

ABBREVIATIONS

Table of abbreviations including AC (AIR CONDITIONING), ACH (AIR CHANGES PER HOUR), AD (ACCESS DOOR), AFF (ABOVE FINISHED FLOOR), AG (ABOVE GRADE), AHU (AIR HANDLING UNIT), AI (ANALOG INPUT), AO (ANALOG OUTPUT), AP (ACCESS PANEL), APPROX (APPROXIMATELY), BAS (BUILDING AUTOMATION SYSTEM), BDD (BACK DRAFT DAMPER), BFF (BELOW FINISHED FLOOR), BHP (BRAKE HORSE POWER), BOD (BOTTOM OF DUCT), BOT (BOTTOM), BTU (BRITISH THERMAL UNIT), CAP (CAPACITY), CC (COOLING COIL), CD (CONDENSATE DRAIN), CFM (CUBIC FEET PER MINUTE), CHWR (CHILLED WATER RETURN), CHWS (CHILLED WATER SUPPLY), CLG (CEILING), CMU (CONCRETE MASONRY UNIT), CONN (CONNECTION), CT (COOLING TOWER), CU (CONDENSING UNIT), DB (DRY BULB), DDC (DIRECT DIGITAL CONTROL), DG (DOOR GRILLE), DI (DIGITAL INPUT), DN (DOWN), DO (DIGITAL OUTPUT), DP (DEW POINT), DX (DIRECT EXPANSION), EA (EXHAUST AIR), EAT (ENTERING AIR TEMPERATURE), EA (EXHAUST AIR), EER (ENERGY EFFICIENCY RATIO), EF (EXHAUST FAN), EG (EXHAUST GRILLE), EL (ELEVATION), ELEC (ELECTRICAL), ENT (ENTERING), EQUIP (EQUIPMENT), ESP (EXTERNAL STATIC PRESSURE), ET (EXPANSION TANK), EXH (EXHAUST), EXIST (EXISTING), F (FAHRENHEIT), FA (FILTER ACCESS), FACP (FIRE ALARM CONTROL PANEL), FCD (FLOW CONTROL DAMPER), FCU (FAN COIL UNIT), FD (FIRE DAMPER), FSD (FIRE SMOKE DAMPER), FL (FLOOR), FLA (FULL LOAD AMPACITY), FPF (FINS PER FOOT), FPI (FINS PER INCH), FPM (FEET PER MINUTE), FPM (FINS PER MINUTE), FSD (FIRE SMOKE DAMPER), GPH (GALLONS PER HOUR), GPM (GALLONS PER MINUTE), H (HUMIDITY), HC (HEATING COIL), HP (HORSEPOWER), HHWR (HEATING HOT WATER RETURN), HHWS (HEATING HOT WATER SUPPLY), HZ (HERTZ), IN-H2O (INCHES OF WATER), KW (KILOWATT), LAT (LEAVING AIR TEMPERATURE), LAT (LATENT), LD (LOUVERED DOOR), LPC (LOW PRESSURE CONDENSATE), LPS (LOW PRESSURE STEAM), LRA (LOCKED ROTOR AMPS), LVG (LEAVING), LWT (LEAVING WATER TEMPERATURE), MAX (MAXIMUM), MBH (1000x BTU), MCA (MINIMUM CIRCUIT AMPACITY), MEZZ (MEZZANINE), MIN (MINIMUM), MISC (MISCELLANEOUS), NC (NORMALLY CLOSED), NIC (NOT IN CONTRACT), NO (NORMALLY OPEN), NTS (NOT TO SCALE), OA (OUTSIDE AIR), OAI (OUTSIDE AIR INTAKE), OAL (OUTSIDE AIR LOUVER), OC (ON CENTER), PD (PRESSURE DROP), PKU (PACKAGE UNIT), PH (PHASE), POC (POINT OF CONNECTION)

THIS IS A GENERAL LIST OF ABBREVIATIONS AND MAY NOT BE USED ON A SPECIFIC PROJECT. IF AN ABBREVIATION IS USED ON A PROJECT AND IS NOT REPRESENTED IN THIS LIST, CONTRACTOR SHALL SUBMIT A REQUEST FOR INFORMATION.

RENOVATION LEGENDS

Table with columns SYMBOL and DESCRIPTION. Symbols include solid lines for existing to remain, dashed lines for existing to be removed, lines with <R> for existing to relocate, and dashed lines with a diagonal line for new added.

MECHANICAL GENERAL NOTES

- 1. APPLICABLE CODES: FLORIDA BUILDING CODE SEVENTH EDITION INCLUDING MECHANICAL, PLUMBING, FUEL GAS, NEC 2011, SMACNA, ASHRAE, NFPA
2. THE CONTRACTOR SHALL FURNISH ALL LABOR, MATERIALS, AND EQUIPMENT NECESSARY FOR THE INSTALLATION OF A COMPLETE SYSTEM IN ACCORDANCE WITH THESE DRAWINGS...
3. THE CONTRACTOR SHALL PAY ALL COSTS OF PERMIT, INSPECTIONS, AND ALL OTHER COSTS INCIDENTAL TO THE COMPLETION AND TESTING OF THIS WORK.
4. THE CONTRACTOR SHALL VISIT THE SITE AND COORDINATE WITH ALL OTHER TRADES.
5. THE CONTRACTOR SHALL SUPPLY THE ARCHITECT WITH "AS-BUILT" DRAWINGS...
6. THE CONTRACTOR SHALL SUBMIT FOR APPROVAL FIVE (5) COPIES OF MANUFACTURER'S DRAWINGS...
7. ALL MATERIAL SHALL BE NEW OF U.S. MANUFACTURER OF GOOD QUALITY...
8. DUCT SIZES SHOWN ARE INSIDE AIRFLOW DIMENSIONS...
9. ALL SUPPLY AND RETURN BRANCH TAKE-OFFS TO BE PROVIDED WITH MANUAL VOLUME DAMPERS...
10. PROVIDE "CONSTRUCTION" AIR FILTERS IN ALL AIR MOVING EQUIPMENT...
11. PROVIDE SMOKE DETECTORS WITH SERVICEABLE ACCESS DOORS...
12. PROVIDE TYPE "B" STATIC FIRE DAMPERS WITH CURTAIN TOTALLY OUT OF AIR STREAM...
13. THERMOSTAT LOCATION SHALL BE APPROVED BY THE OWNER AND ENGINEERS...
14. ALL INSULATION SHALL HAVE FIRE/SMOKE RATING LESS THAN 25/50.
15. PROVIDE MINIMUM OF 3' CLEARANCE IN FRONT OF ALL 120-240 VOLT PANELS...
16. MECHANICAL PLANS IN GENERAL, ARE DIAGRAMMATIC IN NATURE...
17. THE CONTRACTOR SHALL VERIFY EXISTING CONDITIONS PRIOR TO BIDDING...
18. ALL WORK SHALL BE DONE IN ACCORDANCE WITH FLORIDA BUILDING CODE...
19. ROUTE ALL DUCTWORK, PIPING AND ACCESSORIES IN A MANNER TO AVOID BUILDING COMPONENTS...
20. WHERE REFRIGERANT LINES ARE INSTALLED, SIZE PER MANUFACTURER'S INSTRUCTIONS...
21. ALL DEBRIS SHALL BE PROPERLY DISPOSED OFF SITE...
22. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL NECESSARY SUPPORTING DEVICES...

MECHANICAL SHEET INDEX

Table with columns SR. NO., DRAWING NO., SHEET NAME, and SCALE. Lists drawings M-001 through M-602 and their respective sheet names and scales.

LEGEND

Table with columns SYMBOL and DESCRIPTION. Includes symbols for airflow direction, supply/return/exhaust grilles, thermostats, smoke detectors, temperature sensors, humidistats, occupancy sensors, carbon monoxide sensors, fire dampers, radiant dampers, points of disconnection, ceiling diffusers, return grilles, exhaust grilles, condensate pumps, smoke alarm tags, booster fans, sidewall diffusers, terminal units, and a general disclaimer.

PIPING LEGEND

Table with columns SYMBOL and DESCRIPTION. Lists piping symbols for chilled water supply/return, condensate line, refrigerant piping, heating hot water supply/return, pipe reducers/unions, gate/globe/check/ball/plug/butterfly valves, and 2-way/3-way control valves.

DUCTWORK LEGEND

Table with columns SYMBOL and DESCRIPTION. Includes symbols for flexible ductwork, existing equipment to be removed, existing ductwork to remain, manual/motor operated dampers, access doors, radius/vaned elbows, branch duct take-offs, rise/drop directions, duct size changes, spin fittings, opposed/parallel blade control dampers, and a general disclaimer.

PIPING LEGEND

Table with columns SYMBOL and DESCRIPTION. Lists piping symbols for valves, direction of flow, top/bottom connections, capped outlets, drop/rise in piping, solenoid valves, outside screw and yoke, water flow measuring devices, angle globe valves, pressure gauges, strainers, expansion joints, and BTU flow meters.

REVISIONS

D

C

B

A

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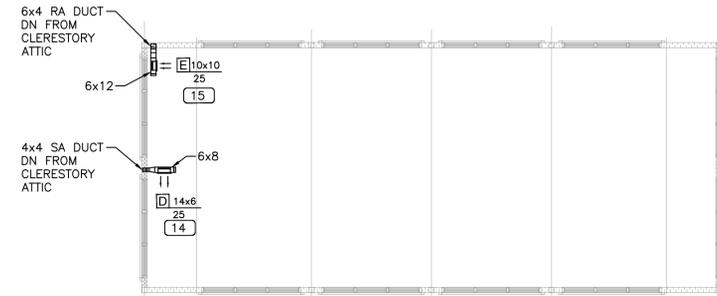
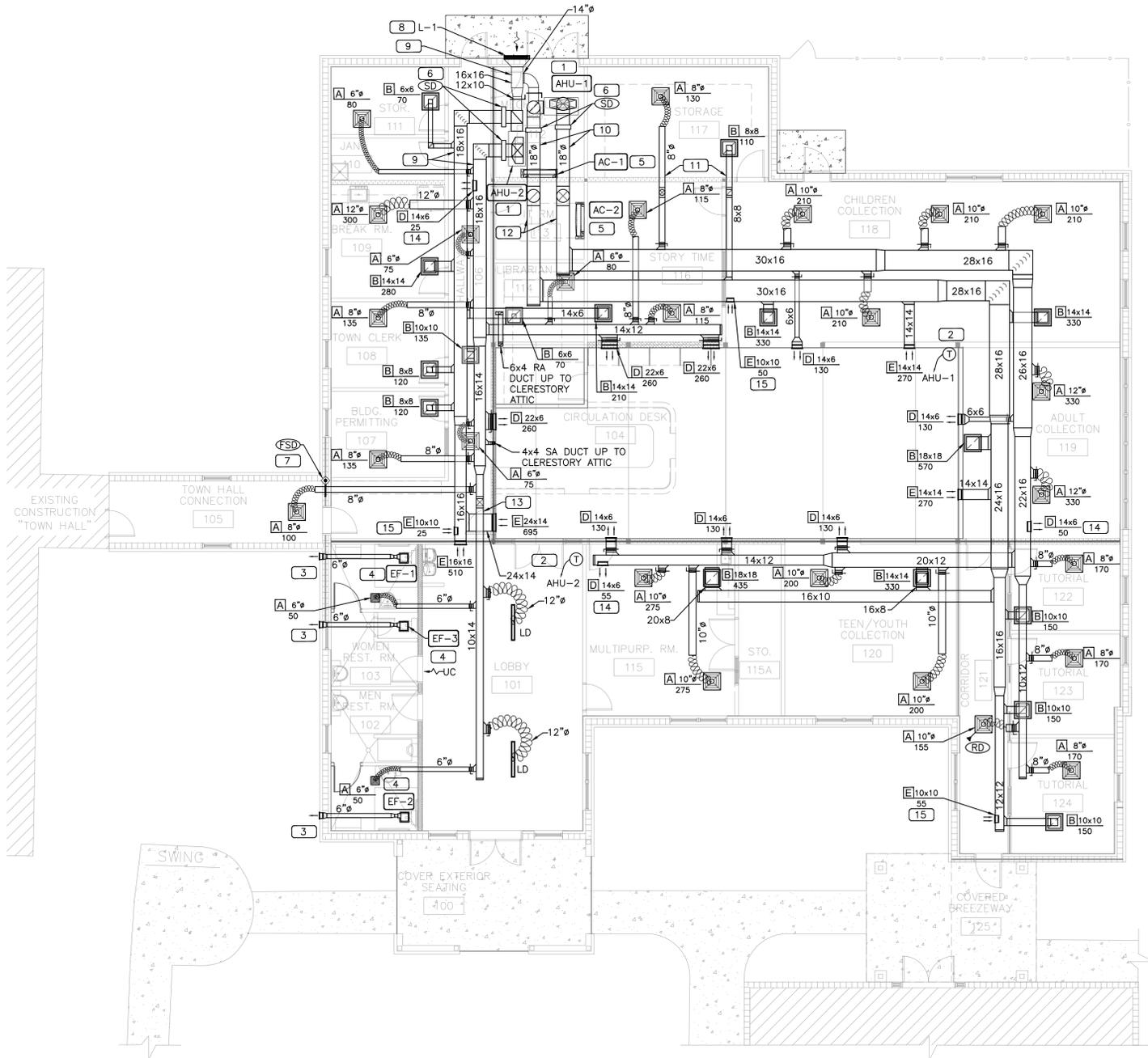
GENERAL INFORMATION - MECHANICAL M-001 ISSUE DATE 09-26-2023

GENERAL NOTES

- 1. RADIANT DAMPER AT DUCT/CEILING PENETRATION. SEE DETAIL NO. 4 ON SHEET M-502 FOR MORE INFORMATION.
- 2. DUCTWORK LAYOUT IS SCHEMATIC. ROUTE DUCTS THROUGH THE TRUSS WEBS AS REQUIRED TO MAINTAIN THE CEILING HEIGHTS INDICATED ON SHEET A410 - REFLECTED CEILING PLAN.

KEY NOTES

- 1. VERTICALLY MOUNTED AHU-1 & AHU-2. PROVIDE MINIMUM NEC REQUIRED CLEARANCE.
- 2. THERMOSTAT SHALL MOUNT AT 4'-0" AFF.
- 3. TOILET EXHAUST VENT CAP. EXTERIOR WALL CAP WILL BE PVC.
- 4. TYPICAL CEILING MOUNTED BATHROOM EXHAUST FAN, SEE M-601 FOR INFORMATION.
- 5. WALL MOUNTED UNIT.
- 6. SMOKE DETECTOR SHALL BE INTER LOCKED WITH AHU. HVAC SHUTDOWN SHALL OCCUR WITHIN TEN (10) SECONDS MAX AND GENERATE A SUPERVISORY SIGNAL AT THE MAIN FIRE ALARM CONTROL PANEL (FACP).
- 7. PROVIDE FIRE/SMOKE DAMPER AT DUCT PENETRATE 2 HOURS RATED WALL.
- 8. 16"x16" INTAKE AIR DUCT TO AHU-1 & AHU-2 VIA LOUVER L-1.
- 9. THE DUCT TOP @ 9' - 10" A.F.F. & BOTTOM @ 8' - 6" A.F.F.
- 10. THE DUCT TOP @ 9' - 10" A.F.F. & BOTTOM @ 8' - 4" A.F.F.
- 11. THE DUCT TOP @ 9' - 2" A.F.F. & BOTTOM @ 8' - 6" A.F.F.
- 12. THE DUCT TOP @ 14' - 10" A.F.F. & BOTTOM @ 13' - 6" A.F.F.
- 13. THE DUCT TOP @ 17' - 2" A.F.F. & BOTTOM @ 16' - 0" A.F.F.
- 14. GRILL IN SUPPLY AIR DUCT FOR AIR CIRCULATION IN ATTIC.
- 15. GRILL IN RETURN AIR DUCT FOR AIR CIRCULATION IN ATTIC.



1 CLERESTORY PLAN - MECHANICAL NORTH
 0 4' 8' 16' 24'
 1/8" = 1'-0"

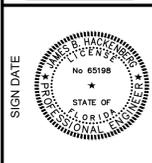
1 FLOOR PLAN - MECHANICAL NORTH
 0 4' 8' 16' 24'
 1/8" = 1'-0"

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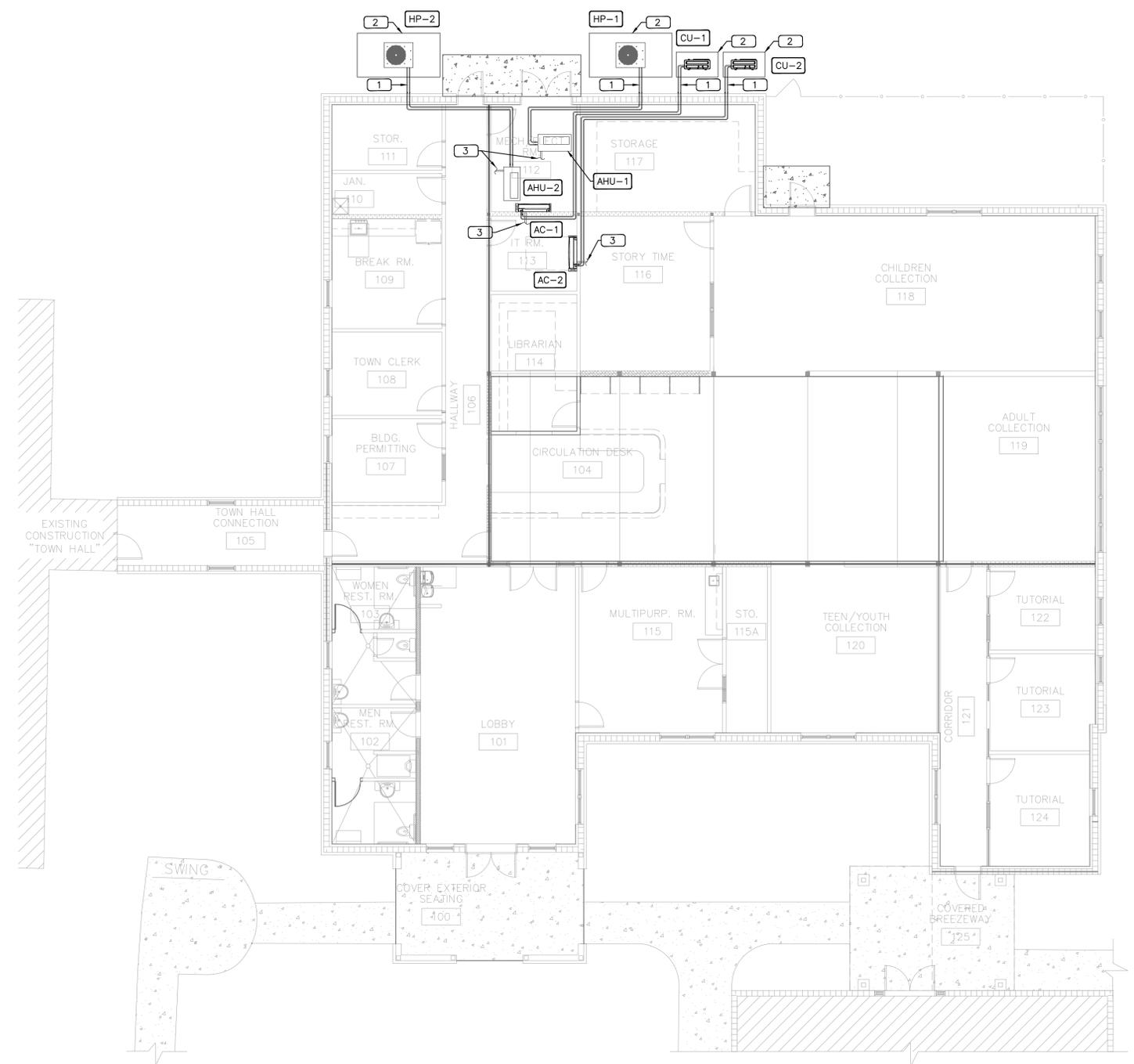
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FLOOR PLAN -
 MECHANICAL
M-101
 ISSUE DATE 09-26-2023
 JOB #: GC-22-010

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KEY NOTES

- 1 PROVIDE LIQUID AND GAS COPPER INSULATED REFRIGERANT LINES TO EXTERIOR CONDENSING UNIT.
- 2 UNIT ACCESS CLEARANCE.
- 3 CONNECT AHU/AC CONDENSATE DRAIN TO THE NEAREST DRAIN.



1 PIPING PLAN - MECHANICAL NORTH

0 4' 8' 16' 24'

1/8" = 1'-0"

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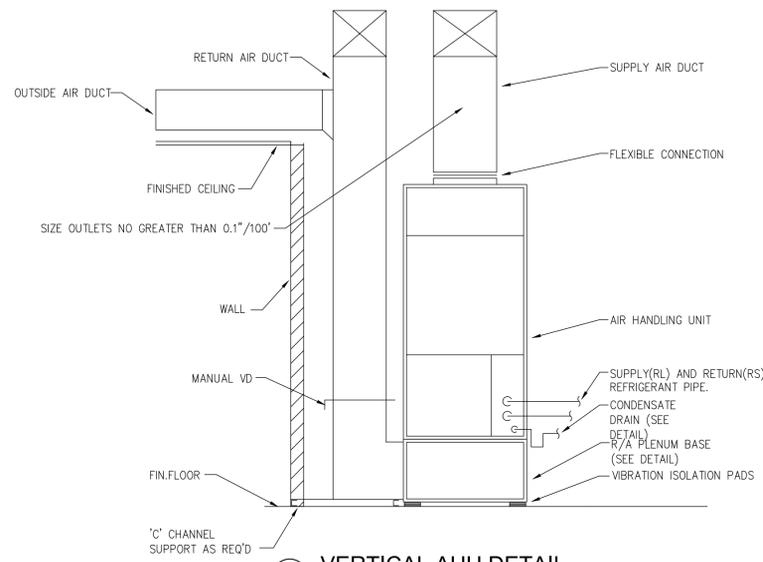
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PIPING PLAN -
 MECHANICAL

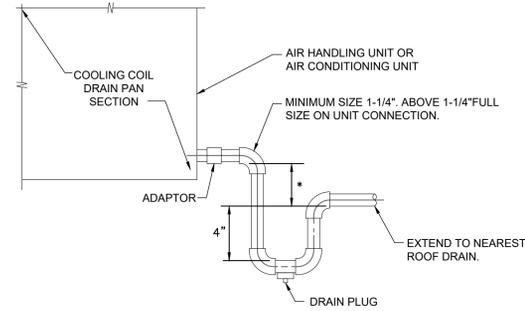
M-201

ISSUE DATE 09-26-2023

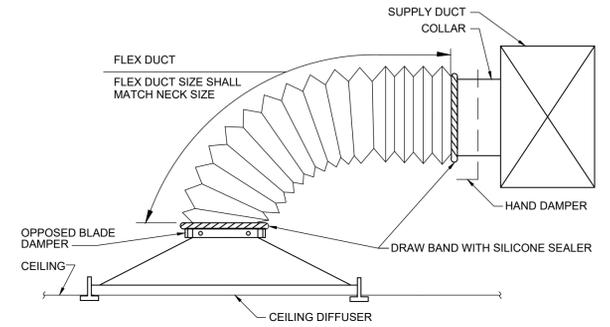
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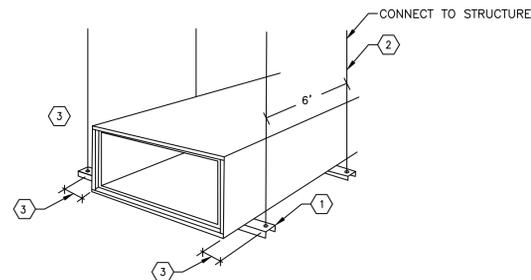
1 VERTICAL AHU DETAIL
NOT TO SCALE



2 CONDENSATE DRAIN DETAIL
NOT TO SCALE

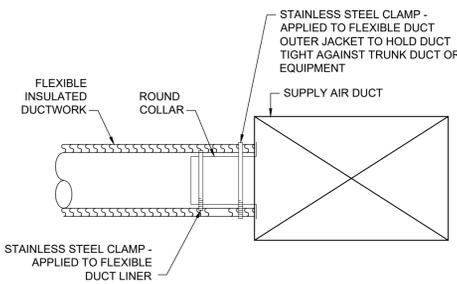


3 TYPICAL DIFFUSER CONNECTION
NOT TO SCALE

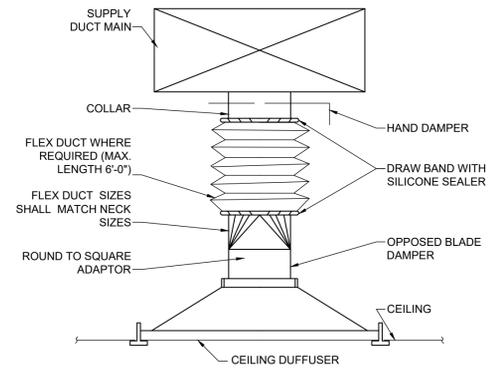


- 1 PROVIDE MIN. 24 GAUGE CHANNEL 3"x1-1/2".
- 2 PROVIDE 12 GAUGE HANGER WIRE AND SPACE NO GREATER THAN 6 FEET.
- 3 3" MAX DISTANCE BETWEEN DUCT AND HANGER WIRE.

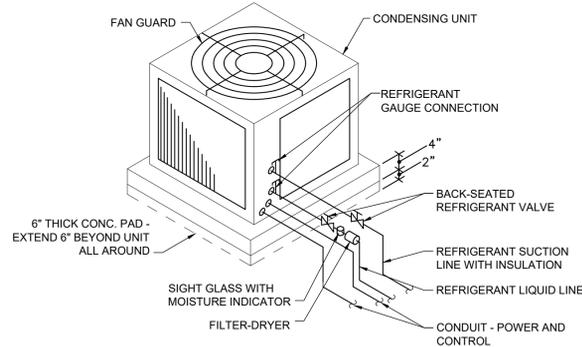
4 DUCT SUPPORT DETAIL
NOT TO SCALE



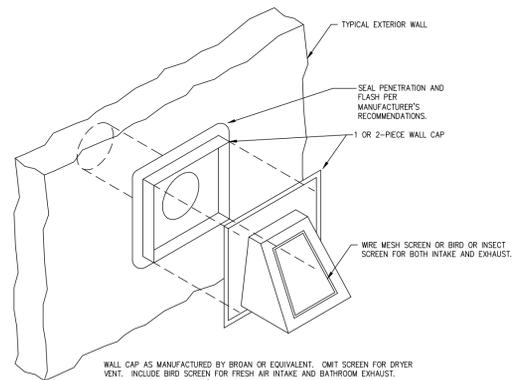
5 TYPICAL FLEXIBLE DUCT CONNECTION
NOT TO SCALE



6 TYPICAL DIFFUSER CONNECTION
(BOTTOM OF DUCT CONNECTION)
NOT TO SCALE



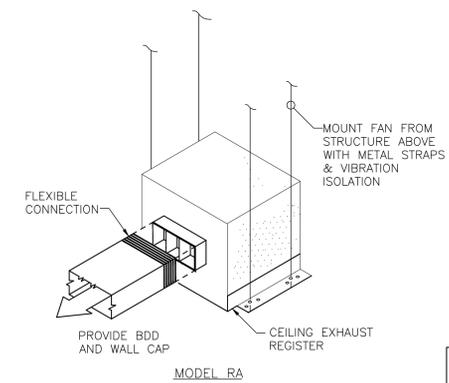
7 AIR-COOLED CONDENSING UNIT - SLAB MOUNTED AT GRADE
NOT TO SCALE



WALL CAP AS MANUFACTURED BY BRIDAN OR EQUIVALENT. OMT SCREEN FOR DRYER VENT. INCLUDE BIRD SCREEN FOR FRESH AIR INTAKE AND BATHROOM EXHAUST. INSTALL PER MANUFACTURER'S RECOMMENDED INSTALLATION INSTRUCTIONS. USE MODEL NUMBER PER CONNECTION DUCT SIZE ON PLANS.

DUCT SIZE	MODEL #
3" OR 4"	656L
6"	641
7"	647
8"	645

8 WALL CAP INSTALLATION DETAIL
NOT TO SCALE



9 CEILING EXHAUST FAN DETAIL
NOT TO SCALE

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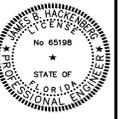
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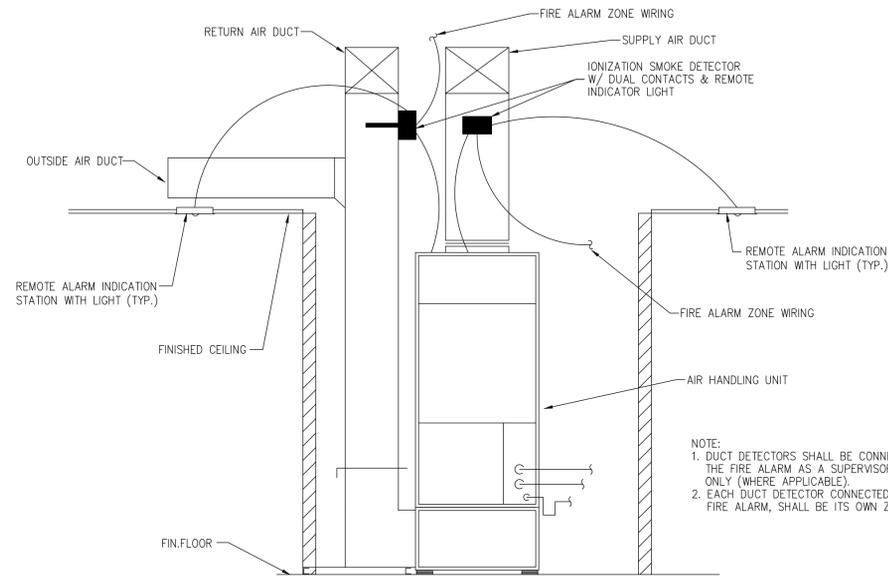
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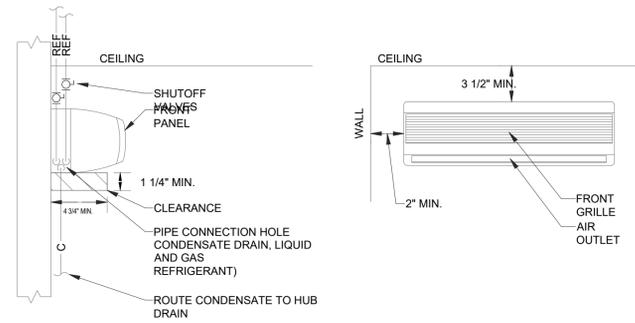


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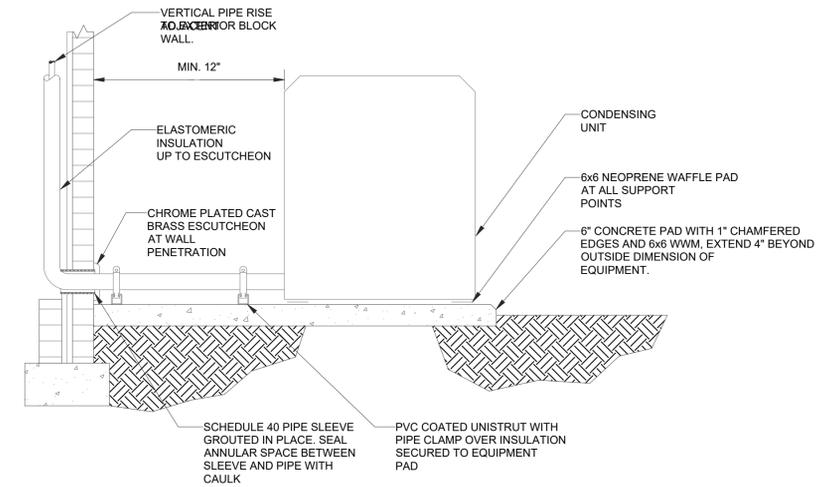
DETAILS - MECHANICAL
M-501
ISSUE DATE 09-26-2023
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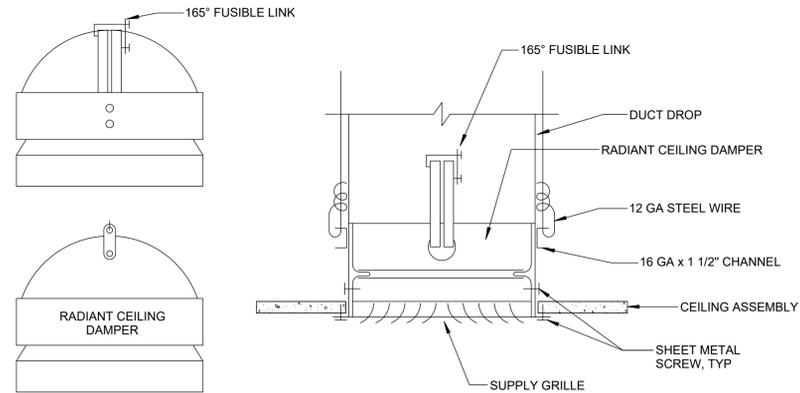
1 DUCT MOUNTED SMOKE DETECTOR DETAIL - AHU DETAIL
NOT TO SCALE



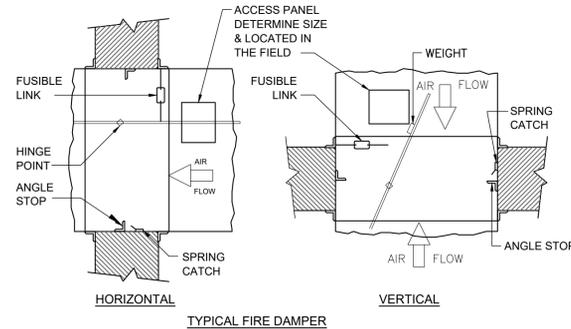
2 DUCTLESS SPLIT SYSTEM - INDOOR UNIT DETAIL
NOT TO SCALE



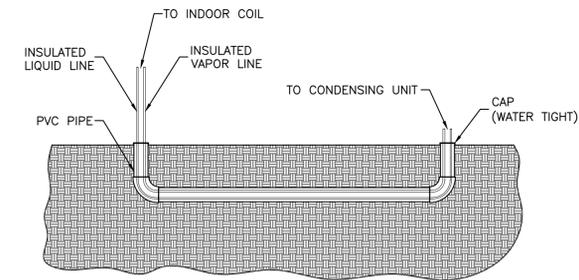
3 DUCTLESS SPLIT SYSTEM - CONDENSING UNIT REFRIGERANT PIPING DETAIL
NOT TO SCALE



4 RADIANT DAMPER DETAIL
NOT TO SCALE



5 DUCT MOUNTED FIRE SMOKE DAMPER DETAIL
NOT TO SCALE



6 UNDERGROUND PVC PIPE DETAIL WITH REFRIGERANT PIPES
NOT TO SCALE

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MECHANICAL
M-502
ISSUE DATE 09-26-2023
JOB #: GC-22-010

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AIR HANDLING UNIT SCHEDULE																															
GENERAL DATA				SUPPLY FAN DATA							COOLING COIL DATA					HEATING DATA		FILTER SELECTION	ELECTRICAL DATA				UNIT INFORMATION					NOTES			
MARK	AREA SERVED	LOCATION	TON	TYPE	DRIVE TYPE	AIR FLOW (CFM)	OUTSIDE AIR FLOW (CFM)	ESP (IN H2O)	MOTOR (HP)	MOTOR SPEED (RPM)	NET CAPACITY (MBH)	SENSIBLE CAPACITY (MBH)	AIR TEMP °F				HEATING TYPE	HEATING COIL CAPACITY (MBH)	SIZE	V/PH/Hz	FLA	MCA (A)	MOCP (A)	REFRIGERANT	SUCTION CONN. (A)	LIQ. CONN. (A)	DIMENSIONS DxWxH (IN)		GROSS WEIGHT (LB)	MODEL NO.	MFR
											TOTAL	TOTAL	ENTER		LEAVING																
											DB	WB	DB	WB																	
AHU-1	SEE PLAN	MECHANICAL ROOM	10.0	SPLIT	DIRECT	4000	800	0.5	1 (2)	1124	120.0	94.3	78.5	66.5	59.0	57.9	HEAT PUMP	62.7	16"X20"X2" 20"X20"X2"	208/3/60	13.8	15.5	20	R-410a	1-1/8" (2)	3/8" (2)	48.25"x24"x60.5"	430	DAX12043	DAIKIN	1,2,3,4,5
AHU-2	SEE PLAN	MECHANICAL ROOM	7.5	SPLIT	DIRECT	2700	440	0.5	1 (2)	869	90.0	61.5	78.6	64.9	55.3	54.1	HEAT PUMP	42.2	16"X20"X2" 20"X20"X2"	208/3/60	13.8	15.5	20	R-410a	1-1/8" (2)	3/8" (2)	48.25"x24"x60.5"	430	DAX09043	DAIKIN	1,2,3,4,5

NOTES:
1. TWO-STAGE ENERGY EFFICIENT COMPRESSOR.
2. QUIET OPERATING TOP DISCHARGE.
3. AHRI CERTIFIED, ETL LISTED.
4. HORIZONTAL OR VERTICAL CONFIGURATION CAPABILITIES.
5. DIRECT DRIVE, TWO 5-SPEED MOTORS.

LOUVER SCHEDULE								
MARK	TYPE	AIR FLOW (CFM)	FRAME WIDTH (IN)	FRAME HEIGHT (IN)	FREE AREA (FT²)	PRESSURE DROP (IN. W.G.)	FREE AREA VELOCITY (FT./MIN.)	MANUFACTURER & MODEL NUMBER
L-1	INTAKE AIR	1240	22	36	2.5	0.04	495	GREENHECK & EVH-501D-22x36

HEAT PUMP UNIT SCHEDULE																		
MARK	CONNECTING UNIT	LOCATION	TON	OUTDOOR FAN DATA		COMPRESSOR	ELECTRICAL DATA			UNIT INFORMATION								NOTES
				FLA	FAN (HP)		RLA-LRA	V/PH.HZ	MCA	MOCP	IEER	REFRIGERANT	SUCTION CONN. (IN)	LIQ. CONN. (IN)	DIMENSIONS DxWxH (IN)	GROSS WEIGHT (LB)	MODEL NO.	
HP-1	AHU-1	SEE PLAN	10.0	7	1	7	208/3/60	47.7	60	14.5	R-410a	1-3/8" (2)	5/8"	35.5"x35.5"x41.5"	375	DZ14XA1203	DAIKIN	1,2,3,4,5
HP-2	AHU-2	SEE PLAN	6.5	7	1	7	208/3/60	40.6	60	14.5	R-410a	1-3/8" (2)	5/8"	35.5"x35.5"x41.5"	355	DZ14XA0903	DAIKIN	1,2,3,4,5

NOTES:
1. ENERGY EFFICIENT COMPRESSOR.
2. FACTORY-INSTALLED FILTER DRIER.
3. AHRI CERTIFIED, ETL LISTED.
4. SINGLE PANEL ACCESS TO CONTROLS.
5. HIGH-EFFICIENCY COPELAND® SCROLL COMPRESSOR.

SPLIT SYSTEM - UNIT SCHEDULE																											
INDOOR UNIT MARK	INDOOR MODEL NO.	LOCATION	TYPE	COOLING CAPACITY (MBH)	AIR FLOW (CFM)	INDOOR UNIT WEIGHT (LB)	INDOOR FAN MOTOR (F.L.A)	INDOOR FAN MOTOR (W)	OUTDOOR UNIT MARK	OUTDOOR UNIT MODEL NO.	OUTDOOR UNIT WEIGHT (LB)	OUTDOOR FAN MOTOR (F.L.A)	OUTDOOR FAN MOTOR (W)	EER	SEER	REFRIGERANT AND SIZE			ELECTRICAL DATA			UNIT INFORMATION			NOTES		
																TYPE	SUCT. SIZE (IN)	LIQ. SIZE (IN)	V/PH/Hz	MCA	MOCP	INDOOR UNIT DIMENSIONS DxWxH (IN)	OUTDOOR UNIT DIMENSIONS DxWxH (IN)	MFR			
AC-1	FTKB09AXVJU	MECHANICAL ROOM	HI-WALL	4.3	148	20	0.20	18	CU-1	RKB09AXVJU	53	0.19	41	11	14	R-410a	0.375	0.25	208/3/60	6.95	15	9x36x12	11x26x21	DAIKIN			
AC-2	FTKB09AXVJU	IT ROOM	HI-WALL	3.8	136	20	0.20	18	CU-2	RKB09AXVJU	53	0.19	41	11	14	R-410a	0.375	0.25	208/3/60	6.95	15	9x36x12	11x26x21	DAIKIN			

AIR DISTRIBUTION SCHEDULE				
NOTES: 1. COORDINATE FRAME & BORDER TYPE WITH CEILING TYPE. REFER TO ARCHITECTURAL PLANS. 2. COORDINATE WITH BLDG MGT FOR BLDG STANDARDS.				
MARK	CFM	NECK SIZE	FACE SIZE LENGTH	DESCRIPTION
A	0-100	6"ø	12x12	SUPPLY AIR DIFFUSER
	101-175	8"ø	24x24	MFR: METALAIR MODEL: SERIES 5700
	176-275	10"ø	24x24	
	276-395	12"ø	24x24	
B	0-75	6x6	12x12	RETURN AIR GRILLE
	76-133	8x8	24x24	MFR: METALAIR MODEL: SERIES RH
	134-208	10x10	24x24	
	209-408	14x14	24x24	
	409-675	18x18	24x24	
	676-833	20x20	24x24	
834-1008	22x22	24x24		
C	0-84	10x4	12x6	SUPPLY AIR GRILL : TITUS S301FL
	85-136	16x4	18x6	
	137-172	20x4	20x4	
D	0-192	14x6	16x8	SUPPLY AIR GRILL : TITUS 300F
	193-308	22x6	24x8	
E	0-236	10x10	12x12	RETURN/TRANSFER AIR GRILL : TITUS 350R
	237-488	14x14	16x16	
	489-648	16x16	18x18	
	649-856	24x14	26x16	
857-1100	36x12	38x14		
F	0-80	6"ø	12x12	EXHAUST AIR GRILL : TITUS MODEL: PAS
LD	0-280	12"ø	3x48	LINEAR SLOT DIFFUSER : TITUS MODEL: FL 30 SLOT TYPE: 3" MAX STATIC PRESS DROP: 0.065 IN WG MATERIAL: ALUM. FINISH: ALUM. FRAME TYPE: SURFACE MOUNTING LOCATION: CEILING MAX NC: 10

EXHAUST FAN SCHEDULE																		
MARK	LOCATION	QTY	MANUFACTURER	MODEL NUMBER	TYPE	DIMENSIONAL		PERFORMANCE					MOTOR					
						WEIGHT W/ACC'S (LB)	DIMENSION LxWxH (IN.)	ACTUAL VOLUME (CFM)	TOTAL EXTERNAL SP (IN W.G.)	FAN (RPM)	OPERATING POWER (HP)	SONES (INLET)	MOTOR MOUNTED	SIZE (HP)	VOLTAGE/CYCLE/PH ASE	INPUT WATTS	MOTOR (RPM)	FLA (AMPS)
EF-1	SEE PLANS	1	GREENHECK	SP-80-VG	CEILING EXHAUST FAN	12	11x11x8	70	0.32	935	-	25	YES	-	115/60/1	6	-	0.1
EF-2	SEE PLANS	1	GREENHECK	SP-80-VG	CEILING EXHAUST FAN	12	11x11x8	70	0.32	935	-	25	YES	-	115/60/1	6	-	0.1
EF-3	SEE PLANS	1	GREENHECK	SP-80-VG	CEILING EXHAUST FAN	12	11x11x8	70	0.32	935	-	25	YES	-	115/60/1	6	-	0.1

NOTES:
1. DIRECT DRIVE CABINET FAN.
2. INCLUDE STARTERS FOR ALL EXHAUST FANS.
3. DISCONNECT SWITCH SHALL BE INTERNAL AND PLUG-IN TYPE.
4. PROVIDE WITH TIME DELAY SWITCH, ON A DELAY OF 10 TO 60 MINUTES AFTER THE LIGHT ON FAN HAS BEEN TURNED OFF.

HACKENBERG ENGINEERING

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M-601
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JOB #: GC-22-010

VENTILATION SCHEDULE													
SPACE	RTU	TYPE	NOTES	GROSS AREA Az' (SF)	NET AREA Az (SF)	Table 403.3 Default Occupant Density (People/1000SF)	No. of People (Rounded)	Table 403.3 OUTDOOR AIR RATE		Outdoor Airflow Rate Required in the Breathing Zone (in Occupied Space)	Table 403.3.1.2 Zone Air Distrib. Effectiveness Ez	Zone Outdoor Airflow Vol(m) = Voz (CFM)	Approx. Outdoor Air Intake Flow Rate Vot (CFM)
								PEOPLE	AREA				
								Rp (CFM/Person)	Ra (CFM/SF)				
<<AHU-1>>													
113 Storage		Occupiable storage rooms for dry materials	1	272	272	2	0	5	0.06	16	0.8	20	20
116 Children Collection		Libraries	1	854	854	10	12	5	0.12	162	0.8	203	205
117 Adult Collection		Libraries	1	406	406	10	15	5	0.12	124	0.8	155	155
120 Circulation Desk (A)		Libraries	1	604	604	10	5	5	0.12	97	0.8	122	125
121 Multipurpose Room		Conference/meeting	1	345	345	50	11	5	0.06	76	0.8	95	95
122 Store		Occupiable storage rooms for dry materials	1	100	100	2	0	5	0.06	6	0.8	8	10
123 Teen/Youth Collection		Libraries	1	398	398	10	4	5	0.12	68	0.8	85	85
124 Tutorial		Office space	1	127	127	5	3	5	0.06	23	0.8	28	30
125 Corridor		Common corridors	1	201	201	0	0	-	0.06	12	0.8	15	15
126 Tutorial		Office space	1	147	147	5	3	5	0.06	24	0.8	30	30
127 Tutorial		Office space	1	161	161	5	3	5	0.06	25	0.8	31	30
TOTAL (AS PER CALCULATIONS)										633		791	800
TOTAL (ACTUAL OUTSIDE AIR REQUIRED/AS PER SCHEDULE)													
<<AHU-2>>													
101 Lobby		Lobbies/prefunction	1	621	621	30	5	7.5	0.06	75	0.8	93	95
105 Corridor		Common corridors	1	365	365	0	0	-	0.06	22	0.8	27	30
106 Building Permitting		Office space	1	132	132	5	1	5	0.06	13	0.8	16	20
107 Town Clerk		Office space	1	133	133	5	1	5	0.06	13	0.8	16	20
109 Break Room		Break rooms	1	174	174	25	4	5	0.06	30	0.8	38	40
111 Storage		Occupiable storage rooms for dry materials	1	106	106	2	0	5	0.06	6	0.8	8	10
115 Story Time		Conference/meeting	1	291	291	50	10	5	0.06	67	0.8	84	85
119 Librarian		Office space	1	97	97	5	1	5	0.06	11	0.8	14	15
120 Circulation Desk (B)		Libraries	1	604	604	10	5	5	0.12	97	0.8	122	125
TOTAL (AS PER CALCULATIONS)										335		419	440
TOTAL (ACTUAL OUTSIDE AIR REQUIRED/AS PER SCHEDULE)													

HVAC DUCT & EQUIPMENT CONSTRUCTION & INSULATION SCHEDULE				
SERVICE	STATIC PRESSURE CLASS	LOCATION(S)	DUCT MATERIAL/ CONSTRUCTION	INSULATION TYPE/DESCRIPTION/PROPERTIES
SUPPLY AIR DUCTS				
LOW PRESSURE, DOWNSTREAM OF BLOWER COILS AND COILS SUPPLYING LESS THAN 2000 CFM	+1" SMACNA SEAL CLASS A	INDOOR CONCEALED LOCATIONS	SINGLE WALL, RECTANGULAR, ROUND AND FLAT OVAL.	0.75 PCF NOMINAL DENSITY, EXTERNAL FIBERGLASS DUCT WRAP MINIMUM 2" NOMINAL THICKNESS.
		INDOOR EXPOSED LOCATIONS, WHERE SHOWN OR NOTED ON THE PLANS	FLANGED TRANSVERSE JOINTS, DOUBLE WALL, SOIL INNER WALL. RECTANGULAR, ROUND AND FLAT OVAL.	INTERSTITIAL INSULATION: 2" THICKNESS, FIBROUS-GLASS LINER COMPLYING WITH ASTM C 1071, NFPA 90A, OR NFPA 90B; AND WITH NAIMA AH124, "FIBEROUS GLASS DUCT LINER STANDARD."
		INDOOR EXPOSED LOCATIONS	SINGLE WALL, RECTANGULAR ONLY.	2.0 PCF NOMINAL DENSITY, EXTERNAL FIBERGLASS DUCT WRAP MINIMUM 2" NOMINAL THICKNESS.
LOW PRESSURE, DOWNSTREAM OF AHUS SUPPLYING 2000 CFM AND GREATER	+3" SMACNA SEAL CLASS A	INDOOR CONCEALED LOCATIONS	SINGLE WALL, RECTANGULAR, ROUND AND FLAT OVAL.	0.75 PCF NOMINAL DENSITY, EXTERNAL FIBERGLASS DUCT WRAP MINIMUM 2" NOMINAL THICKNESS.
		INDOOR EXPOSED LOCATIONS, WHERE SHOWN OR NOTED ON THE PLANS	FLANGED TRANSVERSE JOINTS, DOUBLE WALL, SOLID INNER WALL. RECTANGULAR, ROUND AND FLAT OVAL.	INTERSTITIAL INSULATION: 2" THICKNESS, FIBROUS-GLASS LINER COMPLYING WITH ASTM C 1071, NFPA 90A, OR NFPA 90B; AND WITH NAIMA AH124, "FIBEROUS GLASS DUCT LINER STANDARD."
		INDOOR EXPOSED LOCATIONS	SINGLE WALL, RECTANGULAR ONLY.	2.0 PCF NOMINAL DENSITY, EXTERNAL FIBERGLASS DUCT WRAP MINIMUM 2" NOMINAL THICKNESS.
RETURN AIR DUCTS				
LOW PRESSURE, DOWNSTREAM OF AHUS SUPPLYING 2000 CFM AND GREATER	-2" SMACNA SEAL CLASS A	INDOOR CONCEALED LOCATIONS (UNCONDITIONED SPACE)	SINGLE WALL, RECTANGULAR, ROUND AND FLAT OVAL.	0.75 PCF NOMINAL DENSITY, EXTERNAL FIBERGLASS DUCT WRAP MINIMUM 2" NOMINAL THICKNESS.
		INDOOR EXPOSED LOCATIONS (CONDITIONED SPACE)	SINGLE WALL, RECTANGULAR, ROUND AND FLAT OVAL.	INSULATION NOT REQUIRED FOR RA DUCTS LOCATED IN CONDITIONED SPACE.
OUTSIDE AIR DUCTS				
UNCONDITIONED OA DUCTS, UPSTREAM OR DOWNSTREAM OF FANS	+ OR - 2" SMACNA SEAL CLASS A	INDOOR	SINGLE WALL, RECTANGULAR, ROUND AND FLAT OVAL.	0.75 PCF NOMINAL DENSITY, EXTERNAL FIBERGLASS DUCT WRAP MINIMUM 2" NOMINAL THICKNESS.
OUTSIDE AIR PLENUM AT WALL LOUVER OF GRAVITY INTAKE	+ OR - 2" SMACNA SEAL CLASS A	INDOOR	SINGLE WALL, RECTANGULAR, ROUND AND FLAT OVAL.	2.0 PCF NOMINAL DENSITY, EXTERNAL FIBERGLASS DUCT WRAP MINIMUM 2" NOMINAL THICKNESS.

NOTES:
1. REFER TO SPECIFICATION SECTION 23 07 00 FOR ADDITIONAL INSULATION DETAILS AND REQUIREMENTS.
2. DUCT AND PLENUM INSULATION, CONSTRUCTION & SEALING SHALL MEET THE REQUIREMENTS OF THE 7TH EDITION OF THE FBC 2020- ENERGY CONSERVATION CODE, SECTION C403.2.10, PLUS THE ABOVE REQUIREMENTS WHERE MORE STRINGENT.
3. DUCT CONSTRUCTION AND INSULATION SHALL MEET THE REQUIREMENTS OF THE 7TH EDITION OF THE FBC 2020-MECHANICAL CODE, CHAPTER 6, PLUS THE ABOVE REQUIREMENTS WHERE MORE STRINGENT.
4. ALL DUCT INSULATION SHALL MEET THE REQUIREMENTS OF ASHRAE 90.1-2019, TABLES 6.8.2-1 AND 6.8.2-2, PLUS THE ABOVE REQUIREMENTS WHERE MORE STRINGENT.
5. AS A MINIMUM, ALL DUCT SHALL BE CONSTRUCTED AND SUPPORTED AS SPECIFIED IN THE SMACNA HVAC DUCT CONSTRUCTION STANDARDS -METAL AND FLEXIBLE", LATEST EDITION. HOWEVER, ANY MORE STRINGENT REQUIREMENT INDICATED IN THESE DRAWINGS AND/OR IN THE SPECIFICATIONS SHALL PREVAIL OVER THE SMACNA MANUAL.
6. ALL SHEET METAL DUCTWORK SHALL BE CONSTRUCTED OF G90 GALVANIZED STEEL UNLESS NOTED OTHERWISE.
7. THE DUCT SEALING MATERIAL SHALL BE OF LIQUID,MASTIC AND GASKET TYPE AND APPLIED PER MANUFACTURER'S WRITTEN RECOMMENDATIONS. HEAT AND PRESSURE SENSITIVE TAPES ARE NOT ACCEPTABLE AS A FINAL CLOSURE.
8. FLEXIBLE DUCT SHALL BE PROVIDED WHERE INDICATED ON DRAWINGS. ALL FLEXIBLE SHALL BE SUITABLE FOR THE SERVICE INTENDED. NO LENGTH OF FLEXIBLE DUCT SHALL TURN MORE THAN A TOTAL OF 180 DEGREES, FLEXIBLE DUCT SHALL ONLY BE USED IN CONCEALED SPACES (ABOVE CEILINGS) AND NOT PASS THROUGH ANY WALL, FLOOR OR CEILING. FLEXIBLE DUCT SHALL BE NO LONGER THAN SIX (6) FEET.
9. ALL DUCTWORK REQUIRING INSULATION SHALL BE EXTERNALLY INSULATED UNLESS OTHERWISE NOTED.
10. ALL EXTERNAL FIBROUS GLASS INSULATIONS (RIGID BOARD INSULATIONS OR DUCT WRAP INSULATION) JOINTS, SEAMS AND CONNECTIONS SHALL BE CONSTRUCTED WITH FAB AND STAPLES AND THEN SEALED WITH MASTIC. HEAT AND PRESSURE SENSITIVE TAPES ARE NOT ACCEPTABLE AS FINAL CLOSURE.
11. INSULATION MATERIAL SHALL MEET NFPA 90A REQUIREMENTS AND SHALL HAVE COMPOSITE FIRE AND SMOKE HAZARD RATING AS TESTED IN ACCORDANCE WITH NFPA 225 OR UL 723 NOT EXCEEDING FLAME SPREAD OF MORE THAN 25 AND SMOKE DEVELOPED 50.
12. ALL PLENUMS AT AIR HANDLING UNITS SHALL MATCH THE AHU CONSTRUCTION PARAMETERS. PLENUMS AT DOUBLE-WALL AHUS SHALL BE DOUBLE-WALL FABRICATED BY THE AHU MANUFACTURER TO MATCH AHU CONSTRUCTIONS. REFER TO SPECIFICATIONS SECTION 23 73 00 FOR AHU PLENUM REQUIREMENTS.
13. MINIMUM INSULATION R-VALUES FOR SUPPLY, RETURN AND TRANSFER AIR SYSTEMS CONVEYING CONDITIONED AIR: OUTDOORS R-8; VENTILATED ATTIC R-8; UNVENTED ATTIC ABOVE INSULATED CEILING R-8; UNVENTED ATTIC WITH ROOF INSULATIONS R-4.2; UNCONDITIONED R-4.2; INDIRECTLY CONDITIONED R-4.2; CONDITIONED R-4.2 (SUPPLY AIR).

FBC ENERGY CONSERVATION C403.2.1 HVAC Sizing Calculations								
PROJECT NAME/OWNER	23-002 MONTVERDE LIBRARY							
PROJECT ADDRESS	17435 5TH STREET, MONTVERDE, FLORIDA, 34756							
SIZING METHOD USED	LOAD							
OUTDOOR DRY BULB USED	93.3 °F							
OUTDOOR WET BULB USED	76.1 °F							
INDOOR DRY BULB	75 °F							
MAX RH USED	50%RH							
		COOLING CAPACITY			HEATING CAPACITY			
ZONE	AREA (SQFT)	TOTAL	SENSIBLE	LATENT	GRAINS OF WATER/LB AIR			TOTAL (MBH)
		MBH	MBH	MBH	ENTERING	LEAVING	DIFFERENCE	
AHU-1	3615	120.1	94.3	25.8	78.6	70.3	8.3	62.7
AHU-2	2523	78.2	61.5	16.7	70.5	60.7	9.8	42.2
AC-1	134	3.3	2.7	0.6	72.1	63.4	8.8	N/A
AC-2	93	3.0	2.5	0.5	68.5	61.9	6.6	N/A

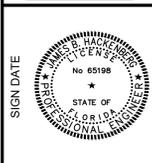
* Above listed capacities include Outside Air required to meet ASHRAE 62.1

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