



CERTIFICATE OF AUTHORIZATION NUMBER:  
PROFESSIONAL ENGINEERING: 018281  
LAND SURVEYING: 017976  
GEOLOGICAL: 018750

It is a violation of New York Education Law Art. 145 Sec. 7209 & Art. 147 Sec. 7307, for any person, unless acting under the direction of a licensed architect, professional engineer, or land surveyor, to alter an item in any way. If an item bearing the seal of an architect, engineer, or land surveyor is altered, the altering architect, engineer, or land surveyor shall affix to the item their seal and notation "altered by" followed by their signature and date of such alteration, and a specific description of the alteration.

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5795 LEWISTON ROAD  
NIAGARA UNIVERSITY, NEW YORK 14109



EDA PROJECT No. 01-01-15369 HUD PROJECT No. B-23-CP-NY-1083



ESD PROJECT No. 135,035

**ACADEMIC INNOVATION  
HUB - WORK FORCE  
DEVELOPMENT TRAINING**

822 CLEVELAND AVENUE  
NIAGARA FALLS, NEW YORK 14305

NO.	DATE	DESCRIPTION

PROJECT NUMBER: 2221723

DRAWN BY: KMK

REVIEWED BY: JSN

ISSUED FOR: BID

DATE: APRIL 11, 2024

DRAWING NAME:

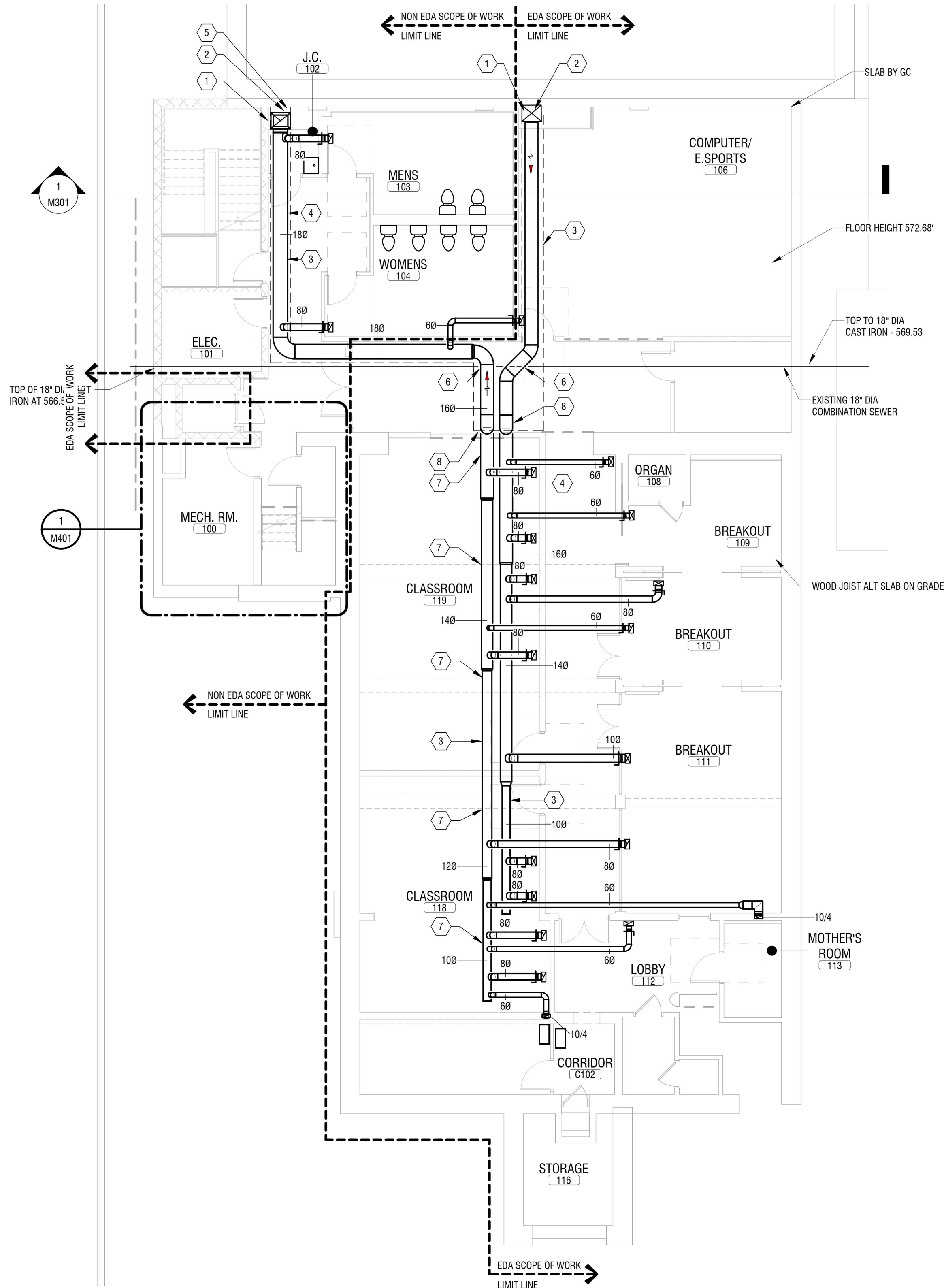
**MECHANICAL DUCTWORK  
PLAN**

DRAWING NUMBER:

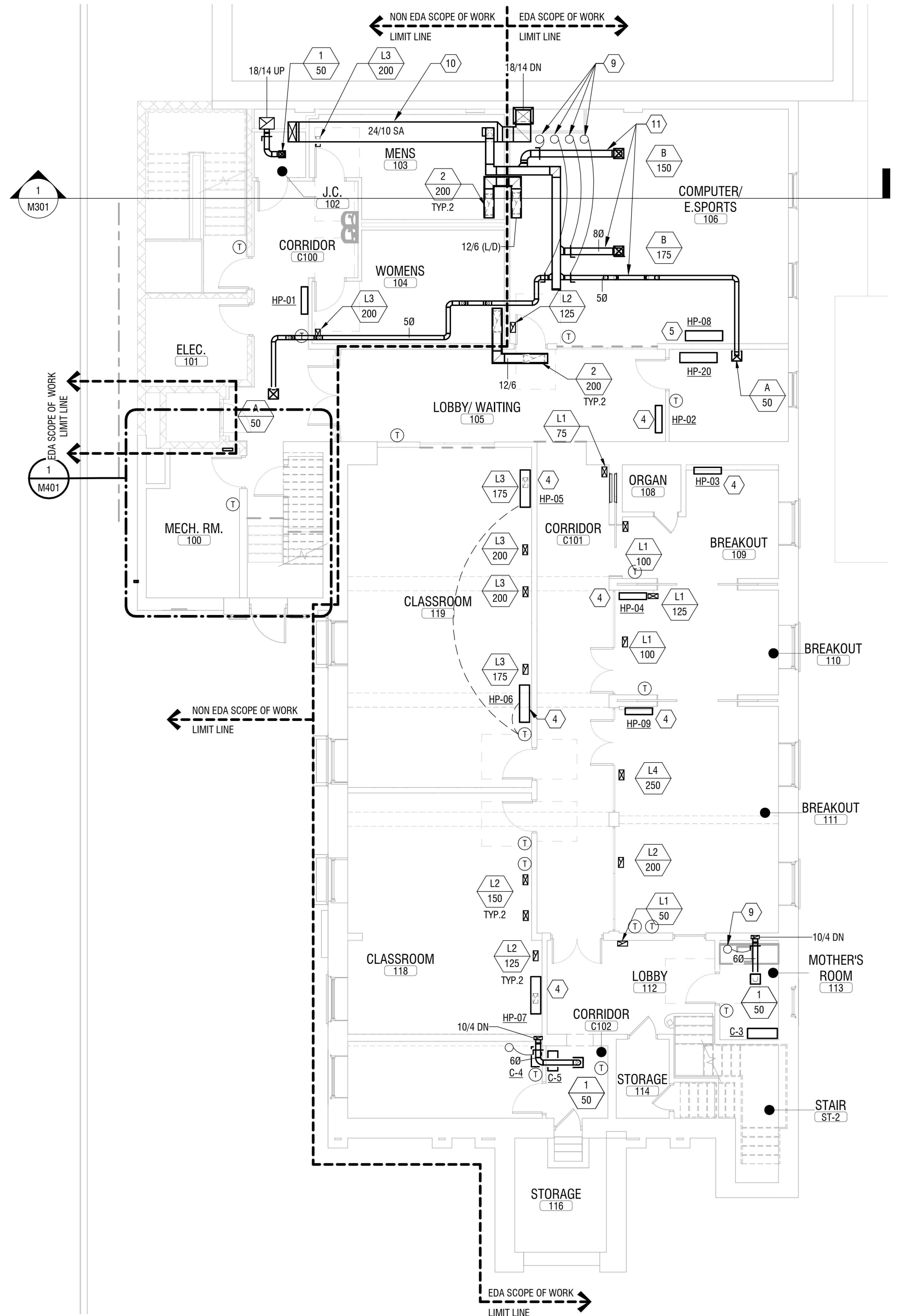
**M102**

**GENERAL NOTES:**  
A. COORDINATE UNDER FLOOR DUCTWORK WITH PLUMBING DRAINAGE.

- KEY NOTES:**
- CUT AND EXCAVATE EXISTING FLOOR. SEE STRUCTURAL DRAWING FOR FLOOR REMOVAL. PROVIDE UNDERGROUND DUCT FOR VENTILATION SYSTEM. BACKFILL WITH PEA SIZED STONE/PATCH CONCRETE FLOOR TO MATCH EXISTING.
  - PROVIDE 20" W x 24" L x 36" H UNDERGROUND DUCT ADAPTOR PLENUMS.
  - EXCAVATE FOR UNDERGROUND DUCT. EMBED DUCT IN PEA SIZED STONE.
  - COORDINATE DUCT DEPTH AND INSTALLATION WITH PLUMBER. SANITARY LINE(S) SHALL RUN UNDER DUCT.
  - COORDINATE PLENUM AND DUCT INSTALLATION WITH STORM LINE.
  - RUN DUCT OVER TOP OF CAST IRON PIPE. LEAVE 6" MIN OF CLEARANCE OVER TOP OF PIPE.
  - RUN DUCT THROUGH SPACE IN FOUNDATION WALL. SEE STRUCTURAL DRAWINGS.
  - OFFSET DUCT DOWN TO UNDER WOOD FRAMED FLOOR. EXCAVATE EARTH CRAWL SPACE AND IMBED DUCT IN PEA STONE.
  - REMOTE DAMPER OPERATOR IN CEILING.
  - RUN DUCT IN SOFFIT.
  - RUN DUCTS ABOVE CEILING. COORDINATE WITH OTHER TRADES.



**2 UNDERGROUND MECHANICAL PLAN**  
M102 1/8" = 1'-0"



**1 BASEMENT DUCTWORK PLAN**  
M102 1/8" = 1'-0"



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EDA PROJECT No. 01-01-15369 HUD PROJECT No. B-23-CP-NY-1083



ESD PROJECT No. 135,035

**ACADEMIC INNOVATION  
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DRAWING NAME:

**MECHANICAL PLAN**

DRAWING NUMBER:

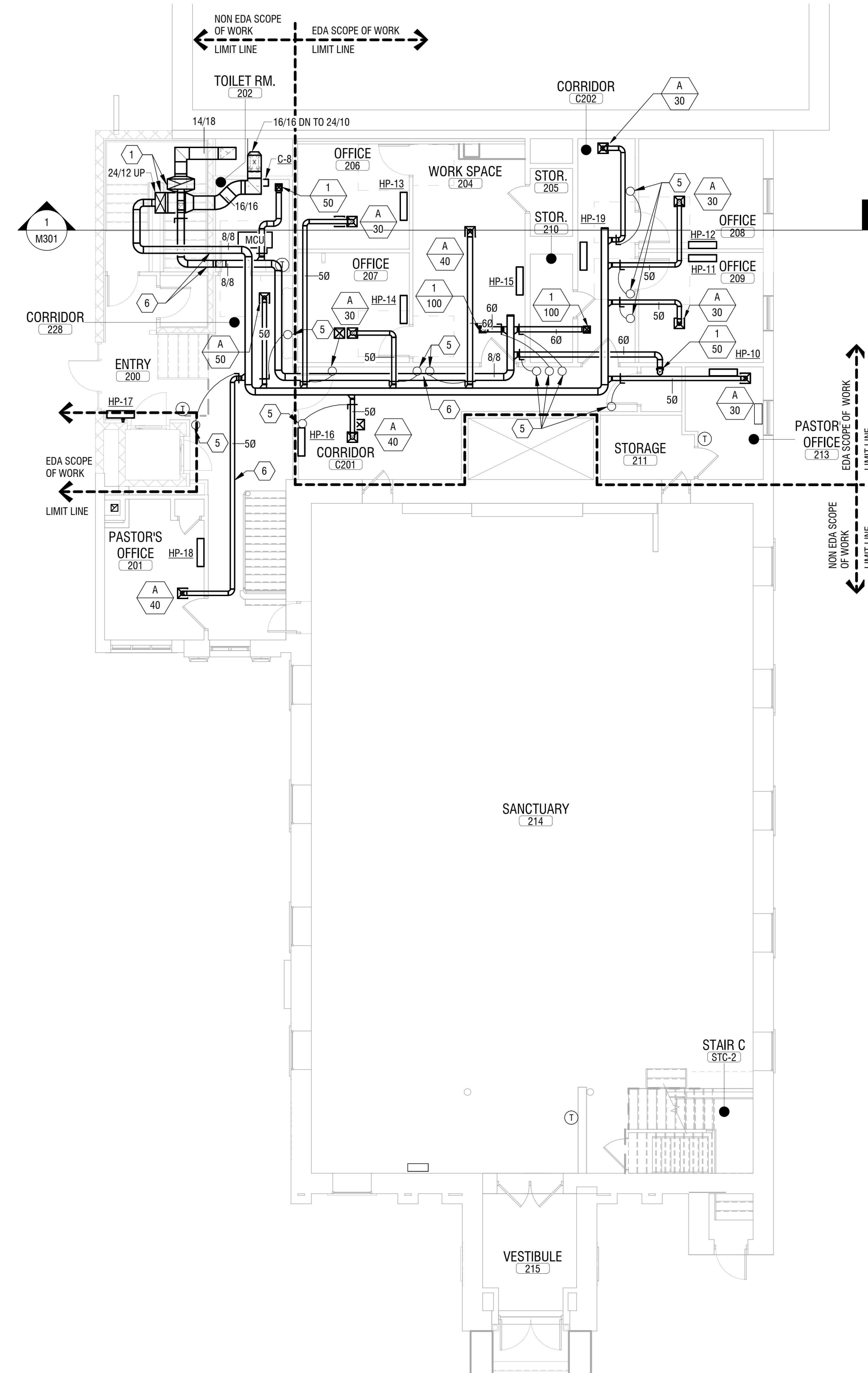
**M103**

**GENERAL NOTES:**

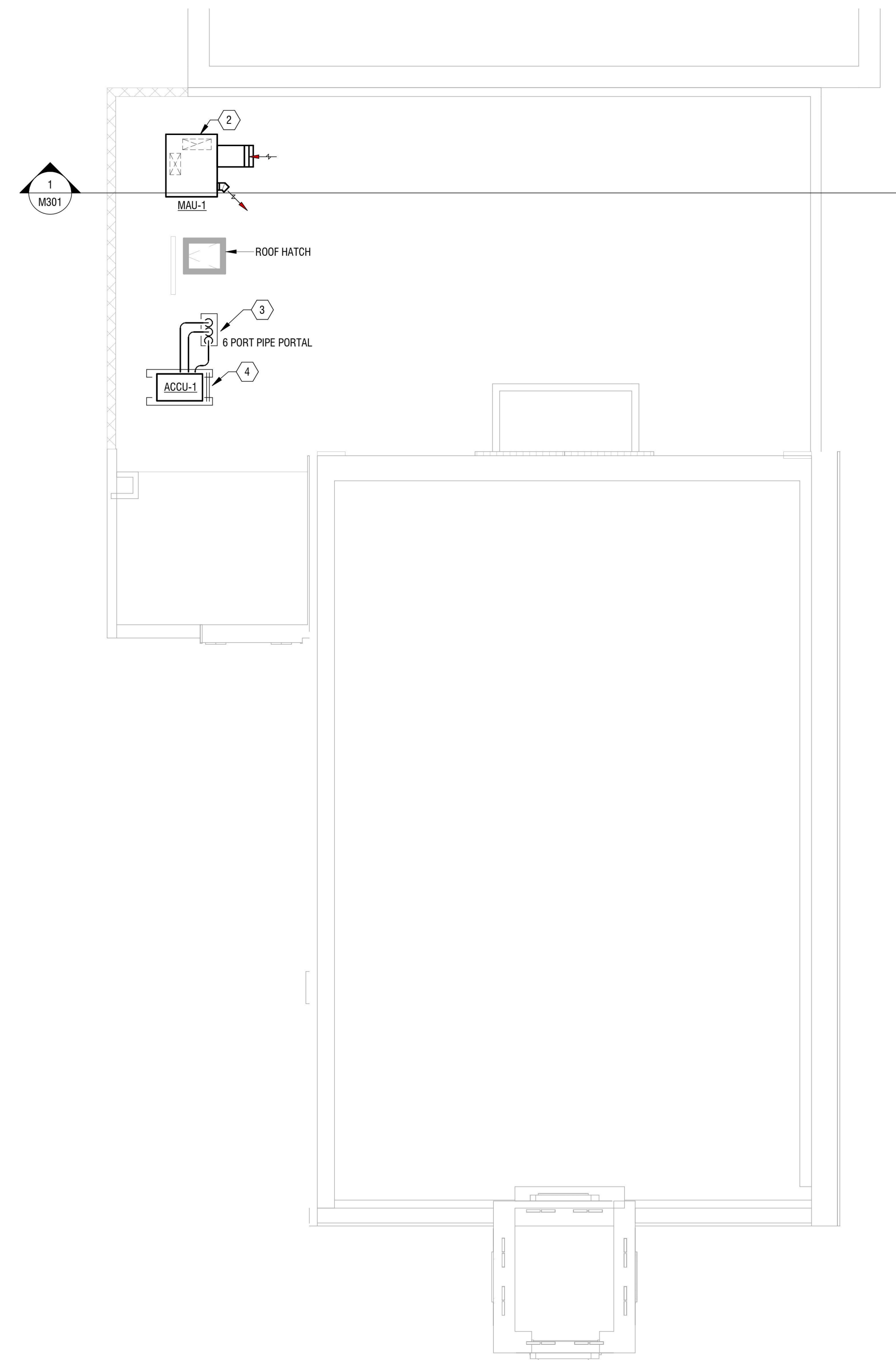
- A. ALL DUCTWORK BRANCH FIRST FLOOR SHALL HAVE REMOTE DAMPER ACTUATORS MOUNTED IN CEILING PROVIDE LAYOUT FOR APPROVAL.

**KEYED NOTES (#):**

1. SUPPLY AND EXHAUST DUCT UP TO ROOF THROUGH CURB. DUCT SHALL BE ABOVE STAIR CEILING.
2. PROVIDE 24" HIGH INSULATED CURB COORDINATE DUCT DROPS WITH STRUCTURAL. COMBINE DUCTS INTO SINGLE DROP THROUGH ROOF. RUN ONE DUCT ON EACH SIDE OF ROOF TRUSS.
3. PROVIDE 6 PORTAL PIPE CURB FOR REFRIGERANT PIPE AND CONTROL CONDUITS. PIPING DOWN TO MCU UNIT IN MECHANICAL CLOSET BELOW.
4. MOUNT ACCU-1 ON A VIBRATION ISOLATION FRAME SUPPORTED BY ROOF MOUNTED EQUIPMENT RAILS. RAILS SHALL SPAN STRUCTURE AND BE LONG ENOUGH TO MOUNT ELECTRICAL DISCONNECT SUPPORT ON ENDS. ASSEMBLY SHALL MEET NYS WIND RESISTANCE REQUIREMENTS.
5. REMOTE DAMPER OPERATOR MOUNTED IN CEILING.
6. RUN DUCTWORK THROUGH EXISTING TRUSSES. VERIFY EXACT LOCATION OF DUCTS IN FIELD.



**2** FIRST FLOOR DUCTWORK PLAN  
M103 1/8" = 1'-0"



**1** ROOF PLAN - MECHANICAL  
M103 1/8" = 1'-0"



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EDA PROJECT No. 01-01-15369

HUD PROJECT No. B-23-CP-NY-1083



ESD PROJECT No. 135,035

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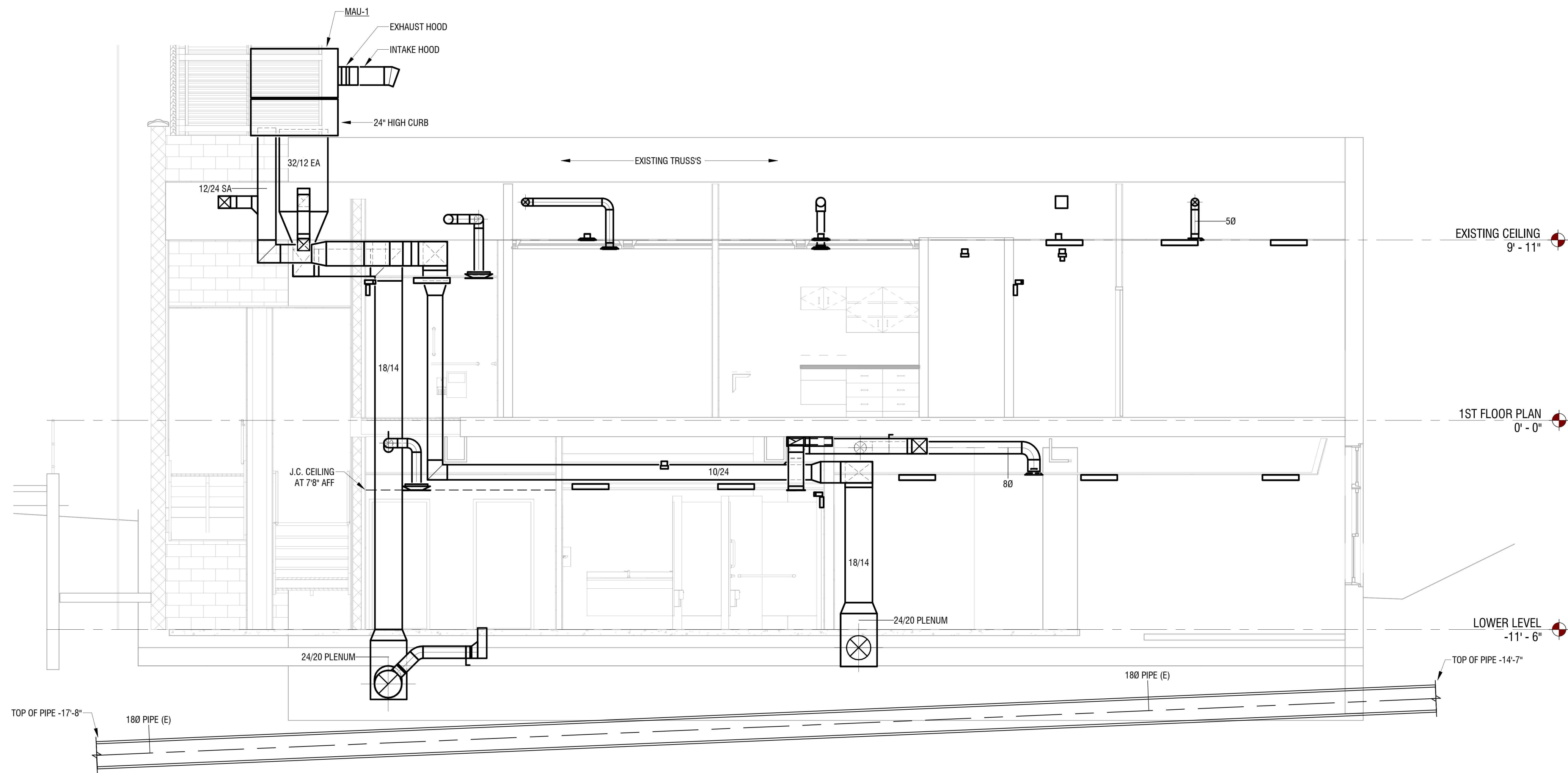
DATE: APRIL 11, 2024

DRAWING NAME:

**MECHANICAL PLAN -  
SECTIONS**

DRAWING NUMBER:

**M301**



**SECTION 1**  
1/4" = 1'-0"



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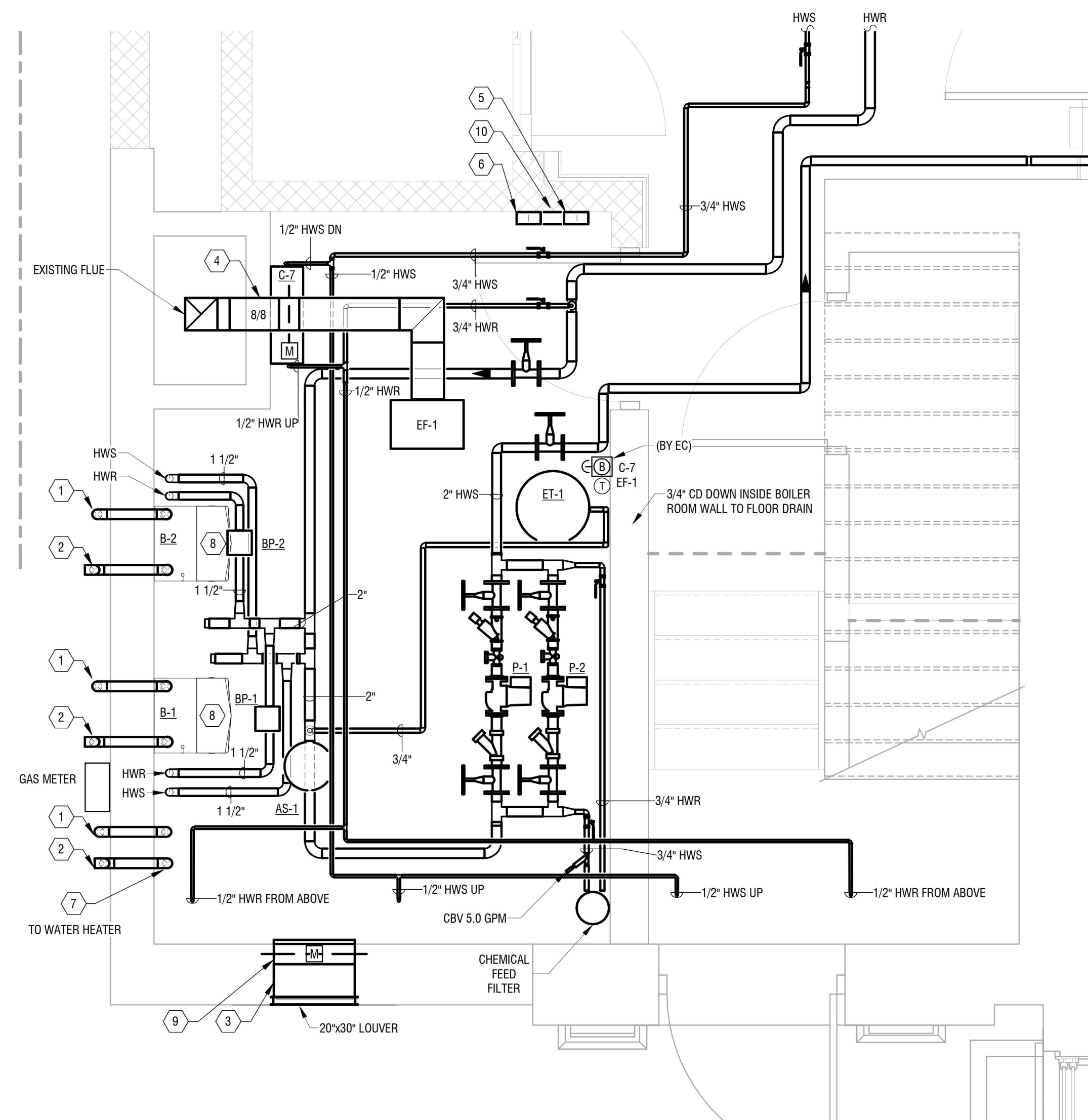
**ENLARGED MECHANICAL  
PLANS**

DRAWING NUMBER:

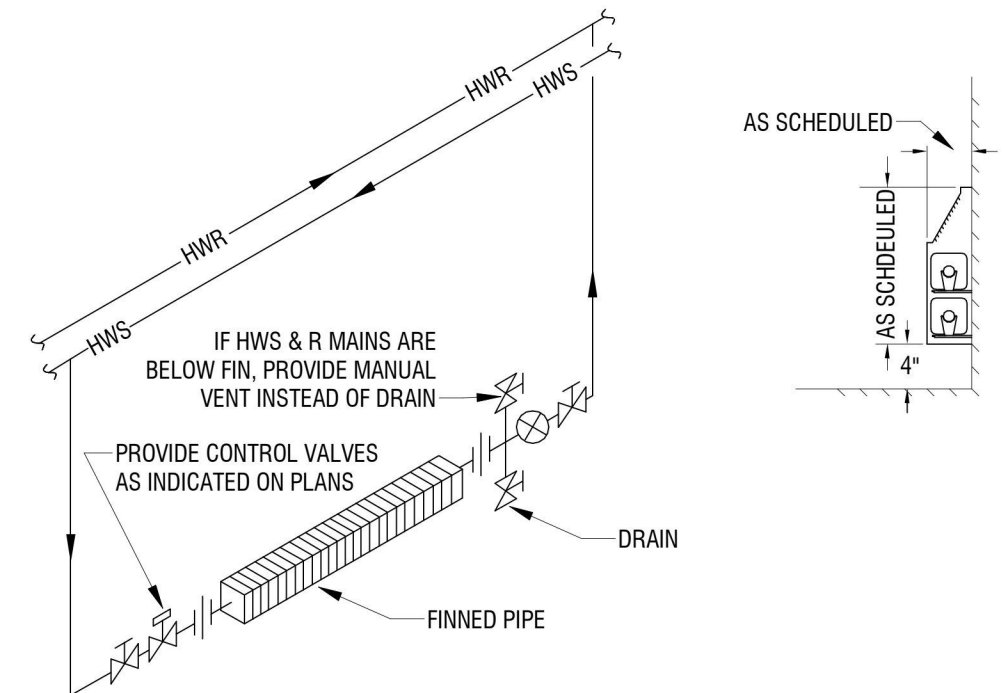
**M401**

**KEYED NOTES**

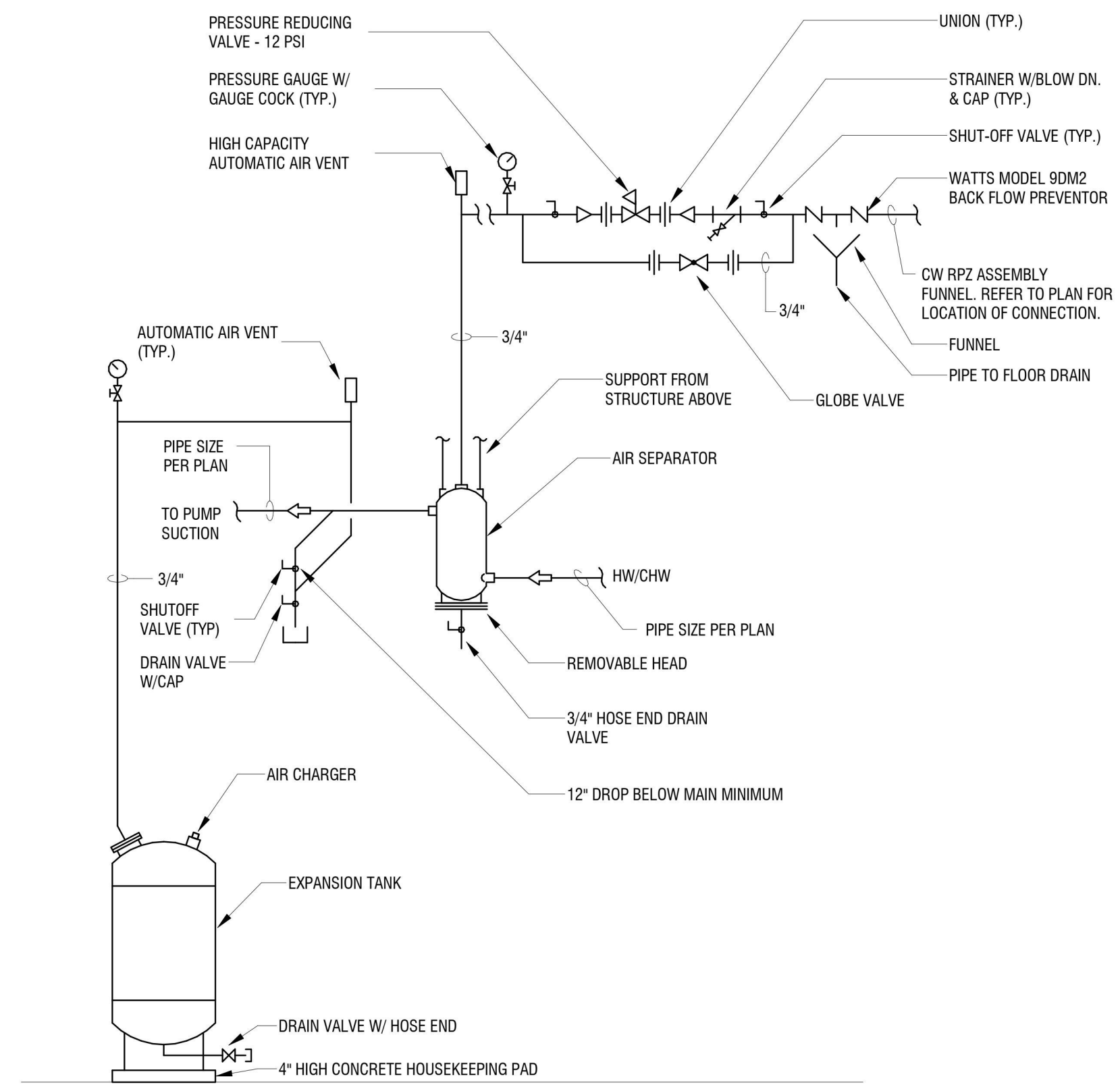
1. PROVIDE 3" PVC AIR INTAKE WITH SCREENED DOWN TURN ELBOW. 12" MIN BELOW FLUE. 48" MIN ABOVE GRADE.
2. PROVIDE 3" STAINLESS STEEL AL-29C VENT WITH DISCHARGE SCREEN 12" MINIMUM ABOVE AIR INTAKE. COORDINATE LOCATION AS NOT TO DRIP ON GAS METER OR REGULATOR.
3. PROVIDE GREENHECK MODEL ESD-345 CUSTOM SHAPE LOUVER WITH ARCH TOP IN EXISTING WINDOW OPENING. FIELD MEASURE OPENING FOR EXACT DIMENSIONS. PROVIDE PLENUM BEHIND LOUVER. PROVIDE 18"x18" INSULATED BLADE MOTORIZED DAMPER IN PLENUM. MOTOR SHALL BE IN DUCT PLENUM. INSULATE EXPOSED ASSEMBLY WITH 3" RIGID FIBERGLASS INSULATION. COORDINATE WITH PLUMBING SYSTEMS.
4. RUN 8"x8" DUCT INTO CHIMNEY FLUE. CUT AND PATCH CHIMNEY TO MATCH EXISTING. HANG EXHAUST FAN EXPOSED IN BOILER ROOM. INSULATE DUCT WITH 3" RIGID FIBERGLASS INSULATION. SEAL AROUND DUCT AT CHIMNEY.
5. MOUNT BMS GATWAY FOR VRF SYSTEM IN BOILER ROOM, COORDINATE LOCATION OF PANEL WITH ELECTRICAL.
6. MOUNT REMOTE PANEL FOR MAU IN BOILER ROOM AND COORDINATE LOCATION OF PANEL WITH ELECTRICAL. WIRE TO MAU.
7. CONNECT FLUE AND OUTSIDE AIR TO WATER HEATER. VERIFY EXACT LOCATION OF WATER HEATER WITH PLUMBER.
8. WALL MOUNTED BOILER. MOUNT SUCH THAT CONTROL PANEL IS APPROXIMATELY 5'-6" AFF TO CENTER LINE.
9. 20" x 20" DAMPER WITH IN DUCT MOTOR. BLANK OFF ARCH OVER TOP OF DAMPER WITH INSULATED METAL PANEL.
10. MOUNT DDC PANEL IN BOILER ROOM. COORDINATE LOCATION WITH ELECTRICAL PANEL, BMS PANEL AND MAU BOILER PANEL.



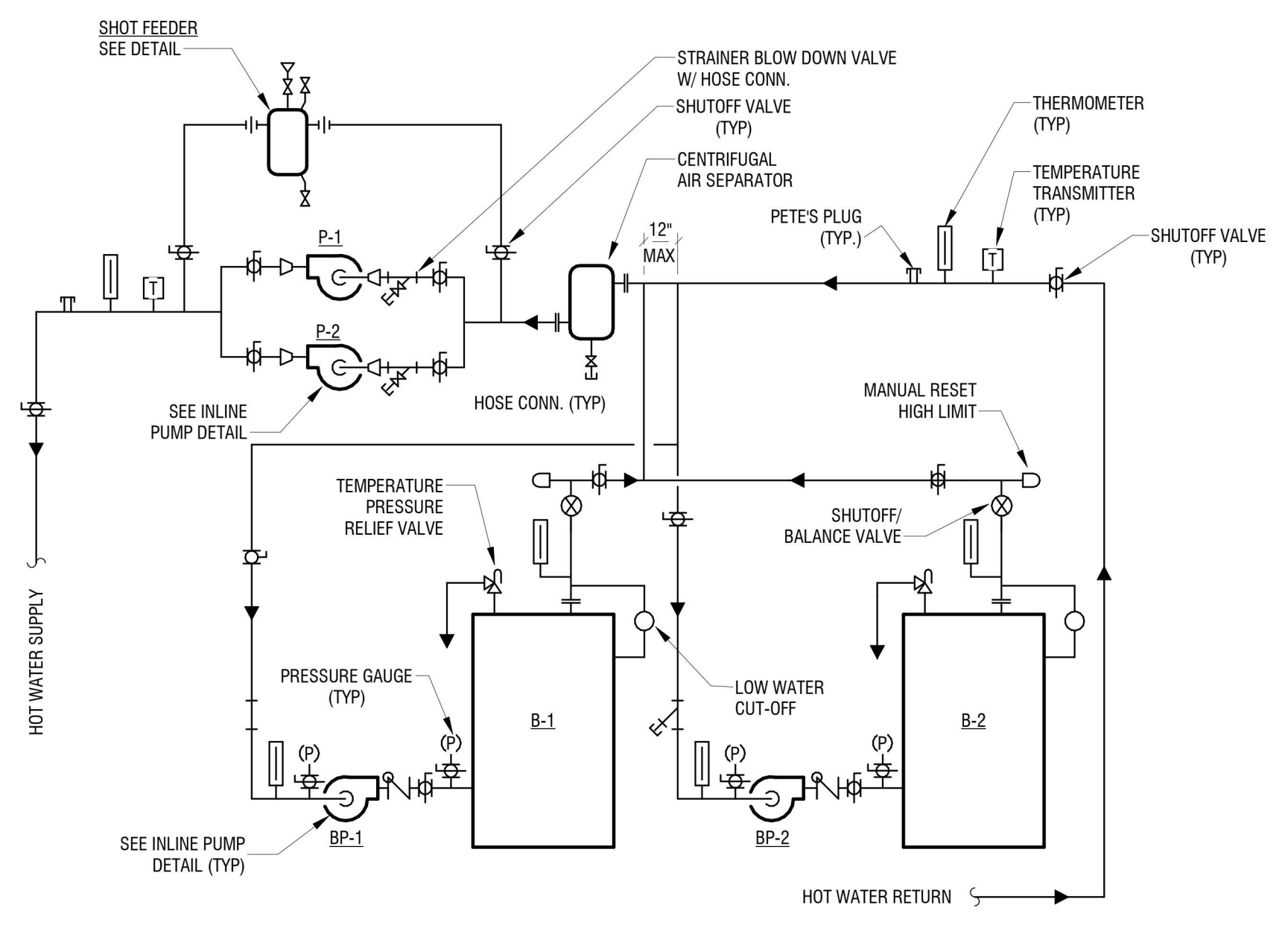
**1 MECH ROOM**  
M401 1/2" = 1'-0"



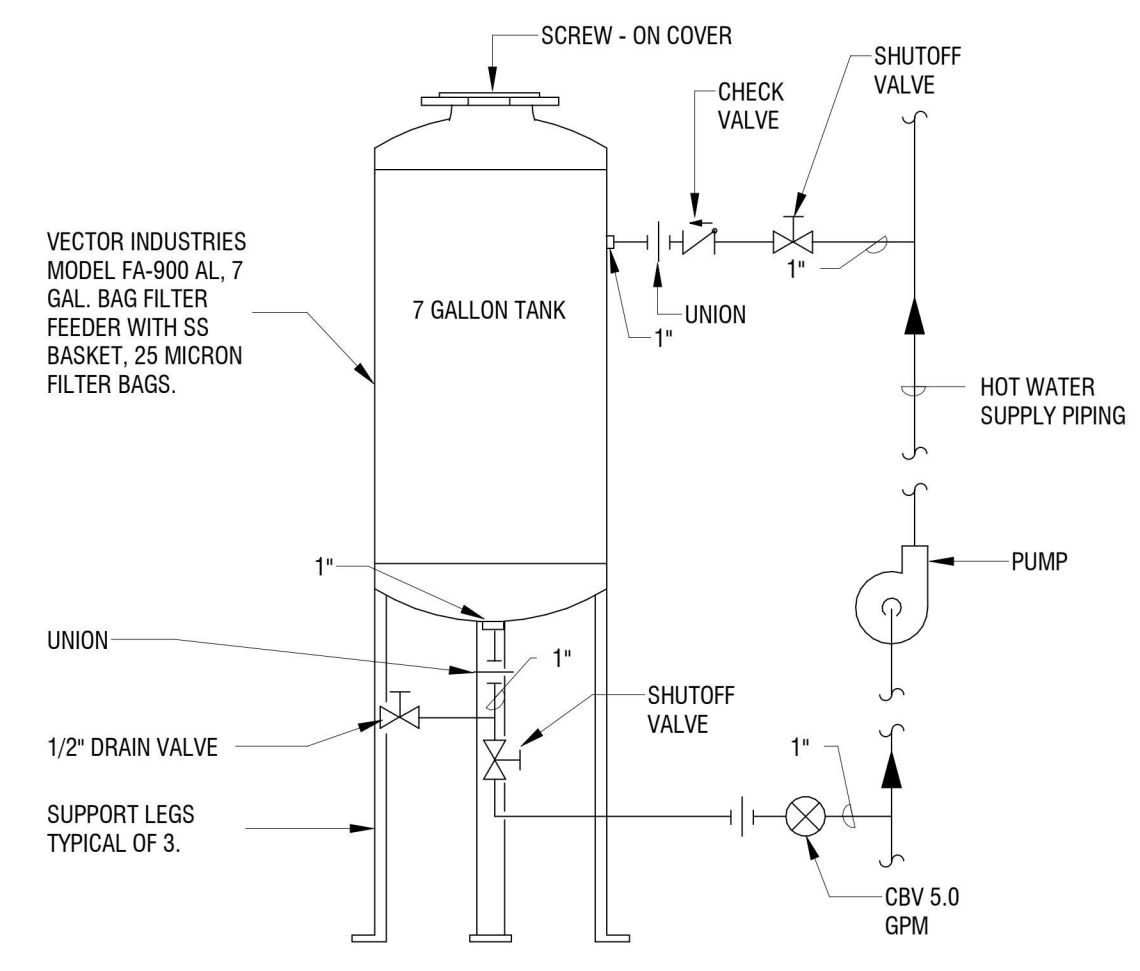
10 FINNED PIPE RADIATION PIPING SCHEMATIC  
M501 NOT TO SCALE



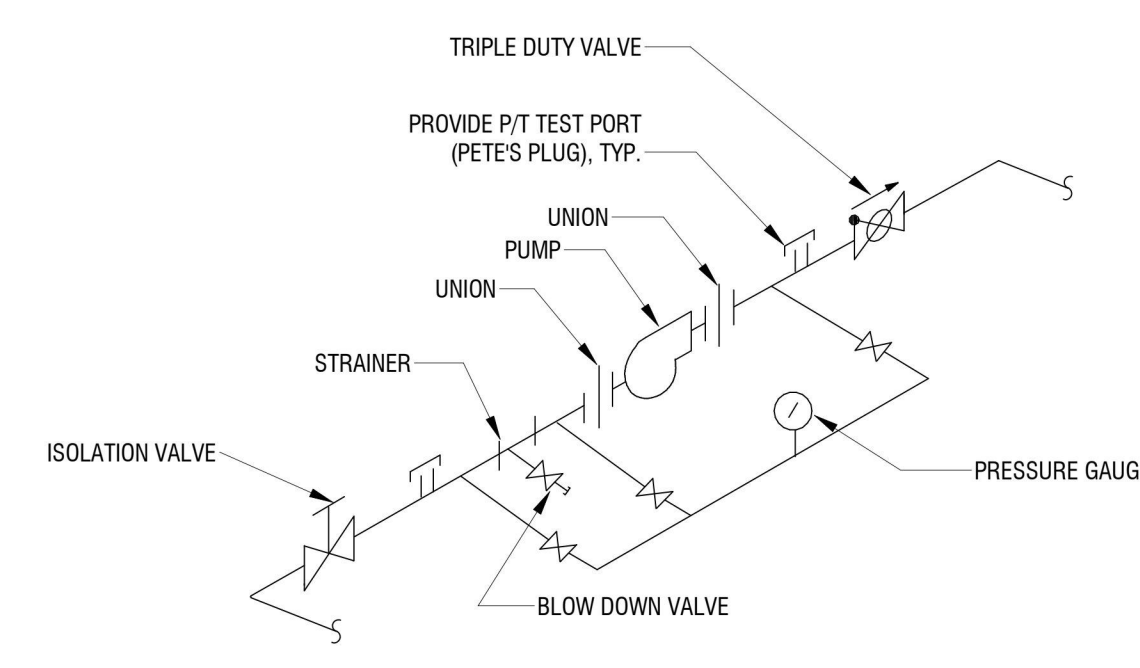
9 BLADDER TYPE EXPANSION TANK DETAIL  
M501 NOT TO SCALE



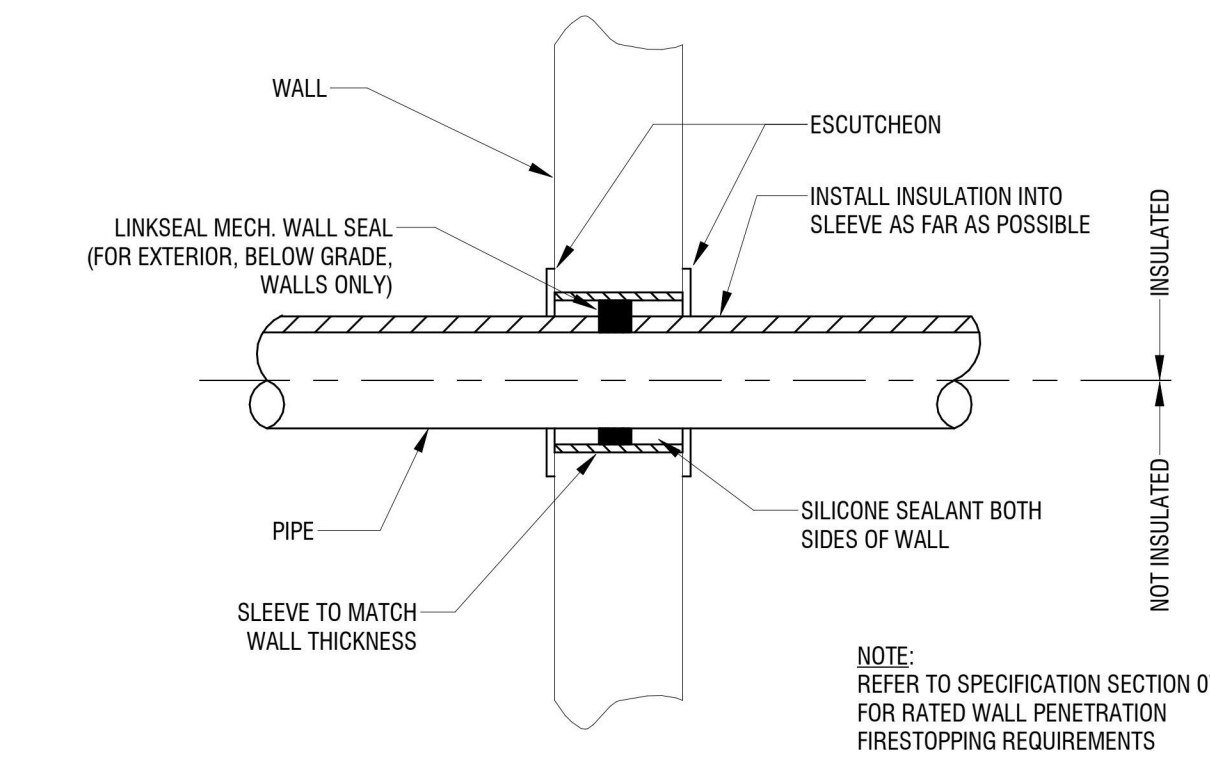
8 HOT WATER BOILER PIPING DETAIL  
M501 NOT TO SCALE



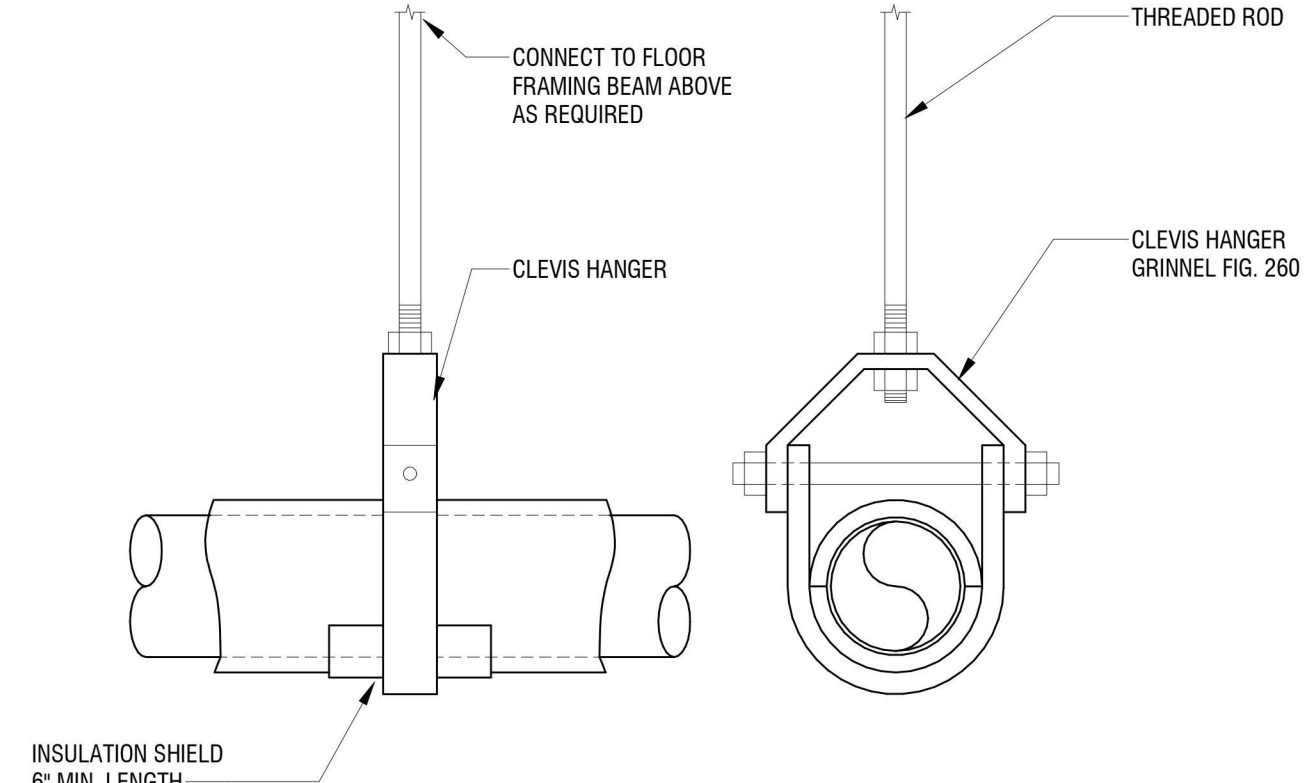
7 BYPASS FILTER FEEDER DETAIL  
M501 NOT TO SCALE



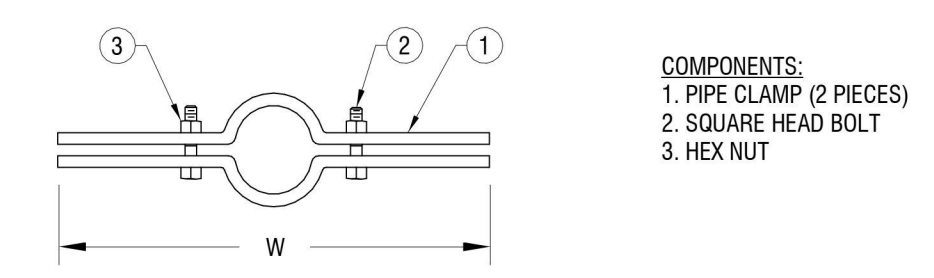
6 INLINE PUMP PIPING DETAIL  
M501 NOT TO SCALE



5 PIPE THRU NON-RATED WALL DETAIL  
M501 NOT TO SCALE



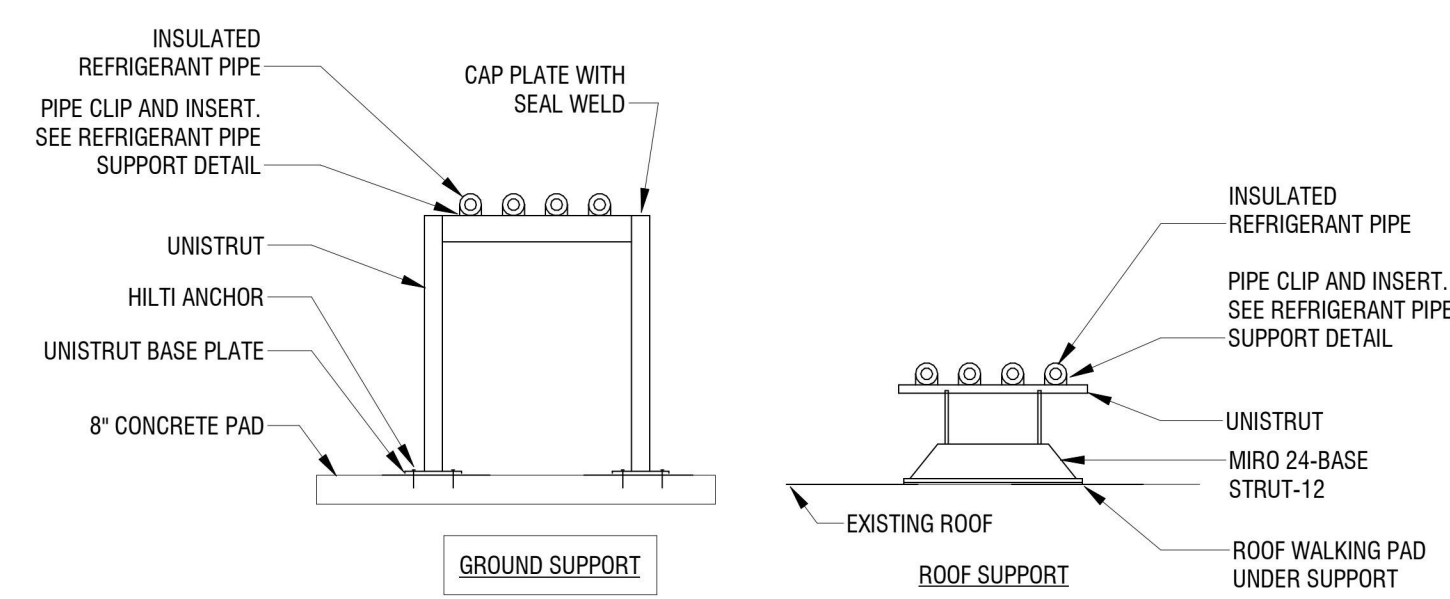
4 PIPE SUPPORT DETAIL  
M501 NOT TO SCALE



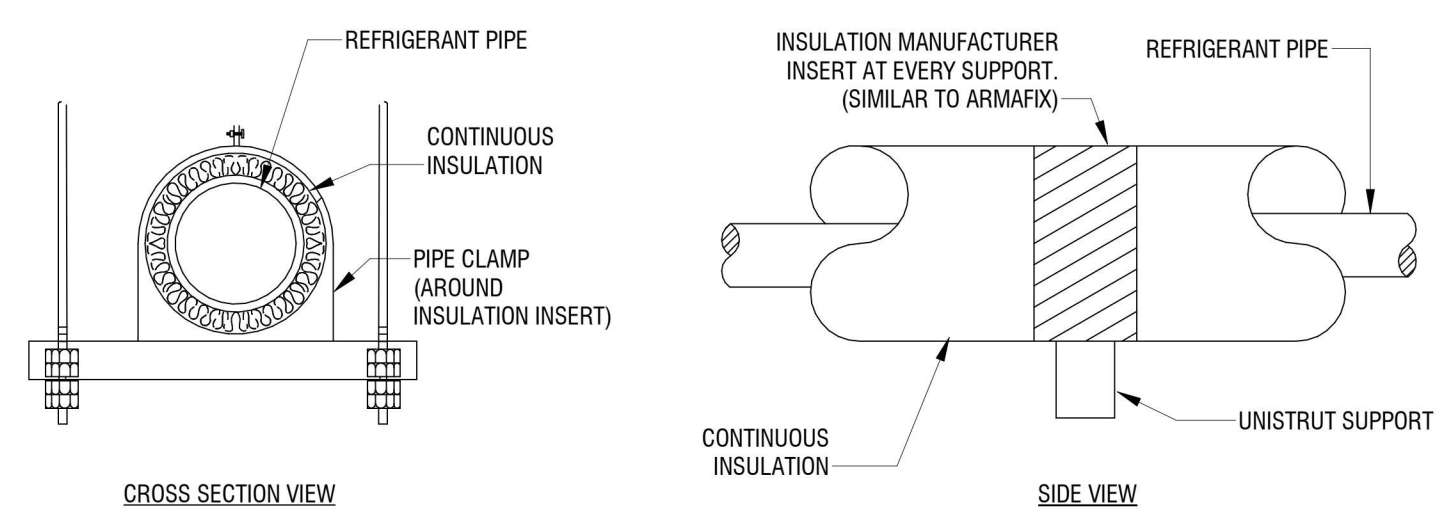
3 PIPE RISER CLAMP DETAIL  
M501 NOT TO SCALE

DESIGN DATA FOR RISER CLAMPS

NOMINAL PIPE SIZE	W DIMENSION	STEEL SIZE	BOLT SIZE
	INCHES	INCHES	INCHES
2-1/2"	11-1/4"	1/4" x 1-1/4"	3/8" x 1-1/2"
3"	12"	1/4" x 1-1/4"	3/8" x 1-1/2"
4"	13-1/2"	1/4" x 1-1/2"	1/2" x 1-1/2"
5"	14-1/2"	1/4" x 2"	1/2" x 1-1/2"
6"	15-1/2"	1/4" x 2"	1/2" x 1-1/2"
8"	18-1/2"	3/8" x 2"	5/8" x 2-1/2"



2 SINGLE STACK REFRIGERANT PIPE SUPPORT DETAIL  
M501 NOT TO SCALE

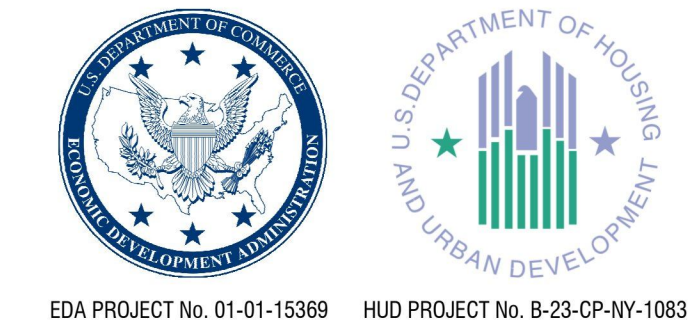


1 REFRIGERANT PIPING SUPPORT DETAIL  
M501 NOT TO SCALE



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EDA PROJECT No. 01-01-15369 HUD PROJECT No. 8-23-CP-NY-1083



ESD PROJECT No. 135.035

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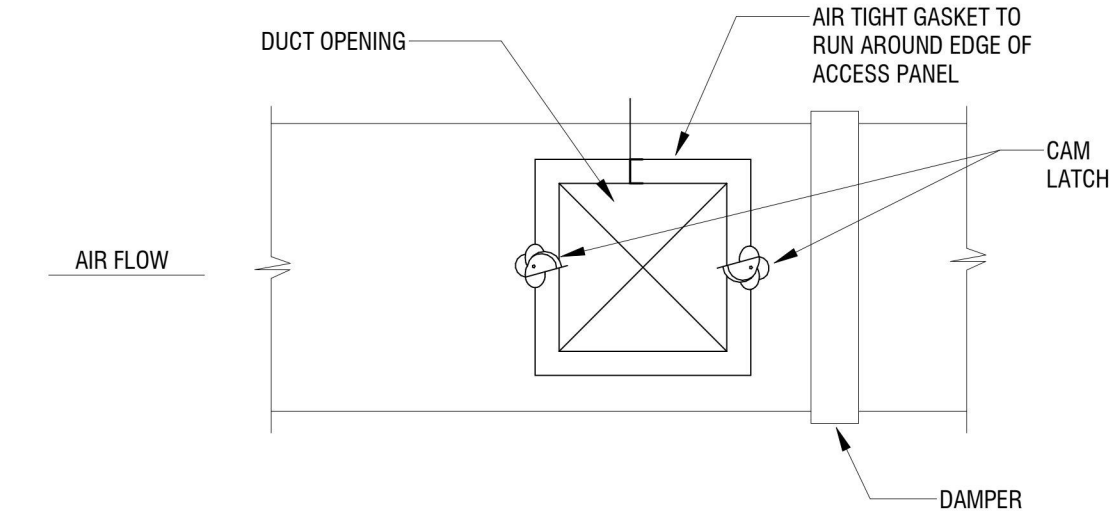
DATE: APRIL 11, 2024

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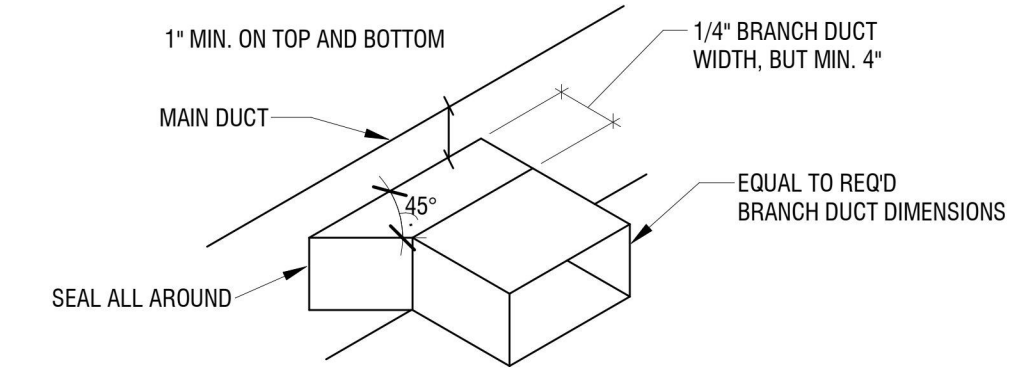
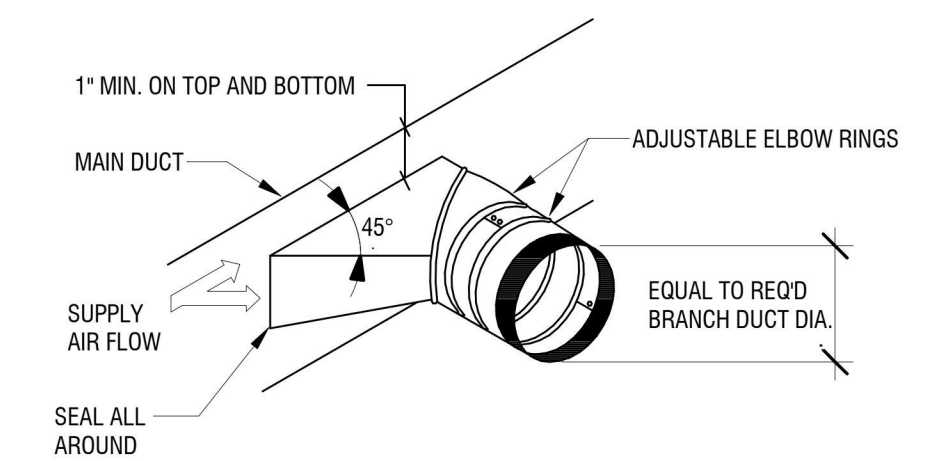
**M502**



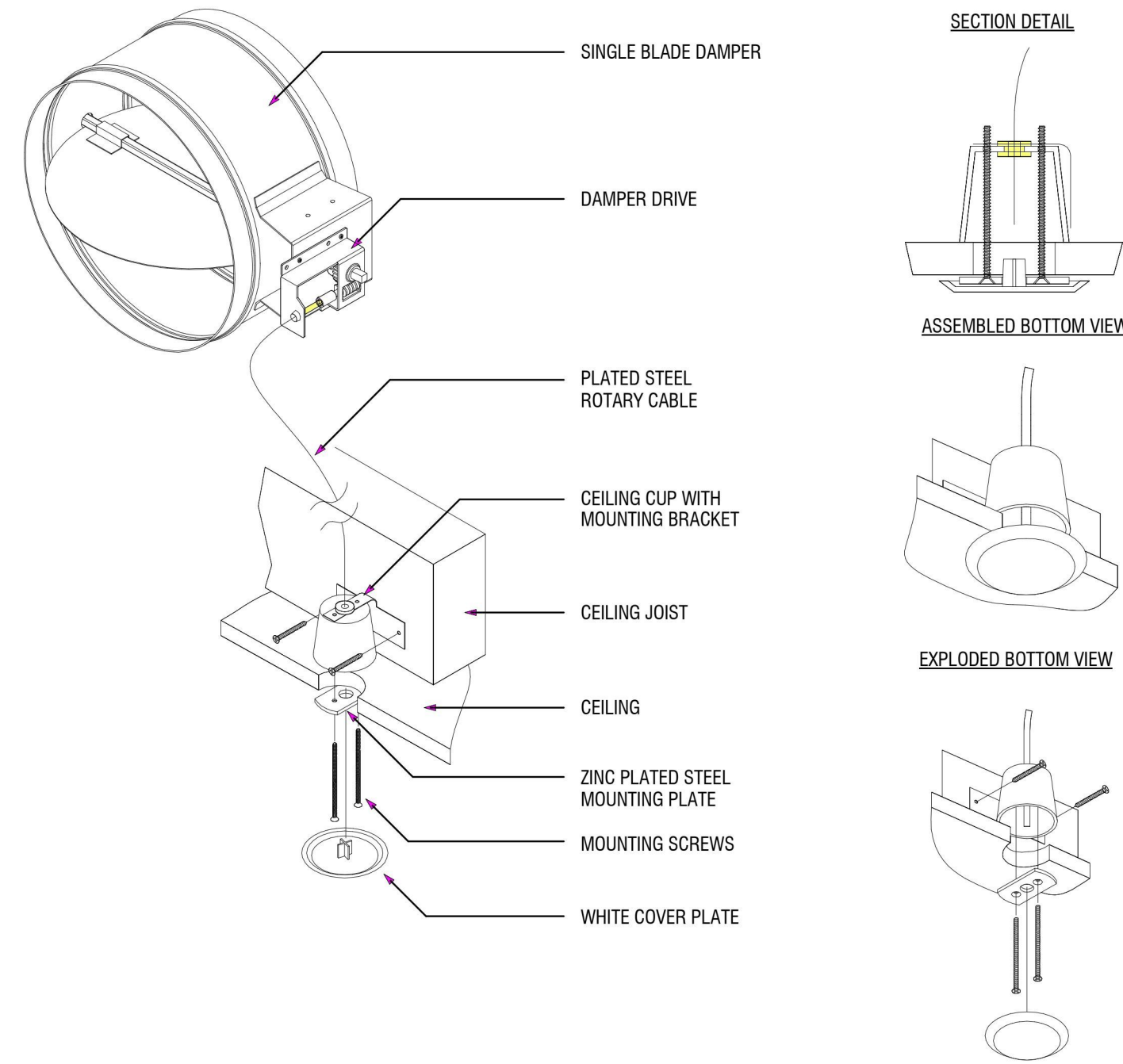
ACCESS PANEL SIZE SCHEDULE	
DUCT SIZE	ACCESS PANEL SIZE
6" TO 15"	10" W x (DAMPER DEPTH-2") D
15" TO 21"	12" W x (DAMPER DEPTH-2") D
21" AND ABOVE	18" W x (DAMPER DEPTH-2") D

ALL OTHER ACCESS PANELS TO BE A MINIMUM OF 15" x 15" WHERE DUCT SIZE ALLOWS. USE FOUR CAM LATCHES ON PANELS LARGER THAN 18" x 18" SIZE.

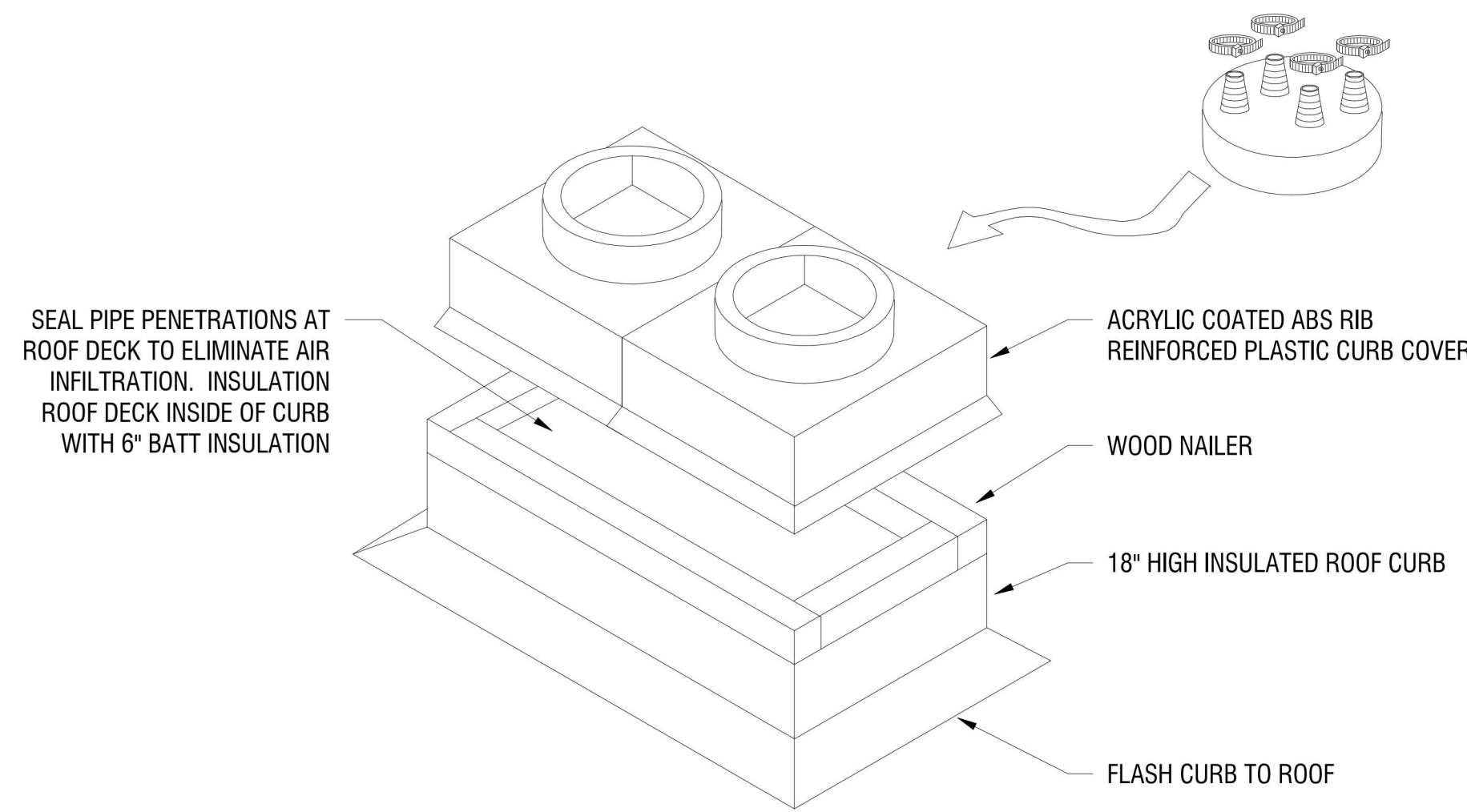
**3 ACCESS PANEL DETAIL**  
M502 NOT TO SCALE



**2 BRANCH TAKE-OFF DETAIL**  
M502 NOT TO SCALE

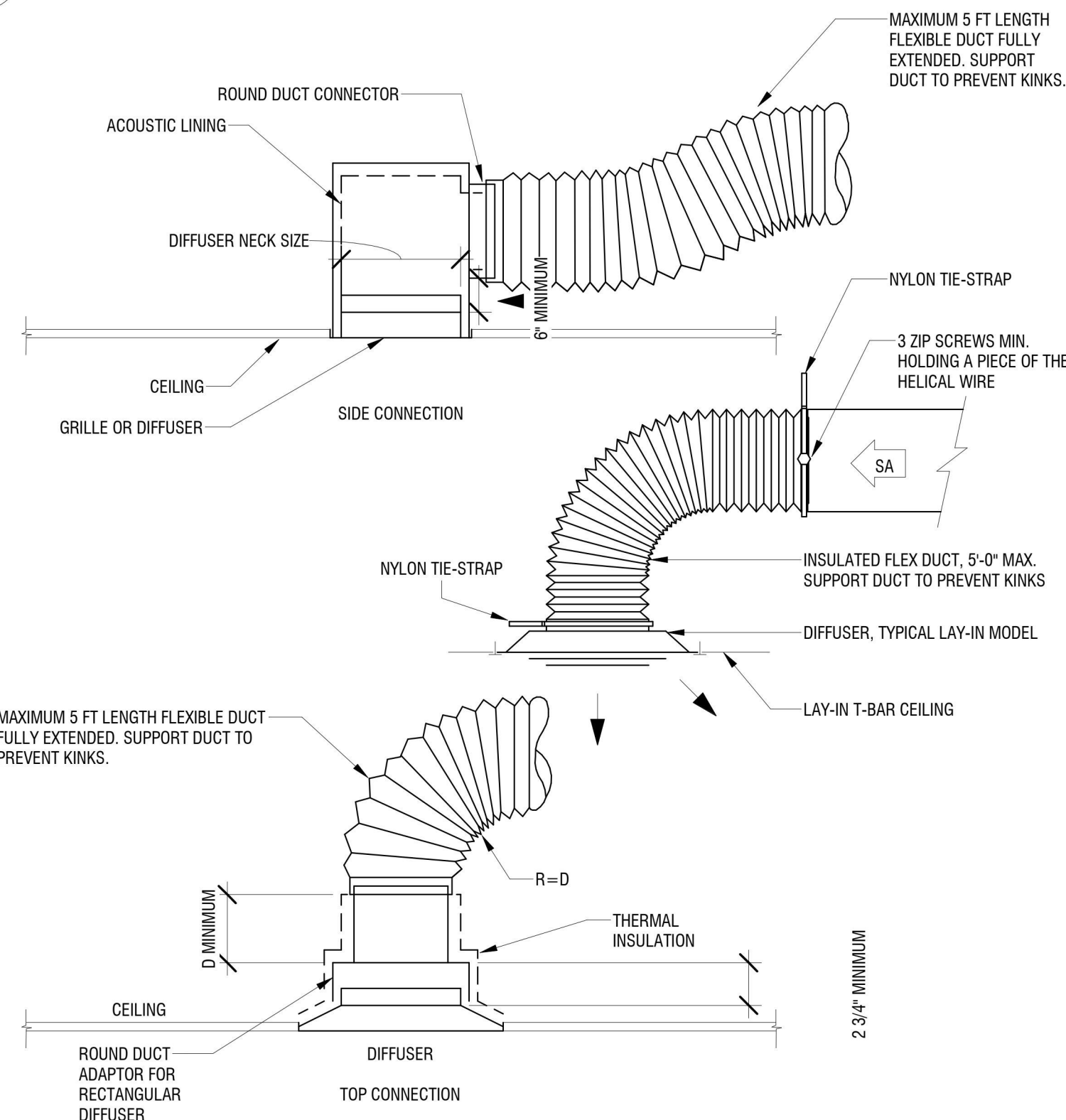


**7 REMOTE DAMPER DETAIL**  
M502 NOT TO SCALE

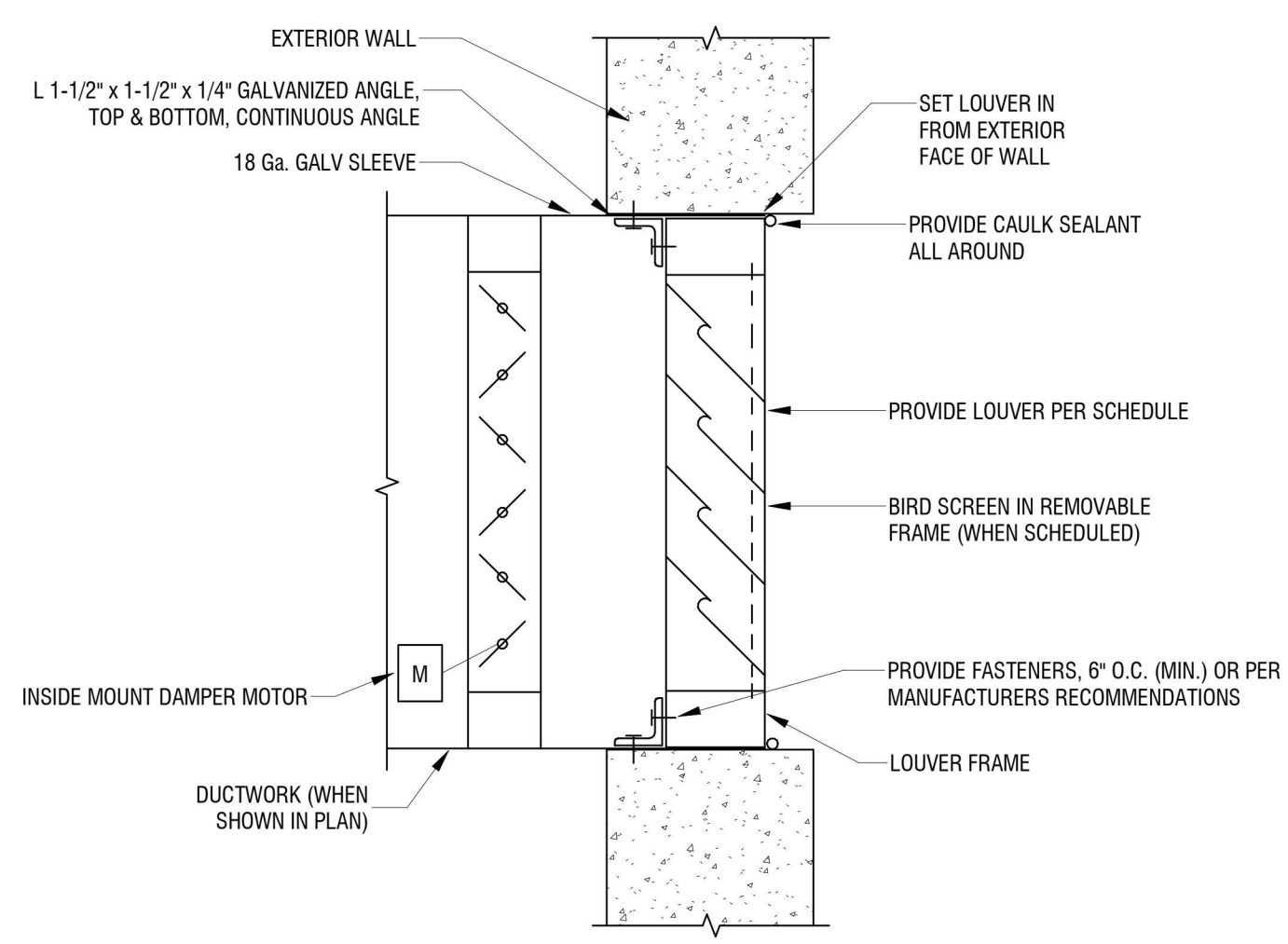


NOTE:  
1. PROVIDE PIPE CURB AS SHOWN ON ROOF PLAN. PROVIDE NUMBER OF PIPE PENETRATIONS AS REQUIRED

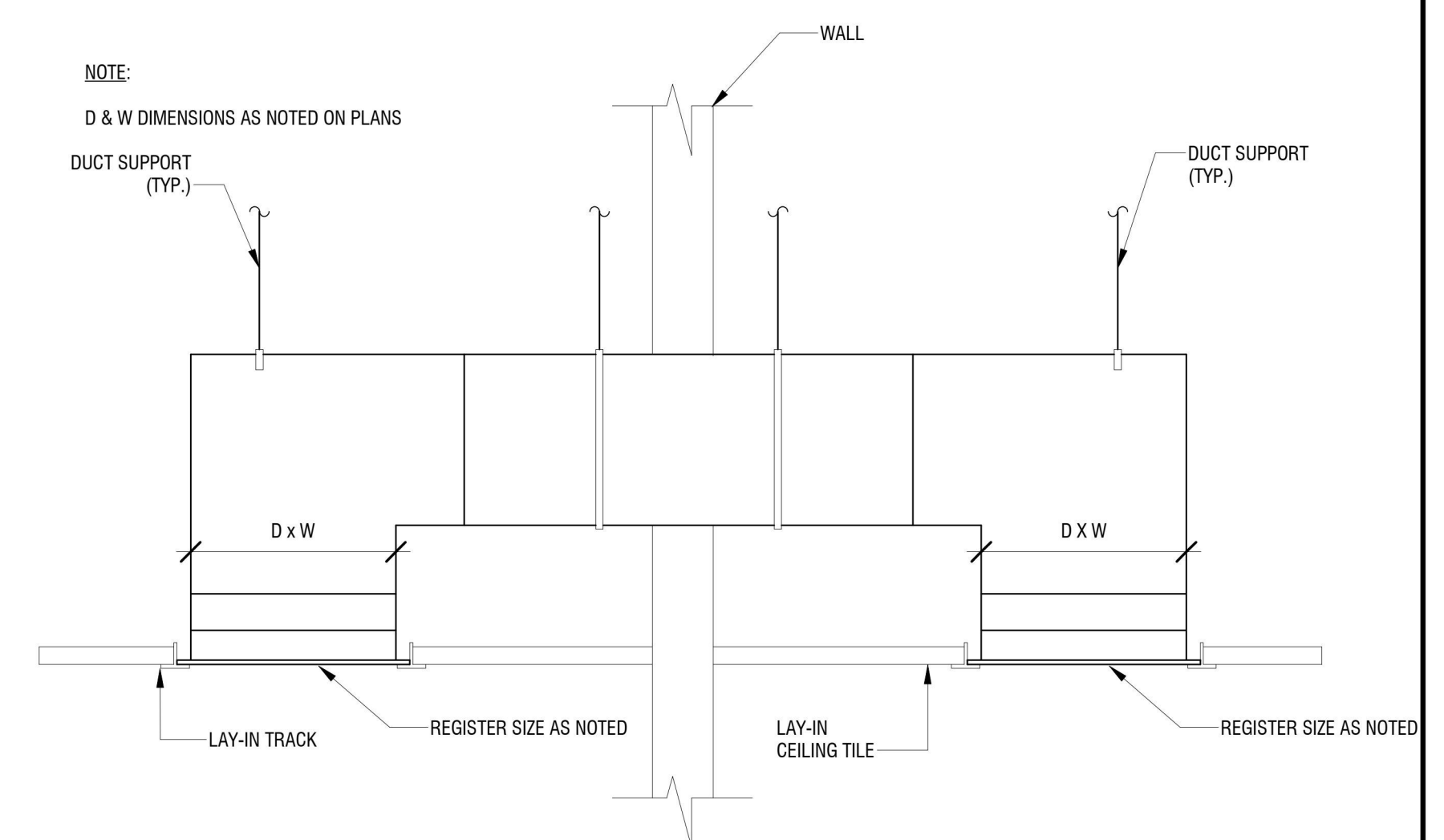
**5 PIPE CURB DETAIL**  
M502 NOT TO SCALE



**6 DIFFUSER CONNECTION DETAIL**  
M502 NOT TO SCALE



**4 AE - LOUVER DETAIL 1**  
M502 1/4" = 1'-0"



**1 AIR TRANSFER UNIT DETAIL**  
M502 NOT TO SCALE





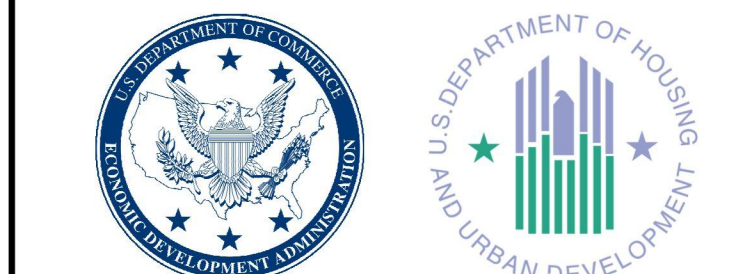
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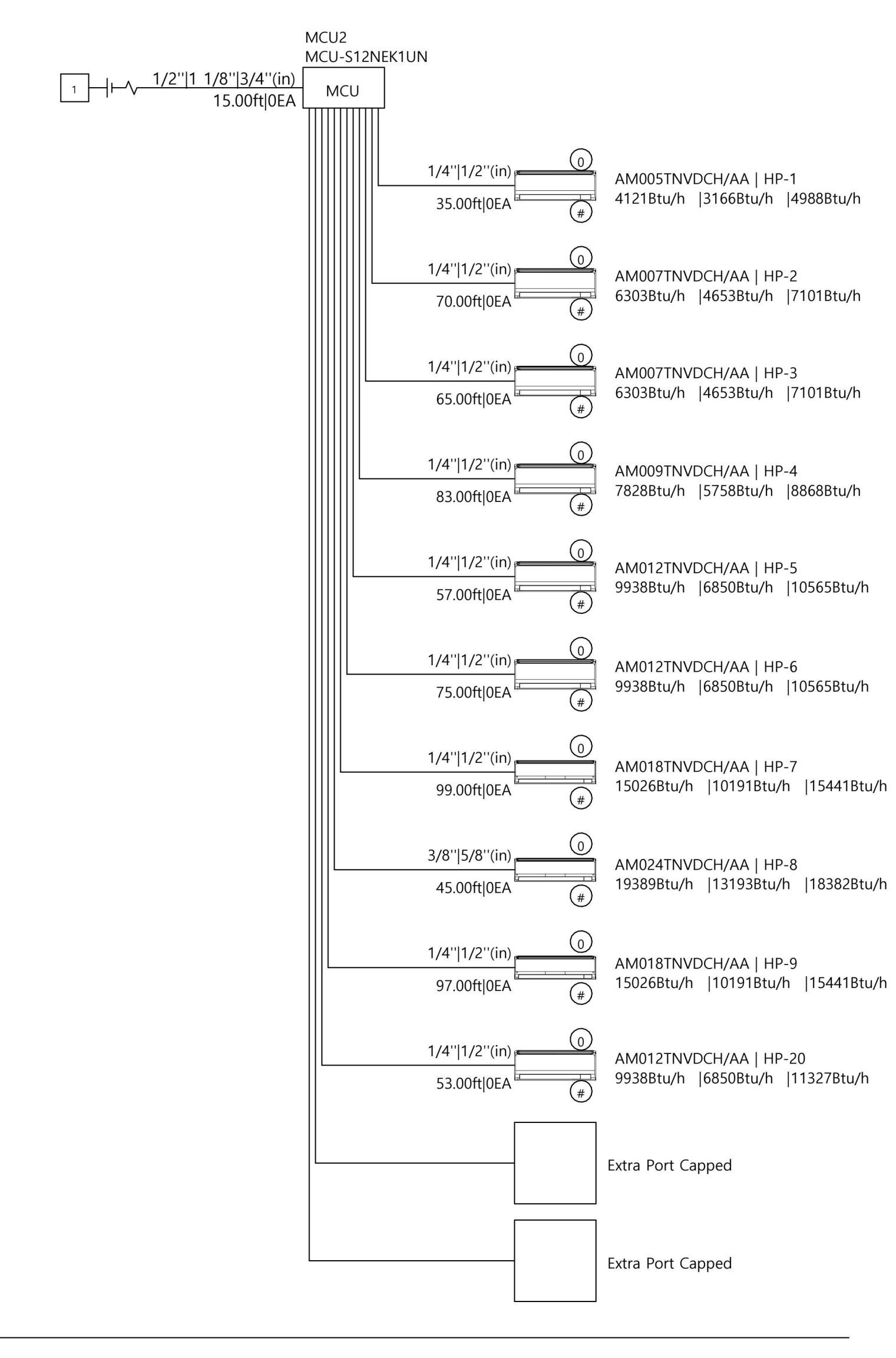
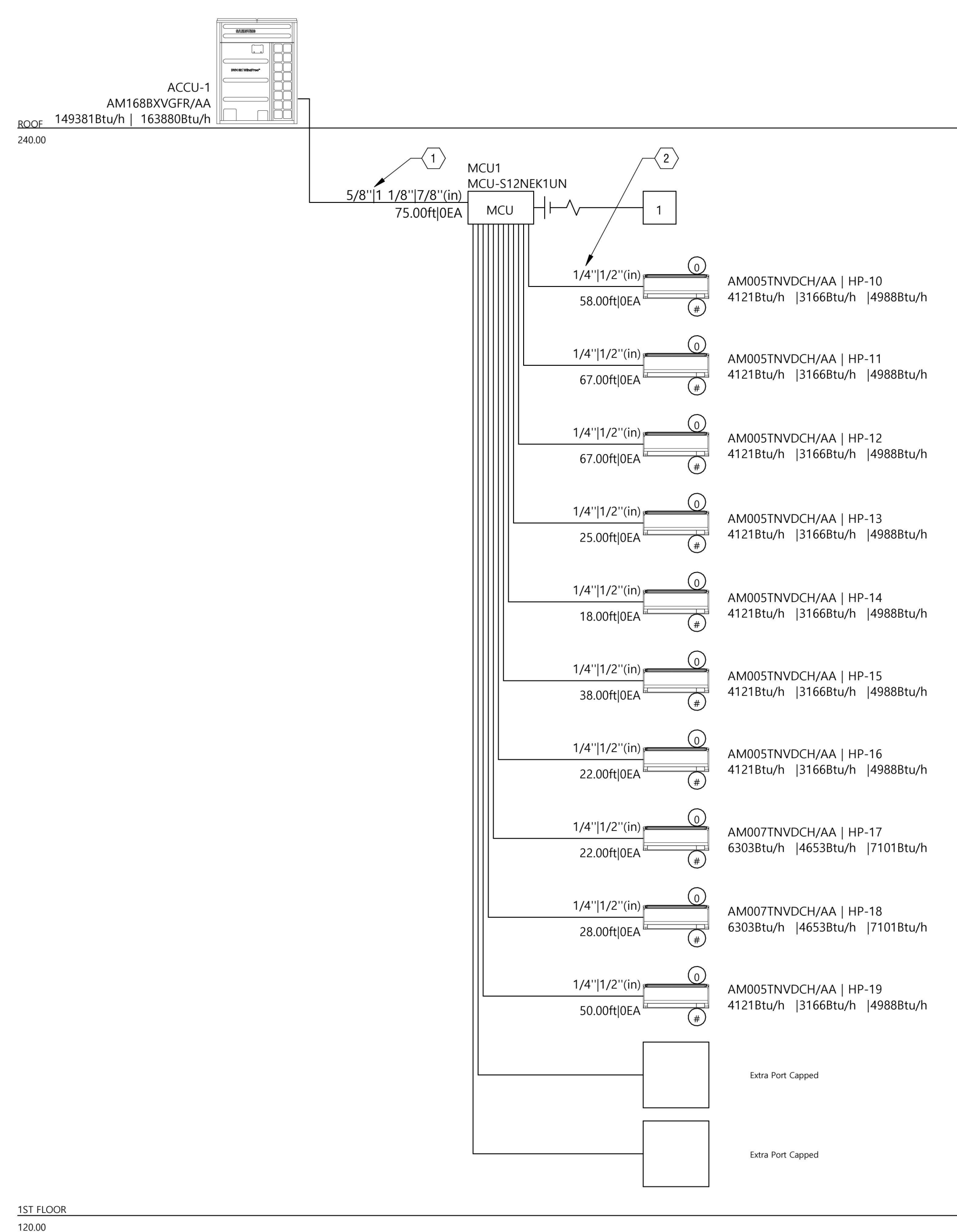
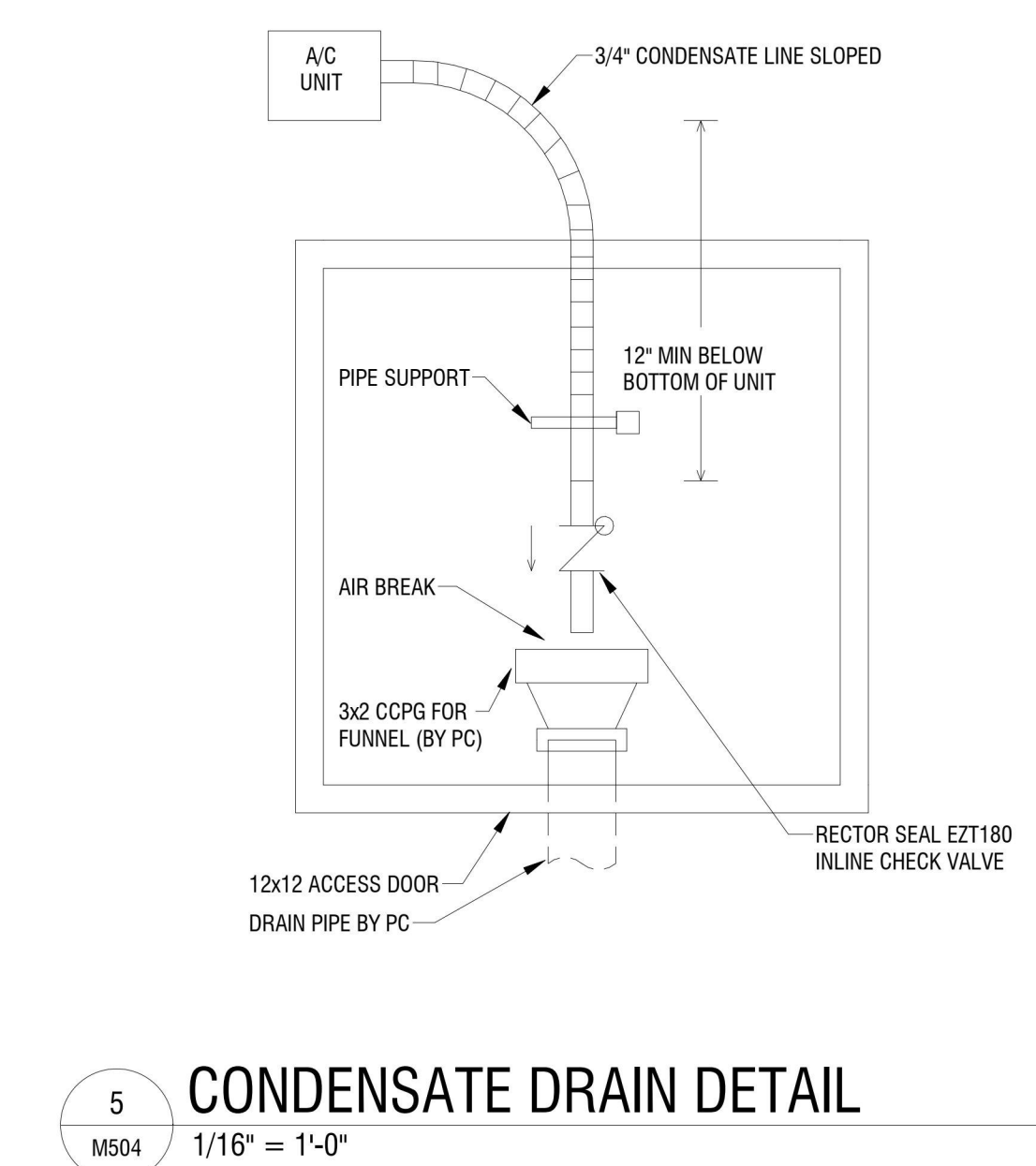
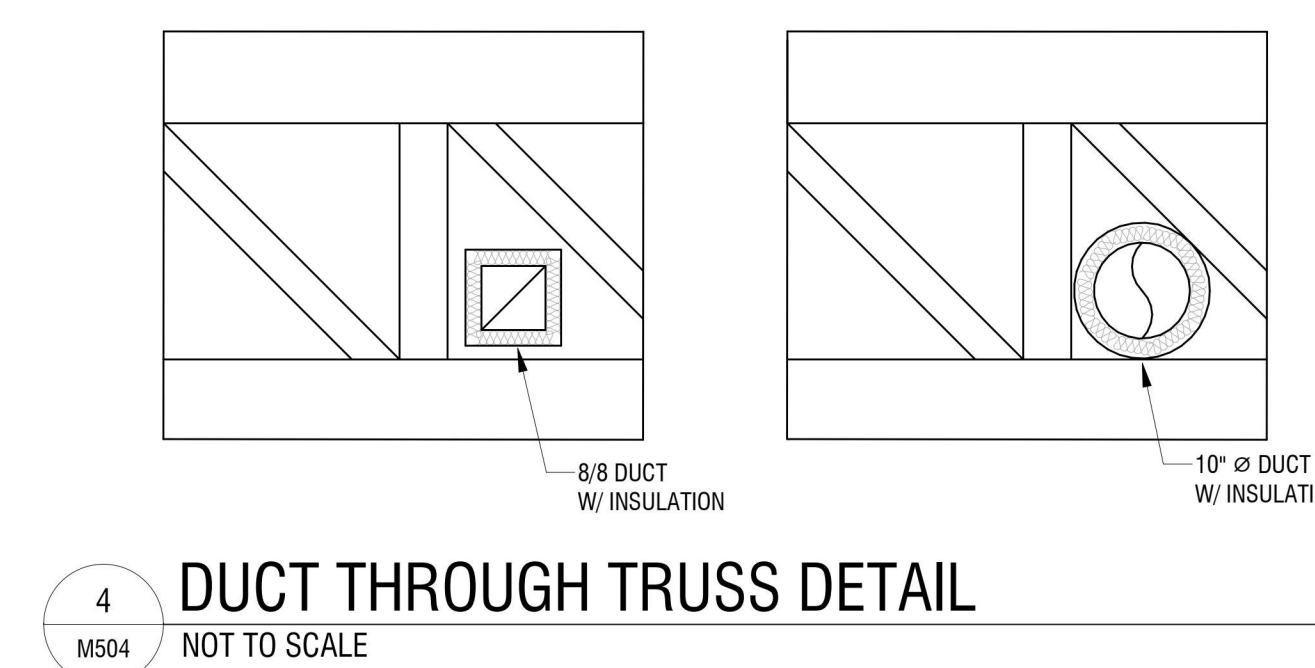
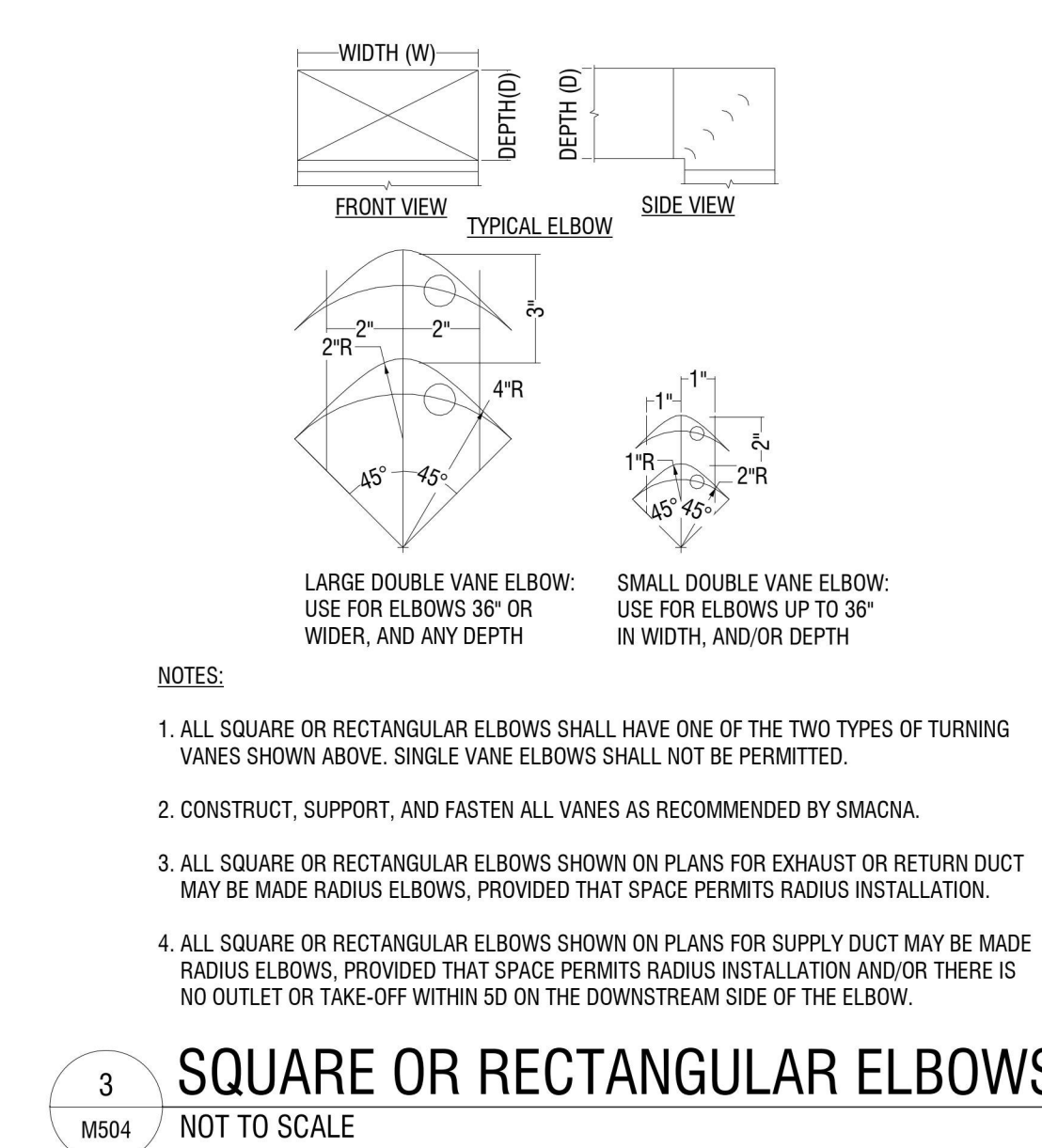
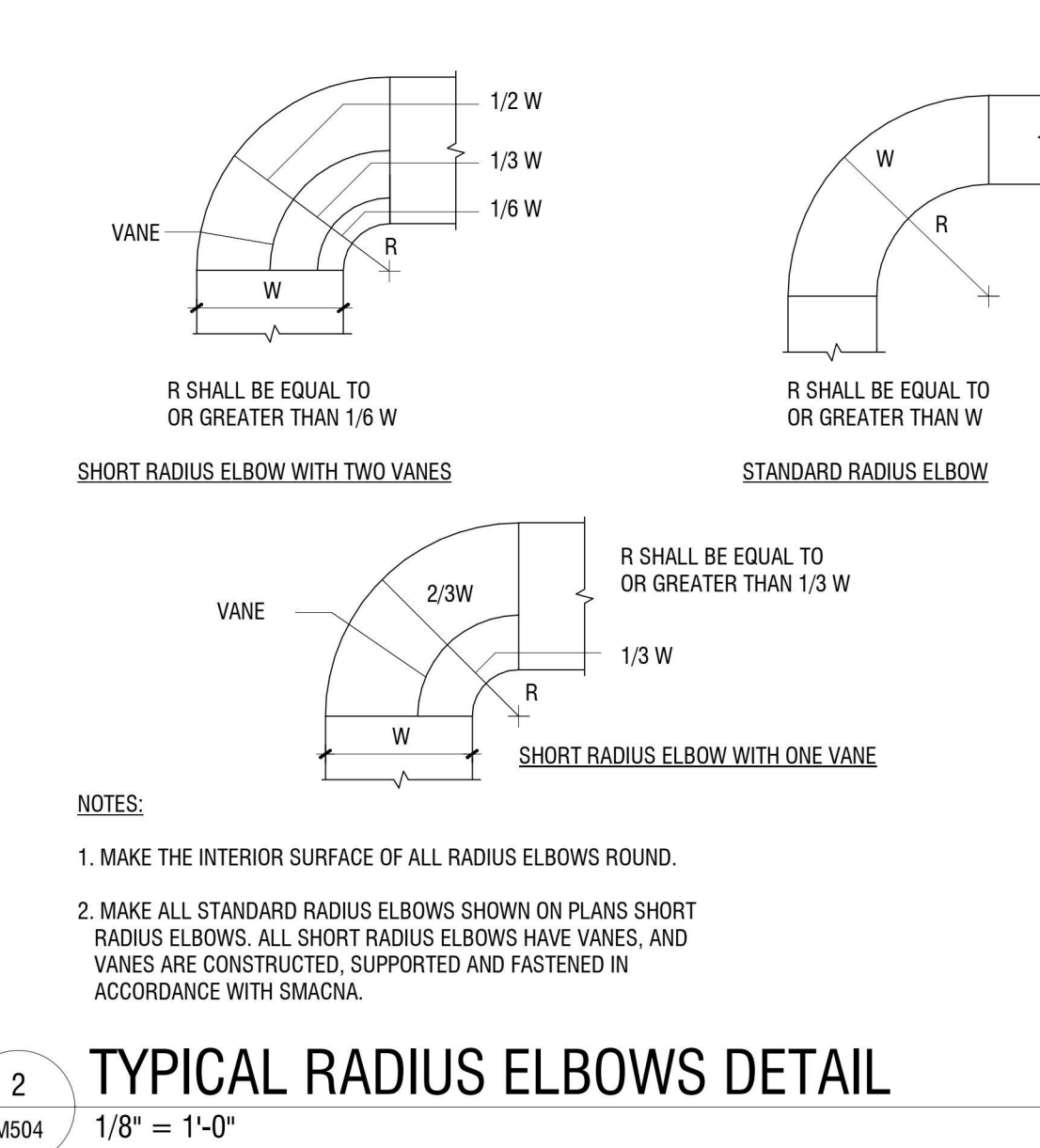
DATE: APRIL 11, 2024

DRAWING NAME:

**MECHANICAL DETAILS**

DRAWING NUMBER:

**M504**



**KEYED NOTES (#):**  
1. 3 UPPER NUMBERS ARE REFRIGERANT LINE SIZES. LOWER NUMBER IS APPROXIMATE DESIGN LENGTH. CONTRACTOR IS RESPONSIBLE FOR DETERMINING FINAL PIPE ROUTING, LENGTHS AND NUMBER OF FITTINGS REQUIRED.  
2. 2 UPPER NUMBERS ARE REFRIGERANT LIQUID AND SUCTION. LOWER NUMBER IS APPROXIMATE DESIGN LENGTH. CONTRACTOR IS RESPONSIBLE FOR FINAL PIPE ROUTING, LENGTH AND NUMBER OF FITTINGS REQUIRED.





**GENERAL NOTES:**

1. INTEGRATE CONTROLS TO BMS SYSTEM VIA BACNET GATEWAY.
2. PROVIDE GRAPHICS FOR BMS SYSTEM FOR EACH HEAT PUMP, OUTDOOR UNIT AND MCU UNIT. BMS SHALL ADJUST ROOM SET POINTS VIA BACNET.
3. PROVIDE 7 DAY OCCUPIED/UNOCCUPIED SCHEDULES FOR EACH MAJOR AREA VIA BMS SYSTEM.
4. ALL SYSTEM ALARMS SHALL BE RECORDED BY BMS AND BMS SHALL SEND APPROPRIATE ALERT MESSAGE TO OWNER'S MAINTENANCE PERSONNEL.



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EDA PROJECT No. 01-01-15369 HUD PROJECT No. B-23-CP-NY-1083



ESD PROJECT No. 135,035

**ACADEMIC INNOVATION  
HUB - WORK FORCE  
DEVELOPMENT TRAINING**

822 CLEVELAND AVENUE  
NIAGARA FALLS, NEW YORK 14305

NO.	DATE	DESCRIPTION
Revisions		

PROJECT NUMBER: 2221723

DRAWN BY: KMK

REVIEWED BY: JSN

ISSUED FOR: BID

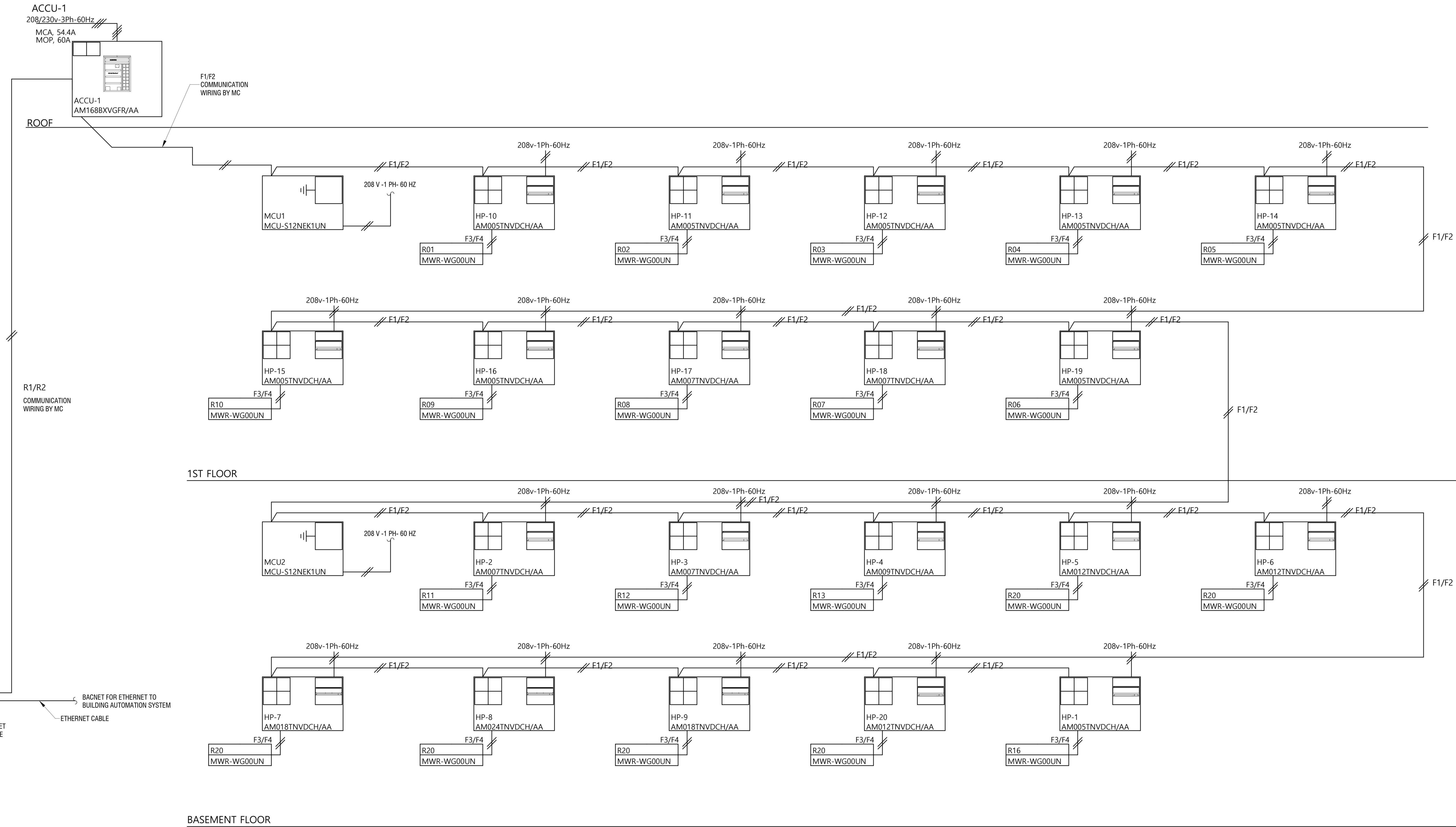
DATE: APRIL 11, 2024

DRAWING NAME:

**MECHANICAL WIRING  
SCHEMATICS**

DRAWING NUMBER:

**M701**



4/8/2024 9:37:02 AM

**1 ACCU-1 HP SYSTEM WIRING SCHEMATIC**  
M701 NOT TO SCALE



CERTIFICATE OF AUTHORIZATION NUMBER:  
PROFESSIONAL ENGINEERING: 018281  
LAND SURVEYING: 017976  
GEOLOGICAL: 018750

It is a violation of New York Education Law Art. 145 Sec. 7209 & Art. 147 Sec. 7307, for any person, unless acting under the direction of a licensed architect, professional engineer, or land surveyor, to alter an item in any way. If an item bearing the seal of an architect, engineer, or land surveyor is altered, the altering architect, engineer, or land surveyor shall affix to the item their seal and notation "altered by" followed by their signature and date of such alteration, and a specific description of the alteration.

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5795 LEWISTON ROAD  
NIAGARA UNIVERSITY, NEW YORK 14109



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DRAWING NAME:

**MECHANICAL CONTROLS**

DRAWING NUMBER:

**M702**

**SYSTEM DESCRIPTION**

THE SYSTEM SHALL CONSIST OF AN EXHAUST FAN WITH MOTOR OPERATED DAMPER, MAKEUP AIR DAMPER, AND A CONVECTOR(S).

**EXHAUST FAN - COOLING**

THE EF SHALL CYCLE AND MAINTAIN A ZONE TEMPERATURE COOLING SETPOINT OF 78°F (ADJ.).

ALARMS SHALL BE PROVIDED AS FOLLOWS:

- HIGH ZONE TEMP: IF THE ZONE TEMPERATURE IS GREATER THAN THE COOLING SETPOINT BY A USER DEFINABLE AMOUNT (ADJ.).

FAN:

THE FAN SHALL RUN ANYTIME THE ZONE TEMPERATURE RISES ABOVE COOLING SETPOINT, AND STOP WHEN ZONE TEMPERATURE DROPS 2°F BELOW SETPOINT.

EXHAUST AIR DAMPER:

THE EXHAUST AIR DAMPER SHALL OPEN ANYTIME THE FAN RUNS AND SHALL CLOSE ANYTIME THE FAN STOPS. THE EXHAUST AIR DAMPER SHALL CLOSE 30 SEC (ADJ.) AFTER THE FAN STOPS.

MAKE UP AIR DAMPER:

THE OUTSIDE AIR DAMPER SHALL OPEN ANYTIME THE UNIT RUNS AND SHALL CLOSE ANYTIME THE UNIT STOPS. THE OUTSIDE AIR DAMPER SHALL CLOSE 30 SEC (ADJ.) AFTER THE FAN STOPS.

FAN STATUS:

THE CONTROLLER SHALL MONITOR THE FAN STATUS.

ALARMS SHALL BE PROVIDED AS FOLLOWS:

- FAN FAILURE: COMMANDED ON, BUT THE STATUS IS OFF.
- FAN IN HAND: COMMANDED OFF, BUT THE STATUS IS ON.
- FAN RUNTIME EXCEEDED: FAN STATUS RUNTIME EXCEEDS A USER DEFINABLE LIMIT (ADJ.).

**UNIT HEATER(S)**

THE UNIT SHALL RUN IN THE FOLLOWING MODES:

- OCCUPIED MODE (OVERRIDE ONLY): THE UNIT SHALL MAINTAIN A HEATING SETPOINT OF 68°F (ADJ.).
- UNOCCUPIED MODE (NIGHT SETBACK): THE UNIT SHALL MAINTAIN A HEATING SETPOINT OF 60°F (ADJ.).

ALARMS SHALL BE PROVIDED AS FOLLOWS:

- LOW ZONE TEMP: IF THE ZONE TEMPERATURE IS LESS THAN THE HEATING SETPOINT BY A USER DEFINABLE AMOUNT (ADJ.).

FAN:

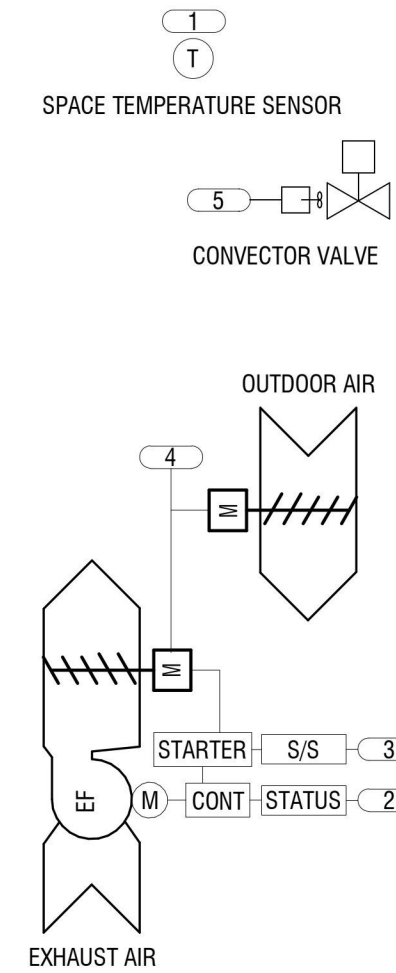
THE FAN SHALL RUN ANYTIME THE ZONE TEMPERATURE DROPS BELOW HEATING SETPOINT, UNLESS SHUTDOWN ON SAFETIES.

HEATING VALVE - 2 POSITION, NORMALLY OPEN.

THE CONTROLLER SHALL MEASURE THE ZONE TEMPERATURE AND CYCLE THE HEATING TO MAINTAIN ITS HEATING SETPOINT.

THE HEATING SHALL BE ENABLED WHENEVER:

- OUTSIDE AIR TEMPERATURE IS LESS THAN 60°F (ADJ.).
- AND THE ZONE TEMPERATURE IS BELOW HEATING SETPOINT.



**CONTROLS POINTS LIST - BOILER ROOM GENERAL EXHAUST FAN**

ABBREVIATION KEY:  
AI = ANALOG INPUT, AO = ANALOG OUTPUT, DI = DIGITAL INPUT, DO = DIGITAL OUTPUT  
AV = ANALOG VALUE, DV = DIGITAL VALUE

NOTES:

1) REFER TO PLANS FOR ROOM TEMPERATURE SENSOR LOCATIONS

POINT #	POINT DESCRIPTION	HARWARE POINTS				SOFTWARE POINTS				NOTES	
		AI	AO	DI	DO	AV	DV	SCHED	ALARM		TREND
1	ZONE TEMPERATURE	X									
2	EXHAUST FAN STATUS			X							X
3	EXHAUST FAN START/STOP				X						X
4	EXHAUST/OUTSIDE AIR DAMPERS				X						X
5	HEATING ENABLE/DISABLE (TYP.)				X						X

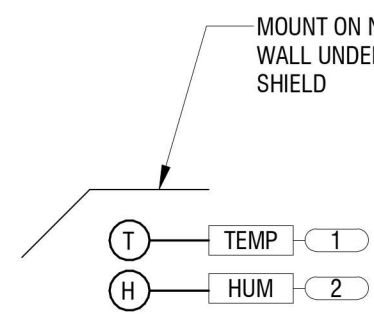
NOTE: SHOW ALL POINTS ON GRAPHICS

**CONTROL POINTS LIST - AMBIENT WEATHER STATION**

ABBREVIATION KEY:  
AI = ANALOG INPUT, AO = ANALOG OUTPUT, DI = DIGITAL INPUT  
DO = DIGITAL OUTPUT, AV = ANALOG VALUE, DV = DIGITAL VALUE

POINT #	POINT DESCRIPTION	HARWARE POINTS				SOFTWARE POINTS				NOTES	
		AI	AO	DI	DO	AV	DV	SCHED	ALARM		TREND
1	SITE OUTSIDE AIR TEMPERATURE	X									
2	OUTSIDE AIR HUMIDITY	X									X 1

NOTE: SHOW ALL POINTS ON GRAPHICS



**CONTROL SCHEMATIC - AMBIENT WEATHER STATION**

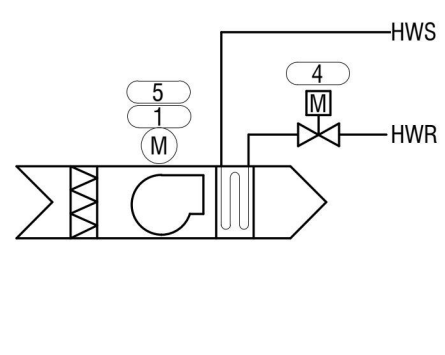
NOT TO SCALE

**CONTROL POINTS LIST - CABINET UNIT HEATER**

ABBREVIATION KEY:  
AI = ANALOG INPUT, AO = ANALOG OUTPUT, DI = DIGITAL INPUT, DO = DIGITAL...  
DV = DIGITAL VALUE

NOTES:  
1) REFER TO PLANS FOR LOCATION AND TYPE.

POINT #	POINT DESCRIPTION	HARWARE POINTS				SOFTWARE POINTS				NOTES	
		AI	AO	DI	DO	AV	DV	SCHED	ALARM		TREND
1	FAN START/STOP				X						
2	TEMPERATURE SENSOR	X									X 1
3	LOW ZONE TEMPERATURE							X			
4	HEATING COIL CONTROL VALVE			X							
5	FAN RUN INDICATION		X						X		



**RUN CONDITIONS**

THE UNIT SHALL CYCLE TO MAINTAIN A HEATING SETPOINT OF 55°F (ADJ.) IN THE UNOCCUPIED MODE AND 65°F IN THE OCCUPIED MODE.

**ALARMS**

LOW ZONE TEMP: IF THE ZONE TEMPERATURE IS LESS THAN THE HEATING SETPOINT BY A USER DEFINABLE AMOUNT (ADJ.).

**FAN**

THE FAN SHALL CYCLE TO MAINTAIN THE ZONE TEMPERATURE HEATING SETPOINT. THE UNIT HEATER SHALL HAVE A 2 MINUTE (ADJ.) MINIMUM RUNTIME.

**HEATING COIL VALVE - TWO POSITION - NORMALLY OPEN**

THE HEATING COIL VALVE SHALL OPEN WHENEVER THE FAN RUNS AND CLOSE WHEN THE FAN STOPS.

**CABINET UNIT HEATER**

NOT TO SCALE

**RUN CONDITIONS**

THE FIN TUBE SHALL MAINTAIN A HEATING SETPOINT OF 60°F (ADJ.) IN UNOCCUPIED MODE AND 68°F IN THE OCCUPIED MODE.

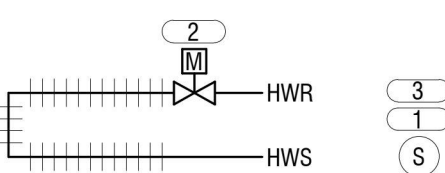
**ALARMS**

LOW ZONE TEMP: IF THE ZONE TEMPERATURE IS LESS THAN 45°F (ADJ.).

**HEATING VALVE - MODULATING - NORMALLY OPEN**

THE CONTROLLER SHALL MEASURE THE ZONE TEMPERATURE AND MODULATE THE HEATING COIL VALVE TO MAINTAIN ITS HEATING SETPOINT.

HEATING SHALL BEENABLED WHENEVER:  
THE OUTSIDE AIR TEMPERATURE IS LESS THAN 65°F (ADJ.)  
AND THE ZONE TEMPERATURE IS BELOW THE HEATING SETPOINT.

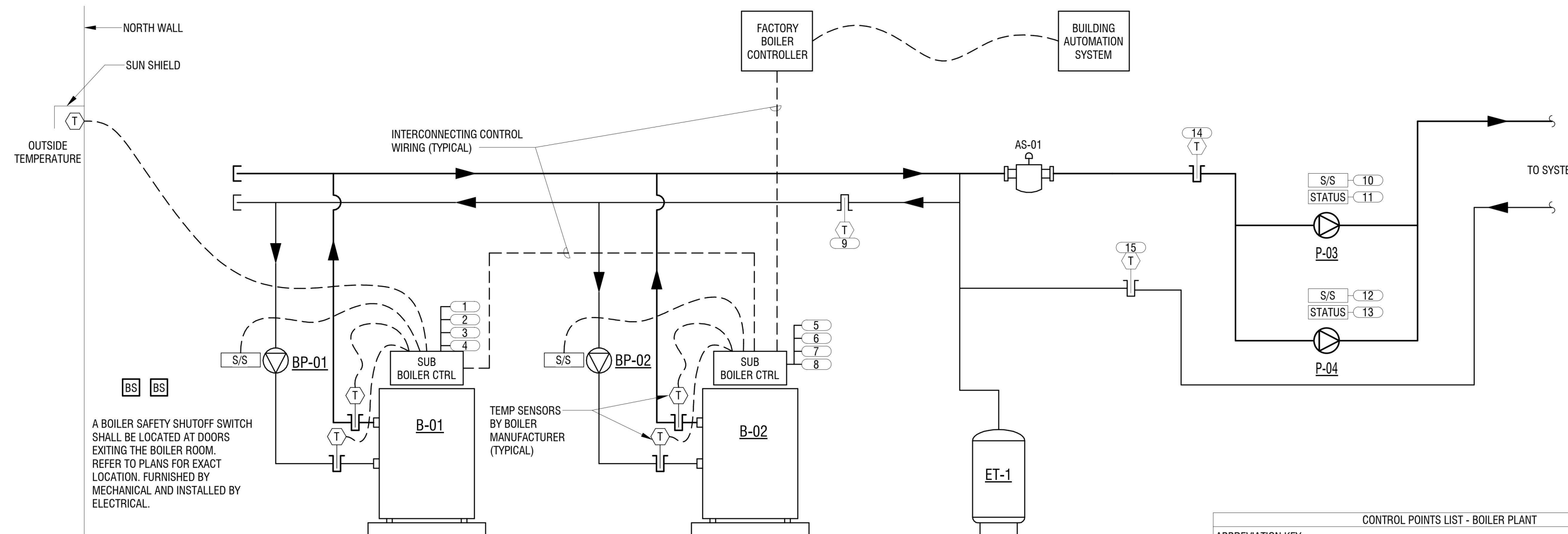


**FIN TUBE/CONVECTOR**

NOT TO SCALE

**BOILER ROOM GENERAL EXHAUST**

NOT TO SCALE



**BOILER PLANT SYSTEM DESCRIPTION**

THE BOILER SYSTEM CONSISTS OF TWO EQUALLY SIZED BOILERS. EACH BOILER IS SERVED BY A DEDICATED VARIABLE SPEED PRIMARY PUMP (BP-1 & BP-2), CONSTANT SPEED SECONDARY PUMPS (P-03 & P-04) CIRCULATE HEATING WATER TO THE BUILDING UNDER CONSTANT PRESSURE CONTROL. SECONDARY PUMPS (P-03 & P-04) OPERATE IN A LEAD/STANDBY FASHION.

EACH BOILER SHALL HAVE A FACTORY SUPPLIED LOCAL BOILER CONTROLLER (LBC), CONTROLLING ALL OPERATIONS AND SAFETIES OF THE ASSOCIATED BOILER. THE BOILER MANUFACTURER SHALL PROVIDE A BOILER PLANT CONTROLLER (BPC) THAT SHALL INTERFACE WITH THE BUILDING AUTOMATION SYSTEM (BAS).

THE BOILER SYSTEM SHALL OPERATE WHEN OUTSIDE AIR TEMPERATURE DROPS TO BELOW 60 DEG. F. (ADJ.) TO MAINTAIN A MAX LOOP WATER TEMPERATURE OF 180°F (ADJ.). THE HOT WATER LOOP TEMPERATURE SHALL BE RESET BASED ON OUTSIDE AIR TEMPERATURE (REFER TO SUPPLY TEMPERATURE SETPOINT RESET SECTION).

TO PREVENT SHORT CYCLING, THE BOILER SYSTEM SHALL RUN FOR AND BE OFF FOR MINIMUM ADJUSTABLE TIMES (BOTH USER DEFINABLE), UNLESS SHUTDOWN.

THE BOILER SHALL RUN SUBJECT TO ITS OWN INTERNAL SAFETIES AND CONTROLS.

THE BOILER PLANT CONTROLLER SHALL REPORT ALL FAULTS AND ALARMS TO THE BAS VIA BOTH BY BAC-NET AND A HARDWIRED CONTACT.

**BOILER SAFETY SHUTDOWN SWITCH**

THE BOILER PLANT SHALL HAVE A BOILER SAFETY SWITCH THAT WILL CUT ALL POWER TO THE BOILERS AND WATER HEATER UPON ACTIVATION. REFER TO DRAWINGS FOR LOCATION.

**PRIMARY PUMPS - VARIABLE SPEED (BP-01 & BP-02)**

THE LBC SHALL ENABLE/DISABLE ITS ASSOCIATED PRIMARY PUMP AND OPERATE AT A VARIABLE SPEED.

**SECONDARY PUMPS - CONSTANT SPEED (P-03 & P-04)**

PUMPS SHALL BE ENABLED TO RUN ANYTIME A BOILER IS COMMANDED TO RUN AND SHALL HAVE A USER DEFINABLE DELAY (ADJ.) ON STOP.

**LEAD/STANDBY OPERATION**

THE TWO SECONDARY PUMPS SHALL OPERATE IN A LEAD/STANDBY FASHION. THE LEAD/LAG PUMP DESIGNATION SHALL BE ROTATED ON A BIWEEKLY BASIS.

**THE LEAD PUMP SHALL RUN FIRST.**

ON FAILURE OF THE LEAD PUMP, THE STANDBY PUMP SHALL RUN AND THE LEAD PUMP SHALL TURN OFF. THE DESIGNATED LEAD PUMP SHALL BE BASED ON MAINTAINING EQUAL PUMP RUNTIMES.

**ALARMS**

FAILURE: COMMANDED ON, BUT THE STATUS IS OFF.  
RUNNING IN HAND: COMMANDED OFF, BUT THE STATUS IS ON.

**BOILER LEAD/LAG OPERATION**

THE TWO BOILERS SHALL OPERATE IN A LEAD/LAG FASHION WHEN CALLED TO RUN AND FLOW IS PROVEN.

**THE LEAD BOILER SHALL RUN FIRST.**

ON FAILURE OF THE LEAD BOILER, THE STANDBY BOILER SHALL RUN AND THE LEAD BOILER SHALL TURN OFF. THE DESIGNATED LEAD BOILER SHALL ROTATE BASED ON BOILER RUNTIME AND ROTATED ON A BIWEEKLY BASIS.

LEAD BOILER FAILURE: THE LEAD BOILER IS IN FAILURE AND THE STANDBY BOILER IS ON.

THE LEAD BOILER SHALL OPERATE AT LOW FIRING RATE, WHEN THE LEAD BOILER OUTPUT EXCEEDS 70 PERCENT CAPACITY (ADJ.) FOR MORE THAN 10 MINUTES (ADJ.), THE LAG BOILER SHALL START AT LOW FIRING RATE AND BOILERS SHALL RAMP TO AT EQUAL FIRING RATES TO MAINTAIN WATER SETPOINT. IF THE LAG BOILER FAILS TO OPERATE, THE LEAD BOILER SHALL MODULATE FIRING STAGES TO MAINTAIN SUPPLY WATER TEMPERATURE SETPOINT.

**HOT WATER SUPPLY TEMPERATURE SETPOINT RESET**

THE HOT WATER SUPPLY TEMPERATURE SETPOINT SHALL RESET BASED ON OUTSIDE AIR TEMPERATURE.

AS OUTSIDE AIR TEMPERATURE RISES FROM 0°F (ADJ.) TO 70°F (ADJ.) THE HOT WATER SUPPLY TEMPERATURE SETPOINT SHALL RESET DOWNWARDS BY SUBTRACTING FROM 0°F (ADJ.) TO 40°F (ADJ.) FROM THE CURRENT BOILER SETPOINT. MINIMUM HEATING LOOP SETPOINT SHALL BE 140°F (ADJ.), AT 60 DEG. F. MAXIMUM HEATING LOOP SETPOINT SHALL BE 180°F (ADJ.), AT 20 DEG. F.

**HOT WATER LOOP TEMPERATURE MONITORING**

THE FOLLOWING TEMPERATURES SHALL BE MONITORED BY THE DDC:

MAIN HOT WATER SUPPLY.

BOILER #1 HOT WATER RETURN.

BOILER #2 HOT WATER SUPPLY.

BOILER COMMON HOT WATER RETURN.

**ALARMS**

HIGH HOT WATER SUPPLY TEMP: IF GREATER THAN 200°F (ADJ.).  
LOW HOT WATER SUPPLY TEMP: IF LESS THAN 100°F (ADJ.).

**CONTROL POINTS LIST - BOILER PLANT**

ABBREVIATION KEY:  
AI = ANALOG INPUT, AO = ANALOG OUTPUT, DI = DIGITAL INPUT  
DO = DIGITAL OUTPUT, AV = ANALOG VALUE, DV = DIGITAL VALUE

NOTES:

POINT #	POINT DESCRIPTION	HARWARE POINTS				SOFTWARE POINTS				NOTES	
		AI	AO	DI	DO	AV	DV	SCHED	ALARM		TREND
1	BOILER #1 START/STOP				X						
2	BOILER #1 ALARM								X		
3	BOILER #1 WATER SUPPLY TEMPERATURE	X									X
4	BOILER #1 CAPACITY CONTROL		X								X
5	BOILER #2 START/STOP				X						
6	BOILER #2 ALARM					X				X	
7	BOILER #2 WATER SUPPLY TEMPERATURE	X									X
8	BOILER #2 CAPACITY CONTROL		X								X
9	BOILERS WATER RETURN TEMPERATURE	X									X
10	LOOP WATER PUMP 1 START/STOP				X						X
11	LOOP WATER PUMP 1 STATUS				X					X	X
12	LOOP WATER PUMP 2 START/STOP					X					X
13	LOOP WATER PUMP 2 STATUS					X				X	X
14	HEATING LOOP WATER SUPPLY TEMPERATURE	X									X
15	HEATING LOOP WATER RETURN TEMPERATURE	X									X

NOTE: SHOW ALL POINTS ON GRAPHICS.

**CONTROL SCHEMATIC - BOILER PLANT**

NOT TO SCALE



CERTIFICATE OF AUTHORIZATION NUMBER:  
PROFESSIONAL ENGINEERING: 018281  
LAND SURVEYING: 017976  
GEOLOGICAL: 018750

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DATE: APRIL 11, 2024

DRAWING NAME:

**MECHANICAL CONTROLS**

DRAWING NUMBER:

**M703**



**SYSTEM DESCRIPTION**  
MONITOR FIRE ALARM.

**SYSTEM CONTROLS:**  
UPON ALARM SHUTDOWN ALL AIR HANDLING EQUIPMENT.  
PROVIDE STAGGERED STARTUP UPON FIRE ALARM CLEARING.

CONTROLS POINTS LIST - FIRE ALARM										
ABBREVIATION KEY: AI = ANALOG INPUT, AO = ANALOG OUTPUT, DI = DIGITAL INPUT, DO = ... AV = ANALOG VALUE, DV = DIGITAL VALUE										
NOTES:										
POINT #	POINT DESCRIPTION	HARDWARE POINTS				SOFTWARE POINTS				NOTES
		AI	AO	DI	DO	AV	DV	SCHED	ALARM	
1	FIRE ALARM SIGNAL	X						X		

NOTE: SHOW ALL POINTS ON GRAPHICS

**5 FIRE ALARM**  
NOT TO SCALE

COORDINATE W/ EC



**LIGHTING CONTROL**

PROVIDE OUTPUT TO LIGHTING CONTACTOR. CONTROL LIGHTING BASED ON TIME OF DAY PROGRAMMER (ADJUSTABLE AT USER INTERFACE). PROVIDE ASTRONOMICAL CLOCK FUNCTION TO ADJUST FOR SUN RISE AND SUN SET.

CONTROLS POINTS LIST - ELECTRICAL SYSTEM										
ABBREVIATION KEY: AI = ANALOG INPUT, AO = ANALOG OUTPUT, DI = DIGITAL INPUT, DO = DIGITAL OUTPUT, AV = ANALOG VALUE, DV = DIGITAL VALUE										
NOTES:										
POINT #	POINT DESCRIPTION	HARDWARE POINTS				SOFTWARE POINTS				NOTES
		AI	AO	DI	DO	AV	DV	SCHED	ALARM	
1	LIGHTING CONTACTOR					X				

**4 ELECTRICAL SYSTEM CONTROL DIAGRAM**  
NOT TO SCALE

**TYPICAL DOMESTIC WATER HEATER MONITORING:**

**DOMESTIC WATER HEATERS:**

THE DDC SYSTEM SHALL MONITOR THE COLD WATER INLET TO THE WATER HEATERS.  
THE DDC SYSTEM SHALL MONITOR THE LEAVING DOMESTIC WATER TEMPERATURE FROM THE WATER HEATER.  
THE DOMESTIC WATER HEATERS SHALL BE WIRED TO THE EMERGENCY SHUT DOWN STATIONS AT THE BOILER ROOM EXITS. THE WATER HEATERS SHALL BE DISABLED WHEN THE STATION IS ACTIVATED.

**DOMESTIC RECIRCULATION PUMP:**

THE DDC SYSTEM SHALL MONITOR THE OUTLET OF EACH DOMESTIC WATER HEATER AND GENERATE AN ALARM IF WATER SUPPLY TEMPERATURE EXCEEDS 120 DEG. F. THE DDC SYSTEM SHALL CYCLE THE RECIRCULATION PUMP TO MAINTAIN HOT WATER RETURN TEMPERATURE DURING OCCUPIED TIMES.  
HOT WATER PUMP RUN CONDITIONS:  
THE HOT WATER PUMPS SHALL BE ENABLED WHENEVER:  
• ANY PART OF THE BUILDING IS IN OCCUPIED MODE.  
• AND THE HOT WATER RETURN TEMPERATURE IS LESS THAN 105 DEG. F (ADJ.).  
TO PREVENT SHORT CYCLING, THE PUMP SHALL RUN FOR A MINIMUM TIME AND BE OFF FOR A MINIMUM TIME (BOTH USER ADJUSTABLE).

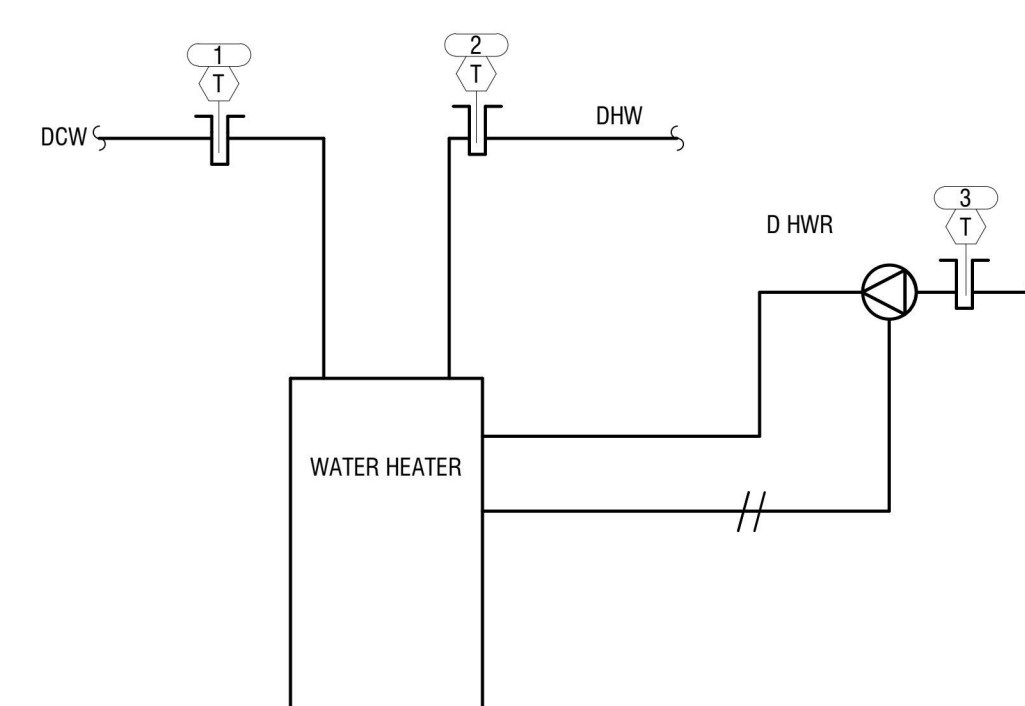
**WATER PUMPS:**

THE HOT WATER PUMP SHALL BE CONTROLLED BY WATER HEATER

**HOT WATER TEMPERATURE MONITORING:**

THE FOLLOWING TEMPERATURE SHALL BE MONITORED:

- HOT WATER RETURN.
- TEMPERED HOT WATER SUPPLY.
- COLD WATER TEMPERATURE.



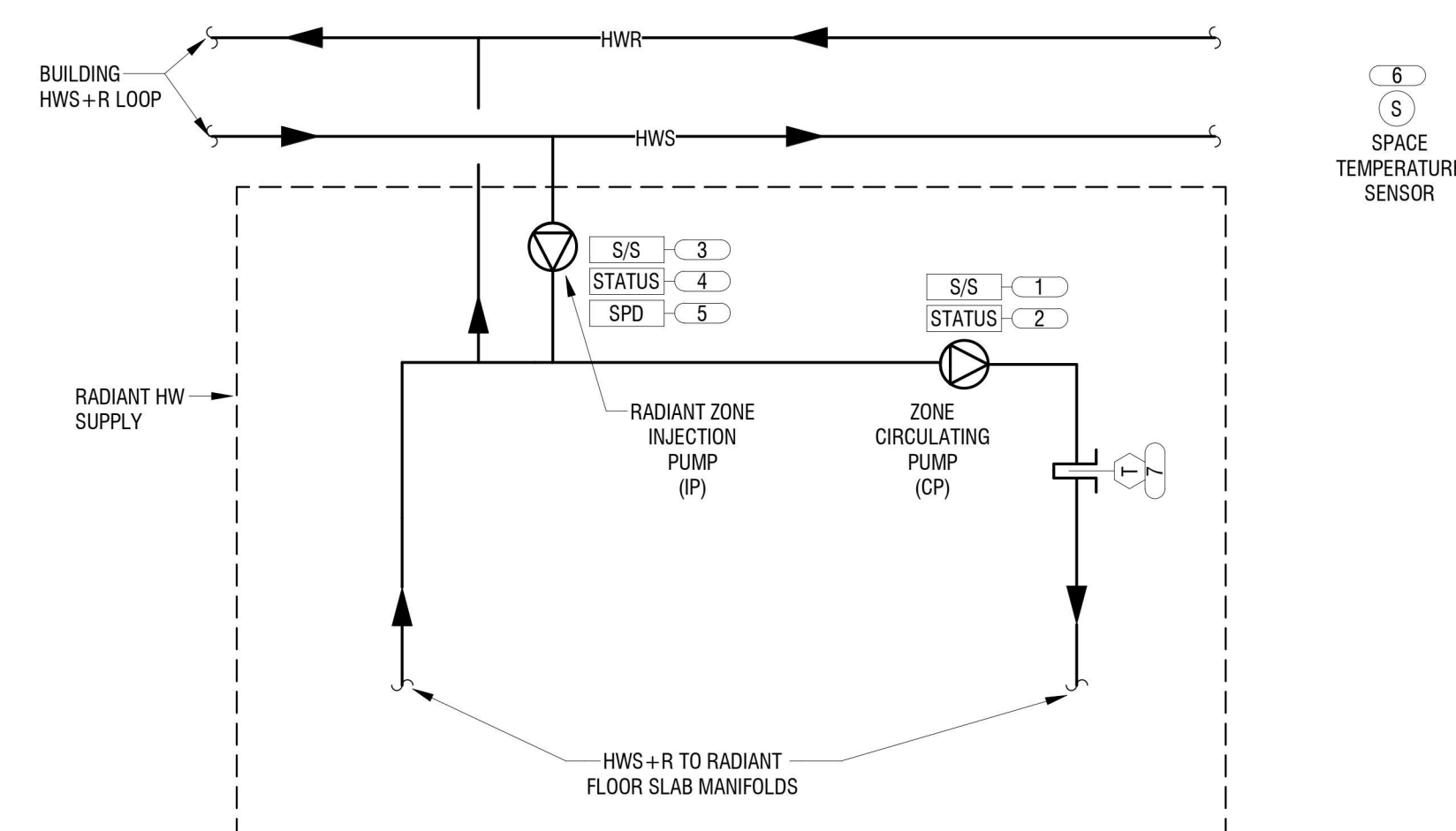
CONTROLS POINTS LIST - DOMESTIC WATER SYSTEM										
ABBREVIATION KEY: AI = ANALOG INPUT, AO = ANALOG OUTPUT, DI = DIGITAL INPUT, DO = DIGITAL OUTPUT, AV = ANALOG VALUE, DV = DIGITAL VALUE										
NOTES:										
POINT #	POINT DESCRIPTION	HARDWARE POINTS				SOFTWARE POINTS				NOTES
		AI	AO	DI	DO	AV	DV	SCHED	ALARM	
1	DOMESTIC COLD WATER TEMP	X								
2	WATER HEATER HWS TEMP	X						X		
3	HOT WATER RETURN TEMP	X						X		

NOTE: SHOW ALL POINTS ON GRAPHICS

**3 DOMESTIC WATER SYSTEM CONTROL DIAGRAM**  
NOT TO SCALE

CONTROLS POINTS LIST - RADIANT FLOOR HEATING										
ABBREVIATION KEY: AI = ANALOG INPUT, AO = ANALOG OUTPUT, DI = DIGITAL INPUT, DO = DIGITAL OUTPUT, AV = ANALOG VALUE, DV = DIGITAL VALUE										
NOTES:										
POINT #	POINT DESCRIPTION	HARDWARE POINTS				SOFTWARE POINTS				NOTES
		AI	AO	DI	DO	AV	DV	SCHED	ALARM	
1	CIRCULATION PUMP START/STOP				X					
2	CIRCULATION PUMP STATUS			X					X	
3	INJECTION PUMP START/STOP				X					
4	INJECTION PUMP STATUS			X					X	
5	INJECTION PUMP SPEED			X						
6	FLOOR TEMPERATURE SENSOR	X								X
7	ZONE WATER TEMPERATURE	X								X

NOTE: SHOW ALL POINTS ON GRAPHICS



**TYPICAL RADIANT FLOOR HEATING ZONE:**

**SYSTEM DESCRIPTION**

HOT WATER RADIANT HEATED FLOOR WITH MANIFOLDS, UNDER-FLOOR TUBING, CIRCULATING PUMPS AND INJECTION PUMPS.

**PUMP CONTROL**

OCCUPIED MODE: THE FMS SHALL MONITOR OUTDOOR AMBIENT AIR AND ZONE SPACE TEMPERATURE FOR THE ZONE. WHEN OUTSIDE AIR IS 50°F (ADJ.) OR LOWER, THE RADIANT ZONE CIRCULATING PUMP SHALL RUN CONTINUOUSLY. THE ZONE INJECTION PUMP SHALL START AND VARY SPEED VIA A 0-10 VDC SIGNAL TO MAINTAIN ZONE WATER TEMPERATURE SETPOINT. UPON STARTUP, THE WATER TEMPERATURE SHALL BE BROUGHT UP GRADUALLY OVER A 30 MINUTE PERIOD (ADJ.) BY ADJUSTING SETPOINT EVERY 10 MINUTES. RADIANT ZONE HWS SHALL BE MONITORED AND LIMITED TO NO MORE THAN 130 DEG. F. (ADJ.) TO THE FLOOR. WATER TEMPERATURE SHALL RESET DOWN WHEN SPACE TEMPERATURE REACHES SET POINT.

UNOCCUPIED MODE: BOTH THE CIRCULATING AND INJECTION PUMPS SHALL BE OFF. PUMPS SHALL START AND RUN IF SPACE TEMPERATURE DROPS BELOW 60°F.

**ALARMS**

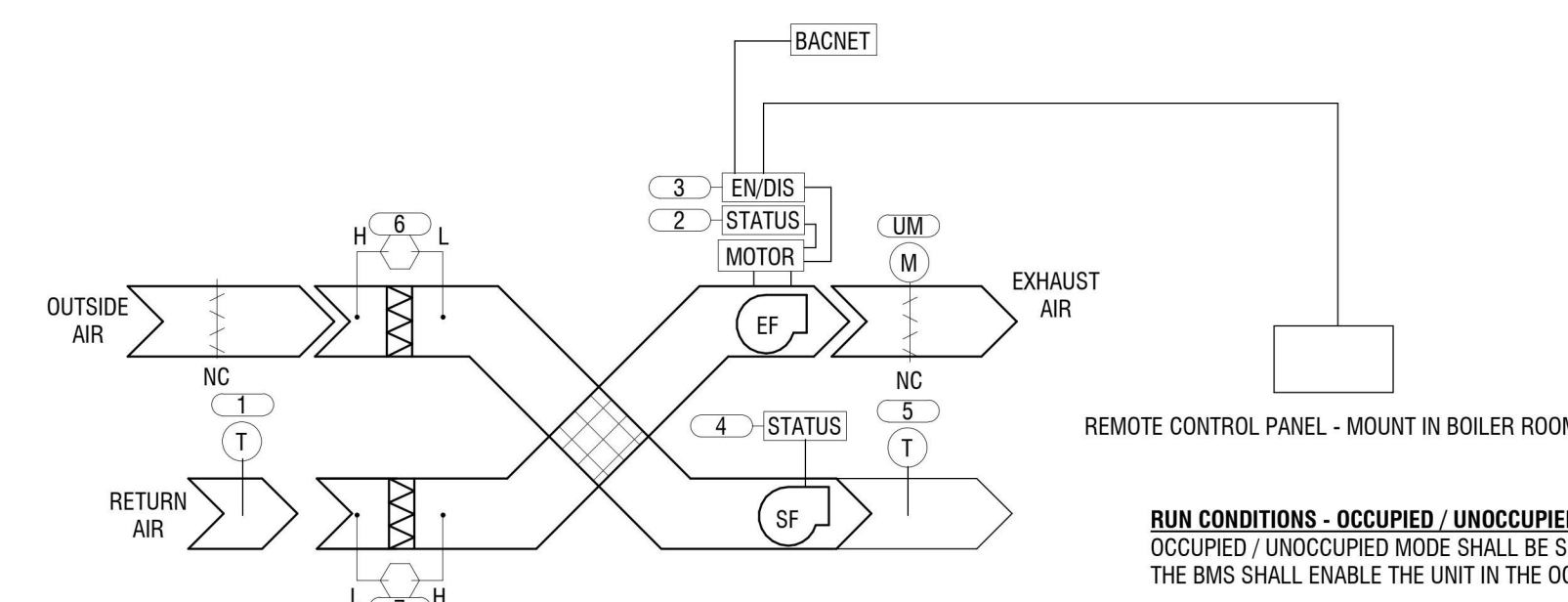
WHEN ANY CONTROL POINT DEVIATES FROM SETPOINT BY MORE THAN 5°F (ADJ.) AN ALARM SHALL BE GENERATED BY THE FMS SYSTEM. WHEN ANY SENSED OUTPUT DIFFERS FROM IS COMMANDED STATE, AN ALARM SHALL BE GENERATED BY THE FMS SYSTEM.

IF ANY PUMP FAILS TO START, AN ALARM SHALL BE GENERATED BY THE FMS SYSTEM.

**GRAPHICS**

DISPLAY RADIANT ZONE SLAB TEMPERATURE, ZONE HWS TEMPERATURE, PUMP OPERATION AND STATUS, AND ALARMS ON THE FMS GRAPHICS INTERFACE.

**2 RADIANT FLOOR HEATING**  
NOT TO SCALE



RCSD #3 - CONTROLS POINTS LIST - ENERGY RECOVERY VENTILATOR										
ABBREVIATION KEY: AI = ANALOG INPUT, AO = ANALOG OUTPUT, DI = DIGITAL INPUT, DO = DIGITAL OUTPUT, AV = ANALOG VALUE, DV = DIGITAL VALUE										
POINT #	POINT DESCRIPTION	HARDWARE POINTS				SOFTWARE POINTS				NOTES
		AI	AO	DI	DO	AV	DV	SCHED	ALARM	
1	RETURN AIR TEMPERATURE				X					
2	EXHAUST FAN STATUS			X						
3	UNIT ENDIS	X								
4	SUPPLY FAN STATUS	X								
5	SUPPLY FAN TEMPERATURE			X					X	
6	OUTSIDE AIR FILTER SWITCH			X					X	
7	RETURN AIR FILTER SWITCH			X					X	

**RUN CONDITIONS - OCCUPIED / UNOCCUPIED MODE:**  
OCCUPIED / UNOCCUPIED MODE SHALL BE SCHEDULED BY THE BMS SYSTEM. IN THE UNOCCUPIED MODE THE UNIT SHALL BE OFF. THE BMS SHALL ENABLE THE UNIT IN THE OCCUPIED MODE.

**FAN CONTROL:**

THE SUPPLY FAN AND EXHAUST FAN SHALL RUN CONTINUOUSLY DURING THE OCCUPIED MODE. THE FANS SHALL BE OFF DURING THE UNOCCUPIED MODE.

**ALARMS**

FAN FAILURE: COMMANDED ON, BUT THE STATUS IS OFF.

**SUPPLY DISCHARGE AIR TEMPERATURE**

THE CONTROLLER SHALL MONITOR THE DISCHARGE AIR TEMPERATURE. THE CONTROLLER SHALL MONITOR THE RETURN AIR TEMPERATURE.

**ALARMS:**

LOW DISCHARGE AIR TEMP: IF THE DISCHARGE AIR TEMPERATURE IS LESS THAN 40°F (ADJ.).

**FILTER MONITORING:**

THE CONTROL SYSTEM SHALL MONITOR THE FILTER DIFFERENTIAL PRESSURE SWITCH AND GENERATE AN ALARM WHEN THE SWITCH ACTIVATES.

**SAFETIES / ALARMS:**

WHEN ANY SENSED OUTPUT DIFFERS FROM ITS COMMANDED STATE, AN ALARM SHALL BE GENERATED BY THE BMS SYSTEM. WHEN THE FREEZESTAT ACTIVATES, THE UNIT SHALL SHUT DOWN AND GENERATE AN ALARM.

**1 ENERGY RECOVERY VENTILATOR CONTROL DIAGRAM**  
NOT TO SCALE



CERTIFICATE OF AUTHORIZATION NUMBER:  
PROFESSIONAL ENGINEERING: 018281  
LAND SURVEYING: 017976  
GEOLOGICAL: 018750

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5795 LEWISTON ROAD  
NIAGARA UNIVERSITY, NY 14109



EDA PROJECT No. 01-01-15369



HUD PROJECT No. B-23-CP-NY-1083



ESD PROJECT No. 135,035

**FIRST CONGREGATIONAL CHURCH REHABILITATION**

822 CLEVELAND AVE, NIAGARA FALLS, NY 14305

NO.	DATE	DESCRIPTION
Revisions		

PROJECT NUMBER: 2221723

DRAWN BY: EEJ

REVIEWED BY: MDR

ISSUED FOR: BID

DATE: APRIL 11, 2024

DRAWING NAME:

**MAIN & LOWER LEVEL DEMOLITION PLAN**

DRAWING NUMBER:

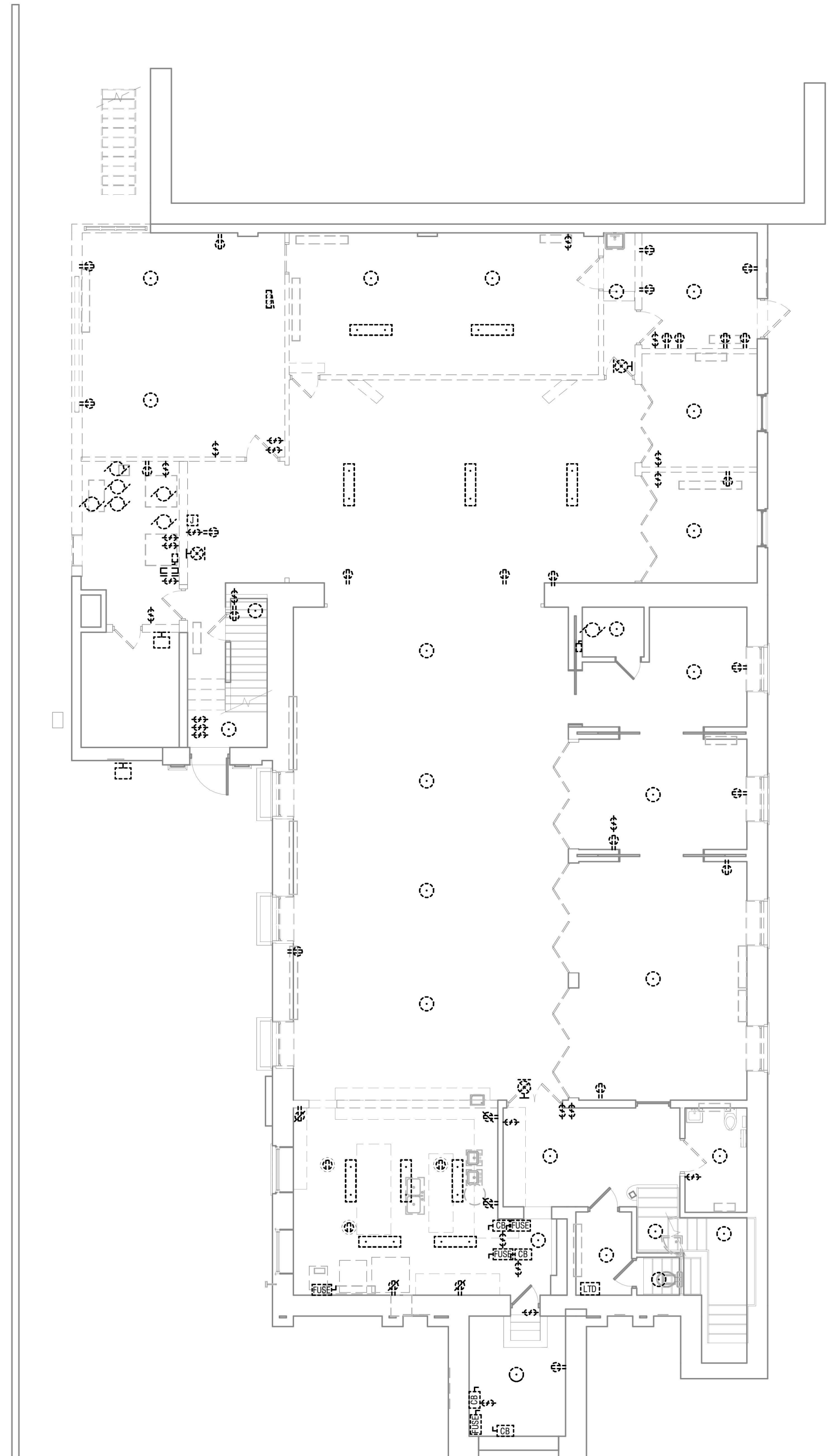
**ED101**

**KEYED NOTES**

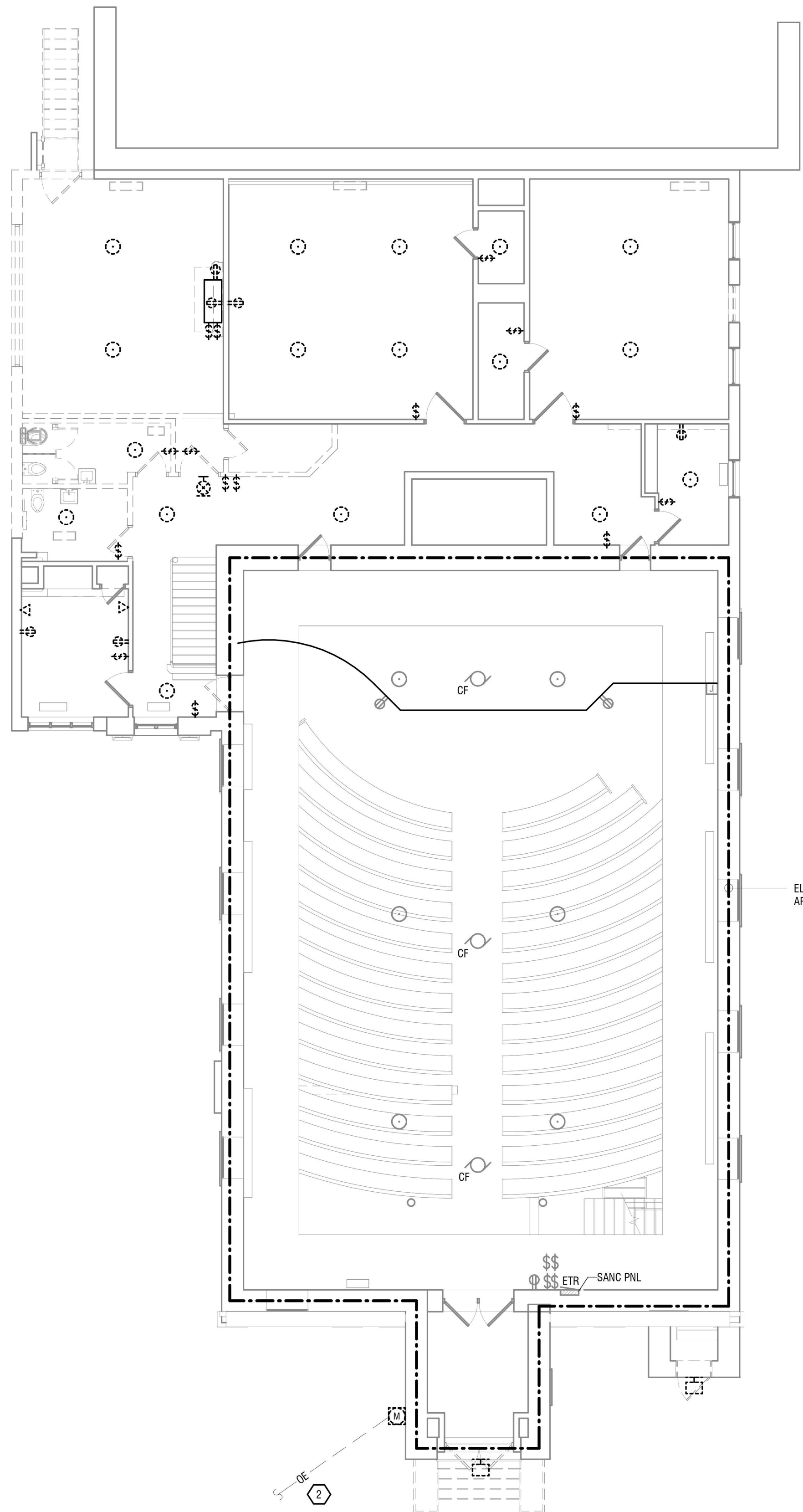
- EXISTING DEVICES IN THIS ROOM TO REMAIN UNLESS NOTED OTHERWISE.
- COORDINATE WITH UTILITY TO REMOVE OVERHEAD ELECTRICAL, SINGLE PHASE SERVICE AND METER AFTER NEW ELECTRICAL SERVICES IS INSTALLED AND ACCEPTED.

**GENERAL DEMOLITION NOTES:**

- REMOVE ALL ELECTRICAL EQUIPMENT ON OR IN EXISTING WALLS, CEILINGS AND PARTITIONS WHICH ARE TO BE DEMOLISHED. REMOVE ALL EXPOSED PORTIONS OF BRANCH CIRCUIT AND CONTROL VOLTAGE WIRING AND CONDUITS.
- WHERE EXISTING WALLS ARE TO REMAIN, REMOVE ALL EXPOSED RACEWAYS, SURFACE AND RECESSED OUTLET BOXES, ETC. WHICH ARE NOT TO BE REUSED. WHERE NEW CONDUITS AND OUTLETS ARE TO BE ADDED TO EXISTING WALLS IN FINISHED ROOMS, CONCEAL BY CUTTING AND PATCHING THE WALLS.
- UTILIZE EXISTING OUTLET BOXES AND RACEWAY SYSTEMS WHEREVER PRACTICAL IN RENOVATION AREAS. WHERE SUCH EXISTING OUTLET BOXES ARE USED, INSTALL NEW WIRING DEVICES, COVERPLATES, AND WIRING. SPECIAL COVERPLATES MAY BE REQUIRED TO SUIT CONDITIONS.
- REARRANGE EXISTING CONDUITS AND WIRING TO ACCOMMODATE NEW CIRCUIT ARRANGEMENTS INDICATED AND TO MAINTAIN CONTINUITY OF EXISTING CIRCUITS FEEDING DEVICES THAT ARE TO REMAIN.
- BE RESPONSIBLE TO REMOVE AND REINSTALL EXISTING ELECTRICAL EQUIPMENT TO ACCOMMODATE THE WORK OF OR DISTURBED BY ALL TRADES.
- STOCKPILE REMOVED LUMINAIRES, POWER AND COMMUNICATION DEVICES ON JOB SITE FOR REUSE UNTIL TIME OR PROJECT CLOSEOUT, THEN REMOVE THOSE FROM SITE THAT THE OWNER DOES NOT WISH TO SALVAGE.
- EXISTING DEVICE LOCATIONS WERE IDENTIFIED AS COMPLETELY AS POSSIBLE BY A SITE SURVEY AND BY RECORD DOCUMENTS AS AVAILABLE. BE RESPONSIBLE FOR PROPER DEMOLITION AND REWORK OF DEVICES NOT SHOWN ON DRAWINGS TO CONFORM WITH INTENT OF DOCUMENTS.



**1 LOWER LEVEL DEMOLITION PLAN**  
ED101 1/8" = 1'-0"



**2 MAIN LEVEL DEMOLITION PLAN**  
ED101 1/8" = 1'-0"

ELECTRICAL DEVICES AND EQUIPMENT IN THIS AREA ARE TO REMAIN UNLESS NOTED OTHERWISE

# ELECTRICAL LEGEND

## ABBREVIATIONS

°	DEGREES	MAG	MAGNETIC
Δ	DELTA	MAX	MAXIMUM
Ω	OHMS	M/C	MECHANICAL CONTRACTOR
Ø	PHASE	MCB	MAIN CIRCUIT BREAKER
Y	WYE	MDP	MAIN DISTRIBUTION PANELBOARD
		MECH	MECHANICAL
A	AMPERE	MFR	MANUFACTURER
AC	ABOVE COUNTER	MH	MANHOLE
AF	AMPERE FRAME	MIN	MINIMUM
AFCI	ARC-FAULT CIRCUIT INTERRUPTING	MLO	MAIN LUGS ONLY
AFF	ABOVE FINISHED FLOOR	MM	MULTIMODE
AHU	AUTHORITY HAVING JURISDICTION	MOCPP	MAXIMUM OVERCURRENT PROTECTION
AHU	AIR HANDLING UNIT	MV	MEDIUM VOLTAGE
AC	AMPERE INTERRUPTING CAPACITY		
ALUM	ALUMINUM	NA	NOT APPLICABLE
ANN	ANNUNCIATOR	NEC	NATIONAL ELECTRICAL CODE
AT	AMPERE TRIP	NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
ATS	AUTOMATIC TRANSFER SWITCH	NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
AVG	AVERAGE	NIC	NOT IN CONTRACT
AWG	AMERICAN WIRE GAUGE	NL	NIGHT LIGHT
		NOM	NOMINAL
		NTS	NOT TO SCALE
BAS	BUILDING AUTOMATION SYSTEM		
BLDG	BUILDING	OC	ON CENTER
		OE	OVERHEAD ELECTRIC
C	CONDUIT	OCPPD	OVERCURRENT PROTECTIVE DEVICE
CAT	CATALOG	OD	OUTSIDE DIAMETER
CB	CIRCUIT BREAKER	OH	OVERHEAD
CKT	CIRCUIT		
CO	CARBON MONOXIDE	P	POLE
CT	CURRENT TRANSFORMER	PB	PULLBOX
CU	COPPER	PC	PERSONAL COMPUTER
		PH	PHASE
DC	DIRECT CURRENT	POE	POWER OVER ETHERNET
DIA	DIAMETER	PRI	PRIMARY
DIV	DIVISION	PT	POTENTIAL TRANSFORMER
DPDT	DOUBLE POLE DOUBLE THROW	PAN	PAN TIL ZOOM
DPS	DOUBLE POLE SINGLE THROW	PVC	POLYVINYL CHLORIDE
DWG	DRAWING		
		RCP	REFLECTED CEILING PLANS
EA	EACH	REC	RECEPTACLE
EC	ELECTRICAL CONTRACTOR	REF	REFRIGERATOR
EF	EXHAUST FAN	RFID	RADIO FREQUENCY IDENTIFICATION DEVICE
EGC	EQUIPMENT GROUNDING CONDUCTOR	RM	ROOM
ELEC	ELECTRIC	RMC	RIGID METAL CONDUIT
ELEV	ELEVATOR		
EMT	ELECTRICAL METALLIC TUBING	SCHED	SCHEDULE
COL	END OF LINE DEVICE	SEC	SECONDARY
EQUIP	EQUIPMENT	SF	SUPPLY FAN
EWC	ELECTRIC WATER COOLER	SFL	SUB FEED LUGS
		SM	SINGLE MODE
FA	FIRE ALARM	SPO	SPURGE PROTECTIVE DEVICE
FAAP	FIRE ALARM ANNUNCIATOR PANEL	SPDT	SINGLE POLE DOUBLE THROW
FACP	FIRE ALARM CONTROL PANEL	SPST	SINGLE POLE SINGLE THROW
FATC	FIRE ALARM TERMINAL CABINET	SPEC	SPECIFICATION
FC	FOOTCANDLE	STP	SHIELDED TWISTED PAIR
FLR	FLOOR	SWBD	SWITCHBOARD
FTL	FEED THRU LUGS	SWGR	SWITCHGEAR
		TEL	TELEPHONE
GC	GENERAL CONTRACTOR	TGB	TELECOMMUNICATIONS GROUNDING BUS BAR
GEN	GENERATOR	THD	TOTAL HARMONIC DISTORTION
GFCI	GROUND FAULT CIRCUIT INTERRUPTING	TMBB	TELECOMMUNICATIONS MAIN GROUNDING BUS BAR
GFI	GROUND FAULT INTERRUPTING	TV	TELEVISION
G	GROUND	TYP	TYPICAL
		UC	UNDER COUNTER
HOA	HAND-OFF-AUTO	UL	UNDERWRITERS LABORATORIES
HP	HORSEPOWER	UNO	UNLESS NOTED OTHERWISE
HTR	HEATER	UPS	UNINTERRUPTIBLE POWER SUPPLY
HV	HIGH VOLTAGE	UTP	UNSHIELDED TWISTED PAIR
HZ	HERTZ (CYCLES/SECOND)	V	VOLT
		VA	VOLT-AMPERE
ID	INSIDE DIAMETER	VAC	VOLTS ALTERNATING CURRENT
IP	INTERNET PROTOCOL	VDC	VOLTS DIRECT CURRENT
IR	INFRARED	VFD	VARIABLE FREQUENCY DRIVE
		VSD	VENDING MACHINE
J-BOX	JUNCTION BOX	VSD	VARIABLE SPEED DRIVE
		VOIP	VOICE OVER INTERNET PROTOCOL
KAIC	KILOAMPERE INTERRUPTING CURRENT	W	WATT
KAIR	KILOAMPERE INTERRUPTING RATING	WAN	WIDE AREA NETWORK
KV	KILOVOLT	WAP	WIRELESS ACCESS POINT
KA	KILOVOLT AMPERE	WP	WEATHERPROOF
KW	KILOWATT	WR	WEATHER RESISTANT
KWh	KILOWATT HOUR	W	WATT
		XFMR	TRANSFORMER

## GROUNDING, BONDING, & LIGHTNING PROTECTION

—G—	GROUND ELECTRODE CONDUCTOR
✖	GROUND ROD
⊗	GROUND TEST STATION
●	MECHANICAL CONNECTION
■	GROUND CONNECTION (MOLDED FUSION WELD OR IRREVERSIBLE)
GROUND	EQUIPMENT ROOM GROUND TERMINAL BAR, 18" AFF
TMBB	TELECOMMUNICATIONS MAIN GROUNDING BUSBAR, 18" AFF
TGB	TELECOMMUNICATIONS GROUNDING BUSBAR, 18" AFF
⊕	GROUND

## RACEWAY, BOXES, & BUSWAY

—○—	CONDUIT TURNED UP
—●—	CONDUIT TURNED DOWN
—○—	CAPPED CONDUIT
—○—	CONDUIT STUBBED AND BUSHED INTO ACCESSIBLE CEILING CAVITY
—○—	SERVICE WEATHERHEAD
■	DATA/POWER INDOOR SERVICE POLE
○	UTILITY POLE
○	MANHOLE
○	HANDHOLE
□	JUNCTION BOX, HEIGHT AS INDICATED
□	JUNCTION BOX, INSTALLED IN CEILING
□	PULL BOX
□	SYSTEMS CABINET, SURFACE OR FLUSH AS SHOWN, TOP OF TRIM 74" AFF
□	BUSWAY FUSED SWITCH PLUG
□	MULTISERVICE BOX, # INDICATES DESIGNATION, SEE MULTISERVICE BOX SCHEDULE

## GENERAL LINework DESCRIPTIONS & DRAWINGS NOTES

—	NEW WORK
---	EXISTING WORK / FUTURE PROVISIONS / NOT IN CONTRACT WORK
---	WORK TO BE REMOVED (DEMO PLANS) - DEVICE AND ALL ASSOCIATED ELECTRICAL WORK SHALL BE REMOVED BACK TO THE SOURCE, UNLESS NOTED OTHERWISE / UNDERFLOOR CONDUIT (NEW PLANS)
---	WIRE AND / OR CONDUIT RUN CONTINUED ON REFERENCED DETAIL
---	MATCH LINE REFERENCING CONTINUATION ON OTHER DRAWING
---	CALLOUT BOUNDARY - DETAIL AND / OR SECTION REFERENCE / SCOPE OF WORK
---	BRANCH CIRCUIT BOUNDARY
#	DRAWING KEYED NOTES
#	BRANCH CIRCUITING NOTES
#	FEEDER IDENTIFICATION
#	KITCHEN / LAB EQUIPMENT TAG
□	SYMBOL WITH TAIL INDICATES WALL INSTALLATION, HEIGHT AS INDICATED
—	INDICATES MULTIPLE DEVICES OF DIFFERENT TYPES INSTALLED UNDER COMMON COVERPLATE AT ONE LOCATION (DEVICES SHALL BE INSTALLED UNDER A COMMON COVERPLATE)

## ELECTRICAL EQUIPMENT

□	DISCONNECT SWITCH, TYPE PER EQUIPMENT CONNECTION SCHEDULE UNFUSED DISCONNECT SWITCH, SURFACE MOUNTED 48" AFF
□	FUSED DISCONNECT SWITCH, SURFACE MOUNTED 48" AFF
□	SEPARATELY ENCLOSED CIRCUIT BREAKER, SURFACE MOUNTED 44" AFF
□	SEPARATELY ENCLOSED FUSE, SURFACE MOUNTED 44" AFF
□	FUSE (ONE-LINE NOTATION)
□	CIRCUIT BREAKER (ONE-LINE NOTATION)
□	LOW VOLTAGE DRAWOUT POWER CIRCUIT BREAKER (ONE-LINE NOTATION)
□	MEDIUM VOLTAGE DRAWOUT POWER CIRCUIT BREAKER (ONE-LINE NOTATION)
□	LOW VOLTAGE INTERRUPTER SWITCH (ONE-LINE NOTATION)
□	MEDIUM VOLTAGE INTERRUPTER SWITCH (ONE-LINE NOTATION)
□	TRANSFER SWITCH (ONE-LINE NOTATION)
□	FRACTIONAL HORSEPOWER MOTOR CONTROLLER, RECESSED 44" AFF OR ABOVE CEILING (MANUAL THERMAL SWITCH)
□	COMBINATION MOTOR CONTROLLER/DISCONNECT, PER EQUIPMENT CONNECTION SCHEDULE, 48" AFF
□	MOTOR CONTROLLER, PER EQUIPMENT CONNECTION SCHEDULE, 48" AFF
□	VARIABLE SPEED DRIVE/VARIABLE FREQUENCY DRIVE
□	TRANSFORMER (PLAN NOTATION)
□	TRANSFORMER (ONE-LINE NOTATION)
□	3-PHASE, 3-WIRE DELTA CONNECTION
□	3-PHASE, 4-WIRE WYE CONNECTION
□	3-PHASE, NEUTRAL UNGROUNDED WYE CONNECTION
□	POTENTIAL TRANSFORMER (ONE-LINE NOTATION)
□	CURRENT TRANSFORMER (ONE-LINE NOTATION)
□	AMMETER (ONE-LINE NOTATION)
□	AMMETER SWITCH (ONE-LINE NOTATION)
□	VOLTMETER (ONE-LINE NOTATION)
□	VOLTMETER SWITCH (ONE-LINE NOTATION)
□	DIGITAL METERING MONITOR (ONE-LINE NOTATION)
□	METER CABINET/SOCKET (ONE-LINE & PLAN NOTATION)
□	METER
□	SURGE PROTECTION DEVICE, TOP OF ENCLOSURE 74" AFF

## PANELBOARDS

### PANELBOARD - ONE-LINE NOTATION:

□	208/120V OR 240V SYSTEM
□	480/277V SYSTEM
□	SHADING INDICATES BRANCH TYPE
□	TEXT INDICATES LUG/BREAKER TYPE
□	FEEDER BREAKERS (BRANCH BREAKERS SHOWN ON EACH PANELBOARD SCHEDULE)

### PANELBOARD - FLOOR PLAN NOTATION:

□	DOOR STYLE (DESIGNATES VOLTAGE):
□	208/120V OR 240V SYSTEM
□	480/277V SYSTEM
□	SIZE (DESIGNATES PANELBOARD TYPE):
□	PANELBOARD
□	DISTRIBUTION PANELBOARD

## ELECTRICAL DEVICES

### GENERAL ELECTRICAL DEVICE NOTATION:

□	NEMA 5-20R TAMPER RESISTANT SIMPLEX RECEPTACLE, 18" AFF
□	NEMA 5-20R TAMPER RESISTANT SIMPLEX RECEPTACLE, INSTALLED FLUSH IN CEILING
□	NEMA 5-20R TAMPER RESISTANT DUPLEX RECEPTACLE, 18" AFF
□	NEMA 5-20R TAMPER RESISTANT DUPLEX RECEPTACLE, INSTALLED FLUSH IN CEILING
□	NEMA 5-20R TAMPER RESISTANT GFCI DUPLEX RECEPTACLE, 18" AFF
□	NEMA 5-20R TAMPER RESISTANT QUADPLEX (DOUBLE DUPLEX) RECEPTACLE, 18" AFF
□	NEMA 5-20R TAMPER RESISTANT QUADPLEX (DOUBLE DUPLEX) RECEPTACLE, INSTALLED FLUSH IN CEILING
□	NEMA 5-20R TAMPER RESISTANT GFCI QUADPLEX (GFCI REC W/ DUPLEX ON LOAD SIDE UNDER COMMON COVERPLATE) RECEPTACLE, 18" AFF
□	EMERGENCY POWER OFF STATION, RED MUSHROOM PUSHBUTTON STYLE, KEY-RELEASE TYPE, 54" AFF
□	MULTIOUTLET PLUGSTRIP, 6" ABOVE COUNTER BACKSPASH OR AS NOTED
□	START/STOP PUSHBUTTONS, STAINLESS STEEL NEMA 4X BOX WITH NEMA 4X PUSHBUTTONS, 54" AFF
□	(1) FLOORBOX, (2) NEMA 5-20R RECEPTACLES AND (4) BLANK INSERTS FOR CAT.6 RJ-45 JACKS.

## LIGHTING CONTROL DEVICES

□	SINGLE POLE TOGGLE SWITCH, 44" AFF
□	2-POLE TOGGLE SWITCH, 44" AFF
□	DIMMING SWITCH, SINGLE OR MULTIPLE LOCATION FUNCTIONALITY AS SHOWN, 44" AFF
□	OCCUPANCY SENSOR SWITCH, DUAL TECHNOLOGY, SINGLE POLE, WALL-BOX STYLE, 44" AFF
□	OCCUPANCY SENSOR SWITCH, DUAL TECHNOLOGY, DOUBLE POLE, WALL-BOX STYLE, 44" AFF
□	VACANCY SENSOR SWITCH, DUAL TECHNOLOGY, SINGLE POLE, WALL-BOX STYLE, 44" AFF
□	VACANCY SENSOR SWITCH, DUAL TECHNOLOGY, DOUBLE POLE, WALL-BOX STYLE, 44" AFF
□	OCCUPANCY SENSOR, LOW VOLTAGE, DUAL TECHNOLOGY, WIDE VIEW, CEILING MOUNTED
□	LIGHTING CONTROL CABINET: LIGHTING CONTACTOR (LC), LIGHTING CONTROL CABINET (LCC), LIGHTING RELAY CABINET (LRC), GENERATOR TRANSFER DEVICE (GTD), OR TIME CLOCK (TC) AS NOTED ON DRAWINGS. FLUSH OR SURFACE AS SHOWN ON DRAWINGS
□	DAYLIGHT HARVESTING DEVICE (DIMMING CONTROL), CEILING MOUNTED

## LIGHTING

### GENERAL LUMINAIRE NOTATION:

□	PATTERN INDICATES LUMINAIRE CONNECTED TO UNSWITCHED LIGHTING CIRCUIT
□	GEOMETRIC SHAPE LUMINAIRE, RECESSED OR SURFACE MOUNTED PER LUMINAIRE SCHEDULE
□	ILLUMINATED EXIT SIGN - SINGLE/DOUBLE FACE AS SHOWN - DIRECTION OF ARROWS AS INDICATED - CEILING, SURFACE WALL, OR PERPENDICULAR WALL AS SHOWN
□	SELF CONTAINED BATTERY LIGHTING UNIT
□	REMOTE LIGHTING LAMP HEAD(S) - CONNECT TO REMOTE BATTERY PACK IN INTERIOR ACCESSIBLE CEILING SPACE
□	LUMINAIRE(S) AND POLE ASSEMBLY

## BRANCH CIRCUIT CONDUCTOR SIZING

### CIRCUIT NOTATION:

11.13	CIRCUIT NUMBER(S)
11.13	SOURCE PANELBOARD (IF OTHER THAN NOTED ON SHEET/CIRCUIT BOUNDARY)
	PROVIDE MINIMUM WIRE SIZE AS FOLLOWED UNLESS NOTED OTHERWISE:
20A CB - #12 AWG	
30A CB - #10 AWG	
40A CB - #8 AWG	
50A CB - #6 AWG	
	INCREASE SIZE OF CONDUCTOR FOR DISTANCE AS SHOWN BELOW IN 20A BRANCH CIRCUIT CONDUCTOR SIZING SCHEDULE.

### 20A BRANCH CIRCUIT CONDUCTOR SIZING SCHEDULE:

CONDUCTOR SIZE (AWG)	#12	#10	#8	#6	#4
MAXIMUM BRANCH CIRCUIT LENGTH AT 120V (FEET)	90	140	225	355	565
MAXIMUM BRANCH CIRCUIT LENGTH AT 277V (FEET)	205	325	520	825	1310

- NOTES:
- INCREASE ALL BRANCH CIRCUIT CONDUCTORS AS INDICATED BASED ON LENGTH OF CIRCUIT, INCLUDING EQUIPMENT GROUNDING CONDUCTOR.
  - TRANSITION FROM LARGER CONDUCTOR SIZE TO #12 AWG FOR FINAL TERMINATION TO OUTLET DEVICE. PROVIDE JUNCTION BOX WITHIN 10' OF OUTLET AND EXTEND #12 AWG CONDUCTORS TO OUTLET.
  - LENGTHS ARE FROM OVERCURRENT PROTECTIVE DEVICE, ALONG CIRCUIT ROUTING, TO CENTER OF EQUIPMENT LOAD.
  - SCHEDULE ASSUMES 12A LOAD, FOR LOADS HIGHER THAN 12A, INCREASE CONDUCTOR SIZE.

## DATA/TELECOMMUNICATION OUTLETS

▽	NOTE: PROVIDE CONDUIT FROM BOX STUBBED INTO ACCESSIBLE CEILING SPACE IN NEAREST CORRIDOR. REFER TO DATA/TELECOMMUNICATION OUTLET SCHEDULE FOR ADDITIONAL DETAILS.
▽	DATA/TELECOMMUNICATIONS OUTLET, 18" AFF
▽	DATA/TELECOMMUNICATIONS OUTLET INSTALLED IN FLOORBOX / DEVICE, WITH CONDUIT ROUGH-IN IN SLAB TO ACCESSIBLE CEILING.

## CABINETS / RACKS

□	OPEN FRAME DATA RACK - FLOOR MOUNTED (BOLD LINE INDICATES FRONT OF RACK, CABLE MANAGEMENT SPACE SHOWN)
---	--

## EQUIPMENT CONNECTIONS

□	SINGLE PHASE MOTOR/PUMP CONNECTION, REFER TO EQUIPMENT CONNECTION SCHEDULE
□	THREE PHASE MOTOR/PUMP CONNECTION, REFER TO EQUIPMENT CONNECTION SCHEDULE
□	SINGLE POINT EQUIPMENT CONNECTION, REFER TO EQUIPMENT CONNECTION SCHEDULE
□	DIRECT CONNECTION FOR 120V EQUIPMENT CONNECTED TO NORMAL BRANCH

## FIRE ALARM, GAS DETECTION, & MASS NOTIFICATION DEVICES

□	HEAT DETECTOR, COMBINATION RATE OF RISE/FIXED 135°F, CEILING MOUNT (# INDICATES RATE OF RISE TEMPERATURE SENSOR, ° INDICATES FIXED TEMPERATURE SENSOR, °R INDICATES COMBINATION RATE OF RISE & FIXED TEMPERATURE SENSOR)
□	SMOKE DETECTOR, CEILING MOUNTED
□	SMOKE DETECTOR, WALL MOUNTED
□	SMOKE DETECTOR, INSTALLED IN DUCTWORK - MECHANICAL UNIT INDICATED
□	SMOKE DETECTOR, PROJECTED BEAM TYPE, TRANSMITTER, HEIGHT AS NOTED
□	SMOKE DETECTOR, PROJECTED BEAM TYPE, RECEIVER, HEIGHT AS NOTED
□	GAS DETECTOR, WALL MOUNTED (CO = CARBON MONOXIDE 60" AFF, NG = NATURAL GAS 18" BELOW CEILING)
□	MASS NOTIFICATION EMERGENCY VOICE/ALARM SPEAKER & STROBE, 90db, 75cd STROBE INTENSITY UNLESS OTHERWISE NOTED, WALL MOUNTED 18" BELOW CEILING
□	- SA = SECURITY ALERT; WHITE HOUSING, BLUE LENS, SEC ALERT LABEL IN RED.
□	- MN = MASS NOTIFICATION ALERT; WHITE HOUSING, AMBER LENS, 'ALERT' LABEL IN RED.
□	- CO = CARBON MONOXIDE; WHITE HOUSING, RED LENS, 'CO ALARM' LABELING
□	- NG = NATURAL GAS; WHITE HOUSING, GREEN LENS, 'NG ALARM' LABELING
□	MASS NOTIFICATION STROBE, 75cd STROBE INTENSITY UNLESS OTHERWISE NOTED, WALL MOUNTED 18" BELOW CEILING
□	- SA = SECURITY ALERT; WHITE HOUSING, BLUE LENS, SEC ALERT LABEL IN RED.
□	- MN = MASS NOTIFICATION ALERT; WHITE HOUSING, AMBER LENS, 'ALERT' LABEL IN RED.
□	- CO = CARBON MONOXIDE; WHITE HOUSING, RED LENS, 'CO ALARM' LABELING
□	- NG = NATURAL GAS; WHITE HOUSING, GREEN LENS, 'NG ALARM' LABELING
□	FIRE ALARM EMERGENCY VOICE/ALARM LOUDSPEAKER, 90 db, WALL MOUNTED 18" BELOW CEILING
□	FIRE ALARM HORN, 90 db, CEILING MOUNTED
□	FIRE ALARM EMERGENCY VOICE/ALARM SPEAKER, FLUSH CEILING MOUNTED
□	FIRE ALARM EMERGENCY VOICE/ALARM SPEAKER, FLUSH WALL MOUNTED
□	FIRE ALARM STROBE LIGHT, WALL MOUNTED, MIN 80°/ MAX 96° AFF (# INDICATES CANDELA RATING)
□	FIRE ALARM STROBE LIGHT, CEILING MOUNTED (# INDICATES CANDELA RATING)
□	FIRE ALARM EMERGENCY VOICE/ALARM SPEAKER & STROBE, 90 db, WALL MOUNTED, MIN 80°/ MAX 96° AFF (# INDICATES CANDELA RATING)
□	FIRE ALARM EMERGENCY VOICE/ALARM SPEAKER & STROBE, 90 db, CEILING MOUNTED (# INDICATES CANDELA RATING)
□	FIRE ALARM MANUAL PULL STATION, 44" AFF UNLESS NOTED OTHERWISE
□	FIRE ALARM CONNECTION TO SMOKE DAMPER, PROVIDE ADDRESSABLE RELAY
□	DUCT SMOKE DETECTOR REMOTE TEST STATION WITH INDICATOR LIGHT, 44" AFF
□	FIRE ALARM CONNECTION TO ELECTRO-MAGNETIC DOOR RELEASE (DOOR HOLDER)
□	FAN SHUT DOWN RELAY
□	FIRE ALARM ADDRESSABLE RELAY (FM INDICATES MONITOR POINT, FC INDICATES CONTROL POINT)
□	WATER FLOW SWITCH FIRE ALARM CONNECTION
□	PRESSURE SWITCH FIRE ALARM CONNECTION (FOR PRE-ACTION SYSTEM)
□	SUPERVISORY TAMPER SWITCH FIRE ALARM CONNECTION
□	SYSTEM CABINET: FIRE ALARM CONTROL PANEL (FACP), FIRE ALARM ANNUNCIATOR PANEL (FAAP), FIRE ALARM GRAPHIC PANEL (FAGP), FIRE ALARM TERMINATION CABINET (FATC), NOTIFICATION APPLIANCE CIRCUIT PANEL (NAC).

## SECURITY DEVICES & ACCESS CONTROL

□	CAMERA, PROVIDE EMPTY OUTLET BOX AND 1" EMPTY CONDUIT TO ABOVE CEILING SPACE
□	CAMERA POWER SUPPLY
□	PROXIMITY ACCESS CARD READER, 40" AFF, 4" FROM DOOR FRAME, UNLESS MULLTION MOUNTING INDICATED.
□	KEYPAD, 40" AFF
□	RECESSED DOOR CONTACT SWITCH, COORDINATE WITH DOOR FRAME INSTALLER
□	CONNECTION TO DOOR ELECTRIC STRIKE
□	MOTION DETECTOR, INSTALL 6" BELOW CEILING OR 96" AFF MAX
□	REQUEST TO EXIT DEVICE (IR SENSOR), MOUNT CENTERED ABOVE DOOR FRAME
□	REQUEST TO EXIT PUSHBUTTON, 40" AFF

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CERTIFICATE OF AUTHORIZATION NUMBER:  
PROFESSIONAL ENGINEERING: 018281  
LAND SURVEYING: 017976  
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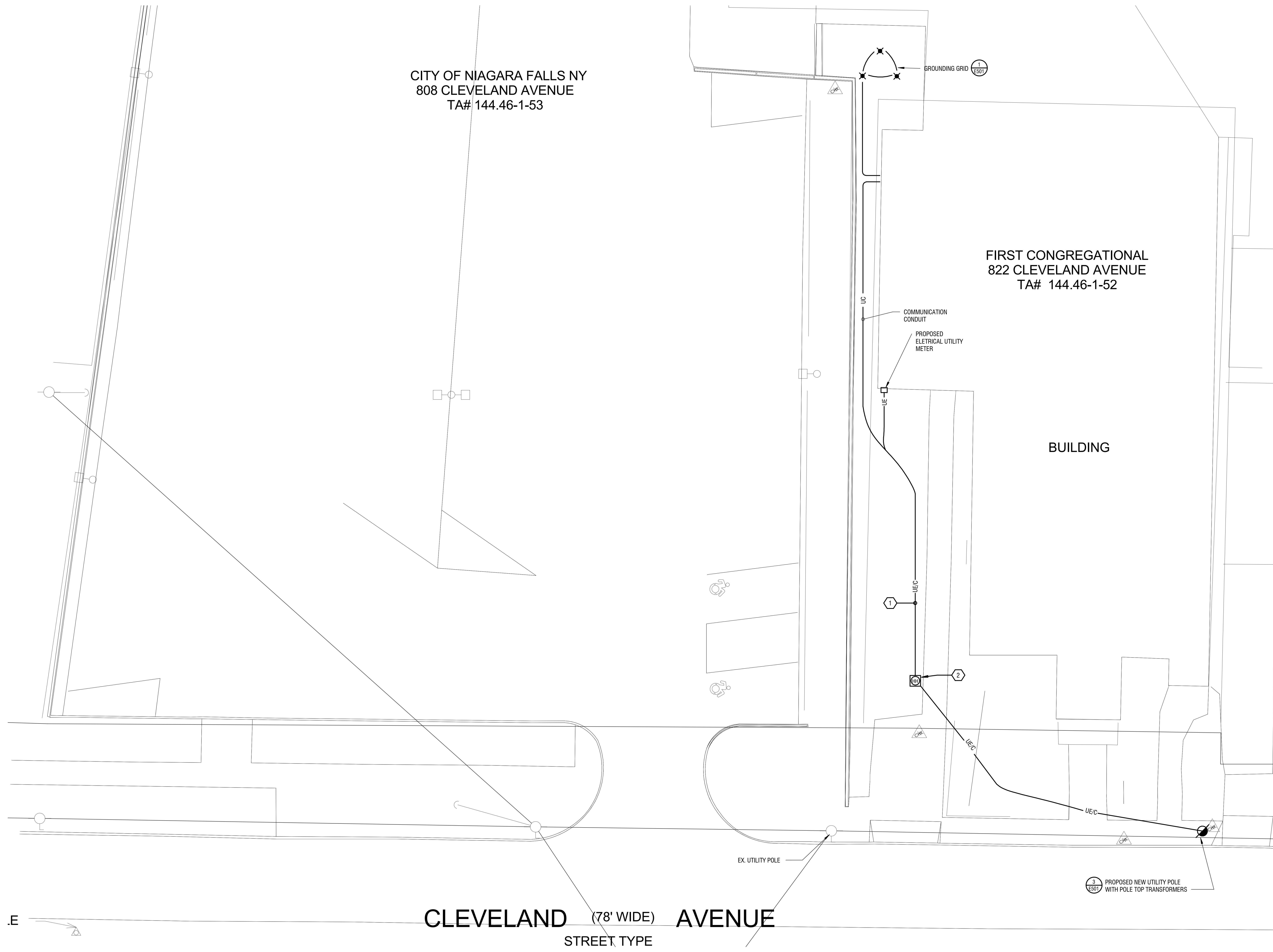
## FIRST CONGREGATIONAL CHURCH REHABILITATION

822 CLEVELAND AVE, NIAGARA FALLS, NY 14305

NO.	DATE	DESCRIPTION:
Revisions		

**KEYED NOTES**

1. PROVIDE UNDERGROUND ELECTRICAL AND COMMUNICATION SERVICE IN SAME TRENCH. REFER TO 2/E501 FOR DUCT BANK DETAIL. REFER TO DWG E-700 FOR CLEARANCE SERVICE SIZE.
2. PROVIDE A 30"x60"x36"D. POLYMER CONCRETE HANDHOLE WITH INTERNAL ENCLOSED DIVIDER TO SEPARATE COMMUNICATION AND POWER SERVICES



CITY OF NIAGARA FALLS NY  
808 CLEVELAND AVENUE  
TA# 144.46-1-53

FIRST CONGREGATIONAL  
822 CLEVELAND AVENUE  
TA# 144.46-1-52

BUILDING

CLEVELAND (78' WIDE) AVENUE  
STREET TYPE

1 SITE PLAN  
E050 1" = 10'-0"



CERTIFICATE OF AUTHORIZATION NUMBER:  
PROFESSIONAL ENGINEERING: 018281  
LAND SURVEYING: 017976  
GEOLOGICAL: 018750

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EDA PROJECT No. 01-01-15369 HUD PROJECT No. B-23-CP-NY-1083



ESD PROJECT No. 135,035

**FIRST CONGREGATIONAL CHURCH REHABILITATION**  
822 CLEVELAND AVE, NIAGARA FALLS, NY 14305

NO.	DATE	DESCRIPTION
Revisions		

PROJECT NUMBER: 2221723

DRAWN BY: EEJ

REVIEWED BY: MDR

ISSUED FOR: BID

DATE: APRIL 11, 2024

DRAWING NAME:

**ELECTRICAL SITE PLAN**

DRAWING NUMBER:

**E050**



CERTIFICATE OF AUTHORIZATION NUMBER:  
PROFESSIONAL ENGINEERING: 018281  
LAND SURVEYING: 017976  
GEOLOGICAL: 018750

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5795 LEWISTON ROAD  
NIAGARA UNIVERSITY, NY 14109



EDA PROJECT No. 01-01-15369 HUD PROJECT No. B-23-CP-NY-1083



ESD PROJECT No. 135,035

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DRAWING NAME:

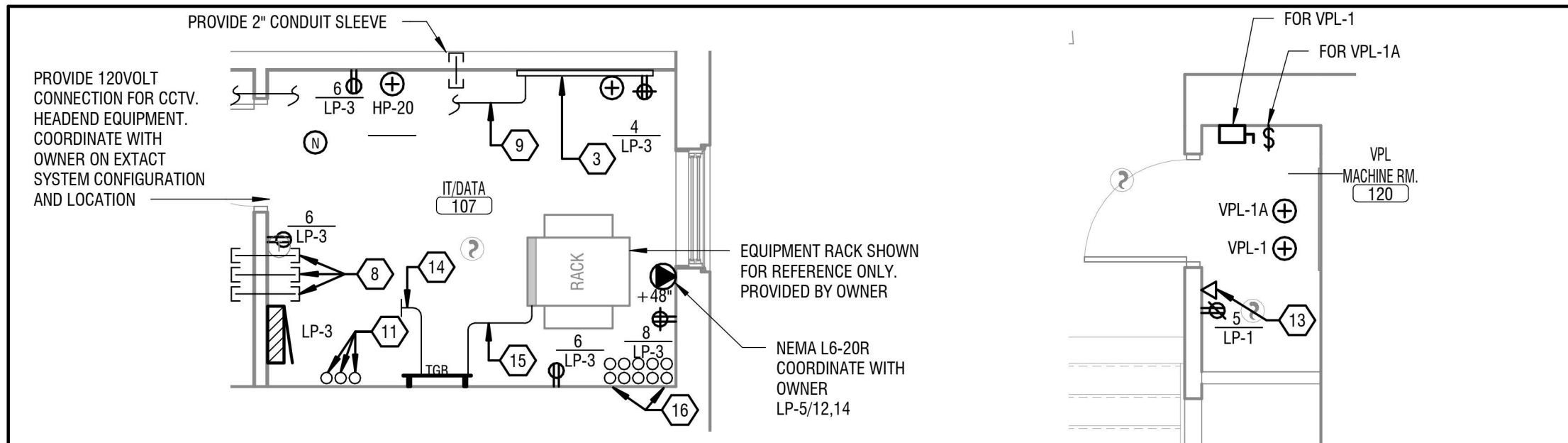
**MAIN & LOWER LEVEL POWER & SYSTEMS PLAN**

DRAWING NUMBER:

**E101**

**KEYED NOTES**

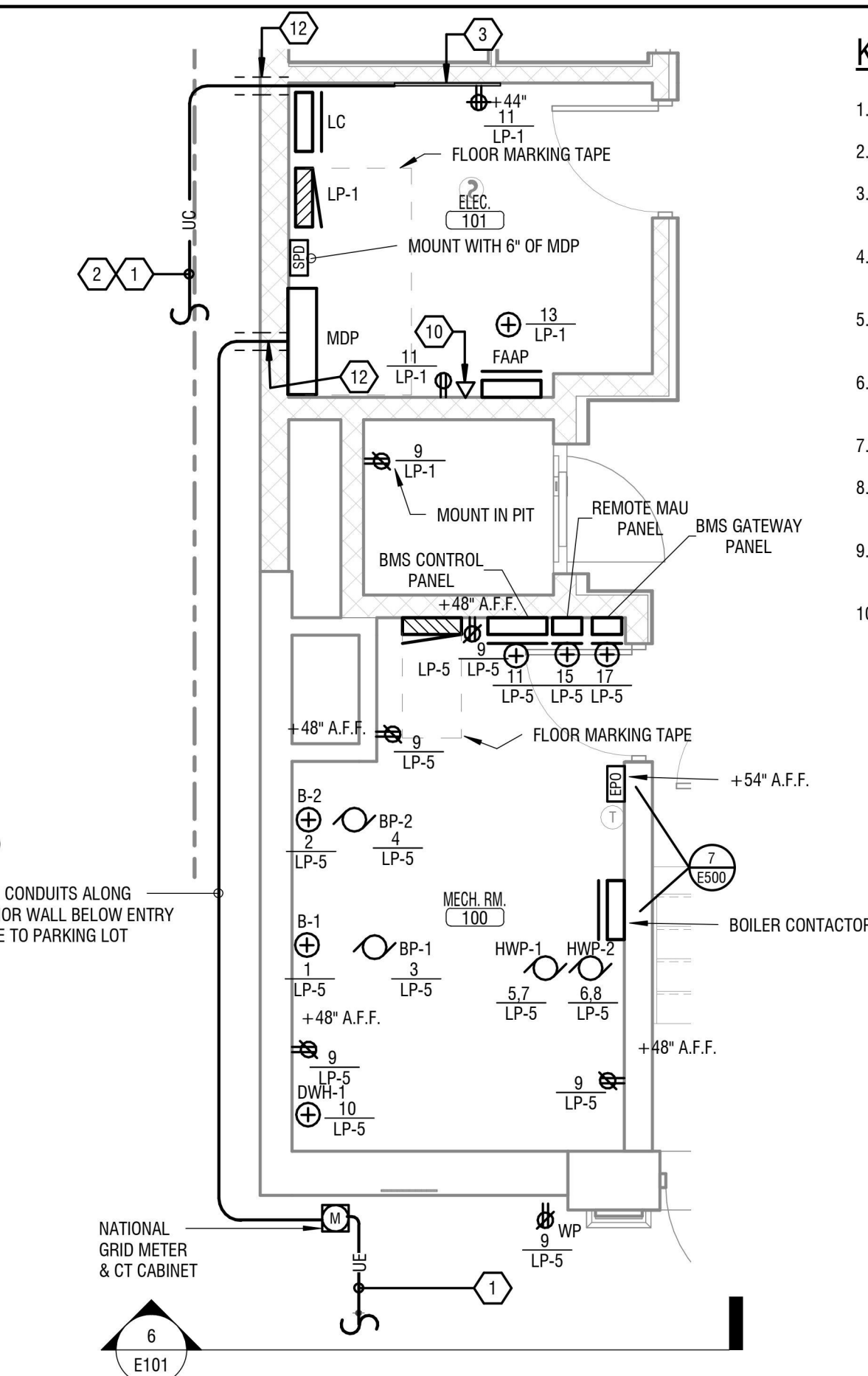
- REFER TO ELECTRICAL DRAWING E-050 FOR CONTINUATION.
- PROVIDE EMPTY 4-INCH PVC SCHEDULE 80 CONDUIT PULLROPE FOR COMMUNICATION SERVICE.
- PROVIDE 4x4x1" THICK PLYWOOD BACKBOARD. PAINT BOTH SIDES WITH 2 COATS OF FIRE RETARDANT PAINT. FOR TELECOMMUNICATION SERVICE.
- PROVIDE NEW BRANCH CIRCUIT TO EXISTING ORGAN BLOWER. CONFIRM EXACT POWER REQUIREMENTS IN FIELD.
- PROVIDE 1-1/4" PVC SCHEDULE 40 CONDUIT BELOW FLOOR SLAB FROM EACH FLOOR BOX TO IT/DATA 107. COORDINATE EXACT STUB-UP LOCATION WITHIN ROOM WITH OWNER.
- PROVIDE 3/4" PVC SCHEDULE 40 CONDUIT BELOW FLOOR SLAB FOR EACH CIRCUIT SERVING FLOOR BOXES ORIGINATING FROM PANEL LP-3.
- PROVIDE 3/4" PVC SCHEDULE 40 CONDUIT INTER-CONNECTING POWER FOR FLOOR BOXES.
- PROVIDE (3)3" EMT CONDUIT SLEEVES ABOVE CEILING TO ACCOMMODATE SYSTEM CABLING PROVIDED BY OWNER.
- PROVIDE 3" EMT CONDUIT WITH PULLROPE FOR THE INSTALLATION OF FIBER OPTIC CABLE FROM ELEC 101 TO IT/DATA 107. TERMINATE CONDUIT AT PLYWOOD BACKBOARD.
- PROVIDE (2)CAT. 6 CABLES FOR DUAL PHONE LINES TO FAQP DIGITAL COMMUNICATION.
- PROVIDE (3)3" EMT CONDUITS WITH PULLROPE FROM MAIN LEVEL CORRIDOR DOWN TO LOWER LEVEL IT/DATA 107 TO FACILITATE CABLE INSTALLATION BY OTHERS.
- CORE DRILL EXISTING BUILDING FOUNDATION WALL (APPROX. 18"). INSTALL LINK SEAL.
- PROVIDE (2)CAT. 6 CABLES FOR DUAL PHONE LINE TO VERTICAL PLATFORM LIFT.
- BOND GROUND BAR TO MDP EQUIPMENT GROUND BAR. SEE DETAIL 1/E500.
- BOND EQUIPMENT REV WITH #6 AWG COMMENT W/OWNER.
- STUB UP CONDUITS FROM FLOOR BOXES IN COMPUTER/E SPONSORS ROOM 106. INSTALL TOP OF CONDUITS + 12" A.F.F. (T.Y.P. OF 10)
- FOR UNDER COUNTER REFRIGERATOR
- ELECTRICAL DEVICE SCHEDULE TO BE INSTALLED ON THIS EXISTING PLASTER WALL SHALL BE FLUSH WITH CONCEALED WIRING. CUT AND PATCH EXISTING WALL TO ACCOMPLISH
- PROVIDE 120VOLT CONNECTION TO ACCESS CONTROL POWER SUPPLY ABOVE CEILING. COORDINATE WITH OWNER ON THE EXACT SYSTEM CONFIGURATION AND LOCATION OF POWER SUPPLIED.
- PROVIDE 3/4" CONDUIT FROM EACH CAMERA LOCATION TO AN EMPTY JUNCTION BOX. PROVIDE 1" CONDUIT FROM J-BOX DOWN TO LOWER LEVEL AND TERMINATE BOX ABOVE CEILING.
- PROVIDE 3/4" C.DOWN TO LOWEST LEVEL AND TERMINATE ABOVE CEILING.



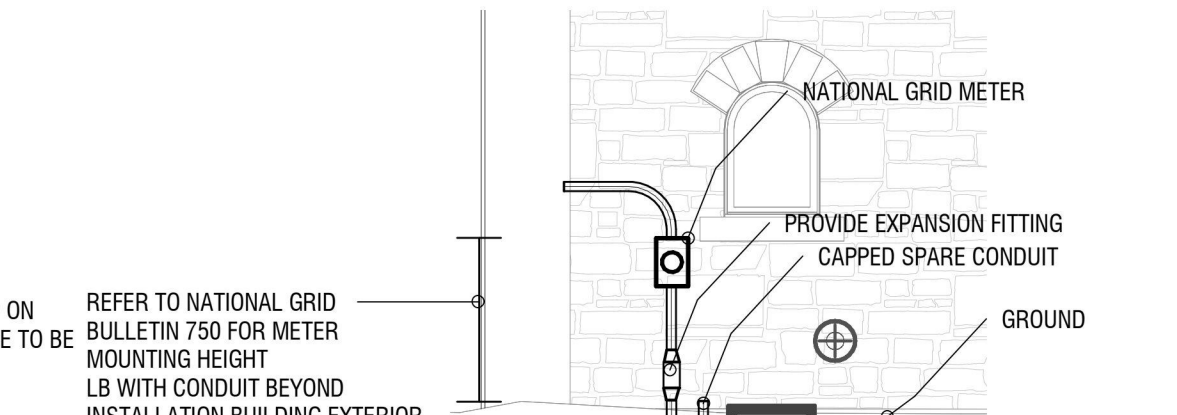
**4 ENLARGED IT/DATA ROOM**  
E101 1/4" = 1'-0"



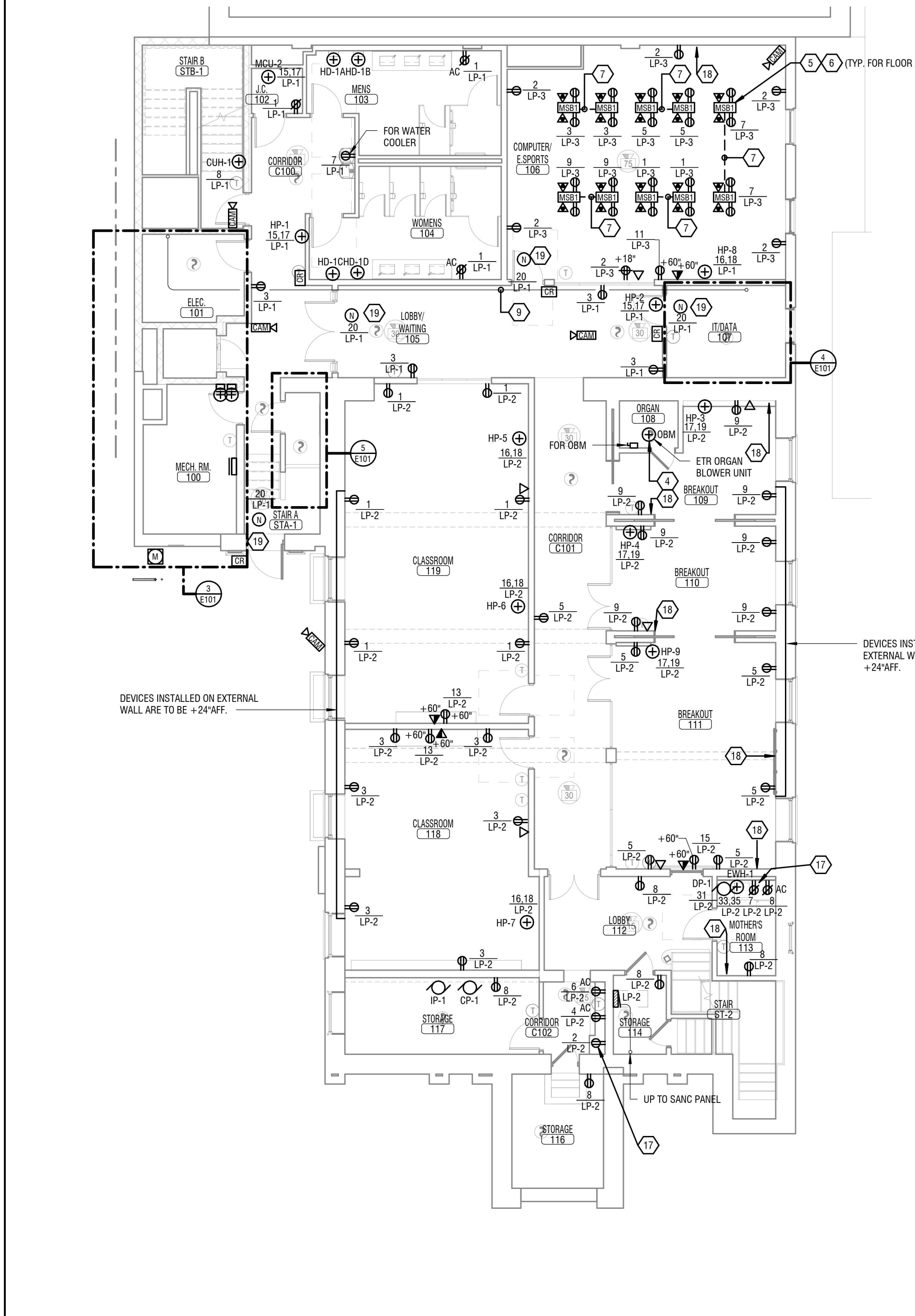
**5 ENLARGED MACHINE ROOM**  
E101 1/4" = 1'-0"



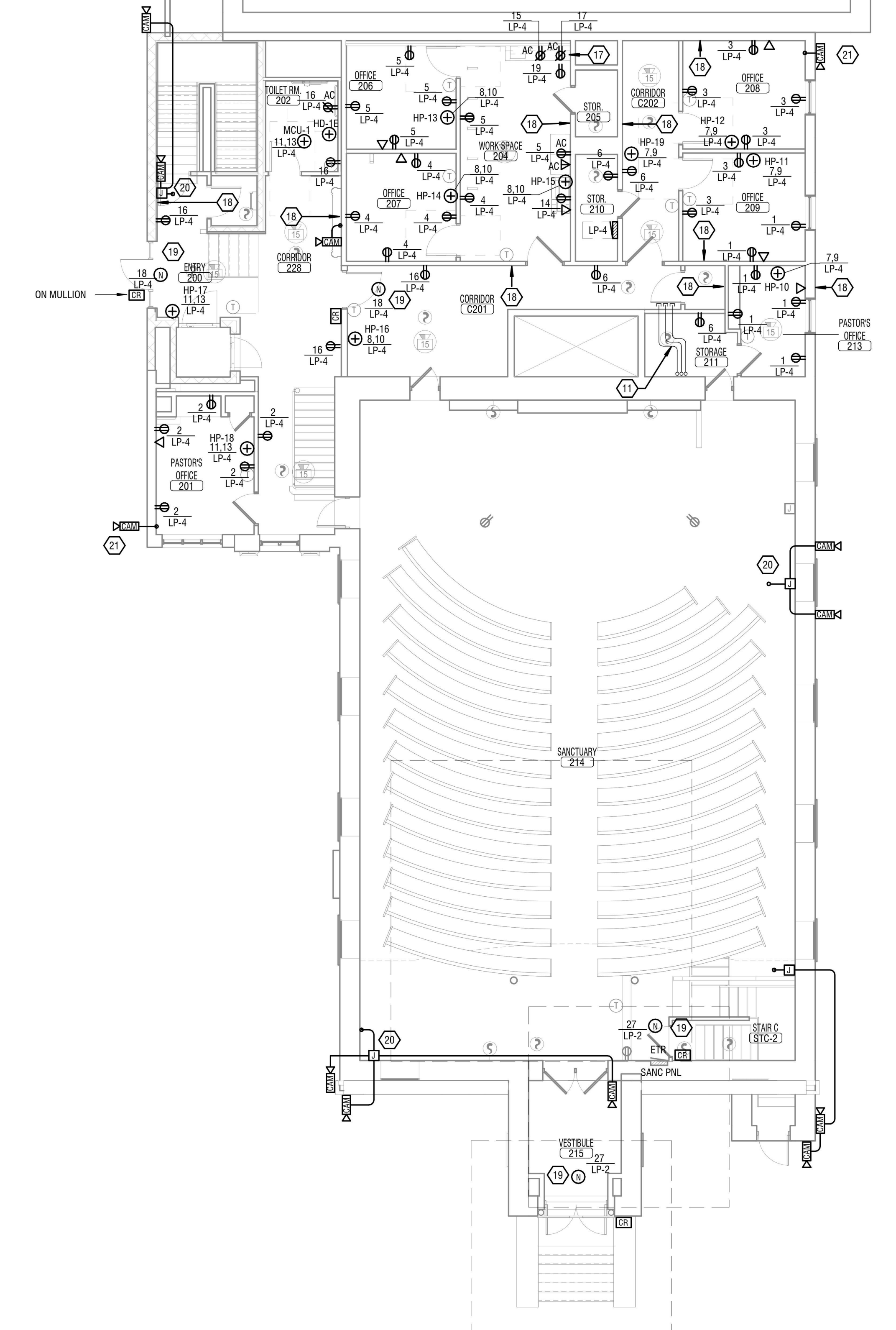
**3 ENLARGED MECHANICAL ROOM**  
E101 1/4" = 1'-0"



**6 METER INSTALL ELEVATION**  
E101 NOT TO SCALE

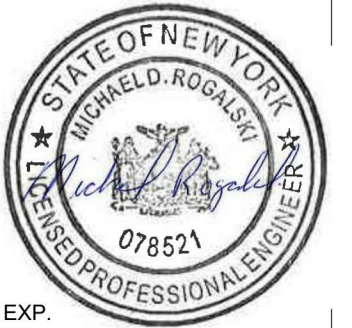


**1 LOWER LEVEL POWER & SYSTEMS PLAN**  
E101 1/8" = 1'-0"



**2 MAIN LEVEL POWER & SYSTEMS PLAN**  
E101 1/8" = 1'-0"





CERTIFICATE OF AUTHORIZATION NUMBER:  
PROFESSIONAL ENGINEERING: 018281  
LAND SURVEYING: 017976  
GEOLOGICAL: 018750

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5795 LEWISTON ROAD  
NIAGARA UNIVERSITY, NY 14109



EDA PROJECT No. 01-01-15369

HUD PROJECT No. B-23-CP-NY-1083



ESD PROJECT No. 135,035

**FIRST CONGREGATIONAL CHURCH REHABILITATION**

822 CLEVELAND AVE, NIAGARA FALLS, NY 14305

NO.	DATE	DESCRIPTION
Revisions		

PROJECT NUMBER: 2221723

DRAWN BY: EEJ

REVIEWED BY: MDR

ISSUED FOR: BID

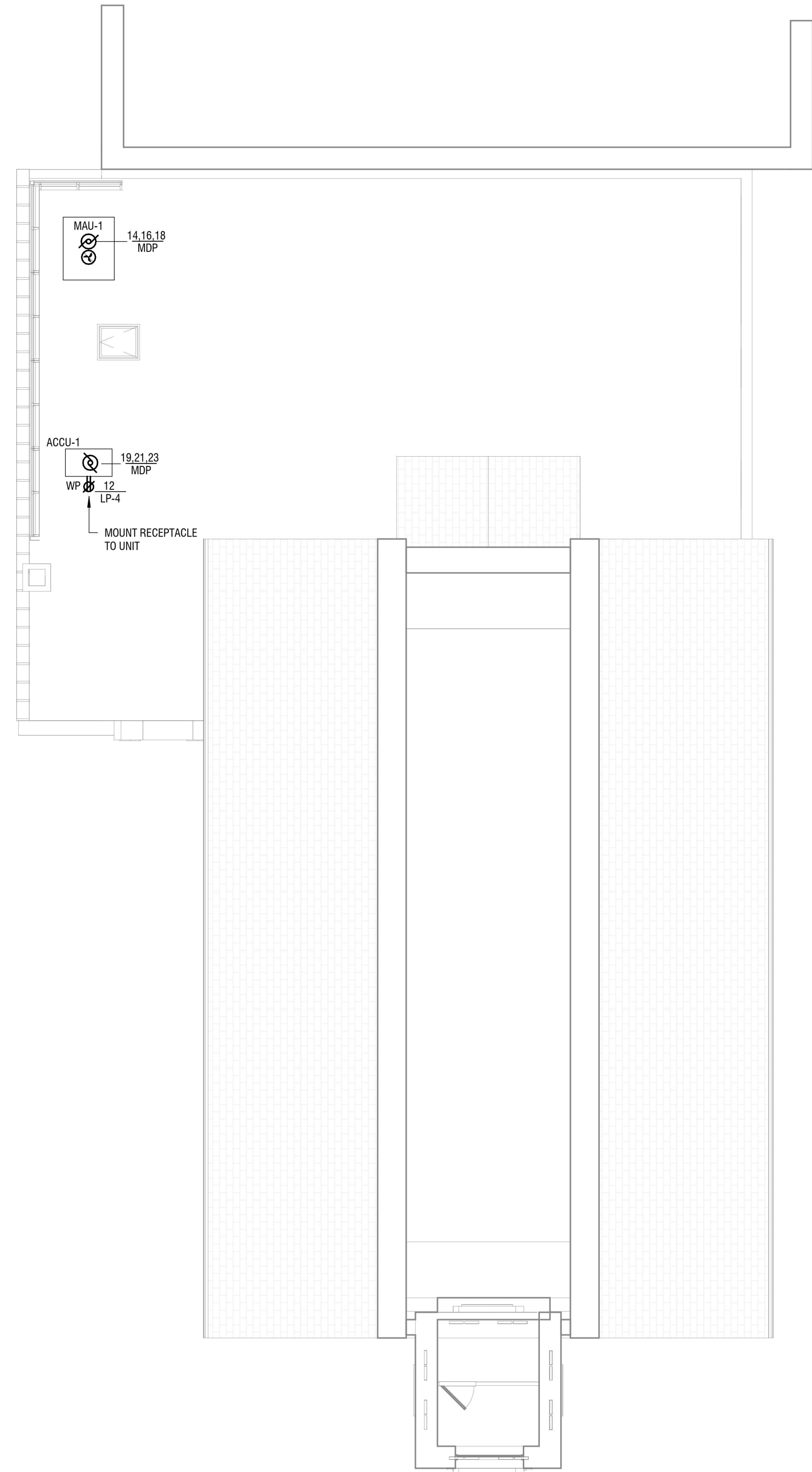
DATE: APRIL 11, 2024

DRAWING NAME:

**ROOF ELECTRICAL PLAN**

DRAWING NUMBER:

**E102**



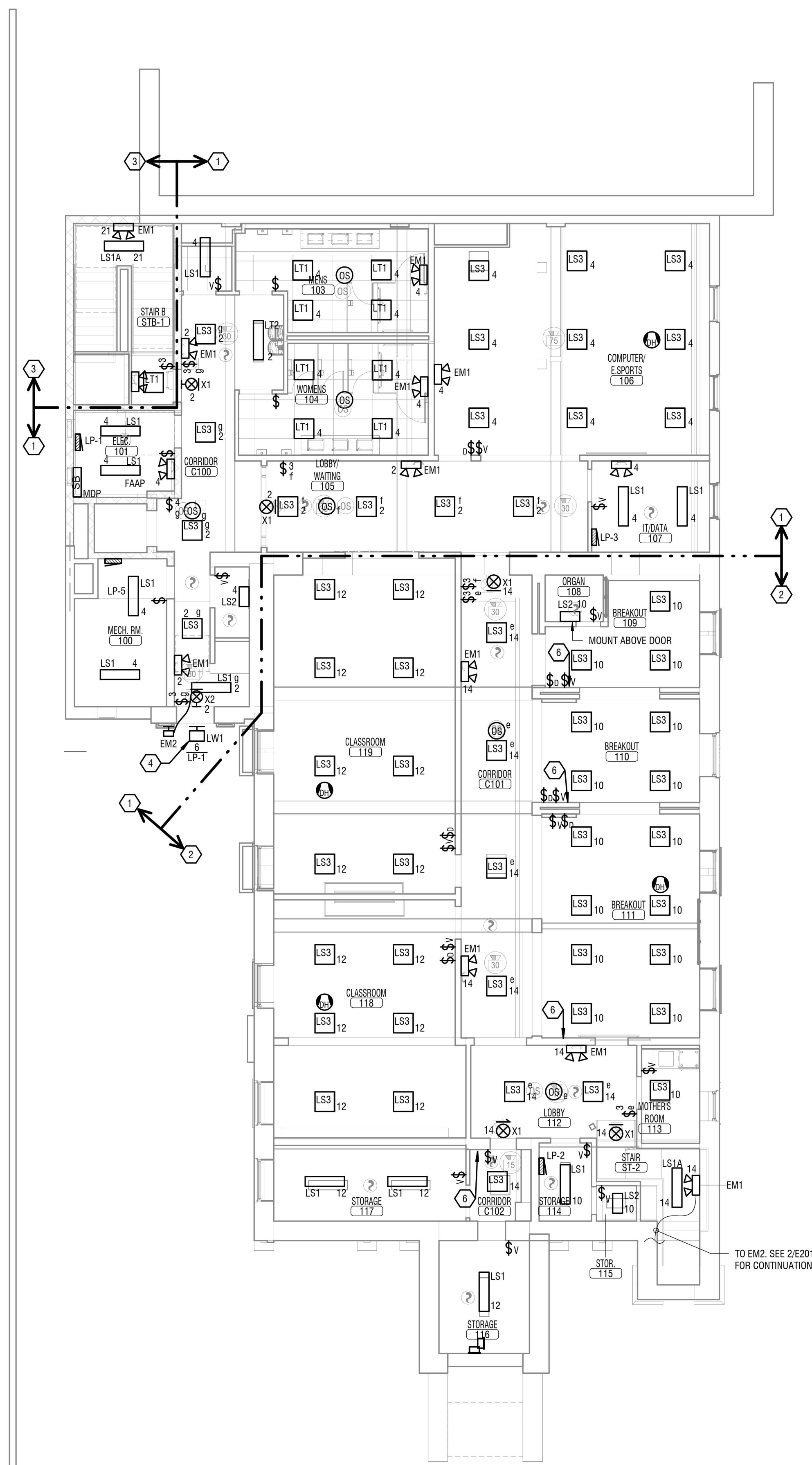
**2 ROOF LEVEL POWER & SYSTEMS PLAN**  
E102 1/8" = 1'-0"

**GENERAL NOTES:**

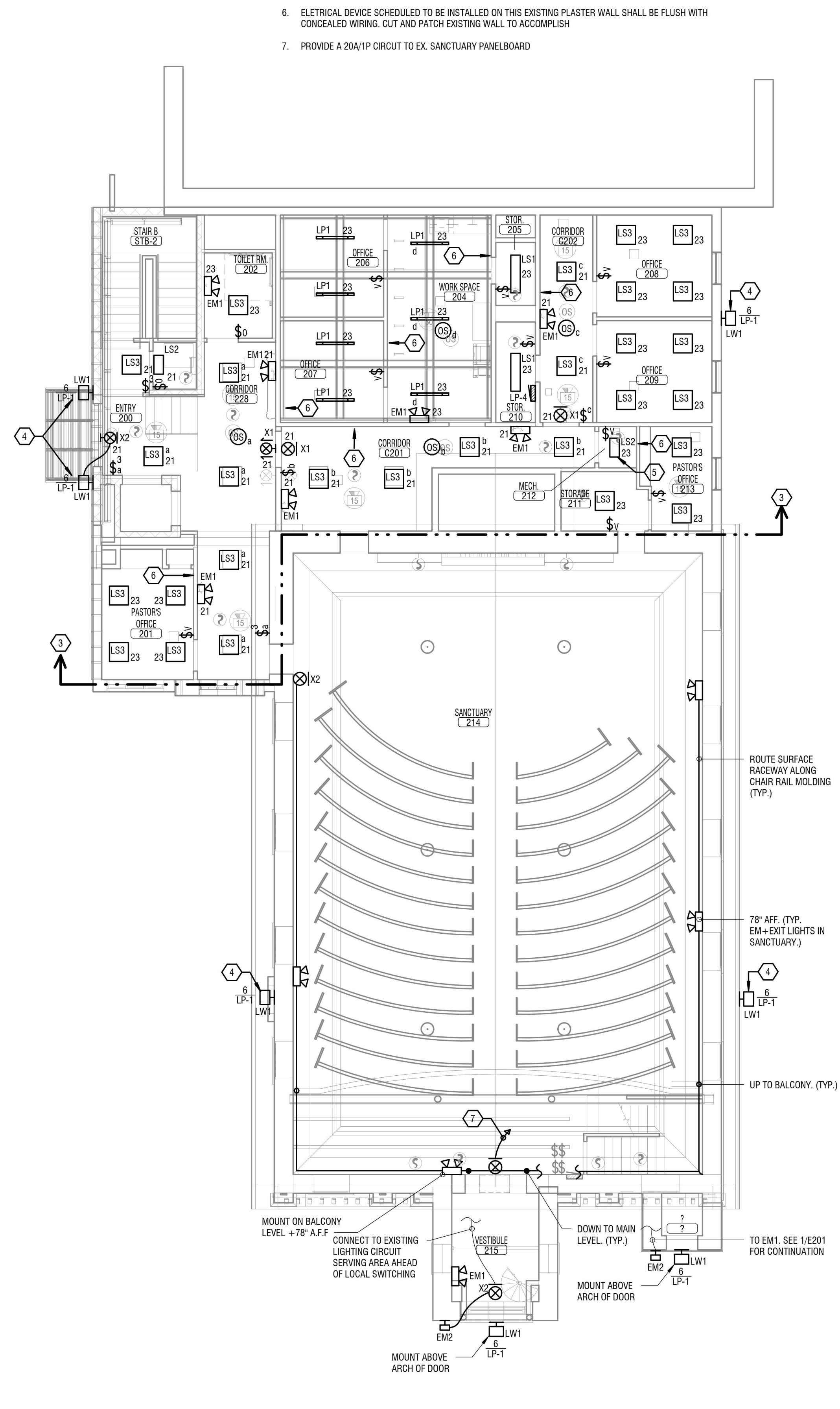
- A. UNLESS OTHERWISE NOTED, INTERIOR LIGHTING ON MAIN LEVEL (PLAN 2/E101) SHALL BE WIRED TO PANEL LP-4.
- B. UNLESS OTHERWISE NOTED, INTERIOR LIGHTING ON LOWER LEVEL (PLAN 1/E101) SHALL BE WIRED TO EITHER PANEL LP-1 OR LP-2. REFER TO KEY NOTES.
- C. EMERGENCY LIGHT UNITS AND EXIT LIGHTS SHALL BE WIRED AHEAD OF LOCAL SWITCHING SERVING THE AREA.
- D. REFER TO 4/E501 FOR LIGHTING HARVESTING DIMMING CONTROLS.

**KEYED NOTES:**

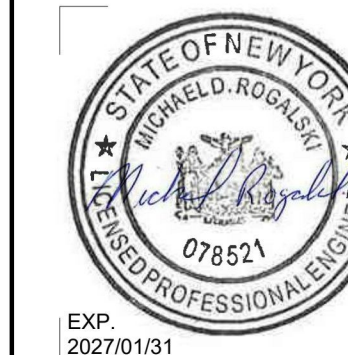
- 1. INTERIOR LIGHTING SHALL BE WIRED TO PANEL LP-1 UNLESS NOTED OTHERWISE.
- 2. INTERIOR LIGHTING SHALL BE WIRED TO PANEL LP-2 UNLESS NOTED OTHERWISE.
- 3. INTERIOR LIGHTING SHALL BE WIRED TO PANEL LP-4 UNLESS NOTED OTHERWISE.
- 4. ROUTE WIRING IN LOWER LEVEL WITH 2#10, 1#10GND IN 3/4" CONDUIT. PENETRATE EXTERIOR WALL AND ROUTE UP TO EXTERIOR WALL PACK LW1. ROUTE WIRING THROUGH LIGHTING CONTACTOR IN ELECTRICAL ROOM.
- 5. FIELD COORDINATE EXACT LOCATION OF LS2 LUMINAIRE IN MECH. 212. DEPENDING ON CONFIGURATION OF MECHANICAL EQUIPMENT, PIPING, ETC., LUMINAIRE MAY BE INSTALLED ON WALL OR CEILING.
- 6. ELECTRICAL DEVICE SCHEDULED TO BE INSTALLED ON THIS EXISTING PLASTER WALL SHALL BE FLUSH WITH CONCEALED WIRING. CUT AND PATCH EXISTING WALL TO ACCOMPLISH.
- 7. PROVIDE A 20A/1P CIRCUIT TO EX. SANCTUARY PANELBOARD.



1 LOWER LEVEL LIGHTING PLAN  
E201 1/8" = 1'-0"



2 MAIN LEVEL LIGHTING PLAN  
E201 1/8" = 1'-0"



CERTIFICATE OF AUTHORIZATION NUMBER:  
PROFESSIONAL ENGINEERING: 018281  
LAND SURVEYING: 017976  
GEOLOGICAL: 018750

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EDA PROJECT No. 01-01-15369 HUD PROJECT No. B-23-CP-NY-1083



ESD PROJECT No. 135,035

**FIRST CONGREGATIONAL CHURCH REHABILITATION**

822 CLEVELAND AVE, NIAGARA FALLS, NY 14305

NO.	DATE	DESCRIPTION

PROJECT NUMBER: 2221723

DRAWN BY: EEJ

REVIEWED BY: MDR

ISSUED FOR: BID

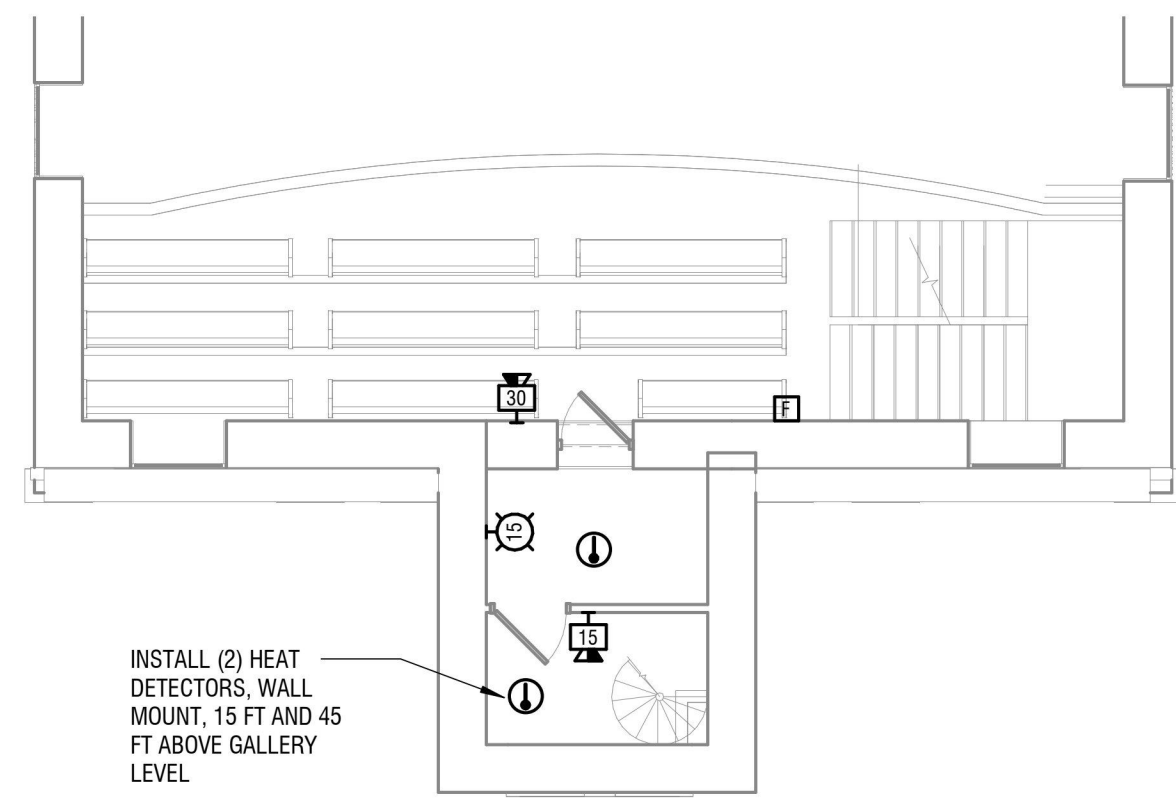
DATE: APRIL 11, 2024

DRAWING NAME:

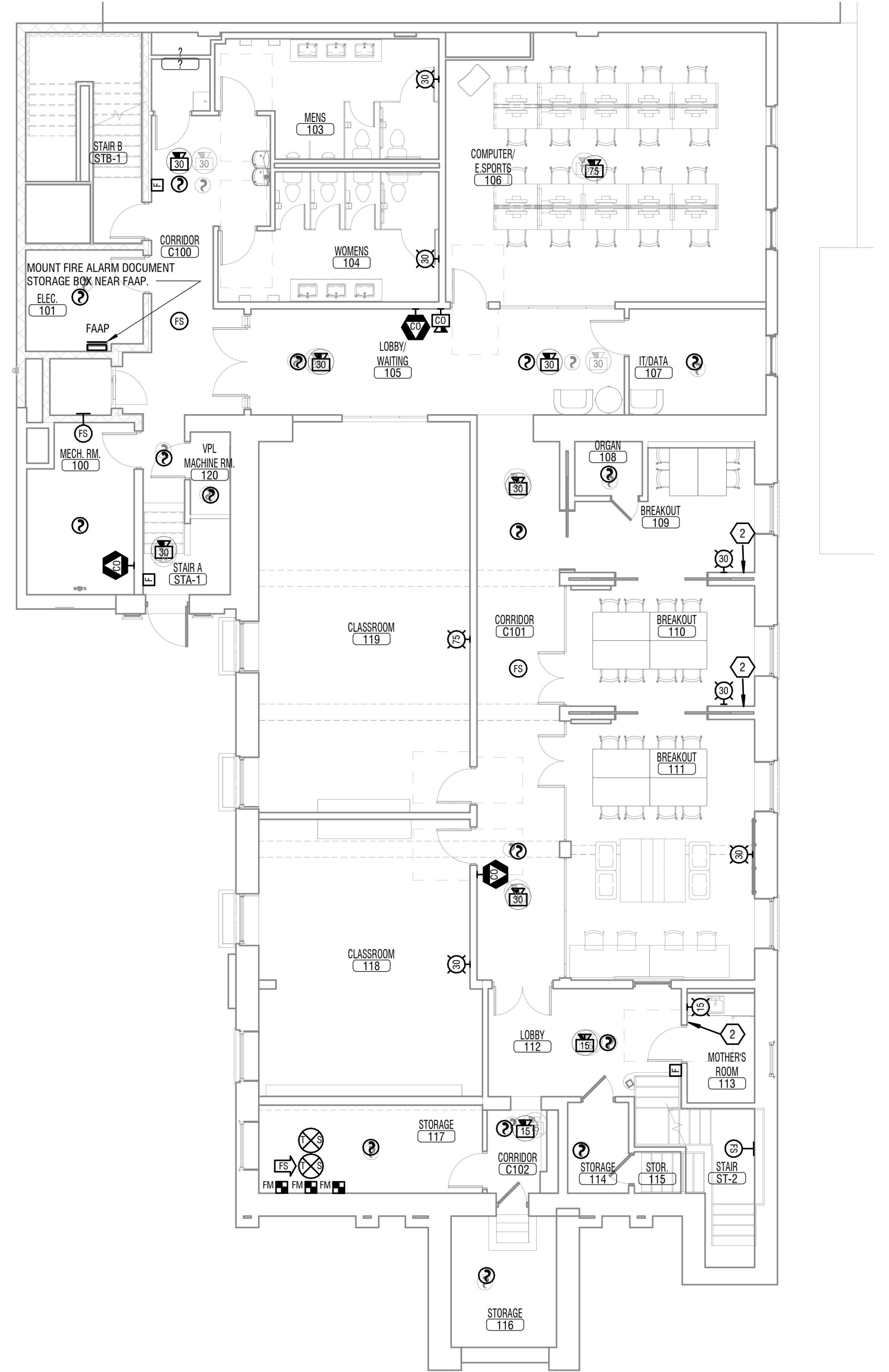
**MAIN & LOWER LEVEL LIGHTING PLAN**

DRAWING NUMBER:

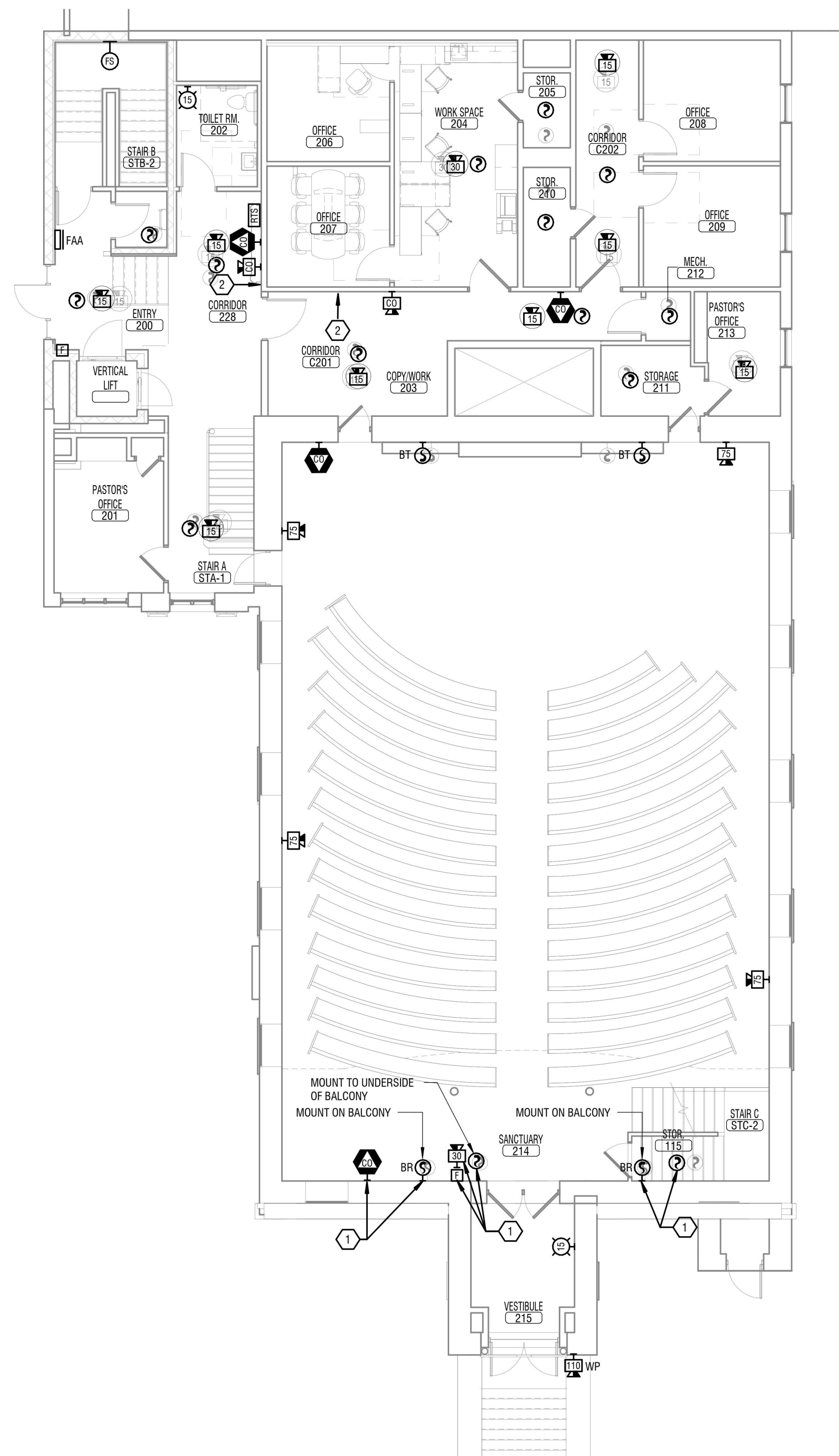
**E201**



3 GALLERY BOTTOM FIRE ALARM PLAN  
E301 1/8" = 1'-0"



2 MAIN LEVEL FIRE ALARM PLAN  
E301 1/8" = 1'-0"



1 LOWER LEVEL FIRE ALARM PLAN  
E301 1/8" = 1'-0"

**GENERAL NOTES :**

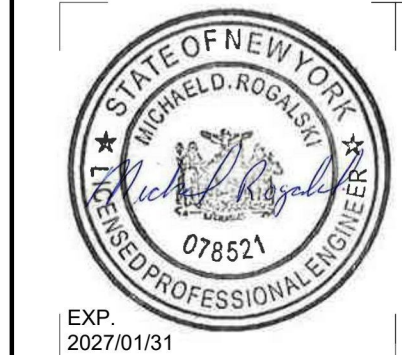
- A. WHERE FIRE ALARM DEVICES ARE LOCATED IN SPACES WITHOUT CEILINGS, FIRE ALARM WIRING SHALL BE INSTALLED IN EMT CONDUIT.
- B. WHERE FIRE ALARM DEVICES ARE LOCATED IN SPACE WITH ACCESSIBLE CEILING SYSTEM, FIRE ALARM CABLING CAN BE INSTALLED WITHOUT CONDUIT UTILIZING CABLING SUPPORTS ABOVE CEILING. PROVIDE CONDUIT SLEEVES IN ALL EXISTING FIRE RATED WALLS AND EXISTING WALLS UP TO STRUCTURE.
- C. REMOVE AND REINSTALL ACCESSIBLE CEILING TILES TO ACCOMMODATE FIRE ALARM SYSTEM DURING INSTALLATION. REPLACE ANY COMPONENTS OF CEILING SYSTEM DAMAGED DURING INSTALLATION.
- D. REPAIR EXISTING SPRAYED IN FIRE PROOFING ON EXISTING STRUCTURE TO ACCOMMODATE FIRE ALARM SYSTEM INSTALLATION. REPLACE ANY COMPONENTS OF CEILING SYSTEM DAMAGED DURING INSTALLATION.
- E. REFER TO DRAWING E-001 FOR ADDITIONAL GENERAL NOTES.

**GENERAL FIRE ALARM INSTALLATION NOTES :**

- A. ALL FIRE ALARM JUNCTION BOXES SHALL HAVE RED COVER PLATES.
- B. INSTALL CEILING MOUNT FIRE ALARM DEVICES IN THE MIDDLE OF EXISTING CEILING TILES.
- C. PROVIDE PANTING OF CONDUIT AND BOXES AS INDICATED ON DRAWING.
- D. COORDINATE EXACT LOCATION OF CEILING MOUNT DEVICES WITH OTHER EXISTING CEILING MOUNT EQUIPMENT SUCH AS LIGHTS, SPRINKLER HEADS, HVAC DIFFUSERS, ETC. WHERE DEVICES APPEAR TO CONFLICT WITH EXISTING CONDITIONS INSTALL ADJACENT TO EXISTING EQUIPMENT AS CLOSE AS POSSIBLE TO LOCATION SHOWN ON DRAWINGS.
- E. MAINTAIN SMOKE DETECTOR 3 FEET FROM ANY HVAC DIFFUSER.
- F. INSTALL MANUAL PULL STATION WITHIN 5 FEET OF EXIT AND/OR STAIRWAY DOOR.
- G. PROVIDE INITIAL TAP SETTINGS ON ALL FIRE ALARM SPEAKERS. IN GENERAL TAP SETTINGS SHALL BE AS FOLLOWS:  
G.1: 0.5 WATT IN CORRIDORS  
G.2: 2 WATT IN LARGE ROOMS-500SF  
G.3: 1 WATT IN MECHANICAL/ELECTRICAL ROOMS  
G.4: 2 WATT IN SANCTUARY  
G.5: 0.25 WATT IN CLASSROOMS  
G.6: 0.5 WATT IN ALL OTHER AREAS  
G.7: CONTRACTOR SHALL PROVIDE ONE ADDITIONAL TAP ADJUSTMENT FOR EACH SPEAKER TO ADJUST SOUND LEVELS BASED ON FIELD CONDITIONS AS DIRECTED BY THE ENGINEER
- H. FAN SHUTDOWN SHALL BE ACTIVATED BY ANY SMOKE DETECTOR LOCATED THROUGHOUT THE BUILDING VIA AN ACCESSIBLE FAN SHUT DOWN RELAY.
- I. ALL MAGNETIC DOOR HOLDERS (NEW AND EXISTING) SHALL RELEASE UPON ALARM WITHIN THE ENTIRE BUILDING.
- J. PROVIDE LABELS ON ALL FIRE ALARM DEVICES INDICATING ADDRESS IDENTIFICATION.
- K. THE EXISTING SYSTEM SHALL REMAIN OPERATIONAL DURING CONSTRUCTION. IN AREAS WHERE IT IS CALLED TO REUSE EXISTING OUTLET BOXES PROVIDE TEMPORARY FIRE ALARM AUDIBLE AND VISUAL ANNUNCIATION WITHIN THAT SPACE PER NFPA 72. THIS CAN BE ACCOMPLISHED WITH TEMPORARY WIRING AND BOXES BUT SHALL BE REMOVED AFTER THE NEW SYSTEM IS TESTED AND ACCEPTED. IF DURING CONSTRUCTION FOR A PERIOD OF TIME THE EXISTING FIRE ALARM SYSTEM IS OUT OR SERVICE DURING NEW SYSTEM INSTALLATION, THE CONTRACTOR SHALL PROVIDE A FIRE WATCH AS REQUIRED BY THE IYS FIRE CODE 191.7.
- L. TYPICALLY FIRE ALARMS CABLING TO BE CONCEALED ABOVE ACCESSIBLE CEILINGS. SUPPORT CABLING WITH J-HOOKS OR BRIDAL RINGS. IN AREAS WITH NO CEILINGS AND EXPOSED STRUCTURE INSTALL FIRE ALARM WIRING IN CONDUIT.
- M. CONTRACTOR SHALL REMOVE EXISTING CEILING TILES TO OBTAIN ACCESS ABOVE CEILING AND REINSTALL TILES WHEN WORK IS COMPLETE. ANY DAMAGE TO CEILING TILES SHALL BE REPLACED WITH NEW AS PART OF THIS CONTRACT.
- N. PROVIDE CONDUIT SLEEVES, MIN 1" DIAMETER WHERE CONCEALED FIRE ALARM CONDUCTOR PASSES THROUGH PARTITIONS TO TERMINATE AT STRUCTURE. PROVIDE FIRESTOPPING AS REQUIRED.

**KEYED NOTES :**

- 1. ROUTE WIRING TO FA DEVICES FROM LOWER LEVEL BELOW.
- 2. ELECTRICAL DEVICE SCHEDULE TO BE INSTALLED ON THIS EXISTING PLASTER WALL SHALL BE FLUSH WITH CONCEALED WIRING. CUT AND PATCH EXISTING WALL TO ACCOMPLISH



CERTIFICATE OF AUTHORIZATION NUMBER:  
PROFESSIONAL ENGINEERING: 018281  
LAND SURVEYING: 017976  
GEOLOGICAL: 018750

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5795 LEWISTON ROAD  
NIAGARA UNIVERSITY, NY 14109



EDA PROJECT No. 01-01-15369 HUD PROJECT No. B-23-CP-NY-1083



ESD PROJECT No. 135,035

**FIRST CONGREGATIONAL CHURCH REHABILITATION**

822 CLEVELAND AVE, NIAGARA FALLS, NY 14305

NO.	DATE	DESCRIPTION
Revisions		

PROJECT NUMBER: 2221723

DRAWN BY: BJC

REVIEWED BY: MDR

ISSUED FOR: BID

DATE: APRIL 11, 2024

DRAWING NAME:

**MAIN & LOWER LEVEL FIRE ALARM PLAN**

DRAWING NUMBER:



CERTIFICATE OF AUTHORIZATION NUMBER:  
PROFESSIONAL ENGINEERING: 018281  
LAND SURVEYING: 017976  
GEOLOGICAL: 018750

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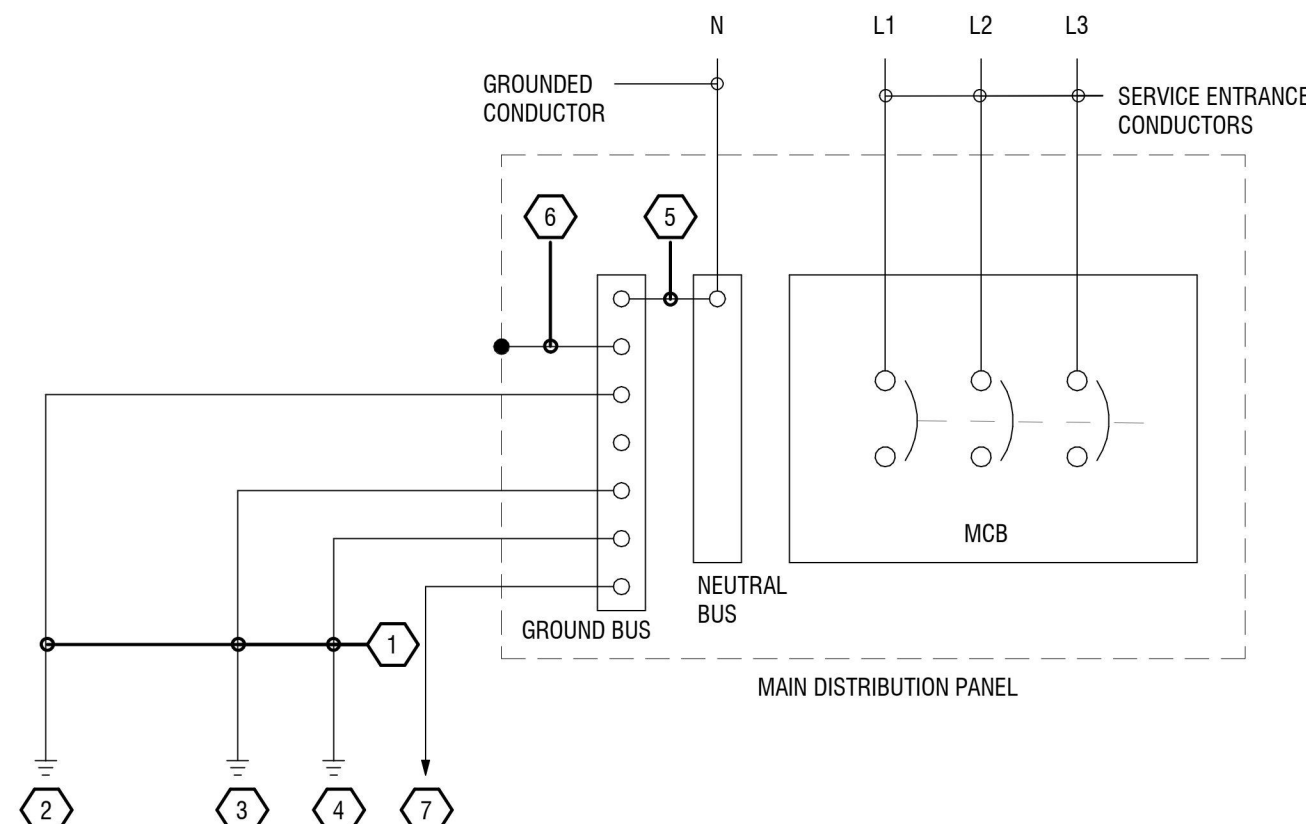
DATE: APRIL 11, 2024

DRAWING NAME:

**ELECTRICAL DETAILS**

DRAWING NUMBER:

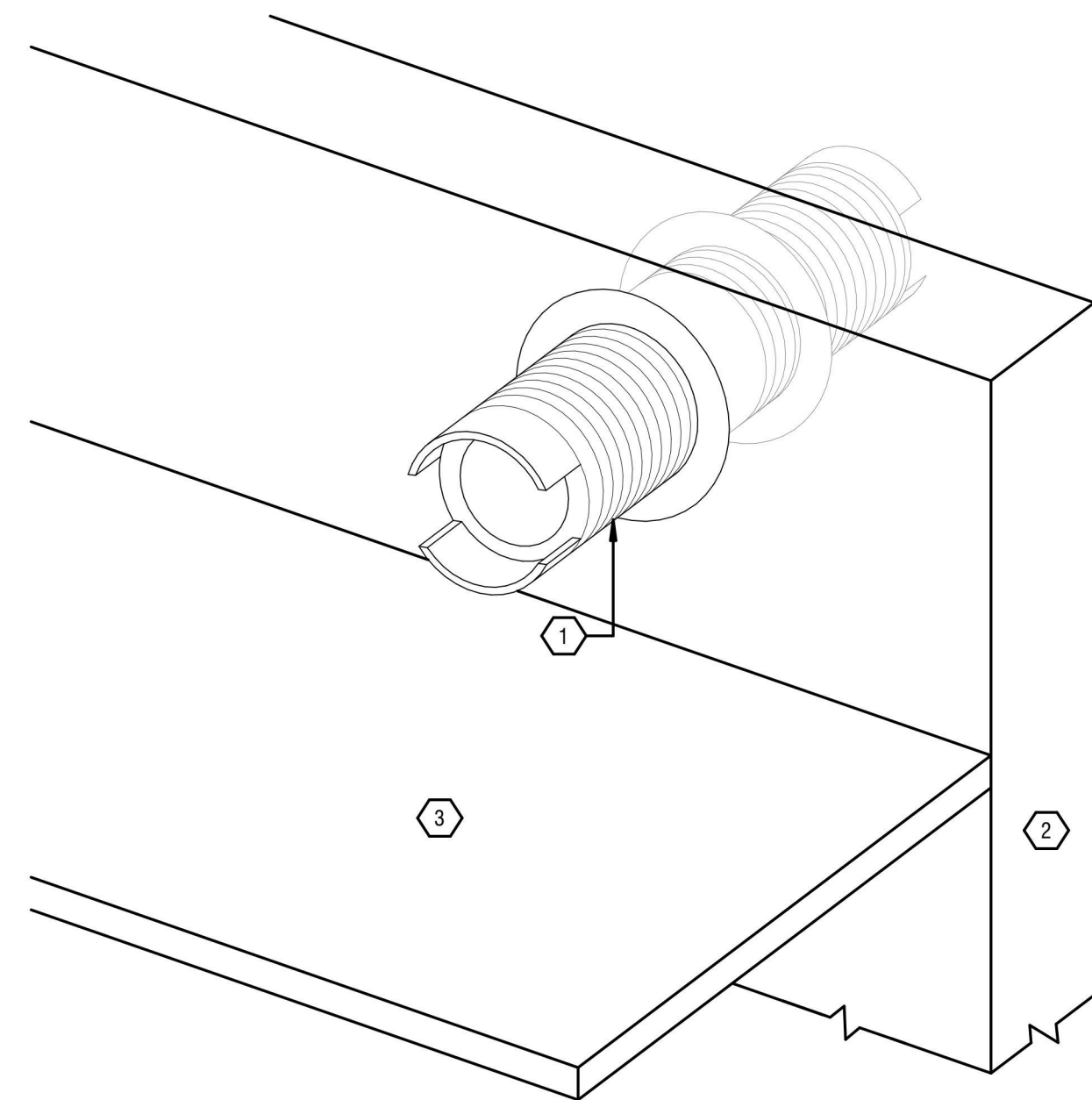
**E500**



**KEYED NOTES**

- GROUNDING ELECTRODE CONDUCTOR. PROVIDE #2/0 INSULATED COPPER CONDUCTOR PER NEC. INSTALL IN RIGID RACEWAY.
- METAL UNDERGROUND WATER PIPE IN DIRECT CONTACT WITH EARTH FOR 10 FEET OR MORE.
- BUILDING STRUCTURAL STEEL.
- GROUNDING ELECTRODE GROUND GRID.
- MAIN BONDING CONDUCTOR. PROVIDE #2/0 INSULATED COPPER CONDUCTOR.
- BOND GROUND BUS TO EQUIPMENT ENCLOSURE WITH BARE COPPER BONDING JUMPER.
- TO TELECOMMUNICATIONS GROUND BAR. #2/0 AWG.

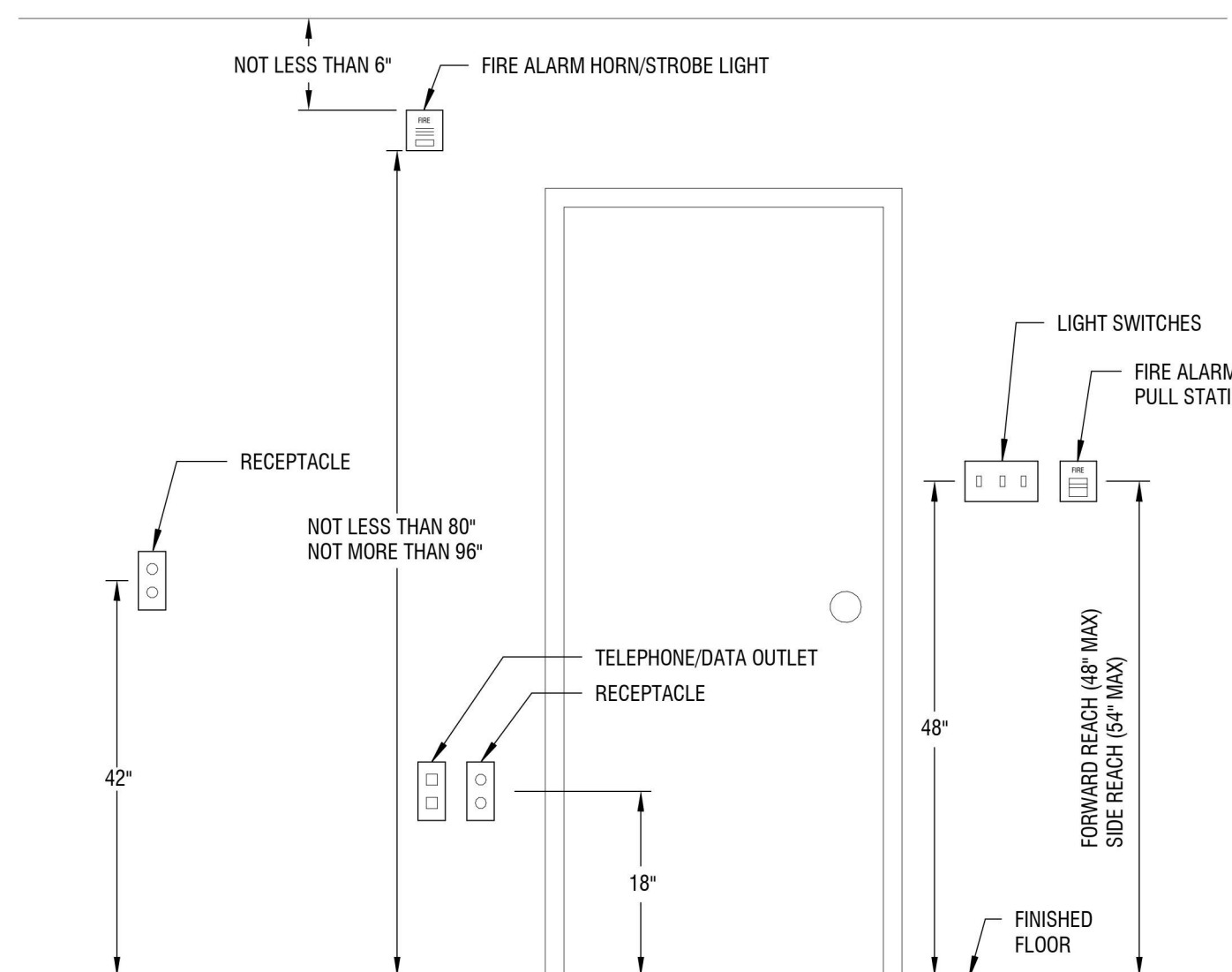
**1 SERVICE ENTRANCE GROUNDING**  
E500 NOT TO SCALE



**KEYED NOTES**

- PROVIDE 4" PREMANUFACTURED FIRE-RATED ASSEMBLY, OR QUANTITIES PER SPECIFICATIONS, AT ALL FIRE-RATED WALLS FOR PASSING CABLING ABOVE ACCESSIBLE CEILING OR THROUGH SLAB PENETRATIONS.
- FIRE-RATED WALL. CONTINUES TO DECK ABOVE. REFER TO ARCHITECTURAL DRAWINGS FOR LOCATIONS.
- ACCESSIBLE CEILING.

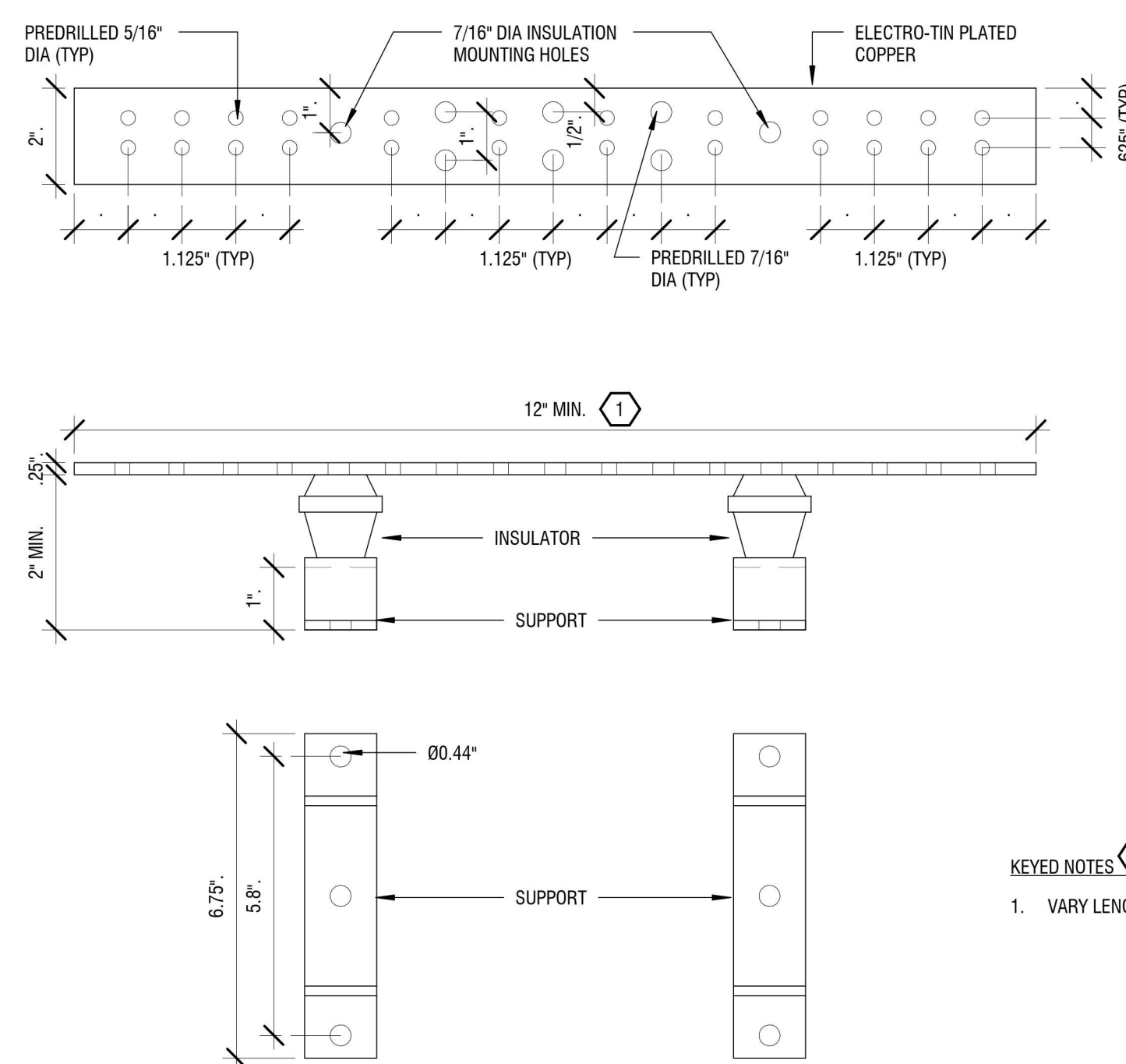
**2 FIRESTOP CIRCULAR SLEEVE**  
E500 NOT TO SCALE



**NOTES:**

- THIS DETAIL INDICATES C FOR SWITCHES AND RECEPTACLES HOWEVER THIS SAME PRINCIPLE SHALL BE FOR GROUP MOUNTED ELECTRICAL DEVICES.
- THIS ELEVATION IS A GENERAL ARRANGEMENT OF DEVICES. ARCHITECTURAL PLANS TAKE PRECEDENCE FOR EXACT LOCATIONS.

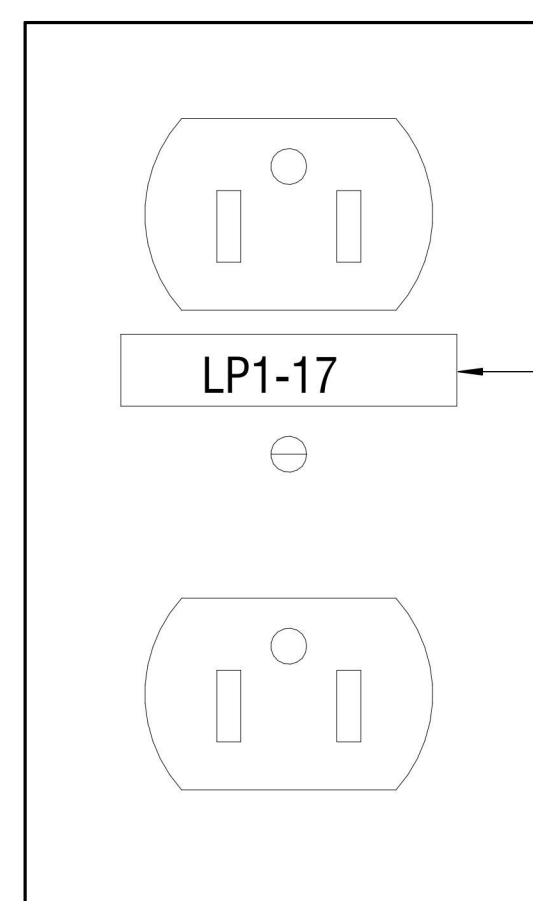
**5 TYPICAL MOUNTING HEIGHT DETAIL**  
E500 NOT TO SCALE



**KEYED NOTES**

- VARY LENGTH TO MEET APPLICATION REQUIREMENTS OF LISTED COMPRESSIONS TWO-HOLE LUGS.

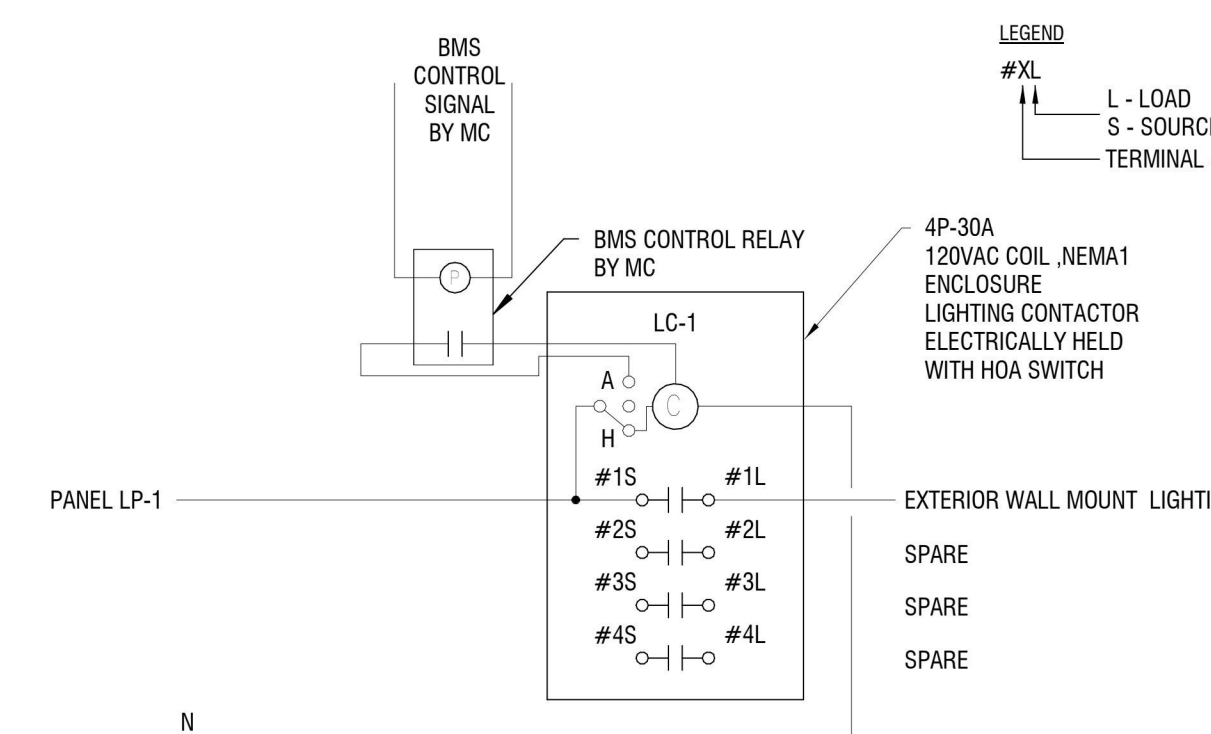
**6 TELECOMMUNICATIONS GROUNDING BUSBAR (TGB)**  
E500 NOT TO SCALE



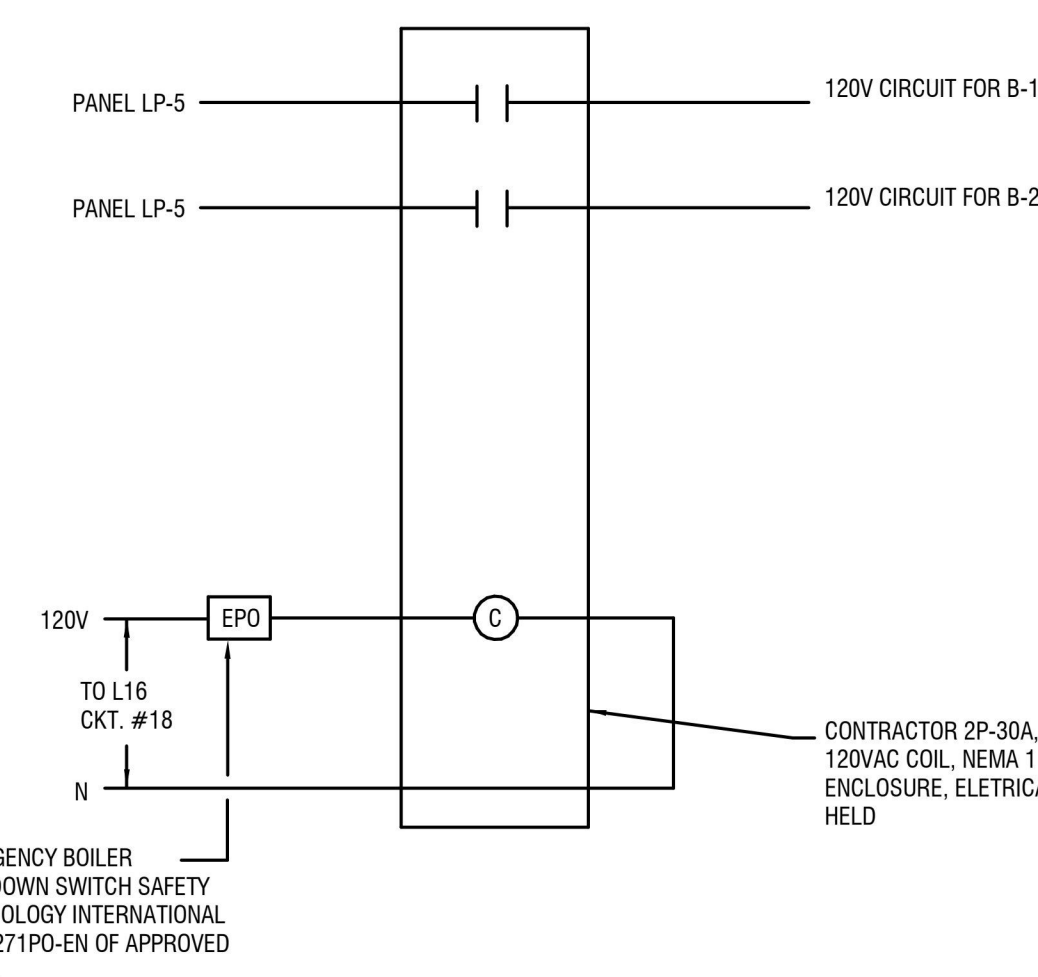
BLACK LABEL STRIP WITH WHITE LETTERING. ADHERE TO BACK SIDE OF COVER PLATE USING CONTACT CEMENT. FACTORY ADHESIVE SHALL NOT BE ACCEPTABLE. PROVIDE SPECIFIC CIRCUIT INFORMATION.

LP1-17  
BRANCH CIRCUIT NUMBER  
LP1-17  
PANEL

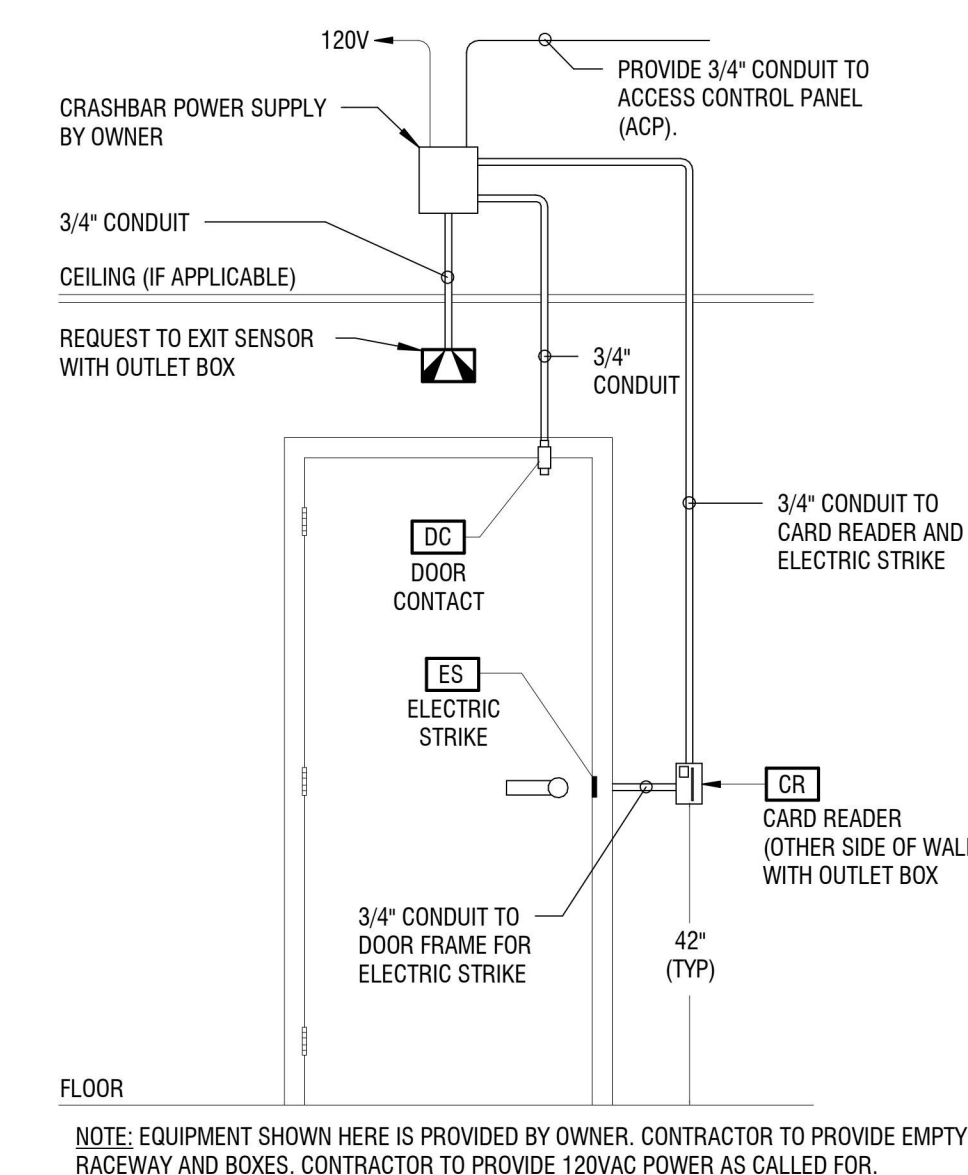
**3 TYPICAL NORMAL POWER RECEPTACLE IDENTIFICATION**  
E500 NOT TO SCALE



**4 SITE LIGHTING CONTACTOR SCHEMATIC**  
E500 NOT TO SCALE



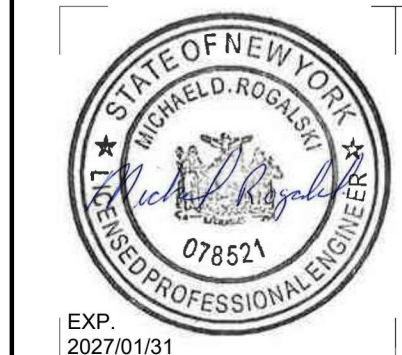
**7 BOILER SHUTOFF DIAGRAM**  
E500 NOT TO SCALE



NOTE: EQUIPMENT SHOWN HERE IS PROVIDED BY OWNER. CONTRACTOR TO PROVIDE EMPTY RACEWAY AND BOXES. CONTRACTOR TO PROVIDE 120VAC POWER AS CALLED FOR.

TYPICAL DOOR ACCESS CONTROL - SINGLE DOOR ELECTRIC STRIKE

**8 DOOR ACCESS CONTROL (TYP)**  
E500 NOT TO SCALE



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It is a violation of New York Education Law Art. 145 Sec. 7209 & Art. 147 Sec. 7307, for any person, unless acting under the direction of a licensed architect, professional engineer, or land surveyor, to alter an item in any way. If an item bearing the seal of an architect, engineer, or land surveyor is altered, the altering architect, engineer, or land surveyor shall affix to the item their seal and notation "altered by" followed by their signature and date of such alteration, and a specific description of the alteration.

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EDA PROJECT No. 01-01-15369 HUD PROJECT No. B-23-CP-NY-1083



ESD PROJECT No. 135,035

**FIRST CONGREGATIONAL CHURCH REHABILITATION**  
822 CLEVELAND AVE, NIAGARA FALLS, NY 14305

NO.	DATE	DESCRIPTION
Revisions		

PROJECT NUMBER: 2221723

DRAWN BY: BJC

REVIEWED BY: MDR

ISSUED FOR: BID

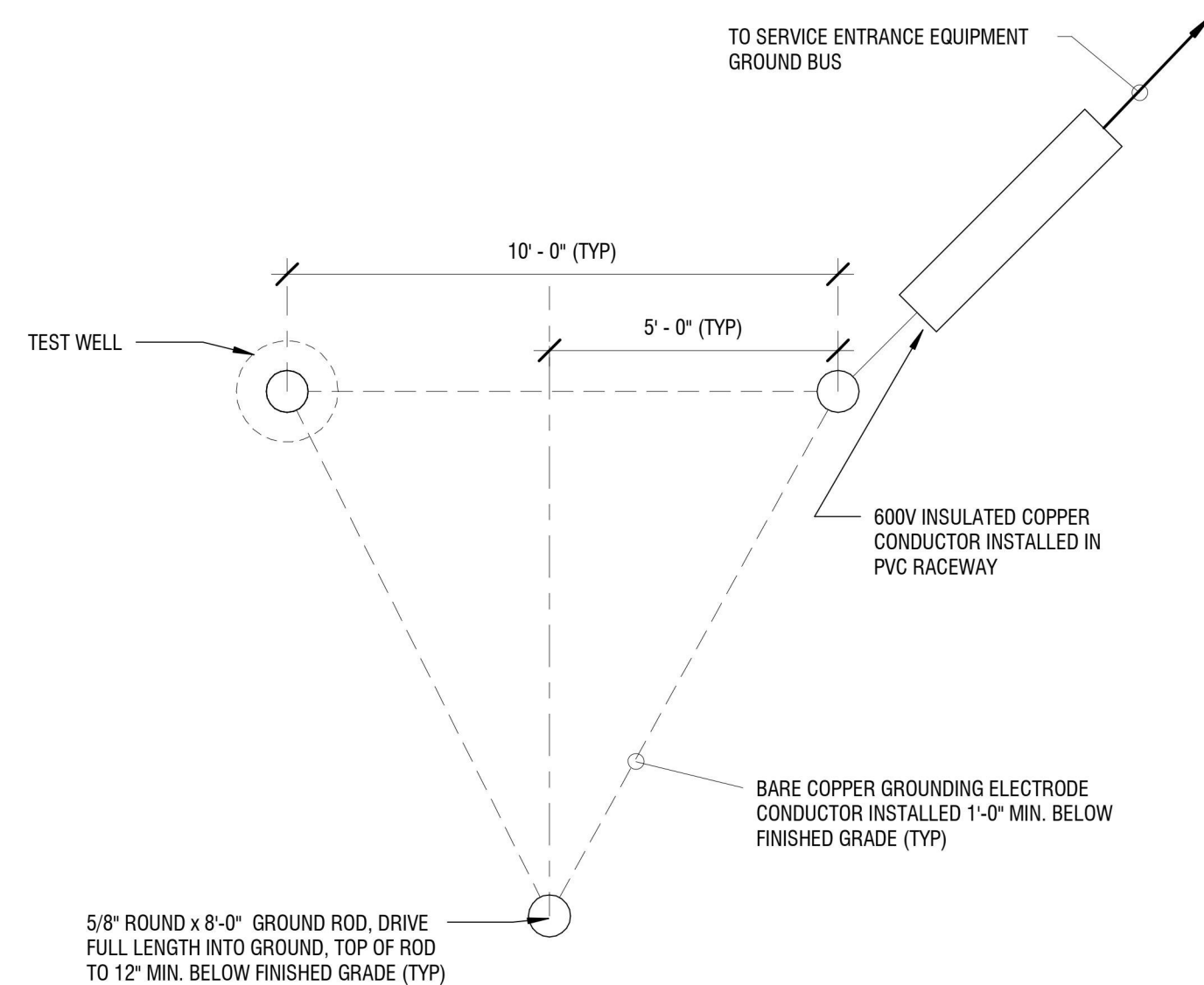
DATE: APRIL 11, 2024

DRAWING NAME:

**ELECTRICAL DETAILS**

DRAWING NUMBER:

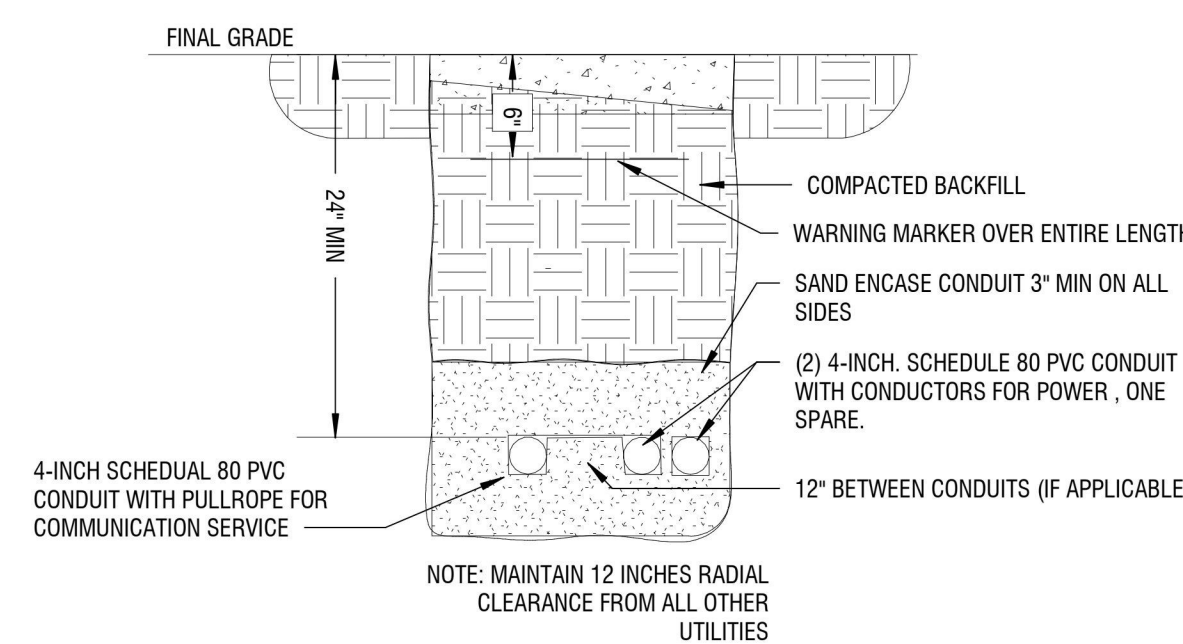
**E501**



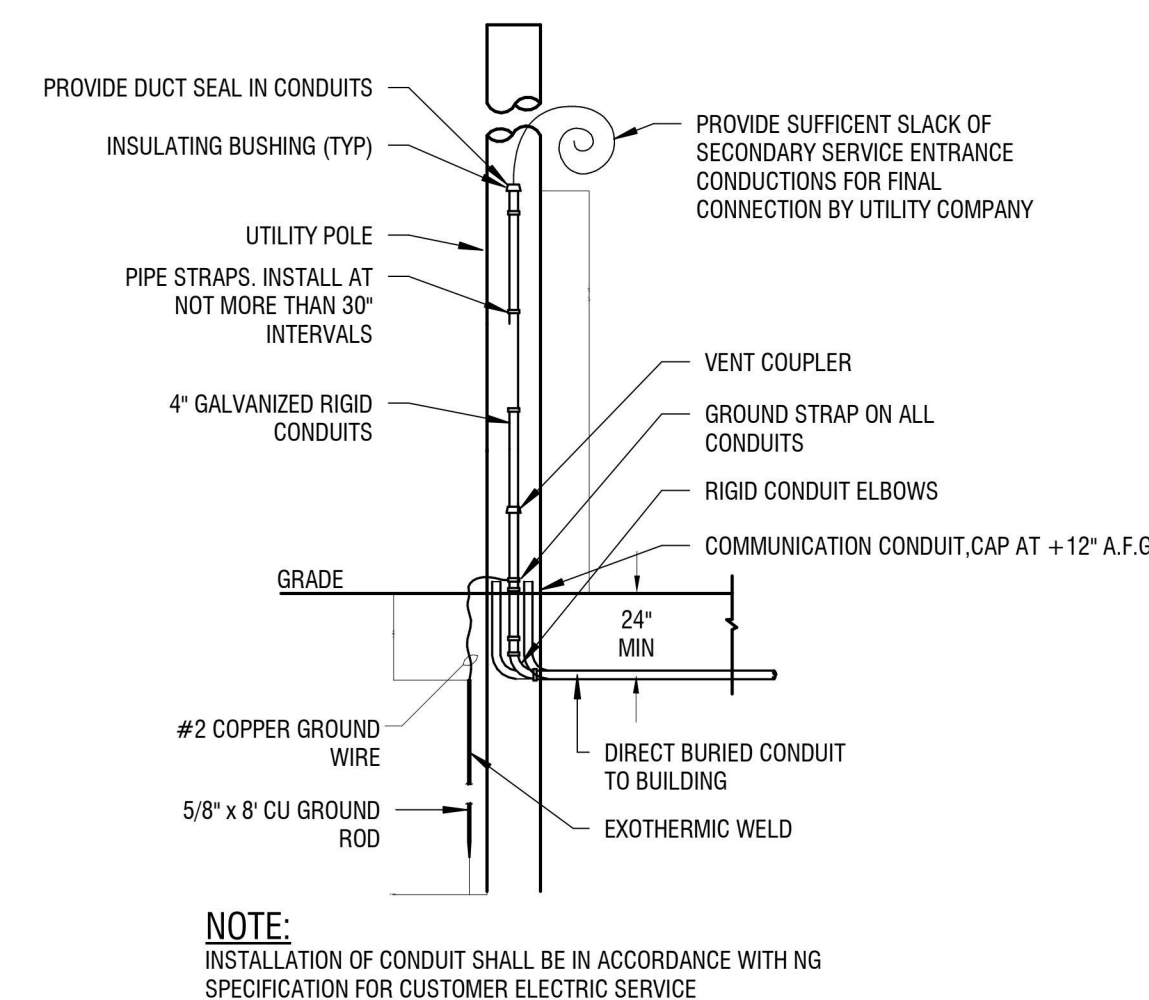
**GENERAL NOTES:**

- AT POINT OF ENTRANCE TO FACILITY, PROVIDE SOLDER BLOCK IN GROUNDING ELECTRODE CONDUCTOR. SEAL CONDUIT TO CONDUCTOR 100% WATERPROOF.
- SIZE GROUNDING ELECTRODE CONDUCTOR PER NEC.

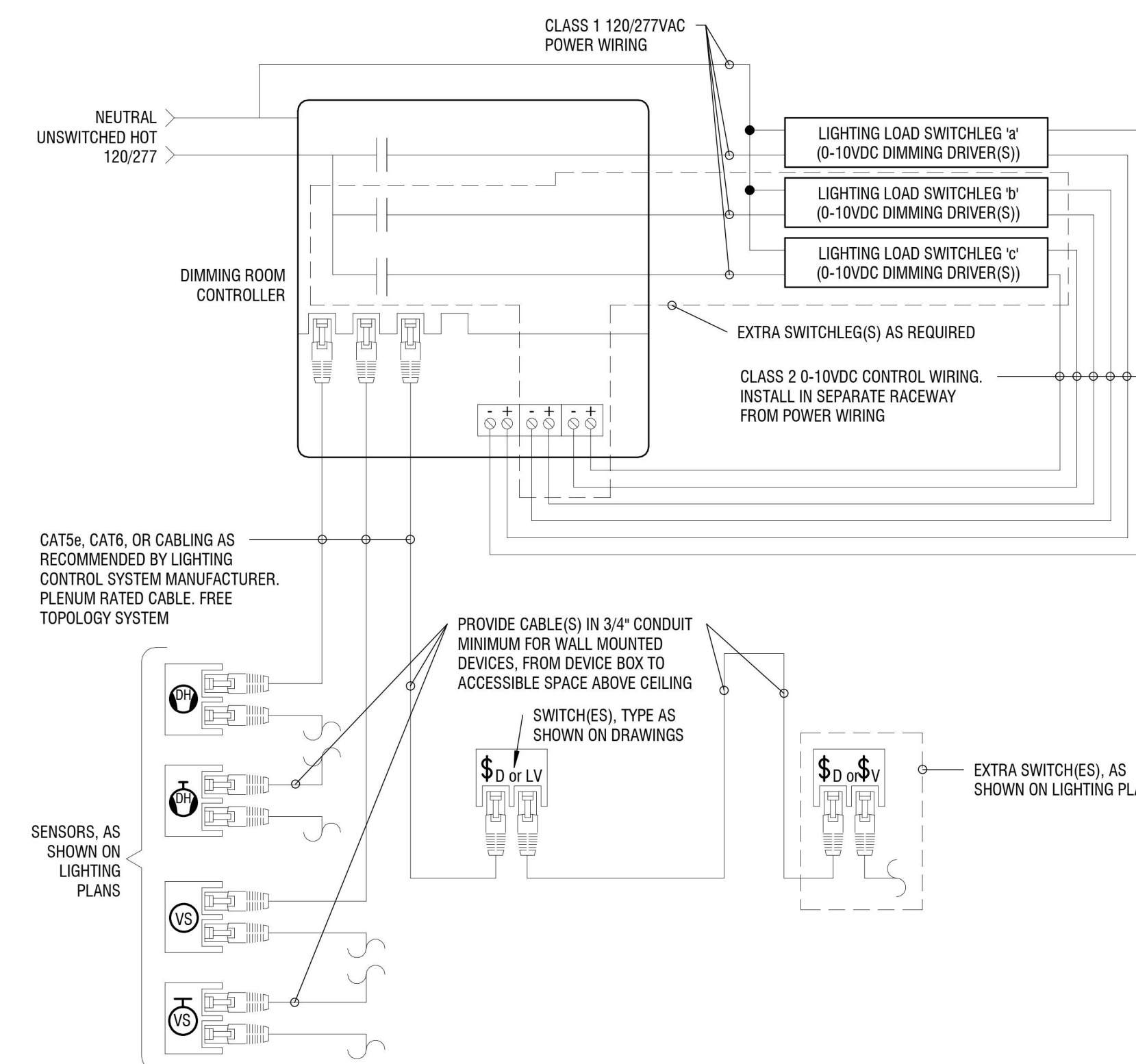
**1 MAIN GROUNDING ELECTRODE GROUNDING GRID**  
E501 NOT TO SCALE



**2 DIRECT BURY CONDUIT TRENCH DETAIL**  
E501 NOT TO SCALE



**3 UTILITY POLE DETAIL**  
E501 NOT TO SCALE



**CONTROL NARRATIVE:**

- SYSTEM SHALL BE MANUAL-ON CONTROL. VACANCY SENSOR SHALL TURN LIGHTING OFF AFTER A TIME PERIOD OF VACANCY DETERMINED BY OWNER (UP TO A MAXIMUM OF 30 MINUTES).
- DAYLIGHT HARVESTING SYSTEMS: SYSTEM SHALL BE PROGRAMMED WITH A MAXIMUM FOOTCANDLE SET POINT (AS CALLED OUT ON LIGHTING PLANS) AND SHALL AUTOMATICALLY DIM DOWN TO SETPOINT WHENEVER LOAD IS 'ON'. DIMMER SHALL ALLOW LOAD TO GO LOWER THAN THIS SETPOINT BASED ON SWITCH INPUT.
- DIMMER SWITCH/LOW VOLTAGE SWITCH SHALL TURN LIGHTING 'ON'/OFF WITH A TAP OF THE SWITCH. DIMMER SWITCH SHALL INCREASE LIGHT LEVEL BY HOLDING UPPER BUTTON UP TO MAXIMUM DRIVER LIGHT OUTPUT LEVEL. FOOTCANDLE SET POINT (DAYLIGHT HARVESTING SYSTEM). DIMMER SWITCH SHALL DECREASE LIGHT LEVEL BY HOLDING LOWER BUTTON DOWN TO MINIMUM DRIVER LIGHT OUTPUT LEVEL.
- PROGRAM SWITCHES TO CONTROL SPECIFIC SWITCHLEGS (IF APPLICABLE). SWITCHES SHALL ALLOW MULTIPLE LOCATION FUNCTIONALITY (IE. 3-WAY, 4-WAY, OR MORE AS SHOWN).

**GENERAL NOTES:**

- PROVIDE BACKBOX FOR ALL DEVICES
- EQUIPMENT GROUND CONDUCTOR NOT SHOWN ON SCHEMATIC, BUT IS REQUIRED.
- DIAGRAM IS SCHEMATIC IN NATURE, REFER TO MANUFACTURERS INSTRUCTIONS FOR SPECIFIC REQUIREMENTS

**DESIGN BASE:**

ROOM CONTROLLER (FOR DIMMING/DAYLIGHT HARVESTING APPLICATIONS): WATTSTOPPER LMRC-211/212/213 SERIES  
ROOM CONTROLLER (FOR NON-DIMMING OR DAYLIGHT SENSING APPLICATIONS): WATTSTOPPER LMRC-101/102 SERIES  
OCCUPANCY/VACANCY SENSOR: WATTSTOPPER LMDX-100 SERIES  
LOW VOLTAGE DIMMER PADDLE CONTROL: WATTSTOPPER LMDM-101 SERIES  
LOW VOLTAGE MOMENTARY SWITCH CONTROL: WATTSTOPPER LMSW-101/102/103/104/108 SERIES  
LOW VOLTAGE MOMENTARY SWITCH (WITH SCENES & DIMMER PADDLE): WATTSTOPPER LMSW-105 SERIES  
PLUS LOAD CONTROLLER: WATTSTOPPER LMP-101 SERIES  
DAYLIGHT HARVEST/SENSING SENSOR (SINGLE ZONE APPLICATIONS): WATTSTOPPER LMLS-400 SERIES  
DAYLIGHT HARVEST/SENSING SENSOR (MULTI-ZONE APPLICATIONS): WATTSTOPPER LMLS-500 SERIES  
NETWORK BRIDGE: WATTSTOPPER LMBC-300 SERIES

**4 TYPICAL DIMMING/DAYLIGHT HARVESTING CONTROL WIRING SCHEMATIC**  
E501 NOT TO SCALE

## LUMINAIRE SCHEDULE

### GENERAL NOTES:

- A. REFERENCED PRODUCTS LISTED OF MANUFACTURER'S SERIES &/OR MODEL NUMBERS ARE LISTED TO GIVE A REPRESENTATION OF ACCEPTABLE BUILD QUALITY AND GENERALLY CONFORM TO THE LUMINAIRE DESIGN INTENT - LISTED MANUFACTURER'S STANDARD PRODUCTS MAY REQUIRE CUSTOM MODIFICATIONS TO MEET THE REQUIREMENTS SPECIFIED IN THE LUMINAIRE SCHEDULE & IN THE SPECIFICATIONS. LISTED SIZES, LAMPING, LUMEN OUTPUT, EFFICACY, INPUT POWER, OPTIONS, & TYPES OF LUMINAIRES MAY NOT BE AVAILABLE FROM ANY GIVEN MANUFACTURER OR SERIES LISTED. **IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE PRODUCTS THAT MEET ALL LISTED REQUIREMENTS IN THE LUMINAIRE SCHEDULE AND SPECIFICATIONS.** EQUIVALENT PRODUCTS BY OTHER MANUFACTURERS MAY BE CONSIDERED, PRIOR TO BID, AND APPROVED AT THE DISCRETION OF THE DESIGN ENGINEER.
- B. DETERMINE SPECIFIC LUMINAIRE PART NUMBERS BASED ON THE REFERENCED PRODUCT SERIES, WRITTEN DESCRIPTIONS, & SPECIFICATIONS.
- C. ALERT ARCHITECT/ENGINEER TO DISCREPANCIES PRIOR TO BID.
- D. UNLESS NOTED OTHERWISE, LED DRIVERS SHALL HAVE A POWER FACTOR OF MORE THAN 0.9 AND A TOTAL HARMONIC DISTORTION OF LESS THAN 20%.
- E. UNLESS NOTED OTHERWISE, LED LUMINAIRES SHALL HAVE 3-STEP MACADAM ELLIPSE/STANDARD DEVIATION COLOR MATCHING (SDCM) OR LESS.
- F. LUMINAIRE SHALL HAVE A WARRANTY OF NOT LESS THAN 5 YEARS.
- G. WHERE A LUMINAIRE IS CALLED OUT TO BE DLC QUALIFIED OR DLC PREMIUM QUALIFIED, PROVIDE DOCUMENTATION OF SPECIFIC MODEL NUMBER FOR DLC LISTING IN PRODUCT DATA SUBMITTAL. CONTRACTOR SHALL BEAR FINANCIAL RESPONSIBILITY OF REJECTED UTILITY REBATES DUE TO INSTALLING LUMINAIRES THAT ARE NOT DLC QUALIFIED AS CALLED OUT IN THIS SCHEDULE.

### ABBREVIATIONS:

AFG	ABOVE FINISHED GRADE	QTY	QUANTITY
BF	BALLAST FACTOR	REFN	REFERENCE
CCT	CORRELATED COLOR TEMPERATURE	SS	STAINLESS STEEL
DLC	DESIGN LIGHTS CONSORTIUM	TBS	TO BE SELECTED BY ARCH
DI	DIRECT / INDIRECT	UNIV	UNIVERSAL 120-277VAC
LG	LAY-IN GRID	HR	HOUR
NT	NARROW TEE GRID		
PAF	PAINT AFTER FABRICATION		
PPC	POLYESTER POWDER COAT		
FRISM	PRISMATIC		

### NOTES:

1. X = NOMINAL LENGTH IN CEILING.
2. LUMINAIRE PROPERTIES PER LUMINAIRE.
3. PROVIDE FULL SIZE SCALED SHOP DRAWINGS FOR ENGINEER APPROVAL.
4. 12" LENGTHS SHOWN ON DRAWINGS AS DESIGN BASIS. PROVIDE COMBINATION OF STANDARD LENGTHS OFFERED BY MANUFACTURER DEPENDING ON SPECIFIC PRODUCT FAMILY CHOSEN TO PROVIDE FOR NOMINAL CABINET LENGTH.
5. PROVIDE WITH INTEGRAL PHOTOCELL.

TYPE	DESCRIPTION	INSTALLATION METHOD	MAX DEPTH	LAMP/LIGHT SOURCE		BALLAST/DRIVER		MAX INPUT WATTS	SHIELDING / OPTICS	FEATURES / OPTIONS	REFERENCED PRODUCTS	NOTES
				SPEC REFN	QTY	SPEC REFN	VOLT					
LP1	3'X4' DIRECT/INDIRECT PENDANT LED LUMINAIRE	AIRCRAFT CABLE SUSPEND PER PLANS	-	LED 4000K ≥ 80 CRI DN:1000 lm/ft UP: 200 lm/ft ≥ 94 lm/W L70 ≥ 50K HR	-	LED DRIVER 0-10V DIMMING DRIVER (10-100% LIGHT OUTPUT RANGE)	UNIV	55	DN: STANDARD WHITE DIFFUSE UP: BATHING OPTIC	NOMINAL 3" WIDE X 4.5" HIGH X 4' LONG SILVER HOUSING	NEORAY DEFINE 3 SERIES OR APPROVED EQUAL FROM PEERLESS AND LEDALITE	-
LS1	4' LINEAR WRAP	SURFACE OR PENDANT AS NOTED	-	LED 4000K ≥ 80 CRI MIN 4500 lm ≥ 120 lm/W L82 ≥ 60K HR	-	LED DRIVER	UNIV	38	RIBBED POLYCARBONATE LENS	STEEL HOUSING	METALUX - NWS WRAP SERIES OR APPROVED EQUAL FROM LITHONIA, PHILIPS LIGHTING.	-
LS1A	4' LINEAR WRAP	SURFACE OR PENDANT AS NOTED	-	LED 4000K ≥ 80 CRI MIN 4500 lm ≥ 120 lm/W L82 ≥ 60K HR	-	LED DRIVER	UNIV	38	RIBBED POLYCARBONATE LENS	PROVIDE WITH INTEGRAL MOTION SENSORS	METALUX - WP LD WRAP SERIES OR APPROVED EQUAL FROM LITHONIA, PHILIPS LIGHTING.	-
LS2	2' LINEAR WRAP	SURFACE OR PENDANT AS NOTED	-	LED 4000K ≥ 80 CRI MIN 4500 lm ≥ 120 lm/W L82 ≥ 60K HR	-	LED DRIVER	UNIV	38	RIBBED POLYCARBONATE LENS	STEEL HOUSING	METALUX - WP LD WRAP SERIES OR APPROVED EQUAL FROM LITHONIA, PHILIPS LIGHTING.	-
LS3	2'X2' VOLUMETRIC SURFACE LED LUMINAIRE	SURFACE	3"	LED 4000K ≥ 80 CRI MIN 3900 lm ≥ 136 lm/W L85 ≥ 50K HR	-	LED DRIVER 0-10V DIMMING DRIVER (10-100% LIGHT OUTPUT RANGE)	UNIV	29	SINGLE OPAL ACRYLIC SHIELDS DOWN LENGTH AROUND LED ARRAY RIBBED FROSTED LENS	SURFACE MOUNT STEEL HOUSING PAF WHITE PPC FINISH	LITHONIA 2BLT SERIES OR APPROVED EQUAL FROM COOPER LIGHTING, PHILIPS LIGHTING.	-
LT1	2'X2' VOLUMETRIC LED TROFFER	RECESSED IN LG	4"	LED 4000K ≥ 80 CRI MIN 3900 lm ≥ 136 lm/W L85 ≥ 50K HR	-	LED DRIVER 0-10V DIMMING DRIVER (10-100% LIGHT OUTPUT RANGE)	UNIV	29	SINGLE OPAL ACRYLIC SHIELDS DOWN LENGTH AROUND LED ARRAY RIBBED FROSTED LENS	RECESSED, SHEET STEEL HOUSING WHITE PPC FINISH PAF FURNISHED WITH FLANGE FOR GYP CEILING	METALUX - CRUIZE ST SERIES PHILIPS - EVOGRID SERIES LITHONIA - ZVTL SERIES	-

TYPE	DESCRIPTION	INSTALLATION METHOD	MAX DEPTH	LAMP/LIGHT SOURCE		BALLAST/DRIVER		MAX INPUT WATTS	SHIELDING / OPTICS	FEATURES / OPTIONS	REFERENCED PRODUCTS	NOTES
				SPEC REFN	QTY	SPEC REFN	VOLT					
LT2	1'X4' VOLUMETRIC LED TROFFER	RECESSED IN GYP	4"	LED 4000K ≥ 80 CRI MIN 3900 lm ≥ 136 lm/W L85 ≥ 50K HR	-	LED DRIVER 0-10V DIMMING DRIVER (10-100% LIGHT OUTPUT RANGE)	UNIV	28	SINGLE OPAL ACRYLIC SHIELDS DOWN LENGTH AROUND LED ARRAY RIBBED FROSTED LENS	RECESSED, SHEET STEEL HOUSING WHITE PPC FINISH PAF FURNISHED WITH FLANGE FOR GYP CEILING	METALUX - CRUIZE ST SERIES PHILIPS - EVOGRID SERIES LITHONIA - ZVTL SERIES	-
LW1	EXTERIOR WEDGE SHAPED SMALL WALL PACK LUMINAIRE	SURFACE WALL, 9.5'	-	LED 4000K ≥ 80 CRI MIN 1950 lm ≥ 130 lm/W L70 ≥ 50K HR	-	LED DRIVER -20 DEGREES C OPERATING TEMP OR BETTER	UNIV	15	TYPE 4 FORWARD THROW DISTRIBUTION NON-PXELATED	DIE-CAST ALUMINUM HOUSING UL WET LOCATION, IP66, -4°F STARTUP TEMP OR BETTER BLACK PPC FINISH WEDGE SHAPE, NO MORE THAN 9"W X 8"H X 6"D DUAL SWITCHING OPTION (2 DRIVERS/2 LIGHT SOURCES) SURFACE MOUNT J-BOX FOR CONDUIT ENTRY ANY SIDE. FINISH TO MATCH LUMINAIRE	LITHONIA - WDG1 LED SERIES OR APPROVED EQUAL FROM PHILIPS GARDCO 101 SERIES, COOPER INVUE VVM SERIES	-
X1	ILLUMINATED "EXIT" SIGN - AC/DC	CEILING/WALL ABOVE OR BESIDE DOOR, PENDANT, AS SHOWN	-	LED	-	-	UNIV	≤ 5W PER FACE	-	WHITE THERMOPLASTIC HOUSING RED LETTERING NICKEL CADMIUM BATTERY BACKUP RATED 90MINUTES MIN UL 924 COMPLIANT SINGLE/DOUBLE FACE AS SHOWN SELF DIAGNOSTIC TYPE	SURE-LITES - LPX SERIES LITHONIA - LQM SERIES EMERG-LITE ELX SERIES	-
EM1	INTERIOR EMERGENCY BATTERY LIGHT	WALL	-	3.3W LED 320lm (EACH) 600lm (TOTAL)	2	-	UNIV	6.6W	DUAL HEAD, ADJUSTABLE	WHITE THERMOPLASTIC HOUSING NOM 14"W X 6"H X 4"D NICKEL CADMIUM OR LITHIUM IRON PHOSPHATE BATTERY RATED 90 MINUTE MINIMUM UL 924 COMPLIANT SELF DIAGNOSTIC TYPE, HIGH OUTPUT CAPACITY.	LITHONIA - ELMAL SERIES OR APPROVED EQUAL FROM SURE-LITES EMERG-LITE	-
EM2	EXTERIOR EMERGENCY REMOTE POWERED LIGHT	WALL 8' AFG	-	1.2W LED 40lm (EACH) 220lm (TOTAL)	2	-	UNIV	6-12 VDC	DUAL HEAD, ADJUSTABLE	BLACK DIE-CAST ALUMINUM HOUSING NOM 6"W X 4"H X 3"D UL 924 COMPLIANT UL WET LOCATION LISTED	LITHONIA ELMRW SERIES OR APPROVED EQUAL FROM SURE-LITES, EMERG-LITE	-
X2	CEILING ILLUMINATION EXIT SIGNS AND EMERGENCY BATTERY LIGHT	CEILING/WALL ABOVE OR BESIDE DOOR, PENDANT, AS SHOWN	-	3.3W LED 320lm (EACH) 600lm (TOTAL)	2	-	UNIV	6.6W	DUAL HEAD, ADJUSTABLE	WHITE THERMOPLASTIC HOUSING RED LETTERING NICKEL CADMIUM BATTERY BACKUP RATED 90MINUTES MIN UL 924 COMPLIANT SINGLE FACE AS SHOWN SELF DIAGNOSTIC TYPE	SURE-LITES-LPX6 SERIES LITHONIA-LHQM OR APPROVED EQUAL FROM EMERG-LITE	-

### EQUIPMENT CONNECTION SCHEDULE NOTES:

1. PROVIDE FIRE ALARM FAN SHUTDOWN RELAY.
2. CP-1 IP-1 WIRED TOGETHER TO CIRCUIT LP-2/11.
3. COORDINATE FUSE SIZE WITH SUBMITTED EQUIPMENT HP/AMPS.
4. INSTALL AND WIRE MOTOR CONTROLLER, FURNISH WITH EQUIPMENT.

## EQUIPMENT CONNECTION SCHEDULE

DESIGNATION	LOCATION	DESCRIPTION	LOAD	VOLTAGE	PHASE	POWER SOURCE	CIRCUIT NUMBER	PROTECTIVE DEVICE RATING (A)	NUMBER OF POLES	CONDUCTORS & CONDUIT	CONTROLLER TYPE	CONTROLLER SIZE	CONTROLLER ACCESSORIES	DISCONNECT	NOTES
ACCU-1	ROOF	AIR COOLED CONDENSING UNIT	54.4 MCA	208 V	3	MDP	19,21,23	60	3	3#6, 1#10GND IN 1" C				60A/3P, NON-FUSED, NEMA 3R	
B-1	MECH 100	BOILER	4.5 MCA	120 V	1	LP-5	1	15	1	2#12, 1#12GND IN 3/4" C				SPST TOGGLE SWITCH	
B-2	MECH 100	BOILER	4.5 MCA	120 V	1	LP-5	2	15	1	2#12, 1#12GND IN 3/4" C				SPST TOGGLE SWITCH	
BMS GATEWAY				120 V	0	LP-5	17	0	1						
BP-1	MECH 100	BOILER PUMP	1/2 HP	120 V	1	LP-5	3	20	1	2#12, 1#12GND IN 3/4" C				SPST TOGGLE SWITCH	
BP-2	MECH 100	BOILER PUMP	1/2 HP	120 V	1	LP-5	4	20	1	2#12, 1#12GND IN 3/4" C				SPST TOGGLE SWITCH	NOTE 2
CP-1	STORAGE 117	CIRCULATION PUMP	45 W	120 V	1	LP-2	11	20	1	2#12, 1#12GND IN 3/4" C				SPST TOGGLE SWITCH	
CUH-1	STAIR B STB-1	CABINET UNIT HEATER	FRAC.	120 V	1	LP-1	8	15	1	2#12, 1#12GND IN 3/4" C	PROVIDED WITH EQUIPMENT				
DP-1	MOTHER'S ROOM 113	DRAIN PUMP	1.7A	120 V	1	LP-2	31	15	1	2#12, 1#12GND IN 3/4" C	PROVIDED WITH EQUIPMENT				
DWH-1	MECH 100	DOMESTIC WATER HEATER	-	120 V	1	LP-5	10	15	1	2#12, 1#12GND IN 3/4" C				5-20R RECEPTACLE	
EWH-1	MOTHER'S ROOM 113	ELEC. WATER HEATER	4000W	208 V	1	LP-2	33,35	30	2	2#10, 1#10GND IN 3/4" C				SPST TOGGLE SWITCH	
HD-1A	MENS 103	ELEC. HAND DRYER	1500W	120 V	1	LP-1	22	20	1	2#12, 1#12GND IN 3/4" C				30A/2P, 208V TOGGLE SWITCH	
HD-1B	MENS 103	ELEC. HAND DRYER	1500W	120 V	1	LP-1	24	20	1	2#12, 1#12GND IN 3/4" C				15A/2P, 208V TOGGLE SWITCH	
HD-1C	WOMENS 104	ELEC. HAND DRYER	1500W	120 V	1	LP-1	26	20	1	2#12, 1#12GND IN 3/4" C				15A/2P, 208V TOGGLE SWITCH	
HD-1D	WOMENS 104	ELEC. HAND DRYER	1500W	120 V	1	LP-1	28	20	1	2#12, 1#12GND IN 3/4" C				15A/2P, 208V TOGGLE SWITCH	
HD-1E	TOILET 202	ELEC. HAND DRYER	1500W	120 V	1	LP-4	25	20	1	2#12, 1#12GND IN 3/4" C				15A/2P, 208V TOGGLE SWITCH	
HP-1	CORRIDOR C100	HEAT PUMP	0.16 A	208 V	1	LP-1	15,17	15	2	2#12, 1#12GND IN 3/4" C				15A/2P, 208V TOGGLE SWITCH	
HP-2	LOBBY/WAITING 105	HEAT PUMP	0.20 A	208 V	1	LP-1	15,17	15	2	2#12, 1#12GND IN 3/4" C				15A/2P, 208V TOGGLE SWITCH	
HP-3	BREAKOUT 109	HEAT PUMP	0.20 A	208 V	1	LP-2	17,19	15	2	2#12, 1#12GND IN 3/4" C				15A/2P, 208V TOGGLE SWITCH	
HP-4	BREAKOUT 110	HEAT PUMP	0.25 A	208 V	1	LP-2	17,19	15	2	2#12, 1#12GND IN 3/4" C				15A/2P, 208V TOGGLE SWITCH	
HP-5	CLASSROOM 119	HEAT PUMP	0.31 A	208 V	1	LP-2	16,18	15	2	2#12, 1#12GND IN 3/4" C				15A/2P, 208V TOGGLE SWITCH	
HP-6	CLASSROOM 119	HEAT PUMP	0.31 A	208 V	1	LP-2	16,18	15	2	2#12, 1#12GND IN 3/4" C				15A/2P, 208V TOGGLE SWITCH	
HP-7	CLASSROOM 118	HEAT PUMP	0.44 A	208 V	1	LP-2	16,18	15	2	2#12, 1#12GND IN 3/4" C				15A/2P, 208V TOGGLE SWITCH	
HP-8	COMPUTER/E. SPORTS 106	HEAT PUMP	0.50 A	208 V	1	LP-1	16,18	15	2	2#12, 1#12GND IN 3/4" C				15A/2P, 208V TOGGLE SWITCH	
HP-9	BREAKOUT 111	HEAT PUMP	0.44 A	208 V	1	LP-2	17,19	15	2	2#12, 1#12GND IN 3/4" C				15A/2P, 208V TOGGLE SWITCH	
HP-10	PASTOR'S OFFICE 213	HEAT PUMP	0.16 A	208 V	1	LP-4	7,9	15	2	2#12, 1#12GND IN 3/4" C				15A/2P, 208V TOGGLE SWITCH	
HP-11	OFFICE 209	HEAT PUMP	0.16 A	208 V	1	LP-4	7,9	15	2	2#12, 1#12GND IN 3/4" C				15A/2P, 208V TOGGLE SWITCH	
HP-11	OFFICE 209	HEAT PUMP	0.16 A	208 V	1	LP-4	7,9	15	2	2#12, 1#12GND IN 3/4" C				15A/2P, 208V TOGGLE SWITCH	
HP-12	OFFICE 208	HEAT PUMP	0.16 A	208 V	1	LP-4	7,9	15	2	2#12, 1#12GND IN 3/4" C				15A/2P, 208V TOGGLE SWITCH	
HP-13	OFFICE 206	HEAT PUMP	0.16 A	208 V	1	LP-4	8,10	15	2	2#12, 1#12GND IN 3/4" C				15A/2P, 208V TOGGLE SWITCH	
HP-14	OFFICE 207	HEAT PUMP	0.16 A	208 V	1	LP-4	8,10	15	2	2#12, 1#12GND IN 3/4" C				15A/2P, 208V TOGGLE SWITCH	
HP-15	WORKSPACE 204	HEAT PUMP	0.16 A	208 V	1	LP-4	8,10	15	2	2#12, 1#12GND IN 3/4" C				15A/2P, 208V TOGGLE SWITCH	
HP-16	CORRIDOR C201	HEAT PUMP	0.16 A	208 V	1	LP-4	8,10	15	2	2#12, 1#12GND IN 3/4" C				15A/2P, 208V TOGGLE SWITCH	
HP-17	ENTRY 200	HEAT PUMP	0.20 A	208 V	1	LP-4	11,13	15	2	2#12, 1#12GND IN 3/4" C				15A/2P, 208V TOGGLE SWITCH	
HP-18	PASTOR'S OFFICE 201	HEAT PUMP	0.20 A	208 V	1	LP-4	11,13	15	2	2#12, 1#12GND IN 3/4" C				15A/2P, 208V TOGGLE SWITCH	
HP-19	CORRIDOR C202	HEAT PUMP	0.16 A	208 V	1	LP-4	7,9	15	2	2#12, 1#12GND IN 3/4" C				15A/2P, 208V TOGGLE SWITCH	
HP-20	IT/DATA 107	HEAT PUMP	0.31 A	208 V	1	LP-1	15,17	15	1	2#12, 1#12GND IN 3/4" C				15A/2P, 208V TOGGLE SWITCH	
HWP-1	MECH 100	HOT WATER PUMP	598 W	208 V	1	LP-5	5,7	15	2	2#12, 1#12GND IN 3/4" C	PROVIDED WITH EQUIPMENT			30A/2P, NON-FUSED	
HWP-2	MECH 100	HOT WATER PUMP	598 W	208 V	1	LP-5	6,8	15	2	2#12, 1#12GND IN 3/4" C	PROVIDED WITH EQUIPMENT			30A/2P, NON-FUSED	
IP-1	STORAGE 117	INJECTION PUMP	45 W	120 V	1	LP-2	11	20	1	2#12, 1#12GND IN 3/4" C	PROVIDED WITH EQUIPMENT			SPST TOGGLE SWITCH	NOTE 2
MAU				120 V	0	LP-5	15	0	1						
MAL-1	ROOF	MAKE-UP AIR UNIT	66.3 MCA	208 V	3	MDP	14,16,18	90	3	3#2, 1#8GND IN 1-1/4" C				100A/3P, NON-FUSED, NEMA 3R	NOTE 1
MCL-1	CORRIDOR 228	MODE CONTROL UNIT	1.6 A	208 V	1	LP-4	11,13	15	2	2#12, 1#12GND IN 3/4" C				15A/2P, 208V TOGGLE SWITCH	
MCL-2	MENS 103	MODE CONTROL UNIT	1.6 A	208 V	1	LP-1	15,17	15	2	2#12, 1#12GND IN 3/4" C				15A/2P, 208V TOGGLE SWITCH	
VPL-1	VPL MACHINE ROOM 120	VERTICAL PLATFORM LIFT		208 V	1	LP-1	10,12	30	2	2#10, 1#10GND IN 3/4" C				30A/2P, NON-FUSED	
VPL-1A	VPL MACHINE ROOM 120	VERTICAL PLATFORM LIFT CONTROL POWER		120 V	1	LP-1	14	20	1	2#12, 1#12GND IN 3/4" C					

**DESIGNATION: LP-1**

LOCATION: ELEC. 101  
 EQUIPMENT TYPE: LIGHTING & APPLIANCE PANELBOARD  
 DISTRIBUTION VOLTAGE: 208Y/120V  
 FULLY RATED AIC: 22,000A  
 # OF PHASES: 3  
 MAINS RATING & TYPE: 225A MLO  
 # OF WIRES: 4  
 BUS RATING: 225 A  
 MOUNTING: SURFACE  
 ENCLOSURE TYPE: NEMA 1  
 MODIFICATIONS:

PANELBOARD SCHEDULE NOTATION: A - PROVIDE AFCI TYPE BREAKER G - PROVIDE GFCI TYPE BREAKER AG - PROVIDE COMBO AFCI/GFCI TYPE BREAKER

NOTES:  
 1. GFI TYPE CIRCUIT BREAKER

NOTES	CKT	CIRCUIT DESCRIPTION	BKR	POLES	A	B	C	POLES	BKR	CIRCUIT DESCRIPTION	CKT	NOTES
	1	BATHROOM RECEPTACLES	20 A	1	540	418.2			1	20 A	CORRIDOR LIGHTING	2
	3	LOBBY RECEPTACLES	20 A	1		720	880		1	20 A	LOWER LEVEL LIGHTING	4
	5	VPL MACHINE ROOM 120 RECEPTACLE	20 A	1			180	120	1	20 A	EXTERIOR LIGHTING	6
G	7	WATER FOUNTAIN RECEPTACLE	20 A	1	720	0			1	15 A	CUH-1	8
	9	ELEVATOR PIT RECEPTACLE	20 A	1		180	2500		1	20 A	VERTICAL PLATFORM LIFT VPL-1 MOTOR CONTROLLER	10
	11	MECH RM 101 RECEPTACLES	20 A	1			540	2500	2	30 A		12
	13	FIRE ALARM ANNUNCIATOR PANEL	20 A	1	100	500			1	15 A	VPL-1A CONTROL POWER	14
	15	HEAT PUMPS (HP-1, HP-2), MCU-2	15 A	2		274.9	41.6		2	15 A	HEAT PUMPS (HP-8, HP-20)	16
	17						274.9	41.6				18
	19	SPARE	20 A	1	0	1600			1	20 A	ACCESS CONTROL POWER SUPPLY	20
	21	SPARE	20 A	1		0	1500		1	20 A	HAND DRYER HO-1A	22
	23	SPARE	20 A	1			0	1500	1	20 A	HAND DRYER HO-1B	24
	25	PREPARED SPACE	--	1	--	1500			1	20 A	HAND DRYER HO-1C	26
	27	PREPARED SPACE	--	1	--		1500		1	20 A	HAND DRYER HO-1D	28
	29	PREPARED SPACE	--	1	--			--	1	--	PREPARED SPACE	30
	31	PREPARED SPACE	--	1	--			--	1	--	PREPARED SPACE	32
	33	PREPARED SPACE	--	1	--			--	1	--	PREPARED SPACE	34
	35	PREPARED SPACE	--	1	--			--	1	--	PREPARED SPACE	36
	37	PREPARED SPACE	--	1	--			--	1	--	PREPARED SPACE	38
	39	PREPARED SPACE	--	1	--			--	1	--	PREPARED SPACE	40
	41	PREPARED SPACE	--	1	--			--	1	--	PREPARED SPACE	42

TOTAL CONNECTED PHASE LOADS: 5382 VA 45 A, 7557 VA 63 A, 5156 VA 43 A  
 TOTAL CONNECTED PHASE CURRENTS:

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND LOAD	TOTALS
ELEVATOR	5500 VA	95.00%	5225 VA	
EQUIPMENT	100 VA	100.00%	100 VA	CONNECTED LOAD: 18074 VA
HVAC	6633 VA	100.00%	6633 VA	ESTIMATED DEMAND LOAD: 17799 VA
LIGHTING	1413 VA	100.00%	1413 VA	CONNECTED CURRENT: 50 A
Other	1600 VA	100.00%	1600 VA	ESTIMATED DEMAND CURRENT: 49 A
RECEPTACLE	2880 VA	100.00%	2880 VA	NON-COINCIDENT HEATING/COOLING: 0 A
				ESTIMATED DEMAND - NC HEAT/COOL: 49 A

**DESIGNATION: LP-3**

LOCATION: IT/DATA 107  
 EQUIPMENT TYPE: LIGHTING & APPLIANCE PANELBOARD  
 DISTRIBUTION VOLTAGE: 208Y/120V  
 FULLY RATED AIC: 10,000 AIC  
 # OF PHASES: 3  
 MAINS RATING & TYPE: 100A MLO  
 # OF WIRES: 4  
 BUS RATING: 100 A  
 MOUNTING: SURFACE  
 ENCLOSURE TYPE: NEMA 1  
 MODIFICATIONS:

PANELBOARD SCHEDULE NOTATION: A - PROVIDE AFCI TYPE BREAKER G - PROVIDE GFCI TYPE BREAKER AG - PROVIDE COMBO AFCI/GFCI TYPE BREAKER

NOTES:  
 1. PROVIDE SURGE PROTECTION DEVICE  
 2. 200% RATED NEUTRAL

NOTES	CKT	CIRCUIT DESCRIPTION	BKR	POLES	A	B	C	POLES	BKR	CIRCUIT DESCRIPTION	CKT	NOTES
	1	FLOOR BOX RECEPTACLES	20 A	1	720	1260			1	20 A	COMPUTER RM RECEPTACLES	2
	3	FLOOR BOX RECEPTACLES	20 A	1		720	360		1	20 A	IT/DATA RM RECEPTACLES	4
	5	FLOOR BOX RECEPTACLES	20 A	1			720	540	1	20 A	IT/DATA RM RECEPTACLES	6
	7	FLOOR BOX RECEPTACLES	20 A	1	720	360			1	20 A	DATA RACK RECEPTACLE	8
	9	FLOOR BOX RECEPTACLES	20 A	1			720	200	1	20 A	SPARE	10
	11	TELEVISION RECEPTACLE	20 A	1			500	750	2	20 A	DATA RACK RECEPTACLE	12
	13	SPARE	20 A	1	750	750						14
	15	PREPARED SPACE	--	1	--	--			1	--	PREPARED SPACE	16
	17	PREPARED SPACE	--	1	--	--			1	--	PREPARED SPACE	18
	19	PREPARED SPACE	--	1	--	--			1	--	PREPARED SPACE	20
	21	PREPARED SPACE	--	1	--	--			1	--	PREPARED SPACE	22
	23	PREPARED SPACE	--	1	--	--			1	--	PREPARED SPACE	24
	25	PREPARED SPACE	--	1	--	--			1	--	PREPARED SPACE	26
	27	PREPARED SPACE	--	1	--	--			1	--	PREPARED SPACE	28
	29	PREPARED SPACE	--	1	--	--			1	--	PREPARED SPACE	30

TOTAL CONNECTED PHASE LOADS: 4560 VA 39 A, 2000 VA 17 A, 2510 VA 22 A  
 TOTAL CONNECTED PHASE CURRENTS:

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND LOAD	TOTALS
RECEPTACLE	8120 VA	100.00%	8120 VA	CONNECTED LOAD: 9070 VA
SPARE	950 VA	100.00%	950 VA	ESTIMATED DEMAND LOAD: 9070 VA
				CONNECTED CURRENT: 25 A
				ESTIMATED DEMAND CURRENT: 25 A
				NON-COINCIDENT HEATING/COOLING: 0 A
				ESTIMATED DEMAND - NC HEAT/COOL: 25 A

**DESIGNATION: LP-2**

LOCATION: STORAGE 114  
 EQUIPMENT TYPE: LIGHTING & APPLIANCE PANELBOARD  
 DISTRIBUTION VOLTAGE: 208Y/120V  
 FULLY RATED AIC: 225 A MLO  
 # OF PHASES: 3  
 MAINS RATING & TYPE: 225 A MLO  
 # OF WIRES: 4  
 BUS RATING: 225 A  
 MOUNTING: SURFACE  
 ENCLOSURE TYPE: NEMA 1  
 MODIFICATIONS:

PANELBOARD SCHEDULE NOTATION: A - PROVIDE AFCI TYPE BREAKER G - PROVIDE GFCI TYPE BREAKER AG - PROVIDE COMBO AFCI/GFCI TYPE BREAKER

NOTES:

NOTES	CKT	CIRCUIT DESCRIPTION	BKR	POLES	A	B	C	POLES	BKR	CIRCUIT DESCRIPTION	CKT	NOTES
	1	CLASSROOM 119 RECEPTACLES	20 A	1	1080	800			1	20 A	REFRIGERATOR	2
	3	CLASSROOM 118 RECEPTACLES	20 A	1		1080	180		1	20 A	KITCHENETTE RECEPTACLE	4
	5	BREAKOUT RECEPTACLES	20 A	1			1080	180	1	20 A	KITCHENETTE RECEPTACLE	6
	7	RECEPTACLE	0 A	1	500	1700			1	20 A	STORAGE RECEPTACLE	8
	9	BREAKOUT FLOORBOX RECEPTACLES	20 A	1		1260	600		1	20 A	LOWER LEVEL EAST LIGHTING	10
	11	PUMPS CP-1 & JP-1	20 A	1			90	540	1	20 A	LOWER LEVEL WEST LIGHTING	12
	13	TELEVISION RECEPTACLES 118/119	20 A	1	1000	328.2			1	20 A	CORRIDOR LIGHTING	14
	15	TELEVISION RECEPTACLE 111	20 A	1		500	124.8		2	15 A	HEAT PUMPS (HP-5, HP-6, HP-7)	16
	17	HEAT PUMPS (HP-3, HP-4, HP-9)	15 A	2			161.2	124.8				18
	19				161.2	500						20
	21	U/C REFRIGERATOR 113	20 A	1		600	500		2	15 A	ETR ORGAN BLOWER	22
	23	SPARE	20 A	1			0	0	1	20 A	SPARE	24
	25	SPARE	20 A	1	0	0			1	30 A	SPARE	26
	27	ACCESS CONTROL/PANEL SUPPLIES	20 A	1		800	0		1	20 A	SPARE	28
	29	SPACE	--	1	--	--		0	2	30 A	SPARE	30
	31	DRAIN PUMP DRY	15 A	1	200	0			1	--	SPACE	32
	33	ELEC. WATER HEATER	30 A	2		2000	--		1	--	SPACE	34
	35						2000	--	1	--	SPACE	36
	37	PREPARED SPACE	--	1	--	--			1	--	PREPARED SPACE	38
	39	PREPARED SPACE	--	1	--	--	3750		2	50 A	SANC PANEL	40
	41	PREPARED SPACE	--	1	--	--		3750				42

TOTAL CONNECTED PHASE LOADS: 6257 VA 52 A, 11366 VA 97 A, 7901 VA 68 A  
 TOTAL CONNECTED PHASE CURRENTS:

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND LOAD	TOTALS
EQUIPMENT	5000 VA	100.00%	5000 VA	CONNECTED LOAD: 25524 VA
HVAC	572 VA	100.00%	572 VA	ESTIMATED DEMAND LOAD: 25574 VA
LIGHTING	1468 VA	100.00%	1468 VA	CONNECTED CURRENT: 71 A
Other	800 VA	100.00%	800 VA	ESTIMATED DEMAND CURRENT: 71 A
RECEPTACLE	9360 VA	100.00%	9360 VA	NON-COINCIDENT HEATING/COOLING: 0 A
SPARE	8100 VA	100.00%	8100 VA	ESTIMATED DEMAND - NC HEAT/COOL: 71 A
MOTOR LOAD	290 VA	117.24%	340 VA	

**DESIGNATION: LP-4**

LOCATION: STOR. 210  
 EQUIPMENT TYPE: LIGHTING & APPLIANCE PANELBOARD  
 DISTRIBUTION VOLTAGE: 208Y/120V  
 FULLY RATED AIC: 225A MLO  
 # OF PHASES: 3  
 MAINS RATING & TYPE: 225A MLO  
 # OF WIRES: 4  
 BUS RATING: 225 A  
 MOUNTING: SURFACE  
 ENCLOSURE TYPE: NEMA 1  
 MODIFICATIONS:

PANELBOARD SCHEDULE NOTATION: A - PROVIDE AFCI TYPE BREAKER G - PROVIDE GFCI TYPE BREAKER AG - PROVIDE COMBO AFCI/GFCI TYPE BREAKER

NOTES:

NOTES	CKT	CIRCUIT DESCRIPTION	BKR	POLES	A	B	C	POLES	BKR	CIRCUIT DESCRIPTION	CKT	NOTES
	1	OFFICE RECEPTACLES	20 A	1	1080	900			1	20 A	OFFICE RECEPTACLES	2
	3	OFFICE RECEPTACLES	20 A	1		1080	900		1	20 A	OFFICE RECEPTACLES	4
	5	OFFICE RECEPTACLES	20 A	1			1080	720	1	20 A	STORAGE RECEPTACLES	6
	7	HEAT PUMPS (HP-10, HP-11, HP-12, HP-19)	15 A	2	166.4	166.4			2	15 A	HEAT PUMPS (HP-13, HP-14, HP-15, HP-16)	8
	9				166.4	166.4						10
	11	HEAT PUMPS (HP-17, HP-18), MCU-1	15 A	2			266.6	180	1	20 A	ROOFTOP GFCI RECEPTACLE	12
	13				266.6	1000			1	20 A	COPIER RECEPTACLE	14
	15	COUNTERTOP RECEPTACLE 204	20 A	1		1500	900		1	20 A	RECEPTACLES 228, C201, 202	16
	17	COUNTERTOP RECEPTACLE 204	20 A	1			1500	800	1	20 A	ACCESS CONTROL POWER SUPPLY	18
	19	UC REF. RECEPT. WORKSPACE 204	20 A	1	800	--			1	--	PREPARED SPACE	20
	21	STAIRWAY & CORRIDOR LIGHTING	20 A	1		538.1	--		1	--	PREPARED SPACE	22
	23	MAIN LEVEL LIGHTING	20 A	1			1005	--	1	--	PREPARED SPACE	24
G	25	HAND DRYER HO-1E	20 A	1	1500	--			1	--	PREPARED SPACE	26
	27	PREPARED SPACE	--	1	--	--			1	--	PREPARED SPACE	28
	29	PREPARED SPACE	--	1	--	--			1	--	PREPARED SPACE	30
	31	PREPARED SPACE	--	1	--	--			1	--	PREPARED SPACE	32
	33	PREPARED SPACE	--	1	--	--			1	--	PREPARED SPACE	34
	35	PREPARED SPACE	--	1	--	--			1	--	PREPARED SPACE	36
	37	PREPARED SPACE	--	1	--	0			1	20 A	SPARE	38
	39	PREPARED SPACE	--	1	--	0			1	20 A	SPARE	40
	41	PREPARED SPACE	--	1	--	0		0	1	20 A	SPARE	42

TOTAL CONNECTED PHASE LOADS: 5879 VA 49 A, 5230 VA 44 A, 5510 VA 46 A  
 TOTAL CONNECTED PHASE CURRENTS:

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND LOAD	TOTALS
HVAC	2699 VA	100.00%	2699 VA	CONNECTED LOAD: 16615 VA
LIGHTING	1543 VA	100.00%	1543 VA	ESTIMATED DEMAND LOAD: 15795 VA
Other	800 VA	100.00%	800 VA	CONNECTED CURRENT: 46 A
RECEPTACLE	11640 VA	92.96%	10820 VA	ESTIMATED DEMAND CURRENT: 44 A
				NON-COINCIDENT HEATING/COOLING: 0 A
				ESTIMATED DEMAND - NC HEAT/COOL: 44 A



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CERTIFICATE OF AUTHORIZATION NUMBER:  
 PROFESSIONAL ENGINEERING: 018281  
 LAND SURVEYING: 017976  
 GEOLOGICAL: 018750

It is a violation of New York Education Law Art. 145 Sec. 7209 & Art. 147 Sec. 7307, for any person, unless acting under the direction of a licensed architect, professional engineer, or land surveyor, to alter an item in any way. If an item bearing the seal of an architect, engineer, or land surveyor is altered, the altering architect, engineer, or land surveyor shall affix to the item their seal and notation "altered by" followed by their signature and date of such alteration, and a specific description of the alteration.

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EDA PROJECT No. 01-01-15369 HUD PROJECT No. B-23-CP-NY-1083



**FIRST CONGREGATIONAL CHURCH REHABILITATION**  
 822 CLEVELAND AVE, NIAGARA FALLS, NY 14305

NO.	DATE	DESCRIPTION
Revisions		

PROJECT NUMBER: 2221723

DRAWN BY: EEJ

**DESIGNATION: LP-5**

LOCATION: MECH. RM. 100  
 EQUIPMENT TYPE: LIGHTING & APPLIANCE PANELBOARD  
 DISTRIBUTION VOLTAGE: 208Y/120V  
 FULLY RATED AIC: 22,000A  
 # OF PHASES: 3  
 MAINS RATING & TYPE: 100A MLO  
 # OF WIRES: 4  
 BUS RATING: 100 A  
 MOUNTING: SURFACE  
 ENCLOSURE TYPE: NEMA 1  
 MODIFICATIONS:

PANELBOARD SCHEDULE NOTATION: A - PROVIDE AFCI TYPE BREAKER G - PROVIDE GFCI TYPE BREAKER AG - PROVIDE COMBO AFCI/GFCI TYPE BREAKER

NOTES:

NOTES	CKT	CIRCUIT DESCRIPTION	BKR	POLES	A	B	C	POLES	BKR	CIRCUIT DESCRIPTION	CKT	NOTES
	1	B-1	15 A	1	540	540		1	15 A	B-2	2	
	3	BP-1	20 A	1		1200	1200	1	20 A	BP-2	4	
	5	HWP-1	15 A	2	300	300	300	300	2	15 A	HWP-2	6
	7										8	
	9	MECH ROOM 100 RECEPTACLES	20 A	1		900	500	1	15 A	WATER HEATER	10	
	11	BMS CONTROL PANEL	15 A	1			500	0	1	20 A	SPARE	12
	13	SPARE	20 A	1	0	0			1	20 A	SPARE	14
	15	MAU CONTROL PANEL	15 A	1		500	--		1	--	PREPARED SPACE	16
	17	BMS GATEWAY PANEL	15 A	1			500	--	1	--	PREPARED SPACE	18
	19	PREPARED SPACE	--	1	--	--			1	--	PREPARED SPACE	20
	21	PREPARED SPACE	--	1	--	--			1	--	PREPARED SPACE	22
	23	PREPARED SPACE	--	1	--	--			1	--	PREPARED SPACE	24
	25	PREPARED SPACE	--	1	--	--			1	--	PREPARED SPACE	26
	27	PREPARED SPACE	--	1	--	--			1	--	PREPARED SPACE	28
	29	PREPARED SPACE	--	1	--	--			1	--	PREPARED SPACE	30

<b>TOTAL CONNECTED PHASE LOADS:</b>	1680 VA	4300 VA	1600 VA
<b>TOTAL CONNECTED PHASE CURRENTS:</b>	14 A	36 A	13 A

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND LOAD	TOTALS
EQUIPMENT	1000 VA	100.00%	1000 VA	<b>CONNECTED LOAD: 7580 VA</b>
HVAC	2080 VA	100.00%	2080 VA	
RECEPTACLE	900 VA	100.00%	900 VA	<b>ESTIMATED DEMAND LOAD: 7880 VA</b>
MOTOR LOAD	3600 VA	108.33%	3900 VA	<b>CONNECTED CURRENT: 21 A</b>
				<b>ESTIMATED DEMAND CURRENT: 22 A</b>
				<b>NON-COINCIDENT HEATING/COOLING: 0 A</b>
				<b>ESTIMATED DEMAND - NC HEAT/COOL: 22 A</b>

**DESIGNATION: MDP**

LOCATION: ELEC. 101  
 EQUIPMENT TYPE:  
 DISTRIBUTION VOLTAGE: 208Y/120V  
 FULLY RATED AIC: 42,000 AIC  
 # OF PHASES: 3  
 MAINS RATING & TYPE: 400AF/800AT MCB  
 # OF WIRES: 4  
 BUS RATING: 800 A  
 MOUNTING: FREESTANDING  
 ENCLOSURE TYPE: NEMA 1  
 MODIFICATIONS:

PANELBOARD SCHEDULE NOTATION: A - PROVIDE AFCI TYPE BREAKER G - PROVIDE GFCI TYPE BREAKER AG - PROVIDE COMBO AFCI/GFCI TYPE BREAKER

NOTES: MCB SHALL BE 800AF, 400AT

NOTES	CKT	CIRCUIT DESCRIPTION	BKR	POLES	A	B	C	POLES	BKR	CIRCUIT DESCRIPTION	CKT	NOTES
	1				5362.3	5879.4					2	
	3	LP-1	100 A	3		7557.5	5230.1		3	30 A	LP-4	4
	5						5156.5	5510.3			6	
	7				6257.4	1680					8	
	9	LP-2	125 A	3		11366.3	4300		3	70 A	LP-5	10
	11						7900.8	1600			12	
	13				4560	7956					14	
	15	LP-3	70 A	3		2000	7956		3	90 A	ROOFTOP ENERGY UNIT (MAU-1)	16
	17						2510	7956			18	
	19				6540	0					20	
	21	ACCU-1	60 A	3		6540	0		3	30 A	SPD	22
	23						6540	0			24	
	25				--	--					26	
	27	PREPARED SPACE (225A)	--	3		--	--		3	--	PREPARED SPACE (225A)	28
	29						--	--			30	
	31				--	--					32	
	33	PREPARED SPACE (225A)	--	3		--	--		3	--	PREPARED SPACE (225A)	34
	35						--	--			36	

<b>TOTAL CONNECTED PHASE LOADS:</b>	38234 VA	44945 VA	37166 VA
<b>TOTAL CONNECTED PHASE CURRENTS:</b>	320 A	376 A	310 A

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND LOAD	TOTALS
ELEVATOR	5500 VA	95.00%	5225 VA	<b>CONNECTED LOAD: 120344 VA</b>
EQUIPMENT	6100 VA	100.00%	6100 VA	
HVAC	55472 VA	100.00%	55472 VA	<b>ESTIMATED DEMAND LOAD: 108920 VA</b>
LIGHTING	4424 VA	100.00%	4424 VA	<b>CONNECTED CURRENT: 334 A</b>
Other	3200 VA	100.00%	3200 VA	<b>ESTIMATED DEMAND CURRENT: 302 A</b>
RECEPTACLE	32900 VA	65.20%	21450 VA	<b>NON-COINCIDENT HEATING/COOLING: 0 A</b>
Spare	9050 VA	100.00%	9050 VA	<b>ESTIMATED DEMAND - NC HEAT/COOL: 302 A</b>
MOTOR LOAD	3890 VA	107.71%	4190 VA	



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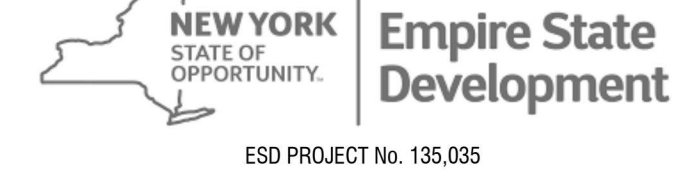
CERTIFICATE OF AUTHORIZATION NUMBER:  
 PROFESSIONAL ENGINEERING: 018281  
 LAND SURVEYING: 017976  
 GEOLOGICAL: 018750

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EDA PROJECT No. 01-01-15369 HUD PROJECT No. B-23-CP-NY-1083



**FIRST CONGREGATIONAL CHURCH REHABILITATION**  
 822 CLEVELAND AVE, NIAGARA FALLS, NY 14305

NO.	DATE	DESCRIPTION
Revisions		

PROJECT NUMBER: 2221723

DRAWN BY: EEJ

REVIEWED BY: MDR

ISSUED FOR: BID

DATE: APRIL 11, 2024

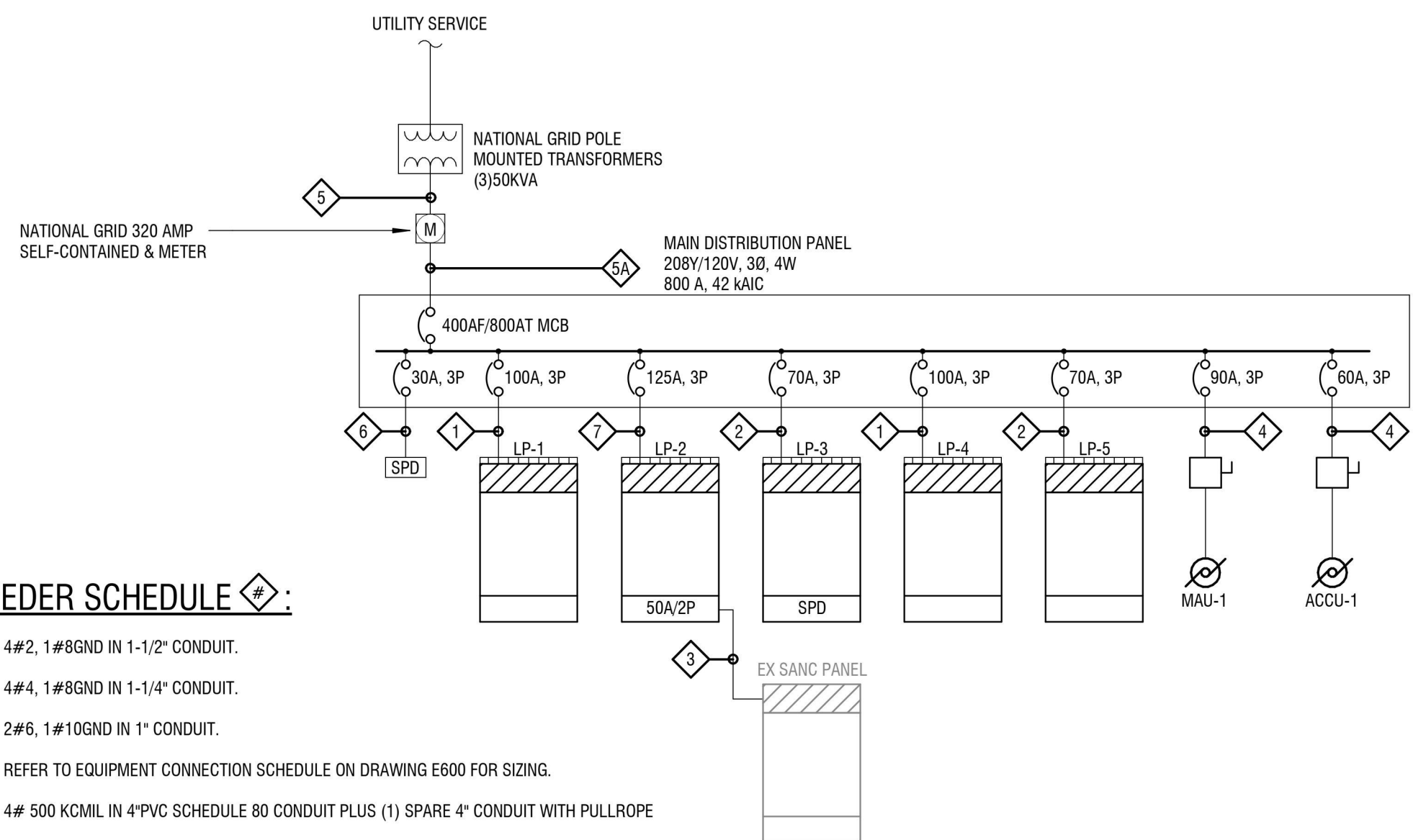
DRAWING NAME:

**ELECTRICAL PANEL SCHEDULES**

DRAWING NUMBER:

**E602**

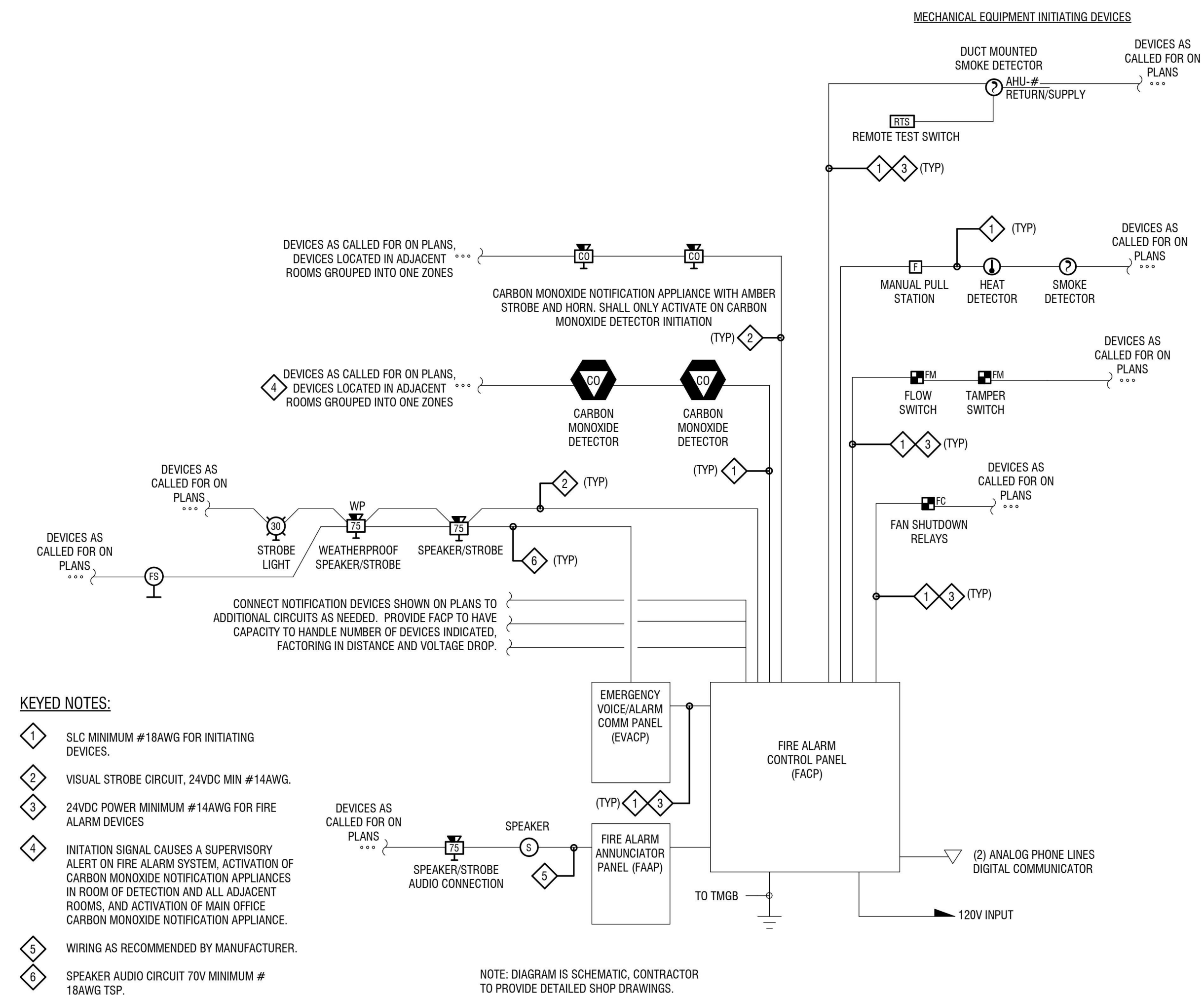




**FEEDER SCHEDULE**

- 4#2, 1#8GND IN 1-1/2" CONDUIT.
- 4#4, 1#8GND IN 1-1/4" CONDUIT.
- 2#6, 1#10GND IN 1" CONDUIT.
- REFER TO EQUIPMENT CONNECTION SCHEDULE ON DRAWING E800 FOR SIZING.
- 4# 500 KCMIL IN 4" PVC SCHEDULE 80 CONDUIT PLUS (1) SPARE 4" CONDUIT WITH PULLROPE
- 4# 500 KCMIL PLUS #1/0 GND. IN 4" PVC SCHEDULE 80 CONDUIT, INSTALL ABOVE GRADE.
- 5 #8 IN 1" CONDUIT INSTALL CONDUIT LENGTH MAXIMUM 20 INCHES LONG, NO UNNECESSARY BENDS.
- 4 #1,1#6 GND. IN 1-1/2" CONDUIT

**1 POWER DISTRIBUTION ONE-LINE DIAGRAM**  
NOT TO SCALE



**KEYED NOTES:**

- SLC MINIMUM #18AWG FOR INITIATING DEVICES.
- VISUAL STROBE CIRCUIT, 24VDC MIN #14AWG.
- 24VDC POWER MINIMUM #14AWG FOR FIRE ALARM DEVICES
- INITIATION SIGNAL CAUSES A SUPERVISORY ALERT ON FIRE ALARM SYSTEM, ACTIVATION OF CARBON MONOXIDE NOTIFICATION APPLIANCES IN ROOM OF DETECTION AND ALL ADJACENT ROOMS, AND ACTIVATION OF MAIN OFFICE CARBON MONOXIDE NOTIFICATION APPLIANCE.
- WIRING AS RECOMMENDED BY MANUFACTURER.
- SPEAKER AUDIO CIRCUIT 70V MINIMUM #18AWG TSP.

NOTE: DIAGRAM IS SCHEMATIC, CONTRACTOR TO PROVIDE DETAILED SHOP DRAWINGS.

**2 FIRE ALARM ONE-LINE DIAGRAM**  
NOT TO SCALE



CERTIFICATE OF AUTHORIZATION NUMBER:  
PROFESSIONAL ENGINEERING: 018281  
LAND SURVEYING: 017976  
GEOLOGICAL: 018750

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EDA PROJECT No. 01-01-15369 HUD PROJECT No. B-23-CP-NY-1083



ESD PROJECT No. 135,035

**FIRST CONGREGATIONAL CHURCH REHABILITATION**  
822 CLEVELAND AVE, NIAGARA FALLS, NY 14305

NO.	DATE:	DESCRIPTION:
Revisions		

PROJECT NUMBER: 2221723

DRAWN BY: EEJ

REVIEWED BY: MDR

ISSUED FOR: BID

DATE: APRIL 11, 2024

DRAWING NAME:

**ELECTRICAL ONE-LINE DIAGRAMS**

DRAWING NUMBER:



CERTIFICATE OF AUTHORIZATION NUMBER:  
PROFESSIONAL ENGINEERING: 018281  
LAND SURVEYING: 017976  
GEOLOGICAL: 018750

It is a violation of New York Education Law Art. 145 Sec. 7209 & Art. 147 Sec. 7307, for any person, unless acting under the direction of a licensed architect, professional engineer, or land surveyor, to alter an item in any way. If an item bearing the seal of an architect, engineer, or land surveyor is altered, the altering architect, engineer, or land surveyor shall affix to the item their seal and notation "altered by" followed by their signature and date of such alteration, and a specific description of the alteration.

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5795 LEWISTON ROAD  
NIAGARA UNIVERSITY, NEW YORK 14109



EDA PROJECT No. 01-01-15369 HUD PROJECT No. B-23-CP-NY-1083



ESD PROJECT No. 135,035

**ACADEMIC INNOVATION  
HUB - WORK FORCE  
DEVELOPMENT TRAINING**

822 CLEVELAND AVENUE  
NIAGARA FALLS, NEW YORK 14305

NO.	DATE	DESCRIPTION
Revisions		

PROJECT NUMBER: 2221723

DRAWN BY: JLJ

REVIEWED BY: JSN

ISSUED FOR: BID

DATE: APRIL 11, 2024

DRAWING NAME:

**PLUMBING REMOVAL  
PLAN**

DRAWING NUMBER:

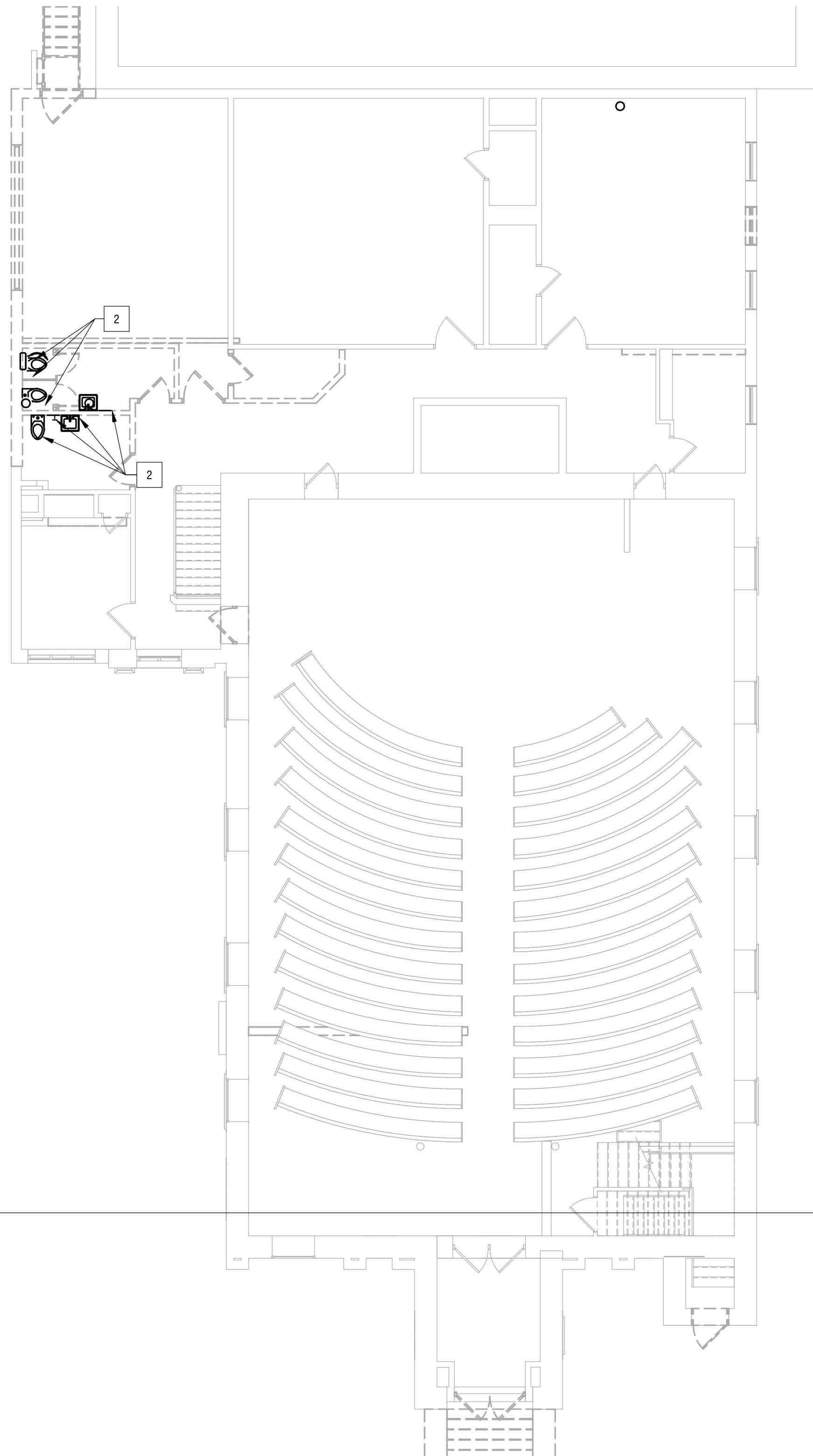
**PD101**

**REMOVAL KEY NOTES:**

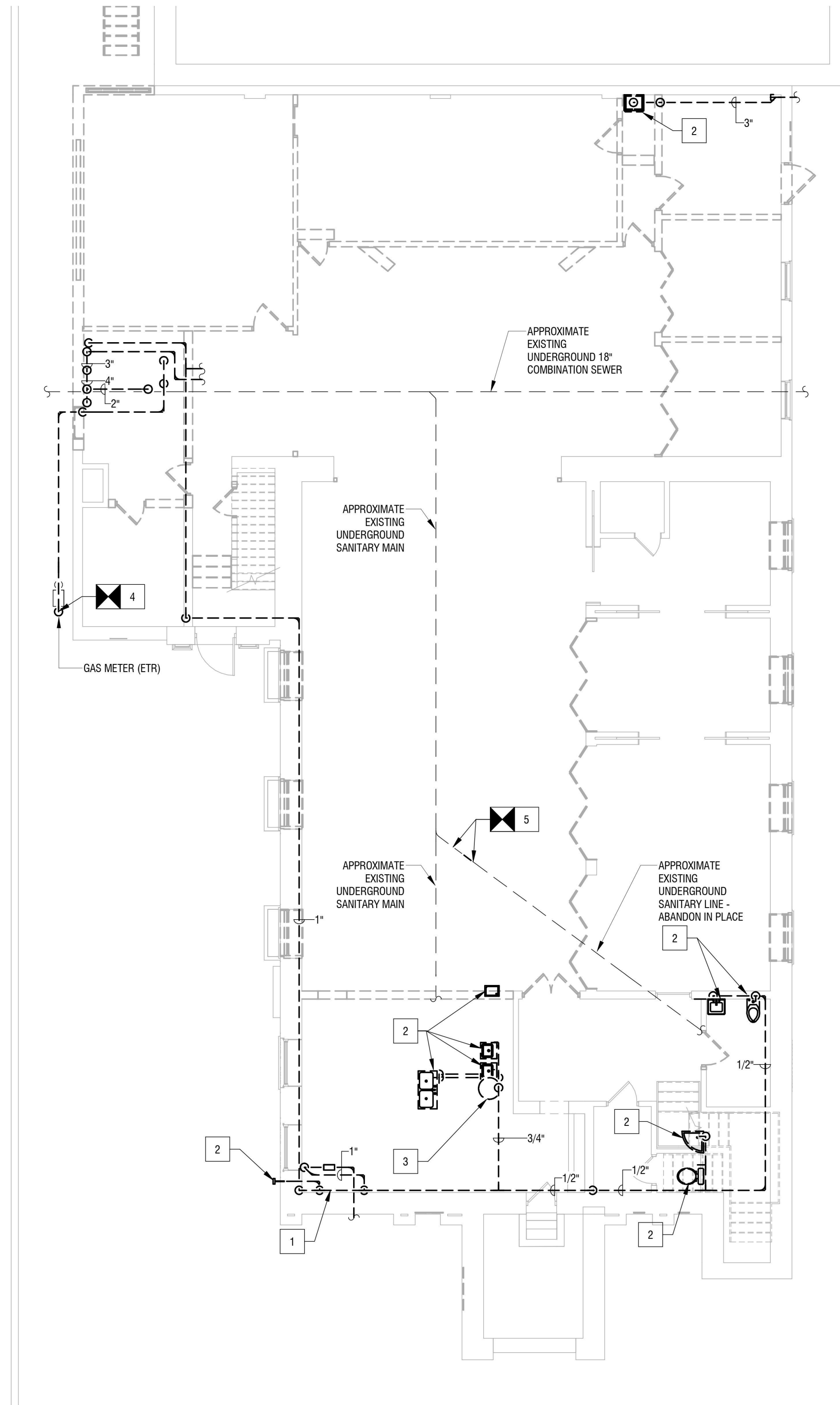
1. REMOVE EXISTING 1" WATER SERVICE AND ASSOCIATED ACCESSORIES. TURN METER BACK OVER TO WATER UTILITY. COORDINATE WITH CIVIL TO REMOVE EXISTING WATER MAIN.
2. REMOVE EXISTING FIXTURE AND ALL ASSOCIATED ACCESSORIES.
3. REMOVE EXISTING WATER HEATER, EXPANSION TANK, ALL ASSOCIATED ACCESSORIES.
4. REMOVE EXISTING NATURAL GAS PIPING TO POINT SHOWN. PREPARE FOR RECONNECTION. GAS METER IS EXISTING TO REMAIN.
5. DISCONNECT EXISTING UNDERGROUND SANITARY LINE AT LOCATION SHOWN AND CAP.

**GENERAL NOTES:**

- A. REMOVE ALL EXISTING DOMESTIC WATER, SANITARY, VENT, AND INTERIOR STORM PIPING. EXISTING EXTERIOR ROOF DOWNSPOUTS AND NATURAL GAS MAIN TO REMAIN. ENSURE THERE ARE NO DEAD LEGS IN ANY PIPING SYSTEM IF LEFT ABANDONED. COORDINATE WITH ARCHITECT TO CUT AND PATCH ANY WALLS, FLOORS, CEILINGS, ROOFS THAT ARE EXISTING TO REMAIN. COORDINATE WITH CIVIL TO REMOVE PIPING MAINS.



**2 FIRST FLOOR PLUMBING REMOVAL PLAN**  
PD101 1/8" = 1'-0"



**1 BASEMENT PLUMBING REMOVAL PLAN**  
PD101 1/8" = 1'-0"