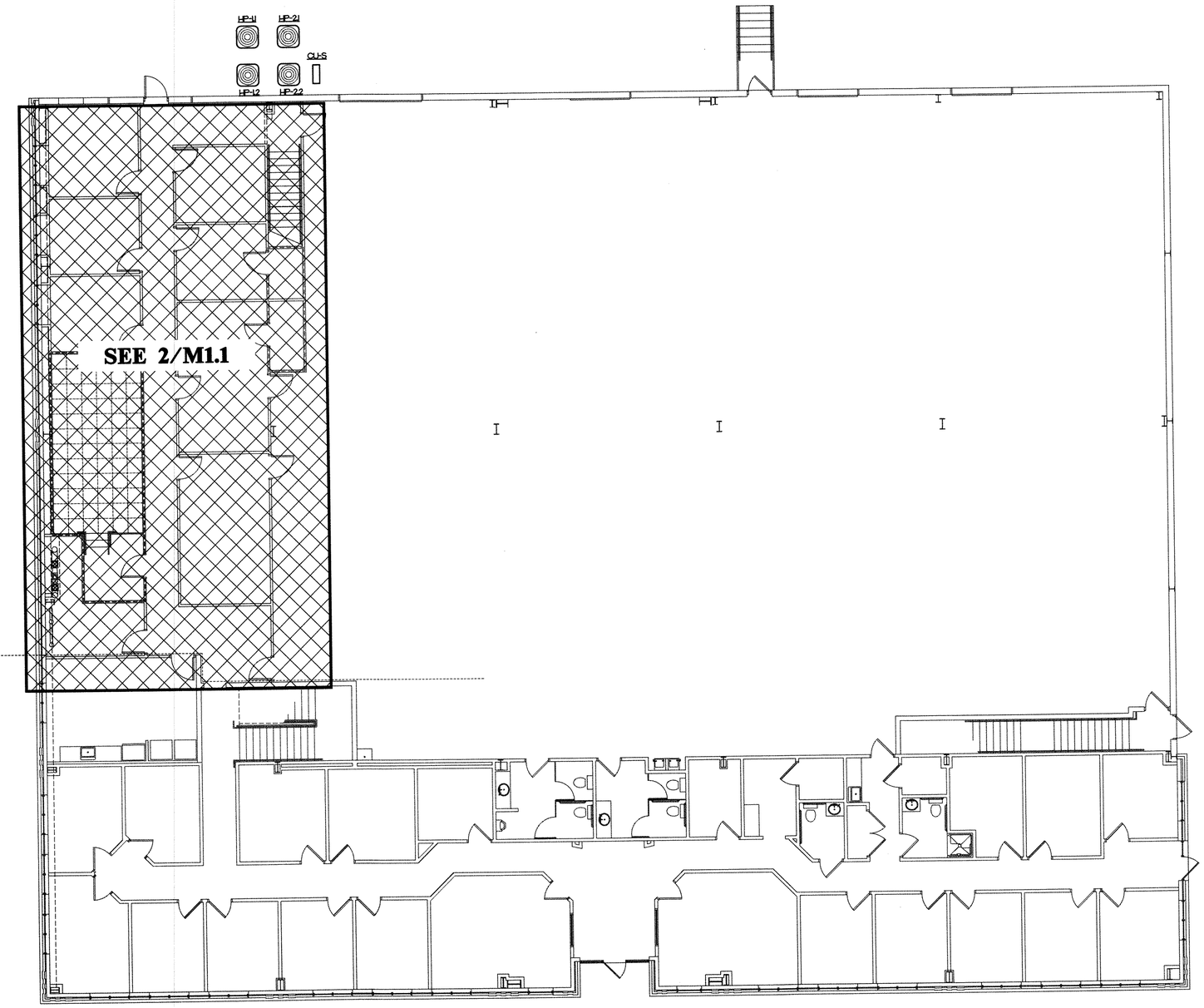
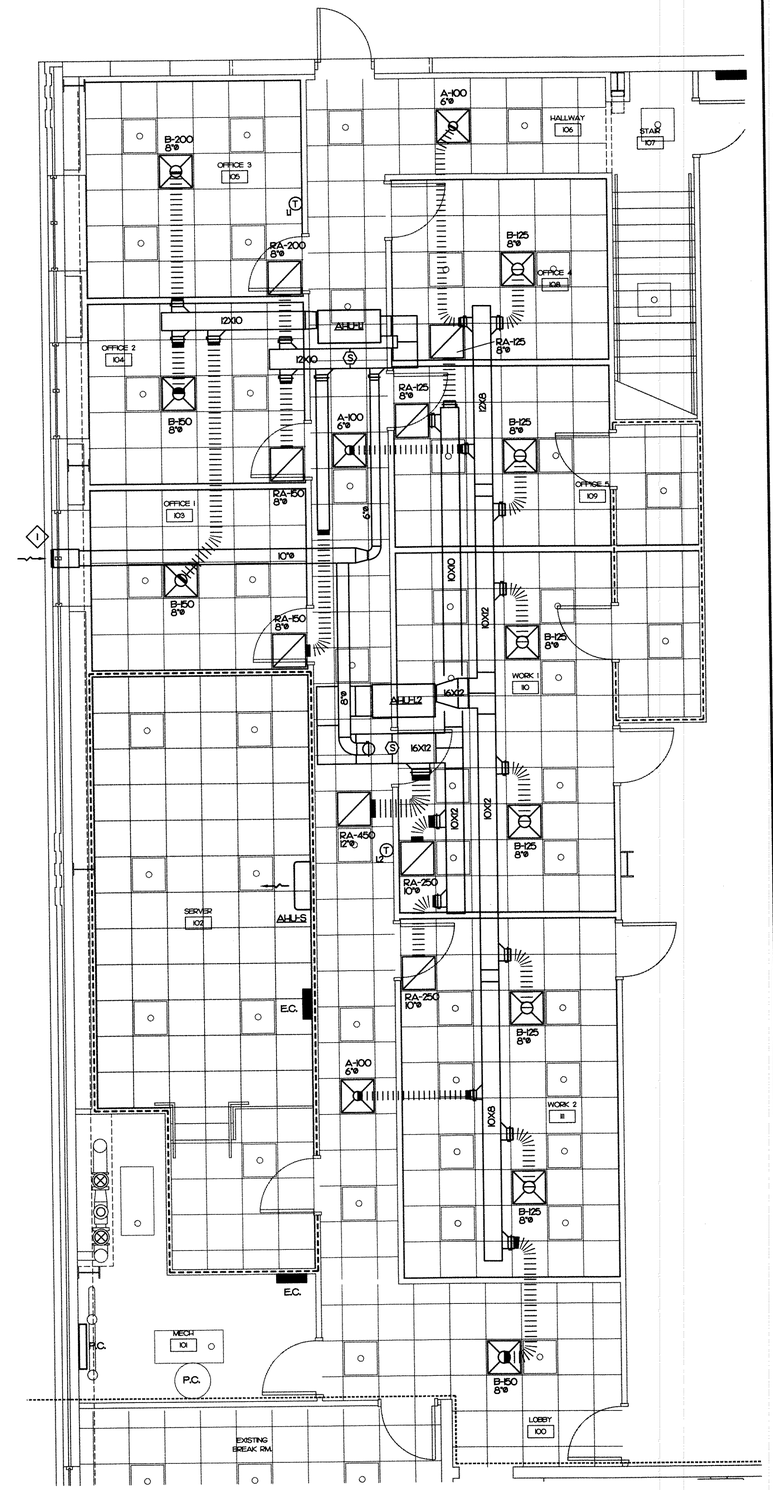
CONSTRUCTION NOTES

1. PROVIDE 18"X12" ARROW MODEL EA-65-D OUTSIDE AIR INTAKE LOUVER FOR 0.5 SQFT. OF FREE AREA. PROVIDE WITH WALL SLEEVE AND INSECT SCREEN. COORDINATE MOUNTING HEIGHT AND FINISH WITH ARCHITECT. MAINTAIN 10 FEET OF CLEARANCE FROM ALL BUILDING EXHAUST.



1 M1.1 IST FLOOR MECHANICAL PLAN
SCALE: 1/8" = 1'-0"



2 M1.1 ENLARGED IST FLOOR MECHANICAL
SCALE: 1/4" = 1'-0"

Interior Alteration

POWER SECURE

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Wake Forest, North Carolina

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NORTH CAROLINA PROFESSIONAL SEAL 20355 ENGINEER JAMES B. DELPAPA, JR.

5-8-14

MAURER ARCHITECTURE
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DATE	05.05.14
DR.	AWK
CH.	JBD
PROJ. #	13049
REVISIONS	DATE
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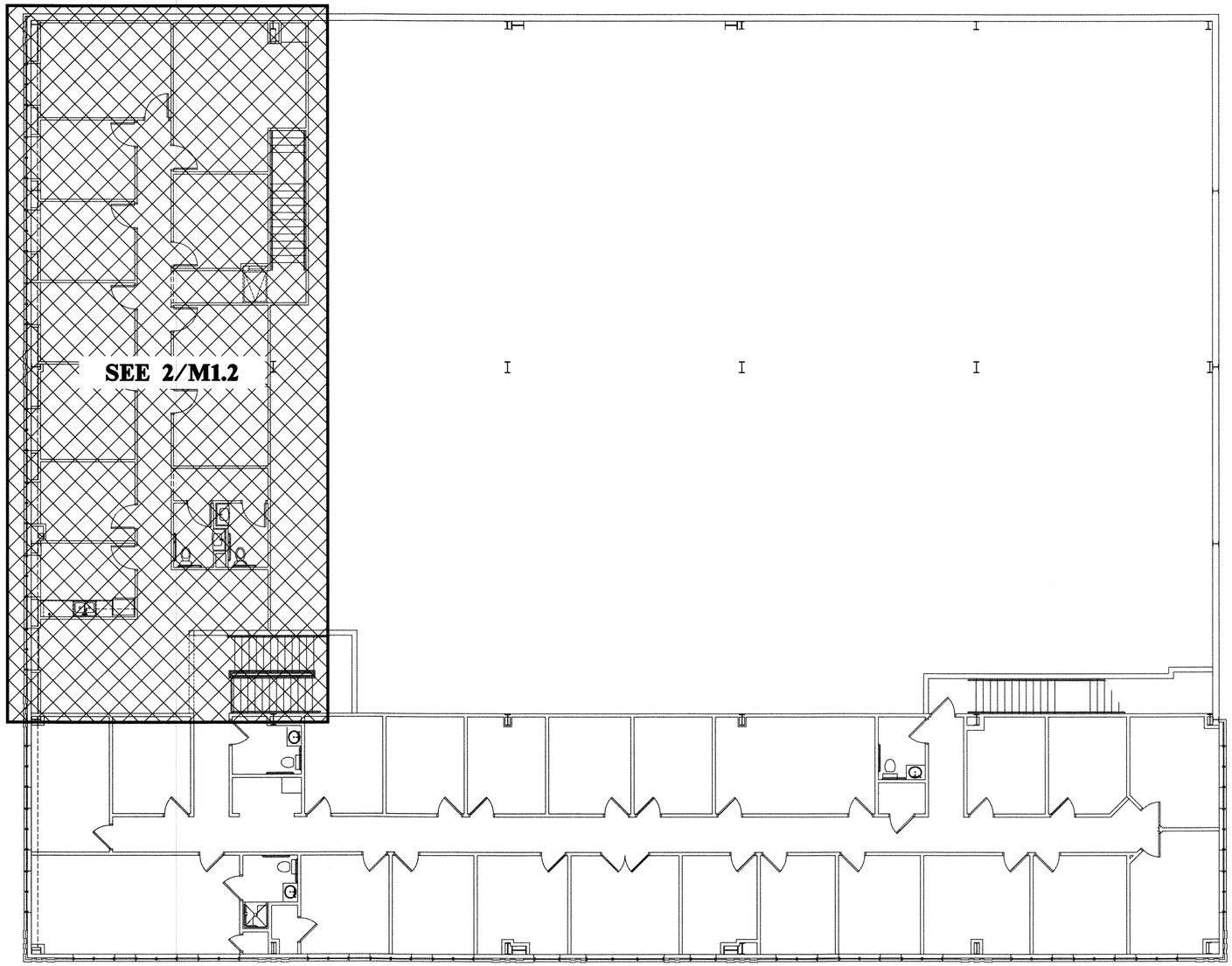
MECHANICAL PLAN

M1.1

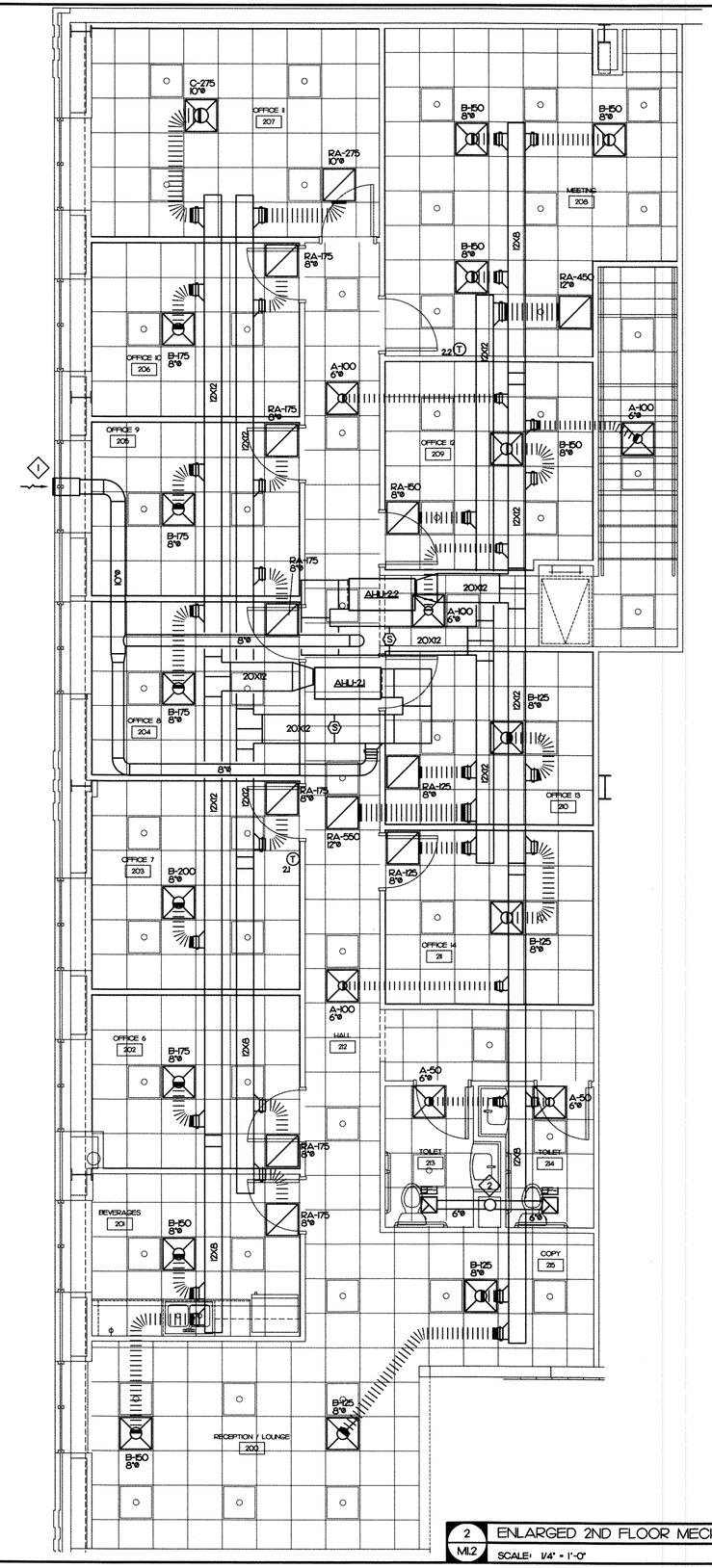
14032

CONSTRUCTION NOTES

1. PROVIDE 18"X12" ARROW MODEL EA-65-D OUTSIDE AIR INTAKE LOUVER FOR 0.5 SQFT. OF FREE AREA. PROVIDE WITH WALL SLEEVE AND INSECT SCREEN. COORDINATE MOUNTING HEIGHT AND FINISH WITH ARCHITECT. MAINTAIN 10 FEET OF CLEARANCE FROM ALL BUILDING EXHAUST.
2. ROUTE 8"ø EXHAUST DUCT TO ROOF. TERMINATE WITH ROOF CAP.



1 M1.2 2ND FLOOR MECHANICAL PLAN
SCALE: 1/8" = 1'-0"



2 M1.2 ENLARGED 2ND FLOOR MECH.
SCALE: 1/4" = 1'-0"

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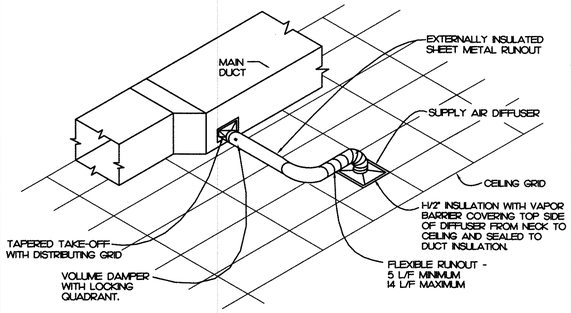
MECHANICAL PLAN

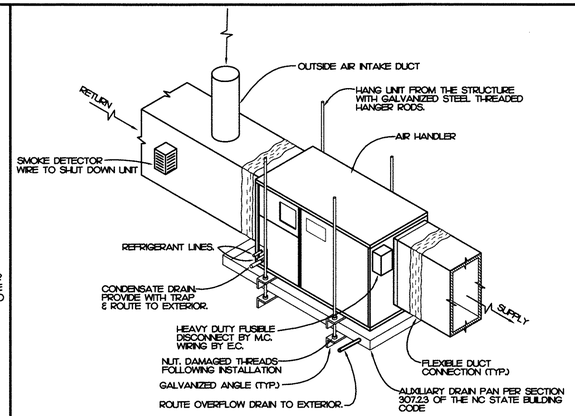
M1.2

14032



1 M2.1 LAY-IN DIFFUSER DETAIL

NOT TO SCALE



NOTE:
PROVIDE WITH OVERFLOW FLOAT SWITCH. THE M.C. SHALL WIRE TO SHUT DOWN FAN.

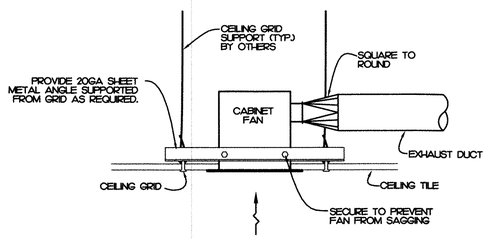
2 M2.1 AIR HANDLING UNIT DETAIL

NOT TO SCALE

SPLIT-SYSTEM HEAT PUMP SCHEDULE

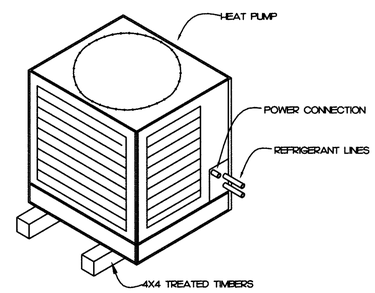
INSIDE UNIT								OUTSIDE UNIT									
MARK	BASIS OF DESIGN	FAN CFM	FAN S.P.	FAN HP	SUPP. HEAT	ELECTRICAL POWER	ELECTRICAL FLA	ELECTRICAL MOCP	MARK	BASIS OF DESIGN	CAPACITY TOTAL	CAPACITY SENSIBLE	HEATING CAPACITY	ELECTRICAL POWER	ELECTRICAL FLA	ELECTRICAL MOCP	EFFICIENCY COOLING	EFFICIENCY HEATING	NOTES
AH-U-1	CARRIER FX4CO36	500	0.5	1/3	3.8 kW	208/1	20.9	30	HP-1	CARRIER 25HBC318	17.2 MBH	13.0 MBH	18.0 MBH	208/1	9.5	20	13 SEER	7.7 HSPF	1-9
AH-U-1.2	CARRIER FX4CO36	1200	0.5	1/2	6.8 kW	208/3	22.9	35	HP-1.2	CARRIER 25HBC336	33.8 MBH	25.6 MBH	35.4 MBH	208/3	11.5	20	13 SEER	7.7 HSPF	1-9
AH-U-2.1	CARRIER FX4CO48	1475	0.5	3/4	11.2 kW	208/3	36.5	50	HP-2.1	CARRIER 25HBC348	47.5 MBH	35.4 MBH	48.0 MBH	208/3	15.1	30	13 SEER	7.7 HSPF	1-9
AH-U-2.2	CARRIER FX4CO48	1500	0.5	3/4	11.2 kW	208/3	36.5	50	HP-2.2	CARRIER 25HBC348	47.5 MBH	35.4 MBH	48.0 MBH	208/3	15.1	30	13 SEER	7.7 HSPF	1-9

NOTES:
1. PROVIDE WITH FUSIBLE DISCONNECT ON INDOOR AND OUTDOOR UNITS.
2. PROVIDE WITH SINGLE POINT ELECTRICAL CONNECTION.
3. PROVIDE WITH PROGRAMMABLE THERMOSTAT WITH 10 HR BATTERY BACKUP AND 2 HOUR OVERRIDE.
4. SEE OUTSIDE AIR SUMMARY FOR OUTSIDE AIR INTAKE FLOW SETTINGS.
5. ROUTE CONDENSATE TO EXTERIOR SPLASH BLOCK.
6. PROVIDE WITH LOW AMBIENT CONTROLS FOR OPERATION DOWN TO 0 DEGREES FAHRENHEIT.
7. PROVIDE WITH 1" PLEATED FILTER BACK AND FILTER AT UNIT.
8. PROVIDE WITH OUTDOOR THERMOSTAT WIRED TO PREVENT THE OPERATION OF ELECTRIC HEAT WHEN HEAT PUMP IS CAPABLE OF SATISFYING THE LOAD.
9. PROVIDE AND WIRE A 24V MOTORIZED OUTDOOR AIR DAMPER. INTERLOCK WITH AIR HANDLING UNIT TO OPEN WHEN IN OPERATION.



3 M2.1 CABINET FAN DETAIL

NOT TO SCALE



3 M2.1 CABINET FAN DETAIL

NOT TO SCALE

DUCTLESS SPLIT-SYSTEM A/C SCHEDULE

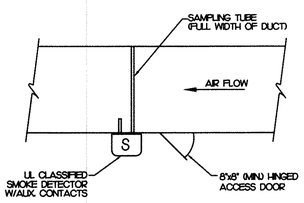
INSIDE UNIT									OUTSIDE UNIT									
MARK	BASIS OF DESIGN	FAN CFM	FAN S.P.	FAN HP	ELECTRICAL POWER	ELECTRICAL MCA	ELECTRICAL MOCP		MARK	BASIS OF DESIGN	CAPACITY TOTAL	CAPACITY SENSIBLE	ELECTRICAL POWER	ELECTRICAL MCA	ELECTRICAL MOCP	EFFICIENCY COOLING	NOTES	
AH-U-S	CARRIER 40GNC036	730	NA	NA	120/1	0.6	15		CU-S	CARRIER 38-1DF036	36 MBH	26 MBH	208/1	23.8	40	13 SEER	1-3	

NOTES:
1. PROVIDE WITH DISCONNECT SWITCH.
2. MOUNT INDOOR UNIT HIGH ON WALL. PROVIDE MOUNTING HARDWARE AND ACCESSORIES.
3. ROUTE CONDENSATE TO EXTERIOR.

EXHAUST FAN SCHEDULE

MARK	BASIS OF DESIGN	SERVICE	TYPE	CFM	RPM	HP/AMPS	S.P.	POWER	NOTES
EF-1	COOK SC-140	BATH	CABINET FAN	105	1500	67 Watts	0.25"	120/1	1-3

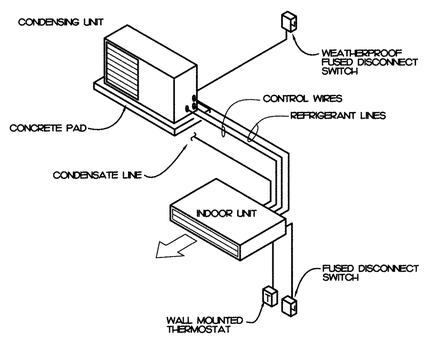
NOTES:
1. PROVIDE WITH DISCONNECT SWITCH.
2. PROVIDE WITH BACKDRAFT DAMPER.
3. CONTROL VIA LIGHT SWITCH BY E.C.



NOTES:
1. IF DUCT WIDTH EXCEEDS 36", SAMPLING TUBE SHALL PENETRATE FAR SIDE OF DUCT & HAVE INTERMEDIATE SUPPORT. PENETRATION SHALL BE SEALED AIRTIGHT.
2. LOCATE SMOKE DETECTOR IN RETURN DUCT UPSTREAM OF OUTSIDE AIR INTAKE IN NON-TURBULANT AIRSTREAM. INSTALL PER MFG'S. DETAILED INSTALLATION INSTRUCTIONS.
3. INSTALL IN WEATHERPROOF ENCLOSURE.

5 M2.1 SMOKE DETECTOR DETAIL

NOT TO SCALE



6 M2.1 MINI-SPLIT SYSTEM DETAIL

NOT TO SCALE

GRILLE & DIFFUSER SCHEDULE

MARK	BASIS OF DESIGN	SERVICE	TYPE	MAX. CFM	FACE SIZE	NECK SIZE	NOTES
A	PRICE SCD 4 CONE	SUPPLY	LOUVERED LAY-IN	100	24X24	6"Ø	1-3
B	PRICE SCD 4 CONE	SUPPLY	LOUVERED LAY-IN	200	24X24	8"Ø	1-3
C	PRICE SCD 4 CONE	SUPPLY	LOUVERED LAY-IN	300	24X24	10"Ø	1-3
RA	PRICE 530	RETURN	LOUVERED LAY-IN	1000	24X24	SEE DWG	1-3

NOTES:
1. PROVIDE WITH WHITE FINISH.
2. PROVIDE WITH INSULATED SHEET METAL PLENUM.
3. GRILLE/DIFFUSER TO HAVE FULL LOUVERED FACE.
4. PROVIDE WITH 1" DISPOSABLE FILTER AND HINGED FACE WITH LOCKING CLIPS.

MECHANICAL SYSTEMS, SERVICE SYSTEMS AND EQUIPMENT METHOD OF COMPLIANCE

PRESCRIPTIVE ☒ ENERGY COST BUDGET ☐

THERMAL ZONE 4A

EXTERIOR DESIGN CONDITIONS
winter dry bulb: 16°F
summer dry bulb: 93°F
relative humidity: 46%

INTERIOR DESIGN CONDITIONS
winter dry bulb: 70°F
summer dry bulb: 74°F
relative humidity: 50%

BUILDING HEATING LOAD: BLOCK LOAD = 87.4 MBH

BUILDING COOLING LOAD: BLOCK LOAD = 136 MBH

MECHANICAL SPACING CONDITIONING SYSTEM

Unitary:
description of unit:
heating efficiency:
cooling efficiency:
heat output of unit:
cooling output of unit:
} SEE SCHEDULES ON SHEET(S) M2.1

Boiler: NA
total boiler capacity. If oversized state reason.

Chiller: NA
total chiller capacity. If oversized state reason.

LIST EQUIPMENT EFFICIENCIES: SEE SCHEDULES ON SHEET(S) M2.1

EQUIPMENT SCHEDULES WITH MOTORS (MECHANICAL SYSTEMS)
motor horsepower:
number of phases:
minimum efficiency:
motor type:
# of poles:
} SEE SCHEDULES ON SHEET(S) M2.1

DESIGNER STATEMENT

To the best of my knowledge and belief, the design of this building complies with the mechanical systems, service systems and equipment requirements of the North Carolina State Energy Code.

SIGNED: _____

NAME: James B. DelPapa, Jr., PE

TITLE: Professional Engineer

14032

Interior Alteration

POWER SECURE

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DATE	05.05.14
DR.	AWK
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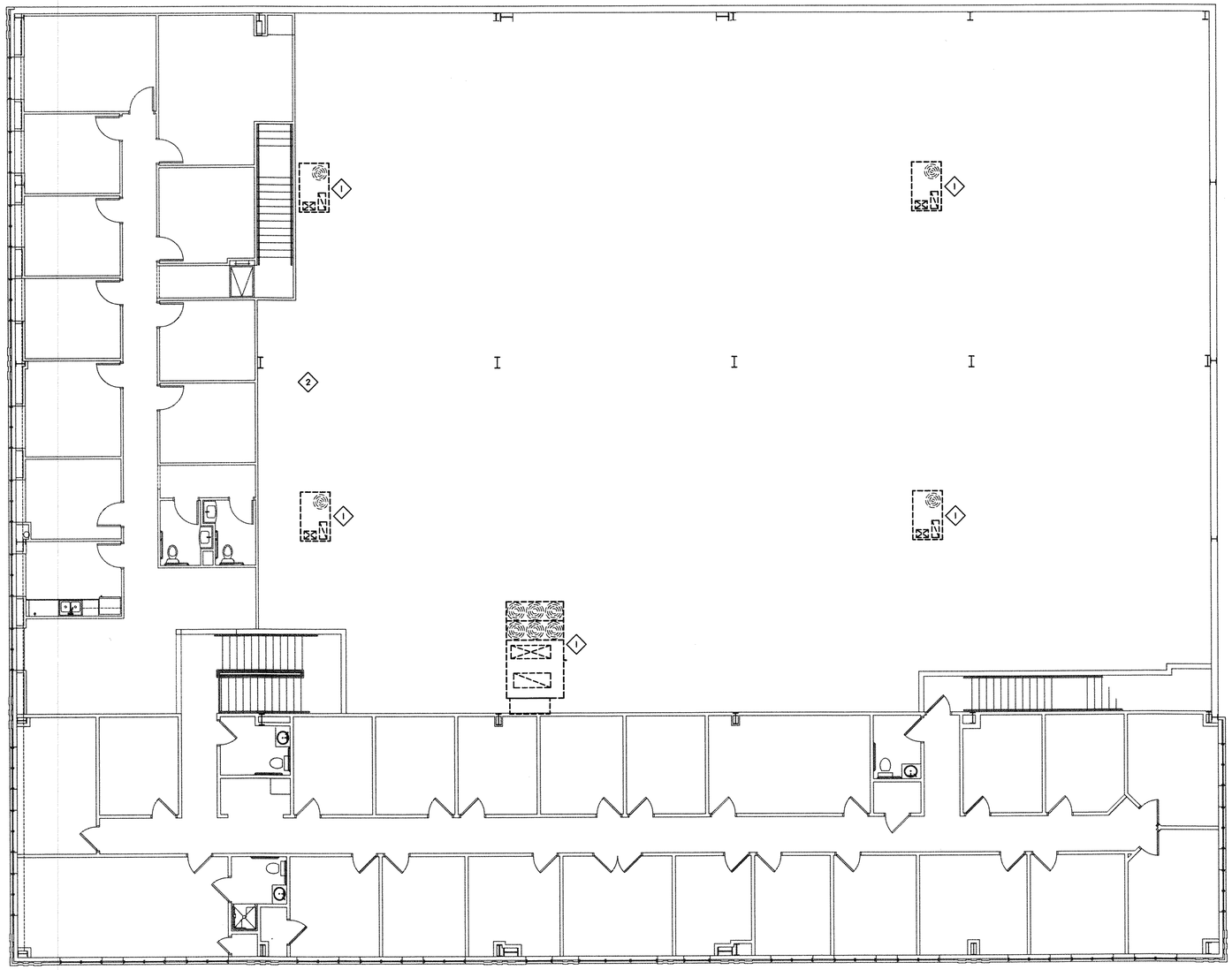
MECHANICAL SCHEDULES

M2.1



1 MECHANICAL ROOF PLAN
M1.3 SCALE: 1/8" = 1'-0"

CONSTRUCTION NOTES

1. EXISTING ROOF TOP UNITS TO REMAIN.
2. NEW CONDENSING UNITS TO BE PLACED ON ROOF. COORDINATE EXACT LOCATION WITH STRUCTURAL ENGINEER.

SYMBOL LEGEND

	SUPPLY DIFFUSER - LETTER & NUMBER INDICATES TYPE & CFM
	RETURN GRILLE - LETTER & NUMBER INDICATES TYPE & CFM
	EXHAUST GRILLE - LETTER & NUMBER INDICATES TYPE & CFM
	SHEET METAL DUCT
	FLEXIBLE DUCT
	BALANCING DAMPER
	ELBOW WITH TURNING VANES
E.C.	ELECTRICAL EQUIPMENT BY ELECTRICAL CONTRACTOR. ROUTE DUCTWORK TO AVOID.
P.C.	PLUMBING EQUIPMENT BY PLUMBING CONTRACTOR. ROUTE DUCTWORK TO AVOID.
S	DUCT-MOUNTED SMOKE DETECTOR - PROVIDED BY E.C. & INSTALLED BY THE MECHANICAL CONTRACTOR - WIRE TO SHUT DOWN UNIT
T	THERMOSTAT - MOUNTED 48" ABOVE FINISHED FLOOR

GENERAL NOTES

1. ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE LATEST EDITION OF THE STATE CODE, ALL LOCAL AND OTHER APPLICABLE CODES
2. ANY PERMITS AND INSPECTION FEES SHALL BE SECURED AND PAID FOR BY THE MECHANICAL CONTRACTOR (M.C.).
3. ALL WORK SHALL BE PERFORMED BY EXPERIENCED AND SKILLED CRAFTSMAN. THE M.C. SHALL COORDINATE ALL OF HIS WORK WITH ALL OTHER CONTRACTORS.
4. THE MECHANICAL PLANS AND SPECIFICATIONS SHALL BE THOROUGHLY REVIEWED PRIOR TO PURCHASING MATERIALS AND INSTALLATION. ALL DISCREPANCIES OR INTERFERENCES SHALL BE BROUGHT TO THE ENGINEERS' ATTENTION.
5. THESE PLANS ARE DIAGRAMATIC AND MAY NOT SHOW MINOR DETAILS AND LOCATIONS. FOR DIMENSIONS, REFER TO THE ARCHITECTURAL PLANS.
6. THE M.C. SHALL BE RESPONSIBLE FOR ALL ELECTRICAL STARTERS, INTERLOCKS, CONTROL WIRING. THE ELECTRICAL CONTRACTOR SHALL PROVIDE POWER WIRING, CONDUIT FROM THE DISCONNECT TO M.C. EQUIPMENT. THE M.C. SHALL BE RESPONSIBLE FOR ALL FINAL CONNECTION TO HIS EQUIPMENT.
7. INSTALL FLEXIBLE CONNECTORS ON SUPPLY AND RETURN DUCTWORK AT ALL AIR HANDLING UNITS.
8. INSTALL TURNING VANES IN SUPPLY DUCTS AT ELBOWS. PROVIDE BALANCING AND SPLITTER DAMPERS WHERE SHOWN AND AS REQUIRED FOR SYSTEM BALANCING.
9. ALL THERMOSTATS, WIRING AND CONDUIT ARE TO BE FURNISHED BY THE M.C. MOUNT THERMOSTATS 4'-0" ABOVE THE FLOOR, UNLESS OTHERWISE NOTED.
10. THE M.C. SHALL INSURE THAT ALL MECHANICAL EQUIPMENT INSTALLED UNDER HIS CONTRACT SHALL OPERATE FREE OF OBJECTIONABLE NOISE AND VIBRATION.
11. THE M.C. SHALL KEEP THE PREMISES CLEAR OF DEBRIS FROM HIS WORK DURING CONSTRUCTION AND LEAVE THE AREA AND BUILDING CLEAN AT THE COMPLETION OF HIS WORK. HE SHALL ALSO LEAVE CLEAN ALL EXPOSED EQUIPMENT IN HIS CONTRACT.
12. FLEXIBLE DUCT RUNOUTS SHALL BE A MAXIMUM OF 14'-0".
13. ALL FLEXIBLE DUCT RUNOUTS SHALL INCLUDE INSULATED DAMPERED BOOTS AT THE POINT OF CONNECTION WITH RECTANGULAR DUCT. PROVIDE ALL FLEXIBLE DUCTWORK WITH FOIL-BACKED, EXTERNALLY WRAPPED INSULATION FOR AN INSTALLED MINIMUM OF R-8.
14. ALL DUCTWORK SHALL BE EXTERNALLY INSULATED SHEET METAL DUCTWORK UNLESS OTHERWISE NOTED. SIZES SHOWN ARE ACTUAL SHEET METAL DIMENSIONS. EXTERNALLY WRAP ALL DUCT WITH FOIL-BACKED INSULATION FOR AN INSTALLED MINIMUM OF R-8.
15. THE MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ACCESS PANELS REQUIRED FOR FIRE DAMPERS, SMOKE DAMPERS, RADIATION DAMPERS, MOTORIZED DAMPERS, MANUAL DAMPERS, TERMINAL BOXES, AIR HANDLING UNITS, AND ALL OTHER MECHANICAL EQUIPMENT THAT REQUIRES ACCESS. COORDINATE EXACT LOCATION IN WALL OR CEILING WITH ARCHITECT BEFORE CONSTRUCTION.
16. INSTALL A RETURN AIR DUCTWORK MOUNTED SMOKE DETECTOR IN EACH UNIT. SMOKE DETECTOR PROVIDED BY ELECTRICAL CONTRACTOR AND INSTALLED BY MECHANICAL CONTRACTOR. WIRE TO SHUT DOWN UNIT. PROVIDE AUXILIARY CONTACTS ON EACH DUCT DETECTOR FOR ALARM AND TROUBLE CONDITIONS. AUDIBLE AND VISUAL SIGNAL PROVIDE THROUGH FIRE ALARM CONTROL PANEL.

OUTSIDE AIR SUMMARY

REQUIRED:

OFFICE - 4,080 SQFT. X (0.06 CFM/SQFT. + 0.005 PEOPLE/SQFT. X 5 CFM/PERSON) = 350 CFM
CONFERENCE - 330 SQFT. X (0.06 CFM/SQFT. + 0.05 PEOPLE/SQFT. X 5 CFM/PERSON) = 105 CFM
RECPT./LOBBY - 360 SQFT. X (0.06 CFM/SQFT. + 0.03 PEOPLE/SQFT. X 5 CFM/PERSON) = 75
TOTAL = 530 CFM

PROVIDED:

AHU-1 = 75 CFM
AHU-21 = 200 CFM
TOTAL = 625 CFM

AHU-12 = 150 CFM
AHU-22 = 200 CFM

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MECHANICAL PLAN

M1.3

14C52