

School of Medicine – CRF/DM Building 104 Mechanical Renovations State Project # H27-N257

COLUMBIA, SC

A/E Project #11060.02 **APRIL 11, 2012** issued for CONSTRUCTION

Prepared by:



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DRAWING INDEX

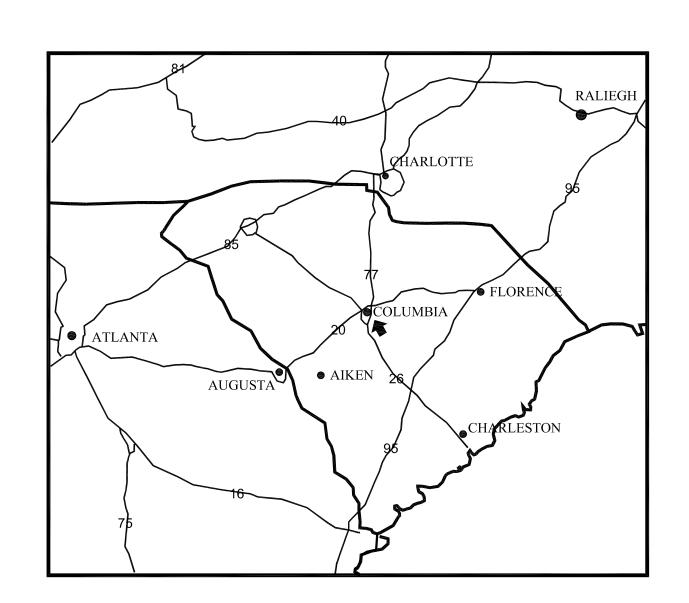
MECHANICAL

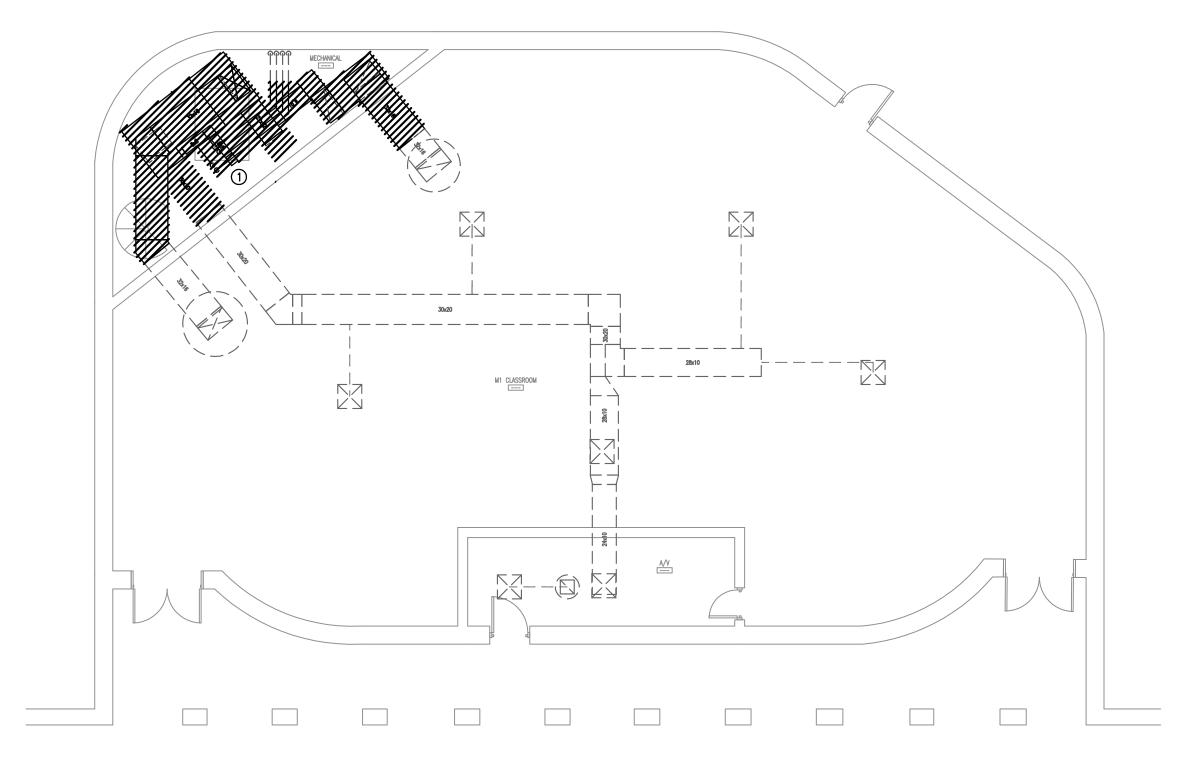
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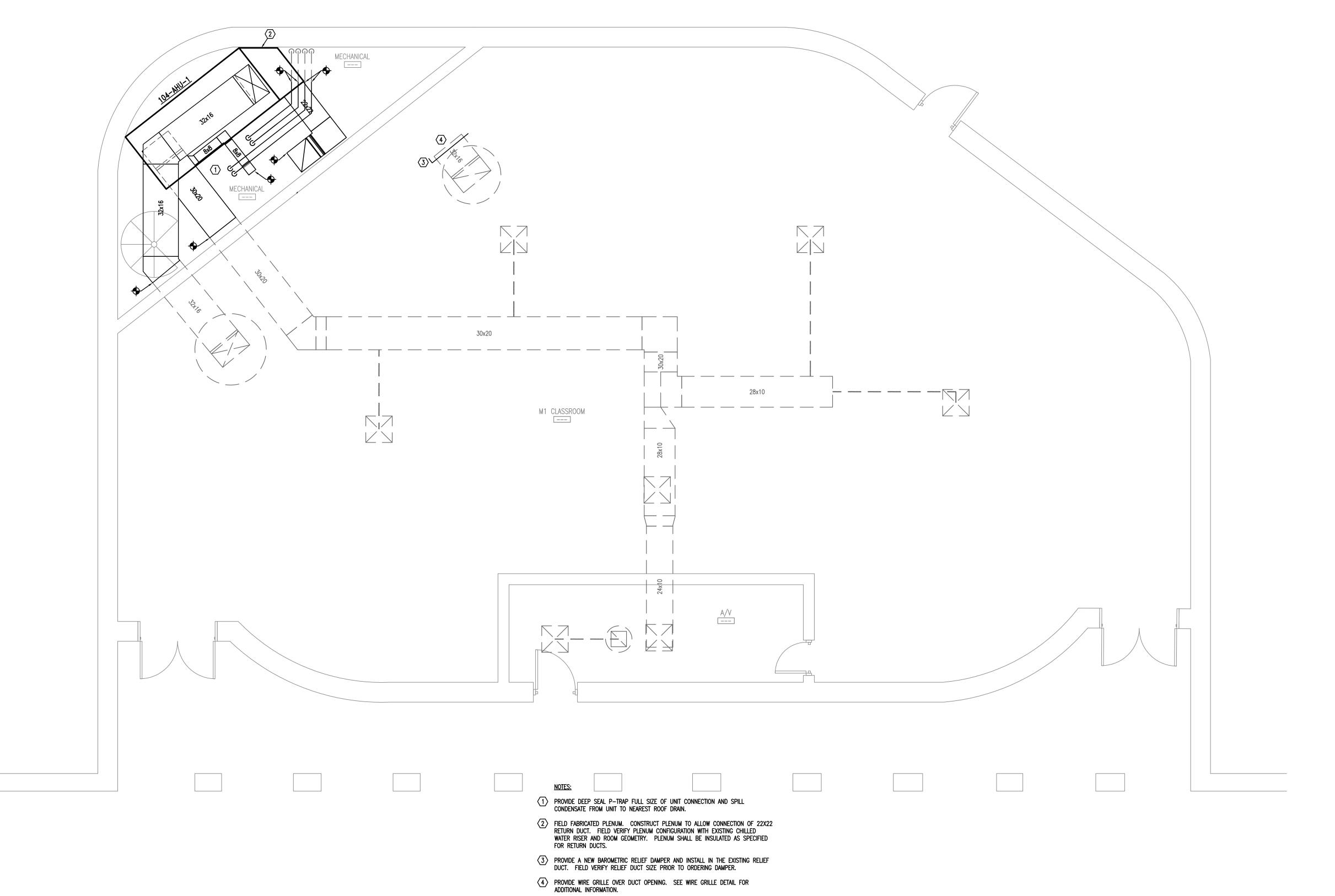




<u>DEMOLITION NOTES:</u>

1 REMOVE UNIT, FANS, DUCTWORK, PIPING, AND DAMPERS SHOWN AS HATCHED.

1 FIRST FLOOR PLAN — HVAC DEMOLITION PLAN



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A S S O C I A T E S, I N C.

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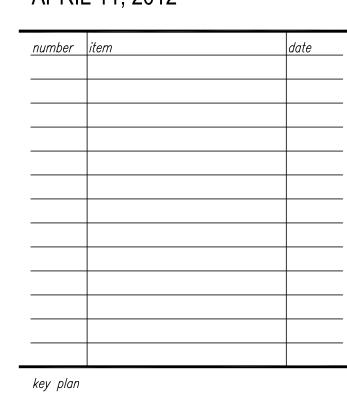
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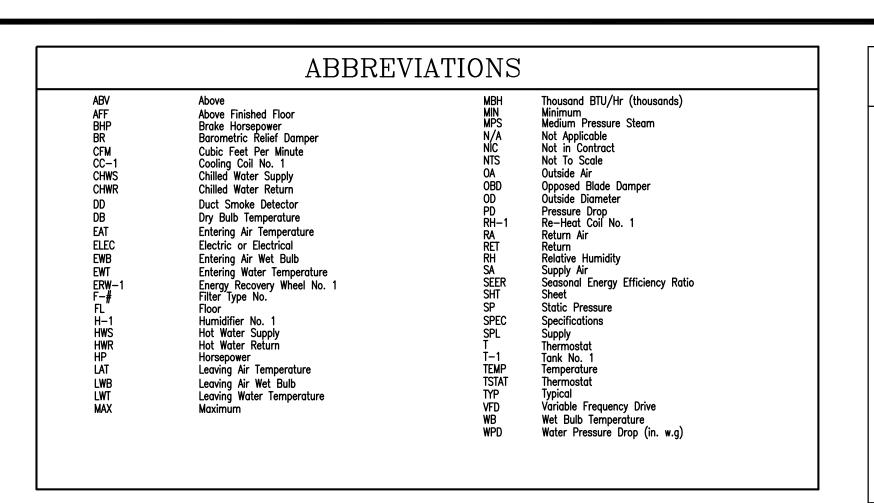
FIRST FLOOR HVAC RENOVATION AND DEMOLITION PLANS

sheet number

M2.

drawn by JDR checked by JDR

PIRST FLOOR PLAN — HVAC RENOVATION PLAN



PIPE FULL SIZE OF EQUIPMENT

THREADED CAP

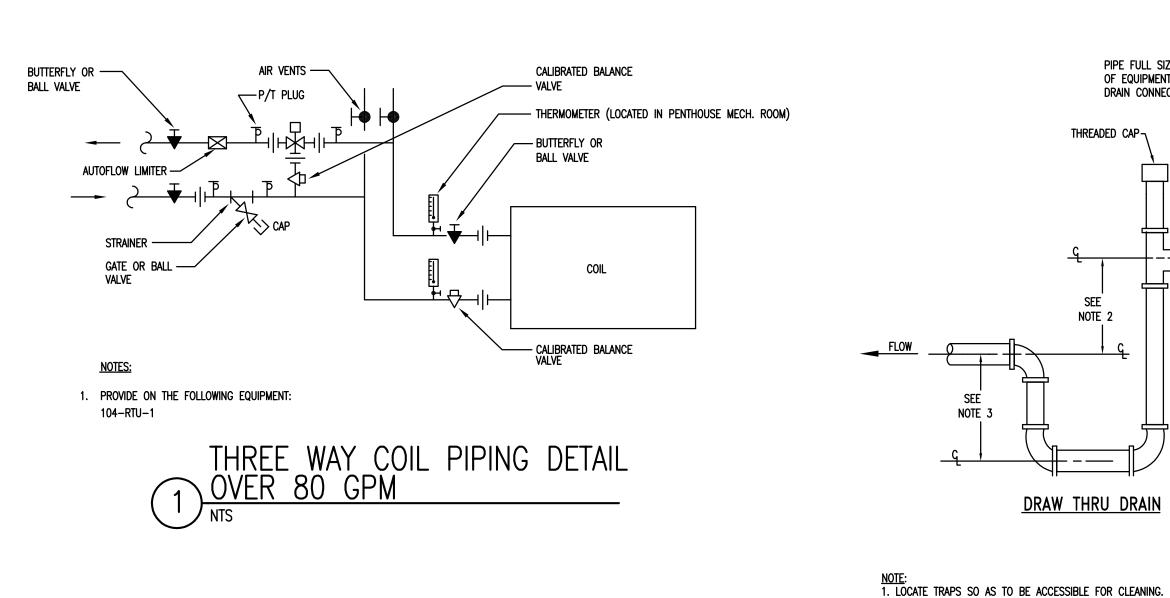
2. HEIGHT SHALL BE EQUAL TO UNIT MAXIMUM NEGATIVE STATIC PRESSURE PLUS 1".

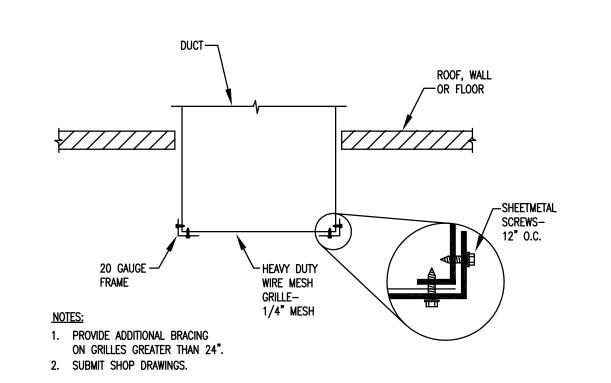
2 EQUIPMENT CONDENSATE DRAIN DETAIL

3. HEIGHT SHALL BE 1/2 OF HEIGHT INSTALLED IN NOTE 3.

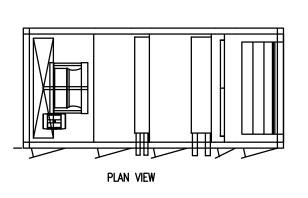
4. PIPE TO NEAREST FLOOR DRAIN.
5. TRAP SHALL NOT BLOCK ACCESS TO EQUIPMENT.
6. INSULATE TRAPS

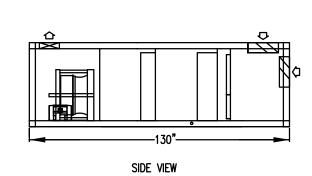
DRAIN CONNECTION -

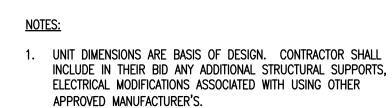












END VIEW

4) 104-RTU-1 CONFIGURATION DETAIL

MECHANICAL GENERAL NOTES

1. DO NOT SCALE DRAWINGS; SEE ARCHITECTURAL DRAWINGS AND REFLECTED CEILING PLANS FOR EXACT LOCATIONS OF DOORS, WINDOWS, CEILING, DIFFUSERS, ETC. 2. EXTEND ALL DRAIN LINES TO EXTERIOR AND SPILL ON GRADE. ROUTE TO AVOID INTERFERENCE WITH PASSAGEWAYS. CONDENSATE DRAINS SHALL BE TRAPPED. SLOPE Drain lines 1/8" per foot.

3. ALL PIPING AND DUCTWORK INSULATION SHALL BE RUN CONTINUOUSLY THROUGH FLOORS, ROOFS AND PARTITIONS EXCEPT WHERE PROHIBITED BY FIRE CODES. 4. ALL PIPING SHALL BE SUPPORTED IN ACCORDANCE WITH THE SPECIFICATIONS AND FURTHER SUPPORTS OR HANGERS SHALL BE ADJACENT TO ELBOWS, TO PREVENT WEIGHT OF PIPING BEING PLACED ON THE EQUIPMENT. SUPPORT DETAILS SHALL BE SUBMITTED TO THE MECHANICAL ENGINEER.

5. ALL PIPING AND DUCTWORK LOCATIONS SHALL BE COORDINATED WITH THE WORK UNDER OTHER DIVISIONS OF THE SPECIFICATIONS TO AVOID INTERFERENCE. 6. ALL PIPING, DUCTS, VENTS, ETC. EXTENDING THRU EXTERIOR WALLS AND ROOFS SHALL BE FLASHED AND COUNTERFLASHED. 7. PROVIDE ALL TRANSITIONS REQUIRED FOR INSTALLATION OF DUCT, EXHAUST FANS, AND ALL OTHER EQUIPMENT AND APPURTENANCES.

8. ALL DUCT IS GALVANIZED SHEET METAL EXCEPT AS NOTED. 9. DUCT SIZES ARE CLEAR INSIDE DIMENSIONS.

MECHANICAL DEMOLITION NOTES

DRAWINGS SHOW GENERAL INTENT OF DEMOLITION. QUANTITIES, LOCATIONS, SIZES AND EQUIPMENT ARE SHOWN TO INDICATE TYPE OF SYSTEM INSTALLED AND DOES NOT NECESSARILY REPRESENT EXACT CONDITIONS. CONTRACTOR SHALL FIELD VERIFY BEFORE BIDDING.

DEMOLITION OF EQUIPMENT, SYSTEMS, AND COMPONENTS SHALL INCLUDE ALL SUPPORTS, PADS, HANGERS, INSULATION, CONTROLS, STARTERS, ACCESSORIES, AND APPURTENANCES NOT REQUIRED FOR THE INSTALLATION OF THE NEW SYSTEM.

WHEN PARTIAL DEMOLITION OF A SYSTEM IS INDICATED, THE PART OF THE SYSTEM SHOWN TO REMOVED SHALL BE REMOVED TO THE ACTIVE MAIN OR BRANCH IF NOT REQUIRED FOR THE INSTALLATION OF THE NEW SYSTEM. THE ACTIVE MAIN OR BRANCH SHALL BE REPAIRED TO MATCH NEW INSTALLATION AS MUCH AS PRACTICAL. IF SYSTEM IS INSULATED, INSULATION SHALL BE PATCHED AND

REMOVAL OF SYSTEMS SHALL INCLUDE COMPLETE SYSTEM WHENEVER PRACTICAL. IF NOT, SYSTEM (IE: PIPE, CONDUIT, ETC.) SHALL BE REMOVED TO 1 INCH BELOW SURFACE.

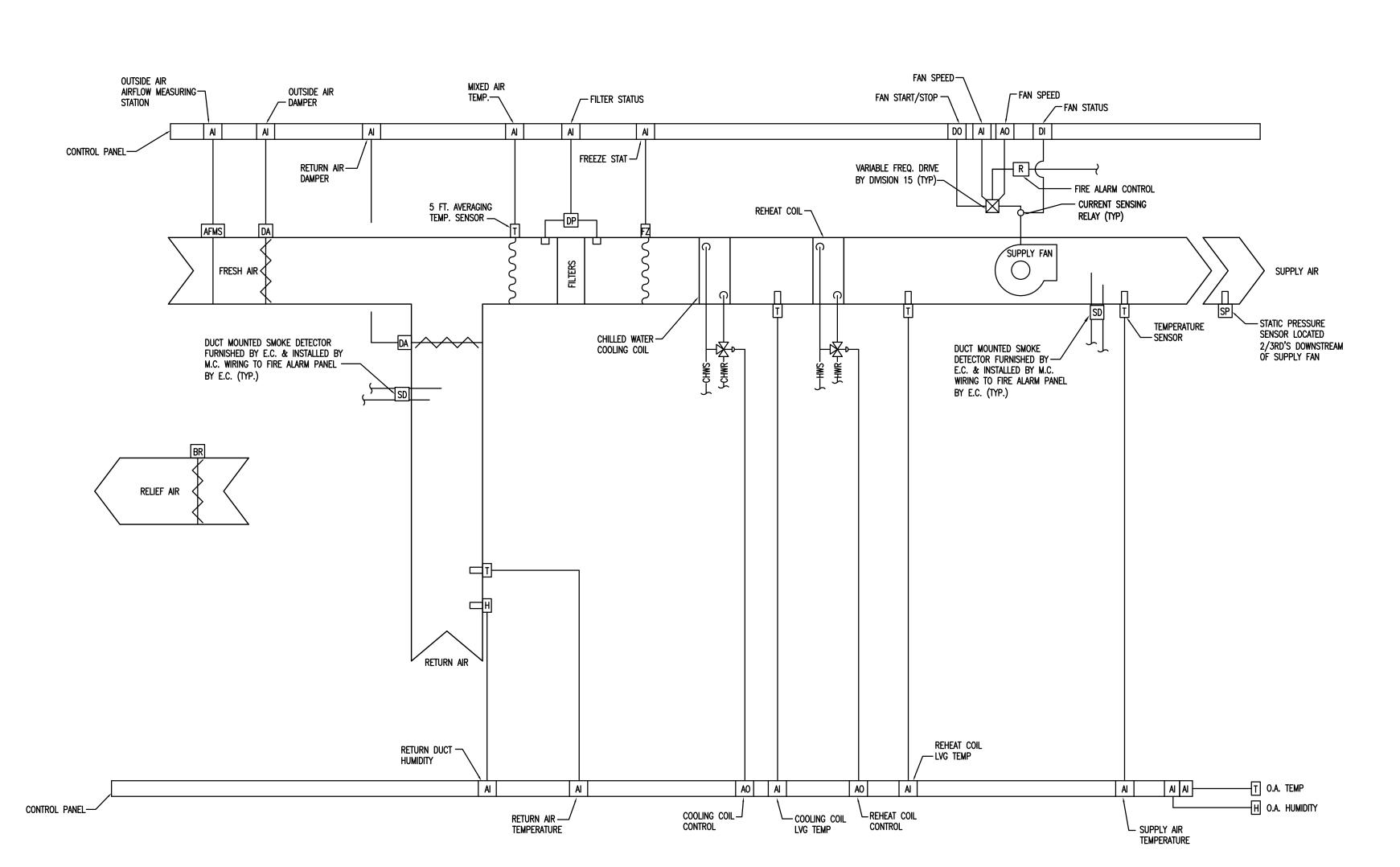
FINISHED REPAIR (IE: VAPOR BARRIER, COATING, ETC.)

		Н	IVAC LEGEND		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
T	TEMPERATURE SENSOR OR THERMOSTAT	100000000000000000000000000000000000000	CEILING SUPPLY DIFFUSER, RETURN GRILLE W/ FLEX DUCT CONN. FOR RETURN OR EXHAUST AIR; SEE "DIFFUSER & GRILLE SCHEDULE"	18x12 12x12	TRANSITION, FLAT ON BOTTOM (FOB) FLAT ON TOP (FOT, IF APPLICABLE)
(\$)	WALL SWITCH		EXISTING DUCT WORK TO REMAIN		TURNING VANES
Э	WALL HUMIDISTAT	*//////	EXISTING DUCT WORK TO BE REMOVED	 • • • • • • • • • • • • • • • • • • •	DUCT SMOKE DETECTORS
•	CONNECT TO EXISTING		DUCT TURNING DOWN	CR	CONCEALED REGULATOR
18x12	RECTANGULAR DUCT SIZE, FIRST FIGURE IS SIDE SHOWN		DUCT TURNING UP		MANUAL VOLUME DAMPER
{ 18*ø }	ROUND DUCT SIZE	—— ——	UNION	<u>6"ø</u>	A — DIFFUSER TAG 6"Ø — NECK SIZE 100 — CFM
<u> </u>	CHANGE OF ELEVATION, RISER (R), DROP (0)		STRAINER		GATE VALVE
<u> </u>	ACOUSTICAL LINING INSULATION		STRAINER WITH BLOW OFF		CONTROL VALVE, TWO WAY
	FLEXIBLE DUCT		ECCENTRIC REDUCER FLAT ON TOP		END CAP
CHWS	CHILLED WATER SUPPLY	<u> </u>	TEE OUTLET UP	C+-	ELBOW TURNED DOWN
CHWR	CHILLED WATER RETURN		TEE OUTLET DOWN	-+0	ELBOW TURNED UP
	CONCENTRIC REDUCER				ECCENTRIC REDUCER FLAT ON BOTTOM

	FILTER SCHEDULE														
TAG	SYSTEM	TYPE Media	CAPACITY (CFM)	Filter Depth (inches)	MAXIMUM AIR VELOCITY (FPM)	initial Press. Drop (in. Wg.)	FINAL PRESS. DROP (IN. WG.)	EFFICIENCY PERCENT	MERV Rating	MANUFACTURER	MODEL	NOTES			
F-1A	104-AHU-1	PRE-FILTER	5300	2"	500	0.31	1.0	30	8	FARR	30/30	1			
1. TEST METH	OD: ASHRAE 52.1—	92 Standard													

	COIL SCHEDULE																		
Ì			OADAOITA/	MAX. AIR	MIN. FACE	AIR PRESS DROP (IN. WG.)	CAPACITY			AIR TEMPERATURE					WATE	MAXIMUM			
TAG	LOCATION	LOCATION	CAPACITY CFM	VELOCITY	AREA (SQ. FT.)		TOTAL	SENS.	SENS. MBH KW	ENTE	RING	LEAVING		ENTERING	LEAVING	GPM	PRESS DROP	NO. OF	NOTES
			CIW	(FPM)			MBH	MBH		DB 'F	WB 'F	DB 'F	WB 'F	TEMP. *F	TEMP. *F	J GI WI	(FT. WATER)	FINS/IN.	
CC-1	104-AHU-1	MECH ROOM	5300	500	10.6	0.51	232.7	154.7		80.0	67.0	50.0	49.8	44	58	40.0	6.7	10	
RH-1	104-AHU-1	MECH ROOM	5300	500	10.6	0.13	314.1			50.0		85.0		180	160	20.0	5.8	9	1
. COIL IN RE	HEAT POSITION														Į.				

	AIR HANDLER UNIT SCHEDULE																												
				SUPPLY FAN						EXHAUST FAN						ELECTRICAL				51D0T_0T+05	251517								
TAG	CAPACITY	CAPACITY MINIMUM	FAN	FAN	FAN	FAN	FAN	FAN	FAN	SP (IN. W.G.)		MO.	TOR	FAN	FAN	SP (II	N. W.G.)	MO	TOR	VOLTS/PHASE	UNIT (IRCUIT	AIR Volume	COOLING COIL	FIRST STAGE FILTER	reheat Coil	ACCESSORIES	MANUFACTURER	REMARKS
	CFM	0.A.	CFM	TYPE	TOTAL	EXT	BHP	HP	CFM	TYPE	TOTAL	EXT	BHP	HP	VOLIS/ PRASE	FLA	MCA	CONTROL	EQ. NO.	EQ. NO.	EQ. NO.	7.00200720	WWW. WOLLY COLLECT						
104-AHU-1	5300	1165	5300	AF	4.95	2.50	6.74	10.0	5300	AF	0.98	0.75	2.39	5.0	460/3	24.2	28.1	VFD	CC-1	F-1A	RH-1		JCI SOLUTION OUTDOOR AHU	1					
1. SINGL	POINT CONNE	ECTION																					_						
1																													



5 104-AHU-1 CONTROL DIAGRAM

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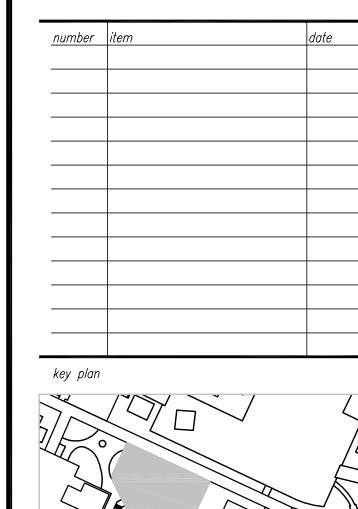
School of Medicine – CRF/DM Building 104 Mechanical Renovations State Project # H27-N257 A/E project number

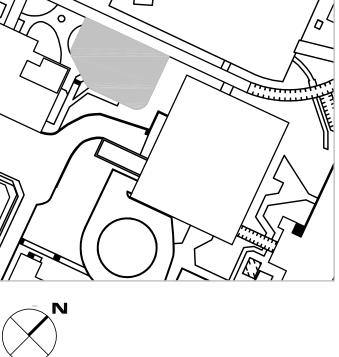
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date APRIL 11, 2012

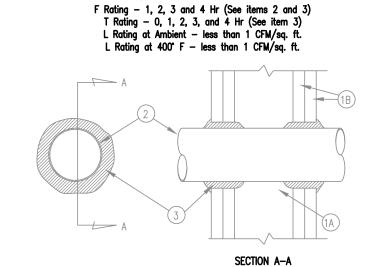




HVAC SCHEDULES AND **DETAILS**

sheet number

drawn by JDR checked by JDR

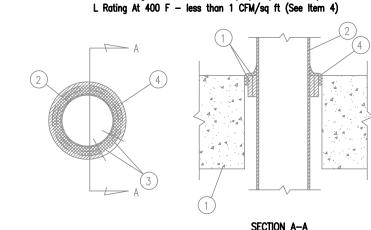


System No. W-L-1001

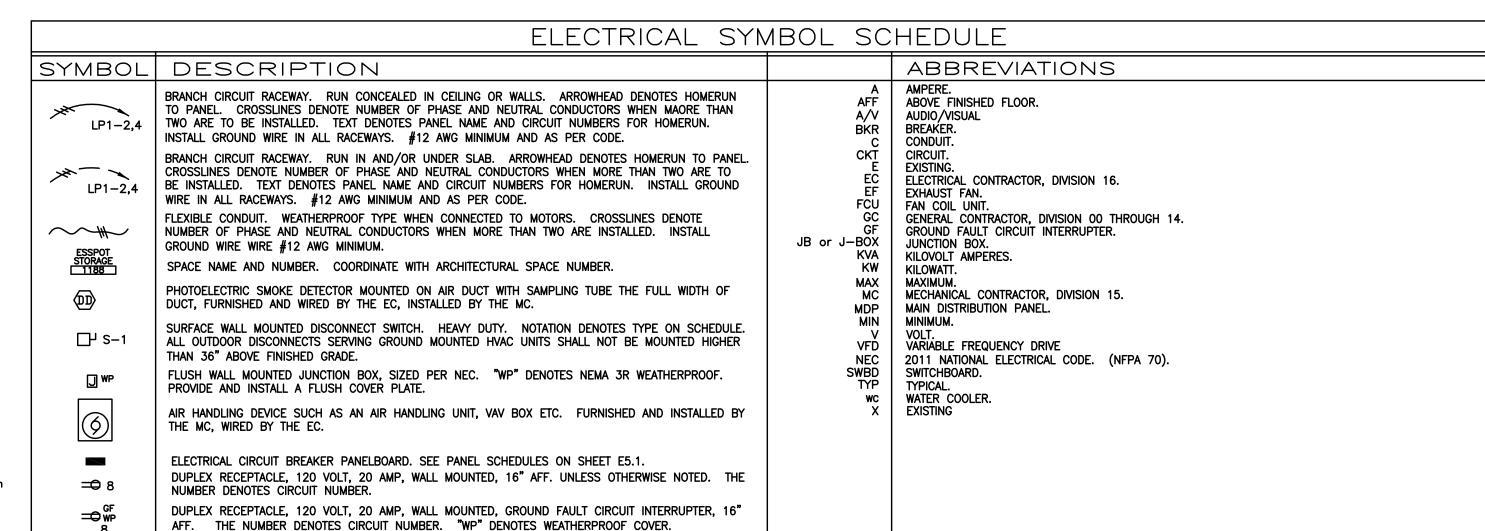
- Wall Assembly The 1, 2, 3, or 4 hour fire—rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner described in the individual U300 or U400 Series Wall or Partition Designs in the UL Fire Resistance Directory and shall include the following construction features: A. Studs — Wall framing may consist of either wood or steel channel studs. Wood studs (max 2 hour fire rated assemblies) or steel channel studs. Wood studs to consist of nom 2 by 4 in. lumber spaced 16 in. OC with nom 2 by 4 in. lumber end plates and cross braces. Steel studs to be min 3-5/8 in. wide by 1-3/8 in. deep channels spaced max 24 in. OC. B. Wallboard, Gypsum* — Nom 1/2 or 5/8 in. thick, 4 ft. wide with square or tapered edges. The gypsum wallboard type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual U300 or U400 Series Design in the UL Fire Resistance Directory. Max diam
- of opening is 13-1/2 in. 2. Pipe or conduit - Nom 12 in. diam (or smaller) Schedule 10 (or heavier) steel pipe, nom 12 in. diam (or smaller) service weight (or heavier) cast iron soil pipe, nom 12 in. diam (or smaller) Class 50 (or heavier) ductile iron pressure pipe, nom 6 in. (or smaller) steel conduit, nom 4 in. diam (or smaller) steel electrical metallic tubing, nom 6 in. diam (or smaller) Type L or (or heavier) copper tubing or nom 1 in. diam (or smaller) flexible steel conduit. When copper pipe is used, max F Rating of firestop system (Item 3) is 2 hr. Steel pipes or conduits larger than nom 4 in. diam may only be used in walls constructed using steel channel studs. A max of one pipe or conduit is permitted in the firestop system. Pipe or conduit to be installed near center of stud cavity width and to be rigidly supported on both sides of wall assembly.
- 3. Fill. Void or Cavity Material* Caulk Caulk fill material installed to completely fill annular space between pipe or conduit and gypsum wallboard and with a min 1/4 in. diam bead of caulk applied to perimeter of pipe or conduit at its egress from the wall. Caulk installed symmetrically on both sides of wall assembly. The hourly F Rating of the firestop system is DEPENDENT upon the hourly fire rating of the wall assembly in which it is installed, as shown in the following table. The hourly T rating of the firestop system is dependent upon the type or size of the pipe or conduit and the hourly fire rating of the wall assembly in

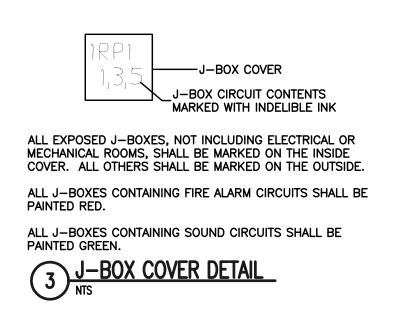
1 or 2 +When copper pipe is used, T Rating is 0 hr. Minnesota Mining & Mfg. Co. — CP 25WB+ *Bearing the UL Classification Marking.

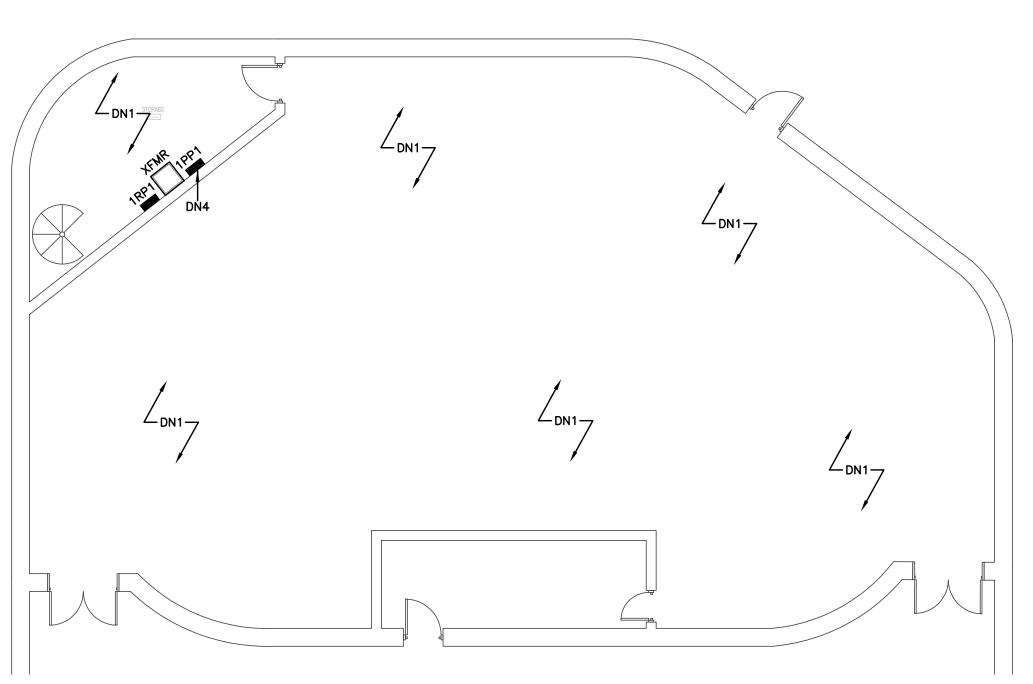
> System No. WL1052 F Rating — 2, 3 AND 4 Hr T Rating — 0 Hr L Rating At Ambient - 2 CFM/sq ft (See Item 4)



- 1. Floor or Wall Assembly Lightweight or normal weight (100-150 pcf) concrete. Min. thickness of concrete floor or wall assembly is 4-1/2 in. for 2 and 3 hr F Ratings and 5-1/2 in. for 4 hr F Rating. Wall may also be constructed of any UL Classified Concrete Blocks*. Max diam of circular opening is 13-1/2 in. See Concrete Blocks (CAZT category in the Fire Resistance Directory for names of manufacturers. Steel Pipe or Conduit - Nom 12 in. diam (or smaller) Schedule 10 or heavier steel pipe, nom 6 in. diam (or smaller) steel conduit or nom 4 in. diam (or smaller) steel EMT. Max one pipe or conduit per opening, centered in opening. Min clearance between pipe or conduit and sides of through opening is 1/4 in. Max clearance between pipe or conduit and sides of through opening is 1-3/4 in for 2 hr F rating and 3/4 in. for 3 and 4 hr F ratings. Pipe or conduit to be rigidly supported on both sides of floor or
- 3. Fill, Void or Cavity Material* Wrap Strip Nom 1/4 in. thick intumescent elastomeric material faced on one side with aluminum foil, supplied in 2 in. wide strips. For the 2 and 3 hr F Ratings, min 1 in. wide strip(s) wrapped around pipe/conduit (foil side exposed) until 0D of wrap strip is equal to or max 3/16 in. less than ID of circular through opening. Wrap strip tightly bound with steel tie wire or pressure sensitive tape and slid into through opening such that the top edge of the wrap strip(s) is recessed 1/4 in from the top surface of floor or in wall groupplies such that the wrap strip(s) is contarted in the wall in. from the top surface of floor or, in wall assemblies, such that the wrap strip(s) is centered in the wall thickness. For the 4 hr F Rating, nom 2 in. wide strip(s) wrapped around pipe/conduit (foil side exposed) on each side of the floor or wall assembly until OD of wrap strip is equal to or max 3/16 in. less than ID of circular through opening. Wrap strip tightly bound with steel tie wire or pressure sensitive tape and slid into through opening on each side of floor or wall assembly such that the exposed edges are recessed
- Minnesota Mining & Mfg. Co. Types FS—195, FS—195+
 4. Fill, Void or Cavity Material* Caulk Nom 1/4 in. thickness of caulk to be applied to the exposed edges of the wrap strip and to fill all voids between the pipe/conduit and the periphery of the through opening. For 2 or 3 hour F rating in floor assemblies, caulk to be installed flush with top surface of floor. For wall assemblies and for the 4 hour F Rating in floor assemblies, caulk to be applied on both
- Minnesota Mining & Mfg. Co. Types CP—25 S/L, CP—25 N/S, CP—25 WB, CP—25 WB+. (Note: L Ratings apply only when Type CP—25 WB+ caulk is used.) *Bearing the UL Classification Marking.



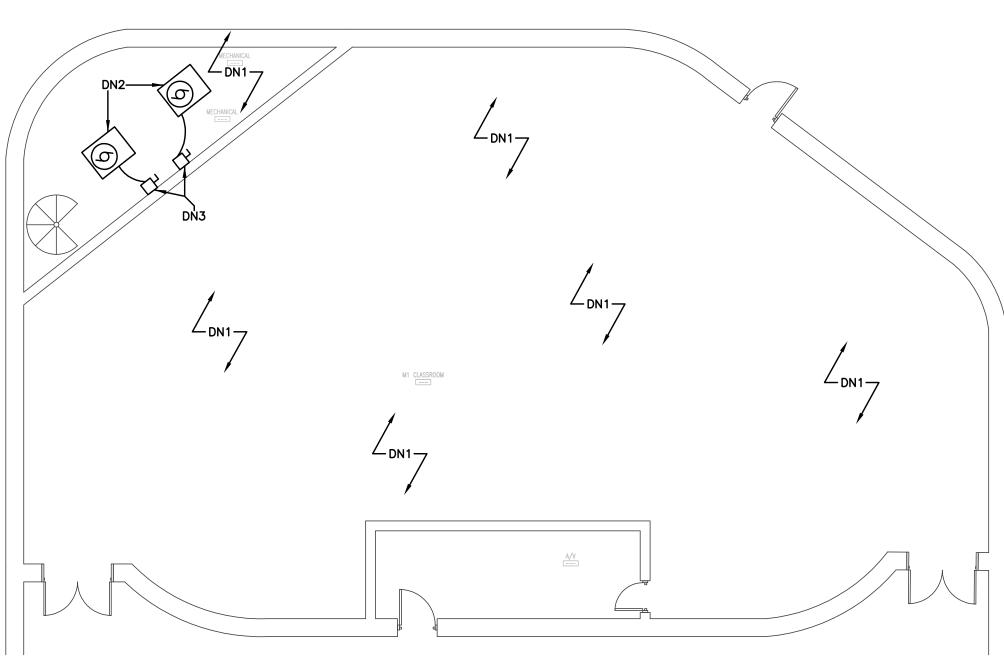




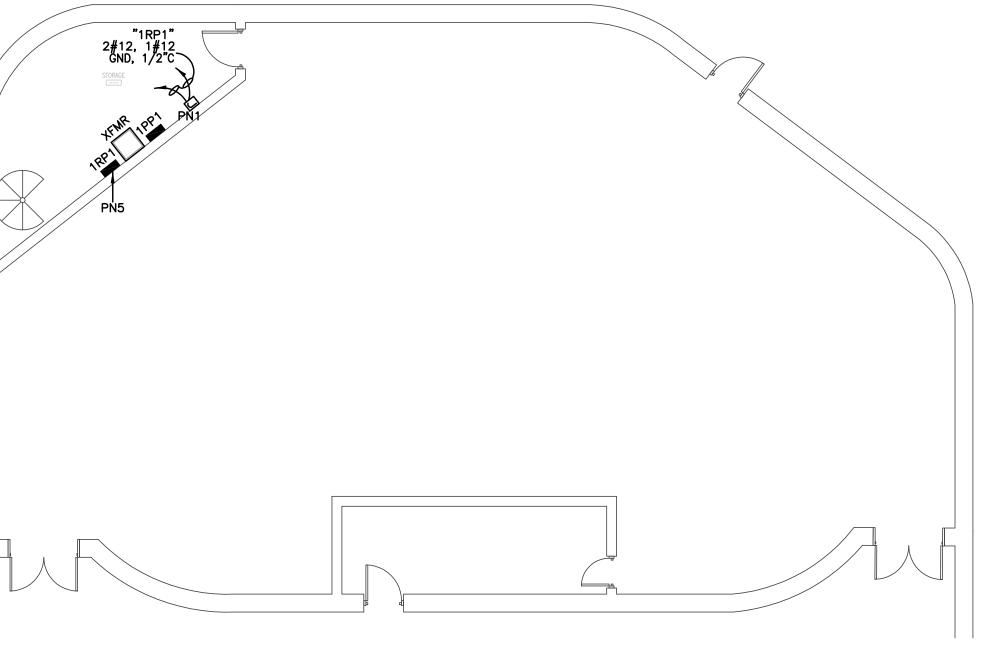
FIRST FLOOR PLAN - ELEC DEMOLITION PLAN - 1

DEMOLITION NOTES (DN):
DN1. EXISTING ELECTRICAL ELEMENTS SHALL REMAIN AS—IS UNLESS OTHERWISE NOTED.
DN2. DISCONNECT EXISTING HVAC UNIT CIRCUIT FROM EXISTING HVAC UNIT. MC TO

- REMOVE EXISTING HVAC UNIT. EXISTING FEEDER AND CONDUIT SHALL BE REMOVED BACK TO WALL MOUNTED DISCONNECT SWITCH. COORDINATE. DN3. EXISTING WALL MOUNTED HVAC UNIT DISCONNECT SWITCH SHALL BE REMOVED. EXISTING FEEDER AND CONDUIT SHALL BE REMOVED FROM EXISTING WALL MOUNTED DISCONNECT SWITCH BACK TO EXISTING SOURCE PANEL 1PP1.
- DN4. EC SHALL DISCONNECT EXISTING FEEDERS FROM EXISTING 20A/480V/3P BREAKERS FEEDING EXISTING HVAC UNITS IN MECHANICAL ROOM ABOVE. ÉC SHÁLL MARK EXISTING BREAKERS AS SPARES. COORDINATE.



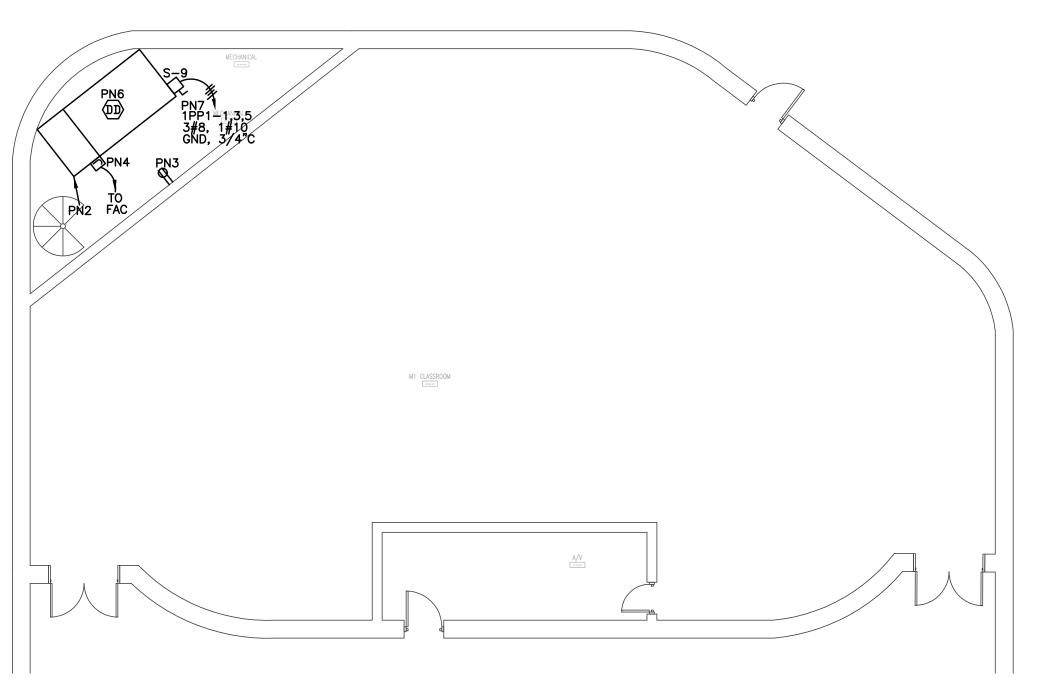




3 FIRST FLOOR PLAN - ELEC RENOVATION PLAN - 1

DEMOLITION NOTES (DN):
PN1. JUNCTION BOX FOR HVAC CONTROLS. EC TO FURNISH AND INSTALL (2) 20A/1P BREAKERS IN EXISTING SPACE(S) OF EXISTING PANEL

- PN2. HVAC UNIT 104-AHU-1 IS LOCATED IN THE MECHANICAL ROOM ABOVE THE STORAGE ROOM AND SHALL BE FURNISHED AND INSTALLED BY MC. WIRED BY EC. COORDINATE.
- PN3. CONNECT TO THE NEAREST RECEPTACLE CIRCUIT. COORDINATE. PN4. CONTROL WIRING TO SHUT DOWN UNIT ON ANY ALARM CONDITION OF FIRE ALARM SYSTEM.
- PN5. EC SHALL FURNISH AND INSTALL (2) 20A/1P BREAKERS IN EXISTING SPACES OF PANEL "1RP1" TO PROVIDE POWER FOR HVAC CONTROLS.
- NEW DUCT DETECTOR FOR HVAC UNIT 104-AHU-1 SHALL BE FURNISHED EC, INSTALLED BY MC AND WIRED BY EC TO EXISTING FIRE ALARM
- CONTROL PANEL ON THE GROUND FLOOR. PN7. EC SHALL FURNISH AND INSTAL AN 40A/3P/480V BREAKER IN EXISTING HVAC BREAKER SPACES FROM DEMOLITION. COORDINATE BREAKER TYPE WITH THOSE IN EXISTING PANEL.



FIRST FLOOR PLAN — ELEC RENOVATION PLAN — 2

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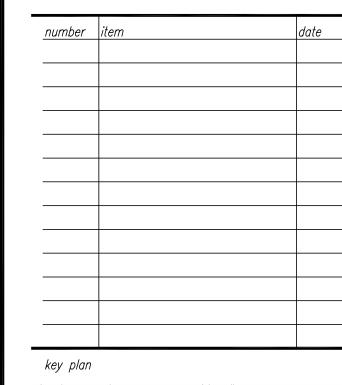
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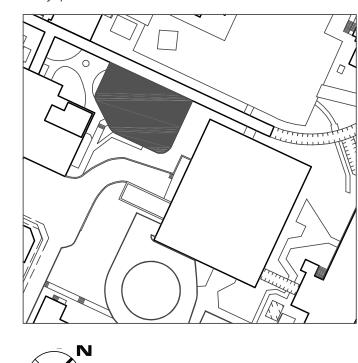
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CONSTRUCTION

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ELECTRICAL DEMOLITION RENOVATION, SYMBOLS, AND SCHEDULES

drawn by TLK checked by JBF