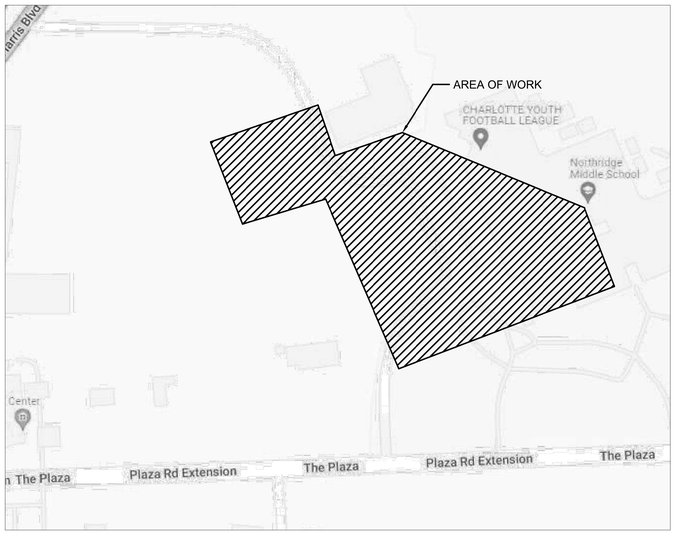
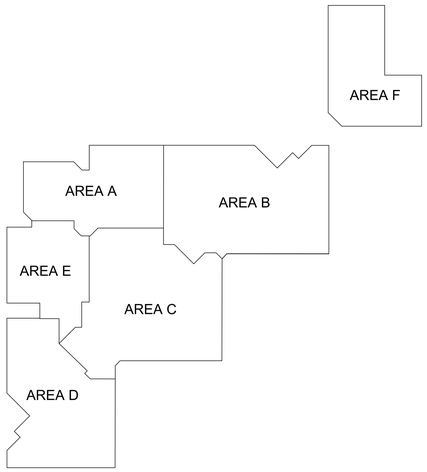
NORTHRIDGE MIDDLE SCHOOL
RESOURCE DRAWINGS FROM EXISTING CONDITIONS

OWNER INFORMATION
Charlotte-Mecklenburg Schools
7601 The Plaza
Charlotte, NC 28215

ENGINEER INFORMATION
TMG Consulting Engineers
401 Hawthorne Street
Suite 110/170
Charlotte, NC



1 SITE PLAN
NOT TO SCALE
TRUE NORTH



2 KEY PLAN
NOT TO SCALE
PLAN NORTH

SHEET INDEX

RM-001	TITLE SHEET
RM-002	MECHANICAL NOTES AND LEGENDS
RM-101	MECHANICAL FLOOR PLAN AREA A
RM-102	MECHANICAL FLOOR PLAN AREA B
RM-103	MECHANICAL FLOOR PLAN AREA C
RM-104	MECHANICAL FLOOR PLAN AREA D
RM-105	MECHANICAL FLOOR PLAN AREA E
RM-106	MECHANICAL FLOOR PLAN AREA F
RM-107	MECHANICAL ROOF PLAN
RM-108	MECHANICAL ROOF PLAN AREA F
RM-109	PIPING PLAN AREA A
RM-110	PIPING PLAN AREA B
RM-111	PIPING PLAN AREA C
RM-112	PIPING PLAN AREA D
RM-113	PIPING PLAN AREA E
RM-114	MECHANICAL DETAILS
RM-115	MECHANICAL DETAILS
RM-116	MECHANICAL DETAILS
RM-117	MECHANICAL DETAILS
RM-118	MECHANICAL DETAILS
RM-119	MECHANICAL DETAILS
RM-120	MECHANICAL DETAILS
RM-121	MECHANICAL DETAILS
RM-122	MECHANICAL DETAILS
RM-123	CONTROLS

TMG CONSULTING ENGINEERS

ISSUED FOR CONSTRUCTION

Charlotte-Mecklenberg Schools

NORTHRIDGE MIDDLE SCHOOL
RESOURCE DRAWINGS FROM EXISTING CONDITIONS

Charlotte-Mecklenberg Schools
7601 The Plaza
Charlotte, NC 28215

REVISIONS

NO.	DESCRIPTION	DATE
	ISSUED FOR CONSTRUCTION	9/27/22

SHEET INFORMATION

DATE	9/27/2022
JOB NUMBER	2202-01-002
DRAWN	ALG
APPROVED	CTM

COVER PAGE

RM-001

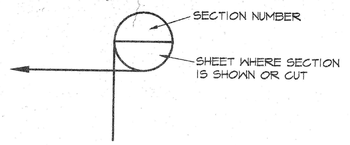
SHEET 1 OF 25

LEGEND

CS	COMBINATION TEMPERATURE SUPPLY
CR	COMBINATION TEMPERATURE RETURN
CHWS	CHILLED WATER SUPPLY
CHWR	CHILLED WATER RETURN
HWS	HOT WATER SUPPLY
HWR	HOT WATER RETURN
NLL	NIGHT LOW LIMIT
MVD	MANUAL VOLUME DAMPER
OA	OUTSIDE AIR
RA	RETURN
SA	SUPPLY AIR
S	SPEED SWITCH
U	SENSOR
T	3/4" DOOR UNDERCUT COORD W/ G.C.
	THERMOSTAT
	SMOKE DETECTOR
ES	AHU EMERGENCY SHUT-OFF SWITCH PER CODE
F X	FIRE DAMPER W/ ACCESS PANEL AND INDICATED RATING
M / MOD /	MOTOR OPERATED DAMPER
	DENOTES PIPE ANCHOR
	DENOTES TWO HOUR RATED WALL (REFER TO ARCH DWGS)
	DENOTES FOUR HOUR RATED WALL (REFER TO ARCH DWGS)
	DENOTES ONE HOUR RATED WALL (REFER TO ARCH DWGS)

	GATE VALVE		GAUGE AND COCK
	GLOBE VALVE		FLEXIBLE PIPE CONNECTION
	BUTERFLY VALVE		TRIPLE DUTY VALVE
	BALL VALVE		PRESSURE REDUCING VALVE
	CHECK VALVE		FLANGED UNION
	THREE WAY VALVE		SCREWED UNION
	THERMOMETER		HOSE END VALVE
	SUCTION DIFFUSER		STRAINER
	SHADED WALL = EXISTING		POINT OF CONNECTION
H	HUMIDISTAT		

SECTION KEY



DESIGN CONDITIONS:

SUMMER: OUTSIDE 94° DB; 78°WB
INSIDE 76° DB; 65%WB

WINTER: OUTSIDE 15° DB; 12°WB
INSIDE 72° DB; 57°WB

BUILDING LOAD:

COOLING: 385 TONS (INCL. GYMS)

HEATING: 2,920,000 BTUH

133,000 SQUARE FEET

CHILLER CAPACITY:

ACC-1 - 250 NOM. TONS

ACC-2 - 100 NOM. TONS

BOILER CAPACITY:

BOILER B-1
3105 MBH INPUT (NATURAL GAS)
2132 MBH NET IBR OUTPUT

BOILER B-2
3105 MBH INPUT (NATURAL GAS)
2132 MBH NET IBR OUTPUT

ALTERNATES

12 PROVIDE ADD ALT.PRICE TO PROVIDE CHILLER AS SHOWN ON PLANS, MEETING THE REQMT'S. OF THE CAPACITY, PERFORMANCE AND SPECIFICATIONS, ETC. CONTRACTOR SHALL PROVIDE A PRICE FOR EACH CHILLER MFG. & CHECK ON BID FORM WHICH CHILLER IS PREFERRED TO BE INSTALLED. IN ACCORDANCE WITH THE LIST BELOW:
A. MCQUAY MODEL NO._____ $_____
B. TRANE MODEL NO._____ $_____
C. CARRIER MODEL NO._____ $_____
D. YORK MODEL NO._____ $_____
E. OTHER MODEL NO._____ $_____

12A PROVIDE ADD ALT.PRICE TO PROVIDE AUTOMATED LOGIC DDC CONTROL INTERFACE WITH CHILLERS.

13 PROVIDE ADD ALT.PRICE TO PROVIDE A SCREW CHILLER MEETING THE REQMT'S. OF THE CAPACITY, PERFORMANCE, SPECIFICATIONS, ETC. AS SHOWN ON THE PLANS. CONTRACTOR SHALL PROVIDE A PRICE FOR EACH CHILLER MFG. & CHECK ON BID FORM WHICH CHILLER IS PREFERRED TO BE INSTALLED. IN ACCORDANCE WITH THE LIST BELOW:
A. MCQUAY MODEL NO._____ $_____
B. TRANE MODEL NO._____ $_____
C. CARRIER MODEL NO._____ $_____
D. YORK MODEL NO._____ $_____
E. OTHER MODEL NO._____ $_____

14 PROVIDE ADD OR DEDUCT ALT.PRICE TO FURNISH & INSTALL A BOILER BY AN ALTERNATIVE MANUFACTURER IN LIEU OF THE PRE-PURCHASED WEIL-MCLAIN SERIES 88 PER PLANS.
MFG./ MODEL NO._____ $_____

15 PROVIDE AN ADD ALTERNATE PRICE TO INSTALL THE 4-PIPE SYSTEM & ASSOC. HX COILS IN THE RE-HEAT POSITION; BASE BID PIPING IS A 2-PIPE SYSTEM. WHEN PRICING THE BASE BID, CONSIDER ONLY THE "CS" & "CR" PIPING AS DUAL-TEMP PIPING. PRIMARY "HWS" & "HWR" PIPING IS NOT TO BE CONSIDERED UNDER BASE BID.

16 PROVIDE AN ALTERNATE ADD PRICE IN ADDITION TO ALT.#4 TO PROVIDE HUMIDITY CONTROL IN CLASSROOMS IF 4-PIPE IS ACCEPTED. (HUMIDISTAT, NECESSARY CONTROLS, ETC)

17 PROVIDE AN ADD OR DEDUCT ALTERNATE PRICE TO PROVIDE HEATING & VENTILATION IN THE GYMS PER SHEET M-2A.

NOTE TYPICAL ALL ALTERNATES
MECHANICAL CONTRACTOR SHALL ALSO INCLUDE AS PART OF EACH ALTERNATE, AS SEPERATE LINE ITEMS, ANY COST NECESSARY FOR ELECTRICAL AND STRUCTURAL MODIFICATIONS REQUIRED FOR INCORPORATION OF THESE ALTERNATES.

MECHANICAL NOTES

1. REFER TO ARCH. REFLECTED CEILING PLAN FOR EXACT LOCATIONS OF GRILLES, DIFFUSERS,CLG. FANS, ETC.
2. TEMP CONTROL SYSTEM SHALL INCORPORATE A "DEAD BAND" FOR NO HEATING OR COOLING
3. PROVIDE MANUAL VOLUME DAMPER (MVD) ON ALL BRANCH DUCTS WHERE TWO OR MORE OUTLETS ARE SERVED FROM THE SAME TRUNK
4. ALL DUCT SHALL BE SHEET METAL. DIMENSION SHOWN IS SHEET METAL SIZE. ALL SA, RA OA DUCT SHALL HAVE 1" LINER. EXHAUST DUCT IS UN-LINED. ALL ROUND DUCT SHALL BE WRAPPED. FLEX DUCT SHALL BE FACTORY INSULATED. OUTSIDE AIR DUCT IN KITCHEN SHALL HAVE MIN. 2" INSUL. WRAP OR AS RECOMMENDED BY INSUL. MFG. FOR THE TEMPERATURES PRESENT IN KITCHEN ENVIRONMENT. FIELD COORD. DUCT WITH PIPING.
5. THERMOSTATS LOCATED ON EXTERIOR WALL SHALL HAVE INSULATED BASE. ALL T/STATS W/TAMPER-PROOF GUARD (MASON THERMA-GARD MODEL TG-1 OR EQUAL, SHALL NOT HAVE AN ADDITIONAL COVER INSIDE THE GUARD. FIELD COORDINATE LOCATION WITH TACK/CHALK-BOARDS, OTHER SWITCHES, ETC. NO THERMOSTAT SHALL BE LOCATED BEHIND A DOOR. ELEC. CONTR. WILL PROVIDE TWO SIDE-BY-SIDE J-BOXES W/CONDUIT TO ABOVE CLG. FOR UV & FC UNITS & T/STAT & ON-OFF SWITCH. COORD. W/E.C.
6. FINAL CONNECTION OF GAS PIPING TO HVAC EQUIP. BY M.C. THIS BEGINS AT DIRT LEG PROVIDED BY P.C. AT EQUIPMENT.
7. COORD LOCATION OF ROOF MTD. EQUIP. W/ ARCH AND STRUCT.DWGS.
8. MAX FLEX DUCT LENGTH SHALL BE 4'-0".
9. RUN-OUTS TO DIFFUSERS/GRILLES SHALL BE AT LEAST DIFFUSER NECK SIZE UNLESS NOTED OTHERWISE.
10. CLOSELY COORD.ALL DUCT, HVAC PIPING IN CHASES W/ P.C. CLOSELY COORD. CONDENSATE DRAINS W/ P.C.
11. ALL 90 DEGREE SUPPLY AND RETURN DUCT ELBOWS SHALL HAVE TURNING VANES.
12. BOILER GAS FLUE, VENT CAP, ETC., SHALL BE 16 GA PAINTED STEEL PER CODE. MAINTAIN CODE REQUIRED CLEARANCES TO COMBUSTIBLES.
13. (TS) DENOTES T/STAT WITH COMBINED SIGNAL THRU PRESSURE SELECTOR
14. PROVIDE SMOKE DETECTOR IN RETURN AIR DUCT. FURNISHED & WIRED BY E.C., INSTALLED BY M.C., PER N.C. CODE. WITH REMOTE LIGHT. LOCATE DETECTOR IN RETURN DUCT, UPSTREAM OF RELIEF AND OUTSIDE AIR DUCT.
15. COORD. ALL PIPE, EQUIP. WITH STRUCTURE, LIGHTS, PIPE, CEILING GRID, ETC., TO MAINTAIN DESIRED CEILING HEIGHTS AND TO AVOID CONFLICTS WITH ALL OTHER TRADES. RUN DUCT W/IN STRUCT WHEREVER POSSIBLE
16. ALL HVAC EQUIP. SHALL BE INSTALLED PER MFG. RECOMMENDATIONS FOR SERVICE & OPERATION CLEARANCES, AND PER CODE FOR CLEARANCES TO COMBUSTIBLES AND ELEC. CONN. POINTS. DO NOT SCALE DRAWINGS.
17. PROVIDE INSTRUMENT TEST HOLES WITH CAPS IN EACH NEW SUPPLY DUCT.
18. ALL CORRIDOR WALLS, ARE 1 HOUR RATED. BOILER ROOM IS TWO HOUR MINIMUM. PROTECT ALL PENETRATIONS PER CODE W/COLLAR, PIPE SAFING SYSTEM,. FIELD VERIFY.
19. ALL CONDENSATE DRAINS SHALL HAVE ACCESSIBLE CLEAN-OUTS.
20. MAINTAIN MIN. 25' BETWEEN O.A.INTAKES OR BLDG. OPENINGS & GAS METER. M.C. TO COORD. HIS OPN'GS. W/PLUMBER'S METERS.
21. M.C SHALL FURNISH & INSTALL MISC. STEEL FOR THE SUPPORT & INSTALL OF HIS EQUIP. ALL FRAMES SHALL BE PAINTED BY MC. SPAN MIN.S STRUCTURAL MEMBERS. GC SHALL PROVIDE STEEL AT FRAMED ROOF OPENINGS, LINTELS, ETC. M.C. TO COORDINATE W/G.C.
22. FC'S & UV'S SHALL BE FURNISHED W/LEFT HAND COIL CONNECTION AND RIGHT HAND ELEC. CONNECTION AS REQ'D FOR SERVICE CLEARANCE ACCESS. FIELD COORD. IF ALT. #M-4 IS ACCEPTED, PIPING FOR HW COILS WILL BE ABOVE CLG. @ UNITS AS DETAILED ON PLANS.
23. ALT. #M-4 IS FOR A 4-PIPE SYSTEM. UNDER THIS ALT., PROVIDE SEPARATE HW COILS & CONTROLS AS INDICATED. COIL SHALL BE MTD. IN REHEAT POSITION.
24. ALL VALVES, CONTROLLERS, ETC., SHALL BE FULLY ACCESSIBLE.
25. M.C. SHALL FURNISH AND INSTALL ALL ACCESS DOORS. ACCESS DOORS SHALL BE RATED WHERE INSTALLED IN A RATED ASSY.
26. ALL WORK SHALL COMPLY WITH ALL APPLICABLE STATE AND LOCAL CODES. MOST STRINGENT SHALL APPLY.
27. ALL PUMPS, STARTERS, THERMOSTATS, HEATERS, AIR HANDLING UNITS, ETC., SHALL BE LABELED TO MATCH THEIR RESPECTIVE COMPONENTS, PER SPECS AND PLANS. THERMOSTATS, CONTROLLERS, ETC., SHALL BE LABELED AS TO THEIR FUNCTION.
28. PERMANENTLY LABEL ALL PIPING WITH FLOW ARROWS.
29. PERMANENTLY MARK SYSTEM OPERATION PRESSURES ON ALL PRESSURE GAUGES.
30. EQUIP. CONTROLS SHALL BE LOCATED WITHIN THE ROOM WHERE THE EQUIP. IS LOCATED.
31. IN-LINE PUMPS SHALL NOT BE OVER 5' ABOVE FINISHED FLOOR.
32. GAUGES SHALL NOT BE MORE THAN 6' ABOVE FINISHED FLOOR UNLESS PROVIDED WITH A REMOTE READ BULB. WATER PRESSURE GAUGES SHALL READ IN "FEET WATER COLUMN".
33. IT IS INTENDED THAT ALL CONDENSATE DRAINS BE CONCEALED. M.C. SHALL VERIFY THIS PRIOR TO INSTALLATION.
34. UNIT VENTILATORS, FAN COIL UNITS, UNIT HEATERS & AIR HANDLING UNITS SHALL BE EQUIPPED WITH TWO WAY VALVES AT COIL.
35. KEEP ALL PIPE, DUCT, ETC. OUT OF ELEC. ROOMS AND AREAS WHERE ELEC. EQUIP. IS LOCATED. NEC REQUIRES MIN. 3' CLEAR IN FRONT OF ELEC. PANELS AND ELEC. CONN. TO EQUIP., AS WELL AS ALL SPACE ABOVE IT.
36. MANUAL AIR VENTS WITH BALL VALVE AND DRAIN LINE DOWN TO CEILING HEIGHT SHALL BE PROVIDED AT ALL HIGH POINTS IN PIPING AND AT ALL PIPE ELEVATION CHANGES. (SEE DETAIL)
37. PROVIDE VALVES IN PIPING SYSTEM FOR ZONED DRAIN-DOWN. SEE PLANS.
38. ALL BOILERS SHALL HAVE MIN. 5' CLEAR ALL AROUND.
39. ALL VALVES & SENSORS LOCATED ABOVE CLG. & SUBJECT TO CONDENSATION SHALL BE INSULATED & PROVIDED W/A VAPOR TIGHT BARRIER. DRAIN PANS SHALL BE PROVIDED IN EXTREME CASES TO PROTECT CLG..
40. THE CONTRACTOR SHALL NOTIFY THE OWNER & ENGR. WHEN THE WORK ABOVE CEILING IS 90% COMPLETE FOR THE PURPOSE OF AN ON-SITE INSPECTION. THIS NOTIFICATION SHALL BE MADE A MINIMUM OF TWO WEEKS PRIOR TO INSTALLATION OF THE CEILING.
41. ALL HEAT TAPE REQUIRED FOR FREEZE PROTECTION SHALL BE REGULATED BY THERMOSTAT, UL. COORD. WITH E.C.
42. COORD. ALL PIPE/DUCT PENETRATIONS OF WALLS, ROOF, ETC., WITH GENERAL CONTRACTOR.
43. INSTALL DUCTWORK AND PIPING AS HIGH AS POSSIBLE & TIGHT TO STRUCTURE.
44. ALL UNIT VENTILATORS AND FAN COIL UNITS SHALL HAVE A SPEED SWITCH. THOSE FOR FAN COIL UNITS SHALL BE WITHIN THE UNIT (UNLESS OTHERWISE SHOWN); UNIT VENTS.' SHALL BE LOCATED ON THE WALL WHERE SHOWN, SEE ARCH. DETAIL.
45. COORDINATE 100% OUTSIDE AIR ECONOMIZER SYSTEM W/ UNITS AS SHOWN ON PLANS. PROVIDE UNIT CONTROLS, ACCESSORIES, ETC. ACCORDINGLY. PROVIDE RELIEF ON ALL ECONOMIZER UNIT SPACES.
46. DRYER DUCT AND ITS INSTALLATION SHALL COMPLY WITH N.C. MECH. CODES.
47. CONDENSATE DRAINS ABOVE ALL GYP. BOARD CEILINGS SHALL BE COPPER W/MIN. 3/4" INSULATION WITH VAPOR BARRIER.
48. THERMOSTATS SHALL BE MOUNTED IN ACCORDANCE W/ARCH. INTERIOR ELEVATIONS. ALL UNIT VENTILATORS & FAN COIL UNIT SWITCHES SHALL BE MOUNTED AT 48" ABOVE FINISHED FLOOR.
49. ALL FC UNITS, UV'S & AH UNITS SHALL BE INTERLOCKED W/FIRE ALARM SYSTEM THROUGH THE EMS TO SHUT-DOWN UNITS ON FIRE ALARM SYSTEM ACTIVATION.
50. HOUSEKEEPING PAD FOR MECHANICAL EQUIPMENT SHALL BE BY GC. M.C. IS RESPONSIBLE FOR COORDINATION.
51. MECH. CONTRACTOR SHALL COORDINATE ALL WORK W/ CABLE TRAYS SHOWN ON ELECTRICAL DRAWINGS.
52. CARDBOARD FRAME FILTERS WILL NOT BE ALLOWED ON JOB SITE
53. M.C. SHALL PROVIDE FACTORY START-UP FOR BOILERS
54. M.C. SHALL BE RESPONSIBLE FOR COSTS TO OTHER TRADES DUE TO EQUIPMENT SUBSTITUTION.
55. M.C. SHALL BE RESPONSIBLE FOR COORDINATING FURRED AREA BEHIND FCU, UV, TO TOTALLY ENCLOSE ALL PIPE, CONTROLS, DUCT, ETC.
56. DELETED
57. ALT #4 FOR THIS PROJECT USES A "FOUR PIPE" PUMPING SYSTEM CONTRACTOR SHALL CONSIDER ALL PIPING SHOWN IN EVALUATING THIS OPTION. 4-PIPE SYSTEM REQUIRES THE ADDITION OF HEATING COILS, EXTRA CONTROL VALVES, EXTRA CONTROLS, AND EXTRA PIPING.
58. M.C. SHALL PROVIDE & COORDINATE ACCESS DOORS TO ALL VALVES, AND MOTOR OPERATORS FOR DAMPERS. WHERE LAY-IN CEILING PROVIDES ACCESS, TILES SHALL BE MARKED FOR ACCESS LOCATION.
59. PROVIDE LOW LEAK M.O.D. ON ALL RELIEF AIR LOCATIONS FOR THIS PROJECT.
60. 0" CONDENSATE RISER UP IN WALL BY P.C.. COORDINATE DRAIN PIPING LOCATIONS. SEE DETAIL, SHEET M-16.
61. PIPING SHOWN TO INDICATE GENERAL ROUTING AND PIPE SIZES REQ'D. FOR THE INSTALLATION. THE CONTRACTOR SHALL INSTALL PIPING IN A COMPLETE AND CONCEALLED MANNER (EXCEPT WHERE NOTED TO BE EXPOSED), PROVIDING ALL NECESSARY OFFSETS AND BENDS TO ACCOMPLISH THE INSTALLATION.
62. CONTRACTOR SHALL COORDINATE ALL PIPING RUNS WITH DUCTWORK AND ELECTRICAL/PLUMBING/CEILING WORK BEFORE FABRICATION OR INSTALLATION OF HIS WORK.
63. BASE BID PIPING SYSTEM IS A "2-PIPE" DESIGN. WHEN PRICING BASE BID, CONSIDER ONLY "CS/CR" PIPING AS COMBINATION PIPING. PRIMARY "HWS/HWR" PIPING IS NOT TO BE CONSIDERED IN BASE BID.
64. ALL WALL LOUVERS SHOWN ON THESE PLANS ARE PROVIDED BY THE MECHANICAL CONTRACTOR AND INSTALLED BY THE GENERAL CONTRACTOR. VERIFY/COORDINATE SIZE, LOCATION AND TYPE IN FIELD.
65. M.C. MAY SUBSTITUTE COPPER PIPE FOR CW AND HW PIPING SIZES 2" AND SMALLER.
66. M.C. SHALL CONFIRM THAT PIPING INSTALLATION COMPLIES WITH PLANS AND SCHEMATICS & DETAILS.
67. ALL EQUIPMENT SPECIFIED IS BASIS OF DESIGN. "EQUALS" WILL BE ACCEPTABLE BASED ON CONFIRMATION OF EQUIVALANCY. CONTRACTOR IS RESPONSIBLE FOR COORD. OF SPACE, SERVICE CLEARANCE, WEIGHT, AND ELECTRICAL FOR ALL SUBSTITUTIONS.

.\PROF. ENGINEERING ASSOC. STAMP-INFO.jpg

SHEET INDEX

M-1	MECHANICAL NOTES, SHEET INDEX, LEGEND
M-2	MECHANICAL FLOOR PLAN AREA A
M-2A	MECHANICAL FLOOR PLAN AREA A - GYM ALT. M-6.
M-3	MECHANICAL FLOOR PLAN AREA B
M-4	MECHANICAL FLOOR PLAN AREA C
M-5	MECHANICAL FLOOR PLAN AREA D
M-6	MECHANICAL FLOOR PLAN AREA E
M-7	ROOF PLAN
M-8	PIPING PLAN AREA A
M-9	PIPING PLAN AREA B
M-10	PIPING PLAN AREA C
M-11	PIPING PLAN AREA D
M-12	PIPING PLAN AREA E
M-13	ENLARGED MECHANICAL EQUIP. ROOM PLAN, DETAILS
M-14	ENLARGED EQUIPMENT ROOM PLANS & SECTIONS
M-15	ENLARGED EQUIPMENT ROOM PLANS & SECTIONS
M-16	DETAILS
M-17	DETAILS
M-18	DETAILS
M-19	SCHEMATIC PIPING DIAGRAM, CONTROLS
M-20	CONTROLS
M-21	MECHANICAL SCHEDULES
M-22	SECTIONS, SCHEDULES

TMG CONSULTING ENGINEERS
The Wilkinson Group Consulting Engineers NC
dba TMG Consulting Engineers
201 South College
Suite 1102-703
Charlotte, NC 28244
704.895.7610 Phone
704.895.7630 Fax
Website: WWW.TMG-CE.COM

ISSUED FOR CONSTRUCTION

Charlotte-Mecklenberg Schools

NORTHRIDGE MIDDLE SCHOOL
RESOURCE DRAWINGS FROM EXISTING CONDITIONS

Charlotte-Mecklenberg Schools
7601 The Plaza
Charlotte, NC 28215

REVISIONS

NO.	DESCRIPTION	DATE
	ISSUED FOR CONSTRUCTION	9/27/22

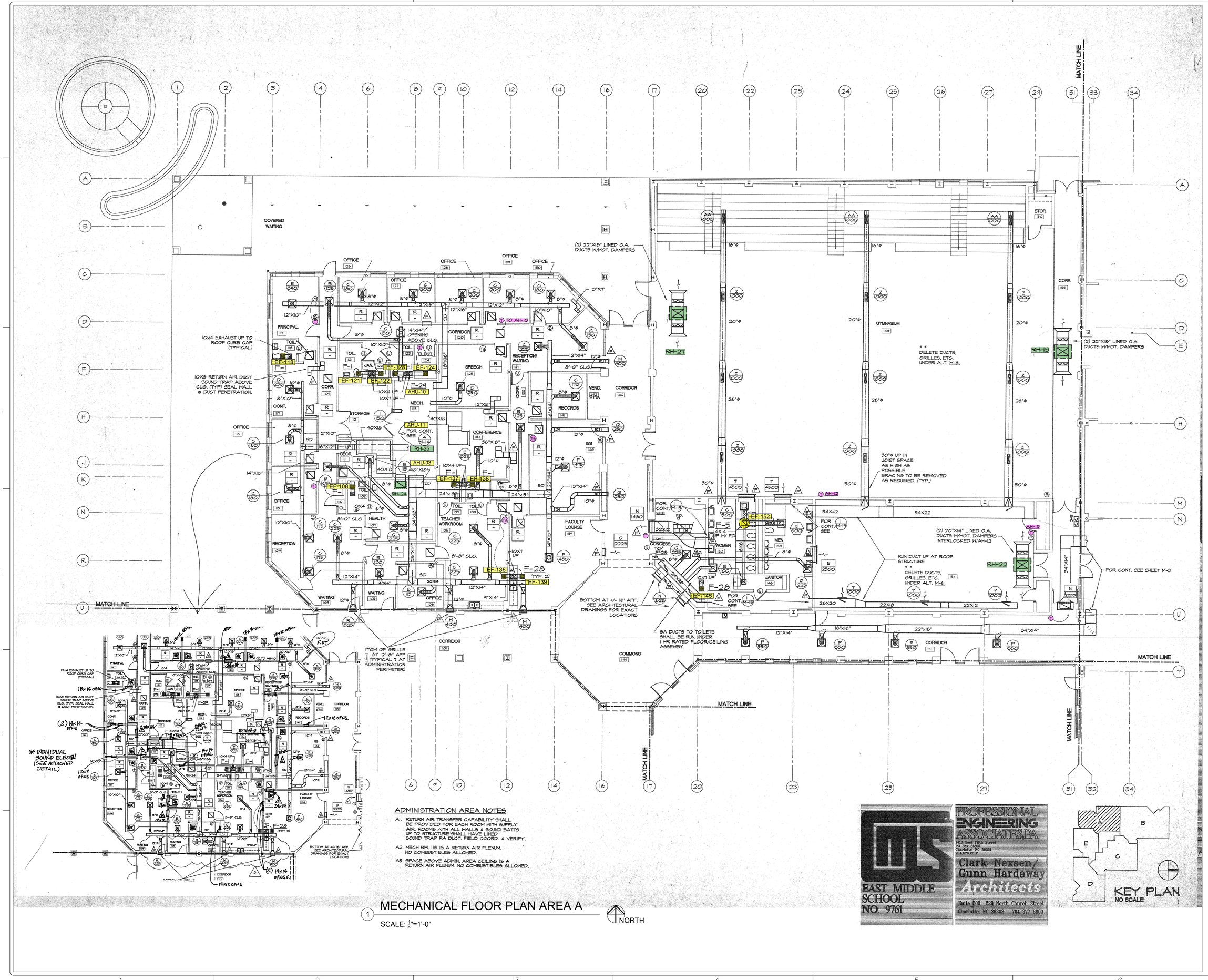
SHEET INFORMATION

DATE	9/27/2022
JOB NUMBER	2202-01-002
DRAWN	ALG
APPROVED	CTM

MECHANICAL NOTES & LEGENDS

RM-002

SHEET 2 OF 25



ADMINISTRATION AREA NOTES

A1. RETURN AIR TRANSFER CAPABILITY SHALL BE PROVIDED FOR EACH ROOM WITH SUPPLY AIR. ROOMS WITH ALL WALLS & SOUND BATTS UP TO STRUCTURE SHALL HAVE LINED SOUND TRAP RA DUCT. FIELD COORD. & VERIFY.

A2. MECH RM. 115 IS A RETURN AIR PLENUM. NO COMBUSTIBLES ALLOWED.

A3. SPACE ABOVE ADMIN. AREA CEILING IS A RETURN AIR PLENUM. NO COMBUSTIBLES ALLOWED.

1 MECHANICAL FLOOR PLAN AREA A

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

NORTH

TMG CONSULTING ENGINEERS

The Wilkerson Group Consulting Engineers NC
dba TMG Consulting Engineers
1420 Elizabeth Ave
Suite 110/120
Charlotte, NC 28204
704.899.7610 Phone
704.899.7620 Fax
Website: WWW.TMG-CE.COM

ISSUED FOR CONSTRUCTION

Charlotte-Mecklenberg Schools

NORTHRIDGE MIDDLE SCHOOL
RESOURCE DRAWINGS FROM EXISTING CONDITIONS

Charlotte-Mecklenberg Schools
7601 The Plaza
Charlotte, NC 28215

REVISIONS			
NO.	DESCRIPTION	DATE	
1	ISSUED FOR CONSTRUCTION	9/27/22	
2	REVISION 1	1/13/23	

SHEET INFORMATION

DATE	9/27/2022
JOB NUMBER	2202-01-002
DRAWN	ALG
APPROVED	CTM

MECHANICAL FLOOR PLAN AREA A

RM-101

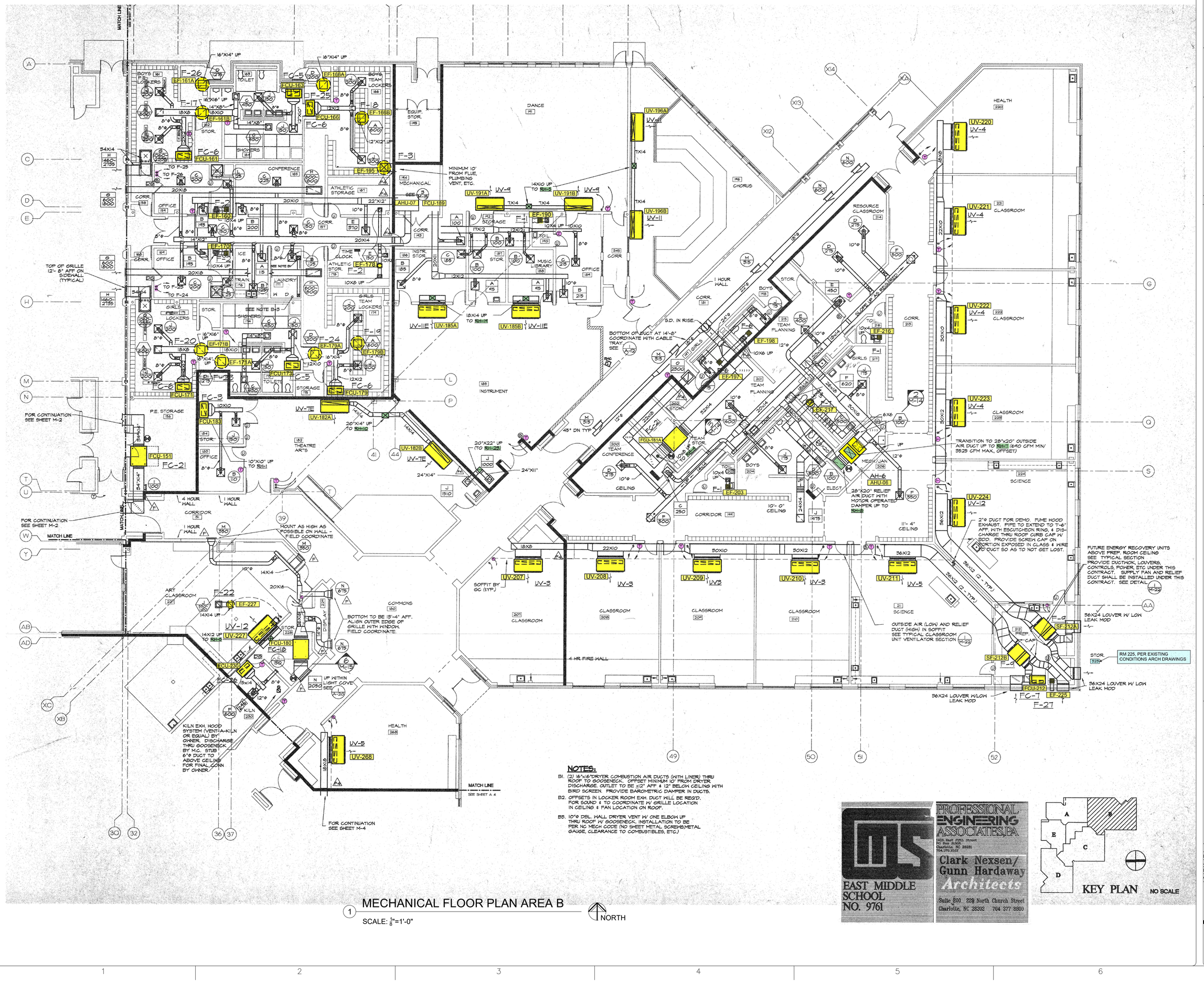
SHEET 3 OF 25

EAST MIDDLE SCHOOL NO. 9761

PROFESSIONAL ENGINEERING ASSOCIATES, PA
1418 East Fifth Street
PO Box 31302
Charlotte, NC 28231
704.370.9318

Clark Nexsen/ Gunn Hardaway Architects
Suite 600 229 North Church Street
Charlotte, NC 28202 704 377 8900

KEY PLAN
NO SCALE



NOTES:

B1. (2) 16"X16"DRYER COMBUSTION AIR DUCTS (WITH LINER) THRU ROOF TO GOOSENECK. OFFSET MINIMUM 10' FROM DRYER DISCHARGE. OUTLET TO BE ±2' AFF & 12" BELOW CEILING WITH BIRD SCREEN. PROVIDE BAROMETRIC DAMPER IN DUCTS.

B2. OFFSETS IN LOCKER ROOM EXH. DUCT WILL BE REQ'D. FOR SOUND & TO COORDINATE W/ GRILLE LOCATION IN CEILING & FAN LOCATION ON ROOF.

B5. 10"ø DBL. WALL DRYER VENT W/ ONE ELBOW UP THRU ROOF W/ GOOSENECK. INSTALLATION TO BE PER NC MECH CODE (NO SHEET METAL SCREWS)METAL GAUGE, CLEARANCE TO COMBUSTIBLES, ETC.)

1 MECHANICAL FLOOR PLAN AREA B

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

NORTH

EAST MIDDLE SCHOOL NO. 9761

PROFESSIONAL ENGINEERING ASSOCIATES, PA
1418 East Fifth Street
PO Box 36808
Charlotte, NC 28231
704.376.8228

Clark Nexsen/ Gunn Hardaway Architects
Suite 200 229 North Church Street
Charlotte, NC 28202 704 377 8800

KEY PLAN NO SCALE

TMG CONSULTING ENGINEERS

The Wilborn Shaw Consulting Engineers PC
dba TMG Consulting Engineers
401 Harbour Lane
Suite 100
Dunedin, NC 28334
704.376.8228 Phone
704.376.8229 Fax
Mobile: 999.NO-CLUE

ISSUED FOR CONSTRUCTION

Charlotte-Mecklenberg Schools

NORTHRIDGE MIDDLE SCHOOL
RESOURCE DRAWINGS FROM EXISTING CONDITIONS

Charlotte-Mecklenberg Schools
7601 The Plaza
Charlotte, NC 28215

REVISIONS		
NO.	DESCRIPTION	DATE
	ISSUED FOR CONSTRUCTION	9/27/22

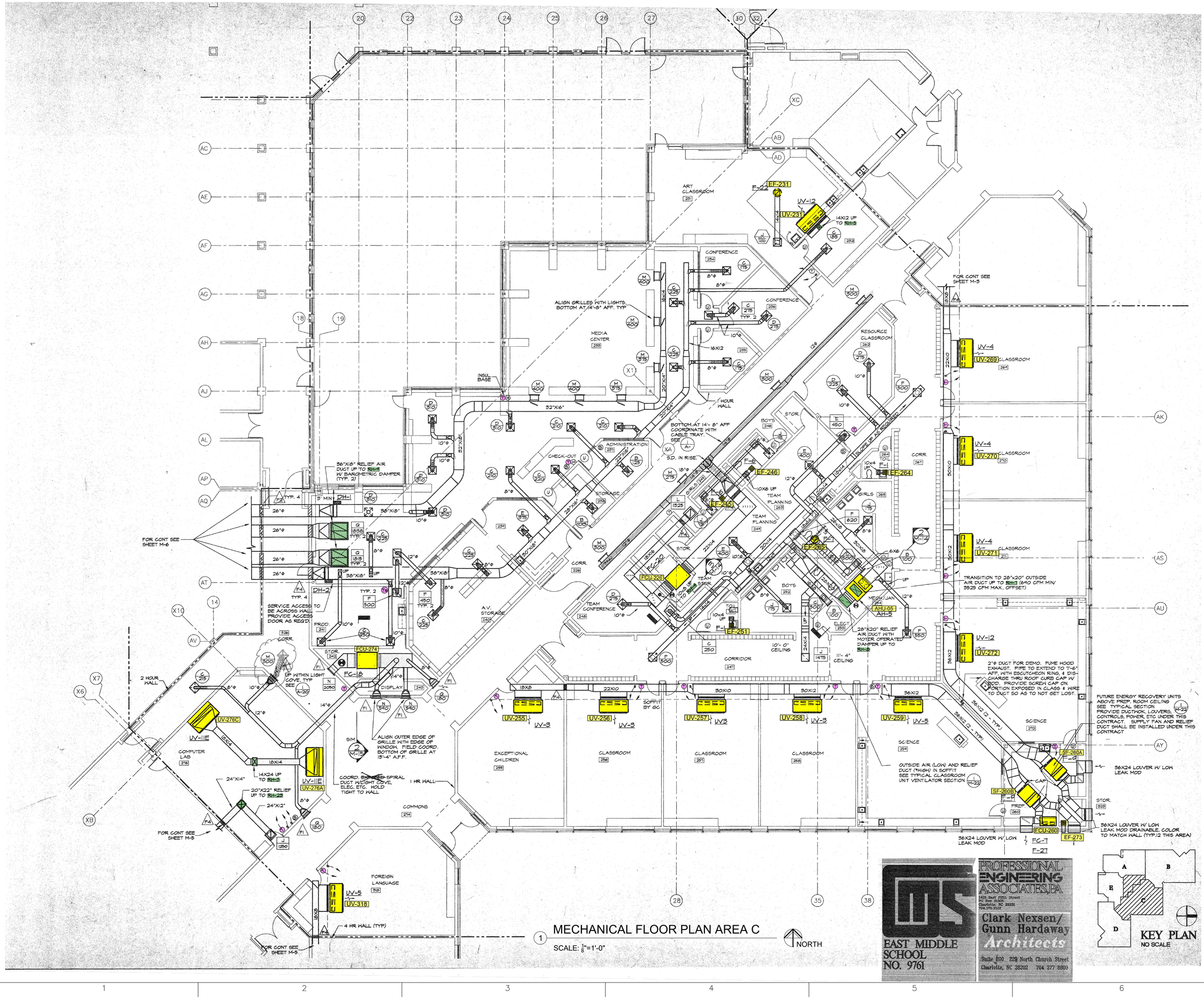
SHEET INFORMATION

DATE	9/27/2022
JOB NUMBER	2202-01-002
DRAWN	ALG
APPROVED	CTM

MECHANICAL FLOOR PLAN AREA B

RM-102

SHEET 4 OF 25



TMG CONSULTING ENGINEERS

The Wilborne Group Consulting Engineers INC
dba TMG Consulting Engineers
1901 Matthews Lane
Suite 100
Charlotte, NC 28204
704.859.5333 Phone
704.859.5335 Fax
Website: WWW.TMG-CE.COM

ISSUED FOR CONSTRUCTION

Charlotte-Mecklenberg Schools

NORTHRIDGE MIDDLE SCHOOL
RESOURCE DRAWINGS FROM EXISTING CONDITIONS

Charlotte-Mecklenberg Schools
7501 The Plaza
Charlotte, NC 28215

REVISIONS		
NO.	DESCRIPTION	DATE
1	ISSUED FOR CONSTRUCTION REVISION 1	9/27/22 1/13/23

SHEET INFORMATION

DATE	9/27/2022
JOB NUMBER	2202-01-002
DRAWN	ALG
APPROVED	CTM

MECHANICAL
FLOOR PLAN AREA C

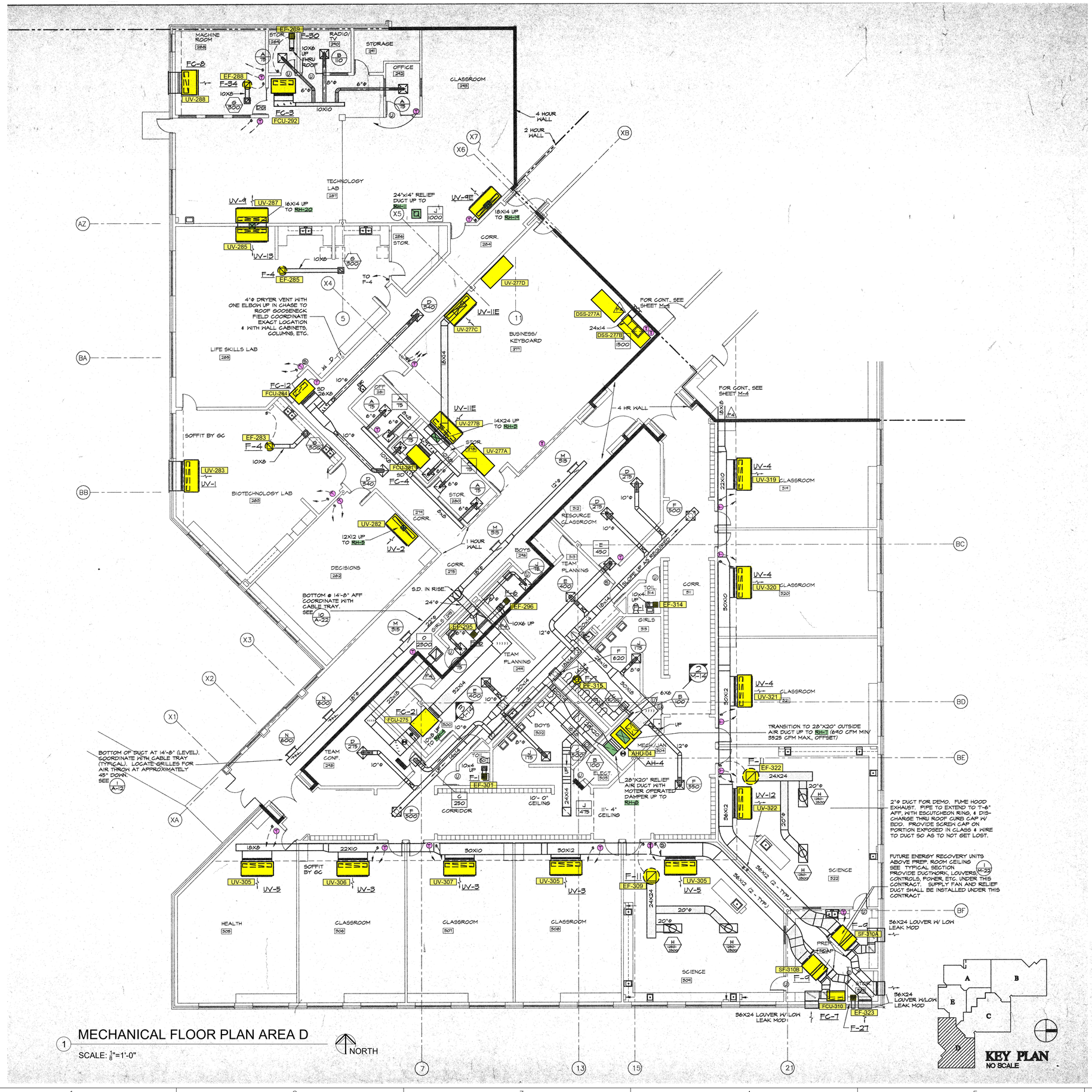
RM-103

SHEET 5 OF 25

EAST MIDDLE SCHOOL NO. 9761

PROFESSIONAL ENGINEERING ASSOCIATES, PA
1426 Stark Street
Post Office Box 1
Charlotte, NC 28231
704.370.2002

Clark Nexsen/ Gunn Hardaway Architects
Suite 600 224 North Church Street
Charlotte, NC 28202 704 377 2800



1 MECHANICAL FLOOR PLAN AREA D

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

TMG CONSULTING ENGINEERS

The Mitchell Gray Consulting Engineers PC
dba TMG Consulting Engineers
401 Hackney Lane
Suite 100
Charlotte, NC 28204
704.333.7525 Phone
704.333.7526 Fax
Website: www.tmg-cc.com

ISSUED FOR CONSTRUCTION

Charlotte-Mecklenberg Schools

NORTHRIDGE MIDDLE SCHOOL
RESOURCE DRAWINGS FROM EXISTING CONDITIONS

Charlotte-Mecklenberg Schools
7601 The Plaza
Charlotte, NC 28215

REVISIONS		
NO.	DESCRIPTION	DATE
1	ISSUED FOR CONSTRUCTION	9/27/22
2	REVISION 1	1/13/23

SHEET INFORMATION

DATE	9/27/2022
JOB NUMBER	2202-01-002
DRAWN	ALG
APPROVED	CTM

MECHANICAL FLOOR PLAN AREA D

RM-104

SHEET 6 OF 25

EAST MIDDLE SCHOOL NO. 9761

PROFESSIONAL ENGINEERING ASSOCIATES, PA
1435 West Fifth Street
PO Box 31808
Charlotte, NC 28231
704.370.3010

Clark Nexsen/ Gunn Hardaway Architects
Suite 200 229 North Church Street
Charlotte, NC 28202 704 377 8800

NOTES - FLOOR PLAN "E"

E1 COOKING HOODS - ABERDLATOR MODEL AC1: KEH-1 IS MINIMUM 14'-0" LONG X 4'-6" WIDE PLUS FIRE CONTROL CABINET, 4200 CFM EXHAUST W/(2) 12"X14" COLLARS 0.75" SP AT COLLAR, 2940 CFM MAKE-UP W/(2) 10"X18" COLLARS 0.50" SP AT COLLAR, KEH-2 IS MINIMUM 14'-0" LONG X 4'-6" WIDE. EXHAUST AND MAKE-UP IS SAME AS #1. PROVIDE STAINLESS STEEL SPACERS FRAME SAME WIDTH AS LOW HIGH WALL UNDER/BETWEEN HOODS & STAINLESS STEEL CLOSURE PANEL TO CEILING. BOTTOM OF HOOD TO BE BETWEEN 6'-6" AND 7'-0" AFF. HOOD TO BE UL LISTED, NSF, STAINLESS, COMPLETE WITH LIGHTS, GAS SOLENOID VALVE, PYROCHEM WET CHEM FIRE SUPPR. SYSTEM WITH REMOTE PULL STATION, BALANCING DAMPERS, FIRE DAMPER, GREASE TROUGH & CONTAINER, UL CLASSIFIED GREASE FILTER, FAN & LIGHTS CONTROL PANEL, & INSULATED SUPPLY PLENUM. FIRE CONTROL CABINET IS 120V-1Φ. THE TWO FANS FOR EACH HOOD SHALL BE ON ONE ELEC. CIRCUIT (1 POINT OF ELEC. CONN.) FANS ARE SHOWN OFFSET FOR CLARITY. EXHAUST FANS SHALL BE INSTALLED MINIMUM 10' FROM PARAPET WALL.

E2 COOKING HOOD S.A. & EXH. DUCT SHALL HAVE 45° MAX. ELBOWS, EXH. DUCT SHALL BE PER NFPA 96 & N.C. MECH. CODE: WELDED, CLEAN-OUTS, SLOPED MIN. 1/2"/FT., ETC.

E3 CROSSBRACING TO BE REMOVED AS REQ'D. FOR DUCT THRU JOIST SPACES.

E4 20" DEEP DUCT INSTALLATION WILL BE TIGHT WITH 24" BETWEEN CEILING & STRUCTURE. USE ECCENTRIC TRANSITIONS TO RAISE BOTTOM OF DUCT. THERE IS NO SPACE AVAILABLE TO CROSS LIGHTS ! FIELD COORDINATE.

E5 ENTIRE AH-8 DUCT SYSTEM SHALL BE PAINTED BY GC (COLOR BY ARCH)

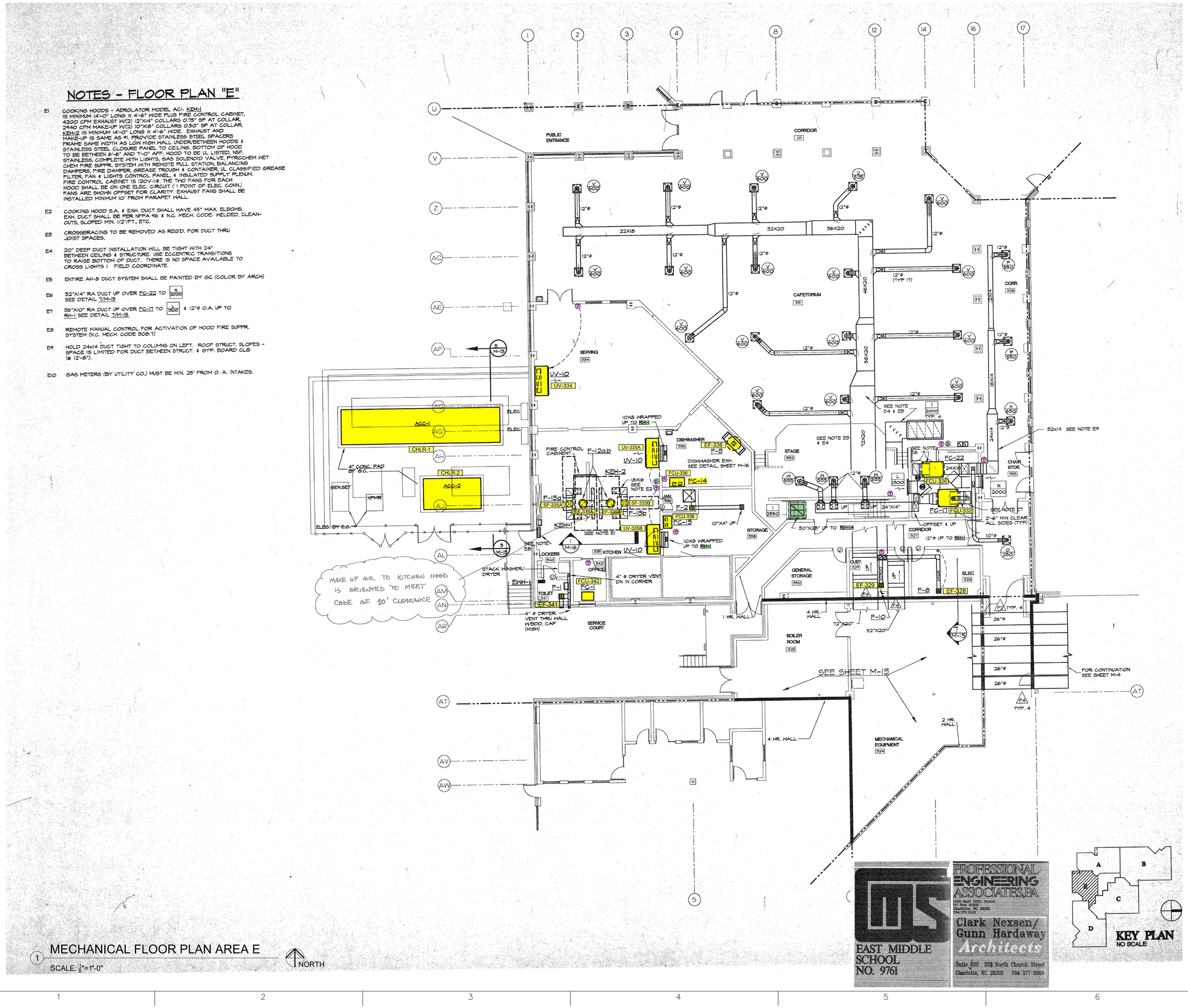
E6 32"X14" RA DUCT UP OVER FC-22 TO N 2000 SEE DETAIL 1/M-15

E7 36"X10" RA DUCT UP OVER FC-17 TO L 1500 & 12"Φ O.A. UP TO RH-1 SEE DETAIL 1/M-15.

E8 REMOTE MANUAL CONTROL FOR ACTIVATION OF HOOD FIRE SUPPR. SYSTEM (N.C. MECH. CODE 508.1)

E9 HOLD 24x14 DUCT TIGHT TO COLUMNS ON LEFT. ROOF STRUCT. SLOPES - SPACE IS LIMITED FOR DUCT BETWEEN STRUCT. & GYP. BOARD CLG (@ 12'-8").

E10 GAS METERS (BY UTILITY CO.) MUST BE MIN. 25' FROM O. A. INTAKES.



1 MECHANICAL FLOOR PLAN AREA E
SCALE: 1/8"=1'-0"

NORTH

EAST MIDDLE SCHOOL NO. 9761

PROFESSIONAL ENGINEERING ASSOCIATES, PA
1416 East Fifth Street
PO Box 8300
Charlotte, NC 28231
704.370.2010

Clark Nexsen/ Gunn Hardaway Architects
Suite 800 228 North Church Street
Charlotte, NC 28202 704 377 8800

TMG CONSULTING ENGINEERS
The Wilborn Shaw Consulting Engineers INC
dba TMG Consulting Engineers
NC# 10070-119
1601 Elm St
Dallas, TX 75201
704.859.5135 Tel.
Web: WWW.TMG-CE.COM

ISSUED FOR CONSTRUCTION

Charlotte-Mecklenburg Schools

NORTHRIDGE MIDDLE SCHOOL
RESOURCE DRAWINGS FROM EXISTING CONDITIONS

Charlotte-Mecklenburg Schools
7501 The Plaza
Charlotte, NC 28215

REVISIONS

NO.	DESCRIPTION	DATE
1	ISSUED FOR CONSTRUCTION	9/27/22
2	REVISION 1	1/13/23

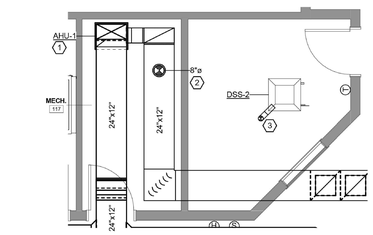
SHEET INFORMATION

DATE	9/27/2022
JOB NUMBER	2202-01-002
DRAWN	ALG
APPROVED	CTM

MECHANICAL FLOOR PLAN AREA E

RM-105

SHEET 7 OF 25

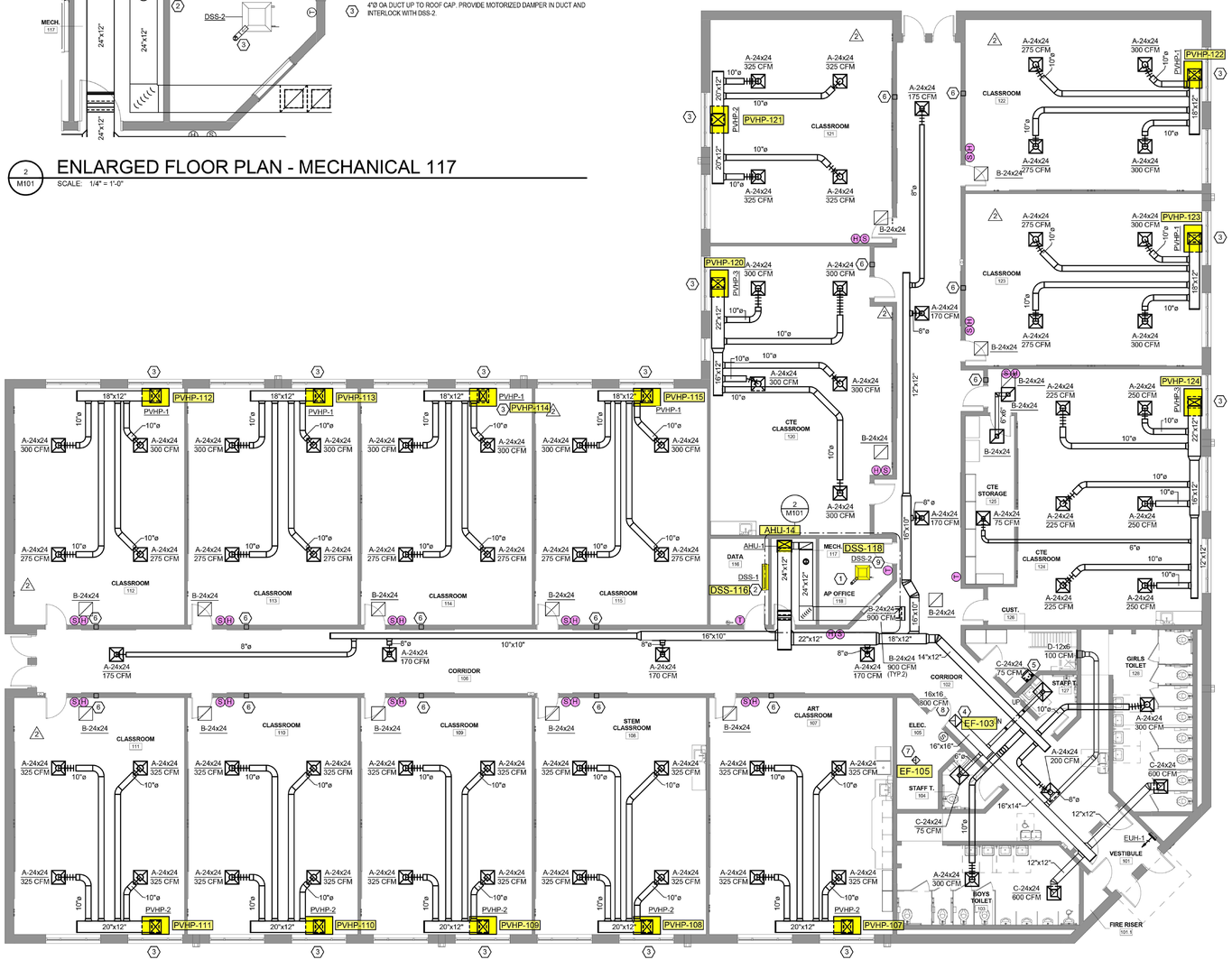


KEYNOTES TO PLAN:

1. ROUTE CONDENSATE FROM AHU-1 TO FLOOR DRAIN IN MECHANICAL ROOM.
2. 8"Ø OA DUCT UP TO ROOF CAP. PROVIDE MOTORIZED DAMPER IN DUCT AND INTERLOCK WITH AHU-1.
3. 4"Ø OA DUCT UP TO ROOF CAP. PROVIDE MOTORIZED DAMPER IN DUCT AND INTERLOCK WITH DSS-2.

2 / M101 ENLARGED FLOOR PLAN - MECHANICAL 117

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



KEYNOTES TO PLAN:

1. ROUTE CONDENSATE FROM AHU-1 TO FLOOR DRAIN IN MECHANICAL ROOM.
2. MOUNT DSS HIGH ON WALL ABOVE CABLE TRAY (BOTTOM OF UNIT APPROXIMATELY 11'-0" AFF). ROUTE CONDENSATE FROM DSS TO FLOOR DRAIN IN MECHANICAL ROOM.
3. COORDINATE PLACEMENT OF PVHP W/ ARCHITECTURAL LOUVER AND WINDOW PLACEMENT. CONDENSATE FROM PVHP SHALL DRAIN THROUGH EXTERIOR WALL AT 6" AFF AND SPILL ONTO GRADE. PROVIDE SPLASH BLOCK. SEAL PENETRATION.
4. 16"x16" EA DUCT UP TO EF-1 ON ROOF.
5. ROUTE 3" VENT AND 3" COMBUSTION AIR INTAKE FROM GWH-1 UP TO CONENTRIC VENT KIT ON ROOF. MATERIALS SHALL COMPLY WITH MANUFACTURER REQUIREMNT.
6. 8"x8" TRANSFER AIR DUCT ABOVE CEILING PER DETAIL 9/M200. MOUNT AS HIGH AS POSSIBLE.
7. 10"x10" EA DUCT UP TO EF-2 ON ROOF. TERMINATE DUCT AT BOTTOM OF JOISTS. COVER OPEN END OF DUCT WITH 1"x1" ALUMINUM WIRE MESH.
8. 18"x18" DOOR TRANSFER GRILLE. TITUS MODEL CT-700L WITH AUXILLARY FRAME OR EQUAL. MOUNT BOTTOM OF GRILLE 12" A.F.F.
9. MOUNT DSS IN CEILING GRID. COORDINATE WITH ARCHITECTURAL RCP. ROUTE CONDENSATE FROM DSS TO FLOOR DRAIN IN MECHANICAL ROOM

1 / M101 FIRST FLOOR PLAN - MECHANICAL

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

1 MECHANICAL FLOOR PLAN AREA F

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

NORTH

Morris·Berg ARCHITECTS
1401 WEST MOREHEAD STREET, SUITE 125, CHARLOTTE, NC 28208
(704) 552-5800 FAX (704) 552-7420

McVEIGH & MANGUM ENGINEERING INC
1610 East Morehead Street, Suite 100
Charlotte, North Carolina 28207
Ph: (704) 547-9035 Fax: (704) 547-9036
email: mail@McVeighMangum.com
Eng. of Record: Scott C. Campagna License No.:34702

TMG CONSULTING ENGINEERS
The Wilborne Shaw Consulting Engineers INC
dba TMG Consulting Engineers
401 Hackberry Lane
PO Box 1000
Oakboro, NC 28129
704.888.9000 Phone
704.888.9155 Fax
Website: WWW.TMG-CE.COM

ISSUED FOR CONSTRUCTION

Charlotte-Mecklenberg Schools

NORTHRIDGE MIDDLE SCHOOL RESOURCE DRAWINGS FROM EXISTING CONDITIONS

Charlotte-Mecklenberg Schools
7601 The Plaza
Charlotte, NC 28215

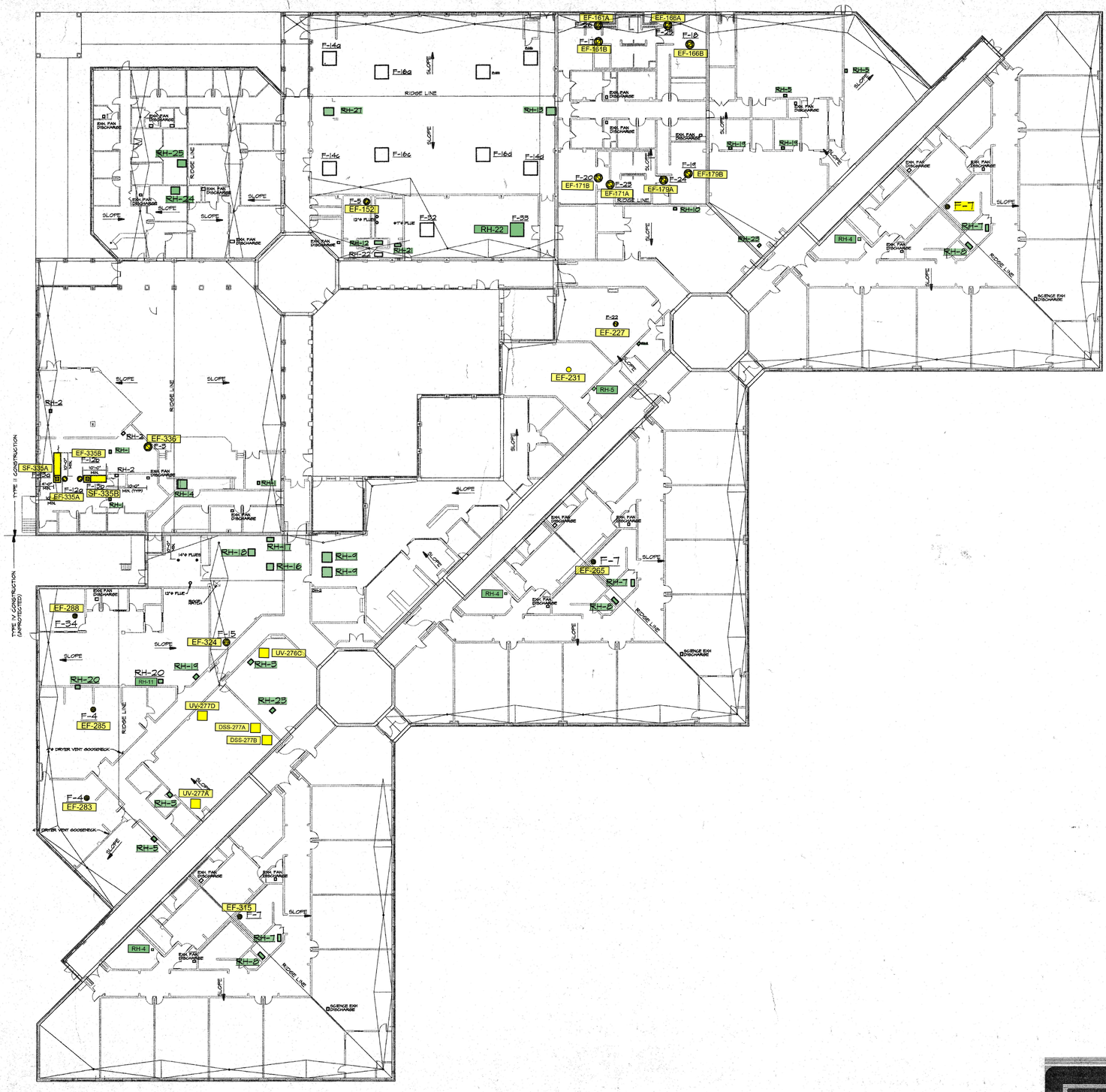
REVISIONS		
NO.	DESCRIPTION	DATE
1	ISSUED FOR CONSTRUCTION	9/27/22
2	REVISION 1	1/13/23

SHEET INFORMATION	
DATE	9/27/2022
JOB NUMBER	2202-01-002
DRAWN	ALG
APPROVED	CTM

MECHANICAL FLOOR PLAN AREA F

RM-106

SHEET 9 OF 25



1 MECHANICAL ROOF PLAN

SCALE: $\frac{3}{8}$"=1'-0"

NORTH

TMG CONSULTING ENGINEERS
The Wilkerson Group Consulting Engineers NC
dba TMG Consulting Engineers
227 West Trade Street
Suite 1927D
Charlotte, NC 28202
704.805.7610 Phone
704.805.5335 Fax
Website: WWW.TMG-CE.COM

ISSUED FOR CONSTRUCTION

Charlotte-Mecklenberg Schools

NORTHRIDGE MIDDLE SCHOOL
RESOURCE DRAWINGS FROM EXISTING CONDITIONS

Charlotte-Mecklenberg Schools
7601 The Plaza
Charlotte, NC 28215

REVISIONS

NO.	DESCRIPTION	DATE
	ISSUED FOR CONSTRUCTION	9/27/22

SHEET INFORMATION

DATE	9/27/2022
JOB NUMBER	2202-01-002
DRAWN	ALG
APPROVED	CTM

MECHANICAL ROOF PLAN

RM-107

SHEET 9 OF 25

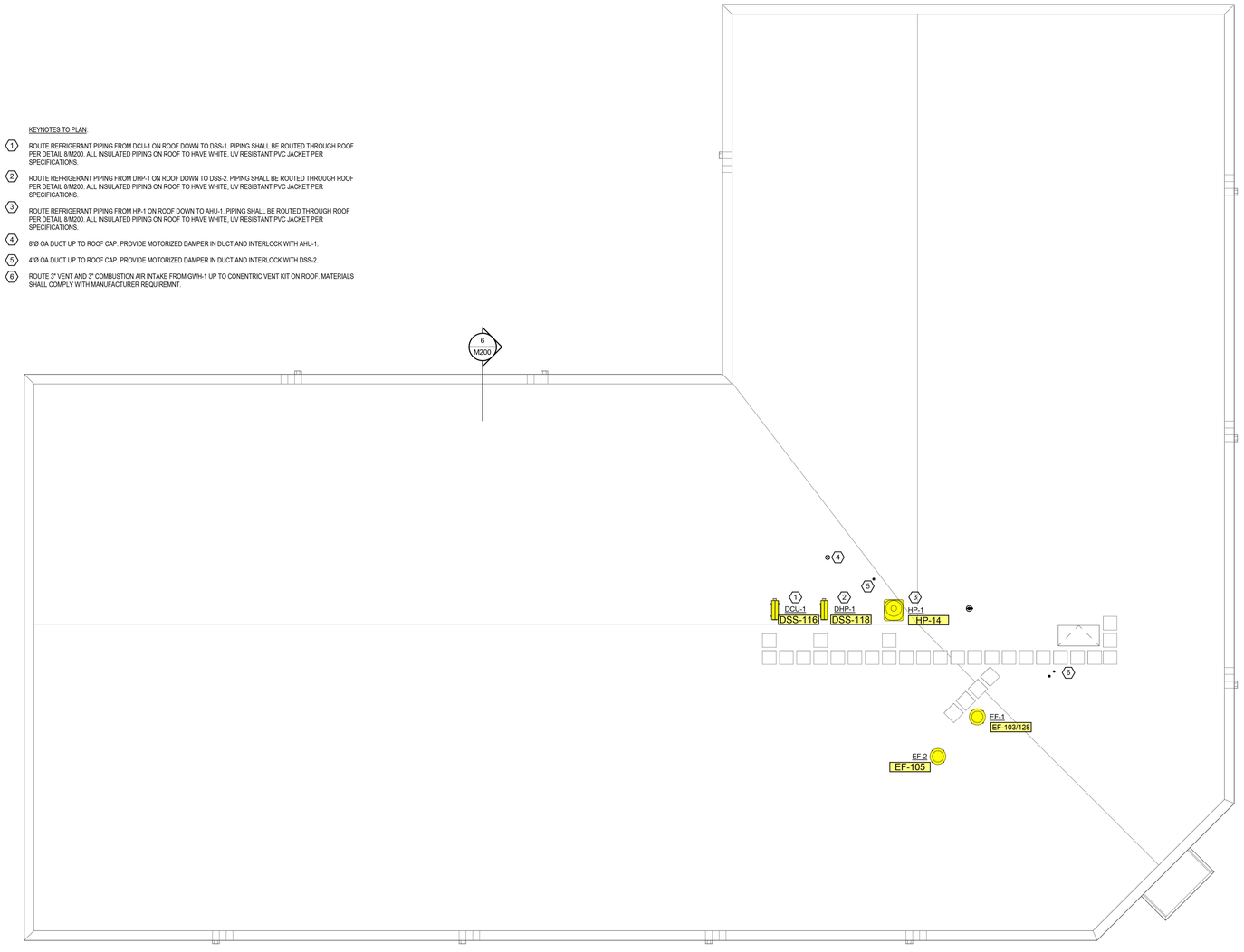
EAST MIDDLE SCHOOL NO. 9761

PROFESSIONAL ENGINEERING ASSOCIATES, P.A.
143N. East Fifth Street
PO Box 31808
Charlotte, NC 28231
704.375.9008

Clark Nexsen/ Gunn Hardaway Architects
Suite 800 228 North Church Street
Charlotte, NC 28202 704 377 8800

KEYNOTES TO PLAN:

1. ROUTE REFRIGERANT PIPING FROM DCU-1 ON ROOF DOWN TO DSS-1. PIPING SHALL BE ROUTED THROUGH ROOF PER DETAIL 8/M200. ALL INSULATED PIPING ON ROOF TO HAVE WHITE, UV RESISTANT PVC JACKET PER SPECIFICATIONS.
2. ROUTE REFRIGERANT PIPING FROM DHP-1 ON ROOF DOWN TO DSS-2. PIPING SHALL BE ROUTED THROUGH ROOF PER DETAIL 8/M200. ALL INSULATED PIPING ON ROOF TO HAVE WHITE, UV RESISTANT PVC JACKET PER SPECIFICATIONS.
3. ROUTE REFRIGERANT PIPING FROM HP-1 ON ROOF DOWN TO AHU-1. PIPING SHALL BE ROUTED THROUGH ROOF PER DETAIL 8/M200. ALL INSULATED PIPING ON ROOF TO HAVE WHITE, UV RESISTANT PVC JACKET PER SPECIFICATIONS.
4. 8"Ø OA DUCT UP TO ROOF CAP. PROVIDE MOTORIZED DAMPER IN DUCT AND INTERLOCK WITH AHU-1.
5. 4"Ø OA DUCT UP TO ROOF CAP. PROVIDE MOTORIZED DAMPER IN DUCT AND INTERLOCK WITH DSS-2.
6. ROUTE 3" VENT AND 3" COMBUSTION AIR INTAKE FROM GWH-1 UP TO CONENTRIC VENT KIT ON ROOF. MATERIALS SHALL COMPLY WITH MANUFACTURER REQUIREMNT.



1 MECHANICAL ROOF PLAN AREA F

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

NORTH

Morris·Berg
ARCHITECTS
1401 WEST MOREHEAD STREET, SUITE 125, CHARLOTTE, NC 28208
(704) 552-5800 FAX (704) 552-7420

McVEIGH & MANGUM
ENGINEERING INC
1610 East Morehead Street, Suite 100
Charlotte, North Carolina 28207
Ph: (704) 547-9035 Fax: (704) 547-9036
email: mail@McVeighMangum.com
Eng. of Record: Scott C. Campagna License No.:34702

TMG CONSULTING ENGINEERS
The Wilborne Group-Consulting Engineers INC
dba TMG-Consulting Engineers
401 Hawthorne Lane
Suite 110
Charlotte, NC 28204
704.859.5505 Phone
704.859.5535 Fax
Website: WWW.TMG-CE.COM

ISSUED FOR CONSTRUCTION

Charlotte-Mecklenberg Schools

NORTHRIDGE MIDDLE SCHOOL
RESOURCE DRAWINGS FROM EXISTING CONDITIONS

Charlotte-Mecklenberg Schools
7601 The Plaza
Charlotte, NC 28215

REVISIONS

NO.	DESCRIPTION	DATE
	ISSUED FOR CONSTRUCTION	9/27/22

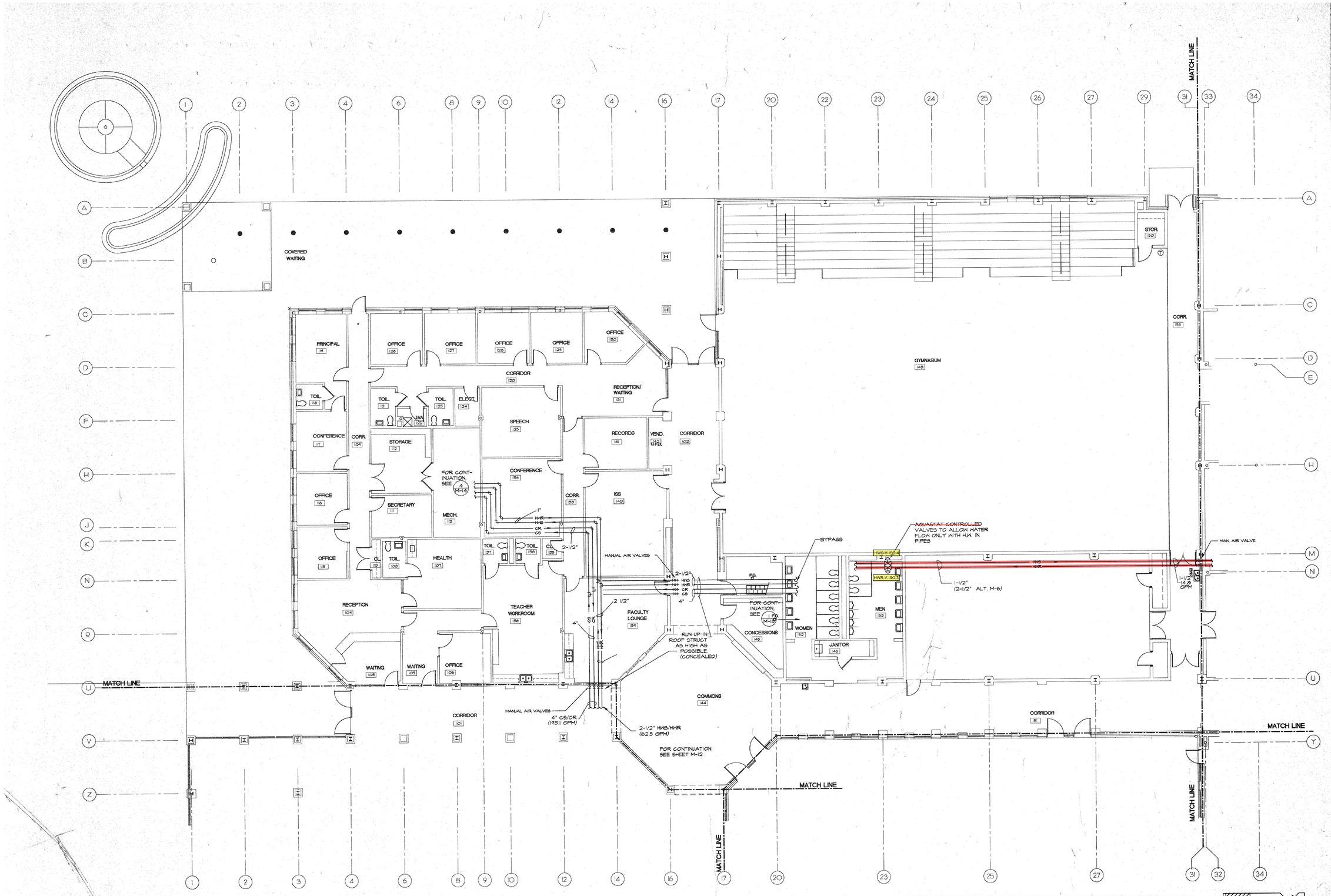
SHEET INFORMATION

DATE	9/27/2022
JOB NUMBER	2202-01-002
DRAWN	ALG
APPROVED	CTM

MECHANICAL ROOF PLAN AREA F

RM-108

SHEET 10 OF 25

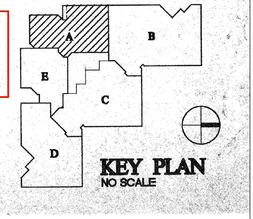


1 PIPING PLAN AREA A

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

NORTH

HYDRONIC SYSTEM IS TWO-PIPE ONLY. UNLESS INDICATED OTHERWISE, HWS AND HWR PIPING WAS NOT INSTALLED.



EAST MIDDLE SCHOOL NO. 9761

PROFESSIONAL ENGINEERING ASSOCIATES, PA
1428 East Fifth Street
PO Box 31505
Charlotte, NC 28231
704.370.3515

Clark Nexsen/ Gunn Hardaway Architects
Suite 200 229 North Church Street
Charlotte, NC 28202 704 377 8900

TMG CONSULTING ENGINEERS
The Wilborn Group-Consulting Engineers PC
dba TMG-Consulting Engineers
401 Hawthorne Lane
Suite 110
Charlotte, NC 28204
704.859.5505 Phone
704.859.5535 Fax
Website: WWW.TMG-CE.COM

ISSUED FOR CONSTRUCTION

Charlotte-Mecklenburg Schools

NORTHRIDGE MIDDLE SCHOOL
RESOURCE DRAWINGS FROM EXISTING CONDITIONS

Charlotte-Mecklenburg Schools
7601 The Plaza
Charlotte, NC 28215

REVISIONS

NO	DESCRIPTION	DATE
	ISSUED FOR CONSTRUCTION	9/27/22

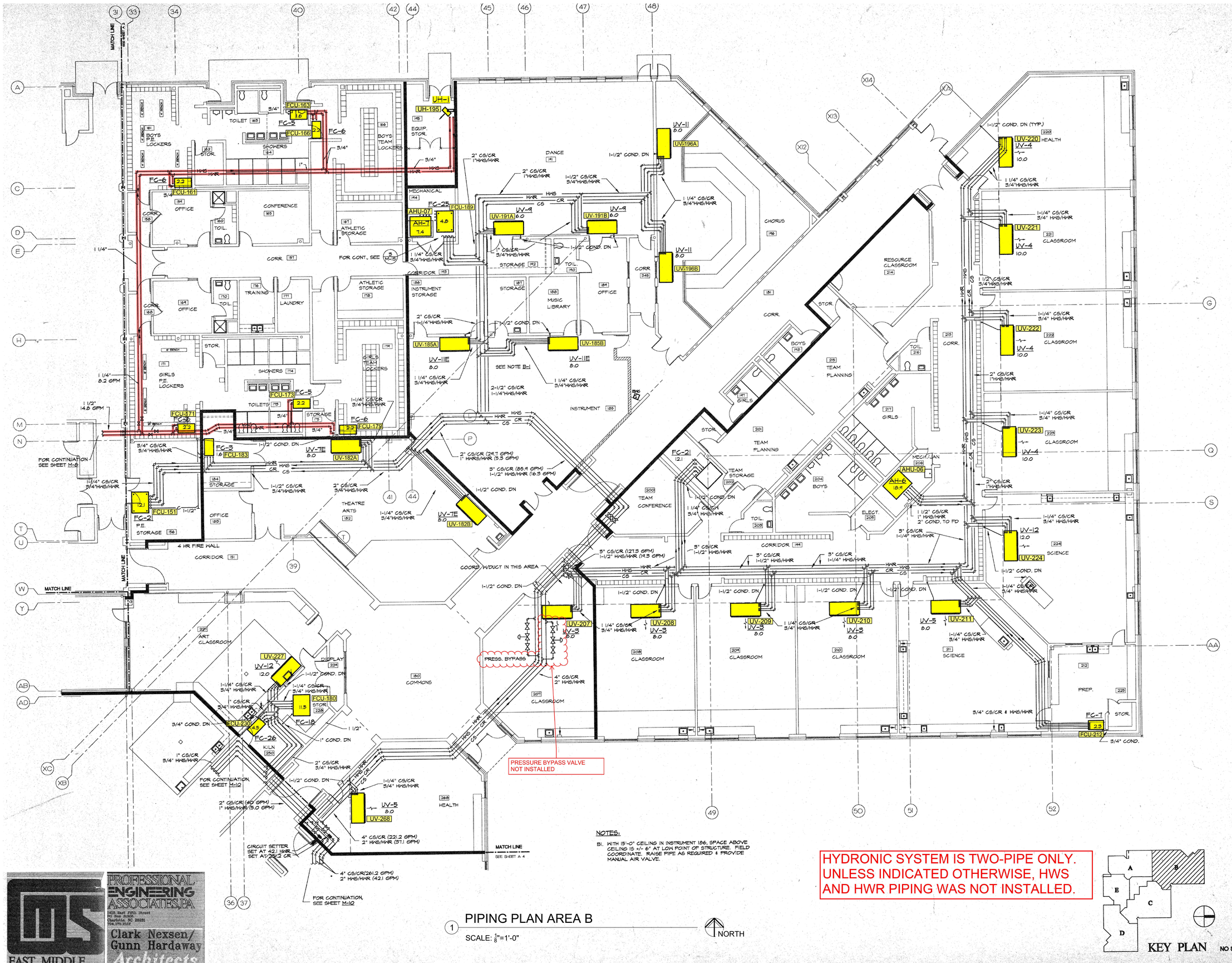
SHEET INFORMATION

DATE	9/27/2022
JOB NUMBER	2202-01-002
DRAWN	ALG
APPROVED	CTM

PIPING PLAN AREA A

RM-109

SHEET 11 OF 25



NOTES:

B1. WITH 15'-0" CEILING IN INSTRUMENT 186, SPACE ABOVE CEILING IS +/- 6" AT LOW POINT OF STRUCTURE. FIELD COORDINATE. RAISE PIPE AS REQUIRED & PROVIDE MANUAL AIR VALVE.

HYDRONIC SYSTEM IS TWO-PIPE ONLY. UNLESS INDICATED OTHERWISE, HWS AND HWR PIPING WAS NOT INSTALLED.

1 PIPING PLAN AREA B

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

NORTH

KEY PLAN NO SCALE

TMG CONSULTING ENGINEERS
The Wilborn Group-Consulting Engineers PC
dba TMG-Consulting Engineers
901 Hamilton Lake
Suite 100
Charlotte, NC 28224
704.970.9000 Phone
704.970.9100 Fax
Website: WWW.TMG-CE.COM

ISSUED FOR CONSTRUCTION

Charlotte-Mecklenberg Schools

NORTHRIDGE MIDDLE SCHOOL
RESOURCE DRAWINGS FROM EXISTING CONDITIONS

Charlotte-Mecklenberg Schools
7601 The Plaza
Charlotte, NC 28215

REVISIONS

NO.	DESCRIPTION	DATE
	ISSUED FOR CONSTRUCTION	9/27/22

SHEET INFORMATION

DATE	9/27/2022
JOB NUMBER	2202-01-002
DRAWN	ALG
APPROVED	CTM

PIPING PLAN AREA B

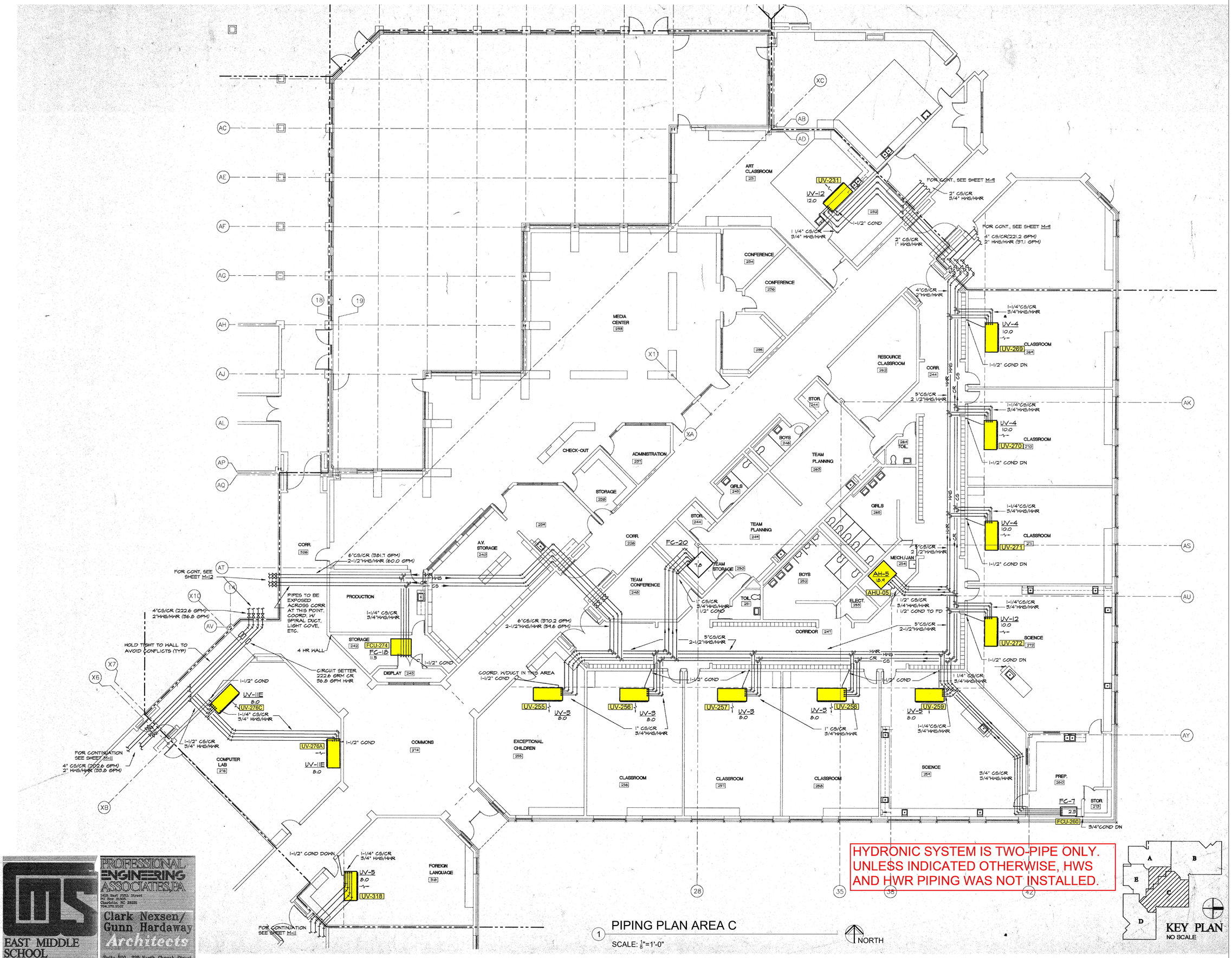
RM-110

SHEET 12 OF 25

EAST MIDDLE SCHOOL NO. 9761

PROFESSIONAL ENGINEERING ASSOCIATES, PA
1418 East Fifth Street
PO Box 31302
Charlotte, NC 28231
704.370.8010

Clark Nexsen/ Gunn Hardaway Architects
Suite 800 229 North Church Street
Charlotte, NC 28202 704 377 8800



HYDRONIC SYSTEM IS TWO-PIPE ONLY. UNLESS INDICATED OTHERWISE, HWS AND HWR PIPING WAS NOT INSTALLED.

1 PIPING PLAN AREA C

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

NORTH

KEY PLAN
NO SCALE

EAST MIDDLE SCHOOL NO. 9761

PROFESSIONAL ENGINEERING ASSOCIATES, P.A.
1415 East 10th Street
PO Box 36305
Charlotte, NC 28231
704.375.2537

Clark Nexsen/ Gunn Hardaway Architects
Suite 200 229 North Church Street
Charlotte, NC 28202 704 377 8800

TMG CONSULTING ENGINEERS
The Milliome Group Consulting Engineers INC
Are TMG Consulting Engineers
401 Hawthorne Lane
Suite 110 CTC
Charlotte, NC 28204
Tel 800.763.7664
Fax 800.763.7665
Website: WWW.TMG-CE.COM

ISSUED FOR CONSTRUCTION

Charlotte-Mecklenberg Schools

NORTHRIDGE MIDDLE SCHOOL
RESOURCE DRAWINGS FROM EXISTING CONDITIONS

Charlotte-Mecklenberg Schools
7601 The Plaza
Charlotte, NC 28215

REVISIONS

NO.	DESCRIPTION	DATE
	ISSUED FOR CONSTRUCTION	9/27/22

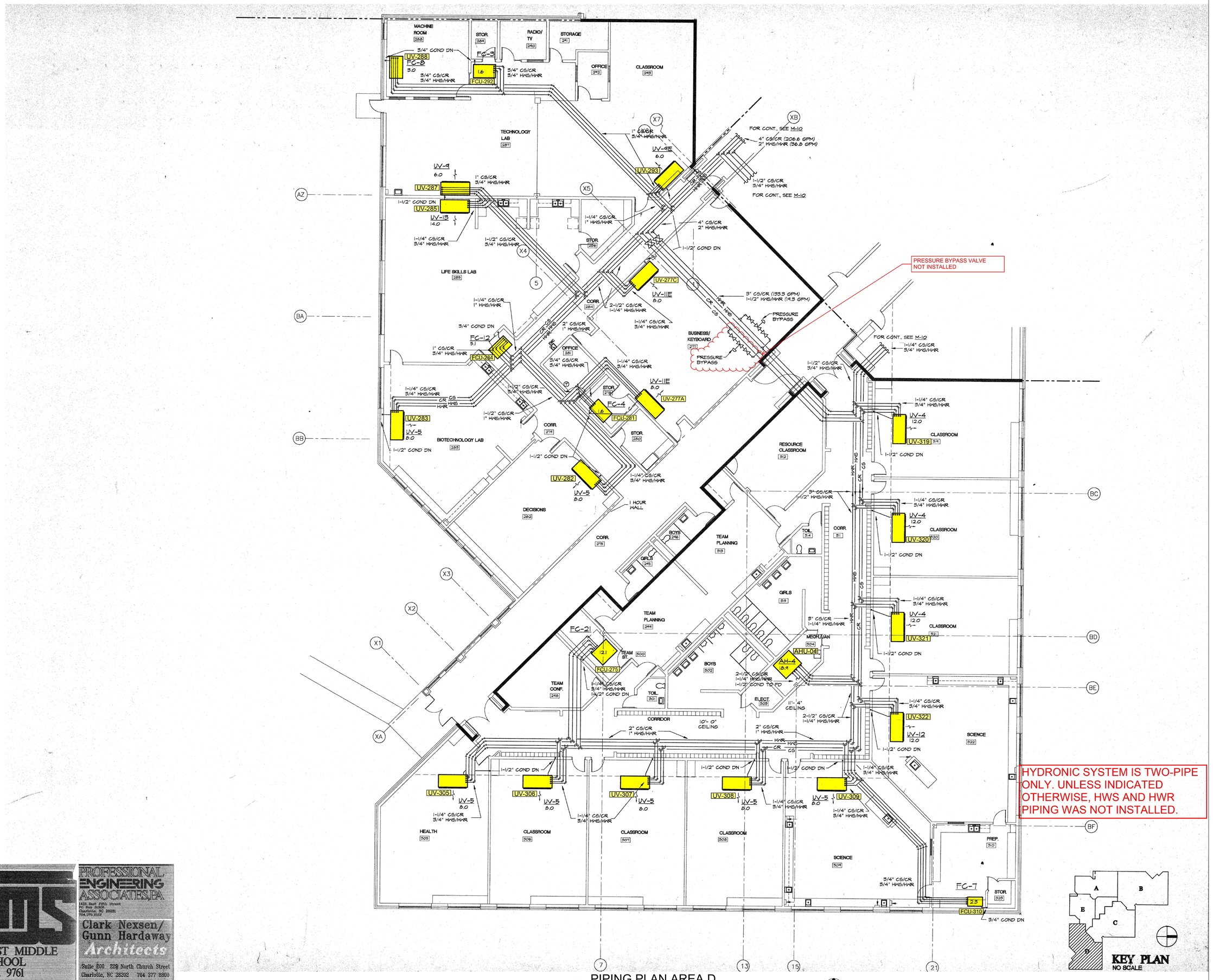
SHEET INFORMATION

DATE	9/27/2022
JOB NUMBER	2202-01-002
DRAWN	ALG
APPROVED	CTM

PIPING PLAN AREA C

RM-111

SHEET 13 OF 25



PIPING PLAN AREA D

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

NORTH

EAST MIDDLE SCHOOL NO. 9761

PROFESSIONAL ENGINEERING ASSOCIATES, P.A.
1415 East Fifth Street
PO Box 31505
Charlotte, NC 28231
704.375.2517

Clark Nexsen/ Gunn Hardaway Architects
Suite 200 229 North Church Street
Charlotte, NC 28202 704 377 8800

TMG CONSULTING ENGINEERS

ISSUED FOR CONSTRUCTION

Charlotte-Mecklenberg Schools

NORTHRIDGE MIDDLE SCHOOL
RESOURCE DRAWINGS FROM EXISTING CONDITIONS

Charlotte-Mecklenberg Schools
7601 The Plaza
Charlotte, NC 28215

REVISIONS

NO.	DESCRIPTION	DATE
	ISSUED FOR CONSTRUCTION	9/27/22

SHEET INFORMATION

DATE	9/27/2022
JOB NUMBER	2202-01-002
DRAWN	ALG
APPROVED	CTM

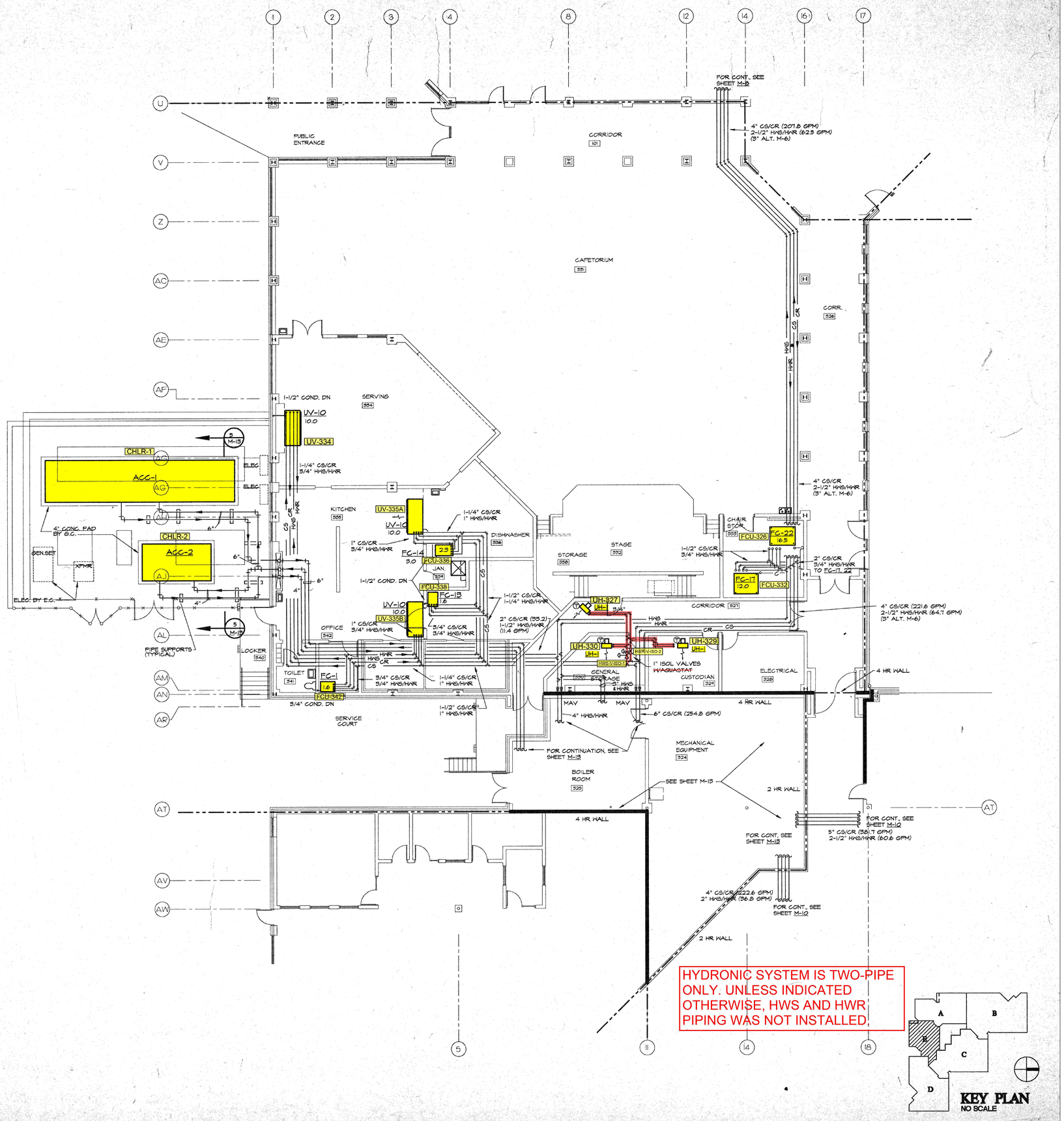
PIPING PLAN
AREA D

RM-112

SHEET 14 OF 25

NOTES - FLOOR PLAN "E"

E1 ENTIRE PIPING SYSTEM THRU CAFETORIUM SHALL BE PAINTED BY GC. COLOR BY ARCHITECT.



HYDRONIC SYSTEM IS TWO-PIPE ONLY. UNLESS INDICATED OTHERWISE, HWS AND HWR PIPING WAS NOT INSTALLED.

KEY PLAN
NO SCALE

1 PIPING PLAN AREA E

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

NORTH

EAST MIDDLE SCHOOL NO. 9761

PROFESSIONAL ENGINEERING ASSOCIATES, P.A.
1415 East Fifth Street
PO Box 36505
Charlotte, NC 28231
704.379.2012

Clark Nexsen/ Gunn Hardaway Architects
Suite 200 229 North Church Street
Charlotte, NC 28202 704 377 8800

TMG CONSULTING ENGINEERS

ISSUED FOR CONSTRUCTION

Charlotte-Mecklenberg Schools

NORTHRIDGE MIDDLE SCHOOL
RESOURCE DRAWINGS FROM EXISTING CONDITIONS

Charlotte-Mecklenberg Schools
7601 The Plaza
Charlotte, NC 28215

REVISIONS

NO.	DESCRIPTION	DATE
	ISSUED FOR CONSTRUCTION	9/27/22

SHEET INFORMATION

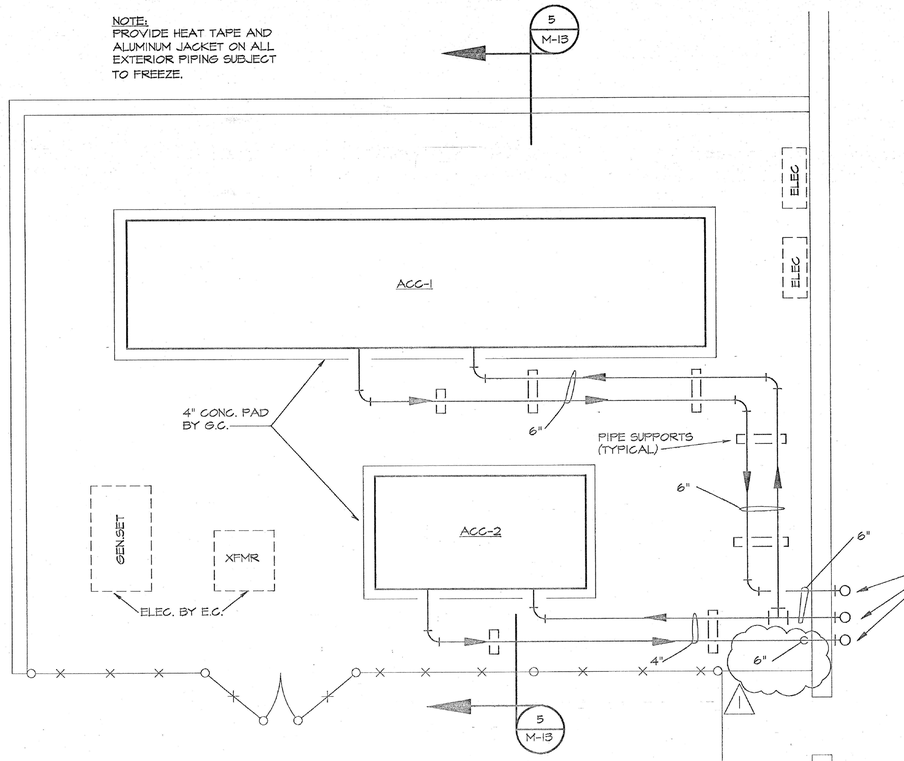
DATE	9/27/2022
JOB NUMBER	2202-01-002
DRAWN	ALG
APPROVED	CTM

PIPING PLAN
AREA E

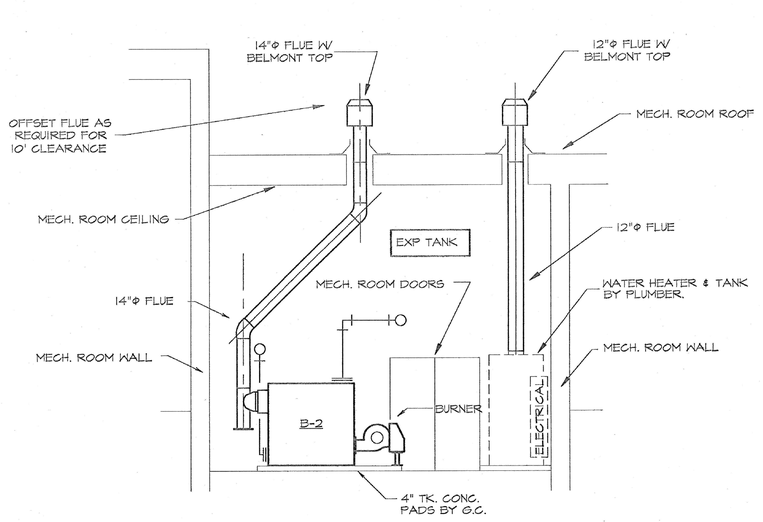
RM-113

SHEET 15 OF 25

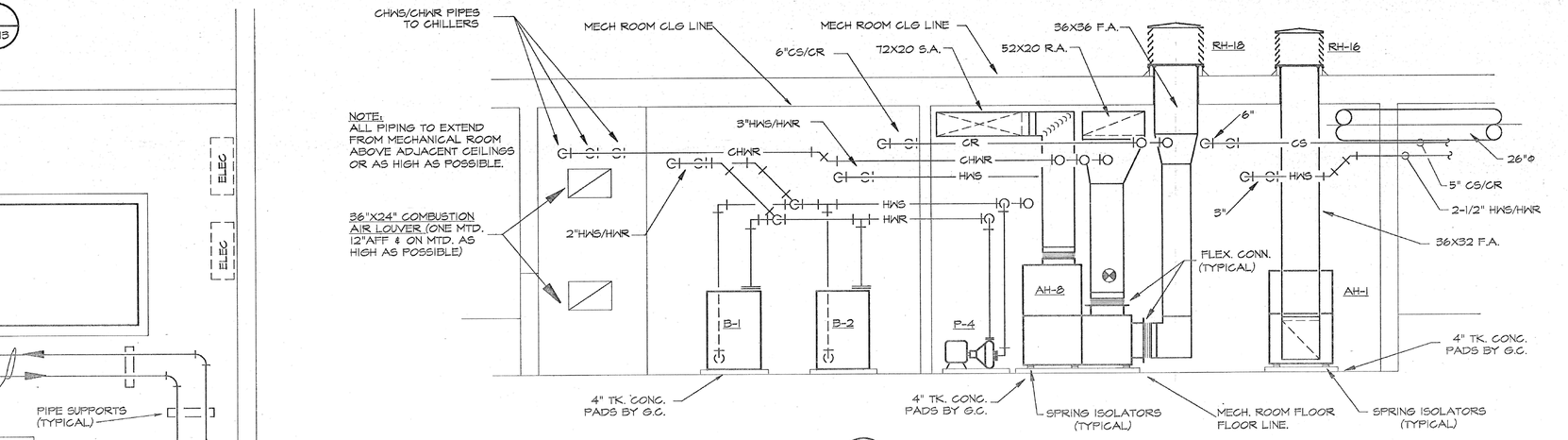
NOTE:
PROVIDE HEAT TAPE AND ALUMINUM JACKET ON ALL EXTERIOR PIPING SUBJECT TO FREEZE.



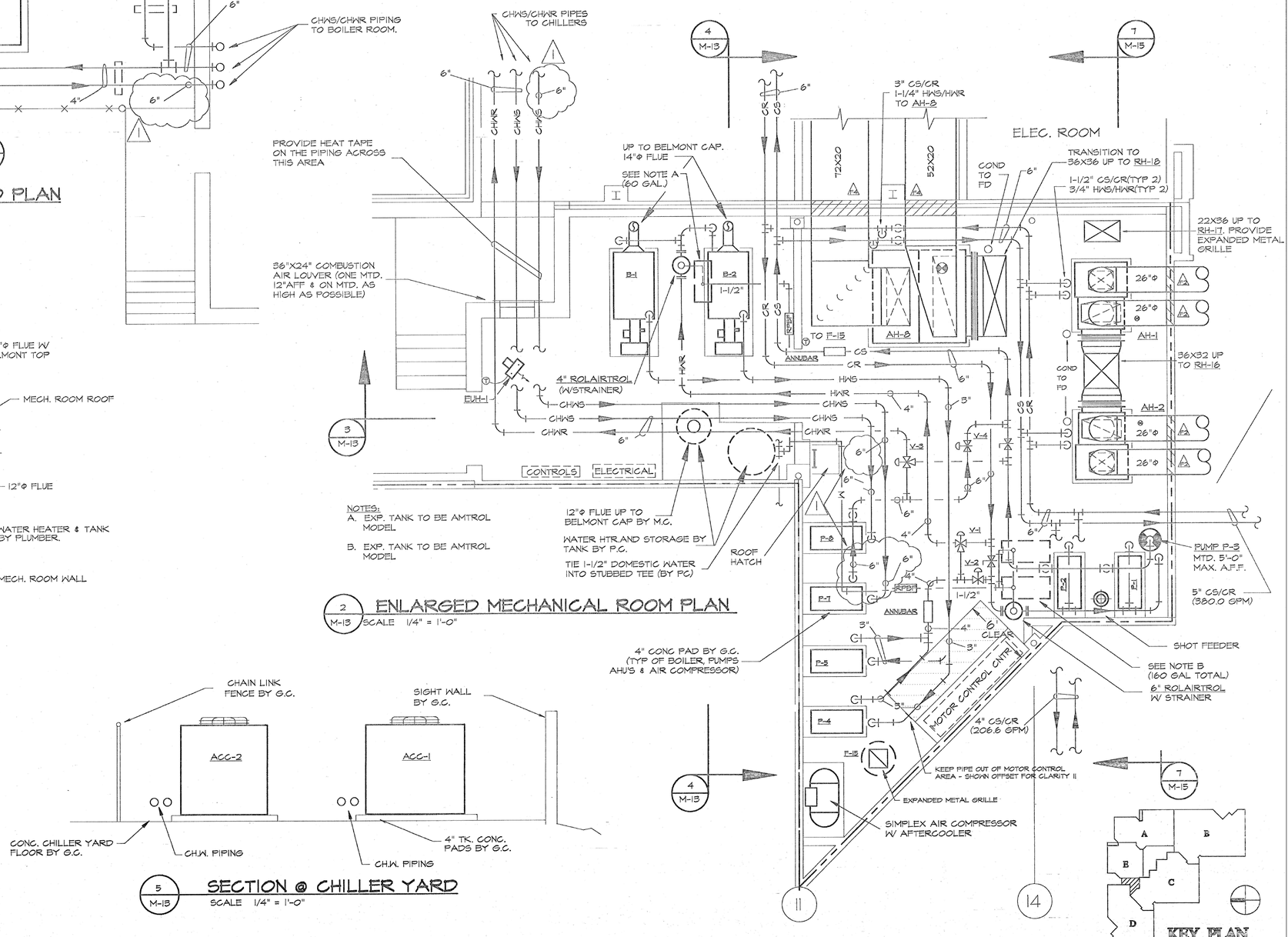
1 M-13 **ENLARGED CHILLER YARD PLAN**
SCALE 1/4" = 1'-0"



4 M-13 **SECTION @ BOILER ROOM**
SCALE 1/4" = 1'-0"



3 M-13 **SECTION @ BOILER ROOM**
SCALE 1/4" = 1'-0"



2 M-13 **ENLARGED MECHANICAL ROOM PLAN**
SCALE 1/4" = 1'-0"

5 M-13 **SECTION @ CHILLER YARD**
SCALE 1/4" = 1'-0"

1 **MECHANICAL DETAILS**
SCALE: 3/4"=1'-0"

NORTH

TMG CONSULTING ENGINEERS
The Wilkinson Group Consulting Engineers NC
301 The Plaza Drive
Mt. Pleasant, SC
Suite 110/210
704.525.7600 - 28204
704.525.7610 Phone
704.525.7620 Fax
Website: www.tmg-cc.com

ISSUED FOR CONSTRUCTION

Charlotte-Mecklenberg Schools

NORTHRIDGE MIDDLE SCHOOL
RESOURCE DRAWINGS FROM EXISTING CONDITIONS

Charlotte-Mecklenberg Schools
7601 The Plaza
Charlotte, NC 28215

REVISIONS		
NO.	DESCRIPTION	DATE
	ISSUED FOR CONSTRUCTION	9/27/22

SHEET INFORMATION

DATE	9/27/2022
JOB NUMBER	2202-01-002
DRAWN	ALG
APPROVED	CTM

MECHANICAL DETAILS

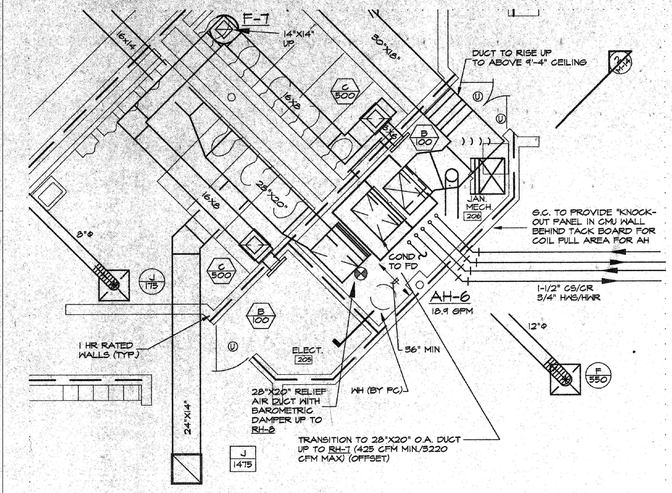
RM-114

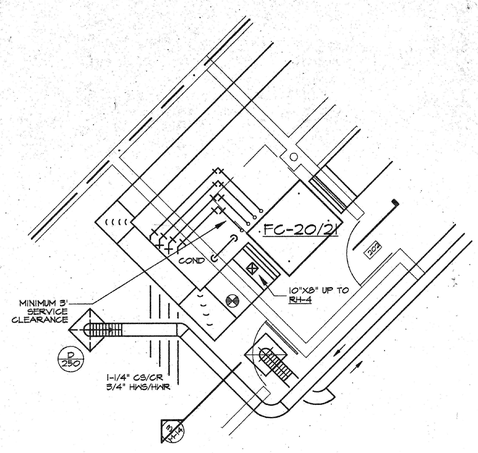
SHEET 16 OF 25

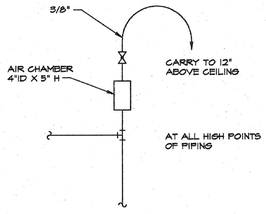
EAST MIDDLE SCHOOL NO. 9761

PROFESSIONAL ENGINEERING ASSOCIATES, PA
141N. East Fifth Street
PO Box 36305
Charlotte, NC 28231
704.375.3002

Clark Nexsen/ Gunn Hardaway Architects
Suite 200 229 North Church Street
Charlotte, NC 28202 704 377 8800

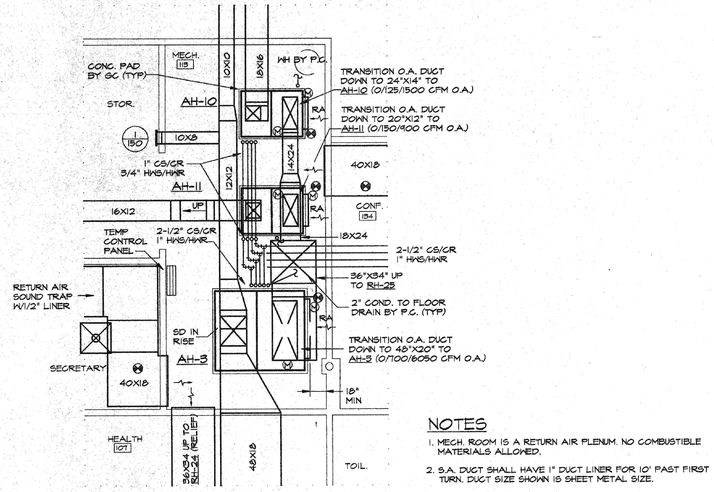






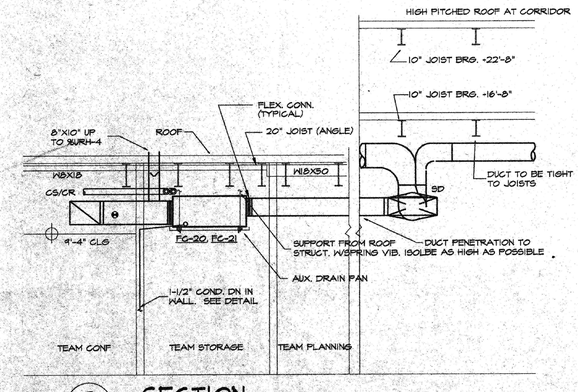
MANUAL AIR VENT DETAIL
NO SCALE

1 M-14 ENLARGED MECHANICAL ROOM #206 & 202 FROM FLOOR PLAN "B" (TYP. "C" & "D")
SCALE — 1/4" = 1'-0"

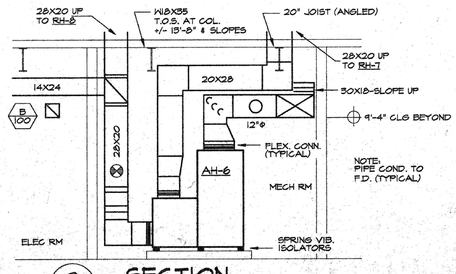


NOTES
1. MECH. ROOM IS A RETURN AIR PLENUM. NO COMBUSTIBLE MATERIALS ALLOWED.
2. S.A. DUCT SHALL HAVE 1" DUCT LINER FOR 10' PAST FIRST TURN. DUCT SIZE SHOWN IS SHEET METAL SIZE.

4 M-14 ENLARGED MECHANICAL ROOM #113 FROM FLOOR PLAN "A"
SCALE — 1/4" = 1'-0"



3 M-14 SECTION
SCALE — 1/4" = 1'-0"



2 M-14 SECTION
SCALE — 1/4" = 1'-0"

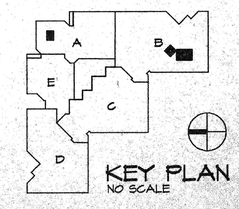
1 MECHANICAL DETAILS
SCALE: 1/8"=1'-0"

NORTH

EAST MIDDLE SCHOOL NO. 9761

PROFESSIONAL ENGINEERING ASSOCIATES, PA
1418 East Fifth Street
PO Box 31808
Charlotte, NC 28231
704.376.0018

Clark Nexsen/ Gunn Hardaway Architects
Suite 300 229 North Church Street
Charlotte, NC 28202 704 377 8800



TMG CONSULTING ENGINEERS
The Wilkerson Group Consulting Engineers NC
dba TMG Consulting Engineers
301 McCullough Drive
Suite 150/700
Charlotte, NC 28262
704.926.7670 Phone
704.926.7676 Fax
Member NWA Net-ID:LCTM

ISSUED FOR CONSTRUCTION

Charlotte-Mecklenberg Schools

NORTHRIDGE MIDDLE SCHOOL
RESOURCE DRAWINGS FROM EXISTING CONDITIONS

Charlotte-Mecklenberg Schools
7601 The Plaza
Charlotte, NC 28215

REVISIONS

NO	DESCRIPTION	DATE
	ISSUED FOR CONSTRUCTION	9/27/22

SHEET INFORMATION

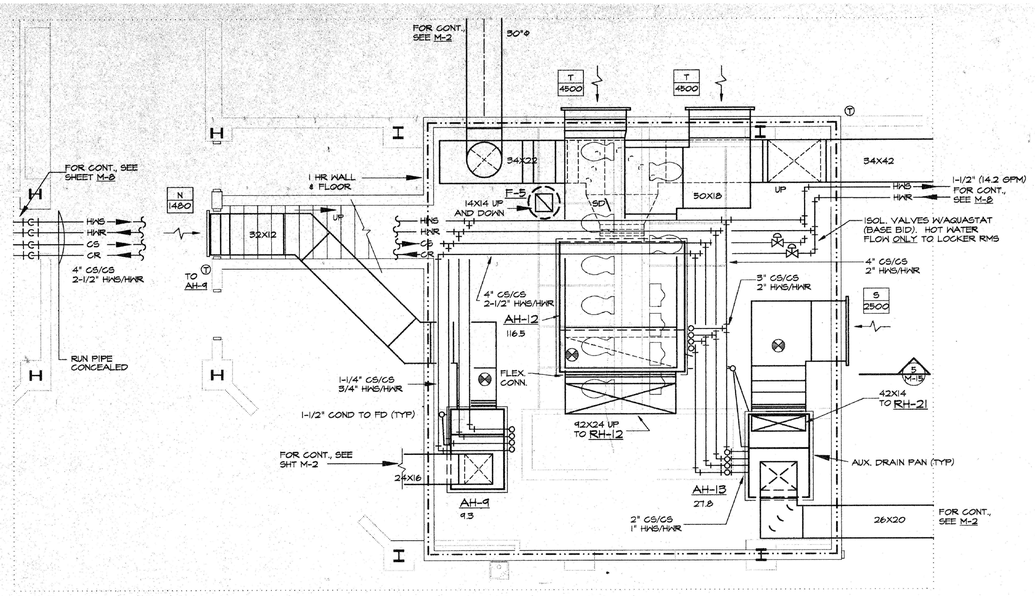
DATE	9/27/2022
JOB NUMBER	2202-01-002
DRAWN	ALG
APPROVED	CTM

MECHANICAL DETAILS

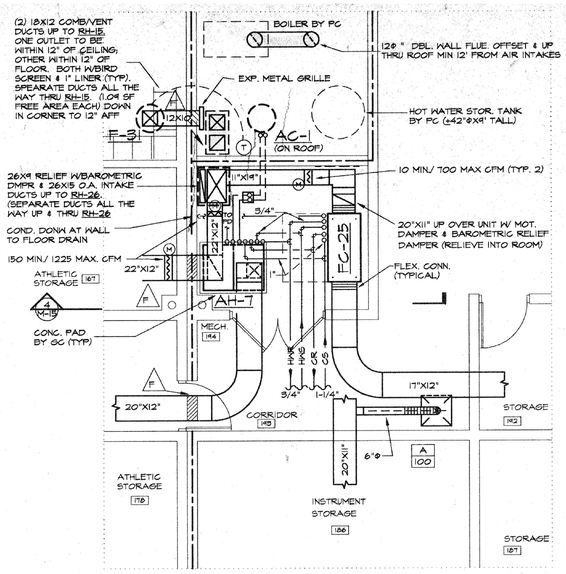
RM-115

SHEET 17 OF 25

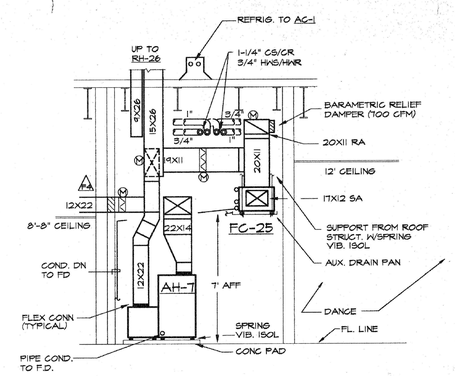
Dwg F:\35024_00\30400HU Date: 05/30/35 Time: 10:11



1 M-15 **ENLARGED MECHANICAL ROOM - AREA "A"**
SCALE 1/4"=1'-0"

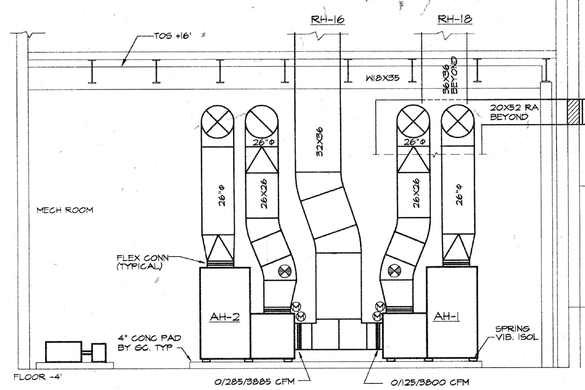


3 M-15 **ENLARGED MECH. ROOM #194 - AREA "B"**
SCALE 1/4"=1'-0"

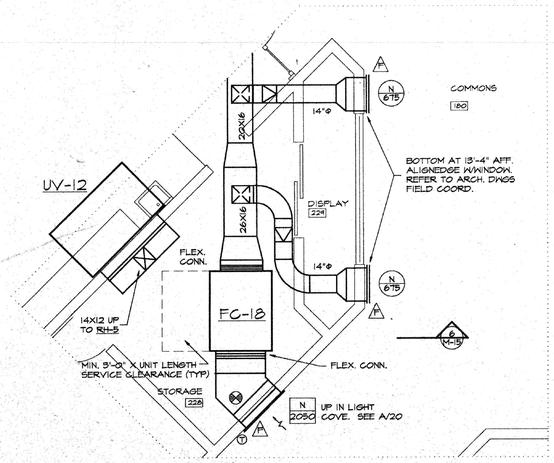


4 M-15 **SECTION**
SCALE : NONE

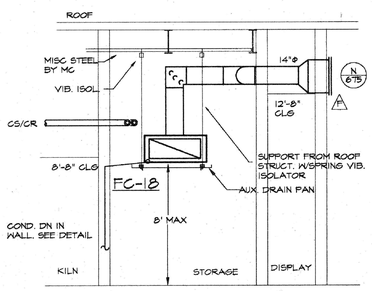
5 M-15 **SECTION**
SCALE : 1/4" = 1'-0"



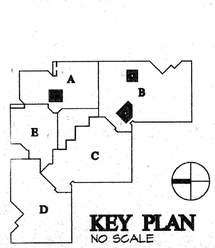
7 M-15 **SECTION**
SCALE : 1/4" = 1'-0"



2 M-15 **ENLARGED MECHANICAL ROOM #228 - AREA "B"**
SCALE 1/4"=1'-0"



6 M-15 **SECTION**
SCALE : NONE



PROFESSIONAL ENGINEERING ASSOCIATES,PA
1416 East Fifth Street
PO Box 31806
Charlotte, NC 28231
704.375.1501
Clark Nexsen/ Gunn Hardaway Architects
Suite 500 228 North Church Street
Charlotte, NC 28202 704 377 8800

1 **MECHANICAL DETAILS**
SCALE: 3/8"=1'-0"
NORTH

TMG CONSULTING ENGINEERS
The Wilkinson Group Consulting Engineers, NC
301 McCullough Drive
6th Technology Center
Suite 110/700
Charlotte, NC 28262
704.549.7610 Phone
704.549.8705 Fax
Website: WWW.TMG-CE.COM

ISSUED FOR CONSTRUCTION

Charlotte-Mecklenberg Schools

NORTHRIDGE MIDDLE SCHOOL
RESOURCE DRAWINGS FROM EXISTING CONDITIONS

Charlotte-Mecklenberg Schools
7601 The Plaza
Charlotte, NC 28215

REVISIONS

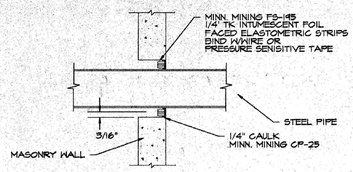
NO.	DESCRIPTION	DATE
	ISSUED FOR CONSTRUCTION	9/27/22

SHEET INFORMATION

DATE	9/27/2022
JOB NUMBER	2202-01-002
DRAWN	ALG
APPROVED	CTM

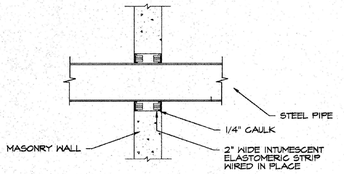
MECHANICAL DETAILS

RM-116
SHEET 18 OF 25



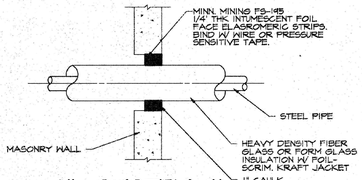
UL SYSTEM 95
2-3 HR.
1-2-3 HR UL PENETRATION UNINSULATED PIPE

SCALE NONE



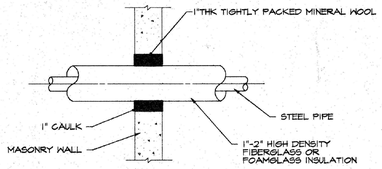
UL SYSTEM 95
4 HR.
4 HR UL PENETRATION UNINSULATED PIPE

SCALE NONE



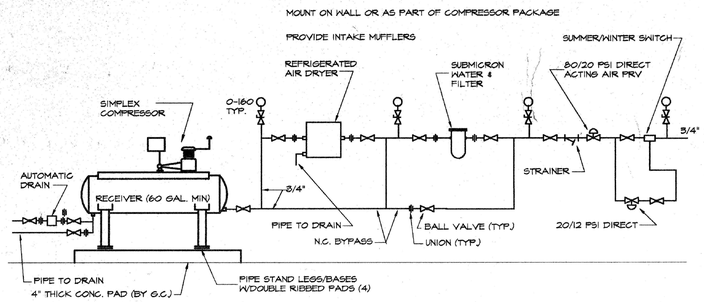
UL SYSTEM 91
2 HR.
1-2 HR UL PENETRATION INSULATED PIPE

SCALE NONE



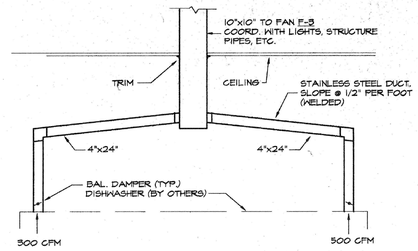
UL SYSTEM 91 D
4 HR UL PENETRATION INSULATED PIPE

SCALE NONE



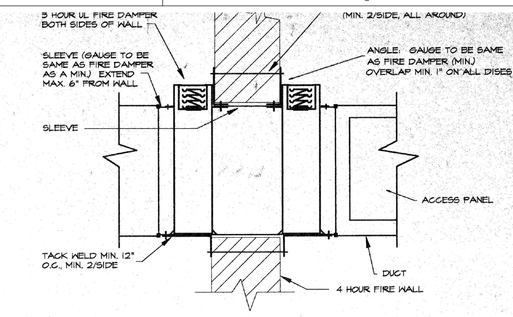
TEMP. CONTROLS AIR COMPRESSOR DETAIL

SCALE NONE



DISHWASHER EXHAUST DETAIL

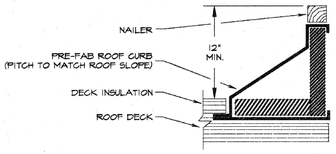
SCALE NONE



NOTE: COMPLETE SYSTEM INSTALLATION PER UL REQUIREMENTS

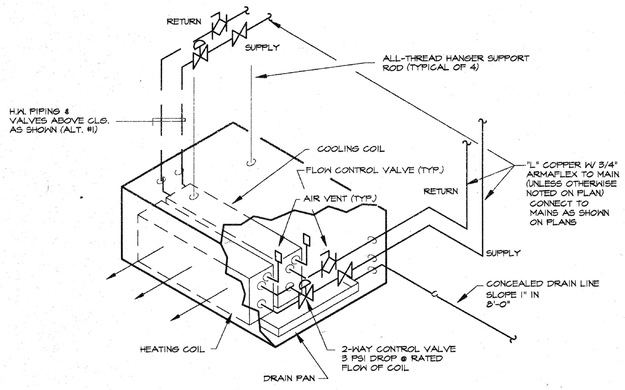
FIRE DAMPER DETAIL - 4 HOUR WALL

SCALE NONE



TYPICAL ROOF CURB DETAIL

SCALE NONE

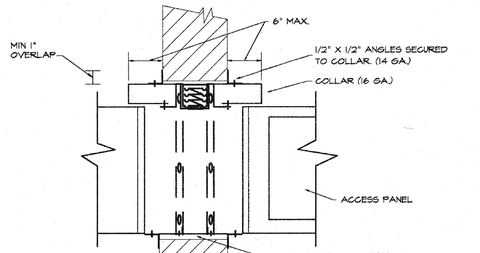


TYPICAL HORIZONTAL FAN COIL/ UNIT VENTILATOR PIPING DETAIL

SCALE NONE

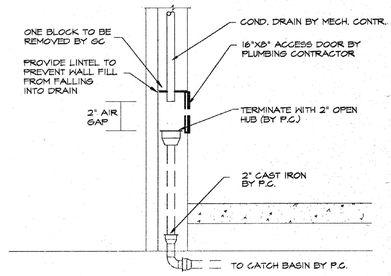
NOTE: 1. TYPICAL OF UNITS LOCATED EXPOSED BELOW DRYWALL CEILINGS. UNITS LOCATED BELOW ACCESSIBLE CEILINGS (LAY-IN ACOUSTICAL TILE) OR MOUNTED RECESSED AT CEILING LEVEL SHALL HAVE ALL DUAL TEMPERATURE PIPING AND UNIT CONNECTIONS ABOVE CEILING.

2. PROVIDE AUXILIARY DRAIN PAN & PIPE WHEN UNITS ARE LOCATED CONCEALED ABOVE CEILING



FIRE DAMPER DETAIL - 2 HOUR WALL

SCALE NONE

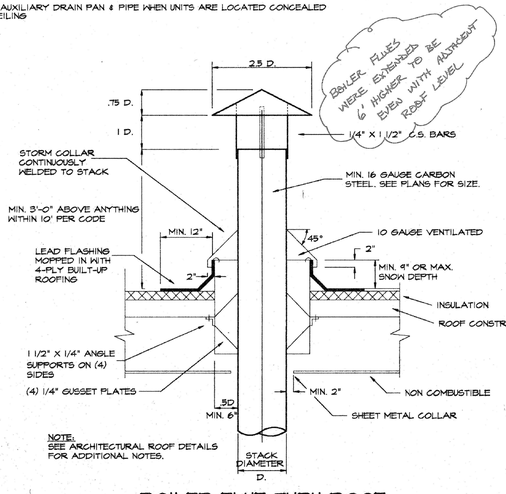


CONDENSATE DRAIN CONNECTION

SCALE NONE

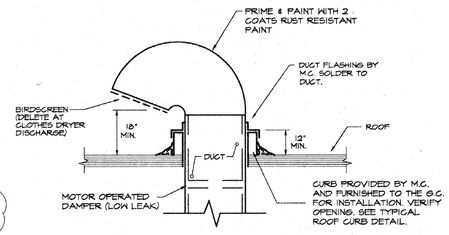
(1) M-19 KITCHEN HOOD SCHEMATIC

SCALE NONE



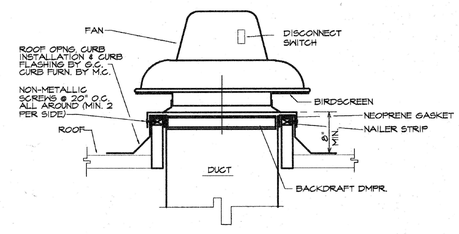
BOILER FLUE THRU ROOF

SCALE NONE



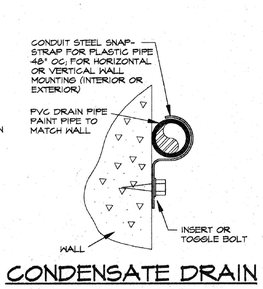
GOOSENECK DETAIL

SCALE NONE



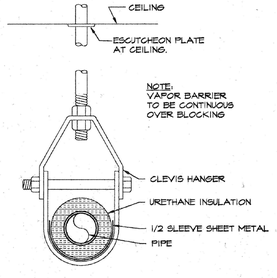
EXHAUST FAN MOUNTING DETAIL

SCALE NONE



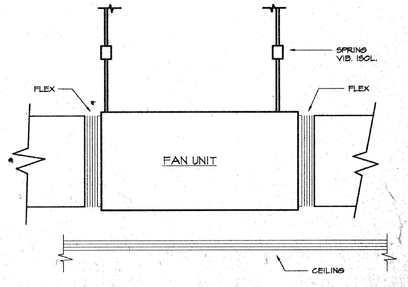
CONDENSATE DRAIN SUPPORT DETAIL

SCALE NONE



PIPE HANGER DETAIL

SCALE NONE



IN-LINE FAN DETAIL

SCALE NONE

MECHANICAL DETAILS

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

NORTH

TMG CONSULTING ENGINEERS
The Wilkinson Group Consulting Engineers NC
dba TMG Consulting Engineers
301 McCullough Drive
Suite 102/103
Charlotte, NC 28262
704.926.1616 Phone
704.926.1626 Fax
Website: www.tmg-cc.com

ISSUED FOR CONSTRUCTION

Charlotte-Mecklenberg Schools

NORTHRIDGE MIDDLE SCHOOL
RESOURCE DRAWINGS FROM EXISTING CONDITIONS

Charlotte-Mecklenberg Schools
7601 The Plaza
Charlotte, NC 28215

REVISIONS		
NO.	DESCRIPTION	DATE
	ISSUED FOR CONSTRUCTION	9/27/22

SHEET INFORMATION

DATE	9/27/2022
JOB NUMBER	2202-01-002
DRAWN	ALG
APPROVED	CTM

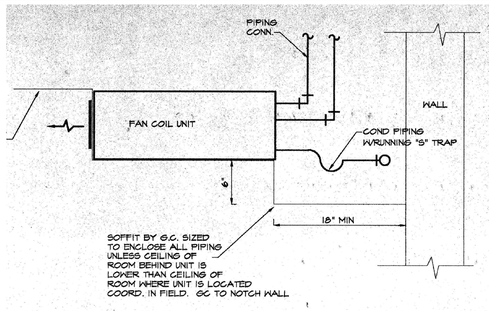
MECHANICAL DETAILS

RM-117

SHEET 19 OF 25

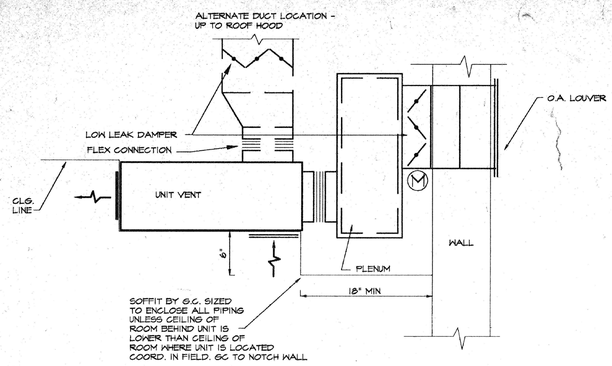
EAST MIDDLE SCHOOL NO. 9761

PROFESSIONAL ENGINEERING ASSOCIATES, P.A.
Clark Nexsen/ Gunn Hardaway Architects
Suite 200 228 North Church Street
Charlotte, NC 28202 704 377 0800



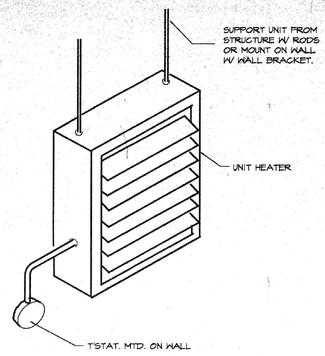
DETAIL - EXPOSED FAN COIL W/O F.A.

SCALE: NONE



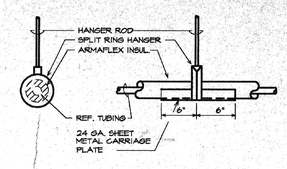
DETAIL - EXPOSED UNIT VENT W/MIN. F.A.

SCALE: NONE



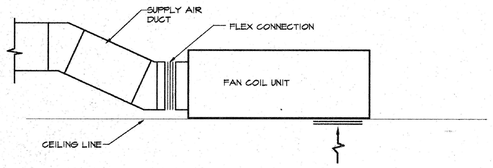
UNIT HEATER MOUNTING DETAIL

SCALE NONE



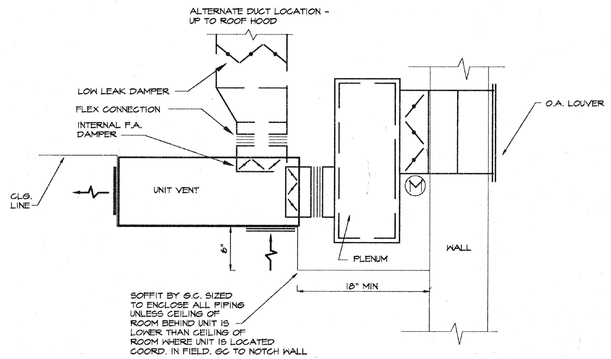
HANGER DETAIL

SCALE NONE



DETAIL - CONCEALED FAN COIL W/O F.A..

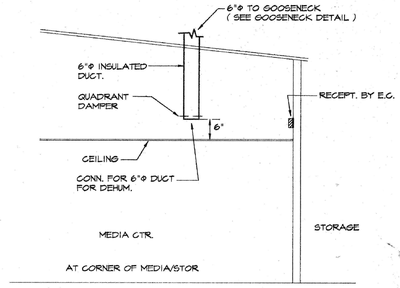
SCALE: NONE



EXPOSED FAN COIL W/ECONOMIZER SIM.

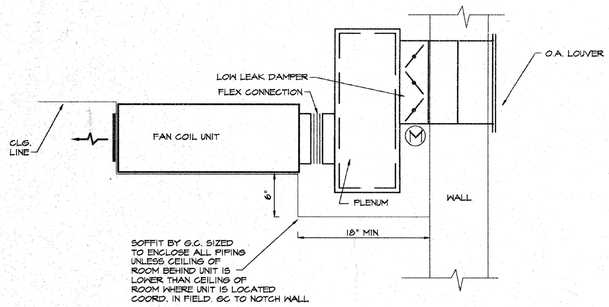
DETAIL - EXPOSED UNIT VENT W/ECONOMIZER.

SCALE NONE



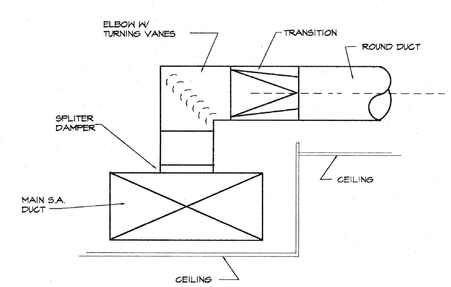
DEHUMIDIFIER DUCT CONNECTION

SCALE NONE



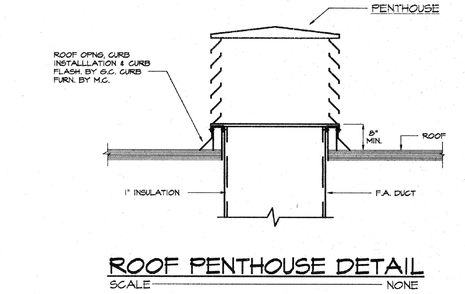
DETAIL - EXPOSED FAN COIL W/MIN. F.A.

SCALE: NONE



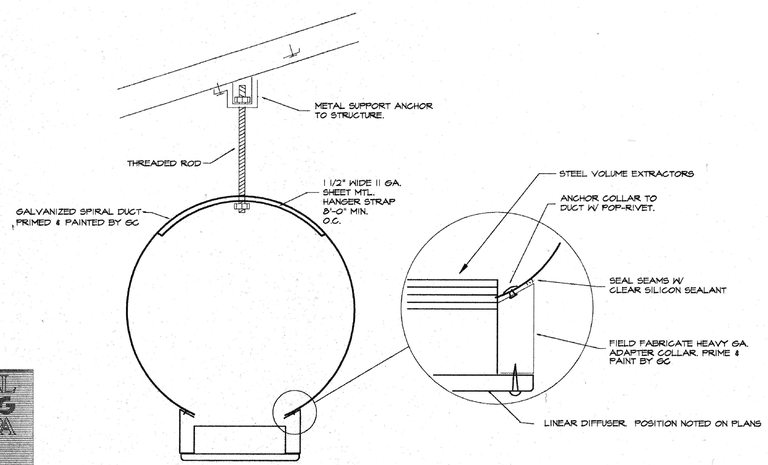
SECTION AT TOP OF DUCT TAKE-OFF

SCALE NONE



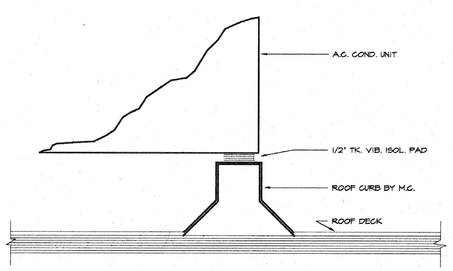
ROOF PENTHOUSE DETAIL

SCALE NONE



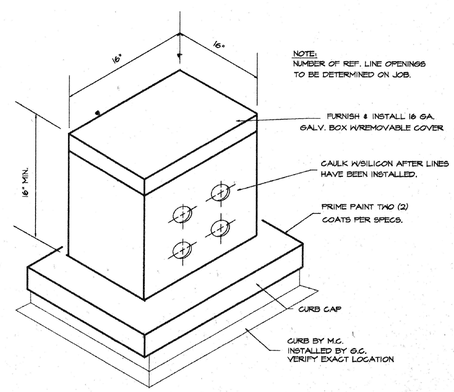
SECTION AT SPIRAL DUCT & DIFFUSER

SCALE NONE



CONDENSING UNIT MOUNTING DETAIL

SCALE NONE



REFRIGERANT BOX DETAIL

SCALE NONE

1 MECHANICAL DETAILS

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

NORTH

EAST MIDDLE SCHOOL NO. 9761

PROFESSIONAL ENGINEERING ASSOCIATES, PA
1435 East Fifth Street
PO Box 31806
Charlotte, NC 28231
704.375.3002

Clark Nexsen/ Gunn Hardaway Architects
Suite 200 229 North Church Street
Charlotte, NC 28202 704 377 8800

TMG CONSULTING ENGINEERS
The Wilkinson Group Consulting Engineers NC
dba TMG Consulting Engineers
301 McCullough Drive
Suite 102/103
Charlotte, NC 28262
704.926.1600 Phone
704.926.1630 Fax
Website: www.tmgcllc.com

ISSUED FOR CONSTRUCTION

Charlotte-Mecklenburg Schools

NORTHRIDGE MIDDLE SCHOOL
RESOURCE DRAWINGS FROM EXISTING CONDITIONS

Charlotte-Mecklenburg Schools
7601 The Plaza
Charlotte, NC 28215

REVISIONS

NO.	DESCRIPTION	DATE
	ISSUED FOR CONSTRUCTION	9/27/22

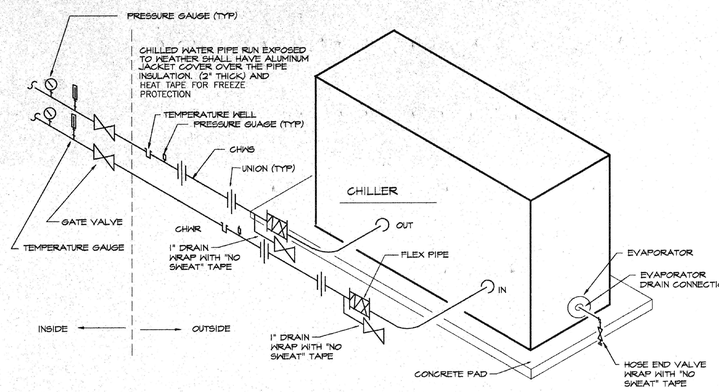
SHEET INFORMATION

DATE	9/27/2022
JOB NUMBER	2202-01-002
DRAWN	ALG
APPROVED	CTM

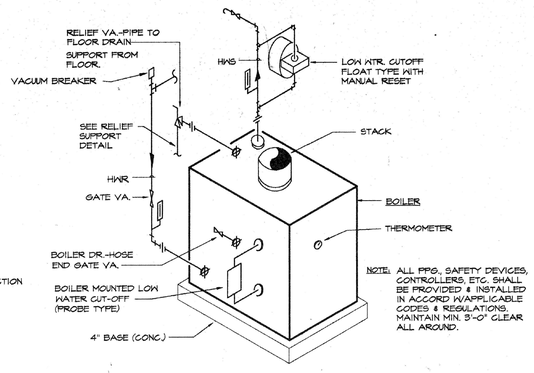
MECHANICAL DETAILS

RM-118

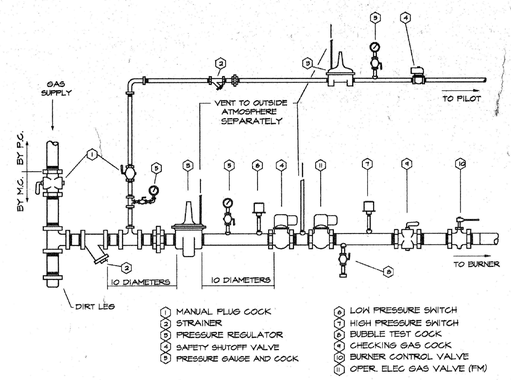
SHEET 20 OF 25



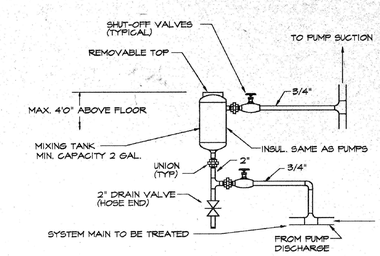
CHILLER PIPING DETAIL
SCALE — NONE



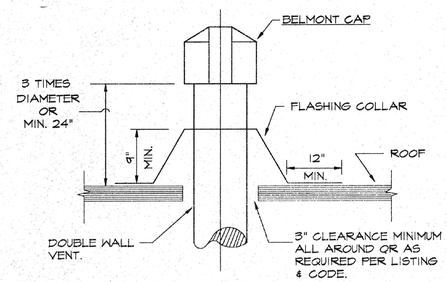
HOT WATER BOILER PIPING
SCALE — NONE



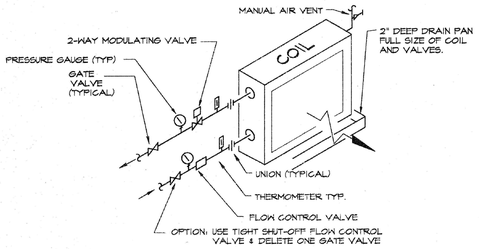
F.M. GAS TRAIN
SCALE — NONE



CHEMICAL FEEDER
SCALE — NONE

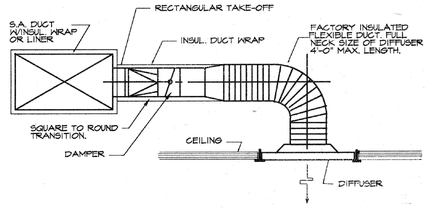


TYPICAL GAS VENT DETAIL
SCALE — NONE

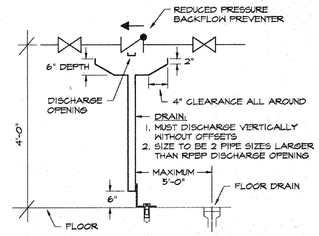


HOT OR CHILLED WATER COIL PIPING DETAIL
SCALE — NONE

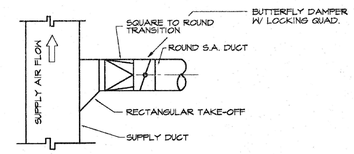
(2-WAY VALVE)



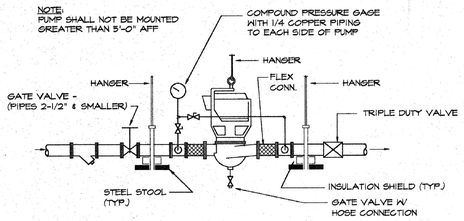
SECTION AT TYP. BRANCH DUCT TAKE-OFF
SCALE — NONE



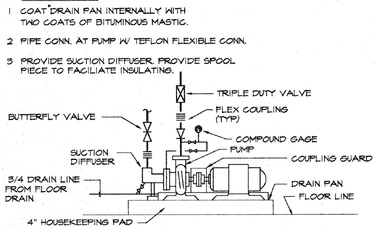
RPBP DRAIN DETAIL
SCALE — NONE



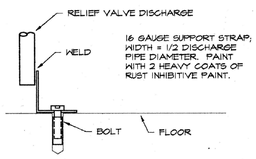
RECTANGULAR TAKE-OFF DETAIL
SCALE — NONE



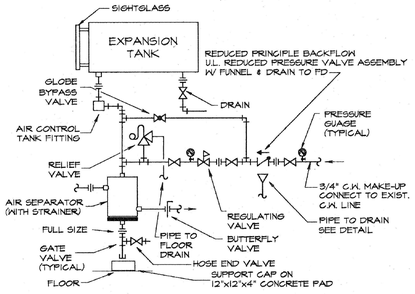
INLINE PUMP DETAIL
SCALE — NONE



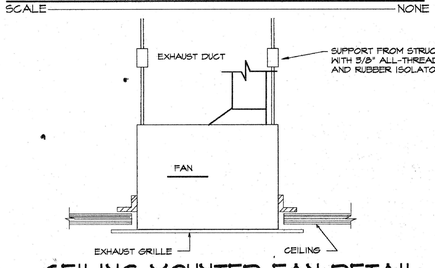
BASE MOUNTED PUMP
SCALE — NONE



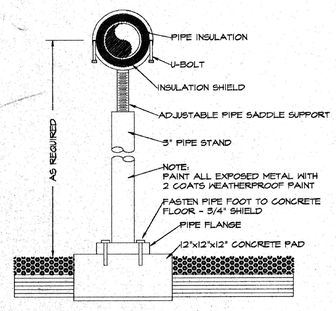
RELIEF DISCHARGE DETAIL
SCALE — NONE



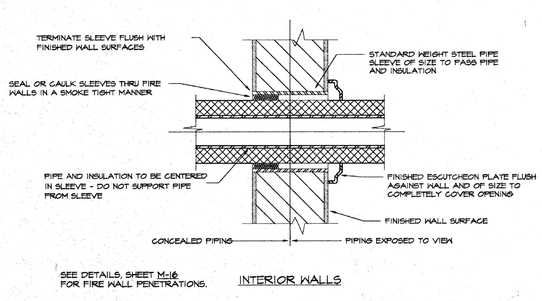
AIR CONTROL PIPING DETAIL
SCALE — NONE



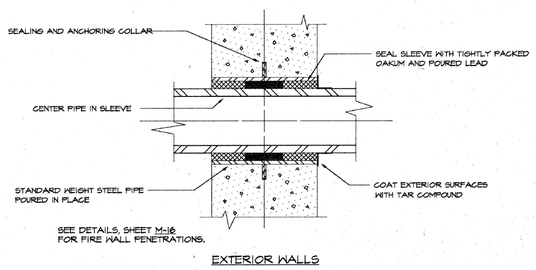
CEILING MOUNTED FAN DETAIL
SCALE — NONE



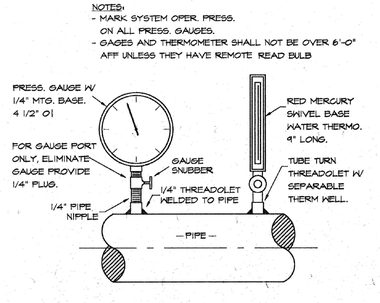
PIPE STAND SUPPORT
SCALE — NONE



PIPE SLEEVES THRU WALL
SCALE — NONE



PIPE SLEEVES THRU WALL
SCALE — NONE



GAUGE & THERMOMETER DETAIL
SCALE — NONE

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

NORTH

TMG CONSULTING ENGINEERS
The Wilkinson Group Consulting Engineers NC
dba TMG Consulting Engineers
201 McCullough Drive
Suite 110/210
Charlotte, NC 28262
704.525.7672 Phone
704.525.8725 Fax
Website: WWW.TMG-CE.COM

ISSUED FOR CONSTRUCTION

Charlotte-Mecklenberg Schools

NORTHRIDGE MIDDLE SCHOOL
RESOURCE DRAWINGS FROM EXISTING CONDITIONS

Charlotte-Mecklenberg Schools
7601 The Plaza
Charlotte, NC 28215

REVISIONS		
NO.	DESCRIPTION	DATE
	ISSUED FOR CONSTRUCTION	9/27/22

SHEET INFORMATION

DATE	9/27/2022
JOB NUMBER	2202-01-002
DRAWN	ALG
APPROVED	CTM

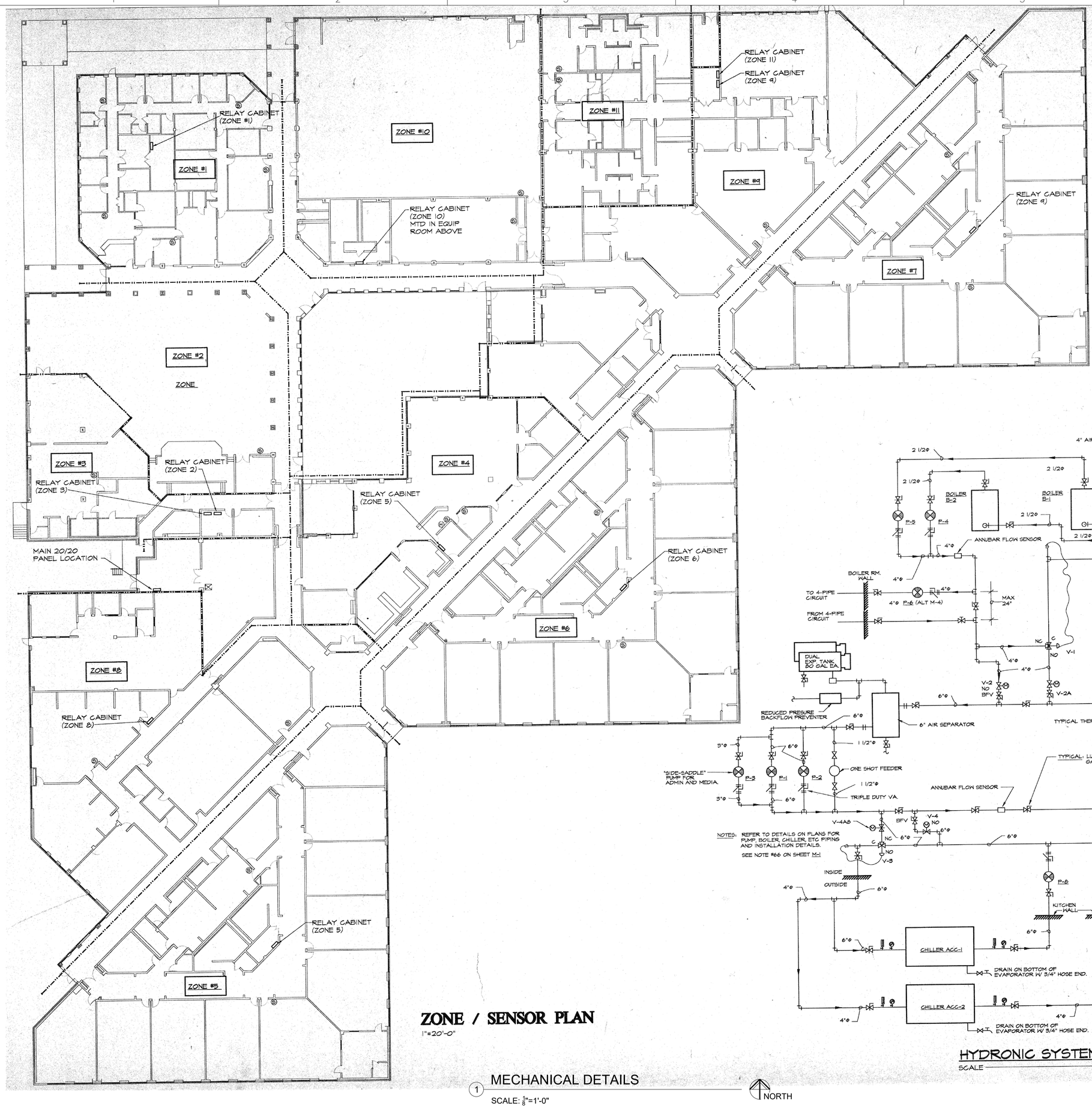
MECHANICAL DETAILS

RM-119

SHEET 21 OF 25

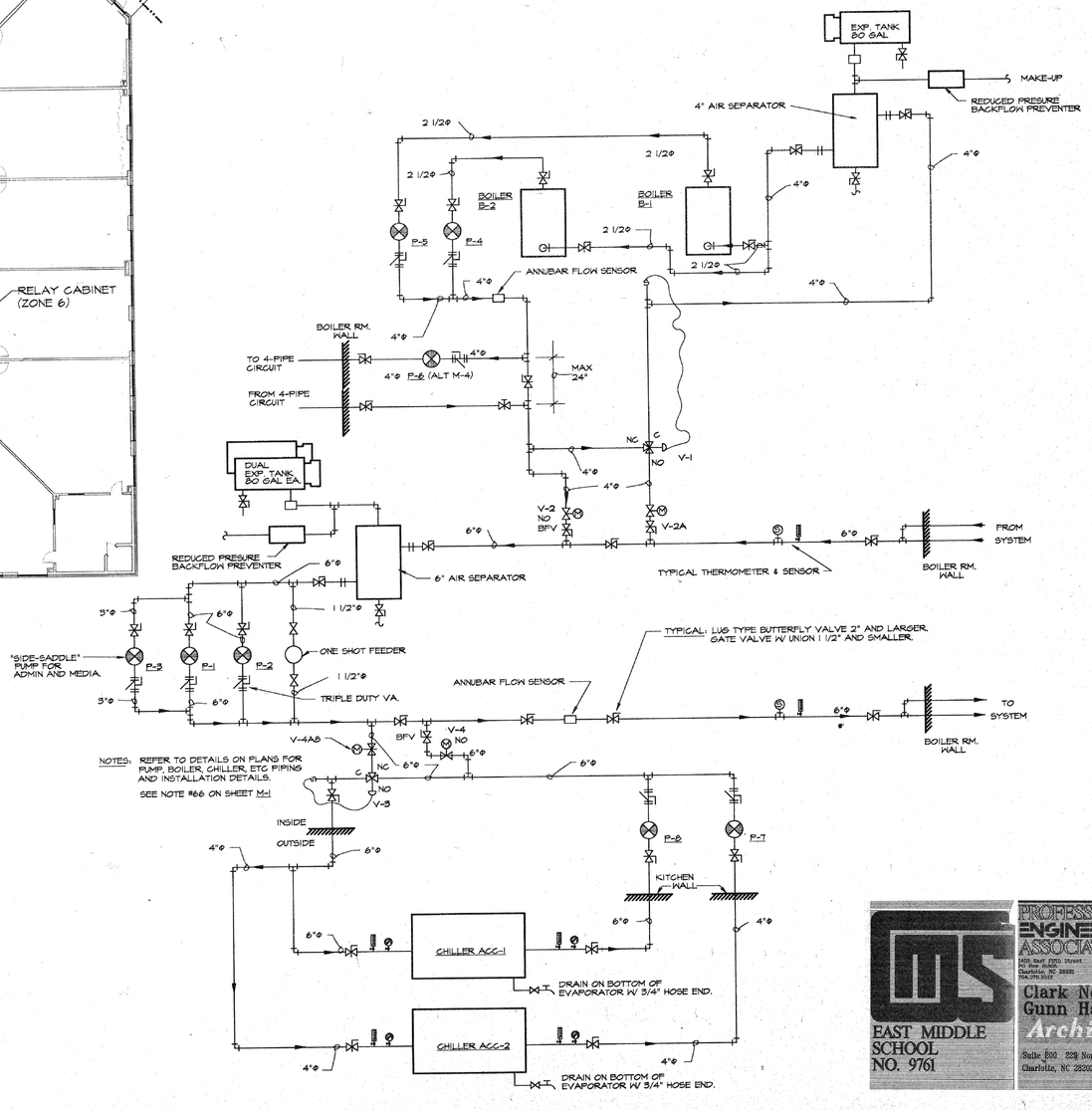
EAST MIDDLE SCHOOL NO. 9761

PROFESSIONAL ENGINEERING ASSOCIATES, PA
1420 East Fifth Street
PO Box 31565
Charlotte, NC 28231
704.375.5100
Clark Nexsen/ Gunn Hardaway Architects
Suite 800 228 North Church Street
Charlotte, NC 28202 704 377 8900



ZONE / SENSOR PLAN

1"=20'-0"



HYDRONIC SYSTEM PIPING SCHEMATIC

SCALE NONE

1 MECHANICAL DETAILS

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

NORTH

TMG CONSULTING ENGINEERS
The Wilborne Group Consulting Engineers NC
dba TMG Consulting Engineers
201 Tradecenter Drive
Suite 150/700
Charlotte, NC 28224
704.525.7670 Phone
704.525.7672 Fax
Website: www.tmgcc-cl.com

ISSUED FOR CONSTRUCTION

Charlotte-Mecklenberg Schools

NORTHRIDGE MIDDLE SCHOOL
RESOURCE DRAWINGS FROM EXISTING CONDITIONS

Charlotte-Mecklenberg Schools
7601 The Plaza
Charlotte, NC 28215

REVISIONS

NO	DESCRIPTION	DATE
1	ISSUED FOR CONSTRUCTION	9/27/22

SHEET INFORMATION

DATE	9/27/2022
JOB NUMBER	2202-01-002
DRAWN	ALG
APPROVED	CTM

MECHANICAL DETAILS

RM-120

SHEET 22 OF 25

EAST MIDDLE SCHOOL NO. 9761

PROFESSIONAL ENGINEERING ASSOCIATES, PA
1429 West Fifth Street
Suite 100
Charlotte, NC 28205
704.375.9228
Clark Nexsen/ Gunn Hardaway Architects
Suite 600 224 North Church Street
Charlotte, NC 28202 704 377 8800

FAN SCHEDULE * PROVIDE UNDER ALT. M-6

SYM	LOCATION	SERVICE	CFM	SP	HP	VOLTS	DRIVE	DMPR.	SONE	MFG. & MODEL NO.	REMARKS
F-1	CEILING	TOILET EXHAUST	30-101	0.15"	76 WATTS	120-1Ø	DIRECT	YES	2.4	GREENHECK SP-105	(1) (2) (3) (4) (7) (10) (14) (17) (18)
F-2	CEILING	TOILET EXHAUST	102-170	0.15"	76 WATTS	120-1Ø	DIRECT	YES	4.2	GREENHECK SP-117	(1) (2) (3) (4) (7) (14) (17) (18)
F-3	ROOF	DISHWASHER EXHAUST	800	3/8"	1/4	120-1Ø	BELT	YES	6.1	GREENHECK CUBE-10-4 R-3	(1) (2) (3) (4)
F-4	ROOF	LIFE SKILLS EXH BIO-TECH EXH	300	1/4"	1/4	120-1Ø	BELT	YES	4.0	GREENHECK GB-80-4-R-3	(1) (2) (3) (4) (11) (18)
F-5	ROOF	TOILET EXHAUST	1100	1/4"	1/4	120-1Ø	BELT	YES	9.1	GREENHECK GB-100-4 R-3	(1) (2) (3) (4) (7)
F-6	CEILING	TOILET EXHAUST	220	.15"	76 WATTS	120-1Ø	DIRECT	YES	2.9	GREENHECK SP-125	(2) (3) (4) (7) (17) (18)
F-7	ROOF	TOILET EXHAUST	1200	1/4"	1/4	120-1Ø	BELT	YES	8.3	GREENHECK GB-120-4 R-3	(1) (2) (3) (4) (7) (14) (15)
F-8	CEILING	CUSTODIAL EXHAUST	310	.15"	140 WATTS	120-1Ø	DIRECT	YES	5.8	GREENHECK SP-127	(1) (2) (3) (4) (11) (18)
F-9	CEILING	CLASSROOM O.A.	1600	1/2"	1/3	120-1Ø	BELT	YES	----	GREENHECK BCF-208	(4) (5) (9) (21) (22)
F-10	CEILING	MAIN ELEC. RM. EXHAUST	490	0.15"	224 WATTS	120-1Ø	DIRECT	YES	5.6	GREENHECK SP-152	(2) (3) (4) (6) (17) (18)
F-11	ROOF	SCIENCE EXHAUST	2300-3000	1/4"	1-1/2	208-3Ø	BELT	YES	21	GREENHECK GB-180-15-R-7	(1) (2) (3) (4) (11) (13) (16) 2-SPEED SW. ON WALL
F-12 ØD	ROOF	KIT HOOD EXHAUST	4200	1.0"	1	208-3Ø	BELT	NO	-	AEROLATOR ALF-22-15	(1) (4) (18)
F-13 ØD	ROOF	KIT HOOD MAKE-UP	2940	0.75"	3/4	208-3Ø	BELT	YES	-		(1) (2) (3) (4) (12) (18)
* F-14 ØD&S	ROOF	GYM EXHAUST	7500-15000	1/8"	1	208-3Ø	BELT	YES	14 MAX.	ACME EC48J	(1) (2) (3) (4) (5) (16) (19) INTERLOCK W/ F-16
F-15	ROOF	MECH. RM. VENTILATION	2625	1/4"	1/3	120-1Ø	BELT	YES	7.9	GREENHECK GB-180-5-R-2	(1) (2) (3) (4) (6) (8)
* F-16 ØD&S	ROOF	GYM SUPPLY	7500-15000	1/8"	1	208-3Ø	BELT	YES	20 MAX.	ACME EC48J5	(1) (2) (3) (4) (5) (16) (18) (19) INTERLOCK W/ F-14, PROVIDE FILTERS
F-17	ROOF	LOCKER EXHAUST	1460	1/4"	1/4	120-1Ø	BELT	YES	9.0	GREENHECK GB-160-4 R-3	(1) (2) (3) (4) (5) (7) (8) (16)
F-18	ROOF	LOCKER EXHAUST	600	1/4"	1/4	120-1Ø	BELT	YES	6.2	GREENHECK GB-140-4 R-2	(1) (2) (3) (4) (5) (7) (8) (16)
F-19	ROOF	LOCKER EXHAUST	600	1/4"	1/4	120-1Ø	BELT	YES	7.3	GREENHECK GB-130-4 R-3	(1) (2) (3) (4) (5) (7) (8) (16)
F-20	ROOF	LOCKER EXHAUST	1460	1/4"	1/4	120-1Ø	BELT	YES	6.5	GREENHECK GB-160-4R-3	(1) (2) (3) (4) (5) (7) (8) (16)
F-21	IN-LINE	ATHL. STOR. EXHAUST	300	1/4"	1/30	120-1Ø	DIRECT	YES	5.3	GREENHECK SQ-85-B	(2) (4) (15) (14) (17) (18)
F-22	ROOF	ART GLASS EXHAUST	550 /1100	1/4"	1/4	120-1Ø	BELT	YES	4.2-7.5	GREENHECK 120-4-R-3	(1) (2) (3) (4) (11) (15) (18)
F-23	ROOF	LOCKER VENTILATION	1275	1/8"	1/4	120-1Ø	BELT	YES	7.5	GREENHECK GB-130-4-R-3	(1) (2) (3) (4) (5) (6) (14) (18)
F-24	ROOF	LOCKER VENTILATION	1200	1/8"	1/4	120-1Ø	BELT	YES	7.5	GREENHECK GB-130-4-R-3	(1) (2) (3) (4) (5) (6) (14) (18)
F-25	ROOF	LOCKER VENTILATION	1200	1/8"	1/4	120-1Ø	BELT	YES	7.5	GREENHECK GB-130-4-R-3	(1) (2) (3) (4) (5) (6) (19) (18)
F-26	ROOF	LOCKER VENTILATION	1275	1/8"	1/4	120-1Ø	BELT	YES	7.5	GREENHECK GB-130-4-R-3	(1) (2) (3) (4) (5) (6) (14) (18)
F-27	CEILING	SCIENCE PREP. EXH.	75	1/8"	97 WATTS	120-1Ø	DIRECT	YES	2.4	GREENHECK SP-108	(2) (3) (4) (10) (15) (17)
F-28	CEILING	CONCESSION/FACULTY LOUNGE TEACHER HORNROOM EXH.	250	1/8"	76 WATTS	120-1Ø	DIRECT	YES	3.0	GREENHECK SP-125	(1) (2) (3) (4) (11) (14) (18)
F-29	CEILING	ELEC. ROOM EXHAUST	250	1/8"	76 WATTS	120-1Ø	DIRECT	YES	3.0	GREENHECK SP-125	(1) (2) (3) (4) (6) (14) (17) (18)
F-30	ROOF	STOR/DARK RM EXHAUST	220	1/4"	76 WATTS	120-1Ø	DIRECT	YES	2.9	GREENHECK SP-125	(1) (2) (3) (4) (11) (14) (17) (18)
F-31	ROOF	MECHANICAL ROOM VENTILATION	500	1/8"	1/20 HP	120-1Ø	BELT	YES	---	GREENHECK AIS-12-E	(1) (2) (3) (4) (6) (16) (18)
* F-32	ROOF	AUX. GYM EXHAUST	5000-10000	1/8"	3/4	120-1Ø	BELT	YES	18 MAX.	ACME EC36H	(1) (2) (3) (4) (11) (14) (17) (18) INTERLOCK W/ F-33
* F-33	ROOF	AUX. GYM SUPPLY	5000-10000	1/8"	3/4	120-1Ø	BELT	YES	18 MAX.	ACME EC 42H-5	(1) (2) (3) (4) (15) (18) (19) INTERLOCK W/ F-32, PROVIDE FILTERS
F-34	ROOF	MACHINE SHOP	300	1/4"	1/4	120-1Ø	BELT	YES	4.0	GREENHECK GB-80-4-R-3	(1) (2) (3) (4) (15) (18)

(1) ROOF CURB (SEE PLANS) (5) CONTROL BY EC 128 PROGRAM TIME CLOCK (9) MOTORIZED DAMPERS (13) TO RUN 10 MIN/HOUR TIME CLOCK BY M.C. (17) SOLID STATE SPEED CONTROLLER MOUNTED ON FAN
(2) BDD (6) CONTROL BY T'STAT SET @ 85°F (10) WALL DISCHARGE (SEE PLANS) (14) ROOF CURB CAP DISCHARGE (SEE PLANS) (18) ROOF MOUNTING PER ROOF MFG REQMT'S. (COORD. W/ROOFING MAT'L/SLOPE)
(3) SCREEN (7) CONTROL WITH LIGHTS (11) CONTROL BY WALL SWITCH WITH 1 HOUR TIMER BY MECH. CONT. (15) 2-SPEED (19) PUSH BUTTON ON/OFF BY M.C.
(4) DISCONNECT SWITCH (8) INTERLOCK W/MOTORIZED DAMPERS (12) SUPPORT RAIL (16) EXPANDED METAL GRILLE (20) EQUAL: PENN, CARNES (21) INSULATED CABINET (22) SPRING ISOLATORS

PUMP SCHEDULE

SYM	SERVICE	GPM	TOTAL HEAD	H.P.	RPM	EFF.	TYPE	VOLT/ PHASE	MFG & MODEL NO.	REMARKS	
P-1	DT	480	150	40	1750	75%	BASE MTD.	480V/3Ø	B&G SERIES VSC 5X5X12B	PARALLEL PUMPING	BASE BID
P-2	DT	602	150	40	1750	75%	BASE MTD	480V/3Ø	B&G SERIES VSC 5X5X12B	PARALLEL PUMPING	BASE BID
P-3	DT	55	60	5	1750	64%	IN-LINE	480V/3Ø	B&G SERIES 80 2X2X9 1/2B		BASE BID
P-4	HW	130	80	7 1/2	1750	58%	BASE MTD	480V/3Ø	B&G SERIES 1510 2BC		BASE BID
P-5	HW	130	80	7 1/2	1750	58%	BASE MTD	480V/3Ø	B&G SERIES 1510 2BC		BASE BID
P-6	HW	130	95	7 1/2	1750	74%	BASE MTD	480V/3Ø	B&G SERIES 1510 2BC		ALT M-4
P-7	CHW	244	75	10	1750	66%	BASE MTD	480V/3Ø	B&G SERIES 1510 2 1/2BB		BASE BID
P-8	CHW	604	75	20	1750	84%	BASE MTD	480V/3Ø	B&G SERIES 1510 4BC		BASE BID

MECHANICAL SEALS, NON-OVERLOADING, FLEX COUPLED

ELECTRIC HEATERS

SYM	KW	VOLTS	MFG. & MODEL NO.	REMARKS
EUH-1	10	480V/3Ø	MARKEL 5100	DUST SHIELD, EMS RELAYS
EXH-1	15	120V/1Ø	MARKEL E785TN	W WALL BOX, TAMPER-PROOF CONSTRUCTION, PROVIDE W/EMS RELAYS
* DH-1 DH-2	35.0	480V/3Ø	MARKEL HF	INDUCTO SERIES, FLANGD CONN. FOR INSUL. DUCT. FUSED DISC., AIR FLOW SWITCH, PE SWITCH, MAGNETIC CONTACT, 4 STAGE. PROVIDE W/EMS RELAYS, SCR CONTROLLER

* BASE BID ONLY - NOT IN ALT. M-4

HYDRONIC UNIT HEATER SCHEDULE * ALT M-6

SYM.	CFM	HP	VOLTAGE	COIL - EAT 160° GPM	WPD	MBH	MFG. & MODEL NO.	REMARKS
UH-1	380	1/60	120V-1Ø	2.2	0.04'	8840	McQUAY UHH - 016B	EQUAL: TRANE,
*UH-2	4000	1/3	120V-1Ø	14.7	2.20'	92700	McQUAY UDH - 200VC	EQUAL: TRANE, 1140 RPM, 70°F EAT
*UH-3	2100	1/4	120V-1Ø	8.0	2.00'	50400	McQUAY UDH - 110VC	EQUAL: TRANE, 1140 RPM, 70°F EAT

GRILLE & DIFFUSER SCHEDULE

SYM	NECK SIZE	PANEL SIZE	BAKED ENAMEL FINISH	USE	DMPR	MFG. & MODEL NO.
A	6"ø	24X24	WHITE	CLG. S.A.	YES	METALAIRE 7600
B	8"ø	24X24	WHITE	CLG. S.A.	YES	METALAIRE 7600
C	10"ø	24X24	WHITE	CLG. S.A.	YES	METALAIRE 7600
D	12"ø	24X24	WHITE	CLG. S.A.	YES	METALAIRE 7600
E	14"ø	24X24	WHITE	CLG. S.A.	YES	METALAIRE 7600
F	16"ø	24X24	WHITE	CLG. S.A.	YES	METALAIRE 7600
G	30X36	--	WHITE	CLG. MAKE-UP AIR INTAKE	--	METALAIRE RH-HD
H	18X36	--	WHITE	CLG. MAKE-UP AIR INTAKE	--	METALAIRE RH-HD
I	10X6	--	WHITE	SIDEWALL S.A.	YES	METALAIRE H4004
J	8"ø 8X8	--	WHITE	CLG. S.A.	YES	METALAIRE 7000 (ALUM)
K	12"ø	--	WHITE	CLG. S.A.	YES	METALAIRE 7000
L	6"ø	--	WHITE	CLG. S.A.	YES	METALAIRE 7000 (ALUM)
M	16X8	--	WHITE	SIDEWALL S.A.	YES	METALAIRE H4004
N	20X8	--	WHITE	SIDEWALL S.A.	YES	METALAIRE H4004 SEE PLANS FOR EXTRACTORS
O	10X10 10"ø	--	WHITE	CLG. S.A.	YES	METALAIRE 7000
P	14"ø 14X14	---	WHITE	CLG. SA	YES	METALAIRE 7000
Q	10X8	---	WHITE	SIDEWALL SA	YES	METALAIRE H4004
R	20X8	---	WHITE	SIDEWALL SA	YES	METALAIRE H4004
S	16X12	---	WHITE	SA	YES	METALAIRE L55D
T	42X14	---	WHITE	SA	YES	METALAIRE L54D
U	12"ø 12X12	24X24	WHITE	CLG. SA	YES	METALAIRE 5000 4 WAY W/ ADJ. VANE FOR VERT. PATTERN
V	12"ø 12X12	24X24	WHITE	CLG. SA	YES	METALAIRE 5000 3 WAY W/ ADJ. VANE FOR VERT. PATTERN
W	32"X18"	---	WHITE	CLG. SA	YES	METALAIRE L54D
X	16"ø 16X16	---	WHITE	CLG. SA	YES	METALAIRE 7000
Y	30X10	---	WHITE	SA	YES	METALAIRE V4004D W/EXTRACTORS
Z	30X10	---	WHITE	SA	YES	METALAIRE V4004D W/EXTRACTORS
AA	34X10	---	WHITE	SA	YES	METALAIRE V4004D W/EXTRACTORS
A	6"ø	24X24	WHITE	CLG. RA	YES	METALAIRE 7600R
B	10"ø	24X24	WHITE	CLG. RA	YES	METALAIRE 7600R
C	12"ø	24X24	WHITE	CLG. RA	YES	METALAIRE 7600R
DS	18X12	---	ANOD.	DOOR GRILLE	---	METALAIRE 300 DS-DF
E	14"ø	24X24	WHITE	CLG. RA	YES	METALAIRE 7600R
F	16"ø	24X24	WHITE	CLG. RA	YES	METALAIRE 7600R
G	18X36	---	WHITE	SIDEWALL RA	---	METALAIRE RH-HD (ALUM)
H	30X36	---	WHITE	SIDEWALL RA	---	METALAIRE RH-HD
I	22X46	24X48	WHITE	CLG. RA / RELIEF	RA= YES/ RELIEF= NO	METALAIRE 7000
J	22X22	24X24	WHITE	CLG. RA	YES	METALAIRE 7000
K	12X12	---	WHITE	CLG. RA	YES	METALAIRE 7000
L	36X14	---	WHITE	RA	YES	METALAIRE RH
M	18X24	---	WHITE	CLG/SDWALL RA	YES	METALAIRE RH
N	30X24	---	WHITE	CLG/SDWALL RA	YES	METALAIRE RH
O	48X18	---	WHITE	SIDEWALL RA	YES 1 HR FD	METALAIRE H4002R
P	8X6	---	WHITE	RA	YES	METALAIRE RH
Q	34X22	48X24	WHITE	RA	YES	METALAIRE 7000
R	---	24X24	WHITE	RA	YES	METALAIRE 7000 PR-TB
S	48X24	---	WHITE	RA	NO	METALAIRE HD RH
T	48X48	---	WHITE	RA	NO	METALAIRE HD RH
A	18X12	-	WHITE ALUM.	CLG. EXH.	YES	METALAIRE RH
B	6X6	-	WHITE	CLG/SDWALL EXH.	YES	METALAIRE RH
C	14X14	-	WHITE	CLG. EXH.	YES	METALAIRE RH (ALUM)
D	22X22	-	WHITE	CLG. EXH.	YES	METALAIRE RH
E	8X8	24X24	WHITE	CLG. EXH.	YES	METALAIRE CC-15-TB
F	20X20	24X24	WHITE	CLG. EXH.	YES	METALAIRE CC-15-TB
G	10X10	24X24	WHITE	CLG. EXH.	YES	METALAIRE CC-15-TB
H	22X46	24X48	WHITE	CLG. EXH.	NO	METALAIRE 7000

EQUAL: CARNES, TITUS

KITCHEN EXHAUST HOOD SCHEDULE

UNIT NO.	HOOD DATA SIZE	TYPE	FINISH	LIGHT	EXHAUST FAN CFM	FAN NO	REMARKS	SUPPLY FAN CFM	FAN NO	REMARKS	REMARKS
KEH-1	14'X4'-6"	MAKE-UP	#3 POLISH S.S.	RECESSED FLUOR.	4200	F-12A	INTERLOCK W/ F-13A	2940	F-13A	INTERLOCK W/ F-12A	AEROLATOR ACI PLUS FIRE CONTROL CABINET
KEH-2	14'X4'-6"	MAKE-UP	#3 POLISH S.S.	RECESSED FLUOR.	4200	F-12B	INTERLOCK W/ F-13B	2940	F-13B	INTERLOCK W/ F-12B	AEROLATOR ACI
											EQUAL: GREASEMASTER, CAPTIVE AIRE

HP-2 CONTROL PANEL
S.S. BAFFLE GREASE FILTERS
PYROCHEM WET CHEMICAL FIRE SUPPRESSION SYSTEM
U.L. LISTED

BOILER SCHEDULE

SYM	GROSS INPUT	*NET IBR OUTPUT	ENT. H_2O TEMP.	LEAVING H_2O TEMP.	GPM	HP	PIPE TAPPING	CONTROL TYPE	MANUFACTURER & MODEL NO.	REMARKS
B-1	3103 MBH	2132 MBH	120°F	160°F	245	73.2	2 @ 5" 1 @ 6"	MODULATING 120V-1Ø	WEIL-McLAIN No. 88 MODEL BG WF 1088 F NATURAL GAS. SEE SPECS FOR CONTROLS	BASE BID
B-2	3103 MBH	2132 MBH	120°F	160°F	245	73.2	2 @ 5" 1 @ 6"	MODULATING 120V-1Ø	WEIL-McLAIN No. 88 MODEL BG WF 1088 F NATURAL GAS. SEE SPECS FOR CONTROLS	BASE BID

PROVIDE PRESSURE REGULATOR FOR 5 PSI GAS
NET IBR INCLUDES ALLOWANCE FOR PICK-UP & PIPE LOSSES
1-1/2 HP POWER FLAME BURNER, 480V-3Ø
PROVIDE WITH FIRE EYE CONTROL AND AUTOMATED LOGIC INTERFACE.

CHILLER SCHEDULE

SYM	NOM. TONS	CAPACITY MBH	GPM	EWT	LWT	ΔP	REFRIG	MCA	MOCP FUSE	VOLT/ PHASE	MFG. & MODEL NO.	REMARKS
ACC-1	250	3,000,000	604	55°F	45°F	MAX. 15'	R-22	545	600	480V/3Ø	CARRIER 30 GT 250	SEE NOTES BELOW. MIN. CAPACITY 12.5%
ACC-2	100	1,241,000	244	55°F	45°F	MAX. 15'	R-22	221.2	250	480V/3Ø	CARRIER 30 GT 100	SEE NOTES BELOW. MIN. CAPACITY 15%
											EQUAL : TRANE, McQUAY, YORK	

START-UP, EXTENDED WARRANTY, MICROCOMPUTER "FLOWTRONIC II" CONTROLS, ASME, RELIEF, INSUL., ISOLATION, DISC. SW., HOT GAS BYPASS, COOLER HEATER, COOLER DRAIN VALVE, AUTOMATED LOGIC INTERFACE,
RESET LWT, LWT & EWT READING, LAST 12 HR TREND LWT & EWT, OIL PRESS., ALL SET POINTS EACH COMPRESSOR MODE, REFER. SUCT TEMP
EVAP REFRIG TEMP, COND REFRIG. TEMP, REFRIG. PRESSURE, EACH COMPRESS KW, UNIT KW, KW TREND, COMPRESSOR RUN TIME, COND FAN RUN TIME
COND FAN START/STOP, MASTER ALARM OUTPUT FOR CMS, SAFETY CONTROLS ALARM SHALL BE MIN. INFORMATION/FUNCTIONS AVAIL. THRU CHILLER SOFTWARE.
CARRIER CHILLERS USED AS DESIGN BASIS. SEE ALTERNATES, SHEET M-1 RELATING TO CHILLERS FOR THIS PROJECT.

AIR COOLED CONDENSING UNIT SCHEDULE

SYMBOL	MFG. & MODEL NO.	COOLING	VOLTAGE	REF	REMARKS
AC-1	COMFORTMAKER AF042GA	41000	208V-1Ø	R-22	SERVES AHU-1 (COACHES OFFICE)

AIR HANDLING UNIT SCHEDULE

TAG	SERVING	FAN MOTOR CFM	TSP	RPM	FAN SIZE	HP	VOLT/PH	COOLING 80/67 EDB/EWB 45/55 EWT/LWT T. COOLING	S. COOLING	LDB	LWB	GPM	APD	WPD	ROWS	FINS	AREA	HEATING 60° EDB 160° EWT (7) BTUH	EDB	GPM	APD	WPD	ROWS	FINS	AREA	FILTERS TYPE	QUAN.	SIZE	MFG. & MODEL NO.	EQUAL / REMARKS	MIN OA
AH-1	MEDIA PERIMETER	3800	2.0"	BY MFG	15"FC	3	480V/3Ø	128440	97670	56.5	56.3	18.8	.69"	2.3'	4	14	8.44	71000	60°	3.5	.12"	.4'	1	9	8.44	(1)	6	16x25x2	MCQUAY LSL 108C (4) (5) (6) (7)	CARRIER, TRANE, YORK /ECONOM.	500
AH-2	MEDIA INTERIOR	4050	2.0"	BY MFG	15"FC	3	480V/3Ø	135930	101725	56.1	55.8	21.1	.71"	2.9'	4	14	8.44	52000	60°	2.6	.10"	.2'	1	6	8.44	(1)	6	16x25x2	MCQUAY LSL 108C (4) (5) (6) (7)	CARRIER, TRANE, YORK /ECONOM.	500
AH-3	ADMIN. INTERIOR	6050	1.75"	BY MFG	16 1/2"FC	5	480V/3Ø	212725 (170500 REQD)	155060 134100 REQD	56.4	55.7	41.4	.71"	11.1'	4	10	11.56	80000	60°	4.0	.11"	.5'	1	6	11.56	(1)	6	20x25x2	MCQUAY LSL 111C (2) (5) (6) (7)	CARRIER, TRANE, YORK /ECONOM.	700
AH-4	TEAM PLAN. CORE 'D'	3525	1.9"	BY MFG	12 1/4" FC	2	480V/3Ø	109000	82475	57.1	56.1	18.0	.6"	2.0	4	10	7.4	40000	60°	2.0	.1"	.1'	1	6	7.4	(1)	6	16x20x2	MCQUAY LSL 108C (2) (5) (6) (7)	CARRIER, TRANE, YORK /ECONOM.	640
AH-5	TEAM PLAN. CORE 'C'	3525	1.9"	BY MFG	12 1/4" FC	2	480V/3Ø	109000	82475	57.1	56.1	18.0	.6"	2.0	4	10	7.4	40000	60°	2.0	.1"	.1'	1	6	7.4	(1)	6	16x20x2	MCQUAY LSL 108C (2) (5) (6) (7)	CARRIER, TRANE, YORK /ECONOM.	640
AH-6	TEAM PLAN. CORE 'B'	3525	1.9"	BY MFG	12 1/4"FC	2	480V/3Ø	109000	82475	57.1	56.1	18.0	.6"	2.0	4	10	7.4	40000	60°	2.0	.1"	.1'	1	6	7.4	(1)	6	16x20x2	MCQUAY LSL 108C (2) (5) (6) (7)	CARRIER, TRANE, YORK /ECONOM.	640
AH-7	P.E. OFFICES	1225	2.5"	BY MFG	9" FC	2	480V/3Ø	CW: 37500 DX:37500	29900 29900	57.7 -	57.4 -	7.4 -	.55" .45"	.90' -	4 -	14 -	2.76 2.8	16000	60°	1.0	.1"	.1'	1	7	2.76	(1)	2	16x25x2	MCQUAY LSL 108C (2) (5) (6) (7)	CARRIER, TRANE, YORK /ECONOM.	150
AH-8	CAFETORIUM	10000	2.5"	BY MFG	24" FC	7 1/2	480V/3Ø	480845	298096	---	---	91	0.73	12.7	4	12	21.15	229707	60°	22.1	.14"	3.3	1	10	21.15	(1)	8	20x25x2	MCQUAY LSL 122 (4) (5) (6) (7) (8)	CARRIER, TRANE, YORK /ECONOM.	3000
AH-9	CONCESSION	1950	1.65"	BY MFG	12" FC	1	480V/3Ø	59400	45750	56.8	56.5	9.3	.67"	1.2'	4	14	4.06	27000	60°	1.5	.11"	.1'	1	7	4.06	(1)	4	16x20x2	MCQUAY LSL 104C (5) (5) (6) (7)	CARRIER, TRANE, YORK HORIZONTAL	N/A
AH-10	ADMIN. PERIMETER	1500	2.0"	BY MFG	9" FC	1	480V/3Ø	37500	29900	57	56	7.4	.99"	.90'	4	14	2.24	22000	60°	1.1	.12"	.1'	1	6	2.24	(1)	2	16x25x2	MCQUAY LSL 108C (2) (5) (6) (7)	CARRIER, TRANE, YORK /ECONOM.	125
AH-11	ADMIN. PERIMETER	900	2.0"	BY MFG	9" FC	3/4	120V/1Ø	27500	21800	57.8	57.3	5.4	.48	5	-	-	2.24	20000	60°	1.0	.15"	.1'	1	6	2.24	(1)	2	16x25x2	MCQUAY LSL 108C (2) (5) (6) (7)	CARRIER, TRANE, YORK /ECONOM.	150
AH-12	MAIN GYM	12000	2.4"	BY MFG	22 FC	10	480V/3Ø	589100	384000	50.7	50.5	116.5	1.25"	14.1'	6	13	24.24	346600	60°	54.6	.19"	7.1'	1	14	24.24	(1)	12	16x25x2	MCQUAY LSL 122C (2) (5) (6) (7)	CARRIER, TRANE, YORK /ECONOM.	3000
AH-13	AUX. GYM	3000	2.0"	BY MFG	12 1/4" FC	2	480V/3Ø	140150	92825	51.7	51.5	27.8	1.06"	10.8'	6	11	6.20	20000	60°	6.1	.15"	.5'	1	11	6.20	(1)	6	16x2.05x2	MCQUAY LSL 106C (2) (5) (6) (7)	CARRIER, TRANE, YORK /ECONOM.	750

(1) REPLACEABLE MEDIA ON 2" PERMANENT FRAMES
(2) FILTER/MIXING BOX FOR ECONOMIZER OPERATION
(3) "EQUAL" MANUFACTURERS SHALL MEET SCHEDULED PERFORMANCE,CAPACITY,ETC.
(4) FILTER/MIXING BOX W/REMOTE DAMPERS FOR ECONOMIZER OPERATION
(5) ANGLE FILTER BOX
(6) FULL UNIT ACCESS PANELS AT COIL, FILTERS, DAMPERS, FAN MOTOR, BELT, DRIVE, ETC.
(7) PROVIDE HEATING COIL IN RE-HEAT POSITION UNDER ALTERNATE #M-4. BASE BID COILS SHALL MEET CAPACITIES LISTED.
(8) 85/70 EDB/EWB

EAST MIDDLE SCHOOL NO. 9761

PROFESSIONAL ENGINEERING ASSOCIATES, P.A.
1426 East Fifth Street
PO Box 36365
Charlotte, NC 28231
704.376.5502

Clark Nexsen/ Gunn Hardaway Architects
Suite 500 229 North Church Street
Charlotte, NC 28202 704 377 2550

TMG CONSULTING ENGINEERS, PLLC
The Williams Group Consulting Engineers, PLLC
dba TMG Consulting Engineers
Suite 110/210
Charlotte, NC 28204
704.926.1616 Phone
704.926.1626 Fax
Website: WWW.TMG-CE.COM

ISSUED FOR CONSTRUCTION

Charlotte-Mecklenberg Schools

NORTHRIDGE MIDDLE SCHOOL
RESOURCE DRAWINGS FROM EXISTING CONDITIONS

Charlotte-Mecklenberg Schools
7601 The Plaza
Charlotte, NC 28215

REVISIONS
NO. | DESCRIPTION | DATE
1 | ISSUED FOR CONSTRUCTION | 9/27/22

SHEET INFORMATION
DATE 9/27/2022
JOB NUMBER 2202-01-002
DRAWN ALG
APPROVED CTM

MECHANICAL DETAILS

RM-121
SHEET 23 OF 25

ROOF HOOD SCHEDULE

GREENHECK MIH OR WRH WITH SCREEN, CURB, ALUMINUM. EQUAL: RUSKIN, GARNES

SYMBOL	SERVING	CFM	MAX. APD	HEIGHT	THROAT	DAMPER	REMARKS
RH-1	KITCHEN STAGE, OFFICE/STOR	250-300	0.05"	12"	12"x12"	0/300 CFM MOT. IN DUCT	OUTSIDE AIR INTAKE
RH-2	KIT., DISHWASHER SERVING, CORR., MISC.	200	0.05"	12"	12"x12"	0/200 CFM MOT. IN DUCT	OUTSIDE AIR INTAKE
RH-3	UV-2E, UV-11E	2000	0.05"	16"	18"x32"	0/1110/2200 CFM MOT. IN DUCT	O.A. INTAKE/ECONOMIZER
RH-4	FC-14, FC-18	150	0.05"	12"	12"x12"	0/150 CFM MOT. IN DUCT	OUTSIDE AIR INTAKE
RH-5	UV-3, UV-9 UV-11, UV-12	450	0.05"	12"	12"x14"	0/450 CFM MOT. IN DUCT	OUTSIDE AIR INTAKE
RH-6	FC-16	1100	0.05"	12"	14"x24"	0/855/1100 CFM MOT. IN DUCT	O.A. INTAKE/ECONOMIZER
RH-7	AH-4,5,6	3525	0.05"	20"	24"x40"	0/1640/3525 CFM MOT. IN DUCT	O.A. INTAKE/ECONOMIZER
RH-8	AH-4,5,6	2745	0.05"	20"	24"x36"	BAROMETRIC	ECONOMIZER RELIEF
RH-9	AH-1,2	3300/ 3885	0.05"	20"	24"x40"	BAROMETRIC	ECONOMIZER RELIEF
RH-10	UV-6E, UV-7E	2000	0.05"	16"	18"x32"	0/1100/2200 CFM MOT. IN DUCT	ECONOMIZER
RH-11	FC-16	1500	0.05"	12"	14"x28"	BAROMETRIC	RELIEF
RH-12	GYM AH-12	12000	0.05"	31"	48"x72"	0/3000/12000 MOT. IN DUCT	O.A. INTAKE/ECONOMIZER **
RH-13	GYM	4450	0.05"	24"	32"x48"	0/4450 CFM MOT. IN DUCT	INTERLOCK W/ FANS F-23, 24, 25, 26 **
RH-14	CAFETORIUM	5100 MAX	0.05"	20"	28"x50"	BAROMETRIC	RELIEF
RH-15	MECHANICAL	-	0.05"	12"	18"x24"	NONE	COMBUSTION/VENTILATION
RH-16	AH-1 & 2	7685	0.05"	28"	42"x54"	MOT. IN DUCT	ECONOMIZER #1:0/3500/3800 CFM #2:0/3500/3885 CFM
RH-17	MECH. EQUIP. RM.	2561	0.05"	20"	22"x36"	0/1256 CFM MOT. IN DUCT	O.A. INTAKE
RH-18	AH-3	8440	0.05"	31"	42"x72"	0/3700/8440 CFM MOT. IN DUCT	O.A. INTAKE/ECONOMIZER
RH-19	UV-4E, 11E	1000	0.05"	12"	18"x18"	0/125/1000 CFM MOT. IN DUCT	O.A. INTAKE / ECONOMIZER
RH-20	UV-4, UV-13	780	0.05"	12"	12"x24"	0/780 CFM MOT. IN DUCT	O.A. INTAKE
RH-21	GYM AH-13	3000	0.05"	20"	24"x40"	0/300/3000 CFM MOT. IN DUCT	O.A. INTAKE/ECONOMIZER **
RH-22	AUX. GYM	2500	0.05"	16"	18"x36"	MOT. IN DUCT	ECON. RELIEF INTERLOCK W/AH-13 ECON.
RH-23	MISC.	2000/ 2500	0.05"	16"	18"x36"	BAROMETRIC IN DUCTS	RELIEF
RH-24	ADMIN.	8450	0.05"	28"	42"x48"	BAROMETRIC	RELIEF
RH-25	ADMIN.	8450	0.05"	31"	42"x60"	MOT. IN DUCT	O.A. INTAKE / ECONOMIZER
RH-26	PE, MUSIC	1925	0.05"	16"	22"x28"	MOT. IN DUCT	O.A. INTAKE / ECONOMIZER
RH-27	GYM	9000	0.05"	28"	42"x48"	MOT. IN DUCT	ECON. RELIEF INTERLOCK W/AH-12 ECON. **
RH-28	GYM	4210	0.05"	28"	28"x44"	0-4210 CFM MOT. IN DUCT	INTERLOCK W/ FANS F-17, 18, 19, 20 *
RH-29	GYM	4450	0.05"	24"	32"x48"	0-4450 CFM MOT. IN DUCT	INTERLOCK W/ FANS F-23, 24, 25, 26 *

NOTE: DAMPERS TO BE LOW LEAK W/BLADE SEALS
* PROVIDE UNDER ALT. M-6.
** DELETE UNDER ALT. M-6.

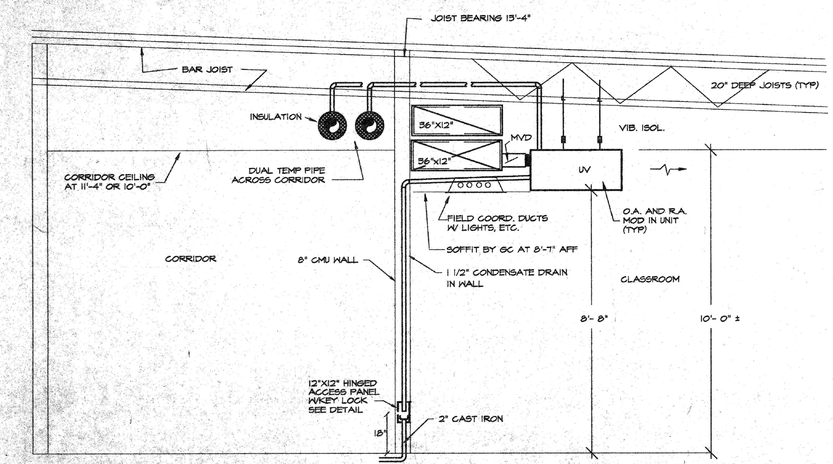
UNIT VENTILATOR / FAN COIL UNIT SCHEDULE

** PROVIDE HEATING COIL IN REHEAT POSITION UNDER ALTERNATE M-6 BASE BID UNIT COILS SHALL MEET HEAT CAPACITIES LISTED.

SYM	FAN DATA NOM.CFM	TSP	RPM	DRIVE	HP	VOLT/PH	COOLING DATA T. COOL	S. COOL	EDB/EWB	GPM	EWT/LWT	WPD	HEATING DATA HEAT (160)	EAT	GPM	EAT/LAT	FILTER DATA TYPE	NO.	SIZE	MFG. & MODEL NO.	REMARKS
UV-1	1250	0.25"	HIGH	DIRECT	1/4	120v/1ø	45000	30800	80°/67°	8.0	45°/-	5.4	30,000	160°	1.5	60°/-	4	1	1"x10"x60.5"	AMERICAN AIR FILTER AH5000	5 7 8 14 15 23 26 27
UV-2	1250	0.25"	HIGH	DIRECT	1/4	120v/1ø	40800	28700	80°/67°	8.0	45°/-	5.4	30,000	160°	1.5	60°/-	4	1	1"x10"x60.5"	AMERICAN AIR FILTER AH5000	5 7 8 11 14 15 23 27
UV-3	1250	0.25"	HIGH	DIRECT	1/4	120v/1ø	40800	28700	80°/67°	8.0	45°/-	5.4	30,000	160°	1.5	60°/-	4	1	1"x10"x60.5"	AMERICAN AIR FILTER AH5000	5 7 8 14 15 23 27
UV-4	1250	0.25"	HIGH	DIRECT	1/4	120v/1ø	48400	32200	80°/67°	10.0	45°/-	5.2	30,000	160°	1.5	60°/-	4	1	1"x10"x60.5"	AMERICAN AIR FILTER AH5000	5 7 8 14 15 23 27
UV-5	1250	0.25"	HIGH	DIRECT	1/4	120v/1ø	45000	30800	80°/67°	8.0	45°/-	5.4	30,000	160°	1.5	60°/-	4	1	1"x10"x60.5"	AMERICAN AIR FILTER AH5000	5 7 8 14 15 23 27
UV-6	1500	0.25"	HIGH	DIRECT	1/4	120v/1ø	54600	40400	80°/67°	12.0	45°/-	8.3	30,000	160°	1.5	60°/-	4	2	1"x10"x36.5"	AMERICAN AIR FILTER AH6000	5 7 8 14 15 23 27
UV-7	750	0.25"	HIGH	DIRECT	1/4	120v/1ø	26000	18200	80°/67°	8.0	45°/-	2.6	30,000	160°	1.5	60°/-	4	1	1"x10"x36.5"	AMERICAN AIR FILTER AH5000	5 7 8 14 15 23 27
UV-8	1500	0.25"	HIGH	DIRECT	1/4	120v/1ø	62300	41500	80°/67°	12.5	45°/-	11.0	30,000	160°	1.5	60°/-	4	2	1"x10"x36.5"	AMERICAN AIR FILTER AH6000	5 7 8 14 15 23 27
UV-9	1000	0.25"	HIGH	DIRECT	1/4	120v/1ø	34300	23100	80°/67°	6.0	45°/-	1.7	30,000	160°	1.5	60°/-	4	1	1"x10"x48.5"	AMERICAN AIR FILTER AH4000	5 7 8 14 15 23 27
UV-10	1250	0.25"	HIGH	DIRECT	1/4	120v/1ø	48400	32200	80°/67°	10.0	45°/-	5.2	30,000	160°	1.5	60°/-	4	1	1"x10"x60.5"	AMERICAN AIR FILTER AH5000	5 7 8 14 15 23 27
UV-11	1000	0.25"	HIGH	DIRECT	1/4	120v/1ø	37800	24500	80°/67°	8.0	45°/-	3.0	30,000	160°	1.5	60°/-	4	1	1"x10"x48.5"	AMERICAN AIR FILTER AH4000	5 7 8 14 15 23 27
UV-12	1250	0.25"	HIGH	DIRECT	1/4	120v/1ø	50400	35200	80°/67°	12.0	45°/-	7.4	30,000	160°	1.5	60°/-	4	1	1"x10"x60.5"	AMERICAN AIR FILTER AH5000	5 7 8 14 15 23 27
UV-13	1500	0.25"	HIGH	DIRECT	1/4	120v/1ø	62300	41500	80°/67°	14.0	45°/-	11.0	30,000	160°	1.5	60°/-	4	2	1"x10"x36.5"	AMERICAN AIR FILTER AH6000	5 7 8 14 15 23 27
FC-1	140	0.00"	LOW	DIRECT	47 W	120v/1ø	5100	3450	80°/67°	1.6	45°/-	3.9	20,000	160°	1.0	60°/-	4	1	1"x8"x26"	MCQUAY TSC08IE	4 7 8 11 14 15 25
FC-2	DELETED																				
FC-3	260	0.20"	MED/ HIGH	DIRECT	100 W	120v/1ø	9400	6100	80°/67°	1.6	45°/-	3.9	20,000	160°	1.0	60°/-	4	1	1"x8"x26"	MCQUAY TCH08IE	1 3 5 6 7 8 11 14 15 23
FC-4	260	0.25"	MED/ HIGH	DIRECT	100 W	120v/1ø	9400	6100	80°/67°	1.6	45°/-	3.9	20,000	160°	1.0	60°/-	4	1	1"x8"x26"	MCQUAY TCH08IE	1 2 3 5 6 7 11 14 15 23
FC-5	300	0.10"	MED	DIRECT	81 W	120v/1ø	NONE	-	-	-	-	2.2	32,000	160°	1.6	60°/-	4	1	1"x8"x26"	MCQUAY TCH08IE	1 3 5 7 8 14 15 18 23
FC-6	400	0.15"	HIGH	DIRECT	124 W	120v/1ø	NONE	-	-	-	-	4.7	44,000	160°	2.2	60°/-	4	1	1"x8"x26"	MCQUAY TCH04IE	1 3 5 7 8 14 15 18 23
FC-7	385	0.10"	MED	DIRECT	124 W	120v/1ø	10800	8500	80°/67°	2.3	45°/-	8.5	20,000	160°	1.0	60°/-	4	1	1"x8"x26"	MCQUAY TSC04IE	5 7 8 11 14 15 25
FC-8	415	0.10"	LOW	DIRECT	88 W	120v/1ø	14500	11900	80°/67°	3.0	45°/-	15.5	20,000	160°	1.0	60°/-	4	1	1"x8"x36"	MCQUAY TSC06IE	5 7 8 11 14 15 17 23 26 27
FC-9	DELETED																				
FC-10	DELETED																				
FC-11	DELETED																				
FC-12	680	0.20"	HIGH	DIRECT	250 W	120v/1ø	24500	17000	80°/67°	5.1	45°/-	16.5	20,000	160°	1.0	60°/-	4	1	1"x8"x36"	MCQUAY TSC08IE	1 3 5 6 7 8 10 11 14 15 23
FC-13	525	0.00"	MED	DIRECT	81 W	120v/1ø	9400	6100	80°/67°	1.6	45°/-	3.9	20,000	160°	1.0	60°/-	4	1	1"x8"x26"	MCQUAY TSC08IE	4 7 8 11 14 15 23
FC-14	415	0.10"	LOW	DIRECT	88 W	120v/1ø	14500	11900	80°/67°	3.0	45°/-	15.5	20,000	160°	1.0	60°/-	4	1	1"x8"x36"	MCQUAY TSC06IE	5 7 8 11 14 15 17 23 26 27
FC-15	DELETED																				
FC-16	DELETED																				
FC-17	1600	1.25"	BY MFG	BELT	3/4	120v/1ø	59425	45270	80°/67°	12.0	45°/-	10.2	20,000	160°	1.0	60°/-	4	2	1"x16"x20"	MCQUAY SCB16IB	1 2 5 7 14 15 20 21 23
FC-18	2050	1.25"	BY MFG	BELT	1	120v/1ø	57545	45015	80°/67°	11.5	45°/-	2.9	20,000	160°	1.0	60°/-	4	2	1"x20"x20"	MCQUAY SCB20IB	1 2 5 7 14 15 20 23
FC-19	DELETED																				
FC-20	1525	1.25"	BY MFG	BELT	3/4	120v/1ø	38400	28580	80°/67°	7.8	45°/-	8.8	20,000	160°	1.0	60°/-	4	1	1"x16"x25"	MCQUAY SCB12IB	1 2 5 7 14 15 20 23
FC-21	2300	1.25"	BY MFG	BELT	1	120v/1ø	60565	48100	80°/67°	12.1	45°/-	5.1	26,000	160°	1.3	60°/-	4	2	1"x20"x20"	MCQUAY SCB20IB	1 2 5 7 14 15 20 21
FC-22	2000	1.45"	BY MFG	BELT	1	120v/1ø	52480	54200	80°/67°	16.5	45°/-	11.3	24,000	160°	1.2	60°/-	4	2	1"x20"x20"	MCQUAY SCB20IB	1 2 5 7 14 15 20 21 23
FC-23	DELETED																				
FC-24	DELETED																				
FC-25	700	1.05"	BY MFG	BELT	1/3	120v/1ø	23500	16200	80°/67°	4.8	45°/-	3.1	20,000	160°	1.0	60°/-	4	1	1"x16"x20"	MCQUAY SCB08IB	1 2 5 7 14 15 20 23
FC-26	750	0.20"	MED	DIRECT	240 W	120v/1ø	21500	15900	80°/67°	4.5	45°/-	2.4	20,000	160°	1.0	60°/-	4	1	1"x8"x66"	MCQUAY TSC08IE	1 3 5 6 7 8 9 14 15 21 23

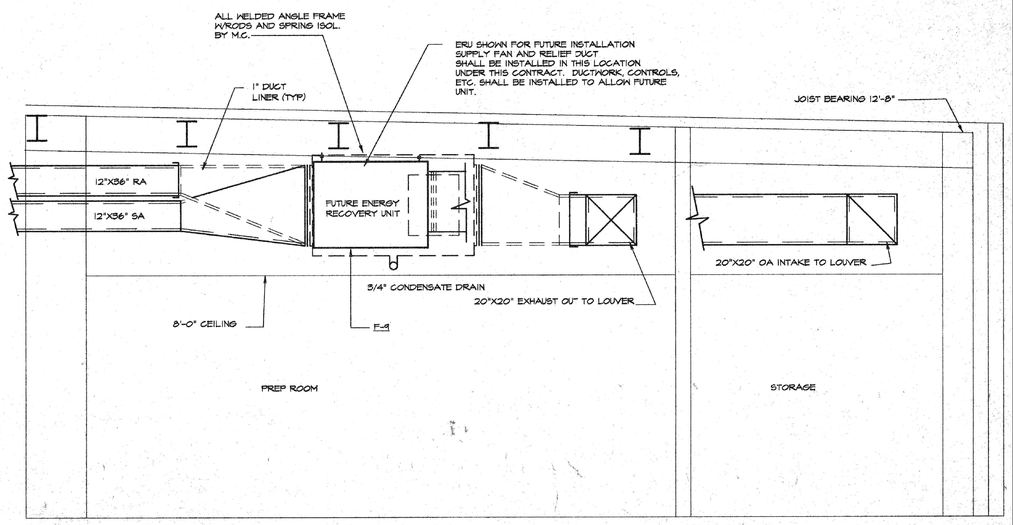
1. SA DUCT COLLAR - SEE PLANS
2. R.A. DUCT COLLAR-SEE PLAN
3. ADJUST. CEILING TRIM KIT
4. REPLACEABLE MEDIA ON PERM FRAME
5. QUIET MOTOR
6. HIGH STATIC MOTOR
7. HINGED BOTTOM PANEL FOR SERVICE
8. BOTTOM R.A. GRILLE
9. "E" DENOTES ECONOMIZER OPERATION & CONTROLS
10. LOW FLOW COIL
11. 6" SPACER FOR PIPING
12. FIELD MOD & CONTROLS FOR 0/300 CFM OA
13. STD. MOTOR
14. FACTORY INSTALLED DMPR, ACTUATORS
15. FACTORY INSTALLED CONTROL VALVES
16. FIELD MOD & CONTROLS FOR 0/200 CFM OA
17. 25% MOT. OA DMPR, WALL LOUVER, SLEEVE
18. HEAT ONLY
19. DELETED
20. FULL SIZE DRAIN PAN
21. HIGH CAPACITY COIL
22. ECONOMIZER CONTROLS
23. UNIT TO HAVE FACTORY DISCONNECT
24. DELETED
25. DBL DEFLECT BARBER COLEMAN "SEA" SA GRILLE ON ALL UNIT VENTILATORS
26. O.A. INTAKE LOUVER
27. TOP / REAR O.A. INTAKE - SEE PLANS
28. ALL UNITS 2 WAY VALVE CONTROL UNLESS OTHERWISE NOTED ON PLANS

** "EQUAL" MANUFACTURERS SHALL MEET SCHEDULED CAPACITIES, NOISE AND PERFORMANCE, PUMPS, PIPING, ELEC., ETC., SHALL BE RESIZED, RESELECTED, & RE-COORD. BY M.C. W/ ALL TRADES AS REQ'D. (TRANE, AMERICAN AIR FILTER, OR APPROVED EQUAL)



1 / M-22 TYP. SECTION AT CLASSROOM UNIT VENTILATOR
SCALE 1/2" = 1'- 0"

PROVIDE WALL MOUNTED PVC TUBE IN MECHANICAL ROOM FOR STORAGE OF 1-SET OF HVAC/PLUMBING DRAWING FOR OWNER.



2 / M-22 TYP. SECTION AT FUTURE ERU
SCALE 1/2" = 1'- 0"

EAST MIDDLE SCHOOL NO. 9761

PROFESSIONAL ENGINEERING ASSOCIATES, PA
1418 East Fifth Street
PO Box 31505
Charlotte, NC 28231
704.370.0010

Clark Nexsen/ Gunn Hardaway Architects
Suite 200 229 North Church Street
Charlotte, NC 28202 704 377 8800

TMG CONSULTING ENGINEERS
The Wilkinson Group Consulting Engineers NC
dba TMG Consulting Engineers
301 McCullough Drive
Suite 110/210
Charlotte, NC 28262
704.895.7870 Phone
704.895.8705 Fax
Website: WWW.TMG-CE.COM

ISSUED FOR CONSTRUCTION

Charlotte-Mecklenberg Schools

NORTHRIDGE MIDDLE SCHOOL
RESOURCE DRAWINGS FROM EXISTING CONDITIONS

Charlotte-Mecklenberg Schools
7501 The Plaza
Charlotte, NC 28215

REVISIONS

NO.	DESCRIPTION	DATE
	ISSUED FOR CONSTRUCTION	9/27/22

SHEET INFORMATION

DATE	9/27/2022
JOB NUMBER	2202-01-002
DRAWN	ALG
APPROVED	CTM

MECHANICAL DETAILS

RM-122

SHEET 24 OF 25

SEQUENCE OF OPERATIONS

SEQUENCE OF OPERATION

Summer/winter change-over shall be by remote operation from the central EMS. Base bid and Alternate #M-3 sequence shall be as follows:

	SUMMER	WINTER
Base	V-1 & V-2 closed to primary loop. Boilers P-4, P-5 & P-6, all inoperative. V-3, V-4 & chillers are operative. See "Summer Operation" below.	V-3 & V-4 closed to primary loop. ACC-1, ACC-2 pumps P-7 and P-8 inoperative. See "Winter Operation" below.
Alt M-3	V-1 & 2 closed to primary loop. Boiler, P-4, P-5 & P-6 are operative to provide "4-pipe" sequence.	Same as Base Bid above except P-6 is inoperative & "4-pipe" sequence is inoperative.

A. Winter Operation

1. Lead dual temperature primary system pump P-1 or P-2 shall run when any zone is in the occupied position or a low limit is energized. If the outside temperature is below 30 degrees, both pumps under control of the building EMS shall run. If outside temperature is below 20 degrees, a hard wired thermostat shall start both pumps, the secondary hot water pumps and boilers. EMS software shall switch the lead pump on alternate starts.

2. Boilers shall be interlocked to start when their associated secondary hot water pump P-4 or P-5 starts. EMS shall have boiler lead/lag control capabilities thru flow & temp sensors. The secondary hot water pumps shall run when either of the primary pumps is in operation. Under Alternate M-1, Pump P-6 shall be inoperative A three-way valve V-1 in the secondary circuit shall reset primary supply water temperature inversely from outside air temperature. At 60 degrees outside supply water temperature shall be 110 degrees and at 10 degrees outside supply water shall be 160 degrees. Set points and reset ratios shall be fully adjustable.

3. Three-way valve V-1 shall also serve as an anti-shock valve for the boilers. When the system is switched from summer to winter a low limit at the return to the boilers shall prevent water below 110 degrees from entering the boilers by overriding the primary reset controller.

4. Unit ventilators (Base Bid). On normal occupied cycle, shall, on fan start, have its outside air damper open to an adjustable minimum position. On an increase in space temperature, the control valve shall modulate closed to the coil. For units designated with economizer control on an additional increase in space temperatures, the outside air and relief air dampers shall modulate open and the return air damper closed. A mixed air low limit thermostat shall prevent mixed air temperature of less than 50 degrees F. All outside air dampers shall be tied into EMS for on/off override of damper operators.

5. Unit ventilators (Fan Pipe): Under Alternate #M-3, unit will be provided with 1-row coil in reheat position. In "winter" cycle, this coil shall be inactive and heating shall be provided thru dual temperature coil as noted in #4 above.

6. All thermostats shall be indexed for heating operation.

7. When Pump P-3 is energized, all 2-way valves at units except those in Admin, Media areas shall close.

B. Summer Operation.

1. Both of the dual temperature primary system pumps P-1 and P-2 shall start when any zone is in the occupied position. When system load as determined by flow and temperature sensors in primary piping drops to 60%, lag pump shall stop. Reverse sequence occurs on load increase. This system is inoperative on winter cycle.

2. EMS shall start/stop chillers thru start/stop control of pumps P-7 and P-8 in parallel w/chiller controls. Flow switch in chiller supply main will energize chiller control circuits. On system start-up at beginning of occupied period, P-5 and P-6 and chillers ACC-1 and ACC-2 shall start. Then, when system load (as determined by dual temperature flow and dual temperature supply/return temperatures) drops to at least 40% of chiller ACC-2 capacity, ACC-1 shall stop. On a further drop to 90% of chiller ACC-1 capacity, ACC-1 shall start and ACC-2 shall stop. Sequence shall reverse on load increase.

   If only Administration, Media or Lobby areas are in occupied mode, then chiller ACC-1, pump P-7, dual temperature pumps P-3 shall run. Differential pressure switch across pumps shall provide status.

3. Three-way valves V-3 in the secondary chilled water loop serves as quick cool down valve and prevents water temperature of greater than 85 degrees from entering the chillers.

4. When the summer winter switch is in the summer position, the three-way valve V-1 and 2-way valve V-2 in the boiler loop shall be closed to the primary loop. Under the base bid, the boilers shall be off and the secondary hot water pump P-3 shall not run. Under Alternate #M-1, valves shall remain closed to the loop and boilers, pumps P-4 and P-5 shall run if OA is below 65° F.

5. All thermostats shall be indexed for cooling operation.

C. Unit Ventilators and Fan Coil Units

1. Wall mounted summer-winter pneumatic thermostat with guard shall be installed on each unit ventilator and fan coil unit. Thermostat control action shall switch from the master summer-winter switch. Two way control valves shall modulate to maintain thermostat at set point. Wall mounted speed switch (with motor rated disconnect switch inside unit behind accessible panels) shall control unit fan speed. Wall switch shall be identified "not a disconnect".

2. Unit ventilators shall be provided with internal modulating return air/outside air control dampers with pneumatic controller. Sequence shall be as follows: In the winter sequence, damper operation shall be as specified in "winter operation" item A. 4. hereinbefore stated. In the summer sequence, O.A. damper shall open to minimum position. Low limit thermostat shall prevent discharge air temperatures below a pre-determined point, regardless of demand of the room thermostat. Outside air dampers shall close when fan is off.

3. Under Alternate #M-3, 2-way valve for 1-row heating coil shall be provided for 4-pipe control. On a drop in space temperature, "dual temp" 2-W control valve shall modulate closed. A further drop in space temperature shall modulate 2-way valve on 4-pipe heating coil open to maintain space temperature.

D. Air Handling Units AH-3 thru AH-11

1. OA damper shall open to min on fan start.

2. Summer: A rise in space temperature shall modulate main coil 2-W valve open. A drop in space temperature shall reverse sequence. Under Alt M-1, a further drop shall modulate 2-W valve on 4-pipe heating coil to maintain setting.

3. Winter: A drop in space temperature shall modulate main coil 2-W valve open. The 4-pipe coil and its controls shall be inactive under Alt M-1. On units with economizer cycle, a rise in temperature shall modulate 2-W valve closed and sequence OA/RA/relief dampers to maintain setting.

E. Media System Humidity Control Sequence (AH-1 & AH-2)

1. With S/W switch in "summer" position, humidity control system for Media Center shall be capable of being activated. Under "normal" conditions, a pneumatic space thermostat shall modulate control valves on media units to maintain space temperature. If space humidity reaches 60% RH, alarm shall be sent to central computer by the energy management system and humidity control activated.

2. Humidity control shall be energized through EP relay. Outside air damper shall close and space humidistat shall open unit CHW control valve to full open until space humidity drops to 55% RH. Space thermostat shall step in electric heat to maintain temperature. When space humidity drops to 55% RH, EP relay shall de-activate humidity control system. When humidity control system is de-activated, control of unit valve shall revert to space thermostat. Electric heat is available only on this cycle under base bid.

F. Supply and exhaust fan control wiring, wall switches, wall thermostats, interlocks shall be provided as per instructions and as required by the drawings. Program control shall be thru start/stop control of zone adjacent to fan location.

G. Electric unit heater in boiler room shall operate thru electric wall thermostat when space temperature drops to 50 degrees F.

H. Wall thermostat in boiler room shall start fan if temperature rises to 85 degrees.

I. Electric wall heaters with integral thermostats shall have their contactor energized from EMS zone they are located in.

J. Contactor for power circuit to future energy recovery unit will be energized by associated UV control zone. See Electrical sheets.

K. EMS shall close outside air dampers if outside air temperature drops below 45 degrees or rises above 92 degrees regardless of system occupied/unoccupied mode.

L. The digital interlock with the boilers and chillers shall include communications module, Fireye E500, and a modem furnished and installed by this contractor. Refer to drawings for additional interlock requirements for phone modem connection.

M. Freeze protection aquastat at the kitchen hot water tank shall override the EMS output and energize the hot water heater should the water temperature decrease to 40 degrees.

N. Pushbutton override switch in principal's office shall normally override EMS program for administration zone. Central EMS shall have the ability to change the function of switch in principal's office to allow override of any of the program zones when desired.

O. Pressure sensor in DTS piping shall modulate by-pass valve V-7 and V-8 to maintain set system pressure.

P. Provide emergency stop button for all air handling units directly inside mechanical room doors.

Q. EMS system shall record, compare, and totalize gas and kw consumption and system load for the HVAC system from digital gas flow meters at gas meters (by local utility) flow sensors in HW & DT piping, and current transmitters (by E.C.) for chillers and pumps.

R. See temperature controls section of the specifications for additional requirements.

CONTROL POINTS LIST

INPUT SCHEDULE

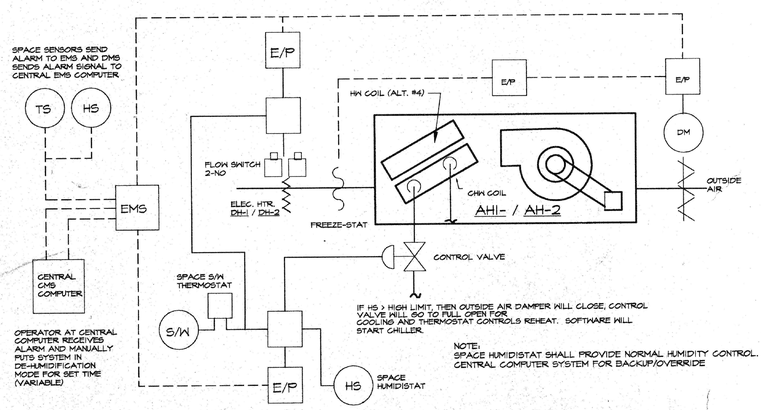
POINT	DESCRIPTION	MODULE	NOTE
1	OA Sensor	2	
2	DT Supply Sensor	2	
3	DT Return Sensor	2	
4	DT Flow Sensor	2	
5	Electric Pulse Meter	2	
6	Fireye/Chiller Alarms	2	
7	Cooler Sensor	2	
8	Freezer Sensor	2	
9	Low Air Pressure Alarm	2	
10	Fire Alarm DI	2	16
11	Pump P-1 Status (Current Relay)	3	8
12	Pump P-2 Status (CR)	3	8
13	Pump P-3 Status "	3	8
14	Pump P-4 Status "	3	8
15	Pump P-5 Status "	3	8
16	Pump P-6 Status " (ALT. M-4)	3	8
17	Pump P-7 Status (CR)	3	8
18	Pump P-8 Status (CR)	3	8
19	Boiler B-1, B-2 Gas Flow Meter	3	
20	Gym Gas Flow Meter	3	
21	Elect. Panel "AC" KW	4	
22	EMS Override	4	
23	Chiller ACC-1 KW	4	
24	Chiller ACC-2 KW	4	
25	Chiller ACC-1 LWT	4	
26	Chiller ACC-2 LWT	4	
27	HW Supply Sensor	4	
28	HW Return Sensor	4	
29	HW Flow Sensor	4	
30	Sensor Zone 1 (Admin. Int.)	4	
31	AH-3 EAT/Freeze	5	14
32	AH-3 LAT	5	15
33	AH-4 EAT/Freeze	5	14
34	AH-10 LAT	5	15
35	AH-11 EAT/Freeze	5	14
36	AH-11 LAT	5	15
37	Sensor Zone 1(Admin. Perm.)	5	
38	Sensor Zone 1(Admin. Perm.)	5	
39	Sensor- Zone 1 (Admin. Int.)	5	
40	Sensor Zone-1 (Main Office)	6	10
41	Sensor Zone-3 (Kitchen)	6	10
42	Sensor Zone-4 (Media-Center)	6	10
43	Sensor Zone-4 (Media-Support)	6	
44	A-1 EAT/Freeze	6	14
45	A-1 LAT	6	15
46	A-2 EAT/Freeze	6	14
47	AH-2 LAT	6	15
48	Sensor- Humidity (Media)	6	
49	Sensor-Zone 5 (POD "D" Exterior)	6	
50	Sensor-Zone 5 (POD "D" Interior)	6	
51	AH-4 EAT/Freeze	7	14
52	AH-4 LAT	7	15
53	Sensor Zone 6 (POD "C" interior)	7	
54	Sensor Zone 6 (POD "C" Exterior)	7	
55	AH-5 EAT/Freeze	7	14
56	AH-5 LAT	7	15
57	Sensor Zone-7 (POD "D" Interior)	7	
58	Sensor Zone-7 (POD "D" Exterior)	7	
59	AH-6 EAT/Freeze	7	14
60	AH-6 LAT	7	15
61	Sensor-Zone 8 (Special "D" Interior)	8	
62	Sensor-Zone 8 (Special "D" Exterior)	8	
63	Sensor-Zone 9 (Special "B" Interior)	8	
64	Sensor-Zone 9 (Special "B" Exterior)	8	
65	Sensor-Zone 10 (Big Gym)	8	10
66	Sensor-Zone 10 (Small Gym)	8	
67	AH-12 EAT/Freeze	8	14
68	AH-12 LAT	8	15
69	AH-13 EAT/Freeze	8	14
70	AH-13 LAT	8	15
71	Sensor-Zone 11 (Coaches)	9	10
72	Sensor-Zone 11 (Lockers)	9	
73	AH-7 EAT/Freeze	9	14
74	AH-7 LAT	9	15
75	Spare	9	
76	Spare	9	
77	Spare	9	
78	Spare	9	
79	Spare	9	
80	Spare	9	

OUTPUT SCHEDULE

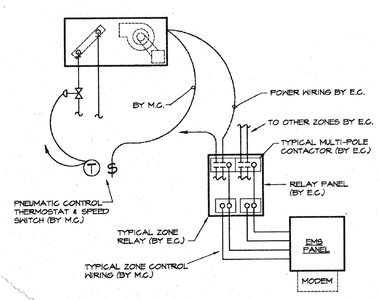
POINT	DESCRIPTION	MODULE	NOTE
1	Fireye/Chiller Alarm	2	
2	Kitchen Water Heater	2	1
3	Kitchen Hood Fans & DW Fan	2	2
4	Summer/Winter Switch	2	3
5	OA Dampers Zone 2, Zone 3	2	6
6	Zone-2 Start/Stop (AH-8)	2	3 4
7	Zone-3 Start/Stop	2	4
8	Outside Lighting	2	
9	Outside Lighting	2	
10	Outside Lighting	2	
11	Pump P-1 Start/Stop	3	3
12	Pump P-2 Start/Stop	3	
13	Pump P-3 Start/Stop	3	3
14	Pump P-4 Start/Stop	3	3
15	Pump P-5 Start/Stop	3	3
16	Pump P-6 Start/Stop (ALT. M-4)	3	3
17	Pump P-7 Start/Stop	3	3
18	Pump P-8 Start/Stop	3	3
19	Spare	3	
20	Spare	3	
21	Zone-1 Start/Stop	4	4
22	Zone-1 O.A. Dampers	4	4 6
23	OA Dampers Zone-4	4	6
24	Zone 4 Start/Stop (AH-1)	4	3
25	Zone-4 Humidity Control	4	
26	Zone-4 Humidity Control	4	
27	Zone-4 Start/Stop (AH-2)	4	3
28	Spare	4	
29	Spare	4	
30	Spare	4	
31	Zone-5 O.A. Dampers	5	6
32	Zone-5 Start/Stop	5	4
33	Future-ERU-Start/Stop	5	17
34	Zone-6 O.A. Dampers	5	17 6 4
35	Zone-6 Start/Stop	5	4
36	Future ERU S/S	5	17
37	Zone-8 O.A. Dampers	5	17 6 4
38	Zone-8 Start/Stop	5	4
39	Spare	5	
40	Spare	5	
41	Zone-7 O.A. Dampers	6	6
42	Zone-7 Start/Stop	6	4
43	Future ERU Start/Stop	6	17
44	Zone-9 O.A. Dampers	6	6
45	Zone9 Start/Stop	6	4
46	Zone-10 O.A. Dampers	6	6 3
47	Zone-10 Start/Stop (AH-12)	6	3
48	Zone-10 Start/Stop (AH-13)	6	3
49	Spare	6	
50	Spare	6	
51	Zone-11 O.A. Dampers	7	6
52	Zone-11 Start/Stop (AH-7)	7	3 4
53	Zone 11 Heat/Vent	7	
54	Spare	7	
55	Spare	7	
56	Spare	7	
57	Spare	7	
58	Spare	7	
59	Spare	7	
60	Spare	7	

INPUT/OUTPUT SCHEDULE NOTES

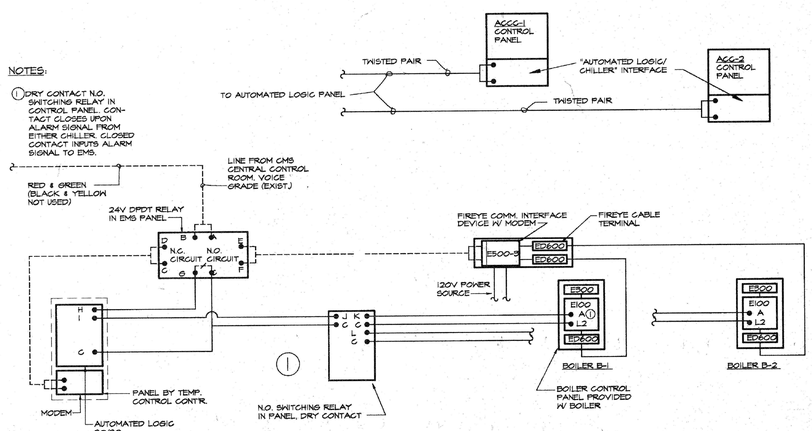
1. Start/stop water heater WH-1.
2. Contactor for kitchen hood supply and exhaust fans. Contactor for dishwasher exhaust fan.
3. Wire to starter.
4. Wire to contactor panel.
5. Wire to EP to switch controls.
6. Loop building to close O.A. dampers (EP) and stop exhaust fans.
7. Digital Gas Meters provided by Utility Company.
8. Current Relay.
9. Current Relay.
10. Provide spare temperature and N.L.L. status.
11. Momentary contact switch to signal EMS central for override.
12. Alarm for activation of fire alarm system.
13. Alarm for smoke detector closure.
14. Sensor on intake of unit coil to measure EAT and provide freeze alarm.
15. Sensor on discharge of unit coil to measure LAT.
16. Fire alarm contact shall de-energize all unit ventilators, fan coil units, air handling units and supply and exhaust fans (except kitchen hood exhaust fan upon activation.
17. Starts fan F-9 for that zone in lieu of erv.



MEDIA CENTER HUMIDITY CONTROL DIAGRAM
SCALE NONE



EQUIPMENT & RELAY PANEL CONTROL WIRING DIAGRAM
SCALE NONE



BOILER/CHILLER CONTROL SCHEMATIC
SCALE NONE

EAST MIDDLE SCHOOL NO. 9761

PROFESSIONAL ENGINEERING ASSOCIATES, PA
7435 East Fifth Street
PO Box 31305
Charlotte, NC 28231
704.375.3515

Clark Nexsen/ Gunn Hardaway Architects
Suite 200 229 North Church Street
Charlotte, NC 28202 704 377 8800

TMG CONSULTING ENGINEERS
The Wilkins Group Consulting Engineers PC
dba TMG Consulting Engineers
301 Seaboard Lane
Suite 110/210
Franklin, TN 37024
615.261.7615 Phone
615.261.7625 Fax
Mobile: 999 561-0139

ISSUED FOR CONSTRUCTION

Charlotte-Mecklenberg Schools

NORTHRIDGE MIDDLE SCHOOL
RESOURCE DRAWINGS FROM EXISTING CONDITIONS

Charlotte-Mecklenberg Schools
7601 The Plaza
Charlotte, NC 28215

REVISIONS

NO	DESCRIPTION	DATE
1	ISSUED FOR CONSTRUCTION	9/27/22

SHEET INFORMATION

DATE	9/27/2022
JOB NUMBER	2202-01-002
DRAWN	ALG
APPROVED	CTM

CONTROLS

RM-123

SHEET 25 OF 25