

HVAC LEGEND					
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	CEILING DIFFUSER - SUPPLY RECTANGULAR WITH ROUND NECK 4-WAY THROW UNLESS OTHERWISE INDICATED		DUCT DROP IN DIRECTION OF ARROW		STANDARD 90° RADIUS ELBOW
	CEILING DIFFUSER - RETURN RECTANGULAR WITH SQUARE NECK		MANUAL VOLUME DAMPER OPPOSED BLADE		STANDARD 45° RADIUS ELBOW
	SIDEWALL DIFFUSER - SUPPLY WITH MULTI-VANE DEFLECTOR		LOW LEAKAGE MOTORIZED VOLUME DAMPER		90° VANED ELBOW (PROVIDE ALL SQUARE OR RECTANGULAR ELBOWS WITH VANES EVEN IF SYMBOL IS MISSING)
	SIDEWALL DIFFUSER - RETURN WITH 30° FIXED DEFLECTION		SMOKE DETECTOR FOR FAN SHUT-DOWN		45° VANED ELBOW (PROVIDE ALL SQUARE OR RECTANGULAR ELBOWS WITH VANES EVEN IF SYMBOL IS MISSING)
XX-X XXX CFM	DIFFUSER TAG REFERENCE SCHEDULE FOR SIZING	C	CARBON DIOXIDE SENSOR LOCATION		VANED TEE (PROVIDE ALL SQUARE OR RECTANGULAR TEES WITH VANES EVEN IF SYMBOL IS MISSING)
	CEILING EXHAUST FAN	H	HUMIDISTAT LOCATION		STANDARD DUCT SIZE TRANSITION
	NEW RECTANGULAR DUCT WIDTH X DEPTH	M	CARBON MONOXIDE SENSOR LOCATION		STANDARD SQUARE TO ROUND TRANSITION
	NEW ROUND DUCT DIAMETER	T	THERMOSTAT LOCATION		CONNECTION TO EXISTING
	ACCESS DOORS VERTICAL OR HORIZONTAL	CD	HVAC CONDENSATE DRAIN PIPING		
	DUCT RISE IN DIRECTION OF ARROW	R	HVAC REFRIGERANT LINE		

HVAC NOTES	
1 ALL DIMENSIONS SHOWN ARE NET INTERNAL.	20 ALL UNUSED PORTION OF LOUVERS SHALL BE CAPPED OFF WITH 1" INSULATED ALUMINUM AND SEALED AIR/WATER TIGHT.
2 INSTALL OPPOSED BLADE BALANCING DAMPERS IN ALL NEW DIFFUSERS AND GRILLES.	21 ALL THERMOSTATS TO BE AUTOMATIC CHANGE OVER TYPE AND SHALL INCLUDE LOCKING THERMOSTAT COVERS.
3 THESE DRAWINGS ARE SCHEMATIC IN NATURE AND ARE NOT INTENDED TO SHOW ALL POSSIBLE CONDITIONS. IT IS INTENDED THAT A COMPLETE HVAC SYSTEM BE PROVIDED WITH ALL NECESSARY EQUIPMENT, APPURTENANCES, AND CONTROLS, COMPLETELY COORDINATED WITH ALL DISCIPLINES. ALL REQUIREMENTS OF THESE DOCUMENTS SHALL BE STRICTLY CONFORMED WITH. ANY ITEMS AND LABOR REQUIRED FOR A COMPLETE HVAC SYSTEM IN ACCORDANCE WITH ALL APPLICABLE CODES, STANDARDS, AND THESE CONTRACT DOCUMENTS SHALL BE FURNISHED WITHOUT INCURRING ANY ADDITIONAL COST TO THE CONTRACTOR. CAREFULLY REVIEW ALL CONTRACT DOCUMENTS AND THE DESIGN OF OTHER TRADES BEFORE PREPARING SHOP DRAWINGS.	22 ALL THERMOSTATS TO BE MOUNTED 4'-0" A.F.F. TO HIGHEST OPERABLE CONTROL UNLESS OTHERWISE INDICATED.
4 COORDINATE DUCTWORK AND PIPING WITH STRUCTURAL, PLUMBING, FIRE PROTECTION AND ELECTRICAL. MAKE OFFSETS AND TRANSITIONS AS REQUIRED TO CLEAR STRUCTURAL MEMBERS, ETC. COORDINATE WITH OTHER TRADES AND EXISTING CONDITIONS WITHOUT ADDITIONAL EXPENSE TO THE OWNER.	23 PAINT ALL EXTERIOR EXPOSED ARMAFLEX INSULATION FOR UV PROTECTION.
5 REFER TO ARCHITECTURAL CEILING PLANS FOR EXACT LOCATION OF ALL CEILING MOUNTED AIR DISTRIBUTION DEVICES; COORDINATE EXACT LOCATION OF GRILLES, REGISTERS, AND DIFFUSERS WITH ARCHITECTURAL AND INTERIOR REFLECTED CEILING PLANS AND LIGHTING FIXTURES. FOR PARTICULAR ITEMS NOT SHOWN ON THE ARCHITECTURAL REFLECTED CEILING PLAN, PREPARE A DRAWING AND PRESENT IT TO THE ARCHITECT FOR REVIEW AND/OR APPROVAL.	24 ALL REFRIGERANT LINES SHALL BE SIZED/APPROVED BY THE EQUIPMENT VENDOR/COMPRESSOR MANUFACTURER.
6 COORDINATE ALL ROOF AND SLAB PENETRATIONS WITH THE STRUCTURAL ENGINEER. TRANSITIONS RECTANGULAR DUCTWORK ON THE BOTTOM AND THE SIDES. MAINTAIN DUCTWORK LEVEL AS HIGH AS POSSIBLE UNLESS NOTED OTHERWISE.	25 PORTIONS OF DUCTWORK VISIBLE THROUGH GRILLES, REGISTERS, AND DIFFUSERS IN FINISHED AREAS SHALL BE PAINTED FLAT BLACK.
7 THE HVAC CONTRACTOR IS TO REVIEW THE ENTIRE SET OF PLANS FOR COORDINATION WITH OTHER TRADES. SHOP DRAWINGS WITH ALL TRADES COORDINATED WILL BE REQUIRED.	26 FLEXIBLE DUCT (SUPPLY RUNOUTS ONLY) SHALL NOT EXCEED 6'-0" IN LENGTH.
8 RECTANGULAR DUCTS SHALL BE WRAPPED EXTERNALLY WITH DUCT WRAP EQUAL TO CERTAINTED SOFT TOUCH DUCT WRAP WITH FSK VAPOR RETARDER FACING TYPE 75 WITH A MINIMUM R-VALUE OF 4.2	27 DUCTWORK SHALL BE INSULATED IN ACCORDANCE WITH THE FOLLOWING SCHEDULE: RECTANGULAR SUPPLY: 1-1/2" EXTERNAL ROUND SUPPLY: 1-1/2" EXTERNAL FLEXIBLE SUPPLY: 1" PRE INSULATED RECTANGULAR RETURN: 1-1/2" EXTERNAL DSA/EXHAUST: 1-1/2" EXTERNAL
9 CONTRACTOR SHALL COORDINATE VOLTAGE AND PHASE OF EACH PIECE OF EQUIPMENT WITH THE ELECTRICAL CONTRACTOR PRIOR TO ORDERING.	28 DUCTWORK SHALL BE GALVANIZED AND INSTALLED IN ACCORDANCE WITH SMACNA STANDARDS.
10 ALL THREE PHASE EQUIPMENT SHALL BE EQUIPPED WITH PHASE LOSS PROTECTION.	29 LABEL ALL DUCTS WITH TYPE (SUPPLY, RETURN, ETC.) AND ARROWS INDICATING DIRECTION OF AIR FLOW. LABELS SHALL BE EVERY SIX FEET AND AT EACH CHANGE OF DIRECTION (T, ETC.)
11 ALL MOTOR STARTERS SHALL BE FURNISHED BY THE MECHANICAL CONTRACTOR.	30 ROUND DUCT SHALL BE INSULATED WITH DUCT WRAP EQUAL TO CERTAINTED SOFT TOUCH DUCT WRAP WITH FSK VAPOR RETARDER FACING TYPE 75 WITH MINIMUM INSULATED R-VALUE 4.2. ROUND DUCTS LOCATED WITHIN THE ATTIC SHALL BE INSULATED WITH DUCT WRAP EQUAL TO CERTAINTED SOFT TOUCH DUCT WRAP WITH FSK VAPOR RETARDER FACING TYPE 100 WITH MINIMUM INSTALLED R-VALUE 6.0.
12 CONTRACTOR TO COORDINATE ALL CEILING TYPES WITH DIFFUSERS, DIFFUSERS IN GYPSUM CEILING SHALL INCLUDE PLASTER FRAME.	31 EXTERIOR DUCT SHALL INCLUDE INSTALLATION OF GLASS CLOTH OVER INSULATION. GLASS CLOTH JACKET SHALL BE DRAWN SMOOTH AND TIGHT WITH A 2-INCH OVERLAP AT JOINTS. EMBED GLASS CLOTH BETWEEN TWO (2) 1/16-INCH-THICK COATS OF GOING ADHESIVE. COMPLETELY ENCAPSULATE THE INSULATION WITH THE JACKET, LEAVING NO EXPOSED RAW INSULATION. FLEXIBLE ELASTOMERIC SHEET 2" THICK MAY BE USED IN LIEU OF 2"-FIBERGLASS ON EXTERIOR DUCT. HOWEVER, GLASS CLOTH JACKET SHALL BE RETAINED IF ELASTOMERIC INSULATION IS USED. MINIMUM INSTALLED R-VALUE 6.0.
13 ALL DISTRIBUTION DEVICES SHALL HAVE FIELD OPERABLE HANDLERS. DIFFUSER RUNOUTS SHALL INCLUDE SPIN-IN WITH DAMPER IN ROUND DUCTS.	32 EXTERIOR DUCT SHALL BE JACKETED WITH MFM BUILDING PRODUCTS FLEX-CLAD 250. FLEX-CLAD 250 SHALL BE INSTALLED PER THE MANUFACTURER'S RECOMMENDATIONS. FLEX-CLAD COLOR SHALL BE AS SELECTED BY ENGINEER. STANDARD COLORS ARE ALUMINUM, WHITE, AND ALMOND.
14 INSULATE TOP SIDE/BACK OF ALL DIFFUSERS, REGISTERS, ETC.	33 ALL DAMPERS INTERLOCKED WITH CARBON DIOXIDE SENSOR SHALL BE 24 VOLT MODULATING MOTORIZED DAMPER. DAMPER SHALL INCLUDE STEP DOWN TRANSFORMER 120V/24V.
15 CONDENSATE DRAIN LINES RUNNING HORIZONTALLY SHALL BE SLOPED 1/4" PER FOOT DOWN IN THE DIRECTION OF FLOW. INDICATE SLOPE.	34 WARRANTIES SHALL BEGIN AT DATE OF SUBSTANTIAL COMPLETION. ALL COMPRESSORS SHALL INCLUDE MIN. OF FIVE YEAR WARRANTY. ONE YEAR WARRANTY FOR LABOR, PARTS, UNITS, ETC. IS REQUIRED FOR ALL EQUIPMENT.
16 ALL 3/4" AND 1" CONDENSATE DRAIN TRAPS SHALL BE EZ-TRAP OR APPROVED EQUAL WITH FLOAT SWITCH.	35 CONTRACTOR SHALL ANCHOR OUTDOOR UNITS TO CONCRETE PAD IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATION, WIND LOAD REQUIREMENTS, AND AS PER PLANS/SPECIFICATIONS. COORDINATE CONCRETE PAD SIZE, UNIT CLEARANCES, ETC. WITH STRUCTURAL AND ARCHITECTURAL PLANS, FRAMING, ETC.
17 INSTALL AUXILIARY DRAIN PAN UNDER ALL UNITS MOUNTED IN ATTIC, ABOVE CEILINGS, ETC. INSTALL FLOAT SWITCH FOR UNIT SHUT DOWN IN AUXILIARY DRAIN PAN.	36 THE CONTRACTOR SHALL INSTALL ANY CURB-MOUNTED EQUIPMENT IN SUCH A WAY THAT NO WATER LEAKAGE IS INTRODUCED INTO THE BUILDING.
18 REFERENCE PLUMBING PLANS FOR CONDENSATE PIPING. IF CONDENSATE DRAINS ARE NOT SHOWN ON THE PLUMBING PLANS, ALL CONDENSATE DRAINS SHALL BE FURNISHED AND INSTALLED BY THE HVAC CONTRACTOR.	37 CARBON MONOXIDE DETECTORS SHALL BE MACURCO MODEL CM-6 (OR APPROVED EQUAL).
19 VERIFY WITH THE ARCHITECTURAL DRAWINGS, SIZE, LOCATION, AND MOUNTING HEIGHT OF ALL LOUVERS. VERIFY COLOR AND FINISH WITH ARCHITECT.	

EXHAUST FAN SCHEDULE											
MARK NO.	BASE BID/ALTERNATE	MOUNTING	CFM	STATIC IN W.G.	SONES	WATTS	VOLTAGE	MANUFACTURER (OR APPROVED EQUAL)	MODEL NO.	WEIGHT (LBS.)	NOTES
EF 1	BASE BID	CEILING	75	0.25	1.6	55	115-1-60	LOREN COOK	GC-142	15	SEE BELOW
EF 2	BASE BID	CEILING	75	0.25	1.6	55	115-1-60	LOREN COOK	GC-142	15	SEE BELOW
EF 3	BASE BID	CEILING	225	0.25	1.7	145	115-1-60	LOREN COOK	GC-620	35	SEE BELOW
EF 4	BASE BID	CEILING	525	0.25	2.1	160	115-1-60	LOREN COOK	GC-862	74	SEE BELOW

1 FAN TO INCLUDE FACTORY MOUNTED/PRE-WIRED FAN SPEED CONTROL.
2 FAN TO BE SWITCHED WITH LIGHTING.
3 FAN TO INCLUDE CEILING RADIATION DAMPER.

APPROVED EQUALS: BREIDERT, GREENHECK, AND PENN.

DEHUMIDIFIER EQUIPMENT SCHEDULE											
MARK NO.	BASE BID/ALTERNATE	NOMINAL FAN CFM	REFRIGERANT	WATER REMOVAL		ELECTRICAL		MODEL NO. DATA		NOTES	
				80°F 60% RH	OPERATING RANGE	POWER SUPPLY	AMPS	MANUFACTURER (OR APPROVED EQUAL)	UNIT MODEL NO.		
DH 1	BASE BID	495	R410A	205 PINTS/DAY	48-55°F	115-1-60	13.2	THERMA-STOR	ULTRA-AIRE XT205H	SEE BELOW	
DH 2	BASE BID	495	R410A	205 PINTS/DAY	48-55°F	115-1-60	13.2	THERMA-STOR	ULTRA-AIRE XT205H	SEE BELOW	

1 UNIT TO BE CONTROLLED BY BUILDING AUTOMATION SYSTEM. DEHUMIDIFIER SHALL BE COMPLETELY INTERFACED TO THE BUILDING AUTOMATION SYSTEM.
2 UNIT TO INCLUDE FACTORY DUCT COLLARS (16").
3 UNIT TO INCLUDE FACTORY SERV - 13 FILTER.
4 UNIT TO INCLUDE FACTORY PUMP KIT.

LOUVER SCHEDULE												
MARK NO.	BASE BID/ALTERNATE	MOUNTING	SIZE W X H	BLADE ANGLE	BLADE CENTERS	MIN. FREE AREA	MINIMUM FREE AREA SQ. FT.	MAXIMUM PRESSURE DROP IN W.G.	CFM	MODEL NO. DATA		NOTES
										MANUFACTURER (OR APPROVED EQUAL)	MODEL NO.	
L 1	BASE BID	SIDE WALL	32"x16"	37°	4"	36%	1.26	0.10	900	GREENHECK	ESD-635	SEE BELOW
L 2	BASE BID	SIDE WALL	44"x16"						1,200	GREENHECK	ESD-635	SEE BELOW
L 3	ALTERNATE #1	SIDE WALL	44"x16"						1,200	GREENHECK	ESD-635	SEE BELOW

1 LOUVER TO INCLUDE FLANGE FRAME AND KYMAR FINISH. VERIFY FINAL COLOR AND FINISH WITH ARCHITECT. VERIFY QUANTITY WITH PLANS.

APPROVED EQUALS: RUSKIN AND UNITED ENERTECH.

HVAC DRAWING INDEX	
SHEET NO.	SHEET TITLE
M1.1	HVAC LEGEND, NOTES, AND SCHEDULES
M1.2	HVAC SCHEDULES
M1.3	HVAC SCHEDULES AND DETAILS
M2.1	HVAC DETAILS AND COMPLIANCE CALCULATIONS
M2.2	HVAC DETAILS
M2.3	HVAC DETAILS
M2.4	HVAC VARIABLE REFRIGERANT FLOW DIAGRAM
M3.1	LOWER FLOOR HVAC DEMOLITION PLAN
M3.2	UPPER FLOOR HVAC DEMOLITION PLAN
M4.1	REVISED HVAC PLANS - BASE BID
M4.2	REVISED HVAC PLANS - BID ALTERNATE #1

CODES AND STANDARDS	
•	2015 INTERNATIONAL PLUMBING CODE
•	2015 INTERNATIONAL MECHANICAL CODE
•	2015 INTERNATIONAL FUEL GAS CODE
•	2015 INTERNATIONAL FIRE CODE
•	2010 ADA STANDARDS FOR ACCESSIBLE DESIGN
•	ASHRAE 90.1-2013 ENERGY STANDARD

HVAC LEGEND, NOTES, AND SCHEDULES

WHORTON ENGINEERING, INC.
HVAC - PLUMBING - PROCESS CONTROL

Randall Whorton
RANDALL WHORTON, P.E.
PHONE: (256) 820-9897

DATE: 01-20-2021
25 SUMMERALL GATE ROAD
ANNISTON, ALABAMA 38205

No. 14192
PROFESSIONAL
ENGINEER
MECHANICAL
D. WHORTON

Facilities Management
1161 West Samford Avenue
Auburn University, AL 36849
Phone: (334) 844-4810
Fax: (334) 844-9458
Safety is our first priority.
Think Safety. Act Safely.

No. Revision Date

JMR+H Architecture, P.C.
440 Dexter Avenue
Montgomery, AL 36104
Phone: (334) 202-5672
Fax: (334) 202-5692
JMR+H Project Number: 19-968
Drawn By: DT

Auburn University Building
Ham Wilson Arena Renovations
Project Number 19-451

SHEET TITLE:
HVAC LEGEND,
NOTES, AND
SCHEDULES

DRAWN BY:
JH
CHECKED BY:
RDW
DATE:
JANUARY 21, 2021
FILE NUMBER:

PROJECT NUMBER:
19-451
SHEET NUMBER:
M1.1

37 of 61