

DUCTWORK		PIPING		INSTRUMENTATION	
	EXISTING DUCTWORK TO REMAIN		EXISTING PIPING TO REMAIN		THERMOSTAT
	EXISTING DUCTWORK TO BE REMOVED		EXISTING PIPING TO BE REMOVED		HUMIDISTAT
	NEW DUCTWORK		NEW PIPING		FIRESTAT
	NEW DUCTWORK W/ACOUSTICAL LINING		CONDENSATE PIPING		GAS DETECTOR
	DUCT UNDER POSITIVE PRESSURE (SUPPLY AIR OR FAN DISCHARGE)		HOT WATER SUPPLY		REMOTE TEMPERATURE SENSOR
	DUCT UNDER NEGATIVE PRESSURE (RETURN OR OUTSIDE AIR)		HOT WATER RETURN		DUCT DETECTOR
	DUCT UNDER NEGATIVE PRESSURE (RETURN OR OUTSIDE AIR)		REFRIGERANT PIPING		REFRIGERANT LEAK DETECTOR
	DUCT UNDER NEGATIVE PRESSURE (EXHAUST)		DIRECTION OF FLOW		TEMPERATURE AND HUMIDITY RECORDER
	(400) SUPPLY DIFFUSER, (AIR QUANTITY IN CUBIC FEET PER MINUTE)		PIPE TURNING UP		LIQUID DETECTOR
	(400) RETURN REGISTER, (AIR QUANTITY IN CUBIC FEET PER MINUTE)		PIPE TURNING DOWN		PRESSURE GAUGE
	RECTANGULAR DIFFUSER WITH BLANKING PLATE		PIPE BREAK		FLOW SWITCH
	(400) EXHAUST REGISTER, (AIR QUANTITY IN CUBIC FEET PER MINUTE)		TOP PIPE TAP		THERMOMETER
	S.R. SUPPLY REGISTER		CAPPED PIPE		ELECTRIC PNEUMATIC SWITCH
	R.R. RETURN REGISTER		PIPE BREAK F&T TRAP		PNEUMATIC ELECTRIC SWITCH
	R.G. RETURN REGISTER		LOW PRESSURE DRIP		ENVIRONMENTAL SENSOR ALARM PANEL
	LOUVER & SCREEN		UNION		MANUAL POTENTIOMETER
	LINEAR DIFFUSER		STRAINER		CARBON DIOXIDE SENSOR
	10" BY 6" TOP REGISTER 150 CFM SUPPLY AIR		HOSE BIBB		
	10" BY 6" TOP REGISTER (TOP GRILLE) 150 CFM RETURN AIR		FLOOR DRAIN, F.D.		
	10" BY 6" BOTTOM REGISTER (BOTTOM GRILLE) 150 CFM RETURN AIR		FLEXIBLE CONNECTION		
	VOLUME DAMPER		10" BY 6" TOP REGISTER 150 CFM SUPPLY AIR		
	SUPPLY AIR FLOW		10" BY 6" TOP REGISTER (TOP GRILLE) 150 CFM RETURN AIR		
	RETURN AIR FLOW - RA		10" BY 6" BOTTOM REGISTER (BOTTOM GRILLE) 150 CFM RETURN AIR		
	RISE IN DUCTWORK (IN DIRECTION OF AIR FLOW)		10" BY 6" TOP REGISTER 150 CFM SUPPLY AIR		
	DROP IN DUCTWORK (IN DIRECTION OF AIR FLOW)		10" BY 6" TOP REGISTER (TOP GRILLE) 150 CFM RETURN AIR		
	UNDERCUT DOOR		10" BY 6" BOTTOM REGISTER (BOTTOM GRILLE) 150 CFM RETURN AIR		
	FIRE DAMPER AND ACCESS DOOR		10" BY 6" TOP REGISTER 150 CFM SUPPLY AIR		
	FIRE/SMOKE DAMPER W/END SWITCH AND ACCESS DOOR		10" BY 6" TOP REGISTER (TOP GRILLE) 150 CFM RETURN AIR		
	GRAVITY BACKDRAFT DAMPER		10" BY 6" BOTTOM REGISTER (BOTTOM GRILLE) 150 CFM RETURN AIR		
	MOTORIZED DAMPER W/END SWITCH		10" BY 6" TOP REGISTER 150 CFM SUPPLY AIR		
	CAP DUCT		10" BY 6" TOP REGISTER (TOP GRILLE) 150 CFM RETURN AIR		
	FLEXIBLE DUCTWORK		10" BY 6" BOTTOM REGISTER (BOTTOM GRILLE) 150 CFM RETURN AIR		
	FLEXIBLE CONNECTION		10" BY 6" TOP REGISTER 150 CFM SUPPLY AIR		
	SMOKE DAMPER		10" BY 6" TOP REGISTER (TOP GRILLE) 150 CFM RETURN AIR		
			10" BY 6" BOTTOM REGISTER (BOTTOM GRILLE) 150 CFM RETURN AIR		
			10" BY 6" TOP REGISTER 150 CFM SUPPLY AIR		
			10" BY 6" TOP REGISTER (TOP GRILLE) 150 CFM RETURN AIR		
			10" BY 6" BOTTOM REGISTER (BOTTOM GRILLE) 150 CFM RETURN AIR		
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			10" BY 6" TOP REGISTER 150 CFM SUPPLY AIR		
			10" BY 6" TOP REGISTER (TOP GRILLE) 150 CFM RETURN AIR		
			10" BY		

M-0.1	MECHANICAL SYMBOLS, ABBREVIATIONS AND GENERAL NOTES		
M-0.2	MECHANICAL GENERAL NOTES		
M-1.1	MECHANICAL FIRST FLOOR DUCTWORK PLAN		
M-1.2	MECHANICAL MEZZANINE DUCTWORK PLAN		
M-1.3	MECHANICAL SECOND FLOOR DUCTWORK PLAN		
M-2.1	MECHANICAL FIRST FLOOR PIPING PLAN		
M-2.2	MECHANICAL MEZZANINE PIPING PLAN		
M-2.3	MECHANICAL SECOND FLOOR PIPING PLAN		
M-3.1	MECHANICAL RADIANT HEATING FIRST FLOOR PLAN		
M-3.2	MECHANICAL RADIANT HEATING MEZZANINE PLAN		
M-5.1	MECHANICAL DETAILS		
M-5.2	MECHANICAL DETAILS		
M-5.3	MECHANICAL DETAILS		
M-5.4	MECHANICAL DETAILS		
M-5.5	MECHANICAL DETAILS		
M-5.6	MECHANICAL DETAILS		
M-5.7	MECHANICAL DETAILS		
M-5.8	MECHANICAL DETAILS		
M-5.9	MECHANICAL DETAILS		
M-5.10	MECHANICAL DETAILS		
M-5.11	MECHANICAL DETAILS		
M-6.1	MECHANICAL SCHEDULES		
M-6.2	MECHANICAL SCHEDULES		
M-6.3	MECHANICAL SCHEDULES	M-8.1	M
M-6.4	MECHANICAL VENTILATION SCHEDULES	M-8.2	M
M-6.5	MECHANICAL LOAD CALCULATIONS	M-9.1	M
M-6.6	MECHANICAL LOAD CALCULATIONS	M-9.2	M
M-7.1	MECHANICAL SPECIFICATIONS		
M-7.2	MECHANICAL SPECIFICATIONS		
M-7.3	MECHANICAL SPECIFICATIONS		

WHERE DUCTWORK IS SHOWN SINGLE LINE, FOLLOWING SHALL APPLY FOR ACTUAL DUCT CONSTR.

SINGLE LINE	ACTUAL CONSTRUCTION
 ELBOW	 DOUBLE THICKNESS TURNING VANES (EITHER TYPE ELBOW AT CONTR. OPTION—SUBJECT TO SPACE CONDITIONS). A,B SHALL BE PROPORTIONAL TO AIR QUANTITY, 4" (10cm) MIN. IF A or B IS LESS THAN 4" (10cm), USE TAP DETAIL. VOLUME DAMPER IN SHORTER BRANCH.
 SPLIT OR TAKE-OFF	 CONSTANT VOL. SYST.
 TAP TAKE-OFF	 VOLUME DAMPER ADJUSTABLE TAP UP TO 1000FPM OVER 1000 FPM USE V.D. ONLY
 RISE OR DROP	 OFFSET IN VERTICAL PLANE SHALL BE MADE WITH SMOOTH FITTINGS.
 HORIZONTAL OFFSET	 OFFSET IN HORIZONTAL PLANE SHALL BE MADE WITH SMOOTH FITTINGS.
 PLENUM OVER DIFFUSER	 PLENUM OVER LINEAR SUPPLY OR RETURN DIFFUSER OR GRILLE
 FIRE DAMPER	 REGULATION OF VOLUME DAMPER SHALL BE ACCESSIBLE THROUGH THE FACE OF DIFFUSER
 HEATING COIL	 ACCESS DOOR IN DUCT FLD MOUNTING TYPE DEPENDS ON AIR VELOCITIES AND DUCT SIZE — SEE SPECIFICATIONS.
 WYE BRANCH	 FLARE/TRANSITION DUCT TO ACCOMMODATE COIL COIL WITH FLANGED CONNECTION ALL AROUND ACCESS DOORS
 WYE BRANCH	 OFFSET IN HORIZONTAL PLANE SHALL BE MADE WITH SMOOTH FITTINGS.

FURNISH & INSTALL ROOF-MOUNTED UNIT TO SERVE PROPOSED GARAGE AREA. FURNISH & INSTALL GAS DETECTION SYSTEM WITH ASSOCIATED STANDBY/EMERGENCY EXHAUST FANS FOR CODE REQUIRED EXHAUST AIR. FURNISH & INSTALL ROOF-MOUNTED PENTHOUSE LOUVER FOR MAKEUP AIR.

FURNISH & INSTALL VRF SYSTEMS FOR 1ST FLOOR AND 2ND FLOOR OFFICE AREAS.

FURNISH & INSTALL INDOOR AIR HANDLING UNITS TO SERVE 1ST FLOOR MULTIPURPOSE AREA, 1ST FLOOR COMMUNITY/SHELTER ROOM, 1ST FLOOR LOBBY, AND 2ND FLOOR TRAINING ROOM.

FURNISH & INSTALL KITCHEN MAKEUP AIR UNIT AND EXHAUST FAN FOR 1ST FLOOR KITCHEN AREA.

	AMPERES	EWBT	ENTERING WET BULB	NTS	NOT TO SCALE
A/C UNIT	AIR CONDITIONING UNIT	EWT	ENTERING WATER TEMPERATURE	OA	OUTSIDE AIR
ACCU	AIR COOLED CONDENSING UNIT	EXH	EXHAUST	OAI	OUTSIDE AIR INTAKE
AHU	AIR HANDLING UNIT	EXP	EXPANSION TANK	OED	OPEN ENDED DUCT
ALT	ALTERNATE	(E)	EXISTING	OD	OUTSIDE DIAMETER
ASHRAE	AMERICAN SOCIETY OF HEATING, REFRIGERATING AND AIR-CONDITIONING ENGINEERS	(ER) °F F & T	EXISTING TO BE REMOVED DEGREES FAHRENHEIT FLOAT AND THERMOSTATIC	PD	PRESSURE DROP
				PDISCH	PUMPED DISCHARGE
AFD	ADJUSTABLE FREQUENCY DRIVE	FA	FREE AREA (SQ. FT.)	PRESS	PRESSURE
AFF	ABOVE FINISHED FLOOR	FAL	FRESH AIR INTAKE	PSI	POUNDS PER SQUARE INCH
ACT	ACOUSTICAL CEILING TILE	FC	FLEXIBLE CONNECTION	(R)	RELOCATED
AS	AIR SEPARATOR	FDMPR	FIRE DAMPER W/ ACCESS DOOR	RA	RETURN AIR
AUTO	AUTOMATIC	FD	FLOOR DRAIN	RND	ROUND
BB	BASEBOARD	FLA	FULL LOAD AMPERES	RFGT	REFRIGERANT
BLR	BOILER	FLR	FLOOR	REQD	REQUIRED
BC	BOTTOM GRILLE	FLR	FLOOR	RA FAN	RETURN FAN
BLR HP	BOILER HORSEPOWER	FBM	FEET PER MINUTE	RG	RETURN GRILLE
BLDG	BUILDING	FBP	FEET PER SECOND	RHG	REFRIGERANT GAS
BOD	BOTTOM OF DUCT	FR	FLOOR REGISTER	RLL	REFRIGERANT LIQUID
BOP	BOTTOM OF PIPE	FT	FEET	RLA	RATED LOAD AMPS
BOS	BOTTOM OF STEEL	FOR	FUEL OIL RETURN	RR	RETURN REGISTER
BR	BOTTOM REGISTER	FOS	FUEL OIL SUPPLY	RSL	REFRIGERANT SUCTION
BHP	BRAKE HORSEPOWER	FD/AD	FIRE DAMPER AND ACCESS DOOR	RM	ROOM
BTU	BRITISH THERMAL UNIT	FSD/AD	FIRE/SMOKE DAMPER W/END SWITCH AND ACCESS DOOR	RPM	REVOLUTIONS PER MINUTE
BTUH	BTU PER HOUR			SA	SUPPLY AIR
¢	CENTERLINE	G	GAS	SAG	SUPPLY GRILLE
CHWP	CHILLED WATER PUMP	GA	GAUGE	SDMPR	SMOKE DAMPER
CHWS	CHILLED WATER SUPPLY	GAL	GALLON	SF	SQUARE FEET
CHWR	CHILLED WATER RETURN	GC	GENERAL CONTRACTOR	SF	SUPPLY FAN
CC	COOLING COIL	GEN	GENERATOR	SOV	SHUT-OFF VALVE
CD	CEILING DIFFUSER	GPM	GALLONS PER MINUTE	SPEC	SPECIFICATION
CFM,	CUBIC FEET PER MINUTE	HEX	HEAT EXCHANGER	SR	SUPPLY REGISTER
CG	CEILING GRILLE	HT	HEIGHT	ST PR	STATIC PRESSURE
CLG	CEILING	HR	HOUR	SST	STAINLESS STEEL
CNDS	CONDENSATE DRAIN	HPS	HIGH PRESSURE STEAM	TAL	TOTAL ACTIVE LENGTH
CO	CLEAN OUT	HWP	HOT WATER PUMP	TAO	TRANSFER AIR OPENING
COD	CONTINUED ON DRAWING	HWR	HOT WATER RETURN	TBR	TO BE REMOVED
CR	CEILING REGISTER	HWS	HOT WATER SUPPLY	TEMP	TEMPERATURE
CRP	CONDENSATE RETURN PUMP	HZ	FREQUENCY	TG	TRANSFER GRILLE
CU FT	CUBIC FEET	IN	INCH OR INCHES	TOD	TOP OF DUCT
CU IN	CUBIC INCHES	IPS	IRON PIPE SIZE	TOS	TOP OF STEEL
CUH	CABINET UNIT HEATER	KW	KILOWATT	TR	TOP REGISTER
CW	COLD (DOMESTIC) WATER	L	LENGTH	TRR	TRANSFER RETURN REGISTER
CWP	CONDENSER WATER PUMP	LAT	LEAVING AIR TEMPERATURE	TRD	TRANSFER RETURN DUCT
CWS	CONDENSER WATER SUPPLY	LBS	POUNDS	TYP	TYPICAL
CWR	CONDENSER WATER RETURN	LDBT	LEAVING DRY BULB TEMPERATURE	UH	UNIT HEATER
DEMO	DEMOLITION	LEMCS	LOCAL EMERGENCY MOTOR	UV	UNIT VENTILATOR
DB	DRY BULB		CONTROL SWITCH	UNO	UNLESS NOTED OTHERWISE
DC	DRY COOLER	LD	LINEAR DIFFUSER	V	VOLTS
DIA, Ø	DIAMETER	LF	LINEAR FEET	VD	VOLUME DAMPER
DMPR	DAMPER	LPS	LOW PRESSURE STEAM	VAV	VARIABLE AIR VOLUME UNIT
DN	DOWN	LPCR	CONDENSATE RETURN	VENT	VENTILATION AIR
DWG	DRAWING	LWBT	LEAVING WET BULB TEMPERATURE	VFD	VARIABLE FREQUENCY DRIVE
DX	DIRECT EXPANSION	LWT	LEAVING WATER TEMPERATURE	W	WIDTH
EA	EACH	MAX	MAXIMUM	W/	WITH
EXA	EXHAUST AIR	MBH	THOUSAND BTU PER HOUR	W/O	WITHOUT
EAT	ENTERING AIR TEMPERATURE	MC	MECHANICAL CONTRACTOR	WB	WET BULB
EC	ELECTRICAL CONTRACTOR	MCA	MINIMUM CIRCUIT AMPS	WC	WATER COLUMN
EDBT	ENTERING DRY BULB TEMPERATURE	MOD	MOTORIZED DAMPER	WG	WATER GAUGE
ECH	ELECTRIC CABINET HEATER	MIN	MINIMUM	WMS	WIRE MESH SCREEN
EDH	ELECTRIC DUCT HEATER	MOT	MOTOR		
EF	EXHAUST FAN	NFPA	NATIONAL FIRE PROTECTION ASSOC.		
EL	ELEVATION	(N)	NEW		
ELEC	ELECTRIC	NC	NORMALLY CLOSED		
EOD	END OF DUCT	NIC	NOT IN CONTRACT		
EQ	EQUAL	NO	NORMALLY OPEN		
EUH	ELECTRIC UNIT HEATER	#	NUMBER		
		NPT	NATIONAL PIPE THREAD		

COMMISSIONING IS REQUIRED FOR "MECHANICAL SYSTEMS AND SERVICE
WATER-HEATING SYSTEMS" IN ACCORDANCE WITH SECTION C408.2.

REFER TO M-002 FOR COMMISSIONING NOTES

THIS PROJECT IS DESIGNED IN ACCORDANCE WITH THE FOLLOWING CODES:

BUILDING CODE -	2025 BUILDING CODE OF NEW YORK STATE (2025-BCNYS)
EXISTING BUILDINGS -	2025 EXISTING BUILDING CODE OF NEW YORK STATE (2025-EBCNYS)
MECHANICAL CODE -	2025 MECHANICAL CODE OF NEW YORK STATE (2025-MCNYS)
PLUMBING CODE -	2025 PLUMBING CODE OF NEW YORK STATE (2025-PCNYS)
SPRINKLERS/FA -	2025 FIRE CODE OF NEW YORK STATE (2025-FCNYS)
FUEL/GAS -	2025 FUEL GAS CODE OF NEW YORK STATE (2025-NYSFGC)
ENERGY CODE -	2025 ENERGY CONSERVATION CONSTRUCTION CODE OF NEW YORK STATE (2025-ECCNYS)

"It is a violation of the State Education Law for any person, unless he or she is acting under the direction of a licensed professional engineer to alter an item in anyway, on this drawing and/or in this specification in anyway. If any such item is altered, the altering engineer shall affix to the item his or her seal and the notation "altered by" followed by his or her signature and the date of such alteration, and a specific description of the alteration."

This plan is approved only for the work indicated on the application specification sheet. All other matters are not to be relied upon, or to be considered as either being approved or in accordance with applicable codes.

06-22-2026 ISSUED FOR
100%DD/50%CD REVIEW
07-20-2026 ISSUED FOR 90%CD
REVIEW
08-17-2026
ISSUED FOR GENERAL
CONSTRUCTION BID AS SINGLE
PRIME CONTRACT INCLUDING
ALL TRADES

ARCHITECTS - PLANNERS

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What's New

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3 S. MAIN ST. NYS ROUTE 209
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MECHANICAL
SYMBOLS, ABBREVIATIONS
AND GENERAL NOTES

PROJECT No. 2501
EMTEC: 76

CHECKED BY: MF/APS

DRAWING:

EMTEC PROJECT NO. 7611 DRAWN BY: MF CHECKED BY: APS

GENERAL MECHANICAL NOTES:

1. THIS PORTION OF THE PROJECT IS EXEMPT FROM SEISMIC CONSTRAINTS.

2. ALL WORK SHALL COMPLY WITH ALL LOCAL AND STATE CODES AND AUTHORITIES HAVING JURISDICTION.

3. THE CONTRACTOR SHALL SECURE FOR ALL REQUIRED PERMITS AND ARRANGE ALL REQUIRED INSPECTIONS. OWNER WILL PAY PERMIT FEES.

4. THESE DRAWINGS, AS PREPARED, ARE DIAGRAMMATIC BUT SHALL BE FOLLOWED AS CLOSELY AS CONSTRUCTION OF THE PROJECT AND THE WORK OF THE TRADES WILL PERMIT. EQUIPMENT LOCATIONS INDICATED ARE APPROXIMATE. COORDINATE EXACT LOCATIONS, MOUNTING HEIGHTS, AND REQUIRED CLEARANCES WITH EQUIPMENT SUPPLIER AND ALL TRADES PRIOR TO INSTALLATION.

5. MECHANICAL CONTRACTOR SHALL FURNISH AND INSTALL ALL THE EQUIPMENT INDICATED WITHIN THE MECHANICAL DRAWINGS UNLESS OTHERWISE NOTED. FIELD VERIFY LOCATION AND DIMENSIONS PRIOR TO FABRICATION AND/OR INSTALLATION. ALL EQUIPMENT SHALL BE UL LISTED.

6. MECHANICAL CONTRACTOR SHALL REFER TO DRAWINGS FOR ALL TRADES AND PERFORM ALL WORK INDICATED AS MECHANICAL CONTRACTOR WORK.

7. FURNISH AND INSTALL FIRE DAMPERS WITH RATED ACCESS DOORS AT ALL DUCT PENETRATIONS THROUGH FIRE RATED WALLS, SMOKE AND FIRE STOPPING, SHAFTS, FLOORS, RATED CEILINGS AND PARTITIONS AS REQUIRED TO MAINTAIN ARCHITECTURAL FIRE RATINGS. PROVIDE CEILING RADIATION DAMPERS AT ALL MEMBRANE PENETRATIONS OF HORIZONTAL FLOOR/CEILING ASSEMBLIES. REFER TO THE ARCHITECTURAL PLANS AND SPECIFICATIONS FOR LOCATIONS AND FIRE RATING REQUIREMENTS.

8. ALL ROOF PENETRATIONS SHALL BE AT THE CONTRACTOR'S EXPENSE. COORDINATE WITH GC'S ROOFING CONTRACTOR SO AS REQUIRED FOR ROOF WARRANTIES.

9. EACH UNIT GENERATING CONDENSATE SHALL BE PROVIDED WITH A CONDENSATE DRAIN WITH EXTERNAL, 4" DEEP P-TRAP. EXTEND DRAIN TO A ROOF MOUNTED SPLASH PAD OR AN ACCEPTABLE LOCATION REQUIRED BY CODE.

10. DUCT WORK SHALL BE CONSTRUCTED OF GALVANIZED SHEET STEEL IN STRICT COMPLIANCE WITH THE LATEST EDITION OF THE ASHRAE, NFPA, AND SMACNA STANDARDS. ALL DUCTS TO HAVE PITTSBURGH TYPE LOCK FOR LONGITUDINAL SEAMS AND DRIVE SLIP / "s" SLIP FOR TRANSVERSE JOINTS. "DUCT-MATE" JOINT SYSTEM IS ACCEPTABLE IN LIEU OF PRIOR SEAM SYSTEMS. DUCT WORK SHALL BE FULLY INSULATED AS PER APPLICABLE CODES AND WRITTEN SPECIFICATIONS.

11. PROVIDE 1" INTERNAL ACOUSTICAL LINING ON SUPPLY AND RETURN DUCTWORK UP TO 15'-0" FROM UNIT.

12. DRAWINGS ARE DIAGRAMMATIC AND ALL DUCTWORK SHOWN MUST BE FIELD VERIFIED AND COORDINATED WITH ALL TRADES AND STRUCTURES BEFORE FABRICATION. DUCT SIZES SHOWN ON DRAWINGS ARE INSIDE DIMENSIONS, INCREASE DUCT SIZES AS REQUIRED FOR INTERNAL LINING.

13. ALL METAL DUCT AND AIR DISTRIBUTION DEVICES SHALL BE INSULATED WITH 75 DENSITY FOIL-BACKED INSULATION WITH FIRE AND SMOKE RATING 25-50. R-VALUE SHALL BE R-6 WHEN DUCT IS LOCATED INSIDE OF THE BUILDING AND R-8 WHEN LOCATED OUTSIDE OF THE BUILDING OR WITHIN THE EXTERIOR ENVELOPE ASSEMBLY.

14. UNLESS OTHERWISE NOTED, ALL SUPPLY TAKEOFFS SHALL HAVE A MANUAL VOLUME CONTROL DAMPER.

15. ANY ADJUSTABLE PATTERN CONTROLLER OR BLADE SHALL BE FIELD SET BY THE INSTALLING CONTRACTOR AS INDICATED ON THESE DOCUMENTS.

16. ALL FLEX DUCT SHALL BE UL LISTED, R-6. FOIL-BACKED, CLASSIFIED AS A CLASS 1 AIR DUCT. MAXIMUM LENGTH IS TO BE 3'-0" PER DROP OR PER LOCAL CODE.

17. THE FINAL LOCATION OF AIR DEVICES MUST BE COORDINATED WITH THE REFLECTED CEILING PLAN AND ALL OTHER MECHANICAL, ELECTRICAL, SPRINKLER, ARCHITECTURAL, AND STRUCTURAL SYSTEMS.

18. THE CONTRACTOR IS TO SUPPLY AND INSTALL ALL LOW-VOLTAGE WIRING CONNECTIONS FOR ALL HVAC EQUIPMENT INCLUDING TEMPERATURE CONTROLS, ROOF TOP UNITS, SMOKE DETECTORS AND CONTACTOR PANEL.

19. PROVIDE FLEXIBLE CONNECTORS AT ALL DUCT CONNECTIONS TO VIBRATING EQUIPMENT. THESE CONNECTORS SHALL BE INSTALLED IN CLOSE PROXIMITY TO SUCH EQUIPMENT.

20. FURNISH AND INSTALL SMOKE DUCT DETECTORS IN EACH AIR CONDITIONING UNIT RETURN GREATER THAN 2000 CFM. CONTRACTOR SHALL PROVIDE INTERCONNECTION AND WIRE TO THE FIRE ALARM CONTROL PANEL IF REQUIRED. DUCT DETECTORS SHALL HAVE REMOTE TEST STATIONS LOCATED IN THE OFFICE NEAR THE RESPECTIVE THERMOSTATS. VERIFY CODE REQUIREMENTS FOR DUCT DETECTORS IN BOTH THE SUPPLY AND RETURN AIR STREAMS.

21. THE ENTIRE INSTALLATION SHALL BE GUARANTEED FREE OF DEFECTS AND CONTRACTOR SHALL REPAIR AND / OR REPLACE ANY DEFECTIVE MATERIALS OR EQUIPMENT AT NO COST TO THE OWNER FOR A MINIMUM PERIOD OF TWO (2) YEARS FROM THE DATE OF ACCEPTANCE BY ARCHITECT OR ENGINEER.
22. ALL WORK SHALL BE SUBJECT TO THE ACCEPTANCE AND APPROVAL OF THE ARCHITECT AND OWNER. THE ARCHITECT SHALL BE NOTIFIED OF ANY AND ALL DISCREPANCIES BETWEEN FIELD CONDITIONS AND THE CONTRACT DOCUMENTS BEFORE PROCEEDING WITH THAT PORTION OF THE WORK. FAILURE OF PROPER NOTIFICATION DOES NOT RELIEVE THE CONTRACTOR. THE CONTRACTOR SHALL CORRECT ANY AND ALL WORK ARISING FROM SUCH FAILURE TO COORDINATE DISCREPANCIES TO THE SATISFACTION OF THE ARCHITECT WITHOUT ADDITIONAL COST TO THE OWNER.

23. PROVIDE MANUAL BALANCING DAMPERS AS REQUIRED TO PROPERLY BALANCE EACH INDIVIDUAL AIR DISTRIBUTION SYSTEM. IF THE LOCATION OF THE BALANCING DAMPER IS NOT DEFINED ON THE DRAWINGS, THE FOLLOWING MINIMUMS STANDARDS SHALL GOVERN: ALL SUPPLY, RETURN, AND EXHAUST MAIN BRANCHES FROM TRUNKS, EACH SPLIT AND ALL SUB-BRANCHES FROM MAINS SHALL INCORPORATE BALANCING DAMPERS.

24. THE CONTRACTOR SHALL, UPON COMPLETION OF PROJECT, PERFORM A COMPLETE TEST AND BALANCE OF ALL EQUIPMENT IN COMPLIANCE WITH ALL APPLICABLE CODES, REGULATIONS, PLANS AND WRITTEN SPECIFICATIONS. CONTRACTOR SHALL PROVIDE A WRITTEN REPORT TO THE ARCHITECT. ALL CAPACITIES MUST BE SET TO WITHIN ±10% OF AMOUNTS INDICATED ON THE FLOOR PLAN AND SCHEDULES.

25. UPON COMPLETION OF INSTALLATION, SYSTEM INSTALLERS SHALL PROVIDE WITH ONE (1) FULL SIZE SET OF AS BUILT DRAWINGS, AS WELL AS AUTOCAD AND PDF FORMATS.

26. AIR HANDLERS AND FILTER BOXES SHALL BE SEALED. JOINTS AND SEAMS SHALL COMPLY WITH EITHER THE INTERNATIONAL MECHANICAL CODE OR INTERNATIONAL RESIDENTIAL CODE, AS APPLICABLE. AIR HANDLERS SHALL HAVE A MANUFACTURER'S DESIGNATION FOR AN AIR LEAKAGE OF NO MORE THAN 2 PERCENT OF THE DESIGN AIR FLOW RATE WHEN TESTED IN ACCORDANCE WITH ASHRAE 193. DUCTS, AIR HANDLERS AND FILTER BOXES SHALL BE SEALED. JOINTS AND SEAMS SHALL COMPLY WITH THE 2020 NYS MECHANICAL CODE AND THE 2020 NYS RESIDENTIAL CODE, AS APPLICABLE.

27. ALL RESETS FOR CONTROLS SHALL BE AUTOMATIC, UNLESS SPECIFICALLY NOTED AS MANUAL.

28. ANY PIPING AND DUCTWORK ABOVE ELECTRICAL EQUIPMENT (PANELS, TRANSFORMERS, ETC) MUST BE INSTALLED AT LEAST 6 FT ABOVE AND PROVIDED WITH 2" DRIP PANS AND LEAK DETECTORS.

29. MC SHALL COORDINATE FULL SYSTEM DEMONSTRATION AND TRAINING FOR ALL SYSTEMS TO THE OWNER'S DESIGNATED REPRESENTATIVE. MC SHALL ESTIMATE ONE (1) FULL DAY OF TRAINING (8 HOURS).

GENERAL CONTRACT NOTES:

1. ALL ISSUES OR CLARIFICATIONS OF INTENT TO BE ADDRESSED PRIOR TO BID OPENING. CHANGE ORDERS BASED ON CLARIFICATION OF INTENT WILL NOT BE ENTERTAINED.

2. M.C. SHALL BE RESPONSIBLE FOR ANY G.C., P.C., OR E.C. CHANGE ORDERS WHICH ARE A RESULT OF SUBSTITUTED MECHANICAL EQUIPMENT OR MATERIALS.

3. ALL NOTES ON THIS AND ANY MECHANICAL SHEET SHALL CARRY THROUGH THE MECHANICAL DRAWING SET, IN ITS ENTIRETY, UNLESS OTHERWISE NOTED.

4. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY UTILITY LOCATIONS, AS WELL AS OTHER UTILITIES THAT MAY OR MAY NOT BE SHOWN.

5. ALL WORK IS TO BE PLUMB, LEVEL AND TRUE.

6. ALL WORK SHALL BE EXECUTED IN SUCH A MANNER AS TO PROTECT THE SAFETY OF THE WORKMEN AND THE PUBLIC, DURING CONSTRUCTION. ALL BARRIERS AND OTHER PRECAUTIONARY MEASURES SHALL BE ERECTED IN ACCORDANCE WITH THE AUTHORITIES HAVING JURISDICTION OR AS REQUIRED FOR SAFETY DURING THE ENTIRE CONSTRUCTION OPERATION.

7. THE CONTRACTOR SHALL USE ADEQUATE NUMBERS OF SKILLED WORKMEN WHO ARE THOROUGHLY TRAINED AND EXPERIENCED IN THE NECESSARY CRAFTS AND WHO ARE COMPLETELY FAMILIAR WITH THE REQUIREMENTS AND METHODS NEEDED FOR PROPER PERFORMANCE OF THE WORK NOTED ON THE PLANS.

8. THE CONTRACTOR SHALL BOTH COORDINATE HIS ACTIVITIES WITH THE OWNER AND ARCHITECT DURING CONSTRUCTION.

9. POWER WIRING SHALL BE BY THE ELECTRICAL CONTRACTOR, POWER FOR CONTROLS AND CONTROL WIRING SHALL BE BY THE MECHANICAL CONTRACTOR INCLUDING CONTROL FEEDER, UNLESS NOTED OTHERWISE.

10. MECHANICAL CONTRACTOR SHALL VISIT THE SITE PRIOR TO SUBMITTING HIS BID AND PERFORM ALL SITE INVESTIGATION WORK REQUIRED PRIOR TO STARTING OF THE HEATING AND VENTILATING WORK.

11. FURNISH AND INSTALL ALL THERMOSTATS WITH GUARDS AND CONTROL WIRING TO NEW EQUIPMENT.

12. UNLESS SPECIFICALLY DESIGNATED OTHERWISE, THE CONTRACTOR SHALL FURNISH AND INSTALL EACH AND EVERY ITEM OF EQUIPMENT SHOWN OR DESCRIBED, TOGETHER WITH ALL COMPONENTS AND INCIDENTALS (MATERIALS, LABOR, FEES, TRANSPORTATION, TOOLS, STORAGE, CUTTING, PATCHING, TRENCHING, CLEAN-UP, ETC.) NECESSARY TO COMPLETE THE WORK WITH NO ADDITIONAL EXPENSE TO THE OWNER.

13. LOCATIONS, QUANTITIES, AND OTHER MEASUREMENTS OF THE BUILDING AND EQUIPMENT ARE OFFERED AS A GENERAL GUIDE ONLY. WITHOUT GUARANTEE AS TO THE COMPLETE ACCURACY, THE CONTRACTOR SHALL EXAMINE THE DRAWINGS AND EQUIPMENT AND VERIFY (TO HIS OWN SATISFACTION) ALL CONDITIONS AND THEIR RELATIONS AND EFFECTS REQUIRED FOR A COMPLETE AND CORRECTLY OPERATING HV SYSTEM.

14. MECHANICAL CONTRACTOR SHALL FURNISH AND INSTALL STEAM PIPING AND ALL NECESSARY CONNECTIONS TO COILS OR HEATING ELEMENTS. FURNISH AND INSTALL PIPING INSULATION AS REQUIRED BY THE MOST RECENT VERSION OF THE NY STATE ENERGY CONSERVATION CODE..

15. M.C. SHALL FURNISH AND INSTALL EXPANSION COMPENSATION WITH ALL HEATING PIPING. M.C. SHALL PROVIDE ALL DUCT TRANSITIONS, HANGERS, VIBRATION ISOLATION, BALANCING DAMPERS, REGISTERS, FIRE DAMPERS AS REQUIRED FOR A PROPER INSTALLATION.

16. ALL EQUIPMENT AND INSTALLATION SHALL BE IN ACCORDANCE WITH SECTION 803 OF THE MOST CURRENT NYS ENERGY CODE AND COMPLY WITH ASHRAE 90.1. MECHANICAL CONTRACTOR SHALL REWRAP AND INSULATE ANY AND ALL PIPING WHICH HAS BEEN ABATED OR REMOVED.

17. MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVAL, REINSTALLATION OF ALL DAMAGED CEILINGS AS REQUIRED TO INSTALL MECHANICAL EQUIPMENT, UNLESS A NEW CEILING IS IN THE G.C. CONTRACT FOR THE SPACE IN QUESTION.

18. MECHANICAL CONTRACTOR SHALL CUT AND PATCH AS REQUIRED TO INSTALL ALL MECHANICAL EQUIPMENT, TO MATCH ADJACENT SURFACES, WHETHER CONDITIONS ARE FORESEEN OR NOT. MECHANICAL CONTRACTOR WILL BE RESPONSIBLE FOR SETTING ALL NEW ROOF CURBS, CUTTING THE OPENINGS THROUGH THE ROOF DECK.

19. M.C. SHALL FURNISH CONCRETE HOUSE KEEPING PADS FOR MECHANICAL EQUIPMENT INCLUDING BUT NOT LIMITED TO BOILERS, PUMPS AND AIR HANDLERS..

20. MECHANICAL CONTRACTOR SHALL FURNISH AND INSTALL HOT WATER PIPING AND ALL NECESSARY CONNECTIONS TO COILS OR HEATING ELEMENTS. FURNISH AND INSTALL PIPING INSULATION AS DESCRIBED IN THE MECHANICAL SPECIFICATION DIVISION.

21. M.C. SHALL FURNISH AND INSTALL ALL STARTERS AND DISCONNECTS. E.C. SHALL WIRE THE DEVICE.

22. M.C SHALL COORDINATE ALL MASONRY OPENINGS WITH G.C.

MECHANICAL COMMISSIONING REQUIREMENTS

THE FOLLOWING SYSTEMS AND EQUIPMENT ARE REQUIRED TO BE COMMISSIONED IN ACCORDANCE WITH THE SECTIONS BELOW:

- ALL EXHAUST FANS

– ALL ROOFTOP UNITS

– ALL INDOOR AIR HANDLING UNITS

– ALL SPLIT SYSTEMS

– ALL ELECTRIC HEATERS (CABINET & UNIT HEATERS)

– ALL ERVS

– ALL VRF SYSTEMS (INDOOR EVAPORATORS AND OUTDOOR CONDENSING UNITS)

MAINTENANCE INFORMATION AND SYSTEMS COMMISSIONING

GENERAL:

THIS SECTION COVERS THE PROVISION OF MAINTENANCE INFORMATION AND THE COMMISSIONING OF, AND THE FUNCTIONAL TESTING REQUIREMENTS FOR BUILDING SYSTEMS.

BUILDING OPERATIONS AND MAINTENANCE INFORMATION:

THE BUILDING OPERATIONS AND MAINTENANCE DOCUMENTS SHALL BE PROVIDED TO THE OWNER AND SHALL CONSIST OF MANUFACTURER'S INFORMATION, SPECIFICATIONS, AND RECOMMENDATIONS; PROGRAMMING PROCEDURES AND DATA POINTS; NARRATIVES; AND OTHER MEANS OF ILLUSTRATING TO THE OWNER HOW THE BUILDING, EQUIPMENT AND SYSTEMS ARE INTENDED TO BE INSTALLED, MAINTAINED AND OPERATED. REQUIRED REGULAR MAINTENANCE ACTIONS FOR EQUIPMENT AND SYSTEMS SHALL BE CLEARLY STATED ON A READILY VISIBLE LABEL. THE LABEL SHALL INCLUDE THE TITLE OR PUBLICATION NUMBER FOR THE OPERATION AND MAINTENANCE MANUAL FOR THAT PARTICULAR MODEL AND TYPE OF PRODUCT.

MECHANICAL SYSTEMS AND SERVICE-WATER HEATING SYSTEMS COMMISSIONING AND COMPLETION REQUIREMENTS:

PRIOR TO THE FINAL MECHANICAL AND PLUMBING INSPECTIONS, A COMMISSIONING AUTHORITY SHALL PROVIDE EVIDENCE OF MECHANICAL SYSTEMS COMMISSIONING AND COMPLETION IN ACCORDANCE WITH THE PROVISIONS OF THIS SECTION.

EXCEPTIONS: THE FOLLOWING SYSTEMS ARE EXEMPT:

1. MECHANICAL SYSTEMS AND SERVICE WATER HEATER SYSTEMS IN BUILDINGS WHERE THE TOTAL MECHANICAL EQUIPMENT CAPACITY IS LESS THAN 480,000 BTU/H COOLING CAPACITY AND 600,000 BTU/H COMBINED SERVICE WATER-HEATING AND SPACE-HEATING CAPACITY.

2. SYSTEMS INCLUDED IN SECTION C403.5 THAT SERVE INDIVIDUAL DWELLING UNITS AND SLEEPING UNITS.

COMMISSIONING PLAN

A COMMISSIONING PLAN SHALL BE DEVELOPED BY THE COMMISSIONING AUTHORITY AND SHALL INCLUDE THE FOLLOWING ITEMS:

1. A NARRATIVE DESCRIPTION OF THE ACTIVITIES THAT WILL BE ACCOMPLISHED DURING EACH PHASE OF COMMISSIONING INCLUDING THE PERSONNEL INTENDED TO ACCOMPLISH EACH ACTIVITY.

2. A LISTING OF SPECIFIC EQUIPMENT, APPLIANCES, OR SYSTEMS TO BE TESTED AND A DESCRIPTION OF THE TESTS TO BE PERFORMED.

3. FUNCTIONS TO BE TESTED INCLUDING, BUT NOT LIMITED TO, CALIBRATIONS AND ECONOMIZER CONTROLS.

4. CONDITIONS UNDER WHICH THE TEST WILL BE PERFORMED. TESTING SHALL AFFIRM WINTER AND SUMMER DESIGN CONDITIONS AND FULL OUTSIDE AIR CONDITIONS.

5. MEASURABLE CRITERIA FOR PERFORMANCE.

SYSTEMS ADJUSTING AND BALANCING

HVAC SYSTEMS SHALL BE BALANCED IN ACCORDANCE WITH GENERALLY ACCEPTED ENGINEERING STANDARDS. THE COMMISSIONING AGENT SHALL REVIEW AND PERFORM A SPOT CHECK VERIFICATION OF THE TESTING, ADJUSTING, AND BALANCING REPORT.

AIR SYSTEMS BALANCING:

EACH SUPPLY AIR OUTLET AND ZONE TERMINAL DEVICE SHALL BE EQUIPPED WITH MEANS FOR AIR BALANCING IN ACCORDANCE WITH THE REQUIREMENTS OF CHAPTER 6 OF THE MECHANICAL CODE OF NEW YORK STATE.

FUNCTIONAL PERFORMANCE TESTING

EQUIPMENT FUNCTIONAL PERFORMANCE TESTING SHALL DEMONSTRATE THE INSTALLATION AND OPERATION OF COMPONENTS, SYSTEMS, AND SYSTEM-TO-SYSTEM INTERFACING RELATIONSHIPS IN ACCORDANCE WITH APPROVED PLANS AND SPECIFICATIONS SUCH THAT OPERATION, FUNCTION, AND MAINTENANCE SERVICEABILITY FOR EACH OF THE COMMISSIONED SYSTEMS IS CONFIRMED. TESTING WILL INCLUDE ALL MODES OF OPERATION, INCLUDING FULL-LOAD, PART-LOAD, AND THE FOLLOWING EMERGENCY CONDITIONS:

1. ALL MODES AS DESCRIBED IN THE SEQUENCE OF OPERATION.

2. REDUNDANT OR AUTOMATIC BACK-UP MODE.

3. PERFORMANCE OF ALARMS.

4. MODE OF OPERATION UPON LOSS OF POWER AND RESTORATION OF POWER.

EXCEPTIONS: UNITARY OR PACKAGED HVAC EQUIPMENT LISTED IN TABLES C403.3.2(1) THROUGH C403.3.2(3) THAT DO NOT REQUIRE SUPPLY AIR ECONOMIZERS.

CONTROLS TESTING

THE COMMISSIONING AGENT SHALL WITNESS TESTING OF THE HVAC AND SERVICE WATER-HEATING SYSTEMS AND DOCUMENT THAT CONTROL DEVICES, COMPONENTS, EQUIPMENT, AND SYSTEMS ARE CALIBRATED AND ADJUSTED AND OPERATE IN ACCORDANCE WITH THE APPROVED PLANS AND SPECIFICATIONS. SEQUENCES OF OPERATION SHALL BE FUNCTIONALLY TESTED TO DOCUMENT THEY OPERATE IN ACCORDANCE WITH THE APPROVED PLANS AND SPECIFICATIONS.

ECONOMIZERS

AIR ECONOMIZER SHALL UNDERGO A FUNCTIONAL TEST TO DETERMINE THAT THEY OPERATE IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS

PRELIMINARY COMMISSIONING REPORT.

THE COMMISSIONING AGENT SHALL PREPARE A PRELIMINARY COMMISSIONING REPORT OF TEST PROCEDURES AND RESULTS. THE REPORT SHALL BE ORGANIZED WITH MECHANICAL AND SERVICE HOT WATER FINDINGS IN SEPARATE SECTIONS TO ALLOW INDEPENDENT REVIEW. THE REPORT SHALL BE IDENTIFIED AS "PRELIMINARY COMMISSIONING REPORT" AND INCLUDE THE COMPLETED COMMISSIONING COMPLIANCE CHECKLIST IN FIGURE C408.2.4.

THE REPORT SHALL IDENTIFY THE FOLLOWING:

1. ITEMIZATION OF DEFICIENCIES FOUND DURING TESTING THAT HAVE NOT BEEN CORRECTED AT THE TIME OF THE REPORT PREPARATION.

2. DEFERRED TESTS THAT CANNOT BE PERFORMED AT THE TIME OF REPORT PREPARATION DUE TO CLIMATIC CONDITIONS.

3. CLIMATIC CONDITIONED REQUIRED FOR PERFORMANCE OF DEFERRED TESTS.

4. RESULTS OF FUNCTIONAL PERFORMANCE TESTS.

5. FUNCTIONAL PERFORMANCE TEST PROCEDURES USED DURING THE COMMISSIONING PROCESS, INCLUDING MEASURABLE CRITERIA FOR TEST ACCEPTANCE.

THE FOLLOWING CHECKLIST SHALL BE COMPLETED BY THE BUILDING OWNER OR OWNER'S AUTHORIZED AGENT:

Project Address: _____

Commissioning Authority: _____

Commissioning Plan (Section C408.2.1)
☐ Commissioning Plan was used during construction and includes all items required by Section C408.2.1

☐ Systems Adjusting and Balancing has been completed.

☐ HVAC Equipment Functional Testing has been executed. If applicable, deferred and follow-up testing is scheduled to be provided on: _____

☐ HVAC Controls Functional Testing has been executed. If applicable, deferred and follow-up testing is scheduled to be provided on: _____

☐ Economizer Functional Testing has been executed. If applicable, deferred and follow-up testing is scheduled to be provided on: _____

☐ Lighting Controls Functional Testing has been executed. If applicable, deferred and follow-up testing is scheduled to be provided on: _____

☐ Service Water Heating System Functional Testing has been executed. If applicable, deferred and follow-up testing is scheduled to be provided on: _____

☐ Manual record documents and training have been completed or scheduled

☐ Preliminary Commissioning Report submitted to owner and includes all items required by Section C408.2.4

I hereby verify that the commissioning provider has provided me with evidence of mechanical, service water heating and lighting systems commissioning in accordance with the 2018 IECC.

Signature of Building Owner or Owner's Representative: _____ Date: _____

FIGURE C408.2.4

ACCEPTANCE OF REPORT:

BUILDINGS, OR PORTIONS THEREOF, SHALL NOT BE CONSIDERED ACCEPTABLE FOR FINAL INSPECTION PURSUANT TO SECTION C104.3 UNTIL THE CODE OFFICIAL HAS RECEIVED A LETTER OF TRANSMITTAL FROM THE BUILDING OWNER ACKNOWLEDGING THAT THE BUILDING OR OWNER'S AUTHORIZED AGENT HAS RECEIVED THE PRELIMINARY COMMISSIONING REPORT.

COPY OF REPORT:

THE BUILDING OFFICIAL SHALL BE PERMITTED TO REQUIRE THAT A COPY OF THE PRELIMINARY COMMISSIONING REPORT BE MADE AVAILABLE FOR REVIEW.

DOCUMENTATION REQUIREMENTS:

THE DOCUMENTS DESCRIBED IN THIS SECTION SHALL BE PROVIDED TO THE BUILDING OWNER OR OWNER'S AUTHORIZED AGENT WITHIN 90 DAYS OF RECEIPT OF THE CERTIFICATE OF OCCUPANCY.

SYSTEM BALANCING REPORT:

A WRITTEN REPORT DESCRIBING THE ACTIVITIES AND MEASUREMENTS COMPLETED.

FINAL COMMISSIONING REPORT:

THE COMMISSIONING AGENT SHALL PREPARE A FINAL COMMISSIONING REPORT. THE REPORT WILL INCLUDE THE FOLLOWING:

1. RESULTS OF FUNCTIONAL PERFORMANCE TESTS.

2. DISPOSITION OF DEFICIENCIES FOUND DURING TESTING, INCLUDING DETAILS OF CORRECTIVE MEASURES USED OR PROPOSED.

3. FUNCTIONAL PERFORMANCE TEST PROCEDURES USED DURING THE COMMISSIONING PROCESS INCLUDING MEASURABLE CRITERIA FOR TEST ACCEPTANCE.

EXCEPTION:

DEFERRED TESTING THAT CANNOT BE PERFORMED AT THE TIME OF REPORT PREPARATION DUE TO CLIMATIC CONDITIONS.

DATE ISSUED

06-22-2026 ISSUED FOR 100%DD/50%CD REVIEW
07-20-2026 ISSUED FOR 90%CD REVIEW
08-17-2026 ISSUED FOR GENERAL CONSTRUCTION BID AS SINGLE PRIME CONTRACT INCLUDING ALL TRADES

SEAL



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PROPOSED NEW FACILITY

ELLENVILLE FIRE DISTRICT

203 S. MAIN ST. NYS ROUTE 209

ELLENVILLE, NY 12428

MECHANICAL GENERAL NOTES

PROJECT No. 2501
EMTEC 7611

CHECKED BY: MF/APS

DRAWING:

M-0.2

"It is a violation of the State Education Law for any person, unless he or she is acting under the direction of a licensed professional engineer to alter an item in anyway, on this drawing and/or in this specification in anyway. If any such item is altered, the altering engineer shall affix to the item his or her seal and the notation "altered by" followed by his or her signature and the date of such alteration, and a specific description of the alteration."
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EMTEC PROJECT NO. 7611 DRAWN BY: MF CHECKED BY: APS

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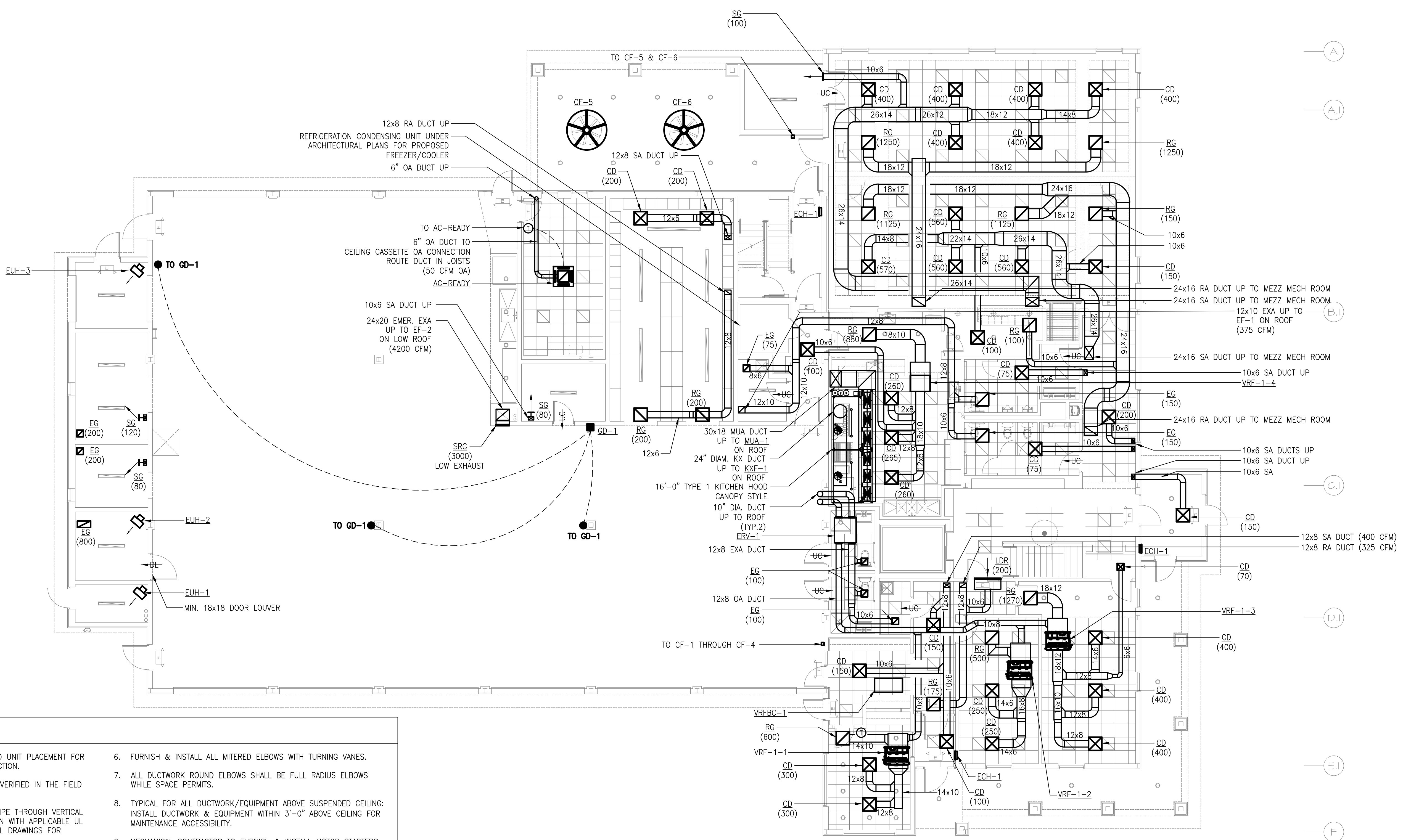
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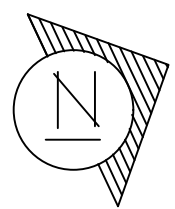
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SHEET NOTES

- SUBMIT SHOP DRAWINGS OF DUCTWORK AND UNIT PLACEMENT FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION.
- EXACT LOCATIONS OF THERMOSTATS TO BE VERIFIED IN THE FIELD AND APPROVED BY THE ARCHITECT.
- FIRESTOP ALL PENETRATIONS OF DUCT & PIPE THROUGH VERTICAL AND HORIZONTAL FIRE-RATED CONSTRUCTION WITH APPLICABLE UL FIRESTOP SYSTEM. REFER TO ARCHITECTURAL DRAWINGS FOR FIRE-RATED CONSTRUCTION.
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- ALL DUCTWORK SHALL BE CONSTRUCTED AND INSTALLED IN ACCORDANCE WITH NFPA 90A AND SMACNA GUIDELINES.
- FURNISH & INSTALL ALL MITERED ELBOWS WITH TURNING VANES.
- ALL DUCTWORK ROUND ELBOWS SHALL BE FULL RADIUS ELBOWS WHILE SPACE PERMITS.
- TYPICAL FOR ALL DUCTWORK/EQUIPMENT ABOVE SUSPENDED CEILING: INSTALL DUCTWORK & EQUIPMENT WITHIN 3'-0" ABOVE CEILING FOR MAINTENANCE ACCESSIBILITY.
- MECHANICAL CONTRACTOR TO FURNISH & INSTALL MOTOR STARTERS FOR ALL MOTOR LOADS (FANS). ELECTRICAL CONTRACTOR TO WIRE ALL.



FIRST FLOOR PLAN

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

MEZZ. SQUARE FOOTAGE = 13,924



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DATE

ISSUED

06-22-2026 ISSUED FOR 100%DD/50%CD REVIEW
07-20-2026 ISSUED FOR 90%CD REVIEW
08-17-2026 ISSUED FOR GENERAL CONSTRUCTION BID AS SINGLE PRIME CONTRACT INCLUDING ALL TRADES

SEAL



SENDLEWSKI ARCHITECTS, P.C.
ARCHITECTS - PLANNERS

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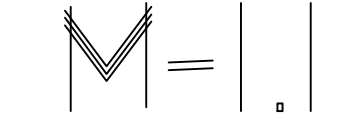
PROPOSED NEW FACILITY
ELLENVILLE FIRE DISTRICT
203 S. MAIN ST. NYS ROUTE 209
ELLENVILLE, NY 12428

MECHANICAL
FIRST FLOOR
DUCTWORK PLAN

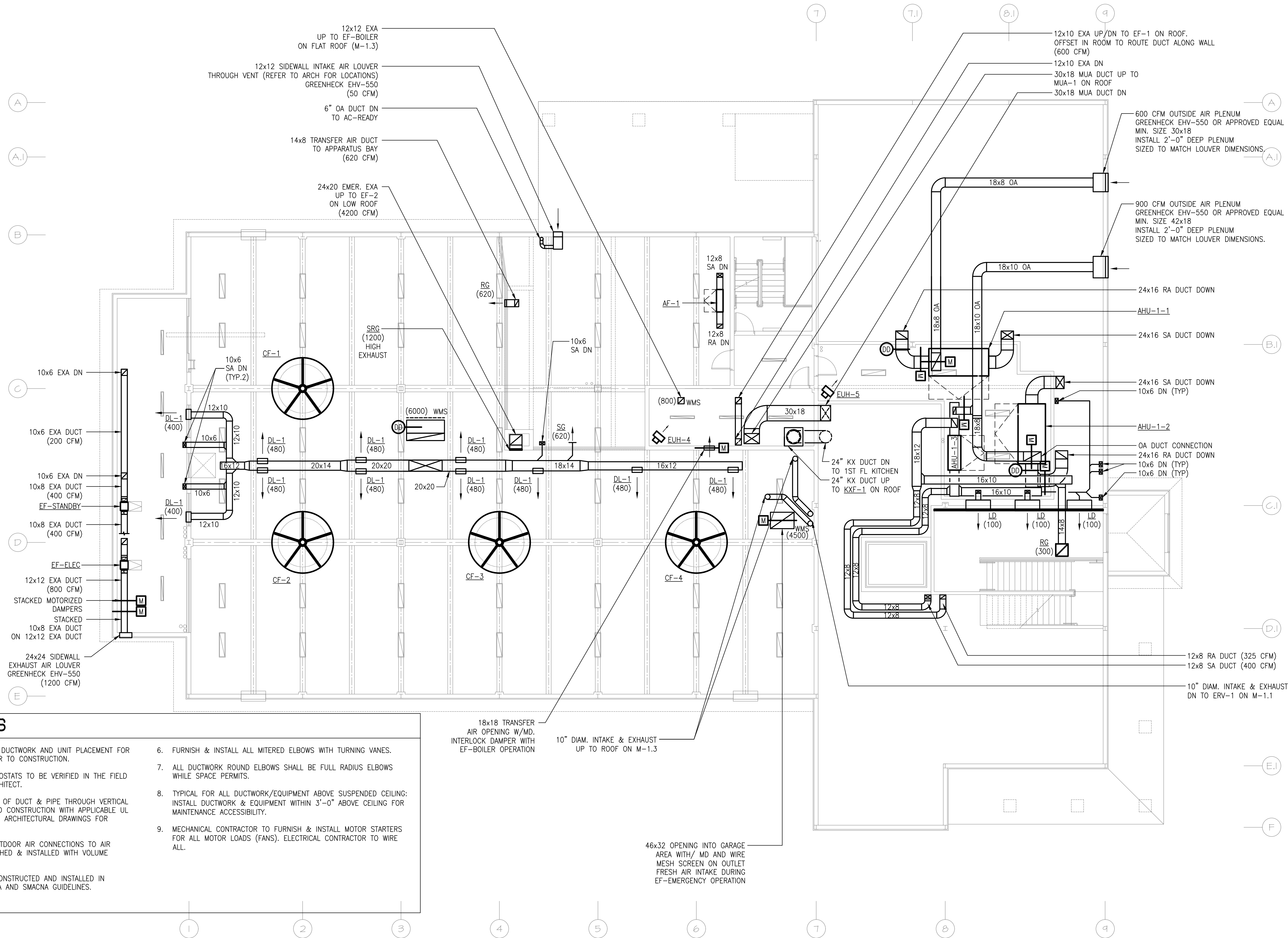
PROJECT No. 2501
EMTEC-7611

CHECKED BY: MF/APS

DRAWING:

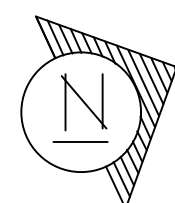


EMTEC PROJECT NO. 7611 DRAWN BY: MF CHECKED BY: APS



SHEET NOTES

- SUBMIT SHOP DRAWINGS OF DUCTWORK AND UNIT PLACEMENT FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION.
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- FURNISH & INSTALL ALL MITERED ELBOWS WITH TURNING VANES.
- ALL DUCTWORK ROUND ELBOWS SHALL BE FULL RADIUS ELBOWS WHILE SPACE PERMITS.
- TYPICAL FOR ALL DUCTWORK/EQUIPMENT ABOVE SUSPENDED CEILING: INSTALL DUCTWORK & EQUIPMENT WITHIN 3'-0" ABOVE CEILING FOR MAINTENANCE ACCESSIBILITY.
- MECHANICAL CONTRACTOR TO FURNISH & INSTALL MOTOR STARTERS FOR ALL MOTOR LOADS (FANS). ELECTRICAL CONTRACTOR TO WIRE ALL.



MEZZANINE FLOOR PLAN (PARTIAL)

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

MEZZ. SQUARE FOOTAGE = 1,482



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DATE ISSUED

06-22-2026 ISSUED FOR
100%DD/50%CD REVIEW
07-20-2026 ISSUED FOR 90%CD
REVIEW
08-17-2026
ISSUED FOR GENERAL
CONSTRUCTION BID AS SINGLE
PRIME CONTRACT INCLUDING
ALL TRADES

SEAL



SENDLEWSKI ARCHITECTS, P.C.
ARCHITECTS - PLANNERS

216 PARKWAY AVENUE WESTFIELD, NY 11091 (516) 727-5552



PROPOSED NEW FACILITY
ELLENVILLE FIRE DISTRICT
203 S. MAIN ST. NYS ROUTE 209
ELLENVILLE, NY 12428

MECHANICAL
MEZZANINE
DUCTWORK PLAN

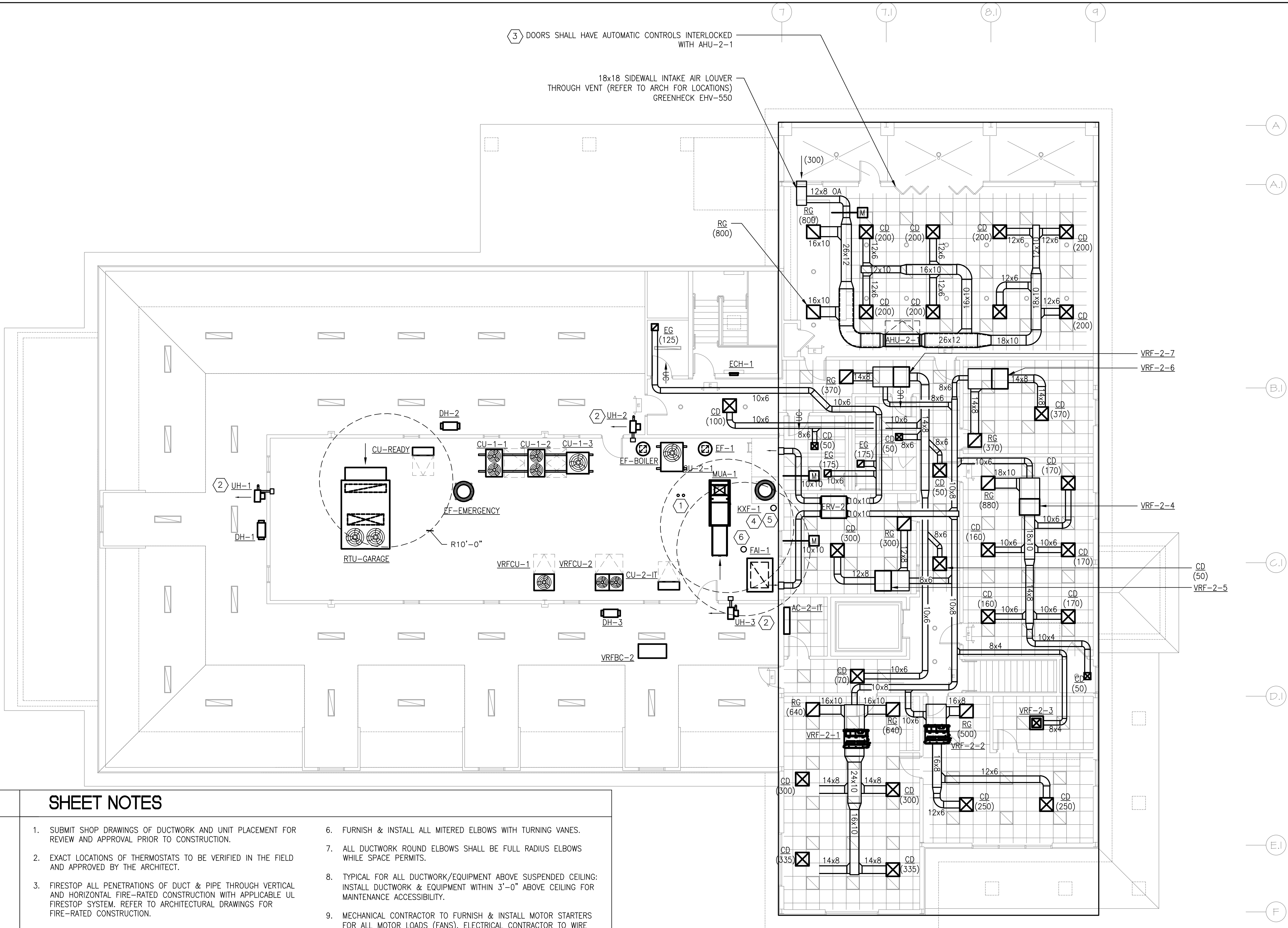
PROJECT No. 2501
EMTEC.7611

CHECKED BY: MF/APS

DRAWING:

M-1.2

EMTEC PROJECT NO. 7611 DRAWN BY: MF CHECKED BY: APS

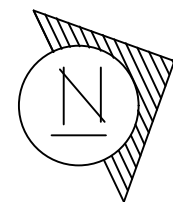


KEY NOTES

- FURNISH & INSTALL 3" EXHAUST & AIR INTAKE VENTS UP TO DISCHARGE ON ROOF FOR RADIANT HEAT BOILER. TERMINATE VENTS ABOVE THE TOP OF ADJACENT ROOF WALLS.
- FURNISH & INSTALL SIDEWALL INTAKES FOR ALL PROPANE GAS-FIRED UNIT HEATERS IN ATTIC SPACE. ELBOW FLUE DISCHARGE OUT OF HEATER TO DISCHARGE FLUE VERTICALLY WITH RAIN CAP VERTICALLY ALIGNED WITH TOP OF ADJACENT ROOF (TYP. 3)
- WITHIN 5 MINUTES OF THE LARGE DOOR OPENING TO THE EXTERIOR BALCONY PROVED FULLY OPEN VIA DOOR SWITCH, THE FOLLOWING SHALL OCCUR FOR THE ASSOCIATED AHU SERVING THIS ROOM:
 - RESET SPACE HEATING TEMP. TO MAXIMUM 55F SETPOINT.
 - RESET SPACE COOLING TEMP. TO MINIMUM 90F SETPOINT.
 - MECHANICAL COOLING CAN REMAIN ENABLED IF OUTDOOR AIR TEMP IS BELOW SPACE TEMPERATURE.
- KITCHEN EXHAUST FAN SHALL BE INSTALLED ABOVE ALL ADJACENT WALLS. COORDINATE MOUNTING HEIGHT WITH ARCHITECT.
- ERV 10" DIAM. EXHAUST DUCT TERMINATED ABOVE THE TOP OF ADJACENT ROOF WALLS. ADJACENT MECHANICAL AIR INTAKES. TERMINATE WITH WEATHERPROOF CAP.
- ERV 10" DIAM. INTAKE AIR VENT. TERMINATE WITH WEATHERPROOF CAP.

SHEET NOTES

- SUBMIT SHOP DRAWINGS OF DUCTWORK AND UNIT PLACEMENT FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION.
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- FURNISH & INSTALL ALL MITERED ELBOWS WITH TURNING VANES.
- ALL DUCTWORK ROUND ELBOWS SHALL BE FULL RADIUS ELBOWS WHILE SPACE PERMITS.
- TYPICAL FOR ALL DUCTWORK/EQUIPMENT ABOVE SUSPENDED CEILING: INSTALL DUCTWORK & EQUIPMENT WITHIN 3'-0" ABOVE CEILING FOR MAINTENANCE ACCESSIBILITY.
- MECHANICAL CONTRACTOR TO FURNISH & INSTALL MOTOR STARTERS FOR ALL MOTOR LOADS (FANS). ELECTRICAL CONTRACTOR TO WIRE ALL.



SECOND FLOOR PLAN

SCALE: 1/8" = 1'-0" SQUARE FOOTAGE = 5643 (NOT INCL. FLAT ROOF & ATTIC AREAS)



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DATE ISSUED

06-22-2026 ISSUED FOR 100%DD/50%CD REVIEW
07-20-2026 ISSUED FOR 90%CD REVIEW
08-17-2026 ISSUED FOR GENERAL CONSTRUCTION BID AS SINGLE PRIME CONTRACT INCLUDING ALL TRADES

SEAL



SENDLEWSKI ARCHITECTS, P.C.

ARCHITECTS - PLANNERS

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PROPOSED NEW FACILITY
ELLENVILLE FIRE DISTRICT
203 S. MAIN ST. NYS ROUTE 209
ELLENVILLE, NY 12428

MECHANICAL
SECOND FLOOR
DUCTWORK PLAN

PROJECT No. 2501

EMTEC-7611

CHECKED BY: MF/APS

DRAWING:

M-1.3

EMTEC PROJECT NO. 7611 DRAWN BY: MF CHECKED BY: APS

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REFRIGERATION CONDENSING UNIT UNDER
ARCHITECTURAL PLANS FOR PROPOSED
FREEZER/COOLER

TO AC-READY

AC-READY

REF. PIPING UP
REFER TO M-2.2
FOR OFFSET IN GARAGE

1" CNDS DN TO SLOP SINK IN J.C.
FROM AC-READY

TO CF-5 & CF-6

TO AHU-1-2

TO AHU-1-3

VRF-1-4

ECH-1

VRF-1-3

1" CNDS

ERV-1

3/4" CNDS
1-1/4" CNDS DN
TO SLOP SINK

1-1/4" CNDS

1-1/4" CNDS

TO RTU-GARAGE
TO CF-1 THROUGH CF-4
REF. PIPING UP
REFER TO M-2.2
FOR OFFSET IN GARAGE

2 VRFBC-1

1 VRF-1-1

ECH-1

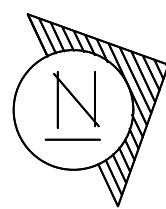
VRF-1-2

KEY NOTES

- ROUTE 3/4" CONDENSATE FROM INDOOR EVAPORATOR UNIT TO SLOP SINK IN NEAREST JANITOR'S CLOSET. VRF-1-3 SHALL BE 1" CONDENSATE DRAIN. UPSIZE PIPE AS REQUIRED FOR MULTIPLE UNITS CONNECTED TO A SINGLE CONDENSATE LINE. (TYP. 4)
- FURNISH & INSTALL 1-1/4" CONDENSATE FROM VRF SYSTEM BRANCH CONTROLLER. CONNECT TO MAIN CONDENSATE LINE PITCHED TO SLOP SINK IN HOUSEKEEPING ROOM.

SHEET NOTES

- EXACT LOCATIONS OF THERMOSTATS TO BE VERIFIED IN THE FIELD AND APPROVED BY THE ARCHITECT.
- FIRESTOP ALL PENETRATIONS OF PIPE THROUGH VERTICAL AND HORIZONTAL FIRE-RATED CONSTRUCTION WITH APPLICABLE UL FIRESTOP SYSTEM. REFER TO ARCHITECTURAL DRAWINGS FOR FIRE-RATED CONSTRUCTION.
- TYPICAL FOR ALL DUCTWORK/EQUIPMENT ABOVE SUSPENDED CEILING: INSTALL DUCTWORK & EQUIPMENT WITHIN 3'-0" ABOVE CEILING FOR MAINTENANCE ACCESSIBILITY.
- EACH CONDENSATE PUMP'S DISCHARGE SHALL BE PIPED VIA 3/4" COPPER PIPE TO THE NEAREST FLOOR DRAIN WITH AIR GAP AS SPECIFIED ON DRAWINGS.
- ALL PIPING EXPOSED TO OUTDOOR ELEMENTS SHALL BE FURNISHED & INSTALLED WITH OUTDOOR RATED PIPE INSULATION.
- PROVIDE ALL REQUIRED FIRESTOPPING OF NEW PIPE PENETRATIONS THROUGH FIRE-RATED WALLS AND DUCT SHAFTS.



FIRST FLOOR PLAN

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

MEZZ. SQUARE FOOTAGE = 13,924



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DATE

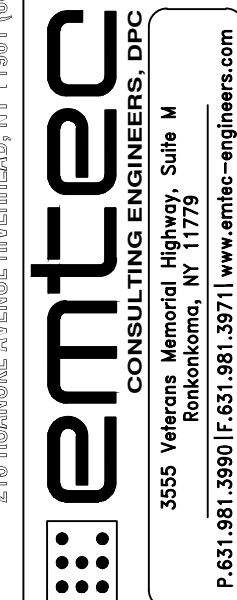
ISSUED

06-22-2026 ISSUED FOR
100%DD/50%CD REVIEW
07-20-2026 ISSUED FOR 90%CD
REVIEW
08-17-2026
ISSUED FOR GENERAL
CONSTRUCTION BID AS SINGLE
PRIME CONTRACT INCLUDING
ALL TRADES

SEAL



SENDLEWSKI ARCHITECTS, P.C.
ARCHITECTS - PLANNERS
216 PARKWAY AVENUE, WESTFIELD, NY 12091 (516) 727-5552



PROPOSED NEW FACILITY
ELLENVILLE FIRE DISTRICT
203 S. MAIN ST. NYS ROUTE 209
ELLENVILLE, NY 12428

MECHANICAL
FIRST FLOOR
PLAN

PROJECT No. 2501
EMTEC-7611

CHECKED BY: MF/APS

DRAWING:

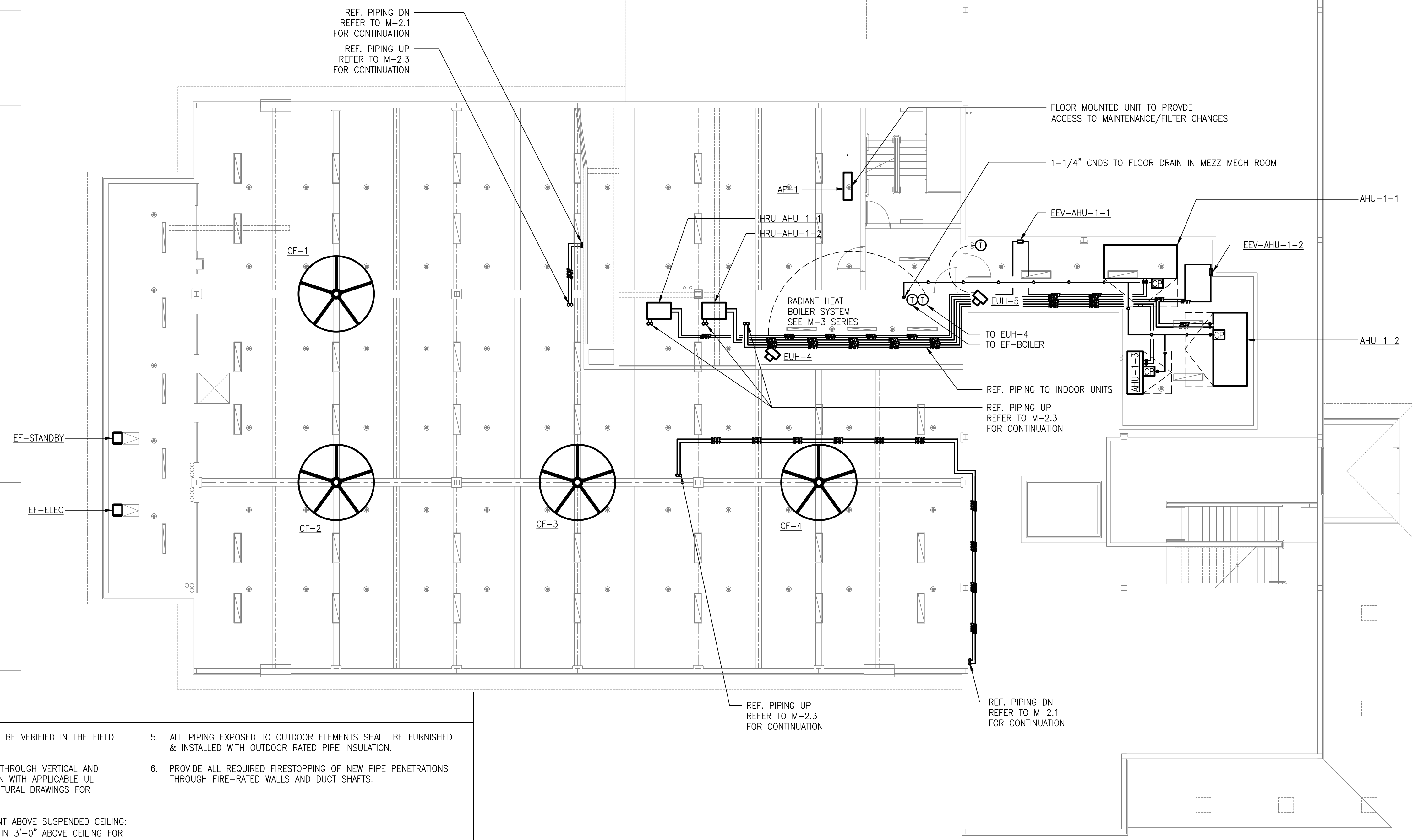
M-2.1

EMTEC PROJECT NO. 7611 DRAWN BY: MF CHECKED BY: APS

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A.1
B
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D
D.1
E

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7.1
8.1
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9



REF. PIPING DN
REFER TO M-2.1
FOR CONTINUATION
REF. PIPING UP
REFER TO M-2.3
FOR CONTINUATION

FLOOR MOUNTED UNIT TO PROVIDE
ACCESS TO MAINTENANCE/FILTER CHANGES

1-1/4" CNDS TO FLOOR DRAIN IN MEZZ MECH ROOM

AF-1
HRU-AHU-1-1
HRU-AHU-1-2

RADIANT HEAT
BOILER SYSTEM
SEE M-3 SERIES

TO EUH-4
TO EF-BOILER

REF. PIPING TO INDOOR UNITS
REF. PIPING UP
REFER TO M-2.3
FOR CONTINUATION

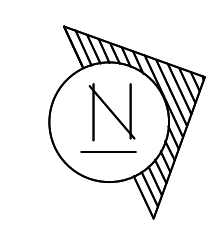
REF. PIPING UP
REFER TO M-2.3
FOR CONTINUATION

REF. PIPING DN
REFER TO M-2.1
FOR CONTINUATION

EF-STANDBY
EF-ELEC

SHEET NOTES

1. EXACT LOCATIONS OF THERMOSTATS TO BE VERIFIED IN THE FIELD AND APPROVED BY THE ARCHITECT.
2. FIRESTOP ALL PENETRATIONS OF PIPE THROUGH VERTICAL AND HORIZONTAL FIRE-RATED CONSTRUCTION WITH APPLICABLE UL FIRESTOP SYSTEM. REFER TO ARCHITECTURAL DRAWINGS FOR FIRE-RATED CONSTRUCTION.
3. TYPICAL FOR ALL DUCTWORK/EQUIPMENT ABOVE SUSPENDED CEILING: INSTALL DUCTWORK & EQUIPMENT WITHIN 3'-0" ABOVE CEILING FOR MAINTENANCE ACCESSIBILITY.
4. EACH CONDENSATE PUMP'S DISCHARGE SHALL BE PIPED VIA 3/4" COPPER PIPE TO THE NEAREST FLOOR DRAIN WITH AIR GAP AS SPECIFIED ON DRAWINGS.
5. ALL PIPING EXPOSED TO OUTDOOR ELEMENTS SHALL BE FURNISHED & INSTALLED WITH OUTDOOR RATED PIPE INSULATION.
6. PROVIDE ALL REQUIRED FIRESTOPPING OF NEW PIPE PENETRATIONS THROUGH FIRE-RATED WALLS AND DUCT SHAFTS.



MEZZANINE FLOOR PLAN (PARTIAL)
SCALE: 1/8" = 1'-0"
MEZZ. SQUARE FOOTAGE = 1,482

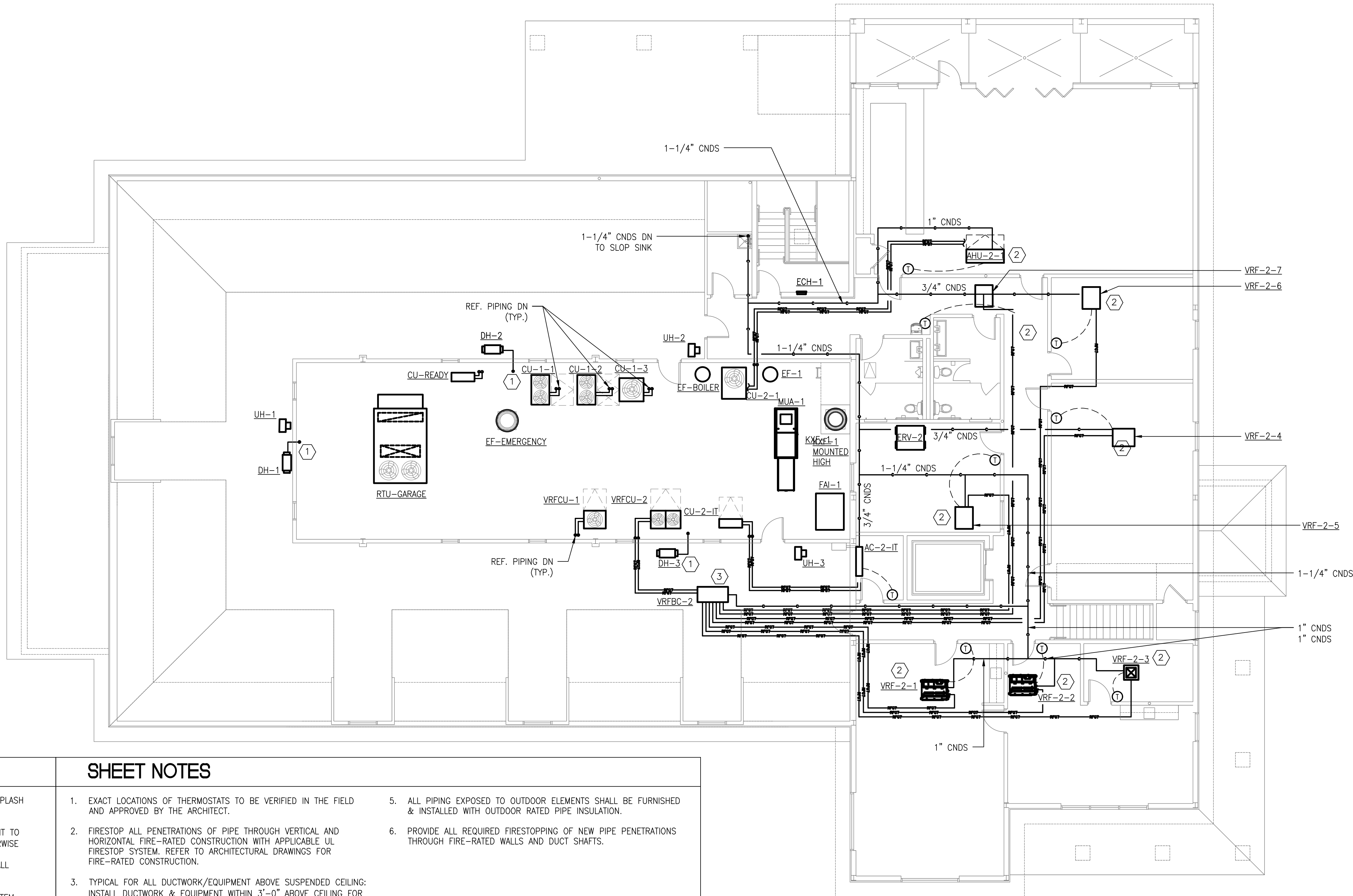
0 2' 4' 6' 8' 10' 20' 30' 50'

DATE	ISSUED
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SEAL	
SENDLEWSKI ARCHITECTS, P.C. ARCHITECTS - PLANNERS 216 FIDELITY AVENUE, WESTFIELD, NY 12091 (518) 727-5352 emtec CONSULTING ENGINEERS, P.C. 3555 Veterans Memorial Highway, Suite 100 Rancho Santa Fe, CA 92051 (760) 739-1177 P. 651.981.3980 F. 651.981.3971 www.emtec-engineers.com	
PROPOSED NEW FACILITY ELLENVILLE FIRE DISTRICT 203 S. MAIN ST. NYS ROUTE 209 ELLENVILLE, NY 12428	MECHANICAL MEZZANINE PIPING PLAN
PROJECT No. 2501 EMTEC-7611	CHECKED BY: MF/APS
DRAWING: M-2.2	

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EMTEC PROJECT NO. 7611 DRAWN BY: MF CHECKED BY: APS

A
A.I
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D
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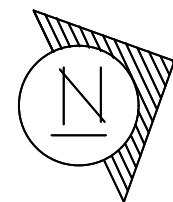


KEY NOTES

- ROUTE CONDENSATE LINE FROM ATTIC DEHUMIDIFIER TO SPLASH BLOCK ON FLAT ROOF. (TYP. FOR ALL)
- ROUTE 3/4\" CONDENSATE FROM INDOOR EVAPORATOR UNIT TO SLOP SINK IN NEAREST JANITOR'S CLOSET UNLESS OTHERWISE NOTED. UPSIZE PIPE AS REQUIRED FOR MULTIPLE UNITS CONNECTED TO A SINGLE CONDENSATE LINE. (TYP. FOR ALL INDOOR AHUS AND VRF UNITS)
- FURNISH & INSTALL 1-1/4\" CONDENSATE FROM VRF SYSTEM BRANCH CONTROLLER. CONNECT TO MAIN CONDENSATE LINE PITCHED TO SLOP SINK IN HOUSEKEEPING ROOM.

SHEET NOTES

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SECOND FLOOR PLAN

SCALE: 1/8\" = 1'-0\"
SQUARE FOOTAGE = 5643
(NOT INCL. FLAT ROOF & ATTIC AREAS)



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CONSULTING ENGINEERS, DPC

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PROPOSED NEW FACILITY
ELLENVILLE FIRE DISTRICT
203 S. MAIN ST. NYS ROUTE 209
ELLENVILLE, NY 12428

MECHANICAL
SECOND FLOOR
PLAN

PROJECT No. 2501
EMTEC.7611

CHECKED BY: MF/APS

DRAWING:

M-2.3

EMTEC PROJECT NO. 7611 DRAWN BY: MF CHECKED BY: APS

Radiant Panel Details
Panel Type #1 - Embedded Slab
Slab Thickness: 10.0 in
Tube Depth: 5.0 in
Slab R per inch (Embedding Material): 0.15 "F" R" hr (Blurin)
Below Slab Insulation Rv: 10.0 hr ft² "F" Btu
Spacing: 12 in, 9 in
Fastener: Wire Ties
Floorplane: Ground Floor
6,717 ft²



2" HWS&R TO BOILER SYSTEM
INSTALLED ON MEZZANINE
REFER TO M-2.2

RFM-4
115.9F, 2.71 USGPM
4 CIRCUITS
RFM-5
115.9F, 2.50 USGPM
4 CIRCUITS

3/4" HWS&R
TO RFM-1
RFM-1
115.9F, 1.34 USGPM
2 CIRCUITS

ROUTE HWS&R PIPING
AS HIGH AS POSSIBLE
(TYP. FOR ALL)
3/4" HWS&R
TO RFM-2
RFM-2
115.9F, 1.36 USGPM
2 CIRCUITS
RFM-3
115.9F, 1.34 USGPM
2 CIRCUITS
3/4" HWS&R
TO RFM-3

RFM-6
115.9F, 2.36 USGPM
4 CIRCUITS
RFM-7
115.9F, 2.10 USGPM
3 CIRCUITS
RFM-8
115.9F, 2.36 USGPM
4 CIRCUITS
RFM-10
115.9F, 2.03 USGPM
3 CIRCUITS

RFM-9
115.9F, 1.52 USGPM
2 CIRCUITS

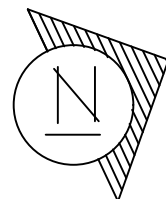
EACH DOTTED AREA INDICATES A ZONE.
NOTE INDICATES NUMBER OF CIRCUITS
FOR EACH ZONE AND WHICH MANIFOLD
SERVES THIS ZONE (TYP. FOR ALL)

KEY NOTES

1. PROVIDE COPPER RADIANT HEATING SUPPLY AND RETURN MANIFOLD SIMILAR TO REHAU HEADER MANIFOLD. PROVIDE END CAP VENT DRAINS AND PLASTIC MANIFOLD BRACKETS. EXACT LOCATION TO BE CONFIRMED IN FIELD. REFER TO ARCHITECTURAL PLANS FOR ENCLOSURE. (TYP. 10)

SHEET NOTES

1. PROVIDE ALL MATERIALS, EQUIPMENT, AND PERFORM ALL LABOR REQUIRED TO INSTALL, COMPLETE, AND OPERATE ALL HVAC SYSTEMS AS INDICATED ON THE DRAWINGS AS SPECIFIED AND REQUIRED BY CODE.
2. ALL PIPING TO BE INSULATED AS PER NYSECC
3. REFER TO M-9 SERIES DRAWINGS FOR RADIANT HEATING SCHEDULES AND DETAILS.



FIRST FLOOR PLAN

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

MEZZ. SQUARE FOOTAGE = 13,924



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PROPOSED NEW FACILITY
ELLENVILLE FIRE DISTRICT
203 S. MAIN ST. NYS ROUTE 209
ELLENVILLE, NY 12428

MECHANICAL
RADIANT HEATING
FIRST FLOOR PLAN

PROJECT No. 2501
EMTEC-1611

CHECKED BY: MF/APS

DRAWING:

M-3.1

EMTEC PROJECT NO. 7611 DRAWN BY: MF CHECKED BY: APS

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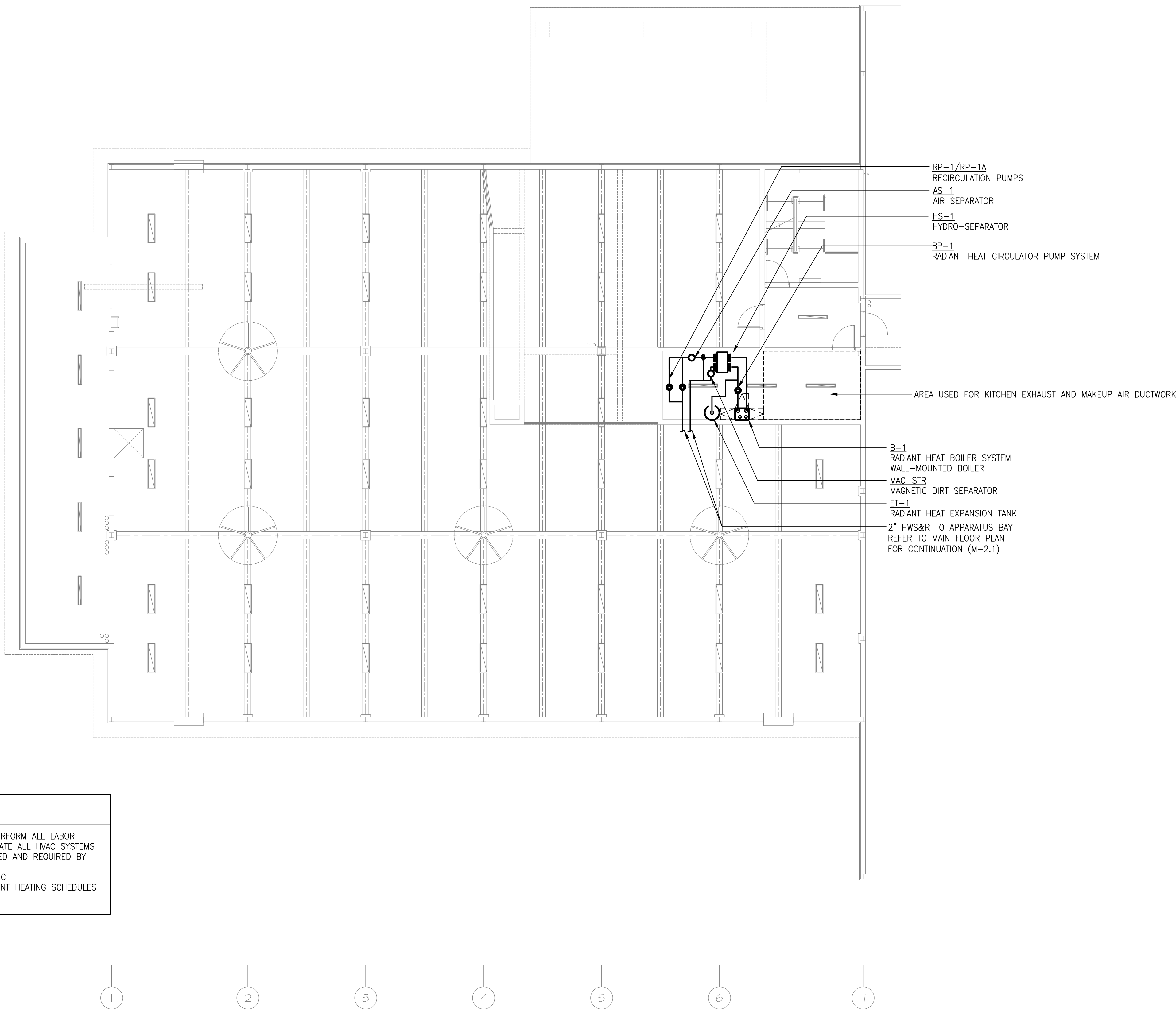
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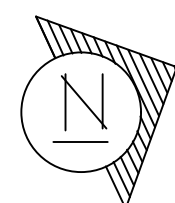
D

E



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MEZZANINE FLOOR PLAN (PARTIAL)

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

MEZZ. SQUARE FOOTAGE = 1,482



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PROPOSED NEW FACILITY

ELLENVILLE FIRE DISTRICT

203 S. MAIN ST. NYS ROUTE 209

ELLENVILLE, NY 12428

MECHANICAL
RADIANT HEATING
MEZZANINE PLAN

PROJECT No. 2501

EMTEC: 7611

CHECKED BY: MF/APS

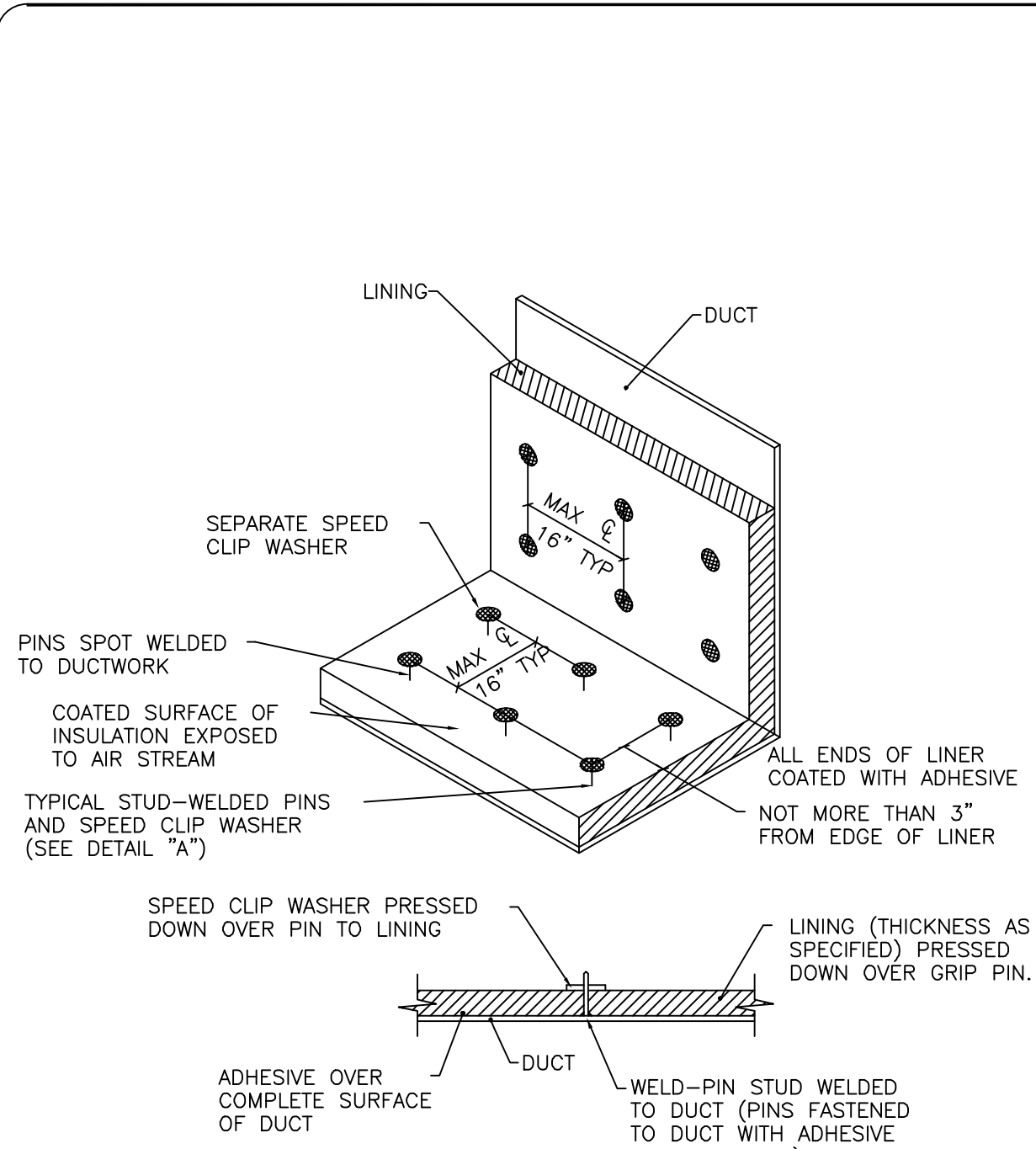
DRAWING:

M-3.2

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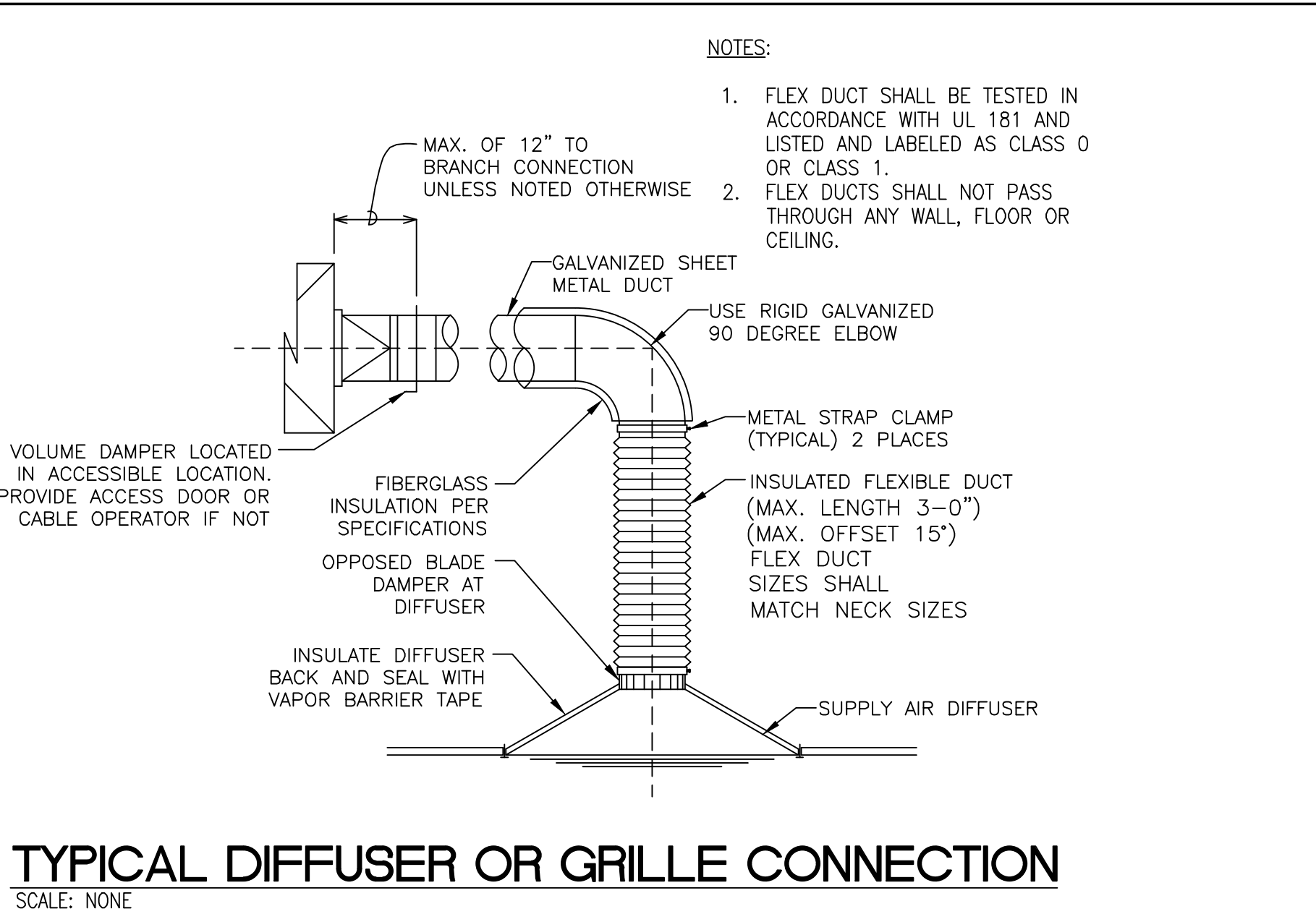
EMTEC PROJECT NO. 7611 DRAWN BY: MF CHECKED BY: APS



DETAIL 'A'

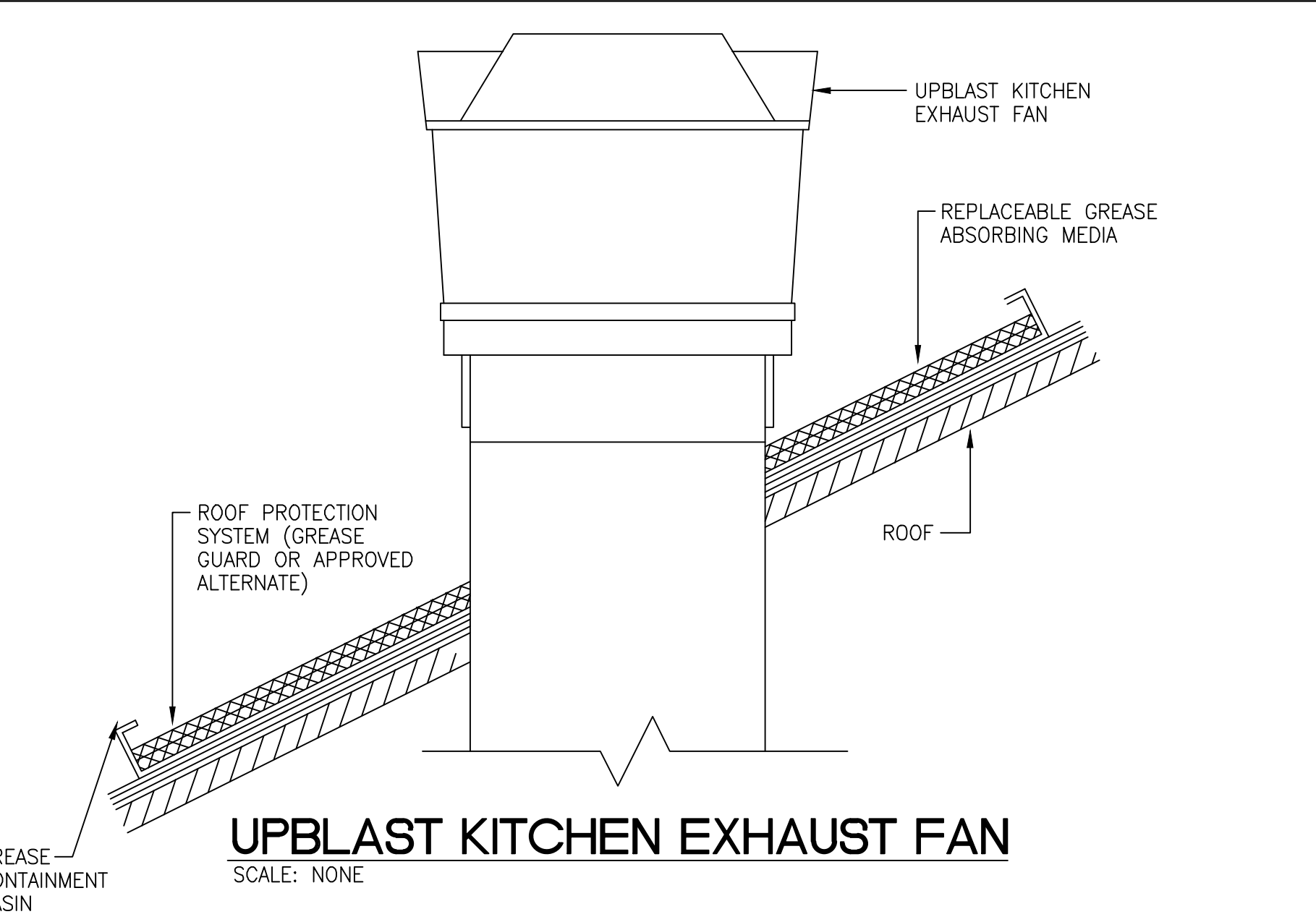
DUCT LINING INSTALLATION DETAIL

NO SCALE



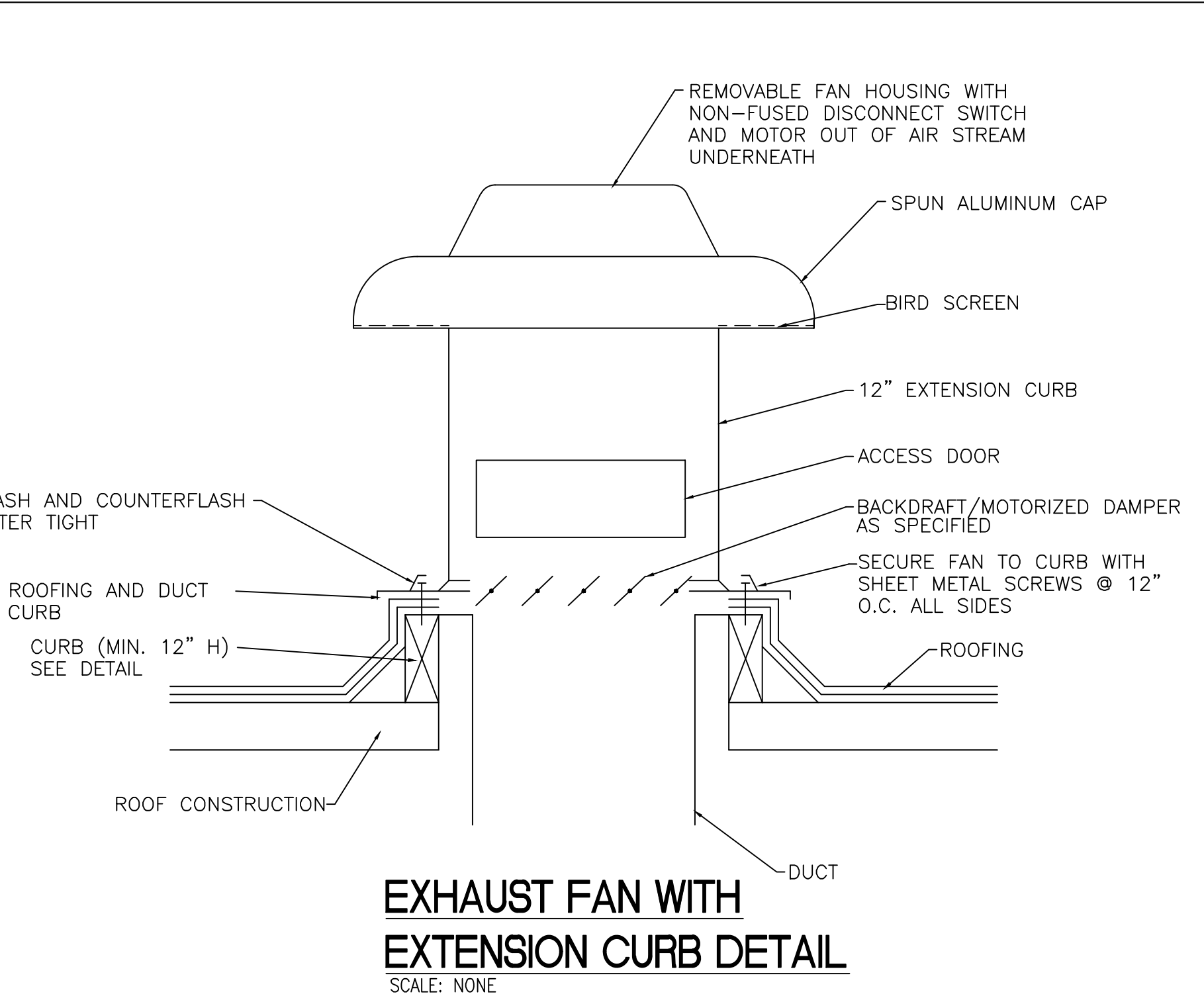
TYPICAL DIFFUSER OR GRILLE CONNECTION

SCALE: NONE



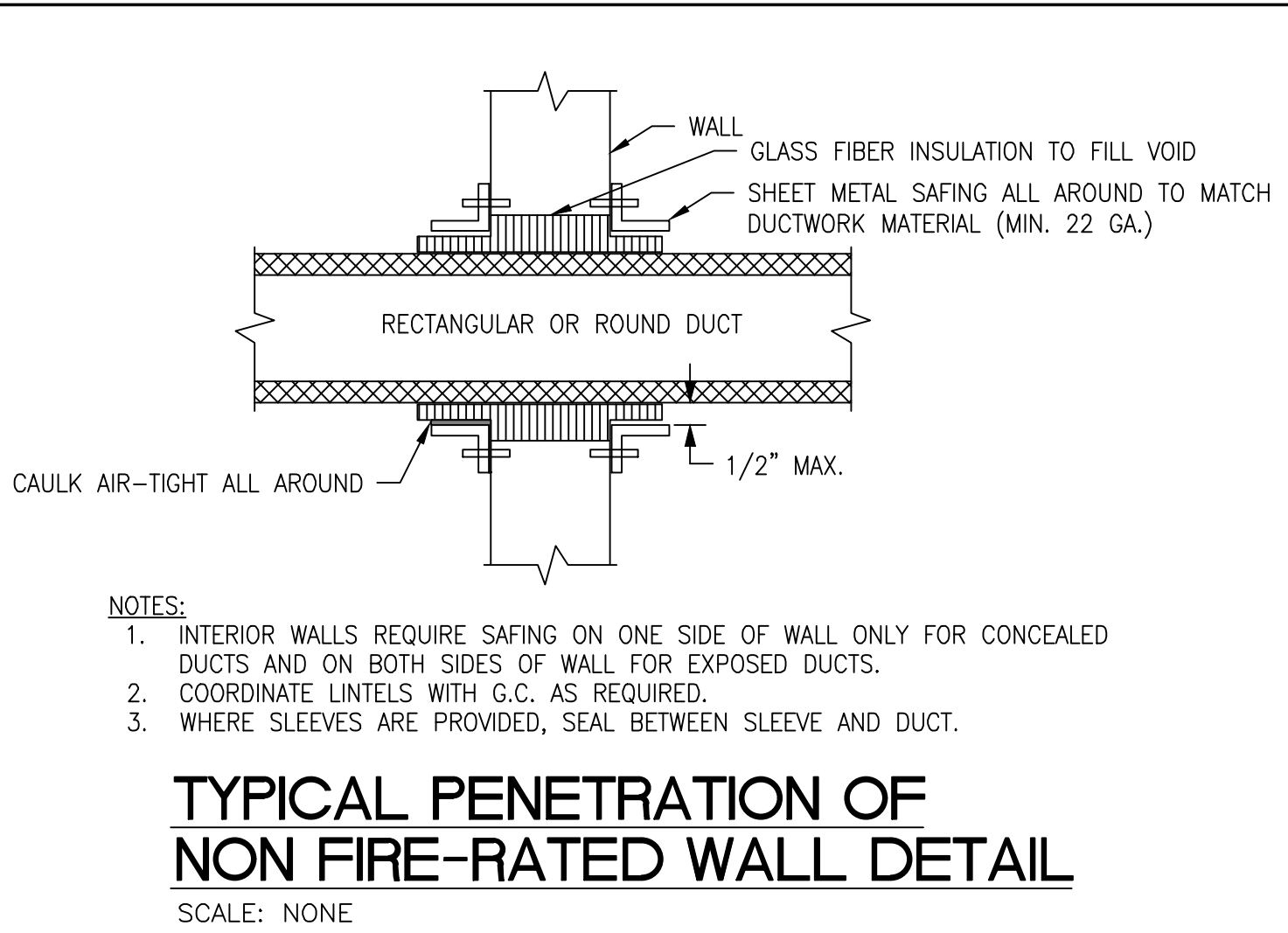
UPBLAST KITCHEN EXHAUST FAN

SCALE: NONE



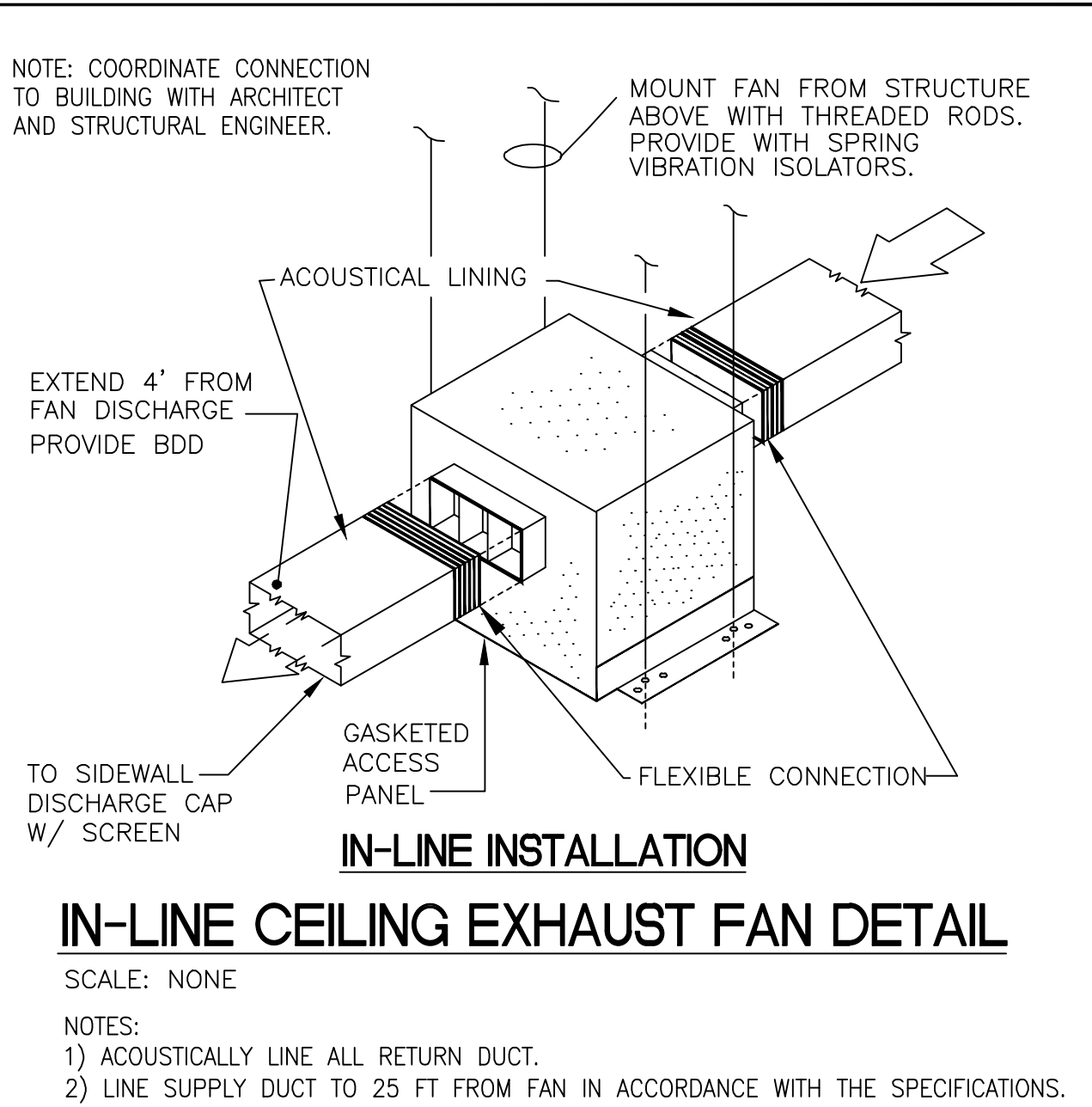
EXHAUST FAN WITH EXTENSION CURB DETAIL

SCALE: NONE



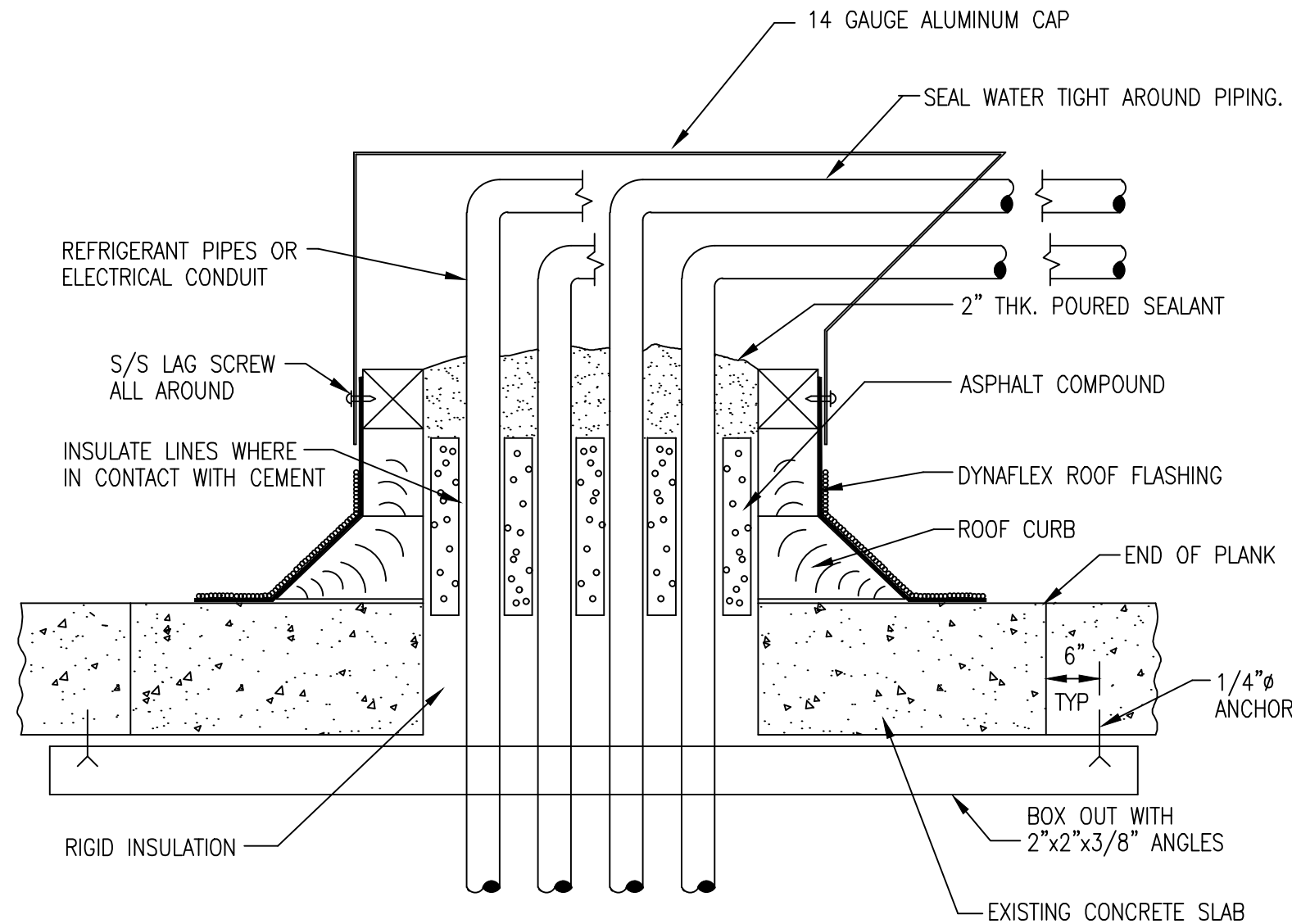
TYPICAL PENETRATION OF NON FIRE-RATED WALL DETAIL

SCALE: NONE



IN-LINE CEILING EXHAUST FAN DETAIL

SCALE: NONE



PITCH POCKET WITH STEEL SUPPORT DETAIL

NO SCALE

NOTE: PROVIDE PRE-FORMED 18 GA. MIN. GALVANIZED STEEL CURB UNIT WITH CENTER SPAN REINFORCING BY "PATE-CURBS" MODEL #PC-5

Self tapping cadmium plated hex head sheet metal screw straps to be tight against duct.

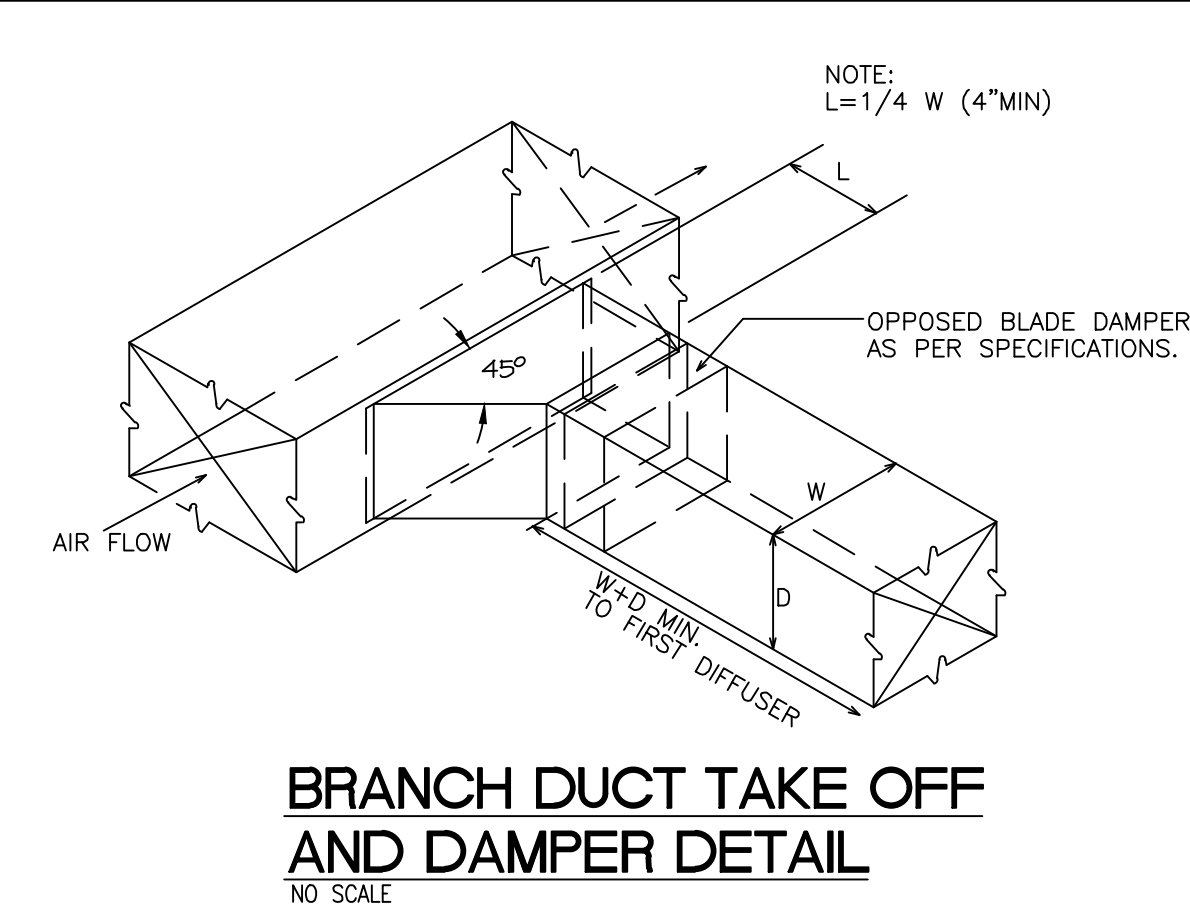
HANGER SIZES FOR RECTANGULAR DUCT			
DUCT SIZE	HANGER	HORIZONTAL SUPPORT ANGLE	
Up to 2 sq. ft.	1" x 1/16" band iron	None	
Over 2 sq. ft.	1" x 1/8" band iron	None	
Over 4" wide	1" x 1/8" band iron	None	
Over 8 sq. ft.	1" x 1/8" band iron	See Note	
Over 10 sq. ft.	1" x 1/8" band iron	See Note	

Note: The minimum reinforcing angle size for ductwork with a dimension of its longest side and maximum longitudinal spacing shall:

43 to 48	1 1/2"x1 1/2"x1/8" @ 60"
49 to 60	1 1/2"x1 1/2"x1/8" @ 48"
61 to 96	1 1/2"x1 1/2"x3/16" @ 24"
97 to 120	2" x 2" x1/4" @ 24"

DUCT STRAP HANGER DETAIL

NO SCALE



BRANCH DUCT TAKE OFF AND DAMPER DETAIL

NO SCALE

DATE

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08-22-2026

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PROPOSED NEW FACILITY

ELLENVILLE FIRE DISTRICT

203 S. MAIN ST. NYS ROUTE 209

ELLENVILLE, NY 12428

MECHANICAL DETAILS

PROJECT No. 2501

EMTEC.1611

CHECKED BY: MF/APS

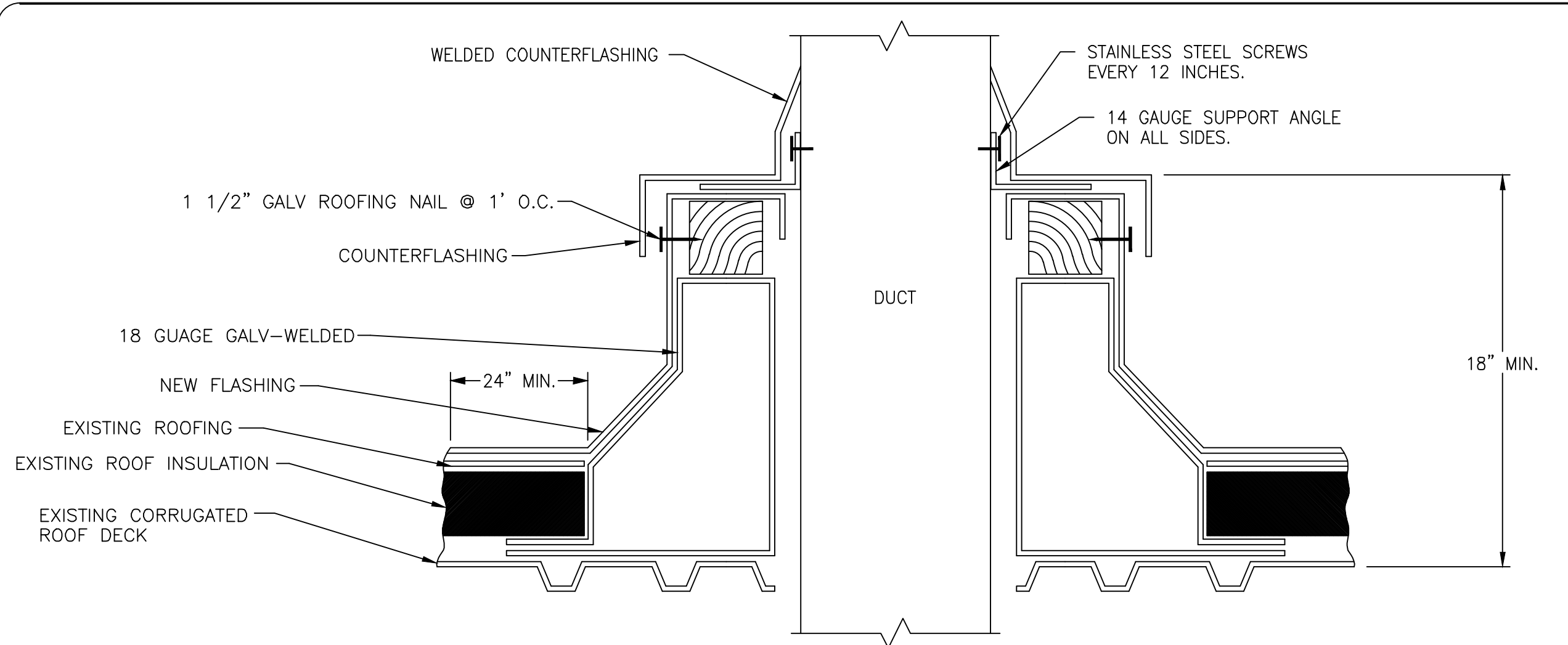
DRAWING:

M-5.1

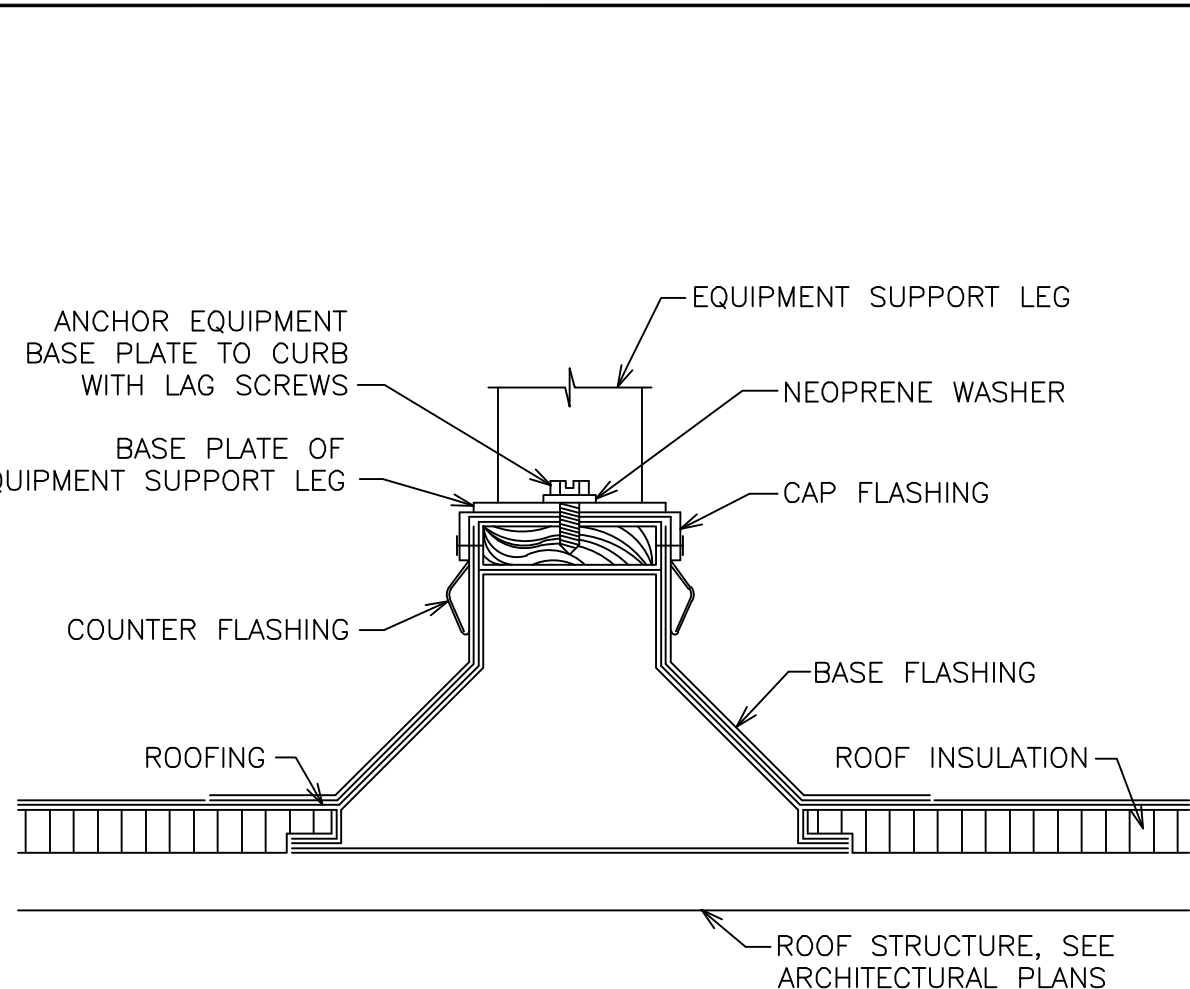
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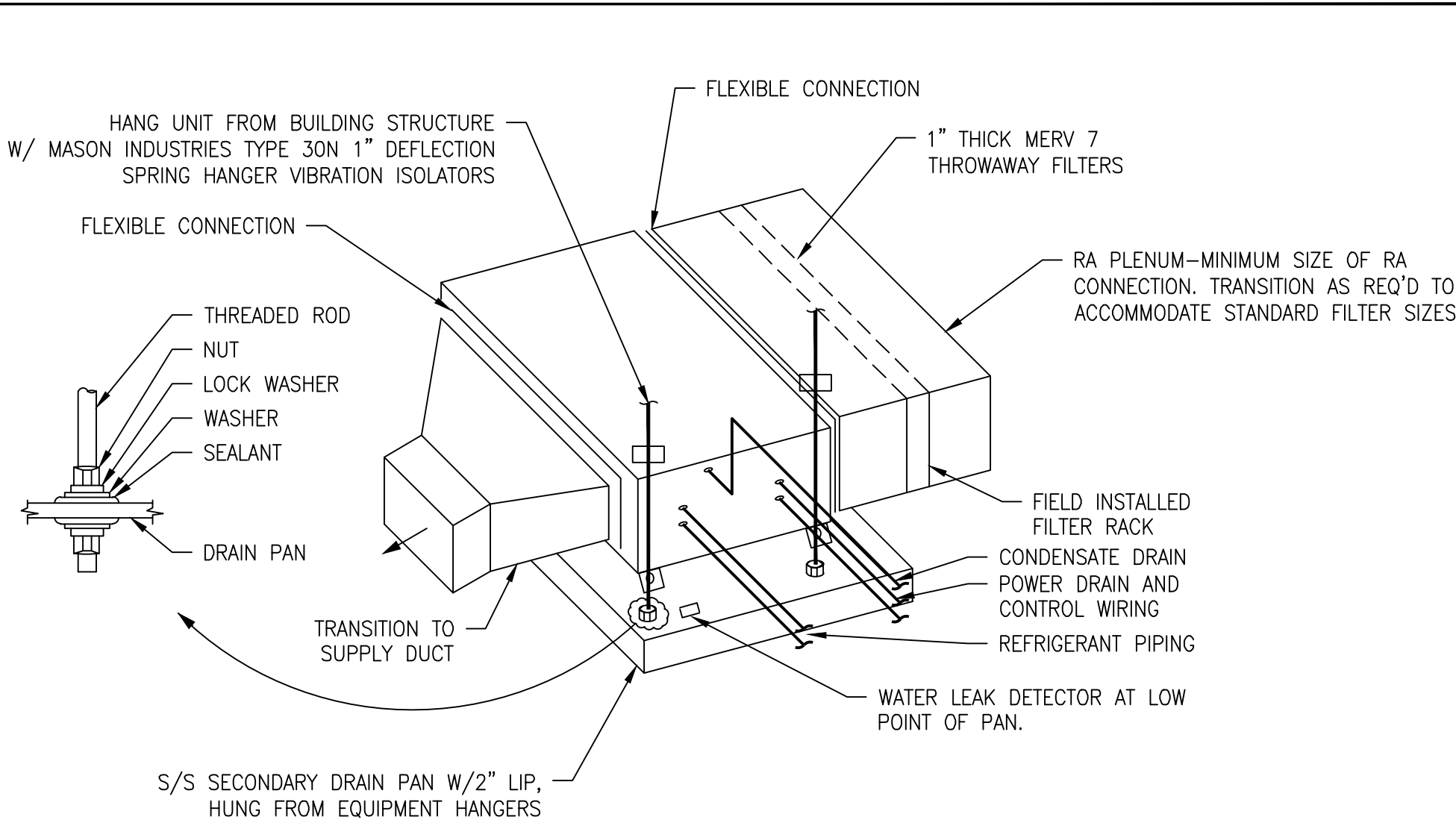
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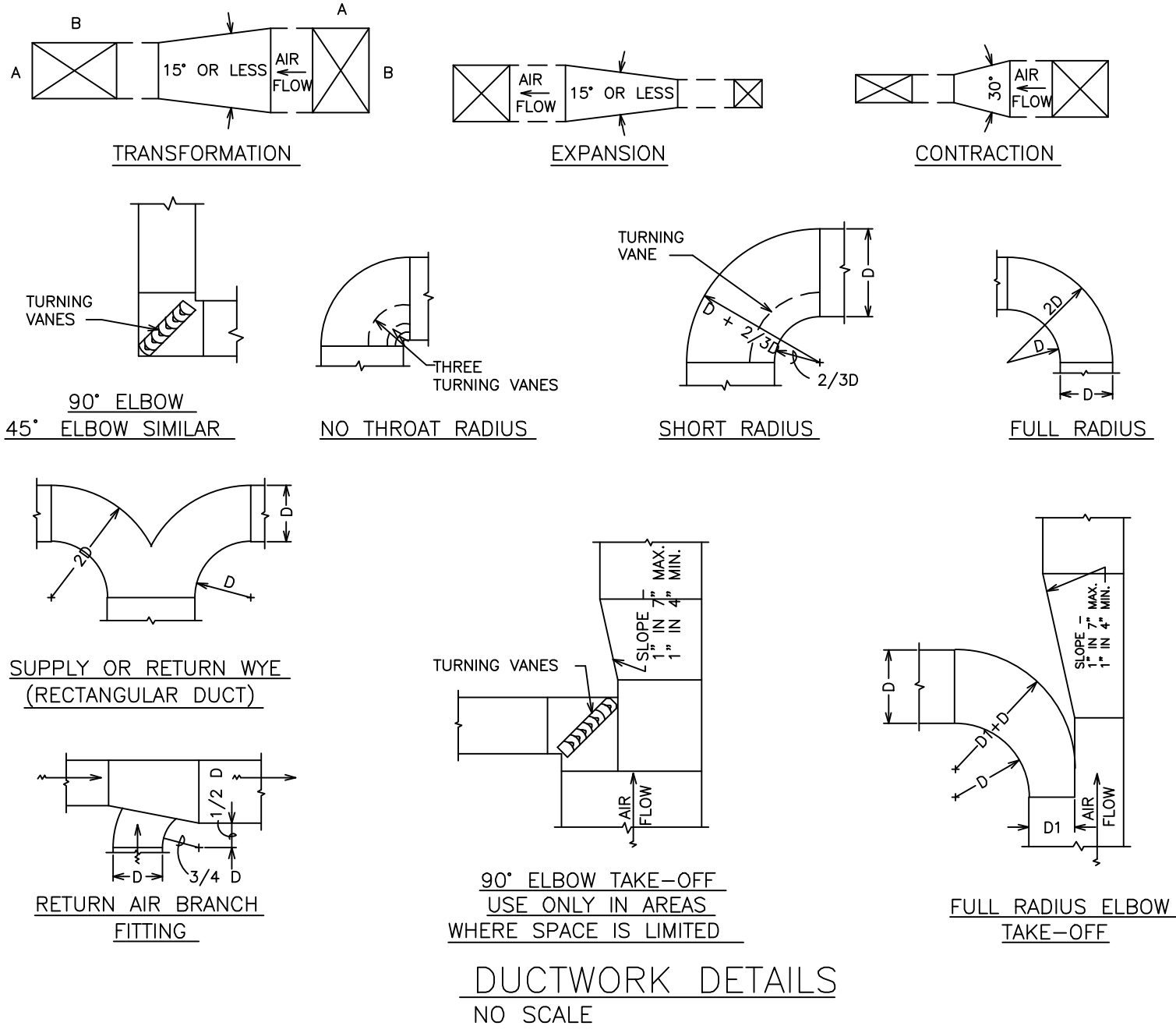
DUCT PENETRATION/CURB DETAIL
SCALE: NONE



ROOF EQUIPMENT SUPPORT RAIL DETAIL
SCALE: NONE



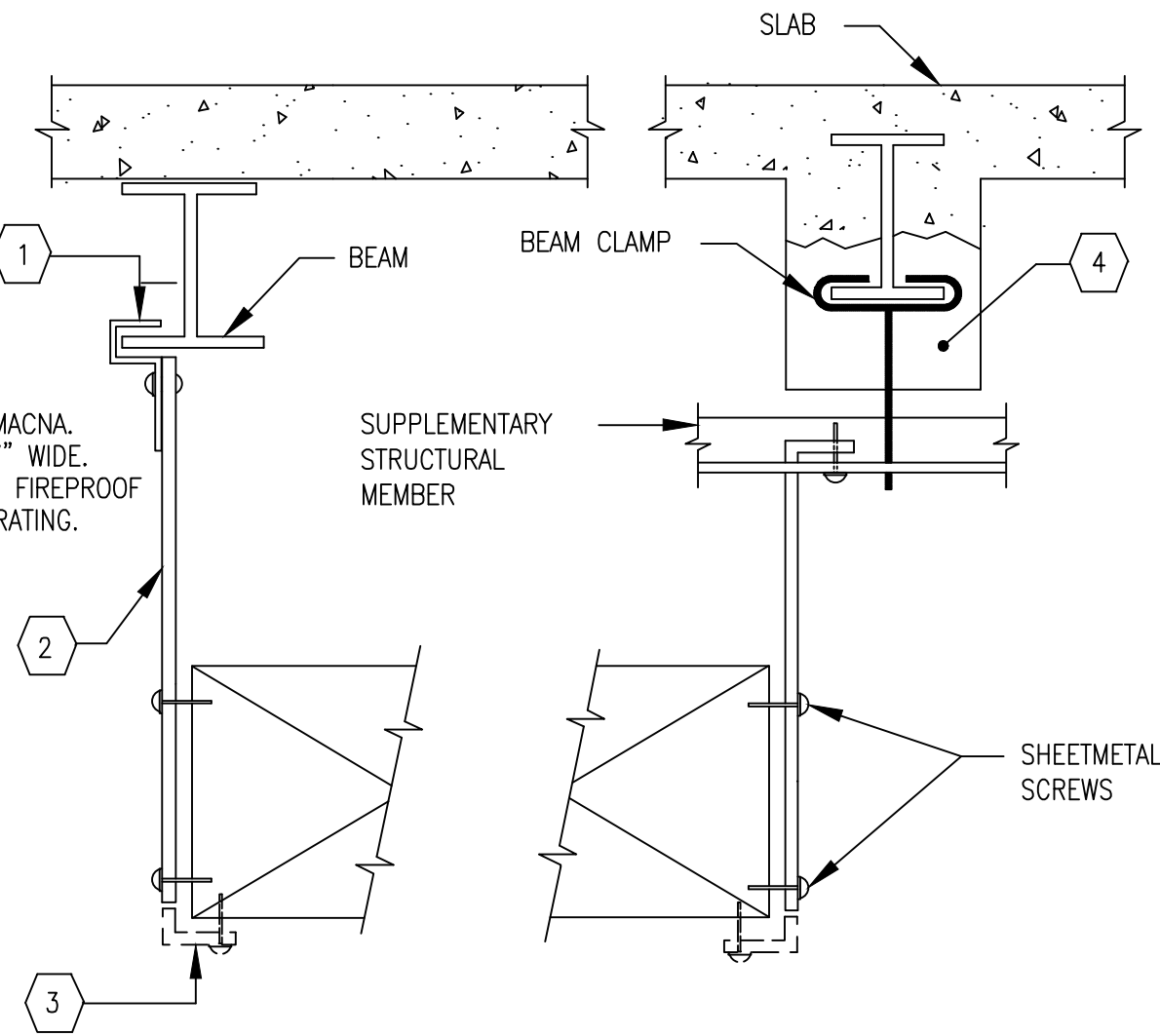
VRF FAN COIL UNIT DETAIL
SCALE: NONE



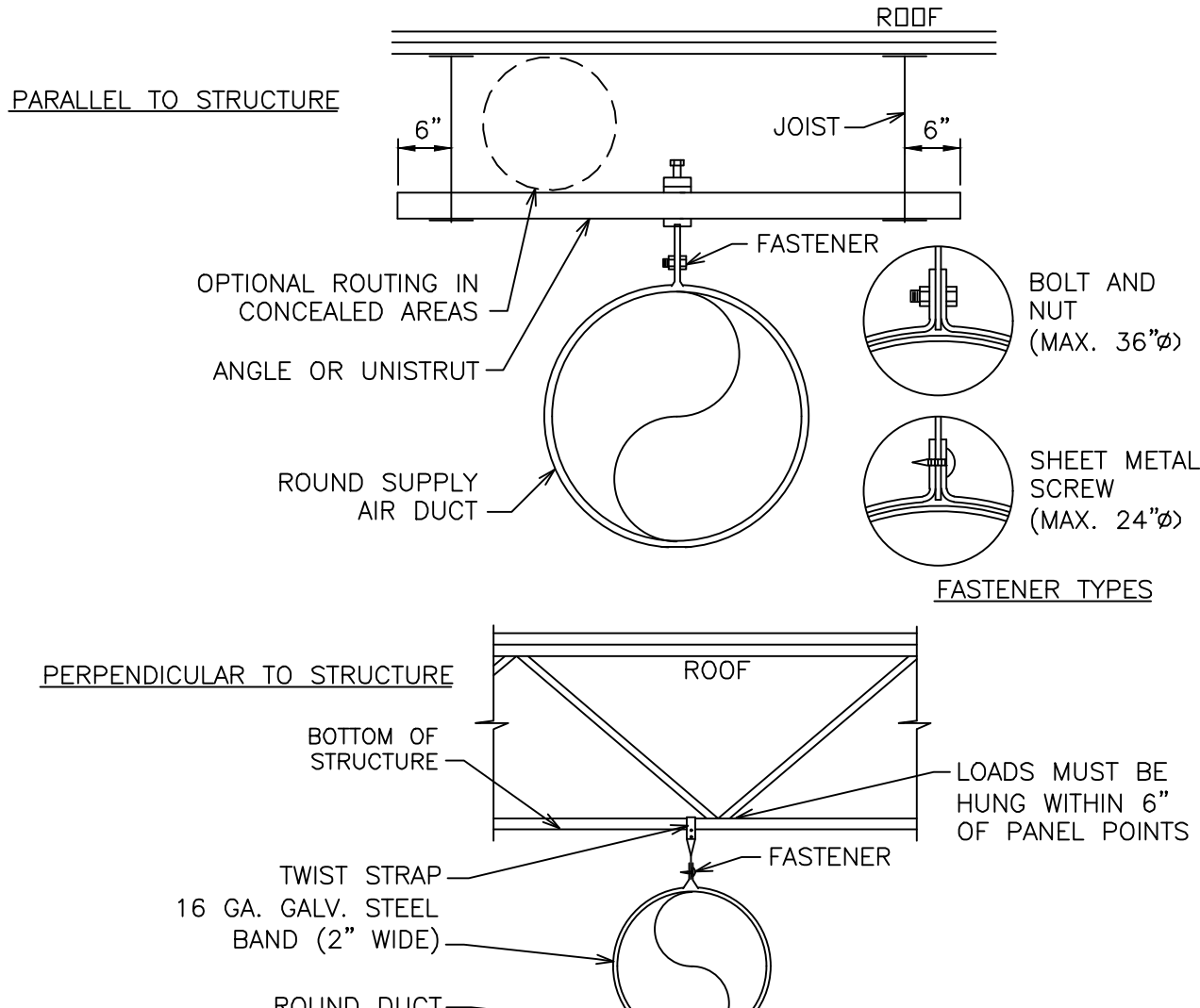
DUCTWORK DETAILS
NO SCALE

- KEY NOTES:
1. H.I.T. OR CADDY BEAM CLIP FOR APPROPRIATE BEAM THICKNESS.
 2. BAND IRON HANGER PER CODE OR SMACNA.
 3. TURN UNDER WHEN DUCT IS OVER 47" WIDE.
 4. TO BE REPLACED WITH METAL LATH & FIREPROOF PLASTER TO ACHIEVE ORIGINAL FIRE RATING.

- NOTES
1. PROVIDE SEISMIC RESTRAINTS IF REQUIRED IN ACCORDANCE WITH THE SPECIFICATIONS.

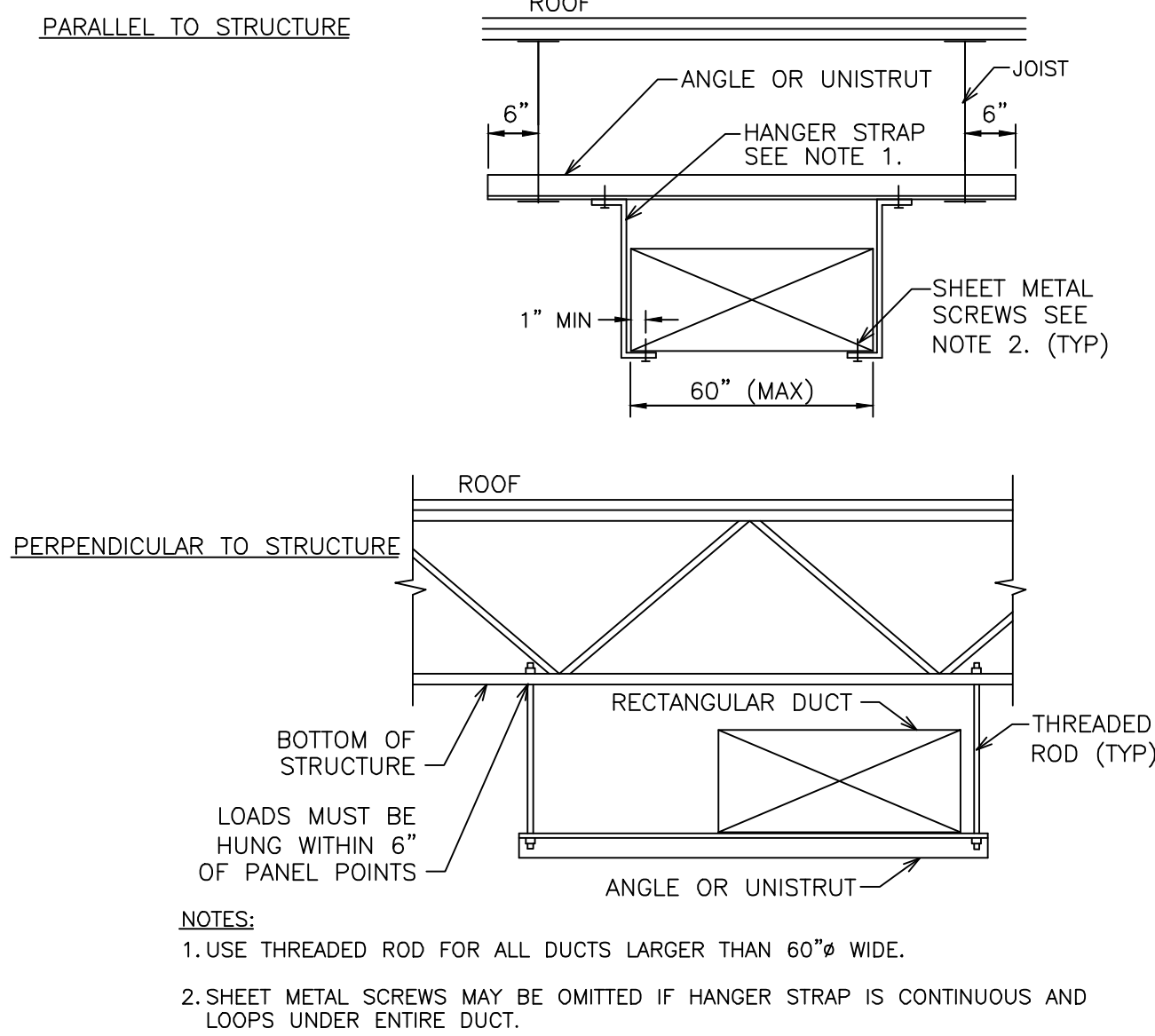


METHOD OF HANGING DUCTWORK
NO SCALE

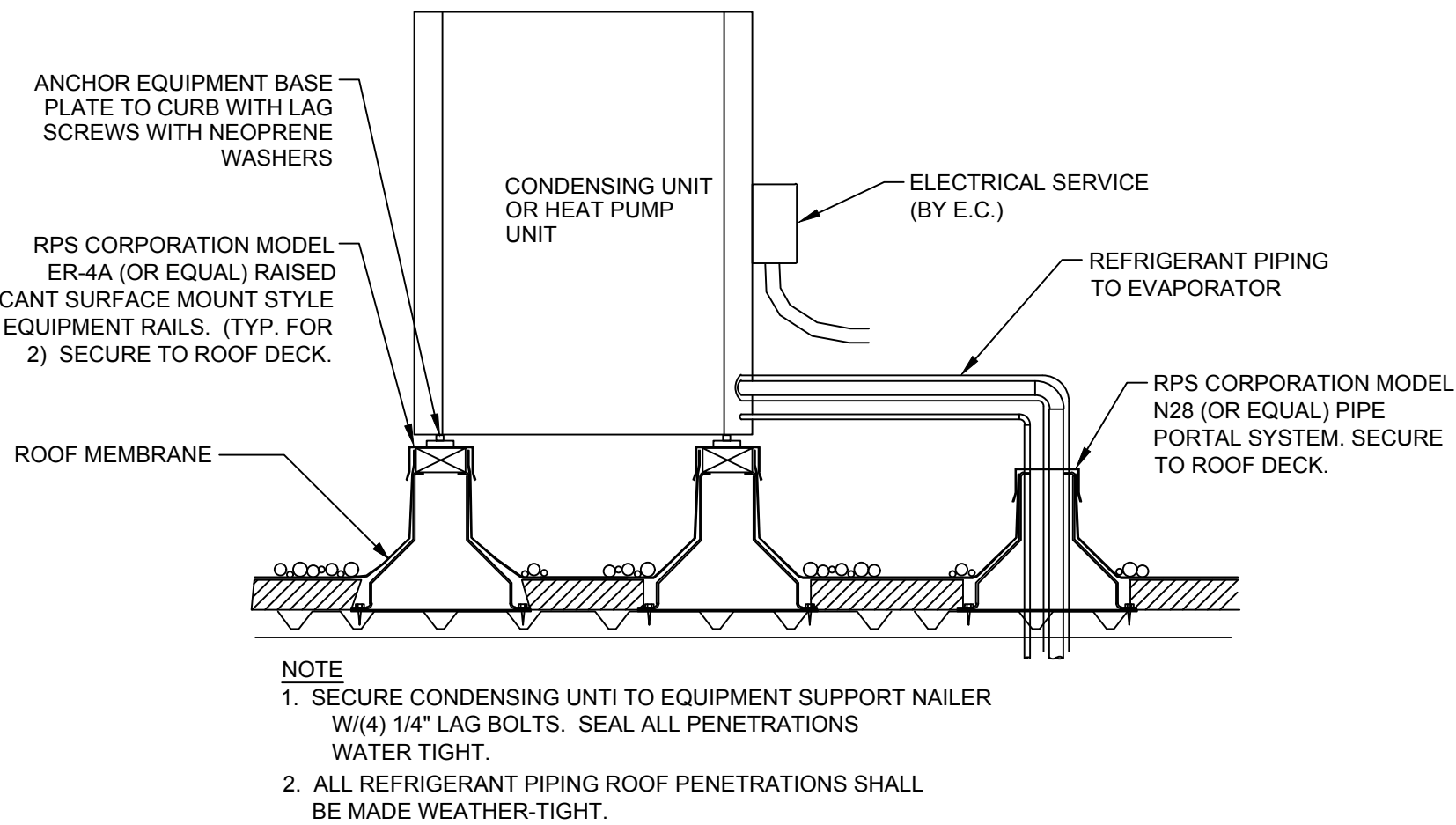


- NOTES:
1. FOR DUCTS LARGER THAN 36", USE TWO HANGER RODS, WIRES OR STRAPS TO SUPPORT DUCT FROM EACH SIDE.

ROUND DUCT SUPPORT DETAIL

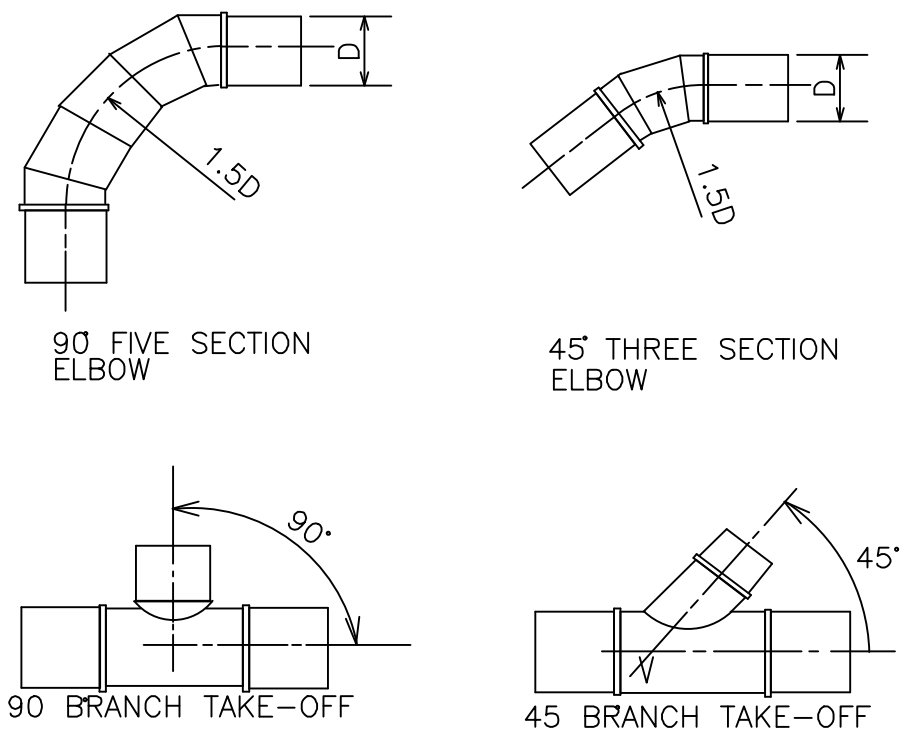


RECTANGULAR DUCT SUPPORT DETAIL
NO SCALE



- NOTE
1. SECURE CONDENSING UNIT TO EQUIPMENT SUPPORT NAILER W/ (4) 1/4" LAG BOLTS. SEAL ALL PENETRATIONS WATER TIGHT.
 2. ALL REFRIGERANT PIPING ROOF PENETRATIONS SHALL BE MADE WEATHER-TIGHT.

ROOF-MOUNTED OUTDOOR UNIT
SCALE: NONE



TYPICAL ROUND DUCT FITTINGS
NO SCALE

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PROPOSED NEW FACILITY
ELLENVILLE FIRE DISTRICT
203 S. MAIN ST. NYS ROUTE 209
ELLENVILLE, NY 12428

MECHANICAL DETAILS

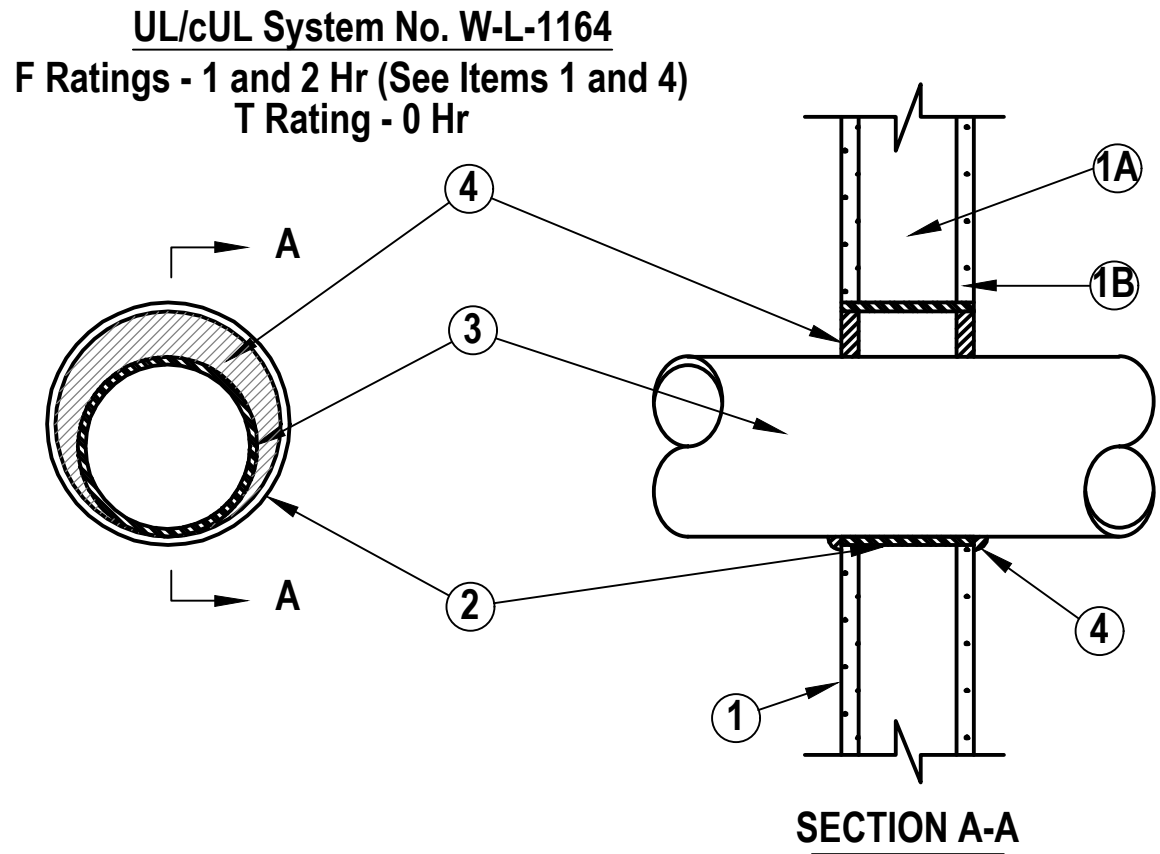
PROJECT No. 2501
EMTEC-7611

CHECKED BY: MF/APS

DRAWING:

M-5.2

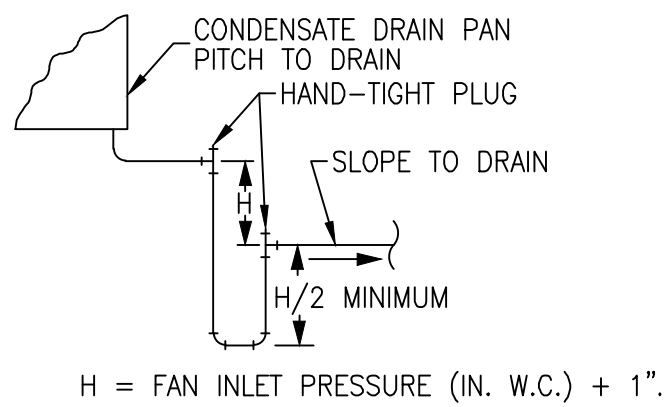
EMTEC PROJECT NO. 7611 DRAWN BY: MF CHECKED BY: APS



- Wall Assembly The 1 or 2 hr fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner described in the individual U400 Series Wall or Partition Design in the UL Fire Resistance Directory and shall include the following construction features:
 - Studs –Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. lumber spaced 16 in. OC. Steel studs to be min 2-1/2 in. wide and spaced max 24 in. OC. When steel studs are used and the diam of opening exceeds the width of stud cavity, the opening shall be framed on all sides using lengths of steel stud installed between the vertical studs and screw attached to the steel studs at each end. The framed opening in the wall shall be 4 to 6 in. wider and 4 to 6 in. higher than the diam of the penetrating item such that, when the penetrating item is installed in the opening, a 2 to 3 in. clearance is present between the penetrating item and the framing on all four sides.
 - Gypsum Board – The gypsum wallboard type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual U300 or U400 Series Design in the UL Fire Resistance Directory. Max diam of opening in steel stud walls is 32in.. Max diam of openings in wood stud walls is 14-1/2 in.The hourly F Rating of the firestop system is equal to the hourly fire rating of the wall assembly in which it is installed.
- Steel Sleeve – Nom 32 in. diam (or smaller) Schedule 40 (or heavier) steel pipe sleeve friction fit in nom 32 in. diam circular opening cut through gyp-sum wallboard layers. Length of steel sleeve to be equal to thickness of wall.
- Through-Penetrant – One metallic pipe, conduit or tubing installed either concentrically or eccentrically within the firestop system. The annular space between pipe, conduit or tubing and the steel sleeve shall be min of 0 in. (point contact) to max 1-7/8 in. Pipe, conduit or tubing to be rigidly supported on both sides of wall assembly. The following types and sizes of metallic pipes, conduits or tubing may be used:
 - Steel Pipe – Nom 30 in. diam (or smaller) Schedule 10 (or heavier) steel pipe.
 - Iron Pipe – Nom 30 in. diam (or smaller) service weight (or heavier) cast iron soil pipe or Class 50 (or heavier) ductile iron pressure pipe.
 - Conduit – Nom 4 in. diam (or smaller) steel electrical metallic tubing.
 - Copper Tubing – Nom 6 in. diam (or smaller) Type L (or heavier) copper tubing.
 - Copper Pipe – Nom 6 in. diam (or smaller) Regular (or heavier) copper pipe.
- Fill, Void or Cavity Material–Sealant – Min 5/8 in. and 1-1/4 in. thickness of fill material applied within annulus, flush with both surfaces of wall assembly for 1 or 2 hr rated walls, respectively. Min 1/2 in. diam bead of caulk applied to the penetrant/wallboard interface at the point contact location on both sides of wall.

FIRESTOP OF METAL PIPING THROUGH GYPSUM RATED WOOD OR STEEL WALL DETAIL

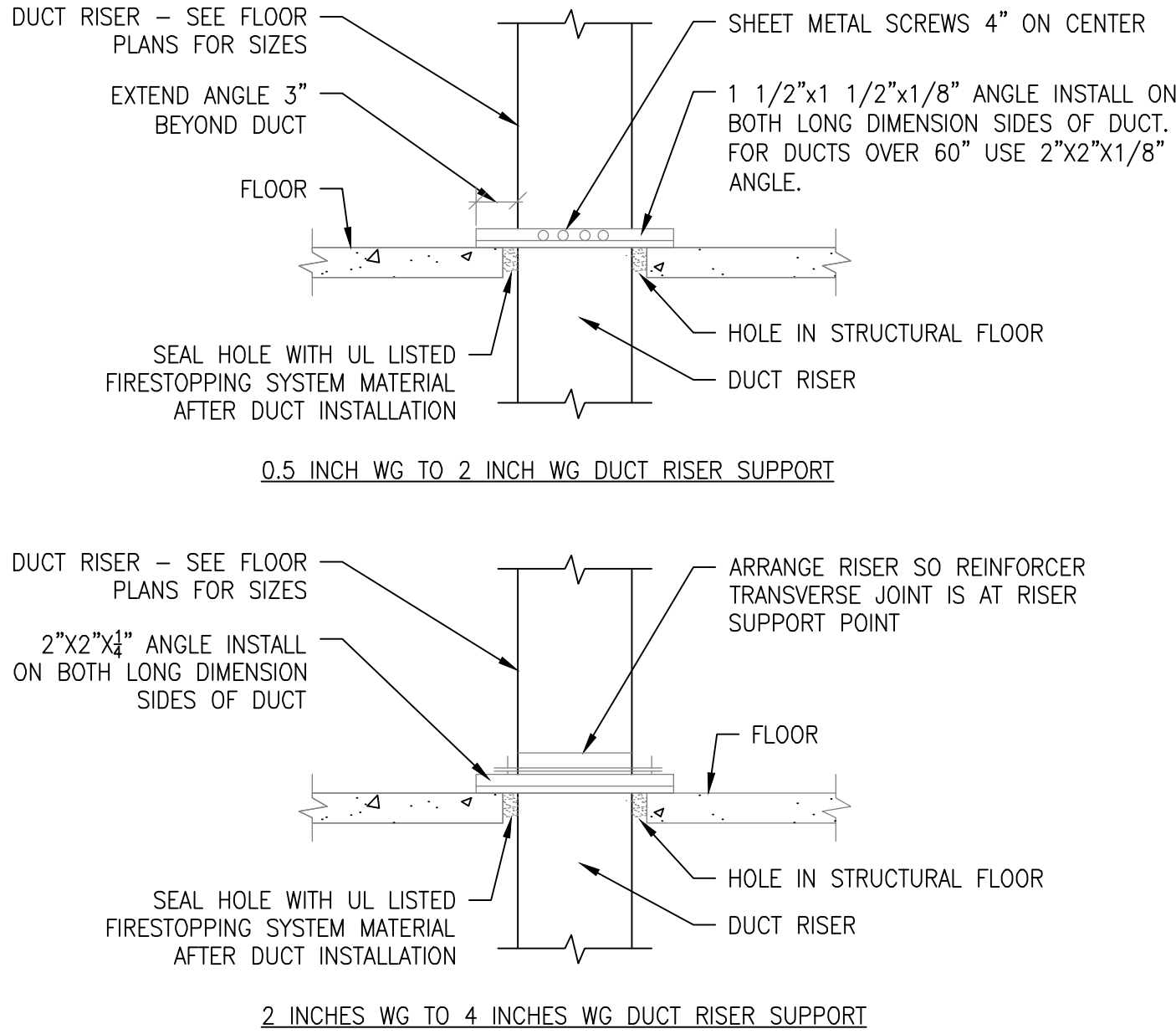
N.T.S.



CONDENSATE TRAP DETAIL (DRAW-THRU)

SCALE: NONE

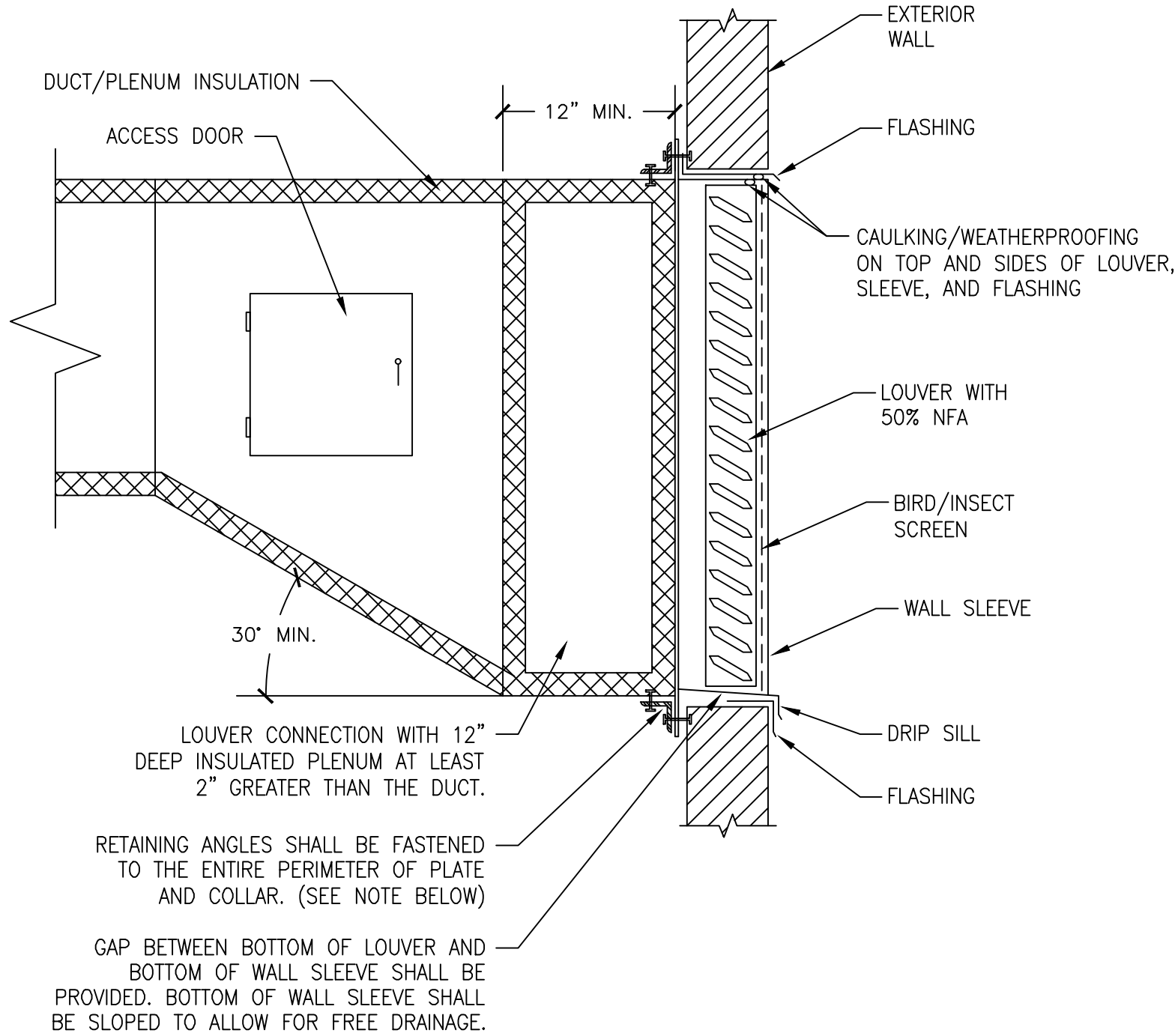
REFER TO ARCHITECTURAL PLANS FOR 1 HR & 2 HR RATED WALLS AND FLOOR ASSEMBLIES AND ASSOCIATED ARCHITECTURAL DETAIL SHEETS



NOTE: ALL DUCT WORK RISERS WHICH ARE RUN EXPOSED, SUCH AS THRU ATTIC FLOORS AND FAN ROOM FLOORS SHALL BE PROVIDED WITH A 3" HIGH CONCRETE CURB AROUND OPENING FOR DUCT.

DUCT RISER SUPPORT DETAILS

SCALE: NONE

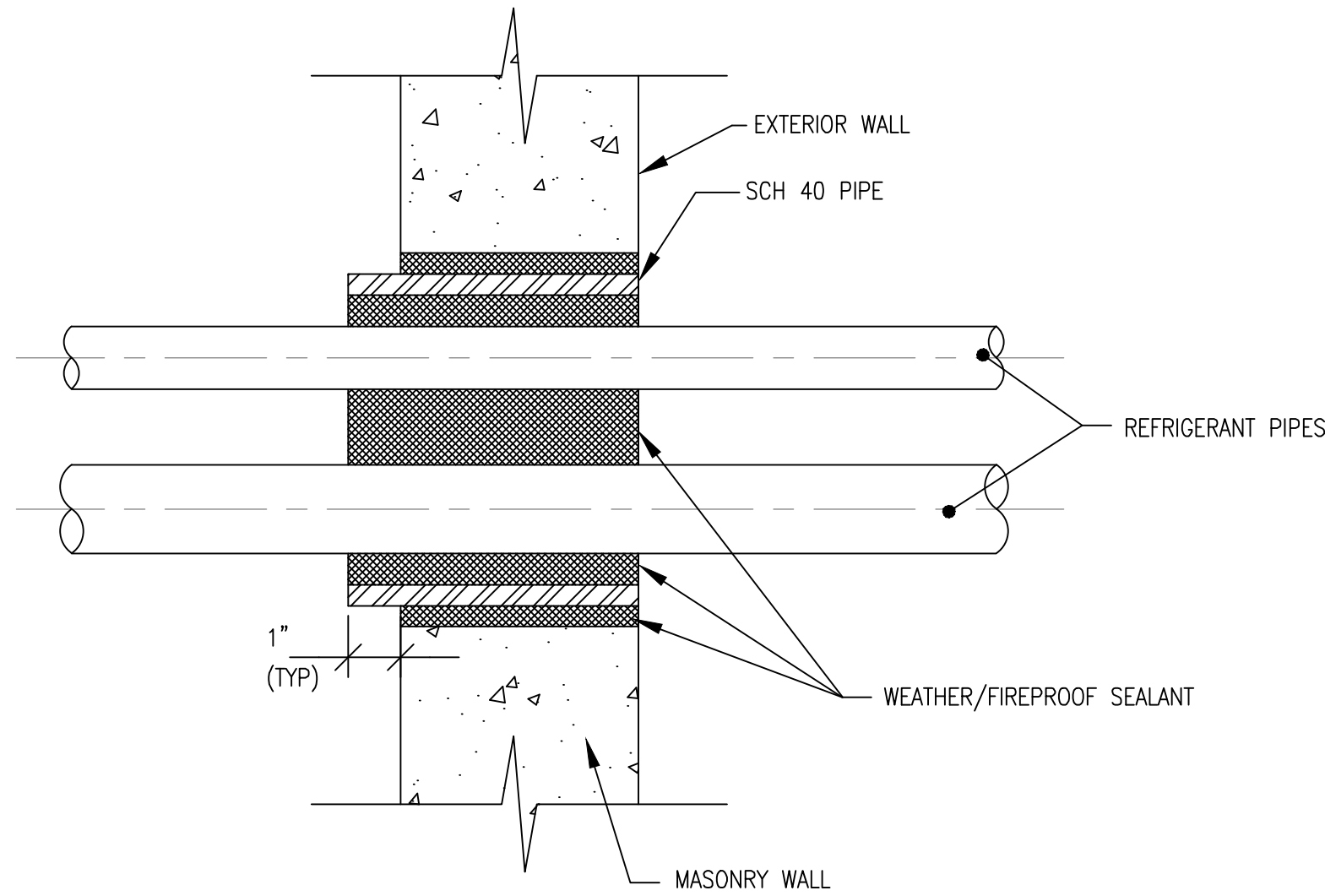


NOTES:

- RETAINING ANGLES SHALL BE SECURED TO COLLAR, SLEEVE, AND/OR PLATE EITHER 3/4" TACK WELDS, NO. 10 SHEET METAL SCREWS, 1/4" DIA. NUTS AND BOLTS, OR 3/16" STEEL POP RIVETS; ALL 8" ON CENTER.
- ALL EXTERIOR LOUVERS FOR BUILDING VENTILATION SYSTEMS SHALL CONFORM TO THE REQUIREMENTS OF THE BUILDING CODE AND COMPLY WITH THE REQUIREMENTS OF AMCA 550.

INSULATED PLENUM BOX CONNECTION TO EXTERIOR LOUVER

NOT TO SCALE



EXTERIOR PIPE SLEEVE DETAIL

NO SCALE

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NOTES:

- All penetrations through rated walls, including but not limited to Boiler Rooms, Mechanical Equipment Rooms and Rated Shafts, shall be fire stopped per details sheets included in this drawing set. Refer to Architectural drawings for all wall ratings. Detail sheets show only a few common applications however, they do not show all applications. Contractor must use only firestop products that have been UL 1479 or ASTM E 814 tested for specific fire-rated construction conditions conforming to construction assembly type, penetrating item type, annular space requirements, and fire-rating involved for each separate instance.
- Details shown are typical details. If field conditions do not match requirements of typical details, approved alternate details shall be utilized. Field conditions and dimensions need to be verified for compliance with the details, including but not limited to the following:
 - Minimum and maximum Width of Joints
 - Type and thickness of fire-rated construction. The minimum assembly rating of the firestop assembly shall meet or exceed the highest rating of the adjacent construction.
- If alternate details matching the field conditions are not available, manufacturer's engineering judgment drawings are acceptable. Drawings shall follow the International Firestop Council (IFC) Guidelines for Evaluating Firestop Systems Engineering Judgments.
- References:
 - 2013 Underwriter's Laboratories Fire Resistance Directory, Volume 2
 - NFPA 101 Life Safety Code
 - All governing local and regional building codes
- Firestop System installation must meet requirements of ASTM E-814 (UL 1479) tested assemblies that provide a fire rating equal to that of construction being penetrated.
- All rated through-penetrations shall be prominently labeled with the following information:
 - ATTENTION: Fire Rated Assembly
 - UL System #
 - Product(s) used
 - Hourly Rating (F-Rating)
 - Installation Date

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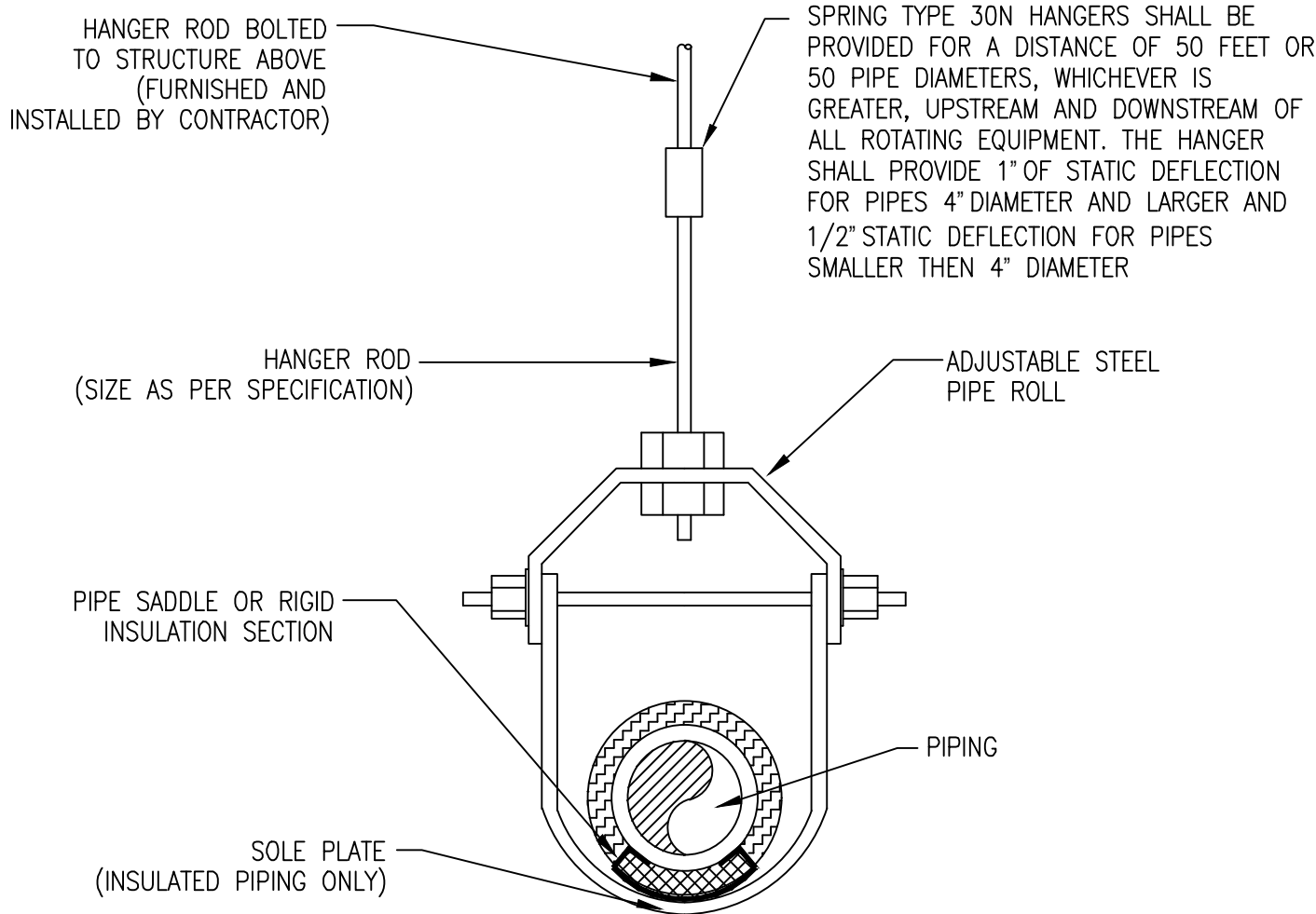
PROJECT No. 2501
EMTEC.1611

CHECKED BY: MF/APS

DRAWING:

M-5.3

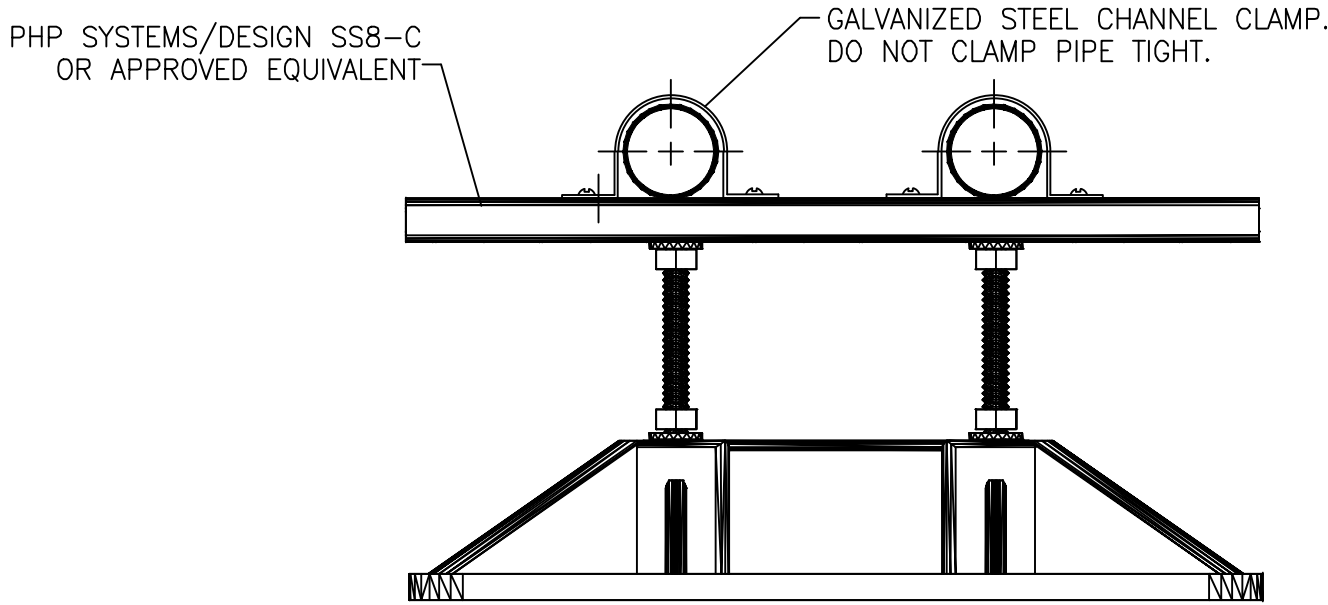
EMTEC PROJECT NO. 7611 DRAWN BY: MF CHECKED BY: APS



MAXIMUM HORIZONTAL HANGER SPACING (FEET)			
PIPE SIZE	STEEL	COPPER	MINIMUM ROD SIZE INCHES
1/2	6	5	3/8
3/4	6	5	3/8
1	6	6	3/8
1 1/4	6	6	3/8
1 1/2	6	6	3/8
2	7	7	3/8
2 1/2	10	8	1/2
3	10	10	1/2
4	10	10	5/8
5	10	10	5/8
6	10	10	3/4
8	12	10	7/8
10	12	10	7/8

SUSPENDED PIPING SUPPORT

NOT TO SCALE



MAXIMUM HORIZONTAL HANGER SPACING (FEET)			
PIPE SIZE	STEEL	COPPER	MINIMUM ROD SIZE INCHES
1/2	6	5	3/8
3/4	6	5	3/8
1	6	6	3/8
1 1/4	6	6	3/8
1 1/2	6	6	3/8
2	7	7	3/8
2 1/2	10	8	1/2
3	10	10	1/2
4	10	10	5/8
5	10	10	5/8
6	10	10	3/4
8	12	10	7/8
10	12	10	7/8

PIPING SUPPORT DETAIL

SCALE: NONE

- LAYOUT ISOLATION PADS, ACCORDING TO DESIGN AND LAYOUT.
- LAYOUT SUPPORTS PER SPACING SPECIFICATION ON PLAN.
- RUN PIPE ON CHANNEL.
- CLAMP DOWN WITH CHANNEL CLAMP.
- ADJUST CHANNEL UNTIL HEIGHT AND WEIGHT OF SYSTEM IS EVENLY DISTRIBUTED.

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ELLENVILLE, NY 12428

MECHANICAL DETAILS

PROJECT No. 2501
EMTEC-7611

CHECKED BY: MF/APS

DRAWING:

M-5.4

EMTEC PROJECT NO. 7611 DRAWN BY: MF CHECKED BY: APS

FOR QUESTIONS, CALL THE
Long Island Office
REGION 43
PHONE: (516) 513 - 5398
EMAIL: reg43@captivefire.com

PATENT NUMBERS
AC-PSP (UNITED STATES) - US PATENT 7963830 B2
AC-PSP WALL (CANADA) - CA PATENT 2582059
AC-PSP ISLAND (CANADA) - CA PATENT 2582030

HOOD INFORMATION - JOB#8719706

HOOD NO	TAG	MODEL	MANUFACTURER	LENGTH	MAX COOKING TEMP	TYPE	APPLIANCE DUTY	DESIGN CFM/FT	TOTAL EXH CFM	RISERS						TOTAL SUPPLY CFM	HOOD CONSTRUCTION	END TO END	RDV
										WIDTH	LENGTH	HEIGHT	DIA	CFM	VEL				
1	Left	5424ND-2-PSP-F	CAPTIVEAIRE	8' 0"	600 DEG	I	HEAVY	275	2200		4'	14"	2200	2058	-1.041'	1892	430 SS WHERE EXPOSED	LEFT	ALONE
2	Right	5424ND-2-PSP-F	CAPTIVEAIRE	8' 0"	600 DEG	I	HEAVY	275	2200		4'	14"	2200	2058	-1.041'	2068	430 SS WHERE EXPOSED	RIGHT	ALONE

HOOD INFORMATION

HOOD NO	TAG	TYPE	FILTER(S)			QTY	LIGHT(S)			WIRE GUARD	LOCATION	SIZE	UTILITY CABINET(S)		ELECTRICAL	SWITCHES	FIRE SYSTEM HANGING PIPING	HOOD
			QTY	HEIGHT	LENGTH		QTY	TYPE	EFFICIENCY @ 7 MICRONS				TYPE	SIZE	MODEL #	QUANTITY		
1	Left	CAPTATE SOLID FILTER	5	20"	16"				85% SEE FILTER SPEC	2	RECESSED ROUND	ND					YES	464 LBS
2	Right	CAPTATE SOLID FILTER	5	20"	16"				85% SEE FILTER SPEC	2	RECESSED ROUND	ND	RIGHT	12"x54"x24"	TANK FS		YES	899 LBS

HOOD OPTIONS

HOOD NO	TAG	OPTION
1	Left	FIELD WRAPPER 18.00" HIGH FRONT. BACKSLASH 8.00" HIGH X 205.00" LONG 430 SS VERTICAL. LEFT SIDESPLASH 8.00" HIGH X 54.00" LONG 430 SS VERTICAL. LEFT END STANDOFF (FINISHED) 1" WIDE 54" LONG INSULATED. SENSOR-CV. LEFT WALL AS END PANEL. FIELD WRAPPER 18.00" HIGH FRONT, RIGHT. SENSOR-CV.
2	Right	

PERFORATED SUPPLY PLENUM(S)

HOOD NO	TAG	PGS	LENGTH	WIDTH	HEIGHT	TYPE	RISER(S)				
							WIDTH	LENG	DIA	CFM	SP
1	Left	Front	97'	20'	6'	MUA	12"	24"		630	0.177"
						MUA	12"	24"		630	0.177"
						MUA	12"	24"		630	0.177"
						MUA	12"	28"		689	0.180"
2	Right	Front	108'	20'	6'	MUA	12"	28"		689	0.180"
						MUA	12"	28"		689	0.180"
						MUA	12"	28"		689	0.180"

CLEARANCE TO COMBUSTIBLES

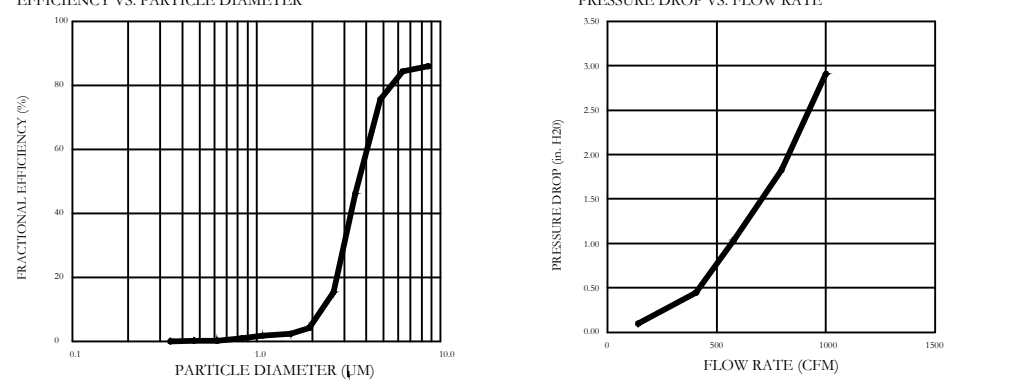
HOODS #	SURFACE	CLEARANCE
1	TOP	18"
	FRONT	18"
	BACK	18"
	LEFT	0"
2	RIGHT	18"
	TOP	18"
	FRONT	0"
	BACK	18"
	LEFT	18"
	RIGHT	0"

- #6" CLEARANCE TO COMBUSTIBLES CONFORMS TO UL710 STANDARD.
- HOOD MOUNTED UTILITY CABINETS REQUIRE 36" SERVICE CLEARANCE.

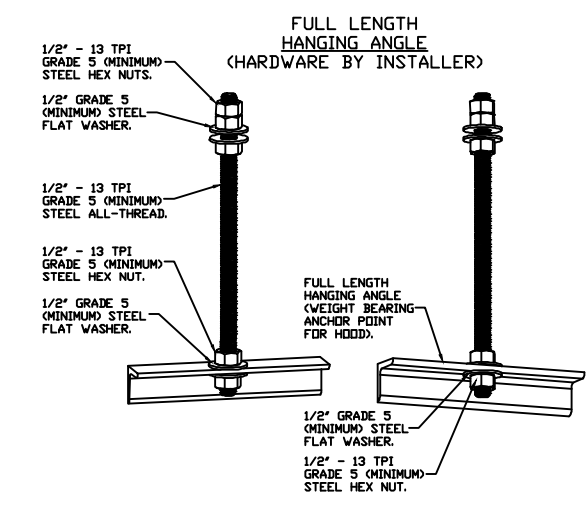
SPECIFICATION: CAPTATE® GREASE-STOP® SOLID FILTER

THE CAPTATE GREASE-STOP SOLID FILTER IS A SINGLE-STAGE FILTER FEATURING A UNIQUE S-Baffle DESIGN IN CONJUNCTION WITH A SLOTTED REAR Baffle DESIGN, TO DELIVER EXCEPTIONAL FILTRATION EFFICIENCY.
FILTER IS STAINLESS STEEL CONSTRUCTION, AND SIZED TO FIT INTO STANDARD 2-INCH DEEP HOOD CHANNEL(S).
UNITS SHALL INCLUDE STAINLESS STEEL HANDLES AND A FASTENING DEVICE TO SECURE THE TWO COMPONENTS WHEN ASSEMBLED.

GREASE EXTRACTION EFFICIENCY PERFORMANCE SHALL REMOVE AT LEAST 75% OF GREASE PARTICLES FIVE MICRONS IN SIZE, AND 85% GREASE PARTICLES SEVEN MICRONS IN SIZE AND LARGER, WITH A CORRESPONDING PRESSURE DROP NOT TO EXCEED 1.0 INCHES OF WATER GAUGE.
THE CAPTATE GREASE-STOP SOLID WAS TESTED TO ASTM STANDARD ASTM F2019-05. MANUFACTURER APPROVED FOR USE IN SOLID FUEL APPLICATIONS AS A SPARK ARRESTER.

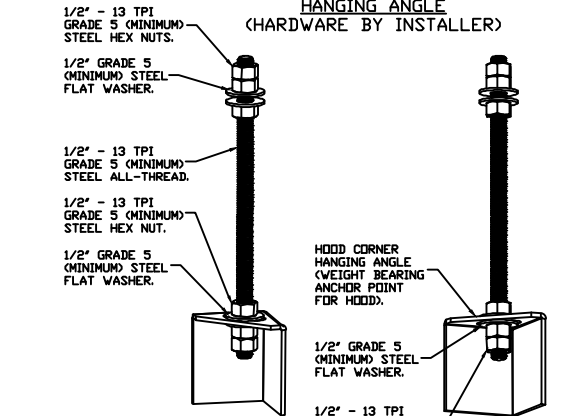


CAPTATE FILTERS ARE BUILT IN COMPLIANCE WITH:
NFPA #96.
NSF STANDARD #2.
UL STANDARD #645.
INT. MECH. CODE (IMC).
ULC-564.9.



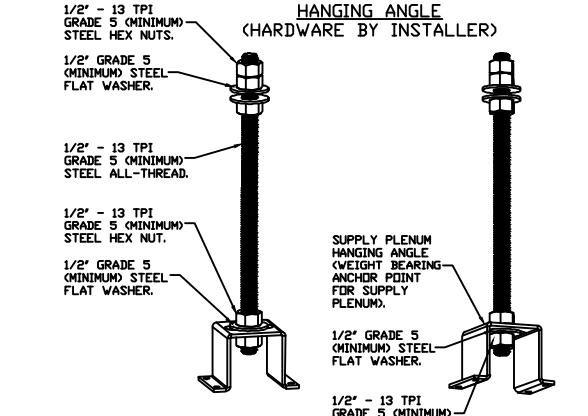
ASSEMBLY INSTRUCTIONS

HANGING ANGLE MUST BE SUPPORTED WITH 1/2" - 13 TPI GRADE 5 (MINIMUM) ALL-THREAD, SANDWICH HANGING ANGLES AND CEILING ANCHOR POINTS WITH 1/2" GRADE 5 (MINIMUM) STEEL FLAT WASHERS AND 1/2" - 13 TPI GRADE 5 (MINIMUM) HEX NUTS AS SHOWN. MUST USE DOUBLED HEX NUT CONFIGURATION ABOVE CEILING ANCHORS. SINGLE HEX NUT BENEATH HANGING ANGLE IS ACCEPTABLE FOR FULL LENGTH HANGING ANGLES. MAINTAIN 1/4" OF EXPOSED THREADS BENEATH BOTTOM HEX NUT. TORQUE ALL HEX NUTS TO 57 FT-LBS.



ASSEMBLY INSTRUCTIONS

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REVISIONS

NO.	DESCRIPTION	DATE
1		
2		
3		
4		

CAPTIVE

Long Island Office

535 Boardwalk Rd., Suite B-7, Melville, NY 11747 PHONE: (516) 513-5398 FAX: 9102270967 EMAIL: reg43@captivefire.com

DATE: 6/10/2026

DWG.#: 8719706

DRAWN BY: JC-43

SCALE: 3/4" = 1'-0"

MASTER DRAWING

SHEET NO. 1

KITCHEN HOOD

NYS CODE COMPLIANCE

KITCHEN EXHAUST HOODS SHALL COMPLY WITH THE FOLLOWING 2020 NEW YORK STATE (2020-NYS) CODE SECTIONS:

2020-NYSFC - SECTION 607
2020-NYSMC - SECTION 507.1.1 (FAN)
2020-NYSFC - SECTION 505.1.1 (INTERLOCK)
2020-NYSFC - SECTION 903.2.11.5 (FIRE PROTECTION)
2020-NYSFC - SECTION 904.2.2 (HOOD SPRINKLER)
2020-NYSMC - SECTION 306
2020-NYSMC - CHAPTERS 5,6 AND 7

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SEAL

STATE OF NEW YORK
ANDREW P. SARGENT
LICENSED PROFESSIONAL ENGINEER
000741

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ELLENVILLE, NY 12428

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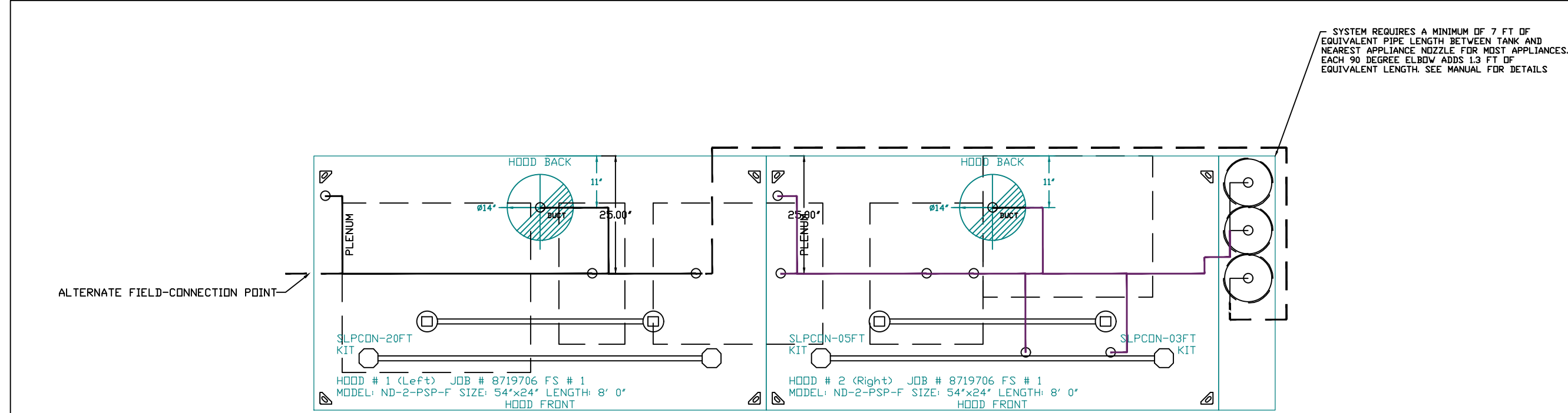
PROJECT No. 2501
EMTEC 7611

CHECKED BY: MF/APS

DRAWING: M-5.5

EMTEC PROJECT NO. 7611 DRAWN BY: MF CHECKED BY: APS

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- NOTES
- FIELD PIPE DROPS AS SHOWN
 - PIPING, ELBOWS, TEES, AND NOZZLES SUPPLIED BY CAS.
 - FIELD INSTALLED DROP: FACTORY WILL PROVIDE QTY 2 60IN LONG PIECES OF CHROME PLATED PIPING SHIPPED LOOSE TO BE FIELD-INSTALLED.
 - SHIP LOOSE DROP: FACTORY WILL PROVIDE THE EXACT CHROME PIPE LENGTH NEEDED SHIPPED LOOSE TO BE FIELD-INSTALLED.
 - RELOCATE NOZZLES IF FLOW PATTERN IS BLOCKED BY SHELVEING, SALAMANDERS, ETC.
 - OVERLAPPING COVERAGE SHALL NOT BE USED ON ANY APPLIANCE WITH AN OBSTRUCTION.
 - IF APPLICABLE, EXTENDED PRE-PIPED DROPS ARE SHIPPED LOOSE.
 - FACTORY PIPING EXTENDS A MAXIMUM OF 6" ABOVE THE TOP OF THE HOOD.
 - APPLIANCE DIMENSIONS LISTED REPRESENT THE COOKING SURFACE SIZE, NOT THE OVERALL APPLIANCE SIZE.
 - THIS PRE-ENGINEERED FIRE SYSTEM COMPLIES WITH UL 300 REQUIREMENTS.
 - DL-F NOZZLE PART NUMBER REPLACES 3070-3/8H-10-SS
- JOB #: 8719706
JOB NAME: ELLENVILLE FD - KITCHEN.
- SYSTEM SIZE: TANK-SP-3 DESIGN FP: 46, MAXIMUM FP: 60.
HOOD # 1 8' 0.00" LONG x 54" WIDE x 24" HIGH.
RISER # 1 SIZE: 14" DIA.
HOOD # 1 METAL BLOW-OFF CAPS INCLUDED.
HOOD # 2 8' 0.00" LONG x 54" WIDE x 24" HIGH.
RISER # 1 SIZE: 14" DIA.
HOOD # 2 METAL BLOW-OFF CAPS INCLUDED.

HEAVY-DUTY APPLIANCES (RATED 600°F) WILL REQUIRE AN ADDITIONAL DOWNSTREAM FIRESTAT IN THE EVENT THAT THE DUCTWORK CONTAINS ANY HORIZONTAL RUNS OVER 25 FT IN LENGTH.

MEDIUM TO LIGHT-DUTY APPLIANCES (RATED 450°F) WILL NOT REQUIRE ANY ADDITIONAL DOWNSTREAM DETECTION.

AGENT DISTRIBUTION PIPING LIMITATIONS	
PIPE SECTION	MAX PIPE LENGTH (FT)
MAX SUPPLY LINE TO FIRST OVERLAPPING NOZZLE	42
OVERLAPPING NOZZLE APPLIANCE BRANCH	10
DEDICATED NOZZLE APPLIANCE BRANCH	10

LEGEND - FIRE CABINET TANK SYSTEM

- 4 GALLON TANK.
- PRIMARY ACTUATOR RELEASE.
- SECONDARY ACTUATOR RELEASE.
- PRESSURE SUPERVISION SWITCH.
- PRIMARY HOSE ASSEMBLY.
- SECONDARY HOSE ASSEMBLY.
- REMOTE MANUAL ACTUATION DEVICE.

FIRE SYSTEM INFORMATION - JOB#8719706

FIRE SYSTEM NO	TAG	TYPE	SIZE	MAX FR	DESIGN FP	INSTALLATION SYSTEM	LOCATION ON HOOD
1	FS-1	TANK FS	4.0/4.0/4.0	60	46	FIRE CABINET RIGHT	RIGHT, HOOD 2

GAS VALVE(S)

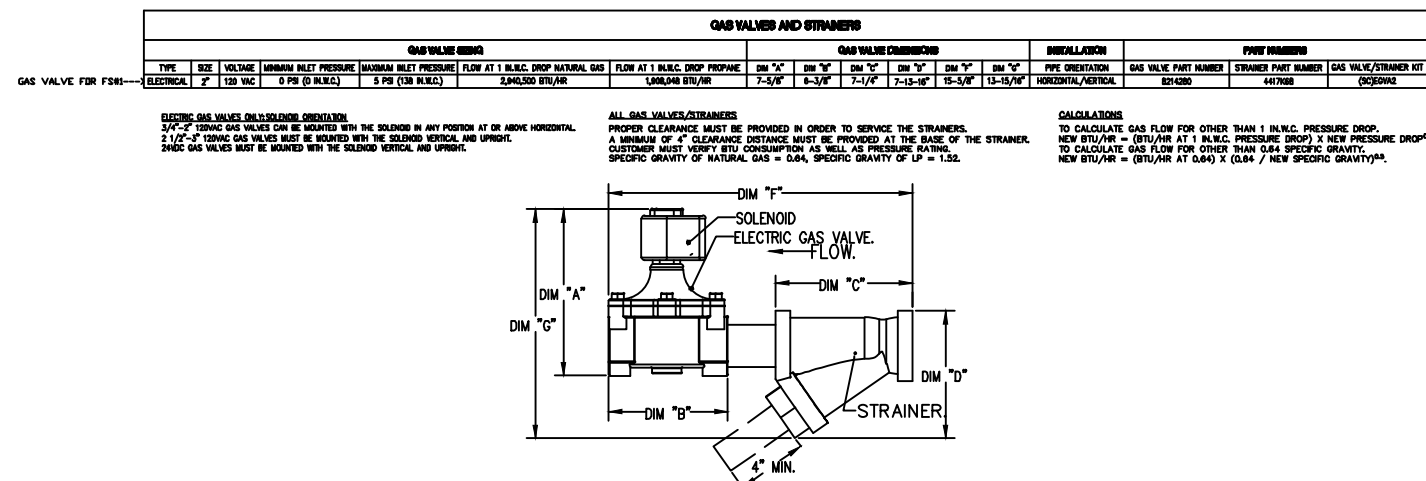
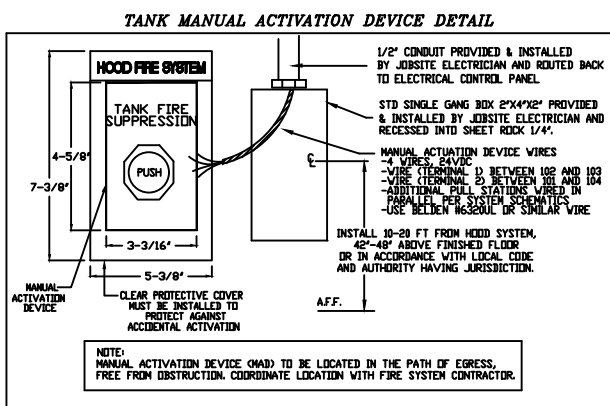
FIRE SYSTEM NO	TAG	TYPE	SIZE	SUPPLIED BY
1	FS-1	SC ELECTRICAL	2.000	CAPTIVEAIRE SYSTEMS

FIRE SYSTEM PARTS LIST KEY

FIRE SYSTEM NO	TAG	KEY NUMBER - PART DESCRIPTION	QTY BY FACTORY	QTY BY DIST
1	FS-1	0 - 0 - WK-283952-000 - DISCHARGE ADAPTER, TANK FIRE SUPPRESSION.	3	0
		0 - 0 - TANK STRAP - TANK STRAP - USED FOR TANK FIRE SUPPRESSION.	9	0
		0 - 0 - 32-30002 - QUICK SEAL - 1/2" (UL).	2	0
		0 - 0 - CBI-107 - CHROME PLATED PIPE FITTING 3/8" NPT UNION.	1	0
		34 - 34 - A0034331 - RED COLOR - 24VDC SINGLE ACTION MANUAL ACTUATION DEVICE (PUSH/PULL STATION) WITH PROTECTIVE COVER, ONE (1) NORMALLY OPEN CONTACT.	1	0
		0 - 0 - 361091 - 3/8" BRASS PLUG.	3	0
		0 - 0 - 9055455PC - PRD PRESS 1/2 PRESS X PRESS 90 ELBOW L.D.	10	0
		0 - 0 - TFS-UCTANKBRACKET - TANK BRACKET FOR FIRE SYSTEM TANK INSTALLATION IN UTILITY CABINETS, TANK FIRE SUPPRESSION.	3	0
		0 - 0 - 79580 - 1/2" X 1/2" PRD-PRESS TEE X 1/2" NPT FEMALE CONNECTION, VIEGA.	3	0
		0 - 0 - TANK FIRE SUPPRESSION MAINTENANCE GUIDE UTILITY CABINET LABEL SHEET.	1	0
		0 - 0 - CBI-106 - CHROME PLATED PIPE FITTING 3/8" NPT 90 DEGREE ELBOW.	1	0
		0 - 0 - B1145 - 3/8" BLACK IRON 90 ELL.	4	0
		16 - 16 - 73010 - 1/2" X 3/8" NPT MALE ADAPTER, VIEGA.	11	0
		26 - 26 - GSA-3/8 - QUICK SEAL - 3/8" (UL).	11	0
		0 - 0 - A0034332 - JUNCTION BOX FOR MANUAL PULL STATION, 1.5" DEEP BACK BOX, RED COLOR.	1	0
		0 - 0 - 87-300152-001 - HARDWARE, SVA BOLTS, TANK FIRE SUPPRESSION.	12	0
		0 - 0 - TANK FIRE SUPPRESSION POST-DISCHARGE PROCEDURE UTILITY CABINET LABEL SHEET.	1	0
		0 - 0 - DATANKLOCK - DISCHARGE ADAPTER TANK LOCKING PLATE FOR FIRE SYSTEM TANK INSTALLATION IN UTILITY CABINETS, TANK FIRE SUPPRESSION.	3	0
		0 - 0 - 909720PC - PRD PRESS POST 1/2 PRESS TEE L.D.	10	0
		16 - 16 - DL-F - NOZZLE - TANK PROTECTION APPLIANCE COVERAGE NOZZLE (INCLUDES METAL BLOW OFF CAP, LANYARD, USED WITH CHROME-PLATED PIPE).	11	0
		0 - 0 - 87-120045-001 - HOSE, SECONDARY ACTUATOR HOSE, 7.5' BRAIDED STAINLESS STEEL, TANK FIRE SUPPRESSION.	2	0
		0 - 0 - 98694A115 - HARDWARE, DATANKLOCK LOCKING BRACKET SQUARE NUTS 5/16" ZINC, TANK FIRE SUPPRESSION.	6	0
		0 - 0 - 79405 - 3/8" NPT FEMALE TO 1/2" MALE PROGRESS ADAPTER.	3	0
		0 - 0 - CBI-225 - CHROME PLATED PIPE FITTING 3/8" NPT 22.5 DEGREE ELBOW.	2	0
		0 - 0 - 12-F28821-32144-DT-360 - DUCT FIRE THERMIST WITH 12 FOOT WIRE LEADS, ND, CLOSE ON TEMP RISE AT 360°F. (A003430).	2	0
		0 - 0 - 4429K153 - 1/2" MALE NPT TO 1/2" FEMALE NPT ELBOW, BRASS.	3	0
		0 - 0 - 4429K422 - 1/2" X 1/4" BRASS REDUCING BUSHING.	2	0
		0 - 0 - 79525 - 1/2" 90 PRD-PRESS ELBOW WITH 1/2" NPT FEMALE CONNECTION, VIEGA.	2	0
		0 - 0 - 87-120042-001 - SECONDARY ACTUATOR VALVE (SVA) - SINGLE ACTUATOR, REQUIRES PRIMARY RELEASE ACTUATOR, TANK FIRE SUPPRESSION.	2	0
		0 - 0 - 87-30001-001 - TANK - PRESSURIZED TANK USED FOR TANK FIRE SUPPRESSION.	3	0
		0 - 0 - 87-300030-001 - PRIMARY ACTUATOR KIT (PAK) - ACTUATOR AND RELEASE SOLENOID ASSEMBLY, ONE NEEDED PER FIRE SYSTEM SUPERVISED, TANK FIRE SUPPRESSION.	1	0
		0 - 0 - 87-300033-001 - DIN CONNECTOR, CANFIELD PART #5J560-201-EU0A, TANK FIRE SUPPRESSION, SUBMINATURE SOLENOID CONNECTION (CED VENDOR 30377).	1	0
		0 - 0 - A31484 - 1/4" NPT SCHRAEDER VALVE AND CAP, JB INDUSTRIES, 1/4" FLARE X 1/4" NPT HALF UNION, USED ON TANK SERVICE PIST.	2	0
		0 - 0 - SLPCDN-03FT - SUPERVISED LOOP CONNECTION KIT. CONTAINS THE PARTS NEEDED TO CONNECT THE SUPERVISED LOOP BETWEEN END TO END HOODS WITH LESS THAN A 4' GAP. KIT CONTAINS 5 FEET OF BLACK MG WIRE, 5 FEET OF TAN MG WIRE, 3 FEET OF FLEXIBLE CONDUIT, AND TWO 7/8" CONNECTORS.	1	0
		0 - 0 - SLPCDN-05FT - SUPERVISED LOOP CONNECTION KIT. CONTAINS THE PARTS NEEDED TO CONNECT THE SUPERVISED LOOP BETWEEN END TO END HOODS WITH LESS THAN A 4' GAP. KIT CONTAINS 7 FEET OF BLACK MG WIRE, 7 FEET OF TAN MG WIRE, 5 FEET OF FLEXIBLE CONDUIT, AND TWO 7/8" CONNECTORS.	1	0
		0 - 0 - SLPCDN-08FT - SUPERVISED LOOP CONNECTION KIT. CONTAINS THE PARTS NEEDED TO CONNECT THE SUPERVISED LOOP BETWEEN HOODS WITH UP TO 19' GAP. KIT CONTAINS 22 FEET OF BLACK MG WIRE, 22 FEET OF TAN MG WIRE, 20 FEET OF FLEXIBLE CONDUIT, AND TWO 7/8" CONNECTORS.	1	0
		SC-EQVAD - GAS VALVE - 2" ELECTRICAL SHUTOFF VALVE FOR USE WITH HMI RESET, 110V, 60HZ (48214280). INCLUDES UPSTREAM STRAINER ASSEMBLY.	1	0

SECTION VIEW - MODEL 5424ND-2-PSP-F
HOOD - #1

SECTION VIEW - MODEL 5424ND-2-PSP-F
HOOD - #2



REVISIONS

NO	DESCRIPTION	DATE
1		
2		
3		
4		
5		
6		
7		

CAPTIVEAIRE

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www.captiveaire.com

558 Broadhollow Rd, Suite B-7, Melville, NY 11747 PHONE: (616) 513-5388 FAX: 918275987 EMAIL: neta@captveaire.com

DATE: 6/10/2026

DWG.#: 8719706

DRAWN BY: JC-43

SCALE: 3/4" = 1'-0"

MASTER DRAWING

SHEET NO. 2

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DATE
06-22-2026
ISSUED FOR
100%DD/50%CD REVIEW
07-20-2026
ISSUED FOR 90%CD REVIEW
08-17-2026
ISSUED FOR GENERAL CONSTRUCTION BID AS SINGLE PRIME CONTRACT INCLUDING ALL TRADES



SENDLEWSKI ARCHITECTS, P.C.

ARCHITECTS - PLANNERS

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PROPOSED NEW FACILITY
ELLENVILLE FIRE DISTRICT
203 S. MAIN ST. NYS ROUTE 209
ELLENVILLE, NY 12428

MECHANICAL DETAILS

PROJECT No. 2501
EMTEC 7611

CHECKED BY: MF/APS

DRAWING:

M-5.6

EMTEC PROJECT NO. 7611 DRAWN BY: MF CHECKED BY: APS

EXHAUST FAN INFORMATION - JOB#8719706

FAN UNIT NO.	TAG	QTY	FAN UNIT MODEL #	MANUFACTURER	CFM	ESP	RPM	MOTOR ENCL.	HP	BHP	PHASE	VOLT	FLA	DISCHARGE VELOCITY	WEIGHT (LBS)	SONES
1	KEF-1	1	DUR40HFA	CAPTIVEAIRE	4400	1.500	921	QDP,PREMIUM	5.000	2,1720	3	208	15.0	1000 FPM	263	16.6

MUA FAN INFORMATION - JOB#8719706

FAN UNIT NO.	TAG	QTY	FAN UNIT MODEL #	BLOVER	HOUSING	MIN CFM	DESIGN CFM	ESP	RPM	MOTOR ENCL.	HP	BHP	PHASE	VOLT	FLA	MCA	MDCP	WEIGHT (LBS)	SONES
2	MUA-1	1	A2-D-500-200	20WF-2-MOD	A2-D-500	2000	3960	0.500	1506	TEFC,PREMIUM	3.000	1.9080	3	208	9.4	11.8A	20A	688	14.2

GAS FIRED MAKE-UP AIR UNIT(S)

FAN UNIT NO.	TAG	INPUT BTU/H	OUTPUT BTU/H	TEMP RISE	REQUIRED INPUT GAS PRESSURE	GAS TYPE	BURNER EFFICIENCY(%)
2	MUA-1	326171	300077	74°F	7 IN. W.C. - 14 IN. W.C.	LP	92

FAN ACCESSORIES

FAN UNIT NO.	TAG	EXHAUST				SUPPLY		
		GREASE CUP	GRAVITY DAMPER	WALL MOUNT	SIDE DISCHARGE	GRAVITY DAMPER	MOTORIZED DAMPER	WALL MOUNT
1	KEF-1	YES					YES	
2	MUA-1							

CURB ASSEMBLIES

NO	EN FAN	TAG	R-VALUE	WEIGHT	ITEM	SIZE
1	# 1	KEF-1		43 LBS	CURB	31,000"W X 31,500"L X 20,000"H VENTED HINGED.
2	# 2	MUA-1	4.3	80 LBS	CURB	31,000"W X 79,000"L X 20,000"H INSULATED.

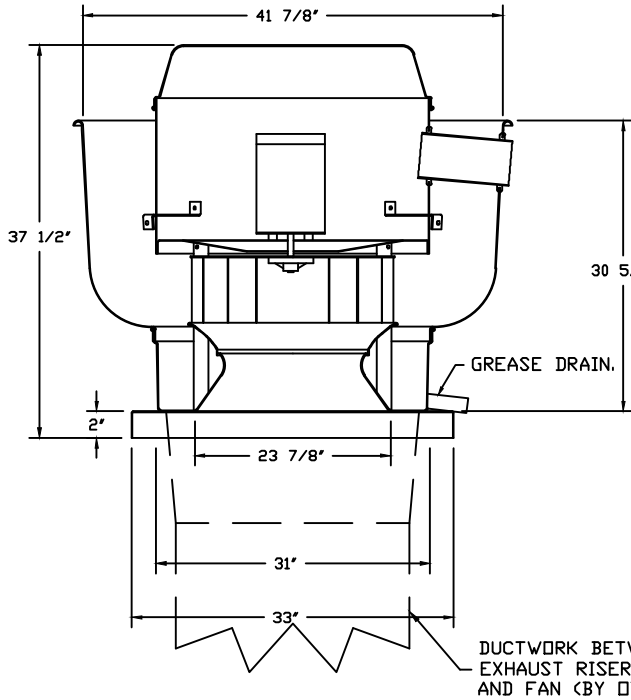
1" R4.3 FOIL FACED FIBERGLASS INSULATION. COMPLIES WITH UL/ULC,ASTM, & ASHRAE STANDARDS.

FAN OPTIONS

FAN UNIT NO.	TAG	QTY	DESCRIPTION
1	KEF-1	1	GREASE BOX
		1	FAN BASE CERAMIC SEAL - DU/DR240HFA - INSTALLED AT PLANT - FOR GREASE DUCTS
		1	2 YEAR PARTS WARRANTY
		1	SIZE 2 TEMPERED COMMERCIAL DOWN DISCHARGE FOR DIRECT DRIVE AHUS
		1	INLET PRESSURE GAUGE, 0-35"
2	MUA-1	1	MANIFOLD PRESSURE GAUGE, -5 TO 15" WC
		1	BUTTERFLY MOD VALVE OPTION FOR MOD SIZE 2 (1" MOD VALVE)
		1	MOTORIZED BACKDRAFT DAMPER FOR A2-D HOUSING - MEETS AMCA CLASS 1A RATING
		1	MODULAR UNIT INTAKE FIRESTAT SET TO 135°F
		1	COMMERCIAL SMOKE DETECTOR/ALARM INTERLOCK - ALARM SUPPLIED BY OTHERS
		1	CASLINK BUILDING MONITORING SYSTEM - INTERNET OR CELLULAR CONNECTION REQUIRED
		1	CLOGGED FILTER SWITCH - NOTIFICATION ON HMI
		1	SEPARATE 120V WIRING PACKAGE (REQUIRED AND USED ONLY FOR DCV OR PREVIRE WITH VFD) - THREE PHASE ONLY
		1	SIZE 2 DIRECT FIRED HEATER LOW CFM PROFILE PACKAGE - USED ON HEATERS UNDER 2500 CFM
		1	2 YEAR PARTS WARRANTY
		1	EXTERIOR GAS CONNECTION PROVIDED BY FACTORY WITH QUICK SEAL AND ANTI-ROTATION BRACKET

HMI SCHEDULE					
UNIT NUMBER	HMI #	HMI LOCATION	TEMP AVERAGING	MODBUS ADDRESS	
FAN #2	HMI #1 - UNIT	IN UNIT	NOT AVERAGED	55	

FAN #1, DUS40HFA - EXHAUST FAN (KEF-1)



TOP VIEW

FEATURES:

- DIRECT DRIVE CONSTRUCTION (NO BELTS/PULLEYS).
- ROOF MOUNTED FANS.
- RESTAURANT MODEL.
- UL705 AND UL762 AND UL-C-5645
- VARIABLE SPEED CONTROL.
- INTERNAL WIRING.
- THERMAL OVERLOAD PROTECTION (SINGLE PHASE).
- HIGH HEAT OPERATION 300°F (149°C).
- GREASE CLASSIFICATION TESTING.
- NEMA 3R SAFETY DISCONNECT SWITCH.

NORMAL TEMPERATURE TEST

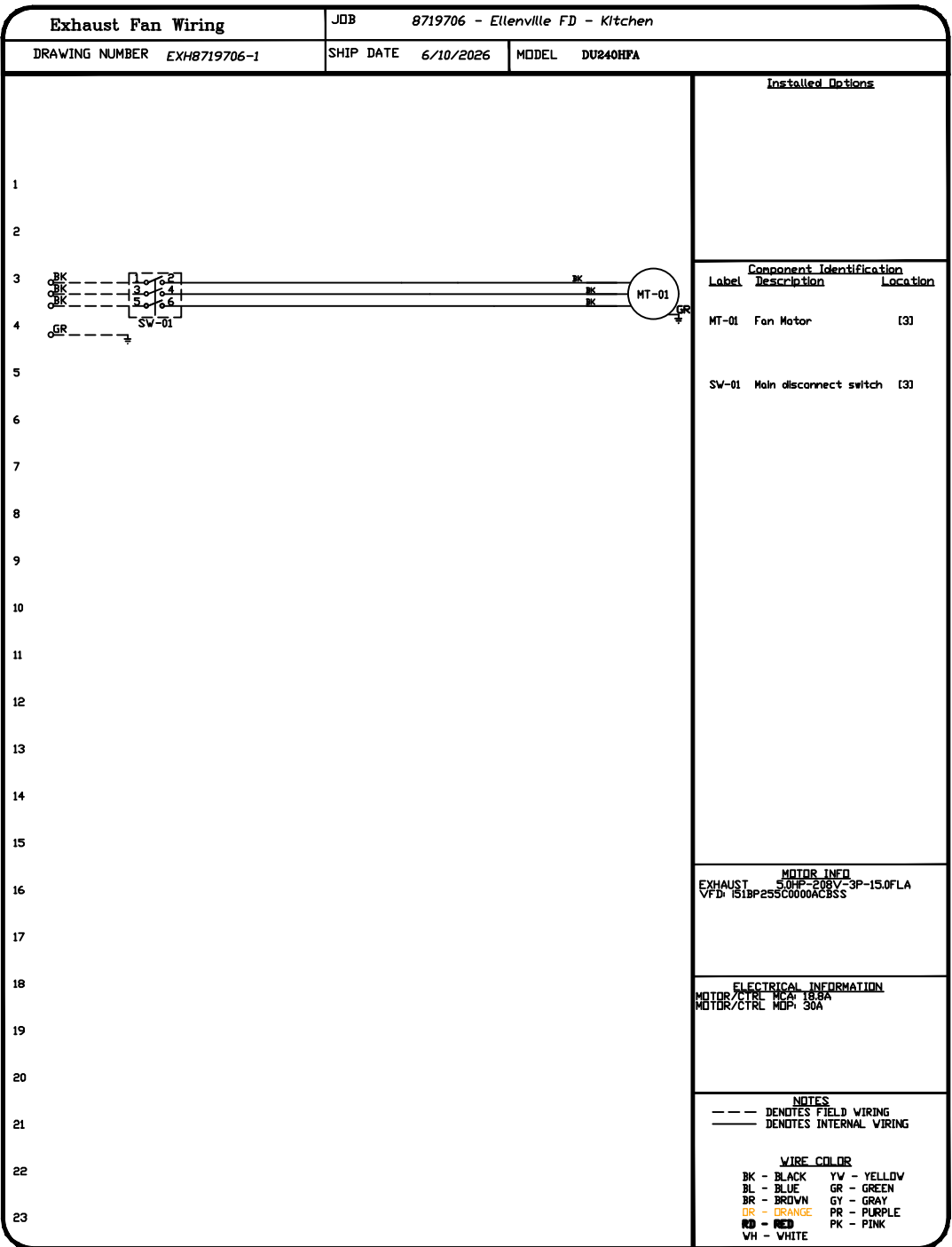
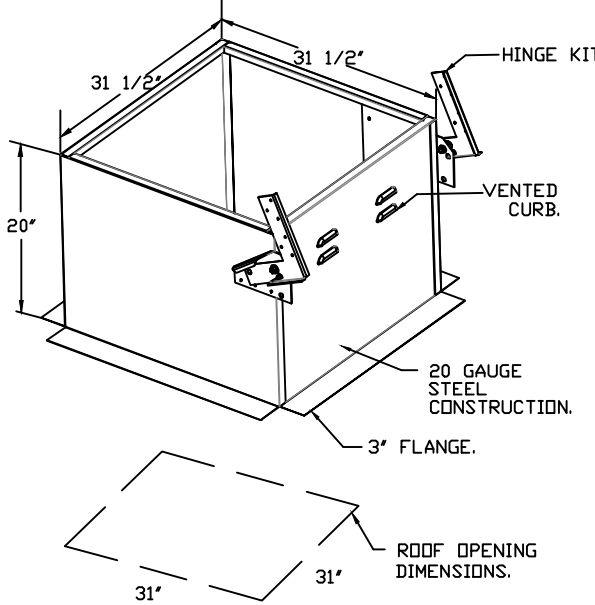
EXHAUST FAN MUST OPERATE CONTINUOUSLY WHILE EXHAUSTING AIR AT 300°F (149°C) UNTIL ALL FAN PARTS HAVE REACHED THERMAL EQUILIBRIUM, AND WITHOUT ANY DETRIMENTARY EFFECTS TO THE FAN WHICH WOULD CAUSE UNSAFE OPERATION.

ABNORMAL FLARE-UP TEST

EXHAUST FAN MUST OPERATE CONTINUOUSLY WHILE EXHAUSTING BURNING GREASE VAPORS AT 600°F (316°C) FOR A PERIOD OF 15 MINUTES WITHOUT THE FAN BECOMING DAMAGED TO ANY EXTENT THAT COULD CAUSE AN UNSAFE CONDITION.

DESIGNS

- GREASE BOX.
- FAN BASE CERAMIC SEAL - DU/DR240HFA - INSTALLED AT PLANT - FOR GREASE DUCTS.
- 2 YEAR PARTS WARRANTY.



Ellenville FD - Kitchen
7025 New York 52,
Greenfield Park, NY, 12435

DATE: 6/10/2026

DWG.#: 8719706

DRAWN BY: JC-43

SCALE: 3/4" = 1'-0"

MASTER DRAWING

SHEET NO. 3

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08-17-2026 ISSUED FOR GENERAL CONSTRUCTION BID AS SINGLE PRIME CONTRACT INCLUDING ALL TRADES

SEAL



SENDLEWSKI ARCHITECTS, P.C.

ARCHITECTS - PLANNERS

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emtec CONSULTING ENGINEERS, P.C.

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Rancho Santa Fe, CA 92037 (760) 327-5552

PROPOSED NEW FACILITY

ELLENVILLE FIRE DISTRICT

203 S. MAIN ST. NYS ROUTE 209

ELLENVILLE, NY 12428

MECHANICAL DETAILS

PROJECT No. 2501

EMTEC 7611

CHECKED BY: MF/APS

DRAWING:

M-5.7

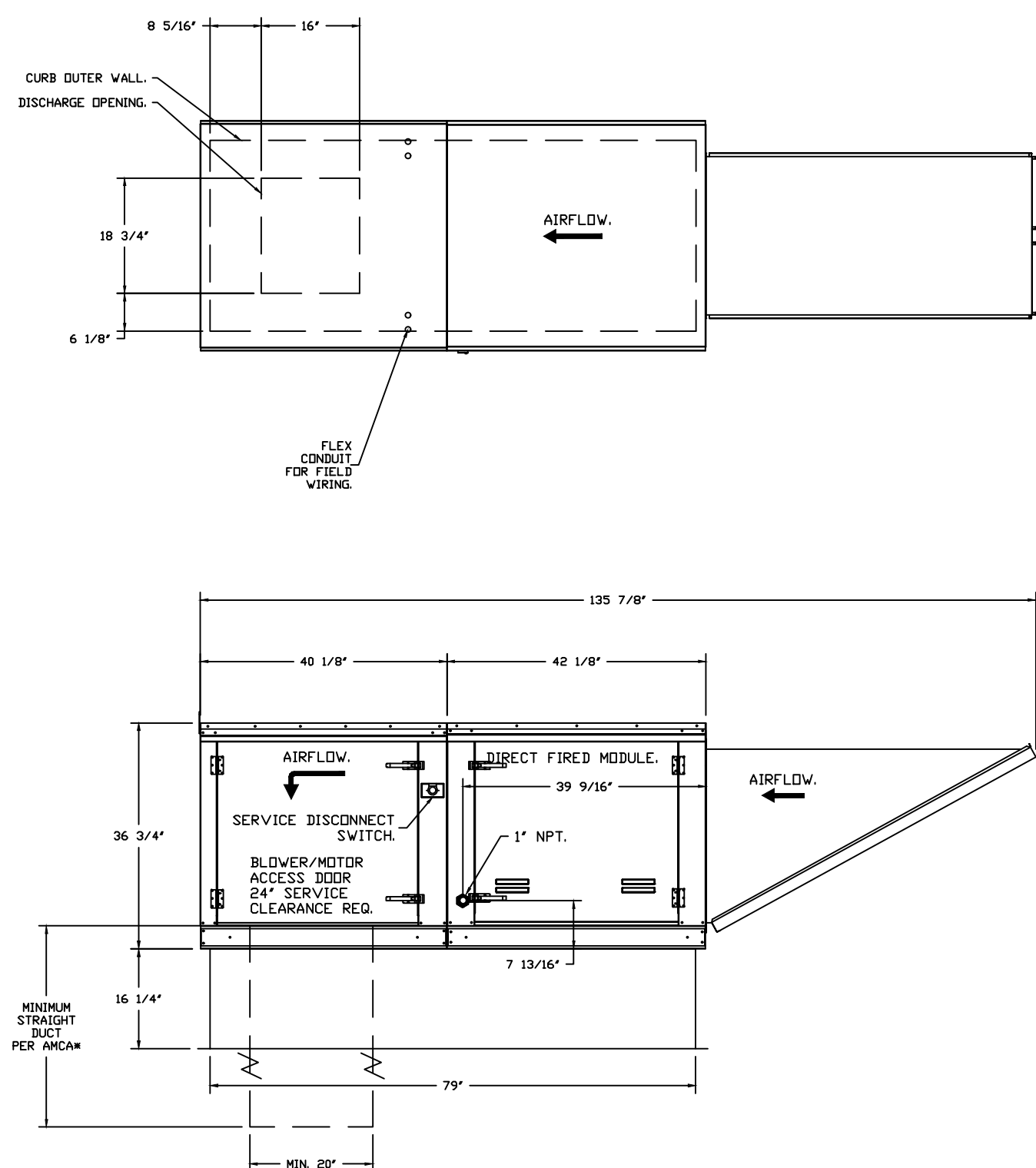
EMTEC PROJECT NO. 7611 DRAWN BY: MF CHECKED BY: APS

- FAN #2 AR-D000-200 - HEATER (MHA-1)
1. DIRECT GAS FIRED HEATED MAKE UP AIR UNIT WITH 20" NOXED FLOW DIRECT DRIVE FAN.
 2. INTAKE HODD WITH EZ FILTERS.
 3. DOWN DISCHARGE - AIR FLOW RIGHT -> LEFT.
 4. DOWN DISCHARGE CONSTRUCTION FOR SIZE 8 DIRECT DRIVE AMUS.
 5. GAS PRESSURE GAUGE, 1/2" O.D. DIAMETER, 1/4" THREAD SIZE.
 6. GAS PRESSURE GAUGE, 1/2" O.D. DIAMETER, 1/4" THREAD SIZE.
 7. BUTTERFLY VALVE OPTION FOR HOD SIZE 2" O.D. VALVES.
 8. MOTORIZED BACK DRAFT DAMPER 22.75" X 24" FOR SIZE 8 STANDARD & MODULAR HEATER UNITS V/EXTENDED SHAF, STANDARD GALVANNEED CONSTRUCTION, 3/4" BEAM FLANGE, LOW LEAKAGE, 17500 ACTUATOR INCLUDED.
 9. MODULAR UNIT INTAKE FIRESTAT, SET TO 130°F.
 10. COMBUSTION GASES DETECTOR INTERLOCK, OPERATOR BY OTHERS.
 11. CLOUDER BUILDING MONITORING SYSTEM COMMUNICATIONS MODULE, REQUIRES INTERNET & FIELD WIRES ETHERNET CONNECTION OR 3G CELLULAR SERVICE. INCLUDES REV. 3 COMM MODULE, RJ45 TO MODBUS CONVERTER, 3 FT CAT5 CABLE, AND 1 FT OF SHIELDED TWISTED PAIR.
 12. CLOTTED FILTER SWITCH WITH NOTIFICATION ON HMI.
 13. SEPARATE 120VAC WIRING PACKAGE FOR MAKE-UP AIR UNITS. OPTION MUST BE SELECTED WHEN MOUNTING VFD IN PREWIRE PANEL OR WITH DCV PACKAGE. PROVIDES SEPARATE 120VAC INPUT TO SUPPLY FAN THIS 120V SIGNAL MUST BE RUN BY ELECTRICIAN FROM TCU TO MAIN SWITCH.
 14. PROFILE PLATE CONFIGURATION FOR SIZE 8 DIRECT FIRED UNIT FOR LOW CFM APPLICATIONS.
 15. SMOKE DOUBLE WALL INSULATED UNDER ASSEMBLY (GAS/NOX/GAS SECTION).
 16. EXTERIOR GAS CONNECTION PROVIDED BY FACTORY WITH QUICK SEAL AND ANTI-ROTATION BRACKET.
 17. 5 YEAR PARTS WARRANTY.

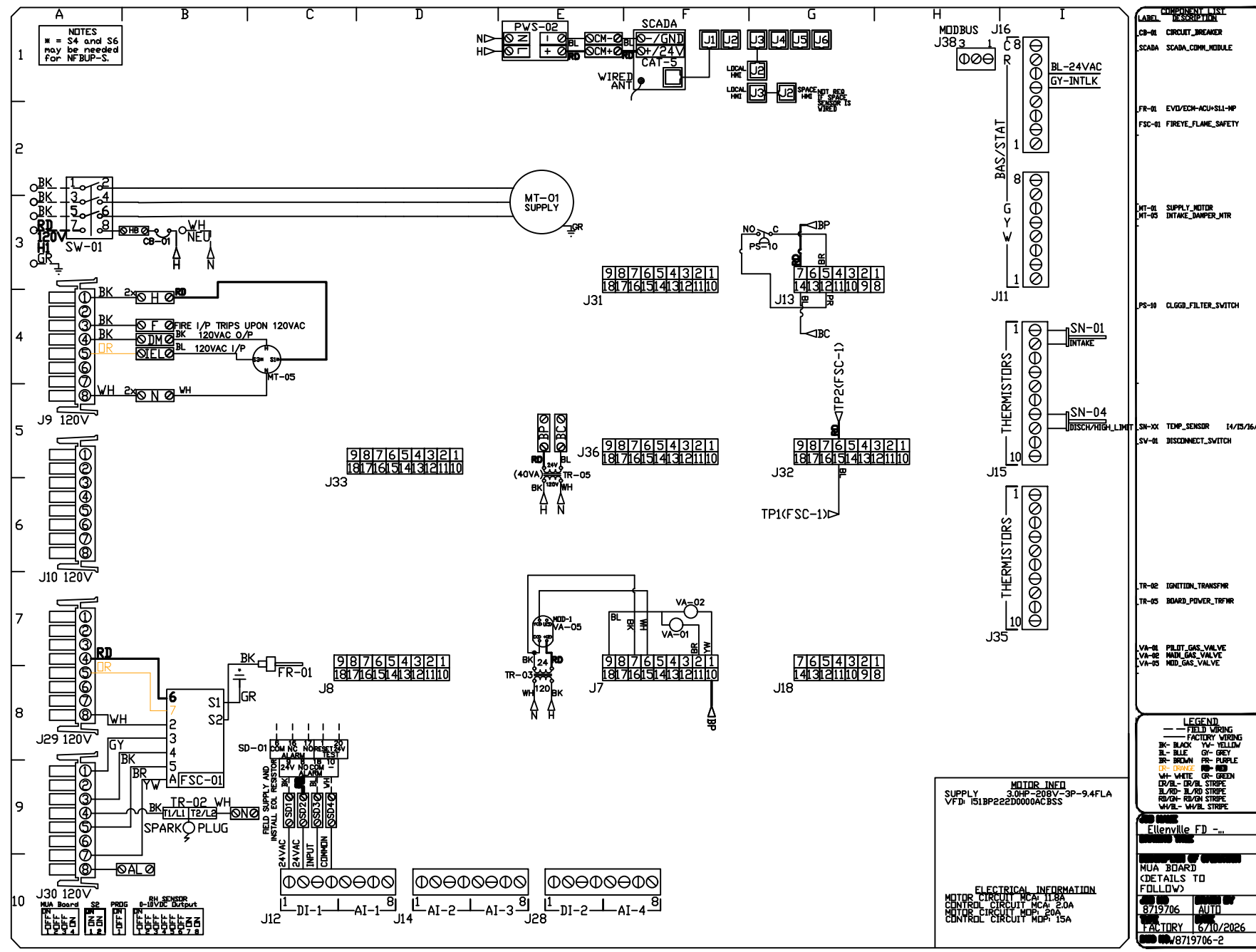
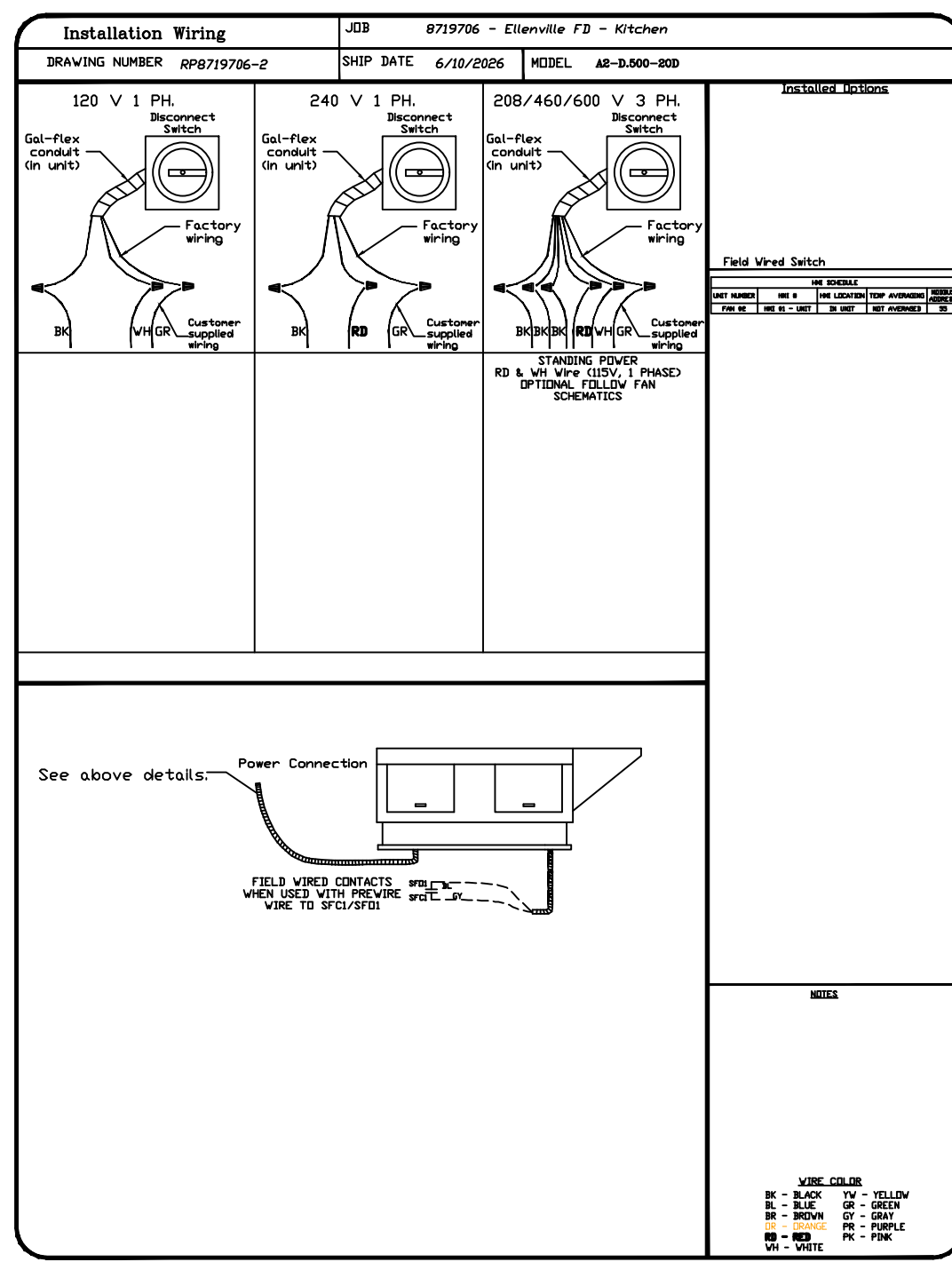
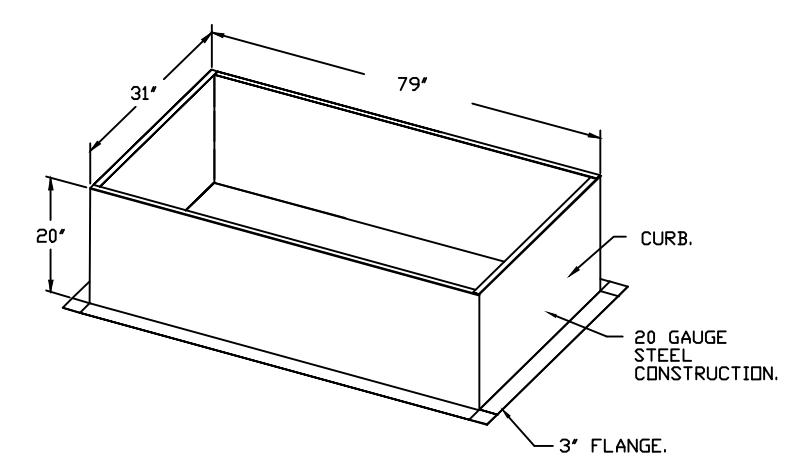
NOTE: SUPPLY DUCT MUST BE INSTALLED TO MEET SMACNA STANDARDS. A MINIMUM STRAIGHT DUCT LENGTH MUST BE MAINTAINED DOWNSTREAM OF UNIT DISCHARGE AS OUTLINED IN AMCA PUBLICATION 201. WHEN USING RECTANGULAR DUCTWORK, ELBOWS MUST BE RADIUS THROAT, RADIUS BACK WITH TURNING VANES. FLEXIBLE DUCTWORK AND SQUARE THROAT/SQUARE BACK ELBOWS SHOULD NOT BE USED ANY TURNING AND/OR TURNS IN THE DUCTWORK WILL CAUSE SYSTEM EFFECTS. SYSTEM EFFECTS WILL DRAMATICALLY INCREASE STATIC PRESSURE AND REDUCE AIRFLOW. DO NOT RELY ON UNIT TO SUPPORT DUCT IN ANY WAY. FAILURE TO PROPERLY SIZE DUCTWORK MAY CAUSE SYSTEM EFFECTS AND REDUCE PERFORMANCE OF THE EQUIPMENT. SUGGESTED SUPPLY STRAIGHT DUCT SIZE IS 20" X 20".

SUPPLY SIDE HEATER INFORMATION

WATER TEMPERATURE = 140°F, TDPM RISE = 74°F, BTUH CALCULATED OFF ACTUAL AIR DENSITY. INPUT BTUH AT ALTITUDE OF 60 FT. = 346290. OUTPUT BTUH AT ALTITUDE OF 1568 FT. = 300077. INPUT BTUH AT ALTITUDE OF 1568 FT. = 306170.



OPTIONS:
- FULL BOTTOM CORNERS.



REVISIONS

NO.	DESCRIPTION	DATE
1	ISSUED FOR GENERAL CONSTRUCTION BID AS SINGLE PRIME CONTRACT INCLUDING ALL TRADES	06-22-2026

Long Island Office
555 Broadhollow Rd., Suite B-7, Melville, NY 11747
PHONE: (516) 513-5388 FAX: (516) 222-2967 EMAIL: info@captivemfg.com

Ellenville FD - Kitchen
7025 New York 52,
Greenfield Park, NY, 12435

DATE: 6/10/2026
DWG.#: 8719706
DRAWN BY: JC-43
SCALE: 3/4" = 1'-0"
MASTER DRAWING

SHEET NO. 4

DATE: 06-22-2026
ISSUED FOR GENERAL CONSTRUCTION BID AS SINGLE PRIME CONTRACT INCLUDING ALL TRADES

06-22-2026
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SEAL

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PROPOSED NEW FACILITY
ELLENVILLE FIRE DISTRICT
203 S. MAIN ST. NYS ROUTE 209
ELLENVILLE, NY 12428

MECHANICAL DETAILS

PROJECT No. 2501
EMTEC 7611

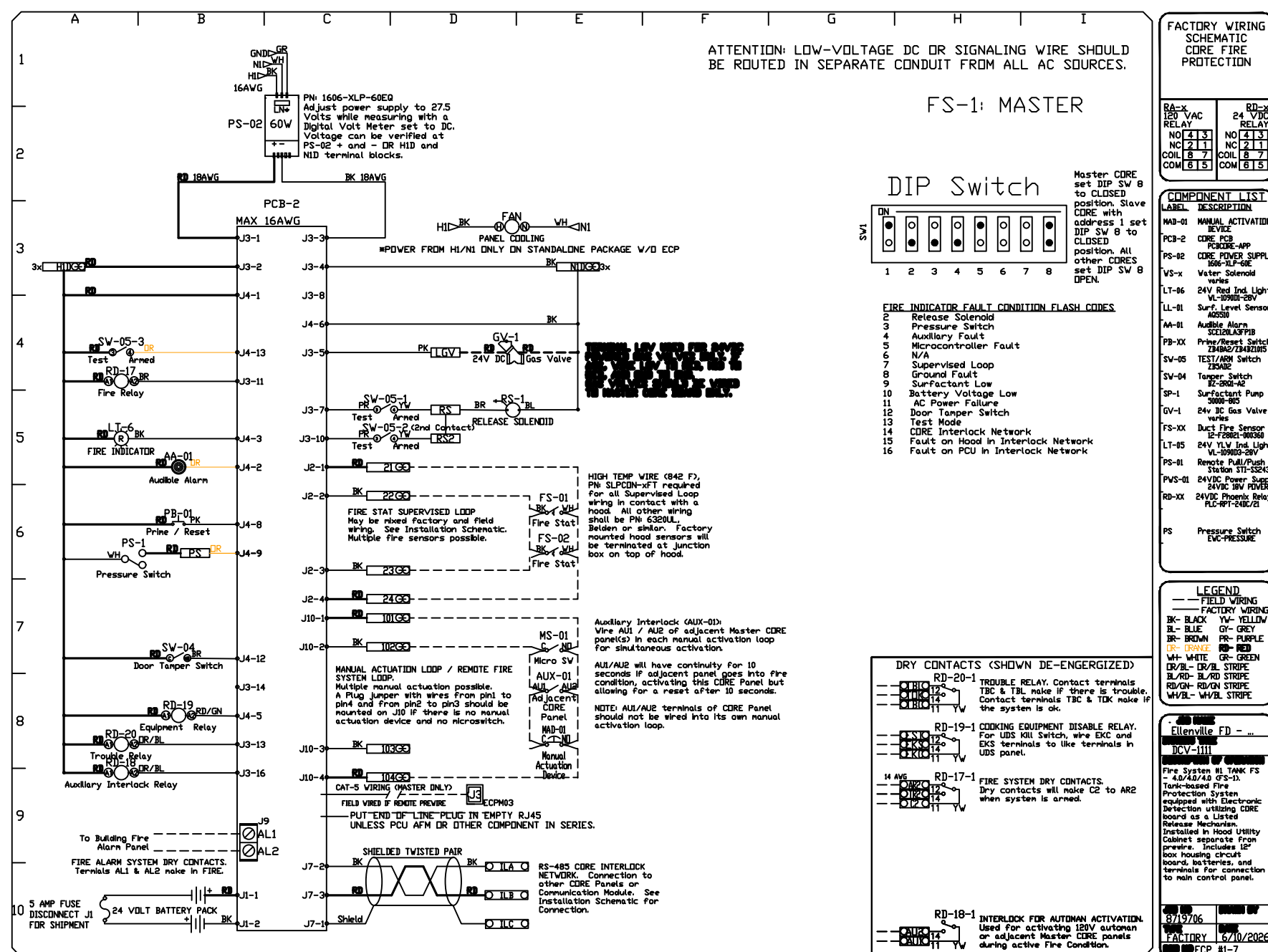
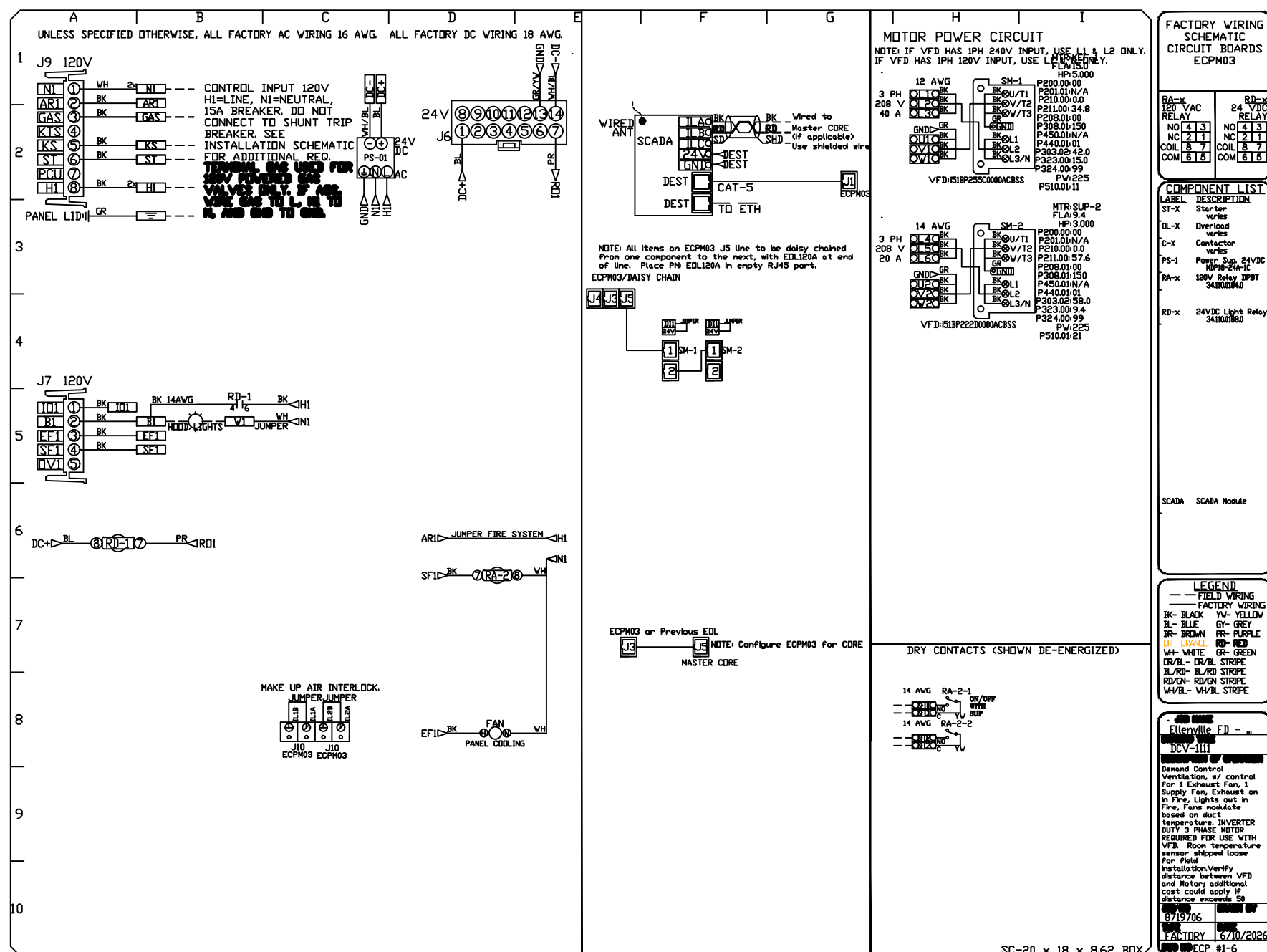
CHECKED BY: MF/APS

DRAWING: M-5.8

EMTEC PROJECT NO. 7611
DRAWN BY: MF
CHECKED BY: APS

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Ellenville FD - Kitchen
7025 New York 52,
Greenfield Park, NY, 1

DATE: 6/10/2026

DWG.#:
8718706

8719708
FRANK

DRAWN BY: JC-43

SCALE:
3/4" = 1' 0"

$$\frac{3}{4} = 1 - 0$$

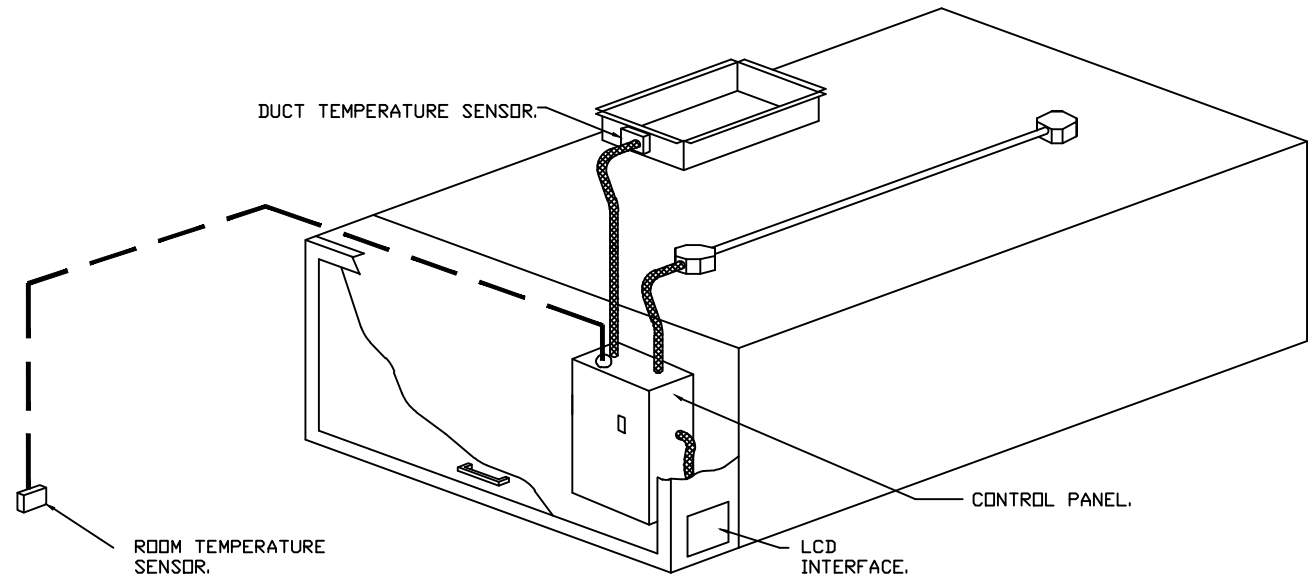
MASTER DRAWING

SHEET NO.

6

DEMAND CONTROL VENTILATION HOOD CONTROL PANEL SPECIFICATIONS:

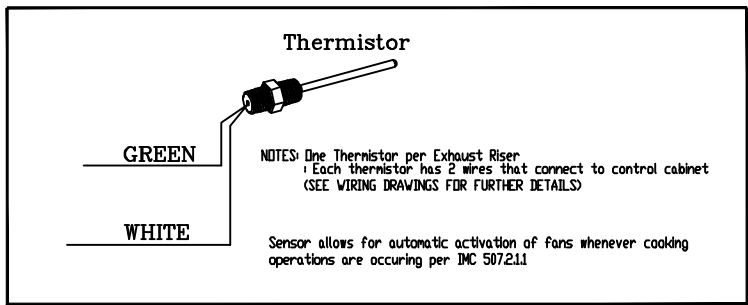
- CONTROLS SHALL BE LISTED BY ETL (UL 508A) AND SHALL COMPLY WITH DEMAND VENTILATION SYSTEM TURNDOWN REQUIREMENTS OUTLINED IN IECC 403.7.5 (2021).
- THE CONTROL ENCLOSURE SHALL BE NEMA 1 RATED AND LISTED FOR INSTALLATION INSIDE OF THE EXHAUST HOOD UTILITY CABINET. THE CONTROL ENCLOSURE MAY BE CONSTRUCTED OF STAINLESS STEEL OR PAINTED STEEL.
- TEMPERATURE PROBE(S) LOCATED IN THE EXHAUST DUCT RISER(S) SHALL BE CONSTRUCTED OF STAINLESS STEEL.
- A DIGITAL CONTROLLER SHALL BE PROVIDED TO ACTIVATE THE HOOD EXHAUST FANS DYNAMICALLY BASED ON A FIXED DIFFERENTIAL BETWEEN THE AMBIENT AND DUCT TEMPERATURES SENSORS. THIS FUNCTION SHALL MEET THE REQUIREMENTS OF IMC 507.1.1.
- A DIGITAL CONTROLLER SHALL PROVIDE ADJUSTABLE HYSTERESIS SETTINGS TO PREVENT CYCLING OF THE FANS AFTER THE COOKING APPLIANCES HAVE BEEN TURNED OFF AND/OR THE HEAT IN THE EXHAUST SYSTEM IS REDUCED.
- A DIGITAL CONTROLLER SHALL PROVIDE AN ADJUSTABLE MINIMUM FAN RUN-TIME SETTING TO PREVENT FAN CYCLING.
- VARIABLE FREQUENCY DRIVES (VFDs) SHALL BE PROVIDED FOR FANS AS REQUIRED. THE DIGITAL CONTROLLER SHALL MODULATE THE VFDs BETWEEN A MINIMUM SETPOINT AND A MAXIMUM SETPOINT ON DEMAND. THE DUCT TEMPERATURE SENSOR INPUT(S) TO THE DIGITAL CONTROLLER SHALL BE USED TO CALCULATE THE SPEED REFERENCE SIGNAL.
- THE VFD SPEED RANGE OF OPERATION SHALL BE FROM 0% TO 100% FOR THE SYSTEM, WITH THE ACTUAL MINIMUM SPEED SET AS REQUIRED TO MEET MINIMUM VENTILATION REQUIREMENTS.
- AN INTERNAL ALGORITHM TO THE DIGITAL CONTROLLER SHALL MODULATE SUPPLY FAN VFD SPEED PROPORTIONAL TO ALL EXHAUST FANS THAT ARE LOCATED IN THE SAME FAN GROUP AS THE SUPPLY FAN.
- THE SYSTEM SHALL OPERATE IN PREP MODE DURING LIGHT COOKING LOAD OR COOL DOWN MODE WHEN SUFFICIENT HEAT REMAINS UNDERNEATH THE HOOD SYSTEM AFTER COOKING OPERATIONS HAVE COMPLETED. OPERATION DURING EITHER OF THESE PERIODS WILL DISABLE THE SUPPLY FANS AND PROVIDE AN EXHAUST FAN SPEED THAT IS EQUAL TO THE MINIMUM VENTILATION REQUIREMENT.
- A DIGITAL CONTROLLER SHALL DISABLE THE SUPPLY FAN(S), ACTIVATE THE EXHAUST FAN(S), ACTIVATE THE APPLIANCE SHUNT TRIP, AND DISABLE AN ELECTRIC GAS VALVE AUTOMATICALLY WHEN FIRE CONDITION IS DETECTED ON A COVERED HOOD.
- A DIGITAL CONTROLLER SHALL ALLOW FOR EXTERNAL BMS FAN CONTROL VIA DRY CONTACT (EXTERNAL CONTROL SHALL NOT OVERRIDE FAN OPERATION LOGIC AS REQUIRED BY CODE).
- AN LCD INTERFACE SHALL BE PROVIDED WITH THE FOLLOWING FEATURES:
 - A. ON/OFF PUSH BUTTON FAN & LIGHT SWITCH ACTIVATION.
 - B. INTEGRATED GAS VALVE RESET FOR ELECTRONIC GAS VALVES (NO RESET RELAY REQUIRED).
 - C. VFD FAULT DISPLAY WITH AUDIBLE & VISUAL ALARM NOTIFICATION.
 - D. DUCT TEMPERATURE SENSOR FAILURE DETECTION WITH AUDIBLE & VISUAL ALARM NOTIFICATION.
 - E. MIS-WIRED DUCT TEMPERATURE SENSOR DETECTION WITH AUDIBLE & VISUAL ALARM NOTIFICATION.
 - F. A SINGLE LOW VOLTAGE CAT-5 RJ45 WIRING CONNECTION.
 - G. AN ENERGY SAVINGS INDICATOR THAT UTILIZES MEASURED KWH FROM THE VFDs.



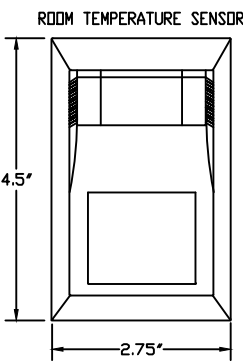
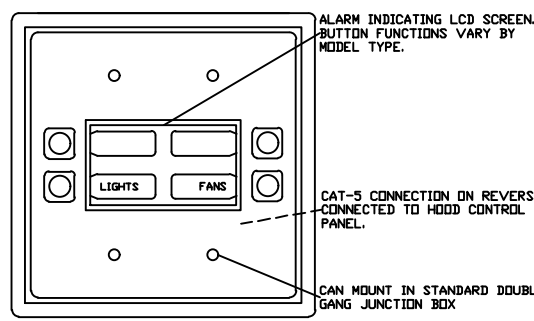
TYPICAL HOOD CONTROL PANEL INSTALLATION

SEQUENCE OF OPERATIONS:

- THE HOOD CONTROL PANEL IS CAPABLE OF OPERATING IN ONE OR MORE OF THE FOLLOWING STATES AT ANY GIVEN TIME:
- **AUTOMATIC:** THE SYSTEM OPERATES BASED ON THE DIFFERENTIAL BETWEEN ROOM TEMPERATURE AND THE TEMPERATURE AT THE HOOD CAVITY OR EXHAUST DUCT COLLAR. FANS ACTIVATE AT A CONFIGURABLE TEMPERATURE DIFFERENTIAL THRESHOLD. DEPENDING ON THE JOB CONFIGURATION EACH FAN ZONE CAN BE CONFIGURED AS STATIC OR DYNAMIC. THESE TERMS REFER TO WHETHER A VARIABLE MOTOR (SUCH AS EC MOTORS OR VFD DRIVEN MOTORS) MODULATE WITH TEMPERATURE. IF THE PANEL IS EQUIPPED WITH VARIABLE SPEED FANS AND THE ZONE IS DEFINED AS "DYNAMIC", THESE WILL MODULATE WITHIN A USER-DEFINED RANGE BASED ON THE TEMPERATURE DIFFERENTIAL. PANELS EQUIPPED WITH VARIABLE SPEED FANS AND A FAN ZONE DEFINED AS "STATIC", FANS WILL RUN AT A SET SPEED CALCULATED FOR THE DRIVE. DEMAND CONTROL VENTILATION SYSTEMS ARE CAPABLE OF MODULATING EXHAUST AND MAKE UP AIR FAN SPEEDS PER THE REQUIREMENTS OUTLINED IN IECC 403.7.5 (2021).
 - **MANUAL:** THE SYSTEM OPERATES BASED ON HUMAN INPUT FROM AN HMI.
 - **SCHEDULE:** A WEEKLY SCHEDULE CAN BE SET TO RUN FANS FOR A SPECIFIED PERIOD THROUGHOUT THE DAY. THERE ARE THREE OCCUPIED TIMES PER DAY TO ALLOW FOR THE USER TO SET UP A TIME THAT IS SUITABLE TO THEIR NEEDS. ANY TIME THAT IS WITHIN THE DEFINED OCCUPIED TIME, THE SYSTEM WILL RUN AT MODULATION MODE AND FOLLOW THE FAN PROCEDURE ALGORITHM BASED ON TEMPERATURE DURING THIS TIME. DURING UNOCCUPIED TIME, THE SYSTEM WILL HAVE AN EXTRA OFFSET TO PREVENT UNINTENDED ACTIVATION OF THE SYSTEM DURING A TIME WHERE THE SYSTEM IS NOT BEING OCCUPIED.
 - **OTHER:** THE SYSTEM OPERATES BASED ON THE INPUT FROM AN EXTERNAL SOURCE (DDC, BMS OR HARD-WIRED INTERLOCK).
 - **FIRE:** UPON ACTIVATION OF THE HOOD FIRE SUPPRESSION SYSTEM, THE EXHAUST FAN WILL COME ON OR CONTINUE TO RUN, THE HOOD MAKEUP AIR WILL SHUTDOWN, AND A SIGNAL WILL BE SENT FOR ACTIVATING THE SHUNT TRIP BREAKER PROVIDED BY THE ELECTRICIAN. FUEL GAS WILL SHUT OFF VIA A MECHANICAL/ELECTRICAL GAS VALVE ACTUATED BY THE HOOD FIRE SUPPRESSION SYSTEM.

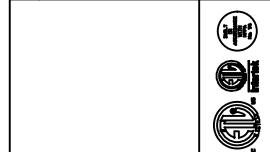


HOOD CONTROL PACKAGE INTERFACE WITH LCD SCREEN



ROOM TEMPERATURE SENSOR
- To be installed in the space to find ambient temperature. Do not install underneath or on the hood or near a heat source producing appearance. Also location is under an air flow return or vent to an intake thermistor.

REVISIONS	
NO.	DATE
1	
2	
3	
4	



Long Island Office
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Ellenville FD - Kitchen
7025 New York 52,
Greenfield Park, NY, 12435

DATE: 6/10/2026
DWG.#: 8719706
DRAWN BY: JC-43
SCALE: 3/4" = 1'-0"
MASTER DRAWING

SHEET NO. 7

"It is a violation of the State Education Law for any person, unless he or she is acting under the direction of a licensed professional engineer to alter an item in anyway, on this drawing and/or in this specification in anyway. If any such item is altered, the altering engineer shall affix to the item his or her seal and the notation "altered by" followed by his or her signature and the date of such alteration, and a specific description of the alteration."
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DATE ISSUED
06-22-2026 ISSUED FOR
100%DD/50%CD REVIEW
07-20-2026 ISSUED FOR 90%CD
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08-17-2026
ISSUED FOR GENERAL
CONSTRUCTION BID AS SINGLE
PRIME CONTRACT INCLUDING
ALL TRADES



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PROPOSED NEW FACILITY
ELLENVILLE FIRE DISTRICT
203 S. MAIN ST. NYS ROUTE 209
ELLENVILLE, NY 12428
MECHANICAL
DETAILS

PROJECT No. 2501
EMTEC-7611

CHECKED BY: MF/APS

DRAWING:

M-5.11

EMTEC PROJECT NO. 7611 DRAWN BY: MF CHECKED BY: APS

[illegible]

① MODULATING GAS HEAT ② OUTDOOR AIR HOOD W/ SCREEN & MOTORIZED DAMPER ③ INTEGRAL NON-FUSED DISCONNECT SWITCH ④ MOISTURE ELIMINATORS ⑤ CLOGGED FILTER SWITCH ⑥ GROUND FAULT CONVENIENCE OUTLET 115VAC ⑦ DOWNFLOW SUPPLY AIR DUCT / DOWNFLOW RETURN AIR DUCT CONNECTION

⑧ FACTORY INSTALLED VFD W/ REMOTE KEYPAD ⑨ LOW LEAK DAMPERS ⑩ REMOTE CONTROL PANEL ⑪ HOT GAS REHEAT OPTION ⑫ LOW-LEAK ECONOMIZER WITH POWERED EXHAUST CONTROL ⑬ SERVICE CONVENIENCE PACKAGE W/ LIGHT IN UNIT ⑭ DOUBLE WALL CABINET CONSTRUCTION

⑮ INSTALL UNITS WITH DEMAND CONTROLLED VENTILATION ⑯ INSTALL UNITS ON MIN. 18" HIGH ROOF CURBS. COORDINATE FINAL UNIT LOCATIONS WITH STRUCTURAL PLANS.

⑰ OUTSIDE AIRFLOW IS FOR PEAK OCCUPANCY. DEMAND CONTROLLED VENTILATION SHALL RESET DOWN TO MIN. OA REQUIRED

ROOF-MOUNTED LP-GAS-FIRED KITCHEN MAKEUP AIR UNIT SCHEDULE															BASIS OF DESIGN CAPTIVEAIRE OR APPROVED EQUAL				
ID	MODEL NO.	SUPPLY FAN							OUTDOOR AIR CFM		GAS HEAT SECTION (LP — PROPANE)			ELECTRICAL (FAN ONLY)			APPROX. WEIGHT (LBS)	REMARKS	
		CFM	RPM	E.S.P. IN. W.G.	BHP	DRIVE	NAMEPLATE HP	FLA	MINIMUM	MAXIMUM	GAS PRESS. IN. W.G.	INPUT BTUH	OUTPUT BTUH	EFF. %	V/PH/Hz	MCA			MFS
MUA-1	A2-D.500-20D	3960	1745	1.0	3.0	DIRECT	5.0	15.0	2000	3960	11.0-14.0	326,171	300,077	92.0	208/3/60	18.8	25.0	700	① THROUGH ⑩

① ROOF MOUNTED WITH VERTICAL DISCHARGE ② NON FUSED DISCONNECT AND THRU BASE CONNECTIONS ③ UNPOWERED CONVENIENCE OUTLET ④ PROGRAMMABLE LOCAL THERMOSTAT CONTROLS

⑤ UNIT USES PROPANE (LP) GAS HEAT ⑥ 2-SPEED INDOOR FAN MOTOR CONTROLLED BY VFD ⑦ WITH AL/CU LOUVERED HAIL GUARDS ⑧ PROVIDE WITH DEMAND CONTROLLED VENTILATION AND REMOTE CO2 SENSOR.

⑨ WITH DUCT SMOKE DETECTOR ON THE RETURN SIDE AND SHUTDOWN RELAY ⑩ FURNISH & INSTALL 14 INCH HEIGHT ROOF CURB.

[illegible]

① INTEGRAL THERMOSTAT ② CEILING HUNG ③ FIELD MOUNTED DISCONNECT SWITCH ④ BELT GUARD PROTECTION ⑤ FURNISH & INSTALL UNIT HEATER WITH VERTICAL DEFLECTOR BLADES

⑥ VIBRATION ISOLATION KIT ⑦ LP-PROPANE GAS HEATING CONVERSION KIT ⑧ PROVIDE 2-STAGE GAS CONTROL IF AVAILABLE. SIZING MAY ONLY PERMIT SINGLE STAGE GAS CONTROL

[illegible]

① FIELD INSTALLED ELECTRIC HEATER KIT W/ POLARIZED PLUG CONNECTIONS ② SMART PROGRAMMABLE RESIDENTIAL THERMOSTAT 5H/2C ③ SWEAT-ELIMINATING CABINET W/ 2" MAX LEAKAGE RATE ④ LOW AMBIENT COOLING DOWN TO 55F ⑤ MOLDED-IN 1 INCH STANDARD FILTER RAIL FOR FIELD-SUPPLIED FILTERS ⑥ 5-YEAR WARRANTY (10-YEAR W/ REGISTRATION)

(7) HORIZONTAL CONFIGURATION (REAR RETURN/FRONT DISCHARGE) (8) FACTORY INSTALLED R-454B ELECTRONIC EXPANSION VALVE (EEV) W/ SLIDE DECK AND INTEGRATED HORIZONTAL DRAIN PAN (9) DEMAND CONTROLLED VENTILATION TO MAINTAIN MAXIMUM CO2 LEVEL OF 700 PPM (10) ENERGY EFFICIENCY EXCEEDS CODE MINIMUM EFFICIENCY BY 20%. ECONOMIZER NOT REQUIRED.

[illegible]

① NOMINAL COOLING CAPACITIES ARE BASED ON INDOOR COIL EAT OF 80/67°F (DB/WB), OUTDOOR OF 95°F (DB) ② PRELIMINARY ADDED FIELD REFRIGERANT CHARGE INDICATED IN SCHEDULES; FINAL CHARGE DEPENDENT ON APPROVED PIPING LAYOUT

③ EFFICIENCY VALUES FOR EER, IEER, COP ARE BASED ON AHRI 1230 TEST METHOD FOR MIXTURE OF DUCTED AND NON-DUCTED INDOOR UNITS ④ FURNISH & INSTALL WITH SALT-RESISTANT COATING

(5) FURNISH & INSTALL UNITS WITH ROOF EQUIPMENT RAILS - SEE MECHANICAL DETAILS

[illegible]

① FURNISH & INSTALL WIRED REMOTE TEMPERATURE CONTROLLER KIT W/ MIN. 25 FT. CABLE ② FURNISH & INSTALL CONDENSATE PUMP WITH SAFETY SWITCH ③ FURNISH & INSTALL ON-GRADE CONDENSING UNIT WITH LOW AMBIENT KIT AND WIND BAFFLE (GUARD)

④ FURNISH & INSTALL CONDENSING UNIT WITH MIN. 24" HIGH STANDS ⑤ CONTRACTOR SHALL SUBMIT FINAL REFRIGERANT PIPING LAYOUT TO MANUFACTURER FOR CONFIRMATION OF EQUIPMENT CAPACITIES BASED ON EFFECTIVE REFRIGERANT LENGTH

⑥ CONTRACTOR SHALL ADJUST ACTUAL REFRIGERANT PIPE DIMENSIONS BASED ON MANUFACTURER INSTRUCTIONS FOR TOTAL REFRIGERANT LENGTH ⑦ ALL REFRIGERANT PIPING SHALL BE INSULATED IN ACCORDANCE WITH PIPE INSULATION TABLE BELOW

MULTI V HR BOXES SCHEDULE							
ID	MODEL NO.	TYPE (DOUBLE/ MAIN/SUB)	NUMBER OF PORTS	NUMBER OF PORTS USED	ELECTRICAL (VOLTAGE)	RLA	MFS
HRU-AHU-1-1	PRHR034C	SINGLE	2	1	208/1/60	0.37	15.0
HRU-AHU-1-2	PRHR034C	SINGLE	2	1	208/1/60	0.37	15.0

NOTES:

1. PROVIDE END CAP FOR ALL UNUSED PORTS.
2. COORDINATE POWER REQUIREMENTS WITH ELECTRICAL CONTRACTOR.
3. FURNISH & INSTALL 1-1/4" CONDENSATE DRAIN FROM EACH UNIT. UPSIZE CONDENSATE LINE AS REQUIRED TO ACCOMMODATE THE BRANCH CONTROLLER.

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ISSUED FOR GENERAL
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PRIME CONTRACT INCLUDING
ALL TRADES

SEAL



SENDLEWSKI ARCHITECTS, P.C.

ARCHITECTS - PLANNERS

215 BOWDOKE AVENUE RIVERHEAD, NY 11901 (631) 727-5352

Contest



EMILCO
CONSULTING ENGINEERS, DPC

3555 Veterans Memorial Highway, Suite M
Ronkonkoma, NY 11779

PROPOSED NEW FACILITY

ELLENVILLE FIRE DISTRICT

203 S. MAIN ST. NYS ROUTE 209

82421 NY 12428
ELLENVILLE, NY

MECHANICAL
SCHEDULES

PROJECT No. 2501

CHECKED BY: MF/APS

DRAWING:

EMTEC PROJECT NO. 7611 DRAWN BY: MF CHECKED BY: APS

ENERGY RECOVERY VENTILATION (ERV) UNIT SCHEDULE

ID	MODEL NO.	SERVICE	LOCATION	PERFORMANCE (SUMMER)								PERFORMANCE (WINTER)					SUPPLY FAN (ECM)				EXHAUST FAN (ECM)				ELECTRICAL—PER MODULE 120V/1PH/60HZ				APPROX. WEIGHT (LBS)	REMARKS						
				OUTDOOR AIR		SUPPLY AIR		RETURN AIR		TEMP. RECOVERY (%)	ENTHALPY RECOVERY (%)	OUTDOOR AIR DB (°F)	SUPPLY AIR DB (°F)	RETURN AIR DB (°F)	TEMP. RECOVERY (%)	ENTHALPY RECOVERY (%)	AIRFLOW (CFM)	ESP (IN. WG)	MOTOR HP	MOTOR RPM	AIRFLOW (CFM)	ESP (IN. WG)	MOTOR HP	MOTOR RPM	VOLTAGE/PHASE			MCA			MOP	MFS				
				DB (°F)	WB (°F)	DB (°F)	WB (°F)	DB (°F)	WB (°F)																V	F	PH									
ERV-1	LGH-F300RVX2-E	VRFCU-1-1	1ST FLOOR	95.0	78.0	—	—	75.0	62.5	65.5%	50.0%	12.0	—	70.0	65.5%	63.0%	300.0	1.00	1/4	1725	300.0	1.00	1/4	1725	208/1/60	4.3	15	20	80.0	1	2	3	4	5	6	7
ERV-2	LGH-F600RVX2-E	VRFCU-2-1	2ND FLOOR	95.0	78.0	—	—	75.0	62.5	67.0%	50.0%	12.0	—	70.0	67.0%	64.0%	560.0	0.86	1/4	1725	475.0	0.86	1/4	1725	208/1/60	5.2	15	20	130.0	1	2	3	4	5	6	7
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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- NOTES:
1. FURNISH & INSTALL UNIT WITH M-NET CONNECTION.
2. INTERLOCK ERV UNIT WITH MITSUBISHI MAIN CONTROL PANEL.
3. FURNISH & INSTALL ALL REQUIRED CONTROLS FOR INTEGRATION TO MAIN MITSUBISHI CONTROL PANEL.
4. FURNISH & INSTALL DUCT CONNECTING FLANGES FOR OUTSIDE AIR AND & RELIEF AIR DUCTWORK.
5. MAINTAIN ALL MANUFACTURER RECOMMENDED CLEARANCES AROUND UNIT.
6. MAX EXTERNAL STATIC PRESSURE IS AT AIRFLOW LISTED WITH FAN SET TO EXTRA HIGH SPEED.
7. WASHABLE FACTORY STANDARD PRE-FILTER ON RETURN AND OA INTAKE SIDE OF CROSS PLATE CORE. MERV-7 FILTER INCLUDED

mitsubishi city multi variable refrigerant flow (vrf) outdoor unit schedule

ID	MODEL NO.	SERVICE	TYPE	QTY. INDOOR UNITS CONNECTED	LOCATION	MODULES	NOMINAL COOLING CAPACITY (BTU/H)	NOMINAL HEATING CAPACITY (BTU/H)	COOLING EFFICIENCY EER/EER2 (SEER)	HEATING COP @ 47°F (HSPF)	NOM SYSTEM CONNECTED CAPACITY (% OF NOM)	DESIGN COOLING OUTDOOR TEMP DB (°F)	DESIGN HEATING OUTDOOR TEMP WB (°F)	CORRECTED COOLING TOTAL CAPACITY (BTU/H)	CORRECTED HEATING CAPACITY (BTU/H)	INVERTER DRIVEN COMPRESSOR TYPE/QUANTITY	REFRIGERANT TYPE	FACTORY CHARGE (LBS, OZ)	ELECTRICAL—PER MODULE (REFER TO CIRCUIT QTY.)						APPROX. WEIGHT (LBS)	REMARKS							
																			CIRCUIT QTY.	VOLTAGE/PHASE/HZ	MCA	RFS	MOCP										
CU—READY	PUZ—AK18NL	AC—READY	HEAT PUMP	ONE (1)	MOUNTED ON FLAT ROOF	—	18,000	23,000	13.7(24.7)	3.7(9.8)	100.0%	95.0	12.0	17,303.7	13,209.9	SCROLL/1	R454B	4 LB, 6 OZ	1	208/ 1—PHASE / 60 HZ	16	20	27	100.0	1	2	3	4	5	6	7	8	
VRFCU—1	PURY—EM72TXU—A	VRF—1-1 THROUGH VRF—1-4	HEAT RECOVERY VRF	FOUR (4)	MOUNTED ON FLAT ROOF	(1) EM72	72,000	80,000	24.2	4.35	100.0%	95.0	12.0	70,580.0	71,144.9	SCROLL/1	R32	11 LB, 11 OZ	1	208/ 3—PHASE / 60 HZ	40	40	60	610.0	1	2	3	4	5	6	7	8	
VRFCU—2	PURY—HM120TXU—A	VRF—2-1 THROUGH VRF—2-7	HEAT RECOVERY VRF	SEVEN (7)	MOUNTED ON FLAT ROOF	(1) HM120	120,000	135,000	23.2	3.98	95.0%	95.0	12.0	116,856.7	119,300.7	SCROLL/1	R32	13 LB, 15 OZ	1	208/ 3—PHASE / 60 HZ	60	70	100	710.0	1	2	3	4	5	6	7	8	
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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- ① NOMINAL COOLING CAPACITIES ARE BASED ON INDOOR COIL EAT OF 80/67°F (DB/WB), OUTDOOR OF 95°F (DB) ② NOMINAL HEATING CAPACITIES ARE BASED ON INDOOR COIL EAT OF 70°F (DB), OUTDOOR OF 43°F (WB)
③ EFFICIENCY VALUES FOR EER, IEER, COP ARE BASED ON AHRI 1230 TEST METHOD FOR MIXTURE OF DUCTED AND NON-DUCTED INDOOR UNITS ④ FURNISH & INSTALL WITH MAIN BRANCH CONTROLLER SIZED FOR QUANTITY OF UNITS ⑤ FURNISH & INSTALL WITH SALT-RESISTANT COATING
⑥ FURNISH & INSTALL UNITS WITH BASE PAN HEATER ⑦ FURNISH & INSTALL UNITS WITH ROOF SUPPORT – SEE MECHANICAL DETAILS ⑧ PRELIMINARY ADDED FIELD REFRIGERANT CHARGE INDICATED IN SCHEDULES; FINAL CHARGE DEPENDENT ON APPROVED PIPING LAYOUT

mitsubishi city multi variable refrigerant flow (vrf) indoor unit schedule

BASIS OF DESIGN MITSUBISHI OR APPROVED EQUAL																				VOLTAGE / PHASE	POWER COOLING 208V	POWER HEATING 208V	ELECTRICAL MCA/MFS	NOTES / OPTIONS
ID	MODEL	SERVICE	TYPE	NOMINAL COOLING CAPACITY (BTU/h)	NOMINAL HEATING CAPACITY (BTU/h)	COOLING DESIGN ENTERING TEMP DB/WB (°F)	HEATING DESIGN ENTERING TEMP DB (°F)	COOLING TOTAL CAPACITY (BTU/h)	COOLING SENSIBLE CAPACITY (BTU/h)	HEATING CAPACITY (BTU/h)	ESTIMATED COOLING COIL LAT (°F)	ESTIMATED HEATING COIL LAT (°F)	PEAK FAN AIRFLOW (cfm)											
AC-READY	PLA-AE18NL	1ST FL – READY ROOM	CEILING CASSETTE (FOUR-WAY BLOW)	18,000	24,000	80.0/67.0	70.0	17,303	13,924	13,210	58.1	90.4	600	208/1-PHASE	–	–	1/15	123456789						
VRF-1-1	PEFY-M15NMAU-A	1ST FL – RADIO ROOM	CEILING CONCEALED (DUCTED UNIT)	15,000	17,000	80.0/67.0	70.0	13,070	10,300	13,220	60.4	92.6	500	208/1-PHASE	0.06	0.06	2.5/15	123456789						
VRF-1-2	PEFY-M12NMAU-A	1ST FL – CHIEFS OFFICE	CEILING CONCEALED (DUCTED UNIT)	12,000	13,500	80.0/67.0	70.0	10,500	7,450	10,520	61.2	93.5	370	208/1-PHASE	0.05	0.05	1.9/15	123456789						
VRF-1-3	PEFY-M30NMAU-A	1ST FL – FITNESS ROOM	CEILING CONCEALED (DUCTED UNIT)	30,000	34,000	80.0/67.0	70.0	26,250	23,500	26,530	62.7	96.0	1270	208/1-PHASE	0.22	0.22	3.1/15	123456789						
VRF-1-4	PEFY-M24NMAU-A	1ST FL – KITCHEN	CEILING CONCEALED (DUCTED UNIT)	24,000	27,000	80.0/67.0	70.0	20,770	17,980	20,860	60.8	91.9	880	208/1-PHASE	0.14	0.14	2.5/15	123456789						
VRF-2-1	PEFY-M30NMAU-A	2ND FL – COMMISSIONERS OFFICE	CEILING CONCEALED (DUCTED UNIT)	30,000	34,000	80.0/67.0	70.0	30,410	25,000	31,830	61.6	90.1	1270	208/1-PHASE	0.22	0.22	3.1/15	123456789						
VRF-2-2	PEFY-M15NMAU-A	2ND FL – SECRETARY/TREAS.	CEILING CONCEALED (DUCTED UNIT)	15,000	17,000	80.0/67.0	70.0	15,150	11,100	15,900	58.9	97.8	500	208/1-PHASE	0.06	0.06	2.5/15	123456789						
VRF-2-3	PLFY-EM12NEMU-A	2ND FL – FILES ROOM	CEILING CASSETTE (FOUR-WAY BLOW)	12,000	13,500	80.0/67.0	70.0	12,070	8,050	12,600	67.3	89.0	600	208/1-PHASE	0.03	0.02	0.39/15	123456789						
VRF-2-4	PEFYM24NMAU-A	2ND FL – CONFERENCE ROOM	CEILING CONCEALED (DUCTED UNIT)	24,000	27,000	80.0/67.0	70.0	24,400	18,160	25,300	60.8	92.5	880	208/1-PHASE	0.14	0.14	2.5/15	123456789						
VRF-2-5	PEFY-M08NMAU-A	2ND FL – CAPTAINS OFFICE	CEILING CONCEALED (DUCTED UNIT)	8,000	9,000	80.0/67.0	70.0	8,100	6,210	8,420	60.5	93.5	300	208/1-PHASE	0.04	0.04	1.8/15	123456789						
VRF-2-6	PEFY-M12NMAU-A	2ND FL – CIVIL OFFICERS	CEILING CONCEALED (DUCTED UNIT)	12,000	13,500	80.0/67.0	70.0	12,150	8,110	12,630	59.4	98.8	370	208/1-PHASE	0.05	0.05	1.9/15	123456789						
VRF-2-7	PEFY-M12NMAU-A	2ND FL – CORE AREAS	CEILING CONCEALED (DUCTED UNIT)	12,000	13,500	80.0/67.0	70.0	12,150	8,110	12,630	59.4	98.8	370	208/1-PHASE	0.05	0.05	1.9/15	123456789						

- ① NOMINAL COOLING CAPACITIES ARE BASED ON INDOOR COIL EAT OF 80/67°F (DB/WB), OUTDOOR OF 95°F (DB) ② NOMINAL HEATING CAPACITIES ARE BASED ON INDOOR COIL EAT OF 70°F (DB), OUTDOOR OF 43°F (WB)
③ SEE OUTDOOR UNIT SCHEDULE FOR OUTDOOR AMBIENT CONDITIONS, CONNECTED CAPACITY, AND OTHER FACTORS ASSOCIATED WITH CORRECTED CAPACITIES ④ SEE SCHEMATIC PIPING/CONTROL DIAGRAM FOR INDICATION OF REQUIRED INDOOR UNIT REMOTE CONTROLLERS, SYSTEM CONTROLLERS, AND INTEGRATION DEVICES.
⑤ FURNISH & INSTALL AN AE-200 SYSTEM REMOTE CONTROLLER. WIRE ALL INDOOR UNITS TO MASTER CONTROLLER, MOUNTED IN EQUIP STORAGE. ⑥ PACKAGE CONSISTS OF MULTIPLE MODULES SHIPPED INDEPENDENTLY. UNITS SHALL BE FIELD MOUNTED AND PIPED BY THIS CONTRACTOR.
⑦ FURNISH & INSTALL WITH 208V CONDENSATE PUMP FOR EACH UNIT WITH DPSLI CONDENSATE DETECTION SWITCH. ⑧ DUCTED UNITS SHALL BE EQUIPPED WITH FBL SERIES FILTER KIT – MERV 8 ⑨ UNITS SHALL BE FURNISHED & INSTALLED WITH MINIMUM MERV-7 FILTRATION OR GREATER.

CEILING SUSPENDED CIRCULATION FAN SCHEDULE

ID	QUANTITY	MODEL NO.	SERVICE	FAN PERFORMANCE			ELECTRICAL			APPROX. WEIGHT (LBS)	REMARKS
				FAN BLADE DIAMETER	FAN RPM	MOTOR (TYPE, HP)	V/PH/Hz	FLA	MFS		
CF-1 THRU CF-4	4	AVD-370	CIRCULATION FANS	10"-0"	140	DIRECT, 3/4	120/1/60	2.7	20.0	80.0	123456789
CF-5 & CF-6	2	AVD-370	CIRCULATION FANS	6"-0"	140	DIRECT, 3/4	120/1/60	2.7	20.0	80.0	123456789
-	-	-	-	-	-	-	-	-	-	-	-

- ① CEILING SUSPENDED, CIRCULATION FAN W/ RATED FOR INDOOR/OUTDOOR USE ② CONTRACTOR TO MAINTAIN MANUFACTURER RECOMMENDED FAN SPACING & CLEARANCES (2FT ON SIDES / 5 FT BELOW CEILING)
③ FURNISH & INSTALL FACTORY PROVIDED DIGITAL TOUCHSCREEN CONTROLLER (CONTROLLER 4) TO CONTROL LISTED FANS ON PLAN WITH FAULT CODE ACCESS ④ LOW-VOLTAGE WIRING FOR THE CONTROLLER TO BE COORDINATED WITH ELECTRICAL CONTRACTOR.
⑤ AVD UNIVERSAL MOUNT WITH I-BEAM HARDWARE KIT ⑥ FURNISH & INSTALL AIRLYNK-BACNET CONTROLS FOR INTEGRATION TO BMS ⑦ ARCHITECT SHALL SPECIFY COLOR UPGRADES & POWDER COATINGS FOR FANS
⑧ FURNISH & INSTALL WITH FUSED DISCONNECT SWITCH ⑨ FURNISH & INSTALL WITH AIREFFECT TEMPERATURE CONTROL SENSORS (1 FLOOR MOUNTED TEMP SENSOR AND 1 CEILING MOUNTED TEMP SENSOR)

AIR FILTRATION UNIT (DUCTED, CEILING SUSPENDED)

ID	MODEL NO.	SERVICE	AIRFLOW			BODY MATERIAL	SOUND LEVEL (DBA)	DIMENSIONS (IN)			ELECTRICAL			APPROX. WEIGHT (LBS)	REMARKS
			CFM	POWER (W)	Δ P (IN.WG)			LENGTH	WIDTH	HEIGHT	V/PH/Hz	FLA	MOCBP		
AF-1	CC-400	LOCKER ROOM AREA	400	170	0.71	T-316/SS	5' PERIMETER – 61.3	43.8"	12.9"	12.3"	120/1/60	2.4	20.0	75.0	1②③④
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

- ① ART. 94000117 – FILTER CONFIGURATION FOR SMELLS REMOVAL AND 97MM ECOLEAT ② UNITS ARE SHOWN FOR DIRECT INTAKE FROM SPACE (NON-DUCTED UNITS)
③ EC FAN MOTOR ④ PRESSURE SENSING TAPS UPSTREAM/DOWNSTREAM OF PARTICULATE FILTERS

VRF MAIN BRANCH CONTROLLER SCHEDULE

ID	MODEL NO.	TYPE (DOUBLE/ MAIN/SUB)	NUMBER OF PORTS	NUMBER OF PORTS USED	ELECTRICAL (VOLTAGE)	MCA
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EXHAUST FAN SCHEDULE

BASIS OF DESIGN: CAPTIVEAIRE, GREENHECK OR APPROVED EQUAL

ID	MODEL NO.	SERVICE	FAN							REQUIRED OPENING W x H	ELECTRICAL				APPROX WEIGHT (LBS)	DISCHARGE VELOCITY (FPM)	REMARKS
			CFM	RPM	E.S.P. IN. W.G.	BHP	DRIVE	NAMEPLATE HP	SONES		V/PH/Hz	FLA	MCA	MOP			
KXF-1	DU240HFA	TYPE 1 (GREASE) KITCHEN HOOD EXHAUST FAN (1ST FLOOR KITCHEN)	4400	921	1.50	2.17	DIRECT	5	16.6	26x26	208/3/60	15.0	18.8	25.0	270	1000	(1)2(3)4(5)6(8)9(10)
EF-STANDBY	SQ-99-VG	STANDBY EXHAUST FOR GARAGE AREA	400	1460	0.75	0.14	DIRECT	1/4	10.0	12x12	120/1/60	2.9	4.0	20.0	60	270	(2)3(5)(7)(11)
EF-EMERGENCY	GB-200	EMERGENCY EXHAUST FOR GARAGE AREA	4200	1070	1.00	1.50	DIRECT	2	16.0	26x26	208/3/60	7.5	9.4	20.0	150	1760	(1)2(3)4(5)(7)
EF-1	SQ-99-VG	1ST FLOOR ENVIRONMENTAL EXHAUST	375	1540	0.75	0.18	DIRECT	1/4	11.0	12x12	120/1/60	2.9	4.0	20.0	60	370	(1)2(3)4(5)(7)
EF-ELEC	SQ-97-VG	1ST FLOOR ELECTRICAL ROOM	800	1430	1.00	0.35	DIRECT	3/4	10.2	18x18	120/1/60	8.8	11.0	20.0	70	525	(2)3(5)(7)(11)2
EF-BOILER	G-130-VG	MEZZANINE BOILER ROOM EXHAUST	800	984	0.50	0.11	DIRECT	1/4	6.8	15x15	120/1/60	3.8	4.8	20.0	60	720	(1)2(3)(5)(7)(12)
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

- (1) ROOF MOUNTED EXHAUST FAN W/ MIN. 20" HIGH ROOF CURB (2) FURNISH & INSTALL EXHAUST FAN W/ DISCONNECT SWITCH, VIBRATION ISOLATORS, MOTOR COVER, PROGRAMMABLE TIME CLOCK (3) FURNISH & INSTALL W/ MOTORIZED BACKDRAFT DAMPER
(4) NEMA-3R DISCONNECT SWITCH FOR OUTDOOR INSTALLATION (5) FURNISH & INSTALL FAN W/ ODP PREMIUM MOTOR & VARIABLE SPEED CONTROL (6) FANS SHALL BE MANUFACTURED BY CAPTIVEAIRE OR APPROVED EQUAL
(7) FANS SHALL BE MANUFACTURED BY GREENHECK OR APPROVED EQUAL (8) HIGH HEAT OPERATION 300F & GREASE CLASSIFICATION TESTING (9) UPBLAST GREASE CUP W/ 24" DISCHARGE EXTENSION
(10) UPBLAST FAN ROOF CURB - REFER TO CAPTIVEAIRE INSTALLATION DETAILS FOR SPECIFICATIONS (11) FURNISH & INSTALL INLINE EXHAUST FAN (12) FAN SHALL OPERATE VIA THERMOSTAT SET TO 85F (ADJUSTABLE)

ELECTRIC UNIT HEATER SCHEDULE

BASIS OF DESIGN: QMARK OR APPROVED EQUAL

ID	MODEL NO.	SERVICE	QUANTITY	FAN					AIR SIDE			ELECTRIC HEAT KW	APPROX. DIMENSION WxDxH	ELECTRICAL				APPROX. WEIGHT (LBS)	REMARKS
				CFM	RPM	FPM	NAMEPLATE HP	MOUNTING HEIGHT (FT)	ENTERING TEMP :°F	LEAVING TEMP :°F	TOTAL MBH			V/PH/Hz	FLA	MCA	MFS		
EUH-1	MUH03-81	FIRST FLOOR RPZ ROOM	1	350	1600	800	1/100	8.0	50	77	10.2	3.0	14"x7.5"x16"	208/1/60	14.5	18.1	25.0	30.0	(1)2(3)4
EUH-2	MUH03-81	FIRST FLOOR ELECTRICAL ROOM	1	350	1600	800	1/100	8.0	50	77	10.2	3.0	14"x7.5"x16"	208/1/60	14.5	18.1	25.0	30.0	(1)2(3)4
EUH-3	MUH03-81	FIRST FLOOR DELIVERY	1	350	1600	800	1/100	8.0	50	77	10.2	3.0	14"x7.5"x16"	208/1/60	14.5	18.1	25.0	30.0	(1)2(3)4
EUH-4	MUH03-81	MEZZANINE BOILER ROOM	1	350	1600	800	1/100	8.0	50	77	10.2	3.0	14"x7.5"x16"	208/1/60	14.5	18.1	25.0	30.0	(1)2(3)4
EUH-5	MUH03-81	MEZZANINE MECHANICAL ROOM	1	350	1600	800	1/100	8.0	50	77	10.2	3.0	14"x7.5"x16"	208/1/60	14.5	18.1	25.0	30.0	(1)2(3)4

- (1) ROOM THERMOSTAT REMOTE MOUNTED ON WALL ADJACENT TO DOORWAY (2) WALL MOUNTED W/ MOUNTING KIT (3) FIELD MOUNTED DISCONNECT SWITCH (4) REMOTE FAN SWITCH

ELECTRIC RECESSED WALL CABINET HEATER SCHEDULE

BASIS OF DESIGN: QMARK OR APPROVED EQUAL

ID	MODEL NO.	SERVICE	QUANTITY	CFM	AIR SIDE			ELECTRIC HEAT WATTS	APPROX. DIMENSION WxDxH	ELECTRICAL				APPROX. WEIGHT (LBS)	REMARKS
					ENTERING TEMP :°F	LEAVING TEMP :°F	TOTAL MBH			V/PH/Hz	FLA	MCA	MFS		
ECH-1 (TYP.)	CWH3404F	STAIRWELL LANDINGS, EGRESS DOORWAYS	SEE PLANS	100	40	75	10.2	3000	16"x4"x20"	208/1/60	14.5	18.2	25.0	25.0	(1)2(3)4
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

- (1) INTEGRAL THERMOSTAT (2) WALL MOUNTED W/ SURFACE MOUNTING KIT (3) FIELD MOUNTED DISCONNECT SWITCH (4) TAMPER RESISTANT FRONT COVER - COLOR BY ARCHITECT

FREESTANDING FLOOR MOUNTED ATTIC DEHUMIDIFIER SCHEDULE

BASIS OF DESIGN: APRILAIRE OR APPROVED EQUAL

ID	MODEL NO.	SERVICE	AIRFLOW RATE (CFM)	WATER REMOVAL PINTS/DAY	HUMIDITY SETPOINT (%Rh)	FILTRATION	SOUND (dBA)	COND. SIZE (DIAM.)	REFRIGERANT TYPE	APPROX. DIMENSION WxDxH	ELECTRICAL				APPROX. WEIGHT (LBS)	REMARKS
											RATED CURRENT	V/PH/Hz	MCA	MFS		
DH-1	E100	ATTIC SPACE	245 @ 0.2"WC	100	55.0	MERV-8	55.0	3/4"	R-410A	14x26x15	6.9A	120/1/60	8.7	20.0	65.0	(1)2(3)4
DH-2	E100	ATTIC SPACE	245 @ 0.2"WC	100	55.0	MERV-8	55.0	3/4"	R-410A	14x26x15	6.9A	120/1/60	8.7	20.0	65.0	(1)2(3)4
DH-3	E100	ATTIC SPACE	245 @ 0.2"WC	100	55.0	MERV-8	55.0	3/4"	R-410A	14x26x15	6.9A	120/1/60	8.7	20.0	65.0	(1)2(3)4
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

- (1) PROVIDE VIBRATION ISOLATION (2) FLOOR MOUNTED WITH LEG SUPPORTS (3) BUILT-IN DIGITAL CONTROL W/ DISPLAY (4) WASHABLE MERV 8 FILTER

AIR TERMINAL SCHEDULE

BASIS OF DESIGN: TITUS OR APPROVED EQUAL

SYMBOL	DESCRIPTION	MODEL	NECK	FACE	CFM	REMARKS	NOTES
CD	SUPPLY DIFFUSER	TDC	6x6	12x12	UP TO 50	OBD, LAY IN MOUNT, SEE DWG FOR DISCHARGE PATTERN	(1)2(3)4(5)
		TDC	6x6	24x24	51 TO 125	OBD, LAY IN MOUNT, SEE DWG FOR DISCHARGE PATTERN	(1)2(3)4(5)
		TDC	9x9	24x24	126 TO 275	OBD, LAY IN MOUNT, SEE DWG FOR DISCHARGE PATTERN	(1)2(3)4(5)
		TDC	12x12	24x24	276 TO 475	OBD, LAY IN MOUNT, SEE DWG FOR DISCHARGE PATTERN	(1)2(3)4(5)
		TDC	15x15	24x24	476 TO 750	OBD, LAY IN MOUNT, SEE DWG FOR DISCHARGE PATTERN	(1)2(3)4(5)
SG	SUPPLY SIDEWALL GRILLE	301FS	14x6	16x8	200 CFM	3/4" SPACING, 35' DEFL, SURFACE MOUNT	(1) (4)5(6)
		301FS	18x8	20x10	500 CFM	3/4" SPACING, 35' DEFL, SURFACE MOUNT	(1) (4)5(6)
		301FS	24x18	26x20	1100 CFM	3/4" SPACING, 35' DEFL, SURFACE MOUNT	(1) (4)5(6)
		301FS	46x22	48x24	2800 CFM	3/4" SPACING, 35' DEFL, SURFACE MOUNT	(1) (4)5(6)
SRG	SIDEWALL RETURN GRILLE	350RL	22x6	24x8	350 CFM	3/4" SPACING, 35' DEFL, SURFACE MOUNT	(1) (4)5(6)
		350RL	18x10	20x12	500 CFM	3/4" SPACING, 35' DEFL, SURFACE MOUNT	(1) (4)5(6)
		350RL	30x12	32x14	1100 CFM	3/4" SPACING, 35' DEFL, SURFACE MOUNT	(1) (4)5(6)
		350RL	46x22	48x24	2800 CFM	3/4" SPACING, 35' DEFL, SURFACE MOUNT	(1) (4)5(6)
RG	RETURN GRILLE	350RL	-	12x12	UP TO 1200	3/4" SPACING, 35' DEFL, LAY IN MOUNT	(1)2 (4)5
		350RL	-	12x24	UP TO 1200	3/4" SPACING, 35' DEFL, LAY IN MOUNT	(1)2 (4)5
		350RL	-	24x24	UP TO 1200	3/4" SPACING, 35' DEFL, LAY IN MOUNT	(1)2 (4)5
EG	EXHAUST GRILLE	350FL	10x10	12x12	UP TO 180	3/4" SPACING, 35' DEFL, LAY IN MOUNT	(1)2 (4)5
		350FL	22x10	24x12	181 TO 500	3/4" SPACING, 35' DEFL, LAY IN MOUNT	(1)2 (4)5
		350FL	22x22	24x24	181 TO 500	3/4" SPACING, 35' DEFL, LAY IN MOUNT (SEE PLANS)	(1)2 (4)5
DL	DRUM LOUVER	DL-SV	20x10	22x12	UP TO 730	SPLIT VANE OPTION, AIR SCOOP DEVICE	(1) (4)5
LD	LINEAR DIFFUSER (SUPPLY)	FL-10	6" INLET	1-SLOT, 1" WIDTH	UP TO 99	CONTINUOUS BAR, LAY IN MOUNT, 2 FT. PLENUM LENGTH	(1)2(3)4(5)6(7)
		FL-10	6" INLET	1-SLOT, 1" WIDTH	100 TO 160	CONTINUOUS BAR, LAY IN MOUNT, 4 FT. PLENUM LENGTH	(1)2(3)4(5)6(7)
		FL-10	8" INLET	1-SLOT, 1" WIDTH	161 TO 190	CONTINUOUS BAR, LAY IN MOUNT, 4 FT. PLENUM LENGTH	(1)2(3)4(5)6(7)
LDR	LINEAR DIFFUSER (RETURN)	FL-10	-	1-SLOT, 1" WIDTH	-	CONTINUOUS BAR, LAY IN MOUNT, LENGTH ON PLANS	(1)2(3)4(5)6(7)8

- (1) FURNISH & INSTALL OBD ONLY WHERE VOLUME DAMPER NOT PROVIDED/FEASIBLE IN DUCTWORK (2) CEILING MOUNTED
(3) INCREASE NECK SIZE FOR ALL DIFFUSERS WITH THREE-WAY BLOW (4) CONTRACTOR SHALL ADJUST AIR DEFLECTORS TO OPTIMIZE AIRFLOW THROUGH SPACE
(5) REFER TO AIR BALANCING SPECIFICATIONS FOR COMFORT BALANCING REQUIREMENTS (6) WALL MOUNTED
(7) COORDINATE BORDER TYPE/COLOR OPTIONS WITH ARCHITECT (8) COORDINATE INACTIVE SECTIONS WITH ARCHITECT FOR CONTINUOUS APPEARANCE

DATE

ISSUED

06-22-2026 ISSUED FOR
100%DD/50%CD REVIEW
07-20-2026 ISSUED FOR 90%CD
REVIEW
08-17-2026
ISSUED FOR GENERAL
CONSTRUCTION BID AS SINGLE
PRIME CONTRACT INCLUDING
ALL TRADES

SEAL



SENDLEWSKI ARCHITECTS, P.C.

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PROPOSED NEW FACILITY
ELLENVILLE FIRE DISTRICT
203 S. MAIN ST. NYS ROUTE 209
ELLENVILLE, NY 12428

MECHANICAL
SCHEDULES

PROJECT No. 2501
EMTEC-7611

CHECKED BY: MF/APS

DRAWING:

M-6.3

"It is a violation of the State Education Law for any person, unless he or she is acting under the direction of a licensed professional engineer to alter an item in anyway, on this drawing and/or in this specification in anyway. If any such item is altered, the altering engineer shall affix to the item his or her seal and the notation "altered by" followed by his or her signature and the date of such alteration, and a specific description of the alteration."
This plan is approved only for the work indicated on the application specification sheet, all other matters are not to be relied upon, or to be considered as either being approved or in accordance with applicable codes.

EMTEC PROJECT NO. 7611 DRAWN BY: MF CHECKED BY: APS

EMTEC PROJECT #:		7611			2020 NEW YORK STATE MECHANICAL CODE VENTILATION INDEX TABLE 403.3.1.1 MINIMUM VENTILATION RATES				Vbz Voz Vpz SA OA			
EMTEC PROJECT NAME:		Ellenville FD										
OUTSIDE AIR RATIO (%)		15%										
ZONE EFFECTIVENESS (ZB)		0.80										
UNIT:		GARAGE RTU										
ZONE NAME/ SPACE NAME		MULTI.	FLOOR AREA	MAXIMUM OCCUPANTS	REQUIRED OUTDOOR AIR RATE	REQUIRED OUTDOOR AIR RATE	MINIMUM REQUIRED OUTDOOR AIR RATE	REQUIRED OUTDOOR AIR	CORRECTED OUTDOOR AIR RATE	REQUIRED SUPPLY AIR	PROVIDED SUPPLY AIR	PROVIDED OUTSIDE AIR
			(FT²)	(PEOPLE)	CFM/PERSON	(CFM/FT²)	(CFM)	(CFM)	(CFM)	(CFM)	(CFM)	(CFM)
RTU-1-1												
1F - DRIVE THRU BAYS		1	6547	16	10	0.06	552.82	552.8	691.0	4607	5100	765
1F - SCBA		1	105	0	0	0.06	6.3	6.3	7.9	53	80	12
1F - STORAGE		1	112	0	0	0.06	6.72	6.7	8.4	56	80	12
1F- WORK ROOM		1	178	0	0	0.06	10.68	10.7	13.4	89	120	18
MEZZ - ENCLOSED STORAGE ROOM		1	1224	0	0	0.06	73.44	73.4	91.8	612	620	93
TOTALS (INCL. SPACE MULTIPLIERS)			8166	16			649.96	649.96	812.45	5416.3333	6000	900

EMTEC PROJECT #:				7611			2025 NEW YORK STATE MECHANICAL CODE VENTILATION INDEX TABLE 403.3.1.1 MINIMUM VENTILATION RATES			Vbz Voz Vpz SA OA		
EMTEC PROJECT NAME:				Ellenville FD								
OUTSIDE AIR RATIO (%)				22%								
ZONE EFFECTIVENESS (ZB)				0.80								
UNIT:				AHU-READY ROOM								
ZONE NAME / SPACE NAME		MULTI.	FLOOR AREA	MAXIMUM OCCUPANTS	REQUIRED OUTDOOR AIR RATE	REQUIRED OUTDOOR AIR RATE	MINIMUM REQUIRED OUTDOOR AIR RATE	REQUIRED OUTDOOR AIR	CORRECTED OUTDOOR AIR RATE	REQUIRED SUPPLY AIR	PROVIDED SUPPLY AIR	PROVIDED OUTSIDE AIR
			(FT²)	(PEOPLE)	CFM/PERSON	CFM/FT²	CFM	(CFM)	(CFM)	(CFM)	(CFM)	(CFM)
AHU-READY												
GARAGE READY ROOM		1	310	6	5	0.12	67.2	67.2	84.0	382	400	88
TOTALS (INCL. SPACE MULTIPLIERS)			310	6			67.2	67.2	84	381.81818	400	88

EMTEC PROJECT #:		7131			2025 NEW YORK STATE MECHANICAL CODE VENTILATION INDEX TABLE 403.3.1.1 MINIMUM VENTILATION RATES			Vbz Voz Vpz SA OA					
EMTEC PROJECT NAME:		Ellenville FD											
OUTSIDE AIR RATIO (%):		24%											
ZONE EFFECTIVENESS (ZB):		0.80											
UNIT:		MULTIPURPOSE AHU											
ZONE NAME / SPACE NAME		MULTI.	FLOOR AREA	MAX CARRIER HAP AIRFLOW	MAXIMUM OCCUPANTS	REQUIRED OUTDOOR AIR RATE	REQUIRED OUTDOOR AIR RATE	MINIMUM REQUIRED OUTDOOR AIR RATE	REQUIRED OUTDOOR AIR	CORRECTED OUTDOOR AIR RATE	REQUIRED SUPPLY AIR	PROVIDED SUPPLY AIR	PROVIDED OUTSIDE AIR
			(FT²)	(CFM)	(PEOPLE)	CFM/PERSON	CFM/FT²	(CFM)	(CFM)	(CFM)	(CFM)	(CFM)	(CFM)
AHU-1-1													
1F - TABLES/CHAIRS STORAGE		1	114	122	0	0	0.06	6.84	6.8	8.6	122	130	31.2
1F - MULTIPURPOSE ROOM		1	861	1419	52	7.5	0.06	441.66	441.7	552.1	2300	2370	568.8
TOTALS (INCL. SPACE MULTIPLIERS)			975	1541	52			448.5	448.5	560.625	2422.3125	2500	600

EMTEC PROJECT #:		7131			2025 NEW YORK STATE MECHANICAL CODE VENTILATION INDEX TABLE 403.3.1.1 MINIMUM VENTILATION RATES			Vbz Voz Vpz SA OA					
EMTEC PROJECT NAME:		Ellenville FD											
OUTSIDE AIR RATIO (%)		25%											
ZONE EFFECTIVENESS (ZB)		0.80											
UNIT:		MULTIPURPOSE AHU											
ZONE NAME/ SPACE NAME		MULTI.	FLOOR AREA	MAX CARRIER HAP AIRFLOW	MAXIMUM OCCUPANTS	REQUIRED OUTDOOR AIR RATE	REQUIRED OUTDOOR AIR RATE	MINIMUM REQUIRED OUTDOOR AIR RATE	REQUIRED OUTDOOR AIR	CORRECTED OUTDOOR AIR RATE	REQUIRED SUPPLY AIR	PROVIDED SUPPLY AIR	PROVIDED OUTSIDE AIR
			(FT²)	(CFM)	(PEOPLE)	CFM/PERSON	(CFM/FT²)	(CFM)	(CFM)	(CFM)	(CFM)	(CFM)	(CFM)
AHU-1-2													
1F - COMMUNITY SHELTER ROOM		1	771	936	52	7.5	0.06	436.26	436.3	545.3	2181	2390	597.5
1F - SERVICE AREA		1	106	106	0	7.5	0.12	12.72	12.7	15.9	106	110	27.5
TOTALS (INCL. SPACE MULTIPLIERS)			877	1042	52			448.98	448.98	561.225	2287.3	2500	625

EMTEC PROJECT #:		7611			2025 NEW YORK STATE MECHANICAL CODE VENTILATION INDEX TABLE 403.3.1.1 MINIMUM VENTILATION RATES				Vbz Voz Vpz SA OA			
EMTEC PROJECT NAME:		Ellenville FD										
OUTSIDE AIR RATIO (%)		18%										
ZONE EFFECTIVENESS (ZB)		0.80										
UNIT:		AHU-LOBBY										
ZONE NAME / SPACE NAME		MULTI.	FLOOR AREA	MAXIMUM OCCUPANTS	REQUIRED OUTDOOR AIR RATE	REQUIRED OUTDOOR AIR RATE	MINIMUM REQUIRED OUTDOOR AIR RATE	REQUIRED OUTDOOR AIR	CORRECTED OUTDOOR AIR RATE	REQUIRED SUPPLY AIR	PROVIDED SUPPLY AIR	PROVIDED OUTSIDE AIR
			(FT²)	(PEOPLE)	CFM/PERSON	CFM/FT²	CFM	(CFM)	(CFM)	(CFM)	(CFM)	(CFM)
AHU-1-3												
1F - LOBBY		1	301	5	5	0.06	43.06	43.1	53.8	299	300	54
1F - CORRIDOR 2		1	207	0	0	0.06	12.42	12.4	15.5	86	200	36
1F - MENS RESTROOM		1	139	0	0	0	0	0.0	0.0	0	75	13.5
1F - WOMENS RESTROOM		1	137	0	0	0	0	0.0	0.0	0	75	13.5
1F - VESTIBULE 1		1	93	0	0	0	0	0.0	0.0	0	150	27
1F - VESTIBULE 2		1	47	0	0	0	0	0.0	0.0	0	100	18
1F - INFO/MAIL AREA		1	142	0	0	0	0	0.0	0.0	0	150	27
1F - CORRIDOR 1		1	172	0	0	0.06	10.32	10.3	12.9	72	150	27
1F - BR/SHWR 1		1	59	0	0	0	0	0.0	0.0	0	0	0
1F - BR/SHWR 2		1	59	0	0	0	0	0.0	0.0	0	0	0
TOTALS (INCL. SPACE MULTIPLIERS)			1356	5			65.8	65.8	82.25	456.94444	1200	216

Project: 7611
Project Name: Ellenville FD
Location: Ellenville, NY
Engineer: MF
Date Last Edited: 6/11/2026

Garage Vehicle Exhaust Requirements, 2025 NYS MC Chapter 5 Exhaust							
		STANDBY	EMERGENCY	STANDBY	EMERGENCY	STANDBY	EMERGENCY
Space	Area (sf)	CFM/SF	CFM/SF	Exhaust Required (CFM)	Exhaust Required (CFM)	Exhaust Provided (CFM)	Exhaust Provided (CFM)
Garage	6,000	0.05	0.75	300	4,500	400	4200-400
				-	-		
Total	6,000			300	4,500	400	4,600

EMTEC PROJECT #:				7611			2025 NEW YORK STATE MECHANICAL CODE VENTILATION INDEX TABLE 403.3.1 MINIMUM VENTILATION RATES				Vbz Voz Vpz SA OA			
EMTEC PROJECT NAME:				Ellenville FD										
OUTSIDE AIR RATIO (%)				100%										
ZONE EFFECTIVENESS (ZB)				0.80										
UNIT:				VRF-1 (ERV-1)										
ZONE NAME / SPACE NAME		MULTI.	FLOOR AREA	MAXIMUM OCCUPANTS	REQUIRED OUTDOOR AIR RATE	REQUIRED OUTDOOR AIR RATE	MINIMUM REQUIRED OUTDOOR AIR RATE	REQUIRED OUTDOOR AIR	CORRECTED OUTDOOR AIR RATE	REQUIRED SUPPLY AIR	PROVIDED SUPPLY AIR	PROVIDED OUTSIDE AIR		
			(FT²)	(PEOPLE)	CFM/PERSON	(CFM/FT²)	(CFM)	(CFM)	(CFM)	(CFM)	(CFM)	(CFM)		
ERV-1														
1F - RADIO ROOM		1	206	4	5	0.06	32.36	32.4	40.5	40	50	50		
1F - CHIEF'S OFFICE		1	265	3	5	0.06	30.9	30.9	38.6	39	40	40		
1F - FITNESS ROOM		1	411	6	20	0.06	144.66	144.7	180.8	181	200	200		
1F - FITNESS ROOM CLOSET		1	26	0	0	0.06	1.56	1.6	2.0	2	10	10		
TOTALS (INCL. SPACE MULTIPLIERS)				908	13		209	209	262	262	300	300		

EMTEC PROJECT #:				7611			2025 NEW YORK STATE MECHANICAL CODE VENTILATION INDEX TABLE 403.3.1.1 MINIMUM VENTILATION RATES				Vbz		Voz		Vpz		SA		OA	
EMTEC PROJECT NAME:				Ellenville FD																
OUTSIDE AIR RATIO (%)				100%																
ZONE EFFECTIVENESS (ZB)				0.80																
UNIT:				VRF-2 (ERV-2)																
ZONE NAME / SPACE NAME		MULTI.	FLOOR AREA	MAXIMUM OCCUPANTS	REQUIRED OUTDOOR AIR RATE	REQUIRED OUTDOOR AIR RATE	MINIMUM REQUIRED OUTDOOR AIR RATE	REQUIRED OUTDOOR AIR	CORRECTED OUTDOOR AIR RATE	REQUIRED SUPPLY AIR	PROVIDED SUPPLY AIR	PROVIDED OUTSIDE AIR								
			(FT²)	(PEOPLE)	CFM/PERSON	CFM/FT²	(CFM)	(CFM)	(CFM)	(CFM)	(CFM)	(CFM)								
ERV-2																				
2F - COMMISSIONERS OFFICE		1	660	24	5	0.06	159	159.0	198.8	199	200	200								
2F - SECRETARY /TREASURY		1	427	2	5	0.06	35.62	35.6	44.5	45	50	50								
2F - FILES ROOM		1	120	0	0	0.06	7.2	7.2	9.0	9	10	10								
2F - CONFERENCE ROOM		1	582	18	5	0.06	124.92	124.9	156.2	156	160	160								
2F - CAPTAINS OFFICE		1	298	2	5	0.06	27.88	27.9	34.9	35	40	40								
2F - CIVIL OFFICERS		1	273	4	5	0.06	36.38	36.4	45.5	45	50	50								
2F - MENS RESTROOM		1	96	0	0	0	0	0.0	0.0	0		0								
2F - WOMENS RESTROOM		1	98	0	5	0	0	0.0	0.0	0		0								
2F - CORRIDOR		1	660	0	0	0.06	39	39.0	48.8	49	50	50								
TOTALS (INCL. SPACE MULTIPLIERS)			3194	50			430	430	538	538	560	560								

Zone Sizing Summary for 1ST FLOOR VRF

Project Name: 7611 - Ellenville Ambulance Facility
Prepared by: EMTEC CONSULTANTS, INC.

08/03/2026
04:29PM

Air System Information

Air System Name: 1ST FLOOR VRF
Equipment Class: TERM
Air System Type: VRF
Number of zones: 4
Floor Area: 1453.0 ft²
Location: New York La Guardia, New York

Sizing Calculation Information

Calculation Months: Jan to Dec
Sizing Data: Calculated
Zone CFM Sizing: Sum of space airflow rates
Space CFM Sizing: Individual peak space loads

Terminal Unit Sizing Data - Cooling

Zone Name	Total Coil Load (MBH)	Sens Coil Load (MBH)	Coil Entering DB / WB (°F)	Coil Leaving DB / WB (°F)	Water Flow @ 10.0 °F (gpm)	Time of Peak Coil Load	Zone CFM/ft²
VRF-1-1	12.5	9.9	77.3 / 85.9	58.7 / 57.7	-	Aug 1000	2.39
VRF-1-2	9.9	5.9	78.2 / 87.8	58.0 / 57.1	-	Aug 1200	1.93
VRF-1-3	24.7	17.1	81.2 / 88.8	58.5 / 57.4	-	Aug 1500	1.59
VRF-1-4	18.8	12.2	79.8 / 88.6	58.1 / 57.2	-	Jul 1300	0.96

Terminal Unit Sizing Data - Heating, Fan, Ventilation

Zone Name	Heating Coil Load (MBH)	Heating Coil EntLvg DB (°F)	Htg Coil Water Flow @20.0 °F (gpm)	Fan Design Airflow (CFM)	Fan Motor (BHP)	Fan Motor (kW)	OA Vent Design Airflow (CFM)
VRF-1-1	12.3	64.1 / 87.2	-	493	0.000	0.000	32
VRF-1-2	5.7	61.6 / 81.0	-	272	0.000	0.000	31
VRF-1-3	24.5	50.5 / 83.1	-	696	0.000	0.000	186
VRF-1-4	7.8	56.2 / 70.0	-	523	0.000	0.000	163

VRF Outdoor Unit Sizing Data

	Cooling (MBH)	Cooling (Tons)	Heating (MBH)
Peak Coincident Indoor Unit Loads	64.3	5.4	50.2
Estimated Piping / Line Losses	0.0	0.0	0.0
Total Required ODU Capacity	64.3	5.4	50.2

Note: VRF piping / line losses are based on typical loss factors for this class of equipment. Actual line loss varies widely from one product to another. Therefore, when selecting equipment it is critical to consult manufacturer's guidance to utilize actual line loss data.

Zone Peak Sensible Loads

Zone Name	Zone Cooling Sensible Load (MBH)	Time of Peak Sensible Cooling Load	Zone Heating Load (MBH)	Zone Floor Area (ft²)
VRF-1-1	9.0	Aug 1600	10.2	206.0
VRF-1-2	5.0	Aug 1500	3.3	265.0
VRF-1-3	12.5	Jul 1600	10.9	437.0
VRF-1-4	9.6	Jan 2100	0.0	545.0

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Zone Sizing Summary for 2ND FLOOR VRF

Project Name: 7611 - Ellenville Ambulance Facility
Prepared by: EMTEC CONSULTANTS, INC.

06/15/2026
11:47AM

Air System Information

Air System Name: 2ND FLOOR VRF
Equipment Class: TERM
Air System Type: VRF
Number of zones: 7
Floor Area: 3194.0 ft²
Location: New York La Guardia, New York

Sizing Calculation Information

Calculation Months: Jan to Dec
Sizing Data: Calculated
Zone CFM Sizing: Sum of space airflow rates
Space CFM Sizing: Individual peak space loads

Terminal Unit Sizing Data - Cooling

Zone Name	Total Coil Load (MBH)	Sens Coil Load (MBH)	Coil Entering DB / WB (°F)	Coil Leaving DB / WB (°F)	Water Flow @ 10.0 °F (gpm)	Time of Peak Coil Load	Zone CFM/ft²
VRF-2-1	28.5	22.4	79.3 / 86.6	58.6 / 57.5	-	Aug 1500	1.55
VRF-2-2	12.1	9.7	77.2 / 85.5	58.0 / 56.9	-	Aug 1000	1.10
VRF-2-3	2.5	1.9	78.0 / 86.3	58.0 / 56.9	-	Jul 1400	0.72
VRF-2-4	21.4	16.4	79.5 / 86.9	58.6 / 57.4	-	Jul 1600	1.25
VRF-2-5	7.5	5.7	78.1 / 86.2	58.0 / 56.9	-	Jul 1600	0.88
VRF-2-6	8.8	6.9	78.8 / 86.3	58.6 / 57.5	-	Jul 1400	1.18
VRF-2-7	9.5	6.0	78.9 / 86.9	59.2 / 58.4	-	Jul 1500	0.34

Terminal Unit Sizing Data - Heating, Fan, Ventilation

Zone Name	Heating Coil Load (MBH)	Heating Coil EntLvg DB (°F)	Htg Coil Water Flow @20.0 °F (gpm)	Fan Design Airflow (CFM)	Fan Motor (BHP)	Fan Motor (kW)	OA Vent Design Airflow (CFM)
VRF-2-1	28.9	58.2 / 83.0	-	1006	0.000	0.000	159
VRF-2-2	14.3	63.3 / 91.7	-	468	0.000	0.000	36
VRF-2-3	2.7	63.0 / 92.5	-	86	0.000	0.000	7
VRF-2-4	18.3	57.3 / 80.7	-	727	0.000	0.000	125
VRF-2-5	6.8	61.6 / 85.7	-	263	0.000	0.000	28
VRF-2-6	7.1	61.3 / 81.9	-	321	0.000	0.000	36
VRF-2-7	8.1	59.7 / 86.1	-	284	0.000	0.000	39

VRF Outdoor Unit Sizing Data

	Cooling (MBH)	Cooling (Tons)	Heating (MBH)
Peak Coincident Indoor Unit Loads	89.4	7.5	84.3
Estimated Piping / Line Losses	0.0	0.0	0.0
Total Required ODU Capacity	89.4	7.5	84.3

Hourly Analysis Program 5.11

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Zone Sizing Summary for 2ND FL TRAINING RM

Project Name: 7611 - Ellenville Ambulance Facility
Prepared by: EMTEC CONSULTANTS, INC.

06/15/2026
11:47AM

Air System Information

Air System Name: 2ND FL TRAINING RM
Equipment Class: TERM
Air System Type: SPLT-FC
Number of zones: 1
Floor Area: 1179.0 ft²
Location: New York La Guardia, New York

Sizing Calculation Information

Calculation Months: Jan to Dec
Sizing Data: Calculated
Zone CFM Sizing: Sum of space airflow rates
Space CFM Sizing: Individual peak space loads

Terminal Unit Sizing Data - Cooling

Zone Name	Total Coil Load (MBH)	Sens Coil Load (MBH)	Coil Entering DB / WB (°F)	Coil Leaving DB / WB (°F)	Water Flow @ 10.0 °F (gpm)	Time of Peak Coil Load	Zone CFM/ft²
Zone 1	49.4	33.8	82.9 / 89.1	57.7 / 56.5	-	Jul 1500	1.05

Terminal Unit Sizing Data - Heating, Fan, Ventilation

Zone Name	Heating Coil Load (MBH)	Heating Coil EntLvg DB (°F)	Htg Coil Water Flow @20.0 °F (gpm)	Fan Design Airflow (CFM)	Fan Motor (BHP)	Fan Motor (kW)	OA Vent Design Airflow (CFM)
Zone 1	58.2	44.6 / 87.9	-	1243	0.000	0.000	436

Zone Peak Sensible Loads

Zone Name	Zone Cooling Sensible Load (MBH)	Time of Peak Sensible Cooling Load	Zone Heating Load (MBH)	Zone Floor Area (ft²)
Zone 1	24.1	Jul 1700	26.6	1179.0

Space Loads and Airflows

Zone Name / Space Name	Mult.	Cooling Sensible (MBH)	Time of Peak Sensible Load	Air Flow (CFM)	Heating Load (MBH)	Floor Area (ft²)	Space CFM/ft²
Zone 1							
2F-TRAINING/CLASSROOM	1	24.1	Jul 1700	1241	26.6	1170.0	1.06
2F-TRAINING/CLASSROOM CL	1	0.0	Jul 1400	2	0.0	9.0	0.26

Hourly Analysis Program 5.11

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LOAD CALCULATIONS

CALCULATION OF HEATING AND COOLING LOADS:

DESIGN LOADS HAVE BEEN DETERMINED IN ACCORDANCE WITH THE PROCEDURES DESCRIBED IN THE ANSI/ASHRAE/ACCA STANDARD 183.

MECHANICAL EQUIPMENT HAS BEEN MODELED USING CARRIER HAP SOFTWARE WHICH IS COMPLIANT WITH ASHRAE 183. REFER TO THE CALCULATED VS. PROVIDED EQUIPMENT CAPACITY TABLE ON THIS SHEET FOR REFERENCE.

ALL HVAC CALCULATION OUTPUT SHEETS HAVE BEEN INCLUDED ON THIS SHEET FOR REFERENCE.

DATE

ISSUED

06-22-2026 ISSUED FOR 100%DD/50%CD REVIEW
07-20-2026 ISSUED FOR 90%CD REVIEW
08-17-2026 ISSUED FOR GENERAL CONSTRUCTION BID AS SINGLE PRIME CONTRACT INCLUDING ALL TRADES

SEAL



SENDLEWSKI ARCHITECTS, P.C.

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PROPOSED NEW FACILITY

ELLENVILLE FIRE DISTRICT

203 S. MAIN ST. NYS ROUTE 209

ELLENVILLE, NY 12428

MECHANICAL LOAD CALCULATIONS

PROJECT No. 2501
EMTEC 7611

CHECKED BY: MF/APS

DRAWING:

M-6.5

"It is a violation of the State Education Law for any person, unless he or she is acting under the direction of a licensed professional engineer to alter an item in anyway, on this drawing and/or in this specification in anyway. If any such item is altered, the altering engineer shall affix to the item his or her seal and the notation "altered by" followed by his or her signature and the date of such alteration, and a specific description of the alteration."
This plan is approved only for the work indicated on the application specification sheet, all other matters are not to be relied upon, or to be considered as either being approved or in accordance with applicable codes.

EMTEC PROJECT NO. 7611 DRAWN BY: MF CHECKED BY: APS

06-22-2026 ISSUED FOR
100%DD/50%CD REVIEW
07-20-2026 ISSUED FOR 90%CD
REVIEW
08-17-2026
ISSUED FOR GENERAL
CONSTRUCTION BID AS SINGLE
PRIME CONTRACT INCLUDING
ALL TRADES

LOAD CALCULATIONS

CALCULATION OF HEATING AND COOLING LOADS:

DESIGN LOADS HAVE BEEN DETERMINED IN
ACCORDANCE WITH THE PROCEDURES DESCRIBED
IN THE ANSI/ASHRAE/ACCA STANDARD 183.MECHANICAL EQUIPMENT HAS BEEN MODELED
USING CARRIER HAP SOFTWARE WHICH IS
COMPLIANT WITH ASHRAE 183. REFER TO THE
CALCULATED VS. PROVIDED EQUIPMENT CAPACITY
TABLE ON THIS SHEET FOR REFERENCE.ALL HVAC CALCULATION OUTPUT SHEETS HAVE
BEEN INCLUDED ON THIS SHEET FOR
REFERENCE.

SEAL



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ARCHITECTS - PLANNERS

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P: 581.981.3980 | F: 581.981.3971 | www.entec-engineers.comPROPOSED NEW FACILITY
ELLENVILLE FIRE DISTRICT
203 S. MAIN ST. NYS ROUTE 209
ELLENVILLE, NY 12428MECHANICAL
LOAD CALCULATIONS

EMTEC PROJECT NO. 7611 DRAWN BY: MF CHECKED BY: APS

PROJECT No. 2501
EMTEC 7611

CHECKED BY: MF/APS

DRAWING:

M-6.6

"It is a violation of the State Education Law for any person, unless he or she is acting under the direction of a licensed professional engineer to alter an item in anyway, on this drawing and/or in this specification in anyway. If any such item is altered, the altering engineer shall affix to the item his or her seal and the notation "altered by" followed by his or her signature and the date of such alteration, and a specific description of the alteration."

This plan is approved only for the work indicated on the application specification sheet, all other matters are not to be relied upon, or to be considered as either being approved or in accordance with applicable codes.

Zone Sizing Summary for AHU-1-2

Project Name: 7611 - Ellenville AMBULANCE FACILITY
Prepared by: EMTEC CONSULTANTS, INC. 06/15/2026
11:47AM

Air System Information

Air System Name AHU-1-2
Equipment Class SPLT AHU
Air System Type VAV
Number of zones 1
Floor Area 1393.0 ft²
Location New York La Guardia, New York

Sizing Calculation Information

Calculation Months Jan to Dec
Sizing Data Calculated
Zone CFM Sizing Peak zone sensible load
Space CFM Sizing Individual peak space loads

Zone Terminal Sizing Data

Zone Name	Design Supply Airflow (CFM)	Minimum Supply Airflow (CFM)	Zone CFM/R ²	Reheat Coil Load (MBH)	Reheat Coil Water gpm @ 20.0 °F	Zone Htg Unit Coil Load (MBH)	Zone Htg Unit Water gpm @ 20.0 °F	Mixing Box Fan Airflow (CFM)
LOBBY	757	757	0.54	32.7	-	0.0	-	0

Zone Peak Sensible Loads

Zone Name	Zone Cooling Sensible (MBH)	Time of Peak Sensible Cooling Load	Zone Heating Load (MBH)	Zone Floor Area (ft ²)
LOBBY	16.2	Jul 1600	20.4	1393.0

Space Loads and Airflows

Zone Name / Space Name	Mult.	Cooling Sensible (MBH)	Time of Peak Sensible Load	Air Flow (CFM)	Heating Load (MBH)	Floor Area (ft ²)	Space CFM/R ²
LOBBY							
1F-LOBBY	1	4.8	Jan 2100	221	0.0	301.0	0.74
1F-VESTIBULE 1	1	4.5	Jul 1600	209	10.4	93.0	2.23
1F-WOMEN'S RESTROOM	1	0.5	Jan 2200	21	0.0	137.0	0.15
1F-MEN'S RESTROOM	1	0.5	Jan 2200	21	0.0	139.0	0.15
1F-BR/SHWR 1	1	0.2	Jan 2200	9	0.0	59.0	0.15
1F-BR/SHWR 2	1	0.2	Jan 2200	9	0.0	59.0	0.15
1F-CORRIDOR 1	1	0.6	Jan 2200	26	0.0	172.0	0.15
1F-CORRIDOR 2	1	2.5	Jul 1500	115	5.7	207.0	0.56
1F-VESTIBULE 2	1	0.9	Jul 1700	41	2.0	47.0	0.88
1F-INFOMAIL AREA	1	1.9	Aug 1700	88	2.3	142.0	0.62
1F-JANITOR CLOSET 1	1	0.1	Jan 2200	6	0.0	37.0	0.15

Hourly Analysis Program 5.11

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Air System Sizing Summary for ATTIC SPACE

Project Name: 7611 - Ellenville AMBULANCE FACILITY
Prepared by: EMTEC CONSULTANTS, INC. 06/15/2026
11:47AM

Air System Information

Air System Name ATTIC SPACE
Equipment Class PKG ROOF
Air System Type SZCAV
Number of zones 1
Floor Area 5058.0 ft²
Location New York La Guardia, New York

Sizing Calculation Information

Calculation Months Jan to Dec
Sizing Data Calculated
Zone CFM Sizing Sum of space airflow rates
Space CFM Sizing Individual peak space loads

Central Cooling Coil Sizing Data

Total coil load	5.6 Tons	Load occurs at	Jul 1400
Total coil load	67.6 MBH	OA DB / WB	94.6 / 75.9 °F
Sensible coil load	69.8 MBH	Entering DB / WB	82.2 / 69.6 °F
Coil CFM at Jul 1400	3082 CFM	Leaving DB / WB	64.3 / 63.1 °F
Max block CFM	3082 CFM	Coil ADP	62.3 °F
Sum of peak zone CFM	3082 CFM	Bypass Factor	0.100
Sensible heat ratio	0.884	Resulting RH	65 %
CFM/Ton	547.1	Design supply temp.	65.0 °F
RT/Ton	897.9	Zone T-stat Check	1 of 1 OK
BTU/(hr-ft ²)	13.4	Max zone temperature deviation	0.0 °F
Water flow @ 10.0 °F rise	N/A		

Central Heating Coil Sizing Data

Max coil load	125.6 MBH	Load occurs at	Des Htg
Coil CFM at Des Htg	3082 CFM	BTU/(hr-ft ²)	24.8
Max coil CFM	3082 CFM	Ent. DB / Lvg DB	56.5 / 94.2 °F
Water flow @ 20.0 °F drop	N/A		

Supply Fan Sizing Data

Actual max CFM	3082 CFM	Fan motor BHP	0.00 BHP
Standard CFM	3079 CFM	Fan motor kW	0.00 kW
Actual max CFM/R ²	0.61 CFM/R ²	Fan static	0.00 in wg

Outdoor Ventilation Air Data

Design airflow CFM	379 CFM	CFM/person	0.00 CFM/person
CFM/R ²	0.08 CFM/R ²		

Hourly Analysis Program 5.11

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Zone Sizing Summary for ATTIC SPACE

Project Name: 7611 - Ellenville AMBULANCE FACILITY
Prepared by: EMTEC CONSULTANTS, INC. 06/15/2026
11:47AM

Air System Information

Air System Name ATTIC SPACE
Equipment Class PKG ROOF
Air System Type SZCAV
Number of zones 1
Floor Area 5058.0 ft²
Location New York La Guardia, New York

Sizing Calculation Information

Calculation Months Jan to Dec
Sizing Data Calculated
Zone CFM Sizing Sum of space airflow rates
Space CFM Sizing Individual peak space loads

Zone Terminal Sizing Data

Zone Name	Design Supply Airflow (CFM)	Minimum Supply Airflow (CFM)	Zone CFM/R ²	Reheat Coil Load (MBH)	Reheat Coil Water gpm @ 20.0 °F	Zone Htg Unit Coil Load (MBH)	Zone Htg Unit Water gpm @ 20.0 °F	Mixing Box Fan Airflow (CFM)
Zone 1	3082	3082	0.61	0.0	-	0.0	-	0

Zone Peak Sensible Loads

Zone Name	Zone Cooling Sensible (MBH)	Time of Peak Sensible Cooling Load	Zone Heating Load (MBH)	Zone Floor Area (ft ²)
Zone 1	37.5	Jul 1500	99.7	5058.0

Space Loads and Airflows

Zone Name / Space Name	Mult.	Cooling Sensible (MBH)	Time of Peak Sensible Load	Air Flow (CFM)	Heating Load (MBH)	Floor Area (ft ²)	Space CFM/R ²
Zone 1							
2F-ATTIC	1	37.5	Jul 1500	3082	99.7	5058.0	0.61

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Zone Sizing Summary for GARAGE READY ROOM

Project Name: 7611 - Ellenville AMBULANCE FACILITY
Prepared by: EMTEC CONSULTANTS, INC. 06/15/2026
11:47AM

Air System Information

Air System Name GARAGE READY ROOM
Equipment Class TERM
Air System Type SPLT-FC
Number of zones 1
Floor Area 310.0 ft²
Location New York La Guardia, New York

Sizing Calculation Information

Calculation Months Jan to Dec
Sizing Data Calculated
Zone CFM Sizing Sum of space airflow rates
Space CFM Sizing Individual peak space loads

Terminal Unit Sizing Data - Cooling

Zone Name	Total Coil Load (MBH)	Sens Coil Load (MBH)	Coil Entering DB / WB (°F)	Coil Leaving DB / WB (°F)	Water Flow @ 10.0 °F (gpm)	Time of Peak Coil Load	Zone CFM/R ²
Zone 1	12.1	9.0	79.4 / 67.2	58.6 / 57.5	-	Jul 1600	1.29

Terminal Unit Sizing Data - Heating, Fan, Ventilation

Zone Name	Heating Coil Load (MBH)	Heating Coil Ent/Lvg DB (°F)	Htg Coil Water Flow @20.0 °F (gpm)	Fan Design Airflow (CFM)	Fan Motor (BHP)	Fan Motor (kW)	OA Vent Design Airflow (CFM)
Zone 1	9.9	57.7 / 80.7	-	400	0.000	0.000	67

Zone Peak Sensible Loads

Zone Name	Zone Cooling Sensible (MBH)	Time of Peak Sensible Cooling Load	Zone Heating Load (MBH)	Zone Floor Area (ft ²)
Zone 1	7.3	Jul 1700	5.0	310.0

Space Loads and Airflows

Zone Name / Space Name	Mult.	Cooling Sensible (MBH)	Time of Peak Sensible Load	Air Flow (CFM)	Heating Load (MBH)	Floor Area (ft ²)	Space CFM/R ²
Zone 1							
1F-READY ROOM	1	7.3	Jul 1700	400	5.0	310.0	1.29

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Air System Sizing Summary for RTU-1 GARAGE

Project Name: 7611 - Ellenville AMBULANCE FACILITY
Prepared by: EMTEC CONSULTANTS, INC. 06/15/2026
11:47AM

Air System Information

Air System Name RTU-1 GARAGE
Equipment Class PKG ROOF
Air System Type SZCAV
Number of zones 1
Floor Area 9127.0 ft²
Location New York La Guardia, New York

Sizing Calculation Information

Calculation Months Jan to Dec
Sizing Data Calculated
Zone CFM Sizing Sum of space airflow rates
Space CFM Sizing Individual peak space loads

Central Cooling Coil Sizing Data

Total coil load	15.2 Tons	Load occurs at	Aug 1500
Total coil load	181.8 MBH	OA DB / WB	95.0 / 76.0 °F
Sensible coil load	154.3 MBH	Entering DB / WB	77.3 / 63.9 °F
Coil CFM at Aug 1500	6613 CFM	Leaving DB / WB	65.7 / 64.5 °F
Max block CFM	6613 CFM	Coil ADP	63.3 °F
Sum of peak zone CFM	6613 CFM	Bypass Factor	0.100
Sensible heat ratio	0.849	Resulting RH	48 %
CFM/Ton	436.4	Design supply temp.	55.0 °F
RT/Ton	822.4	Zone T-stat Check	1 of 1 OK
BTU/(hr-ft ²)	19.9	Max zone temperature deviation	0.0 °F
Water flow @ 10.0 °F rise	N/A		

Central Heating Coil Sizing Data

Max coil load	200.9 MBH	Load occurs at	Des Htg
Coil CFM at Des Htg	6613 CFM	BTU/(hr-ft ²)	22.0
Max coil CFM	6613 CFM	Ent. DB / Lvg DB	63.0 / 91.2 °F
Water flow @ 20.0 °F drop	N/A		

Supply Fan Sizing Data

Actual max CFM	6613 CFM	Fan motor BHP	0.00 BHP
Standard CFM	6605 CFM	Fan motor kW	0.00 kW
Actual max CFM/R ²	0.72 CFM/R ²	Fan static	0.00 in wg

Outdoor Ventilation Air Data

Design airflow CFM	624 CFM	CFM/person	0.00 CFM/person
CFM/R ²	0.07 CFM/R ²		

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Zone Sizing Summary for RTU-1 GARAGE

Project Name: 7611 - Ellenville AMBULANCE FACILITY
Prepared by: EMTEC CONSULTANTS, INC. 06/15/2026
11:47AM

Air System Information

Air System Name RTU-1 GARAGE
Equipment Class PKG ROOF
Air System Type SZCAV
Number of zones 1
Floor Area 9127.0 ft²
Location New York La Guardia, New York

Sizing Calculation Information

Calculation Months Jan to Dec
Sizing Data Calculated
Zone CFM Sizing Sum of space airflow rates
Space CFM Sizing Individual peak space loads

Zone Terminal Sizing Data

Zone Name	Design Supply Airflow (CFM)	Minimum Supply Airflow (CFM)	Zone CFM/R ²	Reheat Coil Load (MBH)	Reheat Coil Water gpm @ 20.0 °F	Zone Htg Unit Coil Load (MBH)	Zone Htg Unit Water gpm @ 20.0 °F	Mixing Box Fan Airflow (CFM)
Zone 1	6613	6613	0.72	0.0	-	0.0	-	0

Zone Peak Sensible Loads

Zone Name	Zone Cooling Sensible (MBH)	Time of Peak Sensible Cooling Load	Zone Heating Load (MBH)	Zone Floor Area (ft ²)
Zone 1	124.9	Jul 1500	150.7	9127.0

Space Loads and Airflows

Zone Name / Space Name	Mult.	Cooling Sensible (MBH)	Time of Peak Sensible Load	Air Flow (CFM)	Heating Load (MBH)	Floor Area (ft ²)	Space CFM/R ²
Zone 1							
1F-DRIVE THRU BAYS	1	97.9	Jul 1400	4539	101.2	5916.0	0.77
1F-DELIVERY	1	2.5	Jul 1600	298	6.0	119.0	2.51
1F-SCBA	1	1.4	Aug 1600	108	2.9	105.0	1.03
1F-GEAR AREA LOCKER RM	1	4.4	Jul 1400	269	7.3	628.0	0.43
1F-STORAGE	2	1.0	Jan 1700	46	0.0	112.0	0.41
1F-WORK ROOM	1	3.0	Aug 1600	176	4.7	178.0	0.98
1F-ELECTRIC SVC	1	1.0	Aug 1600	109	2.9	114.0	0.96
MEZZ-TRAINING MEZZANINE	1	6.2	Aug 1600	694	18.7	616.0	1.13
MEZZ-ENCLOSED STORAGE RM	1	7.1	Jul 1400	328	4.9	1224.0	0.27

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GENERAL:

A. THE "GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION", AIA DOCUMENT A201, LATEST EDITION, AND THIS SPECIFICATION, AS APPLICABLE, ARE PART OF THIS CONTRACT.

B. ALL APPLICABLE CODES, LAWS AND REGULATIONS, GOVERNING OR RELATING TO ANY PORTION OF THIS WORK ARE HEREBY INCORPORATED INTO AND MADE A PART OF THESE SPECIFICATIONS.THESE PROVISIONS SHALL BE CARRIED OUT BY THE CONTRACTOR WHO SHALL INFORM THE OWNER, PRIOR TO SUBMITTING A PROPOSAL, OF ANY WORK OR MATERIALS, WHICH VIOLATE ANY OF THE LAWS AND REGULATIONS. ANY WORK DONE BY THE CONTRACTOR CAUSING SUCH VIOLATIONS SHALL BE CORRECTED BY THE CONTRACTOR. THE DESIGN, CONSTRUCTION, INSTALLATION AND ALTERATION FOR THE SYSTEM FOR PROVIDING VENTILATION AND AIR CONDITIONING SHALL COMPLY WITH THE 2020 NYS MECHANICAL CODE.

C. PROVIDE ALL LABOR, MATERIALS, EQUIPMENT, AND CONTRACTOR'S SERVICES NECESSARY FOR COMPLETE AND SAFE INSTALLATION OF ALL WORK INDICATED OR SPELLED OUT IN CONTRACT DOCUMENTS, IN FULL CONFORMITY WITH REQUIREMENTS OF BUILDING CODES AND OF ALL AUTHORITIES HAVING JURISDICTION.

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

E. EACH BIDDER SUMMING HIS PROPOSAL SHALL EXAMINE ALL DRAWINGS RELATING TO THIS WORK AND VERIFY ALL GOVERNING CONDITIONS AT THE BUILDING AND SHALL BECOME FULLY INFORMED AS TO THE EXTENT AND CHARACTER OF THE WORK REQUIRED AND ITS RELATION TO OTHER WORK. NO CONSIDERATION WILL BE GRANTED FOR ANY ALLEGED MISUNDERSTANDING OF THE MATERIALS TO BE FURNISHED OR WORK TO BE DONE, IT BEING UNDERSTOOD THAT THE SUBMISSION OF A PROPOSAL IS AN AGREEMENT TO ALL ITEMS AND CONDITIONS REFERRED TO HEREIN OR INDICATED ON THE ACCOMPANYING DRAWINGS. (SEE "EXAMINATIONS OF EXISTING CONDITIONS" BELOW).

F. IF DURING THE INSPECTION, THE CONTRACTOR FINDS ANY OBSTRUCTION OR INTERFERENCE THAT MAY PROHIBIT THE PROPER INSTALLATION OF HIS WORK, HE IS TO MAKE IT KNOWN TO THE BUILDING OWNER AND TENANT BEFORE AND AT THE TIME OF SUBMITTING HIS PROPOSAL. BY SUBMISSION OF THE BID, IT IS UNDERSTOOD THAT SUCH INSPECTION HAS BEEN MADE AND BID INCLUDES ALL MATERIALS AND REQUIRED RELOCATION FOR ALL WORK.

G. ALL DUCTWORK INDICATED ON DRAWINGS ARE DIAGRAMMATIC AD DOES NOT SHOW OFFSETS, DROPPING AND RISING OF RUNS AS MAY BE NECESSARY. THE CONTRACTOR SHALL PROVIDE FOR OFFSETS, DROPPING AND RISING OF DUCTWORK AS REQUIRED TO AVOID OBSTRUCTIONS. THE SHEET METAL CONTRACTOR WILL BE RESPONSIBLE FOR ANY ADDITIONAL STATIC PRESSURE DUE TO THE ADDITION OF ELBOWS AND DUCT TURNS.

H. ALL MATERIALS AND EQUIPMENT SHALL BE NEW UNLESS OTHERWISE NOTED, AND SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS.

I. THE CONTRACTOR SHALL KEEP ALL EQUIPMENT AND MATERIALS AND ALL PARTS OF THE BUILDING, EXTERIOR SPACES AND ADJACENT STREET, SIDEWALKS AND PAVEMENTS, FREE FROM MATERIALS AND DEBRIS RESULTING FROM THE EXECUTION OF THIS WORK. EXCESS MATERIALS WILL NOT BE PERMITTED TO ACCUMULATE EITHER ON THE INTERIOR OR THE EXTERIOR.

J. CONTRACTOR IS RESPONSIBLE FOR FIELD COORDINATION WITH OTHER TRADES.

K. CONTRACTOR IS TO MAINTAIN CURRENT WORKING RECORD DRAWINGS ON SITE AT ALL TIMES.

L. INVESTIGATE EACH SPACE THROUGH WHICH EQUIPMENT MUST BE MOVED. WHEN NECESSARY, EQUIPMENT SHALL BE SHIPPED FROM MANUFACTURER IN CRATED SECTIONS OF SIZE SUITABLE FOR MOVING THROUGH RESTRICTED SPACES AVAILABLE. ASCERTAIN FROM BUILDING OWNER AT WHAT TIE OF DAY EQUIPMENT COULD BE MOVED THROUGH CERTAIN RESTRICTED AREAS, AND REVIEW WITH OWNER PLANNED APPROACH FOR ANY REQUIRED EQUIPMENT RIGGING INTO BUILDING. EQUIPMENT SHALL BE LIFTED INTO POSITION, NOT ROLLED OR CRIBBED.

M. REFER TO SECTION 15000 FOR ADDITIONAL REQUIREMENTS.

WORK INCLUDED:

THE WORK INCLUDES FURNISHING AND THE INSTALLATION OF ALL MATERIALS, EQUIPMENT AND LABOR NECESSARY TO COMPLETE AND MAKE READY FOR OPERATION BY THE OWNER ALL HVAC WORK AS SHOWN ON THE DRAWINGS AND HEREINAFTER SPECIFIED, INCLUDING, BUT NOT LIMITED TO THE FOLLOWING:

A. ELECTRIC HEATERS AND ACCESSORIES.

B. ROOF-TOP PACKAGED AIR CONDITIONING UNITS WITH GAS HEAT AND ACCESSORIES.

C. SPLIT SYSTEM AIR CONDITIONING HEAT PUMP UNITS AND ACCESSORIES.

D. ALL REQUIRED DUCTWORK AND DUCTWORK ACCESSORIES.

E. ALL HVAC RELATED PIPING SYSTEMS INCLUDING HOT WATER, REFRIGERANT AND MAKE UP WATER CONNECTIONS.

F. VALVES AND PIPING SPECIALTIES.

G. INSULATION OF PIPING, DUCTWORK AND EQUIPMENT.

H. FANS AND ACCESSORIES.

I. AIR DISTRIBUTION DEVICES.

J. DAMPERS (VARIOUS TYPES).

K. HANGERS AND SUPPORTS.

L. VIBRATION ISOLATION.

M. IDENTIFICATION, LABELS, TAGS AND VALVE CHARTS.

N. DRAINAGE FROM EQUIPMENT AS INDICATED.

O. SUPPLYING OF MOTOR CONTROLLER.

P. FURNISH AND INSTALL ALL CONTROLS, CONTROL ACCESSORIES AND WIRING.

Q. FINAL CONNECTIONS OF ALL HVAC EQUIPMENT.

R. PIPING TESTS.

S. AIR AND HYDRONIC BALANCING.

T. SUBMISSION OF ALL SHOP DRAWINGS AND SAMPLES LISTED HEREIN.

U. SUBMISSION OF ALL RECORD AND AS- BUILT DRAWINGS.

V. SUBMISSION OF ALL BALANCING REPORTS.

W. SUBMISSION OF ALL OPERATIONS AND MAINTENANCE MANUALS.

X. EQUIPMENT START-UP AND TRAINING OF OWNER'S STAFF.

Y. THIS CONTRACTOR SHALL ASSUME COMPLETE RESPONSIBILITY FOR START-UP AND 24 HR/ DAY SERVICE WITHIN AN MAXIMUM RESPONSE TIME OF 4 HOURS AND QUARTERLY PREVENTIVE MAINTENANCE (CHANGE OF FILTERS, ETC.) FOR A PERIOD OF ONE YEAR FOR ALL EQUIPMENT. THE COST OF THIS SHALL BE INCLUDED IN THIS CONTRACT.

Z. MAINTAIN ALL EXISTING MECHANICAL SERVICES IN THE BUILDING AREAS NOT AFFECTED BY THE ALTERATIONS DURING THE PROGRESS OF THE WORK, INCLUDING PROVIDING ALL TEMPORARY PIPING, CAPS, PROTECTIVE DEVICES, CONNECTIONS AND EQUIPMENT REQUIRED.

AA. SECURE PERMITS, LICENSES AND CERTIFICATES, PAY ALL FEES AND CHARGES FOR ALL WORK INSTALLED CERTIFYING COMPLIANCE WITH LOCAL CODES AND GOVERNING AUTHORITIES. DELIVER CERTIFICATES TO BUILDING MANAGEMENT OFFICE PRIOR TO THE COMMENCEMENT OF ALL WORK.

BB. ALL SCAFFOLDING AND RIGGING AS REQUIRED FOR HVAC INSTALLATION.

CC. ALL POWER WIRING AS CONTROL WIRING.

DD. ALL SPECIAL AND PROGRESS INSPECTIONS AS REQUIRED BY THE NEW YORK STATE BUILDING CODE, ARE THE RESPONSIBILITY OF THE HVAC CONTRACTOR.

EE. FURNISH "EQUIPMENT USE PERMITS" AS REQUIRED.

FF. IT IS NOT THE INTENTION OF THESE SPECIFICATIONS TO DESCRIBE, NOR THE CONTRACT DRAWINGS TO SHOW IN DETAIL, ALL THE VARIOUS PIECES OF APPARATUS AND APPURTENANCES AND THEIR CONNECTIONS. THIS

CONTRACTOR SHALL, AS PART OF THE CONTRACT, FURNISH AND INSTALL ALL INCIDENTALS, SUCH AS PIPING FITTINGS, VALVES, ETC. REQUIRED TO COMPLETE THE INSTALLATION OF THE EQUIPMENT. THE CONTRACTOR SHALL REFER TO THE ARCHITECTURAL, ELECTRICAL, PLUMBING, SPRINKLER, FIRE ALARM, AND MECHANICAL DRAWINGS FOR EXACT LOCATIONS OF FIXTURES AND EQUIPMENT INCLUDING TYPES AND QUANTITIES.

STANDARDS AND CODES:

A. 2025 NEW YORK STATE BUILDING CODES.

B. 2025 NEW YORK STATE ENERGY CONSERVATION CONSTRUCTION CODE.

C. ASHRAE STANDARDS AS APPLICABLE.

D. SMACNA MANUALS AS APPLICABLE.

E. NATIONAL FIRE PROTECTION ASSOCIATION.

F. ALL EQUIPMENT SHALL BE UNDERWRITERS LABORATORIES INC. (U.L.) APPROVED.

REFRIGERATION WORK:

ALL REFRIGERATION WORK, INCLUDING THE CHARGING AND/OR RECLAIMING OF REFRIGERANT, SHALL BE CONDUCTED BY EPA CERTIFIED TECHNICIANS AND PERFORMED IN ACCORDANCE WITH THE FEDERAL CLEAN AIR ACT AND AS AMENDED BY LOCAL JURISDICTION.

EXAMINATION OF EXISTING CONDITIONS:

BEFORE SUBMITTING PROPOSAL'S BIDDERS SHALL VISIT THE SITE AND CAREFULLY EXAMINE THOSE PORTIONS OF THE BUILDING AFFECTED BY THE WORK SO AS TO FAMILIARIZE THEMSELVES WITH EXISTING CONDITIONS AND DIFFICULTIES THAT WILL ATTEND THE EXECUTION OF THE WORK. SUBMISSION OF A PROPOSAL WILL BE CONSTRUED AS EVIDENCE THAT SUCH EXAMINATION HAS BEEN MADE AND LATER CLAIMS FOR LABOR OR MATERIALS REQUIRED BECAUSE OF DIFFICULTIES ENCOUNTERED WHICH COULD HAVE BEEN FORESEEN HAD SUCH AN EXAMINATION BEEN MADE, AS DETERMINED BY THE ARCHITECT, WILL NOT BE RECOGNIZED.

PERMITS AND CERTIFICATES:

THIS CONTRACTOR SHALL GIVE NECESSARY NOTICES, FILE DRAWINGS AND SPECIFICATIONS WITH THE DEPARTMENTS HAVING JURISDICTION, OBTAIN PERMITS OR LICENSES NECESSARY TO CARRY OUT THIS WORK AND PAY ALL FEES REQUIRED.

SUBMITTALS:

ELECTRONIC (E-MAIL) OR FAXED SUBMISSIONS OF SHOP DRAWINGS WILL NOT BE ACCEPTED. ALL SHOP DRAWINGS OR CUT SHEETS MUST BE SUBMITTED AS PRINTED COPIES IN SUITABLE QUANTITIES FOR DISTRIBUTION (MINIMUM 5 COPIES OR AS SPECIFIED BY ARCHITECT/ENGINEER)

PRIOR TO SHIPMENT OF EQUIPMENT, TO ANY FABRICATION OF DUCTWORK OR PIPING, OR THE START OF INSTALLATION OF SYSTEM COMPONENTS, SUBMIT COORDINATED SHOP DRAWINGS, CATALOG CUT SHEETS, AND SCHEDULES TO THE ENGINEER FOR APPROVAL. MATERIALS AND EQUIPMENT REQUIRING SHOP DRAWING SUBMITTAL, AND OTHER ITEMS REQUIRING SUBMISSION, INCLUDE BUT NOT LIMITED TO THE FOLLOWING:

A. BOILERS AND ALL ANCIILLARY EQUIPMENT AND ACCESSORIES.

B. AIR CONDITIONING AND AIR HANDLING EQUIPMENT.

C. ALL PIPING MATERIALS AND ACCESSORIES.

D. HANGERS AND SUPPORT INCLUDING VIBRATION ISOLATION EQUIPMENT.

E. SHEET METAL STANDARDS AND DETAILS.

F. DUCTWORK LAYOUT.

G. PIPING LAYOUT.

H. INSULATION (ALL TYPES).

I. ELECTRIC HEATERS AND ACCESSORIES.

J. DAMPERS (ALL TYPES).

K. FANS AND ACCESSORIES.

L. CURBS AND PITCH POCKETS.

M. ALL DUCTWORK ACCESSORIES.

N. GRILLES, REGISTERS AND DIFFUSERS.

O. INSTRUMENTATION.

P. MOTOR CONTROLLERS.

Q. CONTROL DIAGRAMS AND SEQUENCE OF OPERATION.

R. TEMPERATURE CONTROL DEVICES.

S. COORDINATED LAYOUT DRAWINGS.

T. AS- BUILT DRAWINGS.

U. WARRANTIES AND GUARANTEES.

V. CERTIFICATIONS, BALANCING AND TEST REPORTS.

W. OPERATING AND MAINTENANCE MANUALS.

X. EQUIPMENT USE PERMITS.

SHOP DRAWINGS SHOWING MANUFACTURER'S PRODUCT DATA SHALL CONTAIN DETAILED DIMENSIONAL DRAWINGS, ACCURATE AND COMPLETE DESCRIPTION OF MATERIALS OF CONSTRUCTION, MANUFACTURERS PUBLISHED PERFORMANCE CHARACTERISTICS AND CAPACITY RATINGS (PERFORMANCE DATA, ALONE, IS NOT ACCEPTABLE), ELECTRICAL REQUIREMENTS AND WIRING DIAGRAMS. DRAWING SHALL CLEARLY INDICATE LOCATION (TERMINATION BLOCK OR WIRE NUMBER), VOLTAGE AND FUNCTION FOR ALL FIELD TERMINATIONS, AND OTHER INFORMATION NECESSARY TO DEMONSTRATE COMPLIANCE WITH ALL REQUIREMENTS OF CONTRACT DOCUMENTS.

PROVIDE SHOP DRAWING SUBMITTALS SHOWING DETAILS OF DUCTWORK AND PIPING CONNECTIONS TO ALL HVAC EQUIPMENT. IF CONNECTION DETAILS ARE NOT SUBMITTED AND CONNECTIONS ARE FOUND TO BE INSTALLED INCORRECTLY IN THE FIELD, THIS CONTRACTOR SHALL REINSTALL THEM WITHIN THE ORIGINAL CONTRACT PRICE.

ALL PIPING, DUCTWORK AND EQUIPMENT LAYOUTS SHALL BE SUBMITTED ON SCALE $\frac{1}{8}" = 1'-0"$ DRAWINGS, AND SHALL BE COORDINATED AND STAMPED BY ALL TRADES. SHOP DRAWINGS SHALL SHOW LOCATION OF ALL EXISTING AND NEW EQUIPMENT, EXISTING WORK AND NEW WORK.

AFTER SUBSTANTIAL COMPLETION OF ALL WORK, SUBMIT THE FOLLOWING:

A. SUBMIT FIVE (5) COPIES OF ALL AIR BALANCING AND HYDRONIC BALANCING REPORTS FOR APPROVAL.

B. SUBMIT A COMPLETE SET OF REPRODUCIBLE "AS BUILT" RECORD DRAWINGS AND THREE (3) SETS OF PRINTS OR BUILDING FILES AT COMPLETION OF THE PROJECT, TO INCLUDE DUCTWORK, PIPING AND EQUIPMENT DRAWINGS, SCALE $\frac{1}{8}" = 1'-0"$.

C. SUBMIT TWO (2) SETS OF OPERATING AND MAINTENANCE MANUALS FOR EACH PIECE OF HEATING, VENTILATING AND AIR CONDITIONING EQUIPMENT INSTALLED UNDER THIS CONTRACT. SUBMIT EACH SET IN A THREE RING BINDER, WITH A TYPED TABLE OF CONTENTS AND THE NAME, ADDRESS AND TELEPHONE NUMBER OF THE CONTRACTOR, AND THE NAME, ADDRESS AND TELEPHONE NUMBER OF THE MANUFACTURER AND THE LOCAL DISTRIBUTOR FOR EACH PIECE OF EQUIPMENT.

SUBSTITUTIONS:

CONTRACTOR'S SUBSTITUTION OF PRODUCTS OTHER THAN THOSE LISTED MAY NOT BE PERMITTED. SUBMITTALS WITH MANUFACTURERS NOT ACCEPTABLE TO THE CONSULTANTS MAY BE REJECTED WITHOUT COMMENT.

ANY OWNER CONSULTANT COSTS MADE NECESSARY BY CONTRACTOR REVISIONS REVISIONS OR SUBSTITUTIONS SHALL BE BORNE TO THE CONTRACTOR. THIS INCLUDES ADDITIONAL FILING, EXPEDITING,PRINTING AND ENGINEERING COSTS.

SCAFFOLDING AND RIGGING:

CONTRACTOR SHALL PROVIDE ALL SCAFFOLDING, RIGGING AND SERVICES NECESSARY FOR ERECTION AND DELIVERY ONTO THE PREMISES OF ALL MATERIALS FURNISHED AND/OR INSTALLED UNDER THIS SECTION OF THE SPECIFICATIONS AND REMOVE SAME FROM PREMISES WHEN NO LONGER REQUIRED.

CLEAN UP:

CONTRACTOR SHALL MAINTAIN CONSTRUCTION SITE IN A CLEAN AND ORDERLY CONDITION AND SHALL REMOVE ALL TRASH FROM THE PREMISES ON A DAILY BASIS AND PRIOR TO ACCEPTANCE OF THE WORK AS DIRECTED BY THE OWNER

REMOVAL OF EXISTING WORK:

REMOVAL AND RELOCATION OF CERTAIN EXISTING WORK WILL BE NECESSARY FOR THE PERFORMANCE OF GENERAL WORK. ALL EXISTING CONDITIONS CANNOT BE COMPLETELY DETAILED ON THE DRAWINGS. CONTRACTOR SURVEYING THE SITE SHALL MAKE ALL NECESSARY CHANGES REQUIRED BASED ON EXISTING CONDITIONS FOR PROPER INSTALLATION OF NEW YORK AND INCLUDE ALL THE MATERIALS AND REQUIRED WORK IN HIS BID PRICE. NO ALLOWANCE WILL BE MADE FOR FAILURE TO DO SO. COORDINATE TIMETABLE FOR ALL CONSTRUCTION OPERATIONS WITH BUILDING OWNER.

GUARANTEE:

THIS CONTRACTOR SHALL FURNISH A WRITTEN GUARANTEE TO REPLACE OR REPAIR PROMPTLY, AND ASSUME FULL RESPONSIBILITY OF ALL EXPENSES INCURRED FOR ANY WORKMANSHIP AND/OR EQUIPMENT IN WHICH DEFECTS OCCUR WITHIN ONE YEAR FROM DATE OF ACCEPTANCE BY OWNER.

WARRANTIES:

THIS CONTRACTOR SHALL FURNISH THE OWNER WITH MANUFACTURER WARRANTY INFORMATION FOR EACH INDIVIDUAL PIECE OF MAJOR HVAC EQUIPMENT,INCLUDING PUMPS, BOILER, BREECHING, AIR CONDITIONING UNITS, COILS, CABINET AND UNIT HEATERS, FINNED TUBE RADIATION, FAN COIL UNITS, AIR HANDLING UNITS, FANS, CONTROLS, ETC., AND ALL ASSOCIATED ACCESSORIES.

OBTAIN WARRANTIES EXECUTED IN DUPLICATE BY RESPONSIBLE SUBCONTRACTORS, SUPPLIERS, AND MANUFACTURERS, WITHIN TEN (10) DAYS AFTER COMPLETION OF APPLICABLE ITEM OF WORK. EXCEPT ITEMS PUT INTO USE WITH OWNERS PERMISSION, LEAVE DATE OF BEGINNING OF TIME OF WARRANTY UNTIL THE DATE OF SUBSTANTIAL COMPLETION IS DETERMINED.

DUCTWORK AND AIR DISTRIBUTION DEVICES:

A. EXCEPT AS OTHERWISE NOTED, ALL DUCT WORK AND SHEET METAL WORK SHALL BE IN ACCORDANCE WITH LATEST EDITION OF SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION INC. (SMACNA) DUCT MANUAL AND SHEET METAL CONSTRUCTION FOR VENTILATING AND AIR CONDITIONING SYSTEMS. SECTION 1 - LOW VELOCITY SYSTEMS AND SECTION 2 - HIGH VELOCITY SYSTEMS"; SMACNA HVAC AIR DUCT LEAKAGE TEST MANUAL AND ADC AND TMA FLEXIBLE DUCT PERFORMANCE STANDARDS.

B. SHEET METAL MATERIALS:

1. GALVANIZED STEEL: ASTM A-527 LOCK FORMING QUALITY GALVANIZING. ASTM A-525 COATING DESIGNATION G-90.

C. MINIMUM SHEET METAL GAUGES SHALL BE AS FOLLOWS: (AS PER SMACNA RECOMMENDED GUIDELINES)

DUCT CONSTRUCTION MINIMUM SHEET METAL THICKNESS			
RECTANGULAR DUCTS			
LONGEST SIDE OF DUCT (INCHES)	STEEL (MINIMUM THICKNESS, NOMINAL)	ALUMINUM (MINIMUM THICKNESS, NOMINAL)	
THROUGH 12	0.022 INCH (26 GAGE, GALV.)	0.020 INCH (NO. 24 B&S GAGE)	
13 THROUGH 30	0.028 INCH (24 GAGE, GALV.)	0.025 INCH (NO. 22 B&S GAGE)	
31 THROUGH 54	0.034 INCH (22 GAGE, GALV.)	0.032 INCH (NO. 20 B&S GAGE)	
55 THROUGH 84	0.040 INCH (20 GAGE, GALV.)	0.040 INCH (NO. 18 B&S GAGE)	
OVER 84	0.052 INCH (18 GAGE, GALV.)	0.051 INCH (NO. 16 B&S GAGE)	
ROUND DUCTS			
DUCT DIAMETER (INCHES)	SPIRAL SEAM DUCT	LONGITUDINAL SEAM DUCT	FITTINGS
	STEEL (MINIMUM THICKNESS, NOMINAL)	STEEL (MINIMUM THICKNESS, NOMINAL)	STEEL (MINIMUM THICKNESS, NOMINAL)
THROUGH 12	0.019 INCH (28 GAGE, GALV.)	0.022 INCH (26 GAGE, GALV.)	0.022 INCH (26 GAGE, GALV.)
13 THROUGH 18	0.022 INCH (26 GAGE, GALV.)	0.028 INCH (24 GAGE, GALV.)	0.028 INCH (24 GAGE, GALV.)
19 THROUGH 28	0.028 INCH (24 GAGE, GALV.)	0.034 INCH (22 GAGE, GALV.)	0.034 INCH (22 GAGE, GALV.)
29 THROUGH 36	0.034 INCH (22 GAGE, GALV.)	0.040 INCH (20 GAGE, GALV.)	0.040 INCH (20 GAGE, GALV.)
37 THROUGH 52	0.040 INCH (20 GAGE, GALV.)	0.052 INCH (18 GAGE, GALV.)	0.052 INCH (18 GAGE, GALV.)

D. DUCTWORK SHALL HAVE PRESSURE-VELOCITY CLASSIFICATIONS AS FOLLOW:

DUCT CONSTRUCTION CLASS	STATIC PRESSURE RATING	PRESSURE	SMACNA LEAKAGE CLASS
2"	2"	POS. OR NEG.	6
1"	1"	POS. OR NEG.	6
$\frac{1}{2}"$	$\frac{1}{2}"$	POS. OR NEG.	6

E. WHEN MAKING OFFSETS AND TRANSFORMATIONS NECESSARY TO ACCOMMODATE STRUCTURAL CONDITIONS, PRESERVE FULL CROSS SECTIONAL AREA OF DUCTWORK SHOWN ON DRAWINGS.

F. FABRICATION:

1. FABRICATE DUCTWORK FROM GALVANIZED SHEET METAL OF THE GAUGES SPECIFIED.

G. DISSIMILAR METALS: SEPARATE DISSIMILAR METALS USED FOR DUCTWORK WITH 10 OZ. CANVAS IMPREGNATED WITH ZINC CHROMATE. NE SEPARATION IS REQUIRED BETWEEN SCREWS OR RIVETS AND THE MATERIALS THEY ARE INSERTED IN.

H. SEALING REQUIREMENTS FOR CLASS A, LEAKAGE CLASS 6, GALVANIZED, NON WELDED ALUMINUM OR NON WELDED STAINLESS STEEL DUCTWORK:

1. TRANSVERSE JOINTS

a. DURING ASSEMBLY SEAL ALL FLANGED TRANSVERSE JOINTS WITH SEALING TAPE OF QUALITY EQUAL TO HARDCAST INC. 182-FF. CORNERS SHALL BE SEALED AS DESCRIBED BY SMACNA AND WHEN APPLICABLE PER MANUFACTURERS PUBLISHED PROCEDURES.

b. SEAL ALL NON FLANGED TRANSVERSE JOINTS WITH HARDCAST INC. VERSA GRIP 102 OR APPROVED EQUAL.

2. LONGITUDINAL SEAMS

a. SEAL ALL LONGITUDINAL SEAMS DURING DUCTWORK WITH HARDCAST INC. COLD SEAL 1001 OR APPROVED EQUAL.

3. JOINTS AND DUCTWALL PENETRATIONS

a. SEAL ALL DUCT JOINTS AT TAKEOFFS, ACCESS DOORS, DAMPER BEARING PENETRATIONS (VENTLOCK HIVEL 641 AND 609), AND FLEXIBLE DUCT CONNECTIONS ETC., WITH HARDCAST INC. VERSAGRIP 102 OR APPROVED EQUAL.

I. CONSTRUCTION:

1. NO SHARP METAL EDGES SHALL EXTEND INTO AIR STREAMS.

2. INSTALL DRIVE SLIPS ON AIR LEAVING SIDE OF DUCT WITH SHEET METAL SCREWS ON 6" CENTERS.

3. SPIN IN COLLARS SHALL NOT BE USED.

J. JOINTS:

1. LONGITUDINAL LOCK SEAMS SHALL BE DOUBLE LOCKED AND FLATTENED TO MAKE TIGHT JOINTS.

2. MAKE TRANSVERSE JOINTS, FIELD CONNECTIONS, COLLAR ATTACHMENTS AND FLEXIBLE CONNECTIONS TO DUCT AND EQUIPMENT WITH SHEET METAL SCREWS OR BOLTS AND NUTS. DO NOT USE RIVETS AND STAPLES.

K. PREFABRICATED TRANSVERSE DUCT JOINTS:

1. TRANSVERSE JOINTS IN GALVANIZED SHEET METAL DUCT WORK MAY BE MADE WITH GALVANIZED GASKETED FRAME AND ANGLE DUCT JOINT SYSTEM BY DUCTMATE, TDF, TDC OR APPROVED EQUAL. ANGLES SHALL BE AT LEAST 20 GAUGES. PREFABRICATED TRANSVERSE DUCT JOINTS SHALL NOT BE USED FOR DUCT 16 GA. AND HEAVIER, NOR FOR 23 GA. AND LIGHTER.

L. ELBOWS AND BENDS

1. ELBOWS AND BENDS FOR RECTANGULAR DUCTS SHALL HAVE CENTERLINE RADIUS OF 1.5 TIMES THE DUCT WIDTH AND FUME HOOD EXHAUST SHALL BE FULL RADIUS WHENEVER POSSIBLE.

2. WHERE CENTERLINE RADIUS IS LESS THAN 1.5 TIMES DUCT WIDTH (ON SUPPLY, RETURN AND EXHAUST DUCTWORK), ELBOWS SHALL BE RADIUS THROAT WITH RADIUS HEEL AND FULL LENGTH SPLITTER VANES WHEN REQUIRED. WHEN CENTERLINE RADIUS (R) DIVIDED BY THE DUCT WIDTH (W) IS LESS THAN 1.5, PROVIDE THE FOLLOWING NUMBER OF SPLITTER VANES: R/W BETWEEN 1.49 AND 0.7 + 1; R/W BETWEEN 0.69 AND 0.6 + 2; R/W BETWEEN 0.59 AND 0.55 + 3. MINIMUM INSIDE RADIUS (NOT CENTERLINE) SHALL BE 2". INSTALL VANES IN ACCORDANCE WITH SMACNA.

3. FOR ROUND DUCTWORK PROVIDE STAMPED ELBOWS, WITH CENTERLINE RADI EQUAL TO 1-1/2 TIMES DUCT DIAMETER, OR GORED ELBOWS AS FOLLOWS:

ELBOW ANGLE NUMBER OF GORES

0° - 36°	2
37° - 72°	3
73° - 90°	5

4. SQUARE THROAT ELBOWS SHALL HAVE DOUBLE THICKNESS TURNING VANES. SECURELY FASTEN VANES TO RUNNERS FOR QUIET, VIBRATION FREE OPERATION.

M. ROUND DUCTWORK:

1. SPIRAL SEAM CONSTRUCTION. GALVANIZED STEEL. GAUGES: HIGH PRESSURE DUCT MANUAL, LATEST EDITION.

2. FITTINGS: HIGH PRESSURE DUCT MANUAL. CONICAL TEES AND CROSSES, UNLESS OTHERWISE PERMITTED.

3. JOINTS:

a. INTERIOR SLIP COUPLING BEADED AT CENTER. FASTENED TO DUCT WITH SCREWS. SEALING COMPOUND APPLIED CONTINUOUSLY AROUND JOINT BEFORE ASSEMBLING AND AFTER FASTENING. WRAP JOINTS WITH 3 INCH DUCT TAPE.

N. FLEXIBLE DUCTWORK: FLEXIBLE DUCTWORK MAY BE USED ABOVE ACOUSTICAL TILE SUSPENDED CEILINGS AND SHALL BE LIMITED TO 3'-0" IN LENGTH AS PER SECTION 603.6 OF THE NEW YORK STATE MECHANICAL CODE.

O. FIRE DAMPERS: SIMILAR TO RUSKIN SPRING LOADED CURTAIN TYPE (BD WITH BLADES OUTSIDE AIR STREAM, GALVANIZED STEEL CONSTRUCTION, EQUIPPED WITH FUSIBLE LINK, UL LISTED AND INSTALLED IN CONFORMANCE WITH UL555 AND NFPA STANDARD 90A AND APPROVED FOR USE BY ALL AUTHORITIES HAVING JURISDICTION.

P. VOLUME DAMPERS: GALVANIZED STEEL PER SMACNA "LOW VELOCITY MANUAL", EXCEPT PROVIDE BEARING AT ONE END OF DAMPER ROD AND QUADRANT, WITH LEVER AND LOCK SCREW AT OTHER END. FOR INSULATED DUCTS, PROVIDE 2" HANDLE EXTENSION TO CLEAR INSULATION, INSTALL WITH LEVERS ACCESSIBLE. BALANCING DAMPERS SHALL BE THE OPPOSED BLADE TYPE. (DAMPERS LARGER THAN 12" IN HEIGHT SHALL BE OPPOSED MULTIBLADE TYPE.)

PROVIDE VOLUME DAMPERS AT FOLLOWING LOCATIONS:

- ALL DUCT SPLITS AND BRANCH CONNECTIONS OF SUPPLY, RETURN AND EXHAUST SYSTEMS.
- DUCT SPLITS ABOVE 36 INCH DEPTH
- DUCTS CONNECTING TO COMMON PLENUM
- FIVE FEET UPSTREAM WITH INDUCTS SERVING SINGLE OUTLET
- AT OPEN RETURN DUCT IN HUNG CEILING
- AS NOTED ON DESIGN DRAWINGS

Q. ACCESS DOORS: INSULATED OR UN-INSULATED, SAME AS DUCT.

1. PROVIDE MINIMUM 20" x 14" IN MAIN DUCT AND 12" x 6" ON BRANCH DUCTS, UNLESS OTHERWISE NOTED, AT FIRE DAMPERS.

2. ALL ACCESS DOORS TO BE HINGED, WITH LATCH SIMILAR TO VENTLOCK #100.

3. GAUGES OF DOOR MATERIALS, NUMBER OF HINGES, NUMBER AND TYPE OF DOOR LOOKS SHALL BE AS REQUIRED BY SMACNA DUCT CONSTRUCTION STANDARDS.

R. INDOOR FLEXIBLE CONNECTIONS: NEOPRENE COATED GLASS FIBRE RETARDANT FABRIC, 30 OZ. PER SQUARE YARD WITH SEWED AND CEMENTED SEAMS, SIMILAR TO VENT FABRICS.

S. EXHAUST REGISTERS: SEE MECHANICAL SCHEDULES

T. RETURN GRILLES: SEE MECHANICAL SCHEDULES

PIPING AND FITTINGS:

A. ALL PIPING AND FITTINGS SHALL BE FURNISHED AND INSTALLED IN ACCORDANCE WITH THE LATEST EDITIONS OF THE FOLLOWING CODES AND STANDARDS:

- AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME)
- AMERICAN SOCIETY OF TESTING AND MATERIALS (ASTM)
- AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)
- MANUFACTURERS STANDARDIZATION SOCIETY OF THE VALVE AND FITTING INDUSTRY (MSS).

B. INSTALL PIPING SYSTEMS USING THE BEST STANDARD PRACTICES OF THE TRADE TO MAKE THE CONNECTED EQUIPMENT AND SYSTEM COMPONENTS COMPLETE AND READY FOR REGULAR OPERATION. INSTALLATION SHALL BE IN ACCORDANCE WITH ALL WRITTEN INSTALLATION PROCEDURES, PIPING ACCESSORY MANUFACTURERS RECOMMENDATIONS, REQUIREMENTS OF BUILDING SERVICES PIPING (ANSI B31.1) AND POWER PIPING (ANSI B31.9) AS APPLICABLE, AND AS SPECIFIED.

C. PROVIDE PIPE FLEXIBILITY AND EXPANSION BY BENDS, SWING JOINTS, LOOPS, OFFSETS, MECHANICAL COUPLING DEVICES AND EXPANSION JOINTS. SUPPORT, ANCHOR AND GUIDE PIPING TO PRESERVE ALIGNMENT AND DIRECT EXPANSION. REFER TO "EXPANSION PROVISIONS" BELOW.

D. PIPE MATERIALS AND FITTING MATERIALS SHALL BE AS INDICATED IN SCHEDULE OF PIPE AND FITTING MATERIALS BELOW:

SERVICE	PIPE MATERIAL / WEIGHT	FOR TYPE OF JOINTS	FITTING MATERIALS	PRESSURE RATING PSI
HEATING HOT WATER (3" DIA & LESS)	COPPER/ TYPE L	SOLDERED COPPER	WROUGHT	125
CONDENSATE DRAIN	COPPER/ TYPE M	SOLDERED	WROUGHT	125
REFRIGERANT	COPPER/ TYPE L	SOLDERED	WROUGHT	125

F. NO PIPING SHALL BE LESS THAN $\frac{1}{8}"$, UNLESS OTHERWISE NOTED.

G. PROVIDE UNION CONNECTIONS AT EACH PIECE OF EQUIPMENT AND ON EACH SIDE OF ALL VALVES AND IN-LINE EQUIPMENT.

H. PROVIDE VALVED AND CAPPED CONNECTIONS AT ALL POINTS IN PIPING SYSTEMS REQUIRED FOR DRAINING SYSTEMS.

I. CONDENSATE DRAIN LINE MUST HAVE A DIAMETER EQUAL TO OR GREATER THAN THE EXIT DIAMETER OF THE DRAIN SEAL DEVICE. LINE LENGTH MUST BE SHORTEST PATH TO CONDENSATE DISPOSAL AREA, AND MUST BE SLOPED AWAY FROM THE DRAIN SEAL AT A RATE OF NO LESS THAN $\frac{1}{8}"$ PER FOOT.

J. PROVIDE DIELECTRIC FITTINGS AT CONNECTIONS OF DISSIMILAR MATERIALS TO EFFECTIVELY ISOLATE FERROUS FROM NON-FERROUS PIPING (ELECTRICAL CONDUCTANCE), PREVENT GALVANIC ACTION AND STOP REACTIONS.

K. PROVIDE ECCENTRIC REDUCING COUPLINGS TO BRING PIPES FLUSH ON TOP FOR WATER SERVICE.

L. FIT FLANGED JOINTS WITH JOHNS-MANVILLE OR APPROVED RING GASKETS. FLANGES SHALL BE FACED AND DRILLED TO ASA STANDARDS AND FITTED WITH SEMI FINISHED HEXAGON MACHINE BOLTS AND NUTS PROPER NUMBER AND SIZE.

M. MAKE SCREW JOINTS TIGHT WITH TEFLON (POLYTETRAFLUORETHYLENE) TAPE OR LITHARGE-GLYCERIN MIXTURE APPLIED TO MALE THREADS. USED TAPERED THREADS.

N. REFRIGERANT PIPING INSTALLATION SHALL BE IN ACCORDANCE WITH THE AIR CONDITIONING MANUFACTURERS WRITTEN INSTRUCTIONS.

MINIMUM DUCTWORK INSULATION				
DUCTWORK LOCATION	FLAME SPREAD RATING	SMOKE DEVELOPED INDEX RATING	INSULATION MEAN TEMP. RATING	MINIMUM INSTALLED INSULATION VALUE
CONDITIONED SPACE	25	50	75°F	R-6
UNCONDITIONED SPACE	25	50	75°F	R-8

DUCTWORK INSULATION NOTES:

- REFER TO MECHANICAL SPECIFICATION DRAWINGS FOR ADDITIONAL INFORMATION.
- ALL MINIMUM REQUIRED PIPE INSULATION THICKNESS VALUES COMPLY WITH THE 2025 NEW YORK STATE ENERGY CONSERVATION CODE.

"It is a violation of the State Education Law for any person, unless he or she is acting under the direction of a licensed professional engineer to alter an item in anyway, on this drawing and/or in this specification in anyway. If any such item is altered, the altering engineer shall affix to the item his or her seal and the notation "altered by" followed by his or her signature and the date of such alteration, and a specific description of the alteration."

This plan is approved only for the work indicated on the application specification sheet, all other matters are not to be relied upon, or to be considered as either being approved or in accordance with applicable codes.

DATE ISSUED

06-22-2026 ISSUED FOR 100%DD/50%CD REVIEW
07-20-2026 ISSUED FOR 90%CD REVIEW
09-17-2026 ISSUED FOR GENERAL CONSTRUCTION BID AS SINGLE PRIME CONTRACT INCLUDING ALL TRADES

SEAL



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PROPOSED NEW FACILITY
ELLENVILLE FIRE DISTRICT
203 S. MAIN ST. NYS ROUTE 209
ELLENVILLE, NY 12428

MECHANICAL SPECIFICATIONS

PROJECT No. 2501
EMTEC-7611

CHECKED BY: MF/APS

DRAWING:

M-7.1

EMTEC PROJECT NO. 7611 DRAWN BY: MF CHECKED BY: APS

WATER SYSTEM SPECIALTIES- GENERAL:

- A. ALL PIPING SHALL BE SO PITCHED THAT ALL AIR IN THE SYSTEM CAN BE VENTED THROUGH AUTOMATIC AIR VENTS. ALL PIPING SHALL BE ARRANGED SO THAT ENTIRE SYSTEM MAY BE DRAINED. CONNECTIONS TO EQUIPMENT SHALL BE TAKEN OFF THE TOP OF THE MAINS FOR UPFEED AND THE BOTTOM OF THE MAINS FOR DOWNFEED AT EITHER A 45 DEGREE ANGLE OR A 90 DEGREE ANGLE FROM HORIZONTAL PLANE. PIPING SHALL BE INSTALLED SO AS TO AVOID TRAPPING OF AIR. NO PIPING SHALL BE LESS THAN 1/2 INCH UNLESS OTHERWISE NOTED. FOR PIPE SIZES NOT INDICATED ON PLANS, SEE MANUFACTURER'S EQUIPMENT CONNECTION DETAILS. PROVIDE FITTINGS FOR CHANGE IN PIPE SIZE FOR FINAL CONNECTION AT EQUIPMENT REQUIRED. PROVIDE UNION CONNECTIONS AT EACH PIECE OF EQUIPMENT AND ON EACH SIDE OF ALL VALVES. PROVIDE VALVED AND CAPPED CONNECTIONS AT ALL POINTS IN PIPING SYSTEMS REQUIRED FOR DRAINING SYSTEMS.
- B. AVOID ENTRY OF FOREIGN MATTER INTO PIPING DURING CONSTRUCTION. AFTER COMPLETION OF PIPING, FLUSH SYSTEM WITH WATER. REMOVE AND CLEAN STRAINERS AND BLOW OFF ALL PIPING LOW POINTS AT THE END OF FLUSH PERIOD.
- C. TRAP SEAL IN CONDENSATE DRAIN PIPING SHALL BE MINIMUM ONE INCH GREATER THAN STATIC PRESSURE IN SYSTEM.
- D. PROVIDE AS REQUIRED: AUTOMATIC AIR VENTS, MANUAL AIR VENTS, AND RELIEF AIR VALVES.
- E. COMPRESSION AND FLARED FITTINGS: CAST BRASS ANSI B16.26. PROVIDE DIELECTRIC GASKETS FOR JOINTS OF DISSIMILAR METALS. ISOLATING GASKETS, SLEEVES AND WASHERS BETWEEN FLANGES, BOLTS AND NUTS.
- F. PROVIDE 1/2 INCH DRAIN VALVE AND CAPPED CONNECTIONS AT LOW POINTS. PROVIDE 1/2 INCH CAPPED CONNECTION FOR DRAINING CONNECTION AT THE LOWEST POINT IN THE SYSTEM AND IN EQUIPMENT ROOM.
- G. FOR MANUAL AIR VENTS, PROVIDE LINE SIZE AIR CHAMBER WITH 1 INCH VALVE. PROVIDE VALVES AT ALL HIGH POINTS AND WHERE FLOW CHANGES HORIZONTAL TO DOWNWARD.
- H. INSTALL EXPANSION TANKS FOR HEATING WATER SYSTEMS.
- I. INSTALL AIR SEPARATOR (AS) IN HOT WATER PIPING SYSTEMS TO ALLOW AIR TO ESCAPE.

1. PROVIDE AUTOMATIC AIR VENT EQUAL TO TACO HY-VEBT #400

EXPANSION PROVISIONS:

- A. INSTALLATION OF PIPING MUST ALLOW FOR EXPANSION USING OFFSETS, LOOPS, SWING JOINTS, EXPANSION JOINTS, ETC. AS SHOWN AND NECESSARY TO PREVENT UNDUE STRAIN. TAKE-OFFS FROM MAINS TO RUNOUTS SHALL NOT HAVE LESS THAN THREE ELBOW SWINGS.
- B. MAINS AND RISERS WITH LOOPS OR OFFSETS SHALL BE SECURELY ANCHORED TO STRUCTURE SO AS TO IMPART EXPANSION TOWARDS LOOP OR OFFSETS. ANCHORS SHALL BE CONSTRUCTED OF HEAVY FORGED WROUGHT IRON, SECURED TO PIPE AND TO STRUCTURE. PROVIDE VIBRATION ISOLATION AS REQUIRED.
- C. PROVIDE PIPE ALIGNMENT GUIDES AS REQUIRED TO GUIDE EXPANDING PIPE TO MOVE FREELY FROM ANCHOR POINTS TOWARD EXPANSION JOINTS, OFFSET, ETC.

PIPE HANGERS:

- A. PIPE HANGERS FOR 2" PIPE AND SMALLER SHALL BE "GRINNELL" FIG. NO. C765 ADJUSTABLE WROUGHT IRON. FOR 2-1/2" TO 4" PIPE THE HANGERS SHALL BE "GRINNELL" FIG. NO. C7266 ADJUSTABLE WROUGHT IRON OR APPROVED EQUAL. HANGER RODS SHALL BE OF THE FOLLOWING DIAMETERS

PIPE SIZE	ROD DIAMETER	MAXIMUM SPACING
1-1/4" AND BELOW	3/16"	6'-0"
1-1/2" TO 2"	1/4"	8'-0"
2-1/2" TO 3"	5/16"	8'-0"

- B. FOR PIPING IN MECHANICAL EQUIPMENT ROOM: SPRING HANGER ISOLATORS SIMILAR TO MASON INDUSTRIES TYPE 30N OR APPROVED EQUAL.
- C. PROVIDE PIPE STANDS, SUPPORTS, HANGERS AND OTHER SUPPORTING APPLIANCES AS NECESSARY TO SUPPORT WORK REQUIRED BY CONTRACT DOCUMENTS.
- D. SELECT AND SIZE PIPE HANGERS AND SUPPORTS IN COMPLIANCE WITH THE LATEST EDITION OF MSS MANUALS SP-88, SP-89 AND SP-89.

PIPING TESTS:

- A. WORK OF THIS CONTRACTOR SHALL INCLUDE THE FURNISHING OF ALL TESTING INSTRUMENTS, GAUGES, PUMPS AND OTHER EQUIPMENT REQUIRED OR NECESSARY TESTS, REQUIRED BY CODE AND REGULATIONS AS REQUIRED BY THE LOCAL INSPECTOR.
- B. TESTS: NO TEST SHALL BE STARTED UNTIL SYSTEMS HAVE BEEN CLEANED. PROVIDE TEMPORARY PIPING AND CONNECTIONS FOR TESTING, FLUSHING OR DRAINING SYSTEMS TO BE TESTED. IF LEAKS DEVELOP, REPAIRS SHALL BE MADE AND TESTS REPEATED. TESTS SHALL BE CONTINUED UNTIL SYSTEMS OPERATE WITHOUT ADJUSTMENTS AND REPAIR TO EQUIPMENT OR PIPING. TESTS ARE FURTHER SPECIFIED UNDER OTHER PARAGRAPHS OF THIS SECTION. TEST REQUIREMENTS SPECIFICALLY INCLUDE, BUT ARE NOT LIMITED TO THE FOLLOWING:
- C. ALL PIPING INSTALLED SHALL BE TESTED AS DESCRIBED BELOW.
- D. HYDROSTATIC TEST OF PIPING:

1. HOT WATER SUPPLY AND RETURN PIPING SHALL BE TESTED AT NO LESS THAN 80-POUNDS PER SQUARE IN HYDROSTATIC PRESSURE MAINTAINED FOR AT LEAST FOUR (4) HOURS.
2. CONDUCT HYDROSTATIC LEAK TESTS IN ACCORDANCE WITH ANSI B3.3, POWER PIPING CODE.
3. TESTING MEDIUM SHALL BE WATER AT AMBIENT TEMPERATURE.
4. WHEN DESIGNATED TEST PRESSURE IS APPLIED, CONNECTIONS SHALL BE INSPECTED BY ARCHITECTS/ENGINEERS REPRESENTATIVE FOR ACCEPTANCE.
5. LEAKS DISCOVERED DURING TESTING SHALL BE REPAIRED AT NO COST TO THE OWNER; RETEST SYSTEM.
6. ISOLATE SYSTEM PIPING FROM SYSTEM COMPONENTS DURING TEST.
7. TEST PRESSURIZED PIPING SYSTEM TO 150% OF DESIGN OPERATING PRESSURE, NO MORE THAN 125 PSI AND NO LESS THAN 80 PSI.
- E. REFRIGERANT PIPING SHALL BE LEAK TESTED USING NITROGEN AND REFRIGERANT CHARGE WITH ELECTRONIC LEAK DETECTOR. AFTER REPAIRING LEAKS, RETEST AS REQUIRED. AFTER LEAK TEST, DEHYDRATE BY PRODUCING AND HOLDING VACUUM OF 2.5 INCH HG. MAINTAIN VACUUM FOR 24 HOURS WITH MAX 0.05 PRESSURE RISE. IF LEAKAGE EXCEEDS 0.05 INCH REPEAT ALL OF TEST BEFORE DEHYDRATION.

VALVES:

- A. PIPING SERVICE VALVES SHALL BE:
- GATE VALVE: "JENKINS" FIGURE 270-U, 400 LB W.O.G., OR APPROVED EQUAL.
- BALANCING VALVE: "JENKINS" FIGURE 32-A, 400 LB W.O.G., OR APPROVED EQUAL.
- CHECK VALVE: "JENKINS" FIGURE 1272-250 LB W.O.G., OR APPROVED EQUAL.
- STRAINER: "WALWORTH" FIGURE 3699-S, 400 LB W.O.G., OR APPROVED EQUAL.
- B. VALVES (FOR COPPER PIPING):
- GATE VALVE: "JENKINS" FIG. 1242 OR EQUAL.
- GLOBE VALVE: "JENKINS" FIG. 95S1 OR EQUAL.
- CHECK VALVE: "JENKINS" FIG. 1222 OR EQUAL.
- STRAINER: "WALWORTH" FIG. 3699-S OR EQUAL.
- C. VALVES FOR FINNED TUBE RADIATION:
- SELF-CONTAINED THERMOSTATIC CONTROL VALVE: SIMILAR TO DANFOSS RA 2000 VALVE (CONFIGURED AS REQUIRED TO SUIT ACTUAL CONDITIONS) WITH COMBINED DIAL/OPERATOR/SENSOR.
- INSULATION:
- A. ALL INSULATION MATERIALS, INCLUDING JACKETS, FACING, ADHESIVE, COATINGS, AND ACCESSORIES ARE TO BE FIRE HAZARD RATED AND LISTED BY UNDERWRITERS LABORATORIES INC., USING STEINER TUNNEL TEST METHOD FOR

FIRE HAZARD CLASSIFICATION OF BUILDING MATERIALS, STANDARD UL 723 (ASTM E084), (ASA A2.5-1963). FLAMESPREAD: MAXIMUM 25. FUEL CONTRIBUTED AND SMOKE DEVELOPED: MAXIMUM 50. FLAMEPROOFING TREATMENTS SUBJECT TO DETERIORATION FROM MOISTURE OR HUMIDITY ARE NOT ACCEPTABLE.

- B. INSTALL INSULATION, MASTICS, ADHESIVES, COATINGS, COVERS, WEATHER-PROTECTION AND OTHER WORK EXACTLY AS REQUIRED BY MANUFACTURER'S RECOMMENDATIONS.
- C. ACCEPTABLE MANUFACTURERS INCLUDE CERTAIN-TEED, KNAUF, MANVILLE PRODUCTS, AND OWENS-CORNING. ANY SUBSTITUTIONS MUST BE APPROVED BY THE ENGINEER.
- D. DUCT INSULATION:
1. MATERIALS SHALL MEET THE REQUIREMENTS OF ADHESIVE AND SEALANT COUNCIL STANDARDS AND SMANCA.
- a. CONDITIONED SPACE: MINIMUM 2" THICK FIBERGLASS BLANKET, WITH FACTORY APPLIED FOIL/KRAFT VAPOR BARRIER FACING, FLAME SPREAD/SMOKE DEVELOPED RATING OF 25/50. DUCT INSULATION SHALL HAVE A MINIMUM OF R-8 INSTALLED INSULATION VALUE.
- b. INDOORS UNCONDITIONED SPACE: MINIMUM 2" THICK FIBERGLASS BLANKET, WITH FACTORY APPLIED FOIL/KRAFT VAPOR BARRIER FACING, FLAME SPREAD/SMOKE DEVELOPED RATING OF 25/50. DUCT INSULATION SHALL HAVE A MINIMUM OF R-8 INSTALLED INSULATION VALUE.
- c. OUTDOORS UNCONDITIONED SPACE: MINIMUM 1-1/2" THICK RIGID FIBERGLASS BOARD WITH FIELD APPLIED VAPOR BARRIER FOIL, JACKETING FOR WEATHER PROTECTION, TAPER INSULATION TO PITCH 1/8" PER FOOT FROM THE CENTER OF THE DUCT TO PREVENT WATER PONDING. INSTALLED DUCT INSULATION SHALL HAVE A MINIMUM OF R-8 INSULATION VALUE.
- c. ASTM E-84 MINIMUM FIRE HAZARD RATINGS SHALL BE 25 FLAME SPREAD, 50 FUEL CONTRIBUTED AND 50 SMOKE DEVELOPED.
2. ALL SUPPLY AIR DUCTWORK TO BE INSULATED WITH FLEXIBLE BLANKET INSULATION AND HAVE A MINIMUM OF R-6 INSULATION VALUE.
3. ALL OUTSIDE AIR INTAKE DUCTWORK TO BE INSULATED WITH FLEXIBLE BLANKET INSULATION AND HAVE A MINIMUM OF R-8 INSULATION VALUE.
4. ALL COMBUSTION AIR INTAKE DUCTWORK TO BE INSULATED WITH RIGID FIBERGLASS BOARD INSULATION.
5. INSULATION SHALL BE CONTINUOUS THROUGH WALL AND CEILING OPENINGS AND IN SLEEVES.
6. BOILER BREECHING SHALL BE INSULATED WITH 2" THICK JOHNS-MANVILLE "THERMO-12" BLOCKS, OR APPROVED EQUAL. HYDROUS CALCIUM SILICATE INSULATION, HAVING AND AVERAGE THERMAL CONDUCTIVITY NOT TO EXCEED 0.42 BTU/INCH SQ. FT./FHR AT A MEAN TEMPERATURE OF 200 DEGREES FAHRENHEIT.

INSULATION SHALL BE INSTALLED WITH JOINTS TIGHTLY BUTTED AND STAGGERED AND SECURED WITH 16 GA. GALVANIZED, ANNEALED STEEL WIRE ON SQUARE OR RECTANGULAR SURFACES OR 3/4" x .015 GALVANIZED STEEL BANDS ON 12" MAXIMUM CENTERS ON CYLINDRICAL AREAS. WHERE REQUIRED, WELDED STUDS, CLIPS OR ANGLES SHALL BE PROVIDED AS ANCHORS FOR WIRES AND BANDS.

ON BREECHING WITH PROJECTING STIFFENERS, 6" SQUARE NO. 6 GA. WELDED WIRE FABRIC SHALL BE WIRED TO STIFFENERS AND INSULATION SECURED BY WIRING AND FABRIC.

OVER THE INSULATION, 1" HEXAGONAL MESH WIRE SHALL BE TIGHTLY STRETCHED IN PLACE WITH EDGES LACED TOGETHER. FINISH SHALL BE JOHNS-MANVILLE NO. 375 INSULATING AND FINISHING CEMENT OR APPROVED EQUAL, APPLIED 1/2" THICK IN ONE COAT, TROWELED TO SMOOTH FINISH. ALL CORNERS ARE TO BE REINFORCED WITH CORNER BEAD.

E. PIPE INSULATION:

1. NO PIPING IS TO BE INSULATED UNTIL ALL TESTS DESCRIBED ABOVE HAVE BEEN SUCCESSFULLY PASSED.
2. HOT WATER AND CHILLED WATER PIPING SHALL BE INSULATED WITH FIBERGLASS, MOLDED, ONE PIECE, MAXIMUM 26 K-FACTOR AT 75 DEGREES F. MEAN TEMPERATURE, VAPOR SEALED.
3. ALL SERVICE OR ALL PURPOSE INSULATION JACKET: LAMINATE OF WHITE KRAFT FACING, GLASS SCRIM REINFORCING AND ALUMINUM FOIL.
4. DENSITY OF ALL FIBERGLASS PIPING INSULATION SHALL NOT BE LESS THAN 3 LBS/CU. FT.
5. FITTINGS AND VALVES SHALL BE INSULATED WITH JOHNS-MANVILLE ZESTON OR APPROVED EQUAL FITTING COVERS OVER A FIBERGLASS INSERT PRECUT TO A SPECIFIC SIZE, SHAPE AND THICKNESS FOR THE SPECIFIC FITTING INVOLVED. FITTING COVERS SHALL BE SUITABLE FOR PAINTING.
6. ALL INSULATION SHALL BE IN CONFORMANCE WITH LATEST U.L. AND NFPA 90A REQUIREMENTS.
7. REFRIGERANT SUCTION LINES, HOT GAS BY PASS LINES, AND OUTDOOR LIQUID LINES SHALL BE INSULATED WITH FLEXIBLE, CLOSED CELL ELASTOMERIC INSULATION IN TUBULAR FORM, SIMILAR TO ARMAFLEX. ALL OUTDOOR EXPOSED PIPING TO BE PROVIDED WITH ALUMINUM WEATHERPROOF JACKETING. ALL SEAMS MUST BE LOCATED ON THE LOWER HALF OF THE PIPE.
8. CONDENSATE DISCHARGE PIPING SHALL BE INSULATED WITH FIBERGLASS AND ASJ JACKET (NO STAPLES).
9. SCHEDULE.

MINIMUM PIPE INSULATION							
PIPE SERVICE	CONDUCTIVITY RANGE (K-VALUE)	INSULATION MEAN TEMP. RATING	NOMINAL PIPE DIAMETER (INCHES)				
			< 1	1 TO < 1.5	1.5 TO < 4	4 TO < 8	8+
CONDENSATE PIPING	0.21-0.27	75°F	0.5	0.5	1	1	1
COOLING ONLY REFRIGERANT PIPING	0.20-0.26	50°F	0.5	1	1	1	1.5
HEAT PUMP REFRIGERANT PIPING	0.25-0.29	125°F	1.5	1.5	2	2	2
HEATING HOT WATER SUPPLY & RETURN PIPING	0.25-0.29	125°F	1.5	1.5	2	2	2

PIPE INSULATION NOTES:

1. REFER TO MECHANICAL SPECIFICATION DRAWINGS FOR ADDITIONAL INFORMATION.
2. ALL MINIMUM REQUIRED PIPE INSULATION VALUES COMPLY WITH THE 2025 NEW YORK STATE ENERGY CONSERVATION CODE (2025-NYSECC).
3. PIPE INSULATION EXPOSED TO WEATHER AND/OR DIRECT SUNLIGHT SHALL BE PROTECTED WITH ALUMINUM JACKETING TO MINIMIZE DEGRADATION OF PIPE INSULATION OVER TIME.

CONDENSATE PUMPS:

- A. AUTOMATIC CONDENSATE VERTICAL PUMPS.
- B. FLOAT OPERATED CONTROL AND SECOND FLOAT SWITCH TO OPERATE A WARNING SIGNAL AND REPLAY TO STOP THE AIR CONDITIONING UNIT. (PROVIDE REQUIRED REPLY).
- C. SIMILAR TO LITTLE GIANT NO. VCL-4SS, UL LISTED, 115 VOLTS, 1/5 HP, 3.5 AMPS, 15 FT HEAD, 389 GALLONS PER HOUR CAPACITY.

METERS, GAUGES AND INDICATORS:

- A. REFER TO EQUIPMENT MANUFACTURERS FOR ALL REQUIRE METER, GAUGES, INDICATORS, THERMOMETERS AND PRESSURE GAUGES AND THEIR EXACT LOCATION AND MOUNTING REQUIREMENTS FOR ALL EQUIPMENT INSTALLED OR MODIFIED UNDER THIS PROJECT.
- B. PRESSURE GAUGES:
1. INSTALL PRESSURE GAUGES AT INLET AND OUTLET OF EACH PUMP AND HEAT EXCHANGER AND WHEREVER SHOWN ON DRAWINGS.
2. WATER SERVICE: PROVIDE BRASS SHUTOFF COCK AND PRESSURE SNUBBER.
3. PRESSURE GAUGES SHALL BE 4" DIAMETER BOURDON SPRING TYPE AS MANUFACTURED BY U.S. GAUGE, LONERGAN, TRERICE, MARCH, ASHCROFT, OR APPROVED EQUAL.
4. ALL GAUGES SHALL BE FITTED SO AS TO BE READILY READABLE FROM THE FLOOR.
- C. THERMOMETERS:
1. INSTALL THERMOMETERS AT INLET AND OUTLET OF EACH WATERSIDE HEAT EXCHANGER AND WHERE SHOWN ON DRAWINGS.
2. THERMOMETERS SHALL BE OF SEPARABLE WELL, ADJUSTABLE 9" VERTICAL TYPE DIAL AS MANUFACTURED BY AMERICA, TRERICE, WEISS, OR APPROVED EQUAL.
3. ALL THERMOMETERS SHALL BE INSTALLED IN SUCH A MANNER AS TO CAUSE A MINIMUM OF RESTRICTION OF FLOW IN THE PIPES AND SO THAT THEY CAN BE EASILY READ FROM THE FLOOR.
4. INSTALL ALL PIPE MOUNTED THERMOMETERS IN THERMOWELLS FILLED WITH HEAT TRANSFER COMPOUND.
5. SELECT AND INSTALL THERMOMETERS/THERMOWELLS SO THAT TIP OF STEM IS AT LEAST MIDSPAN OF THE PIPE CROSS SECTION BUT LESS THAN THE PIPE DIAMETER.

VIBRATION ISOLATION:

- A. PROVIDE VIBRATION ISOLATION FOR EQUIPMENT, PIPING AND DUCTWORK. PROVIDE SUPPLEMENTARY STEEL WHERE EQUIPMENT CANNOT SUSTAIN POINT SPRING LOADS.
- B. SEISMIC RESTRAINT: THIS CONTRACTOR SHALL COORDINATE THE INSTALLATION OF ALL ISOLATED EQUIPMENT AS REQUIRED IN ACCORDANCE WITH THE REGULATIONS OF THE AUTHORITIES HAVING JURISDICTION.
- C. PROVIDE LEVELING DEVICE AND APPROVED RESILIENT RESTRAINING DEVICES AS REQUIRED TO LIMIT EQUIPMENT AND PIPING MOTION IN EXCESS OF 1/2 INCH.
- D. RUBBER PADS NOT ACCEPTED.
- E. ALL FLOOR MOUNTED EQUIPMENT SHALL BE ERECTED ON FOUR INCH (MINIMUM) CONCRETE PADS PROVIDED UNDER GENERAL CONSTRUCTION OVER THE COMPLETE FLOOR AREA OF THE EQUIPMENT, COORDINATE WITH GENERAL CONTRACTOR.
- F. UNLESS OTHERWISE NOTED, SPRING TYPE VIBRATION ISOLATORS SHALL BE USED FOR ALL EQUIPMENT DRIVEN BY MOTORS OF 3 HP AND LARGER.
- G. UNLESS OTHERWISE NOTED, EQUIPMENT DRIVEN BY MOTORS 2 HP AND SMALLER SHALL BE ISOLATED BY MEANS OF ELASTOMETIC MOUNTS OR ELASTOMERIC HANGERS PROPERLY SIZED FOR 1/2 INCH DEFLECTION.
- H. EQUIP SPRING ISOLATORS WITH SOUND DEADENING PADS AND LEVELING BOLTS.
- I. ISOLATORS FOR EQUIPMENT INSTALLED OUTDOORS SHALL BE DESIGNED TO PROVIDE ADEQUATE RESTRAINT DUE TO NORMAL WIND CONDITIONS AND TO WITHSTAND WIND LOADS OF 30 LBS/SQ. FT. APPLIED TO ANY EXPOSED SURFACE OF THE ISOLATED EQUIPMENT.
- J. PROVIDE WEATHERPROOF CONSTRUCTION FOR ISOLATORS EXPOSED TO OUTSIDE AIR CONDITIONS.
- K. AT EACH EQUIPMENT LOCATION, PROVIDE THE REQUIRED DEFLECTION UNDER THE IMPOSED LOAD AND PRODUCE UNIFORM LOADING AND DEFLECTION EVEN WHEN EQUIPMENT WEIGHT IS NOT EVENLY DISTRIBUTED.
- L. VIBRATION ISOLATORS: NOTE THAT WHERE LISTED, REFERENCE IS TO MASON INDUSTRIES INC.
- M. SPRING ISOLATORS: FOR CEILING MOUNTED EQUIPMENT: TYPE 30N. FOR FLOOR MOUNTED EQUIPMENT: TYPE SLF.
- N. FLEXIBLE CONNECTORS: ELASTOMER TYPE FC-1, MANUFACTURED OF NYLON TIRE CORD AND EPDM, BOTH MOLDED AND CURED WITH HYDRAULIC PRESSES. STRAIGHT CONNECTORS TO HAVE TWO SPHERES REINFORCED WITH A MOLDED IN EXTERNAL DUCTILE IRON RING BETWEEN SPHERES. ELBOWS SHALL BE LONG RADIUS REDUCING TYPE, RATED 300 PSI AT 170 DEG. F. DROPPING IN A STRAIGHT LINE TO 170 PSI AT 250 DEG. F. FOR SIZES 1-1/2 INCH TO 12 INCH ELBOWS. ELBOWS SHALL BE RATED NO LESS THAN 90 PERCENT OF STRAIGHT CONNECTIONS. SIZE 10 INCH AND 12 INCH TO EMPLOY CABLES WITH NEOPRENE END FITTINGS ISOLATED FROM ANCHOR PLATES BY MEANS OF 1/2 INCH BRIDGE BEARING NEOPRENE BUSHINGS. MINIMUM SAFETY FACTOR, 4 TO 1 AT MAXIMUM PRESSURE RATINGS. SUBMITTALS TO INCLUDE TEST REPORTS. MASON TYPE MFTNC SUPERFLEX.
- O. EQUIPMENT ISOLATION: PROVIDE 1 INCH CLEARANCE BETWEEN EQUIPMENT OR STRUCTURAL BASES AND HOUSEKEEPING PAD. ISOLATING MOUNTING DEFLECTION, 1 INCH MINIMUM UNLESS OTHERWISE SPECIFIED OR SCHEDULED ON DRAWINGS.
- P. INSTALLATION: IN ACCORDANCE WITH SPECIFICATIONS AND MANUFACTURER'S WRITTEN INSTRUCTIONS.

IDENTIFICATION OF EQUIPMENT AND CONTROLS:

ALL EQUIPMENT SHALL BE STENCILED OR LABELED WITH LAMACOID PLATES SCREWED THEREON WHICH SHALL INDICATE SYSTEM SERVICE AND UNIT DESIGNATION. ALL PIPING SYSTEMS SHALL BE IDENTIFIED AS TO THEIR CONTENT AND DIRECTION OF FLOW WITH MARKERS SIMILAR TO SETON SET-MARK PIPE MARKERS EVERY 25 FEET OF HORIZONTAL RUN AND MINIMUM ONE PER ROOM. MOTOR STARTERS SHALL BE PROVIDED WITH LAMACOID PLATES, WHICH INDICATE SYSTEM SERVED. EACH MARKER BACKGROUND IS TO BE COLOR CODED WITH A CLEARLY PRINTED LEGEND TO IDENTIFY THE CONTENTS OF THE PIPE CONFORMANCE WITH "SCHEME FOR THE IDENTIFICATION OF PIPING SYSTEMS" (ASA A13.1-1956).

VALVE TAGS AND SYSTEM CHARTS:

MINIMUM 2 INCHES DIAMETER ALUMINUM TAGS WITH IDENTIFICATION NUMBER AND SYSTEM NUMBER FOR ALL VALVES AND CONTROLS. FASTEN WITH HEAVY ALUMINUM OR BRASS HOOKS OR CHAIN. CHART OF ALL SYSTEMS TO BE SCHEMATIC FLOW DIAGRAM WITH LOCATION AND FUNCTION OF ALL TAGGED VALVES. MOUNT ON WOOD PLAQUE WITH CLEAR PLASTIC LAMINATIONS COVERING DIAGRAMS.

SLEEVES AND PENETRATIONS:

- A. PIPE SLEEVES: SLEEVES THROUGH FLOORS AND THROUGH EXTERIOR, STRUCTURAL AND FIRE RATED CONSTRUCTION SHALL BE HOT DIPPED GALVANIZED SCHEDULE 40 STEEL PIPE. SLEEVES THROUGH PARTITIONS AND NON FIRE RATED CONSTRUCTION SHALL BE 26 GAUGE GALVANIZED STEEL WITH LOCK LONGITUDINAL SEAMS, OR APPROVED PLASTIC PIPE.
- B. DUCT SLEEVES AND OPENINGS: SLEEVES THROUGH FLOORS, THROUGH EXTERIOR, STRUCTURAL AND FIRE RATED CONSTRUCTION AND THROUGH SMOKE PARTITIONS THAT REQUIRE SMOKE DAMPERS SHALL BE SCHEDULE 40 GALVANIZED STEEL PIPE FOR ROUND DUCT AND SHALL MEET SMACNA FIRE DAMPER AND HEAT STOP GUIDE FOR RECTANGULAR AND FLAT OVAL DUCTS. FIREPROOF PACKING SHALL BE APPLIED TO SEAL ANY OPENINGS BETWEEN SLEEVE AND WALL. MATERIALS SHALL MAINTAIN THE FIRE RATING OF THE WALL, AND SHALL BE INSTALLED IN ACCORDANCE WITH THE SMACNA FIRE DAMPER AND HEAT STOP GUIDE. OPENINGS IN WALLS, PARTITIONS AND OTHER FIRE RATED CONSTRUCTION THAT DO NOT REQUIRE SMOKE DAMPERS SHALL MEET NFPA 90A, SECTION 3-3.8.
- C. PIPE SLEEVE PACKING: PACKING BETWEEN THE PIPE AND THE SLEEVE (OR WALL OR SLAB OPENING) IN FIRE RATED

WALLS OR SLABS SHALL BE IN COMBINATION OF FIREPROOF INSULATION AND FIREPROOF CAULK. THE COMBINATION OF MATERIALS SHALL HAVE THE SAME FORE RATING, IN HOURS, AS THE WALL OR SLAB, AS TESTED IN ACCORDANCE WITH THE LATEST EDITION OF ASTM-814 (UL 1479). THE COMBINATION OF MATERIALS SHALL BE CLASSIFIED BY UL (FILL, VOID OR CAVITY MATERIALS) FOR THE FIRE RATING REQUIRED AND SHALL BE LISTED AS A NUMBERED SYSTEM IN THE UL FIRE RESISTANCE DIRECTORY. FIBERGLASS SHALL NOT BE USED AS THE INSULATION MATERIAL.

- D. ACCEPTABLE FIREPROOF INSULATION MATERIALS SHALL BE KAOLIN (KAOWOOL BY BABCOCK AND WILCOX); CERAMIC FIBER BLANKET (FIBERFRAX BY STANDARD OIL) OR FIRE RATED MINERAL WOOL (THERMAPRIBER BY USG). ACCEPTABLE FIREPROOF CAULKS SHALL BE SILICONE (FIRESTOP BY DOW CORNING, HILTI CS240); CERAMIC FIBER (FIREPUTTY BY STANDARD OIL) OR INTUMESCENT SYNTHETIC ELASTOMER (FIRE BARRIER CAULK BY 3M, HILTI CS2420).
- E. PACKING FOR SLEEVES THAT DO NOT REQUIRE MAINTENANCE OF FIRE RATING SHALL BE OAKUM, SILICATE FOAM, CERAMIC FIBRE OR MINERAL FIBRE WITH APPROVED SEALANT. PACK OR FOAM TO WITHIN 1" OF WATERPROOF MASTIC SURFACE FINISH OR SILICONE CAULKING.

GENERAL BALANCING REQUIREMENTS:

- A. PROVIDE QUALIFIED PERSONNEL, EQUIPMENT AND SERVICES FOR BALANCING AND ADJUSTING OF MECHANICAL SYSTEMS. SUBMIT RESUMES AT DEMONSTRATION OF BALANCING MEETING. PERSONNEL SHALL BE EXPERIENCED AND QUALIFIED TO PERFORM, RECORD, EVALUATE ALL PROCEDURES CONTAINED HERE AND/OR AS OUTLINED ON DRAWINGS.
- B. SUBMIT PROCEDURES, RECORDING FORMS, AND TEST EQUIPMENT FOR REVIEW PRIOR TO BALANCING, AS FOLLOWS:
1. BALANCING PROCEDURE OR SEQUENCE AS CONTAINED HEREIN.
2. RECORDING FORMS USED FOR BALANCING MUST BE SUBMITTED TO ARCHITECT/ENGINEER FOR APPROVAL BEFORE BALANCING IS STARTED.
3. FAILURE TO SUBMIT FORMS MAY RESULT IN REJECTION OF ENTIRE SUBMITTAL.
4. SUBMIT DESCRIPTION OF BALANCING EQUIPMENT BEING USED.
- C. BALANCING SHALL NOT BEGIN UNTIL ALL SYSTEMS HAVE BEEN INSTALLED COMPLETELY AND ARE CAPABLE OF NORMAL OPERATION.

AIR SYSTEM BALANCING:

- A. A TESTING AGENCY CERTIFIED BY THE NATIONAL ENVIRONMENTAL BALANCING BUREAU (NEBB) OR THE TESTING, ADJUSTING, AND BALANCING BUREAU (TABB) SHALL BALANCE, ADJUST AND TEST MOTORS, SYSTEMS, AIR MOVING EQUIPMENT AND DISTRIBUTION, SUPPLY, RETURN AND EXHAUST SYSTEMS, PER THE REQUIREMENTS BELOW, UP TO 3 SEPARATE TIMES TO SATISFY THE REQUIREMENTS OF THE ENGINEER:
1. ADJUST BLOWER RPM TO DESIGN REQUIREMENTS AND RECORD. TEST AND RECORD MOTOR FULL LOAD AMPERES. CONTRACTOR SHALL REPLACE SHEAVES AND PULLEYS AS NECESSARY TO ACHIEVE THE SPECIFIED PERFORMANCE.
2. MAKE PITOT TUBE TRANSVERSE OF MAIN SUPPLY, RETURN AND EXHAUST AND OBTAIN DESIGN CFM AT FANS.
3. TEST AND RECORD SYSTEM STATIC PRESSURE SUCTION AND DISCHARGE.
4. TEST AND RECORD ENTERING AIR TEMPERATURES.
5. BALANCE AND ADJUST SUPPLY AIR SYSTEMS IN FINISHED AREAS OF BUILDING:
- a. BALANCE AND ADJUST AS REQUIRED TO DELIVER VOLUME OF AIR IN EACH AIR OUTLET WITHIN 10% OF DESIGN FLOW SHOWN IN DRAWINGS.
- b. READJUST AIR VOLUMES AFTER OCCUPANCY, AS REQUIRED TO PROPERLY BALANCE HEATING AND COOLING LOADS THROUGHOUT CONDITIONED AREAS.
6. BALANCE SUPPLY AIR SYSTEMS IN UNFINISHED AREAS:
- a. SUPPLY AIR SYSTEMS SHALL BE BALANCED AFTER INSTALLATION OF ITEMS RELATED TO SAME SYSTEMS WITH EXCEPTION OF DUCT TAPS TO AIR DIFFUSERS IN INTERIOR ZONES.
- b. BALANCE AS REQUIRED TO DELIVER AIR VOLUME AT OUTLETS 10% OF DESIGN FLOW SHOWN IN DRAWINGS.
- c. PROVIDE SUFFICIENT TEMPORARY OPENINGS IN INTERIOR ZONE DUCT SYSTEMS TO ADJUST INTERIOR ZONE AIR VOLUMES.
- d. READJUST AIR VOLUMES AFTER COMPLECTIONS AND OCCUPANCY, AS REQUIRED TO PROPERLY BALANCE HEATING AND COOLING LOADS THROUGHOUT CONDITIONED AREAS.
7. ADJUST TOILET EXHAUST AND RELIEF AIR SYSTEMS AS REQUIRED TO DELIVER AIR VOLUMES AT INLETS WITHIN 10% OF DESIGN FLOW.
8. ADJUST MISCELLANEOUS VENTILATION SYSTEMS AS REQUIRED TO DELIVER AIR VOLUMES AT INLETS AND OUTLETS WITHIN 10% OF DESIGN FLOW.
- a. BALANCING REPORT MUST BE PROVIDED ON AABC-TYPE FORMS.
- b. COMPLETE TEST DATA AND SUBMIT TO ARCHITECT/ENGINEER FOR APPROVAL.
- c. IF QUESTIONS ARISE, TESTS OR PORTIONS OF TESTS SHALL BE REPEATED IN PRESENCE OF ARCHITECT/ENGINEER.

WATER BALANCING AND ADJUSTING:

- A. MAKE ADJUSTMENTS AS REQUIRED TO DELIVER WATER VOLUMES AT COILS AND EQUIPMENT WITHIN A MAXIMUM OF 5% OF DESIGN FLOW, OR AS REQUIRED TO PROPERLY BALANCE COOLING AND HEATING LOADS THROUGHOUT CONDITIONED AREAS.
- B. ADJUSTMENT IN WATER VOLUMES SHALL BE MADE IN MANNER SATISFACTORY TO ARCHITECT/ENGINEER.
- C. REPORTS ON SYSTEM PERFORMANCE SHALL INCLUDE:
1. MANUFACTURER, SIZE, TYPE, LOCATION INCLUDING ROOM NUMBER, AND ZONE OF EACH COIL AND PIECE OF EQUIPMENT.
2. DESIGN AN ACTUAL WATER FLOW.
3. COMPLETE NAMEPLATE DATA FOR EACH PIECE OF EQUIPMENT REPORTED.
4. COMPLETE IDENTIFICATION OF DATA.

AUTOMATIC CONTROLS:

- A. THIS CONTRACTOR IS TO FURNISH AND INSTALL, AS REQUIRED, ELECTRONIC ANALOG CONTROLS. ALL NECESSARY COMPONENTS, CONTROL WIRING, INTERLOCK WIRING, CONTRACTORS, RELAYS, STARTERS, CONTROL TRANSFORMERS, ALARMS, EQUIPMENTS, ETC. TO ACHIEVE DESIRED CONTROL OPERATION FOR THE AIR CONDITIONING AND HEATING SYSTEMS. MECHANICAL CONTRACTOR IS TO RETAIN THE SERVICES QUALIFIED AUTOMATIC CONTROL CONTRACTOR.

1. AIR CONDITIONING UNIT: SHALL BE CONTROLLED BY WALL MOUNTED 2-STAGE COOLING AND HEATING THERMOSTAT AND CONTROLS. UNIT TO CYCLE ON AND OFF TO MAINTAIN DESIGNED ROOM TEMPERATURE.
2. COMMERCIAL TOILET EXHAUST FANS: TO RUN VIA WALL MOUNTED PROGRAMMABLE 7 DAY TIME CLOCK.
3. RESIDENTIAL TOILET EXHAUST FANS: TO RUN VIA WALL MOUNTED SWITCHES.

DATE

ISSUED

06-22-2026 ISSUED FOR 100%DD/50%CD REVIEW

07-20-2026 ISSUED FOR 90%CD REVIEW

09-17-2026 ISSUED FOR GENERAL CONSTRUCTION BID AS SINGLE PRIME CONTRACT INCLUDING ALL TRADES

SEAL



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PROPOSED NEW FACILITY

ELLENVILLE FIRE DISTRICT

209 S. MAIN ST. NYS ROUTE 209

ELLENVILLE, NY 12428

MECHANICAL SPECIFICATIONS

PROJECT No. 2501

EMTEC 7611

CHECKED BY: MF/APS

DRAWING:

M-7.2

"It is a violation of the State Education Law for any person, unless he or she is acting under the direction of a licensed professional engineer to alter an item in anyway, on this drawing and/or in this specification in anyway. If any such item is altered, the altering engineer shall affix to the item his or her seal and the notation "altered by" followed by his or her signature and the date of such alteration, and a specific description of the alteration." This plan is approved only for the work indicated on the application specification sheet, all other matters are not to be relied upon, or to be considered as either being approved or in accordance with applicable codes.

EMTEC PROJECT NO. 7611 DRAWN BY: MF CHECKED BY: APS

4. HEATING SYSTEM: PROVIDE ELECTRONIC BOILER CONTROL WITH DOMESTIC HOT WATER PRIORITY.
5. SPLIT SYSTEM AC UNIT: TO BE CONTROLLED BY A WALL MOUNTED PROGRAMMABLE COOLING AND HEATING THERMOSTAT. PROVIDE HOT WATER CONTROL VALVE.
6. AT EACH ROOFTOP AC UNIT, A FIRESTAT SET AT 200 DEGREES F WILL SHUT THE SYSTEM DOWN IN THE EVENT OF EXCESSIVE HIGH TEMPERATURE.
7. EACH FAN OVER 2000 CFM SHALL BE PROVIDED WITH A NEW DUCT MOUNTED SMOKE DETECTOR OF THE IONIZATION TYPE IN THE SUPPLY DUCT OUT OF AND RETURN DUCT INTO EACH UNIT, WHICH WILL STOP THE SUPPLY FAN SHOULD PRODUCTS OF COMBUSTION BE SENSED. PROVIDE AUXILIARY CONTACTS AND MANUAL RESET SMOKE DETECTOR.
- DUCT MOUNTED DETECTOR SHALL BE SIMILAR TO PYROTRONICS MODEL SA-31 SERIES 3/3X AIR DUCT HOUSING WITH POWER SUPPLY FOR SELF CONTAINED UNIT OPERATION AND WITH COVER SERIES 3 IONIZATION DETECTORS.
- THE CONTRACTOR TO PROVIDE DETECTOR, WIRED BY ELECTRICAL CONTRACTOR.

- B. EMERGENCY BOILER CUTOFF GLASS SWITCH:
1. THE CONTRACTOR SHALL FURNISH AND INSTALL A NEW REMOTE CONTROL SWITCH, ASCO OR APPROVED EQUAL, AT THE LOCATION SHOWN ON THE PLAN. THE SWITCH SHALL BE SURFACE MOUNTED TYPE, WITH ALL ALUMINUM CONSTRUCTION AND NEMA TYPE II DRIP PROOF ENCLOSURE. (CONTROL WIRING FOR THE SWITCH SHALL BE NEW AS RECOMMENDED BY MANUFACTURER).
- C. INSTALL THE ELECTRICAL COMPONENTS FOR THE AUTOMATIC CONTROLS IN ACCORDANCE WITH THE LATEST NEC AND/OR AS AMENDED AND REVISED BY LOCAL GOVERNING CODES.
- D. MOUNT ALL PIP MOUNTED LIQUID AND GAS TEMPERATURE CONTROLS AND INDICATING DEVICES IN THERMOWELLS.
- E. PROVIDE A PETCOCK OR SHUTOFF VALVE FOR ALL PIPE MOUNTED PRESSURE CONTROLS AND INDICATING DEVICES, OTHER THAN SAFETY CONTROLS, TO FACILITATE SERVICE REMOVAL.
- F. MECHANICAL CONTRACTOR SHALL INSTALL ALL AUTOMATIC CONTROL VALVES, THERMOSTATS, THERMOSTAT SUBBASES, SAFETY CONTROLS, WELLS AND OTHER PIPE MOUNTED CONTROL DEVICES FURNISHED BY THE AUTOMATIC CONTROL SUBCONTRACTOR UNDER THE SUPERVISION OF THE AUTOMATIC CONTROL CONTRACTOR.

- FIRE EXTINGUISHERS:
- THE CONTRACTOR SHALL FURNISH IN EACH BOILER ROOM ONE (1) 10 LB. ABC TYPE DRY CHEMICAL FIRE EXTINGUISHER AS MANUFACTURED BY APPROVED A.C.O. OR APPROVED EQUAL, AND SHALL BE MOUNTED ON WALL BRACKET WITH HIGH VISIBILITY SIGN IN THE BOILER ROOM NEAR THE DOOR AND/OR AS DIRECTED BY THE ENGINEER.

- CONSTRUCTION METHODS:
- A. CONTRACTOR TO FOLLOW MANUFACTURER'S RECOMMENDATIONS AND BUILDING STANDARDS FOR PROPER MOUNTING OF ALL EQUIPMENT.
- B. ALL FLOOR MOUNTED EQUIPMENT TO BE MOUNTED WITH VIBRATION ISOLATORS IN AN APPROVED MANNER. PROVIDE ADDITIONAL FRAMING AS REQUIRED.
- C. SUPPORT ALL CEILING MOUNTED EQUIPMENT AND DUCTWORK FROM BUILDING STRUCTURE AND/OR FRAMING IN AN APPROVED MANNER. WHERE OVERHEAD CONSTRUCTION DOES NOT PERMIT FASTENING OF SUPPORTS AND EQUIPMENT, PROVIDE ADDITIONAL STEEL FRAMING AND SUBMIT FOR APPROVAL.
- D. SEAL ALL WALL, FLOOR AND SLAB PENETRATIONS AS PER THE REQUIRED RATING OF SAME. TWO (2) HOURS FOR WALLS, AND THREE (3) HOURS AT STAIR ENCLOSURES, BEAMS AND FLOORS. COORDINATE WITH ARCHITECTURAL DRAWINGS.
- E. SEAL OPENING AROUND DUCTS THROUGH PARTITIONS, WALLS, FLOORS AND SLABS (NOT IN SHAFTS) WITH MINERAL WOOL OR OTHER NONCOMBUSTIBLE MATERIALS AND FINISH AS DETERMINED BY ARCHITECT OR EXISTING BUILDING STANDARDS.
- F. PROVIDE ALL NECESSARY FLASHING AND COUNTER FLASHING TO MAINTAIN THE WATERPROOFING INTEGRITY OF THIS BUILDING AS REQUIRED BY THE INSTALLATION OR REMOVAL OF PIPES, DUCTS, AND CONDUITS, PROVIDE SLEEVES FOR DUCT AND PIPING.
- G. CONTRACTOR TO COORDINATE EXACT LOCATION OF ALL EQUIPMENT, DUCT ROUTING WITH ARCHITECT, BUILDING OWNER AND OTHER TRADES.

- EQUIPMENT START UP AND TESTING:
- A. UPON COMPLETION OF ALL SYSTEMS, PROVIDE THE SERVICES OF AN EXPERIENCED AND COMPETENT MANUFACTURER'S REPRESENTATIVE TO START UP ALL HVAC SYSTEMS AND EQUIPMENT TO DE BUG ANY PROBLEMS. PROVIDE TEMPORARY FILTERS TO ELIMINATE CONSTRUCTION AND DEBRIS. INSTALL PERMANENT FILTERS PRIOR TO BUILDING OCCUPANCY BY OWNER.
- B. AN ACTUAL TEST OF THE SPECIFIED EQUIPMENT SHALL BE CONDUCTED BY THE MANUFACTURER'S REPRESENTATIVE. DURING THE TEST, THE MANUFACTURER SHALL DEMONSTRATE TO THE SATISFACTION OF THE OWNER THAT THE SPECIFIED EQUIPMENT IS OPERATING IN CONFORMANCE WITH THESE SPECIFICATIONS.
- C. UPON COMPLETION OF THE START UP AND TESTING WORK, THE MANUFACTURER SHALL CERTIFY IN WRITING THAT THE SPECIFIED EQUIPMENT HAS BEEN INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND THAT ALL SYSTEM COMPONENTS ARE OPERATING PROPERLY, SAFELY, AND AT THE SPECIFIED PERFORMANCE REQUIREMENTS.

- TRAINING:
- AT THE COMPLETION OF CONSTRUCTION AND PRIOR TO OCCUPANCY OF THIS FACILITY, THIS CONTRACTOR MUST PROVIDE ON SITE DEMONSTRATION AND INSTRUCTION/TRAINING TO STAFF FOR USER PROCEDURES PERTAINING TO ALL HVAC SYSTEMS, CONTROLS AND MAINTENANCE REQUIREMENTS. CONTRACTOR MUST SUBMIT ALL "OPERATION AND MAINTENANCE" MANUALS AND "AS BUILT" DRAWINGS PRIOR TO SCHEDULING THIS TRAINING.

- TESTING AND INSPECTIONS
- A. THE CONTRACTOR SHALL PERFORM TESTS AND INSPECTIONS TO THE COMPLETE DUCT INSTALLATION FOR ANY LEAKS, DEFECTS OR DEFICIENCIES. ALL SUCH DEFICIENCIES DISCOVERED AS A RESULT OF THE TESTS SHALL BE IMMEDIATELY REPAIRED.
- B. THE CONTRACTOR SHALL MAKE ALL NECESSARY ADJUSTMENTS AND CORRECTIONS TO THE HEATING, VENTILATION AND AIR CONDITIONING SYSTEMS FOR THE PURPOSE OF EQUALIZING THE FLOW OF AIR, ANY DAMPERS, DEFLECTORS OR DIFFUSERS NECESSARY TO BRING ABOUT THESE ADJUSTMENTS SHALL BE PROVIDED BY THE CONTRACTOR. AIR BALANCING REPORT TO BE SUBMITTED TO ENGINEER FOR APPROVAL.
- C. EQUIPMENT AND SYSTEMS WHICH NORMALLY OPERATE DURING CERTAIN SEASONS OF THE YEAR SHALL BE TESTED DURING THE APPROPRIATE SEASON. TESTS SHALL BE PERFORMED ON INDIVIDUAL EQUIPMENT, SYSTEMS AND THEIR RESPECTIVE CONTROLS.
- D. WHENEVER THE EQUIPMENT OR SYSTEM UNDER TEST IS INTERRELATED WITH AND DEPENDS UPON THE OPERATION OF OTHER EQUIPMENT, SYSTEMS AND CONTROLS FOR PROPER OPERATION, THE LATTER SHALL BE OPERATED SIMULTANEOUSLY WITH THE EQUIPMENT OR SYSTEM BEING TESTED.
- E. AIR LEAKAGE TEST - THE COMPLETE AIR HANDLING SYSTEMS, ALL VENTILATING EXHAUST SYSTEM, INCLUDING ALL CONVENTIONAL SUPPLY AND RETURN DUCTWORK, SHALL BE TESTED. LEAKAGE SHALL NOT TO EXCEED 5% OF RATED CFM AT RATED PRESSURE. ALL THE AIR LEAKS FOUND SHALL BE CORRECTED WITHIN ACCEPTABLE MARGIN.
- F. THE CONTRACTOR SHALL DEMONSTRATE THAT ALL EQUIPMENT AND APPARATUS FULFILLS THE REQUIREMENTS OF THE SPECIFICATIONS.
- G. ALL WORK PROVIDES UNDER THE CONTRACT SHALL OPERATE WITHOUT ANY OBJECTIONABLE NOISE OR VIBRATION. SHOULD OPERATION OF ANY ONE OR MORE SYSTEMS PRODUCE NOISE OR VIBRATION, WHICH IS IN THE OPINION OF THE ENGINEER OBJECTIONABLE, THE CONTRACTOR SHALL AT HIS OWN EXPENSE MAKE CHANGES IN EQUIPMENT, ETC. AND DO ALL WORK NECESSARY TO ELIMINATE NOISE OR VIBRATION.
- H. THE CONTRACTOR SHALL TEST ECONOMIZER TO ENSURE PROPER OPERATION.
- I. THE CONTRACTOR SHALL PROVIDE ALL REPORTS INDICATED ABOVE TO BUILDING OWNER WITHIN 90 DAYS OF RECEIPT OF OCCUPANCY.

REFRIGERANT PIPE TESTING

REFRIGERATING SYSTEMS FABRICATED, ASSEMBLED, OR ERECTED ON THE PREMISES SHALL BE TESTED BY THE MECHANICAL CONTRACTOR PER THESE REQUIREMENTS. TESTS SHALL INCLUDE BOTH THE HIGH SIDES AND LOW SIDES OF EACH SYSTEM. SYSTEM COMPONENTS THAT HAVE BEEN STRENGTH TESTED UNDER PRESSURE BY THE COMPONENT MANUFACTURER, FABRICATOR, OR ASSEMBLER ARE NOT REQUIRED TO BE STRENGTH TESTED AGAIN ON THE PREMISES UNLESS MODIFIED OR REPAIRED. AFTER INSTALLATION AND BEFORE BEING PLACED IN OPERATION, SYSTEM COMPONENTS NOT PREVIOUSLY STRENGTH TESTED SHALL BE STRENGTH TESTED BY THE MECHANICAL CONTRACTOR PER THESE REQUIREMENTS. AFTER SUCCESSFUL COMPLETION OF THE REQUIRED STRENGTH TESTS AND BEFORE BEING PLACED IN OPERATION, SYSTEM COMPONENTS AND FIELD INSTALLED CONNECTIONS SHALL BE LEAK TESTED FOR TIGHTNESS BY THE MECHANICAL CONTRACTOR PER THESE REQUIREMENTS.

INFORMATIVE NOTE: SYSTEM COMPONENTS THAT ARE STRENGTH TESTED PRIOR TO FIELD ASSEMBLY INCLUDE (BUT ARE NOT LIMITED TO), COMPRESSORS, CONDENSERS, PRECHARGED LINESETS, PRESSURE VESSELS, EVAPORATORS, REFRIGERANT BULK STORAGE TANKS, SAFETY DEVICES, PRESSURE GAGES AND CONTROL MECHANISMS.

EXPOSURE OF REFRIGERANT PIPING SYSTEM. REFRIGERANT PIPING AND JOINTS INSTALLED ON THE PREMISES SHALL BE EXPOSED FOR VISUAL INSPECTION AND TESTING PRIOR TO BEING COVERED OR ENCLOSED.

TEST GASES. THE MEDIUM USED FOR PRESSURE TESTING THE REFRIGERANT SYSTEM SHALL BE ONE OF THE FOLLOWING INERT GASES: OXYGEN-FREE NITROGEN, HELIUM, ARGON, OR PREMIXED NONFLAMMABLE OXYGEN-FREE NITROGEN WITH A TRACER GAS OF HYDROGEN OR HELIUM.

FIELD TEST APPARATUS. THE MEANS USED TO PRESSURIZE THE REFRIGERANT PIPING SYSTEM SHALL HAVE EITHER A PRESSURE LIMITING DEVICE OR A PRESSURE REDUCING DEVICE AND A TEST PRESSURE MEASURING DEVICE ON THE OUTLET SIDE. THE TEST PRESSURE MEASURING DEVICE SHALL HAVE AN ACCURACY OF ±3% OR LESS OF THE TEST PRESSURE AND SHALL HAVE A RESOLUTION OF 3% OR LESS OF THE TEST PRESSURE.

PIPING SYSTEM STRENGTH TEST. REFRIGERATING SYSTEM COMPONENTS AND REFRIGERANT PIPING SHALL BE TESTED BY THE MECHANICAL CONTRACTOR PER THESE REQUIREMENTS. SEPARATE TESTS FOR ISOLATED PORTIONS OF THE SYSTEM ARE PERMITTED, PROVIDED THAT ALL REQUIRED PORTIONS ARE TESTED AT LEAST ONCE. PRESSURIZE WITH TEST GAS FOR A MINIMUM OF TEN (10) MINUTES TO NOT LESS THAN THE LOWER OF (A) THE LOWEST DESIGN PRESSURE FOR ANY SYSTEM COMPONENT OR (B) THE LOWEST VALUE OF SET PRESSURE FOR ANY PRESSURE RELIEF DEVICES IN THE SYSTEM. THE DESIGN PRESSURES FOR DETERMINATION OF TEST PRESSURE SHALL BE THE PRESSURE IDENTIFIED ON THE LABEL NAMEPLATE OF THE CONDENSING UNIT, COMPRESSOR, COMPRESSOR UNIT, PRESSURE VESSEL, OR OTHER SYSTEM COMPONENT WITH A NAMEPLATE. A PASSING TEST RESULT SHALL HAVE NO RUPTURE OR STRUCTURAL FAILURE OF ANY SYSTEM COMPONENT OR REFRIGERANT PIPING. PRESSURE RELIEF DEVICES MAY NEED TO BE TEMPORARILY REMOVED AND REPLACED WITH PLUGS DURING THE STRENGTH TEST.

INFORMATIVE NOTE: STORED ENERGY DUE TO PRESSURE IS HAZARDOUS, AND SUDDEN RELEASE OF THAT ENERGY CAN CAUSE SERIOUS DAMAGE. TAKE APPROPRIATE SAFETY MEASURES TO PROTECT LIFE, LIMB, HEALTH, AND PROPERTY IN THE EVENT OF A TEST FAILURE.

LEAKAGE TEST. THE LEAK TEST SHALL BE BY THE MECHANICAL CONTRACTOR PER THESE REQUIREMENTS.

LEAK TESTING PROTOCOL. AFTER THE TIME TO COMPLETE THE STRENGTH TEST, CONTINUE TO PRESSURE TEST FOR A MINIMUM PERIOD AS SPECIFIED IN THIS SECTION. THE SYSTEM SHALL SHOW NO LOSS IN PRESSURE ON THE PRESSURE MEASURING DEVICE DURING THE PRESSURE TEST. CALCULATION OF THE PRESSURE DIFFERENTIAL BASED ON A CHANGE IN AMBIENT TEMPERATURE SHALL BE PERMITTED. A VACUUM OF 0.0097 PSI ABSOLUTE OR LOWER SHALL BE ACHIEVED. AFTER ACHIEVING A VACUUM, THE SYSTEM SHALL BE ISOLATED FROM THE VACUUM PUMP. THE SYSTEM PRESSURE SHALL NOT RISE ABOVE 0.029 PSI ABSOLUTE FOR A MINIMUM PERIOD AS SPECIFIED IN THIS SECTION.

INFORMATIVE NOTE: THE VACUUM PUMP SHOULD GRADUALLY CREATE A VACUUM TO AVOID FREEZING OF ANY MOISTURE IN THE PIPING SYSTEM.

CONTRACTOR OR ENGINEER DECLARATION. THE INSTALLING CONTRACTOR SHALL ISSUE A CERTIFICATE OF TEST, VERIFYING STRENGTH TEST IN ACCORDANCE WITH THIS SECTION AND LEAKAGE TEST IN ACCORDANCE WITH THIS SECTION, TO THE AHJ FOR ALL SYSTEMS CONTAINING 55 LB OR MORE OF REFRIGERANT. THE CERTIFICATE SHALL GIVE THE TEST DATE, PHOTOGRAPH OF THE PRESSURE GAGE AT THE TEST PRESSURE, REFRIGERANT DESIGNATION, TEST MEDIUM, AND THE FIELD TEST PRESSURE APPLIED TO THE HIGH SIDE AND THE LOW SIDE OF THE SYSTEM. THE CERTIFICATION OF TEST SHALL BE SIGNED BY THE INSTALLING CONTRACTOR OR REGISTERED DESIGN PROFESSIONAL AND SHALL BE MADE PART OF THE PUBLIC RECORD.

DURATION OF LEAK TEST			
	PIPE LENGTH, L	MAXIMUM NOMINAL PIPE SIZE	MINIMUM PERIOD OF TEST
LEAK TEST	FT	NPS, IN.	HOURS
PRESSURE TEST	L<=100	NPS<=3/4	0.25
		3/4<NPS<=3	1.0
		3<NPS	24
	100<L<=200	NPS<=3	1.0
		3<NPS	24
VACUUM TEST	200<L	ANY	24
	L<=100	NPS<=3/4	1.0
		3/4<NPS<=3	8.0
		3<NPS	24
	100<L<=200	NPS<=3	8.0
		3<NPS	24
	200<L	ANY	24

INFORMATIVE NOTE: THE MAXIMUM NOMINAL PIPE SIZE IS THE LARGEST INTERCONNECTING FIELD PIPING INSTALLED.

DATE

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07-20-2026 ISSUED FOR 90%CD
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PRIME CONTRACT INCLUDING
ALL TRADES

SEAL



SENDLEWSKI ARCHITECTS, P.C.

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PROPOSED NEW FACILITY

ELLENVILLE FIRE DISTRICT

203 S. MAIN ST. NYS ROUTE 209

ELLENVILLE, NY 12428

MECHANICAL
SPECIFICATIONS

PROJECT No. 2501
EMTEC-7611

CHECKED BY: MF/APS

DRAWING:

M-7.3

"It is a violation of the State Education Law for any person, unless he or she is acting under the direction of a licensed professional engineer to alter an item in anyway, on this drawing and/or in this specification in anyway. If any such item is altered, the altering engineer shall affix to the item his or her seal and the notation "altered by" followed by his or her signature and the date of such alteration, and a specific description of the alteration."

This plan is approved only for the work indicated on the application specification sheet, all other matters are not to be relied upon, or to be considered as either being approved or in accordance with applicable codes.

EMTEC PROJECT NO. 7611 DRAWN BY: MF CHECKED BY: APS

SEQUENCE OF OPERATIONS
(ALL SHALL BE LOCAL, PROGRAMMABLE CONTROLS)

1. GAS-FIRED MAKEUP AIR ROOFTOP UNIT W/DX COOLING (MUA-1)

1.1) DOAS SHALL RECEIVE SIGNAL FROM HOOD CONTROL PACKAGE AND TURN UP TO 100% OUTSIDE AIR DURING HOOD OPERATION.

2. KITCHEN EXHAUST FAN (KEF-1):

2.1) REFER TO CAPTIVEAIRE DETAILS ON M-5 SERIES FOR SEQUENCE OF OPERATIONS FOR EXHAUST FANS CONNECTED TO KITCHEN HOOD.

2.2) THE KITCHEN EXHAUST FAN SHALL BE INTERLOCKED WITH THE RANGE HOOD. THE FAN SPEED SHALL BE CONTROLLED BY THE POTENTIOMETER SPEED CONTROLLER AND SET BY THE AIR BALANCER TO MATCH THE KITCHEN RANGE HOOD AIRFLOW.

2.3) THE KITCHEN HOOD SHALL BE PROVIDED WITH DEMAND CONTROLLED VENTILATION CONTROLS. REFER TO M-5.0 SERIES FOR ADDITIONAL INFORMATION.

3. VRF HEAT PUMP/HEAT RECOVERY SYSTEMS (VRF SYSTEMS)

3.1) GENERAL:

THE SPLIT SYSTEMS CONSIST OF AN OUTDOOR UNIT CONNECTED TO A NUMBER OF INDOOR UNITS THROUGH CONTROL WIRING AND REFRIGERANT PIPING.

- 1) SPLIT SYSTEMS SHALL OPERATE 24 HOURS A DAY, SEVEN DAYS PER WEEK IN TIMED SCHEDULE (OR AS DIRECTED BY SCHOOL SCHEDULE).
- 2) THERMOSTAT SHALL HAVE LOCAL SETPOINT AND ACTUAL SPACE TEMPERATURE READOUTS AND SHALL HAVE A SETPOINT OF 70°F ADJ.
- 3) THE RESPECTIVE CONDENSATE PUMP FOR EACH AIR CONDITIONING UNIT SHALL BE ENERGIZED AT ALL TIMES REGARDLESS OF THE AIR CONDITIONING UNITS OPERATION.
- 4) LEAK DETECTION SHALL BE PROVIDED IN THE AUXILIARY DRAIN PAN FOR EACH UNIT. WHEN THE LOCAL LEAK DETECTOR SENSES MOISTURE IN THE AUXILIARY DRAIN PAN,
- 5) ON/OFF CONTROL: THE INDOOR UNITS CAN BE COMMANDED ON/OFF EITHER BY A SCHEDULE IN THE CENTRAL CONTROLLER OR AT THE REMOTE CONTROLLER. IF THE INDOOR UNIT IS OFF, THE OUTDOOR UNIT SHALL TURN OFF. WITH THE NIGHT SETBACK FUNCTION/MODE, THE SYSTEM SHALL CYCLE ON DURING UNOCCUPIED PERIODS AS NEEDED TO MAINTAIN UNOCCUPIED TEMPERATURE SET POINT.
- 6) SPACE TEMPERATURE CONTROL: THE INDOOR UNIT SHALL MODULATE ITS INTERNAL LINEAR EXPANSION VALVE (LEV) TO MAINTAIN THE TEMPERATURE SET POINT VIA THE INDOOR UNIT'S INTERNAL CONTROLS.
- 7) THE SET POINT IS ADJUSTABLE AT THE REMOTE CONTROLLER OR CENTRAL CONTROLLER. THE TEMPERATURE SET POINT CAN ALSO BE SCHEDULED AT THE REMOTE CONTROLLER OR THE CENTRAL CONTROLLER
- 8) FAN/VANE CONTROL: FAN SPEED AND VANE DIRECTION (IF APPLICABLE) SHALL BE ADJUSTABLE BY THE USER AT THE REMOTE CONTROLLER AND/OR THE CENTRAL CONTROLLER.

5. ENERGY RECOVERY UNITS (ERVS):

5.1) SYSTEM OPERATION SHALL BE INTERLOCKED WITH OPERATION OF VRF SYSTEM. ERV SHALL ENGAGE WHENEVER ASSOCIATED VRFCU IS OPERATIONAL.

IT RM/ELECTRIC RM SPLIT UNITS

GENERAL:

TEMPERATURE CONTROL:

INDOOR UNIT SEQUENCE OF OPERATIONS:

- A. ON/OFF CONTROL: THE INDOOR UNITS CAN BE COMMANDED ON/OFF EITHER BY A SCHEDULE IN THE CENTRAL CONTROLLER OR AT THE REMOTE CONTROLLER. IF ALL INDOOR UNITS ARE OFF, THE OUTDOOR UNIT SHALL TURN OFF. WITH THE NIGHT SETBACK FUNCTION/MODE, THE SYSTEM SHALL CYCLE ON DURING UNOCCUPIED PERIODS AS NEEDED TO MAINTAIN UNOCCUPIED TEMPERATURE SET POINT.
- B. HEATING MODE: THE INDOOR UNIT SHALL MODULATE ITS LINEAR EXPANSION VALVE (LEV) TO MAINTAIN TEMPERATURE SET POINT OF 72°F (ADJ.).
- C. COOLING MODE: THE INDOOR UNIT SHALL MODULATE ITS LINEAR EXPANSION VALVE (LEV) TO MAINTAIN TEMPERATURE SET POINT OF 75°F (ADJ.).
- D. SPACE TEMPERATURE CONTROL: THE INDOOR UNIT SHALL MODULATE ITS INTERNAL LINEAR EXPANSION VALVE (LEV) TO MAINTAIN THE TEMPERATURE SET POINT VIA THE INDOOR UNIT'S INTERNAL CONTROLS.
- E. THE SET POINT IS ADJUSTABLE AT THE REMOTE CONTROLLER OR CENTRAL CONTROLLER. THE TEMPERATURE SET POINT CAN ALSO BE SCHEDULED AT THE REMOTE CONTROLLER OR THE CENTRAL CONTROLLER
- F. FAN/VANE CONTROL: FAN SPEED AND VANE DIRECTION (IF APPLICABLE) SHALL BE ADJUSTABLE BY THE USER AT THE REMOTE CONTROLLER AND/OR THE CENTRAL CONTROLLER.

CABINET UNIT HEATERS:

TERMINAL HEATERS SHALL BE CONTROLLED BY A THERMOSTAT. UNIT HEATERS SHALL BE OPERATED TO MAINTAIN A SPACE TEMPERATURE SETPOINT OF 70 DEG. F (ADJ.). ON A CALL FOR HEAT, THE HEATER SHALL ENGAGE AND FAN SHALL CYCLE INTERMITTENTLY. PROVIDE PROGRAMMABLE THERMOSTAT IF AVAILABLE OPTION FOR UNIT HEATER CABINET SIZE.

ENVIRONMENTAL EXHAUST FANS:

THE TOILET EXHAUST FANS (TXF-1 & TXF-2) SHALL OPERATE CONTINUOUSLY ON A PROGRAMMABLE TIME CLOCK BASIS. DEFAULT OPERATION SHALL BE FAN OPERATION DURING NORMAL WORKING HOURS 7:00 AM (ADJ.) TO 8:00 PM (ADJ.). FAN SHALL RAMP UP TO AIRFLOW (CFM) NOTED ON PLANS AND IN MECHANICAL SCHEDULES.

UNIT HEATERS:

TERMINAL HEATERS SHALL BE CONTROLLED BY A THERMOSTAT. UNIT HEATERS SHALL BE OPERATED TO MAINTAIN A SPACE TEMPERATURE SETPOINT OF 60 DEG. F (ADJ.). ON A CALL FOR HEAT, THE HEATER SHALL ENGAGE AND FAN SHALL CYCLE INTERMITTENTLY. PROVIDE PROGRAMMABLE THERMOSTAT IF AVAILABLE OPTION FOR UNIT HEATER CABINET SIZE.

INLINE-MOUNTED EXHAUST FAN, STANDBY EXHAUST (EF-STANDBY):

THE IN-LINE EXHAUST FAN (EF-1) SHALL OPERATE CONTINUOUSLY ON A PROGRAMMABLE TIME CLOCK BASIS. DEFAULT OPERATION SHALL BE FAN OPERATION DURING NORMAL WORKING HOURS 7:00 AM (ADJ.) TO 8:00 PM (ADJ.). FAN SHALL RAMP UP TO AIRFLOW (CFM) NOTED ON PLANS AND IN MECHANICAL SCHEDULES.

ROOF-MOUNTED EXHAUST FAN, EMERGENCY EXHAUST (EF-EMERGENCY):

THE ROOF MOUNTED EXHAUST FAN (EF-1) SHALL OPERATE WITH GAS DETECTION SYSTEM. REFER TO THE GAS DETECTION SYSTEM FOR ADDITIONAL INFORMATION.

SINGLE ZONE VARIABLE AIR VOLUME SINGLE ZONE AIR HANDLER NOTES:

AIR HANDLING UNITS WILL BE MANUALLY INDEXED TO START OR STOP EITHER VIA THE LOCAL USER INTERFACE LOCATED AT THE AIR HANDLING SYSTEM'S CONTROL PANEL OR VIA THE LOCAL THERMOSTATS AND SENSORS LOCATED WITHIN THE SPACE BEING SERVED. THERMOSTATS SHALL BE PROVIDED WITH BACNET CONNECTION FOR FUTURE TIE-IN TO A BMS PANEL. THE LOCAL THERMOSTATS SHALL HAVE A DEAD BAND OF AT LEAST 5°F

UPON INITIAL POWER UP OF THE CONTROL PANEL AN ADJUSTABLE RE-START DELAY TIMER (1-5 MINUTES ADJUSTABLE), THE LOCAL CONTROLLER, WILL DELAY THE START OF THE SYSTEM UNTIL ITS TIME PERIOD HAS EXPIRED. THE TIME DELAY PROVIDES FOR A STAGGERED START OF EACH AIR HANDLING SYSTEM, SO THAT UPON A POWER FAILURE AND RESTORATION OF POWER, ALL AIR HANDLING SYSTEMS DO NOT RE-START AT THE SAME TIME.

OPERATION OF THE AIR HANDLER'S CONTROL SYSTEM WILL BE INTERLOCKED TO SUPPLY FAN OPERATION. WHEN INDEXED TO START AND AFTER THE EXPIRATION OF THE SYSTEM'S START DELAY TIMER THE AIR HANDLER'S LOCAL CONTROLLER WILL START THE SUPPLY FAN VIA ITS VARIABLE FREQUENCY DRIVE. THE SUPPLY FAN VARIABLE FREQUENCY DRIVE WILL ALLOW FOR SOFT START OF THE FAN AND FAN SPEED ADJUSTMENT FOR BALANCING OF THE SYSTEM.

UPON PROOF OF SUPPLY FAN OPERATION, AS SENSED BY A CURRENT SWITCH LOCATED AT THE SUPPLY FAN VARIABLE FREQUENCY DRIVE, THE CONTROL SYSTEM WILL BE ENABLED. IF SUPPLY FAN OPERATION IS NOT PROVEN AFTER A TIME DELAY OF 60 SECONDS (ADJUSTABLE) OR ONCE RUNNING LOSS OF SUPPLY FAN OPERATION OCCURS FOR ANY REASON THE CONTROL SYSTEM WILL BE DISABLED. ADDITIONALLY LOSS OF SUPPLY FAN OPERATION WILL CAUSE THE HEATING AND COOLING CONTROL VALVES RETURNED TO THEIR NORMAL CONDITION,

THE LOCAL CONTROLLER WILL MONITOR THE STATIC PRESSURE DROP ACROSS THE AIR FILTERS THROUGH A DIFFERENTIAL PRESSURE SWITCH AND SEND ALARM TO THE BMS FOR A DIRTY FILTER CONDITION.

ASSOCIATED MOTORIZED DAMPER INSTALLED ON THE INCOMING OUTSIDE AIR DUCT CONNECTION TO BE OPERATED VIA TIMECLOCK AND INTERLOCKED WITH AIR HANDLER WHENEVER AIR HANDLER IS RUNNING AND IN OCCUPIED MODE.

HEATING MODE (OCCUPIED TEMPERATURE SETPOINT - 70°F):

- a. OCCUPIED MODE: SUPPLY AIR FAN SHALL RUN CONTINUOUSLY. THE OUTSIDE AIR AND EXHAUST AIR DAMPERS SHALL MOVE TO THE MINIMUM OUTDOOR AIR POSITION AND THE RETURN AIR DAMPER SHALL OPEN. ON A DROP IN TEMPERATURE, THE SUPPLY AIRFLOW WILL INCREASE AND BEGIN TO STAGE THE GAS HEATING OUTPUT TO MAINTAIN THE SUPPLY AIR THERMOSTAT SETPOINT.
- b. UNOCCUPIED MODE: IN THE UNOCCUPIED MODE THE FAN AND GAS-FIRED FURNACE SHALL MODULATE TO MAINTAIN THE SUPPLY NIGHT SETBACK TEMPERATURE OF 55°F (ADJUSTABLE). THE OUTSIDE AIR INTAKE AND EXHAUST DISCHARGE DAMPERS SHALL REMAIN CLOSED AND THE RETURN AIR DAMPERS SHALL REMAIN OPEN.

COOLING MODE (OCCUPIED TEMPERATURE SETPOINT - 72°F):

- a. OCCUPIED CYCLE: SUPPLY AIR FAN WILL RUN CONTINUOUSLY. IF THE ECONOMIZER CYCLE DOES NOT MAINTAIN THE COOLING SET-POINT, A COOLING CYCLE WILL RUN UNTIL THE SET-POINT IS MET. MODULATE TO MAINTAIN THE SUPPLY AIR THERMOSTAT COOLING TEMPERATURE SET-POINT OF 72°F (ADJUSTABLE).

SEQUENCE OF OPERATIONS

ROOFTOP UNITS

OCCUPIED MODE:

DURING OCCUPIED PERIODS, THE SUPPLY FAN SHALL RUN CONTINUOUSLY AND THE OUTSIDE AIR DAMPER SHALL OPEN TO MAINTAIN MINIMUM VENTILATION REQUIREMENTS. THE UNIT CONTROLLER SHALL CONTROL THE SUPPLY FAN SPEED TO MAINTAIN THE CURRENT DUCT STATIC PRESSURE SETPOINT (ADJ.).THE DX COOLING SHALL STAGE AND GAS HEAT SHALL MODULATE TO MAINTAIN THE CURRENT DISCHARGE AIR TEMPERATURE SETPOINT. IF ECONOMIZING IS ENABLED THE OUTSIDE AIR DAMPER SHALL MODULATE TO MAINTAIN THE CURRENT DISCHARGE AIR TEMPERATURE SETPOINT.

UNOCCUPIED MODE:

WHEN THE SPACE TEMPERATURE IS BELOW THE UNOCCUPIED HEATING SETPOINT OF 60.0 DEG. F (ADJ.) THE SUPPLY FAN SHALL START, THE OUTSIDE AIR DAMPER SHALL REMAIN CLOSED AND THE GAS HEAT SHALL BE ENABLED. WHEN THE SPACE TEMPERATURE RISES ABOVE THE UNOCCUPIED HEATING SETPOINT OF 60.0 DEG. F (ADJ.) PLUS THE UNOCCUPIED DIFFERENTIAL OF 4.0 DEG. F (ADJ.) THE SUPPLY FAN SHALL STOP AND THE GAS HEAT SHALL BE DISABLED.

WHEN THE SPACE TEMPERATURE IS ABOVE THE UNOCCUPIED COOLING SETPOINT OF 85.0 DEG. F (ADJ.) THE SUPPLY FAN SHALL START, THE OUTSIDE AIR DAMPER SHALL OPEN IF ECONOMIZING IS ENABLED AND REMAIN CLOSED IF ECONOMIZING IS DISABLED AND THE DX COOLING SHALL BE ENABLED. WHEN THE SPACE TEMPERATURE FALLS BELOW THE UNOCCUPIED COOLING SETPOINT OF 85.0 DEG. F (ADJ.) MINUS THE UNOCCUPIED DIFFERENTIAL OF 4.0 DEG. F (ADJ.) THE SUPPLY FAN SHALL STOP, THE DX COOLING SHALL BE DISABLED AND THE OUTSIDE AIR DAMPER SHALL CLOSE.

OPTIMAL START:

THE CONCIERGE SHALL MONITOR THE SCHEDULED OCCUPIED TIME, OCCUPIED SPACE SETPOINTS AND SPACE TEMPERATURE TO CALCULATE WHEN THE OPTIMAL START OCCURS.

MORNING WARM-UP MODE:

DURING OPTIMAL START, IF THE AVERAGE SPACE TEMPERATURE IS BELOW THE OCCUPIED HEATING SETPOINT A MORNING WARM-UP MODE SHALL BE ACTIVATED. WHEN MORNING WARM-UP IS INITIATED, THE UNIT SHALL ENABLE THE HEATING AND SUPPLY FAN. THE OUTSIDE AIR DAMPER SHALL REMAIN CLOSED. WHEN THE AVERAGE SPACE TEMPERATURE REACHES THE OCCUPIED HEATING SETPOINT (ADJ.), THE UNIT SHALL TRANSITION TO THE OCCUPIED MODE.

PRE-COOL MODE:

DURING OPTIMAL START, IF THE AVERAGE SPACE TEMPERATURE IS ABOVE THE OCCUPIED COOLING SETPOINT, PRE-COOL MODE SHALL BE ACTIVATED. WHEN PRE-COOL IS INITIATED, THE UNIT SHALL ENABLE THE FAN AND COOLING OR ECONOMIZER. THE OUTSIDE AIR DAMPER SHALL REMAIN CLOSED, UNLESS ECONOMIZING. WHEN THE AVERAGE SPACE TEMPERATURE REACHES OCCUPIED COOLING SETPOINT (ADJ.), THE UNIT SHALL TRANSITION TO THE OCCUPIED MODE.

OPTIMAL STOP:

THE CONCIERGE SHALL MONITOR THE SCHEDULED UNOCCUPIED TIME, OCCUPIED SETPOINTS AND SPACE TEMPERATURE TO CALCULATE WHEN THE OPTIMAL STOP OCCURS. WHEN THE OPTIMAL STOP MODE IS ACTIVE THE UNIT CONTROLLER SHALL MAINTAIN THE SPACE TEMPERATURE TO THE SPACE TEMPERATURE OFFSET SETPOINT.

OCCUPIED BYPASS:

THE CONCIERGE SHALL MONITOR THE STATUS OF THE 'ON' AND 'CANCEL' BUTTONS OF THE SPACE TEMPERATURE SENSORS. WHEN AN OCCUPIED BYPASS REQUEST IS RECEIVED FROM A SPACE SENSOR, THE UNIT SHALL TRANSITION FROM ITS CURRENT OCCUPANCY MODE TO OCCUPIED BYPASS MODE AND THE UNIT SHALL MAINTAIN THE SPACE TEMPERATURE TO THE OCCUPIED SETPOINTS (ADJ.).

COOLING MODE:

THE UNIT CONTROLLER SHALL USE THE SPACE TEMPERATURE SENSOR AND SPACE TEMPERATURE COOLING SETPOINT TO CALCULATE THE DISCHARGE AIR COOLING SETPOINT AND DETERMINE WHEN TO INITIATE REQUESTS FOR COOLING. DISCHARGE AIR SETPOINT SHALL BE MAINTAINED BY MODULATING THE ECONOMIZER OR STAGING THE DX COOLING AS REQUIRED TO MAINTAIN THE DISCHARGE AIR SETPOINT. ONCE ALL ECONOMIZING REQUIREMENTS HAVE BEEN MET, COMPRESSOR OPERATION WILL BE ENABLED IF THE ECONOMIZER ALONE CANNOT MEET THE DEMAND. ONCE COMPRESSOR OPERATION IS STARTED, THE VARIABLE SPEED COMPRESSOR WILL BE MODULATED TO MAINTAIN THE DISCHARGE AIR TEMPERATURE TO THE ACTIVE DISCHARGE AIR COOLING SETPOINT. IF THE VARIABLE SPEED COMPRESSOR REACHES ITS MAXIMUM SPEED FOR STAGE ONE, AND THERE IS ADDITIONAL DEMAND FOR COOLING, THE CONTROLLER WILL ENERGIZE THE FIRST FIXED SPEED COMPRESSOR ON CIRCUIT TWO. ONCE THE FIRST FIXED SPEED COMPRESSOR IS ENERGIZED, THE VARIABLE COMPRESSOR SPEED WILL BE REDUCED TO ITS MINIMUM SPEED, THEN RELEASED BACK TO DISCHARGE AIR TEMPERATURE CONTROL. ADDITIONAL STAGES WILL RESPOND IN THE SAME MANNER. ONCE THE ACTIVE COOLING DEMAND HAS BEEN SATISFIED, COMPRESSORS WILL BEGIN STAGING DOWN IN REVERSE ORDER FROM THE STAGE UP SEQUENCE. ONCE THE UNIT HAS STAGED DOWN ALL FIXED COMPRESSORS, AND THERE IS NO LONGER A DEMAND FOR THE VARIABLE SPEED COMPRESSOR, THE COMPRESSOR WILL MODULATE DOWN TO ITS MINIMUM SPEED AND THEN WILL BE DE-ENERGIZED, WHILE ADHERING TO ALL SHUTDOWN REQUIREMENTS.

ECONOMIZER:

THE SUPPLY AIR SENSOR SHALL MEASURE THE DRY BULB TEMPERATURE OF THE AIR LEAVING THE EVAPORATOR COIL WHILE ECONOMIZING. WHEN ECONOMIZING IS ENABLED AND THE UNIT IS OPERATING IN THE COOLING MODE, THE ECONOMIZER DAMPER SHALL BE MODULATED BETWEEN ITS MINIMUM POSITION AND 100% TO MAINTAIN THE DISCHARGE AIR TEMPERATURE SETPOINT. THE ECONOMIZER DAMPER SHALL MODULATE TOWARD MINIMUM POSITION IN THE EVENT THE DISCHARGE AIR TEMPERATURE FALLS BELOW THE DISCHARGE LOW LIMIT TEMPERATURE SETPOINT. COMPRESSORS SHALL BE DELAYED FROM OPERATING UNTIL THE ECONOMIZER HAS OPENED TO 100%.

COMPARATIVE ENTHALPY:

OUTSIDE AIR (OA) ENTHALPY SHALL BE COMPARED WITH RETURN AIR (RA) ENTHALPY POINT. THE ECONOMIZER SHALL ENABLE WHEN OA ENTHALPY IS LESS THAN RA ENTHALPY - 3.0 BTU/LB. THE ECONOMIZER SHALL DISABLE WHEN OA ENTHALPY IS GREATER THAN RA ENTHALPY.

SUPPLY FAN:

THE SUPPLY FAN SHALL BE ENABLED WHILE IN THE OCCUPIED MODE AND CYCLED ON DURING THE UNOCCUPIED MODE. A DIFFERENTIAL PRESSURE SWITCH SHALL MONITOR THE DIFFERENTIAL PRESSURE ACROSS THE FAN. IF THE SWITCH DOES NOT OPEN WITHIN 40 SECONDS AFTER A REQUEST FOR FAN OPERATION A FAN FAILURE ALARM SHALL BE ANNUNCIATED AT THE CONCIERGE, THE UNIT SHALL STOP, REQUIRING A MANUAL RESET.

SUPPLY DUCT STATIC PRESSURE CONTROL:

THE UNIT CONTROLLER SHALL MODULATE THE SUPPLY FAN OUTPUT AS REQUIRED TO MAINTAIN THE DUCT STATIC PRESSURE SETPOINT. IF THE DUCT STATIC PRESSURE FALLS BELOW THE SUPPLY AIR STATIC SETPOINT + DEADBAND, THE UNIT CONTROLLER SHALL INCREASE THE OUTPUT TO THE SUPPLY FAN TO MAINTAIN SETPOINT. IF THE DUCT STATIC PRESSURE RISES ABOVE THE SUPPLY AIR STATIC SETPOINT + DEADBAND, THE UNIT CONTROLLER SHALL DECREASE THE OUTPUT TO THE SUPPLY FAN TO MAINTAIN SETPOINT.

IF FOR ANY REASON THE SUPPLY AIR PRESSURE EXCEEDS THE FIXED SUPPLY AIR PRESSURE LIMIT OF 3.5 INCHES OF W.C. THE SUPPLY FAN SHALL SHUT DOWN. THE UNIT SHALL BE ALLOWED TO RESTART THREE TIMES. IF THE OVERPRESSURIZATION CONDITION OCCURS ON THE FOURTH RESTART, THE UNIT SHALL SHUT DOWN AND A MANUAL RESET DIAGNOSTIC IS DISPLAYED AT THE REMOTE PANEL AND/OR THE CONCIERGE SYSTEM.

BUILDING PRESSURE CONTROL:

THE POWER EXHAUST SHALL ENABLE WHEN THE ECONOMIZER DAMPER POSITION IS EQUAL TO OR GREATER THAN THE EXHAUST FAN SETPOINT.

FILTER STATUS:

A DIFFERENTIAL PRESSURE SWITCH SHALL MONITOR THE DIFFERENTIAL PRESSURE ACROSS THE FILTER WHEN THE FAN IS RUNNING. IF THE SWITCH CLOSSES FOR 2 MINUTES AFTER A REQUEST FOR FAN OPERATION A DIRTY FILTER ALARM SHALL BE ANNUNCIATED AT THE CONCIERGE.

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PROPOSED NEW FACILITY

ELLENVILLE FIRE DISTRICT

203 S. MAIN ST. NYS ROUTE 209

ELLENVILLE, NY 12428

MECHANICAL
SEQUENCE OF OPERATIONS

PROJECT No. 2501
EMTEC 7611

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DRAWING:

M-8.1

"It is a violation of the State Education Law for any person, unless he or she is acting under the direction of a licensed professional engineer to alter an item in anyway, on this drawing and/or in this specification in anyway. If any such item is altered, the altering engineer shall affix to the item his or her seal and the notation "altered by" followed by his or her signature and the date of such alteration, and a specific description of the alteration."
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EMTEC PROJECT NO. 7611 DRAWN BY: MF CHECKED BY: APS

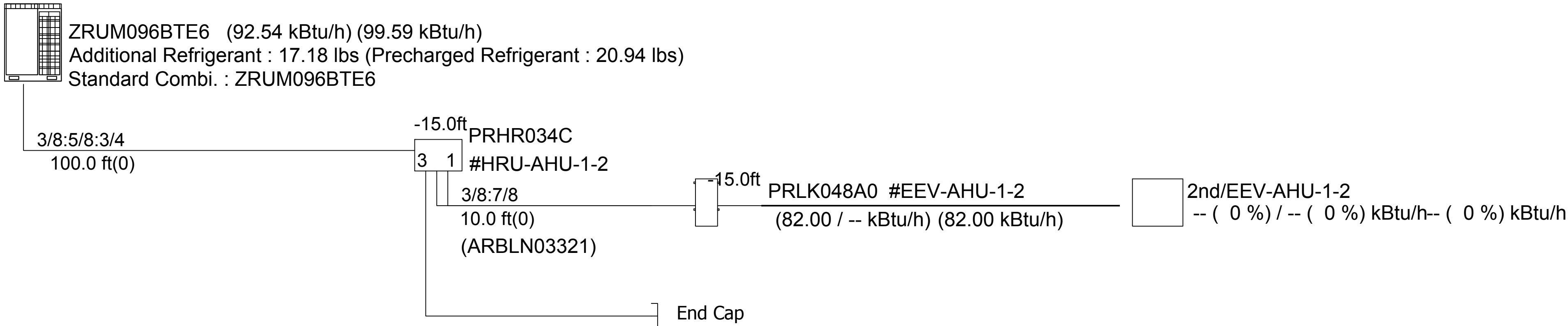
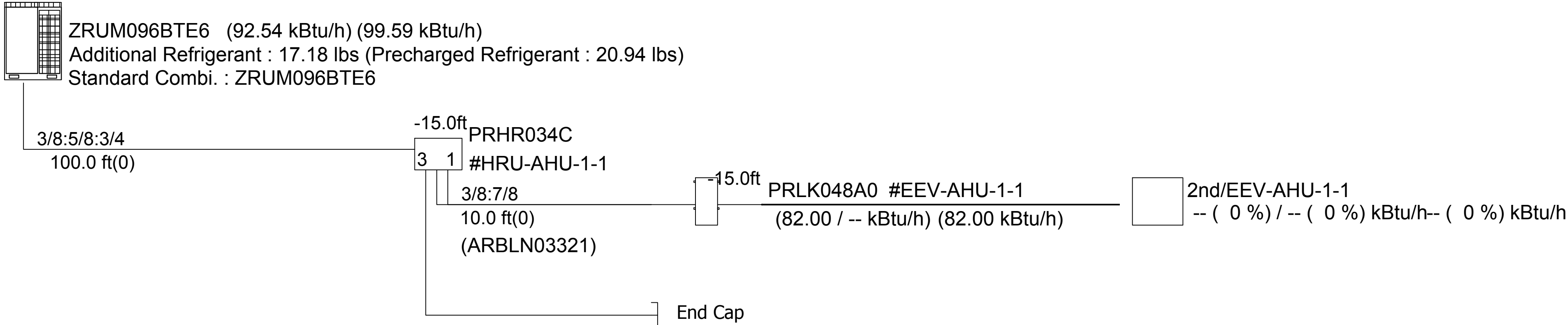
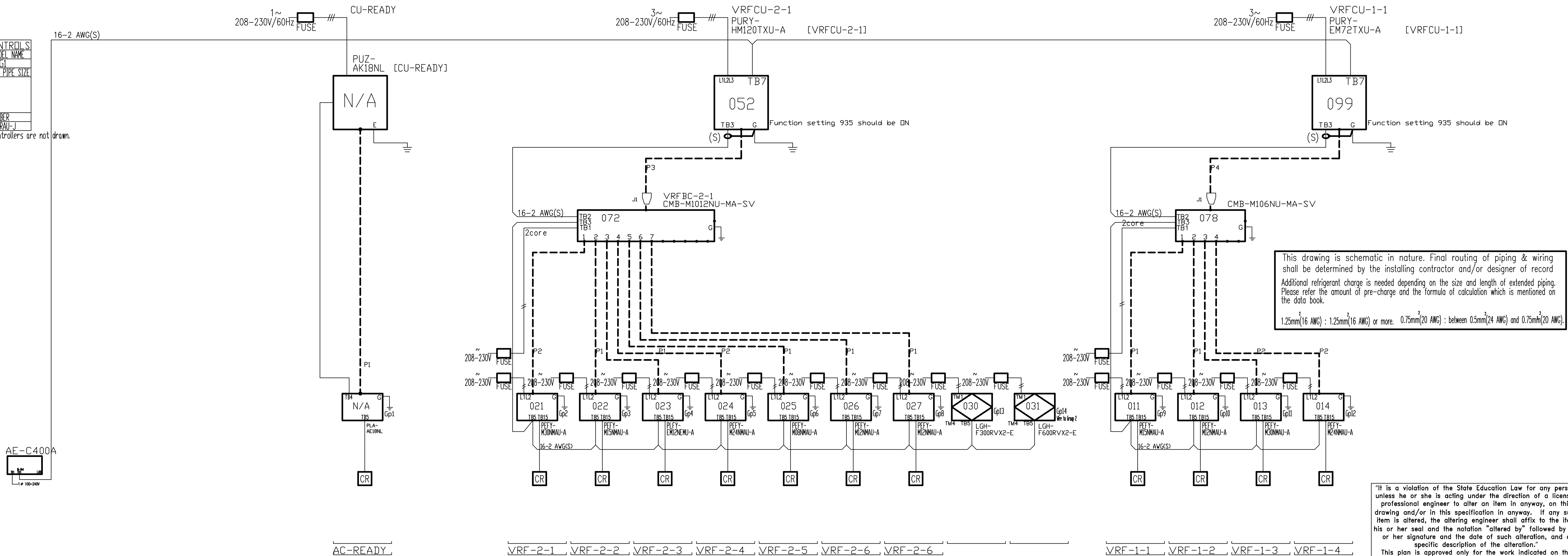


DIAGRAM	SYMBOL	LEGEND
DISPLAY		DESCRIPTION
#		POWER WIRE
		CONTROL WIRE
		REF. PIPE

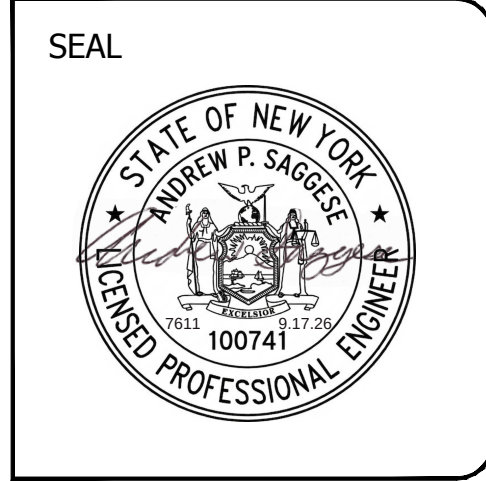
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PIPING AND CONTROLS
SYMBOL BRANCH PIPE MODEL NAME
J1 CRY-R304S-61
SYMBOL LIQUID PIPE/GAS PIPE SIZE
P1 1/4 / 1/2
P2 3/8 / 5/8
P3 3/4 / 1-1/8
P4 5/8 / 3/4
SYMBOL MODEL NUMBER
CR PRC-T1532AHU-1

- Factory installed controllers are not drawn.



DATE	ISSUED
06-22-2026	ISSUED FOR 100%DD/50%CD REVIEW
07-20-2026	ISSUED FOR 90%CD REVIEW
08-17-2026	ISSUED FOR GENERAL CONSTRUCTION BID AS SINGLE PRIME CONTRACT INCLUDING ALL TRADES



SENDLEWSKI ARCHITECTS, P.C.
ARCHITECTS - PLANNERS

216 PARKWAY AVENUE, FIVEBORO, NY 11901 (609) 727-5552

emtec
CONSULTING ENGINEERS, P.C.
3555 Veterans Memorial Highway, Suite 100
Rancho Santa Fe, CA 92051 (760) 734-1177

PROPOSED NEW FACILITY
ELLENVILLE FIRE DISTRICT
203 S. MAIN ST. NYS ROUTE 209
ELLENVILLE, NY 12428

MECHANICAL
REFRIGERANT PIPING DIAGRAMS

PROJECT No. 2501
EMTEC-7611

CHECKED BY: MF/APS

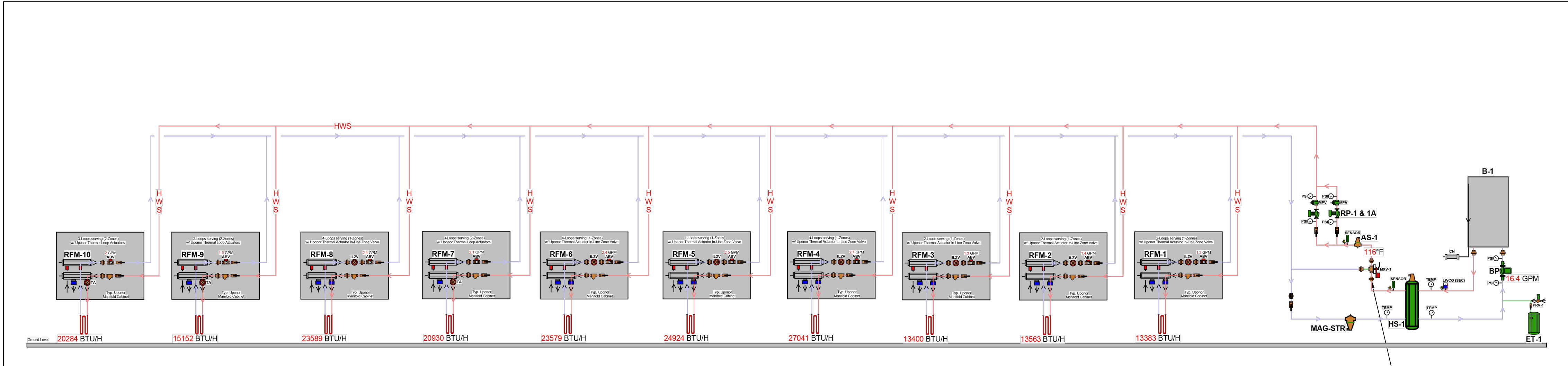
DRAWING:

M-8.2

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EMTEC PROJECT NO. 7611 DRAWN BY: MF CHECKED BY: APS



RADIANT HEATING FLOW DIAGRAM
SCALE: NOT TO SCALE

BOILER FOR RADIANT HEATING SCHEDULE																							BASIS OF DESIGN: NTI OR APPROVED EQUAL		
GENERAL INFORMATION					CAPACITY (PERFORMANCE DATA)					HYDRONIC INFORMATION				ELECTRICAL				NATURAL GAS (HEATING)			DIMENSIONS AND WEIGHTS				REMARKS
TAG	LOCATION	SERVICE	MANU.	MODEL	INPUT (MBH)	OUTPUT (MBH)	AHRI EFF (%)	INTERNAL HEAT EXCHANGERS	TURN-DOWN RATIO	EWI (°F)	LWT (°F)	MAX. WORKING PRESSURE (PSIG)	PRES. RELIEF VALVE SETTING (PSIG)	VOLT/PH/HZ	FLA	MCA	MOCP	MINIMUM INLET PRESSURE (PSIG)	MAXIMUM INLET PRESSURE (PSIG)	GAS CONNECTION (IN)	AIR INTAKE (IN)	VENT (IN)	DIMENSIONS (WxHxD) (IN)	OPERATING WEIGHT (LBS)	
B-1	MEZZANINE	RADIANT HEATING	NTI	TFTN-285	285	270	95.0	1 (SS FIRETUBE)	10:1	140	120	160	50	120/1/60	12A	15A	20A	3.5" W.C.	10.5" W.C.	3/4" MPT	3" DIA.	3" DIA.	22"x34"x19"	180.0	(1)
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

① INSTALLING CONTRACTOR SHALL PROVIDE A CONDENSATE NEUTRALIZER PER BOILER

HYDRAULIC SEPARATOR SCHEDULE										BASIS OF DESIGN: TACO OR APPROVED EQUAL			
GENERAL INFORMATION							PHYSICAL DIMENSIONS AND WEIGHT						
ID	LOCATION	SERVICE	MANUFACTURER	MODEL NUMBER	WORKING FLUID	MAX WORKING PRESSURE (PSIG)	WIDTH (IN)	LENGTH (IN)	OPTIMUM TANK FLOW RATE (GPM)	CONN SIZE (IN)	DRY WEIGHT (LBS)	REMARKS	
HS-1	MEZZANINE	BOILER FOR RADIANT	TACO	5902A-41	WATER	125 PSIG	16.5"	35"	63	2" HWS&R	130	(1)	
—	—	—	—	—	—	—	—	—	—	—	—	—	

① HYDRAULIC SEPARATOR SHALL BE OF ASME CONSTRUCTION

PUMP SCHEDULE														BASIS OF DESIGN: TACO OR APPROVED EQUAL	
ID	MODEL NO.	SERVICE	FLUID	PUMP PERFORMANCE DATA						APPROX. DIMENSION WxH	ELECTRICAL			APPROX. WEIGHT (LBS)	REMARKS
				GPM	HEAD FT. W.G.	RPM	MOTOR TYPE	IMPELLER	BHP	NAMEPLATE HP	V/PH/Hz	MCA	MFS		
BP-1	0034eP-F2	BOILER LOOP	WATER	50.0	30	—	ECM	PPS	170W	0.60 HP	7.1x8.1	115/1/60	1.9A	20A	35 (1)(2)(3)(4)(5)(6)(7)(8)
RP-1	VR-15L	RADIANT HEAT SYSTEM	WATER	86.0	25	—	ECM	PES GF-30	0.4	0.50 HP	14.2x9.8	110/1/60	2.9A	20A	35 (1)(2)(3)(4)(5)(6)(7)(8)
RP-1A	VR-15L	RADIANT HEAT SYSTEM	WATER	86.0	25	—	ECM	PES GF-30	0.4	0.50 HP	14.2x9.8	110/1/60	2.9A	20A	35 (1)(2)(3)(4)(5)(6)(7)(8)

- CONTRACTOR SHALL PROVIDE PRESSURE GAUGES, ISOLATION VALVES AND FLOW CHECK DEVICES FOR ALL PUMPS PER TYP. PUMP DETAILS
- CONTRACTOR SHALL PROVIDE SUITABLE SYSTEM MATERIAL FLANGES FOR PUMPS
- PUMPS SHALL INCLUDE A 0-10 VDC EXTERNAL MODULATED SIGNAL INPUT FOR SPEED REFERENCE AND OPERATION
- POTABLE WATER PUMPS SHALL BE CONSTRUCTED OF MATERIALS COMPLIANT WITH NSF-61G FOR LOW LEAD
- CONTRACTOR SHALL PROVIDE ANSI CLASS 125 FLANGES FOR PUMPS AND REFER TO MANUFACTURERS INSTRUCTIONS FOR APPLICABLE BOLT SIZES
- CONTRACTOR SHALL PROVIDE STANDARD ETHERNET CROSS-OVER CABLE BETWEEN PUMPS FOR DUTY/STANDBY MODE OF OPERATION
- PUMPS SHALL BE CONSTRUCTED OF MATERIALS COMPLIANT WITH NSF-61G FOR LOW LEAD IN POTABLE WATER APPLICATIONS
- PUMPS SHALL INCLUDE A 0-10 VDC ANALOG INPUT FOR OPERATIONAL SPEED CONTROL THROUGH EXTERNAL DEVICES

EXPANSION TANK SCHEDULE					BASIS OF DESIGN: FLEXCON OR APPROVED EQUAL				
ID	LOCATION	MODEL NO.	SERVICE	TANK VOLUME	ACCEPTANCE GAL.	INITIAL CHARGE PSIG	WORKING PRESS. (PSIG)	APPROX. WEIGHT (LBS)	REMARKS
ET-1	MEZZANINE	HTX-60	B-1	6.0	3.0	12.0	125.0	12.0	(1)
-	-	-	-	-	-	-	-	-	-

① EXPANSION TANK FACTORY AIR PRE-CHARGE MUST BE ADJUSTED TO SITE-SPECIFIC CONDITIONS IN THE FIELD BY THE INSTALLING CONTRACTOR PRIOR TO FILLING WITH FLUID

MAGNETIC DIRT SEPARATOR SCHEDULE						BASIS OF DESIGN: TACO OR APPROVED EQUAL			
ID	LOCATION	MODEL NO.	SERVICE	SIZE DIAM.	CONNECTION TYPE	Cv	VELOCITY FT/SEC	APPROX. WEIGHT (LBS)	REMARKS
MAG-STR	MEZZANINE	49MD-200T-2	B-1	2"	NPT	71.0	5.0	20.0	NONE
-	-	-	-	-	-	-	-	-	-

BOILER FOR SNOW MELT SYSTEM (B-1):

SYSTEM ENABLE:
THE HEATING SYSTEM WILL AUTOMATICALLY START WHEN THE OUTSIDE AIR TEMPERATURE (OA-T) FALLS BELOW THE SYSTEM ENABLE SETPOINT (HTGOATLOCKOUT-SP) WHILE THE SYSTEM ENABLE (SYSTEM-EN) IS "ON". WHEN THE OUTSIDE AIR TEMPERATURE (OA-T) RISES ABOVE THIS SETPOINT (HTGOATLOCKOUT-SP) OR THE SYSTEM ENABLE (SYSTEM-EN) IS "OFF", THE HEATING SYSTEM WILL BE DISABLED.

BOILER CONTROL:

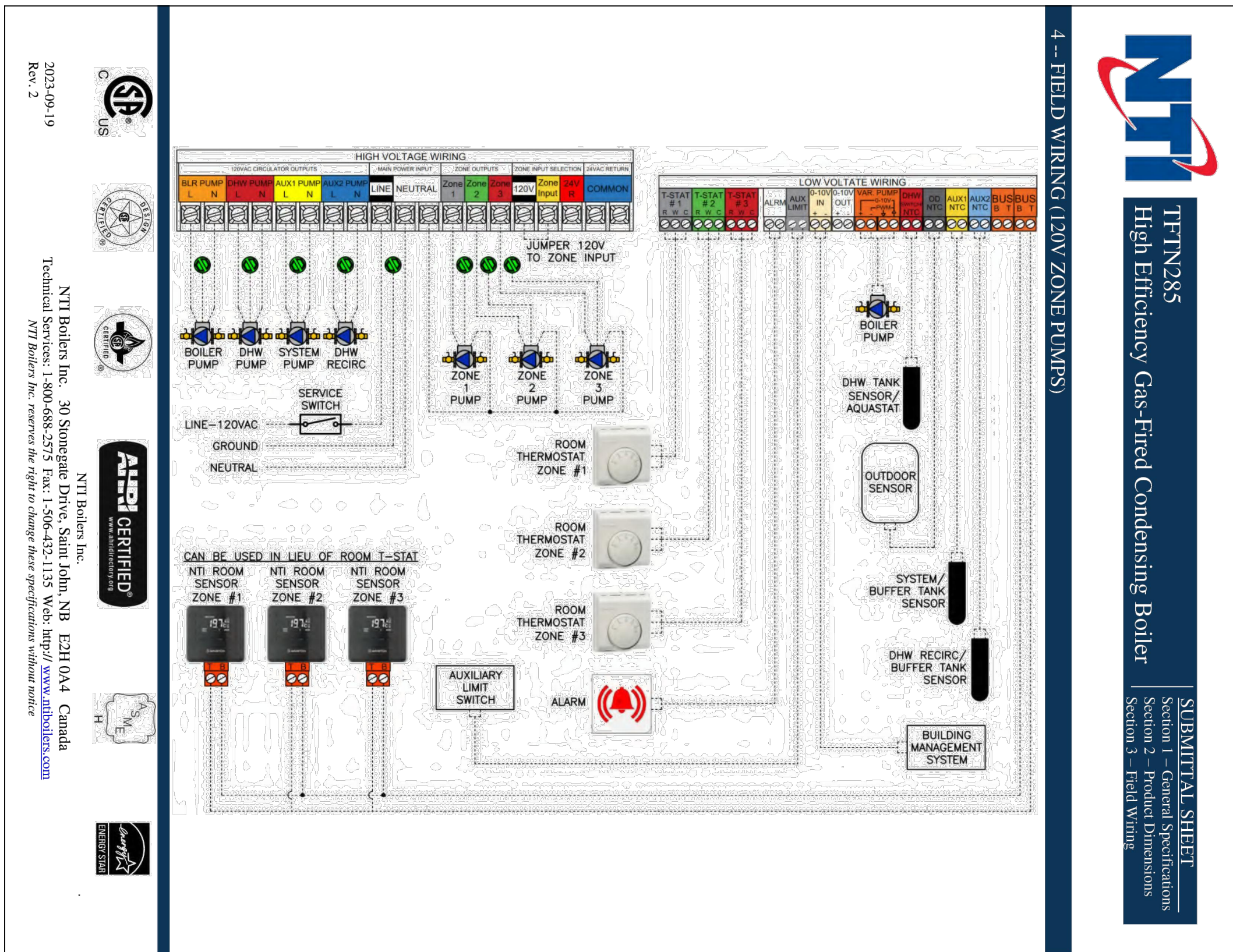
THIS SYSTEM CONSISTS OF THREE BOILERS (BLRX-EN). THE BURNERS SHALL BE CONTROLLED VIA THEIR OWN INTERNAL CONTROLS.

HOT WATER PUMP CONTROL:

WHEN ENABLED, PUMPS (BP-1, RP-1) WILL BE STARTED SO THAT MINIMUM FLOW IS MAINTAINED TO THE BOILERS THAT ARE RUNNING. AFTER THE BOILER IS COMMANDED OFF, THE PUMP (BP-1) WILL CONTINUE TO RUN FOR A SHORT TIME TO DISSIPATE THE HEAT. WHEN AN ADDITIONAL PUMP IS REQUIRED, THE PUMP (RP-1, RP-2) WITH THE LOWEST RUNTIME TOTAL SHALL BE ENABLED TO RUN. IF THE PUMP STATUS (RP-1,RP-2) DOES NOT MATCH THE COMMAND (RP-1,RP-2), AN ALARM WILL BE GENERATED AND THE PUMP WILL BE STOPPED. UPON LOSS OF STATUS (RP-1,RP-2), THE PUMP (RP-1,RP-2) WILL RESTART AFTER THE SYSTEM RESET (SYS-RESET) IS MANUALLY ACTIVATED.

PRIMARY LOOP PRESSURE CONTROL:

WHEN A PUMP STATUS (BP-1) IS VERIFIED, THE PUMP WILL MODULATE (BP-1) TO MAINTAIN THE SYSTEM DIFFERENTIAL PRESSURE (HW-DP) OF THE SYSTEM. IF THE PRIMARY FLOW (PHW-F) BELOW THE MINIMUM FLOW SETPOINT THE SYSTEM BYPASS VALVE (BYPV-0) WILL MODULATE OPEN TO PROVIDE MORE FLOW THRU THE BOILER.



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DATE

ISSUED

06-22-2026

ISSUED FOR 100%DD/80%CD REVIEW

07-20-2026

ISSUED FOR 90%CD REVIEW

09-17-2026

ISSUED FOR GENERAL CONSTRUCTION BID AS SINGLE PRIME CONTRACT INCLUDING ALL TRADES

SEAL

SENDLEWSKI ARCHITECTS, P.C.

ARCHITECTS - PLANNERS

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PROPOSED NEW FACILITY

ELLENVILLE FIRE DISTRICT

203 S. MAIN ST. NYS ROUTE 209

ELLENVILLE, NY 12428

MECHANICAL RADIANT HEATING FLOW DIAGRAMS

PROJECT No. 2501

EMTEC-7611

CHECKED BY: MF/APS

DRAWING:

M-91

EMTEC PROJECT NO. 7611

DRAWN BY: MF

CHECKED BY: APS



Jaymus Burke
Wales Darby
2910 Express Drive South
58 Powder Horn Drive
Islandia/Warren, NY/NJ 11749 / 07059
Phone: 631-585-6800
Email: commercial@walesdarby.com

Water Supply Summary

Project #:(REV) PROPOSAL
July 16, 2026

Project Information

Project #:(REV) PROPOSAL
Name: REVISED - 7611 - Ellenville Fire District RFH Proposal
Location: 203 S Main Street Route 209 Ellenville, NY

Notes: Emtec Engineering

* RADIANT DESIGN IS BASED ON THE INFORMATION PROVIDED. CAPACITIES DEPICTED ARE BASED ON THE HEATING LOADS PROVIDED. RADIANT OUTPUTS AVAILABLE ARE BASED ON THE RADIANT INSTALLATION METHOD, FINISHED FLOOR COVERINGS & EXAMPLE FLOOR CONSTRUCTION DETAIL PROVIDED. NO FORMAL HEAT LOSS HAS BEEN PERFORMED BY WALES DARBY INC.

** LOOP LENGTHS & PIPE SPACING ARE BASED ON THE APPLICATION AND REMOTE MANIFOLD LOCATION(S) DEPICTED. LOOP & LEADER LENGTHS ARE SUBJECT TO CHANGE BASED ON ACTUAL MANIFOLD SITE LOCATION(S). MANIFOLD LOCATIONS ARE TO COORDINATE AND APPROVED BY THE PROJECT ENGINEER, ARCHITECT AND ALL TRADES INVOLVED IN CONSTRUCTION, PRIOR TO PURCHASE OF MATERIALS. **

Supply Summary

Name	Temp	Total Fluid Vol	Total Flow	Head Loss¹	Load²	# Circuits
Water Temperature	116	89.34	19.63	4.2	195,844	30

(1) Head loss includes manifolds, circuits, and supply/return piping if specified, may also contain control valve losses. (2) Load includes all panel back losses.

Length = ft Area = ft² Temperature = °F Flowrate = USGPM Head Loss = Btu/hr Unit Heat Loss = Btu/(hr ft²) Head Loss = ft water Volume = USG Created Using LoopCAD 2026 Updater(US) (7/22/2026) Version:26.0.0094 C

See end of report for important Notes and Disclaimers.

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Name:REVISED - 7611 - Ellenville Fire District RFH Proposal
Project #:(REV) PROPOSAL

Water Supply Summary
July 16, 2026

RFM-5 (116 °F, Stainless-steel, 1" with flow meter, B&I, ball valve, 4 Circuits)

Circuit	Rooms Served	Total Length	Tube Spacing	Area Covered	Tubing	Flowrate	Head Loss¹	Temp Drop²	Load³	Actuator
M5.1	Apparatus Bay Area 8	210	12	203	hePEX 5/8"	0.65	1.5	20	6,488	No
M5.2	Apparatus Bay Area 8	210	12	203	hePEX 5/8"	0.65	1.5	20	6,488	No
M5.3	Apparatus Bay Area 5	193	12	186	hePEX 5/8"	0.60	1.2	20	5,974	No
M5.4	Apparatus Bay Area 5	193	12	186	hePEX 5/8"	0.60	1.2	20	5,974	No
Total	-	804		779	-	2.50	1.5	-	24,924	0

(1) Head loss for circuit tubing only. (2) Design Temp Drop (Estimated Actual Drop). (3) Required load. Includes panel back losses. Does not reflect maximum capacity of the circuit.

RFM-6 (116 °F, Stainless-steel, 1" with flow meter, B&I, ball valve, 4 Circuits)

Circuit	Rooms Served	Total Length	Tube Spacing	Area Covered	Tubing	Flowrate	Head Loss¹	Temp Drop²	Load³	Actuator
M6.1	Apparatus Bay Area 9	193	12	187	hePEX 5/8"	0.59	1.2	20	5,891	No
M6.2	Apparatus Bay Area 9	193	12	187	hePEX 5/8"	0.59	1.2	20	5,891	No
M6.3	Apparatus Bay Area 6	193	12	187	hePEX 5/8"	0.59	1.2	20	5,891	No
M6.4	Apparatus Bay Area 6	193	12	187	hePEX 5/8"	0.59	1.2	20	5,891	No
Total	-	773		749	-	2.36	1.2	-	23,579	0

(1) Head loss for circuit tubing only. (2) Design Temp Drop (Estimated Actual Drop). (3) Required load. Includes panel back losses. Does not reflect maximum capacity of the circuit.

RFM-7 (116 °F, Stainless-steel, 1" with flow meter, B&I, ball valve, 3 Circuits)

Circuit	Rooms Served	Total Length	Tube Spacing	Area Covered	Tubing	Flowrate	Head Loss¹	Temp Drop²	Load³	Actuator
M7.1	Apparatus Bay Area 10	236	12	230	hePEX 5/8"	0.72	2.1	20	7,173	Yes
M7.2	Apparatus Bay Area 12	236	12	230	hePEX 5/8"	0.72	2.1	20	7,168	Yes
M7.3	Gear Area 1	253	12	205	hePEX 5/8"	0.66	1.9	20	6,589	Yes
Total	-	728		666	-	2.10	2.1	-	20,930	3

(1) Head loss for circuit tubing only. (2) Design Temp Drop (Estimated Actual Drop). (3) Required load. Includes panel back losses. Does not reflect maximum capacity of the circuit.

Length = ft Area = ft² Temperature = °F Flowrate = USGPM Head Loss = Btu/hr Unit Heat Loss = Btu/(hr ft²) Head Loss = ft water Volume = USG Created Using LoopCAD 2026 Updater(US) (7/22/2026) Version:26.0.0094 C

See end of report for important Notes and Disclaimers.

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Name:REVISED - 7611 - Ellenville Fire District RFH Proposal
Project #:(REV) PROPOSAL

Water Supply Summary
July 16, 2026

Manifold Summary

Manifold Name	Circuits	Flowrate	Required Temp.	Supplied Temp.	Manifold Type	S/R Length¹	S/R Pipe	Manifold Head Loss	Circuit Head Loss	S/R Head Loss	Total Head Loss²
RFM-1	2	1.34	115	116	Stainless-steel, 1" with flow meter, B&I, ball valve	0	Copper-M, 3/4"	0.6	1.7	0.0	2.4
RFM-2	2	1.36	116	116	Stainless-steel, 1" with flow meter, B&I, ball valve	0	Copper-M, 3/4"	0.6	1.8	0.0	2.4
RFM-3	2	1.34	115	116	Stainless-steel, 1" with flow meter, B&I, ball valve	0	Copper-M, 3/4"	0.6	1.7	0.0	2.3
RFM-4	4	2.71	115	116	Stainless-steel, 1" with flow meter, B&I, ball valve	0	Copper-M, 3/4"	0.7	2.4	0.0	3.1
RFM-5	4	2.50	116	116	Stainless-steel, 1" with flow meter, B&I, ball valve	0	Copper-M, 3/4"	0.6	1.5	0.0	2.1
RFM-6	4	2.36	115	116	Stainless-steel, 1" with flow meter, B&I, ball valve	0	Copper-M, 3/4"	0.5	1.2	0.0	1.7
RFM-7	3	2.10	116	116	Stainless-steel, 1" with flow meter, B&I, ball valve	0	Copper-M, 3/4"	0.7	2.1	0.0	2.7
RFM-8	4	2.36	115	116	Stainless-steel, 1" with flow meter, B&I, ball valve	0	Copper-M, 3/4"	0.5	1.2	0.0	1.7
RFM-9	2	1.52	115	116	Stainless-steel, 1" with flow meter, B&I, ball valve	0	Copper-M, 3/4"	0.8	3.4	0.0	4.2
RFM-10	3	2.03	115	116	Stainless-steel, 1" with flow meter, B&I, ball valve	0	Copper-M, 3/4"	0.6	2.0	0.0	2.7
Total	30	19.63	-	-	-	-	-	0.8	3.4	4.2	4.2

(1) S/R Length = one way. (2) Total Head loss includes manifold, circuits and supply/return piping if specified.

Length = ft Area = ft² Temperature = °F Flowrate = USGPM Head Loss = Btu/hr Unit Heat Loss = Btu/(hr ft²) Head Loss = ft water Volume = USG Created Using LoopCAD 2026 Updater(US) (7/22/2026) Version:26.0.0094 C

See end of report for important Notes and Disclaimers.

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Name:REVISED - 7611 - Ellenville Fire District RFH Proposal
Project #:(REV) PROPOSAL

Water Supply Summary
July 16, 2026

RFM-8 (116 °F, Stainless-steel, 1" with flow meter, B&I, ball valve, 4 Circuits)

Circuit	Rooms Served	Total Length	Tube Spacing	Area Covered	Tubing	Flowrate	Head Loss¹	Temp Drop²	Load³	Actuator
M8.1	Apparatus Bay Area 11	194	12	187	hePEX 5/8"	0.59	1.2	20	5,899	No
M8.2	Apparatus Bay Area 11	194	12	187	hePEX 5/8"	0.59	1.2	20	5,899	No
M8.3	Apparatus Bay Area 13	193	12	187	hePEX 5/8"	0.59	1.2	20	5,895	No
M8.4	Apparatus Bay Area 13	193	12	187	hePEX 5/8"	0.59	1.2	20	5,895	No
Total	-	774		749	-	2.36	1.2	-	23,589	0

(1) Head loss for circuit tubing only. (2) Design Temp Drop (Estimated Actual Drop). (3) Required load. Includes panel back losses. Does not reflect maximum capacity of the circuit.

RFM-9 (116 °F, Stainless-steel, 1" with flow meter, B&I, ball valve, 2 Circuits)

Circuit	Rooms Served	Total Length	Tube Spacing	Area Covered	Tubing	Flowrate	Head Loss¹	Temp Drop²	Load³	Actuator
M9.1	Apparatus Bay Area 14	283	12	277	hePEX 5/8"	0.86	3.4	20	8,563	Yes
M9.2	Gear Area 2	222	12	206	hePEX 5/8"	0.66	1.7	20	6,589	Yes
Total	-	505		485	-	1.52	3.4	-	15,152	2

(1) Head loss for circuit tubing only. (2) Design Temp Drop (Estimated Actual Drop). (3) Required load. Includes panel back losses. Does not reflect maximum capacity of the circuit.

RFM-10 (116 °F, Stainless-steel, 1" with flow meter, B&I, ball valve, 3 Circuits)

Circuit	Rooms Served	Total Length	Tube Spacing	Area Covered	Tubing	Flowrate	Head Loss¹	Temp Drop²	Load³	Actuator
M10.1	Apparatus Bay Area 15	233	12	226	hePEX 5/8"	0.71	2.0	20	7,054	Yes
M10.2	Apparatus Bay Area 15	233	12	226	hePEX 5/8"	0.71	2.0	20	7,054	Yes
M10.3	Radio Room Area	299	9	193	hePEX 5/8"	0.62	2.0	20	6,176	Yes
Total	-	764		645	-	2.03	2.0	-	20,284	3

(1) Head loss for circuit tubing only. (2) Design Temp Drop (Estimated Actual Drop). (3) Required load. Includes panel back losses. Does not reflect maximum capacity of the circuit.

Length = ft Area = ft² Temperature = °F Flowrate = USGPM Head Loss = Btu/hr Unit Heat Loss = Btu/(hr ft²) Head Loss = ft water Volume = USG Created Using LoopCAD 2026 Updater(US) (7/22/2026) Version:26.0.0094 C

See end of report for important Notes and Disclaimers.

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Name:REVISED - 7611 - Ellenville Fire District RFH Proposal
Project #:(REV) PROPOSAL

Water Supply Summary
July 16, 2026

Water Temperature (116 °F)

RFM-1 (116 °F, Stainless-steel, 1" with flow meter, B&I, ball valve, 2 Circuits)

Circuit	Rooms Served	Total Length	Tube Spacing	Area Covered	Tubing	Flowrate	Head Loss¹	Temp Drop²	Load³	Actuator
M1.1	Apparatus Bay Area 1	225	12	214	hePEX 5/8"	0.67	1.7	20	6,691	No
M1.2	Apparatus Bay Area 1	225	12	214	hePEX 5/8"	0.67	1.7	20	6,691	No
Total	-	449		428	-	1.34	1.7	-	13,383	0

(1) Head loss for circuit tubing only. (2) Design Temp Drop (Estimated Actual Drop). (3) Required load. Includes panel back losses. Does not reflect maximum capacity of the circuit.

RFM-2 (116 °F, Stainless-steel, 1" with flow meter, B&I, ball valve, 2 Circuits)

Circuit	Rooms Served	Total Length	Tube Spacing	Area Covered	Tubing	Flowrate	Head Loss¹	Temp Drop²	Load³	Actuator
M2.1	Apparatus Bay Area 2	220	12	214	hePEX 5/8"	0.68	1.8	20	6,782	No
M2.2	Apparatus Bay Area 2	220	12	214	hePEX 5/8"	0.68	1.8	20	6,782	No
Total	-	441		427	-	1.36	1.8	-	13,563	0

(1) Head loss for circuit tubing only. (2) Design Temp Drop (Estimated Actual Drop). (3) Required load. Includes panel back losses. Does not reflect maximum capacity of the circuit.

RFM-3 (116 °F, Stainless-steel, 1" with flow meter, B&I, ball valve, 2 Circuits)

Circuit	Rooms Served	Total Length	Tube Spacing	Area Covered	Tubing	Flowrate	Head Loss¹	Temp Drop²	Load³	Actuator
M3.1	Apparatus Bay Area 3	221	12	214	hePEX 5/8"	0.67	1.7	20	6,700	No
M3.2	Apparatus Bay Area 3	221	12	214	hePEX 5/8"	0.67	1.7	20	6,700	No
Total	-	442		429	-	1.34	1.7	-	13,400	0

(1) Head loss for circuit tubing only. (2) Design Temp Drop (Estimated Actual Drop). (3) Required load. Includes panel back losses. Does not reflect maximum capacity of the circuit.

RFM-4 (116 °F, Stainless-steel, 1" with flow meter, B&I, ball valve, 2 Circuits)

Circuit	Rooms Served	Total Length	Tube Spacing	Area Covered	Tubing	Flowrate	Head Loss¹	Temp Drop²	Load³	Actuator
M4.1	Apparatus Bay Area 7	251	12	245	hePEX 5/8"	0.78	2.4	20	7,629	No
M4.2	Apparatus Bay Area 7	251	12	245	hePEX 5/8"	0.78	2.4	20	7,629	No
M4.3	Apparatus Bay Area 4	193	12	187	hePEX 5/8"	0.59	1.2	20	5,891	No
M4.4	Apparatus Bay Area 4	193	12	187	hePEX 5/8"	0.59	1.2	20	5,891	No
Total	-	889		864	-	2.71	2.4	-	27,041	0

(1) Head loss for circuit tubing only. (2) Design Temp Drop (Estimated Actual Drop). (3) Required load. Includes panel back losses. Does not reflect maximum capacity of the circuit.

Length = ft Area = ft² Temperature = °F Flowrate = USGPM Head Loss = Btu/hr Unit Heat Loss = Btu/(hr ft²) Head Loss = ft water Volume = USG Created Using LoopCAD 2026 Updater(US) (7/22/2026) Version:26.0.0094 C

See end of report for important Notes and Disclaimers.

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Name:REVISED - 7611 - Ellenville Fire District RFH Proposal
Project #:(REV) PROPOSAL

Water Supply Summary
July 16, 2026

Disclaimers

The calculated values shown in this report are based on the data input by the user of the software. Inaccurate or erroneous data input will result in inaccurate or erroneous results. You are strongly advised to review all input data carefully, and to have the calculated results reviewed by an experienced heating professional to ensure reasonableness and suitability for your application.

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Length = ft Area = ft² Temperature = °F Flowrate = USGPM Head Loss = Btu/hr Unit Heat Loss = Btu/(hr ft²) Head Loss = ft water Volume = USG Created Using LoopCAD 2026 Updater(US) (7/22/2026) Version:26.0.0094 C

See end of report for important Notes and Disclaimers.

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DATE

ISSUED

06-22-2026 ISSUED FOR
100%DD/50%CD REVIEW
07-20-2026 ISSUED FOR 90%CD
REVIEW
08-17-2026
ISSUED FOR GENERAL
CONSTRUCTION BID AS SINGLE
PRIME CONTRACT INCLUDING
ALL TRADES

SEAL



SENDLEWSKI ARCHITECTS, P.C.

ARCHITECTS - PLANNERS

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PROPOSED NEW FACILITY
ELLENVILLE FIRE DISTRICT
203 S. MAIN ST. NYS ROUTE 209
ELLENVILLE, NY 12428

MECHANICAL
RADIANT HEATING
DETAILS

PROJECT No. 2501
EMTEC-1611

CHECKED BY: MF/APS

DRAWING:

M-9.2

"It is a violation of the State Education Law for any person, unless he or she is acting under the direction of a licensed professional engineer to alter an item in anyway, on this drawing and/or in this specification in anyway. If any such item is altered, the altering engineer shall affix to the item his or her seal and the notation "altered by" followed by his or her signature and the date of such alteration, and a specific description of the alteration."
This plan is approved only for the work indicated on the application specification sheet, all other matters are not to be relied upon, or to be considered as either being approved or in accordance with applicable codes.

EMTEC PROJECT NO. 7611 DRAWN BY: MF CHECKED BY: APS