

SITE PLAN

AREA OF NEW CONSTRUCTION,
THIS CONTRACT



HVAC UPGRADES - PHASE 4

FORT BRANCH COMMUNITY SCHOOL

7670 S
EASTVIEW LANE
FORT BRANCH, IN 47648

Project No. 2011-314

Date: December, 2020

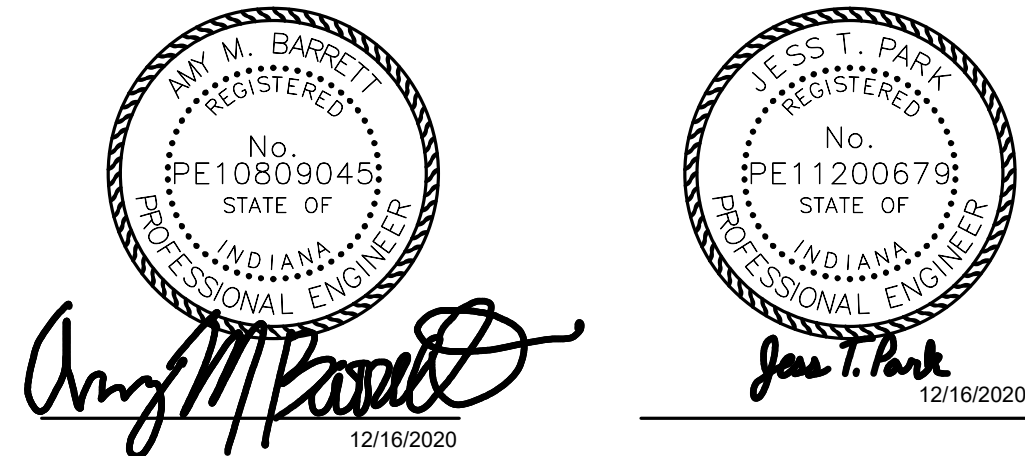


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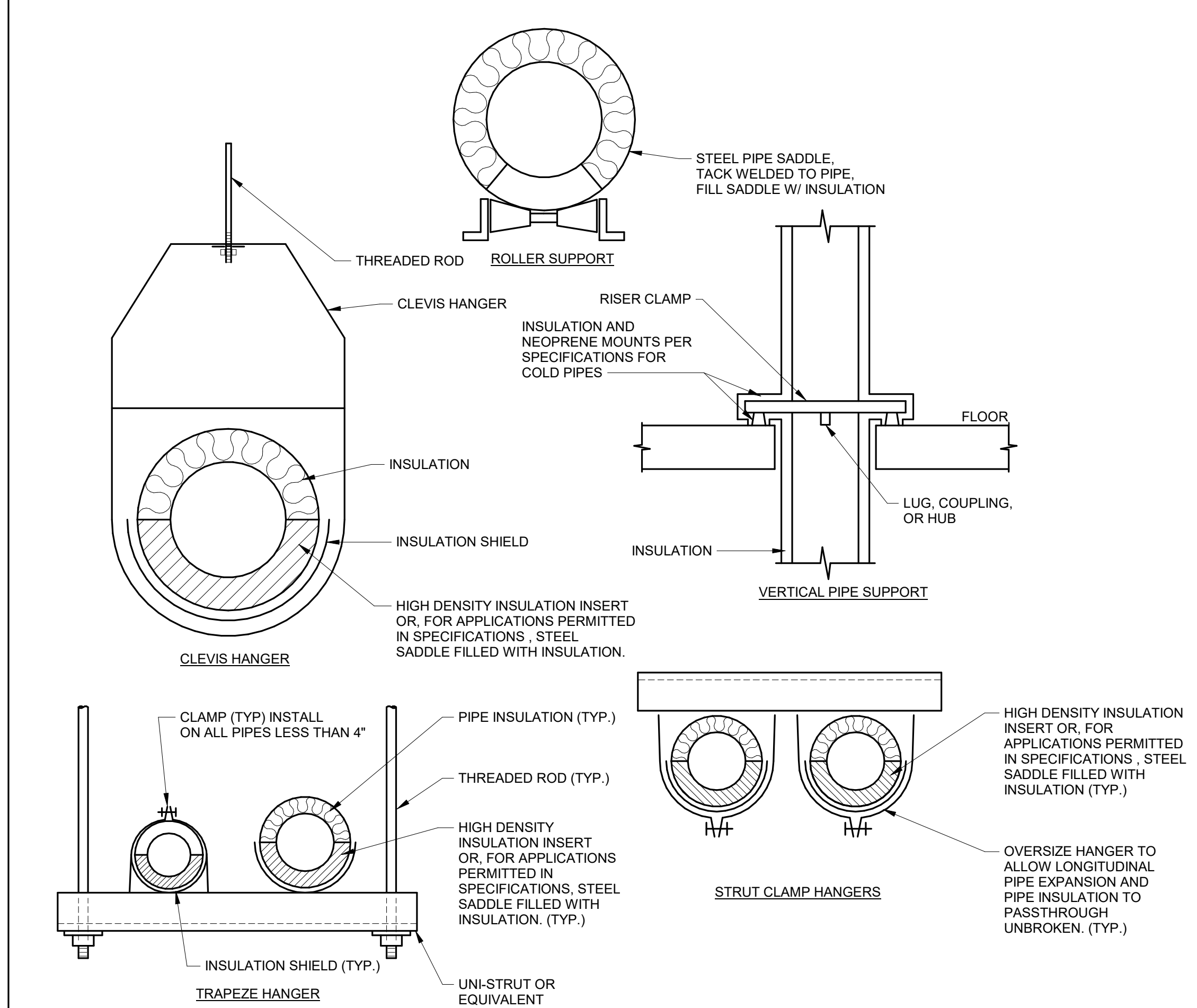
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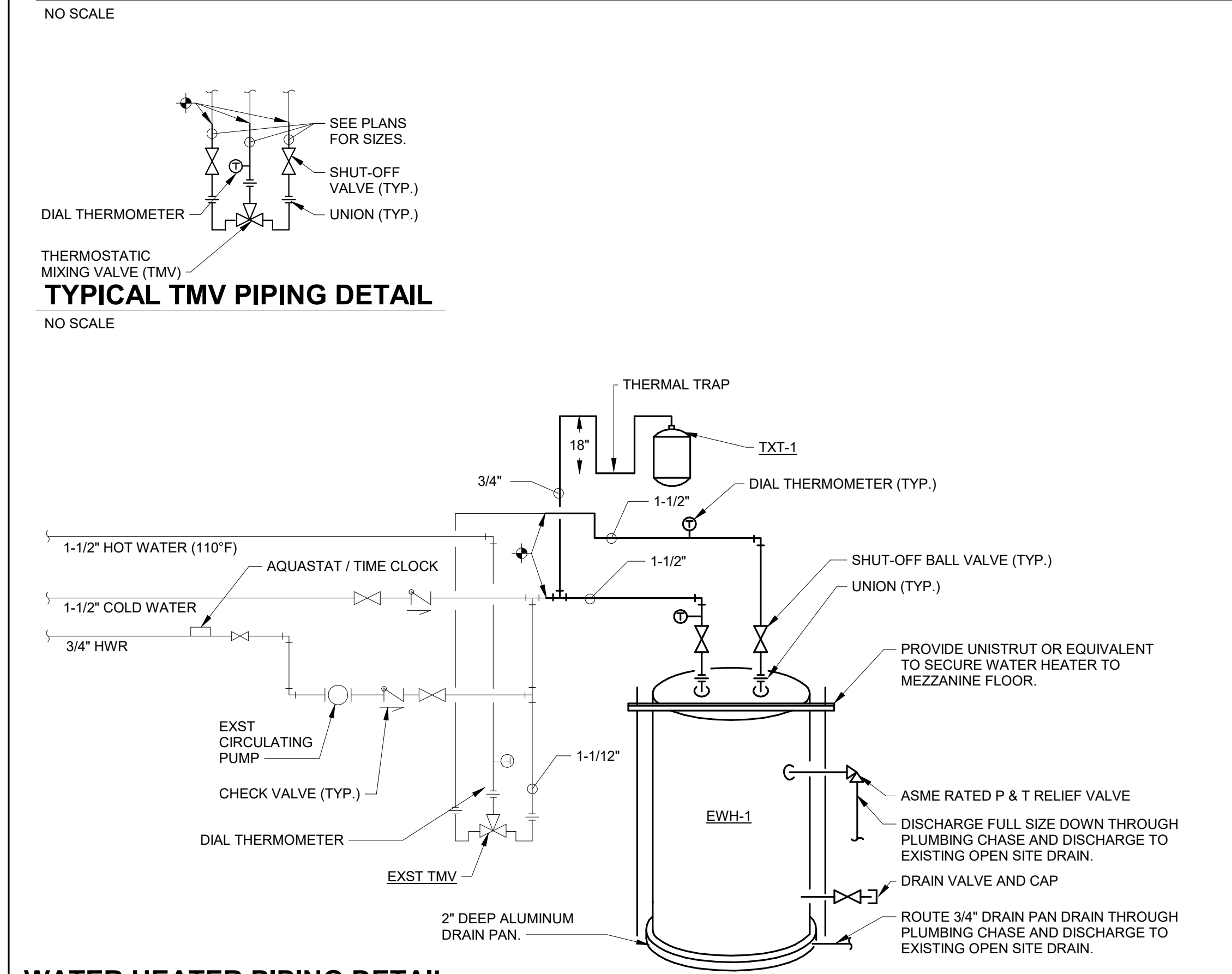
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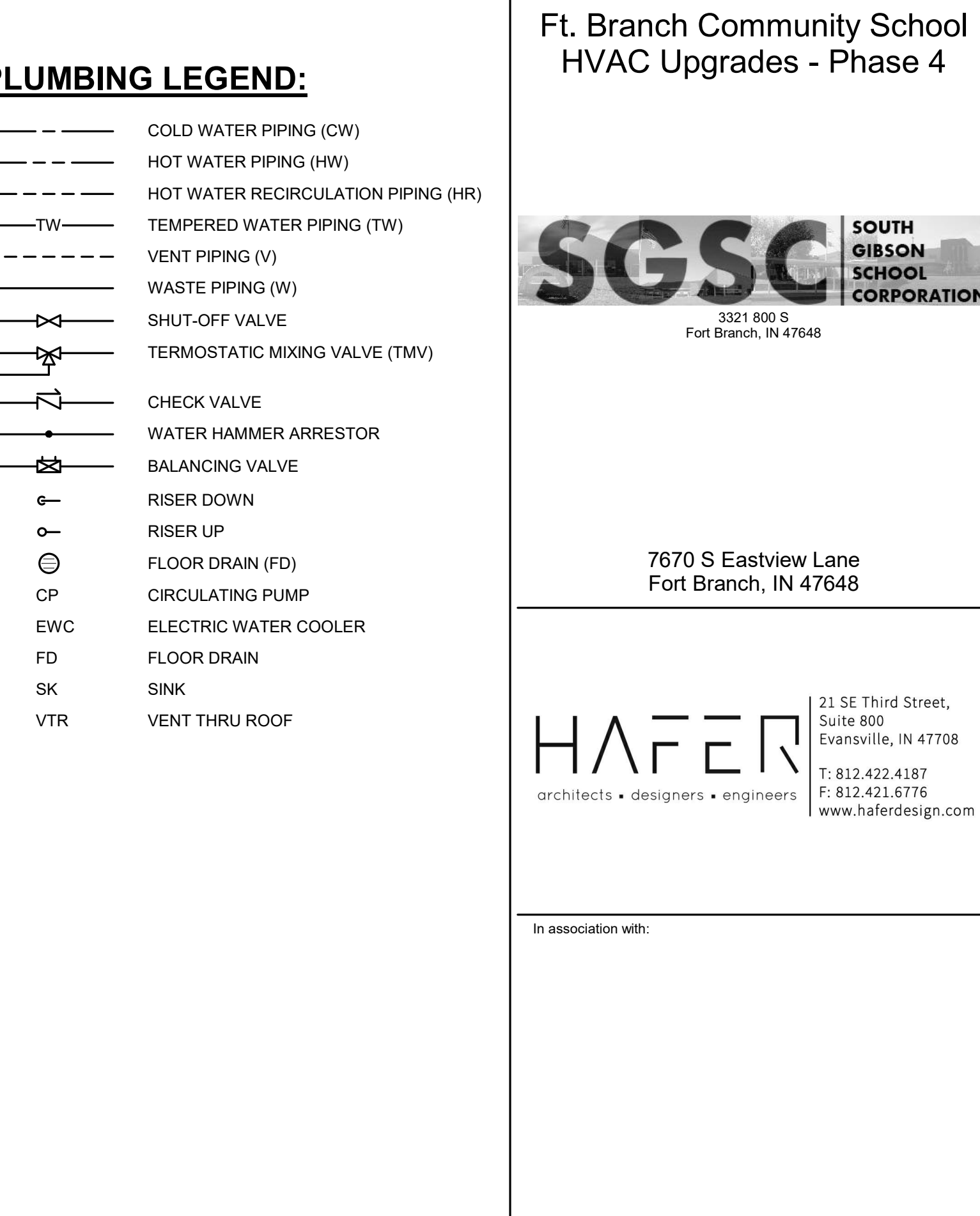
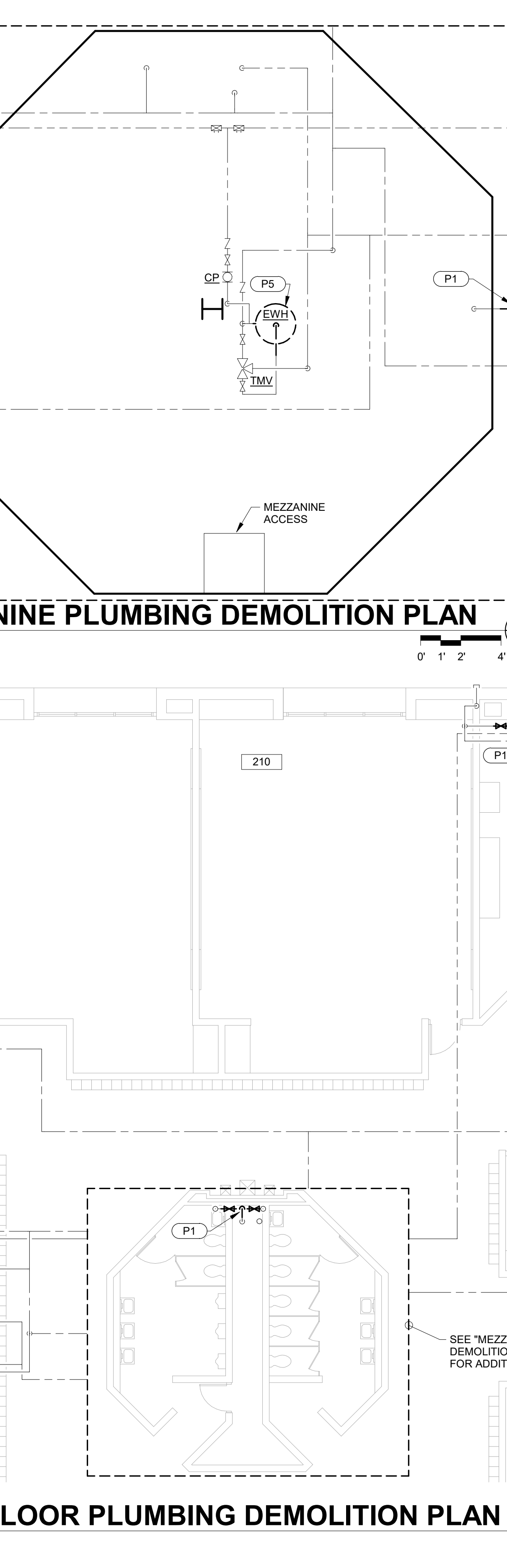
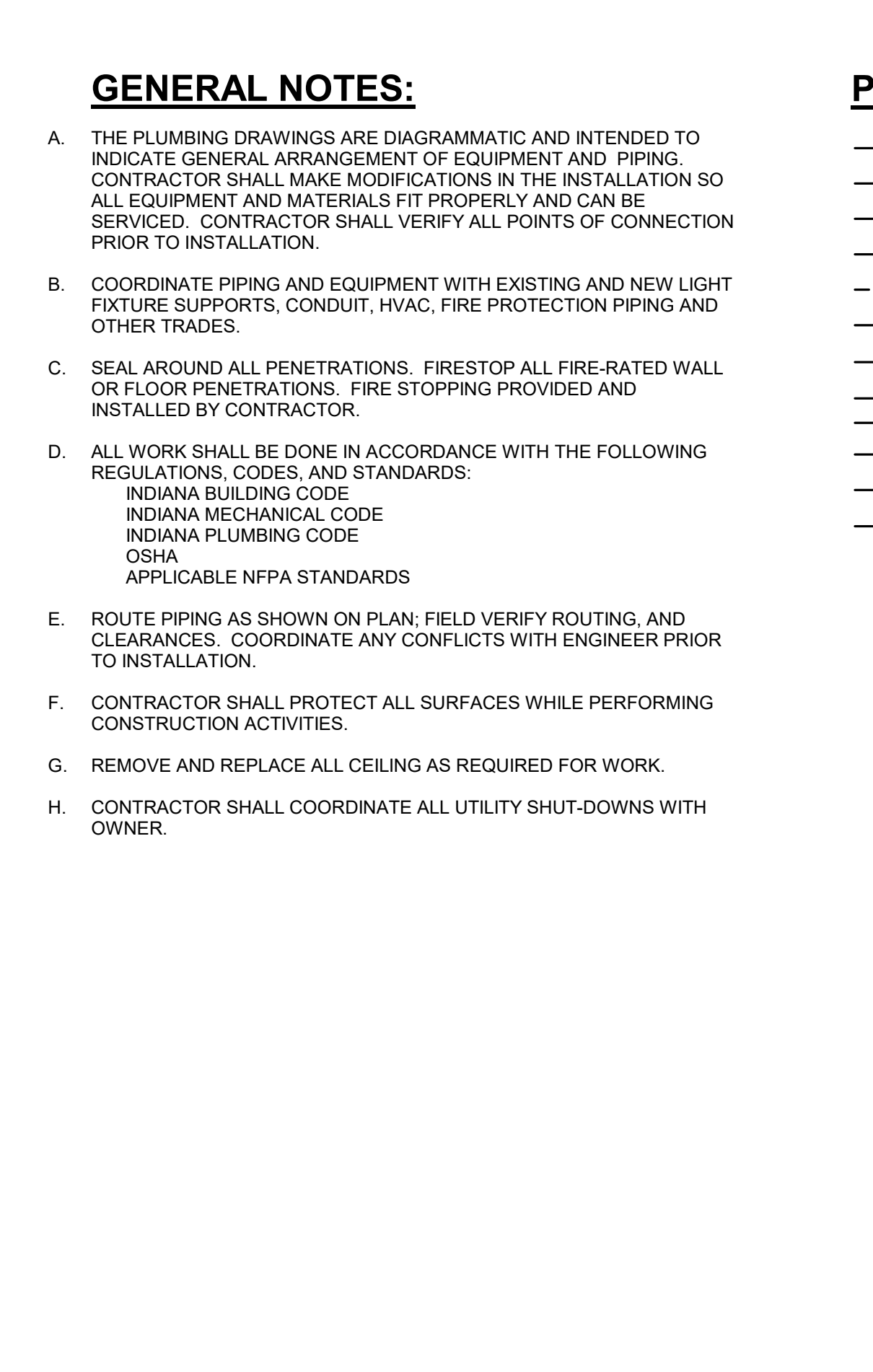
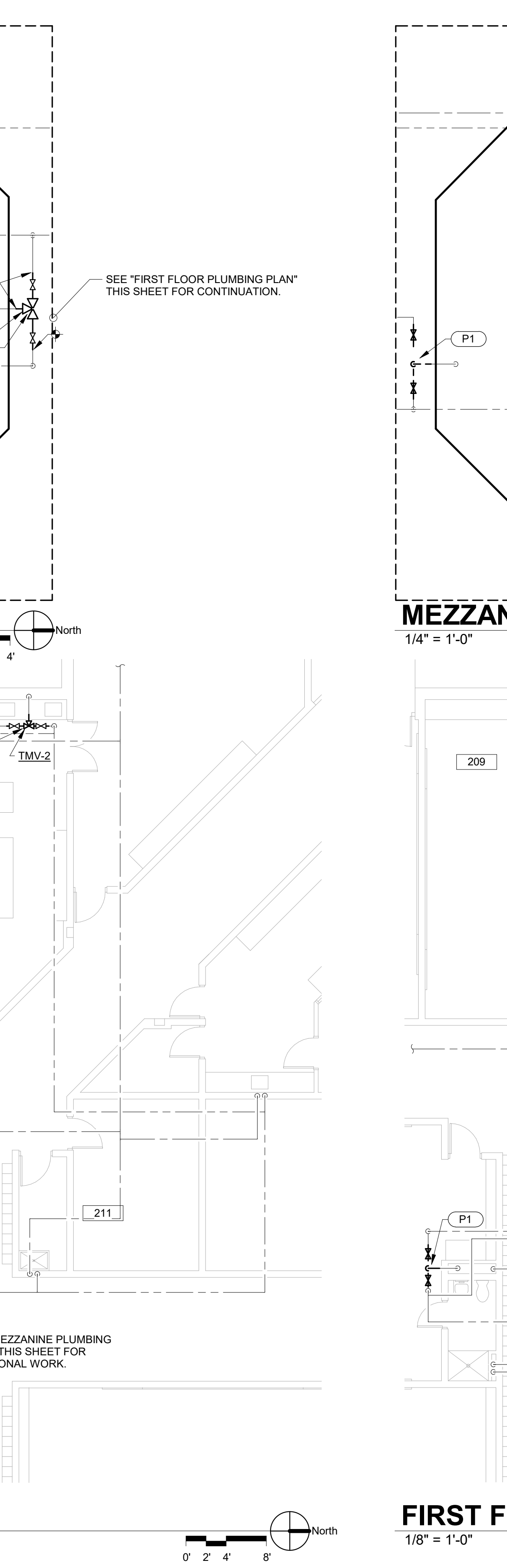
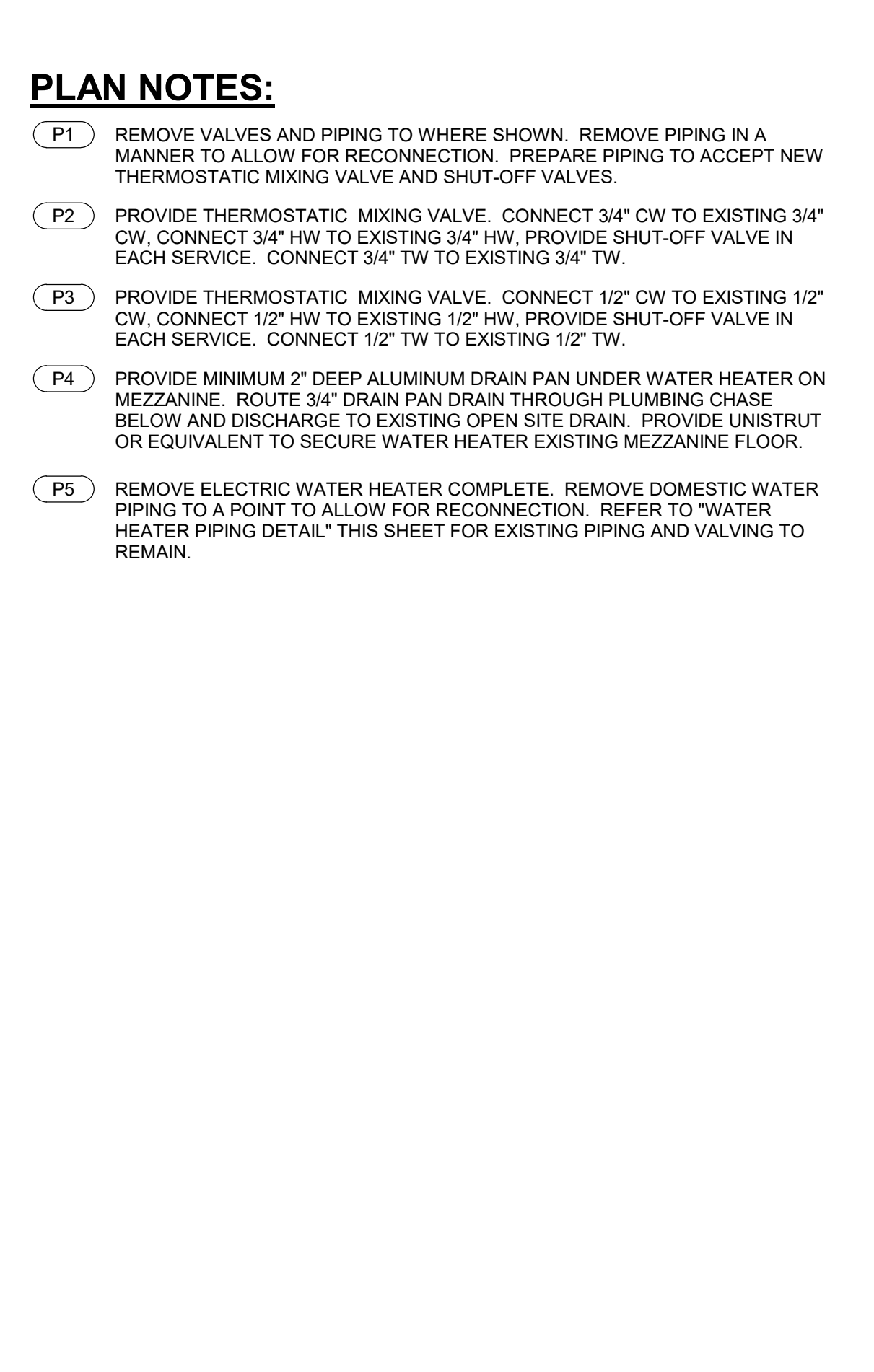
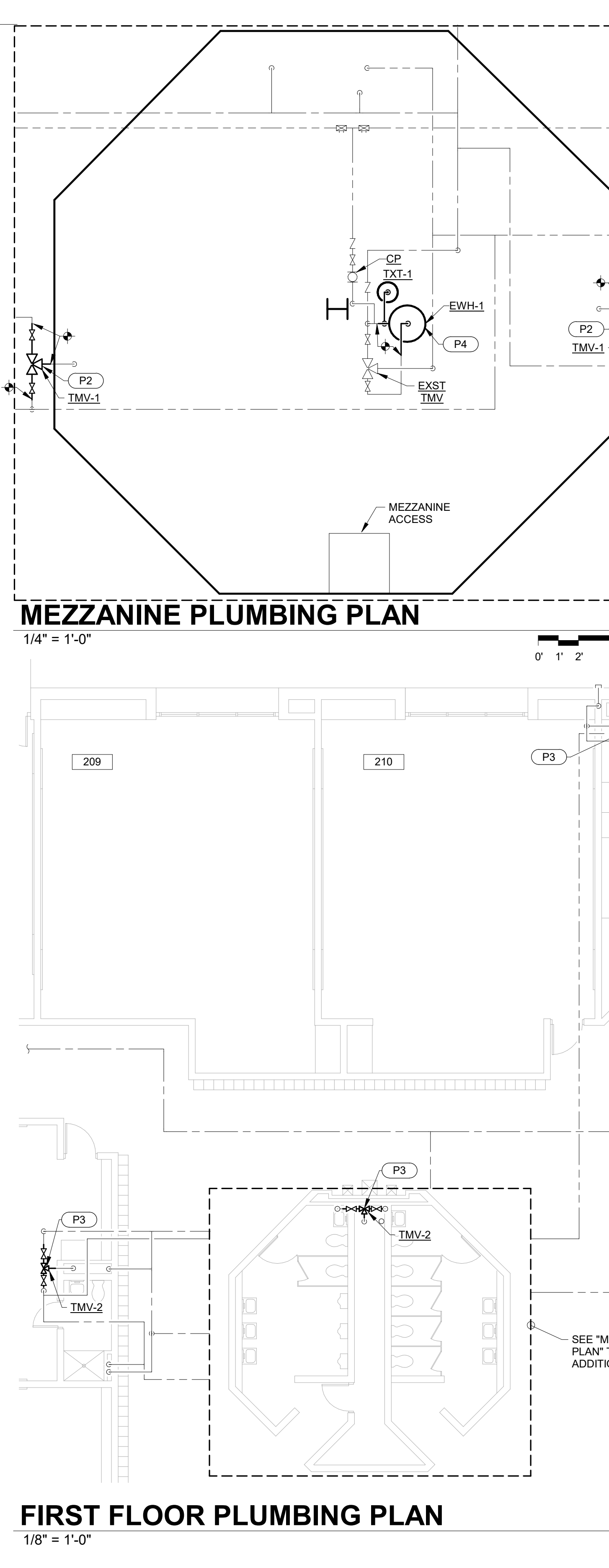
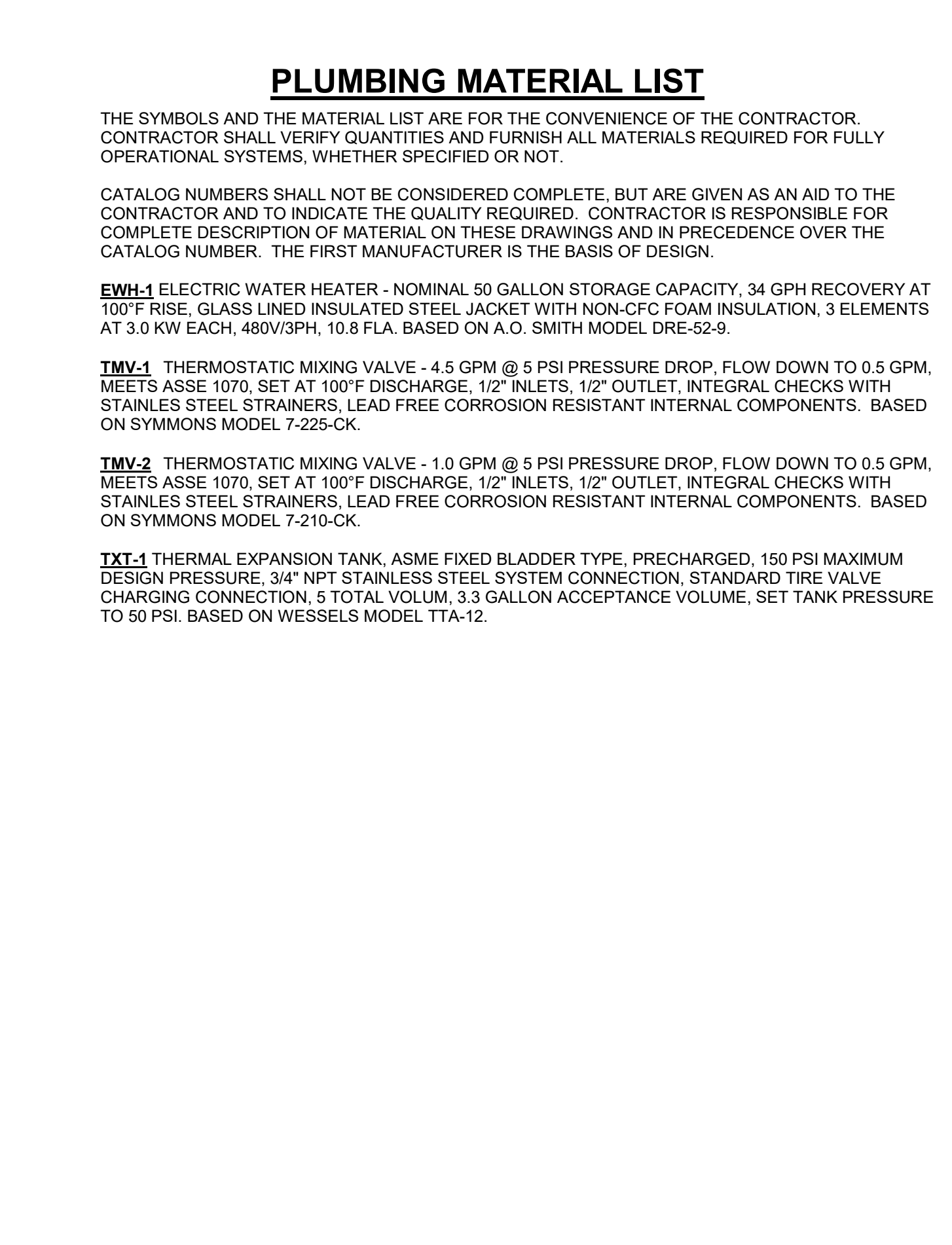
SHEET INDEX	
SHEET NO.	SHEET NAME
COVER	COVER
PLUMBING	
P1.1	PLUMBING PLANS
MECHANICAL	
M1.1	FIRST FLOOR HVAC DEMOLITION PLAN
M1.2	FIRST FLOOR HVAC PIPING DEMOLITION PLAN
M2.1	FIRST FLOOR HVAC PLAN
M2.2	FIRST FLOOR HVAC PIPING PLAN
M3.1	HVAC SCHEDULES
M4.1	HVAC DETAILS
M5.1	TEMPERATURE CONTROL DIAGRAMS & DETAILS
M5.2	TEMPERATURE CONTROL DIAGRAMS & DETAILS
ELECTRICAL	
E1.1	ELECTRICAL LEGEND, DETAILS, AND LOCATION PLAN
E1.2	ELECTRICAL DEMOLITION PLAN
E2.1	FIRST FLOOR POWER AND LIGHTING PLANS
E3.1	LIGHTING FIXTURE SCHEDULE AND BUSSING DIAGRAMS



PIPE SUPPORT DETAIL



WATER HEATER PIPING DETAIL



GENERAL NOTES:

- THE PLUMBING DRAWINGS ARE DIAGRAMMATIC AND INTENDED TO INDICATE GENERAL ARRANGEMENT OF EQUIPMENT AND PIPING. CONTRACTOR SHALL MAKE MODIFICATIONS IN THE INSTALLATION SO ALL EQUIPMENT AND MATERIALS FIT PROPERLY AND CAN BE SERVICED. CONTRACTOR SHALL VERIFY ALL POINTS OF CONNECTION PRIOR TO INSTALLATION.
- COORDINATE PIPING AND EQUIPMENT WITH EXISTING AND NEW LIGHT FIXTURE SUPPORTS, CONDUIT, HVAC, FIRE PROTECTION PIPING AND OTHER TRADES.
- SEAL AROUND ALL PENETRATIONS. FIRESTOP ALL FIRE-RATED WALL OR FLOOR PENETRATIONS. FIRE STOPPING PROVIDED AND INSTALLED BY CONTRACTOR.
- ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE FOLLOWING REGULATIONS, CODES, AND STANDARDS:
INDIANA BUILDING CODE
INDIANA MECHANICAL CODE
INDIANA PLUMBING CODE
OSHA
APPLICABLE NFPA STANDARDS
- ROUTE PIPING AS SHOWN ON PLAN; FIELD VERIFY ROUTING, AND CLEARANCES. COORDINATE ANY CONFLICTS WITH ENGINEER PRIOR TO INSTALLATION.
- CONTRACTOR SHALL PROTECT ALL SURFACES WHILE PERFORMING CONSTRUCTION ACTIVITIES.
- REMOVE AND REPLACE ALL CEILING AS REQUIRED FOR WORK.
- CONTRACTOR SHALL COORDINATE ALL UTILITY SHUT-DOWNS WITH OWNER.

PLUMBING MATERIAL LIST

THE SYMBOLS AND THE MATERIAL LIST ARE FOR THE CONVENIENCE OF THE CONTRACTOR. CONTRACTOR SHALL VERIFY QUANTITIES AND FURNISH ALL MATERIALS REQUIRED FOR FULLY OPERATIONAL SYSTEMS, WHETHER SPECIFIED OR NOT.

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

EW-1 ELECTRIC WATER HEATER - NOMINAL 50 GALLON STORAGE CAPACITY, 34 GPM RECOVERY AT 100°F RISE, GLASS LINED INSULATED STEEL JACKET WITH NON-CFC FOAM INSULATION, 3 ELEMENTS AT 5.0 KW EACH, 480V/2PH, 10.8 FLA, BASED ON A.O. SMITH MODEL DRE-52-8.

TMV-1 THERMOSTATIC MIXING VALVE - 4.5 GPM @ 5 PSI PRESSURE DROP, FLOW DOWN TO 0.5 GPM, MEETS ASSE 1070, SET AT 100°F DISCHARGE, 1/2" INLETS, 1/2" OUTLET, INTEGRAL CHECKS WITH STAINLESS STEEL STRAINERS, LEAD FREE CORROSION RESISTANT INTERNAL COMPONENTS. BASED ON SYMMONS MODEL 7-225-CK.

TMV-2 THERMOSTATIC MIXING VALVE - 1.0 GPM @ 5 PSI PRESSURE DROP, FLOW DOWN TO 0.5 GPM, MEETS ASSE 1070, SET AT 100°F DISCHARGE, 1/2" INLETS, 1/2" OUTLET, INTEGRAL CHECKS WITH STAINLESS STEEL STRAINERS, LEAD FREE CORROSION RESISTANT INTERNAL COMPONENTS. BASED ON SYMMONS MODEL 7-210-CK.

TXT-1 THERMAL EXPANSION TANK, ASME FIXED BLADDER TYPE, PRECHARGED, 150 PSI MAXIMUM DESIGN PRESSURE, 3/4" NPT STAINLESS STEEL SYSTEM CONNECTION, STANDARD TIRE VALVE CHARGING CONNECTION, 5 TOTAL VOLUM, 3.3 GALLON ACCEPTANCE VOLUME, SET TANK PRESSURE TO 50 PSI, BASED ON WESSELLS MODEL TTA-12.

PLAN NOTES:

P1 REMOVE VALVES AND PIPING TO WHERE SHOWN. REMOVE PIPING IN A MANNER TO ALLOW FOR RECONNECTION. PREPARE PIPING TO ACCEPT NEW THERMOSTATIC MIXING VALVE AND SHUT-OFF VALVES.

P2 PROVIDE THERMOSTATIC MIXING VALVE. CONNECT 3/4" CW TO EXISTING 3/4" CW, CONNECT 3/4" HW TO EXISTING 3/4" HW, PROVIDE SHUT-OFF VALVE IN EACH SERVICE. CONNECT 3/4" TW TO EXISTING 3/4" TW.

P3 PROVIDE THERMOSTATIC MIXING VALVE. CONNECT 1/2" CW TO EXISTING 1/2" CW, CONNECT 1/2" HW TO EXISTING 1/2" HW, PROVIDE SHUT-OFF VALVE IN EACH SERVICE. CONNECT 1/2" TW TO EXISTING 1/2" TW.

P4 PROVIDE MINIMUM 2" DEEP ALUMINUM DRAIN PAN UNDER WATER HEATER ON MEZZANINE. ROUTE 3/4" DRAIN PAN DRAIN THROUGH PLUMBING CHASE BELOW AND DISCHARGE TO EXISTING OPEN SITE DRAIN. PROVIDE UNISTRUT OR EQUIVALENT TO SECURE WATER HEATER EXISTING MEZZANINE FLOOR.

P5 REMOVE ELECTRIC WATER HEATER COMPLETE. REMOVE DOMESTIC WATER PIPING TO A POINT TO ALLOW FOR RECONNECTION. REFER TO "WATER HEATER PIPING DETAIL" THIS SHEET FOR EXISTING PIPING AND VALVING TO REMAIN.

KEY PLAN
SCALE: NONE

Revisions:

#	Description	Date

Designed By: JTP Drawn By: JTP Checked By: JTP

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Sheet title:

PLUMBING PLANS

Architect's Project No: 2011-314 Date: December, 2020

Drawing No:

P1.1

Ft. Branch Community School
HVAC Upgrades - Phase 4

SGSC SOUTH GIBSON SCHOOL CORPORATION
3321 800 S
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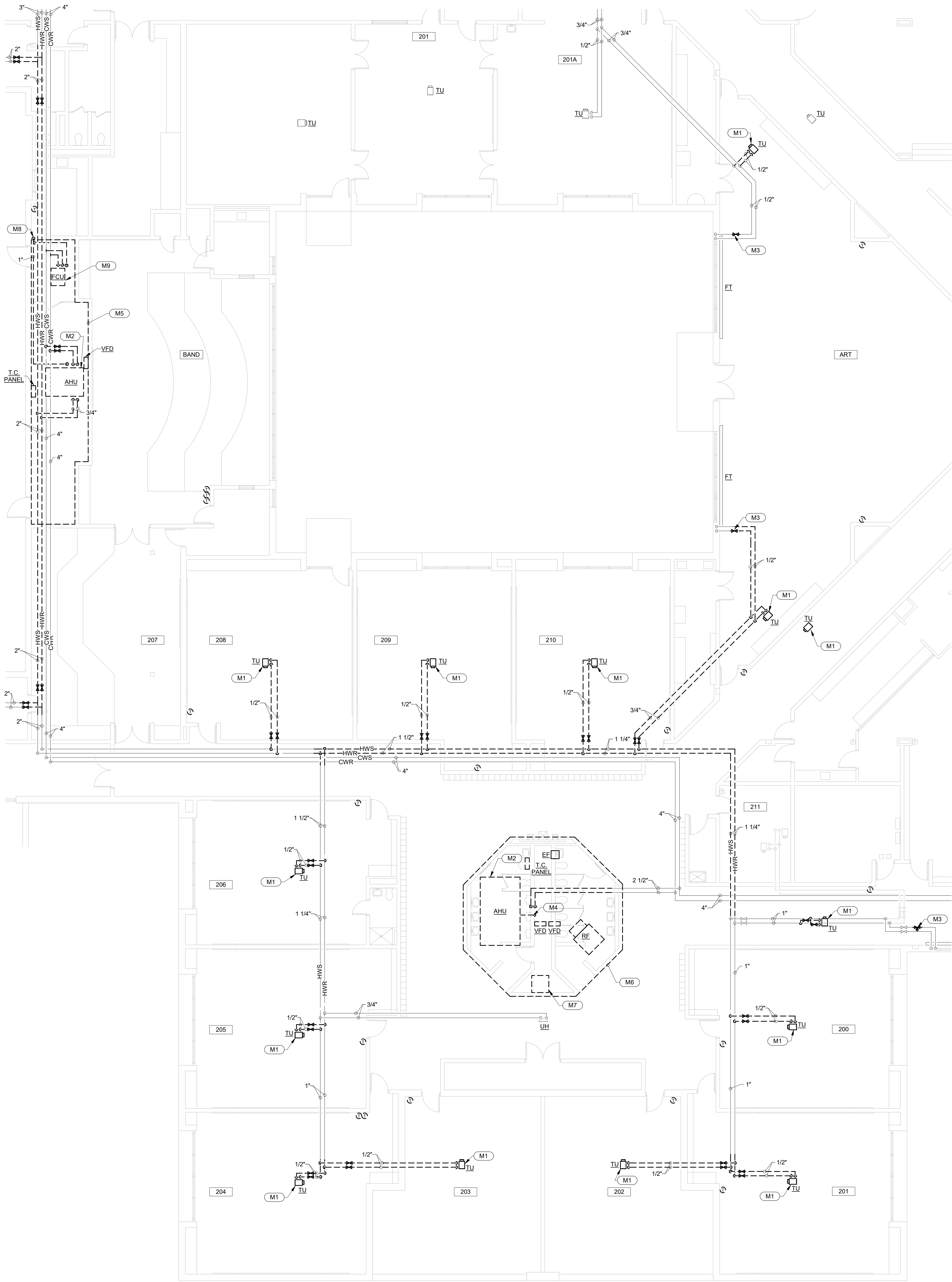
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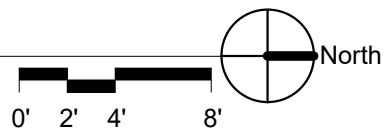
In association with:



M1.1



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



PIPING LEGEND & ABBREVIATIONS

- HWS HOT WATER SUPPLY (HWS)
- HWR HOT WATER RETURN (HWR)
- CWS CHILLED WATER SUPPLY
- CWR CHILLED WATER RETURN
- FLOW - IN DIRECTION OF ARROW
- RISER DOWN (ELBOW)
- RISER UP (ELBOW)
- RISE OR DROP
- BRANCH - TOP CONNECTION
- BRANCH - BOTTOM CONNECTION
- BRANCH - SIDE CONNECTION
- CAP ON END OF PIPE
- CONNECTION POINT NEW TO EXISTING
- A.F.F. ABOVE FINISHED FLOOR
- AHU AIR HANDLING UNIT
- CH CABINET HEATER
- E-E EXISTING EXHAUST GRILLE
- EF EXHAUST FAN
- FT FIN TUBE
- GPM GALLONS PER MINUTE
- MAX. MAXIMUM
- MIN. MINIMUM
- OA OUTSIDE AIR
- RA RETURN AIR
- RF REFUEL FAN
- RH REHEAT COIL
- R-E EXISTING RETURN GRILLE
- SA SUPPLY AIR
- S-E EXISTING SUPPLY GRILLE
- T-E EXISTING TRANSFER GRILLE
- TU AIR TERMINAL UNIT
- UH UNIT HEATER

GENERAL PLAN NOTES:

A. CONTRACTOR SHALL KEEP TEMPERATURE CONTROL CONDUIT AND THERMOSTAT BOX IN TACT FOR RE-USE. REMOVE ALL ABSOLUTE CONTROLS COMPLETE.

PLAN NOTES:

- M1 REMOVE AIR TERMINAL UNIT INCLUDING BUT NOT LIMITED TO ASSOCIATED HWS&R PIPING, HW COIL, VAV BOX, DUCTWORK, HANGERS AND CONTROLS. REMOVE PIPING AND DUCTWORK TO WHERE SHOWN. REMOVE IN A MANNER TO ALLOW FOR RECONNECTION. SUPPLY GRILLES TO REMAIN FOR RECONNECTION UNLESS NOTED OTHERWISE.
- M2 REMOVE AHU COMPLETE. UNIT REMOVAL INCLUDES, BUT IS NOT LIMITED TO FILTER SECTION, ACCESS SECTIONS, COILS, SUPPLY FAN, VFD AND ALL ASSOCIATED CONTROLS AND TEMPERATURE CONTROL PANELS MADE OBSOLETE BY THIS PROJECT. REMOVE CWS&R INCLUDING ISOLATION VALVES TO A POINT TO ALLOW FOR RECONNECTION. REMOVE ALL DUTWORK TO WHERE SHOWN. REMOVE IN A MANNER TO ALLOW FOR RECONNECTION.
- M3 REMOVE CONTROL VALVE SERVING FIN-TUBE CONVECTOR. REMOVE IN A MANNER TO ALL FOR RECONNECTION
- M4 REMOVE CONDENSATE DRAIN DOWN THRU PLUMBING CHASE COMPLETE. OPEN SITE DRAIN TO REMAIN.
- M5 DASHED LINE INDICATES AREA OF SUSPENDED CEILING TO BE REMOVED. REMOVE SUSPENDED CEILING TILES AND GRID COMPLETE.
- M6 DASHED LINE INDICATES MEZZANINE.
- M7 MEZZANINE ACCESS.
- M8 REMOVE CONDENSATE DRAINS COMPLETE. MODIFY 2" OPEN SITE DRAIN AS REQUIRED TO ACCEPT NEW CONDENSATE DRAIN.
- M9 REMOVE FAN COIL UNIT COMPLETE. UNIT REMOVAL INCLUDES, BUT IS NOT LIMITED TO DUCTWORK, HANGERS, FILTER SECTION, ACCESS SECTIONS, CHILLED WATER COIL, SUPPLY FAN AND ALL ASSOCIATED CONTROLS AND TEMPERATURE CONTROL PANELS MADE OBSOLETE BY THIS PROJECT. REMOVE CWS&R INCLUDING ISOLATION VALVES TO A POINT TO ALLOW FOR RECONNECTION. REMOVE ALL DUTWORK TO WHERE SHOWN. REMOVE IN A MANNER TO ALLOW FOR RECONNECTION.

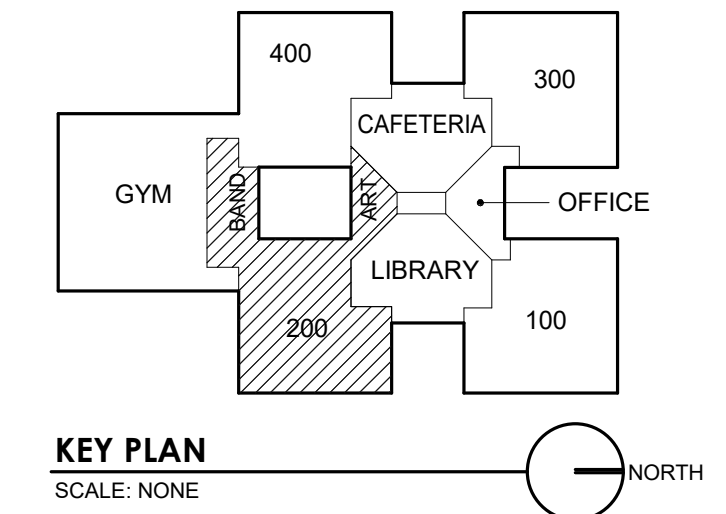
Ft. Branch Community School
HVAC Upgrades - Phase 4



7670 S Eastview Lane
Fort Branch, IN 47648



In association with:



Revisions:		
#	Description	Date

Designed By: JTP Drawn By: JTP Checked By: JTP

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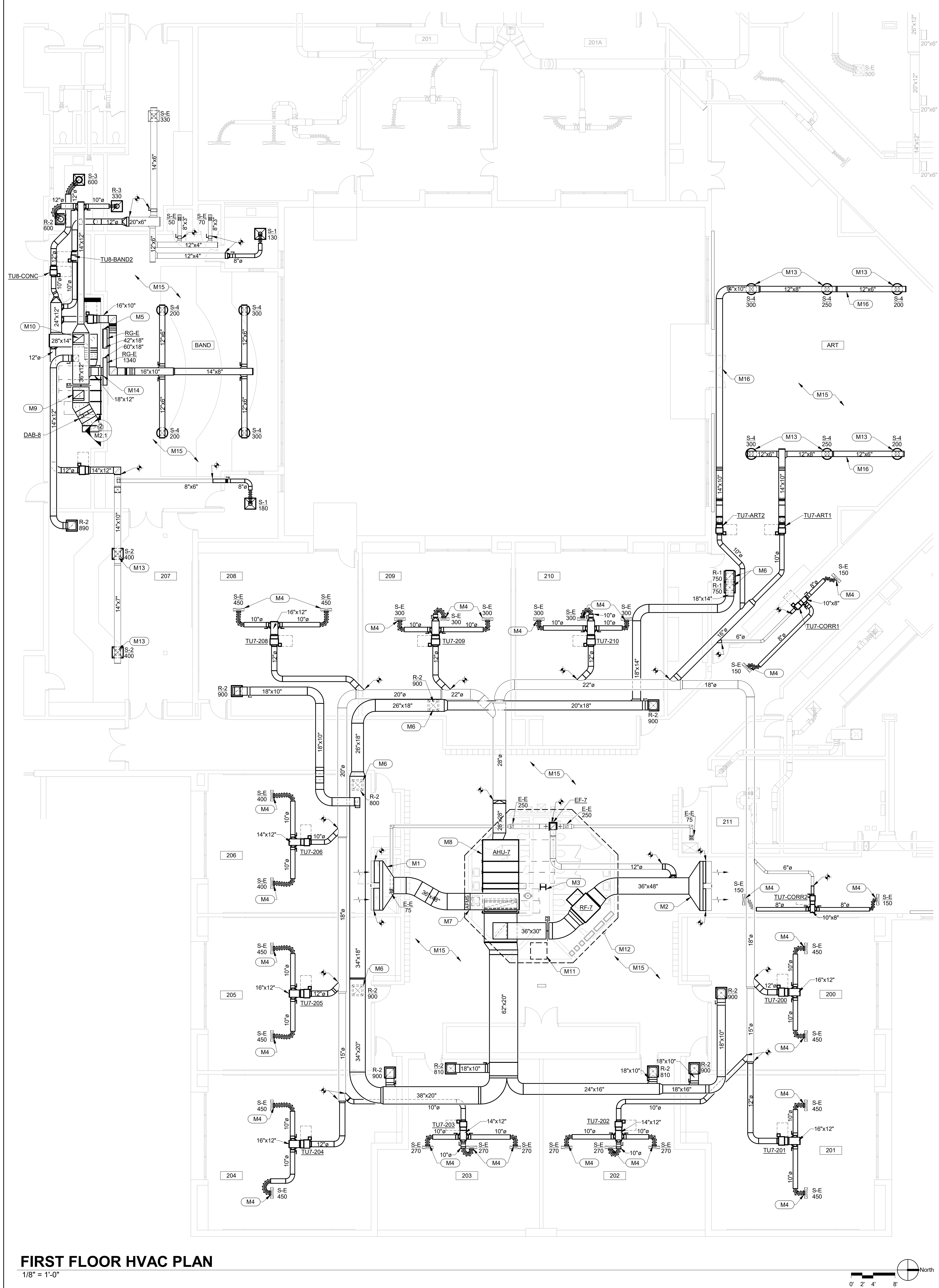
Sheet title:

FIRST FLOOR HVAC PIPING
DEMOLITION PLAN

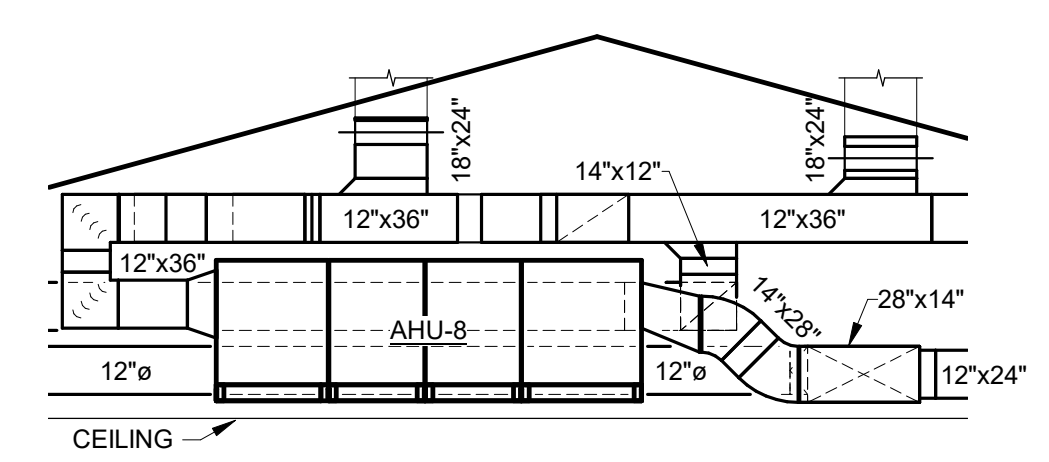
Architect's Project No: 2011-314 Date: December, 2020

Drawing No:

M1.2



FIRST FLOOR HVAC PLAN
1/8" = 1'-0"



AHU-8 ELEVATION
1/4" = 1'-0"

GENERAL NOTES:

- A. BALANCE EXISTING GRILLES AND SYSTEMS TO AIRFLOWS INDICATED.
- B. ALL VISIBLE INSULATED DUCTWORK SHALL BE WHITE FACED.
- C. REMOVE AND REPLACE EXISTING SPRINKLER PIPING AND SPRINKLER HEADS AS REQUIRED FOR REMOVAL AND INSTALLATION OF AIR HANDLING UNITS AND ASSOCIATED COMPONENTS. PROVIDE SERVICES OF PROJECT ELECTRICAL ENGINEER FOR REMOVAL AND REINSTALLATION OF ELECTRICAL COMPONENTS AS REQUIRED FOR DEMOLITION AND CONSTRUCTION.

PLAN NOTES:

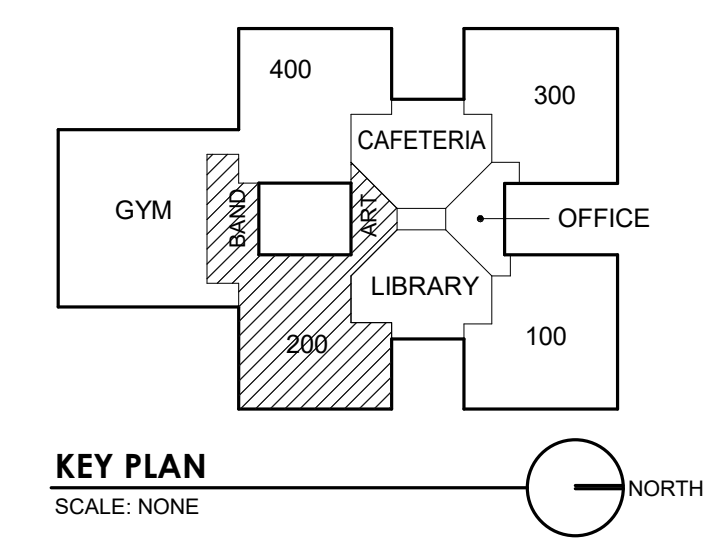
- M1 TRANSITION AS REQUIRED TO CONNECT TO EXISTING 73"x30" OUTSIDE AIR INTAKE IN SOFFIT.
- M2 TRANSITION AS REQUIRED TO CONNECT TO EXISTING 73"x30" RELIEF AIR DISCHARGE IN SOFFIT.
- M3 EXISTING STRUCTURAL COLUMN. COORDINATE AIR HANDLING UNIT LOCATION AND MAINTENANCE ACCESS.
- M4 CONNECT TO EXISTING GRILLE. TRANSITION AS REQUIRED.
- M5 CAP EXISTING RELIEF GRILLE.
- M6 RETURN DUCT DOWN TO GRILLE. PROVIDE MANUAL BALANCING DAMPER IN DUCT.
- M7 AIRFLOW MEASURING STATION. PROVIDE 18"x18" DUCT ACCESS PANEL TO ACCESS AIRFLOW MEASURING STATION.
- M8 PROVIDE NEOPRENE PADS UNDER AIR HANDLING UNIT AND SECURE TO CONCRETE MEZZANINE FLOOR.
- M9 TRANSITION AS REQUIRED TO CONNECT TO EXISTING 24"x18" OUTSIDE AIR INTAKE HOOD. PROVIDE WITH MOTORIZED DAMPER AND BACKDRAFT DAMPER IN RELIEF AIR DUCT.
- M10 TRANSITION AS REQUIRED TO CONNECT TO EXISTING 24"x18" RELIEF AIR INTAKE HOOD. PROVIDE MOTORIZED DAMPER AND BACKDRAFT DAMPER IN RELIEF AIR DUCT.
- M11 MEZZANINE ACCESS.
- M12 DASHED LINE INDICATES MEZZANINE.
- M13 10" SUPPLY DUCT DOWN TO GRILLE. PROVIDE MANUAL BALANCING DAMPER IN DUCT. INSTALL SUPPLY GRILLE AS HIGH AS POSSIBLE.
- M14 TRANSITION AS REQUIRED TO CONNECT TO EXISTING RETURN GRILLE.
- M15 DUCTWORK IN AREA IS VISIBLE. PROVIDE WITH WHITE FACED INSULATION.
- M16 ROUTE DUCTWORK AS HIGH AS POSSIBLE.



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Revisions:		
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Drawn By: JTP
Checked By: JTP

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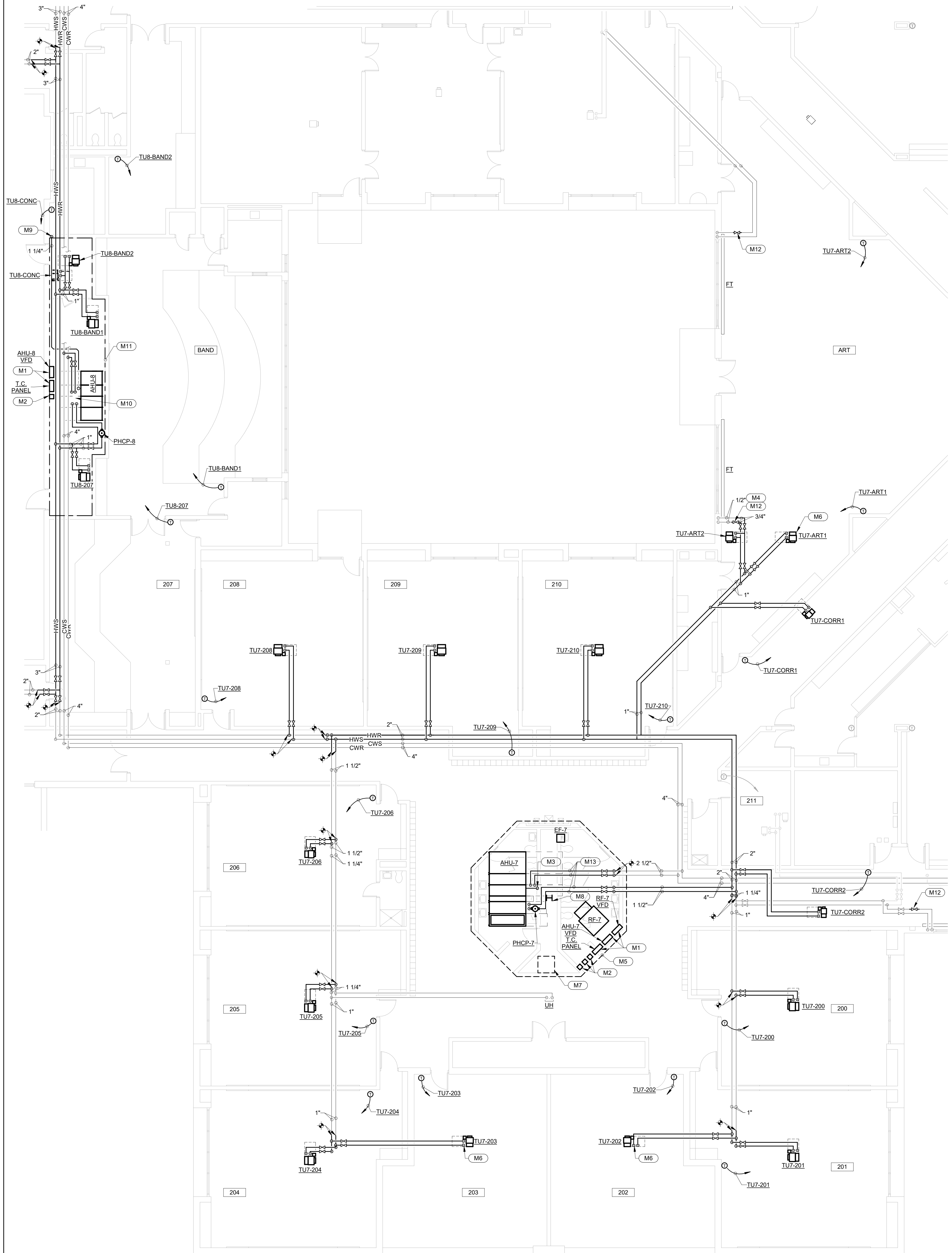
Sheet title:

FIRST FLOOR HVAC PLAN

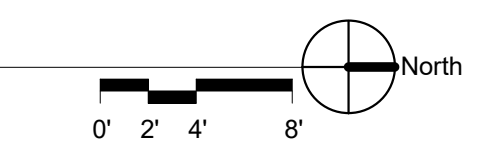
Architect's Project No: 2011-314
Date: December, 2020

Drawing No:

M2.1



FIRST FLOOR HVAC PIPING PLAN - POD 200
1/8" = 1'-0"



GENERAL NOTES:

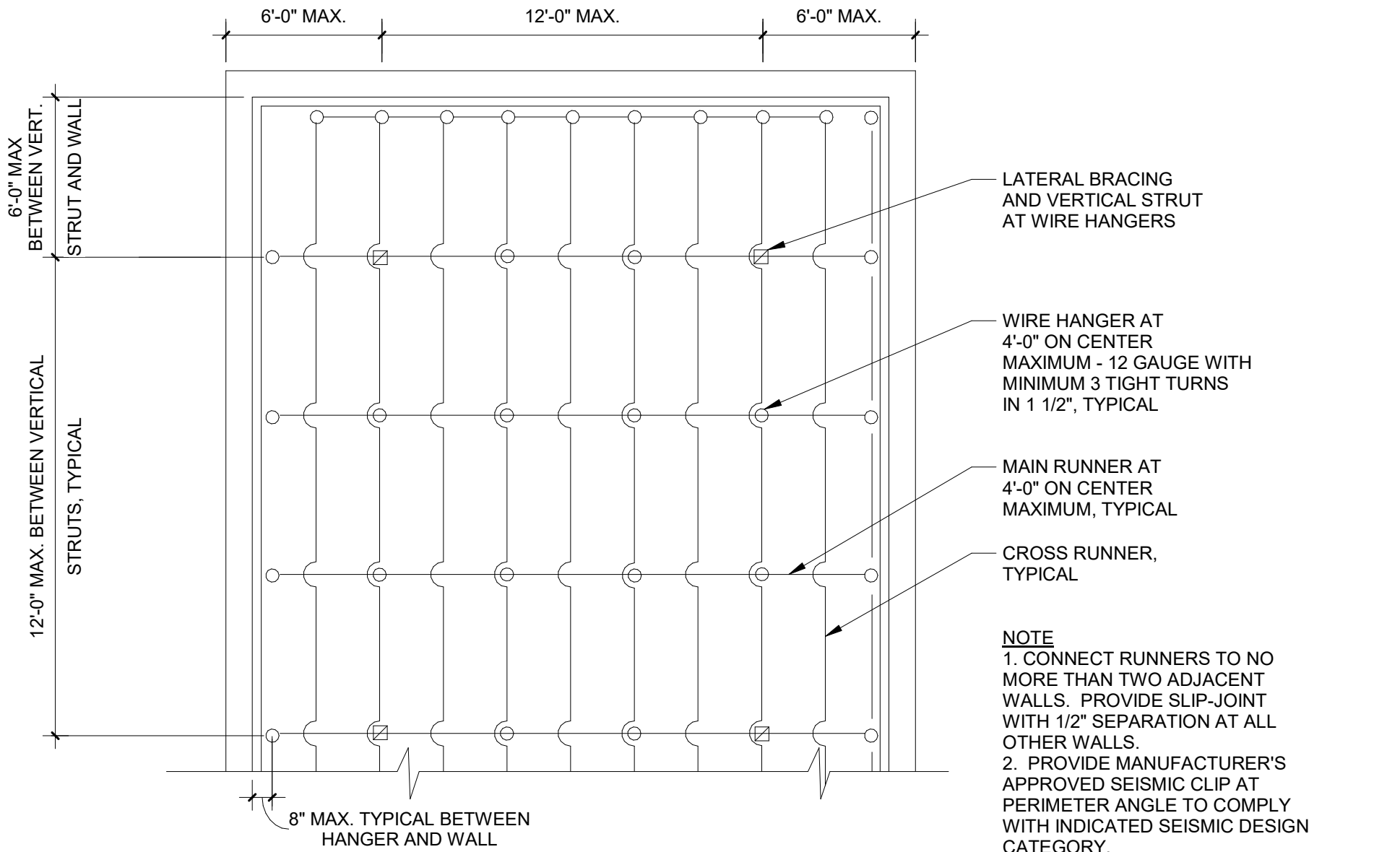
- A. ALL BRANCH PIPING SERVING TERMINAL UNITS SHALL BE 3/4" UNLESS NOTED OTHERWISE.
- B. ALL TERMINAL UNITS SHALL BE PROVIDED WITH TWO-WAY MODULATING CONTROL VALVES UNLESS NOTED OTHERWISE.
- C. IN EXISTING WALLS THAT APPLY, THERMOSTATS SHALL BE LOCATED IN SAME LOCATION AS EXISTING. CONTRACTOR SHALL UTILIZE EXISTING TEMPERATURE CONTROL CONDUIT AND THERMOSTAT BOX FOR NEW THERMOSTAT. PAINT AND PATCH WALL TO MATCH EXISTING AS REQUIRED.
- D. REMOVE AND REPLACE EXISTING SPRINKLER PIPING AND SPRINKLER HEADS AS REQUIRED FOR REMOVAL AND INSTALLATION OF AIR HANDLING UNITS AND ASSOCIATED COMPONENTS. PROVIDE SERVICES OF PROJECT ELECTRICAL ENGINEER FOR REMOVAL AND REINSTALLATION OF ELECTRICAL COMPONENTS AS REQUIRED FOR DEMOLITION AND CONSTRUCTION.

PLAN NOTES:

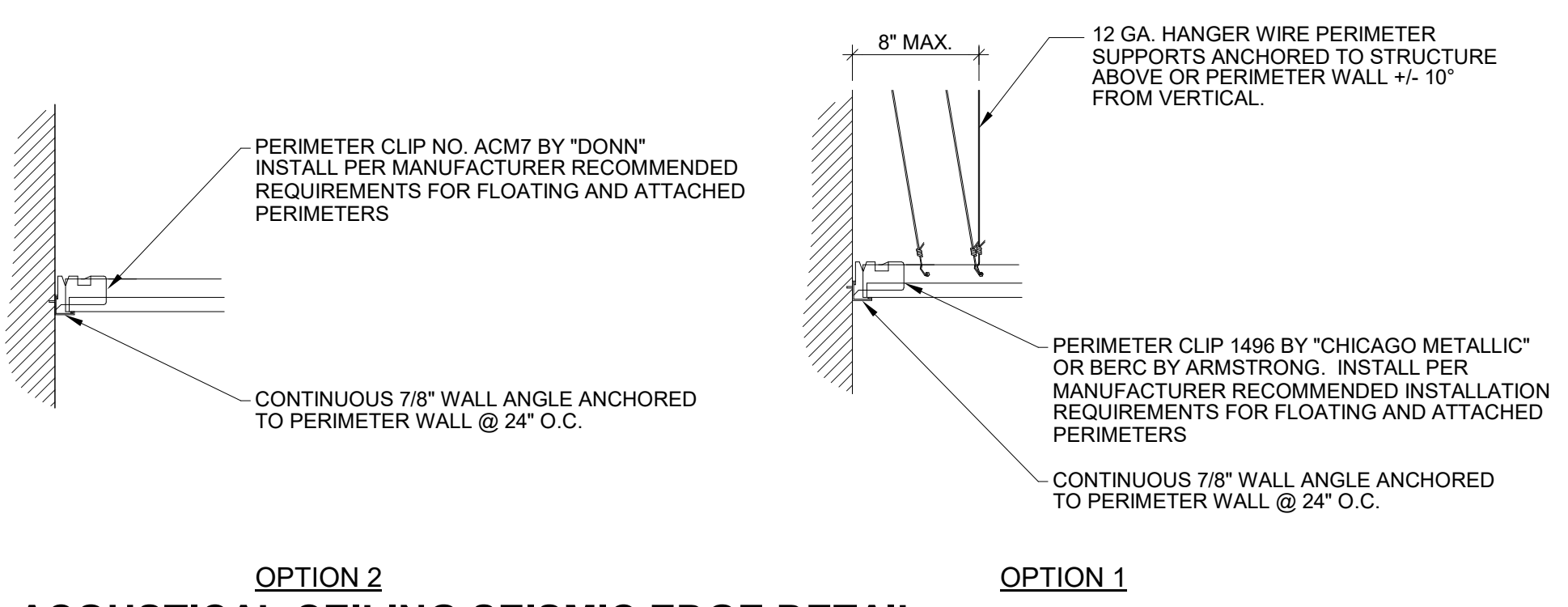
- M1 PROVIDE SUPPORT STRUCTURE AS REQUIRED FOR MOUNTING VFDs AND TEMPERATURE CONTROL PANEL.
- M2 PROVIDE TEMPERATURE CONTROL POWER TRANSFORMERS. PROVIDE ONE TRANSFORMER PER 5 TERMINAL UNITS. COORDINATE REQUIREMENTS AND LOCATIONS WITH ELECTRICAL CONTRACTOR. PROVIDE SUPPORT STRUCTURE TO MOUNT TRANSFORMERS.
- M3 1-1/2" CONDENSATE DOWN IN EXISTING PLUMBING CHASE. ROUTE TO EXISTING 2" OPEN SITE DRAIN. 2-1/2" CWS&R, 1-1/2" HWS&R DOWN TO AHU.
- M4 CONNECT 3/4" HWS&R TO EXISTING 1/2" HWS&R.
- M5 DASHED LINE INDICATES MEZZANINE.
- M6 PROVIDE TERMINAL UNIT WITH 3-WAY MODULATING CONTROL VALVE.
- M7 MEZZANINE ACCESS.
- M8 EXISTING STRUCTURAL COLUMN. COORDINATE AIR HANDLING UNIT LOCATION AND MAINTENANCE ACCESS.
- M9 CONNECT 1-1/4" CONDENSATE DRAIN TO 2" OPEN SITE DRAIN. PROVIDE PROPER AIR GAP. MODIFY 2" OPEN SITE DRAIN AS REQUIRED TO ACCEPT NEW CONDENSATE DRAIN.
- M10 1" HWS&R, 1-1/2" CWS&R, 1-1/4" CONDENSATE UP TO AIR HANDLING UNIT. CONTRACTOR SHALL COORDINATE ROUTING TO MAINTAIN MAINTENANCE CLEARANCES.
- M11 DASHED LINE INDICATES AREA TO BE PROVIDED WITH NEW 2X2 LAY-IN CEILING AND GRID. SEE DETAILS THIS SHEET FOR ADDITIONAL REQUIREMENTS.
- M12 PROVIDE 2-WAY MODULATING CONTROL VALVE TO SERVICE EXISTING FIN-TUBE CONVECTOR.
- M13 ROUTE PIPING HIGH ABOVE MEZZANINE TO ALLOW FOR ACCESS UNDER PIPING.

GENERAL CEILING NOTES:

- A. SUSPENDED ACOUSTICAL PANEL CEILING AREAS IN EXCESS OF 144 S.F. SHALL BE CONSTRUCTED OF HEAVY DUTY RATED SUSPENSION SYSTEMS AND SHALL COMPLY WITH "ACOUSTICAL CEILING SEISMIC EDGE DETAIL" THIS SHEET.



TYPICAL LAY-IN CEILING ASSEMBLY
NO SCALE



OPTION 2
ACOUSTICAL CEILING SEISMIC EDGE DETAIL
NO SCALE

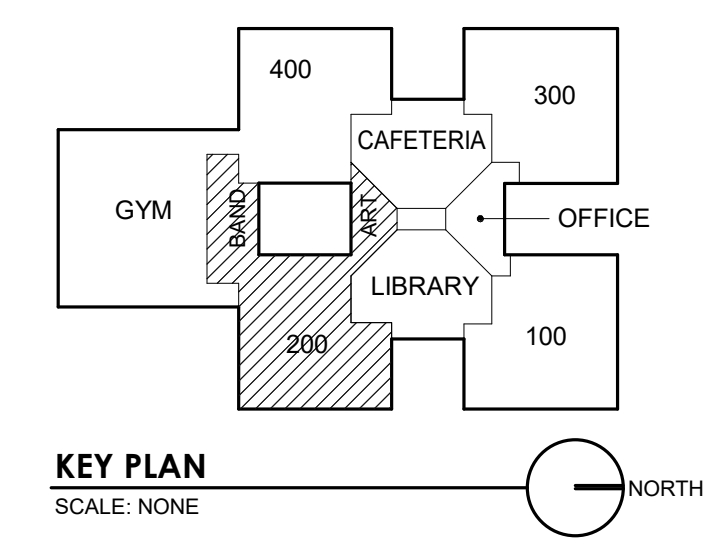
OPTION 1



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Revisions:		
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Designed By: JTP Drawn By: JTP Checked By: JTP

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Sheet title:
FIRST FLOOR HVAC PIPING PLAN

Architect's Project No: 2011-314 Date: December, 2020

Drawing No:

M2.2

AIR HANDLING UNIT SCHEDULE																																							
SYMBOL	AREA SERVED	SUPPLY FAN									PREHEAT COIL - HOT WATER										COOLING COIL - CHILLED WATER										FILTER	MANUF.	MODEL	REMARKS					
		CFM	EXTERNAL STATIC (IN.W.C.)	TOTAL STATIC (IN.W.C.)	TYPE	RPM	MHP	BHP	VOLT/ PHASE	MIN. O.A. CFM	CFM	ROWS	FPI	EAT °F	LAT °F	EWT °F	LWT °F	MBH	GPM	AIR P.D. IN. W.C.	WPD FT. HEAD	CFM	ROWS	FPI	EAT FDB	EAT FWB	LAT FDB	LAT FWB	EWT °F	LWT °F					GPM	TOTAL MBH	SENS. MBH	AIR P.D. IN. W.C.	WPD FT. HEAD
AHU-7	POD 200	10,820	2.5	5.05	FORWARD CURVED	1,142	15	13.5	480 / 3	1,500	10,820	1	8	58.1	74.7	140	120	196.5	19.9	0.26	1.5	10,820	8	12	78.8	66.3	54.0	53.9	45.0	57.0	67.0	385.4	280.1	1.20	9.3	(6) 20"x25" 2" MERV 8	CARRIER	39MN SIZE 21W	NOTES 1,2,3,4,6
AHU-8	BAND	3,160	1.5	3.87	FORWARD CURVED	1,882	5	3.6	480 / 3	475	3,160	1	8	58.3	73.2	140	120	52.3	5.3	0.22	0.3	3,160	8	12	78.7	66.3	54.7	54.6	45.0	57.0	18.9	108.9	80.6	1.25	11.3	(2) 20"x25" 2" MERV 8	CARRIER	39MN SIZE 06W	NOTES 1,2,3,4,5,6
NOTES: 1. FANS RPM SHALL NOT EXCEED 110% OF SCHEDULED VALUE. WITH THE SCHEDULED WHEEL TYPE. 2. NO EQUIPMENT SHALL BE SELECTED ABOVE 90% OF MOTOR NAME PLATE RATING. 3. PROVIDE WITH EXTERNAL SUPPORT KIT (BASERAIL). 4. VFD AND CONTROLS PROVIDED BY TEMPERATURE CONTROL CONTRACTOR. 5. PROVIDE WITH SEISMIC RATED HANGERS WITH SPRING ISOLATORS AND ANTI-SWAY BRACING FOR SEISMIC RESTRAINT. 6. PROVIDE AHU WITH THE FOLLOWING: a. LOW LEAK DAMPERS b. STAINLESS STEEL DRAIN PAN c. SEISMIC RATED SPRING ISOLATED FAN d. PREMIUM EFFICIENCY FAN MOTOR CAPABLE OF VFD CONTROL e. GALVANIZED STEEL DOUBLE WALL CONSTRUCTION WITH INSULATED PANELS f. PROVIDE WITH BI-POLAR IONIZATION AIR CLEANER SIMILAR TO Q2PRIME-AH. COORDINATE 24V POWER REQUIREMENT WITH TEMPERATURE CONTROL CONTRACTOR. g. COOLING COIL SIZED FOR 25% PROPYLENE GLYCOL CHILLED WATER.																																							

MISCELLANEOUS EQUIPMENT SCHEDULE		
SYMBOL	DESCRIPTION	REMARKS
PHCP-7	PREHEAT COIL CIRCULATING PUMP - SERVES PREHEAT COIL FOR AHU-7. 19.9 GPM @ 20 FT. 1-1/2" SUCTION, 1-1/2" DISCHARGE, FLANGED CONNECTIONS. MOTOR SHALL BE 120V, 1/6 HP WITH THERMAL OVERLOAD PROTECTION. BASED ON BELL & GOSSETT MODEL PL-36.	
PHCP-8	PREHEAT COIL CIRCULATING PUMP - SERVES PREHEAT COIL FOR AHU-8. 5.3 GPM @ 20 FT. 1" SUCTION, 1" DISCHARGE, FLANGED CONNECTIONS. MOTOR SHALL BE 120V, 1/12 HP WITH THERMAL OVERLOAD PROTECTION. BASED ON BELL & GOSSETT MODEL PL-30.	
DAB-8	DUCT MOUNTED AIR BLENDER - (3) 11"x11" DUCT MOUNTED AIR BLENDERS SIMILAR TO AIR BLENDER PRODUCTS MODEL AB11. 3,200 CFM MAXIMUM. 940 CFM MINIMUM. 0.24" PRESSURE LOSS. 8" MINIMUM UPSTREAM STRAIGHT DUCT DISTANCE. 8" MINIMUM DOWNSTREAM STRAIGHT DUCT DISTANCE. INSULATE WITH 1-1/2" FIBERGLASS DUCT WRAP. PROVIDE ACCESS PANEL IN DUCTWORK AT INLET SIDE OF AIR BLENDER.	

GENERAL NOTES FOR VARIABLE FREQUENCY DRIVES:

- A. UNLESS NOTED OTHERWISE, ALL VARIABLE FREQUENCY DRIVES (VFDs) SHALL BE FURNISHED WITH DISCONNECT AND BY-PASS, AND SHALL BE FURNISHED BY THE TEMPERATURE CONTROL CONTRACTOR (TCC) WITH 5% REACTANCE ON LINE SIDE.
- B. UNLESS NOTED OTHERWISE, ALL VFDs AND REACTANCE EQUIPMENT SHALL BE INSTALLED BY THE TCC. THE ELECTRICAL CONTRACTOR SHALL PROVIDE ALL LABOR AND MATERIALS REQUIRED AND PROVIDE ALL POWER CONNECTIONS AND INTERCONNECTIONS WITH LIFE SAFETY DEVICES (I.E. SMOKE DETECTORS/FIRE ALARM SYSTEM).
- C. THE TCC SHALL BE RESPONSIBLE FOR ALL OTHER INSTALLATION REQUIREMENTS, NOT MENTIONED ABOVE, INCLUDING BUT NOT LIMITED TO: TEMPERATURE CONTROL CIRCUITS AND PROGRAMMING OF THE VFD.

AHU-7 AIR TERMINAL UNIT SCHEDULE																			
SYMBOL	CFM			INLET SIZE	COIL										WATER PRESS. DROP (FT. W.G.)	AIR PRESSURE DROP	MFR.	MODEL	REMARKS
	COOLING MAX.	HEATING MAX.	MIN.		EAT	LAT	EWT	LWT	ROWS	GPM	COIL								
TU7-200	900	550	550	12"	55	96.1	140	120	2	2.48	1.33	0.16	CARRIER	35E-12	ALL NOTES APPLY				
TU7-201	900	550	550	12"	55	96.1	140	120	2	2.48	1.33	0.16	CARRIER	35E-12	ALL NOTES APPLY				
TU7-202	810	500	500	10"	55	91.3	140	120	2	1.99	0.72	0.24	CARRIER	35E-10	ALL NOTES APPLY				
TU7-203	810	500	500	10"	55	91.3	140	120	2	1.99	0.72	0.24	CARRIER	35E-10	ALL NOTES APPLY				
TU7-204	900	550	550	12"	55	96.1	140	120	2	2.48	1.33	0.16	CARRIER	35E-12	ALL NOTES APPLY				
TU7-205	900	550	550	12"	55	96.1	140	120	2	2.48	1.33	0.16	CARRIER	35E-12	ALL NOTES APPLY				
TU7-206	800	500	500	10"	55	91.3	140	120	2	2.00	0.72	0.23	CARRIER	35E-10	ALL NOTES APPLY				
TU7-208	900	550	550	12"	55	96.1	140	120	2	2.48	1.33	0.16	CARRIER	35E-12	ALL NOTES APPLY				
TU7-209	900	550	550	12"	55	96.1	140	120	2	2.48	1.33	0.16	CARRIER	35E-12	ALL NOTES APPLY				
TU7-210	900	550	550	12"	55	96.1	140	120	2	2.48	1.33	0.16	CARRIER	35E-12	ALL NOTES APPLY				
TU7-ART1	750	570	570	10"	55	97.4	140	120	2	2.31	0.85	0.26	CARRIER	35E-10	ALL NOTES APPLY				
TU7-ART2	750	570	570	10"	55	97.4	140	120	2	2.31	0.85	0.26	CARRIER	35E-10	ALL NOTES APPLY				
TU7-CORR1	300	150	150	6"	55	97.1	140	120	2	0.70	0.14	0.13	CARRIER	35E-06	ALL NOTES APPLY				
TU7-CORR2	300	150	150	6"	55	97.1	140	120	2	0.70	0.14	0.13	CARRIER	35E-06	ALL NOTES APPLY				
TOTALS: 14				10820	6790	6790													
NOTES: 1. PROVIDE WITH: • DUAL DENSITY FIBERGLASS LINER • ACCESS PANEL WHERE REQUIRED. VERIFY WITH ARCHITECTURAL CEILING PLAN. • HANGERS • WATER COIL DRAIN AND VENT • 24V POWER WITH DISCONNECT • CONTROLLER AND ACTUATOR PROVIDED BY TCC TO UNIT MANUFACTURER FOR FACTORY INSTALLATION. • SEE ELECTRICAL PLANS FOR CONTROL POWER TRANSFORMER LOCATIONS. ALL 24V CONTROL POWER FROM TRANSFORMERS TO AIR TERMINAL CONTROLLERS BY T.C.C. 2. TRANSITION SUPPLY DUCT TO INLET AS REQUIRED. 3. CONTRACTOR SHALL FIELD INSULATE HOT WATER COIL CASING WITH 1-1/2" FIBERGLASS DUCT WRAP. 4. PERFORMANCE BASED ON 0.75" W.G. PRESSURE AT AIR VALVE INLET. 5. REFER TO HVAC PLANS FOR TERMINAL UNITS TO BE PROVIDED WITH 3-WAY VALVES.																			

AHU-8 AIR TERMINAL UNIT SCHEDULE																		
SYMBOL	CFM			INLET SIZE	COIL							WATER PRESS. DROP (FT. W.G.)	AIR PRESSURE DROP	MFR.	MODEL	REMARKS		
	COOLING MAX.	HEATING MAX.	MIN.		EAT	LAT	EWT	LWT	ROWS	GPM								
TU8-207	980	600	600	12"	55	94.8	140	120	2	2.62	1.47	0.19	CARRIER	35E-12	ALL NOTES APPLY			
TU8-BAND1	1000	700	700	12"	55	92.7	140	120	2	2.90	1.75	0.20	CARRIER	35E-12	ALL NOTES APPLY			
TU8-BAND2	580	350	350	10"	55	102.7	140	120	2	1.81	0.55	0.17	CARRIER	35E-10	ALL NOTES APPLY			
TU8-CONC	600	175	175	10"	55	99.4	140	110	2	0.56	0.06	0.18	CARRIER	35E-10	ALL NOTES APPLY			
TOTALS: 4	3160	1825	1825															
NOTES: 1. PROVIDE WITH: • DUAL DENSITY FIBERGLASS LINER • ACCESS PANEL WHERE REQUIRED. VERIFY WITH ARCHITECTURAL CEILING PLAN. • HANGERS • WATER COIL DRAIN AND VENT • 24V POWER WITH DISCONNECT • CONTROLLER AND ACTUATOR PROVIDED BY TCC TO UNIT MANUFACTURER FOR FACTORY INSTALLATION. • SEE ELECTRICAL PLANS FOR CONTROL POWER TRANSFORMER LOCATIONS. ALL 24V CONTROL POWER FROM TRANSFORMERS TO AIR TERMINAL CONTROLLERS BY T.C.C. 2. TRANSITION SUPPLY DUCT TO INLET AS REQUIRED. 3. CONTRACTOR SHALL FIELD INSULATE HOT WATER COIL CASING WITH 1-1/2" FIBERGLASS DUCT WRAP. 4. PERFORMANCE BASED ON 0.75" W.G. PRESSURE AT AIR VALVE INLET. 5. REFER TO HVAC PLANS FOR TERMINAL UNITS TO BE PROVIDED WITH 3-WAY VALVES.																		

RELIEF & EXHAUST FAN SCHEDULE											
SYMBOL	MANUFACTURER	AREA SERVED	MODEL	BHP	HP	FRPM	AIR FLOW (CFM)	T.S.P. (IN.)	ELEC.(VOLT /PHASE)	DRIVE	MOUNTING
EF-7	GREENHECK	POD 200	SQ-100-VG	0.16	1/4	1,501	900	0.60	115/1	DIRECT	INLINE
RF-7	GREENHECK	POD 200	BSQ-300-50	4.83	5	828	10,820	1.25	480/3	BELT	INLINE
NOTES: 1. FANS MUST BE WITHIN +/- 10% OF SCHEDULED RPM. 2. NO EQUIPMENT SHALL BE SELECTED ABOVE 90% OF MOTOR NAMEPLATE RATING. 3. PROVIDE FAN WITH THE FOLLOWING: A. FAN MOUNTED DIAL SPEED CONTROLLER B. FACTORY MOUNTED DISCONNECT SWITCH C. HANGERS WITH NEOPRENE ISOLATORS D. FACTORY GRAVITY BACKDRAFT DAMPER E. BALANCE FAN TO PROVIDE 650 CFM F. INSULATED HOUSING G. ELECTRONICALLY COMUTATED MOTOR (ECM) 4. PROVIDE FAN WITH THE FOLOWING: A. PREMIUM EFFICIENCY MOTOR SUITABLE FOR VFD CONTROL. (VFD BY T.C. CONTRACTOR) B. SPRING ISOLATORS, SEISMIC RESTRAINTS AND BRACING C. AUTO BELT TENSIONER D. ONE SPARE BELT E. MOTOR COVER F. INSULATED HOUSING											

GRILLE AND DIFFUSER SCHEDULE												
SYMBOL	TYPE	STYLE	FACE SIZE (INCHES)	INLET SIZE (INCHES)	PERFORMANCE				SOUND	PRESSURE LOSS (IN. W.G.)	MODEL	MANUF.
					AIRFLOW (CFM)	THROW (FT) @ TERMINAL VELOCITY (FFM)	150	100				
R-1	LAY-IN	PERFORATED	24"x24"	15"x15"	782	N/A	N/A	N/A	<15	0.042	PDDR	PRICE
R-2	LAY-IN	PERFORATED	24"x24"	18"x18"	1125	N/A	N/A	N/A	<15	0.042	PDDR	PRICE
R-3	LAY-IN	PLAQUE	24"x24"	10"ø	273	N/A	N/A	N/A	<15	0.057	PDDR	PRICE
S-1	LAY-IN	PLAQUE	24"x24"	8"ø	239	2	4	7	<15	0.042	ASPD	PRICE
S-2	LAY-IN	PLAQUE	24"x24"	12"ø	393	3	5	10	<15	0.065	ASPD	PRICE
S-3	LAY-IN	PLAQUE	24"x24"	15"ø	614	4	7	13	<15	0.101	ASPD	PRICE
S-4	DUCT MOUNTED	ROUND PLAQUE	22"ø	10"ø	327	4	6	11	<15	0.043	RPD	PRICE
NOTES: 1. THROW DATA FOR DIFFUSERS IS BASED ON 4-WAY THROW. 2. N.C. VALUES ARE BASED ON ROOM ABSORPTION FOR 10dB re 10 ⁻¹² WATTS. 3. GRILLES AND DIFFUSERS SHALL BE ALUMINUM CONSTRUCTION UNLESS NOTED OTHERWISE. 4. PRESSURE LOSS SHOWN IS TOTAL PRESSURE FOR SUPPLY AND STATIC PRESSURE FOR RETURN GRILLES. 5. CONTRACTOR SHALL CONFIRM CEILING TYPES PRIOR TO ORDERING. PROVIDE PLASTER FRAMES AND ACCESSORIES AS REQUIRED FOR MOUNTING TYPE.												

Ft. Branch Community School
HVAC Upgrades - Phase 4



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In association with:



Revisions:		
#	Description	Date

Designed By: JTP Drawn By: JTP Checked By: JTP

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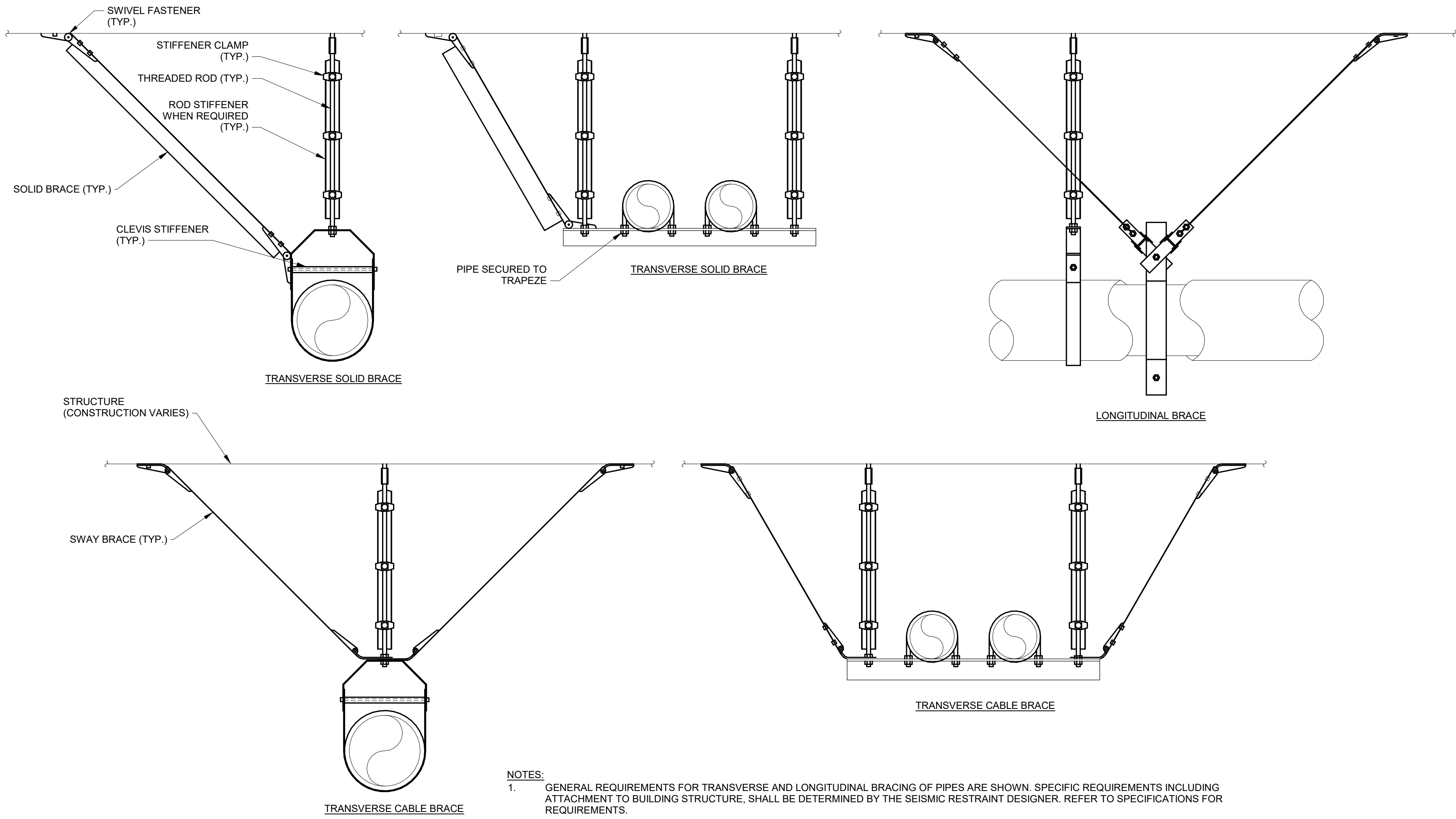
HVAC SCHEDULES

Architect's Project No: Date:

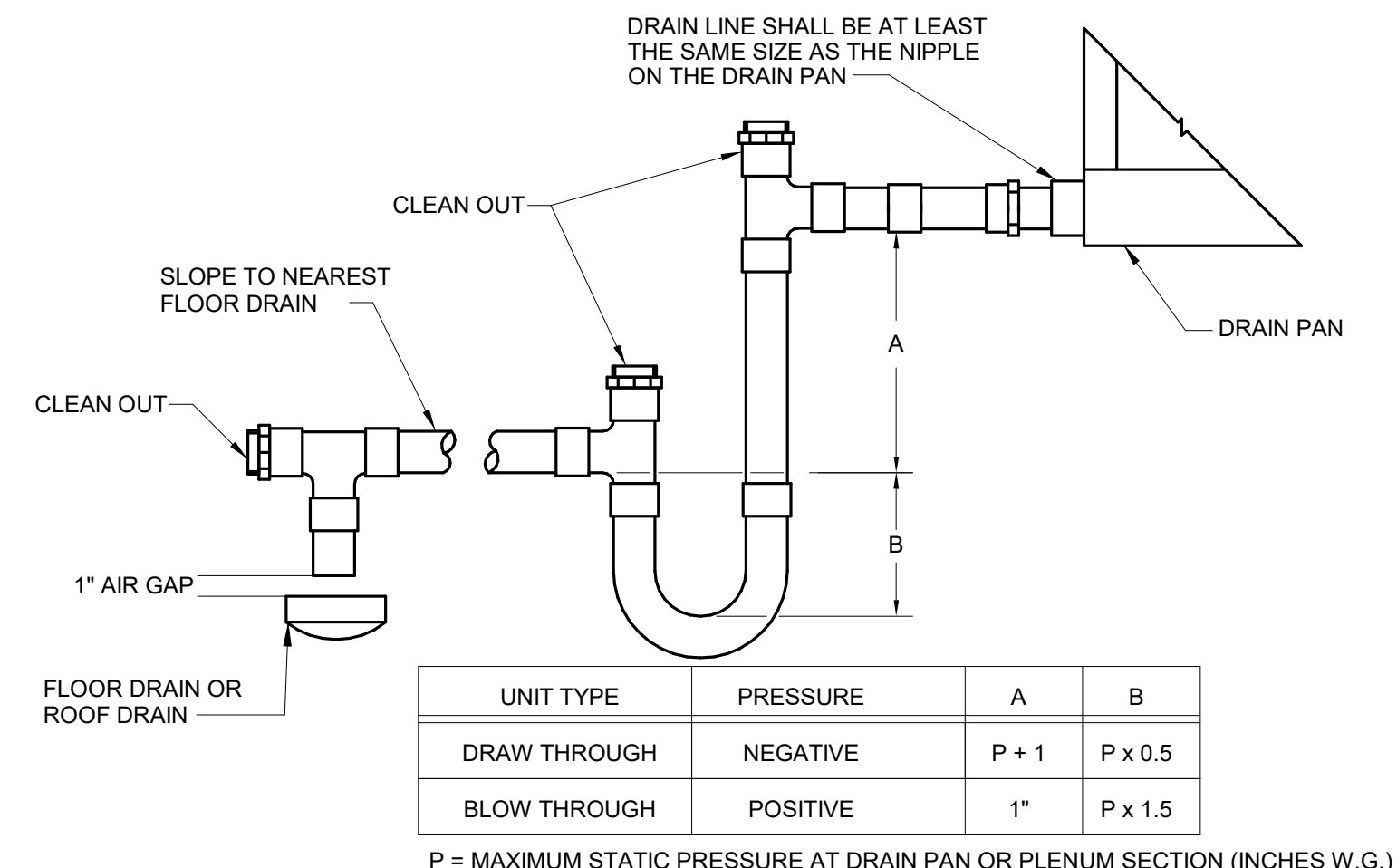
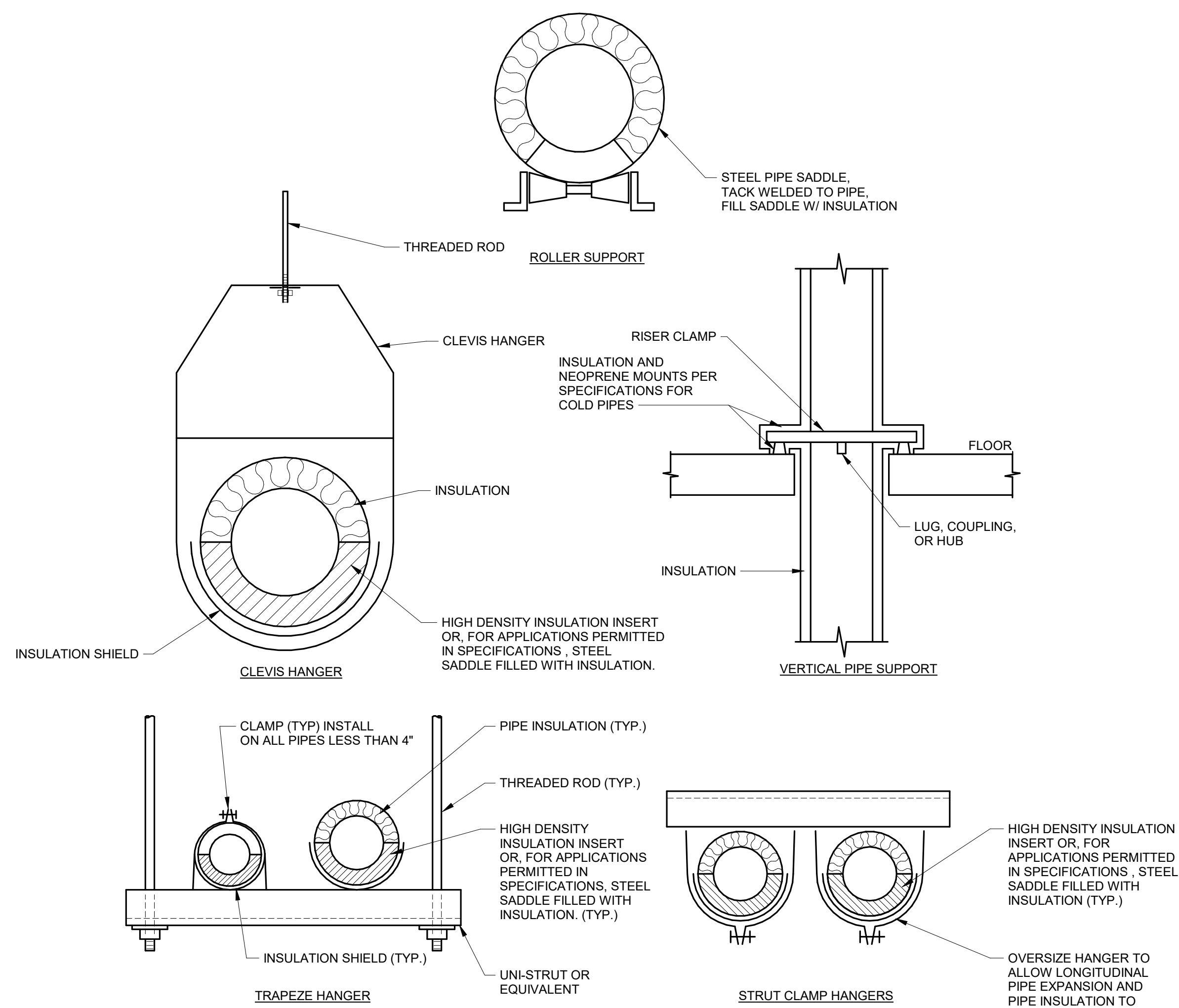
2011-314 December, 2020

Drawing No:

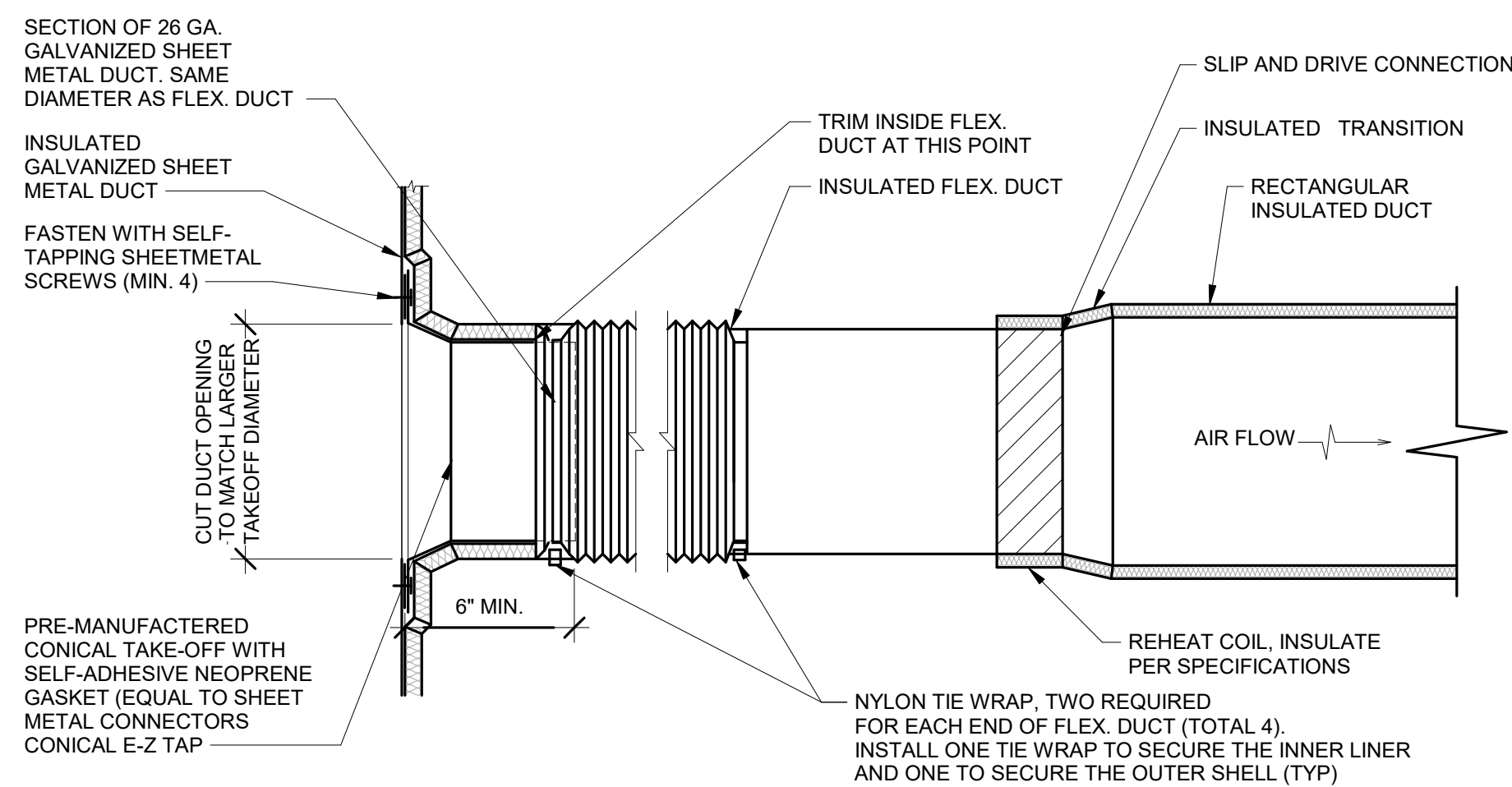
M3.1



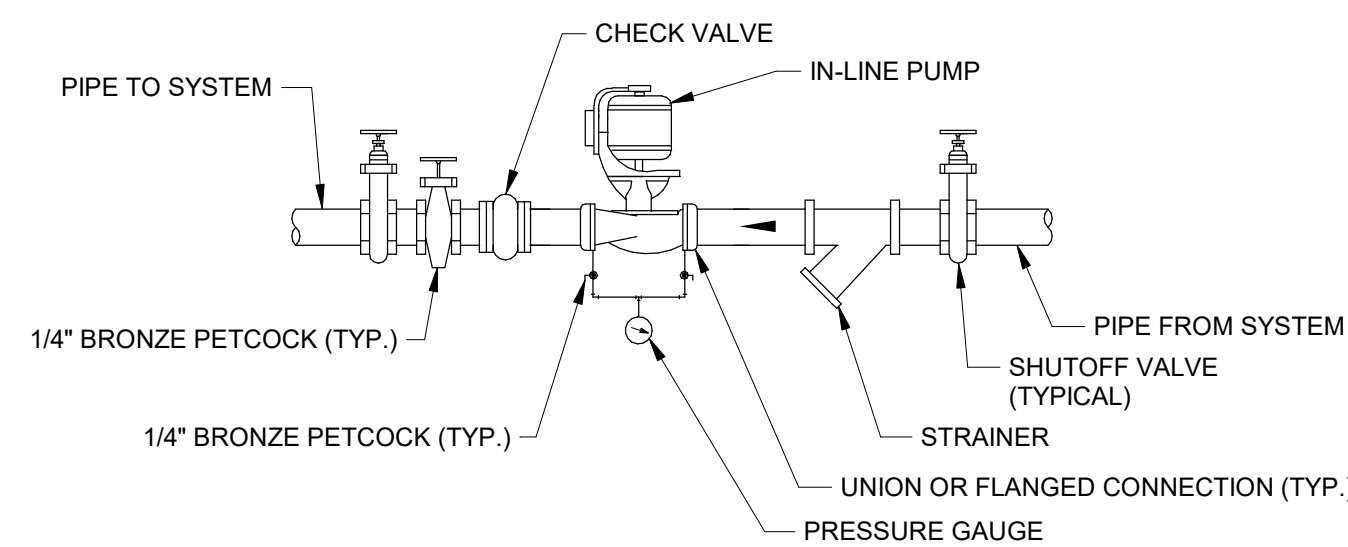
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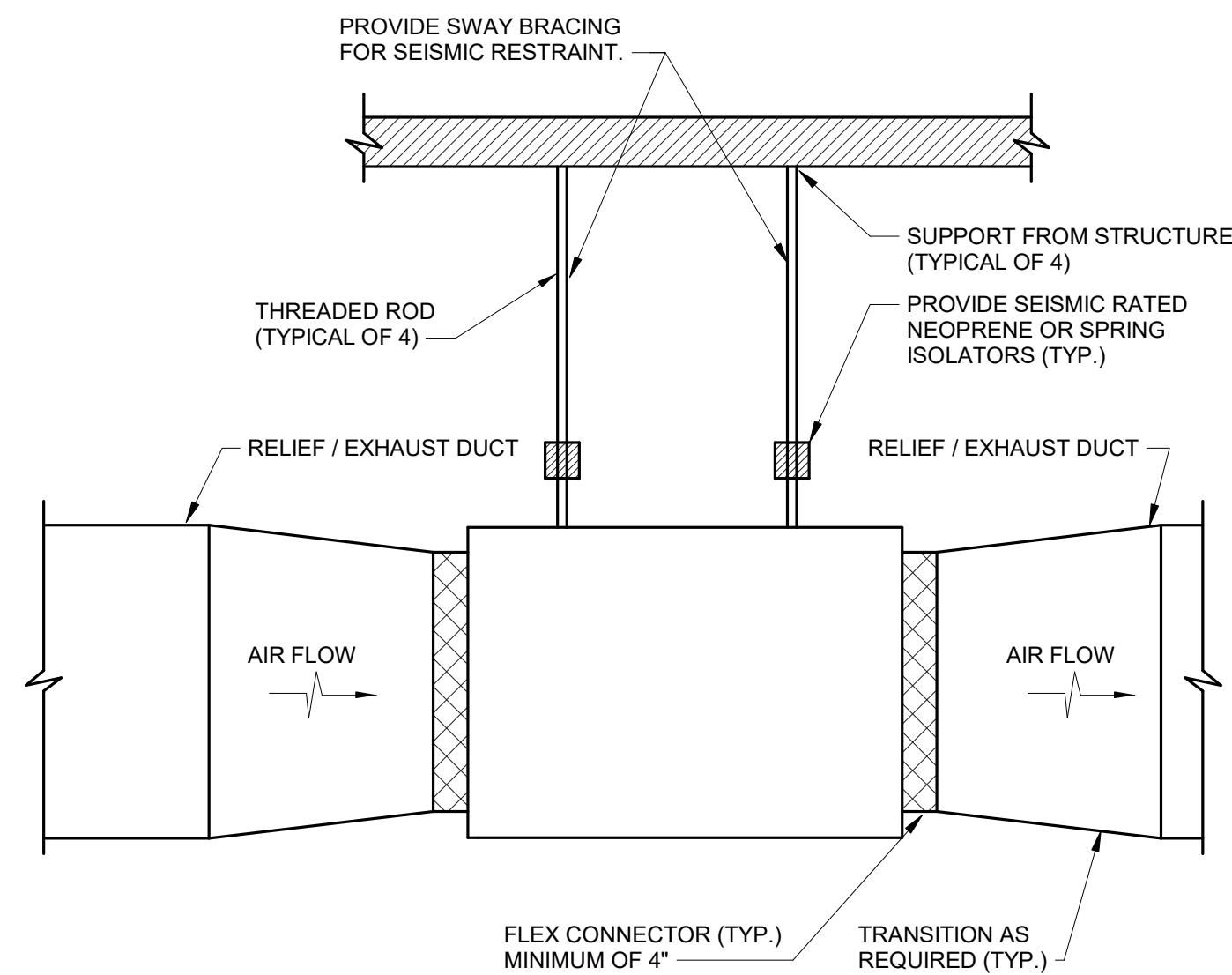
CONDENSATE DRAIN TRAP DETAIL
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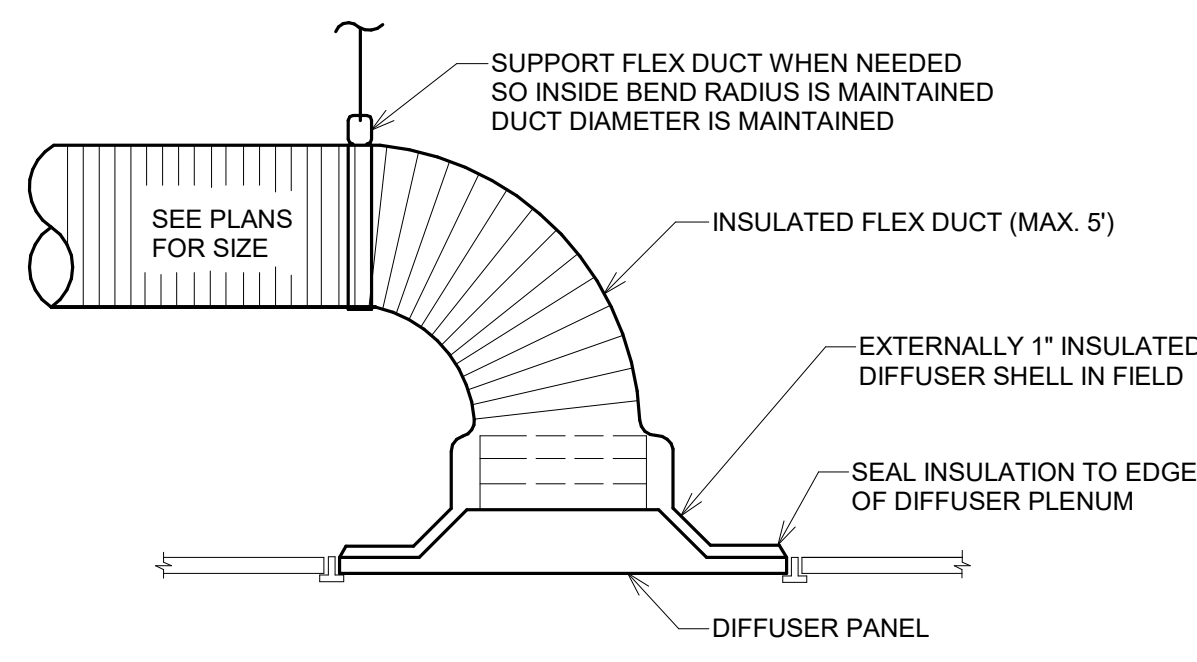
TERMINAL AIR BOX DETAIL
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IN-LINE CIRCULATING PUMP DETAIL
NO SCALE



INLINE FAN
NO SCALE



SUPPLY DIFFUSER CONNECTION DETAIL
NO SCALE

#	Description	Date

Designed By: JTP
Drawn By: JTP
Checked By: JTP

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Sheet title:

HVAC DETAILS

Architect's Project No: 2011-314 Date: December, 2020

Drawing No:

M4.1

TEMPERATURE CONTROL LEGEND

TE	TEMPERATURE ELEMENT (DUCT MOUNTED)
M	ACTUATOR
AFMS	AIRFLOW MEASURING STATION
VFD	VARIABLE FREQUENCY DRIVE
CSR	CURRENT SENSING RELAY
TLL	LOW LIMIT SAFETY THERMOSTAT
T	TEMPERATURE SENSOR
STR	MOTOR STARTER
TE	TEMPERATURE SENSOR
TE	TEMPERATURE SENSOR WITH AVERAGING ELEMENT
SP	STATIC PRESSURE SENSOR
SD	SMOKE DETECTOR (BY OTHERS)
HE	HUMIDITY ELEMENT
DP	DIFFERENTIAL PRESSURE TRANSMITTER
T	WALL MOUNTED THERMOSTAT
CWS	CHILLED WATER SUPPLY
CWR	CHILLED WATER RETURN
HWS	HEATING HOT WATER SUPPLY
HWR	HEATING HOT WATER RETURN
B.V.	BINARY VALUE
B.I.	BINARY INPUT
B.O.	BINARY OUTPUT
A.I.	ANALOG INPUT
A.O.	ANALOG OUTPUT
A.V.	ANALOG VALUE
D.I.	DIGITAL INPUT
D.O.	DIGITAL OUTPUT

TEMPERATURE CONTROL GENERAL NOTES:

- PROVIDE ADDITIONAL TEMPERATURE CONTROL (T.C.) POINTS AS REQUIRED TO COMPLETE THE SEQUENCE OF OPERATION.
- T.C. WIRING SHALL BE INSTALLED IN CONDUIT DEDICATED TO T.C. WIRING. TEMPERATURE CONTROL CONTRACTOR (T.C.C.) SHALL PROVIDE ONE (1) FOUR HOUR CONTROLS TRAINING SESSION. THESE TRAINING SESSIONS SHALL BE SCHEDULED WITH THE OWNER.
- T.C.C. SHALL PROVIDE A ONE YEAR LABOR AND MATERIAL WARRANTY ON THE T.C. SYSTEM. WARRANTY PERIOD SHALL BEGIN ON DATE OF SUBSTANTIAL COMPLETION. SUBSTANTIAL COMPLETION SHALL BE ESTABLISHED BY WRITTEN NOTICE.
- T.C.C. SHALL FULLY COMMISSION ALL ASPECTS OF NEW WORK. T.C.C. SHALL SUBMIT A COMMISSIONING ACCEPTANCE CHECKSHEET TO THE ENGINEER FOR APPROVAL ONCE APPROVED. T.C.C. SHALL COMPLETE THE ACCEPTANCE CHECKSHEET AND SUBMIT COMPLETED CHECKSHEET TO ENGINEER FOR APPROVAL. THE T.C. WORK SHALL NOT BE CONSIDERED SUBSTANTIALLY COMPLETE UNTIL THE COMPLETED ACCEPTANCE CHECKSHEET HAS BEEN APPROVED.
- T.C. RELAYS USED FOR MOTOR STARTING APPLICATIONS SHALL HAVE HAND-OFF-AUTO TOGGLE SWITCH.
- T.C.C. SHALL PROVIDE ALL HARDWARE, SOFTWARE, LABOR AND PROGRAMMING FOR A COMPLETE AND OPERATIONAL SYSTEM. ALL WORK SHALL BE INTEGRATED INTO THE EXISTING BUILDING MANAGEMENT SYSTEM (TRIDUIM M4). T.C.C. SHALL PROVIDE DATA CONNECTIONS TO THE LAN AS REQUIRED. COORDINATE ALL DATA CONNECTION WORK AND REQUIREMENTS WITH OWNER'S NETWORK ENGINEER. T.C.C. SHALL CREATE GRAPHICS FOR EACH UNIT SHOWN ON THE PLANS. T.C.C. SHALL SUBMIT COPIES OF THE GRAPHIC DISPLAYS TO THE ENGINEER AND OWNER FOR APPROVAL. T.C.C. SHALL SUBMIT (5) COPIES OF ALL T.C. COMPONENTS AND WIRING DIAGRAMS. THE SYSTEM SHALL BE CAPABLE OF THE FOLLOWING: TRENDDING AND DATA COLLECTION, EQUIPMENT AND SYSTEM SCHEDULING, CHANGING SETPOINTS, ALARMS (EMAIL FORWARD), PASSWORD PROTECTED ACCESS FOR MULTIPLE USERS.
- T.C.C. SHALL PROVIDE SURGE PROTECTION FOR ALL T.C. PANELS.
- EACH INDIVIDUAL TEMPERATURE CONTROLLER SHALL HAVE ITS OWN OCCUPANCY SCHEDULE.
- T.C. COMPONENTS MUST INTEGRATE INTO EXISTING BUILDING MANAGEMENT SYSTEM (TRIDUIM M4).



Revisions:

#	Description	Date

Designed By: JTP Drawn By: JTP Checked By: JTP

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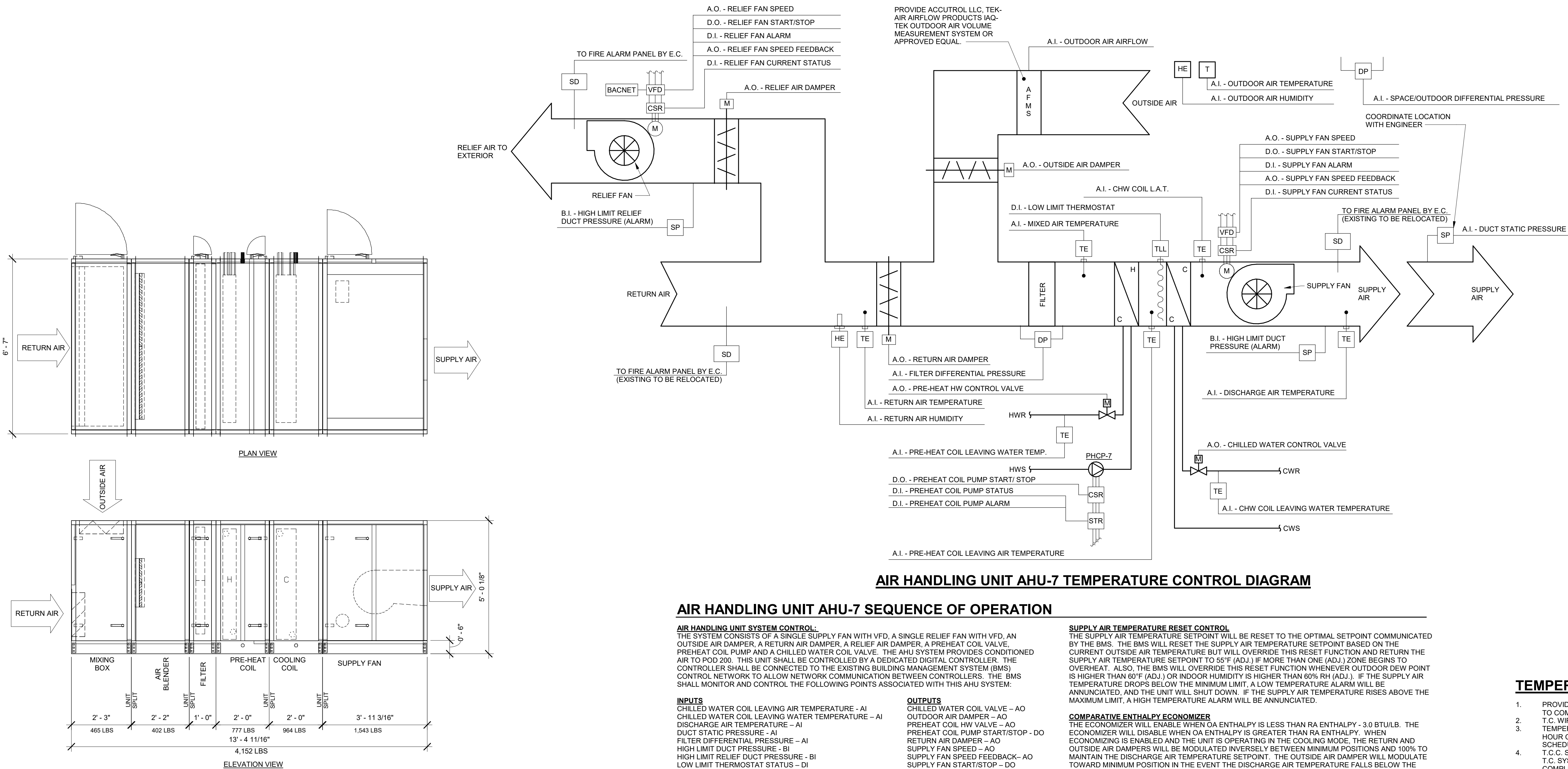
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TEMPERATURE CONTROL DIAGRAMS & DETAILS

Architect's Project No: 2011-314 Date: December, 2020

Drawing No:

M5.1



AIR HANDLING UNIT AHU-7 TEMPERATURE CONTROL DIAGRAM

AIR HANDLING UNIT AHU-7 SEQUENCE OF OPERATION

AIR HANDLING UNIT SYSTEM CONTROL:
THE SYSTEM CONSISTS OF A SINGLE SUPPLY FAN WITH VFD, A SINGLE RELIEF FAN WITH VFD, AN OUTSIDE AIR DAMPER, A RETURN AIR DAMPER, A RELIEF AIR DAMPER, A PREHEAT COIL VALVE, PREHEAT COIL PUMP AND A CHILLED WATER COIL VALVE. THE AHU SYSTEM PROVIDES CONDITIONED AIR TO POD 200. THIS UNIT SHALL BE CONTROLLED BY A DEDICATED DIGITAL CONTROLLER. THE CONTROLLER SHALL BE CONNECTED TO THE EXISTING BUILDING MANAGEMENT SYSTEM (BMS) CONTROL NETWORK TO ALLOW NETWORK COMMUNICATION BETWEEN CONTROLLERS. THE BMS SHALL MONITOR AND CONTROL THE FOLLOWING POINTS ASSOCIATED WITH THIS AHU SYSTEM:

INPUTS
CHILLED WATER COIL LEAVING AIR TEMPERATURE - AI
CHILLED WATER COIL LEAVING WATER TEMPERATURE - AI
DISCHARGE AIR TEMPERATURE - AI
DUCT STATIC PRESSURE - AI
FILTER DIFFERENTIAL PRESSURE - AI
HIGH LIMIT DUCT PRESSURE - BI
SUPPLY FAN SPEED - AO
LOW LIMIT THERMOSTAT STATUS - DI
MIXED AIR TEMPERATURE - AI
OUTDOOR AIR FLOW - AI
OUTDOOR AIR HUMIDITY - AI
PREHEAT COIL LEAVING AIR TEMPERATURE - AI
PREHEAT COIL LEAVING WATER TEMPERATURE - AI
PREHEAT COIL PUMP ALARM - DI
PREHEAT COIL PUMP STATUS - DI
RETURN AIR HUMIDITY - AI
RETURN AIR TEMPERATURE - AI
SUPPLY FAN ALARM - DI
SUPPLY FAN CURRENT STATUS - DI
RELIEF FAN ALARM - DI
RELIEF FAN CURRENT STATUS - DI
SPACE/OUTDOOR DIFFERENTIAL PRESSURE - AI

OUTPUTS
CHILLED WATER COIL VALVE - AO
OUTDOOR AIR DAMPER - AO
DISCHARGE AIR TEMPERATURE - AO
PREHEAT COIL PUMP START/STOP - DO
RETURN AIR DAMPER - AO
SUPPLY FAN SPEED - AO
SUPPLY FAN START/STOP - DO
RELIEF AIR DAMPER - AO
RELIEF FAN SPEED - AO
RELIEF FAN START/STOP - DO
RELIEF FAN SPEED FEEDBACK - AO
RELIEF FAN START/STOP - DO

THE BUILDING MANAGEMENT SYSTEM (BMS) WILL SEND THE CONTROLLER OCCUPIED BYPASS, MORNING WARM-UP / PRECOOL, OCCUPIED / UNOCCUPIED AND HEAT / COOL MODES. IF A BMS IS NOT PRESENT, OR COMMUNICATION IS LOST WITH THE BMS THE CONTROLLER WILL OPERATE USING DEFAULT MODES AND SETPOINTS. THE BMS WILL ALSO SEND THE CONTROLLER A DUCT STATIC PRESSURE SETPOINT, DISCHARGE AIR TEMPERATURE SETPOINT, AND VENTILATION AIRFLOW SETPOINT. EACH OPTIMIZATION ROUTINE IN THE BMS. THE UNIT CONTROLLER SHALL HAVE A USER DEFINED OCCUPIED/UNOCCUPIED SCHEDULE. THE AHU SYSTEM SHALL BE INDEXED TO RUN DURING OCCUPIED MODE. IN ADDITION, THE BMS OPERATOR SHALL HAVE THE ABILITY TO MANUALLY CONTROL THE AHU SYSTEM VIA THE BMS FRONT-END GRAPHICS DISPLAY.

AHU SYSTEM OCCUPIED MODE CONTROL
DURING OCCUPIED PERIODS, THE SUPPLY FAN WILL RUN CONTINUOUSLY AND THE OUTSIDE AIR DAMPER WILL OPEN TO MAINTAIN THE CURRENT AIRFLOW SETPOINT. THE RELIEF FAN WILL RUN AS REQUIRED TO MAINTAIN BUILDING PRESSURE. THE UNIT CONTROLLER WILL CONTROL THE SUPPLY FAN SPEED TO MAINTAIN THE CURRENT DUCT STATIC PRESSURE SETPOINT (ADJ.). DURING COOL DOWN MODE, THE PREHEAT COIL VALVE SHALL BE CLOSED AND THE AHU COOLING COIL VALVE SHALL MODULATE TO MAINTAIN THE DISCHARGE AIR TEMPERATURE SETPOINT OF 55°F (ADJ.). DURING WARM UP MODE, THE COOLING COIL VALVE SHALL BE CLOSED AND THE PREHEAT COIL VALVE SHALL MODULATE TO MAINTAIN THE DISCHARGE AIR TEMPERATURE SETPOINT OF 55°F (ADJ.). THE PREHEAT COIL CIRCULATING PUMP SHALL OPERATE ANY TIME THE OUTSIDE AIR TEMPERATURE IS BELOW 40°F (ADJ.). SEE ECONOMIZER OPERATION FOR ADDITIONAL REQUIREMENTS.

UNOCCUPIED MODE
WHEN THE SUPPLY FAN IS OFF, THE BMS SHALL ENABLE THE AHU PREHEAT VALVE TO MODULATE TO MAINTAIN A PREHEAT COIL LEAVING AIR TEMPERATURE OF 45°F (ADJ.). THE PREHEAT COIL CIRCULATING PUMP SHALL OPERATE ANY TIME THE OUTSIDE AIR TEMPERATURE IS BELOW 40°F (ADJ.). WHEN THERE IS A CALL FOR HEATING OR COOLING FROM ANY SINGLE AIR TERMINAL UNIT, THE SUPPLY FAN WILL RUN. THE OUTSIDE AIR AND RELIEF AIR DAMPERS WILL REMAIN CLOSED AND THE RELIEF FAN WILL REMAIN OFF. THE UNIT CONTROLLER WILL CONTROL THE SUPPLY FAN SPEED TO MAINTAIN THE CURRENT DUCT STATIC PRESSURE SETPOINT (ADJ.). DURING COOL DOWN MODE, THE PREHEAT COIL VALVE SHALL BE CLOSED AND THE AHU COOLING COIL VALVE SHALL MODULATE TO MAINTAIN THE DISCHARGE AIR TEMPERATURE SETPOINT OF 55°F (ADJ.). DURING WARM UP MODE, THE COOLING COIL VALVE SHALL BE CLOSED AND THE PREHEAT COIL VALVE SHALL MODULATE TO MAINTAIN THE DISCHARGE AIR TEMPERATURE SETPOINT OF 55°F (ADJ.). UNLESS ECONOMIZER IS ENABLED, THE OUTSIDE AIR DAMPER WILL REMAIN CLOSED. SEE ECONOMIZER OPERATION FOR ADDITIONAL REQUIREMENTS.

OPTIMAL START
THE BMS WILL MONITOR THE SCHEDULED OCCUPIED TIME, OCCUPIED SPACE SETPOINTS AND SPACE TEMPERATURE TO CALCULATE WHEN THE OPTIMAL START OCCURS.

MORNING WARM-UP MODE
DURING OPTIMAL START, IF THE AVERAGE SPACE TEMPERATURE IS BELOW THE OCCUPIED HEATING SETPOINT A MORNING WARM-UP MODE WILL BE ACTIVATED. WHEN MORNING WARM-UP IS INITIATED THE UNIT WILL ENABE THE SUPPLY FAN AND HEATING MODE. THE OUTSIDE AIR AND RELIEF AIR DAMPERS WILL REMAIN CLOSED. WHEN THE AVERAGE SPACE TEMPERATURE REACHES THE OCCUPIED HEATING SETPOINT (ADJ.), THE UNIT WILL TRANSITION TO THE OCCUPIED MODE.

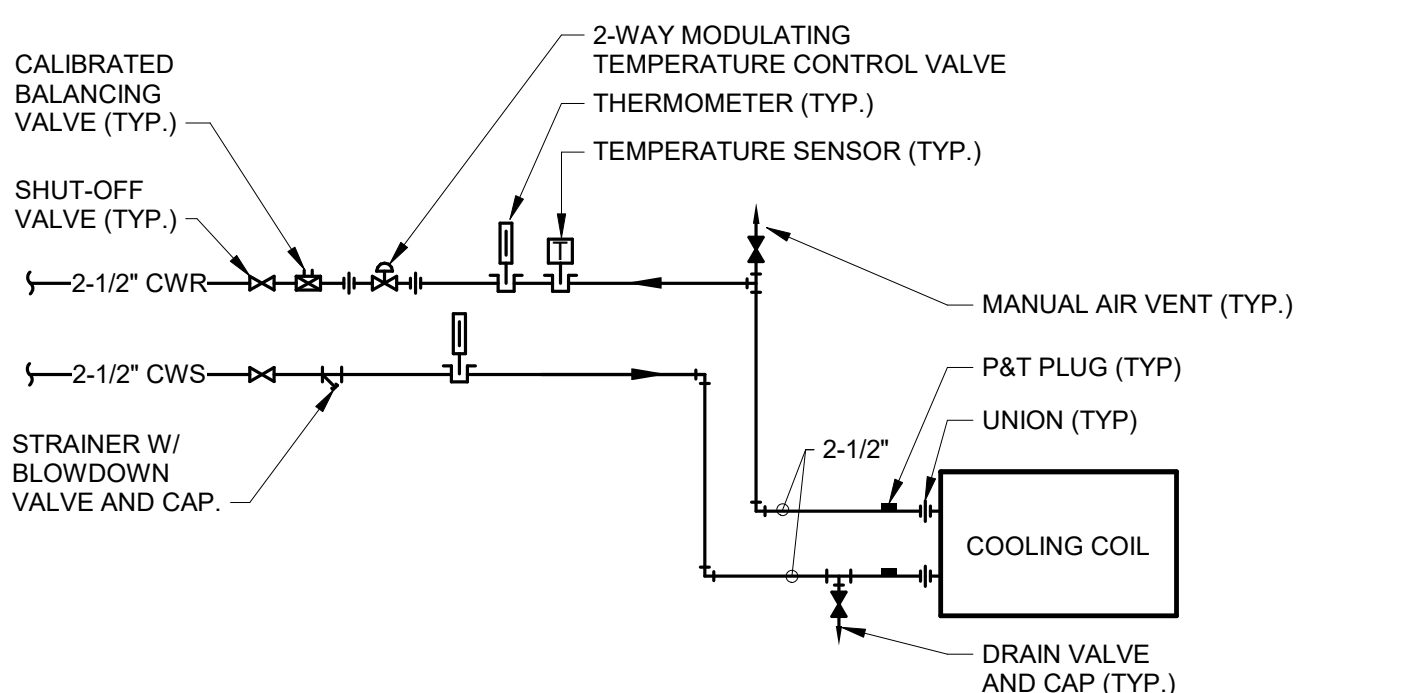
PRE-COOL MODE
DURING OPTIMAL START, IF THE AVERAGE SPACE TEMPERATURE IS ABOVE THE OCCUPIED COOLING SETPOINT, PRE-COOL MODE WILL BE ACTIVATED. WHEN PRE-COOL IS INITIATED THE UNIT WILL ENABLE THE FAN AND COOLING OR ECONOMIZER MODE. THE OUTSIDE AIR AND RELIEF AIR DAMPERS WILL REMAIN CLOSED AND RELIEF FAN OFF. WHEN THE AVERAGE SPACE TEMPERATURE REACHES OCCUPIED COOLING SETPOINT (ADJ.), THE UNIT WILL TRANSITION TO THE OCCUPIED MODE.

OPTIMAL STOP
THE BMS WILL MONITOR THE SCHEDULED UNOCCUPIED TIME, OCCUPIED SETPOINTS AND SPACE TEMPERATURE TO CALCULATE WHEN THE OPTIMAL STOP OCCURS. WHEN THE OPTIMAL STOP MODE IS ACTIVE THE UNIT CONTROLLER WILL MAINTAIN THE SPACE TEMPERATURE TO THE SPACE TEMPERATURE OFFSET SETPOINT.

OCCUPIED BYPASS
THE BMS WILL MONITOR THE STATUS OF THE "ON" AND "CANCEL" BUTTONS OF THE SPACE TEMPERATURE SENSORS. WHEN AN OCCUPIED BYPASS REQUEST IS RECEIVED FROM A SPACE SENSOR, THE UNIT WILL TRANSITION FROM ITS CURRENT OCCUPANCY MODE TO OCCUPIED BYPASS MODE AND THE UNIT WILL MAINTAIN THE SPACE TEMPERATURE TO THE OCCUPIED SETPOINTS (ADJ.).

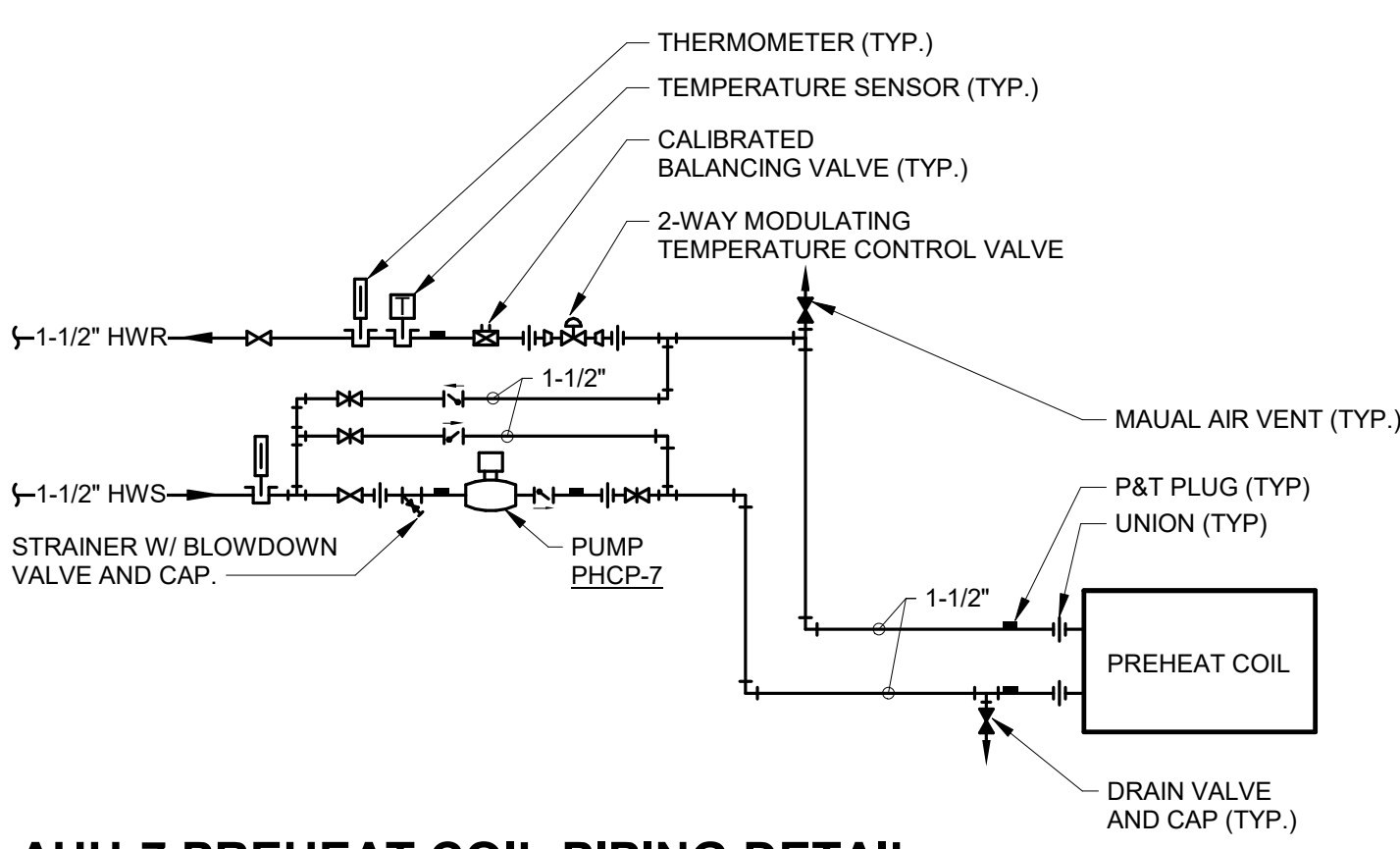
AHU-7 DETAIL

1/2" = 1'-0"



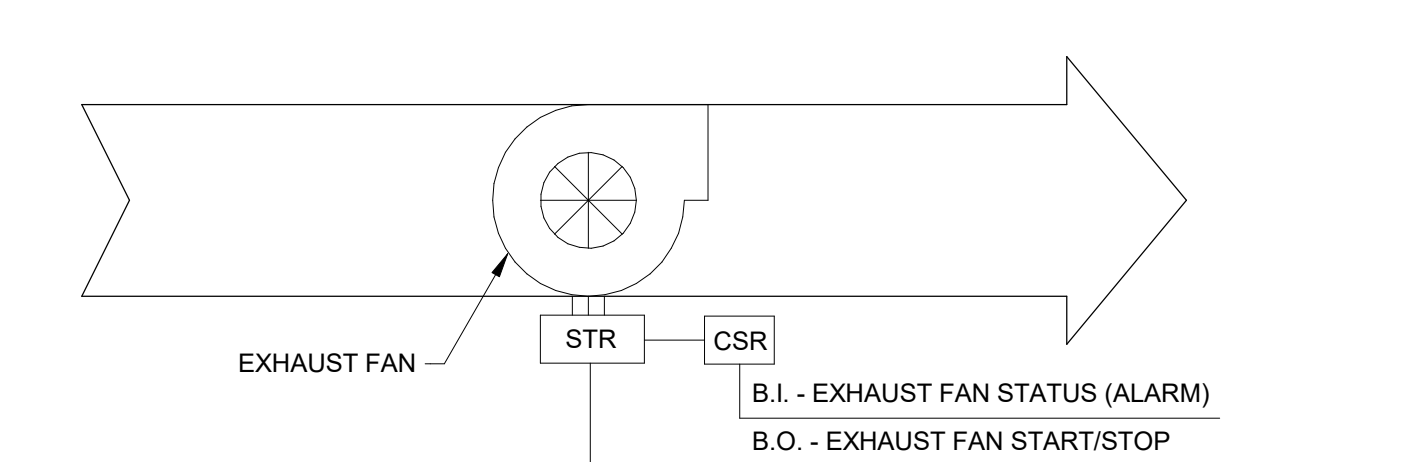
AHU-7 COOLING COIL PIPING DETAIL

NO SCALE



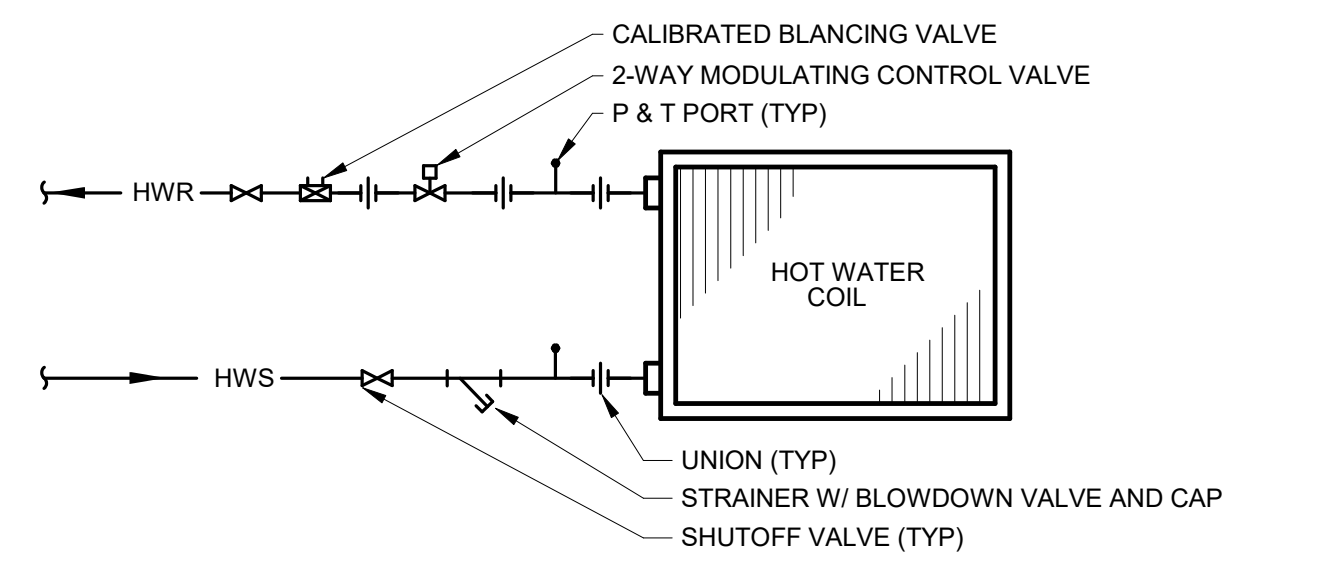
AHU-7 PREHEAT COIL PIPING DETAIL

NO SCALE

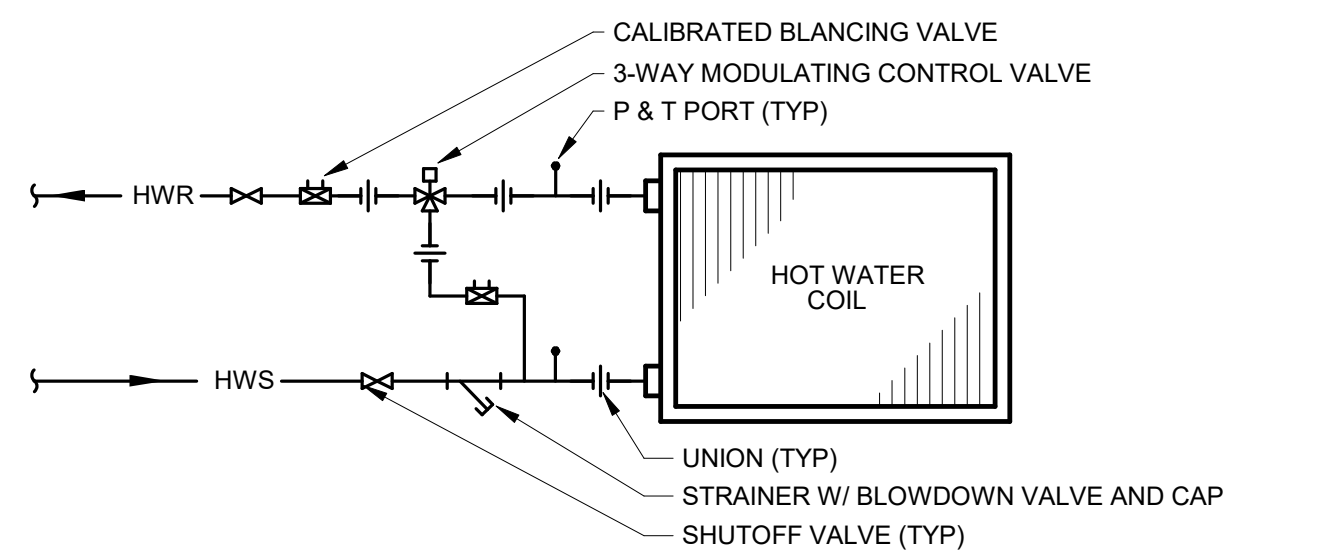


EXHAUST FAN (EF-7) SEQUENCE OF OPERATION

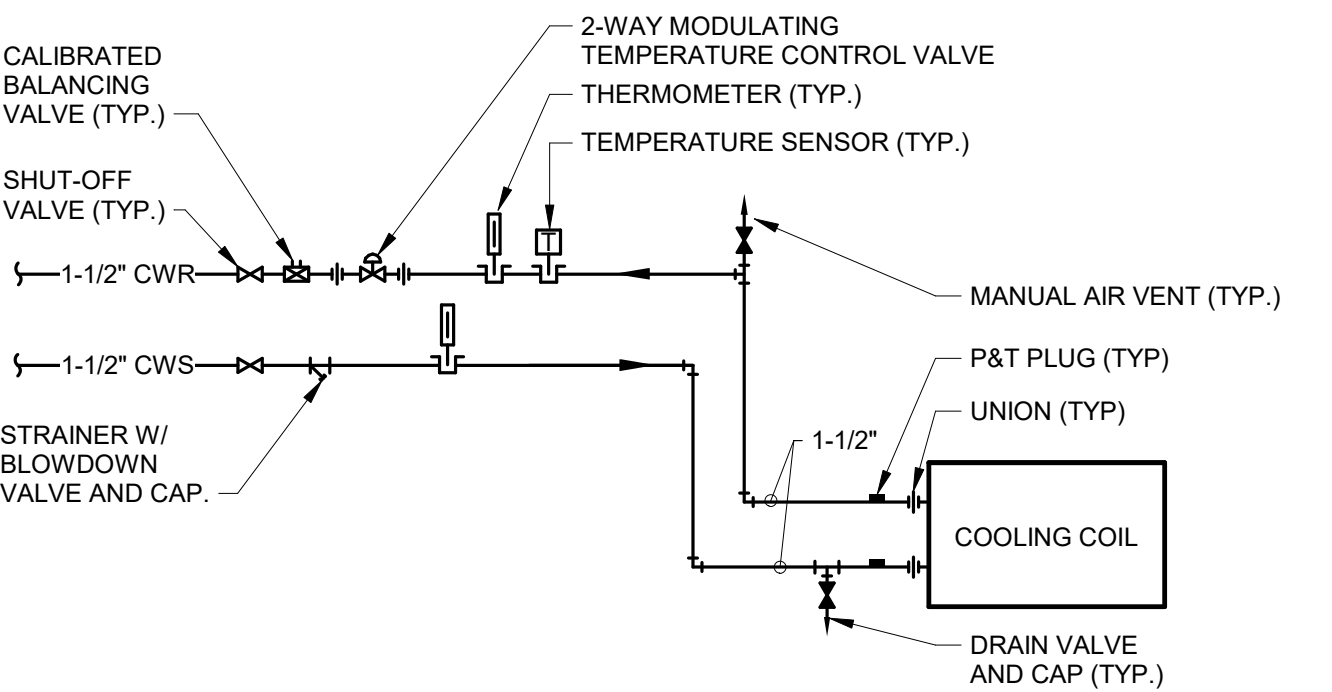
THE EXHAUST FAN SHALL HAVE A USER DEFINED OCCUPIED / UNOCCUPIED MODE SCHEDULE. THE EXHAUST FAN SHALL START AND RUN CONTINUOUSLY DURING OCCUPIED MODE. THE CONTROLLER SHALL ALARM AT THE OPERATOR INTERFACE IF THE FAN STATUS DOES NOT MATCH THE COMMAND OPERATION.



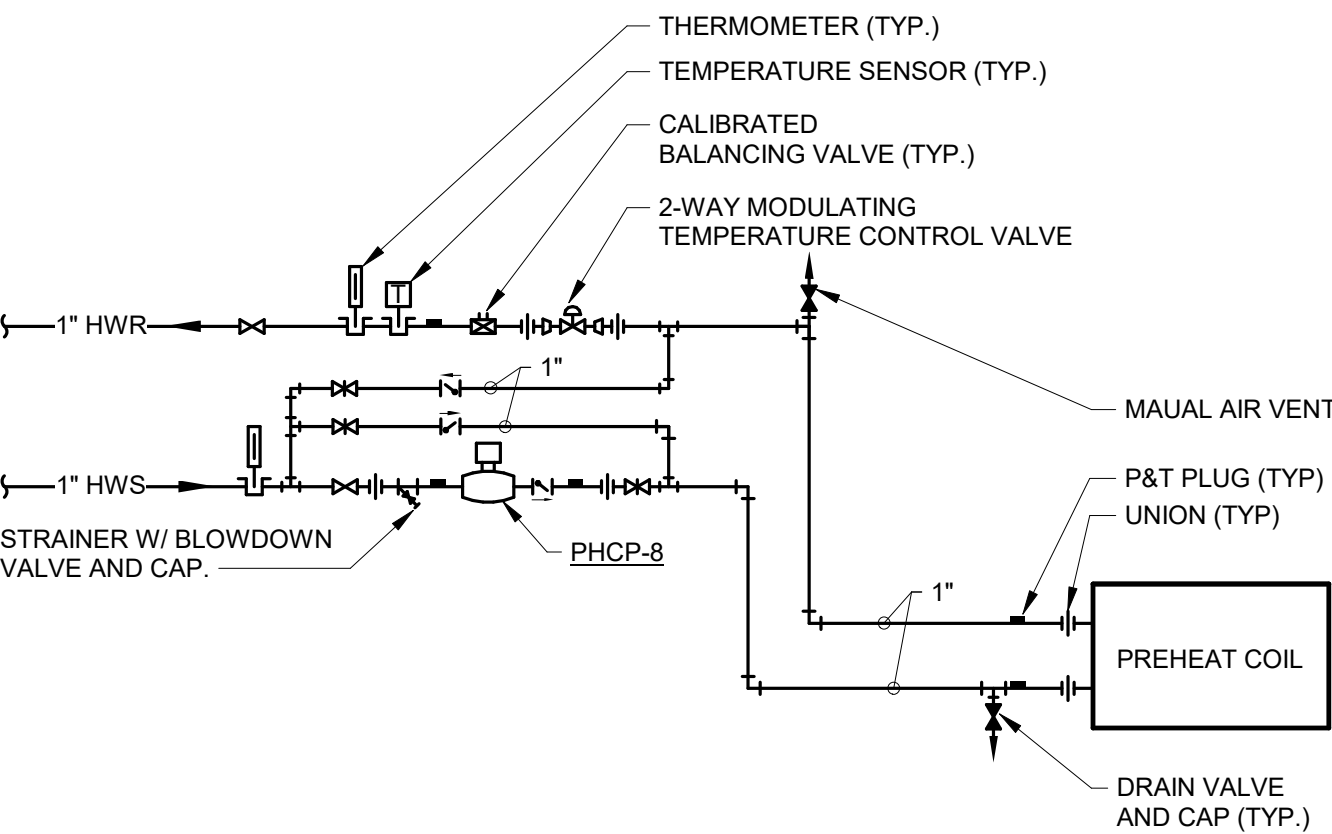
AIR TERMINAL HEATING COIL PIPING DETAIL (2-WAY)
NO SCALE



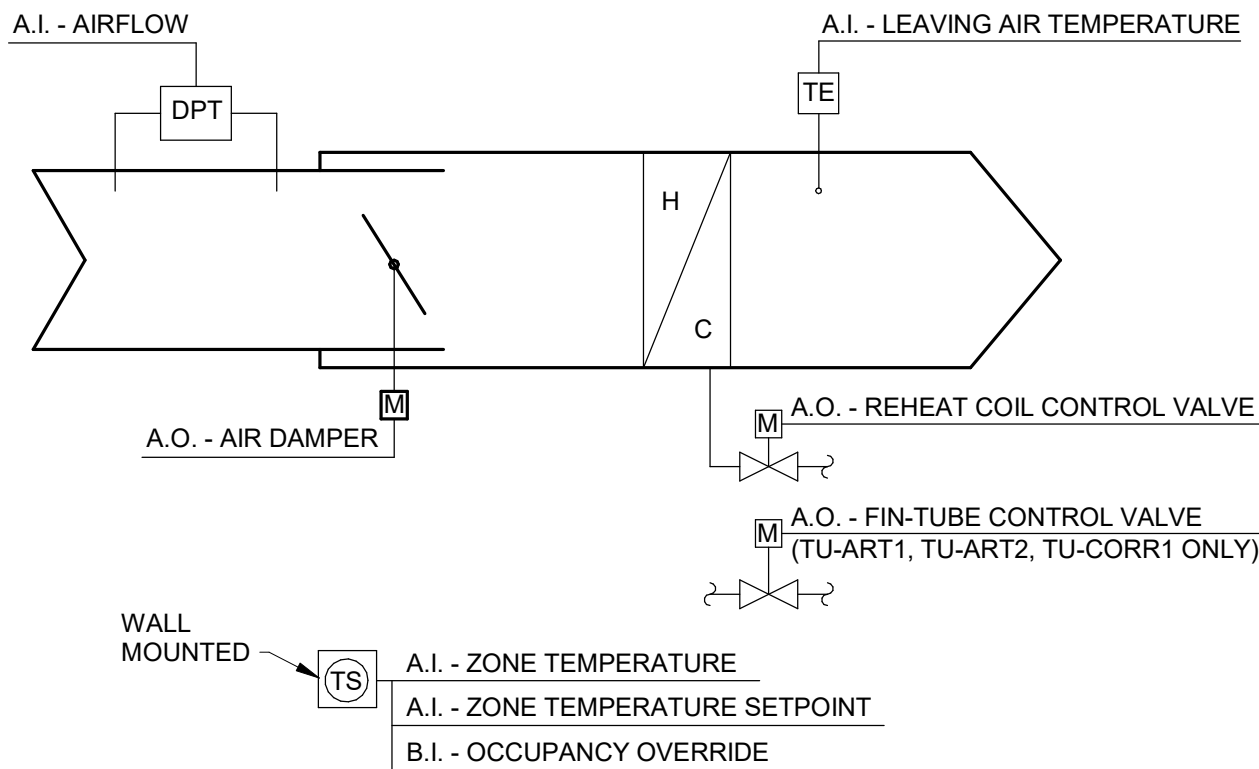
AIR TERMINAL UNIT HEATING COIL PIPING DETAIL (3-WAY)
NO SCALE



AHU-8 COOLING COIL PIPING DETAIL
NO SCALE



AHU-8 PREHEAT COIL PIPING DETAIL
NO SCALE



SINGLE DUCT AIR TERMINAL WITH HOT WATER RE-HEAT TEMPERATURE CONTROL DIAGRAM AND SEQUENCE OF OPERATION

THIS UNIT SHALL BE CONTROLLED BY A DEDICATED DIGITAL CONTROLLER. THE CONTROLLER SHALL BE CONNECTED TO THE BUILDING MANAGEMENT SYSTEM (BMS) CONTROL NETWORK TO ALLOW NETWORK COMMUNICATION BETWEEN CONTROLLERS.

EACH SINGLE DUCT AIR TERMINAL CONTROLLER SHALL HAVE A USER DEFINED OCCUPIED AND UNOCCUPIED MODE AND SHALL HAVE INDIVIDUAL HEATING AND COOLING ZONE TEMPERATURE SETPOINTS.

THE SINGLE DUCT AIR TERMINAL CONTROLLER SHALL MONITOR ZONE TEMPERATURE, LEAVING AIR TEMPERATURE, INLET AIR PRESSURE TRANSDUCER, REHEAT COIL VALVE AND ZONE TEMPERATURE SETPOINT.

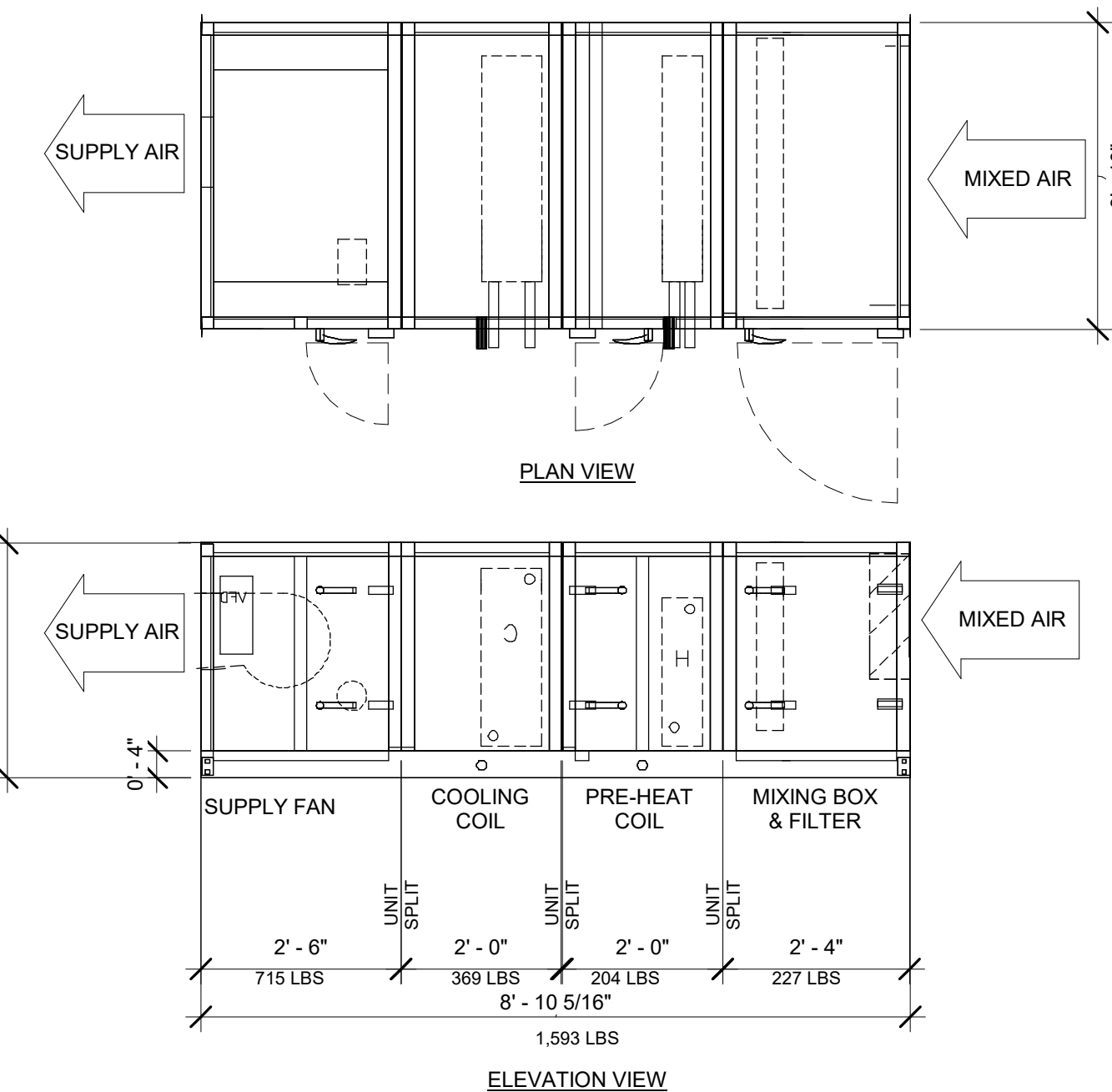
THE CONTROLLER SHALL CALCULATE THE AIRFLOW REQUIRED BASED ON ZONE TEMPERATURE, ZONE TEMPERATURE SETPOINT, AND LEAVING AIR TEMPERATURE. THE CONTROLLER SHALL MODULATE THE INLET AIR DAMPER BETWEEN MINIMUM AND MAXIMUM AIRFLOW SETPOINTS TO MAINTAIN THE CALCULATED AIRFLOW BASED ON THE INLET AIR PRESSURE TRANSDUCER. IF ZONE TEMPERATURE FALLS BELOW THE ZONE TEMPERATURE SETPOINT, THE CONTROLLER SHALL MODULATE THE INLET AIR DAMPER TO MAINTAIN THE HEATING AIRFLOW SETPOINT AND THE CONTROLLER SHALL MODULATE THE REHEAT COIL CONTROL VALVE TO MAINTAIN THE ZONE TEMPERATURE SETPOINT. THE LEAVING AIR TEMPERATURE SHALL NOT BE ALLOWED TO EXCEED THE LEAVING AIR TEMPERATURE LIMIT.

OCCUPIED MODE SETPOINT SHALL BE 68°F (ADJ.) FOR HEATING AND 72°F (ADJ.) FOR COOLING. UNOCCUPIED MODE SETPOINT SHALL BE 60°F (ADJ.) FOR HEATING AND 85°F (ADJ.) FOR COOLING.

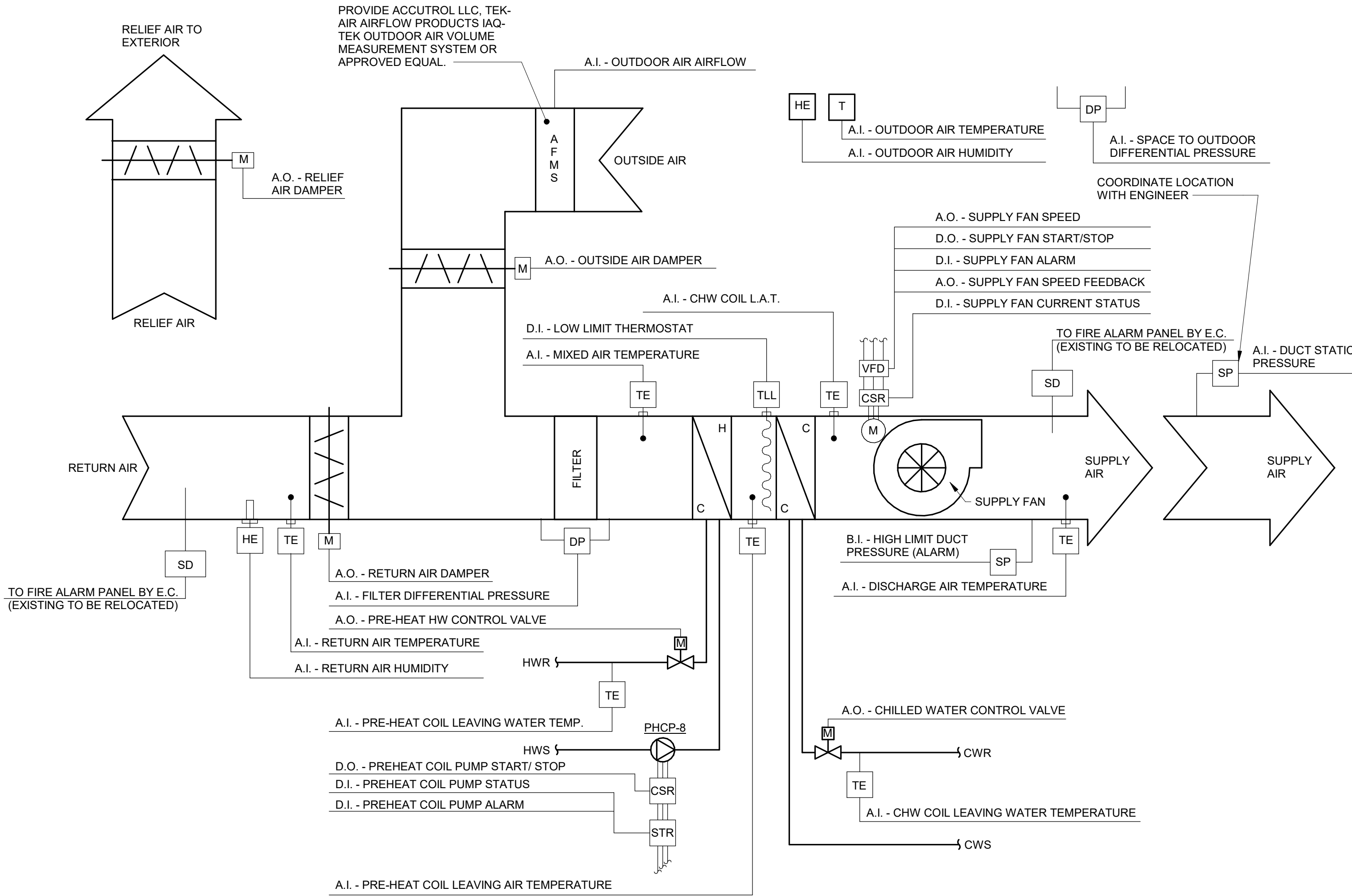
THE CONTROLLER SHALL PROVIDE ALARMS TO THE BMS AS FOLLOWS:
HIGH ZONE TEMPERATURE/LOW ZONE TEMPERATURE - ALARM AT THE OPERATOR INTERFACE IF ZONE TEMPERATURE IS LESS THAN OR GREATER THAN THE COOLING/HEATING ZONE SETPOINT BY AN OPERATOR DEFINED AMOUNT (°F). HIGH DISCHARGE TEMPERATURE/LOW DISCHARGE TEMPERATURE WILL ALARM AT THE OPERATOR INTERFACE IF TERMINAL LEAVING AIR TEMPERATURE IS ABOVE 105°F (ADJ.) OR BELOW 45°F (ADJ.)

TU-ART1 AND TU-ART2 SHALL MONITOR ZONE TEMPERATURE FROM TWO THERMOSTATS IN THE SPACE AND SHALL OPERATE IN UNISON TO MAINTAIN THE SPACE TEMPERATURE AS DESCRIBED ABOVE.

FIN-TUBE CONVECTOR SHALL OPERATE FROM THE NEAREST AIR TERMINAL UNIT CONTROLLER AND SHALL PROVIDE HEAT WHEN THE ASSOCIATED THERMOSTAT CALLS FOR HEAT.



AHU-8 DETAIL
1/2" = 1'-0"



AIR HANDLING UNIT AHU-8 TEMPERATURE CONTROL DIAGRAM

AIR HANDLING UNITS AHU-8 SEQUENCE OF OPERATION

AIR HANDLING UNIT SYSTEM CONTROL:

THE SYSTEM CONSISTS OF A SINGLE SUPPLY FAN WITH VFD, AN OUTSIDE AIR DAMPER, A RETURN AIR DAMPER, A RELIEF AIR DAMPER, A PREHEAT COIL VALVE, PREHEAT COIL PUMP AND A CHILLED WATER COIL VALVE. THE AHU SYSTEM PROVIDES CONDITIONED AIR TO THE BAND AND CHOIR ROOMS. THIS UNIT SHALL BE CONTROLLED BY A DEDICATED DIGITAL CONTROLLER. THE CONTROLLER SHALL BE CONNECTED TO THE EXISTING BUILDING MANAGEMENT SYSTEM (BMS) CONTROL NETWORK TO ALLOW NETWORK COMMUNICATION BETWEEN CONTROLLERS. THE BMS SHALL MONITOR AND CONTROL THE FOLLOWING POINTS ASSOCIATED WITH THIS AHU SYSTEM:

INPUTS

CHILLED WATER COIL LEAVING AIR TEMPERATURE - AI
CHILLED WATER COIL LEAVING WATER TEMPERATURE - AI
DISCHARGE AIR TEMPERATURE - AI
DUCT STATIC PRESSURE - AI
FILTER DIFFERENTIAL PRESSURE - AI
HIGH LIMIT DUCT PRESSURE - BI
LOW LIMIT THERMOSTAT STATUS - DI
MIXED AIR TEMPERATURE - AI
OUTDOOR AIR HUMIDITY - AI
OUTDOOR AIR TEMPERATURE - AI
OUTDOOR AIRFLOW - AI
PREHEAT COIL LEAVING AIR TEMPERATURE - AI
PREHEAT COIL LEAVING WATER TEMPERATURE - AI
PREHEAT COIL PUMP ALARM - DI
PREHEAT COIL PUMP CURRENT STATUS - DI
RETURN AIR HUMIDITY - AI
RETURN AIR TEMPERATURE - AI
SUPPLY FAN ALARM - DI
SUPPLY FAN CURRENT STATUS - DI
SPACE TO OUTDOOR DIFFERENTIAL STATIC PRESSURE - AI

THE BUILDING MANAGEMENT SYSTEM (BMS) WILL SEND THE CONTROLLER OCCUPIED BYPASS, MORNING WARM-UP, PRECOOL, OCCUPIED / UNOCCUPIED AND HEAT / COOL MODES. IF A BMS IS NOT PRESENT, OR COMMUNICATION IS LOST WITH THE BMS THE CONTROLLER WILL OPERATE USING DEFAULT MODES AND SCHEDULES. THE BMS WILL ALSO SEND THE CONTROLLER A DUCT STATIC PRESSURE SETPOINT, DISCHARGE AIR TEMPERATURE SETPOINT, AND VENTILATION AIRFLOW SETPOINT. EACH CALCULATED BY OPTIMIZATION ROUTINES IN THE BMS. THE UNIT CONTROLLER SHALL HAVE A USER DEFINED OCCUPIED/UNOCCUPIED SCHEDULE. THE AHU SYSTEM SHALL BE INDEXED TO RUN DURING OCCUPIED MODE. IN ADDITION, THE BMS OPERATOR SHALL HAVE THE ABILITY TO MANUALLY CONTROL THE AHU SYSTEM VIA THE BMS FRONT-END GRAPHICS DISPLAY.

AHU SYSTEM OCCUPIED MODE CONTROL

DURING OCCUPIED PERIODS, THE SUPPLY FAN WILL RUN CONTINUOUSLY AND THE OUTSIDE AIR DAMPER WILL OPEN TO MAINTAIN ITS MINIMUM POSITION. THE RELIEF AIR DAMPER WILL MODULATE OPEN AS REQUIRED TO MAINTAIN BUILDING PRESSURE. THE UNIT CONTROLLER WILL CONTROL THE SUPPLY FAN SPEED TO MAINTAIN THE CURRENT DUCT STATIC PRESSURE SETPOINT (ADJ.). DURING COOL DOWN MODE, THE PREHEAT COIL VALVE SHALL BE CLOSED AND THE AHU CHILLING COIL VALVE SHALL MODULATE TO MAINTAIN THE DISCHARGE AIR TEMPERATURE SETPOINT OF 55°F (ADJ.). DURING WARM UP MODE, THE COOLING COIL VALVE SHALL BE CLOSED AND THE AHU PREHEAT COIL VALVE SHALL MODULATE TO MAINTAIN THE DISCHARGE AIR TEMPERATURE SETPOINT OF 85°F (ADJ.). THE PREHEAT COIL CIRCULATING PUMP SHALL OPERATE ANY TIME THE OUTSIDE AIR TEMPERATURE IS BELOW 40°F (ADJ.). SEE ECONOMIZER OPERATION FOR ADDITIONAL REQUIREMENTS.

UNOCCUPIED MODE

WHEN THE SUPPLY FAN IS OFF, THE BMS SHALL ENABLE THE AHU PREHEAT VALVE TO MODULATE TO MAINTAIN A PREHEAT COIL LEAVING AIR TEMPERATURE OF 45°F (ADJ.). THE PREHEAT COIL CIRCULATING PUMP SHALL OPERATE ANY TIME THE OUTSIDE AIR TEMPERATURE IS BELOW 40°F (ADJ.). WHEN THERE IS A CALL FOR HEATING OR COOLING FROM ANY SINGLE AIR TERMINAL UNIT, THE SUPPLY FAN WILL RUN, THE OUTSIDE AIR AND RELIEF AIR DAMPERS WILL REMAIN CLOSED. THE UNIT CONTROLLER WILL CONTROL THE SUPPLY FAN SPEED TO MAINTAIN THE CURRENT DUCT STATIC PRESSURE SETPOINT (ADJ.). DURING COOL DOWN MODE, THE PREHEAT COIL VALVE SHALL BE CLOSED AND THE AHU CHILLING COIL VALVE SHALL MODULATE TO MAINTAIN THE DISCHARGE AIR TEMPERATURE SETPOINT OF 55°F (ADJ.). DURING WARM UP MODE, THE COOLING COIL VALVE SHALL BE CLOSED AND THE AHU PREHEAT COIL VALVE SHALL MODULATE TO MAINTAIN THE DISCHARGE AIR TEMPERATURE SETPOINT OF 85°F (ADJ.). IF ECONOMIZER IS ENABLED, THE OUTSIDE AIR DAMPER WILL REMAIN CLOSED. SEE ECONOMIZER OPERATION FOR ADDITIONAL REQUIREMENTS.

OPTIMAL START

THE BMS WILL MONITOR THE SCHEDULED OCCUPIED TIME, OCCUPIED SPACE SETPOINTS AND SPACE TEMPERATURE TO CALCULATE WHEN THE OPTIMAL START OCCURS.

MORNING WARM-UP MODE

DURING OPTIMAL START, IF THE AVERAGE SPACE TEMPERATURE IS BELOW THE OCCUPIED HEATING SETPOINT A MORNING WARM-UP MODE WILL BE ACTIVATED. WHEN MORNING WARM-UP IS INITIATED THE UNIT WILL ENABLE THE SUPPLY FAN AND HEATING MODE. THE OUTSIDE AIR AND RELIEF AIR DAMPERS WILL REMAIN CLOSED. WHEN THE AVERAGE SPACE TEMPERATURE REACHES THE OCCUPIED HEATING SETPOINT (ADJ.), THE UNIT WILL TRANSITION TO THE OCCUPIED MODE.

PRE-COOL MODE

DURING OPTIMAL START, IF THE AVERAGE SPACE TEMPERATURE IS ABOVE THE OCCUPIED COOLING SETPOINT, PRE-COOL MODE WILL BE ACTIVATED. WHEN PRE-COOL IS INITIATED THE UNIT WILL ENABLE THE FAN AND COOLING OR ECONOMIZER MODE. THE OUTSIDE AIR AND RELIEF AIR DAMPERS WILL REMAIN CLOSED. UNLESS ECONOMIZING, WHEN THE AVERAGE SPACE TEMPERATURE REACHES OCCUPIED COOLING SETPOINT (ADJ.), THE UNIT WILL TRANSITION TO THE OCCUPIED MODE.

OPTIMAL STOP

THE BMS WILL MONITOR THE SCHEDULED UNOCCUPIED TIME, OCCUPIED SETPOINTS AND SPACE TEMPERATURE TO CALCULATE WHEN THE OPTIMAL STOP OCCURS. WHEN THE OPTIMAL STOP MODE IS ACTIVE THE UNIT CONTROLLER WILL MAINTAIN THE SPACE TEMPERATURE TO THE SPACE TEMPERATURE OFFSET SETPOINT.

OCCUPIED BYPASS

THE BMS WILL MONITOR THE STATUS OF THE 'ON' AND 'CANCEL' BUTTONS OF THE SPACE TEMPERATURE SENSORS. WHEN AN OCCUPIED BYPASS REQUEST IS RECEIVED FROM A SPACE SENSOR, THE UNIT WILL TRANSITION FROM ITS CURRENT OCCUPANCY MODE TO OCCUPIED BYPASS MODE AND THE UNIT WILL MAINTAIN THE SPACE TEMPERATURE TO THE OCCUPIED SETPOINTS (ADJ.).

SUPPLY AIR TEMPERATURE RESET CONTROL

THE SUPPLY AIR TEMPERATURE SETPOINT WILL BE RESET TO THE OPTIMAL SETPOINT COMMUNICATED BY THE BMS. THE BMS WILL RESET THE SUPPLY AIR TEMPERATURE SETPOINT BASED ON THE CURRENT OUTSIDE AIR TEMPERATURE BUT WILL OVERRIDE THIS RESET FUNCTION AND RETURN THE SUPPLY AIR TEMPERATURE SETPOINT TO 55°F (ADJ.) IF MORE THAN ONE (ADJ.) ZONE BEGINS TO OVERHEAT. ALSO, THE BMS WILL OVERRIDE THIS RESET FUNCTION WHENEVER OUTDOOR DEW POINT IS HIGHER THAN 60°F (ADJ.) OR INDOOR HUMIDITY IS HIGHER THAN 60% RH (ADJ.). IF THE SUPPLY AIR TEMPERATURE DROPS BELOW THE MINIMUM LIMIT, A LOW TEMPERATURE ALARM WILL BE ANNUNCIATED, AND THE UNIT WILL SHUT DOWN. IF THE SUPPLY AIR TEMPERATURE RISES ABOVE THE MAXIMUM LIMIT, A HIGH TEMPERATURE ALARM WILL BE ANNUNCIATED.

COMPARATIVE ENTHALPY ECONOMIZER

THE ECONOMIZER WILL ENABLE WHEN OA ENTHALPY IS LESS THAN RA ENTHALPY - 3.0 BTULB. THE ECONOMIZER WILL DISABLE WHEN OA ENTHALPY IS GREATER THAN RA ENTHALPY. WHEN ECONOMIZING IS ENABLED AND THE UNIT IS OPERATING IN THE COOLING MODE, THE RETURN AND OUTSIDE AIR DAMPERS WILL BE MODULATED INVERSELY BETWEEN MINIMUM POSITIONS AND 100% TO MAINTAIN THE DISCHARGE AIR TEMPERATURE SETPOINT. THE OUTSIDE AIR DAMPER WILL MODULATE TOWARD MINIMUM POSITION IN THE EVENT THE DISCHARGE AIR TEMPERATURE FALLS BELOW THE DISCHARGE LOW LIMIT TEMPERATURE SETPOINT. THE COOLING COIL VALVE WILL BE DELAYED FROM OPERATING UNTIL THE ECONOMIZER HAS OPENED TO 100%. THE RELIEF AIR DAMPER WILL CONTINUE TO MODULATE TO MAINTAIN THE BUILDING STATIC PRESSURE SETPOINT. ECONOMIZER SHALL BE AVAILABLE DURING OCCUPIED AND UNOCCUPIED MODES.

SUPPLY FAN OPERATION

THE SUPPLY FAN WILL BE ENABLED WHILE IN THE OCCUPIED MODE AND CYCLED ON/OFF DURING THE UNOCCUPIED MODE AS REQUIRED. THE UNIT CONTROLLER WILL VARY THE SUPPLY FAN SPEED TO MEET DUCT STATIC PRESSURE SETPOINT. A PRESSURE SWITCH WILL MONITOR THE DIFFERENTIAL PRESSURE ACROSS THE SUPPLY FAN. IF THE SWITCH DOES NOT OPEN WITHIN 40 SECONDS AFTER A REQUEST FOR FAN OPERATION, A FAN FAILURE ALARM WILL BE ANNUNCIATED AND THE SYSTEM WILL STOP, REQUIRING A MANUAL RESET TO RE-START THE UNIT.

BUILDING PRESSURE CONTROL

A DIFFERENTIAL PRESSURE TRANSDUCER WILL ACTIVELY MONITOR THE DIFFERENCE IN PRESSURE BETWEEN THE BUILDING (INDOORS) AND OUTDOORS. IF THE BUILDING PRESSURE INCREASES ABOVE THE DESIRED SETPOINT, THE RELIEF AIR DAMPER WILL MODULATE TO INCREASE THE BUILDING PRESSURE. IF THE BUILDING PRESSURE DECREASES BELOW THE DESIRED SETPOINT, THE CONTROLLER WILL MODULATE THE RELIEF AIR DAMPER CLOSED.

SUPPLY DUCT STATIC PRESSURE CONTROL

THE DUCT STATIC PRESSURE SETPOINT WILL BE RESET TO THE OPTIMAL SETPOINT COMMUNICATED BY THE BMS. THE BMS WILL RESET THE DUCT STATIC PRESSURE SETPOINT BASED ON THE POSITION OF THE FURTHEST OPEN VAV DAMPER.

STATIC PRESSURE HIGH LIMIT

IF FOR ANY REASON THE SUPPLY AIR PRESSURE EXCEEDS ITS STATIC PRESSURE HIGH LIMIT, THE FAN WILL SHUT DOWN. THE UNIT WILL BE ALLOWED TO RESTART THREE TIMES AFTER A 15 MINUTE OFF PERIOD. IF THE OVERPRESSURIZATION CONDITION OCCURS ON THE FOURTH RESTART, THE UNIT WILL SHUT DOWN AND A MANUAL RESET DIAGNOSTIC IS DISPLAYED AT THE REMOTE PANEL AND/OR THE BMS SYSTEM.

FILTER STATUS

A DIFFERENTIAL PRESSURE SWITCH WILL MONITOR THE DIFFERENTIAL PRESSURE ACROSS THE FILTER.

AHU HARDWIRED SAFETY ALARM CONTROL

THE AHU SYSTEM SHALL BE FITTED WITH MULTIPLE SAFETY DEVICES WHICH SHALL BE HARDWIRED TO THE SUPPLY FAN VFD TO STOP THE FAN IN THE EVENT THAT ANY ONE OF THE SAFETY DEVICES GOES TO AN ALARM STATE.

- THE AHU SYSTEM SHALL BE FITTED WITH AN AUTOMATIC RESET LOW LIMIT THERMOSTAT LOCATED ON THE ENTERING SIDE OF THE AHU CHILLED WATER COIL. WHEN THE BMS REGISTERS A LOW LIMIT ALARM CONDITION, THE BMS SHALL GENERATE A LOW LIMIT THERMOSTAT MANUAL RESET. REQUIRED ALARM CONDITION, DISABLE THE AHU SYSTEM, AND TOGGLE THE AHU SYSTEM'S NORMAL/ALARM POINT TO THE ALARM STATE. WHEN THE BMS REGISTERS THAT THE LOW LIMIT THERMOSTAT IS NO LONGER INDICATING AN ALARM CONDITION, THE BMS SHALL KEEP THE AHU SYSTEM DISABLED UNTIL THE BMS OPERATOR MANUALLY RESETS THE AHU SYSTEM'S NORMAL/ALARM POINT BACK TO THE NORMAL STATE AT THE BMS FRONT-END GRAPHICS DISPLAY. WHEN THE BMS REGISTERS THAT THE LOW LIMIT THERMOSTAT IS NO LONGER INDICATING AN ALARM CONDITION, THE AHU SYSTEM'S NORMAL/ALARM POINT HAS BEEN RESET BACK TO THE NORMAL STATE AND THERE ARE NO OTHER AHU SHUTDOWN ALARMS PRESENT, THE BMS SHALL RE-ENABLE THE AHU SYSTEM.
- A HARDWIRED SAFETY CIRCUIT WILL BE WIRED TO A SUPPLY DUCT SMOKE DETECTOR AND A RETURN DUCT SMOKE DETECTOR WHICH WILL NOT BE MONITORED BY THE BMS. WHEN EITHER OF THESE SMOKE DETECTORS IS INDICATING AN ALARM CONDITION, THE AHU SUPPLY FAN SHALL SHUTDOWN VIA THE HARDWARE INTERLOCK. WHEN THIS EVENT HAPPENS, THE BMS SHALL REGISTER A SUPPLY FAN RUN STATUS ALARM CONDITION WHICH WILL BE REPORTED TO THE BMS OPERATOR.

AHU SYSTEM SUMMARY OF ALARM NOTIFICATIONS

- SUPPLY FAN ALARM:** THE RUN STATUS CONTACTS IN THE SUPPLY FAN VFD ARE NOT INDICATING A RUN STATUS WHEN THE BMS IS CALLING FOR THE SUPPLY FAN TO RUN. **REQUIRES MANUAL RESET.**
- SUPPLY FAN CURRENT STATUS ALARM:** THE SUPPLY FAN CURRENT STATUS SWITCH CONTACTS ARE NOT INDICATING A RUN STATUS WHEN THE BMS IS CALLING FOR THE SUPPLY FAN TO RUN. **REQUIRES MANUAL RESET.**
- LOW LIMIT THERMOSTAT ALARM:** THE LOW LIMIT THERMOSTAT IS INDICATING AN ALARM CONDITION. **REQUIRES MANUAL RESET.**
- AHU SYSTEM FAILURE ALARM:** THE AHU SYSTEM HAS SHUTDOWN DUE TO EITHER A HARDWIRED ALARM DEVICE CONDITION OR A SOFTWARE ALARM DEVICE CONDITION.
- AHU MIXED AIR TEMPERATURE ALARM:** THE AHU MIXED AIR TEMPERATURE HAS REMAINED LESS THAN 40°F (ADJ.) FOR A CONTINUOUS TIME PERIOD OF 10 MINUTES (ADJ.).
- AHU FILTER DIFFERENTIAL PRESSURE ALARM:** THE DIFFERENTIAL PRESSURE ACROSS THE AHU PRE-FILTER HAS RISEN ABOVE 1" W.C. (ADJ.).



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#	Description	Date

Designed By: JTP Drawn By: JTP Checked By: JTP

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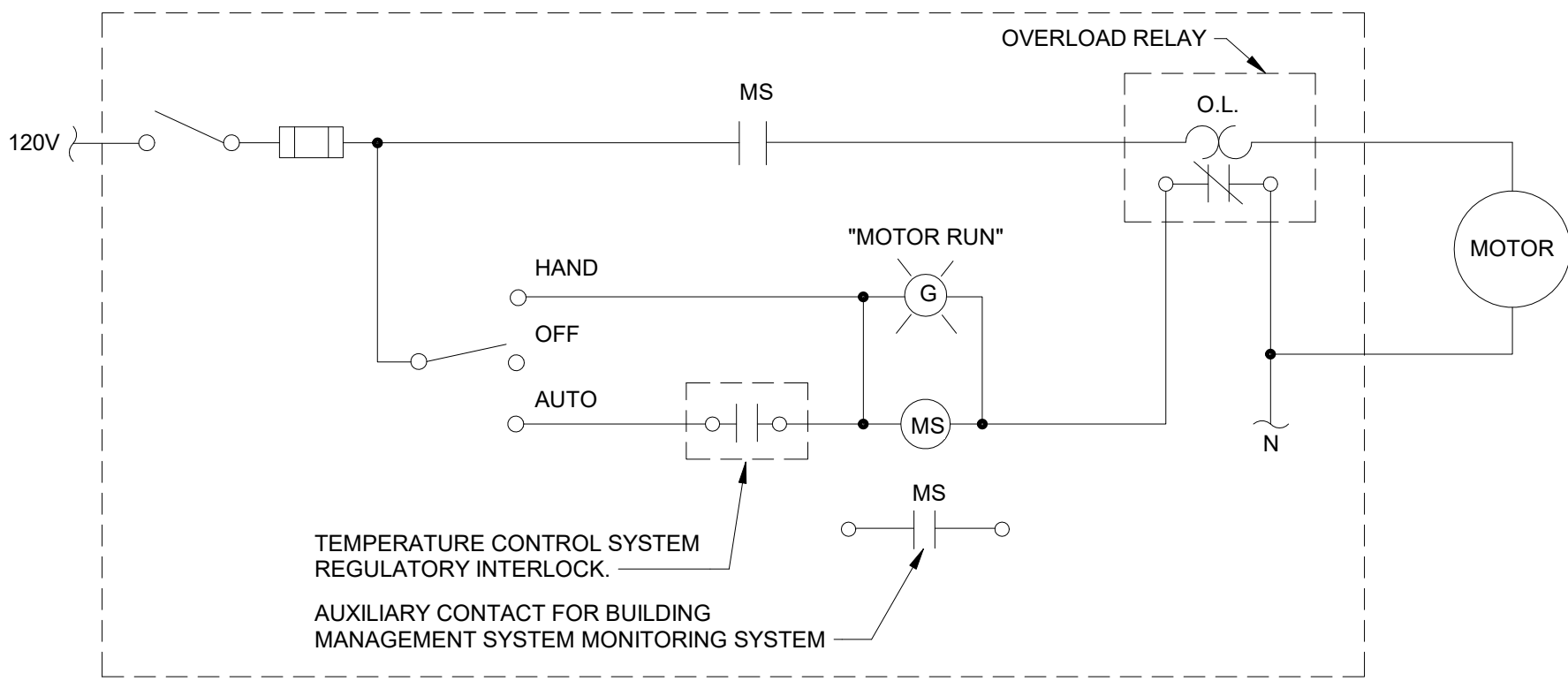
TEMPERATURE CONTROL DIAGRAMS & DETAILS

Architect's Project No: Date:

2011-314 December, 2020

Drawing No:

M5.2



MOTOR CONTROL WIRING DIAGRAM FOR: EXHAUST FAN "EF-7"

NO SCALE

MOTOR CONTROL SCHEDULE													
MOTOR NO.	MOTOR USE	MOTOR LOCATION	MOTOR HP	VOLT	PH	MOTOR CONTROLLER					AUXILIARY CONTROL DEVICES		REMARKS
						TYPE	LOCATION	STR. SIZE	SW. SIZE	FUSE			
											DEVICE	LOCATION	
EF-7	EXHAUST FAN	MEZZANINE	1/4	120	1	A	MEZZANINE	00	30A/1	NOTE 1	H.O.A. SWITCH, PILOT LIGHT	STARTER COVER	SEE CONTROL WIRING DIAGRAM

MOTOR CONTROLLER LEGEND

<u>TYPE</u>	<u>DESCRIPTION</u>
A	INDIVIDUAL COMBINATION, FULL-VOLTAGE, NON-REVERSING MAGNETIC MOTOR CONTROLLER IN NEMA 1 ENCLOSURE.

NOTES:

1. PROVIDE FUSE(S) AS REQUIRED FOR PROTECTION OF MOTOR LOAD USING RK5 TYPE FUSES.

ELECTRICAL LEGEND - SYSTEMS

FIRE ALARM SYSTEM

SYMBOL	DESCRIPTION
	DUCT SMOKE DETECTOR, FIRE ALARM SYSTEM. NOMENCLATURE NEXT TO SYMBOL INDICATES INTERCONNECTIONS. I.E. "SFD" INDICATES SMOKE AND FIRE DAMPER, "SD" INDICATES SMOKE DAMPER, "AHU" INDICATES AIR HANDLER UNIT, ETC.

COMMUNICATIONS SYSTEM

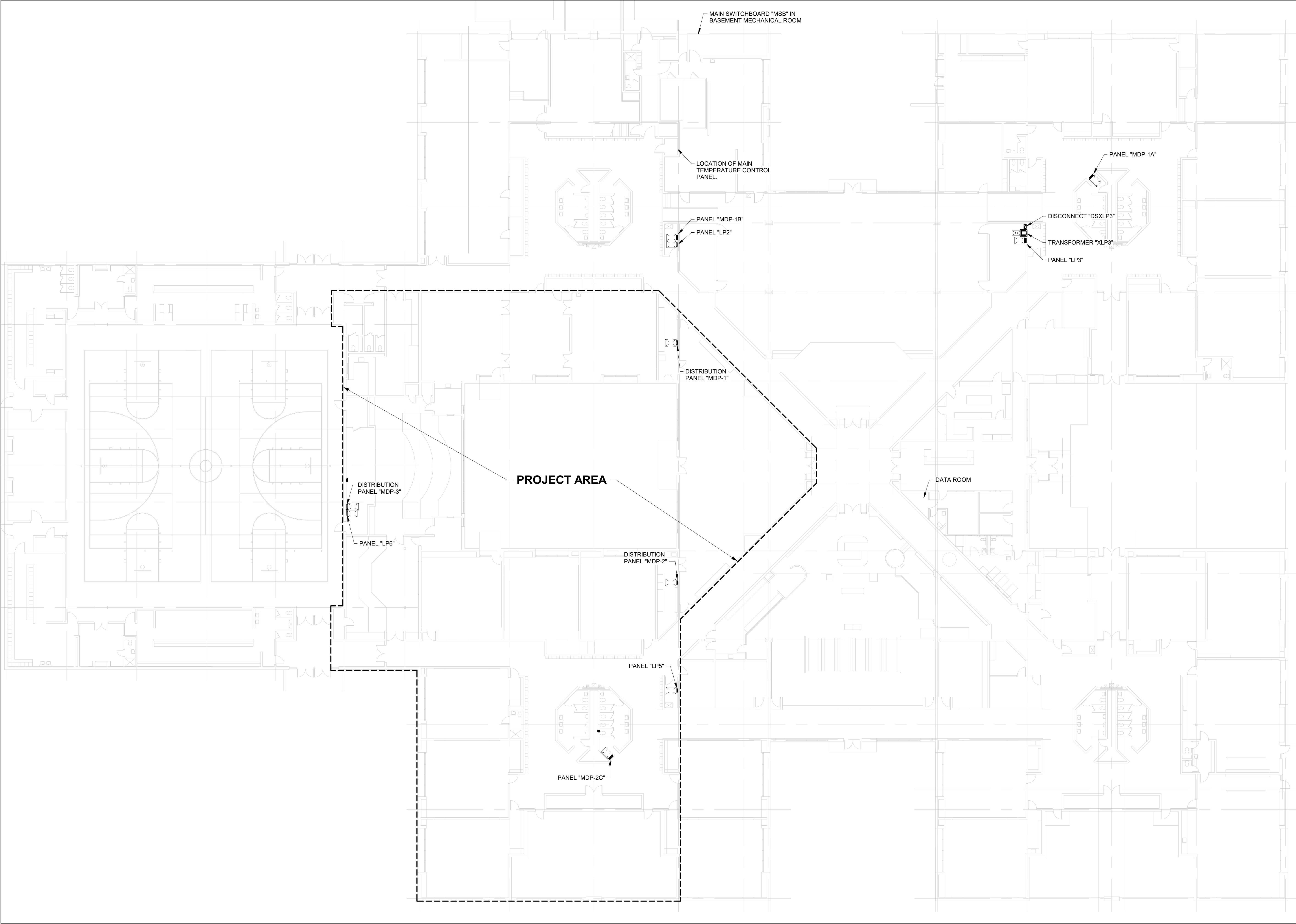
SYMBOL	DESCRIPTION
	VOICE/DATA INFORMATION OUTLET. PROVIDE OUTLET BOX 4" SQUARE BY 2-3/4" DEEP WITH 1 INCH CONDUIT FROM OUTLET TO ABOVE WORK AREA CLEAR OF ALL EQUIPMENT. BUSH CONDUIT ENDS. PROVIDE 2 PORT DATA OUTLET & CAT6 CABLE FROM OUTLET TO NEAREST DATA ROOM.

ELECTRICAL LEGEND - POWER

SYMBOL	DESCRIPTION
1,3,5,...	NUMBERS INDICATE CIRCUIT NUMBERS WHEN SHOWN NEXT TO OR WITHIN SYMBOL ON PLANS.
a,b,c,...	LOWER CASE LETTERS INDICATE SWITCHING ARRANGEMENT WHEN SHOWN NEXT TO OR WITHIN SYMBOL ON PLANS.
+42"	NUMBER INDICATES MOUNTING HEIGHT ABOVE FINISHED FLOOR TO BOTTOM OF OUTLET BOX WHEN SHOWN NEXT TO SYMBOL.
	WALL MOUNT JUNCTION BOX.
	MOTOR CONTROLLER. REFER TO MOTOR CONTROLLER SCHEDULE, THIS SHEET, FOR REQUIREMENTS.
	NEMA 1 SAFETY DISCONNECT SWITCH, UNLESS NOTED OTHERWISE.
LP6-1,3,5	HOMERUN TO PANEL INDICATED, NUMBER OF ARROWHEADS INDICATES NUMBER OF CIRCUITS. PREFIX INDICATES PANEL NOMENCLATURE. NUMBERS INDICATE CIRCUIT NUMBERS
PHASE CONDUCTOR NEUTRAL GROUND	CIRCUIT. NUMBER OF CROSSBARS INDICATE QUANTITY OF CONDUCTORS REQUIRED. MINIMUM CONDUIT SIZE SHALL BE 3/4 INCH TRADE SIZE. MINIMUM SIZE CONDUCTORS SHALL BE 12 AWG.

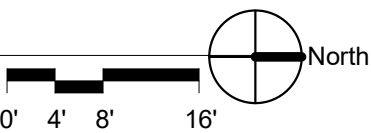
ELECTRICAL LEGEND - LIGHTING

SYMBOL	DESCRIPTION
	CEILING OUTLET AND LIGHTING FIXTURE AS SCHEDULED.
F1	SYMBOL INDICATES FIXTURE TYPE WHEN SHOWN ON LIGHTING PLANS AND SITE ELECTRICAL PLANS ADJACENT TO FIXTURE SYMBOL. REFER TO LIGHTING FIXTURE SCHEDULE FOR FIXTURE REQUIREMENTS.
S3a	OUTLET BOX AND 20A, THREE-WAY SWITCH, MOUNT AT 46 INCHES ABOVE FINISHED FLOOR TO CENTER, UNLESS NOTED OTHERWISE. LOCATE WITHIN 12" OF STRIKE SIDE OF DOOR, UNLESS NOTED OTHERWISE. LOWER CASE LETTER INDICATES CIRCUIT SWITCHED.



FIRST FLOOR ELECTRICAL LOCATION PLAN

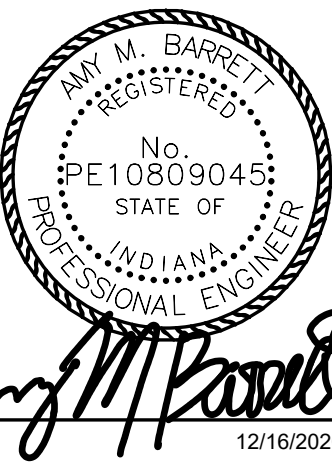
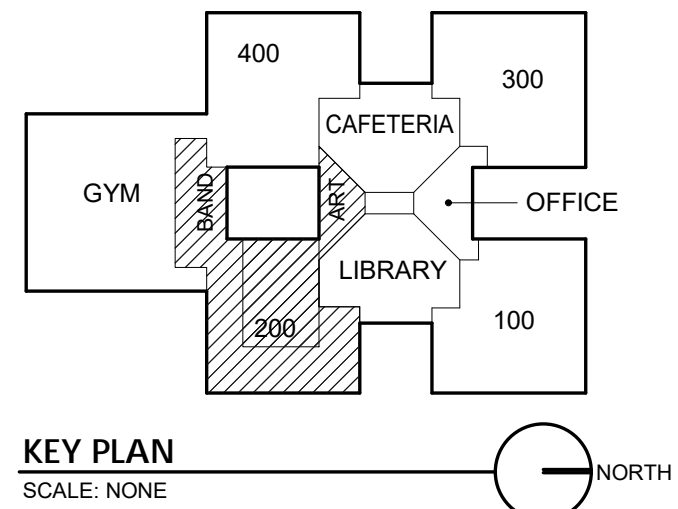
1/16" = 1'-0"



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In association with:



Revisions:		
#	Description	Date

Designed By:	Drawn By:	Checked By:
CWW	CWW	AMB

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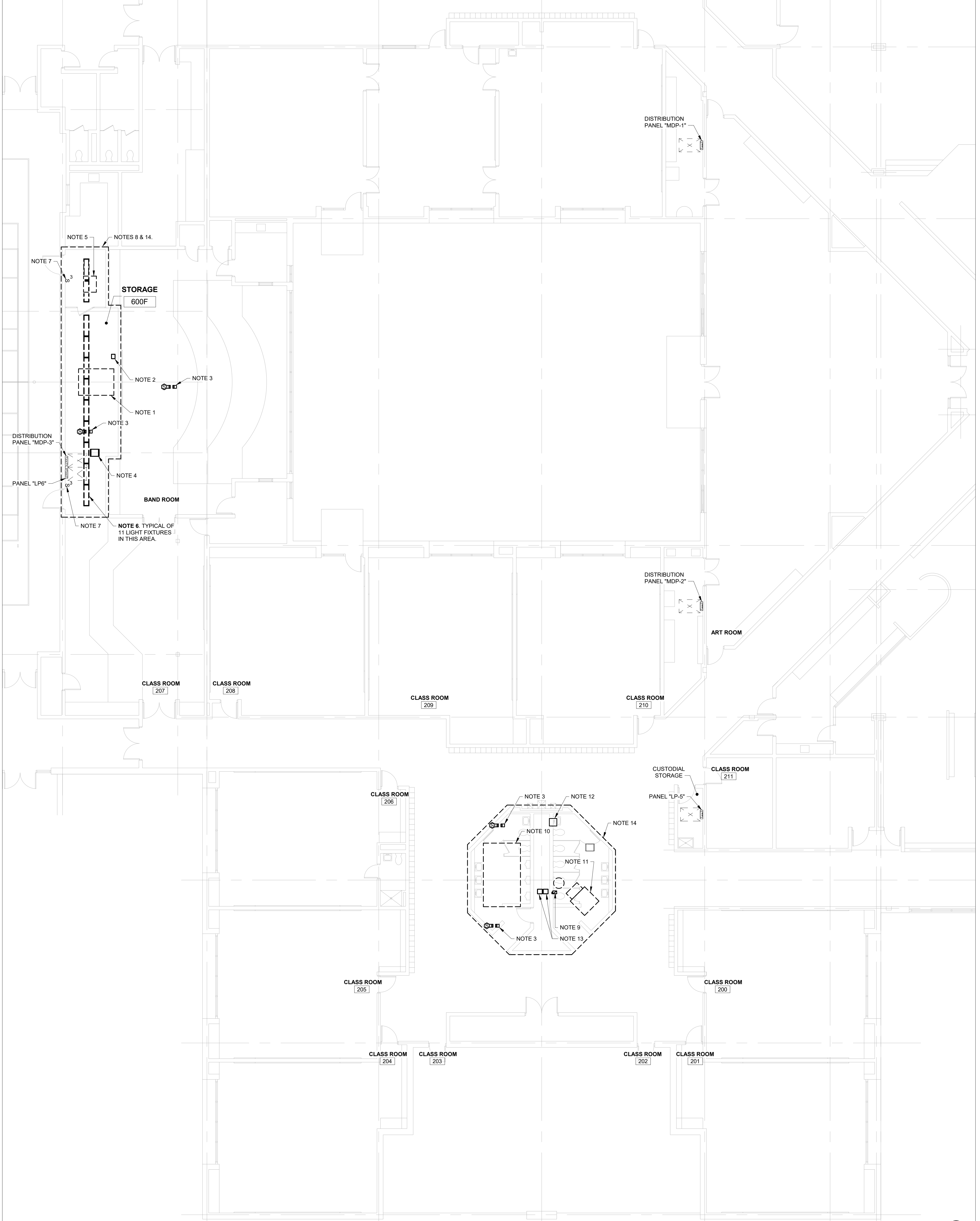
Sheet title:
**ELECTRICAL LEGEND,
DETAILS, AND LOCATION
PLAN**

Architect's Project No: Date:

2011-314 December, 2020

Drawing No:

E1.1



FIRST FLOOR HVAC DEMOLITION PLAN - BAND AND ART
1/8" = 1'-0"

GENERAL DEMOLITION NOTES:

- D1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VISITING THE BUILDING AND SITE TO BECOME FAMILIAR WITH THE EXISTING CONDITIONS. THESE REMOVAL DRAWINGS SHALL SERVE TO AID THE CONTRACTOR IN HIS EVALUATION OF THE EXTENT OF REMOVALS, BUT SHALL NOT BE HELD TO BE ALL INCLUSIVE.
- D2. FOR FURTHER REQUIREMENTS WITH REGARD TO EXTENT OF REMOVALS, SEE THE NEW CONSTRUCTION PLANS WHICH ILLUSTRATE THE ADJACENT NEW CONSTRUCTION.
- D3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL REMOVALS REQUIRED FOR THE INSTALLATION OF NEW WORK, WHETHER OR NOT IT IS SPECIFICALLY INDICATED OR NOTED IN THESE DOCUMENTS.
- D4. ALL EQUIPMENT REMOVED FOR RELOCATION SHALL BE REMOVED IN SUCH A MANNER THAT REUSE IS POSSIBLE.
- D5. ALL CONDUIT RUNS TO REMOVED EQUIPMENT SHALL HAVE ALL CONDUCTORS REMOVED, UNLESS CONDUCTORS ARE REQUIRED TO SERVE EXISTING EQUIPMENT TO REMAIN.
- D6. REMOVAL OF EMPTY CONDUIT SHALL BE REQUIRED ONLY IF SUCH CONDUIT INTERFERES WITH THE NEW CONSTRUCTION AND/OR IF INDICATED TO BE DISCONNECT AND REMOVED COMPLETE BACK TO SOURCE OF FEED.
- D7. IF PORTIONS OF CIRCUITS SERVING EQUIPMENT TO REMAIN MUST BE RELOCATED OR REMOVED DUE TO OTHER DEMOLITION OR DUE TO INTERFERENCE WITH NEW EQUIPMENT INSTALLATION, THE CIRCUITS SHALL BE MODIFIED IN A MANNER WHICH SHALL ENSURE PROPER OPERATION OF THE EQUIPMENT AFTER THE CONSTRUCTION IS COMPLETE. CONTRACTOR SHALL USE THE SAME GAUGE AND TYPE OF CONDUCTOR, AND THE SAME CONDUIT SIZE AS EXISTING TO MAKE ALL REQUIRED CIRCUIT MODIFICATIONS.
- D8. IF WALLS, CEILINGS, FLOORS, OR EQUIPMENT ARE REMOVED, OR OTHER DEMOLITION OCCURS, WHICH EXPOSES CIRCUITS SERVING EQUIPMENT TO REMAIN, THE CIRCUITS SHALL BE RELOCATED OR MODIFIED IN SUCH A MANNER WHICH SHALL ENSURE THE CONTINUED OPERATION OF THE CIRCUIT. EXISTING CONDUITS EXPOSED DURING DEMOLITION WHICH REMAIN TO SERVE EQUIPMENT SHALL BE RESUPPORTED IN ACCORDANCE WITH THE REQUIREMENTS OF THE NEC.
- D9. EQUIPMENT REMOVED FOR RELOCATION BUT NOT RELOCATED SHALL BE STORED AT A LOCATION DIRECTED BY THE OWNER.
- D10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROPER DISPOSAL OF ALL EQUIPMENT REMOVED.
- D11. OWNER RESERVES THE FIRST RIGHT OF REFUSAL OF REMOVED EQUIPMENT.
- D12. THE CONTRACTOR SHALL COORDINATE DISRUPTION OF SERVICES WITH THE OWNER. DISRUPTIONS OF SERVICES SHALL BE KEPT TO A MINIMUM. DISRUPTIONS SHALL ONLY OCCUR AFTER RECEIVING OWNER PRIOR APPROVAL.
- D13. THE CONTRACTOR SHALL REFER TO THE MECHANICAL, PLUMBING, AND ARCHITECTURAL PLANS FOR ADDITIONAL REQUIREMENTS ON EQUIPMENT AND AREAS REQUIRING DISCONNECTIONS AND REMOVALS.

NOTES:

- DISCONNECT AND REMOVE POWER FEED TO AIR HANDLING UNIT LOCATED ABOVE CEILING GRID. ALL ASSOCIATED CONDUIT AND WIRING SHALL BE REMOVED BACK TO SOURCE COMPLETE.
- DISCONNECT AND REMOVE POWER FEED TO VFD LOCATED ABOVE CEILING GRID. ALL ASSOCIATED CONDUIT AND WIRING SHALL BE REMOVED BACK TO SOURCE COMPLETE.
- DISCONNECT AND REMOVE DUCT DETECTOR FOR RELOCATION. DUCT DETECTOR SHALL BE REINSTALLED IN NEW DUCTWORK. CONDUIT AND WIRING TO REMAIN AND BE REWORKED AS REQUIRED FOR NEW AIR HANDLER AND DUCTWORK. REFER TO SHEET E2.1, FIRST FLOOR POWER PLAN, FOR ADDITIONAL REQUIREMENTS.
- DISCONNECT AND REMOVE POWER FEED TO TRANSFORMER LOCATED ABOVE CEILING GRID. REMOVE TRANSFORMER FOR RELOCATION. REFER TO SHEET E2.1, FIRST FLOOR POWER PLAN, FOR ADDITIONAL REQUIREMENTS.
- DISCONNECT AND REMOVE POWER FEED TO FAN COIL UNIT ABOVE CEILING GRID. ALL ASSOCIATED CONDUIT AND WIRING SHALL BE REMOVED BACK TO SOURCE COMPLETE. LABEL CIRCUIT BREAKER PROTECTION SERVING FAN COIL UNIT AS "SPARE".
- DISCONNECT AND REMOVE POWER FEED TO LIGHT FIXTURE. REMOVE LIGHT FIXTURE, ASSOCIATED CONDUIT, AND WIRING BACK TO SOURCE COMPLETE.
- DISCONNECT AND REMOVE LIGHT SWITCH. REMOVE SWITCHED LIGHT CIRCUIT BACK TO SOURCE COMPLETE. RACEWAY AND JUNCTION BOX SHALL REMAIN FOR REUSE.
- COORDINATE WITH GENERAL CONTRACTOR FOR REMOVAL OF CEILING GRID. ELECTRICAL CONTRACTOR SHALL PROVIDE ALL LABOR AND MATERIAL TO PROPERLY SUPPORT ALL CIRCUITS, CONDUCTORS, WIRING, ETC. AFTER REMOVAL OF CEILING GRID AND TILE. ELECTRICAL CONTRACTOR SHALL PROVIDE TEMPORARY SUPPORT OF ANY ELECTRICAL DEVICES AND MATERIAL REQUIRED TO REMAIN ENERGIZED UNTIL PERMANENT SUPPORT IS INSTALLED AND ELECTRICAL DEVICES ARE SECURED.
- DISCONNECT AND REMOVE POWER FEED TO HOT WATER HEATER SAFETY DISCONNECT SWITCH LOCATED ON MEZZANINE. REMOVE SAFETY DISCONNECT SWITCH AND INTERCONNECTION BETWEEN HOT WATER HEATER AND DISCONNECT COMPLETE. ALL ASSOCIATED CONDUIT AND WIRING SHALL BE REMOVED BACK TO SOURCE COMPLETE.
- DISCONNECT AND REMOVE POWER FEED TO AIR HANDLING UNIT LOCATED ON MEZZANINE. ALL ASSOCIATED CONDUIT AND WIRING SHALL BE REMOVED BACK TO SOURCE COMPLETE.
- DISCONNECT AND REMOVE POWER FEED TO RETURN AIR FAN UNIT LOCATED ON MEZZANINE. ASSOCIATED CONDUIT AND WIRING SHALL BE REMOVED BACK TO SOURCE COMPLETE.
- DISCONNECT AND REMOVE POWER FEED TO EXHAUST FAN LOCATED ON MEZZANINE. ASSOCIATED CONDUIT AND WIRING SHALL BE REMOVED BACK TO SOURCE COMPLETE.
- DISCONNECT AND REMOVE POWER FEED TO VFD LOCATED ON MEZZANINE. ALL ASSOCIATED CONDUIT AND WIRING SHALL BE REMOVED BACK TO SOURCE COMPLETE.
- ELECTRICAL CONTRACTOR SHALL PROVIDE ALL LABOR AND MATERIAL TO DISCONNECT AND REMOVE POWER TO ALL HVAC EQUIPMENT TO BE REMOVED RELATED TO THIS PROJECT AREA.

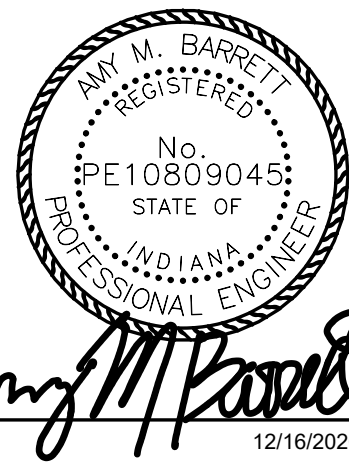
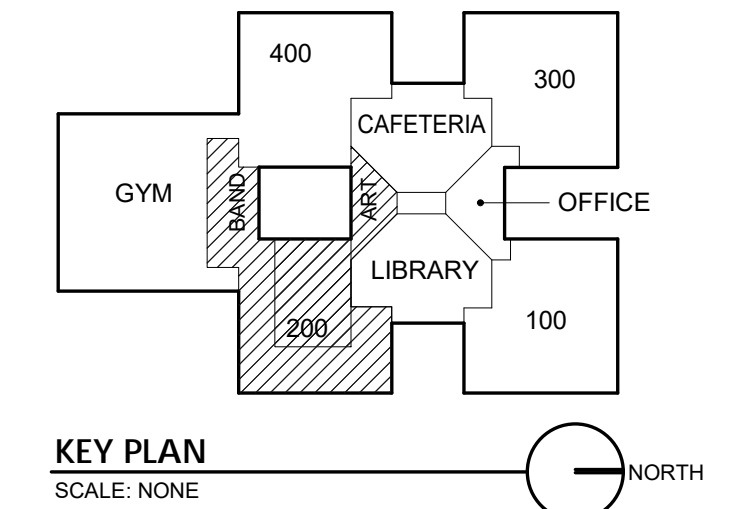
Ft. Branch Community School
HVAC Upgrades - Phase 4



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Revisions:		
#	Description	Date

Designed By: CWW	Drawn By: CWW	Checked By: AMB
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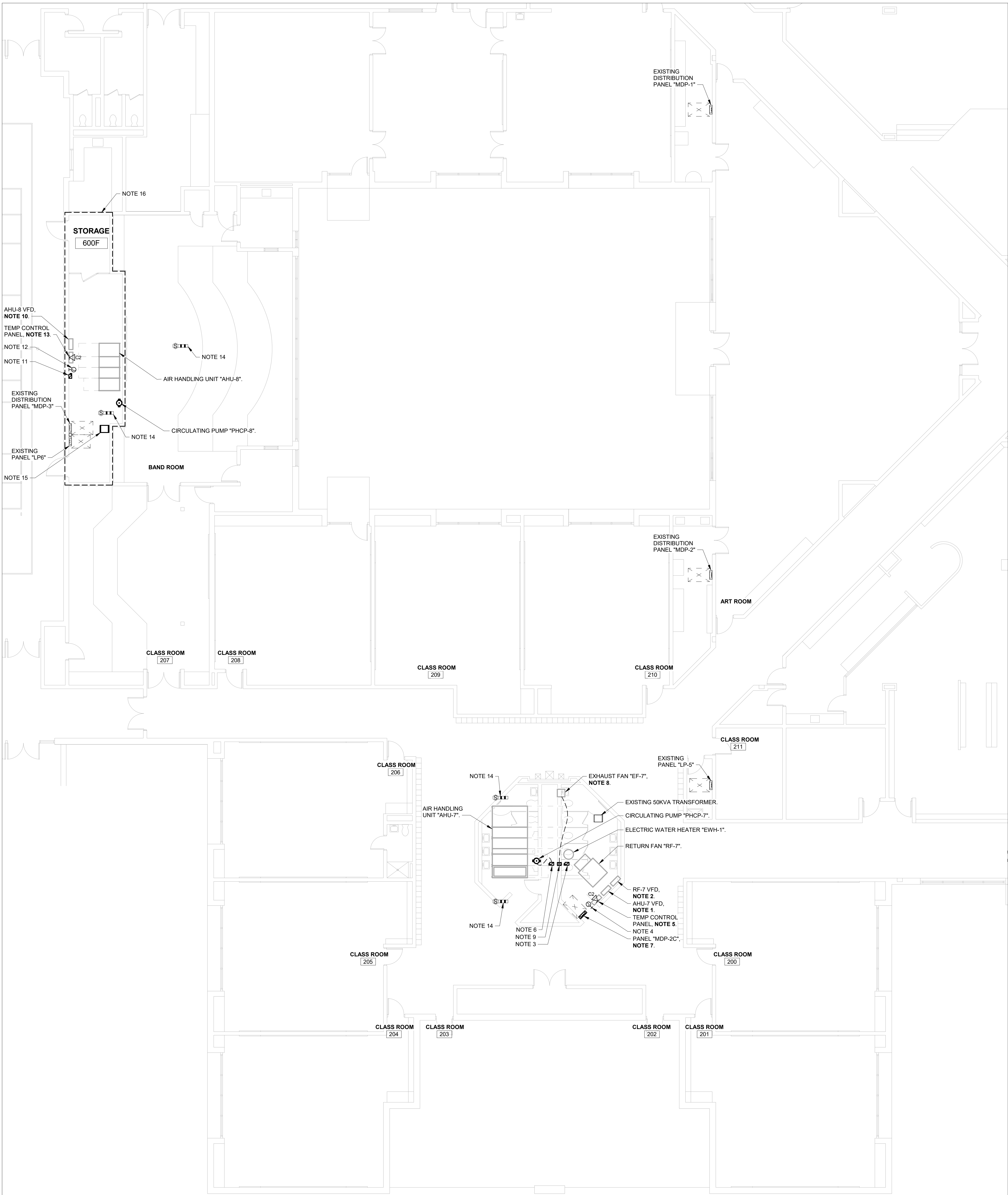
ELECTRICAL DEMOLITION
PLAN

Architect's Project No: Date:

2011-314 December, 2020

Drawing No:

E1.2



FIRST FLOOR POWER PLAN

1/8" = 1'-0"

FIRST FLOOR LIGHTING PLAN

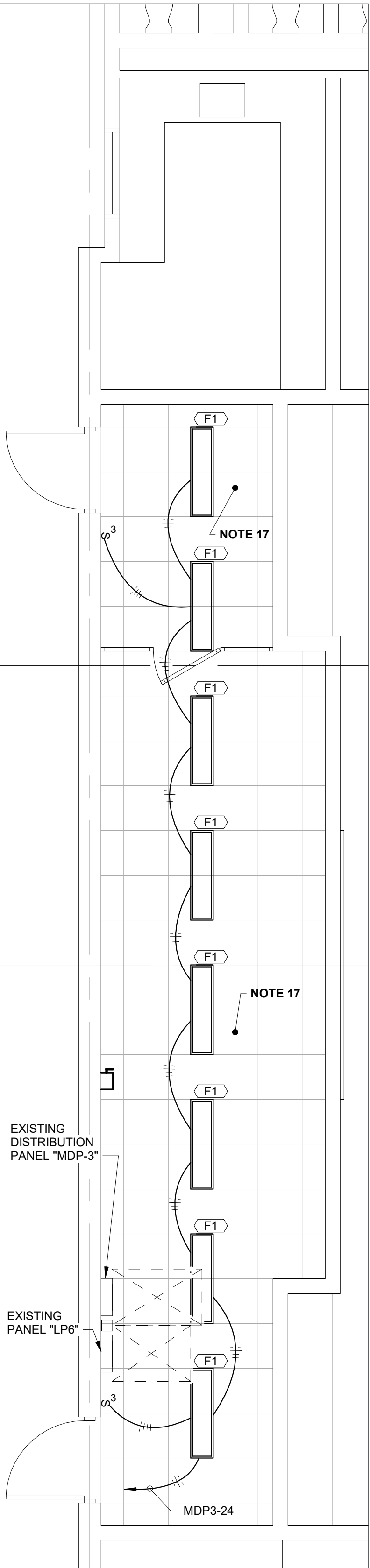
1/4" = 1'-0"

GENERAL NOTES:

G1. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL PAPERWORK AND SUBMITTING THE APPROPRIATE INFORMATION TO THE UTILITY IN ORDER TO OBTAIN ANY REBATE & INCENTIVES POSSIBLE FOR NEW EQUIPMENT, AIR HANDLER VFD'S, ETC.

NOTES:

1. PROVIDE CIRCUIT TO VFD FROM PANEL "MDP-2C" CIRCUIT NO. 1 USING 3#8, 1# 10G IN 3/4". PROVIDE FINAL POWER CONNECTION FROM VFD TO AHU-7 MOTOR PER MANUFACTURER'S REQUIREMENTS.
2. PROVIDE CIRCUIT TO VFD FROM PANEL "MDP-2C" CIRCUIT NO. 2 USING 3#12, 1# 12G IN 3/4". PROVIDE FINAL POWER CONNECTION FROM VFD TO RF-7 MOTOR PER MANUFACTURER'S REQUIREMENTS.
3. 30A/3P NEMA 1 SAFETY DISCONNECT SWITCH FOR ELECTRIC WATER HEATER "EWH-1". PROVIDE CIRCUIT TO DISCONNECT SWITCH FOR ELECTRIC WATER HEATER FROM PANEL "MDP-2C" CIRCUIT NO. 8 USING 3#12, 1# 12G IN 3/4". PROVIDE ALL LABOR AND MATERIAL TO SECURE SAFETY DISCONNECT SWITCH TO SEISMIC RATED STRUCTURE. PROVIDE FINAL CONNECTION FROM SAFETY DISCONNECT SWITCH TO ELECTRIC WATER HEATER PER MANUFACTURER'S REQUIREMENTS.
4. JUNCTION BOX FOR POWER TO HVAC CONTROL TRANSFORMERS. TRANSFORMERS (AND ALL LOAD SIDE CIRCUITS) SHALL BE FURNISHED AND INSTALLED BY THE TEMPERATURE CONTROL CONTRACTOR. ELECTRICAL CONTRACTOR SHALL PROVIDE CIRCUIT TO TRANSFORMERS AND MAKE FINAL PRIMARY-SIDE TERMINATIONS. CONNECT TRANSFORMERS TO PANEL "LP5" CIRCUIT NO. 38 USING 2#12, 1#12G IN 3/4".
5. PROVIDE DEDICATED CIRCUIT, TWO DATA CABLES AND DATA OUTLET FOR TEMPERATURE CONTROL PANELS. COORDINATE REQUIRED INSTALLATION LOCATIONS AND MOUNTING HEIGHTS IN FIELD WITH THE INSTALLATION REQUIREMENTS OF THE T.C. PANEL. CONNECT PANEL TO PANEL "LP5" CIRCUIT NO. 40 USING 2#12, 1#12G IN 3/4".
6. 30A/2P NEMA 1 SAFETY DISCONNECT SWITCH FOR PREHEAT COIL CIRCULATING PUMP "PHCP-7". PROVIDE POWER THROUGH 30A SAFETY DISCONNECT SWITCH FROM PANEL "LP5" CIRCUIT NO. 42 USING 2#12, 1#12G IN 3/4". PROVIDE DISCONNECT WITH AUXILIARY CONTACTS FOR CONTROLS AND MONITORING. PROVIDE ALL REQUIRED MATERIALS AND LABOR AND INTERCONNECT WITH BUILDING MANAGEMENT/TEMPERATURE CONTROL SYSTEM FOR CORRECT OPERATION. PROVIDE ALL LABOR AND MATERIAL TO SECURE SAFETY DISCONNECT SWITCH TO SEISMIC RATED STRUCTURE.
7. PROVIDE ALL LABOR AND MATERIAL TO SECURE CIRCUIT PANEL TO SEISMIC RATED STRUCTURE. PROVIDE FEEDER TO CIRCUIT PANEL FROM MAIN DISTRIBUTION PANEL "MDP-2" IN ARTS STORAGE ROOM. PROVIDE #43, 1#8G, IN 1-1/4" RIGID STEEL CONDUIT. PROVIDE ADEQUATE SUPPORT FOR CONDUIT RACEWAY IN ABOVE CEILING SPACE ENTIRE LENGTH OF RUN.
8. EXHAUST FAN "EF-7" (FURNISHED WITH INTEGRAL SAFETY DISCONNECT SWITCH). PROVIDE ALL LABOR AND MATERIAL TO INTERCONNECT EXHAUST FAN WITH MOTOR CONTROLLER ON MEZZANINE.
9. EXHAUST FAN "EF-7" MOTOR CONTROLLER. PROVIDE ALL LABOR AND MATERIAL TO SECURE MOTOR CONTROLLER TO SEISMIC RATED STRUCTURE. REFER TO MOTOR CONTROL WIRING DIAGRAM FOR EXHAUST FAN "EF-7", AND MOTOR CONTROL SCHEDULE, SHEET E1-1, FOR ADDITIONAL REQUIREMENTS.
10. PROVIDE CIRCUIT TO VFD FROM PANEL "MDP-3" CIRCUIT NO. 5 USING 3#10, 1# 10G IN 3/4". PROVIDE FINAL CONNECTION FROM VFD TO AHU-8 MOTOR PER MANUFACTURER'S REQUIREMENTS.
11. 30A/2P NEMA 1 SAFETY DISCONNECT SWITCH FOR PREHEAT COIL CIRCULATING PUMP "PHCP-8". PROVIDE POWER THROUGH 30A SAFETY DISCONNECT SWITCH FROM PANEL "LP6" CIRCUIT NO. 41 USING 2#12, 1#12G IN 3/4". PROVIDE DISCONNECT WITH AUXILIARY CONTACTS FOR CONTROLS AND MONITORING. PROVIDE ALL REQUIRED MATERIALS AND LABOR AND INTERCONNECT WITH BUILDING MANAGEMENT/TEMPERATURE CONTROL SYSTEM FOR CORRECT OPERATION.
12. JUNCTION BOX FOR POWER TO HVAC CONTROL TRANSFORMERS. TRANSFORMERS (AND ALL LOAD SIDE CIRCUITS) SHALL BE FURNISHED AND INSTALLED BY THE TEMPERATURE CONTROL CONTRACTOR. ELECTRICAL CONTRACTOR SHALL PROVIDE CIRCUIT TO TRANSFORMERS AND MAKE FINAL PRIMARY-SIDE TERMINATIONS. CONNECT TRANSFORMERS TO PANEL "LP6" CIRCUIT NO. 31 USING 2#12, 1#12G IN 3/4".
13. PROVIDE DEDICATED CIRCUIT, TWO DATA CABLES AND DATA OUTLET FOR TEMPERATURE CONTROL PANELS. COORDINATE REQUIRED INSTALLATION LOCATIONS AND MOUNTING HEIGHTS IN FIELD WITH THE INSTALLATION REQUIREMENTS OF THE T.C. PANEL. CONNECT PANEL TO PANEL "LP6" CIRCUIT NO. 31 USING 2#12, 1#12G IN 3/4".
14. PROVIDE ALL LABOR AND MATERIAL TO REINSTALL AND RECONNECT DUCT DETECTOR IN ASSOCIATED RETURN/SUPPLY DUCT. PROVIDE ALL INTERCONNECTIONS TO FIRE ALARM SO THAT DUCT DETECTOR WORKS AS WAS BEFORE DEMOLITION.
15. TRANSFORMER RELOCATED FROM DEMOLITION. PROVIDE ALL LABOR AND MATERIAL TO MOUNT TRANSFORMER AT HEIGHT AS WAS BEFORE DEMOLITION. TRANSFORMER SHALL BE SEISMICALLY SECURE TO SPECIFICATIONS. PROVIDE CONDUIT AND CONDUCTOR FEED TO TRANSFORMER FROM MAIN DISTRIBUTION PANEL "MDP-3" AS WAS BEFORE DEMOLITION. PROVIDE NEW CONDUIT AND NEW CONDUCTOR FEED FROM TRANSFORMER TO CIRCUIT PANEL "LP6" AS WAS BEFORE DEMOLITION. PROVIDE ADEQUATE SUPPORT STRUCTURE FOR FEED RACEWAY. COORDINATE LOCATION OF TRANSFORMER WITH ALL OTHER TRADES SO THAT TRANSFORMER HAS REQUIRED CLEARANCE FOR MAINTENANCE.
16. REFER TO FIRST FLOOR LIGHTING PLAN, THIS SHEET, FOR ADDITIONAL REQUIREMENTS.
17. COORDINATE WITH ALL OTHER TRADES PRIOR TO LIGHT FIXTURE ROUGH-IN. ELECTRICAL CONTRACTOR SHALL PROVIDE ALL LABOR AND MATERIAL TO MOUNT LIGHT FIXTURES SECURELY.



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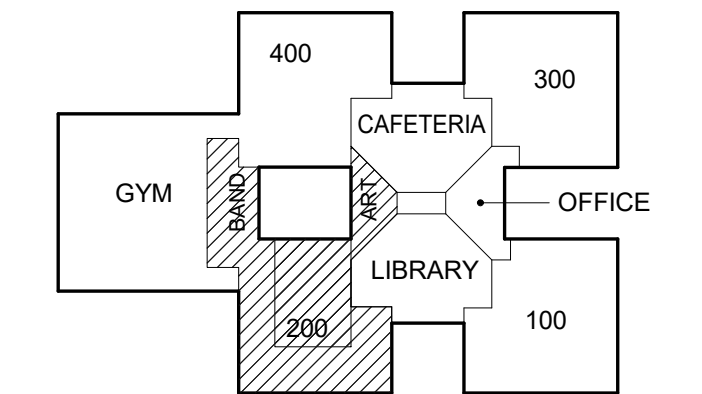


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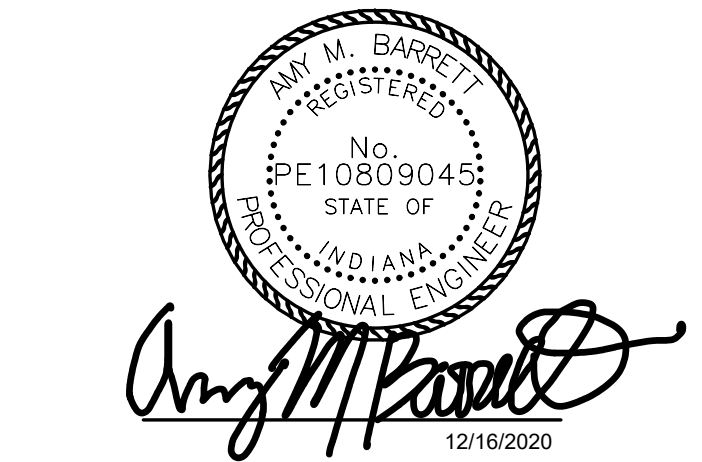


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SCALE: NONE



Revisions:		
#	Description	Date

Designed By: CWW Drawn By: CWW Checked By: AMB

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Sheet title:

FIRST FLOOR POWER AND
LIGHTING PLANS

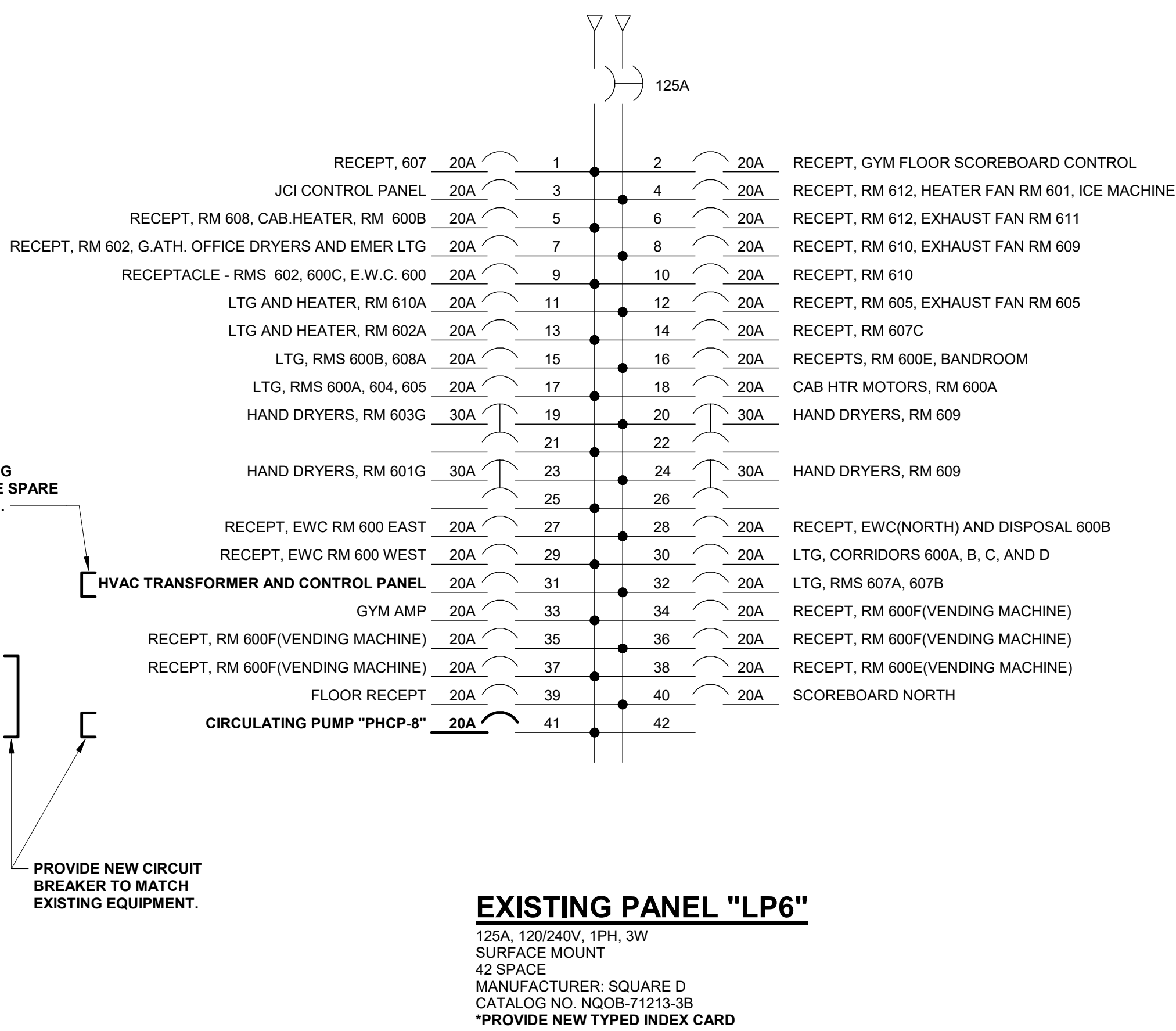
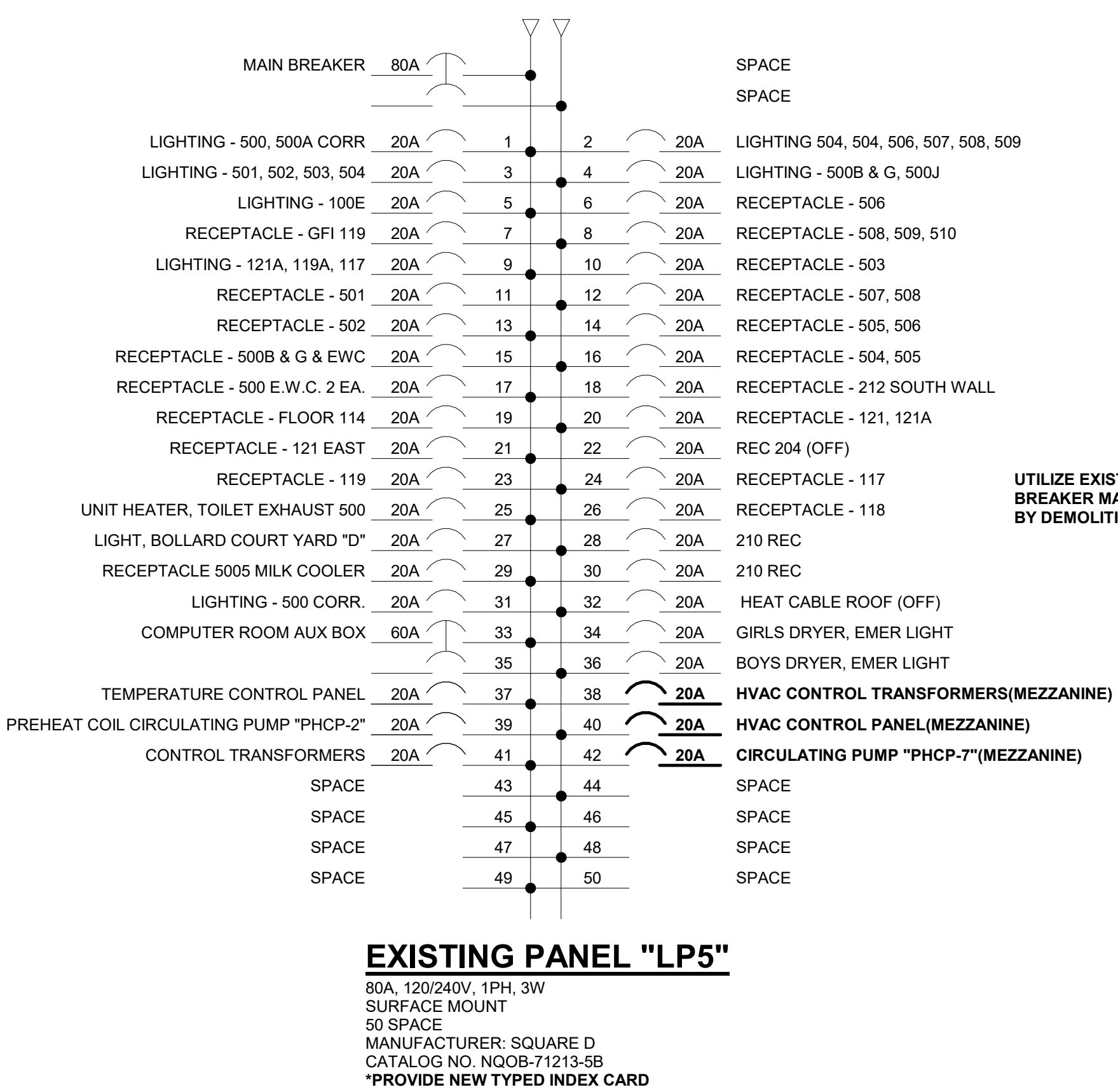
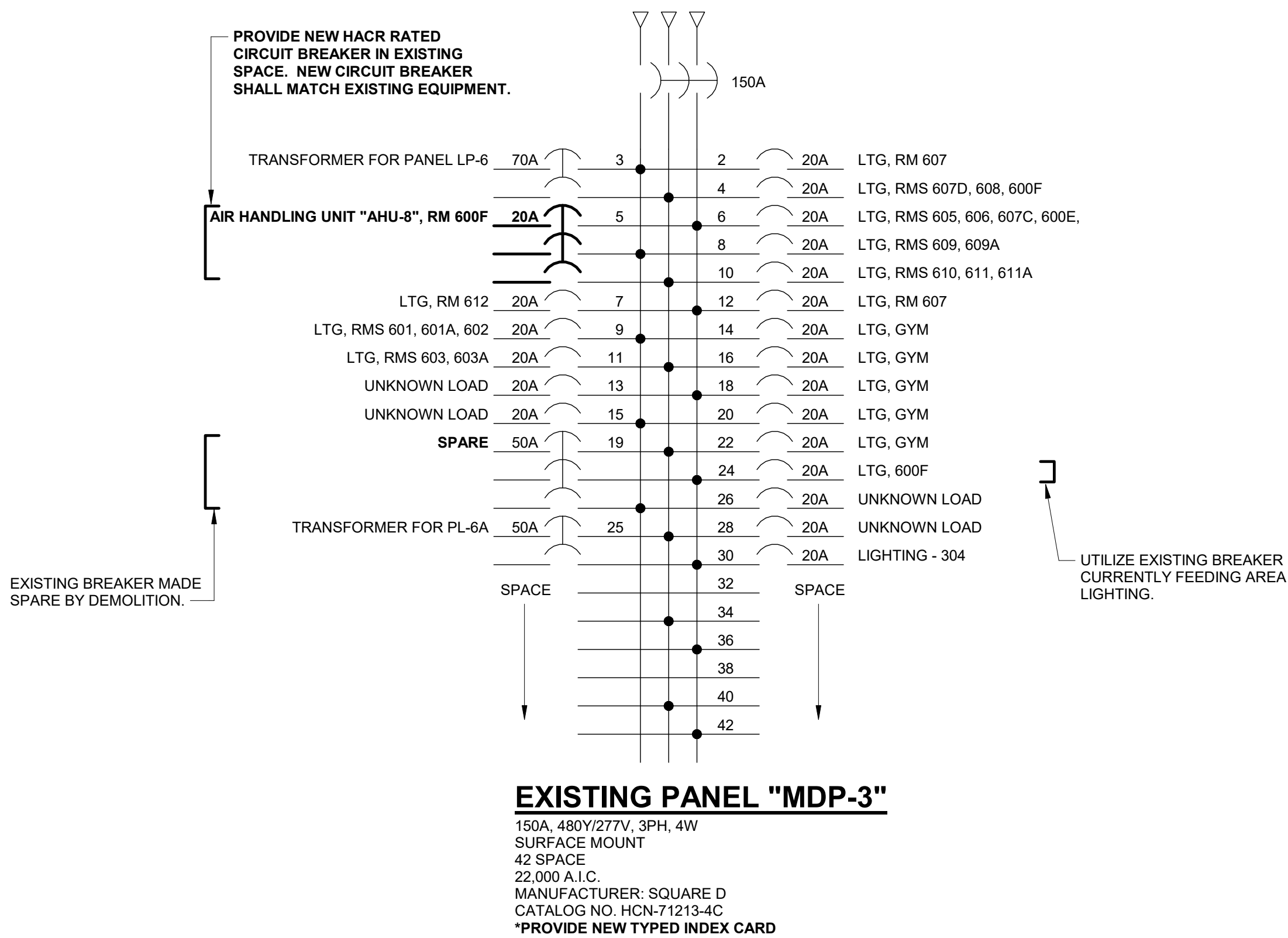
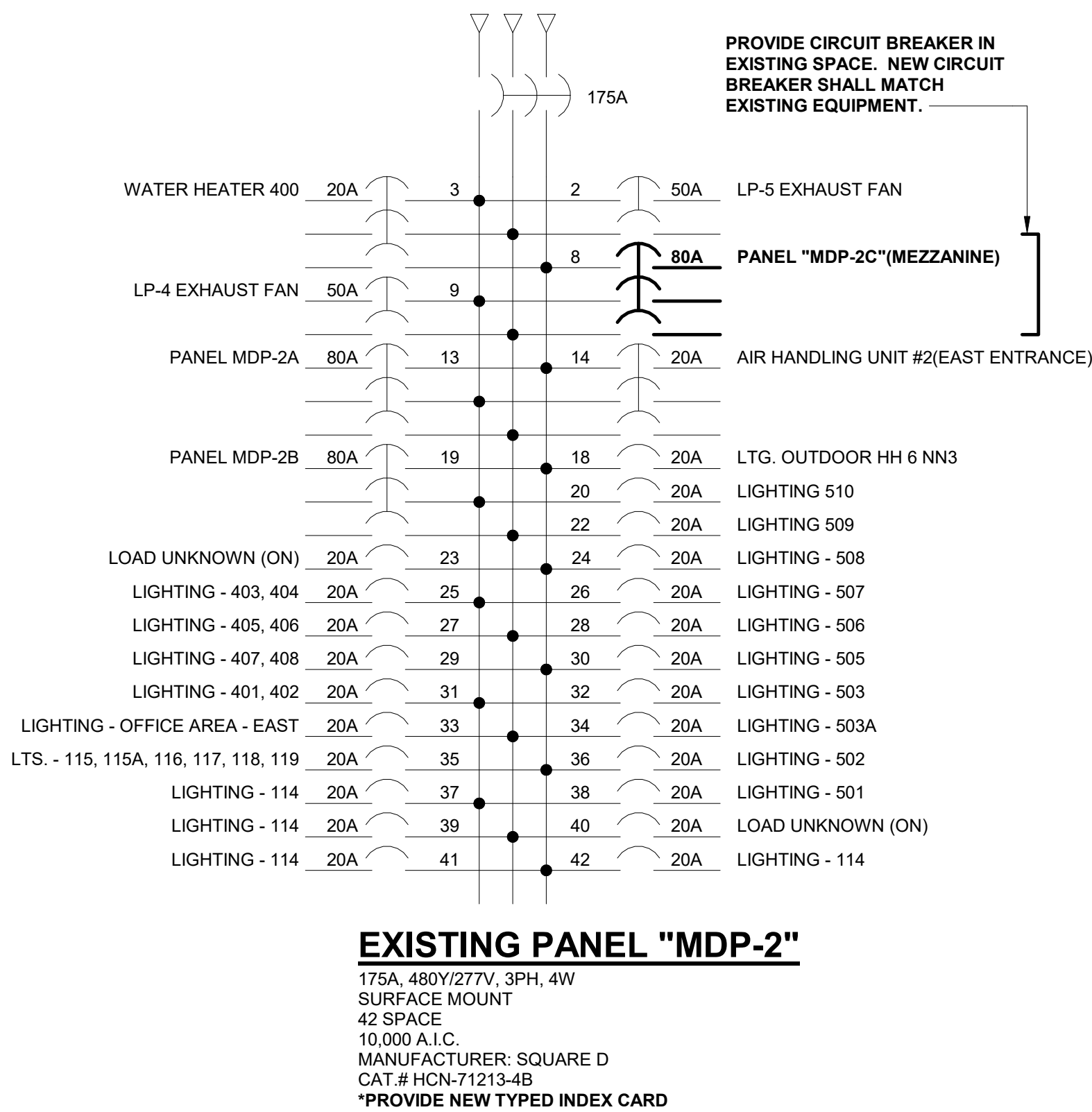
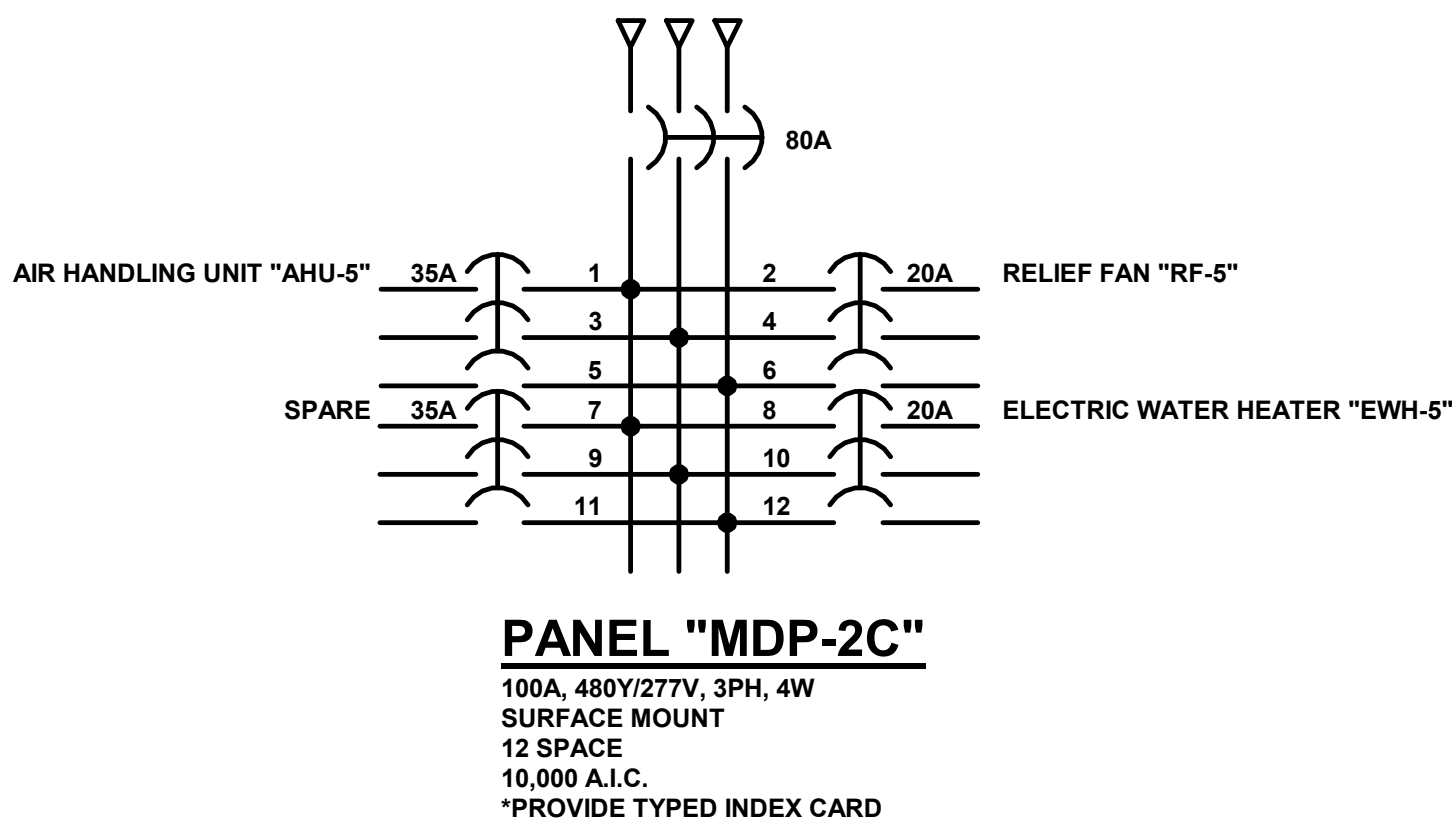
Architect's Project No: Date:

2011-314 December, 2020

Drawing No:

E2.1

LIGHTING FIXTURE SCHEDULE										
SYMBOL	DESCRIPTION	MANUFACTURER	FIXTURE SERIES	LAMP			FIXTURE VOLTAGE	MOUNTING	LIGHT CONTROL	REMARKS
				TYPE	QNTY PER FIXTURE	WATTS				
(F1)	LED 4" LINEAR SURFACE MOUNT FIXTURE WITH FROSTED LENS AND FRAME WITH WHITE BAKED ENAMEL FINISH. (4-3/4" MAXIMUM FIXTURE DEPTH) [4000 LUMEN OUTPUT]	LITHONIA	ZL1N-48-40L-MVOLT-35K-80CRI-WH-WGZ48	LED 3500K (50,000 HRS WITH 80% LUMEN MAINTENANCE) 80 CRI	QTY AS REQUIRED	30W (NOMINAL FIXTURE INPUT WATTS)	120VOLT	SURFACE	SNAP ON FROSTED DIFFUSER	PROVIDE FIXTURE WITH WIREGUARD AND ACCESSORIES TO MOUNT AT SURFACE OF GRID CEILING.

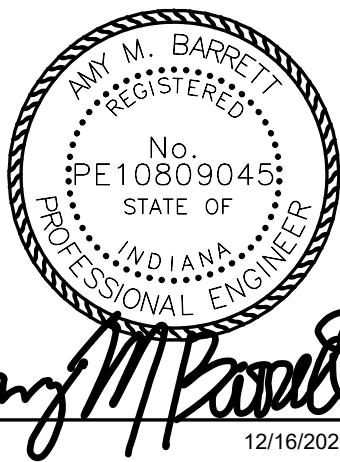
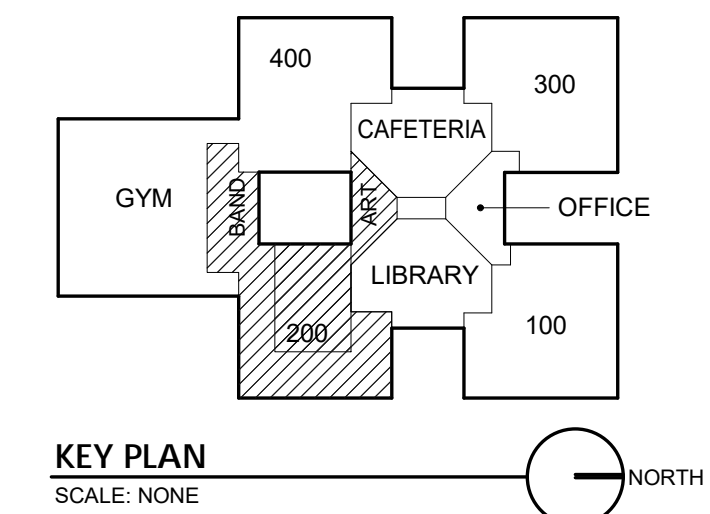


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#	Description	Date

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Drawn By: CWW
Checked By: AMB

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Sheet title:
**LIGHTING FIXTURE
SCHEDULE AND BUSSING
DIAGRAMS**

Architect's Project No: 2011-314
Date: December, 2020

Drawing No:

E3.1