

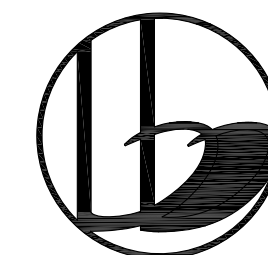
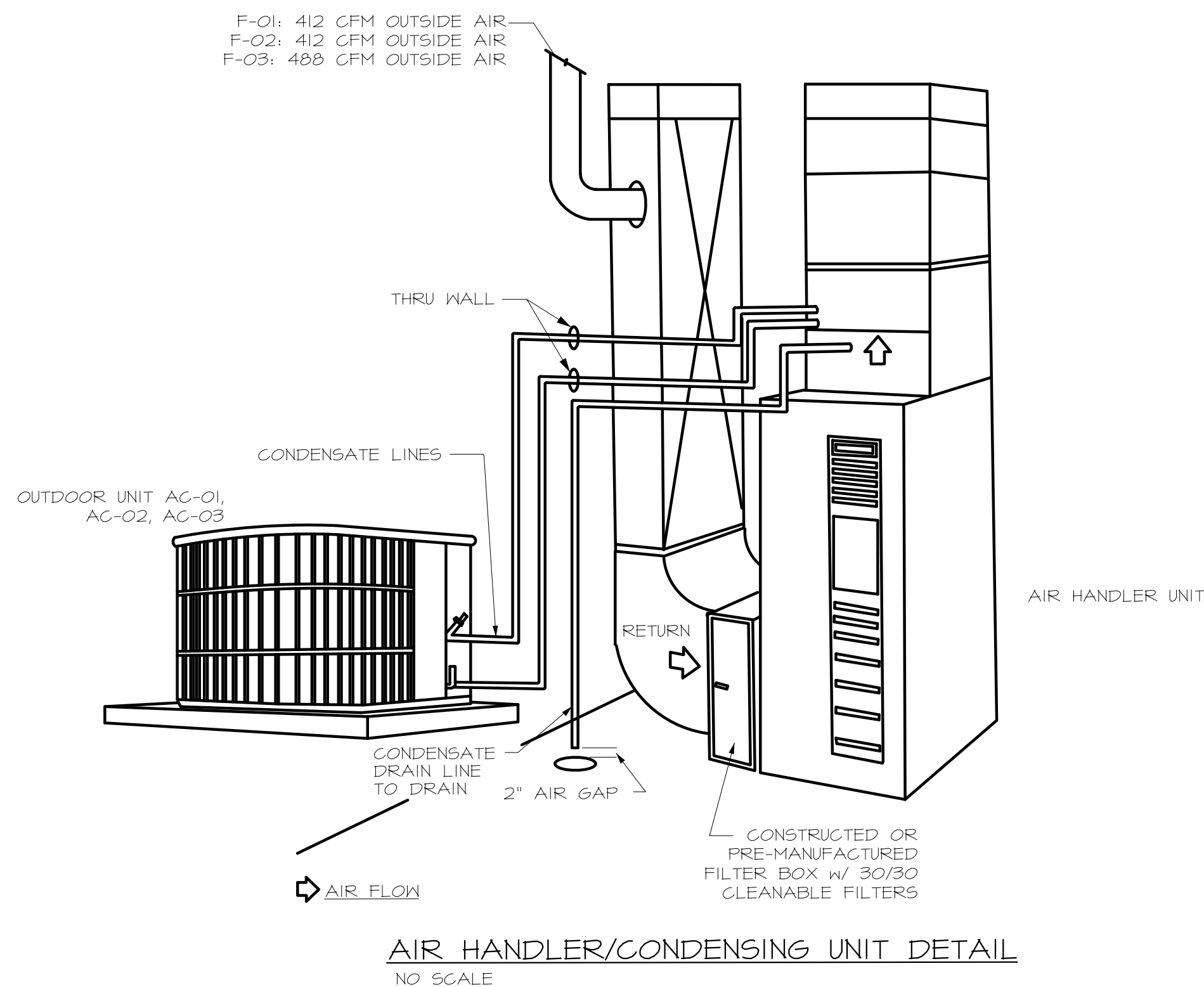
FRESH AIR CALCULATIONS

REQUIREMENTS PER 2017 OHIO MECHANICAL CODE

ROOM	SQ.FT.	SOURCE	NATURAL			MECHANICAL OUTDOOR AIR			SOURCE
			4% OPENABLE AREA REQ'D.	OPENABLE AREA PROVIDED	% OPENABLE AREA PROVIDED	CFM REQUIRED	CFM PROVIDED	% CFM PROVIDED	
RETAIL	3447	NATURAL/MECHANICAL	138	144 SF	104%	0 CFM	936 CFM	-	DOOR/RTU-02 / F-03
REST.	1380	NATURAL/MECHANICAL	56 SF	42 SF	75%	823 CFM	823 CFM	100%	DOOR/F-01
KITCHEN	1465	NATURAL/MECHANICAL	59 SF	84 SF	142%	0 CFM	1360 CFM	-	DOOR/RTU-01
MEN RR	123	MECHANICAL	-	-	-	100 CFM	100 CFM	100%	F-01/EF-1
WOM. RR	162	MECHANICAL	-	-	-	100 CFM	100 CFM	100%	F-01/EF-1

MECHANICAL NOTES

- GENERAL CONTRACTOR SHALL COORDINATE WITH THE PLUMBING, ELECTRICAL, HVAC, AND SPRINKLER CONTRACTORS PRIOR TO CONSTRUCTION FOR PENETRATIONS THROUGH CONCRETE AND MASONRY CONSTRUCTION.
- ALL HVAC CONTRACTOR EQUIPMENT PROVIDED BY THE HVAC CONTRACTOR SHALL BE WIRED BY THE ELECTRICAL CONTRACTOR.
- VENT SYSTEMS: VENTS SHALL BE UL OR FM LABELED. VENTS SHALL BE PROTECTED FROM DAMAGE. VENT CONNECTORS SHALL BE MINIMUM NO. 28 GALVANIZED SHEET GAUGE. STANDARD CONNECTORS SHALL MAINTAIN 4" CLEARANCE TO COMBUSTIBLES.
- AIR VOLUME CONTROL: SUPPLY REGISTERS, GRILLES, AND DIFFUSERS SHALL HAVE VOLUME ADJUSTMENT.
- INTAKE AND EXHAUST LOUVERS: LOUVERS SHALL BE BAFFLED TO EXCLUDE ENTRANCE OF RAIN AND SNOW AT RATED AND NO FLOW CONDITIONS AND SHALL HAVE NON-CORROSIVE 1/4" MESH SCREENS / LOUVERS.
- AIR FILTERS: FILTERS SHALL BE UL OR FM LISTED.
- DUCTWORK: METALLIC DUCTS SHALL CONFORM TO SMACNA LOW PRESSURE DUCT CONSTRUCTION STANDARD OR SMACNA HIGH PRESSURE DUCT CONSTRUCTION STANDARD.
- DUCT AND PIPE INSULATION, COVERINGS, LININGS AND ACCESSORIES: INSULATION, COVERINGS, LININGS AND ACCESSORIES, INCLUDING ADHESIVES WHEN USED, SHALL HAVE A FLAME SPREAD INDEX NOT MORE THAN 25 AND A SMOKE-DEVELOPED INDEX NOT MORE THAN 50, WHEN TESTED IN ACCORDANCE WITH ASTM E84. DUCT COVERINGS AND LININGS SHALL NOT FLAME, GLOW, SMOLDER OR SMOKE WHEN TESTED IN ACCORDANCE WITH ASTM C411 AT THE TEMPERATURE TO WHICH THEY ARE EXPOSED IN SERVICE. THE TEST TEMPERATURE SHALL NOT FALL BELOW 250° F (121° C).
- ALL APPLIANCES SHALL BE UL LISTED AND LABELED.
- ALL APPLIANCES SHALL BE INSTALLED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTALLATION INSTRUCTIONS.
- PROVIDE CLEARANCE AS PER LISTED APPLIANCE FROM COMBUSTIBLE MATERIALS.
- ALL GAS BURNING APPLIANCES SHALL HAVE AN APPROVED SHUT-OFF VALVE.
- ALL APPLIANCES SHALL BEAR A LEGIBLE FACTORY APPLIED NAME PLATE.
- ALL APPLIANCES SHALL BE PROPERLY VENTED WITH U.L. LISTED VENTING ASSEMBLIES.
- ALL WORK AND MATERIALS SHALL CONFORM TO THE OHIO BUILDING AND MECHANICAL CODE.
- DESIGN AND CONSTRUCT ALL DUCTWORK FOR 1/2" STATIC PRESSURE.
- ALL INTERIOR DUCTWORK SHALL BE CONCEALED FROM VIEW ABOVE CEILINGS, BEHIND WALL, OR WITHIN CHASES.
- INSULATE INTERIOR EVAPORATOR COIL CONDENSATE DRAIN PIPING WITH 1/2" INSULATION. INSULATION SHALL CONFORM TO ASTM C 534, TYPE I. INSULATION SURFACE SHALL FORM A COMPLETE VAPOR BARRIER. ALL INSULATING MATERIALS SHALL HAVE A FLAME SPREAD RATING NOT EXCEEDING 15 AND A SMOKE DEVELOPED RATING NOT EXCEEDING 50 WHEN TESTED IN ACCORDANCE WITH ASTM E-84. INSULATE REFRIGERANT TUBING AS RECOMMENDED BY THE EQUIPMENT MANUFACTURER.
- ALL AIR DISTRIBUTION SYSTEMS RATED WITH A CAPACITY GREATER THAN 2000 CFM SHALL BE EQUIPPED WITH AN APPROVED SMOKE DETECTOR. UPON ACTIVATION, THE SMOKE DETECTORS SHALL SHUT DOWN THE DISTRIBUTION SYSTEM.
- OUTSIDE AIR EXHAUST INTAKE OPENINGS SHALL BE LOCATED A MINIMUM OF 10' FROM LOT LINES OR BUILDINGS ON THE SAME LOT.
- SUPPLY AIR DUCTS SHALL HAVE 1 1/2" EXTERNAL FIBERGLASS BLANKET, OR USE ACOUSTIC LINER INSULATION WITH VAPOR BARRIER.
- PROVIDE ALL STRUCTURAL SUPPORTS FOR ALL EQUIPMENT AS RECOMMENDED BY THE EQUIPMENT MANUFACTURERS.
- FLASH AND SEAL ALL PENETRATIONS OF EXTERIOR WALLS AND ROOFS.
- FABRICATED FILTER BOXES TO ACCOMMODATE STANDARD FILTER SIZES LARGE ENOUGH THAT AIR FLOW VELOCITY THROUGH THE FILTER WILL NOT EXCEED 500 FEET PER MINUTE. (PROVIDE 30/30 HIGH EFFICIENCY FILTER.)
- CONTROLS SHALL BE TOTALLY ELECTRIC / ELECTRONIC.
- PROVIDE TURNING VANES IN ALL DUCT ELBOWS.
- BALANCE THE AIR DISTRIBUTION TO WITHIN 10% OF ALL AIRFLOW VALUES SHOWN. BALANCE THE SYSTEMS BY ADJUSTING DUCT MOUNTED BALANCING DAMPERS WITH ALL DOORS AND WINDOWS CLOSED, DIFFUSER DAMPERS OPEN, EXHAUST FANS ON AND COOLING COILS MET. UTILIZE BALANCING METHODS AND REPORTING FORMS RECOMMENDED BY THE ASSOCIATED AIR BALANCE COUNCIL. SUBMIT A BALANCING REPORT FOR THE OWNERS APPROVAL.
- RETURN AIR DUCTWORK SHALL NOT BE INSULATED.
- THERMOSTATS, AUTOMATIC DAMPERS, LOUVERS, CONTROL WIRING, ETC.. SHALL BE BY THE HVAC CONTRACTOR. CONDUIT AND BOXES FOR THE SAME ITEMS SHALL BE PROVIDED AND INSTALLED BY THE ELECTRICAL CONTRACTOR.
- PROVIDE MINIMUM R-8 INSULATION FOR ALL DUCTWORK IN ATTIC.



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 12-23-20

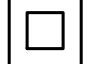



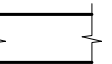
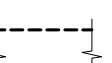

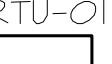

SUBMITTAL DATE
 23 DEC. 2020

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HVAC DETAILS

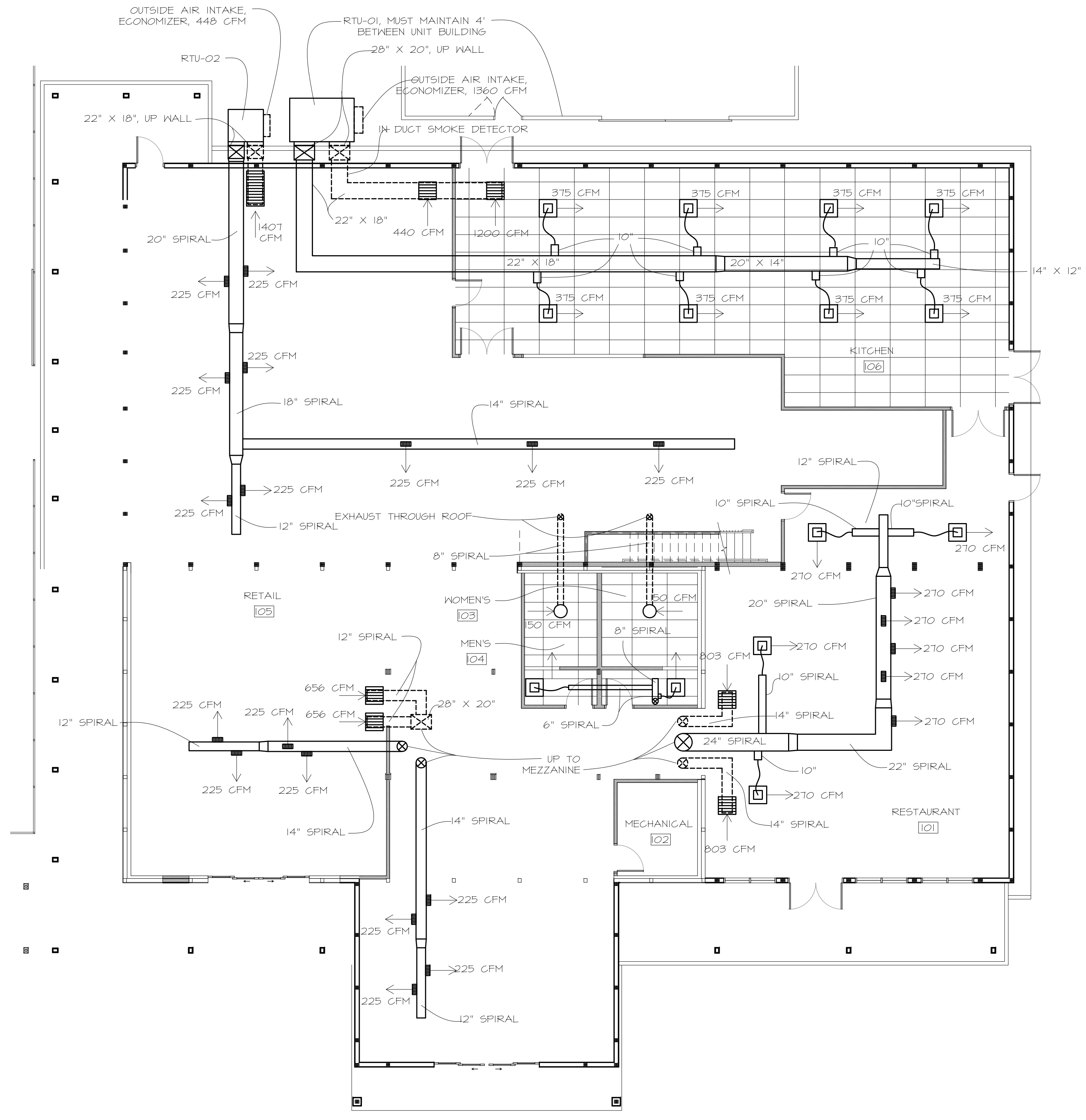
H100

HVAC LEGEND:

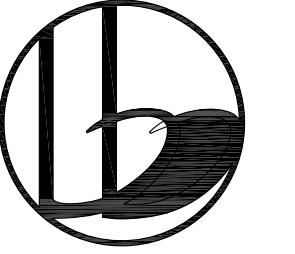
-  24" X 24" PLAQUE DIFFUSER
-  EXHAUST FAN, EF-1, 115 V, 150 CFM, VENTED THROUGH ROOF
-  EGGCRATE RETURN AIR GRILLE
-  14" X 6" SPIRAL DIFFUSER
-  SUPPLY AIR DUCT
-  RETURN AIR DUCT
-  FLEXIBLE DUCT
-  RTU-01 COMFORTMAKER R65090HECA0AAT, 3000 CFM TOTAL SUPPLY AIR, .3 IN WG EXTERNAL STATIC PRESSURE, 208 V, 3 PHASE, 90 MBH COOLING OUTPUT, 148 MBH HEATING OUTPUT.
-  RTU-02 COMFORTMAKER P6R560115HG5I, 1855 CFM TOTAL SUPPLY AIR, 0.3 IN WG EXTERNAL STATIC PRESSURE, 208 V, 3 PHASE, 57 MBH COOLING OUTPUT, 93 MBH HEATING OUTPUT.

SHEET NOTES:

1. LOCATE DUCTS TO AVOID INTERFERING WITH LIGHT FIXTURES.
2. FILTER RACKS SHALL BE DESIGNED SUCH THAT FLOW VELOCITY THROUGH FILTERS DOES NOT EXCEED 500 FEET PER MINUTE.
3. FILTERS SHALL BE 25% EFFICIENT THROW AWAY TYPE.
4. BALANCE ALL GENERAL BUILDING AIRFLOW SYSTEMS WITH HOOD EXHAUST FANS TURNED OFF.
5. WHERE NEW CEILING DIFFUSERS OR GRILLES ARE TO BE INSTALLED IN EXISTING GRID TYPE CEILINGS, THE EXACT LOCATION OF THE DIFFUSERS AND GRILLES SHALL BE FIELD DETERMINED SUCH THAT THEY WILL FIT INTO AN AVAILABLE GRID SPACE AS NEAR TO THE LOCATION SHOWN AS POSSIBLE. EXTEND DUCTWORK TO THESE LOCATIONS.
6. ALL OCCUPIED ROOMS IN THE ADDITION SHALL BE PROVIDED WITH NATURAL VENTILATION OF NOT LESS THAN 4 PERCENT OF THE ROOM FLOOR AREA.
7. THE MINOR RENOVATIONS IN THE EXISTING BUILDING SHALL NOT CHANGE THE OUTDOOR VENTILATION AIR QUANTITIES CURRENTLY BEING DELIVERED INTO THE EXISTING BUILDING.
8. RESTROOM EXHAUST OF 50 CFM PER WATER CLOSET AND URINAL IS REQUIRED. EACH RESTROOM HAS TWO OF THESE FIXTURES AND EXHAUST FANS SHALL EXHAUST 150 CFM CONTINUOUSLY FROM EACH RESTROOM WHEN THE BUILDING IS OCCUPIED. FURNACE SHALL HAVE 225 CFM OF OUTDOOR AIR INTAKE WHENEVER THE BUILDING IS OCCUPIED TO MAKE UP FOR THIS EXHAUST AIR PLUS PROVIDE SLIGHT POSITIVE BUILDING PRESSURE.
9. FURNACES AND CONDENSING UNITS SHALL UTILIZE MANUFACTURER'S STANDARD TWO STAGE OR VARIABLE CAPACITY CONTROLS TO REGULATE BOTH HEATING AND COOLING DELIVERY TO THE CONDITIONED SPACES.
10. FURNACE FANS SHALL RUN CONTINUOUSLY AT THEIR BALANCED CONSTANT SPEED DURING OCCUPIED MODE AND SHALL CYCLE ON AND OFF IN RESPONSE TO CALL FOR HEATING OR COOLING IN UNOCCUPIED MODE.
11. FURNACE THERMOSTATS SHALL BE FULLY PROGRAMMABLE WITH FEATURES FOR OCCUPANCY PROGRAMMING AND SHALL HAVE AN UNOCCUPIED SETPOINT TIMED OVERRIDE FEATURE. EACH THERMOSTAT SHALL CHANGE THE SUPPLY FAN BACK AND FORTH FROM CYCLING TO CONTINUOUS OPERATION BASED ON THE OCCUPANCY SCHEDULE.
12. PROVIDE ALL COMPONENTS AND WIRING NECESSARY TO ACHIEVE THE SEQUENCE OF OPERATIONS AND TO COMPLY WITH ALL APPLICABLE NEC REQUIREMENTS. ALL ELECTRICAL COMPONENTS SHALL BE UL LABELED.



FIRST FLOOR HVAC PLAN
1/8" = 1'-0"



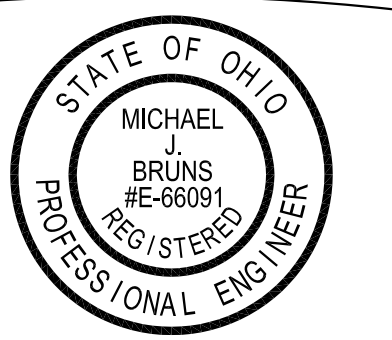
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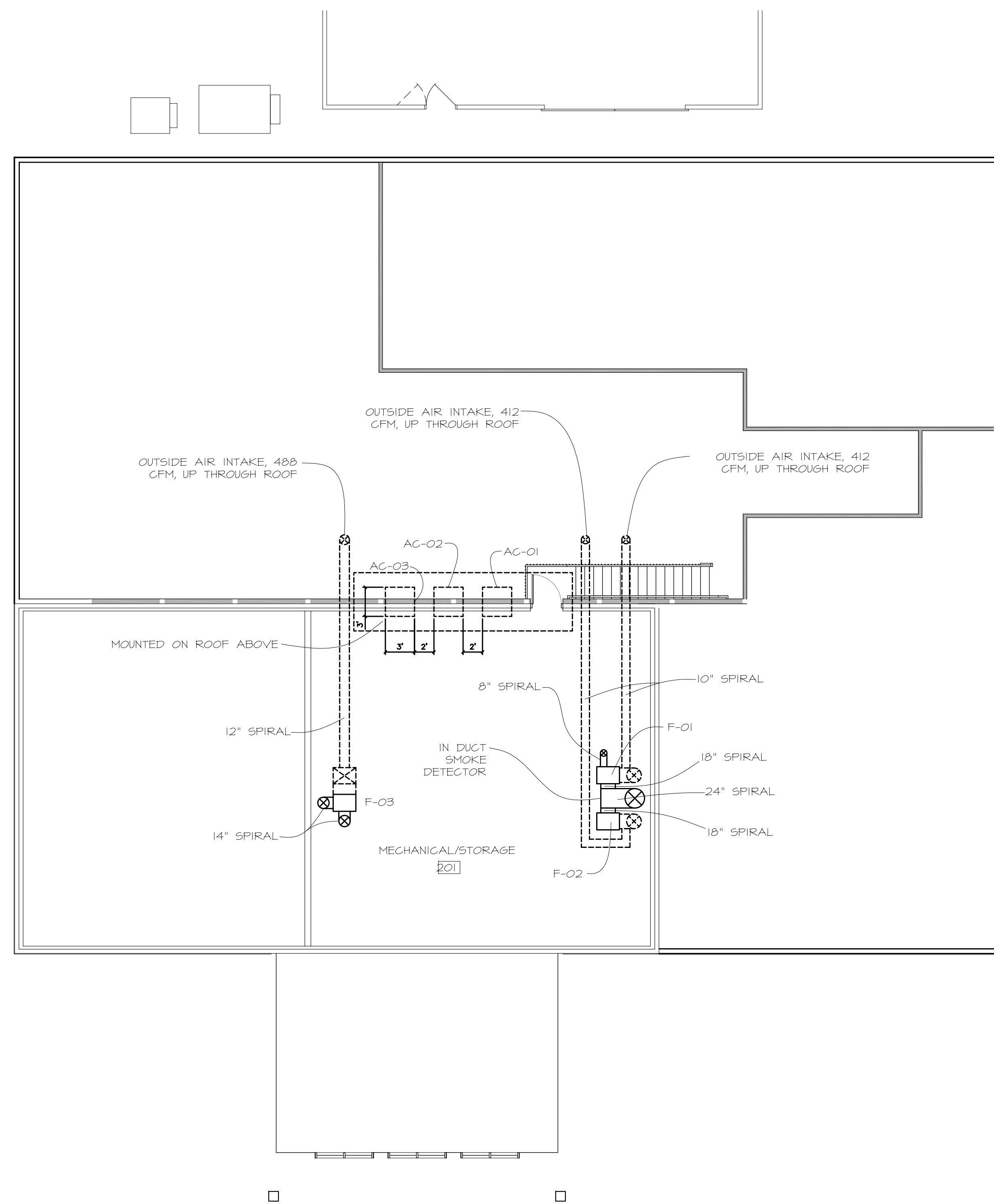
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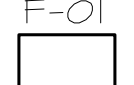
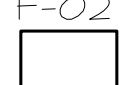
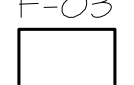
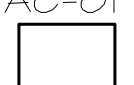
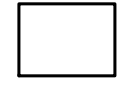
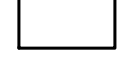
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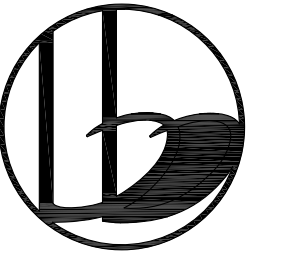
FIRST FLOOR HVAC
PLAN

H101



HVAC LEGEND:

-  SUPPLY AIR DUCT
-  RETURN AIR DUCT
-  F-01 COMFORTMAKER 696VTN0802120, TWINNED WITH F-02, 620 CFM TOTAL SUPPLY AIR, 0.3 IN WG EXTERNAL STATIC PRESSURE, 115 V, 1 PHASE, 78 MBH HEATING CAPACITY.
-  F-02 COMFORTMAKER 696VTN0802120, TWINNED WITH F-01, 620 CFM TOTAL SUPPLY AIR, 0.3 IN WG EXTERNAL STATIC PRESSURE, 115 V, 1 PHASE, 78 MBH HEATING CAPACITY.
-  F-03 COMFORTMAKER 696VTN0802120, 620 CFM TOTAL SUPPLY AIR, 0.3 IN WG EXTERNAL STATIC PRESSURE, 115 V, 1 PHASE, 78 MBH HEATING CAPACITY.
-  AC-01 COMFORTMAKER CSA648GKA WITH END4X48L21 CASED COIL, 208 V, 1 PHASE, 45.5 MBH COOLING CAPACITY.
-  AC-02 COMFORTMAKER CSA648GKA WITH END4X48L21 CASED COIL, 208 V, 1 PHASE, 45.5 MBH COOLING CAPACITY.
-  AC-03 COMFORTMAKER CSA660GKA WITH END4X60L24 CASED COIL, 208 V, 1 PHASE, 53 MBH COOLING CAPACITY.



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