SOMERS CENTRAL SCHOOL DISTRICT
AIR HANDLER REPLACEMENTS TO PRIMROSE ELEMENTARY SCHOOL

110 PRIMROSE ST, LINCOLNDALE, NY 10540

SED PROJECT CONTROL NUMBER 66-21-01-06-0-002-014

CONTRACT 'H' - HEATING VENTILATION AND AIR CONDITIONING

H2M architects + engineers
2700 Westchester Ave., Suite 415
Purchase, NY 10577
914.358.5623 ▪ www.h2m.com

CONSULTANTS:

MARK	DATE	DESCRIPTION

DESIGNED BY:	DRAWN BY:	CHECKED BY:	REVIEWED BY:
JMS	RLB	JMS	MWL

PROJECT No.:	DATE:	SCALE:
SMSD 2105	OCTOBER 2022	

CLIENT

Somers Central School District

Air Handler Replacement at Primrose Elementary School

Primrose Elementary School
110 Primrose Street
Lincolndale, NY 10540
SED #: 66-21-01-06-0-002-014

CONTRACT
CONTRACT H
HEATING VENTILATION AND AIR CONDITIONING

STATUS
FINAL BID SET

SHEET TITLE
GENERAL NOTES, MAPS, DRAWING LIST ABBREVIATIONS,STAGING PLAN AND LEGENDS

DRAWING No.
G000.00

ABBREVIATIONS

AB	Anchor Bolt
A/C	Air Conditioning
ACI	American Concrete Institute
ACST	Acoustic
ACT	Acoustical Ceiling Tile
ACU	Air Conditioning Unit
AD	Access Door
ADJ	Adjustable
A/E	Architect/Engineer
AFF	Above Finish Floor
ALUM	Aluminum
ANCH	Anchor
ANSI	American National Standards Institute
APA	Access Panel
APPROX	Approximately
ASPH	Asphalt
ASTM	American Society for Testing & Materials
AWS	American Welding Society
B	Fire Blanket
BAL	Balance
BB	Bulletin Board
BD	Board
BLDG	Building
BLK	Block
BLKG	Blocking
BM	Beam
B.O.	Bottom Of
BOL	Bottom Of Lintel
BOT	Bottom
CEIL	Ceiling
CEM	Cement
CER	Ceramic
CLO	Closet
CMU	Concrete Masonry Unit
COL	Column
CONC	Concrete
CONST	Construction
CONT	Continuous
CORR	Corridor
CPT	Carpet
DS	Downspout
DW	Dishwasher
DWG	Drawing
EA	Each
EL	Elevation
ELEC	Electric/Electrical
ELEV	Elevator
EP	Electrical Panel
EPY	Epoxy Coating
EQ	Equal
EQUIP	Equipment
EXIST	Existing
EXST	Exhaust
FAI	Fresh Air Intake
F.C.	Fire Code
FD	Floor Drain
FIN	Finish
FR	Fire Retardant
FTG	Footing
GA	Gauge
GWB	Gypsum Wall Board
GYP	Gypsum
GYP. BD.	Gypsum Board
HC	Handicapped
HM	Hollow Metal
HOR	Horizontal
HW	Hot Water
INSUL	Insulation/Insulating
INT	Interior
LAV	Lavatory
LDR	Leader
LT	Light
MAX	Maximum
MECH	Mechanical
MISC	Miscellaneous
MO	Masonry Opening
MR	Moisture Resistant
NIC	Not in Contract
NTS	Not to Scale
OC	On Center
OD	Outside Diameter
PLYWD	Plywood
PSF	Pounds per Square Foot
PSI	Pounds per Square Inch
PTD	Painted
PVC	Polyvinyl Chloride
R	Radius or Riser
RCP	Reflected Ceiling Plan
RD	Roof Drain
REINF	Reinforced
RM	Room
RO	Rough Opening
SIM	Similar
SPEC	Specifications
SQ	Square
SS	Stainless Steel
STL	Steel
TEMP	Temperature
TER	Terrazzo
THK	Thick
TYP	Typical
UTIL	Utility
VB	Vapor Barrier
VCT	Vinyl Composition Tile
VERT	Vertical
VTR	Vent Thru Roof
WC	Water Closet
WH	Water Heater
WWF	Welded Wire Fabric

GENERAL NOTES

ALL WORK SHALL COMPLY WITH THE NEW YORK STATE FIRE PREVENTION AND BUILDING CODE AS WELL AS THE NEW YORK STATE EDUCATION DEPARTMENT MANUAL OF PLANNING STANDARDS.

ALL NOTES APPEARING HEREIN, WITH THOSE ON VARIOUS DRAWINGS SHALL APPLY TO ALL DRAWINGS AND FORM PART OF THE CONTRACT DOCUMENTS.

IT IS THE CONTRACTORS RESPONSIBILITY TO FIELD VERIFY ALL DIMENSIONS, SQUARE FOOTAGES, LOCATIONS AND QUANTITIES OF ALL ITEMS AND/OR SPACES WHETHER INDICATED IN THE DRAWINGS OR NOT.

DO NOT SCALE MEASURE ANY DRAWING. VERIFY THE FIGURES, DIMENSIONS AND DESIGN INTENTION SHOWN ON THE DRAWINGS BEFORE BEGINNING LAYOUT OF THE WORK AND REPORT ANY ERRORS, INACCURACIES, OR CONFLICTS TO THE ARCHITECT/ENGINEER IN WRITING BEFORE BEGINNING ANY WORK.

ALL WORK SHALL COMPLY WITH ALL APPLICABLE CODES, LAWS AND STATUTES AS REQUIRED. STRICTLY ADHERE TO MANUFACTURER'S PRINTED INSTRUCTIONS.

VERIFY EXACT LAYOUT COMPATIBILITY WITH ALL EXISTING CONDITIONS BEFORE BEGINNING WORK.

DISTURB ONLY THOSE AREAS OF THE SITE AFFECTED BY RENOVATION, UNLESS NOTED OTHERWISE. PROTECT ALL OTHER AREAS. CONTRACTORS SHALL BE RESPONSIBLE FOR ALL PATCH AND REPAIR OF EXISTING FINISHES WHICH ARE DAMAGED DURING CONSTRUCTION.

EACH CONTRACTOR SHALL COMPLY WITH THE REQUIREMENTS OF ANSI AND PROVIDE WHERE APPLICABLE ADA COMPLIANT BUILDING COMPONENTS.

THE OWNER RESERVES THE RIGHT AT ALL TIMES TO DELIVER, PLACE AND INSTALL EQUIPMENT AND FURNISHINGS AS THE WORK PROGRESSES SO LONG AS THERE IS NOT A CONFLICT WITH THE CONTRACTORS.

THE CONTRACTOR SHALL MAINTAIN AT THE SITE ONE RECORD COPY OF ALL DRAWINGS, SPECIFICATIONS AND APPROVED SHOP DRAWINGS AND APPROVED SAMPLES MARKED CURRENTLY TO RECORD ALL CHANGES DURING CONSTRUCTION.

ANY CHANGES TO THE SCOPE OF WORK OR IN THE CONSTRUCTION DETAILS, WHETHER DUE TO FIELD CONDITIONS OR OMISSION SHALL BE DOCUMENTED BY THE ARCHITECT PRIOR TO EXECUTION. ANY INCREASE OR DECREASE IN THE CONTRACT PRICE MUST BE APPROVED IN WRITING PRIOR TO EXECUTION.

THE CONTRACTOR BY PRESENTING THEIR BID FOR THE WORK, REPRESENTS THAT HE/SHE HAS INSPECTED THE SITE AND IS COMPLETELY FAMILIAR WITH THE SCOPE OF WORK AND ALL FIELD CONDITIONS RELATED TO, AND AFFECTING THE WORK AND IT'S PERFORMANCE. EXCEPTIONS AFFECTING THE WORK AND IT'S PERFORMANCE, OR CONFLICTS BETWEEN FIELD CONDITIONS, SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT PRIOR TO THE SUBMISSION OF BIDS. FAILURE TO DO SO WILL NOT RESULT IN A CHANGE TO THE CONTRACT PRICE IT SHALL BE THE CONTRACTOR'S SOLE RESPONSIBILITY TO PROVIDE ALL NECESSARY ACCOMMODATIONS TO COMPLETE THE SCOPE OF WORK.

DRAWING LIST

INFORMATIONAL DRAWINGS

G000.00 GENERAL NOTES,ABBREVIATIONS, DRAWING LIST, STAGING PLAN, LOCATION MAP & LEGEND

HVAC DRAWINGS

M000.00 HVAC GENERAL NOTES, LEGENDS, AND SYMBOLS AND MECHANICAL SPECIFICATIONS
M001.00 HVAC MECHANICAL SPECIFICATIONS
M002.00 HVAC ELECTRICAL SPECIFICATIONS
M100.00 HVAC DEMOLITION AND NEW WORK PLAN
M600.00 MECHANICAL SCHEDULES AND DETAILS

STAGING NOTES

1. POST SIGNS INDICATING CONSTRUCTION AREA AND CONSTRUCTION EMPLOYEE ENTRANCE.
2. CONSTRUCTION FENCE TO BE 8'-0" HIGH CHAIN LINK FENCE LOCATED A MINIMUM OF 15'-0" FROM ALL WINDOW OPENINGS. ALL GATES ARE TO BE LOCKED AT ALL TIMES, EXCEPT FOR WHEN A WORKER IS IN ATTENDANCE TO PREVENT UNAUTHORIZED ENTRY.
3. CONTRACTOR IS TO STAGE ON THE SITE IN SUCH A MANNER AS TO NOT BLOCK OR ENCROACH UPON EXISTING EXITS/ENTRANCES TO BUILDING, AND VEHICLE ACCESS.

CONTRACTORS TEMPORARY STAGING AREA W/ 8'-0" HIGH CHAIN LINK FENCE AND (2) 10'-0" WIDE DOUBLE SWING GATE. GATES TO BE LOCKED BY THE CONTRACTOR AT ALL TIMES. SEE LEGEND BELOW.

PEDESTRIAN GATE

CURB RAMP AND WHEEL WASH

GRAVEL LAY DOWN ATOP GRASS AREA

PRIMROSE ELEMENTARY SCHOOL

LEGEND

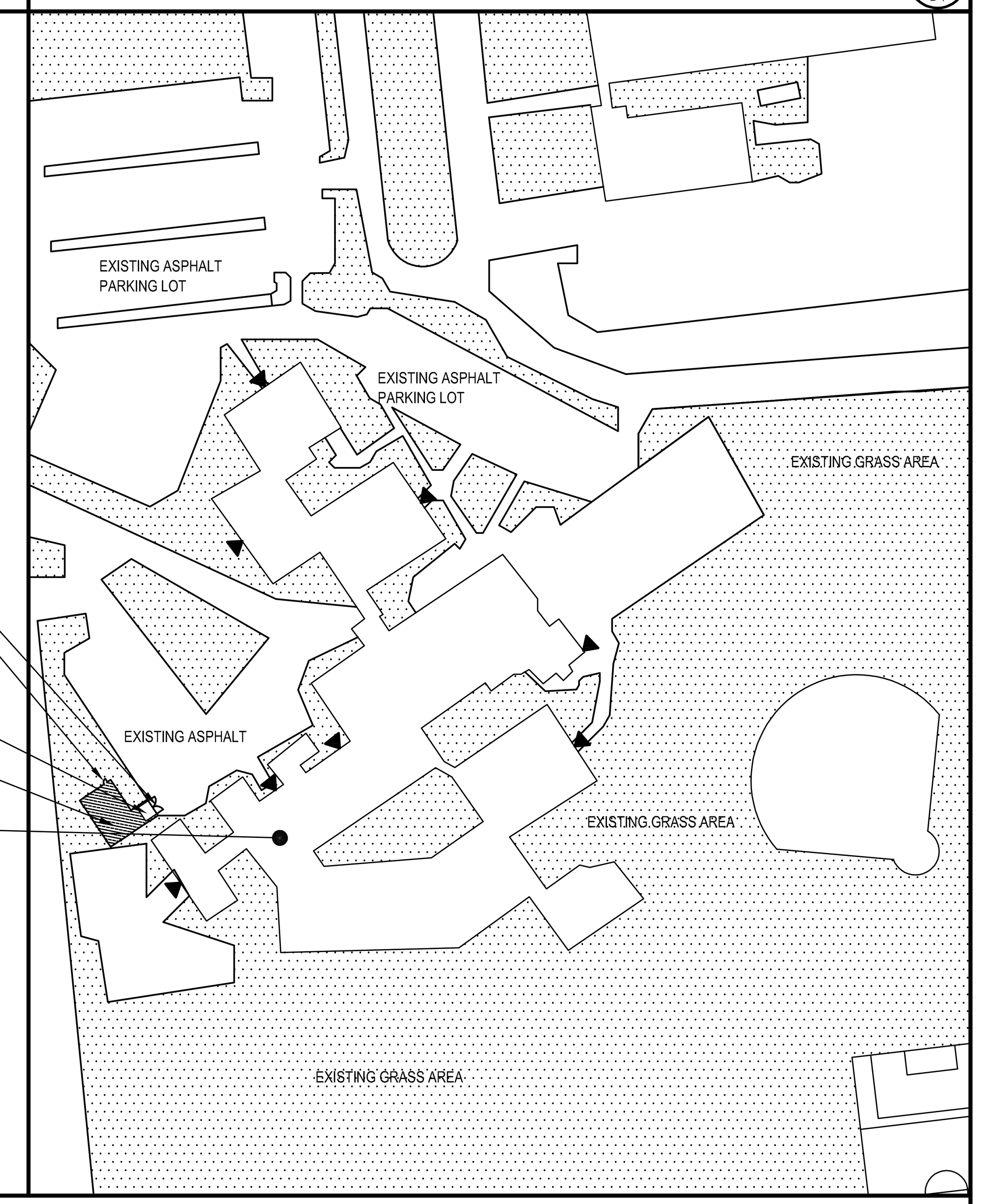
STAGING AREA

SYMBOLS

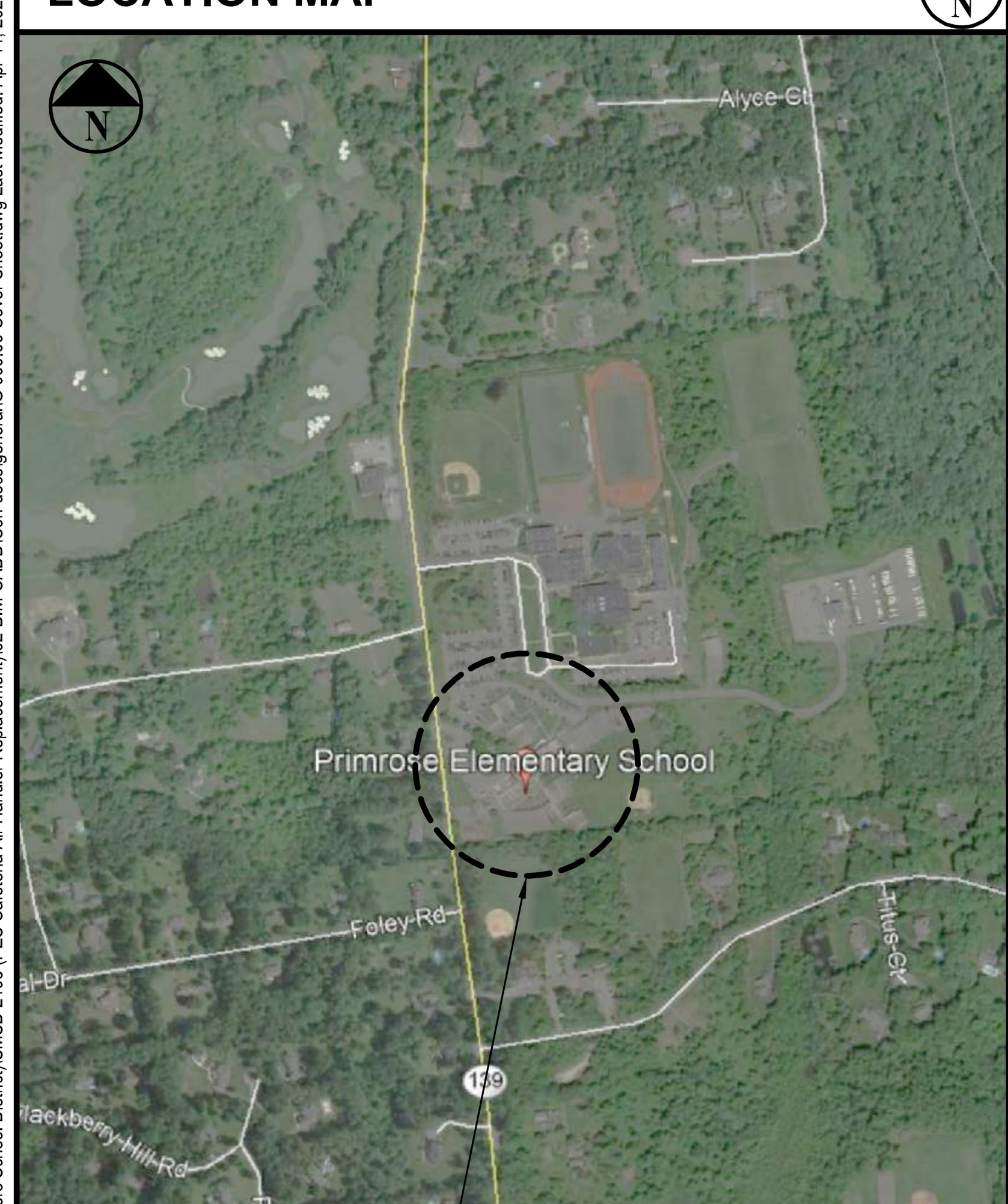
▲ STAFF ENTRANCE / EGRESS

△ ENTRANCE/EGRESS AFFECTED BY CONSTRUCTION ACTIVITY. TEMPORARY EGRESS TO BE MAINTAINED

STAGING PLAN



LOCATION MAP



PROJECT LOCATION

SYMBOLS LEGEND

DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL
ROOM DESIGNATION	GYMNASIUM / -	GYPSUM	
		CONCRETE	
SECTION MARK	1 / A5.0	AGGREGATE SUB-BASE	
DETAIL SYMBOL	1 / A5.1	EARTH	
ELEVATION KEY	1 / A4.0	BATT INSULATION	
INTERIOR ELEVATION REFERENCE	A B C D	PLYWOOD	
ELEVATION LINE		RIGID INSULATION	
REVISION	5	STEEL	
PARTITION TYPE	3	WOOD	
		WOOD BLOCKING	

UNIFORM SAFETY STANDARDS - FOR SCHOOL CONSTRUCTION AND MAINTENANCE PROJECTS (NYSED 155.5 REGULATION)

1. "THE OCCUPIED PORTION OF ANY SCHOOL BUILDING SHALL ALWAYS COMPLY WITH THE MINIMUM REQUIREMENTS NECESSARY TO MAINTAIN A CERTIFICATE OF OCCUPANCY."

   THE OCCUPIED PORTION OF ANY SCHOOL BUILDING SHALL COMPLY WITH THE COMMISSIONER OF EDUCATION 155.5 UNIFORM SAFETY STANDARDS.

2. PORTIONS OF WORK TO BE DISTURBED DURING THIS PROJECT ARE KNOWN TO CONTAIN ASBESTOS. CONTRACTOR SHALL REVIEW BUILDING AHERA REPORT AND QUALITY ENVIRONMENTAL SOLUTIONS REPORT (DATED AUGUST 11, 2022) TO VERIFY KNOWN ACM (ASBESTOS CONTAINING MATERIAL) LOCATIONS. CONTRACTOR SHALL NOT DISTURB ANY ITEMS / LOCATIONS LISTED IN THESE REPORTS UNLESS OTHERWISE NOTED.

3. "GENERAL SAFETY AND SECURITY STANDARDS FOR CONSTRUCTION PROJECTS:

   (1) ALL CONSTRUCTION MATERIALS SHALL BE STORED IN A SAFE AND SECURE MANNER.

   (2) FENCES AROUND CONSTRUCTION SUPPLIES OR DEBRIS SHALL BE MAINTAINED.

   (3) GATES SHALL ALWAYS BE LOCKED UNLESS A WORKER IS IN ATTENDANCE TO PREVENT UNAUTHORIZED ENTRY.

   (4) DURING EXTERIOR RENOVATION WORK, OVERHEAD PROTECTION SHALL BE PROVIDED FOR ANY SIDEWALKS OR AREAS IMMEDIATELY BENEATH THE WORK SITE OR SUCH AREAS SHALL BE FENCED OFF AND PROVIDED WITH WARNING SIGNS TO PREVENT ENTRY.

   (5) WORKERS SHALL BE REQUIRED TO WEAR PHOTO-IDENTIFICATION BADGES AT ALL TIMES FOR IDENTIFICATION AND SECURITY PURPOSES WHILE WORKING AT OCCUPIED SITES."

4. "SEPARATION OF CONSTRUCTION AREAS FROM OCCUPIED SPACES: CONSTRUCTION AREAS WHICH ARE UNDER THE CONTROL OF A CONTRACTOR AND THEREFORE NOT OCCUPIED BY DISTRICT STAFF OR STUDENTS SHALL BE SEPARATED FROM OCCUPIED AREAS. PROVISIONS SHALL BE MADE TO PREVENT THE PASSAGE OF DUST AND CONTAMINANTS INTO OCCUPIED PARTS OF THE BUILDING. PERIODIC INSPECTION AND REPAIRS OF THE CONTAINMENT BARRIERS MUST BE MADE TO PREVENT EXPOSURE TO DUST OR CONTAMINANTS. GYPSUM BOARD MUST BE USED IN EXIT WAYS OR OTHER AREAS THAT REQUIRE FIRE RATED SEPARATION. HEAVY DUTY PLASTIC SHEETING MAY BE USED ONLY FOR A VAPOR, FINE DUST OR AIR INFILTRATION BARRIER, AND SHALL NOT BE USED TO SEPARATE OCCUPIED SPACES FROM CONSTRUCTION AREAS.

   (1) A SPECIFIC STAIRWELL AND/OR ELEVATOR SHALL BE ASSIGNED OR CONSTRUCTION WORKER USE DURING WORK HOURS. IN GENERAL, WORKERS MAY NOT USE CORRIDORS, STAIRS OR ELEVATORS DESIGNATED FOR STUDENTS OR SCHOOL STAFF. WHERE NO STAIRWELL AND OR ELEVATOR IS ASSIGNED, WORKERS MUST ENTER THE CONSTRUCTION SPACES DIRECTLY FROM THE BUILDING EXTERIOR.

   (2) LARGE AMOUNTS OF DEBRIS MUST BE REMOVED BY USING ENCLOSED CHUTES OR A SIMILAR SEALED SYSTEM. THERE SHALL BE NO MOVEMENT OF DEBRIS THROUGH HALLS OF OCCUPIED SPACES OF THE BUILDING. NO MATERIAL SHALL BE DROPPED OR THROWN OUTSIDE THE WALLS OF THE BUILDING.

   (3) ALL OCCUPIED PARTS OF THE BUILDING AFFECTED BY RENOVATION ACTIVITY SHALL BE CLEANED AT THE CLOSE OF EACH WORKDAY. SCHOOL BUILDINGS OCCUPIED DURING A CONSTRUCTION PROJECT SHALL MAINTAIN REQUIRED HEALTH, SAFETY AND EDUCATIONAL CAPABILITIES AT ALL TIMES THAT CLASSES ARE IN SESSION."

5. A PLAN DETAILING HOW EXITING REQUIRED BY THE APPLICABLE BUILDING CODE WILL BE MAINTAINED.

6. WORK UNDER THIS CONTRACT WILL BE CONDUCTED DURING THE SUMMER RECESS OR DURING AFTER SCHOOL HOURS WHEN THE BUILDING IS UNOCCUPIED. IF THE BUILDING BECOMES OCCUPIED THE CONTRACTOR SHALL BE RESPONSIBLE TO MAINTAIN ALL EXISTING MEANS OF EGRESS IN A CLEAR AND FREE MANNER, INCLUDING THE STORAGE OF MATERIALS AND STAGING OF EQUIPMENT ON THE SITE. IF ANY PORTION OF THE BUILDING DOES BECOME OCCUPIED THE ARCHITECT WILL PROVIDE A DETAILED PLAN FOR EXITING, OVERHEAD PROTECTION AND EGRESS IN ACCORDANCE WITH APPLICABLE BUILDING CODES.

7. A PLAN DETAILING HOW ADEQUATE VENTILATION WILL BE MAINTAINED DURING CONSTRUCTION.

8. WORK UNDER THIS PROJECT WILL BE COMPLETED DURING OFF HOURS WHEN THE BUILDING WILL NOT BE OCCUPIED BY FACULTY, STAFF OR STUDENTS. IF A PORTION OF THE BUILDING IS TO BECOME OCCUPIED DURING THE CONSTRUCTION PROCESS THE CONTRACTOR SHALL CLOSE OFF ALL INTAKES, OPENINGS, AND MECHANICAL VENTILATION SYSTEMS ADJACENT TO THE WORK AREA. THE ARCHITECT SHALL ASSIST THE CONTRACTOR IN DEVELOPING A PLAN TO PROVIDE ALTERNATE MEANS OF FRESH AIR TO ALL OCCUPIED SPACES.

9. "CONSTRUCTION AND MAINTENANCE OPERATIONS SHALL NOT PRODUCE NOISE IN EXCESS OF 60 DBA IN OCCUPIED SPACES OR SHALL BE SCHEDULED FOR TIMES WHEN THE BUILDING OR AFFECTED BUILDING SPACES ARE NOT OCCUPIED OR ACOUSTICAL ABATEMENT MEASURES SHALL BE TAKEN."

10. "THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CONTROL OF CHEMICAL FUMES, GASES, AND OTHER CONTAMINATES PRODUCED BY WELDING, GASOLINE OR DIESEL ENGINES, ROOFING, PAVING, PAINTING, ETC. TO ENSURE THEY DO NOT ENTER OCCUPIED PORTIONS OF THE BUILDING OR AIR INTAKES." ALL VENTS SHALL BE SEALED TO PREVENT CONTAMINANTS FROM THE CONSTRUCTION AREA FROM ENTERING THE OCCUPIED AREAS OF THE BUILDING.

11. "THE CONTRACTOR SHALL BE RESPONSIBLE TO ENSURE THAT ACTIVITIES AND MATERIALS WHICH RESULT IN "OFF-GASSING" OF VOLATILE ORGANIC COMPOUNDS SUCH AS GLUES, PAINTS, FURNITURE, CARPETING, WALL COVERING, DRAPERY, ETC. ARE SCHEDULED, CURED OR VENTILATED IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS BEFORE A SPACE CAN BE OCCUPIED."

12. "LARGE AND SMALL ASBESTOS ABATEMENT PROJECTS AS DEFINED BY 12NYCRR56 SHALL NOT BE PERFORMED WHILE THE BUILDING IS OCCUPIED." IT IS OUR INTERPRETATION THAT THE TERM "BUILDING", AS REFERENCED IN THIS SECTION, MEANS A WING OR MAJOR SECTION OF A BUILDING THAT CAN BE COMPLETELY ISOLATED FROM THE REST OF THE BUILDING WITH SEALED NON COMBUSTIBLE CONSTRUCTION. THE ISOLATED PORTION OF THE BUILDING MUST CONTAIN EXITS THAT DO NOT PASS THROUGH THE OCCUPIED PORTION AND VENTILATION SYSTEMS MUST BE PHYSICALLY SEPARATED AND SEALED AT THE ISOLATION BARRIER.

13. EXTERIOR WORK SUCH AS ROOFING, FLASHING, SIDING, OR SOFFIT WORK MAY BE PERFORMED ON OCCUPIED BUILDINGS PROVIDED PROPER VARIANCES ARE IN PLACE AS REQUIRED, AND COMPLETE ISOLATION OF VENTILATION SYSTEMS AND AT WINDOWS IS PROVIDED. CARE MUST BE TAKEN TO SCHEDULE WORK SO THAT CLASSES ARE NOT DISRUPTED BY NOISE OR VISUAL DISTRACTION.

14. MINOR ASBESTOS PROJECTS DEFINED BY 12NYCRR56 AS AN ASBESTOS PROJECT INVOLVING THE REMOVAL, DISTURBANCE, REPAIR, ENCAPSULATION, ENCLOSURE OR HANDLING OF 10 SQUARE FEET OF ASBESTOS OR ASBESTOS MATERIAL MAY BE PERFORMED IN UNOCCUPIED AREAS OF AN OCCUPIED BUILDING IN ACCORDANCE WITH 12NYCRR56.

15. NONE OF THE SURFACES AND/OR MATERIALS TO BE REMOVED OR DISTURBED BY THIS RENOVATION ARE SUSPECT OF CONTAINING LEAD.

16. UNDER NEW YORK STATE LAW SMOKING IS PROHIBITED ON SCHOOL GROUNDS. EMPLOYEES FOUND TO BE SMOKING ON SCHOOL GROUNDS SHALL BE ORDERED OFF SITE AND A SECOND OFFENSE WILL BE GROUNDS FOR PERMANENT REMOVAL FROM PROJECT. LEGAL PENALTIES MAY ALSO BE APPLIED.

17. ALL CONTRACTORS SHALL TAKE EVERY PRECAUTION AND SHALL PROVIDE SUCH EQUIPMENT AND FACILITIES AS ARE NECESSARY OR REQUIRED FOR THE SAFETY OF ITS EMPLOYEES. IN CASE OF AN ACCIDENT, FIRST AID SHALL BE ADMINISTERED TO ANY WHO MAY BE INJURED IN THE PROGRESS OF THE WORK. IN ADDITION, THE CONTRACTOR SHALL BE PREPARED FOR THE REMOVAL TO THE HOSPITAL FOR TREATMENT OF ANY EMPLOYEE EITHER SERIOUSLY INJURED OR ILL.

18. THE CONTRACTOR SHALL PROVIDE TEMPORARY WEATHER-TIGHT AND INSULATED ENCLOSURES AS MAY BE REQUIRED BY THE SCOPE OF WORK FOR ALL EXTERIOR OPENINGS SO AS TO PROTECT ALL WORK FROM THE WEATHER, AND TO PROVIDE SECURITY AGAINST UNAUTHORIZED ENTRY. ENCLOSURES SHALL NOT CREATE DEAD END CONDITIONS, REQUIRED EXITS SHALL BE MAINTAINED FREE AND CLEAR.

Plotted on: Oct 20, 2022 - 2:44pm By mlantier

ABBREVIATIONS

AFF	ABOVE FINISHED FLOOR
BCU	BUILDING CONTROL UNIT
BTU	BRITISH THERMAL UNIT
CFH	CUBIC FEET PER HOUR
CFM	CUBIC FEET PER MINUTE
CLG	CEILING
COMM.	COMMUNICATION
CV	CONTROL VALVE
(D)	DEMOLISH
DB	DRY BULB
DCV	DEMAND CONTROLLED VENTILATION
DEG. F	DEGREES FAHRENHEIT
DIA	DIAMETER
DX	DIRECT EXPANSION
'E'	ELECTRICAL CONTRACTOR
(E)	EXISTING
EA	EACH
EAT	ENTERING AIR TEMPERATURE
EER	ENERGY EFFICIENCY RATING
ESP	EXTERNAL STATIC PRESSURE
FAI	FRESH AIR INTAKE
FD	FLOOR DRAIN
FLA	FULL LOAD AMPS
FT. H20	FEET OF WATER
'G'	GENERAL CONSTRUCTION CONTRACTOR
GPM	GALLONS PER MINUTE
GPH	GALLONS PER HOUR
H	HEIGHT
'H'	HVAC CONTRACTOR
HP	HORSEPOWER
IN.	INCHES
IN. W.C. (W.G.)	INCHES WATER COLUMN (WATER GAUGE)
KW	KILOWATTS
L	LENGTH
LAT	LEAVING AIR TEMPERATURE
LBS	POUNDS
LCD	LIQUID CRYSTAL DISPLAY
LDB	LEAVING DRY BULB TEMPERATURE
LWB	LEAVING WET BULB TEMPERATURE
LWT	LEAVING WATER TEMPERATURE
M	METER
MAX	MAXIMUM
MBH	1,000 BTU PER HOUR
MCA	MINIMUM CIRCUIT AMPACITY
MIN	MINIMUM
MNF	MANUFACTURER
N.C.	NORMALLY CLOSED
N.O.	NORMALLY OPEN
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
NPT	NATIONAL PIPE THREAD
NTS	NOT TO SCALE
OAI	OUTDOOR AIR INTAKE
OD	OUTER DIAMETER
OED	OPEN ENDED DUCT
'P'	PLUMBING CONTRACTOR
PD	PRESSURE DROP
PSIG	LBS / SQUARE INCH (GAUGE PRESSURE)
RD	ROOF DRAIN
RPM	REVOLUTIONS PER MINUTE
RPZ	REDUCED PRESSURE ZONE
SAT	SUPPLY AIR TEMPERATURE
SEER	SEASONAL ENERGY EFFICIENCY RATING
TEMP	TEMPERATURE
TG	TRANSFER GRILLE
TYP	TYPICAL
VFD	VARIABLE FREQUENCY DRIVE
W	WIDTH
WB	WET BULB
WMS	WIRE MESH SCREEN

DUCTWORK LEGEND

SYMBOL	ABBREV	DESCRIPTION
		DUCTWORK BRANCH CONNECTION
	VD	VOLUME DAMPER
	CD	ROUND FACE SUPPLY DIFFUSER
	SEE AIR DEVICE SCHEDULE	SIDEWALL SUPPLY, RETURN OR EXHAUST GRILLE/REGISTER
	SEE AIR DEVICE SCHEDULE	SQUARE FACE SUPPLY DIFFUSER
	SEE AIR DEVICE SCHEDULE	BOTTOM RETURN OR EXHAUST GRILLE/REGISTER
	FC	FLEXIBLE CONNECTION
		TURNING VANES
		RECTANGULAR TO ROUND TRANSITION
	AL	ACOUSTICAL LINING
		END CAP
	SEE AIR DEVICE SCHEDULE	SUPPLY DIFFUSER WITH DIRECTIONAL FLOW (SOLID HATCH INDICATES BLANK OFF PANEL)
		SUPPLY DUCT DROP (TURN DOWN)
		RETURN/EXHAUST DUCT DROP (TURN DOWN)
		SUPPLY DUCT RISE
		RETURN/EXHAUST DUCT RISE
DSD	DSD	DUCT SMOKE DETECTOR
M	MD	MOTORIZED DAMPER WITH ACTUATOR
OR	AD	ACCESS DOOR
	FD/AD	FIRE DAMPER WITH ACCESS DOOR
	FSD/AD	FIRE SMOKE DAMPER WITH ACCESS DOOR
		FAN
		WORK TO BE REMOVED
		POINT OF DISCONNECTION FROM EXISTING
		POINT OF CONNECTION TO EXISTING

CONTROLS LEGEND

SYMBOL	ABBREV	DESCRIPTION
C		CARBON MONOXIDE SENSOR
T		THERMOSTAT
S		DIGITAL TEMPERATURE SENSOR
H		HUMIDITY SENSOR
C2		CARBON DIOXIDE SENSOR
P		PRESSURE SENSOR

PIPING LEGEND

SYMBOL	ABBREV	DESCRIPTION
		NEW WORK
		PIPING DOWN/ PIPING UP
		BALL VALVE WITH HOSE END CONNECTION
	TH	THERMOMETER
	U	UNION
	FPC	FLEXIBLE PIPE CONNECTION
		DIRECTION OF FLOW
	PSR	PRESSURE SAFETY AND RELIEF VALVE
	PRV	PRESSURE REDUCING VALVE
	BV	BALL VALVE
	BA	BALANCING VALVE
	BFV	BUTTERFLY VALVE
		TEMPERATURE SENSOR WITH THERMOWELL
	GA	GATE VALVE
	GB	GLOBE VALVE
	AV	AUTOMATIC AIR VENT
	CV	2-WAY ELECTRONIC CONTROL VALVE
	CV	3-WAY ELECTRONIC CONTROL VALVE
	CV	2-WAY PNEUMATIC CONTROL VALVE
	CV	3-WAY PNEUMATIC CONTROL VALVE
	STR	STRAINER WITH BLOW OFF VALVE WITH HOSE END CONNECTION
	FD	FLOOR DRAIN
S		AIR SEPARATOR
F&T		STEAM TRAPS (INDICATE TYPE)
	CH	CHECK VALVE
	PG	PRESSURE GAUGE WITH GAUGE COCK
	RED	REDUCER
	CO	CLEANOUT END CAP
		PIPE GUIDE
		PIPE ANCHOR
		CAPPED PIPE
		PUMP
		WORK TO BE REMOVED
		POINT OF DISCONNECTION FROM EXISTING
		POINT OF CONNECTION TO EXISTING
	TDV	TRIPLE DUTY VALVE

ASBESTOS REMOVAL NOTES:
THE CONTRACTOR SHALL COMPLETELY ABATE AND DISPOSE OF THE EXISTING PIPING, PIPE INSULATION, AND JOINTS/FITTINGS/ ELBOWS/ETC. IN THE FAN ROOM (MER). PLEASE REFER TO THE QUALITY ENVIRONMENTAL SOLUTIONS REPORT (DATED AUGUST 11, 2022) AND SPECIFICATION 028000 - ASBESTOS REMOVAL FOR ADDITIONAL INFOMATION.

BIDS

BASE BID:	ALL WORK ASSOCIATED WITH AHU-2 ONLY. AHU-2 HEATING ONLY / WITHOUT COOLING COIL.
ALTERNATE #1:	ALL WORK ASSOCIATED WITH AHU-1 ONLY.
ALTERNATE #2:	ADDER FOR COOLING COIL ONLY IN AHU-2.
ALTERNATE #3:	ADDER FOR COOLING COIL, CONDENSER, REFRIGERANT PIPING, ETC. FOR AHU-2.
ALTERNATE #4:	INCLUDE BASE BID, ALT#1 & #3.

GENERAL NOTES

1. PROVIDE ALL MATERIALS AND EQUIPMENT AND PERFORM ALL LABOR REQUIRED TO INSTALL COMPLETE AND OPERABLE MECHANICAL SYSTEMS AS INDICATED ON THE DRAWINGS, AS SPECIFIED AND AS REQUIRED BY CODE.
2. THE CONTRACTOR, BY PRESENTING THEIR BID FOR THE WORK, REPRESENTS THAT HE/SHE HAS INSPECTED THE SITE AND IS COMPLETELY FAMILIAR WITH THE SCOPE OF WORK AND ALL FIELD CONDITIONS RELATED TO, AND AFFECTING THE WORK AND ITS PERFORMANCE. EXCEPTIONS AFFECTING THE WORK AND ITS PERFORMANCE, OR CONFLICTS BETWEEN FIELD CONDITIONS, SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT PRIOR TO THE SUBMISSION OF BIDS.
3. PERFORM ALL WORK IN ACCORDANCE WITH THE PLUMBING CODE, FIRE CODE, MECHANICAL CODE, ENERGY CONSERVATION CONSTRUCTION CODE, AND FUEL GAS CODE OF NEW YORK STATE AND THE REQUIREMENTS OF THE LOCAL AUTHORITIES HAVING JURISDICTION.
4. COMPLY WITH THE NATIONAL ELECTRIC CODE AND THE REQUIREMENTS OF DIVISION 26 FOR ALL ELECTRICAL INSTALLATIONS.
5. FIRE STOP ALL OPENINGS IN FIRE RATED CONSTRUCTION FOR PIPING, DUCTWORK, CONDUIT, ETC. PROVIDE FIRE DAMPERS AND ACCESS DOORS IN ALL OPENINGS IN FIRE RATED FLOORS, PARTITIONS, AND WALLS FOR DUCTWORK AS PER THE MECHANICAL CODE OF NEW YORK STATE. (SEE ARCHITECTURAL DRAWINGS FOR LOCATIONS OF FIRE RATED CONSTRUCTION.)
6. DO NOT SCALE DRAWINGS. DRAWINGS FOR HVAC WORK ARE DIAGRAMMATIC AND ARE INTENDED TO CONVEY SCOPE AND GENERAL ARRANGEMENT ONLY. THE LOCATIONS OF ALL ITEMS SHOWN ON THE DRAWINGS OR CALLED FOR IN THE SPECIFICATIONS THAT ARE NOT DEFINITELY FIXED BY DIMENSIONS ARE APPROXIMATE. COORDINATE CONTRACT DOCUMENTS, PROJECT REQUIREMENTS, WORK OF OTHERS, AND EQUIPMENT AND MATERIALS PURCHASED WITH FIELD DIMENSIONS. INSTALL ALL EQUIPMENT AS PER MANUFACTURER'S REQUIREMENTS TO PROVIDE PROPER CLEARANCE FOR INSTALLATION, OPERATION, AND MAINTENANCE. CONTRACTOR'S INTENDED MEANS AND METHODS OF INSTALLATION AND CONTRACTOR'S FABRICATED ITEMS SHALL ENSURE A PROPER "FIT" AND INSTALLATION. BRING ANY CONFLICTS TO THE ATTENTION OF THE ARCHITECT/ENGINEER DURING THE SUBMITTAL PHASE FOR RESOLUTION PRIOR TO PURCHASING ANY EQUIPMENT.
7. MAINTAIN MAXIMUM HEADROOM AND SPACE CONDITIONS AT ALL POINTS. WHERE HEADROOM AND SPACE CONDITIONS APPEAR INADEQUATE, NOTIFY THE ARCHITECT/ENGINEER PRIOR TO PROCEEDING WITH INSTALLATION. MAXIMIZE HEADROOM FROM FINISHED FLOOR TO UNDERSIDE OF PIPES, DUCTS, CONDUITS, SUSPENDED EQUIPMENT, ETC., THROUGHOUT ACCESS ROUTES IN MECHANICAL ROOMS (NOTE EXISTING CLEAR HEIGHT FROM FINISHED FLOOR TO BOTTOM OF STEEL JOISTS IS 5'-0" (+/-)..
8. FIELD VERIFY AND COORDINATE ALL DUCT AND PIPING DIMENSIONS BEFORE FABRICATION. MAKE MODIFICATIONS IN THE LAYOUT AS NEEDED TO PREVENT CONFLICT WITH WORK OF OTHER TRADES OR FOR PROPER EXECUTION OF THE WORK. OBTAIN THE APPROVAL OF THE ARCHITECT/ENGINEER FOR MODIFICATIONS.
9. PROVIDE PRODUCTS OF ONE MANUFACTURER WHERE TWO OR MORE ITEMS OF THE SAME TYPE OF MATERIAL OR EQUIPMENT IS REQUIRED.
10. INSTALL ALL EQUIPMENT AND APPURTENANCES IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS, CONTRACT DOCUMENTS, AND APPLICABLE CODES AND REGULATIONS. REFER TO DETAILS FOR ADDITIONAL PIPING AND EQUIPMENT INSTALLATION REQUIREMENTS.
11. LOCATE ALL TEMPERATURE AND PRESSURE MEASURING DEVICES IN ACCESSIBLE LOCATIONS WITH STRAIGHT SECTION OF PIPE OR DUCT UP- AND DOWNSTREAM AS RECOMMENDED BY THE MANUFACTURER TO ENSURE MANUFACTURER CERTIFIED ACCURACY.
12. COORDINATE ALL EQUIPMENT CONNECTIONS WITH MANUFACTURER'S CERTIFIED DRAWINGS. COORDINATE AND PROVIDE ALL PIPING AND DUCT TRANSITIONS REQUIRED FOR FINAL CONNECTIONS TO EQUIPMENT.
13. COORDINATE LOCATIONS AND SIZES OF ALL FLOOR, WALL, AND ROOF OPENINGS WITH ALL OTHER TRADES. COORDINATE ALL PIPING AND EQUIPMENT SUPPORTED FROM STRUCTURE WITH GENERAL CONSTRUCTION WORK.
14. COMPLETE ALL PRESSURE TESTS BEFORE ANY MECHANICAL EQUIPMENT, DUCTWORK, OR PIPING INSULATION IS APPLIED.
15. TESTING, ADJUSTING, AND BALANCING AGENCY SHALL BE A MEMBER OF THE ASSOCIATED AIR BALANCE COUNCIL (AABC) OR THE NATIONAL ENVIRONMENTAL BALANCING BUREAU (NEBB), PERFORM ALL TESTING, ADJUSTING, AND BALANCING IN ACCORDANCE WITH THE SPECIFICATIONS.
16. MAKE ALL ATTACHMENTS TO JOISTS, TRUSSES, OR JOIST GIRDERS AT PANEL POINTS. PROVIDE BEAM CLAMPS MEETING MSS STANDARDS. THE USE OF C-CLAMPS IS NOT PERMITTED.
17. PROVIDE CONCRETE PAD EXTENSION ALL FLOOR MOUNTED EQUIPMENT (IF REQUIRED). EXTEND PAD 4 INCHES BEYOND THE EQUIPMENT ON ALL SIDES.
18. INTERNALLY LINE ALL SUPPLY AND RETURN DUCTWORK WITHIN MER WITH 1" THICK INSULATION. INTERNALLY LINED DUCTWORK MEETING THIS REQUIREMENT SHALL ALSO BE PROVIDED WITH EXTERNALLY APPLIED INSULATION AS REQUIRED BY THE SPECIFICATIONS. SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
19. INSTALL PIPING, DUCTWORK, AND CONDUIT CONCEALED IN AREAS HAVING HUNG CEILINGS AND/OR FURRED SPACES UNLESS OTHERWISE INDICATED ON THE DRAWINGS.

WORK IN EXISTING AREAS

1. EXISTING CONDITIONS, INCLUDING EQUIPMENT, DUCT AND PIPE SIZES AND LOCATIONS, INDICATED ON THE DRAWINGS ARE DIAGRAMMATIC. CONFIRM ALL EXISTING CONDITIONS PRIOR TO PROCEEDING WITH THE WORK.
2. CUT AND ROUGH PATCH EXISTING CONSTRUCTION AS REQUIRED FOR THE PERFORMANCE OF THE WORK. FINISH PATCHING AND FLASHING REQUIREMENTS ARE SHOWN ON THE ARCHITECTURAL DRAWINGS. PERFORM ALL CUTTING AND PATCHING WORK IN A MANNER SUCH THAT ANY EXISTING WARRANTEES/GUARANTEES ARE NOT VOIDED. USE QUALIFIED PERSONNEL IN PERFORMANCE OF THE WORK.

CONTRACT 'H' SCOPE NOTES

1. SUPPLY AND INSTALL ALL LOUVERS (OR WORK ASSOCIATED WITH REMOVAL AND RE-INSTALLATION OF EXISTING LOUVERS). SUBMIT LOUVER COLOR AND CONFIGURATION OF ANY NEW LOUVERS TO THE ARCHITECT/ENGINEER FOR APPROVAL.
2. SUPPLY AND INSTALL SMOKE DETECTORS (INCLUDING WIRING) IN DUCTWORK FOR AIR HANDLING UNITS RATED AT 2,000 CFM OR GREATER.
3. FURNISH AND INSTALL ALL NECESSARY CONTROL WIRING, CONDUIT, AND ACCESSORIES AS REQUIRED TO PROVIDE FULLY FUNCTIONING SYSTEMS AND SEQUENCES OF OPERATION.
4. ANY WORK ASSOCIATED WITH LINTELS, SLEEVES, CHASE ENCLOSURES, ETC. (IF REQUIRED) IS PART OF CONTRACT 'H'.
5. PERFORM ALL CUTTING, PATCHING AND FINISHING AS REQUIRED IN THE EXECUTION OF THE WORK.

LEGENDS/ABBREVIATIONS NOTES

1. ABBREVIATIONS AND SYMBOLS ON THIS SHEET DO NOT DEFINE THE SCOPE OF WORK.

VENTILATION INDEX BASED ON 2020 MECHANICAL CODE OF NEW YORK STATE SECTION 403

EQUIPMENT NO.	ROOM NUMBER	OCCUPANCY CLASSIFICATION	FLOOR AREA (SF)	OCCUPANCY LOAD (PERSONS/1000 SF)	NUMBER OF OCCUPANTS	OCCUPANT BASED OA RATE (CFM/OCCUPANT)	AREA BASED OUTSIDE AIR RATE (CFM/SF)	TOTAL OA REQUIRED (CFM)	VENTILATION ZONE EFF (Ez)	EXHAUST REQUIRED (CFM)	ACTUAL OA PROVIDED (CFM)
AHU-1	KITCHEN	COOKING	871	20	NA	7.5	0.12	3500	NA	0.7 / sf	3500 (NOTE 2)
AHU-2	CAFETERIA	CAFETERIA	2813	100	281	7.5	0.18	2614	1.0 (NOTE 3)	NA	2660
AHU-2	CAFETERIA	STAGE	1089	70	76	10	0.06	825	1.0 (NOTE 3)	NA	840

NOTES:

1. VENTILATION RATE CALCULATED IN ACCORDANCE WITH SECTION 403.3.2 (COMMON VENTILATION SYSTEM) OF THE 2020 MECHANICAL CODE OF NYS.
2. MAKE-UP AIR TO MATCH EXISTING EXHAUST FAN
3. CEILING SUPPLY AND LOW RETURN

H2M architects + engineers
2700 Westchester Ave., Suite 415
Purchase, NY 10577
914.358.5623 • www.h2m.com

CONSULTANTS:

MARK	DATE	DESCRIPTION

STATE OF NEW YORK · ALEXANDER HOCHHAUS · 073570 · LICENSED PROFESSIONAL ENGINEER

DESIGNED BY:	DRAWN BY:	CHECKED BY:	REVIEWED BY:

PROJECT No.:	DATE:	SCALE:
SMSD 2105	OCTOBER 2022	

CLIENT

Somers Central School District

Air Handler Replacement at Primrose Elementary School

Primrose Elementary School
110 Primrose Street
Lincolndale, NY 10540

SED #: 66-21-01-06-0-002-014

CONTRACT

CONTRACT H
HEATING VENTILATION AND AIR CONDITIONING

STATUS

FINAL BID SET

SHEET TITLE

HVAC GENERAL NOTES, LEGENDS, AND SYMBOLS AND MECHANICAL SPECIFICATIONS

DRAWING No.

M000.00

A. GENERAL CONDITIONS

1. DRAWINGS AND GENERAL PROVISIONS OF CONTRACT, INCLUDING GENERAL AND SUPPLEMENTARY CONDITIONS AND ALL OTHER SPECIFICATION SECTIONS ARE A PART OF THIS CONTRACT AND APPLY TO THIS AND THE OTHER SECTIONS.

2. THE CONTRACTOR FOR THIS WORK IS REQUIRED TO READ THE ENTIRE SPECIFICATIONS AND REVIEW DRAWINGS FOR ALL OTHER TRADES.

3. THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO SUBMITTING HIS BID TO DETERMINE CONDITIONS AFFECTING THE WORK. BIDS SHALL SERVE AS EVIDENCE OF KNOWLEDGE OF EXISTING CONDITIONS AND ANY MODIFICATIONS WHICH ARE REQUIRED TO MEET THE INTENT OF THE DRAWINGS AND SPECIFICATIONS. FAILURE TO VISIT THE SITE DOES NOT RELIEVE THE CONTRACTOR OF RESPONSIBILITY IN PERFORMANCE OF WORK.

B. GENERAL REQUIREMENTS

1. THE CONTRACTOR SHALL PROVIDE ALL LABOR, MATERIALS, EQUIPMENT, SERVICES, TOOLS, TRANSPORTATION, INCIDENTALS AND DETAILS NECESSARY TO PROVIDE A COMPLETE AND FULLY FUNCTIONAL MECHANICAL SYSTEM AS SHOWN ON THE DRAWINGS, CALLED FOR IN SPECIFICATIONS, AND AS REQUIRED BY JOB CONDITIONS. FIELD VERIFY THE EXACT TYPE, SIZE AND LOCATION, ETC. OF EXISTING PIPE AND DUCTS PRIOR TO BID.

2. THE DRAWINGS AND SPECIFICATIONS ARE INTENDED TO SUPPLEMENT EACH OTHER AND ANY MATERIAL OR LABOR CALLED FOR IN ONE SHALL BE PROVIDED EVEN THOUGH NOT SPECIFICALLY MENTIONED IN BOTH. ANY MATERIAL OR LABOR WHICH IS NEITHER SHOWN ON THE DRAWINGS NOR CALLED FOR IN THE SPECIFICATIONS, BUT WHICH IS OBVIOUSLY NECESSARY TO COMPLETE THE WORK, AND WHICH IS USUALLY INCLUDED IN WORK OF SIMILAR CHARACTER, SHALL BE PROVIDED AS PART OF CONTRACT.

3. THE CONTRACTOR SHALL DO ALL CUTTING, CORE DRILLING, CHASING OR CHANNELING AND PATCHING REQUIRED FOR ANY WORK UNDER THIS DIVISION. CUTTING SHALL HAVE PRIOR APPROVAL BY THE CONSTRUCTION MANAGER PATCHING SHALL MATCH, FINISH OF SURROUNDING AREA.

C. CODES

ALL WORK SHALL BE PERFORMED IN A NEAT PROFESSIONAL MANNER USING GOOD ENGINEERING PRACTICES. ALL WORK SHALL CONFORM TO THE STATE'S, COUNTY'S, CITY'S, AND LOCAL CODES AND ORDINANCES, SAFETY, AND HEALTH CODES, NFPA CODES, ENERGY CODES, AND ALL OTHER APPLICABLE CODES AND REQUIREMENTS. THE CONTRACTOR SHALL INQUIRE INTO AND COMPLY WITH ALL APPLICABLE CODES, ORDINANCES, AND REGULATIONS. AFTER CONTRACT IS ISSUED, NO ADDITIONAL COST DUE TO CODE ISSUES SHALL BE REIMBURSED BY THE OWNER TO THE CONTRACTOR.

D. LICENSES, PERMITS, INSPECTIONS & FEES

1. THE CONTRACTOR SHALL OBTAIN AND PAY FOR ALL LICENSES, PERMITS, INSPECTIONS, AND FEES REQUIRED OR RELATED TO HIS WORK.

2. FURNISH TO THE CONSTRUCTION MANAGER ALL CERTIFICATES OF INSPECTION AND FINAL INSPECTION APPROVAL AT SUBSTANTIAL COMPLETION DATE OF PROJECT.

E. DRAWINGS

DRAWINGS (PLANS. SPECIFICATIONS, AND DETAILS) ARE DIAGRAMMATIC AND INDICATE THE GENERAL LOCATION AND INTENT OF THE MECHANICAL SYSTEMS. BECAUSE OF THE SMALL SCALE OF THE DRAWINGS, IT IS NOT POSSIBLE TO INDICATE ALL DUCT AND PIPING OFFSETS, FITTINGS AND ACCESSORIES THAT MAY BE REQUIRED.

F. DISCREPANCIES IN DOCUMENTS

DRAWINGS (PLANS, SPECIFICATIONS, AND DETAILS) ARE DIAGRAMMATIC AND INDICATE THE GENERAL LOCATION AND INTENT OF THE MECHANICAL SYSTEMS. WHERE DRAWINGS, EXISTING SITE CONDITIONS, SPECIFICATIONS, OR OTHER TRADES CONFLICT OR ARE UNCLEAR, ADVISE THE GENERAL CONTRACTOR IN WRITING, PRIOR TO SUBMITTAL OF BID. GENERAL CONTRACTOR IS RESPONSIBLE TO ADVISE THE CONSTRUCTION MANAGER, IN WRITING, OF VARIATIONS TO CONTRACT DOCUMENT'S PRIOR TO SUBMISSION OF BID. OTHERWISE, CONSTRUCTION MANAGER'S INTERPRETATION OF CONTRACT DOCUMENTS OR CONDITIONS SHALL BE FINAL WITH NO ADDITIONAL COMPENSATION PERMITTED.

G. TRADE NAMES AND MANUFACTURERS

WHERE TRADE NAMES AND MANUFACTURERS ARE USED ON THE DRAWINGS OR IN THE SPECIFICATIONS, THE EXACT EQUIPMENT SHALL BE USED AS A MINIMUM STANDARD FOR THE BASE BID. MANUFACTURERS CONSIDERED AS AN EQUAL OR BETTER IN ALL ASPECTS TO THAT SPECIFIED WILL BE SUBJECT TO APPROVAL. THE USE OF ANY UNAUTHORIZED EQUIPMENT SHALL BE SUBJECT TO REMOVAL AND REPLACEMENT AT THE CONTRACTOR'S EXPENSE.

H. SHOP DRAWINGS

1. SUBMIT SIX COPIES OF MATERIAL LISTS AND SHOP DRAWINGS FOR ALL EQUIPMENT AND DUCT FABRICATION DRAWINGS TO THE CONSTRUCTION MANAGER FOR APPROVAL PRIOR TO ORDERING EQUIPMENT. SUBMISSIONS MUST BE EARLY ENOUGH TO ALLOW THE CONSTRUCTION MANAGER TEN WORKING DAYS FOR REVIEW WITHOUT CAUSING DELAYS OR CONFLICTS TO THE JOB'S PROGRESS. SUBMITTALS SHALL BE IN ACCORDANCE WITH THE GENERAL CONDITIONS USING THE MANUFACTURER'S LISTED ON THE DRAWINGS. SHOP DRAWINGS SHALL INCLUDE ALL DATA THAT PERTAINS TO THE REQUIREMENTS SET FORTH ON THE DRAWINGS AND IN THE SPECIFICATIONS. THE SUBMITTAL SHALL INCLUDE BUT NOT LIMITED TO CUTS OR CATALOGS INCLUDING DESCRIPTIVE LITERATURE AND CHARACTERISTICS OF EQUIPMENT SHALL SHOW MAJOR DIMENSIONS, ROUGHING-IN DATA, CAPACITY, CURVES, PRESSURE DROP, CODE COMPLIANCE, MOTOR AND DRIVE DATA AND ELECTRICAL DATA. OBSERVE SPECIAL INSTRUCTIONS WHEN REQUIRED. SUBMITTALS SHALL BEAR THE STAMP OF THE GENERAL AND SUB-CONTRACTOR SHOWING THAT HE HAS REVIEWED AND CONFIRMED THAT THEY ARE IN CONFORMANCE WITH THE CONTRACT DRAWINGS AND SPECIFICATIONS OR INDICATE WHERE EXCEPTIONS TAKE PLACE. LACK OF SUCH CONTRACTOR'S REVIEW AND APPROVAL WILL BE CAUSE FOR REJECTION WITHOUT REVIEW BY CONSTRUCTION MANAGER. ALL SHOP DRAWINGS MUST APPEAR IN THE OPERATION AND MAINTENANCE MANUALS LEFT ON SITE AT JOB COMPLETION.

2. CONSTRUCTION MANAGER'S REVIEW OF SHOP DRAWINGS OR SCHEDULES SHALL NOT RELIEVE THE CONTRACTOR FROM RESPONSIBILITY FOR ERRORS, OMISSIONS OR OTHER DEFICIENCIES OR DEVIATIONS IN THE SHOP DRAWING FROM THE CONTRACT DRAWINGS AND SPECIFICATIONS.

I. RECORD DRAWINGS

1. THE CONTRACTOR SHALL MAINTAIN ONE COPY OF DRAWINGS AND SPECIFICATIONS ON THE JOB SITE TO RECORD DEVIATIONS FROM CONTRACT DRAWINGS, SUCH AS:
   a. LOCATION OF CONCEALED PIPING VALVES AND DUCTS.
   b. REVISIONS, ADDENDUMS, AND CHANGE ORDERS.
   c. SIGNIFICANT DEVIATIONS MADE NECESSARY BY FIELD CONDITIONS, APPROVED EQUIPMENT SUBSTITUTIONS, AND CONTRACTOR'S COORDINATION WITH OTHER TRADES.
   d. EXACT ROUTING OF ALL SANITARY AND DOMESTIC WATER PIPING UNDER FLOOR.

2. AT COMPLETION OF THE PROJECT AND BEFORE FINAL APPROVAL, THE CONTRACTOR SHALL MAKE ANY FINAL CORRECTIONS TO DRAWINGS AND CERTIFY THE ACCURACY OF EACH PRINT BY SIGNATURE THEREON. THE DRAWINGS ARE TO BE TURNED OVER TO THE OWNER.

J. GUARANTEE

THE CONTRACTOR SHALL GUARANTEE ALL MATERIALS AND WORK UNDER HIS CONTRACT, AND SHALL REPAIR OR REPLACE AT HIS OWN EXPENSE, ANY DEFECTIVE WORK, MATERIAL, OR EQUIPMENT WHICH MAY BE DISCOVERED WITHIN A PERIOD OF 12 MONTHS FROM THE DATE OF ACCEPTANCE (IN WRITING) OF THE INSTALLATION BY THE CONSTRUCTION MANAGER. PROVIDE EXTENDED WARRANTIES AS SPECIFIED WITH INDIVIDUAL EQUIPMENT IN CASE OF REPLACEMENT OR REPAIR OF EQUIPMENT DUE TO FAILURE WITHIN GUARANTEE PERIOD. GUARANTEE ON THAT PORTION OF WORK SHALL BE EXTENDED FOR A PERIOD OF ONE (1) YEAR FROM DATE OF SUCH REPLACEMENT OR REPAIR.

K. OPERATIONS MANUALS

ONE COPY OF EACH OPERATION AND MAINTENANCE MANUAL FOR ALL EQUIPMENT FURNISHED ON JOB SHALL BE COLLECTED AND INSERTED IN A "3" THREE RING BINDER AND TURNED OVER TO THE OWNER. EACH NOTEBOOK SHALL INCLUDE BUT NOT BE LIMITED TO INSTALLATION, MAINTENANCE AND OPERATING INSTRUCTIONS, PAMPHLETS OR BROCHURES APPROVED SHOP DRAWINGS AND WARRANTIES OBTAINED FROM EACH MANUFACTURER OF PRINCIPAL ITEMS OF EQUIPMENT.

L. SLEEVES

1. THE CONTRACTOR SHALL PROVIDE SLEEVES TO PROTECT EQUIPMENT OR FACILITIES IN THE INSTALLATION. EACH SLEEVE SHALL EXTEND THROUGH IT'S RESPECTIVE FLOOR, WALL OR PARTITION AND SHALL BE CUT FLUSH WITH EACH SURFACE EXCEPT SLEEVES THAT PENETRATE THE FLOOR, WHICH SHALL EXTEND 2" ABOVE THE FLOOR.

2. ALL SLEEVES AND OPENINGS THROUGH FIRE RATED WALLS AND/OR FLOORS SHALL BE FIRE SEALED WITH CALCIUM SILICATE, SILICONE "RTV" FOAM, "3M" FIRE RATED SEALANTS OR EQUAL, SO AS TO RETAIN THE FIRE RATING OF THE FLOOR OR WALL. CONFORM TO U.L. ASSEMBLY RATING OF FLOOR OR WALL.

3. SLEEVES IN BEARING AND MASONRY WALLS, FLOORS AND PARTITIONS SHALL BE STANDARD WEIGHT STEEL PIPE FINISHED WITH SMOOTH EDGES. FOR OTHER THAN MASONRY PARTITIONS, THROUGH SUSPENDED CEILINGS, OR FOR CONCEALED VERTICAL PIPING, SLEEVES SHALL BE NO. 22 U.S.G. GALVANIZED STEEL MINIMUM.

4. DUCT SLEEVES TO BE MINIMUM 14 GAUGE STEEL.

M. HANGERS

1. HANGERS SHALL INCLUDE ALL MISCELLANEOUS STEEL SUCH AS ANGLE IRON, BANDS, C-CLAMPS WITH RETAINING CLIPS, CHANNELS, HANGER RODS, ETC., NECESSARY FOR THE INSTALLATION OF WORK.

2. HANGERS SHALL BE FASTENED TO BUILDING STEEL, CONCRETE, OR MASONRY, BUT NOT TO PIPING OR DUCTWORK. HANGING FROM METAL DECK IS NOT PERMITTED. HANGERS MUST BE ATTACHED TO UPPER CHORD OF BAR JOIST. WHERE INTERFERENCES OCCUR, IN ORDER TO SUPPORT DUCTWORK OR PIPING. THE CONTRACTOR MUST INSTALL TRAPEZE TYPE HANGERS OR SUPPORTS WHICH HALL BE LOCATED WHERE THEY DO NOT INTERFERE WITH ACCESS TO FIRE DAMPERS, VALVES, ACCESS DOORS AND OTHER EQUIPMENT SERVICE REQUIREMENTS AND/OR OTHER TRADES. HANGER TYPES AND INSTALLATION METHODS ARE SUBJECT TO OWNER CRITERIA.

3. HANGERS FOR ALL INSULATED PIPING SHALL BE SIZED AND INSTALLED FOR THE OUTER DIAMETER OF INSULATION. INSTALL 6" LONG SPLIT CIRCLE GALVANIZED SADDLE BETWEEN THE HANGER AND THE PIPE INSULATION.

4. HANGERS AND PIPING OF DISSIMILAR METALS SHALL BE DI-ELECTRICALLY SEPARATED FROM ONE ANOTHER.

N. ELECTRICAL MOTORS

1. FURNISH, INSTALL AND ALIGN ALL MOTORS REQUIRED FOR THIS EQUIPMENT, UNLESS THEY ARE FACTORY INSTALLED ON THE UNIT, ALL STARTERS AND ASSOCIATED WIRING AND SAFETY SWITCHES FOR SUCH MOTORS SHALL BE FURNISHED AND INSTALLED BY THE ELECTRICAL CONTRACTOR. STARTERS SHALL MEET ALL REQUIREMENTS AS DEFINED IN THE ELECTRICAL DIVISION OF THE SPECIFICATIONS.

2. DESIGN, CONSTRUCTION AND PERFORMANCE CHARACTERISTICS OF MOTORS SHALL CONFORM TO ALL APPLICABLE PROVISIONS OF LATEST NEMA, ANSI, ISEE, STANDARDS FOR ELECTRICAL EQUIPMENT. ALL MOTORS SHALL BE SUITABLE FOR OPERATION ON VOLTAGE VARIATION OF PLUS OR MINUS 10%, 40 DEGREES AMBIENT TEMPERATURE; HAVE A SERVICE FACTOR OF NOT LESS THAN 1.15.

O. LOW VOLTAGE (24 VOLT) WIRING

1. THE CONTRACTOR IS TO INSTALL ALL LOW VOLTAGE WIRING REQUIRED FOR HIS EQUIPMENT. THIS WORK INCLUDES ALL TRANSFORMERS AND DEVICES TO MAKE THIS A COMPLETE FUNCTIONAL SYSTEM.

2. ALL WORK IS TO CONFORM TO THE LATEST ADDITION N.E.C AND TO DIVISION 26 ELECTRICAL SPECIFICATIONS.

3. ANY CONDUIT REQUIRED BY CODE OR THE OWNER WILL BE INSTALLED BY THE ELECTRICAL SUBCONTRACTOR.

HEATING, VENTILATION AND AIR CONDITIONING

A. SCOPE OF WORK

1. THE HVAC CONTRACTOR SHALL FURNISH ALL LABOR, MATERIALS, EQUIPMENT, SERVICES, TOOLS, TRANSPORTATION, AND FACILITIES NECESSARY FOR REASONABLY IMPLIED AND INCIDENTAL TO, THE FURNISHING, INSTALLATION, COMPLETION AND TESTING OF ALL THE WORK FOR THE MECHANICAL SYSTEMS AS SHOWN ON THE DRAWINGS, CALLED FOR IN THE SPECIFICATIONS, AND AS REQUIRED BY THE JOB CONDITIONS, TO INCLUDE, BUT NOT BE LIMITED TO THE FOLLOWING:
   a. HVAC UNITS, EQUIPMENT, AND APPURTENANCES
   b. PIPING, FITTINGS, VALVES AND ACCESSORIES
   c. DUCTWORK, FITTINGS, DAMPERS, AND INSULATION
   d. VIBRATION ISOLATION SPRINGS AND FLEXIBLE CONNECTIONS
   e. BLOCKING, CURBS AND STEEL FRAMING FOR SUPPORT
   f. TESTING, ADJUSTING, AND BALANCING
   g. OPERATING MANUALS
   h. TEMPERATURE CONTROLS, AND RELATED DIAGRAMS

2. BEFORE STARTING WORK, THIS CONTRACTOR SHALL EXAMINE THE ARCHITECTURAL, STRUCTURAL, MECHANICAL, AND ELECTRICAL PLANS AND SPECIFICATIONS TO SEQUENCE, COORDINATE, AND INTEGRATE THE VARIOUS ELEMENTS OF THE HVAC SYSTEM, MATERIALS, AND EQUIPMENT WITH OTHER CONTRACTORS TO AVOID INTERFERENCES AND CONFRONTATIONS.

B. FAN ROOM ACCESS

REMOVE, PROTECT AND STORE FAN ROOM WINDOW AND AIR PLENUM SECTION AS REQUIRED TO PROVIDE ACCESS TO FAN ROOM FOR EQUIPMENT DEMOLITION AND INSTALLATION OF NEW EQUIPMENT. CONTRACTOR IS RESPONIBLE TO RE-INSTALL ITEMS REMOVED TO PROVIDE AIR AND WEATHER TIGHT CONSTRUCTION AND ARCHITECTURAL FINISHES MATCHING THE EXISTING ADJACENT SURFACES. CONTRACTOR SHALL IDENTIFY ANY DEFECTIVE MATERIALS THAT ARE DAMAGED OR CANNOT BE PROPERLY REMOVED AND RE-INSTALLED PRIOR TO REMOVAL, OTHERWISE CONTRACTOR SHALL BE RESPONSIBLE TO REPLACE MATERIALS IN-KIND AT NO ADDITIONAL COST TO SCHOOL.

C. FAN ROOM FLOOR

CLEAN, SCRAPE OFF LOOSE MATERIALS AND PATCH THE ENTIRE FAN ROOM FLOOR AFTER EQUIPMENT, DUCTWORK AND PIPING HAS BEEN DEMOLISHED. USING TWO PART EPOXY PAINT - REFINISH FLOOR GRAY.

D. HVAC EQUIPMENT

1. AIR HANDLING EQUIPMENT

1. AIR HANDLING UNITS BASIS OF DESIGN IS TRANE AS SPECIFIED ON DRAWINGS. THE EQUIPMENT SHALL BE PROVIDED WITH FILTER SECTION, HEATING AND COOLING COIL (AHU-2 ONLY) AS SPECIFIED. AHU-2 COOLING COIL REFRIGERANT PIPING, CONTROLS AND CONDENSER IS NOT PART OF CURRENT SCOPE). EQUAL ALTERNATE EQUIPMENT SHALL BE SUBMITTED FOR APPROVAL WITH BID. NO ALTERNATES WILL BE ALLOWED AFTER BID AWARD WITHOUT APPROVAL OF ENGINEER.

2. ALL EQUIPMENT SHALL BE COMPLETE IN EVERY RESPECT WITH ALL DEVICES, APPURTENANCES, ACCESSORIES, AND CONTROLS SPECIFIED AND AS OTHERWISE REQUIRED TO MEET THE DESIGN INTENT AND OPERATION OF THE SYSTEMS SHOWN ON THE DRAWINGS AND SPECIFIED HERE IN.

3. EQUIPMENT SHALL BE INSTALLED IN STRICT ACCORDANCE WITH THE MANUFACTURERS DATA, SEE DRAWINGS FOR ADDITIONAL DETAILS.

2. TEMPERATURE AND CO2 SENSORS

PROVIDE NEW SPACE TEMPERATURE SENORS (ONE FOR KITCHEN, TWO FOR CAFETERIA) AND CO2 SENSORS (TWO FOR CAFETERIA).

3. VIBRATION ISOLATION DEVICES

1. VIBRATION ISOLATION DEVICES SHALL BE PROVIDED IN ALL SUPPORTS BETWEEN VIBRATING EQUIPMENT (AIR HANDLING UNITS,) AND EQUIPMENT PADS.

2. VIBRATING EQUIPMENT HUNG FROM STRUCTURE SHALL BE ISOLATED WITH RUBBER AND SPRING DEVICES. VIBRATING EQUIPMENT SUPPORTED FROM FLOOR SHALL BE ISOLATED WITH HOUSED SPRING MOUNT DEVICES.

3. EXAMINE DEAD LOAD AND OPERATING LOAD CONDITIONS WHEN SELECTING DEVICES. ADJUST FOR PROPER ALIGNMENT AND LOADING. AVOID "GROUNDING" THE ISOLATOR.

4. CHECK HANGER ROD SIZE FOR ALLOWABLE LOADS AT THE ISOLATING DEVICE AND AT THE UPPER AND LOWER ATTACHMENTS TO STRUCTURES, DUCTS, EQUIPMENT, ETC.

5. CONSULT MANUFACTURER FOR APPLICATION DATA.

4. METAL DUCTWORK- NO FIBERGLASS DUCT ALLOWED

1. NO DUCTWORK SHALL BE FABRICATED PRIOR TO APPROVAL BY THE CONSTRUCTION MANAGER. SIGNIFICANT DEVIATIONS FROM DESIGN MUST BE APPROVED BY CONSTRUCTION MANAGER PRIOR TO FABRICATION OR INSTALLATION. ALL DUCT MAINS ARE TO BE RECTANGULAR UNLESS NOTES OTHERWISE.

2. EXCEPT AS OTHERWISE INDICATED, FABRICATE AND INSTALL RECTANGULAR DUCTS WITH GALVANIZED SHEER STEEL, IN ACCORDANCE WITH SMACNA "HVAC DUCT CONSTRUCTION STANDARDS" OF THE LATEST EDITION. CONFORM TO THE REQUIREMENTS IN THE REFERENCED STANDARD FOR METAL THICKNESS, REINFORCING TYPES AND INTERVALS, TIE ROD APPLICATIONS, AND JOINT TYPES AND INTERVALS.

3. EXCEPT WHERE OTHERWISE INDICATED, CONSTRUCT DUCT SYSTEMS TO THE FOLLOWING PRESSURE CLASSIFICATIONS: (VERIFY WHETHER RETURN OR EXHAUST DUCT IS POSITIVE OR NEGATIVE PRESSURE).

4. SUPPLY DUCTS 2 INCHES WATER GAUGE, POSITIVE PRESSURE

5. RETURN AND EXHAUST DUCTS: 2 INCHES WATER GAUGE, NEGATIVE PRESSURE. PRESSURE TEST DUCTS FOR LEAKAGE. REMAKE LEAKING JOINTS AND APPLY SEALANTS AS REQUIRED TO FABRICATE A SYSTEM THAT DOES NOT EXCEED 5% LEAKAGE OR LESS AS STATED BY PRESSURE CLASS RATINGS IN SMACHA STANDARDS.

6. AS A MINIMUM, CROSSBREAK ALL FLAT SURFACES OR REINFORCE WITH A BEAD APPROXIMATELY ⅜" WIDE AND 3/16" DEEP ON 12" CENTERS TO PREVENT VIBRATIONS. DUCT. (FLEXIBLE DUCT CONNECTIONS TO THE DIFFUSER ARE NOT TO EXCEED 5'-0").

7. INSTALL DOUBLE THICKNESS TURNING VANES IN ALL RIGHT ANGLE ELBOWS.

8. INSTALL RIGID ROUND AND RECTANGULAR METAL DUCT WITH SUPPORT SYSTEMS INDICATED IN SMACNA STANDARDS. SUPPORT HORIZONTAL DUCTS WITHIN 2 FEET OF EACH ELBOW AND WITHIN 4 FEET OF EACH BRANCH INTERSECTION USING DOUBLE STRAP HANGERS ON EACH SIDE OF FITTING, SUPPORT VERTICAL DUCTS AT A MAXIMUM INTERVAL OF 16 FEET AND AT EACH FLOOR. NO WOOD SHALL BE USED TO SUPPORT OR BRACE DUCTS. PROVIDE SWAY AND SEISMIC BRACING AS REQUIRED BY STATE AND LOCAL CODES OR BY OWNER.

9. ALL TRAVERSE JOINTS AND SEAMS IN SUPPLY AIR DUCT SHALL BE SEALED AIR TIGHT WITH DAP CMC DUCT SEALER. JOINTS ALSO SHALL BE RIVETED OR CONNECTED WITH SHEET METAL SCREWS.

10. SOFT ELASTOMER BUTYL GASKET WITH ADHESIVE BACKING SHALL BE USED TO SEAL FLANGED JOINTS.

11. DUCT TRANSITIONS SHALL NOT EXCEED 30 DEGREES SLOPE EXCEPT AS SPECIFICALLY NOTED OTHERWISE.

12. PROVIDE ACCESS TO ALL MOTORIZED DAMPERS, FIRE DAMPERS, CONTROLS, AND OTHER ITEMS IN DUCTWORK THAT REQUIRE SERVICE OR INSPECTION. IF THE ACCESS PANEL LOCATION IS EXPOSED TO THE SALES AREA. IT MUST BE APPROVED BY THE OWNER'S CONSTRUCTION MANAGER PRIOR TO INSTALLATION.

ASBESTOS REMOVAL NOTES:

THE CONTRACTOR SHALL COMPLETELY ABATE AND DISPOSE OF THE EXISTING PIPING, PIPE INSULATION, AND JOINTS/FITTINGS/ ELBOWS/ETC. IN THE FAN ROOM (MER). PLEASE REFER TO THE QUALITY ENVIRONMENTAL SOLUTIONS REPORT (DATED AUGUST 11, 2022) AND SPECIFICATION 028000 - ASBESTOS REMOVAL FOR ADDITIONAL INFOMATION.

5. FLEXIBLE CONNECTIONS

6. FLEXIBLE COLLARS SHALL BE PROVIDED IN ALL CONNECTIONS BETWEEN VIBRATING EQUIPMENT (FANS, AND ROOFTOP UNITS,) AND DUCTS OR CASINGS. ALSO, PROVIDE FLEXIBLE CONNECTIONS WHERE DUCTS CROSS BUILDING EXPANSION JOINTS.

7. FLEXIBLE CONNECTIONS SHALL BE CONSTRUCTED OF NEOPRENE-COATED FLAMEPROOF FABRIC. PROVIDE ADEQUATE JOINT FLEXIBILITY TO ALLOW FOR MOVEMENT AND PREVENT THE TRANSMISSION OF VIBRATION.

3. FLEXIBLE CONNECTION IS TO BE RATED FOR THE OPERATING PRESSURE OF THE SYSTEM.

6. DUCTWORK INSULATION

1. INSTALL INSULATION PRODUCTS IN ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS, AND IN ACCORDANCE WITH RECOGNIZED INDUSTRY PRACTICES. INSULATION MUST COMPLY WITH NFPA 90A.

2. DUCT SIZES SHOWN ON DRAWINGS ARE INSIDE CLEAR DIMENSIONS. INSULATE SUPPLY DUCTWORK. WHERE SHOWN ON PLAN DUCTWORK SHALL BE INTERNALLY INSULATED WITH 1" THICK 1½ LB. DENSITY LINER (0=0. 28 AT 750 F). LINER IS TO HAVE A COATED SURFACE EXPOSED TO AIRSTREAM TO PREVENT EROSION. APPLY ADHESIVES AND MECHANICAL FASTENERS AS RECOMMENDED BY SMACNA AND THE MANUFACTURER TO PREVENT LINER SEPARATION FROM THE DUCT. ALL TRANSVERSE EDGES TO BE COATED WITH ADHESIVE.

3. ALL OUTSIDE AIR DUCTWORK SHALL BE EXTERNALLY INSULATED WITH A MINIMUM OF 1" THICK, 1½ LB. DENSITY (R=5,6) DUCT WRAP WITH VAPOR BARRIER. VAPOR BARRIER IS TO BE MAINTAINED THROUGHOUT DUCT SYSTEM. ALL JOINTS MUST BE TAPED SO THAT NO INSULATION FIBER IS VISIBLE. EXTEND DUCTWORK INSULATION WITHOUT INTERRUPTION THROUGH WALLS, FLOORS, AND SIMILAR PENETRATIONS.

4. ALL INSULATION SHALL HAVE A FLAME SPREAD RATING OF NOT MORE THAN 25 AND A SMOKE DEVELOPED RATING OF NO HIGHER THAT 50 WHEN TESTED IN ACCORDANCE WITH ASTM C 411, OR AS REQUIRED BY LOCAL CODES.

7. STEAM & CONDENSATE PIPING SYSTEMS

1. INSTALL DRIP LEGS WITH STEAM TRAPS AT LOW POINTS AND NATURAL DRAINAGE POINTS IN THE STEAM SYSTEM, SUCH AS AT THE ENDS OF MAINS, BOTTOM OF RISERS, AND AHEAD OF PRESSURE REGULATORS, CONTROL VALVES, ISOLATION VALVES, PIPE BENDS, AND EXPANSION JOINTS.

2. SIZE DRIP LEGS SAME DIAMETER AS THE MAIN UP TO 6 INCHES.

3. EQUIP DRIP LEGS AND DIRT POCKETS WITH CAPPED GATE VALVES TO ALLOW REMOVAL OF DIRT AND SCALE.

4. IN PIPING SYSTEMS INSTALLED HORIZONTALLY, MAKE REDUCTIONS IN PIPE SIZES USING ECCENTRIC REDUCER FITTING INSTALLED WITH THE LEVEL SIDE DOWN.

5. INSTALL STEAM SUPPLY PIPING AT A UNIFORM GRADE OF 1/4 INCH IN TEN FEET DOWNWARD IN THE DIRECTION OF FLOW.

6. INSTALL CONDENSATE RETURN PIPING AT A UNIFORM GRADE OF 1/2 INCH IN TEN FEET DOWNWARD IN THE DIRECTION OF FLOW.

7. INSTALL AUTOMATIC AIR VENTS AT THE END OF ALL STEAM MAINS AND HEADERS, AND ON LARGE EQUIPMENT STEAM SPACE TO FACILITATE START-UP AND HEAT TRANSFER. LOCATE THE AIR VENT AT A HIGH POINT OF THE PIPING SYSTEM OF EQUIPMENT, OR WHERE THE AIR COLLECTS. PIPE THE OUTLET TO A SAFE PLACE, CUT THE PIPE END AT A 45 DEGREE ANGLE. INSTALL AN ISOLATION VALVE UPSTREAM OF AUTOMATIC AIR VENTS.

A. STEAM & CONDENSATE PIPING

1. PIPING OF ALL SIZES SHALL BE SCHEDULE 40, SEAMLESS STEEL, ASTM A 53 GRADE B (ALL CONDENSATE AND BLOWDOWN PIPING SHALL BE SCHEDULE 80 SEAMLESS STEEL).

B. TRAPS

1. UNLESS OTHERWISE INDICATED, SIZE COMBINATION FLOAT AND THERMOSTATIC, TRAPS OF CAPACITY TO CONTINUOUSLY DISCHARGE 2-1/2 TIMES NORMAL CONDENSATE RATE OF PARTICULAR EQUIPMENT OR APPARATUS BEING SERVED.

2. COMBINATION FLOAT AND THERMOSTATIC TRAPS WITH INTEGRAL STRAINERS MAY BE SUBMITTED FOR APPROVAL, IN LIEU OF SEPARATE TRAP AND STRAINER, IF INTEGRAL STRAINER AND TRAP MEET INDIVIDUAL TRAP AND STRAINER SPECIFICATIONS.

3. TRAPS SHALL BE DESIGNED FOR 125 PSIG STEAM PRESSURE, WHEN USED IN SYSTEMS UP TO 30 PSIG INCLUSIVE. BASE MAXIMUM RATINGS ON 1/2 PSI DIFFERENTIAL THROUGH TRAP. SIZE ORIFICES RATED FOR THE OPERATING STEAM PRESSURE. WEARING PARTS SHALL BE RENEWABLE.

4. TRAPS SHALL BE CAST IRON BODY AND COVER; COPPER OR STAINLESS STEEL FLOAT; BRASS OR STAINLESS STEEL VALVE MECHANISMS, STAINLESS STEEL VALVE SEATS AND STAINLESS STEEL OR BRONZE VALVE HEADS. AIR VENT OF THE BALANCED PRESSURE TYPE WITH BRONZE, MONEL OR STAINLESS STEEL BELLOWS; STAINLESS STEEL OR HARD BRONZE VALVE HEAD AND SEAT.

C. SAFETY AND RELIEF VALVES

1. VALVES FOR STEAM HEATING BOILERS OPERATING AT A MAXIMUM PRESSURE OF 15 PSIG SHALL HAVE A MAXIMUM PRESSURE SETTING OF 15 PSIG. SIZING OF VALVES SHALL BE IN ACCORDANCE WITH ASME TABLE HG 400.1. VALVE BODIES SHALL BE BRONZE OR CAST IRON, WITH DISCS AND SEATS OF BRONZE.

D. THERMOSTATIC AIR VENTS

1. BRASS BODY, SEAT GASKET AND CAP WITH STAINLESS STEEL BELLOWS, SEAT AND SPRING, THREADED CONNECTIONS SUITABLE FOR 125 PSIG MAXIMUM OPERATING PRESSURE.

2. APPROVED MANUFACTURERS: SPIRAX/SARCO MODEL T202

E. STRAINERS

1. STRAINERS SHALL BE 125 PSI, "Y" TYPE WITH REMOVABLE, PERFORATED BASKETS. BASKETS AT PUMPS SHALL BE RIGID CONSTRUCTION, REINFORCED IF REQUIRED. BODIES SHALL BE CAST IRON, SCREWED OR FLANGED AS SPECIFIED FOR VALVES, FULL LINE SIZE, MINIMUM SIZE ¾". INTERNAL STRAINERS ARE NOT ACCEPTABLE. STRAINERS SHALL BE SARCO TYPE "SB," OR TYPE "D" AS APPLICABLE, MUELLER, OR YARWAY.

2. PROVIDE VALVED BLOWOFF CONNECTION FOR EACH STRAINER WITH VALVE LOCATED 6" TO 1'-0" BELOW STRAINER. BLOWOFF SHALL DISCHARGE IN AN APPROVED MANNER, AT A POINT WHERE THERE WILL BE NO RISK OF FLOODING OR DAMAGE.

F. CONTROL VALVES

1. STEAM CONTROL VALVE - 2 WAY, FAIL OPEN, FOR MODULATING SERVICE.

G. PIPING INSULATION

1. PIPE INSULATION TO CONSIST OF 2" THICK FIBERGLASS BONDED AND PREFORMED INTO CYLINDRICAL FORM "K" FACTOR 0.24 BTU AT 750F., AND A NOMINAL DENSITY OF 7¼ LBS. PER CUBIC FOOT. INSULATION SHALL BE FACTORY APPLIED WHITE FIRE RETARDANT VAPOR BARRIER JACKET FOR ALL LINES, AS MANUFACTURED BY OWENS-CORNING, OR APPROVED EQUIVALENT. INSULATION AND SEALING ADHESIVES SHALL HAVE A MAXIMUM FLAME SPREAD RATING OF 25, AND SMOKE DEVELOPED RATING OF 50.

8. SYSTEM CLEANOUT

1. DUCTWORK AND AIR HANDLING EQUIPMENT IS TO BE CLEANED OUT AND BLOWN OUT BEFORE SYSTEM STARTUP.

2. FILTERS MUST BE IN UNITS AT ANY TIME FANS ARE OPERATED.

9. AUTOMATIC TEMPERATURE CONTROLS

1. PROVIDE STAND ALONE CONTROLLERS (ONE FOR EACH AHU) TO PROVIDE ALL UNIT CONTROLS TO ACHIEVE SEQUENCE OF OPERATIONS OR AS OTHERWISE REQUIRED FOR A FULLY FUNCTIONING SYSTEM. CONTROLLERS SHALL BE BACNET CAPABLE FOR FUTURE INTEGRATION TO BMS (NOT IN CURRENT SCOPE OF WORK). PROVIDE IN A NEMA 1 ENCLOSURE WITH DISCONNET, POWER SUPPLIES, FUSES, CIRCUIT BREAKERS, TERMINAL STRIP, ETC. AS REQUIRED FOR ALL FIELD DEVICES.

2. CONTROLLER: JOHNSON CONTROLS FX-PCG2621-0 WITH DISPLAY AND KEYPAD

3. SENSORS:

   KITCHEN 1x NSB8BTN140-0 (TEMPERATURE ONLY)

   CAFETERIA 1x NSB8BHC340-0 & 1x NSB8BHC040-0 (TEMP, RH, CO2)

4. DAMPER AND VALVE ACTUATORS: 24VAC, FAIL OPEN (STEAM CONTROL VALVE & RETURN AIR DAMPER); FAIL CLOSED (OUTSIDE AIR DAMPERS).

10. SEQUENCE OF OPERATIONS:

TYPICAL FOR AHU-1&2. THE UNITS SHALL OPERATE BASED ON PRE-PROGRAMMED WEEKLY SCHEDULE WITH MANUAL OVERRIDE AT THE SPACE SENSOR WITH 4 HOUR (ADJ) TIME-OUT.

1. KITCHEN AHU-1:

A. UNOCCUPIED MODE:
1. THE OUTSIDE AIR DAMPER AND STEAM CONTROL VALVE SHALL REMAIN CLOSED.
2. THE SUPPLY FAN AND EXISTING KITCHEN EXHAUST FAN SHALL REMAIN OFF.
3. THE EXISTING KITCHEN UNIT HEATER WILL MAINTAIN UNOCCUPIED HEATING SETPOINT OF 65°F (ADJ).

B. OCCUPIED MODE:
1. THE OUTSIDE AIR DAMPER SHALL OPEN 100%. THE DAMPER SHALL BE PROVEN OPEN PRIOR TO ENGAGING THE SUPPLY FAN.
2. THE STEAM CONTROL VALVE SHALL MODULATE TO MAINTAIN SPACE HEATING SETPOINT OF 72°F.

C. SUPPLY FAN OPERATION:
1. IN THE OCCUPIED MODE, THE SUPPLY FAN SHALL RUN CONTINUOUSLY AND SHALL BE INTERLOCKED WITH THE EXISTING KITCHEN EXHAUST FAN.

D. SUPPLY AIR LOW LIMIT:
1. IF THE UNIT IS IN HEATING MODE AND THE SUPPLY AIR TEMPERATURE DROPS BELOW 55°F THE HEATING COIL CONTROL VALVE SHALL OPEN 100% AND THE SUPPLY FAN SHALL STOP.

E. SMOKE CONDITION:
1. IF THE SUPPLY AIR SMOKE DETECTOR SENSES A SMOKE CONDITION, THE SUPPLY AIR FAN SHALL SHUT DOWN, THE OUTSIDE AIR DAMPER SHALL CLOSE, AND AN ALARM SHALL BE GENERATED AT THE BUILDING FIRE ALARM.

2. CAFETERIA AHU-2:

A. UN-OCCUPIED MODE:
1. THE OUTSIDE AIR AND RETURN AIR DAMPERS AND STEAM CONTROL VALVE SHALL REMAIN CLOSED.
2. THE SUPPLY FAN SHALL REMAIN OFF.
3. THE EXISTING FIN TUBE SHALL MAINTAIN HEATING SETPOINT OF 65°F (ADJ).

B. UN-OCCUPIED TO OCCUPIED TRANSITION PURGE:
1. THE RETURN AIR DAMPER SHALL REMAIN CLOSED.
2. THE OUTSIDE AIR DAMPER SHALL OPEN 100%.
3. THE SUPPLY FAN SHALL AND EXISTING CAFETERIA EXHAUST FAN SHALL ENGAGE.
4. THE STEAM CONTROL VALVE SHALL MODULATE TO MAINTAIN THE OCCUPIED SPACE HEATING SETPOINT (SEE 'B' FOLLOWING).
5. THE SYSTEM SHALL OPERATE IN THIS PURGE MODE FOR 30 MINUTES. THE UNIT SHALL THEN SWITCH TO THE OCCUPIED MODE OF OPERATION.

B. OCCUPIED MODE:
1. THE RETURN AIR DAMPER SHALL OPEN 100%. THE DAMPER SHALL BE PROVEN OPEN PRIOR TO ENGAGING THE SUPPLY FAN.
2. THE OUTSIDE AIR DAMPER SHALL OPEN TO IT'S MINIMUM VENTILATION POSITION.
3. THE STEAM CONTROL VALVE SHALL MODULATE TO MAINTAIN SPACE HEATING SETPOINT OF 72°F (AVERAGE OF THE TWO SPACE SENSORS).
4. DURING COOLING OPERATION - THE STEAM CONTROL VALVE SHALL BE CLOSED.
5. THE UNIT OUTSIDE AIR AND RETURN AIR DAMPERS SHALL MODULATE AS REQUIRED TO MEET SPACE OCCUPANCY DEMAND BASED ON THE WORST CASE SPACE CO2 SENSORS ABSOLUTE CONCENTRATION SETPOINT (800PPM ADJ.). REGARDLESS OF CO2 LEVELS, THE OUTSIDE AIR AND RETURN AIR DAMPERS SHALL OPEN TO PROVIDE MINIMUM 1,000 CFM OUTSIDE AIR AT ALL TIMES THAT THE UNIT IS IN OCCUPIED MODE. RELIEF AIR IS ACCOMPLISHED VIA THE EXISTING CAFETERIA GRAVITY DAMPER.

C. ADD/ALTERNATE MECHANICAL COOLING MODE:
1. IF THE AIR HANDLING UNIT CANNOT MAINTAIN COOLING SETPOINT VIA 100% OUTSIDE AIR, THE UNIT SHALL MODULATE THE OUTSIDE AIR DAMPER TO MAINTAIN CO2 LEVEL PER B.5 AND ENGAGE MECHANICAL COOLING.
2. THE UNIT CONTROLS SHALL MODULATE IT'S COOLING CAPACITY AND STAGES TO MEET COOLING LOAD, AND MAINTAIN SPACE TEMPERATURE SETPOINT OF 75°F (ADJ). UPON A DROP IN SPACE TEMPERATURE BELOW COOLING SETPOINT, THE COMPRESSORS SHALL BE DISENGAGED.
3. IF THE ROOM TEMPERATURE RISES ABOVE THE COOLING SETPOINT AND THE OUTDOOR AIR DRY BULB / WET BULB (ENTHALPY) CONDITIONS ARE FAVORABLE, THE UNIT CONTROLLER SHALL MODULATE THE OUTDOOR AIR DAMPER BETWEEN THE MINIMUM POSITION AND 100% OPEN TO ALLOW OUTDOOR AIR TO BE DELIVERED FOR FREE COOLING. DURING THIS NATURAL COOLING STAGE THE MECHANICAL COOLING SYSTEM SHALL REMAIN OFF.

D. SUPPLY FAN OPERATION:
1. IN THE OCCUPIED MODE, THE SUPPLY FAN SHALL RUN CONTINUOUSLY AND SHALL BE INTERLOCKED WITH THE EXISTING CAFETERIA EXHAUST FAN.

D. OCCUPIED TO UN-OCCUPIED TRANSITION PURGE:
3. THE RETURN AIR DAMPER SHALL CLOSE.
4. THE OUTSIDE AIR DAMPER SHALL OPEN 100%.
5. THE SUPPLY FAN SHALL AND EXISTING CAFETERIA EXHAUST FAN SHALL ENGAGE.
6. THE STEAM CONTROL VALVE SHALL MODULATE TO MAINTAIN THE UN-OCCUPIED SPACE HEATING SETPOINT (SEE 'A' ABOVE).
7. THE SYSTEM SHALL OPERATE IN THIS PURGE MODE UNTIL CO2 LEVELS DROP BELOW 500PPM. THE UNIT SHALL THEN SWITCH TO UN-OCCUPIED MODE.

D. SUPPLY AIR LOW LIMIT:
1. IF THE UNIT IS IN HEATING MODE AND THE SUPPLY AIR TEMPERATURE DROPS BELOW 55°F THE HEATING COIL CONTROL VALVE SHALL OPEN 100%, THE RETURN AIR DAMPER SHALL OPEN 100% AND THE SUPPLY FAN SHALL STOP.

E. SMOKE CONDITION:
1. IF THE SUPPLY AIR SMOKE DETECTOR SENSES A SMOKE CONDITION, THE SUPPLY AIR FAN SHALL SHUT DOWN, THE OUTSIDE AIR DAMPER SHALL CLOSE, AND AN ALARM SHALL BE GENERATED AT THE BUILDING FIRE ALARM.

11. SYSTEM TESTING, ADJUSTING, AND BALANCING

1. TESTING, ADJUSTING AND BALANCING OF ALL WORK SHALL BE MADE BY AN INDEPENDENT CONTRACTOR WHO IS CURRENTLY LICENSED ASSOCIATED AIR BALANCING COUNCIL (AABC) OR NATIONAL ENVIRONMENTAL BALANCING BUREAU (NEBB) BALANCING CONTRACTOR. NO OTHER BALANCE REPORTS WILL BE REVIEWED OR ACCEPTED. ALL BALANCING WORK MUST BE COMPLETE AND DONE IN ACCORDANCE WITH THE MOST RECENT STANDARDS OF THEIR SOCIETY. PAYMENT OF ALL COSTS FOR TESTING SHALL BE MADE BY THE HVAC CONTRACTOR.

2. THE HVAC CONTRACTOR SHALL INSTALL NEW FILTERS IN ALL UNITS PRIOR TO THE AIR BALANCE. THE COMPLETE AIR BALANCE SHALL TAKE PLACE WITH OUTSIDE AIR DAMPERS IN MINIMUM POSITION.

3. BALANCE AIR QUANTITIES TO WITHIN + 5% OF THAT INDICATED ON THE DRAWINGS. ANY REQUIRED CHANGES IN SHEAVES, BELTS, PULLEYS, OR THE ADDITION OF DAMPERS REQUIRES TO ACHIEVE SPECIFIED FLOW RATES SHALL BE PERFORMED BY THE HVAC CONTRACTOR WITH NO ADDITIONAL COST TO THE OWNER.

4. THE BALANCE REPORT SHALL INCLUDE AS A MINIMUM THE FOLLOWING INFORMATION:
   a. AABC OR NEBB CERTIFICATION NUMBER AND SIGNATURE OF BALANCING CONTRACTOR.
   b. INSTRUMENTATION LIST WITH LAST CALIBRATION DATES.
   c. MAKE AND MODEL NUMBERS OF ALL HVAC EQUIPMENT TESTED.
   d. AIF CFM & STATIC PRESSURE READINGS (DISCHARGE AND SUCTION) AS MEASURED BY PITOT TUBE DUCT TRAVERSE AT HE UNIT.
   e. MOTOR NAMEPLATE DATA WITH ACTUAL FIELD VOLTAGE AND AMPERAGE READINGS FOR EACH LEG.
   f. MOTOR AND FAN RPMS, SHEAVE SIZES AND BELT SIZES.
   g. OUTSIDE RETURN, MIXED AND SUPPLY AIR TEMPERATURE AT FULL HEATING.
   h. MAKE AND MODEL NUMBERS OF ALL AIR DISTRIBUTION EQUIPMENT.
   j. FINAL BALANCED AIR VOLUMES AT SUPPLY AND RETURN MAINS AND AT ALL OUTLETS.
   k. INDEXED PLAN WITH DIFFUSER AND RETURN LOCATIONS.

5. ALL CONTROL SEQUENCES SHALL BE TESTED (INTERLOCKED EQUIPMENT, SMOKE DETECTORS, SMOKE EVACUATION, ECONOMIZER, ETC.) AND OPERATING STATUS RECORDED IN THE REPORT.

6 THREE COPIES OF THE BALANCE REPORT SHALL BE SUBMITTED THROUGH THE GENERAL CONTRACTOR TO THE OWNER'S CONSTRUCTION MANAGER FOR APPROVAL.

7. THE BALANCING CONTRACTOR SHALL PERFORM ALL APPLICABLE TESTING AND BALANCING FUNCTIONS REQUIRED FOR THE SYSTEM DESIGNED IN THESE DRAWINGS. THE BALANCING CONTRACTOR SHALL RECHECK ANY ITEMS THAT THE OWNER DEEMS NECESSARY AT NO ADDITIONAL COST TO THE OWNER.

8. FINAL BALANCE REPORT SHALL BE INCLUDED IN THE OPERATION & MAINTENANCE MANUALS.

12. FINAL HVAC INSPECTIONS

ASIDE FROM NORMAL INTERIM INSPECTIONS OF WORK IN PLACE, THE OWNER SHALL HAVE THE RIGHT TO AN INDEPENDENT HVAC CONTRACTOR INSPECT THE FINISHED HVAC INSTALLATION UPON COMPLETION FOR COMPLIANCE WITH THE PLANS, SPECIFICATIONS, AND CODES. THE INSTALLING CONTRACTOR WILL BE RESPONSIBLE TO BRING ALL ITEMS REPORTED BY THE INDEPENDENT HVAC CONTRACTOR UP TO PLANS AND SPECIFICATION REQUIREMENTS AT NO COST TO OWNER.

MECHANICAL DEMOLITION

A. PREPARATION

1. CONSTRUCT TEMPORARY PARTITIONS ENCLOSING RESPECTIVE WORK PRIOR TO ANY DEMOLITION WORK. ERECT TEMPORARY FENCING AND SIGNAGE AROUND DEMOLISHED MATERIALS.

2. PROTECT EXISTING MATERIALS AND EQUIPMENT WHICH ARE NOT TO BE DEMOLISHED.

3. PREVENT MOVEMENT OF STRUCTURE; PROVIDE REQUIRED BRACING AND SHORING.

4. DO NOT BEGIN THE WORK UNTIL THE TIME SCHEDULES AND MANNER OF OPERATIONS HAVE BEEN APPROVED BY THE ENGINEER AND OWNER. INCLUDE ALL INTERRUPTIONS OF EXISTING SERVICES IN SCHEDULES SUBMITTED BY THE ENGINEER AND OWNER.

B. GENERAL

1. PROVIDE ALTERATION AND DEMOLITION OF MECHANICAL FACILITIES AS REQUIRED BY THE DRAWINGS AND SPECIFICATIONS. THE DRAWINGS ARE DIAGRAMMATIC AND DO NOT SHOW THE EXACT LOCATION OF ALL EXISTING MECHANICAL WORK. WHERE EXISTING EQUIPMENT IS TO REMAIN IN SERVICE DURING CONSTRUCTION, PROVIDE REROUTING AND RECONNECTION OF MECHANICAL SERVICES AS REQUIRED TO MAINTAIN CONTINUOUS SERVICE.

2. REVIEW ALL EQUIPMENT WITH THE ENGINEER AND OWNER PRIOR TO DISPOSAL. COMPLETELY REMOVE EXISTING PIPING, CONDUIT AND SIMILAR ITEMS TO BE ABANDONED THAT ARE NOT EMBEDDED IN WALLS OR FLOOR SLABS UNLESS OTHERWISE SHOWN ON THE DRAWINGS. CAP OPEN ENDS AT ALL WALLS AND FLOORS.

3. REMOVE, STORE AND PROTECT ALL EQUIPMENT OR MATERIALS DESIGNATED TO BE TURNED OVER TO THE OWNED. COORDINATE EXACT LOCATION OF STORAGE WITH THE OWNER.

4. TEMPORARILY CAP ENDS OF PIPING TO AVOID ENTRY OF DIRT, DEBRIS, OR DISCHARGE OF FOUL ODORS AND GASES.

5. DO NOT CLOSE OR OBSTRUCT EGRESS WIDTH TO EXITS.

6. DO NOT DISABLE OR DISRUPT BUILDING FIRE OR LIFE SAFETY SYSTEMS WITHOUT FIVE (5) DAYS PRIOR WRITTEN NOTICE TO THE ENGINEER AND OWNER.

7. CONFORM TO PROCEDURES APPLICABLE WHEN DISCOVERING HAZARDOUS OR CONTAMINATED MATERIALS.

8. CONDUCT DEMOLITION TO MINIMIZE INTERFERENCE WITH ADJACENT BUILDING STRUCTURES OR OWNER'S OPERATIONS.

9. CEASE OPERATIONS IMMEDIATELY IF STRUCTURE APPEARS TO BE IN DANGER OR HAZARDOUS MATERIALS ARE ENCOUNTERED. NOTIFY ENGINEER. DO NOT RESUME OPERATIONS UNTIL DIRECTED.

10. DEMOLISH IN AN ORDERLY AND CAREFUL MANNER. DO NOT CUT OR REMOVE MORE THAN IS NECESSARY TO ACCOMMODATE THE NEW CONSTRUCTION OR ALTERATION.

11. REMOVE DEMOLISHED MATERIALS FROM SITE DAILY. DO NOT BURN OR BURY MATERIALS ON SITE. DISPOSE OF ALL MATERIAL AT AN APPROVED DISPOSAL FACILITY.

12. PROTECT FINISHED SURFACES AT ALL TIMES AND REPAIR OR REPLACE, IF DAMAGED, TO MATCH EXISTING CONSTRUCTION TO THE SATISFACTION OF THE ENGINEER.

C. PIPING REMOVAL

1. CUT OFF ALL WELDED PIPING SQUARE AT THE LOCATIONS INDICATED ON THE DRAWINGS. NO CUTTING IS REQUIRED WHERE THE DEMOLITION ENDS AT A FLANGED VALVE OR EQUIPMENT. CLOSE OFF ALL OPENINGS OF ANY REMAINING VALVES, PIPING OR FITTINGS WITH WELD CAPS OR BLIND FLANGES TO PREVENT DEBRIS FROM ENTERING THE EXISTING SYSTEM.

2. DISCONNECT ALL THREADED PIPING AT THE LOCATION INDICATED ON THE DRAWINGS. CLOSE OFF ALL OPENINGS OF REMAINING VALVES, PIPING, FITTINGS AND EQUIPMENT WITH PIPE PLUGS OR PIPE CAPS AS REQUIRED TO PREVENT DEBRIS FROM ENTERING THE EXISTING SYSTEMS.

3. REMOVE ALL PIPE HANGERS, SUPPORTS, MISCELLANEOUS STEEL AND ANCHORS WITH THE PIPING.

D. PROTECTION FROM FREEZING

1. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE THAT PIPING SYSTEMS THAT ARE BEING WORKED ON ARE COMPLETELY DRAINED FROM WATER PRIOR TO THE START OF DEMOLITION. IF WATER IS NOT DRAINED AND THE WATER FREEZES IT IS THE CONTRACTOR'S RESPONSIBILITY TO REPLACE PIPING AND REPAIR ALL DAMAGES CAUSE BY WATER LEAKAGE AT THIS OWN EXPENSE.

E. DISCONNECTION AND INTERRUPTION OF MECHANICAL SERVIES

1. WHEN PORTIONS OF AN EXISTING PIPING SYSTEM ARE REMOVED, AND THIS REMOVAL CAUSES LOSS OF OPERATION TO ANOTHER PIECE OF EQUIPMENT DUE TO OPEN OR DISCONNECTED PIPING, CAP PIPING OR PROVIDE TEMPORARY PIPING TO RETAIN OPERATION OF THE SYSTEM.

F. MECHANICAL EQUIPMENT REMOVAL

1. REMOVE ALL MECHANICAL EQUIPMENT AS SHOWN ON THE DRAWINGS. REMOVE ALL ELECTRICAL WORK, INCLUDING WIRING BETWEEN EQUIPMENT, AND WIRING TO POWER SOURCE OR POINT OF ORIGIN.

2. WHERE EQUIPMENT IS SUPPORTED BY STEEL AND/OR STRUCTURAL SUPPORTS, REMOVE THESE SUPPORTS.

G. INSULATION REMOVAL

1. REMOVE INSULATION, TOGETHER WITH ALL PIPING, FITTINGS, VALVES AND EQUIPMENT DESIGNATED FOR DEMOLITION.

H. CONTROL WIRING / TUBING REMOVAL

1. DISCONNECT AND REMOVE ALL CONTROL WIRING AND TUBING, INCLUDING CONDUIT, FOR THE AUTOMATIC TEMPERATURE CONTROL (ATC) SYSTEM ASSOCIATED WITH EQUIPMENT AND SYSTEMS TO BE REMOVED.

BUILDING PENETRATIONS, FIRE STOPPING, PATCHING AND FINISHING

A. SCOPE OF WORK

1. EACH TRADE IS RESPONSIBLE FOR BUILDING FLOOR, WALL, AND ROOF PENETRATIONS AS REQUIRED TO PROVIDE COMPLETE, FUNCTIONING SYSTEMS AS REQUIRED FOR THE INDIVIDUAL'S SCOPE OF WORK.

2. EACH TRADE SHALL COORDINATE WILL ALL OTHER TRADES, GENERAL CONTRACTOR AND/OR OWNER AS NECESSARY FOR APPROVAL PRIOR TO CREATING NEW PENETRATIONS.

3. EACH TRADE SHALL FIRE STOP THEIR PENETRATIONS AS REQUIRED BY CODE.

4. ROUGH PATCHING AND FINISHING SHALL BE BY GENERAL CONTRACTOR.

LABELING

1. LABEL ALL NEW PIPING PER ANSI A13.1 AND Z535.1.

2. PROVIDE VALVE TAGS FOR ALL VALVES INSTALLED FOR THIS PROJECT. VALVE TAGS SHALL BE CONSTRUCTED OF BRASS WITH STAMPED LETTERS AND SERVICE DESIGNATION TAG SIZE MINIMUM 1-1/2 INCHES (38MM) DIAMETER WITH SMOOTH EDGES, BRASS S HOOK.

3. VALVE TAGS SHALL BE PERMANENTLY STAMPED AND MARKED WITH A SERVICE DESIGNATION, NORMAL VALVE POSITION, AND AN IDENTIFYING NUMBER AS LARGE AS POSSIBLE. EACH VALVE SHALL HAVE A SEPARATE AND DISTANCE NUMBER COORDINATED WITH THE SERVICE DESIGNATIONS SHOWN ON THE DRAWINGS AND THE OWNERS EXISTING VALVE NUMBERING SYSTEM. COORDINATE WITH THE ENGINEER AND OWNER BEFORE FINALIZING THE VALVE TAG NUMBERING SYSTEM.

13. HVAC SYSTEM COMMISSIONING

CONTRACTOR SHALL INCLUDE THE COST OF AN INDEPENDENT 3RD PARTY COMMISSIONING AGENT, FOR REVIEW AND APPROVAL BY SCHOOL AND ENGINEER. REFER TO SEPARATE COMMISSIONING REQUIREMENTS SPECIFICATION 230800.

H2M architects + engineers
2700 Westchester Ave., Suite 415
Purchase, NY 10577
914.358.5623 ▪ www.h2m.com

CONSULTANTS:

MARK	DATE	DESCRIPTION

STATE OF NEW YORK · ALEXANDER HOCHHAUSL · 073570 · LICENSED PROFESSIONAL ENGINEER

DESIGNED BY:	DRAWN BY:	CHECKED BY:	REVIEWED BY:

PROJECT No.:	DATE:	SCALE:
SMSD 2105	OCTOBER 2022	

CLIENT

Somers Central School District

Air Handler Replacement at Primrose Elementary School

Primrose Elementary School
110 Primrose Street
Lincolndale, NY 10540

SED #: 66-21-01-06-0-002-014

CONTRACT

CONTRACT H

HEATING VENTILATION AND AIR CONDITIONING

STATUS

FINAL BID SET

SHEET TITLE

HVAC MECHANICAL SPECIFICATIONS

DRAWING No.

M001.00

1.01 GENERAL REQUIREMENTS:

A. ALL WORK SHALL COMPLY WITH REQUIREMENTS OF THE NEW YORK STATE BUILDING CODE, THE NATIONAL ELECTRICAL CODE AND ALL AUTHORITIES HAVING JURISDICTION (AHJ). APPLICABLE NATIONAL, STATE AND LOCAL CODES, LAWS AND REGULATIONS GOVERNING OR RELATING TO ANY PORTION OF THIS WORK SHALL BE INCORPORATED INTO AND MADE A PART OF THESE SPECIFICATIONS.

B. IF A CONFLICT OCCURS IN THE SPECIFICATIONS AND/OR ON THE DRAWINGS, THE MORE STRINGENT SITUATION SHALL APPLY.

C. ALL MATERIALS AND WORKMANSHIP SHALL BE GUARANTEED FOR A PERIOD OF ONE YEAR FROM DATE OF FINAL ACCEPTANCE OF THIS WORK. FINAL ACCEPTANCE SHALL BE DEFINED AS THE TIME AT WHICH THE ELECTRICAL WORK IS TAKEN OVER AND ACCEPTED BY THE OWNER. ENGAGE THE SERVICES OF VARIOUS MANUFACTURERS SUPPLYING THE EQUIPMENT FOR THE PROPER STARTUP, OPERATION AND TRAINING OF ALL SYSTEMS INSTALLED. INSTRUCT THE OWNERS PERSONNEL IN THE PROPER OPERATION AND SERVICING OF THE EQUIPMENT.

D. CONTRACTOR SHALL VISIT AND EXAMINE CAREFULLY THE EXISTING AREAS AFFECTED BY THIS WORK TO BECOME FAMILIAR WITH EXISTING CONDITIONS AND WITH DIFFICULTIES THAT WILL ATTEND THE EXECUTION OF THE WORK. CONTRACTOR SHALL PERFORM THIS, PRIOR TO SUBMITTING HIS PROPOSAL SUBMISSION OF A PROPOSAL WILL BE CONSTRUED AS EVIDENCE THAT SUCH AN EXAMINATION HAS BEEN MADE AND LATER CLAIMS WILL NOT BE RECOGNIZED FOR EXTRA LABOR, EQUIPMENT OR MATERIALS REQUIRED BECAUSE OF DIFFICULTIES ENCOUNTERED WHICH COULD HAVE BEEN FORESEEN HAD SUCH AN EXAMINATION BEEN UNDERTAKEN.

E. DRAWINGS ARE DIAGRAMMATIC AND INDICATE GENERAL ARRANGEMENT OF WORK.

F. ALTHOUGH NOT SPECIFICALLY MENTIONED HEREIN OR SHOWN ON THE DRAWINGS, ANY EQUIPMENT, MATERIALS, ACCESSORIES, OR LABOR REQUIRED FOR PROPER AND COMPLETE INSTALLATION OF THE ELECTRICAL WORK SHALL BE FURNISHED AND INSTALLED AS PART OF THIS DESIGN.

G. COORDINATE AND SCHEDULE WITH SCHOOL DISTRICT 72 HOURS PRIOR TO BEGINNING ANY WORK FOR ANY SERVICE INTERRUPTION OF EXISTING SYSTEMS AND GIVE NOTICE AS REQUIRED BY BUILDING RULES AND REGULATIONS.

H. ANY DAMAGE TO EXISTING PARTITIONS, FLOORS, CEILINGS OR ANY PART OF THE BUILDING OR EQUIPMENT HOUSED THEREIN CAUSED BY THE WORK OF THE CONTRACTOR SHALL BE REPAIRED AT NO ADDITIONAL EXPENSE TO THE OWNER.

I. ALL NEW MATERIALS REQUIRED SHALL CONFORM WITH THE STANDARDS OF THE UNDERWRITERS LABORATORIES, INC. (UL) IN EVERY CASE WHERE SUCH A STANDARD EXISTS.

J. DURING THE PROJECT DURATION, THE BUILDING MANAGEMENT OFFICE AND ITS DESIGNATED REPRESENTATIVE SHALL BE ABLE TO INSPECT THE WORK IN PROGRESS. ANY WORK WHICH THE BUILDING MANAGEMENT DEEMS UNACCEPTABLE SHALL BE REMOVED AND REPLACED AT THE EXPENSE OF CONTRACTOR.

K. ALL EQUIPMENT INSTALLED OR CONNECTED INTO THE BUILDING RISERS, SYSTEMS, AND INFRASTRUCTURE SHALL BE APPROVED IN ADVANCE BY THE BUILDING PRIOR TO INSTALLATION.

1.02 SCOPE OF WORK:

A. PROVIDE ALL LABOR, MATERIALS AND EQUIPMENT NECESSARY FOR COMPLETE, SAFE INSTALLATION OF ALL ELECTRICAL WORK. THE SCOPE OF WORK SHALL INCLUDE, BUT NOT BE LIMITED TO, THE FOLLOWING:
   1. POWER FOR NEW HVAC UNITS.
   2. INSTALLATION OF NEW RACEWAY AND CONDUCTORS FOR POWER.
   3. ADDITION OR MODIFICATION OF EXISTING ELECTRICAL DISTRIBUTION EQUIPMENT.
   4. GROUNDING OF ALL EQUIPMENT AS REQUIRED BY CODE AND AS SPECIFIED.
   5. TEMPORARY LIGHTING AND POWER DURING CONSTRUCTION.
   6. CUTTING, CHANNELING, CORING, AND CHASING REQUIRED TO ACCOMMODATE ELECTRIC INSTALLATION AND ROUGH PATCHING.
   7. DEMOLITION AND REMOVAL OF ELECTRICAL EQUIPMENT AS REQUIRED INCLUDING ALL CONDUCTORS AND CONDUIT BACK TO THEIR SOURCE.
   8. MAINTENANCE AND PROPER OPERATION OF EXISTING BASE BUILDING SYSTEMS WITHIN THE CONTRACT AREA IN ACCORDANCE WITH THE REQUIREMENTS OF BUILDING MANAGEMENT.
   9. RECEIPT AND INSTALLATION OF DEVICES, EQUIPMENT, SYSTEMS, SUPPLIED BY OTHERS AS DETAILED.
   10. FAN SHUT DOWN AND FIRE ALARM INTEGRATION

1.03 AS-BUILT DRAWINGS:

A. CONTRACTOR SHALL MAINTAIN RECORD DRAWING PRINTS ON JOB SITE AND RECORD, AT TIME OF OCCURRENCE, DEVIATIONS FROM CONTRACT DOCUMENTS.

B. CONTRACTOR SHALL REVISE SHOP DRAWINGS TO CONFORM TO RECORD DRAWINGS AND SUBMIT AN AS-BUILT CONDITION (DEVICES, EQUIPMENT, CIRCUITRY, ETC.) DRAWINGS, IN AUTOCAD FORMAT, UPON COMPLETION OF THE PROJECT. FINAL SUBMISSION OF AS-BUILT DRAWINGS TO BE CERTIFIED BY INSTALLING CONTRACTOR. LANDLORD TO RECEIVE ONE HARD COPY SET AND AUTOCAD DWG FORMAT DRAWINGS ON DISC OF AS-BUILT DRAWINGS.

PART 2 PRODUCT/APPLICATION

2.01 WIRING DEVICES:

A. WIRING DEVICES SHALL BE SPECIFICATION GRADE, TAMPER RESISTANT, AND INSTALLED FLUSH MOUNTED UNLESS OTHERWISE NOTED. COLOR OF DEVICE AND COVER PLATE SHALL BE COORDINATED WITH OWNER.

B. MULTIPLE DEVICES AT A COMMON LOCATION SHALL BE INSTALLED IN A COMMON MULTI-GANG BOX WITH A COMMON FACEPLATE. DERATE DIMMER SWITCHES PER MANUFACTURER'S REQUIREMENTS WHEN GANGED.

C. SWITCH SHALL BE 120V, 20A, 1P

D. DEVICES GANGED TOGETHER IN MULTI-GANG BOX SHALL BE MOUNTED UNDER A SINGLE COVERPLATE.

2.02 RACEWAYS

A. ALL WIRES SHALL BE RUN IN CONDUIT. MINIMUM SIZE OF CONDUITS SHALL BE 3/4".

B. FOR ALL SIZES OF CONDUIT LARGER THAN 1-1/2", USE STANDARD ELBOW.

C. CONDUIT SHALL BE SECURELY FASTENED IN PLACE AND HANGERS, SUPPORTS OR FASTENINGS SHALL BE PROVIDED AT EACH ELBOW AND AT EACH END OF EACH STRAIGHT RUN TERMINATED AT A BOX OR CABINET.

D. PROVIDE EXPANSION FITTINGS IN EACH CONDUIT RUN WHEREVER IT CROSSES AN EXPANSION JOINT AND WHEREVER THE CONDUIT LENGTH EXCEEDS 200 FEET.

E. UNLESS OTHERWISE INDICATED OR SPECIFIED, ALL WIRING SHALL BE INSTALLED CONCEALED.

F. FEEDERS AND BRANCH CIRCUITRY ABOVE HUNG CEILING AND IN PARTITIONS SHALL BE RUN IN ELECTRICAL METALLIC TUBING (EMT) UNLESS OTHERWISE NOTED. ALL CONNECTIONS TO MOTORS, LIGHT FIXTURES, AND EQUIPMENT SUBJECT TO VIBRATION WILL BE DONE WITH FLEXIBLE METALLIC CONDUIT (GREENFIELD). LENGTH SHALL NOT EXCEED 6 FEET.

G. ALL CONDUIT IN MECHANICAL ROOMS, FAN ROOMS, BOILER ROOMS, ELECTRICAL CLOSETS AND WHERE CONCEALED IN CONCRETE SHALL BE EMT. ALL CONDUITS EXTERIOR ABOVE GROUND SHALL BE RGS, AND ALL CONDUITS EXTERIOR BELOW GRADE SHALL BE PVC SCHEDULE 80.

H. ELECTRIC METALLIC TUBING SHALL BE INDUSTRY STANDARD THIN WALL CONDUIT, HOT DIPPED GALVANIZED STEEL (3/4" MIN, 4" MAX).

I. THE FLEXIBLE METALLIC CONDUIT SHALL BE OF THE GROUNDING TYPE. IT SHALL CONSIST OF GALVANIZED STEEL TAPE FORMED INTO AN INDUSTRY STANDARD INTERLOCKING COIL (3/C MIN).

J. RIGID METAL CONDUIT SHALL BE INDUSTRY STANDARD STEEL CONDUIT (3/4" MIN, 4" MAX.)

K. THREADED FITTINGS SHALL BE USED WITH RIGID CONDUIT. DOUBLE SET SCREW OR COMPRESSION FITTINGS SHALL BE USED WITH EMT.

L. ALL METAL CONDUIT TERMINATING IN A METAL ENCLOSURE SHALL HAVE AN INSULATED BUSHING. PROVIDE "GROUNDING" TYPE BUSHING WHERE REQUIRED.

M. WHERE CONDUITS ARE RUN IN THE CEILING SPACE OF THE FLOOR BELOW, THEY SHALL BE CONTINUOUS AND HAVE NO JUNCTION OR PULL BOXES UNLESS PRIOR APPROVAL IS GIVEN BY BUILDING MANAGEIAENT/CLIENT.

2.03 WIRE AND CABLE:

A. ALL CONDUCTORS SHALL BE SOFT 98% MINIMUM CONDUCTIVITY PROPERLY REFINED COPPER, TYPE THHN/THWN INSULATED RATED AT 600V, UNLESS OTHERWISE NOTED.

B. THE MINIMUM WIRE SIZE FOR BRANCH CIRCUITS SHALL BE NO. 12 AWG EXCEPT 120 VOLT CIRCUITS OVER 100' IN LENGTH SHALL BE NO. 10 AWG.

C. ALL WIRES NO. 10 AWG AND SMALLER SHALL BE SOLID, CONDUCTORS NO. 8 AWG AND LARGER SHALL BE STRANDED.

D. COLOR CODING SHALL BE SIMILAR TO: 120/280V: PHASE 'A': BLACK, PHASE 'B': RED, PHASE 'C': BLUE, NEUTRAL: WHITE, GROUND: GREEN. MATCH BUILDING STANDARD.

E. TAG ALL FEEDERS IN ALL PULL BOXES, GUTTER SPACES, AND WIREWAYS THROUGH WHICH THEY PASS.

F. JOIN OR TAP STRANDED CONDUCTORS (NO. 6 AWG AND LARGER) WITH PRESSURE INDENT TYPE CONNECTORS BURNDY, NEPCO, OR 0.2./GEDNEY WITH COMPOSITION INSULATING COVERS.

G. SPLICES IN BRANCH WIRING (NO. 8 AWG AND SMALLER) SHALL BE TWISTED AND MADE MECHANICALLY TIGHT; THEN SECURED WITH PIGTAIL CONNECTORS, CRIMP TYPE CONNECTORS SHALL NOT BE USED. UTILIZE UL LISTED, "SILICON FILLED' PIGTAIL CONNECTORS WHERE LOCATED IN WET ENVIRONMENTS OR OUTDOORS.

H. EACH BRANCH CIRCUIT SHALL HAVE ITS OWN NEUTRAL CONDUCTOR. CONTRACTOR SHALL NOT BE PERMITTED TO SHARE NEUTRALS.

2.04 JUNCTION BOXES AND PULL BOXES:

A. JUNCTION BOXES AND OUTLET BOXES SHALL BE MANUFACTURED FROM GALVANIZED INDUSTRY STANDARD GAUGE SHEET STEEL.

B. PROVIDE JUNCTION BOXES IN LONG STRAIGHT RUNS OF RACEWAY TO ASSURE THAT CABLES ARE NOT DAMAGED WHEN THEY ARE PULLED, TO FULFILL REQUIREMENTS AS TO THE NUMBER OF BENDS PERMITTED IN RACEWAY BETWEEN CABLE ACCESS POINTS, THE ACCESSIBILITY OF CABLE JOINTS AND SPLICES, AND THE APPLICATION OF CABLE SUPPORTS.

C. JUNCTION BOXES SHALL BE SIZED SO THAT THE MINIMUM BENDING RADIUS CRITERIA SPECIFIED FOR THE WIRES AND CABLE ARE MAINTAINED.

D. JUNCTION BOX BARRIERS SHALL BE PROVIDED WHERE REQUIRED BY CODE.

E. ALL EQUIPMENT, DEVICE BOXES, JUNCTION BOXES, AND OUTLET BOXES SHALL BE INSTALLED SO AS TO ALLOW ACCESS TO THE BOX.

2.05 SUPPORTS AND FASTENINGS:

A. PROVIDE ALL STEEL SUPPORTING MEMBERS, HANGERS, BRACKETS OR OTHER SPECIAL DETAILS REQUIRED AND NECESSARY AS PER CODE.

2.06 CIRCUIT BREAKERS:

A. FOR PANELBOARD APPLICATIONS, CIRCUIT BREAKERS SHALL BE BOLTED TO THE PANELBOARD BUS BARS. WHERE CIRCUIT BREAKERS ARE INSTALLED IN EXISTING PANELBOARD BREAKERS SHALL BE OF THE SAME MANUFACTURER AND INTERRUPTING RATING. BREAKERS SHALL BE COMPATIBLE WITH EXISTING PANELBOARD.

B. CIRCUIT BREAKERS SHALL BE "THERMAL MAGNETIC" TYPE, QUICK-MAKE, QUICK-BREAK, TRIP-FREE WITH NON-WELDING CONTACTS COMPENSATED FOR AMBIENT TEMPERATURES AND SHORT CIRCUIT RATING SHALL MATCH OR EXCEED EXISTING PANEL RATING.

C. MULTIWIRE BRANCH CIRCUITS SUPPLYING POWER TO MORE THAN ONE DEVICE OR EQUIPMENT SHALL BE PROVIDED WITH A MEANS TO DISCONNECT SIMULTANEOUSLY ALL UNGROUNDED CONDUCTORS AT THE PANELBOARD WHERE THE BRANCH CIRCUIT ORIGINATES.

D. PROVIDE APPROVED "HACR" TYPE CIRCUIT BREAKERS FOR ALL HEATING, AIR CONDITIONING, AND REFRIGERATION EQUIPMENT INDICATED FOR CONNECTION ON ELECTRICAL DRAWINGS.

2.07 GROUNDING:

A. PROVIDE SUPPLEMENTARY GROUND BONDING WHERE METALLIC CONDUITS TERMINATE AT METAL CLAD EQUIPMENT (OR AT THE METAL PULL BOX OF EQUIPMENT) FOR WHICH A GROUND BUS IS SPECIFIED WITH A BUSHING OF THE GROUNDING TYPE CONNECTED INDIVIDUALLY TO GROUND BUS.

B. ALL GROUND WIRES SHALL BE SUITABLY PROTECTED FROM MECHANICAL INJURY.

C. SPECIALTY GROUNDING AS DETAILED ON THE DESIGN DRAWINGS OR REQUESTED AS ELECTRICAL CONTRACTOR SCOPE BY OTHER CONSULTANTS DOCUMENTS.

D. PROVIDE A GREEN GROUND CONDUCTOR IN CIRCUIT CONDUITS AS INDICATED. PROVIDE SUPPLEMENTARY GROUND BONDING WHERE METALLIC CONDUITS TERMINATE AT METAL CLAD EQUIPMENT (OR AT THE METAL PULL BOX OF EQUIPMENT) FOR WHICH A GROUND BUS IS SPECIFIED. ACCOMPLISH THIS BY EQUIPPING THE CONDUITS WITH BUSHING OF THE GROUNDING TYPE CONNECTED INDIVIDUALLY TO GROUND BUS. ALL GROUND WIRE SHALL BE SUITABLY PROTECTED FROM MECHANICAL INJURY.

2.08 ACCEPTABLE MANUFACTURERS:

A. RECEPTACLES/SIWTCHES: HUBBELL, LEVITON, BRYANT

B. RACEWAYS: NATIONAL WIRE PRODUCTS, TRIANGLE OR REPUBLIC

C. WIRE/CABLE: SOUTHWIRE, GENERAL CABLE, EDWARDS

D. FITTINGS, COUPLINGS, BUSHINGS, CONNECTORS: OZ GEDNEY, BURNDY, NEPCO, THOMAS AND BETTS

E. CIRCUIT BREAKERS: SIEMENS, GE, SQUARE "D" OR APPROVED EQUAL TO MATCH PANEL.

2.09 APPLIED FIRE PROOFING:

A. PROVIDE FIRESTOPPING MATERIAL AT THICKNESSES AS REQUIRED TO PROVIDE INDICATED RATINGS. WHERE NOT OTHERWISE INDICATED, COMPLY WITH U.L. STANDARD DESIGNS. IN MULTIPLE LAYER WORK, OFFSET JOINTS BY AT LEAST 6 INCHES.

B. ANCHOR FIRESTOPPING USING MANUFACTURER'S RECOMMENDED SYSTEM AND IN COMPLIANCE WITH U.L. STANDARD DESIGNS.

C. INSTALL FIRESTOPPING WITHOUT GAPS AND VOIDS OF ANY KIND. DO NOT USE DAMAGED MATERIALS. REMOVE AND REPLACE NONFITTING OR DISTURBED WORK.

D. USE MINERAL SAFING INSULATION AT TOP OF FIRE-RATED PARTITIONS AT UNDERSIDE OF METAL DECK TO PROVIDE COMPLETE FIRE-RATED SEAL. MINERAL SAFING INSULATION MUST BE USED IN CONJUNCTION WITH A SEALANT OR FOAM FIRESTOP TO ENSURE A CONTINUOUS SMOKE SEAL.

E. USE FIRESTOPPING SEALANT AT NARROW JOINTS AT FIRE-RATED FLOOR AND WALL PENETRATIONS, AND AT PENETRATIONS SUBJECT TO VIBRATION OR MOVEMENT. TYPICAL PENETRATIONS REQUIRING SEALANT ARE PLUMBING AND HVAC PIPING, ELECTRIC CONDUIT AND DUCTWORK.

F. APPLY FOAM-IN-PLACE FIRESTOPPING MATERIAL IN DEPTHS REQUIRED TO MEET THE FIRE RATINGS INDICATED OR REQUIRED BY U.L. STANDARDS. PROVIDE CLIPS OR OTHER APPROVED MEANS TO CONTAIN THE FOAM-IN-PLACE MATERIAL WHICH WILL ENABLE THE FOAM TO SOLIDLY FILL THE AREAS INTENDED. MIXING AND APPLICATION SHALL BE IN STRICT ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS.

G. FOAM FIRESTOPPING MAY BE USED IN LIEU OF SEALANT OR MORTAR MATERIAL AT THE CONTRACTOR'S OPTION, PROVIDED DETAILS CONFORM TO MANUFACTURER'S RECOMMENDATIONS FOR MAINTAINING THE INTEGRITY OF THE ASSEMBLY IN QUESTION.

PART 3 EXECUTION

3.01 GENERAL

A. PERFORM THE WORK AT SUCH TIME AND IN SUCH MANNER AS TO MINIMIZE INTERFERENCE WITH BUILDING'S NORMAL OPERATION. NOTIFY THE SCHOOL DISTRICT(REPRESENTATIVES IN ADVANCE EACH TIME A SERVICE OUTAGE OR INTERRUPTION WILL BE REQUIRED FOR THE PERFORMANCE OF SOME PHASE OF THE WORK. SCHEDULE SUCH SERVICE OUTAGE OR INTERRUPTION ONLY AFTER HAVING RECEIVED APPROVAL OF DATE, HOUR, AND TIME INTERVAL REQUIRED THEREOF. SCHEDULE OF WORK AS DIRECTED SHALL BE FOLLOWED AS CLOSELY AS POSSIBLE .

B. OPENINGS AROUND ELECTRICAL PENETRATIONS THROUGH FIRE RESISTANCE RATED WALLS, PARTITIONS, FLOORS, OR CEILINGS SHALL BE FIRE STOPPED USING APPROVED METHODS. SEALANT SHALL BE RATED FOR 3 HOURS.

C. MAINTAIN GROUND CONTINUITY THROUGHOUT ALL SYSTEMS.

D. MAINTAIN CONTINUITY AND PROTECT ALL EXISTING CIRCUITS TO REMAIN SERVING EQUIPMENT WITHIN BASE BUILDING CORE AREAS OR OTHER AREAS AFFECTED BY THE ALTERATION WORK. CONTRACTOR SHALL BE RESPONSIBLE TO TRACE ALL EXISTING CIRCUITS TO REMAIN ORIGINATING FROM PANELBOARDS, AND SUBMIT FINDINGS TO ENGINEER FOR CLARIFICATION PRIOR TO THE START OF ANY PANELBOARD WORK. WHENEVER IT IS REQUIRED THAT AN EXISTING CIRCUIT BE MODIFIED, REVISED, DISCONNECTED OR REMOVED IT SHALL BE UNDERSTOOD THAT THE CIRCUIT SHALL BE RECONNECTED AND SERVICE RE-ESTABLISHED IN THE REMAINING PORTION OF THE CIRCUIT AFFECTED BY THE ALTERNATION

E. PRIOR TO ANY CHASING, CHOPPING, OR CORE DRILLING BEING PERFORMED, THE CONTRACTOR SHALL FIELD INVESTIGATE CONDITIONS AND COORDINATE WITH ALL APPROPRIATE TRADES TO ENSURE THAT WORK WILL BE IN HARMONY WITH OTHER WORK AND NOT AFFECTED ANY EXISTING BUILDING SYSTEMS.

F. FOR TEMPORARY POWER, FURNISH AND INSTALL WIRING FOR ADEQUATE LIGHT AND SMALL TOOLS POWER FOR THE PROJECT. THIS SHALL INCLUDE STRINGERS, LAMPS, OUTLETS, BREAKERS, AND FUSING, AS IT IS NECESSARY. ALL TEMPORARY WIRING SHALL BE REMOVED FROM SPACE AT COMPLETION OF PROJECT.

G. COORDINATE WITH THE BUILDING OWNER FOR ANY SERVICE INTERRUPTION OF EXISTING SYSTEMS AND GIVE NOTICE AS REQUIRED BY BUILDING RULES AND REGULATIONS OR A MINIMUM OF FIVE (5) DAYS PRIOR TO ANY WORK, WHICHEVER IS MORE STRINGENT. CONTRACTOR IS TO PERFORM WORK ON PREMIUM TIME SO AS TO NOT DISRUPT OTHER FLOORS.

H. WHEN USING TEMPORARY LIGHTING, THE CONTRACTOR SHALL CLEARLY LABEL PANELS AND BREAKERS USED FOR LIGHTING. LOCATION OF PANELS TO BE SHOWN ON FLOOR PLAN POSTED AT ENTRANCE TO WORK AREA. PROPER TEMPORARY LIGHTING AND POWER MUST BE INSTALLED AND MAINTAINED IN ALL WORK AREAS. CONNECTIONS TO EXISTING STAIRWELL AND EXIT LIGHT SYSTEMS ARE NOT PERMITTED.

I. THE CONTRACTOR SHALL CUT BACK TO THE FLOOR, WALL OR CEILING, REMOVE WING AND PLUG BOTH ENDS OF CONCEALED CONDUITS MADE OBSOLETE BY THIS ALTERNATION. EXPOSED CONDUITS, WIREWAYS, OUTLET BOXES, PULL BOXES, HANGERS, ETC. MADE OBSOLETE BY THE ALTERNATION WORK SHALL BE REMOVED, UNLESS OTHERWISE NOTED.

J. IT IS POSSIBLE THAT THERE WILL BE CERTAIN REMOVALS AND RELOCATIONS OF THE EXISTING ELECTRICAL INSTALLATION NECESSARY FOR THE SATISFACTORY PERFORMANCE OF THE WORK. THESE CHANGES CANNOT BE COMPLETELY DETAILED ON THE DRAWINGS, BUT MUST BE CONSIDERED BY THE CONTRACTOR WHILE REVIEWING THE EXISTING CONDITIONS AT THE SITE AND PREPARING THE PROPOSAL.

3.02 IDENTIFICATION OF EQUIPMENT:

A. ALL PANELBOARDS, CONTROL PANELS, AND CABINETS SPECIFIED HEREIN SHALL BE CLEARLY IDENTIFIED WITH THE EQUIPMENT DESIGNATION AND VOLTAGE RATING. IDENTIFICATION SHALL BE BY WHITE ON BLACK PLASTIC NAMEPLATE WITH 1/2' MINIMUM LETTERING ATTACHED BY SCREWS.

B. JUNCTION BOXES, SPLICE BOXES, ETC., SHALL BE IDENTIFIED WITH PANEL AND CIRCUIT NUMBERS, FOR CIRCUITS CONTAINED THEREIN. FACEPLATE OF SWITCHES FOR EQUIPMENT SUCH AS MOTORIZED SCREENS, ETC., SHALL BE IDENTIFIED WITH THE NAME OF THE DEVICE CONTROLLED. IDENTIFICATION SHALL BE BY INDELIBLE MARKER IN CONCEALED LOCATIONS AND ADHESIVE ('P' TOUCH TYPE) LABELS IN EXPOSED LOCATIONS. EMERGENCY DEVICES SHALL BE IDENTIFIED IN RED.

C. ALL RECEPTACLES/SWITCHES SHALL HAVE CIRCUIT NUMBERS AND ASSOCIATED PANEL DESIGNATION CLEARLY IDENTIFIED ON THE RECEPTACLES (OR DISCONNECT, JUNCTION BOX, ETC...) FACEPLATE. IDENTIFICATION SHALL BE PERMANENT, INDELIBLE AND TYPEWRITTEN.

3.03 PROTECTION:

A. CONTRACTOR SHALL BE RESPONSIBLE FOR WORK AND EQUIPMENT UNTIL FINALLY INSPECTED, TESTED AND ACCEPTED. MATERIALS AND EQUIPMENT SHALL BE CAREFULLY STORED WHICH ARE NOT IMMEDIATELY INSTALLED AFTER DELIVERY TO SITE. CLOSE EXPOSED PARTS OF THE WORK WITH TEMPORARY COVERS OR PLUGS DURING CONSTRUCTION TO PREVENT ENTRY OF MOISTURE OR OBSTRUCTING MATERIALS.

B. PROTECT THE WORK AND MATERIAL OF OTHERS FROM DAMAGE INSTALLED AS PART OF THIS CONTRACT. RESTORE ANY WORK DAMAGED AND BE RESPONSIBLE FOR ALL CURRENT WORK AND ASSOCIATED COSTS.

ELECTRICAL LEGENDS

ABBREVIATION	DESCRIPTION	COMMENTS
AFF	ABOVE FINISHED FLOOR	
AFC	ABOVE FINISHED CEILING	
AFCI	ARC FAULT CIRCUIT INTERRUPTER	
AFG	ABOVE FINISHED GRADE	
AHJ	AUTHORITY HAVING JURISDICTION	
AMP, A	AMPERE	
ATS	AUTOMATIC TRANSFER SWITCH; SEE TRANSFER SWITCH SCHEDULE	
AWG	AMERICAN WIRE GAUGE	
BFC	BELOW FINISHED CEILING	
CL	CENTERLINE	
CT	COUNTER TOP	
EC	ELECTRICAL CONDUIT	
GFCI	GROUND FAULT CIRCUIT INTERRUPTER	
GFI	GROUND FAULT INDICATOR	
GND	GROUND	
PSEG	PUBLIC SERVICE ELECTRIC AND GAS COMPANY (LOCAL ELECTRIC UTILITY)	
MCB	MAIN CIRCUIT BREAKER	
MLO	MAIN LUGS ONLY	
NTS	NOT TO SCALE	
TYP	TYPICAL	
UON	UNLESS OTHERWISE NOTED	
UC	UNDER COUNTER	
V	VOLT	
VAC	VOLTS ALTERNATING CURRENT	
VDC	VOLTS DIRECT CURRENT	
X-FMR	TRANSFORMER	
WP	WEATHERPROOF	

H2M architects + engineers

2700 Westchester Ave., Suite 415
Purchase, NY 10577
914.358.5623 ▪ www.h2m.com

CONSULTANTS:

MARK	DATE	DESCRIPTION

STATE OF NEW YORK · MICHAEL WILLIAM LANTIER · 088354 · LICENSED PROFESSIONAL ENGINEER

DESIGNED BY:	DRAWN BY:	CHECKED BY:	REVIEWED BY:
PROJECT No.: SMSD 2105	DATE: OCTOBER 2022	SCALE:	

CLIENT

Somers Central School District

Air Handler Replacement at Primrose Elementary School

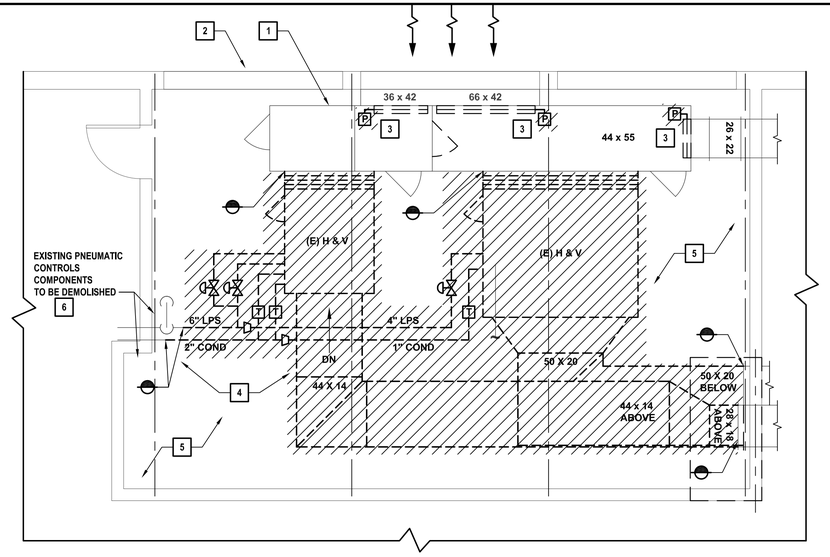
Primrose Elementary School
110 Primrose Street
Lincolndale, NY 10540
SED #: 66-21-01-06-0-002-014

CONTRACT
CONTRACT H
HEATING VENTILATION AND AIR CONDITIONING

STATUS
FINAL BID SET

SHEET TITLE
HVAC ELECTRICAL SPECIFICATIONS

DRAWING No.
M002.00



1 MER HVAC Demolition Plan

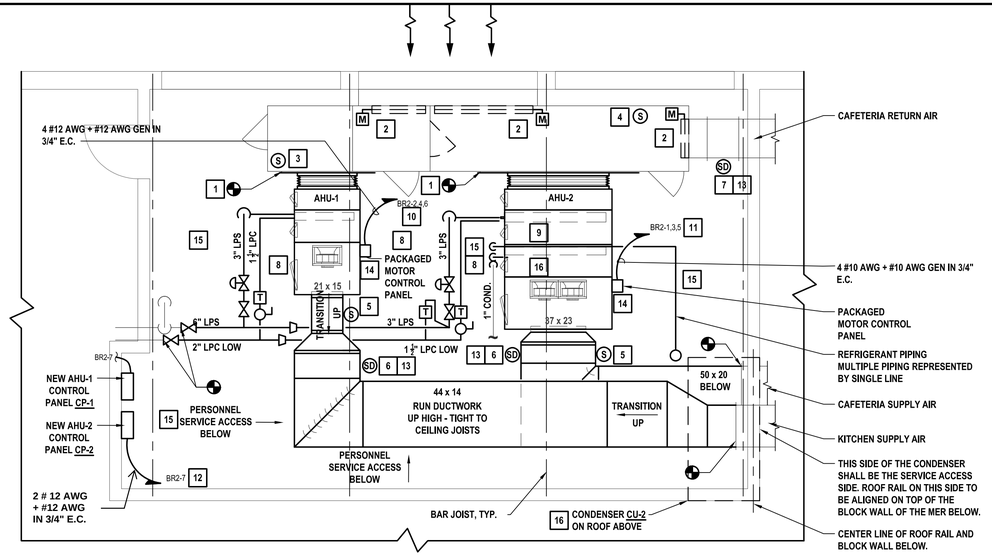
SCALE: 1/4"=1'-0"

KEYED DEMOLITION NOTES:

1. CAREFULLY DISCONNECT AND REMOVE SECTION OF OUTSIDE AIR PLENUM AS REQUIRED TO PROVIDE ACCESS TO MER VIA WINDOW. RETAIN AND STORE FOR RE-INSTALLATION AT COMPLETION OF WORK.
2. CAREFULLY REMOVE WINDOW TO PROVIDE ACCESS TO MER VIA WINDOW. RETAIN AND STORE FOR RE-INSTALLATION AT COMPLETION OF WORK.
3. DEMOLISH PNEUMATIC DAMPER ACTUATOR AND LINKAGE. DAMPER TO REMAIN. CLEAN, LUBRICATE AND EXERCISE DAMPER TO ENSURE PROPER OPERATION. TYP. FOR 3.
4. DEMOLISH TWO H&V UNITS, DUCTWORK, FLEXIBLE CONNECTIONS AND ASSOCIATED STEAM AND CONDENSATE PIPING ENTIRELY UP TO DISCONNECT POINTS. DEMOLISH CONTROL VALVES. DEMOLISH CONTROL TUBING AND ASSOCIATED CONTROL DEVICES WITHIN ROOM AND CAP AIR TIGHT. PROVIDE A 6" STEAM AND 2" CONDENSATE ISOLATION VALVE AT DISCONNECT POINTS. MODIFY PIPING AND LOCATE VALVES TO PROVIDE MAXIMUM SERVICE PATH IN MER.
5. CLEAN FLOOR, SCRAPE OFF LOOSE MATERIALS, PATCH AND REPAINT PRIOR TO INSTALLING ANY NEW EQUIPMENT.
6. REMOVE AND DISPOSE OF ALL POWER, CONTROLS, WIRE, AND CONDUIT FOR EXISTING AHU'S BEING DEMOLISHED BACK TO SOURCE.

ASBESTOS REMOVAL NOTES:

THE CONTRACTOR SHALL COMPLETELY ABATE AND DISPOSE OF THE EXISTING PIPING, PIPE INSULATION, AND JOINTS/FITTINGS/ ELBOWS/ETC. IN THE FAN ROOM (MER). PLEASE REFER TO THE QUALITY ENVIRONMENTAL SOLUTIONS REPORT (DATED AUGUST 11, 2022) AND SPECIFICATION 028000 - ASBESTOS REMOVAL FOR ADDITIONAL INFOMATION.



2 MER HVAC Construction Plan

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

KEYED NEW WORK NOTES:

1. PROVIDE BLANK OFF PANELS, TRANSITIONS AND NEW FLEXIBLE CONNECTIONS AS REQUIRED TO ADAPT EXISTING MIXED AIR PLENUM OPENING TO FULL SIZE NEW AHU AIR INLET OPENING. AIR HANDLER INLET OPENING CROSS SECTION SHALL NOT BE REDUCED. SEAL ALL JOINTS AIR TIGHT.
2. PROVIDE NEW MOTORIZED DAMPER ACTUATORS
3. NEW 100% OUTSIDE AIR TEMPERATURE SENSOR
4. NEW RETURN AIR TEMPERATURE SENSOR
5. NEW SUPPLY AIR TEMPERATURE SENSOR (TYP. FOR 2)
6. NEW SUPPLY AIR SMOKE DETECTOR (TYP. FOR 2)
7. NEW RETURN AIR SMOKE DETECTOR
8. COORDINATE LOCATION AND ELEVATIONS OF PIPING, CONTROL VALVES, TRAPS, ETC. WITH EQUIPMENT TO ENSURE MANUFACTURER REQUIRED SERVICE ACCESS IS PROVIDED. NOTE: NOT ALL VALVES, FITTINGS AND SPECIALTIES ARE SHOWN. REFER TO MECHANICAL DETAILS FOR REQUIREMENTS.
9. REVIEW SELECTED AHU SHOP DRAWING AND VIBRATION ISOLATION, FRAME RAIL, ETC. STACK-UP HEIGHTS - CLEAR HEIGHT TO BOS - ROOF JOIST IS 5'-0" (+/-) - CONTRACTOR TO VERIFY IN FIELD PRIOR TO PROCUREMENT. IF REQUIRED, RUBBER VIBRATION PADS MAY BE USED INSTEAD OF SPRING VIBRATION ISOLATORS.
10. CONTRACTOR SHALL PROVIDE AND INSTALL A NEW 15A/3P CIRCUIT BREAKER IN EXISTING PANEL. PROVIDE ALL MOUNTING HARDWARE. NEW CIRCUIT BREAKER SHALL BE LISTED/LABELED FOR USE IN EXISTING PANEL. AMPERE INTERRUPTING CAPACITY (AIC) RATING ON NEW CIRCUIT BREAKER SHALL MATCH OR EXCEED EXISTING PANEL RATING. SEE DETAIL 3 ON THIS DRAWING FOR THE LOCATION OF PANEL "BR2".
11. CONTRACTOR SHALL PROVIDE AND INSTALL A NEW 35A/3P CIRCUIT BREAKER IN EXISTING PANEL. PROVIDE ALL MOUNTING HARDWARE. NEW CIRCUIT BREAKER SHALL BE LISTED/LABELED FOR USE IN EXISTING PANEL. AMPERE INTERRUPTING CAPACITY (AIC) RATING ON NEW CIRCUIT BREAKER SHALL MATCH OR EXCEED EXISTING PANEL RATING. SEE DETAIL 3 ON THIS DRAWING FOR THE LOCATION OF PANEL "BR2".
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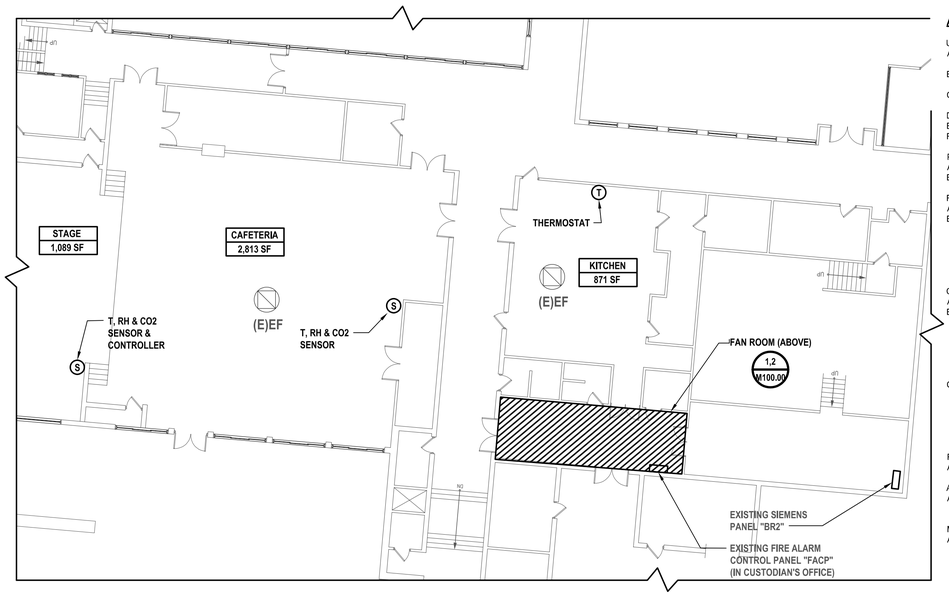
14. ALL HVAC EQUIPMENT SHALL BE INTERCONNECTED TO THE FIRE ALARM SYSTEM AND ALL FANS SHALL SHUT DOWN UPON FIRE ALARM SYSTEM ALARM ACTIVATION. CONTRACTOR SHALL INTERFACE WITH ALL EXISTING UNITS.
15. CONTRACTOR SHALL PROVIDE AND INSTALL A TOTAL OF FOUR (4) 1'X4' LED CHAIN PENDANT LIGHT FIXTURES IN FAN ROOM. DISTRIBUTE EVENLY ACROSS FAN ROOM AS SPACE ALLOCATES. PROVIDE AND INSTALL A NEW LIGHT SWITCH AT ENTRANCE TO FAN ROOM. DEMOLISH EXISTING LIGHTING. CIRCUIT NEW LIGHTING FROM PANEL BR2-7.



3 First Floor Part Plan

SCALE: NTS

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UNIT CASING

A. Unit manufacturer shall ship unit in segments as specified by the contractor for ease of installation in tight spaces. Contractor shall be responsible to provide connection flanges and all other framework that is needed to properly support the unit. Cafeteria unit base height to be included in total height required for proper trap height.
B. Unit casing (wall/floor/roof panels and doors) shall be able to withstand up to 1.5 times design static pressure, or 8-inch w.g., whichever is less, and shall not exceed 0.0042 per inch of panel span (L/240).
C. Unit casing panels shall be 2-inch double-wall construction, with solid galvanized exterior and solid galvanized interior (Cafeteria Unit) / stainless steel interior (kitchen unit), to facilitate cleaning of unit interior.
D. Unit casing panels and external structural frame members shall be completely insulated filling the entire panel cavity in all directions. Panel insulation shall comply with NFPA 90A.
E. Access panels and/or access doors shall be provided in all sections to allow easy access to drain pan, coil(s), motor, drive components and bearings for cleaning, inspection, and maintenance.
F. Access doors shall be gasketed, hinged and removable with 2-inch double-wall construction. Interior and exterior shall be of the same construction as the interior and exterior wall panels.

PRIMARY DRAIN PANS

A. All cooling coil sections shall be provided with an insulated, double-wall, galvanized drain pan.
B. The outlet shall be located at the lowest point of the pan and shall be sufficient diameter to preclude drain pan overflow under any normally expected operating condition.

FANS

A. Fan sections shall have a minimum of one hinged and latched access door located on the drive side of the unit to allow inspection and maintenance of the fan, motor, and drive components.
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   1. Individual Fan Assemblies shall be statically and dynamically balanced in two planes as per DIN / ISO 1940 to balancing grade G 6.3.
   2. Fan performance shall be rated in accordance with AHRI 430-2020. Fan shall be spaced to minimize aerodynamic fan interaction. Motor shall contain integrated PID controller and accept a 0-10VDC input signal for variable speed control.
   3. Motorized impeller fan section shall include expanded metal door guard(s) supplied on the access door(s) to the fan. Door guard is intended to deter unauthorized entry and incidental contact with rotating components.

COILS

A. Coils section header end panel shall be removable to allow for removal and replacement of coils without impacting the structural integrity of the unit.
B. Steam Heating Coils
   1. Steam supply, condensate return, and vacuum breaker connections shall be clearly labeled on unit exterior.
   2. Coils shall be non-freeze, steam distributing type. Coils shall be pitched in units for proper drainage of steam condensate from coils.
   3. Coils shall be proof tested to 300 psig and leak tested to 200 psig air pressure under water.
   4. Tubes shall consist of 11/16 inch O.D., minimum 0.031 inch thick, copper inner tubes and 1 inch O.D., minimum .031 copper outer tubes. Fins shall be of aluminum material.
   5. Inner tubes shall have orifices that ensure even steam distribution throughout the length of the outer tube. Orifices shall direct steam toward return connections to ensure steam condensate is properly drained from coils to prevent flashing of condensate.
C. Refrigerant Cooling Coils
   1. Coils shall be proof tested to 450 psig and leak tested to 300 psig air pressure under water. After testing, insides of tubes shall be air dried, charged with dry nitrogen or dry air, and sealed to prevent contamination.
   2. Refrigerant suction and liquid headers shall be constructed of copper tubing. Suction and liquid connections shall penetrate unit casings to allow for sweat connections to refrigerant lines.
   3. Tubes shall be 3/8-inch .012 copper, with aluminum fins.
   4. Coils shall have equalizing type vertical distributors sized in conjunction with capacities of coils.

FILTERS

A. Filter type, MERV rating, and arrangement shall be provided as defined in project plans and schedule.

ACCESS SECTIONS

A. Access sections shall be provided where indicated in the schedule and plans to allow additional access for inspection, cleaning, and maintenance of unit components. The unit shall be installed for proper access. Procedure for proper access, inspection and cleaning of the unit shall be provided in the AHU manufacturer's maintenance manual.

MOTORIZED IMPELLER CONTROLLER PANEL

A. The fan section shall be provided with a factory installed NEMA 1 panel. The control panel provides a common externally accessible disconnect means, motor over current protection for each fan and a terminal block for ease of control wiring. The box shall include:
   1. Individual motor protection with individual disconnecting means with lockable feature. Fusible motor protection is not permissible.
   2. Fused main panel disconnect with lock out tag out capability
   3. Common control terminal block for common signal wiring. Single 0-10vdc signal used for fan speed control.
   4. Control panel box shall be UL508a compliant and manufactured by a UL508a approved manufacturer.

FACTORY WIRING OF LIGHTS, VFDS, MOTORIZED IMPELLER CONTROL PANELS, AND COMBINATION STARTERS/DISCONNECTS

A. After mounting and wiring of the motorized impeller control panel (MICP), on the AHUs, trained factory personnel shall ensure proper operation of each MICP, through a thorough factory test. Testing shall include a Hypot test of unit wiring to ensure that no weaknesses exist in wiring or motor. Each MICP shall be energized and the fan run to ensure the MICP and MI fan will operate throughout the usable range of the drive and that the fan rotation is correct.

ALTERNATE #3 & 4 KEYED NEW WORK NOTES:

16. PROVIDE 1" CONDENSATE TRAP AND PIPING THROUGH FLOOR DOWN TO SINK IN CUSTODIAN ROOM OR NEAREST FLOOR DRAIN ON LOWER FLOOR OR MER.

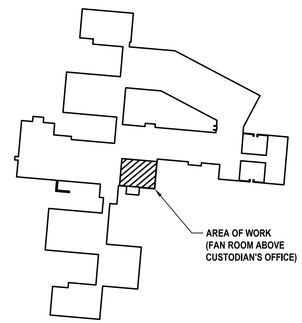
    PROVIDE DUAL CIRCUIT REFRIGERANT PIPING, OIL TRAPS, DRIERS, INSULATION, ETC. AS REQUIRED PER MANUFACTURER AND ENERGY CODE TO CONDENSER ON ROOF ABOVE.

    INSTALL CONDENSER ON ROOF RAILS, ALIGNED WITH STRUCTURAL STEEL BELOW. PROVIDE ALL SUPPLEMENTAL STEEL TO SUPPORT ROOF DECK IN CEILING BELOW ROOF RAILS TO TRANSFER LOAD TO TWO ADJACENT BAR JOISTS.

    CONDENSER SHALL BE LOCATED A MINIMUM OF 10' FROM ROOF EDGE.

    PROVIDE ELECTRICAL NEMA 3R DISCONNECT FOR CONDENSER. PROVIDE 3 #1 AWG + #6 AWG GND IN 1-1/2" E.C. BETWEEN CONDENSER AND "MDP". TERMINATE TO EXISTING 125A/3P CIRCUIT BREAKER.

    EXISTING EPDM ROOF IS UNDER WARRANTY HELD BY BARRETT ROOFS, INC. ALL PENETRATIONS SHALL BE COMPLETED IN ACCORDANCE WITH THE MANUFACTURER'S REQUIREMENTS TO MAINTAIN EXISTING WARRANTY. ALL ROOF WORK SHALL BE COMPLETED BY A CERTIFIED INSTALLER. CONTRACTOR SHALL CONTACT BARRETT ROOFS, INC. AND FIRESTONE (CONTRACTOR WHO INSTALLED WARRANTIED ROOF) TO CONFIRM ALL ROOF WORK.



Key Plan

SCALE: NTS

H2M architects + engineers
2700 Westchester Ave., Suite 415
Purchase, NY 10577
914.358.5623 • www.h2m.com

CONSULTANTS:

MARK	DATE	DESCRIPTION

STATE OF NEW YORK ALEXANDER HOCHHAUS LICENSED PROFESSIONAL ENGINEER 073570

DESIGNED BY:	DRAWN BY:	CHECKED BY:	REVIEWED BY:

PROJECT No.:	DATE:	SCALE:
SMSD 2105	OCTOBER 2022	

CLIENT

Somers Central School District

Air Handler Replacement at Primrose Elementary School

Primrose Elementary School
110 Primrose Street
Lincolndale, NY 10540

SED #: 66-21-01-06-0-002-014

CONTRACT

CONTRACT H
HEATING VENTILATION AND AIR CONDITIONING

STATUS

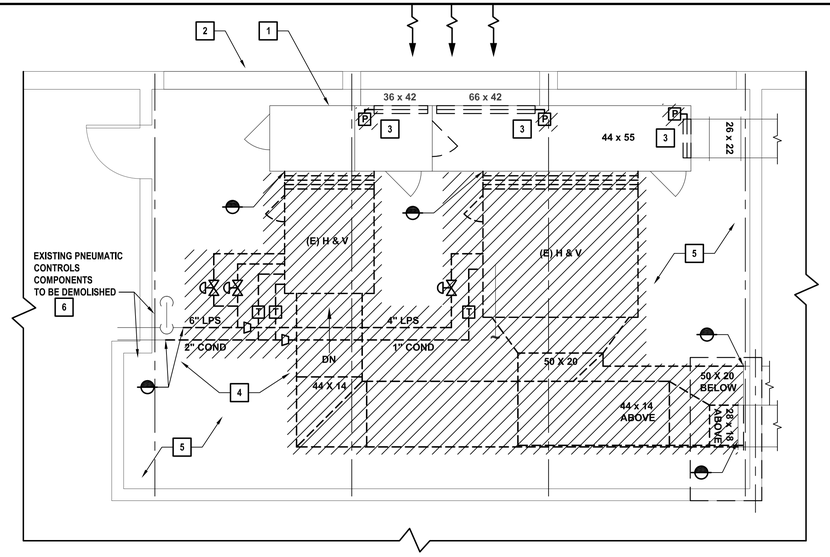
FINAL BID SET

SHEET TITLE

HVAC DEMOLITION AND NEW WORK PLAN

DRAWING No.

M100.00



1 MER HVAC Demolition Plan

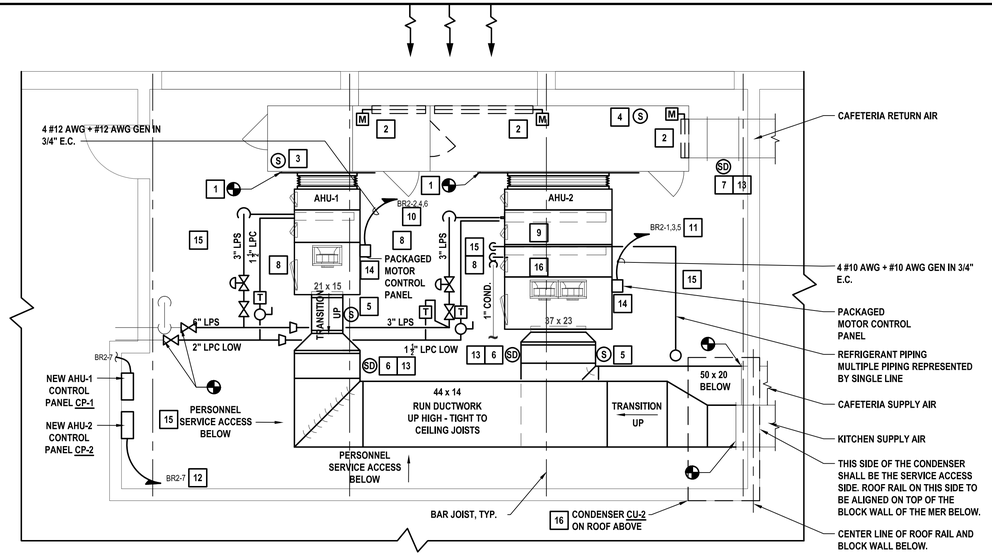
SCALE: 1/4"=1'-0"

KEYED DEMOLITION NOTES:

1. CAREFULLY DISCONNECT AND REMOVE SECTION OF OUTSIDE AIR PLENUM AS REQUIRED TO PROVIDE ACCESS TO MER VIA WINDOW. RETAIN AND STORE FOR RE-INSTALLATION AT COMPLETION OF WORK.
2. CAREFULLY REMOVE WINDOW TO PROVIDE ACCESS TO MER VIA WINDOW. RETAIN AND STORE FOR RE-INSTALLATION AT COMPLETION OF WORK.
3. DEMOLISH PNEUMATIC DAMPER ACTUATOR AND LINKAGE. DAMPER TO REMAIN. CLEAN, LUBRICATE AND EXERCISE DAMPER TO ENSURE PROPER OPERATION. TYP. FOR 3.
4. DEMOLISH TWO H&V UNITS, DUCTWORK, FLEXIBLE CONNECTIONS AND ASSOCIATED STEAM AND CONDENSATE PIPING ENTIRELY UP TO DISCONNECT POINTS. DEMOLISH CONTROL VALVES. DEMOLISH CONTROL TUBING AND ASSOCIATED CONTROL DEVICES WITHIN ROOM AND CAP AIR TIGHT. PROVIDE A 6" STEAM AND 2" CONDENSATE ISOLATION VALVE AT DISCONNECT POINTS. MODIFY PIPING AND LOCATE VALVES TO PROVIDE MAXIMUM SERVICE PATH IN MER.
5. CLEAN FLOOR, SCRAPE OFF LOOSE MATERIALS, PATCH AND REPAINT PRIOR TO INSTALLING ANY NEW EQUIPMENT.
6. REMOVE AND DISPOSE OF ALL POWER, CONTROLS, WIRE, AND CONDUIT FOR EXISTING AHU'S BEING DEMOLISHED BACK TO SOURCE.

ASBESTOS REMOVAL NOTES:

THE CONTRACTOR SHALL COMPLETELY ABATE AND DISPOSE OF THE EXISTING PIPING, PIPE INSULATION, AND JOINTS/FITTINGS/ ELBOWS/ETC. IN THE FAN ROOM (MER). PLEASE REFER TO THE QUALITY ENVIRONMENTAL SOLUTIONS REPORT (DATED AUGUST 11, 2022) AND SPECIFICATION 028000 - ASBESTOS REMOVAL FOR ADDITIONAL INFOMATION.



2 MER HVAC Construction Plan

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

KEYED NEW WORK NOTES:

1. PROVIDE BLANK OFF PANELS, TRANSITIONS AND NEW FLEXIBLE CONNECTIONS AS REQUIRED TO ADAPT EXISTING MIXED AIR PLENUM OPENING TO FULL SIZE NEW AHU AIR INLET OPENING. AIR HANDLER INLET OPENING CROSS SECTION SHALL NOT BE REDUCED. SEAL ALL JOINTS AIR TIGHT.
2. PROVIDE NEW MOTORIZED DAMPER ACTUATORS
3. NEW 100% OUTSIDE AIR TEMPERATURE SENSOR
4. NEW RETURN AIR TEMPERATURE SENSOR
5. NEW SUPPLY AIR TEMPERATURE SENSOR (TYP. FOR 2)
6. NEW SUPPLY AIR SMOKE DETECTOR (TYP. FOR 2)
7. NEW RETURN AIR SMOKE DETECTOR
8. COORDINATE LOCATION AND ELEVATIONS OF PIPING, CONTROL VALVES, TRAPS, ETC. WITH EQUIPMENT TO ENSURE MANUFACTURER REQUIRED SERVICE ACCESS IS PROVIDED. NOTE: NOT ALL VALVES, FITTINGS AND SPECIALTIES ARE SHOWN. REFER TO MECHANICAL DETAILS FOR REQUIREMENTS.
9. REVIEW SELECTED AHU SHOP DRAWING AND VIBRATION ISOLATION, FRAME RAIL, ETC. STACK-UP HEIGHTS - CLEAR HEIGHT TO BOS - ROOF JOIST IS 5'-0" (+/-) - CONTRACTOR TO VERIFY IN FIELD PRIOR TO PROCUREMENT. IF REQUIRED, RUBBER VIBRATION PADS MAY BE USED INSTEAD OF SPRING VIBRATION ISOLATORS.
10. CONTRACTOR SHALL PROVIDE AND INSTALL A NEW 15A/3P CIRCUIT BREAKER IN EXISTING PANEL. PROVIDE ALL MOUNTING HARDWARE. NEW CIRCUIT BREAKER SHALL BE LISTED/LABELED FOR USE IN EXISTING PANEL. AMPERE INTERRUPTING CAPACITY (AIC) RATING ON NEW CIRCUIT BREAKER SHALL MATCH OR EXCEED EXISTING PANEL RATING. SEE DETAIL 3 ON THIS DRAWING FOR THE LOCATION OF PANEL "BR2".
11. CONTRACTOR SHALL PROVIDE AND INSTALL A NEW 35A/3P CIRCUIT BREAKER IN EXISTING PANEL. PROVIDE ALL MOUNTING HARDWARE. NEW CIRCUIT BREAKER SHALL BE LISTED/LABELED FOR USE IN EXISTING PANEL. AMPERE INTERRUPTING CAPACITY (AIC) RATING ON NEW CIRCUIT BREAKER SHALL MATCH OR EXCEED EXISTING PANEL RATING. SEE DETAIL 3 ON THIS DRAWING FOR THE LOCATION OF PANEL "BR2".
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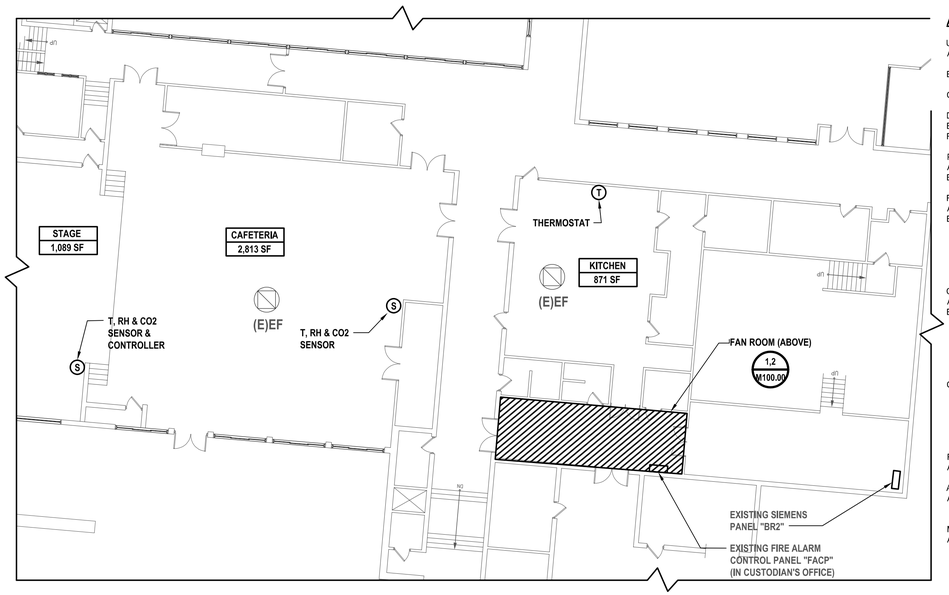

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SCALE: NTS

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    INSTALL CONDENSER ON ROOF RAILS, ALIGNED WITH STRUCTURAL STEEL BELOW. PROVIDE ALL SUPPLEMENTAL STEEL TO SUPPORT ROOF DECK IN CEILING BELOW ROOF RAILS TO TRANSFER LOAD TO TWO ADJACENT BAR JOISTS.

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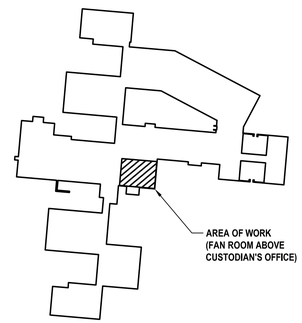


Key Plan

SCALE: NTS

H2M architects + engineers
2700 Westchester Ave., Suite 415
Purchase, NY 10577
914.358.5623 • www.h2m.com

CONSULTANTS:

MARK	DATE	DESCRIPTION

STATE OF NEW YORK ALEXANDER HOCHHAUS LICENSED PROFESSIONAL ENGINEER 073570

DESIGNED BY:	DRAWN BY:	CHECKED BY:	REVIEWED BY:

PROJECT No.:	DATE:	SCALE:
SMSD 2105	OCTOBER 2022	

CLIENT

Somers Central School District

Air Handler Replacement at Primrose Elementary School

Primrose Elementary School
110 Primrose Street
Lincolndale, NY 10540

SED #: 66-21-01-06-0-002-014

CONTRACT

CONTRACT H
HEATING VENTILATION AND AIR CONDITIONING

STATUS

FINAL BID SET

SHEET TITLE

HVAC DEMOLITION AND NEW WORK PLAN

DRAWING No.

M100.00

AIR HANDLING UNITS

EQUIPMENT NO.	LOCATION	AREA SERVED	SUPPLY FAN				OUTDOOR AIR FLOW (CFM)	COOLING COIL					HEATING COIL				BASIS OF DESIGN						REMARKS
			AIR FLOW (CFM)	EXT. S.P. (IN W.G)	MAX. BHP	MOTOR HP		REFRIGERANT TYPE	NOMINAL CAPACITY (TONS)	SENSIBLE CAPACITY (MBH)	AIR DATA ENT. DB/WB (DEG. F)	AIR DATA MAX LVG DB/WB (DEG F)	TOTAL CAPACITY (MBH)	AIR DATA ENT. DB (DEG. F)	AIR DATA LVG. DB (DEG F)	LOW PRESSURE STEAM (5 PSI) (PPH)	MANUFACTURER	MODEL NO.	NOMINAL DIMENSIONS LxWxH	NOMINAL OPERATION WEIGHT (LBS)	ELECTRICAL DATA VOLTS/PHASE	ELECTRICAL DATA FLA / MCA / MOCP	
AHU-1	MER	KITCHEN	3500	0.8	2.0	4.0	3500	NA	NA	NA	NA	NA	250	10	77	260	TRANE	CSAA006	71 x 44 x 35	561	208/3	8.8 / 11 / 15	1-5, 7
AHU-2	MER	CAFETERIA	8000	1.3	4.7	8.0 (2 X 4PH)	3500	R410A	20	200	78 / 67	57.9 / 57.3	440	45	95	460	TRANE	CSAA017	94 x 72 x 49	1239	208/3	27.9 / 30 / 35	1-3, 6-8

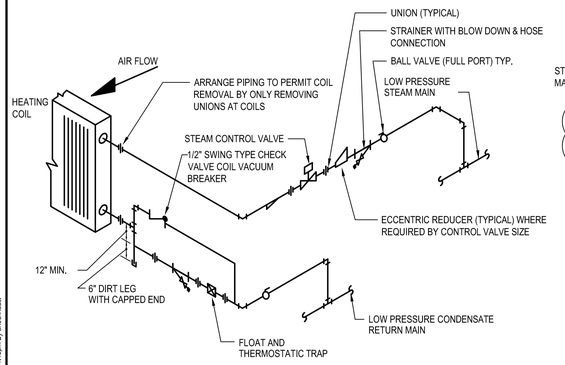
NOTES:

1. SINGLE POINT POWER CONNECTION
2. PACKAGED MOTOR CONTROL PANEL WITH FUSED DISCONNECT IN NEMA 1 ENCLOSURE
3. END INLET / END OUTLET
4. STAINLESS STEEL INNER WALL CONSTRUCTION
5. MERV 8 FILTERS
6. MERV 13 FILTERS
7. PROVIDE WITH PACKAGED CONTROLS AND 7 DAY PROGRAMMABLE SPACE THERMOSTAT.
8. ALTERNATE #2, 3 AND 4: PROVIDE DUAL CIRCUIT COOLING COILS, EEVS AND CONTROLS.

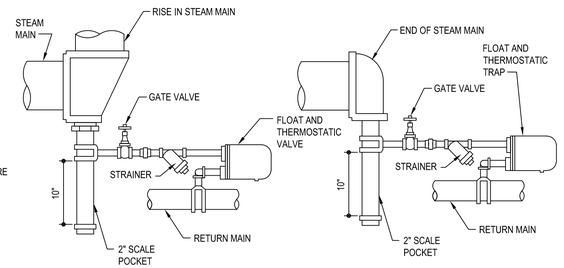
ALTERNATE #3 & 4: AIR COOLED CONDENSING UNITS

EQUIPMENT NO.	LOCATION	AREA TYPE	TYPE	PERFORMANCE/ CONSTRUCTION REQUIREMENTS EAT DB/WB (°F)	MINIMUM OA TEMPERATURE (°F)	NOMINAL CAPACITY (TONS)	REFRIGERANT TYPE	COMPRESSORS NUMBER	COMPRESSORS KW EA	FANS NUMBER	FANS HP	REQUIRED EFFICIENCY RATING	BASIS OF DESIGN INFORMATION MNF	MODEL NO.	NOMINAL DIMENSIONS L x W x H (IN.)	NOMINAL OPERATING WEIGHT (LBS.)	ELECTRICAL DATA VOLTS/PHASE	ELECTRICAL DATA MCA	ELECTRICAL DATA MOCP	REMARKS
CU-2	ROOF	CAFETERIA	COOLING ONLY	95	45	20	R410A	2	14	2	2	10.1 EER	TRANE	TWE240	96 x 45 x 44	762	208/3.	98.0	125	

NOTES: INSTALL ON 12" ROOF RAILS. PROVIDE WITH PACKAGED RELIATEL CONTROLS TO INTERLOCK OPERATION WITH AHU-2. PROVIDE DUAL CIRCUIT REFRIGERANT PIPING AND INSULATION, PITCH POCKETS, REFRIGERANT CHARGE, START-UP, TESTING, ETC. PER MANUFACTURER REQUIREMENTS TO PROVIDE A COMPLETE AND FUNCTIONAL SYSTEM.

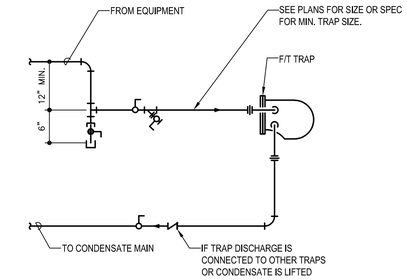


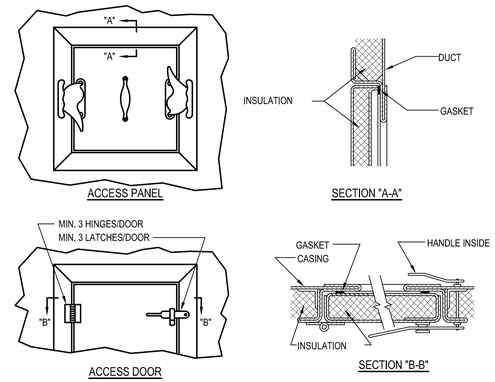
1 Steam Heating Coil Piping Diagram
SCALE: NTS



2 Dripping of Rise and End in Steam Mains
SCALE: NTS

3 Float And Thermostatic Steam Trap Assembly Diagram
SCALE: NTS

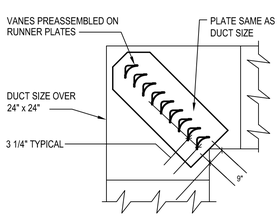




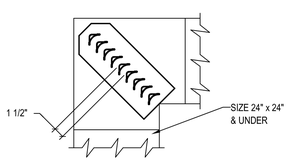
NOTES:

1. LATCHES SHALL BE OF THE WEDGE TYPE TO CLOSE DOORS TIGHTLY.
2. HINGES ON THE ACCESS DOORS SHALL HAVE NON-CORROSIVE PINS.
3. PROVIDE ACCESS DOORS ON AIR HANDLING UNITS AND DUCTWORK INSTALLED IN EQUIPMENT ROOMS. PROVIDE ACCESS PANELS ON ALL EQUIPMENT AND DUCTWORK INSTALLED ABOVE FINISHED CEILINGS WHERE SPACE LIMITATIONS DO NOT ALLOW HINGED DOORS TO OPEN.

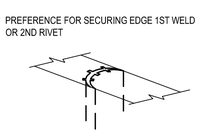
4 Access Door & Panel Details
SCALE: NTS

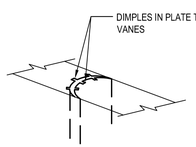


SQUARE ELBOW WITH TYPE "A" DOUBLE THICKNESS VANES

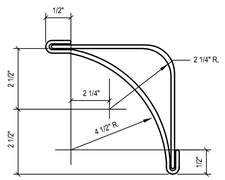


SQUARE ELBOW WITH TYPE "B" DOUBLE THICKNESS VANES.

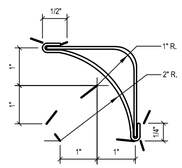




NOTE:
USE GALVANIZED STEEL FOR VANES IN EITHER STEEL OR ALUMINUM DUCTWORK.

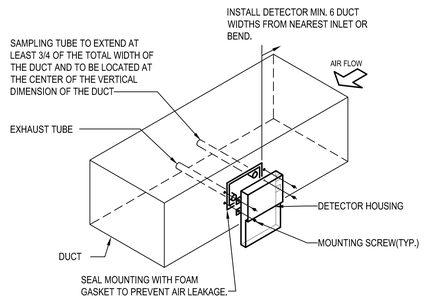


TYPE "A"
TYPE "A" DOUBLE THICKNESS VANES FOR USE IN DUCTS GREATER THAN 24" x 24" IN SIZE. USE SAME GAUGE GALVANIZED IRON AS DUCT NOT TO EXCEED 20 GAUGE.



TYPE "B"
DOUBLE THICKNESS VANES FOR USE IN DUCTS 24" x 24" AND UNDER

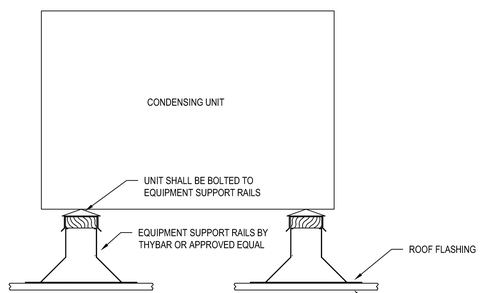
5 Turning Vanes Detail
SCALE: NTS



NOTES:

1. INTERFACE OF NEW DUCT SMOKE DETECTORS W/ EXISTING BUILDING FIRE ALARM SYSTEM BY CONTRACT 'E'.

6 Duct Mounting Smoke Detector Detail
SCALE: NTS



7 CONDENSING UNIT RAILS DETAIL
SCALE: NTS

H2M architects + engineers
2700 Westchester Ave., Suite 415
Purchase, NY 10577
914.358.5623 • www.h2m.com

CONSULTANTS:

MARK	DATE	DESCRIPTION

STATE OF NEW YORK · ALEXANDER HOCHHAUSER · LICENSED PROFESSIONAL ENGINEER · 073570

DESIGNED BY:	DRAWN BY:	CHECKED BY:	REVIEWED BY:

PROJECT No.:	DATE:	SCALE:
SMSD 2105	OCTOBER 2022	

CLIENT
Somers Central School District

Air Handler Replacement at Primrose Elementary School

Primrose Elementary School
110 Primrose Street
Lincolndale, NY 10540

SED #: 66-21-01-06-0-002-014

CONTRACT
CONTRACT H
HEATING VENTILATION AND AIR CONDITIONING

STATUS
FINAL BID SET

SHEET TITLE
MECHANICAL SCHEDULES AND DETAILS

DRAWING No.
M600.00