

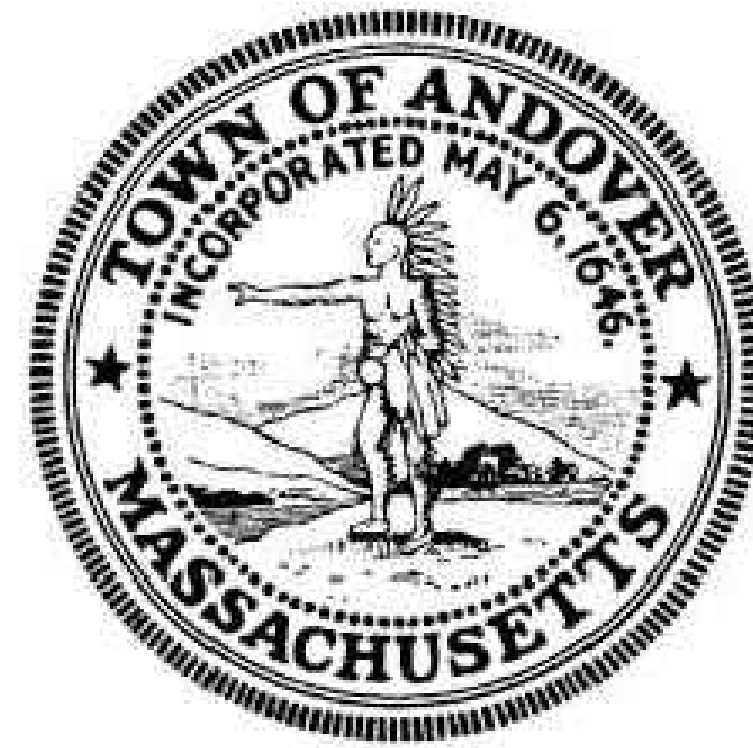
# HVAC SYSTEM UPGRADES

## DOHERTY MIDDLE SCHOOL

### 50 BARTLET STREET

### ANDOVER, MASSACHUSETTS

### 01810



**TOWN OF ANDOVER**  
**ANDOVER, MASSACHUSETTS**  
**01810**

**DRAWING LIST:**

**T0.1** Title Sheet  
**ACT1.0** Nurse's Office Ceiling Plan

**H0.1** HVAC Legend, Notes, & Abbreviations  
**H0.2** HVAC Schedules  
**H0.3** HVAC Details  
**H0.4** HVAC Details  
**H0.5** HVAC Sequences  
**HD1.0** HVAC Demo First Floor  
**H2.0** HVAC First Floor  
**H2.1** HVAC Roof Plan  
**H3.0** HVAC First Floor Piping A  
**H3.1** HVAC Roof Piping Plan

**E0.1** Electrical Legend and Notes  
**E0.2** Electrical Riser & Schedule  
**E0.3** Electrical Overall Plan  
**E1.0** Electrical Floor Plans

Seal:



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HVAC \* ELECTRICAL \* PLUMBING \* FIRE PROTECTION

Client:

TOWN OF ANDOVER  
 DOHERTY SCHOOL  
 ANDOVER, MA

Submission:

BID SET 05/26/21

Revision:

Project:

**DOHERTY MIDDLE SCHOOL HVAC**  
 50 BARTLET ST., ANDOVER, MA

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Project No.: 20427

Drawn By: DLC

Checked By: WJS

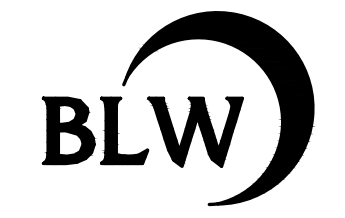
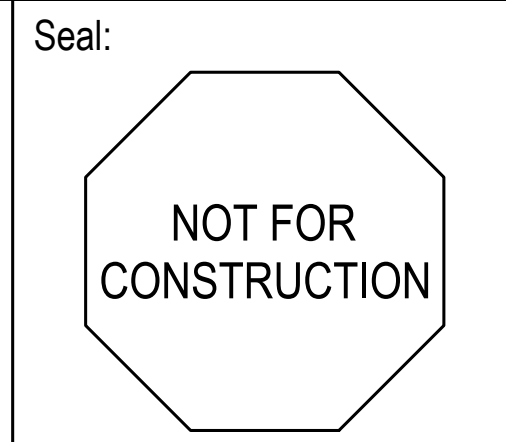
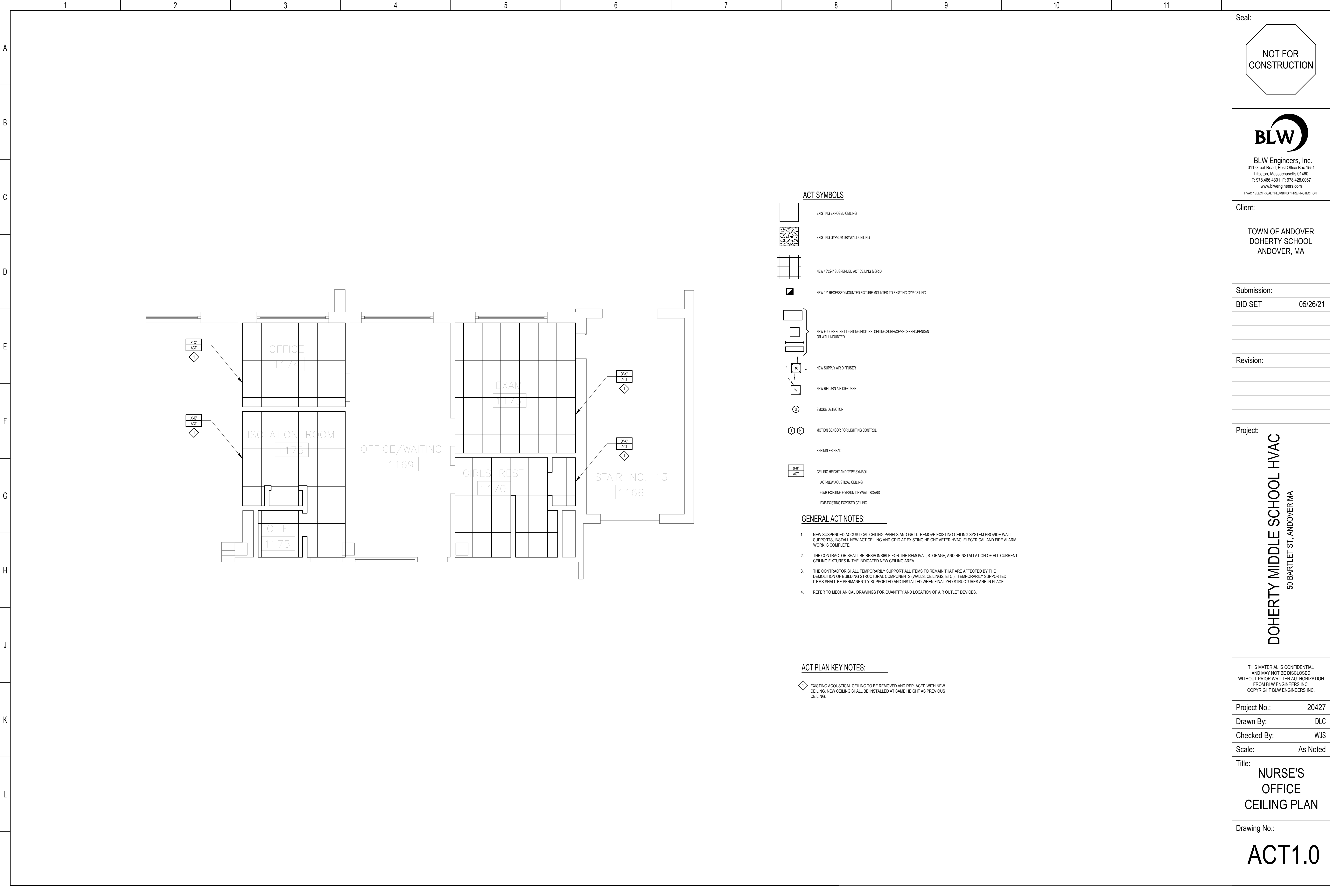
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Title:

**TITLE SHEET**

Drawing No.:

**T0.1**



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Project No.: 20427  
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Title:  
**NURSE'S  
 OFFICE  
 CEILING PLAN**

Drawing No.:  
**ACT1.0**

**ACT SYMBOLS**

- EXISTING EXPOSED CEILING
- EXISTING GYPSUM DRYWALL CEILING
- NEW 48"x24" SUSPENDED ACT CEILING & GRID
- NEW 12" RECESSED MOUNTED FIXTURE MOUNTED TO EXISTING GYP CEILING
- NEW FLUORESCENT LIGHTING FIXTURE, CEILING SURFACE RECESSED PENDANT OR WALL MOUNTED.
- NEW SUPPLY AIR DIFFUSER
- NEW RETURN AIR DIFFUSER
- SMOKE DETECTOR
- MOTION SENSOR FOR LIGHTING CONTROL
- SPRINKLER HEAD
- CEILING HEIGHT AND TYPE SYMBOL  
 ACT-NEW ACOUSTICAL CEILING  
 GWB-EXISTING GYPSUM DRYWALL BOARD  
 EXP-EXISTING EXPOSED CEILING

**GENERAL ACT NOTES:**

1. NEW SUSPENDED ACOUSTICAL CEILING PANELS AND GRID. REMOVE EXISTING CEILING SYSTEM PROVIDE WALL SUPPORTS, INSTALL NEW ACT CEILING AND GRID AT EXISTING HEIGHT AFTER HVAC, ELECTRICAL AND FIRE ALARM WORK IS COMPLETE.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL, STORAGE, AND REINSTALLATION OF ALL CURRENT CEILING FIXTURES IN THE INDICATED NEW CEILING AREA.
3. THE CONTRACTOR SHALL TEMPORARILY SUPPORT ALL ITEMS TO REMAIN THAT ARE AFFECTED BY THE DEMOLITION OF BUILDING STRUCTURAL COMPONENTS (WALLS, CEILINGS, ETC.). TEMPORARILY SUPPORTED ITEMS SHALL BE PERMANENTLY SUPPORTED AND INSTALLED WHEN FINALIZED STRUCTURES ARE IN PLACE.
4. REFER TO MECHANICAL DRAWINGS FOR QUANTITY AND LOCATION OF AIR OUTLET DEVICES.

**ACT PLAN KEY NOTES:**

- EXISTING ACOUSTICAL CEILING TO BE REMOVED AND REPLACED WITH NEW CEILING. NEW CEILING SHALL BE INSTALLED AT SAME HEIGHT AS PREVIOUS CEILING.

### PIPING LEGEND

	RS	REFRIGERANT SUCTION
	RL	REFRIGERANT LIQUID
	D	DRAIN PIPING
	V	VENT
		PIPING TO BE REMOVED
		EXISTING PIPING TO REMAIN
		PIPE OFF BOTTOM
		PIPE OFF TOP
		RUN-OUT OFF TOP
		RUN-OUT OFF BOTTOM
		BRANCH CONNECTION (DIRECTION TO BE FIELD DETERMINED)
		PIPE UP
		PIPE DOWN
		STUB UP TO TERMINAL
		DIRECTION OF FLOW
		PIPE BREAK
		DRAIN PIPE PITCH AND FLOW

### DAMPERS

	ACD	MOTORIZED OR AUTOMATIC CONTROL DAMPER
	SD	SMOKE DAMPER
	BD	BACK DRAFT DAMPER
	FD	FIRE DAMPER
	FS	FIRE & SMOKE DAMPER
	VD	VOLUME DAMPER

### DUCTWORK LEGEND

	RECTANGULAR DUCTWORK - FIRST DIMENSION IS SIDE SHOWN (IN)
	ROUND DUCTWORK - DIMENSION IS DUCT DIAMETER (IN)
	EXISTING DUCTWORK
	EXISTING DUCTWORK TO BE REMOVED
	RECTANGULAR SUPPLY DUCTWORK UP
	RECTANGULAR SUPPLY DUCTWORK DOWN
	RECTANGULAR RETURN/EXHAUST DUCTWORK UP
	RECTANGULAR RETURN/EXHAUST DUCTWORK DOWN
	ROUND DUCTWORK UP
	ROUND DUCTWORK DOWN
	BEAM PENETRATION BY DUCTWORK
	CAPPED DUCTWORK
	ACOUSTICALLY LINED DUCTWORK
	FLEXIBLE CONNECTION
	RECTANGULAR TRANSITION
	RECTANGULAR TO ROUND DUCTWORK TRANSITION
	MITERED ELBOW WITH TURNING VANES
	CHANGE OF ELEVATION UP IN DIRECTION OF AIRFLOW
	CHANGE OF ELEVATION DOWN IN DIRECTION OF AIRFLOW
	NEW SUPPLY DUCTWORK - SINGLE LINE
	NEW RETURN/EXHAUST DUCTWORK - SINGLE LINE
	EXISTING DUCTWORK - SINGLE LINE
	RECTANGULAR SUPPLY DUCTWORK UP - SINGLE LINE
	RECTANGULAR SUPPLY DUCTWORK DOWN - SINGLE LINE
	RECTANGULAR RETURN/EXHAUST DUCTWORK UP - SINGLE LINE
	RECTANGULAR RETURN/EXHAUST DUCTWORK DOWN - SINGLE LINE
	ROUND DUCTWORK UP - SINGLE LINE
	ROUND DUCTWORK DOWN - SINGLE LINE
	FLEXIBLE DUCTWORK - SINGLE LINE (MAX. LENGTH 5'-0")
	DUCTWORK TRANSITION - SINGLE LINE
	ACOUSTICALLY LINED DUCTWORK - SINGLE LINE
	1/2" WIRE MESH SCREEN (ON OPEN END DUCT)

### CONTROL SCHEMATIC LEGEND

	CO SENSOR
	CO2 SENSOR
	HUMIDITY SENSOR
	TEMPERATURE SENSOR
	STATIC PRESSURE SENSOR
	DIFFERENTIAL PRESSURE SENSOR
	HEAT/COOL THERMOSTAT
	REVERSE ACTING THERMOSTAT
	SWITCH CONTROLLER
	TIME CLOCK CONTROLLER
	HUMIDITY SENSOR
	TEMPERATURE SENSOR
	FLOW SWITCH
	FLOW RATE SENSOR
	HIGH HUMIDITY LIMIT SWITCH
	HIGH STATIC PRESSURE SWITCH, MANUAL RESET
	LOW STATIC PRESSURE SWITCH, MANUAL RESET
	FREEZE STAT
	HIGH LIMIT THERMOSTAT
	ENTHALPY CONTROL
	AIR FLOW MEASURING STATION
	VARIABLE FREQUENCY DRIVE
	DIFFERENTIAL PRESSURE SENSOR
	DUCT SMOKE DETECTOR
	FREEZE STAT
	FILTER GAUGE
	CAPILLARY TUBE
	NORMALLY OPEN CONTACT
	NORMALLY CLOSED CONTACT
	COIL
	CONTROL LINE

### DRAWING NOTES

10"x8", 12"x12" SG-A, RG-A or EG-A  
200 CFM  
(TYP. DF 3)

12"x12", SD  
200 CFM  
(TYP. DF 3)

NECK SIZE OR LENGTH IF LINEAR DIFFUSER  
SUPPLY/RETURN/EXHAUST REGISTER OR GRILLE  
AIR VOLUME (CFM)  
QUANTITY

EQUIPMENT DESIGNATION

DRAWING REVISION NOTE

DRAWING WORK NOTE

CONNECT TO EXISTING

CAP EXISTING

LIMIT OF DEMOLITION

REVISION CLOUD

### EQUIPMENT TAGS

AC	AIR CONDITIONING UNIT
ACCU	AIR COOLED CONDENSING UNIT
AFS	AIR FLOW STATION
AHU	AIR HANDLING UNIT
CP	CONDENSATE PUMP
CUH	CABINET UNIT HEATER (STEAM OR WATER)
DBF	DRYER BOOSTER EXHAUST FAN
EG	EXHAUST GRILLE
ERV	ENERGY RECOVERY VEHICLE
ER	EXHAUST REGISTER
F	FAN (GENERIC)
FB	FILTER BOX
FC	FAN COIL UNIT
HP	AIR SOURCED HEAT PUMP
HX	HEAT EXCHANGER
LU	LOUVER
MUA	GAS FRED MAKE-UP AIR UNIT
P	PUMP
RG	RETURN GRILLE
RR	RETURN REGISTER
RH/H	RELIEF HOOD/INTAKE HOOD
RTU	ROOFTOP UNIT
SD	SUPPLY DIFFUSER
SG	SUPPLY GRILLE
SR	SUPPLY REGISTER
UH	UNIT HEATER
UV	UNIT VENTILATOR
V	VARIABLE AIR VOLUME BOX
VI	VIBRATION ISOLATION
WFS	WATER FLOW STATION

### AIR DEVICE LEGEND

	SG	SIDEWALL SUPPLY REGISTER
	SD	SUPPLY DIFFUSER
	RG	RETURN GRILLE
	EG	EXHAUST REGISTER OR GRILLE
	EGRG	SIDEWALL EXHAUST/RETURN REGISTER
	SD-4	SUPPLY AIR DIFFUSER 4-WAY BLOW
	SD-13	SUPPLY AIR DIFFUSER 3-WAY BLOW
	SD-2A	SUPPLY AIR DIFFUSER 2-WAY BLOW
	SD-2B	SUPPLY AIR DIFFUSER 2-WAY BLOW
	SDR	SUPPLY DIFFUSER OR REGISTER BELOW DUCT
	RG	RETURN REGISTER OR GRILLE BELOW DUCT
	EG	EXHAUST REGISTER OR GRILLE BELOW DUCT
		SUPPLY AIR
		RETURN OR EXHAUST AIR
		UNDERCUT DOORWAY (BY G.C.)
		DOOR LOUVER (BY G.C.)

### ABBREVIATIONS

AAV	AUTOMATIC AIR VENT
ACC	AIR COOLED CONDENSER
AD	ACCESS DOOR
AFF	ABOVE FINISHED FLOOR
AP	ACCESS PANEL
ARCH	ARCHITECT
AS	AIR SEPARATOR
ATC	AUTOMATIC TEMPERATURE CONTROL
BDD	BOTTOM OF DUCT
BTU	BRITISH THERMAL UNIT
BTUH	BRITISH THERMAL UNIT PER HOUR
C	CLOSED
CA	COMBUSTION AIR
CAP	CAPACITY
CC	COOLING COIL
CD	CEILING DIFFUSER
CFM	CUBIC FEET PER MINUTE
CO	CLEAN OUT
CONN	CONNECT
CONTR	CONTRACTOR
CP	CONTROL PANEL
CT	CURRENT TRANSFORMER
CV	CONTROL VALVE
DB	DRY BULB TEMPERATURE (°F)
DDC	DIRECT DIGITAL CONTROL
DIA	DIAMETER
DN	DOWN
DO	DIGITAL OUTPUT
DR	DRAIN
DWG	DRAWING
EA	EACH
EA	EXHAUST AIR
EAT	ENTERING AIR TEMPERATURE
EC	ELECTRICAL CONTRACTOR
EF	EXHAUST FAN
EG	EXHAUST AIR GRILLE
EL	EXPANSION LOOP
EMS	ENERGY MANAGEMENT SYSTEM
ER	EXHAUST AIR REGISTER
ERV	EXHAUST ROOF VENT
ESP	EXTERNAL STATIC PRESSURE
ET	EXPANSION TANK
ETR	EXISTING TO BE REMOVED
EUH	ELECTRIC UNIT HEATER
ENT	ENTERING WATER TEMPERATURE
EX	EXISTING
EXH	EXHAUST
FA	FREE AREA
FAI	FRESH AIR INTAKE
FLA	FULL LOAD AMPS
FLD	FLOOR DRAIN
FPI	FINS PER INCH
FS	FEET PER MINUTE
FSD	COMBINATION FIRE AND SMOKE DAMPER
FT	FEET
GAL	GALLONS
GC	GENERAL CONTRACTOR
GE	GENERAL EXHAUST
GPM	GALLONS PER MINUTE
GUH	GAS FIRED UNIT HEATER
HC	HEATING COIL
HE	HOOD EXHAUST
HEF	HOOD EXHAUST FAN
HP	HORSE POWER
HSP	HOOD SUPPLY FAN
HVAC	HEATING, VENTILATION AND AIR CONDITIONING
H	INTAKE HOOD
IN	INCHES
ID	INSIDE DIAMETER
KE	KITCHEN EXHAUST
KW	KILOWATTS
LAT	LEAVING AIR TEMPERATURE
LD	LINEAR DIFFUSER
LWT	LEAVING WATER TEMPERATURE
MBH	THOUSANDS OF BRITISH THERMAL UNITS PER HOUR
MECH	MECHANICAL
NC	NORMALLY CLOSED
NIC	NOT IN CONTRACT
NO	NORMALLY OPEN
NTS	NOT TO SCALE
OA	OUTSIDE AIR
OAT	OUTSIDE AIR TEMPERATURE
OBD	OPPOSED BLADE DAMPER
OD	OUTSIDE DIAMETER
PC	PLUMBING CONTRACTOR
PD	PRESSURE DROP
PSI	POUNDS PER SQUARE INCH
RA	RETURN AIR
REF	ROOF EXHAUST FAN
RF	RETURN FAN
RG	RETURN AIR GRILLE
RC	RETURN IN COVER
ROOM	ROOM
RR	RETURN AIR REGISTER

### ABBREVIATIONS

SA	SUPPLY AIR
SAT	SUPPLY AIR TEMPERATURE
SDC	STAND ALONE DIGITAL CONTROLLER
SF	SQUARE FEET
SP	STATIC PRESSURE
SPO	SPEED
SR	SUPPLY AIR REGISTER
SS	STAINLESS STEEL
SST	SATURATED SUCTION TEMPERATURE
TA	TRANSFER AIR
TD	TRANSFER AIR DUCT
TE	TOILET EXHAUST
TEF	TOILET EXHAUST FAN
TG	TRANSFER AIR GRILLE
TSTAT	THERMOSTAT
TYP	TYPICAL
UC	UNDERCUT DOOR
VAV	VARIABLE AIR VOLUME
VB	VACUUM BREAKER
VFD	VARIABLE FREQUENCY DRIVE
WB	WET BULB TEMPERATURE (°F)
WH	WALL HEATER
WM	WIRE MESH SCREEN

### GENERAL NOTES

- MECHANICAL WORK INDICATED IS DIAGRAMMATIC. EXACT LOCATIONS OF ALL COMPONENTS ARE TO BE DETERMINED IN THE FIELD (SPACING SUBJECT TO ARCHITECT'S REVIEW AND APPROVAL) TO AVOID CONFLICT WITH OTHER TRADES AND EXISTING SITE CONDITIONS.
- REFER TO ARCHITECTURAL PLANS FOR EXACT LOCATION OF CEILING GRID, DIFFUSERS, AND GRILLES.
- ALL INSTALLATIONS SHALL PERMIT AND PROVIDE ACCESSIBILITY FOR SERVICE AND REPLACEMENT OF ALL NEW EQUIPMENT AND EXISTING EQUIPMENT IMPACTED BY THIS WORK.
- COORDINATE ALL OPENINGS IN FLOORS WITH STRUCTURAL DRAWINGS AND GENERAL CONTRACTOR.
- COORDINATE ALL ROOF OPENINGS WITH ARCHITECT AND STRUCTURAL ENGINEER.
- REFER TO STRUCTURAL FRAMING PLANS FOR EXACT LOCATION OF ALL ROOF MOUNTED EQUIPMENT.
- ALL MECHANICAL EQUIPMENT, PIPING, AND DUCTWORK SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF GOVERNING LOCAL, STATE, AND FEDERAL SEISMIC CODES. PARTICULAR ATTENTION SHALL BE MADE TO VIBRATION ISOLATION, ANCHORING, AND BALANCING REQUIREMENTS.
- INSTALL SMOKE DETECTORS WHERE SHOWN ON THE ELECTRICAL DRAWINGS. COORDINATE THE LOCATION WITH SHEET METAL SHOP DRAWINGS, TO BE PRODUCED BY MECHANICAL CONTRACTOR, AND APPROVED BY ENGINEER. ELECTRICAL CONTRACTOR SHALL PROVIDE SMOKE DETECTORS IN SUPPLY AND RETURN DUCTS ON ALL AIR HANDLERS AND ROOF TOP UNITS AS SHOWN ON THE ELECTRICAL DRAWINGS.
- ALL DUCTWORK SHALL BE INSTALLED IN ACCORDANCE WITH CODES AND STANDARDS SET FORTH IN NFPA, SMACNA, AND ASHRAE FOR MEDIUM AND LOW PRESSURE DUCTWORK SYSTEMS.
- PROVIDE MANUAL VOLUME DAMPERS AT ALL BRANCH DUCTS FOR AIR BALANCING.
- ALL SHEET METAL PLENUMS AT OUTSIDE AIR LOUVERS SHALL BE INSULATED WITH RIGID INSULATION, AS PER SPECIFICATION.
- ALL DUCTS, PIPES, AND EQUIPMENT SHALL BE INDEPENDENTLY SUPPORTED FROM THE BUILDING STRUCTURE WITH PROPER ALLOWANCES FOR CONTRACTION, EXPANSION, AND VIBRATION ELIMINATION.
- ROOM THERMOSTATS SHALL BE MOUNTED 4'-0" ABOVE FINISHED FLOOR UNLESS OTHERWISE SHOWN OR DIRECTED.
- COORDINATE EXACT LOCATION OF ALL HVAC EQUIPMENT WITHIN ELECTRIC ROOMS WITH ELECTRICAL CONTRACTOR.
- ALL DUCT DIMENSIONS SHOWN ARE INSIDE CLEAR FREE AREA REQUIRED.
- ALL DIFFUSER, REGISTER, AND GRILLE SIZES INDICATED ON FLOOR PLANS ARE NECK SIZE REQUIRED.
- ALL PIPING IS TO BE SLOPED A MINIMUM OF 1/4" PER HUNDRED FEET IN THE DIRECTION OF DRAINAGE.
- NOT ALL SYMBOLS OR ABBREVIATIONS ARE USED ON THIS PROJECT.
- COORDINATE ENTIRE INSTALLATION WITH THE WORK OF ALL OTHER TRADES PRIOR TO ANY FABRICATION OR INSTALLATIONS.
- OBTAIN ALL REQUIRED PERMITS AND PAY ALL FEES RELATED TO SAME.
- ALL PIPING AND DUCTWORK SHOWN IS DIAGRAMMATIC ONLY. DETERMINE THE EXACT LOCATION IN THE FIELD.
- REVIEW ALL ARCHITECTURAL, STRUCTURAL, PLUMBING, ELECTRICAL, FIRE PROTECTION AND SITE DRAWINGS BEFORE STARTING ANY WORK TO BECOME FAMILIAR WITH THE DETAILS OF CONSTRUCTION, AND COORDINATE WITH OTHER TRADES.
- PROVIDE ALL NECESSARY PIPING, EQUIPMENT AND SUPPORTS AS WELL AS ANY ADDITIONAL EQUIPMENT, ETC. NOT SHOWN ON THE DRAWINGS OR CALLED FOR IN THE SPECIFICATIONS BUT NECESSARY TO PROVIDE COMPLETE AND WORKABLE SYSTEMS.
- DO NOT SCALE THESE DRAWINGS. TAKE ALL MEASUREMENTS IN THE FIELD IN COORDINATION WITH ALL EQUIPMENT AS APPROVED AND WITH ALL OTHER TRADES.
- ALL PIPING SHALL BE INSULATED IN ACCORDANCE WITH THE MASSACHUSETTS STATE BUILDING CODE.
- ALL ROTATING EQUIPMENT SHALL HAVE FLEXIBLE PIPE ON DUCT CONNECTIONS AND APPROVED VIBRATION ISOLATORS.
- PROVIDE AIRTIGHT ACCESS DOOR FOR INSPECTION OF FIRE DAMPERS, FILTERS, AND COILS.
- CONTRACTOR SHALL VERIFY DUCT, PIPING AND EQUIPMENT LOCATIONS FOR INTERFERENCES BEFORE INSTALLATION.
- PROVIDE VERTICAL SUPPORTS FOR WATER PIPING AT THE FOLLOWING MAXIMUM INTERVALS: 8' FOR 2" DIAMETER PIPE, 7' FOR 1-1/2" & 1-1/4" DIAMETER PIPE, 5' FOR 1" & 3/4" DIAMETER PIPE.
- ALL EQUIPMENT SHALL BE INSTALLED IN STRICT ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTALLATION INSTRUCTIONS.

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Title:                            HVAC LEGEND, NOTES AND ABBREVIATIONS

Drawing No.:                    H0.1

HVAC SCHEDULES

COMMON AREA DX FAN COIL UNIT SCHEDULE																			
TAG No.	MANUFACTURER	MODEL No.	TYPE	COOLING MBH	HEATING MBH	FAN DATA				ELECTRICAL DATA									
						OA (CFM)	MIN (CFM)	MAX (CFM)	ESP (IN WG)	COOLING (W)	COOLING (A)	HEATING (W)	HEATING (A)	VOLT	PH	HZ	MCA	MOCP	
FCU-1	DAIKIN	FXZ005TAVJU	CEILING CASSETTE	5.8	6.5	-	220	300	-	-	-	-	-	-	208	1	60	0.3	15
FCU-2	DAIKIN	FXZ007TAVJU	CEILING CASSETTE	7.5	8.5	-	229	307	-	-	-	-	-	-	208	1	60	0.3	15
FCU-3	DAIKIN	FXZ009TAVJU	CEILING CASSETTE	9.5	10.5	-	229	317	-	-	-	-	-	-	208	1	60	0.3	15
FCU-4	DAIKIN	FXZ015TAVJU	CEILING CASSETTE	15	17	-	282	405	-	-	-	-	-	-	208	1	60	0.4	15

- NOTES:  
 1. INSTALLING CONTRACTOR TO PROVIDE FIELD INSTALLED AND WIRED DISCONNECT SWITCH, VIBRATION ISOLATION, MULTI-FUNCTION CASEMENT, MERV 13 FILTER, WALL MOUNTED THERMOSTAT  
 2. INDIRECT WASTE CONDENSATE, REFER TO PLUMBING DRAWINGS FOR LOCATION  
 3. INSTALLING CONTRACTOR SHALL PROVIDE REFRIGERANT ISOLATION VALVES FOR EACH UNIT

COMMON AREA - AIR COOLED HEAT PUMP SCHEDULE														
TAG No.	FAN COIL(S) SERVED	MANUFACTURER	MODEL No.	TYPE	REFRIG.	MBH		MODULE	ELECTRICAL DATA				OPERATING WEIGHT	REMARKS
						COOL	HEAT		VOLTS	PHASE	MCA	MOCP		
HP-1	LIBRARY	DAIKEN	RXLQ144TATJU	AIR COOLED	R-410A	144	162	2	208	3	60.8	70	1446 LBS	SEE NOTES
HP-2	NURSE	DAIKEN	RXYM036PVJU	AIR COOLED	R-410A	36	40	1	208	1	27	30	283 LBS	SEE NOTES
HP-3	SWEGON	DAIKEN	RXT060TAVJUA	AIR COOLED	R-410A	57.5	57	1	208	1	29.1	35	225 LBS	CONNECT TO OXYGEN 8 DX COIL PROVIDE AHU INTEGRATION KIT(EXPANSION VALVE & CONTROL BOX)

ENERGY RECOVERY VENTILATOR SCHEDULE																					
TAG No.	LOCATION SERVED	MANUFACTURER (AS STANDARD)	MODEL No. (AS STANDARD)	TYPE	SUPPLY FAN DATA				EXHAUST FAN DATA				ELECTRICAL DATA					FILTER	EFF%	WEIGHT (LBS)	REMARKS
					CFM	ESP (IN W.C.)	RPM	HP	CFM	ESP (IN W.C.)	RPM	HP	VOLTS	PHASE	HZ	FLA	MOCP				
ERV-1	NURSE	RENEWAIRE	EV-L	INDOOR	170	0.4	-	0.03	170	0.4	-	0.04	120	1	60	1.22	10	MERV 13	65	52	1

- NOTES:  
 1. PROVIDE DISCONNECT SWITCH, SPRING ISOLATION HANGERS, FILTERS, BACKDRAFT DAMPERS, FROST CONTROL  
 2. PROVIDE DX COIL AND ELECTRIC DUCT HEATER WITH SEPARATE POWER SUPPLY

INSULATION TYPE SCHEDULE						
LOCATION	INSULATION TYPE	FITTING INSULATION TYPE	FOR PIPE DIA. (INCHES)			
			< 1"	1" < Ø < 1 1/2"	1 1/2" < Ø < 4"	4" < Ø < 8"
REFRIGERANT PIPING	ELASTOMERIC	ELASTOMERIC	1-1/2"	1-1/2"	1-1/2"	1-1/2"
CONDENSATE PIPING	ELASTOMERIC	ELASTOMERIC	3/4"	3/4"	3/4"	3/4"
SUPPLY, RETURN & OUTSIDE AIR DUCT INSULATION	2" FIBERGLASS DUCT WRAP WITH FSK FACING					
EXHAUST DUCT INSULATION	NO INSULATION					

ELECTRIC HEATING COIL SCHEDULE														
TAG No.	LOCATION(S) SERVED	MANUFACTURER (AS STANDARD)	MODEL No. (AS STANDARD)	HEIGHT X WIDTH (IN. X IN.)	CFM	KW	MBH	DELTA T (°F)	APD (IN.)	ELECTRICAL DATA				REMARKS
										VOLT	PHASE	HZ	A	
EHC-1	ERV-1	INDEECO	QUZ	8 X 8	170	1.9	6.5	35	-	208	1	60	12	PROVIDE SCR CONTROLLER AND DISCONNECT

ENERGY RECOVERY VENTILATOR SCHEDULE																																													
TAG No.	LOCATION SERVED	MANUFACTURER (AS STANDARD)	MODEL No. (AS STANDARD)	TYPE	SUPPLY FAN DATA				EXHAUST FAN DATA				TYPE	HEAT RECOVERY SECTION								ELECTRICAL DATA				FILTER	SEER/EER	WEIGHT (LBS)	REMARKS																
					CFM	ESP (IN W.C.)	RPM	HP	CFM	ESP (IN W.C.)	RPM	HP		WINTER PERFORMANCE				SUMMER PERFORMANCE				TOTAL (MBH)	SENSIBLE (MBH)	EAT (°F)	LAT (°F)					OUTPUT (MBH)	EAT (°F)	LAT (°F)													
														SUPPLY AIR		EXHAUST AIR		SUPPLY AIR		EXHAUST AIR																									
					EAT (°F)	LAT (°F)	DB(°F)	WB(°F)	EAT (°F)	LAT (°F)	DB(°F)	WB(°F)		EAT (°F)	LAT (°F)	DB(°F)	WB(°F)	EAT (°F)	LAT (°F)	DB(°F)	WB(°F)	EAT (°F)	LAT (°F)	DB(°F)	WB(°F)					EAT (°F)	LAT (°F)	DB(°F)	WB(°F)												
ERV-2	REFER TO PLANS	SWEGON	GOLD124RX	OUTDOOR	1230	1.0	-	-	1230	1.0	-	-	WHEEL	1230	0	57	1230	70	13.4	1100	91	76	78	86	1100	75	62.5	-	-	60	31	-	5555	60	58.1	102	220	1	13.4	13.27	15	MERV 13	-	1574	SEE NOTES

- NOTES:  
 1. PROVIDE DISCONNECT SWITCH, GFCI POWER SERVICE OUTLET AND LIGHT, FROST CONTROL, MODULATING DAMPERS, WEATHERHOOD, GAS REHEAT, MODULATING GAS VALVE, GAS SHUT OFF VALVE, 100% ECONOMIZER BYPASS, PACKAGED CONTROLS, CONDENSATE OVERFLOW SWITCH, AND SINGLE POINT CONNECTION.  
 2. PROVIDE 24" HIGH ROOF CURB WITH SPRING VIBRATION ISOLATION.  
 3. PROVIDE DUCT SMOKE DETECTORS IN SUPPLY & RETURN DUCT SHAFTS. WIRED BY EC & INSTALLED BY MC.  
 4. PROVIDE DUCT CO DETECTOR IN SUPPLY DUCT (BY OTHERS).

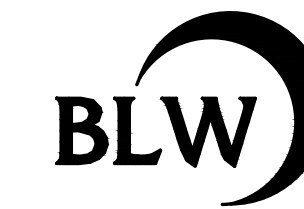
HVAC POWER EQUIPMENT SCHEDULE										
TAG	DESCRIPTION	LOCATION	MANUFACTURER (AS STANDARD)	MODEL No. (AS STANDARD)	SERVING EQUIPMENT TAG	FIRE ALARM CONNECTION	ELECTRICAL DATA			REMARKS
							VOLTS	PHASE	HZ	
DSD	DUCT/SMOKE DETECTOR	REFER TO DWGS	-	-	RTU-1&2	YES	24V	-	-	
CP	CONDENSATE PUMP	REFER TO DWGS	LITTLE GIANT	VCC-20U/LS	ALL GAS FURNACES	NO	120	1	60	
M	MOTORIZED DAMPER	REFER TO DWGS	-	-	-	NO	120	1	60	
M	ELEVATOR VENT DAMPER	REFER TO DWGS	-	-	-	YES	120	1	60	
FSD	FIRE/SMOKE DAMPER	REFER TO DWGS	-	-	-	YES	120	1	60	

REGISTER, GRILLE & DIFFUSER SCHEDULE											
TAG	TYPE	CFM/NECK SIZE	FRAME TYPE	MOUNTING	DAMPER	MATERIAL/FINISH	MANUFACTURER/ MODEL No.	NC	NECK VELOCITY (FPM)	REMARKS	
SR	SUPPLY	REFER TO PLANS	SQ/RECT	CEILING	YES	AS PER ARCHITECT	TITUS/300 RL	<25	500	1,2,3,4,5,6	
SD	RETURN	REFER TO PLANS	SQUARE	CEILING	YES	AS PER ARCHITECT	TITUS/0/MNI	<25	500	1,2,3,4,5,6	
ER	EXHAUST	REFER TO PLANS	SQ./RECT.	CEILING	YES	AS PER ARCHITECT	TITUS/350 RL	<25	500	1,2,3,4,5,6,10	
RR	RETURN	REFER TO PLANS	SQUARE	CEILING	YES	AS PER ARCHITECT	TITUS/350 RL	<25	500	1,2,3,4,5,6	

- NOTES:  
 1. COORDINATE MOUNTING REQUIREMENTS WITH ARCHITECTURAL CEILING PLANS.  
 2. COORDINATE FINISH & COLOR WITH ARCHITECT.  
 3. PROVIDE FRAME SUITABLE FOR SURFACE MOUNTING.  
 4. PROVIDE SQUARE TO ROUND TRANSITIONS WHERE NEEDED.  
 5. PROVIDE RADIATION DAMPER AT A FLOOR/CEILING PENETRATION.  
 6. PROVIDE OPPOSED BLADE DAMPER WITH SCREW DRIVER ADJUSTMENT CONTROL.

PIPE MATERIAL TABLE				
SERVICE	LOCATION	PIPING	FITTINGS	JOINTS
REFRIGERANT PIPING	ABOVE GROUND	COPPER - ARC	COPPER, NO LEAD	BRAZED
CONDENSATE DRAINS		TYPE 1' COPPER OR SCHEDULE 40 PVC	WROT COPPER, NO LEAD OR SCH. 40 PVC	95% NO-LEAD SOLDER OR PVC SOLVENT CEMENT

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Client:

TOWN OF ANDOVER  
 DOHERTY SCHOOL  
 ANDOVER, MA

Submission:

BID SET 05/26/21

Revision:

Project:

DOHERTY MIDDLE SCHOOL HVAC  
 50 BARTLET ST., ANDOVER MA

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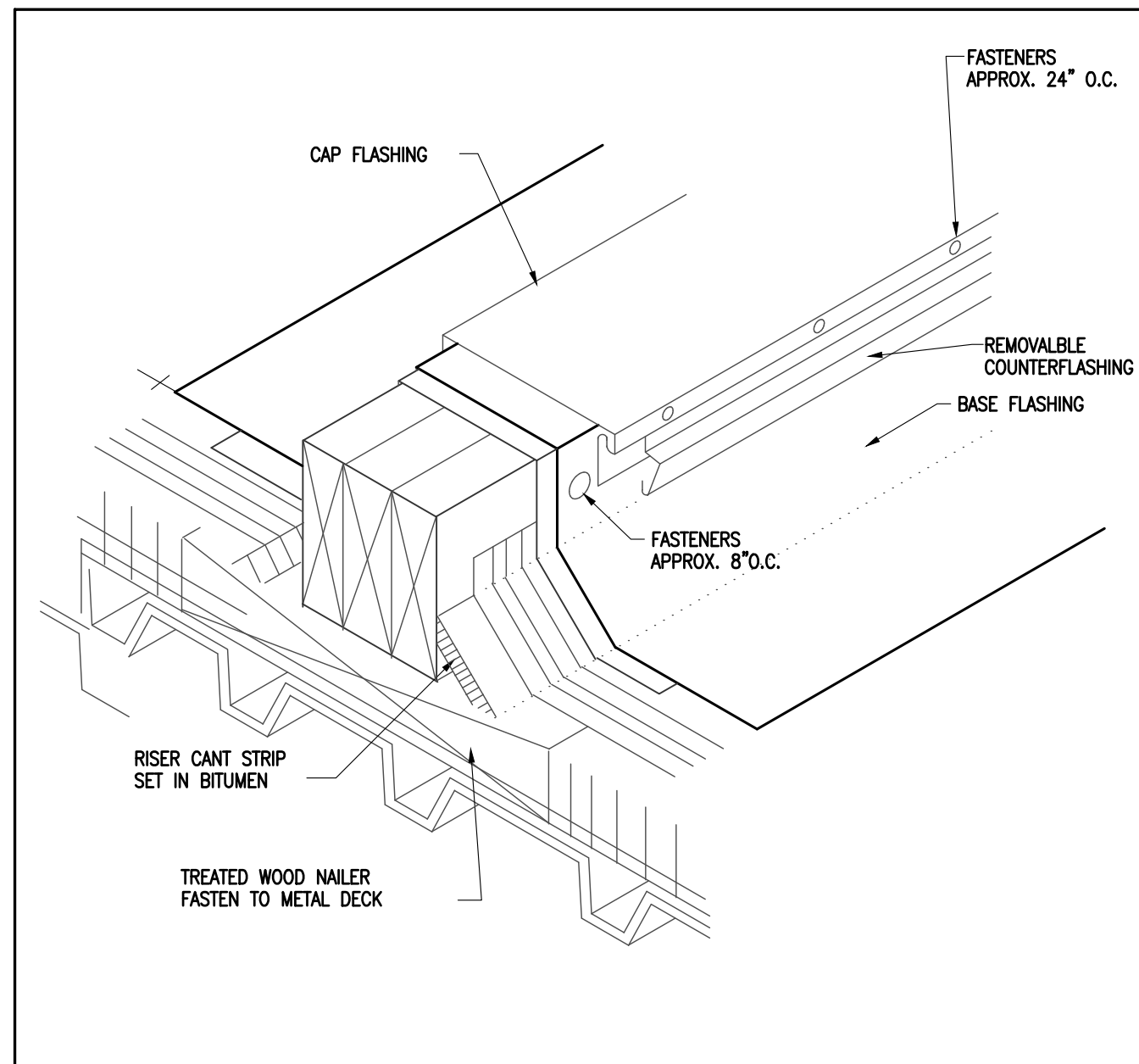
HVAC SCHEDULES

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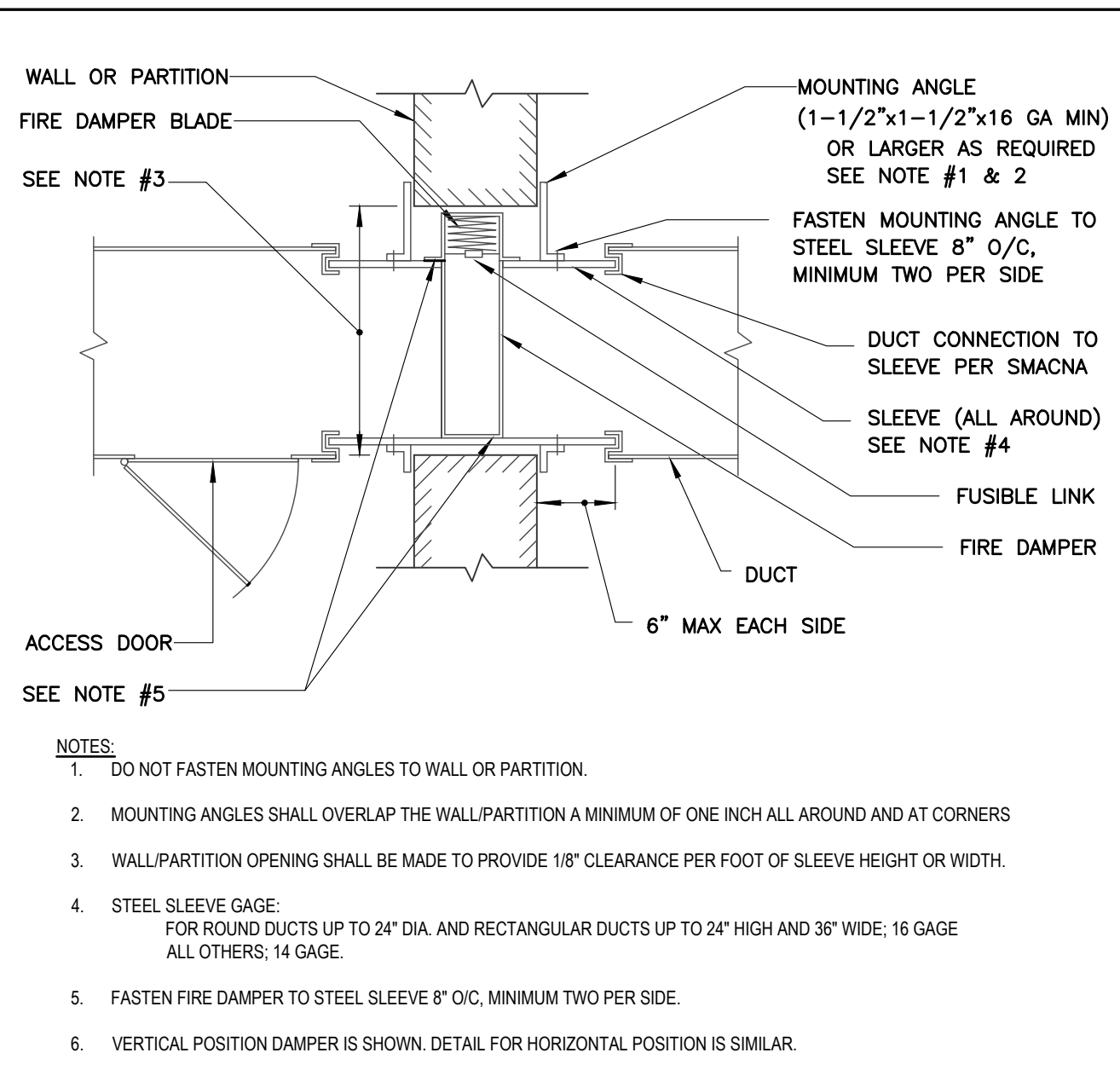
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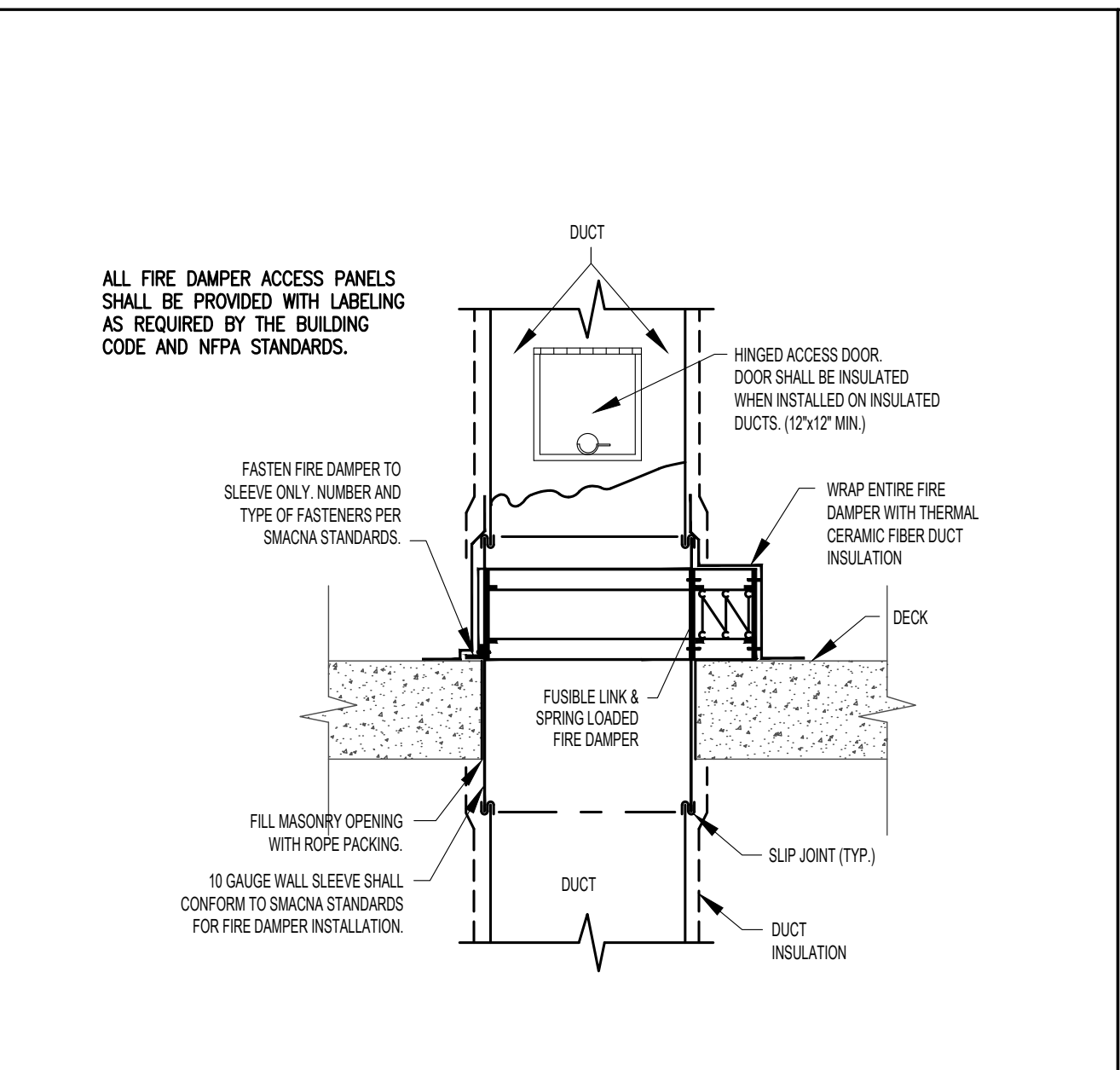
HVAC DETAILS



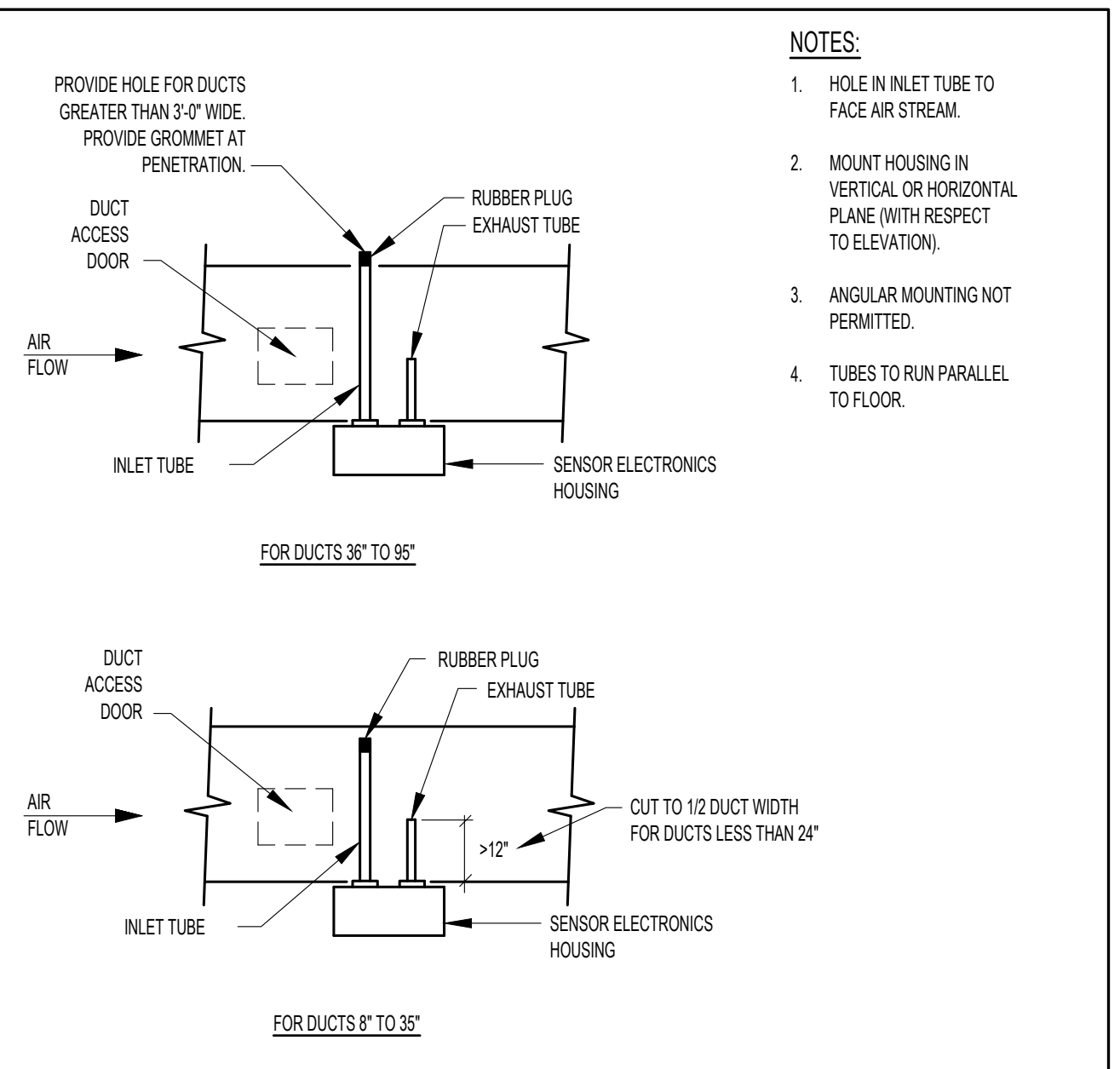
EQUIPMENT SUPPORT DETAIL



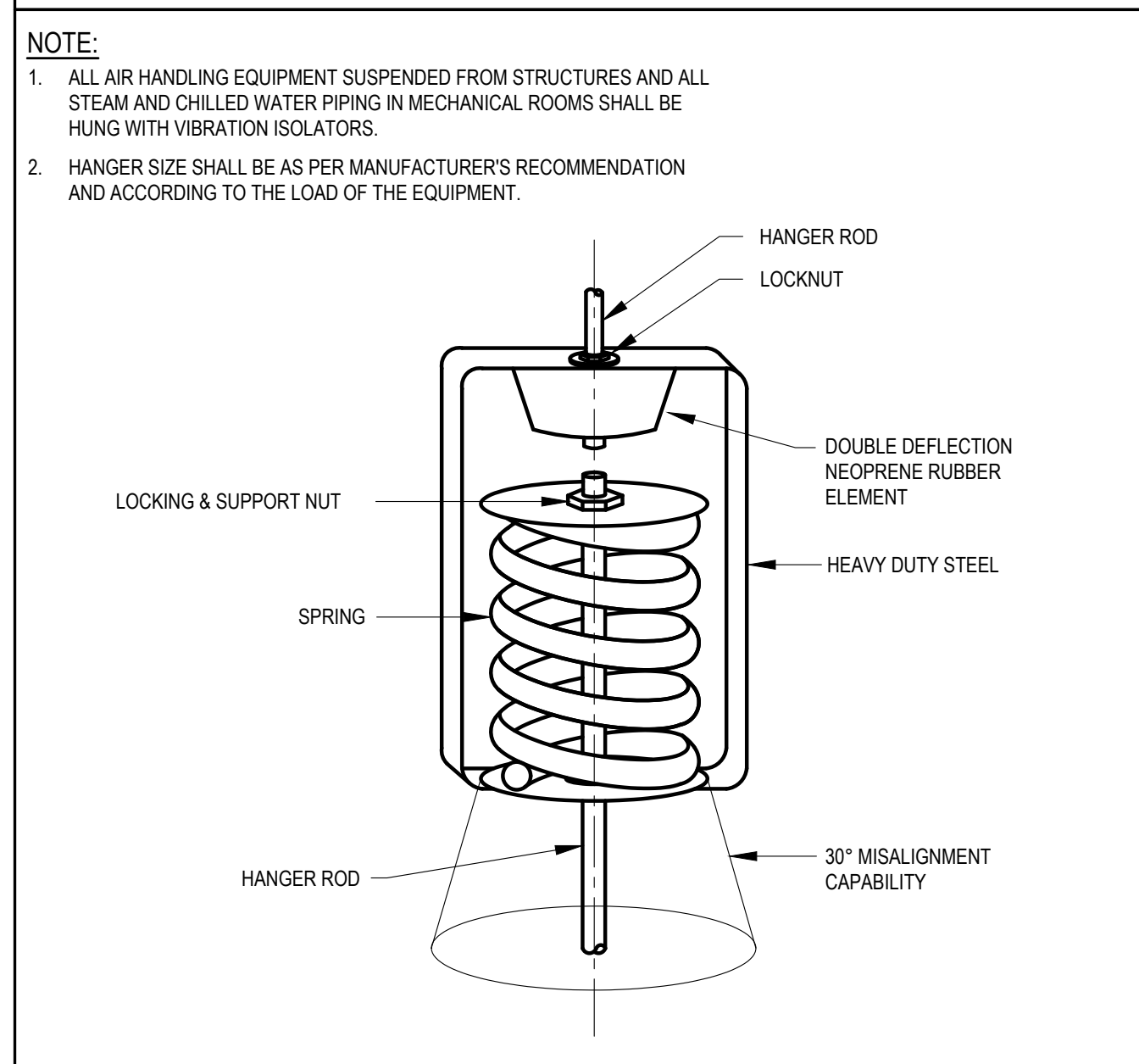
TYPICAL FIRE DAMPER DETAIL



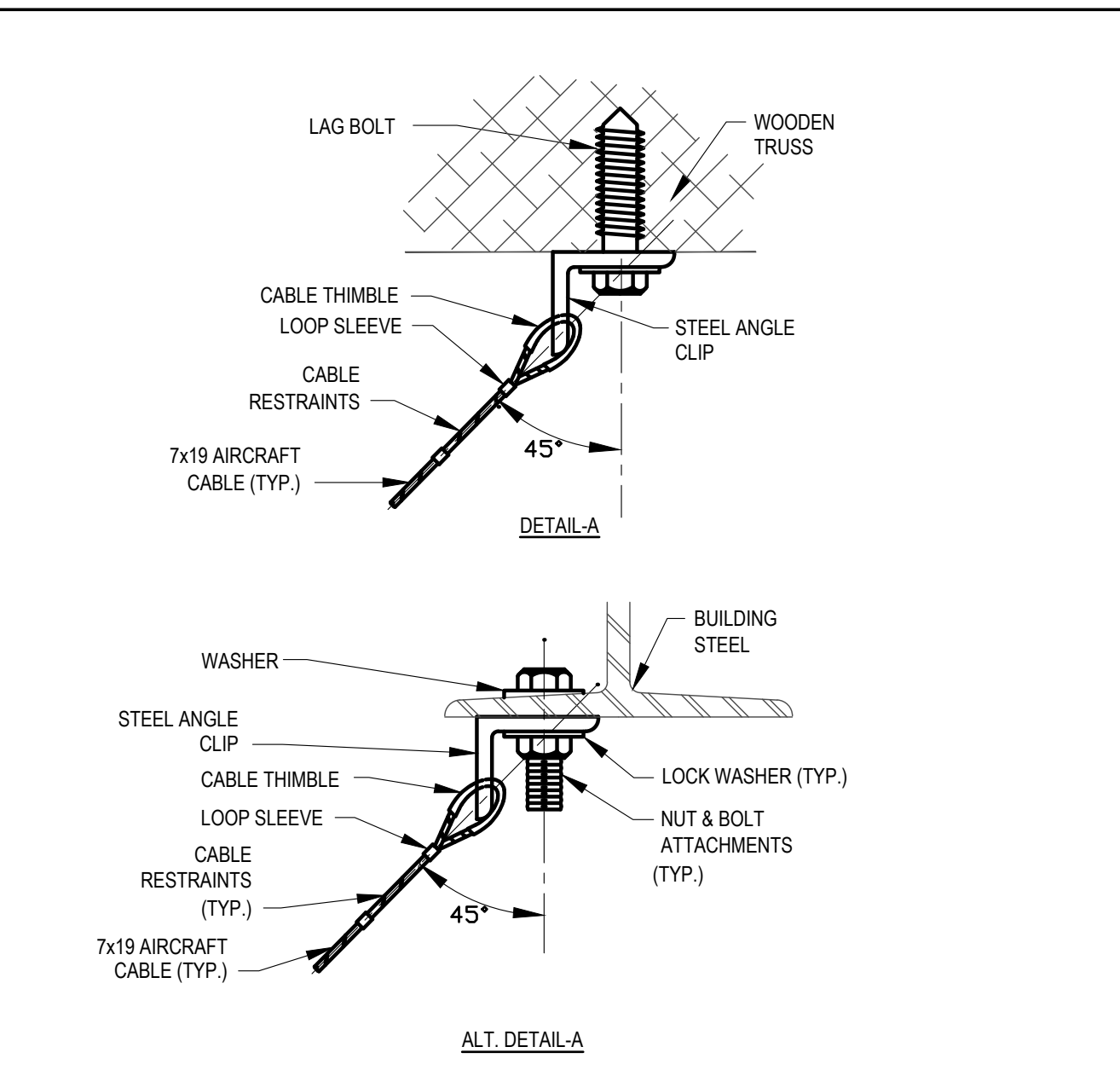
FLOOR FIRE DAMPER DETAIL



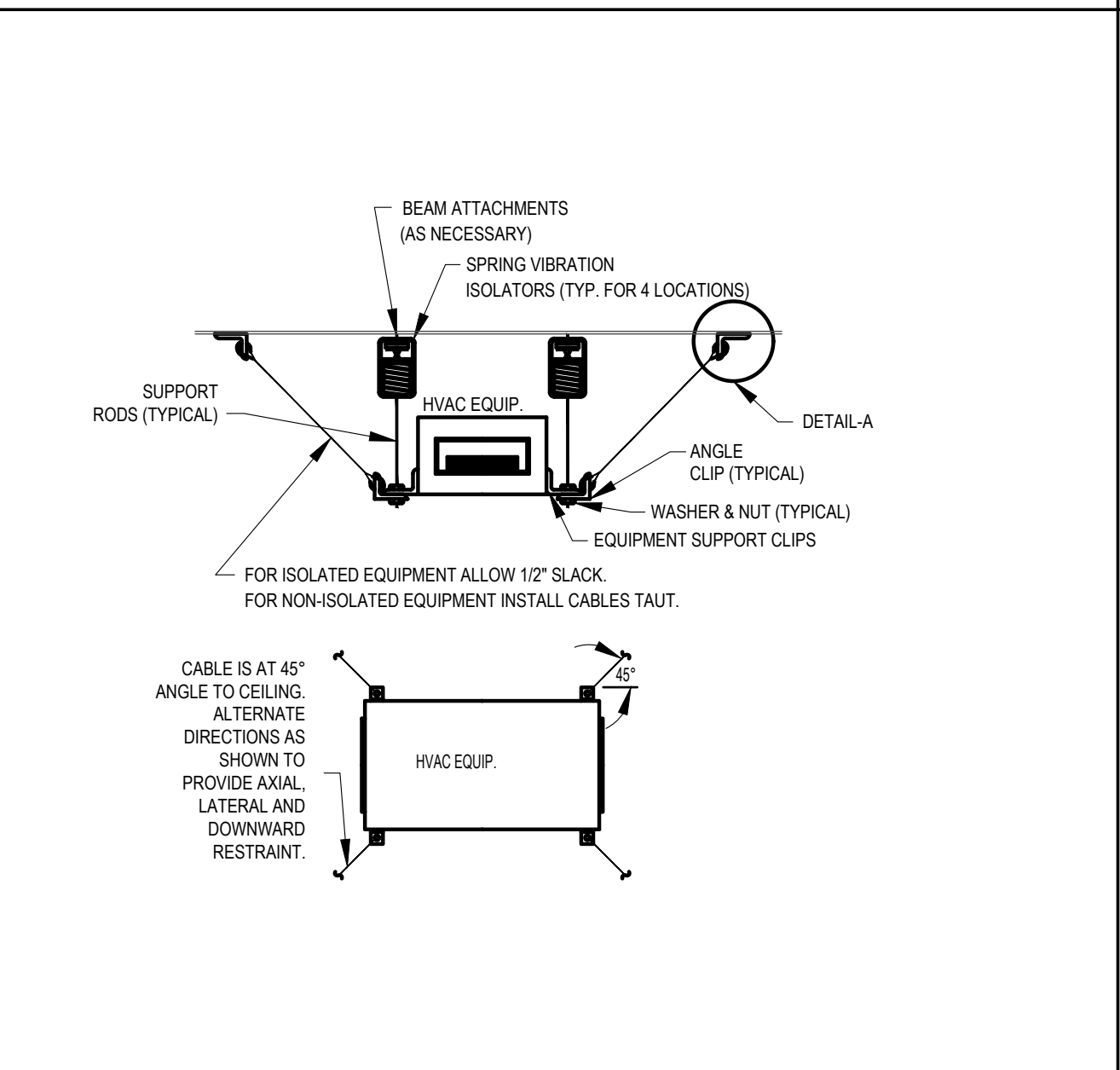
DUCT SMOKE DETECTOR INSTALLATION



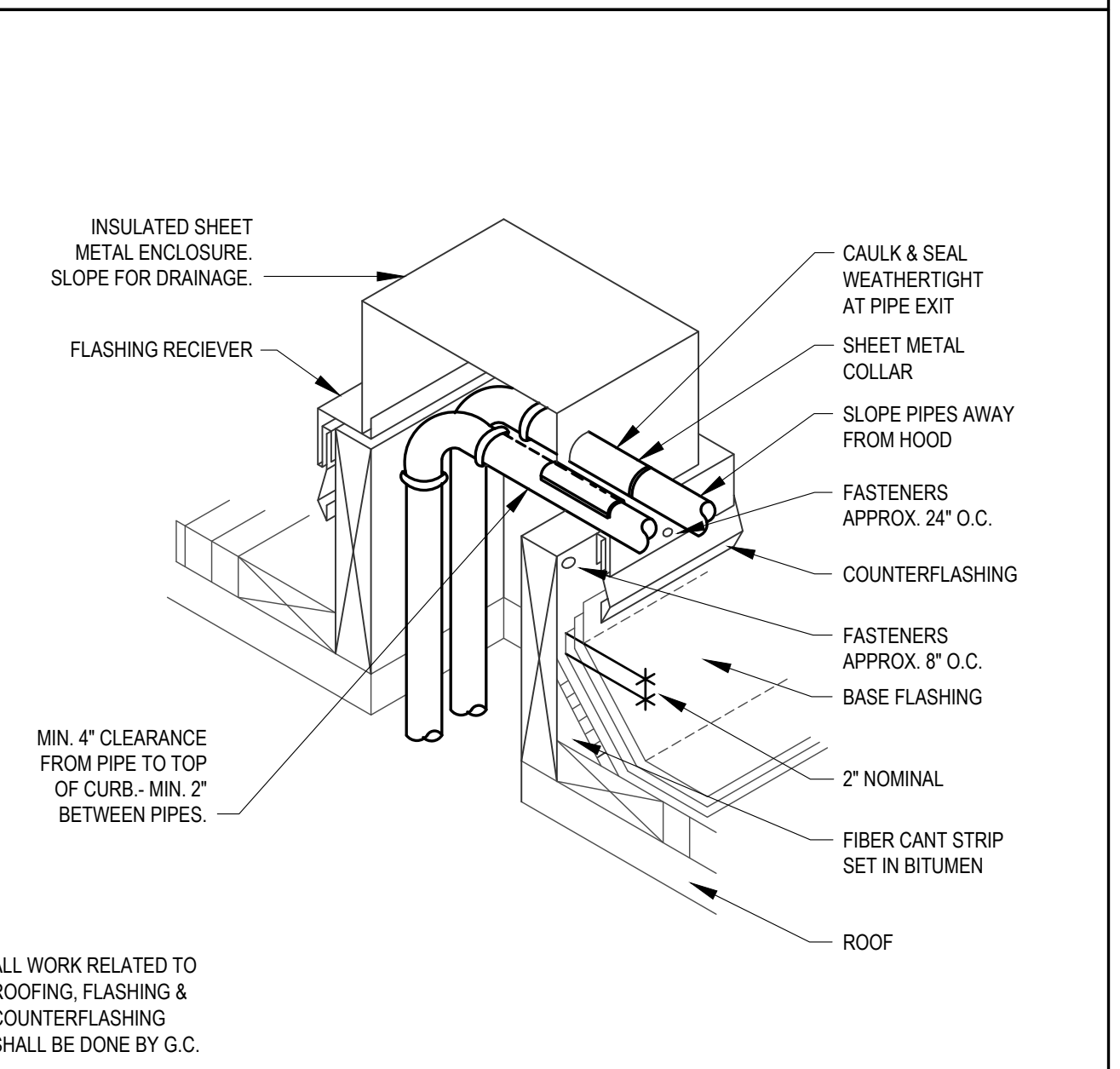
SPRING ISOLATION DETAIL



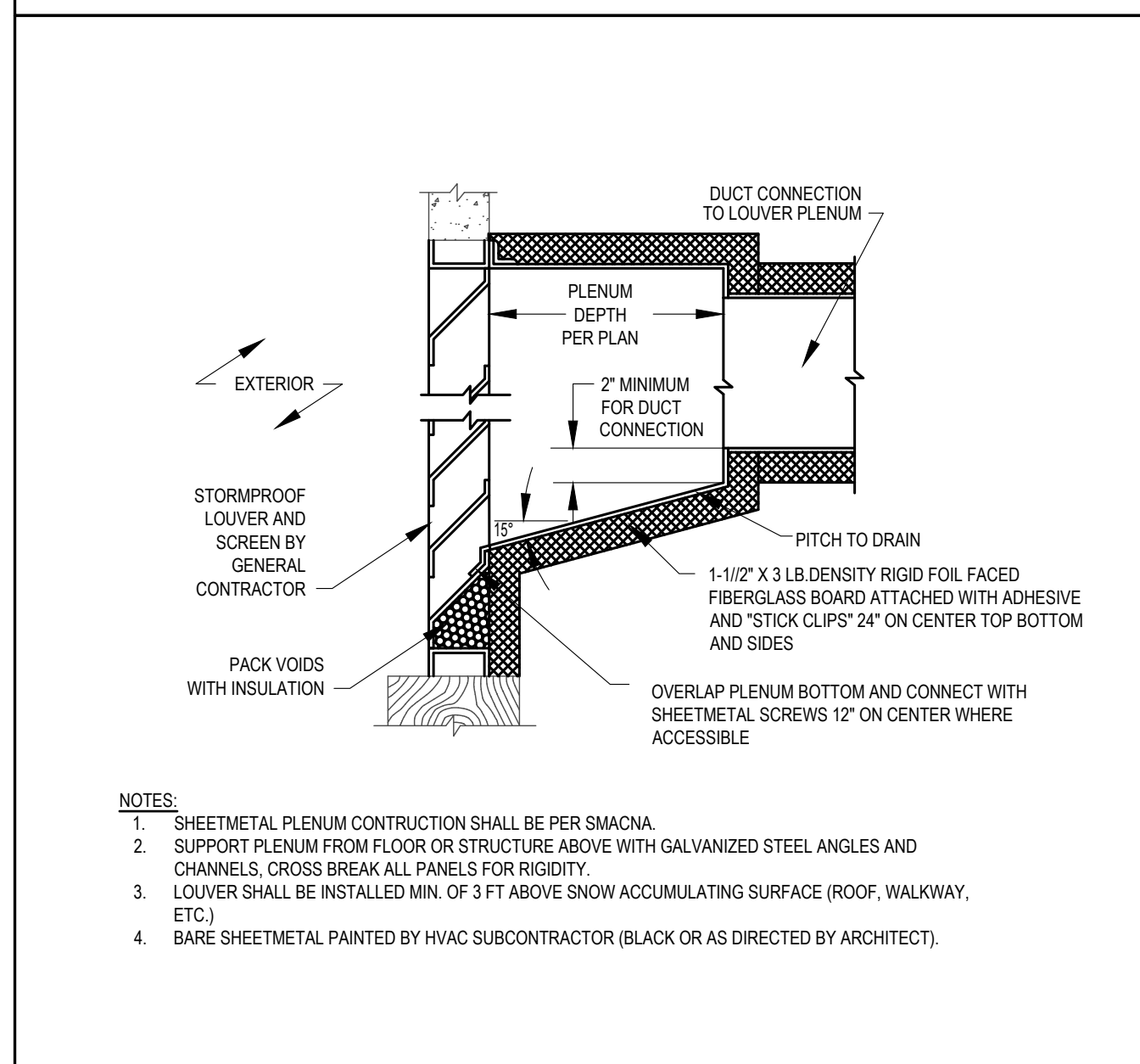
(DETAIL "A") RESTRAINTS



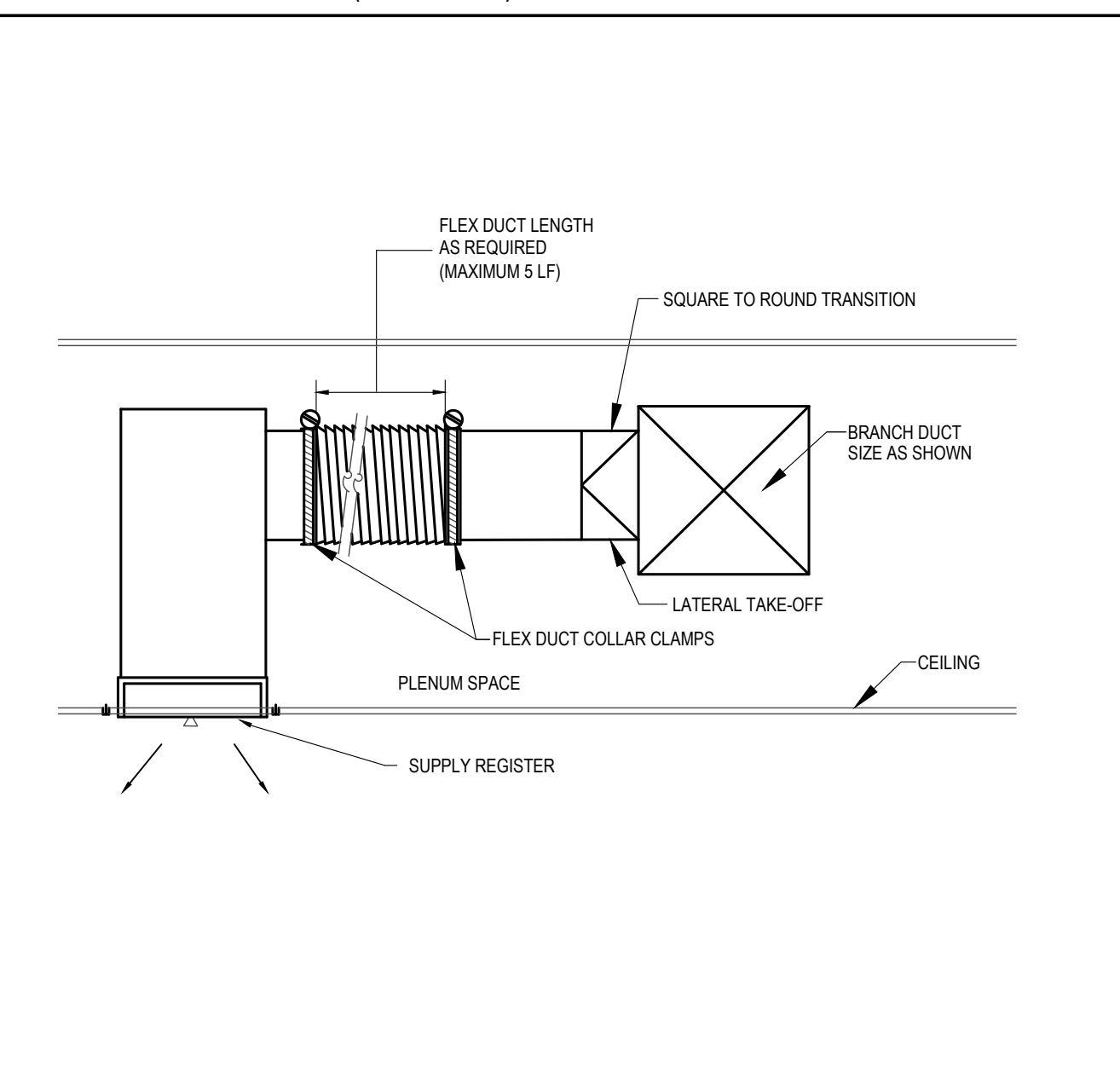
TYPICAL LOUVER PLENUM CONNECTION DETAIL



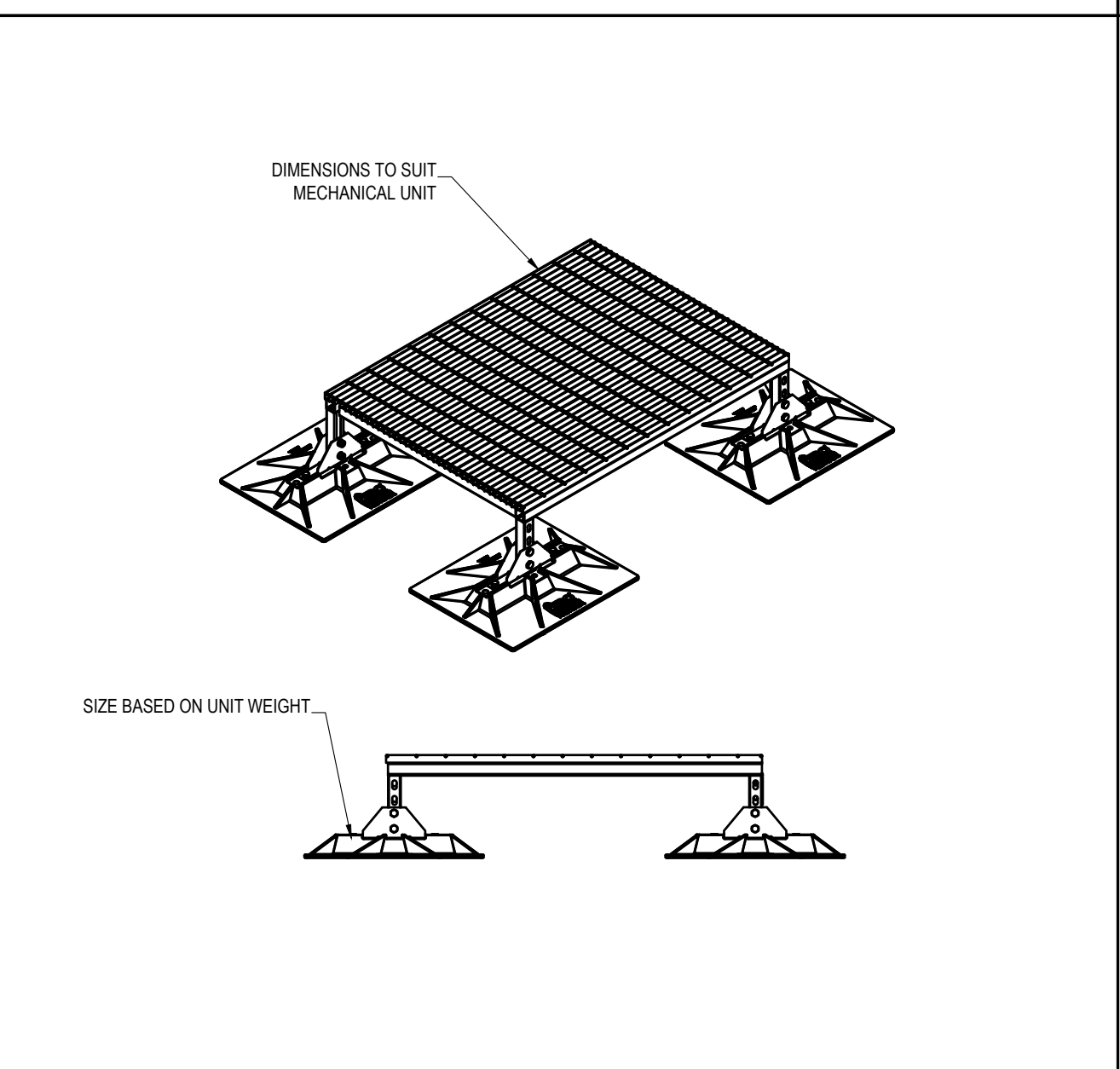
PIPING ROOF PENETRATION DETAIL



TYPICAL LOUVER PLENUM CONNECTION DETAIL

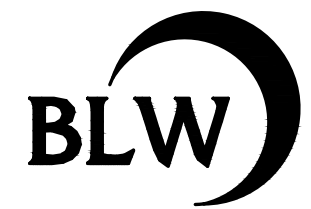


SUPPLY REGISTER DETAIL



HEAT PUMP SUPPORT

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Client:

TOWN OF ANDOVER  
DOHERTY SCHOOL  
ANDOVER, MA

Submission:

BID SET 05/26/21

Revision:

Project:

DOHERTY MIDDLE SCHOOL HVAC  
50 BARTLET ST., ANDOVER MA

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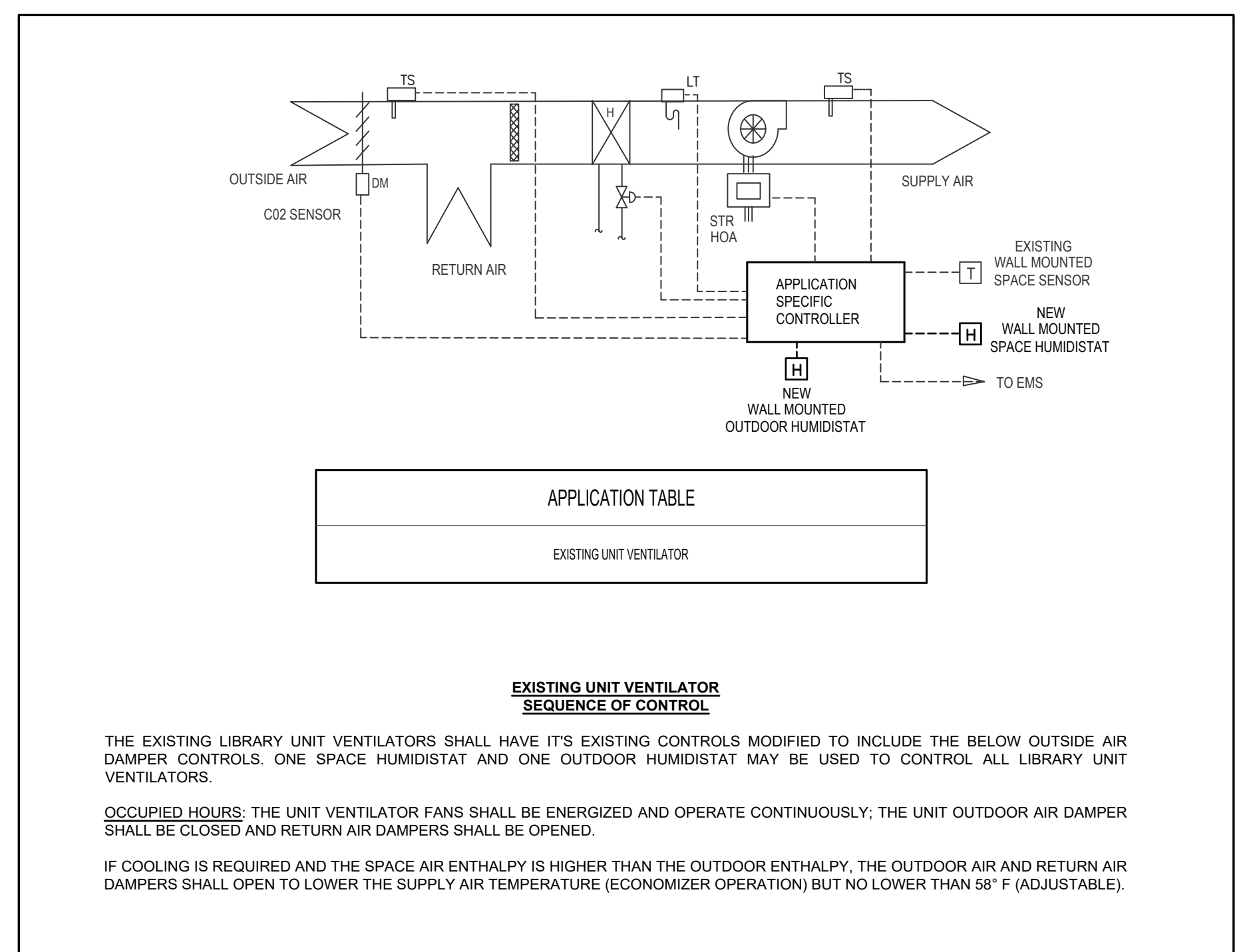
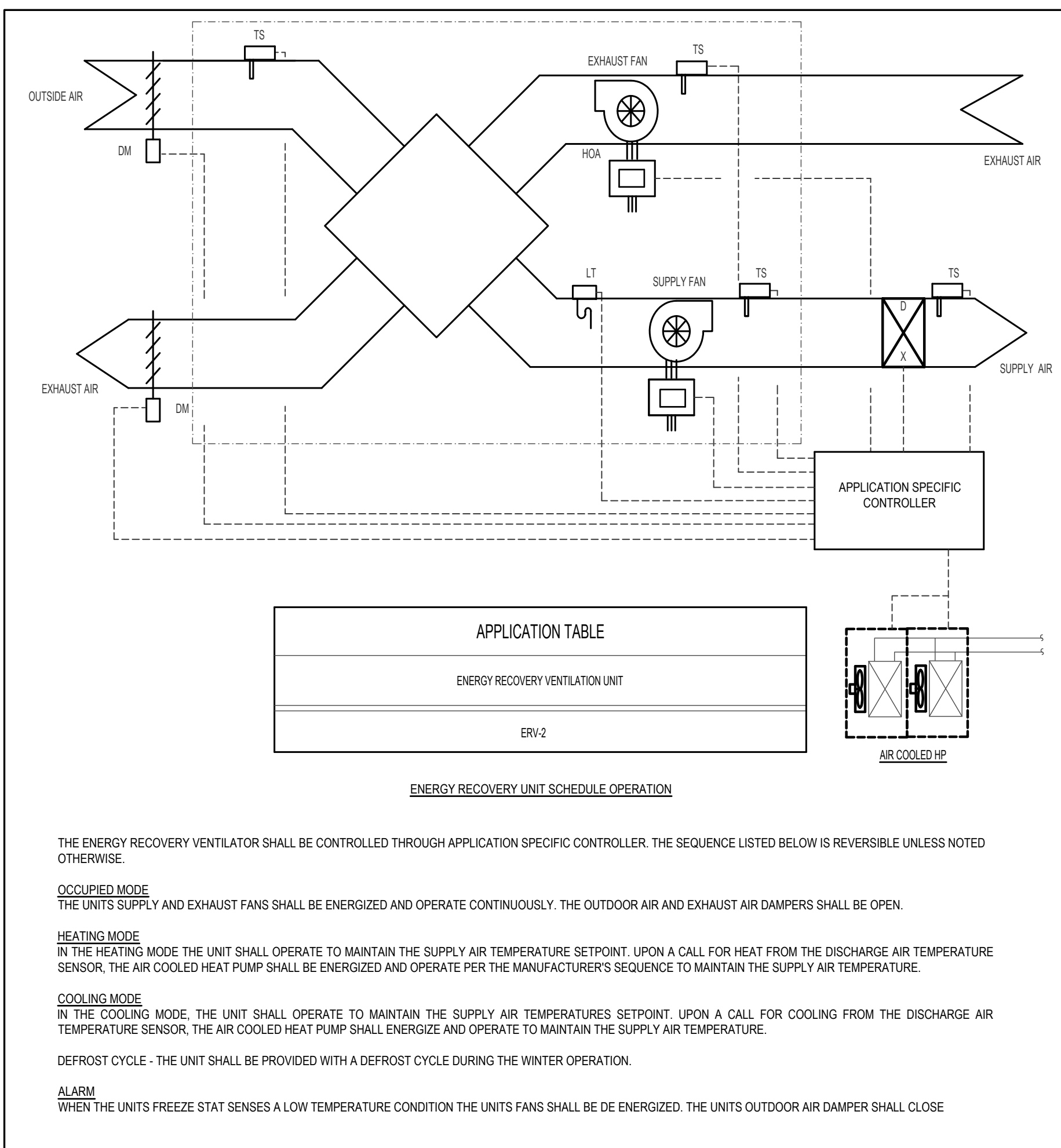
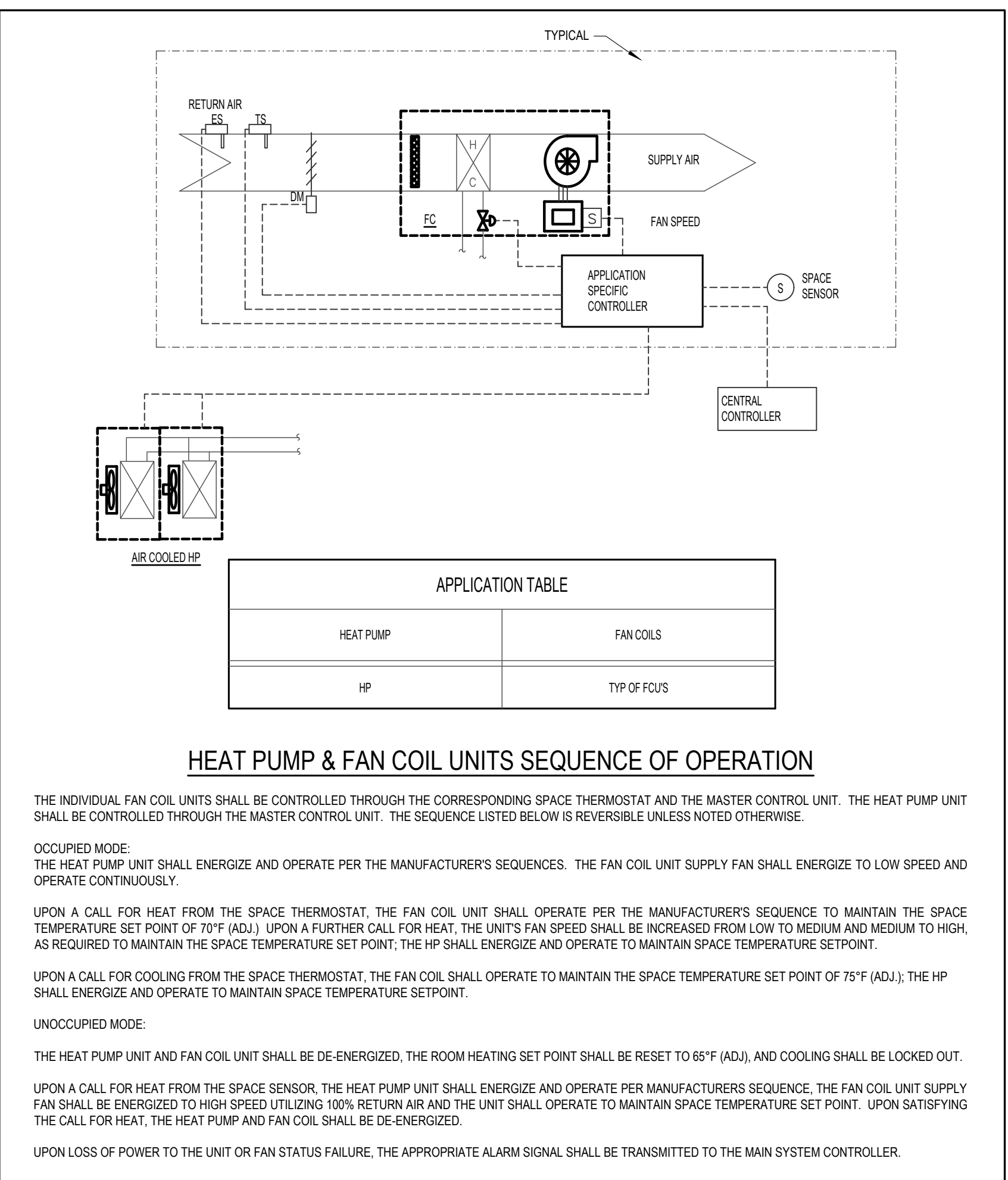
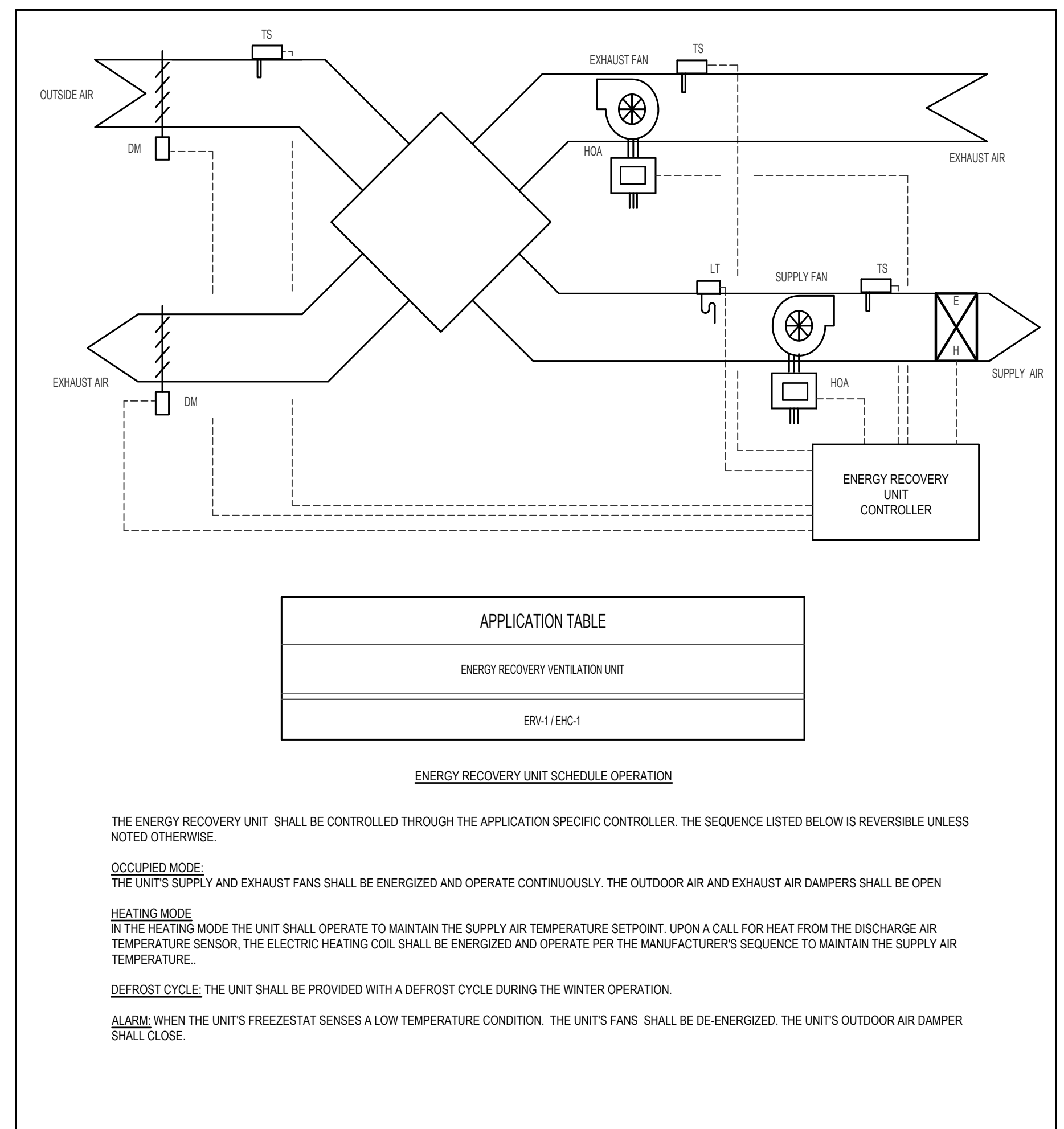
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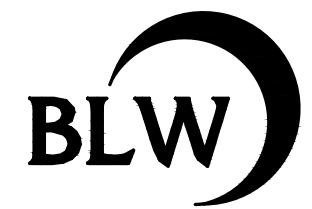
HVAC DETAILS

Drawing No.:

H0.4



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Client:  
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ANDOVER, MA

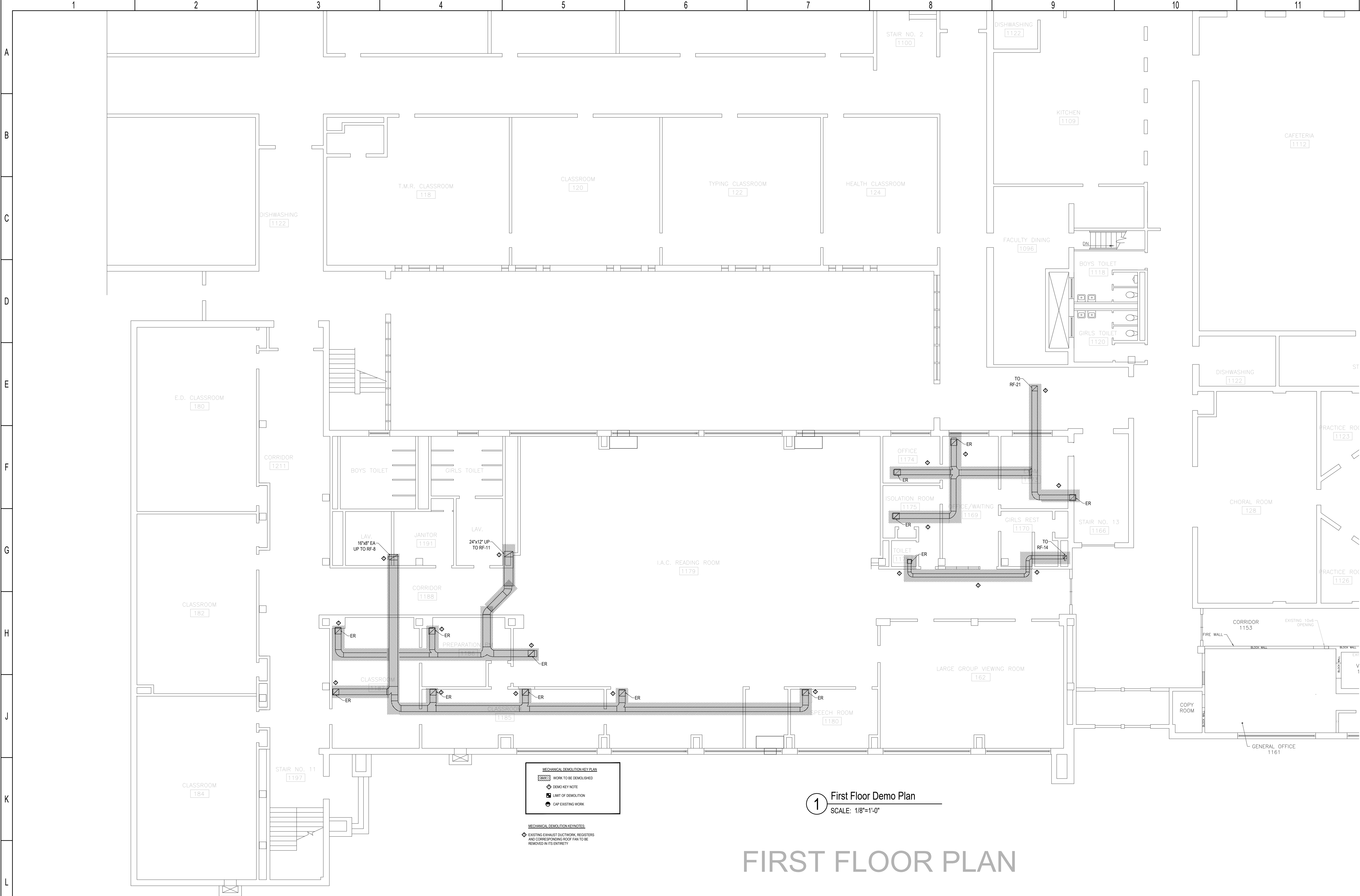
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BID SET 05/26/21

Revision:

Project:  
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Title: HVAC SEQUENCES  
Drawing No.: H0.5



**MECHANICAL DEMOLITION KEY PLAN**

- WORK TO BE DEMOLISHED
- DEMO KEY NOTE
- LIMIT OF DEMOLITION
- CAP EXISTING WORK

**MECHANICAL DEMOLITION KEYNOTES**

- EXISTING EXHAUST DUCTWORK, REGISTERS AND CORRESPONDING ROOF PAN TO BE REMOVED IN ITS ENTIRETY

**1** First Floor Demo Plan  
SCALE: 1/8"=1'-0"

# FIRST FLOOR PLAN

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BID SET **05/26/21**

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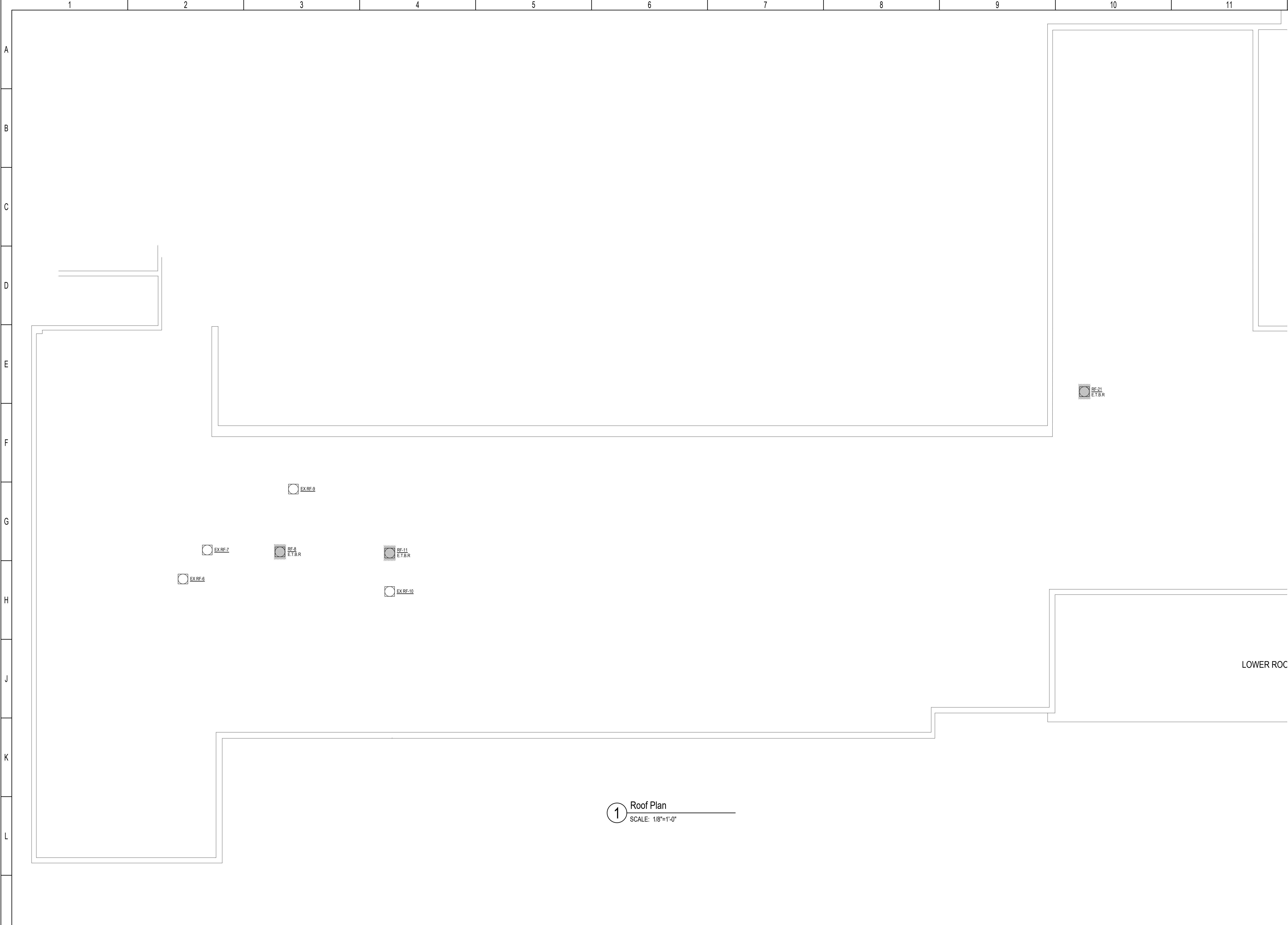
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Title:  
**HVAC DEMO  
FIRST FLOOR**

Drawing No.:  
**HD1.0**



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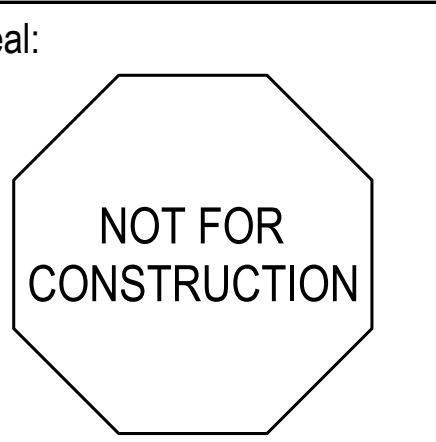
Title:

**HVAC DEMO  
 ROOF PLAN**

Drawing No.:

**HD1.1**

**1** Roof Plan  
 SCALE: 1/8"=1'-0"

Seal:  


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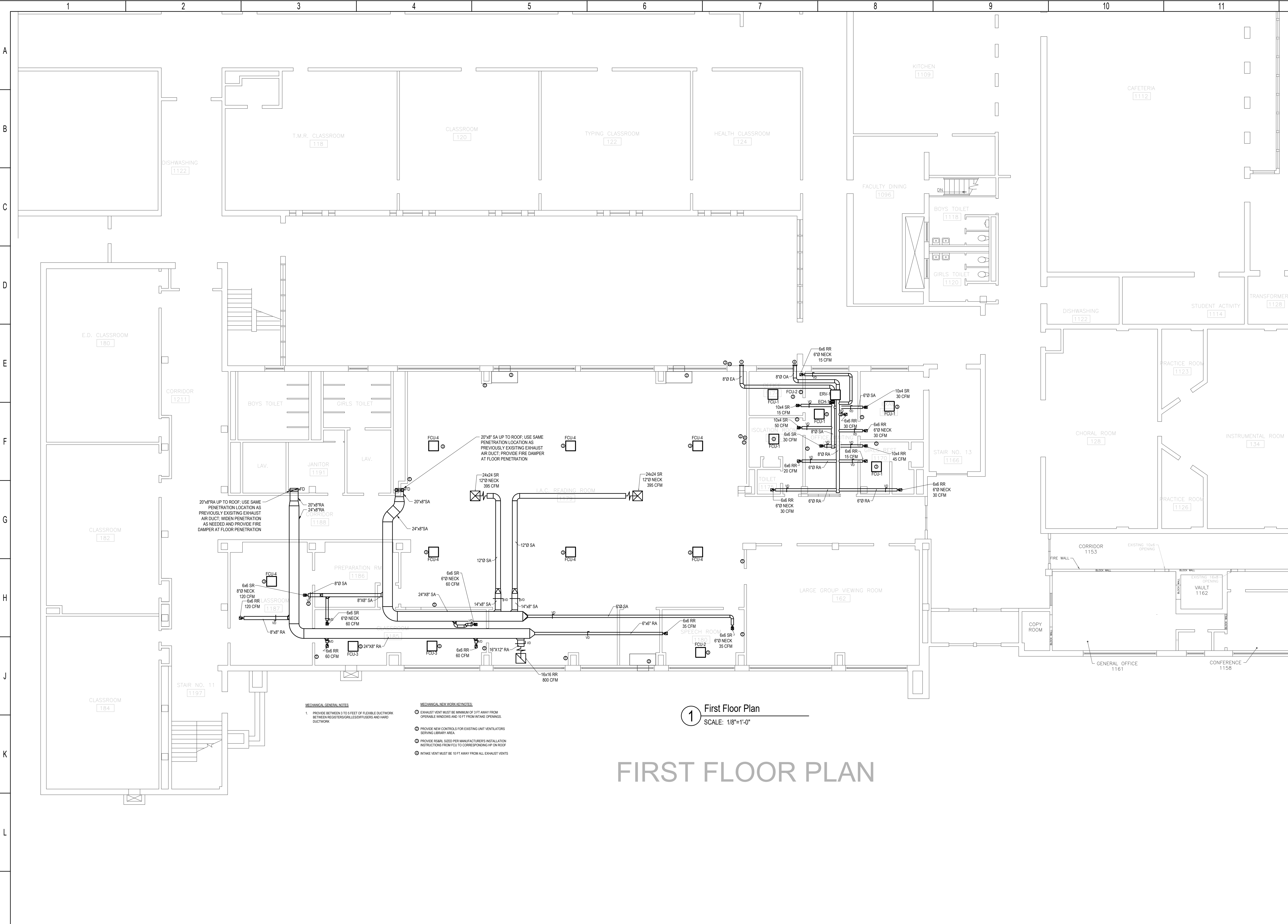
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Title:  
**HVAC FIRST FLOOR**

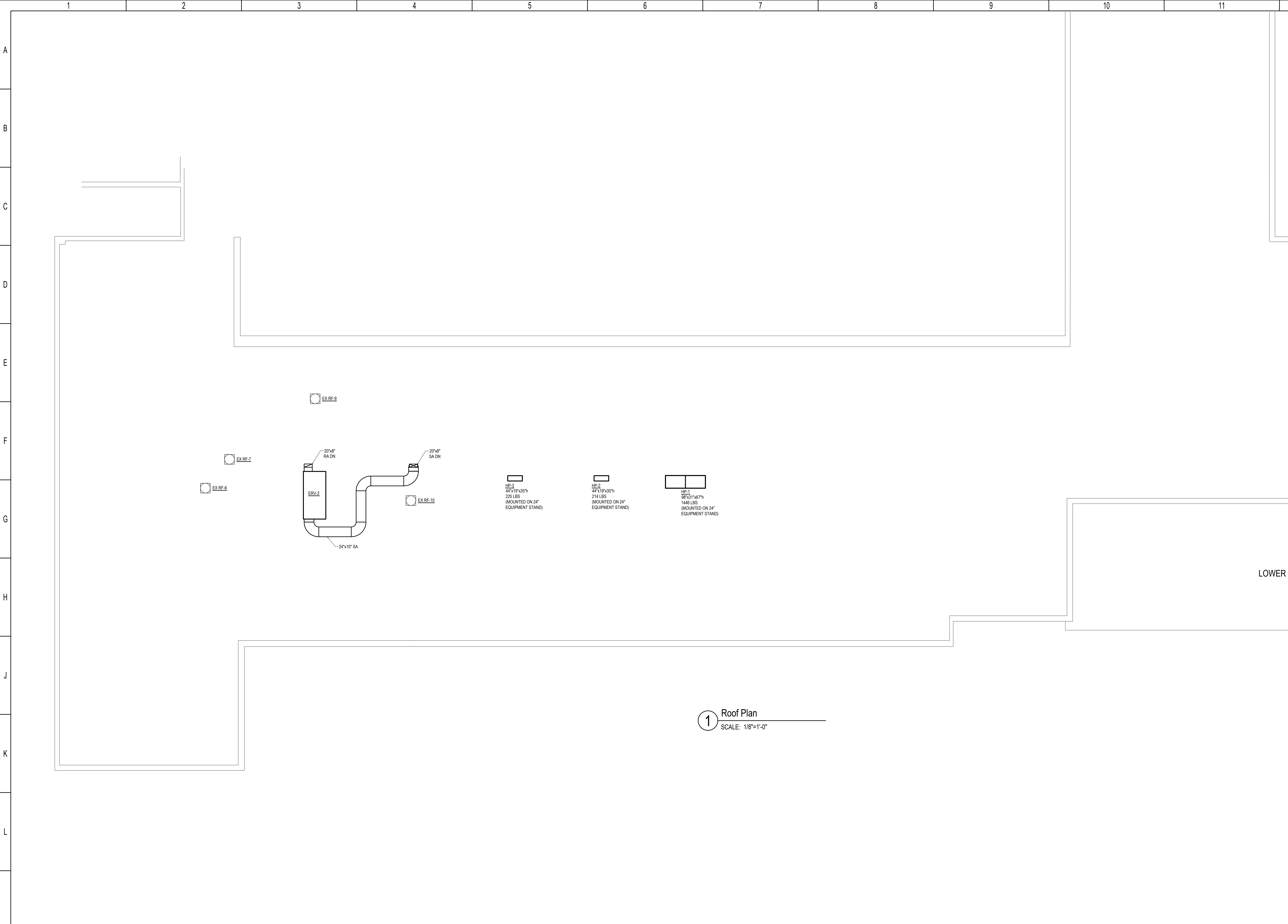
Drawing No.:  
**H2.0**



1 First Floor Plan  
 SCALE: 1/8"=1'-0"

# FIRST FLOOR PLAN

- MECHANICAL GENERAL NOTES**
- PROVIDE BETWEEN 3 TO 5 FEET OF FLEXIBLE DUCTWORK BETWEEN REGISTER/SUPPLIES AND HARD DUCTWORK
- MECHANICAL NEW WORK KEYNOTES**
- EXHAUST VENT MUST BE MINIMUM OF 3 FT AWAY FROM OPENABLE WINDOWS AND 10 FT FROM INTAKE DRAINAGES
  - PROVIDE NEW CONTROLS FOR EXISTING UNIT VENTILATORS SERVING LIBRARY AREA
  - PROVIDE RISER SIZES PER MANUFACTURER'S INSTALLATION INSTRUCTIONS FROM FCU TO CORRESPONDING HP ON ROOF
  - INTAKE VENT MUST BE 10 FT AWAY FROM ALL EXHAUST VENTS



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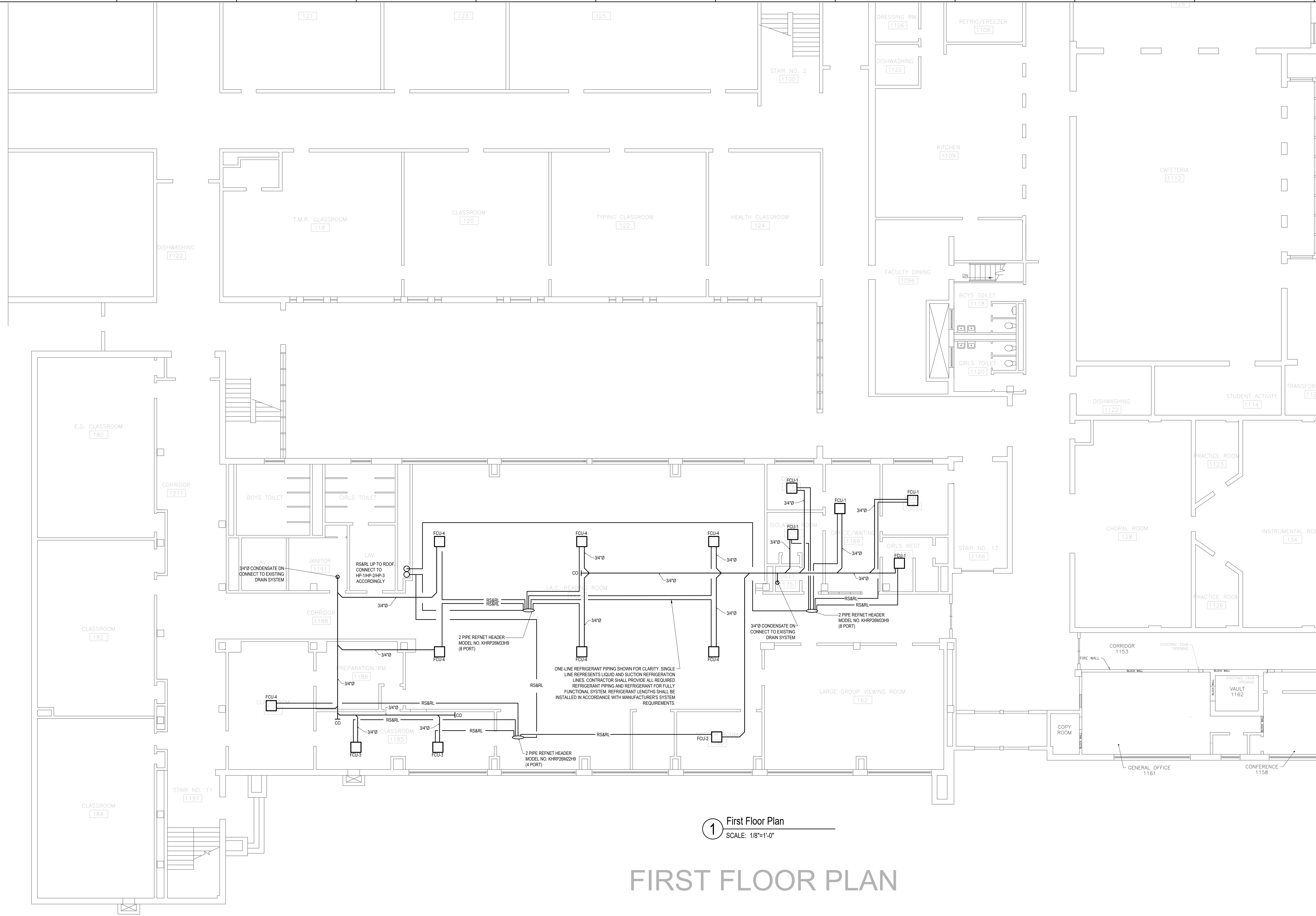
Title:

HVAC ROOF  
PLAN

Drawing No.:

H2.1

**1** Roof Plan  
SCALE: 1/8"=1'-0"



1 First Floor Plan  
SCALE: 1/8"=1'-0"

# FIRST FLOOR PLAN

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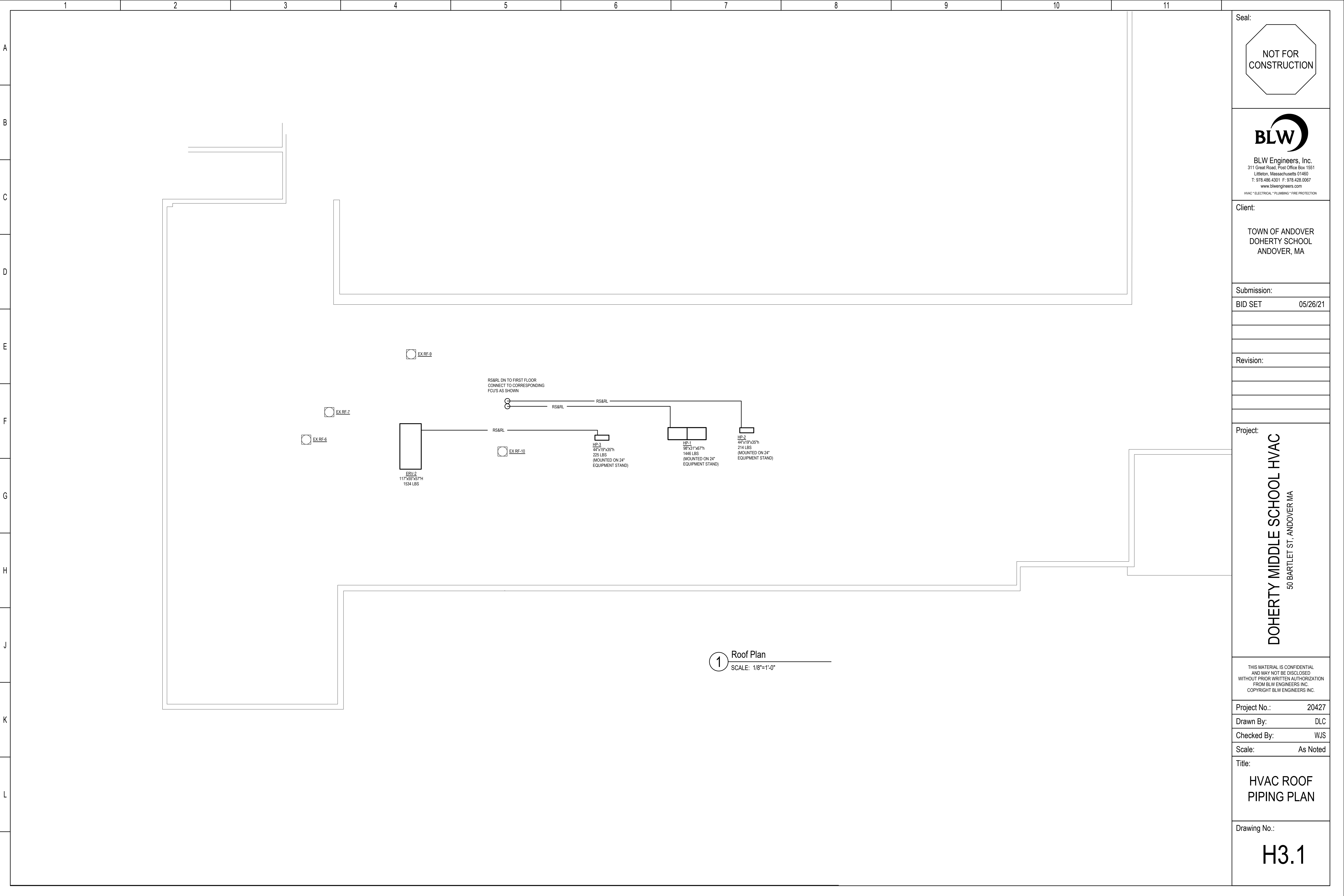
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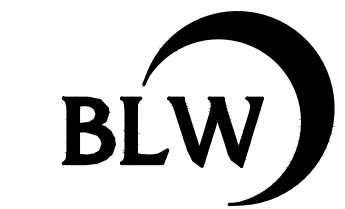
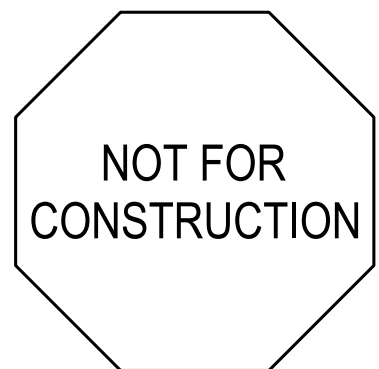
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Title:  
**HVAC FIRST  
FLOOR PIPING**

Drawing No.:  
**H3.0**



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Title:  
**HVAC ROOF  
 PIPING PLAN**

Drawing No.:

**H3.1**

**1** Roof Plan  
 SCALE: 1/8"=1'-0"

GENERAL NOTES

- 1. REFER TO ARCHITECTURAL PLANS AND ELEVATIONS FOR MOUNTING HEIGHTS AND EXACT LOCATIONS OF ALL DEVICES.
2. PERFORM WORK AND PROVIDE MATERIALS AND EQUIPMENT TO MAKE INSTALLATION COMPLETE IN EVERY DETAIL UNDER THIS CONTRACT...
3. ALL CONDUIT, WIRING AND ELECTRICAL EQUIPMENT SHALL BE INSTALLED AND GROUNDED IN ACCORDANCE WITH THE LATEST STANDARDS...
4. ALL FLOOR, MASONRY WALLS AND STRUCTURAL CEILING PENETRATIONS SHALL BE SLEEVED.
5. PROVIDE FIRE/MOISTURE SEAL FOR WALL, FLOOR OR CEILING PENETRATIONS.
6. DO NOT LAY CABLES OR RACEWAY ON, OR SUPPORT FROM SUSPENDED CEILING OR PIPING AND DUCTWORK.
7. OUTLET BOXES SHALL BE MOUNTED FLUSH. CONDUIT SHALL BE RUN CONCEALED. WHERE WALLS ARE BLOCK, DEVICES AND WIRING SHALL BE SURFACE MOUNTED. PROVIDE WIREMOLD OR EQUAL TO SURFACE MOUNTED RACEWAY WITH FINISHED BOXES.
8. NO CONDUIT SMALLER THAN 3/4 INCH ELECTRICAL TRADE SIZE SHALL BE USED, UNLESS SPECIFICALLY CALLED FOR ON THE DRAWINGS.
9. ALL WIRING WITHIN UTILITY CLOSETS MAY BE IN SURFACE MOUNTED CONDUIT. EMT MAY BE UTILIZED.
10. FLEXIBLE CONDUIT CONNECTIONS SHALL BE A MAXIMUM OF 6'-0".
11. MC TYPE CONDUCTOR WITH INTEGRAL GROUND WIRE MAY BE UTILIZED FOR POWER AND LIGHTING CIRCUITS. MC CABLE SHALL BE UTILIZED ONLY WHERE COMPLETELY CONCEALED AND INSTALLED IN ACCORDANCE WITH CODE.
12. STEEL OR FIRE-RATED ELECTRICAL BOXES (SWITCHES, OUTLETS, JUNCTION BOXES, ETC.) SHALL BE PROVIDED AND INSTALLED IN ALL FIRE RATED ASSEMBLIES AS IN ACCORDANCE WITH BUILDING AND ELECTRICAL CODES. UL LISTED MOLDABLE PUTTY PADS OR FIREBLOCK/SPRAY FOAM INSULATE SHALL BE USED TO SEAL ALL ANNULAR SPACES/PENETRATIONS AROUND OUTLET BOXES. FIRE RATED ASSEMBLIES INCLUDE EXTERIOR WALLS, FIRE-RATED WALLS, FLOOR/CEILING ASSEMBLIES AND ROOF/CEILING ASSEMBLIES.
13. RECESSED ELECTRICAL ENCLOSURES SUCH AS BUT NOT LIMITED TO; PANELBOARDS, LOW VOLTAGE MEDIA CENTERS, ETC. SHALL BE PROVIDED WITH FIRE-RATED BOXES WHERE INSTALLED IN FIRE-RESISTANCE-RATED ASSEMBLIES. REFER TO ARCHITECTURAL PLANS FOR LOCATIONS OF FIRE-RATED ASSEMBLIES.
14. ALL EQUIPMENT AND WIRING SHOWN ON DWGS IS DIAGRAMMATICALLY. EXACT LOCATION AND METHOD OF SUPPORT SHALL BE DETERMINED IN THE FIELD, EXCEPT WHERE SPECIFIC DIMENSIONS AND DETAILS ARE SHOWN. ALL CONDUIT RUNS SHALL BE RIGIDLY SUPPORTED.

LIGHTING NOTES

- 1. ALL CONDUIT, FIXTURES AND OUTLETS ARE SHOWN DIAGRAMMATICALLY. EXACT LOCATION AND METHOD OF SUPPORT SHALL BE DETERMINED IN THE FIELD, EXCEPT WHERE SPECIFIC DIMENSIONS AND DETAILS ARE SHOWN.
2. ALL LIGHTING FIXTURE SPACING DIMENSIONS AND MOUNTING HEIGHTS ARE RECOMMENDED LOCATIONS. SLIGHT VARIATIONS WHERE NECESSARY TO AVOID INTERFERENCE SHALL BE DETERMINED IN THE FIELD.
3. WHERE REQUIRED, ADDITIONAL SUPPORT STEEL FOR THE LIGHTING INSTALLATION SHALL BE FURNISHED AND INSTALLED BY ELECTRICAL CONTRACTOR. SEISMIC RESTRAINTS SHALL BE INCLUDED AS PER STATE BUILDING CODE.
4. PROVIDE SEPARATE UN-SWITCHED NEUTRAL TO ALL EXIT SIGNS, EMERGENCY BATTERY UNITS AND EMERGENCY LIGHT FIXTURES CONTAINING EMERGENCY BALLASTS.
5. FIRE-RATED BOXES/ENCLOSURES FOR RECESSED LIGHTING FIXTURES SHALL BE PROVIDED AND INSTALLED IN FIRE-RATED ASSEMBLIES AS IN ACCORDANCE WITH BUILDING AND ELECTRICAL CODES. FIRE-RATED ASSEMBLIES INCLUDE: FIRE-RATED WALLS, FLOOR/CEILING ASSEMBLIES AND ROOF/CEILING ASSEMBLIES. REFER TO ARCHITECTURAL PLANS FOR LOCATIONS OF FIRE-RATED ASSEMBLIES.

POWER NOTES

- 1. ALL CONDUITS ARE SHOWN DIAGRAMMATICALLY. EXACT LOCATION AND METHOD OF SUPPORT SHALL BE DETERMINED IN THE FIELD, EXCEPT WHERE SPECIFIC DIMENSIONS AND DETAILS ARE SHOWN. ALL CONDUIT RUNS SHALL BE RIGIDLY SUPPORTED.
2. NEC - 406.12 TAMPER-RESISTANT RECEPTACLES - IN ALL AREAS SPECIFIED IN 406.12 PARAGRAPHS (1-7) AND ASSEMBLY SUBSETS LISTED IN NEC 518.2, ALL NON-LOCKING-TYPE, 125 VOLT, 15 AND 20 AMPERE RECEPTACLES SHALL BE LISTED TAMPER RESISTANT RECEPTACLES.
3. CONDUCTORS AND CABLE SHALL BE MINIMUM #12 AWG, 600 VOLT, COPPER WITH TYPE THHN/THWN INSULATION. PROVIDE SEPARATE GREEN GROUND IN ALL FEEDERS. WIRE SIZE #8 AWG AND LARGER SHALL BE STRANDED; #10 AWG AND SMALLER SHALL BE SOLID. COLOR CODE CONDUCTORS BLACK, RED, BLUE, WITH WHITE NEUTRAL AND GREEN GROUND EXCEPT AS NOTED FOR 120 VOLT.

DEMOLITION NOTES

- 1. REFER TO THE ARCHITECTURAL DRAWINGS FOR THE FULL EXTENT OF THE SCOPE OF DEMOLITION. DISCONNECT AND MAKE SAFE ALL ELECTRICAL EQUIPMENT IDENTIFIED FOR REMOVAL ON THE HVAC, PLUMBING AND FIRE PROTECTION PLANS. THE ELECTRICAL SCOPE MAY EXTEND BEYOND THE AREA DEFINED BY THE ARCHITECTURAL DEMOLITION LIMITS TO FULLY COMPLY WITH VARIOUS REQUIREMENTS DEFINED BY THESE NOTES.
2. THE ELECTRICAL DEMOLITION PLANS AND DETAILS INDICATE THE GENERAL INTENT AND ARE NOT INTENDED TO SHOW ALL ITEMS TO BE REMOVED OR RETAINED. THE ELECTRICAL CONTRACTOR SHALL VISIT THE SITE PRIOR TO THE SUBMISSION OF BIDS TO BECOME FAMILIAR WITH THE ACTUAL CONDITIONS AND EXTENT OF WORK. DEVICES AND EQUIPMENT LOCATED ON WALLS AND/OR CEILINGS TO BE REMOVED SHALL BE DISCONNECTED AND MADE SAFE. THE ELECTRICAL CONTRACTOR SHALL NOTIFY THE OWNER'S REPRESENTATIVE OF ANY UNANTICIPATED HIDDEN CONDITIONS ENCOUNTERED DURING DEMOLITION.
3. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPAIR OF ALL SYSTEMS OR BUILDING COMPONENTS DAMAGED DURING THE EXECUTION OF THE WORK. DAMAGE SHALL INCLUDE BUT NOT BE LIMITED TO DESTRUCTION OR DISPOSAL OF ITEMS INTENDED TO REMAIN OR TO BE SALVAGED.
4. THE ELECTRICAL CONTRACTOR SHALL CIRCUIT TRACE AND LABEL ALL EXISTING BRANCH CIRCUITS AND FEEDERS WITHIN THE AREA OF DEMOLITION SCOPE PRIOR TO DE-ENERGIZING AND DISCONNECTION. ALL CIRCUITS WITHIN PANELBOARDS IDENTIFIED FOR REMOVAL SHALL BE TRACED AND LABELED TO ENSURE THAT NO AREA OUTSIDE THE DEMOLITION SCOPE LIMIT IS AFFECTED.
5. THE ELECTRICAL CONTRACTOR SHALL IDENTIFY ALL BRANCH CIRCUITS, FEEDERS AND SYSTEM COMPONENTS, WHICH ARE TO REMAIN WITHIN THE AREA OF DEMOLITION SCOPE. THERE SHALL BE NO INTERRUPTION OF SERVICE TO ANY AREA OUTSIDE THE SCOPE LIMITS WITHOUT APPROVAL FROM THE OWNER'S REPRESENTATIVE. EXISTING EQUIPMENT TO REMAIN SHALL BE LEFT IN A CODE COMPLIANT MANNER.
6. THE ELECTRICAL CONTRACTOR SHALL DE-ENERGIZE AND REMOVE ALL CONDUCTORS AND RACEWAYS TO THEIR POINTS OF ORIGIN WITHIN THE AREA OF DEMOLITION SCOPE. ITEMS IDENTIFIED FOR DEMOLITION SHALL NOT BE ABANDONED IN PLACE. RACEWAYS THAT ENTER MASONRY WALLS AND FLOORS SHALL BE CUT FLUSH AT THE SURFACE FOR PATCHING BY OTHERS. ALL CIRCUIT BREAKERS ASSOCIATED WITH THE DEMOLITION SCOPE SHALL BE DE-ENERGIZED AND LABELED SPARE.
7. THE ELECTRICAL CONTRACTOR SHALL TEMPORARILY SUPPORT ALL ITEMS TO REMAIN THAT ARE AFFECTED BY THE DEMOLITION OF BUILDING STRUCTURAL COMPONENTS (WALLS, CEILING, ETC.). TEMPORARILY SUPPORTED ITEMS SHALL BE PERMANENTLY SUPPORTED AND INSTALLED WHEN FINALIZED STRUCTURES ARE IN PLACE.
8. ALL REMOVED ITEMS SHALL BE LEGALLY DISPOSED OF UNLESS IDENTIFIED FOR REUSE. THE OWNER'S REPRESENTATIVE SHALL INSPECT ALL RETAINED ITEMS PRIOR TO PLACEMENT IN THE IDENTIFIED STORAGE LOCATION BY THE ELECTRICAL CONTRACTOR.
9. THE EXISTING FIRE ALARM SYSTEM SHALL REMAIN FULLY FUNCTIONAL DURING THE ENTIRE DEMOLITION AND CONSTRUCTION PERIOD. REMOVE OF EXISTING FIRE ALARM SYSTEM RACEWAYS SHALL NOT BE ALLOWED. ALL REQUIRED SYSTEM SHUTDOWNS SHALL BE COORDINATED WITH AND APPROVED BY THE OWNER'S REPRESENTATIVE AND THE AUTHORITY HAVING JURISDICTION. DEMOLITION OF THE EXISTING SYSTEM SHALL NOT COMMENCE UNTIL THE NEW SYSTEM HAS BEEN COMPLETELY INSTALLED, TESTED AND APPROVED BY THE AUTHORITY HAVING JURISDICTION.
10. ALL DEMOLITION SCOPE ASSOCIATED WITH LOW VOLTAGE SYSTEMS INCLUDING BUT NOT LIMITED TO TELEPHONE, DATA, SECURITY, PAGING, CCTV, ETC. SHALL BE INCLUDED IN THIS CONTRACT.
11. REMOVED FLUORESCENT AND HID LAMPS AND BATTERIES SHALL BE RECYCLED BY A FACILITY APPROVED BY THE OWNER'S REPRESENTATIVE. A UNIFORM HAZARDOUS WASTE MANIFEST SHALL BE PREPARED FOR ALL DISPOSALS AND RETURNED WITH ALL APPLICABLE SIGN OFF'S PRIOR TO APPLICATION FOR FINAL PAYMENT.
12. ALL BALLAST IN LIGHTING FIXTURES TO BE DISPOSED SHALL BE VERIFIED TO BE PCB FREE. ALL BALLAST MANUFACTURED PRIOR TO 1979 AND NOT LABELED AS PCB FREE SHALL BE CONSIDERED TO CONTAIN PCBs. PROVIDE WRITTEN VERIFICATION TO THE OWNER'S REPRESENTATIVE THAT CONFIRMS PCB FREE WASTE. WHERE PCB FREE WASTE CANNOT BE VERIFIED, BALLAST SHALL BE RECYCLED BY A FACILITY APPROVED BY THE OWNER'S REPRESENTATIVE, WITH PCB COMPONENTS ELIMINATED BY A HIGH TEMPERATURE INCINERATION. A UNIFORM HAZARDOUS WASTE MANIFEST SHALL BE PREPARED FOR ALL DISPOSALS AND RETURNED WITH ALL APPLICABLE SIGN OFF'S PRIOR TO APPLICATION FOR FINAL PAYMENT. ALL HANDLING SHALL CONFORM TO EPA REQUIREMENTS. PROVIDE BREAKOUT COST FOR THIS SCOPE.

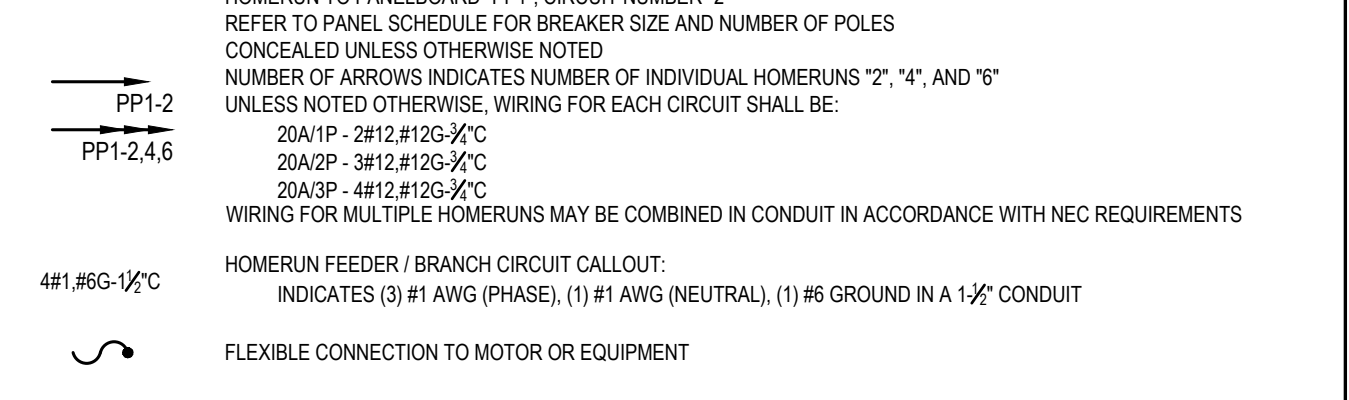
EXISTING EQUIPMENT DESIGNATIONS

Table with 2 columns: Designation (X, XM, XM, XR, XC, XL) and Description (EXISTING TO BE REMOVED, EXISTING TO REMAIN, EXISTING EQUIPMENT TO BE REPLACED WITH NEW, EXISTING EQUIPMENT TO BE RELOCATED, EXISTING EQUIPMENT TO REMAIN, NEW LOCATION OF EXISTING EQUIPMENT).

ABBREVIATIONS

Table with 2 columns: Abbreviation (A/AMP, AC, AF, AFF, AFG, AIC, AL, AT, ATS, AWG, C, CB, CKT, CL, CU, DC, DE, DWG, EC, EMH, EMT, EWC, FLMT, GC, GF, GFI, GND, HP, HVAC) and Definition (AMPERE, ALTERNATING CURRENT, AMPERE FRAME, ABOVE FINISHED FLOOR, ABOVE FINISHED GRADE, AMPERE INTERRUPTING CAPACITY, ALUMINUM, AMPERE TRIP, AUTOMATIC TRANSFER SWITCH, AMERICAN WIRE GAUGE, CONDUIT, CIRCUIT BREAKER, CIRCUIT, CENTERLINE, COPPER, DIRECT CURRENT, DUAL ELEMENT, DRAWING, ELECTRICAL CONTRACTOR, ELECTRICAL MANHOLE, ELECTRIC METALLIC CONDUIT, ELECTRIC WATER COOLER, FLEXIBLE LIQUID TIGHT METALLIC TUBING, GENERAL CONTRACTOR, GROUND FAULT CIRCUIT BREAKER, GROUND FAULT INTERRUPTING, GROUND, HORSEPOWER, HEATING, VENTILATION AND AIR CONDITIONING, INTERMEDIATE METALLIC CONDUIT, JUNCTION BOX, KILOVOLT-AMPERE, KILOWATT, LIGHTING, MAIN CIRCUIT BREAKER, MOTOR CONTROL CENTER, MASSACHUSETTS ELECTRICAL CODE, MAIN LUGS ONLY, MOUNTED, MOUNTING, NATIONAL ELECTRICAL CODE, NUMBER, NON-SYSTEM, NOT TO SCALE, PLUMBING CONTRACTOR, POWER, RIGID STEEL CONDUIT, ROOT MEAN SQUARE VALUE, REVOLUTIONS PER MINUTE, SQUARE FOOT, SOLID NEUTRAL, SHUT TRIP CIRCUIT BREAKER, SWITCHBOARD, TYPICAL, VOLTS, VOLT-AMPERE, VARIABLE FREQUENCY DRIVE, WEATHERPROOF).

BRANCH CIRCUIT AND FEEDER SYMBOLS



RECEPTACLES AND DEVICES

- TYPICAL RECEPTACLE ANNOTATION:
5" INDICATES CIRCUIT NUMBER
"W" INDICATES WEATHERPROOF IN-USE COVER
"FB" INDICATES FLOOR BOX CONFIGURATION. REFER TO FLOOR BOX SCHEDULE / DETAILS FOR ADDITIONAL INFORMATION. REFER TO SPECIFICATIONS FOR ADDITIONAL RECEPTACLE AND DEVICE DETAILS.
5" 5" DUPLEX CONVENIENCE RECEPTACLE OUTLET
5" 5" DUPLEX GROUND FAULT CIRCUIT INTERRUPTING RECEPTACLE OUTLET
5" 5" DUPLEX CONVENIENCE RECEPTACLE OUTLET, FLOOR MOUNTING
5" 5" DUPLEX RECEPTACLE OUTLET, CEILING MOUNTING
5" 5" DOUBLE DUPLEX CONVENIENCE RECEPTACLE OUTLET
5" 5" WIRELESS ACCESS POINT (WAP)
5" 5" JUNCTION BOX, COORDINATE MOUNTING HEIGHT WITH ARCHITECT, "HT" INDICATES HEAT TRACE
5" 5" SPECIAL PURPOSE RECEPTACLE, REFER TO SPECIAL PURPOSE RECEPTACLE SCHEDULE, "F" INDICATES TYPE

MOTORS AND CONTROLS

- 5" 5" MOTOR, NUMERAL INDICATES HORSEPOWER
5" 5" MANUAL MOTOR STARTED, RATED 20A, 250V, COORDINATE MOUNTING HEIGHT IN FIELD, MOUNTING HEIGHT SHALL NOT EXCEED 6'-7" AFF
5" 5" 60A 3R DISCONNECT SWITCH RATED 30A, 3-POLE, IN NEMA TYPE 1 ENCLOSURE, UNLESS OTHERWISE NOTED
5" 5" 60A 3R "3R" INDICATES NEMA TYPE 3R ENCLOSURE
5" 5" 60A 3R "2P" INDICATES 2-POLE, SINGLE PHASE DISCONNECT
5" 5" 60A 3R "60A" INDICATES 60A SWITCH
5" 5" 60AF 40AT 3R FUSED DISCONNECT SWITCH RATED 30A, 3-POLE, IN NEMA TYPE 1 ENCLOSURE, UNLESS OTHERWISE NOTED
5" 5" 60AF 40AT 3R "3R" INDICATES NEMA TYPE 3R ENCLOSURE
5" 5" 60AF 40AT 3R "2P" INDICATES 2-POLE, SINGLE PHASE DISCONNECT
5" 5" 60AF 40AT 3R "60AF" INDICATES 60A FUSE SIZE
5" 5" 60AF 40AT 3R "40AT" INDICATES 40A TRIP RATING

PANELBOARD AND TERMINAL CABINET

- 120/208V PANEL, SURFACE MOUNTED, REFER TO PANEL SCHEDULES
120/208V PANEL, RECESSED MOUNTED, REFER TO PANEL SCHEDULES
TELEPHONE TERMINAL, 4x8 1/2" PLYWOOD BACKBOARD, PAINTED BLACK

ANNOTATIONS

- ECH 1 MECHANICAL EQUIPMENT TAG, REFER TO MECHANICAL EQUIPMENT COORDINATION SCHEDULE FOR ELECTRICAL REQUIREMENTS
2004 FEEDER TAG, NUMBER INDICATES AMPERE RATING OF FEEDER AND NUMBER OF WIRES, REFER TO FEEDER SCHEDULE FOR ADDITIONAL INFORMATION
112.1 EQUIPMENT TAG, REFER TO EQUIPMENT SCHEDULE FOR ADDITIONAL INFORMATION
E SHEET NOTE TAG
E# INDICATES CALL OUT TO CORRESPONDING SHEET NOTE
1 REVISION TAG
E# DETAIL CALLOUT
E# INDICATES THE DETAIL REFERENCE NUMBER
E101 INDICATES THE DRAWING ON WHICH THE DETAIL CAN BE FOUND
SECTION "A-A", REFER TO DUCTBANK OR CONDUIT SECTION DETAIL

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Client:
TOWN OF ANDOVER
DOHERTY SCHOOL
ANDOVER, MA

Submission:
BID SET 05/26/21

Revision:

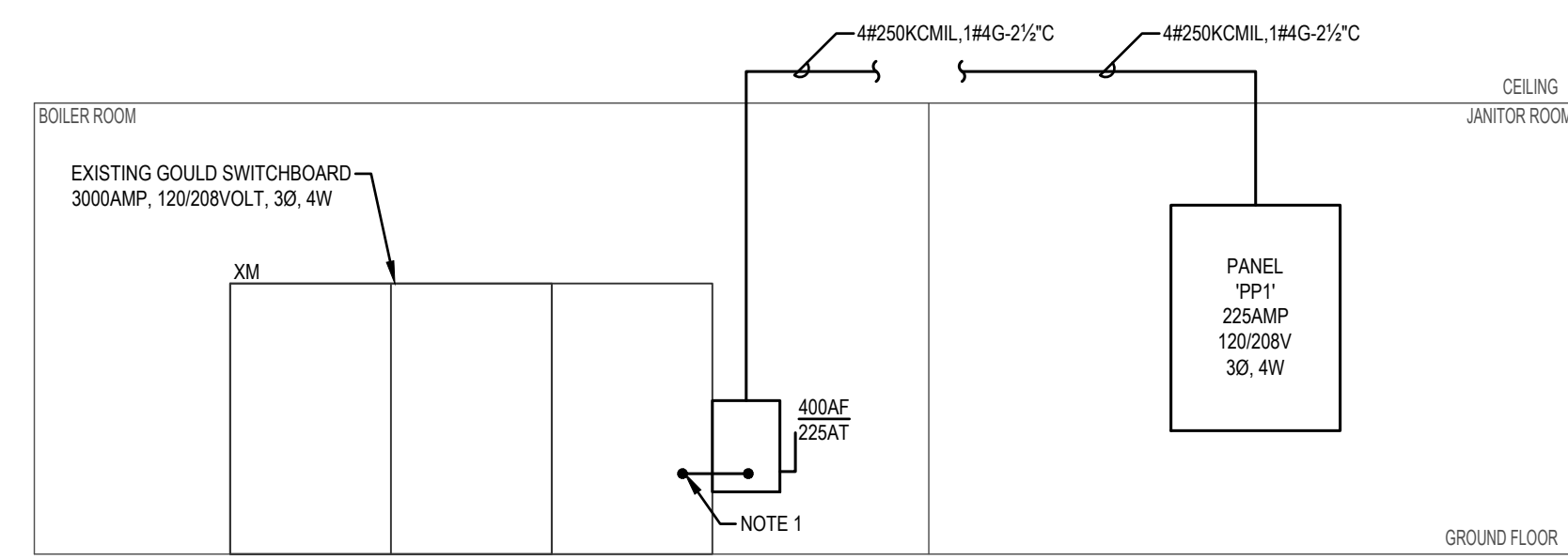
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50 BARTLET ST., ANDOVER MA

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Title:
ELECTRICAL
LEGEND & NOTES

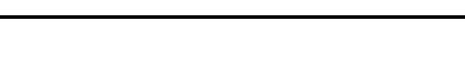
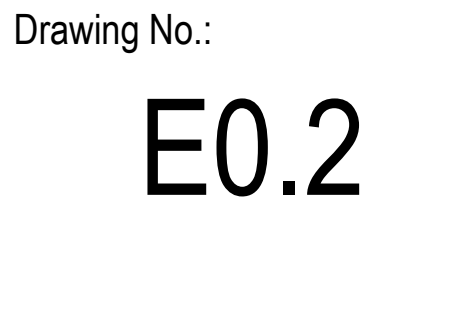
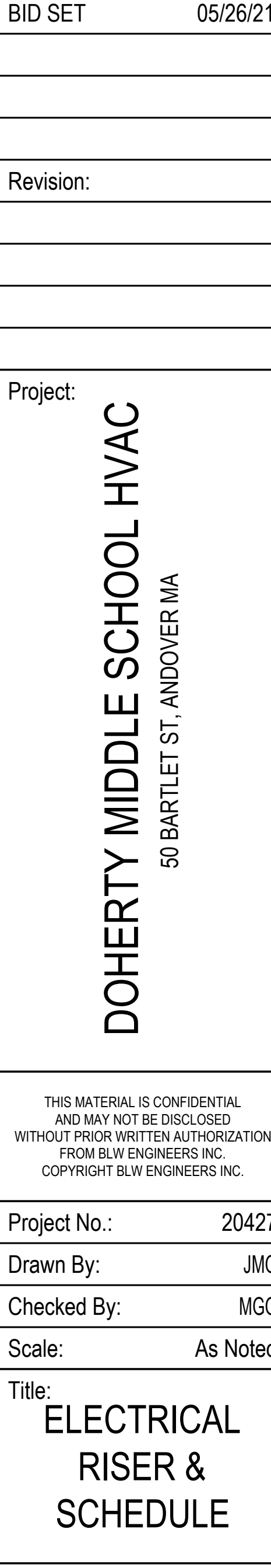
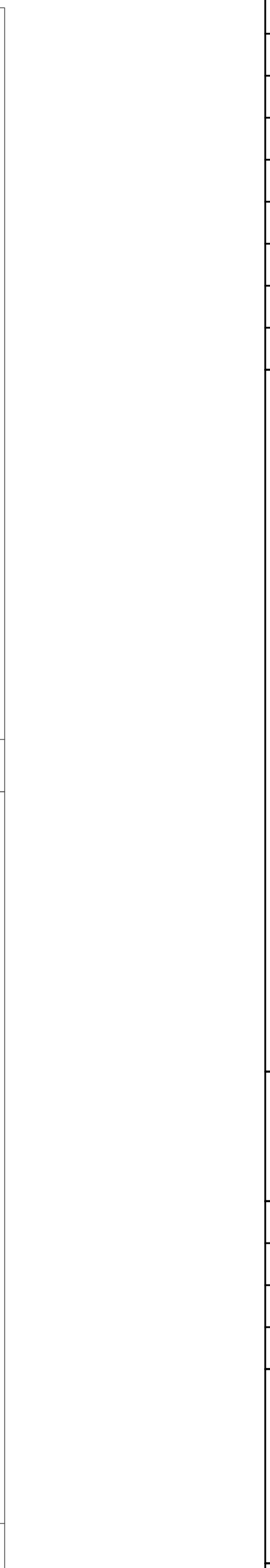
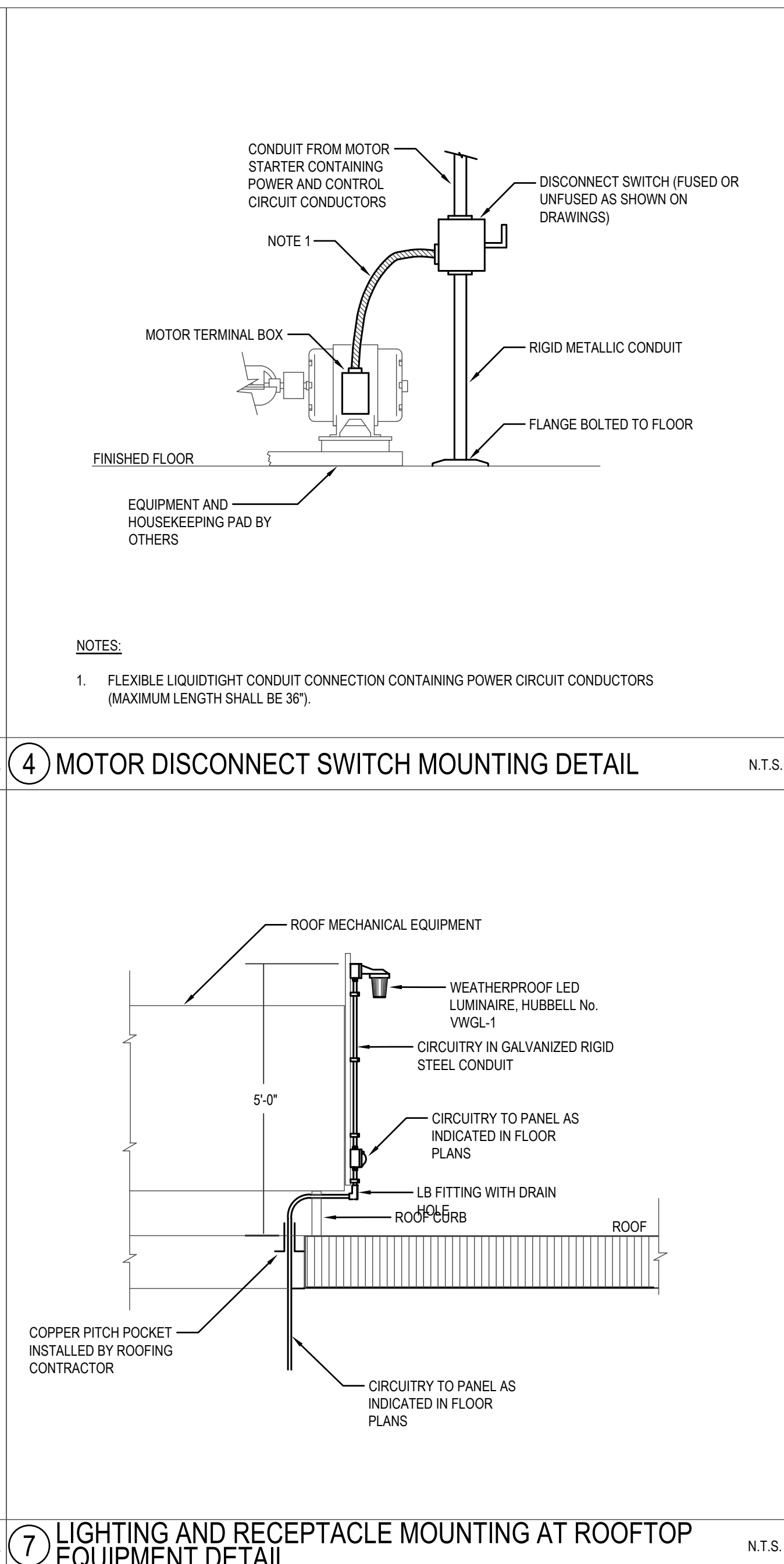
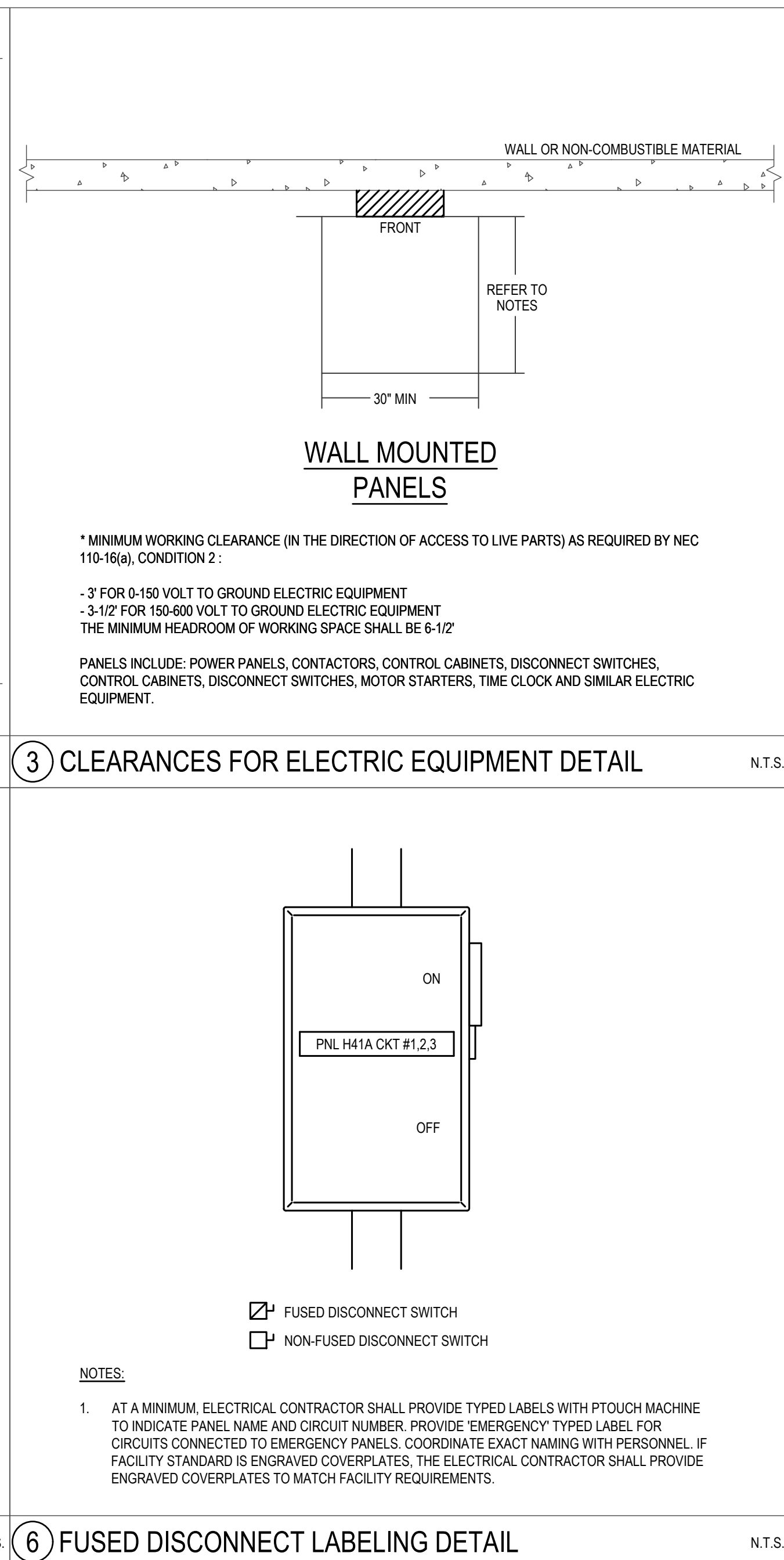
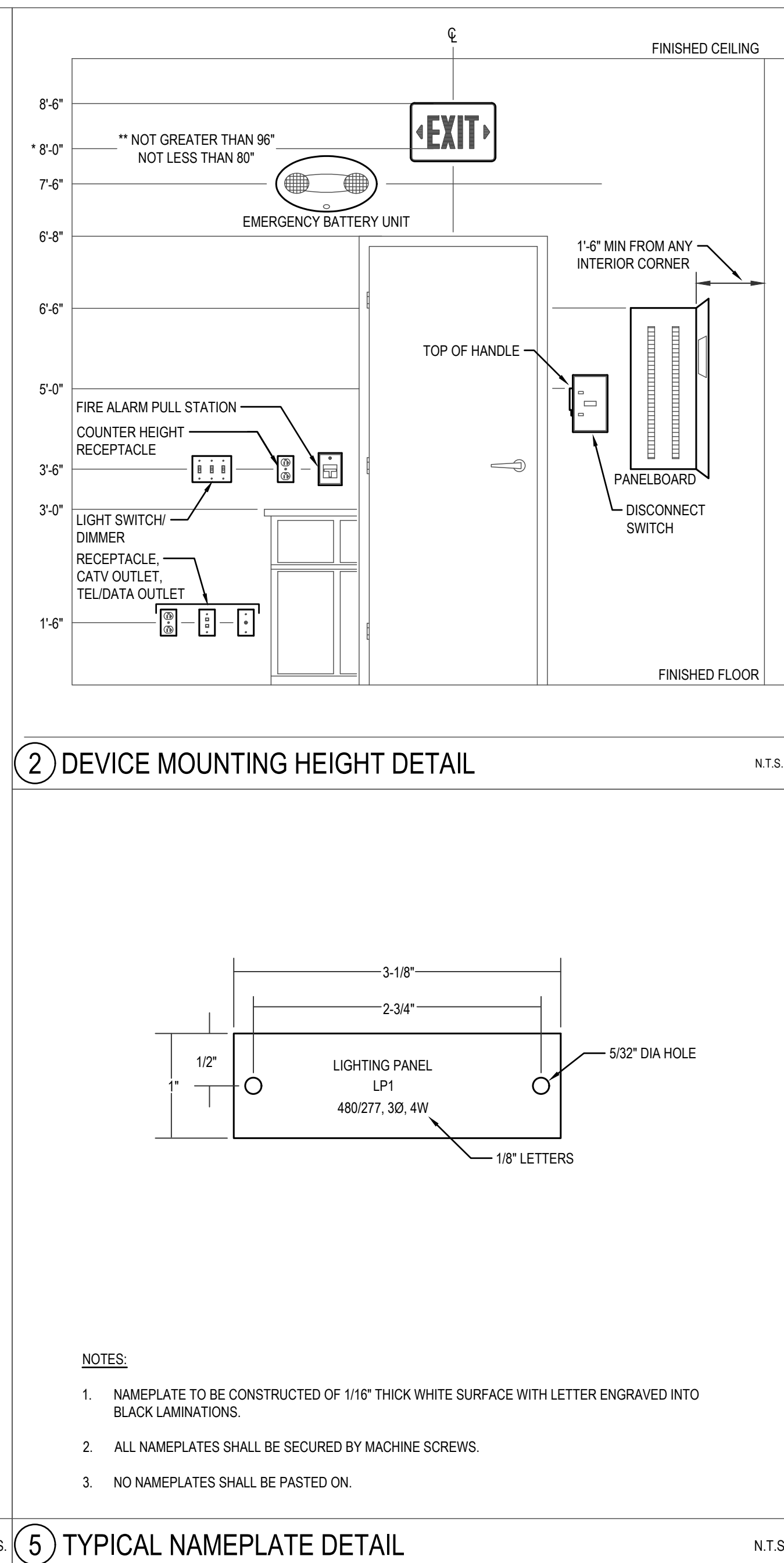
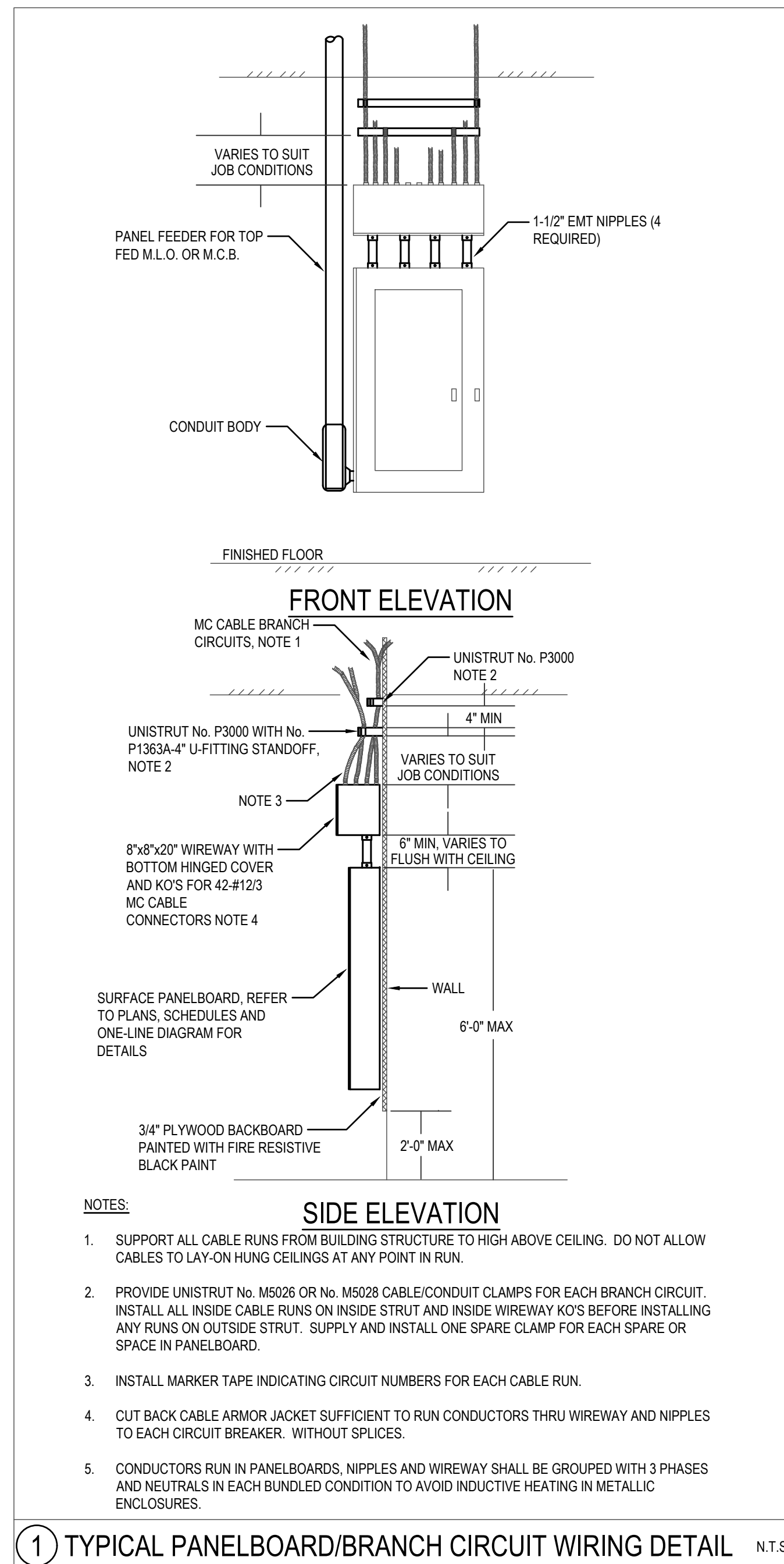
Drawing No.:
E0.1



**PARTIAL POWER RISER DIAGRAM**  
N.T.S.

- NOTES:**
- ELECTRICAL CONTRACTOR SHALL PROVIDE TAP OF SWITCHGEAR BUSSING (IN ACCORDANCE WITH NEC ARTICLE 240.21(B)(1)).
  - ELECTRICAL CONTRACTOR SHALL GROUND IN ACCORDANCE WITH NEC ARTICLE 250 AS AMENDED BY MASSACHUSETTS ELECTRICAL CODE.

PANEL 'PP1', 225 AMP, 120/208 VOLT, 3-PHASE, 4-WIRE & GND											
INTERRUPTING CAPACITY: 42,000 AMPS RMS SYM						MAIN: 200A M.C.B.			MOUNTING: SURFACE		
LOAD DESCRIPTION	CB	CIRC NO.	KVA LOAD			CIRC NO.	LOAD DESCRIPTION				
			A	B	C						
HP-1	70	1	5.80		0.20	2	FCU-6 (READING ROOM)				
		3	5.80		0.20	4					
		5	5.80		0.11	6	FCU-3,4,6 (CLASSROOMS)				
HP-1	70	7	5.80		0.11	8					
		9	5.80		0.12	10	FCU-1,2				
		11	5.80		0.12	12					
HP-2	30	13	2.20		0.13	14	FCU-1,2				
		15	2.20		0.13	16					
HP-3	35	17	2.40		0.15	18	ERV-1				
		19	2.40		0.20	20	ROOF-TOP LITS/RECEP				
ERV-2	20	21	1.10			22	SPACE & HARDWARE				
		23	1.10			24	SPACE & HARDWARE				
ECH-1	25	25	1.20			26	SPACE & HARDWARE				
		27	1.20			28	SPACE & HARDWARE				
SPACE & HARDWARE		29	0.00			30	SPACE & HARDWARE				
PHASE A			18.04	KVA	TOTAL LOAD 50.07 KVA			NOTES:			
PHASE B			16.55	KVA							
PHASE C			15.48	KVA							



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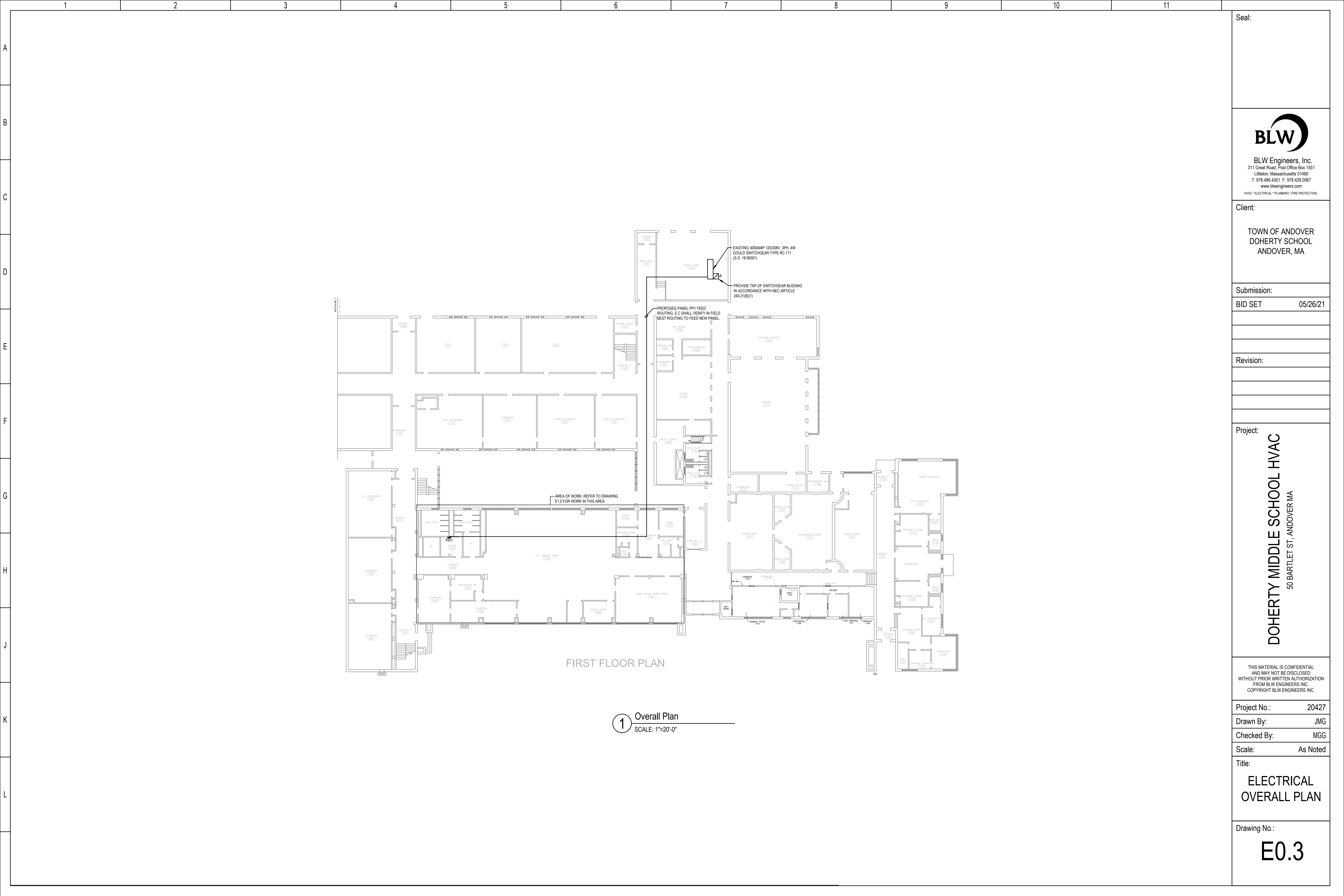
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Checked By: MGG  
Scale: As Noted

Title:  
**ELECTRICAL  
RISER &  
SCHEDULE**

Drawing No.:  
**E0.2**



1 Overall Plan  
SCALE: 1"=20'-0"

Seal:

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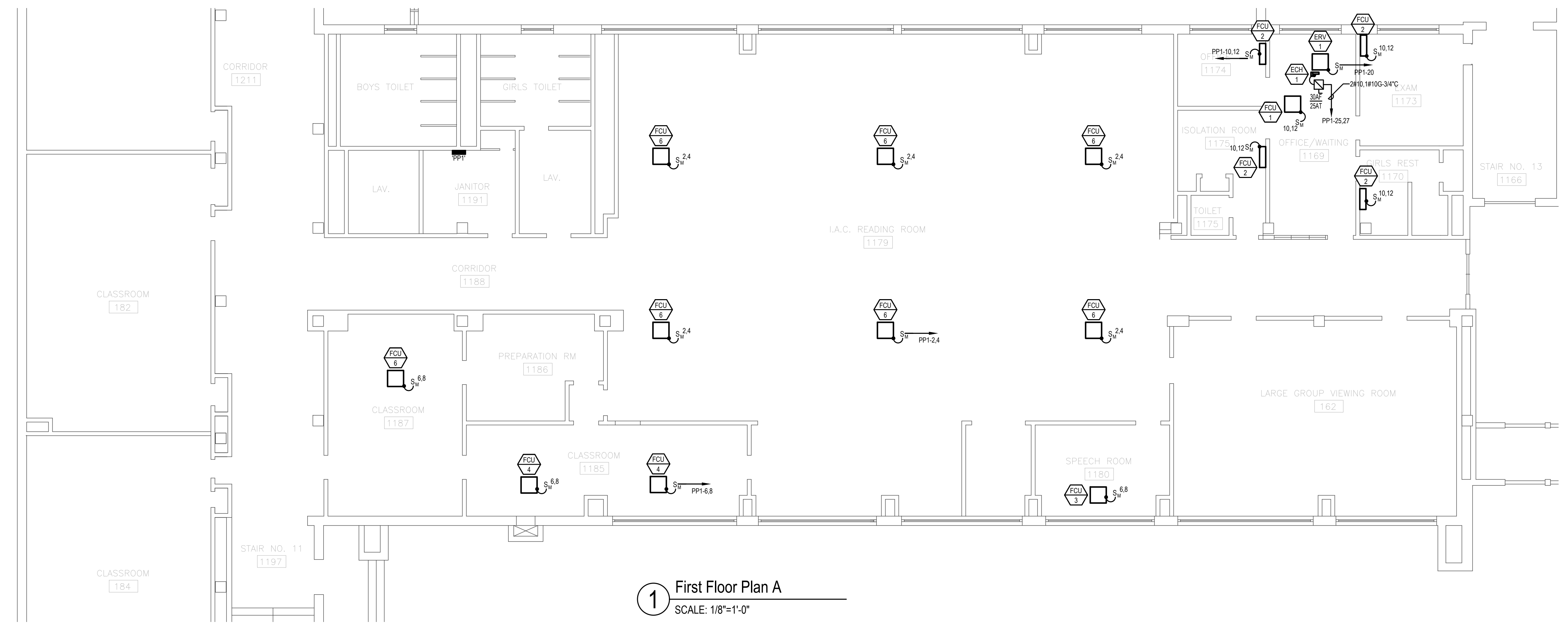
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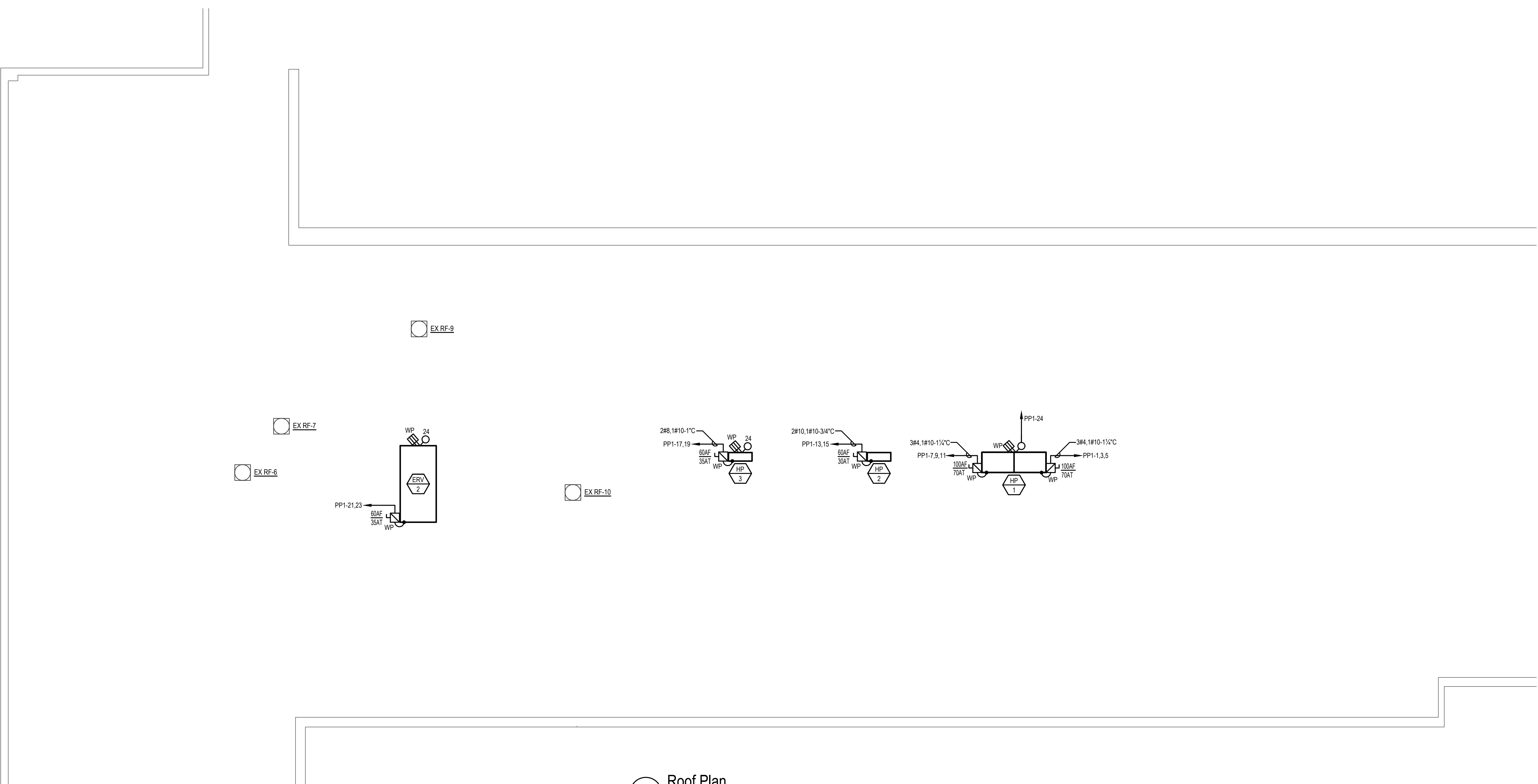
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Drawn By: JMG  
Checked By: MGG  
Scale: As Noted

Title:  
**ELECTRICAL  
OVERALL PLAN**

Drawing No.:  
**E0.3**



1 First Floor Plan A  
SCALE: 1/8"=1'-0"



2 Roof Plan  
SCALE: 1/8"=1'-0"

Seal:



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Title:

ELECTRICAL  
FLOOR PLANS

Drawing No.:

E1.0