GENERAL NOTES

1. REMOVAL & RELOCATION OF CERTAIN EXISTING WORK SHALL BE NECESSARY FOR THE PERFORMANCE OF THE NEW WORK SHOWN HEREIN. ALL EXISTING CONDITIONS ARE NOT COMPLETELY DETAILED ON THE DRAWINGS. THE CONTRACTOR SHALL SURVEY THE SITE & MAKE ALL NECESSARY CHANGES BASED ON EXISTING CONDITIONS AS REQUIRED FOR PROPER DEMOLITION OF EXISTING WORK & SHALL INCLUDE ALL MATERIALS & LABOR FOR SAME IN HIS BID PRICE. NO ALLOWANCE WILL BE MADE FOR FAILURE TO DO SO.
2. PRIOR TO SUBMITTING A BID, THE CONTRACTOR SHALL VISIT THE PREMISES OF THE PROPOSED WORK & SHALL CAREFULLY EXAMINE THE ENGINEERING DRAWINGS, EXISTING CONDITIONS & LIMITATIONS THEREOF. VERIFY ACTUAL LOCATIONS WHERE THE NEW PIPING WILL BE ROUTED, COORDINATE WITH NEW & EXISTING WORK & PROVIDE CLEARANCE W/ BUILDING STRUCTURE, OTHER SERVICES, ETC.. THE CONTRACTOR SHALL INCLUDE ALL COSTS WHATSOEVER WHICH ARE INCURRED AS A RESULT OF LIMITATIONS OF THE EXISTING & NEW CONDITIONS. LATER CLAIMS FOR EXTRA LABOR, EQUIPMENT, MATERIALS, ETC. REQUIRED DUE TO DIFFICULTIES WHICH COULD HAVE BEEN FORESEEN WILL NOT BE CONSIDERED AS EXTRA WORK.
3. INSTALL WORK SO AS TO BE READILY ACCESSIBLE FOR OPERATING, MAINTENANCE & REPAIR. MINOR DEVIATIONS FROM DRAWINGS MAY BE MADE TO ACCOMPLISH THIS, BUT CHANGES OF MAGNITUDE WHICH INVOLVE EXTRA COST SHALL NOT BE MADE WITHOUT APPROVAL.
4. INVESTIGATE EACH SPACE THROUGH WHICH EQUIPMENT MUST BE MOVED. WHEN NECESSARY, EQUIPMENT SHALL BE SHIPPED FROM MANUFACTURER IN CRATED SECTIONS OF SIZE SUITABLE FOR MOVING THROUGH AREAS AVAILABLE. ASCERTAIN FROM BUILDING OWNER AT WHAT TIMES OF DAY EQUIPMENT MAY BE MOVED THROUGH THE BUILDING.
5. COORDINATE THE EXACT SIZE & LOCATION OF NEW OPENINGS WITH EXISTING STRUCTURE. PATCH / INSULATE AS REQUIRED. CONTRACTOR SHALL FIRESTOP ALL PENETRATIONS FROM NEW PIPING, CONDUIT, DUCTWORK, ETC. THROUGH EXISTING OR NEW FIRE/ SMOKE BARRIERS. REFER TO SPECIFICATION SECTION 15511 FOR FURTHER DETAILS.
6. IT IS THE INTENT OF THIS CONTRACT FOR REMAINING SYSTEMS TO BE LEFT IN GOOD WORKING ORDER, READY FOR OPERATION. COORDINATE ANY REQUIRED SYSTEM SHUTDOWNS WITH OWNER 48 HOURS IN ADVANCE. EXISTING SYSTEM SHUTDOWNS WILL NOT BE PERMITTED IF THEY INTERFERE WITH THE DAILY OPERATIONS OF THE BUILDING. CONTRACTOR WILL BE REQUIRED TO TAKE PROPER PRECAUTIONS AGAINST DAMAGING OR DISRUPTING BUILDING SYSTEMS, WIRING, PIPING OR CONTROL TUBING. ANY DAMAGE TO THESE ITEMS SHALL BE REPAIRED AT THE CONTRACTOR'S COST AS A PART OF THIS CONTRACT.
7. THE CONTRACTOR SHALL REPAIR / RESTORE TO ORIGINAL CONDITION ANY EXISTING EQUIPMENT OR MATERIALS DAMAGED IN THE PROCESS OF INSTALLATION, OR DEMOLITION TO THE SATISFACTION OF THE OWNER'S REPRESENTATIVE. CONTRACTOR SHALL MAKE REPAIRS USING THE SAME OR EQUIVALENT MATERIALS. WORK WILL BE PERFORMED AT THE CONTRACTOR'S COST.
8. CONTRACTOR SHALL INCUR ANY COSTS OR BURDENS ASSOCIATED WITH LOST OR STOLEN EQUIPMENT / MATERIALS.
9. DURING THE LIFE OF THE CONTRACT PERIOD, CONTRACTOR SHALL REMOVE ALL RUBBISH / EXCESS MATERIAL ACCUMULATED AS A RESULT OF HIS OPERATIONS ON A DAILY BASIS. ALL AREAS / EQUIPMENT AFFECTED UNDER THIS CONTRACT SHALL BE KEPT CLEAN OF DUST / DEBRIS. ALL AREAS SHALL RECEIVE A FINAL CLEANING PRIOR TO FINAL ACCEPTANCE BY THE OWNER.
10. PROVIDE FOR LEGAL REMOVAL / DISPOSAL OF ALL RUBBISH / DEBRIS FROM THE BUILDING & SITE. PROTECT ALL WORK NOT SLATED FOR DEMOLITION.
11. THIS CONTRACTOR SHALL COORDINATE HIS WORK WITH ALL OTHER TRADES PRIOR TO SCHEDULING THE WORK. WORK SHALL BE PERFORMED IN PROPER SEQUENCE, AS AGREED TO BY ALL TRADES. ANY COSTS INCURRED BY THE OWNER DUE TO IMPROPER SEQUENCING OF WORK WILL BE PAID FOR BY THIS CONTRACTOR.
12. CONTRACTOR SHALL OBTAIN ALL PERMITS, PAY ALL FEES, CONNECTION CHARGES, ETC. ASSOCIATED WITH THE WORK UNDER THEIR CONTRACT.
13. PAINT / TOUCH UP ALL SURFACES MARRED AS A RESULT OF THE PERFORMANCE OF THE CONTRACT WORK.
14. THE MECHANICAL CONTRACTOR SHALL REFER TO / REVIEW ALL OTHER TRADE DRAWINGS IN THE BID PACKAGE & SHALL BE RESPONSIBLE FOR / PERFORM ALL WORK INDICATED AS (M.C.) MECHANICAL WORK AS A PART OF THE BASE BID UNLESS SPECIFICALLY NOTED OTHERWISE.
15. SUBSTITUTED EQUIPMENT OF GREATER OR LARGER POWER, DIMENSIONS, CAPACITIES & RATINGS MAY BE FURNISHED PROVIDED THAT SAID EQUIPMENT IS APPROVED IN WRITING PRIOR TO ORDER. ANY CONNECTING MECHANICAL SERVICES, ELECTRICAL SERVICES, BASES, STRUCTURAL APPURTENANCES, ETC. REQUIRED TO BE INCREASED DUE TO THE USE OF SAID EQUIPMENT WILL BE PAID FOR IN FULL BY THE MECHANICAL CONTRACTOR, INCLUDING ANY ADDITIONAL REQUIRED ENGINEERING FEES.
16. EACH PIECE OF EQUIPMENT SHALL BE PROVIDED WITH A PERMANENT TYPE LAMINATED, BLACK FINISH, WHITE CORE, PHENOLIC NAMEPLATE. NAMEPLATES SHOULD INDICATE THE NAME & NUMBER OF THE UNIT, UNIT VOLTAGE, & ANY INTERLOCK REFERENCE. STARTERS / DISCONNECT SWITCHES SHOULD ALSO BE EQUIPPED WITH AN IDENTICAL NAMEPLATE WITH THE SAME INFORMATION.
17. "ATTIC STOCK" - UPON COMPLETION OF THE PROJECT, MECHANICAL CONTRACTOR SHALL COMPLETELY REMOVE / DISPOSE OF FILTERS USED DURING CONSTRUCTION & START-UP PROCEDURES. INSTALL NEW FILTERS IN ALL EQUIPMENT, MERV-8 OR BETTER UPON TURN OVER OF THE PROJECT TO THE OWNER. IN ADDITION, PROVIDE (2) COMPLETE SETS OF FILTERS FOR EACH PEICE OF EQUIPMENT & TURN OVER TO OWNER.
18. MECHANICAL CONTRACTOR SHALL PROVIDE (1) SPARE MOTOR FOR EACH SIZE MOTOR USED ON THE PROJECT. IN INSTANCES WHERE MORE THAN TEN OF THE SAME MOTOR ARE USED, MECHANICAL CONTRACTOR SHALL PROVIDE (1) SPARE MOTOR FOR EVERY TEN MOTORS OF A GIVEN SIZE USED ON THE PROJECT.
19. MAINTENANCE MANUAL: UPON COMPLETION OF THE PROJECT, THE MECHANICAL CONTRACTOR SHALL PROVIDE A BINDER CONTAINING THE OPERATIONS & MAINTENANCE MANUALS FOR EACH NEW PEICE OF EQUIPMENT INSTALLED UNDER THIS PROJECT. THE FIRST SECTION OF THE MAINTENANCE MANUAL SHALL CONTAIN A LIST OF EACH PEICE OF EQUIPMENT, COMPLETE WITH INFORMATION SHOWING APPROPRIATE REPLACEMENT FILTER SIZES / TYPES, APPROPRIATE REPLACEMENT BELT SPECIFICATIONS, REPLACEMENT MOTOR SPECIFICATIONS, REPLACEMENT BEARING SPECIFICATIONS, VOLTAGES OF UNIT, ETC. THIS SHALL SERVE AS A WRITTEN DATABASE DESCRIBING ALL MAINTENANCE INFORMATION FOR EACH NEW PEICE OF EQUIPMENT USED.

BOILER ROOM and PIPING NOTES

1. THE DRAWINGS SHOW THE GENERAL ARRANGEMENT OF ALL PIPING & EQUIPMENT, & INDICATE THE REQUIRED SIZE / POINTS OF TERMINATION OF THE PIPING & SUGGEST PROPER ROUTING OF SAME. IT IS NOT THE INTENTION OF THE DRAWINGS TO SHOW ALL NECESSARY OFFSETS, RISES, DROPS, OBSTRUCTIONS OR STRUCTURAL CONDITIONS. IT SHALL BE THE RESPONSIBILITY OF THIS CONTRACTOR TO INSTALL HIS WORK IN SUCH A MANNER THAT IT WILL CONFORM TO THE STRUCTURE, AVOID OBSTRUCTIONS, PRESERVE HEADROOM & KEEP OPENINGS / PASSAGEWAYS CLEAR WITHOUT FURTHER CONSTRUCTION OR COST.
2. ALL FLOOR MOUNTED BOILER ROOM EQUIPMENT SHALL BE INSTALLED ON A LEVEL, REINFORCED CONCRETE HOUSEKEEPING PAD, 4" THICK MIN. UNLESS OTHERWISE NOTED. ALL HOUSEKEEPING PADS SHALL BE INSTALLED BY THE MECHANICAL CONTRACTOR. PADS SHALL BE REINFORCED W/ WELDED WIRE MESH & SHALL BE POURED USING 3,000 PSI CONCRETE.
3. MECHANICAL CONTRACTOR SHALL PROVIDE & INSTALL ALL REQUIRED STRUCTURAL SUPPORTS FOR ALL PIPING SYSTEMS & EQUIPMENT AS REQUIRED. PIPING SYSTEMS SHALL BE EQUIPPED WITH EXPANSION COMPENSATORS AT THE INTERVALS REQUIRED. PROVIDE PIPING GUIDES / ANCHORS AS REQUIRED.
4. MECHANICAL CONTRACTOR SHALL PROPERLY INSULATE ALL NEW PIPING SYSTEMS & EQUIPMENT. REFER TO SPECIFICATION SECTION 15250 FOR FURTHER DETAILS REGARDING INSULATION REQUIREMENTS. UPON COMPLETION OF INSULATION WORK, MECHANICAL CONTRACTOR SHALL PROPERLY LABEL EACH PIPING RUN SHOWING THE TYPE OF FLUID CARRIED & DIRECTION OF FLOW. PIPE IDENTIFICATION MARKERS SHALL BE INSTALLED EVERY 20 FEET IN THE PIPING RUNS.
5. ALL VALVES WITHIN PIPING SYSTEMS SHALL BE TAGGED USING A 1-1/2" DIA. BRASS TAG. PROVIDE A LEGEND LISTING VALVE #, TYPE OF VALVE, SERVICE TYPE, & LOCATION OF VALVE. KEY VALVE #'S TO AS-BUILT DRAWINGS UPON COMPLETION OF PROJECT.
6. MECHANICAL CONTRACTOR SHALL SUBMIT (3) SETS OF OPERATING MANUALS FOR EACH PIECE / TYPE OF MECHANICAL EQUIPMENT.
7. MECHANICAL CONTRACTOR SHALL PROVIDE & INSTALL ALL WIRING & DEVICES AS REQUIRED TO CONTROL THE BOILER ROOM EQUIPMENT AS DESCRIBED IN THE SEQUENCE OF OPERATIONS LISTED IN THE PROJECT MANUAL. REFER TO SPECIFICATION SECTION 15903 FOR FURTHER DETAILS.

TESTING and BALANCING NOTES

1. MECHANICAL CONTRACTOR WILL BE REQUIRED TO PERFORM ALL EQUIPMENT & SYSTEM TESTING / BALANCING REQUIRED UNDER THIS CONTRACT. PROVIDE A FULL REPORT DETAILING ALL DESIGN & ACTUAL CONDITIONS FOR ALL AIR & HYDRONIC SYSTEMS SHOWN ON THE DRAWINGS. REFER TO SPECIFICATION SECTIONS 15990 & 15997 FOR FURTHER DETAILS.
2. UPON NOTICE OF COMPLETION OF WORK BY THE CONTRACTOR, OWNER WILL OBTAIN THE SERVICES OF AN INDEPENDENT TESTING & BALANCING CONTRACTOR TO VERIFY THE RESULTS OF THE TESTING & BALANCING REPORT SUBMISSION. INDEPENDENT TESTING AGENCY SHALL SELECT A RANDOM NUMBER OF MEASUREMENTS TO BE CHECKED. MEASUREMENTS WILL BE CHECKED IN THE SAME MANNER AS ORIGINALLY MEASURED. NUMBER OF VERIFICATION MEASUREMENTS SHALL BE APPROXIMATELY 25% OF THE TOTAL MEASUREMENTS FOR THE PROJECT.
3. IF MORE THAN 10% OF THE VERIFICATION TESTING SHOWS DEVIATIONS OF 10% OR MORE / SOUND LEVEL OF 2dB DIFFERENT THAN THAT ORIGINALLY MEASURED, THE ORIGINAL REPORT WILL BE REJECTED. ALL SYSTEMS WILL THEN BE REQUIRED TO BE COMPLETELY RE-TESTED, WITH A SECOND REPORT SUBMITTED. IN THE EVENT THAT THE ORIGINAL REPORT IS REJECTED, ALL SYSTEMS SHALL BE READJUSTED & TESTED, NEW CERTIFIED REPORTS SUBMITTED, AND NEW VERIFICATION TESTS MADE, AT NO ADDITIONAL COST TO THE OWNER. THE CONTRACTOR WILL BE RESPONSIBLE FOR ALL COSTS INVOLVED WITH THE VERIFICATION TESTS.

FIRESTOPPING NOTES

1. ALL PENETRATIONS RELATED TO MECHANICAL WORK THROUGH FIRE RATED WALLS, FLOORS OR OTHER STRUCTURES SHALL BE FIRE STOPPED AS REQUIRED TO MAINTAIN THE RATING OF THE WALL BY MECHANICAL CONTRACTOR. IT IS ASSUMED THAT ALL WALLS IN THE CONSTRUCTION CARRY A MINIMUM FIRE RATING OF 1 HR. IT SHOULD BE ASSUMED THAT ALL MACHINE ROOM WALLS / BOILER ROOM WALLS / ELECTRIC ROOM WALLS CARRY A RATING OF 2 HR. MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR A COMPLETE REVIEW OF THE ARCHITECTURAL DRAWINGS IN ORDER TO DETERMINE FIRE RATINGS OF ALL WALLS / PARTITIONS RELATED TO WORK UNDER THIS CONTRACT.
2. MECHANICAL CONTRACTOR SHALL REVIEW THE COMPLETE ARCHITECTURAL SET OF DRAWINGS IN ORDER TO DETERMINE WHERE DUCT PENETRATIONS THROUGH RATED BARRIERS. DUCTS PENETRATING SAID RATED BARRIERS SHALL BE EQUIPPED WITH A UL LISTED FUSIBLE LINK TYPE FIRE DAMPER, RATED FOR SERVICE FOR WHICH IT IS BEING USED. FIRE DAMPERS SHALL BE PROVIDED & INSTALLED BY THE MECHANICAL CONTRACTOR, COMPLETE W/ DUCT ACCESS DOORS DIRECTLY ADJACENT TO THE DAMPER, POSITIONED FOR EASY REPLACEMENT OF THE LINK.
3. MECHANICAL CONTRACTOR SHALL REVIEW THE COMPLETE ARCHITECTURAL SET OF DRAWINGS IN ORDER TO DETERMINE WHERE DUCT PENETRATIONS THROUGH RATED BARRIERS OCCUR BETWEEN SEPARATE SMOKE ZONES. DUCTS PENETRATING SAID FIRE / SMOKE BARRIERS SHALL BE EQUIPPED WITH A UL LISTED COMBINATION FIRE / SMOKE DAMPER, RATED FOR SERVICE FOR WHICH IT IS BEING USED. FIRE / SMOKE DAMPERS SHALL BE PROVIDED & INSTALLED BY THE MECHANICAL CONTRACTOR, COMPLETE W/ DUCT ACCESS DOORS DIRECTLY ADJACENT TO THE DAMPER. DAMPER ACTUATOR & RELATED WIRING SHALL BE PROVIDED & INSTALLED BY THE ELECTRICAL CONTRACTOR. COORDINATE DAMPER INSTALLATIONS W/ E.C. TO VERIFY PROPER CLEARANCES TO ASSURE PROPER DAMPER OPERATION.
4. MECHANICAL CONTRACTOR SHALL PROVIDE A FULL SET OF AS-BUILT DRAWINGS, SHOWING EACH DAMPER LOCATION, TYPE OF DAMPER, ACCESS DOOR LOCATIONS, ETC.
5. CONTRACTOR SHALL REFER TO SPECIFICATION SECTION 15511 FOR FURTHER DETAILS REGARDING FIRESTOPPING MATERIALS & METHODS.
6. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS OF PRODUCTS TO BE USED. FIRESTOP MATERIALS OTHER THAN THE PRODUCTS SPECIFIED SHALL INCLUDE FULL TECHNICAL DATA WITH SHOP DRAWINGS TO DEMONSTRATE EQUALITY WITH THE SPECIFIED FIRESTOPPING MATERIALS.

GENERAL INSTRUMENTATION NOTES

1. AT A MINIMUM, PROVIDE THERMOMETERS / WELLS AT THE FOLLOWING LOCATIONS:

- AT INLETS & OUTLET OF EACH THREE WAY VALVE (UNIT VENTILATORS / CABINET UNIT HEATER INSTALLATIONS EXCEPTED).
- AT INLET & OUTLET OF EACH HYDRONIC BOILER, CHILLER OR COOLING TOWER.
- AT INLET & OUTLET OF EACH HYDRONIC COIL IN AIR HANDLING UNITS & BUILT-UP CENTRAL SYSTEMS.

2. AT A MINIMUM, PROVIDE LIQUID FILLED PRESSURE GAUGES / WELLS AT THE FOLLOWING LOCATIONS:

- AT SUCTION & DISCHARGE OF EACH PUMP.
- FOR EACH MAKEUP WATER LINE.
- BEFORE & AFTER ALL PRESSURE REDUCING VALVES.
- AT ACCESSIBLE HIGH POINT OF ALL HYDRONIC PIPING SYSTEMS.
- AT ALL EXPANSION / COMPRESSION TANKS.

PIPING SYSTEMS and EQUIPMENT VENTING NOTES

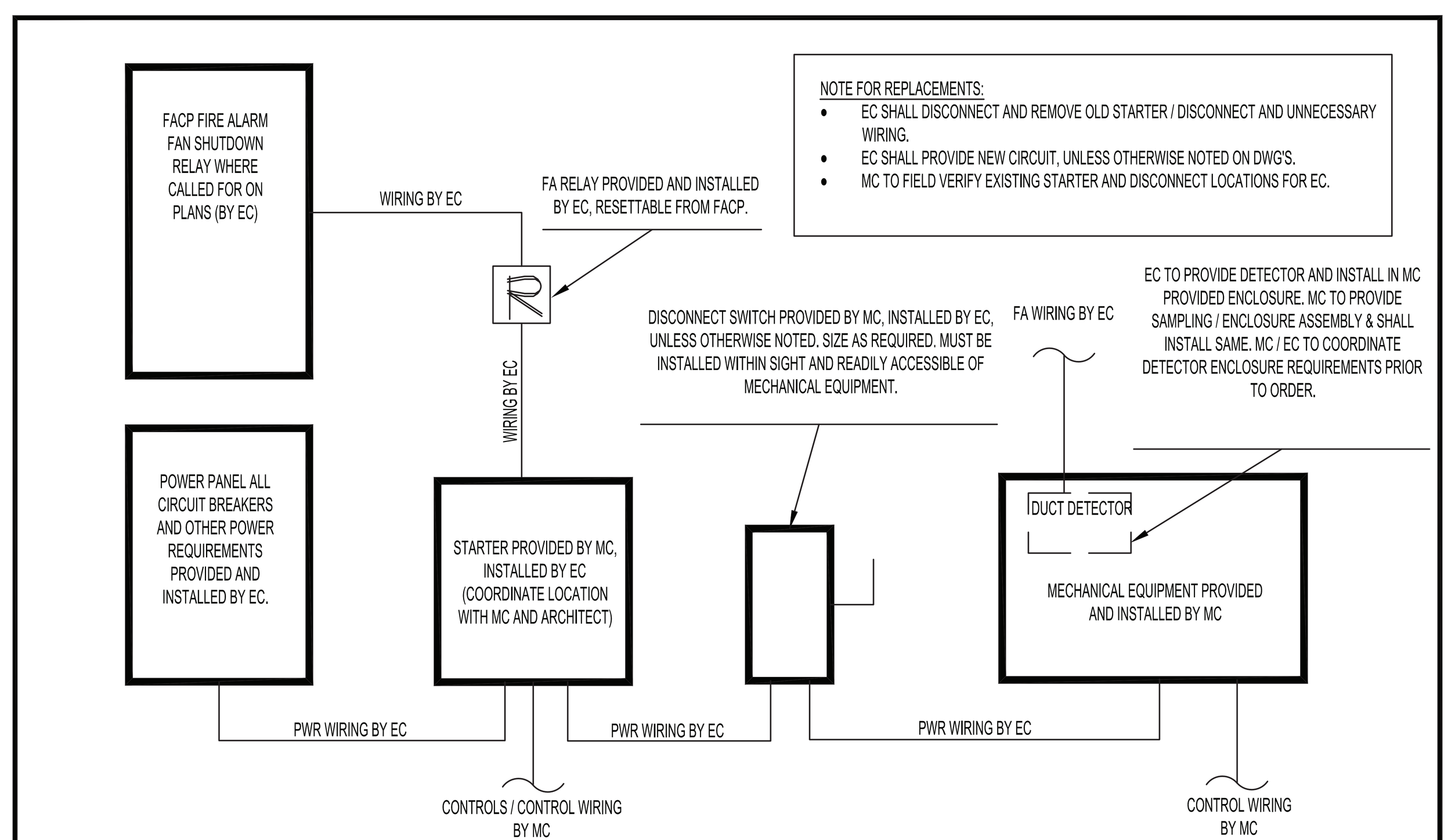
1. MECHANICAL CONTRACTOR WILL BE RESPONSIBLE FOR THE PROPER VENTING OF ALL NEWLY INSTALLED HYDRONIC PIPING SYSTEMS. AUTOMATIC AIR VENTS SHALL BE INSTALLED AT EVERY HIGH POINT IN THE PIPING SYSTEM WHERE AIR CAN COLLECT. PROVIDE COCK IN RISER PRIOR TO AUTOMATIC AIR VENT. NEW AIR VENTS SHALL BE "TACO" #HY-VENT OR EQUIVALENT.
2. MECHANICAL CONTRACTOR SHALL PROVIDE & INSTALL NEW AUTOMATIC AIR VENT FOR EACH AIR HANDLING UNIT COIL OR DUCT MOUNTED COIL. INSTALL SHUT-OFF COCK PRIOR TO VENT TIE-IN.
3. MECHANICAL CONTRACTOR SHALL PROVIDE NEW MANUAL AIR VENTS FOR ALL UNIT VENTILATOR COILS, CONVECTORS, FAN COIL UNITS, FIN TUBE RADIATORS, ETC. MANUAL VENTS SHALL BE "TACO" #417 COIN VENT OR EQUIVALENT. PROVIDE SHUT-OFF COCK PRIOR TO VENT. AIM COIN VENT DISCHARGE IN AN APPROPRIATE MANNER AS TO FACILITATE THE CAPTURE OF BLEED WATER WHILE PERFORMING SYSTEM BLEEDING OPERATIONS.

ELECTRICAL WORK UNDER MECHANICAL CONTRACT

1. MECHANICAL CONTRACTOR SHALL PROVIDE ALL STARTERS & DISCONNECT SWITCHES REQUIRED FOR ALL NEW MECHANICAL EQUIPMENT. STARTER / DISCONNECT SWITCH INSTALLATION TO BE PERFORMED UNDER THE ELECTRICAL CONTRACT. COORDINATE WORK W/ ELECTRICAL CONTRACTOR PRIOR TO START OF WORK.
2. POWER WIRING REQUIRED FOR CONTROLS SHALL BE PERFORMED UNDER THE MECHANICAL CONTRACT UNLESS SPECIFICALLY NOTED OTHERWISE ON THE ELECTRICAL DRAWINGS. MECHANICAL CONTRACTOR SHALL OBTAIN THE SERVICES OF A LICENSED ELECTRICIAN (PER NEC REQUIREMENTS) TO PERFORM ALL ELECTRICAL WORK.

DUCTWORK NOTES

1. PROVIDE ALL NEW DUCTWORK AS SHOWN AND SPECIFIED UNDER SPECIFICATION SECTION 015891, AND IN CONFORMANCE WITH 'SMACNA' SPECIFICATIONS.
2. IF A DUCT ELBOW IS SHOWN TO BE RADIUSED, THEN RADIUSED ELBOWS SHALL BE INSTALLED. SQUARE ELBOWS MAY NOT BE SUBSTITUTED WHERE RADIUSED ELBOWS ARE SHOWN. WHERE SQUARE ELBOWS ARE SHOWN, TURNING VANES SHALL BE INSTALLED UPON APPROVAL BY THE ENGINEER.
3. PROVIDE DUCT LINING IN ALL DUCTWORK THAT IS CONVEYING BELOW AMBIENT TEMPERATURE AIR & IS NOT INSULATED. PROVIDE LINING IN SUPPLY & RETURN AIR DUCTWORK FROM AIR HANDLING EQUIPMENT TO 20 FEET AWAY FROM THE UNIT(S). IN ADDITION, INCLUDE LINING IN ANY OTHER DUCT SPECIFICALLY SHOWN OR SPECIFIED TO BE EQUIPPED WITH LINING. REFER TO SPECIFICATION SECTION 15891 & 15290 FOR FURTHER INFORMATION.
4. WHERE FLEXIBLE DUCTWORK IS USED, LENGTHS MAY NOT EXCEED 4 FEET TOTAL IN ANY ONE RUN OF FLEXIBLE DUCTWORK. FLEXIBLE DUCTWORK SHALL BE RATED IN ACCORDANCE WITH UL 181, CLASS 1. REFER TO SPECIFICATION SECTION 15891 FOR FURTHER INFORMATION.
5. MECHANICAL CONTRACTOR SHALL PROVIDE A BUTTERFLY TYPE VOLUME DAMPER WITH LOCKING QUADRANT HANDLE PRIOR TO EACH AIR OUTLET SHOWN. INSTALL DAMPER AT LEAST 5 FEET AWAY FROM AIR OUTLET WHEREVER POSSIBLE.
6. MECHANICAL CONTRACTOR SHALL PROVIDE FLEXIBLE DUCT CONNECTIONS WHERE DUCT SYSTEMS CONNECT TO EQUIPMENT. REFER TO SPECIFICATION SECTION 15891 FOR FURTHER INFORMATION.



NEW MECHANICAL EQUIPMENT

GENERIC DIAGRAM - REFER TO DWG'S FOR FURTHER DETAILS — NTS

PIPING SYMBOL LEGEND

SYMBOL	DESCRIPTION
	PIPING TO RISE UP
	PIPING TO DROP DOWN
P.A.	PIPING ANCHOR
	PIPING GUIDE
	COLD WATER SUPPLY PIPING
HWS	HEATING SYSTEM SUPPLY PIPING
HWR	HEATING SYSTEM RETURN PIPING
	CHILLED WATER SUPPLY PIPING
	CHILLED WATER RETURN PIPING
	CONDENSER WATER SUPPLY PIPING
	CONDENSER WATER RETURN PIPING
CD	CONDENSATE DRAINAGE PIPING
F.O.S.	FUEL OIL SUPPLY PIPING
F.O.R.	FUEL OIL RETURN PIPING
G	LOW PRESSURE NATURAL GAS PIPING
EG	ELEVATED PRESSURE NATURAL GAS PIPING
	GAS COCK
	DIRT LEG IN PIPING
LP	LIQUEFIED PETROLEUM GAS PIPING
V	VENT PIPING
	LINEAR EXPANSION COMPENSATOR
	EXPANSION LOOP IN PIPING
	UNION IN PIPING
	PIPING STRAINER (w/ BLOWDOWN VALVE)
	REDUCER / INCREASER FITTINGS IN PIPING
	ECCENTRIC REDUCER IN PIPING
	THERMOMETER
	PRESSURE GAUGE
	FULL PORT BALL VALVE
	GATE VALVE
	SWING CHECK VALVE
	BALANCING VALVE
	3-WAY VALVE (w/ OPERATOR)
	CIRCUIT CETTER
3	TRIPLE DUTY VALVE
	WAFER VALVE
	PLUG / CAP IN PIPING
	PNEUMATIC CONTROL VALVE OPERATOR
	ELECTRIC CONTROL VALVE OPERATOR
	AUTOMATIC AIR VENT
	EXISTING PIPING

ABBREVIATIONS

A.F.F.	ABOVE FINISHED FLOOR
B.D.	BACKDRAFT DAMPER
CWS	COLD WATER SUPPLY
CFM	CUBIC FEET OF AIR PER MINUTE
D.	DEEP / DEPTH
DIA./~	DIAMETER
F&T	FLOAT & THERMOSTATIC
FPM	FEET PER MINUTE
FSD	FIRE DAMPER - DUCT MOUNTED
FLEX	FLEXIBLE
FO	FLAT OVAL DUCTWORK
GAL.	GALLONS
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
H.	HIGH
H.C.	HANDICAPPED
HWS	HEATING SYSTEM HOT WATER SUPPLY
HWR	HEATING SYSTEM HOT WATER RETURN
HP	HORSEPOWER
I.D.	INSIDE DIAMETER
KW.	KILOWATT
L.	LONG
LAT	LEAVING AIR TEMPERATURE
LWT	LEAVING WATER TEMPERATURE
MAX.	MAXIMUM
MIN.	MINIMUM
MBH	BTU x 1,000
MFR.	MANUFACTURER
M.H.	MANHOLE
MISC.	MISCELLANEOUS
MTD.	MOUNTED
G	NATURAL GAS
N.I.C.	NOT IN CONTRACT
No. / #	NUMBER
NOM.	NOMINAL
N.T.S.	NOT TO SCALE
O.A.	OUTSIDE AIR
O.C.	ON CENTER
O.D.	OUTSIDE DIAMETER
O.S. & Y	OUTSIDE SCREW & YOKE
O.C.	ON CENTER
PE	PNEUMATIC / ELECTRIC
PREFAB	PREFABRICATED
PRV	PRESSURE REDUCING VALVE
PSI	POUNDS PER SQUARE INCH
R.A.	RETURN AIR
REQ'D.	REQUIRED
RPM	REVOLUTIONS PER MINUTE
S.A.	SUPPLY AIR
SCH.	SCHEDULE
S.P.	STATIC PRESSURE
STD.	STANDARD
T	TEMPERATURE
TXV	THERMAL EXPANSION VALVE
TYP.	TYPICAL
VOL.	VOLUME
V.D.	VOLUME DAMPER
VOL.	VELOCITY
VFD	VARIABLE FREQUENCY DRIVE
W.	WIDE
W/	WITH
W/O	WITHOUT
WB	WET BULB TEMPERATURE
WTD	WATER TEMPERATURE DROP
WTR	WATER TEMPERATURE RISE
WPD	WATER PRESSURE DROP

MECHANICAL SYMBOL LEGEND

SYMBOL	DESCRIPTION
24x12 / 20"~	RECTANGULAR GALVANIZED DUCTWORK - DIMENSIONS 'W' x 'H'
	NEW SUPPLY DUCTWORK TO RISE UP
	NEW SUPPLY DUCTWORK TO DROP DOWN
	NEW RETURN DUCTWORK TO RISE UP
	NEW RETURN DUCTWORK TO DROP DOWN
	TRANSITION IN DUCTWORK
	FIRE DAMPER INSTALLED IN DUCTWORK
	VOLUME DAMPER IN DUCT (w/ LOCKING QUADRANT HANDLE)
	ROUND DUCT WORK TO RISE UP
	ROUND DUCTWORK TO DROP DOWN
42x18 FO	FLAT OVAL DUCT WORK
	RECTANGULAR TO ROUND DUCT TRANSITION
	ELBOW IN DUCTWORK w/ TURNING VANES
	ELBOW IN DUCTWORK (RADIUS + 1.5 x D)
	45 DEG. TAKEOFF FITTING
	90 DEG. TAKEOFF w/ BELLMOUTH FITTING
	FLEXIBLE DUCTWORK TO DIFFUSER (4 FT. MAX. RUN)
	4-WAY PATTERN CEILING DIFFUSER
	3-WAY PATTERN CEILING DIFFUSER
	2-WAY PATTERN CILING DIFFUSER (90 DEG. / OPPOSING PATTERN)
	CEILING RETURN AIR REGISTER
	LINEAR SLOT DIFFUSER
	ROOF MOUNTED EXHAUST FAN

MECHANICAL CODE VENTILATION CALCULATIONS - (HVAC-1 ADD-ALTERNATE NO.1)

Room Number	Occupancy Classification	Occupancy Density (People Per 1000SF)	People Outdoor Airflow Rate in Breathing Zone, Rp (CFM/Person)	Area Outdoor Airflow Rate in Breathing Zone, Ra (CFM/SF)	Exhaust Airflow Rate (CFM/SF)	Area (SF)	Number of People (Pz)	Ventilation in Breathing Zone, Vbz (CFM)	Zone Air Distribution Effectiveness, Ez	Corrected Zone Outdoor Airflow CFM, Voz	Exhaust Air CFM Required
Middle School Gym	Gym, stadium, arena (play area)	7	20	0.18	0	8097	57	2598	1	2598	0

MECHANICAL CODE VENTILATION CALCULATIONS - (HV-2)

Room Number	Occupancy Classification	Occupancy Density (People Per 1000SF)	People Outdoor Airflow Rate in Breathing Zone, Rp (CFM/Person)	Area Outdoor Airflow Rate in Breathing Zone, Ra (CFM/SF)	Exhaust Airflow Rate (CFM/SF)	Area (SF)	Number of People (Pz)	Ventilation in Breathing Zone, Vbz (CFM)	Zone Air Distribution Effectiveness, Ez	Corrected Zone Outdoor Airflow CFM, Voz	Exhaust Air CFM Required
Corridor G	Corridor	0	0	0.06	0	736	0	45	0.8	57	0
Boy's Locker Room 84	Sports locker room	0	0	0	0.5	1966	0	0	0.8	0	983
Girl's Locker Room 309	Sports locker room	0	0	0	0.5	1493	0	0	0.8	0	747
Storage 82	Storage room	0	0	0.12	0	87	0	11	0.8	14	0
W/D 92	Commercial laundry	10	25	0	0	199	2	50	0.8	63	0
Storage 91	Storage room	0	0	0.12	0	90	0	11	0.8	14	0
Storage 84a	Storage room	0	0	0.12	0	137	0	17	0.8	22	0
Stor. 97g	Storage room	0	0	0.12	0	105	0	13	0.8	17	0
Stor. 97f	Storage room	0	0	0.12	0	81	0	10	0.8	13	0
Storage 84b	Storage room	0	0	0.12	0	156	0	19	0.8	24	0
Office 97c	Office space	5	5	0.06	0	105	1	12	0.8	15	0
Office 97b	Office space	5	5	0.06	0	81	1	10	0.8	13	0
Coach 84e	Office space	5	5	0.06	0	136	1	14	0.8	18	0
Coach 97e	Office space	5	5	0.06	0	133	1	13	0.8	17	0
Office 84d	Office space	5	5	0.06	0	136	1	14	0.8	18	0
Office 97d	Office space	5	5	0.06	0	132	1	13	0.8	17	0
Trainer 87	Office space	5	5	0.06	0	176	1	16	0.8	20	0
Storage 88	Storage room	0	0	0.12	0	377	0	46	0.8	58	0

EXISTING BUILDING DROP CEILING TILE REMOVAL & RE-INSTALLATION NOTES

SUSPENDED ACOUSTIC CEILING TILE & GRID SHALL BE PARTIALLY REMOVED BY THE G.C. AS REQUIRED TO FACILITATE REMOVAL & INSTALLATION OF MECHANICAL SYSTEM DUCTWORK. THE ACOUSTIC CEILING SHALL BE RESTORED BY THE GC UPON COMPLETION OF DUCTWORK INSTALLATION.

THE MC SHALL COORDINATE WITH THE GC ALL OF THE LOCATIONS WHERE ACOUSTIC CEILING NEEDS TO BE REMOVED TO FACILITATE REMOVAL & INSTALLATION OF DUCTWORK.

GENERAL NOTES FOR ALL NEW FANS WITH AN ECM MOTOR

ALL ELECTRICALLY COMMUTATED (EC) MOTORS SHALL HAVE THE FOLLOWING FEATURES:

1. SOFT START - MOTORS MUST HAVE SOFT-START TECHNOLOGY WHICH ELIMINATES INRUSH CURRENT AT START-UP. THE MOTORS WILL RELIABLY START AT ANY SPEED SETTING.

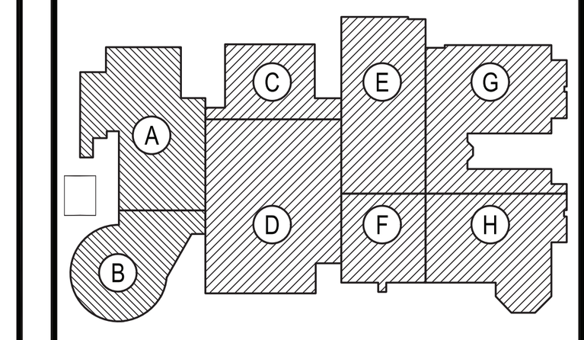
2. OVERLOAD PROTECTION - IF THE MOTOR BECOMES OVERLOADED, IT WILL AUTOMATICALLY REDUCE ITS SPEED UNTIL IT IS NO LONGER OVERLOADED. THIS MEANS THAT THE MOTOR WILL NEVER OPERATE IN THE "SERVICE FACTOR" WHICH IS POSSIBLE WITH MANY AC MOTORS.

3. LOCKED ROTOR PROTECTION - IF THE MOTOR EVER ENCOUNTERS A LOCKED-ROTOR SCENARIO, THE MOTOR WILL AUTOMATICALLY SHUT ITSELF DOWN. IT WILL TRY TO RESTART UP TO 3 TIMES, AND IF AFTER THE 3RD TIME THE MOTOR WILL STILL NOT ROTATE, THE MOTOR WILL NOT ATTEMPT TO START AGAIN UNTIL POWER IS CYCLED.

4. THERMAL PROTECTION - THE MOTORS HAVE A ONE-SHOT FUSE THERMAL PROTECTOR. THIS IS MEANT TO PROTECT THE MOTOR FROM A SEVERE TEMPERATURE RISE. ADDITIONALLY, THE MOTORS HAVE ON-BOARD TEMPERATURE SENSORS WHICH WILL REDUCE THE SPEED OF THE MOTOR SHOULD IT BECOME TOO HOT. THE FUSE IS USED AS A LAST RESORT TO PREVENT A FIRE

FOR ALL PROPOSED NEW PIPING, NEW DUCTWORK, & NEW EQUIPMENT LAYOUTS, THE M.C. SHALL FURNISH DETAIL SHOP DRAWINGS PRIOR TO START OF ANY WORK. ALL EXISTING CONDITIONS SHALL BE VERIFIED IN THE FIELD BY THE M.C. PRIOR TO FURNISH SHOP DRAWINGS & THESE FIELD CONDITIONS SHALL BE REFLECTED ON THE SHOP DRAWINGS.

REV.	DATE	ITEM



KEY PLAN
NOT TO SCALE

PROJECT: BRIARCLIFF MANOR U.F.S.D.
PHASE 2 BOND IMPROVEMENTS
BRIARCLIFF MANOR MIDDLE/HIGH SCHOOL
444 PLEASANTVILLE RD, BRIARCLIFF MANOR, NY 10510

DWG TITLE: GENERAL NOTES, LEGENDS AND SYMBOLS (1 OF 2)

DRAWING BY: R.D.P.
CHECK BY: F.S.

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SED No. 66-14-02-02-0-004-023
DISTRICT: BRIARCLIFF MANOR UFSD
PROJECT: PHASE 2 BOND IMPROVEMENTS
DWG TITLE: GENERAL NOTES, LEGENDS AND SYMBOLS (1 OF 2)
SCALE: AS NOTED
DATE: 7/15/22
BID PICK-UP:
FILE No: 21-274C

M0.01 HSMS

MECHANICAL CODE VENTILATION CALCULATIONS - (HVAC-7)

Room Number	Occupancy Classification	Occupancy Density (People Per 1000SF)	People Outdoor Airflow Rate in Breathing Zone, Rp (CFM/Person)	Area Outdoor Airflow Rate in Breathing Zone, Ra (CFM/SF)	Exhaust Airflow Rate (CFM/SF)	Area (SF)	Number of People (Pz)	Ventilation in Breathing Zone, Vbz (CFM)	Zone Air Distribution Effectiveness, Ez	Corrected Zone Outdoor Airflow CFM, Voz	Exhaust Air CFM Required
Gallery 501B	Corridor	0	0	0.06	0	2815	0	169	0.8	212	0
Office 4	Office space	5	5	0.06	0	105	1	12	0.8	15	0
Office 3	Office space	5	5	0.06	0	105	1	12	0.8	15	0
Corridor - F	Corridor	0	0	0.06	0	420	0	26	0.8	33	0
Corridor - L	Corridor	0	0	0.06	0	179	0	11	0.8	14	0
Student Learning Exchange 168-C	Media center	25	10	0.12	0	1692	43	634	0.8	793	0
Quiet Room 107	Office space	5	5	0.06	0	48	1	8	0.8	10	0
Office 1	Office space	5	5	0.06	0	70	1	10	0.8	13	0
Office 2	Office space	5	5	0.06	0	70	1	10	0.8	13	0

MECHANICAL CODE VENTILATION CALCULATIONS - (DOAS-8)

Room Number	Occupancy Classification	Occupancy Density (People Per 1000SF)	People Outdoor Airflow Rate in Breathing Zone, Rp (CFM/Person)	Area Outdoor Airflow Rate in Breathing Zone, Ra (CFM/SF)	Exhaust Airflow Rate (CFM/SF)	Area (SF)	Number of People (Pz)	Ventilation in Breathing Zone, Vbz (CFM)	Zone Air Distribution Effectiveness, Ez	Corrected Zone Outdoor Airflow CFM, Voz	Exhaust Air CFM Required
College Conf 114	Conference room	50	5	0.06	0	430	22	136	0.8	170	0
Corridor E	Corridor	0	0	0.06	0	2583	0	155	0.8	194	0
Office 8	Office space	5	5	0.06	0	94	1	11	0.8	14	0
Office 13	Office space	5	5	0.06	0	82	1	10	0.8	13	0
Office 15	Office space	5	5	0.06	0	82	1	10	0.8	13	0
Office 14	Office space	5	5	0.06	0	82	1	10	0.8	13	0
Office 12	Office space	5	5	0.06	0	144	1	14	0.8	18	0
Office 9	Office space	5	5	0.06	0	94	1	11	0.8	14	0
Office 11	Office space	5	5	0.06	0	94	1	11	0.8	14	0
Office 17	Office space	5	5	0.06	0	94	1	11	0.8	14	0
Office 18	Office space	5	5	0.06	0	94	1	11	0.8	14	0
Office 16	Office space	5	5	0.06	0	94	1	11	0.8	14	0
Office 7	Office space	5	5	0.06	0	92	1	11	0.8	14	0
Office 10	Office space	5	5	0.06	0	94	1	11	0.8	14	0
Student Learning Exchange 168-B	Media center	25	10	0.12	0	1782	45	664	0.8	830	0
Office 5	Office space	5	5	0.06	0	105	1	12	0.8	15	0
Office 6	Office space	5	5	0.06	0	107	1	12	0.8	15	0

MECHANICAL CODE VENTILATION CALCULATIONS - (HVAC-9)

Room Number	Occupancy Classification	Occupancy Density (People Per 1000SF)	People Outdoor Airflow Rate in Breathing Zone, Rp (CFM/Person)	Area Outdoor Airflow Rate in Breathing Zone, Ra (CFM/SF)	Exhaust Airflow Rate (CFM/SF)	Area (SF)	Number of People (Pz)	Ventilation in Breathing Zone, Vbz (CFM)	Zone Air Distribution Effectiveness, Ez	Corrected Zone Outdoor Airflow CFM, Voz	Exhaust Air CFM Required
Amphitheater 108	Lecture classroom	65	7.5	0.06	0	1502	98	826	0.8	1033	0

MECHANICAL CODE VENTILATION CALCULATIONS - (HVAC-10)

Room Number	Occupancy Classification	Occupancy Density (People Per 1000SF)	People Outdoor Airflow Rate in Breathing Zone, Rp (CFM/Person)	Area Outdoor Airflow Rate in Breathing Zone, Ra (CFM/SF)	Exhaust Airflow Rate (CFM/SF)	Area (SF)	Number of People (Pz)	Ventilation in Breathing Zone, Vbz (CFM)	Zone Air Distribution Effectiveness, Ez	Corrected Zone Outdoor Airflow CFM, Voz	Exhaust Air CFM Required
Corridor C	Corridor	0	0	0.06	0	4467	0	269	0.8	337	0

MECHANICAL CODE VENTILATION CALCULATIONS - (HVAC-11)

Room Number	Occupancy Classification	Occupancy Density (People Per 1000SF)	People Outdoor Airflow Rate in Breathing Zone, Rp (CFM/Person)	Area Outdoor Airflow Rate in Breathing Zone, Ra (CFM/SF)	Exhaust Airflow Rate (CFM/SF)	Area (SF)	Number of People (Pz)	Ventilation in Breathing Zone, Vbz (CFM)	Zone Air Distribution Effectiveness, Ez	Corrected Zone Outdoor Airflow CFM, Voz	Exhaust Air CFM Required
Cafeteria 505	Cafeteria, fast food	100	7.5	0.18	0	4811	482	4481	0.8	5602	0

MECHANICAL CODE VENTILATION CALCULATIONS - (HVAC-12)

Room Number	Occupancy Classification	Occupancy Density (People Per 1000SF)	People Outdoor Airflow Rate in Breathing Zone, Rp (CFM/Person)	Area Outdoor Airflow Rate in Breathing Zone, Ra (CFM/SF)	Exhaust Airflow Rate (CFM/SF)	Area (SF)	Number of People (Pz)	Ventilation in Breathing Zone, Vbz (CFM)	Zone Air Distribution Effectiveness, Ez	Corrected Zone Outdoor Airflow CFM, Voz	Exhaust Air CFM Required
Office 20	Office space	5	5	0.06	0	95	1	11	0.8	14	0
St 118	Storage room	0	0	0.12	0	176	0	22	0.8	28	0
St. 119	Storage room	0	0	0.12	0	223	0	27	0.8	34	0
Student Learning Exchange 168-A	Media center	25	10	0.12	0	3940	99	1463	0.8	1829	0
Tech. 165	Storage room	0	0	0.12	0	468	0	57	0.8	72	0
Corridor P	Corridor	0	0	0.06	0	757	0	46	0.8	58	0
Corridor Q	Corridor	0	0	0.06	0	757	0	46	0.8	58	0
Pysch. 237	Office space	5	5	0.06	0	164	1	15	0.8	19	0
Faculty 220	Office space	5	5	0.06	0	330	2	30	0.8	38	0
Tech. 242	Office space	5	5	0.06	0	211	2	23	0.8	29	0
Faculty 241	Office space	5	5	0.06	0	114	1	12	0.8	15	0
Corridor B	Corridor	0	0	0.06	0	1389	0	84	0.8	105	0
Student Learning Exchange 165-Light Well	Media center	25	10	0.12	0	780	20	294	0.8	368	0
Chemistry 225	Science Laboratories	25	10	0.18	1	1225	31	531	0.8	664	1225
Chemistry 229	Science Laboratories	25	10	0.18	1	1549	39	669	0.8	837	1549
Chem. Stor. 236	Storage room	0	0	0.12	0	169	0	21	0.8	27	0
Support 228	Office space	5	5	0.06	0	185	1	17	0.8	22	0
Math/Tech 227	Office space	5	5	0.06	0	321	2	30	0.8	38	0
Social Studies 221	Classroom (age 9 plus)	35	10	0.12	0	910	32	430	0.8	538	0
Social Studies 226	Classroom (age 9 plus)	35	10	0.12	0	899	32	428	0.8	535	0
Support 222	Office space	5	5	0.06	0	322	2	30	0.8	38	0
Support 223	Office space	5	5	0.06	0	187	1	17	0.8	22	0
Storage 166	Storage room	0	0	0.12	0	45	0	6	0.8	8	0
Storage 167	Storage room	0	0	0.12	0	46	0	6	0.8	8	0

MECHANICAL CODE VENTILATION CALCULATIONS - (FIRST FLOOR - CEILING MOUNTED UNIT VENTILATORS)

Room Number	Unit ID	Occupancy Classification	Occupancy Density (People Per 1000SF)	People Outdoor Airflow Rate in Breathing Zone, Rp (CFM/Person)	Area Outdoor Airflow Rate in Breathing Zone, Ra (CFM/SF)	Exhaust Airflow Rate (CFM/SF)	Area (SF)	Number of People (Pz)	Ventilation in Breathing Zone, Vbz (CFM)	Zone Air Distribution Effectiveness, Ez	Corrected Zone Outdoor Airflow CFM, Voz	Exhaust Air CFM Required
Classroom 117	UV-1A	Classroom (age 9 plus)	35	10	0.12	0	938	33	443	0.8	554	0
Office 19	UV-1B	Office space	5	5	0.06	0	98	1	11	0.8	14	0
Tech 164	UV-1B	Classroom (age 9 plus)	35	10	0.12	0	763	27	362	0.8	453	0
Flex Space 112	UV-1C	Classroom (age 9 plus)	35	10	0.12	0	527	19	254	0.8	318	0
Writing Lab 116	UV-1D	Classroom (age 9 plus)	35	10	0.12	0	384	14	187	0.8	234	0
Math Lab 115	UV-1E	Classroom (age 9 plus)	35	10	0.12	0	317	12	159	0.8	199	0

MECHANICAL CODE VENTILATION CALCULATIONS - (FIRST FLOOR - FLOOR MOUNTED UNIT VENTILATORS)

Room Number	Unit ID	Occupancy Classification	Occupancy Density (People Per 1000SF)	People Outdoor Airflow Rate in Breathing Zone, Rp (CFM/Person)	Area Outdoor Airflow Rate in Breathing Zone, Ra (CFM/SF)	Exhaust Airflow Rate (CFM/SF)	Area (SF)	Number of People (Pz)	Ventilation in Breathing Zone, Vbz (CFM)	Zone Air Distribution Effectiveness, Ez	Corrected Zone Outdoor Airflow CFM, Voz	Exhaust Air CFM Required
Fab Lab/Photography 120	UV-1F	Classroom (age 9 plus)	35	10	0.12	0	982	35	468	0.9	520	0
Robotics/Engineering 121	UV-1G	Classroom (age 9 plus)	35	10	0.12	0	1107	39	523	0.9	582	0
St 120A	UV-1F	Storage room	0	0	0.12	0	204	0	25	0.9	28	0
St 121A	UV-1G	Storage room	0	0	0.12	0	126	0	16	0.9	18	0
Science Research Lab 113	UV-1H	Classroom (age 9 plus)	35	10	0.12	0	890	32	427	0.9	475	0

MECHANICAL CODE VENTILATION CALCULATIONS - (SECOND FLOOR - CEILING MOUNTED UNIT VENTILATORS)

Room Number	Unit ID	Occupancy Classification	Occupancy Density (People Per 1000SF)	People Outdoor Airflow Rate in Breathing Zone, Rp (CFM/Person)	Area Outdoor Airflow Rate in Breathing Zone, Ra (CFM/SF)	Exhaust Airflow Rate (CFM/SF)	Area (SF)	Number of People (Pz)	Ventilation in Breathing Zone, Vbz (CFM)	Zone Air Distribution Effectiveness, Ez	Corrected Zone Outdoor Airflow CFM, Voz	Exhaust Air CFM Required
Chemistry 229	UV-2A & UV-2B	Science Laboratories	25	10	0.18	1	1462	37	634	0.8	793	1462
Math/Tech 227	UV-2C	Office space	5	5	0.06	0	318	2	30	0.8	38	0
Social Studies 221	UV-2E	Classroom (age 9 plus)	35	10	0.12	0	858	31	413	0.8	517	0
Social Studies 226	UV-2D	Classroom (age 9 plus)	35	10	0.12	0	858	31	413	0.8	517	0
Support 222	UV-2F	Office space	5	5	0.06	0	329	2	30	0.8	38	0
Support 223	UV-2F	Office space	5	5	0.06	0	181	1	16	0.8	20	0
Support 228	UV-2C	Office space	5	5	0.06	0	126	1	13	0.8	17	0

MECHANICAL CODE VENTILATION CALCULATIONS - (FIRST FLOOR - CEILING MOUNTED FAN COIL UNITS)

Room Number	Occupancy Classification	Occupancy Density (People Per 1000SF)	People Outdoor Airflow Rate in Breathing Zone, Rp (CFM/Person)	Area Outdoor Airflow Rate in Breathing Zone, Ra (CFM/SF)	Exhaust Airflow Rate (CFM/SF)	Area (SF)	Number of People (Pz)	Ventilation in Breathing Zone, Vbz (CFM)	Zone Air Distribution Effectiveness, Ez	Corrected Zone Outdoor Airflow CFM, Voz	Exhaust Air CFM Required
Breakout 500	Conference/meeting	50	5	0.06	0	169	9	56	0.8	70	0
Breakout 501	Conference/meeting	50	5	0.06	0	170	9	56	0.8	70	0

REV.	DATE	ITEM

NOTICE

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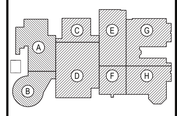

KEY PLAN

NOT TO SCALE

BRIARCLIFF MANOR U.F.S.D.
PHASE 2 BOND IMPROVEMENTS
BRIARCLIFF MANOR MIDDLE/HIGH SCHOOL
444 PLEASANTVILLE RD, BRIARCLIFF MANOR, NY 10510

PROJECT

GENERAL NOTES, LEGENDS AND SYMBOLS (2 OF 2)

DWG TITLE

DRAWING BY: R.D.P.

CHECK BY: F.S.

NOTICE

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SED No. 66-14-02-02-0-004-023

DISTRICT BRIARCLIFF MANOR UFSD

PROJECT PHASE 2 BOND IMPROVEMENTS

DWG TITLE GENERAL NOTES, LEGENDS AND SYMBOLS (2 OF 2)

SCALE: AS NOTED

DATE: 7/15/22

BID PICK-UP:

FILE No: 21-274C

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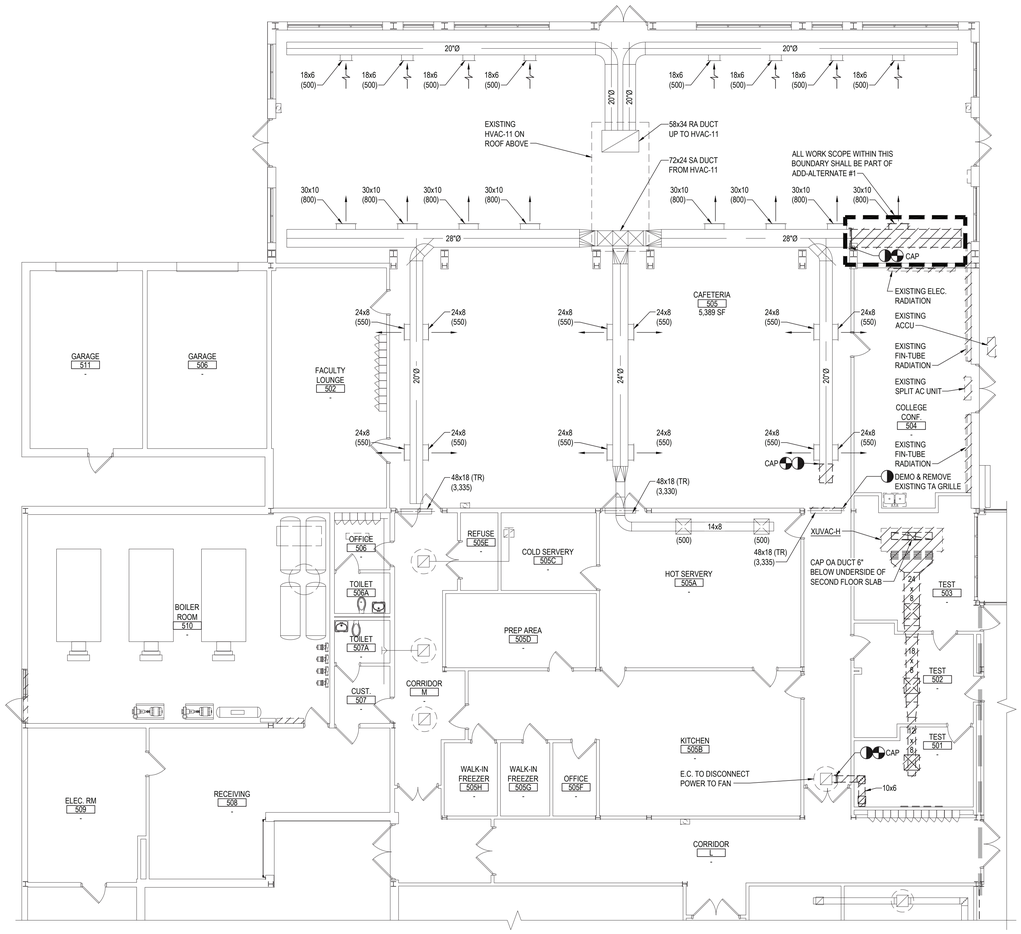
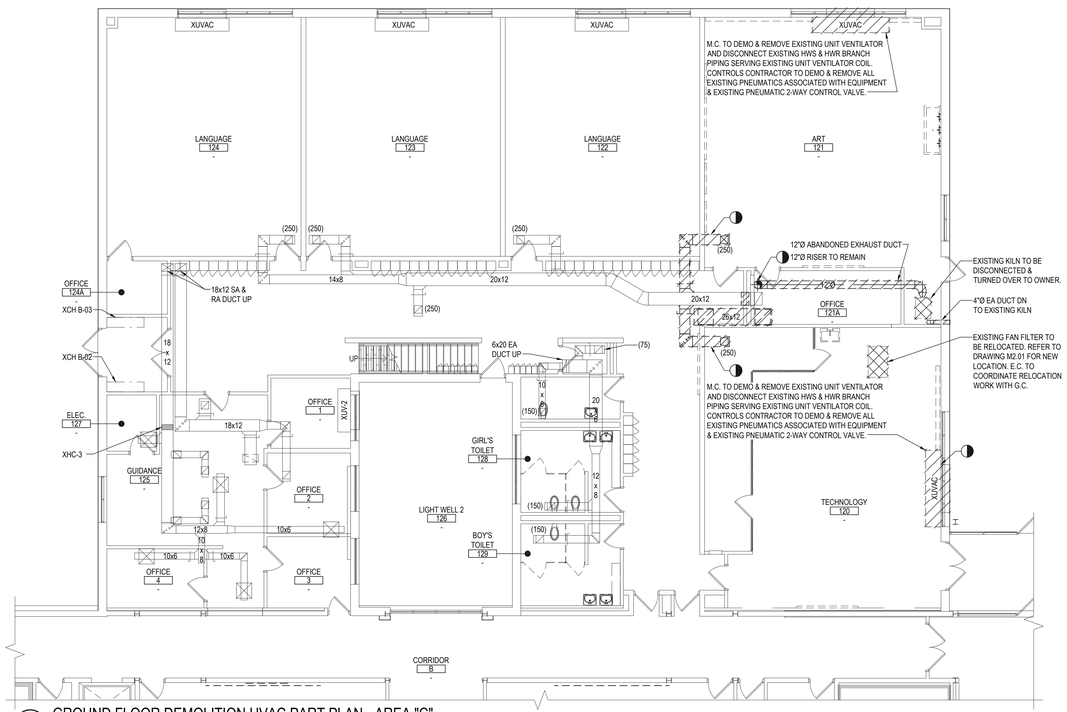


1 GROUND FLOOR DEMOLITION HVAC PART PLAN - AREA "A"

NOTE:

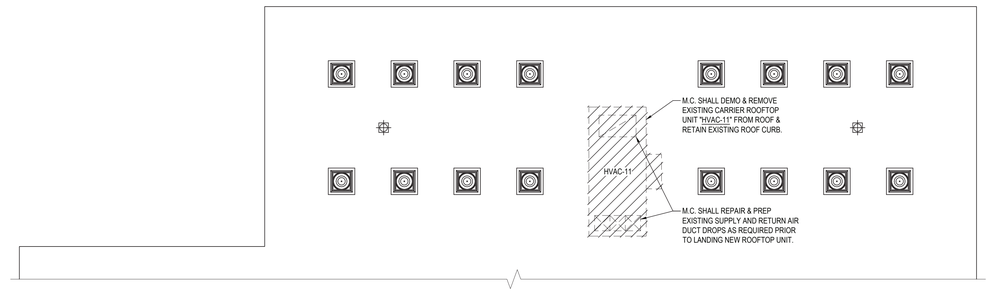
SCALE: 1/8" = 1'-0"



2 GROUND FLOOR DEMOLITION HVAC PART PLAN - AREA "C"

NOTE:

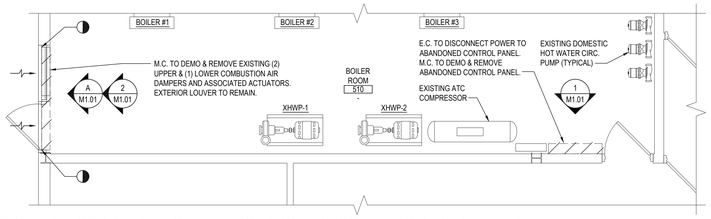
SCALE: 1/8" = 1'-0"



3 ROOF DEMOLITION HVAC PART PLAN - AREA "A" (EAST)

NOTE:

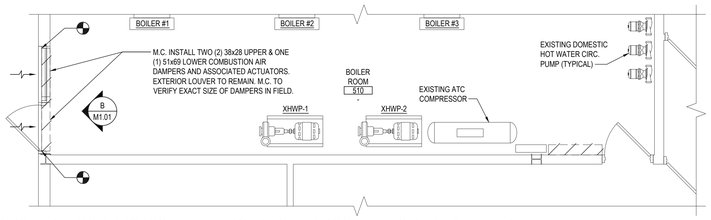
SCALE: 1/8" = 1'-0"



4 GROUND FLOOR DEMOLITION (ENLARGED BOILER ROOM) HVAC PART PLAN - AREA "A"

NOTE:

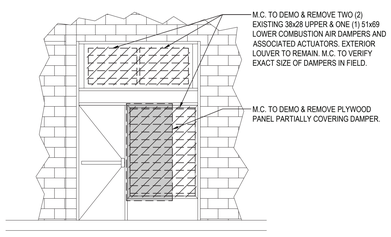
SCALE: 1/4" = 1'-0"



5 GROUND FLOOR PROPOSED (ENLARGED BOILER ROOM) HVAC PART PLAN - AREA "A"

NOTE:

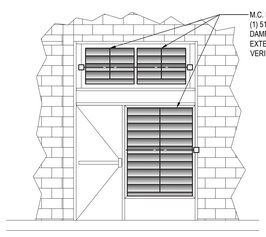
SCALE: 1/4" = 1'-0"



A ELEVATION - DEMOLITION

NOTE:

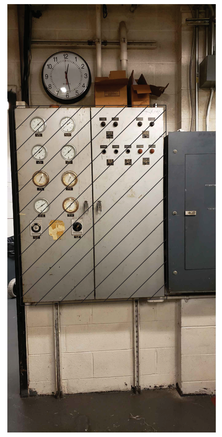
SCALE: 1/4" = 1'-0"



B ELEVATION - PROPOSED

NOTE:

SCALE: 1/4" = 1'-0"



PANEL PHOTO DETAIL - 1

DAMPER PHOTO DETAIL - 2

REV.	DATE	ITEM

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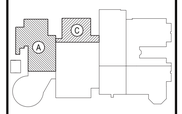

KEY PLAN

NOT TO SCALE

BRIARCLIFF MANOR U.F.S.D.
PHASE 2 BOND IMPROVEMENTS
BRIARCLIFF MANOR MIDDLE/HIGH SCHOOL
444 PLEASANTVILLE RD, BRIARCLIFF MANOR, NY 10510

DEMOLITION HVAC PART PLANS - AREA A & C

PROJECT

DWG TITLE

DRAWING BY: R.D.P.

CHECK BY: F.S.

NOTICE

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SED No. 66-14-02-02-0-004-023

DISTRICT BRIARCLIFF MANOR UFSD

PROJECT PHASE 2 BOND IMPROVEMENTS

DWG TITLE DEMOLITION HVAC PART PLANS AREA A & C

SCALE: AS NOTED

DATE: 7/15/22

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FILE No: 21-274C

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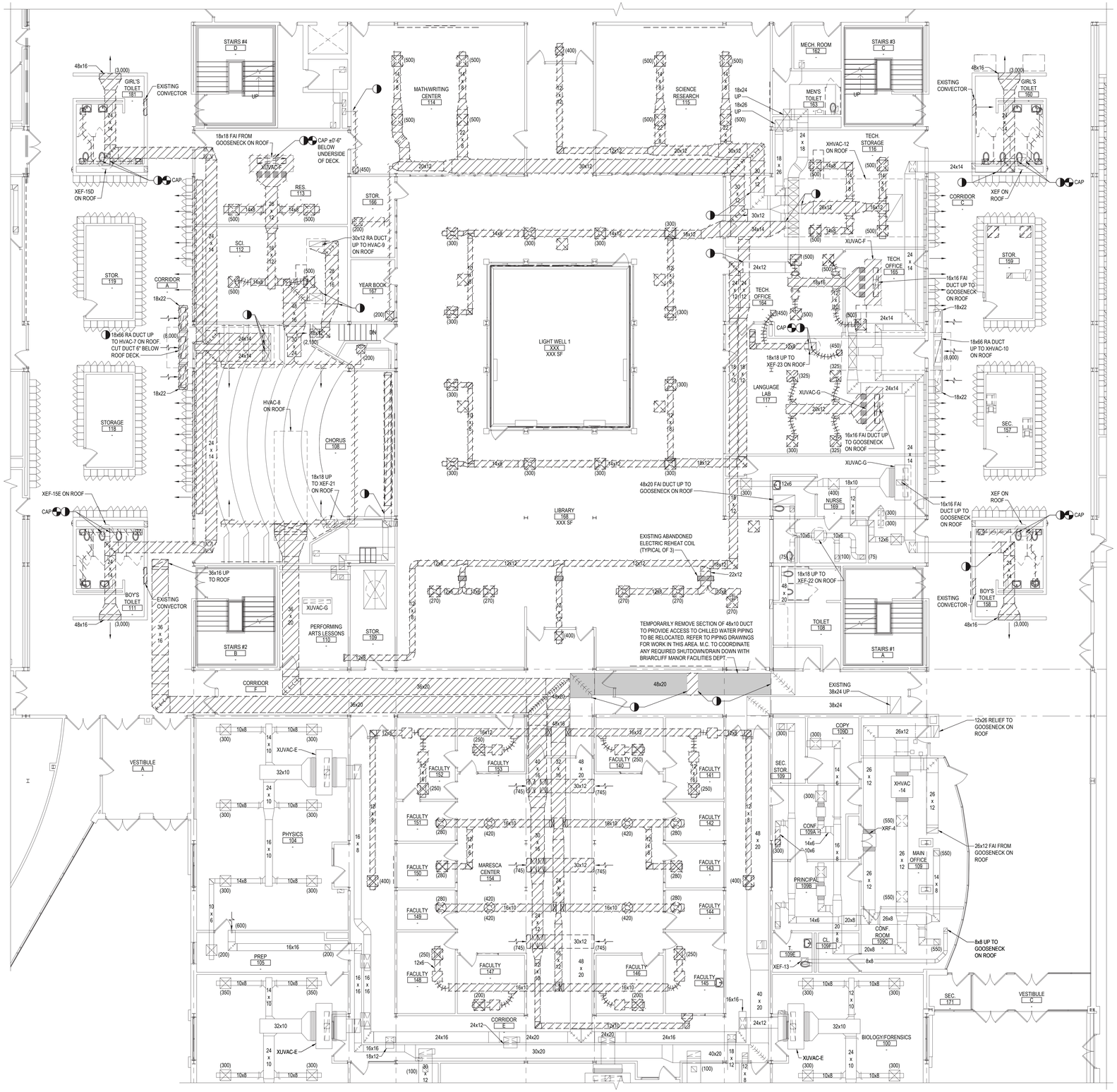

1 GROUND FLOOR DEMOLITION HVAC PART PLAN - AREA "D"

NOTE:

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

REV.	DATE	ITEM

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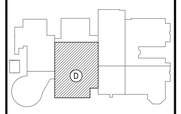

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PHASE 2 BOND IMPROVEMENTS
BRIARCLIFF MANOR MIDDLE/HIGH SCHOOL
444 PLEASANTVILLE RD, BRIARCLIFF MANOR, NY 10510

PROJECT

DEMOLITION HVAC PART PLANS - AREA D

DWG TITLE

DRAWING BY: R.D.P.

CHECK BY: F.S.

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SED No. 66-14-02-02-0-004-023

DISTRICT BRIARCLIFF MANOR UFSD

PROJECT PHASE 2 BOND IMPROVEMENTS

DWG TITLE DEMOLITION HVAC PART PLANS AREA D

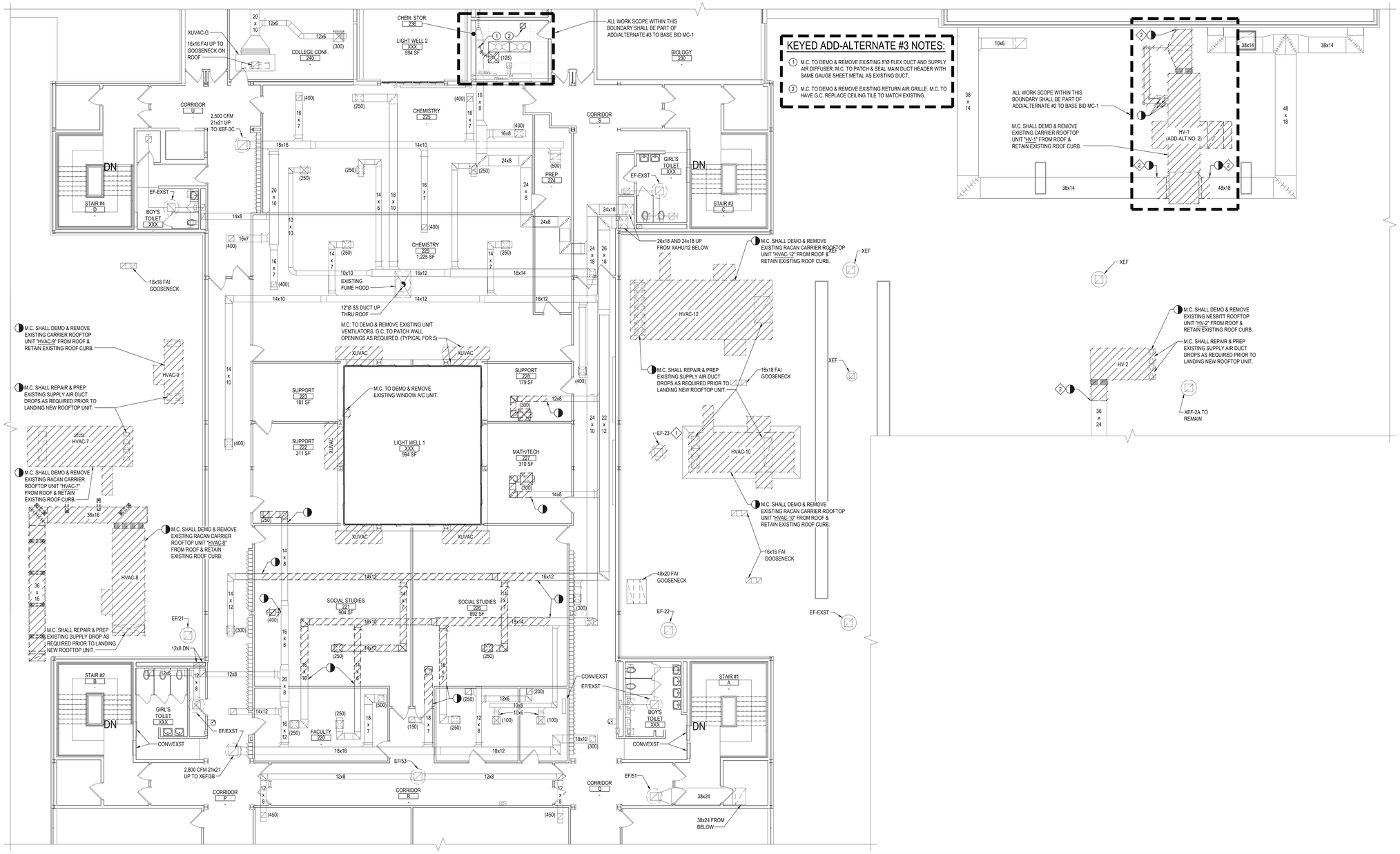
SCALE: AS NOTED

DATE: 7/15/22

BID PICK-UP:

FILE No: 21-274C

M1.02 | HSMS



1 SECOND FLOOR AND ROOF DEMOLITION HVAC PART PLAN - AREA "D & E"

NOTE:

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

MECHANICAL KEYED DEMOLITION NOTES:

1. DEMO & REMOVE EXISTING ROOFTOP EXHAUST FAN AND ASSOCIATED DAMPER SHOWN. E.C. SHALL DISCONNECT FAN PRIOR TO REMOVAL. RETAIN EXISTING ROOF CURB.
2. M.C. SHALL REPAIR & PREP EXISTING DUCT FOR CONNECTION TO NEW DUCTWORK.

PRE-CONSTRUCTION NOTE:

M.C. TO VERIFY EXISTING VOLTS, PHASE & HERTZ OF EXISTING FANS AND COORDINATE SUBMITTALS WITH EXISTING FIELD VERIFICATIONS. M.C. TO FIELD VERIFY EXISTING CURB DIMENSIONS PRIOR TO REMOVAL OF EXISTING CURBS.

REV.	DATE	ITEM

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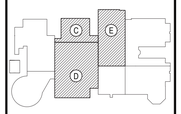

KEY PLAN

NOT TO SCALE

PROJECT

BRIARCLIFF MANOR U.F.S.D.
PHASE 2 BOND IMPROVEMENTS
BRIARCLIFF MANOR MIDDLE/HIGH SCHOOL
444 PLEASANTVILLE RD, BRIARCLIFF MANOR, NY 10510

DWG TITLE

SECOND FLOOR AND ROOF HVAC
DEMOLITION PART PLAN - AREA C, D & E

DRAWING BY: R.D.P.

CHECK BY: F.S.

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DISTRICT BRIARCLIFF MANOR UFSD

PROJECT PHASE 2 BOND IMPROVEMENTS

DWG TITLE 2ND FLOOR & ROOF HVAC HVAC DEMO PART PLAN - C, D & E

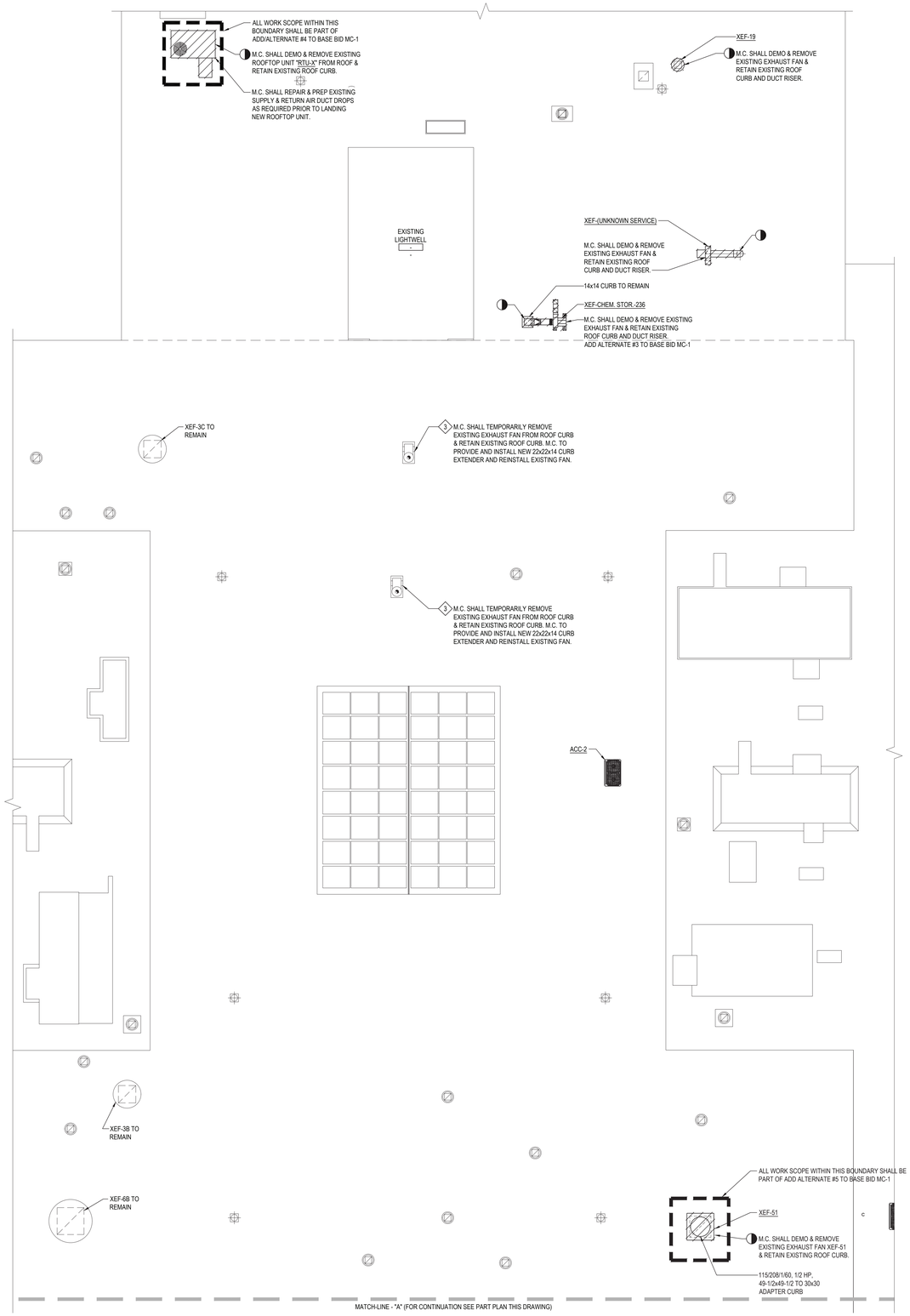
SCALE: AS NOTED

DATE: 7/15/22

BID PICK-UP:

FILE No: 21-274C

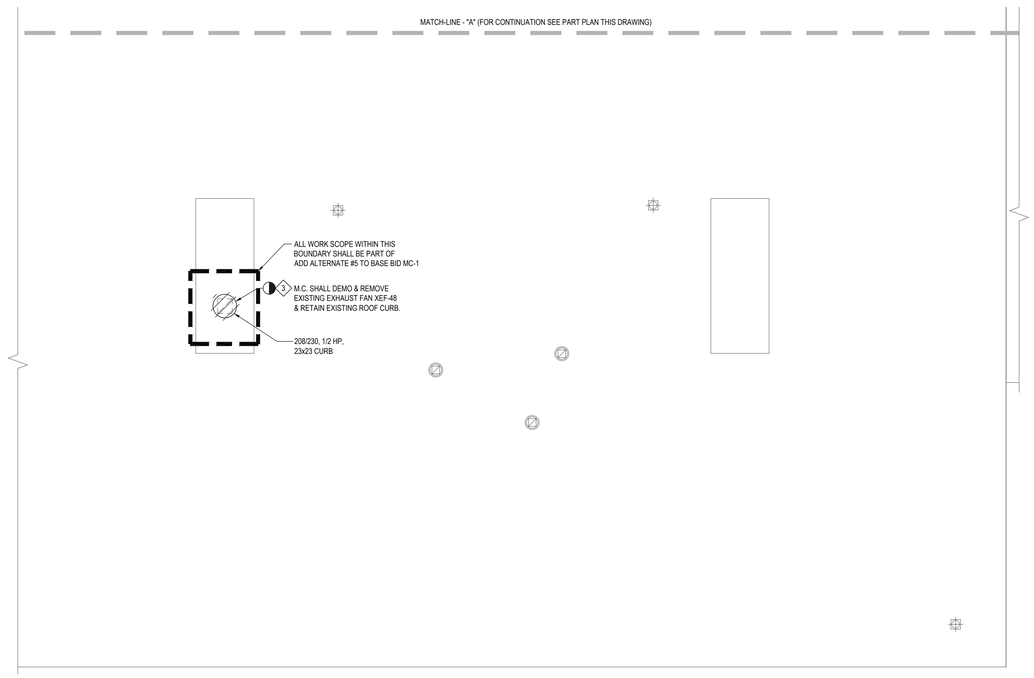
M1.03 | HSMS



1 SECOND FLOOR AND ROOF DEMOLITION HVAC PART PLAN - AREA "D & E"

NOTE:

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



2 SECOND FLOOR AND ROOF DEMOLITION HVAC PART PLAN - AREA "D"

NOTE:

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

MECHANICAL KEYED DEMOLITION NOTES:

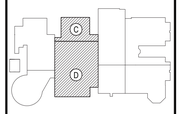
1. DEMO & REMOVE EXISTING ROOFTOP EXHAUST FAN AND ASSOCIATED DAMPER SHOWN. E.C. SHALL DISCONNECT FAN PRIOR TO REMOVAL. RETAIN EXISTING ROOF CURB.
2. M.C. SHALL REPAIR & PREP EXISTING DUCT FOR CONNECTION TO NEW DUCTWORK.
3. E.C. TO SAFE OFF EXHAUST FAN CIRCUIT AND EXTEND POWER WIRING AND CONDUIT AS REQUIRED. M.C. TO EXTEND CONTROL WIRING AS REQUIRED. G.C. TO BE PRESENT WHILE M.C. & E.C. ARE PERFORMING THEIR SCOPE OF WORK.

PRE-CONSTRUCTION NOTE:

M.C. TO VERIFY EXISTING VOLTS, PHASE & HERTZ OF EXISTING FANS AND COORDINATE SUBMITTALS WITH EXISTING FIELD VERIFICATIONS. M.C. TO FIELD VERIFY EXISTING CURB DIMENSIONS PRIOR TO REMOVAL OF EXISTING CURBS.

REV.	DATE	ITEM

NOTICE



KEY PLAN

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PHASE 2 BOND IMPROVEMENTS
BRIARCLIFF MANOR MIDDLE/HIGH SCHOOL
444 PLEASANTVILLE RD, BRIARCLIFF MANOR, NY 10510

PROJECT

SECOND FLOOR AND ROOF HVAC
DEMOLITION PART PLAN - AREA C & D

DWG TITLE

DRAWING BY: R.D.P.

CHECK BY: F.S.

NOTICE

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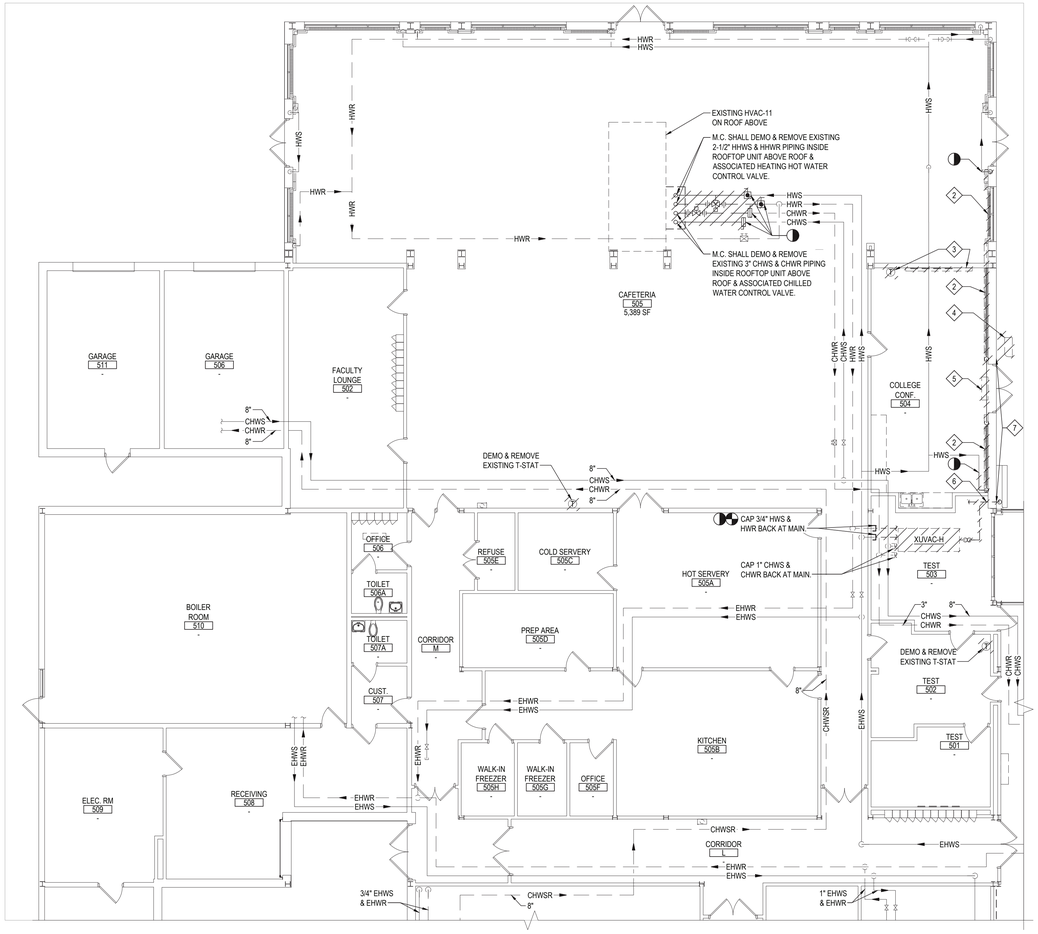
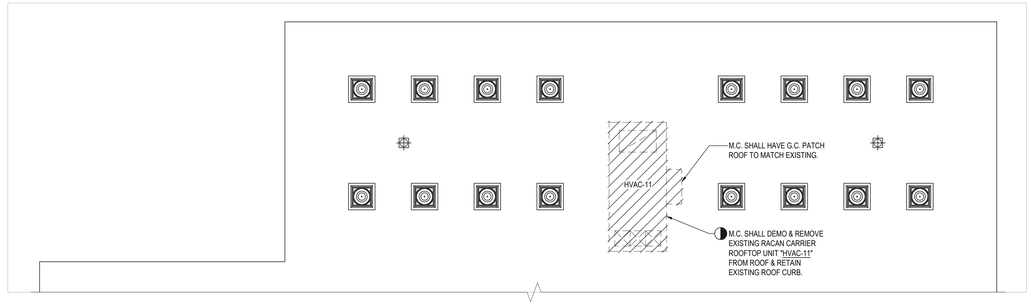
M1.04 | HSMS



1 GROUND FLOOR DEMOLITION PIPING PART PLAN - AREA "A"

NOTE:

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



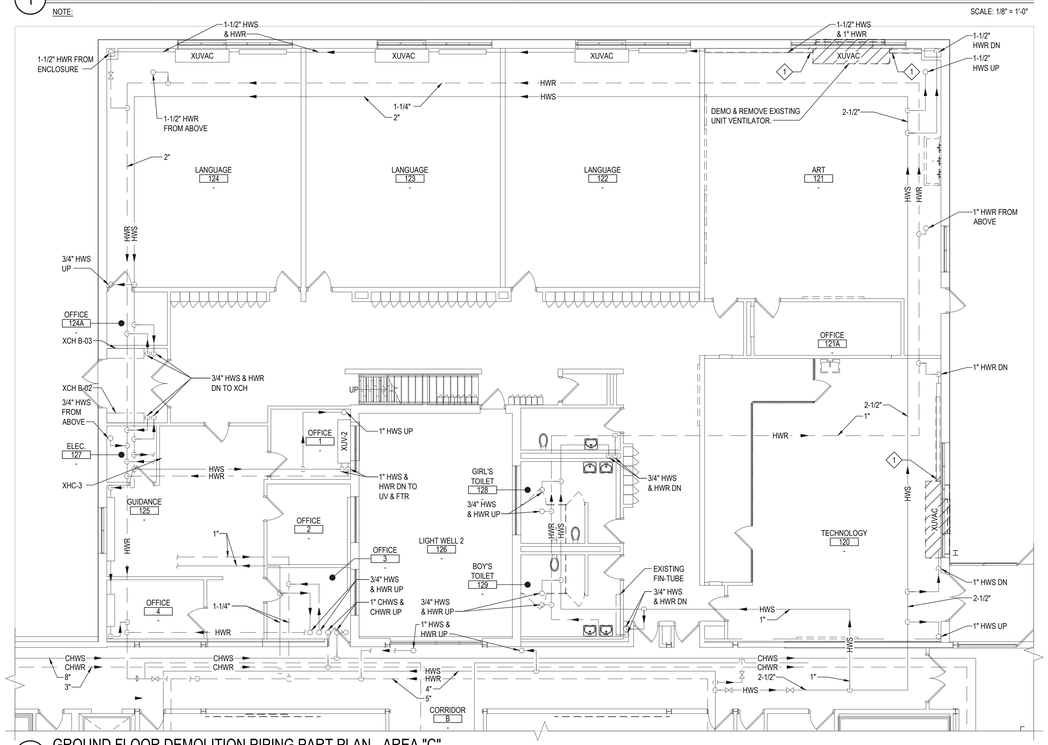
2 ROOF DEMOLITION PIPING PART PLAN - AREA "A"

NOTE:

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

MECHANICAL KEYED DEMOLITION NOTES:

1. M.C. TO CUT BACK EXISTING FIN-TUBE AND HOUSING AS REQUIRED TO ALLOW CLEARANCE FOR NEW U.V. INSTALLATION.
2. DEMO & REMOVE EXISTING FIN-TUBE RADIATION. CUT HWS & HWR BRANCH PIPING BACK AT MAIN.
3. DEMO & REMOVE EXISTING ELECTRIC FIN-TUBE RADIATION & ASSOCIATED T-STAT. M.C. TO COORDINATE REMOVAL WITH E.C.
4. DEMO & REMOVE EXISTING ACCU & ASSOCIATED REFRIGERANT PIPING.
5. DEMO & REMOVE EXISTING EXISTING SPLIT AC UNIT, ASSOCIATED REFRIGERANT AND CONDENSATE PIPING.
6. DEMO & REMOVE EXISTING 1" DR IN IT'S ENTIRETY.
7. M.C. TO PATCH WALL OPENINGS TO MATCH EXISTING. REFER TO ARCHITECTURAL DRAWINGS FOR ADDITIONAL INFORMATION.



4 GROUND FLOOR DEMOLITION PIPING PART PLAN - AREA "C"

NOTE:

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

REV.	DATE	ITEM

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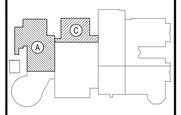

KEY PLAN

NOT TO SCALE

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PHASE 2 BOND IMPROVEMENTS
BRIARCLIFF MANOR MIDDLE/HIGH SCHOOL
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PROJECT

DEMOLITION PIPING PART PLAN - AREA A & C

DWG TITLE

DRAWING BY: R.D.P.

CHECK BY: F.S.

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DWG TITLE DEMOLITION PIPING PART PLAN AREA A & C

SCALE: AS NOTED

DATE: 7/15/22

BID PICK-UP:

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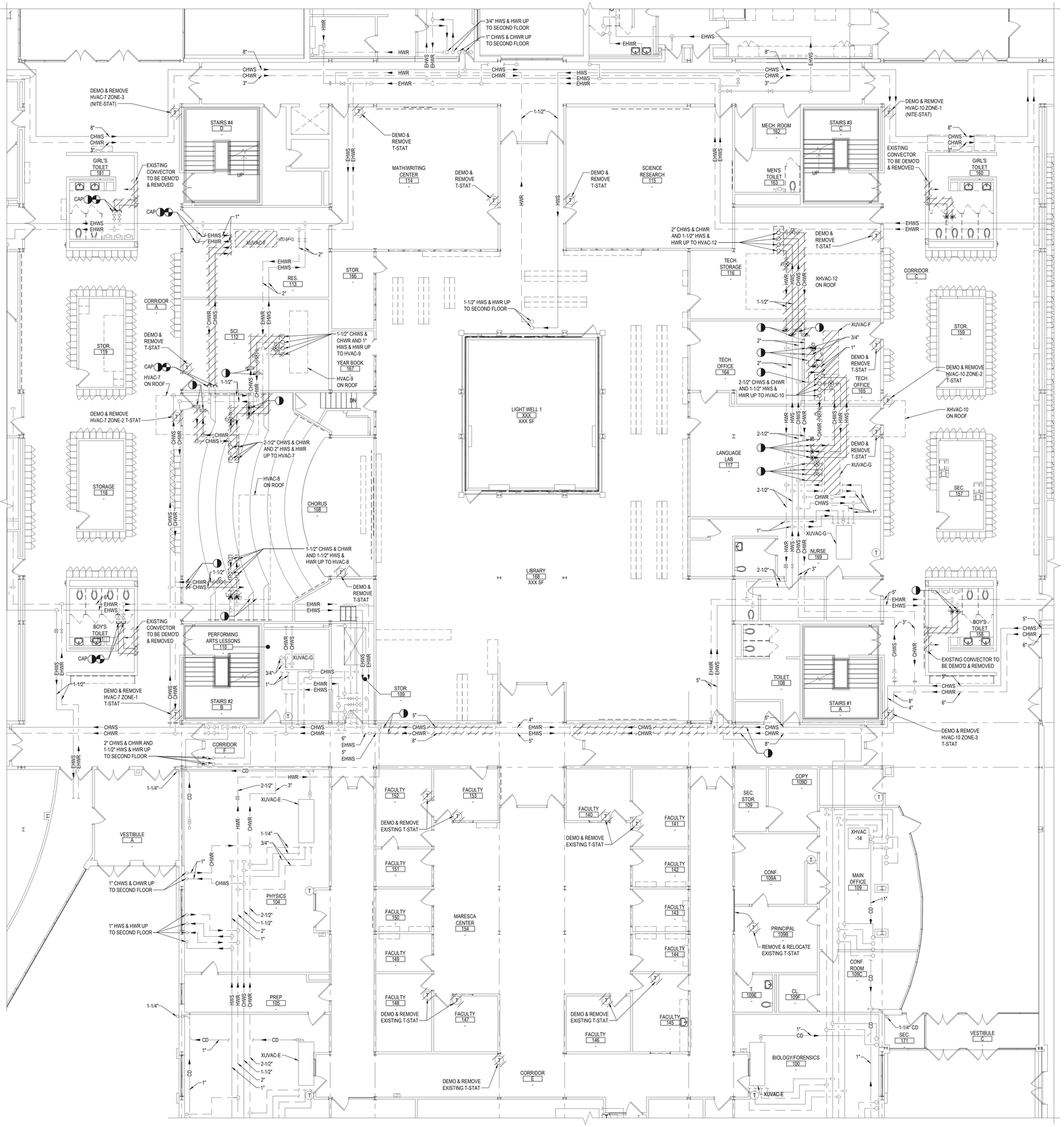
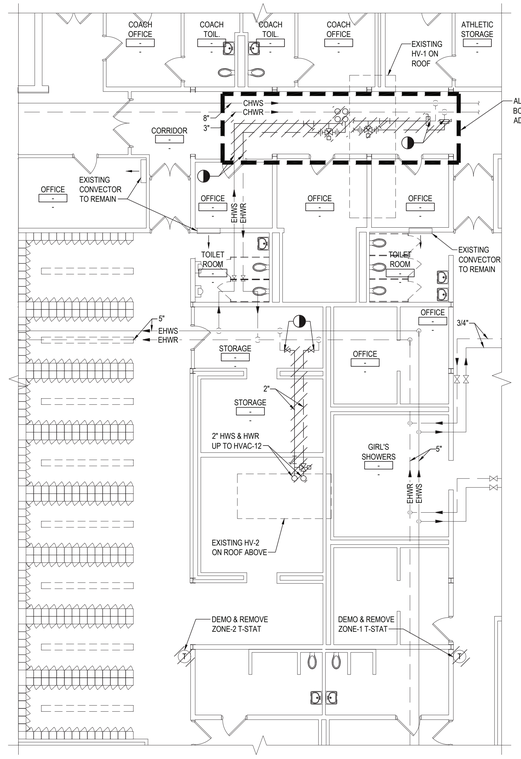


1 GROUND FLOOR DEMOLITION PIPING PART PLAN - AREA "D"

NOTE:

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



1 GROUND FLOOR DEMOLITION PIPING PART PLAN - AREA "E"

NOTE:

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

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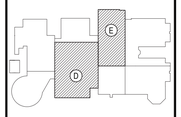

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NOT TO SCALE

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444 PLEASANTVILLE RD, BRIARCLIFF MANOR, NY 10510

PROJECT

DEMOLITION PIPING PART PLANS - AREA D & E

DWG TITLE

DRAWING BY: R.D.P.

CHECK BY: F.S.

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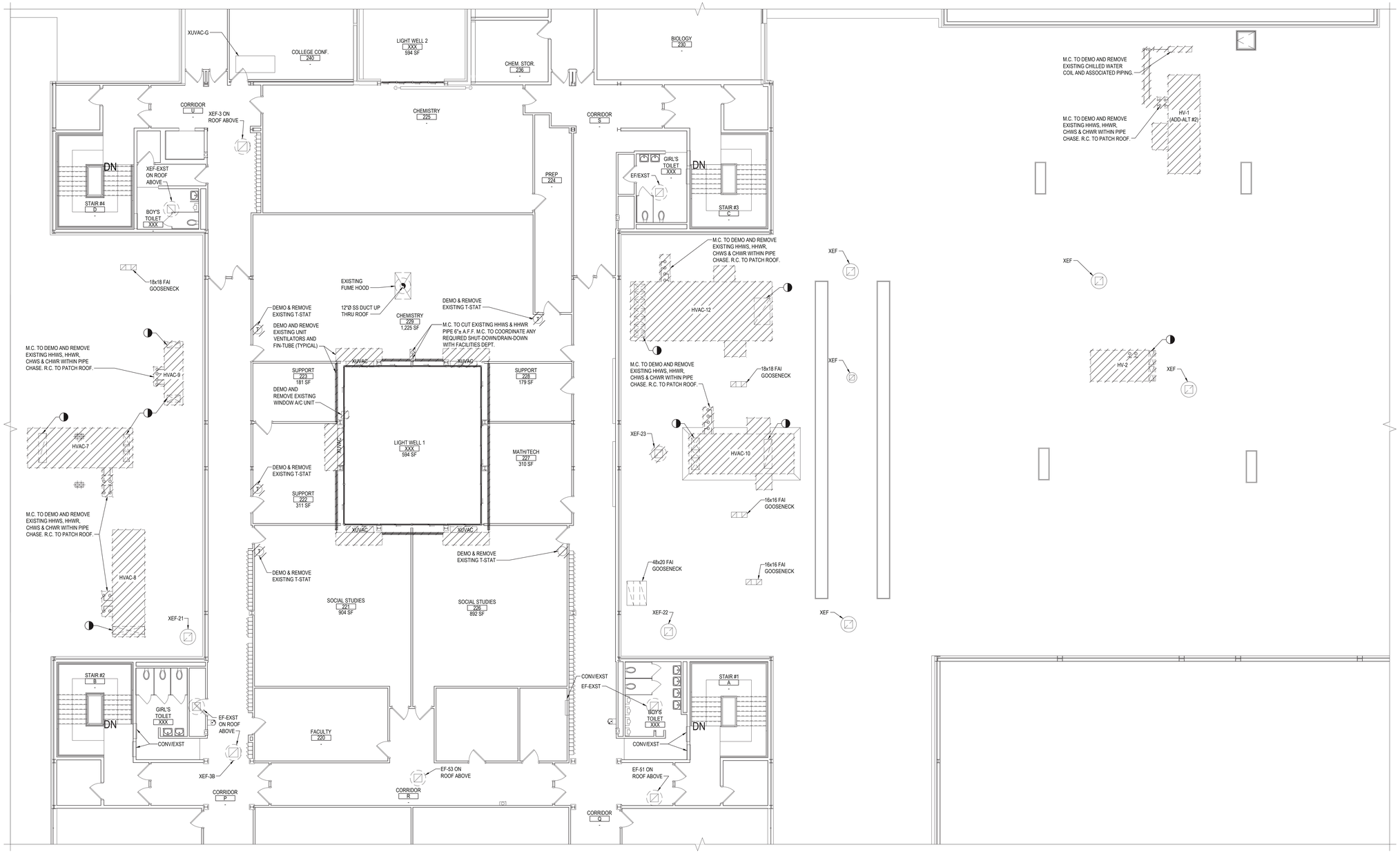

1 SECOND FLOOR AND ROOF DEMOLITION PIPING PART PLAN - AREA "D & E"

NOTE:

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

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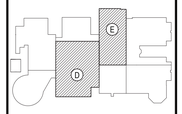

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DWG TITLE

SECOND FLOOR AND ROOF DEMOLITION PIPING PART PLAN - AREA D & E

DRAWING BY: R.D.P.

CHECK BY: F.S.

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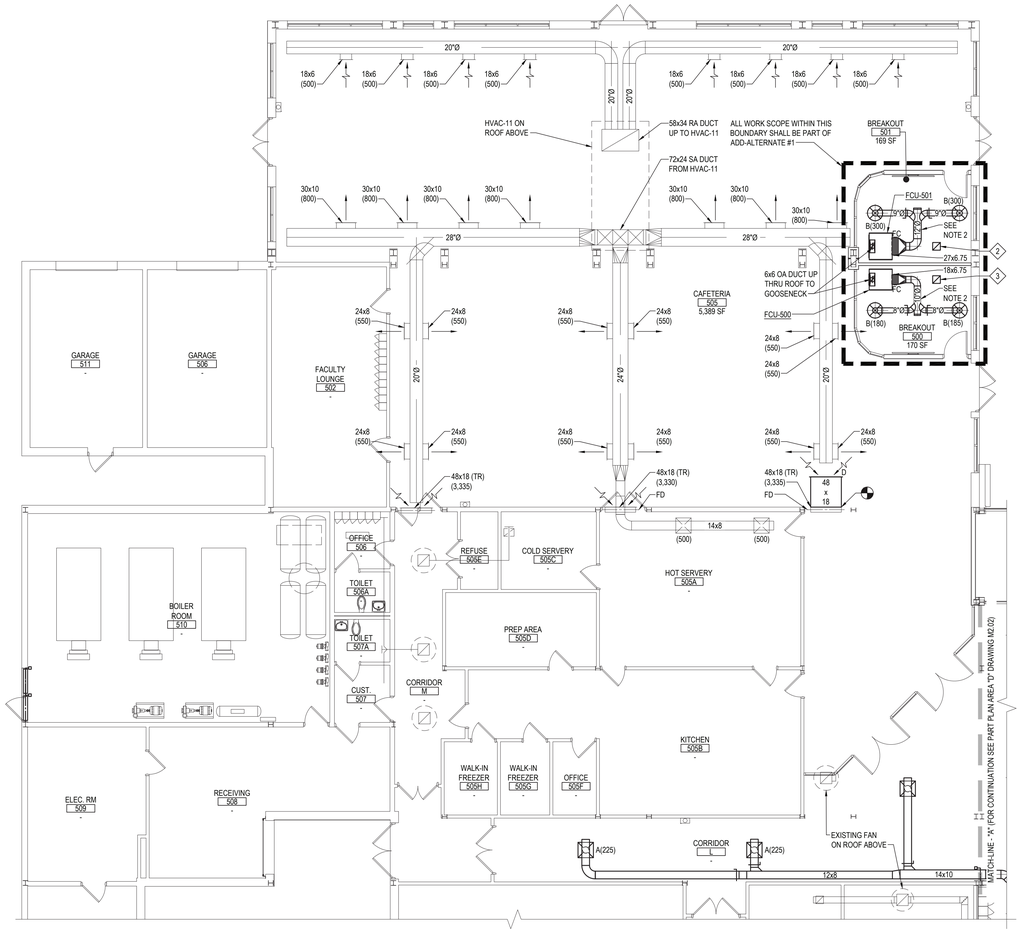
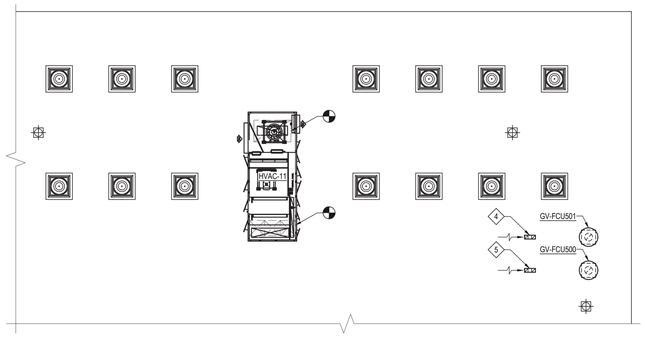


1 GROUND FLOOR PROPOSED HVAC PART PLAN - AREA "A"

NOTE:

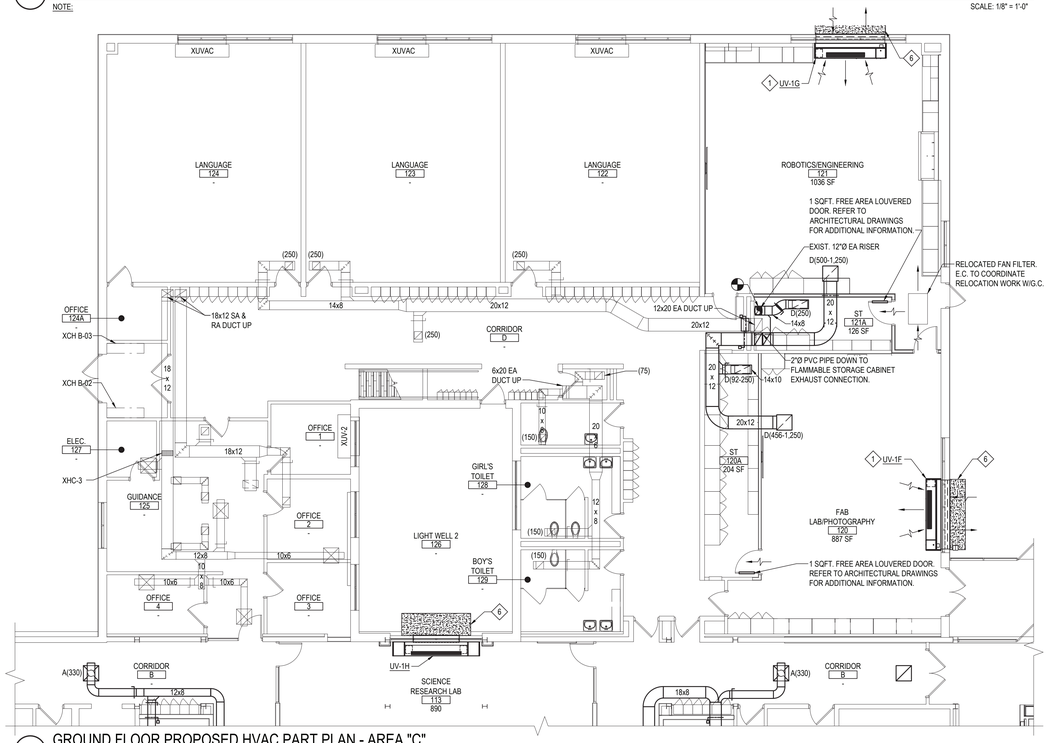
SCALE: 1/8" = 1'-0"



3 ROOF PROPOSED HVAC PART PLAN - AREA "A"

NOTE:

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



2 GROUND FLOOR PROPOSED HVAC PART PLAN - AREA "C"

NOTE:

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

NEW WORK NOTE:

ALL EXPOSED SPIRAL ROUND DUCTWORK SHALL BE INTERNALLY LINED. ALL HIDDEN DUCTWORK SHALL SHALL EXTERNALLY WRAPPED WITH INSULATION. REFER TO MECHANICAL SPECIFICATIONS FOR ADDITIONAL INFORMATION.

NEW WORK KEYED NOTES:

1. M.C. TO HAVE G.C. EXPAND EXISTING BRICK WALL OPENING (EQUALLY FROM CENTERLINE OF EXISTING OPENING) TO 108x28. M.C. TO FURNISH & INSTALL NEW OUTDOOR AIR INTAKE NON-FLANGED LOUVER. REFER TO SCHEDULES & DETAILS ON DRAWING M6.05 FOR ADDITIONAL INFORMATION. M.C. TO INSTALL NEW UNIT VENTILATOR SHOWN & CENTER IT WITH EXISTING OUTSIDE AIR INTAKE/DISCHARGE OPENING ON EXTERIOR WALL SHOWN. NEW UNIT VENTILATOR SHALL BE A FACE-AND-BYPASS DAMPER TYPE. M.C. TO PROVIDE 10" LENGTH 18-GAUGE FIN TUBE COVERS ON EACH SIDE OF NEW UNIT VENTILATOR. M.C. TO VERIFY ALL DIMENSIONS PRIOR TO START OF ANY WORK. REFER TO SCHEDULES, DETAILS AND MECHANICAL SPECIFICATIONS FOR ADDITIONAL INFORMATION.
2. 12x12 RELIEF AIR DUCT UP THRU ROOF TO GRAVITY VENTILATOR GV-FCU501. TERMINATE ±1'-0" BELOW UNDERSIDE OF DECK W/WMS.
3. 12x12 RELIEF AIR DUCT UP THRU ROOF TO GRAVITY VENTILATOR GV-FCU500. TERMINATE ±1'-0" BELOW UNDERSIDE OF DECK W/WMS.
4. 6x6 OA DUCT DN THRU ROOF TO FCU-501. TERMINATE WITH GOOSENECK ABOVE ROOF W/WMS. BOTTOM OF OPEN END OF GOOSENECK SHALL BE A MINIMUM OF 3'-0" ABOVE FINISHED ROOF SURFACE.
5. 6x6 OA DUCT DN THRU ROOF TO FCU-500. TERMINATE WITH GOOSENECK ABOVE ROOF W/WMS. BOTTOM OF OPEN END OF GOOSENECK SHALL BE A MINIMUM OF 3'-0" ABOVE FINISHED ROOF SURFACE.
6. CONCRETE PAD (REFER TO ARCH. DRAWINGS FOR ADDITIONAL INFORMATION)

MECHANICAL NOTES:

1. UNLESS NOTED OTHERWISE, ALL BRANCH DUCTS SERVING AIR DEVICES SHALL BE 12x6
2. M.C. SHALL PAINT ALL EXPOSED AND PARTIALLY EXPOSED (DUCTS ABOVE OPEN SLAT CEILINGS) DUCT INSULATION. COORDINATE DUCT INSULATION TO BE PAINTED WITH ARCHITECT APPROVED REFLECTED CEILING PLANS. PAINT COLOR AND TYPE TO BE SPECIFIED BY ARCHITECT OF RECORD. REFER TO ARCHITECTURAL DRAWINGS FOR ADDITIONAL INFORMATION.

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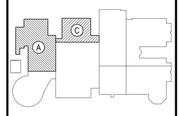

KEY PLAN

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DWG TITLE

PROPOSED HVAC PLAN - AREA A & C

DRAWING BY: R.D.P.

CHECK BY: F.S.

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FILE No:	21-274C

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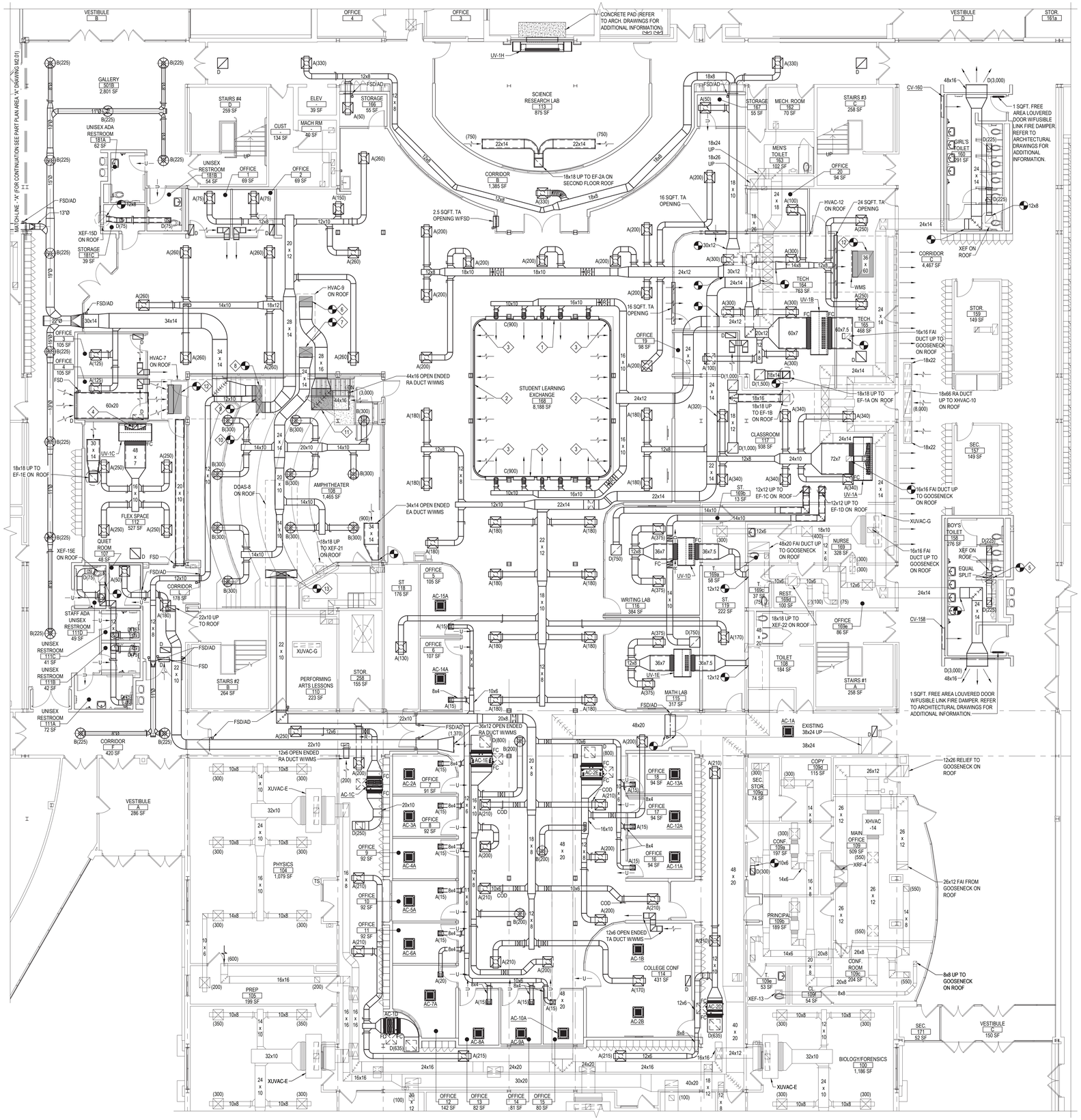


1 GROUND FLOOR PROPOSED HVAC PART PLAN - AREA "D"

NOTE:

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

KEYED MECHANICAL NOTES:

1. 21'-10-3/4" LONG CONTINUOUS SUPPLY AIR, LINEAR SLOT DIFFUSER W/18'-0" ACTIVE LENGTH @ 50 CFM/L.F. SHADED AREA INDICATES BLACK, BLANK-OFF PLATE INSTALLED BEHIND INACTIVE PORTION OF LINEAR. REFER TO LINEAR PATTERN CONTROLLER NOTE BELOW.
2. 25'-11" LONG CONTINUOUS RETURN AIR, LINEAR SLOT DIFFUSER
3. CONTINUOUS LINEAR DIFFUSERS - FACTORY CURVED MITER CORNERS TO BE FURNISHED BY ANEMOSTAT.
4. 16x16 OA DUCT UP THRU ROOF TO GOOSENECK.
5. CONNECT TO EXISTING 18x18 BELOW UNDERSIDE OF DECK. TRANSITION TO 12x12 IN DROP.
6. SHADED AREA REPRESENTS DUCT SILENCER ELBOW TO BE CONNECTED TO EXISTING 30x12 RA DUCT UP TO HVAC-9 ON ROOF. REFER TO SCHEDULES AND SPECIFICATIONS FOR ADDITIONAL INFORMATION.
7. SHADED AREA REPRESENTS DUCT SILENCER ELBOW TO BE CONNECTED TO EXISTING 30x16 SA DUCT UP TO HVAC-9 ON ROOF. REFER TO SCHEDULES AND SPECIFICATIONS FOR ADDITIONAL INFORMATION.
8. SHADED AREA REPRESENTS DUCT SILENCER ELBOW TO BE CONNECTED TO EXISTING 14x24 (ZONE 1) SA DUCT UP TO HVAC-7 ON ROOF. REFER TO SCHEDULES AND SPECIFICATIONS FOR ADDITIONAL INFORMATION.
9. SHADED AREA REPRESENTS DUCT SILENCER ELBOW TO BE CONNECTED TO EXISTING 14x14 (ZONE 2) SA DUCT UP TO HVAC-7 ON ROOF. REFER TO SCHEDULES AND SPECIFICATIONS FOR ADDITIONAL INFORMATION.
10. SHADED AREA REPRESENTS DUCT SILENCER ELBOW TO BE CONNECTED TO EXISTING 14x24 (ZONE 3) SA DUCT UP TO HVAC-7 ON ROOF. REFER TO SCHEDULES AND SPECIFICATIONS FOR ADDITIONAL INFORMATION.
11. SHADED AREA REPRESENTS 44x16 RA DUCT SILENCER ELBOW. REFER TO SCHEDULES AND SPECIFICATIONS FOR ADDITIONAL INFORMATION.
12. SHADED AREA REPRESENTS DUCT SILENCER ELBOW TO BE CONNECTED TO EXISTING 16x66 RA DUCT UP TO HVAC-7 ON ROOF. REFER TO SCHEDULES AND SPECIFICATIONS FOR ADDITIONAL INFORMATION.
13. SHADED AREA REPRESENTS DUCT SILENCER ELBOW TO BE CONNECTED TO EXISTING 22x10 SA DUCT UP TO DOAS-8 ON ROOF. REFER TO SCHEDULES AND SPECIFICATIONS FOR ADDITIONAL INFORMATION.

MECHANICAL NOTES:

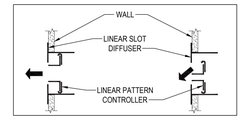
1. UNLESS NOTED OTHERWISE, ALL BRANCH DUCTS SERVING AIR DEVICES SHALL BE 12x6
2. M.C. SHALL PAINT ALL EXPOSED AND PARTIALLY EXPOSED (DUCTS ABOVE OPEN SLAT CEILINGS) DUCT INSULATION. COORDINATE DUCT INSULATION TO BE PAINTED WITH ARCHITECT APPROVED REFLECTED CEILING PLANS. PAINT COLOR AND TYPE TO BE SPECIFIED BY ARCHITECT OF RECORD. REFER TO ARCHITECTURAL DRAWINGS FOR ADDITIONAL INFORMATION.

NEW WORK NOTE:

ALL EXPOSED SPIRAL ROUND DUCTWORK SHALL BE INTERNALLY LINED. ALL HIDDEN DUCTWORK SHALL SHALL EXTERNALLY WRAPPED WITH INSULATION. REFER TO MECHANICAL SPECIFICATIONS FOR ADDITIONAL INFORMATION.

LINEAR PATTERN CONTROLLER NOTES:

1. M.C. TO ADJUST (SUPPLY AIR) LINEAR SLOT DIFFUSER, PATTERN CONTROLLERS AS SHOWN, (ALTERNATING EACH 2'-0" SECTION) BETWEEN HORIZONTAL THROW AND 45° DOWNWARD THROW PATTERNS.



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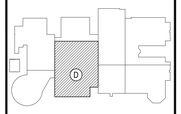

KEY PLAN

NOT TO SCALE

BRIARCLIFF MANOR U.F.S.D.
PHASE 2 BOND IMPROVEMENTS
BRIARCLIFF MANOR MIDDLE/HIGH SCHOOL
444 PLEASANTVILLE RD, BRIARCLIFF MANOR, NY 10510

PROJECT

PROPOSED HVAC PLAN - AREA D

DWG TITLE

DRAWING BY: R.D.P.

CHECK BY: F.S.

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SED No.	66-14-02-02-0-004-023
DISTRICT	BRIARCLIFF MANOR UFSD
PROJECT	PHASE 2 BOND IMPROVEMENTS
DWG TITLE	PROPOSED HVAC PLAN AREA D
SCALE:	AS NOTED
DATE:	7/15/22
BID PICK-UP:	
FILE No:	21-274C

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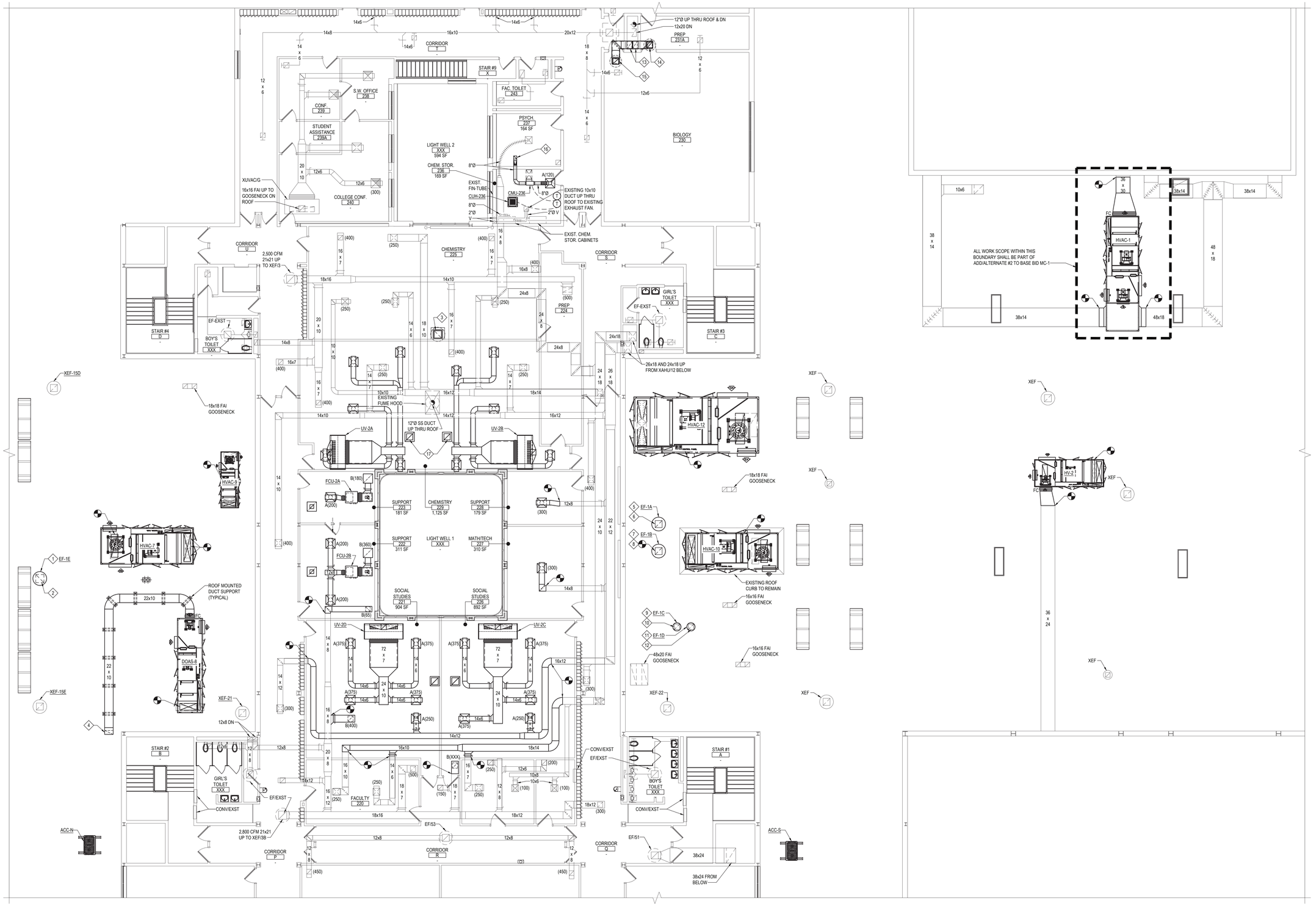

1 PROPOSED HVAC SECOND FLOOR AND ROOF PART PLAN - AREA "D & E"

NOTE:

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

KEYED MECHANICAL NOTES:

1. M.C. TO FURNISH & INSTALL NEW EXHAUST FAN (EF-1E). M.C. TO FURNISH NEW ROOF CURB TO R.C. FOR R.C. TO INSTALL & FLASH WITH M.C. PRESENT. REFER TO DRAWING M6.07 SCHEDULES & DETAILS FOR ADDITIONAL INFORMATION.
2. 18x18 A.L. EA DUCT DN THRU ROOF, (FOR CONTINUATION, SEE DRAWING M2.02).
3. 18x18 A.L. EA DUCT UP THRU ROOF & DOWN THRU SLAB, (FOR CONTINUATION, SEE DRAWING M2.02).
4. 22x10 RA DUCT DN THRU EXISTING ROOF OPENING. M.C. TO PROVIDE R.C. WITH 18" HIGH INSULATED CURB. R.C. TO INSTALL. M.C. TO HAVE R.C. PATCH REMAINING UNUSED PORTION OF OPENING TO MATCH EXISTING ROOF AND FLASH NEW DUCTWORK.
5. M.C. TO FURNISH & INSTALL NEW EXHAUST FAN (EF-1A). M.C. TO FURNISH NEW ROOF CURB TO R.C. FOR R.C. TO INSTALL & FLASH WITH M.C. PRESENT. REFER TO DRAWING M6.07 SCHEDULES & DETAILS FOR ADDITIONAL INFORMATION.
6. 18x18 A.L. EA DUCT DN THRU ROOF, (FOR CONTINUATION, SEE DRAWING M2.02).
7. M.C. TO FURNISH & INSTALL NEW EXHAUST FAN (EF-1B) ON EXISTING ROOF CURB. M.C. TO FURNISH NEW ROOF CURB ADAPTER. REFER TO DRAWING M6.07 SCHEDULES & DETAILS FOR ADDITIONAL INFORMATION.
8. M.C. EXTEND EXISTING 18x18 A.L. EA DUCT AS REQUIRED, (FOR CONTINUATION, SEE DRAWING M2.02).
9. M.C. TO FURNISH & INSTALL NEW EXHAUST FAN (EF-1C). M.C. TO FURNISH NEW ROOF CURB TO R.C. FOR R.C. TO INSTALL & FLASH WITH M.C. PRESENT. REFER TO DRAWING M6.07 SCHEDULES & DETAILS FOR ADDITIONAL INFORMATION.
10. 12x12 A.L. EA DUCT DN THRU ROOF, (FOR CONTINUATION, SEE DRAWING M2.02).
11. M.C. TO FURNISH & INSTALL NEW EXHAUST FAN (EF-1D). M.C. TO FURNISH NEW ROOF CURB TO R.C. FOR R.C. TO INSTALL & FLASH WITH M.C. PRESENT. REFER TO DRAWING M6.07 SCHEDULES & DETAILS FOR ADDITIONAL INFORMATION.
12. 12x12 A.L. EA DUCT DN THRU ROOF, (FOR CONTINUATION, SEE DRAWING M2.02).
13. 12x20 ACOUSTICALLY LINED EA DUCT DN THRU EXISTING SHAFT TO GROUND FLOOR. (FOR CONTINUATION, SEE DRAWING M2.01).
14. 16x16 ACOUSTICALLY LINED EA DUCT UP THRU ROOF TO EF-2B. (FOR CONTINUATION, SEE DRAWING M2.01).
15. 16x16 ACOUSTICALLY LINED EA DUCT UP THRU ROOF TO EF-2A. (FOR CONTINUATION, SEE DRAWING M2.01).
16. 18x18 OA DUCT UP THRU ROOF TO GOOSENECK. (FOR CONTINUATION, SEE DRAWING M3.03).
17. 16x16 OA DUCT UP THRU ROOF TO GRAVITY VENTILATOR. (FOR CONTINUATION, SEE DRAWING M3.03).

NEW WORK NOTE:

ALL EXPOSED SPIRAL ROUND DUCTWORK SHALL BE INTERNALLY LINED. ALL HIDDEN DUCTWORK SHALL SHALL EXTERNALLY WRAPPED WITH INSULATION. REFER TO MECHANICAL SPECIFICATIONS FOR ADDITIONAL INFORMATION.

REV.	DATE	ITEM

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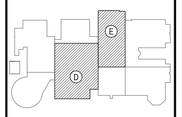

KEY PLAN

NOT TO SCALE

PROJECT: BRIARCLIFF MANOR U.F.S.D.
PHASE 2 BOND IMPROVEMENTS
BRIARCLIFF MANOR MIDDLE/HIGH SCHOOL
444 PLEASANTVILLE RD, BRIARCLIFF MANOR, NY 10510

DWG TITLE: PROPOSED HVAC SECOND FLOOR AND ROOF PART PLAN - AREA D & E

DRAWING BY:	R.D.P.
CHECK BY:	F.S.

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SED No.	66-14-02-02-0-004-023
DISTRICT	BRIARCLIFF MANOR UFSD
PROJECT	PHASE 2 BOND IMPROVEMENTS
DWG TITLE	PROPOSED HVAC ROOF PLAN AREA D & E
SCALE:	AS NOTED
DATE:	7/15/22
BID PICK-UP:	
FILE No:	21-274C

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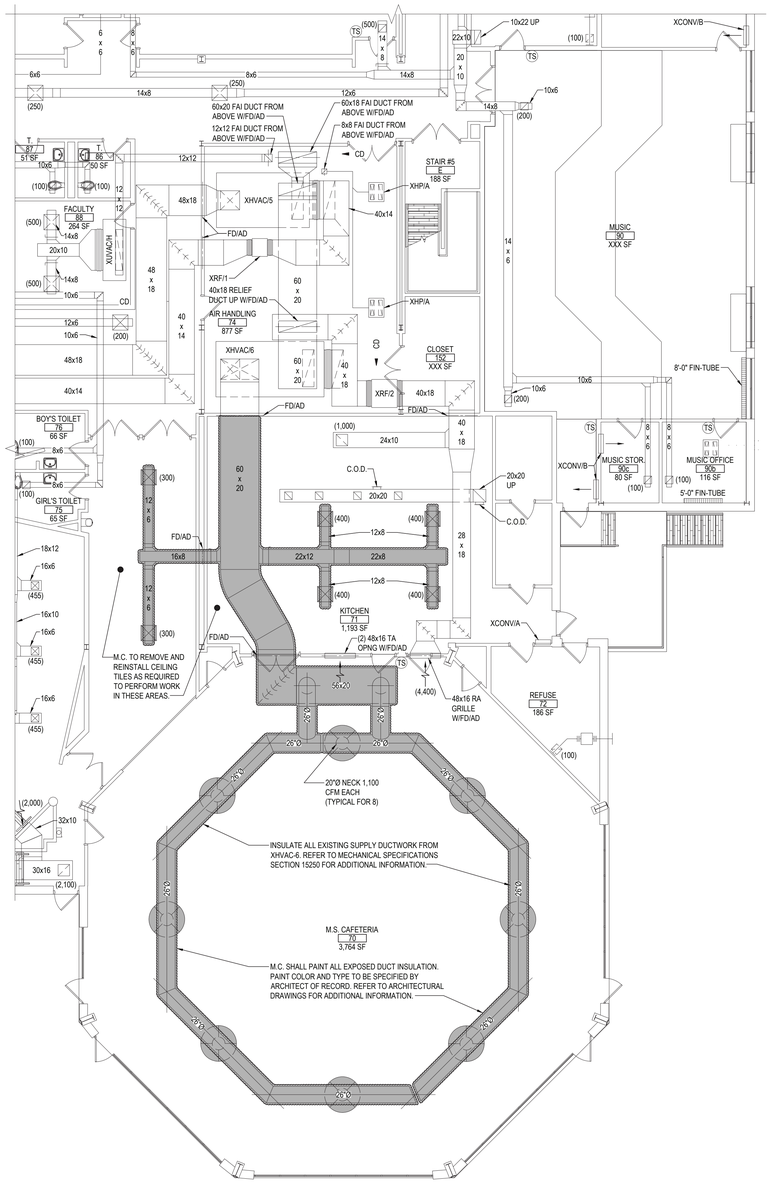
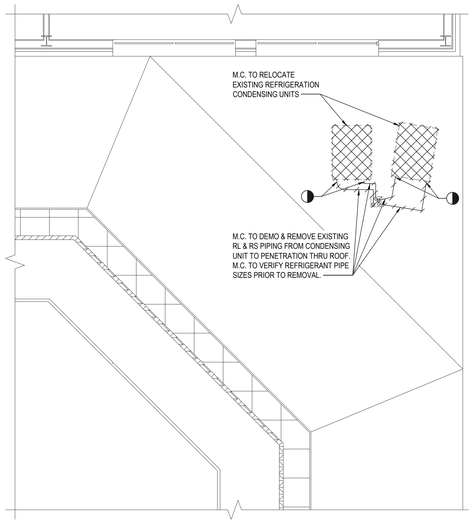


PROPOSED HVAC PART PLAN - AREA "H"

NOTE:
ALL DUCTWORK SHOWN IS EXISTING.

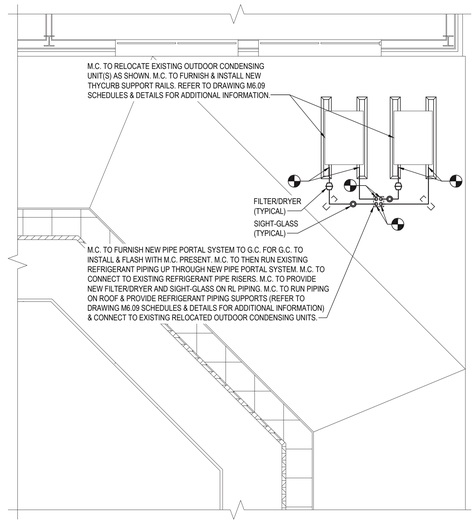
SCALE: 1/8" = 1'-0"



DEMOLITION HVAC PART PLAN - AREA "H" - ROOF

NOTE:

SCALE: 1/4" = 1'-0"



PROPOSED HVAC PART PLAN - AREA "H" - ROOF

NOTE:

SCALE: 1/4" = 1'-0"

REV.	DATE	ITEM

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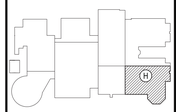

KEY PLAN

NOT TO SCALE

PROJECT

BRIARCLIFF MANOR U.F.S.D.
PHASE 2 BOND IMPROVEMENTS
BRIARCLIFF MANOR MIDDLE/HIGH SCHOOL
444 PLEASANTVILLE RD, BRIARCLIFF MANOR, NY 10510

DWG TITLE

DEMOLITION AND PROPOSED
HVAC PLAN - AREA H

DRAWING BY: R.D.P.

CHECK BY: F.S.

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DISTRICT BRIARCLIFF MANOR UFSD

PROJECT PHASE 2 BOND IMPROVEMENTS

DWG TITLE DEMOLITION AND PROPOSED HVAC PLAN - AREA H

SCALE: AS NOTED

DATE: 7/15/22

BID PICK-UP:

FILE No: 21-274C

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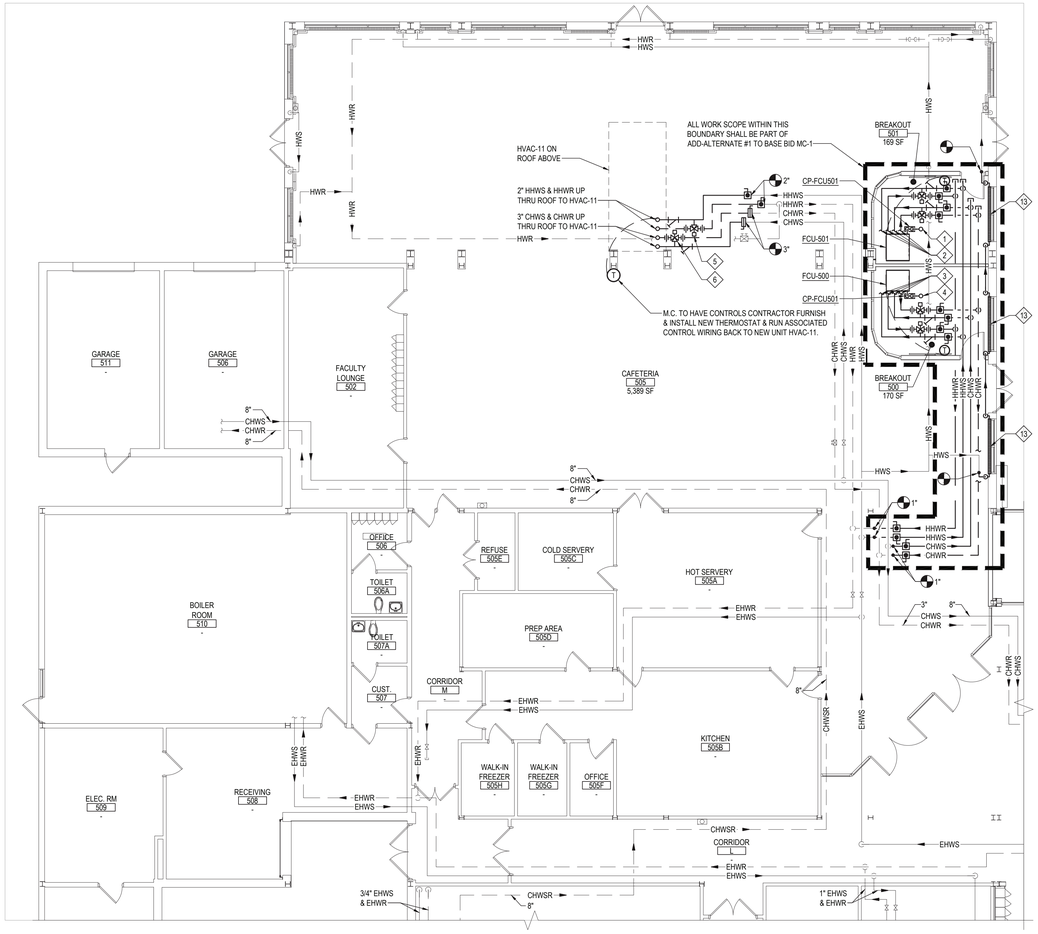
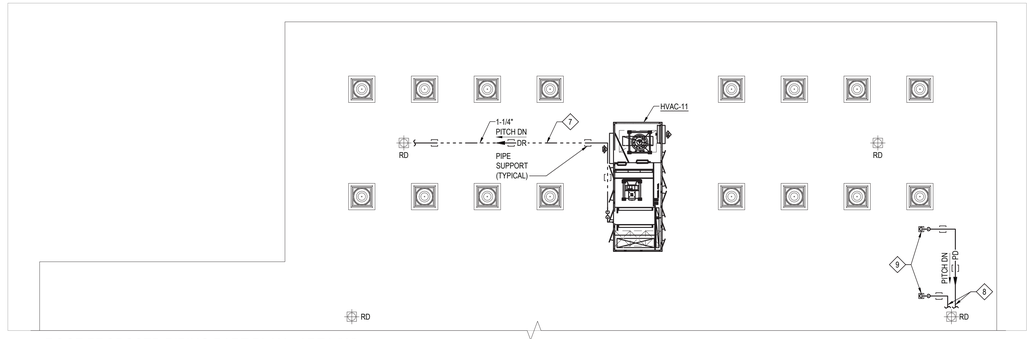


1 GROUND FLOOR PROPOSED PIPING PART PLAN - AREA "A"

NOTE:

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



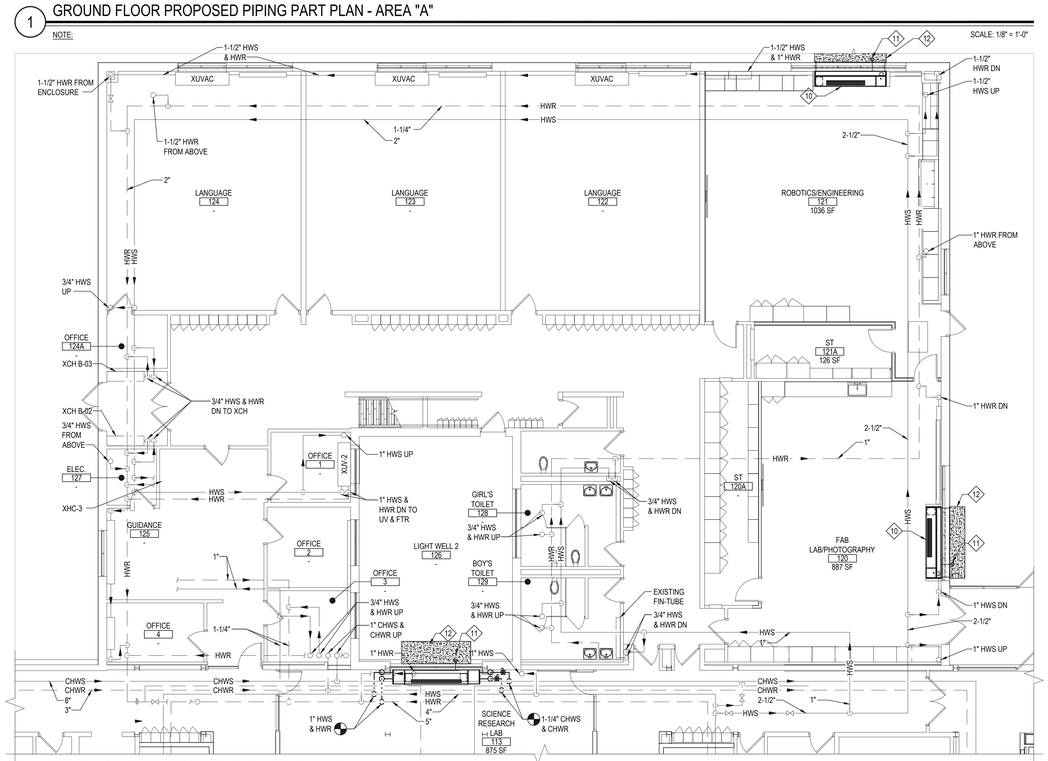
2 ROOF PROPOSED PIPING PART PLAN - AREA "A"

NOTE:

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

KEYED MECHANICAL NOTES:

1. 3/4" PD UP THRU ROOF.
2. 3/4" CHWS, CHWR, HHWS & HHWR TO FCU-501.
3. 3/4" PD UP THRU ROOF.
4. 3/4" CHWS, CHWR, HHWS & HHWR TO FCU-501.
5. M.C. TO HAVE CONTROLS CONTRACTOR FURNISH & INSTALL NEW DDC HOT WATER CONTROL VALVE FOR HVAC-11. REFER TO SCHEDULES, DETAILS AND SPECIFICATIONS FOR FURTHER DETAILS.
6. M.C. TO HAVE CONTROLS CONTRACTOR FURNISH & INSTALL NEW DDC CHILLED WATER CONTROL VALVE FOR HVAC-11. REFER TO SCHEDULES, DETAILS AND SPECIFICATIONS FOR FURTHER DETAILS.
7. M.C. TO RUN 1-1/4" CONDENSATE DRAIN (DR) TO NEAREST ROOF DRAIN. NEW CONDENSATE PIPING SHALL BE COPPER TUBING TYPE K HARD. PITCH VIA 1/8" VERTICAL DISTANCE FOR EVERY ONE FOOT HORIZONTAL DISTANCE.
8. M.C. TO RUN 3/4" CONDENSATE PUMP DISCHARGE (PD) TO NEAREST ROOF DRAIN. NEW CONDENSATE PIPING SHALL BE COPPER TUBING TYPE K HARD. PITCH VIA 1/8" VERTICAL DISTANCE FOR EVERY ONE FOOT HORIZONTAL DISTANCE.
9. M.C. TO FURNISH NEW PIPE PORTAL SYSTEM TO R.C. FOR R.C. TO INSTALL & FLASH WITH M.C. PRESENT. M.C. TO THEN RUN NEW CONDENSATE DISCHARGE PIPING UP THROUGH NEW PIPE PORTAL SYSTEM & RUN PIPING ON ROOF & PROVIDE PIPING SUPPORTS (REFER TO DRAWING M6.09 SCHEDULES & DETAILS FOR ADDITIONAL INFORMATION).
10. M.C. TO INSTALL NEW SELF-CONTAINED UNIT VENTILATOR SHOWN & CENTER IT WITH EXISTING OUTSIDE AIR INTAKE/DISCHARGE OPENING ON EXTERIOR WALL SHOWN. G.C. TO EXPAND EXISTING WALL OPENING AS REQUIRED TO ALLOW INSTALLATION OF NEW UNIT VENTILATOR. M.C. TO ALSO INSTALL NEW 1-1/4" HWS & 1-1/2" HWR PIPING PASSING BEHIND NEW UNIT VENTILATOR WIDTH INSIDE THE FULL ADAPTOR BACK OF NEW UNIT VENTILATOR. M.C. TO INSTALL NEW 1" HWS & HWR BRANCH PIPING GOING TO NEW UNIT VENTILATOR HOT WATER COIL. NEW UNIT VENTILATOR SHALL BE A FACE-AND-BYPASS DAMPER TYPE. M.C. TO ALSO PROVIDE 10" LENGTH 18-GAUGE FIN TUBE COVERS ON EACH SIDE OF NEW UNIT VENTILATOR. M.C. TO VERIFY ALL DIMENSIONS PRIOR TO START OF ANY WORK. ALL EXISTING CABINETRY TO REMAIN IN PLACE. EXISTING RELIEF AIR SYSTEM SHALL REMAIN & BE RE-USED. REFER TO SCHEDULES & DETAILS ON DRAWING M6.02 FOR ADDITIONAL INFORMATION.
11. M.C. TO RUN NEW 3/4" TYPE K HARD COPPER PIPING FOR CONDENSATE DRAIN LINE VIA GRAVITY OUT OF EXTERIOR WALL AS SHOWN WITH TAMPER RESISTANT SCREEN ON DISCHARGE OPENING. G.C. TO CUT OPENING FOR 3/4" CONDENSATE DRAIN PIPING WITH M.C. PRESENT.
12. CONCRETE PAD (REFER TO ARCH. DRAWINGS FOR ADDITIONAL INFORMATION)
13. 7'-0" ACTIVE LENGTH FINE-TUBE RADIATION, (800 BTU/LF). PEDESTAL TYPE ENCLOSURE. REFER TO SCHEDULES & DETAILS FOR ADDITIONAL INFORMATION



4 GROUND FLOOR PROPOSED PIPING PART PLAN - AREA "C"

NOTE:

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

REV.	DATE	ITEM

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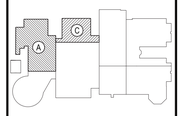

KEY PLAN

NOT TO SCALE

BRIARCLIFF MANOR U.F.S.D.
PHASE 2 BOND IMPROVEMENTS
BRIARCLIFF MANOR MIDDLE/HIGH SCHOOL
444 PLEASANTVILLE RD, BRIARCLIFF MANOR, NY 10510

PROJECT

PROPOSED PIPING PLAN - AREA A & C

DWG TITLE

DRAWING BY: R.D.P.

CHECK BY: F.S.

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SED No. 66-14-02-02-0-004-023

DISTRICT BRIARCLIFF MANOR UFSD

PROJECT PHASE 2 BOND IMPROVEMENTS

DWG TITLE PROPOSED PIPING PLAN AREA A & C

SCALE: AS NOTED

DATE: 7/15/22

BID PICK-UP:

FILE No: 21-274C

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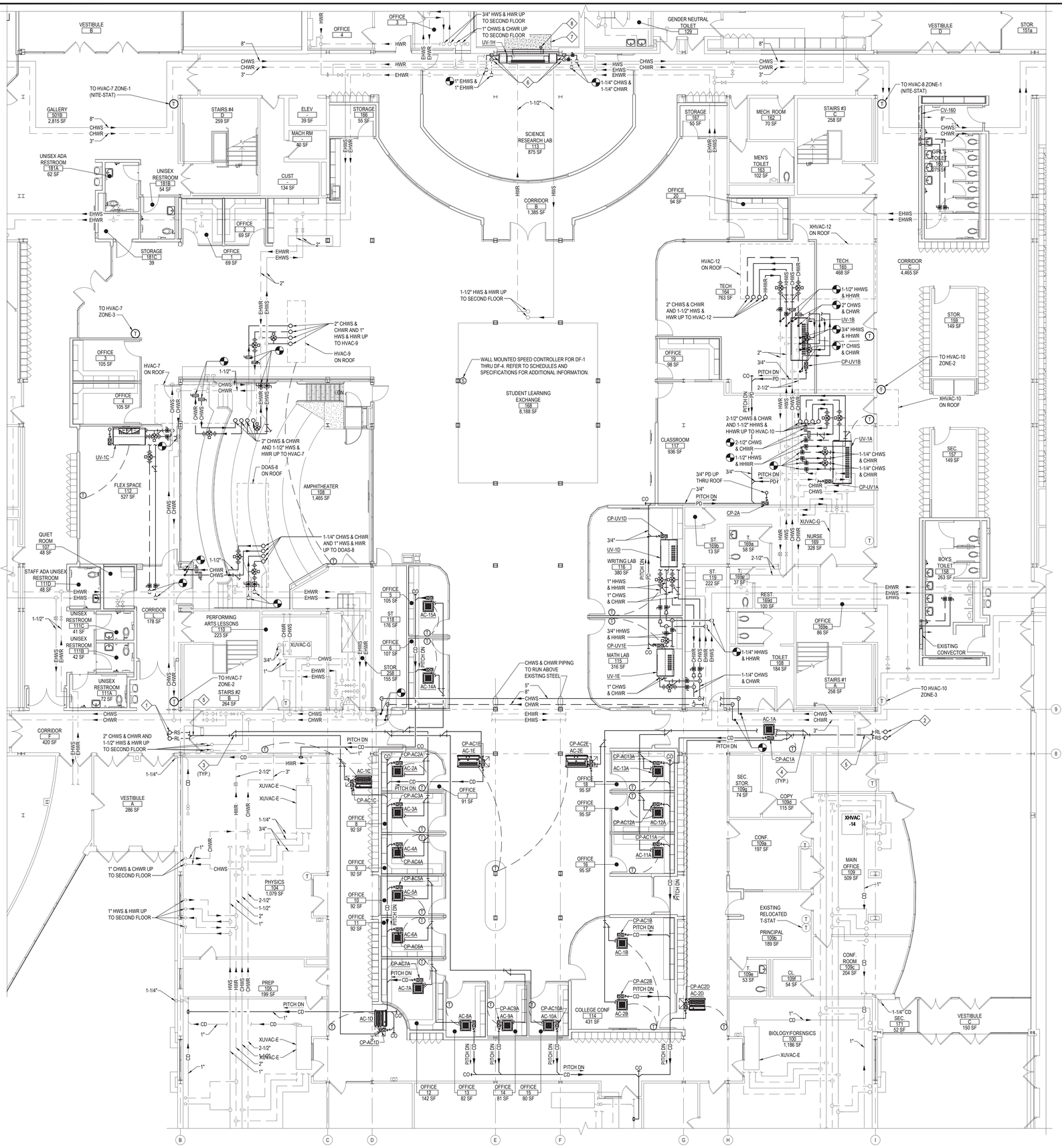

KEYED MECHANICAL NOTES:

1. 1/2" RL & 1-1/8" RS UP THRU ROOF TO ACC-N.
2. 1/2" RL & 1-1/8" RS UP THRU ROOF TO ACC-S.
3. REFRIGERANT Y-BRANCH KIT. REFER TO DWG. M6.02 AAC-N SYSTEM TREE DIAGRAM FOR MODEL, SIZE AND ADDITIONAL INFORMATION.
4. REFRIGERANT Y-BRANCH KIT. REFER TO DWG. M6.02 AAC-S SYSTEM TREE DIAGRAM FOR MODEL, SIZE AND ADDITIONAL INFORMATION.
5. FOR CLARITY, FROM THIS POINT ON, SINGLE LINE REFRIGERANT PIPE REPRESENTS REFRIGERANT LIQUID & REFRIGERANT SUCTION LINE-SETS. REFER TO SCHEDULES, NOTES & DETAILS ON DWG. M6.02 FOR PIPE SIZES.
6. M.C. TO RUN PIPING WITHIN ARCHITECT PROVIDED PIPE CHASE. REFER TO ARCHITECTURAL DRAWINGS FOR ADDITIONAL INFORMATION.
7. CONCRETE PAD (REFER TO ARCH. DRAWINGS FOR ADDITIONAL INFORMATION)
8. M.C. TO RUN NEW 3/8" TYPE K HARD COPPER PIPING FOR CONDENSATE DRAIN LINE VIA GRAVITY OUT OF EXTERIOR WALL AS SHOWN WITH TAMPER RESISTANT SCREEN ON DISCHARGE OPENING. G.C. TO CUT OPENING FOR 3/8"- CONDENSATE DRAIN PIPING WITH M.C. PRESENT.

1 GROUND FLOOR PROPOSED PIPING PART PLAN - AREA "D"

NOTE:

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

REV.	DATE	ITEM

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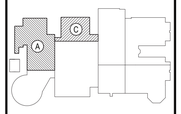

KEY PLAN

NOT TO SCALE

PROJECT

BRIARCLIFF MANOR U.F.S.D.
PHASE 2 BOND IMPROVEMENTS
BRIARCLIFF MANOR MIDDLE/HIGH SCHOOL
444 PLEASANTVILLE RD, BRIARCLIFF MANOR, NY 10510

DWG TITLE

PROPOSED PIPING PLAN - AREA D

DRAWING BY: R.D.P.

CHECK BY: F.S.

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SED No. 66-14-02-02-0-004-023

DISTRICT BRIARCLIFF MANOR UFSD

PROJECT PHASE 2 BOND IMPROVEMENTS

DWG TITLE PROPOSED PIPING PLAN AREA D

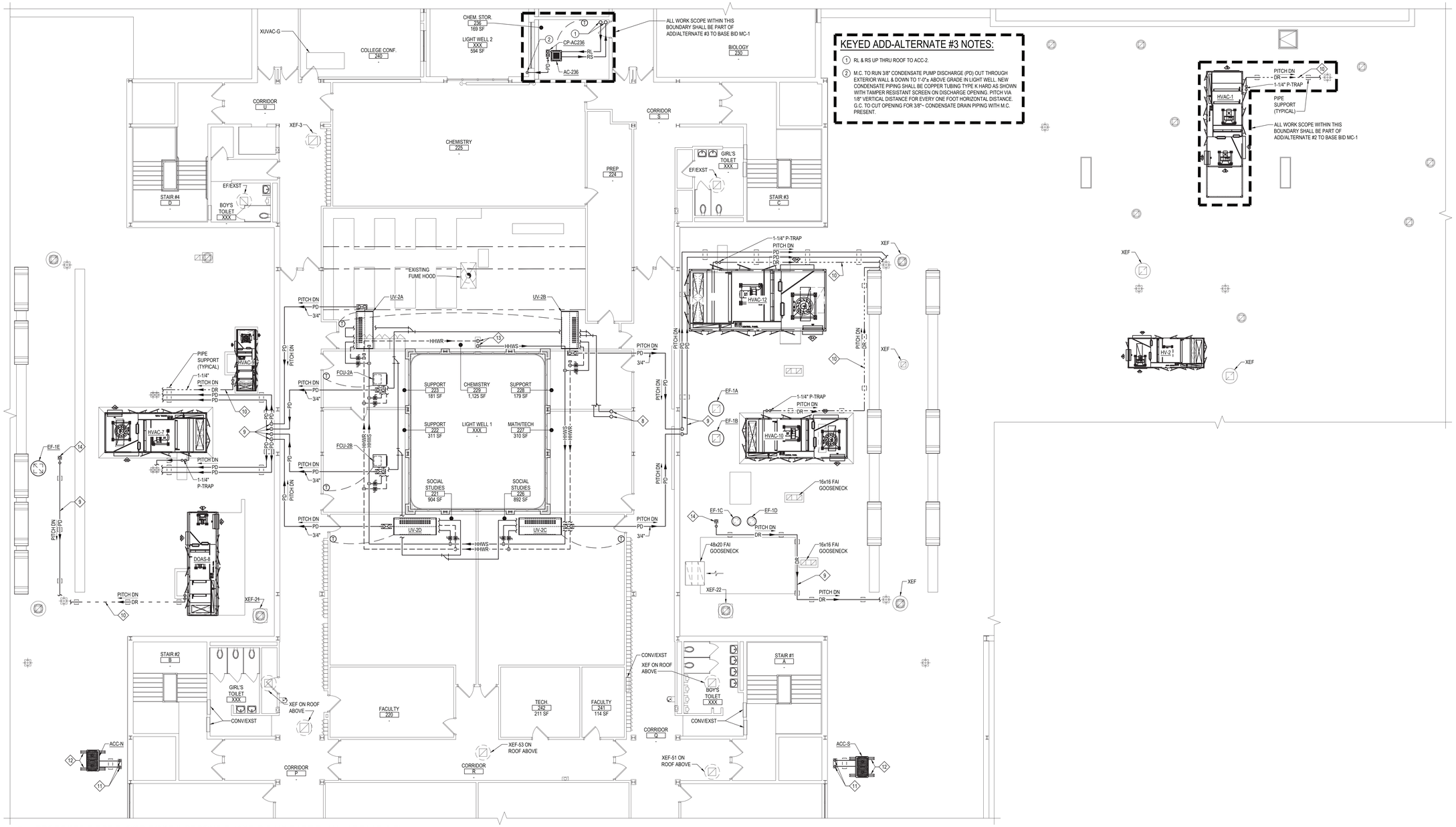
SCALE: AS NOTED

DATE: 7/15/22

BID PICK-UP:

FILE No: 21-274C

M3.02 | HSMS



KEYED ADD-ALTERNATE #3 NOTES:

1. RL & RS UP THRU ROOF TO ACC-2.
2. M.C. TO RUN 3/8" CONDENSATE PUMP DISCHARGE (PD) OUT THROUGH EXTERIOR WALL & DOWN TO 1'-0"± ABOVE GRADE IN LIGHT WELL. NEW CONDENSATE PIPING SHALL BE COPPER TUBING TYPE K HARD AS SHOWN WITH TAMPER RESISTANT SCREEN ON DISCHARGE OPENING. PITCH VIA 1/8" VERTICAL DISTANCE FOR EVERY ONE FOOT HORIZONTAL DISTANCE. G.C. TO CUT OPENING FOR 3/8"~ CONDENSATE DRAIN PIPING WITH M.C. PRESENT.

1 PROPOSED FIRST FLOOR ROOF & SECOND FLOOR PIPING PART PLAN - AREA "D & E"

NOTE:

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

KEYED MECHANICAL NOTES:

1. NOT USED
2. NOT USED
3. NOT USED
4. NOT USED
5. NOT USED
6. NOT USED
7. NOT USED
8. M.C. TO RUN NEW RS & RL REFRIGERANT PIPING UP THROUGH NEW PIPE PORTAL SYSTEM, RUN PIPING ON ROOF & PROVIDE REFRIGERANT PIPING SUPPORTS (REFER TO DRAWING M6.02 SCHEDULES & DETAILS FOR ADDITIONAL INFORMATION) & CONNECT TO NEW OUTDOOR CONDENSING UNIT (ACC-2).
9. M.C. TO RUN 3/4" CONDENSATE PUMP DISCHARGE (PD) OUT THROUGH EXTERIOR WALL & RUN TO NEAREST ROOF DRAIN. NEW CONDENSATE PIPING SHALL BE COPPER TUBING TYPE K HARD. PITCH VIA 1/8" VERTICAL DISTANCE FOR EVERY ONE FOOT HORIZONTAL DISTANCE.
10. M.C. TO RUN 1-1/4" CONDENSATE DRAIN (DR) TO NEAREST ROOF DRAIN. NEW CONDENSATE PIPING SHALL BE COPPER TUBING TYPE K HARD. PITCH VIA 1/8" VERTICAL DISTANCE FOR EVERY ONE FOOT HORIZONTAL DISTANCE.
11. M.C. TO FURNISH NEW PIPE PORTAL SYSTEM TO R.C. FOR R.C. TO INSTALL & FLASH WITH M.C. PRESENT. M.C. TO THEN RUN NEW REFRIGERANT PIPING UP THROUGH NEW PIPE PORTAL SYSTEM & RUN PIPING ON ROOF & PROVIDE REFRIGERANT PIPING SUPPORTS (REFER TO DRAWING M6.09 SCHEDULES & DETAILS FOR ADDITIONAL INFORMATION) & CONNECT TO NEW OUTDOOR CONDENSING UNIT.
12. M.C. TO FURNISH & INSTALL NEW OUTDOOR CONDENSING UNIT. M.C. TO FURNISH & INSTALL NEW THYCURB SUPPORT RAILS. REFER TO DRAWING M6.09 SCHEDULES & DETAILS FOR ADDITIONAL INFORMATION.
13. M.C. TO CONNECT 1-1/2" HHWS & HHWR ±6" A.F.F. AND RUN IN CHASE UP THE CEILING PLENUM SPACE. ALL HHWS & HHWR PIPING TO BE INSULATED AS PER MECHANICAL SPECIFICATIONS.
14. M.C. TO FURNISH NEW PIPE PORTAL SYSTEM TO R.C. FOR R.C. TO INSTALL & FLASH WITH M.C. PRESENT. M.C. TO THEN RUN NEW CONDENSATE PUMP DISCHARGE (PD) PIPING UP THROUGH NEW PIPE PORTAL SYSTEM & RUN (PD) PIPING ON ROOF & PROVIDE PIPING SUPPORTS (REFER TO DRAWING M6.09 FOR ADDITIONAL INFORMATION.

REV.	DATE	ITEM

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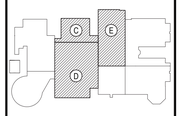

KEY PLAN

NOT TO SCALE

BRIARCLIFF MANOR U.F.S.D.
PHASE 2 BOND IMPROVEMENTS
BRIARCLIFF MANOR MIDDLE/HIGH SCHOOL
444 PLEASANTVILLE RD, BRIARCLIFF MANOR, NY 10510

PROJECT

PROPOSED 1ST FLOOR ROOF & 2ND FLOOR
PIPING & HVAC ROOF PART PLAN - AREA C, D & E

DWG TITLE

DRAWING BY: R.D.P.

CHECK BY: F.S.

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SED No. 66-14-02-02-0-004-023

DISTRICT BRIARCLIFF MANOR UFSD

PROJECT PHASE 2 BOND IMPROVEMENTS

DWG TITLE PROPOSED PIPING & HVAC ROOF PLAN - AREA C, D & E

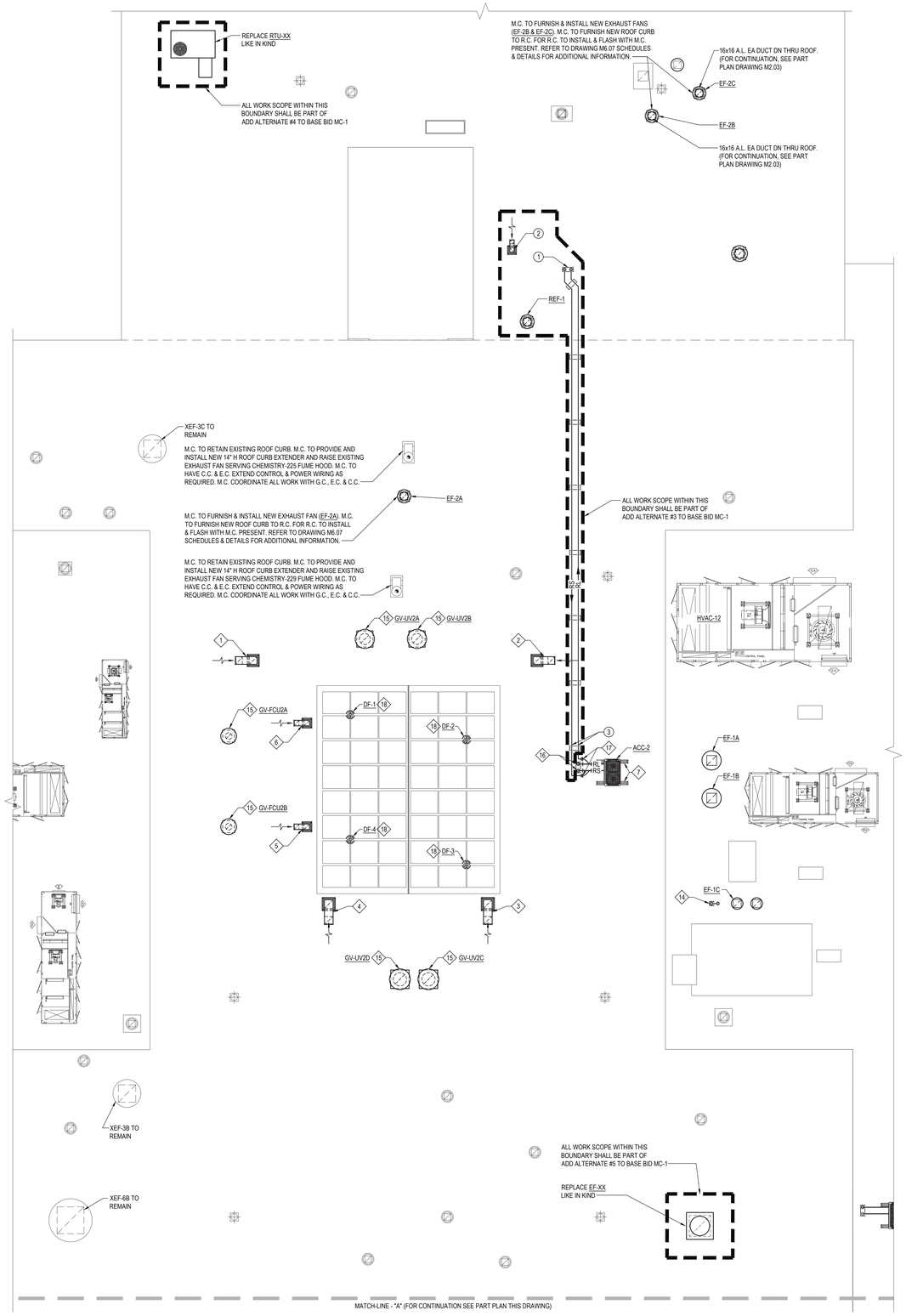
SCALE: AS NOTED

DATE: 7/15/22

BID PICK-UP:

FILE No: 21-274C

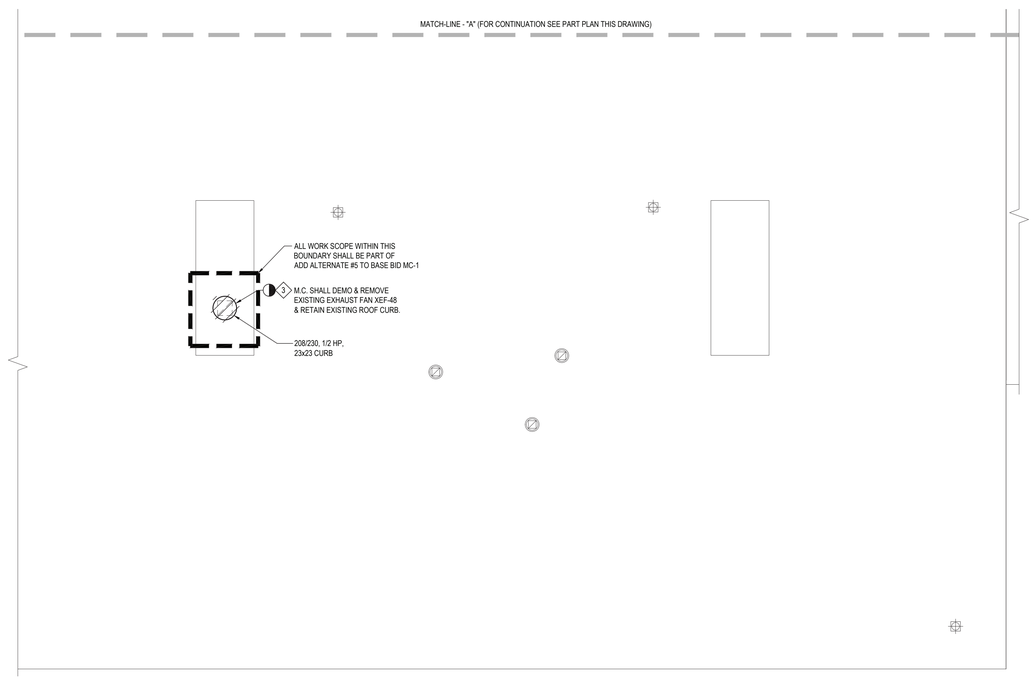
M3.03 | HSMS



1 PROPOSED SECOND FLOOR AND ROOF HVAC PART PLAN - AREA "D & E"

NOTE:

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



2 PROPOSED SECOND FLOOR AND ROOF HVAC PART PLAN - AREA "D"

NOTE:

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

KEYED MECHANICAL NOTES:

1. 14x14 OA DUCT DN THRU ROOF TO UV-2A. TERMINATE WITH GOOSENECK ABOVE ROOF W/WMS. BOTTOM OF OPEN END OF GOOSENECK SHALL BE A MINIMUM OF 3'-0" ABOVE FINISHED ROOF SURFACE.
2. 14x14 OA DUCT DN THRU ROOF TO UV-2B. TERMINATE WITH GOOSENECK ABOVE ROOF W/WMS. BOTTOM OF OPEN END OF GOOSENECK SHALL BE A MINIMUM OF 3'-0" ABOVE FINISHED ROOF SURFACE.
3. 16x16 OA DUCT DN THRU ROOF TO UV-2C. TERMINATE WITH GOOSENECK ABOVE ROOF W/WMS. BOTTOM OF OPEN END OF GOOSENECK SHALL BE A MINIMUM OF 3'-0" ABOVE FINISHED ROOF SURFACE.
4. 16x16 OA DUCT DN THRU ROOF TO UV-2D. TERMINATE WITH GOOSENECK ABOVE ROOF W/WMS. BOTTOM OF OPEN END OF GOOSENECK SHALL BE A MINIMUM OF 3'-0" ABOVE FINISHED ROOF SURFACE.
5. 10x10 OA DUCT DN THRU ROOF TO FCU-2B. TERMINATE WITH GOOSENECK ABOVE ROOF W/WMS. BOTTOM OF OPEN END OF GOOSENECK SHALL BE A MINIMUM OF 3'-0" ABOVE FINISHED ROOF SURFACE.
6. 10x10 OA DUCT DN THRU ROOF TO FCU-2A. TERMINATE WITH GOOSENECK ABOVE ROOF W/WMS. BOTTOM OF OPEN END OF GOOSENECK SHALL BE A MINIMUM OF 3'-0" ABOVE FINISHED ROOF SURFACE.
7. M.C. TO FURNISH & INSTALL NEW OUTDOOR CONDENSING UNIT (ACC-2). M.C. TO FURNISH & INSTALL NEW THYCURB SUPPORT RAILS. REFER TO DRAWING M6.09 SCHEDULES & DETAILS FOR ADDITIONAL INFORMATION.
8. NOT USED
9. NOT USED
10. NOT USED
11. NOT USED
12. NOT USED
13. NOT USED
14. M.C. TO FURNISH NEW PIPE PORTAL SYSTEM TO R.C. FOR R.C. TO INSTALL & FLASH WITH M.C. PRESENT. M.C. TO THEN RUN NEW CONDENSATE PUMP DISCHARGE (PD) PIPING UP THROUGH NEW PIPE PORTAL SYSTEM & RUN (PD) PIPING ON ROOF & PROVIDE PIPING SUPPORTS (REFER TO DRAWING M6.09 FOR ADDITIONAL INFORMATION.
15. M.C. TO FURNISH & INSTALL NEW GRAVITY VENTILATOR. M.C. TO FURNISH NEW ROOF CURB TO R.C. FOR R.C. TO INSTALL & FLASH WITH M.C. PRESENT. REFER TO DRAWING M6.07 SCHEDULES & DETAILS FOR ADDITIONAL INFORMATION.
16. M.C. TO FURNISH NEW PIPE PORTAL SYSTEM TO G.C. FOR G.C. TO INSTALL & FLASH WITH M.C. PRESENT. M.C. TO THEN RUN NEW: RS & RL REFRIGERANT PIPING DOWN THROUGH NEW PIPE PORTAL SYSTEM & RUN PIPING IN SECOND FLOOR CEILING PLENUM TO INDOOR UNITS. REFER TO FIRST FLOOR ROOF & SECOND FLOOR PROPOSED PIPING PART PLAN - AREA "D & E" FOR CONTINUATION. (REFER TO DRAWING M6.02 SCHEDULES & DETAILS FOR ADDITIONAL INFORMATION) & CONNECT TO NEW OUTDOOR CONDENSING UNIT (ACC-2).
17. M.C. TO PROVIDE WYE-BRANCH HEADER WITH VALVED & CAPPED OUTLET TO AC-236.
18. DESTRATIFICATION FANS (DF-1 THRU DF-4) TO BE MOUNTED BELOW SKYLIGHT, FROM SKYLIGHT MULLIONS.

KEYED ADD-ALTERNATE #3 NOTES:

1. M.C. TO FURNISH NEW PIPE PORTAL SYSTEM TO G.C. FOR G.C. TO INSTALL & FLASH WITH M.C. PRESENT. M.C. TO THEN RUN NEW: RS & RL REFRIGERANT PIPING UP THROUGH NEW PIPE PORTAL SYSTEM & RUN PIPING ON ROOF & PROVIDE REFRIGERANT PIPING SUPPORTS (REFER TO DRAWING M6.02 SCHEDULES & DETAILS FOR ADDITIONAL INFORMATION) & CONNECT TO NEW OUTDOOR CONDENSING UNIT (ACC-236).
2. 8x8 OA DUCT DN THRU ROOF TO CMU-236. TERMINATE WITH GOOSENECK ABOVE ROOF W/WMS. BOTTOM OF OPEN END OF GOOSENECK SHALL BE A MINIMUM OF 3'-0" ABOVE FINISHED ROOF SURFACE.
3. M.C. TO REMOVE CAP FROM BRANCH HEADER AND RUN RL & RS PIPING TO AC-236.

REV.	DATE	ITEM

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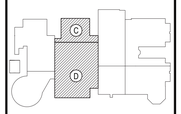

KEY PLAN

NOT TO SCALE

PROJECT

BRIARCLIFF MANOR U.F.S.D.
PHASE 2 BOND IMPROVEMENTS
BRIARCLIFF MANOR MIDDLE/HIGH SCHOOL
444 PLEASANTVILLE RD. BRIARCLIFF MANOR, NY 10510

DWG TITLE

PROPOSED SECOND FLOOR AND ROOF HVAC PART PLAN - AREA C & D

DRAWING BY: R.D.P.

CHECK BY: F.S.

NOTICE

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SED No: 66-14-02-02-0-004-023

DISTRICT: BRIARCLIFF MANOR UFSD

PROJECT: PHASE 2 BOND IMPROVEMENTS

DWG TITLE: PROPOSED 2ND FLOOR ROOF HVAC PART PLAN - C & D

SCALE: AS NOTED

DATE: 7/15/22

BID PICK-UP:

FILE No: 21-274C

M3.04 | HSMS

ROOFTOP UNIT SCHEDULE (BASIS: SEASONS-4)

PERFORMANCE SPECIFICATIONS

JOB NAME BRIARCLIFF MANOR HS/MS

LOCATION BRIARCLIFF, NY

DATE PREPARED 7/13/2022

Section	Unit Designation	HVAC-1	HV-2	HVAC-7	DOAS-8
UNIT INFO	SEASONS-4 MODEL #	AHXXX / 9MNK20-021A-HW4.1-09TD	AHXXX / 9MNK20-XXXX-HW7.1-10SE	AHXXX / 9MNK20-016A-HW2.2-09TD	AHXXX / 9MNK20-004A-HW0.9-01TD
	SEASONS-4 REF. #	P11868-1	P11868-2	P11868-7	P11868-8
	TOTAL AIRFLOW (CFM)	9,200	10,025	8,534	1,370
	OUTDOOR AIRFLOW (CFM)	2,600 - 9,200	10,025	1,120 - 8,534	1,370
	UNIT DIMENSIONS	110W x 101H x 244L	110W x 101H x 244L	110W x 101H x 244L	110W x 101H x 244L
	UNIT WEIGHT (LBS)				
CHILLED WATER COOLING SECTION	CW COIL FACE AREA (SQ-FT)/ROWS/FPI	20.6/4/10	NA	16.5/4/6	3.1/4/8
	TOTAL COOLING (BTUH)	259,377	NA	193,872	53,928
	SENSIBLE COOLING (BTUH)	184,007	NA	135,625	37,246
	CW COIL EAT (FDB/FWB)	79.0/67.3	NA	77.4/66.4	92.0/74.0
	CW COIL LAT (FDB/FWB)	60.5/58.3	NA	62.7/59.2	66.8/62.9
	FLUID TEMP - ENT/LEV (°F)	44/55.5	NA	44/56.9	44/55.9
	TYPE FLUID	Water	NA	Water	Water
	FLUID FLOWRATE (GPM) / PRESS DROP (FT WATER)	45/3.6	NA	30/6.6	9/4.2
	SUPPLY/RETURN CONNECTION SIZE (IN)	2.625/2.625	NA	2.625/2.625	2.625/2.625
SUPPLY AIR BLOWER SECTION	SA BLOWER TYPE QTY/SIZE	AF SWSI PLENUM (75% WHEEL WIDTH) 1/24"	AF SWSI PLENUM (100% WHEEL WIDTH) 1/22"	AF SWSI PLENUM (70% WHEEL WIDTH) 1/24"	AF SWSI PLENUM (50% WHEEL WIDTH) 1/15"
	SA BLOWER AIRFLOW (CFM)	9,200	10,025	8,534	1,370
	SA BLOWER TSP	3.45	3.44	3.55	3.41
	SA BLOWER ESP	1.50	1.50	1.50	1.50
	SA BLOWER RPM	1,785	1,921	1,788	2,357
	SA BLOWER BHP/MOTOR HP	7.5/10	8.7/10	7.1/10	1/1.5
	SA BLOWER DRIVE TYPE	DIRECT DRIVE W/ VFD	DIRECT DRIVE W/ VFD	DIRECT DRIVE W/ VFD	DIRECT DRIVE W/ VFD
RETURN AIR BLOWER SECTION	RA BLOWER TYPE QTY/SIZE	AF SWSI PLENUM (100% WHEEL WIDTH) 1/24"	AF SWSI PLENUM (85% WHEEL WIDTH) 1/27"	AF SWSI PLENUM (100% WHEEL WIDTH) 1/24"	AF SWSI PLENUM (50% WHEEL WIDTH) 1/16"
	RA BLOWER	9,200	10,025	8,534	1,370
	RA BLOWER TSP	1.50	1.50	1.50	1.50
	RA BLOWER ESP	1.00	1.00	1.00	1.00
	RA BLOWER RPM	1,277	1,201	1,217	1,574
	RA BLOWER	3.5/5	3.9/5	3.1/5	0.5/1.5
	RA BLOWER DRIVE TYPE	DIRECT DRIVE W/ VFD	DIRECT DRIVE W/ VFD	DIRECT DRIVE W/ VFD	DIRECT DRIVE W/ VFD
FILTER SECTION	FILTER TYPE	2" Pleated; MERV 8	2" Pleated; MERV 8	2" Pleated; MERV 8	2" Pleated; MERV 8
	FILTER QTY/SIZE	9/24x24	9/24x24	9/24x24	1/12x24, 1/24x24
	FACE VELOCITY (FPM)	256	278	237	228
FILTER SECTION	FILTER TYPE	4" Pleated; MERV 13	4" Pleated; MERV 13	4" Pleated; MERV 13	4" Pleated; MERV 13
	FILTER QTY/SIZE	9/24x24	9/24x24	9/24x24	1/12x24, 1/24x24
	FACE VELOCITY (FPM)	256	278	237	228
HOT WATER HEATING SECTION	HW COIL FACE AREA (SQ-FT)/ROWS/FPI	16.5/1/12	17.5/2/6	11/1/6	3.1/2/10
	CAPACITY (BTUH)	409,611	707,420	217,540	86,074
	AIR TEMP - EAT/LAT (°F)	55/96.2	10/75.3	55/78.6	55/113.2
	FLUID TEMP - ENT/LEV (°F)	200/155.5	200/159.5	200/159.2	200/164.5
	TYPE FLUID	Water	Water	Water	Water
	FLUID FLOWRATE (GPM) / PRESS DROP (FT WATER)	19/4.6	36/4.4	11/1.4	5/0.6
	SUPPLY/RETURN CONNECTION SIZE (IN)	1.375/1.375	1.375/1.375	1.375/1.375	1.375/1.375
ELECTRICAL DATA	UNIT VOLTAGE	460/3/60	460/3/60	460/3/60	460/3/60
	TOTAL COOLING AMPS	24.8	24.8	24.8	9.4
	TOTAL HEATING AMPS	24.8	24.8	24.8	9.4
	UNIT MCA	28	28	28	10
	UNIT MOP	40	40	40	12
	UNIT SCCR	65,000	65,000	65,000	65,000

SEASONS-4, Inc. Page 1 of 2 Douglasville, GA

PERFORMANCE SPECIFICATIONS

JOB NAME BRIARCLIFF MANOR HS/MS

LOCATION BRIARCLIFF, NY

DATE PREPARED 7/13/2022

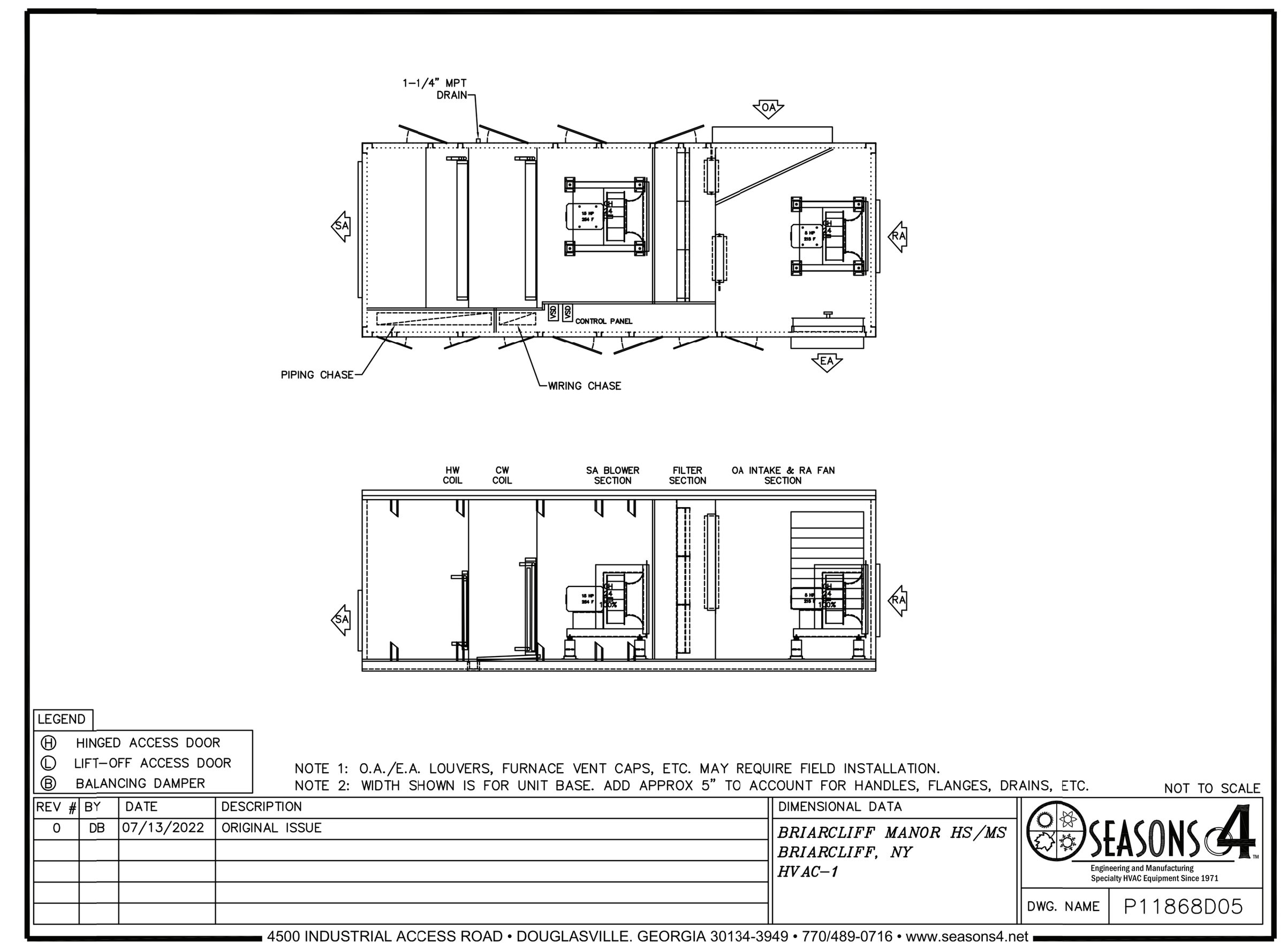
Section	Unit Designation	HVAC-9	HVAC-10	HVAC-11	HVAC-12
UNIT INFO	SEASONS-4 MODEL #	AHXXX / 9MNK20-008A-HW0.8-03TD	AHXXX / 9MNK20-015A-HW2.5-06TD	AHXXX / 9MNK20-040A-HW3.9-13TD	AHXXX / 9MNK20-023A-HW3.7-13TD
	SEASONS-4 REF. #	P11868-9	P11868-10	P11868-11	P11868-12
	TOTAL AIRFLOW (CFM)	3,000	6,000	13,391	13,450
	OUTDOOR AIRFLOW (CFM)	1,050 - 3,000	990 - 6,000	3,500 - 13,391	3,500 - 13,450
	UNIT DIMENSIONS	110W x 101H x 244L	110W x 101H x 244L	110W x 101H x 244L	110W x 101H x 244L
	UNIT WEIGHT (LBS)				
CHILLED WATER COOLING SECTION	CW COIL FACE AREA (SQ-FT)/ROWS/FPI	6.3/4/8	13.8/4/10	26.1/6/10	24.5/4/6
	TOTAL COOLING (BTUH)	105,034	185,972	484,188	278,099
	SENSIBLE COOLING (BTUH)	59,189	129,037	296,251	202,270
	CW COIL EAT (FDB/FWB)	79.3/69.7	77.4/65.7	78.9/68.7	77.4/66.4
	CW COIL LAT (FDB/FWB)	61.0/59.0	57.5/55.4	58.4/57.3	63.5/59.9
	FLUID TEMP - ENT/LEV (°F)	44/55.6	44/56.3	44/58.8	44/55.8
	TYPE FLUID	Water	Water	Water	Water
	FLUID FLOWRATE (GPM) / PRESS DROP (FT WATER)	18/6.4	30/7.3	65/4.3	47/4
	SUPPLY/RETURN CONNECTION SIZE (IN)	2.625/2.625	2.625/2.625	2.625/2.625	2.625/2.625
SUPPLY AIR BLOWER SECTION	SA BLOWER TYPE QTY/SIZE	AF SWSI PLENUM (70% WHEEL WIDTH) 1/16"	AF SWSI PLENUM (70% WHEEL WIDTH) 1/22"	AF SWSI PLENUM (100% WHEEL WIDTH) 1/24"	AF SWSI PLENUM (100% WHEEL WIDTH) 1/24"
	SA BLOWER AIRFLOW (CFM)	3,000	6,000	13,391	13,450
	SA BLOWER TSP	3.41	3.56	3.68	3.60
	SA BLOWER ESP	1.50	1.50	1.50	1.50
	SA BLOWER RPM	2,419	1,773	1,909	1,906
	SA BLOWER BHP/MOTOR HP	2.4/3	5/7.5	12/15	11.8/15
	SA BLOWER DRIVE TYPE	DIRECT DRIVE W/ VFD	DIRECT DRIVE W/ VFD	DIRECT DRIVE W/ VFD	DIRECT DRIVE W/ VFD
RETURN AIR BLOWER SECTION	RA BLOWER TYPE QTY/SIZE	AF SWSI PLENUM (60% WHEEL WIDTH) 1/20"	AF SWSI PLENUM (100% WHEEL WIDTH) 1/22"	AF SWSI PLENUM (100% WHEEL WIDTH) 1/27"	AF SWSI PLENUM (100% WHEEL WIDTH) 1/27"
	RA BLOWER	3,000	6,000	13,391	13,450
	RA BLOWER TSP	1.50	1.50	1.50	1.50
	RA BLOWER ESP	1.00	1.00	1.00	1.00
	RA BLOWER RPM	1,356	1,198	1,310	1,314
	RA BLOWER	1.1/1.5	2.2/3	5.6/7.5	5.7/7.5
	RA BLOWER DRIVE TYPE	DIRECT DRIVE W/ VFD	DIRECT DRIVE W/ VFD	DIRECT DRIVE W/ VFD	DIRECT DRIVE W/ VFD
FILTER SECTION	FILTER TYPE	2" Pleated; MERV 8	2" Pleated; MERV 8	2" Pleated; MERV 8	2" Pleated; MERV 8
	FILTER QTY/SIZE	2/24x24	9/24x24	9/24x24	3/12x24, 9/24x24
	FACE VELOCITY (FPM)	375	167	372	320
FILTER SECTION	FILTER TYPE	4" Pleated; MERV 13	4" Pleated; MERV 13	4" Pleated; MERV 13	4" Pleated; MERV 13
	FILTER QTY/SIZE	2/24x24	9/24x24	9/24x24	3/12x24, 9/24x24
	FACE VELOCITY (FPM)	375	167	372	320
HOT WATER HEATING SECTION	HW COIL FACE AREA (SQ-FT)/ROWS/FPI	5.2/1/6	11/1/10	24.8/1/6	14/1/8
	CAPACITY (BTUH)	80,545	251,265	393,871	371,402
	AIR TEMP - EAT/LAT (°F)	55/79.9	55/93.8	55/82.2	55/80.6
	FLUID TEMP - ENT/LEV (°F)	200/166.8	200/163	200/157.2	200/159.7
	TYPE FLUID	Water	Water	Water	Water
	FLUID FLOWRATE (GPM) / PRESS DROP (FT WATER)	5/0.6	14/2.1	19/3.1	19/3.1
	SUPPLY/RETURN CONNECTION SIZE (IN)	1.375/1.375	1.375/1.375	1.375/1.375	1.375/1.375
ELECTRICAL DATA	UNIT VOLTAGE	460/3/60	460/3/60	460/3/60	460/3/60
	TOTAL COOLING AMPS	11.6	19.1	33.3	33.3
	TOTAL HEATING AMPS	11.6	19.1	33.3	33.3
	UNIT MCA	13	22	38	38
	UNIT MOP	15	30	50	50
	UNIT SCCR	65,000	65,000	65,000	65,000

SEASONS-4, Inc. Page 2 of 2 Douglasville, GA

SCHEDULE NOTES:

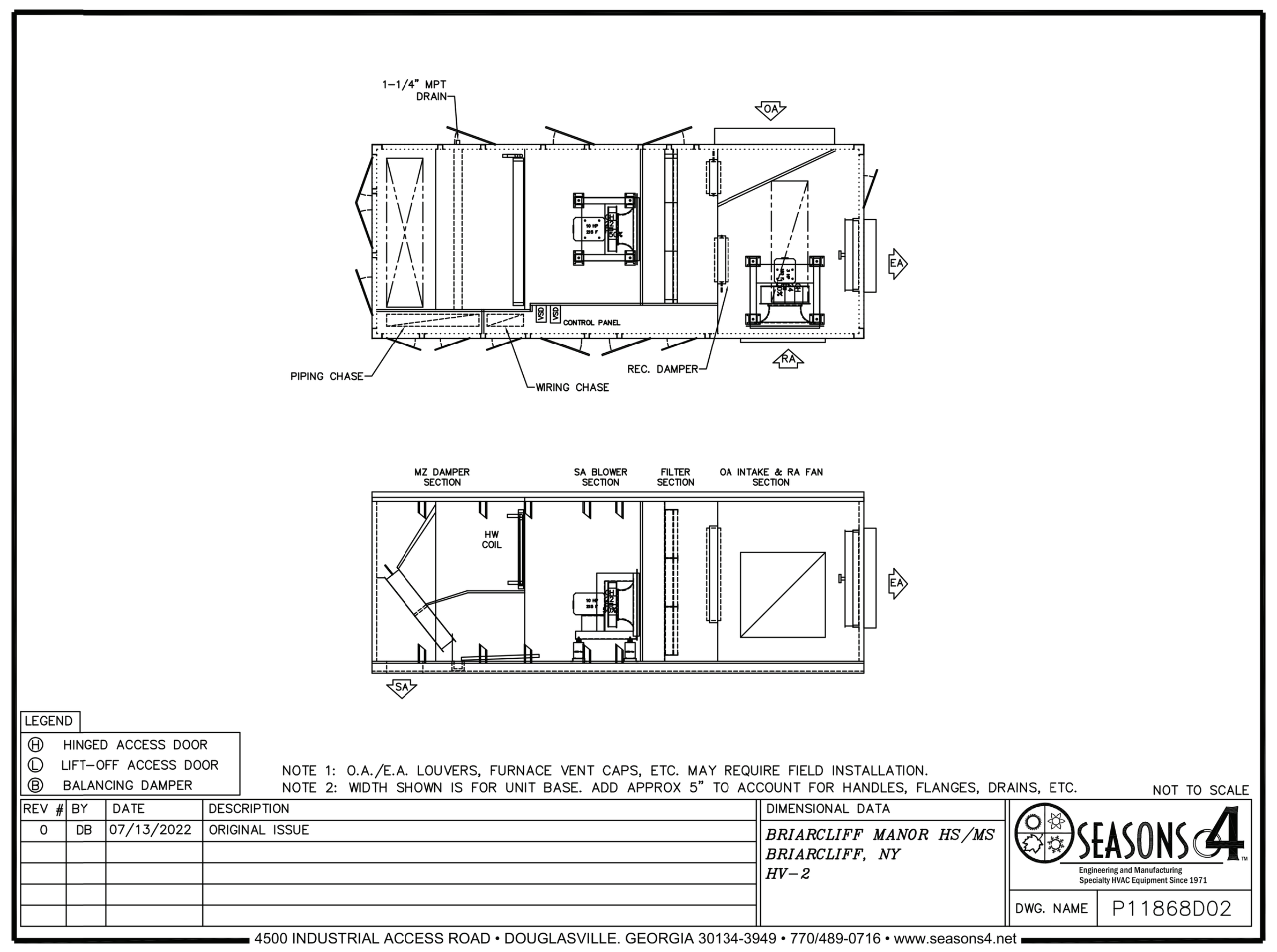
1. PROVIDE POWERED GFI CONVENIENCE OUTLET
2. PROVIDE STARTERS & DISCONNECTS FOR EACH EQUIPMENT
3. M.C. SHALL HAVE MANUFACTURER VISIT JOB SITE TO PERFORM DETAILED MEASUREMENTS IN ORDER TO FIT NEW/ PROPOSED UNIT ON EXISTING ROOF CURB.
4. FACTORY-AUTHORIZED MANUFACTURER'S FIELD REPRESENTATIVE SHALL BE PRESENT FOR START-UP, COMMISSIONING, & TRAINING OF NEW UNIT TO OWNER'S PERSONNEL.
5. CUSTOM ROOFTOP UNIT SHALL COME COMPLETE WITH THE FOLLOWING OPTIONS:
   a) FULL ECONOMIZER W/ DIFFERENTIAL ENTHALPY CONTROLS
   b) FILTER STATUS INDICATOR
   c) FULL DDC CONTROLS WITH BACNET TRANSLATOR (FOR FUTURE BACNET INTEGRATION)
6. CONVENIENCE OUTLET SHALL BE FIELD INSTALLED BY E.C. ON THE LINE SIDE. REFER TO ELECTRICAL PLANS FOR ADDITIONAL DETAILS.

HVAC-1 COMPONENT DIAGRAM (BASIS: SEASONS-4) (ADD-ALTERNATE NO.1)



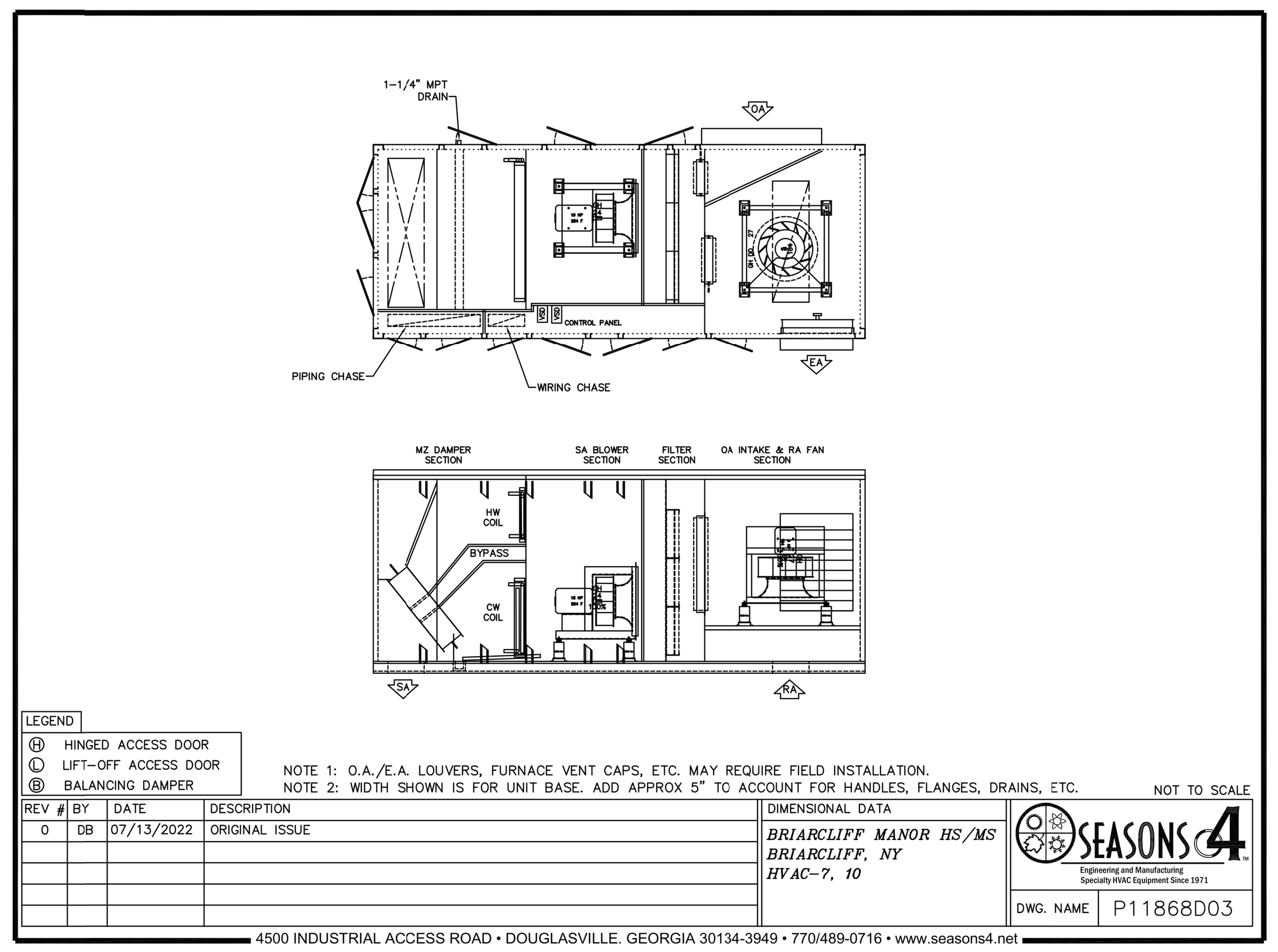
1-1/4" MPT DRAIN
PIPING CHASE
WIRING CHASE
LEGEND
H HINGED ACCESS DOOR
L LIFT-OFF ACCESS DOOR
B BALANCING DAMPER
NOTE 1: O.A./E.A. LOUVERS, FURNACE VENT CAPS, ETC. MAY REQUIRE FIELD INSTALLATION.
NOTE 2: WIDTH SHOWN IS FOR UNIT BASE. ADD APPROX 5" TO ACCOUNT FOR HANDLES, FLANGES, DRAINS, ETC.
NOT TO SCALE
REV # BY DATE DESCRIPTION
0 DB 07/13/2022 ORIGINAL ISSUE
DIMENSIONAL DATA
BRIARCLIFF MANOR HS/MS
BRIARCLIFF, NY
HVAC-1
SEASONS 4
Engineering and Manufacturing Specialty HVAC Equipment Since 1971
DWG. NAME P11868D05
4500 INDUSTRIAL ACCESS ROAD • DOUGLASVILLE. GEORGIA 30134-3949 • 770/489-0716 • www.seasons4.net

HV-2 COMPONENT DIAGRAM (BASIS: SEASONS-4)



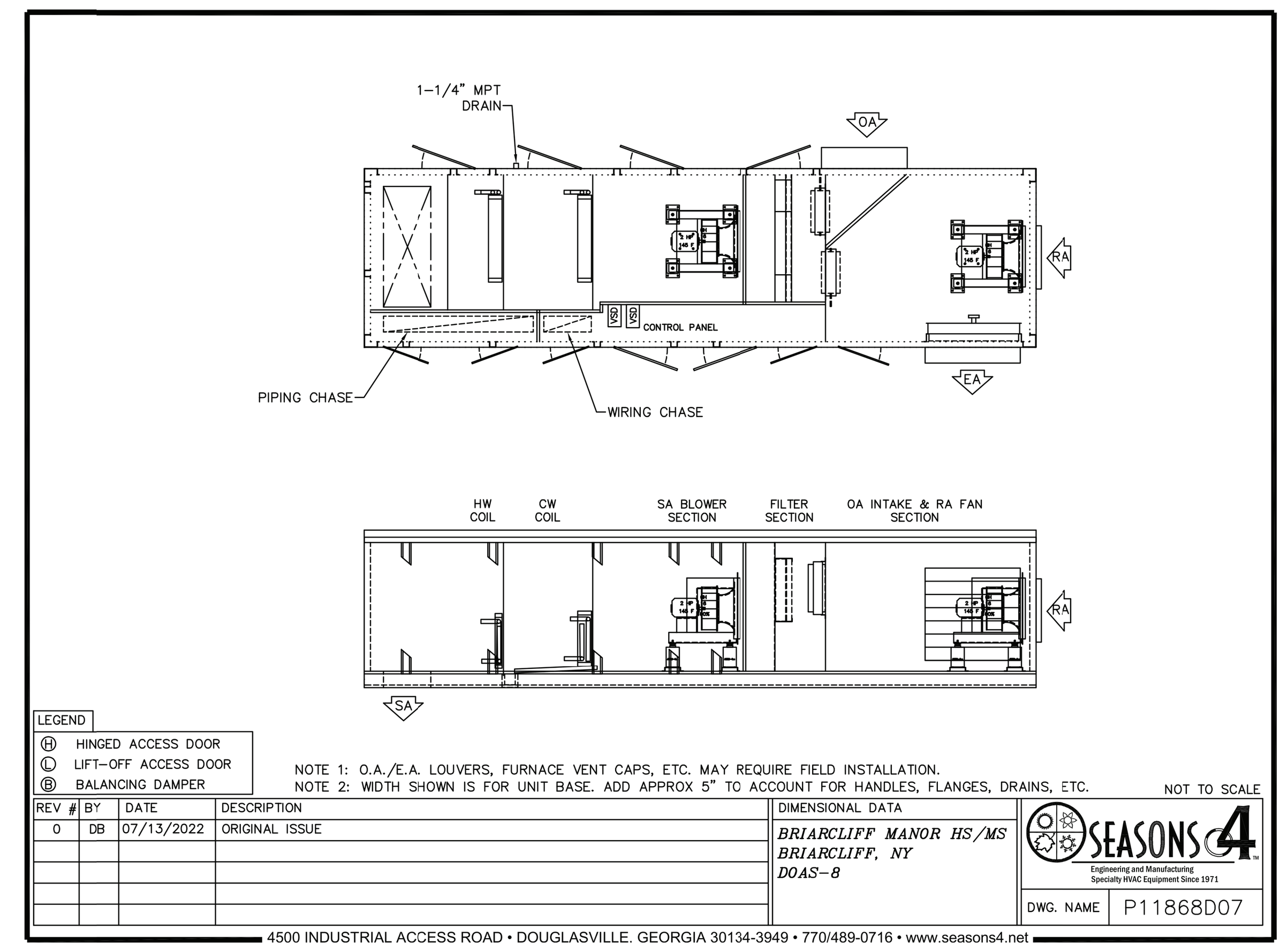
1-1/4" MPT DRAIN
PIPING CHASE
WIRING CHASE
REC. DAMPER
LEGEND
H HINGED ACCESS DOOR
L LIFT-OFF ACCESS DOOR
B BALANCING DAMPER
NOTE 1: O.A./E.A. LOUVERS, FURNACE VENT CAPS, ETC. MAY REQUIRE FIELD INSTALLATION.
NOTE 2: WIDTH SHOWN IS FOR UNIT BASE. ADD APPROX 5" TO ACCOUNT FOR HANDLES, FLANGES, DRAINS, ETC.
NOT TO SCALE
REV # BY DATE DESCRIPTION
0 DB 07/13/2022 ORIGINAL ISSUE
DIMENSIONAL DATA
BRIARCLIFF MANOR HS/MS
BRIARCLIFF, NY
HV-2
DWG. NAME P11868D02
4500 INDUSTRIAL ACCESS ROAD • DOUGLASVILLE. GEORGIA 30134-3949 • 770/489-0716 • www.seasons4.net

HVAC-7 & 10 COMPONENT DIAGRAM (BASIS: SEASONS-4)



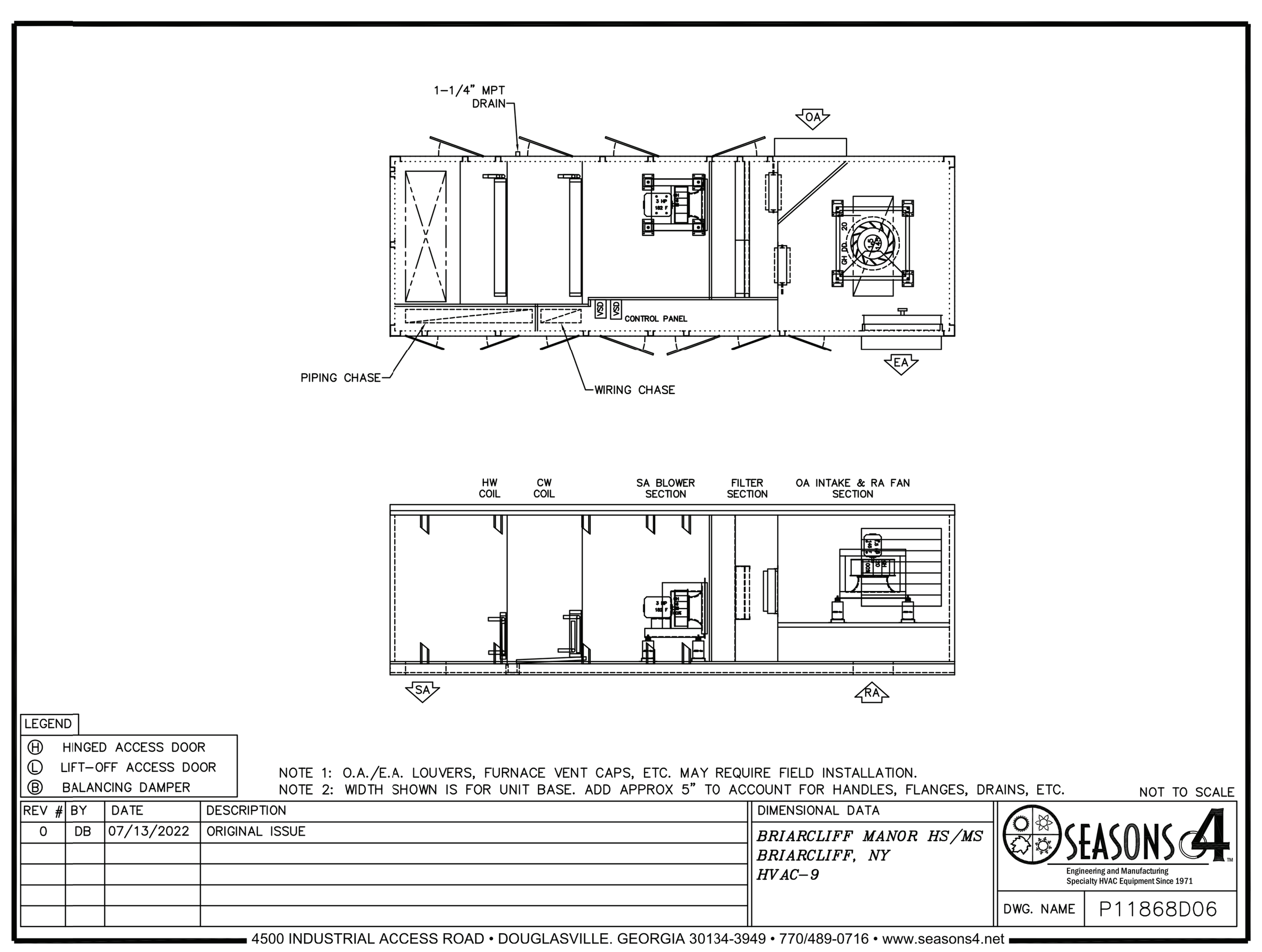
1-1/4" MPT DRAIN
PIPING CHASE
WIRING CHASE
LEGEND
H HINGED ACCESS DOOR
L LIFT-OFF ACCESS DOOR
B BALANCING DAMPER
NOTE 1: O.A./E.A. LOUVERS, FURNACE VENT CAPS, ETC. MAY REQUIRE FIELD INSTALLATION.
NOTE 2: WIDTH SHOWN IS FOR UNIT BASE. ADD APPROX 5" TO ACCOUNT FOR HANDLES, FLANGES, DRAINS, ETC.
NOT TO SCALE
REV # BY DATE DESCRIPTION
0 DB 07/13/2022 ORIGINAL ISSUE
DIMENSIONAL DATA
BRIARCLIFF MANOR HS/MS
BRIARCLIFF, NY
HVAC-7, 10
DWG. NAME P11868D03
4500 INDUSTRIAL ACCESS ROAD • DOUGLASVILLE. GEORGIA 30134-3949 • 770/489-0716 • www.seasons4.net

DOAS-8 COMPONENT DIAGRAM (BASIS: SEASONS-4)



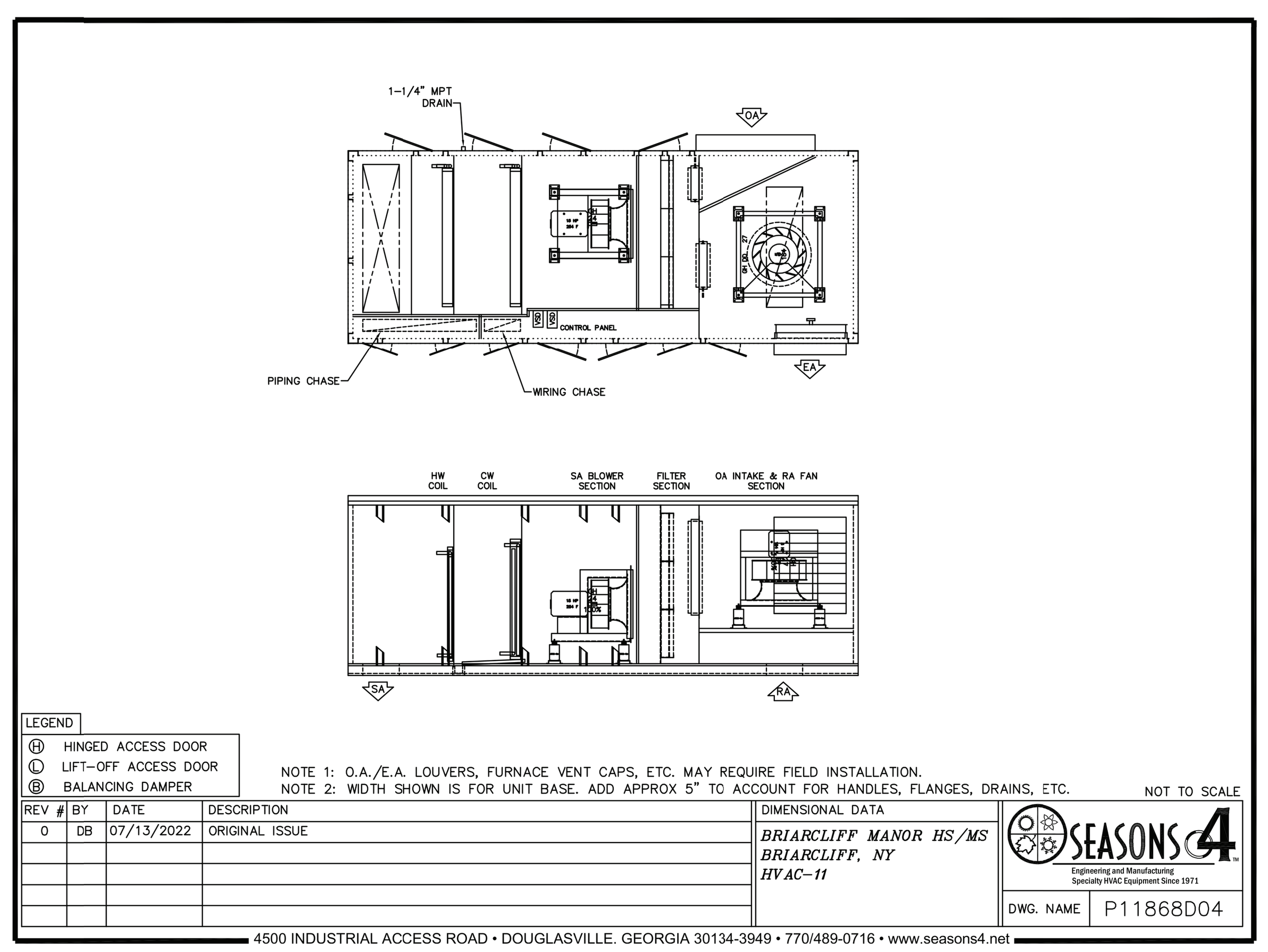
1-1/4" MPT DRAIN
PIPING CHASE
WIRING CHASE
CONTROL PANEL
HW COIL
CW COIL
SA BLOWER SECTION
FILTER SECTION
OA INTAKE & RA FAN SECTION
LEGEND
H HINGED ACCESS DOOR
L LIFT-OFF ACCESS DOOR
B BALANCING DAMPER
NOTE 1: O.A./E.A. LOUVERS, FURNACE VENT CAPS, ETC. MAY REQUIRE FIELD INSTALLATION.
NOTE 2: WIDTH SHOWN IS FOR UNIT BASE. ADD APPROX 5" TO ACCOUNT FOR HANDLES, FLANGES, DRAINS, ETC.
NOT TO SCALE
REV # BY DATE DESCRIPTION
0 DB 07/13/2022 ORIGINAL ISSUE
DIMENSIONAL DATA
BRIARCLIFF MANOR HS/MS
BRIARCLIFF, NY
DOAS-8
DWG. NAME P11868D07
4500 INDUSTRIAL ACCESS ROAD • DOUGLASVILLE. GEORGIA 30134-3949 • 770/489-0716 • www.seasons4.net

HVAC-9 COMPONENT DIAGRAM (BASIS: SEASONS-4)



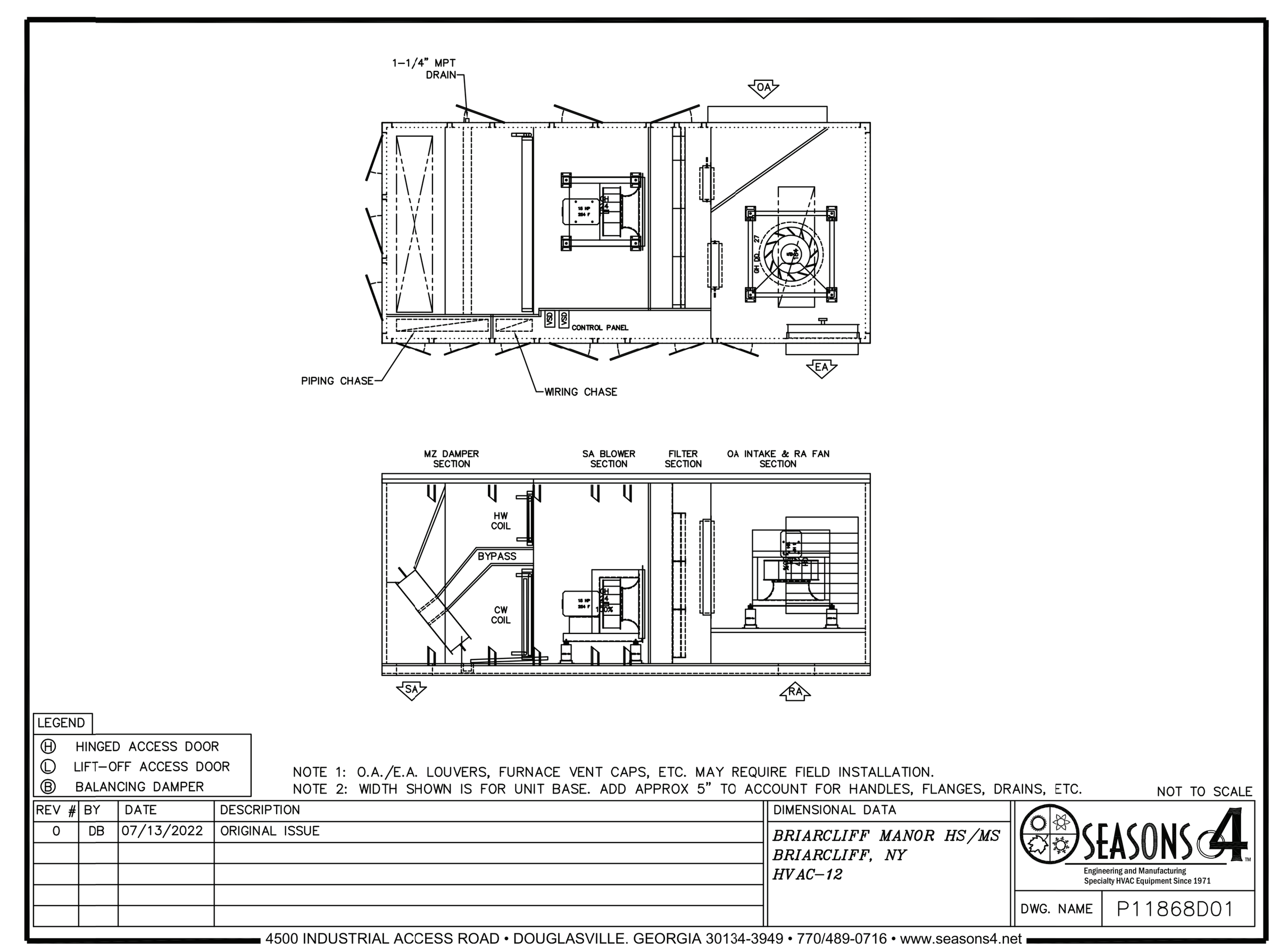
1-1/4" MPT DRAIN
PIPING CHASE
WIRING CHASE
LEGEND
H HINGED ACCESS DOOR
L LIFT-OFF ACCESS DOOR
B BALANCING DAMPER
NOTE 1: O.A./E.A. LOUVERS, FURNACE VENT CAPS, ETC. MAY REQUIRE FIELD INSTALLATION.
NOTE 2: WIDTH SHOWN IS FOR UNIT BASE. ADD APPROX 5" TO ACCOUNT FOR HANDLES, FLANGES, DRAINS, ETC.
NOT TO SCALE
REV # BY DATE DESCRIPTION
0 DB 07/13/2022 ORIGINAL ISSUE
DIMENSIONAL DATA
BRIARCLIFF MANOR HS/MS
BRIARCLIFF, NY
HVAC-9
DWG. NAME P11868D06
4500 INDUSTRIAL ACCESS ROAD • DOUGLASVILLE. GEORGIA 30134-3949 • 770/489-0716 • www.seasons4.net

HVAC-11 COMPONENT DIAGRAM (BASIS: SEASONS-4)



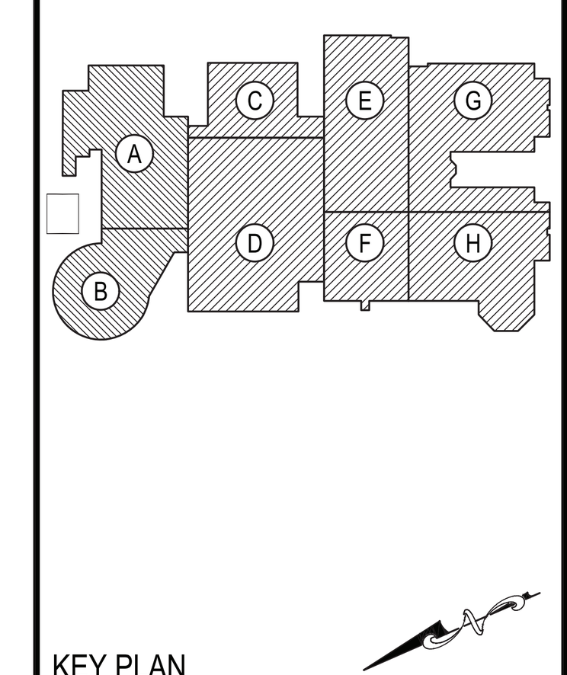
1-1/4" MPT DRAIN
PIPING CHASE
WIRING CHASE
LEGEND
H HINGED ACCESS DOOR
L LIFT-OFF ACCESS DOOR
B BALANCING DAMPER
NOTE 1: O.A./E.A. LOUVERS, FURNACE VENT CAPS, ETC. MAY REQUIRE FIELD INSTALLATION.
NOTE 2: WIDTH SHOWN IS FOR UNIT BASE. ADD APPROX 5" TO ACCOUNT FOR HANDLES, FLANGES, DRAINS, ETC.
NOT TO SCALE
REV # BY DATE DESCRIPTION
0 DB 07/13/2022 ORIGINAL ISSUE
DIMENSIONAL DATA
BRIARCLIFF MANOR HS/MS
BRIARCLIFF, NY
HVAC-11
DWG. NAME P11868D04
4500 INDUSTRIAL ACCESS ROAD • DOUGLASVILLE. GEORGIA 30134-3949 • 770/489-0716 • www.seasons4.net

HVAC-12 COMPONENT DIAGRAM (BASIS: SEASONS-4)



1-1/4" MPT DRAIN
PIPING CHASE
WIRING CHASE
LEGEND
H HINGED ACCESS DOOR
L LIFT-OFF ACCESS DOOR
B BALANCING DAMPER
NOTE 1: O.A./E.A. LOUVERS, FURNACE VENT CAPS, ETC. MAY REQUIRE FIELD INSTALLATION.
NOTE 2: WIDTH SHOWN IS FOR UNIT BASE. ADD APPROX 5" TO ACCOUNT FOR HANDLES, FLANGES, DRAINS, ETC.
NOT TO SCALE
REV # BY DATE DESCRIPTION
0 DB 07/13/2022 ORIGINAL ISSUE
DIMENSIONAL DATA
BRIARCLIFF MANOR HS/MS
BRIARCLIFF, NY
HVAC-12
DWG. NAME P11868D01
4500 INDUSTRIAL ACCESS ROAD • DOUGLASVILLE. GEORGIA 30134-3949 • 770/489-0716 • www.seasons4.net

REV.	DATE	ITEM



KEY PLAN

NOT TO SCALE

PROJECT: BRIARCLIFF MANOR U.F.S.D.
PHASE 2 BOND IMPROVEMENTS
BRIARCLIFF MANOR MIDDLE/HIGH SCHOOL
444 PLEASANTVILLE RD, BRIARCLIFF MANOR, NY 10510

DWG TITLE: SCHEDULES, EQUIPMENT NOTES AND DETAILS (1 OF 10)

DRAWING BY: R.D.P.

CHECK BY: F.S.

BBS
ARCHITECTS
LANDSCAPE ARCHITECTS
ENGINEERS

244 EAST MAIN STREET, PATCHOGUE, NEW YORK 11772, T. 631.475.0349, F. 631.475.0361

187 WOLF ROAD, STE. 205, ALBANY, NEW YORK 12205, T. 518.621.7650, F. 518.621.7655

www.BBSARCHITECTURE.com

SED No.	66-14-02-02-0-004-023
DISTRICT	BRIARCLIFF MANOR UFSD
PROJECT	PHASE 2 BOND IMPROVEMENTS
DWG TITLE	SCHEDULES, EQUIPMENT NOTES AND DETAILS (1 OF 10)
SCALE:	AS NOTED
DATE:	7/15/22
BID PICK-UP:	
FILE No:	21-274C

M6.01 HSMS

VRF SYSTEM "ACC-N" OVERALL SCHEMATIC FLOW, REFRIGERANT PIPING FLOW, ELECTRICAL WIRING DIAGRAM INFORMATION (BASIS: LG)

Building Load Summary

1. Project name:9riarcliff Manor HS-MS - Rev.2
2. Date:10/07/2022
3. Location :Nation(New York, United States), Altitude(131ft)
4. Design conditions

		Cooling	Heating
OAT	DBT(°F)	91.9	10.9
	WBT(°F)	73.9	10.2
	RH(%)	43.3	86.0
IAT	DBT(°F)	80.6	68.0
	WBT(°F)	67.1	56.8
	RH(%)	50.0	50.0

Model Selection - Summary

Date: 10/07/2022

1. Outdoor Units

No.	Model Name	Quantity	Description
1	ARUM121DTE5	2	MULTI V 5/5C:60Hz/R410A/Heat Pump/MULTI V 5/N.America
Total		2	

2. Indoor Units

No.	Model Name	Quantity	Description
1	ARNU053TRD4	15	CEILING CASSETTE - 4WAY
2	ARNU122TRD4	2	CEILING CASSETTE - 4WAY
3	ARNU073M1A4	1	CEILING CONCEALED DUCT - MID STATIC
4	ARNU183M1A4	2	CEILING CONCEALED DUCT - MID STATIC
5	ARNU363M2A4	2	CEILING CONCEALED DUCT - MID STATIC
Total		22	

3. Branch/Header

No.	Model Name	Quantity
1	ARBLN01621	15
2	ARBLN03321	5

4. Pipes

No.	Diameter(Liq Gas,inch)	Length(ft)
1	1/4 : 1/2	179.8
2	3/8 : 5/8	134.8
3	3/8 : 3/4	25.0
4	3/8 : 7/8	35.0
5	1/2 : 1+1/8	95.0

5. Accessories

Model Name	Quantity	Description
PREMTBVC2	22	MultiSITE CRC2 Remote Controller (Includes Humidity)
PT-QCHW0	17	2x2 Grille for TR, TQ Chassis

System Model Selection - ODU

System Name: ACC-N **Date: 10/07/2022**

System No : 1/2

1. Design conditions - Outdoor

	Cooling			Heating		
	DBT(°F)	WBT(°F)	RH(%)	DBT(°F)	WBT(°F)	RH(%)
OAT	91.9	73.9	43.3	10.9	10.2	86.0
IAT	80.4	67.1	50.0	68.0	56.8	56.0

2. Outdoor Units

Model Name	No. of IDUs (Current / Max.) (EA)	Combination Ratio (Current / Max.) (%)	Corrected Capacity / Block Load (Cooling / Heating) (%)	Pre-charged Ref. amount (lbs)	Additional Ref. Amount (lbs)
ARUM121DTE5	14 / 20	97 / 130	0.0 / 0.0	23.20	17.03

Nominal/Corrected Capa. (kBtu/h)		Nominal/Corrected Pi (kW)	
Cooling	Heating	Cooling	Heating
119.7/112.9	135.0/137.6	7.7/7.2	9.2/13.9

Efficiency(Btu/h/W)		Weight(lbs)	Dimension (WxHxD) (inch)	Electrical Characteristics				
Cooling	Heating			Volt	Phase	Hz	MCA (A)	MOP (A)
15.8	9.9	507x1	48-13/16x66-17/32x29-29/32	460	3	60	18.4	25

3. Pipes

Diameter(Liq Gas,inch)	Length(ft)
1/4 : 1/2	135.0
3/8 : 5/8	75.0
3/8 : 3/4	20.0
3/8 : 7/8	5.0
1/2 : 1+1/8	55.0

4. Branch/Header

Model Name	Quantity
ARBLN01621	10
ARBLN03321	3
-	-
-	-

#Notes: Correction factor is corrected by such as, but not limited to, indoor unit combination, temperature, and pipe length.
The result can be slightly different from Product Data Book due to simulation.
Pipe lengths are estimations only.
Contractor is responsible for piping take-off and verification of actual pipe routing and pipe lengths.

System Model Section - IDU

System Name: ACC-N **Date: 10/07/2022**

System No : 1/2

5. Indoor Units(1)

Room	Room Load(kBtu/h)			Room Design Temp.(Return Air Temp.)(°F)				Model Name	Rated TC/Corrected TC(kBtu/h)			Corrected Capa/Room Load(%)		
				Cooling		Heating								
	TC	SC	HC	DBT	WBT	DBT	WBT		TC	SC	HC	TC	SC	HC
	5.0	3.0	6.0	80.6	67.1	68.0	56.8	ARNU053TRD4	5.5/5.5	3.9/4.0	6.1/6.3	110.4	132.2	104.4

OUTDOOR CONDENSING UNITS SCHEDULES (ACC-N & ACC-S) (BASIS: LG)

KLIMA NEW YORK, LLC

VRF Outdoor Condensing Unit Data

ACC-N & S

Tag No.:

ARUM121DTE5
Multi V™ 5 with LGRED° 460V ODU
10 Ton Single Frame Heat Pump and Heat Recovery

LG Life's Good

Performance:

Cooling Mode:

Nominal Capacity (Btu/h)	119,700
Power Input (kW)	7.72

Heating Mode:

Nominal Capacity (Btu/h)	135,000
Power Input (kW)	9.20

Rated capacity is certified under AHRI Standard 1230. Ratings are subject to change without notice. Current certified ratings are available at www.ahridirectory.org.

Electrical:

Frame	ARUM121DTE5
Power Supply (V/Hz/Ø)[1]	460/60/3
MOP (A)	25
MCA (A)	18.4
Rated Amps (A)	15.7
Compressor A (A)	10.7
Compressor B (B)	-
Fan (A)	5.0

Piping:[2]

Frame	ARUM121DTE5
Refrigerant Charge (lbs.)	23.2
Liquid (in., O.D.)	1/2 Braze
High Pressure Vapor (Heat Recov only; in, O.D.)	3/4 Braze
Low Pressure Vapor (in., O.D.)	1-1/8 Braze

Operating Range:

Cooling (°F DB)**	5 - 122
Heating (°F WB)	-22 - 61
Synchronous	
Cooling Based (°F DB)	14 - 81
Heating Based (°F WB)	14 - 61

Unit Data:

Refrigerant Type	R410A
Refrigerant Control	EEV
Max. Number of Indoor Units[3]	20
Sound Pressure[4] dB(A)	59.0
Weight	
Frame	ARUM121DTE5
Net (lbs.)	507
Shipping (lbs.)	534
Communication Cable (No x AWG)[5]	2 x 18
Heat Exchanger Coating	Black Coated Fin™

Compressor:

Type	HSS DC Scroll
Quantity	1
Oil / Type	PVE / FVC68D

Fan:

Type	Propeller
Quantity	2
Motor Drive	Brushless Digitally Controlled Direct
Air Flow Rate (rated/max, CFM)	8,400 / 11,300

Notes:
1. Power wiring cable size must comply with the applicable local and national codes. Cables terminate at each frame.
2. For main pipe segment size, refer to the LATS Multi V tree diagram.
3. The combination ratio must be between 50-130%.
4. Sound pressure levels are tested in an anechoic chamber under ISO Standard 3745 for the combination of outdoor units.
5. Communication cable between ODU and IDUs must be 2-conductor, 18 AWG, twisted, stranded, and shielded. Ensure the communication cable shield is properly grounded to the Main ODU chassis only. Do not ground the communication cable at any other point. Wiring must comply with all applicable local and national codes.
6. Acceptable operating voltage: 414 - 528V
7. Fan ESP (in wg) selectable range is 0.16 to 0.32.

Standard Features:
- Advanced Smart Load Control
- Intelligent Heating
- HiPOR (High Pressure Oil Return)
- Smart Oil Control
- Night Quiet Operation
- Fault Detection and Diagnosis
- Active Refrigerant Control
- Variable Heat Path Exchanger
- Subcooling and Vapor Injection Control
- Liquid Cooled Inverter Controller
- Advanced Comfort Cooling

Optional Accessories:
- ☐ Air Guide - ZAGDKA52A
- ☐ Hail Guard Kit - ZHGDKA52A
- ☐ Low Ambient Baffle Kit - ZLABKA52A (2), Control Kit - PRVC2 (1 per system)
- ☐ Base Pan Heater - ZPLT2A51A

**Cooling range with the Low Ambient Baffle Kit (sold separately) is -9.9°F to +122°F and is achieved only when all indoor units are operating in cooling mode. Does not impact heat recovery system synchronous operating range.

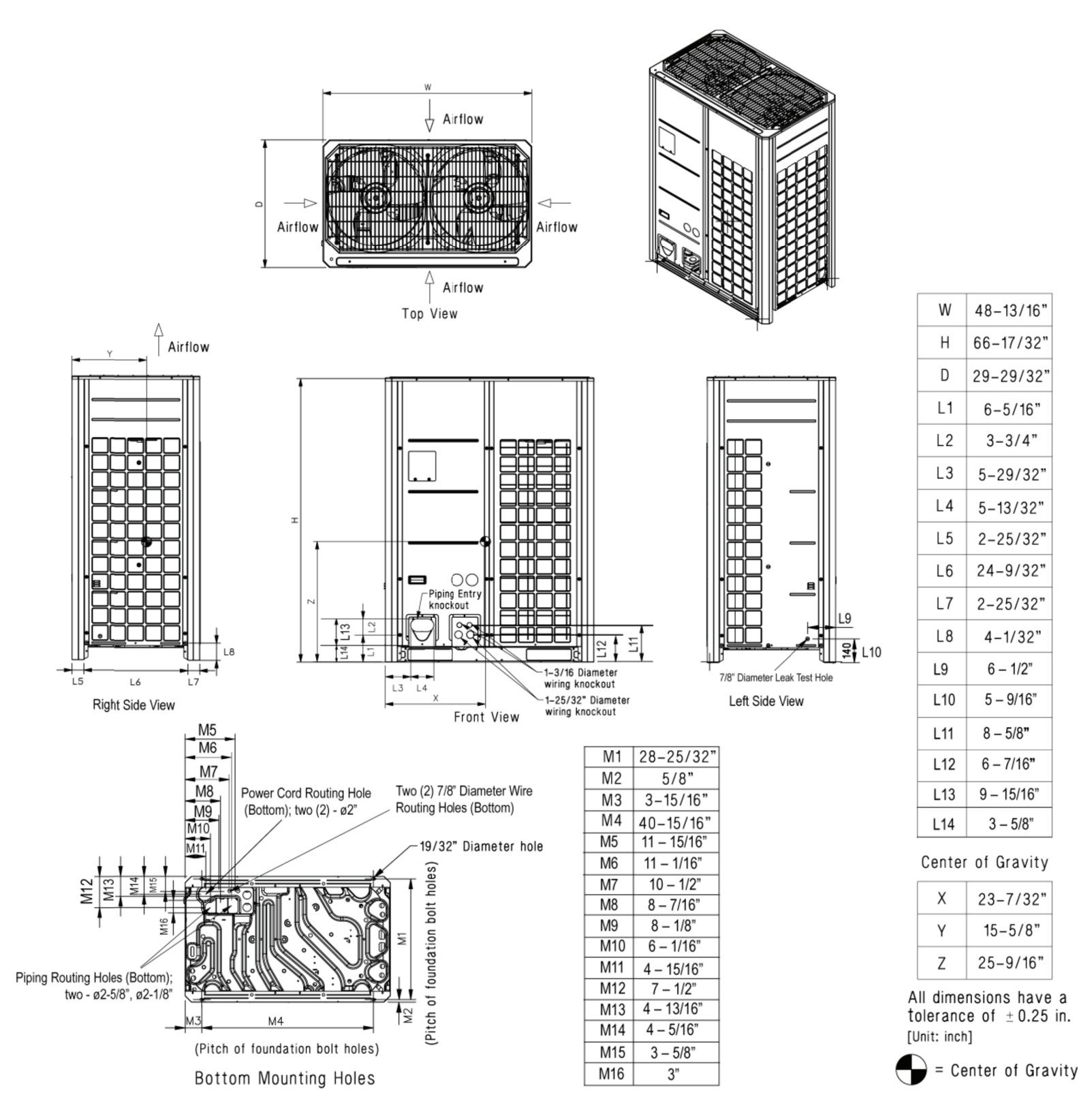
LGRED° Powerful Heat Technology · Inverter · AHRI CERTIFIED™ www.ahridirectory.org Variable Refrigerant Flow (VRF) Multi-Split AC and HP AHRI Standard 1230

SB_MultiV_5_ODU_ARUM121DTE5_2021_05_26_155640

Job Name/Location:

ARUM121DTE5
Multi V™ 5 with LGRED° 460V ODU
10 Ton Single Frame Heat Pump and Heat Recovery

Tag No.:
Date:
PO No.:



SB_MultiV_5_ODU_ARUM121DTE5_2021_05_26_155640

Job Name/Location:

ARUM121DTE5
Multi V™ 5 with LGRED° 460V ODU
10 Ton Single Frame Heat Pump and Heat Recovery

Tag No.:
Date:
PO No.:

AHRI Data:

Reference Number	Indoor Type	Cooling Capacity (95°F)	EER (95°F)	IEER	SCHE	High Heating Capacity (47°F)	High COP (47°F)	Low Heating Capacity (17°F)	Low COP (17°F)
205281464	Ducted Indoor Units	114,000	12.50	24.60	26.40	129,000	3.46	84,000	2.53
202524543	Non-Ducted Indoor Units	114,000	13.10	29.60	31.00	129,000	3.97	84,000	2.74

ADDITIONAL SCHEDULE NOTES:
1. PROVIDE FACTORY-AUTHORIZED MANUFACTURER'S REPRESENTATIVE PRESENT TO PERFORM START-UP, COMMISSIONING, TESTING, AND TRAINING OF NEW EQUIPMENT TO OWNER'S PERSONNEL.
2. APPROVED MANUFACTURER SHALL VISIT JOB SITE TO CONFIRM EXACT DIMENSIONS AND REFRIGERANT PIPING RUN PRIOR TO FURNISHING SUBMITTAL TO M.C. TO PROVIDE TO ARCHITECT/ENGINEER FOR REVIEW.
3. PROVIDE INTERNAL LIFT CONDENSATE PUMP WITH UNIT.
4. TIE IN VRF SYSTEM VIA BACNET CARD TO EXISTING BUILDING MANAGEMENT SYSTEM. SEE SPECIFICATIONS FOR FURTHER DETAILS.
5. COORDINATE INSTALLATION WORK WITH G.C.
6. FOR OUTDOOR CONDENSING UNIT, PROVIDE SUPPORTS FROM MANUFACTURER.

INDOOR EVAPORATOR UNITS SCHEDULES (AC-1A THROUGH AC-22A) (BASIS: LG)

KLIMA NEW YORK, LLC

VRF Indoor Unit Data

AC-1A thru 22A, AC-236*
Qty. (22), (23)*
(* - AC-236 IS PART OF ADD-ALTERNATE #4)

Tag No.:

ARNU053TRD4
Multi V™ Four-Way 2' x 2' Ceiling Cassette
5,500 Btu/h Indoor Unit

Performance:

Cooling Capacity (Btu/h)[1]	5,500
Heating Capacity (Btu/h)[1]	6,100
L/M/H Power Input at Factory Default (W)	11 / 12 / 13

Rated capacity is certified under AHRI Standard 1230. Ratings are subject to change without notice. Current certified ratings are available at www.ahridirectory.org.

Electrical:

Power Supply (V/Hz/Ø)	208-230/60/1
Rated Amps	0.20

Piping:

Refrigerant	
Liquid Line (in., O.D.)	1/4 Flare
Vapor Line (in., O.D.)	1/2 Flare
Condensate	
Condensate Line (in., I.D.)	1
Factory Installed Pump[3]	Yes

Controls Features:
- Auto changeover (Heat Recovery only)
- Auto operation
- Auto restart
- Dual thermistor control
- Dual setpoint control
- Timer (on/off)
- Weekly schedule
- Auto direction/swing (up/down)
- Swirl wind (alternating vanes)
- Fan speed control
- Jet cool (fast cooling)
- Filter life display
- Multiple auxiliary heater applications
- Child lock
- Group control
- High ceiling
- Hot start
- Self diagnostics
- External on/off control
- Wi-Fi compatible
- Auto fan
- Leak detection

Required Accessories:
- ☒ Grille Kit (24-7/16" x 24-7/16") - PT-QCHW0

Optional Accessories:
- ☐ Wireless Remote Controller - PQWRHQ0FDB
- ☒ MultiSITE™ CRC2 Controller - PREMTBVC2
- ☐ MultiSITE CRC1+ Controller - PREMTBVC1
- ☐ Simple Remote Controller - PREMTC00U
- ☐ Premium Remote Controller - PREMTA000
- ☐ Remote Temperature Button Sensor - ZRTBS01
- ☐ Simple Dry Contact (1 contact, 24 VAC external power) - PDRYCB100
- ☐ Dry Contact for Third Party Thermostat - PDRYCB320
- ☐ Dry Contact for Economizer - PDRYCB400
- ☐ Ventilation Kit - PTVK430
- ☐ Auxiliary Heater Kit - PRARH1
- ☐ Wi-Fi Module - PWFMDD200

Entering Mixed Air:

Cooling Maximum[1] (°F WB)	76
Heating Minimum (°F DB)	59

Unit Data:

Refrigerant Type	R410A
Refrigerant Control	EEV
Sound Pressure dB(A) (H/M/L)[3]	29 / 27 / 26
Primary Filter Type	Washable
Unit Net Weight (lbs.)	29
Unit Shipping Weight (lbs.)	34
Grille Net Weight (lbs.)	7
Grille Shipping Weight (lbs.)	11

Fan:

Type	Turbo
Quantity	1
Motor/Drive	Brushless Digitally Controlled/Direct
Motor Quantity	1
Air Flow Rate H/M/L (CFM)	265 / 247 / 212

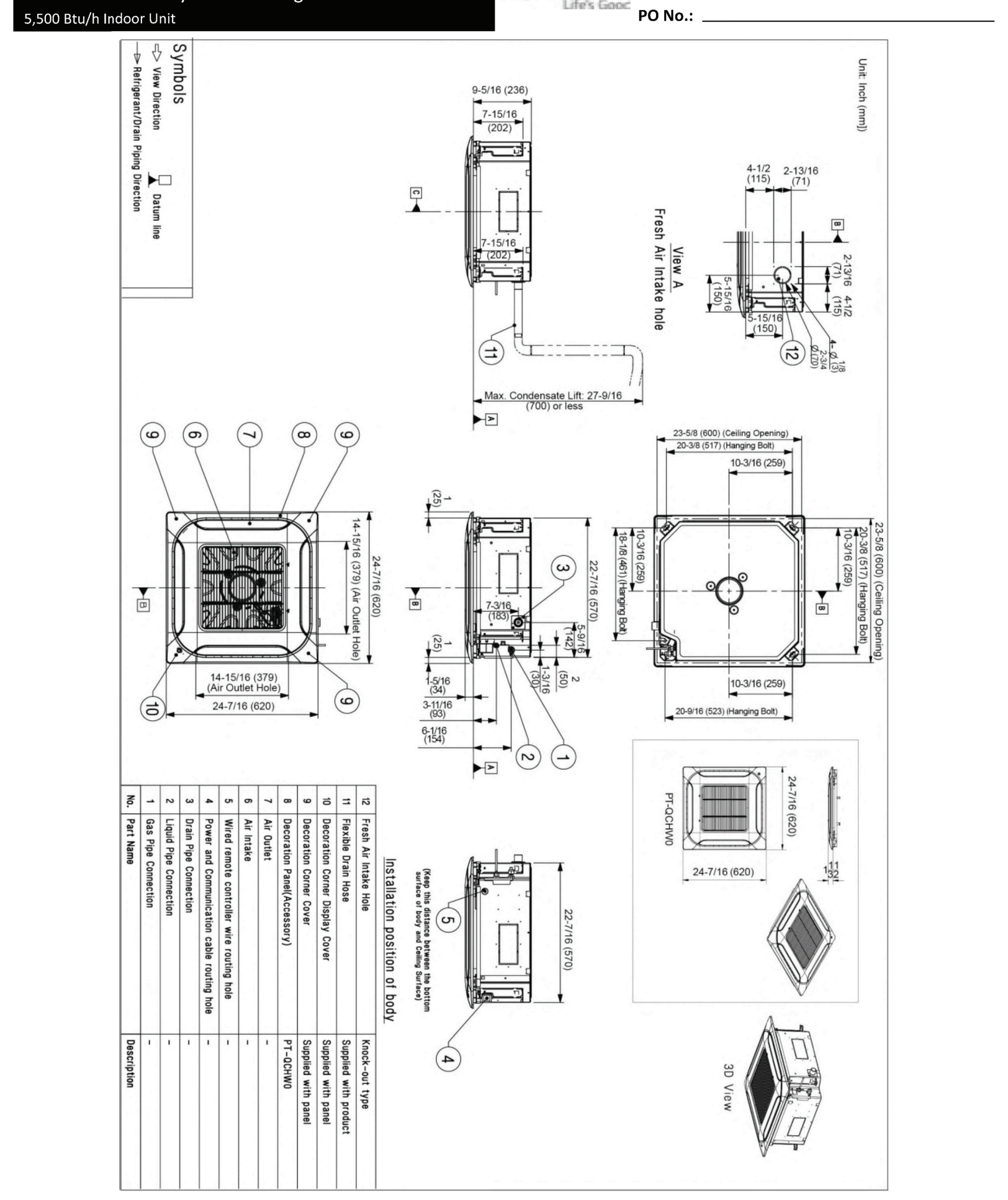
Notes:
1. See Engineering Manual for sensible and latent capacities.
2. Maximum lift is 27-1/2 inches from bottom of unit.
3. Sound Pressure levels are tested in an anechoic chamber under ISO Standard 3745.
4. Communication cable between Main outdoor units to indoor units / heat recovery units to be 18 AWG, 2-conductor, twisted, stranded, shielded. Ensure the communication cable shield is properly grounded to the Main outdoor unit chassis only. Do not ground the outdoor unit to indoor units / heat recovery units communication cable at any other point. Wiring must comply with all applicable local and national codes.
5. Power wiring is field provided, and must comply with the applicable local and national codes.
6. This unit comes with a dry nitrogen charge.
7. All capacities are net with a combination ratio between 95 – 105%.
8. Must follow installation instructions in the applicable LG installation manual.

SB_MV_FourWayCassette2x2_ARNU053TRD4_2021_02_25_133905

Job Name/Location:

ARNU053TRD4
Multi V™ Four-Way 2' x 2' Ceiling Cassette
5,500 Btu/h Indoor Unit

Tag No.:
Date:
PO No.:



SB_MV_FourWayCassette2x2_ARNU053TRD4_2021_02_25_133905

ADDITIONAL SCHEDULE NOTES:
1. PROVIDE FACTORY-AUTHORIZED MANUFACTURER'S REPRESENTATIVE PRESENT TO PERFORM START-UP, COMMISSIONING, TESTING, AND TRAINING OF NEW EQUIPMENT TO OWNER'S PERSONNEL.
2. APPROVED MANUFACTURER SHALL VISIT JOB SITE TO CONFIRM EXACT DIMENSIONS AND REFRIGERANT PIPING RUN PRIOR TO FURNISHING SUBMITTAL TO M.C. TO PROVIDE TO ARCHITECT/ENGINEER FOR REVIEW.
3. PROVIDE INTERNAL LIFT CONDENSATE PUMP WITH UNIT.
4. TIE IN VRF SYSTEM VIA BACNET CARD TO EXISTING BUILDING MANAGEMENT SYSTEM. SEE SPECIFICATIONS FOR FURTHER DETAILS.
5. COORDINATE INSTALLATION WORK WITH G.C.

INDOOR EVAPORATOR UNITS SCHEDULES (AC-1B THROUGH AC-9B) (BASIS: LG)

KLIMA NEW YORK, LLC

VRF Indoor Unit Data

AC-1B thru 9B
Qty. (9)

Tag No.:

ARNU123TRD4
Multi V™ Four-Way 2' x 2' Ceiling Cassette
12,300 Btu/h Indoor Unit

Performance:

Cooling Capacity (Btu/h)[1]	12,300
Heating Capacity (Btu/h)[1]	13,600
L/M/H Power Input at Factory Default (W)	13 / 15 / 17

Rated capacity is certified under AHRI Standard 1230. Ratings are subject to change without notice. Current certified ratings are available at www.ahridirectory.org.

Electrical:

Power Supply (V/Hz/Ø)	208-230/60/1
Rated Amps	0.20

Piping:

Refrigerant	
Liquid Line (in., O.D.)	1/4 Flare
Vapor Line (in., O.D.)	1/2 Flare
Condensate	
Condensate Line (in., I.D.)	1
Factory Installed Pump[3]	Yes

Controls Features:
- Auto changeover (Heat Recovery only)
- Auto operation
- Auto restart
- Dual thermistor control
- Dual setpoint control
- Timer (on/off)
- Weekly schedule
- Auto direction/swing (up/down)
- Swirl wind (alternating vanes)
- Fan speed control
- Jet cool (fast cooling)
- Filter life display
- Multiple auxiliary heater applications
- Child lock
- Group control
- High ceiling
- Hot start
- Self diagnostics
- External on/off control
- Wi-Fi compatible
- Auto fan
- Leak detection

Required Accessories:
- ☒ Grille Kit (24-7/16" x 24-7/16") - PT-QCHW0

Optional Accessories:
- ☐ Wireless Remote Controller - PQWRHQ0FDB
- ☒ MultiSITE™ CRC2 Controller - PREMTBVC2
- ☐ MultiSITE CRC1+ Controller - PREMTBVC1
- ☐ Simple Remote Controller - PREMTC00U
- ☐ Premium Remote Controller - PREMTA000
- ☐ Remote Temperature Button Sensor - ZRTBS01
- ☐ Simple Dry Contact (1 contact, 24 VAC external power) - PDRYCB100
- ☐ Dry Contact for Third Party Thermostat - PDRYCB320
- ☐ Dry Contact for Economizer - PDRYCB400
- ☐ Ventilation Kit - PTVK430
- ☐ Auxiliary Heater Kit - PRARH1
- ☐ Wi-Fi Module - PWFMDD200

Entering Mixed Air:

Cooling Maximum[1] (°F WB)	76
Heating Minimum (°F DB)	59

Unit Data:

Refrigerant Type	R410A
Refrigerant Control	EEV
Sound Pressure dB(A) (H/M/L)[3]	32 / 30 / 27
Primary Filter Type	Washable
Unit Net Weight (lbs.)	32
Unit Shipping Weight (lbs.)	38
Grille Net Weight (lbs.)	7
Grille Shipping Weight (lbs.)	11

Fan:

Type	Turbo
Quantity	1
Motor/Drive	Brushless Digitally Controlled/Direct
Motor Quantity	1
Air Flow Rate H/M/L (CFM)	307 / 283 / 247

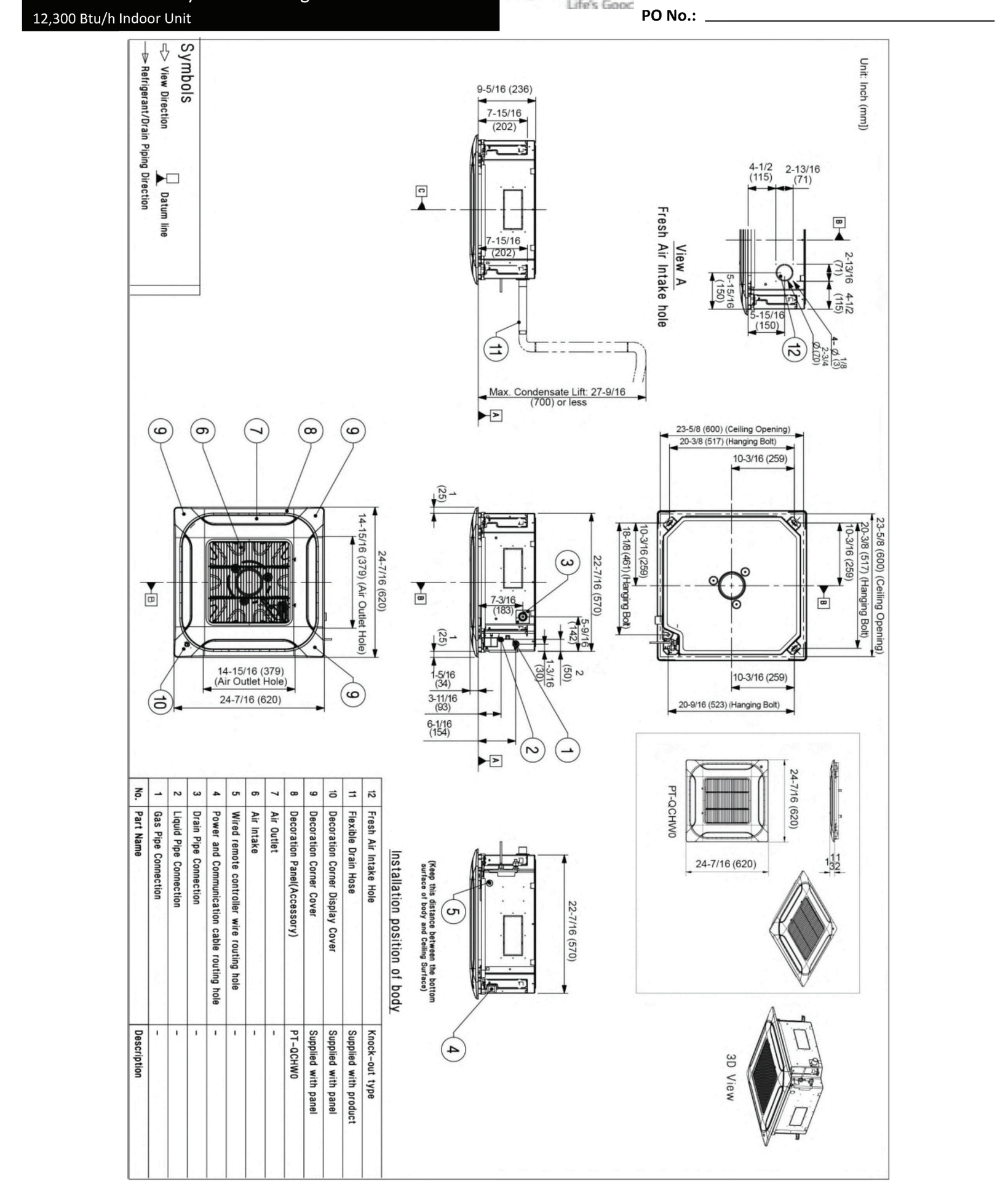
Notes:
1. See Engineering Manual for sensible and latent capacities.
2. Maximum lift is 27-1/2 inches from bottom of unit.
3. Sound Pressure levels are tested in an anechoic chamber under ISO Standard 3745.
4. Communication cable between Main outdoor units to indoor units / heat recovery units to be 18 AWG, 2-conductor, twisted, stranded, shielded. Ensure the communication cable shield is properly grounded to the Main outdoor unit chassis only. Do not ground the outdoor unit to indoor units / heat recovery units communication cable at any other point. Wiring must comply with all applicable local and national codes.
5. Power wiring is field provided, and must comply with the applicable local and national codes.
6. This unit comes with a dry nitrogen charge.
7. All capacities are net with a combination ratio between 95 – 105%.
8. Must follow installation instructions in the applicable LG installation manual.

SB_MV_FourWayCassette2x2_ARNU123TRD4_2021_02_25_133905

Job Name/Location:

ARNU123TRD4
Multi V™ Four-Way 2' x 2' Ceiling Cassette
12,300 Btu/h Indoor Unit

Tag No.:
Date:
PO No.:



SB_MV_FourWayCassette2x2_ARNU123TRD4_2021_02_25_133905

ADDITIONAL SCHEDULE NOTES:
1. PROVIDE FACTORY-AUTHORIZED MANUFACTURER'S REPRESENTATIVE PRESENT TO PERFORM START-UP, COMMISSIONING, TESTING, AND TRAINING OF NEW EQUIPMENT TO OWNER'S PERSONNEL.
2. APPROVED MANUFACTURER SHALL VISIT JOB SITE TO CONFIRM EXACT DIMENSIONS AND REFRIGERANT PIPING RUN PRIOR TO FURNISHING SUBMITTAL TO M.C. TO PROVIDE TO ARCHITECT/ENGINEER FOR REVIEW.
3. PROVIDE INTERNAL LIFT CONDENSATE PUMP WITH UNIT.
4. TIE IN VRF SYSTEM VIA BACNET CARD TO EXISTING BUILDING MANAGEMENT SYSTEM. SEE SPECIFICATIONS FOR FURTHER DETAILS.
5. COORDINATE INSTALLATION WORK WITH G.C.

VRF SYSTEM WALL CONTROLLER SPECIFICATIONS/SCHEDULE (BASIS: LG)

KLIMA NEW YORK, LLC

VRF Wall Controller Data

Wall Controller

Tag #:

PREMTBVC2
MultiSITE CRC2 Remote Controller

Electrical:

Power Supply	12VDC power from indoor unit

Surrounding Conditions:

Temperature		
	Operating	32-122 °F
	Storage	-22-122 °F
Humidity		
	Operating	5-95% RH (non-condensing)
	Storage	0-95% RH (non-condensing)

Features:
- Customizable color digital touch screen interface with Multilanguage support
- BACnet® MS/TP or Wireless IP (optional)
- ZigBee® Pro Wireless network (optional)
- Role based configuration (password protected)
- Lua scripting
- Function code settings
- Function Code Search Tool
- Date and Time Display
- Room temperature display (-9 °F ~ +9 °F adjustable)
- Humidity Display (-15% ~ +15% adjustable)
- Operation - On/Off
- Mode - Auto/Cool/Dry/Heat/Fan Only
- Occupied cooling and heating temperature setpoints
- Unoccupied cooling and heating temperature setpoints
- 7 day scheduling with mode
- Fan speed - Auto/Low/Med/High/Power
- Discharge vanes - Auto/Swing/Fixed
- Static pressure installer setting

Optional Accessories (sold separately):
- ☐ PZCWRCG3 - Group Control Cable Kit
- ☐ PZCWRC1 - Extension Cable (for IDUs without terminal blocks)
- ☐ ZVRCZPWC2 - ZigBee® Pro Wireless Module[3]
- ☐ ZVRCZDWC1 - Wireless Door Window Contact[3]
- ☐ ZVRCZMTH1 - Wireless Ceiling Mounted Occupancy, Temperature and Humidity Sensor[3]
- ☐ ZVRCZWOC1 - Wireless Wall Mounted Occupancy Sensor[3]
- ☐ SEDCO2G5045 - Wireless CO2, Temperature & Humidity Sensor[3]
- ☐ ZVRCZTRH1 - Wireless Temperature & Humidity Sensor[3]
- ☐ ZVRCZWLS1 - Wireless Water Leak Sensor[3]
- ☐ VCM8002V504 - Wi-Fi Module (BACnet Wireless IP)

Notes:
1. Available functions/features may differ based on connected system.
2. Communication cable can be extended to a maximum of 164 feet.
3. Up to 20 ZigBee® sensors can be connected to the MultiSITE CRC2 Remote Controller.
4. Must follow installation instructions in the applicable LG installation manual.

Connectivity:

LG Communications	1 Channel/RS-485 V-Net
BACnet® MS/TP (default model)	
BACnet® wireless IP (optional)	
ZigBee® Pro wireless mesh network (P) (optional)	

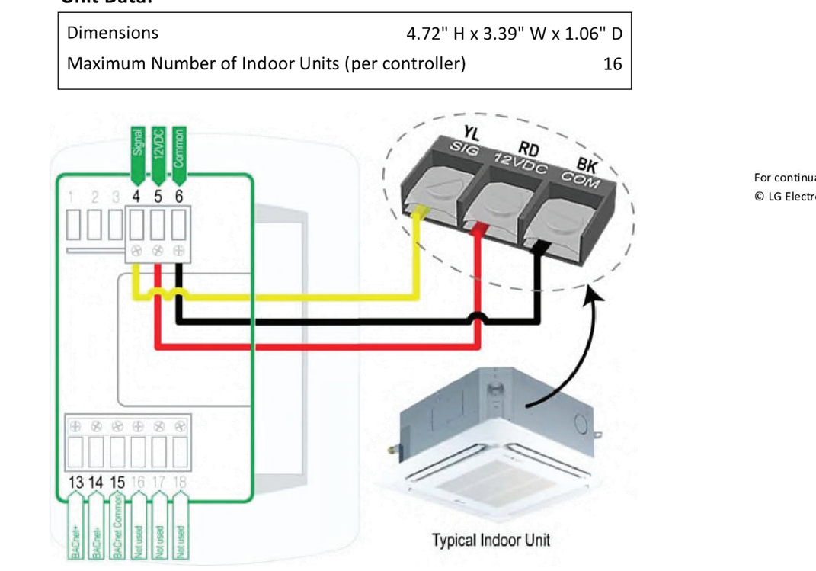
Communications Cabling Specifications (V-Net):

Type	3 conductor, stranded, twisted, unshielded
Size	AWG 22-3
Length[2]	up to 164 ft

AWG - American Wire Gage

Unit Data:

Dimensions	4.72" H x 3.39" W x 1.06" D
Maximum Number of Indoor Units (per controller)	16



TERMINAL	DESCRIPTION
4 (S)	Tx - Rx Communication
5 (12V)	12 Volts DC
6 (G)	Common
13	BACnet +
14	BACnet -
15	BACnet Common

Note: Terminals 1, 2, 3, 16, 17, and 18 are unused.

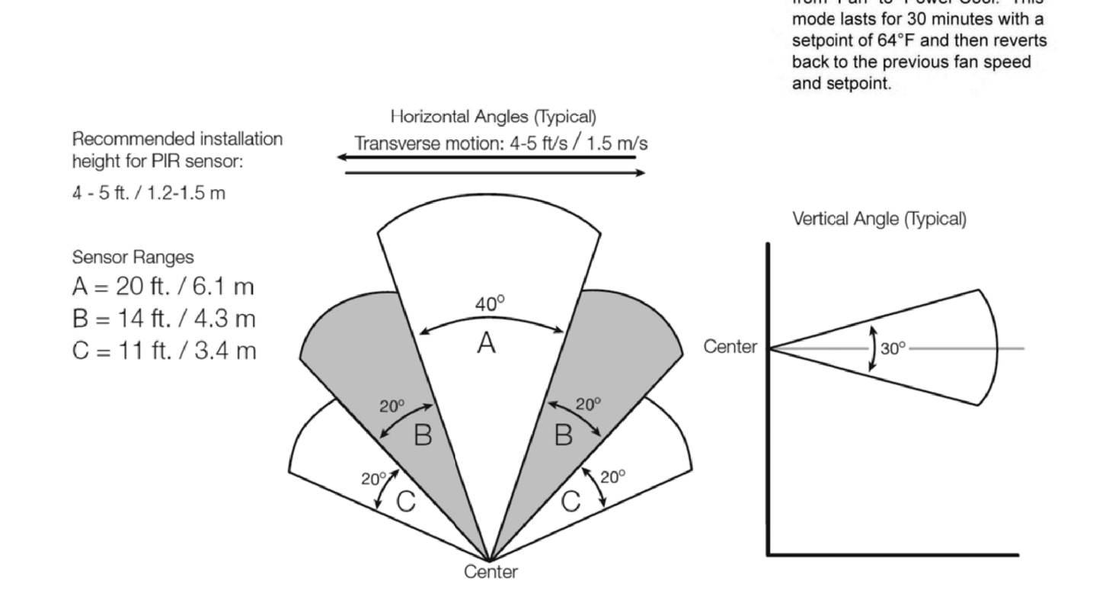
BACnet® is a registered trademark of ASHRAE

SB_MultiSITE_CRC2_PREMTBVC2_2021_08_18_145646

Job Name/Location:

PREMTBVC2
MultiSITE CRC2 Remote Controller

Tag #:
Date:
PO No.:



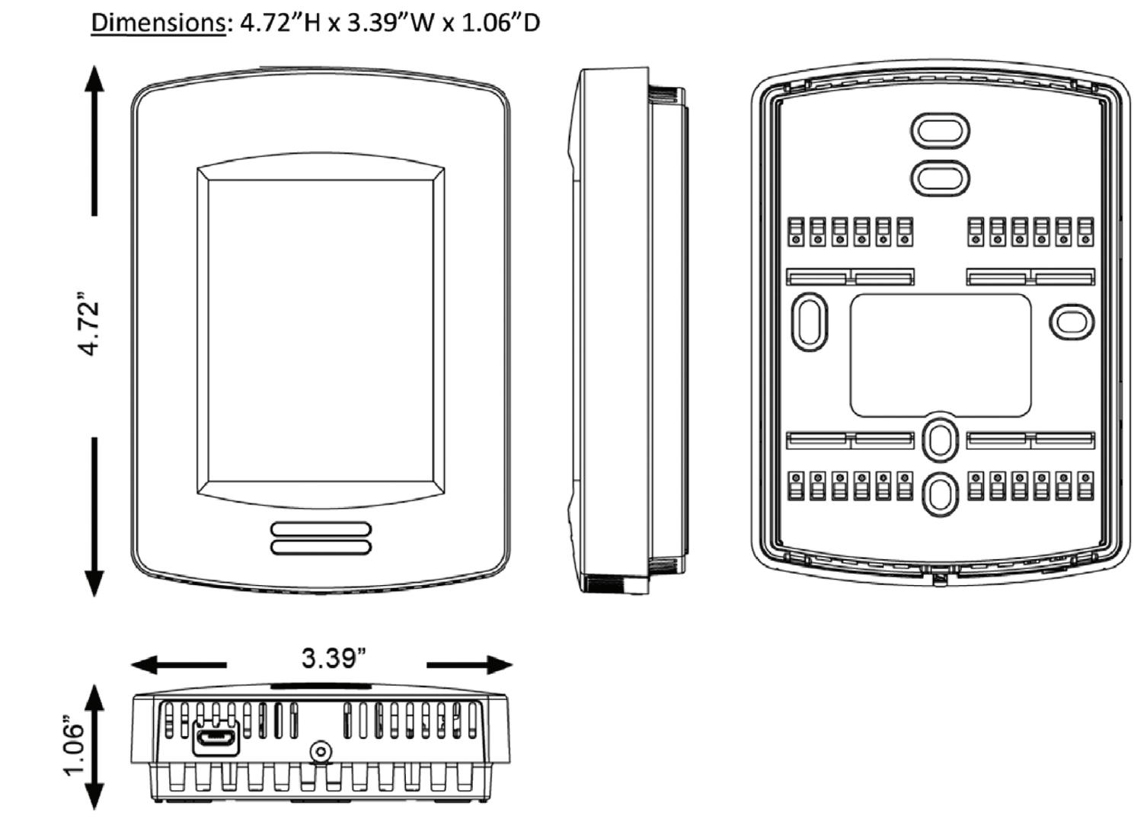
SB_MultiSITE_CRC2_PREMTBVC2_2021_08_18_145646

Job Name/Location:

PREMTBVC2
MultiSITE CRC2 Remote Controller

Tag #:
Date:
PO No.:

Dimensions: 4.72"H x 3.39"W x 1.06"D



ADDITIONAL SCHEDULE NOTES:
1. PROVIDE FACTORY-AUTHORIZED MANUFACTURER'S REPRESENTATIVE PRESENT TO PERFORM START-UP, COMMISSIONING, TESTING, AND TRAINING OF NEW EQUIPMENT TO OWNER'S PERSONNEL.
2. APPROVED MANUFACTURER SHALL VISIT JOB SITE TO CONFIRM & RECOMMEND LOCATION(S) PER MANUFACTURER. 3. PROVIDE INTERNAL LIFT CONDENSATE PUMP WITH UNIT.
4. TIE IN VRF SYSTEM VIA BACNET CARD TO EXISTING BUILDING MANAGEMENT SYSTEM. SEE SPECIFICATIONS FOR FURTHER DETAILS.
5. COORDINATE INSTALLATION WORK WITH G.C.

REV.	DATE	ITEM

NOTICE

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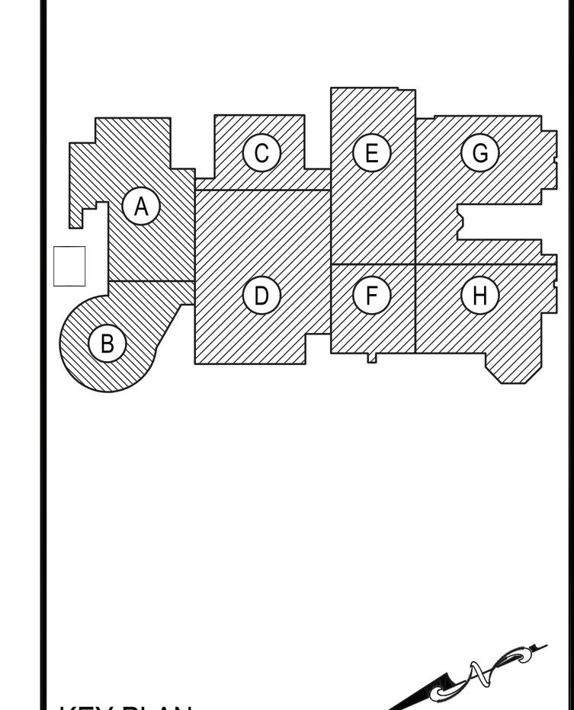

KEY PLAN
NOT TO SCALE

PROJECT
BRIARCLIFF MANOR U.F.S.D.
PHASE 2 BOND IMPROVEMENTS
BRIARCLIFF MANOR MIDDLE/HIGH SCHOOL
444 PLEASANTVILLE RD, BRIARCLIFF MANOR, NY 10510

DWG TITLE
SCHEDULES, EQUIPMENT
NOTES AND DETAILS (3 OF 10)

DRAWING BY: R.D.P.
CHECK BY: F.S.

NOTICE

THIS DRAWING, PREPARED FOR THE SPECIFIC PROJECT INDICATED IS AN INSTRUMENT OF SERVICE AND THE PROPERTY OF BBS ARCHITECTS, LANDSCAPE ARCHITECTS AND ENGINEERS, PC. INFRINGEMENT OR ANY USE OF THIS DRAWING FOR ANY OTHER PROJECT IS PROHIBITED. ANY ALTERATION OR REPRODUCTION OF THIS DOCUMENT IS ALSO PROHIBITED WITHOUT THE WRITTEN CONSENT OF THE ARCHITECT OR ENGINEER.

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www.BBSARCHITECTURE.com

SED No.	66-14-02-02-0-004-023
DISTRICT	BRIARCLIFF MANOR UFSD
PROJECT	PHASE 2 BOND IMPROVEMENTS
DWG TITLE	SCHEDULES, EQUIPMENT NOTES AND DETAILS (3 OF 10)
SCALE:	AS NOTED
DATE:	7/15/22
BID PICK-UP:	
FILE No:	21-274C

M6.03 HSMS

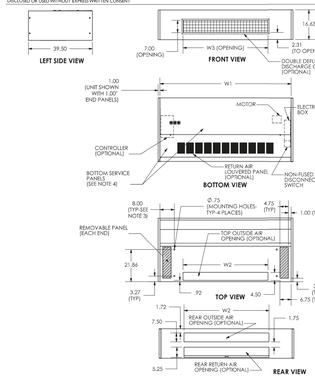
HOT WATER/CHILLED WATER UNIT VENTILATOR SCHEDULES (UV-1A, 1B, 1C, 1D, 1E, 1H) (BASIS: MAGIC AIRE)

Briarcliff Manor HS-MS CHW/HW UV

Manufacturer	MagicAire	MagicAire	MagicAire	MagicAire	MagicAire	MagicAire
Performance Details	MAUHF6	MAUHF5	MAUHF3	MAUHF2	MAUHF2	MAUVF5
Arrangement	Horizontal Ceiling	Horizontal Ceiling	Horizontal Ceiling	Horizontal Ceiling	Horizontal Ceiling	Vertical Floor
Base Unit Size	MAUH-6	MAUH-5	MAUH-3	MAUH-2	MAUH-2	MAUV-5
Tag	***UV-1A***	***UV-1B***	***UV-1C***	***UV-1D***	***UV-1E***	***UV-1H***
Quantity	1	1	1	1	1	1
Altitude	0	0	0	0	0	0
Configuration	4 Pipe	4 Pipe	4 Pipe	4 Pipe	4 Pipe	4 Pipe
Nominal Airflow (CFM)	2000	1500	1000	750	750	1500
OA (CFM)	560	470	320	240	200	475
External Static Pressure ESP (IWG)	0.1	0.1	0.1	0.1	0.1	0.1
Cooling Coil	**3 Row CHW**	**3 Row CHW**	**3 Row CHW**	**3 Row CHW**	**3 Row CHW**	**3 Row CHW**
Rows	3	3	3	3	3	3
EAT Dry Bulb (F)	85.3	82.8	79.4	84.9	84.1	80
EAT Wet Bulb (F)	72	69.1	67.4	70.6	70.3	68.5
LAT Dry Bulb (F)	65.22	62.6	61.71	63.8	63.48	61.72
LAT Wet Bulb (F)	62.73	59.73	58.99	60.6	60.4	59.38
Leaving Dew Point (F)	61.39	58.02	57.34	58.74	58.6	57.96
Total Capacity (BTU/hr)	61558	43965	26044	24475	24148	42633
Sensible Capacity (BTU/hr)	41783	31563	18703	16755	16396	28708
EWT (F)	44	44	44	44	44	44
LWT (F)	59.37	56.54	56.23	56.21	56.05	56.16
GPM	8	7	4.3	4	4	7
WPD (ft w.g.)	8.268	6.544	5.973	4.31	4.31	6.544
Cooling Fluid	Water	Water	Water	Water	Water	Water
How Water Coil	**2 Row HW**	**2 Row HW**	**2 Row HW**	**2 Row HW**	**2 Row HW**	**2 Row HW**
Rows	2	2	2	3	3	2
EAT Dry Bulb (F)	50	48	47	47	51	47
LAT Dry Bulb (F)	120.02	111.52	107.86	120.83	122.21	110.87
Total Capacity (BTU/hr)	155827	106075	68449	63011	60304	106866
EWT (F)	200	200	200	200	200	200
LWT (F)	159.76	160.16	159.6	159.94	158.47	159.86
GPM	8	5.5	3.5	3.3	3	5.5
WPD (ft w.g.)	6.908	3.6	1.224	3.092	2.728	3.6
Heating Fluid	Water	Water	Water	Water	Water	Water
Electrical Data	ECM	ECM	ECM	ECM	ECM	ECM
Voltage 1 (V1)	208	208	208	208	208	208
Phase	1	1	1	1	1	1
Frequency	60	60	60	60	60	60
Motor HP	3/4	1/2	1/3	1/3	1/3	1/2
Motor FLA (at V1)	6.8	3.3	2.6	2.3	2.3	3.3
Unit MCA (at V1)	8.5	4.1	3.2	2.9	2.9	4.1
Unit MOPD (at V1)	15	15	15	15	15	15

Notes:
1. All temperature controls to be field supplied and field installed by ATC vendor (Coordinate control with MC).
2. Architect to select unit color from vendor color chart.
3. MC and vendor to coordinate right or left hand piping connections.

MagicAire — **Magic Aire Horizontal Unit Ventilator Models MAUHF 2-5** — Certified Drawing UHF-201-1 — Front Discharge Plenum, Double Deflection Grille/Duct Collar



MODEL NO.	CFM	W1	W2	W3	APPROXIMATE SHIPPING WEIGHT (LBS)	APPROXIMATE INSTALLED WEIGHT (LBS)
UHF2	750	62	36	36	500	485
UHF3	1000	74	48	48	600	580
UHF4	1250	86	60	60	740	720
UHF5	1,500	98	72	72	830	810

NOTE:
1. Drawing refers to Design "F" units.
2. All dimensions are in inches.
3. Dimension does not include end panels.
4. Two bottom panels provided for service access.
5. Motor and electrical power input box on right side of unit. Box includes Fan Speed switch and non-fused disconnect switch.
6. Connection hand is determined by facing discharge of unit.

Product Information is Subject to Change Without Notice

MagicAire — **Magic Aire Unit Ventilator Model MAUVF** — Certified Drawing 100-38 — Inlet Air Arrangements 21 7/8" Deep Unit

MODEL NO.	CFM	W1	W2	W3	Approx. Installed Weight (LBS)
MAUVF1	500	50	24	16.6	335
MAUVF2	750	62	36	31.67	390
MAUVF3	1000	74	48	46.74	470
MAUVF4	1250	86	60	61.81	395
MAUVF5	1500	98	72	76.47	655

NOTE:
1. Drawing refers to Design "F" units.
2. All dimensions are in inches.
3. Dimension does not include end panels.
4. Three front panels provided for service access.
5. Motor and electrical power input box on right side of unit, Box includes Fan Speed Switch, On/Off Switch and non-fused disconnect switch.

Product Information is Subject to Change Without Notice

MagicAire — **Magic Aire Horizontal Unit Ventilator Model MAUHF 6** — Certified Drawing UHF-304-1 — Down Discharge Plenum, Double Deflection Grille

NOTE:
1. Drawing refers to Design "F" units.
2. All dimensions are in inches.
3. Dimension does not include end panels.
4. Two bottom panels provided for service access.
5. Motor and electrical power input box on right side of unit. Box includes Fan Speed switch and non-fused disconnect switch.
6. Connection hand is determined by facing discharge of unit.
7. Approx shipping weight is 1050 lbs. Approx installed weight is 1030 lbs.

Product Information is Subject to Change Without Notice

ADDITIONAL SCHEDULE NOTES:
1. PROVIDE FACTORY-AUTHORIZED MANUFACTURER'S FIELD REPRESENTATIVE FOR START-UP, COMMISSIONING, & TRAINING OF NEW EQUIPMENT TO OWNER'S PERSONNEL.
2. PROVIDE INTEGRAL MOTORIZED OUTSIDE AIR INTAKE DAMPER WITH EQUIPMENT.
3. M.C. SHALL VERIFY IN THE FIELD THE CONDENSATE DRAIN LINE CONNECTION TO NEW CONDENSATE DRAIN PAN BELOW COOLING COIL.
4. MC TO CONFIRM WITH APPROVED MANUFACTURER IN THE FIELD THE PIPING SIDE CONNECTIONS FOR EACH COIL PRIOR TO FURNISHING SUBMITTAL FOR ARCHITECT/ENGINEER TO REVIEW.
5. UNIT COLOR TO BE SELECTED BY ARCHITECT OF RECORD IN SUBMITTAL PHASE PRIOR TO EQUIPMENT APPROVAL.
6. PROVIDE BACNET INTERFACE.

HOT WATER/CHILLED FAN COIL UNIT SCHEDULES (FCU-500 & FCU-501) (BASIS: MAGIC AIRE) ADD-ALTERNATE #1

KLIMA NEW YORK, LLC

FCU (CHW/ HW)

Data

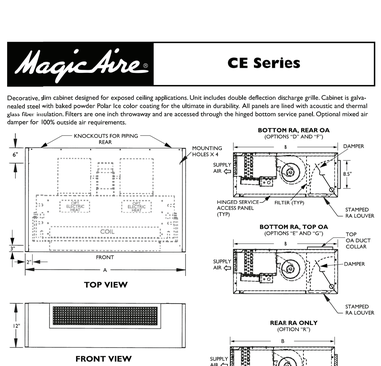
Briarcliff Manor HS-MS CHW/ HW FCU

Manufacturer	MagicAire	MagicAire
Performance Details	CEA04	CEA06
Arrangement	Horizontal Ceiling Mounted	Horizontal Ceiling Mounted
Base Unit Size	CE-4	CE-6
Tag	FCU-500	FCU-501
Quantity	1	1
Altitude	0	0
Configuration	4 Pipe	4 Pipe
Airflow (ACFM)	365	600
OA (CFM)	70	70
Cooling Coil	3 Row Chilled Water	3 Row Chilled Water
Rows	3	3
EAT Dry Bulb (F)	92	92
EAT Wet Bulb (F)	74	74
LAT Dry Bulb (F)	61.09	64.18
LAT Wet Bulb (F)	60.13	62.73
Leaving Dew Point (F)	59.56	61.96
Total Capacity (BTU/hr)	16730	25218
Sensible Capacity (BTU/hr)	11713	19068
EWT (F)	44	44
LWT (F)	57.35	58.38
GPM	2.5	3.5
WPD (ft w.g.)	7.956	3.534
Cooling Fluid	Water	Water
Heating Coil	2 Row HW	2 Row HW
Rows	2	2
EAT Dry Bulb (F)	49	49
LAT Dry Bulb (F)	127.77	114.83
Total Capacity (BTU/hr)	32374	44479
EWT (F)	200	200
LWT (F)	155.4	138.69
GPM	1.5	1.5
WPD (ft w.g.)	10.852	2.742
Heating Fluid	Water	Water
Electrical Data	PSC	PSC
Voltage 1 (V1)	208	208
Phase	1	1
Frequency	60	60
Motor HP	1	1
Motor FLA (at V1)	0.5	0.6
Unit MCA (at V1)	0.6	0.8
Unit MOPD (at V1)	15	15

Notes:
1. All temperature controls to be field supplied and installed by ATC vendor (Coordinate control with MC).
2. Architect to select unit color from vendor color chart.
3. MC and vendor to coordinate right or left hand piping connections.

MagicAire — **CE Series**

Decorative, slim cabinet designed for exposed ceiling applications. Unit includes double deflection discharge grille. Cabinet is galvanealed steel with baked powder Polar Ice color coating for the ultimate in durability. All panels are lined with acoustic and thermal glass fiber insulation. Filters are one inch throwaway and are accessed through the hinged bottom service panel. Optional mixed air damper for 100% outside air requirements.



MODEL	DIMENSIONS A	B	B1	SHIPPING WEIGHT	FILTER SIZE	OPTIONAL DISC. DUCT CONN.	OPTIONAL REAR DUCT CONN.
CEA02	33"	36"	28"	102	10 x 18 x 1	6.75 x 15	8.5 x 18
CEA04	33"	36"	28"	109	10 x 18 x 1	6.75 x 18	8.5 x 18
CEA06	42"	36"	28"	147	10 x 27 x 1	6.75 x 27	8.5 x 36
CEA08	51"	36"	28"	155	10 x 36 x 1	6.75 x 36	8.5 x 36
CEA10	60"	36"	28"	171	10 x 45 x 1	6.75 x 45	8.5 x 45
CEA12	69"	36"	28"	205	10 x 54 x 1	6.75 x 54	8.5 x 54

ALL COIL CONNECTIONS 5/8" O.D. SWT

ALL DRAIN CONNECTIONS 3/4" M.P.T.

NOTES:
1. Legend
RA = Return Air
OA = Outside Air
2. Refer to Nomenclature page for cabinet options. Refer to Coil Option Schedule for available coil combinations.
3. For cabinet options "E" and "C",damper function is 0 - 50% RA and 50 -100% OA nominal.

CEA 1.0 — Page 2 — 6/14/2008

ADDITIONAL SCHEDULE NOTES:
1. PROVIDE FACTORY-AUTHORIZED MANUFACTURER'S FIELD REPRESENTATIVE FOR START-UP, COMMISSIONING, & TRAINING OF NEW EQUIPMENT TO OWNER'S PERSONNEL.
2. PROVIDE INTEGRAL MOTORIZED OUTSIDE AIR INTAKE DAMPER WITH EQUIPMENT.
3. MC TO CONFIRM WITH APPROVED MANUFACTURER IN THE FIELD THE PIPING SIDE CONNECTIONS FOR EACH COIL PRIOR TO FURNISHING SUBMITTAL FOR ARCHITECT/ENGINEER TO REVIEW.
4. M.C. SHALL VERIFY IN THE FIELD THE CONDENSATE DRAIN LINE CONNECTION TO NEW CONDENSATE DRAIN PAN BELOW COOLING COIL.
5. UNIT COLOR TO BE SELECTED BY ARCHITECT OF RECORD IN SUBMITTAL PHASE PRIOR TO EQUIPMENT APPROVAL.
6. PROVIDE BACNET INTERFACE.

ALL WORK SCOPE WITHIN THIS BOUNDARY SHALL BE PART OF ADD-ALTERNATE #1

VRF SYSTEM "ACC-2" OVERALL SCHEMATIC FLOW, REFRIGERANT PIPING FLOW, ELECTRICAL WIRINGS DIAGRAM INFORMATION (BASIS: LG)

LG — Air Conditioning Proposal — Briarcliff Manor HS-MS(ver 1.8.7.13)

AIR CONDITIONING PROPOSAL SHEET

Date: 06/27/2022

LG Electronics U.S.A.
4300 North Point Pkwy, Alpharetta, GA 30022

Prepared by:
BBS

Briarcliff Manor High School-Middle School

KLIMA NEW YORK, LLC

ACC-2

System Data

LG — Air Conditioning Proposal — Briarcliff Manor HS-MS(ver 1.8.7.13)

Contents

LG — Air Conditioning Proposal — Briarcliff Manor HS-MS(ver 1.8.7.13)

Building Load Summary

1. Project name:Briarcliff Manor HS-MS
2. Date:06/27/2022
3. Location :Nation(New York, United States), Altitude(131ft)
4. Design conditions

		Cooling	Heating
OAT	DBT(°F)	91.9	10.9
	WBT(°F)	73.9	10.2
	RH(%)	43.3	86.0
IAT	DBT(°F)	80.6	68.0
	WBT(°F)	67.1	56.8
	RH(%)	50.0	50.0

LG — MULTI V — Briarcliff Manor HS-MS(ver 1.8.7.13)

Model Selection - Summary

Date: 06/27/2022

1. Outdoor Units

No.	Model Name	Quantity	Description
1	ARUM241DTE5	1	MULTI V 5/5S,60Hz/R410A/Heat Pump/MULTI V S/N.America
Total		1	

2. Indoor Units

No.	Model Name	Quantity	Description
1	PRLK048A0	6	EEV KIT
Total		6	

3. Branch/Header

No.	Model Name	Quantity
1	ARBLN03321	1
2	ARBLN07121	4

4. Pipes

No.	Diameter(Liq.Gas,inch)	Length(ft)
1	1/4 : 1/2	10.0
2	3/8 : 5/8	60.0
3	1/2 : 7/8	25.0
4	5/8 : 1+1/8	80.0
5	5/8 : 1+3/8	30.0

5. Accessories

Index	Model Name	Quantity	Description
IDU	PAHCMR000	6	AHU Communications Kit [Return air]

LG — MULTI V — Briarcliff Manor HS-MS(ver 1.8.7.13)

System Model Selection - ODU

System Name: ACC-2 — **Date: 06/27/2022**
System No : 1/1

1. Design conditions - Outdoor

	Cooling			Heating		
	DBT(°F)	WBT(°F)	RH(%)	DBT(°F)	WBT(°F)	RH(%)
OAT	91.9	73.9	43.3	10.9	10.2	86.0
IAT	80.0	67.0	51.2	70.0	56.8	43.8

2. Outdoor Units

Model Name	No. of IDUs (Current / Max.) (EA)	Combination Ratio (Current / Max.) (%)	Corrected Capacity / Block Load (Cooling / Heating) (%)	Pre-charge(Ref amount (lbs)	Additional Ref. Amount (lbs)
ARUM241DTE5	6 / 39	99 / 130	0.0 / 0.0	37.50	29.84

Nominal/Corrected Capa. (kBtu/h)		Nominal/Corrected Pi (kW)	
Cooling	Heating	Cooling	Heating
233.1/220.0	243.0/243.0	16.8/15.9	17.8/27.4

Efficiency(Btu/W/h)		Weight(lbs)	Dimension (WxHxD) (inch)	Electrical Characteristics				
Cooling	Heating			Volt	Phase	Hz	MCA (A)	MOP (A)
13.8	8.9	666x1	48-13/16x66-17/32x29-29/32	460	3	60	41.4	50

3. Pipes

Diameter(Liq.Gas,inch)	Length(ft)
1/4 : 1/2	10.0
3/8 : 5/8	60.0
1/2 : 7/8	25.0
5/8 : 1+1/8	80.0
5/8 : 1+3/8	30.0

4. Branch/Header

Model Name	Quantity
ARBLN03321	1
ARBLN07121	4

#Notes: Correction factor is corrected by such as, but not limited to, indoor unit combination, temperature, and pipe length.
The result can be slightly different from Product Data Book due to simulation.
Pipe lengths are estimations only.
Contractor is responsible for piping take-off and verification of actual pipe routing and pipe lengths.

LG — MULTI V — Briarcliff Manor HS-MS(ver 1.8.7.13)

System Model Section - IDU

System Name: ACC-2 — **Date: 06/27/2022**
System No : 1/1

5. Indoor Units(1)

Room	Room Load(MBtu/h)			Room Design Temp.(Return Air Temp.)(°F)			Model Name	Rated TC(Corrected TC)(MBtu/h)			Corrected Cap(Room Load)		
	TC	SC	HC	Cooling DBT	Cooling WBT	Heating DBT	Heating WBT		TC	SC	HC	TC	SC	HC
2nd Chemistry 229	-	-	-	80.0	67.0	70.0	56.8	PRLK048A0	48.0/45.0	-	48.0/45.0	-	-	-
2nd Chemistry 229	-	-	-	80.0	67.0	70.0	56.8	PRLK048A0	48.0/45.0	-	48.0/45.0	-	-	-
2nd Social Studies 221	-	-	-	80.0	67.0	70.0	56.8	PRLK048A0	52.0/52.0	-	52.0/52.0	-	-	-
2nd Social Studies 224	-	-	-	80.0	67.0	70.0	56.8	PRLK048A0	52.0/52.0	-	52.0/52.0	-	-	-
2nd Support 222	-	-	-	80.0	67.0	70.0	56.8	PRLK048A0	18.5/18.5	-	18.5/18.5	-	-	-
2nd Support 223	-	-	-	80.0	67.0	70.0	56.8	PRLK048A0	34.0/24.0	-	34.0/24.0	-	-	-

LG — MULTI V — Briarcliff Manor HS-MS(ver 1.8.7.13)

System Model Section - IDU

System Name: ACC-2 — **Date: 06/27/2022**
System No : 1/1

6. Indoor Units(2)

Tag	Model Name	Type	Est. Discharge Temp.(°F)		Air flow rate (CFM)	Remark
			Cooling	Heating		
UV-2B	PRLK048A0	EEV KIT	-	-	-	NA
UV-2A	PRLK048A0	EEV KIT	-	-	-	NA
UV-2D	PRLK048A0	EEV KIT	-	-	-	NA
UV-2C	PRLK048A0	EEV KIT	-	-	-	NA
FCU-222 (2a)	PRLK048A0	EEV KIT	-	-	-	NA
FCU-2b	PRLK048A0	EEV KIT	-	-	-	NA

LG — MULTI V — Briarcliff Manor HS-MS(ver 1.8.7.13)

System Model Section - IDU

System Name: ACC-2 — **Date: 06/27/2022**
System No : 1/1

7. Indoor Units(3)

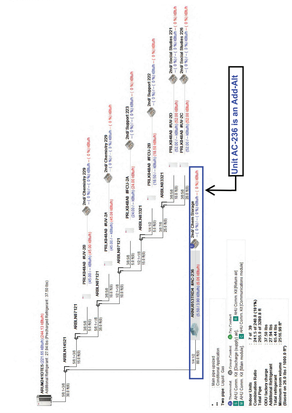
Tag	Model Name	Weight	Dimension (WxHxD)	Electrical Characteristics				
				Volt	Phase	Hz	MCA (A)	RLA (A)
UV-2B	PRLK048A0	kg	mm	DC 12V			0.10	
UV-2A	PRLK048A0	kg	mm	DC 12V			0.10	
UV-2D	PRLK048A0	kg	mm	DC 12V			0.10	
UV-2C	PRLK048A0	kg	mm	DC 12V			0.10	
FCU-222 (2a)	PRLK048A0	kg	mm	DC 12V			0.10	
FCU-2b	PRLK048A0	kg	mm	DC 12V			0.10	

ADDITIONAL SCHEDULE/DIAGRAM NOTES:
1. PROVIDE FACTORY-AUTHORIZED MANUFACTURER'S REPRESENTATIVE PRESENT TO PERFORM START-UP, COMMISSIONING, TESTING, AND TRAINING OF NEW EQUIPMENT TO OWNER'S PERSONNEL.
2. APPROVED MANUFACTURER SHALL VISIT JOB SITE TO CONFIRM EXACT DIMENSIONS AND REFRIGERANT PIPING RUN PRIOR TO FURNISHING SUBMITTAL TO M.C. TO PROVIDE TO ARCHITECT/ENGINEER FOR REVIEW.
3. PROVIDE INTERNAL LIFT CONDENSATE PUMP WITH UNIT.
4. TIE IN VRF SYSTEM VIA BACNET CARD TO EXISTING BUILDING MANAGEMENT SYSTEM. SEE SPECIFICATIONS FOR FURTHER DETAILS.
5. COORDINATE INSTALLATION WORK WITH G.C.
6. FOR OUTDOOR CONDENSING UNIT, PROVIDE SUPPORTS FROM MANUFACTURER.

LG — MULTI V — Briarcliff Manor HS-MS(ver 1.8.7.13)

System Tree Diagram

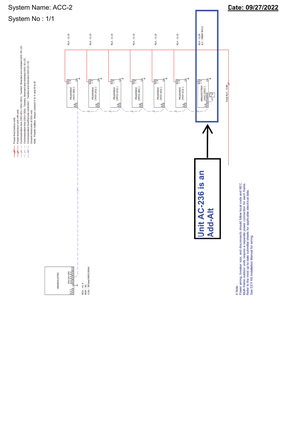
System Name: ACC-2 — **Date: 09/27/2022**
System No : 1/1



LG — MULTI V — Briarcliff Manor HS-MS(ver 1.8.7.13)

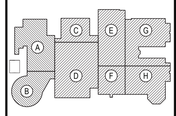
System Schematic Diagram

System Name: ACC-2 — **Date: 09/27/2022**
System No : 1/1



REV.	DATE	ITEM

NOTICE



KEY PLAN

NOT TO SCALE

BRIARCLIFF MANOR U.F.S.D.
PHASE 2 BOND IMPROVEMENTS
BRIARCLIFF MANOR MIDDLE/HIGH SCHOOL
444 PLEASANTVILLE RD, BRIARCLIFF MANOR, NY 10510

SCHEDULES, EQUIPMENT
NOTES AND DETAILS (4 OF 10)

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187 WOLF ROAD, STE. 205
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www.BBSARCHITECTURE.com

PROJECT

DWG TITLE

DRAWING BY:	R.D.P.
CHECK BY:	F.S.

NOTICE

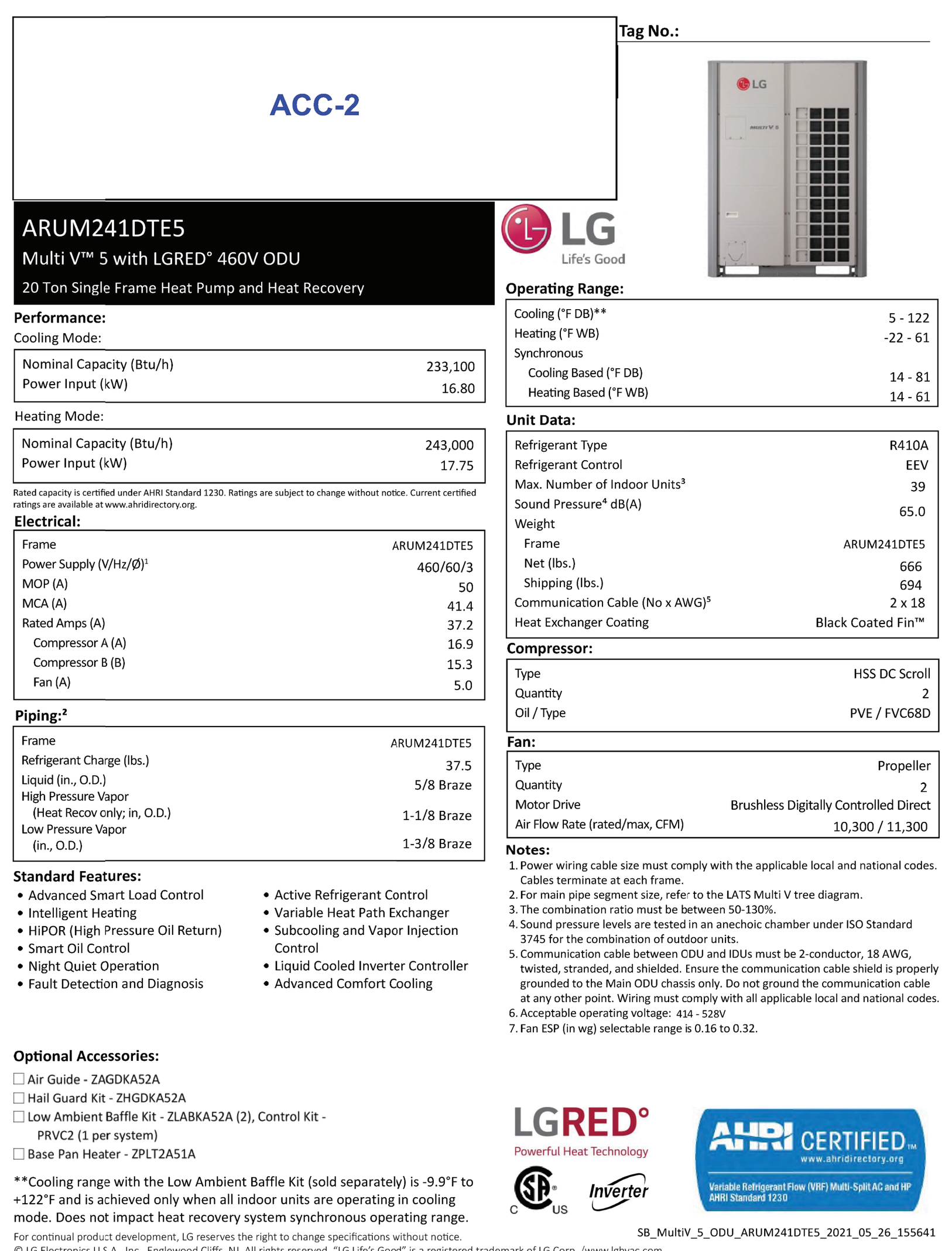
SED No:	66-14-02-02-0-004-023
DISTRICT	BRIARCLIFF MANOR UFSD
PROJECT	PHASE 2 BOND IMPROVEMENTS
DWG TITLE	SCHEDULES, EQUIPMENT NOTES AND DETAILS (4 OF 10)
SCALE:	AS NOTED
DATE:	7/15/22
BID PICK-UP:	
FILE No:	21-274C

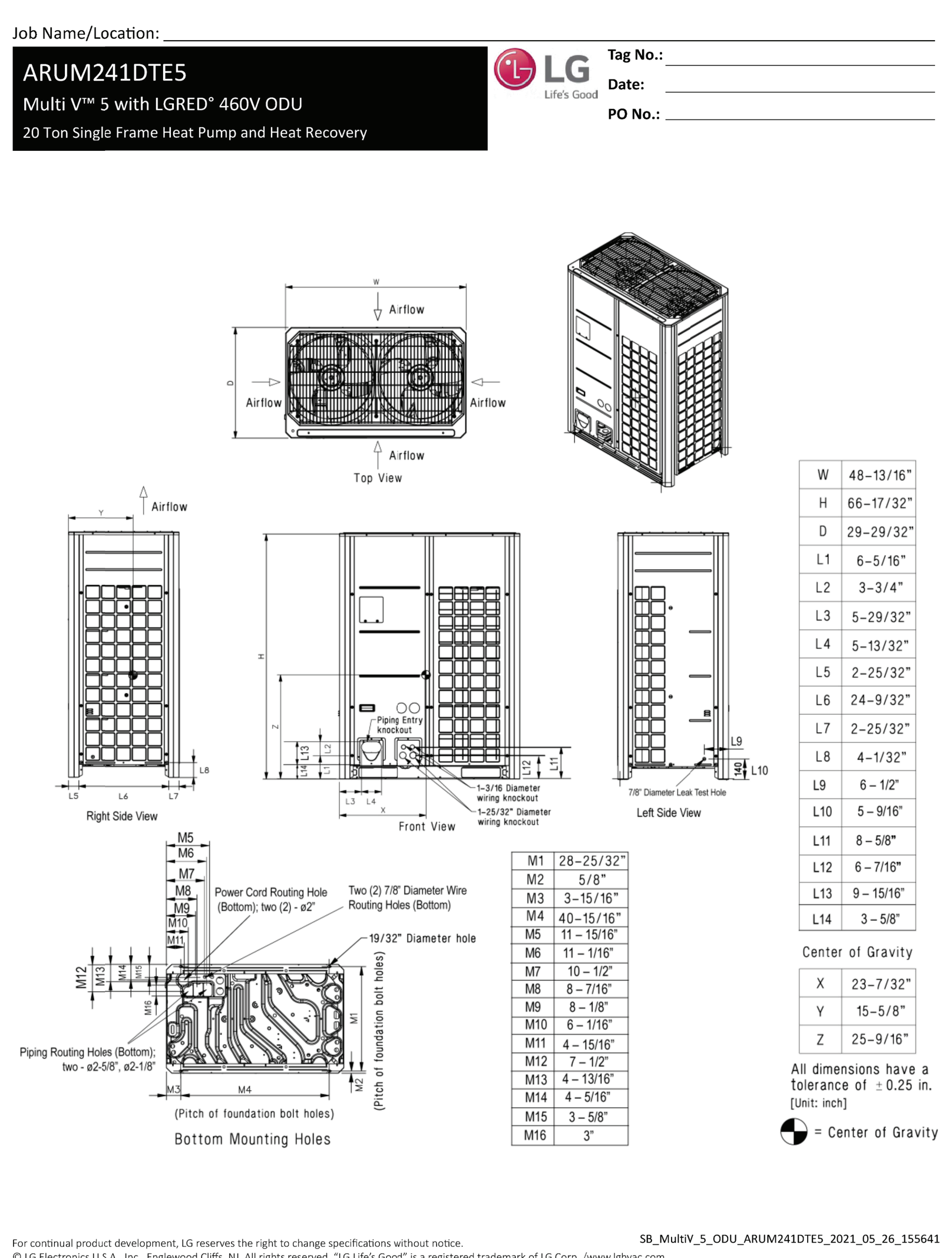
M6.04 | HSMS

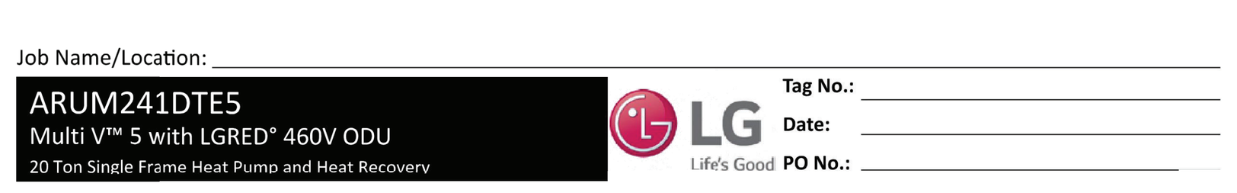
OUTDOOR CONDENSING UNIT SCHEDULE (ACC-2) (BASIS: LG)

KLIMA NEW YORK, LLC

VRF Outdoor Condensing Unit Data







AHRI Data:

Reference Number	Indoor Type	Cooling Capacity (95°F)	EER (95°F)	IEER	SCHE	High Heating Capacity (47°F)	High COP (47°F)	Low Heating Capacity (17°F)	Low COP (17°F)
205281452	Ducted Indoor Units	222,000	10.40	22.70	23.00	230,000	3.20	168,000	2.26
202524553	Non-Ducted Indoor Units	222,000	10.40	22.50	26.00	230,000	3.35	168,000	2.52

ADDITIONAL SCHEDULE NOTES:

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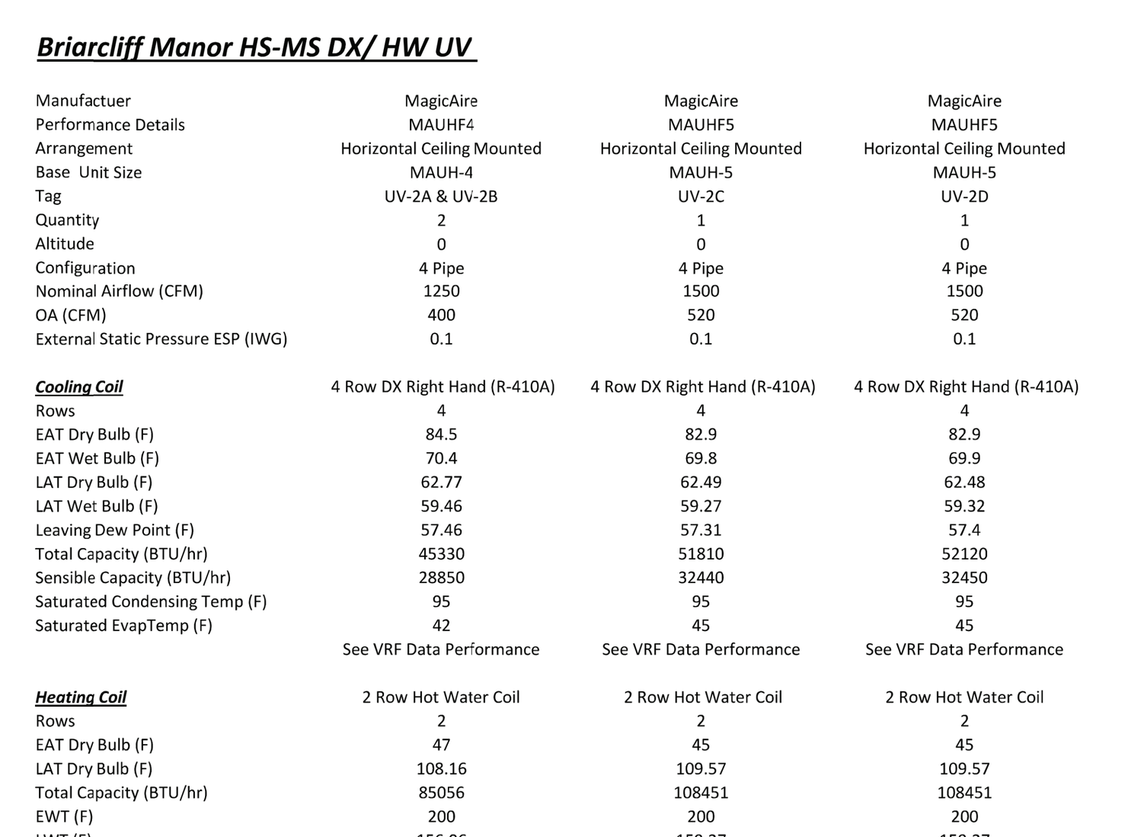
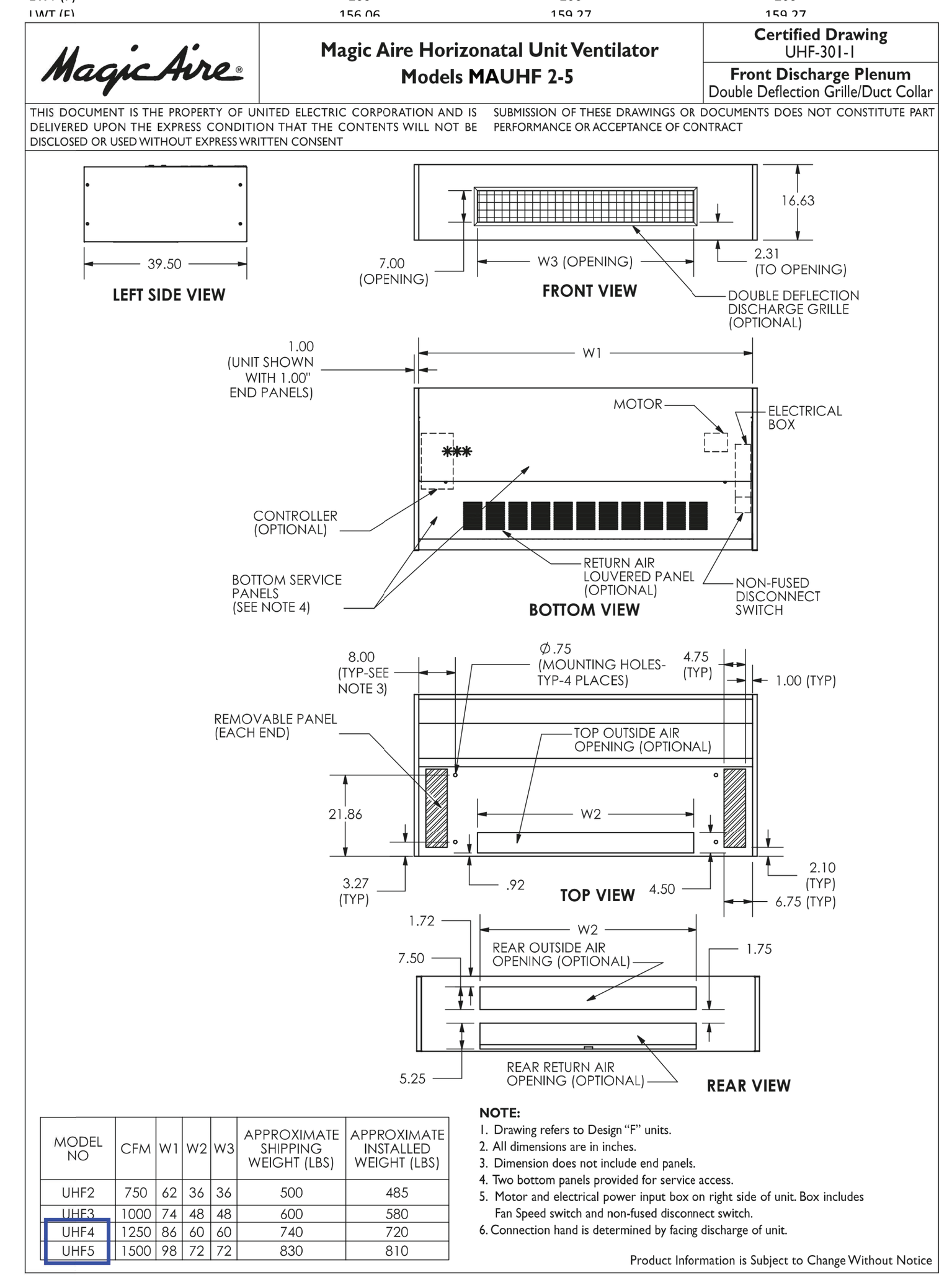
2. APPROVED MANUFACTURER SHALL VISIT JOB SITE TO CONFIRM EXACT DIMENSIONS AND REFRIGERANT PIPING RUN PRIOR TO FURNISHING SUBMITTAL TO M.C. TO PROVIDE TO ARCHITECT/ENGINEER FOR REVIEW.
3. PROVIDE INTERNAL LIFT CONDENSATE PUMP WITH UNIT.
4. TIE IN VRF SYSTEM VIA BACNET CARD TO EXISTING BUILDING MANAGEMENT SYSTEM. SEE SPECIFICATIONS FOR FURTHER DETAILS.
5. COORDINATE INSTALLATION WORK WITH G.C.
6. FOR OUTDOOR CONDENSING UNIT, PROVIDE SUPPORTS FROM MANUFACTURER.

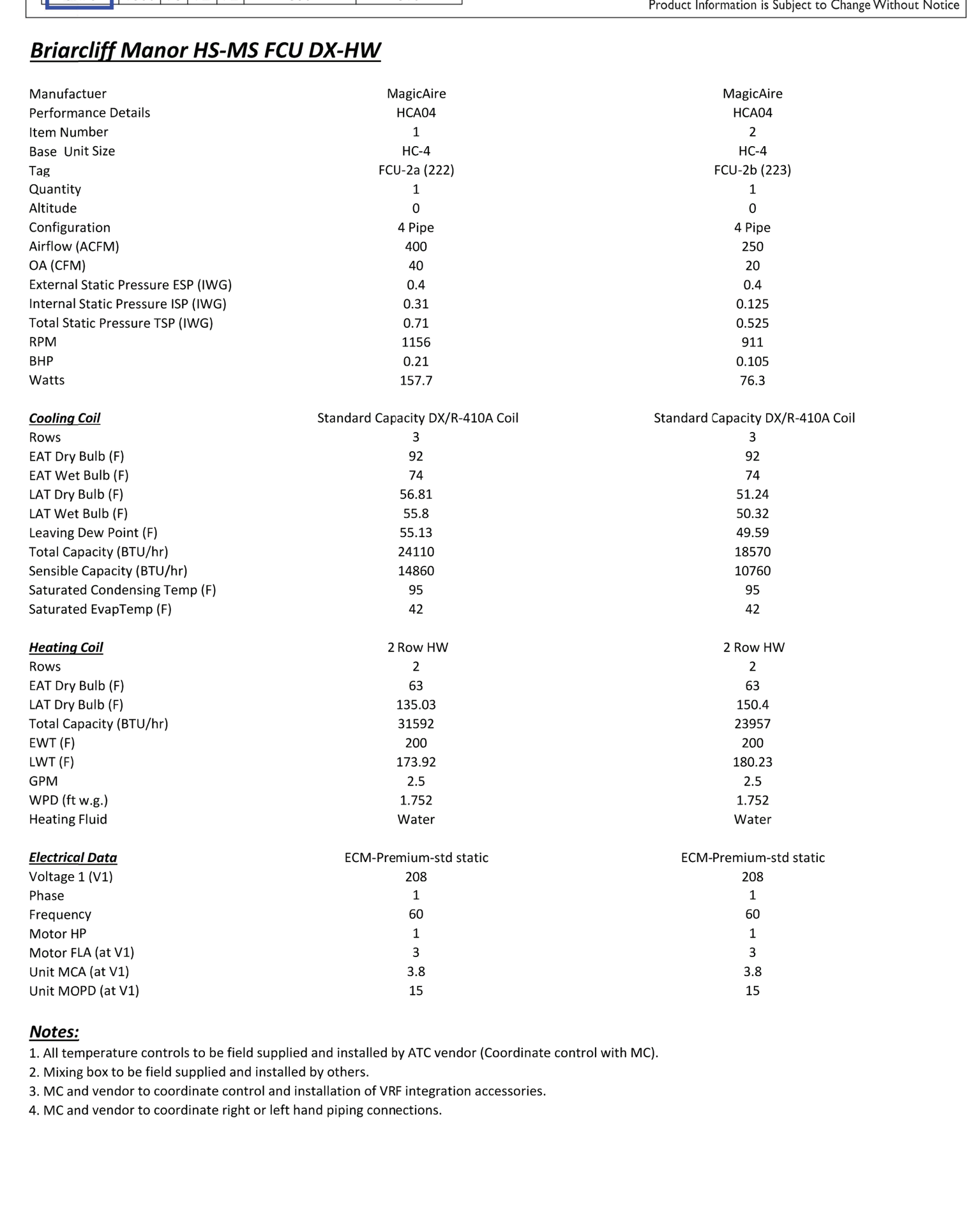
INDOOR VRF UNIT VENTILATOR SCHEDULES (UV-2A, 2B, 2C, & 2D) AND FAN COIL SCHEDULES (FCU 2A & FCU-2B) (BASIS: MAGIC AIRE / LG)

KLIMA NEW YORK, LLC

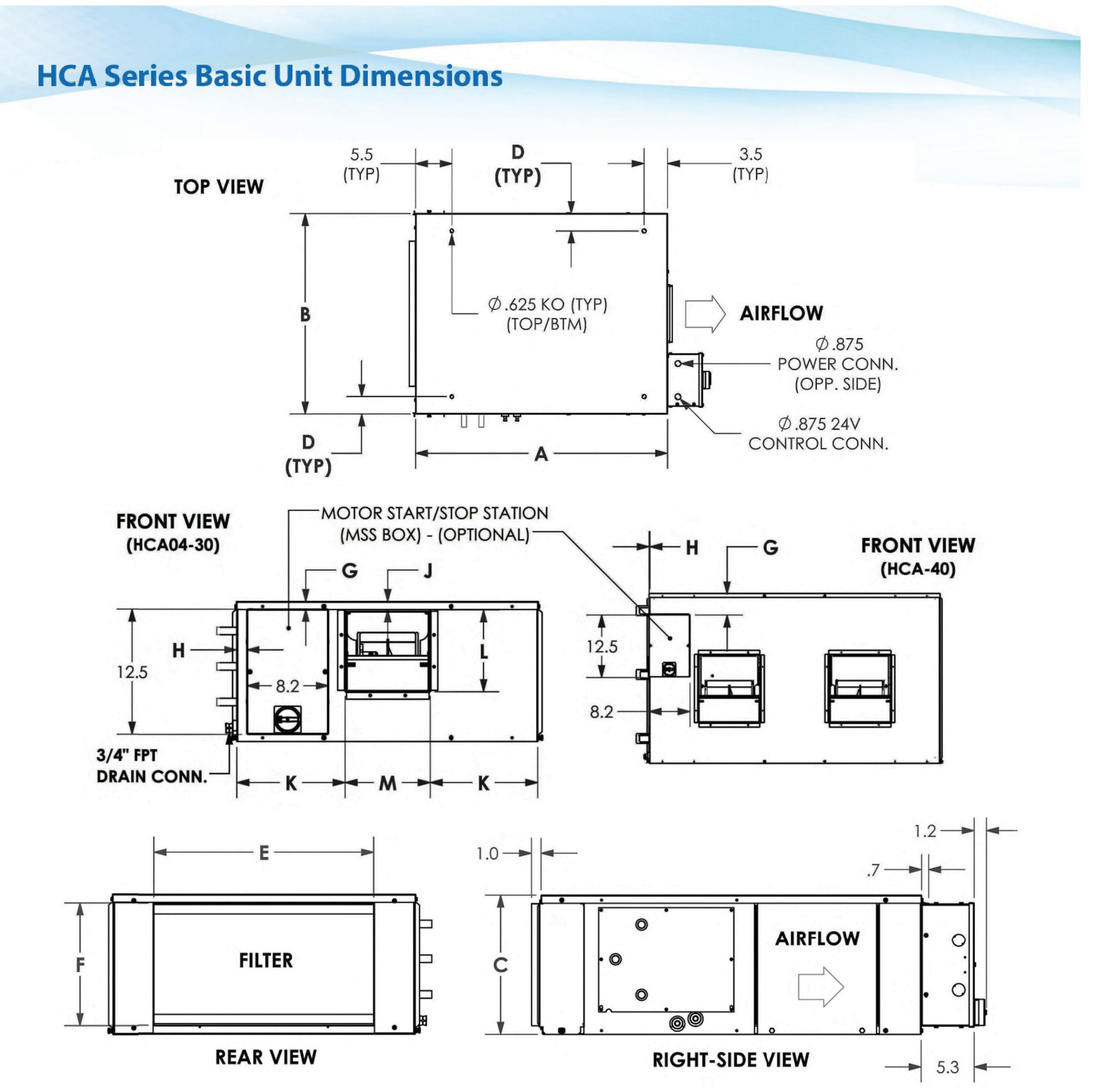
UV & FCU Data







HCA Series Basic Unit Dimensions



MODEL	DEPTH A	WIDTH B	HEIGHT C	UNIT MTG D	RETURN OPENING E	RETURN OPENING F	MSS BOX G	MSS BOX H	SUPPLY OPENING J	SUPPLY OPENING K	SUPPLY OPENING L	SUPPLY OPENING M
HCA04/06	38.1	30.3	14.0	2.6	21.9	12.2	0.8	1.0	0.8	10.8	8.2	8.5
HCA08/12	38.1	37.8	18.0	2.1	27.5	16.2	2.8	0.7	1.2	14.6	10.5	8.5
HCA16/20	42.1	46.3	22.0	2.1	35.9	20.2	4.8	1.0	1.0	15.6	13.8	14.9
HCA30	52.6	59.3	34.0	2.1	47.9	32.2	4.2	0	12.2	22.8	13.8	12.5
HCA40							4.2	0	12.2	9.7	13.8	12.5

6

ADDITIONAL SCHEDULE NOTES:

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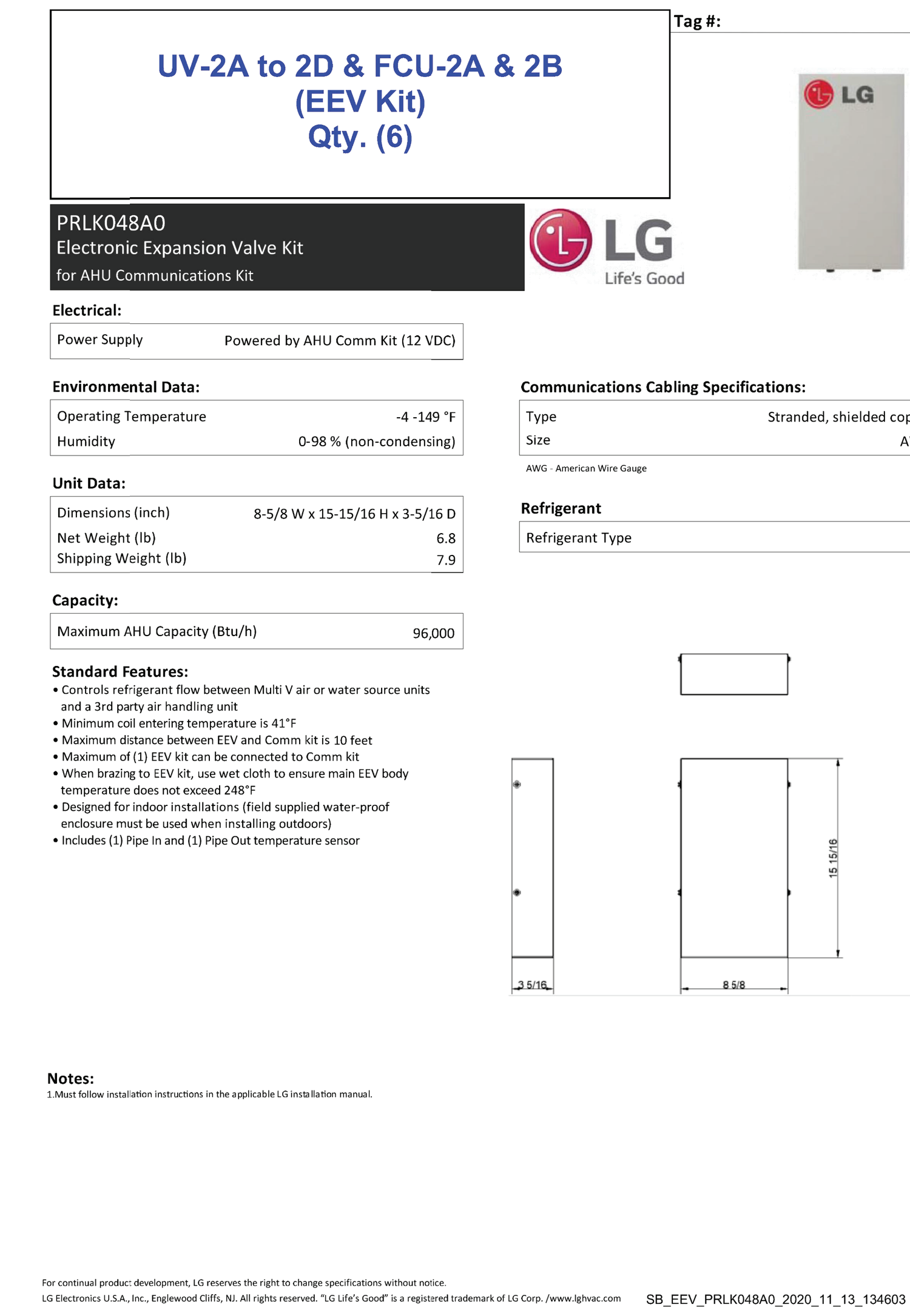
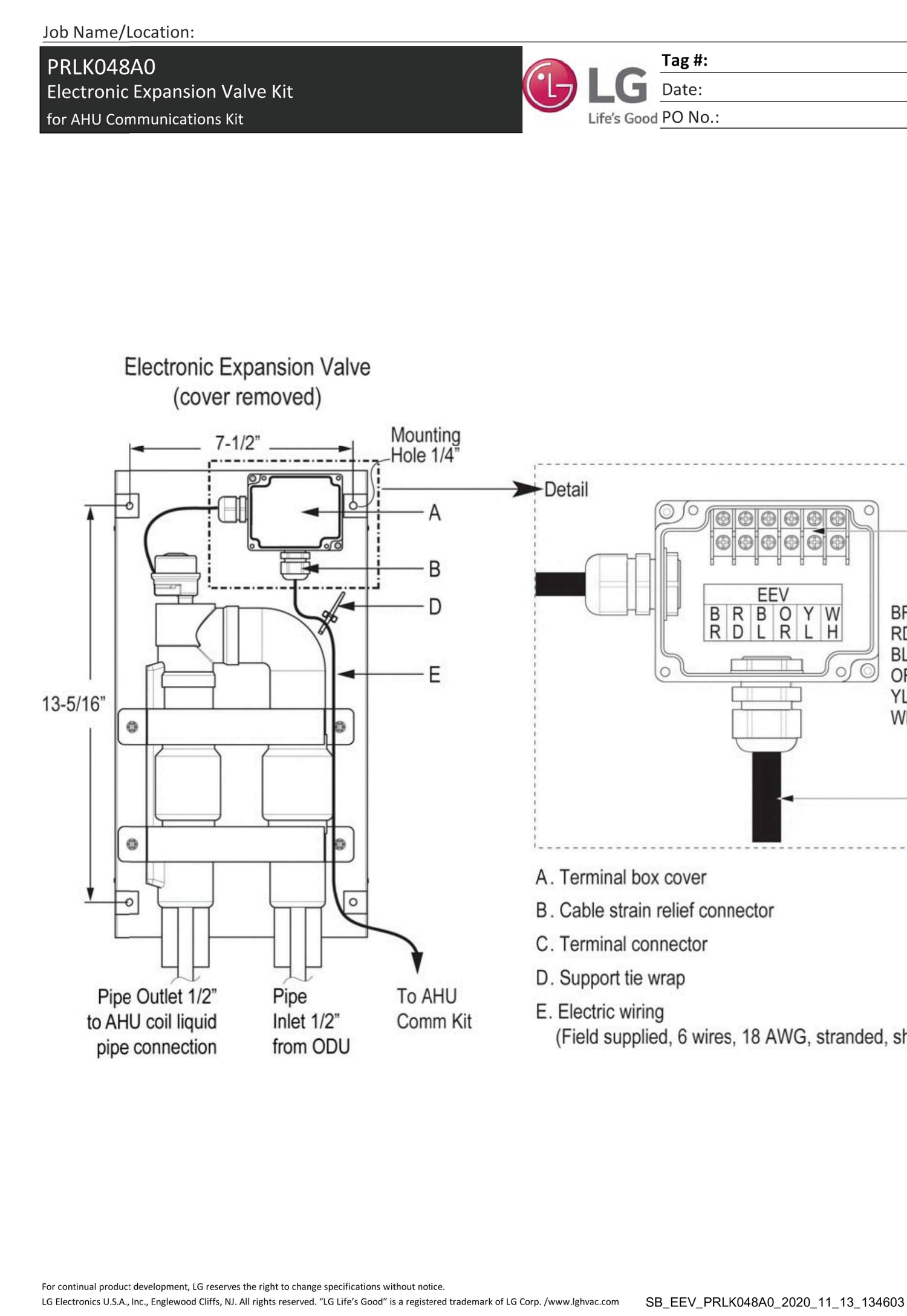
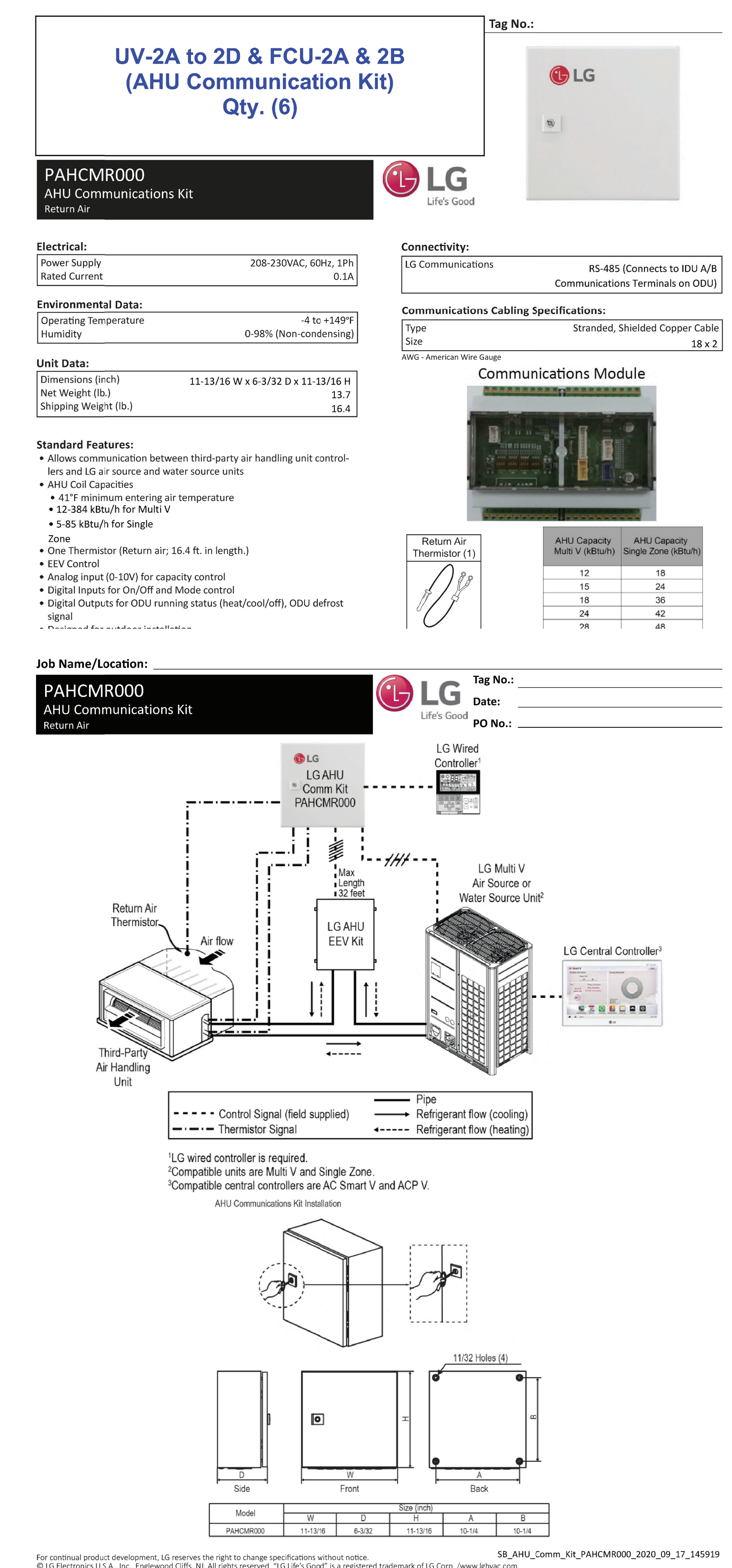
5. COORDINATE INSTALLATION WORK WITH G.C.

UV-2A to 2D & FCU-2A & 2B (EEV Kit) Qty. (6)

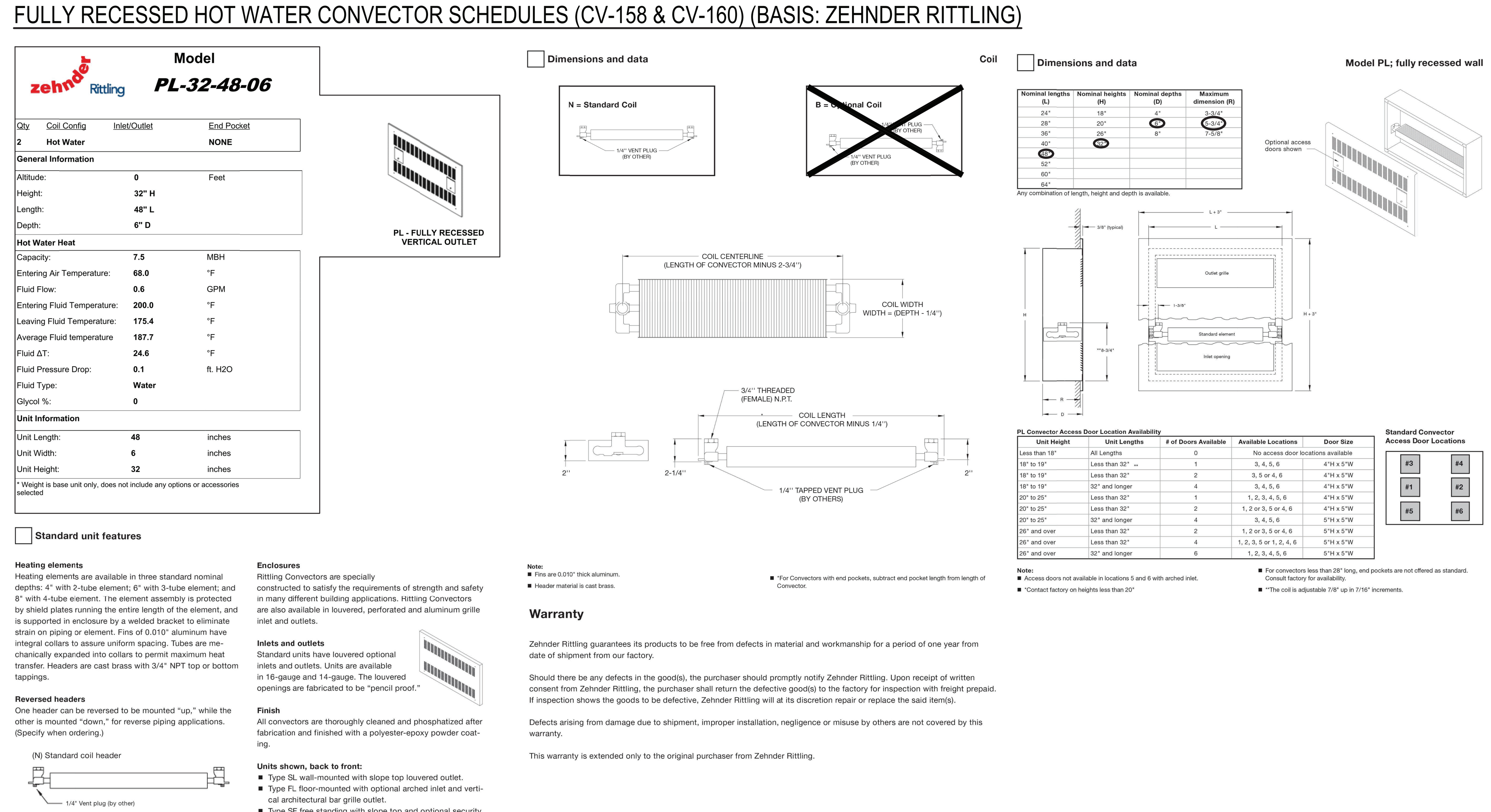




UV-2A to 2D & FCU-2A & 2B (AHU Communication Kit) Qty. (6)



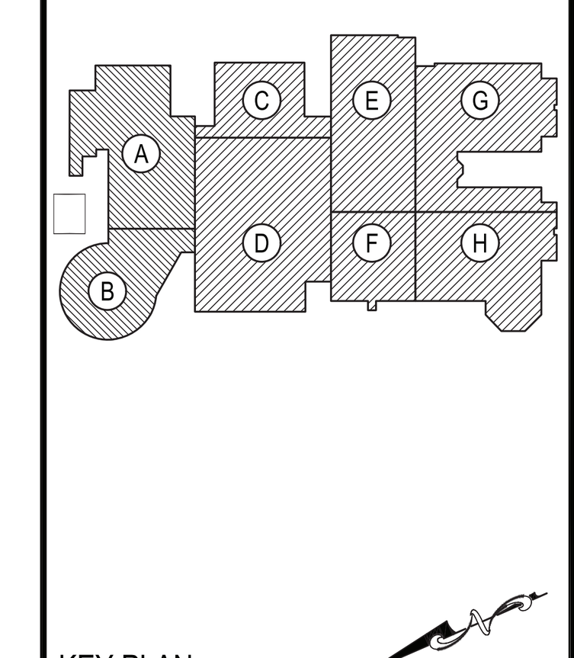
FULLY RECESSED HOT WATER CONVECTOR SCHEDULES (CV-158 & CV-160) (BASIS: ZEHNDER RITTLING)



REV. | DATE | ITEM

NOTICE

THESE DRAWINGS ARE BASED ON CONSTRUCTION DRAWINGS NOT PREPARED BY BBS ARCHITECTS, LANDSCAPE ARCHITECTS AND ENGINEERS, PC. AND, THEREFORE, MAY NOT REPRESENT THE CONDITIONS AS CONSTRUCTED AT THE TIME. ALL EXISTING CONDITIONS SHOWN ARE REPRESENTED AS SUGGESTIVE INFORMATION AS THEY MAY NOT HAVE BEEN BUILT AND DETAILED PER THE ORIGINAL DOCUMENTS OR PER THE OWNER'S INFORMATION.



KEY PLAN

NOT TO SCALE

PROJECT: BRIARCLIFF MANOR U.F.S.D. PHASE 2 BOND IMPROVEMENTS BRIARCLIFF MANOR MIDDLE/HIGH SCHOOL 444 PLEASANTVILLE RD, BRIARCLIFF MANOR, NY 10510

DWG TITLE: SCHEDULES, EQUIPMENT NOTES AND DETAILS (5 OF 10)

DRAWING BY: R.D.P.

CHECK BY: F.S.

NOTICE

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www.BBSARCHITECTURE.com

SED No.: 66-14-02-02-0-004-023

DISTRICT: BRIARCLIFF MANOR UFSD

PROJECT: PHASE 2 BOND IMPROVEMENTS

DWG TITLE: SCHEDULES, EQUIPMENT NOTES AND DETAILS (5 OF 10)

SCALE: AS NOTED

DATE: 7/15/22

BID PICK-UP:

FILE No: 21-274C

M6.05 | HSMS

SELF-CONTAINED UNIT VENTILATOR SCHEDULES (UV-1F & UV-G) (BASIS: MAGIC AIRE)

Performance and Physical Data - Three Phase Units

For conditions of coil outside of AHRI Conditions, please contact your local sales office.

Quick Selections

SCB Three Phase Units - Cooling Capacity and Efficiency						
Model	Nominal Tons	SCFM	Nominal Speed		Partial Load	
			Net Cooling BTUH	Efficiency (EER)	Net Cooling BTUH	Efficiency (EER)
SCB2	2	750	23200	11.6	13359	15.7
SCB3	3	1000	38000	9.7	18768	14.3
SCB4	4	1250	44800	10.4	19268	16.5
SCB5	5	1400	52000	10.2	17160	16.3

AHRI Conditions - Nominal Speed : Indoor 80ºDB / 67ºWB, Outdoor 95ºDB / 75ºWB
AHRI Conditions - Partial Load : Indoor 80ºDB / 67ºWB, Outdoor 82ºDB / 65ºWB

Nominal Capacity		SCB2	SCB3	SCB4	SCB5
Hot Water Heating (BTUH)	1Row	23308	30085	37083	44501
	2Row	35838	47346	58489	69479
Steam Heating (BTUH)	1 Row	60200	80200	100300	120500
	2 Row	97000	129100	161500	193700

Hot Water heating capacity: 60°EAT; 160°F EWT; 6 GPM
Steam heating capacity: 0°EAT; 2 PSI steam at 218.5°F.

Physical Data				
Unit Model	SCB2	SCB3	SCB4	SCB5
Nominal Airflow, CFM	750	1000	1250	1500
Indoor Fan Data				
Quantity	3	4	5	5
Diameter (in.) x Width (in.)	8.12 X 7.75	8.12 X 7.75	8.12 X 7.75	8.12 X 7.75
Outdoor Fan Data				
Quantity	3	4	5	5
Diameter (in.) x Width (in.)	6.25 X 8.0	6.25 X 8.0	6.25 X 8.0	6.25 X 8.0
Motor Data				
Quantity	1	1	1	1
Indoor Motor HP	1/2	1/2	3/4	3/4
Outdoor Motor HP	3/4	3/4	1	1
Filters				
Quantity	1	1	1	1
Nominal Size(in.) (1 in.) and (2in.)	9.25" x 48.25"	9.25" x 60.25"	9.25" x 72.25"	9.25" x 72.25"

SPB Three Phase Units - Cooling and Heating Capacity and Efficiency									
Model	Nominal Tons	Nominal Speed		Partial Load		Nominal Speed		Partial Load	
		Net Cooling BTUH	Efficiency (EER)	Net Cooling BTUH	Efficiency (EER)	Net Heating BTUH	Efficiency (EER)	Net Heating BTUH	Efficiency (EER)
SPB2	2	21700	10.6	13500	14.0	20400	3.1	17100	3.5
SPB3	3	36100	9.6	25300	13.5	36300	3.0	28500	3.5
SPB4	4	42900	9.9	32700	13.7	42200	3.2	35200	3.6
SPB5	5	51200	9.8	33600	13.6	50000	3.2	41500	3.6

AHRI Cooling Conditions - Full Load : Indoor 80ºDB / 67ºWB, Outdoor 95ºDB / 75ºWB

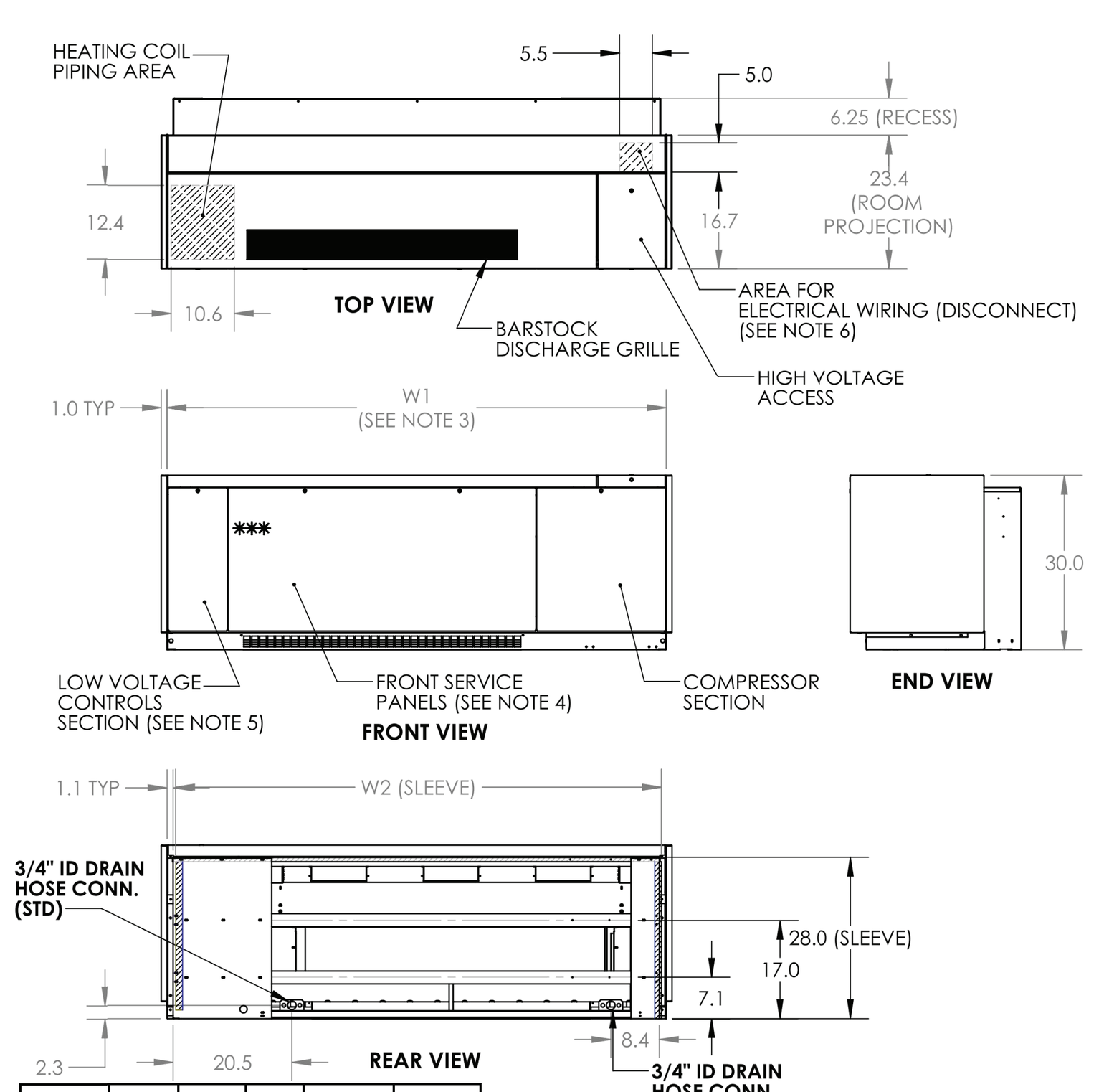
AHRI Cooling Conditions - Partial Load : Indoor 80ºDB / 67ºWB, Outdoor 82ºDB / 65ºWB

AHRI Heating Conditions - Nominal Speed : Indoor 70ºDB / 60ºWB, Outdoor 47ºDB / 43ºWB

AHRI Heating Conditions - Partial Load : Indoor 70ºDB, Outdoor 62ºDB / 56.5ºWB

Physical Data				
Unit Model	SCB2	SCB3	SCB4	SCB5
Nominal Airflow, CFM	750	1000	1250	1500
Indoor Fan Data				
Quantity	3	4	5	5
Diameter (in.) x Width (in.)	8.12 X 7.75	8.12 X 7.75	8.12 X 7.75	8.12 X 7.75
Outdoor Fan Data				
Quantity	3	4	5	5
Diameter (in.) x Width (in.)	6.25 X 8.0	6.25 X 8.0	6.25 X 8.0	6.25 X 8.0
Motor Data				
Quantity	1	1	1	1
Indoor Motor HP	1/2	1/2	3/4	3/4
Outdoor Motor HP	3/4	3/4	1	1
Filters				
Quantity	1	1	1	1
Nominal Size(in.) (1 in.) and (2in.)	9.25" x 48.25"	9.25" x 60.25"	9.25" x 72.25"	9.25" x 72.25"

Dimensions - Partial Recess - 23 3/8" Room Projection



Model	Nom. Tons	W1 (IN.)	W2 (IN)	Approx. Shipping Weight (LBS)	Approx. Installed Weight (LBS)
SC/PB2	2	86.2	84.0	1083	1023
SC/PB3	3	98.2	96.0	1315	1252
SC/PB4	4	110.2	108.0	1539	1472
SC/PB5	5	110.2	108.0	1549	1482

PRODUCT INFORMATION IS SUBJECT TO CHANGE WITHOUT NOTICE

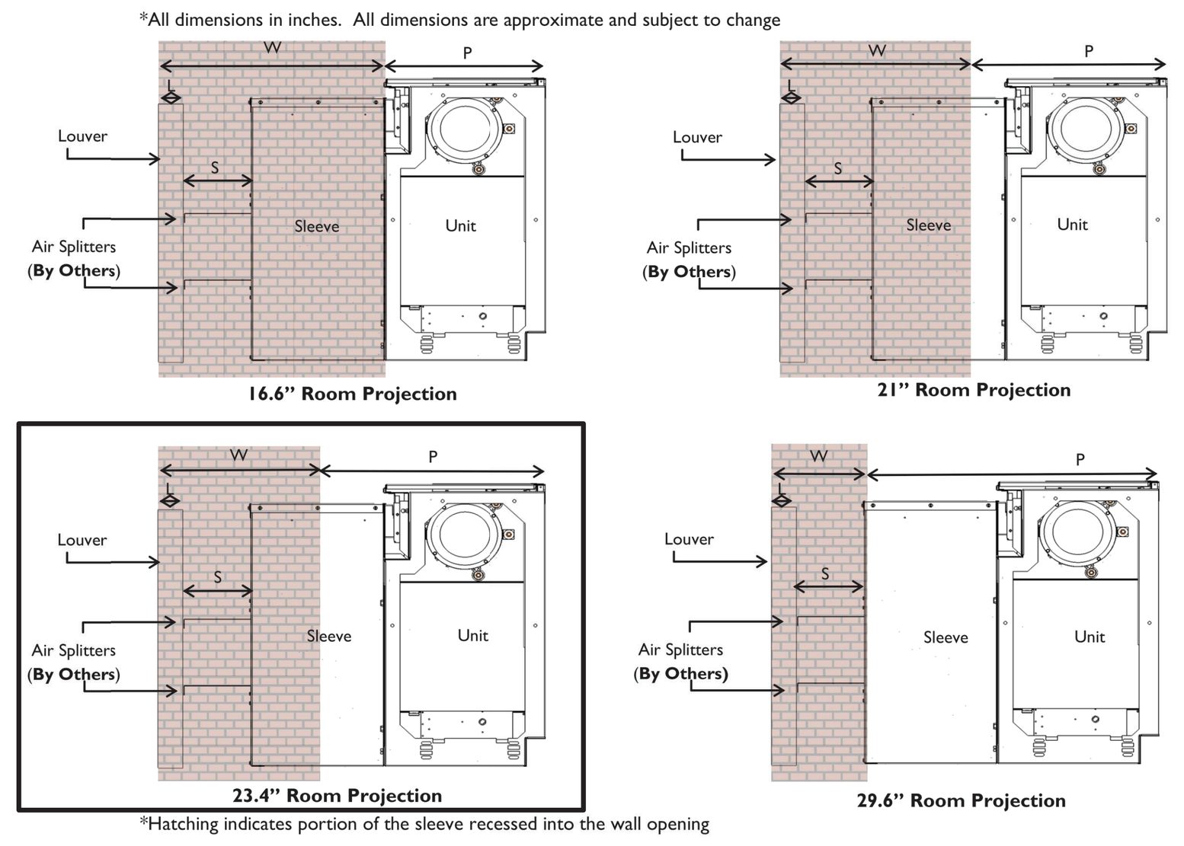
NOTE:
1. DRAWING REFERS TO DESIGN "B" UNITS.
2. ALL DIMENSIONS IN INCHES.
3. DIMENSION DOES NOT INCLUDE END PANELS.
4. THREE FRONT PANELS PROVIDED FOR SERVICE ACCESS.
5. LOW VOLTAGE CONTROLS INCLUDE FAN SWITCH & UNIT CONTROLLER.
6. NON-FUSED DISCONNECT INCLUDED WITH SLEEVE ASSEMBLY.
7. CONNECTION HAND IS DETERMINED BY FACING FRONT OF UNIT.
8. FOR UNITS WITH EXTENDED DRAINPAN OPTION (DIGIT 25 CODES E & F).

Dimensions - Louver and Sleeve

The SCB consists of two major sections, the Self-Contained Unit and the Sleeve. The Sleeve is either recessed fully into the wall, partially into the wall, or the sleeve is not recessed at all and is fully projected into the room. The louver is mounted to the exterior of the building. The field must provide horizontal air splitters if the sleeve does not fully meet the louver. Finished End Panels and Tops will cover the depth of both the Unit and Sleeve that projects into the room.

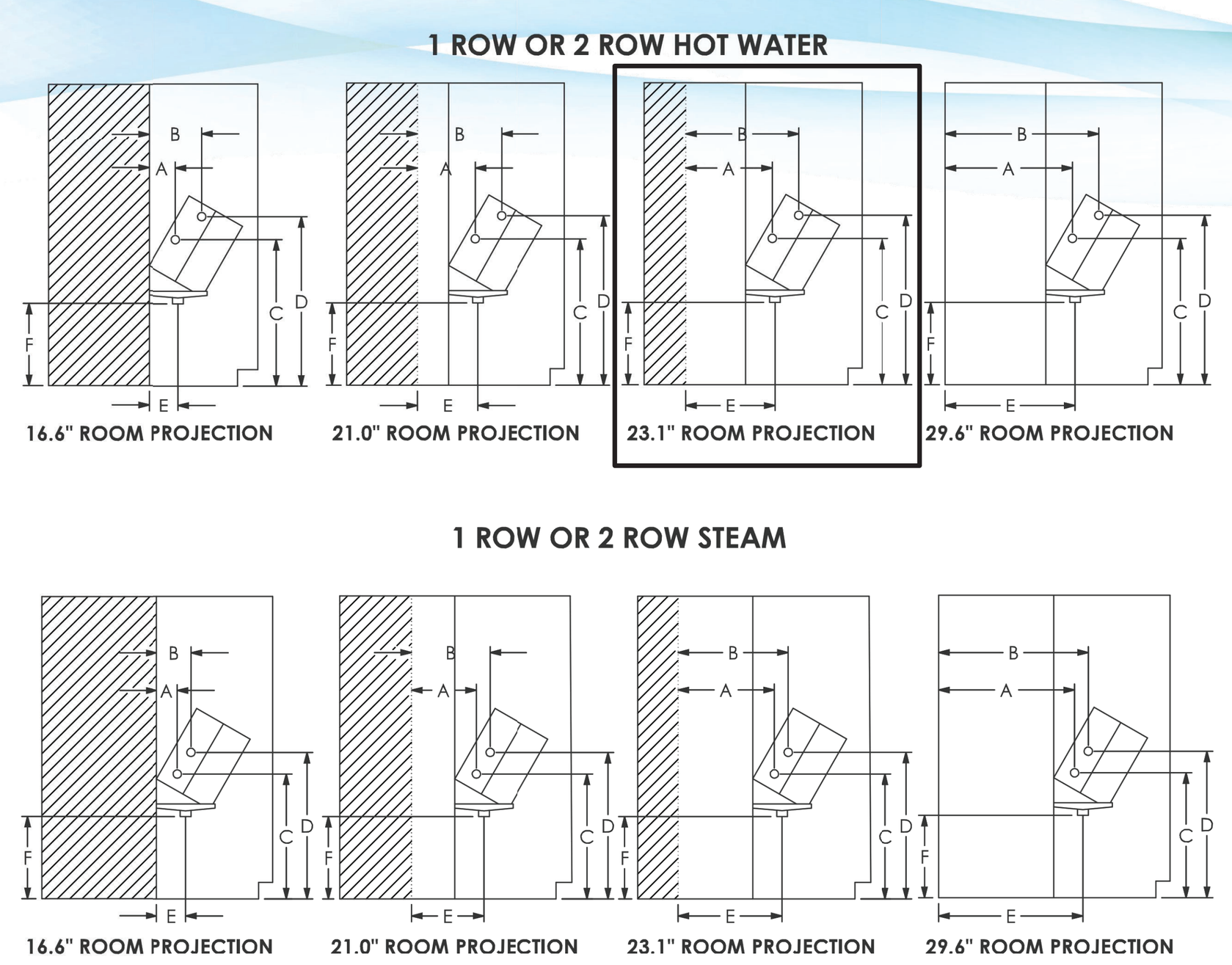
Table 3 - Projection & Recess Dimensions	Recess Type	No Recess	Partial	Partial	Full
	Room Projection, P	29.625	23.375	21.000	16.625
	Recess into Wall, R	0	6.25	8.625	13
	Total Unit Depth	29.625	29.625	29.625	29.625
Wall Thickness, W	Louver , L	Splitter Length from Wall Sleeve to Louver, S			
2.5	2.5	0			
4	2.5	1.5			
6	2.5	3.5			
8.75	2.5	6.25	0.00		
10	2.5	7.5	1.25		
10.625	2.5	8.125	1.875		
12	2.5	9.5	3.25	0.875	
13.625	2.5			2.5	
18	2.5			6.875	2.5
24	2.5			12.875	8.5

*All dimensions in inches. All dimensions are approximate and subject to change



*Hatching indicates portion of the sleeve recessed into the wall opening

Piping Detail Dimensions



ROOM PROJECTION	1 ROW OR 2 ROW HOT WATER						1 ROW STEAM OR 2 ROW STEAM					
	A	B	C	D	E	F	A	B	C	D	E	F
29.6	20.6	24.2	11.4	13.7	15.7	4.9	18.1	20.4	9.1	11.5	15.7	4.9
23.1	14.1	17.7	11.4	13.7	9.2	4.9	11.6	13.9	9.1	11.5	9.2	4.9
21	12.0	15.6	11.4	13.7	7.1	4.9	9.5	11.8	9.1	11.5	7.1	4.9
16.6	7.6	11.2	11.4	13.7	2.7	4.9	5.1	7.4	9.1	11.5	2.7	4.9

Notes:
- *All Coils have same end supply and return connections.*
- *All Hot Water and Steam Coils have left hand connections.*
- *Water connections are 7/8" O.D.*
- *Steam coil supply is 1-1/8" O.D. Condensate return line is 7/8" O.D.*
- *Hatched sections refer to portion of unit recessed into wall*

Electrical Connections

Electrical Connections
Refer to unit serial plate for required supply voltage, amperage, and required circuit ampacities. Refer to unit wiring diagram for unit and field wiring. The unit should never be controlled by any device other than the factory supplied controls unless prior factory authorization is obtained.

Whenever the electric stub-up is brought in through the floor within the confines of the wall sleeve and any portion of the wall sleeve is recessed into the wall, the conduit must be flush with the floor to permit installation of the wall sleeve. Sufficient space must be left around the conduit to permit the attachment of the continuing conduit after the wall sleeve is installed. For concrete slabs, it is recommended that this be accomplished either by sleeving the conduit or by recessing a junction box into the slab.

Access to all high voltage controls including the unit disconnect can be gained through the access panel at the top right side of the unit. Wiring can be routed through the 2" knockouts in the side or rear of sleeve as well as location in bottom of unit.

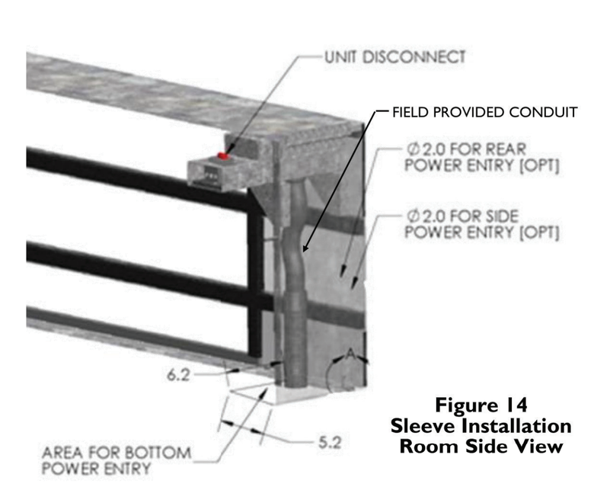


Figure 14
Sleeve Installation
Room Side View

Note: Units are shipped in nominal (non-pull down) mode. Pull down mode is disabled on all units as shipped, but the mode will be available within the unit control menu (single phase only) unless specified on the order not to allow. If pull down mode is specified as not allowed on order, the control menu will not have pull down mode available for selection.

SELF-CONTAINED UNIT VENTILATOR SPECIFICATIONS (UV-1F & UV-G) (BASIS: MAGIC AIRE)

Equipment Specifications

SPB model self-contained unit ventilators are designed for mounting through the wall. The units shall incorporate direct expansion cooling, heat pump capabilities and electric heat as specified. Modulating Hot Gas Reheat Coil shall be utilized when specified to optimize dehumidification. Direct Digital Control (DDC) packages are factory provided and installed and can operate as stand-alone or can be incorporated into a BACnet network. Indoor air quality is assured with ASHRAE II cycles.

The unit shall be a factory-assembled bolt-together unit ventilator. Contained within the unit enclosure shall be factory-installed indoor and outdoor motors, wiring, indoor and outdoor blowers, variable speed refrigeration section, condenser and evaporator coils, bearing(s), outdoor/return air damper, optional face/bypass damper and factory mounted DDC controls. Unit shall have a draw-thru design for uniform air distribution across the coil and even discharge temperatures.

UNIT CONSTRUCTION

Unit shall be constructed of heavy gauge steel components to form a ridged frame that is suitable for rigorous classroom duty. Unless painted for cosmetic reasons, the frame shall be entirely of galvanized material to prevent corrosion.

Exterior panels must be constructed of heavy gauge steel that have been cleaned and pretreated prior to painting to afford the maximum corrosion resistance possible, even after scratches that might appear during normal use. These panels shall be coated with at least 2 mil of the highest quality, polyester baked-on textured powder paint.

Unit tops shall be constructed of heavy gauge steel coated with a textured finish baked on powder paint to resist both corrosion and marring during normal use. Units shall be constructed such that normal unit operation is not affected by removal of front panels for routine maintenance or troubleshooting/ adjustments of control components. Units requiring all front panels to be in-stalled for correct unit operation shall not be accepted.

Each unit shall be completely factory assembled and shipped in one piece. Packaged units shall be shipped fully charged with R-410A refrigerant and oil.

The unit shall undergo a complete factory run test prior to shipment. The factory test shall include a refrigeration circuit run test, a unit control system operations check, a unit refrigerant leak test, and a final unit inspection. At factory test, all units shall conform to ETL standards.

Unit shall include three standard 16-gauge exposed front panels, and service access panels with tamper -resistant hex socket head threaded fasteners for ease of service. 14-gauge panels are optional.

Cabinet models shall have standard textured baked powder finished panels. Cabinet tops shall be charcoal bronze as standard with a steel bar-stock discharge grille. Optional textured baked power paint colors to match panels will be available for cabinet top. Optional sloped top shall be available. Unit top shall be easily removed for routine maintenance.

Unit shall include leveling legs to compensate for floor irregularities.

INSULATION

The standard unit shall be constructed such that there shall be no fiberglass in the airstreams. Only closed cell insulation shall be used. The use of fiberglass insulation is not acceptable.

BAR STOCK DISCHARGE GRILLE

Discharge grilles shall be welded steel continuous blade design with spacing no more than .230" such that normal pencils cannot penetrate.

To further ensure that debris cannot be placed into the fans, the grille shall be backed by screens with spaces no larger than 1/4 inch.

DRAIN PANS drain pans shall be furnished on all units. Pans shall be insulated to ensure that they do not sweat during the cooling season and be sloped in two planes to prevent standing water. Drain stubs shall be at least 7/8" OD. Left hand connections standard on all units.

Equipment Specifications

COILS

DX coils shall be furnished with a thermal expansion valve sized to accommodate the condensing unit selected to meet the load. Coils shall be pressure tested at no less than 500psig at the factory to ensure they are leak tight.

(Optional) Modulating Hot Gas Reheat Coil shall be utilized to optimize dehumidification without using additional energy to reheat.

(Optional) Electric heat elements shall be the open wire type. They shall be mounted in individual heavy gauge galvanized steel frames and suspended in ceramic insulators.

Dual capillary type thermal sensing elements, one automatic reset and one manual reset, shall be employed to protect the unit from overheating in the event of abnormal operation.

REFRIGERATION SYSTEM

The refrigeration section shall be constructed of galvanized steel and shall be factory sealed, factory piped assembly consisting of a condenser coil, condenser fan and motor, evaporator coil, and a variable speed compressor with integral VFD. The variable speed compressor with integral VFD shall be used to maintain high efficiency at part load. The unit controller shall control the speed of the compressor to maintain the discharge air temperature. Two compressor operating modes shall be available. The standard mode shall contain a Pull Down mode to allow for quicker pull down and a broader range of capacity. The equipment manufacturer is to be fully responsible for the integrity of the refrigerant piping and the entire refrigeration circuit, including compressor.

Condenser and evaporator coils shall be fully assembled and tested prior to shipment. The motor compressor unit shall be vibration isolated internally and externally and-shall be connected in such a manner as to prevent transmission of vibration to other components within the section. The condenser coil shall be constructed of copper tubes mechanically expanded to embossed aluminum plate fins. The evaporator coil shall be constructed of copper tubing having embossed aluminum plate fins mechanically bonded thereto and shall be positioned above an insulated galvanized steel drain pan. Refrigerant shall be metered by a electronic expansion valve to achieve evaporator performance and to protect the compressor from floodback of liquid refrigerant. The refrigerant section shall be adequately insulated to prevent "sweating." The unit shall be furnished and wired with compressor thermal/current overload, low-pressure cutout and high-pressure cutout. Gauge ports shall be provided to allow reading of refrigerant pressures at the suction and discharge of the compressor. Compressor shall be equipped with internal pressure relief valve to protect against excessive pressure buildup.

FILTERS

The units shall be furnished with throwaway, permanent, renewable filters. This filter shall be placed in the air stream such that all outdoor and/or return air passes through a single filter. Separate filtration of the outdoor air and return air is not acceptable. Permanent filters shall be constructed utilizing a heavy gauge aluminum frame with spun aluminum media suitable for repeated washing and reuse. Renewable fitters shall be constructed of heavy gauge galvanized, painted frames fitted with fiberglass media. The frame shall be easily disassembled for media renewal. Units shall be constructed to accept 2" filters without cabinet modification.

Equipment Specifications

ROOM AIR FANS AND MOTOR

Fan and motor assembly shall be direct driven. One end of drive shaft shall be mounted in a sleeve-type or ball bearing, with other end of shaft supported by motor bearings. Fan wheels shall be double-width, double-inlet with forward-curved blades, and shall operate at low speed. Fan wheels shall be mounted on a hollow one piece steel shaft. Fan wheels shall be statically and dynamically balanced. Fan (blower) housings shall be constructed from heavy-gauge steel and mounted to a heavy-gauge galvanized steel fan deck. To prevent vibration transmission to the unit frame, motor and shaft bearing shall be resiliently mounted. The drive shaft shall be connected to motor with a flexible coupling. Fan motors shall be mounted outside of the airstream on a heavy-gauge steel partition and removable without removing the blower module. Unit shall be supplied with higher efficiency 3-speed electronically commutated motors (ECM). All motors shall have integral high temperature reset and shall be protected with cartridge-type fuse(s).

CONDENSER FANS AND MOTOR

Fan and motor assembly shall be direct driven. One end of drive shaft shall be mounted in a sleeve-type or ball bearing, with other end of shaft supported by motor bearings. Fan wheels shall be double-width, double-inlet with forward-curved blades, and shall operate at low speed. Fan wheels shall be mounted on a hollow one piece steel shaft. Fan wheels shall be statically and dynamically balanced. Fan (blower) housings shall be constructed from heavy-gauge steel and mounted to a heavy-gauge galvanized steel fan deck. To prevent vibration transmission to the unit frame, motor and shaft bearing shall be resiliently mounted. The drive shaft shall be connected to motor with a flexible coupling. Unit shall be supplied with higher efficiency 3-speed electronically commutated motors (ECM). All motors shall have integral high temperature reset and shall be protected with cartridge-type fuse(s).

ROOM AIR/OUTDOOR AIR DAMPERS

Unit shall contain a single outdoor-air/return-air damper with a continuous seal the length of the damper. The damper shall be constructed of extruded aluminum that has an integral curved web to afford maximum rigidity. Damper shall be constructed of one piece heavy gauge extruded aluminum material that has been stiffened by use of multiple components to afford maximum rigidity, strength and corrosion resistance. Seats shall be deep pile polyester material on all side edges; damper blades shall use dual durometer PVC seals with memory suit-able for use from -30°F to 160°F. The damper shafts shall pass through trouble-free nylon bearings and be connected to the damper blade using multiple fasteners that utilize vibration resistant components for maximum trouble-free life. The damper must be insulated with closed cell foam insulation. Optional cold weather damper must be avail-able for maximum cold weather protection.

FACE AND BYPASS DAMPER

A single face and bypass damper with a continuous seal the length of the damper constructed of extruded aluminum shall be available. Face and bypass dampers must be constructed of heavy gauge aluminum material that has been stiffened by use of multiple components to form a cross section that forms a rectangle to afford maximum rigidity. Damper shafts shall pass through trouble free nylon bearings and be connected to the damper blade using multiple fasteners that utilize vibration resistant components for maximum trouble-free life.

AGENCY LISTINGS

All units shall be listed by NRTI (Nationally Recognized Testing laboratory) such as ETL. All units shall have certified performance under applicable ARI 840 program for unit ventilators. The manufacturer shall furnish proof of such certification prior to final approval of the product. Unit insulation and adhesive shall meet the require-ments for flame spread rating of lower than 25 per ASTM E84 and smoke generation rating of lower than 50 per ASTM E84.

Equipment Specifications

TEMPERATURE CONTROLS

The manufacturer shall furnish, install, wire and factory test a complete DDC Control Package suitable for the unit type(s) selected. The control pack-age can be ordered Network Ready to be integrated into a Building Management System network or ordered for stand-alone operation and shall have all of the necessary sensors and accessories to monitor, control and ensure com-plete and safe operation of the unit. The Network Ready control packages shale be capable of BACnet MSTP network protocol ASHRAE Cycles II shall be utilized. Control Components and features shall be included as needed according to unit selection.

DDC Controller and interfacing with Variable Speed Control Compressor and DC inverter

Temperature Sensors

Face and Bypass Control with damper actuator

Outside Air Control with damper actuator

Tenant override Switch

Override Scheduling

Holiday Scheduling

CO2 Sensor option

Humidity Sensor options

Drain Pan Overflow Switch

Remote mounted sensor with capability to sense room temperature and have tenant override built in.

All control components shall be factory provided and installed. Field provided and/or installed controls shall not be acceptable.

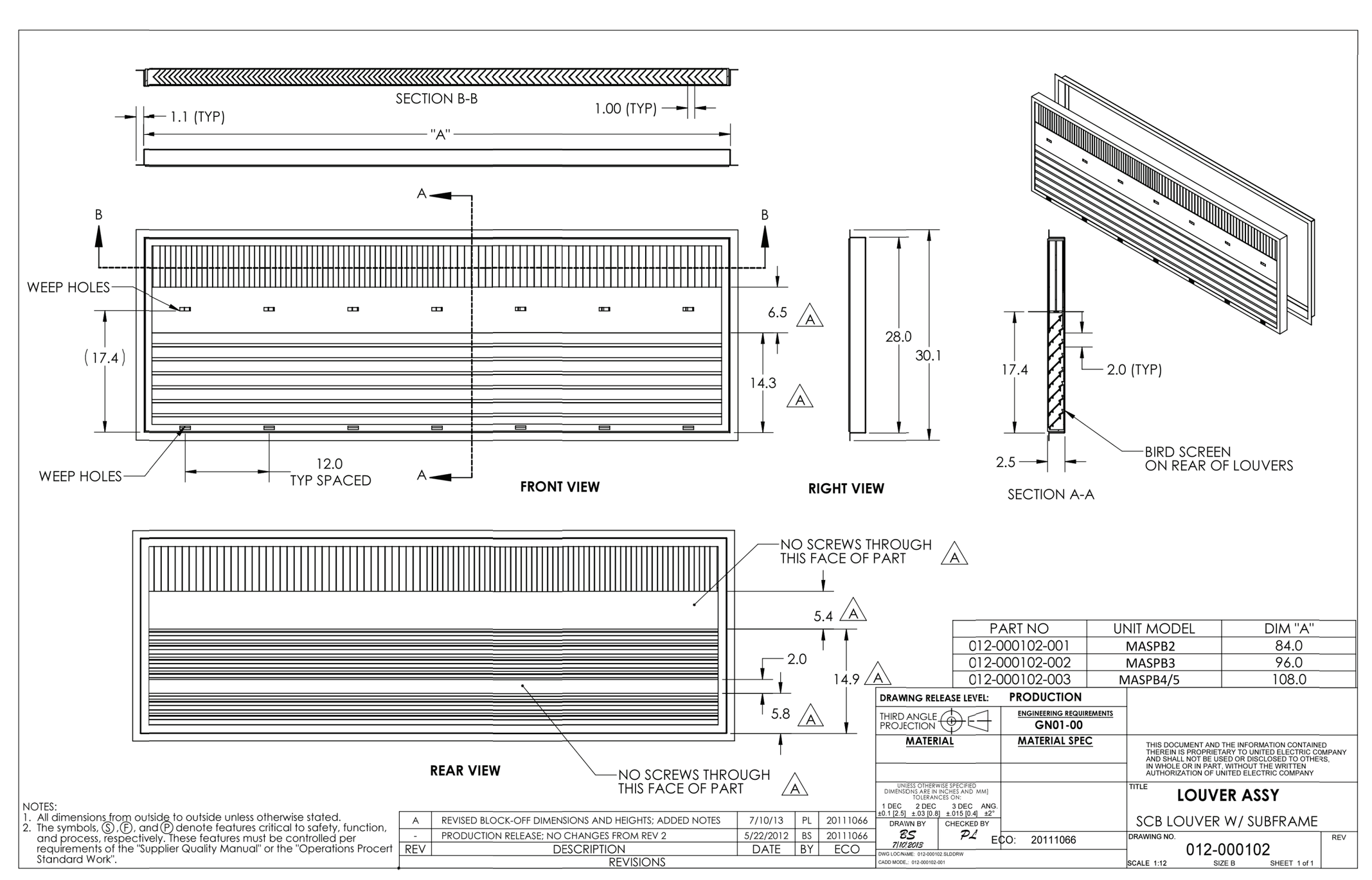
WALL SLEEVE

The galvanized steel wall sleeve shall be set in a wall opening and completely touching directly against the intake louver. Where it is not possible for the wall sleeve to touch the wall intake louver, the contractor shall fabricate and install a horizontal sheet metal baffle between louver and wall sleeve to provide an airtight separation between condenser discharge and return air. The wall sleeve is to be permanently fastened in place and shall be suitably sealed, caulked or grouted by the contractor around the entire perimeter to prevent air leakage. The wall sleeve shall be fitted with an electrical junction box containing a service disconnect ("on-off") switch. All field-wiring connections shall be made in this wall sleeve junction box. It shall be the installing contractor's responsibility to make the final load side power wiring connections between the wall sleeve junction box and the unit terminal block. Contractor shall provide all necessary balancing valves, shutoff valves and union connections in both the supply and return piping connections to permit removal of the unit from the wall sleeve for servicing.

WALL INTAKE LOUVER

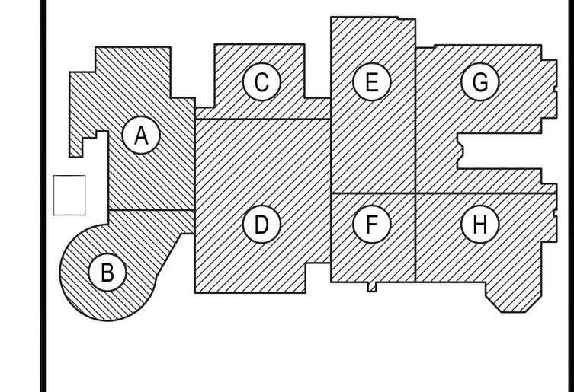
The louver shall be supplied by the unit manufacturer and shall be of heavy-gauge (unpainted, painted, or clear anodized) aluminum construction. The louver shall be of the [vertical blade] [horizontal blade] type and shall be divided in half horizontally across the louver to prevent condenser air recirculation. All louvers shall be suitable for both masonry and panel wall construction. The frame of the louver shall have weep holes along the bottom. Lintels shall be provided by the contractor above the louver opening.

(Optional) A decorative lattice grille shall be furnished on the exterior face of the louver.



REV.	DATE	ITEM

NOTICE



KEY PLAN
NOT TO SCALE

PROJECT
BRIARCLIFF MANOR U.F.S.D.
PHASE 2 BOND IMPROVEMENTS
BRIARCLIFF MANOR MIDDLE/HIGH SCHOOL
444 PLEASANTVILLE RD, BRIARCLIFF MANOR, NY 10510

DWG TITLE
SCHEDULES, EQUIPMENT
NOTES AND DETAILS (6 OF 10)

DRAWING BY: R.D.P.
CHECK BY: F.S.

NOTICE

BBS
ARCHITECTS
LANDSCAPE ARCHITECTS
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187 WOLF ROAD, STE. 205, ALBANY, NEW YORK 12205, T. 518.621.7650, F. 518.621.7655
www.BBSARCHITECTURE.com

SED No. 66-14-02-02-0-004-023
DISTRICT BRIARCLIFF MANOR UFSD
PROJECT PHASE 2 BOND IMPROVEMENTS
DWG TITLE SCHEDULES, EQUIPMENT NOTES AND DETAILS (6 OF 10)

SCALE: AS NOTED
DATE: 7/15/22
BID PICK-UP:
FILE No: 21-274C

M6.06 HSMS

AIR DEVICE SCHEDULE
(ANEMOSTAT AS STANDARD)

MANUFACTURER MODEL NO.	TAG	NECK SIZE	MODULE SIZE	CFM RANGE	SYMBOL & FLOW PATTERN
ANEMOSTAT PG SUPPLY	A	8"Ø	12x12	UP TO 200	ALL PATTERNS
		8"Ø	24x24	UP TO 200	ALL PATTERNS
		10"Ø	24x24	205-350	ALL PATTERNS
		12"Ø	24x24	335-500	ALL PATTERNS
		15"Ø	24x24	505-675	ALL PATTERNS
ANEMOSTAT CM-1P SUPPLY	B	8"Ø	18"	UP TO 200	ALL PATTERNS
		10"Ø	24"	205-350	ALL PATTERNS
		12"Ø	24"	335-500	ALL PATTERNS
		15"Ø	34"	505-675	ALL PATTERNS
ANEMOSTAT PJBF-150 (SUPPLY & RETURN)	C	8" OVAL	SINGLE, 1-1/2" SLOT DIFFUSER	50/LF	ALL PATTERNS
ANEMOSTAT AC30-45 (LAY-IN) OR 30-45 (SURFACE MTD.) RETURN	D	-	24x24	UP TO 1000	RETURN
		-	24x12	UP TO 400	RETURN
		-	12x12	UP TO 200	RETURN
		-	60x20	UP TO 2,500	RETURN
ANEMOSTAT 20L SUPPLY	E	-	48x16	UP TO 3,000	SUPPLY

NOTES:

1) MECHANICAL CONTRACTOR TO COORDINATE BORDER TYPES WITH CLG. CONSTRUCTION.

2) FURNISH PLASTIC FRAMES FOR SHEETROCK AREAS, ANEMOSTAT MODEL TBF.

3) DIFFUSERS LOCATED IN GYP. BOARD SHALL BE FURNISHED WITH CABLE OPERATED DAMPERS (COD) AS MANUFACTURED BY YOUNG REGULATOR CO. MODEL NUMBER: 800AW.

4) ALL BALANCING TO BE PERFORMED THRU BRANCH DAMPERS.

5) DIRECTIONAL BLANK OFFS TO BE FIELD INSTALLED BY HVAC CONTRACTOR AS INDICATED DWGS.

6) RETURN GRILLES BASED ON ANEMOSTAT MODEL 30 OR AC. NON DUCTED RETURN GRILLES TO HAVE LIGHT SHIELDS.

7) MAXIMUM NC LEVELS ARE <25 FOR ALL DIFFUSERS AND RETURNS

8) RETURN AIR LINEAR DIFFUSERS (PJBF-150) SHALL BE INSTALLED WITHOUT PATTERN CONTROLLERS TO MAXIMIZE AIRFLOW.

9) LINEAR SLOT DIFFUSER PLENUMS SHALL BE 8" HIGH.

10) WHERE INDICATED ON PLANS, SUPPLY & RETURN LINEAR DIFFUSER BLANK-OFF PLATES SHALL BE INSTALLED.

11) M.C. TO ADJUST LINEAR DIFFUSER PATTERN CONTROLLERS AS INDICATED ON PLAN.

MODEL PG:

INSTALL WHERE SHOWN ON THE PLANS AND OUTLET SCHEDULE ANEMOSTAT MODEL PG PARAGON PLAQUE CEILING DIFFUSERS. THE DIFFUSER SIZES SHALL BE NOMINAL 24" x 24" OR 12" x 12", AS SCHEDULED, WITH MINIMUM 18" OR 9" SQUARE APPEARANCE PANELS. THE DIFFUSERS SHALL BE CONSTRUCTED OF STEEL, AND SHALL BE DESIGNED TO INTEGRATE WITH THE SPECIFIED CEILING SYSTEM TYPE. THE DIFFUSER SHALL CONSIST OF A BACK PAN AND A REMOVABLE, HEAVY GAUGE APPEARANCE PANEL ATTACHED TO THE BACK PAN VIA (4) POSITIVE LOCKING POSTS. THE APPEARANCE PANEL SHALL HAVE AERODYNAMIC, RIGID, HEMMED EDGES AROUND THE PERIMETER AND SHALL BE A SINGLE PIECE CONSTRUCTION. THE PANEL SHALL BE FLAT, SMOOTH, AND SHALL BE FREE OF ANY WELDING OR FORMING BLEMISHES. THE HORIZONTAL AIR DISCHARGE PATTERN SHALL BE 360° TYPE. BLANK-OFF BAFFLES SHALL BE PROVIDED TO OBTAIN 1,2,OR 3 WAY BLOW PATTERNS AS SCHEDULED. THE SIZE AND ELEVATION OF THE APPEARANCE PANEL SHALL BE AS SCHEDULED FOR ANEMOSTAT'S TYPE A OR C MODELS. PROVIDE VOLUME CONTROL, MODEL VD BUTTERFLY TYPE DAMPERS AS SCHEDULED. DAMPERS SHALL BE ADJUSTABLE FROM THE FACE. DIFFUSER FINISH SHALL BE (ARCTIC WHITE)(SATIN POLISH FINISH-STAINLESS ONLY)(COLOR AS SELECTED BY THE ARCHITECT). PROVIDE PUBLISHED PERFORMANCE DATA DETERMINED IN ACCORDANCE WITH THE LATEST ANSI/ASHRAE STANDARDS FOR THROW, PRESSURE, AND SOUND.

MODEL CM-1P:

CONTRACTOR SHALL FURNISH AND INSTALL ANEMOSTAT CM1-P AIR DIFFUSERS AS MANUFACTURED BY ANEMOSTAT PRODUCTS AT EACH POINT INDICATED ON THE PLANS. THESE AIR DIFFUSERS ARE TO CONSIST OF A ROUND OUTER CONE WITH A ROUND HEAVY GAUGE PLAQUE FACE. THE PLAQUE FACE SHALL BE FLAT, SMOOTH, AND FREE OF ANY WELDING OR FORMING BLEMISHES. THE PLAQUE ASSEMBLY SHALL BE REMOVED FROM THE OUTER CONE BY A TWIST OF THE ASSEMBLY WITHOUT THE USE OF ANY TOOLS. A SPRING LOCK SHALL PREVENT UNINTENTIONAL REMOVAL OF THE PLAQUE ASSEMBLY. THE AIR DIFFUSER SHALL BE STEEL, PAINTED ARCTIC WHITE. PROVIDE PUBLISHED PERFORMANCE DATA DETERMINED IN ACCORDANCE WITH THE LATEST ANSI/ASHRAE STANDARDS FOR THROW, PRESSURE AND SOUND.

MODEL PJBF-150:

ANEMOSTAT FREE FLO™ AND PRO JET™ LINEAR/CURVED SLOT DIFFUSERS SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR ACCORDING TO ARCHITECTURAL/MECHANICAL DRAWINGS. THE MANUFACTURER SHALL PROVIDE SUBMITTAL DRAWINGS UTILIZING EXACT DIMENSIONS SPECIFIED BY ARCHITECTURAL DRAWINGS. THE LINEAR SLOT DIFFUSERS SHALL CONSIST OF HEAVY WALL EXTRUDED ALUMINUM OUTER FRAMES, ADJUSTABLE AND REMOVABLE AIR PATTERN CONTROLLERS, AND INVERTED T-MEMBERS. STEEL OUTER FRAMES, INVERTED T-MEMBERS, AND PATTERN CONTROLLERS WILL NOT BE ACCEPTED. NON-REMOVABLE INNER T-MEMBERS AND PATTERN CONTROLLERS ALSO WILL NOT BE ACCEPTED. THE DIFFUSERS SHALL BE SPECIFICALLY DESIGNED TO INTEGRATE INTO THE WALL SYSTEM IN WHICH THEY ARE INSTALLED. WHERE CONTINUOUS RUNS ARE REQUIRED, THE SLOT DIFFUSERS SHALL INCLUDE KEYWAYS TO ACCEPT CONCEALED COATED STEEL ALIGNMENT STRIPS BETWEEN SECTIONS TO CORRECT FOR MISALIGNMENT. ALIGNMENT STRIPS ARE TO BE FURNISHED BY THE DIFFUSER MANUFACTURER. WHERE APPLICABLE, CONCEALED MOUNTING BRACKETS SHALL BE PROVIDED FOR ATTACHING THE DIFFUSERS TO THE AIR PLENUMS. THE ATTACHING SCREWS AND MOUNTING BRACKETS SHALL NOT BE VISIBLE AFTER INSTALLATION OF THE PATTERN/VOLUME CONTROLLERS. MOUNTING BRACKETS SHALL BE MINIMUM 18 GA COATED STEEL WITH STIFFENERS AND SHALL CONSIST OF A SINGLE PIECE SPANNING ACROSS THE ENTIRE WIDTH OF THE DIFFUSER. FOR EXPOSED FLANGE APPLICATIONS, THE FACE SHALL BE PAINTED FACTORY WHITE. FOR CONCEALED FLANGE APPLICATIONS, THE FACE SHALL BE PAINTED BLACK. ARCHITECT SPECIFIED COLORS WILL ALSO BE AVAILABLE. INTERNAL PATTERN CONTROLLERS SHALL BE BLACK. DIFFUSERS DESIGNATED AS FREE FLO™ SHALL UTILIZE AIR PATTERN CONTROLLERS THAT ARE FULLY ADJUSTABLE. ADJUSTMENT SHALL ALLOW FOR AIR VOLUME BALANCING AND DIRECTIONAL CONTROL FROM HORIZONTAL TO VERTICAL. THE DIFFUSERS SHALL BE MOUNTED IN THE CEILING OR SIDEWALL, AND SHALL BE ADJUSTED FOR BOTH THE PATTERN AND AIRFLOW VOLUME AS SHOWN ON THE PLANS. DIFFUSERS DESIGNATED AS PRO JET™ SHALL UTILIZE A VARIABLE NOZZLE THAT IS FULLY ADJUSTABLE. ADJUSTMENT SHALL CHANGE FLOW AREA FOR AIR VOLUME BALANCING AND RESULTANT THROW DISTANCE. THE NOZZLE SHALL BE CAPABLE OF SHUTOFF, IF REQUIRED. THE DIFFUSERS SHALL BE MOUNTED IN THE CEILING OR SIDEWALL, AND SHALL BE ADJUSTED FOR AIRFLOW VOLUME AS SHOWN ON THE PLANS. ALL DIFFUSERS SHALL BE CERTIFIED AS TO PERFORMANCE DATA AS TESTED IN ACCORDANCE WITH ASHRAE STANDARD 70-91. DIFFUSER MANUFACTURER SHALL PROVIDE BLANK-OFF PLATES, AIR PLENUMS, LIGHT SHIELDS, MITERED CORNERS, AND ANY OTHER ACCESSORIES AS INDICATED IN THE SCHEDULE, AS SHOWN ON THE PLANS.

MODEL AC30:

LAY-IN TYPE CEILING RETURN / EXHAUST GRILLES & REGISTERS SHALL BE ANEMOSTAT MODEL AC30 (3/4" BLADE SPACING) FIXED BLADE, NON-ADJUSTABLE GRILLES, MANUFACTURED FROM (STEEL) AS SCHEDULED. PROVIDE SIZES AND MOUNTING TYPES AS SCHEDULED TO INTERFACE WITH THE SUSPENSION GRID SYSTEM AS SHOWN. GRILLES SHALL HAVE A NARROW BORDER DESIGN TO ENHANCE APPEARANCE AND MAXIMIZE CORE AREA. FULL-BORDERED SURFACE MOUNTED GRILLES SIZED FOR LAY-IN APPLICATIONS ARE NOT APPROVED. BLADES SHALL BE ON 3/4" SPACING, AND SHALL RUN PARALLEL TO THE LONG DIMENSION. BLADES SHALL BE POSITIONED AT 45° DEFLECTION ANGLES, AND HELD RIGIDLY FIXED IN PLACE BY REAR MULLIONS WELDED TO THE GRILLE FRAME. CORNERS SHALL BE WELDED OR STAKED FOR NEAT, UNIFORM MITERED CORNERS. WHERE SCHEDULED, INCLUDE STEEL OPPOSED BLADE VOLUME CONTROL DAMPERS. PROVIDE BLACK, STEEL LIGHT SHIELDS FOR CEILING PLENUM RETURN USE AS SHOWN. PROVIDE A BAKED-ON, ARCTIC WHITE FINISH, OR CUSTOM COLOR AS SELECTED BY THE ARCHITECT. (OPTIONAL) PROVIDE A SATIN POLISH FINISH ON EXPOSED SURFACES FOR ALL STAINLESS STEEL UNITS.

MODEL 30-45:

RETURN / EXHAUST GRILLES & REGISTERS SHALL BE ANEMOSTAT MODEL 30 (3/4" BLADE SPACING) OR MODEL 35 (1/2" BLADE SPACING) FIXED BLADE, NON-ADJUSTABLE GRILLES, MANUFACTURED FROM (STEEL) AS SCHEDULED. PROVIDE SIZES AND MOUNTING TYPES AS SCHEDULED. FOR SURFACE MOUNTING APPLICATIONS, COUNTERSUNK MOUNTING HOLES SHALL BE PROVIDED IN THE BORDER, WITH OVAL HEAD SCREWS ALSO PROVIDED BY THE GRILLE MANUFACTURER. BLADES SHALL BE ON 3/4" SPACING, AND SHALL RUN HORIZONTAL OR VERTICAL (SHORT OR LONG DIMENSION) AS SHOWN. BLADES SHALL BE POSITIONED AT 45° DEFLECTION ANGLES, AND HELD RIGIDLY FIXED IN PLACE BY REAR MULLIONS WELDED TO THE GRILLE FRAME. CORNERS SHALL BE WELDED OR STAKED FOR NEAT, UNIFORM MITERED CORNERS. WHERE SCHEDULED, INCLUDE STEEL, OPPOSED BLADE VOLUME CONTROL DAMPERS. PROVIDE A BAKED-ON, ARCTIC WHITE FINISH, OR CUSTOM COLOR AS SELECTED BY THE ARCHITECT. (OPTIONAL) PROVIDE A SATIN POLISH FINISH ON EXPOSED SURFACES FOR ALL STAINLESS STEEL UNITS.

MODEL 20L:

3/4" BLADE SPACING, DOUBLE DEFLECTION SUPPLY GRILLES AND REGISTERS SHALL BE ANEMOSTAT MODEL 20 (DOUBLE DEFLECTION), MANUFACTURED FROM (STEEL) WITH 3/4" BLADE SPACING AND AS SCHEDULED. THE GRILLES/REGISTERS SHALL CONSIST OF AN OUTER BORDER OR FRAME, WITH FACE DIRECTIONAL BLADES PARALLEL TO THE (LONG, SHORT) DIMENSION AS DETAILED. BLADES SHALL BE INDIVIDUALLY ADJUSTABLE AND DESIGNED TO MINIMIZE NOISE AND PRESSURE LOSS, AND SHALL CONSIST OF EITHER AN EXTRUDED ALUMINUM OR ROLL FORMED, CLOSED PROFILE. BLADES SHALL ROTATE SMOOTHLY WITHOUT BENDING AND INCLUDE A FRICTION DESIGN CONSISTING OF TENSION WIRE TO HOLD BLADE POSITION, AND PREVENT RATTLING. FRAME MOUNTING HOLES SHALL BE COUNTERSUNK FOR OVAL HEAD SCREWS, PROVIDED BY THE GRILLE MANUFACTURER. WHERE SCHEDULED AND AS SHOWN, PROVIDE OPTIONAL (STEEL) FACE OPERATED OPPOSED BLADE VOLUME CONTROL DAMPERS. INCLUDE OPTIONAL GRILLE FRAME GASKETING OR MODEL RC REMOVABLE CORE AUXILIARY FRAMES IF SCHEDULED. FINISH SHALL BE BAKED-ON ANEMOSTAT ARCTIC WHITE OR CUSTOM COLOR AS SPECIFIED BY THE ARCHITECT.

EXHAUST FAN SCHEDULES (EF-2A - EF-2C & EF-1A - EF-1E) (BASIS: GREENHECK)

EXHAUST FAN SCHEDULE — GREENHECK AS STD.

TAG	SERVICE	MODEL	CFM	ESP	FAN RPM	MOTOR (HP)	INLET SONES	VOLT/PH	*WEIGHT (LBS)	OPTIONS AND ACCESSORIES	NOTES
EF-2A	SCIENCE RESEARCH LAB - 113	G-120-VG	1500	0.75	1566	1/2	13.8	115/1	103.0	1,3,4,5,6,7,8	MINIMUM AIRFLOW 475CFM
EF-2B	FAB LAB/PHOTOGRAPHY - 120	G-120-VG	1500	0.75	1566	1/2	13.8	115/1	103.0	1,3,4,5,6,7,8	MINIMUM AIRFLOW 520CFM
EF-2C	ROBOTICS/ENGINEERING - 121	G-120-VG	1500	0.75	1566	1/2	13.8	115/1	103.0	1,3,4,5,6,7,8	MINIMUM AIRFLOW 582CFM
EF-1A	TECH - 164	G-120-VG	1500	0.75	1566	1/2	13.8	115/1	103.0	1,3,4,5,6,7,8	MINIMUM AIRFLOW 453CFM
EF-1B	CLASSROOM - 117	G-130-VG	2000	0.75	1673	3/4	15.0	115/1	126.0	2,3,4,5,6,7,8	MINIMUM AIRFLOW 554CFM
EF-1C	WRITING LAB - 116	G-099-VG	750	0.75	1537	1/4	10.0	115/1	95.0	1,3,4,5,6,7,8	MINIMUM AIRFLOW 234CFM
EF-1D	MATH LAB - 115	G-099-VG	750	0.75	1537	1/4	10.0	115/1	95.0	1,3,4,5,6,7,8	MINIMUM AIRFLOW 199CFM
EF-1E	FLEX SPACE - 112	G-100-VG	1000	0.75	1619	1/4	8.9	115/1	95.0	1,3,4,5,6,7,8	MINIMUM AIRFLOW 318CFM

Options / Accessories:
1. 12" High roof curb
2. Aluminum roof curb adapter, contractor to field verify existing curb dimensions prior to fabrication
3. UL-705 Listing
4. Disconnect Switch
5. Varigreen motor w/soft start and thermal overload protection
6. HOA (Hand/Off/Auto) controller w/LCD display, multiple inputs for 2-speed control and damper relay contacts
7. Roof curb extension (aluminum construction) w/damper tray and access panel
8. Motorized leakage class 1 damper w/115v actuator and end switches

General Notes:
*Weights include all accessories and curb/adapter
All fans shall be capable of running at the minimum airflow shown without entering the fan's surge region or below the manufacturer's minimum reccomended RPM

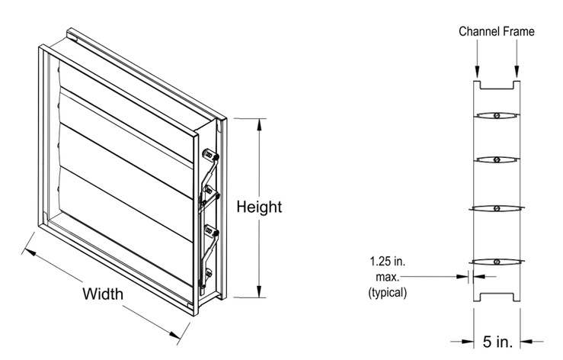
COMBUSTION AIR DAMPER SCHEDULES (BASIS: GREENHECK)

VCD-42 Low Leakage Extruded Airfoil Blade Volume Control Damper

APPLICATION & DESIGN
The VCD-42 is a low leakage damper designed to meet the highest standards established for commercial control dampers. Model VCD-42 is intended for applications in medium to high pressure and velocity systems. Smooth profile extruded aluminum airfoil blades insure the lowest resistance to airflow in HVAC systems.

DAMPER RATINGS
- Pressure: Up to 6 in. wg - pressure differential
- Velocity: Up to 6,000 ft/min
- Leakage: 6 CFM @ 4 in. wg or 3 CFM @ 1 in. wg
- Temperature: Up to 250 F

PRODUCT DETAILS
- Frame Type: Channel
- Frame Thickness: 16 ga
- Material: Galvanized
- Blade Type: Airfoil
- Blade Action: Opposed
- Blade Seal Material: TPE
- Axle/Linkage Material: Steel
- Axle Bearings: Synthetic
- Jamb Seal Material: Stainless Steel
- Damper Temp. Rating: 180 F
- Jackshafting: No Preference
- Actuator Sizing: Default SqFt
- Multi-Section Fastening: Standard
- Sizing: Nominal



• This drawing shows a general damper configuration and is not intended to depict the exact configuration of all dampers in this submittal.
• Width and height furnished approximately 0.250 in. undersize.
• Factory supplied actuators are sized for 1,500 fpm and a fully-closed differential pressure of 2 in. wc. Contact factory for actuator sizing on applications exceeding these levels.
• Installation instructions available at www.greenheck.com.

ACTUATOR INFORMATION
- Actuator Type: 24 VAC
- Actuator Mounting: Internal
- Actuator Location: Left Side
- Operating Mode: TwoPosition
- Actuator Operation: Spring Return
- Fail Position: Closed
- NEMA Enclosure: Least Cost
- Auxiliary Switches: Yes
- Spring Return Time: Standard

CODES APPROVED
IECC (International Energy Conservation Code) compliant

OPTIONS & ACCESSORIES
- Union Label: Required

SUMMARY

ID #	TAG	QTY	Width	Height	CONFIGURATION			
1-1		1	51.000 in.	69.000 in.	Drive Arrangement: Drive-CC-11-1FIL-0	Actuator Mfr: Honeywell	Actuator Model: MS8120F1200	Actuator Qty: 1
					Act. Orientation: Perp Down			
1-2		2	38.000 in.	28.000 in.	Drive Arrangement: Drive-CC-11-1FIL-0	Actuator Mfr: Honeywell	Actuator Model: MS8110A1206	Actuator Qty: 1
					Act. Orientation: Perp Down			

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MS4120F, MS4620F,S; MS8120F,S; S2024-F; S20230-F

FAST-ACTING, TWO-POSITION ACTUATORS FOR FIRE/SMOKE CONTROL APPLICATIONS

SPECIFICATION DATA

The MS4120F; MS4620F,S; MS8120F,S; S2024-F, and S20230-F Fast-Acting, Two-Position Actuators are spring return direct coupled actuators (DCA) for on/off damper control. The actuator accepts an on/off signal from a single-pole, single-throw (spst) controller. Reversible mounting allows actuator to be used for either clockwise (cw) or counterclockwise (ccw) spring rotation.

Designed to operate reliably in smoke control systems requiring Underwriter's Laboratories Inc. UL555S ratings up to 350°F, if applicable.

FEATURES
- **Reversible mounting facilitates use in either clockwise (cw) or counterclockwise (ccw) spring rotation.**
- **No special cycling required during long-term holding.**
- **Integral spring return ensures level of return torque.**
- **Stainless steel internal spring.**
- **Fifteen-second spring return timing.**
- **No audible noise during holding.**
- **Patent pending design eliminates need for limit switches to reduce power consumption.**
- **Models available for 24, 120, and 230 Vac.**
- **Ninety-five degree angle of rotation.**
- **Actuator holds rated torque at reduced power level.**
- **Die-cast aluminum housing.**
- **Housing design allows flush mounting to damper.**
- **Self-centering shaft adapter (SCSA), patent pending.**
- **Designed to operate reliably in smoke control systems requiring Underwriter's Laboratories Inc. UL555S ratings up to 350°F.**
- **Non-UL marked versions available.**

MS4120F, MS4620F, MS8120F
- **High temperature Teflon® lead wires.**
- **Models available with integral high temperature (350°F) SPST position-indicating switches (7°, 85°).**

S2024-F, S20230-F, MS4620S, MS8120S
- **Double-insulation rating.**
- **High-temperature, halogen-free, silicone-free leadwires.**
- **Models available with integral SPDT position-indicating switches (7°, 85°).**

SPECIFICATIONS

Table 1. Models

Model	Voltage in Vac	Internal Auxiliary Switches
MS4120F1006	120	None
MS4120F1204	120	2 SPST[a]
MS4620F1005	230	None
MS4620F1203	230	2 SPST[a]
MS8120F1002	24	None
MS8120F1200	24	2 SPST[a]
S2024-F (MS8120S1006)	24	None
S20230-F (MS4620S1009)	230	
S2024-F-SW2 (MS8120S1204)	24	2 SPDT[a]
S20230-F-SW2 (MS4620S1207)	230	

[a] Internal switches are designed to pass UL555S requirements (at 350°F) on APPI.

Dimensions: See Fig. 1.

Device Weight: 7 lb (3.2 kg).

Stroke: 95° ± 3°, mechanically limited.

Electrical Ratings:
Power Input:
MS4120F: 120 Vac ±10%, 60 Hz.
MS4620F,S, S20230-F: 230 Vac ±10%, 50/60 Hz.
MS8120F,S; S2024-F: 24 Vac +20%, -10%, 50/60 Hz (Class 2).
Power Consumption:
MS4120F: Driving: 0.35A, 35W. Holding: 0.15A, 10W.
MS4620F,S; S20230-F: Driving: 0.20A, 35W. Holding: 0.14A, 10W.
MS8120F,S; S2024-F: Driving: 45 VA. Holding: 10 VA.

Electrical Connections:
Lead Wires:
MS4120F, MS4620F, MS8120F: 1m Teflon wire.
MS4620S, MS8120S, S2024-F, S20230-F: 1m halogen-free wire.
Two integral 3/8 in. flexible conduit connections.

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MS4120F, MS4620F,S; MS8120F,S; S2024-F; S20230-F

Timing (At Rated Torque and Voltage):
Drive Open: 15 seconds typical.
Spring Close: 15 seconds typical.

Auxiliary Switches:
Ratings (maximum load): 250 Vac, 5A resistive, Dry Contact
Settings (fixed): 7° nominal stroke, 85° nominal stroke.

Torque Rating (at rated voltage):
Typical Holding (minimum at 350°F): 175 lb-in. (20 N•m).
Spring Return (minimum at 350°F): 175 lb-in. (20 N•m).
Stall Maximum (fully open at 75°F): 425 lb-in. (48.0 N•m).
350°F Minimum Driving: 175 lb-in. (20 N•m).

Design Life (at Rated Voltage):
30,000 full stroke cycles.

Minimum Damper Shaft Length:
1 in. (25 mm); 3-1/4 (83 mm) recommended.

Cycling Requirements:
Prolonged holding-period (1 year) testing of these actuators has been performed with no spring return failures. The actuator and the internal spring are designed to require no special cycling during long-term holding.
Honeywell recommends following all local, state and national codes for periodic testing of the entire smoke control system. Refer to National Fire Protection Association (NFPA) National Fire Codes®: NFPA90A, NFPA92A and NFPA92B for your application.
NFPA recommends periodic examination of each fire/smoke damper (semi-annually or annually) to ensure proper performance.

Mounting:
Self-centering shaft adapter.
Round Damper Shafts: 0.5 to 1.06 in.
Square Damper Shafts: 1/2 to 3/4 in.
Actuator can be mounted with shaft in any position.

IMPORTANT
Honeywell does not recommend using linkages with these actuators because side-loading of the output hub reduces actuator life.

Noise Rating (Typical):
Driving or Spring Return: 70 dBA.
Holding: 20 dBA (no audible noise).

Vibration:
Not suitable for high vibration applications (Example installation environment: Truck Trailers or Railroad Cars)
Acceptable Vibration Levels 0.6g at 30 to 300

Temperature Ratings:

IMPORTANT
The actuators are designed to meet UL555S standards at 350°F (176°C), if applicable. These actuators must be tested with the damper to achieve this rating.

Ambient: -40°F to 130°F (-40°C to 55°C).
Shipping and Storage: -40°F to 140°F (-40°C to 60°C).

Humidity Ratings:
5% to 95% RH noncondensing.

Environmental Protection Ratings:
NEMA2 and IP54 when mounted on a horizontal shaft and the base of the actuator below the shaft.

Accessories:
205649 Mounting Bracket (not supplied with actuator).

Approvals:

	MS4120F	MS4620F, MS8120F	S20230-F, S2024-F, MS4620S, MS8120S	S2024-F, MS8120S
UL/cUL (optional)	X	X		
UL60730 Plenum Rating, File No. E4436; Guide No. XAPX. (optional)[a]	X	X		
CE		X	X	
C-TICK		X	X	X

[a] Plenum applications require that conductors be enclosed in conduit (see Wiring section for conduit details).

Controller Type:
MS4120F: Line voltage (120 Vac), 2-position, spst (Series 40).
MS4620F,S; S20230-F: Line voltage (230 Vac), 2-position, spst (Series 40).
MS8120F,S; S2024-F: Low voltage (24 Vac), 2-position, spst (Series 80).

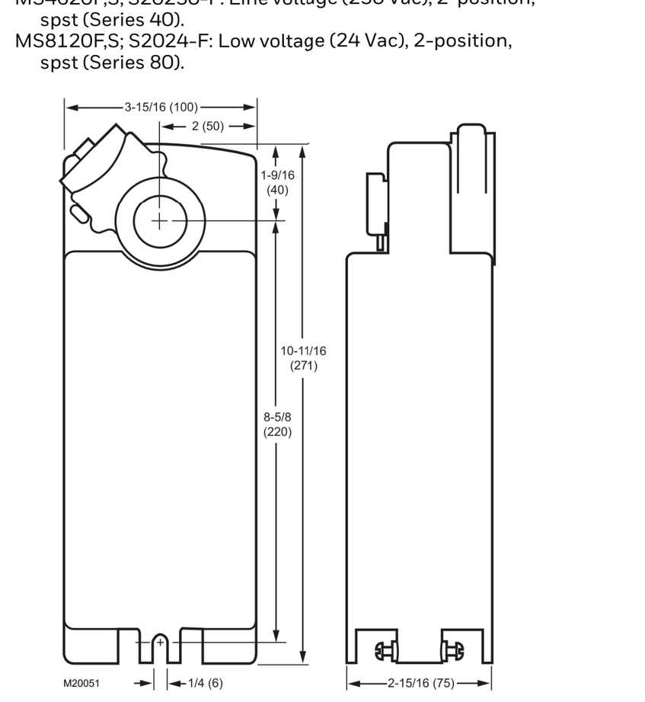

Fig. 1. Dimensions in in. (mm).

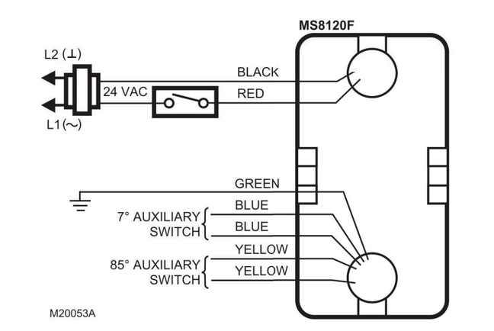

Fig. 2. Typical 24 Vac wiring (MS Series).

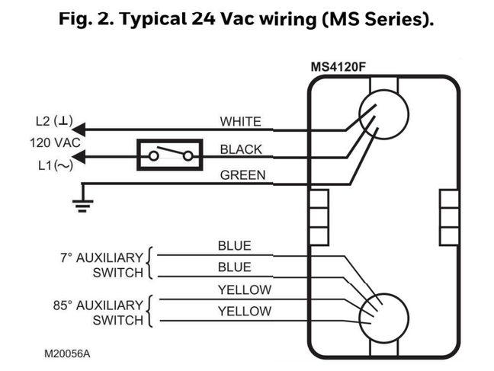

Fig. 3. Typical 120 Vac wiring.

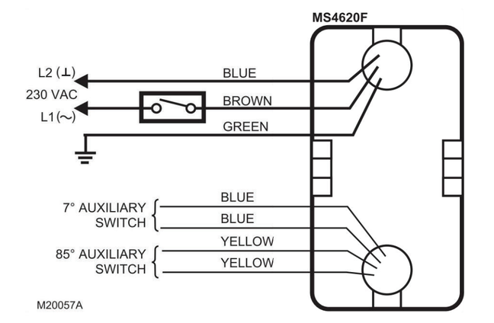

Fig. 4. Typical 230 Vac wiring (MS Series).

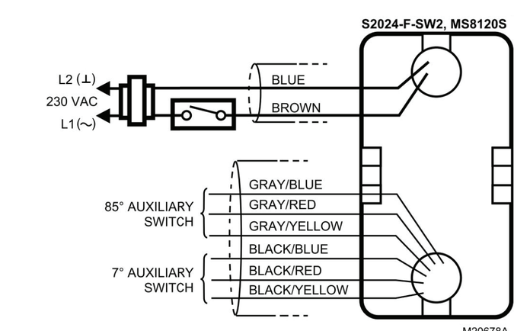

Fig. 5. Typical 24 Vac wiring (S20 Series).

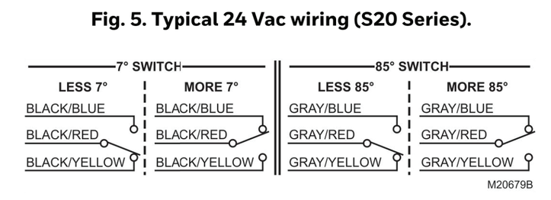

Fig. 6. Auxiliary switch wiring (S20 Series).

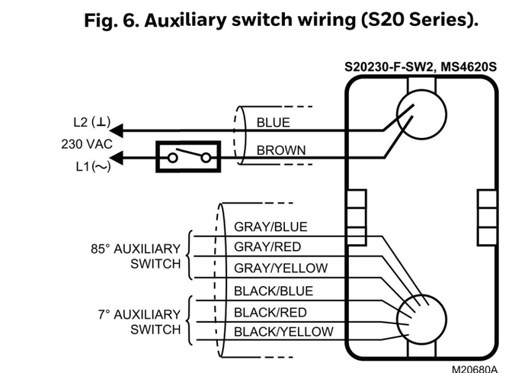

Fig. 7. Typical 230 Vac wiring (S20 Series).

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MSXX10 Series

88 LB-IN (10 NM) SPRING RETURN DIRECT COUPLED ACTUATORS

MS4110, MS7510, MS8110 S10 Series Spring Return Direct Coupled Actuators (DCA) are used within heating, ventilating, and air-conditioning (HVAC) systems. They can drive a variety of quarter-turn, final control elements requiring spring return fail-safe operation. Applications include:

- Volume control dampers, mounted directly to the drive shaft or remotely (with the use of accessory hardware).
- Quarter-turn rotary valves, such as ball or butterfly valves mounted directly to the drive shaft.
- Linear stroke globe or cage valves mounted with linkages to provide linear actuation.

- **UL (cUL) listed and CE compliant.**
- **All Models are plenum-rated per UL873.**

SPECIFICATIONS
Torque Ratings:
❑ Typical Holding, Driving, Spring Return: 88 lb-in. (10 Nm).
❑ Stall Maximum (fully open at 75°F): 200 lb-in. (22.6 Nm).
Electrical Ratings:
❑ See Table 3.
Electrical Connections:
❑ Field wiring 14 to 22 AWG (2.0 to 0.344 mm sq) to screw terminals, located under the removable access cover.
Stroke:
❑ 95° ±3°, mechanically limited.
❑ Controller Type:
❑ See Models.
❑ Modulating (Series 70) or Floating (Series 60); controlled by selector switch.
❑ Input Impedance: 95K ohms minimum.
❑ Feedback Signal: 0 or 2-10 Vdc; Driving current is 3 mA minimum.
Timing (At Rated Torque and Voltage):
❑ Drive Open (typical):
❑ Floating, Modulating Models: 90 seconds.
❑ Two-Position Models: 45 seconds ±5 seconds.
❑ Spring Close: 20 seconds typical.
Temperature Ratings:
❑ Ambient: -40°F to 140°F (-40°C to 60°C).
❑ Shipping and Storage: -40°F to 158°F (-40°C to 70°C).
Humidity Ratings:
❑ 5% to 95% RH noncondensing.
Design Life (at Rated Voltage):
❑ Two-position models: 50,000 full stroke cycles; 50,000 full stroke spring returns.
❑ Floating and Modulating models: 60,000 full stroke cycles; 1,500,000 repositions; 60,000 full stroke spring returns.
End Switches (Two SPDT):
❑ Dry Contact
❑ Settings (fixed): 7° nominal stroke, 85° nominal stroke.
❑ Ratings (maximum load): 250 Vac, 5A resistive.
Dimensions:
❑ See Fig. 1.
Device Weight:
❑ 6 lb (2.7 kg)
Mounting:
❑ Self-centering shaft adapter (shaft coupling).
❑ Round Damper Shafts: 0.375 to 1.06 in. (10 to 27 mm).
❑ Square Damper Shafts: 1/2 to 3/4 in. (13 to 19 mm).

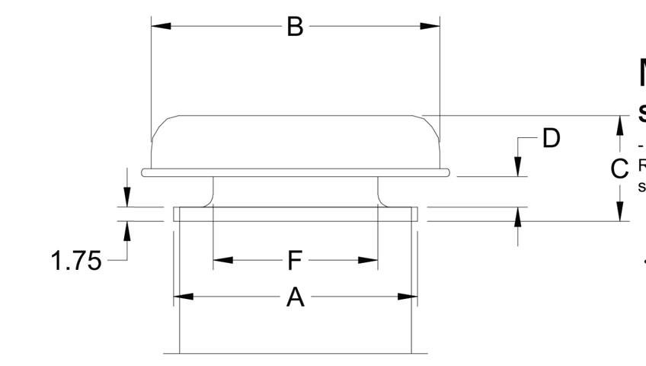
SPECIFICATION DATA

FEATURES
- **Brushless DC submotor with electronic stall protection for floating/modulating models.**
- **Brush DC submotor with electronic stall protection for 2-position models.**
- **Self-centering shaft adapter (shaft coupling) for wide range of shaft sizes.**
- **Models available for use with two-position, single pole single throw (spst), line- (Series 40) or low- (Series 80) voltage controls.**
- **Models available for use with floating or switched single-pole, double-throw (spdt) (Series 60) controls.**
- **Models available for use with proportional current or voltage (Series 70) controls.**
- **Models available with combined floating/modulating control in a single device.**
- **Models available with adjustable zero and span.**
- **Models available with line-voltage internal end switches.**
- **Models available with 3-foot, 18 AWG color-coded cable.**
- **Access cover to facilitate connectivity.**
- **Metal housing with built-in mechanical end limits.**
- **Spring return direction field-selectable.**
- **Shaft position indicator and scale.**
- **Manual winding capability with locking function.**

❑ Actuator can be mounted with shaft in any position.
Minimum Damper Shaft Length:
❑ 1 in. (25 mm); 3 in. (76 mm) recommended.
Noise Rating at 1m (Maximum):
❑ Holding: 20 dBA (no audible noise).
❑ Two-position models:
❑ Driving: 50 dBA.
❑ Spring Return: 65 dBA.
❑ Floating and Modulating models:
❑ Driving: 40 dBA.
❑ Spring Return: 50 dBA.
Vibration:
❑ Not suitable for high vibration applications (Example installation environment: Truck Trailers or Railroad Cars)
❑ Acceptable Vibration Levels 0.6g at 30 to 300 Hz.
Environmental Protection Ratings:
❑ NEMA2 (US Models) or IP54 (European Models) when mounted on horizontal shaft with access cover below the shaft.
Approvals:
❑ UL/cUL.
❑ UL873 Plenum Rating, File No. E4436; Guide No. XAPX.
❑ CE.
❑ C-TICK.

63-1296-03

GRAVITY VENT SCHEDULES GV-UV2A - GV-UV2D & GV-FCU2A & GV-FCU-2B (BASIS: GREENHECK)



Model: GRSR
Standard Construction Features:
- Aluminum housing. - Aluminum curb cap with prepunched mounting holes. - Recommended roof opening dimension is at least 2.5 in. larger than the damper size.

ADD-ALTERNATE #1 NOTE:
1. TWO (2) OF FOUR (4) GRSR-12 GRAVITY VENTILATORS (AND ASSOCIATED ACCESSORIES) LISTED BELOW ARE PART OF ADD-ALTERNATE #1.

Dimensions

ID#	Tag	Qty	Model	Model Size (in.)	A (in.)	B (in.)	C (in.)	D (in.)	E (in.)	F (in.)	Curb Cap Width (in.)	Curb Cap Length (in.)	Weight (lb)
2-1	(Multiple)	2	GRSR-20	20	30	35.5	13	3.75	N/A	20.25	30	30	39
2-2	(Multiple)	2	GRSR-24	24	34	38.25	12.75	4	N/A	24.5	34	34	44
2-3	(Multiple)	4	GRSR-12	12	22	29	11.75	3.5	N/A	12.25	22	22	25

Performance

ID#	Tag	Qty	Volume (CFM)	SP (in. wg)	Throat Area (ft2)	Throat Velocity (ft/min)
2-1	(Multiple)	2	1,250	0.038	2.25	556
2-2	(Multiple)	2	1,500	0.025	3.24	463
2-3	(Multiple)	4	400	0.029	0.82	488

Construction

ID#	Flashing Flange	Installation Type	Insect Screen	Birdscreen Material	Unit Material
2-1	No	Ducted	No	Galvanized	Aluminum
2-2	No	Ducted	No	Galvanized	Aluminum
2-3	No	Ducted	No	Galvanized	Aluminum

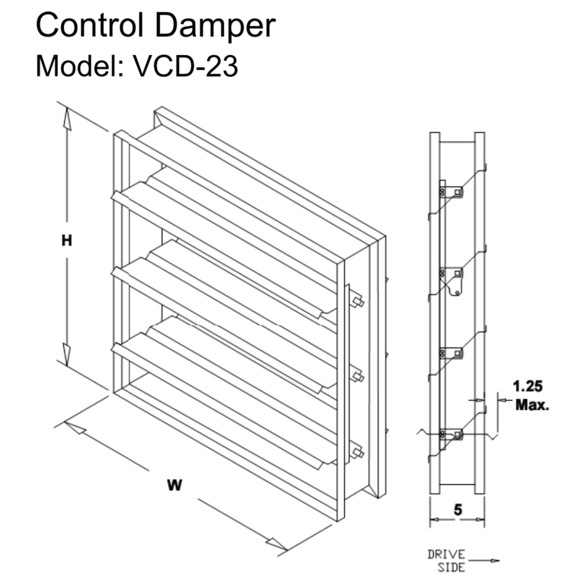
Accessories

ID#	Hinged Curb Cap	Curb Seal	Hood Insulation (in.)	Tie Down Points
2-1	No	No	None	No
2-2	No	No	None	No
2-3	No	No	None	No

Roof Curbs

ID#	Model	Height (in.)	Width (in.)	Length (in.)
2-1	GPI	18	30	30
2-2	GPI	18	34	34
2-3	GPI	18	22	22

Control Damper
Model: VCD-23



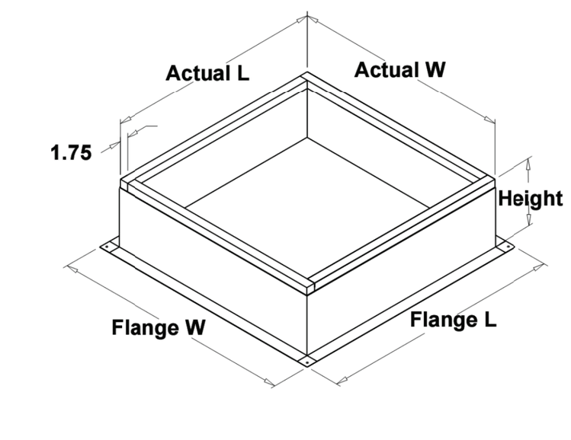
Standard Construction Features:

- Model VCD-23 is a well built low leakage control damper for automatic control or manual balancing applications - Galvanized 16 ga channel frame - Galvanized blades with reinforcements - Side mounted steel linkage is concealed in the frame to prevent additional pressure drop - Axles are steel and 0.5 in. dia.- Synthetic axle bearings - Width and height furnished approximately 0.25 in. undersized - Field wiring is required to individual components

Damper Configuration:

ID #:	Tag:	Quantity:	W (in.):	H (in.):	Act Qty:
2-1	(Multiple)	2	18	18	1
2-2	(Multiple)	2	24	24	1
2-3	(Multiple)	4	12	12	1

Notes: All dimensions shown are in units of in.
Width And height furnished approximately 0.25 in. undersize



Model: GPI
Roof Curb
Standard Construction Features:
- Roof Curb fits between the building roof and the fan mounted directly to the roof support structure - Constructed of either 18 ga galvanized steel or 0.064 in. aluminum - Straight Sided without a cant - 2 in. mounting flange - 3 lb density insulation - Height - Available from 12 in. to 42 in. as specified in 0.5 in. increments. Notes: - The maximum roof opening dimension should not be greater than the "Actual" top outside dimension minus 2 in.. - The minimum roof opening dimension should be at least 2.5 in. more than the damper dimension or recommended duct size. - The Roof Opening Dimension may or may not be the same as the Structural Opening Dimension. - Damper Tray is optional and must be specified. Tray size is same as damper size. - Security bars are optional and must be specified. Frames and gridwork are all 12 ga steel. Gridwork is welded to the frame and the frame is welded to the curb.

General

ID#	Tag	Qty	Model	Sizing Method	Undersizing (in.)	Weight (lb)	Shipped Assembled	Union Made
2-1		2	GPI-30-G18	Nominal	1.5	49	Yes	No Preference
2-2		2	GPI-34-G18	Nominal	1.5	54	Yes	No Preference
2-3		4	GPI-22-G18	Nominal	1.5	32	Yes	No Preference

Dimensions

ID#	Curb Height (in.)	Nominal Outside Width (in.)	Nominal Outside Length (in.)	Actual Outside Width (in.)	Actual Outside Length (in.)	Flange Width (in.)	Flange Length (in.)
2-1	18	30	30	28.5	28.5	32.5	32.5
2-2	18	34	34	32.5	32.5	36.5	36.5
2-3	18	22	22	20.5	20.5	24.5	24.5

Damper Tray

ID#	Tray Use	Damper Tray Width (in.)	Damper Tray Length (in.)
2-1	GFC Fans	18	18
2-2	GFC Fans	24	24
2-3	GFC Fans	12	12

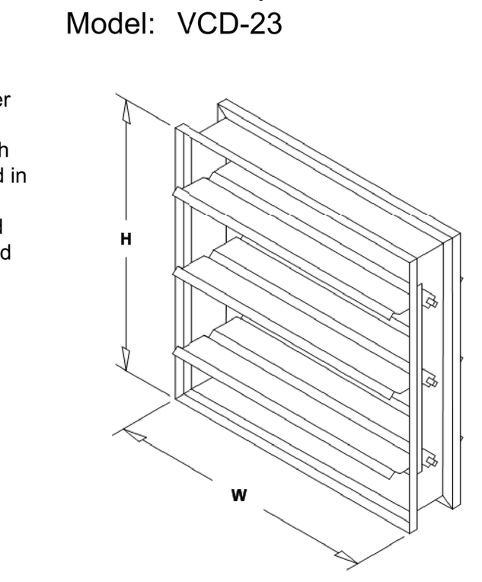
Accessories

ID#	Material	Security Bars	Liner	Insulation (in.)	Insulation R Value
2-1	Galvanized	No	No	1	R4.3
2-2	Galvanized	No	No	1	R4.3
2-3	Galvanized	No	No	1	R4.3

Dampers

ID#	Model	Width (in.)	Length (in.)	Blade Action	Frame Type	Actuator Type	Actuator Quantity	Actuator Mounting	End Switch	Damper Mounting
2-1	VCD-23	18	18	Parallel	Channel	115 VAC	1	Internal	Yes	Ship Separate
2-2	VCD-23	24	24	Parallel	Channel	115 VAC	1	Internal	Yes	Ship Separate
2-3	VCD-23	12	12	Parallel	Channel	115 VAC	1	Internal	Yes	Ship Separate

Control Damper
Model: VCD-23



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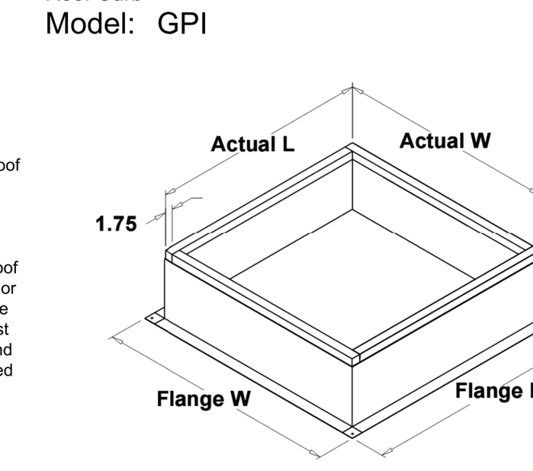
Damper Configuration:

ID #:	Tag:	Quantity:	W (in.):	H (in.):	Act Qty:	Actuator Model:
4	Gravity Relief	1	18	18		

Notes: All dimensions shown are in units of in.
Width And height furnished approximately 0.25 in. undersize

Roof Curb
Model: GPI



Standard Construction Features:

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Notes:
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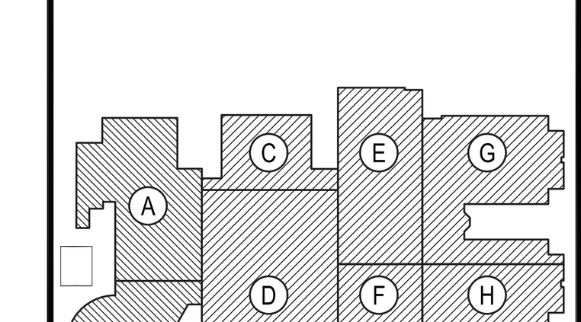
- The minimum roof opening dimension should be at least 2.5 in. more than the damper dimension or recommended duct size.
- The Roof Opening Dimension may or may not be the same as the Structural Opening Dimension.
- Damper Tray is optional and must be specified. Tray size is same as damper size.
- Security bars are optional and must be specified. Frames and gridwork are all 12 ga steel. Gridwork is welded to the frame and the frame is welded to the curb.

Roof Curb Configuration:

ID #:	Tag:	Qty:	Curb Cap W x L:	Actual W x L:	Flange W:	Flange L:	Height:	Step Hgt:	Damper Tray W x L:
4	Gravity Relief	1	30 x 30	28.5 x 28.5	32.5	32.5	18	N/A	18 x 18

Notes: All dimensions shown are in units of in.

REV.	DATE	ITEM



KEY PLAN
NOT TO SCALE

PROJECT
BRIARCLIFF MANOR U.F.S.D.
PHASE 2 BOND IMPROVEMENTS
BRIARCLIFF MANOR MIDDLE/HIGH SCHOOL
444 PLEASANTVILLE RD, BRIARCLIFF MANOR, NY 10510

DWG TITLE
SCHEDULES, EQUIPMENT
NOTES AND DETAILS (7 OF 10)

DRAWING BY: R.D.P.
CHECK BY: F.S.

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LANDSCAPE ARCHITECTS
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www.BBSARCHITECTURE.com

SED No. 66-14-02-02-0-004-023
DISTRICT BRIARCLIFF MANOR UFSD
PROJECT PHASE 2 BOND IMPROVEMENTS
DWG TITLE SCHEDULES, EQUIPMENT NOTES AND DETAILS (7 OF 10)

SCALE: AS NOTED
DATE: 7/15/22
BID PICK-UP:
FILE No: 21-274C

M6.07 HSMS

NEW COMPACT MAKE-UP AIR UNIT SCHEDULE (BASIS OF DESIGN: NEPTRONIC)

neptronic
www.neptronic.com
400 Boulevard Lebeau
Montreal, QC, Canada, H4N 1R6
Tel 1-800-361-2308 or 1-514-333-1433, Fax 1-514-333-3163
Visit us at http://www.Neptronic.com

Compact Make-up Air Unit(s) Schedule
Unit(s) selected:1/1

Date	21 Sep, 2022	Rev.1
Project Number	CMU22264003	Canada
Project Name	Briarcliff Manor HS/MS - BBS-RP	
Reference Number		
Customer		
Engineer		
Submitted By	Andy Siegelson	
Company	Air Distribution Enterprises, Inc. NY	

Compact Make-up Air Unit(s)				Air Flow Parameters		Electrical Data							Fan Type	Power Switch	Accessories and Sensors
Item	Qty	Model	Collar Dia. (in)	Max. CFM	S.P. (w.c.)	VAC/Ph	Heater KW	Heater I(A)	Motor I(A)	Motor HP	MCA	MOP			
1	Tag(s): CMU-236														
	1	CMU06G030DD	6	185	0.5	208/3	3	8.33	0.46	0.08	10.99	15	Centrifugal ECM	Disconnect	STC8-11, TDF00-100

Product Description

FRAME MATERIAL: The frame of the compact make-up air unit is made of galvanized steel of suitable gauge according to the voltage and kW of the unit.

CONTROL:
- Monitor alarms for faulty or disconnected temperature sensors, tripped thermal cutouts or other fault conditions
- Recommended control with a duct temperature sensor to capitalize on the full range of ECM modulation
- Set fan speed and temperature setpoints on the main board or from the optional thermostat
- Real time display of temperature (from room or duct) and setpoint
- IAQ control based on CO_2 level and optional synchronization to start exhaust fans
- Static pressure PID algorithms, control of fresh air and return air
- Multi-exhaust fan synchronizer control
- Optional dry mode control to maintain relative humidity in the zone
- Optional control of modulating or on/off dampers
- Optional outside air and supply air duct sensor algorithms
- Optional board and SSR temperature sensors for added protection
- Optional room temperature, relative humidity, CO_2 and occupancy sensor
- Optional BMS integration via BACnet MS/TP or Modbus
- 7-day programmable scheduler accessible using BACnet communication, with interlock based on occupancy status

CENTRIFUGAL FAN: The ECM centrifugal fan is suitable for applications with higher restriction on the filter, duct or zoning requirements, which result in a higher pressure drop.

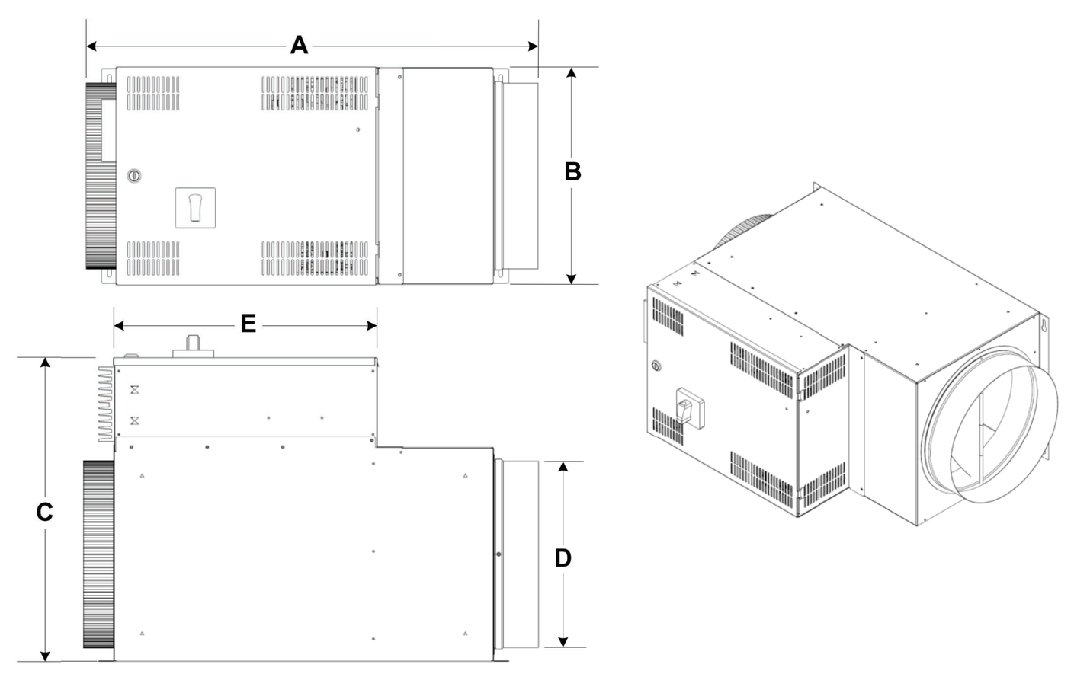
HEATING ELEMENTS: The heating elements of the unit are made of high-grade nickel chromium wire supported by ceramic bushings.

THERMAL PROTECTION: The thermal cutouts stops the CMU if a high-temperature condition is detected. Neptronic patented EAS algorithm control is incorporated in the design.

ELEMENT MODULATION CONTROL: Uses Thyristors to control the heater output to maintain the desired temperature setpoint. Vernier control may also be used based on the kW and voltage of the unit.

neptronic — Briarcliff Manor HS/MS - BBS-RP

Dimensions:



Tag	Model	Dimensions			Collar Size	Door Length
		A	B	C	D	E
CMU-236	CMU06G030DD	34.20	9.90	15.30	6.00	25.90

Controls & Accessories

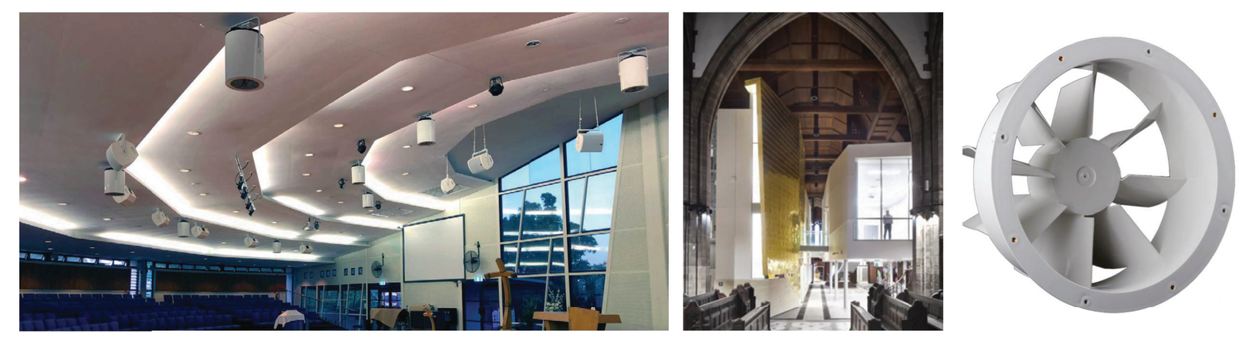
Item	Model	Description
	TDF	Wall mounted universal digital room sensor. Built-in temperature sensor with optional humidity, CO_2 and occupancy sensors. Selectable Fahrenheit or Celsius scale. BACnet service port via on-board mini USB connector.
	STC8-11	Duct mounted temperature sensor, 10kΩ, with high accuracy and fast thermal response.
BACnet	BACnet MS/TP	This product provides a BACnet network interface between BACnet client devices and Neptronic devices. This product uses the BACnet Master Slave/Token Passing (MS/TP) protocol at the BACnet MAC layer.
Modbus	Modbus RTU	This product uses Modbus communication protocol over serial line in the RTU mode and provides a Modbus network interface between client devices and Neptronic devices. This product supports Baud Rates of 9600, 19200, 38400, 57600; and supports RTU Slave, 8 bits with configurable parity and stop bits via menu.

MAKEUP AIR UNITS SCHEDULE

UNIT TAG	MANUFACTURER	MODEL	DESIGN AIRFLOW		MAXIMUM AIRFLOW		ESP (in wg)	FAN TYPE	ELECTRICAL DATA					CONTROL	REMARKS
			Airflow (CFM)	ΔT (°F)	Airflow (CFM)	ΔT (°F)			VOLT/PH	KW	FLA (A)	MCA (A)	MOP (A)		
CMU-236	NEPTRONIC	CMU06G030DD	150	63.2	185	51.2	0.50	CENTRIFUGAL - ECM	208/3	3.0	8.79	10.99	15	PCB, TDF, STC-8	SEE NOTES BELOW

NOTES:
1. MODULATING SCR HEATER OUTPUT W/CONSTANT DISCHARGE TEMPERATURE CONTROL
2. BUILT-IN BACnet COMMUNICATION INTERFACE
3. AUTOMATIC AND MANUAL THERMAL CUTOUTS
4. DISCONNECT SWITCH

NEW DESTRATIFICATION FAN SCHEDULE (DF-1 THRU DF-4) (BASIS OF DESIGN: AIRIUS)



DISTRIBUTED COMFORT

Use the Q Series in high bay, sound-sensitive installations to equalize temperature and humidity in buildings that suffer from stratification. Reducing stratification increases thermal comfort during summer and winter, reduces ceiling temperature to extend the life of lighting and ceiling mounted equipment, and saves energy.

WHERE WE HELP

- Atrium, vestibules and lobbies with overhead air supply
- Spaces 15 ft+ or higher
- Sound sensitive areas
- Areas where other fans will not physically fit

Features

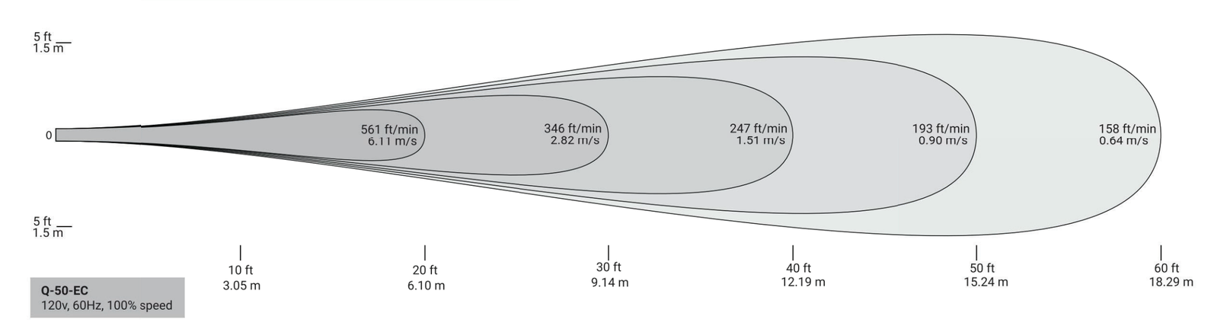
- Basic permanent split capacitor or premium EC motors
- Easy installation in new construction or retrofits
- Unique motor mount to reduce noise and increase flow
- 3-year parts and workmanship warranty
- 6 ft. steel leash and anchor point for safety
- ETL Listed in U.S. and Canada
- 5VA Flame resistance rating
- Made in the U.S.A.

Optional

- Manual wall mounted control
- Wi-Fi App based Pearlink control
- BACnet/IP controls package for integration with existing front end control systems

TECHNICAL SPECIFICATIONS — MAX COVERAGE: UP TO 50 FT CEILING, 2000 FT²

Q SERIES EC — AIRIUSFANS.COM | 888-247-7327



Housing: PC/ABS, UL 94 5VA flame resistance.

Motor: 300mm, electrically commutated, thermally-protected axial motor by ebm-papst®. Operating temperature: 40˚ F (-40˚ C) to 176˚ F (80˚ C). No lubrication required, bearings are sealed.

Power Cord: 6 foot cord and plug provided for 100-130V fans, no plug for 200-240V.

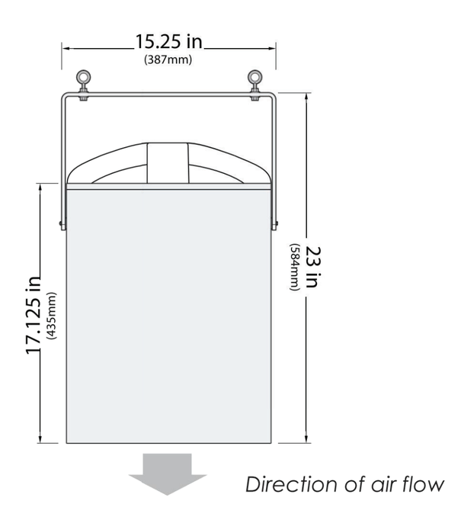
Control Input: 0-10VDC.

Stator: Patented multi-vane stator significantly increases air throw for maximizing performance.

Certification: Conforms to UL-507, CAN/CSA-C22.2 No. 1113. ETL listed in USA and Canada.

Safety Cable: 6' length steel cable (fastened to body)

Warranty: 3 years parts and workmanship.



Technical Specifications

Model	Input Power, 1 Ø	Amps	Watts	RPM	dB(A)[1]	Weight	Colors
Q-50-EC-STD-100-130-X	100-130VAC, 60Hz	1.04	87	1670	41, 40, 39	22 lbs.	X = Off white (W) , gray (G) or black (B)
Q-50-EC-STD-200-240-X	200-240VAC, 60Hz	0.8	98	1660	41, 40, 39	22 lbs.	X = Off white (W) , gray (G) or black (B)

(1) Calculated sound pressure at 40, 45 and 50 foot distances based on non-reflective area. 73.8 dB(A) Sound Power Level, designed to meet ISO 3744 - engineering grade precision for determining sound power. Data independently verified by third party. Tests performed in-unit.

Controls & Factory Installed Options

Item	Description
Pearlink-F	Pearlink Fan Sensor- One Per Fan. Wi-Fi iOS/Android App based controller
Pearlink-T	Pearlink wired (120v) Floor Thermostat- One Per Room
POT-1	Wall-mounted speed control. Low voltage control wiring daisy-chained between fans to be controlled as a group.
BACnet	BACnet/IP package for integration with an existing BACnet system. Individually control speed, on/off and monitor fan status.

NEW PLENUM MOUNTED CONDENSATE DRAIN PUMP UNIT SCHEDULE (BASIS OF DESIGN: LITTLE GIANT)

Little GIANT

VCCA-20-P SERIES

APPLICATIONS

- Designed for automatic collection and removal of condensate from air conditioning, refrigeration, and dehumidification equipment when gravity drainage is not possible or practical. The VCCA Series' low tank height allows these condensate pumps to be used where other condensate pumps will not fit.
- Suitable for plenum applications as it is constructed with materials that have been tested by and meet Underwriter's Laboratories' Standard 2043 "Fire Test for Heat and Visible Smoke Release for Discrete Products and their Accessories Installed in Air Handling Spaces".

FEATURES

- The pump is labeled "suitable for use in air handling spaces"
- 1/30 hp motor
- Low profile for limited space applications
- 72" 3-conductor lead wires with adjustable conduit fitting for 1/2" diameter flexible metal conduit
- 1/4-turn, twist-off locking check valve discharge adapter for 3/8" ID tubing
- Additional check valve included for 3/8" copper tubing
- Pump switch test lever (for manual test operation)
- Rubber feet on bottom of tank to isolate pump when placed on hard surface
- Three 1-1/8" diameter inlets
- Easy-to-knock-out plugs in two of the inlet openings
- Includes overflow detection switch with 72" leads
- Intermittent liquid temperature up to 140 °F
- Designed for hard-wire installation only
- Thermal overload protection
- Stainless steel motor shaft
- cCSAus

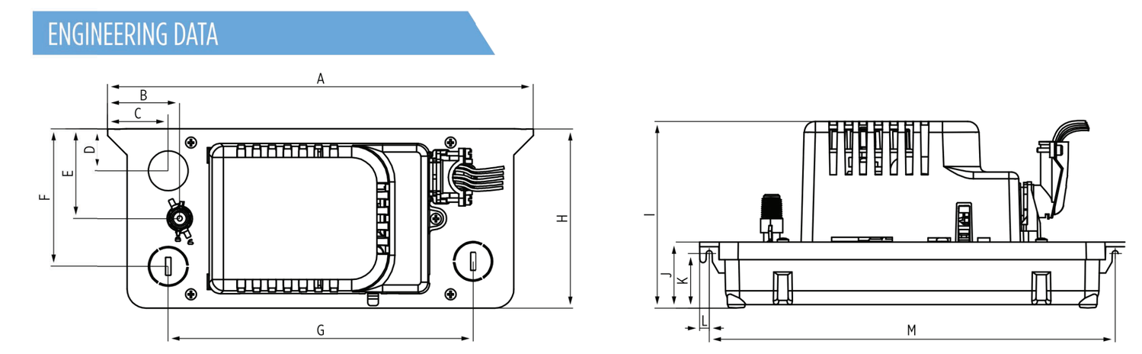
SERIES SPECIFICATIONS

Item No.	Model No.	HP	Input Voltage	Hz	Amps	Watts	Discharge Size	Performance GPH (LPH) @ Head* 1'	5'	10'	18'	Shut-Off (ft)	PSI	Cord (ft)	Weight (lbs)
554221101	VCCA-20-P	1/30	115	60	1.5	93	3/8" (9.5mm) OD Barded	80 (303)	70 (265)	45 (171)	10 (38)	20 (6.1m)	8.6	6 (1.8m)	4.5 (2.1 kg)
554222101	VCCA-20-P	1/30	230	50/60	0.6/0.5	75	3/8" (9.5mm) OD Barded	80 (303)	70 (265)	45 (171)	10 (38)	17 (5.2m)	7.4	6 (1.8m)	4.5 (2.1 kg)

Note: Flow rating is through check valve

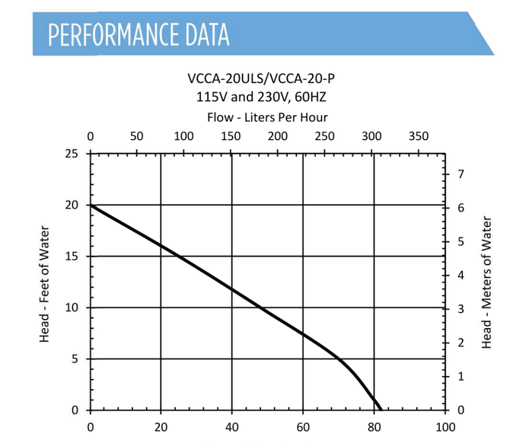
VCCA-20-P SERIES

ENGINEERING DATA



A	B	C	D	E	F	G	H	I	J	K	L	M
11.99" (304.5 mm)	2.02" (51.4 mm)	1.70" (43.2 mm)	1.18" (30 mm)	2.52" (64 mm)	3.85" (98 mm)	8.57" (217.8 mm)	5.03" (127.7 mm)	5.24" (133.2 mm)	1.85" (47 mm)	1.52" (38.8 mm)	0.27" (6.9 mm)	290.6" (11.44 mm)

PERFORMANCE DATA



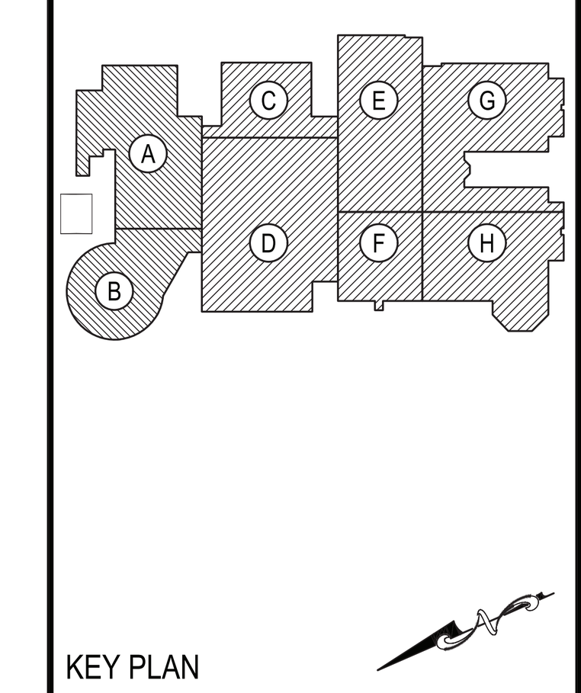
CONSTRUCTION

Motor	1/30 hp
Discharge	3/8" O.D. barbed
Housing/Tank Cover	Polypropylene
Motor Cover	Polypropylene
Volute	Polypropylene
Tank	Polypropylene
Impeller	Polypropylene
Check Valve	Acetal

REV.	DATE	ITEM

NOTICE

THESE DRAWINGS ARE BASED ON CONSTRUCTION DRAWINGS NOT PREPARED BY BBS ARCHITECTS, LANDSCAPE ARCHITECTS AND ENGINEERS, PC. AND, THEREFORE, MAY NOT REPRESENT THE CONDITIONS AS CONSTRUCTED AT THE TIME. ALL EXISTING CONDITIONS SHOWN ARE REPRESENTED AS SUGGESTIVE INFORMATION AS THEY MAY NOT HAVE BEEN BUILT AND DETAILED PER THE ORIGINAL DOCUMENTS OR PER THE OWNER'S INFORMATION.



KEY PLAN
NOT TO SCALE

PROJECT: BRIARCLIFF MANOR U.F.S.D.
PHASE 2 BOND IMPROVEMENTS
BRIARCLIFF MANOR MIDDLE/HIGH SCHOOL
444 PLEASANTVILLE RD, BRIARCLIFF MANOR, NY 10510

DWG TITLE: SCHEDULES, EQUIPMENT NOTES AND DETAILS (8 OF 10)

DRAWING BY: R.D.P.
CHECK BY: F.S.

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www.BBSARCHITECTURE.com

SED No.	66-14-02-02-0-004-023
DISTRICT	BRIARCLIFF MANOR UFSD
PROJECT	PHASE 2 BOND IMPROVEMENTS
DWG TITLE	SCHEDULES, EQUIPMENT NOTES AND DETAILS (8 OF 10)
SCALE:	AS NOTED
DATE:	7/15/22
BID PICK-UP:	
FILE No:	21-274C

NEW PEDESTAL MOUNTED FIN-TUBE SCHEDULE (BASIS OF DESIGN: ZEHNDER RITTLING)

Element and Enclosure — **Project: Briarcliff Manor HS/MS - BBS-RP**

zehnder Rittling

Model ***Copper-Aluminum***

Tag:

Qty	Coil Config	Rows of Element	Min. Installed Height
1	Hot Water	1	10 inches

General Information

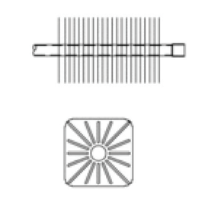
Altitude:	0	Feet
Tube Diameter:	3/4" TUBE	
Fin Size:	4-1/4" X 4-1/4" FIN	
Fin Spacing:	48 FINS PER FOOT	
Length of Active Element:	7	Feet

Enclosure General Information

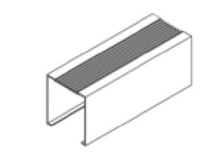
Model:	PIBG5	
Depth:	5 1/2" D	
Height:	6" H	
Damper:	*	
Return:	*	
Minimum Installed Height:	10	inches
Floor to Top of Enclosure:	10	inches
Length of Inactive Enclosure:	0	Feet
Total Length of Enclosure:	7	Feet

Hot Water Heat

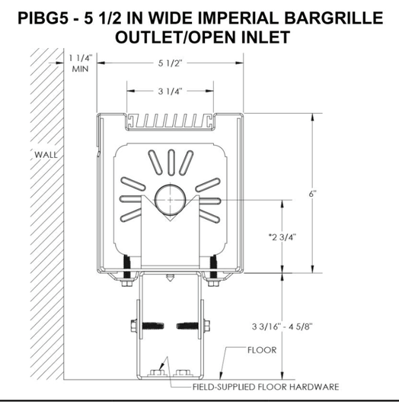
Capacity:	9.0	MBH
Element Output:	1287	Btuh/Ft
Entering Air Temperature:	65.0	°F
Fluid Flow:	0.9	GPM
Entering Fluid Temperature:	200.0	°F
Leaving Fluid Temperature:	180.0	°F
Fluid ΔT:	20.0	°F
Fluid Pressure Drop:	0.3	ft. H2O
Fluid Type:	Water	
Glycol %:	0	



COPPER TUBE-ALUMINUM FIN

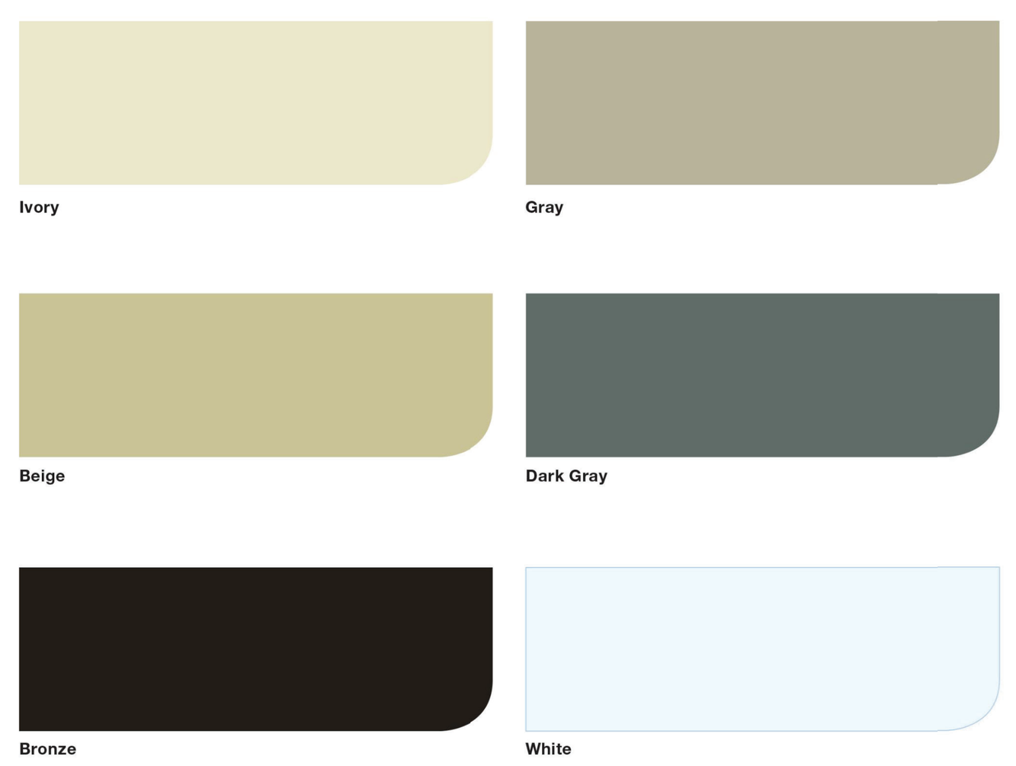


PIBG5 - 5 1/2 IN WIDE IMPERIAL BARGRILLE OUTLET/OPEN INLET



PIBG506		
Pipe size		Fin size
Steel	Copper	
N/A	3/4", 1", 1-1/4"	2-3/4" x 4"
1", 1-1/4"	3/4", 1", 1-1/4"	3-1/4" x 3-1/4"
1", 1-1/4"	3/4", 1", 1-1/4"	4-1/4" x 4-1/4"

Standard Colors



Pricing for standard colors varies by product and color, refer to price lists for detailed information.

Electronic file is for reference only, subject to the calibration of each individual monitor it is viewed on. Contact the factory for a printed color chart to obtain an accurate representation of standard colors.

Notes
- Slight color variation may exist between actual finish and color chips. All colors are supplied in semi-gloss.
- Variation in color and gloss may occur in the manufacturing process.
- Custom color matching is available at additional cost. Metallic colors are not available.
- All products with a prime finish must have a field-applied topcoat for a consistent color.

Features, Pedestal — **PBG5/PIBG5, PBG10/PIBG10**

Zehnder Rittling's Pedestal Bargrille Enclosure offers a slimline appearance in a strong floor mounted enclosure.

Enclosure
- 14, 16, 18-gauge cold rolled steel with painted finish
- 1'-8' lengths in 6" increments
- PBG5/PIBG5:
  - 1 row: 6" high
  - 1 row and return: 8" high
  - 2 row: 12" high
- PBG10/PIBG10:
  - 2 column: 6" high
- Powder coated finish in decorator colors available
- Available in 16-gauge or 18-gauge stainless steel
- 1-row or 2-row high (PBG5/PIBG5), 2-column wide (PBG10/PIBG10) or many other custom configurations available

Copper/Aluminum Element
- Tube: 3/4", 1" or 1-1/4"
- Fin: 2-3/4" x 4", 3-1/4" x 3-1/4" or 4-1/4" x 4-1/4"
- 1' to 12' lengths in 6" increments

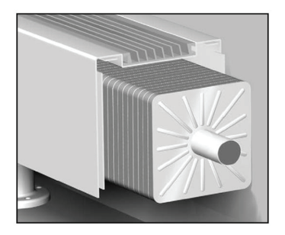
Steel Element
- Tube: 1", 1-1/4" or 2"
- Fin: 3-1/4" x 3-1/4" or 4-1/4" x 4-1/4"
- 1-1/2' to 10' length in 6" increments

Mounting
- Pedestal brackets - 2 available style bases:
  - Adjustable U (standard) 4" +5/8" / -13/16"
  - Aluminum floor flange (optional), not available on 2 column
- Enclosure mounts to a cradle-type expansion bracket with positive locking bottom mounting clip to provide easy installation and security

Joints
- Internal joggle joiners provide hairline joints without any external fasteners

Damper (optional)
- Aluminum slide (PIBG only)

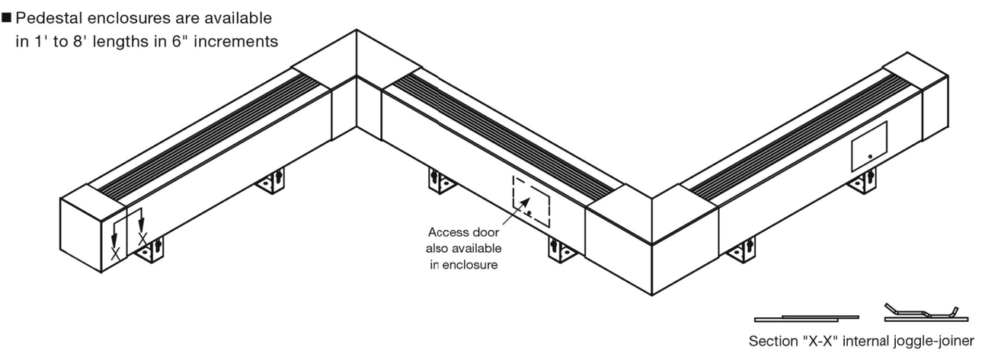
Grille
- PBG: standard aluminum extrusion, etched finishes, pencilproof
- PIBG: heavy-duty aluminum extrusion, R-204 clear anodized finish, 15° grille deflection, pencilproof

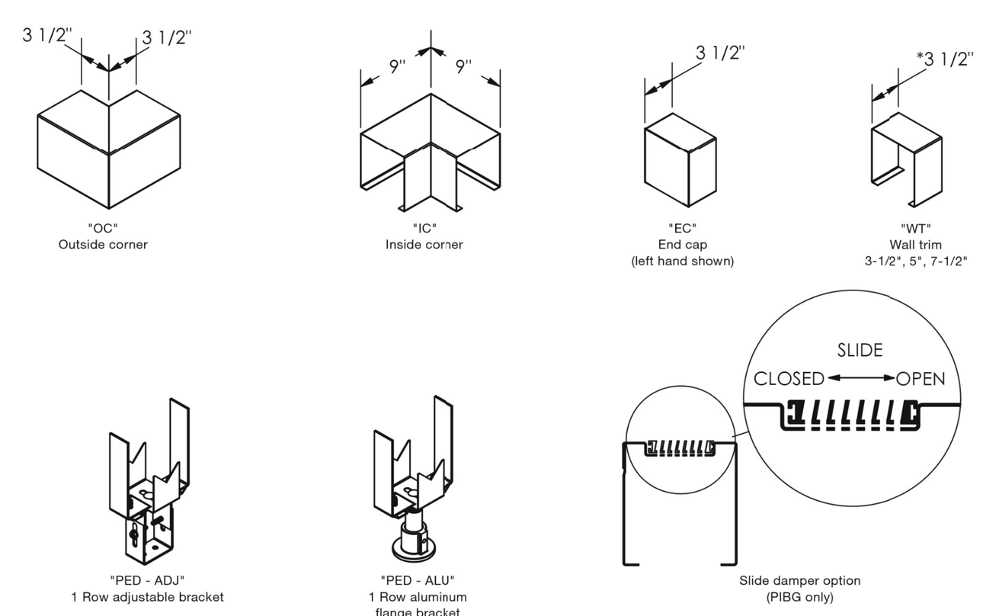


Cutaway view of PIBG enclosure showing 4-1/4" x 4-1/4" fin configuration.

Accessories — **PBG5/PIBG5**

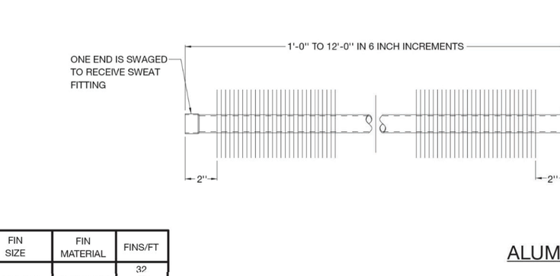
- Pedestal enclosures are available in 1' to 8' lengths in 6" increments





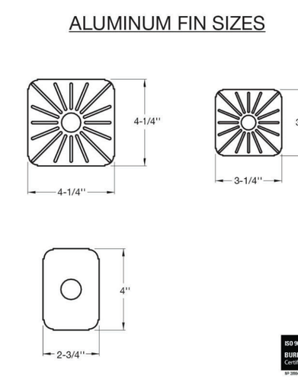
Notes:
- All accessories are overlap type, butt type optional (except as noted)

zehnder Rittling



MODEL	TUBE SIZE (OD) NOMINAL	TUBE SIZE (OD) ACTUAL	TUBE MATERIAL	FIN SIZE	FIN MATERIAL	FINS/FT
3/4C, 2-3/4 X 4, 32 3/4C, 2-3/4 X 4, 40 3/4C, 2-3/4 X 4, 48	3/4"	7/8" OD	COPPER	2-3/4" X 4"	ALUMINUM	32 40 48
3/4C, 3-1/4, 32 3/4C, 3-1/4, 40 3/4C, 3-1/4, 48	3/4"	7/8" OD	COPPER	3-1/4" X 3-1/4"	ALUMINUM	32 40 48
3/4C, 4-1/4, 32 3/4C, 4-1/4, 40 3/4C, 4-1/4, 48	3/4"	7/8" OD	COPPER	4-1/4" X 4-1/4"	ALUMINUM	32 40 48
1C, 2-3/4 X 4, 32 1C, 2-3/4 X 4, 40 1C, 2-3/4 X 4, 48	1"	1-1/8" OD	COPPER	2-3/4" X 4"	ALUMINUM	32 40 48
1C, 3-1/4, 32 1C, 3-1/4, 40 1C, 3-1/4, 48	1"	1-1/8" OD	COPPER	3-1/4" X 3-1/4"	ALUMINUM	32 40 48
1C, 4-1/4, 32 1C, 4-1/4, 40 1C, 4-1/4, 48	1"	1-1/8" OD	COPPER	4-1/4" X 4-1/4"	ALUMINUM	32 40 48
1-1/4C, 2-3/4 X 4, 32 1-1/4C, 2-3/4 X 4, 40 1-1/4C, 2-3/4 X 4, 48	1-1/4"	1-3/8" OD	COPPER	2-3/4" X 4"	ALUMINUM	32 40 48
1-1/4C, 3-1/4, 32 1-1/4C, 3-1/4, 40 1-1/4C, 3-1/4, 48	1-1/4"	1-3/8" OD	COPPER	3-1/4" X 3-1/4"	ALUMINUM	32 40 48
1-1/4C, 4-1/4, 32 1-1/4C, 4-1/4, 40 1-1/4C, 4-1/4, 48	1-1/4"	1-3/8" OD	COPPER	4-1/4" X 4-1/4"	ALUMINUM	32 40 48

ALUMINUM FIN SIZES



NOTES:
1) FIN THICKNESS IS 0.016 INCH EXCEPT AS NOTED
2) COPPERMAT'L TYPE C122

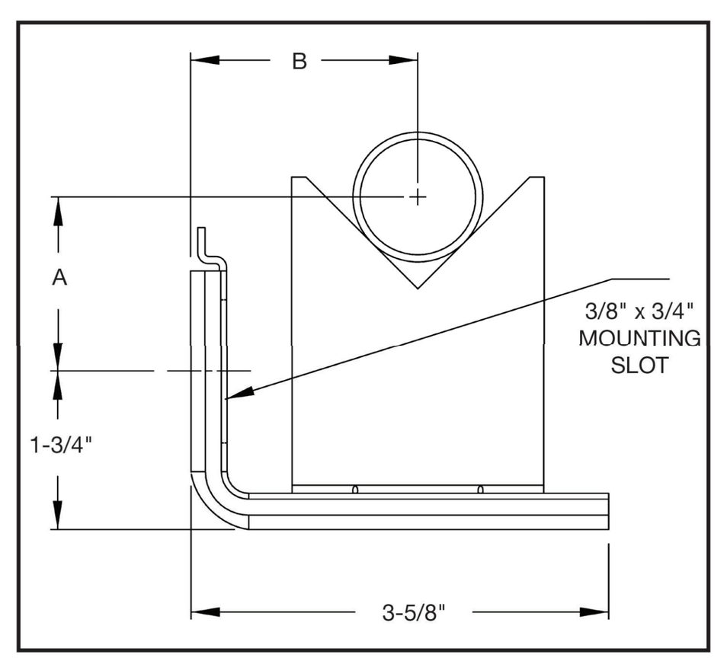
CONTRACTOR ______ ELEMENT ______
ARCHITECT ______ RATING ______ BTU ______ A.W.T. ______ E.A.T.
ENGINEER ______
REPRESENTATIVE ______
LOCATION ______

ZEHNDER RITTLING
100 RITTLING BLVD. • BUFFALO, NY USA 14220
JOB:
ENCLOSURE MODEL: **Aluminum Element**
DATE: **November 2015** | DWG.NO.: **Aluminum Element**

Models and dimensions

Galvannealed-steel, cradle-type expansion bracket for bare tube installation

Zehnder Rittling finned tube can be installed bare or with any Zehnder Rittling enclosure using Zehnder Rittling's cradle-type expansion brackets. Made of sturdy, ribbed, galvannealed steel, these economical brackets permit 1-1/4 inches of finned-tube expansion. The L-Shaped enclosure brackets support both the enclosure and element. Second row brackets are used for bare tube applications as well as 2 row and 3 row installations. Enclosures 20 inches high accommodate one or two rows of finned-tube; those 24 inches high accommodate one, two or three rows of finned tube.



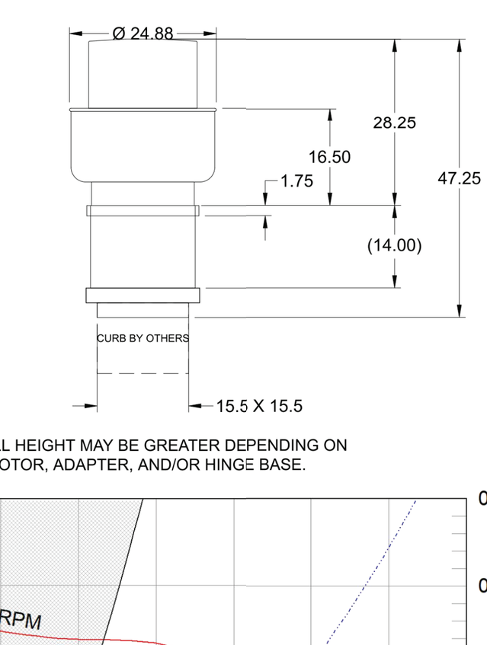
Tube size	Dimension A
1" Steel	1-3/4"
1-1/4" Steel	1-7/8"
2" Steel	2-1/4"
3/4" Copper	1-3/8"
1" Copper	1-1/2"
1-1/4" Copper	1-5/8"

Enclosure depth	Dimension B
3-1/2", 3-15/16", 5-3/8"	1-31/32"
4-1/2", 5-3/8"	2-17/32"

NEW EXHAUST FAN "EF-19" SCHEDULE (BASIS OF DESIGN: GREENHECK)

Model: CUE-099-B
Direct Drive Upblast Centrifugal Roof Exhaust Fan

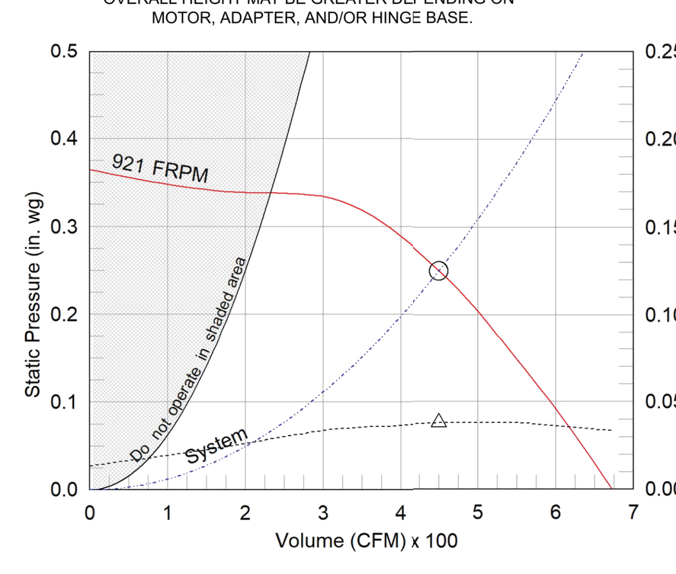
Dimensional	
Quantity	1
Weight w/o Acc's (lb)	45
Weight w/ Acc's (lb)	76
Max T Motor Frame Size	56
Standard Curb Cap Size (in.)	19 x 19
Roof Opening (in.)	15.5 x 15.5



Performance	
Requested Volume (CFM)	450
Actual Volume (CFM)	450
Total External SP (in. wg)	0.25
Fan RPM	921
Operating Power (hp)	0.04
Elevation (ft)	30
Airstream Temp.(F)	70
Air Density (lb/ft3)	0.075
Tip Speed (ft/min)	2,696
Static Eff. (%)	47

Misc Fan Data	
Fan Eff. Index (FEI)	-
Outlet Velocity (ft/min)	352

OVERALL HEIGHT MAY BE GREATER DEPENDING ON MOTOR, ADAPTER, AND/OR HINGE BASE.



Motor	
Motor Mounted	Yes
Size (hp)	1/6
Voltage/Cycle/Phase	115/60/1
Enclosure	ODP
Motor RPM	1140
Efficiency Rating	Standard
Windings	1
Short Circuit Current Rtg (SCCR)	5 kA

Notes:
All dimensions shown are in units of in.
*Please consult factory for actual motor amp draw
LwA - A weighted sound power level, based on ANSI S1.4
dBA - A weighted sound pressure level, based on 11.5 dB attenuation per Octave band at 5 ft - dBA levels are not licensed by AMCA International
Sones - calculated using ANSI/AMCA 301 at 5 ft

Sound Power by Octave Band

Sound Data	62.5	125	250	500	1000	2000	4000	8000	LwA	dBA	Sones
Inlet	73	66	62	53	50	50	40	34	59	47	4.7

Model: CUE-099-B
Direct Drive Upblast Centrifugal Roof Exhaust Fan
Standard Construction Features:
- Aluminum housing - Backward inclined aluminum wheel - Aluminum curb cap with prepunched mounting holes - Drain trough - Ball bearing motors (sizes 85-300 and all Vari Green), sleeve bearing motors (sizes 60-80) - Motor isolated on shock mounts - Corrosion resistant fasteners

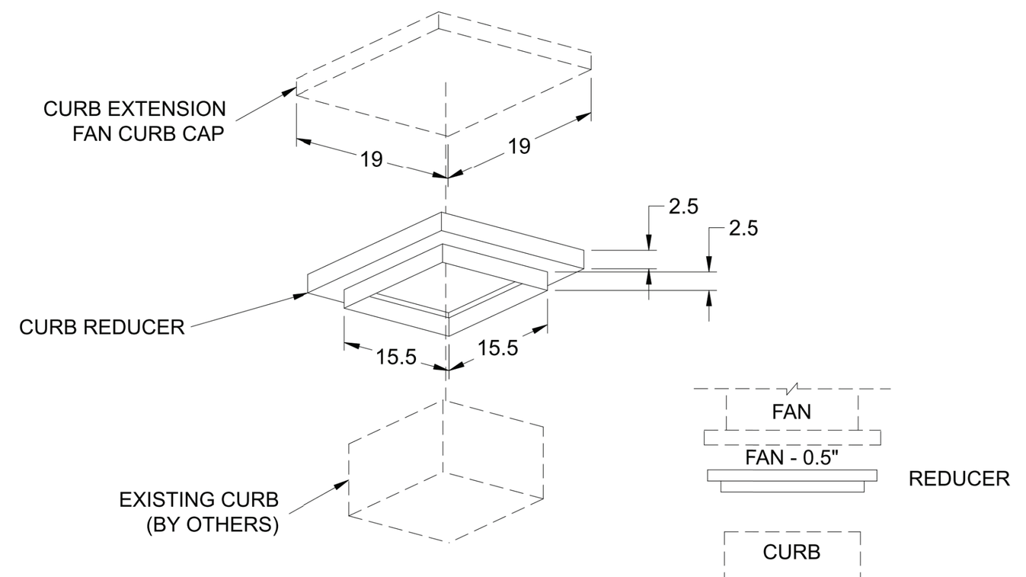
Spark B construction was selected.
Greenheck has included options and accessories for this product that meet the intent of AMCA 99 - spark resistant construction guidelines. Greenheck recommends, but does not require, an EXP motor for this product line. If an EXP motor is not selected, the engineer of record must determine if this is acceptable for the application. The resulting fan construction in no way implies a guarantee o safety for any level of spark resistance. Spark resistant construction does not prevent ignition of explosive gasses or vapors due to catastrophic failure or from any airstream material that may exist within in a system.

Selected Options & Accessories:
PSC Motor
Standard Curb Cap Size - 19 Square
Spark B Construction
UL/cUL 705 Listed - "Power Ventilators"
Switch, NEMA-1, Toggle, Shipped with Unit
Junction Box Mounted & Wired
Curb Extension-Alum., GPE-19-A14, Tray, Coated
Reducer-Alum., Curb Cap Reduced to 15.5 x 15.5 (Attached), Coated
Coated with Hi-Pro Polyester, Concrete Gray-RAL 7023, Fan And Attached Acc
Solid State Speed Control, 6 Amp, Shipped With Unit
Aluminum Rub Ring
Unit Warranty: 1 Yr (Standard)

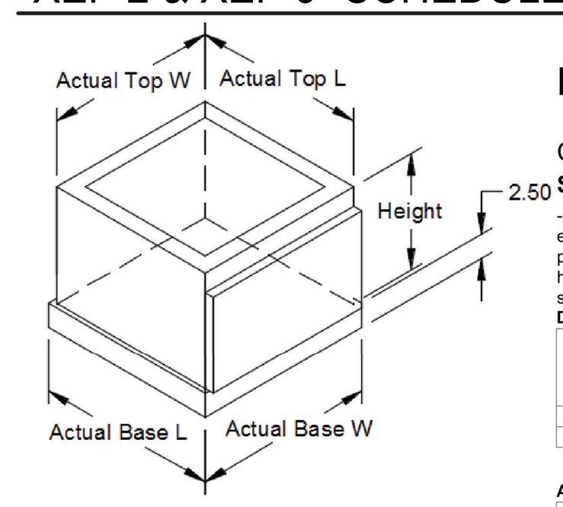
Curb Cap Adapter
Type: Reducer

Standard Construction Features:

Curb adapters are designed to adapt standard curb cap dimensions to non-standard curb sizes. Adapters may be constructed of either aluminum or galvanized steel. Curb reducers may reduce by a maximum of 10 in. and curb adapters may extend up to 20 in. beyond the standard curb cap size.



NEW CURB EXTENSION W/ACCESS DOOR FOR EXISTING FANS "XEF-2 & XEF-3" SCHEDULE (BASIS OF DESIGN: GREENHECK)



Model: GPE

Curb Extension With Access Door
Standard Construction Features:
- Curb Extension mounts between the fan and the roof curb - Constructed of either 18 ga galvanized or optional 0.064 in. aluminum - Bolted access door provide easy access to damper and damper actuator - Also can fulfill additional height requirements. NOTES: - Available in heights from 12 in. to 24 in. as specified. - Damper Tray is standard and sized same as damper size.

Damper Tray

ID#	Tray Use	Damper Tray Width (in.)	Damper Tray Length (in.)
3-1	GFC Fans	12	12
3-2	GFC Fans	12	12

Accessories

ID#	Material
3-1	Aluminum
3-2	Aluminum

General

ID#	Tag	Qty	Model	Sizing Method	Undersizing (in.)	Weight (lb)	Shipped Assembled	Union Made
3-1	EF-2	1	GPE-22-A14	Nominal	1.25	18		
3-2	EF-3	1	GPE-22-A14	Nominal	1.25	18		

Dimensions

ID#	Curb Height (in.)	Nominal Width (in.)	Nominal Length (in.)	Actual Top Width (in.)	Actual Top Length (in.)	Actual Base Width (in.)	Actual Base Length (in.)
3-1	14	22	22	20.75	20.75	22.25	22.25
3-2	14	22	22	20.75	20.75	22.25	22.25

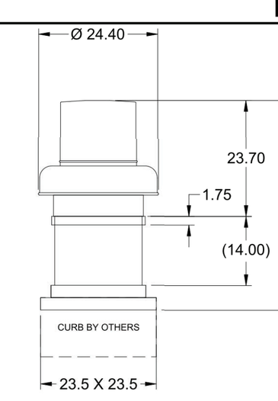
NEW EXHAUST FAN "EF-48" SCHEDULE (BASIS OF DESIGN: GREENHECK)

GREENHECK Building Value in Air.

Cut Sheet - Not for Submittal
Printed Date: 10/19/2022
Mark: EF-48
Model: G-120-VG

Model: G-120-VG
Direct Drive Centrifugal Roof Exhaust Fan
Previously: G-123-VG

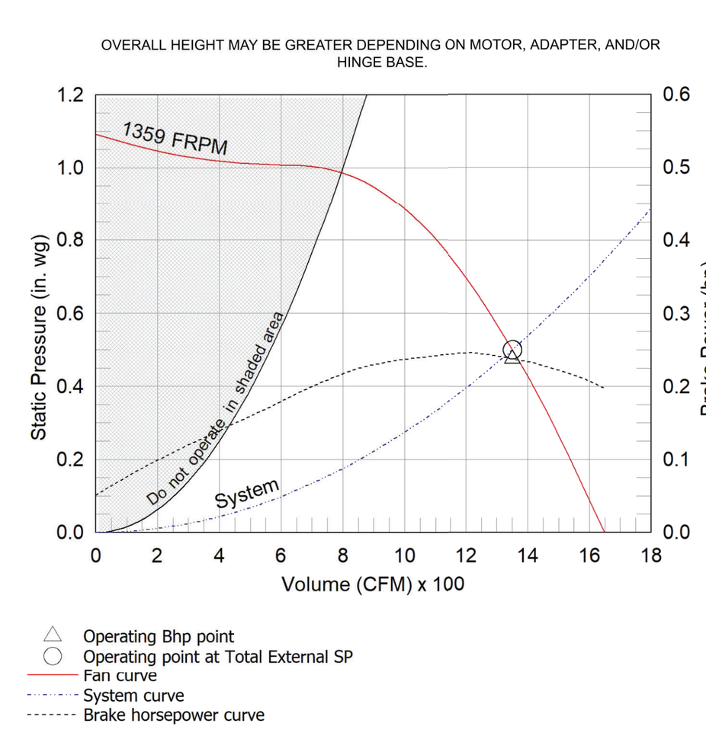
Dimensional	
Quantity	1
Weight w/o Acc's (lb)	44
Weight w/ Acc's (lb)	122
Standard Curb Cap Size (in.)	19 x 19
Optional Damper (in.)	12 x 12
Roof Opening (in.)	15.5 x 15.5



Performance	
Requested Volume (CFM)	1,350
Actual Volume (CFM)	1,350
Total External SP (in. wg)	0.5
Fan RPM	1359
Operating Power (hp)	0.24
Elevation (ft)	30
Airstream Temp.(F)	70
Air Density (lb/ft3)	0.075
Tip Speed (ft/min)	4,648
Static Eff. (%)	45

Misc Fan Data	
Fan Eff. Index (FEI)	-
Outlet Velocity (ft/min)	1,452

OVERALL HEIGHT MAY BE GREATER DEPENDING ON MOTOR, ADAPTER, AND/OR HINGE BASE.



Motor	
Motor Mounted	Yes
Size (hp)	1/2
Voltage/Cycle/Phase	115/60/1
Enclosure	ODP
Motor RPM	1725
Efficiency Rating	High
Windings	1
FLA (Amps)	6.4
Min. Circuit Ampacity (MCA)	8
Max. Overcurrent Protection (MOP)	15
Short Circuit Current Rtg (SCCR)	5 kA

Notes:
All dimensions shown are in units of in.
*NEC FLA, MCA and MOP are for reference only – based on tables 430.248 or 430.25 of National Electric Code 2020. Actual motor FLA may vary, for sizing thermal overload, consult factory. MCA and MOP values shown only account for the motor, not accessories (damper actuator, field supplied VFD, etc).
LwA - A weighted sound power level, based on ANSI S1.4
dBA - A weighted sound pressure level, based on 11.5 dB attenuation per Octave band at 5 ft - dBA levels are not licensed by AMCA International
Sones - calculated using ANSI/AMCA 301 at 5 ft

Sound Power by Octave Band

Sound Data	62.5	125	250	500	1000	2000	4000	8000	LwA	dBA	Sones
Inlet	71	76	78	72	64	63	58	56	74	62	11.5

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Model: G-120-VG
Direct Drive Centrifugal Roof Exhaust Fan
Standard Construction Features:
- Aluminum housing - Backward inclined composite (sizes 60-95) or aluminum (sizes 97-300) wheel - Aluminum curb cap with prepunched mounting holes - Birdscreen - Ball bearing motors (sizes 85-300 and all Vari Green), sleeve bearing motors (sizes 60-80) - Motor isolated on shock mounts - Corrosion resistant fasteners

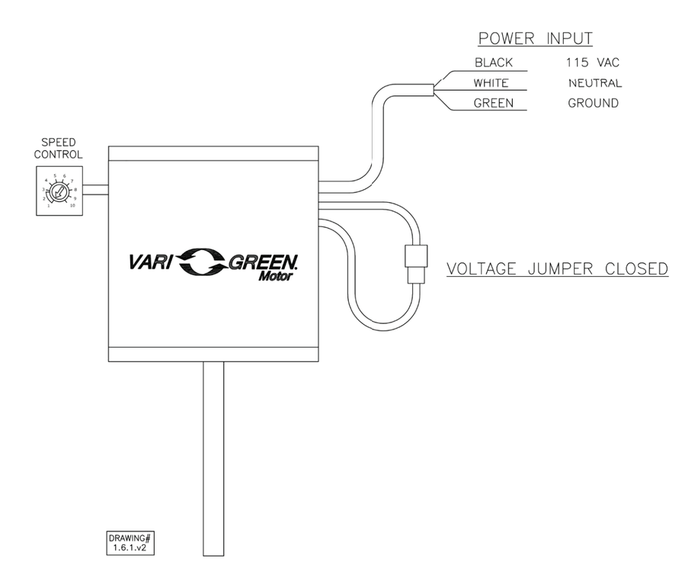
Selected Options & Accessories:
Motor - Vari-Green EC motor
Control - Dial for balancing
Standard Curb Cap Size - 19 Square
UL/cUL 705 Listed - "Power Ventilators"
Switch, NEMA-1, Toggle, Shipped with Unit
Junction Box Mounted & Wired
Curb Extension-Alum., GPE-19-A14, Tray
Adapter-Alum., Curb Cap Adapted to 23.5 x 23.5 (Attached)
Birdscreen: Galvanized, nom. 84% Free Area
Unit Warranty: 1 Yr (Standard)
Damper Shipped Loose, VCD-23-PB-12X12, Not Coated
Damper Actuator (MS4103F1025), 115 VAC Actuated

The Vari-Green Motor included in this order has a 'Multi-Voltage' ability. The red wire on the motor is called a 'Voltage Doubler', and when it is connected the motor can be powered by 115V. If the Red wire is disconnected, then the motor can be powered with 208-230/277V. The motor will leave the factory with the voltage doubler wired per the order.

Vari-Green
Motor & Control Options
An EC motor that uses AC input power and internally converts it to DC power. Potentiometer (dial) mounted on the motor enclosure adjusts the speed (RPM) down 80%. Vari-Green motors feature a soft-start and inherent thermal and current protection built into each unit. Inrush current at start up is eliminated and the motor will automatically reduce speed or turn off if overloaded or it becomes too hot.

Motor Configuration
Input Voltage: 115
Speed Reference: Dial on Motor
Permanent Dial: Yes

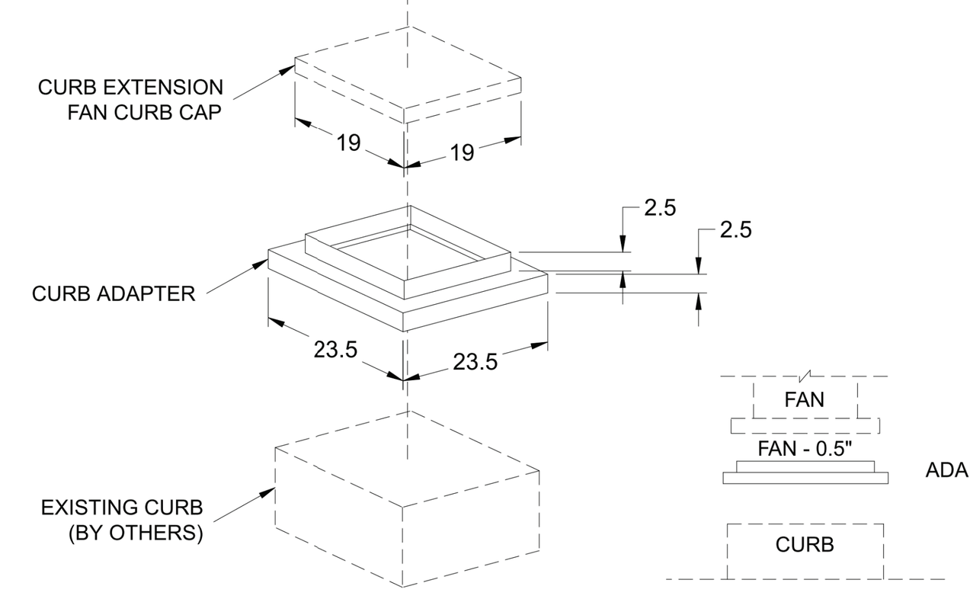
Control Configuration
Control Type: N/A
Transformer: None



Curb Cap Adapter
Type: Adapter

Standard Construction Features:

Curb adapters are designed to adapt standard curb cap dimensions to non-standard curb sizes. Adapters may be constructed of either aluminum or galvanized steel. Curb reducers may reduce by a maximum of 10 in. and curb adapters may extend up to 20 in. beyond the standard curb cap size.



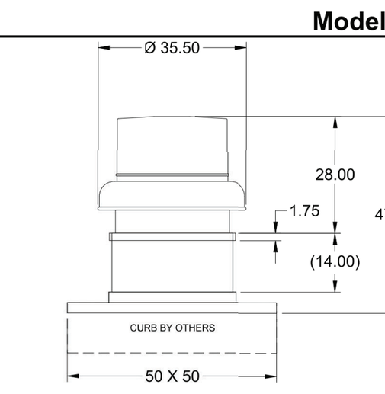
NEW EXHAUST FAN "EF-51" SCHEDULE (BASIS OF DESIGN: GREENHECK)

GREENHECK Building Value in Air.

Cut Sheet - Not for Submittal
Printed Date: 10/19/2022
Mark: EF-51
Model: G-200HP-VG

Model: G-200HP-VG
Direct Drive Centrifugal Roof Exhaust Fan
Previously: G-203HP-VG

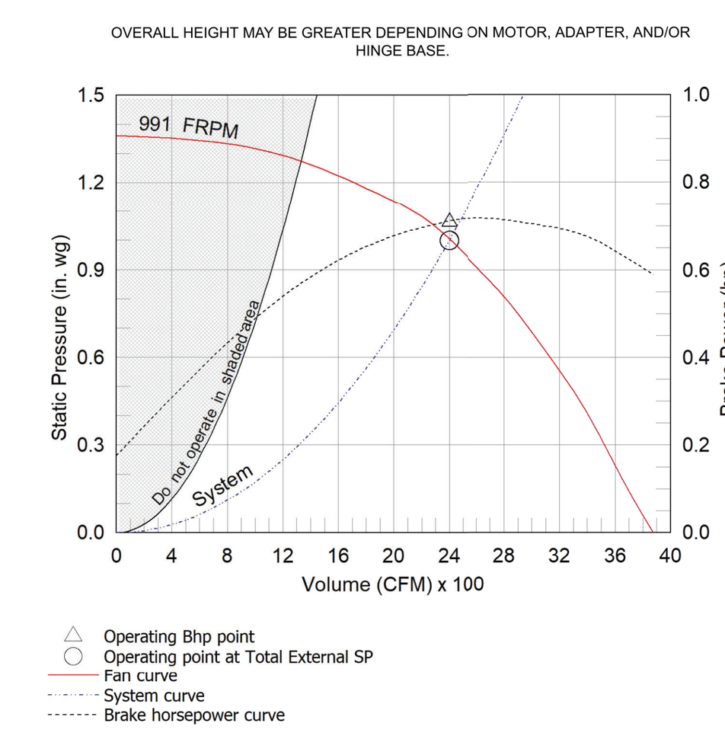
Dimensional	
Quantity	1
Weight w/o Acc's (lb)	158
Weight w/ Acc's (lb)	282
Standard Curb Cap Size (in.)	30 x 30
Optional Damper (in.)	24 x 24
Roof Opening (in.)	26.5 x 26.5



Performance	
Requested Volume (CFM)	2,400
Actual Volume (CFM)	2,400
Total External SP (in. wg)	1
Fan RPM	991
Operating Power (hp)	0.71
Elevation (ft)	30
Airstream Temp.(F)	70
Air Density (lb/ft3)	0.075
Tip Speed (ft/min)	5,545
Static Eff. (%)	53

Misc Fan Data	
Fan Eff. Index (FEI)	-
Outlet Velocity (ft/min)	1,004

OVERALL HEIGHT MAY BE GREATER DEPENDING ON MOTOR, ADAPTER, AND/OR HINGE BASE.



Motor	
Motor Mounted	Yes
Size (hp)	2
Voltage/Cycle/Phase	208/60/3
Enclosure	TEFC
Motor RPM	1350
Efficiency Rating	High
Windings	1
FLA (Amps)	7.4
Min. Circuit Ampacity (MCA)	9
Max. Overcurrent Protection (MOP)	15
Short Circuit Current Rtg (SCCR)	5 kA

Notes:
All dimensions shown are in units of in.
*NEC FLA, MCA and MOP are for reference only – based on tables 430.248 or 430.25 of National Electric Code 2020. Actual motor FLA may vary, for sizing thermal overload, consult factory. MCA and MOP values shown only account for the motor, not accessories (damper actuator, field supplied VFD, etc).
LwA - A weighted sound power level, based on ANSI S1.4
dBA - A weighted sound pressure level, based on 11.5 dB attenuation per Octave band at 5 ft - dBA levels are not licensed by AMCA International
Sones - calculated using ANSI/AMCA 301 at 5 ft

Sound Power by Octave Band

Sound Data	62.5	125	250	500	1000	2000	4000	8000	LwA	dBA	Sones
Inlet	80	76	75	74	68	64	61	58	75	63	12.4

CAPS 4.39.1057 — F:\ENGINEERING\Projects\Andy Siegelson\BBS\Briarcliff Manor HS-MS - RP\Briarcliff Manor HS-MS - BBS-RP.gfcj Generated by: asiegelson@adehvac.com — Page 11 of 21

Model: G-200HP-VG
Direct Drive Centrifugal Roof Exhaust Fan
Standard Construction Features:
- Aluminum housing - Backward inclined composite (sizes 60-95) or aluminum (sizes 97-300) wheel - Aluminum curb cap with prepunched mounting holes - Birdscreen - Ball bearing motors (sizes 85-300 and all Vari Green), sleeve bearing motors (sizes 60-80) - Motor isolated on shock mounts - Corrosion resistant fasteners

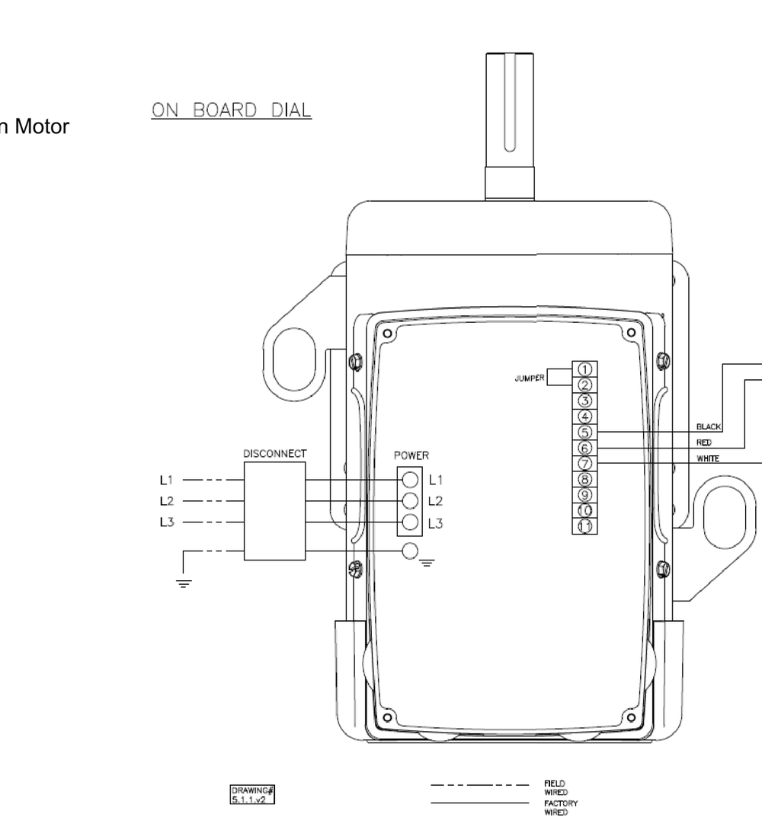
Selected Options & Accessories:
Motor - Vari-Green EC motor
Control - Dial for balancing
Standard Curb Cap Size - 30 Square
UL/cUL 705 Listed - "Power Ventilators"
Switch, NEMA-1, Toggle, Shipped with Unit
Junction Box Mounted & Wired
Curb Extension-Alum., GPE-30-A14, Tray
Adapter-Alum., Curb Cap Adapted to 50 x 50 (Attached)
Birdscreen: Galvanized, nom. 84% Free Area
Unit Warranty: 1 Yr (Standard)
Damper Shipped Loose, VCD-23-PB-24X24, Not Coated
Damper Actuator (MS4103F1025), 208 VAC Actuated w/ 115 VAC Transformer

The Vari-Green Motor included in this order can operate on any three phase voltage between 208V and 240V.

Vari-Green
Motor & Control Options
An EC motor that uses AC input power and internally converts it to DC power. Potentiometer (dial) mounted on the motor enclosure adjusts the speed (RPM) down 80%. Vari-Green motors feature a soft-start and inherent thermal and current protection built into each unit. Inrush current at start up is eliminated and the motor will automatically reduce speed or turn off if overloaded or it becomes too hot.

Motor Configuration
Input Voltage: 208
Speed Reference: Dial on Motor
Permanent Dial: Yes

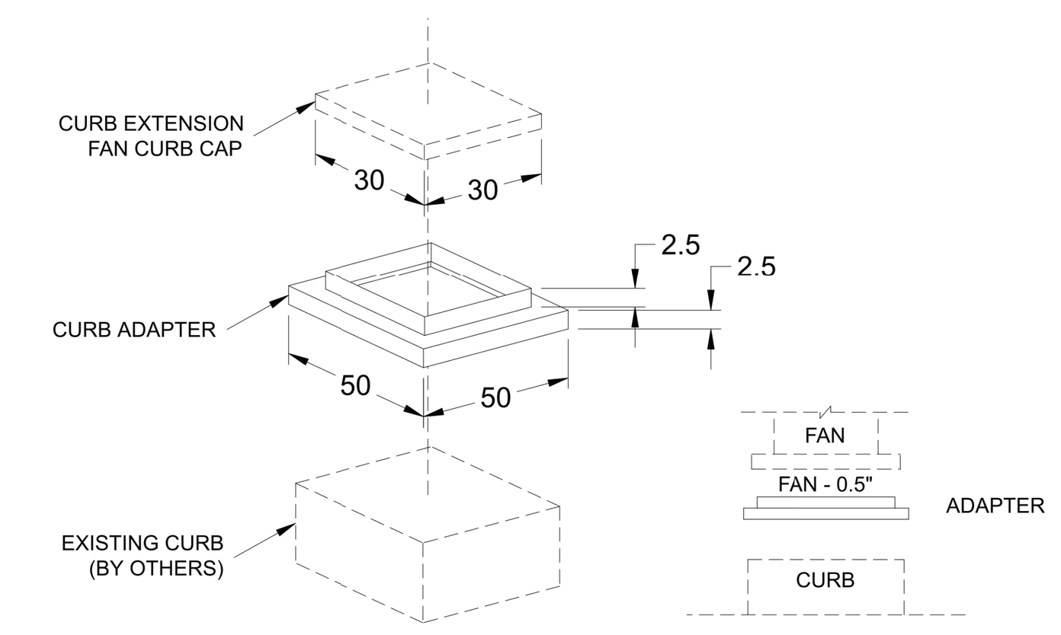
Control Configuration
Control Type: N/A
Transformer: None



Curb Cap Adapter
Type: Adapter

Standard Construction Features:

Curb adapters are designed to adapt standard curb cap dimensions to non-standard curb sizes. Adapters may be constructed of either aluminum or galvanized steel. Curb reducers may reduce by a maximum of 10 in. and curb adapters may extend up to 20 in. beyond the standard curb cap size.



ALL WORK SCOPE WITHIN THIS BOUNDARY SHALL BE PART OF
ADD-ALTERNATE #5

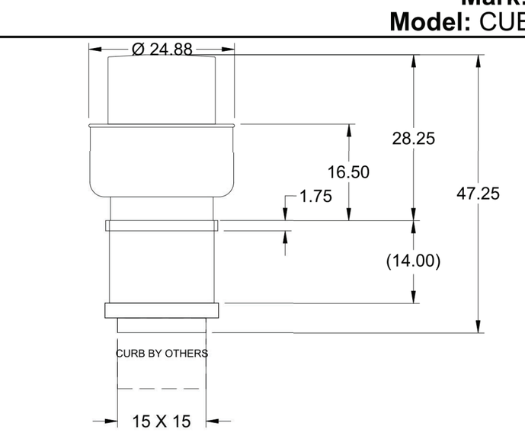
NEW EXHAUST FAN "REF-1" SCHEDULE (BASIS OF DESIGN: GREENHECK)

GREENHECK Building Value in Air.

Cut Sheet - Not for Submittal
Printed Date: 10/19/2022
Mark: REF-1
Model: CUE-099-A

Model: CUE-099-A
Direct Drive Upblast Centrifugal Roof Exhaust Fan

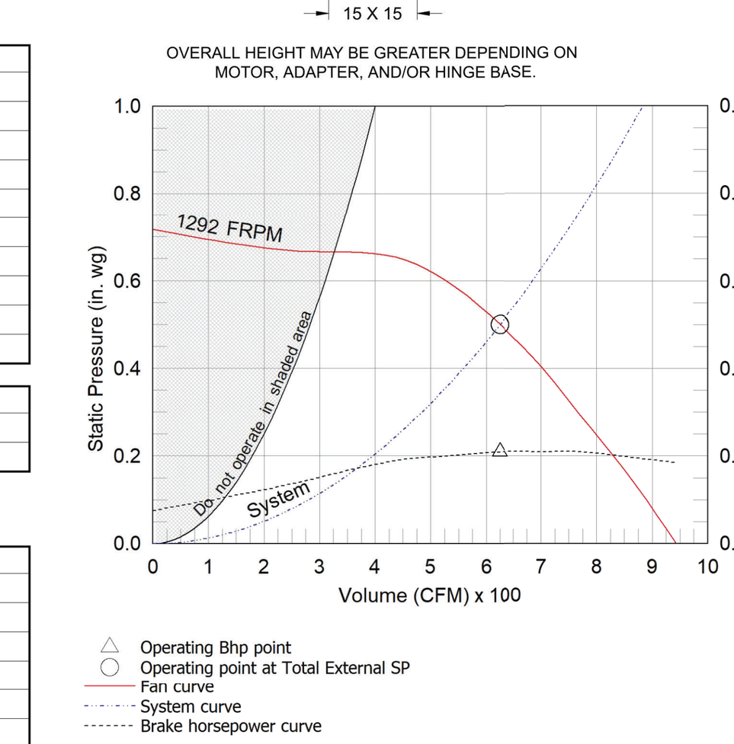
Dimensional	
Quantity	1
Weight w/o Acc's (lb)	45
Weight w/ Acc's (lb)	76
Max T Motor Frame Size	56
Standard Curb Cap Size (in.)	19 x 19
Roof Opening (in.)	15.5 x 15.5



Performance	
Requested Volume (CFM)	625
Actual Volume (CFM)	625
Total External SP (in. wg)	0.5
Fan RPM	1292
Operating Power (hp)	0.1
Elevation (ft)	30
Airstream Temp.(F)	70
Air Density (lb/ft3)	0.075
Tip Speed (ft/min)	3,783
Static Eff. (%)	47

Misc Fan Data	
Fan Eff. Index (FEI)	-
Outlet Velocity (ft/min)	488

OVERALL HEIGHT MAY BE GREATER DEPENDING ON MOTOR, ADAPTER, AND/OR HINGE BASE.



Motor	
Motor Mounted	Yes
Size (hp)	1/4
Voltage/Cycle/Phase	115/60/1
Enclosure	ODP
Motor RPM	1725
Efficiency Rating	Standard
Windings	1
NEC FLA* (Amps)	5.8
Min. Circuit Ampacity (MCA)	7.25
Max. Overcurrent Protection (MOP)	15
Short Circuit Current Rtg (SCCR)	5 kA

Notes:
All dimensions shown are in units of in.
*NEC FLA, MCA and MOP are for reference only – based on tables 430.248 or 430.25 of National Electric Code 2020. Actual motor FLA may vary, for sizing thermal overload, consult factory. MCA and MOP values shown only account for the motor, not accessories (damper actuator, field supplied VFD, etc).
LwA - A weighted sound power level, based on ANSI S1.4
dBA - A weighted sound pressure level, based on 11.5 dB attenuation per Octave band at 5 ft - dBA levels are not licensed by AMCA International
Sones - calculated using ANSI/AMCA 301 at 5 ft

Sound Power by Octave Band

Sound Data	62.5	125	250	500	1000	2000	4000	8000	LwA	dBA	Sones
Inlet	70	70	67	62	59	57	52	43	65	54	6.8

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Model: CUE-099-A
Direct Drive Upblast Centrifugal Roof Exhaust Fan
Standard Construction Features:
- Aluminum housing - Backward inclined aluminum wheel - Aluminum curb cap with prepunched mounting holes - Drain trough - Ball bearing motors (sizes 85-300 and all Vari Green), sleeve bearing motors (sizes 60-80) - Motor isolated on shock mounts - Corrosion resistant fasteners

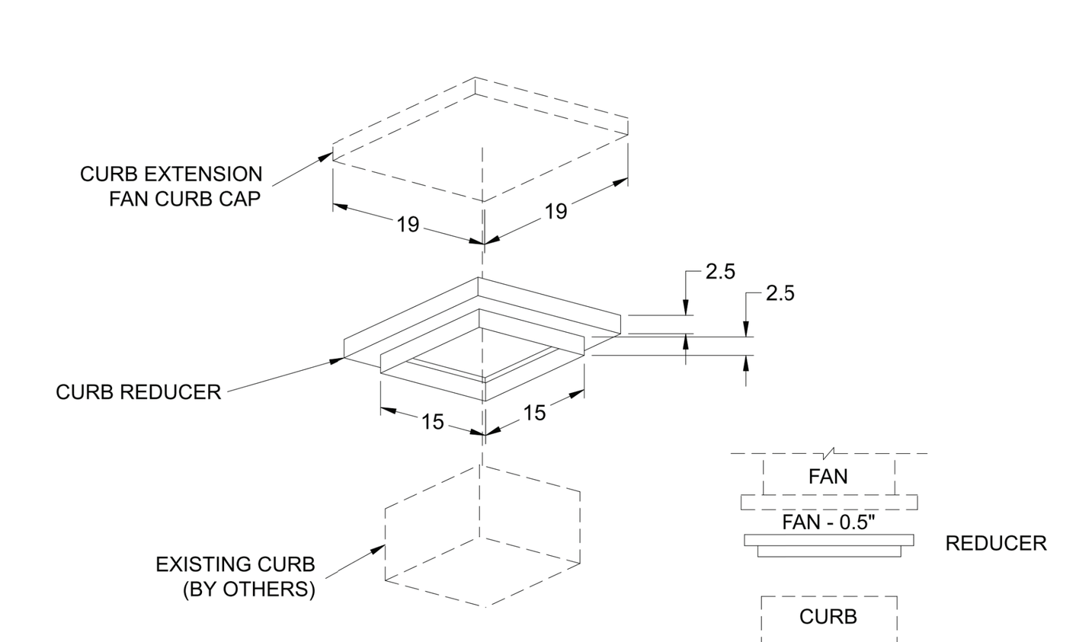
Spark B construction was selected.
Greenheck has included options and accessories for this product that meet the intent of AMCA 99 - spark resistant construction guidelines. Greenheck recommends, but does not require, an EXP motor for this product line. If an EXP motor is not selected, the engineer of record must determine if this is acceptable for the application. The resulting fan construction in no way implies a guarantee of safety for any level of spark resistance. Spark resistant construction does not prevent ignition of explosive gasses or vapors due to catastrophic failure or from any airstream material that may exist within in a system.

Selected Options & Accessories:
PSC Motor
Standard Curb Cap Size - 19 Square
Spark B Construction
UL/cUL 705 Listed - "Power Ventilators"
Switch, NEMA-1, Toggle, Shipped with Unit
Junction Box Mounted & Wired
Curb Extension-Alum., GPE-19-A14, Tray, Coated
Reducer-Alum., Curb Cap Reduced to 15 x 15 (Attached), Coated
Coated with Hi-Pro Polyester, Concrete Gray-RAL 7023, Fan And Attached Acc
Solid State Speed Control, 6 Amp, Shipped With Unit
Aluminum Rub Ring
Unit Warranty: 1 Yr (Standard)

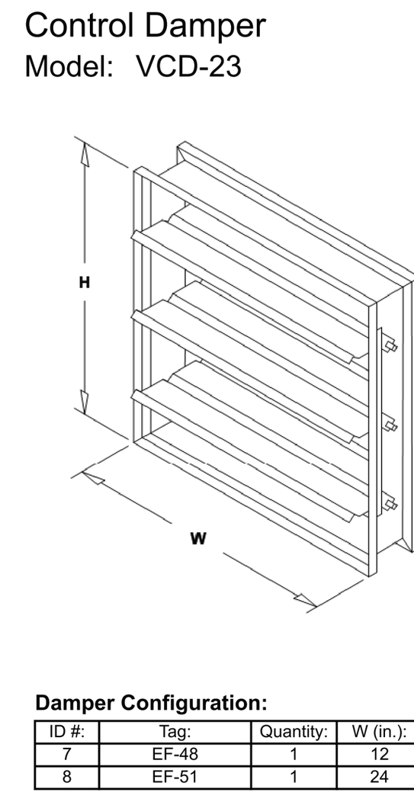
Curb Cap Adapter
Type: Reducer

Standard Construction Features:

Curb adapters are designed to adapt standard curb cap dimensions to non-standard curb sizes. Adapters may be constructed of either aluminum or galvanized steel. Curb reducers may reduce by a maximum of 10 in. and curb adapters may extend up to 20 in. beyond the standard curb cap size.



Control Damper
Model: VCD-23



Standard Construction Features:

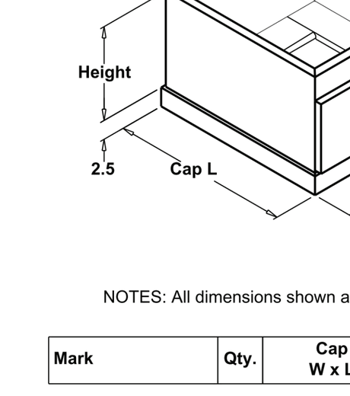
- Model VCD-23 is a well built low leakage control damper for automatic control or manual balancing applications - Galvanized 16 ga channel frame - Galvanized blades with reinforcements - Side mounted steel linkage is concealed in the frame to prevent additional pressure drop - Axles are steel and 0.5 in. dia.- Synthetic axle bearings - Width and height furnished approximately 0.25 in. undersized - Field wiring is required to individual components

Damper Configuration:

ID #:	Tag:	Quantity:	W (in.):	H (in.):	Act Qty:	Actuator Model:
7	EF-48	1	12	12	1	MS4103F1025
8	EF-51	1	24	24	1	MS4103F1025

Notes: All dimensions shown are in units of in.
Width And height furnished approximately 0.25 in. undersize

GPE Curb Extension with Access Door



STANDARD CONSTRUCTION FEATURES
• Welded Aluminum (0.064 in.) or galvanized (18 ga) construction • Bolted access door provides easy access to damper and damper actuator • Fulfills additional height requirements.
NOTES:
* Height - Available from 12 in. to 24 in. as specifed in 0.5 in. increments.
* Tray - Damper Tray is standard. Tray size is same as damper size.

NOTES: All dimensions shown are in units of inches

Mark	Qty.	Cap W x L	Actual W x L	Height	Damper Tray W x L

REV.	DATE	ITEM

NOTICE
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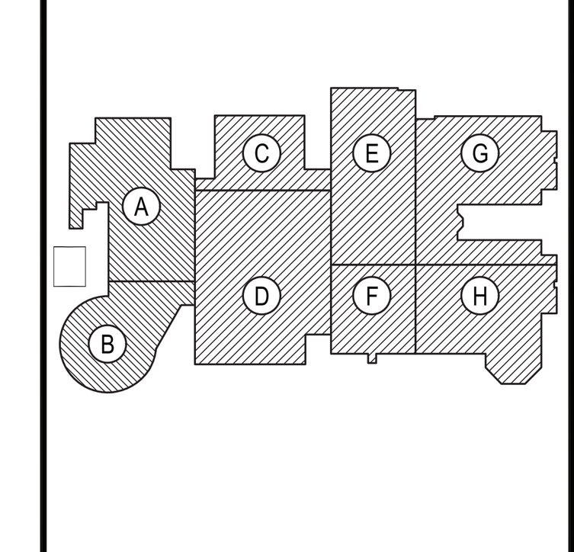

KEY PLAN
NOT TO SCALE

PROJECT
BRIARCLIFF MANOR U.F.S.D.
PHASE 2 BOND IMPROVEMENTS
BRIARCLIFF MANOR MIDDLE/HIGH SCHOOL
444 PLEASANTVILLE RD, BRIARCLIFF MANOR, NY 10510

DWG TITLE
SCHEDULES, EQUIPMENT
NOTES AND DETAILS (9 OF 10)

DRAWING BY: R.D.P.
CHECK BY: F.S.

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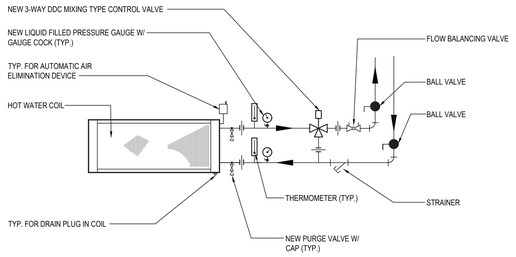
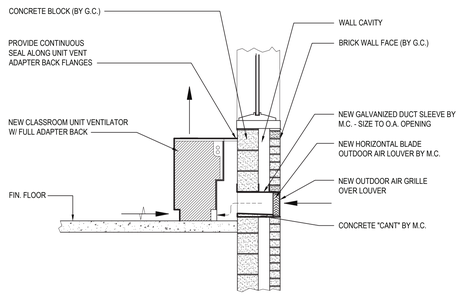
SED No.	66-14-02-02-0-004-023
DISTRICT	BRIARCLIFF MANOR UFSD
PROJECT	PHASE 2 BOND IMPROVEMENTS
DWG TITLE	SCHEDULES, EQUIPMENT NOTES AND DETAILS (9 OF 10)
SCALE:	AS NOTED
DATE:	7/15/22
BID PICK-UP:	
FILE No:	21-274C

M6.09 HSMS



1 3 WAY HOT WATER COIL DETAIL

SCALE: N.T.S.



2 UNIT VENTILATOR / FAN COIL UNIT FRESH AIR INTAKE - MASONRY WALL INSTALLATION

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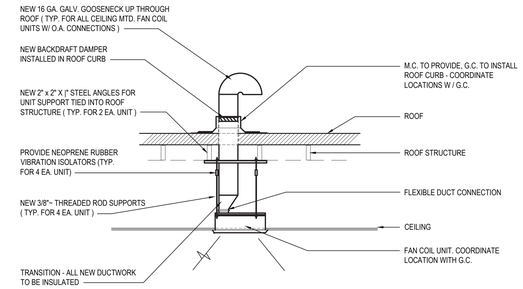
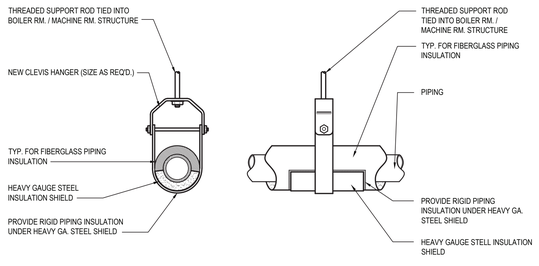


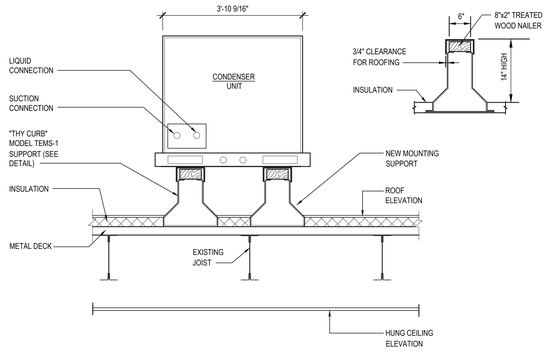
3 FAN COIL UNIT WITH FRESH AIR INTAKE

SCALE: N.T.S.



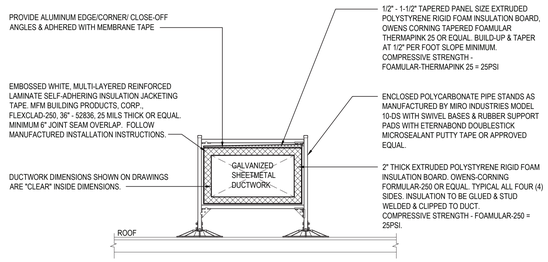
4 CLEVIS HANGER PIPING SUPPORT DETAIL

SCALE: N.T.S.



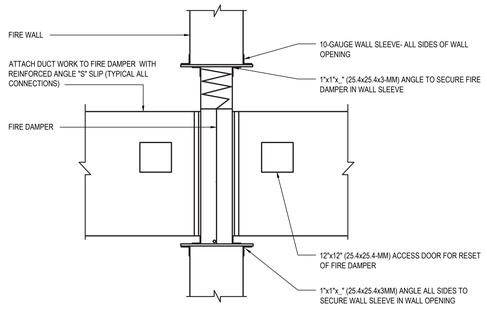
5 CONDENSER UNIT AND SUPPORT

SCALE: N.T.S.



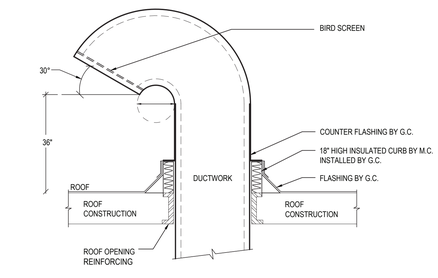
6 EXTERIOR DUCTWORK INSULATION WITH SUPPORTS

SCALE: N.T.S.



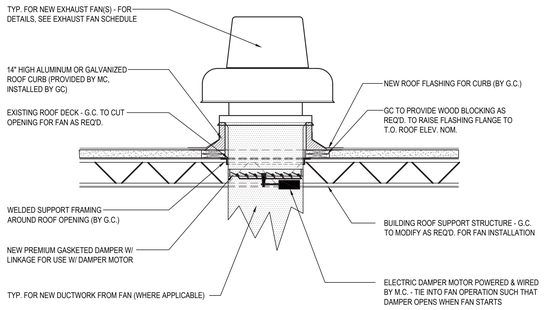
7 FIRE DAMPER IN WALL AREA FOR DUCT PENETRATION

SCALE: N.T.S.



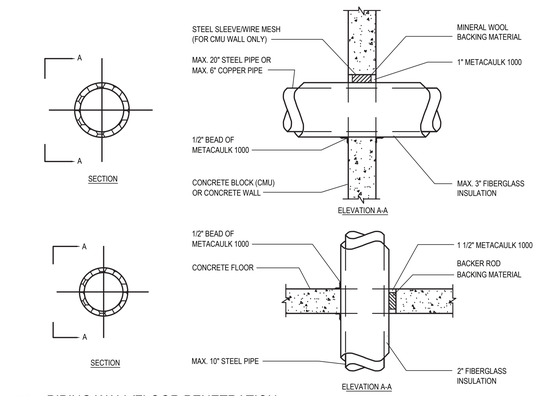
8 FRESH AIR INTAKE GOOSENECK DETAIL

SCALE: N.T.S.



9 NEW ROOF MOUNTED EXHAUST FAN INSTALLATION

SCALE: N.T.S.



10 PIPING WALL/FLOOR PENETRATION

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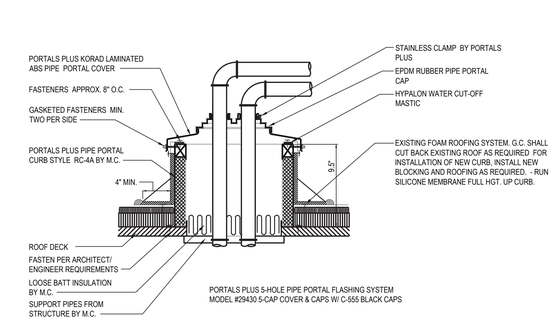
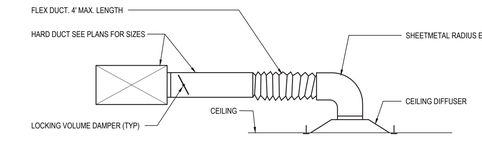


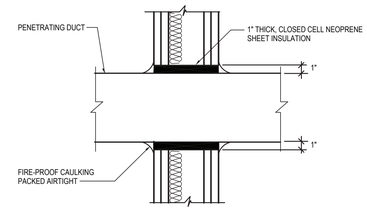
11 ROOF PIPING PENETRATION DETAIL

SCALE: N.T.S.



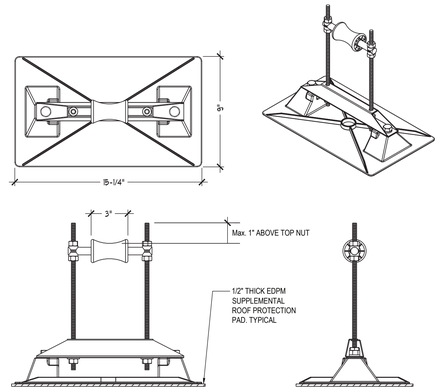
12 TYPICAL CEILING DIFFUSER INSTALLATION

SCALE: N.T.S.



13 TYPICAL DUCT PENETRATION

SCALE: N.T.S.



PROVIDE & INSTALL A "ROLLER-BEARING" PIPE SUPPORT FOR ROOF MOUNTED GAS PIPING. SUPPORTS ARE TO BE MADE OF POLYCARBONATE AS MANUFACTURED BY MIRO INDUSTRIES' MODEL 3-RAH-12 PILLOW BLOCK PIPE STAND. SPACING NOT TO EXCEED 10'-0" ON CENTER. MOUNT EACH PIPE STAND ON 15-3/4" x 19-3/4" SUPPORT PAD BY MIRO INDUSTRIES. SEE DETAIL IN THIS DRAWING.

14 ROOF MOUNTED PIPING SUPPORT DETAIL

SCALE: N.T.S.

REV.	DATE	ITEM

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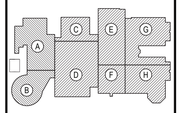

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DWG TITLE

SCHEDULES, EQUIPMENT
NOTES AND DETAILS (10 OF 10)

DRAWING BY: R.D.P.

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NOTICE

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