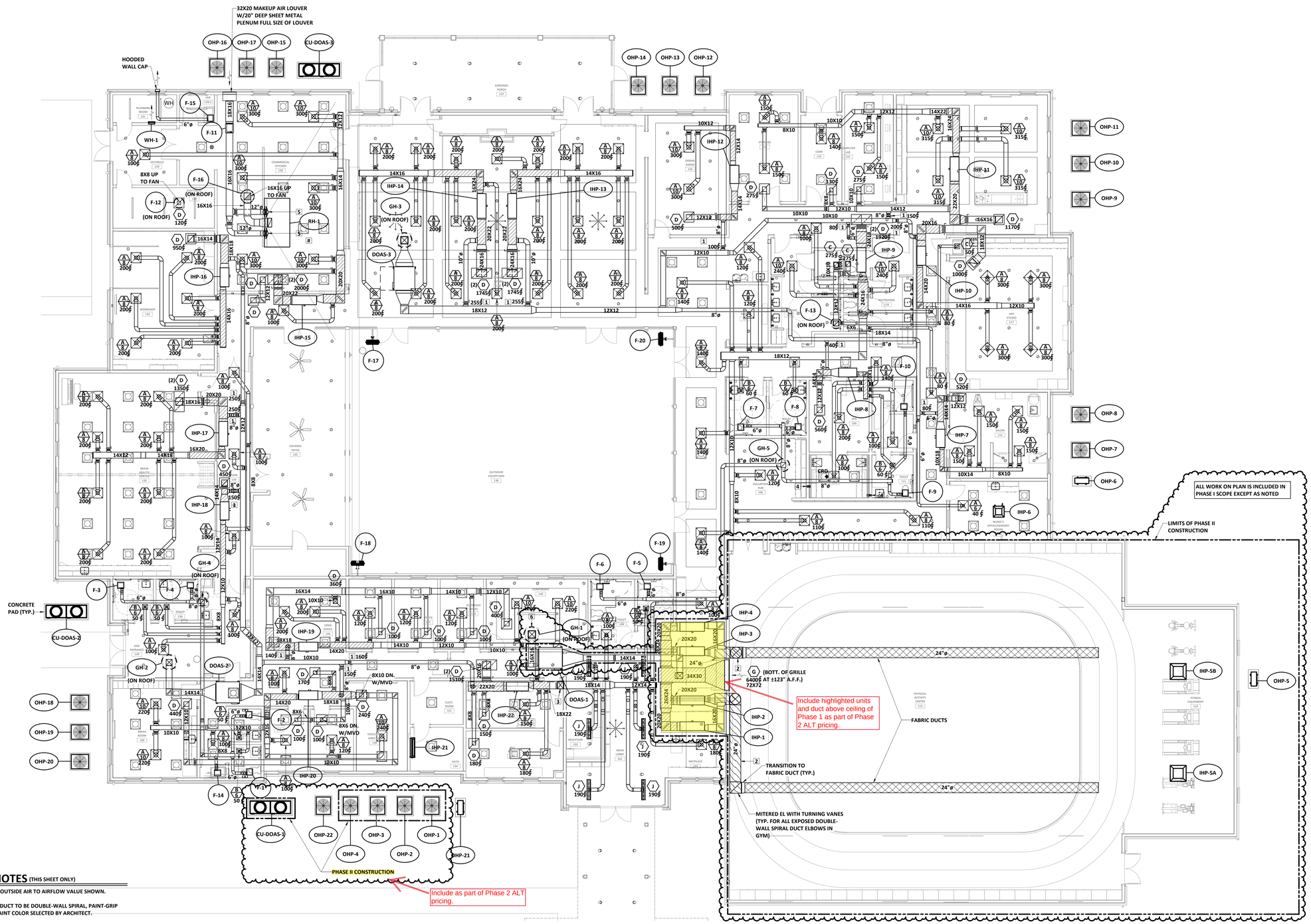

KEYNOTES (THIS SHEET ONLY)

1. BALANCE OUTSIDE AIR TO AIRFLOW VALUE SHOWN.
2. EXPOSED DUCT TO BE DOUBLE-WALL SPIRAL, PAINT-GRIP FINISH. PAINT COLOR SELECTED BY ARCHITECT.
3. OFFSET 18X14 UP TO ABOVE VAULTED CEILING IN MAIN LOBBY 101.
4. DRYER VENT THROUGH ROOF.
5. TRANSITION TO HOOD CONNECTION SIZE IN VERTICAL.
6. PROVIDE AND INSTALL GRAVITY HOOD GH-1 AND 16X16 RISER DUCT UNDER PHASE I CONSTRUCTION. CAP BOTTOM OF RISER DUCT AND INSULATE ALL DUCT SURFACES BELOW ROOF. CONNECT TO DOAS-1 INTAKE UNDER PHASE II CONSTRUCTION.

N

1 / M101 **HVAC NEW WORK PLAN**
SCALE: 1/8" = 1'-0"

dickinson ARCHITECTS
Architecture|Interior Design|Planning
771 Broad Street Suite 200
Augusta, Georgia 30901
(706) 722-7488
mail@dickinsonarchitects.com
www.dickinsonarchitects.com

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PROJECT TITLE:

JUD C HICKEY CENTER

REVISIONS

REV #	DATE	APRVD BY	REVISION
	04/16/21	JMF	35% SET
	11/17/21	JMF	65% SET
	2/16/22	JMF	ISSUE FOR PERMIT
1	9/9/22	JMF	OWNER REVISIONS

DA PROJECT NUMBER & NAME: 1893

DRAWING TITLE:

HVAC PLAN

DRAWING NO:

M101

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1/4 1/2 3/4 1" REFERENCE SCALE

PLOT DATE: 4/16/21
FILE NAME: 21011MECH
PLOT SCALE: 1" =1'-0"
WGC

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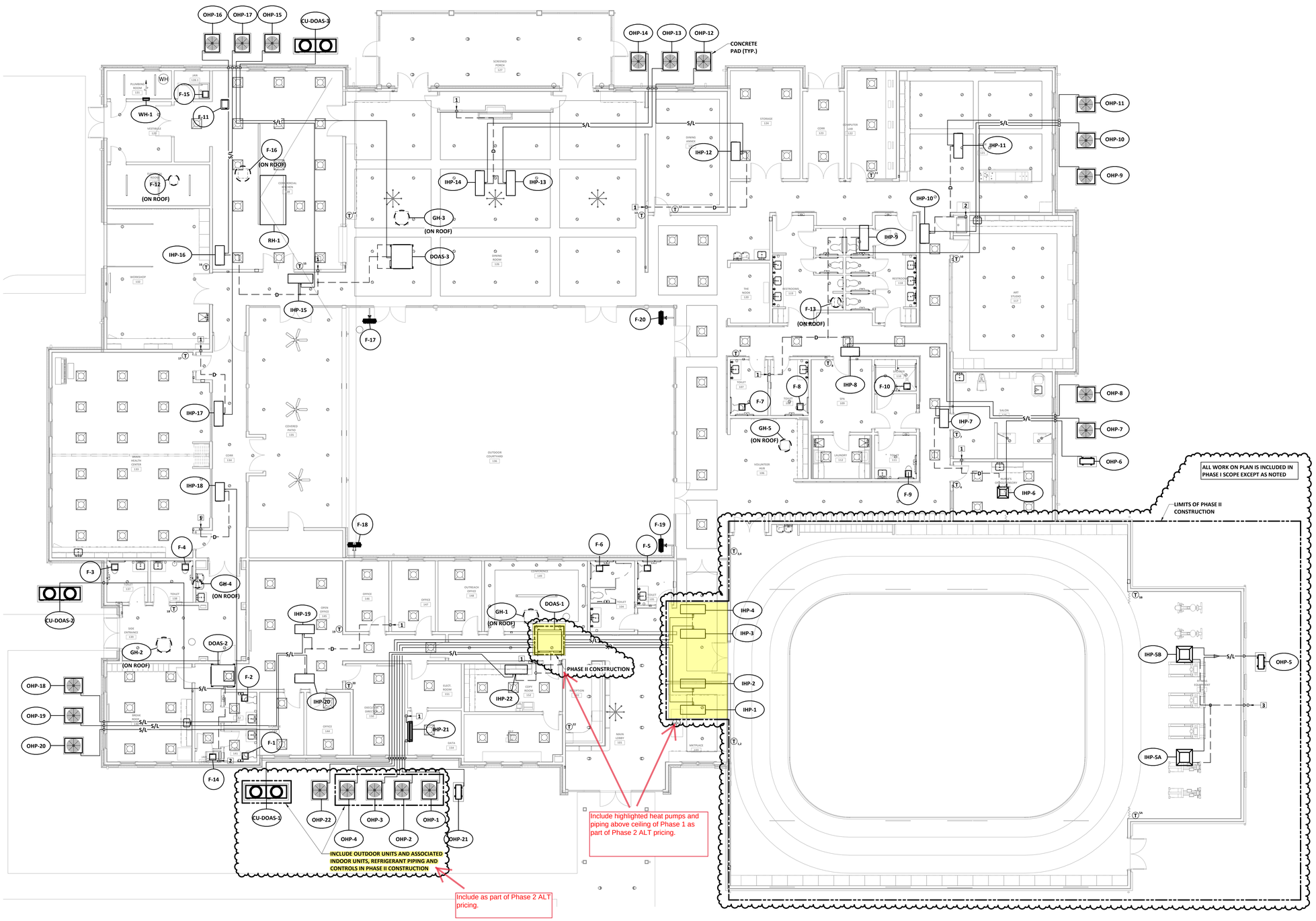

KEYNOTES (THIS SHEET ONLY)

1. DISCHARGE CONDENSATE IN WALL BOX BY PLUMBING. SEE PLUMBING DRAWINGS.
2. ROUTE CONDENSATE AND DISCHARGE INTO JANITOR SINK.
3. ROUTE CONDENSATE DOWN IN WALL AND DISCHARGE ON GRADE.

N

1 M201 **HVAC PIPING PLAN**

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

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Architecture|Interior Design|Planning

771 Broad Street Suite 200
Augusta, Georgia 30901
(706) 722-7488
mail@dickinsonarchitects.com
www.dickinsonarchitects.com

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DA PROJECT NUMBER & NAME: 1893

DRAWING TITLE:

HVAC PIPING PLAN

DRAWING NO:

M201

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706-722-3929 • FAX: 706-724-3527 • www.pfaengineers.com
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1/4 1/2 3/4 1" REFERENCE SCALE

PLOT DATE: 4/16/21
FILE NAME: 21011MECH
PLOT SCALE: 1" =1'-0"
WGC

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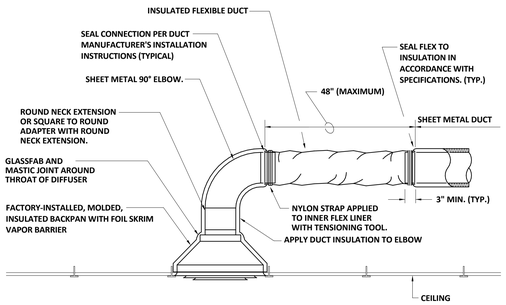

1 M301 FLEXIBLE ROUND DUCT CONNECTION DETAIL

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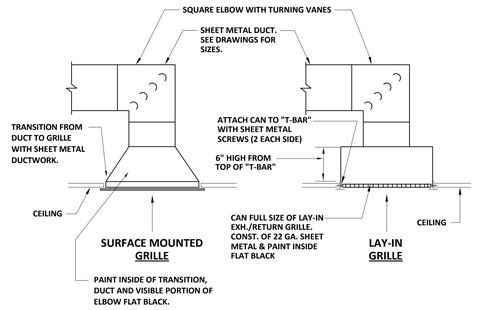
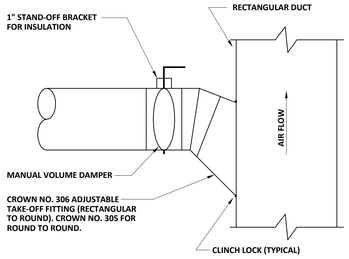


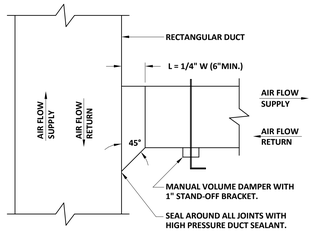
2 M301 EXHAUST/RETURN GRILLE CONNECTION DETAILS

NOT TO SCALE



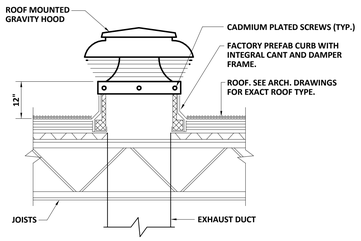
3 M301 SUPPLY DUCT TAKE-OFF FITTING DETAIL

NOT TO SCALE



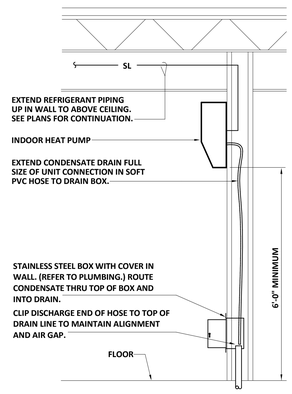
4 M301 RECTANGULAR SUPPLY AND RETURN DUCT TAKE-OFF DETAIL

NOT TO SCALE



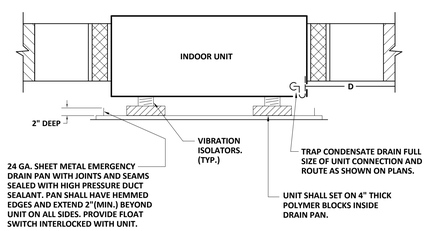
5 M301 ROOF MOUNTED GRAVITY HOOD DETAIL

NOT TO SCALE



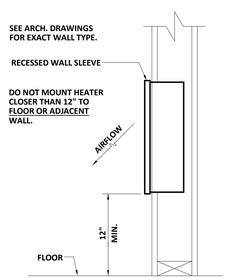
6 M301 SECTION @ INDOOR HEAT PUMP

NOT TO SCALE



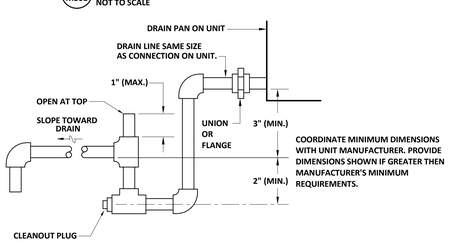
7 M301 SECTION @ INDOOR UNIT

NOT TO SCALE



8 M301 ELECTRIC WALL HEATER DETAIL

NOT TO SCALE



9 M301 CONDENSATE DRAIN TRAP DETAIL

NOT TO SCALE

H.V.A.C. SPECIFICATION

GENERAL: Entire system shall be installed to meet applicable Local, State and National Codes, current requirements of NFPA, State Heating and Air Conditioning Code and National Electric Code.

All equipment shall be installed in accordance with the manufacturer's instructions. Installing contractor shall furnish fully functioning systems.

EXISTING CONDITIONS: Not all existing work is shown on the plans. The Contractor is responsible for verifying actual job site conditions prior to ordering equipment and fabricating duct. Any discrepancies discovered shall be reported to the Owner.

ELECTRICAL: All line and low voltage control wiring shall be provided by the HVAC Contractor. Provide and submit complete wiring diagrams and all switches, starters, controls, relays, etc. necessary for a complete system. Run all wiring in EMT raceways.

Voltage and phase of mechanical equipment requiring power is designated under the Electrical division. Model numbers listed in mechanical equipment schedule shall not be construed to indicate electrical characteristics. Furnish written documentation that all electrical characteristics of mechanical equipment have been coordinated with and confirmed by the electrical subcontractor.

Power wiring and disconnects shall be provided under another Division.

SHOP DRAWINGS: Submit 5 sets of Shop Drawings for approval before ordering equipment.

DUCTWORK:

1. Low Pressure, Metal: Fabricate of galvanized steel as per SMACNA Manual for HVAC Duct Construction Standards for 1" W.C., with transverse joints, branch connections and tap-ins sealed.
2. Duct sealant shall be water-Based Joint and Seam Sealant: Flexible, adhesive sealant, resistant to UV light when cured, UL 723 listed, and complying with NFPA requirements for class 1 ducts. Duct tape shall not be used.
3. Flexible Ducts shall be factory-fabricated, insulated, round duct, with an outer jacket enclosing 1-1/2-inch-thick, glass fiber insulation around a continuous inner liner. Reinforcement: Steel-wire helix encapsulated in the inner liner. Outer Jacket: Glass-reinforced, silver mylar. Inner Liner: polyethylene film. Pressure Rating: 10-inches wg, positive. R value = 6.0 Flexible duct shall not exceed 4 feet in length and shall be supported 3 feet maximum on center with 3" wide by 26 gauge galvanized hangers. Duct shall be secured to branch ducts and outlets with stainless steel worm drive strap or nylon self-locking strap around the inner liner only.
4. All ductwork shall be supported in accordance with SMACNA Standards.

DUCT ACCESSORIES:

1. Turning Vanes: Fabricate turning vanes according to SMACNA HVAC Duct Construction Standards, Figures 2-2 through 2-7.
2. Manual Dampers: For rectangular duct: Opposed blade, constructed with galvanized gauge steel blades and equal to SMACNA DCS Fig. 2-15. End of damper operating rod shall be square to accommodate damper operator. Manual dampers 12" or smaller in height may be single blade type equal to SMACNA DCS Fig 2-14 constructed of galvanized sheet metal. Round damper shall be SMACNA DCS Fig 2-14 with blade gauge as follows: 8" and smaller = 22 gauge, 9" - 12" - 20 gauge 13" and larger = 18 gauge.
3. Access Doors: Provide construction and airtightness suitable for duct pressure class. Frame: Galvanized sheet steel. Provide with bend-over tabs and foam gaskets. Door: Double-wall, galvanized sheet metal construction with insulation fill and thickness, number of locks as indicated for duct pressure class. Provide cam latches. Seal around frame attachment to duct and door to frame with neoprene or foam rubber seals. Insulation: 1-inch-thick fiber glass or polystyrene foam board.
4. Fire dampers shall be dynamically rated and UL labeled in accordance with UL Standard 555 for the fire resistance required by the partition rating. Damper shall have blades out of the airstream.
5. Combination fire/smoke dampers shall be electrically operated, dynamically rated and UL labeled in accordance with UL Standard 555 for the fire resistance required by the partition rating, and Class II smoke resistance. Damper shall have its operator out of the airstream. Furnish damper end switch for control interlocks.

INSULATION:

1. Ductwork: Insulate lined and unlined supply, return, and outdoor air ductwork with 3/4 lb. 2" thick fiberglass blanket insulation with FSK jacket. Lap all vapor barrier joints 2" minimum, staple 4" o.c. and seal with vapor barrier mastic reinforced with fiber glass mesh ("glas-fab and mastic"). Use Stik-clips 24" o.c. on bottom of 30" wide and larger ducts. Cover top of all air device shells with insulation.
2. Refrigerant and Condensate Drainage Pipe: Insulate with flexible elastomeric insulation (Armaflex or equivalent). Thickness: 3/4" for refrigerant suction and hot gas piping, 3/8" for condensate drainage piping. Seal all joints with compatible adhesive. Slip whole sections of insulation on piping before pipe joints are made. Miter all elbows in insulation. Paint outdoor insulation two brush coats of exterior latex enamel in color selected by the Owner.
3. Duct Liner: 1 ½ lb density, 1" thick (unless noted) vinyl spray coated with flame spread less than 25. Adhere liner with thick coat lagging adhesive over entire surface and fasten liner with weld or stick pins 12" o.c. in accordance with SMACNA Duct Liner Application Standard.

CONCRETE PADS: Provide 3000 psi concrete pad for all ground and floor mounted HVAC equipment. Pads outdoors on grade shall be 6" thick and extend 4" above the adjacent grade. Pads indoors shall be nominally 4" thick. Pads shall be re-enforced with 6" x 6" 1010 wire and shall have chamfered edges. Concrete pads shall extend 6" beyond all sides of unit.

PIPING:

1. Refrigerant piping shall be ACR nitrogen charged tubing with joints made with high temperature (1200 degrees F.) brazing compound. Bleed dry nitrogen through piping during brazing process. After satisfactory leak test, piping and system shall be evacuated and charged in accordance with the manufacturer's printed instructions.
2. Condensate drain piping shall be type "L" hard temper tubing with soldered fittings.
3. Support pipe from structure above with clevis type hanger, all thread rod and upper attachment devices appropriate for the structural type. Provide supplementary steel for upper attachment as required. Hangers shall fit around insulated pipe and shall have 24 gauge galvanized sheet metal saddle between the support and the insulation jacket.

TESTS:

1. Refrigerant Piping: Charge system per industry accepted standards for systems utilizing R-410A, or manufacturer's recommended procedures if more stringent than industry standards. The following is an outline of the triple evacuation method.

a. Pull initial vacuum on the line set testing for a leak. If it holds then pressure test with Nitrogen at 300 psi minimum.
b. Pump system down, recharge with Nitrogen to 2 psi. Perform this step two times.
c. Pump system down, re-pressurize with Nitrogen and then evacuate system to 500 microns. Hold for 30 minutes.
d. Break vacuum with refrigerant and charge per manufacturer's directions.

2. Heat and Cooling Units: Record all motor and heater nameplate amps and running amps during Heating and Cooling cycle (below 60 degrees F. cooling). Record all fan motor amps for motors ½ HP and larger.
3. Air Side Systems: Record air quantities at supply outlets, return grille and outside air duct. All airflow quantities shall be balanced to be within + or - 10% of design air quantity.

ELECTRIC HEAT PUMP: Unit shall be of size, type and capacity as indicated on the Drawings and shall be manufactured by Trane. Equal units by Johnson Controls, Lennox or Carrier will be acceptable.

The following accessories shall be provided:

Condenser Coil Guard
5-minute Anti-Recycle TimerHard Start Kit for Single Phase Units
Crankcase Heater
Outdoor Thermostat for each Auxiliary Heat Stage
Defrost Thermostat for Indoor Coil
Low Ambient controls

Auxiliary electric heaters shall be of size and capacity as indicated on the Drawings and meet the requirements of the National Electric Code and Underwriters Laboratories.

RANGE HOOD SYSTEMS

Submit the following: Product data for each range hood, including unit weight, furnished accessories and installation and startup instructions. Also, submit shop drawings detailing fabrication and installation of range hood, including plans, elevations, sections, component details, attachments and other construction elements. Include the following: dimensions, weight loadings and distribution, clearances for maintenance and operation, size and location of field connections, mounting details and wiring diagrams. Maintenance data for each hood system to include in the Operating and Maintenance Manual and a certification letter from the manufacturer stating that the rangehood system has been through startup procedures and that it is functioning properly.

U.L. Listing: Hood shall bear the U.L. Listed nameplate in accordance with U.L. 710. NFPA Compliance: Hood shall be constructed in accordance with NFPA Standard 96 requirements and 120-3-3 modifications to NFPA-96. NSF Compliance: Hood shall bear the National Sanitation Foundation seal of approval. Fire suppression installer shall have a pre-engineered kitchen fire suppression system license.

Manufacturers: Subject to compliance with requirements, provide products by the following manufacturers:

Accurex
Captive Aire
Greenheck
The hood shall be constructed in accordance with NFPA Standard 96, Vapor Removal from Cooking Equipment. Hood shall have the National Sanitation seal of approval and be U. L. Listed and labeled in accordance with U.L. 710 and shall comply with the following:

1. All Type 304 stainless steel construction (18 gauge min.) No. 3 finish interior and exterior where exposed to view. Inner shell shall be insulated with 1", 3 pound density fiberglass duct liner.
2. Provide, from the hood manufacturer, Type 304 stainless steel, 18 gauge No. 3 finish enclosure panels between top of hood and finished ceiling.
Grease extractors shall be 20" x 20" size, all stainless steel construction, furnished with drop handles and shall be self draining. Extractors shall be selected for 0.5 in. W.C. clean pressure drop (700 cfm max. per filter). Mesh filters will not be accepted. The filters shall be equal to Fire Guardian and shall be listed by Underwriters' Laboratories, Inc.
1. Grease gutters shall be furnished and pitched to drain to a removable metal container with capacity not exceeding one gallon.
2. Fan and light controls shall be mounted on face of canopy in factory installed stainless steel wireway system similar in design to Wiremold boxes with a stainless steel vertical raceway welded to the hood face - all with No. 3 finish. Provide separate switching for supply air and exhaust air (two switches), all with signal lights.
3. Complete drawings of the system installation including the hood(s), exhaust duct(s), and appliances, along with the interface of the fire extinguishing system detectors, piping, nozzles, fuel shut-off devices, agent storage container(s), and manual actuation device(s) shall be submitted to the authority having jurisdiction.
4. Vapor proof incandescent lights with bulbs shall be installed approximately on 36-inch centers. Globe shall be clear thermal shock proof glass, plastic coated. Fixtures shall be U.L. Listed for Commercial Cooking Hoods.
5. Temperature sensor and fan delay relay shall be installed in exhaust duct collar of hood to turn on exhaust fan when setpoint is reached. Sensor shall be rated for 120 volts.
6. The prewired remote control center shall include, but not be limited to, an integral master disconnect switch with fuse blocks for main power connection, magnetic motor starters with thermal overloads and manual reset, fused 120 volt control transformer, and distribution terminal control strip for control wiring connection. All electrical components shall be UL Listed or classified where applicable and wired in compliance with the National Electrical Code. Wiring shall be complete, requiring only one-point field connection for power service and one-point filed connection for control voltage.

Provide roof mounted pre-engineered combination exhaust and supply fan package of size and capacity as indicated on the plans. The assembly shall be a complete system and shall include the following:

1. Hinged upblast exhaust fan shall be constructed of aluminum and shall conform to AMCA, U.L. 762 Listed for use with restaurant exhaust applications. Fan shall have grease drain container with tight fitting lid.
2. Supply air fan package shall be constructed of weatherproof baked enamel finished 16 gauge galvanized steel. Supply fan shall be forward curved centrifugal type with adjustable belt drive and mounted on vibration isolators. Fan wheel shall be constructed of galvanized steel and fan bearings shall be sized for an average life of 200,000 hours. Unit shall be complete with adjustable angle iron support legs and mounted on an equipment rail. The inlet shall contain a bird screen and 1 inch washable U.L. Listed aluminum filters sized for 500 fpm max. face velocity. Provide motorized 2-position multi-shutter outside air damper. Filters shall be easily removable. Shop drawings submittal shall include fan curves. Access panels shall be side access. (Top access is not acceptable.)
3. Furnish pre-fabricated roof curb constructed of minimum 18 gauge galvanized steel with integral non-combustible nailer, run-off cant and 1" rigid insulation. Provide extensions as required for exhaust fan to meet N.F.P.A. requirements for discharge height. Roof curb shall be approved by the National Roofing Contractors Association.
4. Master electric pre-wired weatherproof control panel, factory mounted on rooftop fan package with: Main power source fused disconnect switch; control circuit terminal strip; magnetic motor starters with motor overload protection, relays, transformer and fused control circuit. Furnish heat detection sensors and controls to automatically energize fans when heat it detected in the hood shell. Panel shall be mounted on exterior of unit and single disconnect shall control both supply and exhaust fan. Panel shall be weather proof.
5. Factory wiring shall be provided in conduit conforming to NFPA Standard 70 and designed to withstand effects of heat, vapor and grease on the equipment. Wiring shall include control wiring to conduit to the opening in top of canopy, connecting wiring and conduit from master electric control panel to supply and exhaust fans.Direct Gas Heater: Fan package preheater(s) shall be direct-fired gas, A.G.A. design certified and C.G.A. approved. The unit shall include, but not be limited to: Heavy duty stainless steel burners, main gas pressure regulator, pilot gas cock, main modulating gas valve, electric spark ignition pilot re-light system safety pilot, high limit, 24-volt control transformer. Burner shall be equipped with duct mounted thermostat and be capable of 30:/turndown. The pre-heater shall be an integral part of the fan package.
6. The installer shall certify to the authority having jurisdiction that the installation is in complete agreement with the terms of the listing and the manufacturer's instructions and/or approved design.
7. Contractor shall submit a layout of the hood, fan package and connecting ductwork. Structural steel and ceiling height locations will be indicated on drawings.
8. Hood, grease extractors and ducts shall have a clearance of at least 18 inches to combustible material. See NFPA 96 Appendix for protection required to reduce the clearance to combustibles.

Provide Grease Guard system to protect roof around Kitchen Range Hood exhaust fans. System shall protect 4-sides of base of fan (3 sides of base of fan packages with common curb for supply and exhaust fans) and shall consist of grease deflecting flashing at base of fan.3-layer filter assembly contained in an anodized aluminum frame. Product shall be as manufactured by Grease Guard, Inc.

Rangehood Fire Suppression System: Refer to Architectural Drawing, Kitchen Equipment Drawings and Mechanical Drawings. Provide Fire Suppression system and nozzles for each Cooking Appliance, Hood, Filters and Plenum.

1. Provide U. L. Listed wet chemical type Fire Suppression System for the hood, duct plenum and appliances. Upon activation of the extinguishing system, all fuel shall be shut off, whether gas or electric and will include fuel to all equipment under the hood, including fryers, broilers, griddles and ranges. Make-up air shall be shut off, but exhaust fans shall continue exhausting. Exhaust fans shall have an adjustable high limit shutdown switch normally set at 350 deg. F. Firestat shall be removable bulb type with reset button located on the hood. The fire extinguishing system shall be designed in accordance with the Standard Mechanical Code, Section 307, NFPA 96 and NFPA 17A.
2. The fire extinguishing system shall also meet the requirements of the State Fire Marshal. Submit copies of Drawings bearing the stamp of Approval of the State Fire Marshal; one copy of which shall remain at the Job Site.
3. Piping, except for nozzle drops, shall be run above the hood. Hood penetration shall be made with Ansul "Quick-Seal" adapters.
4. All exposed piping shall be Schedule 40 black steel with stainless steel fittings. Piping shall be covered with polished chrome plated sleeves. Manual activation levers shall be as shown on the plan or in avenue of egress from kitchen. All electrical switches, control wiring devices and fuel cut-off valves shall be provided. Installation of piping system and control and interlock system shall be under this (MECHANICAL) Division. Wiring, conduit, cable, etc., shall be installed concealed. Provide access panels as required.
5. The fire suppression system shall be pre-engineered, liquid agent type with fixed nozzle agent distribution network. It shall be listed with Underwriters Laboratories, Inc. (UL).
6. The system shall have fire suppression capabilities for the following hazard areas: ventilating structures including hoods, ducts, plenums, and filters; deep-fat fryer; griddles and range tops; upright natural charcoal or chain-type broilers; electric, lava rock, mesquite or gas-radiant char-broilers.
7. The extinguishing agent shall be a potassium carbonate, potassium acetate-based formulation.
8. Agent tank shall be chrome-plated carbon steel.
9. The regulated release mechanism shall be the spring-loaded type capable of providing the expellant gas supply to agent tank. The regulated release mechanism shall have the following actuation capabilities: automatic actuation by fusible link detection system; remote manual actuation by a mechanical pull station; local manual actuation by a push button located at the front of the release mechanism enclosure.
10. The tank/bracket assembly shall contain a chrome-plated, welded steel bracket and an agent tank.
11. Each discharge nozzle shall be tested and listed with a restaurant system for specific applications. Nozzle placement shall be determined by the size of the orifice in the nozzle tip.
12. The fusible link shall be selected and installed according to the operating temperature in the ventilating system.
13. The following accessory equipment shall be provided.
a. A remote manual pull station shall be the primary means of manual actuation.
b. A U.L. listed mechanical gas line shut-off valve.
c. A U.L. listed electric switch shall be provided to shut off electrical power to appliances, or to activate electrically-operated devices and Fire Alarm System.
d. Provide a relay with 2 single pole contacts for the purpose of sending signals to the fire alarm system. Relay contact ratings and operation shall be compatible with the fire alarm system.
14. The installer shall submit a Letter of Certification to the State Fire Marshal (with copy to the Architect) that the installation is in complete agreement with the terms of the listing and the manufacturer's instructions and/or approved design.

EXHAUST FANS: Exhaust fans shall be of size, type and capacity as shown on the drawings and shall be manufactured by Greenheck. Equal products by Cook, Penn, Acme, and Hartzell are acceptable.

1. Ceiling-mounted fans shall include integral disconnect, aluminum ceiling grille, and backdraft damper. Furnish discharge accessories as indicated on the fan schedule.

BIPOLAR IONIZATION AND AIR PURIFICATION SYSTEMS: Units shall be of size, type and capacity as shown on the drawings and shall be manufactured by Global Plasma Solutions (GPS). Equal products by Aerisa, Air Oasis, Bioclimatic, and Plasma Air are acceptable. Bipolar ionization units shall be tested and listed by either UL or ETL according to UL Standard 867 - Electrostatic Air Cleaners. The operation of the electrodes or bipolar ionization units shall conform to UL 867 with respect to ozone generation. Ion generators shall contain a built-in power supply and directly accept 24V AC and shall connect to the fan and common terminals of the fan coil unit or air handling unit served.

1. Fan-mounted units shall be brush type needlepoint units designed to be mounted at the fan inlet. Units shall have an LED ionization output-indicator, and an in-line 1-Amp fuse.

OPERATING AND MAINTENANCE MANUALS: Provide Owner 3 bound copies of Operating and Maintenance Instructions on each piece of HVAC equipment.

INSTRUCTION TO OWNER: Provide formal instruction period to familiarize the Owner in the operation and maintenance of the HVAC System. Document attendance and material covered for each instruction session.

CONTROLS: Control system consists of sensors, indicators, actuators, microprocessors, final control elements, interface equipment, other apparatus, and accessories connected to controllers to operate mechanical systems according to sequences of operation indicated or specified. Installation shall be in accordance with HVAC equipment manufacturer's wiring diagrams. Control components shall form a fully functional system.

1. Thermostats: Manufacturers standard 7-day programmable thermostat.

dickinson ARCHITECTS
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REVISIONS			
REV #	DATE	APRVD BY	REVISION
	04/16/21	JMF	35% SET
	11/17/21	JMF	65% SET
	2/16/22	JMF	ISSUE FOR PERMIT

DA PROJECT NUMBER & NAME: 1893

DRAWING TITLE:

HVAC DETAILS & SPECIFICATIONS

DRAWING NO:

M301

PFA ENGINEERING
1201 BROAD STREET, SUITE 5A, AUGUSTA, GEORGIA 30901
706-722-2809 • FAX: 706-724-0827 • www.pfaengineers.com
GA LIC. PEF000760 EXP. 06/30/2022

1/4 1/2 3/4 1" REFERENCE SCALE

PLOT DATE: 4/16/21
FILE NAME: 21011MECH
PLOT SCALE: 1" = 1'-0"
WGC

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-- INDOOR HEAT PUMP SCHEDULE --

ITEM	SUPPLY CFM	ESP (IN. WG)	OA CFM	FAN HP	DRIVE	COOLING CAP. BTUH (1) SENSIBLE	COOLING CAP. BTUH (1) TOTAL	AUX. HEAT KW	AUX. HEAT STGS.	TRANE MODEL NO.	REMARKS
IHP-1	1600	0.5	300	1/2	DIRECT	33,200	46,000	9.6	1	GAM580C48	(2)(4)
IHP-2	1600	0.5	300	1/2	DIRECT	33,200	46,000	9.6	1	GAM580C48	(2)(4)
IHP-3	1600	0.5	300	1/2	DIRECT	33,200	46,000	9.6	1	GAM580C48	(2)(4)
IHP-4	1600	0.5	300	1/2	DIRECT	33,200	46,000	9.6	1	GAM580C48	(2)(4)
IHP-5A	--	-	-	-	DIRECT	-	42,000	-	-	MITSUBISHI PLA-	(2)(4)
IHP-5B	--	-	-	-	DIRECT	-	42,000	-	-	MITSUBISHI PLA-	(2)(4)
IHP-6	530	-	-	-	DIRECT	-	12,000	-	-	MITSUBISHI PLA-A12	(2)
IHP-7	600	0.5	(3)	1/8	DIRECT	12,600	17,000	4.8	1	GAM5BOA18	(2)
IHP-8	600	0.5	(3)	1/8	DIRECT	12,600	17,000	4.8	1	GAM5BOA18	(2)
IHP-9	2000	0.5	(3)	3/4	DIRECT	40,000	56,000	9.6	1	GAM5BOC60	(2)
IHP-10	1200	0.5	(3)	1/2	DIRECT	24,800	34,000	4.8	1	GAM5BOB36	(2)
IHP-11	2000	0.5	(3)	3/4	DIRECT	40,000	56,000	9.6	1	GAM5BOC60	(2)
IHP-12	600	0.5	(3)	1/8	DIRECT	12,600	17,000	4.8	1	GAM5BOA18	(2)
IHP-13	2000	0.5	(3)	3/4	DIRECT	40,000	56,000	9.6	1	GAM5BOC60	(2)
IHP-14	2000	0.5	(3)	3/4	DIRECT	40,000	56,000	9.6	1	GAM5BOC60	(2)
IHP-15	2000	0.5	(3)	3/4	DIRECT	40,000	56,000	9.6	1	GAM5BOC60	(2)
IHP-16	1200	0.5	(3)	1/2	DIRECT	24,800	34,000	4.8	1	GAM5BOB36	(2)
IHP-17	1600	0.5	(3)	1/2	DIRECT	33,200	46,000	9.6	1	GAM580C48	(2)
IHP-18	600	0.5	(3)	1/8	DIRECT	12,600	17,000	4.8	1	GAM5BOA18	(2)
IHP-19	1200	0.5	(3)	1/2	DIRECT	24,800	34,000	4.8	1	GAM5BOB36	(2)
IHP-20	1200	0.5	(3)	1/2	DIRECT	24,800	34,000	4.8	1	GAM5BOB36	(2)
IHP-21	350	--	--	1.0 A	DIRECT	--	18,000	--	--	MITSUBISHI PKA-A18HA	(2)
IHP-22	1600	0.5	(3)	1/2	DIRECT	33,200	46,000	9.6	1	GAM580C48	(2)

(1) RATINGS IN ACCORDANCE WITH A.R.I. STANDARD 240.
(2) FURNISH AND INSTALL BIPOLAR IONIZATION UNIT SIZED FOR FULL UNIT AIRFLOW.
(3) SEE PLAN FOR AIRFLOWS.
(4) PHASE II CONSTRUCTION.

-- AIR DISTRIBUTION SCHEDULE --

MARK	TYPE	NECK CONNECTION (1)	FINISH	OBD	PRICE NO. UNLESS NOTED	REMARKS (2)
A 6	CEILING DIFFUSER	6"ø	MANUFACTURER'S STANDARD FINISH	NO	SCD-4C	24 X 24 PANEL (3)
A 8	CEILING DIFFUSER	8"ø	MANUFACTURER'S STANDARD FINISH	NO	SCD-4C	24 X 24 PANEL (3)
A 10	CEILING DIFFUSER	10"ø	MANUFACTURER'S STANDARD FINISH	NO	SCD-4C	24 X 24 PANEL (3)
A 12	CEILING DIFFUSER	12"ø	MANUFACTURER'S STANDARD FINISH	NO	SCD-4C	24 X 24 PANEL (3)
A 14	CEILING DIFFUSER	14"ø	MANUFACTURER'S STANDARD FINISH	NO	SCD-4C	24 X 24 PANEL (3)
B 6	CEILING DIFFUSER	6"ø	MANUFACTURER'S STANDARD FINISH	NO	SCD	12 X 12 PANEL (3)
B 8	CEILING DIFFUSER	8"ø	MANUFACTURER'S STANDARD FINISH	NO	SCD	12 X 12 PANEL (3)
C	CEILING RETURN/EXHAUST	10" X 10"	MANUFACTURER'S STANDARD FINISH	NO	80	12 X 12 PANEL WITH BORDER FRAME
D	CEILING RETURN/EXHAUST	22" X 22"	MANUFACTURER'S STANDARD FINISH	NO	80	24 X 24 PANEL WITH BORDER FRAME
E	SUPPLY REGISTER	SEE PLANS	MANUFACTURER'S STANDARD FINISH	YES	520D	DOUBLE DEFLECTION 3/4" BLADE SPACING
F	RETURN GRILLE	SEE PLANS	MANUFACTURER'S STANDARD FINISH	NO	535	45° DEFLECTION 1/2" BLADE SPACING
G	HEAVY DUTY RETURN/EXHAUST	SEE PLANS	MANUFACTURER'S STANDARD FINISH	NO	91	45° DEFLECTION 3/8" BLADE SPACING
LOUVER	WIND-DRIVEN RAIN STATIONARY LOUVER	SEE PLANS	(4)	NO	GREENHECK EHH-601	FLANGE FRAME BIRDSCREEN
LOUVER-1	MOTORIZED LOUVER	SEE PLANS	(4)	NO	GREENHECK EAD-635 (5)	FLANGE FRAME BIRDSCREEN
LOUVER-2	STATIONARY LOUVER	SEE PLANS	(4)	NO	GREENHECK ESD-635	FLANGE FRAME BIRDSCREEN

(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 SKRIM VAPOR BARRIER.

(4) BAKED ENAMEL FINISH, CUSTOM COLOR. COLOR AS SELECTED BY ARCHITECT.

(5) CONCEALED OPERATOR AND LINKAGE. SIZE INDICATED DOES NOT INCLUDE OPERATOR COMPARTMENT.

-- GRAVITY HOOD SCHEDULE --

ITEM	LOCATION	CFM	THROAT WIDTH (IN.)	ESP (IN. WG)	GREENHECK MODEL NO.	REMARKS
GH-1	ROOF	1200	--	0.01	GRSI-30	--
GH-2	ROOF	1200	--	0.01	GRSI-30	--
GH-3	ROOF	1200	--	0.01	GRSI-30	--
GH-4	ROOF	320	--	0.01	GRSR-16	--
GH-5	ROOF	400	--	0.01	GRSR-16	--

-- OUTDOOR HEAT PUMP SCHEDULE --

ITEM	COOLING CAP. BTUH (1)	EER MIN.	HEATING CAP. MBH (1) HI	HEATING CAP. MBH (1) LO	COP (1) HI	COP (1) LO	TRANE MODEL NO.
OHP-1	47,500	14.0 SEER	42.5	24.8	3.5	8.8 HSPF	4TWA4048 (2)
OHP-2	47,500	14.0 SEER	42.5	24.8	3.5	8.8 HSPF	4TWA4048 (2)
OHP-3	47,500	14.0 SEER	42.5	24.8	3.5	8.8 HSPF	4TWA4048 (2)
OHP-4	47,500	14.0 SEER	42.5	24.8	3.5	8.8 HSPF	4TWA4048 (2)
OHP-5	42,000	21.0 SEER	45.0	28.0	4.0	2.91	MITSUBISHI PUZ-A42 (2)
OHP-6	12,000	27.0 SEER	14.0	10.1	4.94	2.91	MITSUBISHI PUZ-A12
OHP-7	17,000	14.0 SEER	16.0	8.6	3.5	7.7 HSPF	4TTR4018
OHP-8	17,000	14.0 SEER	16.0	8.6	3.5	7.7 HSPF	4TTR4018
OHP-9	57,000	14.0 SEER	53.0	34.4	3.5	8.5 HSPF	4TWA4060
OHP-10	35,200	14.0 SEER	32.2	17.6	3.5	7.9 HSPF	4TWA4036
OHP-11	57,000	14.0 SEER	53.0	34.4	3.5	8.5 HSPF	4TWA4060
OHP-12	17,000	14.0 SEER	16.0	8.6	3.5	7.7 HSPF	4TTR4018
OHP-13	57,000	14.0 SEER	53.0	34.4	3.5	8.5 HSPF	4TWA4060
OHP-14	57,000	14.0 SEER	53.0	34.4	3.5	8.5 HSPF	4TWA4060
OHP-15	57,000	14.0 SEER	53.0	34.4	3.5	8.5 HSPF	4TWA4060
OHP-16	35,200	14.0 SEER	32.2	17.6	3.5	7.9 HSPF	4TWA4036
OHP-17	47,500	14.0 SEER	42.5	24.8	3.5	8.8 HSPF	4TWA4048
OHP-18	17,000	14.0 SEER	16.0	8.6	3.5	7.7 HSPF	4TTR4018
OHP-19	35,200	14.0 SEER	32.2	17.6	3.5	7.9 HSPF	4TWA4036
OHP-20	35,200	14.0 SEER	32.2	17.6	3.5	7.9 HSPF	4TWA4036
OHP-21	18,000	15.3 SEER	19.0	13.0	9.5 HSPF	--	MITSUBISHI PUZ-A18NHA
OHP-2	47,500	14.0 SEER	42.5	24.8	3.5	8.8 HSPF	4TWA4048

(1) RATINGS IN ACCORDANCE WITH A.R.I. STANDARD 240.
(2) PHASE II CONSTRUCTION.

-- FAN SCHEDULE --

ITEM	LOCATION	CFM	ESP (IN. WG)	HP	RPM	MAX. RPM	MAX. SONES	GREENHECK MODEL NO.	REMARKS
F-1	TOILET 141	80	0.375	30 WATTS	650	-	2.5	SP-B110ES	(2)(4)
F-2	TOILET 142	80	0.375	30 WATTS	650	-	2.5	SP-B110ES	(2)(4)
F-3	TOILET 137	80	0.375	30 WATTS	650	-	2.5	SP-B110ES	(2)(4)
F-4	TOILET 138	80	0.375	30 WATTS	650	-	2.5	SP-B110ES	(2)(4)
F-5	TOILET 105	80	0.375	30 WATTS	650	-	2.5	SP-B110ES	(2)(4)
F-6	TOILET 104	80	0.375	30 WATTS	650	-	2.5	SP-B110ES	(2)(4)
F-7	TOILET 107	80	0.375	30 WATTS	650	-	2.5	SP-B110ES	(2)(4)
F-8	TOILET 108	80	0.375	30 WATTS	650	-	2.5	SP-B110ES	(2)(4)
F-9	TOILET 111	80	0.375	30 WATTS	650	-	2.5	SP-B110ES	(2)(4)
F-10	TOILET 110	80	0.375	30 WATTS	650	-	2.5	SP-B110ES	(2)(4)
F-11	KITCHEN 128	1300	0.5	1/2	1475	1725	9.7	SQ-120-VG	(3)(7)
F-12	ROOF	120	0.375	1/30	1300	--	6.1	G-080-G	(1)(6)
F-13	ROOF	600	0.5	1/8	1550	--	9.3	G-095-D	(1)(4)
F-14	JANITOR 140.1	80	0.375	30 WATTS	650	-	2.5	SP-B110ES	(2)(4)
F-15	JANITOR 128.1	80	0.375	30 WATTS	650	-	2.5	SP-B110ES	(2)(4)
F-16	ROOF	2150	1.0	3/4	1172	-	13.7	CUE-160-VG	(8)
F-17	COURTYARD	8400	-	3/10	1100	-	-	GLOBAL INDUSTRIAL T9F292451	(9)
F-18	COURTYARD	8400	-	3/10	1100	-	-	GLOBAL INDUSTRIAL T9F292451	(9)
F-19	COURTYARD	8400	-	3/10	1100	-	-	GLOBAL INDUSTRIAL T9F292451	(9)
F-20	COURTYARD	8400	-	3/10	1100	-	-	GLOBAL INDUSTRIAL T9F292451	(9)

(1) COMPLETE WITH BACKDRAFT DAMPER, ROOF CURB, BIRDSCREEN, (SPEED CONTROLLER), AND DISCONNECT MEANS.

(2) COMPLETE WITH BACKDRAFT DAMPER, HANGING BRACKETS, METAL CEILING GRILLE, (SPEED CONTROLLER), AND DISCONNECT MEANS.

(3) COMPLETE WITH BACKDRAFT DAMPER, ISOLATION HANGERS, (SPEED CONTROLLER), AND DISCONNECT MEANS.

(4) SWITCH WITH ROOM LIGHTS. FURNISH CONTACTORS AS REQUIRED.

(5) CONTROL WITH WALL SWITCH.

(6) CONTROL WITH THERMOSTAT SET AT 85° (ADJ.).

(7) CONTROL WITH HOOD MOUNTED SWITCH.

(8) SEE SPECIFICATIONS FOR REQUIRED ACCESSORIES.

(9) 30" OSCILLATING WALL MOUNT FAN. 110V PLUG WITH PULL CHAIN.

-- RANGEHOOD SCHEDULE --

ITEM	SUPPLY C.F.M.	SUPPLY S.P.	SUPPLY HP.	EXHAUST C.F.M.	EXHAUST S.P.	EXHAUST HP.	EXHAUST SONES	GREENHECK MODEL NO.
RH-1	1300	0.5	1/2	2,150	1.0	3/4	13.7	GHEW (1)

(1) FURNISH CONTROL PACKAGE FOR SINGLE POINT CONNECTION.

ALL EQUIPMENT SCHEDULED ON THIS SHEET IS INCLUDED IN PHASE I CONSTRUCTION EXCEPT AS NOTED.

-- REFRIGERATION PIPE SCHEDULE --

ITEM	SUCTION LINE OD	LIQUID LINE OD	REMARKS
IHP-1/OHP-1	7/8"	3/8"	(1)(2)
IHP-2/OHP-2	7/8"	3/8"	(1)(2)
IHP-3/OHP-3	7/8"	3/8"	(1)(2)
IHP-4/OHP-4	7/8"	3/8"	(1)(2)
IHP-5A & B/OHP-5	5/8"	3/8"	(1)(2)(3)
IHP-6/OHP-6	1/2"	1/4"	(1)
IHP-7/OHP-7	3/4"	3/8"	(1)
IHP-8/OHP-8	3/4"	3/8"	(1)
IHP-9/OHP-9	1 1/8"	3/8"	(1)
IHP-10/OHP-10	7/8"	3/8"	(1)
IHP-11/OHP-11	1 1/8"	3/8"	(1)
IHP-12/OHP-12	3/4"	3/8"	(1)
IHP-13/OHP-13	1 1/8"	3/8"	(1)
IHP-14/OHP-14	1 1/8"	3/8"	(1)
IHP-15/OHP-15	1 1/8"	3/8"	(1)
IHP-16/OHP-16	7/8"	3/8"	(1)
IHP-17/OHP-17	7/8"	3/8"	(1)
IHP-18/OHP-18	3/4"	3/8"	(1)
IHP-19/OHP-19	7/8"	3/8"	(1)
IHP-20/OHP-20	7/8"	3/8"	(1)
IHP-21/OHP-21	1/2"	1/4"	(1)
IHP-22/OHP-22	7/8"	3/8"	(1)

(1) REFRIGERANT PIPE SIZES INDICATED ARE FOR ESTIMATING PURPOSES ONLY. EXACT SIZES AND ACCESSORIES REQUIRED SHALL BE DETERMINED BY EQUIPMENT MANUFACTURER FROM FIELD OBTAINED DIMENSIONS.
(2) PHASE II CONSTRUCTION.
(3) CONSULT MANUFACTURER FOR MANIFOLD PIPING CONFIGURATION AND SIZING.

-- DEDICATED OUTDOOR AIR UNIT SCHEDULE --

ITEM	C.F.M. TOTAL	EXT. S.P. INCHES W.C.	NET COOLING CAP. SENS/TOT MBH	SUMMER DESIGN ENTERING DB/WB	SUMMER DESIGN LEAVING DB/WB	REHEAT COIL CAP. MBH	ELEC HEAT KW/STAGES	WINTER DESIGN ENTERING DB	WINTER DESIGN LEAVING DB	MITSUBISHI MODEL NO.	REMARKS
DOAS-1	1200	1.0	--/112.0	87.0/80.0	55.8/-	24.0	--/--	32.0	79.4	PEFY-AF1200CFMR	(1)(2)
DOAS-2	1200	1.0	--/112.0	87.0/80.0	55.8/-	24.0	--/--	32.0	79.4	PEFY-AF1200CFMR	(1)
DOAS-3	1200	1.0	--/112.0	87.0/80.0	55.8/-	24.0	--/--	32.0	79.4	PEFY-AF1200CFMR	(1)

(1) UNIT WITH SMART ME STAND-ALONE CONTROLLER WITH TIME-OF-DAY SCHEDULING AND DISCHARGE TEMPERATURE CONTROL.
(2) PHASE II CONSTRUCTION.

-- CONDENSING UNIT SCHEDULE --

ITEM	SERVES	CAPACITY M.B.H.	S.E.E.R.	MANUF. MODEL NO.
CU-DOAS-1	DOAS-1	120.0	--	PURY-P120 (1)
CU-DOAS-2	DOAS-1	120.0	--	PURY-P120
CU-DOAS-3	DOAS-1	120.0	--	PURY-P120

(1) PHASE II CONSTRUCTION.

-- BRANCH CONTROLLER SCHEDULE --

ITEM	# OF PORT SETS	SERVED FROM	MITSUBISHI MODEL NO.
BC-DOAS-1	6	CU-DOAS-1	CMB-P106 (2)
BC-DOAS-2	6	CU-DOAS-2	CMB-P106
BC-DOAS-3	6	CU-DOAS-3	CMB-P106

(1) REFRIGERANT PIPE SIZES AND ACCESSORIES REQUIRED SHALL BE DETERMINED BY EQUIPMENT MANUFACTURER FROM FIELD OBTAINED DIMENSIONS.
(2) PHASE II CONSTRUCTION.

-- ELECTRIC HEATER SCHEDULE --

ITEM	LOCATION	WATTS	Q-MARK MODEL NO.	REMARKS
WH-1	SEE PLANS	2,000	AWH SERIES	(1)

(1) COMPLETE WITH RECESSED TRIM KIT AND UNIT MOUNTED THERMOSTAT.

HVAC LEGEND

SYMBOL	DESCRIPTION
SL	REFRIGERANT SUCTION / LIQUID
D	CONDENSATE DRAIN
T	THERMOSTAT 4'-6" A.F.
CRD	CEILING RADIATION DAMPER
OBD	OPPOSED BLADE DAMPER
CFM	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
	LINED DUCT (SIZE SHOWN IS METAL SIZE)
	SQUARE ELL WITH SINGLE THICK TURNING VANES
	FABRIC DUCT WITH MESH DIFFUSERS
A / B	AIR DEVICE / NECK CONNECTION SIZE
ø	DIAMETER

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 WORK UNDER THIS DIVISION WITH THAT OF OTHER TRADES TO PROVIDE THE BEST ARRANGEMENT OF PIPING, DUCTWORK, AND EQUIPMENT.

PIPING, DUCTWORK, AND EQUIPMENT IS SHOWN IN ITS GENERAL LOCATION UNLESS DIMENSIONED.

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

EXACT LOCATION OF GRILLES AND CEILING OUTLETS SHALL BE DETERMINED ON THE JOBSITE. COORDINATE WITH LIGHTS, SPRINKLER HEADS, AND OTHER CEILING APPURTENANCES 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 HYDRONIC EQUIPMENT AND CONTROL VALVES, AND AS REQUIRED FOR SERVICE.

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

PFA ENGINEERING
1201 BROAD STREET, SUITE 5A, AUGUSTA, GEORGIA 30901
706-722-3959 • FAX 706-724-3127 • www.pfaengineers.com
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1/4 1/2 3/4 1" REFERENCE SCALE

PLOT DATE: 4/16/21
FILE NAME: 21011MECH
PLOT SCALE: 1" =1'-0"
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PFA ENGINEERING, INC.
AUGUSTA, GA 30901 (706) 722-3959

dickinson ARCHITECTS
Architecture|Interior Design|Planning
771 Broad Street Suite 200
Augusta, Georgia 30901
(706) 722-7488
mail@dickinsonarchitects.com
www.dickinsonarchitects.com

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PROJECT TITLE:
JUD C HICKEY CENTER

REVISIONS

REV #	DATE	APRVD BY	REVISION
	04/16/21	JMF	35% SET
	11/17/21	JMF	65% SET
	2/16/22	JMF	ISSUE FOR PERMIT
1	9/9/22	JMF	OWNER REVISIONS

DA PROJECT NUMBER & NAME: 1893

DRAWING TITLE:
HVAC SCHEDULES

DRAWING NO:
M401