



**FRUIT, RORD & ASSOCIATES, INC.**  
 CONSULTING ENGINEERS  
 125 IRONWOOD STREET, SUITE 3A  
 ALBUQUERQUE, GEORGIA 30016  
 770-272-2889 • FAX 770-272-5727

THESE DOCUMENTS, AS INSTRUMENTS OF SERVICE, REMAIN THE PROPERTY OF THE ARCHITECT AND NO PART OF THESE DOCUMENTS SHALL BE REPRODUCED OR USED IN ANY FORM WITHOUT WRITTEN PERMISSION.

DATE	
REVISIONS	
NO.	

CONSTRUCTION DOCUMENTS

HVAC PLAN

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

SHEET

**M4.01**

18 OF 32

FILE: 18\_04

DATE: 12/14/18

### H.V.A.C. LEGEND

SYMBOL	DESCRIPTION
— SL —	REFRIGERANT SUCTION / LIQUID
— D —	CONDENSATE DRAIN
⊖	THERMOSTAT 4'-6" A.F.
⊕	SENSOR
▲	FIRE DAMPER
⊘	or C.F.M. CUBIC FEET PER MINUTE
⊙	1 M-1 DETAIL NO. 1/M-1 SHEET NO.
⊗	SUPPLY DIFFUSER
⊘	RETURN OR EXHAUST GRILLE
⊕	or MVD MANUAL VOLUME DAMPER
⊕	M MOTOR OPERATED DAMPER
⊕	FLARE ELL WITH THICK TURNING VANES
⊕	AIR NECK CONNECTION SIZE
⊕	NEW TO EXISTING CONNECTION
⊕	DIAMETER
⊕	TYPICAL
⊕	DEMOLITION EXTENTS (DEMO. PLANS ONLY)

**HVAC NOTES:**

NOT ALL EXISTING WORK IS SHOWN, AND THAT SHOWN IS IN ITS APPROXIMATE LOCATION AND ARRANGEMENT. EXACT LOCATION, ARRANGEMENT AND SIZES SHALL BE VERIFIED ON THE JOB BEFORE STARTING ANY NEW WORK.

INSTALL PIPING AND DUCTWORK IN EQUIPMENT ROOMS ADJACENT TO WALLS AND CEILINGS, WHERE POSSIBLE, TO PROVIDE MAXIMUM ROOM CLEARANCE.

COORDINATE THE INSTALLATION OF THIS WORK WITH THAT OF OTHER TRADES TO PROVIDE THE BEST ARRANGEMENT OF PIPING, DUCTWORK, AND EQUIPMENT. REFER TO PLUMBING AND ELECTRICAL DRAWINGS.

PIPING, DUCTWORK, AND EQUIPMENT IS SHOWN IN ITS GENERAL LOCATION, UNLESS DIMENSIONED. EXACT LOCATION SHALL BE DETERMINED BY THE LOCATION OF OTHER EQUIPMENT, AND TO PROVIDE SERVICE CLEARANCE.

ARRANGE PIPING AND DUCTWORK TO CLEAR STRUCTURAL MEMBERS, PLUMBING, PIPING AND LIGHT FIXTURES.

EXACT LOCATION OF GRILLES AND CEILING OUTLETS SHALL BE DETERMINED ON THE JOB. COORDINATE WITH LIGHTS AND ARCHITECTURAL REQUIREMENTS TO PROVIDE A UNIFORM AND SYMMETRICAL APPEARANCE. REFER TO ARCHITECTURAL AND ELECTRICAL DRAWINGS AND DETAILS.

ALL PIPING SHALL BE CONCEALED, UNLESS NOTED OTHERWISE.

PROVIDE FLEXIBLE DUCT CONNECTIONS TO ALL AIR HANDLING EQUIPMENT.

PROVIDE UNION OR FLANGE CONNECTIONS IN PIPING AT ALL EQUIPMENT AND CONTROL VALVES, AND AS REQUIRED FOR SERVICE.

PROVIDE MVD IN EACH ZONE SUPPLY DUCT OF MULTI-ZONE AHU'S.

PROVIDE ACCESS DOORS IN DUCTWORK FOR ALL FIRE AND SMOKE DAMPERS, AND DUCT-MOUNTED COILS AND CONTROL DEVICES.

PROVISIONS SHALL BE MADE FOR DRAINING ALL OUTSIDE LINES SUBJECT TO FREEZING.

UNDERGROUND PIPING SHALL HAVE A MINIMUM COVER OF 24 INCHES.

SLOPE DRAIN LINES TOWARD DRAIN WITH A MINIMUM SLOPE OF 1/4" PER FOOT.

THRU-WALL UNITS SHALL BE LOCATED SO AS TO BE SYMMETRICAL WITH ROOM, WINDOWS, WALL SECTIONS, AND OTHER ARCHITECTURAL REQUIREMENTS.

### -- DUCT FURNACE SCHEDULE --

ITEM	LOCATION	C.F.M.	HEATING M.B.H. INPUT	HEATING M.B.H. OUTPUT	MANUF. & MODEL NO.
DF-1	MECH 160	3750	225.0	182.25	MODINE DFG225

### -- COIL SCHEDULE --

ITEM	C.F.M.	TOTAL M.B.H.	SENS. M.B.H.	MAX. A.P.D.	CARRIER MODEL NO.
COIL-1	1350	40.0	30.9	0.2"	CAPMP4221ALA

### -- AIR DISTRIBUTION SCHEDULE --

MARK	TYPE	NECK CONNECTION (1)	FINISH	OBD	PRICE NO. UNLESS NOTED	REMARKS (2)
A	CEILING DIFFUSER	6"Ø	MANUFACTURER'S STANDARD FINISH	YES	SCD-4C	24 X 24 PANEL (3)
B	CEILING DIFFUSER	8"Ø	MANUFACTURER'S STANDARD FINISH	YES	SCD-4C	24 X 24 PANEL (3)
C	CEILING DIFFUSER	10"Ø	MANUFACTURER'S STANDARD FINISH	YES	SCD-4C	24 X 24 PANEL (3)
D	CEILING RETURN/EXHAUST	10" X 10"	MANUFACTURER'S STANDARD FINISH	NO	80	12 X 12 PANEL WITH BORDER FRAME
E	CEILING RETURN/EXHAUST	22" X 22"	MANUFACTURER'S STANDARD FINISH	NO	80	24 X 24 PANEL WITH BORDER FRAME
F	SUPPLY REGISTER	SEE PLANS	MANUFACTURER'S STANDARD FINISH	YES	5200	DOUBLE DEFLECTION 3/4" BLADE SPACING
G	RETURN GRILLE	SEE PLANS	MANUFACTURER'S STANDARD FINISH	NO	535	45° DEFLECTION 1/2" BLADE SPACING

- (1) DUCT RUNOUT SIZE SAME AS NECK CONNECTION SIZE, UNLESS NOTED OTHERWISE.
- (2) PROVIDE LAY-IN TYPE FOR T-BAR CEILINGS AND SURFACE TYPE FOR ALL OTHER CEILINGS. REFER TO ARCHITECTURAL FINISH SCHEDULE FOR CEILING TYPES.
- (3) PROVIDE WITH REMOVABLE CORE (RC) AND MOLDED, INSULATED BACKPAN WITH FOIL SKIRM VAPOR BARRIER.
- (4) NOT USED.
- (5) NOT USED.
- (6) OMIT OBD FOR WALL MOUNT HVAC UNITS.

### -- PACKAGED HEATING & AIR CONDITIONING UNIT SCHEDULE --

ITEM	NDM TONS	C.F.M. TOTAL	EXT. S.P. INCHES W.C.	C.F.M. O.A.	COOLING CAP. SENS/TOT MBH (1)	S.E.E.R. MIN. (1)	HTG. CAP. MBH N. GAS IN.	CARRIER MODEL NO.
AC-1	10	9,380	1.0	315	114.0	11.1 E.E.R.	224.0	48TCE1131000
AC-2	8.5	3,000	1.0	300	99.0	11.0 E.E.R.	180.0	11CDE09 (2)(3)(4)
AC-3	25	10,000	1.0	1700	280.0	9.8 E.E.R.	400.0	11STCFE29 (2)(3)(5)
AC-4	7.5	2,400	1.0	375	88.0	11.0 E.E.R.	224.0	11TCE08 (2)(3)(5)

- (1) RATINGS IN ACCORDANCE WITH A.R.I. STANDARD 210.
- (2) FURNISH FACTORY INSTALLED DISCONNECT AND HOT GAS REHEAT DEHUMIDIFICATION SYSTEM.
- (3) FURNISH ION GENERATOR AS SCHEDULED.
- (4) UNITS SHALL HAVE ROOF CURB.
- (5) MODIFY EXISTING EQUIPMENT RAILS TO SUPPORT NEW UNIT.

### -- ION GENERATORS --

ITEM	AHU NO.	MAX. TREATED AIRFLOW	QTY.	TYPE	DRY CONTACTS	POWER (VA)	VARIABLE OUTPUT WITH AIRFLOW	MANUFACTURER & MODEL NUMBER
IG-1	WGU/FUR	1000	1	1	INCLUDED	24 VA	INTEGRAL	GPS-2400 (1)(2)(3)(4)
IG-2	AHU/AC	2,400	1	1	INCLUDED	24 VA	INTEGRAL	GPS-2400 (1)(2)(3)(4)

- (1) INSTALL ION GENERATORS IN SUPPLY AIR DUCT OF EACH UNIT WHERE INDICATED.
  - (2) ION GENERATORS SHALL BE POWERED FROM THE 24V AC FAN CONTROL CIRCUIT. LOOSE TRANSFORMERS ARE NOT ACCEPTABLE.
- FAULT RESERVE SHALL BE AUTOMATIC. MANUAL FUSE REPLACEMENT WITH NOT BE ACCEPTED.
- PROVIDE WITH A FULL PERIMETER GASKETED FLANGE OF EACH ION GENERATOR.

### -- CONDENSING UNIT SCHEDULE --

ITEM	SERVES	CAPACITY M.B.H.	S.E.E.R.	CARRIER MODEL NO.
CU-1	AHU-1	121.0	11.2 E.E.R.	38AU2812
CU-2	COIL-1	34.5	13.0	24ABR336

### -- GAS FIRED FURNACE SCHEDULE --

ITEM	LOCATION	O.A. C.F.M.	C.F.M.	S.P.	HP.	HEATING M.B.H. INPUT	CARRIER MODEL NO.
FUR-1	MECH 159	150	1350	0.8	1/5	66.0	58TA070 (1)

- (1) FURNISH ION GENERATORS AS SCHEDULED.

### -- AIR HANDLING UNIT SCHEDULE --

ITEM	C.F.M.	EXT. S.P.	FAN HP.	O.A. C.F.M.	COOLING CAPACITY MBH SENSIBLE	TOTAL	CARRIER MODEL NO.	REMARKS
AHU-1	3750	1.0	2.4	240	—	121.0	40RUAA12	(1)(2)

- (1) RATINGS IN ACCORDANCE WITH A.R.I. STANDARD 240.
- (2) FURNISH ION GENERATOR AS SCHEDULED.

### FMS INPUT/OUTPUT SUMMARY

TYPICAL PACKAGED AND SPLIT AIR CONDITIONING UNIT (WITH GAS HEAT)

	OUTPUTS		INPUTS		SOFTWARE		NOTES
	BINARY	ANALOG	BINARY	ANALOG	ALARM	DDC	
ROOM TEMPERATURE							
ROOM OFFSET							
ROOM HUMIDITY (PKG. UNITS ONLY)							
OVERRIDE							
SUPPLY FAN	X						
COOLING STAGE 1	X						
COOLING STAGE 2 (IF APPLICABLE)	X						
HEAT STAGE 1	X						
HEAT STAGE 2 (IF APPLICABLE)	X						
REVERSING VALVE (DEHUM)	X						

### FMS INPUT/OUTPUT SUMMARY

TYPICAL DUCTLESS SPLIT SYSTEM HEAT PUMP

	OUTPUTS		INPUTS		SOFTWARE		NOTES
	BINARY	ANALOG	BINARY	ANALOG	ALARM	DDC	
ROOM TEMPERATURE					X		(1)

- (1) TEMPERATURE POINT FOR INFORMATION ONLY. CONTROL SHALL BE BY THERMOSTAT FURNISHED BY UNIT MANUFACTURER.

### FMS INPUT/OUTPUT SUMMARY

TYPICAL FOR WALL-MOUNT UNIT (GAS HEAT)

	OUTPUTS		INPUTS		SOFTWARE		NOTES
	BINARY	ANALOG	BINARY	ANALOG	ALARM	DDC	
ROOM TEMPERATURE							
ROOM OFFSET							
COOLING STAGE 1	X						
HEATING STAGE 1	X						
VENTILATION SYSTEM	X						
SUPPLY FAN	X						
SUPPLY AIR TEMPERATURE					X		

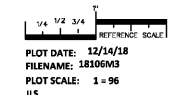
CONTROL DEHUMIDIFICATION CYCLE WITH DEVICES FURNISHED BY UNIT MANUFACTURER.

### FMS INPUT/OUTPUT SUMMARY

MISCELLANEOUS

	OUTPUTS		INPUTS		SOFTWARE		NOTES
	BINARY	ANALOG	BINARY	ANALOG	ALARM	DDC	
FREEZER TEMPERATURE SENSOR							
COOLER TEMPERATURE SENSOR							
OUTSIDE AIR TEMPERATURE							
OUTSIDE AIR HUMIDITY							
CABINET HEATING							
THRU-WALL (PTAC) UNIT EXHAUST	X						

Order Plans @



REFERENCE SCALE:  
 PLOT DATE: 12/14/18  
 FILENAME: 18106M3  
 PLOT SCALE: 1 = 96  
 JS

FRUIT, RORD & ASSOCIATES, INC.  
 MARIETTA, GA 30067 (770) 772-2889