

Heat Pump Schedule																
Mark	Manufacturer	Model	Nominal Cooling Capacity	Cooling Coil			Reverse Cycle Heating	Ratings				Electrical			Operating Weight	Notes
				Total	Sensible	SEER		EER	SEER	HSPF	COP	Voltage	Number of Poles	MCA		
HP-1	Trane	4TWR4049G1	4.0 ton	47,284 Btu/h	33,045 Btu/h	12.0	14.0	8.5	3.4	208 V	1	26 A	45 A	250 lb	1.2-4.8	
HP-2	Trane	4TWR4049G1	4.0 ton	47,452 Btu/h	33,476 Btu/h	12.0	14.0	8.5	3.4	208 V	1	26 A	45 A	250 lb	1.2-4.8	
HP-3	Trane	TWA9043DAB	7.5 ton	89,250 Btu/h	67,740 Btu/h	11.2	12.8	9.5	3.3	208 V	3	33 A	45 A	413 lb	1-8	
HP-4	Trane	4TWR5030H1	2.5 ton	28,518 Btu/h	20,739 Btu/h	12.5	15.0	9.5	3.9	208 V	1	17 A	25 A	216 lb	1.2-4.8	
HP-5	Trane	4TWR5030H1	2.5 ton	28,518 Btu/h	20,739 Btu/h	12.5	15.0	9.5	3.9	208 V	1	17 A	25 A	216 lb	1.2-4.8	
HP-6	Trane	4TWR4018S1	1.5 ton	18,376 Btu/h	13,087 Btu/h	12.0	14.5	8.5	3.7	208 V	1	12 A	20 A	141 lb	1.2-4.8	
HP-7	Trane	4TWR4069G1	5.0 ton	58,976 Btu/h	43,750 Btu/h	11.7	14.0	8.5	3.5	208 V	1	32 A	50 A	278 lb	1.2-4.8	

- Notes:
- Condenser Coil Hall/Vandal Guard
 - Secure Heat Pump to Utility Pad w/Tamper Resistant fasteners
 - Dual Compressor, Dual Circuit
 - Mechanical contractor to coordinate with the electrical contractor for the installation, wiring, and programming/setting of a HVAC rated time delay relay equipped with lockout and adjustable random restart.
 - Relay to be mounted in heat pump controls compartment. The minimum restart setting is to be 40 seconds with each unit programmed for random start intervals (staggered start) subsequent to the initial delay of 40 seconds.
 - Heat pump to also control restart of the indoor air handler fan motor.
 - Wiring to be installed in conduit to the exterior heat pump.
 - Wiring also routes to the emergency generator control panel contacts in conduit, coordinate with generator vendor for connections.

Air Terminal Schedule						
Mark	Manufacturer	Model	Description	Material	Size	Count
EG-1	Price	80	Ceiling Exhaust Grille	Steel	12"x12"	1
RG-2	Price	80	Ceiling Return Grille	Steel	12"x24"	61
SD-1	Price	SCD	Rectangular Face Ceiling Supply Diffuser - 12"x12" Face	Steel	6"ø	6
SD-2	Price	SCD	Rectangular Face Ceiling Supply Diffuser - 12"x12" Face	Steel	8"ø	3
SD-3	Price	SCD	Rectangular Face Ceiling Supply Diffuser - 24"x24" Face	Steel	6"ø	73
SD-4	Price	SCD	Rectangular Face Ceiling Supply Diffuser - 24"x24" Face	Steel	8"ø	6
SD-5	Price	SCD	Rectangular Face Ceiling Supply Diffuser - 24"x24" Face	Steel	10"ø	1

- Notes:
- Noise Criteria Shall Not Exceed 25
 - Contractor Shall Coordinate Border with Ceiling Type (Lay-In Or Gyp.)
 - Refer to Mechanical Floor Plan(S) For CFM
 - Air Devices Are 4-Way Throw (Unless Noted Otherwise on Mechanical Floor Plans)
 - Supply Air Terminals Shall Be Supplied with Opposed Blade Damper
 - Provide Manual Volume Damper at Main Trunk Take-Off For Balancing, Supply and Return
 - Approved Alternate Manufacturers: Metalabre, Titus
 - Air Terminal Finishes Shall Be Per Architect

Condensing Unit Schedule (Ductless Systems)												
Mark	Manufacturer	Model	Capacities			SEER	Voltage	Electrical			Weight	Notes
			Nominal	Total	Sensible			# Poles	MCA	MOCF		
DCU-1	Mitsubishi Electric	MUY-GL12NA	1.00 ton	12000 Btu/h	9240 Btu/h	13	208 V	1	7 A	15 A	81 lb	1

- Notes:
- Provide tamper resistant securement to concrete utility pad

Fan Coil Schedule (Ductless Systems)						
Mark	Manufacturer	Model	Air Flow (High Wet)	Weight (lbs.)	Outdoor Unit	Accessories
DFCU-1	Mitsubishi Electric	MSY-GL12NA	364 CFM	22.0	DCU-1	1-3

- Accessories:
- Hard Wired Controller
 - Electrical Contractor Shall Provide Conduit and Pull String for Low Voltage Wiring From Outdoor Unit to Indoor Unit
 - Provide w/MicroBlue Diamond Condensate Pump
- Note:
- Indoor unit power is provided via the outdoor unit; no separate electrical power supply is needed.

Fan Schedule															
Mark	Manufacturer	Model	Description	Air Flow	E.S.P.	Motor RPM	Fan Drive Type	Power	Electrical			Sones	Weight	Count	Notes
									Volt	# Poles	Control				
F-1	Greenheck	SP-B110	Ceiling Exhaust Fan	250 CFM	0.30 in-wg	1000	Direct	83 W	115 V	1	Wall Switch	3.0	27 lb	1	1-5
F-2	Greenheck	SP-A250	Ceiling Exhaust Fan	250 CFM	0.30 in-wg	1000	Direct	83 W	115 V	1	Wall Switch	3.0	27 lb	1	1-5

- Accessories:
- Solid State Speed Control, 6 Amp, Shipped Loose
 - Round Duct Connection
 - Transition Duct Reducer (PN: 473324), Shipped Loose
 - Isolation Kit (PN: VI KIT-SP/CSF), Shipped Loose
 - Adjustable easy installation mounting bracket

Louver Schedule						
Mark	Manufacturer	Model	Description	Material	Size	Count
L-1	Greenheck	EAC-401	4" Combination Louver-Backdraft Damper	Aluminum	12"x12"	1

- Notes:
- Approved alternate manufacturers: Ruskin
 - Louver finishes shall be per architect

Gravity Ventilator Schedule					
Mark	Manufacturer	Model	Weight	Notes	
GV-1	Greenheck	GRSL-18	4.00 lb	1-4	
GV-2	Greenheck	GRSR-20	24.00 lb	1-4	
GV-3	Greenheck	SP-B110			
GV-4	Greenheck	SP-B110			

- Notes:
- Insect Screen
 - Birdscreen - Galvanized
 - Backdraft Gravity Damper
 - Provide w/Manufacturer Roof Curb - Height TBD (min. 8" Above Flashing), Slope Level
 - Installation, Coordinate w/Roofing Contractor

Air Handler Schedule														
Mark	Manufacturer	Model	Air Flow			Electric Heat @ 208V		Filter Type	Electrical				Weight	Notes
			Supply	ESP	Outdoor	Power	Steps		Volts	Phase	MCA	MOCF		
AHU-1	Trane	GAMS80C48M41	1365 CFM	0.70 in-wg	285 CFM	7.21 kW	1	MERV 12	208 V	1	51.0 A	60 A	166 lb	1-5
AHU-2	Trane	GAMS80C48M41	1290 CFM	0.70 in-wg	290 CFM	7.21 kW	1	MERV 12	208 V	1	51.0 A	60 A	166 lb	1-5
AHU-3	Trane	TWE690438AA	2570 CFM	1.00 in-wg	480 CFM	26.20 kW	2	MERV 12	208 V	3	98.7 A	100 A	323 lb	1-7
AHU-4	Trane	GAMS80B30M21	840 CFM	0.70 in-wg	175 CFM	5.76 kW	1	MERV 12	208 V	1	38.0 A	40 A	132 lb	1-5
AHU-5	Trane	GAMS80B30M21	1000 CFM	0.70 in-wg	175 CFM	5.76 kW	1	MERV 12	208 V	1	38.0 A	40 A	132 lb	1-5.7
AHU-6	Trane	GAMS80A18M11	475 CFM	0.70 in-wg	100 CFM	3.60 kW	1	MERV 12	208 V	1	25.0 A	25 A	120 lb	1-5
AHU-7	Trane	GAMS80C60M51	1700 CFM	0.70 in-wg	245 CFM	10.80 kW	2	MERV 12	208 V	1	66.0 A	100 A	145 lb	1-5

- Notes:
- 7-Day Programmable Thermostat
 - UV Lights
 - Single Point wiring
 - Bi-Polar Ionization (Global Plasma Solutions or Equal)
 - Factory Installed Heaters w/Circuit Breaker
 - Dual Circuit
 - Economizer

Electric Wall Heater Schedule										
Mark	Manufacturer	Model	Watts	BTUs	Voltage	Number of Poles	Operating Weight	Mounting	Control	Notes
EWH-1	Markel	F3423T	3.0 kW	10,239 Btu/h	120 V	1	22 lb	Wall Mounted	Integral T-Stat	1-2

- Notes:
- Provide with factory surface mounting frame
 - Provide with factory installed double pole thermostat

Mechanical Symbols

Sections

- Indicates Similar to Noted View When Pressed
- View Number on Sheet
- Sheet on Which Detail Appears

Air Terminals

- CD1 - Mark (See Air Terminal Schedule)
- 6"ø - Duct Connection Size
- 125 - Air Flow (cfm)
- Supply Air Duct Up / Supply Air Duct Down
- Return / Outdoor Air Duct Up / Return / Outdoor Air Duct Down
- Exhaust Air Duct Up / Exhaust Air Duct Down
- Duct Centerline (Round Duct)
- Damper in Ductwork, if Damper is Unlabeled, Assume Balancing Damper, Manual (B)
- Damper Types:
 - B = Balancing Damper, Manual
 - 2P = 2-Position Damper, Motorized Actuator
 - M = Full Modulating Damper, Motorized Actuator
 - F = Fire Damper
 - FS = Combination Fire / Smoke Damper
- Ceiling Diffuser with Flexible Duct Connection and 4-Way Throw Direction Arrows, if no Direction Arrows Are Not Present, Assume 4-Way Throw
- Direction of Air Flow
- Door Unit (3/4" Access Duct) (Unlabeled)
- Turned Rectangular Ductwork with Turning Vanes Inside Turning Vanes in Rectangular Supply Ductwork Even When Arrows Are Not Indicated, Turning Vanes Not Required in Return Air, Outdoor Air, and Exhaust Air Ducts (Unless Indicated)
- Rectangular Duct / Round Duct with Dimensions
- Thermostat - Wall Mounted with Unit Designation and Mounting Height to Bottom of Thermostat (Mounting Height 48" A.F.F. Unless Noted Otherwise on Plans)
- Thermostat in Lockbox
- Humidistat - Wall Mounted with Unit Designation and Mounting Height to Bottom of Thermostat (Mounting Height 48" A.F.F. Unless Noted Otherwise on Plans)
- RTU-1
- Carbon Dioxide Sensor
- Condensate Drain Piping (CD)

Sequences of Operation

Exhaust fans: Exhaust fans in toilet rooms shall be controlled by light switches.

Heaters: (Cabinet) (Unit) (Baseboard) heaters shall be controlled by thermostat located as called for in drawings or snap acting unit mounted thermostats where not shown. Wall heaters shall be controlled by built in thermostat.

HVAC: (RTUs and split units) Air conditioning units shall have room thermostat furnished by unit manufacturer and shall control heating and cooling in sequence with automatic switchover as required maintaining room temperature. A fan switch shall allow blower fan to run continuously or cycle. Electric duct heaters to be controlled by wall mounted mercury bulb thermostat with stages as indicated on plans.

Economizer cycle: (AH 3 & AH 5) Air conditioning units shall include a full outdoor air enthalpy controlled economizer cycle. When the outdoor air is suitable for free cooling, the outdoor air damper shall modulate to maintain a mixed air temperature entering the air handling unit between 50-55° F. When the outdoor air is not suitable for free cooling, the first stage of the cooling compressor is turned on and the dampers are set to minimum for occupancy requirements (vat per DCV.)

Dehumidification: (AH 3) Air conditioning unit shall be controlled by both temperature (thermostat) and humidity (humidistat) controls. The AHU shall have a thermostat to control heating and cooling in sequence with automatic switchover as required to maintain room temperature. Upon a rise in humidity, the humidistat (adj.) shall initiate the cooling mode and sub-cool the space up to 2° F (adj.) below the temperature set point. This sequence shall continue until the humidity set point has been satisfied.

HVAC Submittals

The mechanical contractor shall provide the HVAC equipment submittals with an electrical summary sheet for use by the electrical engineer. The sheet shall indicate voltage, phase, MCA, and MOCF for all HVAC equipment submitted. Electrical values that conflict with information provided in the HVAC equipment submittals is sole responsibility of the mechanical contractor.

Bipolar Ionization Notes

- Basis of Design: Global Plasma Solutions: Approved equals by Airgenics and Bioxgen subject to specification compliance
- Mount GPS-device to air inlet side of cooling coil
- If contractor substitutes basis of design with another manufacturer, contractor shall coordinate all electrical and mechanical changes
- Bi-polar ionization systems requiring perishable glass tubes are not acceptable
- All manufacturers must pass UL-867-2007 ozone chamber testing by either UL or ETL
- Ionization bar to have a minimum of 1 neeppoint every 0.50' of coil width. Systems with neeppoints further apart shall not be acceptable (applicable for large AHU, coil installations)
- Ionization systems with multiple ion modules mounted to a bar shall not be an acceptable substitute
- Ionization systems that do not use epoxy to protect the ion circuitry shall not be acceptable
- Ionization output shall be a minimum of 60 million ions/sec for every 0.50' of coil width
- Ionization power supply shall be capable of 24V to 240VAC input without the use of an external transformer
- Ionization power supply shall have power on and plasma on indication light
- Ionization power supply shall have integral BMS alarm contacts and shall only take up one inch in the direction of airflow
- Ionization bar shall be modular and designed to cover the entire coil width in 6 inch increments
- Ionization system shall have been tested and certified by UL 2998 as an "ozone free" device
- Provide with self-cleaning feature. Systems without self-cleaning shall not be acceptable.
- Provide with rare earth magnets for ease of mounting or self-sealing adhesive on small units
- UV light to be factory installed shining directly on the coil with option safety hardware that will turn off the light when the cabinet doors are opened.

Design Conditions

Outdoor	
Design Data Location	Eljay, GA
Heating db (99.6%)	19.0
Cooling db (0.4%)	93.2
Mean Coincident wb (0.4%)	75.6
Weather Station	Dalton Municipal, GA, USA (WMO: 722154)
Current Energy Code	2015 IECC
Climate Zone	4A
Indoor	
Heating db	70
Cooling db	74
Cooling Relative Humidity	55% (Maximum)

db: Dry Bulb °F
wb: Wet Bulb °F
Note: Outdoor conditions based upon ASHRAE Climatic Design Conditions 2017.

Mechanical Sheet List		
Sheet Number	Sheet Name	Current Revision Description
M01	MECHANICAL SCHEDULES	
M02	MECHANICAL DETAILS	
M11	MECHANICAL PLAN	
M21	MECHANICAL ROOF PLAN	

- ### Mechanical Project Notes
- All mechanical work shall be done in accordance with all state and local laws and ordinances and in a manner satisfactory to the authority having jurisdiction. It shall be the responsibility of the Mechanical contractor to obtain all required permits, inspections and pay all applicable fees.
 - The mechanical contractor shall coordinate the routing of ductwork with other trades and ensure there is available space for all involved occupations before fabrication of ductwork begins. Ductwork sizes noted on mechanical plans are net clear inside dimensions.
 - The mechanical contractor shall not pass ductwork, piping, or place mechanical equipment directly over any electrical panels or electrical equipment. Coordinate with the electrical contractor to maintain clearances as required by codes.
 - Fire dampers are required where ductwork penetrates a one or more hour fire resistance rated assembly. [International Mechanical Code section 607 and International Building Code 716.5.] Fire dampers may be omitted in 1-hour rated fire assemblies where the duct penetrating the wall is not larger than 100 in² in area. Fire dampers are also required where ducts of all air systems penetrate floor assemblies. Coordinate with the architect for all fire dampers and assemblies indicated on the architectural plans.
 - Coordinate location of ceiling mounted air terminals with architectural selection of ceiling plans.
 - Mechanical contractor shall furnish all labor, materials, equipment, and tools and shall be responsible for a complete and operating facility.
 - All mechanical equipment shall be provided complete with electrical starter, protective devices, and interlocks required for complete operation system.
 - Mechanical equipment placement shall allow for full service/maintenance as recommended by the equipment manufacturer.
 - Color and finish of air terminals, louvers, and wall caps shall be coordinated with the architect.
 - The mechanical contractor is responsible for the testing, adjusting and balancing of all air systems.
 - All ductwork shall be connected to mechanical equipment with flexible U.L. listed connectors.
 - Outdoor air intakes shall not be located within 10'-0" of exhaust/relief louvers, wall caps, plumbing vents, or roof caps.
 - Units with air flows above 2,000 cfm must have a duct mounted smoke detector mounted in the supply duct downstream of all filters [2002 NFPA 90a 6.4.2.1]. Smoke detectors are also required in the return air stream prior to any exhausting from the building or mixing with return air unless all portions of the building served by the air distribution system are protected by area smoke detectors connected to a fire alarm system in accordance with the International Fire Code [International Mechanical Code 606.2.1 and exception]. These smoke detectors must be wired to a fire alarm system when one is provided in a constantly attended location for supervisory signals [International Mechanical Code 606.4.1 and 2002 NFPA 90a 6.4.4]. Local ordinances may have more stringent requirements. Coordinate with electrical contractor. See electrical drawings for locations.
 - Insulating materials shall have a flame spread index not more than 25 and a smoke-developed index not exceeding 450 in accordance with ASTM E 84.
 - The mechanical contractor shall provide access panels in non-lay-in type ceiling (example gypsum ceilings) for all mechanical valves and dampers.
 - Where ductwork is visible through registers and grilles, the mechanical contractor shall prime and paint the interior of the ductwork black.
 - The mechanical contractor shall size refrigerant line sets in accordance with the equipment manufacturer's guidelines.
 - Furnish mechanical as-built drawings as well as Operations & Maintenance manuals for all mechanical systems to the owner within 90 days of system acceptance by the authority having jurisdiction.

HVAC Submittals

The mechanical contractor shall provide the HVAC equipment submittals with an electrical summary sheet for use by the electrical engineer. The sheet shall indicate voltage, phase, MCA, and MOCF for all HVAC equipment submitted. Electrical values that conflict with information provided in the HVAC equipment submittals is sole responsibility of the mechanical contractor.

Bipolar Ionization Notes

- Basis of Design: Global Plasma Solutions: Approved equals by Airgenics and Bioxgen subject to specification compliance
- Mount GPS-device to air inlet side of cooling coil
- If contractor substitutes basis of design with another manufacturer, contractor shall coordinate all electrical and mechanical changes
- Bi-polar ionization systems requiring perishable glass tubes are not acceptable
- All manufacturers must pass UL-867-2007 ozone chamber testing by either UL or ETL
- Ionization bar to have a minimum of 1 neeppoint every 0.50' of coil width. Systems with neeppoints further apart shall not be acceptable (applicable for large AHU, coil installations)
- Ionization systems with multiple ion modules mounted to a bar shall not be an acceptable substitute
- Ionization systems that do not use epoxy to protect the ion circuitry shall not be acceptable
- Ionization output shall be a minimum of 60 million ions/sec for every 0.50' of coil width
- Ionization power supply shall be capable of 24V to 240VAC input without the use of an external transformer
- Ionization power supply shall have power on and plasma on indication light
- Ionization power supply shall have integral BMS alarm contacts and shall only take up one inch in the direction of airflow
- Ionization bar shall be modular and designed to cover the entire coil width in 6 inch increments
- Ionization system shall have been tested and certified by UL 2998 as an "ozone free" device
- Provide with self-cleaning feature. Systems without self-cleaning shall not be acceptable.
- Provide with rare earth magnets for ease of mounting or self-sealing adhesive on small units
- UV light to be factory installed shining directly on the coil with option safety hardware that will turn off the light when the cabinet doors are opened.

