

# UNIVERSITY OF SOUTH CAROLINA SOM - BUILDING #1 SECOND FLOOR AHU REPLACEMENT

COLUMBIA, SC H27-Z160

A/E Project #14037.01
AUGUST 14, 2014
ISSUED FOR CONSTRUCTION

Prepared by:



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### **DRAWING INDEX**

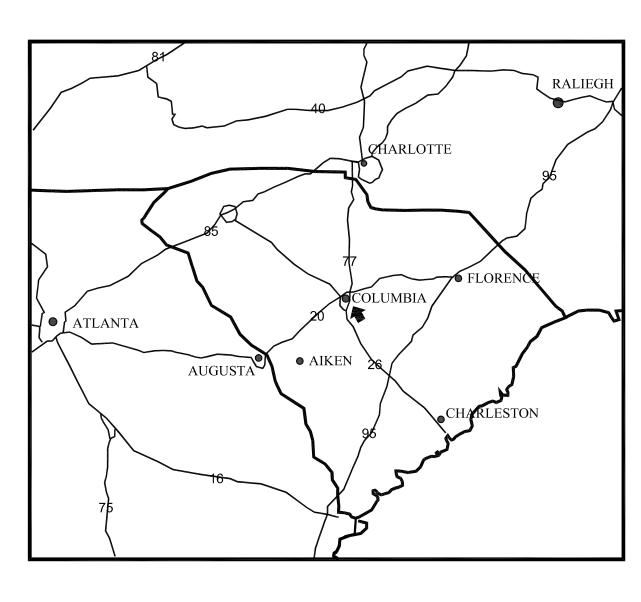
**MECHANICAL** 

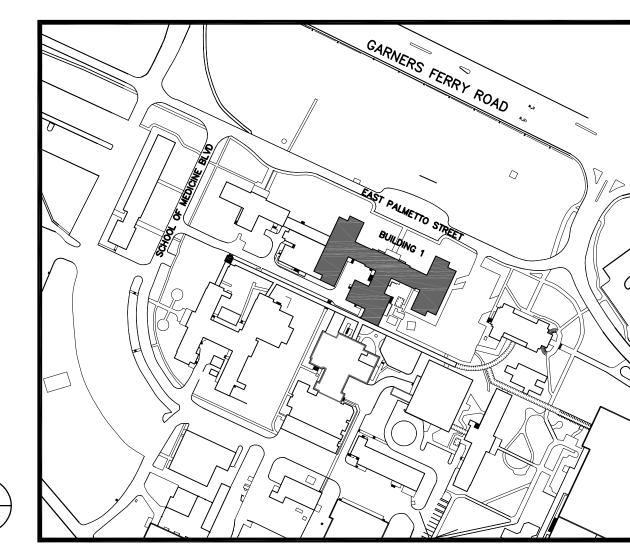
M2.2 PARTIAL SECOND FLOOR PLAN — HVAC DEMOLITION AND RENOVATION HVAC LEGENDS, ABBREVIATIONS, NOTES, SCHEDULES, AND DETAILS

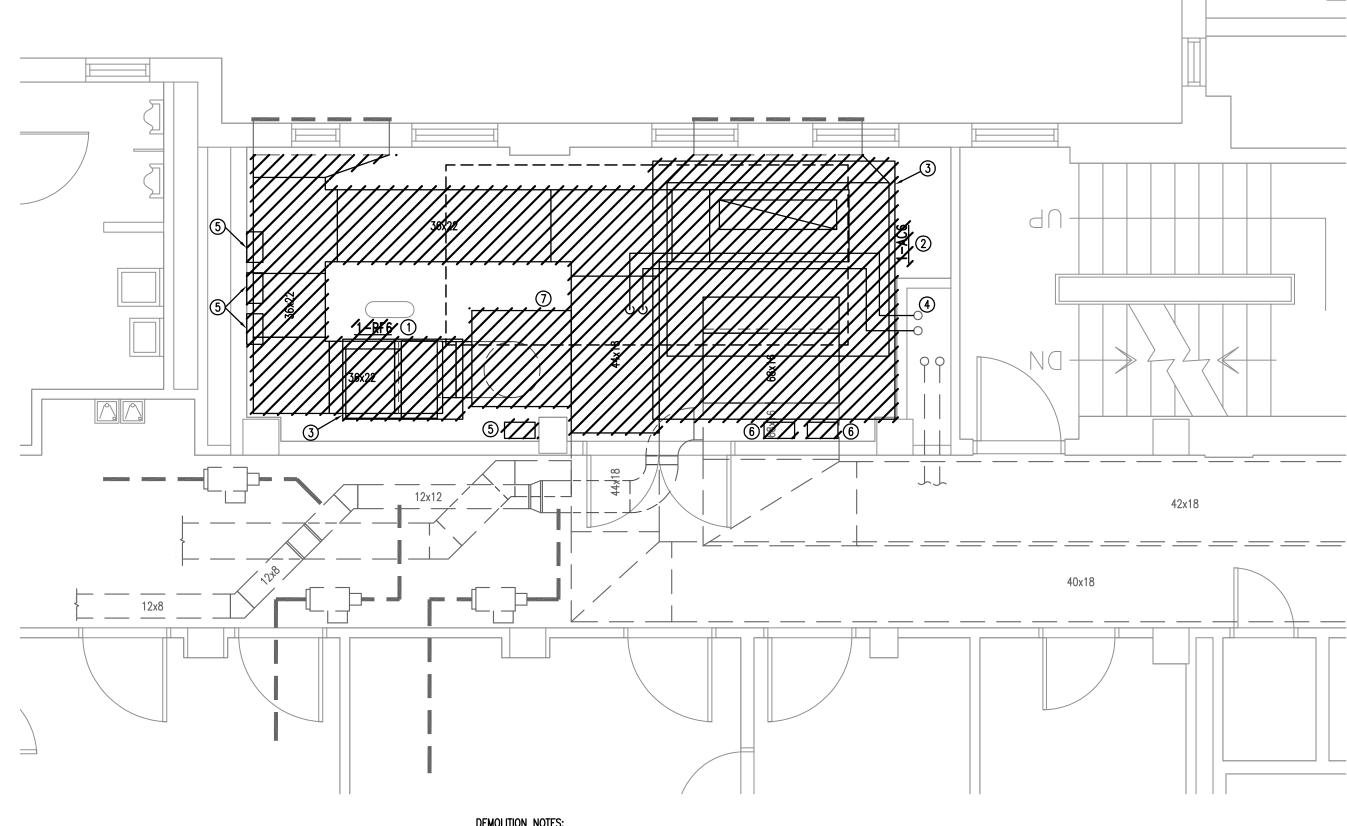
**ELECTRICAL** 

E3.2 PARTIAL SECOND FLOOR DEMOLITION AND POWER PLAN

**KEY PLAN** 



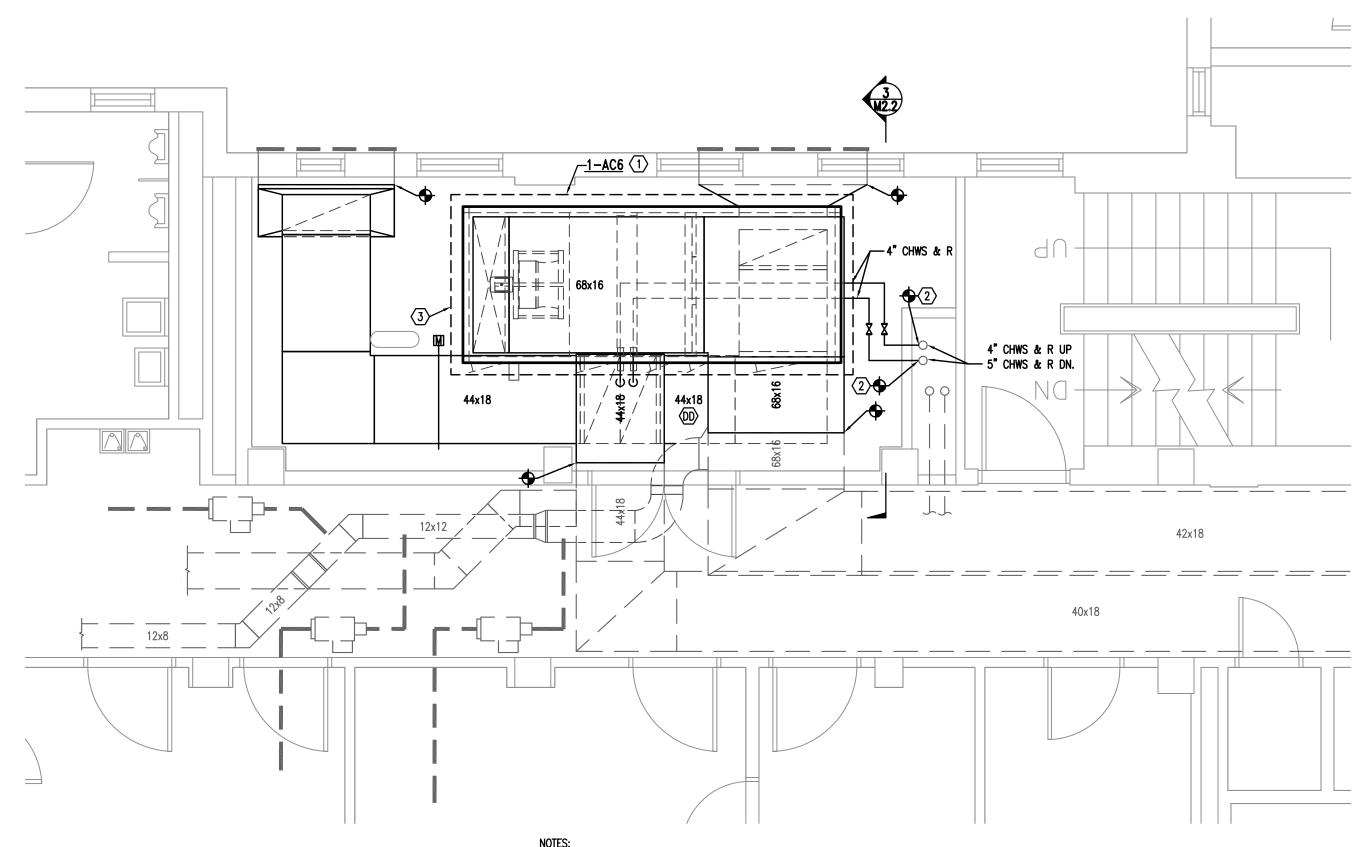




**DEMOLITION NOTES:** 

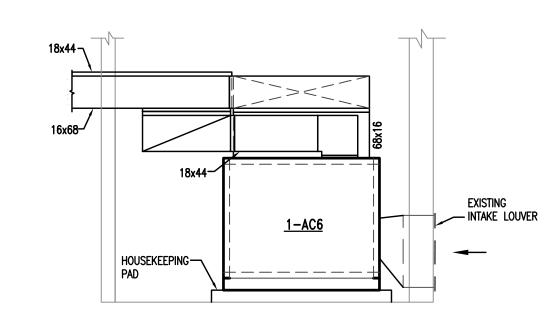
- 1 REMOVE EXISTING 1-RF6, ASSOCIATED CONTROLS, AND DUCTWORK. SEE RENOVATION PLAN FOR ADDITIONAL INFORMATION.
- 2 REMOVE EXISTING 1-AC6, ASSOCIATED CONTROLS, DUCTWORK, PIPING. SEE RENOVATION PLAN FOR ADDITIONAL INFORMATION.
- 3 REMOVE EXISTING HOUSE KEEPING PADS FOR 1—RF6 AND 1—AC6.
- (4) REMOVE CHILLED WATER PIPING BACK TO RISERS. SEE SHEET RENOVATION PLAN FOR ADDITIONAL INFORMATION. FIELD VERIFY LOCATION OF ISOLATION VALVES.
- (5) EXISTING CONTROL PANELS FOR 1AC-6 TO BE REMOVED. VERIFY CONTROL PANELS SERVE ONLY EQUIPMENT BEING REMOVED. IF PANEL SERVES OTHER EQUIPMENT IN OPERATION, CONTRACTOR SHALL LEAVE PANELS SO EXISTING EQUIPMENT REMAINS IN OPERATION. CONTRACTOR SHALL REMOVE ALL PNEUMATIC TUBING ASSOCIATED WITH EXISTING 1—AC6 AND 1RF—6.
- 6 REMOVE EXISTING STARTERS AND DISCONNECTS.
- 7 REMOVE EXISTING LAY-IN CEILING FOR INSTALLATION OF NEW AIR HANDLER AND ASSOCIATED DUCTWORK.

## PARTIAL SECOND FLOOR — HVAC DEMOLITION 1/4"=1'-0"



- PROVIDE DEEP SEAL P-TRAP FULL SIZE OF UNIT CONNECTION AND SPILL CONDENSATE FROM UNIT TO NEAREST FLOOR DRAIN.
- 2 HOT TAP EXISTING 5" CHILLED WATER RISERS WITH NEW 4" CHILLED WATER TAPS.
- PROVIDE NEW 6" HOUSEKEEPING PAD FOR 1AC-6. HOUSEKEEPING PAD SHALL BE A MINIMUM OF 6" LARGER IN ALL DIMENSIONS OF NEW 1AC-6.

2 PARTIAL SECOND FLOOR - HVAC RENOVATION



3 SECTION THROUGH MECHANICAL ROOM



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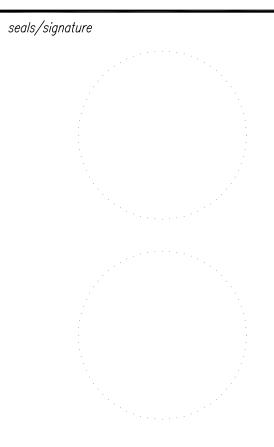
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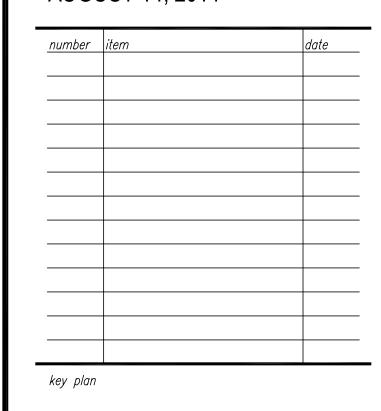
USC School of Medicine Building 1 Second Floor AHU Replacement State Project # H27-Z160

A/E project number 14037.01



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<sup>date</sup> AUGUST 14, 2014

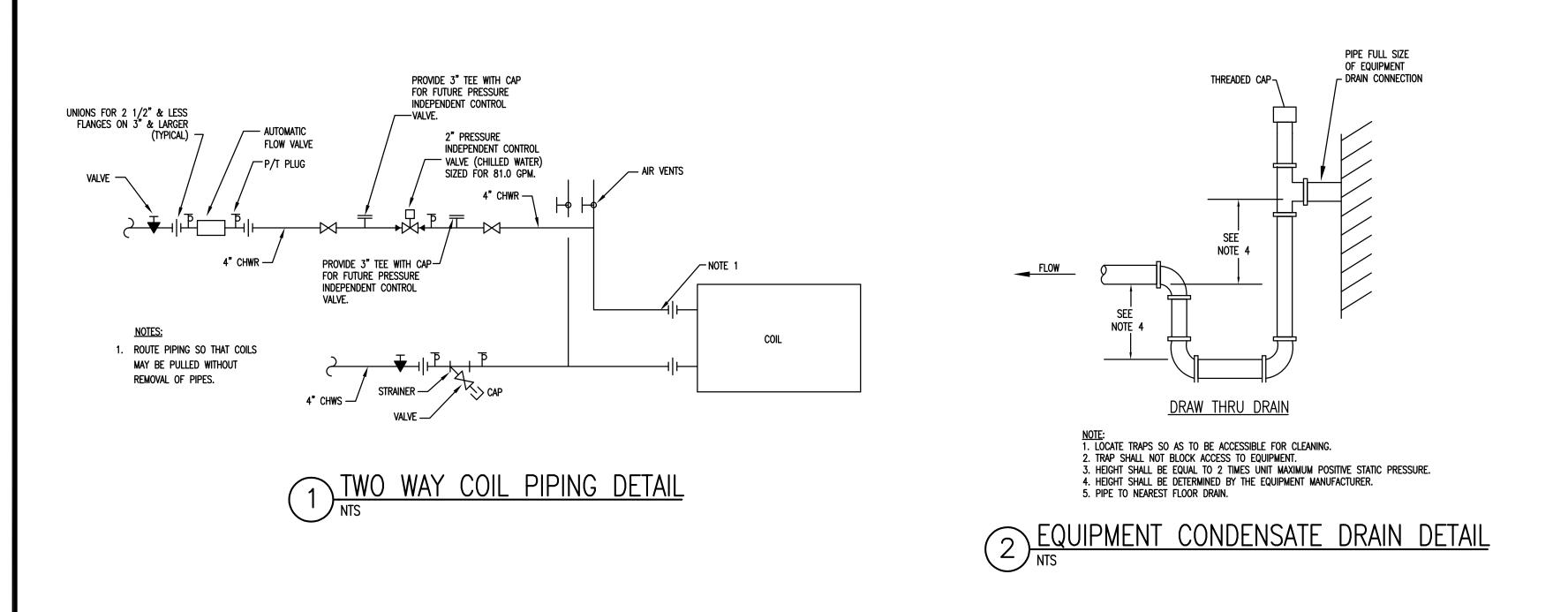


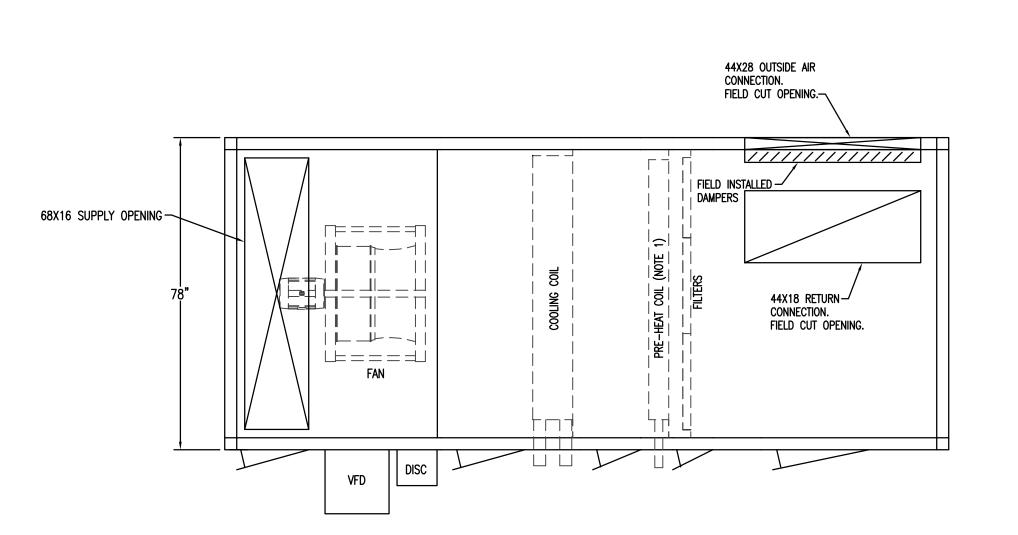


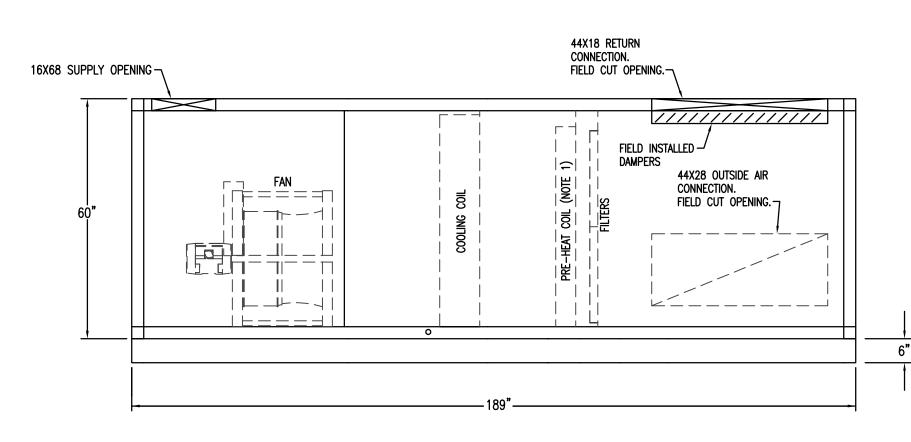
PARTIAL SECOND FLOOR PLAN HVAC DEMOLITION AND
RENOVATION

sheet number

drawn by JDR checked by JWB







<u>Plan View</u>

### **ELEVATION VIEW**

1. EQUIPMENT MANUFACTURER SHALL CONSTRUCT UNIT SO A STEAM PRE-HEAT COIL CAN BE ADDED in the future. 2. EQUIPMENT SHALL BE CONSTRUCTED INTO MODULES. THE AIR HANDLER IS LOCATED IN THE MECHANICAL ROOM ON THE SECOND FLOOR. THE ELEVATOR SHALL BE USED TO TRANSPORT AIR

REASSEMBLED IN THE MECHANICAL ROOM. THE ELEVATOR OPENING IS 40" WIDE X 80" HIGH. THE DEPTH OF THE ELEVATOR CAB IS 86". 3. EQUIPMENT MANUFACTURER SHALL PROVIDE FIELD SUPERVISION TO THE CONTRACTOR FOR TEARDOWN/REASSEMBLY. EQUIPMENT MANUFACTURER SHALL FIELD CERTIFY AIR HANDLER ONCE

HANDLER MODULES TO THE MECHANICAL ROOM. EACH MODULE SHALL NOT EXCEED THE DIMENSIONS OF THE ELEVATOR. IF THE MODULES EXCEED THE DIMENSIONS OF THE ELEVATOR, THE UNIT SHALL BE DESIGNED TO BREAK DOWN ON THE JOB SITE TO FIT IN THE ELEVATOR AND

- 4. FIELD CUT DAMPER OPENINGS TO THE SIZES SPECIFIED. EQUIPMENT MANUFACTURER SHALL PROVIDE DAMPERS TO MATCH SPECIFIED OPENING SIZES. DAMPERS SHALL BE INSTALLED AND
- 5. PROVIDE ACCESS DOORS AND COIL CONNECTIONS, AS SHOWN ABOVE. (ORIENTATION DETERMINED BY "FACING" DISCHARGE AIRFLOW).

### 3 1-AC6 CONFIGURATION DETAIL

### 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
- DEMOLITION OF EQUIPMENT, SYSTEMS, AND COMPONENTS SHALL INCLUDE ALL SUPPORTS, PADS, HANGERS, INSULATION, CONTROLS, STARTERS, ACCESSORIES, AND

VERIFY BEFORE BIDDING.

- 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 FINISHED REPAIR (IE:
- VAPOR BARRIER, COATING, ETC.) 4. PATCHING OF BUILDING STRUCTURES AND FINISHES SHALL PERTAIN TO ALL WALLS, FLOORS, SLABS, ROOFS, STRUCTURES, AND FINISHES. PATCHES SHALL MATCH
- EXISTING STRUCTURE, FIRE RATING AND FINISH. 5, ALL OPENINGS CREATED BY THE ABANDONMENT OR REMOVAL OF EXISTING SYSTEMS
- SHALL BE PATCHED. 6. ALL WALLS, ROOFS, SLABS, STRUCTURES, AND FINISHES WHOSE FINISH IS
- IRREGULAR DUE TO THE REMOVAL OF SYSTEMS, SUPPORTS, PADS, ACCESSORIES, AND APPURTENANCES SHALL BE PATCHED.
- ALL FINISHES SHALL MATCH EXISTING FINISH. WHEN FINISH OBVIOUSLY DOES NOT MATCH EXISTING FINISH SUCH AS SHADE OF PAINT, AGE OF FINISH, ETC., THE FINISH SHALL BE APPLIED TO THE PATCH AND THE SURFACE IN ALL DIRECTIONS UNTIL A SURFACE CHANGE OF A MINIMUM OF 45 DEGREES.
- 8. REMOVAL OF SYSTEMS SHALL INCLUDE COMPLETE SYSTEM WHENEVER PRACTICAL. IF NOT, SYSTEM (IE: PIPE, CONDUIT, ETC.) SHALL BE REMOVED TO 1 INCH BELOW

#### MECHANICAL GENERAL NOTES

- 1. DO NOT SCALE DRAWINGS; SEE ARCHITECTURAL DRAWINGS AND REFLECTED CEILING PLANS FOR EXACT LOCATIONS OF DOORS, WINDOWS, CEILING, DIFFUSERS, ETC. ALL DUCTWORK INSULATION SHALL BE RUN CONTINUOUSLY THROUGH FLOORS, ROOFS AND PARTITIONS EXCEPT WHERE PROHIBITED BY FIRE CODES.
- 3. LOCATE ALL THERMOSTATS 4'-0" ABOVE FINISH FLOOR; ALIGN WITH LIGHT SWITCHES.
- 4. ALL DUCTWORK LOCATIONS SHALL BE COORDINATED WITH THE WORK UNDER OTHER DIVISIONS OF THE SPECIFICATIONS TO AVOID INTERFERENCE.
- 5. CORRECT SETTINGS ON ALL BALANCING FITTINGS SHALL BE PERMANENTLY MARKED. 6. AIR DISTRIBUTION SYSTEMS WITH MORE THAN ONE BRANCH, OR MULTIPLE OUTLETS ON A BRANCH, SHALL HAVE VOLUME DAMPERS TO BALANCE AIR FLOWS. SPIN-IN FITTINGS ARE PERMITTED FOR CONNECTING FLEX DUCT TO BRANCH OR TRUNK DUCTS WHERE FLEX DUCTS ARE INDICATED. IF FLEX DUCT CANNOT BE CONNECTED WITH A SPIN-IN, A HARD DUCTED TAKEOFF MUST BE PROVIDED.
- 7. HIGH EFFICIENCY TAKEOFFS SHALL BE USED ON ALL HARD DUCTED SUPPLY
- 8. PROVIDE ALL TRANSITIONS REQUIRED FOR INSTALLATION OF DUCT, EXHAUST FANS,
- 9. ALL DUCT IS GALVANIZED SHEET METAL EXCEPT AS NOTED. 10. DUCT SIZES ARE CLEAR INSIDE DIMENSIONS.

AND ALL OTHER EQUIPMENT AND APPURTENANCES.

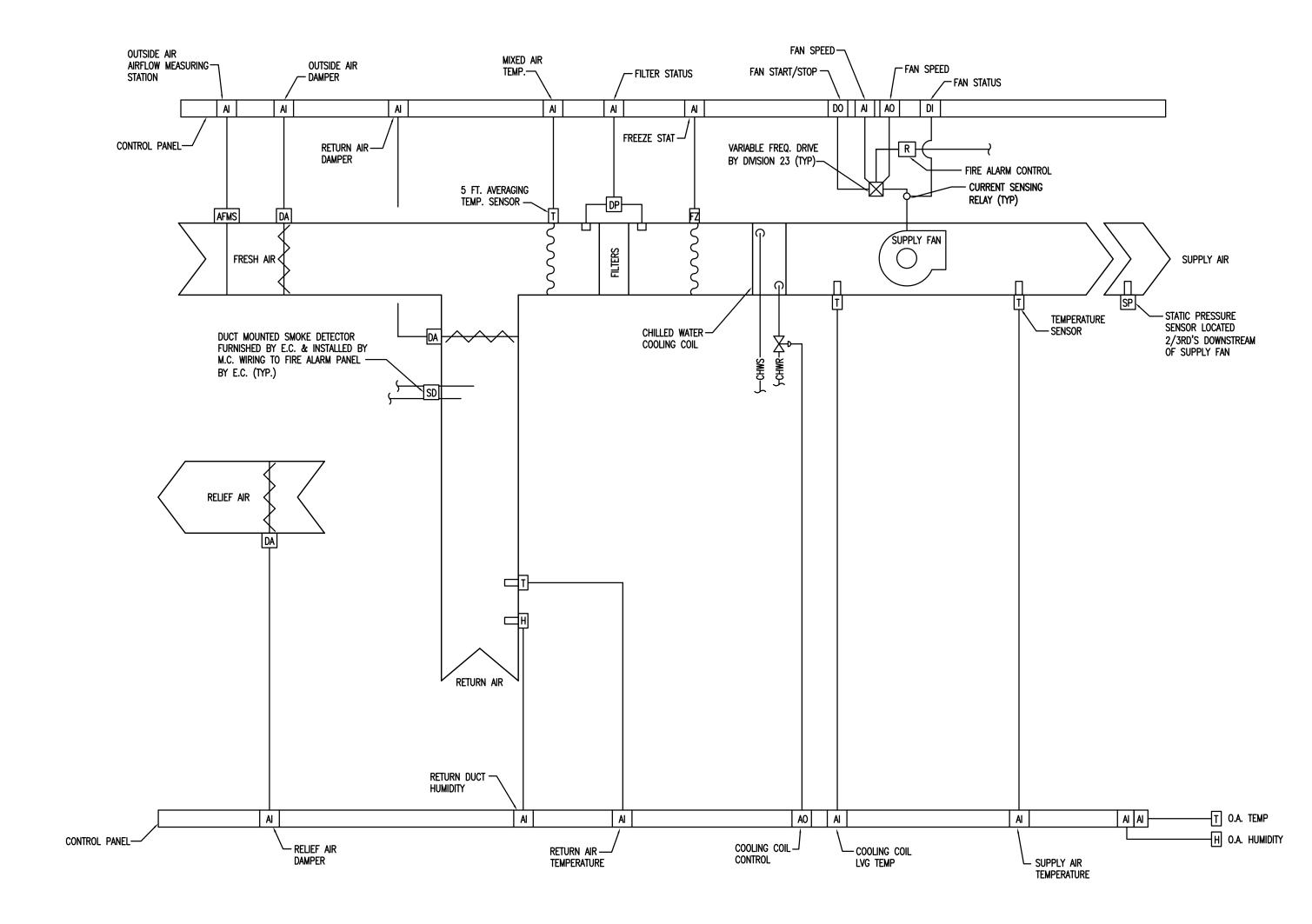
11. AIR DISTRIBUTION UNITS SHALL HAVE TRIM REQUIRED FOR FINISHED SERVICE.

ABBREVIATIONS												
A/C ABV AFF BHP CFM DD DB EAT ELEC EWB EXH FD FL HP LAT LWB MAX MBH MIN	Air Conditioning Above Above Finished Floor Brake Horsepower Cubic Feet Per Minute Duct Smoke Detector Dry Bulb Temperature Entering Air Temperature Electric or Electrical Entering Air Wet Bulb Exhaust Fire Damper Floor Horsepower Leaving Air Temperature Leaving Air Wet Bulb Maximum Thousand BTU/Hr (thousands) Minimum	N/A NIC NTS OBD OD PD RA RET RH SA SHT SP SPEC SPL T TEMP TSTAT TYP WB	Not Applicable Not in Contract Not To Scale Opposed Blade Damper Outside Diameter Pressure Drop Return Air Return Relative Humidity Supply Air Sheet Static Pressure Specifications Supply Thermostat Temperature Thermostat Typical Wet Bulb Temperature									

	HVAC	LEGEND
(m)		DUCT SMOKE DETECTOR
扫三耳		CHANGE IN DUCT ELEVATION (DUCT RISE UNLESS SPECIFIED)
		DUCT TURNING DOWN
		DUCT TURNING UP

		CAPACITY	MAX. AIR	AIR PRESS DROP (IN. WG.)	CAPACITY				air temi	PERATURE		WATER			MAXIMUM		
TAG	LOCATION	CFM	VELOCITY (FPM)		TOTAL MBH	SENS. MBH	KW	DB °F	RING WB 'F	DB °F	VING WB 'F		LEAVING TEMP. °F	GPM	PRESS DROP (FT. WATER)	NO. OF FINS/IN.	NOTES
CC-1	1-AC6	10500	500	0.58	993.2	480.9		95.0	80.0	51.9	51.5	44	56	165.5	11.9	11	1

	AIR HANDLER UNIT SCHEDULE																		
TAG	AG CAPACITY MINIMUM		FAN	FAN	SUPPLY FAN SP (IN. W.G.)		MOTOR		ELECTRICAL AIR VOLTS/PHASE VOLUME		PREFILTERS	TYPE   COIL	ACCESSORIES	MANUFACTURER	REMARKS				
1-AC6	10500	0.A. 2400	10500	CFM	CFM	CFM	TYPE Plenum	TOTAL 6.18	EXT 4.0	BHP 13.63	HP 15.0	460/3	CONTROL VFD	EQ. NO.	MERV 7	EQ. NO.		JCI SOLUTION INDOOR AHU	1.2
		2.00			5.1.5		,0.00		100,0	5	•					,-			
	POINT CONNECTION Y MOUNTED VFD		ISCONNECT																





ASSOCIATES, INC.

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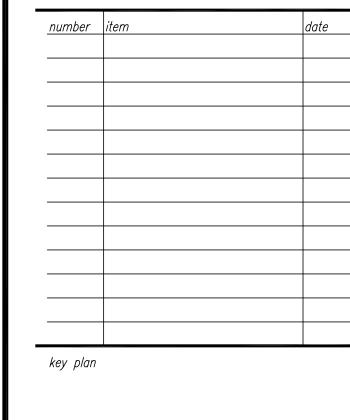


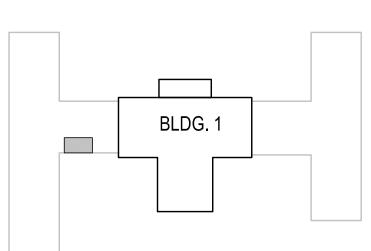
**USC School of Medicine Building 1** Second Floor AHU Replacement State Project # H27-Z160 A/E project number

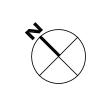


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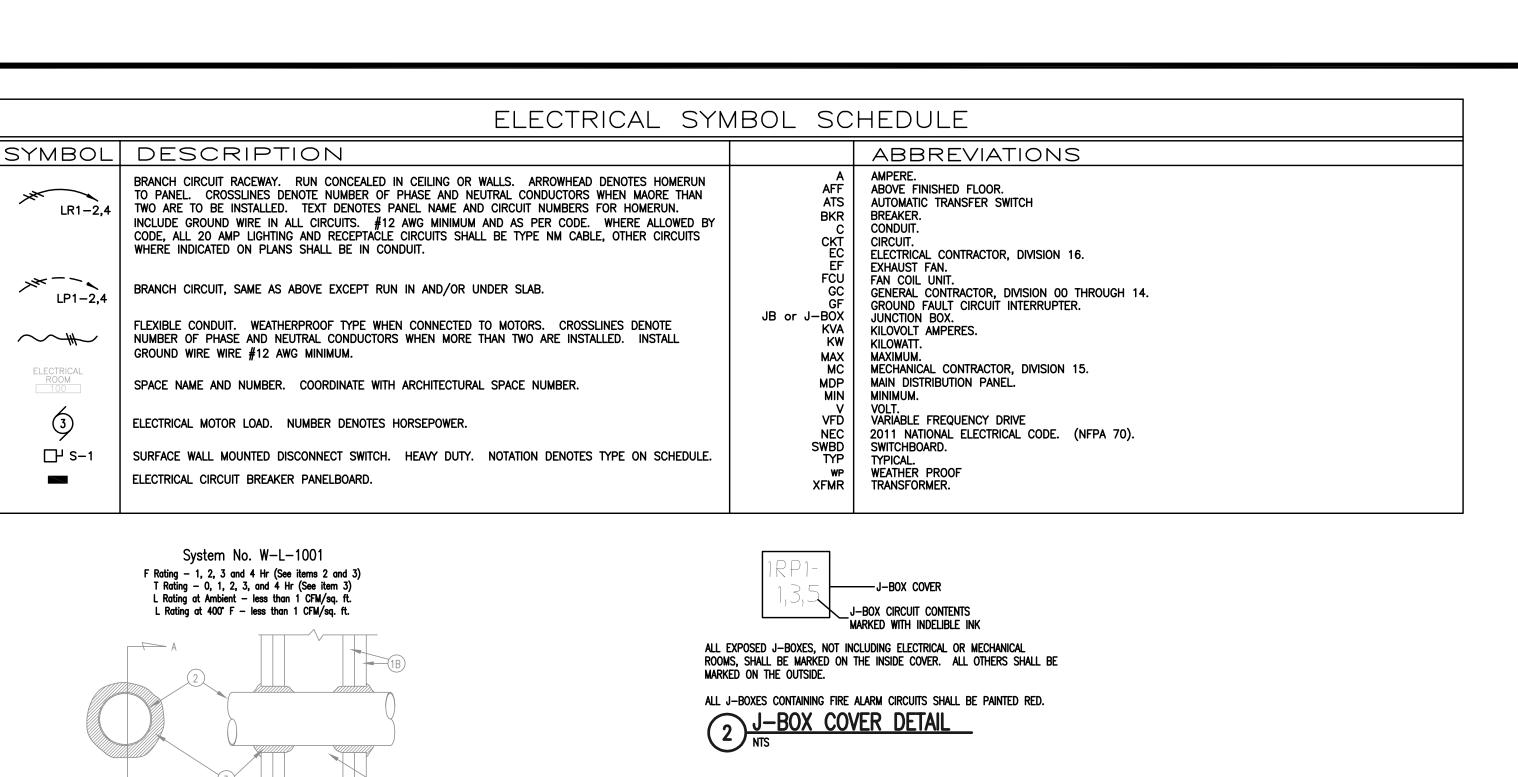


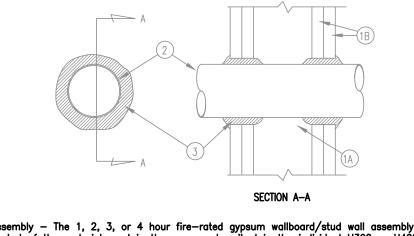


HVAC LEGENDS, NOTES,
ABBREVIATIONS, SCHEDULES **AND DETAILS** 

sheet number

drawn by JDR checked by JDR



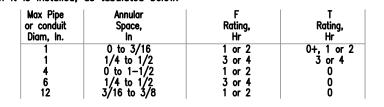


Wall Assembly — The 1, 2, 3, or 4 hour fire—rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner described in the individual U300 or U400 Series Wall or Partition Designs in the UL Fire Resistance Directory and shall include the following construction features: 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

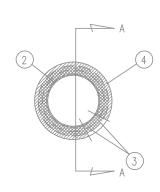
of opening is 13-1/2 in. Pipe or conduit - Nom 12 in. diam (or smaller) Schedule 10 (or heavier) steel pipe, nom 12 in. diam (or smaller) service weight (or heavier) cast iron soil pipe, nom 12 in. diam (or smaller) Class 50 (or heavier) ductile iron pressure pipe, nom 6 in. (or smaller) steel conduit, 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.

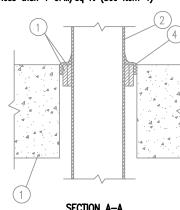
Fill, Void or Cavity Material\* - Caulk - Caulk fill material installed to completely fill annular space between pipe or conduit and gypsum wallboard and with a min 1/4 in. diam bead of caulk applied to perimeter of pipe or conduit at its egress from the wall. Caulk installed symmetrically on both sides 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 which it is installed, as tabulated below: which it is installed, as tabulated below:



+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) L Rating At 400 F - less than 1 CFM/sq ft (See Item 4)





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 wall assembly. will dsserially.

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 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 such that the top edge of the wrap strip(s) is recessed 1/4 in. from the top surface of floor or, in wall assemblies, such that the wrap strip(s) is centered in the wall

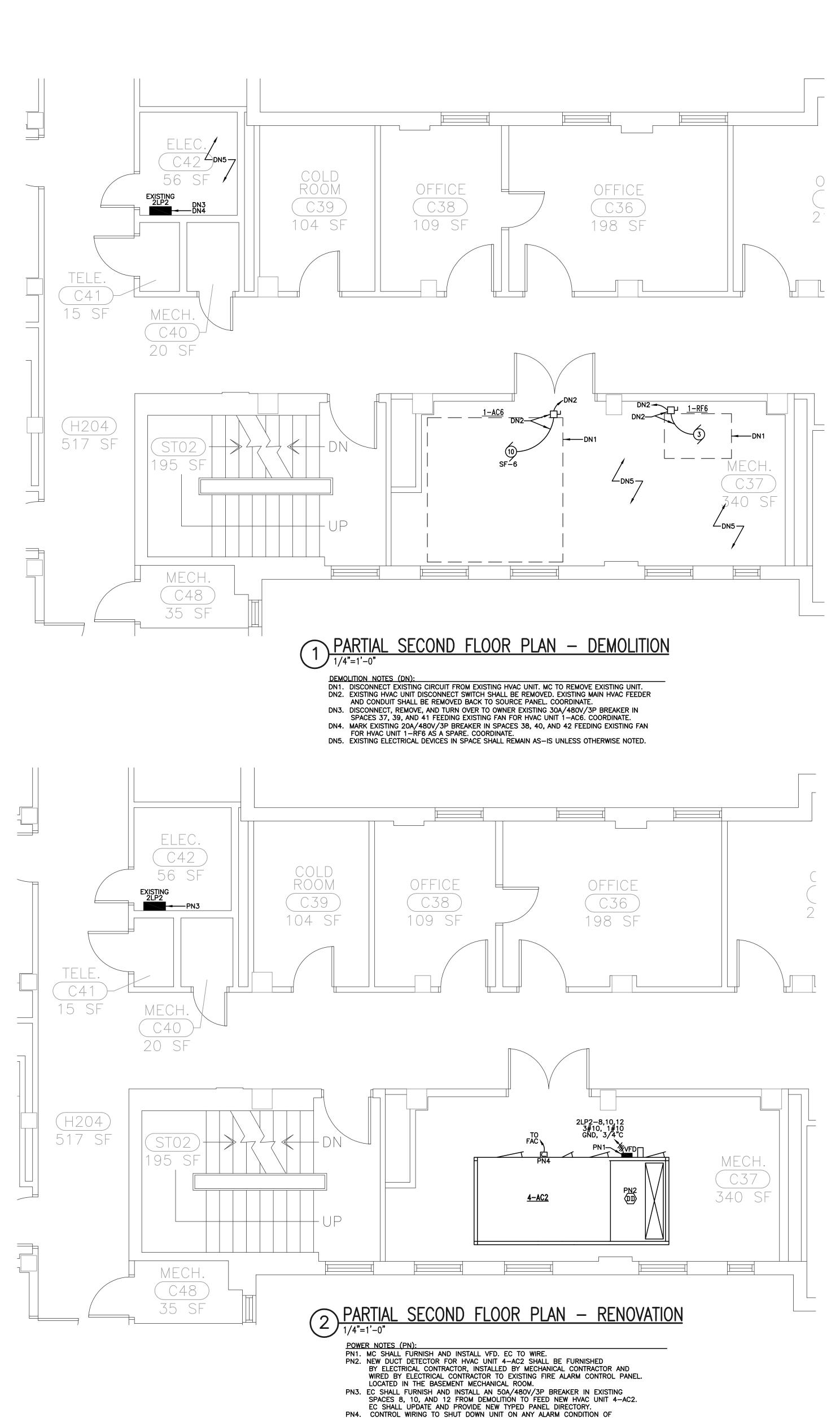
thickness. For the 4 hr F Rating, nom 2 in. wide strip(s) wrapped around pipe/conduit (foil side exposed)

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 1/4 in. from the floor or wall surfaces. Minnesota Mining & Mfg. Co. — Types FS—195, FS—195+
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.

ALL CONDUIT SHALL BE INSTALLED IN A NEAT AND ORDERLY MANNER,
PERPENDICULAR TO ALL BUILDING WALLS AND BEAMS AND SHALL COMPLY STRICTLY WITH ALL CODES AND REQUIREMENTS OF THE NEC, NFPA, UL AND SBCCI WITH NO EXCEPTIONS.



EXISTING FIRE ALARM SYSTEM.



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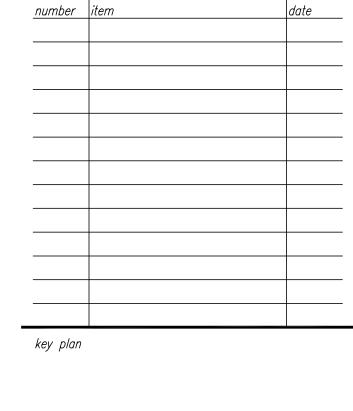


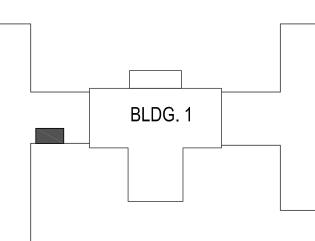
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PARTIAL SECOND FLOOR **DEMOLITION AND POWER PLAN** 

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