

SYMBOL	(c) CFM	(d) CONN. SIZE (WxH)	RUNOUT	(e) NC	(f) PD	REMARKS
1 CFM	1150-1200	18x30	-	< 20	< 0.08	①②
2 CFM	1500	18x36	-	< 25	< 0.08	①②
3 CFM	2075	30x48	-	< 20	< 0.08	①②

- (a) LOUVER BLADE TYPE GRILLE.
 (b) GRILLES SHALL BE:
 1. SUPPLY: KRUEGER 1330
 2. RETURN/EXHAUST: KRUEGER 1330.
 3. FINISH: WHITE.
 (c) CFM IS FOR GENERAL INFORMATION ONLY. SOME GRILLES MAY BE SIZED SMALLER / LARGER.
 (d) DUCT RUNOUT SIZE IN INCHES. IF NO OTHER RUNOUT SIZE INDICATED ON PLANS OR SCHEDULE, TRANSITION TO NECK SIZE AS REQUIRED.
 (e) NC @ 10db ROOM ATTENUATION (RE: 10⁻² WATTS).
 (f) TOTAL PRESSURE (IN WG).
 (g) VERIFY DIMENSIONS ORIENTATION (W vs. H) BEFORE ORDERING.
 ① SINGLE PIECE GRILLE
 ② BLADES PARALLEL WITH FLOOR

3/16

S3400E

SYMBOL (c)(d)	(g) CFM	(b) CONN. SIZE	(f)(g) NC	(h)(g) PD	REMARKS
1 CFM	0-99	6"ø	<15	.023	
2 CFM	100-199	8"ø	<15	.037	
3 CFM	200-299	10"ø	<15	.044	
4 CFM	300-399	12"ø	<15	.04	
5 CFM	400-599	14"ø	<15	.05	
6 CFM	600-699	15"ø	<15	.06	
7 CFM	700-899	15"ø	25	.11	
8 CFM	-	-	-	-	FILTER RETURN GRILLE 20"x20" FILTER

- (a) LOUVERED FACE AIR DISTRIBUTION UNITS.
 (b) ALSO DUCT RUNOUT SIZE IN INCHES (UNLESS LARGER RUNOUT INDICATED ON PLANS) TRANSITION TO NECK. IF NECK DIFFERENT SIZE.
 (c) LAY-IN TYPE UNITS SHALL HAVE 24"x24" FACE PANEL AND SHALL BE INDICATED BY AN "L" SUFFIX. SEE SPECIFICATIONS FOR DIMENSIONS OF NON LAY-IN TYPE UNITS.
 (d) UNITS WITH AN "F" SUFFIX SHALL BE TYPE SUITABLE FOR FIRE RATED CEILING/ ROOF/FLOOR ASSEMBLIES. A NUMBER WILL ALSO BE SHOWN IF GREATER THAN 1 HOUR RATED.
 (e) GRILLES SHALL BE:
 1. LAY-IN SUPPLY: PRICE (A/SCD, TYPE 31 FRAME)
 2. LAY-IN RETURN: PRICE (A/SCD, TYPE 31 FRAME)
 3. SURFACE MTD SUPPLY/EXHAUST: PRICE (A/SCD, TYPE 31 FRAME)
 4. SURFACE MTD RETURN/EXHAUST: PRICE (A/SCD, TYPE 31 FRAME)
 5. FILTER RETURN GRILLE: PRICE 60FH
 6. FINISH: WHITE
 (f) NC @ 10db ROOM ATTENUATION (RE: 10⁻² WATTS), 4 WAY THROW
 (g) CFM IS FOR GENERAL INFORMATION ONLY. SOME GRILLES MAY BE SIZED LARGER.
 (h) TOTAL PRESSURE (IN WG)
 (i) WITH 24"x24" PANEL

9/05

S3400L

SYMBOL (g)	CFM		THROW PER SIDE (MIN.)	ADAPTER INLET SIZE	RUNOUT (d)	NC (e)	PD (f)	REMARKS
	TOTAL	PER SIDE						
AW-1	300	300	10'15"23	12"x12"	12'ø	15	.04	①②
AW-1A	100-150	75	7'11"17	6"x6"	6'ø	26	.15	①
AW-2	170-280	140	9'13"20	9"x9"	9'ø	15	.11	①②
AW-2A	300-400	200	10'14"21	12"x12"	12'ø	15	.07	①②
AW-3	450-630	315	12'17"24	15"x15"	15'ø	25	.07	①②
AW-3A	575-900	450	14'19"27	18"x18"	18'ø	25	.07	①②
AW-4	300-500	125/188	8'13"19	12"x12"	12'ø	25	.11	①②

- (a) LOUVER BLADE, HIGH INDUCTION, DIRECTIONAL TYPE GRILLE.
 (b) GRILLES SHALL BE:
 1. SUPPLY: PRICE AMX
 2. RETURN/EXHAUST: PRICE AMX
 3. FINISH: WHITE.
 (c) PERFORMANCE IS BASED UPON A SINGLE LOUVER THE LENGTH AND WIDTH OF ADAPTER INLET SIZE.
 (d) DUCT RUNOUT SIZE IN INCHES. IF NO OTHER RUNOUT SIZE INDICATED ON PLANS, TRANSITION TO NECK SIZE AS REQUIRED.
 (e) NC @ 10db ROOM ATTENUATION (RE: 10⁻² WATTS).
 (f) TOTAL PRESSURE (IN WG).
 (g) GRILLE BLOW: 1W - 1 WAY
 2W - 2 WAY
 3W - 3 WAY
 (h) BASED UPON MAX CFM FOR THAT GRILLE SIZE AND 150'100'50 FPM.
 ① DIFFUSER LOUVER SIZE SHALL BE 18"x18" IN A LAY-IN FRAME.
 ② PROVIDE ADAPTER (2" DEEP MAX) FROM ADAPTER INLET SIZE TO DIFFUSER LOUVER SIZE.

1/14

S3400F

SEISMIC DESIGN
SEISMIC DESIGN CATEGORY (SDC): C
RISK CATEGORY: III
SPECTRAL RESPONSE COEFFICIENTS Sds*: .g Sd1*: .g
WIND DESIGN
BASIC WIND SPEED: 120 MPH
EXPOSURE CATEGORY: SEE STRUCTURAL
*REFER TO STRUCTURAL SHEET

☒ SUPPLY OR OUTSIDE AIR GRILLE	☒ FLANGE FITTING
☒ RETURN AIR GRILLE	☒ FLEXIBLE CONNECTION
☒ EXHAUST AIR GRILLE	☒ BACS-1 BUILDING AUTOMATION CONTROL SYSTEM NO. 1
☒ DUCT TURNED TO	☒ THERMOSTAT/SENSOR
☒ DUCT TURNED AWAY	☒ HUMIDITY/HUMIDITY SENSOR
☒ DUCT CAPPED	☒ FLEX CONNECTION (DUCT)
☒ ACOUSTICAL DUCT LINER	☒ DUCT SMOKE DETECTORS
☒ EQUIPMENT LOCATED ON ROOF	☒ CONNECT NEW DUCT OR PIPE TO EXISTING
☒ INSIDE DUCT DIMENSION	☒ TRIPLE VALVE
☒ OPPOSED BLOW VOLUME DAMPER	☒ GAUGE COCK
☒ FIRE DAMPER (FLUE/CHIMNEY)	☒ PRESSURE GAUGE
☒ SMOKE DAMPER	☒ THERMOMETER
☒ FIRE AND SMOKE DAMPER	☒ FLOW SENSOR/SWITCH
☒ 20V POWER IN J-BOX	☒ ACCESS DOOR
☒ CONCEALED REGULATOR	☒ CLEANOUT
☒ PLAR IONIZATION	☒ AIR DISTRIBUTION (OTHER SYMBOLS SM.)
☒ STRAINER	☒ AUTOMATIC FLOW CONTROL VALVE ASSEMBLY
☒ BALL VALVE	☒ THERMAL EXPANSION VALVE
☒ GATE VALVE	☒ SOLENOID W/115V COIL
☒ GLOBE VALVE	☒ DIFFERENTIAL PRESSURE
☒ PRESSURE REDUCING VALVE	☒ FLAT PLATE SENSOR
☒ RELIEF VALVE	☒ 10" ROUND DUCT (INSIDE DIM)
☒ CIRCUIT SETTER	☒ HEAT TRACED PIPE (W/CONNECTION PT.)
☒ BUTTERFLY VALVE	☒ ECCENTRIC REDUCER
☒ THREE WAY VALVE	☒ CONCENTRIC REDUCER
☒ TWO WAY VALVE	☒ POUNDS (OR NUMBER)
☒ SWING CHECK VALVE	
☒ UNION	
☒ FLOW METER	

7/17

S3950

ABV ABOVE	HP HORSE POWER
AD ACCESS DOOR	HT-1 HEAT TAPE NO. 1
AFF ABOVE FINISH FLOOR	IH-1 FRESH AIR INTAKE HOOD NO.1
AHU-1 AIR HANDLING UNIT NO.1	IN INCHES
B-1 BOILER NO. 1	LR LOOP RETURN
BACS BUILDING AUTOMATION CONTROL SYSTEM	LS LOOP SUPPLY
BHP BRAKE HORSE POWER	MER MECHANICAL EQUIPMENT ROOM
BI BIPOLAR IONIZATION	NO NORMALLY OPEN
BOD BOTTOM OF DUCT	NC NORMALLY CLOSED
BOP BOTTOM OF PIPE	OC ON CENTER
CFM CUBIC FEET PER MINUTE	P-1 PUMP NO.1
CLG CEILING	PD PRESSURE DROP
CO CLEAN OUT	PPD PIPE TO FLOOR DRAIN
CUH-1 CEILING UNIT HEATER NO. 1	PH PHASE
D DRAIN	RH-1 RELIEF HOOD NO. 1
EF-1 EXHAUST FAN NO.1	SF SQUARE FOOT
EFF EFFICIENCY	SF-1 SUPPLY FAN NO.1
ELECT ELECTRICAL	SP STATIC PRESSURE SENSOR
ESP EXTERNAL STATIC PRESSURE	T-1 TERMINAL UNIT NO. 1
EUH-1 ELECTRIC UNIT HEATER NO.1	TD TRANSFER DUCT
EXT EXTERNAL	TOWER-1 COOLING TOWER NO. 1
FD FIRE DAMPER	UNO UNLESS NOTES OTHERWISE
FLR FLOOR	VFD VARIABLE FREQUENCY DRIVE
FPS FEET PER SECOND	VEL VELOCITY
FSD COMBINATION FIRE/SMOKE DAMPER	VOLT VOLTAGE
FT FEET	

4/01

S3956

DUCT	SYSTEM	PRESSURE	STATIC PRESSURE CLASS (TWG)
RETURN DUCT	ALL SYSTEM RETURNS	NEG	-2"
EXHAUST DUCT	ALL SYSTEM EXHAUSTS	NEG	-2"
SUPPLY DUCT	DOWNSTREAM OF TERMINAL UNITS	POS	+2"
SUPPLY DUCT	FAN TO TERMINAL UNIT	POS	+6"

6/02

S3958

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| <ol style="list-style-type: none"> DO NOT SCALE DRAWINGS. SEARCH ARCHITECTURAL DRAWINGS AND REFLECTED PLUMBING PLANS FOR EXISTING CONDITIONS, OF DUCTS, CEILING DIFFUSERS, ETC. USE ECCENTRIC REDUCERS IN PUMP SUCTION AND CONCENTRIC REDUCERS ON PUMP DISCHARGE. USE ECCENTRIC REDUCERS ON AUTOMATIC VALVES. EXTEND ALL DRAIN LINES AND RELIEF LINES TO NEAREST FLOOR DRAIN OR AS INDICATED ON PLANS. CONDENSATE DRAINS SHALL BE TRAPPED. GENERALLY ROUTE PIPE DOWN WALL AND TO DRAIN UNLESS NOTED OTHERWISE. ROUTE TO MINIMIZE TRIPPING HAZARD. PROVIDE TAKEOFFS AT ALL CHANGES OF DIRECTION GREATER THAN 90 DEGREES. ALL PIPING SHALL PITCH DOWN IN DIRECTION OF FLOW, AS INDICATED ON DRAWINGS. 1" PER 40 FEET WITH MANUAL AIR VENTS AT ALL HIGH POINTS AND 3/4" DRAIN VALVES AT ALL LOW POINTS. ALL PIPING AND DUCTWORK INSULATION SHALL BE RUN CONTINUOUSLY THROUGH FLOORS, ROOFS AND PARTITIONS EXCEPT WHERE PROHIBITED BY FIRE CODES. LOCATE ALL THERMOSTATS, HUMIDISTATS AND SWITCHES 48" (TO TOP OF DEVICE) ABOVE FINISH FLOOR. UNLESS NOTED OTHERWISE. ALL PIPING SHALL BE SUPPORTED IN ACCORDANCE WITH THE SPECIFICATIONS. HANGERS SHALL BE ADJACENT TO ELBOWS AND AT EQUIPMENT TO PREVENT BEING PLACED ON THE EQUIPMENT. SUPPORT DETAILS SHALL BE SUBMITTED TO THE MECHANICAL ENGINEER. ALL PIPING AND DUCTWORK LOCATIONS SHALL BE COORDINATED WITH THE WORK UNDER OTHER DIVISIONS OF THE SPECIFICATIONS TO AVOID INTERFERENCE. CORRECT SETTINGS ON ALL BALANCING FITTINGS SHALL BE PERMANENTLY MARKED. RUNOUTS SHALL PITCH DOWN IN DIRECTION OF FLOW A MINIMUM OF 1" IN 30 FEET. AIR DISTRIBUTION SYSTEMS WITH MORE THAN ONE BRANCH OR MULTIPLE OUTLETS ON A BRANCH, SHALL HAVE VOLUME DAMPERS TO BALANCE AIR FLOWS. SPIN IN FITTINGS ARE PERMITTED FOR CONNECTING FLEX DUCT TO BRANCH OR TRUNK DUCTS WHERE FLEX DUCTS ARE INDICATED. IF FLEX DUCT CANNOT BE CONNECTED WITH A SPIN IN, A HARD DUCTED TAKEOFF MUST BE PROVIDED. 45 DEGREE TAKEOFFS SHALL BE USED ON ALL HARD DUCTED SUPPLY BRANCHES. ALL STEEL PIPE BELOW GRADE SHALL BE WELDED. MOUNT SUSPENDED COOLING UNITS HIGH ENOUGH ABOVE CEILING FOR PROPER SLOPE ON DRAIN LINE. ALL PIPING, DUCTS, VENTS, ETC. EXTENDING THRU EXTERIOR WALLS AND ROOFS SHALL BE FLASHED AND COUNTERFLASHED. PROVIDE ALL TRANSITIONS REQUIRED FOR INSTALLATION OF DUCT, DUCT HEATERS, AIR VOLUME CONTROLLERS, AIR HANDLING UNITS, FANS, AND ALL OTHER EQUIPMENT AND APPURTENANCES. ALL TRANSFER DUCTS SHALL BE LINED WITH ONE INCH ACOUSTICAL LINER. ALL DUCT IS GALVANIZED SHEETMETAL EXCEPT AS NOTED. DUCT SIZES ARE CLEAR INSIDE DIMENSIONS. INTAKES FOR AIR HANDLING EQUIPMENT SHALL BE A MINIMUM OF TEN FEET AWAY FROM ANY EXHAUST OR VENT. ALL COOLING UNITS LOCATED IN CONCEALED LOCATIONS SHALL HAVE AUXILIARY DRAIN PANS. AIR DISTRIBUTION UNITS SHALL HAVE TRIM REQUIRED FOR FINISHED SERVICE. COORDINATE ORIENTATION OF SUPPLY AND RETURN PIPING BEFORE FABRICATION. NO OPENINGS IN ROOF FOR DUCT, PIPING, EQUIPMENT OR ACCESSORIES WITHIN 5 FEET OF BUILDING FIRE WALL. (IE. WALL RATED GREATER THAN 2 HOUR) ALL EQUIPMENT SHALL MEET THE PROJECT'S SEISMIC DESIGN AND WIND LOAD REQUIREMENTS. WHERE DUCTS ARE INDICATED TO BE OFFSET, OFFSET THE LOWER VELOCITY DUCT WHILE KEEPING THE HIGHER VELOCITY DUCT AS STRAIGHT AS PRACTICAL. |
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7/17

S3951

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| <ol style="list-style-type: none"> DRAWINGS SHOW GENERAL INTENT OF DEMOLITION. QUANTITIES, LOCATIONS, SIZES AND EQUIPMENT ARE SHOWN TO INDICATE TYPE OF SYSTEM INSTALLED AND DOES NOT NECESSARILY REPRESENT EXACT CONDITIONS. CONTRACTOR SHALL FIELD VERIFY BEFORE BIDDING. DEMOLITION OF EQUIPMENT, SYSTEMS, AND COMPONENTS SHALL INCLUDE ALL SUPPORTS, PADS, HANGERS, INSULATION, CONTROLS, STARTERS, ACCESSORIES, AND APPURTENANCES NOT REQUIRED FOR THE INSTALLATION OF THE NEW SYSTEM. WHEN PARTIAL DEMOLITION OF A SYSTEM IS INDICATED, THE PART OF THE SYSTEM SHOWN TO BE REMOVED SHALL BE REMOVED TO THE ACTIVE MAIN OF BRANCH IF NOT REQUIRED FOR THE INSTALLATION OF THE NEW SYSTEM. THE ACTIVE MAIN OF BRANCH SHALL BE REPAIRED TO MATCH A NEW INSTALLATION AS PRACTICAL. IF SYSTEM IS INSULATED, INSULATION SHALL BE PATCHED AND FINISHED REPAIR (IE: VAPOR BARRIER, COATING, ETC.) PATCHING OF BUILDING STRUCTURES AND FINISHES SHALL PERTAIN TO ALL WALLS, FLOORS, SLABS, ROOFS, STRUCTURES, AND FINISHES. PATCHES SHALL MATCH EXISTING STRUCTURE, FIRE RATING AND FINISH. ALL OPENINGS CREATED BY THE ABANDONMENT OR REMOVAL OF EXISTING SYSTEMS SHALL BE PATCHED. ALL WALL, ROOFS, SLABS, STRUCTURES AND FINISHES WHOSE FINISH IS IRREGULAR DUE TO THE REMOVAL OF SYSTEMS, SUPPORTS, PADS, ACCESSORIES AND APPURTENANCES SHALL BE PATCHED. ALL FINISHES SHALL MATCH EXISTING FINISH. WHEN FINISH OBVIOUSLY DOES NOT MATCH EXISTING FINISH SUCH AS SHADE OF PAINT, AGE OF FINISH, ETC., THE FINISH SHALL BE APPLIED TO THE PATCH AND THE SURFACE IN ALL DIRECTIONS UNTIL A SURFACE CHANGE OF A MINIMUM 45 DEGREE. REMOVAL OF SYSTEMS SHALL INCLUDE COMPLETE SYSTEM WHENEVER PRACTICAL. IF NOT SYSTEM (I PIPE, CONDUIT, ETC.) SHALL BE REMOVED TO 1 INCH BELOW SURFACE. WHERE CEILINGS ARE REPLACED AND MECHANICAL DEVICES ARE TO REMAIN OR BE REUSED, THE CONTRACTOR SHALL TEMPORARILY SUPPORT THE DEVICES. AFTER THE NEW CEILING IS INSTALLED, THE DEVICES SHALL BE PROPERLY INSTALLED IN THE CEILING AND TEMPORARY SUPPORTS REMOVED. |
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7/17

S3951

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HVAC NOTES & SCHEDULES

MILLBROOK ELEMENTARY SCHOOL - ADDITIONS AND RENOVATIONS

255 E PINE LOG RD, AIKEN, SC 29803
GMC # ACOL180004

ISSUE DATE: 10/24/19
BID DOCUMENTS

DRAWN BY: JSS
CHECKED BY: DER

Buford & Associates, Inc.
Engineers & Planners
1433 Boulevard Ave.
Suite 206
Columbia, SC 29204
Phone: 803.746.4332