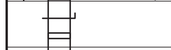
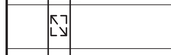
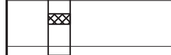
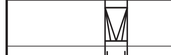
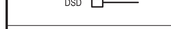
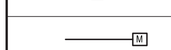
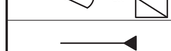
ABBREVIATIONS

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

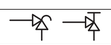
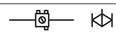
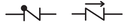
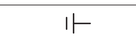
DUCTWORK LEGEND

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

CONTROLS LEGEND

SYMBOL	ABBREV	DESCRIPTION
		CARBON MONOXIDE SENSOR
		THERMOSTAT
		DIGITAL TEMPERATURE SENSOR
		CARBON DIOXIDE SENSOR

PIPING LEGEND

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

BMS NOTES:

PROVIDE MATERIALS AND LABOR TO PROVIDE A BMS SYSTEM FOR ALL NEW EQUIPMENT ASSOCIATE WITH THIS PROJECT. SYSTEM SHALL BE WEB BASED USER INTERFACE. BMS SYSTEM SHALL INCLUDE ABILITY FOR COMMAND ENTRY, INFORMATION MANAGEMENT, NETWORK ALARM MANAGEMENT, AND DATABASE MANAGEMENT FUNCTIONS. A REAL TIME CONTROLS FUNCTION, INCLUDING SCHEDULING, HISTORY COLLECTION AND ALARMING SHALL BE RESIDENT IN THE BMS NETWORK. SYSTEM COMMUNICATIONS SHALL BE BACNET ANSI/ASHRAE STANDARD 135-2016 AT ALL LEVELS OF THE ARCHITECTURE. THE BMS SHALL USE AN OPEN ARCHITECTURE AND FULLY SUPPORT A MULTI-VENDOR ENVIRONMENT.

GENERAL NOTES

1. PROVIDE ALL MATERIALS AND EQUIPMENT AND PERFORM ALL LABOR REQUIRED TO INSTALL COMPLETE AND OPERABLE MECHANICAL SYSTEMS AS INDICATED ON THE DRAWINGS, AS SPECIFIED AND AS REQUIRED BY CODE.
2. THE CONTRACTOR, BY PRESENTING THEIR BID FOR THE WORK, REPRESENTS THAT HE/SHE HAS INSPECTED THE SITE AND IS COMPLETELY FAMILIAR WITH THE SCOPE OF WORK AND ALL FIELD CONDITIONS RELATED TO, AND AFFECTING THE WORK AND ITS PERFORMANCE. EXCEPTIONS AFFECTING THE WORK AND ITS PERFORMANCE, OR CONFLICTS BETWEEN FIELD CONDITIONS, SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT PRIOR TO THE SUBMISSION OF BIDS.
3. PERFORM ALL WORK IN ACCORDANCE WITH THE PLUMBING CODE, FIRE CODE, MECHANICAL CODE, ENERGY CONSERVATION CONSTRUCTION CODE, AND FUEL GAS CODE OF NEW YORK STATE AND THE REQUIREMENTS OF THE LOCAL AUTHORITIES HAVING JURISDICTION.
4. COMPLY WITH THE NATIONAL ELECTRIC CODE AND THE REQUIREMENTS OF DIVISION 26 FOR ALL ELECTRICAL INSTALLATIONS.
5. FIRE STOP ALL OPENINGS IN FIRE RATED CONSTRUCTION FOR PIPING, DUCTWORK, CONDUIT, ETC. PROVIDE FIRE DAMPERS AND ACCESS DOORS IN ALL OPENINGS IN FIRE RATED FLOORS, PARTITIONS, AND WALLS FOR DUCTWORK AS PER THE MECHANICAL CODE OF NEW YORK STATE. (SEE ARCHITECTURAL DRAWINGS FOR LOCATIONS OF FIRE RATED CONSTRUCTION.)
6. DO NOT SCALE DRAWINGS. DRAWINGS FOR HVAC WORK ARE DIAGRAMMATIC AND ARE INTENDED TO CONVEY SCOPE AND GENERAL ARRANGEMENT ONLY. THE LOCATIONS OF ALL ITEMS SHOWN ON THE DRAWINGS OR CALLED FOR IN THE SPECIFICATIONS THAT ARE NOT DEFINITELY FIXED BY DIMENSIONS ARE APPROXIMATE. COORDINATE CONTRACT DOCUMENTS, PROJECT REQUIREMENTS, WORK OF OTHERS, AND EQUIPMENT AND MATERIALS PURCHASED WITH FIELD DIMENSIONS. INSTALL ALL EQUIPMENT AS PER MANUFACTURER'S REQUIREMENTS TO PROVIDE PROPER CLEARANCE FOR INSTALLATION, OPERATION, AND MAINTENANCE. CONTRACTOR'S INTENDED MEANS AND METHODS OF INSTALLATION AND CONTRACTOR'S FABRICATED ITEMS SHALL ENSURE A PROPER "FIT" AND INSTALLATION. BRING ANY CONFLICTS TO THE ATTENTION OF THE ARCHITECT/ENGINEER DURING THE SUBMITTAL PHASE FOR RESOLUTION PRIOR TO PURCHASING ANY EQUIPMENT.
7. MAINTAIN MAXIMUM HEADROOM AND SPACE CONDITIONS AT ALL POINTS. WHERE HEADROOM AND SPACE CONDITIONS APPEAR INADEQUATE, NOTIFY THE ARCHITECT/ENGINEER PRIOR TO PROCEEDING WITH INSTALLATION. MAINTAIN A MINIMUM OF 6'-8" CLEARANCE FROM FINISHED FLOOR TO UNDERSIDE OF PIPES, DUCTS, CONDUITS, SUSPENDED EQUIPMENT, ETC., THROUGHOUT ACCESS ROUTES IN MECHANICAL ROOMS.
8. FIELD VERIFY AND COORDINATE ALL DUCT AND PIPING DIMENSIONS BEFORE FABRICATION. MAKE MODIFICATIONS IN THE LAYOUT AS NEEDED TO PREVENT CONFLICT WITH WORK OF OTHER TRADES OR FOR PROPER EXECUTION OF THE WORK. OBTAIN THE APPROVAL OF THE ARCHITECT/ENGINEER FOR MODIFICATIONS.
9. PROVIDE PRODUCTS OF ONE MANUFACTURER WHERE TWO OR MORE ITEMS OF THE SAME TYPE OF MATERIAL OR EQUIPMENT IS REQUIRED.
10. INSTALL ALL EQUIPMENT AND APPURTENANCES IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS, CONTRACT DOCUMENTS, AND APPLICABLE CODES AND REGULATIONS. REFER TO DETAILS FOR ADDITIONAL PIPING AND EQUIPMENT INSTALLATION REQUIREMENTS.
11. LOCATE ALL TEMPERATURE, PRESSURE, AND FLOW MEASURING DEVICES IN ACCESSIBLE LOCATIONS WITH STRAIGHT SECTION OF PIPE OR DUCT UP- AND DOWNSTREAM AS RECOMMENDED BY THE MANUFACTURER TO ENSURE MANUFACTURER CERTIFIED ACCURACY.
12. COORDINATE ALL EQUIPMENT CONNECTIONS WITH MANUFACTURER'S CERTIFIED DRAWINGS. COORDINATE AND PROVIDE ALL PIPING AND DUCT TRANSITIONS REQUIRED FOR FINAL CONNECTIONS TO EQUIPMENT.
13. COORDINATE LOCATIONS AND SIZES OF ALL FLOOR, WALL, AND ROOF OPENINGS WITH ALL OTHER TRADES. COORDINATE ALL PIPING AND EQUIPMENT SUPPORTED FROM STRUCTURE WITH GENERAL CONSTRUCTION WORK.
14. COORDINATE INSTALLATION OF SUPPLY AND RETURN GRILLES WITH INSTALLATION OF FINISHED CEILINGS.
15. COMPLETE ALL PRESSURE TESTS BEFORE ANY MECHANICAL EQUIPMENT, DUCTWORK, OR PIPING INSULATION IS APPLIED.
16. TESTING, ADJUSTING, AND BALANCING AGENCY SHALL BE A MEMBER OF THE ASSOCIATED AIR BALANCE COUNCIL (AABC) OR THE NATIONAL ENVIRONMENTAL BALANCING BUREAU (NEBB). PERFORM ALL TESTING, ADJUSTING, AND BALANCING IN ACCORDANCE WITH THE SPECIFICATIONS.
17. MAKE ALL ATTACHMENTS TO JOISTS, TRUSSES, OR JOIST GIRDERS AT PANEL POINTS. PROVIDE BEAM CLAMPS MEETING MSS STANDARDS. THE USE OF C-CLAMPS IS NOT PERMITTED.
18. PROVIDE CONCRETE PADS FOR ALL FLOOR MOUNTED EQUIPMENT. EXTEND PAD 6 INCHES BEYOND THE EQUIPMENT ON ALL SIDES.
19. LINE ALL SUPPLY AND RETURN DUCTWORK WITHIN 20 FEET UPSTREAM AND DOWNSTREAM OF FANS WITH 1" THICK INSULATION. SEE DRAWINGS AND SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
20. PROVIDE TRAPPED DRAIN PIPING FROM DRAIN PANS OF ALL COOLING COILS, FANS, AND OTHER ACTIVE DRAINS EXPOSED TO SYSTEM AIR STREAM. PROVIDE TRAP AT CONNECTION, WATER SEAL DEPTH 1 INCH GREATER THAN UNIT OPERATING PRESSURE. DIRECT DRAINS TO NEAREST FLOOR DRAIN, MOP SINK, OR OTHER LOCATION APPROVED BY THE ARCHITECT/ENGINEER.
21. INSTALL PIPING, DUCTWORK, AND CONDUIT CONCEALED IN AREAS HAVING HUNG CEILINGS AND/OR FURRED SPACES UNLESS OTHERWISE INDICATED ON THE DRAWINGS.

SCOPE NOTES

1. SUBMIT LOUVER COLOR AND CONFIGURATION TO THE ARCHITECT/ENGINEER FOR APPROVAL.
2. INSTALL SMOKE DETECTORS IN DUCTWORK FOR AIR HANDLING UNITS RATED AT 2,000 CFM OR GREATER.
3. FURNISH AND INSTALL ALL NECESSARY CONTROL WIRING, CONDUIT, AND ACCESSORIES AS REQUIRED TO PROVIDE FULLY FUNCTIONING SYSTEMS AND SEQUENCES OF OPERATION.
4. REMOVE CHASE ENCLOSURE COVER WHEN PERFORMING WORK IN ANY CHASE, AND REINSTALL THE CHASE ENCLOSURE COVER WHEN WORK IS COMPLETE.
5. PERFORM ALL CUTTING AND ROUGH PATCHING AS REQUIRED IN THE EXECUTION OF THE WORK.

LEGENDS/ABBREVIATIONS NOTES

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

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CONSULTANTS:

MARK	DATE	DESCRIPTION

STATE OF NEW YORK · JOHN LAREY · 101303 · LICENSED PROFESSIONAL ENGINEER

DESIGNED BY:	DRAWN BY:	CHECKED BY:	REVIEWED BY:
DKR	DKR	MJV	JML

PROJECT No.:	DATE:	SCALE:
VGFD2001	JULY 2022	AS SHOWN

CLIENT

VAILS GATE FIRE DISTRICT

New Storage Building (Phase I)
New Fire Station (Phase II)

872 Blooming Grove Turnpike
New Windsor, NY 12553

CONTRACT

CONTRACT G
GENERAL CONSTRUCTION

STATUS

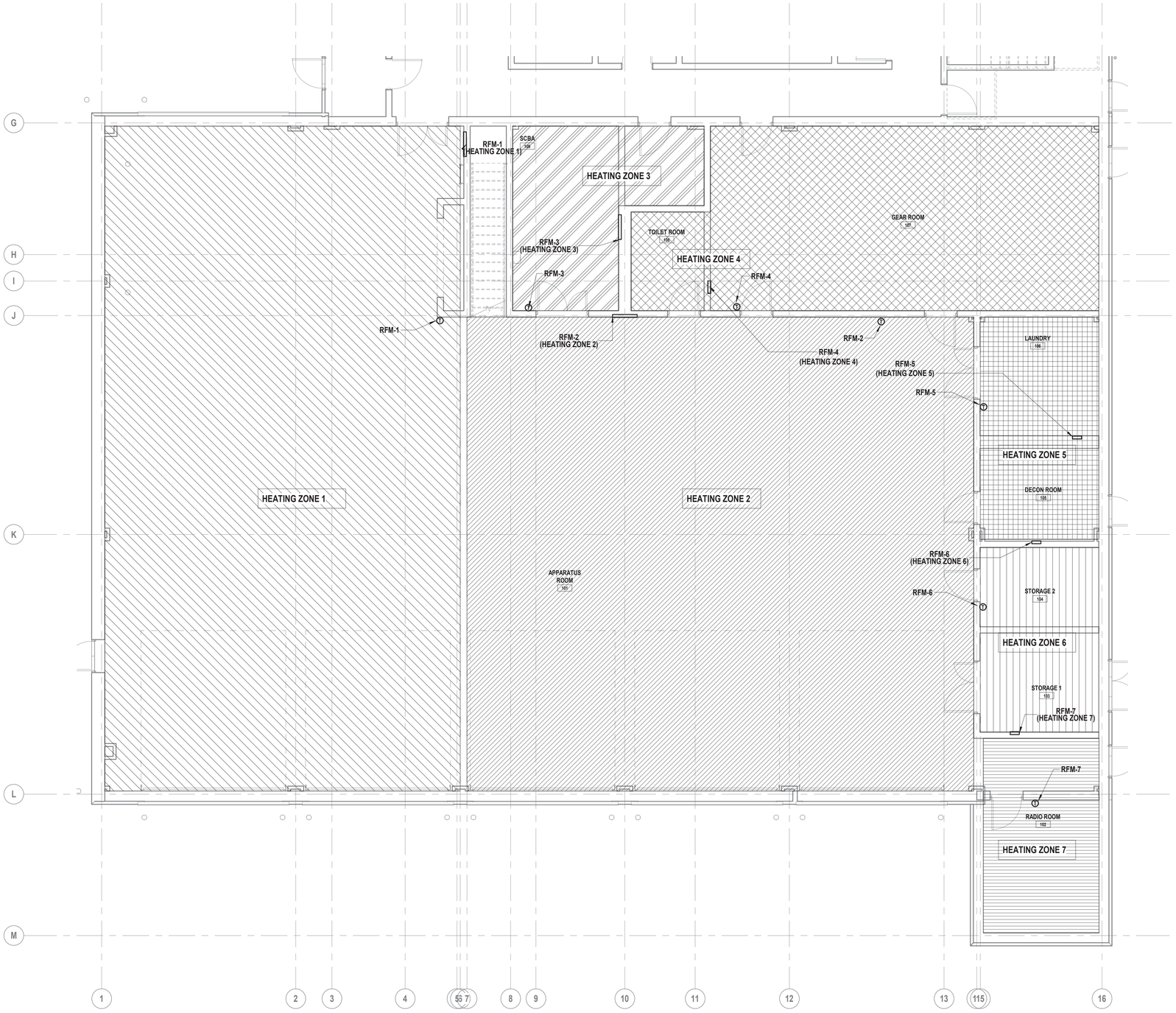
FINAL BID DOCUMENT

SHEET TITLE

HVAC LEGENDS, SYMBOLS, ABBREVIATIONS, AND GENERAL NOTES

DRAWING No.

M2 001.00



1 Slab HVAC Piping Plan

SCALE: 3/16" = 1'-0"

RADIANT FLOOR ZONE LEGEND:

= ZONE 1, CONTAINS RADIANT FLOOR PIPING WITH 10 CIRCUITS TO MANIFOLD RFM-1.

= ZONE 2, CONTAINS RADIANT FLOOR PIPING WITH 10 CIRCUITS TO MANIFOLD RFM-2.

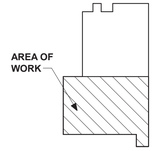
= ZONE 3, CONTAINS RADIANT FLOOR PIPING WITH 2 CIRCUITS TO MANIFOLD RFM-3.

= ZONE 4, CONTAINS RADIANT FLOOR PIPING WITH 4 CIRCUITS TO MANIFOLD RFM-4.

= ZONE 5, CONTAINS RADIANT FLOOR PIPING WITH 2 CIRCUITS TO MANIFOLD RFM-5.

= ZONE 6, CONTAINS RADIANT FLOOR PIPING WITH 2 CIRCUITS TO MANIFOLD RFM-6.

= ZONE 7, CONTAINS RADIANT FLOOR PIPING WITH 2 CIRCUITS TO MANIFOLD RFM-7.



Key Plan
SCALE: N.T.S.

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CONSULTANTS:

MARK	DATE	DESCRIPTION

STATE OF NEW YORK · JOHN LAMEY · 101303 · LICENSED PROFESSIONAL ENGINEER

DESIGNED BY:	DRAWN BY:	CHECKED BY:	REVIEWED BY:
DKR	DKR	MJV	JML

PROJECT No:	DATE:	SCALE:
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New Fire Station (Phase II)

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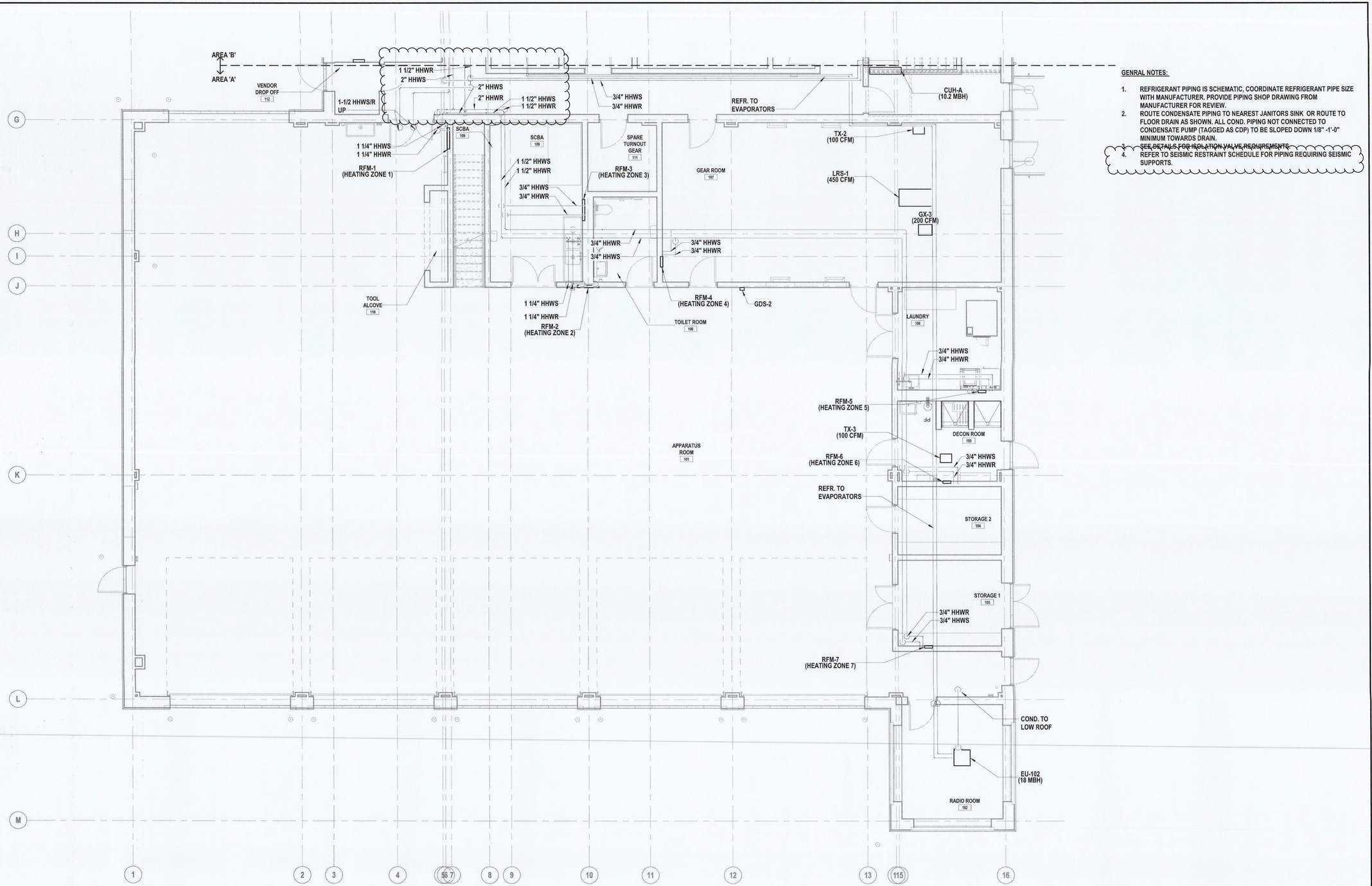
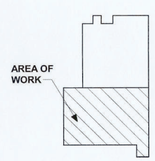
SLAB HVAC PIPING PLAN AREA A

DRAWING No.
M2 100A.00



1 First Floor HVAC Piping Plan
SCALE: 3/16" = 1'-0"



Key Plan
SCALE: N.T.S.

GENRAL NOTES:

1. REFRIGERANT PIPING IS SCHEMATIC, COORDINATE REFRIGERANT PIPE SIZE WITH MANUFACTURER. PROVIDE PIPING SHOP DRAWING FROM MANUFACTURER FOR REVIEW.
2. ROUTE CONDENSATE PIPING TO NEAREST JANITORS SINK OR ROUTE TO FLOOR DRAIN AS SHOWN. ALL COND. PIPING NOT CONNECTED TO CONDENSATE PUMP (TAGGED AS CDP) TO BE SLOPED DOWN 1/8" -1'-0" MINIMUM TOWARDS DRAIN.
3. SEE DETAILS FOR ISOLATION VALVE REQUIREMENTS.
4. REFER TO SEISMIC RESTRAINT SCHEDULE FOR PIPING REQUIRING SEISMIC SUPPORTS.

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CONSULTANTS:

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STATE OF NEW YORK — JOHN LA... — LICENSED PROFESSIONAL ENGINEER

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

PROJECT No:	DATE:	SCALE:
VGFD2001	JULY 2022	AS SHOWN

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New Fire Station (Phase II)

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New Windsor, NY 12553

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SHEET TITLE
FIRST FLOOR HVAC PIPING PLAN
AREA A

DRAWING No.
M2 101A.02

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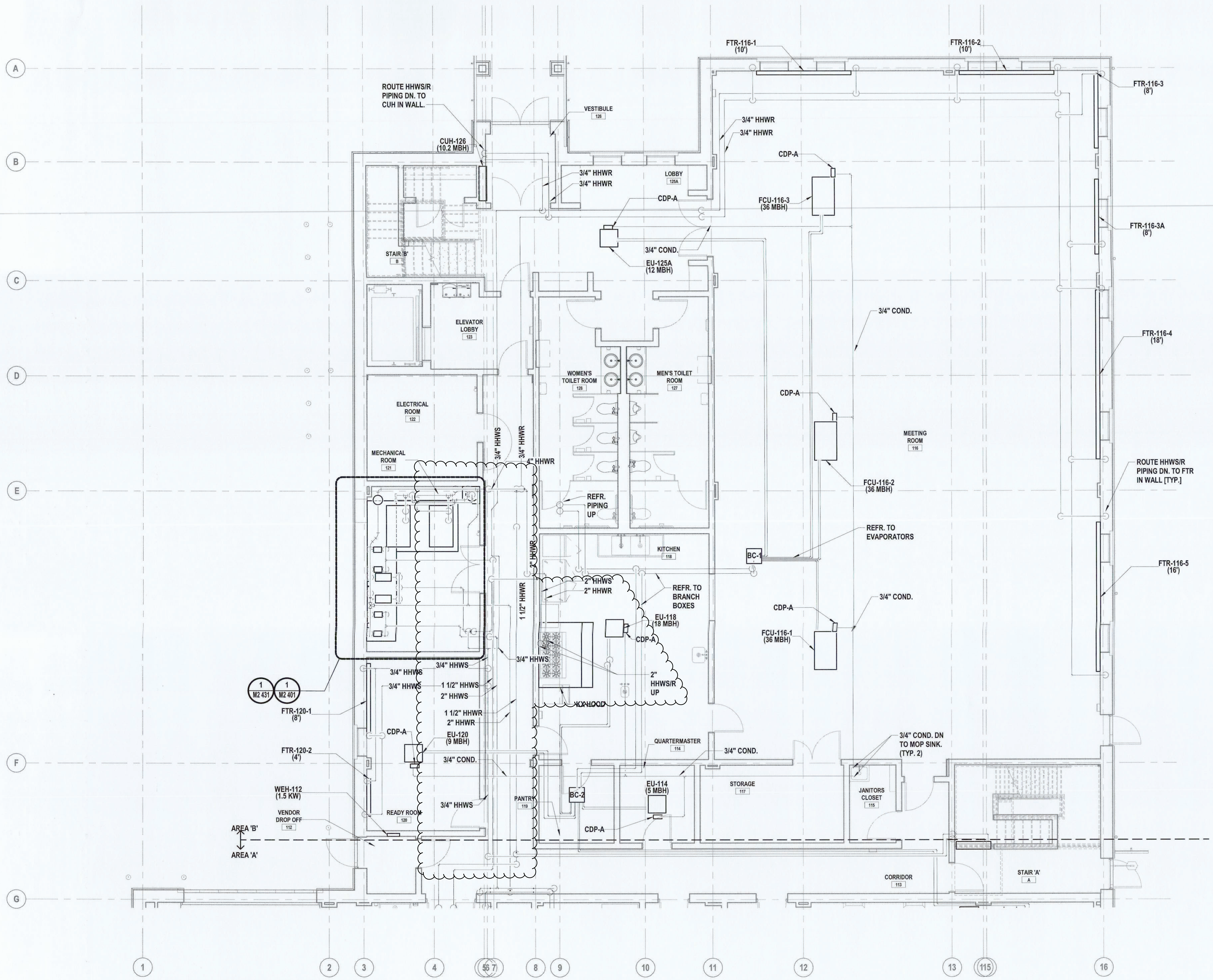
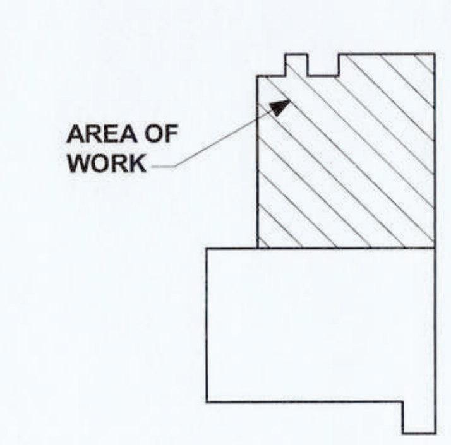


1 First Floor HVAC Piping Plan
SCALE: 3/16" = 1'-0"

GENRAL NOTES:

1. REFRIGERANT PIPING IS SCHEMATIC, COORDINATE REFRIGERANT PIPE SIZE WITH MANUFACTURER. PROVIDE PIPING SHOP DRAWING FROM MANUFACTURER FOR REVIEW.
2. ROUTE CONDENSATE PIPING TO NEAREST JANITORS SINK OR ROUTE TO FLOOR DRAIN AS SHOWN. ALL COND. PIPING NOT CONNECTED TO CONDENSATE PUMP (TAGGED AS CDP) TO BE SLOPED DOWN 1/8" -1'-0" MINIMUM TOWARDS DRAIN.
3. ~~SEE DETAILS FOR ISOLATION VALVE REQUIREMENTS.~~
4. REFER TO SEISMIC RESTRAINT SCHEDULE FOR PIPING REQUIRING SEISMIC SUPPORTS



Key Plan
SCALE: N.T.S.

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CONSULTANTS:

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

PROJECT No:	DATE:	SCALE:
VGFD2001	JULY 2022	AS SHOWN

CLIENT

VAILS GATE FIRE DISTRICT

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New Fire Station (Phase II)

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New Windsor, NY 12553

CONTRACT

CONTRACT G
GENERAL CONSTRUCTION

STATUS

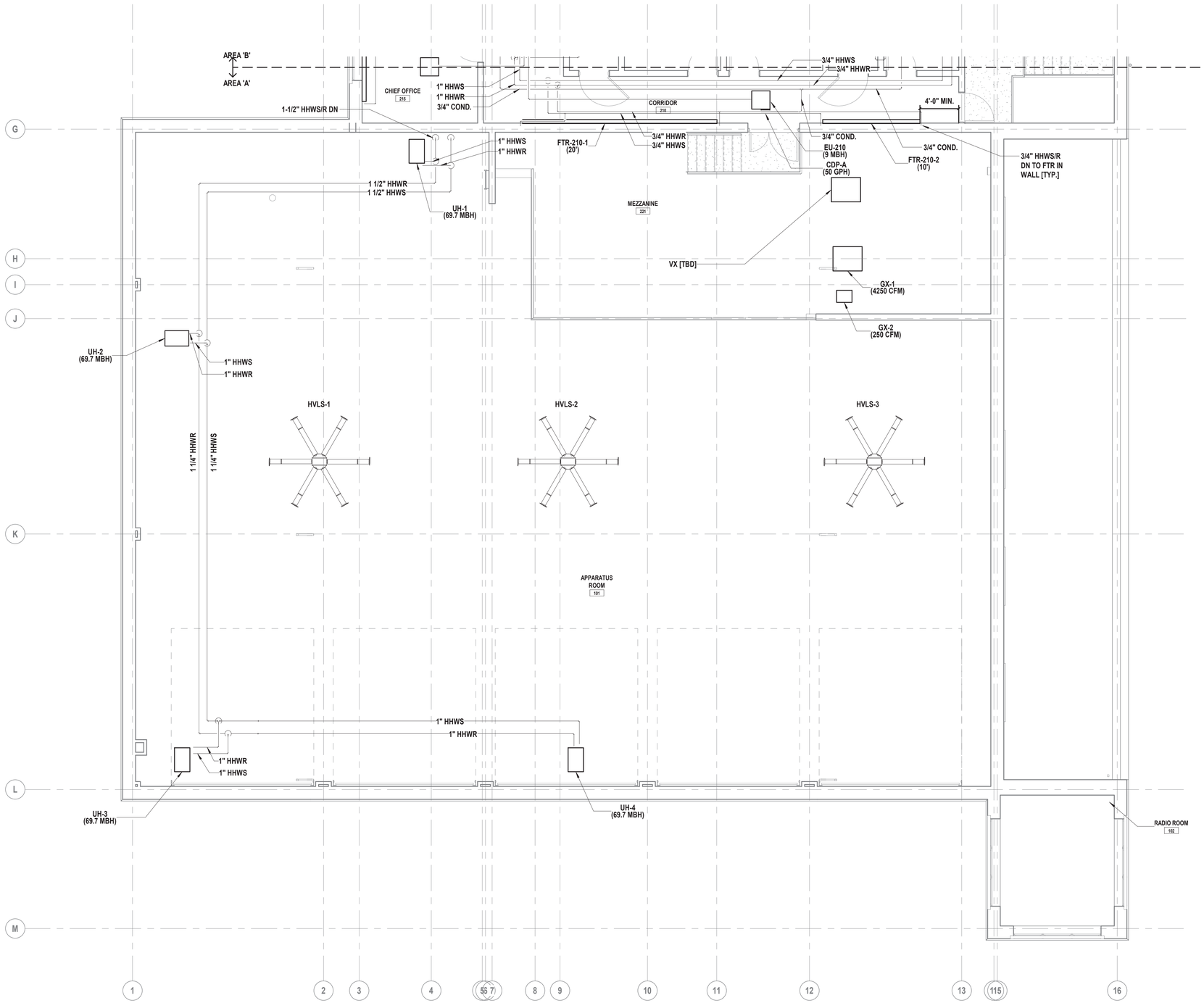
FINAL BID DOCUMENT

SHEET TITLE

FIRST FLOOR HVAC PIPING PLAN
AREA B

DRAWING No.

M2 101B.02



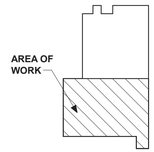
1 **Second Floor HVAC Piping Plan**
SCALE: 3/16" = 1'-0"

GENRAL NOTES:

1. REFRIGERANT PIPING IS SCHEMATIC, COORDINATE REFRIGERANT PIPE SIZE WITH MANUFACTURER. PROVIDE PIPING SHOP DRAWING FROM MANUFACTURER FOR REVIEW.
2. ROUTE CONDENSATE PIPING TO NEAREST JANITORS SINK OR ROUTE TO FLOOR DRAIN AS SHOWN. ALL COND. PIPING NOT CONNECTED TO CONDENSATE PUMP (TAGGED AS CDP) TO BE SLOPED DOWN 1/8" -1'-0" MINIMUM TOWARDS DRAIN.
3. SEE DETAILS FOR ISOLATION VALVE REQUIREMENTS.

KEYED NOTES:

VX BY DISTRICT FOR REFERENCE ONLY



Key Plan
SCALE: N.T.S.

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JOHN LALEY
101303
LICENSED PROFESSIONAL ENGINEER
PROFESSIONAL ⊕ ILLEGAL

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DKR	DKR	MJV	JML

PROJECT No:	DATE:	SCALE:
VGFD2001	JULY 2022	AS SHOWN

CLIENT
VAILS GATE FIRE DISTRICT

New Storage Building (Phase I)
New Fire Station (Phase II)

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New Windsor, NY 12553

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SHEET TITLE
SECOND FLOOR HVAC PIPING PLAN
AREA A

DRAWING No.
M2 102A.00

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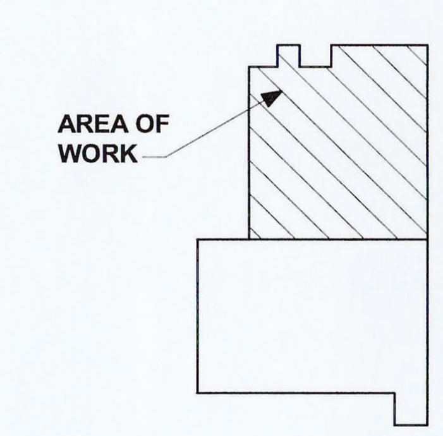
1 **Second Floor HVAC Piping Plan**
SCALE: 3/16" = 1'-0"

GENRAL NOTES:

1. REFRIGERANT PIPING IS SCHEMATIC, COORDINATE REFRIGERANT PIPE SIZE WITH MANUFACTURER. PROVIDE PIPING SHOP DRAWING FROM MANUFACTURER FOR REVIEW.
2. ROUTE CONDENSATE PIPING TO NEAREST JANITORS SINK OR ROUTE TO FLOOR DRAIN AS SHOWN. ALL COND. PIPING NOT CONNECTED TO CONDENSATE PUMP (TAGGED AS CDP) TO BE SLOPED DOWN 1/8" -1'-0" MINIMUM TOWARDS DRAIN.
3. SEE DETAILS FOR ISOLATION VALVE REQUIREMENTS.
4. REFER TO SEISMIC RESTRAINT SCHEDULE FOR PIPING REQUIRING SEISMIC SUPPORTS



Key Plan
SCALE: N.T.S.

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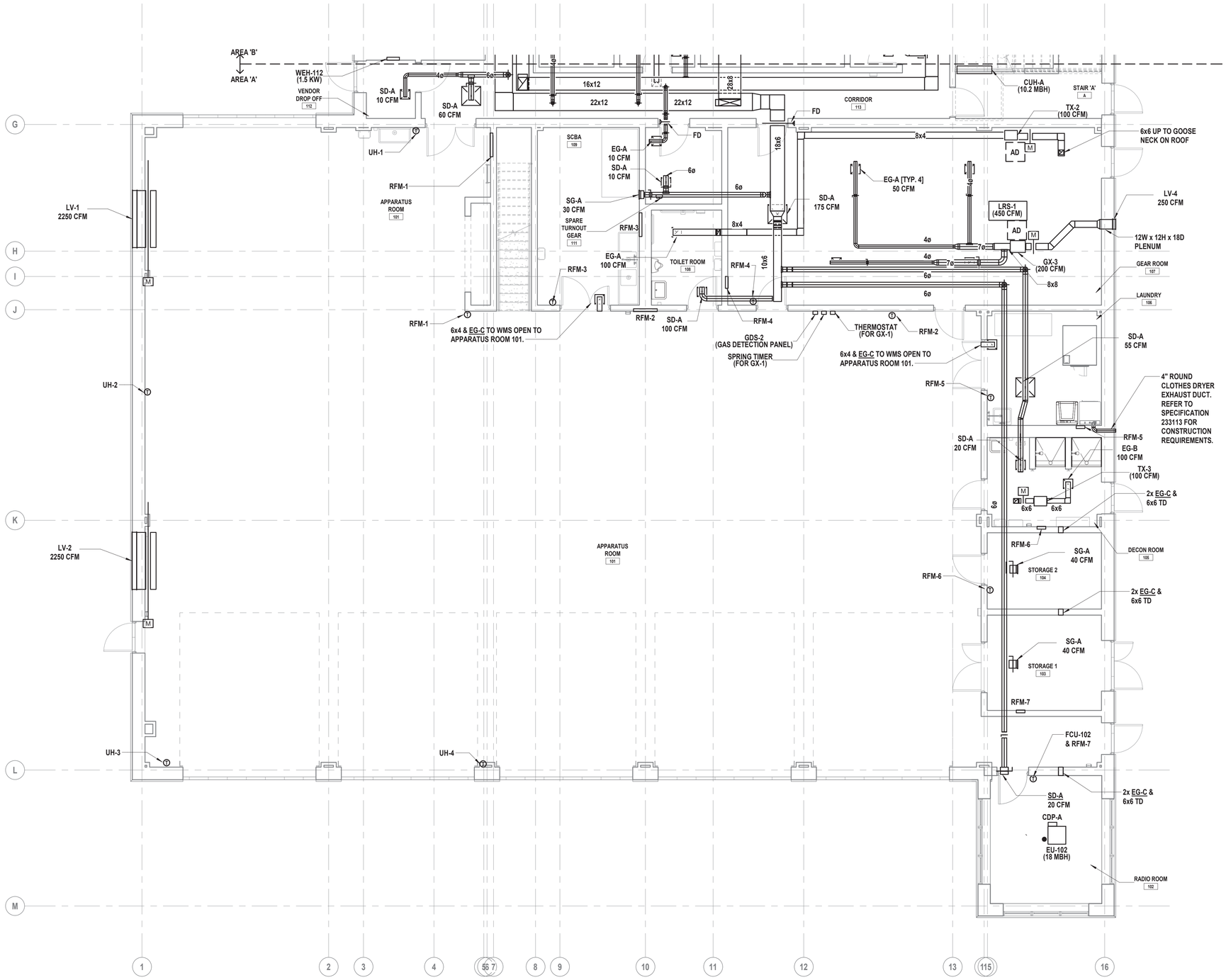
SHEET TITLE

SECOND FLOOR HVAC PIPING PLAN AREA B

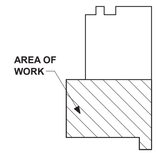
DRAWING No.

M2 102B.02



1 First Floor Ductwork Plan

SCALE: 3/16" = 1'-0"



Key Plan

SCALE: N.T.S.

GENERAL NOTES:

1. ALL DUCT SIZES ARE CLEAR INSIDE DIMENSIONS. REFER TO SPECIFICATIONS FOR ALL DUCT CONSTRUCTION REQUIREMENTS.
2. ALL SUPPLY, RETURN AND EXHAUST BRANCH DUCTWORK SHALL BE PROVIDED WITH VOLUME DAMPERS.
3. MAINTAIN 10'-0" CLEARANCE BETWEEN OUTSIDE AIR AND EXHAUST AIR TERMINATIONS ON ROOF.
4. PROVIDE SOUND PROOFED PENETRATIONS THROUGH ALL NON FIRE RATED INTERIOR WALLS, USE TREMCO ACOUSTICAL SEALANT OR APPROVED EQUAL

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VAILS GATE FIRE DISTRICT

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SHEET TITLE

FIRST FLOOR DUCTWORK PLAN
AREA A

DRAWING No.

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GENERAL NOTES:

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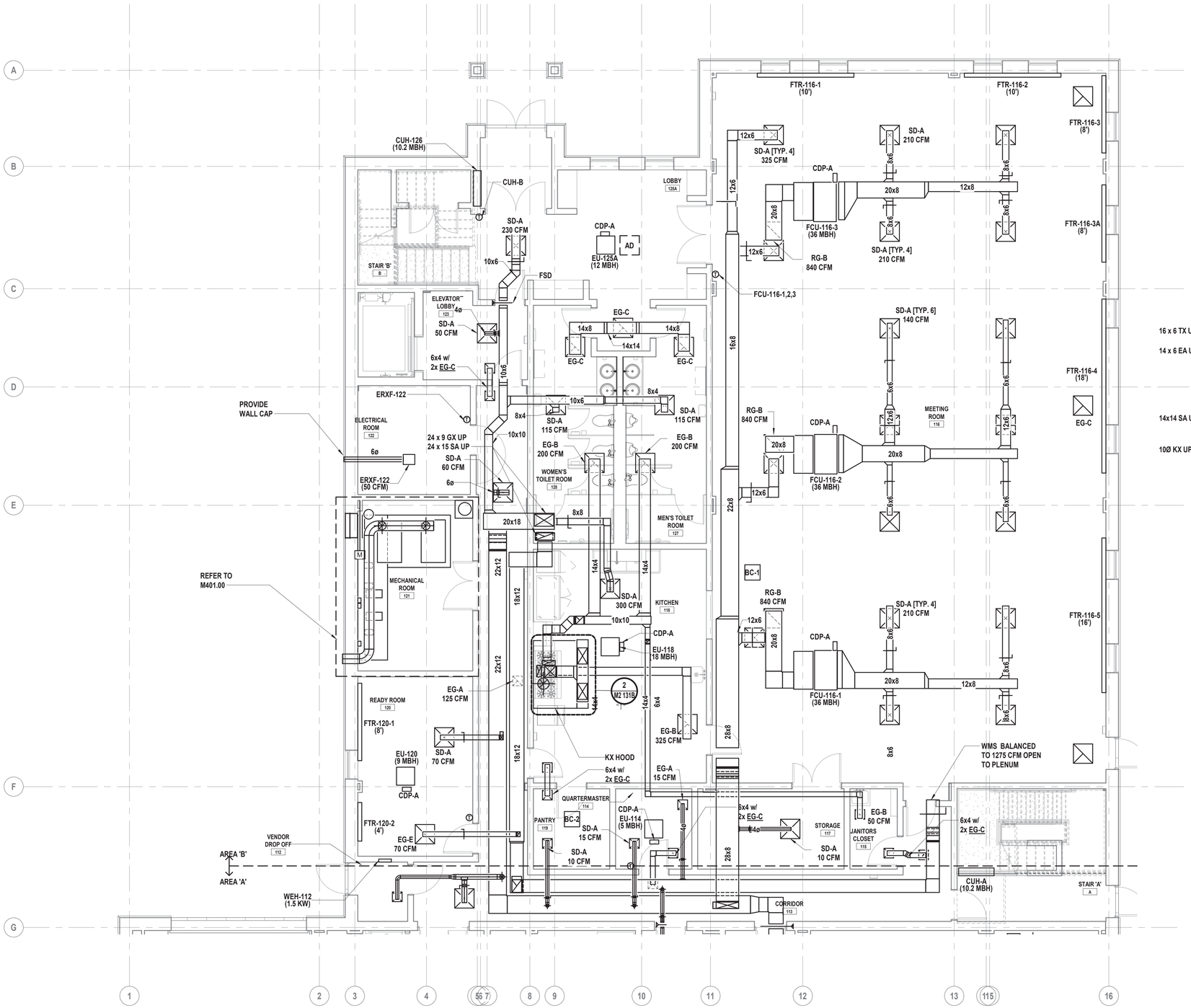
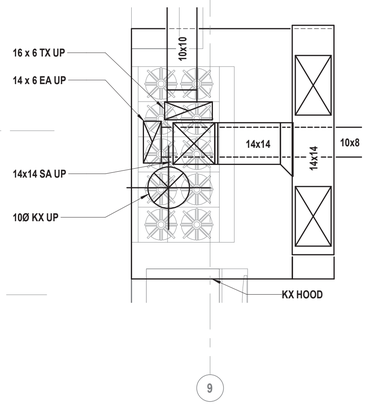
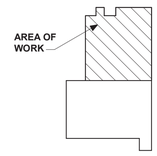


1 First Floor Ductwork Plan
SCALE: 3/16" = 1'-0"



2 HVAC KITCHEN HOOD EXPANDED VIEW
SCALE: 1/2" = 1'-0"



Key Plan
SCALE: N.T.S.

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New Fire Station (Phase II)

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FIRST FLOOR DUCTWORK PLAN AREA B

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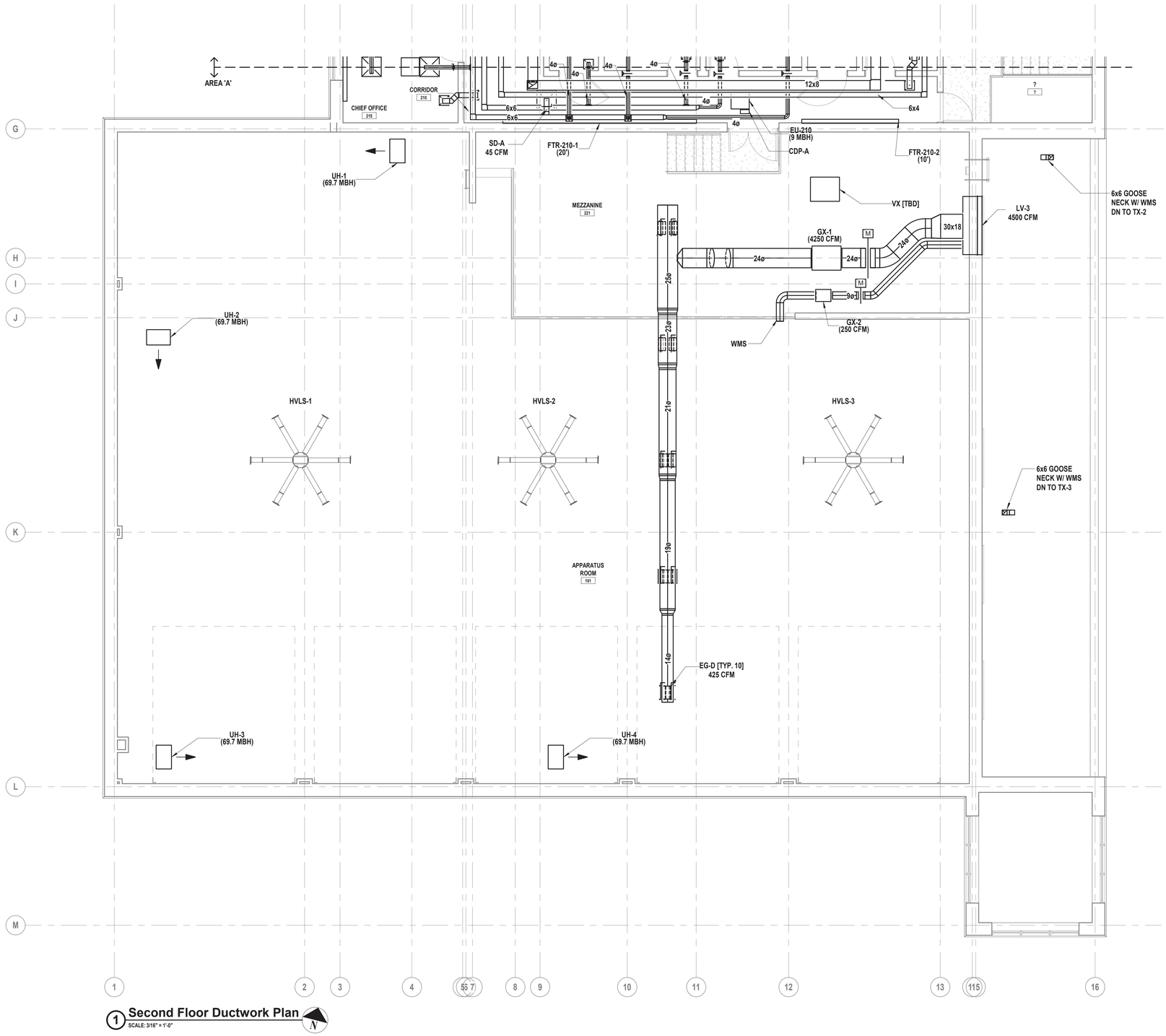

1 **Second Floor Ductwork Plan**
SCALE: 3/16" = 1'-0"

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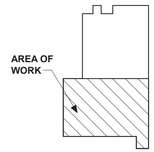

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SCALE: N.T.S.

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SHEET TITLE
SECOND FLOOR DUCTWORK PLAN AREA A

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M2 132A.00

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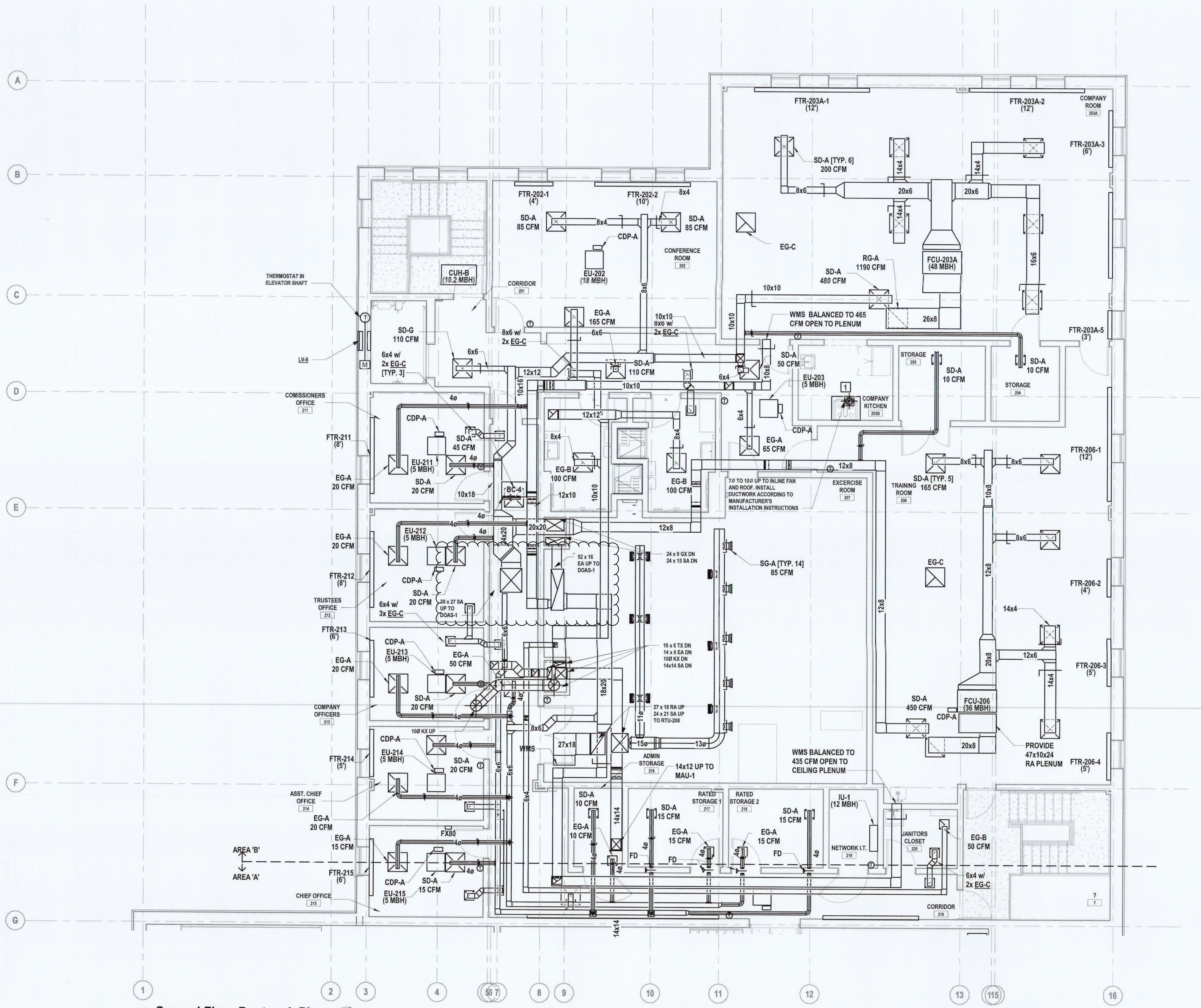
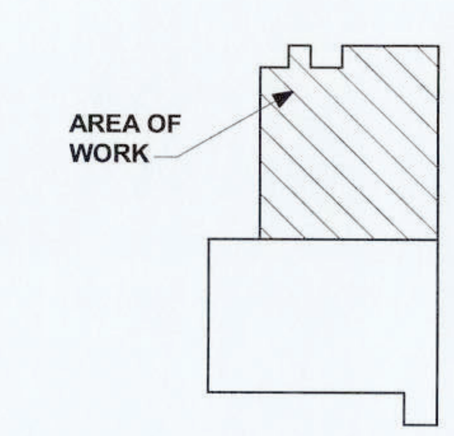


1 Second Floor Ductwork Plan
SCALE: 3/16" = 1'-0"



Key Plan
SCALE: N.T.S.

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7. REFER TO SEISMIC RESTRAINT SCHEDULE FOR DUCTWORK AND EQUIPMENT REQUIRING SEISMIC SUPPORTS

KEYED NOTES:

1 DENLAR D1030-D-IF-G HOOD AND FAN SHOWN. REFER TO ARCHITECTURAL DRAWINGS.

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SECOND FLOOR DUCTWORK PLAN AREA B

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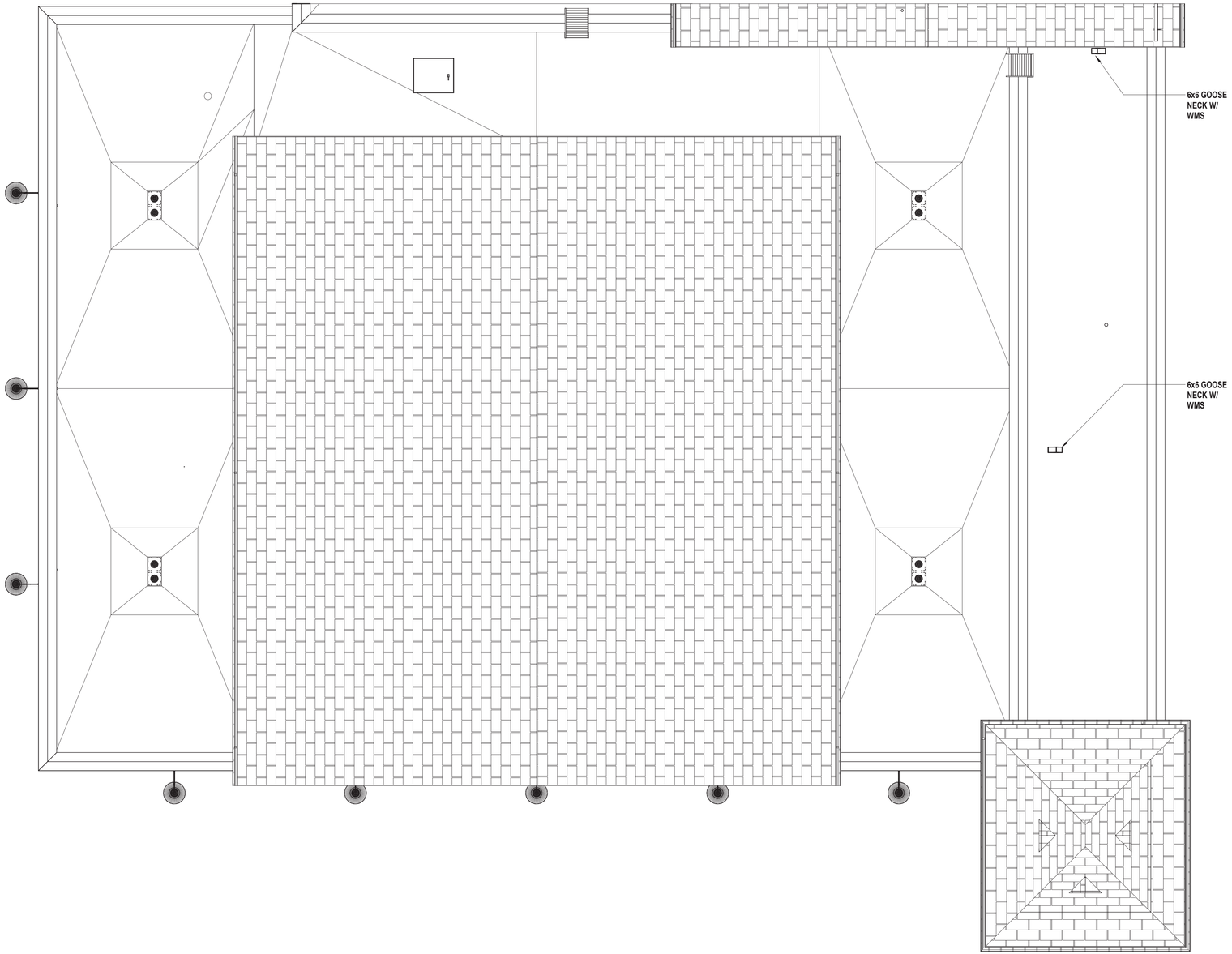
M2 132B.02



1 ROOF AREA A
SCALE: 3/16" = 1'-0"

Key Plan
SCALE: N.T.S.

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SHEET TITLE
HVAC ROOF PLAN AREA A

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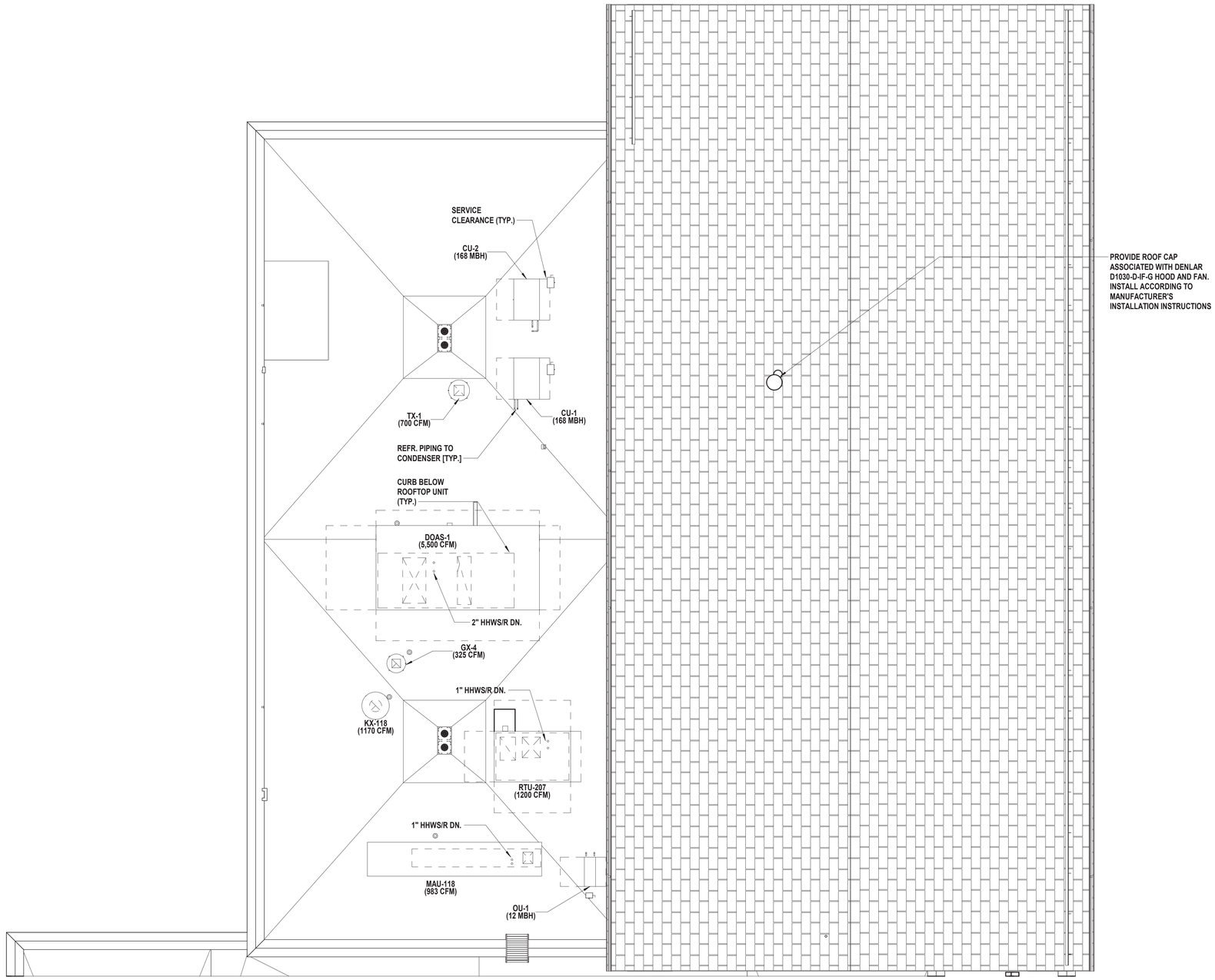
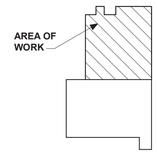


1 **ROOF AREA B**
SCALE: 3/16" - 1'-0"



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HVAC ROOF PLAN AREA B

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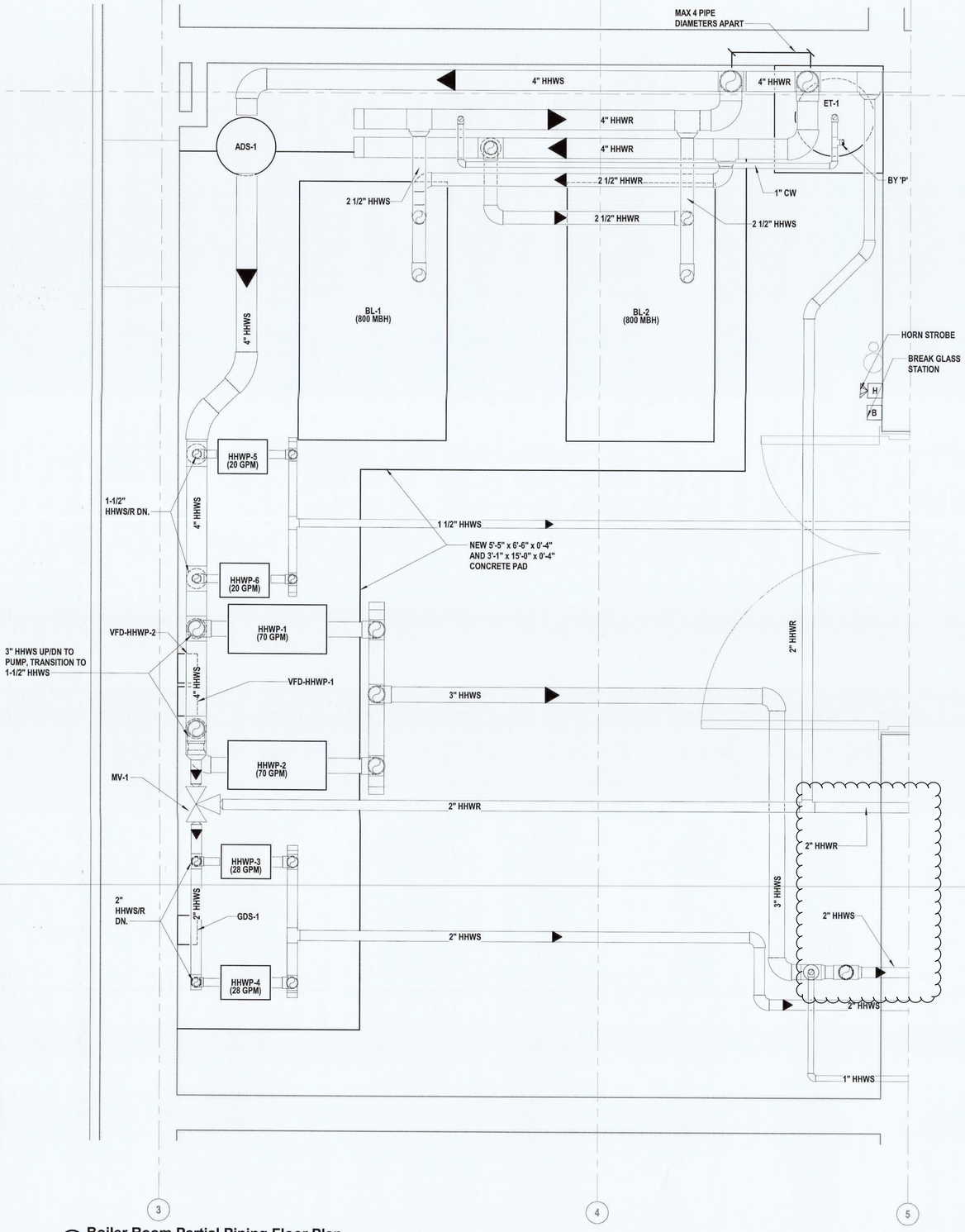

1 Boiler Room Partial Piping Floor Plan

SCALE: 1" = 1'-0"

GENERAL NOTES:

1. ALL DUCT SIZES ARE CLEAR INSIDE DIMENSIONS. REFER TO SPECIFICATIONS FOR ALL DUCT CONSTRUCTION REQUIREMENTS.
2. ALL SUPPLY, RETURN AND EXHAUST BRANCH DUCTWORK SHALL BE PROVIDED WITH VOLUME DAMPERS.
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7. REFER TO SEISMIC RESTRAINT SCHEDULE FOR DUCTWORK, PIPING AND EQUIPMENT REQUIRING SEISMIC SUPPORTS

COMBUSTION AIR REQUIRED:

BOILER GAS INPUT RATING (CFH): 800 (PER BOILER)
DOMESTIC WATER HEATER GAS INPUT RATING (MBH): 120
TOTAL GAS INPUT RATING (MBH): (800 x 2) + 120 = 1,720

*TO PROVIDE COMBUSTION AIR USING MECHANICAL COMBUSTION AIR SUPPLY IN ACCORDANCE WITH SECTION 304.9 OF THE 2020 NYS FUEL GAS CODE AND SECTION 701.1 OF THE 2020 NYS MECHANICAL CODE (I.E. NFPA 31).

VOLUMETRIC FLOW RATE OF COMBUSTION AIR REQUIRED BY CODE:
1 IN^2 PER 3,000 MBH OF TOTAL INPUT RATING OF ALL APPLIANCES LOCATED WITHIN THE SPACE

FREE AREA REQUIRED:
1,720 MBH x (1 IN^2 / 3,000 BTU/HR) = 573.33 IN^2 * 1 FT^2 / 144 IN^2 = 3.98 FT^2
COMBUSTION AIR FREE AREA PROVIDED: 4.07 FT^2 > 3.98 FT^2

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SHEET TITLE
BOILER ROOM EXPANDED HVAC PIPING PLAN

DRAWING No.
M2 401.02

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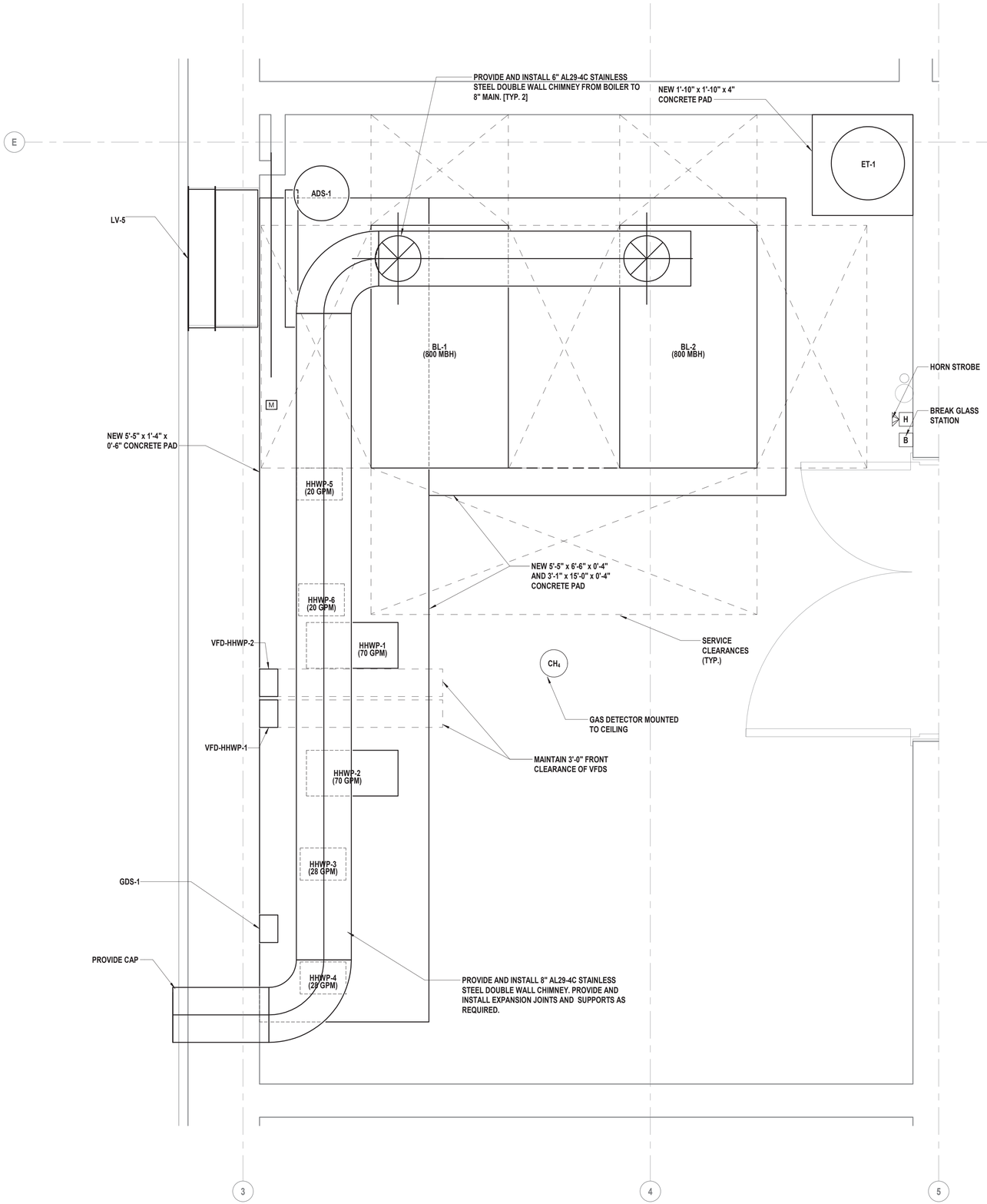

1 Boiler Room Partial Equiment and Breeching Floor Plan

SCALE: 1" = 1'-0"

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SHEET TITLE

BOILER ROOM EXPANDED HVAC EQUIPMENT AND DUCTWORK PLAN

DRAWING No.

M2 431.00

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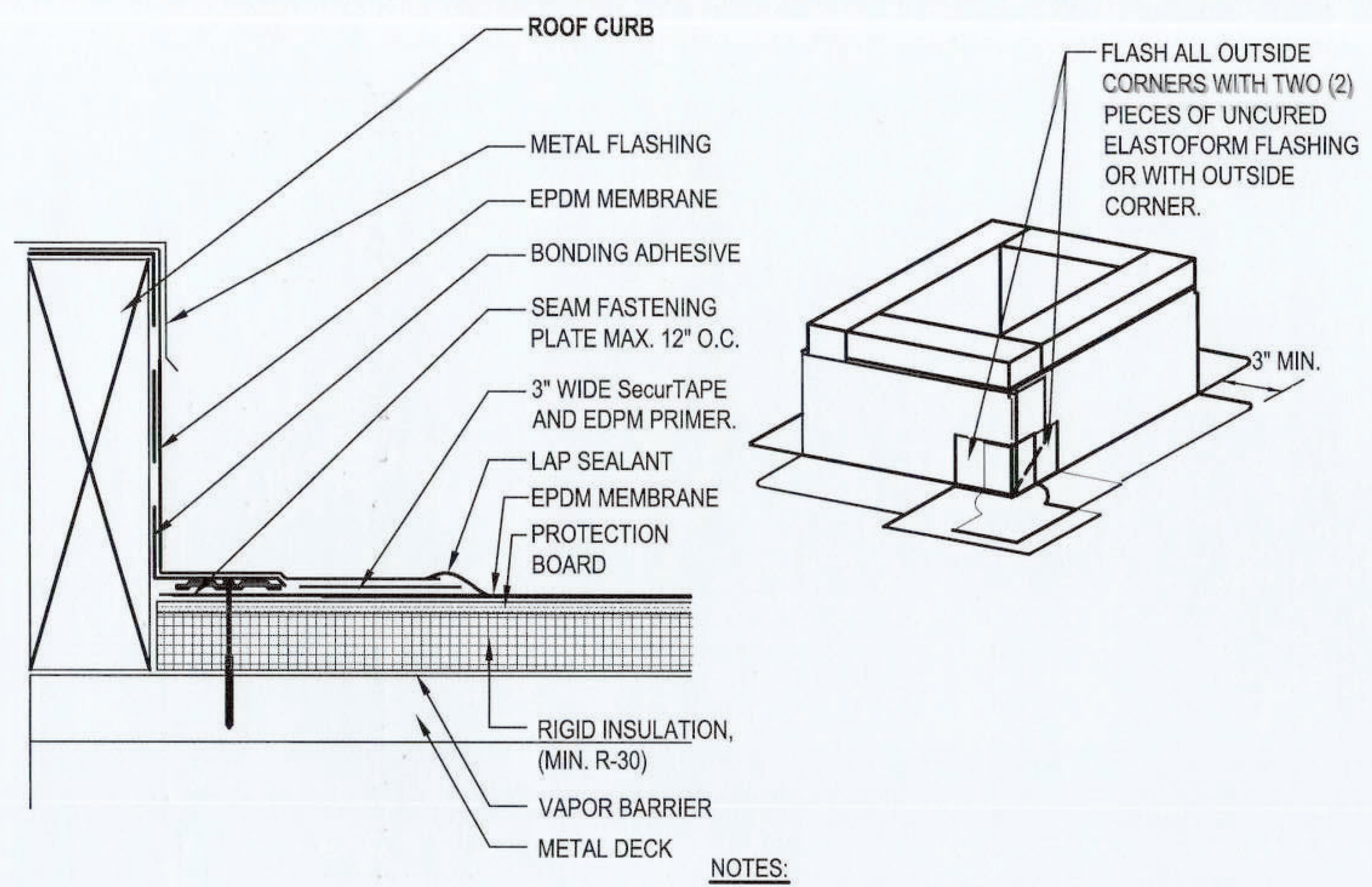
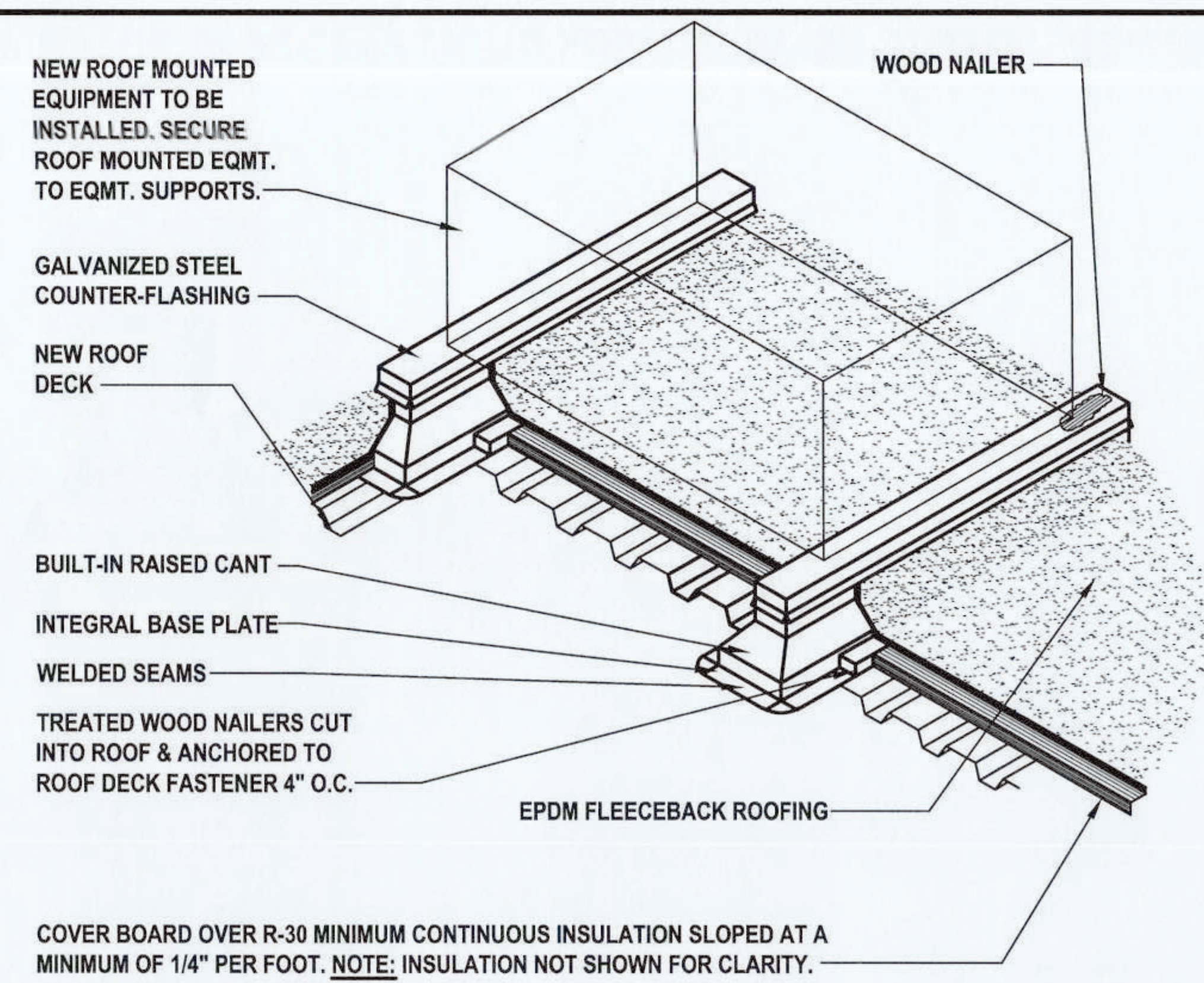


NOTES:

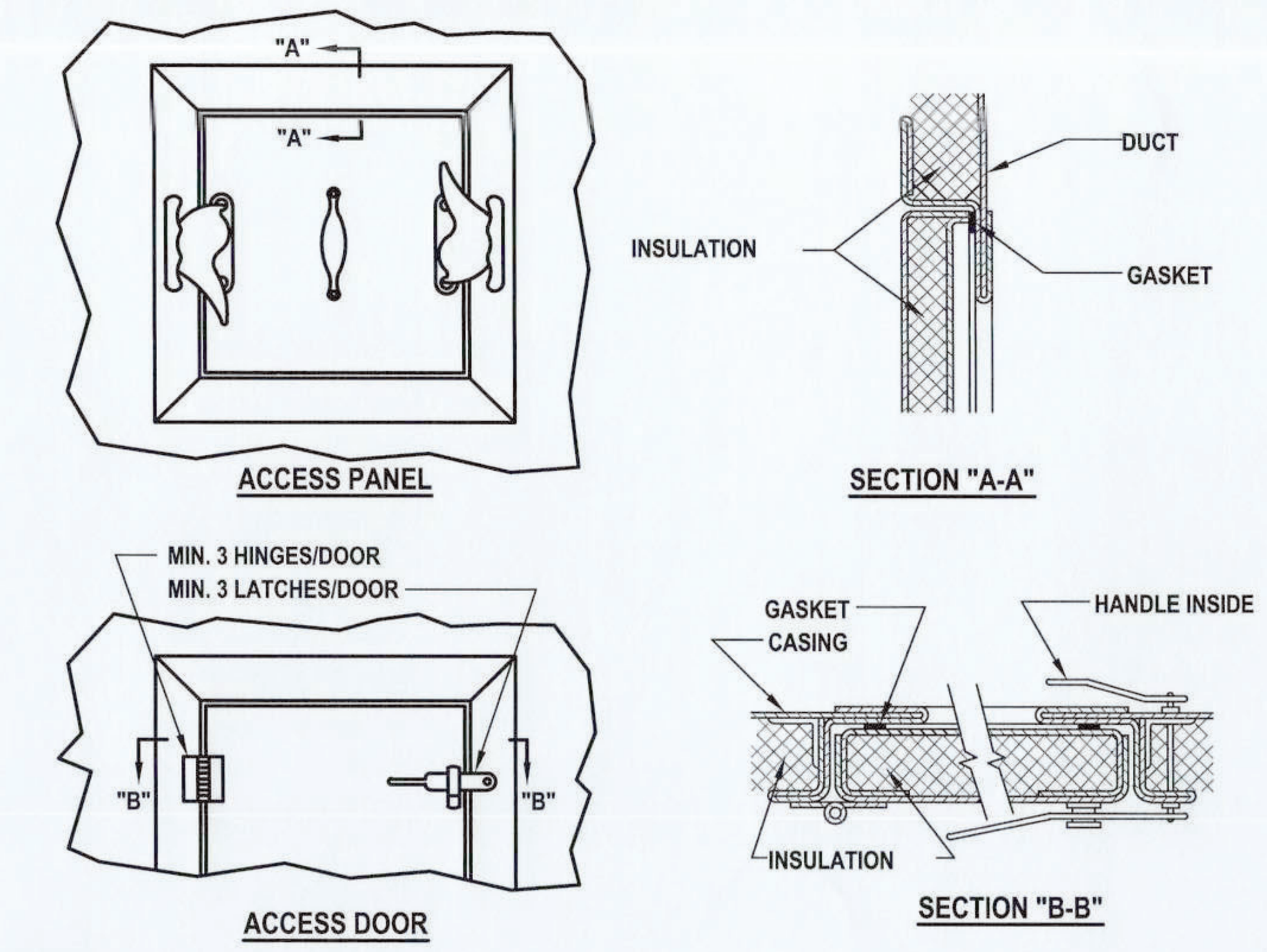
1. IF VERTICAL SPLICE IS NOT LOCATED AT CORNER, 6" WIDE UNCURED ELASTOFORM FLASHING OR PRESSURE-SENSITIVE FLASHING MUST BE CENTERED OVER FIELD SPLICE AT ANGLE CHANGE.
2. FASTENING PLATES MAY BE INSTALLED VERTICALLY.
3. APPLY PRIMER PRIOR TO INSTALLING SecurTAPE.
4. LAP SEALANT IS REQUIRED ON ALL FLASHING EDGES.

1 Roof Curb Detail
SCALE: NTS



COVER BOARD OVER R-30 MINIMUM CONTINUOUS INSULATION SLOPED AT A MINIMUM OF 1/4" PER FOOT. NOTE: INSULATION NOT SHOWN FOR CLARITY.

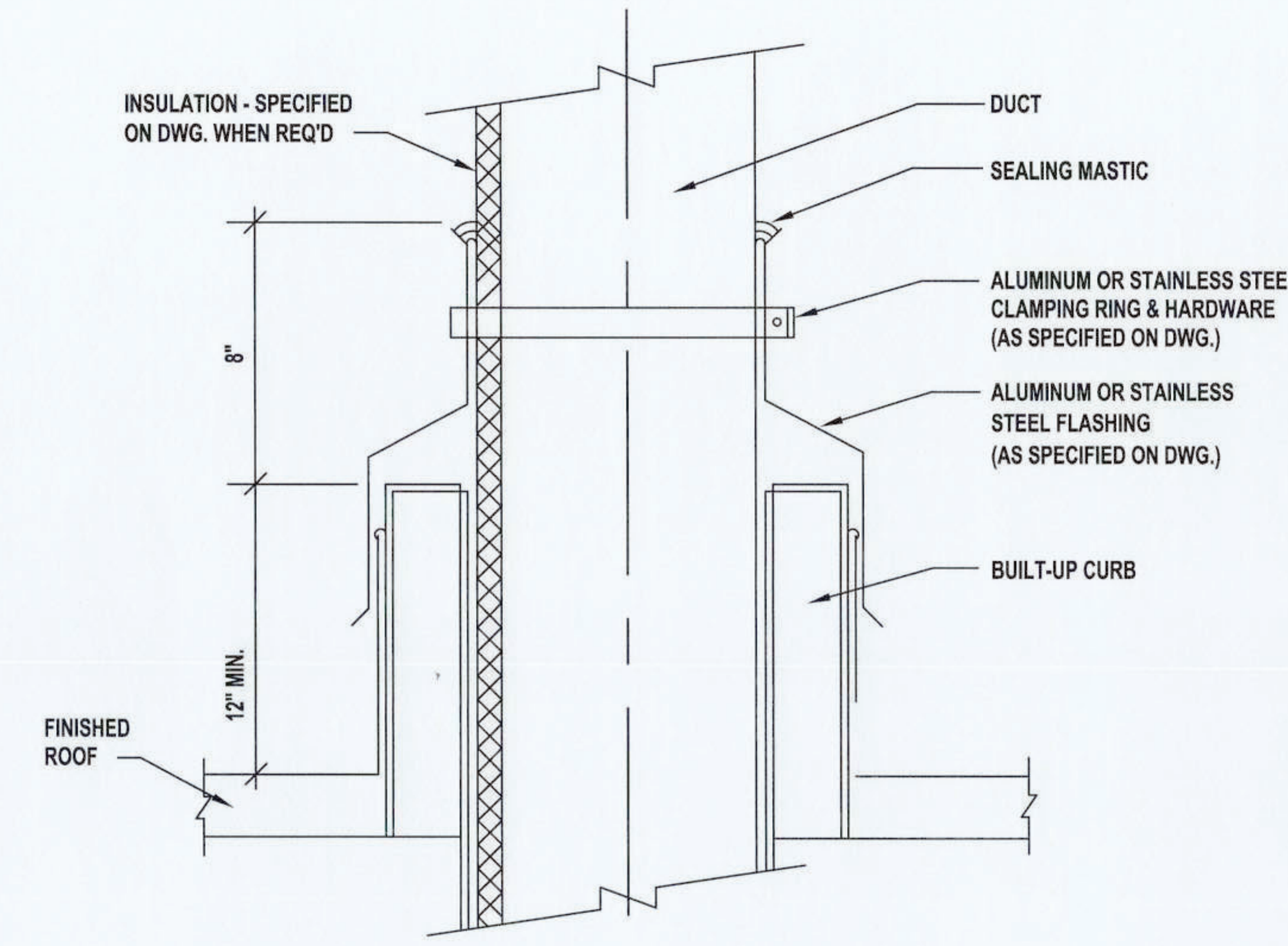
2 Equipment Support Detail
SCALE: NTS



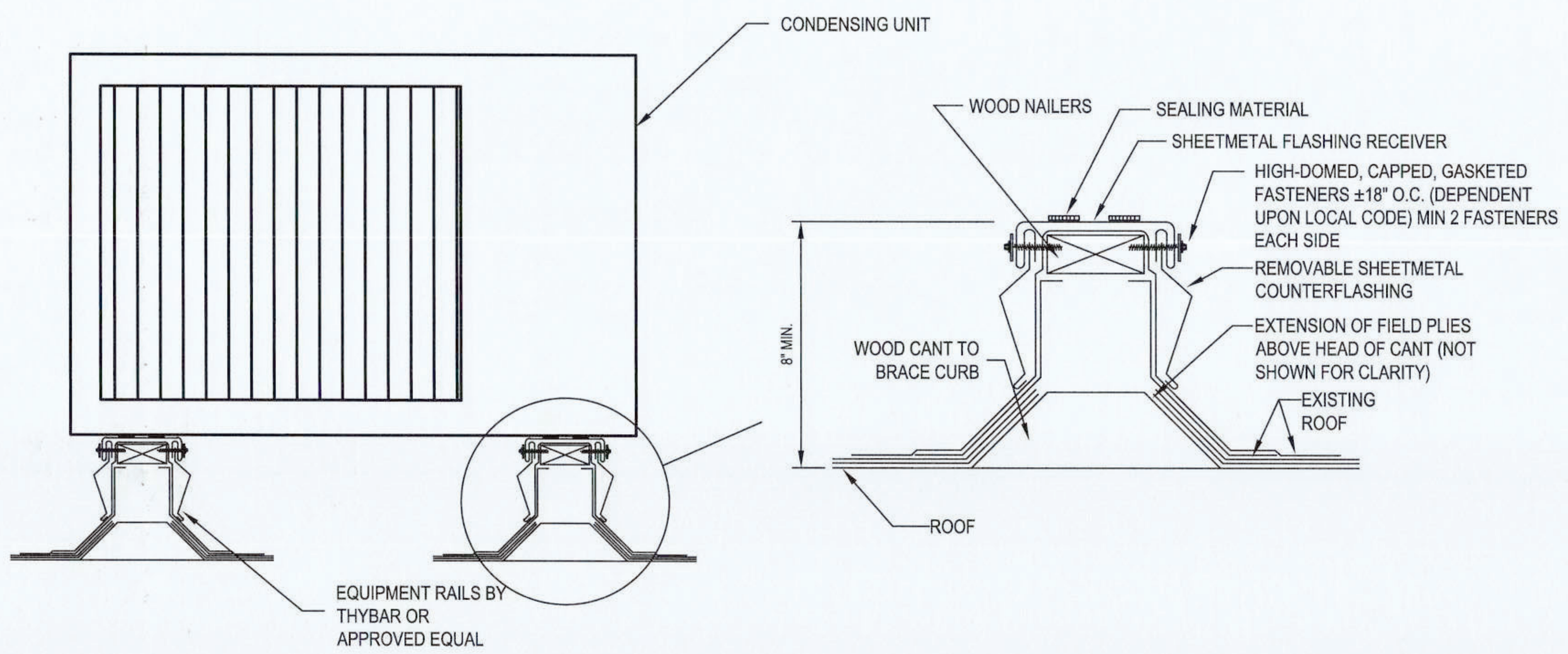
NOTES:

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

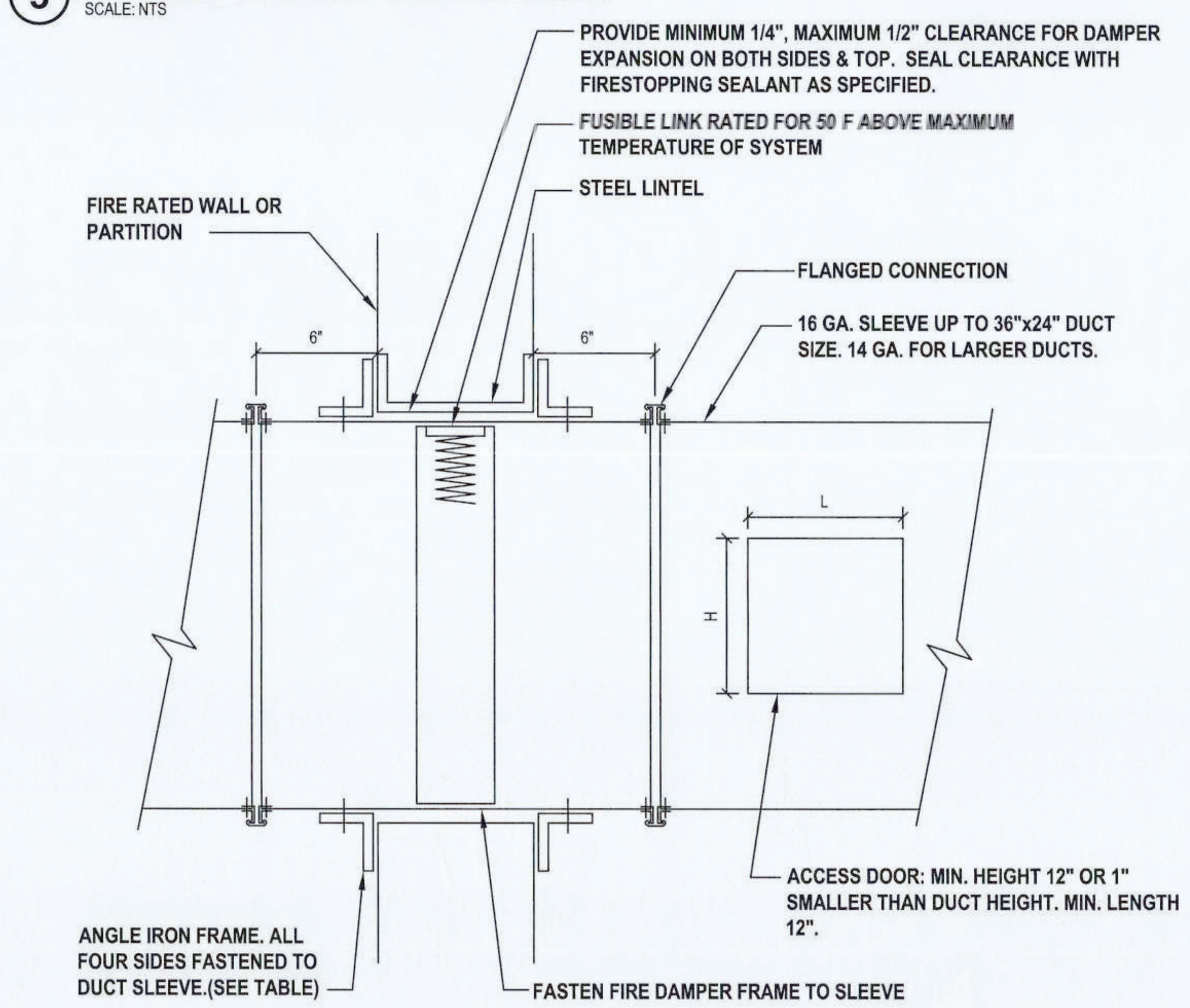
3 Access Door & Panel Details
SCALE: NTS



4 Duct Roof Penetration Detail
SCALE: NTS



5 Condensing Unit Curb Detail
SCALE: NTS



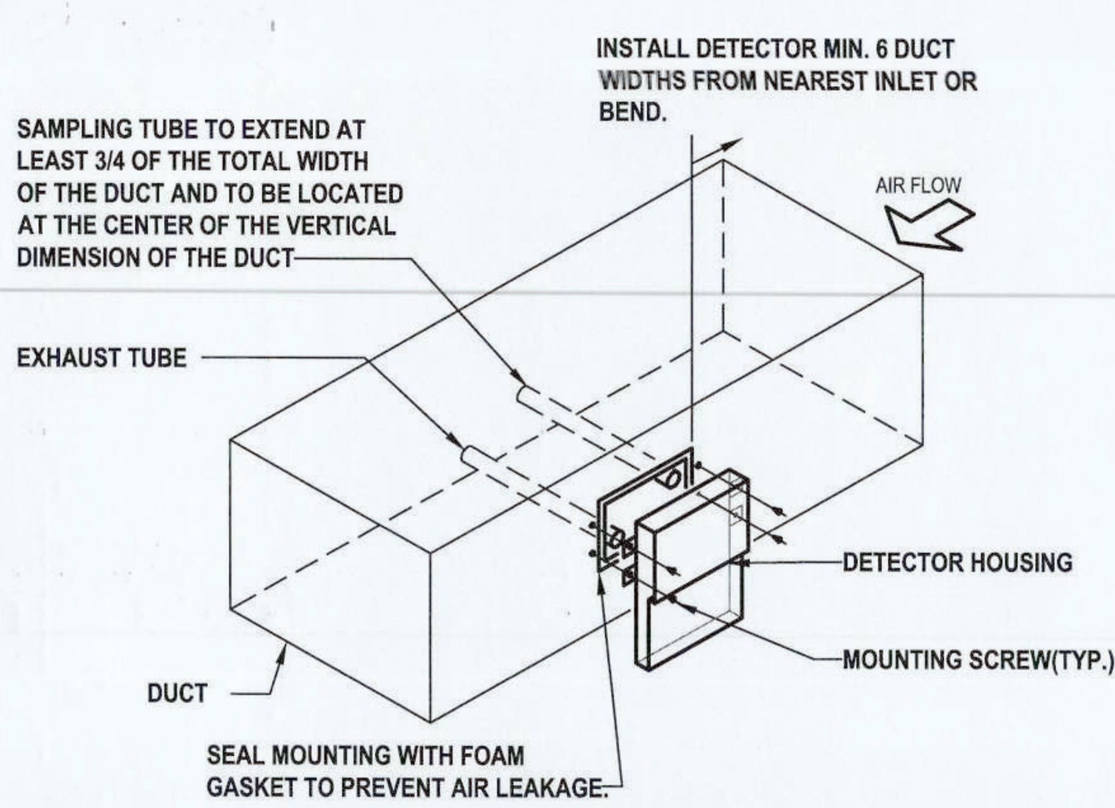
GENERAL NOTES:

1. FIRE DAMPER TO BE U.L. LABELED N.F.P.A. 90A.
2. N.F.P.A. APPROVED INSTALLATION DETAILS TO BE PART OF SUBMISSION OF FIRE DAMPER FOR APPROVAL, WHICH SHALL MEET N.F.P.A. STANDARD 90A.
3. DETAILS SHOWN ARE FOR FIRE DAMPERS IN HORIZONTAL DUCTWORK. FOR FIRE DAMPERS IN VERTICAL DUCTWORK, DETAILS SIMILAR EXCEPT DAMPERS SHALL BE SPRING LOADED.
4. U.L. APPROVED BREAKAWAY SLIP JOINT CONNECTION MAY BE USED IN LIEU OF FLANGED CONNECTION.
5. ACCESS DOOR IS SHOWN ON SIDE OF DUCT. IF FUSIBLE LINK IS MORE ACCESSIBLE FROM BOTTOM OF DUCT, RELOCATE ACCESS DOOR.
6. FROM FIRST 10'-0" OF FAN DISCHARGE DUCTS AND FOR DUCT SIZES LESS THAN 6" DEEP, FIRE DAMPER BLADES SHALL BE INSTALLED IN POCKET OUTSIDE OF AIR STREAM.

ANGLE IRON TABLE

WALL OPENING	ANGLE SIZE
UP TO 30"	1"x1"x1/8"
31" TO 54"	1-1/2"x1-1/2"x1/8"
55" TO 84"	3"x2"x3/16"
85" TO 120"	3"x2"x3/16"

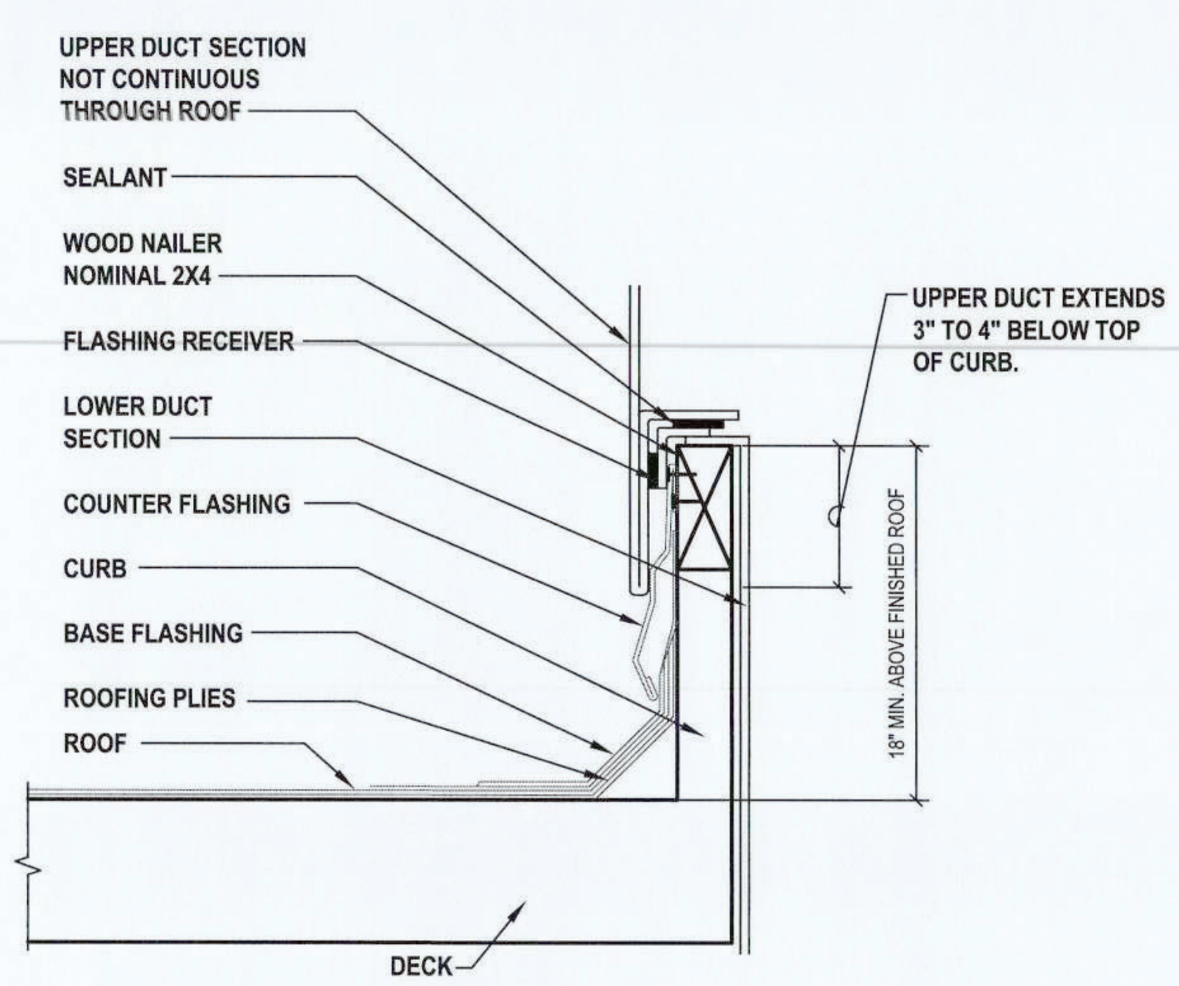
6 Low Pressure Fire Damper Detail
SCALE: NTS



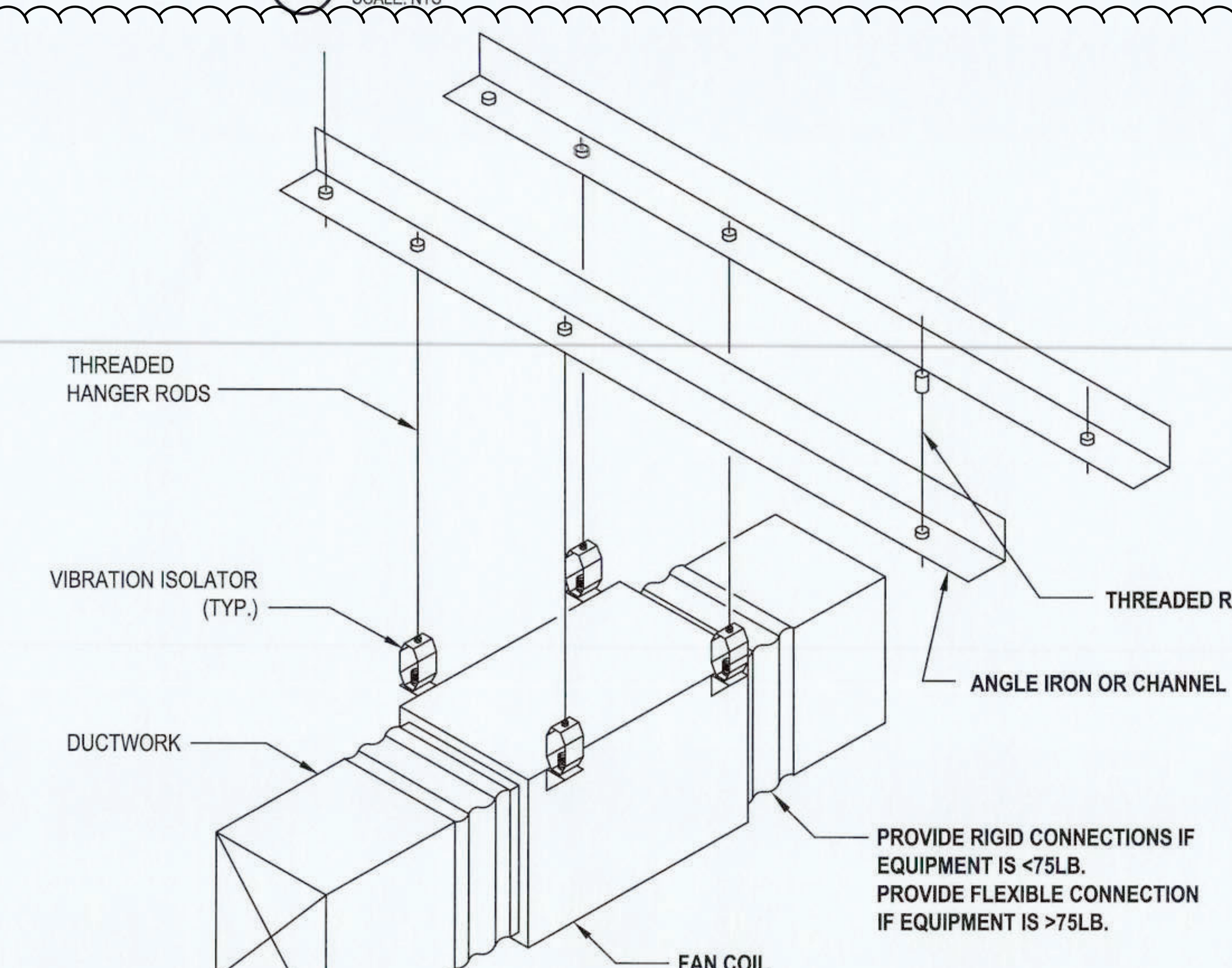
NOTES:

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

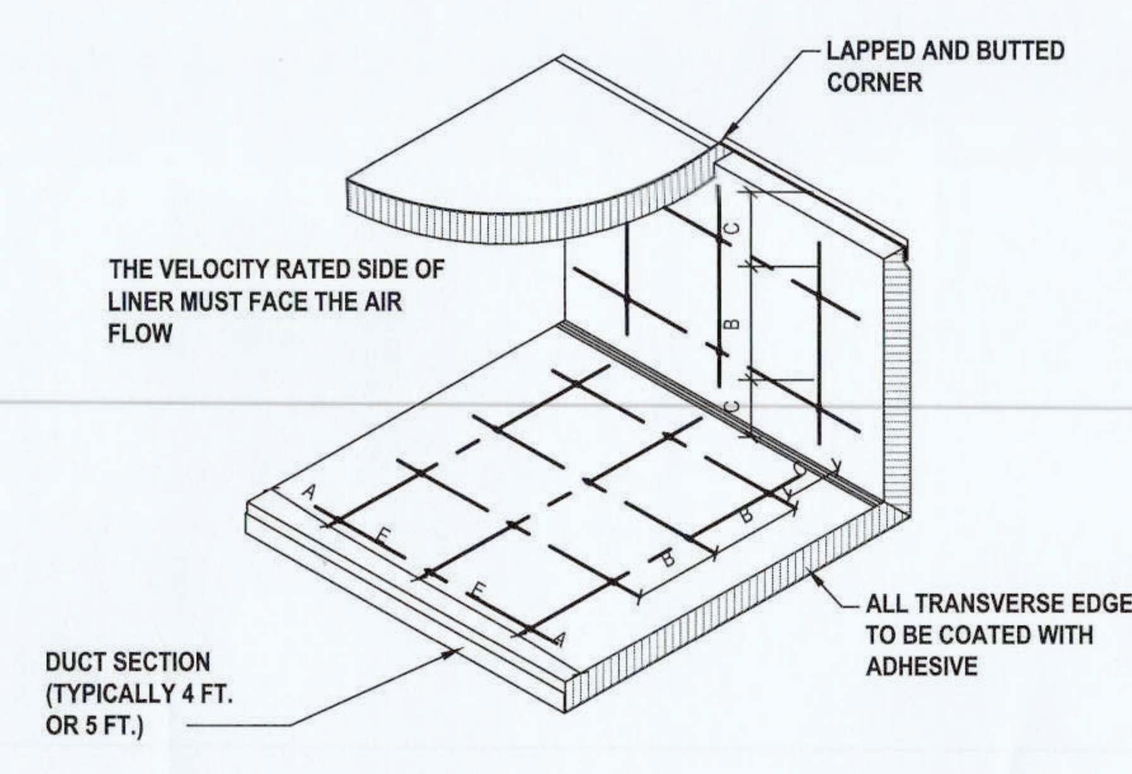
7 Duct Mounting Smoke Detector Detail
SCALE: NTS



8 Ductwork Roof Penetration Detail
SCALE: NTS



9 Inline Fan Coil Hanging Support Detail
SCALE: NTS



MAXIMUM SPACING FOR FASTENERS. ACTUAL INTERVALS ARE APPROXIMATE.

LINER ADHERED TO THE DUCT WITH 90% MIN. AREA COVERAGE OF ADHESIVE

VELOCITY*	DIMENSIONS			
	A	B	C	E
0-1500 FPM	3"	12"	4"	18"
1501-3500 FPM	3"	6"	4"	16"

* UNLESS A LOWER LEVEL IS SET BY MANUFACTURER OR LISTING AGENCY

10 Acoustical Liner Fastening Detail
SCALE: NTS

H2M architects + engineers
538 Broad Hollow Road, 4th Floor East
Melville, NY 11747
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CONSULTANTS:

MARK	DATE	DESCRIPTION
2	12/22/2022	REVS. PER TOWN COMMENTS

STATE OF NEW YORK · LICENSED PROFESSIONAL ENGINEER · 303

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DESIGNED BY:	DRAWN BY:	CHECKED BY:	REVIEWED BY:
DKR	DKR	MJV	JML

PROJECT No.:	DATE:	SCALE:
VGFD2001	JULY 2022	AS SHOWN

CLIENT

VAILS GATE FIRE DISTRICT

New Storage Building (Phase I)
New Fire Station (Phase II)

872 Blooming Grove Turnpike
New Windsor, NY 12553

CONTRACT

CONTRACT G
GENERAL CONSTRUCTION

STATUS

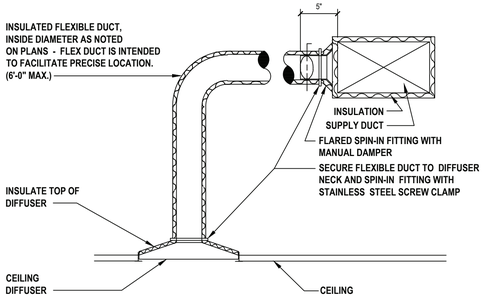
FINAL BID DOCUMENT

SHEET TITLE

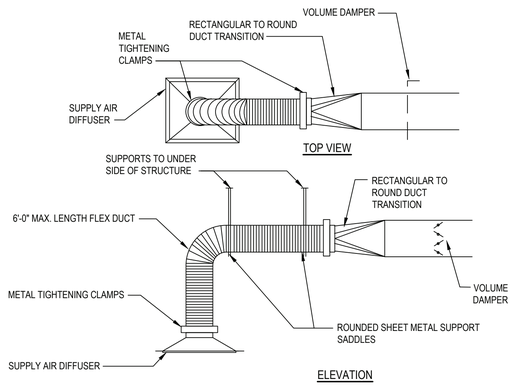
HVAC DETAILS (1 OF 4)

DRAWING No.

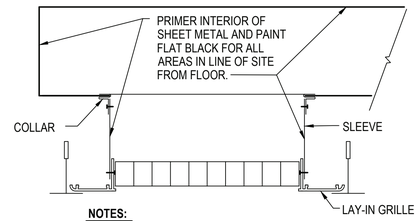
M2 500.02



1 Ceiling Diffuser Connection
SCALE:NTS



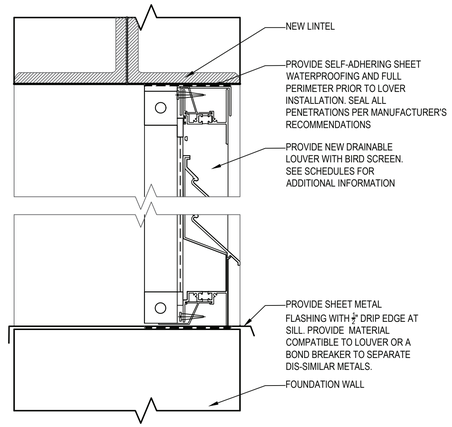
2 Round Neck Diffusers
SCALE:NTS



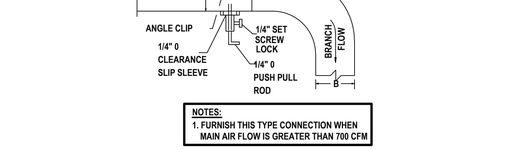
NOTES:

1. PROVIDE A GRILLE WITH A LAY-IN, ALUMINUM FRAME/ BORDER.
2. PROVIDE CONCEALED SCREW HOLES IN NECK.
3. PROVIDE CLINCH LOCK DUCT COLLAR AND TELESCOPIC SLEEVE.
4. SECURE GRILLE FRAME/ TO SLEEVE AND DUCT COLLAR TO SLEEVE.

3 Ducted Exhaust Ceiling Grille Detail
SCALE:NTS

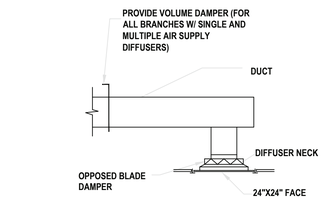


4 Typical Louver Detail
SCALE: NTS

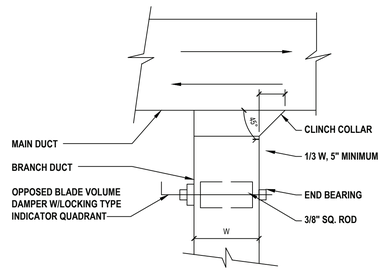


NOTES:
1. FURNISH THIS TYPE CONNECTION WHEN MAIN AIR FLOW IS GREATER THAN 700 CFM

5 Throat & Splitter Damper Supply Duct Branch
SCALE: NTS

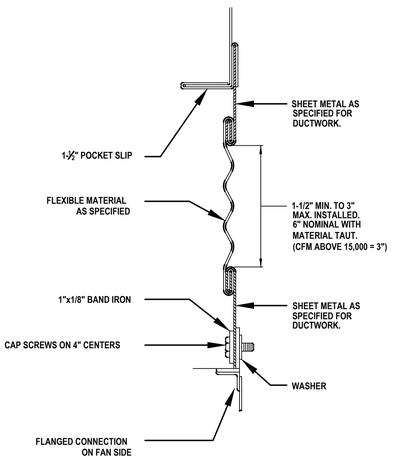


6 Diffuser Detail Supply Air
SCALE: NTS

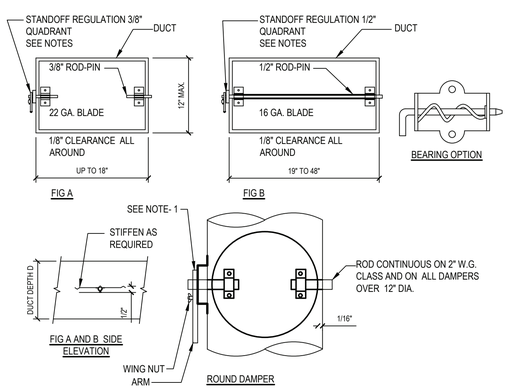


NOTE:
1. FURNISH THIS TYPE OF CONNECTION WHEN SINGLE LINE DUCTWORK IS INDICATED AS SHOWN FOR LOW PRESSURE BRANCHES WITH LESS THAN 33% CAPACITY OF MAIN DUCT.

7 Duct Branch Takeoff For Low Pressure Ductwork
SCALE:NTS

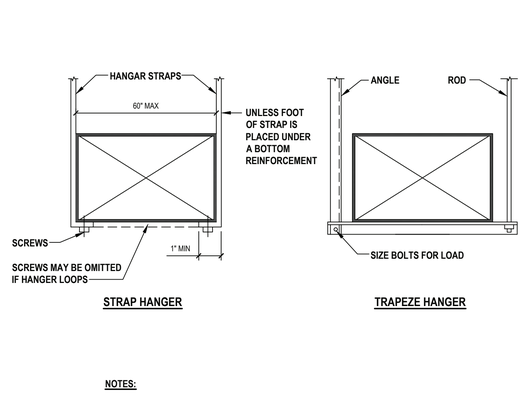


8 Flexible Duct Connection Detail
SCALE: NTS



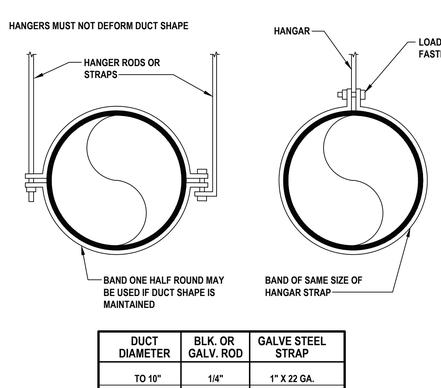
NOTES:
1. PROVIDE 2" HIGH STANDOFF REGULATORS FOR EXTERNALLY INSULATED DUCTWORK. PROVIDE REGULATORS WITH SEALS. DURO-DYNE MODEL ES0.
2. STANDOFF BASE HEIGHT TO MATCH INSULATION THICKNESS. BASE CONSTRUCTION 16 GAUGE.
3. RAPIT DAMPER REGULATORS AND JIFFY DAMPERS ARE NOT ACCEPTABLE ON RECTANGULAR OR ROUND DUCTWORK.

9 Volume Dampers - Single Blade Type
SCALE:NTS



NOTES:
1. SIZE ALL SUPPORTS IN ACCORDANCE WITH THE SMACNA DUCT CONSTRUCTION STANDARDS, LATEST EDITION.

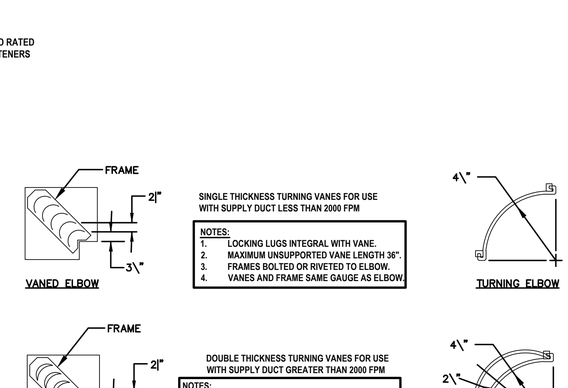
10 Hanger Detail
SCALE:NTS



DUCT DIAMETER	BLK. OR GALV. ROD	GALVE STEEL STRAP
TO 10"	1/4"	1" X 22 GA.
11" TO 18"	1/4"	1" X 22 GA.
19" TO 24"	1/4"	1" X 22 GA.

NOTES:
1. SPACING 8'-0" ON CENTERS MAX

11 Round Duct Hangers
SCALE: NTS



12 Turning Vanes For Square Elbows
SCALE: NTS

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Melville, NY 11747
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CONSULTANTS:

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STATE OF NEW YORK · JOHN LAMEY · 101303 · LICENSED PROFESSIONAL ENGINEER

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DKR	DKR	MJV	JML

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New Fire Station (Phase II)

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New Windsor, NY 12553

CONTRACT

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GENERAL CONSTRUCTION

STATUS

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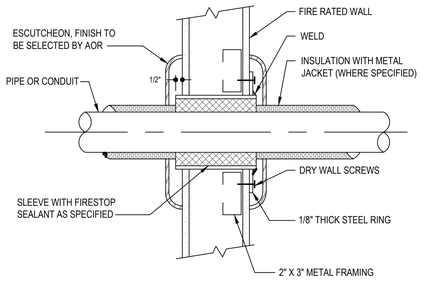
SHEET TITLE

HVAC DETAILS (2 OF 4)

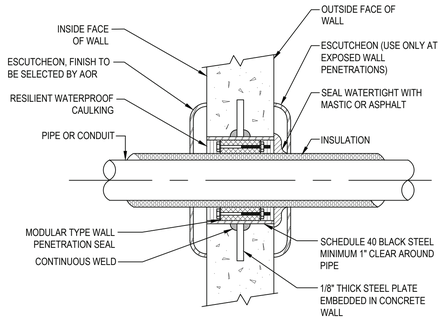
DRAWING No.

M2 501.00



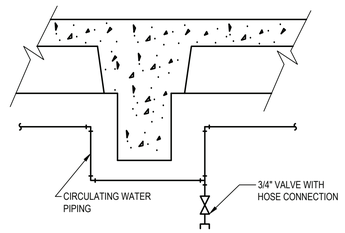
Pipe or Conduit Penetration Through Fire Rated Walls

SCALE: NTS (DETAIL #)



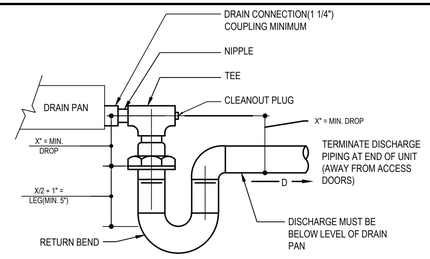
Pipe or Conduit Penetration Through Exterior Walls

SCALE: NTS



3 Draining Low Points in Piping Detail

SCALE: NTS



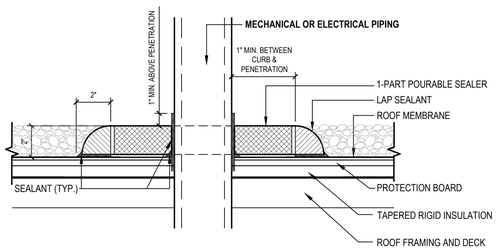
X = NEGATIVE INTERNAL STATIC PRESSURE AT FAN INLET(IN.)

NOTES:

1. ALLOW SUFFICIENT SPACE BELOW DRAIN PAN FOR TRAP.
2. PITCH DRAIN FOR PROPER RUN-OFF.
3. MANUALLY PRIME FILL TRAP BEFORE START-UP TO FORM INITIAL DRAIN SEAL.
4. SUPPORT LENGTHY DRAIN LINES TO PREVENT SAG AND CONDENSATE OVERFLOW.
5. PROVIDE DRAIN SEAL AT EACH AC UNIT.

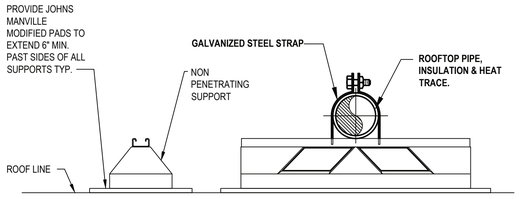
4 Drain Pan Water Seal Piping Draw-Thru Unit

SCALE: NTS (DETAIL #)



Pitch Pocket Detail

SCALE: NTS (DETAIL #)

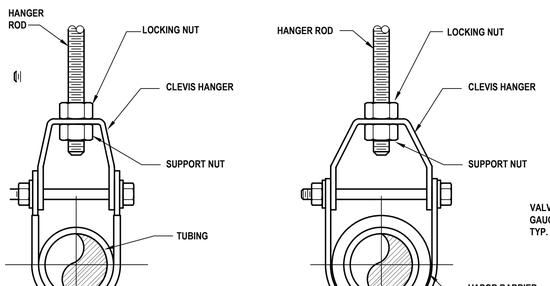


NOTES:

1. INSTALLATION ALSO TYPICAL FOR ROLLER ROOFTOP PIPE SUPPORTS.
2. SEE SPECIFICATION SECTION 230529 FOR INFORMATION ON ROOF TOP PIPE SUPPORT SYSTEM.

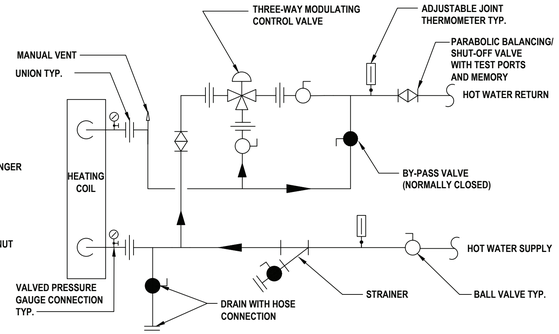
6 Roof Pipe Support Detail

SCALE: NTS



7 Copper Tubing Hanger Details

SCALE: NTS

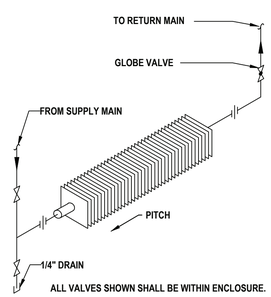


NOTES:

1. ARRANGE PIPING TO ALLOW FOR COIL REMOVAL.

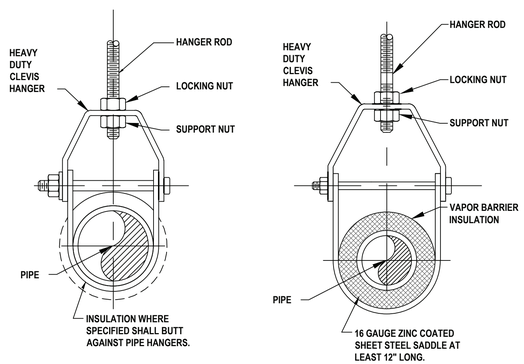
Heating Hot Water Coil Piping Diagram - Three Way Valve

SCALE: NTS



9 Hot Water Fin Tube Radiation Down Feed Piping

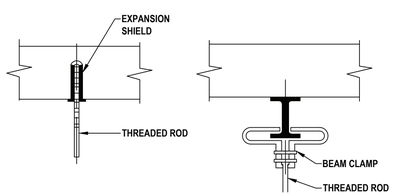
SCALE: NTS (DETAIL #)



HANGER ROD SCHEDULE			
PIPE SIZE	ROD SIZE	PIPE SIZE	ROD SIZE
UP TO 2"	3/8" DIA.	4" THRU 5"	5/8" DIA.
2 1/2" THRU 3"	1/2" DIA		

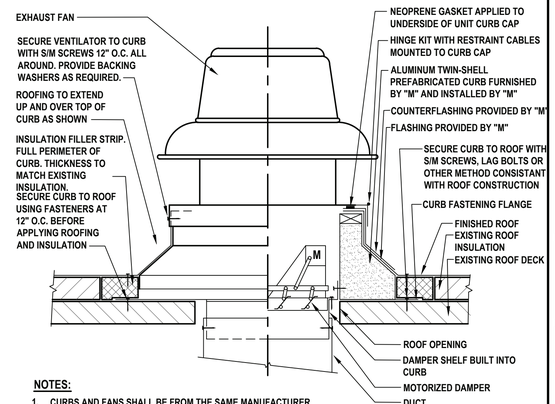
10 Steel Pipe Hanger

SCALE: NTS



11 PIPE HANGER SUPPORT DETAIL

SCALE: NTS



NOTES:

1. CURBS AND FANS SHALL BE FROM THE SAME MANUFACTURER
2. ROOF OPENING IN ACCORDANCE WITH MANUFACTURER'S APPROVED SHOP DRAWINGS
3. CURB HEIGHT SHALL BE 12" ABOVE FINISHED ROOF.

12 Roof Exhaust Fan & Curb

SCALE: NTS (DETAIL #)

H 2 M architects + engineers

538 Broad Hollow Road, 4th Floor East
Melville, NY 11747
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GENERAL CONSTRUCTION

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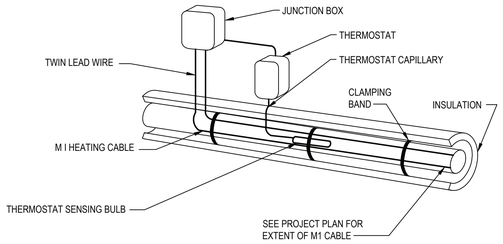
SHEET TITLE

HVAC DETAILS (3 OF 4)

DRAWING No.

M2 502.00

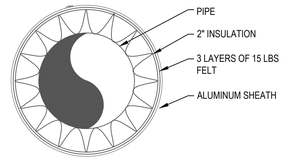


CONTROL INSTALLATION

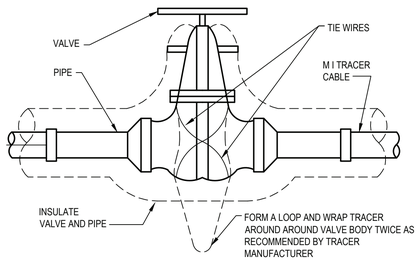
NOTES:

1. THERMOSTAT SHALL HAVE CURRENT CARRYING CAPACITY OF 120% OF INSTALLED WATTAGE OR A CONTACTOR PANEL SHALL BE INSTALLED.
2. OUTDOOR INSTALLATION SHALL BE 2" THICK GLASS FIBRE INSULATION COVERED BY THREE LAYERS OF 15 LB FELT HOT MOPPED IN PLACE AND THENCE COVERED WITH AN ALUMINUM SHEATH OF 0.016" THICKNESS AND ALL PIPING EXPOSED TO THE WEATHER SHALL BE INSULATED IN THIS MANNER.

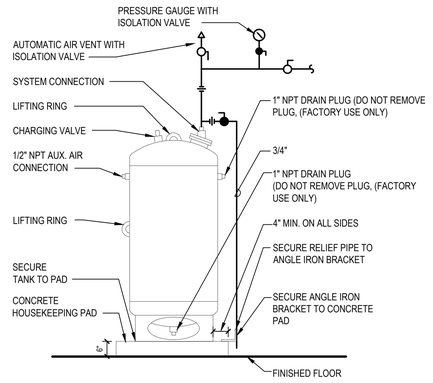
1 Typical Piping Heat Tracing Detail
SCALE: NTS



PIPE SECTION

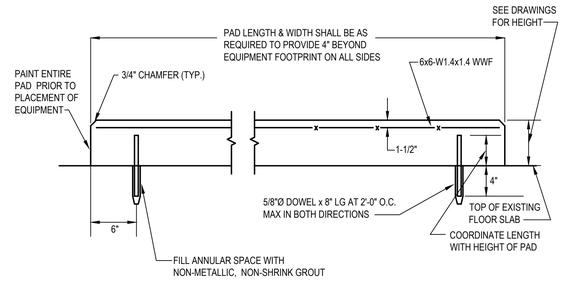


2 Typical Valve Tracing Pattern
SCALE: NTS



NOTE:
1. ADJUST FACTORY AIR CHARGE PRESSURE TO BUILDING OPERATING STATIC HEAD PRESSURE PRIOR TO FILLING TANK WITH WATER.

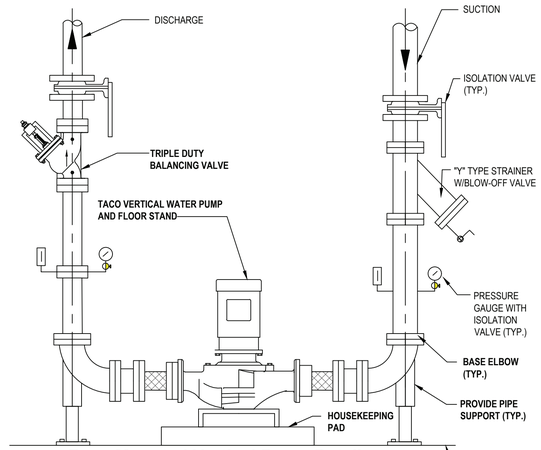
3 Diaphragm Expansion Tank
SCALE: NTS



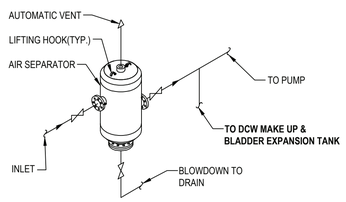
NOTES:

1. CONTRACTOR SHALL RETAIN THE SERVICES OF A UTILITY MARKOUT COMPANY TO LOCATE UTILITIES BENEATH THE SLAB PRIOR TO INSTALLING NEW DOWELS.

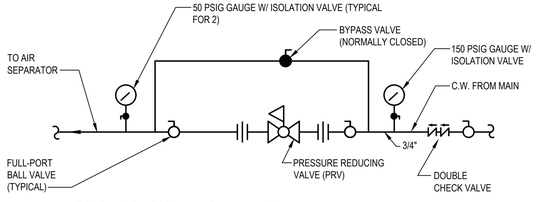
4 Typical Housekeeping Slab Section
SCALE: NTS



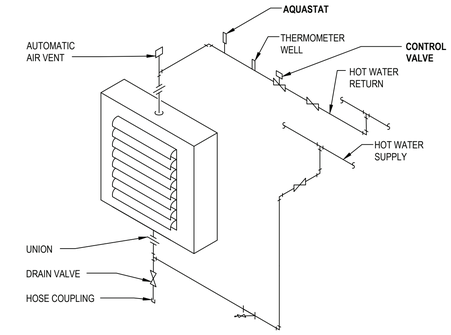
5 Base Mounted Vertical Pump Detail
SCALE: NTS



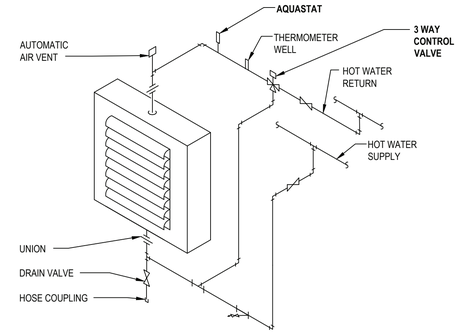
6 Air Separator
SCALE: NTS



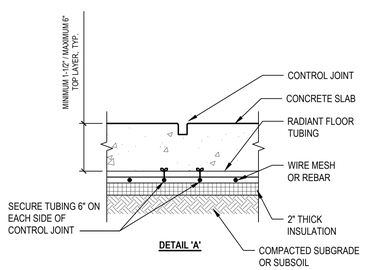
7 Make Up Water Assembly
SCALE: NTS



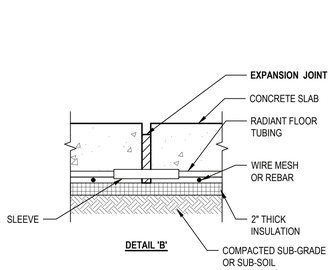
8 Hot Water Unit Heater Connections
SCALE: NTS



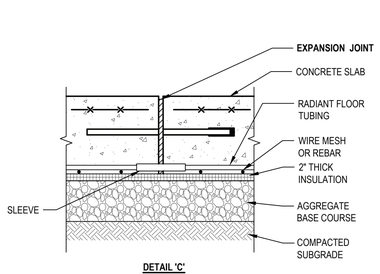
9 Hot Water Unit Heater Connections for UH-4
SCALE: NTS



DETAIL 'A'



DETAIL 'B'

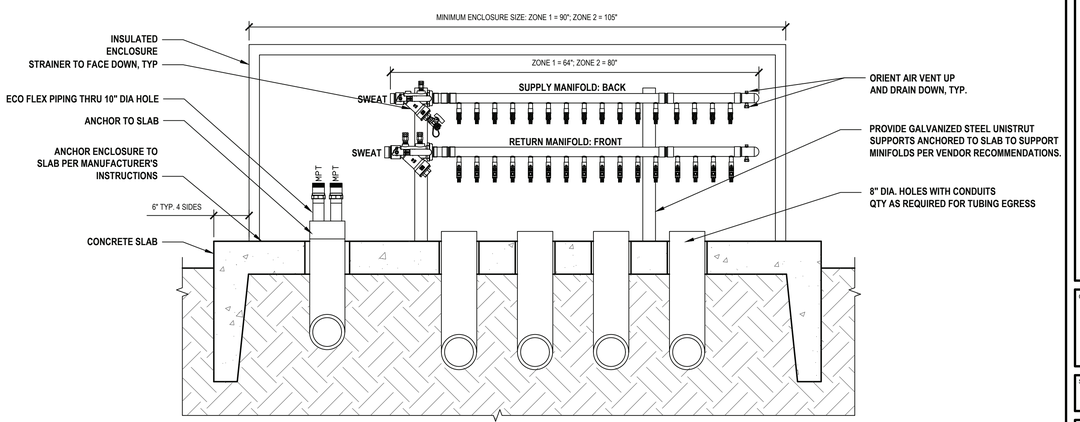


DETAIL 'C'

10 Radiant Floor Tubing Installation Detail
SCALE: NTS

NOTES:

1. **DETAIL 'A' & 'B' FOR STAMPED CONCRETE SIDEWALK - STANDARD DUTY. SIMILAR FOR HANDICAP RAMPS, STAIRS, ETC.**
2. **DETAIL 'C' FOR CONCRETE PAVEMENT - HEAVY DUTY SUCH AS APP BAYS.**
3. **REFER TO STRUCTURAL DRAWINGS FOR SLAB CONSTRUCTION AND DETAILS.**
4. **THIS DETAIL PROVIDES GENERAL INSTALLATION REQUIREMENTS AND IS PROVIDED FOR REFERENCE ONLY. INSTALL TUBING ACCORDING TO SPECIFIC VENDER INSTRUCTION. IN CASE OF ANY CONFLICTING REQUIREMENTS, THE VENDOR REQUIREMENTS SHALL SUPERCEDE THIS DETAIL.**



11 Radiant Floor Manifold Enclosure
SCALE: NTS

NOTES:

1. **ALL DIMENSIONS AND QUANTITIES ARE FOR REFERENCE ONLY.**
2. **COORDINATE ENCLOSURE SIZE WITH EQUIPMENT AND REQUIRED SERVICE CLEARANCES.**
3. **COORDINATE LOCATION, SIZE AND QUANTITY OF PIPING/TUBING CONDUITS WITH APPROVED SNOW MELT VENDOR DESIGN DRAWINGS.**
4. **APPROXIMATE ENCLOSURE DEPTH = 30", HEIGHT = 50" (+/-).**
5. **COORDINATE CONCRETE PAD SIZE WITH ENCLOSURE SIZE.**
6. **REFER TO STRUCTURAL DRAWINGS FOR CONCRETE PAD DETAILS.**
7. **REFER TO CIVIL DRAWINGS AND SPECIFICATIONS FOR EXACT PAD LOCATIONS, UNDERGROUND UTILITIES, EXCAVATION, COMPACTION AND BACK-FILL REQUIREMENTS.**

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CONSULTANTS:

MARK	DATE	DESCRIPTION

STATE OF NEW YORK · JOHN LAMEY · 101303 · LICENSED PROFESSIONAL ENGINEER

DESIGNED BY:	DRAWN BY:	CHECKED BY:	REVIEWED BY:
DKR	DKR	MJV	JML

PROJECT No.:	DATE:	SCALE:
VGFD2001	JULY 2022	AS SHOWN

CLIENT

VAILS GATE FIRE DISTRICT

New Storage Building (Phase I)
New Fire Station (Phase II)

872 Blooming Grove Turnpike
New Windsor, NY 12553

CONTRACT

CONTRACT G
GENERAL CONSTRUCTION

STATUS

FINAL BID DOCUMENT

SHEET TITLE

HVAC DETAILS (4 OF 4)

DRAWING No.

M2 503.00

VENTILATION INDEX BASED ON 2020 NEW YORK STATE MECHANICAL CODE

ROOM NUMBER	ROOM NAME	OCCUPANCY CLASSIFICATION	FLOOR AREA (SF)	OCCUPANCY LOAD (PERSONS/1000 SF)	NUMBER OF OCCUPANTS	OCCUPANT BASED OA RATE (CFM/OCCUPANT)	AREA BASED OUTSIDE AIR RATE (CFM/SF)	EXHAUST RATE (CFM/SF)	FIXTURES	UNCORRECTED OA (CFM)	Ez EFFICIENCY FACTOR (HEATING)	CORRECTED OA [HEATING] (CFM)	EXHAUST REQUIRED (CFM)
101 / 223	APP BAY	GARAGE	5051	0	0	0	0.00	0.75	0	0	0.80	0	3788
	MEZZANINE	GARAGE	900	0	0	0	0.00	0.75	0	0	0.80	0	675
102	RADIO ROOM	OFFICE	158	5	1	5	0.06	0.00	0	14	0.80	18	0
103	STORAGE1	STORAGE	121	0	0	0	0.12	0.00	0	15	0.80	18	0
104	STORAGE2	STORAGE	97	0	0	0	0.12	0.00	0	12	0.80	15	0
105	DECON	TOILET	117	0	0	0	0.00	0.00	2	-	-	-	100
106	LAUNDRY	LAUNDRY	145	20	3	7	0.12	0.00	0	40	0.80	50	0
107	GEAR ROOM	LOCKER	735	0	0	0	0.00	0.25	0	-	-	-	184
108	TOILET	TOILET	67	0	0	0	0.00	0.00	1	-	-	-	50
109	SCBA	OFFICE	201	5	2	5	0.06	0.00	0	22	0.80	28	0
111	SPARE TURNOUT GEAR	STORAGE	65	0	0	0	0.06	0.00	0	4	0.80	5	0
112	VENDOR DROP OFF	CORRIDOR	45	0	0	0	0.06	0.00	0	3	0.80	3	0
113	CORRIDOR	CORRIDOR	556	0	0	0	0.06	0.00	0	33	0.80	42	0
114	QUARTERMASTER	OFFFICE	66	5	1	5	0.06	0.00	0	9	0.80	11	0
115	JC	JC	41	0	0	0	0.00	0.00	1	-	-	-	50
116	MEETING	CONFERENCE	3000	50	150	5	0.06	0.00	0	930	0.80	1163	0
117	STORAGE	STORAGE	126	0	0	0	0.06	0.00	0	15	0.80	19	0
118	KITCHEN	KITCHEN	433	20	9	7	0.12	0.70	0	119	0.80	149	303
119	PANTRY	STORAGE	66	0	0	0	0.06	0.00	0	4	0.80	5	0
120	READY ROOM	DAY ROOM	221	30	7	5	0.06	0.00	0	48	0.80	60	0
123	ELEVATOR LOBBY	CORRIDOR	45	0	0	0	0.06	0.00	0	3	0.80	3	0
125A	LOBBY	LOBBY	353	10	4	5	0.06	0.00	0	41	0.80	51	0
126	VESTIBULE	CORRIDOR	53	0	0	0	0.00	0.00	0	0	0.80	0	0
127	TOILET	TOILET	187	0	0	0	0.00	0.00	4	-	-	-	200
128	TOILET	TOILET	185	0	0	0	0.00	0.00	4	-	-	-	200
201	CORRIDOR	CORRIDOR	186	0	0	0	0.06	0.00	0	11	0.80	14	0
202	MEETING	CONFERENCE	381	50	20	5	0.06	0.00	0	123	0.80	154	0
203	MEMBER VESTIBULE	LOBBY/ PREUNCTION	126	30	4	7	0.06	0.00	0	38	0.80	47	0
203A	COMPANY ROOM	CONFERENCE	1082	50	55	5	0.06	0.00	0	340	0.80	425	0
203B	KITCHEN	KITCHEN	78	20	2	7	0.12	0.70	0	24	0.80	30	55
204	STORAGE	STORAGE	39	0	0	0	0.06	0.00	0	5	0.80	6	0
205	STORAGE	STORAGE	78	0	0	0	0.06	0.00	0	9	0.80	12	0
206	TRAINING ROOM	CONFERENCE	1005	50	51	5	0.06	0.00	0	315	0.80	394	0
207	EXERCISE ROOM	WEIGHT ROOM	1000	10	10	20	0.06	0.00	0	260	0.80	325	0
208	BATHROOM	BATHROOM	95	0	0	0	0.00	0.00	2	-	-	-	100
209	BATHROOM	BATHROOM	95	0	0	0	0.00	0.00	2	-	-	-	100
210	CORRIDOR	CORRIDOR	505	0	0	0	0.06	0.00	0	30	0.80	38	0
211	COMMISIONER'S OFFICE	OFFFICE	144	5	1	5	0.06	0.00	0	14	0.80	17	0
212	TRUSTEE'S OFFICE	OFFFICE	142	5	1	5	0.06	0.00	0	14	0.80	17	0
213	COMPANY OFFICERS	OFFFICE	118	5	1	5	0.06	0.00	0	12	0.80	15	0
214	ASST. CHIEF'S OFFICE	OFFFICE	118	5	1	5	0.06	0.00	0	12	0.80	15	0
215	CHIEF'S OFFICE	OFFFICE	115	5	1	5	0.06	0.00	0	12	0.80	15	0
216	ADMIN STORAGE	STORAGE	42	0	0	0	0.06	0.00	0	5	0.80	6	0
217	RATED STORAGE 1	STORAGE	82	0	0	0	0.06	0.00	0	10	0.80	12	0
218	RATED STORAGE 1	STORAGE	82	0	0	0	0.06	0.00	0	10	0.80	12	0
220	JC	JC	64	0	0	0	0.00	0.00	1	-	-	-	50

LOUVERS

EQMT. TAG	LOCATION	SERVING	PERFORMANCE/CONSTRUCTION REQUIREMENTS						BASIS OF DESIGN INFORMATION				NOTES
			CFM	EXT S. P. (IN. W.C.)	FACE VELOCITY (FPM)	FREE AREA (FT^2)	FRAME THICKNESS (IN.)	BLADE THICKNESS (IN.)	MNF	MODEL NO.	NOMINAL DIMENSIONS (W" x H" x D")	WEIGHT (LBS.)	
LV-1	APPARATUS BAY	APPARATUS BAY	2,250	0.03	431	5.13	.125	.081	GREENHECK	ESD-635	72 x 24 x 6	39	1,3
LV-2	APPARATUS BAY	APPARATUS BAY	2,250	0.03	431	5.13	.125	.081	GREENHECK	ESD-635	72 x 24 x 6	39	1,3
LV-3	WORK ROOM	APPARATUS BAY	4,500	0.12	954	4.78	.125	.081	GREENHECK	ESD-635	72 x 24 x 6	39	2-3
LV-4	GEAR ROOM	GEAR ROOM	200	0.07	671	0.29	.081	.081	GREENHECK	ESD-435	12 x 12 x 4	3	3-4
LV-5	BOILER ROOM	BOILER ROOM	N/A	N/A	N/A	4.07	.125	.081	GREENHECK	ESD-635	30 x 36 x 6	30	1,3
LV-6	ELEVAOR	ELEVATOR	N/A	N/A	N/A	1.82	.081	.081	GREENHECK	ESD-435	24 x 24 x 4	15	5-8

NOTES:
1. PROVIDE 24" SLEEVE WITH VCD-23 MOTORIZED DAMPER 115V/ 1 INTERLOCKED WITH OPERATION OF APPARATUS BAY GENERAL EXHAUST.
2. PROVIDE 18" SLEEVE.AND BLANK OFF PANEL.
3. PROVIDE WITH INTERNAL BIRSDCREEN.
4. PROVIDE 12" SLEEVE.
5. PROVIDE WITH (120V/1) VCD-23 MOTORIZED DAMPER W/ INTERNAL ACTUATOR
6. MOUNTING CLIPS TO REMOVE LOUVER AND ACCESS DAMPER FROM BUILDING EXTERIOR
7. DAMPER CONTROLLED BY THERMOSTAT SET TO OPEN DAMPER AT 90F
8. CONFIRM INSTALL WITH ELEVATOR MANUFACTURER

HIGH VOLUME LOW SPEED FANS

FAN NO.	AREA SERVED	BASIS OF DESIGN INFORMATION							REMARKS
		FAN/MOTOR RPM	MNF	MODEL NO.	NOMINAL DIMENSION (DIA" x H")	WEIGHT (LBS.)	ELECTRICAL DATA		
							VOLTS /PHASE	OPERATING AMPERAGE	MOTOR HP	
HVLS-1 THRU 3	APPARATUS BAY	148	BIG ASS FANS	BASIC6-10	120 x 46.5	135	208 / 3	10 A	1.0	1,2

NOTES:
1. MANUFACTURER TO PROVIDE VFD MOTOR.
2. PROVIDE BAFCON CONTROLLER SERVING ALL HVLS FANS IN AREA SERVED. PROVIDE MULTI-FAN KIT.

AIR OUTLETS

SYMBOL	BASIS OF DESIGN: MNF/ MODEL NO.	DESCRIPTION	FACE SIZE (IN)	AIR FLOW RANGE (CFM)	NECK SIZE (IN.)	REMARKS
SD-A (CFM)	NAILOR AUNI	SQUARE FACE CEILING DIFFUSER	24 X 24 OR 12 X 12, SEE DRAWINGS	0-200	6"Ø	1
				201-230	8"Ø	
				231-320	10"Ø	
				321 - 460	12"Ø	
SG-A (CFM)	NAILOR 61DV-O	DOUBLE DEFLECTION SUPPLY GRILLE	8 x 8	0-100	6 x 6	1
			12 x 8	101-225	10 x 6	
			14 x 8	226-290	12 x 6	
RG-A (CFM)	NAILOR 61FB45-O	RETURN GRILLE	24 X 24	0-1190	20 x 20	1,3
EG-A (CFM)	NAILOR 6145H-O	EXHAUST GRILLE	24 X 24 OR 12 X 12, SEE DRAWINGS	0-150	6x6	1
				151-420	12 x 10	
EG-B (CFM)	NAILOR 5145H-OA	EXHAUST GRILLE	24 X 24 OR 12 X 12, SEE DRAWINGS	0-100	6x6	1,2
				101-200	8x6	
				201-325	12x8	
EG-C (CFM)	NAILOR 5145H	EXHAUST GRILLE	24 x 24 OR 12 x 12, SEE DRAWINGS	N/A [MATCH DUCTWORK OR OPEN TO PLENUM]	N/A [MATCH DUCTWORK OR OPEN TO PLENUM]	1,2
EG-D (CFM)	NAILOR 6145HC	EXHAUST GRILLE	18 x 10	0-450	16 x 8	1

NOTES:
1. PROVIDE VOLUME DAMPERS FOR ALL AIR INLETS AND OUTLETS
2. ALL ALUMINUM CONSTRUCTION (TERMINAL AND DAMPER), PROVIDE ALUMINUM CONSTRUCTION IN SHOWER AREAS.
3. PROVIDE WITH 2" FILTER BOX AND MERV-8 FILTER.

VEHICLE GAS DETECTION SYSTEM

EQMT. NO.	LOCATION	SYSTEM SERVED	BASIS OF DESIGN INFORMATION				NOTES
			MNF	MODEL NO.	NOMINAL DIMENSIONS L" x W" x H"	VOLTS / PHASE	
GDS-2	APPARATUS BAY	GX-2	RKI BEACON	410A (4 CHANNEL)	10.5 x 6.5 x 14	120/1	1-7

NOTES:
1. INCLUDE FOUR CHANNEL DIGITAL CONTROLLER IN NEMA 4 ENCLOSURE FOR WALL MOUNT.
2. LED DISPLAY FOR ALL FOUR CHANNELS FOR NO2 AND CO
3. INCLUDE (2) NITROGEN DIOXIDE SENSORS AND (2) CARBON MONOXIDE SENSORS
4. PROVIDE CONFIGURABLE ALARM OUTPUTS WITH ISOLATION RELAYS FOR INTERLOCK WITH THE EF & FACP.
5. PROVIDE PANEL MOUNTED AUDIBLE ALARM AND SILENCING SWITCH
6. PROVIDE ALARM HORN WITH STROBE.
7. PROVIDE STARTUP, TEST AND CALIBRATION REPORT.

EXHAUST FANS

FAN NO.	SYSTEM SERVED	PERFORMANCE/CONSTRUCTION REQUIREMENTS				BASIS OF DESIGN INFORMATION						NOTES
		CFM	EXT S. P. (IN. W.C.)	FAN/MOTOR RPM	BHP	MNF	MODEL NO.	NOMINAL DIMENSION (DIA" x H") (L" x W" x H")	WEIGHT (LBS.)	ELECTRICAL DATA		
										VOLTS /PHASE	MOTOR HP	
GX-1	APPARATUS ROOM	4,250	0.60	728	2.52	GREENHECK	QEID-22	36.5 x 30 x 35.5	370	208V / 3	3	3,4,10
GX-2	APPARATUS ROOM	250	0.30	1,550	0.03	GREENHECK	SQ-090-VG	19 x 15 x 15	72	115V / 1	1/10	2-4,6,9
GX-3	GEAR ROOM	200	0.30	1,550	0.03	GREENHECK	SQ-090-VG	19 x 15 x 15	72	115V / 1	1/10	2,3,5,6
GX-4	KITCHEN	325	0.40	1,625	0.22	GREENHECK	G-080-VG	22Ø x 27	62	115V / 1	1/10	2,3,6-8
TX-1	TOILET EXHAUST	700	0.60	1,625	0.22	GREENHECK	G-098-VG	24.5Ø x 25.5	78	115V / 1	1/4	2,3,6-8
TX-2	APP BAY TOILET	100	0.25	1,550	0.02	GREENHECK	SQ-060-D	16 x 12 x 12	34	115V / 1	1/40	2,3,5
TX-3	DECON ROOM 105	100	0.25	1,550	0.02	GREENHECK	SQ-060-D	16 x 12 x 12	34	115V / 1	1/40	2,3,5
ERXF-122	ELECTRIC ROOM 122	58	0.34	1,550	0.02	GREENHECK	SQ-060-D	16 x 12 x 12	34	115V / 1	1/40	2,11,12

NOTES:
1. CONTRACTOR TO PROVIDE WITH DISCONNECT SWITCH.
2. MANUFACTURER PROVIDED DISCONNECT SWITCH.
3. PROVIDE WITH 115VAC (WITH 115 VAC TRANSFORMER) MOTORIZED DAMPER WITH END SWITCH.
4. FAN TO OPERATE BASED ON SIGNALS FROM INTERLOCKED TEMPERATURE SENSOR OR GAS DETECTIONS SYSTEM IN ADDITION TO 30-MINUTE SPRING TIMER.
5. ELECTRICAL TO INTERLOCK WITH LIGHT SWITCH.
6. PROVIDE WITH DIAL FOR BALANCING ONLY
7. PROVIDE 12" INSULATED ROOF CURB WITH BUILT-IN DAMPER TRAY.
8. ELECTRICAL TO PROVIDE TIME CLOCK
9. ELECTRICAL TO PROVIDE WALL SWITCH
10. REFER TO MOTORIZED DAMPER SCHEDULES
11. FAN TO OPERATE BASED ON THERMOSTAT IN SPACE
12. PROVIDE GRAVITY BACKDRAFT DAMPER

MOTORIZED DAMPERS

EQMT. TAG	PERFORMANCE/CONSTRUCTION REQUIREMENTS					BASIS OF DESIGN INFORMATION							REMARKS
	CFM	EXT S. P. (IN. W.C.)	FACE VELOCITY (FPM)	FRAME THICKNESS	FAILURE MODE	MNF	MODEL NO.	ACTUATOR MNF	ACTUATOR MODEL NO.	ACTUATOR COUNT	NOMINAL DIMENSIONS (W" x H" x D")	ELECTRICAL DATA		
												VOLTAGE	POWER DRAW (W)	
MD-1	4,250	0.095	905	16 GAGUE	CLOSED	GREENHECK	VCD-23	HONEYWELL	MS8104F1210	1	26 x 26 x 5	24VAC	18	1-4

NOTES:
1. TWO POSITION W/ SPRING RETURN
2. EXTERNALLY MOUNTED ACTUATOR, COORDINATE LOCATION IN FIELD
3. PROVIDE WITH STANDARD SLEEVE
4. INTERLOCK WITH OPERATION OF GX-1
5. ELECTRICAL CONTRACTOR TO PROVIDE 208V/3 TO 24VAC TRANSFORMER

AIR SCRUBBERS

EQUIPMENT NO.	LOCATION	PERFORMANCE/ CONSTRUCTION REQUIREMENTS					BASIS OF DESIGN INFORMATION				NOTES
		FAN DATA				FILTER DATA					
		AIR FLOW (CFM) [LO-MED-HI]	SOUND LEVEL (dBA) [LO-MED-HI]	VOLTS / PHASE	OPERATING CURRENT (A)	FILTER EFFICIENCY	MNF	MODEL NO.	NOMINAL DIMENSIONS L" x W" x H"	NOMINAL OPERATING WEIGHT (LBS.)	
LRS-1	GEAR ROOM	450 - 825 - 1,150	53 - 57 - 61	120V / 1	8.0	95% @ 0.3 MICRONS	HONEYWELL	F111C1012W-3S	48 x 24 x 21.5	198	1-3

NOTES:
1. PROVIDE WITH THREE SPEED SWITCH.
2. ELECTRICAL CONTRACTOR TO PROVIDE DISCONNECT SWITCH.
3. PROVIDE WITH CPZ ODOR ELIMINATION MODULE.

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CONSULTANTS:

MARK	DATE	DESCRIPTION

STATE OF NEW YORK · JOHN LAMEY · 101303 · LICENSED PROFESSIONAL ENGINEER

"ALTERATION OF THIS DOCUMENT EXCEPT BY A LICENSED PROFESSIONAL IS ILLEGAL"

DESIGNED BY:	DRAWN BY:	CHECKED BY:	REVIEWED BY:
DKR	DKR	MJV	JML

PROJECT No.:	DATE:	SCALE:
VGFD2001	JULY 2022	AS SHOWN

CLIENT
VAILS GATE FIRE DISTRICT

New Storage Building (Phase I)
New Fire Station (Phase II)

872 Blooming Grove Turnpike
New Windsor, NY 12553

CONTRACT
CONTRACT G
GENERAL CONSTRUCTION

STATUS
FINAL BID DOCUMENT

SHEET TITLE
HVAC SCHEDULES (1 OF 3)

DRAWING No.
M2 600.00

ROOFTOP UNITS

EQUIPMENT NO.	LOCATION	QUANTITY	AREA SERVED	PERFORMANCE/ CONSTRUCTION REQUIREMENTS																		BASIS OF DESIGN INFORMATION							NOTES
				SUPPLY FAN			OUTSIDE AIR FLOW (CFM)	COOLING COIL						HEATING COIL														
				MAXIMUM FLOW (CFM)	EXT. S.P. (IN W.G)	BHP		REFRIGERANT TYPE	TOTAL CAPACITY (MBH)	SENSIBLE CAPACITY (MBH)	EER	SEER	AIR DATA		MIN TOTAL CAPACITY (MBH)	HOT WATER COIL												
													ENT. DB/WB (°F)	LVG. DB/WB (°F)		FLOW RATE (GPM)	EWT (°F)	LWT (°F)	COIL WATER ΔP (FT H20)	EAT (°F)	COIL LAT (°F)	MNF	MODEL NO.	NOMINAL DIMENSIONS LxWxH (IN.)	NOMINAL OPERATION WEIGHT (LBS)	ELECTRICAL DATA			
																										VOLTS/ PHASE	SUPPLY FAN HP	UNIT MCA/MOCP	
RTU-207	ROOF	1	207 TRAINING ROOM	1,200	0.60	0.57	325	R-410A	33.0	26.7	12.2	14.7	80.0 / 67.0	59.4 / 58.4	65.6	4.4	150	119.9	0.8	55	105.1	TEMPMASTER	ZR037C00B2B6ACA1A2	89 x 59 x 42	962	208/3	1.50	41.3 / 50	1-18

NOTES:
1. 4" PLEATED MERV-13 FILTERS WITH FOUR (4) SETS OF SPARE FILTER MEDIA.
2. HINGED ACCESS DOORS.
3. DISCONNECT SWITCH (FACTORY MOUNTED).
4. DIRTY FILTER INDICATOR SWITCH.
5. POWERED CONVENIENCE OUTLET.
6. CONDENSER HAIL GUARD.
7. LOW LEAK COMPARATIVE ENTHALPY ECONOMIZER.
8. ELECTRICAL CONTRACTOR TO FURNISH AND WIRE SUPPLY AND RETURN AIR SMOKE DETECTORS. MECHANICAL CONTRACTOR TO INSTALL.
9. VERTICAL SUPPLY/RETURN CONNECTIONS
10. BACNET DDC COMMUNICATION. INTERLOCK WITH BMS.
11. 14" ROOF CURB AND THRU BASE ELECTRICAL CONNECTIONS.
12. PHASE MONITOR (PHASE LOSS PROTECTION.)
13. PROVIDE SPACE TEMPERATURE SENSOR(S) WITH DIGITAL DISPLAY, SETPOINT ADJUSTMENT, OCCUPANCY SCHEDULE.
14. SINGLE ZONE VARIABLE AIR VOLUME CONFIGURATION.
15. VARIABLE FREQUENCY DRIVE.
16. SINGLE POINT POWER FEED TO RTU AND CONVENIENCE OUTLET
17. HOT GAS REHEAT DEHUMIDIFICATION
18. TWO STAGES OF COOLING

DEDICATED OUTDOOR AIR UNITS

EQUIPMENT NO.	AREA SERVED	SUPPLY FAN					EXHAUST FAN					COOLING COIL						HEATING COIL											BASIS OF DESIGN INFORMATION						NOTES
		OUTSIDE AIR FLOW (CFM)	MOTOR HP	BHP	EXT. S.P. (IN W.C.)	TOTAL S.P. (IN W.C.)	AIR FLOW (CFM)	MOTOR HP	BHP	EXT. S.P. (IN W.C.)	TOTAL S.P. (IN W.C.)	REFRIGERANT TYPE	ISMRE	TOTAL SYSTEM CAPACITY (MBH)	SENSIBLE UNIT CAPACITY (MBH)	AIR DATA						MIN TOTAL CAPACITY (MBH)	HOT WATER													
																COIL AIR ΔP (IN. W.C.)	OA DB/WB (°F)	RA DB / WB (°F)	ENT. DB / WB (°F)	COIL LVG DB/WB (°F)	UNIT LVG DB/RH (°F)		FLOW RATE (GPM)	EWT (°F)	LWT (°F)	COIL WATER ΔP (IN. W.C.)	OA DB (°F)	RA DB (°F)	EAT (°F)	MAX COIL LAT (°F)	UNIT LAT (°F)	MNF	MODEL NO.	NOMINAL DIMENSIONS L" x W" x H"	NOMINAL OPERATION WEIGHT (LBS)	ELECTRICAL DATA			
																																	VOLTS/ PHASE	MCA	MOCP	
DOAS-1	1ST AND 2ND FLOOR VENTILATION	4,500	5	2.97	1.00	2.677	2,800	2	1.16	1.00	1.596	R-410A	6.8	206.9	143.7	0.24	95.0 / 75.0	75.0 / 63.0	84.2 / 69.2	55.1 / 54.7	75 / 50%	295.8	18.1	150	120	0.7	12.0	70.0	40.8	95.7	75	LG	ARDE-212-52-15H-15D	180.5 x 98.5 x 76.5	4,527	208/3	84.4	100	1-19

NOTES:
1. ENERGY RECOVERY WHEEL
2. HORIZONTAL DISCHARGE/EXHAUST CONFIGURATION
3. FACTORY PROVIDED INTEGRAL NONFUSED DISCONNECT
4. POWERED CONVENIENCE OUTLET
5. PROVIDE 14" ROOF CURB W/ THRU BASE CONNECTIONS
6. SINGLE POINT POWER FEED
7. BACNET DDC COMMUNICATION, INTEGRATE WITH BMS
8. FROST CONTROL (MODULATING WHEEL)
9. STAINLESS STEEL DRAIN PAN
10. DIRTY FILTER INDICATOR SWITCH
11. HAIL GUARDS
12. MODULATING HOT GAS REHEAT
13. DIGITAL SCROLL COMPRESSOR FOR ALL CIRCUITS
14. MANUFACTURER TO PROVIDE FACTORY INSTALLED UNIT CONTOLLER
15. PHASE/BROWN OUT PROTECTION
16. SUPPLY AIR FLOW MONITORING
17. 2" PLEATED MERV-8 FILTERS,PROVIDE WITH FOUR (4) SETS OF SPARE FILTER MEDIA.
18. ELECTRICAL CONTRACTOR TO FURNISH AND WIRE SUPPLY AND RETURN AIR SMOKE DETECTORS. MECHANICAL CONTRACTOR TO INSTALL.
19. HINGED ACCESS DOORS

SPLIT CONDENSING UNITS

EQMT. #	LOCATION	TYPE	INDOOR UNITS SERVED	REFRIGERANT	ESTIMATED CONDENSER CHARGE (LB)	COOLING PERFORMANCE					HEATING PERFORMANCE					BASIS OF DESIGN INFORMATION						NOTES
						TOTAL CAPACITY (MBH)	MIN OPER. TEMP. (°F)	MAX OPER. TEMP. (°F)	EER	IEER [SEER]	TOTAL CAPACITY (MBH) @ 0°F DB / -2F WB [-3°F DB / -4°F WB]	MIN OPER. TEMP. (°F)	MAX OPER. TEMP. (°F)	COP @ 47°F [HSPF]	COP @ 17°F	MANUF.	MODEL #	NOMINAL DIMENSIONS L x W x H (IN.)	NOMINAL OPERATING WEIGHT (LBS.)	ELECTRICAL DATA			
																				VOLTS / PHASE / HZ	MCA	MOCP	
CU-1	ROOF	MULTI-ZONE HEAT RECOVERY	SEE EVAPORATOR UNIT SCHEDULE	R410A	26.5	168	5	122	11.1	21.9	163.8	-22	61	3.20	2.38	LG	ARUM168BTE5	49 x 30 x 67	639	208/60/3	53.6	70	1-8
CU-2	ROOF	MULTI-ZONE HEAT RECOVERY	SEE EVAPORATOR UNIT SCHEDULE	R410A	26.5	168	5	122	11.1	21.9	163.7	-22	61	3.20	2.38	LG	ARUM168BTE5	49 x 30 x 67	639	208/60/3	53.6	70	1-8
OU-1	ROOF	1 TO 1 HEAT PUMP	IU-1	R410A	2.21	13.8	14	118	12.5	22.7	[10.36]	-4	65	[11.4]	-	LG	LSU120HSV5	30.5 x 12.5 x 21.5	74	208-230/60/1	10.0	15	1-4,7,8

NOTES:
1. REFRIGERANT CHARGE IS SOLELY PRE-CHARGE FROM CONDENSERS. CONTRACTOR TO NOTIFY ENGINEER IF ADDITIONAL SYSTEM CHARGE IS REQUIRED.
2. ELECTRICAL CONTRACTOR TO PROVIDE DISCONNECT SWITCH FOR OUTDOOR UNIT IN NEMA-4X ENCLOSURE.
3. PROVIDE AND INSTALL REFRIGERANT PIPING SPECAIALTIES PER MANUFACTURER'S RECCOMENDATIONS.
4. CONTRACTOR TO PROVIDE 14" HIGH RAILS.
5. MANUFACTURER TO PROVIDE HAIL GUARD KIT
6. MANUFACTURER PROVIDED AIR GUIDE
7. MANUFACTURER PROVIDED LOW AMBIENT BAFFLE KIT
8. MANUFACTURER PROVIDED BASE PAN HEATER

SPLIT EVAPORATING UNITS

UNIT TAG	UNIT LOCATION	TYPE	PAIRED EQUIPMENT		PERFORMANCE/ CONSTRUCTION REQUIREMENTS							BASIS OF DESIGN INFORMATION						NOTES
						SUPPLY UNIT DATA												
					REFRIGERANT	DRY AIRFLOW (CFM) [HI-MED-LO]	EXTERNAL STATIC (IN. W.C.) [HI TO LO]	SOUND LEVEL LOW TO HIGH dB(A)	NOMINAL SIZE (MBH)	TOTAL COOLING CAPACITY (MBH)	SENSIBLE COOLING CAPACITY (MBH)	HEATING CAPACITY (MBH) @ 0°F DB / -2F WB [-3°F DB / -4°F WB]	MANUF.	MODEL	NOMINAL DIMENSIONS L" x W" x H"	NOMINAL OPERATING WEIGHT (LBS.)	ELECTRICAL DATA			
																	VOLTS/ PHASE/ HZ	MCA (A)	MOCP (A)	
EU-102	RADIO ROOM 102	CEILING CASSETTE	BC-1	CU-1	R410A	396-388-353	-	34/35/37	18	19.15	13.82	22.2	LG	ARNU183TQD4	24.5 x 24.5 x 10	35	208/1/60	0.25	15	1-6
EU-114	114 QUARTERMASTER	CEILING CASSETTE			R410A	265-247-212	-	26/27/29	5	5.52	3.90	6.3	LG	ARNU053TRD4	22.5 x 22.5 x 8.5	29	208/1/60	0.25	15	1-6
EU-118	118 KITCHEN	CEILING CASSETTE			R410A	396-388-353	-	34/35/37	18	19.15	13.82	22.2	LG	ARNU183TQD4	24.5 x 24.5 x 10	35	208/1/60	0.25	15	1-6
EU-120	120 READY ROOM	CEILING CASSETTE			R410A	283-265-251	-	27/29/30	9	9.63	6.91	11.2	LG	ARNU093TRD4	24.5 x 24.5 x 10	32	208/1/60	0.25	15	1-6
FCU-116-1	116 MEETING	CONCEALED FAN COIL	BC-2		R410A	1554-676	0.71 - 0.16	60/62/65	36	36.31	26.84	42.0	LG	ARNU363M2A4	27.5 x 54 x 11	86	208/1/60	2.90	15	1-6
FCU-116-2	116 MEETING	CONCEALED FAN COIL			R410A	1554-676	0.71 - 0.16	60/62/65	36	36.31	26.84	42.0	LG	ARNU363M2A4	27.5 x 54 x 11	86	208/1/60	2.90	15	1-6
FCU-116-3	116 MEETING	CONCEALED FAN COIL			R410A	1554-676	0.71 - 0.16	60/62/65	36	36.31	26.84	42.0	LG	ARNU363M2A4	27.5 x 54 x 11	86	208/1/60	2.90	15	1-6
EU-125A	125A LOBBY	CEILING CASSETTE			R410A	307-283-247	-	27/30/32	12	12.34	8.91	14.1	LG	ARNU123TRD4	24.5 x 24.5 x 10	32	208/1/60	0.25	15	1-6
EU-202	202 MEETING	CEILING CASSETTE	BC-3	CU-1	R410A	396-388-353	-	34/35/37	18	19.15	13.82	22.2	LG	ARNU183TQD4	24.5 x 24.5 x 10	35	208/1/60	0.25	15	1-6
EU-203	203 VESTIBULE	CEILING CASSETTE			R410A	265-247-212	-	26/27/29	5	5.52	3.90	6.3	LG	ARNU053TRD4	22.5 x 22.5 x 8.5	29	208/1/60	0.25	15	1-6
FCU-203A	203A COMPANY ROOM	CONCEALED FAN COIL			R410A	2076-522	0.79 - 0.16	62/64/67	48	48.24	36.16	56.0	LG	ARNU483M3A4	27.5 x 50.5 x 12	96.10	208/1/60	3.10	15	1-6
FCU-206	206 TRAINING	CONCEALED FAN COIL			R410A	1554-676	0.71 - 0.16	60/62/65	36	36.31	26.84	42.0	LG	ARNU363M2A4	27.5 x 54 x 9	86	208/1/60	2.90	15	1-6
EU-210	210 CORRIDOR	CEILING CASSETTE	BC-4		R410A	283-265-251	-	27/29/30	9	9.63	6.91	11.2	LG	ARNU093TRD4	24.5 x 24.5 x 10	32	208/1/60	0.25	15	1-6
EU-211	211 OFFICE	CEILING CASSETTE			R410A	265-247-212	-	26/27/29	5	5.52	3.90	6.3	LG	ARNU053TRD4	22.5 x 22.5 x 8.5	29	208/1/60	0.25	15	1-6
EU-212	212 OFFICE	CEILING CASSETTE			R410A	265-247-212	-	26/27/29	5	5.52	3.90	6.3	LG	ARNU053TRD4	22.5 x 22.5 x 8.5	29	208/1/60	0.25	15	1-6
EU-213	213 OFFICE	CEILING CASSETTE			R410A	265-247-212	-	26/27/29	5	5.52	3.90	6.3	LG	ARNU053TRD4	22.5 x 22.5 x 8.5	29	208/1/60	0.25	15	1-6
EU-214	214 OFFICE	CEILING CASSETTE			R410A	265-247-212	-	26/27/29	5	5.52	3.90	6.3	LG	ARNU053TRD4	22.5 x 22.5 x 8.5	29	208/1/60	0.25	15	1-6
EU-215	215 OFFICE	CEILING CASSETTE			R410A	265-247-212	-	26/27/29	5	5.52	3.90	6.3	LG	ARNU053TRD4	22.5 x 22.5 x 8.5	29	208/1/60	0.25	15	1-6
IU-1	219 IT	WALL MOUNT	OU-1		R410A	338-317-229	-	39/33/23	12	13.785	-	[10.36]	LG	LSN120HSV5	30 x 12 x 7.5	18.30	208-230/1/60	-	-	1-3,5-8

NOTES:
1. MANUFACTURER TO PROVIDE HARDWIRED, WALL MOUNTED, PROGRAMMABLE THERMOSTAT.
2. PROVIDE WITH 208V / 1 CONDENSATE PUMP TAGGED AS CDP-A (LITTLE GIANT MODEL VCCA-20ULST)
3. DRAIN PAIN LEVEL SENSOR THE UNIT SHALL TURN OFF IF WATER IS SENSED.
4. ELECTRICAL CONTRACTOR TO PROVIDE DISCONNECT SWITCH
5. FURNISH AND INSTALL BACNET INTERFACE AND INTEGRATE WITH BMS.
6. INSTALL ALL EQUIPMENT AND COMPONENTS ACCORDING TO MANUFACTURER'S INSTRUCTIONS.POWERED BY PAIRED CONDENSER,
7. ELECTRICAL CONTRACTOR TO PROVIDE DISCONNECT SWITCH BETWEEN INDOOR AND OUTDOOR UNIT
8. PROVIDE PIPE COVER FOR ALL EXPOSED REFRIGERANT PIPING. PROVIDE CJ INNOVATIONS OR APPROVED EQUAL. COORDINATE FINISH WITH ARCHITECT/OWNER.

VRF BRANCH CONTROL BOXES

EQMT NO.	LOCATION	CNDSR. PAIRING	# OF INDOOR UNIT PORTS	BASIS OF DESIGN INFORMATION							NOTES
				MNF	MODEL NO.	NOMINAL DIMENSIONS L" x W" x H"	NOMINAL OPERATING WEIGHT (LBS.)	ELECTRICAL DATA			
								VOLTS/ PHASE	MCA	MOCP	
BC-1	FIRST FLOOR	CU-1	4	LG	PRHR043A	19 x 19 x 8.5	40	208-230/1	0.17	15	1, 2
BC-2	FIRST FLOOR	CU-2	4	LG	PRHR043A	19 x 19 x 8.5	40	208-230/1	0.17	15	1, 2
BC-3	SECOND FLOOR	CU-3	4	LG	PRHR043A	19 x 19 x 8.5	40	208-230/1	0.17	15	1, 2
BC-4	SECOND FLOOR	CU-3	6	LG	PRHR063A	31 x 19 x 8.5	60	208-230/1	0.27	15	1, 2

NOTES:
1. PROVIDE BALL VALVES
2. CONDENSATE DRAIN NOT REQUIRED FOR THIS MANUFACTURER

ELECTRIC HEAT TRACE

EQMT. TAG	EQMT. SERVED	SERVING	DESIGN CONDITIONS							BASIS OF DESIGN INFORMATION					NOTES
			NOMINAL PIPE SIZE (IN.)	MINIMUM OA TEMP. (°F)	PIPE TEMP. SETPOINT (°F)	STARTUP PIPE TEMP. (°F)	INSULATION			MNF	MODEL NO.	ELECTRICAL DATA			
							THICKNESS (IN.)	TYPE	APPROXIMATE LENGTH REQUIRED (FT)			POWER OUTPUT (W/FT)	POWER (W)	VOLTS/ PHASE	MOCP	
HT-D	HHWS/R	DOAS-1	2	-10	40	35	2	FIBERGLASS	30'	THEMOM	5-FLX-2	5	150	208/1	20	1-2
HT-208	HHWS/R	RTU-208	1	-10	40	35	1-1/2	FIBERGLASS	30'	THEMOM	5-FLX-2	5	150	208/1	20	1-2
HT-MAU	HHWS/R	MAU-1	1	-10	40	35	1-1/2	FIBERGLASS	30'	THEMOM	5-FLX-2	5	150	208/1	20	1-2

NOTES:
1. PROVIDE ALL REQUIRED TEMPERATURE SENSORS AND CONTROLS FOR A COMPLETELY FUNCTIONING HEAT TRACE SYSTEM.
2. HEAT TRACE ASSOCIATED HOT WATER PIPING OUTDOORS, VALVES AND FITTINGS AS REQUIRED.

CONDENSATE DRAIN PUMPS

EQMT. NO.	SYSTEM SERVED	PERFORMANCE/CONSTRUCTION REQUIREMENTS				BASIS OF DESIGN INFORMATION							NOTES
		FLUID	MAX FLOW RATE (GPH)	MAX HEAD (FT.)	HP	MNF	MODEL NO.	DIMS. L x W x H	WEIGHT (LBS.)	VOLTS/ PHASE	POWER DRAW (W)		
CDP-A	SEE PLANS	WATER	48	10	1/30	LITTLE GIANT	VCCA-20ULST	11 X 5 X 7	6.3	115V/1	93		1-3

NOTES:
1. UL RATED
2. OVERFLOW DETECTION SWITCH
3. 1/2 GALLON COLLECTION TANK

REFRIGERANT DENSITY CALCS

SYSTEM	EFFECTIVE PIPE LENGTH (FT.)	EFFECTIVE FURTHEST PIPE RUN (FT.)	TOTAL NUMBER OF ELBOWS	TOTAL REFRIGERANT AMOUNT (LBS)	ZONE SMALLEST SPACE, TOTAL AREA (SQFT.)	ZONE SMALLEST SPACE, TOTAL VOLUME (FT^3)	REFRIGERANT DENSITY ($LB/1000FT^3$)
CU-1 & 2	-	-	-	39.15 [NOTE 1]	503	4,024	19.64
	-	-	-	39.82 [NOTE 1]			
OU-1	88	88	0	3.34	42	336	9.91

NOTES:
1. LINE LENGTHS ARE ESTIMATED BY MANUFACTURER VRF DESIGN SOFTWARE. REFRIGERANT LINE LENGTHS, SIZES & CHARGES TO BE VERIFIED BY EQUIPMENT MANUFACTURER.
2. CONTRACTOR TO NOTIFY ENGINEER IF ADDITIONAL SYSTEM CHARGE IS REQUIRED.

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CONSULTANTS:

MARK	DATE	DESCRIPTION

STATE OF NEW YORK · JOHN LAHEY · 101303 · LICENSED PROFESSIONAL ENGINEER

DESIGNED BY:	DRAWN BY:	CHECKED BY:	REVIEWED BY:
DKR	DKR	MJV	JML

PROJECT No.:	DATE:	SCALE:
VGFD2001	JULY 2022	AS SHOWN

CLIENT
VAILS GATE FIRE DISTRICT

New Storage Building (Phase I)
New Fire Station (Phase II)

872 Blooming Grove Turnpike
New Windsor, NY 12553

CONTRACT
CONTRACT G
GENERAL CONSTRUCTION

STATUS
FINAL BID DOCUMENT

SHEET TITLE
HVAC SCHEDULES (2 OF 3)

DRAWING No.
M2 601.00

HEATING HOT WATER BOILERS

EQUIPMENT NO.	LOCATION	RATEF GROSS INPUT (MBH)	RATED GROSS OUTPUT (MBH)	GAS (%)	PERFORMANCE/ CONSTRUCTION REQUIREMENTS: WATER DATA: FLOW RATE (GPM)	MAX RATED PRESS. (PSIG)	INLET TEMP. (DEG. F)	OUTLET TEMP. (DEG. F)	GAS DATA: CFH	MIN PRESSURE (IN. W.C.)	MAX PRESSURE (IN. W.C.)	BOILER VENT SIZE (IN)	BASIS OF DESIGN INFORMATION: MANUFACTURER	MODEL NO.	NOMINAL DIMENSIONS (L x W x H)	WEIGHT (LBS.)	ELECTRICAL DATA: VOLTAGE	FLA	MCA	MOCP	NOTES
BL-1 & BL-2	MECHANICAL ROOM	800	768.8	96.1	45.3	80	114	150	800	4	13.5	6	RIELO	ARRAY 800	29.5 x 52.5 x 53.5	926	115V/1	15.5	16	20	1-7

NOTES:
1. ASME RELIEF VALVE – SET AT 50 PSI
2. SINGLE POINT POWER FEED.
3. PROVIDE MULTIPLE LOW WATER CUTOFFS.
4. PROVIDE INTERLOCKS FOR GAS DETECTION AND BREAK GLASS STATION
5. PROVIDE CONDENSATE TRAP AND TRANSPARENT NEUTRALIZATION KIT.
6. PROVIDE MAINTENANCE KIT FOR EACH BOILER.
7. OUTSIDE AIR TEMPERATURE SENSOR.
8. CONTROLLED BY BMS

WALL MOUNTED ELECTRIC HEATERS

EQMT. NO.	LOCATION	PERFORMANCE/ CONSTRUCTION REQUIREMENTS: FLOW (CFM)	TOTAL CAPACITY (MBH)	HEATING COIL DATA – ELECTRIC DATA: VOLTS/PHASE	TOTAL KW	AMPS	BASIS OF DESIGN INFORMATION: MNF	MODEL NO.	NOMINAL DIMENSIONS L" x W" x H"	NOMINAL OPERATING WEIGHT (LBS.)	NOTES
WEH-112	112 VENDOR DROPOFF	100	5.1	208/1	1.5	7.2	QMARK / MARLEY	AWH4404F*	16 x 4 x 19.5	25	1-3

NOTES:
1. BUILT IN THERMOSTAT.
2. MANUFACTURER PROVIDED DISCONNECT SWITCH
3. FIELD WIRED FOR HALF WATTAGE, COORDINATE WITH 'E' AND MANUFACTURER'S INSTALLATION INSTRUCTIONS.

HEATING HOT WATER PUMPS

EQMT. NO.	LOCATION	SYSTEM SERVED	PERFORMANCE/CONSTRUCTION REQUIREMENTS: WORKING FLUID	FLOW RATE (GPM)	TOTAL HEAD (FT.)	HP	PUMP SPEED (RPM)	BASIS OF DESIGN INFORMATION: MNF	MODEL NO.	NOMINAL DIMENSIONS L x W x H	NOMINAL OPERATING WEIGHT (LBS.)	VOLTS/ PHASE	REMARKS
HHWP-1&2	MECHANICAL ROOM	BUILDING HW HEAT	WATER	70	65	3.0	1,760	TACO	SKV-1506D-A-2P-PD	22x10x30	246	208/3	1-9
HHWP-3&4	MECHANICAL ROOM	RADIANT FLOOR	WATER	28	40	0.9	-	TACO	VR15H	10x7x15.5	226	208/1	2,4-6,8-10
HHWP-5&6	MECHANICAL ROOM	UNIT HEATERS	WATER	20	35	0.6	-	TACO	VR15M	10x7x15	226	208/1	2,4-6,8-10

NOTES:
1. OPEN DRIP PROOF MOTOR
2. ANSI CLASS 125
3. MANUFACTURER TO PROVIDE DISCONNECT SWITCH.
4. MANUFACTURER PROVIDED VFD.
5. SELF SENSING
6. INTERLOCK WITH BMS
7. PROVIDE WITH BASE STAND AND SUPPLEMENTAL STEEL AS REQUIRED
8. PROVIDE SD020015-5 SUCTION DIFFUSER
9. PROVIDE MPV 015-4 MULTIPURPOSE VALVE
10. ELECTRICAL CONTRACTOR TO PROVIDE DISCONNECT SWITCH

GAS DETECTION SYSTEM

EQMT. NO.	LOCATION	SYSTEM SERVED	BASIS OF DESIGN INFORMATION: MNF	MODEL NO.	NOMINAL DIMENSIONS L" x W" x H"	VOLTAGE / PHASE	REMARKS
GDS-1	MECHANICAL ROOM	BOILERS BL-1, BL-2	RKI BEACON	410A (4 CHANNEL)	10.5 x 6.5 x 14	120/1	1-7

NOTES:
1. INCLUDE TWO CHANNEL DIGITAL CONTROLLER IN NEMA 4 ENCLOSURE FOR WALL MOUNT.
2. LED DISPLAY FOR LEL AND CO.
3. INCLUDE COMBUSTIBLE GAS SENSOR AND CARBON MONOXIDE SENSOR.
4. PROVIDE CONFIGURABLE ALARM OUTPUTS WITH ISOLATION RELAYS FOR INTERLOCK WITH BOILER AND FACP.
5. PROVIDE PANEL MOUNTED AUDIBLE ALARM AND SILENCING SWITCH
6. PROVIDE ALARM HORN WITH STROBE.
7. PROVIDE STARTUP, TEST AND CALIBRATION REPORT

RADIANT FLOOR MANIFOLDS

EQMT. NO.	AREA SERVED	FLOOR AREA SERVED $[FT^2]$	PERFORMANCE/CONSTRUCTION REQUIREMENTS: TOTAL CAPACITY (BTU/HR)	HEATING COIL DATA – HOT WATER COIL: EWT (°F)	GPM	CIRCUITS	MNF	MODEL NO.	NOMINAL DIMENSIONS L"xW"xH"	NOTES
RFM-1	APPARATUS ROOM	2429	99621	123.6	9.7	10	UPONOR	A2721002	28 x 3.5 x 14.5	1-5
RFM-2	APPARATUS ROOM	2503	102663	123.6	10	10	UPONOR	A2721002	28 x 3.5 x 14.5	1-5
RFM-3	APPARATUS ROOM	266	8902	123.6	0.9	2	UPONOR	A2720202	11 x 3.5 x 14.5	1-5
RFM-4	APPARATUS ROOM	805	25634	123.6	2.4	4	UPONOR	A2720402	15 x 3.5 x 14.5	1-5
RFM-5	APPARATUS ROOM	260	6376	123.6	0.6	2	UPONOR	A2720202	11 x 3.5 x 14.5	1-5
RFM-6	APPARATUS ROOM	217	6973	123.6	0.7	2	UPONOR	A2720202	11 x 3.5 x 14.5	1-5
RFM-7	APPARATUS ROOM	229	6320	123.6	0.6	2	UPONOR	A2720202	11 x 3.5 x 14.5	1-5

NOTES:
1. ~~MANIFOLD TO BE CONSTRUCTED OF STAINLESS STEEL.~~

AIR/DIRT SEPARATORS

EQMT. NO.	LOCATION	SYSTEM SERVED	PERFORMANCE REQUIREMENTS: FLOW RATE (GPM)	MAX. PD (FT. H2O)	BASIS OF DESIGN INFORMATION: MNF	MODEL NO.	NOMINAL DIMENSION DIA. x H	NOMINAL OPERATING WEIGHT (LBS.)	NOTES
ADS-1	BOILER ROOM	HOT WATER LOOPS	118	1.07	TACO	4904AD-125	12 x 25	75	1-2

NOTES:
1. AIR VENT
2. BLOW DOWN PIPED TO DRAIN

EXPANSION TANKS

EQUIPMENT NO.	LOCATION	SYSTEM SERVED	PERFORMANCE/CONSTRUCTION REQUIREMENTS – SYSTEM DATA: ESTIMATED VOLUME (GAL.)	MAX. OPERATING PRESS. RANGE (PSIG)	MAX. OPERATING TEMP. RANGE (°F)	BASIS OF DESIGN INFORMATION: MNF	MODEL NO.	NOMINAL DIMENSION DIA. x H	TANK VOLUME (GAL.)	SHIPPING WEIGHT (LBS.)	REMARKS
ET-1	BOILER ROOM	HOT WATER	500	17-47	40-150	TACO	CA140-150	16 x 40.5	37	195	1

NOTES:
1. CHARGE OF EXPANSION TANK SHALL BE ADJUSTED TO MATCH THE PRESSURE AT THE POINT WHERE THE TANK IS CONNECTED TO THE PIPING.

" VIBRATION ISOLATION / SEISMIC & WIND RESTRAINTS SCHEDULE [2020 New York State Building Code, SDC = C, RISK CAT = IV"]

UNIT TAG	EQUIPMENT TYPE	"LOCATION (FL LEVEL)"	MOUNTING METHOD	BASE TYPE	MANUF	ISOLATOR TYPE	NOM. DEFL., IN.	RESTRAINT REQ'D	SEISMIC COMPONENT IMPORTANCE FACTOR, Ip	NOTES (1,2, TYP.)
HVLS-1,2,3	HVLS FANS	VARIOUS	SUSPENDED	---	VIBRO-ACOUSTICS	---	---	SEIS	1.5	6
GX-1	EXHAUST FANS	MECH MEZ	SUSPENDED	---	VIBRO-ACOUSTICS	SHR	2.00	SEIS	1.5	6,7
GX-4, TX-1	EXHAUST FANS	ROOF	ROOF	---	VIBRO-ACOUSTICS	---	---	SEIS/WIND	1.5	
VX [TBD]	VEHICLE EXHAUST	MECH MEZ	SUSPENDED	---	VIBRO-ACOUSTICS	SHR	2.00	SEIS	1.5	6,7
LRS-1	AIR SCRUBBERS	GEAR ROOM	SUSPENDED	---	VIBRO-ACOUSTICS	---	---	SEIS	1.5	6
RTU-207, DOAS-1	ROOFTOP UNITS	ROOF	ROOF	RC	VIBRO-ACOUSTICS	VCR	2.00	SEIS/WIND	1.5	
CU-1, 2, OU-1	CONDENSING UNIT	ROOF	ROOF	---	VIBRO-ACOUSTICS	NP	0.18	SEIS/WIND	1.5	
EU-102 THRU 215	SPLIT SYSTEM INDOOR	VARIOUS	SUSPENDED	---	VIBRO-ACOUSTICS	SHR	1.00	SEIS	1.5	6, 7
BC-1, 2, 3, 4	VRF BRANCH CONTROL	VARIOUS	SUSPENDED	---	VIBRO-ACOUSTICS	---	---	SEIS	1.5	6
BL-1, 2	BOILER	MECH ROOM	FLOOR	---	VIBRO-ACOUSTICS	NP	0.18	SEIS	1.5	4,5
HHWP1 THRU 6	PUMPS	MECH ROOM	FLOOR	CIB	VIBRO-ACOUSTICS	SFS+ SIPS	2.00	SEIS	1.5	4,5
ADS-1	AIR DIRT SEPARATOR	MECH ROOM	SUSPENDED		VIBRO-ACOUSTICS			SEIS	1.5	6
ET-1	EXPANSION TANK	MECH ROOM	FLOOR		VIBRO-ACOUSTICS			SEIS	1.5	
CUH-A, B, 126	CABINET UNIT HEATER	VARIOUS	SUSPENDED		VIBRO-ACOUSTICS	SHR	2.00	SEIS	1.5	6, 7
UH-1 THRU 4	UNIT HEATER	VARIOUS	SUSPENDED		VIBRO-ACOUSTICS	SHR	2.00	SEIS	1.5	6, 8
KITCHEN HOOD	KITCHEN HOOD	KITCHEN	SUSPENDED		VIBRO-ACOUSTICS			SEIS	1.5	6
MAU-118	MAKE-UP AIR	ROOF	ROOF	RC	VIBRO-ACOUSTICS	VCR	2.00	SEIS/WIND	1.5	
KX-118	EXHAUST FANS	ROOF	ROOF	---	VIBRO-ACOUSTICS	---	---	SEIS/WIND	1.5	6,7
DUCTWORK (≥ 6' CLEAR AREA)	DUCTWORK	VARIOUS	SUSPENDED	---	VIBRO-ACOUSTICS			SEIS	1.5	
HVAC PIPING (>2" NOMINAL DIAMETER)	PIPING	VARIOUS	SUSPENDED	---	VIBRO-ACOUSTICS			SEIS	1.5	

NOTES:
1. BASIS OF DESIGN: VIBRO-ACOUSTICS.
2. SEISMICALLY RATED FOR PROJECT CONDITIONS.
3. STAND SUPPORT MUST BE ABLE TO MEET CALCULATED SEISMIC LOADS
4. PROVIDE FLEXIBLE PIPING CONNECTORS
5. PROVIDE TYPE SHR OR SFS ISOLATORS ON ADJACENT PIPING/DUCTWORK.
6. PROVIDE SEISMIC RESTRAINT CABLES. PROVIDE ROD STIFFENERS AS REQUIRED.
7. PROVIDE SEISMIC UPLIFT STOP WASHER.
8. SUPPORT INLINE PUMP AT FLANGE CONNECTION.

BASE TYPE:
CIB - CONCRETE INERTIA BASE
VCR - ADJUSTABLE SPRING CURB
RC: ROOF CURB

ISOLATOR TYPE:
NP - RUBBER PAD
SIPS - SEISMIC INLINE PUMP STANDS
SFS - SEISMIC FLOOR MOUNT
SHR - SPRING + RUBBER HANGER

FIN TUBE RADIATOR

EQMT. NO.	AREA SERVED	PERFORMANCE / CONSTRUCTION REQUIREMENTS: TOTAL CAPACITY (MBH)	HEATING COIL DATA – HOT WATER COIL: BTU/FT	PIPE DIA	FINS/FT	FIN DIMS W" x H"	GPM	MNF	MODEL NO.	NOMINAL DIMENSIONS L"xW"xH"	REMARKS
FTR-116-1	116 MEETING	5.2	516	3/4"	50	4.25 X 4.25	2.5	MODINE	S012	10' x 5.25" 12"	1-2
FTR-116-2	116 MEETING	5.2	516	3/4"	50	4.25 X 4.25	2.5	MODINE	S012	10' x 5.25" 12"	1-2
FTR-116-3-1	116 MEETING	4.1	516	3/4"	50	4.25 X 4.25	2.5	MODINE	S012	8' x 5.25" 12"	1-2
FTR-116-3-2	116 MEETING	4.1	516	3/4"	50	4.25 X 4.25	2.5	MODINE	S012	8' x 5.25" 12"	1-2
FTR-116-4	116 MEETING	9.3	516	3/4"	50	4.25 X 4.25	2.5	MODINE	S012	18' x 5.25" 12"	1-2
FTR-116-5	116 MEETING	8.3	516	3/4"	50	4.25 X 4.25	2.5	MODINE	S012	16' x 5.25" 12"	1-2
FTR-120-1	120 READY ROOM	4.1	516	3/4"	50	4.25 X 4.25	2.5	MODINE	S012	8' x 5.25" 12"	1-2
FTR-120-2	120 READY ROOM	2.1	516	3/4"	50	4.25 X 4.25	2.5	MODINE	S012	4' x 5.25" 12"	1-2
FTR-202-1	202 CONFERENCE	5.2	516	3/4"	50	4.25 X 4.25	2.5	MODINE	S012	10' x 5.25" 12"	1-2
FTR-202-2	202 CONFERENCE	5.2	516	3/4"	50	4.25 X 4.25	2.5	MODINE	S012	10' x 5.25" 12"	1-2
FTR-203A-1	COMPANY ROOM 203A	6.2	516	3/4"	50	4.25 X 4.25	2.5	MODINE	S012	12' x 5.25" 12"	1-2
FTR-203A-2	COMPANY ROOM 203A	6.2	516	3/4"	50	4.25 X 4.25	2.5	MODINE	S012	12' x 5.25" 12"	1-2
FTR-203A-3	COMPANY ROOM 203A	3.1	516	3/4"	50	4.25 X 4.25	2.5	MODINE	S012	6' x 5.25" 12"	1-2
FTR-203A-4	COMPANY ROOM 203A	2.1	516	3/4"	50	4.25 X 4.25	2.5	MODINE	S012	4' x 5.25" 12"	1-2
FTR-203A-5	COMPANY ROOM 203A	1.5	516	3/4"	50	4.25 X 4.25	2.5	MODINE	S012	3' x 5.25" 12"	1-2
FTR-206-1	TRAINING ROOM 206	6.2	516	3/4"	50	4.25 X 4.25	2.5	MODINE	S012	12' x 5.25" 12"	1-2
FTR-206-2	TRAINING ROOM 206	2.1	516	3/4"	50	4.25 X 4.25	2.5	MODINE	S012	4' x 5.25" 12"	1-2
FTR-206-3	TRAINING ROOM 206	2.6	516	3/4"	50	4.25 X 4.25	2.5	MODINE	S012	5' x 5.25" 12"	1-2
FTR-206-4	TRAINING ROOM 206	2.6	516	3/4"	50	4.25 X 4.25	2.5	MODINE	S012	5' x 5.25" 12"	1-2
FTR-210-1	CORRIDOR 210	10.3	516	3/4"	50	4.25 X 4.25	2.5	MODINE	S012	20' x 5.25" 12"	1-2
FTR-210-2	CORRIDOR 210	5.2	516	3/4"	50	4.25 X 4.25	2.5	MODINE	S012	10' x 5.25" 12"	1-2
FTR-212	211 OFFICE	4.1	516	3/4"	50	4.25 X 4.25	2.5	MODINE	S012	8' x 5.25" 12"	1-2
FTR-213	212 OFFICE	4.1	516	3/4"	50	4.25 X 4.25	2.5	MODINE	S012	8' x 5.25" 12"	1-2
FTR-214	213 OFFICE	2.6	516	3/4"	50	4.25 X 4.25	2.5	MODINE	S012	5' x 5.25" 12"	1-2
FTR-215	214 OFFICE	3.1	516	3/4"	50	4.25 X 4.25	2.5	MODINE	S012	6' x 5.25" 12"	1-2
FTR-216	215 OFFICE	3.1	516	3/4"	50	4.25 X 4.25	2.5	MODINE	S012	6' x 5.25" 12"	1-2

NOTES:
1. PROVIDE ALL CORNER SECTIONS, END PANELS, SUPPORTS AND ACCESSORIES AS REQUIRED TO PROVIDE CONTINUOUS ENCLOSE.
2. PROVIDE SPACE MOUNTED THERMOSTAT AND CONTROL VALVE (Cv = 4.6 MINIMUM).

CABINET UNIT HEATERS

EQMT NO.	LOCATION	CONFIGURATION	FAN DATA: FLOW (CFM)	HP	VOLTS/ PHASE	TOTAL CAPACITY (MBH)	AIR DATA: ENT. DB TEMP. (DEG. F)	LVG. DB TEMP. (DEG. F)	HEATING COIL DATA – WATER: ENT. TEMP. (DEG. F)	LVG. TEMP. (DEG. F)	FLOW (GPM)	MAX. P.D. (FT. H2O)	BASIS OF DESIGN INFORMATION: MNF	MODEL NO.	NOMINAL DIMENSIONS L x W x H	NOMINAL OPERATING WEIGHT (LBS.)	NOTES
CUH-A	STAIR A	STANDALONE CABINET	280	0.03	115V/1	10.2	70	98	150	122.1	1.5	0.20	MODINE	C 0030	44 x 9.5 x 25	90	1,2
CUH-B	STAIR B	CEILING MOUNTED	280	0.03	115V/1	10.2	70	98	150	122.1	1.5	0.20	MODINE	CW 0035	44 x 9.5 x 25	100	2,3
CUH-126	VESTIBULE 126	CEILING MOUNTED	280	0.03	115V/1	10.2	70	98	150	122.1	1.5	0.20	MODINE	CW 0035	44 x 9.5 x 25	100	2,3

NOTES:
1. UNIT MOUNTED THERMOSTAT.
2. MANUFACTURER PROVIDED UNIT MOUNTED DISCONNECT SWITCH.
3. REMOTE MOUNTED THERMOSTAT

CONTROL VALVES

EQMT. NO.	QTY.	PERFORMANCE/CONSTRUCTION REQUIREMENTS: VALVE FAMILY	CONFIG.	FAIL POSITION	VALVE SIZE	MEDIUM	VALVE COEFFICIENT (CV)	VALVE CLOSE OFF (PSI)	TRIM MATERIAL	CONNECTION	MNF.	MODEL NUMBER	ACTUATOR POWER	ACTUATOR CONTROL	NOTES
MV-1	1	BALL VALVE	3-WAY	LAST POSITION	1-1/2"	WATER	23.5	40	BRASS	THREADED	GRISWOLD CONTROLS	UR3EEFBM	24VAC	2-10VDC MODULATING	

HOT WATER UNIT HEATERS

EQUIPMENT NO.	AREA SERVED	BASIS OF DESIGN – FAN DATA: FLOW (CFM)	RPM	TOTAL CAPACITY (MBH)	AIR DATA: EAT (°F)	LAT (°F)	THROW (FT)	FPM	HEATING COIL DATA – HOT WATER COIL: EWT (°F)	LWT (°F)	GPM	ΔP (FT W.C.)	ELECTRIC DATA: VOLTS/ PHASE	AMPS	HP	MNF	MODEL NO.	NOMINAL DIMENSIONS L"xW"xH"	NOMINAL OPERATING WEIGHT (LBS.)	MAX MOUNTING HEIGHT (FT)	NOTES
UH-1 THRU 4	APPARATUS ROOM	3,240	1,075	69.7	60	80	53	870	150	120	4.8	1.3	115/1	4.6	1/3	MODINE	HC 165SB01SA	29.5 x 19 x 26.5	92	25	1-5

NOTES:
1. MANUFACTURER TO PROVIDE T1P STARTER DISCONNECT SWITCH TO BE INSTALLED BY ELECTRICAL CONTRACTOR.
2. ELECTRICAL TO PROVIDE WITH LINE VOLTAGE WALL MOUNTED THERMOSTAT.
3. MANUFACTURER TO PROVIDE WITH AQUASTAT.
4. MANUFACTURER TO PROVIDE WITH CEILING SUSPENSION KIT.
5. INTERLOCK WITH APPARATUS BAY DOORS

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631.756.8000 • www.h2m.com

CONSULTANTS:

MARK	DATE	DESCRIPTION
2	12/22/2022	REVS. PER TOWN COMMENTS

STATE OF NEW YORK · JOHN LAHEY · LICENSED PROFESSIONAL ENGINEER · 101303

DESIGNED BY:	DRAWN BY:	CHECKED BY:	REVIEWED BY:
DKR	DKR	MJV	JML

PROJECT No.:	DATE:	SCALE:
VGFD2001	JULY 2022	AS SHOWN

CLIENT
VAILS GATE FIRE DISTRICT

New Storage Building (Phase I)
New Fire Station (Phase II)

VAILS GATE FIRE DEPT. N.Y.

872 Blooming Grove Turnpike
New Windsor, NY 12553

CONTRACT
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GENERAL CONSTRUCTION

STATUS
FINAL BID DOCUMENT

SHEET TITLE
HVAC SCHEDULES (3 OF 3)

DRAWING No.
M2 602.02

PATENT NUMBERS

AC-PSP (UNITED STATES) - US PATENT 7963830 B2.
AC-PSP WALL (CANADA) - CA PATENT 2820509.
AC-PSP ISLAND (CANADA) - CA PATENT 2520330.

HOOD INFORMATION - JOB#5338935

HOOD NO	TAG	MODEL	MANUFACTURER	LENGTH	MAX COOKING TEMP	TYPE	APPLIANCE DUTY	DESIGN CFM/FT	TOTAL EXH CFM	EXHAUST PLENUM RISER(S)							TOTAL SUPPLY CFM	HOOD CONSTRUCTION	HOOD CONFIG	
										WIDTH	LENG	HEIGHT	DIA	CFM	VEL	SP			END TO END	ROW
1		5424 ND-2-PSP-F	CAPTIVEAIRE	6' 0"	600 DEG	I	HEAVY	195	1170			4"	10"	1170	2145	-0.936"	983	430 SS WHERE EXPOSED	ALONE	ALONE

HOOD INFORMATION

HOOD NO	TAG	FILTER(S)					LIGHT(S)			UTILITY CABINET(S)						FIRE SYSTEM PIPING	HOOD HANGING WEIGHT
												FIRE SYSTEM		ELECTRICAL	SWITCHES		
		TYPE	QTY	HEIGHT	LENGTH	EFFICIENCY @ 7 MICRONS	QTY	TYPE	WIRE GUARD	LOCATION	SIZE	TYPE	SIZE	MODEL #	QUANTITY		
1		CAPTRATE SOLO FILTER	4	16"	16"	85% SEE FILTER SPEC	2	RECESSED ROUND	NO	LEFT	12"x54"x24"	TANK FS	4.0	DCV-1111	1 LIGHT 1 FAN	YES	704 LBS

HOOD OPTIONS

HOOD NO	TAG	OPTION
1		FIELD WRAPPER 18.00" HIGH FRONT, LEFT, RIGHT.
		BACKSPLASH 80.00" HIGH X 84.00" LONG 430 SS VERTICAL.
		RIGHT VERTICAL END PANEL 27" TOP WIDTH, 21" BOTTOM WIDTH, 80" HIGH INSULATED 430 SS.
		LEFT VERTICAL END PANEL 27" TOP WIDTH, 21" BOTTOM WIDTH, 80" HIGH INSULATED 430 SS.
		SENSOR-CV.

PERFORATED SUPPLY PLENUM(S)

HOOD NO	TAG	POS	LENGTH	WIDTH	HEIGHT	TYPE	RISER(S)				
							WIDTH	LENG	DIA	CFM	SP
1		Front	84"	14"	6"	MUA	12"	20"		491	0.133"
						MUA	12"	20"		491	0.133"

FIRE SYSTEM INFORMATION - JOB#5338935

FIRE SYSTEM NO	TAG	TYPE	SIZE	FLOW POINTS	INSTALLATION	
					SYSTEM	LOCATION ON HOOD
1		TANK FS	4.0	16	FIRE CABINET LEFT	LEFT, HOOD 1

GAS VALVE(S)

FIRE SYSTEM NO	TAG	TYPE	SIZE	SUPPLIED BY
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		0 - 0 - 12-F28021-32144-0T-360 DUCT FIRE THERMOSTAT WITH 12 FOOT WIRE LEADS. NO, CLOSE ON TEMP RISE AT 360°F.	1	0
		0 - 0 - 87-300001-001 TANK - PRESSURIZED TANK USED FOR TANK FIRE SUPPRESSION.	1	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 - 87-300152-001 HARDWARE, SVA BOLTS, TANK FIRE SUPPRESSION.	4	0
		0 - 0 - 98694A115 HARDWARE, DATANKLOCK LOCKING BRACKET SQUARE NUTS 5/16" ZINC, TANK FIRE SUPPRESSION.	2	0
		0 - 0 - A0034332 JUNCTION BOX FOR MANUAL PULL STATION. 1.5" DEEP BACK BOX, RED COLOR.	1	0
		0 - 0 - DATANKLOCK DISCHARGE ADAPTER TANK LOCKING PLATE FOR FIRE SYSTEM TANK INSTALLATION IN UTILITY CABINETS, TANK FIRE SUPPRESSION.	1	0
		0 - 0 - SLPCDN-10FT SUPERVISED LOOP CONNECTION KIT. CONTAINS THE PARTS NEEDED TO CONNECT THE SUPERVISED LOOP BETWEEN END TO END HOODS WITH LESS THAN A 9' GAP OR BACK TO BACK HOODS. KIT CONTAINS 12 FEET OF BLACK MG WIRE, 12 FEET OF TAN MG WIRE, 10 FEET OF FLEXIBLE CONDUIT, AND TWO 7/8" CONNECTORS.	1	0
		0 - 0 - TANK STRAP TANK STRAP - USED FOR TANK FIRE SUPPRESSION.	3	0
		0 - 0 - TFS-UCTANKBRACKET TANK BRACKET FOR FIRE SYSTEM TANK INSTALLATION IN UTILITY CABINETS, TANK FIRE SUPPRESSION.	1	0
		0 - 0 - WK-283952-000 DISCHARGE ADAPTER, TANK FIRE SUPPRESSION.	1	0
		34 - 34 - A0034331 24VDC SINGLE ACTION MANUAL ACTUATION DEVICE (PUSH/PULL STATION) WITH PROTECTIVE COVER, ONE (1) NORMALLY OPEN CONTACT. RED COLOR.	1	0
		ADDITIONAL PARTS TO BE DETERMINED...		

SPECIFICATION: CAPTRATE® GREASE-STOP® SOLO FILTER

THE CAPTRATE GREASE-STOP SOLO 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.

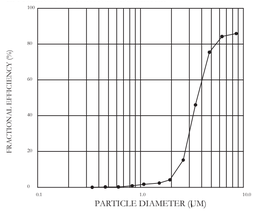
FILTER IS STAINLESS STEEL CONSTRUCTION, AND SIZED TO FIT INTO STANDARD 2-INCH DEEP HOOD CHANNEL(S).

UNITS SHALL INCLUDE STAINLESS STEEL HANDLES AND A FASTENING DEVICE TO SECURE THE TWO COMPONENTS WHEN ASSEMBLED.

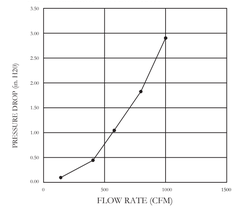
GREASE EXTRACTION EFFICIENCY PERFORMANCE SHALL REMOVE AT LEAST 75% OF GREASE PARTICLES FIVE MICRONS IN SIZE, AND 85% GREASE PARTICLES SEVEN MICRONS IN SIZE AND LARGER, WITH A CORRESPONDING PRESSURE DROP NOT TO EXCEED 1.0 INCHES OF WATER GAUGE.

THE CAPTRATE GREASE-STOP SOLO WAS TESTED TO ASTM STANDARD ASTM F2519-05. MANUFACTURER APPROVED FOR USE IN SOLID FUEL APPLICATIONS AS A SPARK ARRESTER.

EFFICIENCY VS. PARTICLE DIAMETER



PRESSURE DROP VS. FLOW RATE

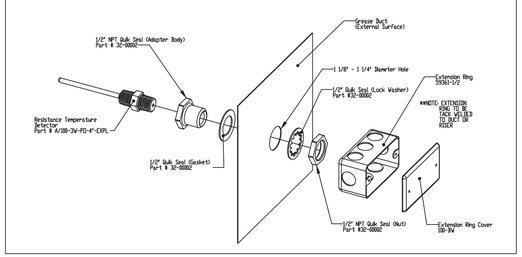


CAPTRATE FILTERS ARE BUILT IN COMPLIANCE WITH:
NFPA #96.
NSF STANDARD #2.
UL STANDARD #1046.
INT. MECH. CODE (IMC).
ULC-S649.

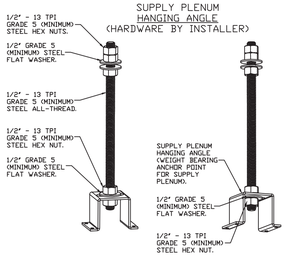
BUILT IN ACCORDANCE WITH NFPA No. 96

RTD SENSOR INSTALLATION (IF NOT FACTORY INSTALLED)

NOTES: One RTD per Exhaust Fan
: RTD has 3 wires that connect to control cabinet



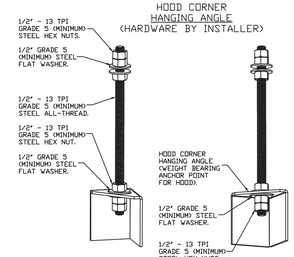
SUPPLY PLENUM
HANGING ANGLE
(HARDWARE BY INSTALLER)



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 PSP HANGING ANGLES. MAINTAIN 1/4" OF EXPOSED THREADS BENEATH BOTTOM HEX NUT. TORQUE ALL HEX NUTS TO 57 FT-LBS.

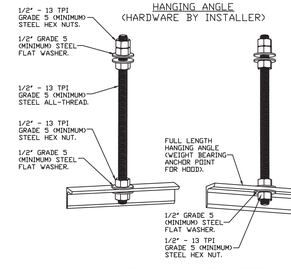
HOOD CORNER
HANGING ANGLE
(HARDWARE BY INSTALLER)



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 BENEATH HOOD HANGING ANGLES AND ABOVE CEILING ANCHORS. MAINTAIN 1/4" OF EXPOSED THREADS BENEATH BOTTOM HEX NUT. TORQUE ALL HEX NUTS TO 57 FT-LBS.

FULL LENGTH
HANGING ANGLE
(HARDWARE BY INSTALLER)



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.

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CONSULTANTS:

MARK	DATE	DESCRIPTION

STATE OF NEW YORK · JOHN LAMEY · 101303 · LICENSED PROFESSIONAL ENGINEER

DESIGNED BY:	DRAWN BY:	CHECKED BY:	REVIEWED BY:
DKR	DKR	MJV	JML

PROJECT No.:	DATE:	SCALE:
VGFD2001	JULY 2022	AS SHOWN

CLIENT

VAILS GATE FIRE DISTRICT

New Storage Building (Phase I)
New Fire Station (Phase II)

872 Blooming Grove Turnpike
New Windsor, NY 12553

CONTRACT

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GENERAL CONSTRUCTION

STATUS

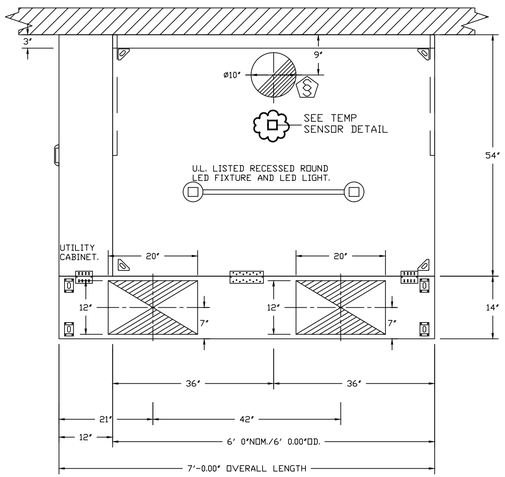
FINAL BID DOCUMENT

SHEET TITLE

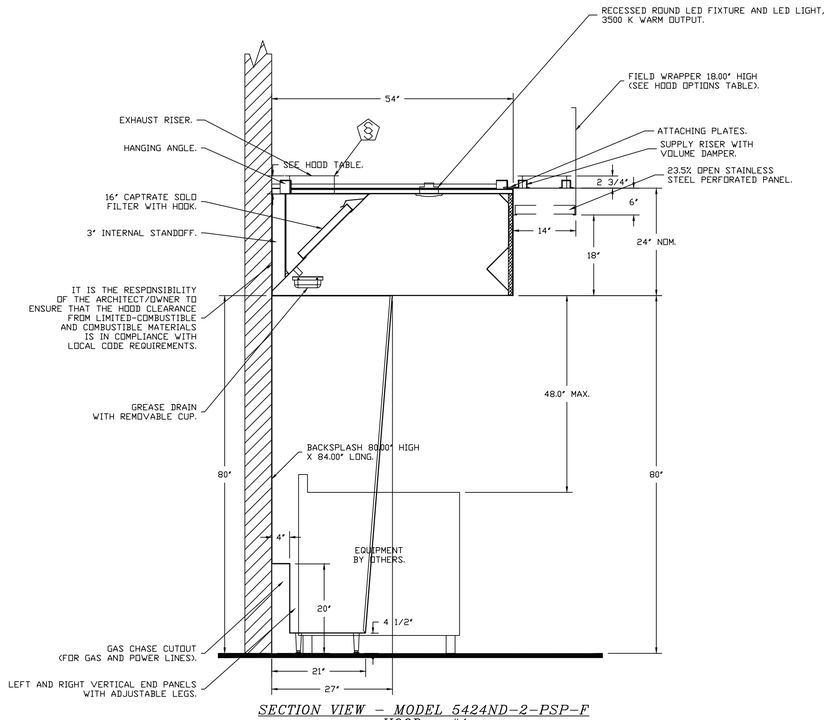
HVAC KITCHEN SCHEDULES (1 OF 10)

DRAWING No.

M2 610.00



PLAN VIEW – HOOD #1
6′ 0.00″ LONG 5424ND–2–PSP–F



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

H 2 M architects + engineers

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Melville, NY 11747
631.756.8000 • www.h2m.com

CONSULTANTS:

MARK	DATE	DESCRIPTION

STATE OF NEW YORK · JOHN LAHEY · 101303 · LICENSED PROFESSIONAL ENGINEER

"ALTERATION OF THIS DOCUMENT EXCEPT BY A LICENSED PROFESSIONAL IS ILLEGAL"

DESIGNED BY:	DRAWN BY:	CHECKED BY:	REVIEWED BY:
DKR	DKR	MJV	JML

PROJECT No.:	DATE:	SCALE:
VGFD2001	JULY 2022	AS SHOWN

CLIENT

VAILS GATE FIRE DISTRICT

New Storage Building (Phase I)
New Fire Station (Phase II)

872 Blooming Grove Turnpike
New Windsor, NY 12553

CONTRACT

CONTRACT G
GENERAL CONSTRUCTION

STATUS

FINAL BID DOCUMENT

SHEET TITLE

HVAC KITCHEN SCHEDULES (2 OF 10)

DRAWING No.

M2 611.00

EXHAUST FAN INFORMATION – JOB#5338935

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	KX-118	1	DU85HFA	CAPTIVEAIRE	1170	1.500	1391	TEAO-ECM	0.750	0.4880	1	208	5.2	370 FPM	88	13.1

CONDENSER DETAILS

FAN UNIT NO	TAG	FAN UNIT MODEL #	CONDENSER NO	TONNAGE	VOLTAGE	PHASE	FREQUENCY	MCA	RLA	MAX FUSE SIZE	MIN WIRE SIZE	SEER
2	MAU-118	A1-15D-MPU	1	3	208-230	3 PHASE	60 HZ	14.5 AMPS	11.9 AMPS	20 AMPS	14 AWG	14

MUA FAN INFORMATION – JOB#5338935

FAN UNIT NO	TAG	QTY	FAN UNIT MODEL #	BLOWER	HOUSING	MIN CFM	DESIGN CFM	ESP	RPM	MOTOR ENCL	HP	BHP	PHASE	VOLT	FLA	MCA	MOCP	WEIGHT (LBS)	SONES
2	MAU-118	1	A1-15D-MPU	15MF-1-MOD	A1	450	983	0.500	1536	ODP,PREMIUM	1.000	0.5230	3	208	3.1	3.9A	15A	1120	17.4

COILS – JOB#5338935

FAN UNIT NO	TAG	COIL TYPE	DESIGN CFM	COOLING										HEATING								
				ENTERING DB TEMP	ENTERING WB TEMP	LEAVING DB TEMP	LEAVING WB TEMP	ENTERING FLUID TEMP	LEAVING FLUID TEMP	FLUID FLOW RATE	PERCENT GLYCOL	TOTAL CAPACITY	SENSIBLE CAPACITY	LATENT CAPACITY	ENTERING DB TEMP	LEAVING DB TEMP	ENTERING FLUID TEMP	LEAVING FLUID TEMP	FLUID FLOW RATE	PERCENT GLYCOL	STEAM PRESSURE	TOTAL CAPACITY	SENSIBLE CAPACITY
2	MAU-118	DX AND HOT WATER	983	86.0°F	72.0°F	66.9°F	61.1°F	---	---	---	---	36.0 MBH	20.0 MBH	16.0 MBH	0°F	70.32°F	150.0°F	120.0°F	5.07 GAL/MIN	---	---	75 MBH	75 MBH

FAN OPTIONS

FAN UNIT NO	TAG	QTY	DESCRIPTION
1	KX-118	1	GREASE BOX
		1	ECM WIRING PACKAGE - PWM SIGNAL FROM ECPM03 PREWIRE (TELCO MOTOR), CCW ROTATION
		1	2 YEAR PARTS WARRANTY
2	MAU-118	1	SIZE 1 UNTEMPERED COMMERCIAL DOWN DISCHARGE FOR DIRECT DRIVE AHUS
		1	MOTORIZED BACKDRAFT DAMPER FOR SIZE 1 HOUSING - MEETS AMCA CLASS 1A RATING
		1	HOT WATER COIL SECTION A1-2 ROW. TEMPERATURE CONTROLS, MIXING VALVES, THERMOSTATS, AND FREEZE PROTECTION BY OTHERS
		1	INSULATED BLOWER SECTION SIZE 1-2 COMMERCIAL
		1	MIXING BOX SHELL FOR SIZE 1 MOD PACKAGE UNIT CONDENSER SUPPORT
		1	SEPARATE 120V WIRING PACKAGE (REQUIRED AND USED ONLY FOR DCV OR PREWIRE WITH VFD) - THREE PHASE ONLY
		1	3 TON SINGLE CIRCUIT MODULAR PACKAGED AC COOLING OPTION FOR SIZE 1 MUA (450 TO 1200 CFM), 208V/230V, 3 PHASE. COOLING THERMOSTAT OR PROGRAMMABLE STAT REQUIRED FOR PROPER OPERATION
		1	MOD PACKAGE UNIT AC CONTROLS FOR UNTEMPERED FANS
		1	2 YEAR PARTS WARRANTY

FAN ACCESSORIES

FAN UNIT NO	TAG	EXHAUST			SUPPLY			
		GREASE CUP	GRAVITY DAMPER	WALL MOUNT	SIDE DISCHARGE	GRAVITY DAMPER	MOTORIZED DAMPER	WALL MOUNT
1	KX-118	YES						
2	MAU-118						YES	

CURB ASSEMBLIES

NO	ON FAN	TAG	WEIGHT	ITEM	SIZE
1	# 1	KX-118	36 LBS	CURB	23.000"W X 23.000"L X 20.000"H ALONG LENGTH, RIGHT VENTED HINGED.
2	# 2		89 LBS	RAIL	6.000"W X 21.000"L X 20.000"H RIGHT.
	# 2			RAIL	6.000"W X 21.000"L X 20.000"H RIGHT.
	# 2			RAIL	6.000"W X 21.000"L X 20.000"H RIGHT.
2	# 2		89 LBS	CURB	21.000"W X 21.000"L X 20.000"H ALONG LENGTH, RIGHT.

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CONSULTANTS:

MARK	DATE	DESCRIPTION

STATE OF NEW YORK · JOHN LAMEY · 101303 · LICENSED PROFESSIONAL ENGINEER

DESIGNED BY:	DRAWN BY:	CHECKED BY:	REVIEWED BY:
DKR	DKR	MJV	JML

PROJECT No.:	DATE:	SCALE:
VGFD2001	JULY 2022	AS SHOWN

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VAILS GATE FIRE DISTRICT

New Storage Building (Phase I)
New Fire Station (Phase II)

872 Blooming Grove Turnpike
New Windsor, NY 12553

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GENERAL CONSTRUCTION

STATUS

FINAL BID DOCUMENT

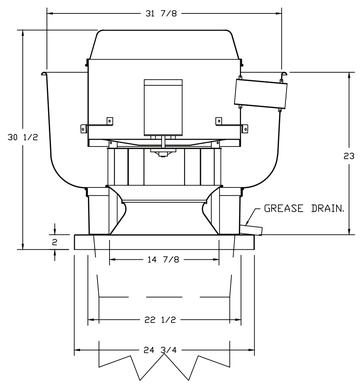
SHEET TITLE

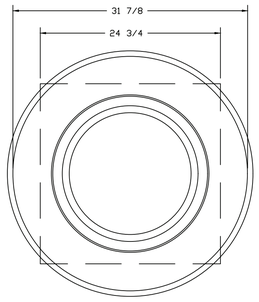
HVAC KITCHEN SCHEDULES (3 OF 10)

DRAWING No.

M2 612.00

FAN #1 DUBSHFA - EXHAUST FAN (KX-118)





TOP VIEW

FEATURES:

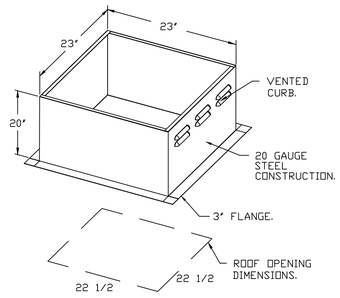
- DIRECT DRIVE CONSTRUCTION (NO BELTS/PULLEYS).
- ROOF MOUNTED FANS.
- RESTAURANT MODEL.
- UL705 AND UL762 AND ULC-S645
- VARIABLE SPEED CONTROL.
- INTERNAL WIRING.
- THERMAL OVERLOAD PROTECTION (SINGLE PHASE).
- HIGH HEAT OPERATION 300°F (149°C).
- GREASE CLASSIFICATION TESTING.
- NEMA 3R SAFETY DISCONNECT 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 DETERIORATING EFFECTS TO THE FAN WHICH WOULD CAUSE UNSAFE OPERATION.

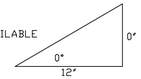
ABNORMAL FLARE-UP TEST
EXHAUST FAN MUST OPERATE CONTINUOUSLY WHILE EXHAUSTING BURNING GREASE VAPORS AT 600°F (316°C) FOR A PERIOD OF 15 MINUTES WITHOUT THE FAN BECOMING DAMAGED TO ANY EXTENT THAT COULD CAUSE AN UNSAFE CONDITION.

OPTIONS

GREASE BOX.
ECM WIRING PACKAGE - PWM SIGNAL FROM ECPM03 PREWIRE (TELCO MOTOR), CCW ROTATION.
2 YEAR PARTS WARRANTY.

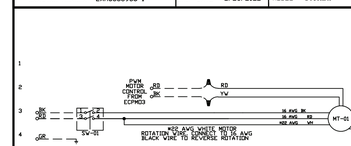


PITCHED CURBS ARE AVAILABLE FOR PITCHED ROOFS.



SPECIFY PITCH:
EXAMPLE: 7/12 PITCH = 30° SLOPE.

Exhaust Fan Wiring
DRAWING NUMBER EXH5338935-1
JOB 5338935 - VGFD2001
SHOP DATE 2/28/2022 MODEL DUBSHFA



Installed Options

Component Identification		
Label	Description	Location
MT-01	Fan Motor	[3]
SV-01	Main disconnect switch	[3]

MOTOR INFO
EXHAUST 0.75HP-208V-1P-5.8FLA

ELECTRICAL INFORMATION
MOTOR/CTRL MCA 5.8A
MOTOR/CTRL MOP 15A

NOTES:
— — DENOTES FIELD WIRING
——— DENOTES INTERNAL WIRING

WIRE COLOR
BK - BLACK YW - YELLOW
BL - BLUE GN - GREEN
BR - BROWN GY - GRAY
OR - ORANGE PR - PURPLE
RD - RED
WH - WHITE
PK - PINK

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SHEET TITLE

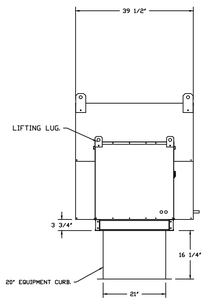
HVAC KITCHEN SCHEDULES (4 OF 10)

DRAWING No.

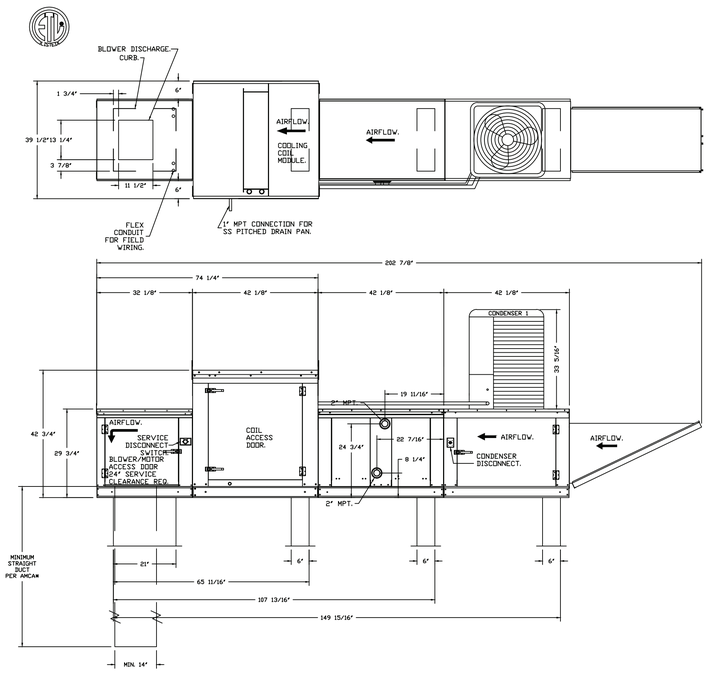
M2 613.00

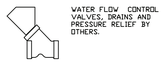
FAN #2 AI-15D-MPU - SUPPLY FAN (MAU-118)
1. SUPPLY UNIT WITH 15" MIXED FLOW DIRECT DRIVE FAN IN SIZE #1 HOUSING.
2. INTAKE HOOD WITH EZ FILTERS.
3. DOWN DISCHARGE - AIR FLOW RIGHT -> LEFT.
4. DOWN DISCHARGE CONSTRUCTION FOR SIZE 1 UNTEMPERED DIRECT DRIVE AHUS.
5. MOTORIZED BACK DRAFT DAMPER 16" X 18" FOR SIZE 1 UNTEMPERED UNITS W/EXTENDED SHAFT, STANDARD GALVANIZED CONSTRUCTION, 3/4" REAR FLANGE, LOW LEAKAGE, TF8120S ACTUATOR INCLUDED.
6. HOT WATER COIL MODULE FOR SIZE 1 MODULAR FANS - 3350 CFM @ 70DEG TEMP RISE (253,260 BTU'S) COIL = 5MS1402B-19.5X16.5. OPPOSITE AIRFLOW REQUIRES SPECIAL ORDER COIL WITH EXTENDED LEAD-TIME. TEMPERATURE CONTROLS, MIXING VALVES, THERMOSTATS, AND FREEZE PROTECTION BY OTHERS.
7. INSULATED BLOWER HOUSING SIZES 1-2 COMMERCIAL MODULAR.
8. SUPPORT SHELL FOR SIZE 1 MODULAR PACKAGE UNIT. INCLUDES CONTROL VESTIBULE. INCLUDES CONDENSER SUPPORTS. DOES NOT INCLUDE RETURN AIR OR INLET AIR DAMPER.
9. 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 DCV TO MUA SWITCH.
10. 3 TON, SINGLE CIRCUIT MODULAR PACKAGED AC COOLING OPTION FOR SIZE 1 MODULAR PACKAGED UNIT. INCLUDES CONDENSER, DX COIL, FILTER/DRYER KIT, THERMAL EXPANSION VALVE, R410A REFRIGERANT, AND REFRIGERANT PIPING. (450 TO 1,225 CFM) WHEN ORDERED WITH OPPOSITE AIRFLOW CONDENSERS ACCESS AND COIL PIPING WILL REMAIN IN STANDARD POSITION. DRAIN AND SLEDS WILL MOVE TO THE OPPOSITE SIDE. ANY OTHER CHANGE WILL REQUIRE CLI. CONDENSERS REQUIRE SEPARATE 208V, 3 PHASE POWER SUPPLY UNLESS ORDERED WITH SINGLE POINT CONNECTION. COIL = 2EY1402.
11. CONTROL PACKAGE FOR MOD PACKAGE UNIT COOLING ONLY UNIT. INCLUDES AIRFLOW PROVING SWITCH, RTULINK-ACHP BOARD AND TERMINAL BLOCKS.
12. HINGED DOUBLE WALL INSULATED DOOR ASSEMBLY (BURNER/BLOWER/MPU SECTION).
13. 2 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 TRANSITION AND/OR TURNS IN THE DUCTWORK WILL CAUSE SYSTEM EFFECT. SYSTEM EFFECT WILL DRASTICALLY 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 STRAIGHT DUCT SIZE IS 14" x 14".



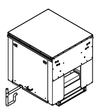
ROOF OPENING 2" SMALLER THAN CURB DIMENSION.



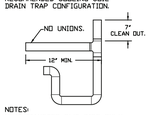


WATER FLOW CONTROL VALVES, DRAINS AND PRESSURE RELIEF BY OTHERS.

TYPICAL DRAIN TRAP INSTALL



RECOMMENDED COOLING COIL DRAIN TRAP CONFIGURATION.



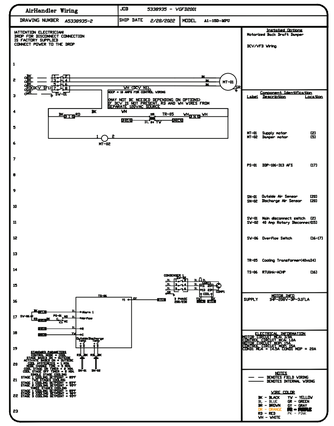
NOTES:
1) 1" DIAMETER PVC PIPE ONLY.
2) USE ONLY LOW PROFILE COUPLINGS.
3) ADD CLEAN OUT AS SHOWN.

(5) GREASE DUCT & CHIMNEY SPECIFICATIONS:
PROVIDE GREASE DUCT EQUAL TO CAPTIVEAIRE SYSTEMS MODEL "DW" ROUND 20 GAUGE 430 STAINLESS STEEL DUCTWORK. MODEL "DW" IS LISTED TO UL-1978 AND IS INSTALLED USING "V" CLAMP LOCKING CONNECTIONS SEALED WITH 3M FIRE BARRIER 2000 PLUS. MODEL "DW" DOES NOT REQUIRE WELDING PROVIDING IT HAS BEEN INSTALLED PER THE MANUFACTURES INSTALLATION GUIDE.
PROVIDE RATED ACCESS DOORS AT EVERY CHANGE IN DIRECTION AND EVERY 12' ON CENTER. PER MANUFACTURES LISTING MODEL "DW" HORIZONTAL RUNS LESS THAN 75 FT. CAN BE SLOPED 1/16" PER 12", HORIZONTAL RUNS MORE THAN 75 FT. CAN BE SLOPED 3/16" PER 12". DUCT SHOULD BE SLOPED AS MUCH AS POSSIBLE TO REDUCE THE CHANCE OF GREASE ACCUMULATION IN HORIZONTAL RUNS.

IF THE DUCT OR CHIMNEY IS WITHIN 18 INCHES OF COMBUSTIBLE MATERIAL, PROVIDE UL-2221 OR UL-103 HT LISTED DOUBLE WALL GREASE DUCT OR DOUBLE WALL CHIMNEY EQUAL TO CAPTIVEAIRE SYSTEMS MODEL "DW- 2R, 2R TYPE HT, 3R, OR 3Z" ROUND 20 GAUGE 430 STAINLESS INNER DUCT INSULATED WITH A 24 GAUGE 430 STAINLESS OUTER SHELL.

CUSTOMER APPROVAL TO MANUFACTURE:

APPROVED AS NOTED ☐
APPROVED WITH NO EXCEPTION TAKEN ☐
REVISE AND RESUBMIT ☐
SIGNATURE _____
YOUR TITLE _____ DATE _____



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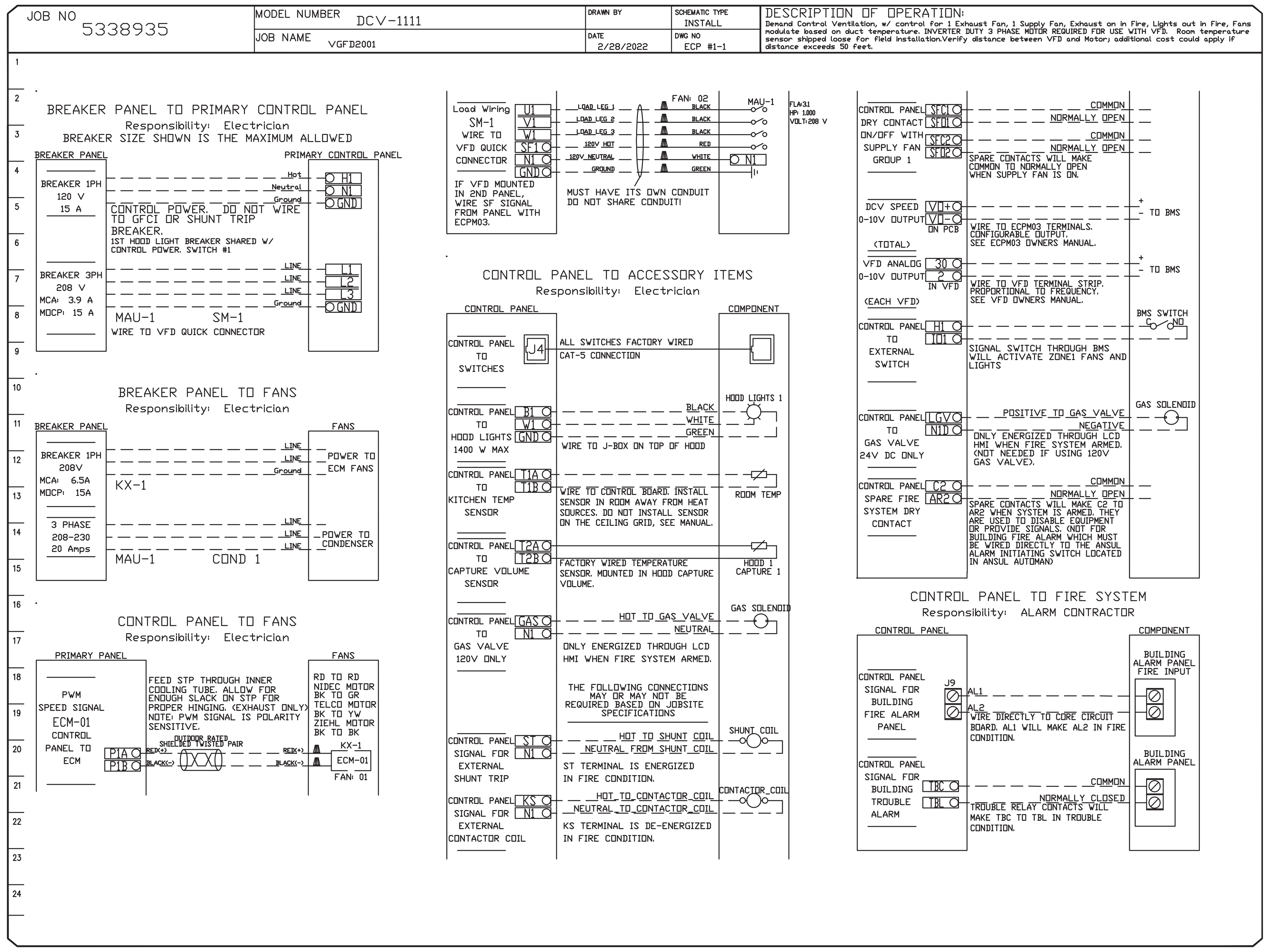
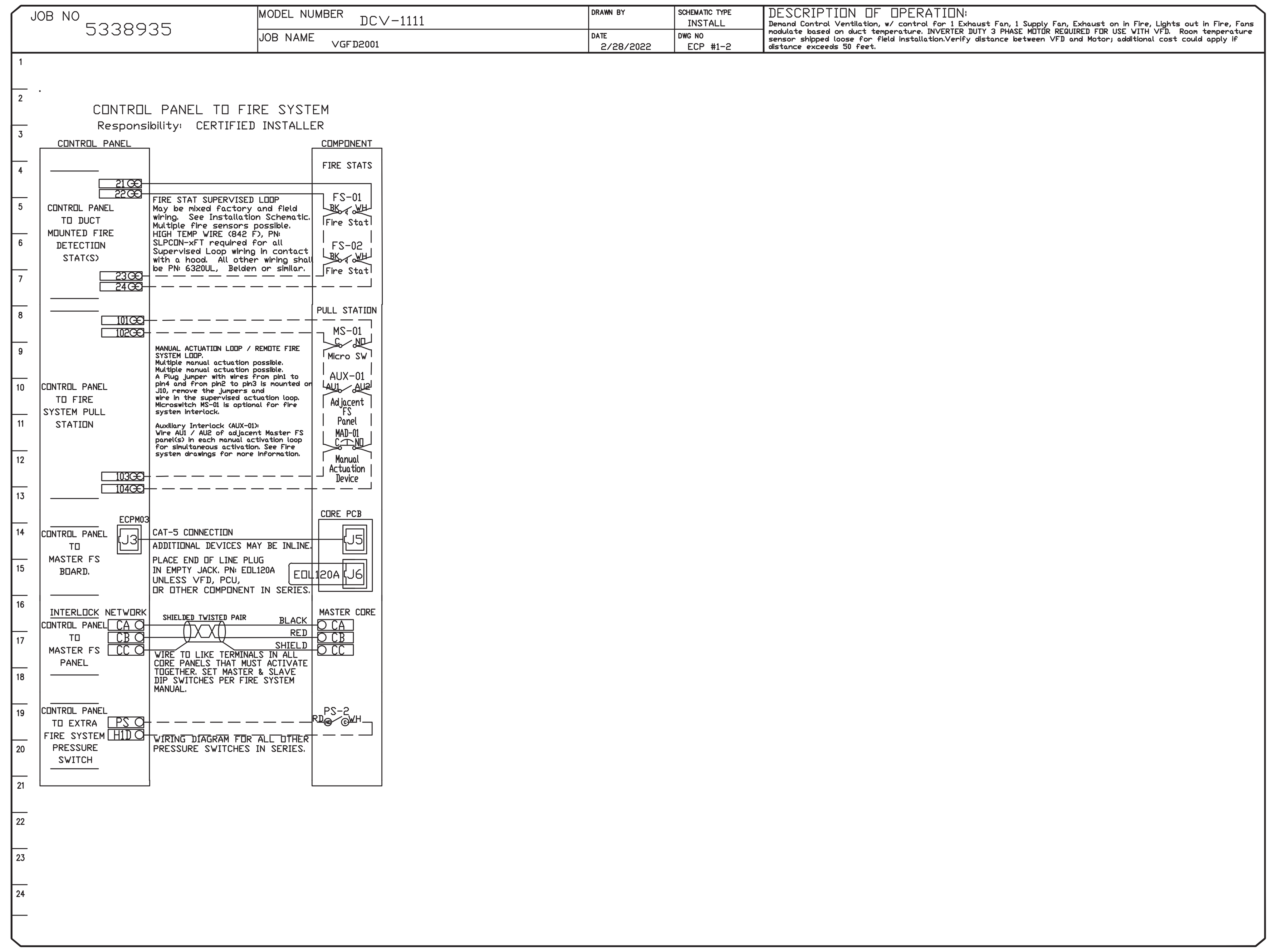
SHEET TITLE
HVAC KITCHEN SCHEDULES (5 OF 10)

DRAWING No.
M2 614.00

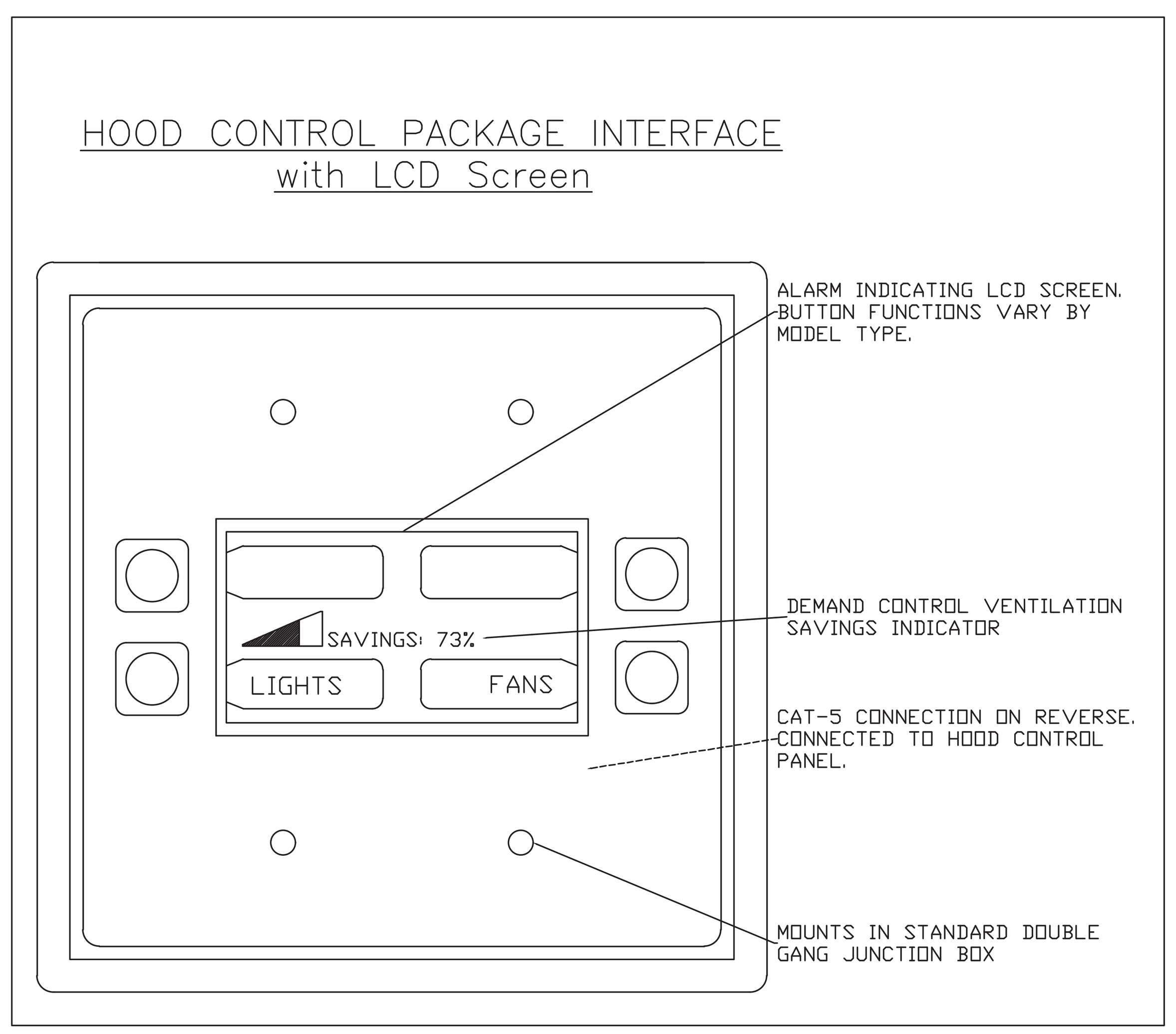
ELECTRICAL PACKAGE – JOB#5338935

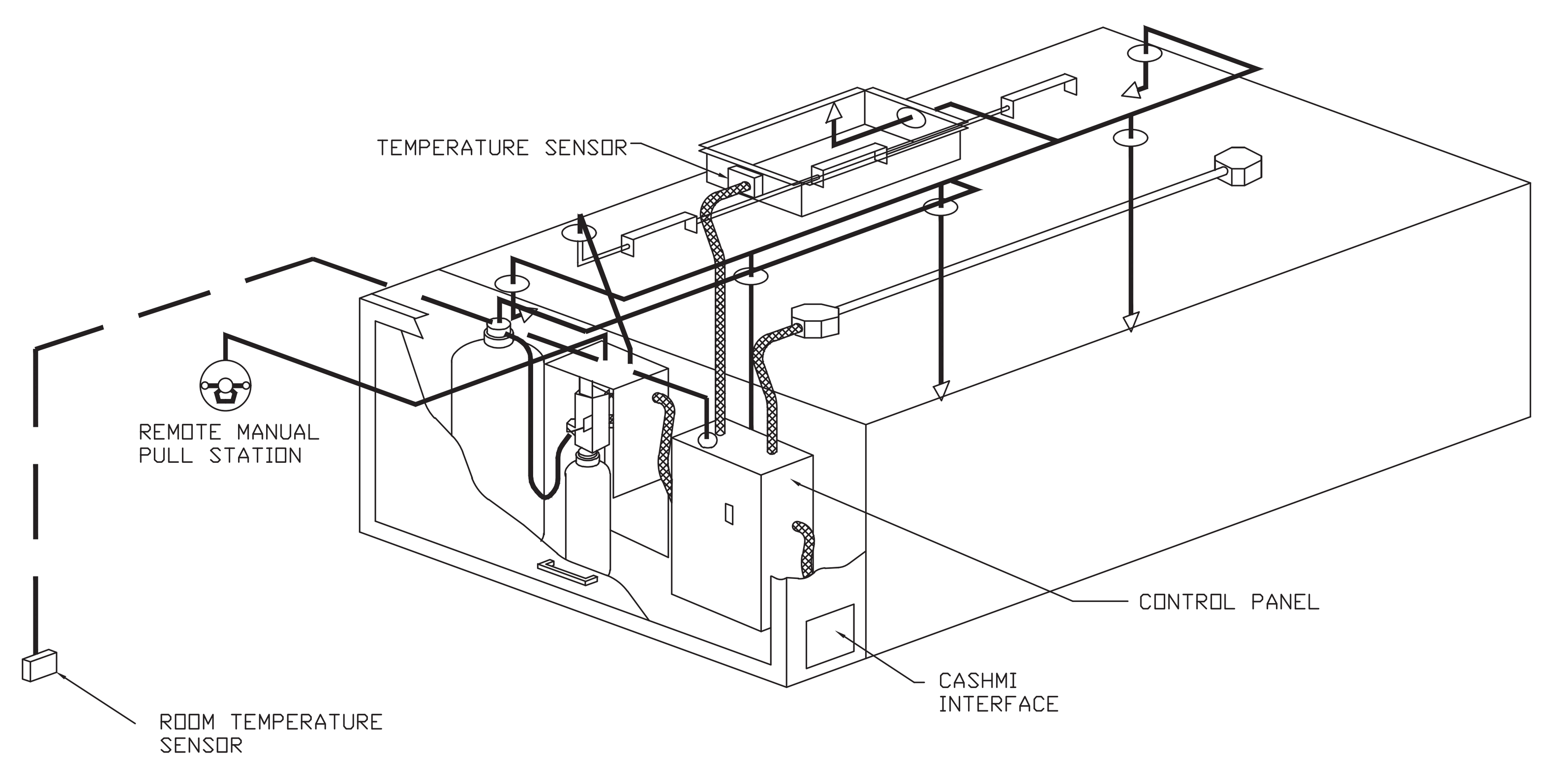
NO	TAG	PACKAGE #	LOCATION	SWITCHES LOCATION	SWITCHES QUANTITY	OPTION	FANS CONTROLLED FAN TAG	TYPE	Φ	HP	VOLT	FLA
1		DCV-1111	UTILITY CABINET LEFT	03 – UTILITY CABINET LEFT	1 LIGHT	SMART CONTROLS DCV	KX-1	EXHAUST	1	0.750	208	5.2
				HOOD # 1	1 FAN			SUPPLY	3	0.250	208	1.2





*****ATTENTION ELECTRICIAN*****
LOAD SIDE WIRING FOR EACH FAN MUST BE RUN IN SEPERATE CONDUIT FROM EMS SYSTEM TO EACH FAN ON ROOF.





TYPICAL CONTROL CENTER INSTALLATION

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DKR	DKR	MJV	JML
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SHEET TITLE
HVAC KITCHEN SCHEDULES (6 OF 10)

DRAWING No.
M2 615.00

JOB NO	MODEL NUMBER	DRAWN BY	SCHEMATIC TYPE	DESCRIPTION OF OPERATION:
5338935	DCV-1111		INSTALL	Fire System #1 TANK FS - 40. Tank-based Fire Protection System equipped with Electronic Detection utilizing CORE board as a Listed Release Mechanism. Installed in Hood Utility Cabinet with integral hood prewire panel.
	JOB NAME VGFD2001	DATE 2/28/2022	DWG NO ECP #1-3	

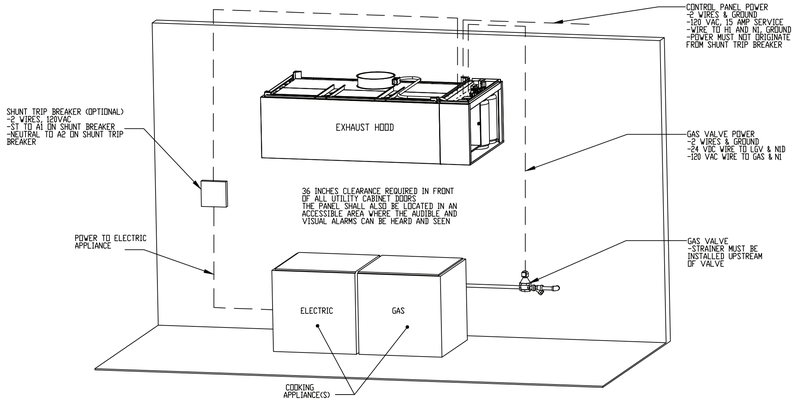
TANK PROTECTION ELECTRICAL DETAIL

02/10/2021 Rev. 2

FS-1: MASTER

ELECTRICIAN
1. WIRE MAIN CONTROL PANEL PER INCLUDED SCHEMATIC
2. WIRE ALL FANS PER INCLUDED SCHEMATIC
3. WIRE SHUNT TRIP BREAKER (OPTIONAL)
4. WIRE UDS APPLIANCE KILL SWITCH, IF EQUIPPED (OPTIONAL)
5. WIRE GAS VALVE

ELECTRICAL CONTRACTOR REQUIREMENT					
ITEM	CONNECTION IN PANEL	CONNECTION IN DEVICE	VOLTAGE	AMPERAGE	COMMENTS
SHUNT TRIP BREAKER (OPTIONAL)	ST & N1	BREAKER COIL (A1 & A2)	120 VAC	< 4 AMPS	ST TO A1 ON SHUNT BREAKER COIL, AND NEUTRAL TO A2 ON SHUNT TRIP BREAKER COIL
CONTROL PANEL POWER	H1 & N1 + GROUND	CIRCUIT BREAKER	120 VAC	15 AMPS	CONTROL PANEL POWER MUST NOT BE RUN THROUGH SHUNT TRIP BREAKER
UDS APPLIANCE KILL SWITCH (OPTIONAL)	KTS & N1	KTS & N1	120 VAC	< 4 AMPS	KILL SWITCH TERMINALS MUST BE IN SERIES WITH OTHER KILL SWITCHES
REMOTE 120VAC ANSUL AUTOMAN (OPTIONAL)	AU1, AU2	SOLENOID	120 VAC	< 6 AMPS	120V TO AU1, AU2 TO ANSUL ELECTRIC AUTOMAN, ANSUL SOLENOID TO NEUTRAL
GAS VALVE	LGV & N1D (IF 24 VDC) GAS & N1 (IF 120 VAC)	RED/RED/GREEN	24 VDC OR 120 VAC	< 10 AMPS	IF 24 VDC - 2 WIRES & GROUND, N1D TO RED, LGV TO RED, AND GREEN TO GROUND IF 120 VAC - 2 WIRES & GROUND GAS TO RED, N1 TO RED, AND GREEN TO GROUND



NOTE: SEE INSTALLATION, OPERATION, AND MAINTENANCE MANUAL FOR FURTHER INSTRUCTIONS

JOB NO	MODEL NUMBER	DRAWN BY	SCHEMATIC TYPE	DESCRIPTION OF OPERATION:
5338935	DCV-1111		INSTALL	Fire System #1 TANK FS - 40. Tank-based Fire Protection System equipped with Electronic Detection utilizing CORE board as a Listed Release Mechanism. Installed in Hood Utility Cabinet with integral hood prewire panel.
	JOB NAME VGFD2001	DATE 2/28/2022	DWG NO ECP #1-4	

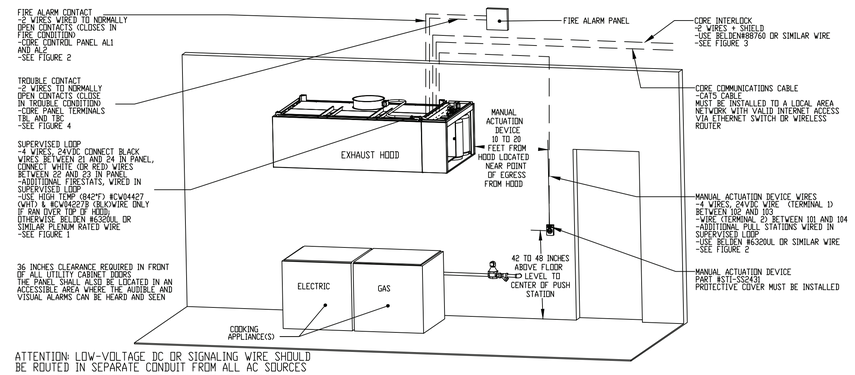
TANK PROTECTION LOW-VOLTAGE DETAIL

02/10/2021 Rev. 2

FS-1: MASTER

ALARM CONTRACTOR:
1. WIRE MANUAL ACTUATION DEVICE(S), REMOTE FIRESTAT(S), CORE INTERLOCK(S), FIRE SENSOR(S) AND FIRE ALARM CONTACTS
2. COMPLETE FINAL HOOKUP OF SYSTEM
3. VERIFY FINAL FIRE SYSTEM TEST

ALARM CONTRACTOR REQUIREMENT					
ITEM	CONNECTION IN PANEL	CONNECTION ON DEVICE	VOLTAGE	AMPERAGE	COMMENTS
MANUAL ACTUATION DEVICE(S)	101 AND 104 102 AND 103	1 & 2	24 VDC	< 10 AMPS	WIRE MANUAL ACTUATION DEVICE TERMINAL 1 BETWEEN CORE PANEL TERMINALS 102 AND 103 WIRE MANUAL ACTUATION DEVICE TERMINAL 2 BETWEEN CORE PANEL TERMINALS 101 AND 104 JUMPER 101 TO 104 AND 102 TO 103 IF NO MANUAL ACTUATION DEVICE IS INSTALLED
MANUAL ACTUATION DEVICE COVER	N/A	N/A	N/A	N/A	MANUAL ACTUATION DEVICE COVER MUST BE INSTALLED IF SURFACE MOUNTED, USE COVER EXTENSION ST1-65318
REMOTE FIRESTAT SENSOR(S)	23 AND 24 22 AND 23	BLACK AND WHITE	24 VDC	< 10 AMPS	WIRE FIRE SENSOR WHITE WIRES BETWEEN HOOD CORE PANEL TERMINALS 22 AND 23 WIRE FIRE SENSOR BLACK WIRE BETWEEN HOOD CORE PANEL TERMINALS 21 AND 24 HIGH TEMP (842°F) #CW04427 (WHT) & #CW04427B (BLK)WIRE OR SIMILAR ONLY IF RAN OVER TOP OF HOOD, OTHERWISE BELDEN #6328UL OR SIMILAR PLENUM RATED WIRE, SEE FIGURE 1
FIRE ALARM CONTACT	AL1, AL2	VARIES	50V MAX (AC/DC)	UP TO 1 AMP	FIRE ALARM RELAY CONTACTS FOR BUILDING FIRE ALARM LOCATED IN THE CORE ELECTRICAL CONTROL PANEL
CORE INTERLOCKS(S)	ILA, ILB, ILC	ILA, ILB, ILC	RS-485 COMMUNICATIONS SIGNAL		CORE SYSTEM (1) ILA, TO CORE SYSTEM (2) ILA CORE SYSTEM (1) ILB, TO CORE SYSTEM (2) ILB CORE SYSTEM (1) ILC, TO CORE SYSTEM (2) ILC. USE BELDEN# 88760 OR SIMILAR WIRE
TROUBLE CONTACT	TBC, TBL, TDK	VARIES	MAX 120 VAC	UP TO 6 AMPS	WIRE TO TBL & TBC NORMALLY OPEN CONTACT, CLOSES IN TROUBLE CONDITION
CORE COMMUNICATIONS CABLE	RJ-45 Jack	INTERNET CONNECTION	SIGNAL	<10 AMPS	TYPICAL CONNECTION CAT5 CABLE TO LOCAL AREA NETWORK VIA ETHERNET SWITCH OR WIRELESS ROUTER WITH VALID INTERNET CONNECTION



ATTENTION: LOW-VOLTAGE DC OR SIGNALING WIRE SHOULD
BE ROUTED IN SEPARATE CONDUIT FROM ALL AC SOURCES

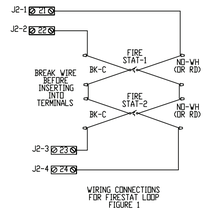
NOTE: SEE INSTALLATION, OPERATION, AND MAINTENANCE MANUAL FOR FURTHER INSTRUCTIONS

JOB NO	MODEL NUMBER	DRAWN BY	SCHEMATIC TYPE	DESCRIPTION OF OPERATION:
5338935	DCV-1111		INSTALL	Fire System #1 TANK FS - 40. Tank-based Fire Protection System equipped with Electronic Detection utilizing CORE board as a Listed Release Mechanism. Installed in Hood Utility Cabinet with integral hood prewire panel.
	JOB NAME VGFD2001	DATE 2/28/2022	DWG NO ECP #1-5	

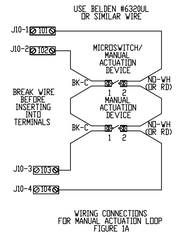
TANK PROTECTION LOW-VOLTAGE FIGURES

02/10/2021 Rev. 17

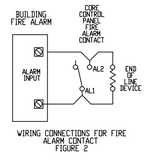
FS-1: MASTER



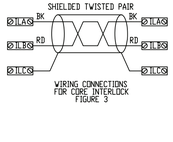
WIRING CONNECTIONS
FOR FIRESTAT LOOP
FIGURE 1



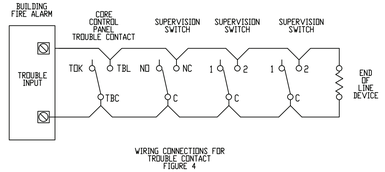
WIRING CONNECTIONS
FOR MANUAL ACTUATION LOOP
FIGURE 1A



WIRING CONNECTIONS FOR FIRE
ALARM CONTACT
FIGURE 2



WIRING CONNECTIONS
FOR CORE INTERLOCK
FIGURE 3



WIRING CONNECTIONS FOR
TROUBLE CONTACT
FIGURE 4

ATTENTION: LOW-VOLTAGE DC OR SIGNALING WIRE SHOULD
BE ROUTED IN SEPARATE CONDUIT FROM ALL AC SOURCES

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CONSULTANTS:

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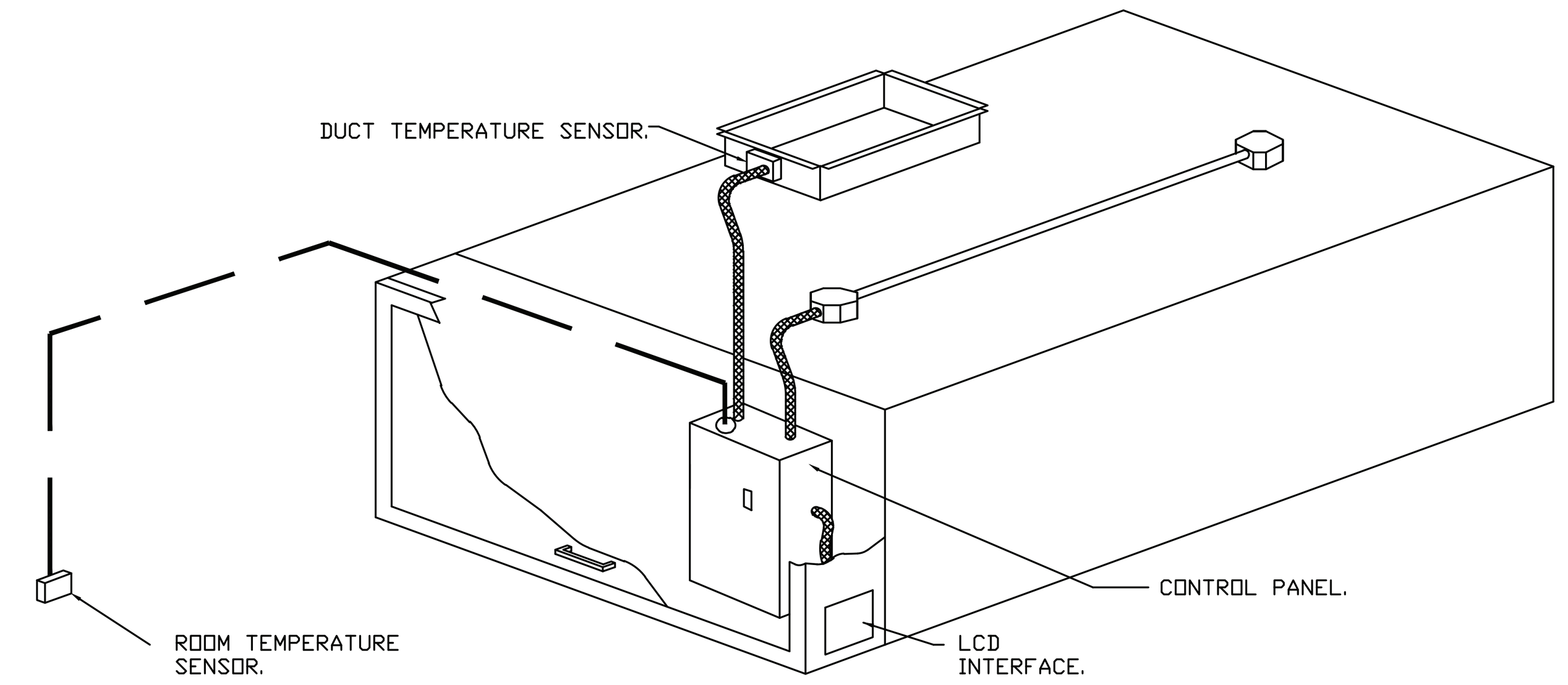
DEMAND CONTROL VENTILATION HOOD CONTROL PANEL SPECIFICATIONS:

- CONTROLS SHALL BE LISTED BY ETL (UL 508A) AND SHALL COMPLY WITH DEMAND VENTILATION SYSTEM TURNDOWN REQUIREMENTS OUTLINED IN IECC 403.2.8 (2015).
- 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 403.2.8.
- 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 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.

SYSTEM DESIGN VERIFICATION (SDV)

IF ORDERED, CAS SERVICE WILL PERFORM A SYSTEM DESIGN VERIFICATION (SDV) ONCE ALL EQUIPMENT HAS HAD A COMPLETE START UP PER THE OPERATION AND INSTALLATION MANUAL. TYPICALLY, THE SDV WILL BE PERFORMED AFTER ALL INSPECTIONS ARE COMPLETE.

ANY FIELD RELATED DISCREPANCIES THAT ARE DISCOVERED DURING THE SDV WILL BE BROUGHT TO THE ATTENTION OF THE GENERAL CONTRACTOR AND CORRESPONDING TRADES ON SITE. THESE ISSUES WILL BE DOCUMENTED AND FORWARDED TO THE APPROPRIATE SALES OFFICE. IF CAS SERVICE HAS TO RESOLVE A DISCREPANCY THAT IS A FIELD ISSUE, THE GENERAL CONTRACTOR WILL BE NOTIFIED AND BILLED FOR THE WORK. SHOULD A RETURN TRIP BE REQUIRED DUE TO ANY FIELD RELATED DISCREPANCY THAT CANNOT BE RESOLVED DURING THE SDV, THERE WILL BE ADDITIONAL TRIP CHARGES.

DURING THE SDV, CAS SERVICE WILL ADDRESS ANY DISCREPANCY THAT IS THE FAULT OF THE MANUFACTURER. SHOULD A RETURN TRIP BE REQUIRED, THE GENERAL CONTRACTOR AND APPROPRIATE SALES OFFICE WILL BE NOTIFIED. THERE WILL BE NO ADDITIONAL CHARGES FOR MANUFACTURER DISCREPANCIES.

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631.756.8000 • www.h2m.com

CONSULTANTS:

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STATE OF NEW YORK · JOHN LAHEY · 101303 · LICENSED PROFESSIONAL ENGINEER

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DKR	DKR	MJV	JML

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DUCTWORK #1 PARTS – JOB#5338935 DOUBLE WALL

TAG	PART #	CFM	GPM	ZONE	COVEREDBY	SP	WEIGHT	VELOCITY	QTY	DESCRIPTION
P1	DW1090DWASY-2R-S	1170				-0.21	20.35	2145.15	1	DOUBLE WALL DUCT - 10″ INNER 90 DUCT - 2 LAYERS REDUCED CLEARANCE - 14″ STAINLESS STEEL OUTER SHELL.
P2	DW1001DWOFFSETASY-2R-S	1170				-0.008	10.25	2145.15	1	DOUBLE WALL DUCT - 10″ INNER DUCT RISER & 1 DEGREE OFFSET - 2 LAYERS REDUCED CLEARANCE - 14″ STAINLESS STEEL OUTER SHELL.
P3	DW1047DWLT-2R-S	1170				-0.045	47.26	2145.15	1	DOUBLE WALL DUCT - 10″ INNER DUCT, 47″ LONG - 2 LAYERS REDUCED CLEARANCE - 14″ STAINLESS STEEL OUTER SHELL.
P4	DW1418SADKIT						5.82		1	DUCT - HORIZONTAL SADDLE SUPPORT KIT, USED WITH 14″ OD - INCLUDES UNI-STRUT CUT TO LENGTH,, DW1418SAD, & HARDWARE BAG 4.
P5	DW1047DWAJD-2R-S	1170				-0.034	72.54	2145.15	1	DOUBLE WALL ADJUSTABLE DUCT - 10″ INNER DUCT - 2 LAYERS REDUCED CLEARANCE - 14″ STAINLESS STEEL OUTER SHELL. MIN LENGTH = 11″ / MAX LENGTH = 49.5″ / ADJUSTMENT = 31.5″ / ADJUSTABLE SECTION MAY NEED TO BE CUT. INCLUDES SINGLE AND DOUBLE WALL "V" CLAMPS.
P6	DW1001DWOFFSETASY-2R-S	1170				-0.008	10.25	2145.15	1	DOUBLE WALL DUCT - 10″ INNER DUCT RISER & 1 DEGREE OFFSET - 2 LAYERS REDUCED CLEARANCE - 14″ STAINLESS STEEL OUTER SHELL.
P7 ASSEMBLED W/P8	DW10DWTEASY-2R-S	1170		1		-0.12	27.71	2145.15	1	DOUBLE WALL DUCT - 10″ INNER TEE DUCT - 2 LAYERS REDUCED CLEARANCE - 14″ STAINLESS STEEL OUTER SHELL.
P8 ASSEMBLED W/P7 O=S	DW10DWACCDOORCOV-2R-S						15.14		1	DOUBLE WALL DUCT - 10″ INNER ACCESS DOOR & 14″ ACCESS DOOR COVER WITH CLAMPS - 2 LAYERS REDUCED CLEARANCE - 14″ STAINLESS STEEL OUTER SHELL.
P9	DW1047DWLT-2R-S	1170				-0.045	47.26	2145.15	1	DOUBLE WALL DUCT - 10″ INNER DUCT, 47″ LONG - 2 LAYERS REDUCED CLEARANCE - 14″ STAINLESS STEEL OUTER SHELL.
P10	DW1047DWLT-2R-S	1170				-0.045	47.26	2145.15	1	DOUBLE WALL DUCT - 10″ INNER DUCT, 47″ LONG - 2 LAYERS REDUCED CLEARANCE - 14″ STAINLESS STEEL OUTER SHELL.
P11 ASSEMBLED W/P12	DW10DWTEASY-2R-S	1170		1		-0.021	27.71	2145.15	1	DOUBLE WALL DUCT - 10″ INNER TEE DUCT - 2 LAYERS REDUCED CLEARANCE - 14″ STAINLESS STEEL OUTER SHELL.
P12 ASSEMBLED W/P11 O=T	DW10DWACCDOORCOV-2R-S						15.14		1	DOUBLE WALL DUCT - 10″ INNER ACCESS DOOR & 14″ ACCESS DOOR COVER WITH CLAMPS - 2 LAYERS REDUCED CLEARANCE - 14″ STAINLESS STEEL OUTER SHELL.
P13	DW1047DWLT-2R-S	1170				-0.045	47.26	2145.15	1	DOUBLE WALL DUCT - 10″ INNER DUCT, 47″ LONG - 2 LAYERS REDUCED CLEARANCE - 14″ STAINLESS STEEL OUTER SHELL.
P14 ASSEMBLED W/P15	DW1035DWLTTP-2R-S	1170				-0.034	36.51	2145.15	1	DOUBLE WALL DUCT - 10″ INNER DUCT, 35″ LONG - 2 LAYERS REDUCED CLEARANCE - 14″ STAINLESS STEEL OUTER SHELL - USED WITH TRANSITION PLATE.
P15 ASSEMBLED W/P14	DW2310TPDB	1170					14.66	2145.15	1	DUCT TO CURB TRANSITION DOWN TURN, 23″ CURB TO 10″ DUCT, 16 GA ALUMINIZED. NOT FOR USE WITH EXHAUST FANS.
SYSTEM AT P15						-1.551	0.00			
P16	DW1418SADKIT						5.82		1	DUCT - HORIZONTAL SADDLE SUPPORT KIT, USED WITH 14″ OD - INCLUDES UNI-STRUT CUT TO LENGTH,, DW1418SAD, & HARDWARE BAG 4.
	3M-2000PLUS						0.80		3	DUCT - 3M FIRE BARRIER 2000 PLUS SILICONE - USED AS SEALANT TO SEAL DUCT JOINTS.
	DW10DWCLASY-2R-S						5.67		8	DUCT - 10″ DUCT - 14″ DOUBLE "V" CLAMP - 2R INSULATION & SINGLE "V" CLAMP INCLUDED - REDUCED CLEARANCE.
TOTAL WEIGHT							498.70			

DOUBLE WALL FACTORY BUILT DUCTWORK

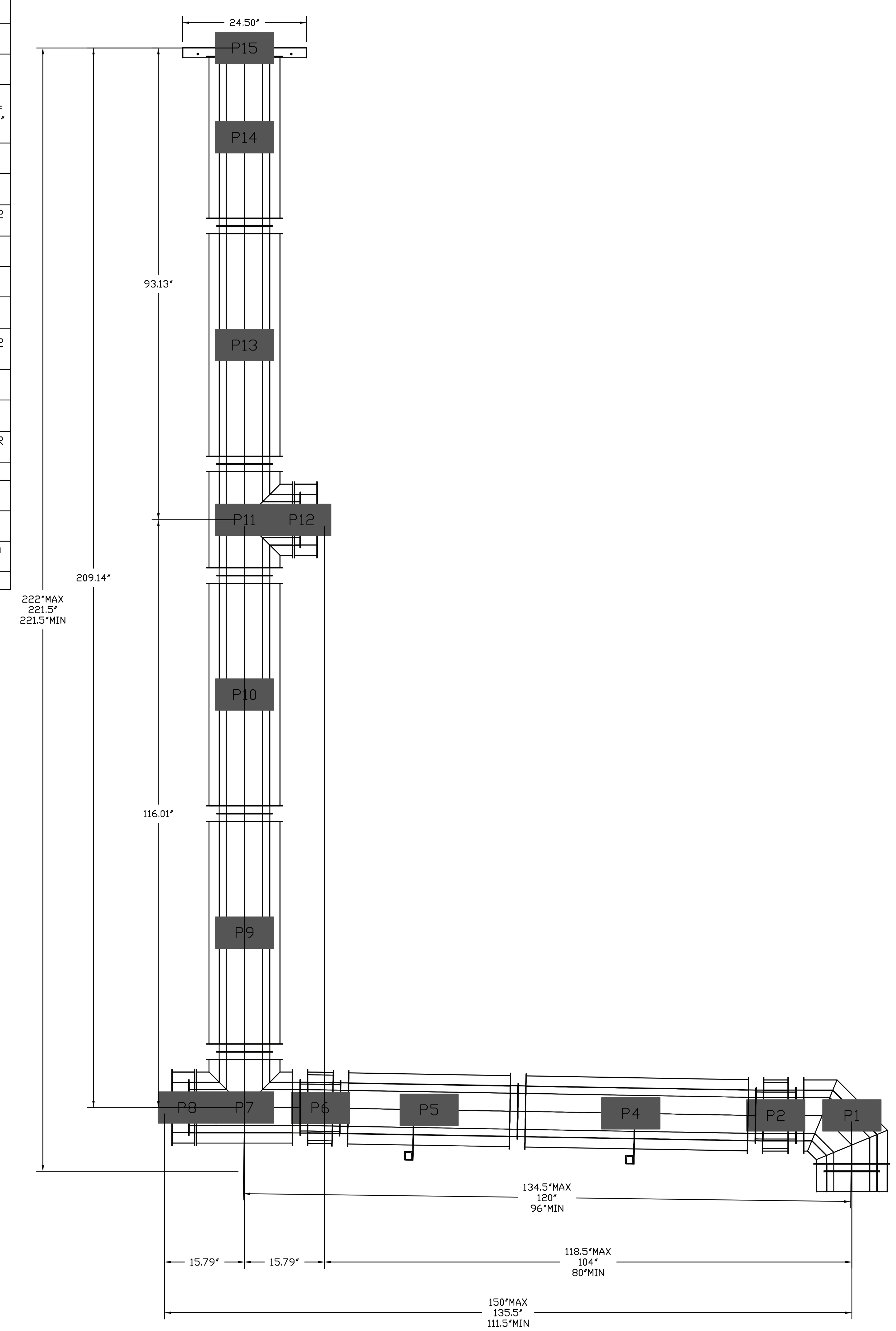
- ALL DUCTWORK IS REQUIRED TO BE INSTALLED WITH THE MAXIMUM SUPPORT SPACING LISTED BELOW.
- FOR A COMPLETE LIST OF APPROVED SUPPORT METHODS, SEE THE ENTIRE INSTALLATION AND OPERATION MANUAL
- DUCTWORK SHALL SLOPE NOT LESS THAN 1/16″ PER LINEAR FOOT TOWARDS THE HOOD OR AN APPROVED GREASE COLLECTION RESERVOIR.
- WHERE HORIZONTAL DUCTS EXCEED 75 FEET IN LENGTH, THE SLOPE SHALL NOT BE LESS THAN 3/16″ PER LINEAR FOOT.

HORIZONTAL	
DUCT DIAMETER	SUPPORT SPACING (FT)
5″	7′
6″	7′
7″	7′
8″	7′
10″	7′
12″	7′
14″	7′
16″	7′
18″	5′
20″	5′
22″	5′
24″	5′
26″	5′
28″	5′
30″	5′
32″	5′
34″	5′
36″	5′

VERTICAL			
TYPE	WALL SUPPORT (FT)	CURB SUPPORT (FT)	FLOOR SUPPORT (FT)
2R & 2R HT (5″-16″)	20′	24′	24′
2R (18″)	18′	24′	24′
3R & 3Z (5″-24″)	10′	24′	24′
3Z (26″ -36″)	10′	20′	20′

DO NOT LEAK TEST USING SMOKE BOMBS CONTAINING CHLORINES/CHLORIDES. CONSULT WITH CAPTIVEAIRE FOR PROPER LEAK TESTING METHODS.

DUCTWORK #1 FRONT VIEW



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"ALTERATION OF THIS DOCUMENT EXCEPT BY A LICENSED PROFESSIONAL IS ILLEGAL"

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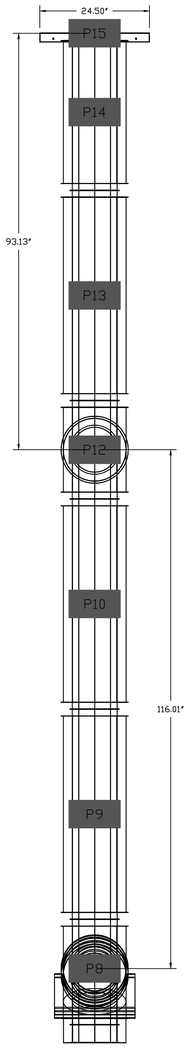
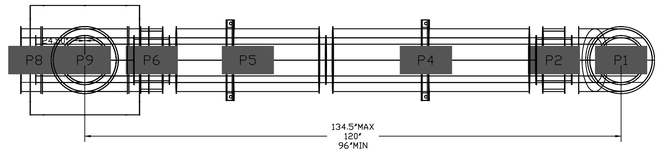
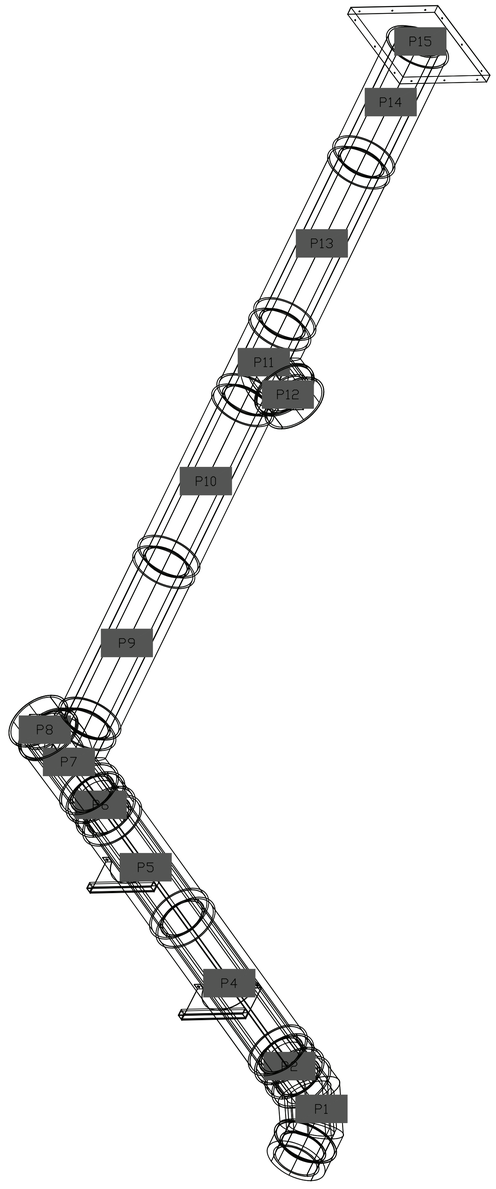
DUCTWORK #1 SIDE VIEW



DUCTWORK #1 TOP VIEW



DUCTWORK #1 SE VIEW



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= PIPING ON EXTERIOR OF BUILDING, HEAT TRACED.

ROOF

MAU-118 HWC — 5.1 GPM ABV
RTU-2 HWC — 4.4 GPM ABV
DOAS-1 HWC — 18.1 GPM ABV

1" HWR / 1" HWS
2" HWR / 2" HWS

FTR-206-1,2,3&4 — 2.5 GPM ABV
FTR-210-1&2 — 2.5 GPM ABV
FTR-215 — 2.5 GPM ABV
FTR-214 — 2.5 GPM ABV
FTR-213 — 2.5 GPM ABV

3/4" HWR / 3/4" HWS
1" HWR / 1" HWS
1-1/4" HWR / 1-1/4" HWS
1-1/2" HWR / 1-1/2" HWS
2" HWR / 2" HWS

FTR-204A-1,2,3,4&5 — 2.5 GPM ABV
FTR-202-1&2 — 1.5 GPM ABV
CUH-B — 2.5 GPM ABV
FTR-211 — 2.5 GPM ABV
FTR-212 — 2.5 GPM ABV

SECOND FLOOR

FTR-120-1&2 — 2.5 GPM ABV
CUH-A — 1.5 GPM ABV
FTR-116-1,2,3,3A,4&5 — 2.5 GPM ABV
CUH-126 — 1.5 GPM ABV

UH-4 — 4.8 GPM
UH-3 — 4.8 GPM (STR)
UH-2 — 4.8 GPM
UH-1 — 4.8 GPM

HHWP-5 20 GPM
HHWP-6 20 GPM (STANDBY)

ADS-1 — TEMP SENSOR — TO DRAIN

TYP. OUTDOOR AIR TEMPERATURE SENSOR
SENSOR TEMP

1" MAKE UP WATER
BACKFLOW PREVENTER (BY "P")
PRESSURE REDUCING VALVE

CLOSELY SPACED TEE'S MAX. 4X PIPE DIA. APART

LWCO
LWCO

BL-1
BL-2
ET-1

CONDENSATE NEUTRALIZATION KIT
CONDENSATE NEUTRALIZATION KIT

MV-1
CKV

HHWP-1 70 GPM
HHWP-2 70 GPM (STANDBY)
HHWP-3 28 GPM
HHWP-4 28 GPM (STANDBY)

TEMP
TEMP

RFM-7 — 0.6 GPM ABV — 6320 BTU/H
RFM-6 — 0.7 GPM ABV — 6973 BTU/H
RFM-5 — 0.6 GPM ABV — 6376 BTU/H
RFM-4 — 2.4 GPM ABV — 25904 BTU/H
RFM-2 — 10 GPM ABV — 102663 BTU/H
RFM-3 — 0.9 GPM ABV — 8902 BTU/H
RFM-1 — 9.7 GPM ABV — 99621 BTU/H

FIRST FLOOR

NOTE: PRIMARY BOILER PUMP(S) ARE INTERNAL TO THE BOILER PACKAGE

H2M architects + engineers
538 Broad Hollow Road, 4th Floor East
Melville, NY 11747
631.756.8000 • www.h2m.com

CONSULTANTS:

MARK	DATE	DESCRIPTION
2	12/22/2022	REVS. PER TOWN COMMENTS

"ALTERATION OF THIS DOCUMENT EXCEPT BY A LICENSED PROFESSIONAL IS ILLEGAL"

DESIGNED BY:	DRAWN BY:	CHECKED BY:	REVIEWED BY:
DKR	DKR	MJV	JML

PROJECT No.:	DATE:	SCALE:
VGFD2001	JULY 2022	AS SHOWN

CLIENT

VAILS GATE FIRE DISTRICT

New Storage Building (Phase I)
New Fire Station (Phase II)

872 Blooming Grove Turnpike
New Windsor, NY 12553

CONTRACT

CONTRACT G
GENERAL CONSTRUCTION

STATUS

FINAL BID DOCUMENT

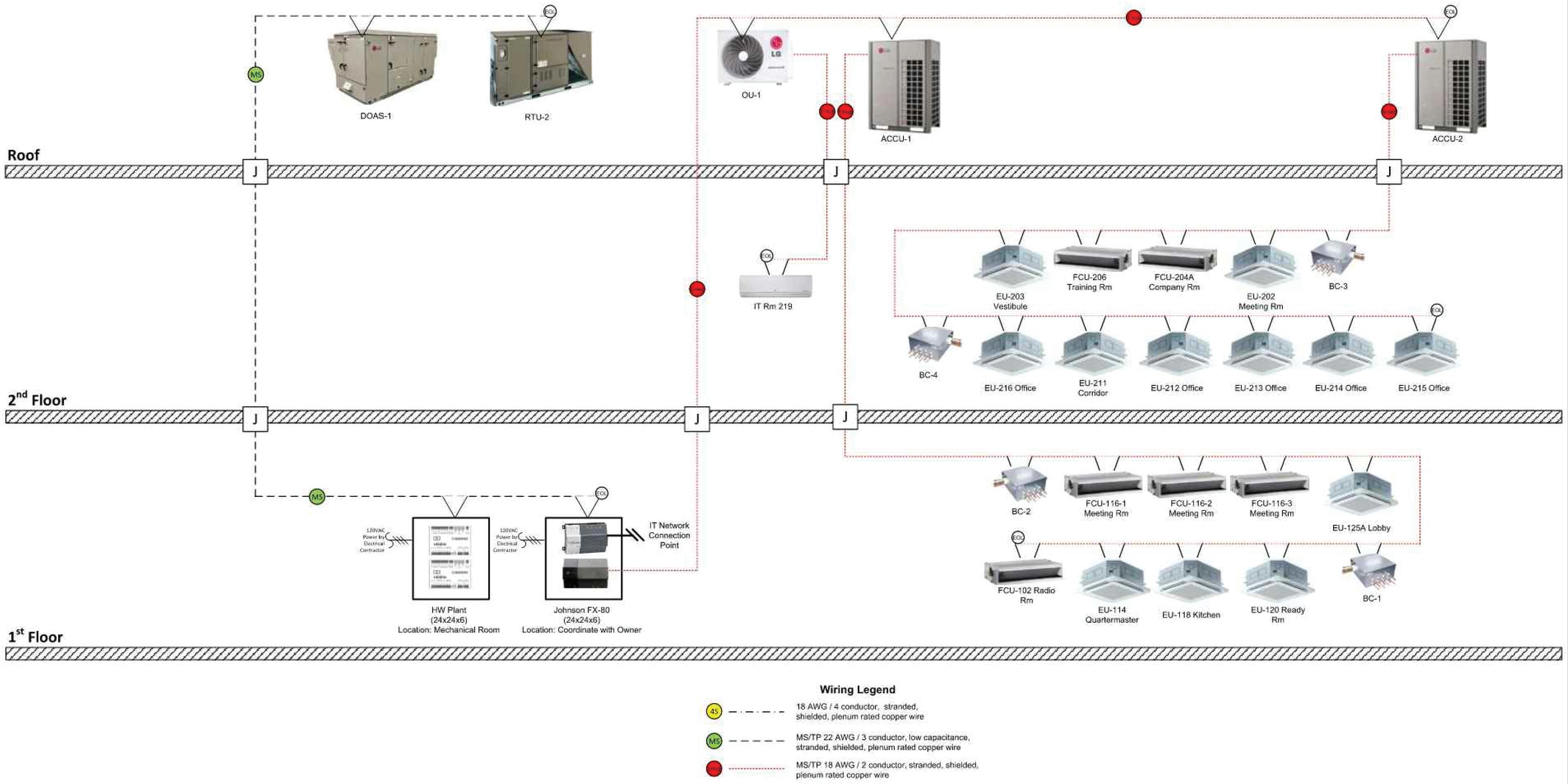
SHEET TITLE

HVAC FLOW DIAGRAM (1 OF 1)

DRAWING No.

M2 640.02

System Architecture



Wiring Legend

- 4S — 18 AWG / 4 conductor, stranded, shielded, plenum rated copper wire
- MS — MS/TP 22 AWG / 3 conductor, low capacitance, stranded, shielded, plenum rated copper wire
- MS/TP 18 AWG / 2 conductor, stranded, shielded, plenum rated copper wire

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CONSULTANTS:

MARK	DATE	DESCRIPTION

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SHEET TITLE

HVAC CONTROLS DIAGRAM (1 OF 1)

DRAWING No.

M2 650.00