AIR DISTRIBUTION

AxB	RECTANGULAR SHEET METAL DUCT
CØ	ROUND SHEET METAL DUCT
CØ	FABRIC DUCT
AxB	DOUBLE WALL SHEET METAL DUCT (DUCT SIZE INDICATED INSIDE DIMENSION)
	FLEXIBLE RUNOUT DUCT
	ROUND OR RECTANGULAR TAKE-OFF FITTING WITH BALANCING DAMPER - SEE DETAIL E/M502
	SUPPLY AIR DUCTWORK SECTION
	RETURN AIR DUCTWORK SECTION
	EXHAUST AIR DUCTWORK SECTION
	AIR BALANCING DAMPER (MANUAL)
MD	CONTROL DAMPER (MOTORIZED)
	DUCTWORK FLEXIBLE CONNECTION
AP	DUCTWORK ACCESS PANEL
	DUCT ELBOW WITH SINGLE THICKNESS TURNING VANES
CFM	ROUND CEILING SA DIFFUSER
CFM	SQUARE CEILING SA DIFFUSER AND AIR FLOW (CFM)(SEE SCHEDULE FOR SIZES UNLESS NOTED OTHERWISE)
CFM	RECTANGULAR CEILING RA REGISTER AND AIR FLOW (CFM)(SEE SCHEDULE FOR SIZES UNLESS NOTED OTHERWISE) WHERE CFM IS NOT INDICATED, PROVIDE STANDARD SIZE FOR CEILING TYPE INDICATED IN SCHEDULE. - SEE DETAIL C/M502
CFM	RECTANGULAR CEILING EA REGISTER AND AIR FLOW (CFM)(SEE SCHEDULE FOR SIZES UNLESS NOTED OTHERWISE) - SEE DETAIL C/M502
	DOOR GRILLE (24"x16", UNO)
	NEW DUCT
	EXISTING DUCT TO REMAIN
	EXISTING MATERIALS TO BE REMOVED
	DUCT MOUNTED SMOKE DETECTOR (PROVIDED AND INSTALLED BY FIRE ALARM CONTRACTOR)

PIPING AND FITTINGS

C	CONDENSATE DRAIN PIPING FROM COOLING COIL
G	GAS PIPING
	CAP
	ELBOW TURNED UP
	ELBOW TURNED DOWN
	TEE, OUTLET UP
	TEE, OUTLET DOWN
	NEW PIPE
	EXISTING PIPE TO REMAIN
	EXISTING PIPE TO BE REMOVED

CEILING SUPPLY DIFFUSERS

SYMBOL	CFM	NECK SIZE	MINIMUM - MAXIMUM 1/2 SPACING	FACE DIMENSION	
				HARD CEILING	LAY-IN CEILING
	40-80	6"Ø	4' - 5'	12x12	24x24
	85-180	8"Ø	4' - 8'	12x12	24x24
	185-340	10"Ø	8' - 10'	24x24	24x24
	345-500	12"Ø	9' - 10'	24x24	24x24
	505-600	14"Ø	10' - 12'	24x24	24x24

NOTE:
1. RUNOUT DUCTS TO DIFFUSERS SHALL BE THE SAME SIZE AS THE INDICATED NECK SIZE.

CEILING RETURN OR EXHAUST REGISTERS & GRILLES

SYMBOL	CFM	GRILLE SIZE	RUNOUT DUCT (NOTE 2)
	0-95	8x8 (NOTE 1)	6x6
	100-195	10x10 (NOTE 1)	8x8
	200-295	12x12 (NOTE 1)	10x8
OR	300-595	18x18 (NOTE 1)	12x12
	600-695	22x22 (NOTE 1)	12x12
	700-795	24x24 (NOTE 1)	14x12
	800-1500	48x24 (NOTE 1)	18x14

NOTES:
1. USE 22x22 GRILLE SIZE FOR ALL LAY-IN CEILING APPLICATIONS. USE SIZE INDICATED FOR HARD CEILING APPLICATIONS.
2. WHERE DUCT CONNECTION IS SHOWN, RUNOUT DUCT SHALL BE SIZE SHOWN IN SCHEDULE U.N.O.
3. USE 18x18 GRILLE SIZE AND 12x12 RUNOUT DUCT FOR HARD CEILING APPLICATIONS WHERE SIZE OR AIRFLOW IS NOT INDICATED.
4. USE 12x12 RUN OUT DUCT FOR LAY-IN CEILING APPLICATIONS WHERE AIRFLOW IS NOT INDICATED.

APPLICABLE CODES

PERFORM WORK IN ACCORDANCE WITH THE FOLLOWING CODES AND ANY APPLICABLE STATUTES, ORDINANCES, CODES, AND REGULATIONS OF GOVERNMENTAL AUTHORITIES HAVING JURISDICTION.

1. ASHRAE
   a. STANDARD 15 — SAFETY STANDARD FOR REFRIGERATION SYSTEMS - 2019
   b. STANDARD 55 — THERMAL ENVIRONMENTAL CONDITIONS FOR HUMAN OCCUPANCY - 2017
   c. STANDARD 62.1 — VENTILATION STANDARD FOR ACCEPTABLE INDOOR AIR QUALITY - 2019
   d. STANDARD 90.1 — ENERGY STANDARD FOR BUILDINGS EXCEPT LOW RISE RESIDENTIAL BUILDINGS - 2019
2. OCCUPATIONAL SAFETY AND HEALTH REGULATIONS (OSHA).
3. FIRE CODES
   a. NFPA 1 — FIRE CODE - 2021 (FLORIDA EDITION)
   b. NFPA 13 — STANDARD FOR THE INSTALLATION OF SPRINKLER SYSTEM - 2019
   c. NFPA 25 — STANDARD FOR THE INSPECTION, TESTING AND MAINTENANCE OF WATER-BASED FIRE PROTECTION SYSTEMS - 2017
   d. NFPA 54 — NATIONAL FUEL GAS CODE - 2021
   e. NFPA 70 — NATIONAL ELECTRICAL CODE - 2020
   f. NFPA 72 — NATIONAL FIRE ALARM AND SIGNALING CODE - 2019
   g. NFPA 90A — STANDARD FOR THE INSTALLATION OF AIR CONDITIONING AND VENTILATION SYSTEMS - 2021
   h. NFPA 90B — STANDARD FOR THE INSTALLATION OF WARM AIR HEATING AND AIR CONDITIONING SYSTEMS - 2021
   i. NFPA 91 — STANDARD FOR THE INSTALLATION OF BLOWER AND EXHAUST SYSTEMS - 2020
   j. NFPA 101 — LIFE SAFETY CODE - 2021 (FLORIDA EDITION)
4. FLORIDA BUILDING CODE, 2023 8th EDITION
   a. BUILDING CODE
   b. EXISTING BUILDING CODE
   c. ENERGY CONSERVATION CODE
   d. MECHANICAL CODE
   e. PLUMBING CODE
   f. FUEL GAS CODE
   g. ACCESSIBILITY CODE
5. FLORIDA STATUTES
   a. CHAPTER 471 — ENGINEERING
   b. CHAPTER 533.80 — BUILDING CONSTRUCTION STANDARDS; FLORIDA BUILDING CODE - ENFORCEMENT
6. FLORIDA ADMINISTRATIVE CODE
   a. CHAPTER 6A-2 — EDUCATIONAL FACILITIES
   b. CHAPTER 9B-7 — FLORIDA BUILDING COMMISSION HANDICAPPED ACCESSIBILITY STANDARDS
   c. CHAPTER 61G15-34 — RESPONSIBILITY RULES OF PROFESSIONAL ENGINEERS CONCERNING THE DESIGN OF MECHANICAL SYSTEMS
   d. CHAPTER 69A-3 — FIRE PREVENTION - GENERAL PROVISIONS
   e. CHAPTER 69A-58 — FIRE SAFETY IN EDUCATIONAL FACILITIES
   f. CHAPTER 69A-60 — THE FLORIDA FIRE PREVENTION CODE

RESOLVE, IN WRITING, ANY CODE VIOLATION DISCOVERED IN CONTRACT DOCUMENTS WITH THE ENGINEER PRIOR TO BIDDING. AFTER AWARD OF THE CONTRACT, MAKE ANY CORRECTION OR ADDITITION NECESSARY FOR COMPLIANCE WITH APPLICABLE CODES AT NO ADDITIONAL COST TO OWNER.

THE CONTRACTOR SHALL INCLUDE IN THE WORK, WITHOUT EXTRA COST TO THE OWNER, ANY LABOR, MATERIALS, SERVICES, APPARATUS, AND DRAWINGS REQUIRED TO COMPLY WITH ALL APPLICABLE LAWS, ORDINANCES, RULES, AND REGULATIONS.

WHERE THERE IS CONFLICT BETWEEN THE CONTRACT DOCUMENTS AND THE APPLICABLE CODES, THE CODES SHALL GOVERN, EXCEPT WHERE THE REQUIREMENTS OF THE CONTRACT DOCUMENTS ARE MORE STRINGENT.

COMMISSIONING NOTES

1. THE BUILDING MECHANICAL SYSTEMS ARE EXEMPT FROM COMMISSIONING REQUIREMENTS IN ACCORDANCE WITH THE FLORIDA BUILDING CODE – ENERGY CONSERVATION, SECTION C408 "SYSTEMS COMMISSIONING". THE TOTAL MECHANICAL EQUIPMENT CAPACITY IS LESS THAN 480 MBH COOLING CAPACITY AND 600 MBH HEATING CAPACITY.

GAS FUEL NOTES

1. INSTALL ALL WORK IN ACCORDANCE WITH THE FLORIDA PLUMBING CODE, FLORIDA FUEL GAS CODE, AND LOCAL PLUMBING CODES. WHERE CONFLICTS OCCUR BETWEEN CODES AND BETWEEN THE CONSTRUCTION DOCUMENTS AND CODES, THE MOST RESTRICTIVE REQUIREMENTS SHALL GOVERN.
2. TEST, INSPECT, AND PURGE NATURAL GAS PIPING ACCORDING TO NFPA 54 AND AUTHORITIES HAVING JURIDICTION.
3. INSTALLATION OF EQUIPMENT AND PIPING SHALL PROVIDE CONVENIENT ACCESS FOR MAINTENANCE.
4. GRAVITY FLOW SYSTEMS HAVE SPACE PRIORITY FOR SLOPING PIPES, HOWEVER SLOPE MUST BE STARTED AT HIGHEST POINT POSSIBLE.
5. PAINT GAS PIPING EXPOSED TO VIEW YELLOW.

MISCELLANEOUS

	POINT OF CONNECTION, NEW TO EXISTING
	POINT INDICATED LIMIT OF DEMOLITION
	1 HOUR FIRE RATED WALL

VALVES

N.O. N.C.	BALL VALVE (WITH QUARTER TURN HANDLE)
S	SOLENOID VALVE

MEASUREMENTS AND CONTROLS

T	THERMOSTAT/TEMPERATURE SENSOR
H	HUMIDITY SENSOR
CO2	CARBON DIOXIDE SENSOR
R	GAS REGULATOR
M	METER (WATER OR GAS)

HVAC NOTES

1. TRAP AIR CONDITIONING CONDENSATE AND RUN TO SAFEWASTE AT LOCATION SHOWN ON PLANS.
2. INSTALL DUCTWORK, PIPING, ETC. AS HIGH AS POSSIBLE ABOVE CEILING WHILE MAINTAINING ACCESSIBILITY FOR EQUIPMENT AND DEVICES AS APPROPRIATE.
3. COORDINATE LOCATION OF ALL EQUIPMENT, DUCTWORK AND PIPING INSTALLATIONS WITH ELECTRICAL TO PROVIDE THE REQUIRED CLEARANCES AROUND ALL ELECTRICAL PANELS, SWITCHGEAR, ETC.
4. INSTALLATION OF EQUIPMENT, DUCTWORK AND PIPING SHALL PROVIDE CONVENIENT ACCESS FOR REMOVAL OF FILTERS AND FOR MAINTENANCE.
5. DUCT SIZES GIVEN ARE SHEET METAL SIZES.
6. COORDINATE EXACT LOCATIONS OF AIR DISTRIBUTION EQUIPMENT WITH THE CEILING AND THE LIGHTING LAYOUT.
7. THE RETURN AIR FROM INDIVIDUAL ROOMS IS THRU AN ABOVE-CEILING RETURN AIR PLENUM.
8. THE CEILING DIFFUSERS SHALL BE 4-WAY THROW UNLESS OTHERWISE NOTED.
9. PROVIDE NEW AIR FILTERS IN EACH UNIT REQUIRING FILTERS WHEN THE PROJECT IS READY FOR TEST AND BALANCE. DO NOT OPERATE UNITS WITHOUT FILTERS DURING CONSTRUCTION. REPLACE FILTERS DURING CONSTRUCTION ACCORDING TO FILTER MANUFACTURER'S RECOMMENDATIONS. SEAL ALL OPEN ENDS OF DUCT WORK DURING CONSTRUCTION.
10. WHEREVER THE DEPTH OF THE TRUNK DUCT IS LESS THAN THE ROUND RUNOUT DUCT DIAMETER, PROVIDE TRANSITION FITTING OF EQUIVALENT AREA TO THE RUNOUT DUCT.
11. WHERE ROUND DUCT IS INDICATED ON PLANS, USE SPIRAL WOUND DUCTWORK.
12. PROVIDE FLEXIBLE DUCT CONNECTIONS AT EACH EQUIPMENT CONNECTION.
13. OUTSIDE AIR INTAKES SHALL NOT BE LOCATED ANY CLOSER THAN 15 FEET FROM ANY CHIMNEY OR EXHAUST OUTLET OR PLUMBING VENT TERMINAL.
14. INSTALL DUCT MOUNTED SMOKE DETECTOR (FURNISHED BY DIV. 26) IN SUPPLY TRUNK DUCT BEFORE ANY TAKE-OFFS FOR AIR HANDLING UNITS WITH SUPPLY AIR CAPACITY GREATER THAN 2000 CFM AND WHERE INDICATED ON PLANS.
15. WHERE DUCT MOUNTED SMOKE DETECTORS ARE REQUIRED, PROVIDE DUCT ACCESS DOORS TO ALLOW VIEWING AND SERVICING. PROVIDE CEILING/WALL ACCESS PANELS WHERE INSTALLED IN INACCESSIBLE LOCATIONS; ACCESS PANELS IN RATED CONSTRUCTION SHALL BEAR UL LABEL.
16. IT IS RECOMMENDED THAT DUCTWORK BE FABRICATED FROM FIELD MEASUREMENTS TAKEN AS THE BUILDING STRUCTURE AND SPACE COMPETING SYSTEMS ARE PROGRESSIVELY INSTALLED. THE DUCTWORK AS SHOWN ON THE CONSTRUCTION DOCUMENTS IS DIAGRAMMATIC AND DOES NOT NECESSARILY INCLUDE ALL MODIFICATIONS REQUIRED TO AVOID THESE INTERFERENCES. BEFORE FABRICATING ANY DUCTWORK, CHECK THE PHYSICAL CONDITIONS AT THE JOB SITE AND MAKE CHANGES IN CROSS SECTIONS, ROUTING, OFFSETS AND SIMILAR ITEMS WHETHER SPECIFICALLY INDICATED OR NOT. VERIFY THAT SUFFICIENT CLEARANCES ARE AVAILABLE FOR INSTALLING DUCTWORK, PIPING, LIGHT FIXTURES, CEILING SYSTEMS AND TO PROVIDE EQUIPMENT SERVICE. COSTS REQUIRED TO CHANGE DUCTWORK TO FIT THE SPACE AVAILABLE AND AVOID INTERFERENCES CAUSED BY SPACE COMPETING SYSTEMS SHALL BE BORNE BY THE CONTRACTOR. NO ADDITIONAL REMUNERATION WILL BE PAID BY THE OWNER.
17. APPLY EXTERNAL INSULATION TO SINGLE WALL SUPPLY DUCTS, RETURN DUCTS AND OUTSIDE AIR DUCTS PER SPECIFICATIONS. DOUBLE WALL DUCTS AND DUCTS INDICATED ON PLANS TO HAVE INTERNAL DUCT LINER SHALL NOT RECEIVE EXTERNAL INSULATION.
18. PROVIDE VOLUME CONTROL DAMPERS IN SIDE TAKE-OFF FITTINGS TO SUPPLY AIR DIFFUSERS AND EXHAUST AIR AND RETURN AIR GRILLES AND AT EACH DUCT BRANCH SERVING TWO OR MORE AIR TERMINALS, WHETHER SHOWN ON THE DRAWINGS OR NOT.
19. SECTIONS OF PIPE STORED ON SITE OR PLACED IN TRENCHES SHALL HAVE EACH OPEN END COVERED AT ALL TIMES EXCEPT WHILE MAKING CONNECTIONS. IF DEBRIS IS FOUND INSIDE PIPE, IT SHALL BE COMPLETELY REMOVED PRIOR TO ASSEMBLY.
20. PROVIDE ACCESS PANEL AT EACH LOCATION WHERE A VALVE, DAMPER OR OTHER DEVICE REQUIRING SERVICE IS LOCATED ABOVE AN INACCESSIBLE CEILING OR INSIDE A WALL. ACCESS PANELS IN RATED CONSTRUCTION SHALL BEAR UL LABEL. COORDINATE ACCESS PANEL LOCATION WITH ARCHITECT PRIOR TO INSTALLATION.
21. PATCH ALL BREAKS, TEARS AND VOIDS IN EXISTING EXTERNAL DUCT INSULATION WITHIN PROJECT AREA. SEAL INSULATION USING ALUMINUM DUCT TAPE.
22. COORDINATE ALL DUCT TEST WITNESSING WITH LOCAL MECHANICAL INSPECTOR.
23. PRIOR TO FINAL INSPECTION, PROVIDE CERTIFIED TEST & BALANCE REPORT AND OPERATIONS & MAINTENANCE MANUALS TO THE OWNER.
24. DUCT CONSTRUCTION, INCLUDING SHEET METAL THICKNESSES, SEAM AND JOINT CONSTRUCTION, REINFORCEMENTS, AND HANGERS AND SUPPORTS, SHALL COMPLY WITH SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE DUCT."

DELEGATED DESIGN CALCULATION REQUIREMENTS

1. THESE MECHANICAL SYSTEM ENGINEERING DOCUMENTS REPRESENT THE DESIGN INTENT FOR THE CRITERIA BELOW. THE DELEGATED ENGINEER IS RESPONSIBLE FOR PROVIDING A COMPLETE DESIGN, APPROVED BY THE AUTHORITY HAVING JURISDICTION WITHOUT OBSTRUCTING REQUIRED SERVICE CLEARANCES.
   1). SUPPORTING AND SECURING THE EXTERIOR SUPPLY AND RETURN DUCTWORK ASSOCIATED WITH AHU-17-3.
   2). SUPPORTING AND SECURING THE NEW EXHAUST FAN (EF-17-3) ON THE ROOF.
2. DESIGN CRITERIA:
   WIND SPEED: 130 MPH.
   RISK CATEGORY: III.
   WEIGHT: PER APPROVED SUBMITTALS AND SHOP DRAWINGS.
   DEFLECTION LIMITS: PER MANUFACTURER'S REQUIREMENTS IN APPROVED SUBMITTALS AND SHOP DRAWINGS.
3. DELEGATED ENGINEER SHALL PROVIDE SIGNED AND SEALED DATA TO THE ENGINEER OF RECORD AND AUTHORITY HAVING JURISDICTION INCLUDING THE FOLLOWING AS APPLICABLE, BUT NOT LIMITED TO:
   1). DETAIL FABRICATION AND ASSEMBLY OF SUPPORT STRUCTURE.
   2). DESIGN CALCULATIONS FOR STATIC AND DYNAMIC LOADING DUE TO EQUIPMENT WEIGHT AND OPERATION AND WIND FORCES REQUIRED TO SELECT WIND RESTRAINT.
   3.). SECUREMENT DETAILS WITH ANCHORAGES AND ATTACHMENTS TO STRUCTURE AND TO SUPPORTED EQUIPMENT.

GENERAL NOTES

1. DRAWINGS ARE DIAGRAMMATIC, INDICATIVE OF WORK TO BE FURNISHED AND INSTALLED UNDER THIS CONTRACT. REFER TO ARCHITECTURAL AND STRUCTURAL DRAWINGS FOR ALL DIMENSIONS.
2. FIELD VERIFY ALL DIMENSIONS AND ALL CONDITIONS. IF THE CONTRACTOR IS UNABLE TO INTERPRET THE CONTRACT DOCUMENTS, HE IS RESPONSIBLE TO REQUEST CLARIFICATION IN WRITING TO THE ARCHITECT. IF HE PROCEEDS WITH ANY WORK BEFORE OBTAINING CLARIFICATION, HE SHALL BE HELD RESPONSIBLE FOR ALL DEFICIENCIES ASSOCIATED THEREWITH.
3. BEFORE SUBMITTING FOR THE WORK, EACH BIDDER WILL BE RESPONSIBLE TO EXAMINE THE PREMISES AND SATISFY HIMSELF AS TO THE EXISTING CONDITIONS UNDER WHICH HE WILL BE OBLIGATED TO OPERATE AND COMPLETE THE WORK UNDER THIS CONTRACT. NO ALLOWANCE WILL SUBSEQUENTLY BE MADE IN THIS CONNECTION ON BEHALF OF THE CONTRACTOR FOR ANY ERROR OR OMISSION ON HIS PART.
4. THE CONTRACTOR SHALL PAY FOR ALL INSPECTION PERMITS, CERTIFICATES, CONNECTION FEES, SYSTEM DEMAND CHARGES AND LICENSE FEES IN CONNECTION WITH HIS WORK.
5. CONSTRUCTION MANAGER SHALL BE RESPONSIBLE FOR COORDINATING WORK OF ALL SUBCONTRACTORS TO AVOID INTERFERENCES.
6. ALL WORK SHALL COMPLY WITH APPLICABLE O.S.H.A. AND E.P.A. REGULATIONS AND GUIDELINES.
7. ERECT AND MAINTAIN ALL REASONABLE PRECAUTIONS FOR SAFETY AND HEALTH INCLUDING POSTING DANGER SIGNS AND OTHER WARNINGS AGAINST HAZARDS INCLUDING PROMULGATING SAFETY REGULATIONS. PROVIDE SAFETY PRECAUTIONS AND BARRICADES FOR PEDESTRIANS AT CONSTRUCTION VEHICLE ACCESS AND EGRESS LOCATIONS.
8. COORDINATE AND SEQUENCE ALL DEMOLITION, CLEANING AND CONSTRUCTION WORK. SUBMIT A COMPLETELY DETAILED CONSTRUCTION SCHEDULE PRIOR TO PRE-CONSTRUCTION CONFERENCE.
9. THE CONTRACTOR SHALL STRICTLY BE HELD TO THE PROJECT SCHEDULE. HE SHALL PROVIDE SUFFICIENT MANPOWER AND EQUIPMENT TO FULLY MOBILIZE, PROCEED WITH AND COMPLETE THE WORK.
10. THE CONTRACTOR SHALL BE RESTRICTED TO AREAS SPECIFIED BY THE OWNER FOR ON-SITE STORAGE OF CONSTRUCTION MATERIALS. THE CONTRACTOR IS RESPONSIBLE FOR THE PROTECTION AND SECURITY OF ALL EQUIPMENT AND MATERIALS.
11. THE CONTRACTOR SHALL MAINTAIN A CLEAN WORK ENVIRONMENT AT ALL TIMES AND SHALL CLEAN CONSTRUCTION SITE OF ALL DEBRIS AT COMPLETION OF THE JOB AND BEFORE FINAL PAYMENT IS MADE.
12. THE CONTRACTOR SHALL FURNISH "AS-BUILT" DRAWINGS TO THE ARCHITECT AT COMPLETION OF CONSTRUCTION.
13. CONTRACTOR'S USE OF AN APPROVAL STAMP ON DOCUMENTS SUBMITTED AS SHOP DRAWINGS, PRODUCT DATA, SAMPLES AND SIMILAR SUBMITTALS CERTIFIES THAT THE CONTRACTOR HAS COMPLIED WITH THE CONTRACT DOCUMENT REQUIREMENTS RELATED TO "SHOP DRAWINGS, PRODUCT DATA AND SAMPLES".
14. THE CONTRACTOR SHALL NOT BE RELIEVED OF RESPONSIBILITY FOR DEVIATIONS FROM REQUIREMENTS OF THE CONTRACT DOCUMENTS BY THE ARCHITECT/ ENGINEER'S APPROVAL OF SHOP DRAWINGS, PRODUCT DATA, SAMPLES OR SIMILAR SUBMITTALS UNLESS THE CONTRACTOR HAS SPECIFICALLY INFORMED THE ARCHITECT/ENGINEER IN WRITING OF SUCH DEVIATION AT THE TIME OF SUBMITTAL AND THE ARCHITECT/ENGINEER HAS GIVEN WRITTEN APPROVAL TO THE SPECIFIC DEVIATION. THE CONTRACTOR SHALL NOT BE RELIEVED OF RESPONSIBILITY FOR ERRORS OR OMISSIONS IN SHOP DRAWINGS, PRODUCT DATA, SAMPLES OR SIMILAR SUBMITTALS BY THE ARCHITECT/ENGINEER'S APPROVAL THEREOF.
15. PRIOR TO INSTALLATION, COORDINATE AND ADJUST THE FINAL LOCATION OF ALL WALL MOUNTED DEVICES AND EQUIPMENT WITH ALL CASEWORK, SHELVING, BULLETIN BOARDS OR OTHER WALL MOUNTED FURNISHINGS.
16. NOTE ANY SPECIAL REQUIREMENTS INVOLVED IN INSTALLING THE EQUIPMENT IN THE BUILDING. DISMANTLING AND REASSEMBLING OF ANY EQUIPMENT SHALL BE DONE AS REQUIRED FOR ENTRY INTO THE BUILDING AND EQUIPMENT ROOMS.
17. PROTECT THE ROOF FROM DAMAGE WHENEVER ANY WORK ON THE ROOF IS REQUIRED.
18. SUPPORTS AND HANGERS SHALL PRESENT A NEAT, ORDERLY APPEARANCE.
19. ALL ROOF MOUNTED EQUIPMENT SHALL BE SECURED TO STRUCTURE TO RESIST A 130 MPH WIND LOAD.
20. CONTRACTOR SHALL MAINTAIN THE INTEGRITY OF ALL FIRE, SMOKE, AND ACOUSTICAL WALL ASSEMBLIES.
21. BEAM AND FLOOR PENETRATIONS SHALL BE APPROVED BY THE STRUCTURAL ENGINEER. BEAM SLEEVES AND BEAM REINFORCING APPROVED BY STRUCTURAL ENGINEER SHALL BE FURNISHED AND INSTALLED BY THIS CONTRACTOR.
22. CONTRACTOR SHALL FURNISH U.L. APPROVED DRAWINGS FOR EACH TYPE OF FIRE RATED ASSEMBLY PENETRATION BY DUCTS, PIPES OR CONDUITS. THESE DRAWINGS SHALL BE DISPLAYED ON THE JOB SITE AT ALL TIMES DURING CONSTRUCTION. SEE SPECIFICATIONS.
23. CONTRACTOR SHALL GUARANTEE THE WORK AND MATERIALS FOR A PERIOD OF ONE YEAR FROM DATE OF FINAL ACCEPTANCE. THIS GUARANTEE SHALL BE IN ADDITION TO THE WARRANTIES PROVIDED BY MATERIAL SUPPLIERS AND MANUFACTURERS.
24. THE BUILDING WILL REMAIN OCCUPIED DURING CONSTRUCTION. THE OWNER WILL MAKE ALL REASONABLE EFFORTS TO ASSIST THE CONTRACTOR IN COMPLETING THE WORK. COORDINATE ALL WORK WITH THE OWNER'S DESIGNATED REPRESENTATIVE.
25. EXIT WAYS SHALL BE KEPT CLEAR. IF AN EXIT MUST BE TEMPORARILY BLOCKED, PROVIDE THE REQUIRED BARRICADE AND DIRECTIONAL SIGNS FOR TEMPORARY EXITING AND SAFETY.
26. REMOVE AND REPAIR OR RE-INSTALL EXISTING CEILING ASSEMBLIES AS REQUIRED. REPLACE ANY ASSEMBLIES DAMAGED OR SOILED DURING CONSTRUCTION.
27. PROVIDE PROPER PROTECTIVE MEASURES TO PROTECT EXISTING FURNITURE, CARPET AND FINISHES DURING THE COURSE OF CONSTRUCTION. TAKE CARE NOT TO DAMAGE EXISTING SURFACES. REPAIR TO MATCH EXISTING CONDITIONS AS REQUIRED.
28. SEAL ALL HOLES IN WALLS, CEILINGS, FLOORS, ETC. TO MATCH EXISTING ADJACENT SURFACES WHERE EQUIPMENT, CONDUIT AND/OR PIPING ARE REMOVED.
29. ALL EXISTING EQUIPMENT IS THE PROPERTY OF THE OWNER AND SHALL BE DISPOSED OF AS DIRECTED BY THE OWNER. DISPOSE OF ALL MATERIALS AND EQUIPMENT SHOWN TO BE REMOVED IN ACCORDANCE WITH LOCAL REGULATIONS.
30. ITEMS REMOVED AND SAVED FOR REUSE SHALL BE PROTECTED FROM DAMAGE DURING CONSTRUCTION. CONTRACTOR SHALL IDENTIFY ANY DEFECTIVE MATERIALS PRIOR TO DEMOLITION. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DAMAGE TO MATERIALS AT PROJECT COMPLETION NOT IDENTIFIED PRIOR TO DEMOLITION.
31. RELOCATE, AS REQUIRED, ANY EXISTING WIRE AND CONDUIT WHICH INTERFERES WITH INSTALLATION OF THE NEW WORK.
32. REMOVE ALL ELECTRICAL EQUIPMENT (CONDUIT, POWER & CONTROL WIRING, DISCONNECT SWITCHES, STARTERS, ETC.) RELATED TO EQUIPMENT BEING REMOVED OR REPLACED.
33. CONTRACTOR SHALL COMPLY WITH "TRENCH SAFETY ACT" (FLORIDA STATUTE 553 PART III) AND OSHA STANDARD 29 CFR 1926.650 SUBPART P FOR ALL UTILITY TRENCHES IN EXCESS OF 5 FEET DEEP. CONTRACTOR SHALL INDICATE WITHIN HIS BID RESPONSE A REFERENCE TO THE TRENCH SAFETY STANDARD AND A SEPARATE LINE ITEM COST OF COMPLIANCE WITH STANDARD.

ABBREVIATIONS

AFF	ABOVE FINISHED FLOOR	MOCP	MAXIMUM OVERLOAD PROTECTION
AHAP	AS HIGH AS POSSIBLE	N/A	NOT APPLICABLE
AHU	AIR HANDLING UNIT	NIS	NOT IN SCOPE
BAS	BUILDING AUTOMATION SYSTEM	OA	OUTSIDE AIR
BHP	BRAKE HORSEPOWER	RA	RETURN AIR
BTUH	BRITISH THERMAL UNITS PER HOUR	RAG	RETURN AIR GRILLE
C	CONDENSATE	RAR	RETURN AIR REGISTER
CC	COOLING COIL	REF	REFRIGERANT
CFM	CUBIC FEET PER MINUTE	RPM	REVOLUTIONS PER MINUTE
CU	CONDENSING UNIT	SA	SUPPLY AIR
DDC	DIRECT DIGITAL CONTROL PANEL	SF	SUPPLY FAN
DN	DOWN	SMS	SHEET METAL SIZE
EA	EXHAUST AIR	SP	STATIC PRESSURE
EAG	EXHAUST AIR GRILLE	SQ FT	SQUARE FEET
EF	EXHAUST FAN	TAG	TRANSFER AIR GRILLE
F	FEET	TAS	TRANSFER AIR SLEEVE
°Fdb	DEGREES FAHRENHEIT DRY BULB	TYP	TYPICAL
°Fwb	DEGREES FAHRENHEIT WET BULB	UG	UNDERGROUND
FMB	FILTER MIXING BOX	UNO	UNLESS NOTED OTHERWISE
FPM	FEET PER MINUTE	V	VALVE
GPH	GALLONS PER HOUR	VAV	VARIABLE AIR VOLUME
HP	HORSEPOWER	VFD	VARIABLE FREQUENCY DRIVE
IN	INCHES	WG	WATER GAUGE
MCA	MINIMUM CIRCUIT AMPACITY		

DRAWING INDEX

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RAA MIDDLE SCHOOL DINING EXPANSION PROJECT

TALLAHASSEE, FLORIDA

LEON COUNTY SCHOOL BOARD

PHASE III
100% SUBMITTAL

PROJ. NO.	174324
DATE	04/02/2025
DRAWN	JPT
CHECKED	MPP
APPROVED	MPP
REVISION	
REVISION DATE	

GENERAL NOTES, LEGENDS & SCHEDULES

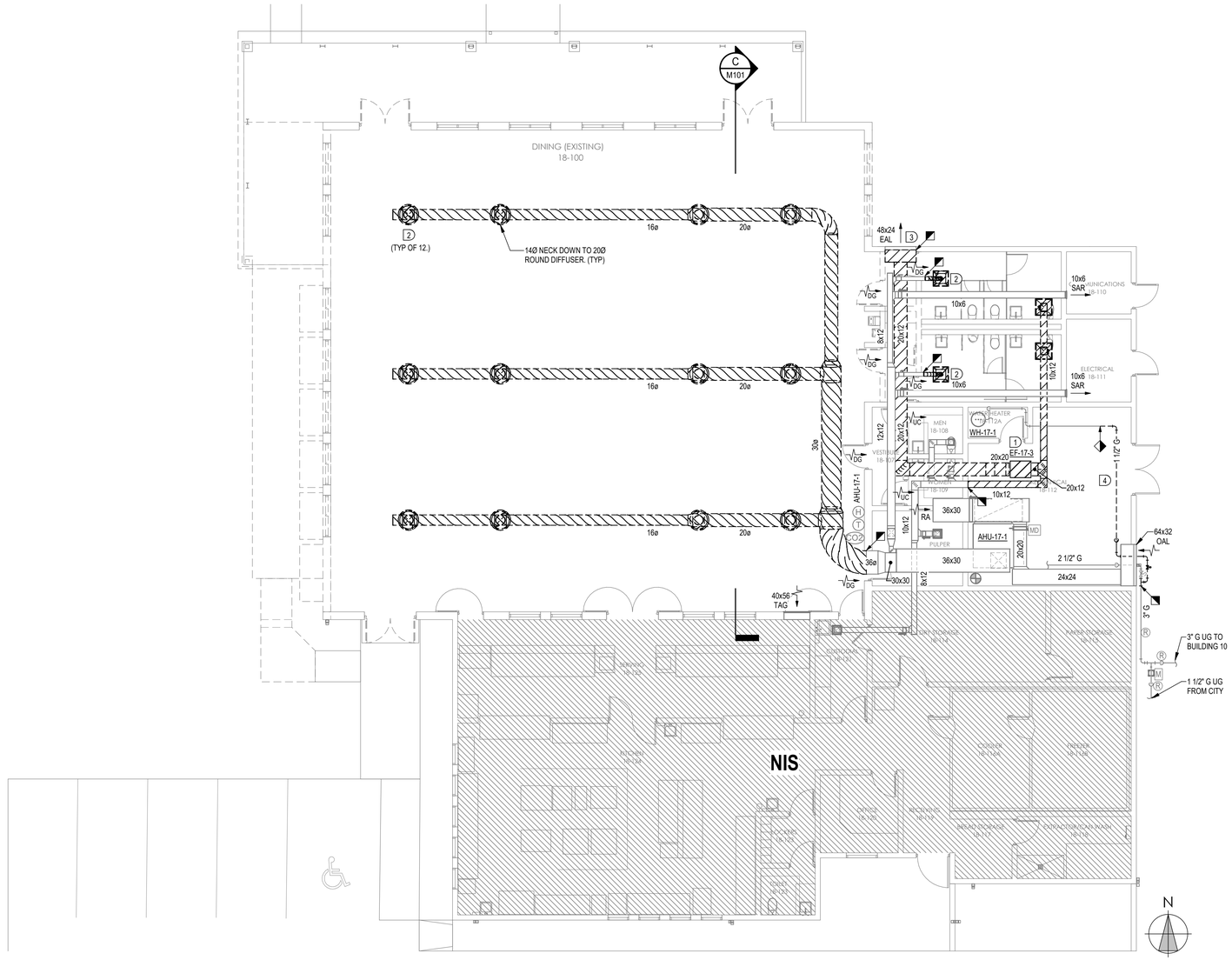
M001

GENERAL NOTES:

1. PRIOR TO DEMOLITION WORK: PROVIDE PRE TEST AND BALANCE WORK FOR AIR HANDLING UNIT (AHU-17-1) TO DOCUMENT FAN PERFORMANCE, COOLING PERFORMANCE, HEATING PERFORMANCE, AIR FLOW CAPACITIES, WATER FLOW CAPACITIES AND ELECTRICAL CHARACTERISTICS. REFER TO SHEET M401 FOR SPECIFIC EQUIPMENT.

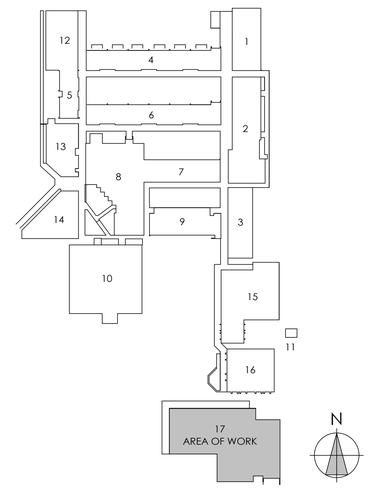
DEMOLITION KEYNOTES

1. DEMOLISH EXHAUST FAN AND ASSOCIATED DUCTWORK, GRILLES, SUPPORTS AND CONTROLS TO LIMITS INDICATED. SEE ELECTRICAL DRAWINGS FOR POWER REQUIREMENTS.
2. DEMOLISH DIFFUSER AND DUCTWORK TO LIMIT INDICATED. NEW DUCTWORK TO BE PROVIDED AS INDICATED ON RENOVATION PLANS.
3. BLANK OFF LOUVER PER DETAIL E/M501.
4. DEMOLISH GAS PIPING AND ASSOCIATED SUPPORTS AND SOLENOID VALVE TO LIMITS INDICATED. NEW PIPING TO BE PROVIDED AS INDICATED ON RENOVATION PLANS.



1 MD101 DEMOLITION PLAN
SCALE: 1/8" = 1'-0"

KEY PLAN



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Florida Registry #2485
Mark P. Poindexter, P.E. #90615

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RAA MIDDLE SCHOOL DINING EXPANSION PROJECT

LEON COUNTY SCHOOL BOARD — TALLAHASSEE, FLORIDA

PHASE III
100% SUBMITTAL

PROJ. NO.	174324
DATE	04/02/2025
DRAWN	JPT
CHECKED	MPP
APPROVED	MPP
REVISION	
REVISION DATE	

DEMOLITION PLAN

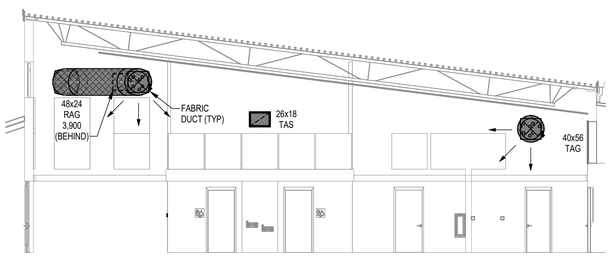
MD101

RENOVATION GENERAL NOTE

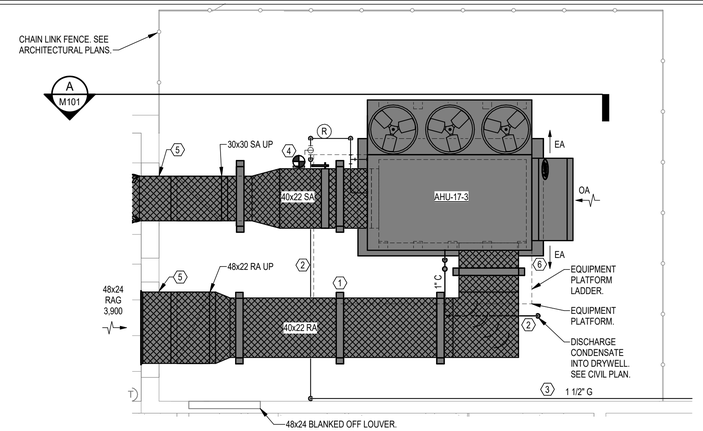
1. BALANCE ALL DIFFUSERS / GRILLES TO VALUES INDICATED.

RENOVATION KEYNOTES

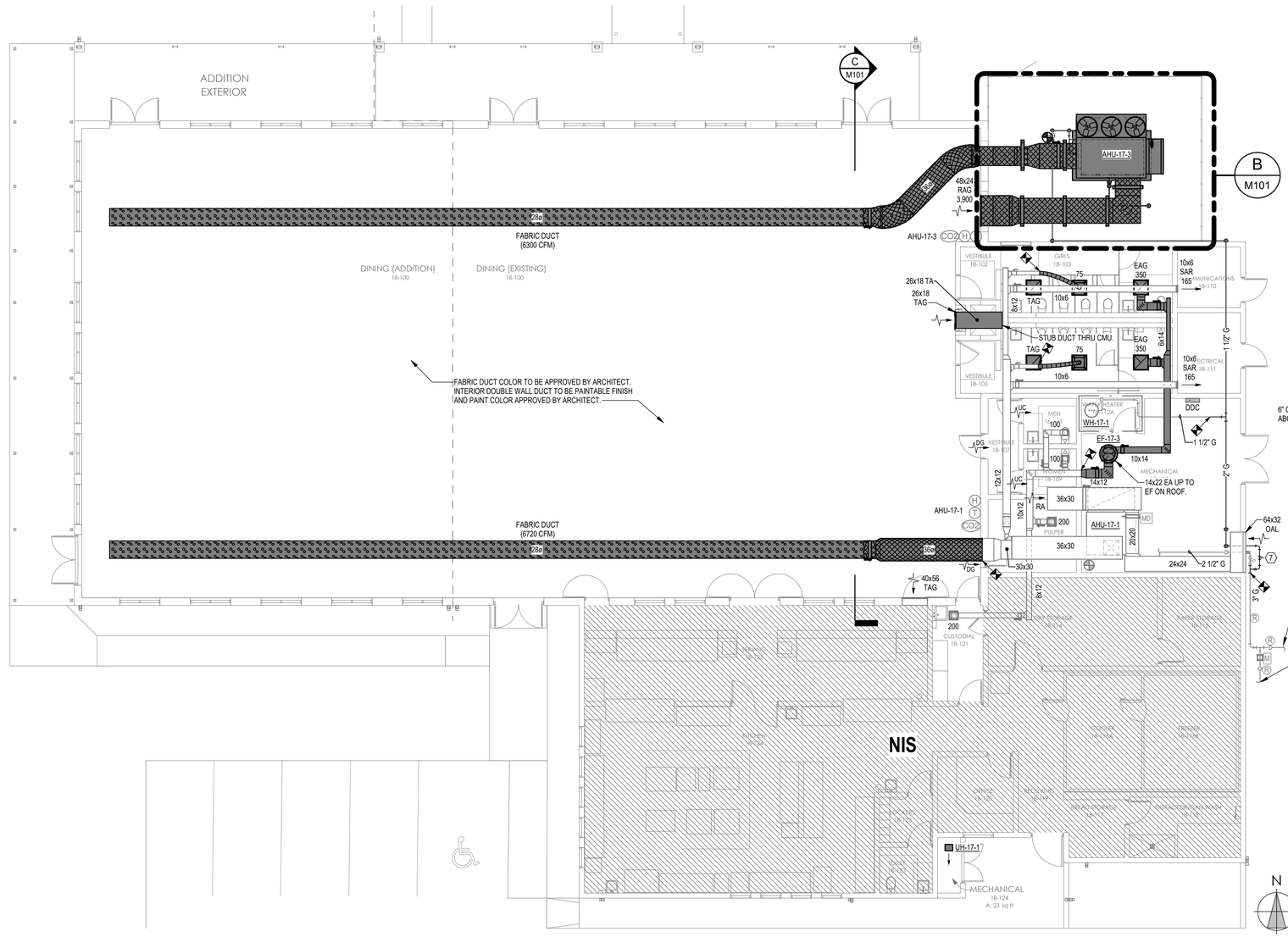
1. DUCT SUPPORT (TYPICAL). SEE DETAIL C/M501.
2. PROVIDE PIPING SUPPORTS PER DETAIL B/M501 ON GRADE.
3. SUPPORT GAS PIPING ALONG WALL WITH UNISTRUT AND PIPE CLAMPS. REFER TO SPECIFICATIONS FOR SPACING.
4. DUCT MOUNTED SMOKE DETECTOR. PROVIDE NEMA 3R ENCLOSURE. MAINTAIN 3FT CLEARANCE IN FRONT.
5. SEE ARCHITECTURAL DRAWINGS FOR WALL PENETRATION WATER PROOFING.
6. NEW 6" CONCRETE EQUIPMENT PAD. EXTEND CONCRETE PAD 6" PAST EQUIPMENT ON ALL SIDES. PROVIDE NEOPRENE ISOLATION PADS UNDER UNIT AND ANCHOR UNIT TO CONCRETE PAD WITH GALVANIZED BRACKETS (MINIMUM 1 EACH SIDE).
7. PROVIDE AUTOMATIC GAS SOLENOID VALVE, ELECTRONICALLY HELD OPEN, MANUAL RESET: ASCO 8044, 120V OR APPROVED EQUAL. PROVIDE NEMA 3R ENCLOSURE FOR VALVE. VALVE SHALL CLOSE ON LOSS OF POWER OR WHEN COMMANDED BY FIRE ALARM.



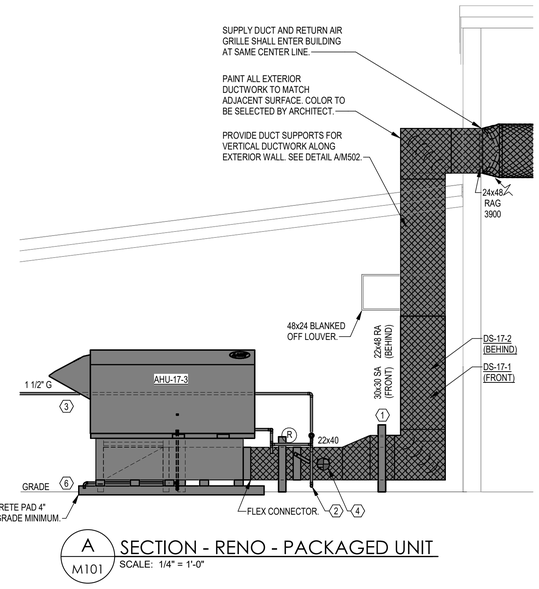
C M101 SECTION - RENO - DINING
SCALE: 1/8" = 1'-0"



B M101 ENLARGED PLAN - RENO - PACKAGED UNIT
SCALE: 1/4" = 1'-0"

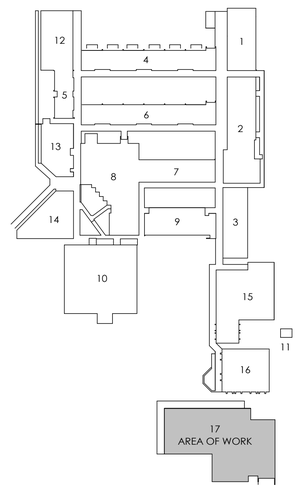


1 M101 RENOVATION PLAN
SCALE: 1/8" = 1'-0"



A M101 SECTION - RENO - PACKAGED UNIT
SCALE: 1/4" = 1'-0"

KEY PLAN



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RENOVATION PLAN

M101

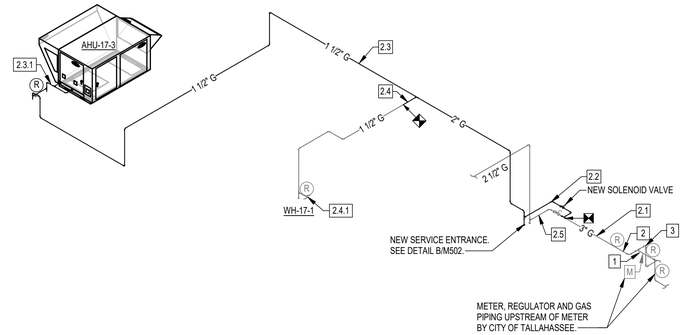
GAS PIPE SCHEDULE

PIPE SECTION	FUEL GAS TYPE	CAPACITY (MBH)	DESIGN PRESSURE	EQUIPMENT	PIPE LENGTH (FT)	EQUIV. LENGTH FOR FITTINGS (FT)	TOTAL LENGTH (FT)	PIPE SIZE (IN)
1	NATURAL GAS	3,930	2 PSI	BLDG 10 &17	2	0	2	3
2	NATURAL GAS	1,530	2 PSI	KITCHEN HOOD, WH-17-1, AHU-17-3	3	15	18	3
2.1	NATURAL GAS	1,530	SEE NOTE 2	KITCHEN HOOD, WH-17-1, AHU-17-3	7	0	7	3
2.2	NATURAL GAS	570	SEE NOTE 2	WH-17-1, AHU-17-3	31	104	135	2
2.3	NATURAL GAS	270	SEE NOTE 2	AHU-17-3	74	89	163	1 1/2
2.3.1	NATURAL GAS	270	7 IN WC	AHU-17-3	17	31	48	2
2.4	NATURAL GAS	300	SEE NOTE 2	WH-17-1	26	28	54	1 1/2
2.4.1	NATURAL GAS	300	7 IN WC	WH-17-1	1	0	1	2
2.5	NATURAL GAS	960	SEE NOTE 2	KITCHEN HOOD	23	23	46	2 1/2
3	NATURAL GAS	2,400	2 PSI	BLDG 10	3	3	6	3

NOTES:

1 GAS PIPING SIZED USING LONGEST LENGTH METHOD FROM POINT OF DELIVERY TO EITHER REGULATOR OR APPLIANCE.

2 LESS THAN 2 PSI ASSUMED.



1 / M301 RISER DIAGRAM - GAS

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RISER DIAGRAM - GAS

M301

CABINET UNIT HEATER

DESIGNATION			UH-17-1
	CAPACITY	KW	2.25
	NUMBER OF STAGES	#	1
	AIR QUANTITY	CFM	300
	AIR TEMPERATURE RISE	°F	23.5
	ELECTRICAL CHARACTERISTICS	V/PH	208 / 1
	MOUNTING HEIGHT (A.F.F.)	FT.	6
MANUFACTURER (BASIS OF DESIGN)			REZNOR
MODEL NUMBER			EGW

NOTES:
1. PROVIDE UNITS WITH MOUNTING HARDWARE.
2. PROVIDE UNITS WITH BUILT-IN THERMOSTAT. SET THERMOSTAT PER MANUFACTURER INSTRUCTIONS TO MAINTAIN 40 DEGREE FAHRENHEIT.

VENTILATION RATE

		EXHAUST AIR	OUTSIDE AIR	
TYPE OF SPACE		CFM / FT²	CFM / PERSON	CFM / FT²
	CAFETERIA / FAST FOOD DINING		7.5	0.18
	TOILET (PUBLIC)	50/70	0	0.00

NOTES:
1. VENTILATION RATES FOR SPACES WITH INTERMITTENT OCCUPANCY (PEAK OCCUPANCY LESS THAN THREE HOURS) HAVE BEEN REDUCED ON AVERAGE OCCUPANCY DURING THE OCCUPIED PERIOD, BUT NOT LESS THAN HALF OF THAT REQUIRED DURING PEAK OCCUPANCY.
2. VENTILATION RATES CALCULATED PER REQUIREMENTS OF FBC, MECHANICAL 2023.
3. EXHAUST IS PER WATER CLOSET AND/OR URINAL. HIGHER RATE USED.

DESIGN CONDITIONS

OUTDOOR CONDITIONS - DESIGN DAY (TALLAHASSEE, FLORIDA)			
	COOLING (0.4% ANNUAL)	°Fdb - °Fwb	96.2 - 76.2
	HEATING (99.6% ANNUAL)	°Fdb	25.0
INDOOR CONDITIONS - SUMMER			
	CAFETERIA	°Fdb - %RH	75 - 50
INDOOR CONDITIONS - WINTER			
	CAFETERIA	°Fdb - %RH	70 - 30

DUCT SILENCER SCHEDULE

DESIGNATION			DS-17-1	DS-17-2
	TYPE		DISSIPATIVE	DISSIPATIVE
	SHAPE		RECTANGULAR	RECTANGULAR
	CONFIGURATION		ELBOW	ELBOW
	FLOW DIRECTION (NOTE1)		FORWARD	REVERSE
	FACE DIMENSION (WIDTH x HEIGHT / or DIAMETER)	IN x IN.	30 x 30	22 x 48
	LENGTH	IN.	120	120
	INLET LEG (NOTE 4)	IN.	40	113
	OUTLET LEG (NOTE 4)	IN.	110	41
	MAXIMUM AIRFLOW	CFM	6,300	6,300
	MAXIMUM PRESSURE DROP (INCLUDING SYSTEM EFFECTS)	INCH W.G.	0.23	0.21
OCTAVE BAND DYNAMIC INSERTION LOSS / GENERATED NOISE (NOTE 2)				
	63 Hz	dB / dB	13 / 41	20 / 50
	125 Hz	dB / dB	18 / 42	30 / 44
	250 Hz	dB / dB	33 / 35	52 / 38
	500 Hz	dB / dB	51 / 37	55 / 24
	1000 Hz	dB / dB	53 / 37	55 / 39
	2000 Hz	dB / dB	53 / 30	55 / 38
	4000 Hz	dB / dB	47 / 32	51 / 36
	8000 Hz	dB / dB	35 / 23	40 / 27
MANUFACTURER			PRICE	PRICE
MODEL NUMBER			ERM120/2C	ERMX120/3F

NOTES:
1. FORWARD FLOW INDICATES WHERE NOISE AND AIRFLOW MOVE IN SAME DIRECTIONS. REVERSE FLOW INDICATES WHERE NOISE AND AIRFLOW MOVE IN OPPOSITE DIRECTIONS.
2. DYNAMIC INSERTION LOSS DETERMINED IN ACCORDANCE WITH ASTM E477-99.
3. DYNAMIC INSERTION LOSS DATA SHOWN FOR EACH SILENCER IS BASED ON ACOUSTICAL DATA FROM BASIS OF DESIGN AIR HANDLING UNITS. IF ACOUSTICAL DATA FOR APPROVED ALTERNATE IS DIFFERENT FROM BASIS OF DESIGN, CONTRACTOR SHALL BE RESPONSIBLE FOR SELECTING DUCT SILENCERS THAT DO NOT EXCEED GENERATED NOISE REQUIREMENTS FOR EACH OCTAVE BAND, AS INDICATED IN THE SCHEDULE ABOVE. PROVIDE ACOUSTICAL CALCULATIONS FOR ALL SYSTEMS WITH SILENCERS TO DEMOSTRATE THAT THE RESULTANT DUCTBORNE FAN SOUND LEVEL, INCLUDING AIRBORNE AND BREAKOUT NOISE, IN THE OCCUPIED SPACES, MEET NC 30.
4. INDICATED LENGTH APPLIES TO ELBOW SILENCER.

TEST AND BALANCE AIR HANDLING UNITS (EXISTING UNITS)

DESIGNATION			AHU-17-1
DESIGN AIR QUANTITIES			
	SUPPLY AIR FLOW	CFM	7,200
	OUTSIDE AIR FLOW	CFM	2,600
DESIGN WATER QUANTITIES			
	HEATING HOT WATER FLOW (PREHEAT)	GPM	N/A
	HEATING HOT WATER FLOW (REHEAT)	GPM	19.8
	CHILLED WATER FLOW	GPM	50.4
DESIGN COOLING & HEATING CAPACITIES			
	HEATING CAPACITY (PREHEAT)	MBH	N/A
	HEATING CAPACITY (REHEAT)	MBH	297.3
	TOTAL COOLING CAPACITY	MBH	352.9

NOTES:
1. PROVIDE PRE TEST AND BALANCE WORK TO DOCUMENT FAN PERFORMANCE, COOLING PERFORMANCE, HEATING PERFORMANCE, AIR FLOW CAPACITIES, WATER FLOW CAPACITIES AND ELECTRICAL CHARACTERISTICS. TEST FUNCTIONALITY OF UNIT AND ASSOCIATED CONTROLS. REPORT PERFORMANCE OF TESTS TO OWNER AND ENGINEER.
2. EXISTING AIR HANDLING UNIT SCHEDULE INFORMATION; PROVIDED FOR REFERENCE ONLY.
3. PROVIDE TESTING, ADJUSTING, AND BALANCING (TAB) WORK IN ACCORDANCE WITH SPECIFICATIONS.
4. BEFORE PERFORMING TESTING AND BALANCING OF EXISTING SYSTEMS, INSPECT EXISTING EQUIPMENT THAT IS TO REMAIN AND BE REUSED TO VERIFY THAT EXISTING EQUIPMENT HAS BEEN CLEANED AND REFURBISHED. VERIFY THE FOLLOWING:
   A. PROVIDE NEW FILTERS
   B. COILS ARE CLEAN AND FINS COMBED.
   C. DRAIN PANS ARE CLEAN.
   D. FANS ARE CLEAN.
   E. BEARINGS AND OTHER PARTS ARE PROPERLY LUBRICATED.
5. EXISTING CONTROLS AND SEQUENCE TO REMAIN.

UNIT ELECTRICAL DATA			
	VOLTAGE / PHASE	V / PH	208 / 3
	MCA / MOCP	AMPS / AMPS	175 / 200
AHRI EFFICIENCY		IEER	13.2
UNIT WEIGHT		LB	3390
UNIT DIMENSIONS		IN. x IN.	110 x 110
MANUFACTURER			AAON
MODEL NUMBER			RNA-030
DETAIL REFERENCE			A/M501

NOTES:
1. PROVIDE UNIT WITH PREMIUM-EFFICIENCY MOTORS.
2. PROVIDE 0-100% OUTSIDE AIR DAMPER.
3. PROVIDE NEMA 3R NON-FUSED DISCONNECT.
4. PROVIDE PHASE & BROWNOUT PROTECTION.
5. PROVIDE FIVE YEAR COMPRESSOR, ONE YEAR COMPONENTS AND ONE YEAR LABOR WARRANTY.
8. PROVIDE FACTORY START-UP.
9. PROVIDE ONE (1) MODULATING COMPERESSOR.
10. PROVIDE UNIT POWERED CONVENIENCE OUTLET.
11. PROVIDE HAIL GUARD PROTECTION FOR CONDESER COIL.
12. PROVIDE STAINLESS STEEL GAS HEAT EXCHANGER.
13. PROVIDE SURGE PROTECTION DEVICES FOR SENSOR AND CONTROLS LOCATED OUTDOORS AND SUBJECT TO ELECTRICAL DAMAGE.
14. COAT ALL COILS WITH ANTI-MICROBIAL AND CORROSION RESISTANT COATING.
15. PROVIDE DOUBLE WALL GROUND MOUNTED CURB, INSULATED.
16. PROVIDE ION GENERATOR IG-B PER SCHEDULE.

CONTROLS:
1. PROVIDE TERMINAL STRIP FOR PROVIDING A THIRD PARTY CONTROLLER.
2. PROVIDE SUPPLY AIR TEMPERATURE SENSOR.
3. PROVIDE OUTSIDE AIR TEMPERATURE AND HUMIDITY SENSOR.
4. PROVIDE COOLING COIL LEAVING AIR TEMPERATURE SENSOR.
5. PROVIDE SUCTION PRESSURE TRANSDUCER.
6. PROVIDE OUTSIDE AIRFLOW MEASURING STATION (EBTRON GOLD SERIES).
7. PROVIDE MOTORIZED OUTSIDE AND RETURN AIR DAMPER.
8. PROVIDE TEMPERATURE AND HUMIDITY SPACE SENSOR.
9. PROVIDE STATIC PRESSURE SENSOR.
10. PROVIDE WALL MOUNTED CO2 SPACE SENSOR.

FANS

DESIGNATION			EF-17-3
	SERVICE		CLASS 1 OR 2 EXHAUST
	MOUNTING METHOD		ROOF
	FAN TYPE		CENTRIFUGAL UPBLAST
	AIR FLOW	CFM	1,300
	STATIC PRESSURE	IN.	0.5
	AIRSTREAM TEMPERATURE	DEG F	70
	FAN SPEED	RPM	1,027
	FAN DRIVE		DIRECT
	MOTOR SPEED	RPM	1,300
	MOTOR POWER	HP or W	1/2 HP
	MOTOR BRAKE HORSEPOWER	BHP	0.2
	ELECTRONICALLY COMMUTATED MOTOR		YES
	ELECTRICAL CHARACTERISTICS	V / PH	208 / 1
	WEIGHT	LBS.	65
	NOISE LEVEL (RADIATED)	SONES or LwA	8.8 SONES
	STANDARD NOTES		1, 2, 3, 4, 7, 9
MANUFACTURER			GREENHECK
MODEL NUMBER			CUE-140-VG
DETAIL REFERENCE			G/M501

NOTES: SEE SEQUENCES OF OPERATION ON CONTROL SHEETS
1. PROVIDE PRE-WIRED DISCONNECT SWITCH, FACTORY MOUNTED.
2. PROVIDE SOLID STATE SPEED CONTROLLER, FACTORY MOUNTED.
3. PROVIDE BIRD SCREEN.
4. PROVIDE BACKDRAFT DAMPER, GRAVITY OPERATED.
7. PROVIDE PRE-FABRICATED INSULATED ROOF CURB, 12-INCH HIGH WITH DAMPER TRAY, SLOPED TO MATCH ROOF SLOPE.
9. PROVIDE TIE-DOWN EYELETS.

BUILDING AIR BALANCE - EQUIPMENT SUMMARY

OUTSIDE AIR SOURCE	CFM	EXHAUST SOURCE	CFM
AHU-17-1	2,600	EF-17-1	100
AHU-17-2	350	EF-17-2	250
AHU-17-3 (NEW)	2,400	EF-17-3 (REPLACED)	1,300
SF-17-1 KITCHEN HOOD	4,200	EF-17-4 KITCHEN HOOD	5,200
		AHU-17-3 (NEW - NOTE 1)	0
TOTAL	9,550	TOTAL	6,850
BUILDING PRESSURIZATION		(+)	2,700

NOTES:
1. RELIEF CAPABLE OF 5200 CFM FOR BUILDING PRESSURE AND ECONOMIZER MODE.

PACKAGED AIR CONDITIONER

DESIGNATION			AHU-17-3
AREA SERVED			DINING
CONTROL CONFIGURATION			SZ VAV
AIRFLOWS			
	TOTAL SUPPLY AIR / MINIMUM AIRFLOW	CFM / CFM	6,300 / 3,150
	OUTSIDE AIR / MINIMUM AIRFLOW	CFM / CFM	2,400 / 660
	RELIEF AIR / MINIMUM AIRFLOW	CFM	5,200 / 0
	HEATING AIRFLOW	CFM	2,500
FILTER SECTION			
	PRE-FILTER		2" PLEATED MERV 8
	FINAL FILTER		4" PLEATED MERV 13
SUPPLY FAN SECTION			
	SUPPLY FAN QUANTITY	#	1
	SUPPLY FAN MOTOR (TOTAL)	HP - BHP	15.0 – 8.5
	SUPPLY FAN MOTOR TYPE		STANDARD
	SUPPLY FAN TYPE		BACKWARD CURVED
	FAN DRIVE		DIRECT
	EXTERNAL STATIC PRESSURE	IN. WG	1.3
	DIRTY PRE-FILTER ALLOWANCE	IN. WG	0.7
	DIRTY FINAL FILTER ALLOWANCE	IN. WG	0.7
	MAX. TOTAL STATIC PRESSURE	IN. WG	4
	VARIABLE FREQUENCY DRIVE		YES
RELIEF FAN SECTION			
	RELIEF FAN QUANTITY	#	1
	RELIEF FAN MOTOR (TOTAL)	HP - BHP	5.0 – 2.7
	RELIEF FAN MOTOR TYPE		STANDARD
	RELIEF FAN TYPE		BACKWARD CURVED
	FAN DRIVE		DIRECT
	EXTERNAL STATIC PRESSURE	IN. WG	0.5
	VARIABLE FREQUENCY DRIVE		YES
COOLING COIL DATA - REFRIGERANT			
	TOTAL COOLING CAPACITY	MBH	323
	SENSIBLE COOLING CAPACITY	MBH	208
	COMPRESSOR QUANTITY	#	2
	AIR ENTERING COOLING COIL	°Fdb - °Fwb	83.1 – 69.2
	AIR LEAVING COOLING COIL	°Fdb - °Fwb	53.0 – 52.5
	CONDENSATE DRAIN SIZE	IN.	1
HOT GAS REHEAT			
	TYPE		MODULATING
	TOTAL CAPACITY	MBH	129.8
	REHEAT COIL ENTERING / LEAVING TEMPERATURE	°Fdb / °Fdb	53 / 72
HEATING COIL DATA - GAS			
	FUEL TYPE		NATURAL GAS
	TYPE		MODULATING
	INPUT / OUTPUT CAPACITY	MBH / MBH	270 / 219
	AIR ENTERING HEATING COIL	°Fdb	22
	AIR LEAVING HEATING COIL	°Fdb	102.6
	GAS PIPE CONNECTION SIZE / QUANTITY	IN. / #	1 1/2 / 2

NEEDLE POINT ION GENERATORS

DESIGNATION			IG-B
	MAXIMUM AIRFLOW CAPACITY	CFM	6,000
	IONIZATION GENERATION		NEEDLE POINT BIPOLAR
	NEEDLE CONFIGURATION		RECESSED
	NUMBER OF BRUSHES	#	BRUSHLESS
	WEIGHT	LBS.	0.3
	ELECTRICAL CHARACTERISTICS	VAC	24
	QUANTITY	#	SEE NOTE 1
MANUFACTURER			PLASMA AIR
MODEL NUMBER			1560

NOTES:
1. INSTALL ION GENERATOR IN AHU FAN INLET PER MANUFACTURER'S INSTRUCTION. PROVIDE QUANTITY BASED ON MAXIMUM AIR FLOW.
2. ION GENERATOR SHALL BE ENABLED WHEN THE FAN IS RUNNING AND DISABLED WHEN THE FAN IS OFF.
3. PROVIDE POWER TO ION GENERATOR THRU AHU 24V INTERNAL TRANSFORMER.

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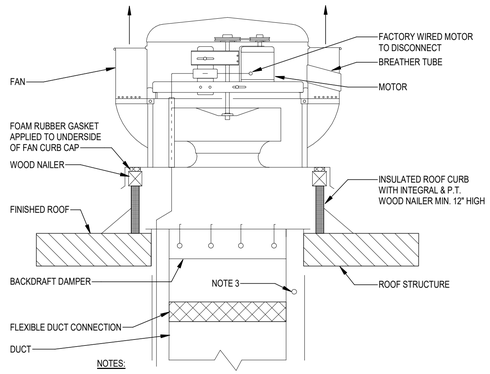
SCHEDULES

M401

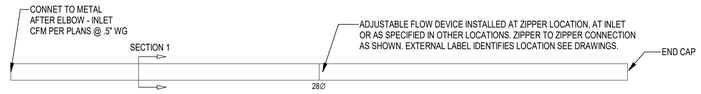


NOTES:

1. SECURE FAN TO CURB AS NECESSARY TO MEET CODE REQUIRED WIND LOADING.
2. SECURE CURB TO ROOF WITH SHEET METAL SCREWS, LAG BOLTS OR OTHER METHOD CONSISTENT WITH ROOF CONSTRUCTION AS NECESSARY TO MEET CODE REQUIRED WIND LOADING.
3. MINIMUM 1 1/4" CLEARANCE FOR ELECTRICAL CONDUIT.
4. SEE ROOF CURB AND TIE-DOWN DETAIL D/M502.

M420

G UPBLAST ROOF EXHAUST FAN



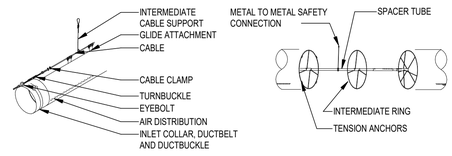
DUCTSOX VERONA FABRIC WITH INTERIOR SKELE CORE

FLOW CHARACTERISTICS - SECTION 1

ISOTHERMAL THROW BASED ON TERMINAL VELOCITY OF 50, 100 AND 150 FPM

ORIFICE AT 3 O'CLOCK POSITION = 38'-24'-16' SIZE 2
ORIFICE AT 4:30 POSITION = 38'-24'-16' SIZE 2
ORIFICE AT 6 O'CLOCK POSITION = 24'-15'-10' SIZE 2

CABLE WITH SKELE CORE



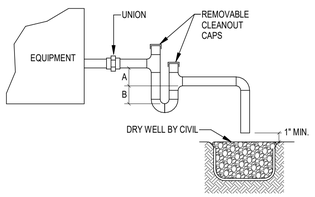
SUSPENSION DETAIL - 1 ROW CABLE

CUT AWAY OF SKELE CORE

INLET DETAIL

M465

H FABRIC DUCT



NOTES:

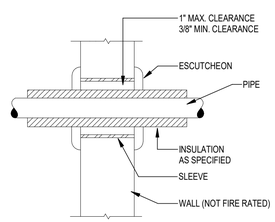
1. DRAIN LINE SHALL BE AT LEAST THE SAME SIZE AS THE CONNECTION ON THE DRAIN PAN (1" MIN.)
2. DRAIN LINE SHALL SLOPE 1/8" PER FOOT (MIN.)
3. SEE SPECIFICATIONS FOR PIPE AND INSULATION MATERIALS.

UNIT TYPE	A	B
DRAW-THRU	X PLUS 2"	X
BLOW-THRU	1" MIN.	2X

WHERE X=STATIC PRESSURE IN PAN

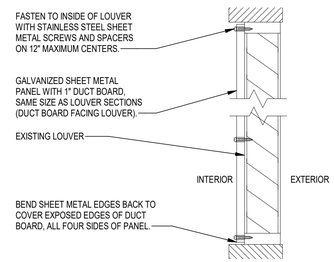
M443

J CONDENSATE DRAIN



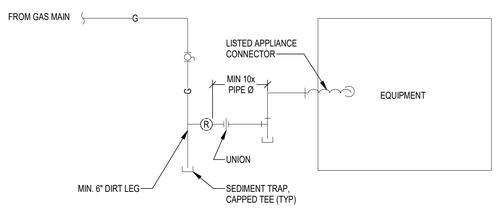
M462

D PIPE PENETRATION OF NON-FIRE RATED WALL



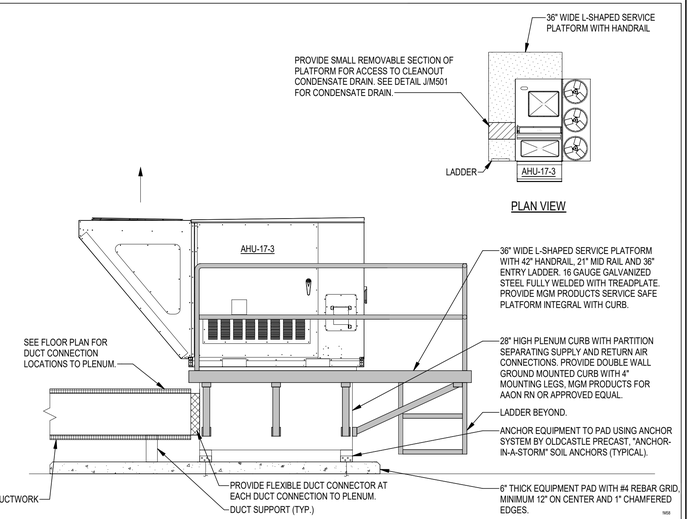
M432

E LOUVER CLOSURE



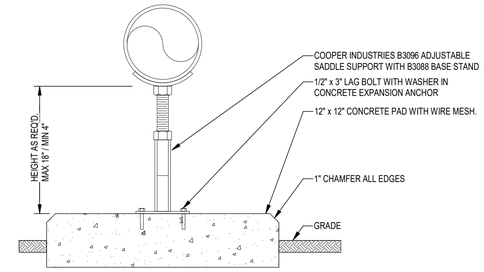
M400

F GAS APPLIANCE CONNECTION



M459

A PACKAGED AIR HANDING UNIT

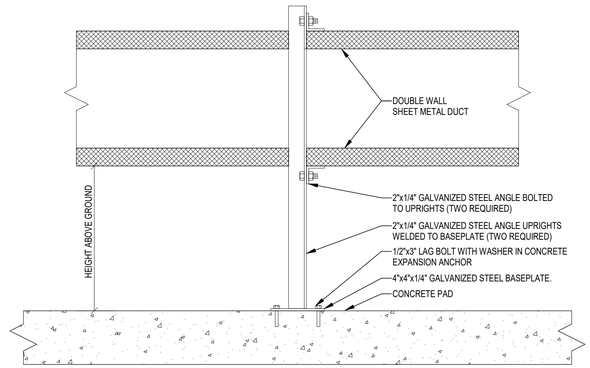


NOTE:

1. PROVIDE PIPING SUPPORTS AT MAXIMUM SPACING PER SPECIFICATION FOR APPLICABLE PIPE.

M/M3.3

B ADJUSTABLE PIPE SADDLE SUPPORT



NOTE: SEE SHEET M001 FOR DELEGATED DESIGN CALCULATION REQUIREMENTS.

M/T1.2

C EXTERIOR DUCT SUPPORTS

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RAA MIDDLE SCHOOL DINING EXPANSION PROJECT

LEON COUNTY SCHOOL BOARD

TALLAHASSEE, FLORIDA

PHASE III
100% SUBMITTAL

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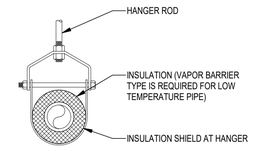
REVISION DATE	

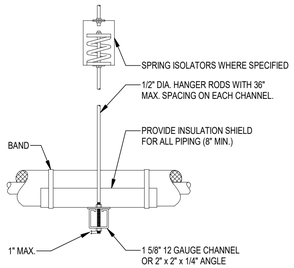
DETAILS

M501

G TYPICAL PIPE HANGERS



ADJUSTABLE CLEVIS HANGER



SIDE VIEW

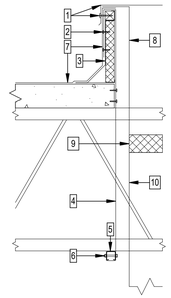
TRAPEZE HANGER FOR UP TO 1000 LB. UNIFORM LOAD

NOTES:

1. SEE SPECIFICATIONS FOR SPACING OF HANGERS.

M402.2

D ROOF CURB AND TIE-DOWN

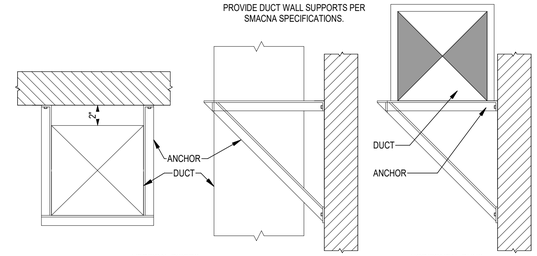


NOTES: (THIS DETAIL ONLY)

1. SECURE EQUIPMENT OR CURB CAP TO ROOF CURB WITH 3/8 "Ø x1" LAG BOLTS @ 12" O.C. ALL AROUND. CAULK BOLTS WITH SILICONE. APPLY CONTINUOUS FOAM RUBBER GASKET TO UNDERSIDE OF CURB CAP.
2. WRAP STRAP OVER TOP OF CURB AND ATTACH TO OUTSIDE OF CURB WITH FOUR STAINLESS STEEL SHEET METAL SCREWS.
3. PREFABRICATED INSULATED ROOF CURB WITH PRESSURE TREATED WOOD NAILER AND INTEGRAL CANT, MIN. 12" HIGH (SEE SPECIFICATIONS). PROVIDE RAISED CANT MODEL FOR INSULATED ROOF.
4. GALVANIZED STEEL STRAPS AT CURB CORNERS - SIMPSON "STRONG-TIE" CMSTC16, OR EQUAL. SECURE TO STRUCTURAL STEEL ANGLE WITH 4#12 SCREWS.
5. UNISTRUT BOLTED TO ROOF STRUCTURE (SPAN AT LEAST TWO BAR JOISTS).
6. WRAP STRAP AROUND THREE SIDES OF UNISTRUT AND FASTEN WITH 1/4" STAINLESS STEEL BOLT, WASHER, LOCK WASHER AND NUT.
7. ROOF MEMBRANE SHALL TURN UP ON OUTSIDE OF ROOF CURB AND COVER THE TIE-DOWN STRAPS. FASTEN TO WOOD NAILER AT TOP OF CURB.
8. PROVIDE DUCT (WHERE INDICATED ON PLANS) WITH FLANGE ATTACHED TO TOP OF ROOF CURB. ALLOW SPACE FOR DUCT INSULATION, IF REQUIRED.
9. FLEXIBLE DUCT CONNECTION.
10. SUPPORT LOWER SECTION OF DUCT FROM ROOF STRUCTURE.

M473.1

A DUCT SUPPORT ON EXTERIOR WALL



VERTICAL RISERS

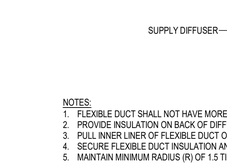
HORIZONTAL RUNS

NOTES:

1. BRACKETS ARE SIZED FOR 12 FEET OF DUCT, MAXIMUM.
2. LOCATE DUCTS AGAINST WALL OR MAXIMUM OF 2" AWAY FROM WALL.
3. SEE SHEET M001 FOR DELEGATED DESIGN CALCULATION REQUIREMENTS.

M214

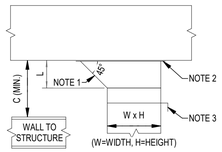
E TYPICAL DUCT TAKE-OFF FITTINGS



ROUND DUCT

D	E (NOTE 5)	WxH (NOTE 5)	TRUNK DUCT HEIGHT (B MIN.)	C	
				NO FIRE DAMPER	WITH FIRE DAMPER
6	8.5	12 x 6	8	9	12
8	8.5	12 x 6	8	9	12
10	9.5	16 x 6.75	10	10	13
12	10.5	18 x 8.5	12	11	14
14	10.5	20 x 9.5	12	11	14
16	12	24 x 12	14	13	16

DIMENSIONS BASED ON CROWN PRODUCTS CO., INC.



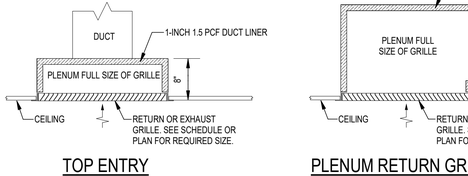
RECTANGULAR DUCT

NOTES:
1. 45° ENTRY.
2. 1" WIDE FLANGE WITH GASKET SEAL AROUND ENTIRE PERIMETER.
3. PROVIDE MANUAL BALANCING DAMPER. OPERATOR SHALL PENETRATE INSULATION.
4. USE ROUND TYPE TAKE-OFF FOR SUPPLY AIR TO NOT MORE THAN ONE TERMINAL.
5. USE ROUND TYPE TAKE-OFF FOR SUPPLY AIR TO NOT MORE THAN ONE TERMINAL. DIAMETER, PROVIDE TRANSITION FITTING OF EQUIVALENT AREA TO THE RUNOUT DUCT.

L = W/4 (4"MIN.)
H = B-2 (MAX.)
C = L+4 (WITH FIRE DAMPER)
C = L+2 (WITHOUT FIRE DAMPER)

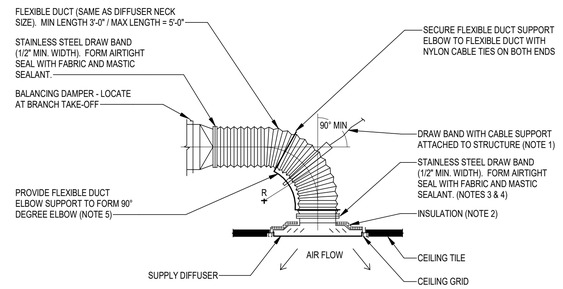
M502

B GAS SERVICE ENTRANCE DETAIL



M103

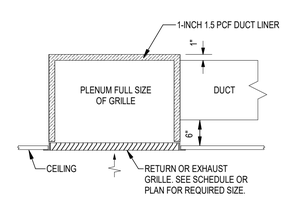
F FLEXIBLE DUCT CONNECTION TO SUPPLY DIFFUSER



NOTES:
1. FLEXIBLE DUCT SHALL NOT HAVE MORE THAN 1/2" SAG PER FOOT.
2. PROVIDE INSULATION ON BACK OF DIFFUSERS (SEE SPECIFICATIONS). SEAL VAPOR TIGHT WITH FABRIC AND MASTIC.
3. PULL INNER LINER OF FLEXIBLE DUCT OVER DIFFUSER COLLAR AND SECURE WITH DRAW BAND.
4. SECURE FLEXIBLE DUCT INSULATION AND OUTER JACKET WITH DRAW BAND.
5. MAINTAIN MINIMUM RADIUS (R) OF 1.5 TIMES THE DUCT DIAMETER.

M245

C RETURN OR EXHAUST CEILING GRILLE

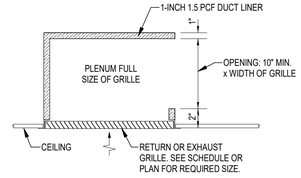


SIDE ENTRY

TOP ENTRY

NOTES:

1. INSTALL BLADES OF GRILLE SO SIGHT LINE INTO PLENUM IS OBSCURED FROM ROOM.
2. PROVIDE APPROPRIATE MOUNTING HARDWARE FOR GRILLE TO ACCOMMODATE CEILING TYPE.



PLENUM RETURN GRILLES

M213

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DETAILS

M502

SYMBOLS, NOTES, ABBREVIATIONS, ETC.

IDENTIFICATION LETTERS

	FIRST - LETTER	SUCCEEDING - LETTERS	
	MEASURED OR INITIATING VARIABLE	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION
A	ANALYSIS	ALARM	.
B	BURNER, COMBUSTION	USER'S CHOICE (*)	USER'S CHOICE (*)
C	USER'S CHOICE (*)	.	CONTROL
D	USER'S CHOICE (*)	DIFFERENTIAL	.
E	VOLTAGE	SENSOR (PRIMARY ELEMENT)	.
F	FLOW RATE, FLOW	.	.
G	GAS	GLASS, VIEWING DEVICE	.
H	HAND (MANUAL)	.	.
I	CURRENT (ELECTRICAL)	INDICATE	.
J	POWER	.	.
K	TIME, SCHEDULE	.	.
L	LEVEL	LIGHT (PILOT)	.
M	MOISTURE, HUMIDITY	.	.
N	USER'S CHOICE (*)	USER'S CHOICE (*)	USER'S CHOICE (*)
O	USER'S CHOICE (*)	ORIFICE, RESTRICTION	.
P	PRESSURE, VACUUM	POINT (TEST) CONNECTION	.
Q	QUANTITY	INTEGRATE / TOTALIZE	.
R	RADIATION	RECORD	.
S	SPEED, FREQUENCY	.	SWITCH
T	TEMPERATURE	.	TRANSMIT
U	MULTIVARIABLE	MULTIFUNCTION	MULTIFUNCTION
V	VIBRATION, MECHANICAL ANALYSIS	.	VALVE, DAMPER, LOUVER
W	WEIGHT, FORCE	WELL, PROBE	.
X	SMOKE, FIRE	UNCLASSIFIED	UNCLASSIFIED
Y	EVENT, STATE, OR PRESENCE	.	RELAY, COMPUTE, CONVERT
Z	POSITION, DIMENSION	.	DRIVER, ACTUATOR, UNCLASS - IFIED FINAL CONTROL ELEMENT

(*) WHEN USED, EXPLANATION IS SHOWN ADJACENT TO INSTRUMENT SYMBOL.

GENERAL INSTRUMENT / FUNCTION SYMBOLS

CONTROL DEVICE / INSTRUMENT

(XX ##) YY

XX = VARIABLE OR FUNCTION
YY = MODIFIER OR SETPOINT
= INSTRUMENT NUMBER

INPUT / OUTPUT PARAMETER

(XY)

X = ANALOG (A) OR DIGITAL (D)
Y = INPUT (I) OR OUTPUT (O)

EXAMPLES:

(TS 01) LOW — LOW TEMPERATURE SWITCH

(GTE 01) CO2 — GAS TRANSMITTER & ELEMENT FOR CO2

MODIFIERS:

AVG	AVERAGE
CO	CARBON MONOXIDE
CO2	CARBON DIOXIDE
DPT	DEWPOINT TEMPERATURE
ENT	ENTHALPY
EX	EXISTING
FC	FAIL CLOSED
FO	FAIL OPEN
FTL	FAIL TO LAST POSITION
HIGH	HIGH LIMIT
HUM	RELATIVE HUMIDITY
LOW	LOW LIMIT
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
O2	OXYGEN
SCR	SILICONE CONTROLLED RECTIFIER
VOC	VOLATILE ORGANIC COMPOUND
WBT	WET BULB TEMPERATURE

(X) KEY NOTE

SEQUENCE OF OPERATION DEFINITIONS

ENABLE	ALLOW AN OPERATION TO START
START	REQUIRE AN OPERATION TO START
DISABLE	PREVENT AN OPERATION FROM STARTING
STOP	REQUIRE AN OPERATION TO STOP
PROVE	COMMAND EQUALS STATUS
100%	MAXIMUM COMMAND OR FULLY OPEN
0%	MINIMUM COMMAND OR FULLY CLOSED

MECHANICAL COMPONENTS (SHOWN IN DIAGRAMS)

	FAN
X / C	COIL — X = COOLING (C), HEATING HOT WATER (H), STEAM (S), REFRIGERANT (R), HEAT PIPE (HP), ELECTRIC HEATING (EH), RUN-AROUND LOOP (RL), GAS HEATING (GH), HOT GAS REHEAT(HG)
	DAMPER
	FILTER

ELECTRICAL COMPONENTS & CONTROLLER (SHOWN IN DIAGRAMS)

VFD	VARIABLE FREQUENCY DRIVE (PROVIDED BY OTHERS) - SEE WIRING DETAIL C/MC501
CNT	MOTOR RATED CONTACTOR (PROVIDED BY DIV. 25) - SEE WIRING DETAIL B/IC002
C	RELAY (NORMALLY OPEN)
C	RELAY (NORMALLY CLOSED)
	TRANSFORMER
LAN	NETWORK COMMUNICATION LINK TO BAS
M	ELECTRIC MOTOR

APPLICABLE CODES

PERFORM WORK IN ACCORDANCE WITH THE FOLLOWING CODES AND ANY APPLICABLE STATUTES, ORDINANCES, CODES, AND REGULATIONS OF GOVERNMENTAL AUTHORITIES HAVING JURISDICTION.

1. ASHRAE
   a. STANDARD 15 — SAFETY STANDARD FOR REFRIGERATION SYSTEMS - 2019
   b. STANDARD 55 — THERMAL ENVIRONMENTAL CONDITIONS FOR HUMAN OCCUPANCY - 2017
   c. STANDARD 62.1 — VENTILATION STANDARD FOR ACCEPTABLE INDOOR AIR QUALITY - 2019
   d. STANDARD 90.1 — ENERGY STANDARD FOR BUILDINGS EXCEPT LOW RISE RESIDENTIAL BUILDINGS - 2019
2. OCCUPATIONAL SAFETY AND HEALTH REGULATIONS (OSHA).
3. FIRE CODES
   a. NFPA 1 — FIRE CODE - 2021 (FLORIDA EDITION)
   b. NFPA 13 — STANDARD FOR THE INSTALLATION OF SPRINKLER SYSTEM - 2019
   c. NFPA 25 — STANDARD FOR THE INSPECTION, TESTING AND MAINTENANCE OF WATER-BASED FIRE PROTECTION SYSTEMS - 2017
   d. NFPA 54 — NATIONAL FUEL GAS CODE - 2021
   e. NFPA 70 — NATIONAL ELECTRICAL CODE - 2020
   f. NFPA 72 — NATIONAL FIRE ALARM AND SIGNALING CODE - 2019
   g. NFPA 90A — STANDARD FOR THE INSTALLATION OF AIR CONDITIONING AND VENTILATION SYSTEMS - 2021
   h. NFPA 90B — STANDARD FOR THE INSTALLATION OF WARM AIR HEATING AND AIR CONDITIONING SYSTEMS - 2021
   i. NFPA 91 — STANDARD FOR THE INSTALLATION OF BLOWER AND EXHAUST SYSTEMS - 2020
   j. NFPA 101 — LIFE SAFETY CODE - 2021 (FLORIDA EDITION)
4. FLORIDA BUILDING CODE, 2023 8th EDITION
   a. BUILDING CODE
   b. EXISTING BUILDING CODE
   c. ENERGY CONSERVATION CODE
   d. MECHANICAL CODE
   e. PLUMBING CODE
   f. FUEL GAS CODE
   g. ACCESSIBILITY CODE
5. FLORIDA STATUTES
   a. CHAPTER 471 — ENGINEERING
   b. CHAPTER 533.80 — BUILDING CONSTRUCTION STANDARDS; FLORIDA BUILDING CODE - ENFORCEMENT
6. FLORIDA ADMINISTRATIVE CODE
   a. CHAPTER 6A-2 — EDUCATIONAL FACILITIES
   b. CHAPTER 9B-7 — FLORIDA BUILDING COMMISSION HANDICAPPED ACCESSIBILITY STANDARDS
   c. CHAPTER 61G15-34 — RESPONSIBILITY RULES OF PROFESSIONAL ENGINEERS CONCERNING THE DESIGN OF MECHANICAL SYSTEMS
   d. CHAPTER 69A-3 — FIRE PREVENTION - GENERAL PROVISIONS
   e. CHAPTER 69A-58 — FIRE SAFETY IN EDUCATIONAL FACILITIES
   f. CHAPTER 69A-60 — THE FLORIDA FIRE PREVENTION CODE

RESOLVE, IN WRITING, ANY CODE VIOLATION DISCOVERED IN CONTRACT DOCUMENTS WITH THE ENGINEER PRIOR TO BIDDING. AFTER AWARD OF THE CONTRACT, MAKE ANY CORRECTION OR ADDITITION NECESSARY FOR COMPLIANCE WITH APPLICABLE CODES AT NO ADDITIONAL COST TO OWNER.

THE CONTRACTOR SHALL INCLUDE IN THE WORK, WITHOUT EXTRA COST TO THE OWNER, ANY LABOR, MATERIALS, SERVICES, APPARATUS, AND DRAWINGS REQUIRED TO COMPLY WITH ALL APPLICABLE LAWS, ORDINANCES, RULES, AND REGULATIONS.

WHERE THERE IS CONFLICT BETWEEN THE CONTRACT DOCUMENTS AND THE APPLICABLE CODES, THE CODES SHALL GOVERN, EXCEPT WHERE THE REQUIREMENTS OF THE CONTRACT DOCUMENTS ARE MORE STRINGENT.

INSTRUMENTATION AND CONTROL NOTES

1. THE INTENT OF THE INSTRUMENTATION AND CONTROL DRAWINGS IS TO PROVIDE A COMPLETE AND OPERATIONAL SYSTEM IN ACCORDANCE WITH THE SEQUENCE(S) OF OPERATION. THE DIAGRAMS, POINTS LISTS, AND SEQUENCES OF OPERATION INCLUDED HEREIN DESCRIBE THE INTENDED SEQUENCES OF OPERATION FOR SYSTEMS AND MAJOR COMPONENTS BUT DO NOT DEFINE IN DETAIL THE OPERATION OF MINOR COMPONENTS, RELAYS, SWITCHES, WIRING, OR OTHER SMALL DEVICES REQUIRED FOR THE PROPER OPERATION OF THE CONTROL SYSTEM. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY COMPONENTS AND/OR WIRING TO ACHIEVE THE SEQUENCE OF OPERATION.
2. PROVIDE ALL CONTROL WIRING, CONDUIT, RELAYS, AND ELECTRICAL WORK REQUIRED AS INTEGRAL PART OF THE INSTRUMENTATION AND CONTROL SYSTEM UNLESS NOTED OTHERWISE. WORK SHALL COMPLY WITH REQUIREMENTS OF DIVISIONS 26, 27, AND 28 DRAWINGS AND SPECIFICATIONS.
3. ALL BAS CONFIGURATIONS (SETPOINTS, TIME DELAYS, RESET LIMITS, TUNING PARAMETERS, ETC) SHALL BE ADJUSTABLE BY THE OPERATOR THROUGH BAS WORKSTATION OR PORTABLE OPERATOR TERMINAL WITHOUT ANY HARDWARE OR SOFTWARE REVISIONS.
4. COORDINATE ALL WORK WITH OTHER TRADES INVOLVED. INTERFACE EQUIPMENT AND WIRING SHALL BE PROVIDED AT NO ADDITIONAL COST TO THE OWNER.
5. COORDINATE BUILDING OCCUPANCY SCHEDULES (OCCUPIED AND UNOCCUPIED) WITH BUILDING OWNER.
6. COORDINATE INSTALLATION LOCATION OF ALL CONTROL DEVICES, INCLUDING BUT NOT LIMITED TO: SENSORS, METERS, SWITCHES, VALVES, DAMPERS, ETC. COORDINATE AND ENSURE CONTROL DEVICES ARE INSTALLED PER THE MANUFACTURER'S RECOMMENDATIONS, INCLUDING UPSTREAM AND DOWNSTREAM DIAMETERS FOR FLOW METERS, PROPER ORIENTATION TO PREVENT MOISTURE INTRUSION, AND DISTANCES FROM AIR OUTLETS TO ENSURE PROPER TEMPERATURE READINGS.
7. LOCATE THERMOSTATS AND OTHER WALL-MOUNTED CONTROL DEVICES REQUIRING OCCUPANCY MONITORING OR ADJUSTMENT AT AN ELEVATION 4'-0" ABOVE FINISHED FLOOR, IN ACCORDANCE WITH ADA REGULATIONS.
8. IF FIELD ADJUSTMENTS ARE MADE TO THE BAS CONFIGURATIONS DURING FINAL TESTING / VERIFICATION /COMMISSIONING, SET THE FACTORY DEFAULT VALUES IN THE CONTROLLERS TO MATCH FINAL VALUES.
9. PROVIDE ACCESS PANEL AT EACH LOCATION WHERE A VALVE, DAMPER, OR OTHER DEVICE REQUIRING SERVICE IS LOCATED ABOVE AN INACCESSIBLE CEILING OR INSIDE A WALL. ACCESS PANELS IN RATED CONSTRUCTION SHALL BEAR UL LABEL. COORDINATE ACCESS PANEL LOCATION WITH ARCHITECT/ENGINEER PRIOR TO INSTALLATION.
10. PROVIDE DUCT ACCESS DOOR AT EACH AIRFLOW MEASURING STATION.
11. CONTROLLED SYSTEMS SHALL AUTOMATICALLY RESET ON EMERGENCY POWER AND RESTORATION OF NORMAL POWER, UNLESS NOTED OTHERWISE. PROVIDE TIME DELAYS ON RESTART, AS NECESSARY, TO STAGGER THE START OF EQUIPMENT SO THAT ALL MOTORS DO NOT ATTEMPT TO START AT THE SAME TIME.
12. SAFETIES SHALL BE HARDWIRED UNLESS NOTED OTHERWISE.

COMMISSIONING NOTES

1. THE BUILDING MECHANICAL SYSTEMS ARE EXEMPT FROM COMMISSIONING REQUIREMENTS IN ACCORDANCE WITH THE FLORIDA BUILDING CODE – ENERGY CONSERVATION, SECTION C408 "SYSTEMS COMMISSIONING". THE TOTAL MECHANICAL EQUIPMENT CAPACITY IS LESS THAN 480 MBH COOLING CAPACITY AND 600 MBH HEATING CAPACITY.

CONTROL DEVICES (SHOWN ON FLOOR PLANS)

T	ROOM THERMOSTAT/TEMPERATURE SENSOR
H	ROOM HUMIDISTAT/HUMIDITY SENSOR
DP	DIFFERENTIAL PRESSURE SENSOR
CO2	CARBON DIOXIDE SENSOR
DDC	DIRECT DIGITAL CONTROL PANEL

MISCELLANEOUS

— - — - —	1 HOUR FIRE RATED WALL

GENERAL NOTES

1. DRAWINGS ARE DIAGRAMMATIC, INDICATIVE OF WORK TO BE FURNISHED AND INSTALLED UNDER THIS CONTRACT. REFER TO ARCHITECTURAL AND STRUCTURAL DRAWINGS FOR ALL DIMENSIONS.
2. FIELD VERIFY ALL DIMENSIONS AND ALL CONDITIONS. IF THE CONTRACTOR IS UNABLE TO INTERPRET THE CONTRACT DOCUMENTS, HE IS RESPONSIBLE TO REQUEST CLARIFICATION IN WRITING TO THE ARCHITECT. IF HE PROCEEDS WITH ANY WORK BEFORE OBTAINING CLARIFICATION, HE SHALL BE HELD RESPONSIBLE FOR ALL DEFICIENCIES ASSOCIATED THEREWITH.
3. BEFORE SUBMITTING FOR THE WORK, EACH BIDDER WILL BE RESPONSIBLE TO EXAMINE THE PREMISES AND SATISFY HIMSELF AS TO THE EXISTING CONDITIONS UNDER WHICH HE WILL BE OBLIGATED TO OPERATE AND COMPLETE THE WORK UNDER THIS CONTRACT. NO ALLOWANCE WILL SUBSEQUENTLY BE MADE IN THIS CONNECTION ON BEHALF OF THE CONTRACTOR FOR ANY ERROR OR OMISSION ON HIS PART.
4. THE CONTRACTOR SHALL PAY FOR ALL INSPECTION PERMITS, CERTIFICATES, CONNECTION FEES, SYSTEM DEMAND CHARGES AND LICENSE FEES IN CONNECTION WITH HIS WORK.
5. CONSTRUCTION MANAGER SHALL BE RESPONSIBLE FOR COORDINATING WORK OF ALL SUBCONTRACTORS TO AVOID INTERFERENCES.
6. ALL WORK SHALL COMPLY WITH APPLICABLE O.S.H.A. AND E.P.A. REGULATIONS AND GUIDELINES.
7. ERECT AND MAINTAIN ALL REASONABLE PRECAUTIONS FOR SAFETY AND HEALTH INCLUDING POSTING DANGER SIGNS AND OTHER WARNINGS AGAINST HAZARDS INCLUDING PROMULGATING SAFETY REGULATIONS. PROVIDE SAFETY PRECAUTIONS AND BARRICADES FOR PEDESTRIANS AT CONSTRUCTION VEHICLE ACCESS AND EGRESS LOCATIONS.
8. COORDINATE AND SEQUENCE ALL DEMOLITION, CLEANING AND CONSTRUCTION WORK. SUBMIT A COMPLETELY DETAILED CONSTRUCTION SCHEDULE PRIOR TO PRE-CONSTRUCTION CONFERENCE.
9. THE CONTRACTOR SHALL STRICTLY BE HELD TO THE PROJECT SCHEDULE. HE SHALL PROVIDE SUFFICIENT MANPOWER AND EQUIPMENT TO FULLY MOBILIZE, PROCEED WITH AND COMPLETE THE WORK.
10. THE CONTRACTOR SHALL BE RESTRICTED TO AREAS SPECIFIED BY THE OWNER FOR ON-SITE STORAGE OF CONSTRUCTION MATERIALS. THE CONTRACTOR IS RESPONSIBLE FOR THE PROTECTION AND SECURITY OF ALL EQUIPMENT AND MATERIALS.
11. THE CONTRACTOR SHALL MAINTAIN A CLEAN WORK ENVIRONMENT AT ALL TIMES AND SHALL CLEAN CONSTRUCTION SITE OF ALL DEBRIS AT COMPLETION OF THE JOB AND BEFORE FINAL PAYMENT IS MADE.
12. THE CONTRACTOR SHALL FURNISH "AS-BUILT" DRAWINGS TO THE ARCHITECT AT COMPLETION OF CONSTRUCTION.
13. CONTRACTOR'S USE OF AN APPROVAL STAMP ON DOCUMENTS SUBMITTED AS SHOP DRAWINGS, PRODUCT DATA, SAMPLES AND SIMILAR SUBMITTALS CERTIFIES THAT THE CONTRACTOR HAS COMPLIED WITH THE CONTRACT DOCUMENT REQUIREMENTS RELATED TO "SHOP DRAWINGS, PRODUCT DATA AND SAMPLES".
14. THE CONTRACTOR SHALL NOT BE RELIEVED OF RESPONSIBILITY FOR DEVIATIONS FROM REQUIREMENTS OF THE CONTRACT DOCUMENTS BY THE ARCHITECT/ ENGINEER'S APPROVAL OF SHOP DRAWINGS, PRODUCT DATA, SAMPLES OR SIMILAR SUBMITTALS UNLESS THE CONTRACTOR HAS SPECIFICALLY INFORMED THE ARCHITECT/ENGINEER IN WRITING OF SUCH DEVIATION AT THE TIME OF SUBMITTAL AND THE ARCHITECT/ENGINEER HAS GIVEN WRITTEN APPROVAL TO THE SPECIFIC DEVIATION. THE CONTRACTOR SHALL NOT BE RELIEVED OF RESPONSIBILITY FOR ERRORS OR OMISSIONS IN SHOP DRAWINGS, PRODUCT DATA, SAMPLES OR SIMILAR SUBMITTALS BY THE ARCHITECT/ENGINEER'S APPROVAL THEREOF.
15. PRIOR TO INSTALLATION, COORDINATE AND ADJUST THE FINAL LOCATION OF ALL WALL MOUNTED DEVICES AND EQUIPMENT WITH ALL CASEWORK, SHELVING, BULLETIN BOARDS OR OTHER WALL MOUNTED FURNISHINGS.
16. NOTE ANY SPECIAL REQUIREMENTS INVOLVED IN INSTALLING THE EQUIPMENT IN THE BUILDING. DISMANTLING AND REASSEMBLING OF ANY EQUIPMENT SHALL BE DONE AS REQUIRED FOR ENTRY INTO THE BUILDING AND EQUIPMENT ROOMS.
17. PROTECT THE ROOF FROM DAMAGE WHENEVER ANY WORK ON THE ROOF IS REQUIRED.
18. SUPPORTS AND HANGERS SHALL PRESENT A NEAT, ORDERLY APPEARANCE.
19. ALL ROOF MOUNTED EQUIPMENT SHALL BE SECURED TO STRUCTURE TO RESIST A 130 MPH WIND LOAD.
20. CONTRACTOR SHALL MAINTAIN THE INTEGRITY OF ALL FIRE, SMOKE, AND ACOUSTICAL WALL ASSEMBLIES.
21. BEAM AND FLOOR PENETRATIONS SHALL BE APPROVED BY THE STRUCTURAL ENGINEER. BEAM SLEEVES AND BEAM REINFORCING APPROVED BY STRUCTURAL ENGINEER SHALL BE FURNISHED AND INSTALLED BY THIS CONTRACTOR.
22. CONTRACTOR SHALL FURNISH U.L. APPROVED DRAWINGS FOR EACH TYPE OF FIRE RATED ASSEMBLY PENETRATION BY DUCTS, PIPES OR CONDUITS. THESE DRAWINGS SHALL BE DISPLAYED ON THE JOB SITE AT ALL TIMES DURING CONSTRUCTION. SEE SPECIFICATIONS.
23. CONTRACTOR SHALL GUARANTEE THE WORK AND MATERIALS FOR A PERIOD OF ONE YEAR FROM DATE OF FINAL ACCEPTANCE. THIS GUARANTEE SHALL BE IN ADDITION TO THE WARRANTIES PROVIDED BY MATERIAL SUPPLIERS AND MANUFACTURERS.
24. THE BUILDING WILL REMAIN OCCUPIED DURING CONSTRUCTION. THE OWNER WILL MAKE ALL REASONABLE EFFORTS TO ASSIST THE CONTRACTOR IN COMPLETING THE WORK. COORDINATE ALL WORK WITH THE OWNER'S DESIGNATED REPRESENTATIVE.
25. EXIT WAYS SHALL BE KEPT CLEAR. IF AN EXIT MUST BE TEMPORARILY BLOCKED, PROVIDE THE REQUIRED BARRICADE AND DIRECTIONAL SIGNS FOR TEMPORARY EXITING AND SAFETY.
26. REMOVE AND REPAIR OR RE-INSTALL EXISTING CEILING ASSEMBLIES AS REQUIRED. REPLACE ANY ASSEMBLIES DAMAGED OR SOILED DURING CONSTRUCTION.
27. PROVIDE PROPER PROTECTIVE MEASURES TO PROTECT EXISTING FURNITURE, CARPET AND FINISHES DURING THE COURSE OF CONSTRUCTION. TAKE CARE NOT TO DAMAGE EXISTING SURFACES. REPAIR TO MATCH EXISTING CONDITIONS AS REQUIRED.
28. SEAL ALL HOLES IN WALLS, CEILINGS, FLOORS, ETC. TO MATCH EXISTING ADJACENT SURFACES WHERE EQUIPMENT, CONDUIT AND/OR PIPING ARE REMOVED.
29. ALL EXISTING EQUIPMENT IS THE PROPERTY OF THE OWNER AND SHALL BE DISPOSED OF AS DIRECTED BY THE OWNER. DISPOSE OF ALL MATERIALS AND EQUIPMENT SHOWN TO BE REMOVED IN ACCORDANCE WITH LOCAL REGULATIONS.
30. ITEMS REMOVED AND SAVED FOR REUSE SHALL BE PROTECTED FROM DAMAGE DURING CONSTRUCTION. CONTRACTOR SHALL IDENTIFY ANY DEFECTIVE MATERIALS PRIOR TO DEMOLITION. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DAMAGE TO MATERIALS AT PROJECT COMPLETION NOT IDENTIFIED PRIOR TO DEMOLITION.
31. RELOCATE, AS REQUIRED, ANY EXISTING WIRE AND CONDUIT WHICH INTERFERES WITH INSTALLATION OF THE NEW WORK.
32. REMOVE ALL ELECTRICAL EQUIPMENT (CONDUIT, POWER & CONTROL WIRING, DISCONNECT SWITCHES, STARTERS, ETC.) RELATED TO EQUIPMENT BEING REMOVED OR REPLACED.
33. CONTRACTOR SHALL COMPLY WITH "TRENCH SAFETY ACT" (FLORIDA STATUTE 553 PART III) AND OSHA STANDARD 29 CFR 1926.650 SUBPART P FOR ALL UTILITY TRENCHES IN EXCESS OF 5 FEET DEEP. CONTRACTOR SHALL INDICATE WITHIN HIS BID RESPONSE A REFERENCE TO THE TRENCH SAFETY STANDARD AND A SEPARATE LINE ITEM COST OF COMPLIANCE WITH STANDARD.

ABBREVIATIONS

AHU	AIR HANDLING UNIT	N/A	NOT APPLICABLE
BAS	BUILDING AUTOMATION SYSTEM	NIS	NOT IN SCOPE
CFM	CUBIC FEET PER MINUTE	OA	OUTSIDE AIR
CU	CONDENSING UNIT	RA	RETURN AIR
DDC	DIRECT DIGITAL CONTROL PANEL	REF	REFRIGERANT
EA	EXHAUST AIR	RF	RETURN FAN
EF	EXHAUST FAN	RPM	REVOLUTIONS PER MINUTE
EX	EXISTING	SA	SUPPLY AIR
°Fdb	DEGREES FAHRENHEIT DRY BULB	SF	SUPPLY FAN
°Fwb	DEGREES FAHRENHEIT WET BULB	TYP	TYPICAL
FPM	FEET PER MINUTE	UH	UNIT HEATER
FT	FEET	UNO	UNLESS NOTED OTHERWISE
HP	HEAT PUMP UNIT OR HORSEPOWER	VAV	VARIABLE AIR VOLUME
IN	INCHES	VFD	VARIABLE FREQUENCY DRIVE
IOT	INTERNET OF THINGS	WG	WATER GAUGE
LAN	LOCAL AREA NETWORK		

DRAWING INDEX

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RAA MIDDLE SCHOOL DINING EXPANSION PROJECT
TALLAHASSEE, FLORIDA
LEON COUNTY SCHOOL BOARD

PHASE III
100% SUBMITTAL

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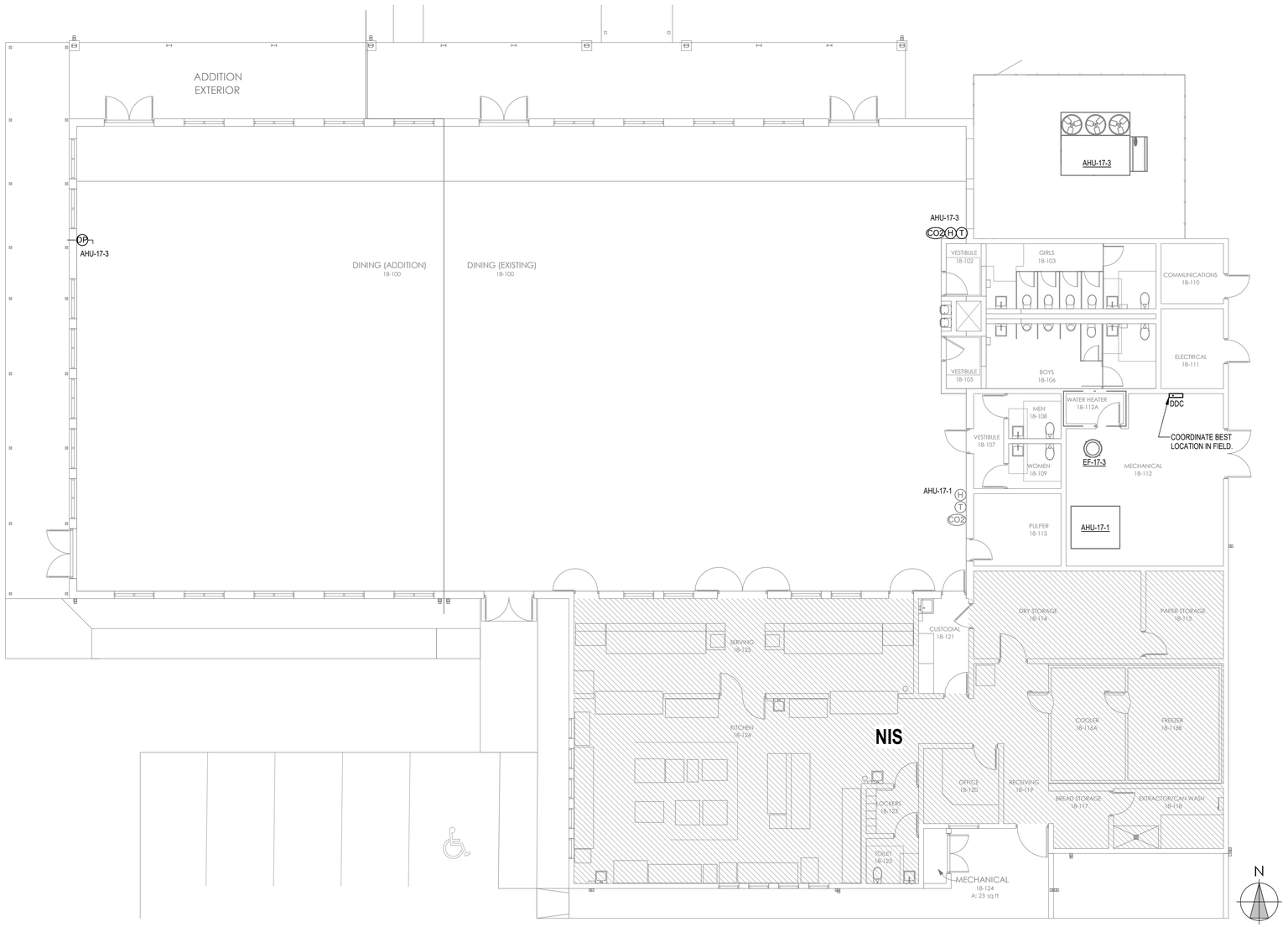
REVISION DATE	

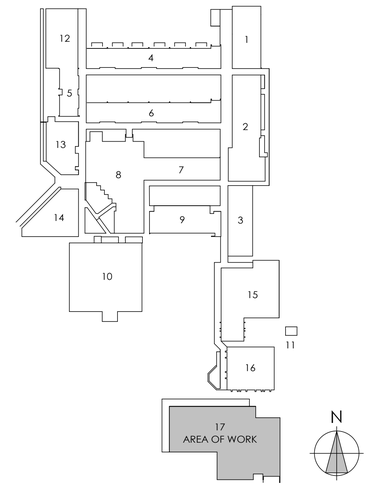
GENERAL NOTES, LEGENDS & SCHEDULES

MC001



1 MC101 RENOVATION PLAN
SCALE: 1/8" = 1'-0"

KEY PLAN



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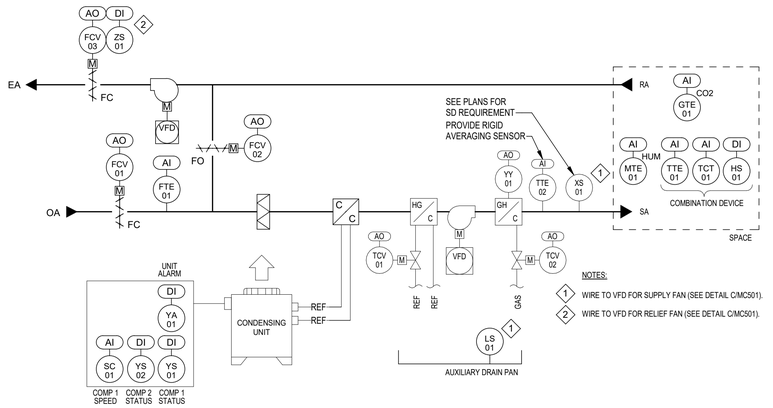
RENOVATION PLAN

MC101

SZVAV AIR HANDLING UNIT		POINT TYPE					CONTROL TYPE			EQUIP. DESIG.	SCHEM. DESIG.	NOTES
POINT DESCRIPTION	UNITS	ANALOG IN	ANALOG OUT	DIGITAL IN	DIGITAL OUT	INTEG. POINT	P	I	D			
SUPPLY FAN START/STOP	ON/OFF				1						YC-01	1
SUPPLY FAN STATUS	ON/OFF			1							IS-01	1
SUPPLY FAN SPEED	%		1				X	X			SCT-01	1
RELIEF FAN START/STOP	ON/OFF				1						YC-02	1
RELIEF FAN STATUS	ON/OFF			1							IS-02	1
RELIEF FAN SPEED	%		1				X	X			SCT-02	1
OUTSIDE AIR DAMPER	% OPEN		1				X	X			FCV-01	
RETURN AIR DAMPER	% OPEN		1								FCV-02	
RELIEF AIR DAMPER	OPN/CLS		1								FCV-03	
COMPRESSOR STATUS	ON/OFF			2							YS-01,02	2
VARIABLE SPEED COMPRESSOR SPEED	%		1								SC-01	
HOT GAS REHEAT VALVE	% OPEN		1				X	X			TCV-01	
UNIT ALARM	ON/OFF			1							YA-01	
GAS HEAT	% OPEN		1								TCV-02	
SUPPLY AIR TEMPERATURE	DEG F	1									TTE-02	
SPACE HUMIDITY	%	1									MTE-01	
SPACE TEMPRATURE	DEG F	1									TTE-01	
SPACE TEMPERATURE SET-POINT ADJUST	DEG F		1								TCT-01	
TENANT OVERRRIDE	ON/OFF			1							HS-01	
SMOKE DETECTOR	NORMAL / ALARM			1							XS-01	1
FLOAT SWITCH	NORMAL / ALARM			1							LS-01	1
DAMPER POSITION SWITCH	OPN/CLS			1							ZS-01	1
OUTSIDE AIRFLOW	CFM	1									FTE-01	
POINTS (SUB-TOTAL)	#	4	9	9	2							
POINTS (TOTAL WITH SPARE)	#	5	10	10	3							

NOTES:
1 HARDWIRE TO VFD, MOTOR STARTER, OR MOTOR CONTACTOR. SEE DETAILS SHEET IC02.
2 NUMBER OF POINTS VARIES DEPENDING ON NUMBER OF COMPRESSORS.



SINGLE ZONE VAV PACKAGED UNIT

1. GENERAL

A. THE PACKAGED AIR UNIT SHALL BE CONTROLLED BY A SEPARATE, STAND-ALONE APPLICATION SPECIFIC CONTROLLER (ASC) PROVIDED AND CONFIGURED BY THE EQUIPMENT MANUFACTURER. THE ASC SHALL MONITOR AND CONTROL THE UNIT IN A STAND-ALONE MODE OR AS DIRECTED BY THE BAS. A SEPARATE, STAND-ALONE, NETWORK CONTROLLER (NC) OR PROGRAMMABLE APPLICATION CONTROLLER (PAC) SHALL BE PROVIDED BY THE CONTROLS CONTRACTOR TO ALLOW FOR THE ADDITIONAL FUNCTIONS SPECIFIED HEREIN. ALL CONTROL LOGIC SHALL RESIDE IN THE CONTROL PANEL SERVING THE EQUIPMENT.
B. THE CONTROLS CONTRACTOR SHALL PROVIDE HARD-WIRED CONNECTIONS FROM THE BAS TO THE UNIT CONTROL PANEL TO FULLY CONTROL THE UNIT.
C. THE CONTROLS CONTRACTOR SHALL PROVIDE ALL WIRING AND COMPONENTS NECESSARY TO INTEGRATE WITH THE BACNET INTERFACE, PROVIDED BY THE EQUIPMENT MANUFACTURER. MAP ALL POINTS FROM THE UNIT TO THE BAS.
D. THE ASC SHALL RESIDE ON A SUB-NETWORK OF THE PROGRAMMABLE APPLICATION CONTROLLERS.
E. ALL SET-POINTS, TIME DELAYS, DEAD-BANDS, RESET LIMITS, SELECTABLE POINTS, AND OBJECTS SHALL BE AVAILABLE TO THE USER VIA DYNAMIC GRAPHICS OR TEXT-BASED INTERFACE WITHOUT REQUIRING THE USER TO EDIT THE APPLICATION PROGRAM.

2. RUN CONDITIONS

A. SPACE TEMPERATURE AND HUMIDITY SET-POINTS:
1. PROVIDE OCCUPIED SPACE TEMPERATURE COOLING (74°F, ADJ) AND HEATING (70°F, ADJ) SET-POINTS. PROVIDE UNOCCUPIED SPACE TEMPERATURE COOLING (80°F, ADJ) AND HEATING (65°F, ADJ) SET-POINTS.
2. PROVIDE AN OCCUPIED SPACE HUMIDITY SET-POINT (55%, ADJ). PROVIDE AN UNOCCUPIED SPACE HUMIDITY SET-POINT (60%, ADJ).

B. OCCUPIED MODE: ENABLE THE UNIT BASED ON AN OCCUPIED TIME SCHEDULE (MON-FRI = 7:00 AM – 6:00 PM / SAT – SUN = OFF, ADJ).
1. COOLING MODE: IF THE OUTSIDE AIR TEMPERATURE RISES ABOVE THE COOLING ENABLE SET-POINT (75°F, ADJ) PLUS A DEAD-BAND, THEN INITIATE COOLING MODE. DISABLE COOLING MODE IF THE OUTSIDE AIR TEMPERATURE IS BELOW THE COOLING LOCKOUT SET-POINT (50°F, ADJ).
2. HEATING MODE: IF THE OUTSIDE AIR TEMPERATURE FALLS BELOW THE HEATING ENABLE SET-POINT (55°F, ADJ) MINUS A DEAD-BAND, THEN INITIATE HEATING MODE. DISABLE HEATING MODE IF THE OUTSIDE AIR TEMPERATURE IS ABOVE THE HEATING LOCKOUT SET-POINT (70°F, ADJ).
3. DEHUMIDIFICATION MODE: IF THE SPACE HUMIDITY RISES ABOVE THE SPACE HUMIDITY SET-POINT (55%, ADJ), THEN ENABLE DEHUMIDIFICATION MODE.
4. VENT MODE: IF THE UNIT IS OPERATING IN OCCUPIED MODE AND THERE IS NO DEMAND FOR COOLING, HEATING, OR DEHUMIDIFICATION, THEN INITIATE VENT MODE.

C. UNOCCUPIED MODE: THE UNIT IS OFF EXCEPT AS FOLLOWS:
1. TEMPERATURE CONTROL: DURING UNOCCUPIED HOURS, RESET THE COOLING AND HEATING TEMPERATURE SET-POINTS EQUAL TO THE RESPECTIVE UNOCCUPIED TEMPERATURE SET-POINTS. ENABLE COOLING AND HEATING MODES OF OPERATION TO MAINTAIN THE UNOCCUPIED TEMPERATURE SET-POINTS.
2. HUMIDITY CONTROL: DURING UNOCCUPIED HOURS, RESET THE DEHUMIDIFICATION SET-POINT TO UNOCCUPIED SET-POINT. IF THE SPACE HUMIDITY RISES ABOVE SET-POINT, THEN INITIATE DEHUMIDIFICATION MODE UNTIL SPACE HUMIDITY IS BELOW SET-POINT MINUS A DEAD-BAND.
3. TENANT OVERRIDE: IF THE OVERRIDE BUTTON IS ACTIVATED AT THE SPACE SENSOR, THEN INITIATE AN OCCUPIED MODE OF OPERATION FOR A MINIMUM TIME DELAY (2 HOURS, ADJ).

3. SUPPLY FAN

A. OCCUPIED MODE: THE SUPPLY FAN OPERATES CONTINUOUSLY. MODULATE THE SUPPLY FAN SPEED TO MAINTAIN THE SPACE TEMPERATURE COOLING SET-POINT. PROGRAM A MINIMUM SPEED (50%) AND A RAMP TIME (60 SEC) INTO THE AFD.
B. UNOCCUPIED MODE: THE SUPPLY FAN IS OFF UNLESS THERE IS A CALL FOR ANY MODE.

4. RELIEF FAN

A. OCCUPIED MODE: MODULATE THE RELIEF FAN TO MAINTAIN A BUILDING DIFFERENTIAL PRESSURE SET-POINT (0.05 INCH WG, ADJ). PROGRAM A MINIMUM SPEED (20%) AND A RAMP TIME (60 SEC) INTO THE AFD.
B. UNOCCUPIED MODE: FAN OFF.

5. ECONOMIZER DAMPER

A. OCCUPIED MODE: MODULATE DAMPER TO MAINTAIN AN OUTSIDE AIRFLOW SET-POINT.
1. OUTSIDE AIRFLOW SET-POINT RESET: RESET THE OUTSIDE AIRFLOW SET-POINT BETWEEN MINIMUM AND MAXIMUM LIMITS AS THE INDOOR CO2 CONCENTRATION VARIES BETWEEN MINIMUM (450 PPM, ADJ) AND MAXIMUM LIMITS (1000 PPM, ADJ), RESPECTIVELY.

B. ECONOMIZER DAMPER MODE: IF THE CALCULATED OUTSIDE AIR ENTHALPY IS LESS THAN THE CALCULATED RETURN AIR ENTHALPY AND IF THE OUTSIDE AIR TEMPERATURE IS ABOVE SET-POINT (40°F, ADJ), THEN ENABLE ECONOMIZER MODE.

C. UNOCCUPIED MODE: CLOSE DAMPER.

6. COMPRESSORS

A. SUPPLY FAN OFF: COMPRESSORS OFF.
B. COOLING MODE: STAGE/MODULATE COMPRESSORS IN SEQUENCE TO MAINTAIN THE SUPPLY AIR TEMPERATURE SET-POINT (54°F, ADJ)].
C. HEATING MODE: COMPRESSORS OFF.
D. DEHUMIDIFICATION MODE: STAGE/MODULATE COMPRESSORS IN SEQUENCE TO MAINTAIN THE EVAPORATOR COIL SUCTION TEMPERATURE SET-POINT (52°F, ADJ).
E. VENT MODE: COMPRESSORS OFF.
F. COMPRESSOR SEQUENCING:
1. COMPRESSOR ADD: IF THE VARIABLE SPEED COMPRESSOR IS OPERATING AT MAXIMUM SPEED AND THE TEMPERATURE IS ABOVE OR BELOW SETPOINT (BASED ON OPERATING MODE), THEN STAGE THE LAG COMPRESSOR ON. MODULATE THE VARIABLE SPEED COMPRESSOR TO MAINTAIN THE TEMPERATURE SETPOINT.
2. COMPRESSOR SUBTRACT: IF MORE THAN ONE COMPRESSOR IS OPERATING, THE VARIABLE SPEED COMPRESSOR IS AT MINIMUM SPEED, AND THE TEMPERATURE IS ABOVE OR BELOW SETPOINT (BASED ON OPERATING MODE), THEN STAGE THE LAG COMPRESSOR OFF. MODULATE THE VARIABLE SPEED COMPRESSOR TO MAINTAIN THE TEMPERATURE SETPOINT.

7. HOT GAS REHEAT VALVE

A. SUPPLY FAN OFF: HOT GAS REHEAT VALVE CLOSED.
B. DEHUMIDIFICATION MODE: MODULATE HOT GAS REHEAT VALVE TO MAINTAIN THE SUPPLY AIR TEMPERATURE SET-POINT (70°F, ADJ).
C. ALL OTHER MODES: HOT GAS REHEAT VALVE CLOSED.

8. GAS HEAT VALVE

A. SUPPLY FAN OFF: GAS VALVE CLOSED.
B. HEATING MODE: MODULATE GAS VALVE TO MAINTAIN THE SPACE TEMPERATURE HEATING SET-POINT.
C. ALL OTHER MODES: GAS VALVE CLOSED.

9. SAFETIES

A. SMOKE DETECTOR(S): SMOKE DETECTOR(S) ARE PROVIDED BY OTHERS BUT SHALL BE WIRED TO AN AUXILIARY CONTACT ON THE VFD TO OVERRIDE ALL CONTROLS AND SHUT DOWN THE AIR HANDLER UNIT UPON DETECTION OF SMOKE.
B. FLOAT SWITCH: PROVIDE A FLOAT SWITCH IN THE AUXILIARY DRAIN PAN WIRED TO AN AUXILIARY CONTACT ON THE VFD TO OVERRIDE ALL CONTROLS AND SHUT DOWN THE AIR HANDLING UNIT UPON DETECTION OF A HIGH WATER LEVEL IN THE DRAIN PAN.
C. DAMPER PROOF: PROVIDE A DAMPER POSITION SWITCH WIRED TO AN AUXILIARY CONTACT ON THE VFD TO OVERRIDE ALL CONTROLS AND PREVENT OPERATION OF THE AIR HANDLING UNIT'S FANS IF THE DAMPER FAILS TO OPEN.

10. MISCELLANEOUS ALARMS

A. THE BAS SHALL ANNUNCIATE THE FOLLOWING ALARMS:
1. HIGH OUTSIDE AIR FLOW: IF THE SUPPLY AIR FLOW IS 10% (ADJ) GREATER THAN SET-POINT FOR A MINIMUM TIME DELAY (10 MIN, ADJ).
2. LOW OUTSIDE AIR FLOW: IF THE SUPPLY AIR FLOW IS 10% (ADJ) LESS THAN SET-POINT FOR A MINIMUM TIME DELAY (10 MIN, ADJ).

11. REQUIRED REPORTS

A. AIR HANDLING UNIT FAILURE:
1. FREQUENCY: UPON FAILURE OF SUPPLY FAN
2. DATA: INSTANTANEOUS VALUE OF ALL POINTS ON AIR HANDLING UNIT.

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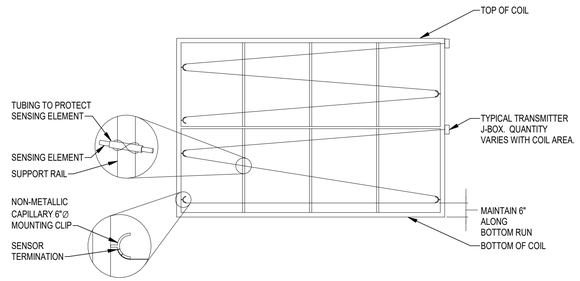
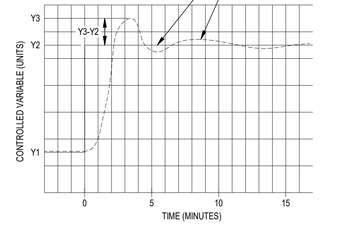
SINGLE ZONE VAV PACKAGED UNIT

MC201



NOTES:
1. PROVIDE 5 LINEAR FT. OF SENSING ELEMENT FOR EVERY 10 SQ. FT. OF COIL CROSS-SECTIONAL AREA.
2. PROVIDE MINIMUM 20 FT. LONG ELEMENT FOR LOW TEMPERATURE THERMOSTATS (FREEZE STAT).

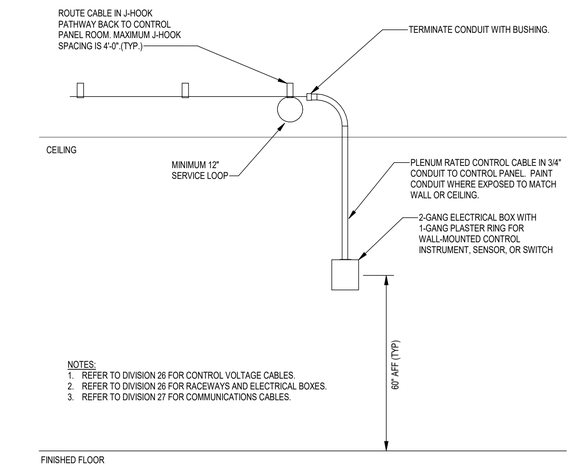
D AVERAGING TEMPERATURE SENSOR DETAIL



CONTROL LOOP TUNING NOTES:

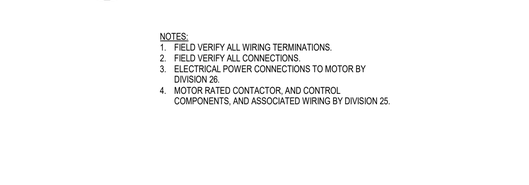
1. TEST EACH CONTROL LOOP TO VERIFY STABLE MODE OF OPERATION AND COMPLIANCE WITH SEQUENCE OF OPERATION.
2. ADJUST PROPORTIONAL-INTEGRAL-DERIVATIVE (PID) ACTIONS USING EITHER ZIEGLER-NICHOLS METHODS (EITHER ULTIMATE OSCILLATION OR FIRST-ORDER-PLUS-DEAD-TIME) OR TRIAL AND ERROR.
3. EACH PROPORTIONAL, INTEGRAL, AND DERIVATIVE GAIN SHALL UTILIZE A LINEAR RESET BASED ON ERROR FROM SETPOINT. CONTRACTOR SHALL DETERMINE MAXIMUM AND MINIMUM RANGE FOR EACH GAIN TO ACHIEVE SPECIFIED PERFORMANCE. MODEL-FREE ADAPTIVE CONTROL LOOPS AND SELF-LEARNING CONTROL LOOPS SHALL NOT BE USED.
4. BEGIN WITH MEASURED VALUE AT SETPOINT (Y1). ADJUST SETPOINT OR MANUAL OUTPUT OF CONTROLLER TO CREATE A STEP CHANGE (Y2-Y1). PI CONTROL LOOPS SHALL EXCEED NO MORE THAN A 25% MAXIMUM OVERSHOOT IN A STEP RESPONSE. $[(Y3-Y2)/(Y2-Y1)] \leq 0.25$
5. INITIAL RESPONSE, INCLUDING OVERSHOOT AND DAMPENING SHALL OCCUR WITHIN APPROXIMATELY 5 MINUTES FROM STEP CHANGE. MEASURED VALUE SHALL ACHIEVE SETPOINT WITHIN APPROXIMATELY 15 MINUTES FROM STEP CHANGE.
6. SUPPLY GRAPHICAL TREND DATA OUTPUT TO ENGINEER SHOWING EACH DDC LOOP'S RESPONSE TO A SET POINT CHANGE REPRESENTING AN END DEVICE CHANGE OF AT LEAST 25% OF FULL RANGE. TREND SAMPLING RATE SHALL BE FROM 10 SECONDS TO 1 MINUTE, DEPENDING ON LOOP SPEED. EACH SAMPLE'S TREND DATA SHALL SHOW SETPOINT, END DEVICE RESPONSE, AND CONTROLLED VARIABLE VALUES.

A CONTROL LOOP TUNING DETAIL



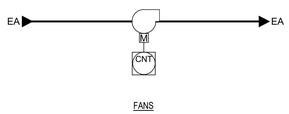
NOTES:
1. REFER TO DIVISION 26 FOR CONTROL VOLTAGE CABLES.
2. REFER TO DIVISION 26 FOR RACEWAYS AND ELECTRICAL BOXES.
3. REFER TO DIVISION 27 FOR COMMUNICATIONS CABLES.

E WALL-MOUNTED CONTROL DEVICE ROUGH-IN



NOTES:
1. FIELD VERIFY ALL WIRING TERMINATIONS.
2. FIELD VERIFY ALL CONNECTIONS.
3. ELECTRICAL POWER CONNECTIONS TO MOTOR BY DIVISION 26.
4. MOTOR RATED CONTACTOR, AND CONTROL COMPONENTS, AND ASSOCIATED WIRING BY DIVISION 25.

B MOTOR RATED CONTACTOR - WIRING DETAIL



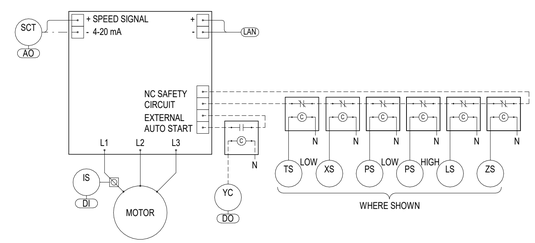
FANS

MISCELLANEOUS

1 FANS
A. FANS (EF): WIRED TO OPERATE WHEN THE ASSOCIATED AHU IS OPERATING:
1. AHU-17-3: EF-17-3

MISCELLANEOUS SYSTEMS AND EQUIPMENT		POINT TYPE					CONTROL TYPE			EQUIP. DESIG.	SCHEM. DESIG.	NOTES
POINT DESCRIPTION	UNITS	ANALOG IN	ANALOG OUT	DIGITAL IN	DIGITAL OUT	INTEG. POINT	P	I	D			
FAN START/STOP	ON/OFF				1						YC	
FAN STATUS	ON/OFF			1							IS	
POINTS (SUB-TOTAL)	#	0	0	1	1							
POINTS (TOTAL WITH SPARE)	#	0	0	2	2							
NOTES: 1 SEE MOTOR CONTROLLER DETAIL (VFD, MOTOR STARTER, OR MOTOR CONTRACTOR).												

F MISCELLANEOUS CONTROLS



NOTES:
1. FIELD VERIFY ALL WIRING TERMINATIONS.
2. FIELD VERIFY ALL CONNECTIONS.
3. VARIABLE FREQUENCY DRIVE FURNISHED BY DIVISION 26.
4. ELECTRICAL POWER CONNECTIONS TO VFD AND MOTOR PROVIDED BY DIVISION 26.
5. CONTROL COMPONENTS AND ASSOCIATED WIRING PROVIDED BY DIVISION 25.

C VARIABLE FREQUENCY DRIVE - WIRING DETAIL

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H2E PROJECT No. 24134

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RAA MIDDLE SCHOOL DINING EXPANSION PROJECT

LEON COUNTY SCHOOL BOARD

TALLAHASSEE, FLORIDA

PHASE III
100% SUBMITTAL

PROJ. NO.	174324
DATE	04/02/2025
DRAWN	JPT
CHECKED	MPP
APPROVED	MPP
REVISION	
REVISION DATE	

MISC. & DETAILS

MC401