PROJECT DIRECTORY

PROJECT SITE:
LAUDERDALE COUNTY AGRI-CENTER
1022 MS-19, MERIDIAN, MS 39301

PRIME PROFESSIONAL AND MECHANICAL ENGINEER:
ENGINEERING RESOURCE GROUP
350 EDGEWOOD TERRACE DRIVE
JACKSON, MS 39206
T: (601) 362-3552
F: (601) 366-6418

ELECTRICAL ENGINEER
SCHULTZ & WYNNE, P.A.
4523 OFFICE PARK DR.
JACKSON, MS 39206
T: (601) 982-3313

REGULATORY STANDARDS

APPLICABLE CODES AND STANDARDS INCLUDE BUT ARE NOT LIMITED TO THE FOLLOWING:

2018- INTERNATIONAL BUILDING CODE
2018 - INTERNATIONAL MECHANICAL CODE
ASHRAE STANDARD 90.1-2010

PROJECT SUMMARY

PROJECT SCOPE OF WORK INCLUDES BUT IS NOT LIMITED TO THE FOLLOWING:

HUMAN SERVICES

BASE BID

- DEMOLITION OF CEILING
- DEMOLITION OF HVAC AND CONTROL SYSTEM
- INSTALLATION OF NEW HVAC AND CONTROL SYSTEMS
- INSTALLATION OF NEW CEILING, PATCHING AND PAINTING
- ELECTRICAL SYSTEMS DEMOLITION AND SERVICE TO NEW EQUIPMENT

EMERGENCY SERVICES / EMA

BASE BID

- DEMOLITION OF CEILING WHERE SHOWN
- DEMOLITION OF VAV UNITS AND CONTROL SYSTEM
- INSTALLATION OF NEW VAV UNITS AND CONTROL SYSTEM
- INSTALLATION OF NEW CEILING WHERE SHOWN, PATCHING AND PAINTING
- ELECTRICAL SYSTEMS DEMOLITION AND SERVICE TO NEW EQUIPMENT

AGRI-CENTER

ADD ALTERNATE #1

- DEMOLITION OF LOWER RESTROOM CEILING
- INSTALLATION OF NEW HVAC SYSTEM
- INSTALLATION OF LOWER RESTROOM NEW CEILING, PATCHING AND PAINTING
- ELECTRICAL SYSTEMS DEMOLITION AND SERVICE TO NEW EQUIPMENT

SPECIAL PROJECT NOTES

1. ANY UTILITY OUTAGES SHALL BE COORDINATED WITH THE OWNER AND PROFESSIONAL AND SHALL BE PERFORMED DURING PERIODS CONVENIENT FOR THE OWNER. OUTAGES WILL LIKELY BE REQUIRED TO BE PERFORMED AT NIGHT, ON WEEKENDS, HOLIDAYS, ETC. (PERIODS OF LIGHT OR NO CAMPUS OCCUPANCY).

GENERAL NOTES

1. EACH CONTRACTOR, SUPPLIER AND/OR MANUFACTURER SHALL REFER TO ALL DOCUMENTS PERTAINING TO THIS PROJECT AND COORDINATE ACCORDINGLY SO AS TO ENSURE ADEQUACY OF FIT, COMPLIANCE WITH SPECIFICATIONS, PROPER ELECTRICAL SERVICE, AND AVOID CONFLICT WITH ANY OTHER BUILDING SYSTEMS. VERIFY SAME WITH SHOP DRAWINGS.
2. ALL OFFSETS, TURNS, FITTINGS, TRIM, DETAIL, ETC., MAY NOT BE INDICATED, BUT SHALL BE PROVIDED AS REQUIRED. ADDITIONAL ALLOWANCES SHALL BE INCLUDED FOR SAME AT EACH PROPOSERS' DISCRETION.
3. OBSERVE ALL APPLICABLE CODES, RULES AND REGULATIONS (CITY, COUNTY, LOCAL, STATE, FEDERAL, MUNICIPALITY, UTILITY COMPANY, OSHA, ETC.).
4. ALL SYSTEMS, EQUIPMENT, AND MATERIALS ARE TO BE INSTALLED IN A NEAT AN WORKMANLIKE MANNER. WORK NOT DONE SO SHALL BE REMOVED AND REINSTALLED SATISFACTORILY.
5. WHERE MOUNTING HEIGHTS ARE NOT INDICATED OR ARE IN CONFLICT WITH ANY OTHER BUILDING SYSTEM, CONTACT THE ENGINEER BEFORE INSTALLATION. REFER ALSO TO ARCHITECTURAL WALL INTERIOR AND EXTERIOR WALL ELEVATIONS, CEILING HEIGHTS AND OTHER DETAILS OF THESE DOCUMENTS. REFERENCE SPECIFICATION 230010 "MECHANICAL GENERAL PROVISIONS" FOR COORDINATION DRAWING REQUIREMENTS.
6. DO NOT SCALE DRAWINGS, PRINTING DISTORTS SCALE. WORK SHALL BE LAID OUT FROM DIMENSIONED DRAWINGS, OR DIMENSIONS SUPPLIED TO THE CONTRACTOR.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CUTTING AND PATCHING REQUIRED FOR THEIR WORK, ALL CUTTING AND PATCHING SHALL MATCH ADJACENT SURFACES.
8. THESE DRAWINGS ARE ACCURATE TO THE BEST OF OUR KNOWLEDGE, HOWEVER LOCATIONS, DEPTHS, ELEVATIONS, AND SIZES WERE TAKEN FROM DIFFERENT SOURCES AND ARE SUBJECT TO DEVIATION. THE CONTRACTOR SHALL ASSUME SOME DEVIATIONS AND INCLUDE OFFSETS, ADDITIONAL PIPING, ETC. AT THE TIME OF BID.
9. ADVISE THE ENGINEER OF ANY CONFLICTS, ERRORS, OMISSIONS, ETC. AT LEAST TEN DAYS PRIOR TO BID DATE, TO ALLOW CLARIFICATION BY WRITTEN ADDENDUM.
10. DEVIATION FROM SPECIFICATIONS OR PLANS REQUIRES PRIOR WRITTEN APPROVAL FROM THE ENGINEER AND MUST BE SUBMITTED IN WRITING NO LATER THAN TEN DAYS PRIOR TO THE BID DATE.
11. THE PURPOSE AND INTENT OF THE DOCUMENTS PERTAINING TO THIS PROJECT IS TO PROVIDE A COMPLETE, FUNCTIONAL, AND SAFE FACILITY, ANYTHING LESS SHALL BE UNACCEPTABLE.
12. ALL VIBRATING, OSCILLATING, NOISE PRODUCING OR ROTATING EQUIPMENT SHALL BE ISOLATED FROM SURROUNDING SYSTEMS IN AN APPROVED MANNER. NOISY, VIBRATING, OR STRUCTURALLY DAMAGING INSTALLATIONS SHALL BE SATISFACTORILY REPLACED OR REPAIRED AT THE INSTALLING CONTRACTOR'S EXPENSE. THE FINAL DECISION ON THE SUITABILITY OF A PARTICULAR INSTALLATION SHALL BE THAT OF THE ARCHITECT.
13. INSTALL EQUIPMENT, MATERIALS, ETC. IN STRICT ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND DIRECTIONS. IF IN CONFLICT WITH THE DESIGN INDICATED IN CONTRACT DOCUMENTS, ADVISE THE ARCHITECT PRIOR TO INSTALLATION FOR CLARIFICATION.
14. ALL SUPPORTS FOR EQUIPMENT, DEVICES, OR FIXTURES SHALL BE UNIQUE FROM THE BUILDING STRUCTURE. DO NOT SUPPORT FROM OTHER TRADES, EQUIPMENT OR SUPPORTS WITHOUT WRITTEN PERMISSION FROM THE ARCHITECT AND CONSENT OF THE OTHER TRADE, IN WRITING.
15. DEVIATIONS IN SIZE, CAPACITIES, FIT, FINISH, ETC. FOR EQUIPMENT FROM THAT SPECIFIED SHALL BE THE RESPONSIBILITY OF THE PURCHASER OF THAT EQUIPMENT. ANY PROVISIONS REQUIRED TO ACCOMMODATE A DEVIATION, WHETHER APPROVED BY THE ARCHITECT OR NOT, SHALL BE THE RESPONSIBILITY OF THE PURCHASER.
16. THE GENERAL CONTRACTOR FOR THIS CONSTRUCTION IS RESPONSIBLE FOR THE COORDINATION, APPEARANCE, SCHEDULING, AND TIMELINESS OF THE WORK OF ALL TRADES, CONTRACTORS, SUPPLIERS, INSTALLERS, ETC.
17. THE GENERAL CONTRACTOR, MECHANICAL CONTRACTOR, AND ALL OTHER CONTRACTORS SHALL ENSURE PROPER COORDINATION BETWEEN ALL TRADES SUCH THAT CONDUITS, PIPING, DUCTWORK, ETC. DO NOT BLOCK ACCESS TO VALVES, EQUIPMENT, DUCT ACCESS DOORS, ETC. ITEMS THAT HAVE BEEN INSTALLED WHERE ACCESS IS COMPROMISED SHALL BE RELOCATED AT THE CONTRACTOR'S EXPENSE.
18. THE CONTRACTOR SHALL INCLUDE IN THEIR BID ALL COSTS ASSOCIATED WITH DRAINING, FLUSHING, AND FILLING PIPING SYSTEMS AS REQUIRED TO INSTALL THEIR NEW WORK.
19. PRIOR TO ORDERING ANY MATERIALS OR ROUGH-IN OF ANY KIND, THE MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR FINAL COORDINATION OF ALL ELECTRICAL REQUIREMENTS (I.E., VOLTAGE, PHASE, CIRCUIT BREAKER, WIRING SIZE, ETC.) WITH THE ELECTRICAL CONTRACTOR. THERE WILL BE NO CHANGE IN THE CONTRACT AMOUNT FOR ANY DISCREPANCIES. MECHANICAL CONTRACTOR SHALL COORDINATE WITH ALL OTHER CONTRACTORS, VENDORS, AND SUPPLIERS AND SHALL INSURE COMPLETE, 100% FUNCTIONAL, TESTED, INSPECTED, AND APPROVED SYSTEMS. CLAIMS FOR ADDITIONAL COST OR CHANGE ORDERS WILL IMMEDIATELY BE REJECTED.
20. EQUIPMENT BRACING WILL BE INCLUDED FOR ALL OVERHEAD UTILITIES AND OTHER EQUIPMENT WEIGHING 31 POUNDS OR MORE (EXCLUDING DISTRIBUTED SYSTEMS SUCH AS PIPING, ETC.). BRACING SHALL BE ACCOMPLISHED BY EITHER RIGID OR FLEXIBLE SYSTEMS. ALL EQUIPMENT MOUNTINGS SHALL BE DESIGNED TO RESIST FORCES OF 0.5 TIMES THE EQUIPMENT WEIGHT IN ANY DIRECTION AND 1.5 TIMES THE EQUIPMENT WEIGHT IN THE DOWNWARD DIRECTION. ALL BRACING SHALL BE CONTRACTOR DESIGNED.

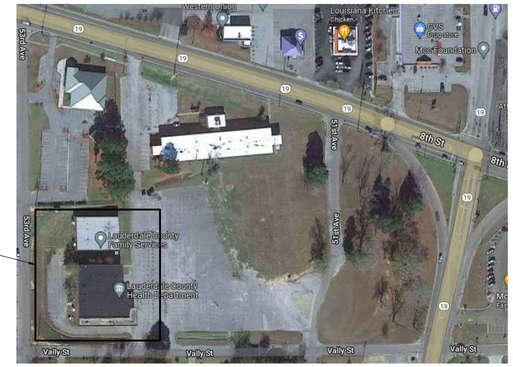
DRAWING INDEX

HVAC UPGRADES
LAUDERDALE COUNTY
MERIDIAN, MISSISSIPPI

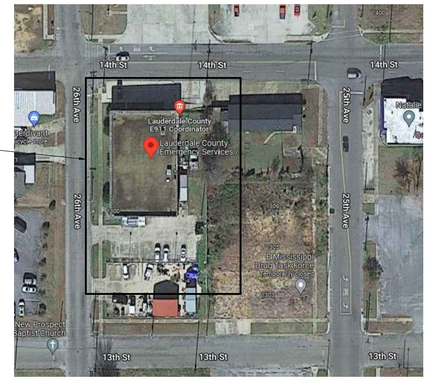
CONSTRUCTION DOCUMENTS
OCTOBER 4, 2022

PROJECT MAP

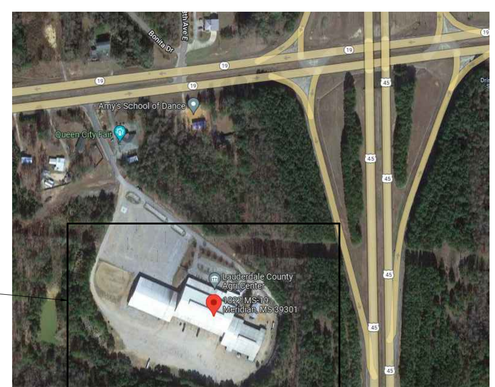
HUMAN SERVICES BUILDING PROJECT LOCATION



EMERGENCY SERVICES / EMA PROJECT LOCATION



AGRI-CENTER PROJECT LOCATION



CONSTRUCTION DOCUMENTS

ENGINEERING RESOURCE GROUP
350 EDGEWOOD TERRACE DRIVE
JACKSON, MS 39206
PHONE: (601) 362-3552
FAX: (601) 366-6418

CONSULTANTS:

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PROJECT:

HVAC UPGRADES
LAUDERDALE COUNTY
MERIDIAN, MISSISSIPPI

PROJECT NUMBER: 22.006
DATE: 10/4/2022
DRAWN BY: KAH
CHECKED BY: CEM

REV: 0 IFC 10/4/2022
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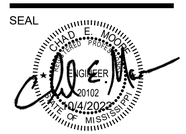
SEAL

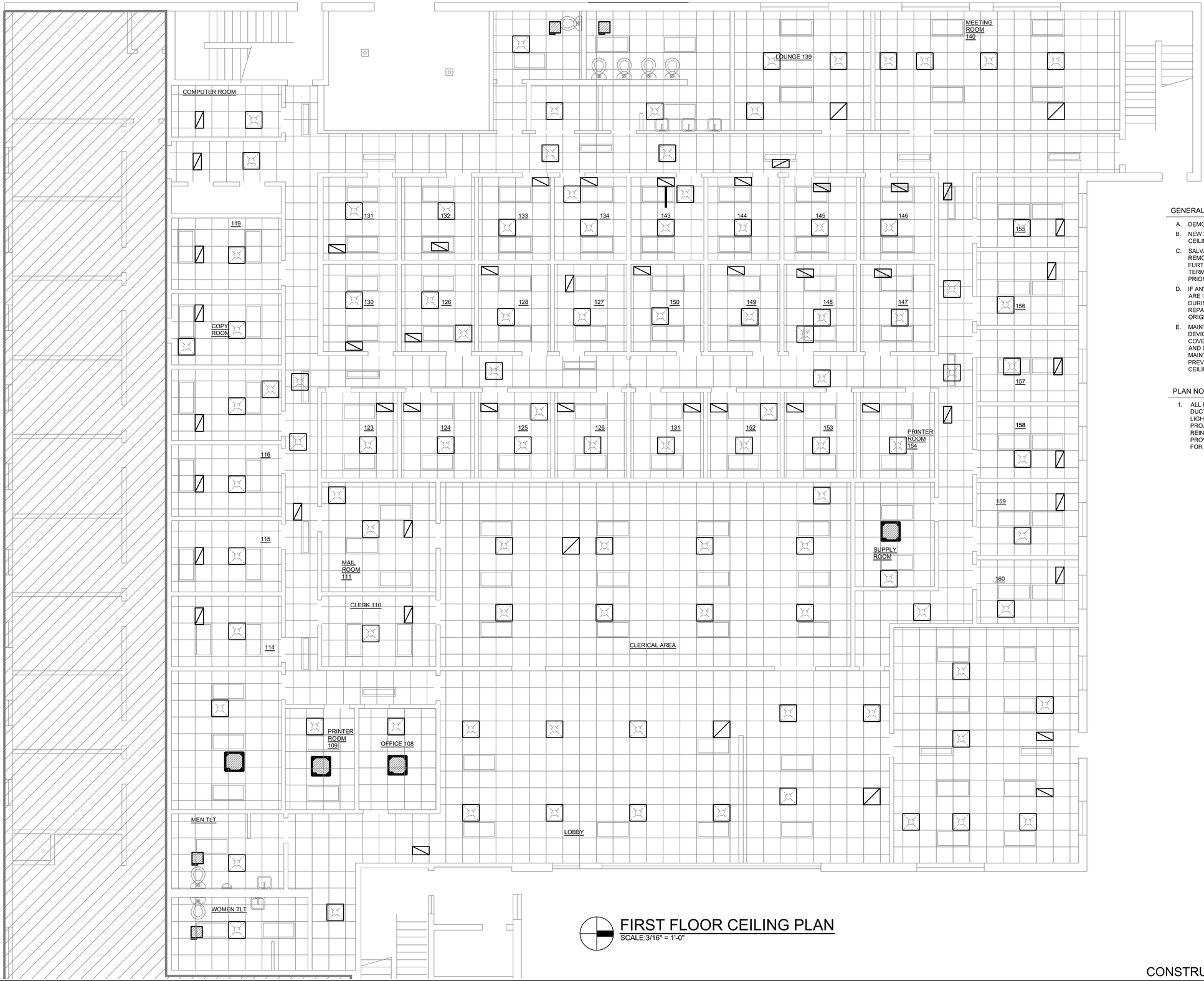


SHEET TITLE:

TITLE SHEET

SHEET NUMBER

T0.1



FIRST FLOOR CEILING PLAN

SCALE:3/16" = 1'-0"

CONSTRUCTION DOCUMENTS

GENERAL NOTES:

A. DEMO EXISTING CEILING TILE AND GRID.

B. NEW 2x2 CEILING IS TO MATCH EXISTING CEILING HEIGHT.

C. SALVAGE IS DEFINED AS CAREFULLY REMOVING & RETAINING ITEMS FOR REUSE. FURTHER EVALUATION OF CERTAIN ITEMS IN TERMS OF SALVAGE DESIRABILITY MAY OCCUR PRIOR TO DEMOLITION.

D. IF ANY FIREPROOFING OR ASSEMBLIES WHICH ARE INDICATED TO REMAIN ARE DAMAGED DURING DEMOLITION THE CONTRACTOR SHALL REPAIR DAMAGE TO THE LEVEL OF THE ORIGINAL FIRE PROTECTION REQUIREMENTS.

E. MAINTAIN, WHERE POSSIBLE, ALL FIRE ALARM DEVICES, SPEAKERS, ETC. AND PROVIDE COVERS TO PROJECT DEVICES FROM DUST AND DEBRIS. WHERE DEVICES CANNOT BE MAINTAINED, REMOVE DEVICES AND STORE TO PREVENT DAMAGE. RE-INSTALL DEVICES ONCE CEILING HAS BEEN INSTALLED.

PLAN NOTES: (X)

1. ALL EXISTING CEILINGS TO BE REMOVED FOR DUCTWORK AND PIPING DEMOLITION. SALVAGE LIGHT FIXTURES, CEILING SPEAKERS, PROJECTORS, FIRE ALARM DEVICES, ETC. AND REINSTALL DURING RENOVATION PHASE. PROVIDE NEW GRID SYSTEM AS REQUIRED FOR NEW 2x2 TILE SYSTEM.

ENGINEERING RESOURCE GROUP
350 EDGEWOOD TERRACE DRIVE
JACKSON, MS 39206
PHONE: (601) 362-3552
FAX: (601) 366-6418

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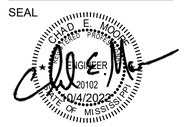
SEAL



SHEET TITLE:

HUMAN SERVICES - FIRST FLOOR CEILING PLAN

SHEET NUMBER

A1.1

SECOND FLOOR CEILING PLAN
SCALE:3/16" = 1'-0"

CONSTRUCTION DOCUMENTS

GENERAL NOTES:

A. DEMO EXISTING CEILING TILE AND GRID.

B. NEW 2x2 CEILING IS TO MATCH EXISTING CEILING HEIGHT.

C. SALVAGE IS DEFINED AS CAREFULLY REMOVING & RETAINING ITEMS FOR REUSE. FURTHER EVALUATION OF CERTAIN ITEMS IN TERMS OF SALVAGE DESIRABILITY MAY OCCUR PRIOR TO DEMOLITION.

D. IF ANY FIREPROOFING OR ASSEMBLIES WHICH ARE INDICATED TO REMAIN ARE DAMAGED DURING DEMOLITION THE CONTRACTOR SHALL REPAIR DAMAGE TO THE LEVEL OF THE ORIGINAL FIRE PROTECTION REQUIREMENTS.

E. MAINTAIN, WHERE POSSIBLE, ALL FIRE ALARM DEVICES, SPEAKERS, ETC. AND PROVIDE COVERS TO PROJECT DEVICES FROM DUST AND DEBRIS. WHERE DEVICES CANNOT BE MAINTAINED, REMOVE DEVICES AND STORE TO PREVENT DAMAGE. RE-INSTALL DEVICES ONCE CEILING HAS BEEN INSTALLED.

PLAN NOTES:

1. ALL EXISTING CEILINGS TO BE REMOVED FOR DUCTWORK AND PIPING DEMOLITION. SALVAGE LIGHT FIXTURES, CEILING SPEAKERS, PROJECTORS, FIRE ALARM DEVICES, ETC. AND REINSTALL DURING RENOVATION PHASE. PROVIDE NEW GRID SYSTEM AS REQUIRED FOR NEW 2x2 TILE SYSTEM.

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JACKSON, MS 39206
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1
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3

SEAL

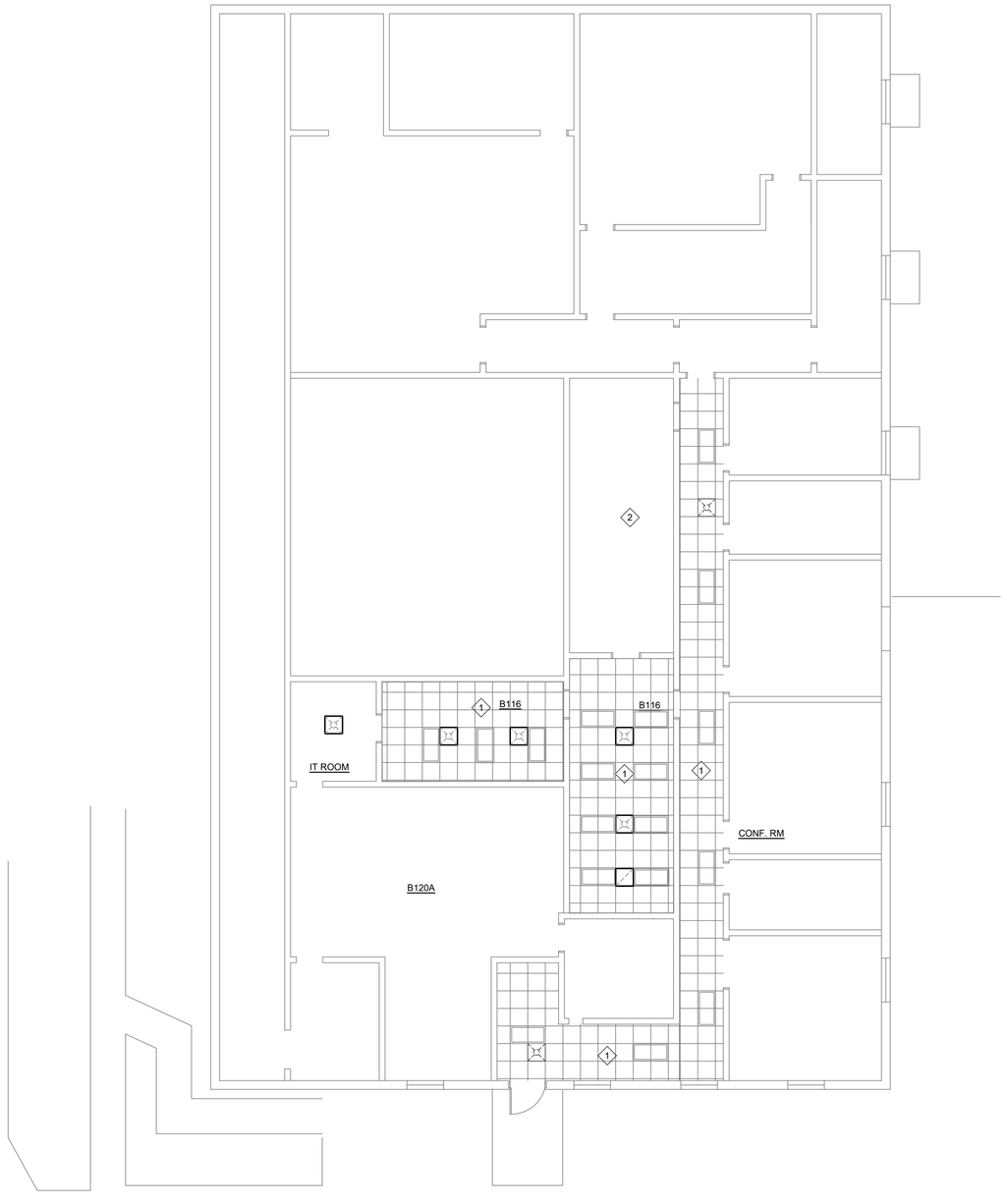
CHRISTOPHER E. MOORE
REGISTERED PROFESSIONAL ENGINEER
20102
10/4/2022
STATE OF MISSISSIPPI

SHEET TITLE:

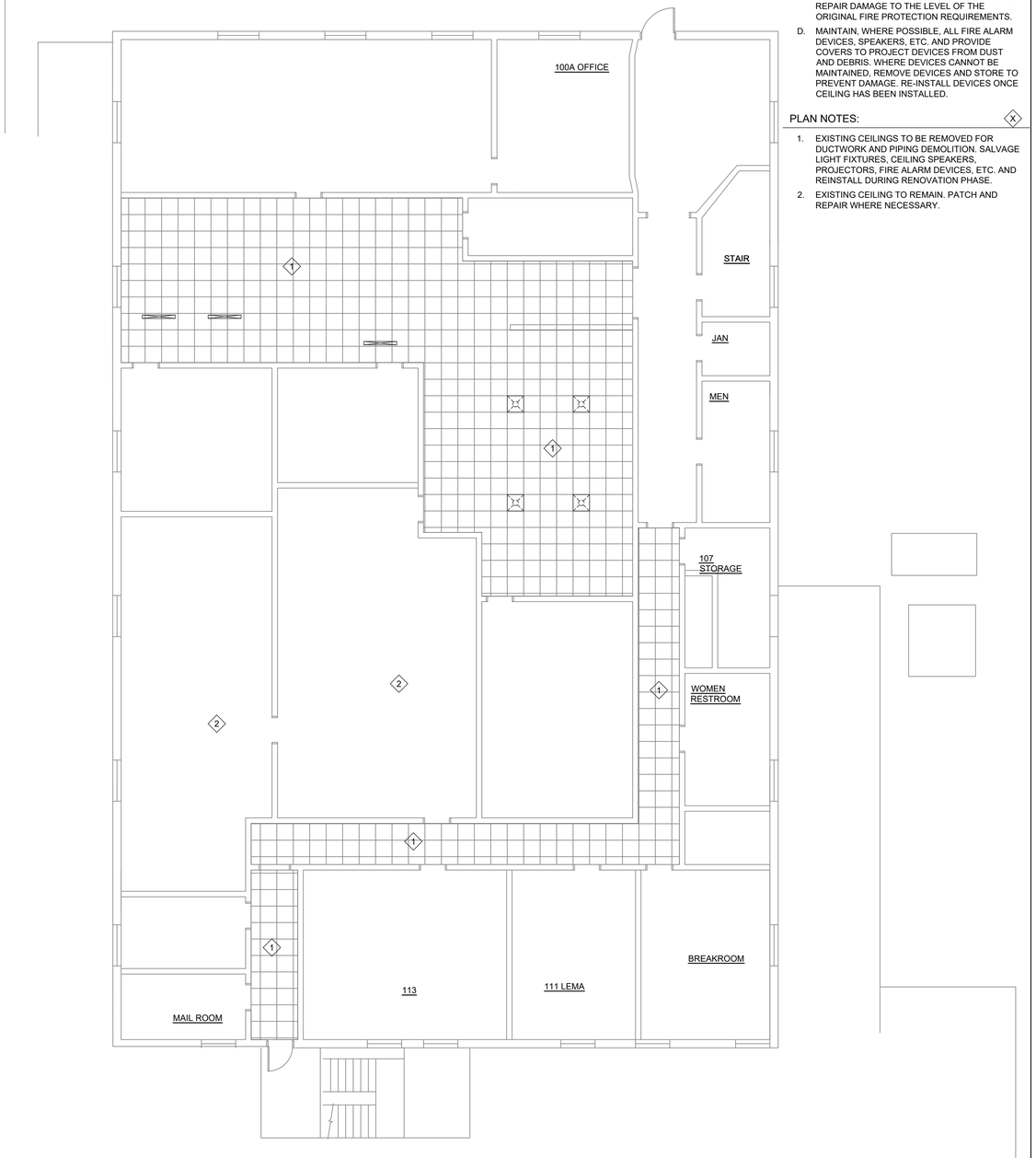
HUMAN SERVICES - SECOND FLOOR CEILING PLAN

SHEET NUMBER

A1.2



FIRST FLOOR CEILING PLAN
SCALE:1/8" = 1'-0"



SECOND FLOOR CEILING PLAN
SCALE:1/8" = 1'-0"

GENERAL NOTES:

A. NEW CEILING IS TO MATCH EXISTING CEILING HEIGHT.

B. SALVAGE IS DEFINED AS CAREFULLY REMOVING & RETAINING ITEMS FOR REUSE. FURTHER EVALUATION OF CERTAIN ITEMS IN TERMS OF SALVAGE DESIRABILITY MAY OCCUR PRIOR TO DEMOLITION.

C. IF ANY FIREPROOFING OR ASSEMBLIES WHICH ARE INDICATED TO REMAIN ARE DAMAGED DURING DEMOLITION THE CONTRACTOR SHALL REPAIR DAMAGE TO THE LEVEL OF THE ORIGINAL FIRE PROTECTION REQUIREMENTS.

D. MAINTAIN, WHERE POSSIBLE, ALL FIRE ALARM DEVICES, SPEAKERS, ETC. AND PROVIDE COVERS TO PROJECT DEVICES FROM DUST AND DEBRIS. WHERE DEVICES CANNOT BE MAINTAINED, REMOVE DEVICES AND STORE TO PREVENT DAMAGE. RE-INSTALL DEVICES ONCE CEILING HAS BEEN INSTALLED.

PLAN NOTES:

1. EXISTING CEILINGS TO BE REMOVED FOR DUCTWORK AND PIPING DEMOLITION. SALVAGE LIGHT FIXTURES, CEILING SPEAKERS, PROJECTORS, FIRE ALARM DEVICES, ETC. AND REINSTALL DURING RENOVATION PHASE.
2. EXISTING CEILING TO REMAIN. PATCH AND REPAIR WHERE NECESSARY.

CONSTRUCTION DOCUMENTS

ENGINEERING RESOURCE GROUP
350 EDGEWOOD TERRACE DRIVE
JACKSON, MS 39206
PHONE: (601) 362-3552
FAX: (601) 366-6418

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1
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SEAL

CHAD E. MOORE
REGISTERED
ENGINEER
20102
10/4/2022
STATE OF MISSISSIPPI

SHEET TITLE:

EMERGENCY SERVICES / EMA - CEILING PLAN

SHEET NUMBER

A1.3

GENERAL NOTES:

A. NEW CEILING IS TO MATCH EXISTING CEILING HEIGHT.

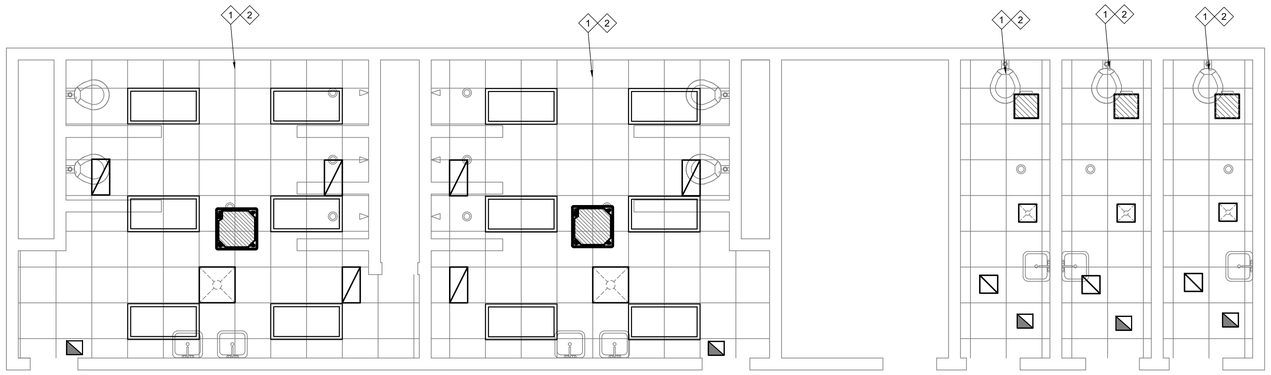
B. SALVAGE IS DEFINED AS CAREFULLY REMOVING & RETAINING ITEMS FOR REUSE. FURTHER EVALUATION OF CERTAIN ITEMS IN TERMS OF SALVAGE DESIRABILITY MAY OCCUR PRIOR TO DEMOLITION.

C. IF ANY FIREPROOFING OR ASSEMBLIES WHICH ARE INDICATED TO REMAIN ARE DAMAGED DURING DEMOLITION THE CONTRACTOR SHALL REPAIR DAMAGE TO THE LEVEL OF THE ORIGINAL FIRE PROTECTION REQUIREMENTS.

D. MAINTAIN, WHERE POSSIBLE, ALL FIRE ALARM DEVICES, SPEAKERS, ETC. AND PROVIDE COVERS TO PROJECT DEVICES FROM DUST AND DEBRIS. WHERE DEVICES CANNOT BE MAINTAINED, REMOVE DEVICES AND STORE TO PREVENT DAMAGE. RE-INSTALL DEVICES ONCE CEILING HAS BEEN INSTALLED.

PLAN NOTES:

1. EXISTING CEILINGS TO BE REMOVED FOR DUCTWORK AND PIPING DEMOLITION. SALVAGE LIGHT FIXTURES, CEILING SPEAKERS, FIRE ALARM DEVICES, ETC. AND REINSTALL DURING RENOVATION PHASE.
2. PROVIDE AND INSTALL A MINIMUM OF R19 INSULATION ABOVE CEILING LAT CEILING.



LOWER RESTROOMS CEILING PLAN

SCALE:1/4" = 1'-0"

CONSTRUCTION DOCUMENTS

ENGINEERING RESOURCE GROUP
350 EDGEWOOD TERRACE DRIVE
JACKSON, MS 39206
PHONE: (601) 362-3552
FAX: (601) 366-6418

CONSULTANTS:

ELECTRICAL ENGINEER
SCHULTZ & WYNNE, P.A.
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SEAL

SHEET TITLE:

ARGI-CENTER - LOWER RESTROOMS CEILING PLAN - ADD ALT. #1

SHEET NUMBER

A1.4

HVAC LEGEND AND ABBREVIATIONS

PIPING LEGEND

	CONCRETE THRUST BLOCK
FM	FLOW METER
FS	FLOW SWITCH
	FIRESTOPPING
	PIPE SLEEVE
	BEAM PENETRATION
	PIPE CAP
	PIPE BLIND FLANGE
	HOT WATER FLOW DESIGNATION
HWS / HWS	HOT WATER SUPPLY
HWR / HWR	HOT WATER RETURN
G / LP	GAS (NATURAL) GAS (PROPANE)
RS / RL	REFRIGERANT SUCTION REFRIGERANT LIQUID
HL / HV / LV	HIGH PRESS. LIQUID HIGH PRESS. VAPOR LOW PRESS. VAPOR
	ARROW INDICATES DIRECTION OF FLOW
	PITCH PIPE DOWN IN DIRECTION OF ARROW
D / D	CONDENSATE DRAIN LINE
	PIPE GUIDE
	EXPANSION COMPENSATOR
	CONCENTRIC REDUCER (INCREASER)
	ECCENTRIC REDUCER (INCREASER)
	UNION
	CAPPED PIPE WITH SHUT-OFF VALVE
	"Y" TYPE STRAINER WITH HOSE END BLOW OFF VALVE
	"Y" TYPE STRAINER
	ELBOW TURNED UP
	ELBOW TURNED DOWN
	BOTTOM PIPE CONNECTION

PIPING LEGEND (CONT.)

	TOP PIPE CONNECTIONS
C C	SLOPED CHANGE IN PIPE ELEVATION
	SHUT-OFF VALVE
	AUTOMATIC FLOW CONTROL VALVE
	ORIFICE TYPE FLOW MEASURING DEVICE
	VENTURI TYPE FLOW MEASURING DEVICE
	BALL VALVE WITH HOSE THREAD CONNECTION
	GAS COCK
	BALANCING VALVE
	GLOBE VALVE
	CHECK VALVE
	AUTOMATIC THREE-WAY CONTROL VALVE
	AUTOMATIC TWO-WAY CONTROL VALVE
	RELIEF VALVE
	ANGLE RELIEF VALVE
	PRESSURE REDUCING VALVE (PRV)
	LUBRICATED PLUG VALVE
	SOLENOID VALVE
	BUTTERFLY VALVE (MANUAL)
	BALL VALVE
	BALL VALVE, NORMALLY CLOSED
	SIGHT GLASS
	MANUAL AIR VENT
A	AUTOMATIC AIR VENT
	THERMOMETER
	PIPE SENSOR WELL (THERMOMETER)
P	PRESSURE GUAGE AND COCK
	PRESSURE GUAGE WITH LOOP
	TEMPERATURE-PRESSURE TEST FITTING

DUCTWORK LEGEND

	RADIUS ELBOW
	ELBOW WITH TURNING VANES
	RECTANGULAR BRANCH TAKEOFF WITH BALANCING DAMPER
	RECTANGULAR SUPPLY DUCT UP
	RECTANGULAR SUPPLY DUCT DOWN
	RECTANGULAR RETURN OR EXHAUST DUCT UP
	RECTANGULAR RETURN OR EXHAUST DUCT DOWN
	ROUND DUCT, UP
	ROUND DUCT, DOWN
R	SLOPING RISE IN DUCTWORK
D	SLOPING DROP IN DUCTWORK
18x12 / 18x12	DUCT SIZE (CLEAR INSIDE DIMENSION) FIRST FIGURE INDICATES PLAN SIZE
18 ϕ / 18 ϕ	ROUND DUCT DIAMETER SIZE (CLEAR INSIDE DIMENSION)
18/12 / 18/12	OVAL DUCT SIZE
	SIDE, TOP OR BOTTOM DUCT ACCESS DOOR
	RECTANGULAR OR SQUARE TO ROUND OR OVAL TRANSITION
	DOUBLE-WALL DUCT IS INDICATED BY SHADING
	INTERNALLY LINED DUCTWORK IS INDICATED BY INSIDE DASHED LINE.
	FLEXIBLE DUCT
	VOLUME DAMPER IN DUCT
M	MOTORIZED DAMPER
F	FIRE DAMPER
B	GRAVITY BACK DRAFT DAMPER
	SUPPLY DIFFUSR
	LINEAR DIFFUSER
	RETURN/EXHAUST REGISTER OR GRILLE
	FIRE RATED ENCASED DUCT
→	SUPPLY REGISTER WITH AIR OUTLET DEVICE DESIGNATION
←/→	RETURN OR EXHAUST REGISTER OR GRILLE WITH AIR INLET DEVICE DESIGNATION
	DUCT END/CAP

CONTROLS LEGEND

CO	CARBON MONOXIDE SENSOR
CO2	CARBON DIOXIDE SENSOR
H	HUMIDITY SENSOR
T	THERMOSTAT
TP	PROGRAMMABLE THERMOSTAT
S	TEMPERATURE SENSOR
WS	WALL SWITCH
RC	REMOTE CONTROLLER
T/C	TIME CLOCK
ESS	HVAC SYSTEM EMERGENCY SHUT-OFF BUTTON
	WALL OR CEILING MOTION HEAT SENSOR
EMCS	ENERGY MANAGEMENT AND CONTROL SYSTEM

MISCELLANEOUS

DP	DIFFERENTIAL PRESSURE SENSOR
DP	DIFFERENTIAL PRESSURE SWITCH
ϕ	DIAMETER
HW 1	RISER DESIGNATION — RISER SERVICE, RISER NUMBER
2 M3.1	SECTION DESIGNATION — SECTION NUMBER, DRAWING NUMBER
1 M2.1	DETAIL DESIGNATION — DETAIL NUMBER, DRAWING NUMBER
CT 1-1	EQUIPMENT DESIGNATION — EQUIPMENT TYPE, EQUIPMENT NUMBER
T-3.24	VAV TERMINAL UNIT DESIGNATION — 3.24: THE NUMBER ON SYSTEM, SYSTEM
IDU-1.01	VRV INDOOR UNIT DESIGNATION — 1.01: THE NUMBER ON SYSTEM, SYSTEM
	EXISTING EQUIPMENT, PIPING, OR DUCTWORK TO REMAIN IN SERVICE.
	EXISTING EQUIPMENT, PIPING, OR DUCTWORK TO BE REMOVE
	NEW CONNECTION TO EXISTING PIPING, DUCTWORK AND/OR EQUIPMENT

DIFFUSER, RETURN, & EXHAUST GRILLE TAG: A-12x12" 200-2A — DIFFUSER DESIGNATION AND LENGTH OR NECK SIZE (LINEAR OR LOUVER DIFFUSER ONLY); PATTERN (4A UNLESS INDICATED OTHERWISE); CFM

ABBREVIATIONS - MECHANICAL

ACU	AIR CONDITIONING UNIT
AD	ACCESS DOOR
AHU	AIR HANDLING UNIT
BMS	BUILDING MANAGEMENT SYSTEM
BHP	BRAKE HORSE POWER
BTU	BRITISH THERMAL UNIT
CC	COOLING COIL
CD	CEILING DIFFUSER
CER	CEILING EXHAUST REGISTER
CRG	CEILING RETURN GRILLE
CFM	CUBIC FEET PER MINUTE
CTG	CEILING TRANSFER GRILLE
CG	CEILING GRILLE
CO	CLEAN OUT
CRA	CONDITIONING RETURN AIR
CSA	CONDITIONING SUPPLY AIR
CT	COOLING TOWER
DB	DRY BULB
DG	DOOR GRILLE
DIA	DIAMETER
DN	DOWN
DX	DIRECT EXPANSION
EA	EXHAUST AIR
EAT	ENTERING AIR TEMPERATURE
EDB	ENTERING DRY BULB
EF	EXHAUST FAN
EFF	EFFICIENCY
ET	EXPANSION TANK
EWB	ENTERING WET BULB
EWT	ENTERING WATER TEMPERATURE
°F	DEGREES FAHRENHEIT
FC	FLEXIBLE CONNECTION (DUCT OR PIPE)
FD	FUSIBLE LINK FIRE DAMPER W/ DUCT ACCESS DOOR
FLR	FLOOR
FLA	FULL LOAD AMPS
FT	FEET
GF	GAS FURNACE
GPM	GALLONS PER MINUTE
GWH	GAS WATER HEATER
HC	HEATING COIL
HP	HORSE POWER
HR	HOUR
HRU	HEAT RECOVERY UNIT
HWS	HEATING WATER SUPPLY
HWR	HEATING WATER RETURN
ID	INSIDE DIMENSION
KW	KILOWATT

ABBREVIATIONS - MECHANICAL

LAT	LEAVING AIR TEMPERATURE
LBS	POUNDS
LD	LINEAR DIFFUSER (CEILING, WALL, SILL OR FLOOR)
LRA	LOCK ROTOR AMPS
LFD	LOUVER FACE DIFFUSOR
LWT	LEAVING WATER TEMPERATURE
MA	MIXED AIR
MAT	MIXED AIR TEMPERATURE
MAX	MAXIMUM
MBH	THOUSAND BTU PER HOUR
MFG	MANUFACTURER
MFS	MAXIMUM FUSE SIZE
MIN	MINIMUM
MUA	MAKE UP AIR UNIT
MOCP	MAXIMUM OVERCURRENT PROTECTION
NC	NORMALLY CLOSED
NFA	NET FREE AREA
NIC	NOT IN THIS CONTRACT
NO	NORMALLY OPEN
NTS	NOT TO SCALE
OA	OUTSIDE AIR INTAKE
OBD	OPPOSED BLADE DAMPER
OD	OUTSIDE DIMENSION
P	PUMP
PD	PRESSURE DROP
RA	RELEIF AIR
RH	RELATIVE HUMIDITY
RHC	REHEAT COIL
RPM	REVOLUTIONS PER MINUTE
RP	RECIRC PUMP
SA	SUPPLY AIR
SD	SMOKE DAMPER
SENS	SENSIBLE
SP	STATIC PRESSURE
SQFT	SQUARE FEET
TA	TRANSFER AIR DUCT
TYP	TYPICAL
VAV	VARIABLE AIR VOLUME
VD	VOLUME DAMPER
VFD	VARIABLE FREQUENCY DRIVE
VRF	VARIABLE REFRIGERANT FLOW
VSA	VENTILATION SUPPLY AIR
VTR	VENT THRU ROOF
W/	WITH
WSR	WALL SUPPLY REGISTER
WB	WET BULB

GENERAL NOTES - HVAC

1. EACH CONTRACTOR, SUPPLIER AND/OR MANUFACTURER SHALL REFER TO ALL DOCUMENTS PERTAINING TO THIS PROJECT AND COORDINATE ACCORDINGLY SO AS TO ENSURE ADEQUACY OF FIT, COMPLIANCE WITH SPECIFICATIONS, PROPER ELECTRICAL SERVICE, AND AVOID CONFLICT WITH ANY OTHER BUILDING SYSTEMS. VERIFY SAME WITH SHOP DRAWINGS.
2. ALL OFFSETS, TURNS, FITTINGS, TRIM, DETAIL, ETC., MAY NOT BE INDICATED, BUT SHALL BE PROVIDED AS REQUIRED. ADDITIONAL ALLOWANCES SHALL BE INCLUDED FOR SAME AT EACH PROPOSERS' DISCRETION.
3. OBSERVE ALL APPLICABLE CODES, RULES AND REGULATIONS (CITY, COUNTY, LOCAL, STATE, FEDERAL, MUNICIPALITY, UTILITY COMPANY, OSHA, ETC.).
4. ALL SYSTEMS, EQUIPMENT, AND MATERIALS ARE TO BE INSTALLED IN A NEAT AN WORKMANLIKE MANNER. WORK NOT DONE SO SHALL BE REMOVED AND REINSTALLED SATISFACTORILY.
5. WHERE MOUNTING HEIGHTS ARE NOT INDICATED OR ARE IN CONFLICT WITH ANY OTHER BUILDING SYSTEM, CONTACT THE ENGINEER BEFORE INSTALLATION. REFER ALSO TO ARCHITECTURAL WALL INTERIOR AND EXTERIOR WALL ELEVATIONS, CEILING HEIGHTS AND OTHER DETAILS OF THESE DOCUMENTS. REFERENCE SPECIFICATION 230010 "MECHANICAL GENERAL PROVISIONS" FOR COORDINATION DRAWING REQUIREMENTS.
6. DO NOT SCALE DRAWINGS, PRINTING DISTORTS SCALE. WORK SHALL BE LAID OUT FROM DIMENSIONED DRAWINGS, OR DIMENSIONS SUPPLIED TO THE CONTRACTOR.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CUTTING AND PATCHING REQUIRED FOR THEIR WORK, ALL CUTTING AND PATCHING SHALL MATCH ADJACENT SURFACES.
8. TURNING VANES SHALL BE INSTALLED IN ALL SUPPLY, RETURN, AND EXHAUST DUCTWORK ELBOWS. TURNING VANES NOT REQUIRED FOR KITCHEN EXHAUST DUCTS.
9. THESE DRAWINGS ARE ACCURATE TO THE BEST OF OUR KNOWLEDGE, HOWEVER LOCATIONS, DEPTHS, ELEVATIONS, AND SIZES WERE TAKEN FROM DIFFERENT SOURCES AND ARE SUBJECT TO DEVIATION. THE CONTRACTOR SHALL ASSUME SOME DEVIATIONS AND INCLUDE OFFSETS, ADDITIONAL PIPING, ETC. AT THE TIME OF BID.
10. WHERE PENETRATING ROOFING MEMBRANE OR OTHER MATERIALS USED FOR WEATHERPROOFING THE BUILDING, MAKE SUCH PENETRATIONS IN A WAY THAT WILL NOT VOID OR DIMINISH THE ROOFING WARRANTY OR INTEGRITY IN ANY WAY. COORDINATE ALL SUCH PENETRATIONS WITH THE GENERAL CONTRACTOR/ROOFER.
11. ADVISE THE ARCHITECT OF ANY CONFLICTS, ERRORS, OMISSIONS, ETC. AT LEAST TEN DAYS PRIOR TO BID DATE, TO ALLOW CLARIFICATION BY WRITTEN ADDENDUM.
12. DEVIATION FROM SPECIFICATIONS OR PLANS REQUIRES PRIOR WRITTEN APPROVAL FROM THE ARCHITECT AND MUST BE SUBMITTED IN WRITING NO LATER THAN TEN DAYS PRIOR TO THE BID DATE.
13. COORDINATE THE LOCATION OF DRAINS, ELECTRICAL OUTLETS, ETC. WITH ALL MECHANICAL ROOM EQUIPMENT, ETC. PRIOR TO COMMENCING INSTALLATION. WORK NOT SO COORDINATED SHALL BE REMOVED AND PROPERLY INSTALLED AT THE EXPENSE OF THE RESPONSIBLE CONTRACTOR(S).
14. THE PURPOSE AND INTENT OF THE DOCUMENTS PERTAINING TO THIS PROJECT IS TO PROVIDE A COMPLETE, FUNCTIONAL, AND SAFE FACILITY, ANYTHING LESS SHALL BE UNACCEPTABLE.
15. ALL VIBRATING, OSCILLATING, NOISE PRODUCING OR ROTATING EQUIPMENT SHALL BE ISOLATED FROM SURROUNDING SYSTEMS IN AN APPROVED MANNER. NOISY, VIBRATING, OR STRUCTURALLY DAMAGING INSTALLATIONS SHALL BE SATISFACTORILY REPLACED OR REPAIRED AT THE INSTALLING CONTRACTOR'S EXPENSE. THE FINAL DECISION ON THE SUITABILITY OF A PARTICULAR INSTALLATION SHALL BE THAT OF THE ARCHITECT.
16. INSTALL EQUIPMENT, MATERIALS, ETC. IN STRICT ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND DIRECTIONS. IF IN CONFLICT WITH THE DESIGN INDICATED IN CONTRACT DOCUMENTS, ADVISE THE ARCHITECT PRIOR TO INSTALLATION FOR CLARIFICATION.
17. ALL SUPPORTS FOR EQUIPMENT, DEVICES, OR FIXTURES SHALL BE UNIQUE FROM THE BUILDING STRUCTURE. DO NOT SUPPORT FROM OTHER TRADES, EQUIPMENT OR SUPPORTS WITHOUT WRITTEN PERMISSION FROM THE ARCHITECT AND CONSENT OF THE OTHER TRADE, IN WRITING.
18. DEVIATIONS IN SIZE, CAPACITIES, FIT, FINISH, ETC. FOR EQUIPMENT FROM THAT SPECIFIED SHALL BE THE RESPONSIBILITY OF THE PURCHASER OF THAT EQUIPMENT. ANY PROVISIONS REQUIRED TO ACCOMMODATE A DEVIATION, WHETHER APPROVED BY THE ARCHITECT OR NOT, SHALL BE THE RESPONSIBILITY OF THE PURCHASER.
19. THE GENERAL CONTRACTOR FOR THIS CONSTRUCTION IS RESPONSIBLE FOR THE COORDINATION, APPEARANCE, SCHEDULING, AND TIMELINESS OF THE WORK OF ALL TRADES, CONTRACTORS, SUPPLIERS, INSTALLERS, ETC.
20. VALVES, BALANCING DAMPERS OR ANY MECHANICAL/ELECTRICAL ITEM SHALL NOT BE LOCATED ABOVE A HARD CEILING. IF THIS IS NOT POSSIBLE, THEN AN APPROPRIATELY SIZED ACCESS DOOR SHALL BE PLACED UNDER THE ITEM TO ALLOW EASY MAINTENANCE AND ADJUSTMENT BY THIS CONTRACTOR.
21. PROVIDE FIRE DAMPERS AND APPROPRIATE DUCT ACCESS DOORS IN ALL DUCT PENETRATIONS WHERE REQUIRED BY CODE. CONTACT PROFESSIONAL SHOULD CLARIFICATION BY REQUIRED.
22. PROVIDE METAL SLEEVES AND FIRESTOPPING ON ALL DUCTWORK PASSING THRU RATED WALLS, PER CODE.
23. THE GENERAL CONTRACTOR, MECHANICAL CONTRACTOR, AND ALL OTHER CONTRACTORS SHALL ENSURE PROPER COORDINATION BETWEEN ALL TRADES SUCH THAT CONDUITS, PIPING, DUCTWORK, ETC. DO NOT BLOCK ACCESS TO VALVES, EQUIPMENT, DUCT ACCESS DOORS, ETC. ITEMS THAT HAVE BEEN INSTALLED WHERE ACCESS IS COMPROMISED SHALL BE RELOCATED AT THE CONTRACTOR'S EXPENSE.
24. THE CONTRACTOR SHALL INCLUDE IN THEIR BID ALL COSTS ASSOCIATED WITH DRAINING AND FILLING PIPING SYSTEMS AS REQUIRED TO INSTALL THEIR NEW WORK.
25. TESTING, ADJUSTING, AND BALANCING AGENCY IS TO PROVIDE SIZING OF FAN AND MOTOR SHEAVES REQUIRED FOR PROPER BALANCE. REPLACE FAN AND MOTOR SHEAVES AND BELTS AS REQUIRED ON EQUIPMENT (AHUs, EFs, ETC.). THE MECHANICAL CONTRACTOR SHALL PURCHASE AND INSTALL ALL SHEAVES AND BELTS AS REQUIRED.
26. PRIOR TO ORDERING ANY MATERIALS OR ROUGH-IN OF ANY KIND, THE MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR FINAL COORDINATION OF ALL ELECTRICAL REQUIREMENTS (I.E., VOLTAGE, PHASE, CIRCUIT BREAKER, WIRING SIZE, ETC.) WITH THE ELECTRICAL CONTRACTOR. THERE WILL BE NO CHANGE IN THE CONTRACT AMOUNT FOR ANY DISCREPANCIES. MECHANICAL CONTRACTOR SHALL COORDINATE WITH ALL OTHER CONTRACTORS, VENDORS, AND SUPPLIERS AND SHALL INSURE COMPLETE, 100% FUNCTIONAL, TESTED, INSPECTED, AND APPROVED SYSTEMS. CLAIMS FOR ADDITIONAL COST OR CHANGE ORDERS WILL IMMEDIATELY BE REJECTED.
27. EQUIPMENT BRACING WILL BE INCLUDED FOR ALL OVERHEAD UTILITIES AND OTHER EQUIPMENT WEIGHING 31 POUNDS OR MORE (EXCLUDING DISTRIBUTED SYSTEMS SUCH AS PIPING, ETC.). BRACING SHALL BE ACCOMPLISHED BY EITHER RIGID OR FLEXIBLE SYSTEMS. ALL EQUIPMENT MOUNTINGS SHALL BE DESIGNED TO RESIST FORCES OF 0.5 TIMES THE EQUIPMENT WEIGHT IN ANY DIRECTION AND 1.5 TIMES THE EQUIPMENT WEIGHT IN THE DOWNWARD DIRECTION. ALL BRACING SHALL BE CONTRACTOR DESIGNED.
28. ALL BRANCH DUCTS TO AIR DISTRIBUTION DEVICES (SUPPLY, RETURN, EXHAUST, ETC.) SHALL INCLUDE A VOLUME DAMPER PER DRAWINGS AND SPECIFICATIONS.
29. DUCT SIZES INDICATED ARE ACTUAL INSIDE (NET) DIMENSIONS. ALL RECTANGULAR SUPPLY, RETURN, EXHAUST, AND OUTDOOR AIR DUCT SIZES ARE INSIDE CLEAR DIMENSIONS (INSIDE LINER, WHERE APPLICABLE).

CONSTRUCTION DOCUMENTS

ERG ENGINEERING RESOURCE GROUP
350 EDGEWOOD TERRACE DRIVE
JACKSON, MS 39206
PHONE: (601) 362-3552
FAX: (601) 366-6418

CONSULTANTS:

ELECTRICAL ENGINEER
SCHULTZ & WYNNE, P.A.
4523 OFFICE PARK DR.
JACKSON, MS 39206
T: (601) 982-3313

PROJECT:

HVAC UPGRADES
LAUDERDALE COUNTY
MERIDIAN, MISSISSIPPI

PROJECT NUMBER: 22.006
DATE: 10/4/2022
DRAWN BY: KAH
CHECKED BY: CEM
REV: 0 IFC 10/4/2022
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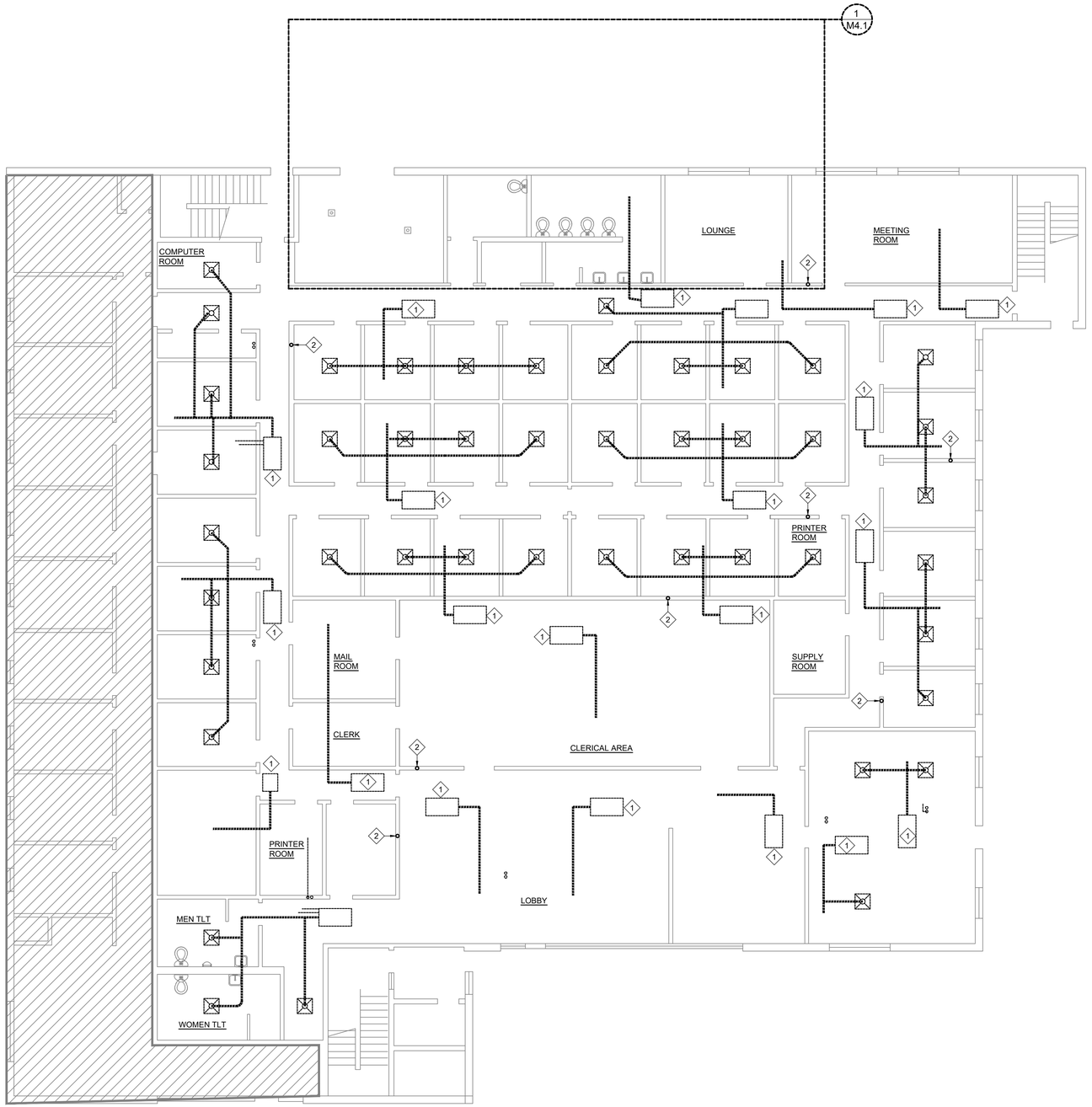
SEAL

SHEET TITLE:

MECHANICAL LEGEND, ABBREVIATIONS, AND NOTES

SHEET NUMBER

M0.1



FIRST FLOOR PLAN - HVAC DEMOLITION

SCALE:1/8" = 1'-0"

PLAN NOTES: X

1. EXISTING FAN COIL UNIT, DUCTWORK, AIR DISTRIBUTION DEVICE, PIPING, ETC. TO BE DEMOLISHED.
2. EXISTING CONDENSATE DRAIN PIPIING IN WALL TO REMAIN (FIELD-VERIFY). THIS CONTRACTOR IS TO MAKE NECESSARY MODIFICATIONS TO EXISTING PIPE ABOVE CEILING FOR CONNECTION OF NEW PIPING.

GENERAL NOTES:

A. ALL EXISTING CONDENSATE PIPING ABOVE CEILING IS TO BE REMOVED UNLESS NOTED OTHERWISE.

ENGINEERING RESOURCE GROUP
350 EDGEWOOD TERRACE DRIVE
JACKSON, MS 39206
PHONE: (601) 362-3552
FAX: (601) 366-6418

CONSULTANTS:

ELECTRICAL ENGINEER
SCHULTZ & WYNNE, P.A.
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SEAL

CHAD E. MOORE
REGISTERED PROFESSIONAL ENGINEER
20102
10/4/2022
STATE OF MISSISSIPPI

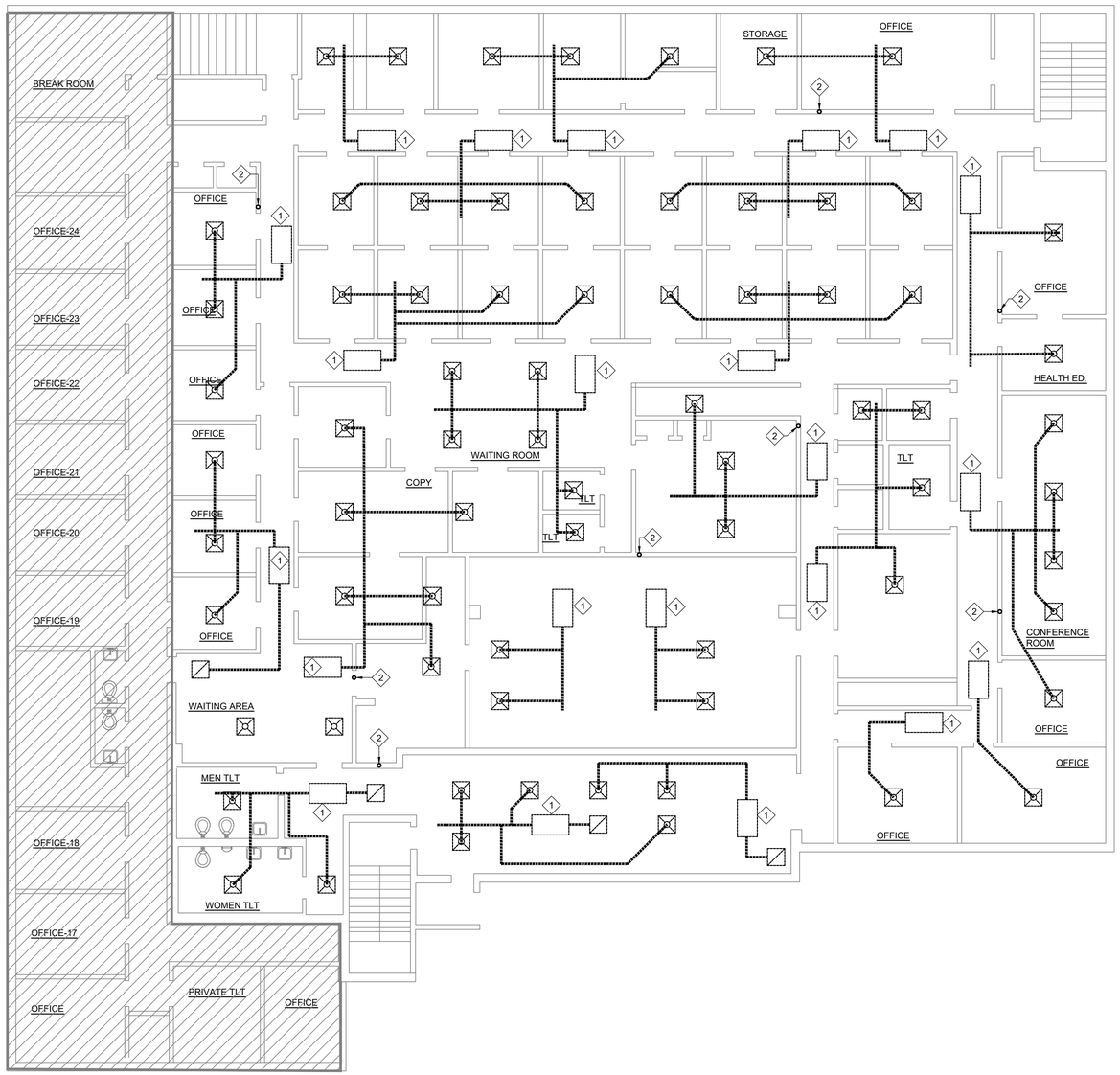
SHEET TITLE:

HUMAN SERVICES - FIRST FLOOR PLAN - HVAC DEMOLITION

SHEET NUMBER

M1.1

CONSTRUCTION DOCUMENTS



SECOND FLOOR PLAN - HVAC DEMOLITION

SCALE:1/8" = 1'-0"

PLAN NOTES: X

1. EXISTING FAN COIL UNIT, DUCTWORK, AIR DISTRIBUTION DEVICE, PIPING, ETC. TO BE DEMOLISHED.
2. EXISTING CONDENSATE DRAIN PIPING IN WALL TO REMAIN (FIELD-VERIFY). THIS CONTRACTOR IS TO MAKE NECESSARY MODIFICATIONS TO EXISTING PIPE ABOVE CEILING FOR CONNECTION OF NEW PIPING.

GENERAL NOTES:

A. ALL EXISTING CONDENSATE PIPING ABOVE CEILING IS TO BE REMOVED UNLESS NOTED OTHERWISE.

ENGINEERING RESOURCE GROUP
350 EDGEWOOD TERRACE DRIVE
JACKSON, MS 39206
PHONE: (601) 362-3552
FAX: (601) 366-6418

CONSULTANTS:

ELECTRICAL ENGINEER
SCHULTZ & WYNNE, P.A.
4523 OFFICE PARK DR.
JACKSON, MS 39206
T: (601) 982-3313

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SEAL

CHAD E. MOORE
REGISTERED PROFESSIONAL ENGINEER
20102
10/4/2022
STATE OF MISSISSIPPI

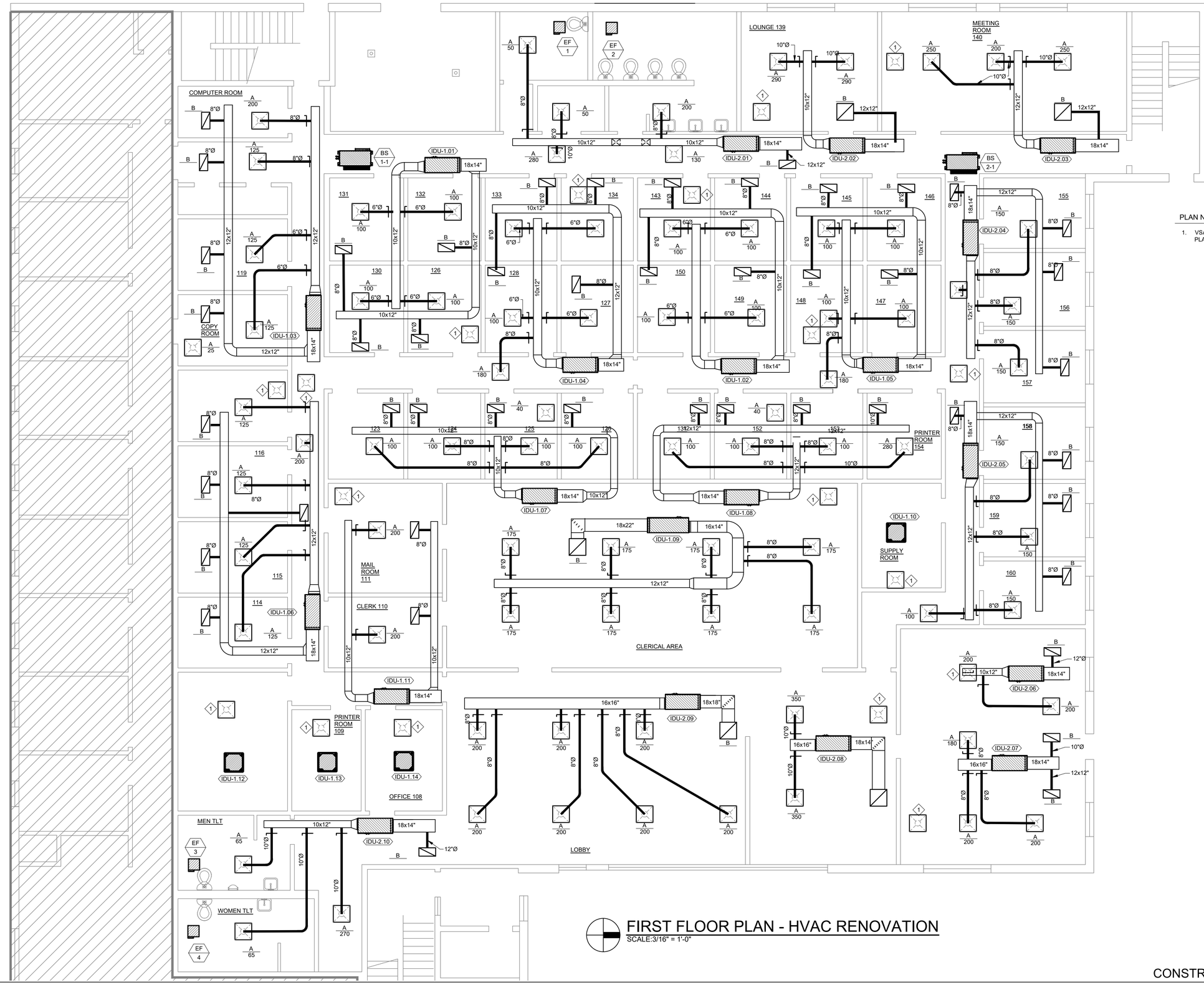
SHEET TITLE:

HUNAN SERVICES - SECOND FLOOR PLAN - HVAC DEMOLITION

SHEET NUMBER

M1.2

CONSTRUCTION DOCUMENTS



FIRST FLOOR PLAN - HVAC RENOVATION

SCALE:3/16" = 1'-0"

PLAN NOTES:

1. VSA DIFFUSER - SEE VENTILATION AND PIPING PLAN FOR DETAILS.

CONSTRUCTION DOCUMENTS

ERG ENGINEERING RESOURCE GROUP
350 EDGEWOOD TERRACE DRIVE
JACKSON, MS 39206
PHONE: (601) 362-3552
FAX: (601) 366-6418

CONSULTANTS:

ELECTRICAL ENGINEER
SCHULTZ & WYNNE, P.A.
4523 OFFICE PARK DR.
JACKSON, MS 39206
T: (601) 982-3313

PROJECT:

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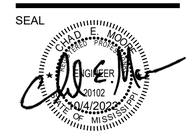
SEAL

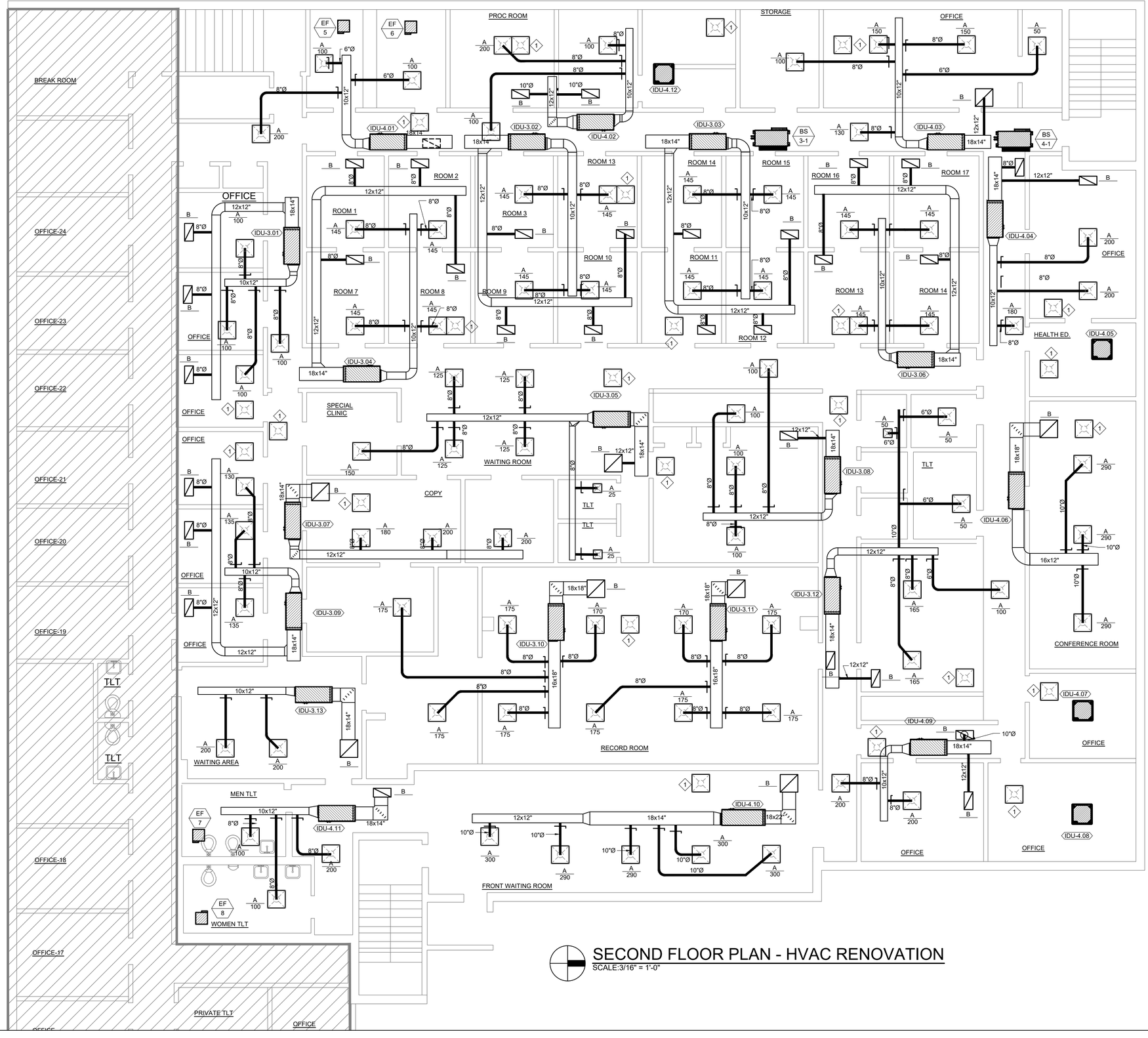


SHEET TITLE:

HUMAN SERVICES - FIRST FLOOR PLAN - HVAC RENOVATION

SHEET NUMBER

M1.3



SECOND FLOOR PLAN - HVAC RENOVATION

SCALE:3/16" = 1'-0"

CONSTRUCTION DOCUMENTS

PLAN NOTES:

1. VSA DIFFUSER - SEE VENTILATION AND PIPING PLAN FOR DETAILS.

ERG ENGINEERING RESOURCE GROUP
350 EDGEWOOD TERRACE DRIVE
JACKSON, MS 39206
PHONE: (601) 362-3552
FAX: (601) 366-6418

CONSULTANTS:

ELECTRICAL ENGINEER
SCHULTZ & WYNNE, P.A.
4523 OFFICE PARK DR.
JACKSON, MS 39206
T: (601) 982-3313

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SEAL

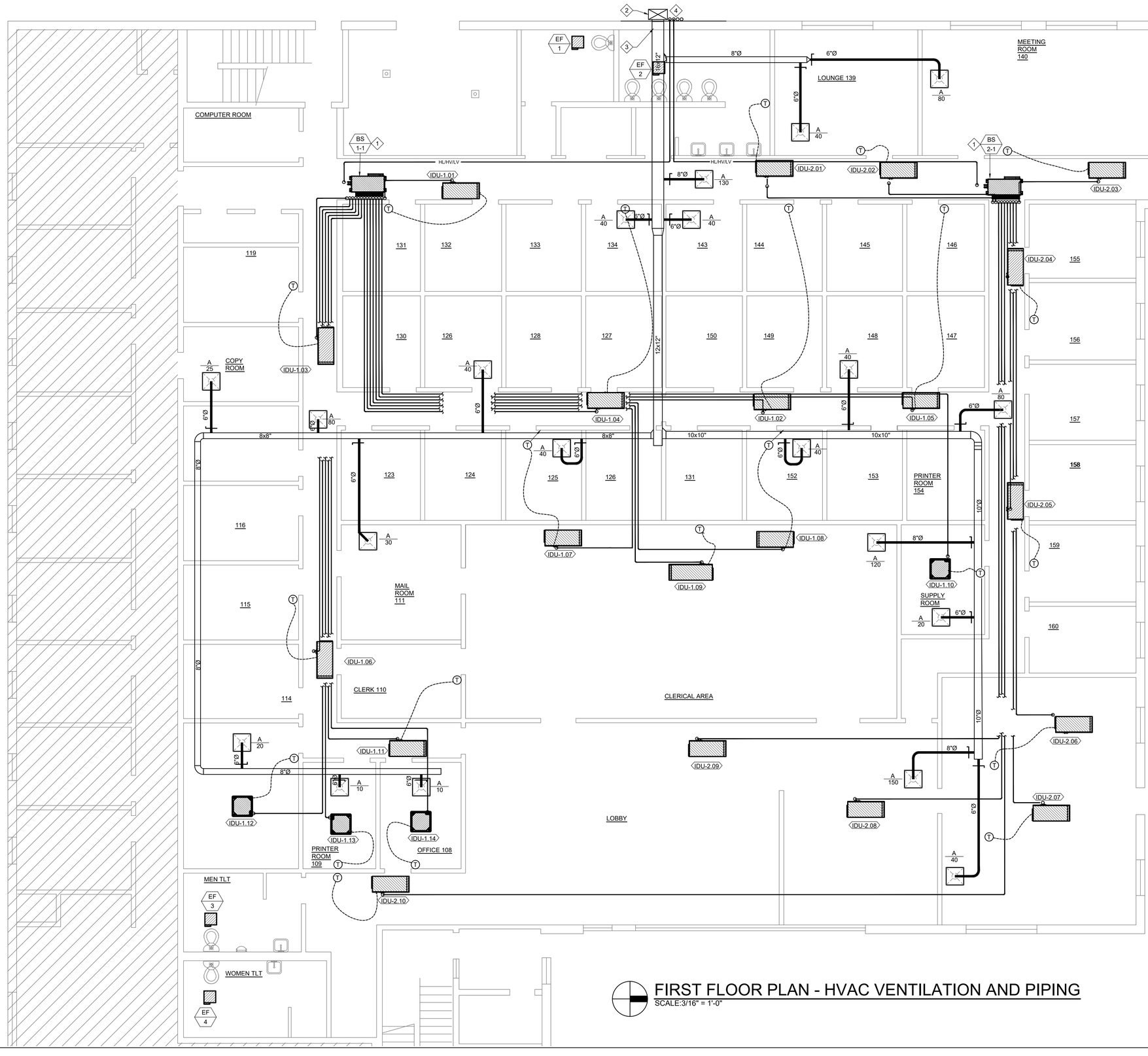
CHRIS E. MOORE
REGISTERED ENGINEER
20102
10/4/2022
MISSISSIPPI

SHEET TITLE:

HUMAN SERVICES - SECOND FLOOR PLAN - HVAC RENOVATION

SHEET NUMBER

M1.4



FIRST FLOOR PLAN - HVAC VENTILATION AND PIPING

SCALE:3/16" = 1'-0"

CONSTRUCTION DOCUMENTS

GENERAL NOTES:

A. CONTRACTOR IS TO ROUTE PIPING AND SIZE PIPING WITH ALL FITTING PER MANUFACTURE RECOMMENDATIONS. PROVIDE SHOP DRAWINGS INDICATING ALL EQUIPMENT, PIPING, WITH SIZES AND ACCESSORIES.

B. COORDINATE THERMOSTAT LOCATION WITH USING AGENCY.

PLAN NOTES: X

1. PROVIDE AND INSTALL BRACH SELECTOR ABOVE CEILING. ROUTE REFRIGERANT PIPING HIGH THRU STRUCTURAL.
2. 26x14" VSA UP WALL FROM DOAS; CONTINUE UP AFTER TAP WITH 16x14" DUCT TO SECOND LEVEL.
3. DUCT THRU WALL PENETRATION ABOVE CEILING. CONTRACTOR TO PROVIDE AUZILIARY FRAMING WITH FLASHING AND WEATHERPROOFING
4. REFRIGERANT PIPING UP WALL WITH PAINTED PIPE HIDE COVER.

ERG ENGINEERING RESOURCE GROUP
350 EDGEWOOD TERRACE DRIVE
JACKSON, MS 39206
PHONE: (601) 362-3552
FAX: (601) 366-6418

CONSULTANTS:

ELECTRICAL ENGINEER
SCHULTZ & WYNNE, P.A.
4523 OFFICE PARK DR.
JACKSON, MS 39206
T: (601) 982-3313

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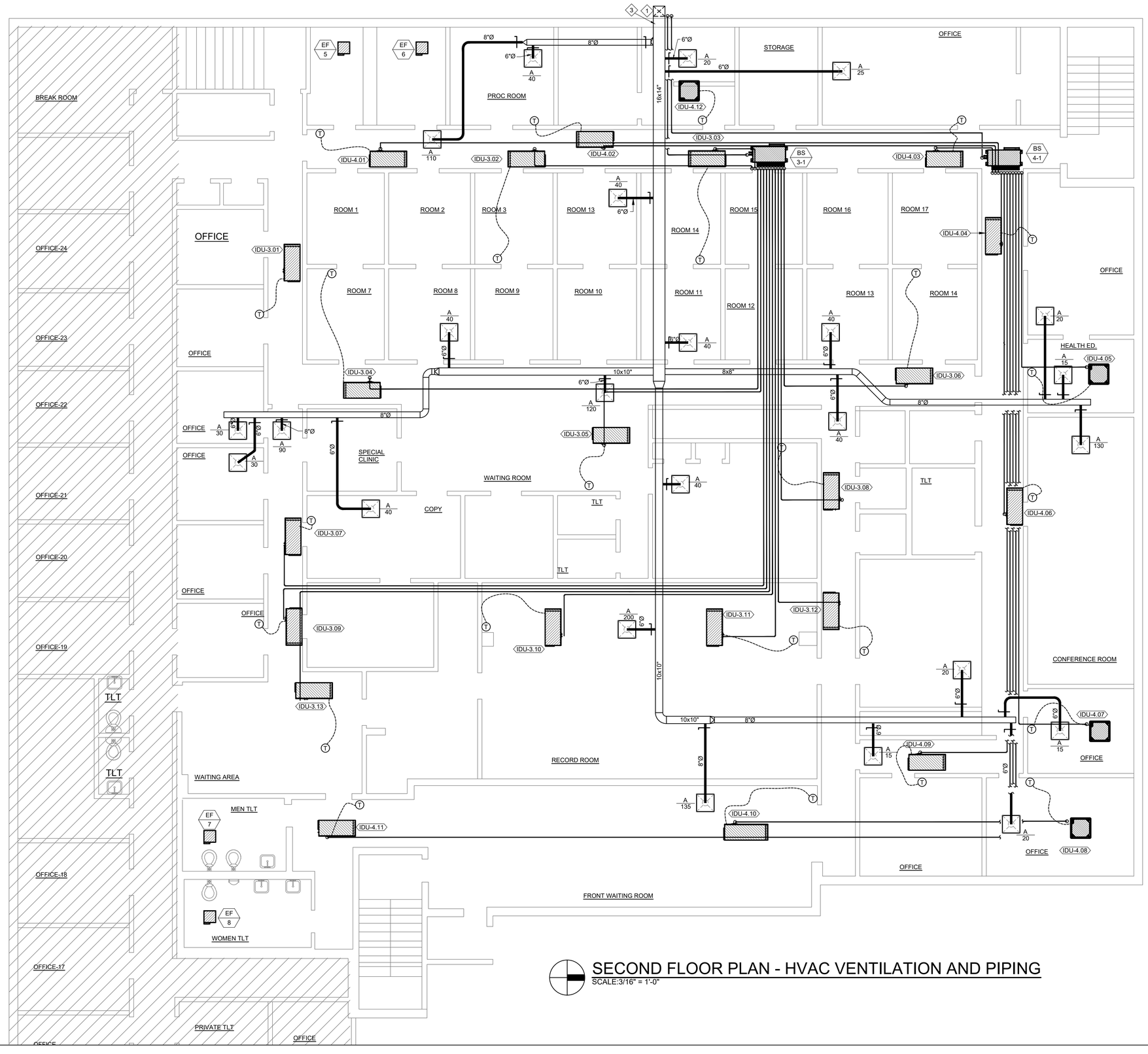
SEAL

CHAD E. MOORE
REGISTERED PROFESSIONAL ENGINEER
20102
10/4/2022
STATE OF MISSISSIPPI

SHEET TITLE:
HUMAN SERVICES - FIRST FLOOR PLAN - HVAC VENTILATION AND PIPING

SHEET NUMBER
M1.5



SECOND FLOOR PLAN - HVAC VENTILATION AND PIPING

SCALE:3/16" = 1'-0"

CONSTRUCTION DOCUMENTS

GENERAL NOTES:

A. CONTRACTOR IS TO ROUTE PIPING AND SIZE PIPING WITH ALL FITTING PER MANUFACTURE RECOMMENDATIONS. PROVIDE SHOP DRAWINGS INDICATING ALL EQUIPMENT, PIPING, WITH SIZES AND ACCESSORIES.

PLAN NOTES:

1. PROVIDE AND INSTALL BRACH SELECTOR ABOVE CEILING. ROUTE REFRIGERANT PIPING HIGH THRU STRUCTURAL.
2. 16x14" VSA FROM BELOW.
3. DUCT THRU WALL PENETRATION ABOVE CEILING. CONTRACTOR TO PROVIDE AUZILIARY FRAMING WITH FLASHING AND WEATHERPROOFING

ERG ENGINEERING RESOURCE GROUP
350 EDGEWOOD TERRACE DRIVE
JACKSON, MS 39206
PHONE: (601) 362-3552
FAX: (601) 366-6418

CONSULTANTS:

ELECTRICAL ENGINEER
SCHULTZ & WYNNE, P.A.
4523 OFFICE PARK DR.
JACKSON, MS 39206
T: (601) 982-3313

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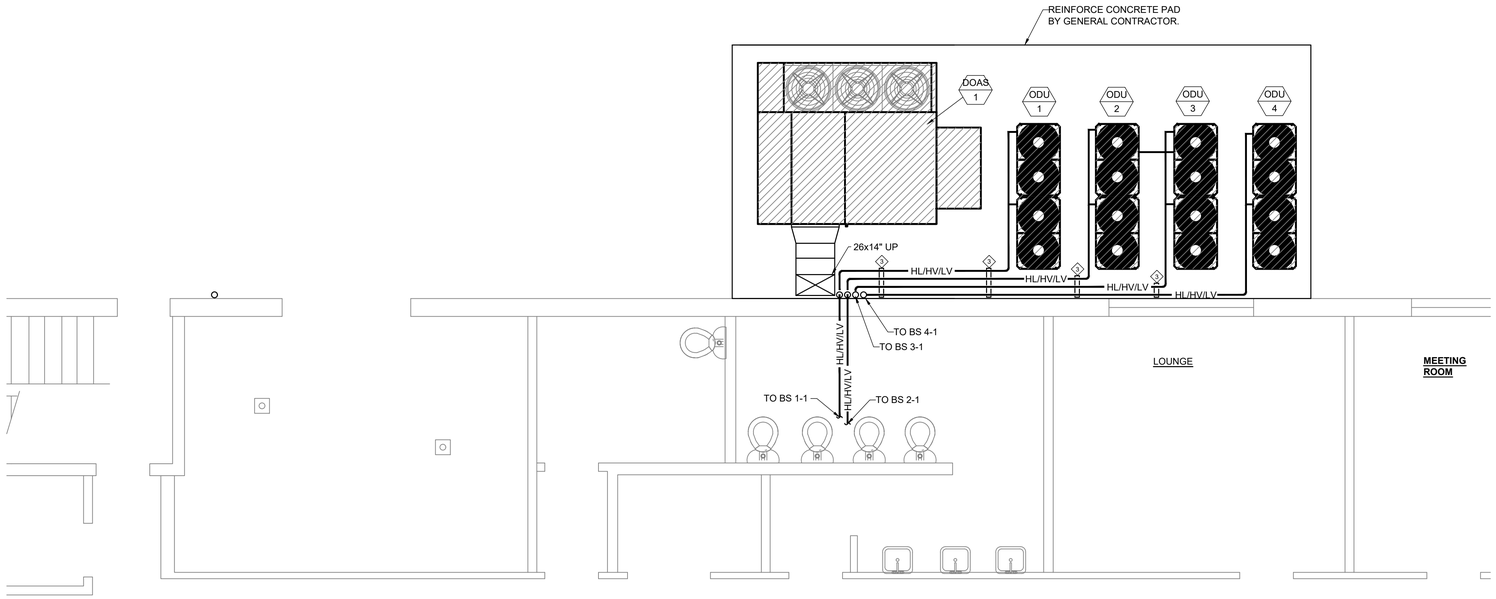
SEAL

SHEET TITLE:
HUMAN SERVICES - SECOND FLOOR PLAN - HVAC VENTILATION AND PIPING

SHEET NUMBER
M1.6

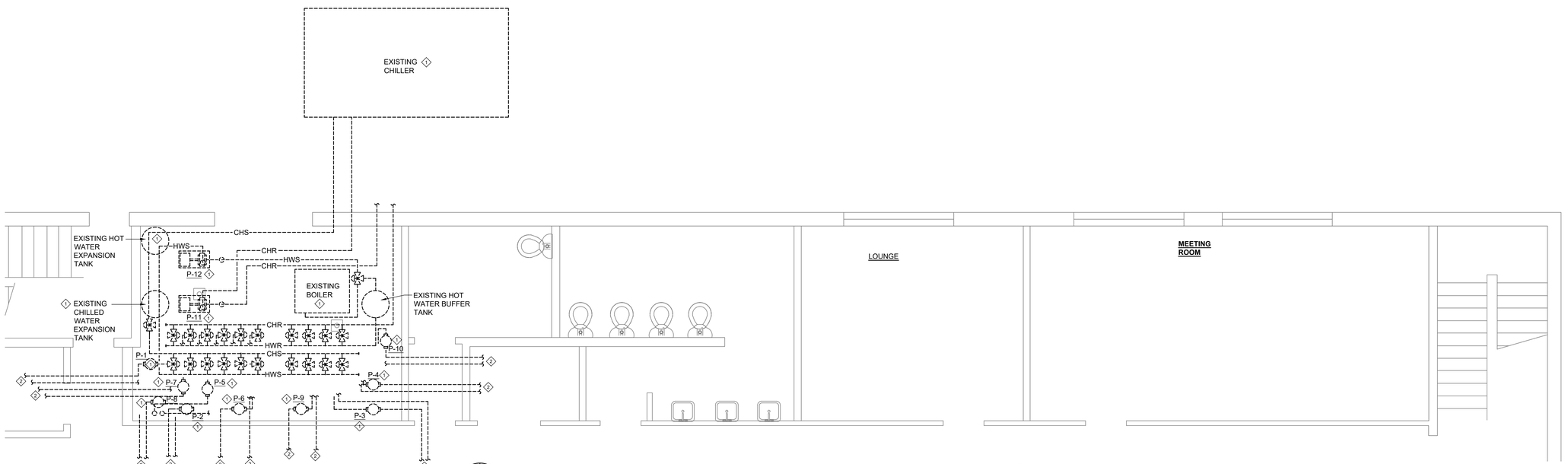
PLAN NOTES:

1. REMOVE EXISTING CHILLER, BOILER, EXPANSION TANKS, PUMPS, PIPING, VALVES, ETC.
2. EXISTING ZONE PIPING, HANGER, VALVES, ETC. TO BE REMOVED THOUGHT OUT THE ENTIRE BUILDING.
3. REFRIGERANT PIPE SUPPORT.



ENLARGE MECHANICAL ROOM PLAN - HVAC RENOVATION

SCALE:1/4" = 1'-0"



ENLARGE MECHANICAL ROOM PLAN - HVAC DEMOLITION

SCALE:1/4" = 1'-0"

CONSTRUCTION DOCUMENTS

ENGINEERING RESOURCE GROUP
350 EDGEWOOD TERRACE DRIVE
JACKSON, MS 39206
PHONE: (601) 362-3552
FAX: (601) 366-6418

CONSULTANTS:

ELECTRICAL ENGINEER
SCHULTZ & WYNNE, P.A.
4523 OFFICE PARK DR.
JACKSON, MS 39206
T: (601) 982-3313

PROJECT:

HVAC UPGRADES
LAUDERDALE COUNTY
MERIDIAN, MISSISSIPPI

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SEAL

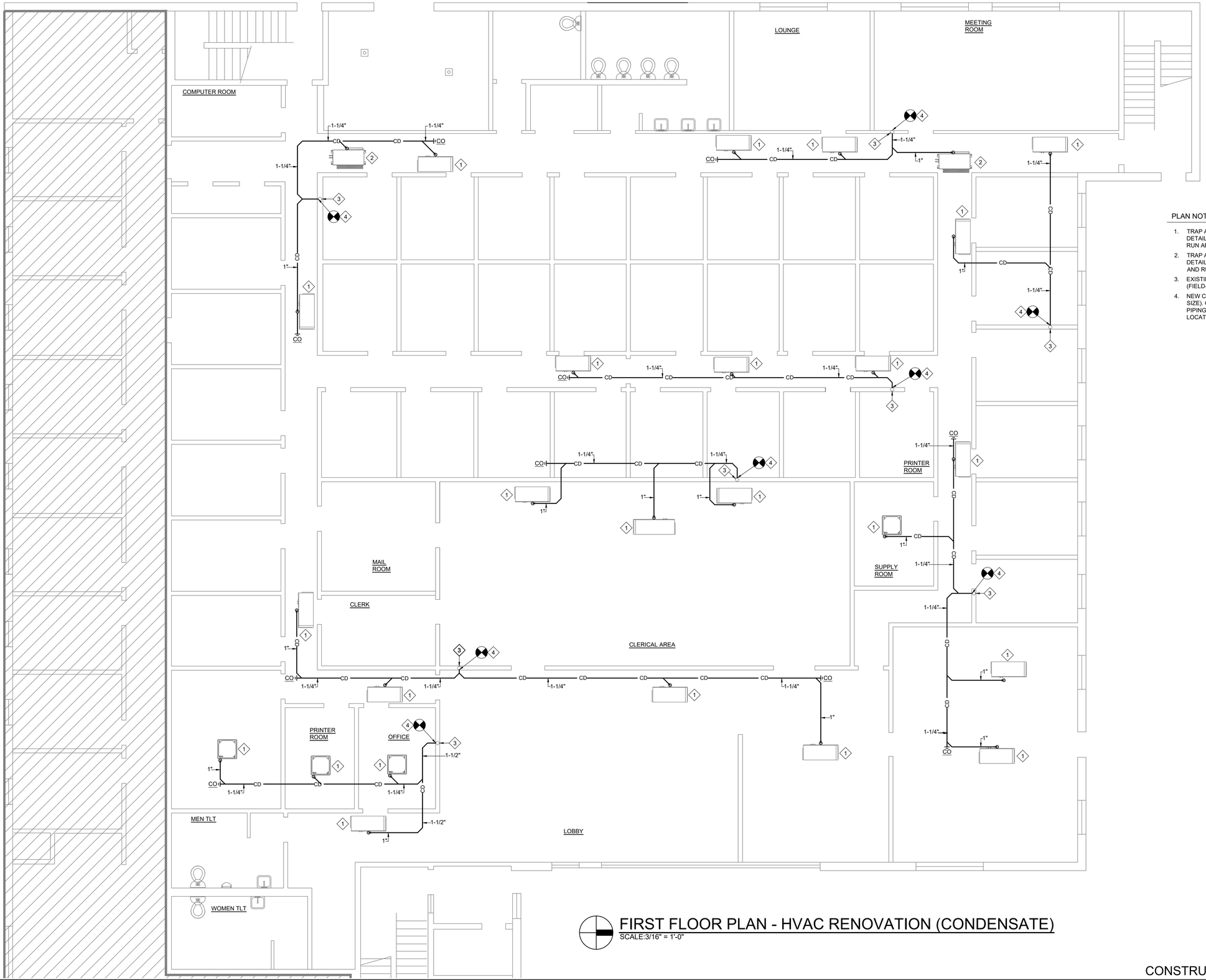
CHAD E. MOORE
LICENSED PROFESSIONAL ENGINEER
20102
10/4/2022
STATE OF MISSISSIPPI

SHEET TITLE:

HUMAN SERVICES - ENLARGED SCALE MECHANICAL ROOM PLAN - HVAC

SHEET NUMBER

M1.7



FIRST FLOOR PLAN - HVAC RENOVATION (CONDENSATE)

SCALE:3/16" = 1'-0"

CONSTRUCTION DOCUMENTS

PLAN NOTES:

1. TRAP AND VENT CONDENSATE DRAIN (SEE DETAIL) AT INDOOR UNIT. INCREASE TO 1" AND RUN ABOVE CEILING.
2. TRAP AND VENT CONDENSATE DRAIN (SEE DETAIL) AT BC CONTROLLER. INCREASE TO 1" AND RUN ABOVE CEILING.
3. EXISTING CONDENSATE DRAIN DOWN IN WALL (FIELD-VERIFY) EXACT LOCATION.
4. NEW CONDENSATE PIPE (SEE PLANS FOR PIPE SIZE). CONNECT TO EXISTING CONDENSATE PIPING ABOVE CEILING (FIELD-VERIFY) EXACT LOCATION.

ENGINEERING RESOURCE GROUP
350 EDGEWOOD TERRACE DRIVE
JACKSON, MS 39206
PHONE: (601) 362-3552
FAX: (601) 366-6418

CONSULTANTS:

ELECTRICAL ENGINEER
SCHULTZ & WYNNE, P.A.
4523 OFFICE PARK DR.
JACKSON, MS 39206
T: (601) 982-3313

PROJECT:

HVAC UPGRADES
LAUDERDALE COUNTY
MERIDIAN, MISSISSIPPI

PROJECT NUMBER: 22.006
DATE: 10/4/2022
DRAWN BY: KAH
CHECKED BY: CEM

REV: 0 IFC 10/4/2022
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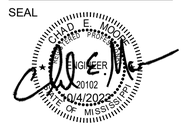
SEAL

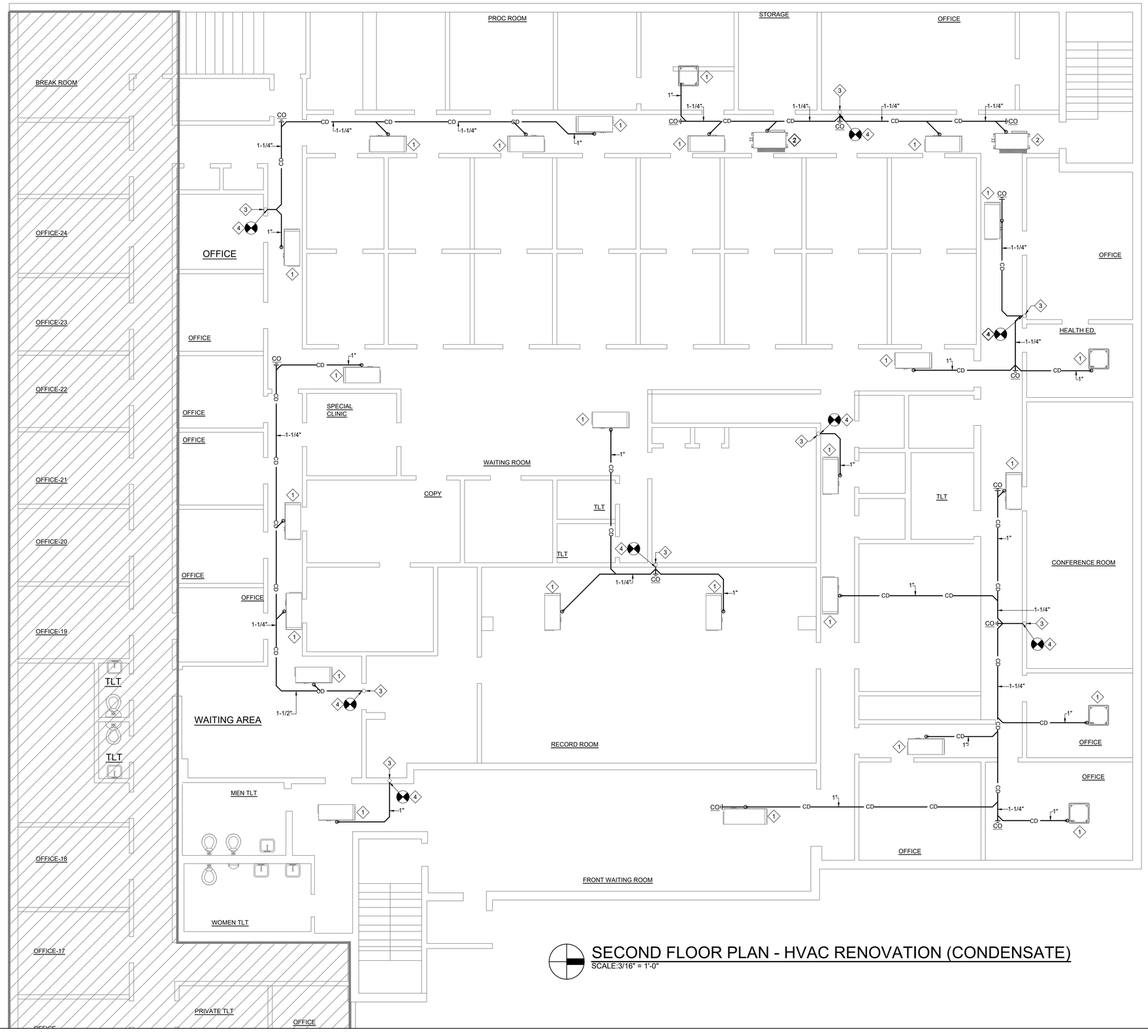


SHEET TITLE:
HUMAN SERVICES - FIRST FLOOR PLAN - HVAC CONDENSATE RENOVATION

SHEET NUMBER
M1.8

PLAN NOTES:

1. TRAP AND VENT CONDENSATE DRAIN (SEE DETAIL) AT INDOOR UNIT. INCREASE TO 1" AND RUN ABOVE CEILING.
2. TRAP AND VENT CONDENSATE DRAIN (SEE DETAIL) AT BC CONTROLLER. INCREASE TO 1" AND RUN ABOVE CEILING.
3. EXISTING CONDENSATE DRAIN DOWN IN WALL (FIELD-VERIFY) EXACT LOCATION.
4. NEW CONDENSATE PIPE (SEE PLANS FOR PIPE SIZE). CONNECT TO EXISTING CONDENSATE PIPING ABOVE CEILING (FIELD-VERIFY) EXACT LOCATION.



SECOND FLOOR PLAN - HVAC RENOVATION (CONDENSATE)

SCALE:3/16" = 1'-0"

CONSTRUCTION DOCUMENTS

ERG ENGINEERING RESOURCE GROUP
350 EDGEWOOD TERRACE DRIVE
JACKSON, MS 39206
PHONE: (601) 362-3552
FAX: (601) 366-6418

CONSULTANTS:

ELECTRICAL ENGINEER
SCHULTZ & WYNNE, P.A.
4523 OFFICE PARK DR.
JACKSON, MS 39206
T: (601) 982-3313

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1
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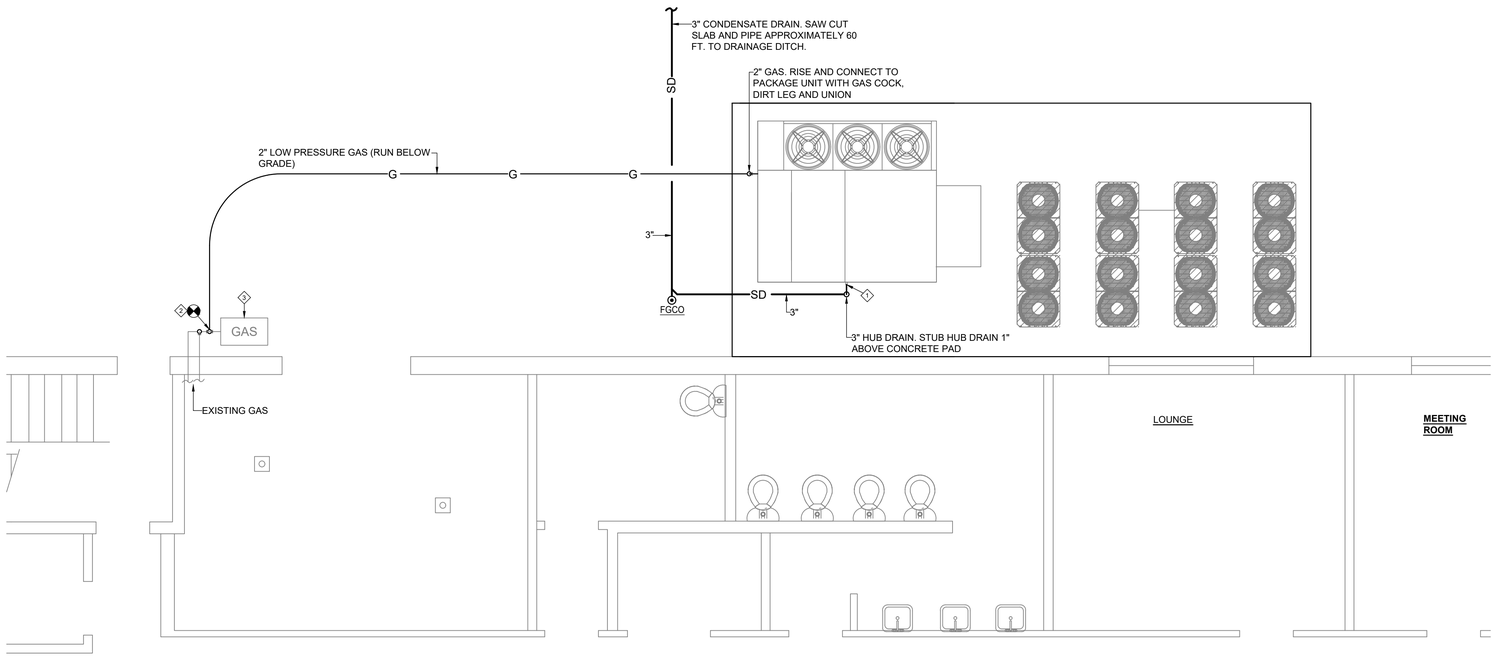
SEAL

CHRIS E. MOORE
REGISTERED PROFESSIONAL ENGINEER
20102
10/4/2022
STATE OF MISSISSIPPI

SHEET TITLE:
HUMAN SERVICES - SECOND FLOOR PLAN - HVAC CONDENSATE RENOVATION

SHEET NUMBER
M1.9



ENLARGE MECHANICAL ROOM PLAN - HVAC RENOVATION (CONDENSATE)

SCALE:1/4" = 1'-0"

PLAN NOTES:

1. TRAP AND VENT CONDENSATE DRAIN (SEE DETAIL) AT PACKAGE UNIT. RUN DRAIN FULL-SIZE AND SPILL INTO HUB DRAIN.
2. 2" GAS. CONNECT TO EXISTING. DROP AND RUN BELOW GRADE.
3. EXISTING GAS METER AND REGULATOR. VERIFY EXISTING GAS METER AND REGULATOR WILL HANDLE ADDITIONAL 300 CFH. REPLACE IF NECESSARY AT NO ADDITIONAL COST TO THE OWNER.

CONSTRUCTION DOCUMENTS

ENGINEERING RESOURCE GROUP
350 EDGEWOOD TERRACE DRIVE
JACKSON, MS 39206
PHONE: (601) 362-3552
FAX: (601) 366-6418

CONSULTANTS:

ELECTRICAL ENGINEER
SCHULTZ & WYNNE, P.A.
4523 OFFICE PARK DR.
JACKSON, MS 39206
T: (601) 982-3313

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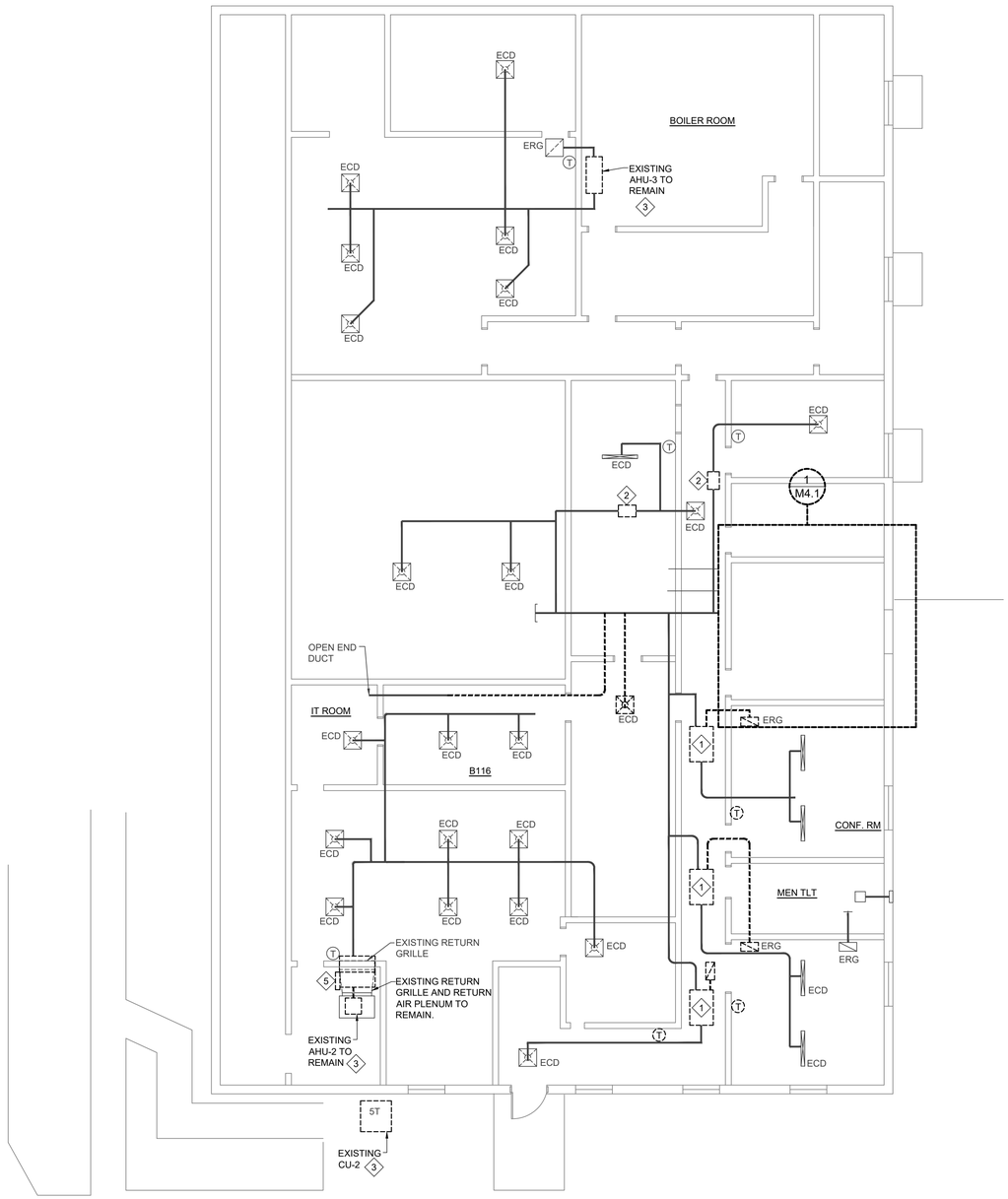
SEAL

CHAD E. MOORE
LICENSED PROFESSIONAL ENGINEER
20102
10/4/2022
STATE OF MISSISSIPPI

SHEET TITLE:
HUMAN SERVICES - ENLARGED SCALE MECHANICAL ROOM PLAN - HVAC CONDENSATE

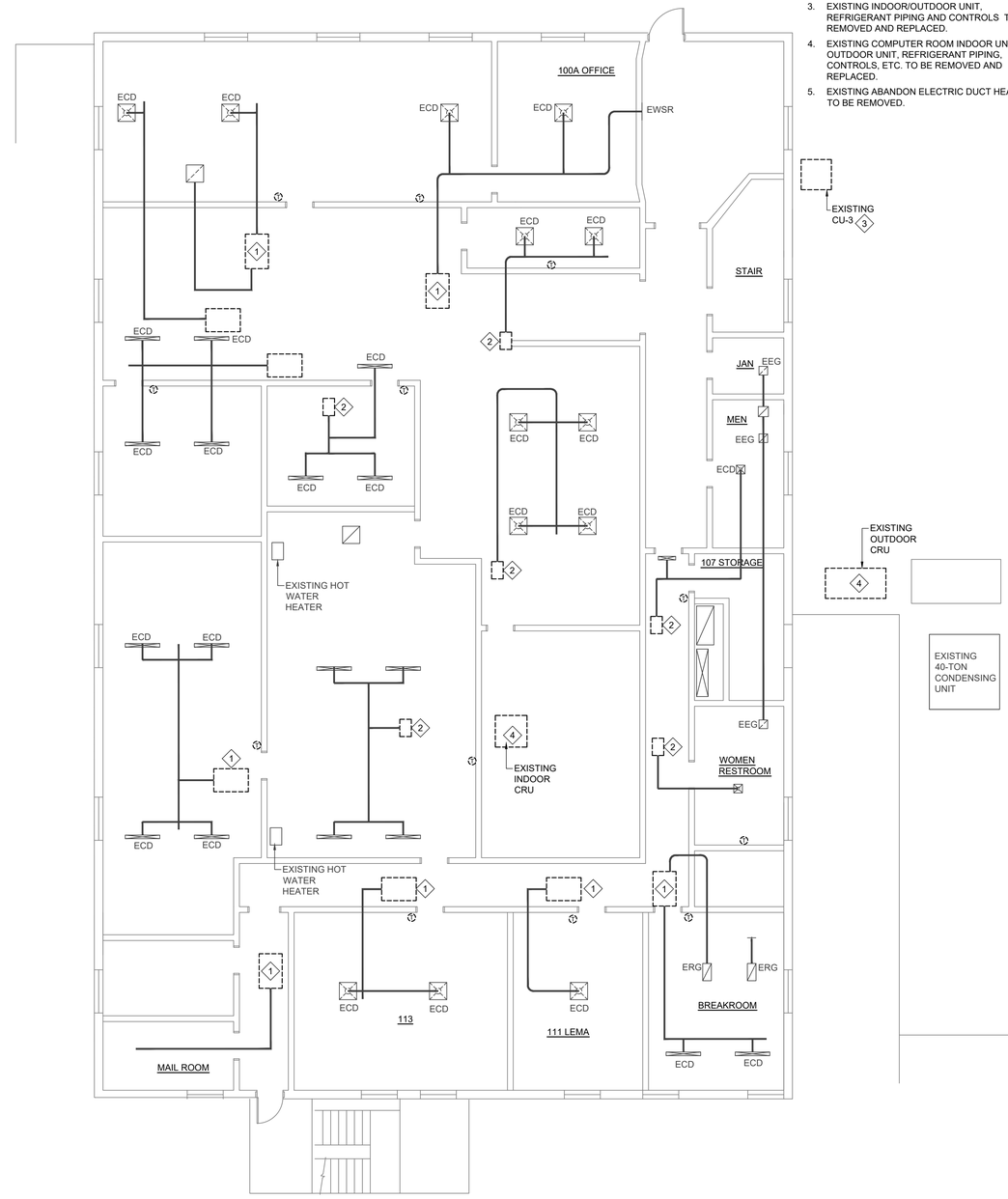
SHEET NUMBER

M1.10



FIRST FLOOR PLAN - HVAC DEMOLITION

SCALE:1/8" = 1'-0"



SECOND FLOOR PLAN - HVAC DEMOLITION

SCALE:1/8" = 1'-0"

PLAN NOTES:

1. EXISTING FAN POWER VAV UNIT WITH HOT WATER COIL TO BE REMOVED. REMOVE EXISTING T'STAT AND ASSOCIATED RETURN DUCTWORK AND RETURN GRILLE. EXISTING ELECTRICAL SERVICE, HEATING WATER PIPING, AND SUPPLY AIR DUCTWORK TO REMAIN FOR REUSE.
2. EXISTING REGULATOR AIR VALVE TO BE REMOVED. EXISTING SUPPLY AIR DUCTWORK TO REMAIN FOR REUSE.
3. EXISTING INDOOR/OUTDOOR UNIT, REFRIGERANT PIPING AND CONTROLS TO BE REMOVED AND REPLACED.
4. EXISTING COMPUTER ROOM INDOOR UNIT, OUTDOOR UNIT, REFRIGERANT PIPING, CONTROLS, ETC. TO BE REMOVED AND REPLACED.
5. EXISTING ABANDON ELECTRIC DUCT HEATER TO BE REMOVED.

CONSTRUCTION DOCUMENTS

ENGINEERING RESOURCE GROUP
350 EDGEWOOD TERRACE DRIVE
JACKSON, MS 39206
PHONE: (601) 362-3552
FAX: (601) 366-6418

CONSULTANTS:

ELECTRICAL ENGINEER
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4523 OFFICE PARK DR.
JACKSON, MS 39206
T: (601) 982-3313

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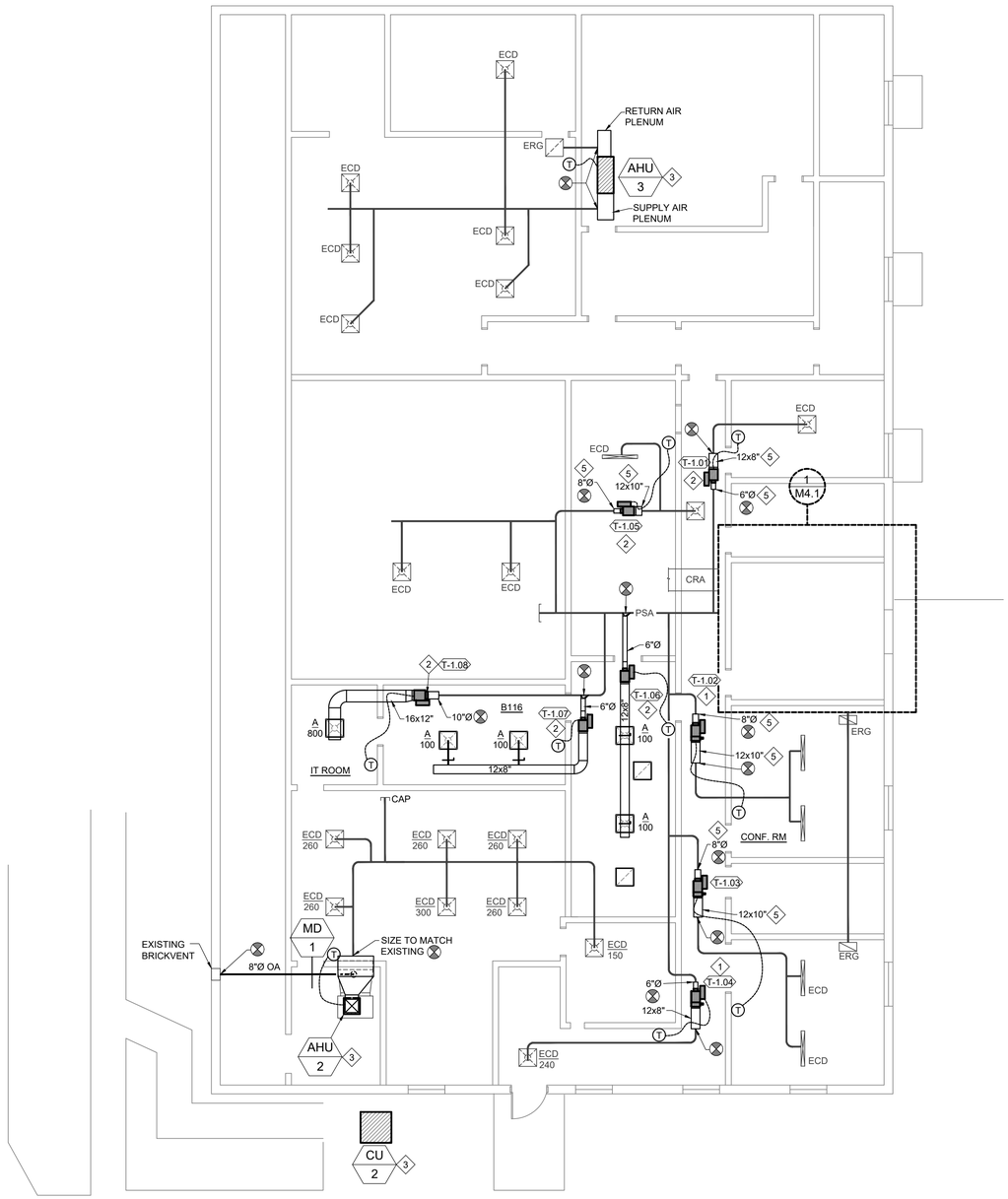
SEAL

CHAD E. MOORE
REGISTERED PROFESSIONAL
ENGINEER
20102
10/4/2022
STATE OF MISSISSIPPI

SHEET TITLE:
EMERGENCY SERVICES / EMA - FIRST AND SECOND FLOOR PLAN - HVAC DEMOLITION

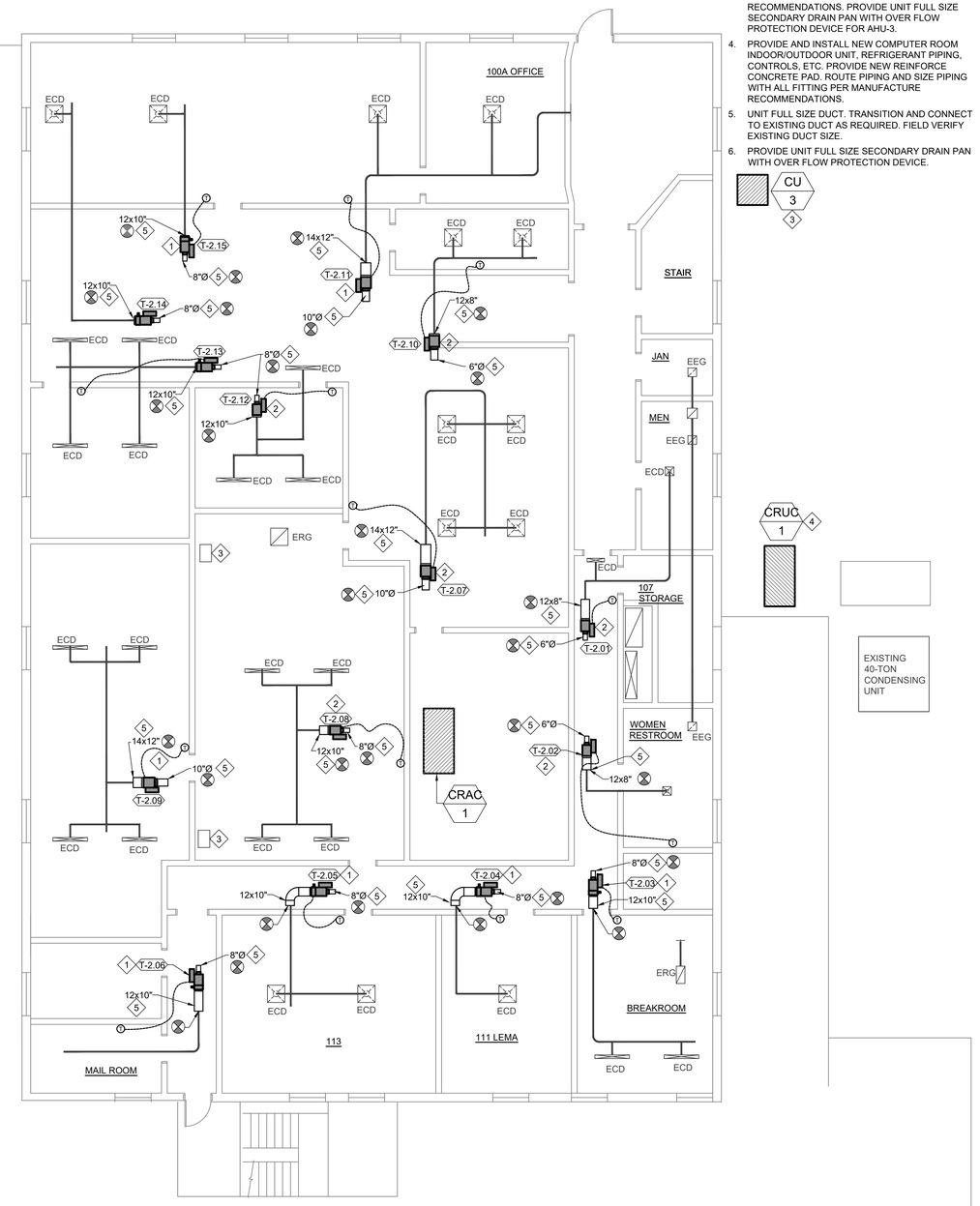
SHEET NUMBER

M1.11



FIRST FLOOR PLAN - HVAC RENOVATION

SCALE:1/8" = 1'-0"



SECOND FLOOR PLAN - HVAC RENOVATION

SCALE:1/8" = 1'-0"

PLAN NOTES:

1. PROVIDE AND INSTALL NEW VAV TERMINAL UNIT. RECONNECT TO EXISTING ELECTRICAL SERVICE, PIPING, DUCTWORK - MODIFY AS REQUIRED.
2. PROVIDE AND INSTALL NEW VAV TERMINAL UNIT BOX. RECONNECT TO EXISTING DUCTWORK - MODIFY AS REQUIRED.
3. PROVIDE AND INSTALL NEW INDOOR/OUTDOOR UNIT, REFRIGERANT PIPING, CONDENSATE PIPING, CONTROLS, ETC. ROUTE REFRIGERANT PIPING AND SIZE PIPING WITH ALL FITTING PER MANUFACTURE RECOMMENDATIONS. PROVIDE UNIT FULL SIZE SECONDARY DRAIN PAN WITH OVER FLOW PROTECTION DEVICE FOR AHU-3.
4. PROVIDE AND INSTALL NEW COMPUTER ROOM INDOOR/OUTDOOR UNIT, REFRIGERANT PIPING, CONTROLS, ETC. PROVIDE NEW REINFORCE CONCRETE PAD. ROUTE PIPING AND SIZE PIPING WITH ALL FITTING PER MANUFACTURE RECOMMENDATIONS.
5. UNIT FULL SIZE DUCT. TRANSITION AND CONNECT TO EXISTING DUCT AS REQUIRED. FIELD VERIFY EXISTING DUCT SIZE.
6. PROVIDE UNIT FULL SIZE SECONDARY DRAIN PAN WITH OVER FLOW PROTECTION DEVICE.

CU 3

CONSTRUCTION DOCUMENTS

ENGINEERING RESOURCE GROUP
350 EDGEWOOD TERRACE DRIVE
JACKSON, MS 39206
PHONE: (601) 362-3552
FAX: (601) 366-6418

CONSULTANTS:

ELECTRICAL ENGINEER
SCHULTZ & WYNNE, P.A.
4523 OFFICE PARK DR.
JACKSON, MS 39206
T: (601) 982-3313

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LAUDERDALE COUNTY
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SEAL

CHAD E. MOORE
REGISTERED PROFESSIONAL ENGINEER
20102
10/4/2022
STATE OF MISSISSIPPI

SHEET TITLE:
EMERGENCY SERVICES / EMA - FIRST AND SECOND FLOOR PLAN - HVAC RENOVATION

SHEET NUMBER

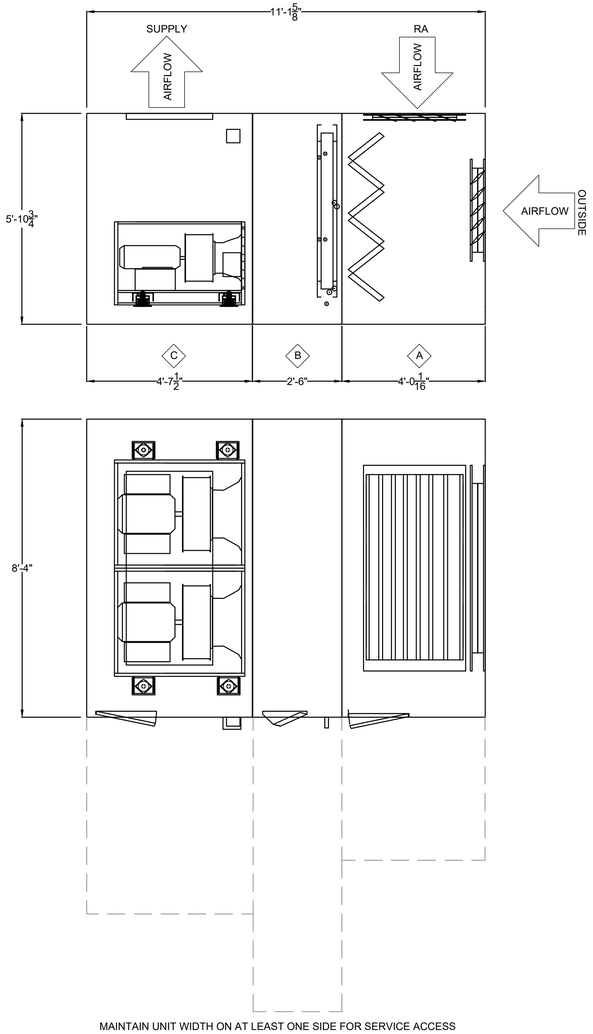
M1.12

AHU SECTION DESCRIPTION (X)

A. MIXING BOX AND FILTER SECTION W/1" TEST PORT & VALVE, LED MARINE LIGHT

B. DX COOLING COIL W/STAINLESS STEEL DRAIN PAN. PIPING CONNECTION ON EXTERIOR OF UNIT, LED MARINE LIGHT.

C. SUPPLY FAN SECTION, (2) DIRECT-DRIVE PLENUM FANS AND DISCHARGE SECTION W/1" TEST PORT & VALVE, WINDOW, LED MARINE LIGHT. EACH SUPPLY FAN SHALL BE FACTORY WIRED FROM THE FAN MOTOR TO A FACTORY INSTALLED EXTERNAL JUNCTION BOX. ELECTRICAL SERVICE TO EACH FACTORY WIRED EXTERNAL JUNCTION BOX IS SPECIFIED UNDER DIVISION 26 ELECTRICAL.



MAINTAIN UNIT WIDTH ON AT LEAST ONE SIDE FOR SERVICE ACCESS

2 / M4.1 DETAIL OF MODULAR AHU-1

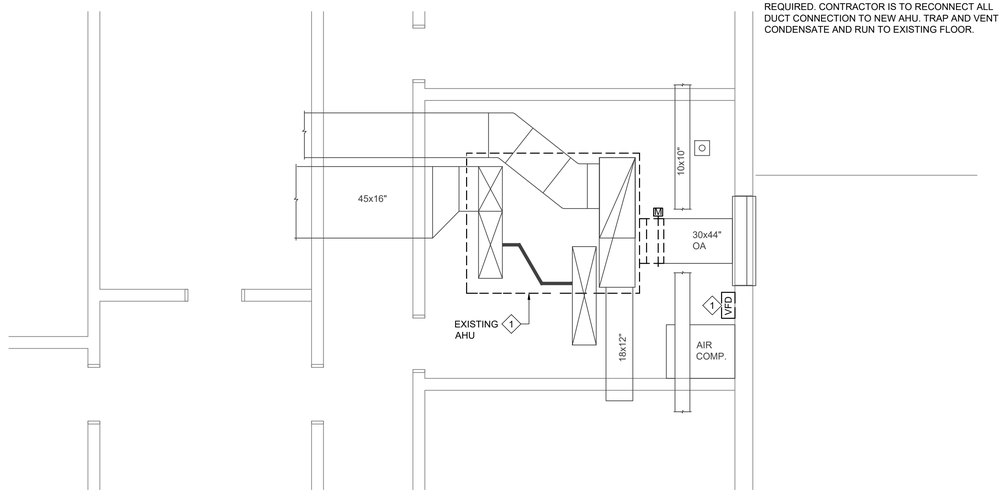
SCALE: 1/2" = 1'-0"

AIR HANDLING UNIT SOUND LIMIT SCHEDULE

TAG	SOURCE	MAXIMUM Lw IN dB re 10^{-12} WATTS OCTAVE BAND CENTER FREQUENCY - Hz							
		63	125	250	500	1000	2000	4000	8000
AHU 1	DISCHARGE	86	84	92	87	88	88	87	78
	INLET	77	79	85	76	73	77	77	66
	CASING RADIATED	86	83	85	81	84	66	54	45

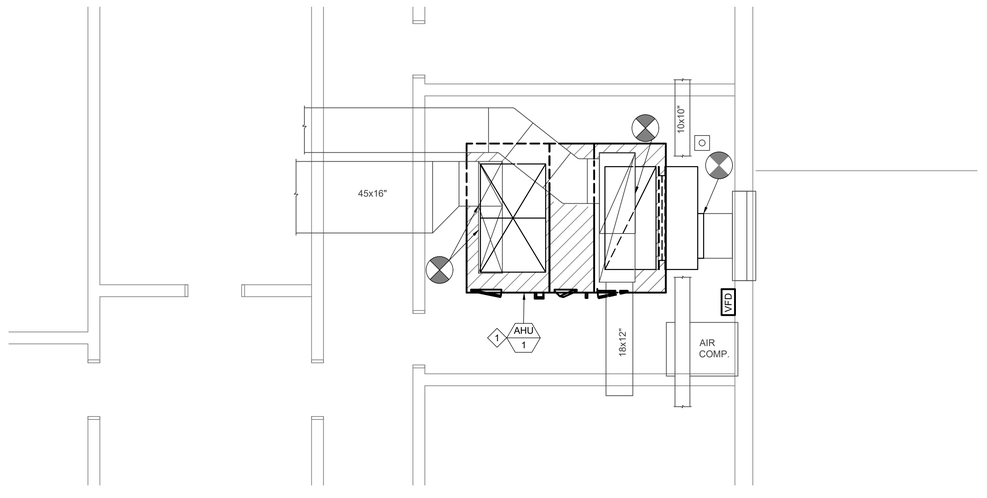
PLAN NOTES: (X)

1. REMOVE EXISTING AHU AND WALL MTD VFD. EXISTING REFRIGERANT PIPING TO REMAIN FOR REUSE - MODIFY PIPING WITH NEW FITTING AS REQUIRED UNDER NEW WORK.
2. PROVIDE AND INSTALL NEW AHU. RECONNECT TO EXISTING DUCTWORK, REFRIGERANT PIPING, ELECTRICAL SERVICE, PIPING, - MODIFY AS REQUIRED. CONTRACTOR IS TO RECONNECT ALL DUCT CONNECTION TO NEW AHU. TRAP AND VENT CONDENSATE AND RUN TO EXISTING FLOOR.



ENLARGED SCALE MECHANICAL ROOM - HVAC DEMOLITION

SCALE:1/4" = 1'-0"



ENLARGED SCALE MECHANICAL ROOM - HVAC RENOVATION

SCALE:1/4" = 1'-0"

CONSTRUCTION DOCUMENTS

ENGINEERING RESOURCE GROUP
350 EDGEWOOD TERRACE DRIVE
JACKSON, MS 39206
PHONE: (601) 362-3552
FAX: (601) 366-6418

CONSULTANTS:

ELECTRICAL ENGINEER
SCHULTZ & WYNNE, P.A.
4523 OFFICE PARK DR.
JACKSON, MS 39206
T: (601) 982-3313

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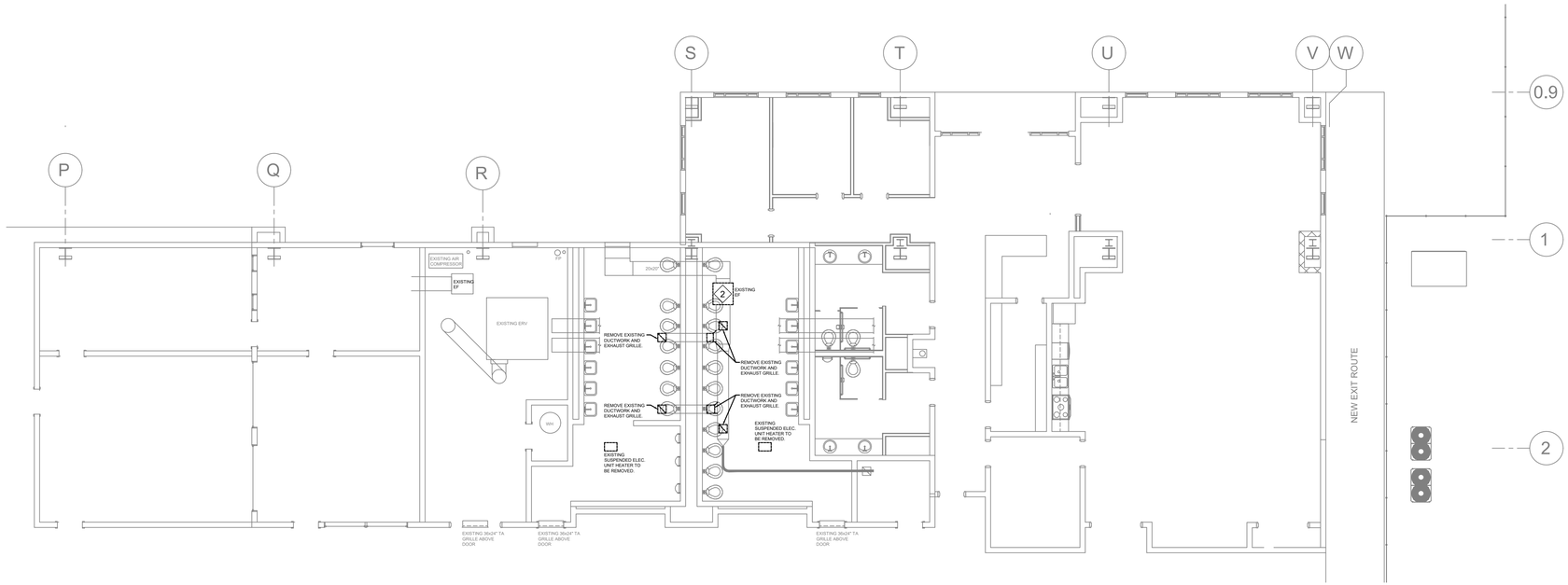
SEAL

CHAD E. MOORE REGISTERED PROFESSIONAL ENGINEER 20102 10/4/2022 STATE OF MISSISSIPPI

SHEET TITLE:
EMERGENCY SERVICES / EMA - ENLARGED SCALE MECHANICAL ROOM PLAN - HVAC

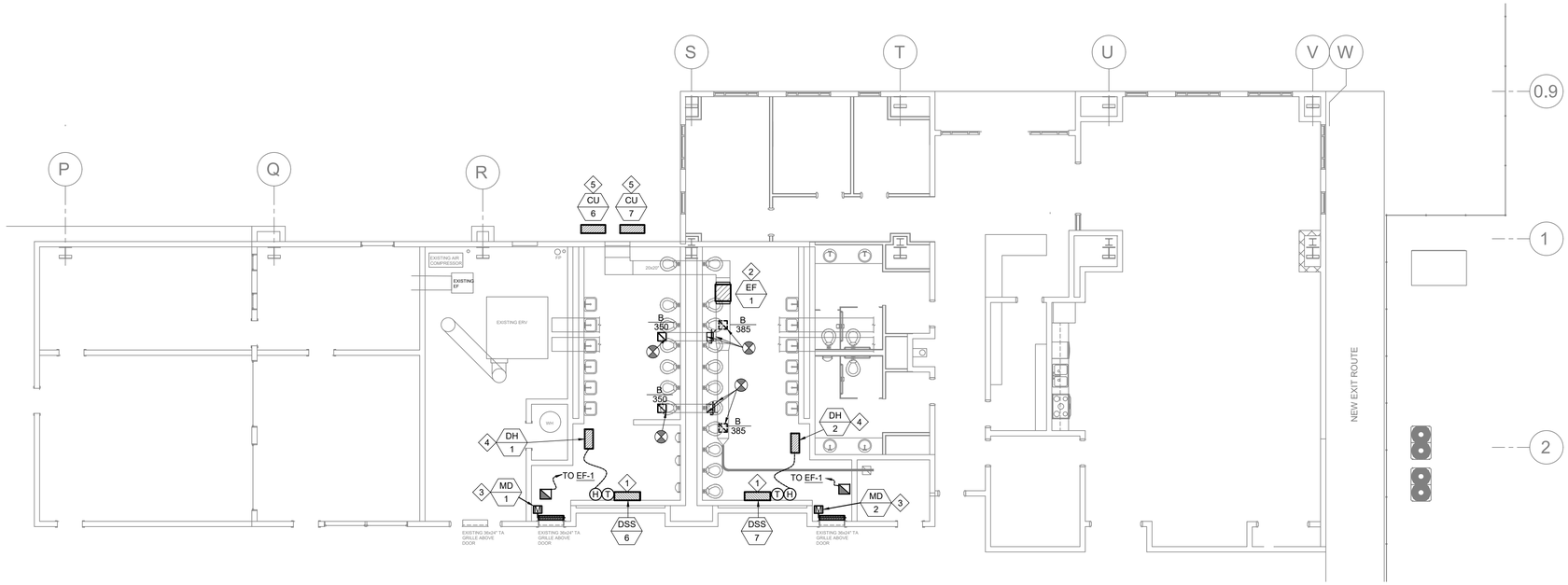
SHEET NUMBER

M1.13



UPPER RESTROOMS PLAN - HVAC DEMOLITION

SCALE:1/8" = 1'-0"



UPPER RESTROOMS PLAN - HVAC RENOVATION

SCALE:1/8" = 1'-0"

CONSTRUCTION DOCUMENTS

GENERAL NOTES:

A. ALL REFRIGERANT PIPING (INDOOR AND OUTDOOR) ON WALLS TO HAVE PAINTABLE LINE HIDE.

PLAN NOTES:

1. PROVIDE NEW WALL MOUNTED DSS UNIT. PUMP CONDENSATE TO NEAREST WASTE WITH DEEP SEAL TRAP.
2. EXISTING EXHAUST FAN TO BE REPLACED DURING NEW WORK. EF-1 TO ENERGIZE WHEN CEILING MTD OCCUPANCY SENSOR IN EITHER RESTROOM IS ENERGIZE.
3. PROVIDE NEW 36x24" MOTORIZED DAMPER AND CONNECT TO EXISTING TRANSFER GRILLE. INTERLOCK WITH EF-1 TO OPEN WHEN EF-1 TURNS ON. FIELD VERIFY EXISTING GRILLE SIZE PRIOR TO ORDER.
4. SUSPENDED DEHUMIDIFIER FROM STRUCTURAL AS HIGH AS POSSIBLE. PROVIDE UNIT FULL SIZE SECONDARY DRAIN PAN WITH OVER FLOW PROTECTION DEVICE TO SHUT OFF UNIT. UNIT BOTTOM ELEVATION TO MATCH AHU IN SPACE.
5. PROVIDE SUPPORT PAD FOR OUTDOOR UNIT. ROUTE REFRIGERANT PIPING THRU MECHANICAL ROOM TO INDOOR UNIT.

ENGINEERING RESOURCE GROUP
350 EDGEWOOD TERRACE DRIVE
JACKSON, MS 39206
PHONE: (601) 362-3552
FAX: (601) 366-6418

CONSULTANTS:

ELECTRICAL ENGINEER
SCHULTZ & WYNNE, P.A.
4523 OFFICE PARK DR.
JACKSON, MS 39206
T: (601) 982-3313

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SEAL

CHAD E. MOORE
REGISTERED PROFESSIONAL ENGINEER
20102
10/4/2022
STATE OF MISSISSIPPI

SHEET TITLE:

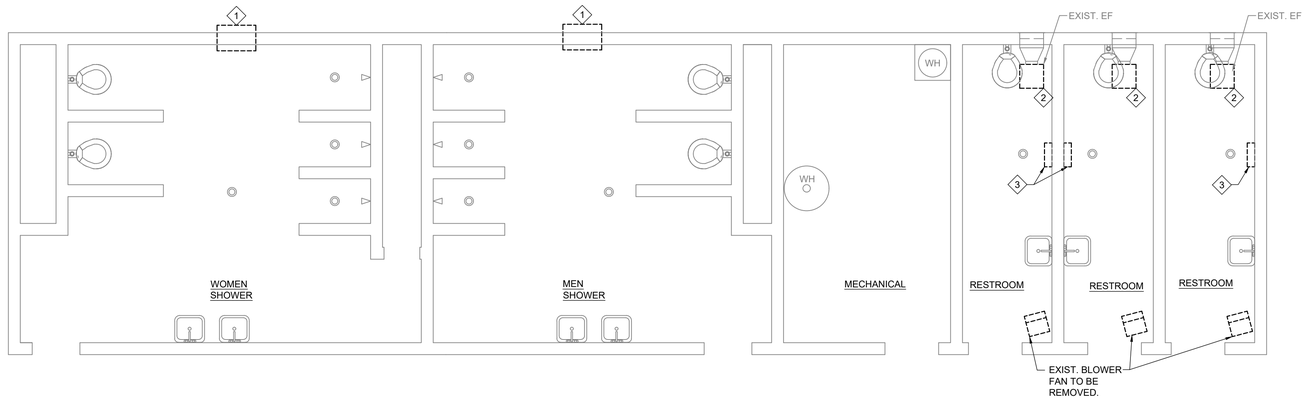
AGRI-CENTER - UPPER RESTROOMS PLAN - HVAC

SHEET NUMBER

M1.11

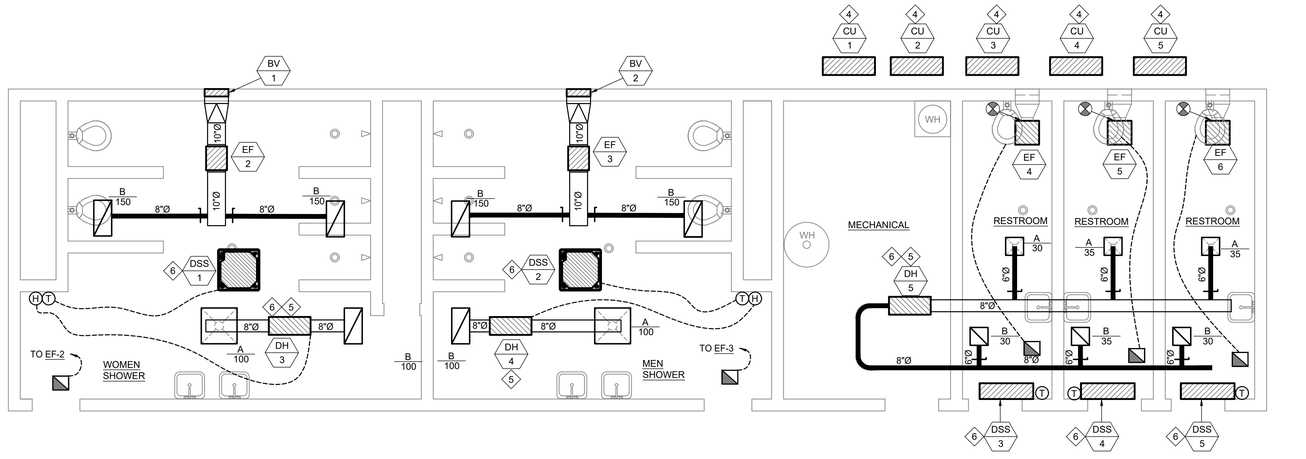
PLAN NOTES:

1. EXISTING THRU WALL UNIT TO BE REMOVED. PATCH SURFACE TO MATCH.
2. EXISTING EXHAUST FAN TO BE REPLACED.
3. EXISTING ELECTRIC WALL HEATER TO BE REMOVED. PATCH SURFACE TO MATCH EXISTING.
4. PROVIDE WALL MOUNT BRACKET KIT FOR OUTDOOR UNIT. ROUTE REFRIGERANT PIPING UP WALL TO ABOVE CEILING AND RUN TO INDOOR UNIT. ALL REFRIGERANT PIPING (INDOOR AND OUTDOOR EXPOSED) TO HAVE PAINTABLE LINE HIDE.
5. SUSPENDED DEHUMIDIFIER FROM STRUCTURAL. PROVIDE UNIT FULL SIZE SECONDARY DRAIN PAN WITH OVER FLOW PROTECTION DEVICE TO SHUT OFF UNIT.
6. PUMP CONDENSATE TO NEAREST WASTE WITH DEEP SEAL TRAP.



LOWER RESTROOMS PLAN - HVAC DEMOLITION

SCALE:1/4" = 1'-0"



LOWER RESTROOMS PLAN - HVAC RENOVATION

SCALE:1/4" = 1'-0"

CONSTRUCTION DOCUMENTS

ENGINEERING RESOURCE GROUP
350 EDGEWOOD TERRACE DRIVE
JACKSON, MS 39206
PHONE: (601) 362-3552
FAX: (601) 366-6418

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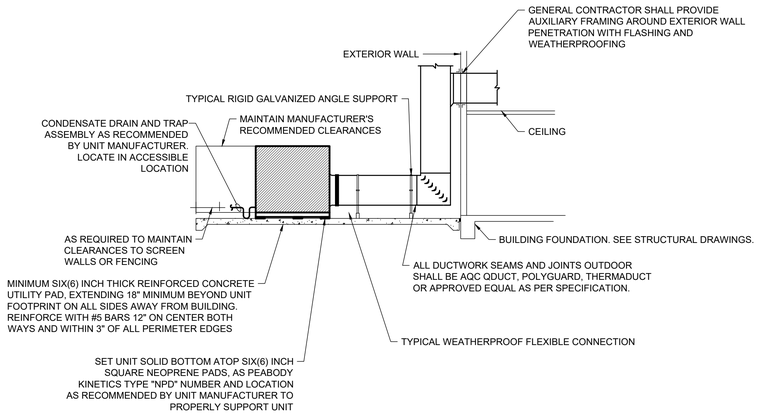
SEAL

SHEET TITLE:

AGRI-CENTER - LOWER RESTROOMS PLAN - HVAC

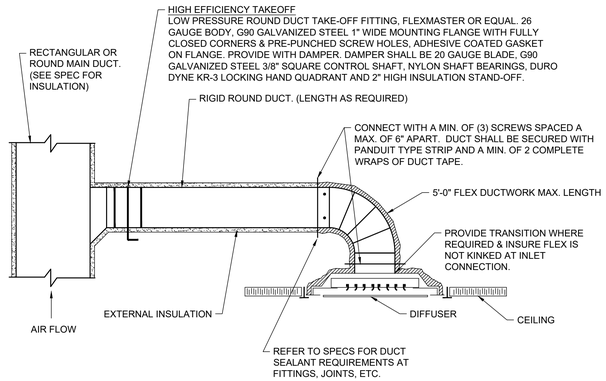
SHEET NUMBER

M1.12

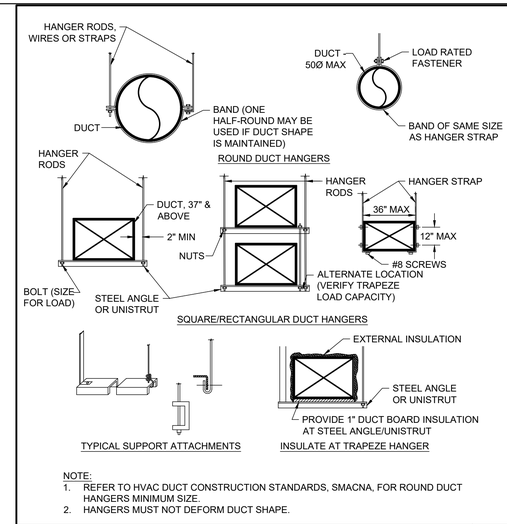


PAD MOUNTED HVAC PACKAGED UNIT DETAIL | NO SCALE

NOTE: DUCTWORK AND AUXILLARY SUPPORTS SHALL BE NEATLY PRIMED AND PAINTED BY CONTRACTOR, WITH AN ALKYD - BASED RUST INHIBITIVE APPROVED PAINT SYSTEM

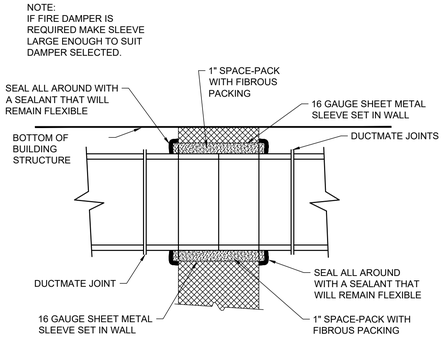


TYPICAL ROUND SUPPLY BRANCH DUCT DETAIL | NO SCALE

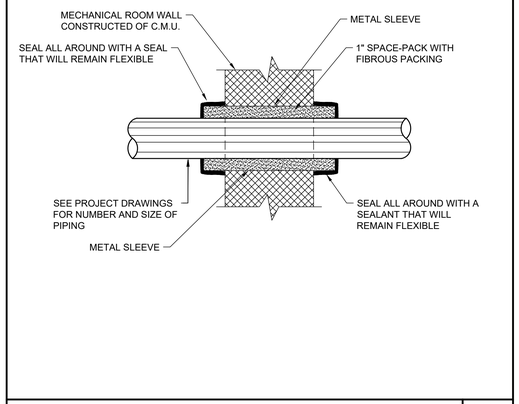


NOTE:
1. REFER TO HVAC DUCT CONSTRUCTION STANDARDS, SMACNA, FOR ROUND DUCT HANGERS MINIMUM SIZE.
2. HANGERS MUST NOT DEFORM DUCT SHAPE.

DUCTWORK LOWER HANGER ATTACHMENTS DETAIL | NO SCALE

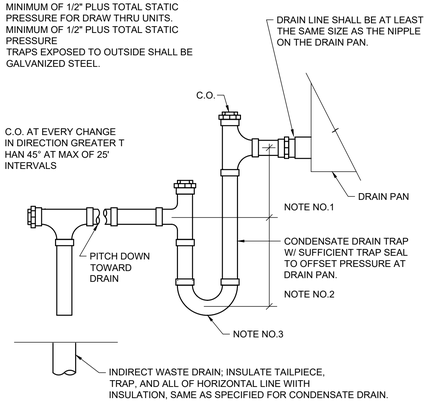


DUCT PASSING THROUGH WALLS DETAIL | NO SCALE

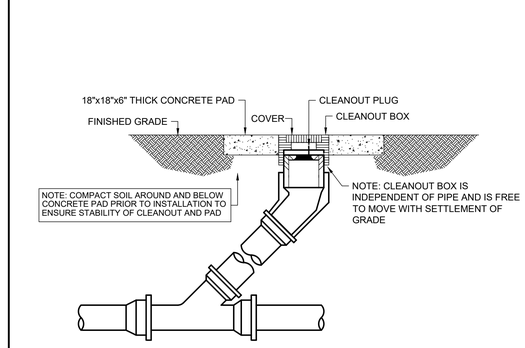


DETAIL OF PIPES AND CONDUITS PASSING THRU WALLS | NO SCALE

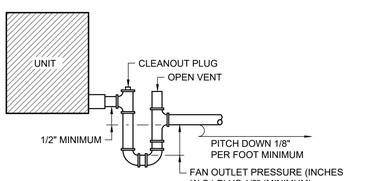
NOTES:
1. MINIMUM OF 1/2" ON BLOW THRU UNITS. MINIMUM OF 1/2" PLUS TOTAL STATIC PRESSURE FOR DRAW THRU UNITS.
2. MINIMUM OF 1/2" PLUS TOTAL STATIC PRESSURE
3. TRAPS EXPOSED TO OUTSIDE SHALL BE GALVANIZED STEEL.



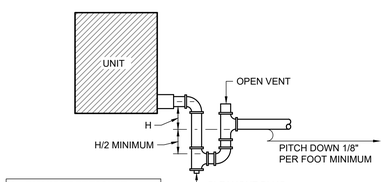
CONDENSATE DRAIN TRAP DETAIL | NO SCALE



EXTERIOR FLUSH GRADE CLEANOUT DETAIL | NO SCALE



BLOW-THRU UNITS

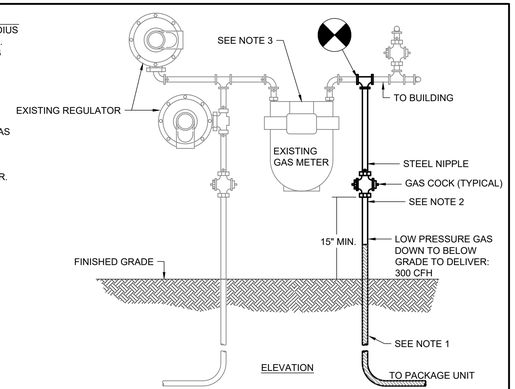


DRAW-THRU UNITS

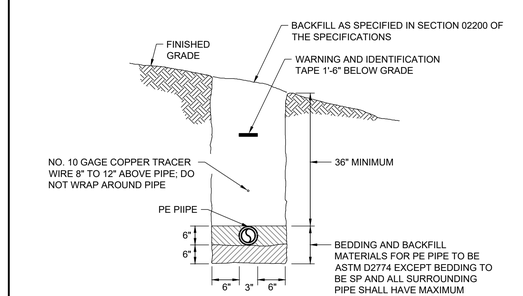
NOTES:
1) SEE FLOOR PLAN(S) FOR PIPE SIZES.
2) ALL CONDENSATE PIPING SHALL BE INSULATED (SEE SPECIFICATIONS).
3) CONTRACTOR TO BE RESPONSIBLE FOR LEVELING ALL UNITS, DRAIN PANS, ETC. AS REQUIRED TO INSURE PROPER CONDENSATE FLOW.
4) CONTRACTOR SHALL VERIFY IF UNIT FAN IS IN THE "BLOW-THRU" OR "DRAW-THRU" POSITION.

CONDENSATE DRAIN DETAILS | NO SCALE

NOTES:
1. BEND METER RISER ON AN 8" RADIUS USING A 90°, 1" CONDUIT BENDER. CHECK COATING AFTER BENDING AND REPAIR ANY DEFECTS.
2. PAINT ABOVE GROUND INSTALLATION.
3. EXISTING GAS METER AND REGULATOR. VERIFY EXISTING GAS METER AND REGULATOR WILL HANDLE ADDITIONAL 300 CFH, REPLACE IF NECESSARY AT NO ADDITIONAL COST TO THE OWNER.



DETAIL OF EXISTING GAS SERVICE RISER | NO SCALE



PE GAS MAIN INSTALLATION DETAIL | NO SCALE

CONSTRUCTION DOCUMENTS

ENGINEERING RESOURCE GROUP
350 EDGEWOOD TERRACE DRIVE
JACKSON, MS 39206
PHONE: (601) 362-3552
FAX: (601) 366-6418

CONSULTANTS:

ELECTRICAL ENGINEER
SCHULTZ & WYNNE, P.A.
4523 OFFICE PARK DR.
JACKSON, MS 39206
T: (601) 982-3313

PROJECT:

HVAC UPGRADES
LAUDERDALE COUNTY
MERIDIAN, MISSISSIPPI

PROJECT NUMBER: 22.006
DATE: 10/4/2022
DRAWN BY: KAH
CHECKED BY: CEM

REV: 0 IFC 10/4/2022
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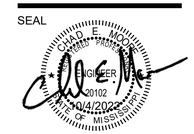
SEAL

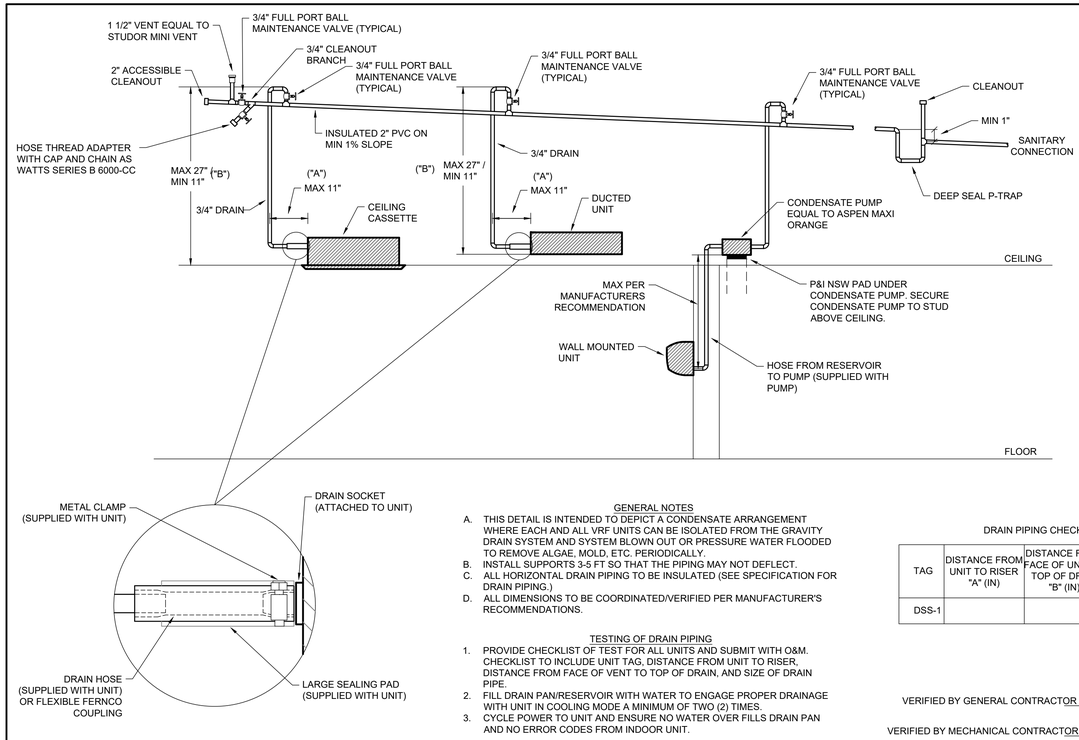


SHEET TITLE:

MECHANICAL DETAILS

SHEET NUMBER

M5.1



GENERAL NOTES

A. THIS DETAIL IS INTENDED TO DEPICT A CONDENSATE ARRANGEMENT WHERE EACH AND ALL VRF UNITS CAN BE ISOLATED FROM THE GRAVITY DRAIN SYSTEM AND SYSTEM BLOWN OUT OR PRESSURE WATER FLOODED TO REMOVE ALGAE, MOLD, ETC. PERIODICALLY.
B. INSTALL SUPPORTS 3-5 FT SO THAT THE PIPING MAY NOT DEFLECT.
C. ALL HORIZONTAL DRAIN PIPING TO BE INSULATED (SEE SPECIFICATION FOR DRAIN PIPING.)
D. ALL DIMENSIONS TO BE COORDINATED/VERIFIED PER MANUFACTURER'S RECOMMENDATIONS.

TESTING OF DRAIN PIPING

1. PROVIDE CHECKLIST OF TEST FOR ALL UNITS AND SUBMIT WITH O&M. CHECKLIST TO INCLUDE UNIT TAG, DISTANCE FROM UNIT TO RISER, DISTANCE FROM FACE OF VENT TO TOP OF DRAIN, AND SIZE OF DRAIN PIPE.
2. FILL DRAIN PAN/RESERVOIR WITH WATER TO ENGAGE PROPER DRAINAGE WITH UNIT IN COOLING MODE A MINIMUM OF TWO (2) TIMES.
3. CYCLE POWER TO UNIT AND ENSURE NO WATER OVER FILLS DRAIN PAN AND NO ERROR CODES FROM INDOOR UNIT.

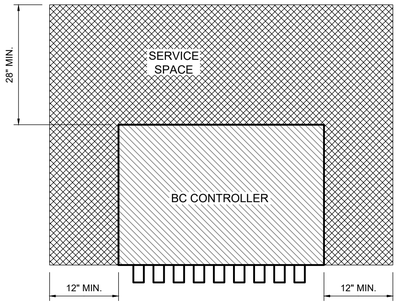
DRAIN PIPING CHECKLIST TEMPLATE

TAG	DISTANCE FROM UNIT TO RISER "A" (IN)	DISTANCE FROM FACE OF UNIT TO TOP OF DRAIN "B" (IN)	SIZE OF DRAIN PIPE (IN)	FILL DRAIN PIPE (Y/N)	PASS TEST (Y/N)
DSS-1					

VERIFIED BY GENERAL CONTRACTOR _____ DATE _____

VERIFIED BY MECHANICAL CONTRACTOR _____ DATE _____

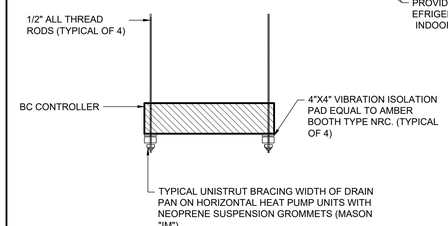
VRF PUMPED CONDENSATE DRAIN DETAIL — NO SCALE



NOTES:

A. ALL DIMENSIONS ARE IN INCHES
B. REFER TO BC CONTROLLER SCHEDULE FOR OVERALL SIZE AND WEIGHT OF UNIT

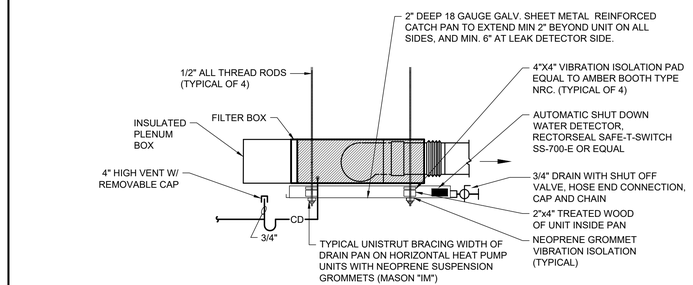
BC CONTROLLER SERVICE ACCESS DETAIL — NO SCALE



NOTES:

A. BC CONTROLLER(S) MUST BE MOUNTED LEVEL.
B. SEE PLUMBING DRAWINGS FOR CONDENSANTE DRAIN ROUTING
C. PROVIDE AND INSTALL TAGS AT EACH CONNECTION TO THE BRANCH SELECTOR THAT INDICATES WHICH INDOOR UNIT THE REFRIGERANT LINE IS SERVING.
D. PROVIDE AND INSTALL TAG AT EACH INDOOR UNIT TO INDICATE WHICH BRANCH SELECTOR THE REFRIGERANT LINE IS SERVING.

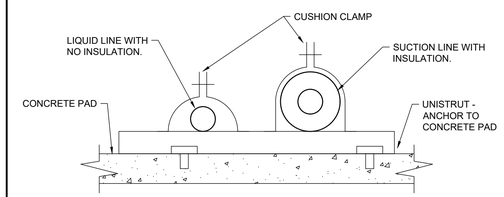
BC CONTROLLER MOUNTING AND REFRIGERANT CONTROL DETAIL - SUSPENDED — NO SCALE



NOTE:

1. CONTRACTOR SHALL PROVIDE LEAK DETECTOR & AUTO-SHUTOFF KIT AS BY WATER ALARM FLOODSTOP TO DEACTIVATE UNIT WHEN WATER IN CATCH PAN IS DETECTED.
2. PROVIDE AUXILIARY STEEL TO SPAN EXISTING BAR JOISTS SUCH THAT EQUIPMENT CAN BE SUSPENDED WHERE NECESSARY/SHOWN.

MULTI-PURPOSE AHU DETAIL - SUSPENDED — NO SCALE



DETAIL OF EXTERIOR REFRIGERANT PIPE SUPPORT — NO SCALE

CONSTRUCTION DOCUMENTS

ENGINEERING RESOURCE GROUP
350 EDGEWOOD TERRACE DRIVE
JACKSON, MS 39206
PHONE: (601) 362-3552
FAX: (601) 366-6418

CONSULTANTS:

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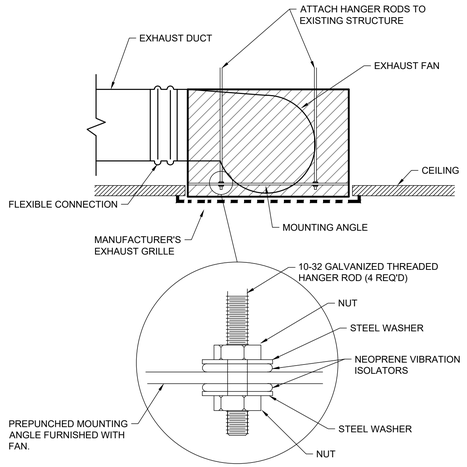
SEAL

SHEET TITLE:

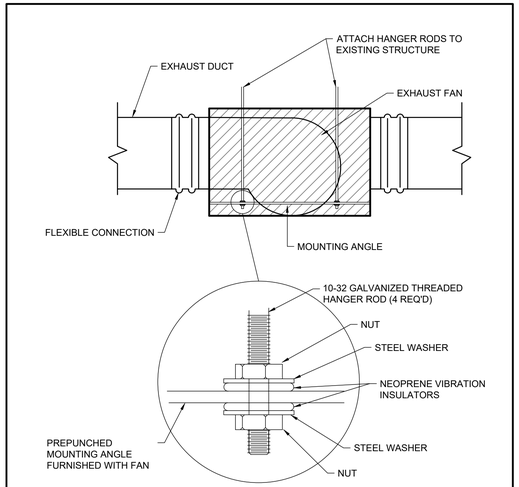
MECHANICAL DETAILS

SHEET NUMBER

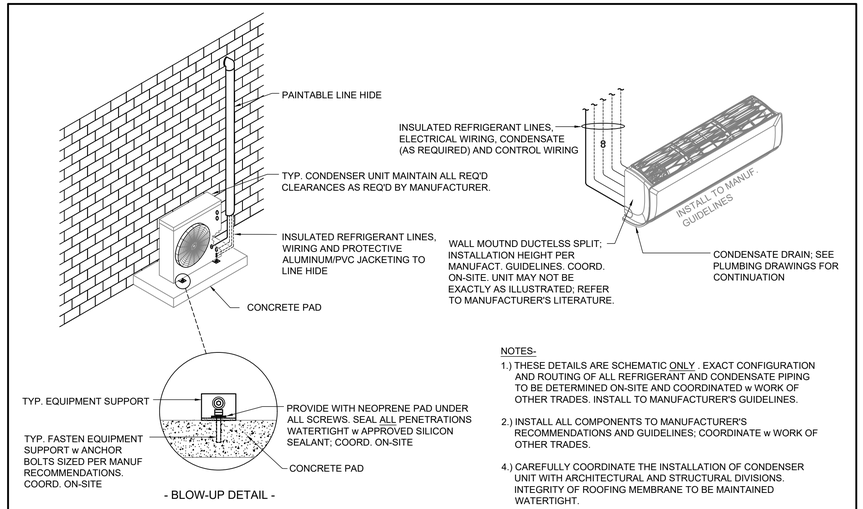
M5.2



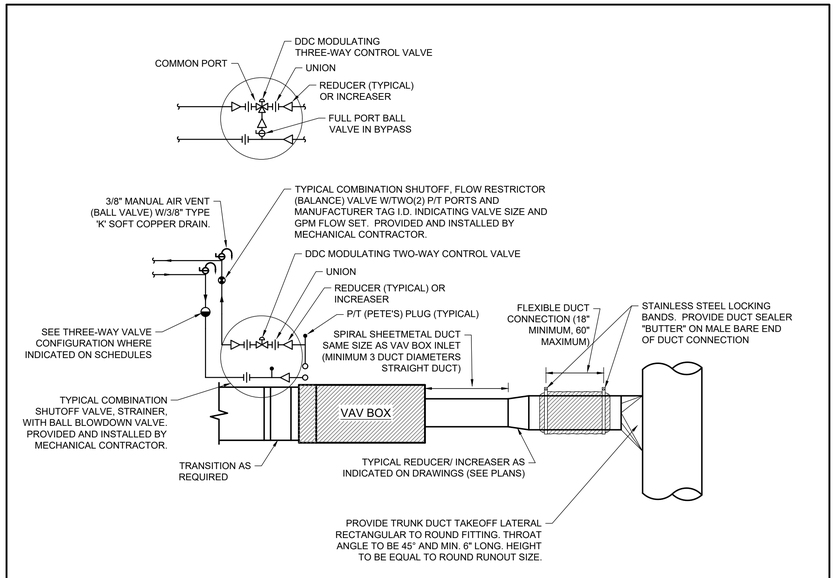
1 CEILING EXHAUST FAN INSTALLATION DETAIL — NO SCALE



2 IN - LINE EXHAUST FAN MOUNTING DETAIL — NO SCALE



3 OUTDOOR SINGLE ZONE MINI-SPLIT DETAIL — NO SCALE



NOTES:
1. ALL CONTRACTOR INSTALLED PIPING AND VALVES TO BE LINE SIZE AS INDICATED ON DRAWINGS.
2. PROVIDE MANUAL AIR VENT IN HIGHEST POINT OF PIPING AT EQUIPMENT CONNECTIONS.
3. COORDINATE LOCATION OF ALL SHUTOFF VALVES, STRAINERS AND BALANCE/FLOW RESTRICTOR VALVES FOR ACCESSIBILITY AND MAINTENANCE.
4. ALL PIPING TO BE LINE SIZE AS INDICATED ON DRAWINGS, EXCEPT PIPING AT COIL CONNECTIONS AND AS RECOMMENDED BY CONTROLS SUBCONTRACTOR FOR CONTROL VALVE PROPER SIZING.
5. COMBINATION SHUTOFF/FLOW RESTRICTOR VALVE SHALL BE COORDINATED AND ORDERED WITH FACTORY SETTING AT 1.0 TIMES APPROVED COIL GPM FLOW RATE FOR SPECIFIED CAPACITY.

2 HOT-WATER REHEAT AIR TERMINAL UNIT (VAV BOX) DUCTWORK AND PIPING DETAIL — NO SCALE

CONSTRUCTION DOCUMENTS

ENGINEERING RESOURCE GROUP
350 EDGEWOOD TERRACE DRIVE
JACKSON, MS 39206
PHONE: (601) 362-3552
FAX: (601) 366-6418

CONSULTANTS:

ELECTRICAL ENGINEER
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SEAL

SHEET TITLE:

MECHANICAL DETAILS

SHEET NUMBER

M5.3

VARIABLE REFRIGERANT FLOW HEAT RECOVERY EQUIPMENT SCHEDULE

OUTDOOR UNIT																INDOOR UNIT														
TAG	MANUFACTURER AND MODEL NO.	AMBIENT TEMP. (°F)				CAPACITY (MBH)		ELECTRICAL DATA				EFFICIENCY			WEIGHT (LBS)	TAG	TYPE	BASIS OF DESIGN	INDOOR AIR TEMP. (°F)			MIN CAPACITY (MBH)		ELECTRICAL DATA			DUCTED UNIT FAN		WEIGHT (LBS)	REMARKS
		SUMMER		WINTER				NO. OF MODULES	VOLT/Ø	MCA	MOCP	IEER	COP (47°)	SCHE						SUMMER		WINTER								
		DB	WB	DB	WB	COOLING	HEATING												DB	WB	DB	COOLING	HEATING	VOLT/Ø	MCA	MOCP	SA	OA		
ODU 1	TRANE-MITSUBISHI TURYP2163BN40AN (HEAT RECOVERY)	95	70	47	43	216.0	243.0	2	208/3	1@43 1@33	1@70 1@50	23.3 (DUCTED)	3.4 (DUCTED)	22.7 (DUCTED)	1160 TOTAL	U-1.01	AIR HANDLER	TRANE-MITSUBISHI TPVFYP012AM141A	78	65	70.0	12.0	13.5	208/1	3.00	15	400	---	120	R410A, PROVIDE W/GLOBAL PLASMA GPS-FC-3T-BAS MTD IN FAN SECTION AND FILTER RACK
																U-1.02	AIR HANDLER	TRANE-MITSUBISHI TPVFYP012AM141A	78	65	70.0	12.0	13.5	208/1	3.00	15	400	---	120	R410A, PROVIDE W/GLOBAL PLASMA GPS-FC-3T-BAS MTD IN FAN SECTION AND FILTER RACK
																U-1.03	AIR HANDLER	TRANE-MITSUBISHI TPVFYP024AM141A	78	65	70.0	24.0	27.0	208/1	3.00	15	700	---	120	R410A, PROVIDE W/GLOBAL PLASMA GPS-FC-3T-BAS MTD IN FAN SECTION AND FILTER RACK
																U-1.04	AIR HANDLER	TRANE-MITSUBISHI TPVFYP012AM141A	78	65	70.0	12.0	13.5	208/1	3.00	15	400	---	120	R410A, PROVIDE W/GLOBAL PLASMA GPS-FC-3T-BAS MTD IN FAN SECTION AND FILTER RACK
																U-1.05	AIR HANDLER	TRANE-MITSUBISHI TPVFYP012AM141A	78	65	70.0	12.0	13.5	208/1	3.00	15	400	---	120	R410A, PROVIDE W/GLOBAL PLASMA GPS-FC-3T-BAS MTD IN FAN SECTION AND FILTER RACK
																U-1.06	AIR HANDLER	TRANE-MITSUBISHI TPVFYP024AM141A	78	65	70.0	24.0	27.0	208/1	3.00	15	700	---	120	R410A, PROVIDE W/GLOBAL PLASMA GPS-FC-3T-BAS MTD IN FAN SECTION AND FILTER RACK
																U-1.07	AIR HANDLER	TRANE-MITSUBISHI TPVFYP018AM141A	78	65	70.0	18.0	20.0	208/1	3.00	15	580	---	120	R410A, PROVIDE W/GLOBAL PLASMA GPS-FC-3T-BAS MTD IN FAN SECTION AND FILTER RACK
																U-1.08	AIR HANDLER	TRANE-MITSUBISHI TPVFYP018AM141A	78	65	70.0	18.0	20.0	208/1	3.00	15	580	---	120	R410A, PROVIDE W/GLOBAL PLASMA GPS-FC-3T-BAS MTD IN FAN SECTION AND FILTER RACK
																U-1.09	AIR HANDLER	TRANE-MITSUBISHI TPVFYP048AM141A	78	65	70.0	48.0	54.0	208/1	5.60	15	1400	---	180	R410A, PROVIDE W/GLOBAL PLASMA GPS-FC-3T-BAS MTD IN FAN SECTION AND FILTER RACK
																U-1.10	CEILING CASSETTE	TRANE-MITSUBISHI TPLFYP005FM140A	78	65	70.0	5.0	5.6	208/1	0.24	15	280	---	35	R410A, PROVIDE W/GLOBAL PLASMA GPS-IRIB
																U-1.11	AIR HANDLER	TRANE-MITSUBISHI TPVFYP012AM141A	78	65	70.0	12.0	13.5	208/1	3.00	15	400	---	120	R410A, PROVIDE W/GLOBAL PLASMA GPS-FC-3T-BAS MTD IN FAN SECTION AND FILTER RACK
																U-1.12	CEILING CASSETTE	TRANE-MITSUBISHI TPLFYP012FM140A	78	65	70.0	12.0	13.5	208/1	0.29	15	330	---	35	R410A, PROVIDE W/GLOBAL PLASMA GPS-IRIB
																U-1.13	CEILING CASSETTE	TRANE-MITSUBISHI TPLFYP005FM140A	78	65	70.0	5.0	5.6	208/1	0.24	15	280	---	35	R410A, PROVIDE W/GLOBAL PLASMA GPS-IRIB
																U-1.14	CEILING CASSETTE	TRANE-MITSUBISHI TPLFYP005FM140A	78	65	70.0	5.0	5.6	208/1	0.24	15	280	---	35	R410A, PROVIDE W/GLOBAL PLASMA GPS-IRIB
ODU 2	TRANE-MITSUBISHI TURYP2163BN40AN (HEAT RECOVERY)	95	70	47	43	216.0	243.0	2	208/3	1@43 1@33	1@70 1@50	23.3 (DUCTED)	3.4 (DUCTED)	22.7 (DUCTED)	1160 TOTAL	U-2.01	AIR HANDLER	TRANE-MITSUBISHI TPVFYP018AM141A	78	65	70.0	18.0	20.0	208/1	3.00	15	580	---	120	R410A, PROVIDE W/GLOBAL PLASMA GPS-FC-3T-BAS MTD IN FAN SECTION AND FILTER RACK
																U-2.02	AIR HANDLER	TRANE-MITSUBISHI TPVFYP018AM141A	78	65	70.0	18.0	20.0	208/1	3.00	15	580	---	120	R410A, PROVIDE W/GLOBAL PLASMA GPS-FC-3T-BAS MTD IN FAN SECTION AND FILTER RACK
																U-2.03	AIR HANDLER	TRANE-MITSUBISHI TPVFYP024AM141A	78	65	70.0	24.0	27.0	208/1	3.00	15	700	---	120	R410A, PROVIDE W/GLOBAL PLASMA GPS-FC-3T-BAS MTD IN FAN SECTION AND FILTER RACK
																U-2.04	AIR HANDLER	TRANE-MITSUBISHI TPVFYP024AM141A	78	65	70.0	24.0	27.0	208/1	3.00	15	700	---	120	R410A, PROVIDE W/GLOBAL PLASMA GPS-FC-3T-BAS MTD IN FAN SECTION AND FILTER RACK
																U-2.05	AIR HANDLER	TRANE-MITSUBISHI TPVFYP024AM141A	78	65	70.0	24.0	27.0	208/1	3.00	15	700	---	120	R410A, PROVIDE W/GLOBAL PLASMA GPS-FC-3T-BAS MTD IN FAN SECTION AND FILTER RACK
																U-2.06	AIR HANDLER	TRANE-MITSUBISHI TPVFYP012AM141A	78	65	70.0	12.0	13.5	208/1	3.00	15	400	---	120	R410A, PROVIDE W/GLOBAL PLASMA GPS-FC-3T-BAS MTD IN FAN SECTION AND FILTER RACK
																U-2.07	AIR HANDLER	TRANE-MITSUBISHI TPVFYP018AM141A	78	65	70.0	18.0	20.0	208/1	3.00	15	580	---	120	R410A, PROVIDE W/GLOBAL PLASMA GPS-FC-3T-BAS MTD IN FAN SECTION AND FILTER RACK
																U-2.08	AIR HANDLER	TRANE-MITSUBISHI TPVFYP024AM141A	78	65	70.0	24.0	27.0	208/1	3.00	15	700	---	120	R410A, PROVIDE W/GLOBAL PLASMA GPS-FC-3T-BAS MTD IN FAN SECTION AND FILTER RACK
																U-2.09	AIR HANDLER	TRANE-MITSUBISHI TPVFYP048AM141A	78	65	70.0	48.0	54.0	208/1	5.60	15	1400	---	180	R410A, PROVIDE W/GLOBAL PLASMA GPS-FC-3T-BAS MTD IN FAN SECTION AND FILTER RACK
																U-2.10	AIR HANDLER	TRANE-MITSUBISHI TPVFYP012AM141A	78	65	70.0	12.0	13.5	208/1	3.00	15	400	---	120	R410A, PROVIDE W/GLOBAL PLASMA GPS-FC-3T-BAS MTD IN FAN SECTION AND FILTER RACK
ODU 3	TRANE-MITSUBISHI TURYP2403BN40AN (HEAT RECOVERY)	95	70	47	43	240.0	270.0	2	208/3	1@43 1@43	1@70 1@70	22.3 (DUCTED)	3.3 (DUCTED)	22.9 (DUCTED)	1200 TOTAL	U-3.01	AIR HANDLER	TRANE-MITSUBISHI TPVFYP012AM141A	78	65	70.0	12.0	13.5	208/1	3.00	15	400	---	120	R410A, PROVIDE W/GLOBAL PLASMA GPS-FC-3T-BAS MTD IN FAN SECTION AND FILTER RACK
																U-3.02	AIR HANDLER	TRANE-MITSUBISHI TPVFYP018AM141A	78	65	70.0	18.0	20.0	208/1	3.00	15	580	---	120	R410A, PROVIDE W/GLOBAL PLASMA GPS-FC-3T-BAS MTD IN FAN SECTION AND FILTER RACK
																U-3.03	AIR HANDLER	TRANE-MITSUBISHI TPVFYP018AM141A	78	65	70.0	18.0	20.0	208/1	3.00	15	580	---	120	R410A, PROVIDE W/GLOBAL PLASMA GPS-FC-3T-BAS MTD IN FAN SECTION AND FILTER RACK
																U-3.04	AIR HANDLER	TRANE-MITSUBISHI TPVFYP018AM141A	78	65	70.0	18.0	20.0	208/1	3.00	15	580	---	120	R410A, PROVIDE W/GLOBAL PLASMA GPS-FC-3T-BAS MTD IN FAN SECTION AND FILTER RACK
																U-3.05	AIR HANDLER	TRANE-MITSUBISHI TPVFYP024AM141A	78	65	70.0	24.0	27.0	208/1	3.00	15	700	---	120	R410A, PROVIDE W/GLOBAL PLASMA GPS-FC-3T-BAS MTD IN FAN SECTION AND FILTER RACK
																U-3.06	AIR HANDLER	TRANE-MITSUBISHI TPVFYP018AM141A	78	65	70.0	18.0	20.0	208/1	3.00	15	580	---	120	R410A, PROVIDE W/GLOBAL PLASMA GPS-FC-3T-BAS MTD IN FAN SECTION AND FILTER RACK
																U-3.07	AIR HANDLER	TRANE-MITSUBISHI TPVFYP018AM141A	78	65	70.0	18.0	20.0	208/1	3.00	15	580	---	120	R410A, PROVIDE W/GLOBAL PLASMA GPS-FC-3T-BAS MTD IN FAN SECTION AND FILTER RACK
																U-3.08	AIR HANDLER	TRANE-MITSUBISHI TPVFYP012AM141A	78	65	70.0	12.0	13.5	208/1	3.00	15	400	---	120	R410A, PROVIDE W/GLOBAL PLASMA GPS-FC-3T-BAS MTD IN FAN SECTION AND FILTER RACK
																U-3.09	AIR HANDLER	TRANE-MITSUBISHI TPVFYP012AM141A	78	65	70.0	12.0	13.5	208/1	3.00	15	400	---	120	R410A, PROVIDE W/GLOBAL PLASMA GPS-FC-3T-BAS MTD IN FAN SECTION AND FILTER RACK
																U-3.10	AIR HANDLER	TRANE-MITSUBISHI TPVFYP030AM141A	78	65	70.0	30.0	34.0	208/1	4.10	15	870	---	150	R410A, PROVIDE W/GLOBAL PLASMA GPS-FC-3T-BAS MTD IN FAN SECTION AND FILTER RACK
																U-3.11	AIR HANDLER	TRANE-MITSUBISHI TPVFYP030AM141A	78	65	70.0	30.0	34.0	208/1	4.10	15	870	---	150	R410A, PROVIDE W/GLOBAL PLASMA GPS-FC-3T-BAS MTD IN FAN SECTION AND FILTER RACK
																U-3.12	AIR HANDLER	TRANE-MITSUBISHI TPVFYP018AM141A	78	65	70.0	18.0	20.0	208/1	3.00	15	580	---	120	R410A, PROVIDE W/GLOBAL PLASMA GPS-FC-3T-BAS MTD IN FAN SECTION AND FILTER RACK
																U-3.13	AIR HANDLER	TRANE-MITSUBISHI TPVFYP012AM141A	78	65	70.0	12.0	13.5	208/1	3.00	15	400	---	120	R410A, PROVIDE W/GLOBAL PLASMA GPS-FC-3T-BAS MTD IN FAN SECTION AND FILTER RACK
ODU 4	TRANE-MITSUBISHI TURYP1923BN40AN (HEAT RECOVERY)	95	70	47	43	192.0	215.0	2	208/3	2@33.0 EACH	2@50.0 EACH	24.3 (DUCTED)	3.6 (DUCTED)	23.0 (DUCTED)	1160 TOTAL	U-4.01	AIR HANDLER	TRANE-MITSUBISHI TPVFYP012AM141A	78	65	70.0	12.0	13.5	208/1	3.00	15	400	---	120	R410A, PROVIDE W/GLOBAL PLASMA GPS-FC-3T-BAS MTD IN FAN SECTION AND FILTER RACK
																U-4.02	AIR HANDLER	TRANE-MITSUBISHI TPVFYP012AM141A	78	65	70.0	12.0	13.5	208/1	3.00	15	400	---	120	R410A, PROVIDE W/GLOBAL PLASMA GPS-FC-3T-BAS MTD IN FAN SECTION AND FILTER RACK
																U-4.03	AIR HANDLER	TRANE-MITSUBISHI TPVFYP018AM141A	78	65	70.0	18.0	20.0	208/1	3.00	15	580	---	120	R410A, PROVIDE W/GLOBAL PLASMA GPS-FC-3T-BAS MTD IN FAN SECTION AND FILTER RACK
																U-4.04	AIR HANDLER	TRANE-MITSUBISHI TPVFYP018AM141A	78	65	70.0	18.0	20.0	208/1	3.00	15	580	---	120	R410A, PROVIDE W/GLOBAL PLASMA GPS-FC-3T-BAS MTD IN FAN SECTION AND FILTER RACK
																U-4.05	CEILING CASSETTE	TRANE-MITSUBISHI TPLFYP005FM140A	78	65	70.0	5.0	5.6	208/1	0.24	15	280	---	35	R410A, PROVIDE W/GLOBAL PLASMA GPS-IRIB
																U-4.06	AIR HANDLER	TRANE-MITSUBISHI TPVFYP030AM141A	78	65	70.0	30.0	34.0	208/1	4.10	15	870	---	150	R410A, PROVIDE W/GLOBAL PLASMA GPS-FC-3T-BAS MTD IN FAN SECTION AND FILTER RACK
																U-4.07	CEILING CASSETTE	TRANE-MITSUBISHI TPLFYP005FM140A	78	65	70.0	5.0	5.6	208/1	0.24	15	280	---	35	R410A, PROVIDE W/GLOBAL PLASMA GPS-IRIB
																U-4.08	CEILING CASSETTE	TRANE-MITSUBISHI TPLFYP012FM140A	78	65	70.0	12.0	13.5	208/1	0.29	15	330	---	35	R410A, PROVIDE W/GLOBAL PLASMA GPS-IRIB
																U-4.09	AIR HANDLER	TRANE-MITSUBISHI TPVFYP012AM141A	78	65	70.0	12.0	13.5	208/1	3.00	15	400	---	120	R410A, PROVIDE W/GLOBAL PLASMA GPS-FC-3T-BAS MTD IN FAN SECTION AND FILTER RACK
																U-4.10	AIR HANDLER	TRANE-MITSUBISHI TPVFYP054AM141A	78	65	70.0	54.0	60.0	208/1	5.60	15	1480	---	180	R410A, PROVIDE W/GLOBAL PLASMA GPS-FC-3T-BAS MTD IN FAN SECTION AND FILTER RACK
																U-4.11	AIR HANDLER	TRANE-MITSUBISHI TPVFYP012AM141A	78	65	70.0	12.0	13.5	208/1	3.00	15	400	---	120	R410A, PROVIDE W/GLOBAL PLASMA GPS-FC-3T-BAS MTD IN FAN SECTION AND FILTER RACK
																U-4.12	CEILING CASSETTE	TRANE-MITSUBISHI TPLFYP005FM140A	78	65	70.0	5.0	5.6	208/1	0.24	15	280	---	35	R410A, PROVIDE W/GLOBAL PLASMA GPS-IRIB

NOTE: ALL OUTDOOR UNIT TO BE PROVIDE WITH SUPER STAND. ALL DUCTED UNITS TO BE PROVIDE WITH SECONDARY DRAIN PAN AND OVERFLOW PROTECTION DEVICE SWITCH. PROVIDE TOUCH SCREEN BACNET GATEWAY.

BRANCH SELECTOR SCHEDULE

TAG	MANUFACTURER AND MODEL NO.	SERVES	# PORTS	V - Ø	MCA	MOCP	OPERATING WEIGHT (LBS)	REMARKS
BS 1-1	TRANE MITSUBISHI TCMBM1016JA11N4	ODU 1	16	208 - 1	1.5	15.0	150	R 410A REFRIGERANT, CAP UNUSED PORTS, SEE BS CONTROLLER DETAILS FOR MORE INFORMATION, PROVIDE FULL PORT SCHRAEDER VALES ON ALL PIPING.
BS 2-1	TRANE MITSUBISHI TCMBM1012JA11N4	ODU 2	12	208 - 1	1.5	15.0	150	R 410A REFRIGERANT, CAP UNUSED PORTS, SEE BS CONTROLLER DETAILS FOR MORE INFORMATION, PROVIDE FULL PORT SCHRAEDER VALES ON ALL PIPING.
BS 3-1	TRANE MITSUBISHI TCMBM1016JA11N4	ODU 3	16	208 - 1	1.5	15.0	150	R 410A REFRIGERANT, CAP UNUSED PORTS, SEE BS CONTROLLER DETAILS FOR MORE INFORMATION, PROVIDE FULL PORT SCHRAEDER VALES ON ALL PIPING.
BS 4-1	TRANE MITSUBISHI TCMBM1016JA11N4	ODU 4	16	208 - 1	1.5	15.0	150	R 410A REFRIGERANT, CAP UNUSED PORTS, SEE BS CONTROLLER DETAILS FOR MORE INFORMATION, PROVIDE FULL PORT SCHRAEDER VALES ON ALL PIPING.

CONSTRUCTION DOCUMENTS

ENGINEERING RESOURCE GROUP
350 EDGEWOOD TERRACE DRIVE
JACKSON, MS 39206
PHONE: (601) 362-3552
FAX: (601) 366-6418

CONSULTANTS:

ELECTRICAL ENGINEER
SCHULTZ & WYNNE, P.A.
4523 OFFICE PARK DR.
JACKSON, MS 39206
T: (601) 982-3313

PROJECT:

HVAC UPGRADES
LAUDERDALE COUNTY
MERIDIAN, MISSISSIPPI

PROJECT NUMBER: 22.006
DATE: 10/4/2022
DRAWN BY: KAH
CHECKED BY: CEM
REV: 0 IFC 10/4/2022
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SEAL

CHAD E. MOORE
ENGINEER
20102
10/4/2022
STATE OF MISSISSIPPI

SHEET TITLE:

HUMAN SERVICES - MECHANICAL SCHEDULES

SHEET NUMBER

M6.1

DEDICATED OUTDOOR AIR SYSTEM SCHEDULE

TAG	MANUFACTURER & MODEL NO. (TON)	SERVES	REFR TYPE	SUPPLY FAN			COOLING										HEATING						ELECTRICAL			OPER WT (LBS)	REMARKS
				SUPPLY CFM	ESP	HP	EDB / EWB	LDB / LWB	CAPACITY (MBH) TOTAL	CAPACITY (MBH) SENS	MIN EER	MIN IEER	COMPRESSOR QTY	COMPRESSOR RLA	COMPRESSOR LRA	CONDENSER QTY	CONDENSER FLA	EAT	INPUT (MBH)	OUTBUT (MBH)	FUEL	MIN EFF (%)	HGRH (MBH)	VOLT/Ø	MCA	MOCP		
DOAS 1	TRANE VALENT VX-212-17.5I-J-F0	BUILDING	R-410A	2400	1.0	1.5	95.6 79.8	53.7 53.6	229.6	111.2	-	-	1@ 1@	32.3 27.6	- 191	-	- EA	22	300	240	NAT GAS	80.0	92.9	208/3	84.2	110.0	3500	PAINTED EXTERIOR, DOUBLE WALL 2" R13 INJECTED FOAM INSULATED CABINET, DIRECT-DRIVE FANS WITH FACTORY MOUNTED VFDS, INVERTER SCROLL LEAD COMPRESSOR WITH A 5 YEAR WARRANTY, MODULATING NATURAL GAS FURNACE WITH 12:1 MODULATING TURNDOWN AND A 25 YEAR HX WARRANTY, HORIZONTAL SUPPLY DUCT CONNECTION, WEATHER HOOD, 2" PLEATED MERV 8 FILTER, HOT GAS REHEAT, UNIT SHALL PROVIDE ASHRAE 90.1 VENTILATION AIR HEATING CONTROL SEQUENCE, HAIL GUARDS, HINGED ACCESS PANELS, NON-FUSED DISCONNECT, POWERED GFI OUTLET, OUTDOOR AIR DAMPER (LOW-LEAKAGE DAMPER PER ASHRAE 90.1-CURRENT ADDITION), REMOTE CONTROLLER, VAPOR TIGHT LIGHT

POWER VENTILATOR SCHEDULE

TAG	MANUFACTURER AND MODEL NO.	TYPE	CFM	ESP	RPM	SOUND (dBA/SONES)	ELECTRICAL BHP	ELECTRICAL HP	ELECTRICAL V/Ø	ON/OFF	INTERLOCK	OP WT (LBS)	REMARKS
EF 1	COOK GC-148	CEILING MOUNTED	70	0.25	763	0.9	--	31W	115/1	MOTION DETECTOR	NONE	-	PRE-WIRED DISCONNECT, PRE-WIRED FAN SPEED CONTROLLER, BACKDRAFT DAMPER, ISOLATOR KIT, WHITE ALUMINUM GRILLE
EF 2	COOK GC-622	CEILING MOUNTED	280	0.25	1044	1.3	--	89W	115/1	MOTION DETECTOR	NONE	-	PRE-WIRED DISCONNECT, PRE-WIRED FAN SPEED CONTROLLER, BACKDRAFT DAMPER, ISOLATOR KIT, WHITE ALUMINUM GRILLE
EF 3	COOK GC-186	CEILING MOUNTED	150	0.375	875	3.0	--	69W	115/1	MOTION DETECTOR	NONE	-	PRE-WIRED DISCONNECT, PRE-WIRED FAN SPEED CONTROLLER, BACKDRAFT DAMPER, ISOLATOR KIT, WHITE ALUMINUM GRILLE
EF 4	COOK GC-148	CEILING MOUNTED	75	0.25	763	0.9	--	31W	115/1	MOTION DETECTOR	NONE	-	PRE-WIRED DISCONNECT, PRE-WIRED FAN SPEED CONTROLLER, BACKDRAFT DAMPER, ISOLATOR KIT, WHITE ALUMINUM GRILLE
EF 5	COOK GC-148	CEILING MOUNTED	70	0.25	763	0.9	--	31W	115/1	MOTION DETECTOR	NONE	-	PRE-WIRED DISCONNECT, PRE-WIRED FAN SPEED CONTROLLER, BACKDRAFT DAMPER, ISOLATOR KIT, WHITE ALUMINUM GRILLE
EF 6	COOK GC-622	CEILING MOUNTED	280	0.25	1044	1.3	--	89W	115/1	MOTION DETECTOR	NONE	-	PRE-WIRED DISCONNECT, PRE-WIRED FAN SPEED CONTROLLER, BACKDRAFT DAMPER, ISOLATOR KIT, WHITE ALUMINUM GRILLE
EF 7	COOK GC-186	CEILING MOUNTED	150	0.375	875	3.0	--	69W	115/1	MOTION DETECTOR	NONE	-	PRE-WIRED DISCONNECT, PRE-WIRED FAN SPEED CONTROLLER, BACKDRAFT DAMPER, ISOLATOR KIT, WHITE ALUMINUM GRILLE
EF 8	COOK GC-186	CEILING MOUNTED	150	0.375	875	3.0	--	69W	115/1	MOTION DETECTOR	NONE	-	PRE-WIRED DISCONNECT, PRE-WIRED FAN SPEED CONTROLLER, BACKDRAFT DAMPER, ISOLATOR KIT, WHITE ALUMINUM GRILLE

CONSTRUCTION DOCUMENTS

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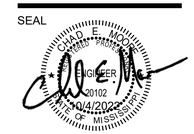

SHEET TITLE:

HUMAN SERVICES - MECHANICAL SCHEDULES

SHEET NUMBER

M6.2

MODULAR AIR HANDLING UNIT SCHEDULE

TAG	MANUFACTURER AND MODEL NO.	SUPPLY FAN												DX COOLING COIL							FILTER			OP WT (LBS.)	REMARKS
		TYPE	SUPPLY AIR CFM	OUTDOOR AIR MAX	OUTDOOR AIR MIN	ESP TSP	RPM	ISOLATION TYPE	ISOLATION DEFL	FAN (QTY)	ELEC (PER FAN) BHP	ELEC (PER FAN) HP	ELEC (PER FAN) V/Ø	FV	EDB EWB	LDB LWB	APD	CAPACITY (MBH) TOTAL	CAPACITY (MBH) SENS	ROWS FPI	TYPE	DEPTH	MERV		
AHU 1	TRANE CSAA035	DIRECT-DRIVE PLENUM FAN	15700	15700	1150	2.0 3.4	1800	SPRING	2	2	14.4	7.5 EA	208/3	450	78.0 65.0	54.9 53.5	0.63	537	396	4 14	PLTD	2"	13	3800	MARINE LED LIGHT PER SECTION - 120 15AMP CIRCUIT REQUIRED, 6" INTEGRAL BASE FRAME, PREMIUM EFF. INVERTER DUTY MOTOR WITH SHAFT GROUNDING, DOUBLE WALL W/HINGES & LATCHES; OA DAMPER, RA DAMPER, FAC MTD AIRFLOW MEASURING STATION, WALL MTD VFD'S, IG-1

ION GENERATORS

TAG	MANUFACTURER & MODEL NO.	UNIT SERVED	SUPPLY CFM	DEVICES REQUIRED	DEVICE MOUNTING LOCATION	MIN ION OUTPUT PER DEVICE	POWER	REMARKS
IG-1	GLOBAL PLASMA GPS-IMOD	AHU-1	15700	SEE REMARKS	IN UNIT DOWNSTREAM OF FILTERS FULL LENGTH OF COIL	> 140 MILLION +/- IONS/CC PER INCH OF BAR	24 VAC TO 240 VAC	PROVIDE WITH: BUILT IN UNIVERSAL INPUT VOLTAGE TRANSFORMER, ON/OFF SWITCH AND LED POWER INDICATOR LIGHT, UL-2998 NO OZONE CERTIFIED, QUANTITY TO BE FIELD VERIFIED BASED ON COIL HEIGHT PER MANUFACTURE'S RECOMMENDATIONS
IG-2	GLOBAL PLASMA GPS-FC48-AC	AHU	1250-1800	1	IN UNIT DOWNSTREAM OF FILTERS	> 400 MILLION +/- IONS/CC	24 VAC TO 240 VAC	PROVIDE WITH: BUILT IN UNIVERSAL INPUT VOLTAGE TRANSFORMER, ON/OFF SWITCH AND LED POWER INDICATOR LIGHT, UL-2998 NO OZONE CERTIFIED

COMPUTER ROOM AIR-CONDITIONING UNIT (INDOOR UNIT) SCHEDULE

TAG	MANUFACTURER AND MODEL NO.	SERVES	TYPE	SUPPLY FAN					DX COOLING COIL				ELECTRIC REHEAT		HUMIDIFER		FILTERS			ELECTRICAL			SCOP -127	OP WT (LBS)	REMARKS
				SUPPLY CFM	OA CFM	ESP TSP	QTY	HP	OA TEMP	EDB EWB	CAPACITY (KW) TOTAL	CAPACITY (KW) SENS	NO. STAGES	CAPACITY (KW)	TYPE	CAPACITY (LBS/HR)	TYPE	DEPTH	MERV	MCA	MOP	VOLT/Ø			
CRAC 1	TRANE TR-CFU-042-D2A-0-10	SERVER & COMPUTER	VERTICAL UPFLOW	8000	-0-	0.2 --	2	4.2	120	80 62	40.1	40.1	2	18	-	4-15	PLTD	2	8	102.5	110	208/3	-	2400	INTEGRAL CONDENSATE PUMP, UNIT MOUNTED DISCONNECT, FLOORSTAND, UPFLOW PLENUM, SMOKE DETECTOR, BACnet MS/TP COMM CARD, ELECTRIC REHEAT, INFRARED HUMIDIFIER W/AUTOFLUSH

COMPUTER ROOM AIR-CONDITIONING UNIT (OUTDOOR UNIT) SCHEDULE

TAG	MANUFACTURER AND MODEL NO	SERVES	NOM TONS	REFR TYPE	ELECTRICAL				OP WT (LBS)	REMARKS
					FLA	MCA	MOCP	VOLT/Ø		
CRCU 1	TRANE TR-SCS-192-DEC	CRAC-1	-	410A	1@8.5 1@8.5	21.2	25.0	208/3	455	REMOTE CONDENSER, EC FAN MOTOR

VARIABLE AIR VOLUME TERMINAL UNIT SCHEDULE

TAG	MANUFACTURER AND MODEL NO	INLET SIZE	DESIGN CFM			TOTAL ΔP	NC	HEATING COIL								VOLT-Ø	REMARKS
			COOL	MIN	HEAT			ROWS	CFM	EAT	LAT	GPM	EWT	LWT	MBH		
T-1.01	TRANE VCCF05	5"	60	60	-	0.416	15	-	-	-	-	-	-	-	-	120-1	SINGLE DUCT WITH HEATING COIL, FLOW RING, 24 VAC CONTROL TRANSFORMER, BOTTOM ACCESS DOOR.
T-1.02	TRANE VCWF08	8"	500	150	300	0.416	15	2	300	55	95	1.52	140	95	13.01	120-1	SINGLE DUCT WITH HEATING COIL, FLOW RING, 24 VAC CONTROL TRANSFORMER, BOTTOM ACCESS DOOR.
T-1.03	TRANE VCWF08	8"	400	120	240	0.416	15	2	240	55	95	1.08	140	95	10.41	120-1	SINGLE DUCT WITH HEATING COIL, FLOW RING, 24 VAC CONTROL TRANSFORMER, BOTTOM ACCESS DOOR.
T-1.04	TRANE VCWF06	6"	240	70	140	0.416	15	2	140	55	95	0.05	140	99	6.69	120-1	SINGLE DUCT WITH HEATING COIL, FLOW RING, 24 VAC CONTROL TRANSFORMER, BOTTOM ACCESS DOOR.
T-1.05	TRANE VCCF08	8"	380	110	-	0.416	15	-	-	-	-	-	-	-	-	120-1	SINGLE DUCT WITH HEATING COIL, FLOW RING, 24 VAC CONTROL TRANSFORMER, BOTTOM ACCESS DOOR.
T-1.06	TRANE VCCF06	6"	300	90	-	0.416	15	-	-	-	-	-	-	-	-	120-1	SINGLE DUCT WITH HEATING COIL, FLOW RING, 24 VAC CONTROL TRANSFORMER, BOTTOM ACCESS DOOR.
T-1.07	TRANE VCCF06	6"	200	60	-	0.416	15	-	-	-	-	-	-	-	-	120-1	SINGLE DUCT WITH HEATING COIL, FLOW RING, 24 VAC CONTROL TRANSFORMER, BOTTOM ACCESS DOOR.
T-1.08	TRANE VCCF10	10"	800	240	-	0.416	15	-	-	-	-	-	-	-	-	120-1	SINGLE DUCT WITH HEATING COIL, FLOW RING, 24 VAC CONTROL TRANSFORMER, BOTTOM ACCESS DOOR.
T-2.01	TRANE VCCF06	6"	200	60	-	0.416	15	-	-	-	-	-	-	-	-	120-1	SINGLE DUCT WITH HEATING COIL, FLOW RING, 24 VAC CONTROL TRANSFORMER, BOTTOM ACCESS DOOR.
T-2.02	TRANE VCCF06	6"	290	90	-	0.416	15	-	-	-	-	-	-	-	-	120-1	SINGLE DUCT WITH HEATING COIL, FLOW RING, 24 VAC CONTROL TRANSFORMER, BOTTOM ACCESS DOOR.
T-2.03	TRANE VCWF08	8"	400	120	240	0.416	15	2	240	55	95	1.08	140	95	10.41	120-1	SINGLE DUCT WITH HEATING COIL, FLOW RING, 24 VAC CONTROL TRANSFORMER, BOTTOM ACCESS DOOR.
T-2.04	TRANE VCWF08	8"	630	180	380	0.416	15	2	380	55	95	2.40	140	95	16.48	120-1	SINGLE DUCT WITH HEATING COIL, FLOW RING, 24 VAC CONTROL TRANSFORMER, BOTTOM ACCESS DOOR.
T-2.05	TRANE VCWF08	8"	580	170	350	0.416	15	2	350	55	95	2.02	140	95	-	120-1	SINGLE DUCT WITH HEATING COIL, FLOW RING, 24 VAC CONTROL TRANSFORMER, BOTTOM ACCESS DOOR.
T-2.06	TRANE VCWF08	8"	450	130	270	0.416	15	2	270	55	95	1.29	140	95	-	120-1	SINGLE DUCT WITH HEATING COIL, FLOW RING, 24 VAC CONTROL TRANSFORMER, BOTTOM ACCESS DOOR.
T-2.07	TRANE VCCF10	10"	800	250	-	0.416	15	-	-	-	-	-	-	-	-	120-1	SINGLE DUCT WITH HEATING COIL, FLOW RING, 24 VAC CONTROL TRANSFORMER, BOTTOM ACCESS DOOR.
T-2.08	TRANE VCCF08	8"	400	120	-	0.416	15	-	-	-	-	-	-	-	-	120-1	SINGLE DUCT WITH HEATING COIL, FLOW RING, 24 VAC CONTROL TRANSFORMER, BOTTOM ACCESS DOOR.
T-2.09	TRANE VCWF10	10"	1180	350	710	0.416	15	2	710	55	95	4.18	140	95	30.80	120-1	SINGLE DUCT WITH HEATING COIL, FLOW RING, 24 VAC CONTROL TRANSFORMER, BOTTOM ACCESS DOOR.
T-2.10	TRANE VCCF06	6"	200	60	-	0.416	15	-	-	-	-	-	-	-	-	120-1	SINGLE DUCT WITH HEATING COIL, FLOW RING, 24 VAC CONTROL TRANSFORMER, BOTTOM ACCESS DOOR.
T-2.11	TRANE VCWF10	10"	1210	370	730	0.416	15	2	730	55	95	4.55	140	95	31.67	120-1	SINGLE DUCT WITH HEATING COIL, FLOW RING, 24 VAC CONTROL TRANSFORMER, BOTTOM ACCESS DOOR.
T-2.12	TRANE VCCF08	8"	400	120	-	0.416	15	-	-	-	-	-	-	-	-	120-1	SINGLE DUCT WITH HEATING COIL, FLOW RING, 24 VAC CONTROL TRANSFORMER, BOTTOM ACCESS DOOR.
T-2.13	TRANE VCWF08	8"	580	170	350	0.416	15	2	350	55	95	2.02	140	95	15.18	120-1	SINGLE DUCT WITH HEATING COIL, FLOW RING, 24 VAC CONTROL TRANSFORMER, BOTTOM ACCESS DOOR.
T-2.14	TRANE VCWF08	8"	580	170	350	0.416	15	2	350	55	95	2.02	140	95	15.18	120-1	SINGLE DUCT WITH HEATING COIL, FLOW RING, 24 VAC CONTROL TRANSFORMER, BOTTOM ACCESS DOOR.
T-2.15	TRANE VCWF08	8"	400	120	240	0.416	15	2	240	55	95	1.08	140	95	10.41	120-1	SINGLE DUCT WITH HEATING COIL, FLOW RING, 24 VAC CONTROL TRANSFORMER, BOTTOM ACCESS DOOR.

MOTORIZED DAMPER SCHEDULE

TAG	DAMPER MODEL	ACTUATOR MODEL	ACTUATOR VOLTAGE/PHASE	INTERLOCK	POWER WIRING	CONTROLS & INTERLOCK WIRING	REMARKS
MD 1	RUSKIN CDRS-25	BELIMO	120/1	AHU-2	DIVISION 26	DIVISION 23 BAS	TAMPERPROOF SUPERVISORY SWITCHES TO MONITOR VALVE STATUS. VERIFY/COORDINATE DEDICATED POWER OR SYSTEM POWER REQUIREMENTS. INTERLOCK WITH OCCUPANCY SENSOR IN ROOM IDU SERVED (SEE CONTROLS). 3-POSITION ACTUATOR.

SPLIT SYSTEM AIR HANDLING UNIT SCHEDULE

TAG	MANUFACTURER & MODEL NO	NOMINAL TONS	SUPPLY FAN				ELECTRIC HEAT					DX COOLING COIL		FILTER			OPER WT (LBS)	REMARKS
			SUPPLY CFM	OA CFM	ESP	HP	VOLT/Ø	KW	MCA	MOP	MODEL NO	EAT (DB/WB)	MBH (TOTAL/SENSIBLE)	TYPE	DEPTH	MERV		
AHU 2	TRANE	5.0	1800	180	0.5	1/2	208 / 1	15	79	80	CBX26UH	80/67	60.8/45.6	THROW AWAY	1"	N.A.	300	PROVIDE WITH PROGRAMMABLE THERMOSTAT, FILTER SECTION, ION GENERATOR IG-2
AHU 3	TRANE	3.5	1250	130	0.5	1/3	208 / 1	10	53	60	CBX26UH	80/67	43.6/35.1	THROW AWAY	1"	N.A.	300	PROVIDE WITH PROGRAMMABLE THERMOSTAT, FILTER SECTION, ION GENERATOR IG-2

HEAT PUMP CONDENSING UNIT SCHEDULE

TAG	MANUFACTURER & MODEL NO	SERVING	NOM TONS	REFR TYPE	ELECTRICAL				SEER	OPER WT (LBS)	REMARKS
					RLA	MCA	MOCP	VOLT/Ø			
CU 2	TRANE	AHU-2	5.0	410A	29.3	36.3	60	208 / 1	13.0	200	---
CU 3	TRANE	AHU-3	3.5	410A	22.5	27.8	45	208 / 1	13.5	180	---

MISCELLANEOUS HVAC POWER, CONTROL AND INTERLOCK WIRING CONNECTIONS

TAG	DESCRIPTION	POWER WIRING	CONTROL & INTERLOCK WIRING	ELECTRICAL V/Ø	REMARKS
M	MOTORIZED DAMPER	DIV 26 ELECTRICAL	DIV 23 BAS	120/1	TAMPERPROOF SUPERVISORY SWITCHES TO MONITOR VALVE STATUS. VERIFY/COORDINATE DEDICATED POWER OR SYSTEM POWER REQUIREMENTS.
MCP	MASTER CONTROL PANEL	DIV 23 BAS	DIV 23 BAS	120/1	DIVISION 26 ELECTRICAL SHALL PROVIDE NETWORK IT LAN DROP NEAR BUILDING CONTROLLER, PROVIDE LOW VOLTAGE RELAY TO DE-ENERGIZE CONTROLS WITH OCCUPANCY BY BUILDING WEB BASED CONTROL (SEE WIRELESS CONTROL DIAGRAM)
WC	WIRELESS CONTROLLER	DIV 23 BAS	DIV 23 BAS	120/1	
LT	AHU LED LIGHTS	DIV 26 ELECTRICAL	DIV 23 HVAC	120/1	PROVIDE 120VAC TO EXTERNAL JUNCTION BOX ON EACH AHU.

CONSTRUCTION DOCUMENTS

ENGINEERING RESOURCE GROUP
350 EDGEWOOD TERRACE DRIVE
JACKSON, MS 39206
PHONE: (601) 362-3552
FAX: (601) 366-6418

CONSULTANTS:

ELECTRICAL ENGINEER
SCHULTZ & WYNNE, P.A.
4523 OFFICE PARK DR.
JACKSON, MS 39206
T: (601) 982-3313

PROJECT:

HVAC UPGRADES
LAUDERDALE COUNTY
MERIDIAN, MISSISSIPPI

PROJECT NUMBER: 22.006

DATE: 10/4/2022

DRAWN BY: KAH

CHECKED BY: CEM

REV: 0 IFC 10/4/2022
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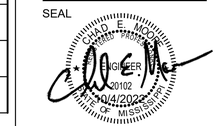
SEAL



SHEET TITLE:

EMERGENCY SERVICES / EMA - HVAC SCHEDULES

SHEET NUMBER

M6.3

DUCTLESS SPLIT-SYSTEM HEAT PUMP - INDOOR UNIT SCHEDULE

TAG	MANUFACTURER & MODEL NO	TYPE	COOLING (MBH)	HEATING (MBH)	ELECTRICAL			OPER WT (LBS)	REMARKS
					VOLT/Ø	FLA	MOCP		
DSS 1	TRANE/MITSUBISHI NTXCKS15A112AA	4-WAY CASSETTE	14.1	19.1	208/1	.32	18	30	WALL MOUNTED REMOTE CONTROLLER, INDOOR UNIT RECEIVES POWER FROM OUTDOOR UNIT, CONDENSATE PUMP
DSS 2	TRANE/MITSUBISHI NTXCKS15A112AA	4-WAY CASSETTE	14.1	19.1	208/1	.32	18	30	WALL MOUNTED REMOTE CONTROLLER, INDOOR UNIT RECEIVES POWER FROM OUTDOOR UNIT, CONDENSATE PUMP
DSS 3	TRANE/MITSUBISHI NTXWPH06B112AA	WALL MTD	9.0	14.0	208/1	.65	15	30	WALL MOUNTED REMOTE CONTROLLER, INDOOR UNIT RECEIVES POWER FROM OUTDOOR UNIT, CONDENSATE PUMP
DSS 4	TRANE/MITSUBISHI NTXWPH06B112AA	WALL MTD	9.0	14.0	208/1	.65	15	30	WALL MOUNTED REMOTE CONTROLLER, INDOOR UNIT RECEIVES POWER FROM OUTDOOR UNIT, CONDENSATE PUMP
DSS 5	TRANE/MITSUBISHI NTXWPH06B112AA	WALL MTD	9.0	14.0	208/1	.65	15	30	WALL MOUNTED REMOTE CONTROLLER, INDOOR UNIT RECEIVES POWER FROM OUTDOOR UNIT, CONDENSATE PUMP
DSS 6	TRANE/MITSUBISHI NTXWST36B112AA	WALL MTD	33.2	36.0	208/1	.76	20	50	WALL MOUNTED REMOTE CONTROLLER, INDOOR UNIT RECEIVES POWER FROM OUTDOOR UNIT, CONDENSATE PUMP
DSS 7	TRANE/MITSUBISHI NTXWST36B112AA	WALL MTD	33.2	36.0	208/1	.76	20	50	WALL MOUNTED REMOTE CONTROLLER, INDOOR UNIT RECEIVES POWER FROM OUTDOOR UNIT, CONDENSATE PUMP

DUCTLESS SPLIT-SYSTEM HEAT PUMP - OUTDOOR UNIT SCHEDULE

TAG	MANUFACTURER & MODEL NO	NOM TONS	REFR TYPE	OAT	CAPACITY (MBH)		ELECTRICAL			SEER	HSPF	OPER WT (LBS)	REMARKS
				COOL / HEAT	COOLING	HEATING	MCA	MOCP	VOLT/Ø				
CU 1	TRANE/MITSUBISHI NTXSK15A112AA	1.25	410A	95.0 / 47.0	14.1	19.1	10.0	18	208/1	19.8	11.2	100	INVERTER COMPRESSOR, LOW AMBIENT KIT, WALL MOUNT BRACKET
CU 2	TRANE/MITSUBISHI NTXSK15A112AA	1.25	410A	95.0 / 47.0	14.1	19.1	10.0	18	208/1	19.8	11.2	100	INVERTER COMPRESSOR, LOW AMBIENT KIT, WALL MOUNT BRACKET
CU 3	TRANE/MITSUBISHI NTXSPB06B112AA	.75	410A	95.0 / 47.0	9.0	14.0	10.0	15	208/1	33.1	12.5	100	INVERTER COMPRESSOR, LOW AMBIENT KIT, WALL MOUNT BRACKET
CU 4	TRANE/MITSUBISHI NTXSPB06B112AA	.75	410A	95.0 / 47.0	9.0	14.0	10.0	15	208/1	33.1	12.5	100	INVERTER COMPRESSOR, LOW AMBIENT KIT, WALL MOUNT BRACKET
CU 5	TRANE/MITSUBISHI NTXSPB06B112AA	.75	410A	95.0 / 47.0	9.0	14.0	10.0	15	208/1	33.1	12.5	100	INVERTER COMPRESSOR, LOW AMBIENT KIT, WALL MOUNT BRACKET
CU 6	TRANE/MITSUBISHI NTXSST36B112AA	3.0	410A	95.0 / 47.0	33.2	36.0	19.0	20	208/1	16.2	10.0	125	INVERTER COMPRESSOR, LOW AMBIENT KIT, WALL MOUNT BRACKET
CU 7	TRANE/MITSUBISHI NTXSST36B112AA	3.0	410A	95.0 / 47.0	33.2	36.0	19.0	20	208/1	16.2	10.0	125	INVERTER COMPRESSOR, LOW AMBIENT KIT, WALL MOUNT BRACKET

POWER VENTILATOR SCHEDULE

TAG	MANUFACTURER AND MODEL NO.	TYPE	CFM	ESP	RPM	SOUND (dBA/SONES)	ELECTRICAL			ON/OFF	INTERLOCK	OP WT (LBS)	REMARKS
							BHP	HP	V/Ø				
EF 1	COOK 150SQN10D	CENTRIFUGAL INLINE CABINET FAN	1520	0.5	1071	59/9.0	.26	1/3	115/1	(2)MOTION DETECTOR	MD-1 & MD-2	100	DIRECT DRIVE, TWO2) MOTION DETECTOR, PREWIRED DISCONNECT, PREWIRED FAN SPEED CONTROLLER, BACKDRAFT DAMPER, RUBBER-IN-SHEAR ISOLATORS
EF 2	COOK 90SQN17DEC	CENTRIFUGAL INLINE CABINET FAN	300	0.35	1354	52/5.9	--	1/6	115/1	MOTION DETECTOR	NONE	100	ECM MOTOR, PREWIRED DISCONNECT, BACKDRAFT DAMPER, RUBBER-IN-SHEAR ISOLATORS
EF 3	COOK 90SQN17DEC	CENTRIFUGAL INLINE CABINET FAN	300	0.35	1354	52/5.9	--	1/6	115/1	MOTION DETECTOR	NONE	100	EC MOTOR, PREWIRED DISCONNECT, BACKDRAFT DAMPER, RUBBER-IN-SHEAR ISOLATORS
EF 4	COOK GCVF-100	CEILING MOUNTED	75	0.25	808	1.3	--	.26A	115/1	MOTION DETECTOR	NONE	-	EC MOTOR, PRE-WIRED DISCONNECT, PRE-WIRED FAN SPEED CONTROLLER, BACKDRAFT DAMPER, ISOLATOR KIT, WHITE ALUMINUM GRILLE
EF 5	COOK GCVF-100	CEILING MOUNTED	75	0.25	808	1.3	--	.26A	115/1	MOTION DETECTOR	NONE	-	EC MOTOR, PRE-WIRED DISCONNECT, PRE-WIRED FAN SPEED CONTROLLER, BACKDRAFT DAMPER, ISOLATOR KIT, WHITE ALUMINUM GRILLE
EF 6	COOK GCVF-100	CEILING MOUNTED	75	0.25	808	1.3	--	.26A	115/1	MOTION DETECTOR	NONE	-	EC MOTOR, PRE-WIRED DISCONNECT, PRE-WIRED FAN SPEED CONTROLLER, BACKDRAFT DAMPER, ISOLATOR KIT, WHITE ALUMINUM GRILLE

DEHUMIDIFIER UNIT SCHEDULE

TAG	MANUFACTURER AND MODEL NO.	CFM	PINTS/ 24 HRS	ELECTRICAL		REMARKS
				VOLT/Ø	AMPS	
DH 1	HONEYWELL TRUEDRY DR65	100	65	115/1	5.2	HARD DRAIN CONNECTION, 10' CORD WITH PLUG, MERV 11 FILTER, DIGITAL HUMIDITY CONTROLLER (WALL MOUNTED) WITH LCD DISPLAY, PINTS/24 HRS IS BASED ON 80 °F / 60% RH ENTERING AIR CONDITIONS, CONDENSATE PUMP
DH 2	HONEYWELL TRUEDRY DR65	100	65	115/1	5.2	HARD DRAIN CONNECTION, 10' CORD WITH PLUG, MERV 11 FILTER, DIGITAL HUMIDITY CONTROLLER (WALL MOUNTED) WITH LCD DISPLAY, PINTS/24 HRS IS BASED ON 80 °F / 60% RH ENTERING AIR CONDITIONS, CONDENSATE PUMP
DH 3	HONEYWELL TRUEDRY DR65	100	65	115/1	5.2	HARD DRAIN CONNECTION, 10' CORD WITH PLUG, MERV 11 FILTER, DIGITAL HUMIDITY CONTROLLER (WALL MOUNTED) WITH LCD DISPLAY, PINTS/24 HRS IS BASED ON 80 °F / 60% RH ENTERING AIR CONDITIONS, CONDENSATE PUMP
DH 4	HONEYWELL TRUEDRY DR65	100	65	115/1	5.2	HARD DRAIN CONNECTION, 10' CORD WITH PLUG, MERV 11 FILTER, DIGITAL HUMIDITY CONTROLLER (WALL MOUNTED) WITH LCD DISPLAY, PINTS/24 HRS IS BASED ON 80 °F / 60% RH ENTERING AIR CONDITIONS, CONDENSATE PUMP
DH 5	HONEYWELL TRUEDRY DR65	100	65	115/1	5.2	HARD DRAIN CONNECTION, 10' CORD WITH PLUG, MERV 11 FILTER, DIGITAL HUMIDITY CONTROLLER (WALL MOUNTED) WITH LCD DISPLAY, PINTS/24 HRS IS BASED ON 80 °F / 60% RH ENTERING AIR CONDITIONS, CONDENSATE PUMP

MOTORIZED DAMPER SCHEDULE

TAG	DAMPER MODEL	ACTUATOR		INTERLOCK	POWER WIRING	CONTROLS & INTERLOCK WIRING	REMARKS
		MODEL	VOLTAGE/PHASE				
MD 1	RUSKIN CDRS-25	BELIMO	120/1	EF-1	DIVISION 26	DIVISION 23 BAS	TAMPERPROOF SUPERVISORY SWITCHES TO MONITOR VALVE STATUS. VERIFY/COORDINATE DEDICATED POWER OR SYSTEM POWER REQUIREMENTS. INTERLOCK WITH OCCUPANCY SENSOR IN ROOM IDU SERVED (SEE CONTROLS). 3-POSITION ACTUATOR.
MD 2	RUSKIN CDRS-25	BELIMO	120/1	EF-1	DIVISION 26	DIVISION 23 BAS	TAMPERPROOF SUPERVISORY SWITCHES TO MONITOR VALVE STATUS. VERIFY/COORDINATE DEDICATED POWER OR SYSTEM POWER REQUIREMENTS. INTERLOCK WITH OCCUPANCY SENSOR IN ROOM IDU SERVED (SEE CONTROLS). 3-POSITION ACTUATOR.

AIR DISTRIBUTION DEVICE SCHEDULE

TAG	TYPE	MANUFACTURER & MODEL NO.	NECK SIZE	FACE SIZE	REMARKS
A	CEILING MOUNTED SUPPLY AIR DEVICE	TITUS OMNI	SEE PLANS/ SCHEDULE BELOW	SEE PLANS/ SCHEDULE BELOW	24"x24" OR 12"x12" FACE SIZE AS INDICATED ON PLANS. PROVIDE ALL SURFACE MOUNTED GRILLES WITH PLASTER FRAME MOUNT (TITUS TRM). NECK SIZE TO BE AS INDICATED ON PLANS OR CONNECTION SCHEDULE BELOW.
B	CEILING MOUNTED EXHAUST/RETURN	TITUS 50F	SEE PLANS/ SCHEDULE BELOW	SEE PLANS/ SCHEDULE BELOW	12"x12" OR 24"x12" FACE SIZE AS INDICATED ON PLANS. PROVIDE ALL SURFACE MOUNTED GRILLES WITH SCREW HOLES. NECK SIZE TO BE AS INDICATED ON PLANS OR CONNECTION SCHEDULE BELOW.

NOTES:

1. CEILING DIFFUSERS ARE 4-WAY UNLESS OTHERWISE NOTED BY SHADING ON PLANS.
2. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING TYPE AND CONSTRUCTION DETAILS.
3. AIR DEVICE FRAME AND STYLE SHALL MATCH CEILING TYPE. COORDINATE WITH ARCHITECTURAL REFLECTED CEILING PLAN.
4. REFER TO ARCHITECT FOR FINISHES AND COLOR OF DEVICES.
5. FACE SIZE TO BE NECK SIZE PLUS 2".

AIR DEVICE CONNECTION SCHEDULE

AIR QUANTITY (CFM)	CEILING MOUNTED NECK SIZE	SIDEWALL MOUNTED NECK SIZE	EXHAUST AIR GRILLE NECK SIZE	BRANCH DUCT SIZE	
				ROUND	ALTERNATE RECTANGULAR DUCT
0-100	6"Ø	8x4"	8x8"	6"Ø	8x4"
101-200	8"Ø	10x6"	8x8"	8"Ø	10x6"
201-350	10"Ø	12x8"	10x10"	10"Ø	12x8"
351-600	12"Ø	14x10"	12x12"	12"Ø	14x10"

CONSTRUCTION DOCUMENTS

ENGINEERING RESOURCE GROUP
350 EDGEWOOD TERRACE DRIVE
JACKSON, MS 39206
PHONE: (601) 362-3552
FAX: (601) 366-6418

CONSULTANTS:

ELECTRICAL ENGINEER
SCHULTZ & WYNNE, P.A.
4523 OFFICE PARK DR.
JACKSON, MS 39206
T: (601) 982-3313

PROJECT:

HVAC UPGRADES
LAUDERDALE COUNTY
MERIDIAN, MISSISSIPPI

PROJECT NUMBER: 22.006
DATE: 10/4/2022
DRAWN BY: KAH
CHECKED BY: CEM
REV: 0 IFC 10/4/2022
1
2
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SEAL

CHAD E. MOORE
REGISTERED ENGINEER
22102
10/4/2022
STATE OF MISSISSIPPI

SHEET TITLE:
AGRI-CENTER - MECHANICAL SCHEDULES - ADD ALT. #1

SHEET NUMBER
M6.4

CONTROL POINTS

Points List Table Column Definitions:

1. Point Description.
2. Type (number in point list schedule after each type refers to tag on schematics).
   - 2.1. AO: analog output
   - 2.2. AI: analog input
   - 2.3. DO: digital or binary output
   - 2.4. DI: digital or binary input
3. Device description.
   - 3.1. See Specification Section 230913 EMCS Basic Materials and Devices for device definitions and specifications.
4. Trend Logging.
   - 4.1. Commissioning: Where listed, point is to be trended at the basis listed for commissioning and performance verification purposes.
   - 4.2. Continuous: Where listed, point is to be trended at the basis listed continuously, initiated after system acceptance, for the purpose of future diagnostics.
   - 4.3. Trend Basis
     - 4.3.1. Where range of engineering units is listed, trend on a change of value (COV) basis (in other words record time stamp and value when point value changes by engineering unit listed).
     - 4.3.2. Where time interval is listed, trend on a time basis (in other words record time stamp and value at interval listed). All points related to a specific piece of equipment shall be trended at the same initiation time of day so data can be compared in text format.
5. Calibration.
   - 5.1. F = factory calibration only is required (no field calibration)
   - 5.2. HH = field calibrate with handheld device. Test/calibration equipment shall be at least twice as accurate as respective field device (for example if field device is ±0.5% accurate, test equipment shall be ±0.25% accurate over same range).

Note that points lists herein are for each system of like kind. Refer to Drawings for quantity of each.

SEQUENCES OF OPERATION - GENERAL

1. General:

A. Contractor shall review sequences prior to programming and suggest modifications where required to achieve the design intent. Contractor may also suggest modifications to improve performance and stability or to simplify or reorganize logic in a manner that provides equal or better performance. Proposed changes in sequences shall be included as a part of Submittal Package 2.
B. Include costs for program modifications if required to provide proper performance of the system.
C. Unless otherwise indicated in SOOs, control loops shall be enabled and disabled based on the status of the system being controlled to prevent wind-up. Loops shall be initiated with the output set to a neutral (deadband) condition, e.g. valves and dampers close, VFDs at minimum speed, etc.
D. When SOOs use outdoor air temperature present value and there are multiple outdoor air sensors, the physically closet sensor reading shall be used.
E. The term "proven" (i.e. "proven on" / "proven off") shall mean that the equipment's DI status point matches the state set by the equipment's DO command point.
F. The term "PID loop" or "control loop" is used generically for all control loops and shall not be interpreted as requiring proportional plus integral plus derivative gains on all loops. Unless specifically indicated otherwise, the following guidelines shall be followed:
   a. Use proportional only (P-only) loops for limiting loops (such as zone CO2 limiting loops, etc.) to ensure there is no integral windup.
   b. Do not use the derivative term on any loops unless field tuning is not possible without it.

G. All setpoints, timers, deadbands, PID gains, etc. listed in sequences shall be capable of being adjusted by the operator (with full administrative access) without having to access programming whether indicated as adjustable in sequences or not. Software (virtual) points shall be used for these setpoints. Fixed scalar numbers shall not be imbedded in programs unless the value will never need to be adjusted.
H. Values for all points, including real (hardware) points used in control sequences shall be capable of being overridden by the user (e.g. for testing and commissioning). If hardware design prevents this for hardware points, they shall be equated to a software point and the software point shall be used in all sequences. Exception: Not required for ASC hardware points.

SEQUENCES OF OPERATION - GENERAL CONT'D

2. Zones:

A. This section applies to all single zone systems and sub-zones of air handling systems, such as VAV boxes, fan-powered boxes, etc.
B. Setpoints:
   a. Each zone shall have separate unoccupied and occupied setpoints, and separate heating and cooling setpoints. As a default:

Zone Type	Occupied		Unoccupied	
	Heat	Cool	Heat	Cool
Exterior	70°F	74°F	60°F	90°F
Interior	70°F	73°F	60°F	90°F
Circulation	69°F	76°F	60°F	90°F
Mech/Elec Rooms	60°F	85°F	60°F	85°F
Network/IT	65°F	75°F	65°F	75°F

   b. The software shall prevent:
      - The heating setpoint from exceeding the cooling setpoint minus 1°F (in other words the minimum deadband shall be 1°F).
      - The unoccupied heating setpoint from exceeding the occupied heating setpoint; and
      - The unoccupied cooling setpoint from being less than the occupied cooling setpoint.
   c. Where the zone has a local occupant adjustable setpoint adjustment knob/button:
      - The adjustment shall be capable of being limited in software.
        - As a default, occupied cooling setpoint shall be limited between 72°F and 80°F.
        - As a default, occupied heating setpoint shall be limited between 65°F and 72°F.
      - The adjustment shall move both the existing heating and cooling setpoints upwards or downwards by the same amount unless the limit has been reached.
      - The adjustment shall only be active in Occupied mode.
   d. The operative setpoint shall be determined by the Zone Group's mode:
      - The setpoints shall be the occupied setpoint during Occupied mode, Warm-up mode, and Cool-down mode.
      - The setpoints shall be the unoccupied setpoints during Unoccupied mode, Setback mode, and Setup mode.
   e. Hierarchy of Setpoint Adjustments: The following adjustment restrictions shall prevail in order from highest to lowest priority:
      - Setpoint overlap restriction specified herein.
      - Local setpoint adjustment.
      - Scheduled setpoints based on Zone Group mode.

C. Local override: When thermostat override buttons are depressed, the request for Occupied Mode operation shall be sent up to the Zone Group control for 60 minutes. (This will cause all zones in the Zone Group to operate in Occupied Mode to ensure that the system has adequate load to operate stably.)

D. Control Loops:
   a. Two separate control loops shall operate to maintain space temperature at setpoint, the Cooling Loop and the Heating Loop. Both loops shall be continuously active.
   b. The Cooling Loop shall maintain the space temperature at the active cooling setpoint. The output of the loop shall be a virtual point ranging from 0% (no cooling) to 100% (full cooling).
   c. The Heating Loop shall maintain the space temperature at the active heating setpoint. The output of the loop shall be a virtual point ranging from 0% (no heating) to 100% (full heating).
   d. Loops shall use proportional + integral logic or fuzzy logic. Proportional-only control is not acceptable, although the integral gain shall be small relative to the proportional gain. P and I gains shall be adjustable from the Operator Workstation.
   e. See other sections for how the outputs from these loops are used.

E. Zone Modes:
   a. Heating Mode: when the output of the space heating control loop is greater than zero.
   b. Cooling Mode: when the output of the space cooling control loop is greater than zero and the output of the heating loop is equal to zero.
   c. Deadband Mode: when not in either the Heating or Cooling Mode.

F. Alarms:
   a. Zone temperature alarms:
      - If the zone is 3°F above cooling or below heating setpoints for 10 minutes, generate Level 3 alarm.
      - if the zone is 5°F above cooling or below heating setpoints for 10 minutes, generate Level 2 alarm.
      - Suppress zone temperature alarms as follows:
      - After zone setpoint is changed for a period of 10 minutes per degree of difference between the zone temperature at the time of the change and the new setpoint. This suppression period applies any time that the zone setpoint is changed.
      - While Zone Group is in Warm-up or Cool-down Modes.
      - For zones with an Importance multiplier (see Trim & Respond sequences above) of zero.
   b. For zones with CO2 sensors:
      - If the CO2 concentration is less than 300 ppm, or the zone is in unoccupied mode for more than 2 hours and zone CO2 concentration exceeds 600 ppm, generate a Level 4 alarm, indicating sensor may be out of calibration.
      - If the CO2 concentration exceeds setpoint plus 10% for more than 10 minutes generate a Level 3 alarm.

3. Zone Groups (aka Isolation Areas):

A. Each system shall be broken into separate Zone Groups composed of a collection of one or more zones served by the air handling system.
B. Each Zone Group shall have separate occupancy schedules and operating modes from other Zone Groups served by the air handling system. All zones in the Zone Group shall be in the same operating mode.
C. Individual Zone Groups shall be setup per the Owner's written requirements. Contractor shall confirm Zone Groups from Owner (in writing) prior to initial programming.
D. Provide testing/commissioning software switches to override all zones served by the Zone Group. Provide a single software switch for each of the zone override switches listed under terminal box control above. When the Zone Group override switch value is changed, the terminal box zone override switch value for each zone in the Zone Group shall change to the same value. This only occurs when the switch changes value; the switch at each zone shall be capable of being changed to a different value from the Zone Group switch. These software switches are for commissioning and need not be shown on graphics.

SEQUENCES OF OPERATION - GENERAL CONT'D

E. Zone Group Operating Modes: Each Zone Group shall have the following modes:
   a. Occupied Mode: A Zone Group is in the occupied mode when any of the following is true:
      - The time of day is between the Zone Group's scheduled occupied start and stop times.
      - Manual override from zone temperature sensor.
   b. Warm-up mode. Warm-up start time shall be determined based on the zone in the Zone Group whose space temperature is furthest below its occupied heating temperature setpoint, the outside air temperature (using global outdoor air temperature sensor, not any associated with AHUs), and a building mass/capacity factor. This factor shall be manually adjusted or self-tuned by the program based on internal trending so that all zones in the Zone Group are brought up to their occupied setpoint by the scheduled occupied start hour. The tuning period mode shall be turned on or off by a software switch (to allow tuning to be stopped after the system has been trained). Warm-up mode shall start no earlier than 3 hours before the scheduled occupied start hour and shall end at the scheduled occupied start hour.
   c. Cool-down mode. Cool-down shall be determined based on the zone in the Zone Group whose space temperature is furthest above its occupied cooling temperature setpoint, the outside air temperature (using global outdoor air temperature sensor, not any associated with AHUs), and a building mass/capacity factor. This factor shall be manually adjusted or self-tuned by the program based on internal trending so that all zones in the Zone Group are brought down to their occupied setpoint by the scheduled occupied start hour. The tuning period mode shall be turned on or off by a software switch (to allow tuning to be stopped after the system has been trained). Cool-down mode shall start no earlier than 3 hours before the scheduled occupied start hour and shall end at the scheduled occupied start hour.
   d. Setback mode. During other than normal mode, and warm-up mode, if any 2 (adjustable; set to all zones if there are fewer in Zone Group) zone(s) in the Zone Group falls 2°F below its active unoccupied setback setpoint, until all spaces in the Zone Group are above their active setback setpoints.
   e. Setup mode. During other than normal mode, warm-up mode, and setback mode, if any 2 (adjustable; set to all zones if there are fewer in Zone Group) zone(s) in the Zone Group rises 2°F above its active unoccupied setup setpoint until all spaces in the Zone Group are below their active setup setpoints.
      - e.1.1. Unoccupied Mode: When the Zone Group is not in any other mode.

4. Air Handling Unit, Fan Coil Unit, Blower Coil Unit, Split-System Unit System Modes:

A. AHU, FCU, BCU, and/or Split-System modes are the same as the mode of the Zone Groups served by the system. When Zone Groups served by an air handling system are in different modes, the following hierarchy applies (highest one sets AHU mode):
   a. Occupied mode.
   b. Cool-down mode.
   c. Setup mode.
   d. Warm-up mode.
   e. Setback mode.
   f. Unoccupied mode.

5. Miscellaneous Alarms:

A. Points in Hand (Operator Override) via Workstation command (including name of operator who made the command) or via supervised HOA switch at output: Level 4.
B. Equipment alarm (for equipment with alarm contacts such as VFDs): Level 2.
C. Failure or disconnection of a sensor as indicated by signal widely out of range: Level 2.
D. Panel or LAN failure: Level 2.
E. Loss of communication with any device via Gateway (e.g. VFD) for more than 30 seconds: Level 2 (alarm shall indicate which specific device is not responding).

CONTROLS LEGEND

GENERAL

- SA — SUPPLY AIR
- OA — OUTSIDE/OUTDOOR AIR
- RA — RETURN AIR
- EA — EXHAUST AIR
- DIGITAL POINT — HARDWIRED DIGITAL OUTPUT (DO) OR DIGITAL INPUT (DI) — DO
- ANALOG POINT — HARDWIRED ANALOG OUTPUT (AO) OR ANALOG INPUT (AI) — AO
- NETWORK CONNECTION BETWEEN CONTROLLER AND DEVICE — NETWORK

CONTROLS LEGEND

EQUIPMENT

- 2-WAY VALVE
- 3-WAY VALVE
- SD — SMOKE DETECTOR
- FAN - PROPELLER
- FAN - CENTRIFUGAL HOUSED
- FAN - PLUG / PLENUM
- FURNACE
- FILTER
- AFMS-X — AIR FLOW MEASURING STATION
- C / C — COIL
- OPPOSED BLADE DAMPER
- PARALLEL BLADE DAMPER
- ENABLE, RUN, SPEED, NETWORK, VFD — VARIABLE SPEED DRIVE
- M/S, HAND, OFF, AUTO — MOTOR STARTER (MOTOR CONTROLLER)

SENSORS

- STATIC PRESSURE TIP
- SENSOR WELL
- T — TEMPERATURE SENSOR & SENSOR WELL
- HT-X, TS-X — HUMIDITY TRANSMITTER (HT) OR TEMPERATURE SENSOR (TS) - DUCT MTD. (SINGLE POINT)
- TS-X — AVERAGING TEMPERATURE SENSOR
- M — MODULATING ACTUATOR
- M2 — 2-POSITION ACTUATOR
- DPS-X — DIFFERENTIAL PRESSURE SWITCH
- DPT-X — DIFFERENTIAL PRESSURE TRANSMITTER
- FM-X — FLOW METER
- TS-X — TEMPERATURE SENSOR - WALL MTD.
- HT-X — HUMIDITY TRANSMITTER - WALL MTD.
- CO2-X — CARBON DIOXIDE SENSOR - WALL MTD.
- OCC — OCCUPANCY SENSOR
- CS — CURRENT SWITCH
- CT — CURRENT TRANSFORMER
- RELAY N.C. / N.O.
- WLD-X — WATER LEAK DETECTOR
- RC — VARIABLE REFRIGERANT FLOW SYSTEM INDOOR UNIT REMOTE CONTROLLER

CONSTRUCTION DOCUMENTS

ERG ENGINEERING RESOURCE GROUP
350 EDGEWOOD TERRACE DRIVE
JACKSON, MS 39206
PHONE: (601) 362-3552
FAX: (601) 366-6418

CONSULTANTS:

ELECTRICAL ENGINEER
SCHULTZ & WYNNE, P.A.
4523 OFFICE PARK DR.
JACKSON, MS 39206
T: (601) 982-3313

PROJECT:

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LAUDERDALE COUNTY
MERIDIAN, MISSISSIPPI

PROJECT NUMBER: 22.006
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DRAWN BY: KAH
CHECKED BY: CEM

REV: 0 IFC 10/4/2022
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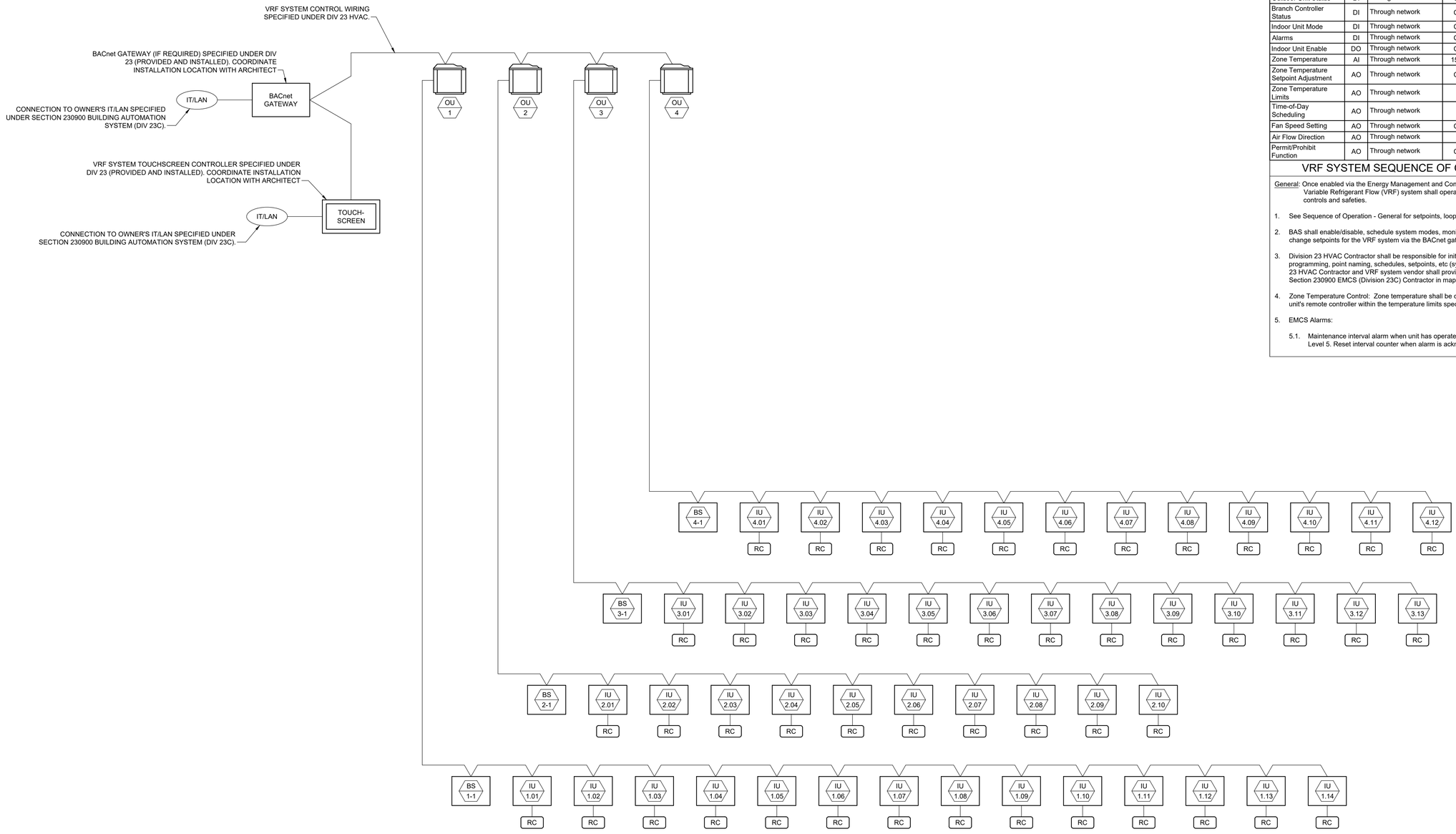
SEAL

SHEET TITLE:

CONTROL SCHEMATICS

SHEET NUMBER

M7.1



1 M7.2 VARIABLE REFRIGERANT FLOW (VRF) SYSTEM CONTROL SCHEMATIC - HUMAN SERVICES

NO SCALE

NOTES

1. VRF SYSTEM WIRING DIAGRAM AND CONTROL SCHEMATIC IS PROVIDED FOR REFERENCE ONLY. DIVISION 23 HVAC CONTRACTOR SHALL VERIFY AND COORDINATE ACTUAL SYSTEM WIRING WITH FINAL EQUIPMENT SUBMITTAL AND SYSTEM LAYOUT.

POINT MAPPED FROM VRF SYSTEM

Description	Type	Device	Trend Logging		Calibration
			Commissioning	Continuous	
Outdoor Unit Status	DI	Through network	COV	COV	–
Branch Controller Status	DI	Through network	COV	COV	–
Indoor Unit Mode	DI	Through network	COV	COV	–
Alarms	DI	Through network	COV	COV	–
Indoor Unit Enable	DO	Through network	COV	COV	–
Zone Temperature	AI	Through network	15 min	60 min	–
Zone Temperature Setpoint Adjustment	AO	Through network	COV	COV	–
Zone Temperature Limits	AO	Through network	–	–	–
Time-of-Day Scheduling	AO	Through network	–	–	–
Fan Speed Setting	AO	Through network	COV	–	–
Air Flow Direction	AO	Through network	–	–	–
Permit/Prohibit Function	AO	Through network	COV	–	–

VRF SYSTEM SEQUENCE OF OPERATION

General: Once enabled via the Energy Management and Control System (EMCS), the Variable Refrigerant Flow (VRF) system shall operate subject to its own internal controls and safeties.

1. See Sequence of Operation - General for setpoints, loops, control modes, alarms, etc.
2. BAS shall enable/disable, schedule system modes, monitor system parameters, and change setpoints for the VRF system via the BACnet gateway.
3. Division 23 HVAC Contractor shall be responsible for initial VRF system setup, programming, point naming, schedules, setpoints, etc (system configuration). Division 23 HVAC Contractor and VRF system vendor shall provide technical support to the Section 230900 EMCS (Division 23C) Contractor in mapping across EMCS points.
4. Zone Temperature Control: Zone temperature shall be controlled via each indoor unit's remote controller within the temperature limits specified.
5. EMCS Alarms:
   - 5.1. Maintenance interval alarm when unit has operated for more than 1500 hours: Level 5. Reset interval counter when alarm is acknowledged.

CONSTRUCTION DOCUMENTS

ERG ENGINEERING RESOURCE GROUP
350 EDGEWOOD TERRACE DRIVE
JACKSON, MS 39206
PHONE: (601) 362-3552
FAX: (601) 366-6418

CONSULTANTS:

ELECTRICAL ENGINEER
SCHULTZ & WYNNE, P.A.
4523 OFFICE PARK DR.
JACKSON, MS 39206
T: (601) 982-3313

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SEAL

SHEET TITLE:

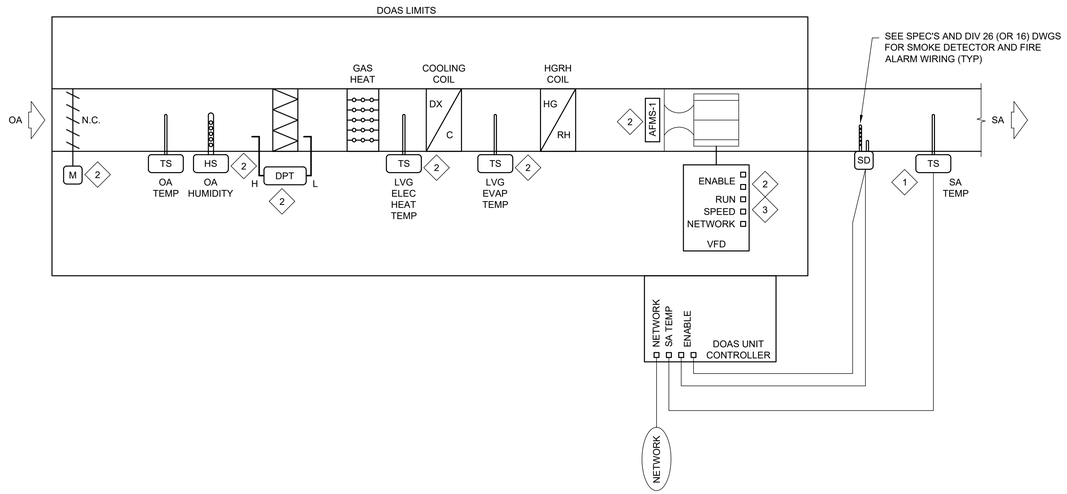
HUMAN SERVICES - CONTROL SCHEMATICS

SHEET NUMBER

M7.2

NOTES

1. CONTROL DEVICE FACTORY PROVIDED, FIELD INSTALLED BY DIV 23C EMCS CONTRACTOR.
2. CONTROL DEVICE FACTORY PROVIDED, FACTORY INSTALLED.
3. FOR UNITS WITH MULTIPLE SUPPLY FANS, PROVIDE A VFD FOR EACH FAN. SEE DOAS EQUIPMENT SCHEDULE FOR SUPPLY FAN QUANTITY.



1 / M7.3 OUTDOOR AIR UNIT CONTROL SCHEMATIC

NO SCALE

POINTS MAPPED FROM OAU BACNET CARD

Description	Type	Device	Trend Logging		Calibra-tion
			Comm-issioning	Contin-uous	
Supply Fan Start/Stop	DO	Through network	COV	COV	–
Cooling Stage 1	DO	Through network	COV	COV	–
Cooling Stage 2	DO	Through network	COV	COV	-
Cooling Stage 3	DO	Through network	COV	COV	–
Cooling Stage 4	DO	Through network	COV	COV	–
Unit Mode (Cooling, Heating, Dehumidification)	DO	Through network	COV	COV	–
Compressor lead-lag	DO	Through network	COV	COV	–
Unit mode (Occupied, Unoccupied, Cool-down, Warm-up, Setup, Setback)	DO	Through network	COV	COV	–
Supply fan status	DI	Through network	COV	COV	–
OA damper status	DI	Through network	COV	COV	–
Unit alarm contact	DI	Through network	COV	COV	
Supply fan speed	AO	Through network	1 min	60 min	
Variable speed compressor output	AO	Through network	1 min	60 min	
Heat output	AO	Through network	1 min	60 min	
OA damper position	AO	Through network	1 min	60 min	
Discharge air temperature setpoint	AO	Through network	1 min	60 min	
OA damper minimum position setpoint	AO	Through network	1 min	60 min	
OA minimum flow setpoint	AO	Through network	1 min	60 min	
Humidity high-limit	AO	Through network	1 min	60 min	
Cooling capacity	AI	Through network	1 min	60 min	
Heating capacity	AI	Through network	1 min	60 min	
Reheat capacity	AI	Through network	1 min	60 min	
Discharge air temperature	AI	Through network	1 min	60 min	
Reheat capacity	AI	Through network	1 min	60 min	
Filter runtime hours	AI	Through network	1 min	60 min	
OA temperature	AI	Through network	1 min	60 min	
OA flow rate	AI	Through network	1 min	60 min	
OA humidity	AI	Through network	1 min	60 min	
Space humidity	AI	Through network	1 min	60 min	

OAU SEQUENCE OF OPERATION

General: Constant Air Volume (CAV) Outdoor Air Unit (OAU) with DX cooling, hot gas reheat (HGRH), modulating gas heat, and supply fan(s)

OA System Modes: OAU system mode shall be in the occupied mode 24/7. EMCS graphic shall include a switch to manually swith the OAU from occupied to unoccupied mode.

1. Occupied mode
2. Unoccupied mode

Supply Fan Control:

1. Supply Fan Start/Stop
   - 1.1. RTU supply fan(s) shall run when system is in Occupied Mode.
   - 1.2. Unit shall be hard-wire interlocked through smoke detector.
2. Supply Fan Speed Control
   - 2.1. Supply fan speed is controlled to maintain the OA flow rate at the design CFM when the fan is proven on.

Supply Air Temperature Control

1. Control loop is enabled when the supply air fan is proven on and disabled and output set to zero otherwise.
2. The leaving evaporator coil temperature shall be controlled to setpoint (52°F adjustable) using a PID loop whose output is mapped to sequence the cooling stages and variable speed compressor.
3. The supply air temperature shall be controlled to setpoint (72°F adjustable) using a PID loop whose output is mapped to sequence the hot gas reheat coil and natural gas heat exchanger.

Safeties and Interlocks:

1. Supply fan shall be hardwire interlocked through the unit smoke detector to shut down the unit upon smoke detection.

EMCS Alarms: Provide the following EMCS alarms:

1. Maintenance interval alarm when unit has operated for more than 1500 hours: Level 5. Reset interval counter when alarm is acknowledged.
2. Fan alarm is indicated by the status being different from the command for a period of 60 seconds.
   - 2.1. Commanded on, status off: Level 2
   - 2.2. Commanded off, status on: Level 4
3. Filter pressure drop exceeds alarm limit: Level 5. The alarm limit shall vary with fan speed as follows:

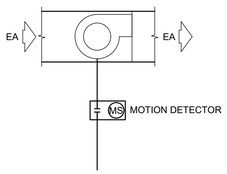
$$DPx = DP100(x)^{1.4}$$

Where DP100 is the high limit pressure drop at design cfm (determine limit from filter manufacturer) and DPx is the high limit at speed signal x (expressed as a fraction of full signal). For instance, the setpoint at 50% of full speed would be (0.5)^1.4 or 38% of the design high limit pressure drop.

4. High supply air temperature (more than 5 °F above setpoint) when control loop is active for longer than 15 minutes: Level 3.
5. If the outside air temperature is above the supply air temperature setpoint and the economizer is enabled and the mixed air temperature is more than 2 °F different from the outside air temperature for more than 30 minutes continuously; OR if the outdoor air temperature is more than 5 °F below the supply air temperature setpoint and the chilled water valve is open: Level 4 indicating economizer damper control problems.
6. Low static pressure (more than 0.25 inches below setpoint) when fan control loop is active for longer than 5 minutes: Level 3.
7. High building pressure (more than 0.1") for 5 minutes. Level 3.
8. Low building pressure (less than 0.0") for 5 minutes. Level 4.
9. Outdoor airflow less than setpoint by 10% for 10 minutes when loop is active: Level 3.

Testing/Commissioning Overrides: Provide software points that interlock to a chilled water and hot water plant level point to:

Force all stages of cooling on.
Force all stages of cooling off.
Force gas heat to 100%.
Force gas heat off.



2 / M7.3 EXHAUST FAN CONTROL SCHEMATIC - HUMAN SERVICES

NO SCALE

EF W/MOTION DETECTOR SEQUENCE OF OPERATION

General: Constant volume exhaust fan(s).

1. See Sequence of Operation - General for setpoints, loops, control modes, alarms, etc.
2. Exhaust fans shall operate if restroom is occupied as indicated by the motion detector. Fan shall run until the time delay duration has been exceeded. Time delay setting shall be initially set for 20 minutes.

CONSTRUCTION DOCUMENTS

ENGINEERING RESOURCE GROUP
350 EDGEWOOD TERRACE DRIVE
JACKSON, MS 39206
PHONE: (601) 362-3552
FAX: (601) 366-6418

CONSULTANTS:

ELECTRICAL ENGINEER
SCHULTZ & WYNNE, P.A.
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JACKSON, MS 39206
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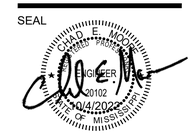
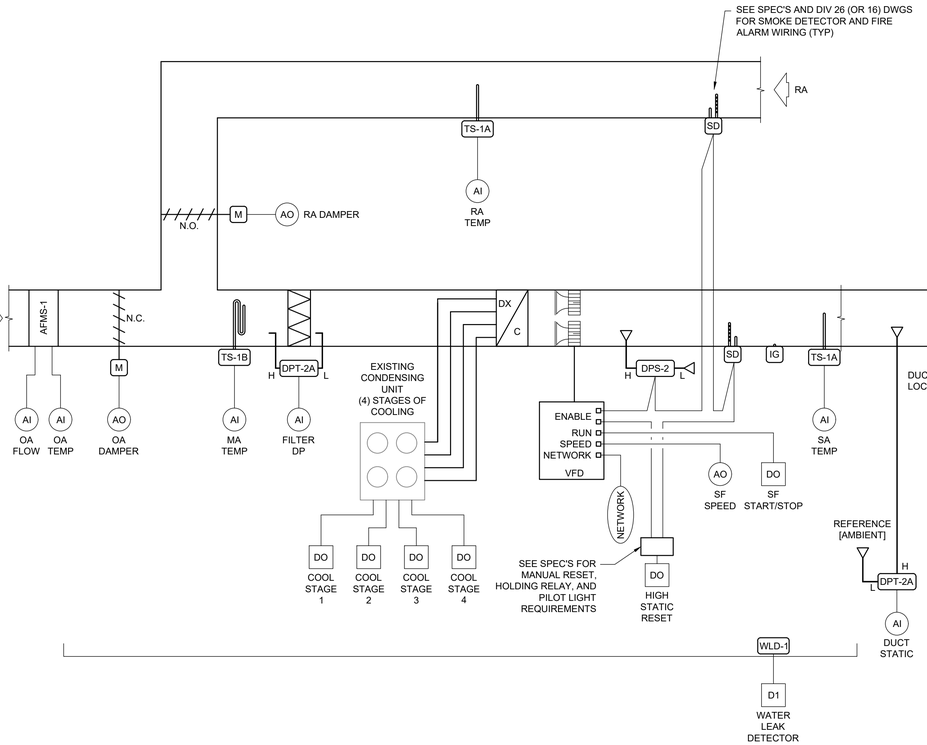


SHEET TITLE:

HUMAN SERVICES - CONTROL SCHEMATICS

SHEET NUMBER

M7.3



1 M7.4 VAV AHU CONTROL SCHEMATIC - EMERGENCY SERVICES/EMA (AHU-1)

NO SCALE

AHU HARDWIRED POINTS LIST

Description	Type	Device	Trend Logging		Calibration
			Commissioning	Continuous	
Supply Fan Start/Stop	DO	Connect to VFD "Run"	COV	COV	–
Supply fan high static alarm reset	DO	Dry contact to 120V or 24V control circuit	COV	COV	–
DX cooling stage 1	DO	Dry contact to 120V or 24V control circuit	COV	COV	–
DX cooling stage 2	DO	Dry contact to 120V or 24V control circuit	COV	COV	–
DX cooling stage 3	DO	Dry contact to 120V or 24V control circuit	COV	COV	–
DX cooling stage 4	DO	Dry contact to 120V or 24V control circuit	COV	COV	–
Water leak detector	DI	WLD-1	COV	COV	-
Outdoor air damper	AO	Modulating actuator	1 min	15 min	–
Return air damper	AO	Modulating actuator	1 min	15 min	–
Supply fan speed	AO	Connect to VFD Speed	1 min	15 min	–
Mixed air temperature	AI	TS-1B, across filter bank	1 min	15 min	–
Filter pressure drop	AI	DPT-2A, 0 to 1 inch	–	60 min	–
Return air temperature	AI	TS-1A	1 min	15 min	–
Supply air temperature	AI	TS-1A	1 min	15 min	–
Duct static pressure	AI	DPT-2A, 0 to 2 inches	1 min	15 min	–
OA flow	AI	AFMS-1	1 min	15 min	–
OA temperature	AI	AFMS-1	1 min	15 min	–

POINTS MAPPED FROM VFD BACNET CARD

Description	Type	Device	Trend Logging		Calibration
			Commissioning	Continuous	
Fault reset	DO	Through network	COV	COV	–
On/off status	DI	Through network	COV	COV	–
Fault (Critical Alarm)	DI	Through network	COV	COV	–
Minor Alarm	DI	Through network	COV	COV	–
Fault Text	DI	Through network (convert code to plain English text)	COV	COV	–
Alarm Text	DI	Through network (convert code to plain English text)	COV	COV	–
Keypad in hand/auto	DI	Through network	COV	COV	–
Minimum frequency setpoint	AO	Through network	±5%	±5%	–
Maximum frequency setpoint	AO	Through network	±5%	±5%	–
Acceleration rate	AO	Through network	±5%	±5%	–
Deceleration rate	AO	Through network	±5%	±5%	–
Actual frequency	AI	Through network	1 min	15 min	–
AC output voltage	AI	Through network	±10%	±10%	–
Current	AI	Through network	15 min	60 min	–
VFD temperature	AI	Through network	60 min	60 min	–
Power, kW	AI	Through network	1 min	15 min	–
Energy, MWh	AI	Through network	15 min	60 min	–
DC Bus Voltage	AI	Through network	±10%	±10%	–

AHU SEQUENCE OF OPERATION

General: Variable Air Volume (VAV) Air Handling Unit (AHU) with pre-heat coil, chilled water coil, supply fan(s). The sequence of operation is based on ASHRAE Guideline 36-2021. Refer to the guideline for additional information and commentary.

AHU System Modes: AHU system modes are the same as the mode of the Zone Group served by the system. When Zone Groups served by an air handling system are in different modes, the following hierarchy applies (highest one sets AHU mode):

1. Occupied mode
2. Cool-down mode
3. Setup mode
4. Warm-up mode
5. Setback mode
6. Unoccupied mode

Supply Fan Control:

1. Supply Fan Start/Stop
   - 1.1. AHU supply fan(s) shall run when system is in any mode other than Unoccupied Mode.
   - 1.2. Fan VFD's shall be hard-wire interlocked through smoke detectors and high discharge pressure safety relay mounted in the control panel in each AHU control panel. The relay energizes when high-limit DP switches sense pressure above 3.0 inches (adjustable) at the fan discharge or smoke detector auxiliary contacts are energized, locking out the fans until they are reset by the reset DO point or a push button on the panel face. A pilot light on the panel face indicates static pressure safety lockout is in effect.
   - 1.3. Totalize current airflow rate from VAV boxes and display on AHU graphic at discharge duct.
2. Static Pressure Setpoint Reset
   - 2.1. Static pressure setpoint: Setpoint shall be reset using Trim & Respond Logic (see Trim & Respond description herein) with the following parameters.

Variable	Value
Device	Supply Fan
SP0	0.5 inches
SPmin	0.1 inches
SPmax	Max_DSP Per TAB Agency
Td	10 minutes
T	2 minutes
I	2
R	Zone Static Pressure Reset Requests
SPtrim	-0.05 inches
SPres	+0.06 inches
SPres-max	+0.13 inches

3. Static Pressure Control
   - 3.1. Supply fan speed is controlled to maintain DSP at set point when the fan is proven ON. Where the zone groups served by the system are small, provide multiple sets of gains that are used in the control loop as a function of a load indicator (such as supply-fan airflow rate, the area of the zone groups that are occupied, etc.).

Supply Air Temperature Control:

1. Control loop is enabled when the supply air fan is proven ON and disabled and output set to zero otherwise.
2. Supply Air Temperature Setpoint: 55 °F.
3. Supply air temperature shall be controlled to setpoint using a PID loop whose output is mapped to stage the DX cooling stages to maintain the supply air temperature setpoint.

Minimum Outdoor Airflow Set Points:

1. Outdoor Airflow Set Point for ASHRAE Standard 62.1 Ventilation.
   - 1.1. Refer to Guideline 36 Section 5.2.1.3.5 for zone outdoor air requirement Voz.
   - 1.2. Refer to Guideline 36 Section 3.1.4.2.1 for set points DesVou and DesVot.
   - 1.3. Outdoor air absolute minimum and design minimum set points are recalculated continuously based on the mode of the zones being served.
     - 1.3.1. Calculate the uncorrected outdoor air rate Vou for all zones in all zone groups that are in occupied mode, but note that Vou shall be no larger than the design uncorrected outdoor air rate DesVou.

$$Vou = MIN(DesVou, \sum Vbz-A + \sum Vbz-P)$$

   - 1.4. Vps is the sum of the zone primary airflow rates Vpz as measured by VAV boxes for all zones in all zone groups that are in occupied mode.
   - 1.5. For each zone in occupied mode, calculate the zone primary outdoor air fraction Zpz:

$$Zpz = Voz/Vpz$$

   - 1.6. Calculate the maximum zone outdoor air fraction Zp:

$$Zp = max(Zpz)$$

   - 1.7. Calculate the current system ventilation efficiency Ev:

$$Ev = 1 + (Vou/Vps) - Zp$$

   - 1.8. Calculate the effective minimum outdoor air set point MinOAsp as the uncorrected outdoor intake divided by the system ventilation efficiency, but no larger than the design total outdoor air rate DesVot:

$$MinOAsp = MIN(Vou/Ev , DesVot)$$

Minimum Outdoor Air Control:

1. Minimum Outdoor Air Control Loop.
   - 1.1. Minimum outdoor air control loop is enabled when the supply fan is proven on and the AHU is in Occupied Mode and disabled and output set to zero otherwise.
   - 1.2. The outdoor airflow rate shall be maintained at the minimum outdoor air setpoint MinOAsp by a reverse-acting control loop whose output is mapped to the outdoor air damper minimum position MinOA-P and return air damper maximum position MaxRA-P as indicated in Figure 1.

AHU SEQUENCE OF OPERATION CON'T

Safeties and Interlocks:

1. Supply fan shall be hardwire interlocked through the unit smoke detector(s) and high static pressure switch to shut down the unit upon smoke detection.

BAS Alarms:

1. Maintenance interval alarm when unit has operated for more than 1500 hours: Level 4. Reset interval counter when alarm is acknowledged.
2. Fan alarm is indicated by the status being different from the command for a period of 60 seconds.
   - 2.1. Commanded ON, status off: Level 2
   - 2.2. Commanded OFF, status on: Level 4
3. Filter pressure drop exceeds alarm limit: Level 5. The alarm limit shall vary with fan speed as follows:

$$DPx = DP100(x)^{1.4}$$

Where DP100 is the high limit pressure drop at design cfm (determine limit from filter manufacturer) and DPx is the high limit at speed signal x (expressed as a fraction of full signal). For instance, the setpoint at 50% of full speed would be $(0.5)^{1.4}$ or 38% of the design high limit pressure drop.

4. High building pressure (more than 0.1") for 10 minutes. Level 3.
5. Low building pressure (less than 0.0") for 10 minutes. Level 4.

Testing/Commissioning Overrides: Provide software points that interlock to a chilled water and hot water plant level point to:

1. Force all stages of cooling on.
2. Force all stages of cooling off.

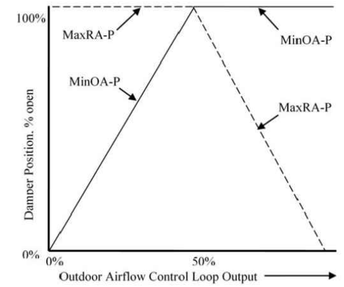


FIGURE 1

CONSTRUCTION DOCUMENTS

ENGINEERING RESOURCE GROUP
350 EDGEWOOD TERRACE DRIVE
JACKSON, MS 39206
PHONE: (601) 362-3552
FAX: (601) 366-6418

CONSULTANTS:

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SCHULTZ & WYNNE, P.A.
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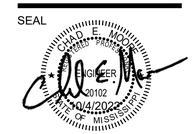

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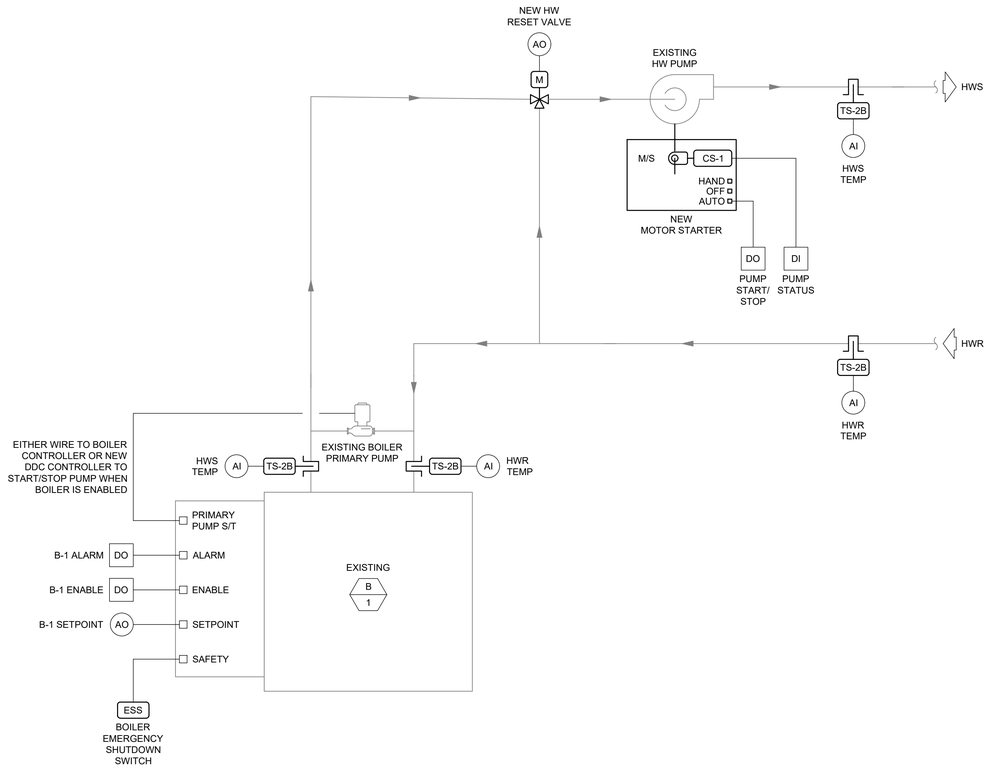
EMERGENCY SERVICES / EMA - CONTROL SCHEMATICS

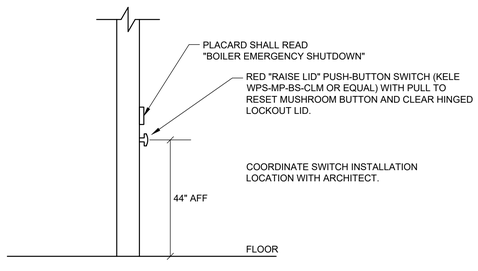
SHEET NUMBER

M7.4



1 M7.5 HW SYSTEM CONTROL SCHEMATIC - EMERGENCY SERVICES/EMA

NO SCALE



2 M7.5 BOILER EMERGENCY SHUTDOWN SWITCH - EMERGENCY SERVICES/EMA

NO SCALE

HW SYSTEM HARDWIRED POINTS LIST

Description	Type	Device	Trend Logging		Calibration
			Commissioning	Continuous	
Boiler B-1 enable	DO	Connect to boiler enable contact	COV	COV	–
HWP-1 start/stop	DO	Dry Contact to 120V starter control circuit	COV	COV	–
PHWP-1 start/stop	DO	Dry Contact to 120V starter control circuit (coordinate with existing pump/boiler)	COV	COV	–
B-1 setpoint	AO	Connect to boiler setpoint input	1 min	15 min	–
HWP-1 status	DI	CS-1	COV	COV	–
PHWP-1 status	DI	CS-1	COV	COV	–
Boiler B-1 Alarm	DI	Connect to boiler alarm contact	COV	COV	–
HWS temperature (leaving boiler)	AI	TS-2B	1 min	±2°F	–
HWR temperature (entering boiler)	AI	TS-2B	1 min	±2°F	–
HWS temperature (to system)	AI	TS-2B	1 min	±2°F	–
HWR temperature (from system)	AI	TS-2B	1 min	±2°F	–

HW SYSTEM SEQUENCE OF OPERATION

General: HW system with existing atmospheric boiler, primary pump, and secondary pump.

1. Lead boiler and pump.
   - 1.1. The HW system shall be enabled if there are more than 3 (adjustable) Boiler Plant Requests from zones for more than 10 minutes (adjustable).
   - 1.2. The HW system shall be disabled if it has run at least 10 minutes and there are no Boiler Plant Requests from zones for more than 10 minutes (adjustable).
2. Boiler and pumps.
   - 2.1. When the lead system is enabled, first start the boiler primary pump and simultaneously start the HW secondary pump, then after 30 seconds, enable the boiler. When the HW system is disabled, first disable the boiler, then after 3 minutes turn off the pumps.
   - 2.2. Pumps speed shall be constant speed.
3. Boiler Supply Water Temperature:
   - 3.1. Leaving Boiler Supply Water temperature setpoint shall be 180 °F.
4. Hot Water Supply Temperature Reset:
   - 4.1. Hot water supply temperature setpoint shall be reset using Trim & Respond logic (see Sequence of Operation - General) based on hot water pump status with the following parameters:

Variable	Value
Device	HWS temperature
SP0	SPmax
SPmin	150°F
SPmax	180°F
Td	10 minutes
T	5 minutes
I	2
R	Heating HWST Reset Requests
SPtrim	-2°F
SPres	+3°F
SPres-max	+7°F

5. Boiler Emergency Shutdown Switch.
   - 5.1. Boiler shall be disabled when he Boiler Emergency Shutdown Switch (ESS) is enabled.
   - 5.2. Boiler shall require a manual reset.
6. Alarms.
   - 6.1. Maintenance interval alarm when pump has operated for more than 1500 hours: Level 5. Reset interval counter when alarm is acknowledged.
   - 6.2. Maintenance interval alarm when boiler has operated for more than 2000 hours: Level 5. Reset interval counter when alarm is acknowledged.
   - 6.3. Boiler alarm: Level 2.
   - 6.4. Low boiler leaving hot water temperature (more than 15°F below setpoint) for more than 15 minutes when boiler has been enabled for longer than 15 minutes: Level 3.
   - 6.5. Low boiler return hot water temperature (less than 140°F) for more than 15 minutes when boiler has been enabled for longer than 15 minutes: Level 2.
   - 6.6. Pump alarm is indicated by the status input being different from the output command after a period of 15 seconds after a change in output status.
     - 6.6.1. Commanded on, status off: Level 2.
     - 6.6.2. Commanded off, status on: Level 4.

CONSTRUCTION DOCUMENTS

ENGINEERING RESOURCE GROUP
350 EDGEWOOD TERRACE DRIVE
JACKSON, MS 39206
PHONE: (601) 362-3552
FAX: (601) 366-6418

CONSULTANTS:

ELECTRICAL ENGINEER
SCHULTZ & WYNNE, P.A.
4523 OFFICE PARK DR.
JACKSON, MS 39206
T: (601) 982-3313

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EMERGENCY SERVICES / EMA - CONTROL SCHEMATICS

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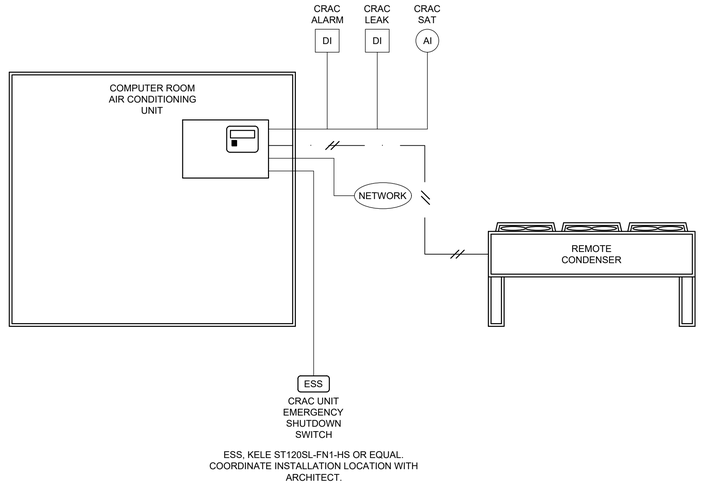
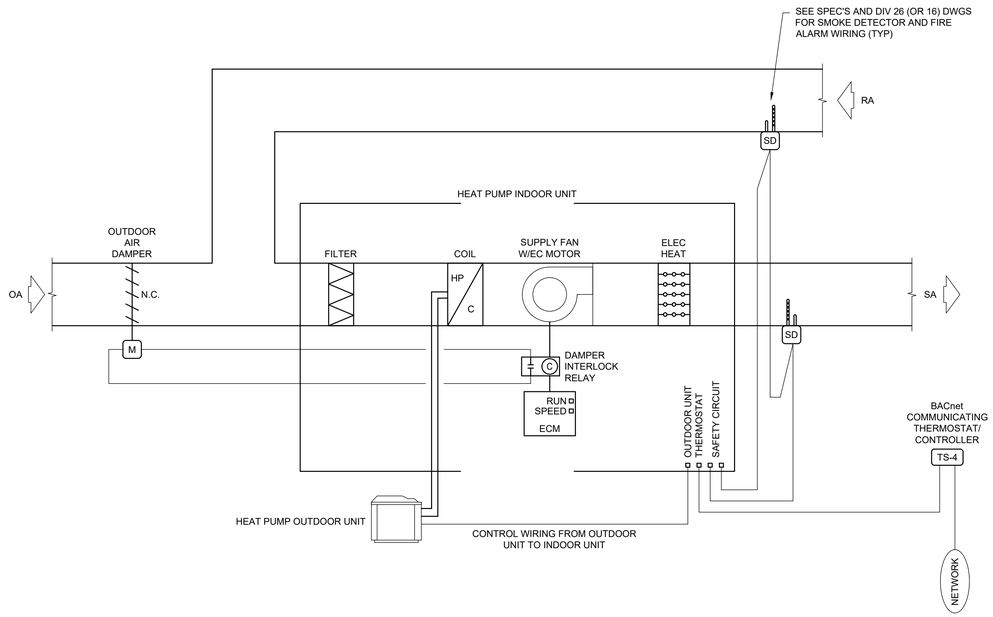


1 M7.6 COMPUTER ROOM AIR CONDITIONING (CRAC) UNIT CONTROL SCHEMATIC - EMERGENCY SERVICES/EMA

NO SCALE



2 M7.6 SPLIT-SYSTEM HEAT PUMP CONTROL SCHEMATIC - EMERGENCY SERVICES/EMA

NO SCALE

SPLIT-SYSTEM HP SEQUENCE OF OPERATION

General: Constant volume split-system heat pump.

System Modes: System modes are the same as the mode of the Zone Group served by the system. When Zone Groups served by an air handling system are in different modes, the following hierarchy applies (highest one sets AHU mode):

1. Occupied mode
2. Cool-down mode
3. Setup mode
4. Warm-up mode
5. Setback mode
6. Unoccupied mode

Supply Fan Control: Unit controller shall control the starting and stopping of the supply fan as follows:

1. Start/Stop: Unit controller shall command the supply fan on when the system is enabled. Unit controller shall command the supply fan off when the system is disabled.
2. Proof: Unit controller shall prove fan operation. EMCSS shall use the status indication to accumulate runtime. Upon failure of the supply fan, unit controller shall enunciate an alarm.
3. Supply fan shall run at the speed corresponding to the design supply air flow rate. Fan speed shall be determined in conjunction with the Testing, Adjusting, and Balancing Agency.

Heat Pump Control:

1. The EMCS shall control the operation of the heat pump as described herein below.
2. EMCS shall control cycling of the reversing valve as required, based on mode of operation.

Zone Temperature Control (Cooling):

1. Cooling control loop shall be enabled when the supply fan is proven on, and disabled and output set to zero when fan is off.
2. Zone temperature shall be controlled to setpoint by energizing the reversing valve and enabling the compressor as required to maintain the zone temperature setpoint.

Zone Temperature Control (Heating):

1. Heating control loop shall be enabled when the supply fan is proven on, and disabled and output set to zero when fan is off.
2. Zone temperature shall be controlled to setpoint by de-energizing the reversing valve and enabling the compressor as required to maintain the zone temperature setpoint.

Safeties and Interlocks:

1. Supply fan shall be hardwire interlocked through the unit smoke detector(s) to shut down the unit upon smoke detection.

EMCS Alarms: Provide the following EMCS alarms:

1. Maintenance interval alarm when unit has operated for more than 1500 hours: Level 5. Reset interval counter when alarm is acknowledged.
2. Fan alarm is indicated by the status being different from the command for a period of 60 seconds.
   - 2.1. Commanded on, status off: Level 2
   - 2.2. Commanded off, status on: Level 4

POINT MAPPED FROM TS-2A CONTROLLER

Description	Type	Device	Trend Logging		Calibration
			Commissioning	Continuous	
Unit Status	DI	TS-4, Through network	COV	COV	–
System mode	DI	TS-4, Through network	COV	COV	–
Fan mode	DI	TS-4, Through network	COV	COV	–
Alarms	DI	TS-4, Through network	COV	COV	–
Occupancy/override	DI	TS-4, Through network	COV	COV	–
Aux.heat status	DI	TS-4, Through network	COV	COV	–
Fan status	DI	TS-4, Through network	COV	COV	–
Cooling status	DI	TS-4, Through network	COV	COV	–
Heating status	DI	TS-4, Through network	COV	COV	–
Reversing valve	DI	TS-4, Through network	COV	COV	–
Unit enable	DO	TS-4, Through network	COV	COV	–
Zone temperature	AI	TS-4, Through network	5 min	60 min	–
Zone humidity	AI	TS-4, Through network	5 min	60 min	–
Zone IAQ	AI	TS-4, Through network	5 min	60 min	–
Zone Temperature Setpoint Adjustment	AO	TS-4, Through network	COV	COV	–
Zone Temperature Limits	AO	TS-4, Through network	COV	COV	–
Time-of-Day Scheduling	AO	TS-4, Through network	–	–	–
Fan Speed Setting	AO	TS-4, Through network	COV	COV	–
Permit/Prohibit Function	AO	TS-4, Through network	COV	COV	–

CRAC UNIT SEQUENCE OF OPERATION

General: Computer Room Air Conditioning (CRAC) Unit. EMCS shall monitor CRAC unit's hardwired and network points for diagnostic purposes. All alarms shall be displayed at the OWS.

1. CRAC unit shall be controlled by it's internal controller and shall run subject to it's own internal safeties.
2. Alarms:
   - 2.1. Generate a Level 5 maintenance alarm when unit has operated for more than 5000 hours. Reset interval counter when alarm is acknowledged.

CRAC UNIT POINTS LIST

Description	Type	Device	Trend Logging		Calibration
			Commissioning	Continuous	
CRAC Leak	DI	Connect to CRAC leak detection contact	COV	COV	–
CRAC Alarm	DI	Connect to CRAC Alarm contact	COV	COV	–
CRAC Supply Air Temp	AI	Connect to CRAC SAT contact	COV	COV	-

POINTS MAPPED FROM CRAC UNIT BACNET CARD

Description	Type	Device	Trend Logging		Calibration
			Commissioning	Continuous	
Unit Enable	DO	Through network	COV	COV	–
Local Alarm Present	DI	Through network	COV	COV	–
Dehumidification	DI	Through network	COV	COV	–
Humidification	DI	Through network	COV	COV	–
Reheat	DI	Through network (convert code to plain English text)	COV	COV	–
Unit Status	DI	Through network (convert code to plain English text)	COV	COV	–
Water Detection	DI	Through network	COV	COV	–
Dirty Filter	DI	Through network	COV	COV	–
Cooling Stages On	AO	Through network	COV	COV	–
Heating Stages On	AO	Through network	COV	COV	–
CHW Valve Position	AO	Through network	1 min	60 min	–
HW Valve Posiiton	AO	Through network	1 min	60 min	–
CHW Runtime	A1	Through network	1 min	60 min	–
HW Runtime	AI	Through network	1 min	60 min	–
Temperature Setpoint	AO	Through network	COV	COV	–
Humidity Setpoint	AO	Through network	COV	COV	–
Discharge Air Temperature	AI	Through network	1 min	60 min	–
Return Air Temperture	AI	Through network	1 min	60 min	–
Relative Humidty	AI	Through network	1 min	60 min	

CONSTRUCTION DOCUMENTS

ERG ENGINEERING RESOURCE GROUP
350 EDGEWOOD TERRACE DRIVE
JACKSON, MS 39206
PHONE: (601) 362-3552
FAX: (601) 366-6418

CONSULTANTS:

ELECTRICAL ENGINEER
SCHULTZ & WYNNE, P.A.
4523 OFFICE PARK DR.
JACKSON, MS 39206
T: (601) 982-3313

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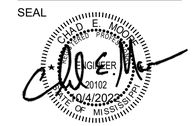

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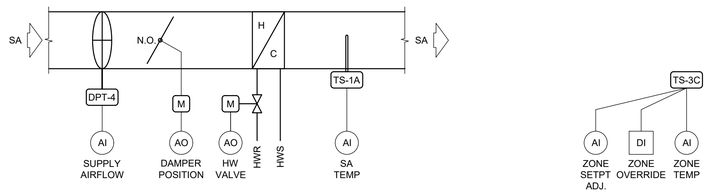

1 M7.7 VAV REHEAT CONTROL SCHEMATIC - EMERGENCY SERVICES/EMA

NO SCALE

VAV TERMINAL UNIT SEQUENCE OF OPERATION

General: Variable Air Volume (VAV) Terminal Unit with hot water reheat. The VAV terminal unit sequence of operation is based on ASHRAE Guideline 36 -2021 VAV Terminal Unit with Reheat. Refer to Guideline 36 for additional information and commentary.

See Sequence of Operation - General for setpoints, loops, control modes, alarms, etc.

See Sequence of Operation - General for calculation of zone minimum outdoor airflow.

Design airflow rates shall be as scheduled on plans:

1. Zone maximum cooling airflow set point (Vcool-max).
2. Zone minimum airflow set point (Vmin).
3. Zone maximum heating airflow set point (Vheat-max).
4. Maximum Discharge Air Temperature (DAT) rise above heating set point Max ΔT.

Active maximum and minimum set points shall vary depending on the mode of the zone group the zone is a part of.

Setpoint	Occupied	Cool-down	Setup	Warm-up	Setback	Unoccupied
Cooling maximum	Vcool-max	Vcool-max	Vcool-max	0	0	0
Cooling minimum	Vmin*	0	0	0	0	0
Minimum	Vmin*	0	0	0	0	0
Heating minimum	Max(Vheat-min, Vmin*)	Vheat-max	0	Vheat-max	Vheat-max	0
Heating maximum	Max(Vheat-max, Vmin*)	Vheat-max	0	Vcool-max	Vcool-max	0

Control logic is depicted schematically in Figure 1 and described in the following subsections. Relative levels of various set points are depicted for occupied mode operation.

When the zone state is cooling, the cooling-loop output shall be mapped to the airflow set point from the cooling minimum to the cooling maximum airflow set points. Heating coil is disabled unless the DAT is below 50°F.

1. If supply air temperature from the air handler is greater than room temperature, cooling supply airflow set point shall be no higher than the minimum.

When the zone state is deadband, the active airflow set point shall be the minimum airflow set point. Heating coil is disabled unless the DAT is below 50°F.

When the zone state is heating, the heating loop shall maintain space temperature at the heating set point as follows:

1. From 0% to 50%, the heating-loop output shall reset the discharge temperature set point from the current AHU SAT set point to a maximum of MaxΔT above space temperature set point. The airflow set point shall be the heating minimum.
2. From 51% to 100%, if the DAT is greater than room temperature plus 5°F, the heating-loop output shall reset the airflow set point from the heating minimum airflow set point to the heating maximum airflow set point.
3. The heating coil shall be modulated to maintain the discharge temperature at set point. (Directly controlling heating off the zone temperature control loop is not acceptable).
   - 3.1. When the airflow set point is pulse-width modulated (time-averaged ventilation), the heating coil and PID loop shall be disabled, with output set to 0 during closed periods.

Alarms:

1. Low Airflow:
   - 1.1. If the measured airflow is less than 70% of set point for 5 minutes, while set point is greater than zero, generate a Level 3 alarm.
   - 1.2. If the measured airflow is less than 50% of setpoint for 5 minutes, while set point is greater than zero, generate a Level 2 alarm.
   - 1.3. If a zone has a Importance-Multiplier of 0 for its static pressure reset trim and respond control loop, low airflow alarms shall be suppressed for that zone.
2. Low-Discharge Air Temperature:
   - 2.1. If boiler plant is proven ON and the DAT is 15°F less than set point for 10 minutes, generate a Level 3 alarm.
   - 2.2. If boiler plant is proven ON and the DAT is 30°F less than set point for 10 minutes, generate a Level 2 alarm.
   - 2.3. If a zone has a Importance-Multiplier of 0 for its hot water reset trim and respond control loop, low DAT alarms shall be suppressed for that zone.
3. Airflow Sensor Calibration:
   - 3.1. If the fan serving the zone has been OFF for 10 minutes, and airflow sensor reading is above 10% of the cooling maximum airflow set point, generate a Level 3 alarm.
4. Leaking Damper:
   - 4.1. If the damper position is 0%, and airflow sensor reading is above 10% of the cooling maximum airflow set point for 10 minutes while the fan serving the zone is proven ON, generate a Level 4 alarm.
5. Leaking Valve:
   - 5.1. If the valve position is 0% for 15 minutes, DAT is above AHU SAT by 5°F, and the fan serving the zone is proven ON, generate a Level 4 alarm.

Testing/Commissioning Overrides: Provide software switches that interlock to a system level point to:

1. Force zone airflow set point to zero.
2. Force zone airflow set point to Vcool-max.
3. Force zone airflow set point to Vmin.
4. Force zone airflow set point to Vheat-max.
5. Force damper full closed/open.
6. Force heating to OFF/closed.
7. Reset request-hours accumulator point to zero (provide one point for each reset type listed below).

System Requests:

1. Cooling SAT Reset Requests:
   - 1.1. If the zone temperature exceeds the zone's cooling set point by 5°F for 2 minutes and after suppression period due to set point change, send 3 requests.
   - 1.2. Else if the zone temperature exceeds the zone's cooling set point by 3°F for 2 minutes and after suppression period due to set point change, send 2 requests.
   - 1.3. Else if the cooling loop is greater than 95%, send 1 request until the loop is less than 85%.
   - 1.4. Else if the cooling loop is less than 95%, send 0 requests.
2. Static Pressure Reset Requests:
   - 2.1. If the measured airflow is less than 50% of set point while set point is greater than zero and the damper position is greater than 95% for 1 minute, send 3 requests.
   - 2.2. Else if the measured airflow is less than 70% of set point while set point is greater than zero and the damper position is greater than 95% for 1 minute, send 2 requests.
   - 2.3. Else if the damper position is greater than 95%, send 1 request until the damper position is less than 85%.
   - 2.4. Else if the damper position is less than 95%, send 0 requests.

VAV SEQUENCE OF OPERATION CON'T

3. Hot Water Reset Requests:
   - 3.1. If the DAT is 30°F less than set point for 5 minutes, send 3 requests.
   - 3.2. Else if the DAT is 15°F less than set point for 5 minutes, send 2 requests.
   - 3.3. Else if the HW valve position is greater than 95%, send 1 request until the HW valve position is less than 85%.
   - 3.4. Else if the HW valve position is less than 95%, send 0 requests.
4. Boiler Plant Requests:
   - 4.1. If the HW valve position is greater than 95%, send 1 request until the HW valve position is less than 10%.
   - 4.2. Else if the HW valve position is less than 95%, send 0 requests.

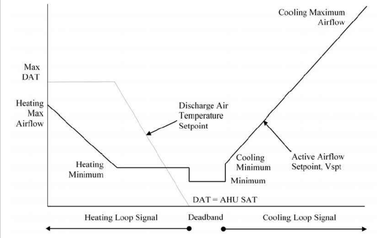

FIGURE 1

VAV HARDWIRED POINTS LIST

Description	Type	Device	Trend Logging		Calibration
			Commissioning	Continuous	
Zone Override	DI	TS-3C	COV	COV	–
Zone Occupancy	DI	Occupancy Sensor	COV	COV	–
VAV Box Damper Position	AO	Modulating actuator	1 min	15 min	–
HW Valve Signal	AO	2-way valve	1 min	15 min	–
Supply Airflow	AI	DPT-4 connected to box manufacturer supplied flow cross	1 min	15 min	–
Supply Air Temperature	AI	TS-1A	1 min	15 min	–
Zone Temperature Setpoint Adjustment	AI	TS-3C	15 min	15 min	–
Zone Temperature	AI	TS-3C	1 min	15 min	–
Zone Humidity	AI	HT-2	1 min	15 min	–
Zone CO2	AI	CO2-1	5 min	15 min	–

CONSTRUCTION DOCUMENTS

ENGINEERING RESOURCE GROUP
350 EDGEWOOD TERRACE DRIVE
JACKSON, MS 39206
PHONE: (601) 362-3552
FAX: (601) 366-6418

CONSULTANTS:

ELECTRICAL ENGINEER
SCHULTZ & WYNNE, P.A.
4523 OFFICE PARK DR.
JACKSON, MS 39206
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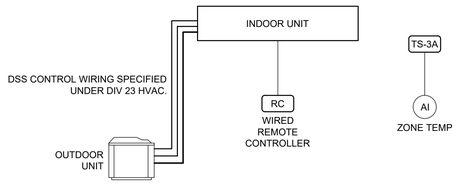
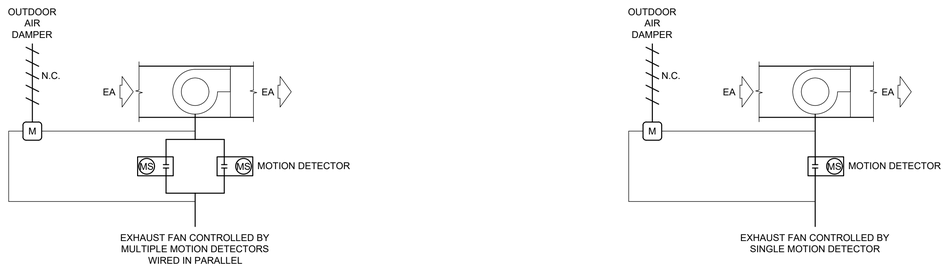


1 M7.8 DUCTLESS SPLIT-SYSTEM CONTROL SCHEMATIC - AGRI-CENTER ADD ALT. #1

NO SCALE



2 M7.8 EXHAUST FAN CONTROL SCHEMATIC - AGRI-CENTER

NO SCALE

DSS SEQUENCE OF OPERATION

General: Ductless split-systems.

1. See Sequence of Operation - General for setpoints, loops, control modes, alarms, etc.
2. Ductless split-systems (DSS) shall be controlled by their wired remote controller. Setpoints shall be setup per the following:
   - 2.1. Cooling setpoint = 78°F.
   - 2.2. Heating setpoint = 68°F.
3. EMCS to monitor space temperature.

MISCELLANEOUS POINTS LIST

Description	Type	Device	Trend Logging		Calibration
			Commissioning	Continuous	
Ductless Split-System Zone Temperature	AI	TS-3A	1 min	15 min	–

EF W/MOTION DET. SEQUENCE OF OPERATION

General: Constant volume exhaust fan(s), controlled by motion detector(s).

1. See Sequence of Operation - General for setpoints, loops, control modes, alarms, etc.
2. Exhaust fans shall operate if restroom is occupied as indicated by the motion detector(s). Fan shall run until the time delay duration has been exceeded. Time delay setting shall be initially set for 20 minutes.

CONSTRUCTION DOCUMENTS

ENGINEERING RESOURCE GROUP
350 EDGEWOOD TERRACE DRIVE
JACKSON, MS 39206
PHONE: (601) 362-3552
FAX: (601) 366-6418

CONSULTANTS:

ELECTRICAL ENGINEER
SCHULTZ & WYNNE, P.A.
4523 OFFICE PARK DR.
JACKSON, MS 39206
T: (601) 982-3313

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