

OUTLINE SPECIFICATIONS - PLUMBING

1. GENERAL:
- a. It is the intent and meaning of these drawings to provide complete and operable plumbing and drainage systems.
 - b. Contractor shall comply with the following Codes and Standards insofar as they apply: North Carolina State Building Code, Plumbing, Energy Code, National Fire Protection Association Codes and all Local Codes and Ordinances.
 - c. Contractor shall secure all permits, inspections, licenses and tests required for this work and pay all fees in connection therewith.
 - d. Unless specifically indicated otherwise, all equipment and materials shall be installed in accordance with the recommendations of the manufacturers.
 - e. The drawings are generally diagrammatic and may not show all details of bolts, nuts, fittings, connections, etc. required for a complete system, and do not indicate the exact locations of piping, fixtures, ducts, equipment, etc. While these drawings shall be followed as closely as possible, all dimensions shall be checked and verified at the building and any necessary changes shall be made in accordance with structural conditions, equipment to be installed, or other systems, etc., without additional cost to the Owner and as directed by the Architect and Engineer.
 - f. Coordinate work in this division with work of other divisions.
 - g. All materials shall be new and shall bear the manufacturer's name, trade name and be UL labeled. Equipment and materials of the same general type shall be of the same make throughout the work.
 - h. It shall be the responsibility of the Contractor to verify that items to be furnished fit the space available.
 - i. Contractor shall submit to the Engineer shop drawings for approval (6 copies required) for the following items: (1) All items of equipment, (2) Insulation, (3) Piping specialties.
 - j. This Contractor shall locate and size all openings required for his equipment and piping and provide this information to the General Contractor in time to not delay the building construction.
 - k. This Contractor shall provide and locate all sleeves and inserts required before the floor and walls are built or shall be responsible for the cost of cutting and patching required for pipes where sleeves and inserts were not installed or where incorrectly located.

2. PLUMBING FIXTURES:
- a. All exposed piping and metal parts shall be chrome-plated.
 - b. All floor-mounted closets shall be set and grouted with white grout between floor and closet. Connections for water closets shall be made by use of extra heavy cast brass flanges and vermin proofed wax gaskets.
 - c. All wall-hung fixtures shall be sealed between wall and fixtures with white silicone caulking.
 - d. All counter mounted fixture rims shall be sealed with clear silicone caulking.
 - e. Fixtures shall be as specified on the drawings. Approved equals will be acceptable.

3. PIPING:
- a. Unless otherwise indicated, all piping shall be run in concealed spaces between floors and ceilings or in chases. Pipes shall be run at right angles or parallel lines with building walls.
 - b. Provide necessary grading and valves for drainage. Grade waste and drainage piping 2 1/2-inches and smaller at minimum of 1/4 inch per foot and 3-inches and larger at a minimum of 1/8 inch per foot unless otherwise noted.
 - c. Contractor shall make provisions for expansion loops where necessary whether or not shown on the drawings.
 - d. Support all interior piping from building structure by means of hangers or inserts to maintain required grading and pitching of lines, to prevent vibration and secure piping in place.
 - e. Soil, waste and vent stacks shall be well supported at the base by means of piers of heavy-duty hangers close to the bottom of riser and secured at each floor by means of heavy-duty iron riser clamps.
 - f. Piping table:

USAGE	SIZES	MATERIAL	FITTINGS
Domestic Water (below grade)	1/2"-3"	Type "K" Soft Copper (ASTM B-88)	Wrought Copper (ASA B 16.22) 95-5 tin-antimony
Domestic Water (above grade)	1/2"-3"	Type "L" Hard Copper (ASTM B-88)	Wrought Copper (ASA B 16.22) 95-5 tin-antimony
Waste, Vent and Roof Drainage	ALL	PVC-DWV Schedule 40 (ASTM D-2665-73)	PVC-DWV (ASTM D-2665-73) Solvent (ASTM D-2665-73)
Waste and Drain Stack	ALL	Cast Iron	

- g. Use dielectric unions for connecting copper tubing with hot water storage tank and other equipment and piping made of ferrous metals.
- h. Provide shock arrestors in water supplies to each fixture be Josam, Smith or Zurn.
- i. All traps shall be approved "P" type. Traps at floor drains shall be deep seal type cast iron. Provide trap primers as required by local inspection departments.
- j. Cleanouts shall be accessible and shall be Josam, Smith or Zurn. All exposed portions of cleanouts in finished areas shall be nickel brass alloy.
- k. Drain valves shall be of brass construction with 3/4-inch hose thread outlet and vacuum breaker.
- l. Contractor shall provide insulation on all above ground cold and hot water lines. Insulation shall be 1-inch thick fiberglass with jacket.
- m. All water service, cold and hot water piping shall be sterilized with chlorine solution as outlined in the North Carolina State Building Code, Plumbing. A record of the sterilization shall be submitted to the Engineer. The Plumbing Contractor shall notify the Board of Health in writing 7 days in advance of system sterilization.
- n. The Plumbing Contractor shall notify the Engineer 24 hours in advance of all tests. The Plumbing Contractor shall make all necessary preliminary tests to insure a tight system. All water piping shall be made tight under a hydrostatic test pressure of 125 pounds per square inch and maintained without pressure loss for a minimum of 4 hours. No caulking of joints will be permitted. Waste piping shall be pressure tested for leaks.

4. GUARANTEE:
- The Plumbing Contractor shall guarantee all work performed under this contract to be free from defects in material and workmanship for a period of one (1) year from the date of final acceptance of such work by the Architect. Water heaters shall be guaranteed for three (3) years.

OUTLINE SPECIFICATIONS - MECHANICAL

1. GENERAL:
- a. It is the intent and meaning of these drawings to provide complete heating and air-conditioning systems for the areas indicated.
 - b. Contractor shall comply with the following standards and codes insofar as they apply:
 - (1) National Fire Protection Association Codes.
 - (2) North Carolina State Mechanical Code, Energy Code and Local Requirements.
 - (3) SMACNA Standards.
 - c. Contractor shall secure all permits, inspections, licenses and tests required for this work and pay all fees in connection therewith.
 - d. Unless specifically indicated otherwise, all equipment and materials shall be installed in accordance with the recommendations of the manufacturers.
 - e. Contractor shall submit shop drawings for approval (6 copies required) for the following items prior to ordering:
 - (1) Air Distribution.
 - (2) Insulation and Jacketing.
 - (3) Heating, Ventilation and Air Conditioning Equipment.

2. PIPING, VALVES, ACCESSORIES:
- a. GENERAL REQUIREMENTS:
 - (1) Provide refrigerant piping from outdoor units to indoor coils in accordance with manufacturer's recommendations. Provide cooling coil condensate drain piping from indoor unit to drain points.
 - (2) Piping connections shall be made strictly in accordance with equipment manufacturer's recommendations. This Contractor shall make all vents and drain, other small pipe connections, etc. required to complete the installation in accordance with good practice.
 - b. REFRIGERANT PIPING, VALVES, FITTINGS, AND MISCELLANEOUS:
 - (1) All refrigerant piping shall be Type "L" hard drawn copper tubing with wrought copper fittings with all joints made with hard solder of the silver type similar to "SIL-FOS" or "Easy-Flow" or approved equal.
 - (2) Each refrigerant circuit shall contain all the accessories as recommended by the compressor manufacturer. Refrigerant pipe sizes shall be as recommended by the compressor manufacturer for the length of run and lift required.
 - (3) Furnish a full charge of refrigerant for each system and maintain the charge and the complete HVAC system for a period of one (1) year from date of acceptance.
 - (4) Testing: All refrigerant piping shall be tested in accordance with manufacturer's recommendations.
 - c. CONDENSATE DRAIN PIPING:
 - (1) All condensate drain piping from cooling coils and drain pans to be of PVC with fittings for all changes in direction.

3. DUCTWORK, SHEET METAL AND ACCESSORIES:
- a. GENERAL REQUIREMENTS:
 - (1) Provide all sheet metal ducts required for air distribution shown on the drawings and as specified herein. This Contractor shall be responsible for location of wall and floor openings for ductwork.
 - (2) All ducts, fittings and components shall be as constructed in accordance with standards as described in applicable SMACNA manuals.
 - (3) Provide manual volume control dampers of the multiblade or splitter type as required for balancing the airflow. Dampers to be fitted with locking quadrants.
 - (4) Duct hangers and supports shall be in accordance with standards as described in SMACNA manual titled "Low Pressure Duct Construction Standards" for low velocity ducts.
 - (5) Flexible connections shall be installed at all locations between ductwork and fans.
 - (6) All duct joint sealing compounds, glues, mastics and adhesives used on duct construction shall be "Fire Safe" and be UL approved and labeled.
 - (7) All square bends or elbows shall be fitted with turning vanes.
 - (8) All duct dimensions shown on the drawings are clear and free inside dimensions.
 - b. DUCT CONSTRUCTION FOR LOW VELOCITY AND LOW PRESSURE:
 - (1) All rectangular and round galvanized sheet metal duct handling low pressure and low velocity air shall be constructed in accordance with the latest edition of SMACNA duct manual titled "Low Pressure Duct Construction Standards".
 - (2) All mechanical joints in low-pressure supply ductwork shall be sealed with an approved type duct sealing tape or compound. Duct tape will not be approved.
 - (3) Ductwork shall be UL listed Class 1 or better.

4. INSULATION:
- a. Insulate all refrigerant piping in accordance with Table Section 503, paragraph 503.2.8 of the N.C. State Energy Code – Latest Edition. Insulation to be Armstrong Armaflex or equal. All joints in insulation to be sealed with adhesive as recommended by the manufacturer.
 - b. Insulate all condensate drain piping with 1/2" wall thickness Armstrong Armaflex or equal. All joints in insulation to be sealed with adhesive as recommended by the manufacturer.
 - c. All supply, return and outside air ductwork and plenums shall be insulated in accordance with Section 503, paragraph 503.2.7 of the N.C. State Energy Code – Latest Edition.
 - d. Internally insulated ductwork shall be provided with (1) clip per square foot of duct surface in addition to continuous adhesive to attach lining to inside of ducts. Ducts with duct lining will not require additional exterior insulation. Duct sizes shown on drawings are clear inside and shall be increased in size to accommodate duct lining.
 - e. All ducts, boots and any other portion of ductwork not lined on the interior shall be insulated on the exterior with flexible type insulation with factory applied vapor barrier meeting the requirements of Section 503, paragraph 503.2.7 of the N.C. State Energy Code – Latest Edition. Flexible duct insulation shall be adhered to duct with approved adhesive, applied in strips about 6" wide on approximately 12" centers. All joints to have 2" overlap stapled on 3" centers and sealed with 3" vapor barrier type tape.

5. EQUIPMENT:
- Refer to drawings and schedules for manufacturers and model numbers of all equipment. Approved equals by the Engineer will be accepted.

6. AIR BALANCE:
- The Contractor shall perform an airflow balance of the systems using airflow hood, pilot tubes, etc. Contractor shall then prepare an air balance report indicating airflow at the air handlers and at the air distribution devices.

7. COMMISSIONING:
- Equipment installation and operation shall be fully inspected and commissioned by a representative of Mitsubishi Corporation.

8. GUARANTEE:
- The Contractor shall guarantee the materials, equipment and workmanship furnished and installed under this contract against defects for a period of one (1) year from date of acceptance by the owner. Each air conditioning compressor warranty shall extend for additional four (4) year period.

OUTLINE SPECIFICATIONS - ELECTRICAL

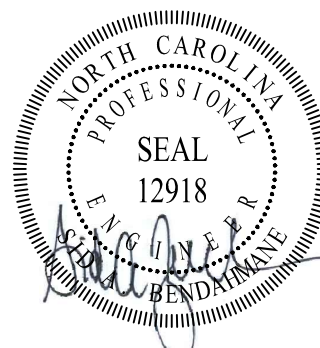
1. GENERAL:
- a. The contract documents shall consist of the complete project Specifications and Drawings.
 - b. All electrical work shall be provided in accordance with the latest edition of the National Electrical Code, State Building Codes including Volume X Energy Code and Local Codes.
 - c. The Electrical Contractor shall be responsible for securing all permits, inspections, licenses, insurance's, etc. required for this work and paying all fees in connection therewith.
2. SCOPE:
- a. The Electrical contract documents require the Electrical Contractor to provide the complete installation of all electrical equipment, materials, services, labor, etc. required to produce the intended results.
3. MATERIALS:
- a. Unless otherwise specified, all wiring shall consist of individually insulated copper conductors installed in conduits. MC cable may be used in walls and above ceilings where it does not come in contact with concrete or ground and it is not subject to injury.
 - b. CONDUCTORS:
 - (1) All wiring shall be copper.
 - (2) Type THW in raceways for service conductors.
 - (3) Type THW in raceways for panel boards and power feeders and grounding conductors.
 - (4) Type THHN or THWN for branch circuits.
 - (5) All conductor connectors shall be compression type.
 - (6) Wire shall be color coded as follows:
 - Phase A – Black
 - Phase B – Red
 - Phase C – Blue
 - Neutral – White
 - Ground – Green
 - (7) Provide each circuit with a ground wire. Bond ground wire in panel and at device.
 - c. CONDUITS:
 - (1) PVC Sch. 40 with solvent weld joints for underground systems.
 - (2) EMT for above grade system, unless subject to injury.
 - (3) If subject to injury, use rigid galvanized conduit.
 - (4) Weatherproof flexible conduit for connection to outdoor equipment.
 - (5) Rigid galvanized conduit for service feeders.
 - d. WIRING DEVICES:
 - Wiring devices shall be Leviton Spec Grade or approved equal. Covers shall be plastic and white color unless otherwise noted. Wiring devices shall be one make throughout entire project.
4. EQUIPMENT:
- a. All distribution equipment shall be one make throughout entire project. Acceptable manufacturers include Square D, General Electric and Westinghouse.
 - b. Main circuit breakers and secondary breakers shall have short circuit rating as shown on drawings. These ratings shall be coordinated with Power Company and higher ratings shall be provided if the Power Company requires same.
 - c. See light fixture schedules for fixture manufacturers and model numbers.
 - d. Each panel board shall be provided with a typed directory card showing the type and size of load for each breaker.
 - e. Each disconnect switch and panel board shall be labeled.
 - f. All electrical material furnished under this contract shall be new and unused. Defective electrical equipment and/or materials shall be removed and replaced by the Electrical Contractor at his expense.
 - g. All indoor junction boxes shall be stamped metal with knockouts.
 - h. Fused disconnect switches shall be heavy duty.
 - i. Panels and disconnect switches in dry locations may be NEMA 1. Panels and disconnect switches in wet locations shall be NEMA 3R.
 - j. Provide three 3/4" spare conduits with pull wire from all flush mounted panels. Stub spare conduits above the ceiling for future use.
5. EXECUTION:
- a. All electrical work shall be coordinated with work of other trades to provide a thoroughly coordinated installation that meets all code clearances and is free of conflicts.
 - b. Do not back-to-back mount wall receptacles.
 - c. The circuit distance for 20-ampere circuits with #12 AWG wire from the point of home run to the panel shall not exceed 75 feet. Where the distance exceeds 75 feet, use #10 AWG wire in lieu of #12 AWG wire.
 - d. Do not scale the Electrical Drawings. Secure all dimensions from Architectural Drawings.
6. GROUNDING:
- The service equipment, conduit system support cabinets, equipment and neutral conductor shall be grounded in accordance with Article 250 of the latest edition of the National Electrical Code. Grounding conductors shall be routed as to permit, as far as practical, the shortest and most direct path to the ground electrode system. All ground connections shall have a clean contact surface.
7. GUARANTEE:
- All materials, equipment and workmanship under this contract shall be guaranteed to be free from defects for a period of one (1) year from the date of acceptance by the Owner.



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PLANNING/INSPECTIONS

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Phone: 910-470-9687



WILMINGTON
EYE CLINIC

1729 MEDICAL PARK DRIVE
WILMINGTON, NC 28403

SPECIFICATIONS

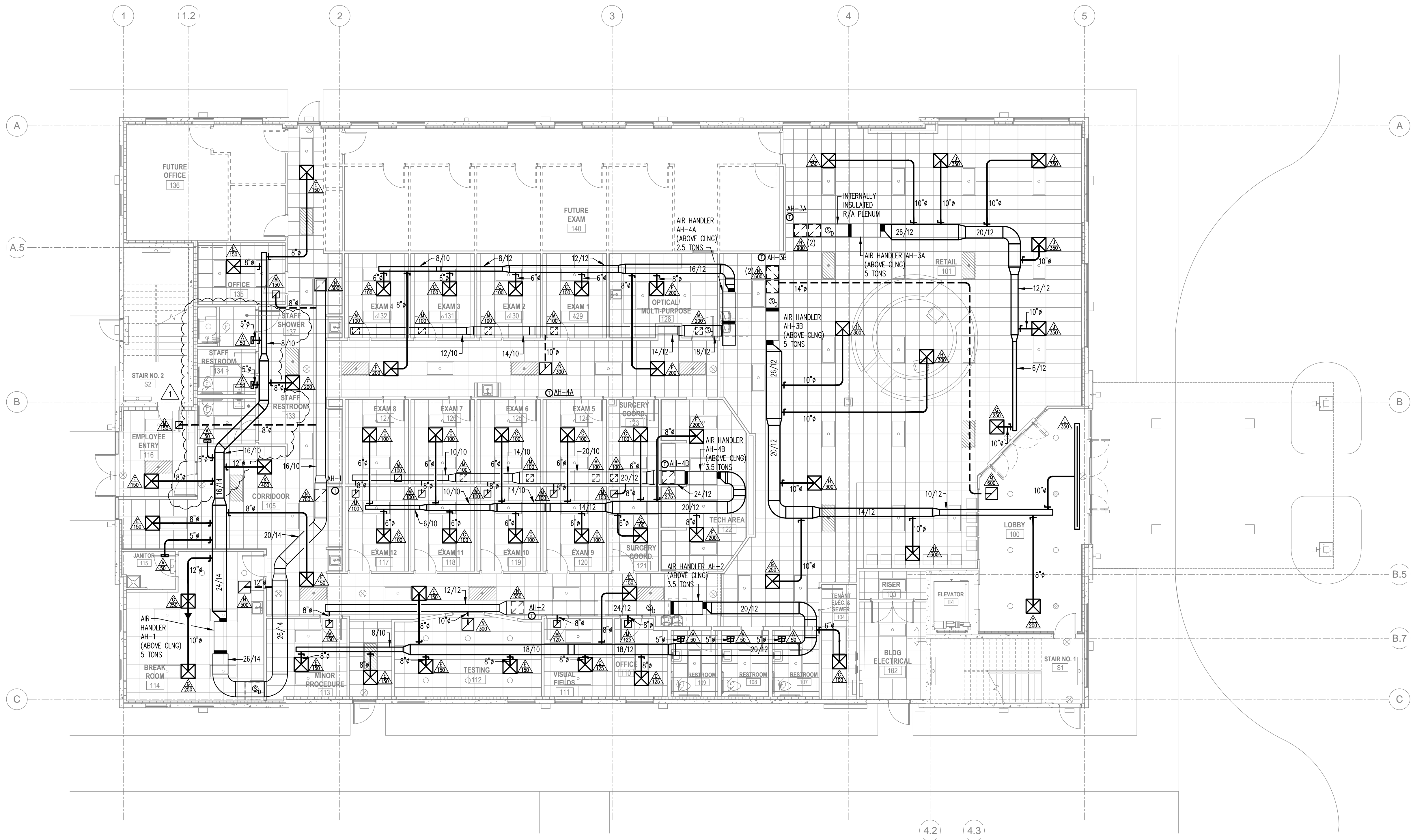
DATE: JUNE 24, 2019
DRAWN BY: SHB
CHECKED BY: SAB
PROJECT NO: 2019-004-2329

REVISIONS:

SHEET:

PME1

ADAMS
SOUTHEASTERN
CONSTRUCTION



GENERAL NOTES:

- MECHANICAL CONTRACTOR TO EXAMINE PREMISES TO UNDERSTAND CONDITIONS THAT MAY AFFECT PERFORMANCE OF WORK OF THIS DIVISION BEFORE SUBMITTING PROPOSALS FOR THIS WORK. EXAMINE ADJOINING WORK ON WHICH MECHANICAL WORK IS DEPENDENT FOR EFFICIENCY AND REPORT WORK THAT REQUIRES CORRECTION. NO SUBSEQUENT ALLOWANCE FOR TIME OR MONEY WILL BE CONSIDERED FOR ANY CONSEQUENCE RELATED TO FAILURE TO EXAMINE SITE CONDITIONS.
- ALL WORK IS TO BE DONE IN ACCORDANCE WITH THE N.C. STATE MECHANICAL CODE AND ANY OTHER APPLICABLE CODES OR LOCAL ORDINANCES.
- MECHANICAL CONTRACTOR IS TO COORDINATE HIS WORK WITH THE WORK OF OTHER TRADES.
- SEAL ANY AND ALL PENETRATIONS OF FIRE RATED WALLS, FLOORS, CEILINGS, ETC. WITH U.L. APPROVED FIRE STOPPING SYSTEMS. PROVIDE DOCUMENTATION.
- MECHANICAL CONTRACTOR IS TO ADD A CONDENSATE PUMP TO AIR HANDLING UNITS IF REQUIRED FOR LIFT.
- MECHANICAL CONTRACTOR IS TO INSTALL REFRIGERANT PIPING, IN EXCESS OF 75 FEET, PER MANUFACTURERS WRITTEN INSTRUCTIONS FOR LONG LINE APPLICATIONS.

1
M1 FIRST FLOOR PLAN -- MECHANICAL
SCALE: 1/8" = 1'-0"

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FIRST FLOOR PLAN -- MECHANICAL

DATE: JUNE 24, 2019
DRAWN BY: SHB
CHECKED BY: SAB
PROJECT NO: 2019-006-2331

REVISIONS:

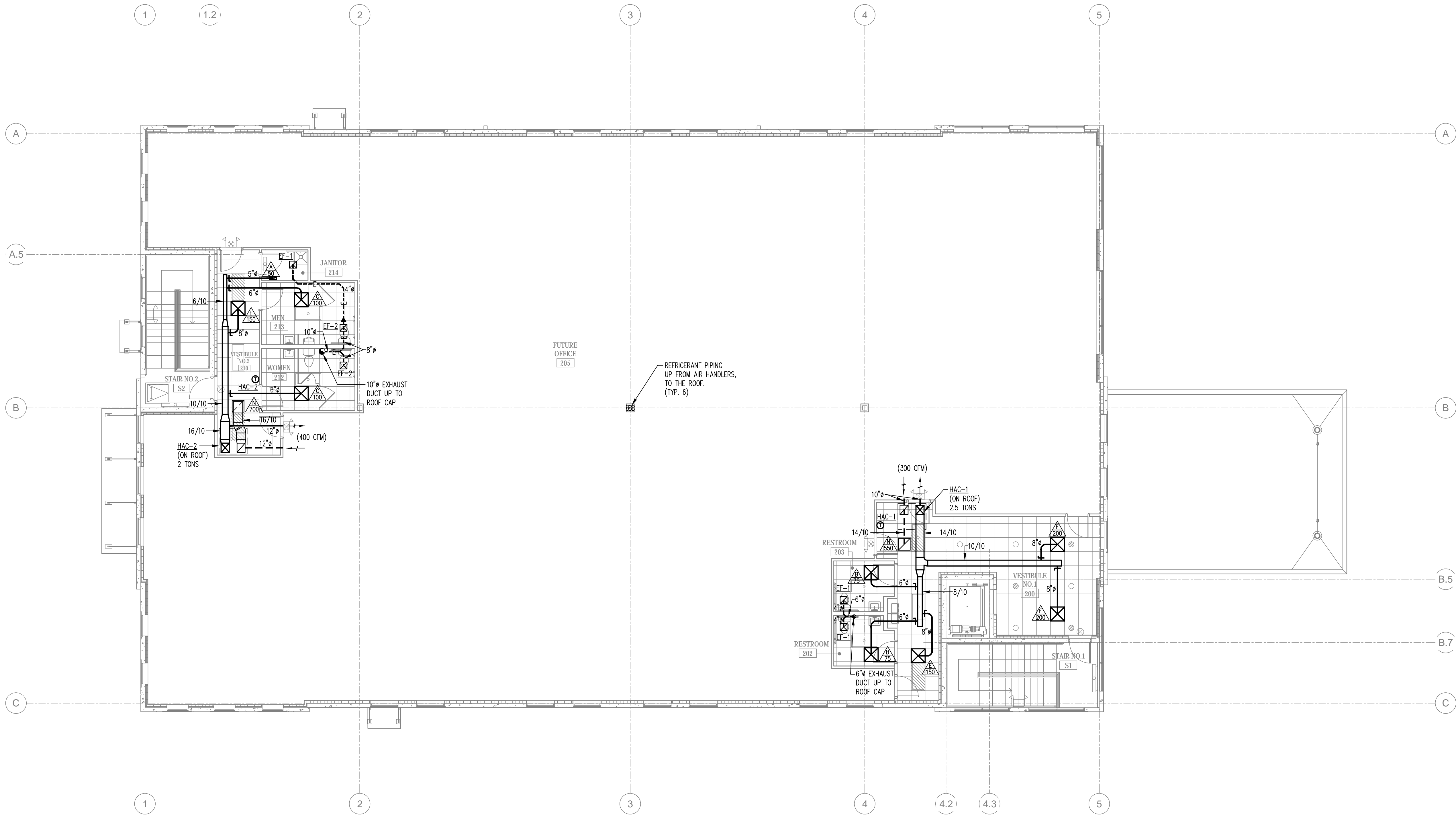
1 AUGUST 21, 2019

SHEET:

M1



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SOUTHEASTERN
CONSTRUCTION



GENERAL NOTES:

- MECHANICAL CONTRACTOR TO EXAMINE PREMISES TO UNDERSTAND CONDITIONS THAT MAY AFFECT PERFORMANCE OF WORK OF THIS DIVISION BEFORE SUBMITTING PROPOSALS FOR THIS WORK. EXAMINE ADJOINING WORK ON WHICH MECHANICAL WORK IS DEPENDENT FOR EFFICIENCY AND REPORT WORK THAT REQUIRES CORRECTION. NO SUBSEQUENT ALLOWANCE FOR TIME OR MONEY WILL BE CONSIDERED FOR ANY CONSEQUENCE RELATED TO FAILURE TO EXAMINE SITE CONDITIONS.
- ALL WORK IS TO BE DONE IN ACCORDANCE WITH THE N.C. STATE MECHANICAL CODE AND ANY OTHER APPLICABLE CODES OR LOCAL ORDINANCES.
- MECHANICAL CONTRACTOR IS TO COORDINATE HIS WORK WITH THE WORK OF OTHER TRADES.
- SEAL ANY AND ALL PENETRATIONS OF FIRE RATED WALLS, FLOORS, CEILINGS, ETC. WITH U.L. APPROVED FIRE STOPPING SYSTEMS. PROVIDE DOCUMENTATION.
- MECHANICAL CONTRACTOR IS TO ADD A CONDENSATE PUMP TO AIR HANDLING UNITS IF REQUIRED FOR LIFT.
- MECHANICAL CONTRACTOR IS TO INSTALL REFRIGERANT PIPING, IN EXCESS OF 75 FEET, PER MANUFACTURERS WRITTEN INSTRUCTIONS FOR LONG LINE APPLICATIONS.

1
M2 SECOND FLOOR PLAN – MECHANICAL
SCALE: 1/8" = 1'-0"



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SHEET:
M2

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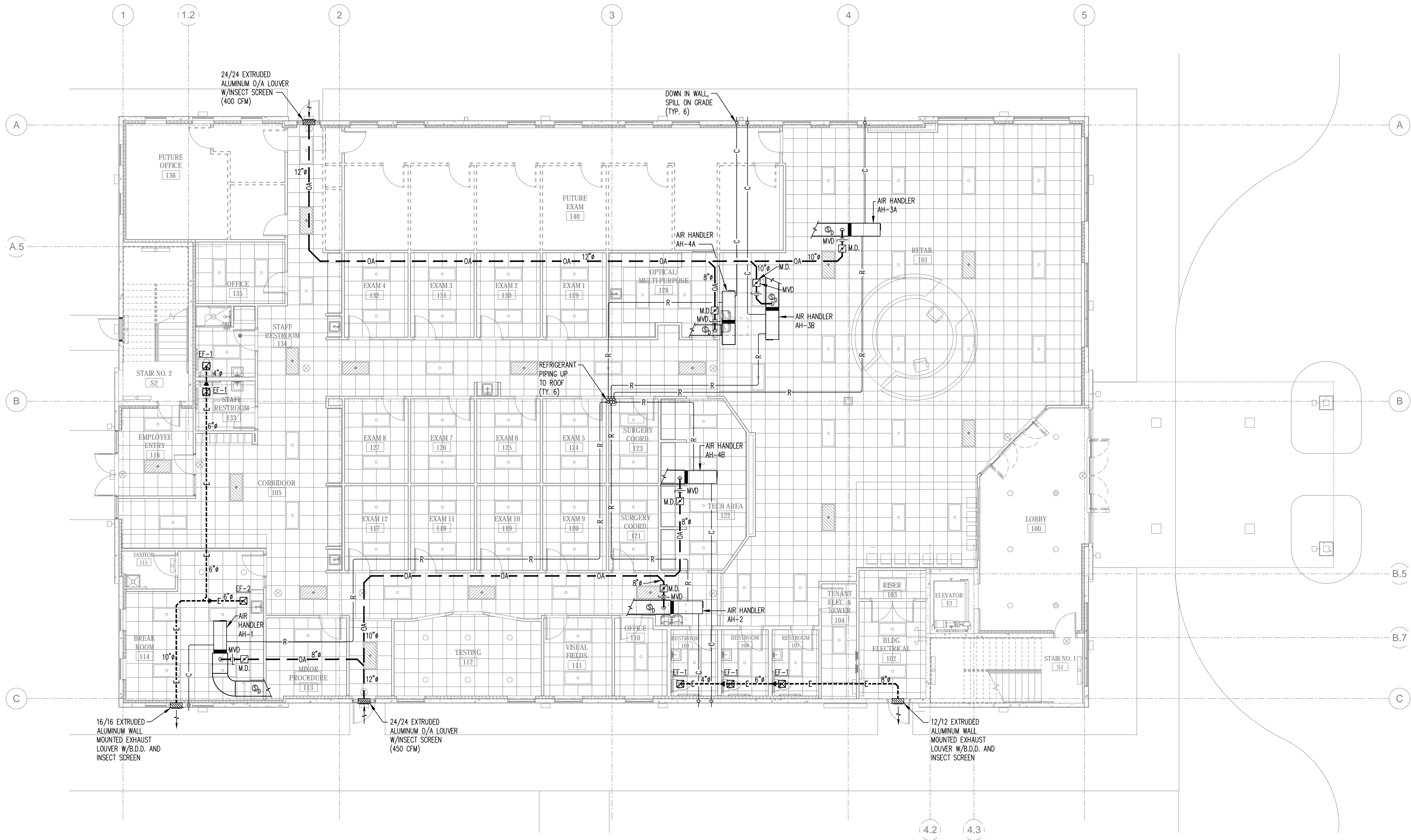


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1729 MEDICAL PARK DRIVE
WILMINGTON, NC 28403

**SECOND FLOOR PLAN-
MECHANICAL**

DATE: JUNE 24, 2019
DRAWN BY: SHB
CHECKED BY: SAB
PROJECT NO: 2019-004-2329

REVISIONS:



GENERAL NOTES:

- MECHANICAL CONTRACTOR TO EXAMINE PREMISES TO UNDERSTAND CONDITIONS THAT MAY AFFECT PERFORMANCE OF WORK OF THIS DIVISION BEFORE SUBMITTING PROPOSALS FOR THIS WORK. EXAMINE ADJOINING WORK ON WHICH MECHANICAL WORK IS DEPENDENT FOR EFFICIENCY AND REPORT WORK THAT REQUIRES CORRECTION. NO SUBSEQUENT ALLOWANCE FOR TIME OR MONEY WILL BE CONSIDERED FOR ANY CONSEQUENCE RELATED TO FAILURE TO EXAMINE SITE CONDITIONS.
- ALL WORK IS TO BE DONE IN ACCORDANCE WITH THE N.C. STATE MECHANICAL CODE AND ANY OTHER APPLICABLE CODES OR LOCAL ORDINANCES.
- MECHANICAL CONTRACTOR IS TO COORDINATE HIS WORK WITH THE WORK OF OTHER TRADES.
- SEAL ANY AND ALL PENETRATIONS OF FIRE RATED WALLS, FLOORS, CEILINGS, ETC. WITH U.L. APPROVED FIRE STOPPING SYSTEMS. PROVIDE DOCUMENTATION.
- MECHANICAL CONTRACTOR IS TO ADD A CONDENSATE PUMP TO AIR HANDLING UNITS IF REQUIRED FOR LIFT.
- MECHANICAL CONTRACTOR IS TO INSTALL REFRIGERANT PIPING, IN EXCESS OF 75 FEET, PER MANUFACTURERS WRITTEN INSTRUCTIONS FOR LONG LINE APPLICATIONS.

1 FIRST FLOOR PLAN – PIPING & VENTILATION
M3 SCALE: 1/8" = 1'-0"

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**FIRST FLOOR PLAN –
PIPING & VENTILATION**

DATE: JUNE 24, 2019
DRAWN BY: SHB
CHECKED BY: SAB
PROJECT NO: 2019:004-2329

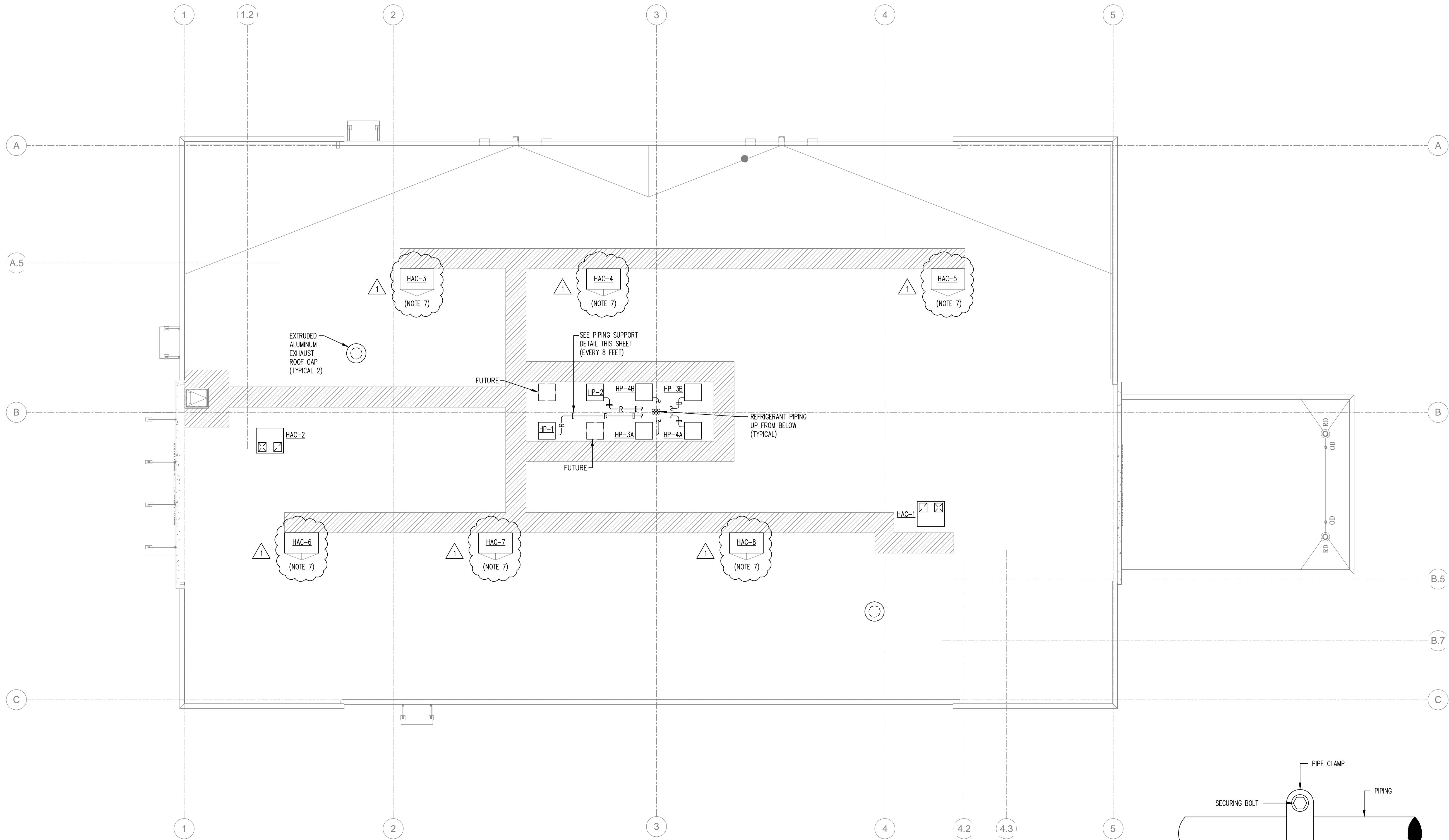
REVISIONS:

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M3



**ADAMS
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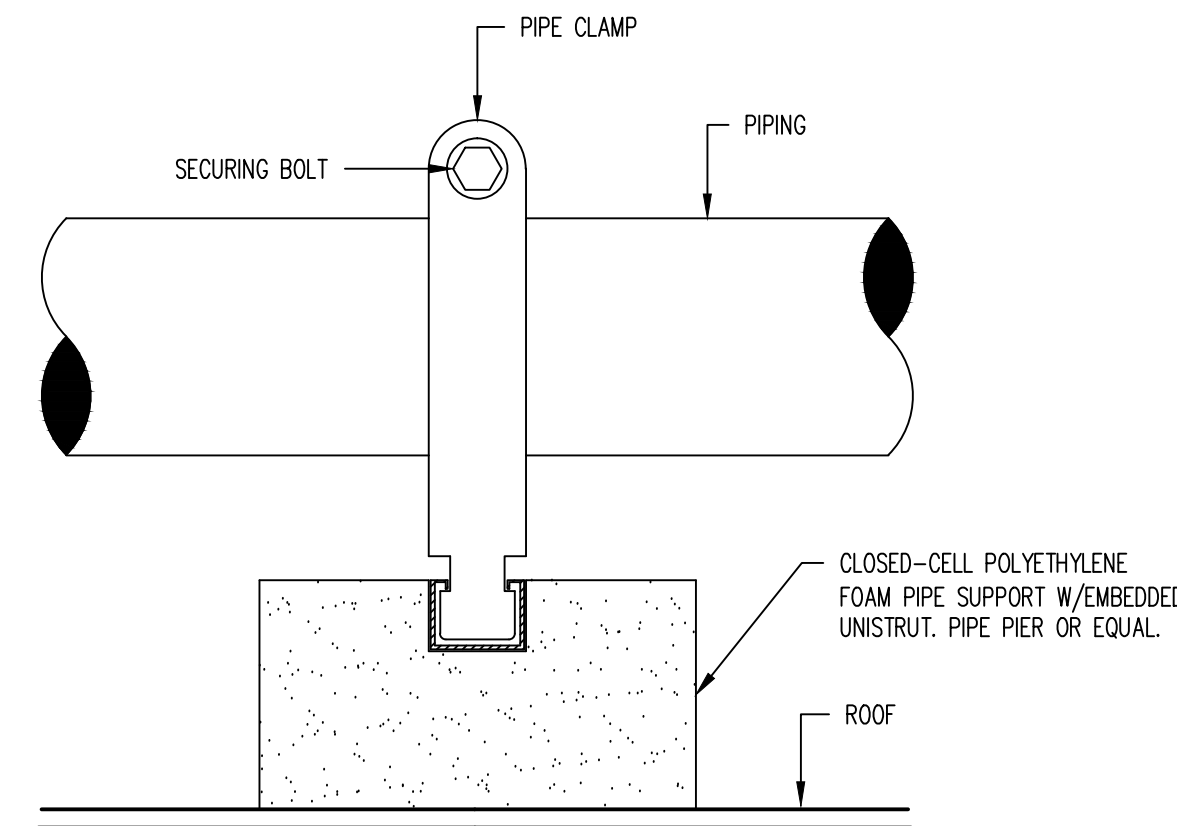


GENERAL NOTES:

- MECHANICAL CONTRACTOR TO EXAMINE PREMISES TO UNDERSTAND CONDITIONS THAT MAY AFFECT PERFORMANCE OF WORK OF THIS DIVISION BEFORE SUBMITTING PROPOSALS FOR THIS WORK. EXAMINE ADJOINING WORK ON WHICH MECHANICAL WORK IS DEPENDENT FOR EFFICIENCY AND REPORT WORK THAT REQUIRES CORRECTION. NO SUBSEQUENT ALLOWANCE FOR TIME OR MONEY WILL BE CONSIDERED FOR ANY CONSEQUENCE RELATED TO FAILURE TO EXAMINE SITE CONDITIONS.
- ALL WORK IS TO BE DONE IN ACCORDANCE WITH THE N.C. STATE MECHANICAL CODE AND ANY OTHER APPLICABLE CODES OR LOCAL ORDINANCES.
- MECHANICAL CONTRACTOR IS TO COORDINATE HIS WORK WITH THE WORK OF OTHER TRADES.
- SEAL ANY AND ALL PENETRATIONS OF FIRE RATED WALLS, FLOORS, CEILINGS, ETC. WITH U.L. APPROVED FIRE STOPPING SYSTEMS. PROVIDE DOCUMENTATION.
- MAINTAIN 10'-0" MINIMUM DISTANCES BETWEEN AIR INTAKES AND AIR EXHAUSTS INCLUDING VENTS.
- OBSERVE ALL CLEARANCES AROUND EQUIPMENT PER MANUFACTURER'S INSTRUCTIONS.

7. CONTRACTOR TO FURNISH AND INSTALL ROOF CURB ONLY. HVAC UNIT WILL BE PROVIDED WITH FUTURE UPFITS. CLOSE AND SEAL ALL CURB OPENINGS.

1 ROOF PLAN - MECHANICAL
SCALE: 1/8" = 1'-0"



REFRIGERANT PIPING SUPPORT DETAIL
NO SCALE

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**ROOF PLAN -
MECHANICAL**

DATE: JUNE 24, 2019
DRAWN BY: SHB
CHECKED BY: SAB
PROJECT NO: 2019-004-2329

REVISIONS:
1 JULY 18, 2019

SHEET:
M4



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MECHANICAL LEGEND	
SYMBOL	DESCRIPTION
	SQUARE CEILING MOUNTED S/A DIFFUSER
	SQUARE CEILING MOUNTED R/A GRILLE
	CEILING MOUNTED EXHAUST FAN
	RECTANGULAR SUPPLY AIR REGISTER
	SUPPLY AIR DUCT (SINGLE LINE)
	RETURN AIR DUCT (SINGLE LINE)
	EXHAUST DUCT
	OUTSIDE AIR DUCT
	RUNNOUT TO DIFFUSER W/VOLUME DAMPER AND CONE EXTRACTOR
	SUPPLY AIR DUCT (DOUBLE LINE)
	RETURN AIR DUCT (DOUBLE LINE)
	DUCTWORK TRANSITION
	REFRIGERANT (SUCTION & LIQUID) PIPING
	CONDENSATE PIPING - (2 PER AIR HANDLER)
	HEATING AND COOLING THERMOSTAT 5"-0" A.F.F. 7-DAY PROGRAMMABLE W/ AUTOMATIC CHANGEOVER, NIGHT SETBACK, AND STRIP HEAT LOCK-OUT FEATURE.
	DUCT MOUNTED SMOKE DETECTOR WIRED TO DE-ENERGIZE AIR HANDLING UNIT UPON DETECTION OF SMOKE. PROVIDED BY ELECTRICAL CONTRACTOR, INSTALLED BY MECHANICAL CONTRACTOR, WIRED BY ELECTRICAL CONTRACTOR.
S/A	SUPPLY AIR
R/A	RETURN AIR
O/A	OUTSIDE AIR
M.V.D.	MANUAL VOLUME DAMPER
M.D.	MOTORIZED DAMPER (24 VOLT)
A.F.F.	ABOVE FINISHED FLOOR
B.D.D.	BACK DRAFT DAMPER

FAN SCHEDULE											
MARK	LOCATION	SERVICE	CFM	S.P.	WATTS	RPM	VOLTS	PHASE	DRIVE	REMARKS	
EF-1	CEILING	TOILETS, JAN.	75	0.125"	35	1200	120	1	DIRECT	CEILING MOUNTED EXHAUST FAN GEMINI GC-120 OR EQUAL	
EF-2	CEILING	TOILETS	150	0.125"	113	1500	120	1	DIRECT	CEILING MOUNTED EXHAUST FAN GEMINI GC-160 OR EQUAL	

PACKAGED ROOF TOP HEAT PUMP SCHEDULE																			
UNIT NO.	NOM. TONS	INDOOR FAN			COOLING CAPACITIES			HEATING CAPACITIES			ELECTRICAL DATA							REMARKS	
		TOTAL CFM	O.A. CFM	STATIC PRESS. (IN.)	TOTAL COOLING (BTUH)	SENSIBLE COOLING (BTUH)	EER	TOTAL HEATING (MBH)	COP	NO. OF COMPR.	COMPR. AMPS (EACH)	NO. OF INDOOR FANS	IN FAN AMPS (EACH)	NO. OF OUTDOOR FANS	OUT FAN AMPS (EACH)	UNIT VOLT	UNIT PH.		ELEC HEAT (KW)
HAC-1	2 1/2	1000	100	0.5	28,600	22,000	11.6	27,600	2.2	1	16.8	1	4.3	1	0.9	208	1	3.8	CARRIER MODEL 50XT030 PACKAGED ROOFTOP HEAT PUMP WITH ECONOMIZER OR EQUAL BY TRANE OR BRYANT
HAC-2	2	800	100	0.5	22,600	18,000	11.4	20,800	2.2	1	15.3	1	4.3	1	0.9	208	1	3.8	CARRIER MODEL 50XT024 PACKAGED ROOFTOP HEAT PUMP WITH ECONOMIZER OR EQUAL BY TRANE OR BRYANT
HAC-3 HAC-4 HAC-5 HAC-6 HAC-7 HAC-8	5	2000	200	0.75	57,000	45,000	11.0	56,000	2.2	1	27.3	1	9.1	1	1.9	208	1	7.5	CARRIER MODEL 50XT060 PACKAGED ROOFTOP HEAT PUMP WITH ECONOMIZER OR EQUAL BY TRANE OR BRYANT

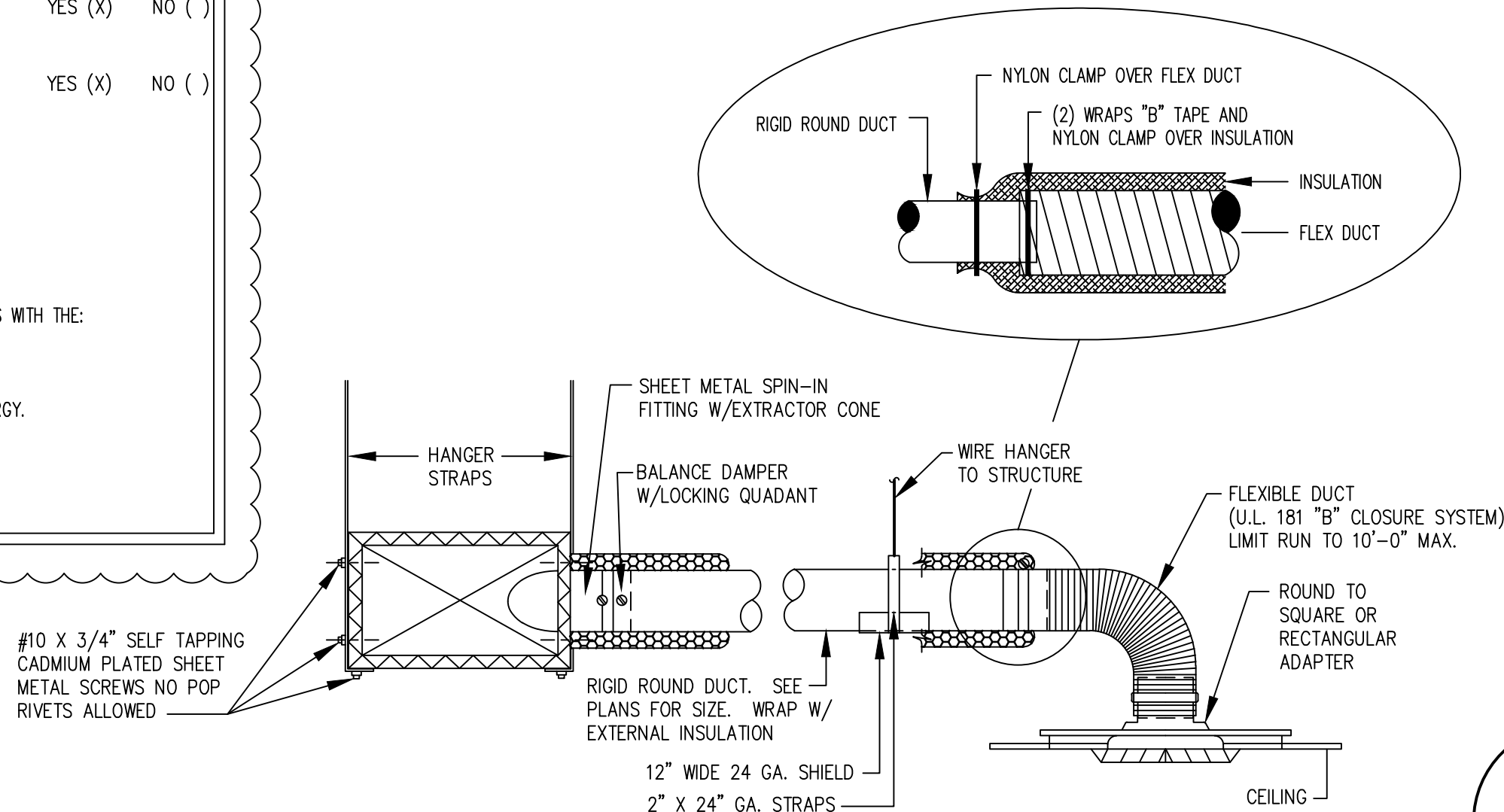
HEAT PUMP SCHEDULE																						
UNIT NO.	INDOOR UNIT								UNIT NO.	OUTDOOR UNIT						CAPACITIES					MANUFACTURER	
	TOTAL CFM	O/A CFM	EXT. S.P.	MOTOR HP	AUXILIARY HEAT	UNIT VOLT	UNIT PHASE	M.O.C.P.		COMPRESSOR AMPS	NO. OF COMPR.	FAN AMPS	NO. OF FANS	UNIT VOLT	UNIT PHASE	M.O.C.P.	TOTAL COOLING	SENSIBLE COOLING	MIN. SEER	TOTAL HEATING		MIN. C.O.P.
AH-1	2000	200	0.40"	3/4	11.3 KW	208	3	50	HP-1	26.7	1	1.2	1	208	1	50	57,500	46,000	15.0	57,000	3.82	CARRIER MODEL 25HCBS-60A HEAT PUMP W/ CARRIER MODEL FX4CNF-060 AIR HANDLER
AH-2	1400	150	0.40"	1/2	6.8 KW	208	3	35	HP-2	22.4	1	1.2	1	208	1	45	42,000	32,500	15.0	42,000	3.84	CARRIER MODEL 25HCBS-42A HEAT PUMP W/ CARRIER MODEL FX4CNF-042 AIR HANDLER
AH-3A	2000	200	0.40"	3/4	11.3 KW	208	3	50	HP-3A	26.7	1	1.2	1	208	1	50	57,500	46,000	15.0	57,000	3.82	CARRIER MODEL 25HCBS-60A HEAT PUMP W/ CARRIER MODEL FX4CNF-060 AIR HANDLER
AH-3B	2000	200	0.40"	3/4	11.3 KW	208	3	50	HP-3B	26.7	1	1.2	1	208	1	50	57,500	46,000	15.0	57,000	3.82	CARRIER MODEL 25HCBS-60A HEAT PUMP W/ CARRIER MODEL FX4CNF-060 AIR HANDLER
AH-4A	1000	100	0.40"	1/3	6.8 KW	208	3	35	HP-4A	14.4	1	0.9	1	208	1	30	29,000	23,200	15.0	29,600	3.72	CARRIER MODEL 25HCBS-30A HEAT PUMP (PUROX) W/ CARRIER MODEL FX4CNF-030 AIR HANDLER
AH-4B	1400	150	0.40"	1/2	6.8 KW	208	3	35	HP-4B	22.4	1	1.2	1	208	1	45	42,000	32,500	15.0	42,000	3.84	CARRIER MODEL 25HCBS-42A HEAT PUMP W/ CARRIER MODEL FX4CNF-042 AIR HANDLER

NOTES:
1. EQUALS BY TRANE, YORK OR LENOX WILL BE ACCEPTABLE.
2. HEATING AND COOLING CAPACITIES SHOWN AT ARI STANDARDS.
3. HEAT STRIP WATTAGES RATED AT 208 VOLT.

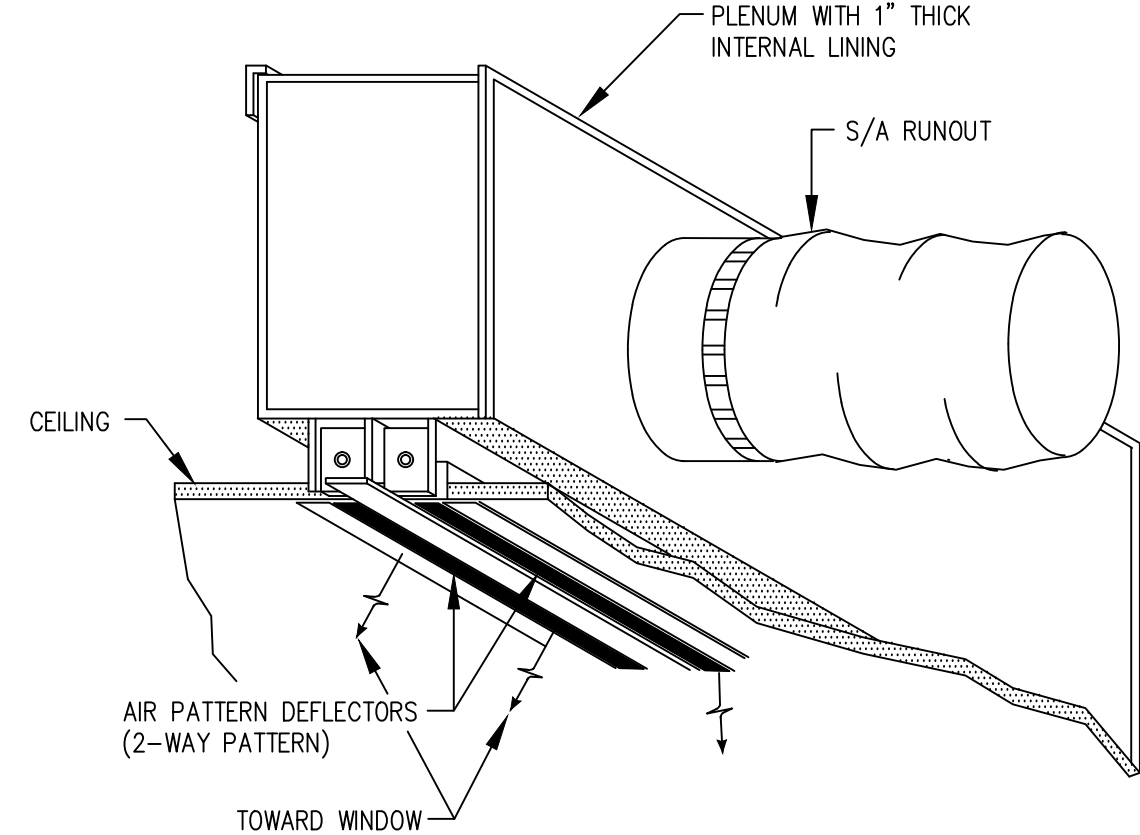
VOLUME X - ENERGY COMPLIANCE			
PROJECT NAME:	WILMINGTON EYE CLINIC	DATE:	JUNE 24, 2019
LOCATION:	WILMINGTON, N.C.	THERMAL ZONE:	3A (HUMID)
ACTIVITY:	MEDICAL OFFICE	AREA:	24,000 S.F.
METHOD OF COMPLIANCE:	[X] ENERGY CODE [] ASHRAE 90.1 [X] PREScriptive [] PERFORMANCE		
BUILDING ENVELOPE (SECTION C402):			
WINTER DESIGN: 22°F DB	SUMMER DESIGN: 91°F DB		
HDD65: 2556	CD65: 1788	AOH: 757	
MECHANICAL SYSTEMS AND EQUIPMENT (SECTION C403):	YES (X)	NO ()	
A. BUILDING HEATING LOAD: 272,500 BTUH	YES (X)	NO ()	
BUILDING COOLING LOAD INCLUDING VENTILATION: 618,900 BTUH			
B. EQUIPMENT TYPE: HEAT PUMPS	YES (X)	NO ()	
HEATING OUTPUT OF UNIT: 669,200 BTUH			
COOLING OUTPUT OF UNIT: 678,700 BTUH			
MINIMUM EFFICIENCY:	ACTUAL EFFICIENCY:		
a. SEER: 14.0	15.0		
b. EER: -	-		
c. HSPF: 8.2	8.2		
e. AFUE: -	-		
C. CONTROLS COMPLIANCE:	YES (X)	NO ()	
D. ECONOMIZER REQUIRED:	YES ()	NO (X)	
E. OUTSIDE AIR DAMPER REQUIRED:	YES ()	NO (X)	
F. DUCT INSULATION: MINIMUM REQUIRED: R=8.0	ACTUAL: R=8.0	YES (X)	NO ()
G. PIPE INSULATION: REFRIGERANT PIPING MINIMUM REQUIRED: <1"Ø PIPE - 1-1/2"	ACTUAL: 1-1/2"	YES (X)	NO ()
MINIMUM REQUIRED: 1-1/8"Ø TO 2"Ø PIPE - 1-1/2"	ACTUAL: 1-1/2"		
H. ADDITIONAL PREScriptive COMPLIANCE (SECTION C406):	YES (X)	NO ()	
[X] (C406.2) MORE EFFICIENT MECHANICAL EQUIPMENT			
[X] (C406.3) REDUCED LIGHTING POWER DENSITY			
[] (C406.6) ENERGY RECOVERY VENTILATION SYSTEMS			
[] (C406.7) HIGHER EFFICIENCY SERVICE WATER HEATING			
[] (C406.5) ON-SITE SUPPLY OF RENEWABLE ENERGY			
[] (C406.4) AUTOMATIC DAYLIGHTING CONTROL SYSTEM			
DESIGNERS STATEMENT:	TO THE BEST OF MY KNOWLEDGE AND BELIEF, THE DESIGN OF THIS BUILDING COMPLIES WITH THE:		
[X] MECHANICAL SYSTEMS	REQUIREMENTS OF THE 2012 NORTH CAROLINA STATE BUILDING CODE, VOLUME X-ENERGY.		
SIGNED:			
NAME:	SID A. BENDAHMANE, P.E.		

REGISTER, GRILLE & DIFFUSER SCHEDULE					
SYMBOL	CFM	AIR PATTERN	NECK SIZE	RUNOUT SIZE	REMARKS
A	50	2-WAY	10"x4"	5"Ø	METAL*ARE MODEL 4004, ALUMINUM, S/A REGISTER W/V.D.
B	75	4-WAY	6"Ø	6"Ø	METAL*ARE MODEL 5700-6, ALUMINUM, LAY-IN S/A DIFFUSER W/V.D.
C	100	4-WAY	6"Ø	6"Ø	METAL*ARE MODEL 5700-6, ALUMINUM, LAY-IN S/A DIFFUSER W/V.D.
D	125	4-WAY	8"Ø	8"Ø	METAL*ARE MODEL 5700-6, ALUMINUM, LAY-IN S/A DIFFUSER W/V.D.
E	150	4-WAY	8"Ø	8"Ø	METAL*ARE MODEL 5700-6, ALUMINUM, LAY-IN S/A DIFFUSER W/V.D.
F	200	4-WAY	8"Ø	8"Ø	METAL*ARE MODEL 5700-6, ALUMINUM, LAY-IN S/A DIFFUSER W/V.D.
G	250	4-WAY	10"Ø	10"Ø	METAL*ARE MODEL 5700-6, ALUMINUM, LAY-IN S/A DIFFUSER W/V.D.
H	300	4-WAY	10"Ø	10"Ø	METAL*ARE MODEL 5700-6, ALUMINUM, LAY-IN S/A DIFFUSER W/V.D.
J	350	4-WAY	10"Ø	10"Ø	METAL*ARE MODEL 5700-6, ALUMINUM, LAY-IN S/A DIFFUSER W/V.D.
K	400	4-WAY	12"Ø	12"Ø	METAL*ARE MODEL 5700-6, ALUMINUM, LAY-IN S/A DIFFUSER W/V.D.
L	350	2-WAY	10"Ø	10"Ø	METAL*ARE MODEL 6675 (2) 3/4" LINEAR SLOT DIFFUSER W/ LINED PLENUM BPI- 48" LONG
M	100-200	RETURN	12"x12"	-	METAL*ARE MODEL CCF, ALUMINUM, EGGRATE FACE, FILTER FRAME, R/A GRILLE
N	275-900	RETURN	20"x20"	-	METAL*ARE MODEL CCF, ALUMINUM, EGGRATE FACE, FILTER FRAME, R/A GRILLE
P	200	4-WAY	8"Ø	8"Ø	METAL*ARE MODEL 5700-1, ALUMINUM, SURFACE MOUNT, S/A DIFFUSER W/V.D.
Q	600	4-WAY	14"Ø	14"Ø	METAL*ARE MODEL SRHF, ALUMINUM, SURFACE MOUNT, FILTER FRAME, R/A GRILLE

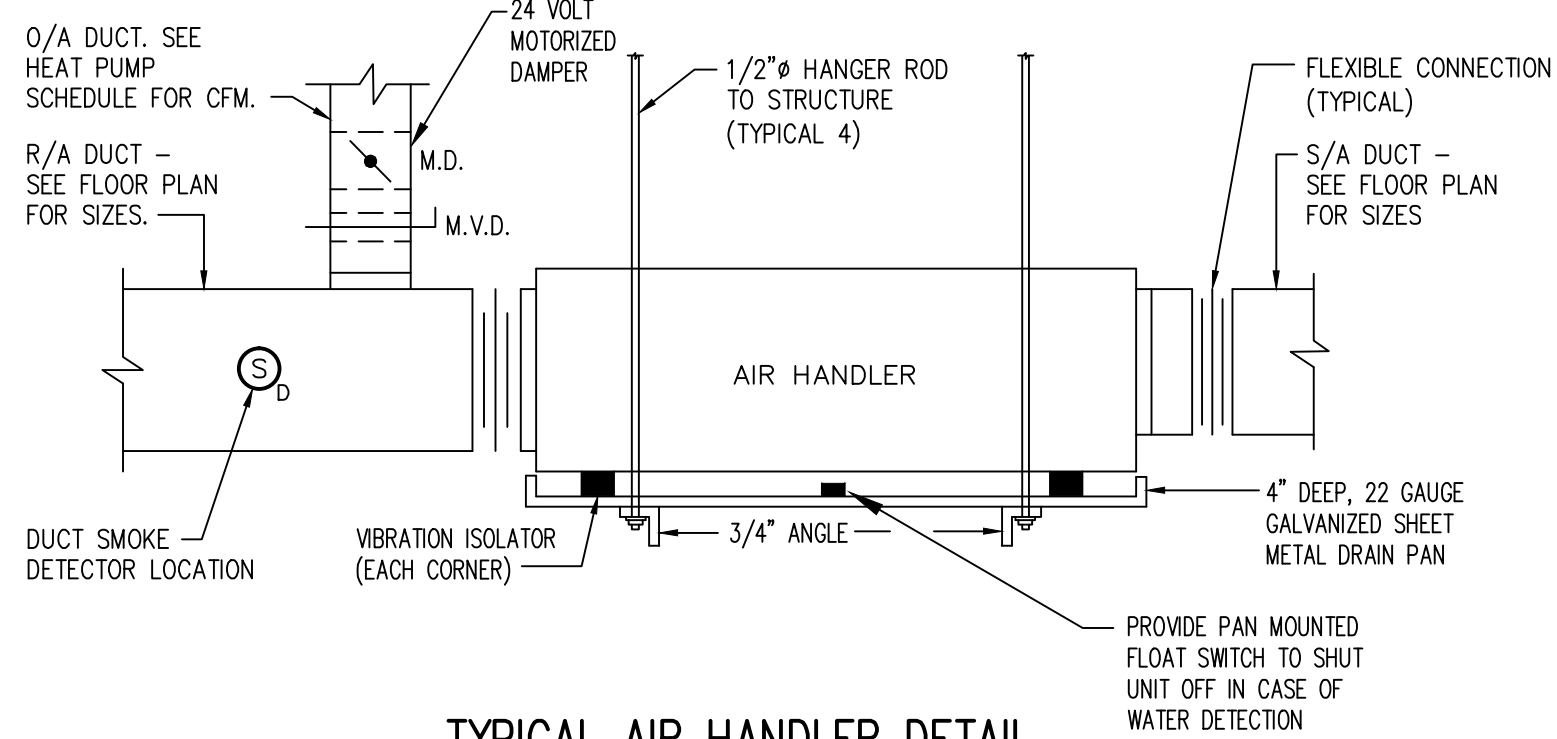
NOTE: EQUALS BY TITUS, PRICE, AND J & J WILL BE ACCEPTABLE.



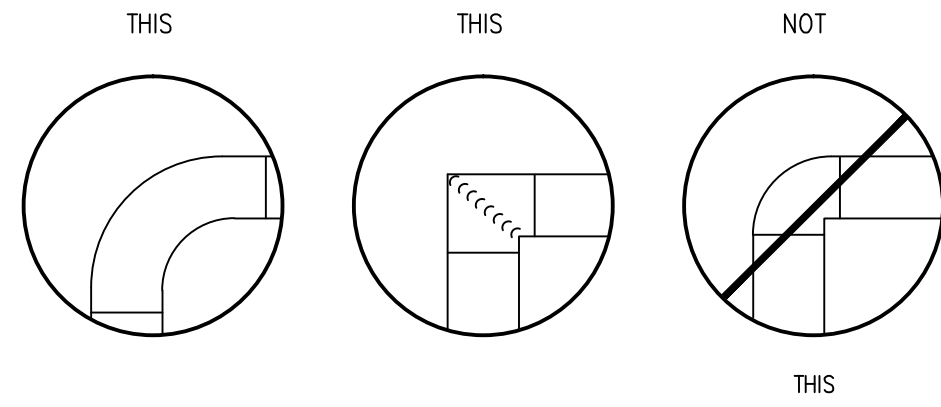
TYPICAL DIFFUSER CONNECTION DETAIL
NO SCALE



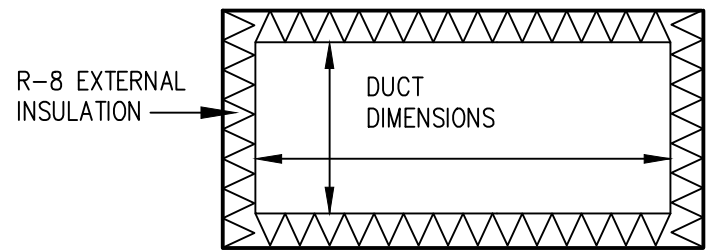
SLOT LINEAR DIFFUSER
NO SCALE



TYPICAL AIR HANDLER DETAIL
NO SCALE

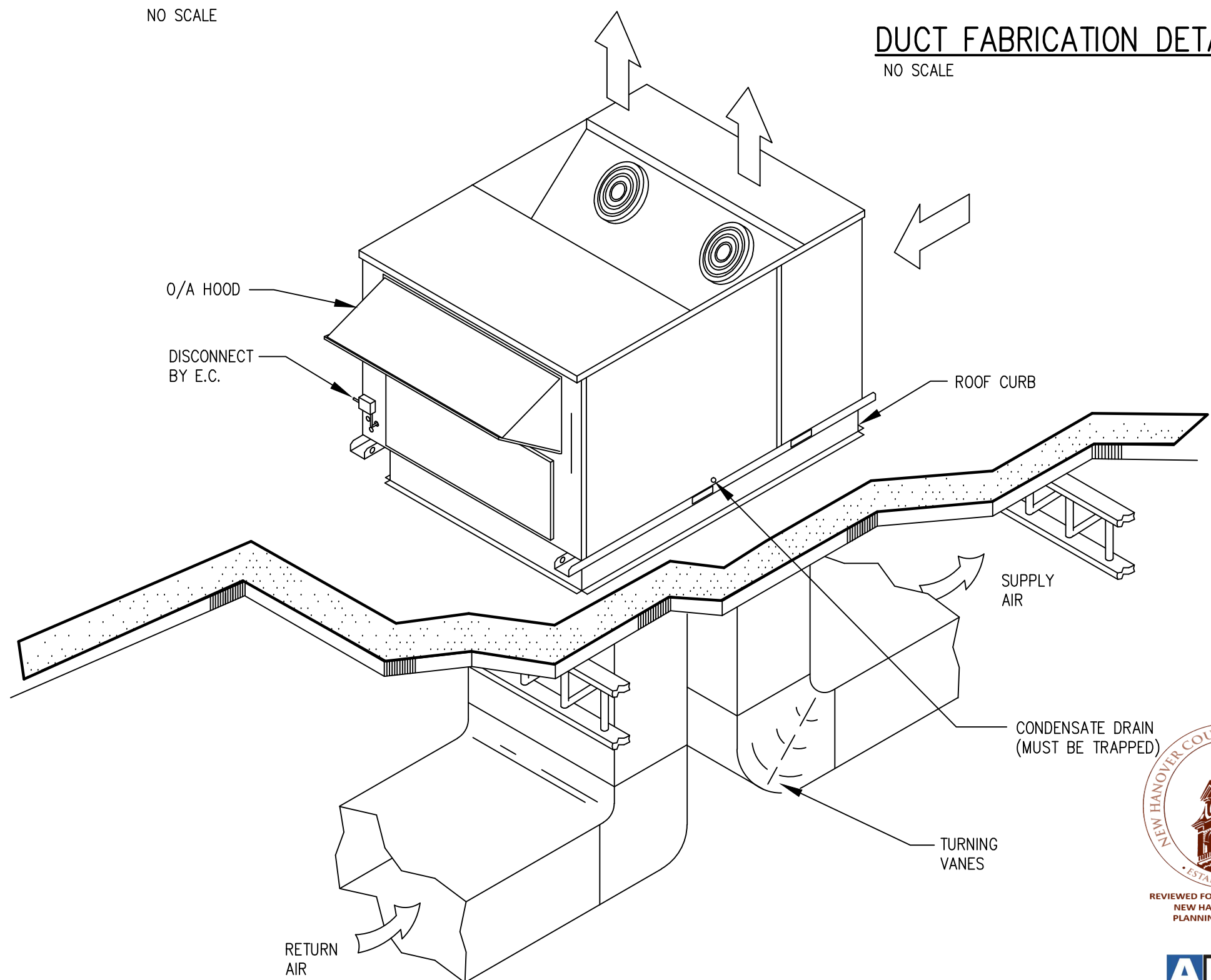


ELBOW FABRICATION DETAIL
NO SCALE



NOTE: ALL DUCT DIMENSIONS SHOWN ON THESE DRAWINGS ARE INSIDE CLEAR.

DUCT FABRICATION DETAIL
NO SCALE



TYPICAL ROOF MOUNTED HEAT PUMP DETAIL
NO SCALE

S & S Designs
ENGINEERING • DRAFTING • DESIGN

353 Spicer Lake Drive
Holly Ridge, N.C. 28445
Phone: 910-470-9687



WILMINGTON EYE CLINIC
1729 MEDICAL PARK DRIVE
WILMINGTON, NC 28403

SCHEDULES AND DETAILS

DATE: JUNE 24, 2019
DRAWN BY: SHB
CHECKED BY: SAB
PROJECT NO: 2019-004-2329

REVISIONS:
1 JULY 18, 2019
2 AUGUST 15, 2019

SHEET:
M5

