HVAC NOTES:

1. PROVIDE LABOR, MATERIALS, TOOLS, MACHINERY, EQUIPMENT, AND SERVICES NECESSARY TO COMPLETE THE HVAC WORK UNDER THIS CONTRACT. ALL SYSTEMS AND EQUIPMENT SHALL BE COMPLETE IN EVERY ASPECT AND ALL ITEMS OF MATERIAL, EQUIPMENT AND LABOR SHALL BE PROVIDED FOR A FULLY OPERATIONAL SYSTEM AND READY FOR USE. COORDINATE THE WORK WITH THE WORK OF THE OTHER SUBCONTRACTORS IN ORDER TO RESOLVE ALL CONFLICTS WITHOUT IMPEDING THE JOB PROGRESS.

2. EXAMINE THE ARCHITECTURAL, STRUCTURAL, AND ELECTRICAL DRAWINGS AND OTHER DIVISIONS, AND SECTIONS OF THE SPECIFICATIONS IN ORDER TO DETERMINE THE EXTENT OF THE WORK REQUIRED TO BE COMPLETED UNDER THIS DIVISION. FAILURE TO EXAMINE ALL THE CONTRACT DOCUMENTS FOR THIS PROJECT WILL NOT RELIEVE THIS CONTRACTOR OF HIS RESPONSIBILITIES TO PERFORM THE WORK REQUIRED FOR A COMPLETE FULLY OPERATIONAL AND SATISFACTORY INSTALLATION.

3. THE WORK INCLUDES BUT IS NOT LIMITED TO THE DEPICTED SYSTEMS, EQUIPMENT AND SERVICES, AS SPECIFIED HEREIN.

4. START-UP SERVICES SHALL BE INCLUDED.

5. ALL SYSTEMS, EQUIPMENT AND SERVICES SPECIFIED HEREIN SHALL BE PROVIDED COMPLETE AND READY FOR USE. ALL EQUIPMENT, DUCTWORK, PIPING, DAMPERS, OUTLETS ARE NEW, FURNISHED AND INSTALLED BY THIS CONTRACTOR, UNLESS OTHERWISE NOTED.

6. DUCTWORK AND PIPING ARE SHOWN DIAGRAMMATICALLY AND DO NOT SHOW ALL OFFSETS, DROPS AND RISES OF RUNS. THE CONTRACTOR SHALL ALLOW IN HIS PRICE FOR ROUTING OF DUCTWORK AND PIPING TO AVOID OBSTRUCTIONS. EXACT LOCATIONS ARE SUBJECT TO APPROVAL OF ENGINEER. COORDINATION WITH THE EXISTING SERVICES, INCLUDING THOSE OF OTHER SUBCONTRACTORS IS REQUIRED. PROVIDE COORDINATION DRAWINGS SHOWING ALL TRADES WORK AND EXISTING CONDITION.

7. INSTALL WORK SO AS TO BE READILY ACCESSIBLE FOR OPERATION, MAINTENANCE AND REPAIR. MINOR DEVIATIONS FROM DRAWINGS MAY BE MADE TO ACCOMPLISH THIS, BUT CHANGES INVOLVING EXTRA COST SHALL NOT BE MADE WITHOUT APPROVAL.

8. VERIFY FINAL LOCATIONS FOR ROUGH WORK WITH FIELD MEASUREMENTS AND WITH THE REQUIREMENTS OF THE ACTUAL EQUIPMENT BEING CONNECTED.

9. PROVIDE A COMPLETE SYSTEM OF VIBRATION ISOLATION FOR EACH ITEM OF HVAC EQUIPMENT AND APPARATUS AS SPECIFIED HEREIN, AS SHOWN ON THE DRAWINGS AND AS NEEDED FOR A COMPLETE AND PROPER INSTALLATION.

10. THE CONTRACTOR SHALL KEEP ALL EQUIPMENT AND MATERIALS, AND ALL PARTS OF THE BUILDING, EXTERIOR SPACE AND ADJACENT STREETS, SIDEWALKS AND PAVEMENTS, FREE FROM MATERIAL AND DEBRIS RESULTING FROM THE EXECUTION OF THIS WORK. EXCESS MATERIALS WILL NOT BE PERMITTED TO ACCUMULATE EITHER IN THE INTERIOR OR THE EXTERIOR.

11. ALL PRESENT MATERIAL, EQUIPMENT AND CONSTRUCTION DEBRIS TO BE REMOVED UNDER THIS CONTRACT SHALL BECOME THE PROPERTY OF THE CONTRACTOR WITH THE EXCEPTION OF SPECIFIC EQUIPMENT AND APPARATUS REQUESTED BY THE DISTRICT FACILITIES, OR AS NOTED TO BE RELOCATED ON THE DRAWINGS, AND SHALL BE PROPERLY DISPOSED OF BY THE CONTRACTOR.

12. THE FINAL ACCEPTANCE WILL BE MADE AFTER THE CONTRACTOR HAS ADJUSTED HIS EQUIPMENT, BALANCED THE VARIOUS SYSTEMS, DEMONSTRATED THAT IT FULFILLS THE REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS AND HAS FURNISHED ALL THE REQUIRED CERTIFICATES OF INSPECTION AND APPROVAL.

13. ALL CONTROL WIRING SHALL BE DONE BY MECHANICAL CONTRACTOR, IN ACCORDANCE WITH SEQUENCE OF OPERATION, AS SPECIFIED, AND IN ACCORDANCE WITH MANUFACTURER'S CONTROL DATA.

14. CONTRACTOR IS RESPONSIBLE TO ATTEND COORDINATION MEETING WITH ALL TRADES TO DETERMINE LOCATIONS OF DEVICES AND DISCOVER IF ANY CONFLICTS MAY EXIST.

15. ALL PIPING EXPOSED OR INSULATED, DUCTWORK, CONDUIT AND CONTROL WIRING SHALL BE CONCEALED IN CEILINGS, WALLS AND FLOORS OR CONCEALED IN NEW SOFFITS OR FRAMED ENCLOSURES.

16. OUTSIDE AIR INTAKE AND EXHAUST AIR OPENINGS SHALL HAVE CLASS 1 MOTORIZED DAMPERS WITH AN AIR LEAKAGE RATE NOT GREATER THAN 4CFM/FT^2 AT 1 INCH OF WATER GAUGE AND SHALL BE LABELED BY AN APPROVED AGENCY IN ACCORDANCE WITH AMCA 500D AS PER 2020 NYSECCC C403.7.7

GENERAL SYMBOLS

- DEMOLISH
- POINT OF CONNECTION
- POINT OF DISCONNECT
- SECTION A–A

PIPING SYMBOLS

- CO — CONDENSATE DRAIN PIPING

HVAC SYMBOLS

- T## — TEMPERATURE SENSOR/THERMOSTAT (UH REFERS TO UNIT HEATER) (AC REFERS TO SPLIT A/C UNIT) (RTU REFERS TO ROOFTOP UNIT)
- M — MOTORIZED DAMPER/LOUVER

GENERAL NOTES

1. THE CONTRACTOR SHALL VERIFY THE EXISTING CONDITIONS AND COORDINATE THE WORK WITH OTHER TRADES.

2. THE FULL DEMOLITION SCOPE IS NOT SPECIFICALLY SHOWN ON THE DRAWINGS. PROVIDE DEMOLITION WORK CONSIDERED NECESSARY FOR THE COMPLETION OF THE WORK. SURVEY THE PREMISES TO ACCURATELY DETERMINE THE FULL SCOPE OF THE REMOVAL AND DISPOSAL WORK. NO ADDITIONAL PAYMENTS WILL BE MADE DUE TO CONTRACTOR'S FAILURE TO ADEQUATELY SURVEY THE PREMISES.

3. CONTRACTOR TO REMOVE AND PROPERLY DISPOSE OF EQUIPMENT FROM SITE INDICATED FOR DEMOLITION, UNLESS OTHERWISE DIRECTED BY THE AUTHORITY.

4. THE MECHANICAL CONTRACTOR SHALL PROVIDE POWER SUPPLIES, ELECTRICAL WIRING AND CONDUIT FOR POWER AND CONTROL TO PNEUMATIC OR MOTORIZED DAMPER AND VALVE OPERATORS, THERMOSTATS, AUTOMATIC CONTROL INSTRUMENTATION. COORDINATE WITH THE ELECTRICAL CONTRACTOR TO PROVIDE A COMPLETE AND FUNCTIONAL SYSTEM.

5. FOR POWERED EQUIPMENT INTENDED FOR DEMOLITION, THE CONTRACTOR SHALL COORDINATE SHUT-OFF POWER SUPPLIES AND DISCONNECT SWITCHES ASSOCIATED WITH THE EQUIPMENT TO BE DISCONNECTED. RECONNECT ELECTRICAL POWER TO NEW EQUIPMENT AFTER INSTALLATION. PROVIDE ELECTRICAL MATERIAL AND LABOR AS REQUIRED FOR A COMPLETE AND FUNCTIONAL INSTALLATION.

6. TEMPORARY SHUTDOWNS OF SERVICE OF EXISTING ELECTRICAL, STEAM, HEATING, AIR CONDITIONING AND VENTILATION SYSTEMS SHALL BE PERFORMED WITH A MINIMUM OF DISRUPTION OF SERVICE, HELD TO AN ABSOLUTE MINIMUM DURATION OF TIME, AND ONLY AFTER HAVING NOTIFIED THE BUILDING OPERATIONS MANAGEMENT AT LEAST TWO WEEKS IN ADVANCE AND HAVING RECEIVED THEIR PERMISSION IN WRITING, AT LEAST TWO WEEKS PRIOR TO THE SCHEDULED SHUTDOWN. COMMUNICATIONS SHALL BE RELAYED THROUGH THE OWNER'S REPRESENTATIVE.

7. PROVIDE MOTOR STARTERS AS REQUIRED FOR MECHANICAL EQUIPMENT.

8. LOAD CALCULATIONS HAVE BEEN PERFORMED IN ACCORDANCE WITH GENERALLY ACCEPTED ENGINEERING STANDARDS, SPECIFICALLY ASHRAE HANDBOOK – FUNDAMENTALS.

9. ALL SYSTEMS, EQUIPMENT AND SERVICES SPECIFIED HEREIN SHALL BE PROVIDED COMPLETE AND READY FOR USE. ALL EQUIPMENT, DUCTWORK, PIPING, DAMPERS ARE NEW, FURNISHED AND INSTALLED BY THIS CONTRACTOR, UNLESS OTHERWISE NOTED.

10. CONTRACTOR SHALL PERFORM ALL TESTS AND STARTUP PROCEDURES FOR EACH VENTILATION SYSTEM IN ACCORDANCE WITH THE MANUFACTURER AND SPECIFICATIONS.

11. ALL THERMOSTATIC CONTROLS SHALL BE TESTED FOR FUNCTIONALITY AND PROPER OPERATION AS REQUIRED BY NYS ECC.

12. ELECTRIC MOTORS SHALL COMPLY WITH THE REQUIREMENTS OF THE ENERGY POLICY ACT OF 1992 AS SHOWN IN ASHRAE 90.1–2013 TABLE #10.8.

13. PROVIDE EQUIPMENT MAINTENANCE MANUALS AND REQUIRED EQUIPMENT LABELS FOR ALL NEW MECHANICAL, ELECTRICAL AND SERVICE HOT WATER HEATING EQUIPMENT.

14. IT IS THE RESPONSIBILITY OF THE MECHANICAL CONTRACTOR TO PROVIDE CONTROL WIRING TO THE EXISTING BMS SYSTEM BY SIEMENS. MECHANICAL CONTRACTOR TO FURNISH THE SERVICES OF CONTROL CONTRACTOR TO PREPARE CONTROL WIRING DIAGRAMS. THE MECHANICAL CONTRACTOR SHALL ALSO PROVIDE ALL POWER SUPPLIES, ELECTRICAL WIRING AND CONDUIT FOR POWER AND CONTROL TO ALL VALVE OPERATORS, THERMOSTATS AND AUTOMATIC CONTROL INSTRUMENTATION. ELECTRICAL CONTRACTOR TO INSTALL AND ROUTE POWER WIRING FOR EACH MECHANICAL SYSTEM.

15. MOUNTING HEIGHTS FOR ASSOCIATED MECHANICAL THERMOSTAT CONTROLS, ETC. SHALL MEET THE AMERICANS WITH DISABILITIES ACT ACCESSIBILITY GUIDELINES FOR BUILDING AND FACILITIES. MOUNTING HEIGHTS FOR ALL THERMOSTATS, ETC SHALL BE 48" AFF.

16. PATCH AND REPAIR EXISTING VCT FLOORING AT UNIT VENTILATORS TO REPAIR ANY DAMAGE CAUSED BY THE WORK OR AS NECESSARY COMPENSATE FOR ANY DIFFERENCE IN THE SIZE OF THE CASING BETWEEN THE NEW AND EXISTING UNIT VENTILATORS.

17. EXTEND ALL GREASE FITTINGS TO AN ACCESSIBLE LOCATION.

18. FOR ACCESS DOORS TO VALVES, DAMPERS AND ALL OTHER HVAC TYPE OF ITEMS, ACCESSORIES AND EQUIPMENT, CONCEALED IN WALLS, FURRINGS AND CEILINGS. DOOR SHALL PERMIT FULL ACCESS TO THE EQUIPMENT.

19. VERIFY FINAL LOCATIONS FOR ROUGH WORK WITH FIELD MEASUREMENTS AND WITH THE REQUIREMENTS OF THE ACTUAL EQUIPMENT BEING CONNECTED.

20. ARRANGE FOR CHASES, SLOTS, AND OPENINGS IN OTHER BUILDING COMPONENTS TO ALLOW FOR HVAC INSTALLATIONS.

21. COORDINATE THE INSTALLATION OF REQUIRED SUPPORTING DEVICES AND SIZE OF SLEEVES TO BE SET IN POURED CONCRETE AND OTHER STRUCTURAL COMPONENTS AS THEY ARE CONSTRUCTED.

22. COORDINATE THE INSTALLATION OF HVAC MATERIALS AND EQUIPMENT ABOVE CEILINGS WITH SUSPENSION SYSTEM, LIGHT FIXTURES, AND ALL OTHER INSTALLATIONS AND ACCESSORIES.

23. PROVIDE EQUIPMENT AND SYSTEMS THAT, AS DEFINED HEREIN, SHALL BE QUIET AND FREE OF APPARENT VIBRATION IN OPERATIONS.

24. OBTAIN EQUIPMENT THAT IS QUIET IN OPERATION AS COMPARED TO OTHER AVAILABLE EQUIPMENT OF ITS SIZE, CAPACITY, AND TYPE; INSTALL EQUIPMENT SO THAT A MINIMUM AMOUNT OF NOISE AND/OR VIBRATION IS TRANSMITTED TO THE BUILDING; AND FABRICATE THE DUCT SYSTEM SO THAT AIR NOISES GENERATED IN THE SYSTEM ARE HELD TO AN ABSOLUTE MINIMUM.

25. PROVIDE A COMPLETE SYSTEM OF VIBRATION ISOLATION FOR EACH ITEM OF HVAC EQUIPMENT AND APPARATUS AS SPECIFIED HEREIN, AS SHOWN ON THE DRAWINGS AND AS NEEDED FOR A COMPLETE AND PROPER INSTALLATION.

26. PROVIDE SEISMIC RESTRAINTS FOR ALL EQUIPMENT FURNISHED AS PART OF THIS CONTRACT. ANCHOR ALL EQUIPMENT FURNISHED BY OTHERS WHEN INSTALLATION IS CLAIMED BY THIS CONTRACT. DUCTWORK SHALL HAVE SUPPORTS, HANGERS, VIBRATION ISOLATORS, AND SHALL BE SEISMICALLY RESTRAINED IN ACCORDANCE WITH CODE AND SMACNA STANDARDS.

27. THE WORD "PROVIDE" USED ON DRAWINGS AND SPECIFICATIONS ASSOCIATED WITH THIS PROJECT MEANS "FURNISH AND INSTALL". WHEN ONLY ONE PART OF ACTION IS REQUIRED, EITHER "FURNISH" OR "INSTALL" WILL BE USED ACCORDINGLY (TYP., U.O.W.N.).

28. INSTALL WORK SO AS TO BE READILY ACCESSIBLE FOR OPERATION, MAINTENANCE AND REPAIR. MINOR DEVIATIONS FROM DRAWINGS MAY BE MADE TO ACCOMPLISH THIS, BUT CHANGES INVOLVING EXTRA COST SHALL NOT BE MADE WITHOUT APPROVAL.

29. CONTRACTOR SHALL PROVIDE AN ADAPTER CURB AND FACTORY ASSEMBLED PIPE CABINET FOR EACH AHU BEING REPLACED. DURING INSTALLATION OF AHU, REMOVE EXISTING GRAVEL FOR NEW BASE FLASHING. NEW BASE FLASHING TO BE INSTALLED OVER EXISTING ROOFING AND EXISTING TERMINATION BARS AS PER 2/A–500.

30. PERFORM COMMISSIONING OF THE INSTALLED AIR HANDLING EQUIPMENT AS PER 2020 NYS IECC C408. SEE SPEC 019113. SERVICES ARE TO BE PERFORMED BY A THIRD PARTY APPROVED AGENCY, SEE ALLOWANCE #3.

ABBREVIATIONS

AFF	ABOVE FINISHED FLOOR	LWT	LEAVING WATER TEMPERATURE
BHP	BRAKE HORSEPOWER	M	METER
BTUH	BRITISH THERMAL UNIT PER HOUR	MAX	MAXIMUM
CFM,	CUBIC FEET PER MINUTE	MBH	1000 BTU/H
DB	DECIBELS	MD	MOTORIZED DAMPER
Db	DRY–BULB TEMPERATURE	MHP	MOTOR HORSEPOWER
DDC	DIRECT DIGITAL CONTROLS	MIN	MINIMUM
DEG	DEGREE	NA	NOT APPLICABLE
DIA, ø	DIAMETER	NC	NORMALLY CLOSED
EWT	ENTERING WATER TEMPERATURE	NO	NORMALLY OPEN
EX.	EXISTING	N.T.S.	NOT TO SCALE
(E)	EXISTING	OA	OUTSIDE AIR
F	FAHRENHEIT	OD	OUTSIDE DIAMETER
FAI	FRESH AIR INTAKE	PD	PRESSURE DROP
FD	FLOOR DRAIN	PG	PRESSURE GAGE
FT	FEET	PSI	POUNDS PER SQUARE INCH
GA	GAUGE	PSIA	POUNDS PER SQUARE INCH – ABSOLUTE
GPM	GALLONS PER MINUTE	PSIG	POUNDS PER SQUARE INCH – GAGE
HD	HEAD	RPM	REVOLUTIONS PER MINUTE
HOA	HAND/OFF/AUTOMATIC	SP	STATIC PRESSURE
HP	HORSEPOWER	SS	STAINLESS STEEL
HW	HOT WATER	TAB	TESTING, ADJUSTING, BALANCE
HWR	HEATING HOT WATER RETURN	TDH	TOTAL DYNAMIC HEAD
HWS	HEATING HOT WATER SUPPLY	UON	UNLESS OTHERWISE NOTED
HZ	HERTZ	UTR	UP THROUGH ROOF
ID	INSIDE DIAMETER	VFD	VARIABLE FREQUENCY DRIVE
IN WC	INCH WATER COLUMN	W/	WITH
IN WG	INCH WATER GAUGE	WG	WATER GAGE
KW	KILOWATT	WPD	WATER PRESSURE DROP
KWH	KILOWATT HOUR		
LF	LINEAR FOOT (FEET)		

HVAC DESIGN CRITERIA

A. SITE (BASED ON NEAREST AVAILABLE DATA: ASHRAE 2013 HANDBOOK CLIMATIC DESIGN INFORMATION, WESTCHESTER CO, NY):
1. 41.07'N, 73.71'W
2. ELEVATION: 397 FT
3. CLIMATE ZONE 5A.

B. OUTSIDE DESIGN CONDITIONS (BASED ON NEAREST AVAILABLE DATA: ASHRAE 2013 CLIMATIC DESIGN INFORMATION, WESTCHESTER CO, NY):
1. HEATING DB (99.6%): 9.0°F DB
2. COOLING DB/MCWB (1%): 86.5°F DB, 72.1°F WB

C. INSIDE DESIGN CONDITIONS (PER NYSED MANUAL OF PLANNING STANDARDS S602–6 B. AND 2015 ASHRAE HANDBOOK CH 7 TABLE 6):
1. OCCUPIED HEATING INDOOR SETPOINT: 72'F
2. OCCUPIED COOLING INDOOR SETPOINT: 78'F, 60% RH
3. NON–OCCUPIED HEATING INDOOR SETPOINT: 55'F
4. NON–OCCUPIED COOLING INDOOR SETPOINT: 85'F
5. ZONE THERMOSTATIC CONTROLS SHALL PROVIDE DEADBAND OF MIN. 5'F. (NYSECCC C403.4.1.2)

D. ACOUSTICS (PER NYSED MANUAL OF PLANNING STANDARDS, TABLE S304–1):
1. DESIGN REQUIREMENTS FOR HVAC SYSTEM NOISE FOR CLASSROOMS, 7–12: RC 25–30.

E. FILTRATION: MERV 13 (PER NYSED MANUAL OF PLANNING STANDARDS).

F. DEMAND CONTROLLED VENTILATION (PER NYSED MANUAL OF PLANNING STANDARDS AND ASHRAE 62.1 APPENDIX C):
1. OUTDOOR CO2 CONCENTRATION: 350 PPM
2. SPACE ACTIVITY LEVEL:
   a. AUDITORIUM 1.0 MET, GYMNASIUM 3.5 MET
3. MAX. INDOOR CO2 CONCENTRATION: BASED ON CODE REQUIRED VOLUMETRIC FLOW RATE FOR EACH ROOM (PER SED MANUAL J007–g). REFER TO THE VENTILATION SCHEDULE.

SEQUENCE OF OPERATIONS

A. UNIT VENTILATORS
1. BUILDING AUTOMATION SYSTEM INTERFACE:
   THE BUILDING AUTOMATION SYSTEM (BAS) SHALL SEND THE UNIT VENTILATOR CONTROL SYSTEM CONTROLLER OCCUPIED AND UNOCCUPIED REQUESTS, SETPOINTS, AND OVERRIDES (IF REQUIRED). THE BAS SHALL ALSO READ AND DISPLAY ALL POINTS AVAILABLE FROM THE UNIT VENTILATOR CONTROL SYSTEM (ASSUME 50 PER UNIT). IF COMMUNICATION IS LOST WITH THE BAS THE CONTROLLER SHALL OPERATE USING DEFAULT MODES AND SETPOINTS.
2. OCCUPIED MODE:
   DURING OCCUPIED PERIODS THE SUPPLY FAN SHALL RUN CONTINUOUSLY AND THE OUTSIDE AIR DAMPER SHALL OPEN TO MAINTAIN MINIMUM VENTILATION REQUIREMENTS. THE DX COOLING AND HOT WATER VALVE SHALL OPERATE TO MAINTAIN THE ACTIVE SPACE TEMPERATURE SETPOINT.
3. UNOCCUPIED MODE:
   WHEN THE SPACE TEMPERATURE IS BELOW THE UNOCCUPIED HEATING SETPOINT OF 60.0 DEG. F (ADJ.), THE SUPPLY FAN SHALL START, THE OUTSIDE AIR DAMPER SHALL REMAIN CLOSED AND THE HOT WATER VALVE SHALL OPEN. WHEN THE SPACE TEMPERATURE RISES ABOVE THE UNOCCUPIED HEATING SETPOINT OF 60.0 DEG. F (ADJ.) PLUS THE UNOCCUPIED DIFFERENTIAL OF 2.0 DEG. F (ADJ.) THE SUPPLY FAN SHALL STOP AND THE HOT WATER VALVE SHALL CLOSE.WHEN THE SPACE TEMPERATURE IS ABOVE THE UNOCCUPIED COOLING SETPOINT OF 85.0 DEG. F (ADJ.), THE SUPPLY FAN SHALL START, THE OUTSIDE AIR DAMPER SHALL OPEN IF ECONOMIZING IS ENABLED AND REMAIN CLOSED IF ECONOMIZING IS DISABLED AND THE DX COOLING SHALL BE ENABLED. WHEN THE SPACE TEMPERATURE FALLS BELOW THE UNOCCUPIED COOLING SETPOINT OF 85.0 DEG. F (ADJ.) MINUS THE UNOCCUPIED DIFFERENTIAL OF 4.0 DEG. F (ADJ.) THE SUPPLY FAN SHALL STOP, THE DX COOLING SHALL BE DISABLED AND THE OUTSIDE AIR DAMPER SHALL CLOSE.
4. OPTIMAL START:
   THE BAS SHALL MONITOR THE SCHEDULED OCCUPIED TIME, OCCUPIED SPACE SETPOINTS AND SPACE TEMPERATURE TO CALCULATE WHEN THE OPTIMAL START OCCURS.
5. MORNING WARM–UP MODE:
   DURING OPTIMAL START, IF THE SPACE TEMPERATURE IS BELOW THE OCCUPIED HEATING SETPOINT A MORNING WARM–UP MODE SHALL BE ACTIVATED. WHEN MORNING WARM–UP IS INITIATED THE UNIT SHALL ENABLE THE HEATING AND SUPPLY FAN. THE OUTSIDE AIR DAMPER SHALL REMAIN CLOSED. WHEN THE SPACE TEMPERATURE REACHES THE OCCUPIED HEATING SETPOINT (ADJ.), THE UNIT SHALL TRANSITION TO THE OCCUPIED MODE.
6. PRE–COOL MODE:
   DURING OPTIMAL START, IF THE SPACE TEMPERATURE IS ABOVE THE OCCUPIED COOLING SETPOINT, PRE–COOL MODE SHALL BE ACTIVATED. WHEN PRE–COOL IS INITIATED THE UNIT SHALL ENABLE THE FAN AND COOLING OR ECONOMIZER. THE OUTSIDE AIR DAMPER SHALL REMAIN CLOSED, UNLESS ECONOMIZING. WHEN THE SPACE TEMPERATURE REACHES OCCUPIED COOLING SETPOINT (ADJ.), THE UNIT SHALL TRANSITION TO THE OCCUPIED MODE.
7. ECONOMIZER CONTROL:
   ECONOMIZING SHALL BE ENABLED WHEN THE OUTDOOR AIR TEMPERATURE IS BELOW THE ECONOMIZING ENABLE SETPOINT OF 65.0 DEG. F (ADJ.). ECONOMIZING SHALL BE DISABLED WHEN THE OUTDOOR AIR TEMPERATURE IS GREATER THAN 5.0 DEG. F ABOVE THE ECONOMIZER ENABLE SETPOINT. WHEN ECONOMIZING IS ENABLED THE OUTSIDE AIR DAMPER SHALL MODULATE BETWEEN THE MINIMUM DAMPER POSITION AND 100% OPEN TO MAINTAIN THE OCCUPIED COOLING SETPOINT. IF THE OUTDOOR AIR TEMPERATURE SENSOR FAILS, ECONOMIZING SHALL BE DISABLED AND AN ALARM SHALL BE ANNUNCIATED AT THE BAS.
8. SUPPLY FAN OPERATION:
   THE SUPPLY FAN SHALL CYCLE ON DEMAND DURING THE UNOCCUPIED MODE. WHEN THE CONTROLLER TRANSITIONS TO THE OCCUPIED MODE, THE SUPPLY FAN SHALL START AT HIGH SPEED BEFORE TRANSITIONING TO CONTINUOUS OPERATION AT THE SELECTED SPEED. THE SUPPLY FAN STATUS SHALL BE MONITORED BY A DIFFERENTIAL PRESSURE SWITCH. IF THE SUPPLY FAN FAILS THE FAN SHALL BE COMMANDED OFF AND AN ALARM SHALL BE ANNUNCIATED AT THE BAS. A MANUAL RESET SHALL BE REQUIRED TO RESTART THE FAN.
9. CONDENSATE OVERFLOW MONITORING:
   IF THE CONDENSATE LEVEL REACHES THE TRIP POINT, A CONDENSATE OVERFLOW DIAGNOSTIC SHALL BE ANNUNCIATED AT THE BAS. TO PREVENT THE CONDENSATE DRAIN PAN FROM OVERFLOWING AND CAUSING WATER DAMAGE TO THE BUILDING THE FAN SHALL BE DISABLED AND THE DX COOLING SHALL BE DISABLED.
10. FREEZE PROTECTION:
    A HARDWIRED, LOW LIMIT TEMPERATURE SWITCH SHALL BE ELECTRICALLY INTERLOCKED WITH THE SAFETY CIRCUIT. IF THE LOW LIMIT TEMPERATURE SWITCH IS TRIPPED 38.0 DEG. F (ADJ.), THE SUPPLY FAN SHALL BE COMMANDED OFF, WATER VALVES SHALL OPEN TO 100%, OUTSIDE AIR DAMPER SHALL CLOSE, AND AN ALARM SHALL BE ANNUNCIATED AT THE BAS.
    THE CONTROLLER SHALL AUTOMATICALLY ATTEMPT TO RESTART THE UNIT AFTER 30 MINUTES. IF THE UNIT RESTARTS SUCCESSFULLY WITH NO LOW TEMPERATURE CONDITION, THE DIAGNOSTIC IS CLEARED. IF A SECOND LOW TEMPERATURE CONDITION OCCURS WITHIN A 24 HOUR PERIOD THE UNIT SHALL BE LOCKED OUT UNTIL MANUALLY RESET.
11. OCCUPIED BYPASS:
    THE BAS SHALL MONITOR THE STATUS OF THE "ON" AND "CANCEL" BUTTONS OF THE SPACE TEMPERATURE SENSOR. WHEN AN OCCUPIED BYPASS REQUEST IS RECEIVED FROM A SPACE SENSOR, THE UNIT SHALL TRANSITION FROM ITS CURRENT OCCUPANCY MODE TO OCCUPIED BYPASS MODE AND THE UNIT SHALL MAINTAIN THE SPACE TEMPERATURE TO THE OCCUPIED SETPOINTS (ADJ.).
12. SPACE TEMPERATURE CONTROL:
    CASCADE ZONE CONTROL SHALL BE USED IN THE OCCUPIED, OCCUPIED BYPASS, AND OCCUPIED STANDBY MODES. IT MAINTAINS ZONE TEMPERATURE BY CONTROLLING THE DISCHARGE AIR TEMPERATURE TO CONTROL THE ZONE TEMPERATURE WHILE MINIMIZING THE FAN SPEED. THE SPACE TEMPERATURE SHALL BE MAINTAINED BETWEEN THE OCCUPIED COOLING SETPOINT OF 74.0 DEG. F (ADJ.) AND THE OCCUPIED HEATING SETPOINT OF 71.0 DEG. F (ADJ.). THE UNIT SHALL TRANSITION TO THE COOLING MODE WHEN THE SPACE TEMPERATURE RISES ONE DEGREE ABOVE THE OCCUPIED COOLING SETPOINT OF 74.0 DEG. F (ADJ.). THE UNIT SHALL TRANSITION TO THE HEATING MODE WHEN THE SPACE TEMPERATURE DROPS ONE DEGREE BELOW THE OCCUPIED HEATING SETPOINT OF 74.0 DEG. F (ADJ.).
13. FILTER TIMER:
    THE FAN–RUN TIME (HRS) SHALL BE COMPARED TO THE FILTER MAINTENANCE TIMER SETPOINT. ONCE THE SETPOINT IS REACHED A FILTER TIMER ALARM DIAGNOSTIC SHALL BE ANNUNCIATED AT THE BAS. WHEN THE DIAGNOSTIC IS CLEARED, THE FILTER–MAINTENANCE TIMER IS RESET TO ZERO, AND THE TIMER BEGINS ACCUMULATING FAN–RUN TIME AGAIN.

B. FAN COIL UNITS:
1. COOLING OCCUPIED MODE: SUPPLY FANS SHALL BE ON, OA DAMPER SHALL BE AT MINIMUM POSITION, AND THE CONTROL VALVE SHALL MODULATE TO MAINTAIN SPACE TEMPERATURE.
2. COOLING UNOCCUPIED MODE: THE UNIT SHALL BE OFF AND THE OA DAMPER SHALL BE CLOSED.
3. HEATING OCCUPIED MODE: SUPPLY FANS SHALL BE ON, OA DAMPER SHALL BE AT MINIMUM POSITION, THE CONTROL VALVE SHALL MODULATE TO MAINTAIN SPACE TEMPERATURE.
4. HEATING UNOCCUPIED MODE: THE OA DAMPER SHALL BE CLOSED AND THE CONTROL VALVE SHALL BE WIDE OPEN. THE SUPPLY FANS SHALL CYCLE AND THE CONTROL VALVE SHALL MODULATE TO MAINTAIN SPACE TEMPERATURE AT THE NIGHT SETBACK VALUE.
5. MORNING WARM–UP/COOL–DOWN: THE UNIT SHALL AUTOMATICALLY WARM–UP/COOL–DOWN THE SPACE PRIOR TO OCCUPANCY BASED ON THE PROGRAMMABLE SCHEDULE.
6. BUILDING MANAGEMENT SYSTEM (BMS): EACH UNIT VENTILATOR INCLUDING DAMPER, CONTROL VALVES, THERMOSTATS, AND APPURTENANCES SHALL BE INTEGRATED WITH THE EXISTING SIEMENS BMS.

C. ROOFTOP AIR HANDLING UNITS:
1. SEE SPECIFICATION SECTION 230993.

IF THIS BAR DOES NOT MEASURE 1", THEN DRAWING IS NOT TO FULL SCALE
0 — 1/2 — 1

No.	Date	Revisions
3	12–17–21	ISSUED FOR BID
2	11–19–21	SED ADDENDUM 1
1	08–30–21	BIDDING DOCUMENTS

Drawn by WM
Checked by ERF
Project No. 41048
Scale AS NOTED
Date 08–30–21

GREENMAN PEDERSEN, INC
GPI BUILDING
MONTGOMERY, NY 12549

Mechanical & Electrical Engineer:

Structural Engineer:

UNIVENT REPLACEMENT AT HAVERSTRAW ELEMENTARY
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Drawing Title
MECHANICAL NOTES

Drawing No.
M-001

VRF HEAT RECOVERY OUTDOOR CONDENSING UNIT SCHEDULE

Tag Reference	Model Number	Modules	Nominal Cooling Capacity (BTU/h)	Nominal Heating Capacity (BTU/h)	Cooling Efficiency IEER/EER [SEER]	Heating COP @ 47°F [HSPF]	Nom System Connected Capacity (% of NOM)	Design Cooling Outdoor Temp DB (°F)	Design Heating Outdoor Temp WB (°F)	Refrigerant Pipe Dim. (See Note 4)	Corrected Cooling Total Capacity (BTU/h)	Corrected Heating Capacity (BTU/h)	Preliminary Added Field Charge (lbs) (See Note 5)	Electrical 208/230				Notes / Options
														Voltage / Phase	MCA	RFS	MOCP	
CU-1	TURYE1683AN40AN	P168	168,000.0	188,000.0	25.7 / 11.55	3.55	95.2%	87.0	10.8	7/8 / 1 1/8	161,812.2	116,233.7	41.4	208/230V / 3-phase 3-wire	57/53	70/70	90/80	SEE NOTES
CU-2	TURYE1683AN40AN	P168	168,000.0	188,000.0	25.7 / 11.55	3.55	89.3%	87.0	10.8	7/8 / 1 1/8	168,904.3	117,081.5	37.2	208/230V / 3-phase 3-wire	57/53	70/70	90/80	SEE NOTES
CU-3	TURYE1683AN40AN	P168	168,000.0	188,000.0	25.7 / 11.55	3.55	97.6%	87.0	10.8	7/8 / 1 1/8	165,288.8	117,637.5	32.5	208/230V / 3-phase 3-wire	57/53	70/70	90/80	SEE NOTES
CU-4	TURYE1683AN40AN	P168	168,000.0	188,000.0	25.7 / 11.55	3.55	92.9%	87.0	10.8	7/8 / 1 1/8	162,384.3	115,947.9	46.6	208/230V / 3-phase 3-wire	57/53	70/70	90/80	SEE NOTES
CU-5	TURYE1683AN40AN	P168	168,000.0	188,000.0	25.7 / 11.55	3.55	88.1%	87.0	10.8	7/8 / 1 1/8	157,289.8	113,679.3	54.5	208/230V / 3-phase 3-wire	57/53	70/70	90/80	SEE NOTES
CU-6	TURYE1443AN40AN	P144	144,000.0	160,000.0	26.9 / 12.3	3.67	91.7%	87.0	10.8	7/8 / 1 1/8	141,585.8	98,636.2	33.5	208/230V / 3-phase 3-wire	49/45	60/60	80/70	SEE NOTES
CU-7	TURYE1203AN40AN	P120	120,000.0	135,000.0	27.55 / 13.2	3.87	76.7%	87.0	10.8	3/4 / 1 1/8	123,425.0	83,382.0	26.0	208/230V / 3-phase 3-wire	41/38	60/60	60/60	SEE NOTES
CU-8	TURYE1443AN40AN	P144	144,000.0	160,000.0	26.9 / 12.3	3.67	97.2%	87.0	10.8	7/8 / 1 1/8	142,210.2	99,763.9	26.8	208/230V / 3-phase 3-wire	49/45	60/60	80/70	SEE NOTES
CU-9	TURYE1683AN40AN	P168	168,000.0	188,000.0	25.7 / 11.55	3.55	100.6%	87.0	10.8	7/8 / 1 1/8	157,679.7	115,937.2	52.3	208/230V / 3-phase 3-wire	57/53	70/70	90/80	SEE NOTES
CU-10	TURYE1683AN40AN	P168	168,000.0	188,000.0	25.7 / 11.55	3.55	94.0%	87.0	10.8	7/8 / 1 1/8	163,431.9	116,457.7	38.9	208/230V / 3-phase 3-wire	57/53	70/70	90/80	SEE NOTES
CU-11	TURYE1443AN40AN	P144	144,000.0	160,000.0	26.9 / 12.3	3.67	70.8%	87.0	10.8	7/8 / 1 1/8	148,717.8	100,475.3	24.9	208/230V / 3-phase 3-wire	49/45	60/60	80/70	SEE NOTES
CU-12	TURYE1683AN40AN	P168	168,000.0	188,000.0	25.7 / 11.55	3.55	89.3%	87.0	10.8	7/8 / 1 1/8	170,280.6	117,464.2	33.9	208/230V / 3-phase 3-wire	57/53	70/70	90/80	SEE NOTES

OUTDOOR CONDENSING UNIT SCHEDULE NOTES:
1. NOMINAL COOLING CAPACITIES ARE BASED ON INDOOR COIL EAT OF 80/67°F (DB/WB), OUTDOOR OF 95°F (DB)
2. NOMINAL HEATING CAPACITIES ARE BASED ON INDOOR COIL EAT OF 70°F (DB), OUTDOOR OF 43°F (WB)
3. EFFICIENCY VALUES FOR EER, IEER, COP ARE BASED ON AHRI 1230 TEST METHOD FOR MIXTURE OF DUCTED & NON-DUCTED INDOOR UNITS.
4. FOR SYSTEMS WITH MULTIPLE MODULES, REFRIGERANT PIPE DIMENSIONS INDICATE TOTAL SYSTEM COMBINED PIPING DOWNSTREAM OF MODULE TWINNING.
5. ADDED FIELD CHARGE LISTED IS IN ADDITION TO FACTORY CHARGE, THIS MUST BE UPDATED BASED UPON FINAL AS-BUILT PIPING LAYOUT.
6. COOLING EFFICIENCY FOR CONDENSING UNITS MUST BE 10% GREATER THAN LIMITS SET IN 2020 ECC NYS C406.2-10.5 EER, 11.8 IEER.
7. FACTORY REPRESENTATIVES SHALL STARTUP AND COMMISSION CITY MULTI EQUIPMENT UPON COMPLETION OF EQUIPMENT INSTALLATION.
8. FACTORY REPRESENTATIVES SHALL PROVIDE ON-SITE ASSISTANCE FOR THE BMS INTEGRATION OF THE CITY MULTI EQUIPMENT.

VRF HEAT RECOVERY BRANCH CIRCUIT CONTROLLER SCHEDULE

Tag Reference	System Tag	Model Number	Type (double / Main / Sub)	Number of Ports	Connected Capacity to BC	Voltage / Phase	Power Cooling 208V/230V (kW)	Power Heating 208V/230V (kW)	MCA 208/230	Notes / Options
BC-1	CU-1	TCMBM0108JA11N4	Main	8	160,000.0	208/230V/1-phase	0.137/0.176	0.076/0.098	0.83/0.97	1, 2, 3, 4
BC-2	CU-2	TCMBM0108JA11N4	Main	8	150,000.0	208/230V/1-phase	0.137/0.176	0.076/0.098	0.83/0.97	1, 2, 3, 4
BC-3	CU-3	TCMBM0108JA11N4	Main	8	164,000.0	208/230V/1-phase	0.137/0.176	0.076/0.098	0.83/0.97	1, 2, 3, 4
BC-4	CU-4	TCMBM0108JA11N4	Main	8	156,000.0	208/230V/1-phase	0.137/0.176	0.076/0.098	0.83/0.97	1, 2, 3, 4
BC-5	CU-5	TCMBM0108JA11N4	Main	8	148,000.0	208/230V/1-phase	0.137/0.176	0.076/0.098	0.83/0.97	1, 2, 3, 4
BC-6	CU-6	TCMBM0108JA11N4	Main	8	132,000.0	208/230V/1-phase	0.137/0.176	0.076/0.098	0.83/0.97	1, 2, 3, 4
BC-7	CU-7	TCMBM0108JA11N4	Main	8	92,000.0	208/230V/1-phase	0.137/0.176	0.076/0.098	0.83/0.97	1, 2, 3, 4
BC-8	CU-8	TCMBM0108JA11N4	Main	8	140,000.0	208/230V/1-phase	0.137/0.176	0.076/0.098	0.83/0.97	1, 2, 3, 4
BC-9	CU-9	TCMBM1016JA11N4	Main	16	169,000.0	208/230V/1-phase	0.258/0.333	0.137/0.176	1.57/1.82	1, 2, 3, 4
BC-10	CU-10	TCMBM0108JA11N4	Main	8	158,000.0	208/230V/1-phase	0.137/0.176	0.076/0.098	0.83/0.97	1, 2, 3, 4
BC-11	CU-11	TCMBM0108JA11N4	Main	8	102,000.0	208/230V/1-phase	0.137/0.176	0.076/0.098	0.83/0.97	1, 2, 3, 4
BC-12	CU-12	TCMBM0108JA11N4	Main	8	150,000.0	208/230V/1-phase	0.137/0.176	0.076/0.098	0.83/0.97	1, 2, 3, 4

BC CONTROLLER SCHEDULE NOTES:
1. INCLUDE DIAMONDBACK BALL VALVES BV-SERIES, 700PSIG WORKING PRESSURE, FULL PORT, 410A RATED.
2. A SUB BC CONTROLLER IS NOT REQUIRED FOR THIS PROJECT. FOR SUB BC CONTROLLER INFO, SEE MANUFACTURER'S INSTALLATION INSTRUCTIONS.
3. PROVIDE REFRIGERATION BALL VALVE-BRAZE/SCHRADER/INSULATED - 3/8" SIZE
4. PROVIDE REFRIGERATION BALL VALVE-BRAZE/SCHRADER/INSULATED - 5/8" SIZE

STEAM HEATING COIL

UNIT SERVED	RTU-2	RTU-3
LOCATION	RTU-2	RTU-3
BTU/HR	125,000	137,500
STEAM FLOW RATE (LB/H)	318	318
AIRFLOW (CFM)	8,085	8,328
ENTERING AIR TEMP (F)	45.4	45.4
LEAVING AIR TEMP (F)	80.5	80.5
ENTERING STEAM PRESSURE (PSIG)	2	2
STEAM PRESSURE DROP (PSIG)	1	1
AIRSIDE PRESSURE DROP (IN WC)	0.25	0.25
NOMINAL TUBE DIAMETER (IN)	1	1
TUBE THICKNESS (IN)	0.035	0.035

REMARKS:
1. PROVIDE STEAM DISTRIBUTING TYPE COIL.
2. THIS COIL SHALL BE A STANDARD PRODUCT OF THE RTU MANUFACTURER AND SHALL BE INTEGRAL TO THE RTU HEATING SECTION. REFER TO THE ROOFTOP UNIT SCHEDULE FOR RTU DETAILS.

ROOFTOP AIR HANDLING UNITS

UNIT TAG	AREA SERVED	REFRIGERANT	TOTAL SUPPLY AIRFLOW (CFM)	MINIMUM OUTSIDE AIRFLOW (CFM)		MAXIMUM OUTSIDE AIRFLOW (CFM)	EXTERNAL STATIC PRESSURE (IN W.C.)	COOLING						HEATING (SEE STEAM HEATING COIL SCHEDULE)		FILTER	ELECTRICAL			SUPPLY FAN MOTOR INFO		UNIT WEIGHT (LBS)	UNIT DIMENSIONS (LxWxH, IN)	BASIS OF DESIGN	REMARKS
				COOLING	HEATING			NOMINAL CAPACITY (TONS)	MIN. TOTAL CAPACITY (MBH)	MIN. SENSIBLE CAPACITY (MBH)	MINIMUM EER	MINIMUM IEER	CONDENSER EAT (°F DB)			MERV	MCA	MOP	VOLT/PH/HZ	HP	BHP				
RTU-2	AUDITORIUM (218)	R410A	12000	6200	6200	12000	1.0	27.50	364.82	261.04	11.0	13.6	95	–	–	14	161.97	175	208/3/60	10	8.30	5000	180x90x72	TRANE TCD330BE	SEE NOTES
RTU-3	GYMNASIUM (220)	R410A	11500	2500	2500	11500	1.0	30.00	350.91	247.60	10.6	13.3	95	–	–	14	170.53	200	208/3/60	10	7.67	5000	180x90x72	TRANE TCD360BE	SEE NOTES

PACKAGED ROOFTOP UNIT SCHEDULE NOTES:
1. PROVIDE SINGLE ZONE VARIABLE AIR VOLUME (SZVAV) CONTROL AND VARIABLE SPEED COMPRESSORS (TRANE eFLEX OR EQUAL).
2. PROVIDE LOW LEAKAGE REFERENCE OR COMPARATIVE ENTHALPY ECONOMIZER WITH FAULT DETECTION DIAGNOSIS AND BAROMETRIC RELIEF DAMPER.
3. PROVIDE CO2 BASED DEMAND CONTROLLED VENTILATION WITH FIELD INSTALLED, WALL MOUNTED CO2 SENSORS. SEE SPEC 237313, 2.20 FOR MORE INFO.
4. PROVIDE ROOF CURB, 24" HIGH U.O.N. REFER TO DETAIL 6/M502.
5. PROVIDE DISCONNECT SWITCH AND POWERED CONVENIENCE OUTLET.
6. PROVIDE WITH MANUFACTURER'S STANDARD STEAM HEATING COIL SECTION. REFER TO THE STEAM COIL SCHEDULE ON THIS DRAWING.
7. PROVIDE DUCT SMOKE DETECTORS FOR BOTH THE SUPPLY AND RETURN AIR, SEE GENERAL NOTE #5 ON M-004.
8. PROVIDE MOTORIZED DAMPERS AT OUTSIDE AND EXHAUST AIR OPENINGS. SEE HVAC NOTE #16 ON M-001.
9. PROVIDE FREEZESTAT FOR FROST PROTECTION. FOR OTHER REQUIRED SENSORS AND CONTROLS, SEE DRAWING M-004, SPEC 230993 AND 237313.
10. PROVIDE UNIT MOUNTED DISCONNECT SWITCH WITH VFD, SEE DRAWING M-004.

0 1/2 1
IF THIS BAR DOES NOT MEASURE 1", THEN DRAWING IS NOT TO FULL SCALE

No.	Date	Revisions
3	12-17-21	ISSUED FOR BID
2	11-19-21	SED ADDENDUM 1
1	08-30-21	BIDDING DOCUMENTS

Drawn by WM
Checked by ERF
Project No. 41048
Scale AS NOTED
Date 08-30-21

GREENMAN PEDERSEN, INC
400 RELLA BOULEVARD
MONTEBELLO, NY 10901

Mechanical & Electrical Engineer: - -
Structural Engineer: - -

UNIVENT REPLACEMENT AT HAVERSTRAW ELEMENTARY
SED# 50-02-01-06-0-009-018
COUNTY OF ROCKLAND
16 Crest Street
Haverstraw, NY 10927

MICHAEL SHILALE ARCHITECTS, L.L.P.
140 Park Avenue New City, NY 10956 Tel 845-708-9200
www.shilale.com

Drawing Title
MECHANICAL SCHEDULES

Drawing No.
M-002

VRF HEAT RECOVERY INDOOR UNIT SCHEDULE

Tag Reference	Related System	Room Name	Model	Type	Nominal Cooling Capacity (BTU/h)	Nominal Heating Capacity (BTU/h)	Cooling Design Entering Temp DB/WB (°F)	Heating Design Entering Temp DB/WB (°F)	Cooling Total Capacity (BTU/h)	Cooling Sensible Capacity (BTU/h)	Heating Capacity (BTU/h)	Estimated Cooling Coil LAT (°F)	Estimated Heating Coil LAT (°F)	Refrig Pipe Dim Liquid/Suction (inch)	Voltage / Phase	Power 208V Cooling/Heating (KW)	Electrical MCA/MFS	Notes / Options
UV-101	CU-1	CR 101	30000 Btu/h LEV Kit	LEV KIT	30,000.0	34,000.0	78.0/67.9	72.0	30,157.2	Dependent on 3rd Party Coil	21,809.8	78.0	72.0	3/8 / 5/8	208/230V/1-phase	0.012 / 0.012	/16	1, 2, 3, 4, 5, 6
UV-102	CU-1	CR 102	30000 Btu/h LEV Kit	LEV KIT	30,000.0	34,000.0	78.0/67.9	72.0	30,157.2	Dependent on 3rd Party Coil	21,809.8	78.0	72.0	3/8 / 5/8	208/230V/1-phase	0.012 / 0.012	/16	1, 2, 3, 4, 5, 6
UV-103	CU-1	CR 103	30000 Btu/h LEV Kit	LEV KIT	30,000.0	34,000.0	78.0/67.9	72.0	30,157.2	Dependent on 3rd Party Coil	21,809.8	78.0	72.0	3/8 / 5/8	208/230V/1-phase	0.012 / 0.012	/16	1, 2, 3, 4, 5, 6
UV-104	CU-1	CR 104	30000 Btu/h LEV Kit	LEV KIT	30,000.0	34,000.0	78.0/67.9	72.0	30,157.2	Dependent on 3rd Party Coil	21,809.8	78.0	72.0	3/8 / 5/8	208/230V/1-phase	0.012 / 0.012	/16	1, 2, 3, 4, 5, 6
AC-1A	CU-1	AP 105D	TPLFYP005FM140A	Ceiling-Cassette (Four-Way)	5,000.0	5,600.0	78.0/67.9	72.0	5,026.2	3,757.3	3,592.2	65.4	83.9	1/4 / 1/2	208/230V/1-phase	0.02 / 0.02	0.24/15	1, 2, 3, 4, 5, 6
AC-1B	CU-1	Kitchenette 105	TPLFYP005FM140A	Ceiling-Cassette (Four-Way)	5,000.0	5,600.0	78.0/67.9	72.0	5,026.2	3,757.3	3,592.2	65.4	83.9	1/4 / 1/2	208/230V/1-phase	0.02 / 0.02	0.24/15	1, 2, 3, 4, 5, 6
UV-106	CU-1	CR 106	30000 Btu/h LEV Kit	LEV KIT	30,000.0	34,000.0	78.0/67.9	72.0	30,157.2	Dependent on 3rd Party Coil	21,809.8	78.0	72.0	3/8 / 5/8	208/230V/1-phase	0.012 / 0.012	/16	1, 2, 3, 4, 5, 6
UV-201	CU-2	CR 201	30000 Btu/h LEV Kit	LEV KIT	30,000.0	34,000.0	78.0/67.9	72.0	30,157.2	Dependent on 3rd Party Coil	23,416.3	78.0	72.0	3/8 / 5/8	208/230V/1-phase	0.012 / 0.012	/16	1, 2, 3, 4, 5, 6
UV-202	CU-2	CR 202	30000 Btu/h LEV Kit	LEV KIT	30,000.0	34,000.0	78.0/67.9	72.0	30,157.2	Dependent on 3rd Party Coil	23,416.3	78.0	72.0	3/8 / 5/8	208/230V/1-phase	0.012 / 0.012	/16	1, 2, 3, 4, 5, 6
UV-203	CU-2	CR 203	30000 Btu/h LEV Kit	LEV KIT	30,000.0	34,000.0	78.0/67.9	72.0	30,157.2	Dependent on 3rd Party Coil	23,416.3	78.0	72.0	3/8 / 5/8	208/230V/1-phase	0.012 / 0.012	/16	1, 2, 3, 4, 5, 6
UV-204	CU-2	CR 204	30000 Btu/h LEV Kit	LEV KIT	30,000.0	34,000.0	78.0/67.9	72.0	30,157.2	Dependent on 3rd Party Coil	23,416.3	78.0	72.0	3/8 / 5/8	208/230V/1-phase	0.012 / 0.012	/16	1, 2, 3, 4, 5, 6
UV-205	CU-2	CR 205	30000 Btu/h LEV Kit	LEV KIT	30,000.0	34,000.0	78.0/67.9	72.0	30,157.2	Dependent on 3rd Party Coil	23,416.3	78.0	72.0	3/8 / 5/8	208/230V/1-phase	0.012 / 0.012	/16	1, 2, 3, 4, 5, 6
UV-301	CU-3	CR 301	30000 Btu/h LEV Kit	LEV KIT	30,000.0	34,000.0	78.0/67.9	72.0	30,157.2	Dependent on 3rd Party Coil	21,619.9	78.0	72.0	3/8 / 5/8	208/230V/1-phase	0.012 / 0.012	/16	1, 2, 3, 4, 5, 6
UV-302	CU-3	CR 302	30000 Btu/h LEV Kit	LEV KIT	30,000.0	34,000.0	78.0/67.9	72.0	30,157.2	Dependent on 3rd Party Coil	21,619.9	78.0	72.0	3/8 / 5/8	208/230V/1-phase	0.012 / 0.012	/16	1, 2, 3, 4, 5, 6
UV-303	CU-3	CR 303	36000 Btu/h LEV Kit	LEV KIT	36,000.0	40,000.0	78.0/67.9	72.0	36,188.6	Dependent on 3rd Party Coil	25,435.1	78.0	72.0	3/8 / 5/8	208/230V/1-phase	0.012 / 0.012	/16	1, 2, 3, 4, 5, 6
UV-304	CU-3	CR 304	30000 Btu/h LEV Kit	LEV KIT	30,000.0	34,000.0	78.0/67.9	72.0	30,157.2	Dependent on 3rd Party Coil	21,619.9	78.0	72.0	3/8 / 5/8	208/230V/1-phase	0.012 / 0.012	/16	1, 2, 3, 4, 5, 6
AC-3A	CU-3	CR 305	TPEFYP008MA143A	Ceiling-Concealed (Ducted)	8,000.0	9,000.0	78.0/67.9	72.0	8,041.9	5,558.7	5,722.9	60.6	89.8	1/4 / 1/2	208/230V/1-phase	0.06 / 0.04	1.05/15	1, 2, 3, 4, 5, 6, 8
UV-306	CU-3	CR 306	30000 Btu/h LEV Kit	LEV KIT	30,000.0	34,000.0	78.0/67.9	72.0	30,157.2	Dependent on 3rd Party Coil	21,619.9	78.0	72.0	3/8 / 5/8	208/230V/1-phase	0.012 / 0.012	/16	1, 2, 3, 4, 5, 6
AC-4A	CU-4	Main Office 105A	TPEFYP008MA143A	Ceiling-Concealed (Ducted)	8,000.0	9,000.0	78.0/67.9	72.0	8,041.9	5,558.7	5,939.3	60.6	90.4	1/4 / 1/2	208/230V/1-phase	0.06 / 0.04	1.05/15	1, 2, 3, 4, 5, 6, 8
AC-4B	CU-4	Principal 105C	TPEFYP006MA143A	Ceiling-Concealed (Ducted)	6,000.0	6,700.0	78.0/67.9	72.0	6,031.4	4,892.2	4,421.5	78.0	85.7	1/4 / 1/2	208/230V/1-phase	0.06 / 0.04	1.05/15	1, 2, 3, 4, 5, 6, 8
AC-4C	CU-4	Conference 105B	TPEFYP008MA143A	Ceiling-Concealed (Ducted)	8,000.0	9,000.0	78.0/67.9	72.0	8,041.9	5,558.7	5,939.3	60.6	90.4	1/4 / 1/2	208/230V/1-phase	0.06 / 0.04	1.05/15	1, 2, 3, 4, 5, 6, 8
UV-206	CU-4	CR 206	30000 Btu/h LEV Kit	LEV KIT	30,000.0	34,000.0	78.0/67.9	72.0	30,157.2	Dependent on 3rd Party Coil	21,619.9	78.0	72.0	3/8 / 5/8	208/230V/1-phase	0.012 / 0.012	/16	1, 2, 3, 4, 5, 6
UV-207	CU-4	CR 207	30000 Btu/h LEV Kit	LEV KIT	30,000.0	34,000.0	78.0/67.9	72.0	30,157.2	Dependent on 3rd Party Coil	22,437.3	78.0	72.0	3/8 / 5/8	208/230V/1-phase	0.012 / 0.012	/16	1, 2, 3, 4, 5, 6
UV-208	CU-4	CR 208	30000 Btu/h LEV Kit	LEV KIT	30,000.0	34,000.0	78.0/67.9	72.0	30,157.2	Dependent on 3rd Party Coil	22,437.3	78.0	72.0	3/8 / 5/8	208/230V/1-phase	0.012 / 0.012	/16	1, 2, 3, 4, 5, 6
UV-307	CU-4	CR 307	36000 Btu/h LEV Kit	LEV KIT	36,000.0	40,000.0	78.0/67.9	72.0	36,188.6	Dependent on 3rd Party Coil	26,396.8	78.0	72.0	3/8 / 5/8	208/230V/1-phase	0.012 / 0.012	/16	1, 2, 3, 4, 5, 6
AC-4D	CU-4	CR 309	TPEFYP008MA143A	Ceiling-Concealed (Ducted)	8,000.0	9,000.0	78.0/67.9	72.0	8,041.9	5,558.7	5,939.3	60.6	90.4	1/4 / 1/2	208/230V/1-phase	0.06 / 0.04	1.05/15	1, 2, 3, 4, 5, 6, 8
UV-186	CU-5	Music 186	30000 Btu/h LEV Kit	LEV KIT	30,000.0	34,000.0	78.0/67.9	72.0	30,157.2	Dependent on 3rd Party Coil	23,116.6	78.0	72.0	3/8 / 5/8	208/230V/1-phase	0.012 / 0.012	/16	1, 2, 3, 4, 5, 6
AC-5C	CU-5	Music 185	TPVFYP018AM141A	Multi-Position Air Handler	18,000.0	40,000.0	78.0/67.9	72.0	18,094.3	11,937.6	13,598.0	58.8	93.6	1/4 / 1/2	208/230V/1-phase	0.13 / 0.13	3.0/15	1, 2, 3, 4, 5, 6
UV-190	CU-5	Home Ec 190	30000 Btu/h LEV Kit	LEV KIT	30,000.0	34,000.0	78.0/67.9	72.0	30,157.2	Dependent on 3rd Party Coil	23,116.6	78.0	72.0	3/8 / 5/8	208/230V/1-phase	0.012 / 0.012	/16	1, 2, 3, 4, 5, 6
UV-195A	CU-5	Home Ec 195A	30000 Btu/h LEV Kit	LEV KIT	30,000.0	34,000.0	78.0/67.9	72.0	30,157.2	Dependent on 3rd Party Coil	23,116.6	78.0	72.0	3/8 / 5/8	208/230V/1-phase	0.012 / 0.012	/16	1, 2, 3, 4, 5, 6
AC-5A	CU-5	Office 220A	TPLFYP005FM140A	Ceiling-Cassette (Four-Way)	5,000.0	5,600.0	78.0/67.9	72.0	5,026.2	3,757.3	3,807.4	65.4	84.7	1/4 / 1/2	208/230V/1-phase	0.02 / 0.02	0.24/15	1, 2, 3, 4, 5, 6
AC-5B	CU-5	Office 220B	TPLFYP005FM140A	Ceiling-Cassette (Four-Way)	5,000.0	5,600.0	78.0/67.9	72.0	5,026.2	3,757.3	3,807.4	65.4	84.7	1/4 / 1/2	208/230V/1-phase	0.02 / 0.02	0.24/15	1, 2, 3, 4, 5, 6
UV-105B	CU-5	Conference 105B	30000 Btu/h LEV Kit	LEV KIT	30,000.0	34,000.0	78.0/67.9	72.0	30,157.2	Dependent on 3rd Party Coil	23,116.6	78.0	72.0	3/8 / 5/8	208/230V/1-phase	0.012 / 0.012	/16	1, 2, 3, 4, 5, 6
UV-180A-1	CU-6	Room 180A	36000 Btu/h LEV Kit	LEV KIT	36,000.0	40,000.0	78.0/67.9	72.0	36,188.6	Dependent on 3rd Party Coil	27,023.6	78.0	72.0	3/8 / 5/8	208/230V/1-phase	0.012 / 0.012	/16	1, 2, 3, 4, 5, 6
UV-180A-2	CU-6	Room 180A	36000 Btu/h LEV Kit	LEV KIT	36,000.0	40,000.0	78.0/67.9	72.0	36,188.6	Dependent on 3rd Party Coil	27,023.6	78.0	72.0	3/8 / 5/8	208/230V/1-phase	0.012 / 0.012	/16	1, 2, 3, 4, 5, 6
UV-175	CU-6	Room 175	60000 Btu/h LEV Kit	LEV KIT	60,000.0	66,000.0	78.0/67.9	72.0	60,314.4	Dependent on 3rd Party Coil	44,589.0	78.0	72.0	3/8 / 3/4	208/230V/1-phase	0.012 / 0.012	/16	1, 2, 3, 4, 5, 6
UV-221	CU-7	Locker Rm 221	36000 Btu/h LEV Kit	LEV KIT	36,000.0	40,000.0	78.0/67.9	72.0	36,188.6	Dependent on 3rd Party Coil	32,571.1	78.0	72.0	3/8 / 5/8	208/230V/1-phase	0.012 / 0.012	/16	1, 2, 3, 4, 5, 6
UV-222	CU-7	Locker Rm 222	36000 Btu/h LEV Kit	LEV KIT	36,000.0	40,000.0	78.0/67.9	72.0	36,188.6	Dependent on 3rd Party Coil	32,571.1	78.0	72.0	3/8 / 5/8	208/230V/1-phase	0.012 / 0.012	/16	1, 2, 3, 4, 5, 6
AC-7A	CU-7	Office 222C	TPLFYP005FM140A	Ceiling-Cassette (Four-Way)	5,000.0	5,600.0	78.0/67.9	72.0	5,026.2	3,757.3	4,560.0	65.4	87.2	1/4 / 1/2	208/230V/1-phase	0.02 / 0.02	0.24/15	1, 2, 3, 4, 5, 6, 7
AC-7B	CU-7	Office 222B	TPLFYP005FM140A	Ceiling-Cassette (Four-Way)	5,000.0	5,600.0	78.0/67.9	72.0	5,026.2	3,757.3	4,560.0	65.4	87.2	1/4 / 1/2	208/230V/1-phase	0.02 / 0.02	0.24/15	1, 2, 3, 4, 5, 6, 7
AC-7C	CU-7	Office 221B	TPLFYP005FM140A	Ceiling-Cassette (Four-Way)	5,000.0	5,600.0	78.0/67.9	72.0	5,026.2	3,757.3	4,560.0	65.4	87.2	1/4 / 1/2	208/230V/1-phase	0.02 / 0.02	0.24/15	1, 2, 3, 4, 5, 6, 7
AC-7D	CU-7	Office 221C	TPLFYP005FM140A	Ceiling-Cassette (Four-Way)	5,000.0	5,600.0	78.0/67.9	72.0	5,026.2	3,757.3	4,560.0	65.4	87.2	1/4 / 1/2	208/230V/1-phase	0.02 / 0.02	0.24/15	1, 2, 3, 4, 5, 6, 7
UV-207-1	CU-8	Library 207	36000 Btu/h LEV Kit	LEV KIT	36,000.0	40,000.0	78.0/67.9	72.0	36,188.6	Dependent on 3rd Party Coil	25,745.5	78.0	72.0	3/8 / 5/8	208/230V/1-phase	0.012 / 0.012	/16	1, 2, 3, 4, 5, 6
UV-207-2	CU-8	Library 207	36000 Btu/h LEV Kit	LEV KIT	36,000.0	40,000.0	78.0/67.9	72.0	36,188.6	Dependent on 3rd Party Coil	25,745.5	78.0	72.0	3/8 / 5/8	208/230V/1-phase	0.012 / 0.012	/16	1, 2, 3, 4, 5, 6
UV-311	CU-8	Science 311	60000 Btu/h LEV Kit	LEV KIT	60,000.0	66,000.0	78.0/67.9	72.0	60,314.4	Dependent on 3rd Party Coil	42,480.1	78.0	72.0	3/8 / 3/4	208/230V/1-phase	0.012 / 0.012	/16	1, 2, 3, 4, 5, 6
AC-8A	CU-8	Office 209A	TPEFYP008MA143A	Ceiling-Concealed (Ducted)	8,000.0	9,000.0	78.0/67.9	72.0	8,041.9	5,558.7	5,792.7	60.6	90.0	1/4 / 1/2	208/230V/1-phase	0.06 / 0.04	1.05/15	1, 2, 3, 4, 5, 6, 8
AC-9A	CU-9	Office 107B	TPEFYP006MA143A	Ceiling-Concealed (Ducted)	6,000.0	6,700.0	78.0/67.9	72.0	5,598.1	4,738.6	4,071.2	63.1	84.6	1/4 / 1/2	208/230V/1-phase	0.06 / 0.04	1.05/15	1, 2, 3, 4, 5, 6, 8
AC-9B	CU-9	Office 107F	TPEFYP006MA143A	Ceiling-Concealed (Ducted)	6,000.0	6,700.0	78.0/67.9	72.0	5,598.1	4,738.6	4,071.2	63.1	84.6	1/4 / 1/2	208/230V/1-phase	0.06 / 0.04	1.05/15	1, 2, 3, 4, 5, 6
AC-9C	CU-9	Office 107D	TPEFYP006MA143A	Ceiling-Concealed (Ducted)	6,000.0	6,700.0	78.0/67.9	72.0	5,598.1	4,738.6	4,071.2	63.1	84.6	1/4 / 1/2	208/230V/1-phase	0.06 / 0.04	1.05/15	1, 2, 3, 4, 5, 6, 8
AC-9E	CU-9	Office 107E	TPEFYP006MA143A	Ceiling-Concealed (Ducted)	6,000.0	6,700.0	78.0/67.9	72.0	5,598.1	4,738.6	4,071.2	63.1	84.6	1/4 / 1/2	208/230V/1-phase	0.06 / 0.04	1.05/15	1, 2, 3, 4, 5, 6
AC-9I	CU-9	Office 108E	TPLFYP005FM140A	Ceiling-Cassette (Four-Way)	5,000.0	5,600.0	78.0/67.9	72.0	4,665.1	3,626.6	3,402.8	65.8	83.3	1/4 / 1/2	208/230V/1-phase	0.02 / 0.02	0.24/15	1, 2, 3, 4, 5, 6
AC-9F	CU-9	Office 108B	TPLFYP005FM140A	Ceiling-Cassette (Four-Way)	5,000.0	5,600.0	78.0/67.9	72.0	4,665.1	3,626.6	3,402.8	65.8	83.3	1/4 / 1/2	208/230V/1-phase	0.02 / 0.02	0.24/15	1, 2, 3, 4, 5, 6
AC-9G	CU-9	Office 108C	TPLFYP005FM140A	Ceiling-Cassette (Four-Way)	5,000.0	5,600.0	78.0/67.9	72.0	4,665.1	3,626.6	3,402.8	65.8	83.3	1/4 / 1/2	208/230V/1-phase	0.02 / 0.02	0.24/15	1, 2, 3, 4, 5, 6
AC-9H	CU-9	Office 108D	TPLFYP005FM140A	Ceiling-Cassette (Four-Way)	5,000.0	5,600.0	78.0/67.9	72.0	4,665.1	3,626.6	3,402.8	65.8	83.3	1/4 / 1/2	208/230V/1-phase	0.02 / 0.02	0.24/15	1, 2, 3, 4, 5, 6
UV-107	CU-9	CR 107	30000 Btu/h LEV Kit	LEV KIT	30,000.0	34,000.0	78.0/67.9	72.0	27,990.5	Dependent on 3rd Party Coil	20,659.7	78.0	72.0	3/8 / 5/8	208/230V/1-phase	0.012 / 0.012	/16	1, 2, 3, 4, 5, 6
UV-109	CU-9	CR 109	30000 Btu/h LEV Kit	LEV KIT	30,000.0	34,000.0	78.0/67.9	72.0	27,990.5	Dependent on 3rd Party Coil	20,659.7	78.0	72.0	3/8 / 5/8	208/230V/1-phase	0.012 / 0.012	/16	1, 2, 3, 4, 5, 6
UV-111	CU-9	CR 111	30000 Btu/h LEV Kit	LEV KIT	30,000.0	34,000.0	78.0/67.9	72.0	27,990.5	Dependent on 3rd Party Coil	20,659.7	78.0	72.0	3/8 / 5/8	208/230V/1-phase	0.012 / 0.012	/16	1, 2, 3, 4, 5, 6
AC-9J	CU-9	Office 110A	TPLFYP005FM140A	Ceiling-Cassette (Four-Way)	5,000.0	5,600.0	78.0/67.9	72.0	4,665.1	3,626.6	3,402.8	65.8	83.3	1/4 / 1/2	208/230V/1-phase	0.02 / 0.02	0.24/15	1, 2, 3, 4, 5, 6
UV-110	CU-9	CR 110-Art	30000 Btu/h LEV Kit	LEV KIT	30,000.0	34,000.0	78.0/67.9	72.0	30,157.2	Dependent on 3rd Party Coil	22,120.5	78.0	72.0	3/8 / 5/8	208/230V/1-phase	0.012 / 0.012	/16	1, 2, 3, 4, 5, 6
UV-209	CU-10	CR 209	30000 Btu/h LEV Kit	LEV KIT	30,000.0	34,000.0	78.0/67.9	72.0	30,157.2	Dependent on 3rd Party Coil	22,120.5	78.0	72.0	3/8 / 5/8	208/230V/1-phase	0.012 / 0.012	/16	1, 2, 3, 4, 5, 6
UV-210	CU-10	CR 210	30000 Btu/h LEV Kit	LEV KIT	30,000.0	34,000.0	78.0/67.9	72.0	30,157.2	Dependent on 3rd Party Coil	22,120.5	78.0	72.0	3/8 / 5/8	208/230V/1-phase	0.012 / 0.012	/16	1, 2, 3, 4, 5, 6
AC-10A	CU-10	CR 211	TPEFYP008MA143A	Ceiling-Concealed (Ducted)	8,000.0	9,000.0	78.0/67.9	72.0	8,041.9	5,558.7	5,855.4	60.6	90.2	1/4 / 1/2	208/230V/1-phase	0.06 / 0.04	1.05/15	1, 2, 3, 4, 5, 6, 8
UV-213	CU-10	CR 213	30000 Btu/h LEV Kit	LEV KIT	30,000.0	34,000.0	78.0/67.9	72.0	30,157.2	Dependent on 3rd Party Coil	22,120.5	78.0	72.0	3/8 / 5/8	208/230V/1-phase	0.012 / 0.012	/16	1, 2, 3, 4, 5, 6
UV-215	CU-10	CR 215	30000 Btu/h LEV Kit	LEV KIT	30,000.0	34,000.0	78.0/67.9	72.0	30,157.2	Dependent on 3rd Party Coil	22,120.5	78.0	72.0	3/8 / 5/8	208/230V/1-phase	0.012 / 0.012	/16	1, 2, 3, 4, 5, 6
UV-212	CU-10	CR 212	30000 Btu/h LEV Kit	LEV KIT	30,000.0	34,000.0	78.0/67.9	72.0	30,157.2	Dependent on 3rd Party Coil	22,120.5	78.0	72.0	3/8 / 5/8	208/230V/1-phase	0.012 / 0.012	/16	1, 2, 3, 4, 5, 6
AC-11A	CU-11	Resource 317	TPEFYP006MA143A	Ceiling-Concealed (Ducted)	6,000.0	6,700.0	78.0/67.9	72.0	6,031.4	4,892.2	5,936.4	62.7	90.4	1/4 / 1/2	208/230V/1-phase	0.06 / 0.04	1.05/15	1, 2, 3, 4, 5, 6, 8
UV-313	CU-11	CR 313 - Science	60000 Btu/h LEV Kit	LEV KIT	60,000.0	66,000.0	78.0/67.9	72.0	60,314.4	Dependent on 3rd Party Coil	58,477.7	78.0	72.0	3/8 / 3/4	208/230V/1-phase	0.012 / 0.012	/16	1, 2, 3, 4, 5, 6
UV-310	CU-11	CR 310	30000 Btu/h LEV Kit	LEV KIT	30,000.0	34,000.0	78.0/67.9	72.0	30,157.2	Dependent on 3rd Party Coil	30,124.9	78.0	72.0	3/8 / 5/8	208/230V/1-phase	0.012 / 0.012	/16	1, 2, 3, 4, 5, 6
AC-11B	CU-11	Prep 311B	TPEFYP006MA143A	Ceiling-Concealed (Ducted)	6,000.0	6,700.0	78.0/67.9	72.0	6,031.4	4,892.2	5,936.4	62.7	90.4	1/4 / 1/2	208/230V/1-phase	0.06 / 0.04	1.05/15	1, 2, 3, 4, 5, 6, 8
UV-314	CU-12	CR 314	30000 Btu/h LEV Kit	LEV KIT	30,000.0	34,000.0	78.0/67.9	72.0	30,157.2	Dependent on 3rd Party Coil	23,492.8	78.0	72.0	3/8 / 5/8	208/230V/1-phase	0.012 / 0.012	/16	1, 2, 3, 4, 5, 6
UV-321	CU-12	CR 321	30000 Btu/h LEV Kit	LEV KIT	30,000.0	34,000.0	78.0/67.9	72.0	30,157.2	Dependent on 3rd Party Coil	23,492.8	78.0	72.0	3/8 / 5/8	208/230V/1-phase	0.012 / 0.012	/16	1, 2, 3, 4, 5, 6
UV-319	CU-12	CR 319	30000 Btu/h LEV Kit	LEV KIT	30,000.0	34,000.0	78.0/67.9	72.0	30,157.2	Dependent on 3rd Party Coil	23,492.8	78.0	72.0	3/8 / 5/8	208/230V/1-phase	0.012 / 0.012	/16	1, 2, 3, 4, 5, 6
UV-312	CU-12	CR 312	30000 Btu/h LEV Kit	LEV KIT	30,000.0	34,000.0	78.0/67.9	72.0	30,157.2	Dependent on 3rd Party Coil	23,492.8	78.0	72.0	3/8 / 5/8	208/230V/1-phase	0.012 / 0.012	/16	1, 2, 3, 4, 5, 6
UV-216	CU-12	CR 216	30000 Btu/h LEV Kit	LEV KIT	30,000.0	34,000.0	78.0/67.9	72.0	30,157.2	Dependent on 3rd Party Coil	23,492.8	78.0	72.0	3/8 / 5/8	208/230V/1-phase	0.012 / 0.012	/16	1, 2, 3, 4, 5, 6

INDOOR UNIT SCHEDULE NOTES:

1. NOMINAL COOLING CAPACITIES ARE BASED ON INDOOR COIL EAT OF 80/67°F (DB/WB), OUTDOOR OF 95°F (DB)
2. NOMINAL HEATING CAPACITIES ARE BASED ON INDOOR COIL EAT OF 70°F (DB), OUTDOOR OF 43°F (WB)
3. SEE OUTDOOR UNIT SCHEDULE FOR OUTDOOR AMBIENT CONDITIONS, CONNECTED CAPACITY, AND OTHER FACTORS ASSOCIATED WITH CORRECTED CAPACITIES
4. SEE SCHEMATIC PIPING/CONTROL DIAGRAM FOR INDICATION OF REQUIRED INDOOR UNIT REMOTE CONTROLLERS, SYSTEM CONTROLLERS, AND INTEGRATION DEVICES.
5. FULL DEMAND CORRECTED CAPACITY INCLUDES DE-RATE ASSOCIATED WITH INDOOR VS. OUTDOOR CONNECTED CAPACITY INDICATED ON OUTDOOR UNIT SCHEDULE FOR ASSOCIATED SYSTEM. PARTIAL CORRECTED CAPACITY ASSUMES SUFFICIENT DIVERSITY EXISTS SUCH THAT THE CONNECTED CAPACITY DE-RATE DOES NOT APPLY, IT IS THE DESIGNER'S RESPONSIBILITY TO ENSURE "DIAMOND SYSTEM BUILDER" IS SET IN THE APPROPRIATE OUTPUT CAPACITY SETTING (FULL DEMAND/PARTIAL DEMAND) PRIOR TO GENERATING THIS SCHEDULE.
6. IT IS RECOMMENDED TO ALWAYS BASE HEATING CORRECTED CAPACITY ON FULL DEMAND.
7. NOT USED
8. PROVIDE FILTER BOX WITH MERV 13 FILTERS

GENERAL NOTE

1. LEV KITS AT EACH UNIT VENTILATOR REQUIRE 208V POWER FOR CONTROL BOX.
2. CONTRACTOR TO PROVIDE SINGLE PHASE 120/208V STEP UP TRANSFORMER ALONG WITH LEV KIT AND INSTALL INSIDE THE UNIT VENTILATOR.
3. CONTRACTOR TO CONFIRM WITH MANUFACTURER REPRESENTATIVE FOR ITEMS THAT ARE FACTORY AND FIELD INSTALLED.
4. AT ALL UNIT VENTILATORS, CONTRACTOR IS RESPONSIBLE TO REMOVE FACTORY INSTALLED STANDARD DX CONTROL VALVE FOR FIELD INSTALLATION OF LEV DX VALVE, REFER TO MANUFACTURER REPRESENTATIVE FOR PROPER INSTALLATION.
5. SEE CONTROL DIAGRAMS ON M004 FOR ADDITIONAL INFORMATION.

IF THIS BAR DOES NOT MEASURE 1", THEN DRAWING IS NOT TO FULL SCALE

0 1/2 1

No.	Date	Revisions
3	12-17-21	ISSUED FOR BID
2	11-19-21	SED ADDENDUM 1
1	08-30-21	BIDDING DOCUMENTS

Drawn by WM
Checked by ERF
Project No. 41048
Scale AS NOTED
Date 08-30-21

GREENMAN PEDERSEN, INC
400 POSTAL WAY, SUITE 300
MONTGOMERY, NY 10941

Mechanical & Electrical Engineer:

Structural Engineer:

UNIVENT REPLACEMENT AT HAVERSTRAW ELEMENTARY
SED# 50-02-01-06-0-009-018
16 Grant Street
Haverstraw, NY 10927
COUNTY OF ROCKLAND

MICHAEL SHILALE ARCHITECTS, L.L.P.
140 Park Avenue New City, NY 10956 Tel 845-708-9200
www.shilale.com

Drawing Title
MECHANICAL SCHEDULES -2

Drawing No.
M-003

GENERAL NOTES

1. DUCT SMOKE DETECTORS SHALL BE PROVIDED IN MAIN SUPPLY AND RETURN DUCT FOR SYSTEMS OVER 1,000 CFM AND ALSO UPSTREAM OF EACH STORY RETURN DUCT/ RISER CONNECTION WHERE RETURN AIR RISERS SERVE TWO OR MORE STORIES FOR SYSTEMS OVER 15,000 CFM.
2. INTEGRATE AIR FLOW MEASURING APPARATUS INTO THE BMS/DDC NETWORK. PROVIDE ONE OUTSIDE AIR FLOW MEASURING STATION FOR EACH OUTSIDE AIR INTAKE PORT. PROVIDE FACTORY INSTALLED AIRFLOW STATION.
3. PROVIDE NEW THERMOSTATS WITH LOCK BOXES IN ROOMS BEING SERVED BY AHU. CONTRACTOR SHALL PROVIDE ALL ASSOCIATED CONTROL WIRING.
4. SAFETY SHUTDOWN DEVICES SHALL BE HARDWIRED TO THE FAN STARTER CIRCUIT IN ADDITION TO THE DDC SYSTEM. COORDINATE WITH MANUFACTURER FOR SHUTDOWN UNDER ALL MODES OF OPERATION.
5. MECHANICAL CONTRACTOR SHALL HIRE A FIRE ALARM SUBCONTRACTOR. FIRE ALARM CONTRACTOR TO FURNISH FIRE ALARM SYSTEM COMPLIANT SMOKE DETECTORS TO THE MECHANICAL CONTRACTOR WHO SHALL IN TURN FURNISH THEM TO THE CENTRAL AIR HANDLING UNIT MANUFACTURER FOR FACTORY INSTALLATION OR TO THE SHEET METAL CONTRACTOR FOR FIELD DUCTWORK INSTALLATION FOR THE FLOOR RETURN/RISER RETURN CONNECTIONS AS APPLICABLE. CONTRACTOR SHALL PROVIDE ALL SIGNAL AND CONTROL POWER WIRING TO UNIT.

LEGEND

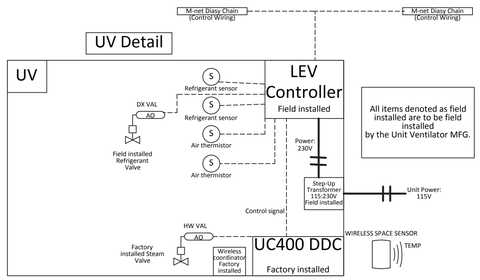
VFD	VARIABLE FREQUENCY DRIVE	DCV	DEMAND CONTROL VENTILATION
TLL-1	TEMPERATURE LOW LIMIT	CO2	CARBON DIOXIDE
TCC	TEMPERATURE CONTROLS CONTRACTOR	DI	DIGITAL INPUT
TS-1	OUTSIDE AIR TEMP	DO	DIGITAL OUTPUT
TS-2	MIXED AIR TEMP	AI	ANALOG INPUT
TS-3	HEATING COIL DISCHARGE	AO	ANALOG OUTPUT
TS-4	DISCHARGE AIR TEMP	LON	LONWORKS NETWORK CONNECTION
TS-5	RETURN AIR TEMP	PSL	PRESSURE SWITCH LOW
FE	FLOW ELEMENT	PSH	PRESSURE SWITCH HIGH
FM	FLOW METER	DPS/I	DIFF. PRESSURE SWITCH/INDICATOR
BI	BINARY INPUT	AD	DPR ACTUATORS
BO	BINARY OUTPUT	BMS	BUILDING MANAGEMENT SYSTEM
DA	DISCHARGE AIR	RTU	ROOFTOP UNIT
OA	OUTSIDE AIR	VRF	VARIABLE REFRIGERANT FLOW
SA	SUPPLY AIR	STM SUP	STEAM SUPPLY
RA	RETURN AIR	COND	CONDENSATE RETURN
IDU	INDOOR UNIT	WCI	WIRELESS COMMUNICATION INTERFACE
ODU	OUTDOOR UNIT	MA ACT	MIXED AIR ACTIVE
FLTG	FLOATING	SF STS	SUPPLY FAN STATUS
TEMP	TEMPERATURE	SPD	SPEED
STPT	SETPOINT	CMD	COMMAND
VAL	VALVE	---	FIELD INSTALLED WIRING
EC	ELECTRICAL CONTRACTOR		

POINTS LIST NOTES:
LEGEND:
X = PROVIDE QUANTITY AS REQUIRED TO INCLUDE ALL INSTANCES OF THE INDICATED FEATURE. INCLUDE MULTIPLE POINTS WITHIN EACH MECHANICAL SYSTEM AS NECESSARY. COORDINATE WITH EQUIPMENT VENDOR.
B = INFORMATION PROVIDED TO EACH SYSTEM VIA NETWORK BROADCAST.
NVO = NETWORK VARIABLE OUTPUT, NVI = NETWORK VARIABLE INPUT

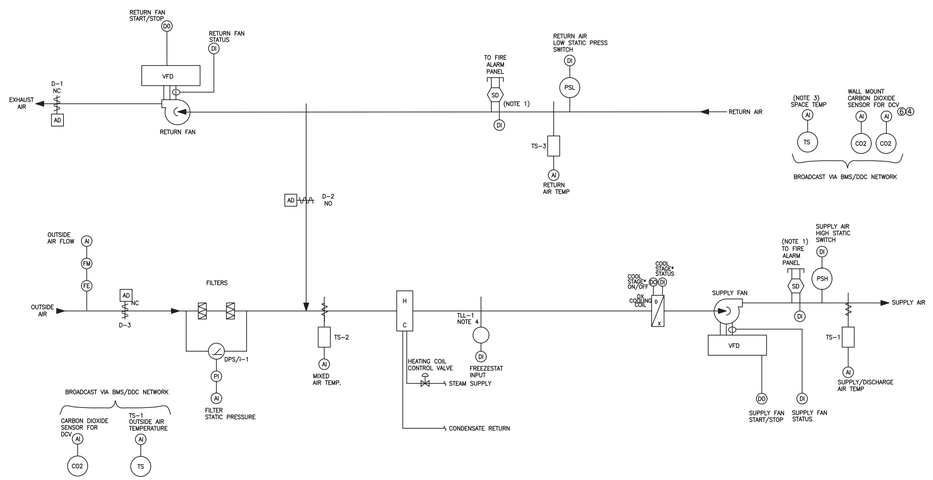
KEY NOTES:

① THE POINT LISTED HEREIN ARE THE MINIMUM POINTS REQUIRED FOR THE CONTROL AND MONITORING OF THIS EQUIPMENT. THIS POINT LIST IS TYPICAL FOR EACH MECHANICAL/ELECTRICAL SYSTEM OF THIS TYPE. IF THE SEQUENCE OF OPERATION REQUIRES ADDITIONAL OR DIFFERING INFORMATION, IT MUST BE PROVIDED BY THE RESPECTIVE PROVIDER OF THE CONTROLS FOR THIS TYPE OF EQUIPMENT AS COORDINATED BY THE GENERAL AND MECHANICAL CONTRACTORS.
② THE TCC SHALL PROVIDE ALL DIGITAL ALARM LOGIC. ALL DIGITAL ALARMS SHALL BE COMPATIBLE WITH THE EXISTING SIEMENS BMS SYSTEM.
③ THE TCC SHALL PROVIDE ALL TRENDING AND ANALOG ALARMING VIA THE SOFTWARE USED AT THE EXISTING SIEMENS BMS SYSTEM.
④ PROVIDE ACCUMULATED AIR FLOW FOR VALIDATION OF PURGE–MODE AND FOR PERMANENT VALIDATION OF OCCUPANT VENTILATION.
⑤ PROVIDE MANUAL RESET DEVICE. NOTE THAT THIS DEVICE BOTH ALARMS IN THE BMS AND IS HARDWIRED TO THE VFDS FOR SHUTDOWN OF THE FANS IN ALL OPERATING CONDITIONS OF THE VFD.
⑥ PROVIDE THE ALARM WHEN AT THE CALCULATED DIFFERENTIAL BETWEEN OUTSIDE AIR AND SPACE AIR CO2 VALUE IS 1000 ppm.
⑦ PROVIDE LON COMMUNICATION CONNECTION TO THIS DEVICE MAPPING ALL REQUIRED POINTS INTO THE LNS DATABASE.

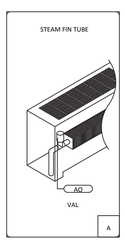
		Input/Output (Note 1)								Software/Firmware Features (Note 2,3)							Notes
"SZVAV AIR HANDLING UNIT"		Sensed			Calculated			Alarms and Advisories (with Instructions)				Misc. Features					
Reference No.	Point Name	Analog Input	Analog Output	Digital Input	Digital Output	String Value	Rate-of-Variable	Totalized Variable	Digital Alarm	Change-Of-State Alarm	High Limit Alarm	Low Limit Alarm	Runtime Limit (Hrs)	Broadcast Point	"Direct Lon Communication"	Trended Value	Misc. Other	Network Variable Type	Notes
1	Outside Air Temp	X												X		X		nvo	
2	Outside Air CO2	X												X		X		nvo	
3	Supply Airflow	X									20% over SP	20% under SP				X		nvo	
4	Exhaust/Return Airflow	X									20% over SP	20% under SP						nvo	
5	Supply Air Enthalpy Wheel Discharge Temp	X														X		nvo	
6	Supply Air Temp Heating Setpoint (Leaving The Wheel)		X															nvi/nvo	
7	Heating Coil Discharge Air Temp	X														X		nvo	
8	Cooling Coil Discharge Air Temp	X														X		nvo	
9	Supply Air Temp	X														X		nvo	
10	Exhaust/Return Air Temp	X														X		nvo	
11	Room Temp	X									Note 8					X		nvo	
12	Room CO2	X																nvo	
13	Differential CO2 (Calculated)					X					1000 ppm							nvo	⑥
14	SF High Static Pressure			X						X	[TBD]							nvo	⑤
15	EF/RF Low Suction Pressure			X						X		[TBD]						nvo	⑤
16	Supply Fan Status			X									1,000					nvo	
17	Supply Fan VFD															X		nvo	⑦
18	Supply Fan VFD Fault			X						X								nvo	
19	Supply Fan VFD Speed		X															nvo	
20	Supply Fan Failure				X				X									nvo	②
21	Exhaust Fan Status			X									1,000					nvo	
22	Exhaust Fan VFD															X		nvo	⑦
23	Exhaust Fan VFD Fault			X						X								nvo	
24	Exhaust Fan VFD Speed		X															nvo	
25	Exhaust Fan Failure				X				X									nvo	②
26	Outside Air Flow	X					cfm	CCF			SP-20%	SP+20%				X		nvo	④
27	Common Fire Alarm			X						X				X				nvo	
28	Freezestat Alarm			X						X		39°F						nvo	
29	HVAC Mode					X								X				nvo	
30	Occupancy Mode (Bypass Mode)			X														nvo	
31	Occupancy Mode					X												nvo	
32	DX Cooling Command				X													nvo	
33	DX Compressor Status			X									1,000					nvo	

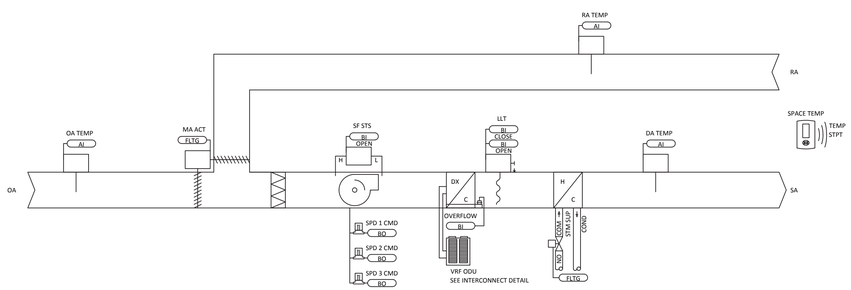


4 LEV KIT WIRING DIAGRAM
SCALE: N.T.S.

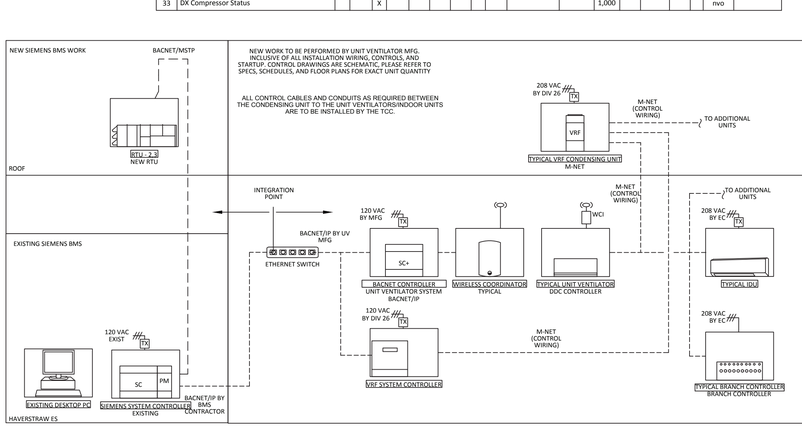


1 RTU CONTROL DIAGRAM
SCALE: N.T.S.





2 UV CONTROL DIAGRAM
SCALE: N.T.S.



3 VRF BMS WIRING DIAGRAM
SCALE: N.T.S.

1/2" 1" 0
IF THIS BAR DOES NOT MEASURE 1", THEN DRAWING IS NOT TO FULL SCALE

No.	Date	Revisions
3	12-17-21	ISSUED FOR BID
2	11-19-21	SED ADDENDUM 1
1	08-30-21	BIDDING DOCUMENTS

Drawn by WM
Checked by ERF
Project No. 41048
Scale AS NOTED
Date 08-30-21

GREENMAN PEDERSEN, INC
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Structural Engineer:

UNIVENT REPLACEMENT AT HAVERSTRAW ELEMENTARY
SED# 50-02-01-06-0-009-018
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Drawing Title
CONTROLS

Drawing No.
M-004

MECHANICAL VENTILATION SCHEDULE

ROOM	OCCUPANCY CLASSIFICATION	FLOOR AREA SF Az	ROOM VOLUME (FT^3)	OCCUPANT LOAD OCCUPANT/ 1,000 SF	# OF OCCUPANTS Pz	REQUIRED CFM/ OCCUPANT Rp	REQUIRED CFM/SF Ra	BREATHING ZONE OUTDOOR AIRFLOW Vbz=RpPz+RaAz	ZONE DISTRIBUTION EFFECTIVENESS Ez		TOTAL ROOM OUTDOOR AIR REQUIRED Vot=Vbz/Ez		ACTUAL ROOM OUTDOOR AIR FLOW RATE CFM		TOTAL SUPPLY AIRFLOW (CFM)		AIR CHANGE RATE (ACH)		REQUIRED EXHAUST RATE (CFM/FT^2)	REQUIRED EXHAUST AIRFLOW (CFM/FT^2)	ACTUAL EXHAUST AIRFLOW (CFM/FT^2)
									COOLING	HEATING	COOLING	HEATING	COOLING	HEATING	COOLING	HEATING	COOLING	HEATING			
101	CLASSROOM	760	9120	35	27	10	0.12	357	0.9	0.9	397	397	400	400	750	750	4.9	4.9	-	-	-
102	CLASSROOM	666	7992	35	23	10	0.12	313	0.9	0.9	348	348	400	400	750	750	5.6	5.6	-	-	-
103	CLASSROOM	762	9144	35	27	10	0.12	358	0.9	0.9	398	398	400	400	750	750	4.9	4.9	-	-	-
104	CLASSROOM	666	7992	35	23	10	0.12	313	0.9	0.9	348	348	375	375	750	750	5.6	5.6	-	-	-
105	KITCHENETTE	85	1020	0	0	5	0.12	10	0.9	0.9	11	11	15	15	265	265	15.6	15.6	-	-	-
105A	MAIN OFFICE	635	5080	5	3	5	0.06	54	0.9	0.9	60	60	60	60	300	300	3.5	3.5	-	-	-
105B	CONFERENCE RM	420	3360	50	21	5	0.06	130	0.9	0.9	145	145	150	150	315	315	5.6	5.6	-	-	-
105C	PRINCIPAL OFFICE	460	3680	5	2	5	0.06	39	0.9	0.9	43	43	50	50	265	265	4.3	4.3	-	-	-
105D	AP OFFICE	150	1200	5	1	5	0.06	13	0.9	0.9	14	14	15	15	265	265	13.3	13.3	-	-	-
106	CLASSROOM	640	7680	35	22	10	0.12	301	0.9	0.9	334	334	375	375	750	750	5.9	5.9	-	-	-
107	CLASSROOM	755	9060	35	26	10	0.12	355	0.9	0.9	394	394	400	400	750	750	5.0	5.0	-	-	-
107A	NURSE OFFICE	70	840	5	0	5	0.06	6	0.9	0.9	7	7	15	15	265	265	18.9	18.9	-	-	-
107B	OFFICE	155	1860	5	1	5	0.06	13	0.9	0.9	15	15	15	15	265	265	8.5	8.5	-	-	-
107C	OFFICE	135	1620	5	1	5	0.06	11	0.9	0.9	13	13	15	15	265	265	9.8	9.8	-	-	-
107D	OFFICE	75	900	5	0	5	0.06	6	0.9	0.9	7	7	10	10	265	265	17.7	17.7	-	-	-
107E	WORK ROOM-OFFICE	355	4260	5	2	5	0.06	30	0.9	0.9	34	34	40	40	315	315	4.4	4.4	-	-	-
108	GUIDANCE OFFICE	384	4608	5	2	5	0.06	33	0.9	0.9	36	36	40	40	315	315	4.1	4.1	-	-	-
108B	OFFICE	55	660	5	0	5	0.06	5	0.9	0.9	5	5	10	10	265	265	24.1	24.1	-	-	-
108C	OFFICE	66	792	5	0	5	0.06	6	0.9	0.9	6	6	10	10	265	265	20.1	20.1	-	-	-
108D	OFFICE	72	864	5	0	5	0.06	6	0.9	0.9	7	7	10	10	265	265	18.4	18.4	-	-	-
109	CLASSROOM	765	9180	35	27	10	0.12	360	0.9	0.9	400	400	400	400	750	750	4.9	4.9	-	-	-
110	CLASSROOM - ART	896	10752	35	31	10	0.12	421	0.9	0.9	468	468	475	475	750	750	4.2	4.2	0.7	627	630
110A	OFFICE	315	3780	5	2	5	0.06	27	0.9	0.9	30	30	30	30	265	265	4.2	4.2	-	-	-
111	CLASSROOM	740	8880	35	26	10	0.12	348	0.9	0.9	386	386	400	400	750	750	5.1	5.1	-	-	-
175	CLASSROOM - BAND	1610	19320	35	56	10	0.12	757	0.9	0.9	841	841	850	850	1500	1500	4.7	4.7	-	-	-
180A	CLASSROOM - TECH	1995	23940	35	70	10	0.12	938	0.9	0.9	1042	1042	1050	1050	2000	2000	5.0	5.0	-	-	-
180C	OFFICE	150	1800	5	1	5	0.06	13	0.9	0.9	14	14	15	15	265	265	8.8	8.8	-	-	-
185	CLASSROOM - MUSIC	624	7488	35	22	10	0.06	256	0.9	0.9	284	284	285	285	585	585	4.7	4.7	-	-	-
186	CLASSROOM - MUSIC	1070	12840	35	37	10	0.06	439	0.9	0.9	487	487	500	500	1000	1000	4.7	4.7	-	-	-
190	CLASSROOM - HOME EC	690	8280	35	24	10	0.12	324	0.9	0.9	360	360	365	365	750	750	5.4	5.4	-	-	-
195A	CLASSROOM - HOME EC	830	9960	35	29	10	0.12	390	0.9	0.9	433	433	435	435	750	750	4.5	4.5	-	-	-
201	CLASSROOM	759	9108	35	27	10	0.12	357	0.9	0.9	396	396	400	400	750	750	4.9	4.9	-	-	-
202	CLASSROOM	737	8844	35	26	10	0.12	346	0.9	0.9	385	385	400	400	750	750	5.1	5.1	-	-	-
203	CLASSROOM	732	8784	35	26	10	0.12	344	0.9	0.9	382	382	400	400	750	750	5.1	5.1	-	-	-
204	CLASSROOM	529	6348	35	19	10	0.12	249	0.9	0.9	276	276	300	300	750	750	7.1	7.1	-	-	-
205	CLASSROOM	700	8400	35	25	10	0.12	329	0.9	0.9	366	366	375	375	750	750	5.4	5.4	-	-	-
206	CLASSROOM	448	5376	35	16	10	0.12	211	0.9	0.9	234	234	250	250	750	750	8.4	8.4	-	-	-
207	CLASSROOM	688	8256	35	24	10	0.12	323	0.9	0.9	359	359	375	375	750	750	5.5	5.5	-	-	-
208	CLASSROOM	465	5580	35	16	10	0.12	219	0.9	0.9	243	243	250	250	750	750	8.1	8.1	-	-	-
207A	LIBRARY	1886	22632	35	66	10	0.12	886	0.9	0.9	985	985	1000	1000	2000	2000	5.3	5.3	-	-	-
209	CLASSROOM	706	8472	35	25	10	0.12	332	0.9	0.9	369	369	375	375	750	750	5.3	5.3	-	-	-
209A	OFFICE	339	4068	5	2	5	0.06	29	0.9	0.9	32	32	50	50	265	265	3.9	3.9	-	-	-
210	CLASSROOM	755	9060	35	26	10	0.12	355	0.9	0.9	394	394	400	400	750	750	5.0	5.0	-	-	-
211	CLASSROOM	339	4068	35	12	10	0.12	159	0.9	0.9	177	177	180	180	750	750	11.1	11.1	-	-	-
213	CLASSROOM	707	8484	35	25	10	0.12	332	0.9	0.9	369	369	375	375	750	750	5.3	5.3	-	-	-
212	CLASSROOM	743	8916	35	26	10	0.12	349	0.9	0.9	388	388	400	400	750	750	5.0	5.0	-	-	-
215	CLASSROOM	741	8892	35	26	10	0.12	348	0.9	0.9	387	387	400	400	750	750	5.1	5.1	-	-	-
216	CLASSROOM	729	8748	35	26	10	0.12	343	0.9	0.9	381	381	400	400	750	750	5.1	5.1	-	-	-
218	AUDITORIUM	6121	124042	150	918	5	0.06	4958	0.8	0.8	6198	6198	6200	6200	12000	12000	5.8	5.8	-	-	-
220A	OFFICE	96	1152	5	0	5	0.06	8	0.9	0.9	9	9	15	15	265	265	13.8	13.8	-	-	-
220B	OFFICE	96	1152	5	0	5	0.06	8	0.9	0.9	9	9	15	15	265	265	13.8	13.8	-	-	-
220	GYMNASIUM	6152	147648	7	43	20	0.18	1969	0.8	0.8	2461	2461	2500	2500	11500	11500	4.7	4.7	-	-	-
221	GIRLS LOCKER RM	1020	12240	5	5	5	0.06	87	0.9	0.9	96	96	100	100	1000	1000	4.9	4.9	.25	257	260
222	BOYS LOCKER RM	1027	12324	5	5	5	0.06	87	0.9	0.9	97	97	100	100	1000	1000	4.9	4.9	.25	257	260
221B	OFFICE	134	1608	5	1	5	0.06	11	0.9	0.9	13	13	15	15	265	265	9.9	9.9	-	-	-
221C	OFFICE	103	1236	5	1	5	0.06	9	0.9	0.9	10	10	15	15	265	265	12.9	12.9	-	-	-
222B	OFFICE	213	2556	5	1	5	0.06	18	0.9	0.9	20	20	20	20	265	265	6.2	6.2	-	-	-
222C	OFFICE	80	960	5	0	5	0.06	7	0.9	0.9	8	8	15	15	265	265	16.6	16.6	-	-	-
301	CLASSROOM	759	9108	35	27	10	0.12	357	0.9	0.9	396	396	400	400	750	750	4.9	4.9	-	-	-
302	CLASSROOM	668	8016	35	23	10	0.12	314	0.9	0.9	349	349	375	375	750	750	5.6	5.6	-	-	-
303	CLASSROOM - SCIENCE	980	11760	25	25	10	0.18	421	0.9	0.9	468	468	475	475	1000	1000	5.1	5.1	-	-	-
304	CLASSROOM	671	8052	35	23	10	0.12	315	0.9	0.9	350	350	350	350	750	750	5.6	5.6	-	-	-
305	CLASSROOM	256	3072	35	9	10	0.12	120	0.9	0.9	134	134	150	150	315	315	6.2	6.2	-	-	-
306	CLASSROOM	929	11148	35	33	10	0.12	437	0.9	0.9	485	485	500	500	1000	1000	5.4	5.4	-	-	-
307	CLASSROOM - COMPUTER LAB	930	11160	25	23	10	0.12	344	0.9	0.9	382	382	400	400	1000	1000	5.4	5.4	-	-	-
309	CLASSROOM - SPECIAL ED	271	3252	35	9	10	0.12	127	0.9	0.9	142	142	150	150	315	315	5.8	5.8	-	-	-
310	CLASSROOM - TYPING	923	11076	25	23	10	0.12	342	0.9	0.9	379	379	400	400	750	750	4.1	4.1	-	-	-
311	CLASSROOM - SCIENCE	1302	15624	25	33	10	0.18	560	0.9	0.9	622	622	625	625	1500	1500	5.8	5.8	-	-	-
311B	PREP	269	2690	25	7	10	0.12	100	0.9	0.9	111	111	125	125	315	315	7.0	7.0	-	-	-
312	CLASSROOM	685	8220	35	24	10	0.12	322	0.9	0.9	358	358	400	400	750	750	5.5	5.5	-	-	-
313	CLASSROOM - SCIENCE	1194	14328	25	30	10	0.18	513	0.9	0.9	570	570	575	575	1500	1500	6.3	6.3	-	-	-
314	CLASSROOM	679	8148	35	24	10	0.12	319	0.9	0.9	355	355	400	400	750	750	5.5	5.5	-	-	-
317	OFFICE-RESOURCE	258	3096	5	1	5	0.06	22	0.9	0.9	24	24	30	30	300	300	5.8	5.8	-	-	-
319	CLASSROOM	670	8040	35	23	10	0.12	315	0.9	0.9	350	350	400	400	750	750	5.6	5.6	-	-	-
321	CLASSROOM	741	8892	35	26	10	0.12	348	0.9	0.9	387	387	400	400	750	750	5.1	5.1	-	-	-

0 1/2 1

IF THIS BAR DOES NOT MEASURE 1", THEN DRAWING IS NOT TO FULL SCALE

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Drawing Title
VENTILATION SCHEDULE

Drawing No.
M-005

UNIT VENTILATOR SCHEDULE

UNIT TAG	LOCATION	TOTAL SUPPLY AIRFLOW (CFM)	MINIMUM OUTSIDE AIRFLOW (CFM)		MAXIMUM OUTSIDE AIRFLOW (CFM)	COOLING						HEATING				FILTER	ELECTRICAL			UNIT WEIGHT (LBS)	UNIT DIMENSIONS (LxDxH, IN) (V.I.F.)	BASIS OF DESIGN	REMARKS
			COOLING	HEATING		EADB (°F)	EAWB (°F)	LADB (°F)	LADB (°F)	MIN. SENSIBLE CAPACITY (BTU/H)	MIN. TOTAL CAPACITY (BTU/H)	EADB (°F)	LADB (°F)	STEAM PRESSURE (PSIG)	REQUIRED TOTAL CAPACITY (BTU/H)	MERV	MCA	MAX. FUSE SIZE	VOLT/PH/HZ				
UV-101	101	750	400	400	750	80.0	67.0	54.7	52.4	17,810	28,250	12.0	102.6	2.0	63,200	13	4.5	15	115/1/60	320	69x21.25x30	TRANE VUVE0750	SEE NOTES 1-10
UV-102	102	750	400	400	750	80.0	67.0	54.7	52.4	17,810	28,250	12.0	102.6	2.0	63,200	13	4.5	15	115/1/60	320	69x21.25x30	TRANE VUVE0750	SEE NOTES 1-10
UV-103	103	750	400	400	750	80.0	67.0	54.7	52.4	17,810	28,250	12.0	102.6	2.0	63,200	13	4.5	15	115/1/60	320	69x21.25x30	TRANE VUVE0750	SEE NOTES 1-10
UV-104	104	750	375	375	750	80.0	67.0	54.7	52.4	17,810	28,250	12.0	102.6	2.0	63,200	13	4.5	15	115/1/60	320	69x21.25x30	TRANE VUVE0750	SEE NOTES 1-10
UV-105B	105	750	375	375	750	80.0	67.0	54.7	52.4	17,810	28,250	12.0	102.6	2.0	63,200	13	4.5	15	115/1/60	320	69x21.25x30	TRANE VUVE0750	SEE NOTES 1-10,11
UV-106	106	750	375	375	750	80.0	67.0	54.7	52.4	17,810	28,250	12.0	102.6	2.0	63,200	13	4.5	15	115/1/60	320	69x21.25x30	TRANE VUVE0750	SEE NOTES 1-10
UV-107	107	750	400	400	750	80.0	67.0	54.7	52.4	17,810	28,250	12.0	102.6	2.0	63,200	13	4.5	15	115/1/60	320	69x21.25x30	TRANE VUVE0750	SEE NOTES 1-10
UV-109	109	750	400	400	750	80.0	67.0	54.7	52.4	17,810	28,250	12.0	102.6	2.0	63,200	13	4.5	15	115/1/60	320	69x21.25x30	TRANE VUVE0750	SEE NOTES 1-10
UV-110	110	750	475	475	750	80.0	67.0	54.7	52.4	17,810	28,250	12.0	102.6	2.0	63,200	13	4.5	15	115/1/60	320	69x21.25x30	TRANE VUVE0750	SEE NOTES 1-10
UV-111	111	750	400	400	750	80.0	67.0	54.7	52.4	17,810	28,250	12.0	102.6	2.0	63,200	13	4.5	15	115/1/60	320	69x21.25x30	TRANE VUVE0750	SEE NOTES 1-10
UV-175	175	1500	850	850	1500	80.0	67.0	55.4	52.2	30,890	51,010	12.0	116.3	2.0	129,700	13	9.0	15	115/1/60	470	105x21.25x30	TRANE VUVE1500	SEE NOTES 1-10
UV-180A-1	180A	1000	525	525	1000	80.0	67.0	54.7	51.8	21,720	35,670	12.0	124.2	2.0	106,950	13	4.5	15	120/1/60	375	82.25x35.6x16.6	TRANE HUVC1001	SEE NOTES 1-10,12
UV-180A-2	180A	1000	525	525	1000	80.0	67.0	54.7	51.8	21,720	35,670	12.0	124.2	2.0	106,950	13	4.5	15	120/1/60	375	82.25x35.6x16.6	TRANE HUVC1001	SEE NOTES 1-10,12
UV-186	186	1000	500	500	1000	80.0	67.0	54.7	51.8	21,720	35,670	12.0	112.5	2.0	85,380	13	4.5	15	115/1/60	405	81x21.25x30	TRANE VUVE1000	SEE NOTES 1-10,11
UV-190	190	750	365	365	750	80.0	67.0	54.7	52.4	17,810	28,250	12.0	102.6	2.0	63,200	13	4.5	15	115/1/60	320	69x21.25x30	TRANE VUVE0750	SEE NOTES 1-10
UV-195A	195A	750	435	435	750	80.0	67.0	54.7	52.4	17,810	28,250	12.0	102.6	2.0	63,200	13	4.5	15	115/1/60	320	69x21.25x30	TRANE VUVE0750	SEE NOTES 1-10
UV-201	201	750	400	400	750	80.0	67.0	54.7	52.4	17,810	28,250	12.0	102.6	2.0	63,200	13	4.5	15	115/1/60	320	69x21.25x30	TRANE VUVE0750	SEE NOTES 1-10
UV-202	202	750	400	400	750	80.0	67.0	54.7	52.4	17,810	28,250	12.0	102.6	2.0	63,200	13	4.5	15	115/1/60	320	69x21.25x30	TRANE VUVE0750	SEE NOTES 1-10
UV-203	203	750	400	400	750	80.0	67.0	54.7	52.4	17,810	28,250	12.0	102.6	2.0	63,200	13	4.5	15	115/1/60	320	69x21.25x30	TRANE VUVE0750	SEE NOTES 1-10
UV-204	204	750	300	300	750	80.0	67.0	54.7	52.4	17,810	28,250	12.0	102.6	2.0	63,200	13	4.5	15	115/1/60	320	69x21.25x30	TRANE VUVE0750	SEE NOTES 1-10
UV-205	205	750	375	375	750	80.0	67.0	54.7	52.4	17,810	28,250	12.0	102.6	2.0	63,200	13	4.5	15	115/1/60	320	69x21.25x30	TRANE VUVE0750	SEE NOTES 1-10
UV-206	206	750	250	250	750	80.0	67.0	54.7	52.4	17,810	28,250	12.0	102.6	2.0	63,200	13	4.5	15	115/1/60	320	69x21.25x30	TRANE VUVE0750	SEE NOTES 1-10
UV-207	207	750	375	375	750	80.0	67.0	54.7	52.4	17,810	28,250	12.0	102.6	2.0	63,200	13	4.5	15	115/1/60	320	69x21.25x30	TRANE VUVE0750	SEE NOTES 1-10
UV-208	208	750	250	250	750	80.0	67.0	54.7	52.4	17,810	28,250	12.0	102.6	2.0	63,200	13	4.5	15	115/1/60	320	69x21.25x30	TRANE VUVE0750	SEE NOTES 1-10
UV-207A-1	207A	1000	500	500	1000	80.0	67.0	54.7	51.8	21,720	35,670	12.0	112.5	2.0	85,380	13	4.5	15	115/1/60	405	81x21.25x30	TRANE VUVE1000	SEE NOTES 1-10,11
UV-207A-2	207A	1000	500	500	1000	80.0	67.0	54.7	51.8	21,720	35,670	12.0	112.5	2.0	85,380	13	4.5	15	115/1/60	405	81x21.25x30	TRANE VUVE1000	SEE NOTES 1-10,11
UV-209	209	750	375	375	750	80.0	67.0	54.7	52.4	17,810	28,250	12.0	102.6	2.0	63,200	13	4.5	15	115/1/60	320	69x21.25x30	TRANE VUVE0750	SEE NOTES 1-10
UV-210	210	750	400	400	750	80.0	67.0	54.7	52.4	17,810	28,250	12.0	102.6	2.0	63,200	13	4.5	15	115/1/60	320	69x21.25x30	TRANE VUVE0750	SEE NOTES 1-10
UV-213	213	750	375	375	750	80.0	67.0	54.7	52.4	17,810	28,250	12.0	102.6	2.0	63,200	13	4.5	15	115/1/60	320	69x21.25x30	TRANE VUVE0750	SEE NOTES 1-10
UV-214	214	750	400	400	750	80.0	67.0	54.7	52.4	17,810	28,250	12.0	102.6	2.0	63,200	13	4.5	15	115/1/60	320	69x21.25x30	TRANE VUVE0750	SEE NOTES 1-10
UV-215	215	750	400	400	750	80.0	67.0	54.7	52.4	17,810	28,250	12.0	102.6	2.0	63,200	13	4.5	15	115/1/60	320	69x21.25x30	TRANE VUVE0750	SEE NOTES 1-10
UV-216	216	750	400	400	750	80.0	67.0	54.7	52.4	17,810	28,250	12.0	102.6	2.0	63,200	13	4.5	15	115/1/60	320	69x21.25x30	TRANE VUVE0750	SEE NOTES 1-10
UV-221	221	1000	100	100	1000	80.0	67.0	54.7	51.8	21,720	35,670	12.0	112.5	2.0	85,380	13	4.5	15	115/1/60	405	81x21.25x30	TRANE VUVE1000	SEE NOTES 1-10
UV-222	222	1000	100	100	1000	80.0	67.0	54.7	51.8	21,720	35,670	12.0	112.5	2.0	85,380	13	4.5	15	115/1/60	405	81x21.25x30	TRANE VUVE1000	SEE NOTES 1-10
UV-301	301	750	400	400	750	80.0	67.0	54.7	52.4	17,810	28,250	12.0	102.6	2.0	63,200	13	4.5	15	115/1/60	320	69x21.25x30	TRANE VUVE0750	SEE NOTES 1-10
UV-302	302	750	375	375	750	80.0	67.0	54.7	52.4	17,810	28,250	12.0	102.6	2.0	63,200	13	4.5	15	115/1/60	320	69x21.25x30	TRANE VUVE0750	SEE NOTES 1-10
UV-303	303	1000	475	475	1000	80.0	67.0	54.7	51.8	21,720	35,670	12.0	112.5	2.0	85,380	13	4.5	15	115/1/60	405	81x21.25x30	TRANE VUVE1000	SEE NOTES 1-10
UV-304	304	750	350	350	750	80.0	67.0	54.7	52.4	17,810	28,250	12.0	102.6	2.0	63,200	13	4.5	15	115/1/60	320	69x21.25x30	TRANE VUVE0750	SEE NOTES 1-10
UV-306	306	1000	500	500	1000	80.0	67.0	54.7	51.8	21,720	35,670	12.0	112.5	2.0	85,380	13	4.5	15	115/1/60	405	81x21.25x30	TRANE VUVE1000	SEE NOTES 1-10
UV-307	307	1000	400	400	1000	80.0	67.0	54.7	51.8	21,720	35,670	12.0	112.5	2.0	85,380	13	4.5	15	115/1/60	405	81x21.25x30	TRANE VUVE1000	SEE NOTES 1-10
UV-310	310	750	400	400	750	80.0	67.0	54.7	52.4	17,810	28,250	12.0	102.6	2.0	63,200	13	4.5	15	115/1/60	320	105x21.25x30	TRANE VUVE1500	SEE NOTES 1-10
UV-311	311	1500	625	625	1500	80.0	67.0	55.4	52.2	30,890	51,010	12.0	116.3	2.0	129,700	13	9.0	15	115/1/60	470	105x21.25x30	TRANE VUVE1500	SEE NOTES 1-10
UV-312	312	750	400	400	750	80.0	67.0	54.7	52.4	17,810	28,250	12.0	102.6	2.0	63,200	13	4.5	15	115/1/60	320	69x21.25x30	TRANE VUVE0750	SEE NOTES 1-10
UV-313	313	1500	575	575	1500	80.0	67.0	55.4	52.2	30,890	51,010	12.0	116.3	2.0	129,700	13	9.0	15	115/1/60	470	105x21.25x30	TRANE VUVE1500	SEE NOTES 1-10
UV-314	314	750	400	400	750	80.0	67.0	54.7	52.4	17,810	28,250	12.0	102.6	2.0	63,200	13	4.5	15	115/1/60	320	69x21.25x30	TRANE VUVE0750	SEE NOTES 1-10
UV-319	319	750	400	400	750	80.0	67.0	54.7	52.4	17,810	28,250	12.0	102.6	2.0	63,200	13	4.5	15	115/1/60	320	69x21.25x30	TRANE VUVE0750	SEE NOTES 1-10
UV-321	321	750	400	400	750	80.0	67.0	54.7	52.4	17,810	28,250	12.0	102.6	2.0	63,200	13	4.5	15	115/1/60	320	69x21.25x30	TRANE VUVE0750	SEE NOTES 1-10

UNIT VENTILATOR SCHEDULE NOTES:

1. PROVIDE VARIABLE VOLUME SPEED CONTROL ECM MOTORS. MOTOR CONTROL TO BE FIELD INSTALLED.
2. PROVIDE LOW LEAKAGE OUTSIDE AIR DAMPER, CLASS 1 MOTORIZED DAMPERS, LOW LEAKAGE TYPE FOR OUTSIDE AIR AND EXHAUST OPENINGS. AIR LEAKAGE SHALL NOT BE GREATER THAN 4CFM/FT^2 AND BE IN ACCORDANCE WITH AMCA 500D.
3. PROVIDE FIXED DRY-BULB ECONOMIZER WITH FAULT DETECTION DIAGNOSIS.
4. PROVIDE DISCONNECT SWITCH.
5. CONTRACTOR TO VERIFY STEAM HEAT COIL PIPING CONNECTIONS AND NEW DX COIL PIPING CONNECTIONS PRIOR TO ORDERING. STEAM HEAT COILS SHALL MATCH EXISTING LOCATIONS. TYPICAL LOCATIONS ARE AS FOLLOWS: ELECTRICAL - LH SIDE, STEAM - RH SIDE, DX - RH SIDE.
6. AT COMPLETION OF UV INSTALLATION, CONTRACTOR SHALL INSTALL MERV-13 FILTERS FURNISHED BY THE UNIT MANUFACTURER.
7. PROVIDE MODULATING TWO-WAY STEAM CONTROL VALVE.
8. CABINET COLOR TO BE OF DELUXE BEIGE FINISH U.O.N. BY ARCHITECT AND/OR FACILITIES.
9. PROVIDE HEAVY GAUGE FRONT PANEL AND CUT-TO-FIT FILLER PANELS ON BOTH SIDES OF THE UNIT VENTILATOR TO MATCH THE INSTALLED WIDTH OF THE EXISTING UNITS AND ENCLOSE EXISTING PIPING.
10. PROVIDE FIELD INSTALLED DDC CONTROLS TO SATISFY SEQUENCE OF OPERATIONS, COORDINATE/INTEGRATE WITH EXISTING SIEMENS BMS. SEE DRAWING M004 FOR MORE INFO. PROVIDE LEV KIT AS PER INDOOR UNIT SCHEDULE, SEE DRAWING M003.
11. PROVIDE WITH NO ENCLOSURE/END COVERS FOR INSTALLATION BEHIND EXISTING CABINETRY ENCLOSURE.
12. PROVIDE ALL REQUIRED SUPPORTS FOR CEILING MOUNT HORIZONTAL UNIT.

0 1/2 1

IF THIS BAR DOES NOT MEASURE 1", THEN DRAWING IS NOT TO FULL SCALE

No.	Date	Revisions
3	12-17-21	ISSUED FOR BID
2	11-19-21	SED ADDENDUM 1
1	08-30-21	BIDDING DOCUMENTS

Drawn by WM
Checked by ERF
Project No. 41048
Scale AS NOTED
Date 08-30-21

GREENMAN PEDERSEN, INC
400 RELLA BOULEVARD
MONTEBELLO, NY 10901

Mechanical & Electrical Engineer: - - -

Structural Engineer: - - -

UNIVENT REPLACEMENT AT HAVERSTRAW ELEMENTARY
SED# 50-02-01-06-0-009-018
COUNTY OF ROCKLAND
15 Great Street
Haverstraw, NY 10927

MICHAEL SHILALE ARCHITECTS, L.L.P.
140 Park Avenue New City, NY 10956 Tel 845-708-9200
www.shilale.com

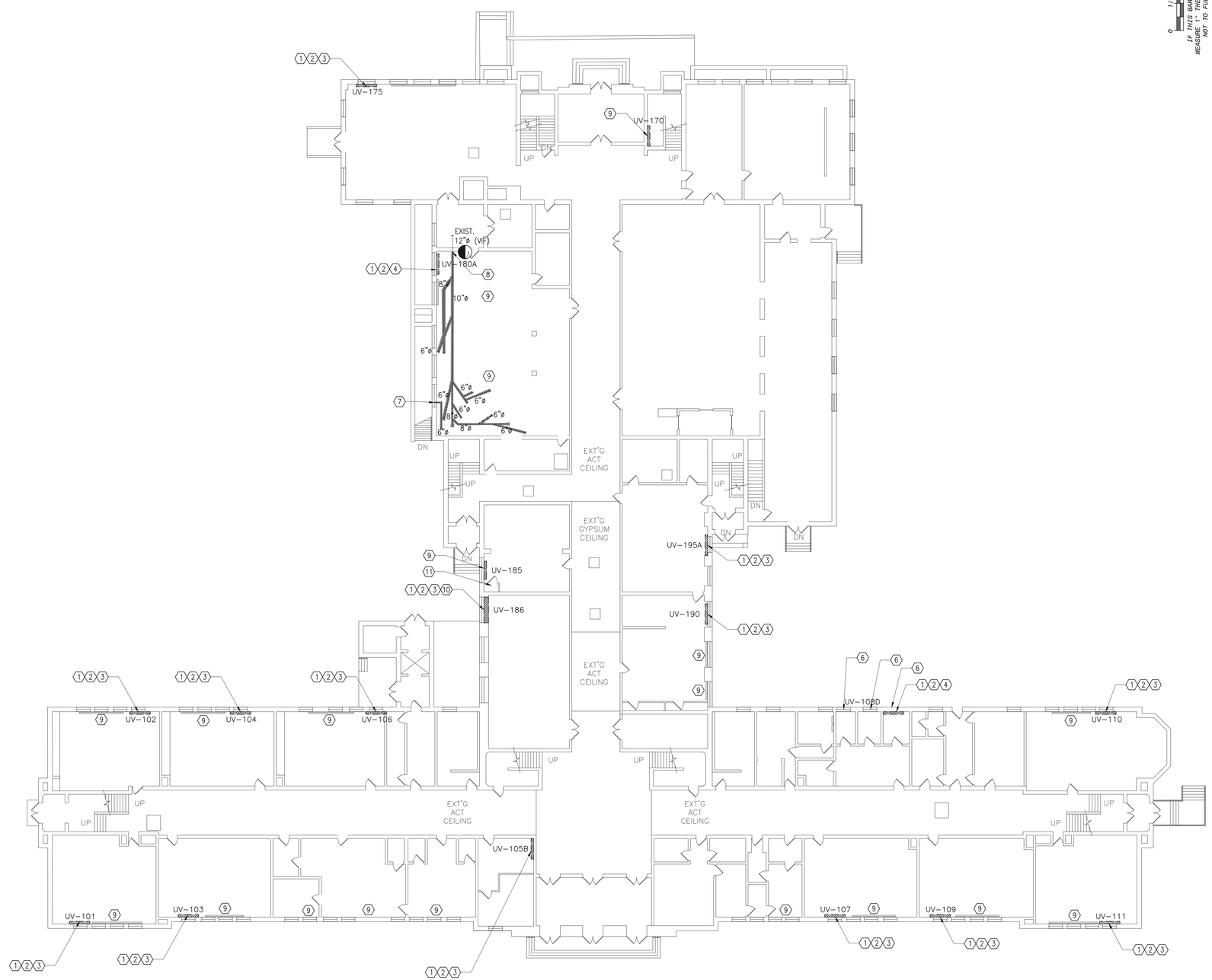
Drawing Title
UV SCHEDULE

Drawing No.
M-006

NOTES:

1. DEMOLISH EXISTING UNIT VENTILATOR OR FCU.
2. REMOVE STEAM CONTROL VALVE, TRAPS, AND ASSOCIATED APPURTENANCES. CAP AND REMOVE STEAM PIPING BACK TO NEAREST RISER, APPROX. 5 LF OF PIPING.
3. REMOVE AND DISCONNECT FRESH AIR CONNECTION. EXISTING LOUVER TO REMAIN. PROVIDE TEMPORARY CLOSURE FOR OA LOUVER TO PREVENT INFILTRATION FROM OUTDOORS.
4. REMOVE AND DISCONNECT FRESH AIR CONNECTION. PERMANENTLY CAP EXISTING 36"x12" (V.I.F.) LOUVER OPENING FROM THE INSIDE WITH 22 GA MIN GALVANIZED PANEL. FILL VOID WITH INSULATION, R-12 MIN. RESTORE INTERIOR FINISHES, COORDINATE WITH GC AND ARCHITECT.
5. DEMO EXISTING A/C UNIT IN SPACE AND ASSOCIATED CONDENSING UNIT AND RETURN EQUIPMENT TO FACILITIES.
6. DEMO EXISTING WINDOW A/C UNIT. RETURN WINDOW A/C UNIT TO THE SCHOOL. CAP INSULATED WINDOW PANEL AT LOCATION OF EXISTING WINDOW AC UNIT, REFER TO ARCHITECTURAL PLANS.
7. DEMO EXISTING VACUUM EXHAUST DUCT, FITTINGS AND SUPPORTS IN CEILING. TEMPORARILY CAP AND SEAL ANY PENETRATIONS TO THE OUTSIDE. ALL DUCT DIMENSIONS AND ROUTING AS SHOWN ARE APPROXIMATE. CONTRACTOR TO VERIFY IN THE FIELD.
8. PERMANENTLY CAP EXISTING DUCT AT BUILDING WALL.
9. EXISTING RADIATOR TO REMAIN.
10. EXISTING CABINETRY ENCLOSURE TO REMAIN.
11. EXISTING ENERGY RECOVERY VENTILATOR IN SPACE TO REMAIN.

NOTES



1 FIRST FLOOR PLAN

SCALE: 1/16" = 1'-0"

PLAN NORTH

0 1/2 1

IF THIS BAR DOES NOT MEASURE 1", THEN DRAWING IS NOT TO FULL SCALE

No.	Date	Revisions
3	12-17-21	ISSUED FOR BID
2	11-19-21	SED ADDENDUM 1
1	08-30-21	BIDDING DOCUMENTS

Drawn by WM
Checked by ERF
Project No. 41048
Scale AS NOTED
Date 08-30-21

GREENMAN PEDERSEN, INC
400 BROAD HOLLOW ROAD
MONTGOMERY, NY 10941

Mechanical & Electrical Engineer: --

Structural Engineer: --

UNIVENT REPLACEMENT AT HAVERSTRAW ELEMENTARY
SED# 50-02-01-06-0-009-018
16 Grant Street, Haverstraw, NY 10927
COUNTY OF ROCKLAND

MICHAEL SHILALE ARCHITECTS, L.L.P.
140 Park Avenue New City, NY 10956 Tel 845-708-9200
www.shilale.com

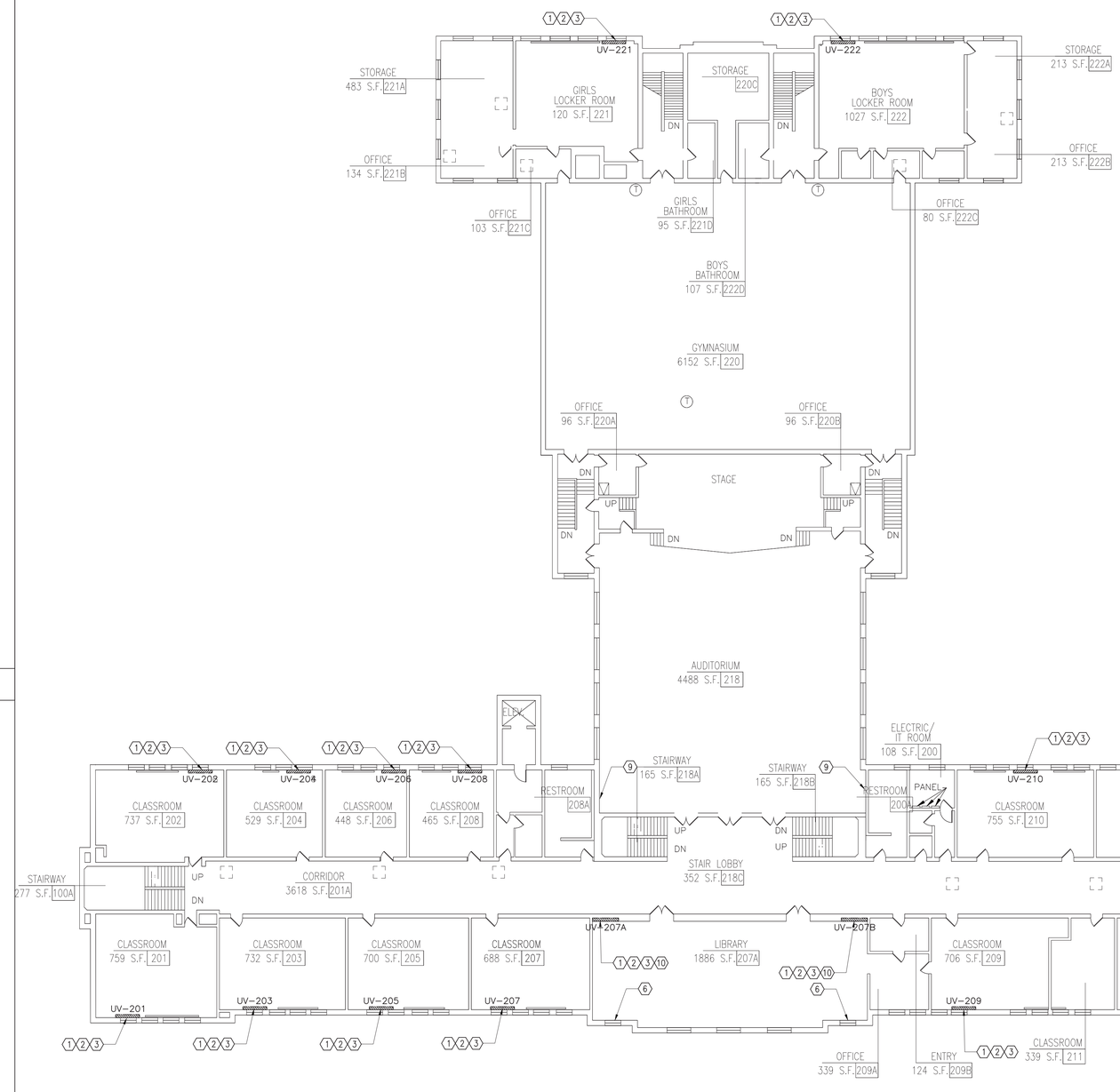
Drawing Title: HVAC DEMO - 1ST FLOOR PLAN

Drawing No. M-061

NOTES:

1. DEMOLISH EXISTING UNIT VENTILATOR OR FCU.
2. REMOVE STEAM CONTROL VALVE, TRAPS, AND ASSOCIATED APPURTENANCES. CAP AND REMOVE STEAM PIPING BACK TO NEAREST RISER, APPROX. 5 LF OF PIPING.
3. REMOVE AND DISCONNECT FRESH AIR CONNECTION. EXISTING LOUVER TO REMAIN. PROVIDE TEMPORARY CLOSURE FOR OA LOUVER TO PREVENT INFILTRATION FROM OUTDOORS.
4. REMOVE AND DISCONNECT FRESH AIR CONNECTION. PERMANENTLY CAP EXISTING 36"x12" (V.I.F.) LOUVER OPENING FROM THE INSIDE WITH 22 GA MIN GALVANIZED PANEL. FILL VOID WITH INSULATION, R-12 MIN. RESTORE INTERIOR FINISHES, COORDINATE WITH GC AND ARCHITECT.
5. DEMO EXISTING A/C UNIT IN SPACE AND ASSOCIATED CONDENSING UNIT AND RETURN EQUIPMENT TO FACILITIES.
6. DEMO EXISTING WINDOW A/C UNIT. RETURN WINDOW A/C UNIT TO THE SCHOOL. CAP INSULATED WINDOW PANEL AT LOCATION OF EXISTING WINDOW AC UNIT, REFER TO ARCHITECTURAL PLANS.
7. DEMO EXISTING VACUUM EXHAUST DUCT, FITTINGS AND SUPPORTS IN CEILING. TEMPORARILY CAP AND SEAL ANY PENETRATIONS TO THE OUTSIDE. ALL DUCT DIMENSIONS AND ROUTING AS SHOWN ARE APPROXIMATE. CONTRACTOR TO VERIFY IN THE FIELD.
8. PERMANENTLY CAP EXISTING DUCT AT BUILDING WALL.
9. EXISTING RADIATOR TO REMAIN.
10. EXISTING CABINETRY ENCLOSURE TO REMAIN.

NOTES



1 **SECOND FLOOR PLAN**
SCALE: 1/16" = 1'-0"

PLAN NORTH

0 1/2 1
IF THIS BAR DOES NOT MEASURE 1", THEN DRAWING IS NOT TO FULL SCALE

No.	Date	Revisions
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2	11-19-21	SED ADDENDUM 1
1	08-30-21	BIDDING DOCUMENTS

Drawn by WM
Checked by ERF
Project No. 41048
Scale AS NOTED
Date 08-30-21

GREENMAN PEDERSEN, INC
400 RELLA BOULEVARD
MONTEBELLO, NY 10901

Mechanical & Electrical Engineer: - - - -
Structural Engineer: - - - -

UNIVENT REPLACEMENT
AT
HAVERSTRAW
ELEMENTARY
SED# 50-02-01-06-0-009-018
COUNTY OF ROCKLAND
18 Grant Street
Haverstraw, NY 10927

MICHAEL SHILALE ARCHITECTS, L.L.P.
140 Park Avenue New City, NY 10956 Tel 845-708-9200
www.shilale.com

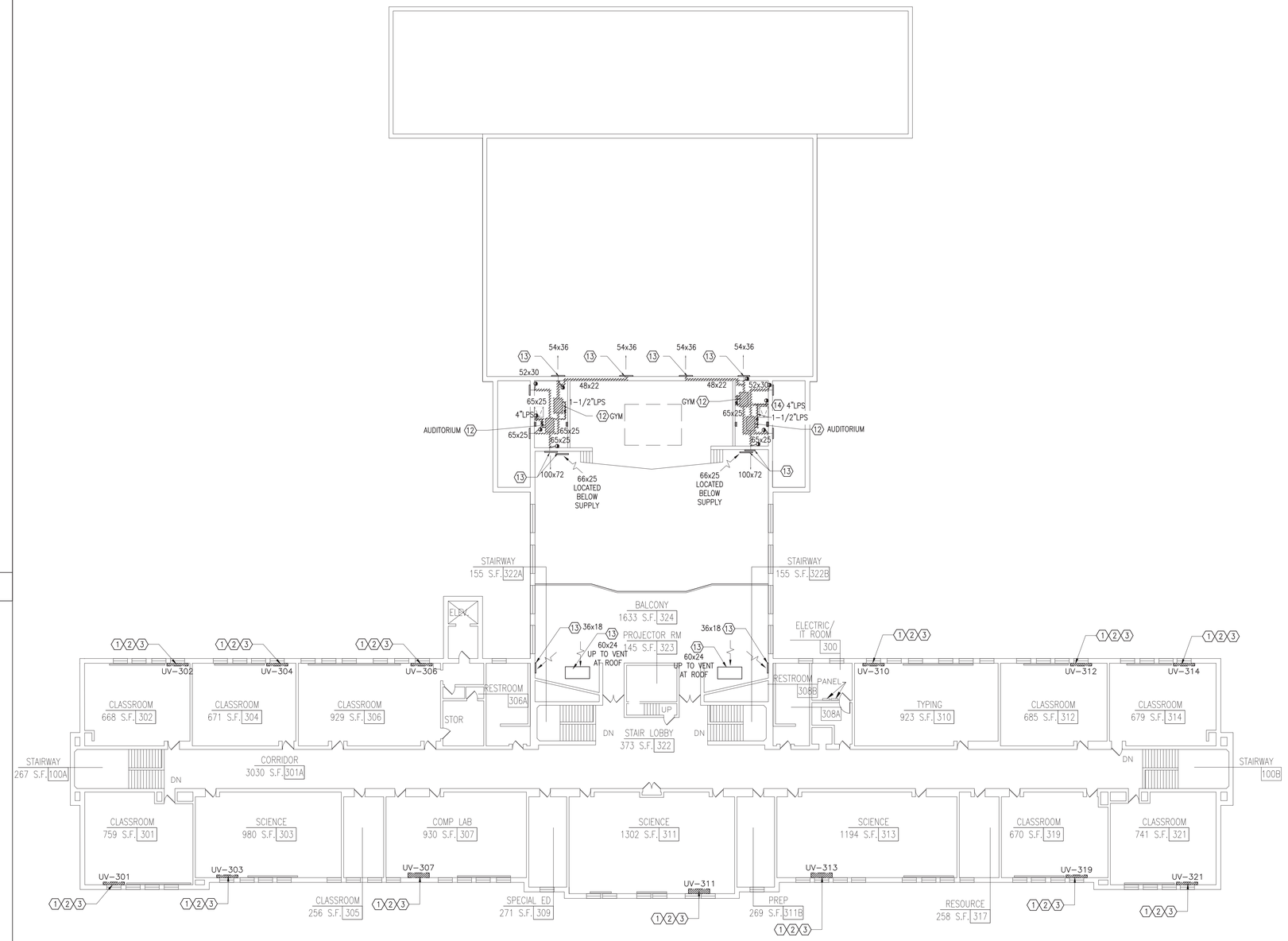
Drawing Title: HVAC DEMO - 2ND FLOOR PLAN

Drawing No. M-062

NOTES:

1. DEMOLISH EXISTING UNIT VENTILATOR OR FCU.
2. REMOVE STEAM CONTROL VALVE, TRAPS, AND ASSOCIATED APPURTENANCES. CAP AND REMOVE STEAM PIPING BACK TO NEAREST RISER, APPROX. 5 LF OF PIPING.
3. REMOVE AND DISCONNECT FRESH AIR CONNECTION. EXISTING LOUVER TO REMAIN. PROVIDE TEMPORARY CLOSURE FOR OA LOUVER TO PREVENT INFILTRATION FROM OUTDOORS.
4. REMOVE AND DISCONNECT FRESH AIR CONNECTION. PERMANENTLY CAP EXISTING 36"x12" (V.I.F.) LOUVER OPENING FROM THE INSIDE WITH 22 GA MIN GALVANIZED PANEL. FILL VOID WITH INSULATION, R-12 MIN. RESTORE INTERIOR FINISHES, COORDINATE WITH GC AND ARCHITECT.
5. DEMO EXISTING A/C UNIT IN SPACE AND ASSOCIATED CONDENSING UNIT AND RETURN EQUIPMENT TO FACILITIES.
6. DEMO EXISTING WINDOW A/C UNIT. RETURN WINDOW A/C UNIT TO THE SCHOOL. CAP INSULATED WINDOW PANEL AT LOCATION OF EXISTING WINDOW AC UNIT, REFER TO ARCHITECTURAL PLANS.
7. DEMO EXISTING VACUUM EXHAUST DUCT, FITTINGS AND SUPPORTS IN CEILING. TEMPORARILY CAP AND SEAL ANY PENETRATIONS TO THE OUTSIDE. ALL DUCT DIMENSIONS AND ROUTING AS SHOWN ARE APPROXIMATE. CONTRACTOR TO VERIFY IN THE FIELD.
8. PERMANENTLY CAP EXISTING DUCT AT BUILDING WALL.
9. EXISTING RADIATOR TO REMAIN.
10. EXISTING CABINETRY ENCLOSURE TO REMAIN.
11. DEMOLISH EXISTING AIR HANDLING UNIT, SUPPORTS AND ASSOCIATED DISCONNECT SWITCH/CONTROLS.
12. DEMOLISH EXISTING DUCTWORK AND SUPPORTS.
13. EXISTING GRILLE/REGISTER TO REMAIN.
14. DEMOLISH EXISTING STEAM AND CONDENSATE RETURNS AND F&T TRAPS. CAP PIPING BACK AT MAIN IN EACH SPACE.

NOTES



1 THIRD FLOOR PLAN

SCALE: 1/16" = 1'-0"

0 1/2 1

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE

No.	Date	Revisions
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2	11-19-21	SED ADDENDUM 1
1	08-30-21	BIDDING DOCUMENTS

Drawn by WM
Checked by ERF
Project No. 41048
Scale AS NOTED
Date 08-30-21

GREENMAN PEDERSEN, INC
400 RELLA BOULEVARD
MONTEBELLO, NY 10901

Mechanical & Electrical Engineer: - - -
Structural Engineer: - - -

UNIVENT REPLACEMENT AT HAVERSTRAW ELEMENTARY
SED# 50-02-01-06-0-009-018
COUNTY OF ROCKLAND
16 Grand Street
Haverstraw, NY 10927

MICHAEL SHILALE ARCHITECTS, L.L.P.
140 Park Avenue New City, NY 10956 Tel 845-708-9200
www.shilale.com

Drawing Title: HVAC DEMO - 3RD FLOOR PLAN

Drawing No. M-063

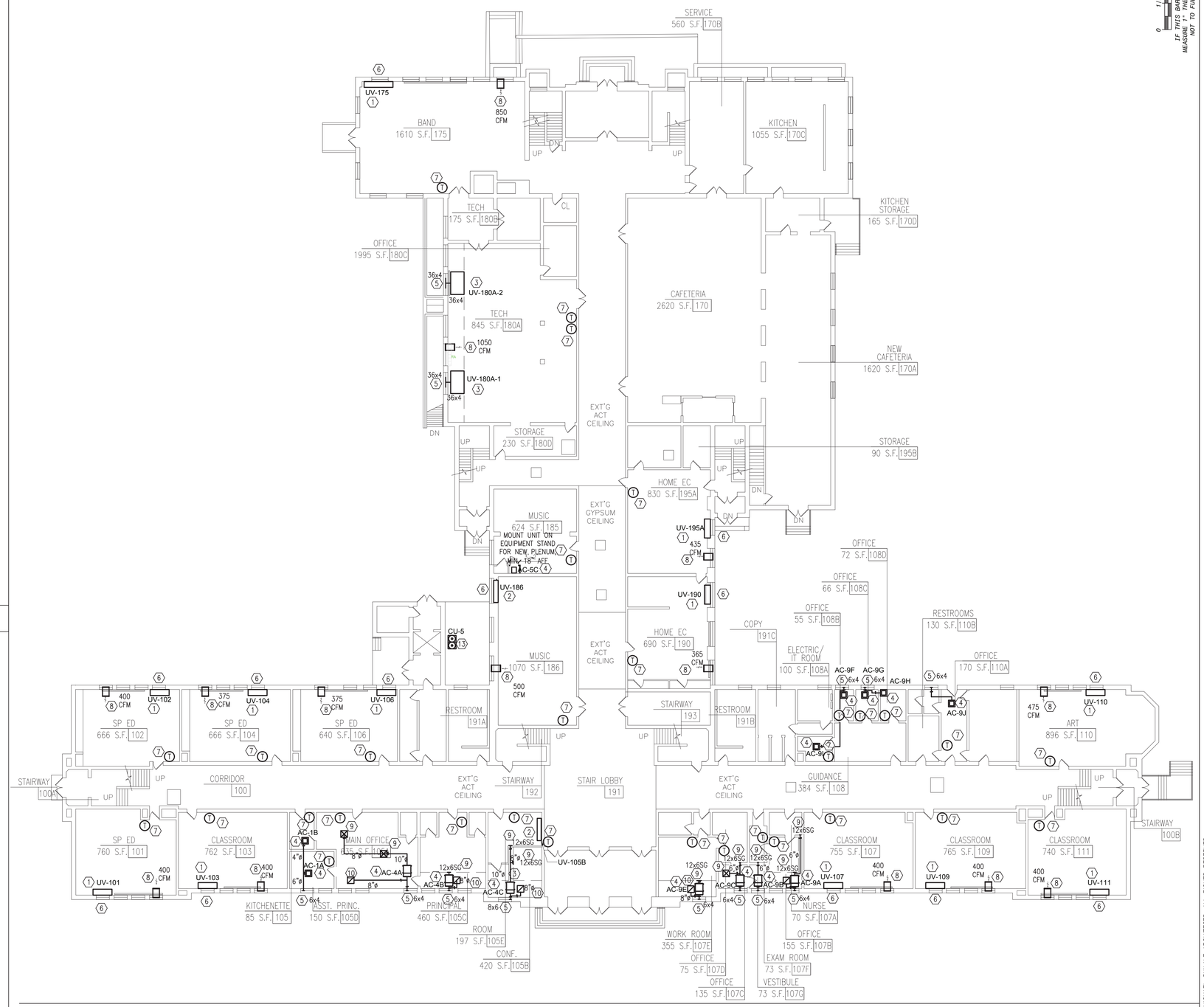
NOTES:

1. FURNISH AND INSTALL NEW VERTICAL UNIT VENTILATOR. REFER TO THE UNIT VENTILATOR SCHEDULE ON DRAWING M-006 AND DETAILS ON DRAWING M-501. CONNECT OUTSIDE AIR DUCT TO EXISTING OUTSIDE AIR OPENING/LOUVER.
2. FURNISH AND INSTALL NEW VERTICAL UNIT VENTILATOR. UTILIZE EXISTING ORIGINAL BUILT-IN CABINETRY ENCLOSURE. REFER TO THE UNIT VENTILATOR SCHEDULE ON DRAWING M-006 AND DETAILS ON DRAWING M-501. CONNECT OUTSIDE AIR DUCT TO EXISTING OUTSIDE AIR OPENING/LOUVER.
3. FURNISH AND INSTALL NEW HORIZONTAL UNIT VENTILATOR WITH NEW CEILING SUPPORTS. REFER TO THE UNIT VENTILATOR SCHEDULE ON DRAWING M-006 AND DETAILS ON DRAWING M-501.
4. FURNISH AND INSTALL NEW EVAPORATOR/AC INDOOR UNIT. REFER TO VRF HEAT RECOVERY INDOOR UNIT SCHEDULE ON DRAWING M-003 AND DETAILS ON DRAWING M-501.
5. FURNISH AND INSTALL NEW OUTSIDE AIR INTAKE LOUVER AT WINDOW INSULATED PANEL. GC TO PROVIDE OPENING TO ACCOMMODATE NEW LOUVER. COORDINATE OPENINGS WITH THE ARCHITECT AND GC.FURNISH AND INSTALL OUTSIDE AIR DUCT CONNECTION TO LOUVER WITH VOLUME DAMPER, SEE PLANS FOR DUCT SIZE.
6. EXISTING OUTSIDE AIR WALL LOUVER TO REMAIN. SIZE VARIES PER EACH ROOM. CONNECT OA INTAKE DUCT TO EXISTING LOUVER. SEE DETAILS ON DRAWING M-501.
7. FURNISH AND INSTALL NEW PROGRAMMABLE ELECTRONIC THERMOSTAT WITH LOCKING GUARD. INTEGRATE WITH THE SIEMENS BMS.
8. FURNISH AND INSTALL NEW RELIEF AIR LOUVER WITH MOTORIZED DAMPER, PROVIDE NEW OPENING AT INSULATED PANEL. COORDINATE OPENINGS WITH GC, SEE ARCHITECTURAL DETAILS. SEE DETAIL 9/M-501.
9. PROVIDE SUPPLY DIFFUSER WITH VOLUME DAMPER AND ASSOCIATED INSULATED DUCTWORK AS INDICATED. FLEX DUCT SHALL BE LIMITED TO 3'-0" MAX. BASIS OF DESIGN: TITUS TMS OR EQUAL.
10. PROVIDE 24x24 RETURN GRILLE IN EXISTING LAY-IN ACOUSTIC CEILING OR NEW SOFFIT. BASIS OF DESIGN: TITUS 45F OR EQUAL. EXTEND DUCTWORK AS INDICATED.
11. THE EXISTING DOOR UNDERCUT IS SUFFICIENT FOR AIR TRANSFER TO THE ADJACENT SPACE.
12. PROVIDE NEW DOOR UNDERCUT IN SPACE FOR SUFFICIENT AIR TRANSFER OF RELIEF AIR, SEE ARCHITECT DRAWINGS.
13. FURNISH AND INSTALL NEW OUTDOOR CONDENSING UNIT, SEE SCHEDULE ON DRAWING M-002. MOUNT AND SECURE UNIT TO WALL. UNIT SHALL BE MOUNTED MIN. 3'-0" ABOVE GRADE.

GENERAL NOTE:

FOR PIPING LAYOUT FOR EACH NEW EQUIPMENT, REFER TO DRAWINGS M-301, M-302 AND M-303.

NOTES



1 FIRST FLOOR PLAN

SCALE: 1/16" = 1'-0"

PLAN NORTH

1/2" IF THIS BAR DOES NOT MEASURE 1", THEN DRAWING IS NOT TO FULL SCALE

No.	Date	Revisions
3	12-17-21	ISSUED FOR BID
2	11-19-21	SED ADDENDUM 1
1	08-30-21	BIDDING DOCUMENTS

Drawn by WM
Checked by ERF
Project No. 41048
Scale AS NOTED
Date 08-30-21

GREENMAN PEDERSEN, INC
400 RELLA BOULEVARD
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Mechanical & Electrical Engineer:

Structural Engineer:

UNIVENT REPLACEMENT AT HAVERSTRAW ELEMENTARY
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Haverstraw, NY 10927

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Drawing Title
1ST FLOOR PLAN - MECHANICAL

Drawing No.
M-101

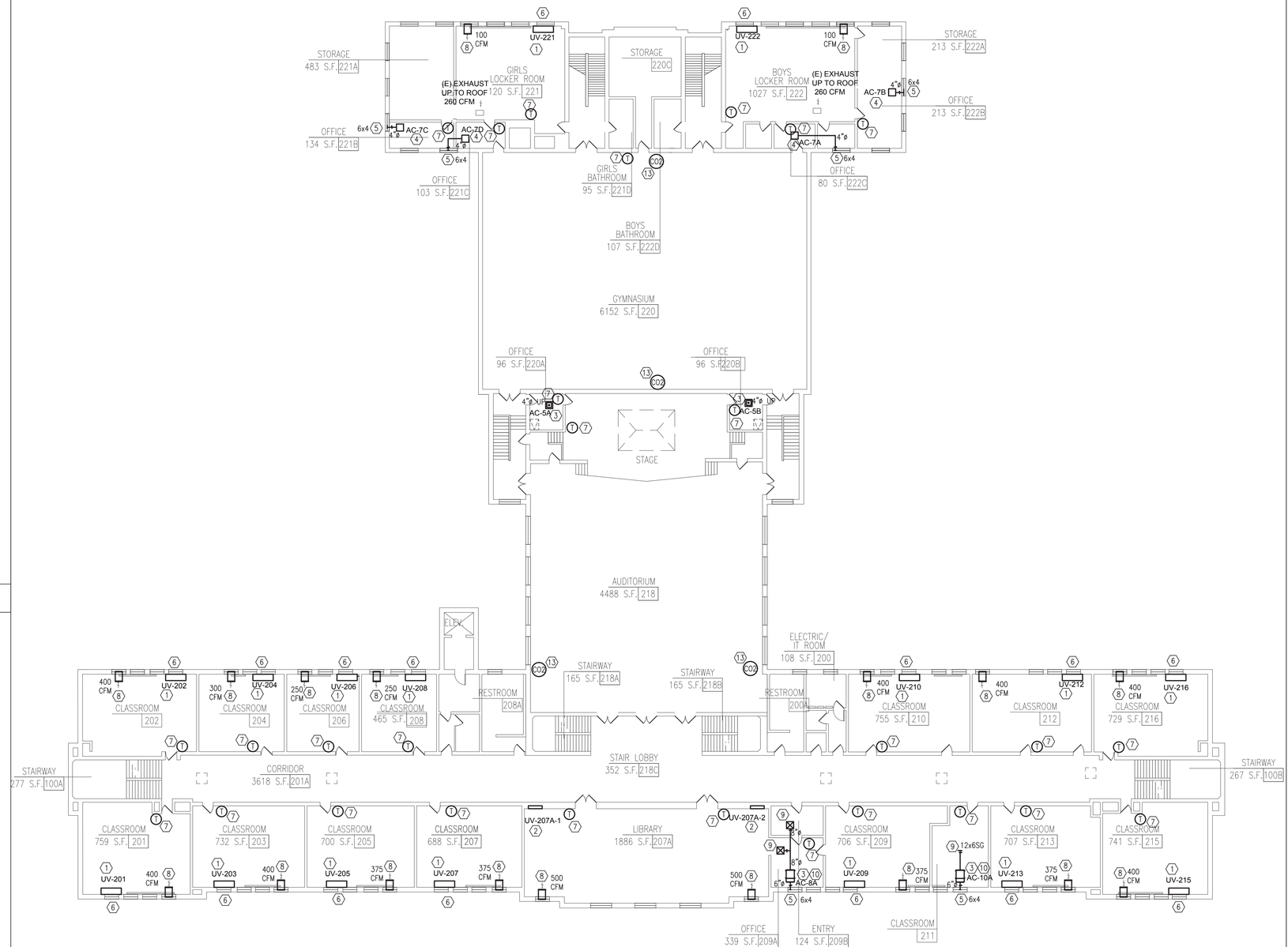
NOTES:

1. FURNISH AND INSTALL NEW VERTICAL UNIT VENTILATOR. REFER TO THE UNIT VENTILATOR SCHEDULE ON DRAWING M-006 AND DETAILS ON DRAWING M-501. CONNECT OUTSIDE AIR DUCT TO EXISTING OUTSIDE AIR OPENING/LOUVER.
2. FURNISH AND INSTALL NEW VERTICAL UNIT VENTILATOR. UTILIZE EXISTING ORIGINAL BUILT-IN CABINETRY ENCLOSURE. REFER TO THE UNIT VENTILATOR SCHEDULE ON DRAWING M-006 AND DETAILS ON DRAWING M-501. CONNECT OUTSIDE AIR DUCT TO EXISTING OUTSIDE AIR OPENING/LOUVER.
3. FURNISH AND INSTALL NEW HORIZONTAL UNIT VENTILATOR WITH NEW CEILING SUPPORTS. REFER TO THE UNIT VENTILATOR SCHEDULE ON DRAWING M-006 AND DETAILS ON DRAWING M-501.
4. FURNISH AND INSTALL NEW EVAPORATOR/AC INDOOR UNIT. REFER TO VRF HEAT RECOVERY INDOOR UNIT SCHEDULE ON DRAWING M-003 AND DETAILS ON DRAWING M-501.
5. FURNISH AND INSTALL NEW OUTSIDE AIR INTAKE LOUVER AT WINDOW INSULATED PANEL. GC TO PROVIDE OPENING TO ACCOMMODATE NEW LOUVER. COORDINATE OPENINGS WITH THE ARCHITECT AND GC. FURNISH AND INSTALL OUTSIDE AIR DUCT CONNECTION TO LOUVER WITH VOLUME DAMPER, SEE PLANS FOR DUCT SIZE.
6. EXISTING OUTSIDE AIR WALL LOUVER TO REMAIN. SIZE VARIES PER EACH ROOM. CONNECT OA INTAKE DUCT TO EXISTING LOUVER. SEE DETAILS ON DRAWING M-501.
7. FURNISH AND INSTALL NEW PROGRAMMABLE ELECTRONIC THERMOSTAT WITH LOCKING GUARD. INTEGRATE WITH THE SIEMENS BMS.
8. FURNISH AND INSTALL NEW RELIEF AIR LOUVER WITH MOTORIZED DAMPER, PROVIDE NEW OPENING AT INSULATED PANEL. COORDINATE OPENINGS WITH GC, SEE ARCHITECTURAL DETAILS. SEE DETAIL 9/M-501.
9. PROVIDE SUPPLY DIFFUSER WITH VOLUME DAMPER AND ASSOCIATED INSULATED DUCTWORK AS INDICATED. FLEX DUCT SHALL BE LIMITED TO 3'-0" MAX. BASIS OF DESIGN: TITUS TMS OR EQUAL.
10. PROVIDE 24x24 RETURN GRILLE IN EXISTING LAY-IN ACOUSTIC CEILING OR NEW SOFFIT. BASIS OF DESIGN: TITUS 45F OR EQUAL.
11. THE EXISTING DOOR UNDERCUT IS SUFFICIENT FOR AIR TRANSFER TO THE ADJACENT SPACE.
12. PROVIDE NEW DOOR UNDERCUT IN SPACE FOR SUFFICIENT AIR TRANSFER OF RELIEF AIR, SEE ARCHITECT DRAWINGS.
13. FURNISH AND INSTALL NEW WALL MOUNT CARBON DIOXIDE SENSOR FOR NEW RTU. REFER TO DRAWING M-004 FOR CONTROL DIAGRAM. MOUNT THE SENSOR ON INSIDE WALL OR PANEL APPROXIMATELY 54" ABOVE THE FLOOR (OR OTHERWISE DIRECTED) TO ALLOW EXPOSURE TO THE AVERAGE ZONE TEMPERATURE. FOR ACCURATE TEMPERATURE SENSING DO NOT MOUNT DEVICE ON OUTSIDE WALL, ADJACENT TO PIPES, IN DIRECT SUNLIGHT, NEAR RADIANT HEAT SOURCES, AIR DUCTS, ETC. THAT COULD IMPACT SENSING ACCURACY. REFER TO MANUFACTURER'S IOM INSTRUCTIONS FOR MORE INFO.

GENERAL NOTE:

FOR PIPING LAYOUT FOR EACH NEW EQUIPMENT, REFER TO DRAWINGS M-301, M-302 AND M-303.

NOTES



1 SECOND FLOOR PLAN

SCALE: 1/16" = 1'-0"

1/2" IF THIS BAR DOES NOT MEASURE 1", THEN DRAWING IS NOT TO FULL SCALE

No.	Date	Revisions
3	12-17-21	ISSUED FOR BID
2	11-19-21	SED ADDENDUM 1
1	08-30-21	BIDDING DOCUMENTS

Drawn by WM
Checked by ERF
Project No. 41048
Scale AS NOTED
Date 08-30-21

GREENMAN PEDERSEN, INC
400 RELLA BOULEVARD
MONTEBELLO, NY 10901

Mechanical & Electrical Engineer:

Structural Engineer:

UNIVENT REPLACEMENT AT HAVERSTRAW ELEMENTARY
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Drawing Title: 2ND FLOOR PLAN - MECHANICAL

Drawing No. M-102

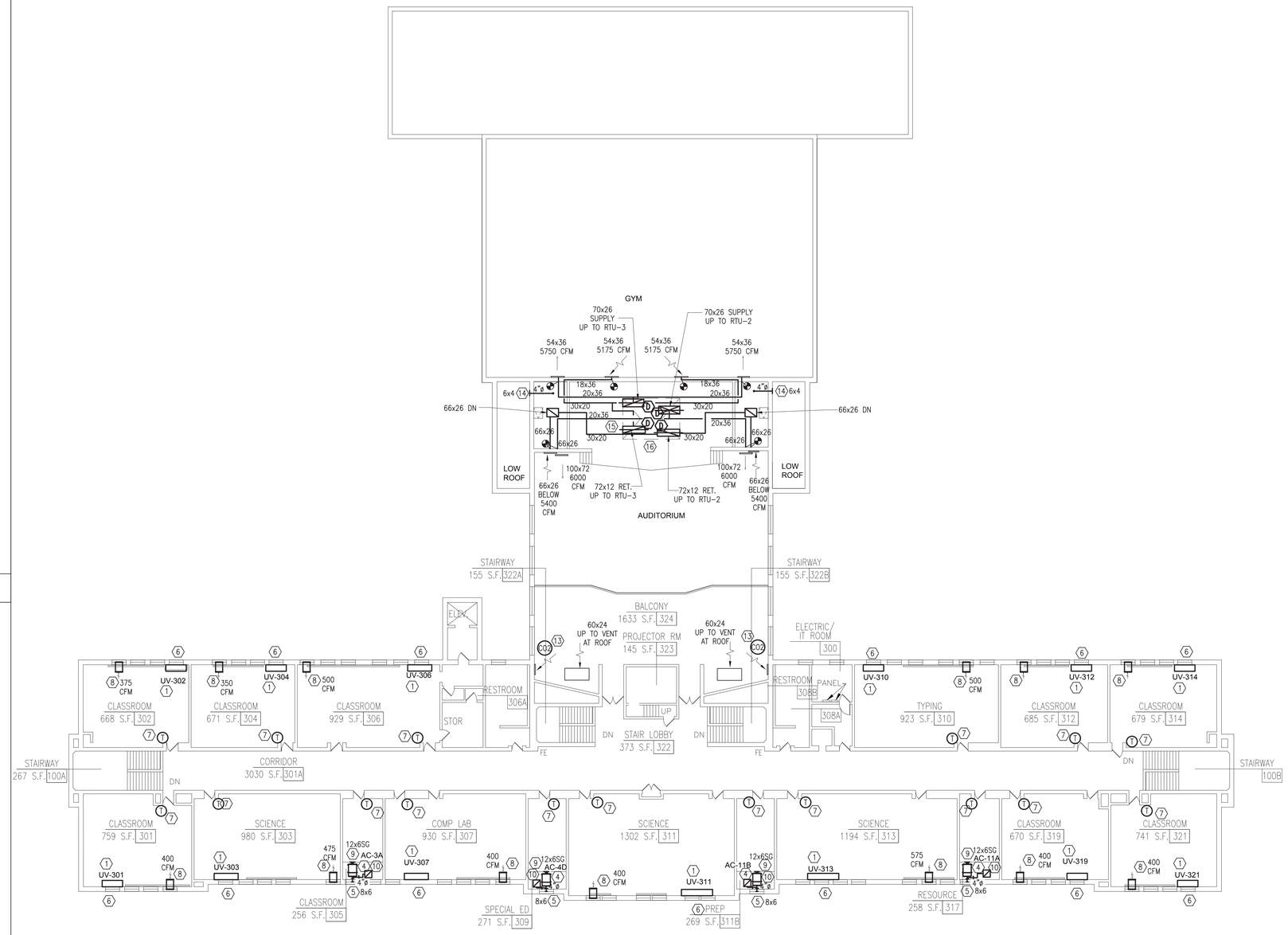
NOTES:

1. FURNISH AND INSTALL NEW VERTICAL UNIT VENTILATOR. REFER TO THE UNIT VENTILATOR SCHEDULE ON DRAWING M-006 AND DETAILS ON DRAWING M-501. CONNECT OUTSIDE AIR DUCT TO EXISTING OUTSIDE AIR OPENING/LOUVER.
2. FURNISH AND INSTALL NEW VERTICAL UNIT VENTILATOR. UTILIZE EXISTING ORIGINAL BUILT-IN CABINETRY ENCLOSURE. REFER TO THE UNIT VENTILATOR SCHEDULE ON DRAWING M-006 AND DETAILS ON DRAWING M-501. CONNECT OUTSIDE AIR DUCT TO EXISTING OUTSIDE AIR OPENING/LOUVER.
3. FURNISH AND INSTALL NEW HORIZONTAL UNIT VENTILATOR WITH NEW CEILING SUPPORTS. REFER TO THE UNIT VENTILATOR SCHEDULE ON DRAWING M-006 AND DETAILS ON DRAWING M-501.
4. FURNISH AND INSTALL NEW EVAPORATOR/AC INDOOR UNIT. REFER TO VRF HEAT RECOVERY INDOOR UNIT SCHEDULE ON DRAWING M-003 AND DETAILS ON DRAWING M-501.
5. FURNISH AND INSTALL NEW OUTSIDE AIR INTAKE LOUVER AT WINDOW INSULATED PANEL. GC TO PROVIDE OPENING TO ACCOMMODATE NEW LOUVER. COORDINATE OPENINGS WITH THE ARCHITECT AND GC. FURNISH AND INSTALL OUTSIDE AIR DUCT CONNECTION TO LOUVER WITH VOLUME DAMPER, SEE PLANS FOR DUCT SIZE.
6. EXISTING OUTSIDE AIR WALL LOUVER TO REMAIN. SIZE VARIES PER EACH ROOM. CONNECT OA INTAKE DUCT TO EXISTING LOUVER. SEE DETAILS ON DRAWING M-501.
7. FURNISH AND INSTALL NEW PROGRAMMABLE ELECTRONIC THERMOSTAT WITH LOCKING GUARD. INTEGRATE WITH THE SIEMENS BMS.
8. FURNISH AND INSTALL NEW RELIEF AIR LOUVER 24X12 WITH MOTORIZED DAMPER(24x12), PROVIDE NEW OPENING AT INSULATED PANEL. COORDINATE OPENINGS WITH GC, SEE ARCHITECTURAL DETAILS. SEE DETAIL 9/M-501.
9. PROVIDE SUPPLY DIFFUSER WITH VOLUME DAMPER AND ASSOCIATED INSULATED DUCTWORK AS INDICATED. FLEX DUCT SHALL BE LIMITED TO 3'-0" MAX. BASIS OF DESIGN: TITUS TMS OR EQUAL.
10. PROVIDE 24x24 RETURN GRILLE IN EXISTING LAY-IN ACOUSTIC CEILING OR NEW SOFFIT. BASIS OF DESIGN: TITUS 45F OR EQUAL.
11. THE EXISTING DOOR UNDERCUT IS SUFFICIENT FOR AIR TRANSFER TO THE ADJACENT SPACE.
12. PROVIDE NEW DOOR UNDERCUT IN SPACE FOR SUFFICIENT AIR TRANSFER OF RELIEF AIR, SEE ARCHITECT DRAWINGS.
13. FURNISH AND INSTALL NEW WALL MOUNT CARBON DIOXIDE SENSOR FOR NEW RTU. REFER TO DRAWING M-004 FOR CONTROL DIAGRAM. MOUNT THE SENSOR ON INSIDE WALL OR PANEL APPROXIMATELY 54" ABOVE THE FLOOR (OR OTHERWISE DIRECTED) TO ALLOW EXPOSURE TO THE AVERAGE ZONE TEMPERATURE. FOR ACCURATE TEMPERATURE SENSING DO NOT MOUNT DEVICE ON OUTSIDE WALL, ADJACENT TO PIPES, IN DIRECT SUNLIGHT, NEAR RADIANT HEAT SOURCES, AIR DUCTS, ETC. THAT COULD IMPACT SENSING ACCURACY. REFER TO MANUFACTURER'S IOM INSTRUCTIONS FOR MORE INFO.
14. PROVIDE NEW NON-FLANGED LOUVER AT EXISTING OPENING. INFILL EXISTING OPENING TO ACCOMMODATE NEW LOUVER. SEE ARCHITECT'S PLANS FOR PATCHING AND REPAIR DETAILS AT BUILDING FACADE.
15. FURNISH AND INSTALL DUCT SMOKE DETECTOR ON STRAIGHT DUCT, COORDINATE INSTALLATION WITH ELECTRICAL. FURNISH AND INSTALL FIRE SMOKE DAMPER AT ROOF PENETRATION. (TYP. 4).
16. CONTRACTOR RESPONSIBLE TO FIELD VERIFY AND MEASURE ROUTING OF NEW DUCTWORK AT STAGE AREA FOR THE NEW RTUs. AVOID ANY CONFLICTS/INTERFERENCE WITH EXISTING CONDITIONS, SUCH AS THE CABLES AND PULLEYS FOR THE STAGE CURTAINS. DUCTWORK SHALL BE ROUTED HIGH AT WALL. SUPPLY DUCTWORK IS TO BE INSULATED. RETURN DUCTWORK TO BE PAINTED BLACK, VERIFY FINISH REQUIREMENTS WITH ARCHITECT.

GENERAL NOTE:

FOR PIPING LAYOUT FOR EACH NEW EQUIPMENT, REFER TO DRAWINGS M-301, M-302 AND M-303.

NOTES



1 THIRD FLOOR PLAN

SCALE: 1/16" = 1'-0"

PLAN NORTH

0 1/2 1

IF THIS BAR DOES NOT MEASURE 1", THEN DRAWING IS NOT TO FULL SCALE

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Drawn by WM
Checked by ERF
Project No. 41048
Scale AS NOTED
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GREENMAN PEDERSEN, INC
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Structural Engineer:

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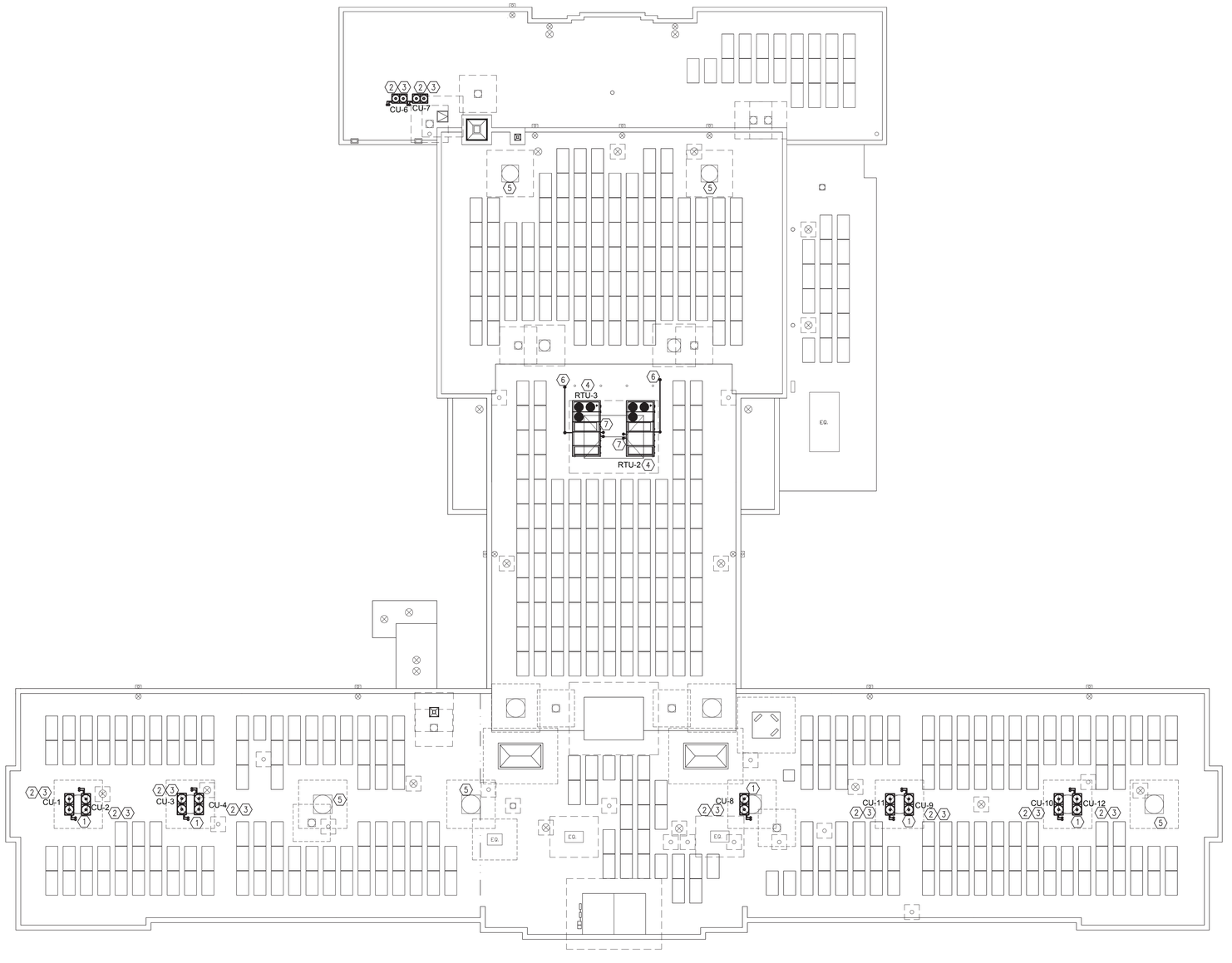
Drawing Title
3RD FLOOR PLAN - MECHANICAL

Drawing No.
M-103

NOTES:

1. DEMOLISH EXISTING GRAVITY VENTILATOR AND DAMPER AT ROOF. DEMOLISH ASSOCIATED DUCTWORK DIRECTLY BELOW ROOF. DISCONNECT DAMPER FROM SIEMENS BMS CONTROL.
2. PROVIDE NEW OUTDOOR CONDENSING UNIT, SEE SCHEDULE ON DRAWING M-002. MOUNT UNIT ON MODIFIED ROOF CURB/DUNNAGE, SEE STRUCTURAL DRAWINGS.
3. PROVIDE NEW DX PIPING FROM BRANCH CONTROLLER, SEE FLOOR BELOW. FOR ROOF CURB AND ROOF SUPPORT DETAIL, SEE DRAWING M-502 AND ARCHITECTURAL DRAWINGS FOR PROPER SEALING FOR PIPE SIZES, SEE DRAWING M-401.
4. PROVIDE NEW ROOFTOP AIR HANDLING UNIT AT LOCATION OF EXISTING SKYLIGHT, SEE SCHEDULE ON DRAWING M-002. GC TO DEMO EXISTING SKYLIGHT. MOUNT AHUS ON NEW ROOF CURB. PROVIDE ADEQUATE CLEARANCE AS PER MANUFACTURER'S IOM. SEE DETAILS FOR MORE INFO.
5. EXISTING GRAVITY VENTILATOR TO REMAIN.
6. PROVIDE NEW CONDENSATE DRAINAGE, TERMINATE ON ROOF TO NEAREST DRAIN. PROVIDE SPLASH BLOCK. SEE DETAIL 5/M501 FOR SUPPORT OF PIPING ON ROOF.
7. PROVIDE NEW STEAM AND CONDENSATE PIPING, CONNECT TO EXISTING MAIN. SEE DETAIL 3/M501. PROVIDE FACTORY ASSEMBLED PIPE CABINET WITH ROOFTOP AIR HANDLING UNIT. EXTEND BASE FLASHING TO CURB.

NOTES



1 **ROOF PLAN**
SCALE: 1/16" = 1'-0"

0 1/2 1
IF THIS BAR DOES NOT MEASURE 1", THEN DRAWING IS NOT TO FULL SCALE

No.	Date	Revisions
3	12-17-21	ISSUED FOR BID
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GREENMAN PEDERSEN, INC
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Drawing Title
ROOF PLAN - MECHANICAL

Drawing No.
M-104

NOTES:

1. FURNISH AND INSTALL NEW STEAM PIPING AND INSULATION AT COIL CONNECTIONS AT NEW UNIT VENTILATOR. SEE DETAIL 4/M-501. ALL PENETRATIONS THROUGH FIRE-RATED CONSTRUCTION SHALL BE SLEEVED/FIRESTOPPED, SEE DETAILS ON M-502. PROVIDE ADEQUATE SUPPORTS THROUGHOUT, SEE DETAILS ON M-502.

2. FURNISH AND INSTALL NEW DX PIPING WITH INSULATION AT NEW INDOOR UNIT. FOR PIPE SIZES REFER TO DRAWING M-401. ALL PENETRATIONS THROUGH FIRE-RATED CONSTRUCTION SHALL BE SLEEVED/FIRESTOPPED, SEE DETAILS ON M-502. PROVIDE ADEQUATE SUPPORTS THROUGHOUT, SEE DETAILS ON M-502.

3. FURNISH AND INSTALL LEV KIT FOR NEW UNIT VENTILATOR, SEE VRF INDOOR UNIT SCHEDULE ON DRAWING M-003.

4. FURNISH AND INSTALL NEW BRANCH CIRCUIT CONTROLLER, SEE BC CONTROLLER SCHEDULE ON DRAWING M-002. FURNISH AND INSTALL 3/4" CONDENSATE DRAINAGE PIPING FOR EACH BRANCH CONTROLLER. TERMINATE DRAIN IN AIR GAP AT NEAREST JANITOR SINK. FOLLOW MANUFACTURER'S IOM MANUAL FOR ADDITIONAL INSTRUCTIONS.

5. FURNISH AND INSTALL ENCLOSURE TO CONCEAL EXPOSED PIPING CONNECTED TO UNIT. SEE ARCH PLANS FOR DETAILS, FINISH AND COLOR. ENCLOSURE SHALL BE REMOVABLE AND CONSTRUCTED OF 24 GA STEEL. ENCLOSURE SHALL BE PAINTED TO MATCH EXISTING FINISHES. VERIFY COLOR FINISH WITH ARCHITECT AND FACILITIES.

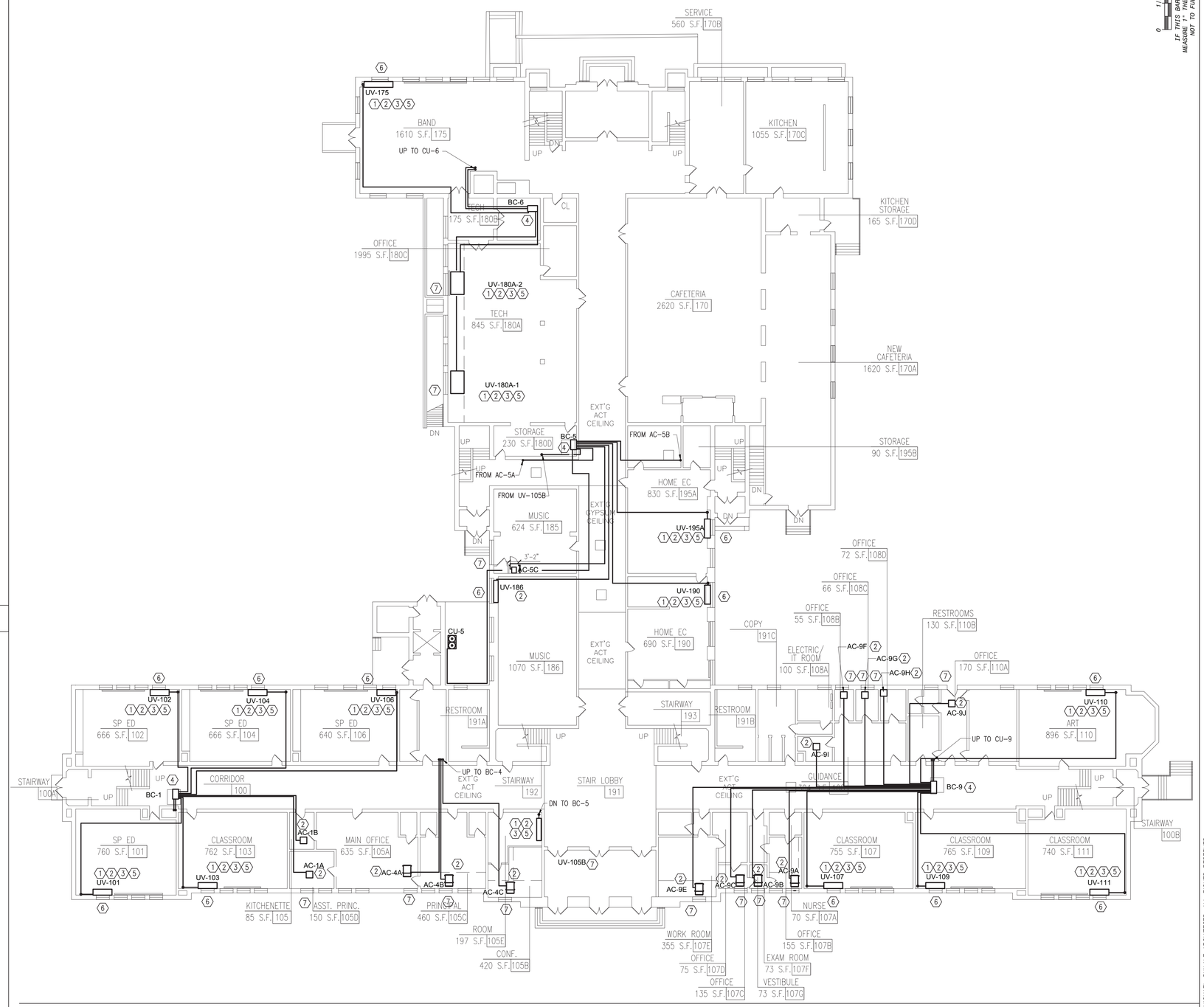
6. AT EACH UNIT VENTILATOR, FURNISH AND INSTALL NEW 3/4" CONDENSATE DRAIN FROM DRAIN PAN. TERMINATE AT BUILDING EXTERIOR WALL, SEE DETAIL 1/M501.

7. AT EACH EVAPORATOR INDOOR UNIT/CEILING MOUNTED UNIT VENTILATOR, FURNISH AND INSTALL NEW 3/4" CONDENSATE DRAIN. TERMINATE DRAIN AT BUILDING EXTERIOR WALL THROUGH INSULATED PANEL BENEATH NEW OUTSIDE AIR LOUVER.

GENERAL NOTE:

FOR APPROXIMATE REFRIGERANT PIPE SIZES AND LENGTHS, SEE VRF PIPING RISERS DRAWING M-401.

NOTES



1 FIRST FLOOR PLAN

SCALE: 1/16" = 1'-0"

0 1/2 1

IF THIS BAR DOES NOT MEASURE 1", THEN DRAWING IS NOT TO FULL SCALE

No.	Date	Revisions
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1	08-30-21	BIDDING DOCUMENTS

Drawn by WM
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Project No. 41048
Scale AS NOTED
Date 08-30-21

GREENMAN PEDERSEN, INC
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Drawing Title: HVAC PIPING - 1ST FLOOR PLAN

Drawing No.: M-301

NOTES:

1. FURNISH AND INSTALL NEW STEAM PIPING AND INSULATION AT COIL CONNECTIONS AT NEW UNIT VENTILATOR. SEE DETAIL 4/M-501. ALL PENETRATIONS THROUGH FIRE-RATED CONSTRUCTION SHALL BE SLEEVED/FIRESTOPPED, SEE DETAILS ON M-502. PROVIDE ADEQUATE SUPPORTS THROUGHOUT, SEE DETAILS ON M-502.

2. FURNISH AND INSTALL NEW DX PIPING WITH INSULATION AT NEW INDOOR UNIT. FOR PIPE SIZES REFER TO DRAWING M-401. ALL PENETRATIONS THROUGH FIRE-RATED CONSTRUCTION SHALL BE SLEEVED/FIRESTOPPED, SEE DETAILS ON M-502. PROVIDE ADEQUATE SUPPORTS THROUGHOUT, SEE DETAILS ON M-502.

3. FURNISH AND INSTALL LEV KIT FOR NEW UNIT VENTILATOR, SEE VRF INDOOR UNIT SCHEDULE ON DRAWING M-003.

4. FURNISH AND INSTALL NEW BRANCH CIRCUIT CONTROLLER, SEE BC CONTROLLER SCHEDULE ON DRAWING M-002. FURNISH AND INSTALL 3/4" CONDENSATE DRAINAGE PIPING FOR EACH BRANCH CONTROLLER. TERMINATE DRAIN IN AIR GAP AT NEAREST JANITOR SINK. FOLLOW MANUFACTURER'S IOM MANUAL FOR ADDITIONAL INSTRUCTIONS.

5. FURNISH AND INSTALL ENCLOSURE TO CONCEAL EXPOSED PIPING CONNECTED TO UNIT. SEE ARCH PLANS FOR DETAILS, FINISH AND COLOR. ENCLOSURE SHALL BE REMOVABLE AND CONSTRUCTED OF 24 GA STEEL. ENCLOSURE SHALL BE PAINTED TO MATCH EXISTING FINISHES. VERIFY COLOR FINISH WITH ARCHITECT AND FACILITIES.

6. ENCLOSE NEW PIPING IN 6" ø AIR-TIGHT PIPE ENCLOSURE. PROVIDE FIRESTOPPING AT WALL PENETRATIONS, SEE DETAILS ON M-502.

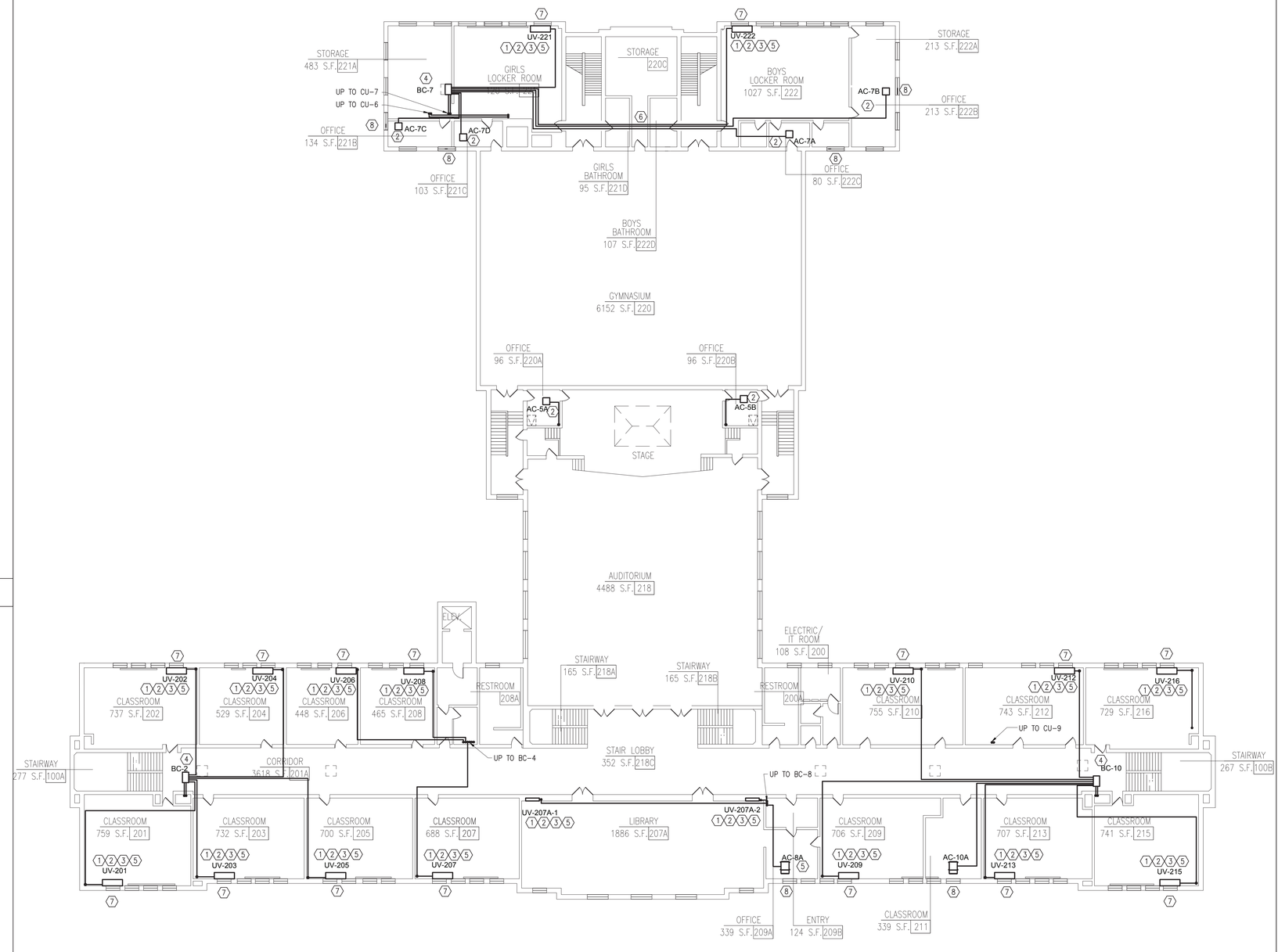
7. AT EACH UNIT VENTILATOR, FURNISH AND INSTALL NEW 3/4" CONDENSATE DRAIN FROM DRAIN PAN. TERMINATE AT BUILDING EXTERIOR WALL, SEE DETAIL 1/M501.

8. AT EACH EVAPORATOR INDOOR UNIT, FURNISH AND INSTALL NEW 3/4" CONDENSATE DRAIN. TERMINATE DRAIN AT BUILDING EXTERIOR WALL THROUGH INSULATED PANEL BENEATH NEW OUTSIDE AIR LOUVER.

GENERAL NOTE:

FOR APPROXIMATE REFRIGERANT PIPE SIZES AND LENGTHS, SEE VRF PIPING RISERS DRAWING M-401.

NOTES



1 **SECOND FLOOR PLAN**
SCALE: 1/16" = 1'-0"

PLAN NORTH

1/2" IF THIS BAR DOES NOT MEASURE 1", THEN DRAWING IS NOT TO FULL SCALE

No.	Date	Revisions
3	12-17-21	ISSUED FOR BID
2	11-19-21	SED ADDENDUM 1
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GREENMAN PEDERSEN, INC
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Mechanical & Electrical Engineer:

Structural Engineer: - - - -

UNIVENT REPLACEMENT
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Drawing Title **HVAC PIPING - 2ND FLOOR PLAN**

Drawing No. **M-302**

NOTES:

1. FURNISH AND INSTALL NEW STEAM PIPING AND INSULATION AT COIL CONNECTIONS AT NEW UNIT VENTILATOR. SEE DETAIL 4/M-501. ALL PENETRATIONS THROUGH FIRE-RATED CONSTRUCTION SHALL BE SLEEVED/FIRESTOPPED, SEE DETAILS ON M-502. PROVIDE ADEQUATE SUPPORTS THROUGHOUT, SEE DETAILS ON M-502.

2. FURNISH AND INSTALL NEW DX PIPING WITH INSULATION AT NEW INDOOR UNIT. FOR PIPE SIZES REFER TO DRAWING M-401. ALL PENETRATIONS THROUGH FIRE-RATED CONSTRUCTION SHALL BE SLEEVED/FIRESTOPPED, SEE DETAILS ON M-502. PROVIDE ADEQUATE SUPPORTS THROUGHOUT, SEE DETAILS ON M-502.

3. FURNISH AND INSTALL LEV KIT FOR NEW UNIT VENTILATOR, SEE VRF INDOOR UNIT SCHEDULE ON DRAWING M-003.

4. FURNISH AND INSTALL NEW BRANCH CIRCUIT CONTROLLER, SEE BC CONTROLLER SCHEDULE ON DRAWING M-002. FURNISH AND INSTALL 3/4" CONDENSATE DRAINAGE PIPING FOR EACH BRANCH CONTROLLER. TERMINATE DRAIN IN AIR GAP AT NEAREST JANITOR SINK. FOLLOW MANUFACTURER'S IOM MANUAL FOR ADDITIONAL INSTRUCTIONS.

5. FURNISH AND INSTALL ENCLOSURE TO CONCEAL EXPOSED PIPING CONNECTED TO UNIT. SEE ARCH PLANS FOR DETAILS, FINISH AND COLOR. ENCLOSURE SHALL BE REMOVABLE AND CONSTRUCTED OF 24 GA STEEL. ENCLOSURE SHALL BE PAINTED TO MATCH EXISTING FINISHES. VERIFY COLOR FINISH WITH ARCHITECT AND FACILITIES.

6. FURNISH AND INSTALL NEW STEAM SUPPLY AND RETURN PIPING AND INSULATION AT COIL CONNECTIONS FOR NEW RTU. SEE DETAIL 3/M-501. FIRESTOP ALL RATED PENETRATIONS, SEE DRAWING M-502.

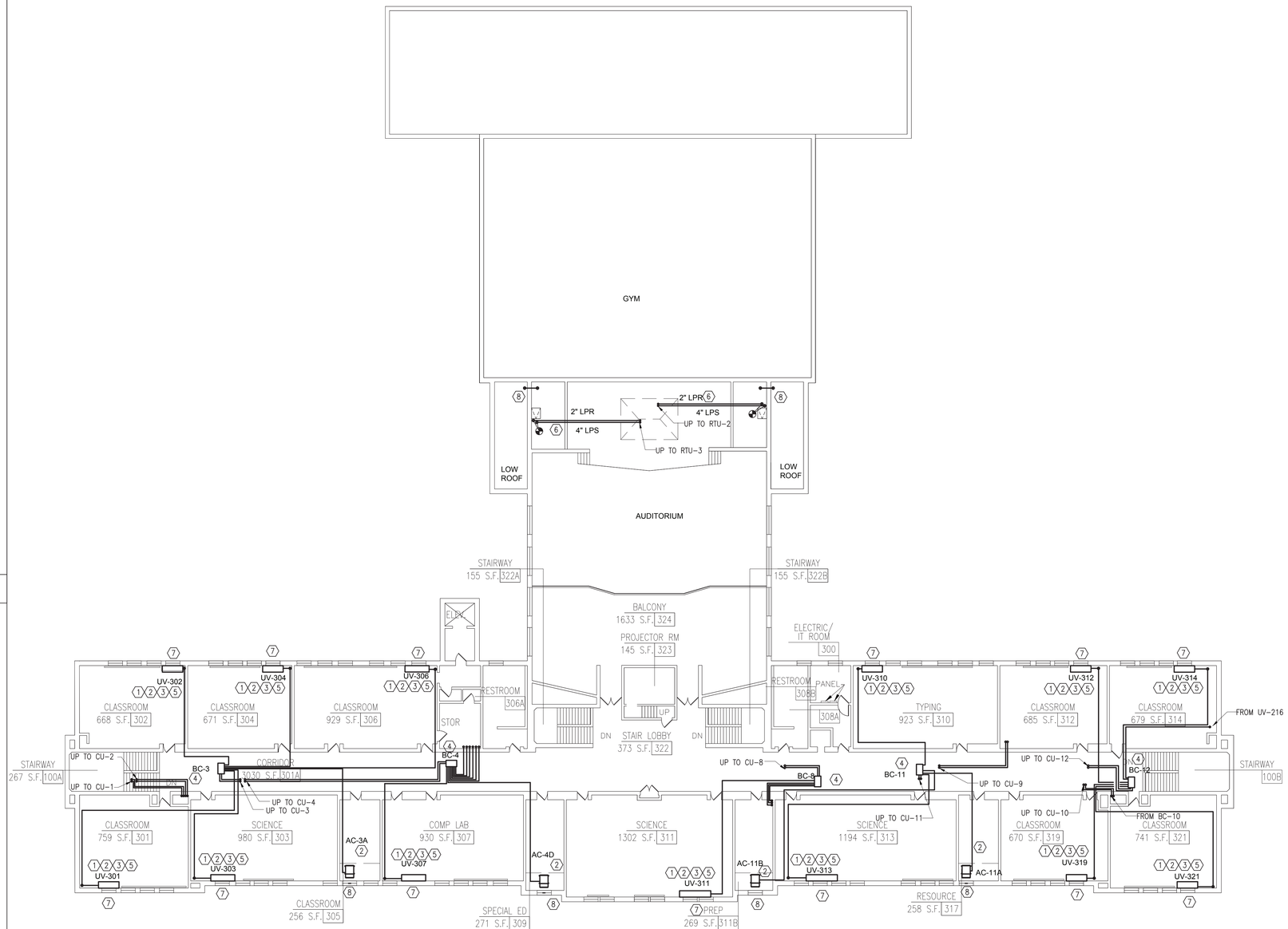
7. AT EACH UNIT VENTILATOR, FURNISH AND INSTALL NEW 3/4" CONDENSATE DRAIN FROM DRAIN PAN. TERMINATE AT BUILDING EXTERIOR WALL, SEE DETAIL 1/M501.

8. AT EACH EVAPORATOR INDOOR UNIT, FURNISH AND INSTALL NEW 3/4" CONDENSATE DRAIN. TERMINATE DRAIN AT BUILDING EXTERIOR WALL THROUGH INSULATED PANEL BENEATH NEW OUTSIDE AIR LOUVER.

GENERAL NOTE:

FOR APPROXIMATE REFRIGERANT PIPE SIZES AND LENGTHS, SEE VRF PIPING RISERS DRAWING M-401.

NOTES



1 **THIRD FLOOR PLAN**
SCALE: 1/16" = 1'-0"

PLAN NORTH

0 1/2 1
IF THIS BAR DOES NOT MEASURE 1", THEN DRAWING IS NOT TO FULL SCALE

No.	Date	Revisions
1	08-30-21	BIDDING DOCUMENTS
2	11-19-21	ISSED ADDENDUM 1
3	12-17-21	ISSUED FOR BID

Drawn by WM
Checked by ERF
Project No. 41048
Scale AS NOTED
Date 08-30-21

GREENMAN PEDERSEN, INC
450 NEW KARNER ROAD
ALBANY, NEW YORK
MONTGOMERY, NY 10941

Mechanical & Electrical Engineer:
Structural Engineer:

UNIVENT REPLACEMENT
AT
HAVERSTRAW
ELEMENTARY
SBD# 50-02-01-06-0-009-018
COUNTY OF ROCKLAND
18 Grant Street
Haverstraw, NY 10927

MICHAEL SHILALE ARCHITECTS, L.L.P.
140 Park Avenue New City, NY 10956 Tel 845-708-9200
www.shilale.com

Drawing Title
HVAC PIPING - 3RD FLOOR PLAN

Drawing No.
M-303

1 VRF PIPING RISER DIAGRAMS

SCALE: NONE

NOTES:
1. CONTRACTOR TO VERIFY ALL PIPE LENGTHS AND BENDS IN THE FIELD.

IF THIS BAR DOES NOT MEASURE 1", THEN DRAWING IS NOT TO FULL SCALE

0 1/2 1

No.	Date	Revisions
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Drawn by WM
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Project No. 41048
Scale AS NOTED
Date 08-30-21

GREENMAN PEDERSEN, INC
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MOOTHERELLA, NY 10901

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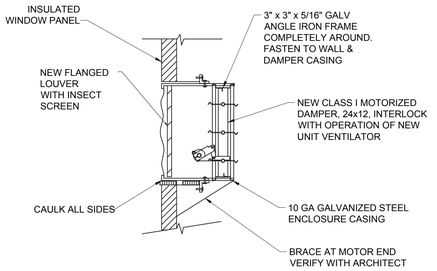
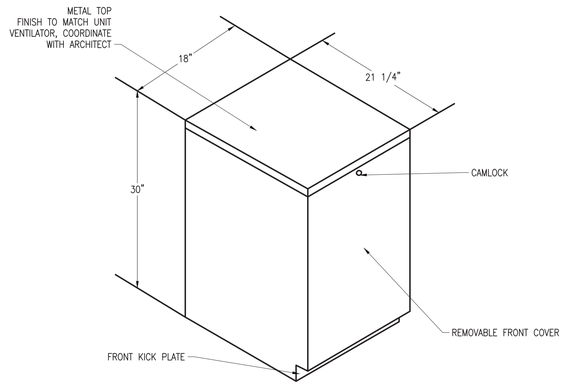
Drawing Title
VRF PIPING RISERS

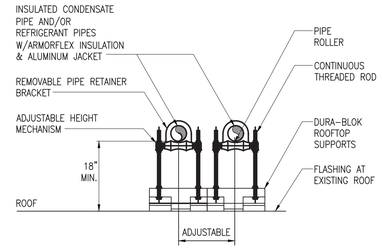
Drawing No.
M-401



9 RELIEF DAMPER FOR UV
SCALE: N.T.S.

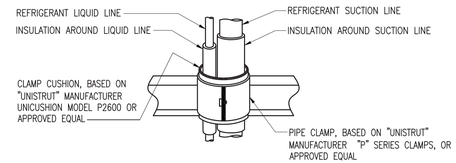


8 LEV HOUSING KIT (TYP)
SCALE: N.T.S.



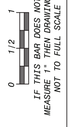
NOTE:
FURNISH AND INSTALL PIPE MOUNTED PEDESTALS FOR MULTIPLE PIPE SUPPORTS MANUFACTURED BY COOPER B-LINE, (DURA-BLOK ROOFTOP SUPPORTS) DB SERIES OR APPROVED EQUAL.

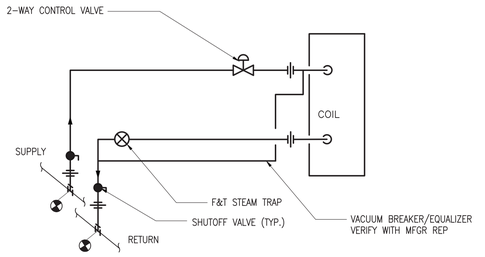
7 ROOF PIPE SUPPORT
SCALE: N.T.S.



NOTE:
1. LIQUID AND SUCTION LINES MAY BE ROUTED TOGETHER FOR CONVENIENCE, BUT MUST BE COMPLETELY INSULATED FROM EACH OTHER. DO NOT SOLDER LIQUID AND SUCTION LINES TOGETHER. DO NOT ALLOW METAL TO METAL CONTACT.
2. LINES SHOULD BE INSTALLED WITH AS FEW BENDS AS POSSIBLE, ALLOWING SERVICE ACCESS TO THE INDOOR COIL.
3. SLOPE HORIZONTAL SUCTION LINES 1 INCH EVERY 20 FEET TOWARD THE OUTDOOR UNIT.
4. USE LONG RADIUS ELBOWS WHEREVER POSSIBLE, EXCEPT IN OIL RETURN TRAPS, WHERE SHORT RADIUS ELBOWS SHOULD BE USED.

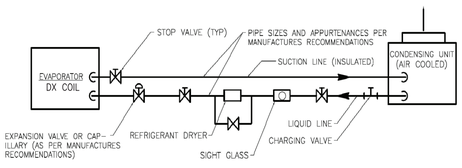
6 REFRIGERANT PIPE SUPPORT DETAIL
SCALE: N.T.S.





4 STEAM COIL PIPING AT UV DETAIL
SCALE: N.T.S.

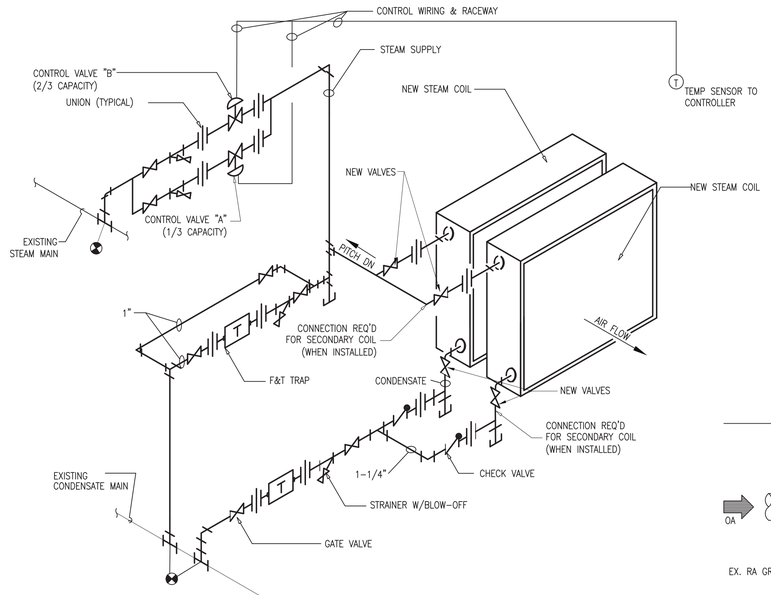
NOTE:
1. CONTRACTOR SHALL FURNISH AND INSTALL NEW PIPING, TRAPS, CONTROL VALVES AND INSULATION AT EACH UNIT VENTILATOR. PROVIDE AN ALLOWANCE FOR REPLACEMENT OF 10 LF OF PIPING AND INSULATION FOR EACH UNIT VENTILATOR BEING REPLACED.
2. REFER TO MANUFACTURER'S IOM MANUAL FOR ADDITIONAL INFORMATION



NOTE: THE HORIZONTAL DIMENSION OF OIL TRAPS TO BE AS SHORT AS POSSIBLE.

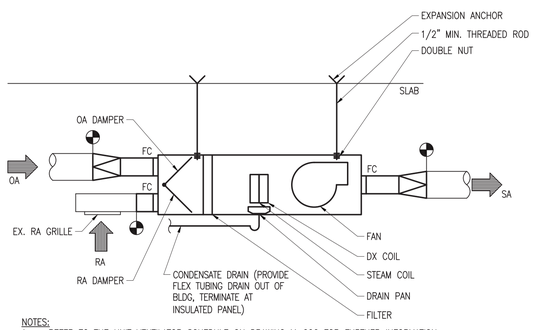
5 DX COIL PIPING DIAGRAM
SCALE: N.T.S.

NOTE:
1. CONTRACTOR SHALL PROVIDE NEW PIPING AND INSULATION AT EACH COIL, WHERE INDICATED. PIPE SIZES TO BE PROVIDED AS PER MANUFACTURER'S REQUIREMENTS.



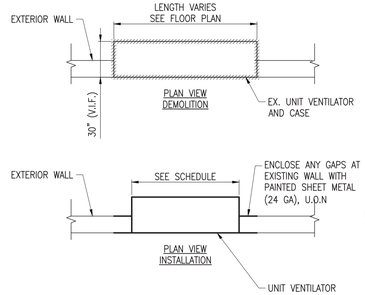
3 STEAM HEAT COIL DETAIL
SCALE: N.T.S.

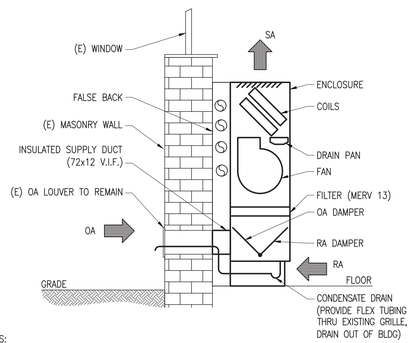
NOTE:
1. CONTRACTOR SHALL FURNISH AND INSTALL NEW PIPING, TRAPS, CONTROL VALVES AND INSULATION AT EACH COIL, WHERE INDICATED. PIPE SIZES TO MATCH EXISTING, SEE PIPE SCHEDULE.
2. PROVIDE AN ALLOWANCE FOR REPLACEMENT OF 20 LF OF PIPING AND INSULATION FOR EACH UNIT BEING REPLACED.



NOTES:
1. REFER TO THE UNIT VENTILATOR SCHEDULE ON DRAWING M-006 FOR FURTHER INFORMATION.

2 HORIZONTAL UNIT VENTILATOR
SCALE: N.T.S.





NOTES:
1. DEMOLITION: REMOVE THE EXISTING UNIT VENTILATOR WHERE SHOWN ON THE PLANS. THE EXISTING OUTSIDE AIR LOUVER AND WALL SLEEVE SHALL REMAIN.
2. CONSTRUCTION: PROVIDE THE UNIT VENTILATOR IN THE SAME LOCATION AS EXISTING WHERE SHOWN ON THE PLANS. CONNECT THE OUTSIDE AIR DUCT TO THE EXISTING OUTSIDE AIR LOUVER AND WALL SLEEVE. PROVIDE A LOW-LEAKAGE DAMPER, END PANELS, AND SUB-BASE AS NECESSARY FOR A COMPLETE INSTALLATION. VERIFY MEASUREMENTS IN FIELD PRIOR TO FABRICATION.

1 UNIT VENTILATOR DETAILS
SCALE: N.T.S.

No.	Revisions	Date
3	ISSUED FOR BID	12-17-21
2	SED ADDENDUM 1	11-19-21
1	BIDDING DOCUMENTS	08-30-21

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Mechanical & Electrical Engineer:

Structural Engineer:

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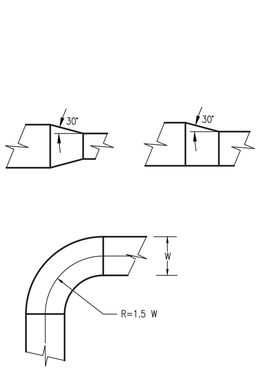
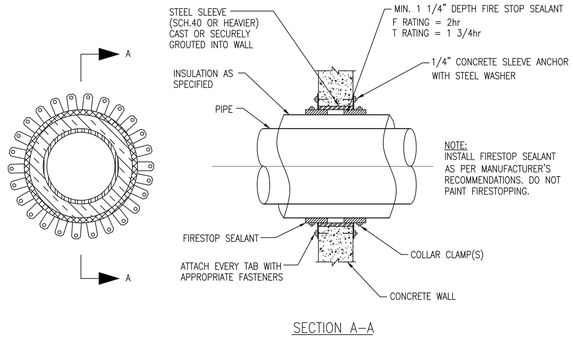
Drawing Title
MECHANICAL DETAILS

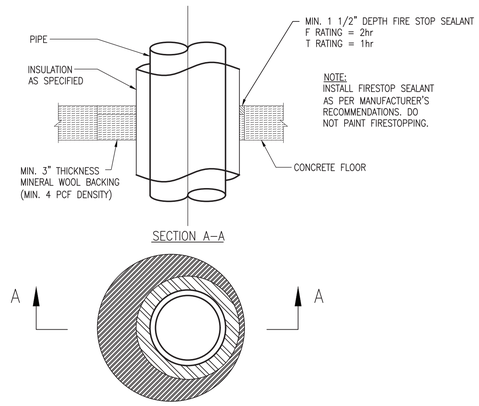
Drawing No.
M-501



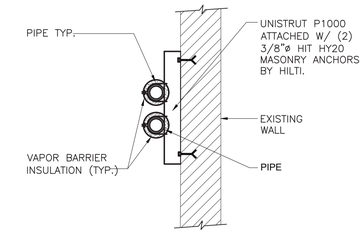
10 DUCTWORK DETAILS
SCALE: N.T.S.



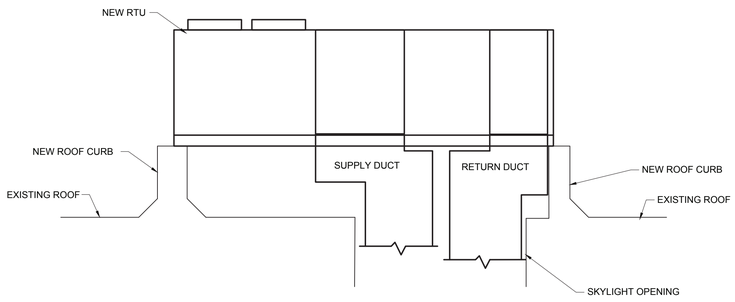
9 PIPE AT FIRE-RATED WALL PENETRATION
SCALE: N.T.S.



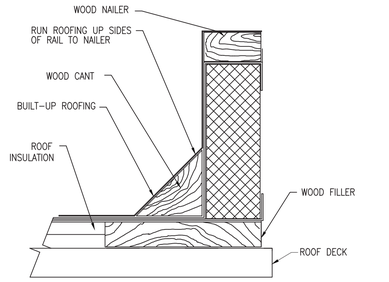
8 PIPE AT FLOOR PENETRATION (TYP)
SCALE: N.T.S.



7 PIPE WALL SUPPORT DETAIL
SCALE: N.T.S.

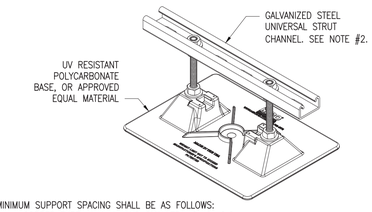


11 RTU PLENUM DETAIL
SCALE: N.T.S.



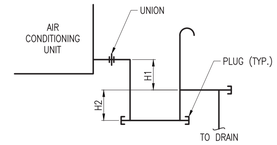
NOTE:
1. THE ROOF CURB SHALL BE DESIGNED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF NEW YORK TO MEET APPLICABLE WIND LOADING REQUIREMENTS. SUBMIT SIGNED AND SEALED DRAWINGS OF THE ROOF CURB FOR APPROVAL PRIOR TO FABRICATION. AT A MINIMUM, THE ROOFTOP UNIT SHALL BE SECURED TO THE ROOF CURB AND THE ROOF CURB SHALL BE SECURED TO THE STRUCTURE WITH #12 SS SCREWS SPACED 12" O.C. ON THE LONG SIDE AND 6" O.C. ON THE SHORT SIDE.
2. COORDINATE CURB FABRICATION WITH UNIT MANUFACTURER REPRESENTATIVE ON-SITE.
3. SEE ARCHITECTURAL DRAWINGS FOR ADDITIONAL ROOF PATCHING AND SEAL DETAILS.
4. BE SURE TO PROPERLY INSTALL, CUT AND SECURE GASKET MATERIAL AT CURB. FOR SECURING OF DUCTWORK TO PLENUM, REFER TO UNIT MANUFACTURER'S ROOF CURB INSTALLATION GUIDE.
5. CONTRACTOR TO EXTEND PLENUM FOR SUPPLY AND RETURN DUCT CONNECTIONS THROUGH EXISTING SKYLIGHT OPENING, SEE DETIAL 11/M-502. COORDINATE AND ROUTE NEW DUCTWORK AROUND EXISTING BEAMS

6 RTU ROOF CURB DETAIL
SCALE: N.T.S.



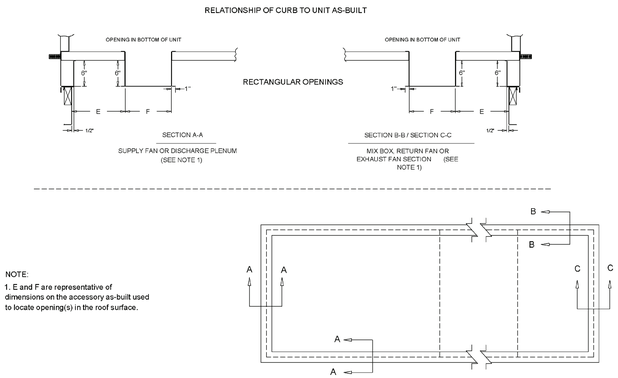
NOTES:
1. MINIMUM SUPPORT SPACING SHALL BE AS FOLLOWS:
   a. COPPER TUBE (1 1/4" AND SMALLER): 6'-0" O.C.
   b. COPPER TUBE (1 1/2" AND LARGER): 10'-0" O.C.
   c. PVC: 4'-0" O.C.
   d. FOR SIZES AND MATERIALS NOT LISTED ABOVE, COMPLY WITH 2015 MCNYS 305.4.
2. VERIFY IN FIELD REQUIRED STRUT CHANNEL HEIGHT. SECURE PIPING TO CHANNEL USING CLAMP CONSTRUCTED OF COMPATIBLE MATERIAL.
3. BASIS OF DESIGN: MIRO IND. MODEL 2.5-CS.

5 SUPPORT FOR ROOFTOP CONDENSATE PIPING
SCALE: N.T.S.



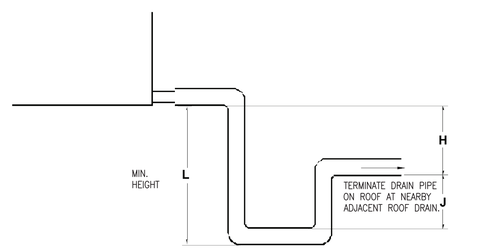
NOTE:
1. SLOPE PIPING 1/8" PER FOOT TOWARD DRAIN. TERMINATE WITHIN 6" OF THE NEAREST ROOF DRAIN.
2. FOR DRAW THROUGH UNITS: H1= NEGATIVE STATIC PRESSURE OF FAN + 1" MIN. H2=H1.
3. MINIMUM PIPE SIZES SHALL BE AS FOLLOWS:
   a. FOR EQUIPMENT UP TO 20 TONS REFRIGERATION: 3/4"
   b. FOR EQUIPMENT OVER 20 TONS UP TO 40 TONS REFRIGERATION: 1".
4. CONNECT THE CONDENSATE DRAIN TO THE EXISTING CONDENSATE DRAIN PIPING AT EACH UNIT VENTILATOR AND FAN COIL UNIT.

4 CONDENSATE TRAP
SCALE: N.T.S.



3 RTU EQUIPMENT OPENING DETAIL
SCALE: N.T.S.

2 RTU EQUIPMENT BASE DETAIL
SCALE: N.T.S.



Drain pan trapping for section under negative pressure

L = H + J + pipe diameter where:
H = 1 inch for each inch of negative pressure (loaded filters) plus 1 inch
J = ½ H

Drain pan trapping for section under positive pressure

L = H + J + pipe diameter where:
H = 1/2 inch (minimum)
J = ½ inch plus the unit positive static pressure at coil discharge (loaded filters)

1 RTU DRIP PAN DETAIL
SCALE: N.T.S.

IF THIS BAR DOES NOT MEASURE 1", THEN DRAWING IS NOT TO FULL SCALE
0 1/2 1

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Drawing Title
MECHANICAL DETAILS - 2

Drawing No.
M-502