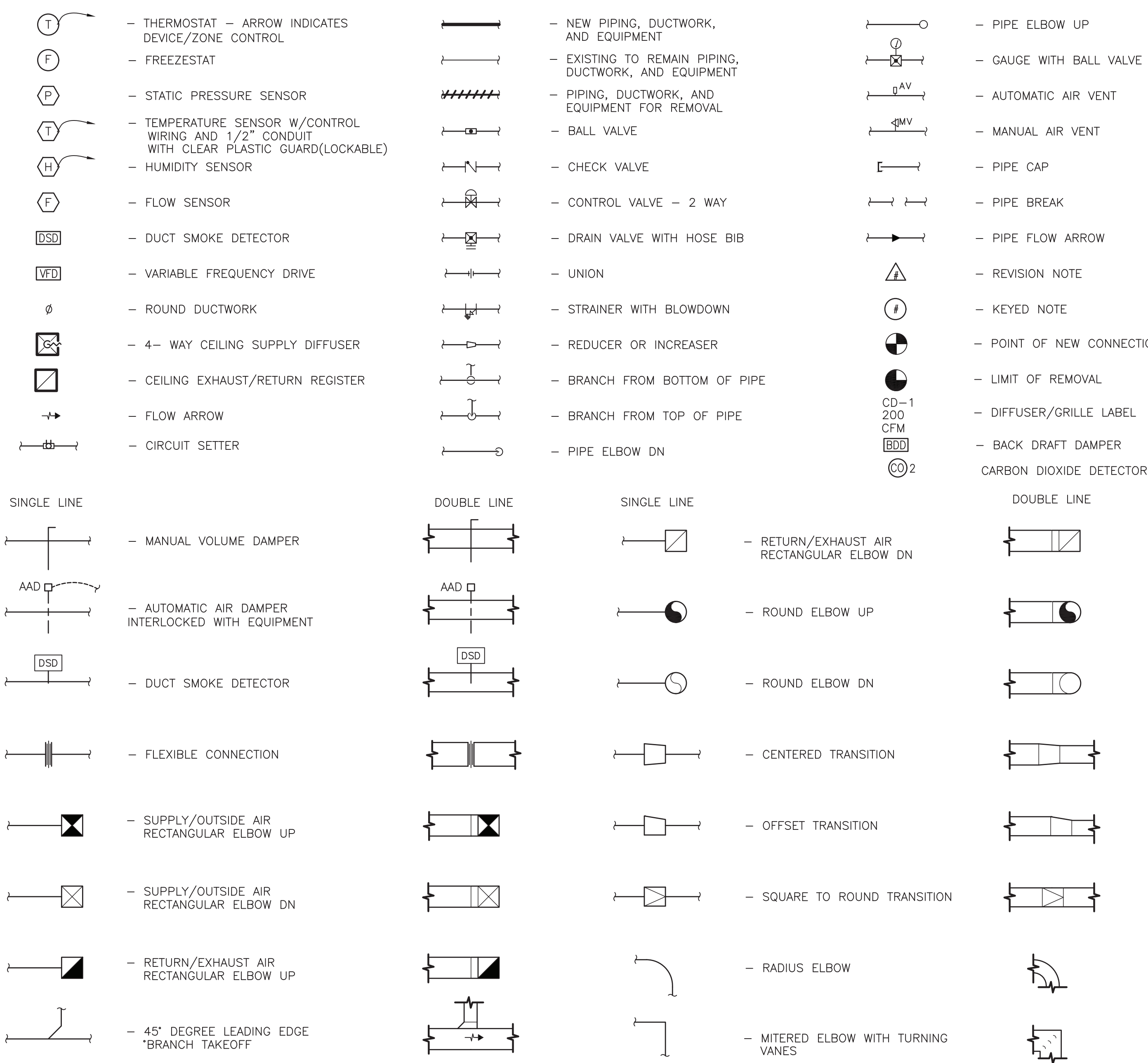


MECHANICAL GENERAL NOTES:

1. ALL HVAC WORK SHALL BE INSTALLED IN ACCORDANCE WITH 2018 INTERNATIONAL MECHANICAL, FIRE, PLUMBING, FUEL GAS CODE AND BUILDING CODE, NYS ENERGY CONSERVATION CONSTRUCTION CODE, ALL LOCAL CODES AND GENERALLY ACCEPTED STANDARDS.
2. HVAC CONTRACTOR SHALL PROVIDE ALL EQUIPMENT, PIPING, VALVES, ACCESS DOORS, HANGERS, FITTINGS AND MISCELLANEOUS COMPONENTS NOT NECESSARILY DETAILED ON THESE DRAWINGS TO RENDER THE HVAC SYSTEMS COMPLETE, OPERABLE, AND IN ACCORDANCE WITH APPLICABLE CODES AND GENERALLY ACCEPTED INDUSTRY STANDARDS.
3. HVAC CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FULLY COORDINATED WITH ELECTRICAL, AND PLUMBING TRADES FOR ENGINEERS REVIEW. SUBMIT.
4. HVAC CONTRACTOR SHALL SEAL AROUND ALL PIPE AND DUCT PENETRATIONS THROUGH FIRE RATED WALLS, FLOORS AND CEILINGS WITH HILTI INTUMESCENT FIRE STOP MATERIALS TO MAINTAIN FIRE AND SMOKE RATINGS. DUCTS PENETRATING FIRE RATED WALLS, FLOORS AND CEILINGS SHALL BE INSTALLED WITH FIRE DAMPERS AND ACCESS DOORS WHETHER SPECIFICALLY SHOWN ON THE DRAWINGS OR NOT. PROVIDE FIRE STOP SEALANT ON ALL EXISTING PIPING AND DUCTWORK PENETRATING NEW FIRE RATED WALLS CONSTRUCTED AS PART OF THE PROJECT.
5. HVAC CONTRACTOR SHALL NOT DRILL OR CUT ANY STRUCTURAL MEMBERS WITHOUT PERMISSION OF ENGINEER.
6. ALL EQUIPMENT SHALL BE INSTALLED PER MANUFACTURERS RECOMMENDATIONS.
7. HVAC CONTRACTOR SHALL FURNISH AND INSTALL ALL CONTROL WIRING (24V) FOR SYSTEMS SHOWN ON HVAC DRAWINGS AND DESCRIBED IN HVAC SPECIFICATIONS, INCLUDING ALL RELAYS, TRANSFORMERS, CONDUIT, JUNCTION BOXES, CONDUCTORS, THERMOSTATS, APPURTENANCES AND ALL NECESSARY EQUIPMENT TO MAKE SYSTEMS COMPLETE AND OPERABLE.
8. HVAC CONTRACTOR SHALL PAY FOR ALL PERMITS AND INSPECTION FEES REQUIRED BY LOCAL AUTHORITY HAVING JURISDICTION.
9. ALL DUCTWORK SHALL BE CONSTRUCTED AND INSTALLED IN ACCORDANCE WITH SHEET METAL AND AIR CONDITIONING HVAC CONTRACTORS NATIONAL ASSOCIATION (SMACNA) DUCT STANDARDS. PROVIDE RADIUS TURNS OR TURNING VANES ON ALL CHANGES IN DIRECTION IN ACCORDANCE WITH SMACNA STANDARDS.
10. ALL CONTROL WIRING SHALL BE IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE (N.E.C.) AND ALL LOCAL CODES. ALL CONDUCTORS SHALL BE COPPER WITH THHN INSULATION IN EMT CONDUIT. 120V/1 – MINIMUM CONDUCTOR SIZE #12. 24V – MINIMUM CONDUCTOR SIZE #18. MINIMUM CONDUIT SIZE SHALL BE 3/4". CONDUIT INSTALLED OUTDOORS SHALL BE GALVANIZED.
11. ALL DUCTWORK SHALL BE FABRICATED WITH MINIMUM 26 GAGE GALVANIZED STEEL INCLUDING ROUND DUCTS.
12. FINAL LOCATIONS OF ALL THERMOSTATS AND SENSORS SHALL BE APPROVED BY OWNER PRIOR TO INSTALLATION, COORDINATE IN FIELD.
13. HVAC CONTRACTOR SHALL PROVIDE ACCESS DOORS FOR ALL VALVES AND DUCT ACCESSORIES CONCEALED IN WALLS/CEILINGS. ACCESS DOORS SHALL HAVE APPROPRIATE FIRE RATING TO MAINTAIN INTEGRITY OF WALL/CEILING. TURN OVER ACCESS DOORS TO GENERAL CONTRACTOR FOR INSTALLATION.
14. HVAC CONTRACTOR SHALL COORDINATE FINAL LOCATIONS OF ALL PIPING IN FINISHED AREAS TO ENSURE CONCEALMENT OF ALL PIPING IN WALLS, FLOORS AND CEILINGS.
15. HVAC CONTRACTOR SHALL FURNISH AND INSTALL VALVE TAGS, PIPE LABELS, DUCT LABELS AND EQUIPMENT LABELS. LOG ALL TAGS AND LABELS IN A 3-RING BINDER WITH LOCATION, DESCRIPTION AND FUNCTION. SEE SPECIFICATIONS FOR MORE INFORMATION.
16. HVAC CONTRACTOR SHALL PROVIDE ALL AIR AND HYDRONIC BALANCING FOR ALL NEW HVAC SYSTEMS. PROVIDE ALL NECESSARY MOTOR, DRIVE, BELT CHANGES AND ETC. SEE SPECIFICATIONS FOR BALANCE PROCEDURES AND ADDITIONAL REQUIREMENTS. CONTRACTOR SHALL COMFORT BALANCE ALL HVAC SYSTEMS TO THE SATISFACTION OF ENGINEER.
17. HVAC CONTRACTOR SHALL BE RESPONSIBLE FOR ALL SUPPLEMENTAL STRUCTURAL STEEL SUPPORT ASSOCIATED WITH NEW HVAC EQUIPMENT HUNG OR SUPPORTED FROM OR ON THE BUILDING STRUCTURE. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS TO ENGINEER FOR APPROVAL PRIOR TO STEEL FABRICATION AND INSTALLATION OF EQUIPMENT.
18. HVAC CONTRACTOR SHALL INSTRUCT GREEN CHIMNEYS SCHOOL KEY PERSONNEL ON OPERATION OF ALL HVAC SYSTEMS. SET ALL THERMOSTATS TO TEMPERATURES AND SCHEDULES AS DIRECTED BY GREEN CHIMNEYS SCHOOL.
19. HVAC CONTRACTOR SHALL INCLUDE IN BID ALL MATERIALS, RIGGING AND LABOR REQUIRED FOR THE COMPLETE AND PROPER INSTALLATION OF THE MECHANICAL SYSTEM.
20. HVAC CONTRACTOR TO FIELD VERIFY ALL EXISTING CONDITIONS PRIOR TO THE BEGINNING OF WORK, AND COORDINATE WORK ALL OTHER TRADES.
21. PROVIDE ALL PIPE OPENINGS THROUGH WALLS WITH PIPE SLEEVES.
22. HVAC CONTRACTOR SHALL SCHEDULE ALL SHUT-DOWNS OF EXISTING BASE BUILDING EQUIPMENT/SYSTEMS WITH GREEN CHIMNEYS SCHOOL AS REQUIRED FOR PERFORMING WORK. NOTICE SHALL BE GIVEN NO LESS THAN (5) FIVE BUSINESS DAYS PRIOR REQUIRED SHUT-DOWN. SHUT-DOWNS SHALL NOT BE PERFORMED WITHOUT APPROVAL FROM GREEN CHIMNEYS SCHOOL.
23. BEFORE DISPOSING OF REMOVED EQUIPMENT, VERIFY WITH GREEN CHIMNEYS SCHOOL WHAT ITEMS ARE TO BE TURNED OVER TO SCHOOL DISTRICT AND KEPT FOR STOCK.
24. UNLESS OTHERWISE NOTED CEILING REMOVAL, TEMPORARY PROTECTION, AND REPLACEMENT AS REQUIRED PERFORMING SCOPE OF WORK SHALL BE BY THIS CONTRACTOR. CEILING TILES DAMAGED AS A RESULT OF THIS CONTRACTOR'S WORK SHALL BE REPLACED AT NO ADDITIONAL COST TO THE SCHOOL.
25. ALL MOTOR STARTERS AND DISCONNECT SWITCHES FOR HVAC EQUIPMENT SHALL BE FURNISHED BY THE HVAC CONTRACTOR AND INSTALLED BY THE ELECTRICAL CONTRACTOR. UNLESS OTHERWISE NOTED, DISCONNECT SWITCHES FURNISHED BY THE HVAC CONTRACTOR FOR HVAC EQUIPMENT SHALL BE HEAVY DUTY TYPE AND SHALL BE NEMA 3R WHEN LOCATED OUTSIDE.
26. CONTRACTOR SHALL BE RESPONSIBLE FOR DRAINING AND REFILLING EXISTING HYDRONIC AND DOMESTIC WATER SYSTEMS AS REQUIRED FOR COMPLETION OF WORK.
27. CONTRACTOR SHALL GUARANTEE ALL WORKMANSHIP AND MATERIAL INSTALLED UNDER THIS CONTRACT FREE FROM DEFECTS FOR A PERIOD OF ONE (1) YEAR FROM DATE OF SUBSTANTIAL COMPLETION AND ACCEPTANCE BY THE OWNER AND AGREES TO REPLACE DEFECTIVE WORK (INCLUDING ALL REQUIRED LABOR AND MATERIAL) AT NO ADDITIONAL COST TO OWNER DURING THE GUARANTEE PERIOD.
28. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING START-UP OF ALL NEW EQUIPMENT, CONTROLS, AND ETC. TO ENSURE CORRECT OPERATION OF INSTALLED DEVICES.
29. CONTRACTOR SHALL PROVIDE OWNER WITH CATALOG DATA, OPERATING INSTRUCTIONS, MAINTENANCE INSTRUCTIONS, AND RECORD (AS-BUILT) DRAWINGS OF ALL COMPLETED WORK.
30. ALL NEW HOLES IN WALLS AND FLOORS SHALL BE CORE DRILLED BY THIS CONTRACTOR. PRIOR TO CORE DRILLING FLOORS, RADAR SCAN FLOOR SLABS. USE CAUTION WHEN CORE DRILLING TO AVOID DAMAGE TO EXISTING EQUIPMENT, SYSTEMS, STRUCTURE AND ETC. ANY ITEMS DAMAGED AS A RESULT OF CORE DRILLING SHALL BE REPAIRED BY THIS CONTRACTOR AT NO ADDITIONAL COST TO SCHOOL DISTRICT.
31. LOW VOLTAGE CONTROL WIRING AND CONDUIT INDICATED TO BE REMOVED SHALL BE COMPLETELY REMOVED BACK TO SOURCE WHEN POSSIBLE. FOR INACCESSIBLE LOCATIONS WIRING AND CONDUIT SHALL BE SAFELY ISOLATED ON BOTH ENDS.
32. CONTRACTOR SHALL HIRE GREEN CHIMNEYS APPROVED ROOFING CONTRACTOR FOR ALL PATCHING, WATERPROOFING AND FLASHING OF ALL HVAC WORK. ANY ROOFING WORK SHALL NOT VOID NEW OR EXISTING ROOF WARRANTIES.
33. CONTRACTOR SHALL PROVIDE ACCESS DOORS FOR ALL VALVES AND DUCTS CONCEALED IN WALLS/ CEILINGS. ACCESS DOORS SHALL HAVE APPROPRIATE FIRE RATING TO MAINTAIN INTEGRITY OF WALL/ CEILING. PROVIDE TWO (2) COATS OF FINISHED PAINT, COLOR AS DIRECTED BY ENGINEER.
34. CONTRACTOR IS RESPONSIBLE FOR ALL CUTTING, PATCHING AND PAINTING ASSOCIATED WITH HVAC WORK. PATCH OPENINGS/ AREAS WITH SIMILAR MATERIALS AND RESTORE TO ORIGINAL FIRE/ SMOKE RATING AND STRUCTURAL INTEGRITY. SEE SPECIFICATIONS AND GENERAL CONDITIONS FOR ACCEPTABLE PROCEDURES, MATERIALS AND STANDARDS.
35. HEALTH, SAFETY AND CRITICAL OPERATING EQUIPMENT SHALL NOT BE COMPROMISED WITHOUT SCHOOLS NOTIFICATION AND SCHEDULED SHUTDOWN DURING OFF HOURS AS TEMPORARY OPERATIONAL PLAN IS IMPLEMENTED AND MAINTAINED.
36. ALL PIPING SUPPORTS AND HANGERS EXPOSED TO OUTDOOR ELEMENTS SHALL BE GALVANIZED STEEL.
37. CONTRACTOR SHALL INSULATE ALL DUCTWORK RUN OUTSIDE OF THE BUILDING ENVELOPE WITH FIBERGLASS BOARD INSULATION MINIMUM R-VALUE (12.0) WITH VAPOR PROOF JACKET AND TAPED JOINTS. DUCTS RUN WITHIN THE BUILDING SHALL HAVE A MINIMUM R-VALUE (8.0) FIBERGLASS INSULATION WITH VAPOR JACKET AND TAPED JOINTS.
38. CONTRACTOR TO PROVIDE NECESSARY MODIFICATIONS TO EXISTING MECHANICAL, PLUMBING, ELECTRICAL, ETC. TO ACCOMPLISH NEW WORK AND TO PROVIDE A PROPERLY FUNCTIONING SYSTEM. VERIFY IN FIELD.

MECHANICAL SYMBOLS



NOTE: CLEANING DURING MECHANICAL WORK: THE MECHANICAL ROOM AND ROOMS WHERE WORK WILL BE DONE TO MINIMIZE DISTURBANCE IN THE BUILDINGS. WORKERS ARE TO USE PATHWAYS AND FACILITIES AGREED UPON WITH THE DISTRICT DESIGNEE IN WRITING. THE AREA OUTSIDE THE BUILDING WHERE CUTTING WELDING OR STORAGE IS ALLOWED IS TO BE FENCED AT ALL TIMES. THE CONTRACTOR WILL ON A DAILY BASIS CLEAN THE GROUNDS AND THE BUILDING OF ANY DEBRIS OR GARBAGE GENERATED BY THEIR WORK.

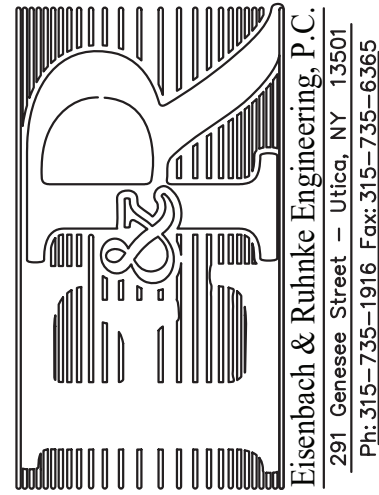
HVAC ABBREVIATIONS

AAD	AUTOMATIC AIR DAMPER
ACCU	AIR COOLED CONDENSING UNIT
AD	ACCESS DOOR
AHU	AIR HANDLING UNIT
AMP	AMPERAGE
BDD	BACKDRAFT DAMPER
BHP	BRAKE HORSEPOWER
BMS	BUILDING MANAGEMENT SYSTEM
BTU	BRITISH THERMAL UNIT
CFM	CUBIC FEET PER MINUTE
CH	CABINET HEATER
CLG	CEILING
C	CONDENSATE
DB	DRYBULB TEMPERATURE
DDC	DIRECT DIGITAL CONTROL (SYSTEM)
DEG	DEGREE
DIA	DIAMETER
DN	DOWN
DP	DEWPOINT TEMPERATURE
DX	DIRECT EXPANSION
EA	EXHAUST AIR
EAT	ENTERING AIR TEMPERATURE
EF	EXHAUST FAN
EFF	EFFICIENCY
EG	EXHAUST GRILLE
ESP	EXTERNAL STATIC PRESSURE
EXH	EXHAUST
F	FAHRENHEIT
FD	FIRE DAMPER
FF	FINAL FILTER
FLR	FLOOR
FFM	FEET PER MINUTE
FSTAT	FREEZESTAT
FT	FEET
FT HD	FEET OF HEAD
FT WG	FEET OF WATER GAUGE
FV	FACE VELOCITY
G	GAS
GAL	GALLON
GPM	GALLONS PER MINUTE
HD	HEAD
HP	HORSEPOWER
MAT	MIXED AIR TEMPERATURE
MAU	MAKE-UP AIR UNIT
MBH	1,000 BTU/HR
MCA	MINIMUM BRANCH CIRCUIT AMPACITY
OA	OUTSIDE AIR
OAI	OUTSIDE AIR INTAKE
PD	PRESSURE DROP
R	REMOVE
RA	RETURN AIR
RL	REFRIGERANT LIQUID
RPM	REVOLUTIONS PER MINUTE
RS	REFRIGERANT SUCTION
S	SATISFACTORY
SAT	SUPPLY AIR TEMPERATURE
SEN	SENSIBLE HEAT
SG	SPECIFIC GRAVITY
SP	STATIC PRESSURE
TAB	TESTING, ADJUSTING, BALANCE
TSTAT	THERMOSTAT
TYP	TYPICAL
VD	VOLUME DAMPER
WB	WETBULB
WG	WATER GAUGE
HP	HEAT PUMP
AT	TEMPERATURE DIFFERENCE

HVAC REMOVAL: NOTES

1. THE SCOPE OF REMOVAL SHOWN ON "REMOVALS" DRAWING IS DIAGRAMMATIC ONLY AND INDICATES THE INTENT OF THE WORK TO BE PERFORMED AND NOT THE COMPLETE SCOPE OF DEMOLITION AND/OR REMOVAL WORK. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO REMOVE OR RELOCATE ANY RELATED MECHANICAL DEVICES/ITEMS EVEN IF NOT SPECIFICALLY INDICATED TO BE REMOVED ON THESE DRAWINGS IN ORDER TO ACCOMMODATE NEW WORK.
2. EQUIPMENT/ITEMS SHOWN CROSS HATCHED ON DRAWINGS ARE ITEMS TO BE REMOVED. ANY DEVICES/ITEMS REMOVED SHALL INCLUDE (BUT SHALL NOT BE LIMITED TO) THE REMOVAL OF ALL ASSOCIATED PIPING, CONTROLS, ETC. THAT ARE NOT INCORPORATED IN THE NEW LAYOUT. THE CONTRACTOR SHALL PERFORM ALL WORK REQUIRED TO INSURE CONTINUITY OF SERVICE TO EXISTING REMAINING EQUIPMENT. NO EXTRAS RELATING TO THE SCOPE OF WORK DESCRIBED WILL BE ALLOWED.
3. EQUIPMENT, PIPING, ETC. REQUIRED TO RECONNECT SHALL BE INSTALLED CONCEALED WITHIN THE SUSPENDED CEILINGS, PARTITIONS AND/OR WALLS, FLOORS. NO SURFACE MOUNTED OR EXPOSED EQUIPMENT, PIPING, ETC., SHALL BE PERMITTED, UNLESS SPECIFICALLY INDICATED.
4. ALL ITEMS TO BE REMOVED SHALL BE REVIEWED WITH THE OWNER PRIOR TO REMOVAL. OWNER SHALL HAVE FIRST SALVAGE RIGHTS. ITEMS THE OWNER WISHES TO KEEP SHALL BE REMOVED WITH CARE AND STORED AS DIRECTED BY OWNER. ITEMS THE OWNER DOES NOT WISH TO KEEP SHALL BE REMOVED FROM THE SITE AND DISPOSED OF PROPERLY.

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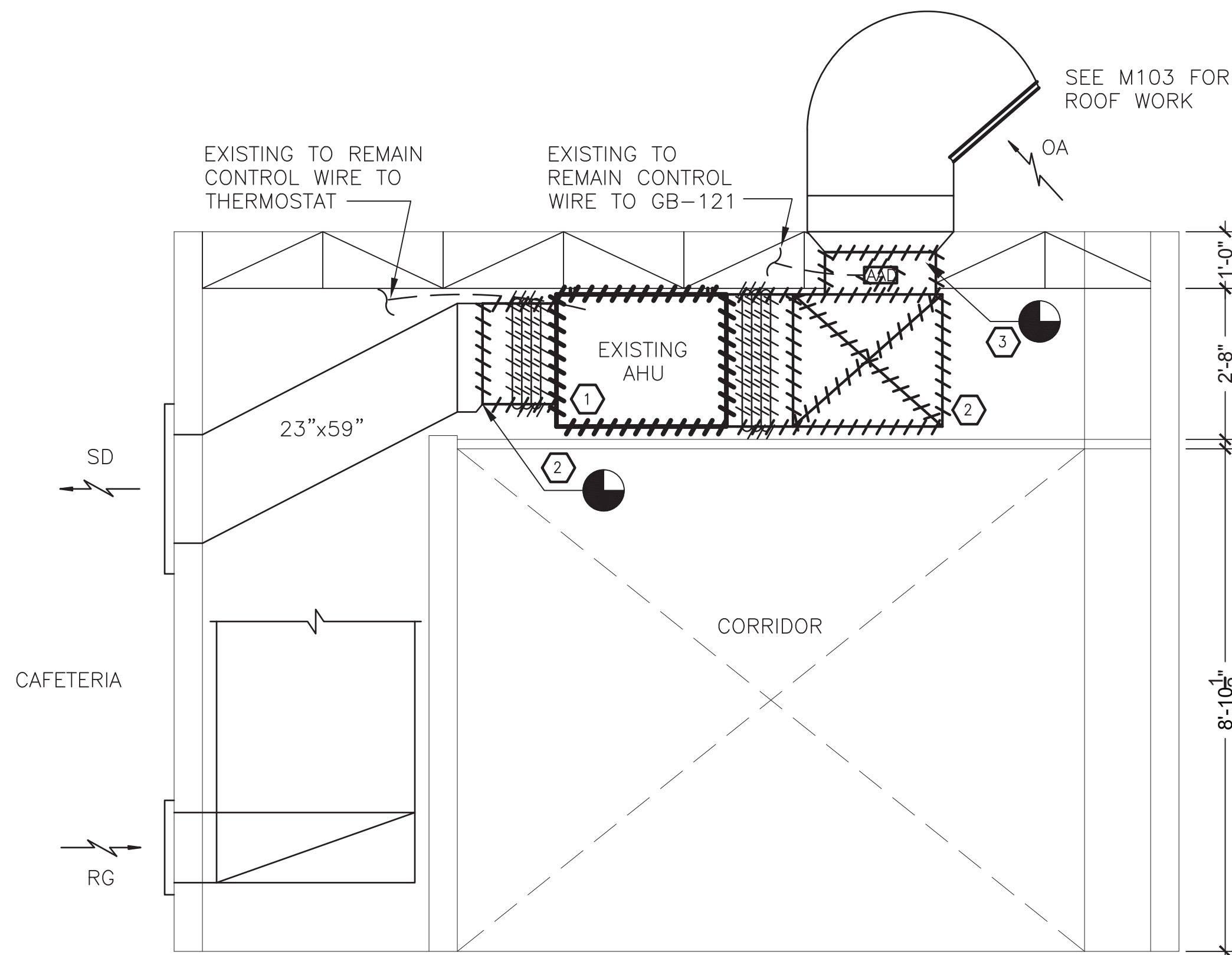
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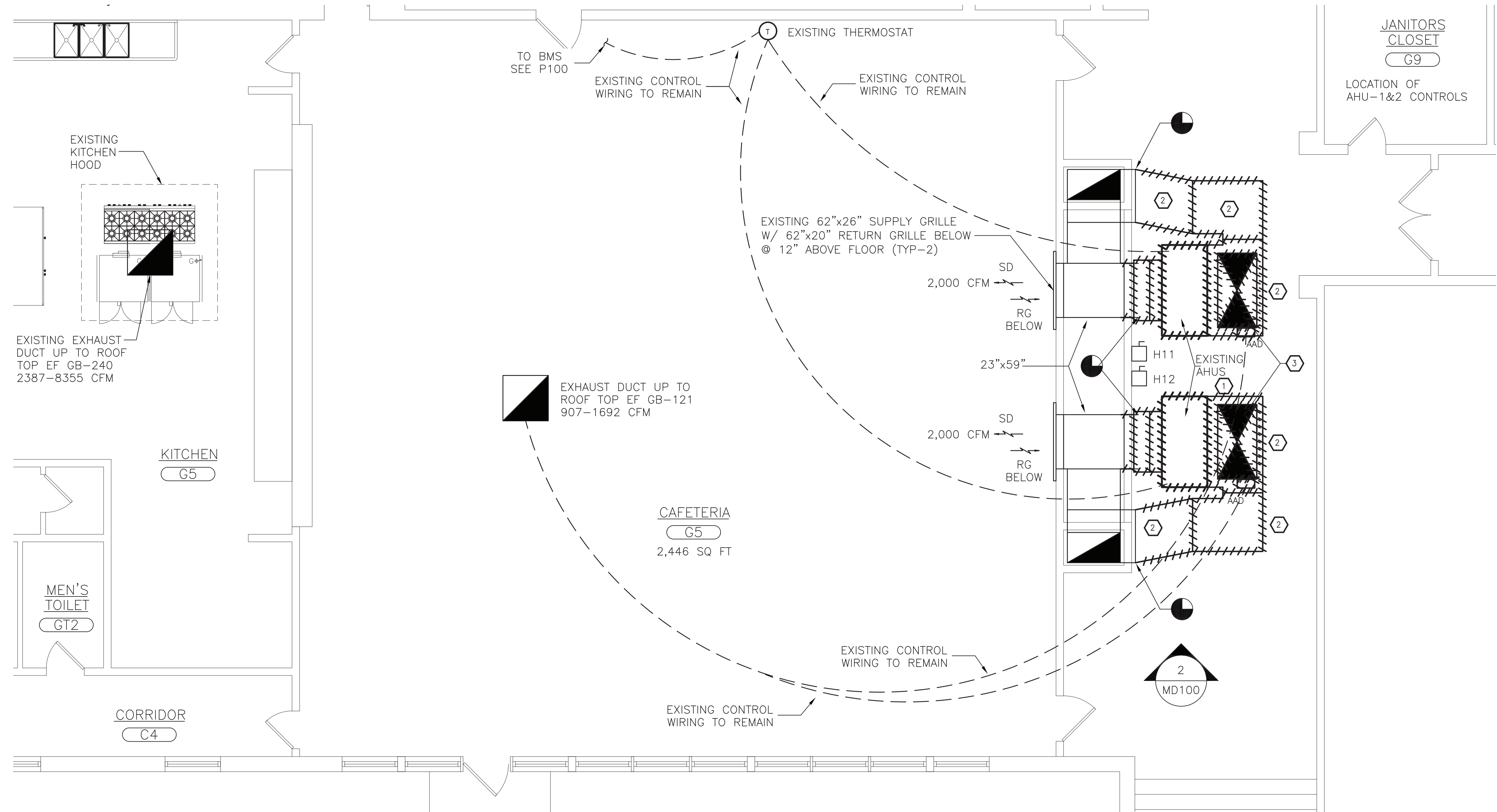
S.E.D. CONTROL NUMBER:
MAIN BUILDING
48-04-01-04-0-001-023
HIGH SCHOOL ANNEX
48-04-01-04-0-016-007

PROJECT TITLE
CENTRAL SCHOOL DISTRICT
MECHANICAL UPGRADE AND RELATED WORK
PACKAGE NO 2 - COLD SPRING, NY 10516
DRAWING TITLE
ABBREVIATIONS
AND SYMBOLS

DATE
09/13/2021
SHEET SIZE
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SCALE
AS NOTED
DRAWN BY
F & D
BID
ISSUED TO
DRAWING NO.
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FILE NO.
19338.02



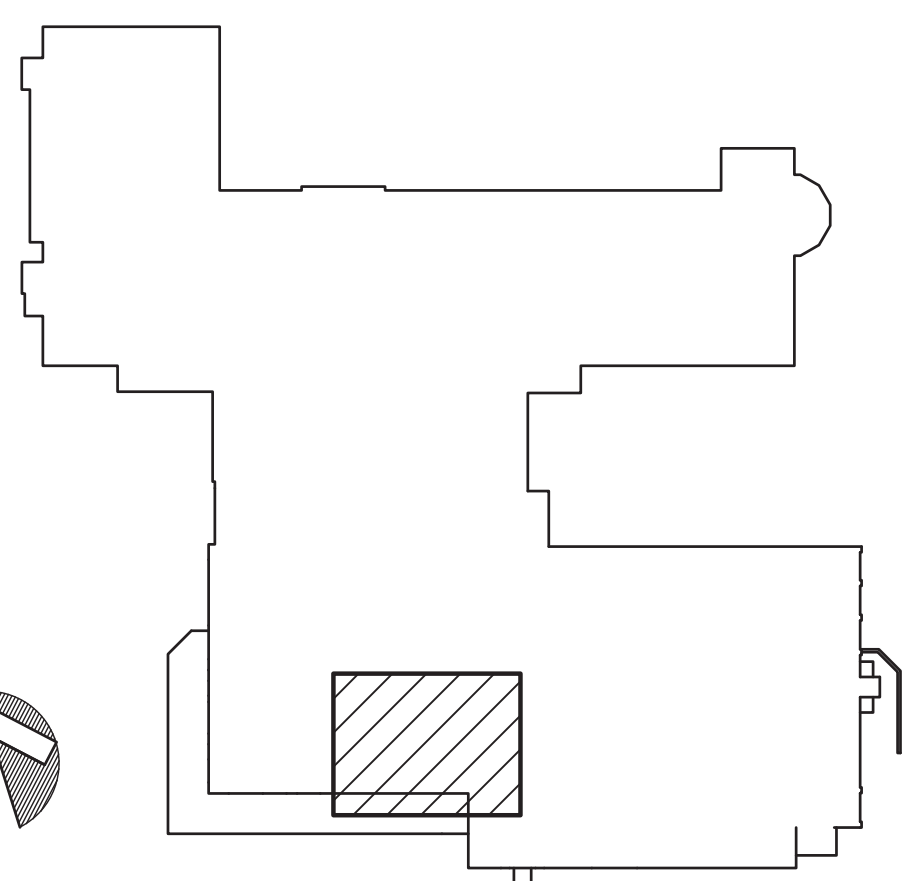
HALDANE ES/MS SCHOOL
GROUND FLOOR ELEVATION - DEMOLITION
 2 SCALE: 1/2" = 1'-0"



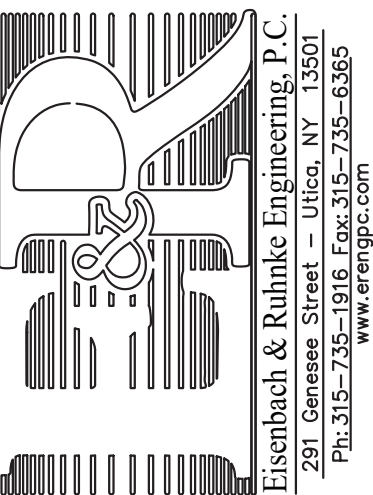
HALDANE ES/MS SCHOOL
GROUND FLOOR PLAN - DEMOLITION
 1 SCALE: 1/4" = 1'-0"

- KEYED NOTES - DEMOLITION**
- 1 REMOVE 2 AIR HANDLING UNITS AND ASSOCIATED SUPPORTS, DAMPERS, CONTROLS AND NECESSARY HW PIPING ABOVE EXISTING DROP CEILING. THERMOSTAT, PORTION OF CONROL WIRING AND CONTROLS FOR INTERCONNECTION TO GB-121 SHALL BE DISCONNECTED AND REUSED.
 - 2 REMOVE PORTION OF EXISTING DUCTWORK. DISCONNECT AT THE POINTS SHOWN.
 - 3 REMOVE PORTION OF DUCTWORK CONNECTING TO ROOF MOUNTED OUTSIDE AIR INTAKE.

KEY-PLAN
 SCALE: NONE



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 48-04-01-04-0-001-023
 HIGH SCHOOL ANNEX
 48-04-01-04-0-016-007

PROJECT:
 HALDANE CENTRAL SCHOOL DISTRICT
 MECHANICAL UPGRADE AND RELATED WORK
 PACKAGE NO. 2
 15 CROSSLAND DR. COLD SPRING, NY 10516

DRAWING TITLE:
 HALDANE ELEMENTARY SCHOOL
 CAFETERIA HALLWAY DEMOLITION

09/13/2021
 DATE

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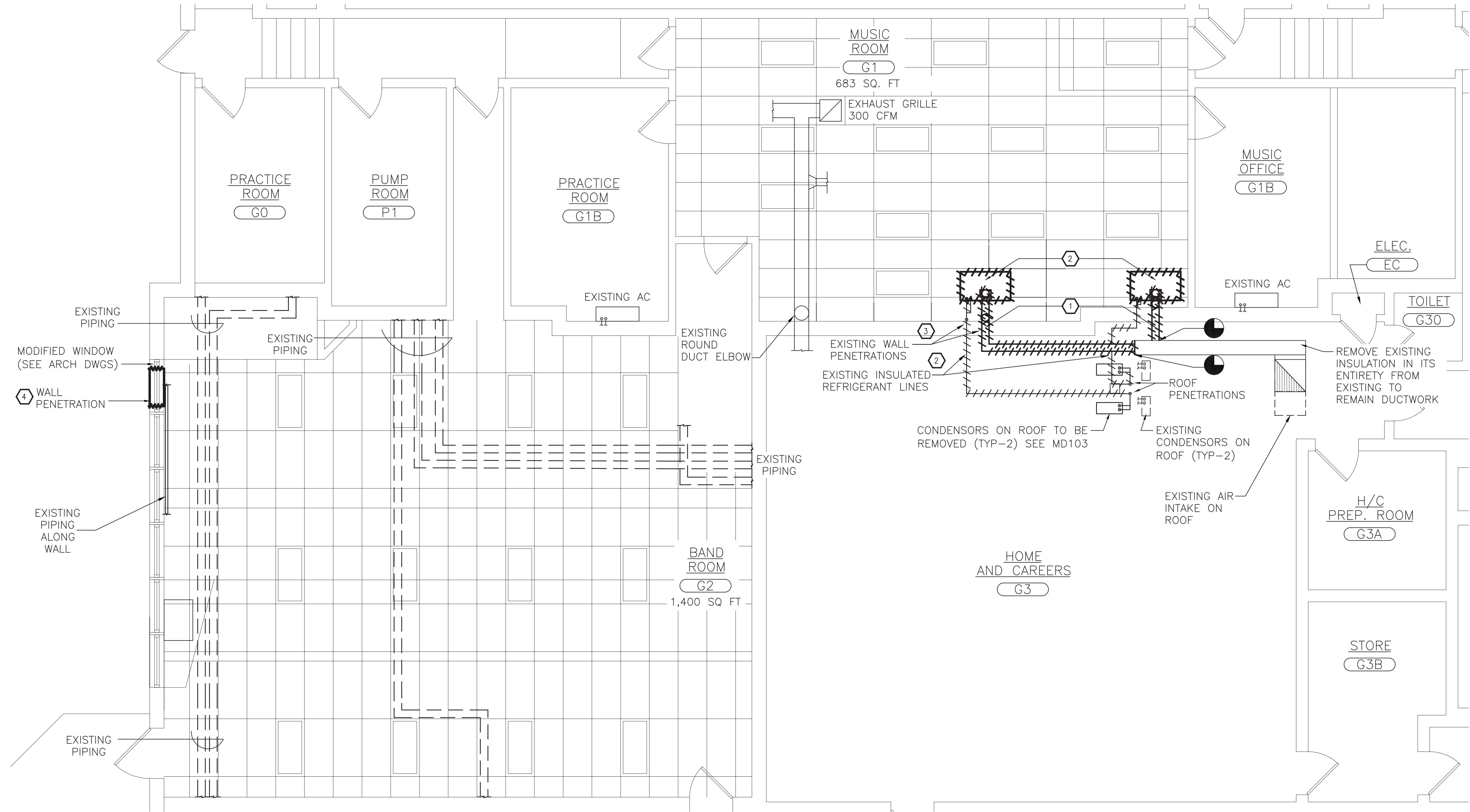
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DRAWING NO.
MD100

SCALE:
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FILE NO.
 19338.02



GENERAL NOTE: FOR MECH REMOVALS
ON ROOF SEE MD103

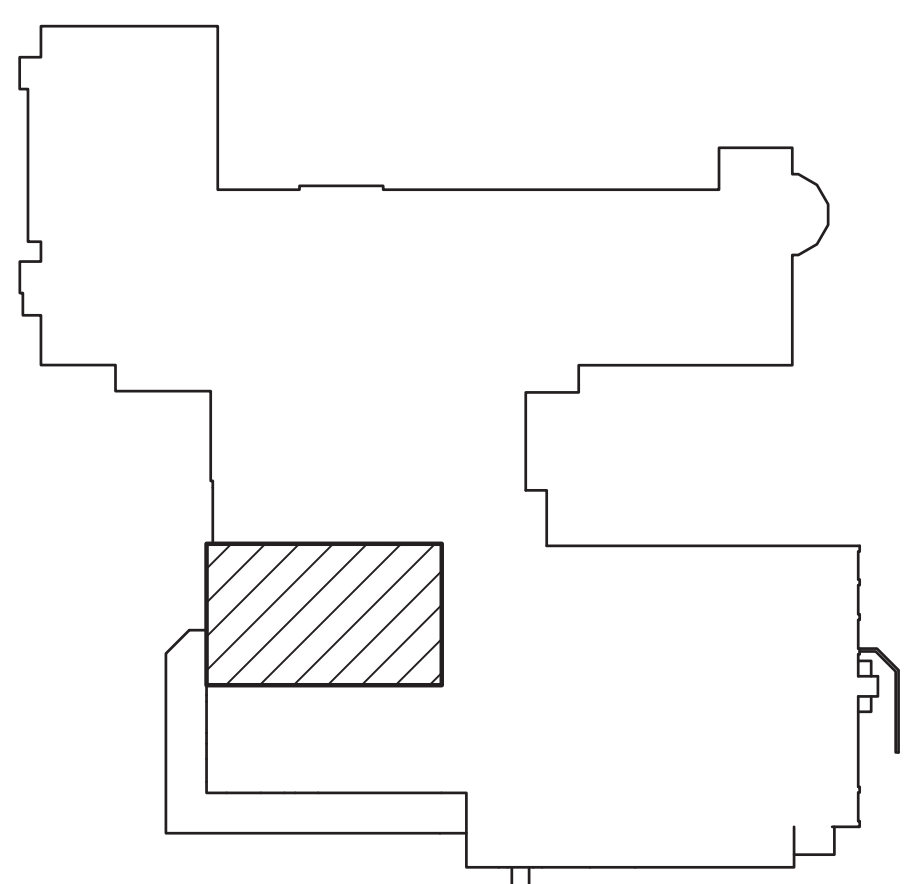
HALDANE ES/MS SCHOOL GROUND FLOOR PLAN - DEMOLITION

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

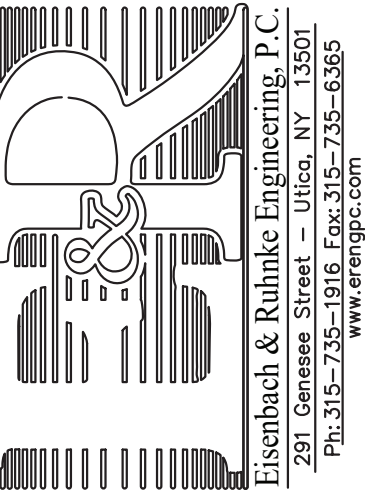
KEYED NOTES - DEMOLITION

- 1 REMOVE PORTION OF EXISTING OUTSIDE AIR DUCTWORK AND ALL INSULATION. PREPARE FOR NEW WORK.
- 2 REMOVE TWO (2) EXISTING UNIT VENTILATORS INCLUDING REFRIGERANT LINES, MOUNTS, HANGERS AND ASSOCIATED. ELECTRICAL REMOVALS ARE PART OF ELECTRICAL CONTRACT.
- 3 CUT AND MODIFY EXISTING WALL PENETRATIONS TO ACCEPT NEW DUCTWORK AND REFRIGERANT LINES. SEE NEW WORK PLAN AND NOTES.
- 4 SAW CUT WALL TO PROVIDE NEW SLEEVE. SEE NEW WORK PLAN AND NOTES.

KEY-PLAN
SCALE: NONE



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S.E.D. CONTROL NUMBER:
MAIN BUILDING
48-04-01-04-0-001-023
HIGH SCHOOL ANNEX
48-04-01-04-0-016-007

PROJECT:
HALDANE CENTRAL SCHOOL DISTRICT
MECHANICAL UPGRADE AND RELATED WORK
PACKAGE NO. 2
15 CROSSLAND DR. COLD SPRING, NY 10516
DRAWING TITLE:
HALDANE ELEMENTARY SCHOOL
MUSIC AND BAND ROOM DEMOLITION

09/13/2021
DATE

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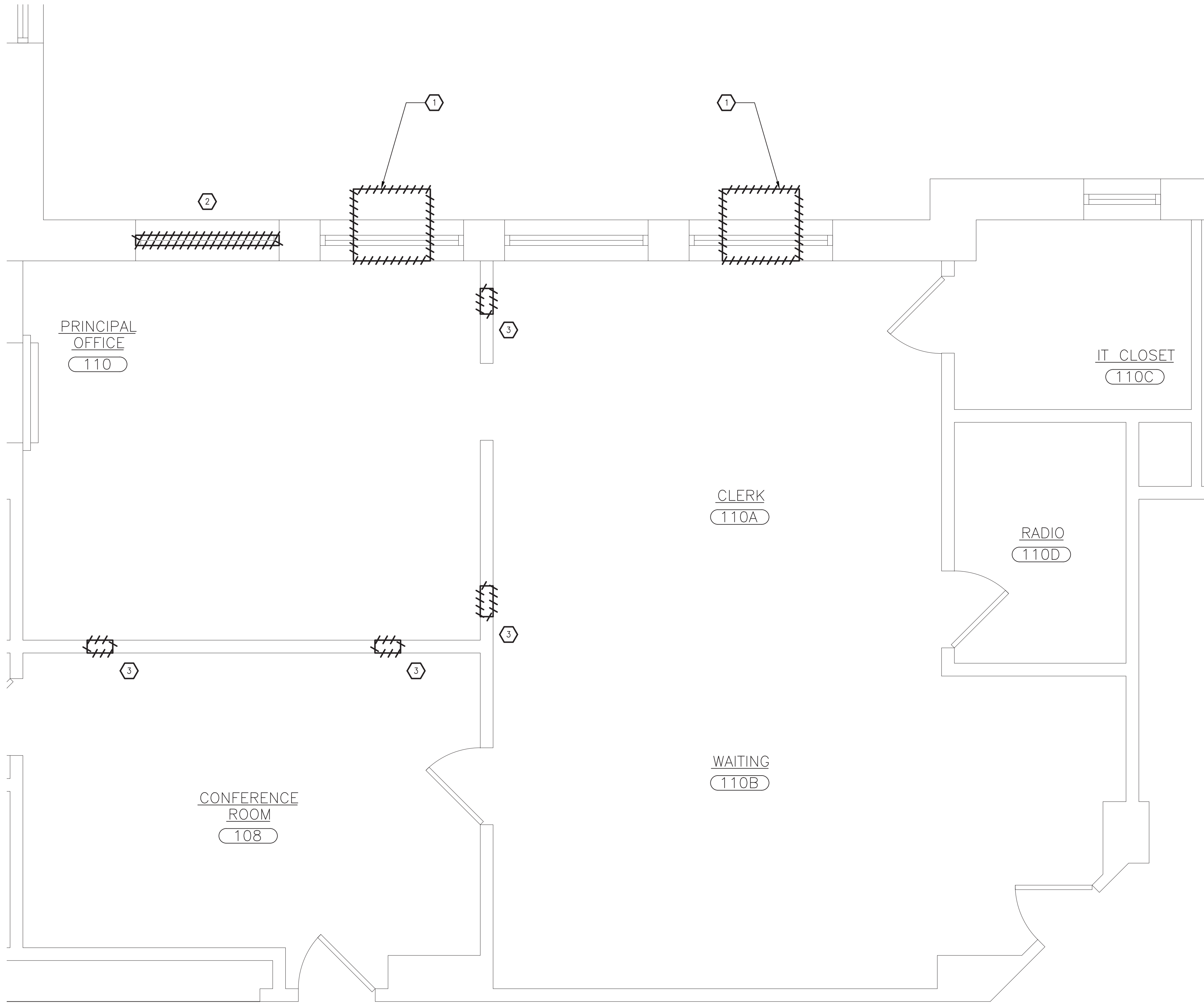
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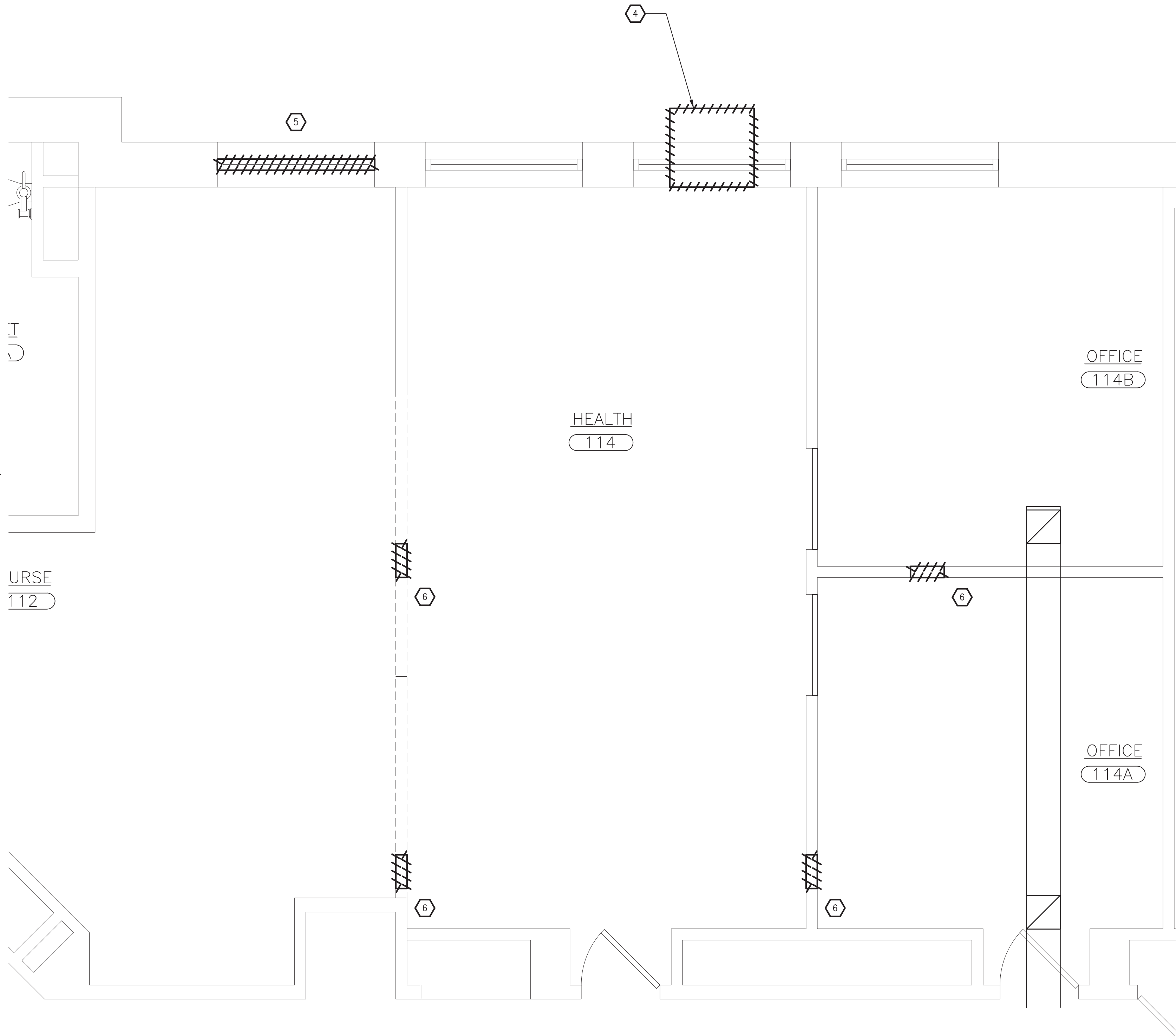
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DRAWING NO:
MD101



2 HALDANE ES/MS
PARTIAL FIRST FLOOR PLAN - MAIN OFFICE - DEMOLITION
SCALE: 1/2" = 1'-0"

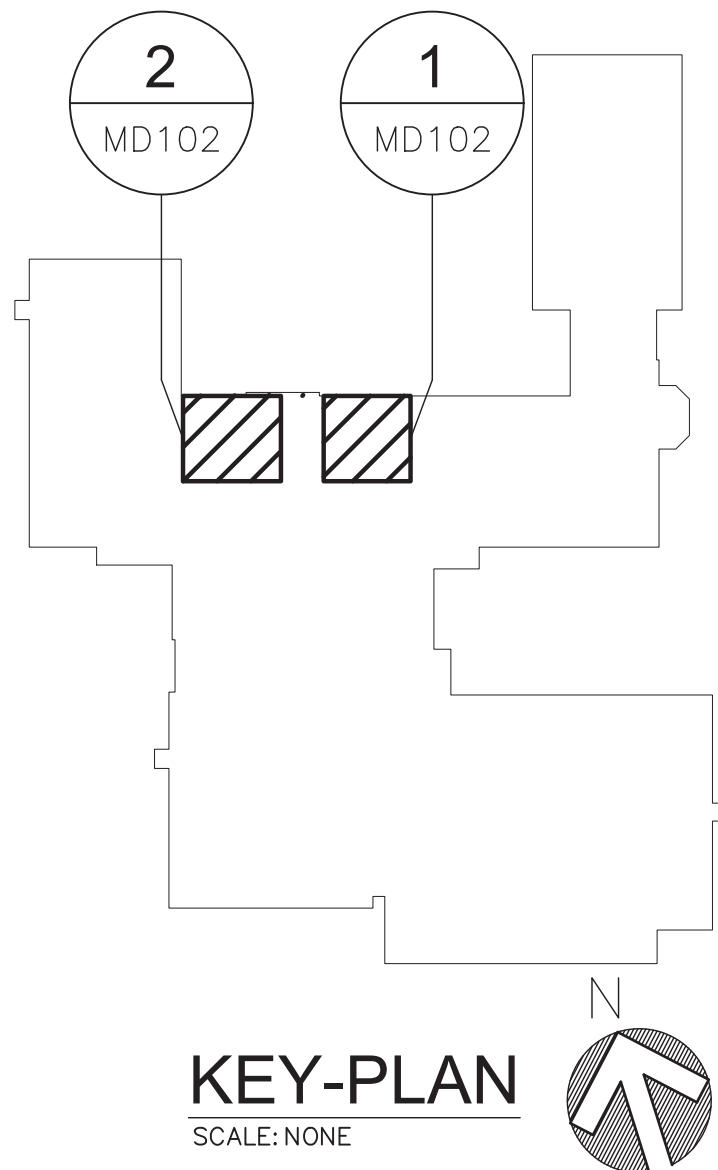
GENERAL NOTE: MD102-DETAIL 2 IS PART OF ALT HVAC-1 ONLY



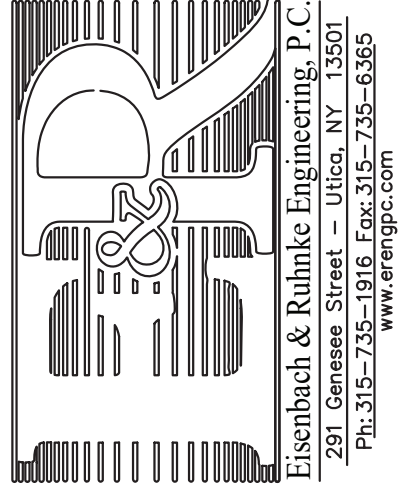
1 HALDANE ES/MS
PARTIAL FIRST FLOOR PLAN - NURSES OFFICE - DEMOLITION
SCALE: 1/2" = 1'-0"

GENERAL NOTE: MD102 DETAIL 1 IS PART OF ALT HVAC-2 ONLY

- KEYED NOTES - NEW WORK:
- 1 EXISTING WINDOW AC UNITS TO BE CAREFULLY REMOVED AND TURNED OVER TO OWNER. REPLACE WITH WINDOW PANES TO MATCH EXISTING. (ALT HVAC-1)
 - 2 EXISTING WINDOW PANE TO BE REMOVED. SEE ARCH DRAWINGS. (ALT HVAC-1)
 - 3 SAW CUT PENETRATIONS FOR NEW DUCTWORK. COORDINATE WITH ARCH DRAWINGS FOR SOFFITS AND NEW DROP CEILINGS. (ALT HVAC-1)
 - 4 EXISTING WINDOW AC UNITS TO BE CAREFULLY REMOVED AND TURNED OVER TO OWNER. REPLACE WITH WINDOW PANES TO MATCH EXISTING. (ALT HVAC-2)
 - 5 EXISTING WINDOW PANE TO BE REMOVED. SEE ARCH DRAWINGS. (ALT HVAC-2)
 - 6 SAW CUT PENETRATIONS FOR NEW DUCTWORK. COORDINATE WITH ARCH DRAWINGS FOR SOFFITS AND NEW DROP CEILINGS. (ALT HVAC-2)



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HIGH SCHOOL ANNEX
48-04-01-04-0-016-007

PROJECT TITLE:
HALDANE CENTRAL SCHOOL DISTRICT
MECHANICAL UPGRADE AND RELATED WORK
15 CRAIGSIDE DR, COLD SPRING, NY 10516
DRAWING TITLE:
HALDANE ELEMENTARY SCHOOL
MECHANICAL UPGRADE
DEMOLITION

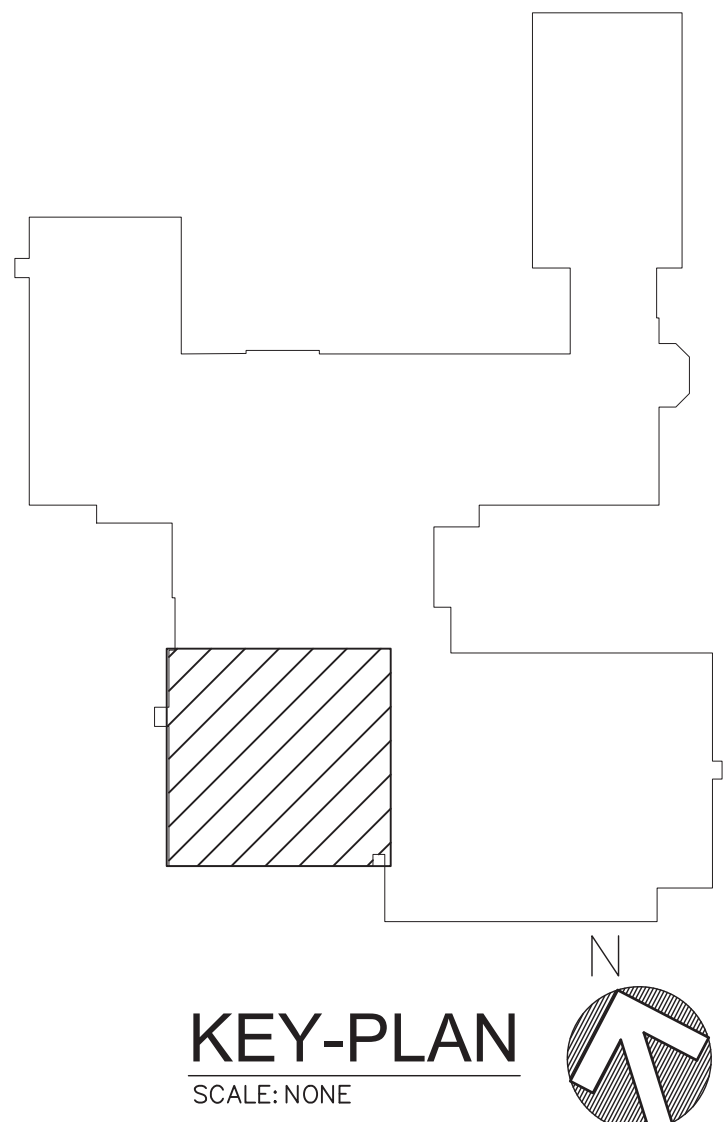
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SCALE AS NOTED	FILE NO. 19338.02
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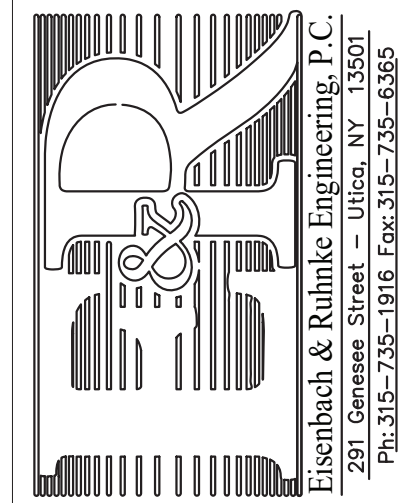
- KEYED NOTES -- NEW WORK:
- 1 REMOVE TWO EXISTING CONDENSERS AND THEIR PLATFORMS. REMOVE REFRIGERANT LINES PER MD101.
 - 2 PREPARE EXISTING ROOF PENETRATIONS FOR NEW WORK. TEMPORARILY SEAL PENETRATIONS AFTER REMOVING REFRIGERANT LINES UNLESS NEW WORK IS TO COMMENCE IMMEDIATELY AFTER REMOVALS ARE COMPLETE TO PREVENT WATER LEAKS.
 - 3 REMOVE TWO EXISTING SCREENS ON AHU OUTSIDE AIR INTAKES PER MD100.

GENERAL NOTE: FOR INTERIOR MECH. DEMOLITION AND ADDITIONAL INFORMATION ABOUT ROOF DEMOLITION SEE MD100 AND MD101

1 HALDANE ES/MS
PARTIAL ROOF PLAN - DEMOLITION
SCALE: 1/4" = 1'-0"



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S.E.D. CONTROL NUMBER:
MAIN BUILDING
48-04-01-04-0-001-023
HIGH SCHOOL ANNEX
48-04-01-04-0-016-007

PROJECT TITLE:
HALDANE CENTRAL SCHOOL DISTRICT
MECHANICAL UPGRADE AND RELATED WORK
15 CRAIGSIDE DR, COLD SPRING, NY 10516

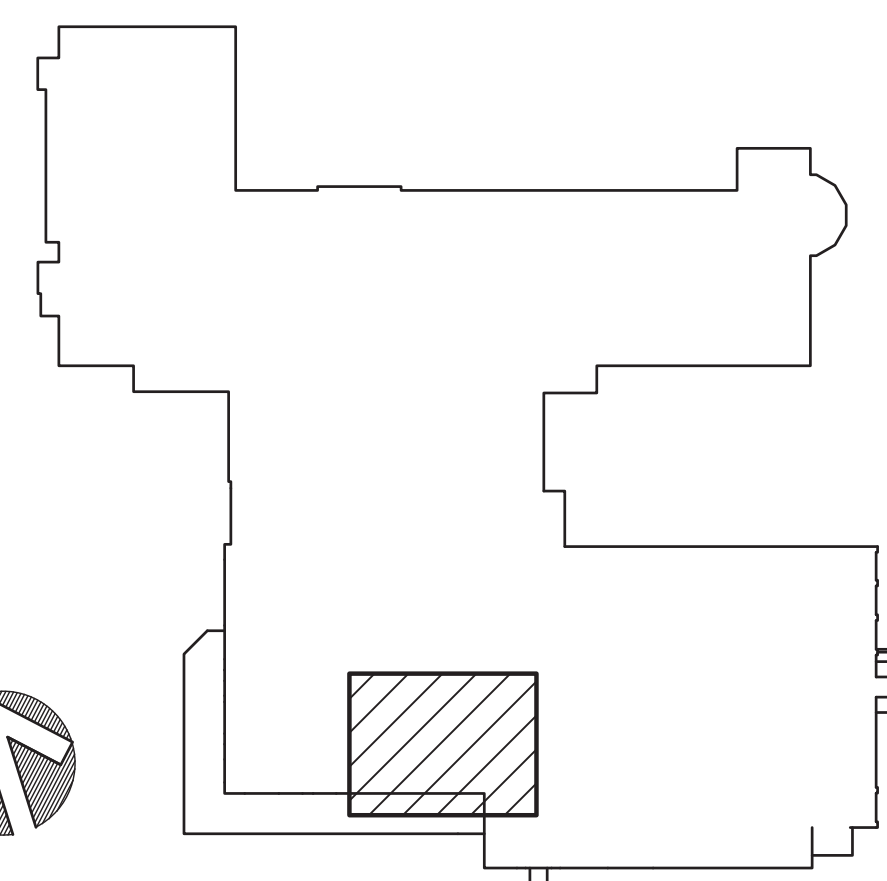
DRAWING TITLE:
HALDANE ELEMENTARY SCHOOL
ROOF PLAN DEMOLITION

09/13/2021	BID
DATE	ISSUED TO
SHEET SIZE 30"x42"	DRAWING NO. MD103
SCALE AS NOTED	FILE NO. 19338.02
DRAWN BY F & D	

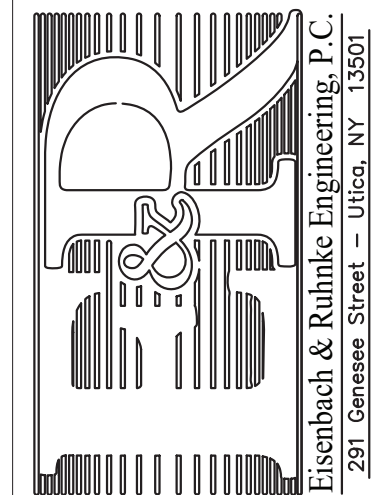


- 1 PROVIDE NEW AHU-1 AND AHU-2 WITH APPURTENANCES ABOVE DROP CEILING. SECURELY HANG FROM STRUCTURE. REUSE EXISTING CIRCUITS AND PIPING, MODIFY EXISTING PIPING IF NECESSARY.
- 2 PROVIDE NEW 14"x15", 36"x22", 24"x24" AND TRANSITION DUCTWORK, VIBRATION ISOLATORS, AND APPURTENANCES TO CONNECT EXISTING DUCTWORK AND CORRESPONDING NEW AHUS AS SHOWN. AVOID EXISTING JOISTS AND PIPING. FIELD VERIFY. RECONNECT AT POINTS SHOWN. SEAL AND MAKE AIRTIGHT.
- 3 ADAPT EXISTING DUCTWORK CONNECTED TO THE ROOF MOUNTED OUTSIDE AIR INTAKES TO ALIGN WITH NEW 24"x24" DUCTWORK. TRANSITION FROM EXISTING DUCTWORK TO DUCTWORK SIZE 30"x34" VERIFY IN FIELD. SEAL DUCTWORK AND MAKE AIRTIGHT. SEAL ROOF PENETRATION IF NECESSARY TO MAKE WEATHERPROOF.
- 4 PROVIDE DUCT SMOKE DETECTOR AND INTERCONNECT WITH DAMPERS.
- 5 PROVIDE NEW MOTORIZED DAMPERS AND AUTOMATIC AIR DAMPERS AS SHOWN.
- 6 CLEAN EXISTING SUPPLY DIFFUSERS, RETURN GRILLES, EXHAUST GRILLES, AND EXISTING DUCTWORK.
- 7 RECONNECT CONTROL WIRING FOR EXISTING THERMOSTAT AND GB-121. THERMOSTAT MUST CONFORM TO NYSDEC C403.4.1.2 OR SHALL BE REPLACED AS PART OF BASE BID. VERIFY IN FIELD.

SEE M500 FOR SCHEDULES AND OA REQUIREMENTS



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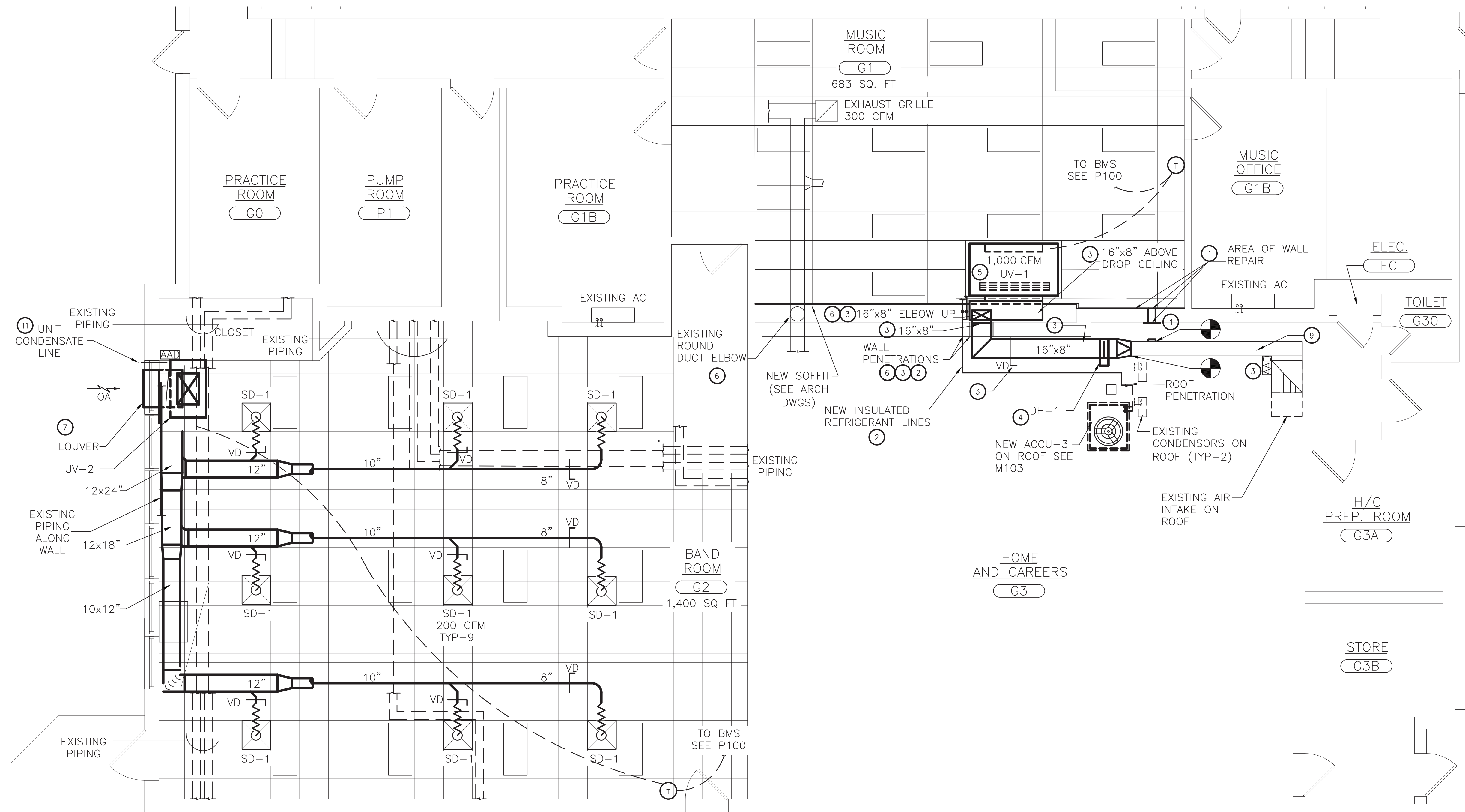
ARCHITECT
PLANNER



S.E.D. CONTROL NUMBER:
MAIN BUILDING
48-04-01-04-0-001-023
HIGH SCHOOL ANNEX
48-04-01-04-0-016-007

PROJECT TITLE	HALDANE CENTRAL SCHOOL DISTRICT MECHANICAL UPGRADE AND RELATED WORK PACKAGE NO. 2 15 CRAIGSIDE DR, COLD SPRING, NY 10516
DRAWING TITLE	HALDANE ELEMENTARY SCHOOL CAFETERIA HALLWAY NEW WORK

09/13/2021	BID
DATE	ISSUED TO
SHEET SIZE 30"x42"	DRAWING NO. M100
SCALE AS NOTED	
DRAWN BY F & D	FILE NO. 19338.0



GENERAL NOTE: FOR MECH NEW WORK
ON ROOF SEE M103

1 HALDANE ES/MS SCHOOL GROUND FLOOR PLAN - NEW WORK

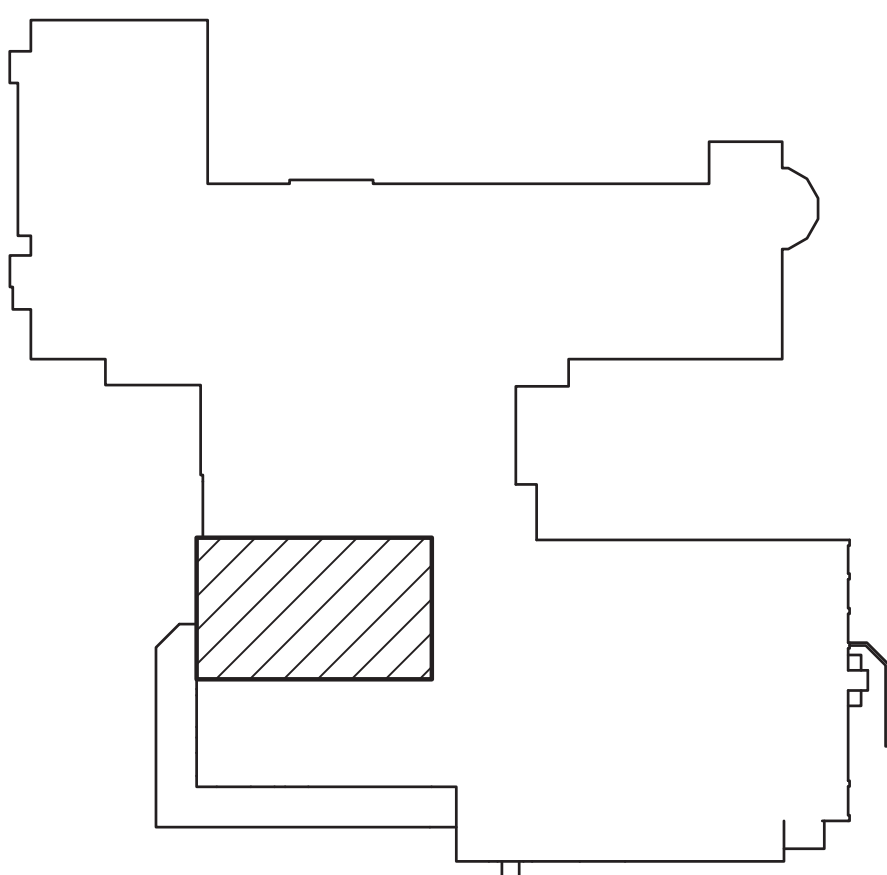
SCALE: 1/4" = 1'-0"

KEYED NOTES - NEW WORK:

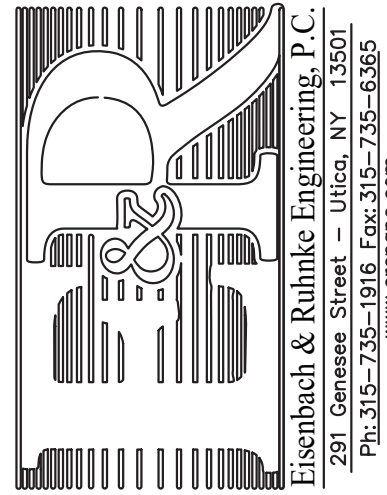
- 1 CAP EXISTING DUCT AND CONNECT AT POINT SHOWN. SEAL DUCT AND MAKE AIRTIGHT. PROVIDE FIRE PROOFING WHERE REQUIRED. SPACKLE AND PAINT WALL TO MATCH EXISTING.
- 2 PROVIDE, SUPPORT AND FEED INSULATED REFRIGERANT LINES FROM NEW ACCU-1 (SEE DRAWING M103) THROUGH EXISTING ROOF PENETRATION AND WALL PENETRATION. MODIFY PENETRATION IF NECESSARY. ROOF PENETRATION SHALL BE WEATHER PROOF. PROVIDE FIRE STOPPING AT WALL PENETRATION.
- 3 PROVIDE NEW INSULATED 16"x8" DUCT, VOLUME DAMPER, MOTORIZED DAMPER, AND DUCT INSULATION. USE MODIFIED WALL PENETRATION TO FIT INSULATED 16"x8" DUCT. PROVIDE FIRE STOPPING TO WALL PENETRATION. SEAL DUCTWORK AND MAKE AIRTIGHT. SECURELY HANG DUCTWORK FROM STRUCTURE.
- 4 PROVIDE AND SUPPORT ELECTRIC DUCT HEATER DH-1. SEAL IN DUCTWORK AND MAKE AIR TIGHT.
- 5 PROVIDE NEW UV-1 TO BE FLUSH WITH DROP CEILING. SECURELY HANG FROM STRUCTURE USING FRAMING AND THREADED RODS.
- 6 WALL PENETRATIONS, DUCTWORK ELBOWS, REFRIGERANT LINES, AND ASSOCIATED, SHALL BE HIDDEN AND HOUSED BY A NEW SOFFIT. COORDINATE WITH ARCH DRAWINGS.
- 7 PROVIDE UV-2, WALL SLEEVE AND LOUVER. POSITION UV-2 TO ALLOW ACCESS TO CLOSET AND TO ALLOW EXISTING HW PIPING TO RUN BEHIND UV-2 AND UNDER WALL SLEEVE. PROVIDE INSULATION TO ANY HW PIPING LOCATED BEHIND THE UNIT. VERIFY IN FIELD.
- 8 PROVIDE NEW INSULATED DUCTWORK, LOUVERS, THREADED ROD HANGERS AND NINE (9) SD-1 DIFFUSERS AS SHOWN. POSITION AND MANUEVER DUCTWORK THROUGH EXISTING OPEN WEB JOISTS AND AVOID EXISTING DUCTWORK AND PIPING ABOVE CEILING. CONTRACTOR TO RELOCATE CROSS BRACING AS REQUIRED. EXISTING PIPING SHOWN FOR REFERENCE ONLY. VERIFY IN FIELD.
- 9 PROVIDE NEW INSULATION TO EXISTING TO REMAIN DUCTWORK. CLEAN EXISTING TO REMAIN DUCTWORK.
- 10 PROVIDE TWO NEW THERMOSTATS TO CONFORM TO NYSECC C403.4.1.2.
- 11 PROVIDE 1" COPPER CONDENSATE LINE TO THE EXTERIOR. MAKE PENETRATION TO EXTERIOR WEATHERTIGHT. PROVIDE SPLASH BLOCK FLUSH WITH GRADE.

SEE M500 FOR SCHEDULES AND OA REQUIREMENTS

KEY-PLAN
SCALE: NONE



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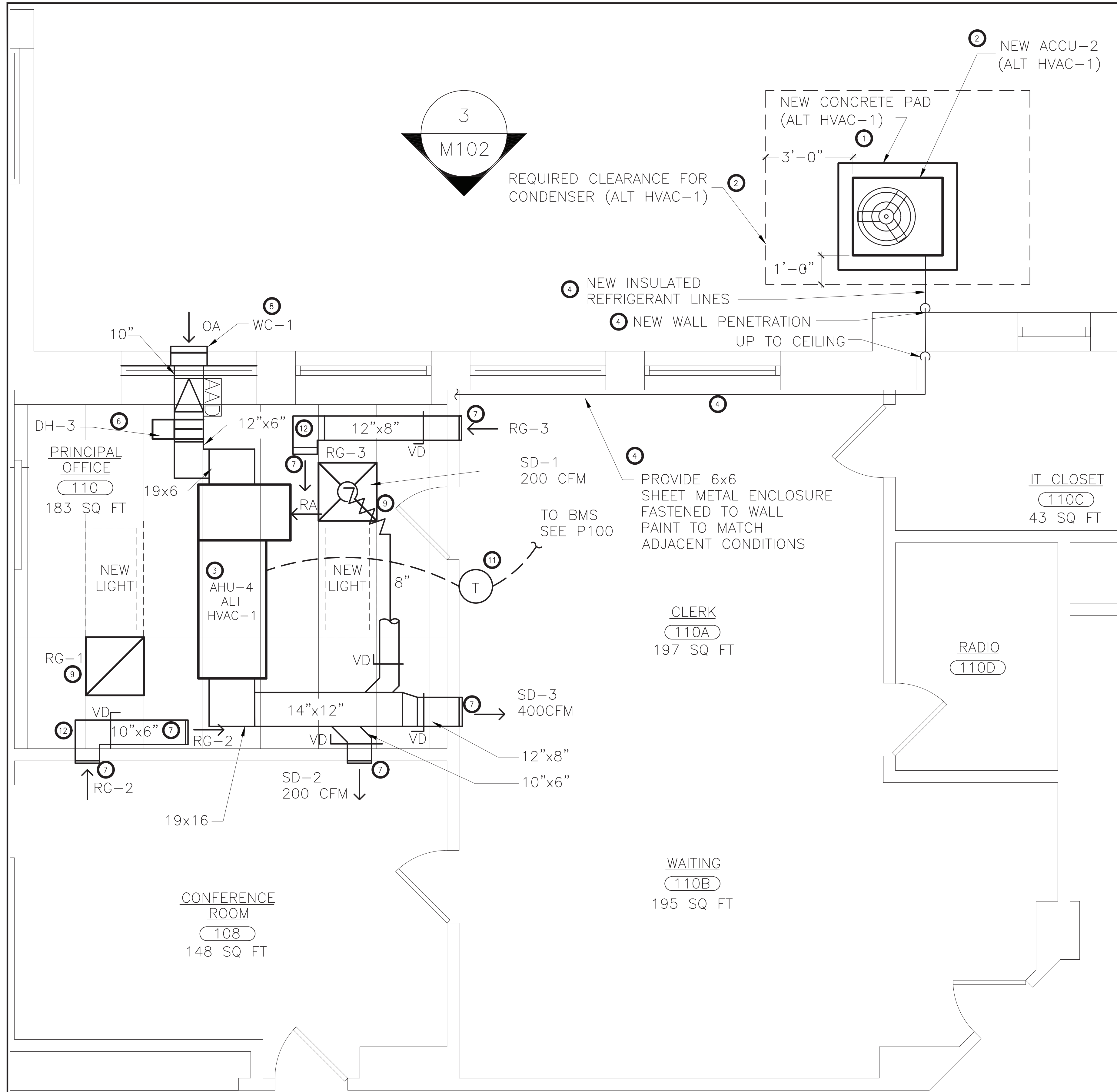
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S.E.D. CONTROL NUMBER:
MAIN BUILDING
48-04-01-04-0-001-023
HIGH SCHOOL ANNEX
48-04-01-04-0-016-007

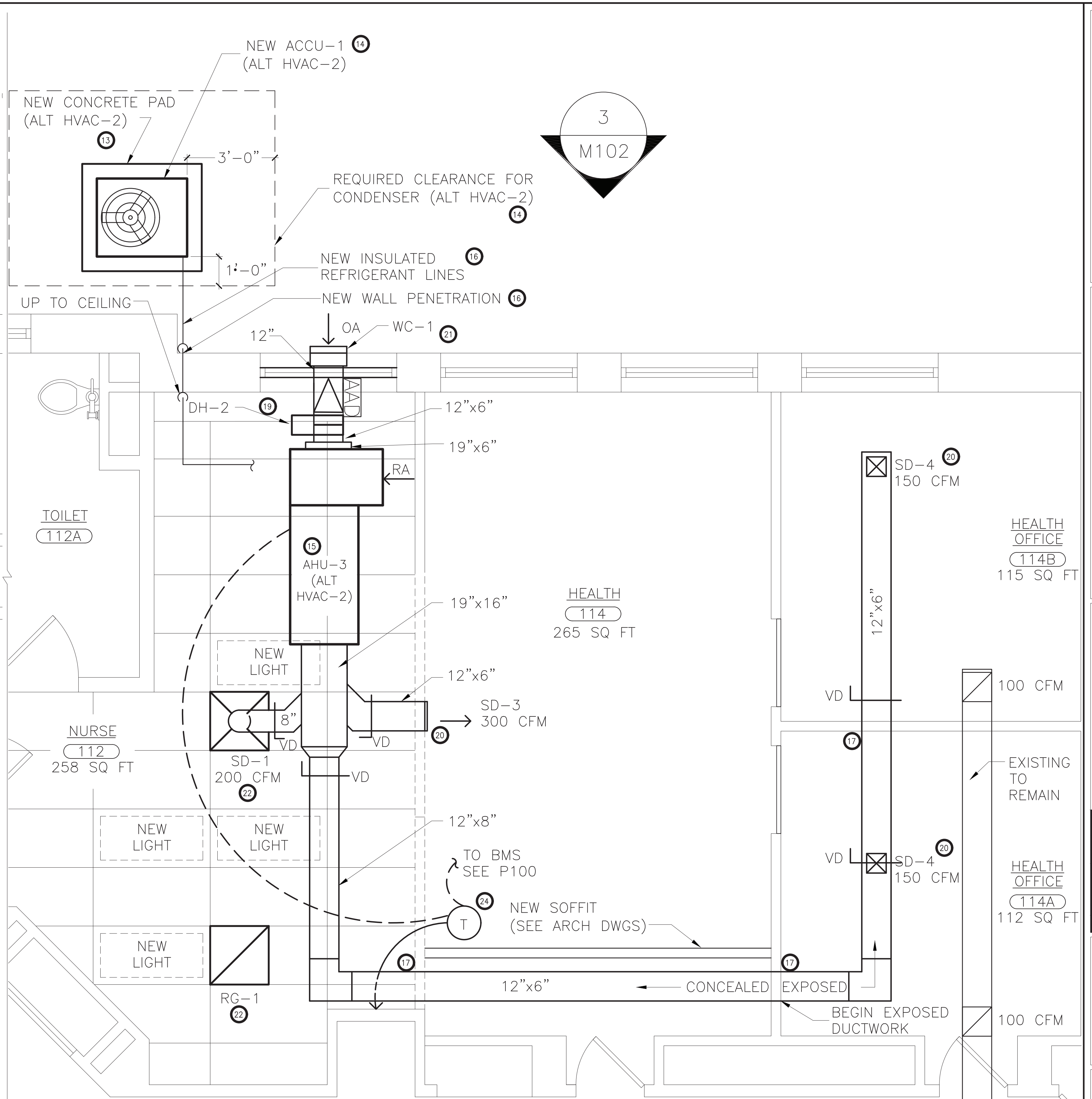
PROJECT TITLE
CENTRAL SCHOOL DISTRICT
MECHANICAL UPGRADE AND RELATED WORK
PACKAGE NO. 2
15 CROMBIE DR. COLD SPRING, NY 10516
DRAWING TITLE
HALDANE ELEMENTARY SCHOOL,
MUSIC AND BAND ROOM NEW WORK

DATE
09/13/2021
SHEET SIZE
30"x42"
SCALE
AS NOTED
DRAWN BY
F & D
BID
ISSUED TO
DRAWING NO.
M101
FILE NO.
19338.02



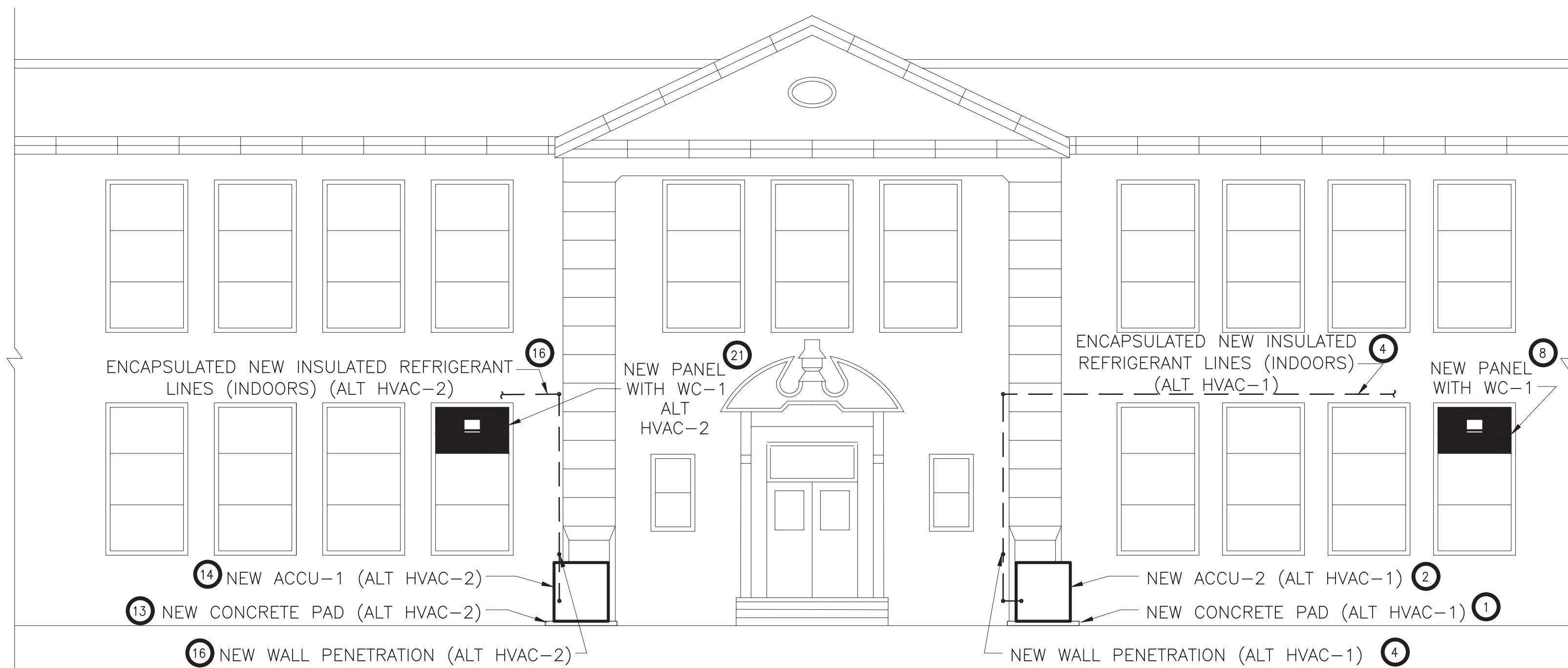
HALDANE ES/MS
2 PARTIAL FIRST FLOOR PLAN - MAIN OFFICE - NEW WORK
 SCALE: 1/2" = 1'-0"

NOTE: M102-DETAIL 2 SHOWS WORK FOR ALT HVAC-1 ONLY



HALDANE ES/MS
1 PARTIAL FIRST FLOOR PLAN - NURSES OFFICE - NEW WORK
 SCALE: 1/2" = 1'-0"

NOTE: M102-DETAIL 1 SHOWS WORK FOR ALT HVAC-2 ONLY

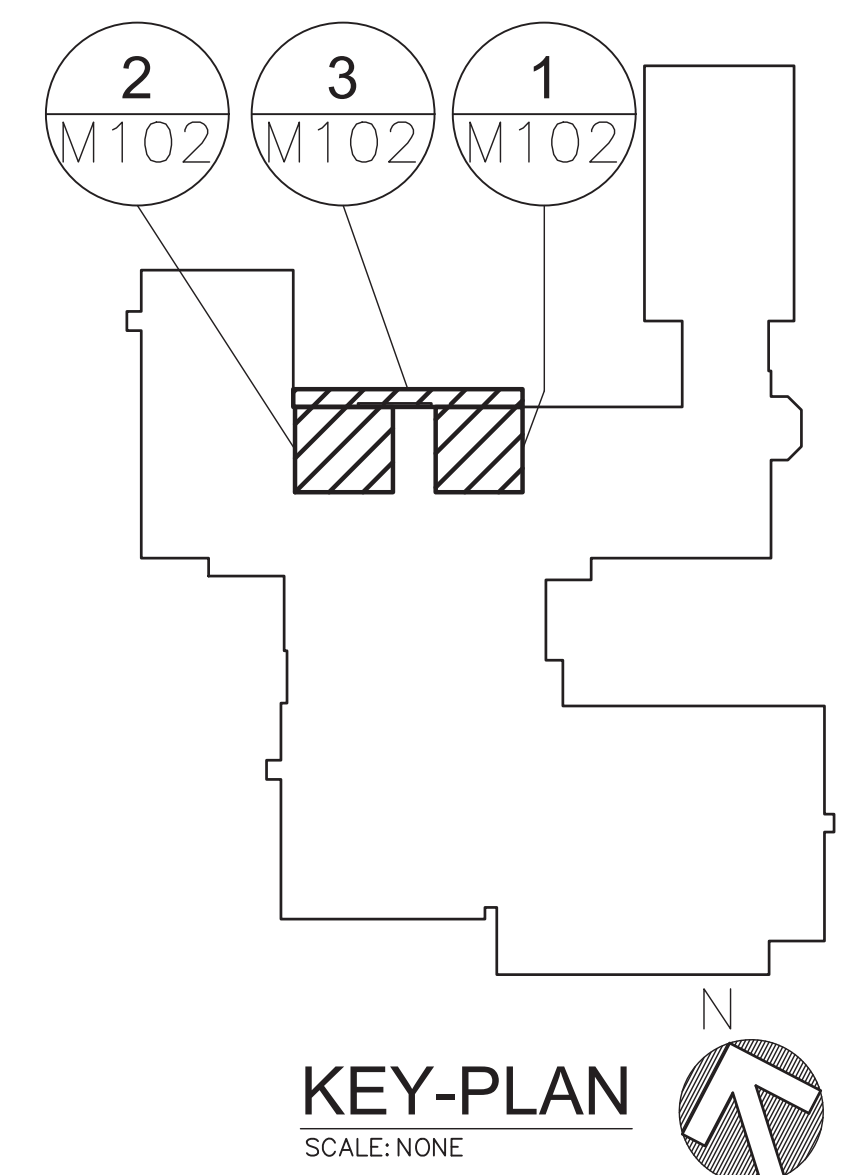


HALDANE ES/MS
3 PARTIAL ELEVATION - MAIN ENTRANCE - NEW WORK
 SCALE: 1/4" = 1'-0"

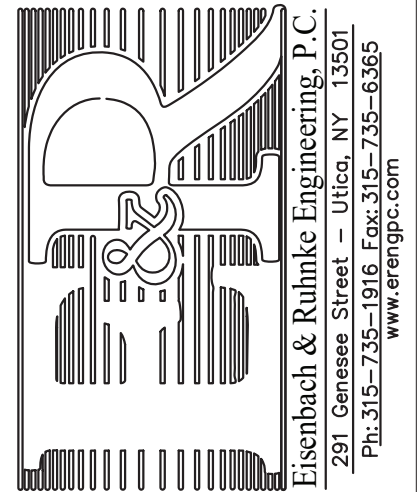
NOTE: M102-DETAIL 3 SHOWS WORK FOR ALT HVAC-1 AND ALT HVAC-2

- KEYED NOTES — NEW WORK:**
- PROVIDE CONCRETE PAD AS SHOWN. OBSERVE CLEARANCES FOR CONDENSER (ALT HVAC-1).
 - PROVIDE NEW CONDENSER ACCU-2 TO NEW CONCRETE PAD, OBSERVE REQUIRED CLEARANCES FOR CONDENSERS, SEE ARCH DWGS FOR PLANTINGS (ALT HVAC-1).
 - PROVIDE NEW AHU-4 ABOVE DROP CEILING, SECURELY HANG FROM STRUCTURE, SEE M500 FOR ADDITIONAL NOTES AND DETAILS (ALT HVAC-1).
 - PROVIDE INDIVIDUALLY INSULATED SUCTION AND LIQUID LINES FROM NEW CONDENSER TO CORRESPONDING AHU, PROVIDE PENETRATION THROUGH WALL AS SHOWN, SEE M500 FOR CONDENSATE DRAINAGE NOTES; INDOOR INSULATED LINES SHALL BE ENCAPSULATED BY SOFFI STEEL U-SHIELD SHEET METAL ENCLOSURE SECURED BY SCREWS AND PAINTED TO MATCH ADJACENT CONDITIONS, SEE DRAWING FOR PATH, MAKE PENETRATION WEATHER TIGHT (ALT HVAC-1).
 - PROVIDE INSULATED DUCTWORK, MOTORIZED DAMPERS, VOLUME DAMPERS, AND ASSOCIATED AS SHOWN. SEAL AND MAKE AIRTIGHT (ALT HVAC-1).
 - PROVIDE ELECTRIC DUCT HEATER DH-2, SEAL IN DUCT WORK AND MAKE AIR TIGHT (ALT HVAC-1).
 - PROVIDE WALL PENETRATIONS AND PROVIDE RETURN GRILLES, AND SUPPLY DIFFUSERS IN EXISTING WALLS. CONNECT ALL RG-2, RG-3, SD-2, AND SD-3 TO DUCTWORK THROUGH WALL (ALT HVAC-1).
 - PROVIDE PENETRATION AND WALL CAP WC-1 TO NEWLY INSTALLED INSULATED PANELS IN WINDOWS. SEAL AND MAKE WEATHER TIGHT (ALT HVAC-1).
 - PROVIDE NEW 2'x2' RETURN GRILLE RG-1 AND SUPPLY DIFFUSER SD-1 AND NECK CONNECTIONS OF CORRESPONDING SIZE INTO 2'x4' CEILING GRID AS SHOWN (ALT HVAC-1).
 - PROVIDE NEW THERMOSTAT TO CONFORM TO NYSECC C403.4.1.2 (ALT HVAC-1).
 - PROVIDE ACOUSTIC LINING TO ALL DUCTWORK INDICATED (ALT HVAC-1).

- KEYED NOTES — NEW WORK:**
- PROVIDE CONCRETE PAD AS SHOWN. OBSERVE CLEARANCES FOR CONDENSER (ALT HVAC-2).
 - PROVIDE NEW CONDENSER ACCU-1 TO NEW CONCRETE PAD, OBSERVE REQUIRED CLEARANCES FOR CONDENSERS, SEE ARCH DWGS FOR PLANTINGS (ALT HVAC-2).
 - PROVIDE NEW AHU-3 ABOVE DROP CEILING, SECURELY HANG FROM STRUCTURE, SEE M500 FOR ADDITIONAL NOTES AND DETAILS (ALT HVAC-2).
 - PROVIDE INDIVIDUALLY INSULATED SUCTION AND LIQUID LINES FROM NEW CONDENSER TO CORRESPONDING AHU, PROVIDE PENETRATION THROUGH WALL AS SHOWN, SEE M500 FOR CONDENSATE DRAINAGE NOTES; INDOOR INSULATED LINES SHALL BE ENCAPSULATED BY SOFFI STEEL U-SHIELD SHEET METAL ENCLOSURE SECURED BY SCREWS AND PAINTED TO MATCH ADJACENT CONDITIONS, SEE DRAWING FOR PATH, MAKE PENETRATION WEATHER TIGHT (ALT HVAC-2).
 - PROVIDE WALL PENETRATIONS TO FIT DUCTWORK THROUGH EXISTING WALLS. PROVIDE FIRESTOPPING AT PENETRATIONS (ALT HVAC-2).
 - PROVIDE INSULATED DUCTWORK, MOTORIZED DAMPERS, VOLUME DAMPERS, AND ASSOCIATED AS SHOWN. SEAL AND MAKE AIRTIGHT (ALT HVAC-2).
 - PROVIDE ELECTRIC DUCT HEATER DH-3, SEAL IN DUCT WORK AND MAKE AIR TIGHT (ALT HVAC-2).
 - PROVIDE WALL PENETRATIONS AND PROVIDE RETURN GRILLES, AND SUPPLY DIFFUSERS IN EXISTING WALLS. CONNECT ALL RG-2, RG-3, SD-2, SD-3 AND SD-4 TO DUCTWORK THROUGH WALL (ALT HVAC-2).
 - PROVIDE PENETRATION AND WALL CAP WC-1 TO NEWLY INSTALLED INSULATED PANELS IN WINDOWS. SEAL AND MAKE WEATHER TIGHT (ALT HVAC-2).
 - PROVIDE NEW 2'x2' RETURN GRILLE RG-1 AND SUPPLY DIFFUSER SD-1 AND NECK CONNECTIONS OF CORRESPONDING SIZE INTO 2'x4' CEILING GRID AS SHOWN (ALT HVAC-1).
 - NEW AND EXISTING EXPOSED DUCTWORK TO BE PRIMED AND PAINTED, SEE ARCH DWGS (ALT HVAC-2).
 - PROVIDE NEW THERMOSTAT TO CONFORM TO NYSECC C403.4.1.2 (ALT HVAC-2).



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S.E.D. CONTROL NUMBER:
 MAIN BUILDING
 48-04-01-04-0-001-023
 HIGH SCHOOL ANNEX
 48-04-01-04-0-016-007

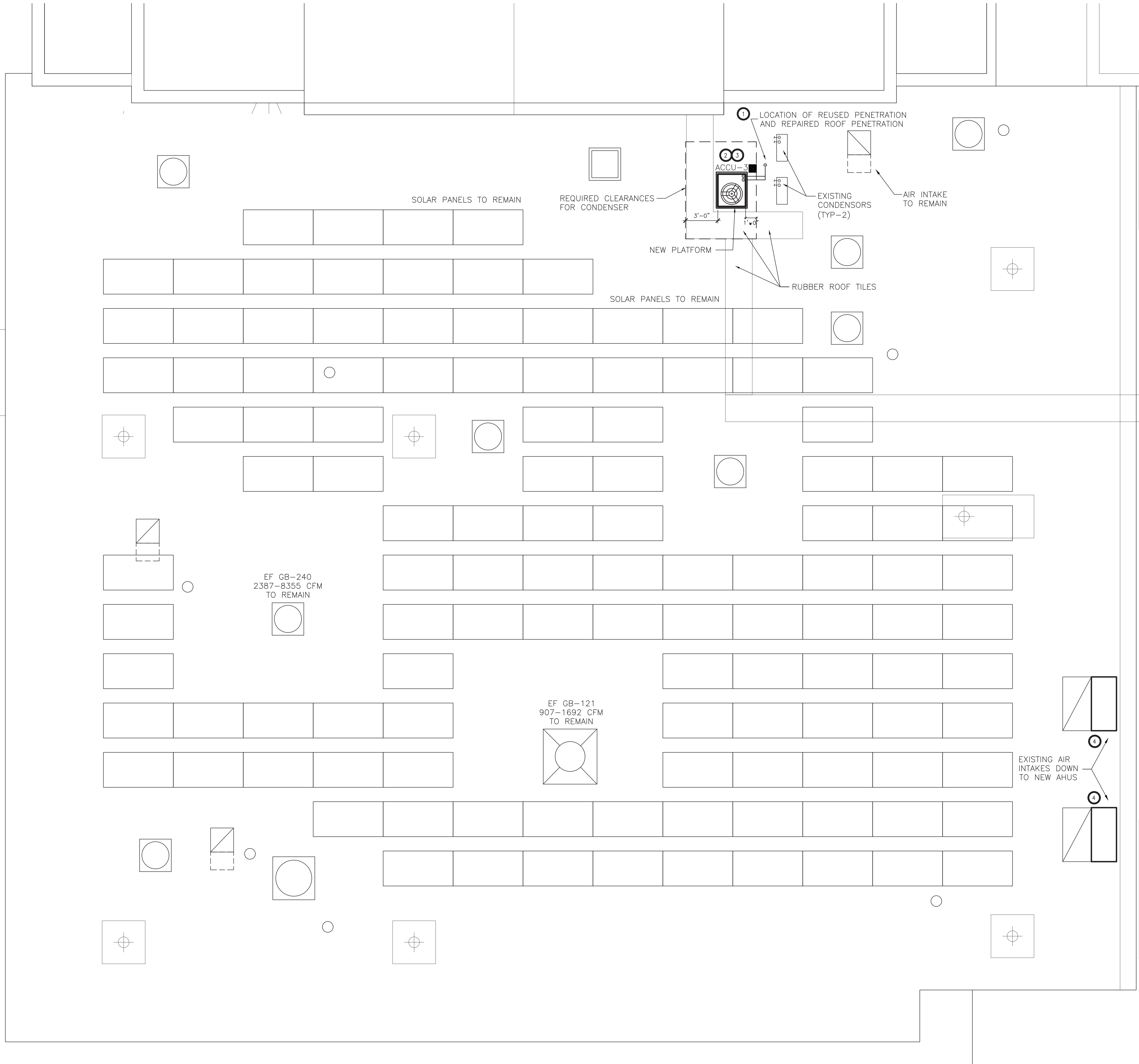
PROJECT TITLE:
 HALDANE CENTRAL SCHOOL DISTRICT
 MECHANICAL
 15 CRAIGSIDE DR. GOLD SPRING, NY 10516

DRAWING TITLE:
 HALDANE ELEMENTARY SCHOOL
 MECHANICAL
 NEW WORK

09/13/2021
 DATE
 SHEET SIZE
 30"x42"
 SCALE
 AS NOTED

BID
 ISSUED TO
 DRAWING NO.
M102
 FILE NO.
19338.02

SEE M500 FOR SCHEDULES AND OA REQUIREMENTS

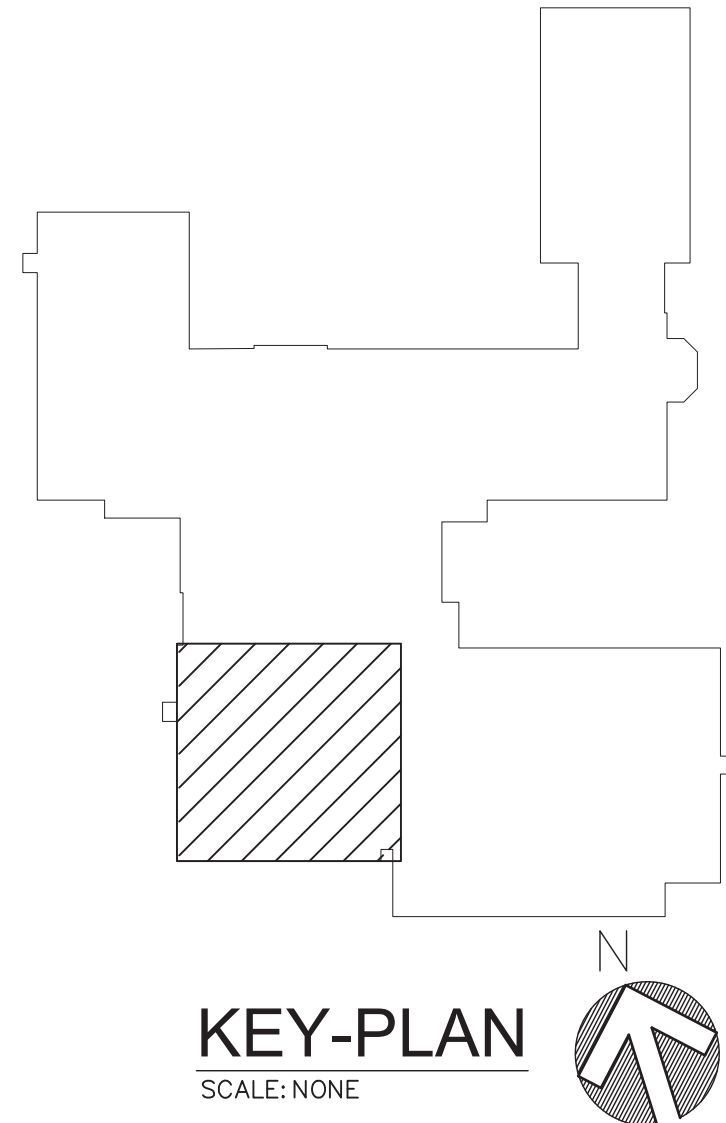


- KEYED NOTES - NEW WORK:**
1. REPAIR AND PERMANENTLY SEAL ROOF PENETRATION THAT WILL NOT BE REUSED. REPAIR SHALL BE WEATHER PROOF. SEE DRAWING A102.
 2. PROVIDE PLATFORM FOR CONDENSER AS SHOWN. OBSERVE REQUIRED CLEARANCES FOR CONDENSER. RELOCATE RUBBER ROOF TILES IF NECESSARY. VERIFY IN FIELD.
 3. PROVIDE NEW CONDENSER ACCU-3. OBSERVE REQUIRED CLEARANCES FOR CONDENSER. CONNECT AND INSULATE REFRIGERANT LINES. PROVIDE THROUGH EXISTING PENETRATION. SEAL PENETRATION TO BE WEATHER PROOF.
 4. PROVIDE NEW STAINLESS STEEL SCREENS WITH STAINLESS STEEL SCREWS FOR AHU AIR INTAKES. FIELD VERIFY.

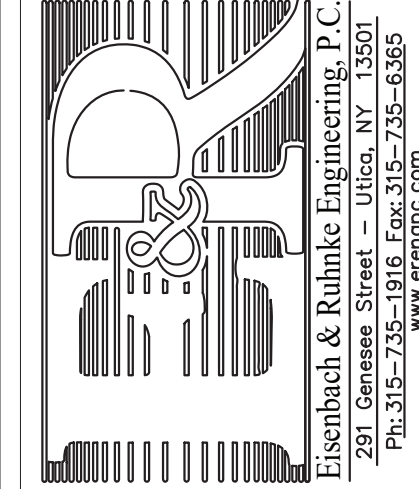
SEE M500 FOR SCHEDULES AND OA REQUIREMENTS

GENERAL NOTE: FOR INTERIOR MECH NEW WORK AND ADDITIONAL INFORMATION ABOUT ROOF WORK SEE M100 AND M101

**HALDANE ES/MS
PARTIAL ROOF PLAN - NEW WORK**
SCALE: 1/4" = 1'-0"



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S.E.D. CONTROL NUMBER:
MAIN BUILDING
48-04-01-04-0-001-023
HIGH SCHOOL ANNEX
48-04-01-04-0-016-007

PROJECT TITLE:
HALDANE CENTRAL SCHOOL DISTRICT
MECHANICAL UPGRADE AND RELATED WORK
15 CROSSLAND DR. COLD SPRING, NY 10516

DRAWING TITLE:
HALDANE ELEMENTARY SCHOOL
ROOF PLAN NEW WORK

09/13/2021	BID
DATE	ISSUED TO
SHEET SIZE 30"x42"	DRAWING NO. M103
SCALE AS NOTED	FILE NO. 19338.02
DRAWN BY F & D	

OA DESIGN CRITERIA
HALDANE ELEMENTARY/MIDDLE SCHOOL

AHU-1 & AHU-2 – CAFETERIA CAFETERIA OCCUPANT DENSITY = 100/1000 SQUARE FEET RP=7.5 CFM/PERSON PZ=172 PEOPLE (POSTED MAX OCCUPANCY) RA=0.18 CFM/SQ.FT. AZ=2450 SQ.FT. VBZ=1731 CFM EZ=0.9 (SEE NOTE) VOZ=1923 CFM MIN TOTAL OUTSIDE AIR REQUIRED – 1,923 CFM*	NOTE: RETURN GRILLE IS LOCATED BETWEEN "FLOOR" (EZ=1.0) AND "CEILING" (EZ=0.8) AND THEREFORE DOES NOT MEET EITHER DESCRIPTION. AN AVERAGED EZ VALUE OF 0.9 WILL BE USED. SEE AIR DISTRIBUTION NOTES BELOW. * TOTAL OA SUPPLIED BY ONE INDIVIDUAL AHU OR BY BOTH AHUS COLLECTIVELY.
AHU-3 NURSE'S OFFICE NURSE'S OFFICE OCCUPANT DENSITY = 10/1000 SQ. FT. RP=5 CFM/PERSON PZ=6 PEOPLE RA=0.18 CFM/SQ.FT. AZ=530 SQ.FT. VBZ=125.4 CFM EZ=1.0 (CEILING SUPPLY OF COOL AIR) VOZ=126 CFM PARTIAL OUTSIDE AIR REQUIRED – 126 CFM HEALTH OFFICE 114A OCCUPANT DENSITY = 5/1000 SQ. FT. RP=5 CFM/PERSON PZ=1 PERSON RA=0.06 CFM/SQ.FT. AZ=115 SQ.FT. VBZ=11.9 CFM EZ=1.0 (CEILING SUPPLY OF COOL AIR) VOZ=12 CFM PARTIAL OUTSIDE AIR REQUIRED – 12 CFM HEALTH OFFICE 114B OCCUPANT DENSITY = 5/1000 SQ. FT. RP=5 CFM/PERSON PZ=1 PERSON RA=0.06 CFM/SQ.FT. AZ=125 SQ.FT. VBZ=12.5 CFM EZ=1.0 (CEILING SUPPLY OF COOL AIR) VOZ=13 CFM PARTIAL OUTSIDE AIR REQUIRED – 13 CFM MIN OUTSIDE AIR REQUIRED – 151 CFM	WORK IS PART OF ALT HVAC-2 ONLY
AHU-4 MAIN OFFICE MAIN OFF./ WAITING AREA OCC. DENSITY = 30/1000 SQ. FT. RP=5 CFM/PERSON PZ=18 PEOPLE RA=0.06 CFM/SQ.FT. AZ=600 SQ.FT. VBZ=126 CFM EZ=1.0 (CEILING SUPPLY OF COOL AIR) VOZ=126 CFM PARTIAL OUTSIDE AIR REQUIRED – 126 CFM PRINCIPAL'S OFFICE OCCUPANT DENSITY = 5/1000 SQ. FT. RP=5 CFM/PERSON PZ=1 PERSON RA=0.06 CFM/SQ.FT. AZ=200 SQ.FT. VBZ=17 CFM EZ=1.0 (CEILING SUPPLY OF COOL AIR) VOZ=17 CFM PARTIAL OUTSIDE AIR REQUIRED – 17 CFM CONFERENCE ROOM OCCUPANT DENSITY = 50/1000 SQ. FT. RP=5 CFM/PERSON PZ=8 PERSON RA=0.06 CFM/SQ.FT. AZ=150 SQ.FT. VBZ=49 CFM EZ=1.0 (CEILING SUPPLY OF COOL AIR) VOZ=49 CFM PARTIAL OUTSIDE AIR REQUIRED – 49 CFM MIN OUTSIDE AIR REQUIRED COOLING – 192 CFM	WORK IS PART OF ALT HVAC-1 ONLY
UV-1 MUSIC ROOM MUSIC ROOM OCCUPANCY DENSITY = 35/1000 SQ. FT. RP=10 CFM/PERSON PZ=25 PEOPLE RA=0.06 CFM/SQ.FT. AZ=715 SQ.FT. VBZ=292.9 CFM EZ=1.0 (CEILING SUPPLY OF COOL AIR) VOZ=293 CFM MIN OUTSIDE AIR REQUIRED COOLING– 293 CFM	
UV-2 BAND ROOM BAND ROOM OCC. DENSITY = 35/1000 SQ. FT. ALT. USED AS CONF. RM. – OCC. DENSITY = 50/1000 SQ. FT. RP=10 CFM/PERSON PZ=48 PEOPLE RA=0.06 CFM/SQ.FT. AZ=1350 SQ.FT. VBZ=561 CFM EZ=0.9 (HEATING, 1.0 COOLING) VOZ=561 CFM (COOLING) VOZ=623 CFM (HEATING) MIN TOTAL OUTSIDE AIR REQUIRED COOLING – 561 CFM MIN TOTAL OUTSIDE AIR REQUIRED HEATING – 623 CFM	NOTE: RETURN GRILLE IS LOCATED BETWEEN "FLOOR" (EZ=1.0) AND "CEILING" (EZ=0.8) AND THEREFORE DOES NOT MEET EITHER DESCRIPTION. AN AVERAGED EZ VALUE OF 0.9 WILL BE USED. SEE AIR DISTRIBUTION NOTES BELOW.

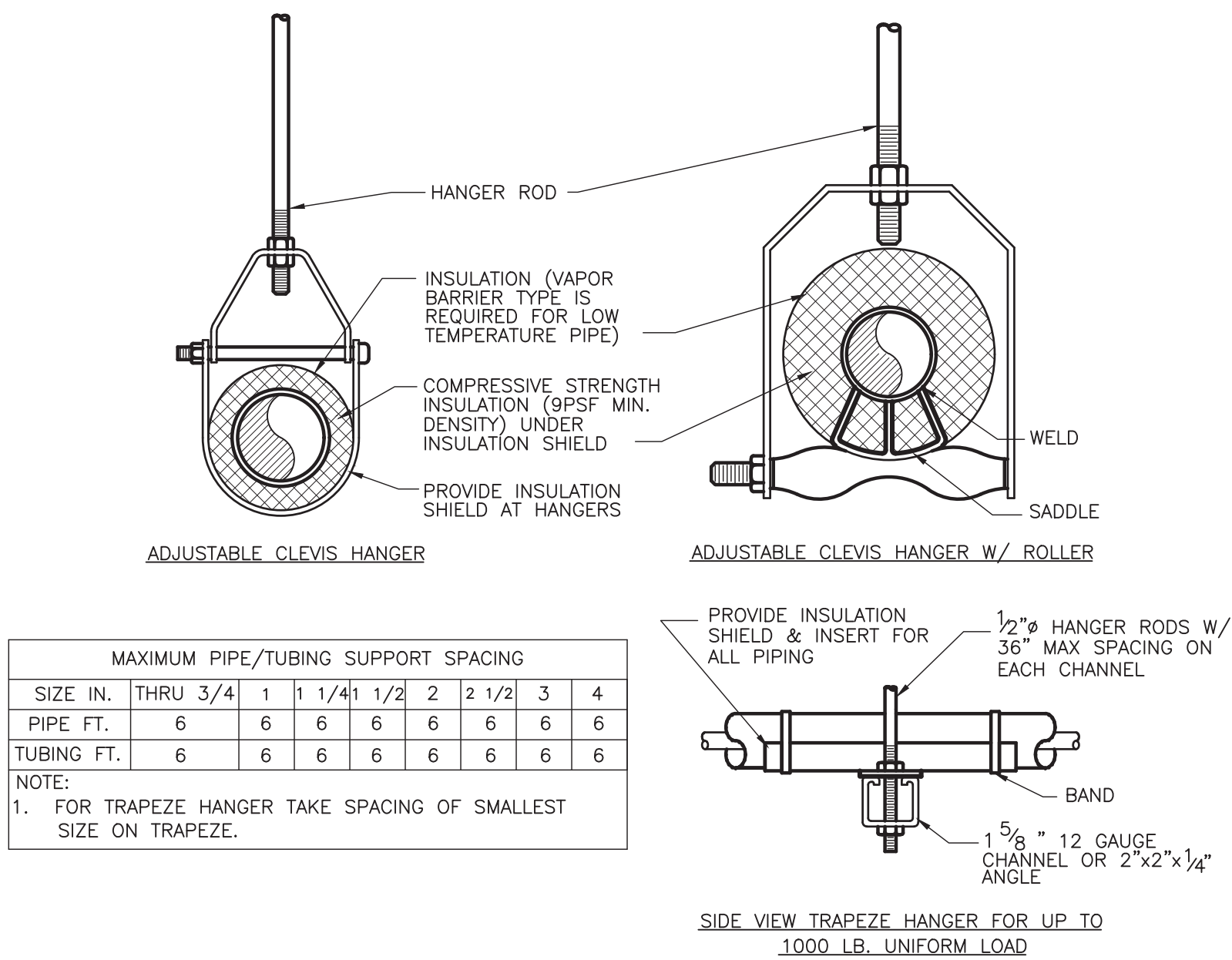
OCCUPANCY CLASSIFICATION DERIVED FROM NYSCM TABLE 403.3.1.1
RP=OUTDOOR AIRFLOW RATE PER PERSON (NYSCM TABLE 403.3.1.1)
PZ=QTY. OF OCCUPANTS IN SPACE
RA=OUTDOOR AIRFLOW RATE PER UNIT AREA (NYSCM TABLE 403.3.1.1)
AZ=OCCUPIABLE FLOOR AREA
VBZ=REQUIRED OUTDOOR AIRFLOW RATE IN BREATHING ZONE
EZ=ZONE AIR DISTRIBUTION EFFECTIVENESS (NYSCM TABLE 403.3.1.1.2)
VOZ=ZONE OUTDOOR AIRFLOW RATE

VBZ=(RPxPZ)+(RAXAZ) VOZ=VBZ/EZ

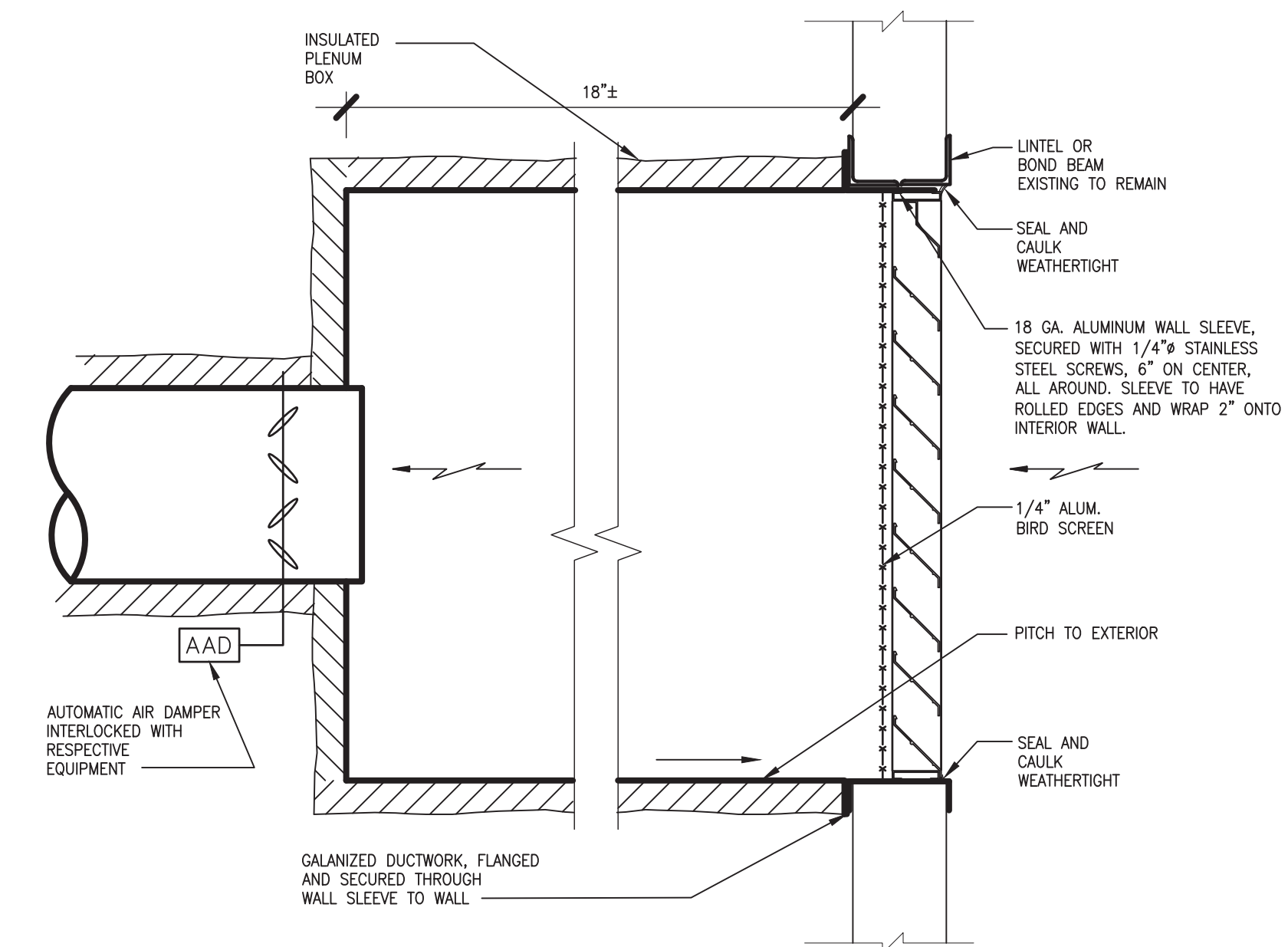
NYSCM TABLE 403.3.1.1.1.2 ZONE AIR DISTRIBUTION EFFECTIVENESS a,b,c,d	EZ
AIR DISTRIBUTION CONFIGURATION	
CEILING OR FLOOR SUPPLY OF COOL AIR	1.0(a)
CEILING OR FLOOR SUPPLY OF WARM AIR AND FLOOR RETURN	1.0
CEILING SUPPLY OF WARM AIR AND CEILING RETURN	0.8(b)
FLOOR SUPPLY OF WARM AIR AND CEILING RETURN	0.7
MAKEUP AIR DRAWN IN ON THE OPPOSITE SIDE OF THE ROOM FROM THE EXHAUST OR RETURN	0.8
MAKEUP AIR DRAWN IN NEAR TO THE EXHAUST OR RETURN LOCATION	0.5

- a. "COOL AIR" IS AIR COOLER THAN SPACE TEMPERATURE.
b. "WARM AIR" IS AIR WARMER THAN SPACE TEMPERATURE.
c. "CEILING" INCLUDES ANY POINT ABOVE THE BREATHING ZONE.
d. "FLOOR" INCLUDES ANY POINT BELOW THE BREATHING ZONE.
e. ZONE AIR DISTRIBUTION EFFECTIVENESS OF 1.2 SHALL BE PERMITTED FOR SYSTEMS WITH A FLOOR SUPPLY OF COOL AIR AND CEILING RETURN, PROVIDED THAT LOW-VELOCITY DISPLACEMENT VENTILATION ACHIEVES UNIDIRECTIONAL FLOW AND THERMAL STRATIFICATION.
f. ZONE AIR DISTRIBUTION EFFECTIVENESS OF 1.0 SHALL BE PERMITTED FOR SYSTEMS WITH A CEILING SUPPLY OF WARM AIR, PROVIDED THAT SUPPLY AIR TEMPERATURE IS LESS THAN 15°F ABOVE SPACE TEMPERATURE AND PROVIDED THAT THE 150-FOOT-PER-MINUTE SUPPLY AIR JET REACHES TO WITHIN 4-1/2 FEET OF FLOOR LEVEL.

NYSED EZ CLASSIFICATION NOTE: "FLOOR" REFERS TO THE AREA LOCATED 0-3 INCHES AFF. "CEILING" REFERS TO THE AREA LOCATED 72 INCHES AFF AND ABOVE. THOSE LOCATED BETWEEN 3 INCHES AND 72 INCHES AFF ARE NOTED ABOVE.

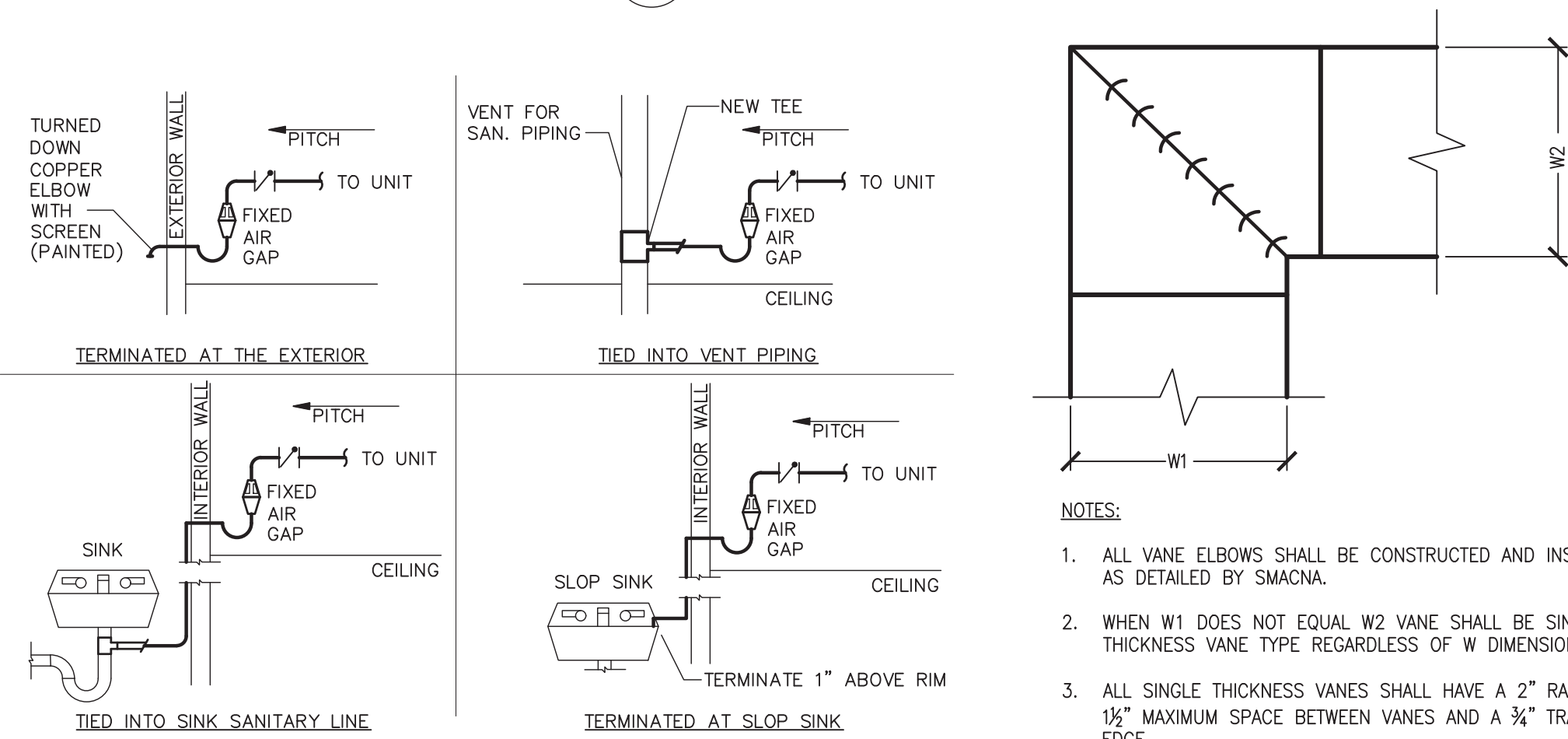


1 PIPE SUPPORT DETAIL
SCALE: NONE



- NOTES:
1. ALL HARDWARE SHALL BE CORROSION RESISTANT AND HAVE FINISH TO MATCH ADJACENT SURFACE WHERE EXPOSED TO VIEW.
2. PROVIDE LOUVER NOTED ON ARCH DRAWINGS OR APPROVED EQUAL. MUST ALLOW PROPER OUTDOOR AIR AND RELIEF AIR FLOW.

2 LOUVER DETAIL
SCALE: NONE



- NOTES:
1. ALL VANE ELBOWS SHALL BE CONSTRUCTED AND INSTALLED AS DETAILED BY SMCMA.
2. WHEN W1 DOES NOT EQUAL W2 VANE SHALL BE SINGLE THICKNESS VANE TYPE REGARDLESS OF W DIMENSION.
3. ALL SINGLE THICKNESS VANES SHALL HAVE A 2" RADIUS, 1/8" MAXIMUM SPACE BETWEEN VANES AND A 3/4" TRAILING EDGE.
4. WHEN W1 EQUALS W2 AND W1 IS GREATER THAN 20" VANES SHALL BE DOUBLE VANES TYPE.

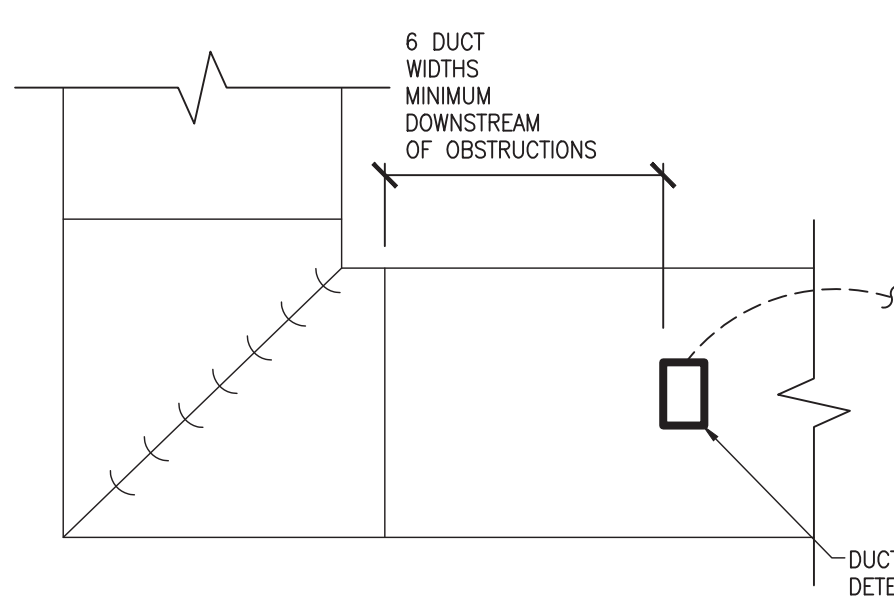
3 DUCTWORK SQUARE VANE ELBOWS DETAIL
SCALE: NONE

5 CONDENSATE LINE INSTALLATION
SCALE: NONE

COORDINATION NOTE:
1. COORDINATION- IT SHALL BE THE RESPONSIBILITY OF THE ELECTRICAL AND MECHANICAL CONTRACTORS TO COORDINATE THEIR WORK. THE HVAC CONTRACTOR SHALL TAKE THE LEAD IN THE COORDINATION EFFORT AND PRODUCE THE COORDINATION DRAWINGS. COORDINATION DRAWINGS SHALL BE SUBMITTED FOR APPROVAL TO THE ENGINEER PRIOR TO STARTING ANY WORK. CEILING SPACE IS VERY LIMITED AND DUCTWORK/PIPING INSTALLATION AND LOCATION IS CRITICAL. THE PURPOSE OF THESE DRAWINGS IS TO COORDINATE THE LOCATIONS OF ALL PIPING, DUCTWORK, AND ASSOCIATED ELECTRICAL EQUIPMENT. ALL ELECTRICAL EQUIPMENT SHALL BE INSTALLED AND LOCATED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE (NEC). MECHANICAL EQUIPMENT CANNOT INFILTRATE THE ELECTRICAL EQUIPMENT'S WORKING CLEARANCE AND WORKING SPACE, NOR CAN IT BE INSTALLED DIRECTLY ABOVE OR BELOW TO THE STRUCTURE, AS IDENTIFIED WITHIN THE NEC ARTICLE 110 "REQUIREMENTS FOR ELECTRICAL INSTALLATION". THIS COORDINATION IS REQUIRED FOR ALL PHASES OF THIS PROJECT. FAILURE TO FOLLOW THIS PROCEDURE DOES NOT RELIEVE THE CONTRACTOR FROM THE DUTIES AND WILL NOT CONSTITUTE A REASON FOR A CHANGE ORDER.

- NOTES:
1. DETECTORS SHALL BE FURNISHED/WIRED BY ELECTRICAL CONTRACTOR AND INSTALLED BY HVAC CONTRACTOR.

4 DUCTWORK SMOKE DETECTOR INSTALLATION
SCALE: NONE



INSULATION SCHEDULE

TYPE	EQUIPMENT OR SYSTEM SERVED	INSULATION CLASS (a)			JACKETING CLASS (b)			THICKNESS (IN)					
								NOMINAL PIPE SIZE (IN)					DUCTWORK (c)
		INTERIOR CONCEALED	INTERIOR EXPOSED	EXTERIOR	INTERIOR GENERAL	EQUIPMENT ROOMS	EXTERIOR	<1"	1"-<1 1/2"	1 1/2"- <4"	4 "- <8"	≥8" & UP	
A	RS, RL	FE	FE	FE	0	0	4	0.5	1.5	1.5	1.5	1.5	
B	DOW, COOLING COIL CONDENSATE	FE	--	--	0	--	--	0.5	0.5	1.0	1.0	1.0	
C	HWS, HWR	FG	--	--	1	--	--	1.5	1.5	2	2	2	
		--	FG	--	1	1	--	1.5	1.5	2	2	2	
		--	--	UR	--	--	6	1.5	1.5	2	2	2	
D	DUCTWORK	FG (d)	--	--	2	--	--	--	--	--	--	--	1.5(g)
		--	FG (e)	--	2	2	--	--	--	--	--	--	2 (f)(g)
		--	--	UR(e)	--	--	3	--	--	--	--	--	2 (i)
E	BOILER BREECHING	--	CS	--	--	4(i)	--	--	--	2	2	2	
(a) FG -- FIBROUS GLASS FE -- FLEXIBLE ELASTOMERIC UR -- URETHANE CS -- CALCIUM SILICATE FR -- FIRE RATED		(b) 0 -- NONE 1 -- ALL SERVICE 2 -- ALUMINUM FOIL 3 -- CANVAS 4 -- POLYVINYL CHLORIDE 5 -- STAINLESS STEEL 6 -- ALUMINUM 7 -- EPDM			(c) SUPPLY AIR OUTSIDE AIR MIXED AIR RETURN AIR (d) BLANKET (e) RIGID BOARD			(f) EXCEPT SUPPLY AIR WITHIN CONDITIONED SPACE (g) INSULATE EXHAUST AIR 15'-0" FROM EXTERIOR PENETRATION (i) TWO LAYERS, 3 IN TOTAL					

ALL INSULATION TO COMPLY WITH 2015 NYS ENERGY CONSERVATION CONSTRUCTION CODE

RETURN GRILLE, SUPPLY DIFFUSER, AND WALL CAP SCHEDULE

QTY	MARK	SERVICE	MODEL	SIZE	MATERIAL	MANUFACTURER FINISH	NOTES
	RG-1	RETURN	TITUS 300 RL	24"x24"	STEEL	WHITE	1,2,3,5,7
	RG-2	RETURN	TITUS 350 RL	10"x6"	STEEL	WHITE	3,4,5,8
	RG-3	RETURN	TITUS 350 RL	12"x8"	STEEL	WHITE	3,4,5,8
	SD-1	SUPPLY	TITUS TMS	24"x24"	STEEL	WHITE	1,2,3,5,7
	SD-2	SUPPLY	TITUS 300 RL	10"x6"	STEEL	WHITE	3,4,5,8
	SD-3	SUPPLY	TITUS 300 RL	12"x8"	STEEL	WHITE	3,4,5,8
	SD-4	SUPPLY	TITUS TDC	8"x8"	STEEL	WHITE	3,4,5,8
	WC-1	OUTSIDE AIR INTAKE	BROAN 610FA	10" ROUND	ALUMINUM	NATURAL	3,4,5,6
NOTE 1: PROVIDE APPROPRIATE SIZED NECK TO CONNECT TO NEW DUCT. SEAL AND MAKE CONNECTIONS AIR TIGHT. NOTE 2: PROVIDE GRILLE OR DIFFUSER TO FIT IN A FULL SPACE IN DROP CEILING GRID. NOTE 3: PROVIDE DAMPERS AS NECESSARY TO AID IN AIR BALANCING. NOTE 4: CONNECT TO NEW DUCT THROUGH WALL. SEAL DUCT CONNECTIONS AND MAKE AIR TIGHT. SEAL AREA AROUND EXTERIOR WALL PENETRATIONS TO MAKE FLUSH AND WEATERTIGHT. NOTE 5: PROVIDE MODEL INDICATED OR APPROVED EQUAL. SUBMIT PROPOSED MODELS TO ENGINEER FOR APPROVAL. NOTE 6: CONNECT TO 10" ROUND DUCT. MUST INCLUDE MESH SCREEN. NOTE 7: LAY IN T-BAR GRID TYPE. FRAME TO REST ON GRID. NOTE 8: TYPE TO SCREW INTO EXPOSED DUCT OR DUCT FLANGE AT WALL PENETRATIONS.							

UNIT VENTILATOR SCHEDULE

QTY	MARK	SERVICE	MODEL	NOMINAL AIR FLOW (CFM)	COOLING (BTU)	HEATING (BTU)	SUPPLY/RETURN/ OUTSIDE AIR CONFIGURATION	FILTERS	POWER (HP)	VOLTS/HERTZ/PHASE	NOTES
1	UV-1	MUSIC ROOM (COOLING)	MAGIC AIRE UHF3	1000	28650		BOTTOM/BOTTOM/REAR	MERV-8	1/3	208/60/1	1,2,3,4,5
1	UV-2	BAND ROOM (HEATING & COOLING)	MODINE CMP60	1800	57000	54000	TOP/FRONT/REAR	MERV-13	3/4	208/60/3	3,6
NOTE 1: SECURELY HANG FROM STRUCTURE USING STEEL THREADED RODS AND FRAMING. MUST INSTALL UNIT TO ALLOW FOR MAINTENANCE CLEARANCES AND FILTER CHANGES. NOTE 2: INSTALL UNIT FLUSH WITH BOTTOM OF DROP CEILING NOTE 3: PROVIDE DAMPERS AS NECESSARY TO AID IN AIR BALANCING. NOTE 4: MERV-13 FILTER(S) MAY BE USED AT THE OWNER'S DISCRETION, NO OFFICIAL TEST DATA IS AVAILABLE TO ASSURE PERFORMANCE ON THIS UNIT. NOTE 5: PROVIDE CONDENSATE DRAIN PUMP AND SECONDARY DRAIN PAN. PROVIDE INSULATED 3/4" POLY CONDENSATE LINE TO RUN ABOVE DROP CEILING. PITCH LINE AND DISCHARGE TO A NEARBY VENT LINE IN ROOM 106. NOTE 6: PROVIDE MERV-13 FILTER, ECONOMIZER W/OA DAMPER, DUCT SHROUD, AND "STUDY PACKAGE" CASE--INSULATION OPTIONS.											

AIR HANDLING UNIT SCHEDULE

QTY	MARK	SERVICE	MODEL	NOMINAL CAPACITY	TYPE	VOLTS/HERTZ/PHASE/HP	FILTERS	ASSOCIATED EQUIPMENT	NOTES
1	AHU-1	CAFETERIA (HEATING)	MAGIC AIRE HCA20	2000 CFM	HOT WATER	208V/60/1/1.0	MERV-13		1,2
1	AHU-2	CAFETERIA (HEATING)	MAGIC AIRE HCA20	2000 CFM	HOT WATER	208V/60/1/1.0	MERV-13		1,2
1	AHU-3	(ALT HVAC-2) NURSE'S OFFICE (COOLING)	AAON H3-ARB	800 CFM	DX COIL	208V/60/1/1.0	MERV-13	CONDENSER ACCU-1	1,2,3,5
1	AHU-4	(ALT HVAC-1) MAIN OFFICE (COOLING)	AAON H3-ARB	800 CFM	DX COIL	208V/60/1/1.0	MERV-13	CONDENSER ACCU-2	1,2,3,4
NOTE 1: SECURELY HANG FROM STRUCTURE USING STEEL THREADED RODS AND FRAMING. MUST INSTALL UNIT TO ALLOW FOR MAINTENANCE CLEARANCES AND FILTER CHANGES. NOTE 2: PROVIDE RETURN AIR DUCT SMOKE DETECTOR AND TIE INTO UNIT POWER FEED AND AIR INTAKE DAMPERS. NOTE 3: PROVIDE CONDENSATE DRAIN PAN AND SECONDARY DRAIN PAN. PROVIDE CONDENSATE DRAIN PUMP AND HARDWARE TO THE UNIT. NOTE 4: PROVIDE INSULATED 3/4" POLY CONDENSATE LINE TO RUN ABOVE DROP CEILINGS. PITCH LINE AND DISCHARGE INTO SLOP SINK IN ROOM 106. ALLOW FOR 1 INCH AIR GAP. NOTE 5: PROVIDE INSULATED 3/4" POLY CONDENSATE LINE TO RUN ABOVE DROP CEILINGS. PITCH LINE AND TIE INTO SANITARY OR VENT PIPING FOR SINK IN NURSE'S BATHROOM 112A.									

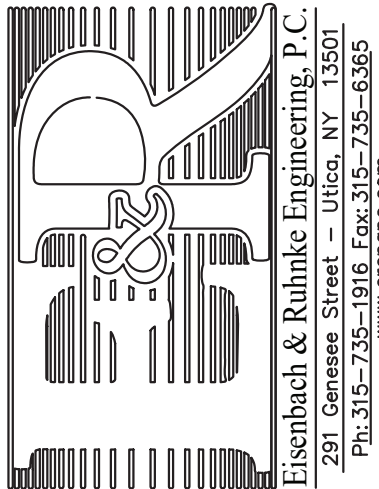
CONDENSER SCHEDULE

QTY	MARK	SERVICE	MODEL	NOMINAL CAPACITY	REFRIGERANT	VOLTS/HERTZ/PHASE	NOTES
1	ACCU-1	(ALT HVAC-2) NURSE'S OFFICE AHU-3	AAON CB-B-024	24000 BTU (2 TON)	R410A	208/60/1	1,2,3,4,5
1	ACCU-2	(ALT HVAC-1) MAIN OFFICE AHU-4	AAON CB-B-024	24000 BTU (2 TON)	R410A	208/60/1	1,2,3,4,5
1	ACCU-3	MUSIC ROOM UV-1	AAON CB-B-036	36000 BTU (3 TON)	R410A	208/60/1	2,3,4,5
NOTE 1: GC SHALL PROVIDE PLANTINGS OR FENCING AROUND UNIT. COORDINATE WITH DISTRICT. NOTE 2: OBSERVE REQUIRED AND RECOMMENDED CLEARANCES FOR UNIT DURING PLACEMENT. NOTE 3: PROVIDE WEATHERPROOF PAD FOR UNIT. NOTE 4: PROVIDE REFRIGERANT SUCTION AND REFRIGERANT LIQUID LINES. PROVIDE INSULATION FOR THESE LINES. NOTE 5: INSTALL AND CHARGE UNIT ACCORDING TO MANUFACTURER RECOMMENDATIONS.							

DUCT HEATER SCHEDULE

QTY	MARK	SERVICE	MODEL	KW	DUCT SIZE (IN)	CALCULATED OA REQUIREMENT (CFM)	VOLTS/HERTZ/PHASE	NOTES
1	DH-1	MUSIC ROOM UV-1	RENEW AIRE EK	4	16x8	293	208/60/3	1
1	DH-2	(ALT HVAC-1) MAIN OFFICE AHU-4	RENEW AIRE EK	4	12x6	192	208/60/3	1
1	DH-3	(ALT HVAC-2) NURSE'S OFFICE AHU-3	RENEW AIRE EK	4	12x6	151	208/60/3	1
NOTE 1: INSTALL UNIT ACCORDING TO MANUFACTURER RECOMMENDATIONS.								

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S.E.D. CONTROL NUMBER:
MAIN BUILDING
48-04-01-04-0-001-023
HIGH SCHOOL ANNEX
48-04-01-04-0-016-007

PROJECT TITLE
HALLWAY DISTRICT
MECHANICAL UPGRADE AND RELATED WORK
PACKAGE NO. 2
15 CHAMBERLAIN DR. COLD SPRING, NY 10516
DRAWING TITLE
SCHEDULES AND DETAILS

DATE
09/13/2021
SHEET SIZE
30"x42"
SCALE
AS NOTED
DRAWN BY
F & D

DATE
09/13/2021
SHEET SIZE
30"x42"
SCALE
AS NOTED
DRAWN BY
F & D

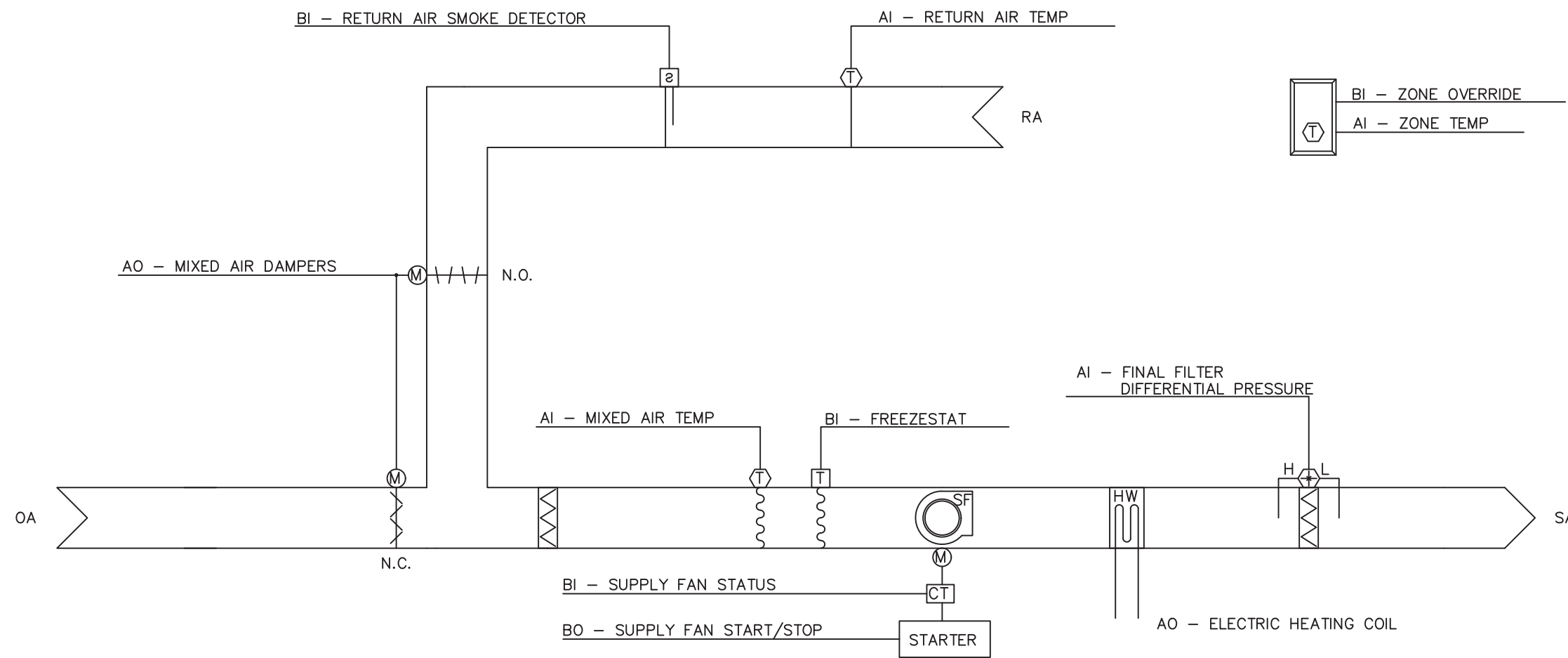
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RUN CONDITIONS – SCHEDULED:
THE UNIT SHALL RUN ACCORDING TO A USER DEFINABLE TIME SCHEDULE IN THE FOLLOWING MODES:
OCCUPIED MODE: THE UNIT SHALL MAINTAIN
75 DEG. F (ADJ.) COOLING SETPOINT
70 DEG. F (ADJ.) HEATING SETPOINT.

UNOCCUPIED MODE (NIGHT SETBACK): THE UNIT SHALL MAINTAIN
80 DEG. F (ADJ.) COOLING SETPOINT.
65 DEG. F (ADJ.) HEATING SETPOINT.

ALARMS SHALL BE PROVIDED AS FOLLOWS:
HIGH ZONE TEMP: IF THE ZONE TEMPERATURE IS GREATER THAN THE COOLING SETPOINT BY A USER DEFINABLE AMOUNT (ADJ.).
LOW ZONE TEMP: IF THE ZONE TEMPERATURE IS LESS THAN THE HEATING SETPOINT BY A USER DEFINABLE AMOUNT (ADJ.).

ZONE OPTIMAL START:
THE UNIT SHALL USE AN OPTIMAL START ALGORITHM FOR MORNING START-UP. THIS ALGORITHM SHALL MINIMIZE THE UNOCCUPIED WARM-UP OR COOL-DOWN PERIOD WHILE STILL ACHIEVING COMFORT CONDITIONS BY THE START OF SCHEDULED OCCUPIED PERIOD.

ZONE UNOCCUPIED OVERRIDE:
A TIMED LOCAL OVERRIDE CONTROL SHALL ALLOW AN OCCUPANT TO OVERRIDE THE SCHEDULE AND PLACE THE UNIT INTO AN OCCUPIED MODE FOR AN ADJUSTABLE PERIOD OF TIME. AT THE EXPIRATION OF THIS TIME, CONTROL OF THE UNIT SHALL AUTOMATICALLY RETURN TO THE SCHEDULE.

FREEZE PROTECTION:
THE UNIT SHALL SHUT DOWN AND GENERATE AN ALARM UPON RECEIVING A FREEZESTAT STATUS.

RETURN AIR SMOKE DETECTION:
THE UNIT SHALL SHUT DOWN AND GENERATE AN ALARM UPON RECEIVING A RETURN AIR SMOKE DETECTOR STATUS.

SUPPLY FAN:
THE SUPPLY FAN SHALL RUN ANYTIME THE UNIT IS COMMANDED TO RUN, UNLESS SHUTDOWN ON SAFETIES. TO PREVENT SHORT CYCLING, THE SUPPLY FAN SHALL HAVE A USER DEFINABLE (ADJ.) MINIMUM RUNTIME.

ALARMS SHALL BE PROVIDED AS FOLLOWS:
SUPPLY FAN FAILURE: COMMANDED ON, BUT THE STATUS IS OFF.
SUPPLY FAN IN HAND: COMMANDED OFF, BUT THE STATUS IS ON.
SUPPLY FAN RUNTIME EXCEEDED: STATUS RUNTIME EXCEEDS A USER DEFINABLE LIMIT (ADJ.).

HEATING COIL:
THE CONTROLLER SHALL MEASURE THE ZONE TEMPERATURE AND MODULATE THE ELECTRIC HEATING COIL TO MAINTAIN ITS HEATING SET POINT.

THE HEATING SHALL BE ENABLED WHENEVER:
OUTSIDE AIR TEMPERATURE IS LESS THAN 65 DEG.F (ADJ.).
AND THE ZONE TEMPERATURE IS BELOW HEATING SETPOINT.
AND THE SUPPLY FAN STATUS IS ON.
THE HEATING COIL SHALL OPEN WHENEVER THE FREEZESTAT (IF PRESENT) IS ON.

ECONOMIZER:
THE CONTROLLER SHALL MEASURE THE ZONE TEMPERATURE AND MODULATE THE ECONOMIZER DAMPERS IN SEQUENCE TO MAINTAIN A SETPOINT 2 DEG. F LESS THAN THE ZONE COOLING SETPOINT. THE OUTSIDE AIR DAMPERS SHALL MAINTAIN A MINIMUM ADJUSTABLE POSITION OF 20%(ADJ.) OPEN WHENEVER OCCUPIED.

THE ECONOMIZER SHALL BE ENABLED WHENEVER:
OUTSIDE AIR TEMPERATURE IS LESS THAN 65 DEG. F (ADJ.).
AND THE OUTSIDE AIR TEMPERATURE IS LESS THAN THE RETURN AIR TEMPERATURE.
AND THE SUPPLY FAN STATUS IS ON.

THE ECONOMIZER SHALL CLOSE WHENEVER:
MIXED AIR TEMPERATURE DROPS FROM 45 DEG. F TO 40 DEG. F (ADJ.).
OR ON LOSS OF SUPPLY FAN STATUS.
OR THE FREEZESTAT (IF PRESENT) IS ON.

THE OUTSIDE AND EXHAUST AIR DAMPERS SHALL CLOSE AND THE RETURN AIR DAMPER SHALL OPEN WHEN THE UNIT IS OFF. IF OPTIMAL START UP IS AVAILABLE, THE MIXED AIR DAMPER SHALL OPERATE AS DESCRIBED IN THE OCCUPIED MODE EXCEPT THAT THE OUTSIDE AIR DAMPER SHALL MODULATE TO FULLY CLOSED.

MINIMUM OUTSIDE AIR VENTILATION – FIXED PERCENTAGE:
THE OUTSIDE AIR DAMPERS SHALL MAINTAIN A MINIMUM POSITION (ADJ.) DURING BUILDING OCCUPIED HOURS AND BE CLOSED DURING UNOCCUPIED HOURS.

FINAL FILTER DIFFERENTIAL PRESSURE MONITOR:
THE CONTROLLER SHALL MONITOR THE DIFFERENTIAL PRESSURE ACROSS THE FINAL FILTER.

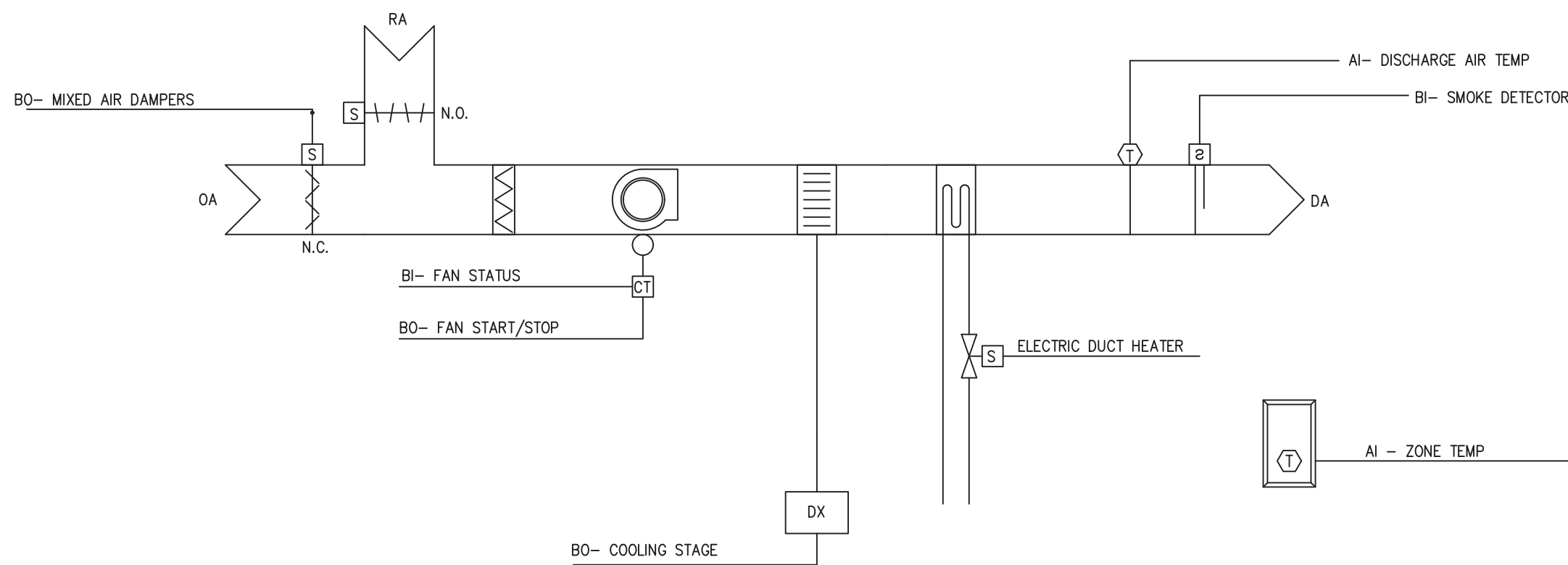
ALARMS SHALL BE PROVIDED AS FOLLOWS:
FINAL FILTER CHANGE REQUIRED: FINAL FILTER DIFFERENTIAL PRESSURE EXCEEDS A USER DEFINABLE LIMIT (ADJ.).

MIXED AIR TEMPERATURE:
THE CONTROLLER SHALL MONITOR THE MIXED AIR TEMPERATURE AND USE AS REQUIRED FOR ECONOMIZER CONTROL (IF PRESENT) OR PREHEATING CONTROL (IF PRESENT).

ALARMS SHALL BE PROVIDED AS FOLLOWS:
HIGH MIXED AIR TEMP: IF THE MIXED AIR TEMPERATURE IS GREATER THAN 90 DEG. F (ADJ.).
LOW MIXED AIR TEMP: IF THE MIXED AIR TEMPERATURE IS LESS THAN 45 DEG. F (ADJ.).

1 AIR HANDLING UNIT CONTROL SCHEMATIC

SCALE: NONE



UNIT VENTILATOR

RUN CONDITIONS – SCHEDULED:
THE UNIT SHALL RUN ACCORDING TO A USER DEFINABLE TIME SCHEDULE IN THE FOLLOWING MODES:
OCCUPIED MODE: THE UNIT SHALL MAINTAIN
74 DEG F (ADJ.) COOLING SETPOINT
70 DEG F (ADJ.) HEATING SETPOINT.
UNOCCUPIED MODE (NIGHT SETBACK): THE UNIT SHALL MAINTAIN
85 DEG F (ADJ.) COOLING SETPOINT.
55 DEG F (ADJ.) HEATING SETPOINT.

ALARMS SHALL BE PROVIDED AS FOLLOWS:
HIGH ZONE TEMP: IF THE ZONE TEMPERATURE IS GREATER THAN THE COOLING SETPOINT BY A USER DEFINABLE AMOUNT (ADJ.).
LOW ZONE TEMP: IF THE ZONE TEMPERATURE IS LESS THAN THE HEATING SETPOINT BY A USER DEFINABLE AMOUNT (ADJ.).

ZONE OPTIMAL START:
THE UNIT SHALL USE AN OPTIMAL START ALGORITHM FOR MORNING START-UP. THIS ALGORITHM SHALL MINIMIZE THE UNOCCUPIED WARM-UP OR COOL-DOWN PERIOD WHILE STILL ACHIEVING COMFORT CONDITIONS BY THE START OF SCHEDULED OCCUPIED PERIOD.

SMOKE DETECTION:
THE UNIT SHALL SHUT DOWN AND GENERATE AN ALARM UPON RECEIVING A SMOKE DETECTOR STATUS.

FAN:
THE FAN SHALL RUN ANYTIME THE UNIT IS COMMANDED TO RUN, UNLESS SHUTDOWN ON SAFETIES.

COOLING STAGE:
THE CONTROLLER SHALL MEASURE THE ZONE TEMPERATURE AND STAGE THE COOLING TO MAINTAIN ITS COOLING SETPOINT. TO PREVENT SHORT CYCLING, THE STAGE SHALL HAVE A USER DEFINABLE (ADJ.) MINIMUM RUNTIME.
THE COOLING SHALL BE ENABLED WHENEVER:
OUTSIDE AIR TEMPERATURE IS GREATER THAN 60 DEG F (ADJ.).
AND THE ZONE TEMPERATURE IS ABOVE COOLING SETPOINT.
AND THE FAN IS ON.

HEATING (ELECTRIC):
THE CONTROLLER SHALL MEASURE THE ZONE TEMPERATURE AND OPEN THE HEATING COIL VALVE TO MAINTAIN ITS HEATING SETPOINT.
THE HEATING SHALL BE ENABLED WHENEVER:
OUTSIDE AIR TEMPERATURE IS LESS THAN 65 DEG F (ADJ.).

AND THE ZONE TEMPERATURE IS BELOW HEATING SETPOINT.
AND THE FAN IS ON.

THE HEATING COIL SHALL START WHENEVER THE FREEZESTAT (IF PRESENT) IS ON.

HEATING – HIGH DISCHARGE AIR TEMPERATURE LIMIT:
THE CONTROLLER SHALL MEASURE THE DISCHARGE AIR TEMPERATURE AND, ON RISING TEMPERATURE, LIMIT THE HEATING AS FOLLOWS:
AS THE DISCHARGE AIR TEMPERATURE RISES FROM 90 DEG F TO 120 F (ADJ.), THE CONTROLLER SHALL LIMIT THE HEATING OUTPUT FROM 100% TO 0% (ADJ.).

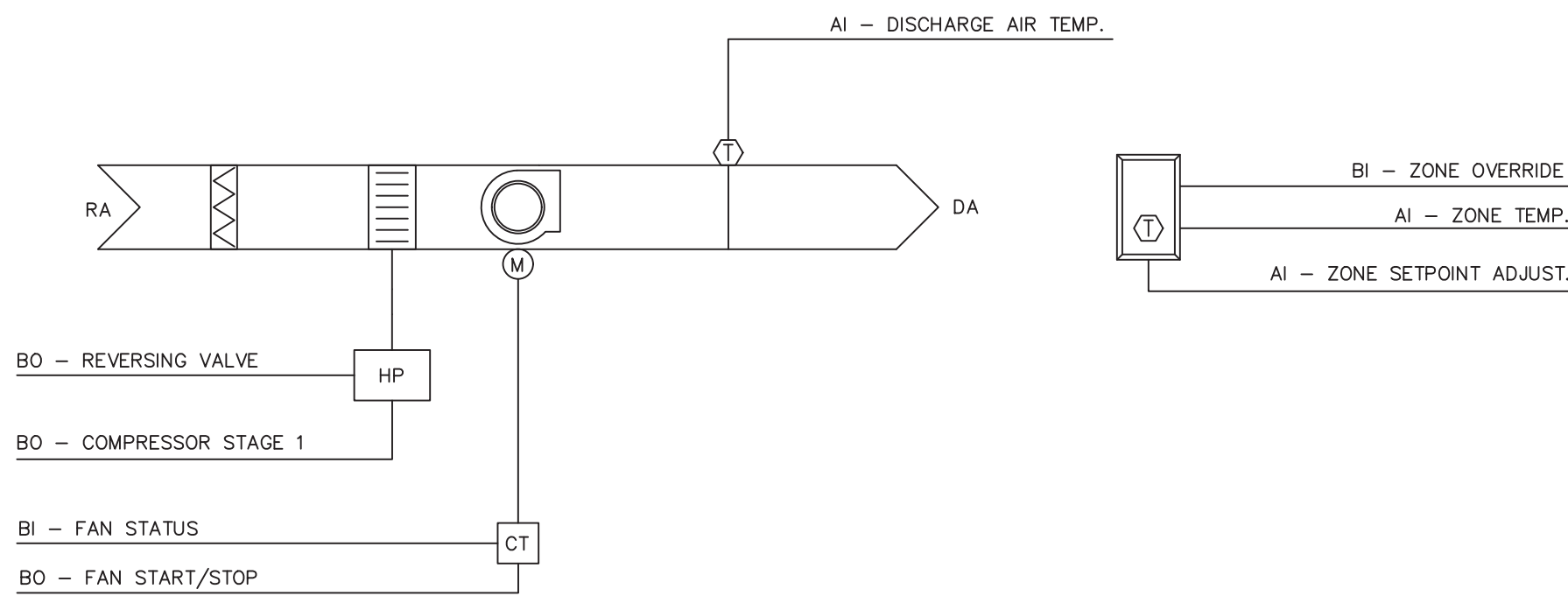
MIXED AIR DAMPERS:
THE OUTSIDE AIR DAMPER SHALL OPEN TO PROVIDE A FIXED PERCENTAGE OUTSIDE AIR VENTILATION ANYTIME THE UNIT IS OCCUPIED AND SHALL CLOSE ANYTIME THE UNIT STOPS. THE DAMPER OPEN POSITION SHALL BE SET DURING TESTING AND BALANCING. THE MIXED AIR DAMPERS SHALL CLOSE 15SEC (ADJ.) AFTER THE FAN STOPS.
IF OPTIMAL START UP IS AVAILABLE THE OUTSIDE AIR DAMPER SHALL CLOSE AND THE RETURN AIR DAMPER SHALL OPEN.

MINIMUM OUTSIDE AIR VENTILATION – FIXED PERCENTAGE:
THE OUTSIDE AIR DAMPERS SHALL MAINTAIN A MINIMUM POSITION (ADJ.) DURING BUILDING OCCUPIED HOURS AND BE CLOSED DURING UNOCCUPIED HOURS.

FILTER HOURS:
THE CONTROLLER SHALL MONITOR THE FAN RUNTIME.
ALARMS SHALL BE PROVIDED AS FOLLOWS:
FILTER CHANGE REQUIRED: FILTER HAS BEEN IN USE FOR MORE THAN 2200 HRS (ADJ.).

DISCHARGE AIR TEMPERATURE:
THE CONTROLLER SHALL MONITOR THE DISCHARGE AIR TEMPERATURE.
ALARMS SHALL BE PROVIDED AS FOLLOWS:
HIGH DISCHARGE AIR TEMP: IF THE DISCHARGE AIR TEMPERATURE IS GREATER THAN 120 DEG F (ADJ.).
LOW DISCHARGE AIR TEMP: IF THE DISCHARGE AIR TEMPERATURE IS LESS THAN 40 DEG F (ADJ.).

FAN STATUS:
THE CONTROLLER SHALL MONITOR THE FAN STATUS.
ALARMS SHALL BE PROVIDED AS FOLLOWS:
FAN FAILURE: COMMANDED ON, BUT THE STATUS IS OFF.
FAN IN HAND: COMMANDED OFF, BUT THE STATUS IS ON.
FAN RUNTIME EXCEEDED: FAN STATUS RUNTIME EXCEEDS A USER DEFINABLE LIMIT (ADJ.).



HEAT PUMP SEQUENCE OF OPERATION:

A. RUN CONDITIONS – SCHEDULED:

- THE UNIT SHALL RUN ACCORDING TO A USER DEFINABLE TIME SCHEDULE IN THE FOLLOWING MODES:
 - OCCUPIED MODE: THE UNIT SHALL MAINTAIN
 - A 74 DEG. F (ADJ.) COOLING SETPOINT
 - A 70 DEG. F (ADJ.) HEATING SETPOINT
 - UNOCCUPIED MODE: THE UNIT SHALL MAINTAIN
 - A 85 DEG. F (ADJ.) COOLING SETPOINT
 - A 60 DEG. F (ADJ.) HEATING SETPOINT
- ZONE SETPOINT ADJUST:
 - THE OCCUPANT SHALL BE ABLE TO ADJUST THE ZONE TEMPERATURE HEATING AND COOLING SETPOINTS AT THE ZONE SENSOR.
- ZONE UNOCCUPIED OVERRIDE:
 - A TIMED LOCAL OVERRIDE CONTROL SHALL ALLOW AN OCCUPANT THE SCHEDULE AND PLACE THE UNIT INTO AN UNOCCUPIED MODE FOR AN ADJUSTABLE PERIOD OF TIME. AT THE EXPIRATION OF THIS TIME, CONTROL OF THE UNIT SHALL AUTOMATICALLY RETURN TO THE SCHEDULE.
- FAN:
 - THE FAN SHALL RUN ANYTIME THE UNIT IS COMMANDED TO RUN, UNLESS SHUTDOWN ON SAFETIES.
- HEATING AND COOLING – 1 COMPRESSOR STAGE:
 - THE CONTROLLER SHALL MEASURE THE ZONE TEMPERATURE AND CYCLE THE COMPRESSOR TO MAINTAIN ITS SETPOINT. TO PREVENT SHORT CYCLING, THE STAGE SHALL HAVE A USER DEFINABLE (ADJ.) MINIMUM RUNTIME. THE COMPRESSOR SHALL RUN SUBJECT TO ITS OWN INTERNAL SAFETIES AND CONTROLS.

2. HEATING SHALL BE ENABLED WHENEVER:
OUTSIDE AIR IS LESS THAN 65 DEG. F (ADJ.).
AND THE FAN IS ON.
AND THE REVERSING VALVE IS IN HEAT MODE.

3. COOLING SHALL BE ENABLED WHENEVER:
OUTSIDE AIR TEMPERATURE IS GREATER THAN 60 DEG. F (ADJ.).
AND THE FAN IS ON.
AND THE REVERSING VALVE IS IN COOL MODE.

4. ON MODE CHANGE, THE COMPRESSOR SHALL BE DISABLED AND REMAIN OFF UNTIL AFTER THE REVERSING VALVE HAS CHANGED POSITION.

F. FILTER HOURS:

- THE CONTROLLER SHALL MONITOR THE FAN RUNTIME.

G. DISCHARGE AIR TEMPERATURE:

- THE CONTROLLER SHALL MONITOR THE DISCHARGE AIR TEMPERATURE.

H. FAN STATUS:

- THE CONTROLLER SHALL MONITOR THE FAN STATUS.

I. ALARMS SHALL BE PROVIDED AS FOLLOWS:

- HIGH ZONE TEMPERATURE: IF THE ZONE TEMPERATURE IS GREATER THAN THE COOLING SETPOINT BY A USER DEFINABLE AMOUNT (ADJ.).
- LOW ZONE TEMPERATURE: IF THE ZONE TEMPERATURE IS LESS THEN THE HEATING SETPOINT BY A USER DEFINABLE AMOUNT (ADJ.).
- FILTER CHANGE REQUIRED: FILTER HAS BEEN IN USER FOR MORE THAN 2200 HRS. (ADJ.).
- HIGH DISCHARGE AIR TEMPERATURE: IF THE DISCHARGE AIR TEMPERATURE IS GREATER THAN 120 DEG. F (ADJ.).
- LOW DISCHARGE AIR TEMPERATURE: IF THE DISCHARGE AIR TEMPERATURE IS LESS THAN 40 DEG. F (ADJ.).
- FAN FAILURE.

3 UNIT VENTILATOR CONTROL SCHEMATIC

SCALE: NONE

2 UNIT VENTILATOR/HEAT PUMP CONTROL SCHEMATIC

SCALE: NONE

CONTROL DIAGRAMS LEGEND

AI = ANALOG INPUT. A PHYSICAL INPUT TO THE CONTROL MODULE.

AO = ANALOG OUTPUT. A PHYSICAL OUTPUT FROM THE CONTROL MODULE.

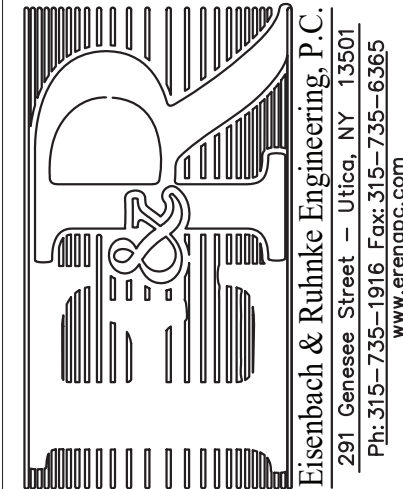
AV = ANALOG VALUE. AN INTERMEDIATE (SOFTWARE) POINT THAT MAY BE EDITABLE OR READ-ONLY. EDITABLE AVS ARE TYPICALLY USED TO ALLOW THE USER TO SET A FIXED CONTROL PARAMETER. SUCH AS A SETPOINT. READ ONLY AVS ARE TYPICALLY USED TO DISPLAY THE STATUS OF A CONTROL OPERATION.

BI = BINARY INPUT. A PHYSICAL INPUT TO THE CONTROL MODULE.

BO = BINARY OUTPUT. A PHYSICAL OUTPUT FROM THE CONTROL MODULE.

BV = BINARY VALUE. AN INTERMEDIATE (SOFTWARE) POINT THAT MAY BE EDITABLE OR READ-ONLY. EDITABLE BVs ARE TYPICALLY USED TO ALLOW THE USER TO SET A FIXED CONTROL PARAMETER. SUCH AS A SETPOINT. READ ONLY BVs ARE TYPICALLY USED TO DISPLAY THE STATUS OF A CONTROL OPERATION.

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S.E.D. CONTROL NUMBER:
MAIN BUILDING
48-04-01-04-0-001-023
HIGH SCHOOL ANNEX
48-04-01-04-0-016-007

PROJECT TITLE
CENTRAL SCHOOL DISTRICT
MECHANICAL UPGRADE AND RELATED WORK
PACKAGE NO. 2
15 CHAMBERS DR. COLD SPRING, NY 10516

DRAWING TITLE
CONTROL SCHEMATICS

DATE
09/13/2021

SHEET SIZE
30"x42"

SCALE
AS NOTED

DRAWN BY
F & D

BID
ISSUED TO

DRAWING NO.
M501

FILE NO.
19338.02