

## 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. H2O	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





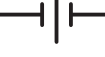


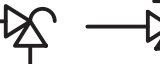


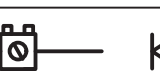









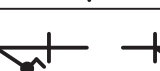



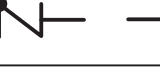



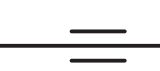


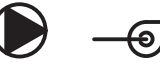
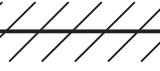
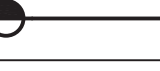
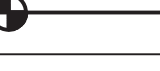

## DUCTWORK LEGEND

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	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
Ⓒ2		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 TO 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 AIR 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

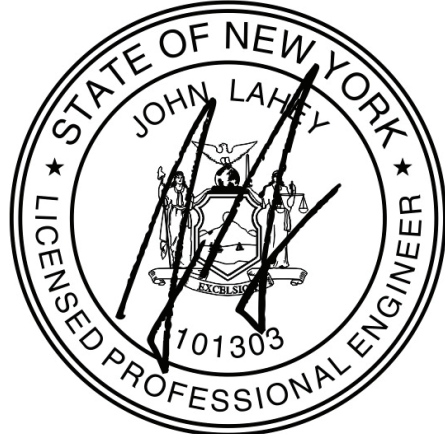
1. ABBREVIATIONS AND SYMBOLS ON THIS SHEET DO NOT DEFINE THE SCOPE OF WORK.



architects  
+  
engineers

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**CONSULTANTS:**

[illegible]

DESIGNED BY: DKR	DRAWN BY: DKR	CHECKED BY: MJV	REVIEWED BY: JML
PROJECT No.: VGFD2001		DATE: JULY 2022	SCALE: 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**

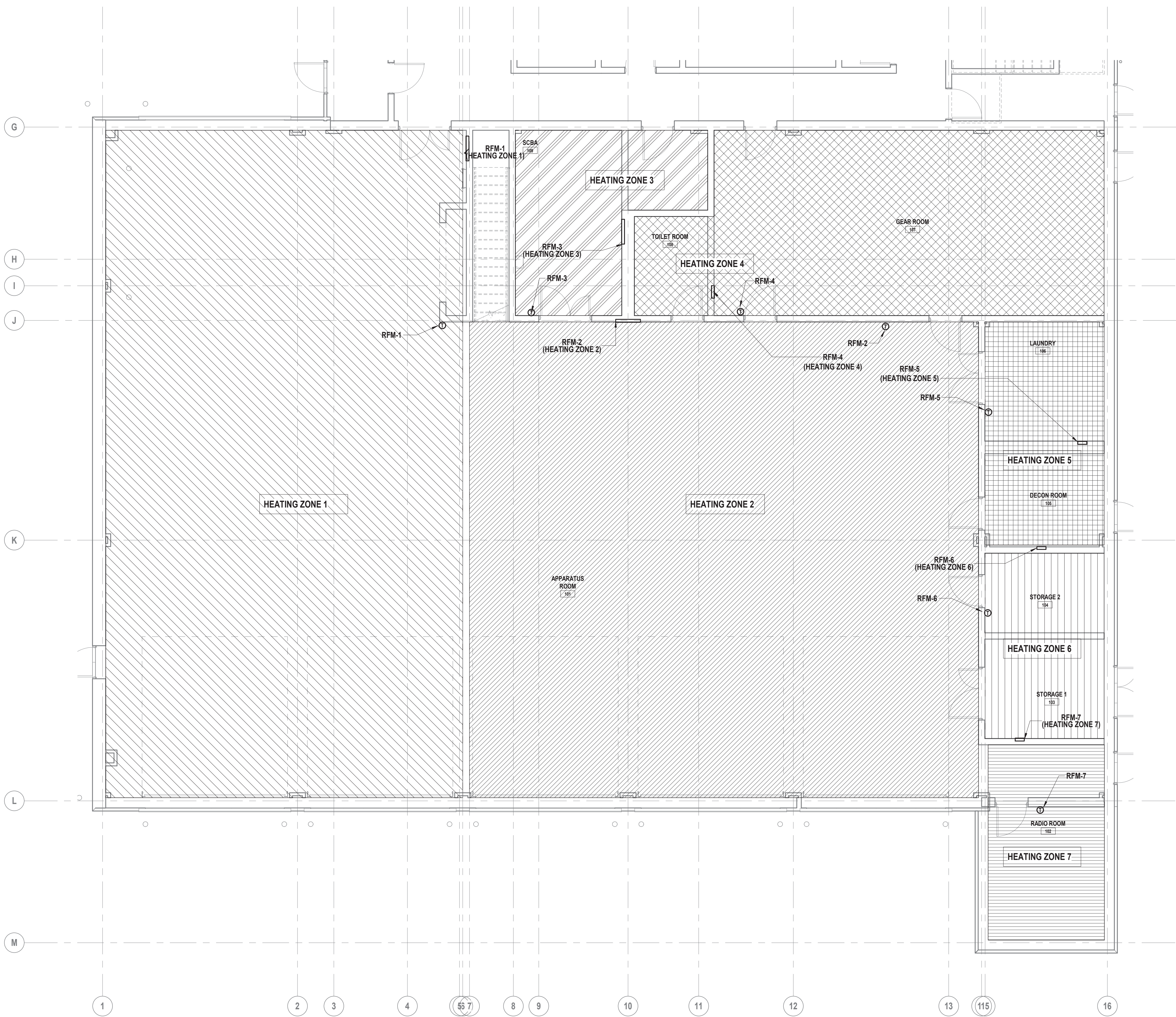
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## HVAC LEGENDS, SYMBOLS, ABBREVIATIONS, AND GENERAL NOTES

DRAWING No.

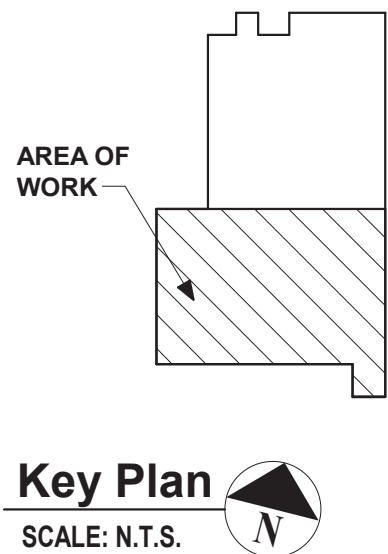
**M2 001.00**





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

- RADIANT FLOOR ZONE LEGEND:
- [diagonal lines /] = ZONE 1, CONTAINS RADIANT FLOOR PIPING WITH 10 CIRCUITS TO MANIFOLD RFM-1.
  - [diagonal lines \] = ZONE 2, CONTAINS RADIANT FLOOR PIPING WITH 10 CIRCUITS TO MANIFOLD RFM-2.
  - [diagonal lines / and \] = ZONE 3, CONTAINS RADIANT FLOOR PIPING WITH 2 CIRCUITS TO MANIFOLD RFM-3.
  - [cross-hatch] = ZONE 4, CONTAINS RADIANT FLOOR PIPING WITH 4 CIRCUITS TO MANIFOLD RFM-4.
  - [grid pattern] = ZONE 5, CONTAINS RADIANT FLOOR PIPING WITH 2 CIRCUITS TO MANIFOLD RFM-5.
  - [vertical lines] = ZONE 6, CONTAINS RADIANT FLOOR PIPING WITH 2 CIRCUITS TO MANIFOLD RFM-6.
  - [horizontal lines] = ZONE 7, CONTAINS RADIANT FLOOR PIPING WITH 2 CIRCUITS TO MANIFOLD RFM-7.



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VAILS GATE FIRE DISTRICT

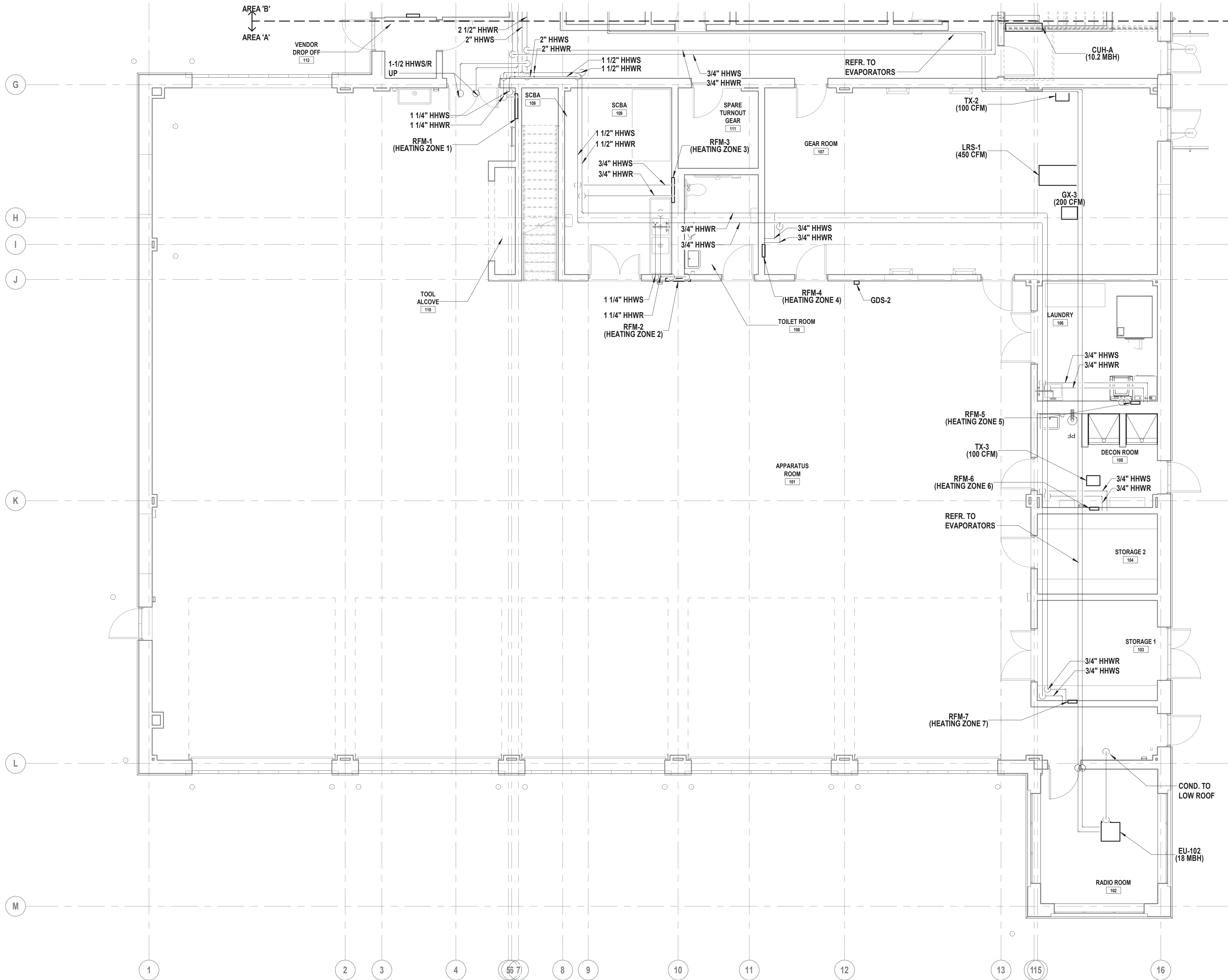
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CONTRACT	CONTRACT G GENERAL CONSTRUCTION
STATUS	FINAL BID DOCUMENT
SHEET TITLE	SLAB HVAC PIPING PLAN AREA A
DRAWING No.	M2 100A.00



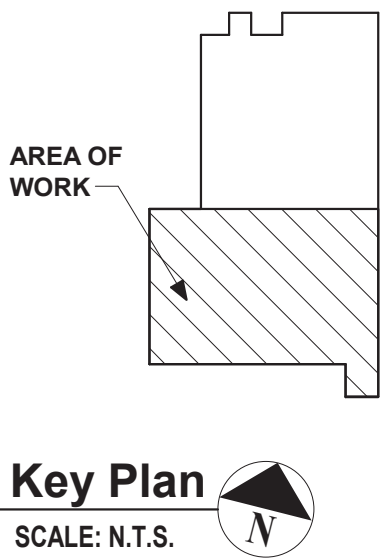
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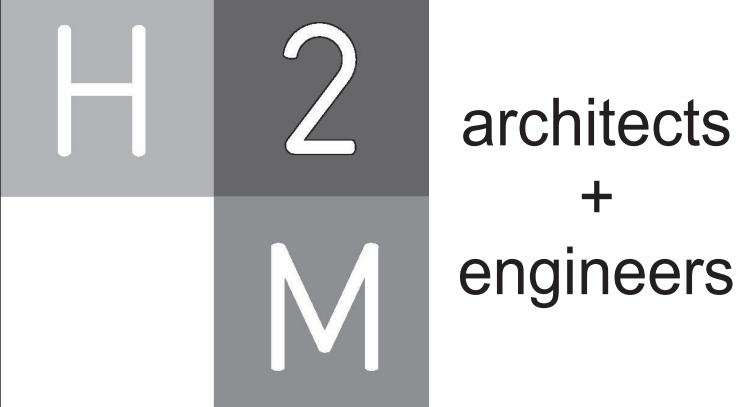
1 First Floor HVAC Piping Plan  
SCALE: 3/16" = 1'-0"

GENERAL NOTES:

- REFRIGERANT PIPING IS SCHEMATIC, COORDINATE REFRIGERANT PIPE SIZE WITH MANUFACTURER. PROVIDE PIPING SHOP DRAWING FROM MANUFACTURER FOR REVIEW.
- 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.
- SEE DETAILS FOR ISOLATION VALVE REQUIREMENTS.



Key Plan  
SCALE: N.T.S.



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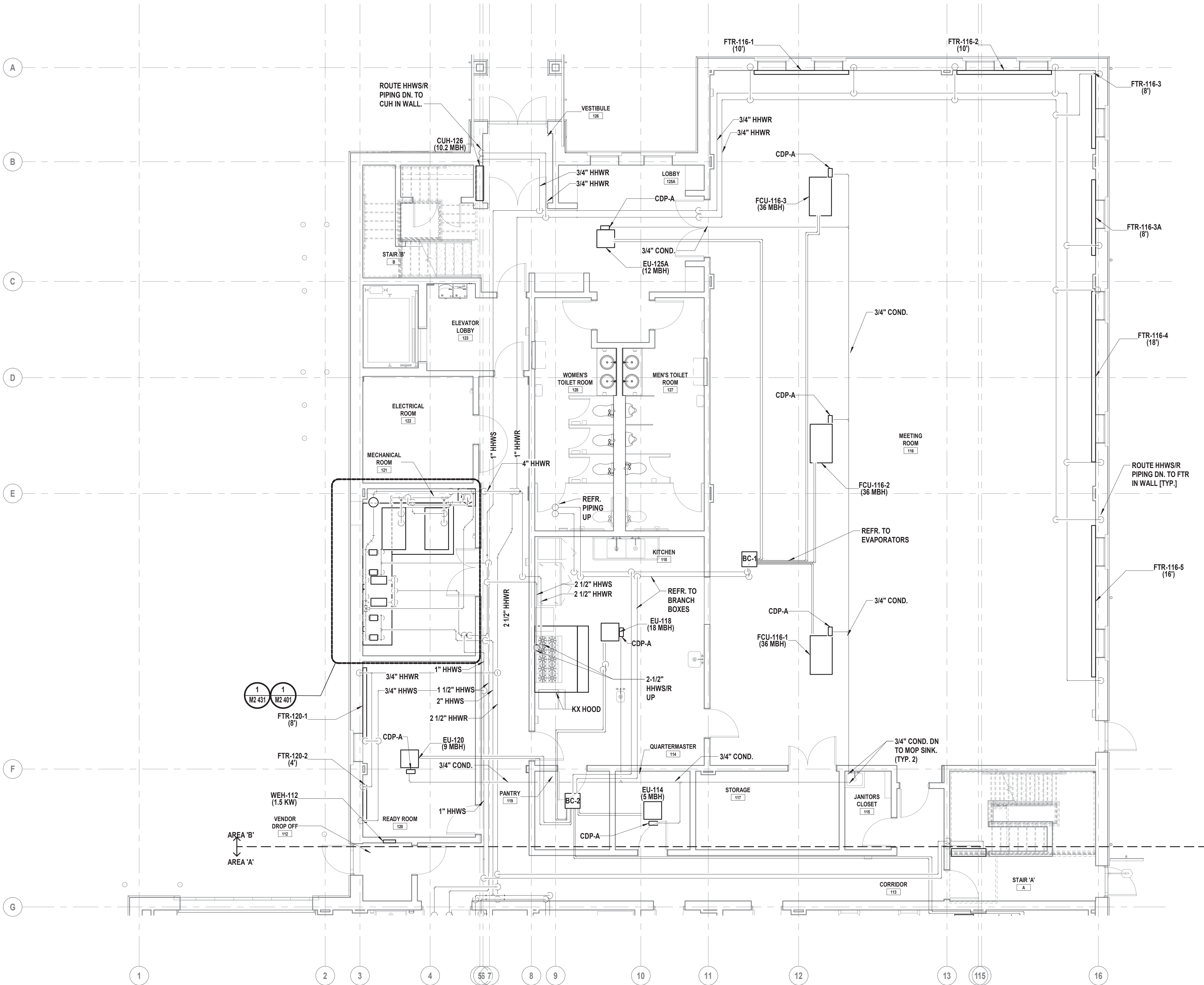
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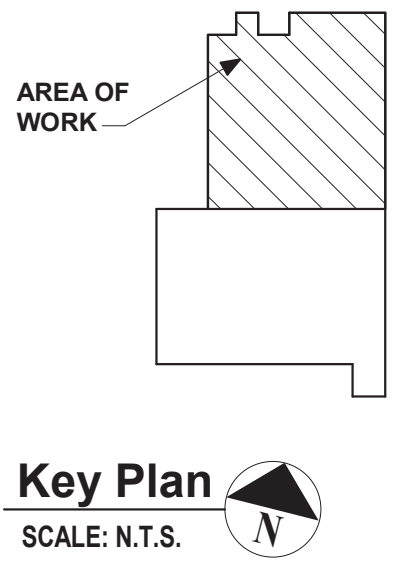
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CONTRACT	CONTRACT G GENERAL CONSTRUCTION
STATUS	FINAL BID DOCUMENT
SHEET TITLE	FIRST FLOOR HVAC PIPING PLAN AREA A
DRAWING No.	M2 101A.00

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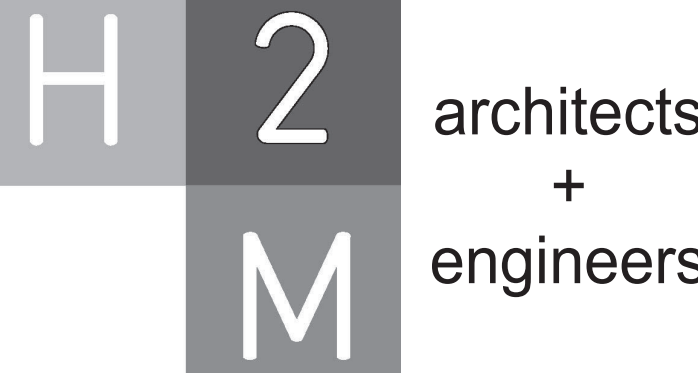


1 First Floor HVAC Piping Plan  
SCALE: 3/16" = 1'-0"



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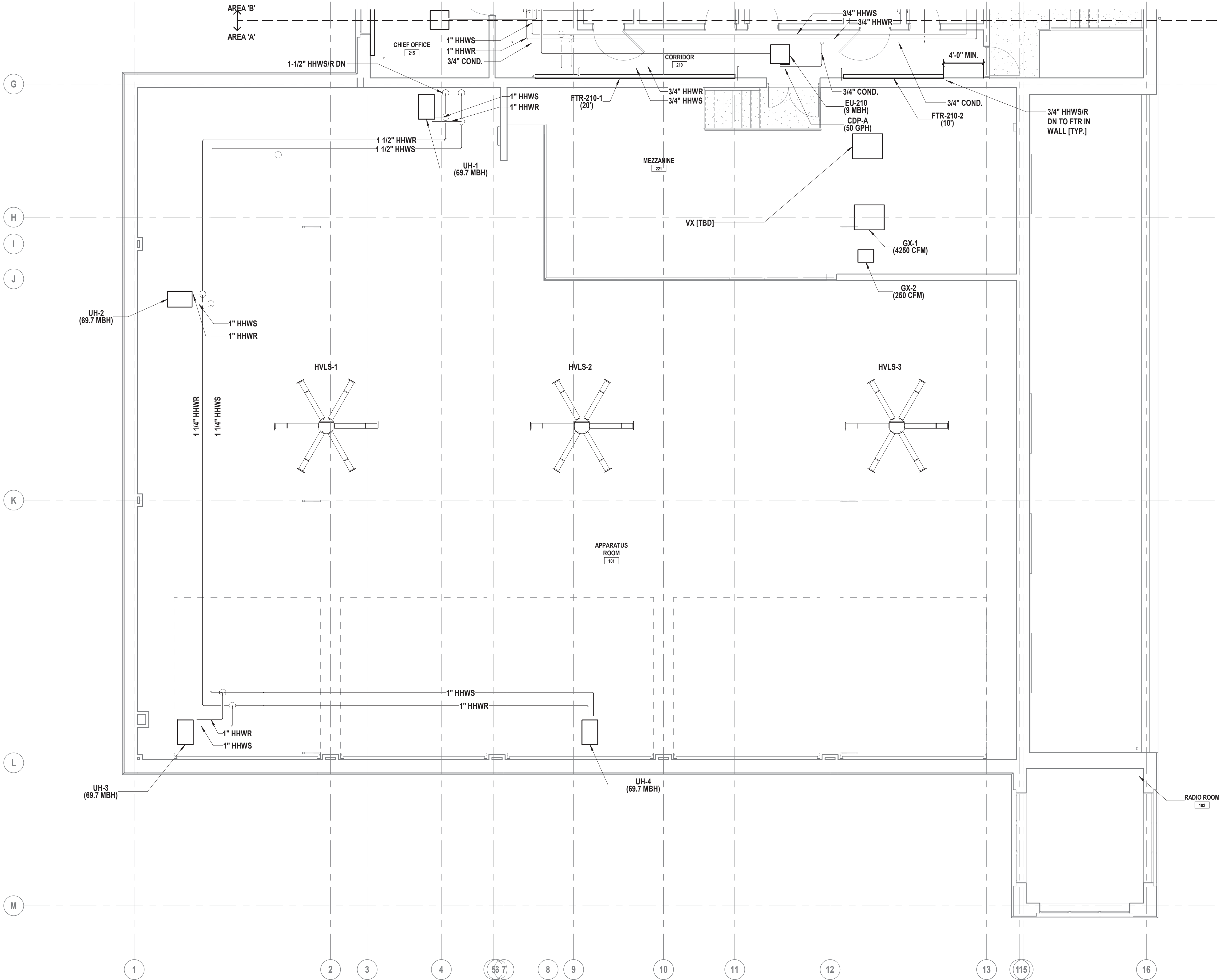
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**FIRST FLOOR HVAC PIPING PLAN  
AREA B**

DRAWING No.

**M2 101B.00**





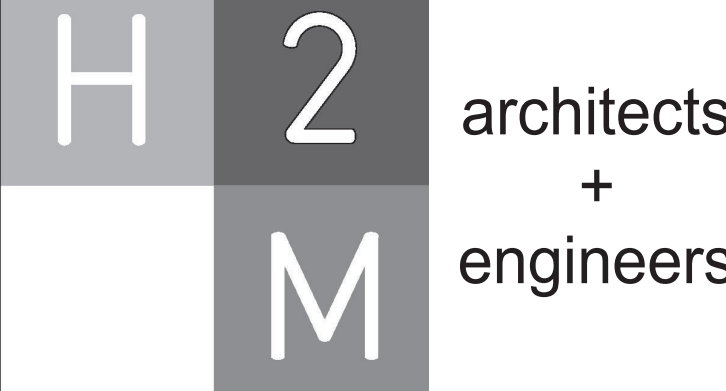
1 Second Floor HVAC Piping Plan  
SCALE: 3/16" = 1'-0"

GENERAL NOTES:

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- SEE DETAILS FOR ISOLATION VALVE REQUIREMENTS.

KEYED NOTES:

VX BY DISTRICT FOR REFERENCE ONLY



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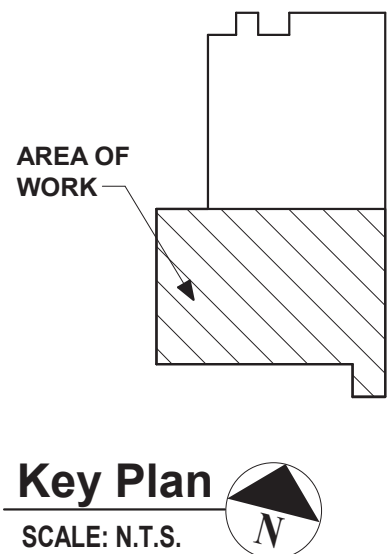
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SHEET TITLE

**SECOND FLOOR HVAC PIPING PLAN  
AREA A**

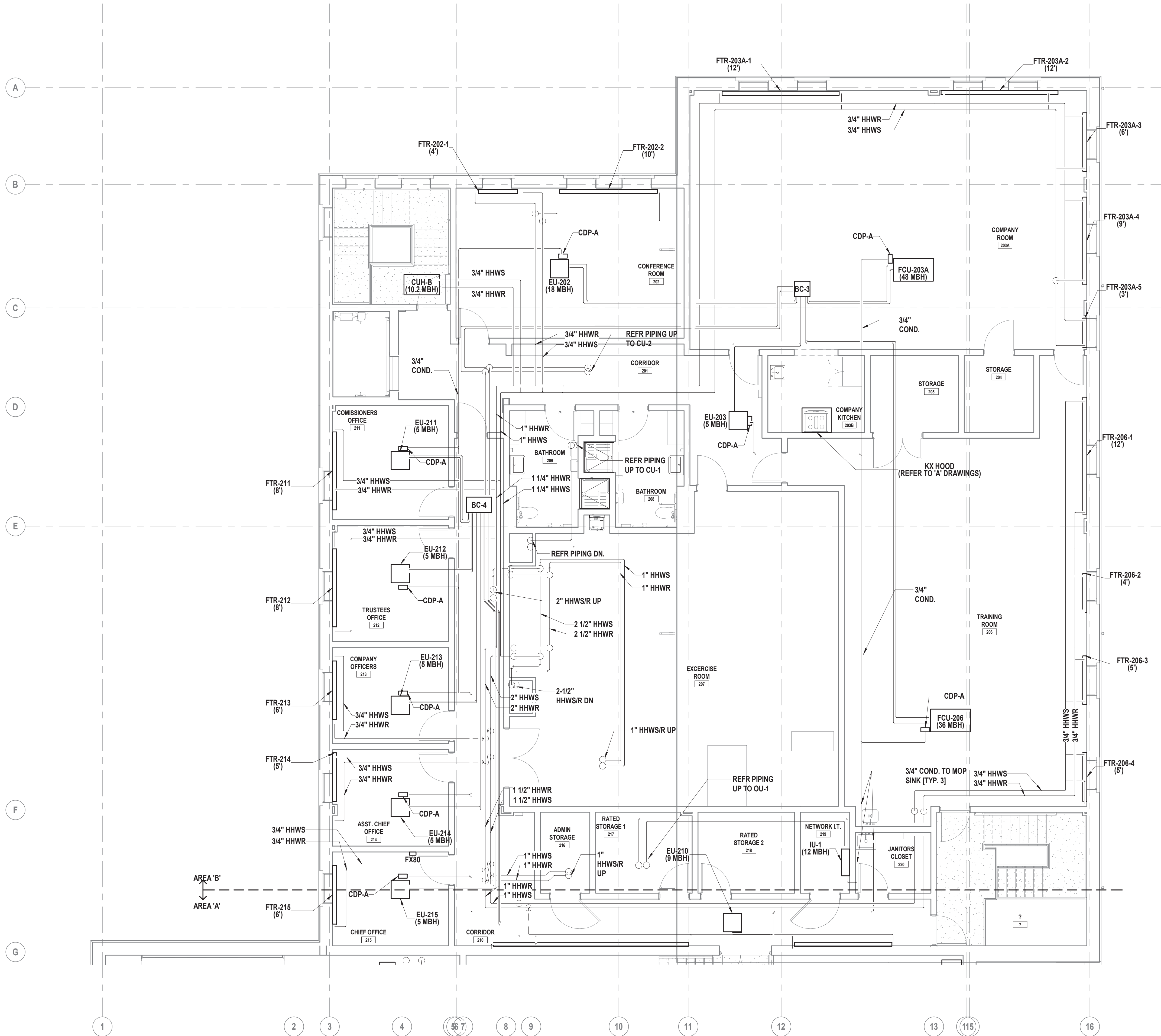
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**M2 102A.00**

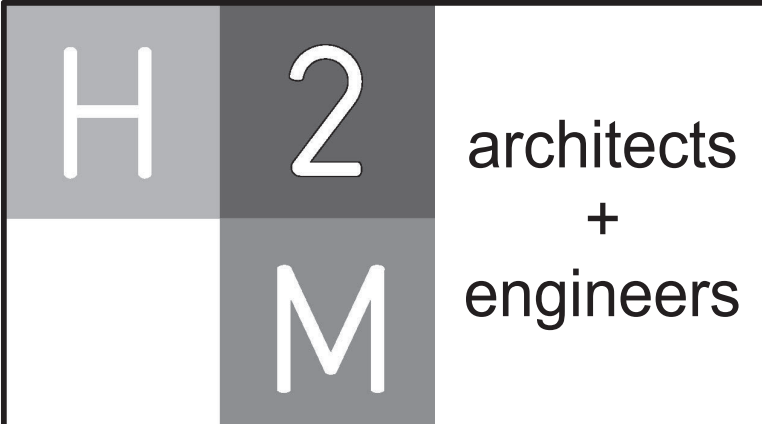
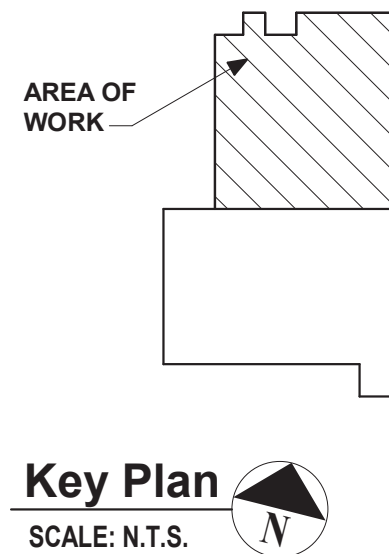


Key Plan  
SCALE: N.T.S.

C:\Users\Dragone\Documents\VGFD2001-Central2-1-H\_Dragone.rvt 7/15/2022 12:54:34 PM



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



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Melville, NY 11747  
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CONSULTANTS:


MARK	DATE	DESCRIPTION



DESIGNED BY: DKR	DRAWN BY: DKR	CHECKED BY: MJV	REVIEWED BY: JML
PROJECT No: VGFD2001	DATE: JULY 2022	SCALE: 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

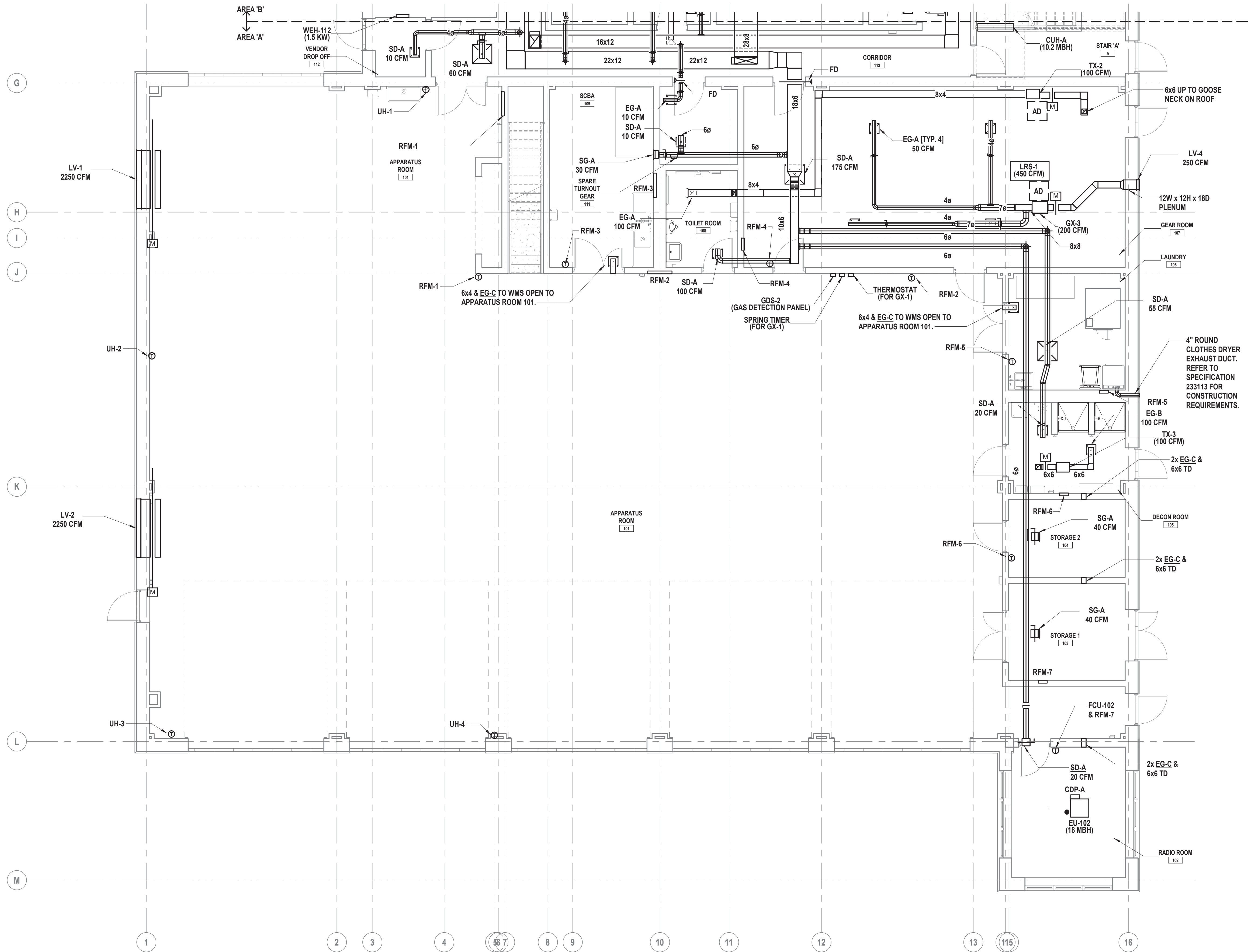
**SECOND FLOOR HVAC PIPING PLAN  
AREA B**

DRAWING No.

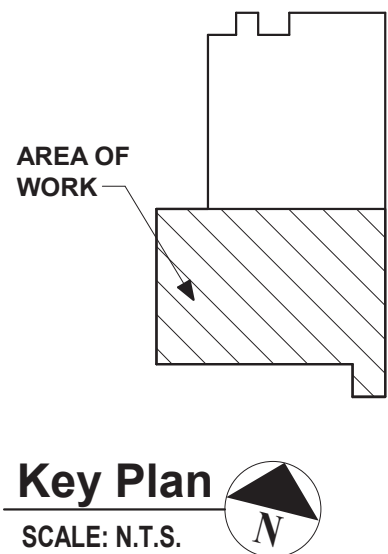
**M2 102B.00**



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1 First Floor Ductwork Plan  
SCALE: 3/16" = 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.
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

H2M

architects  
+  
engineers

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CONSULTANTS:		

MARK	DATE	DESCRIPTION

DESIGNED BY: DKR  
PROJECT No: VGFD2001

DRAWN BY: DKR  
DATE: JULY 2022

CHECKED BY: MJV  
SCALE: AS SHOWN

REVIEWED BY: JML

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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

CONTRACT

CONTRACT G  
GENERAL CONSTRUCTION

STATUS

FINAL BID DOCUMENT

SHEET TITLE

FIRST FLOOR DUCTWORK PLAN  
AREA A

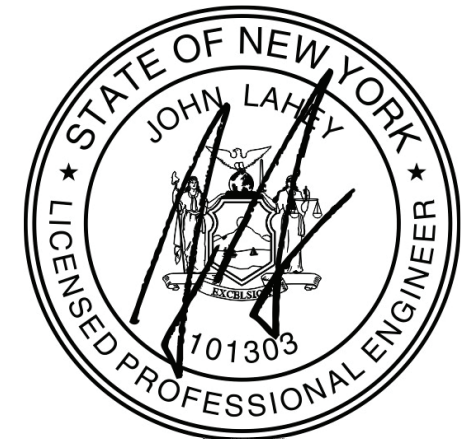
DRAWING No.

M2 131A.00



CONSULTANTS:

MARK	DATE	DESCRIPTION



DESIGNED BY: DKR	DRAWN BY: DKR	CHECKED BY: MJV	REVIEWED BY: JML
PROJECT No: VGFD2001	DATE: JULY 2022	SCALE: 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

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**CONTRACT G**  
**GENERAL CONSTRUCTION**

STATUS

**FINAL BID DOCUMENT**

SHEET TITLE

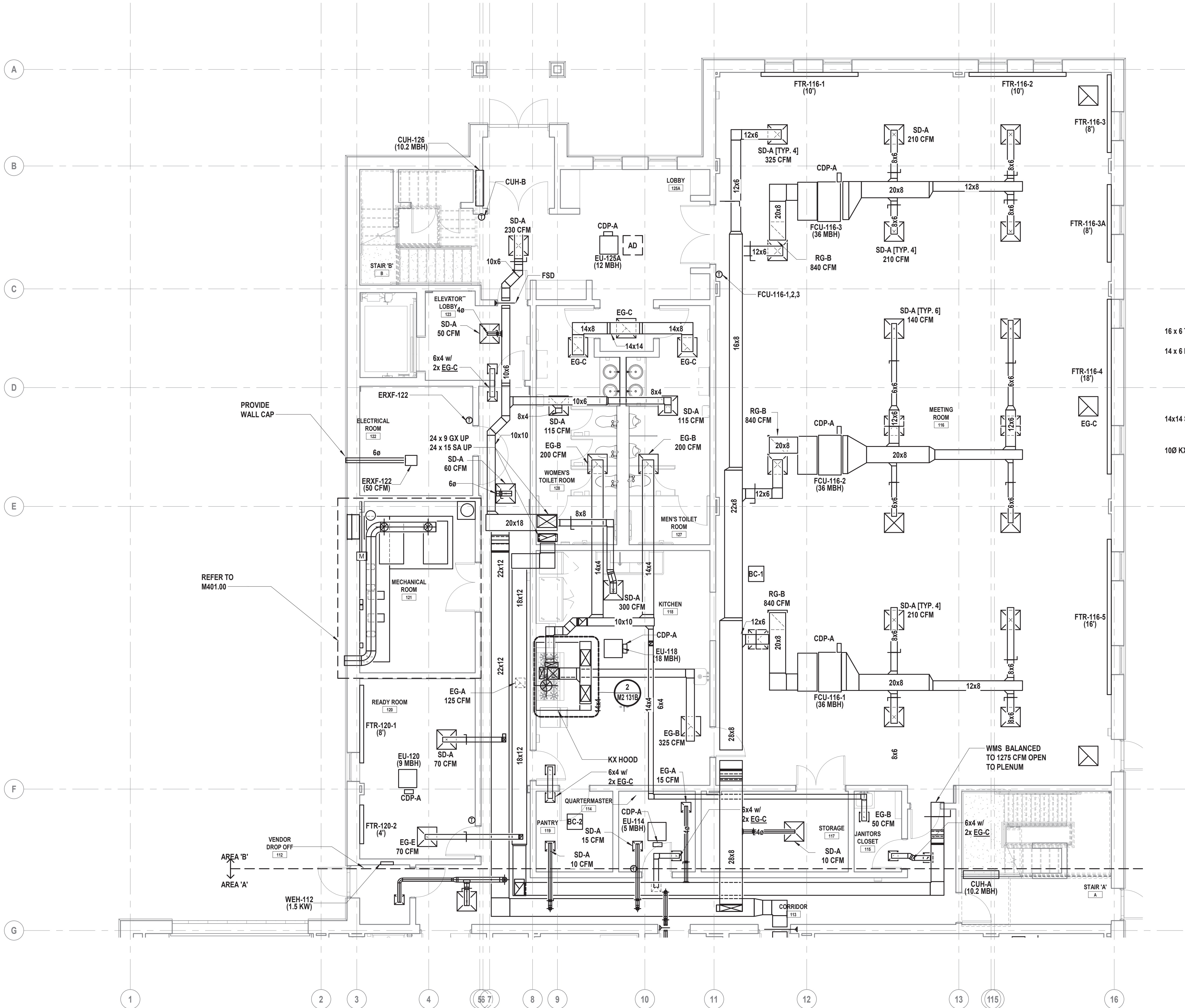
**FIRST FLOOR DUCTWORK PLAN  
AREA B**

DRAWING No.

**M2 131B.00**


#### GENERAL NOTES:

- ALL DUCT SIZES ARE CLEAR INSIDE DIMENSIONS. REFER TO SPECIFICATIONS FOR ALL DUCT CONSTRUCTION REQUIREMENTS.
- ALL SUPPLY, RETURN AND EXHAUST BRANCH DUCTWORK SHALL BE PROVIDED WITH VOLUME DAMPERS.
- MAINTAIN 10'-0" CLEARANCE BETWEEN OUTSIDE AIR AND EXHAUST AIR TERMINATIONS ON ROOF.
- COORDINATE WITH NEW STRUCTURE, OFFSET AS REQUIRED.
- MAINTAIN HEADROOM FOR ALL NEW HORIZONTAL DUCTWORK (6'-8" MINIMUM).
- PROVIDE SOUND PROOFED PENETRATIONS THROUGH ALL NON FIRE RATED INTERIOR WALLS. USE TREMCO ACOUSTICAL SEALANT OR APPROVED EQUAL.







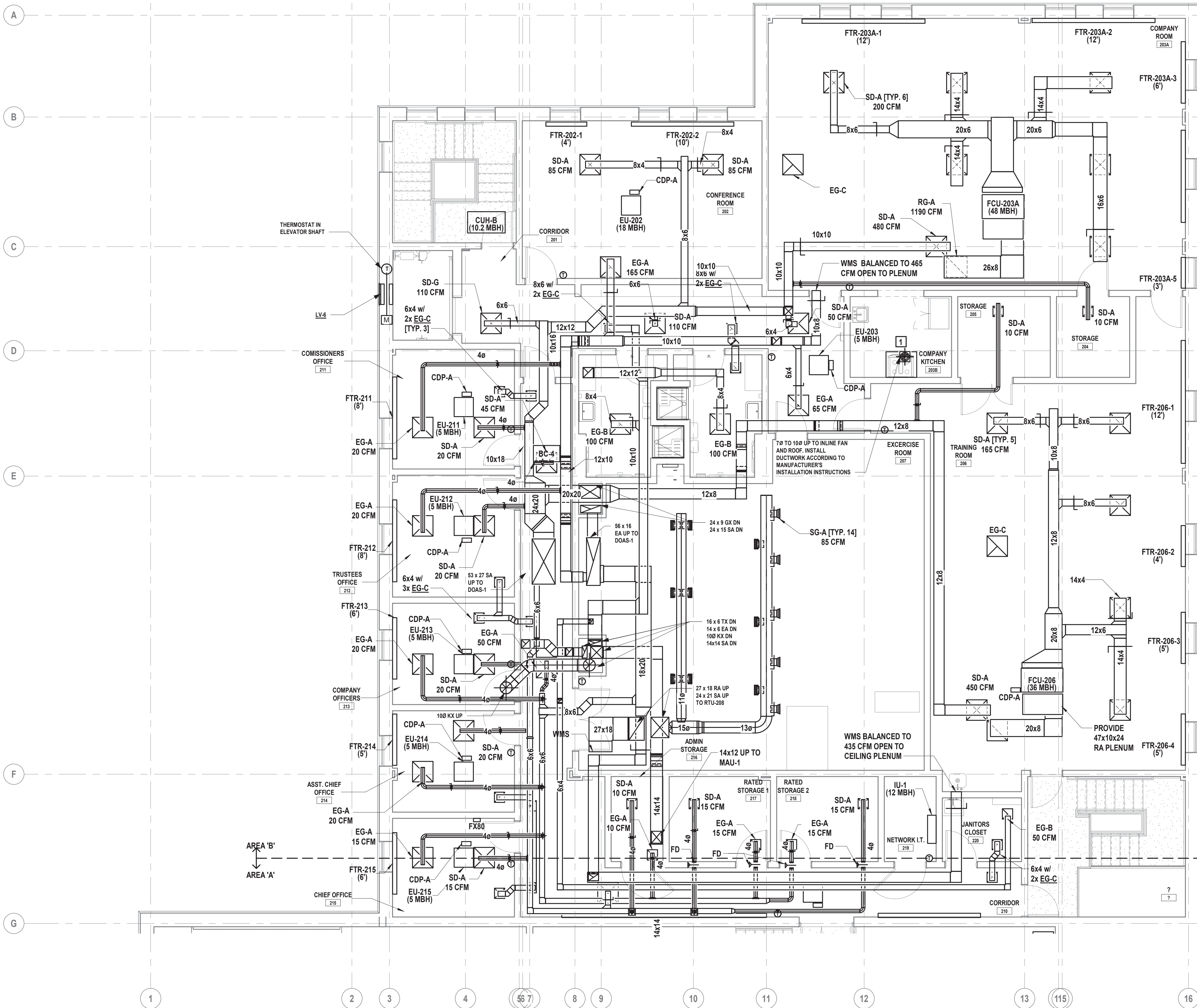
**Key Plan**   
SCALE: N.T.S.

DRAWING No.

**M2 132A.00**



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

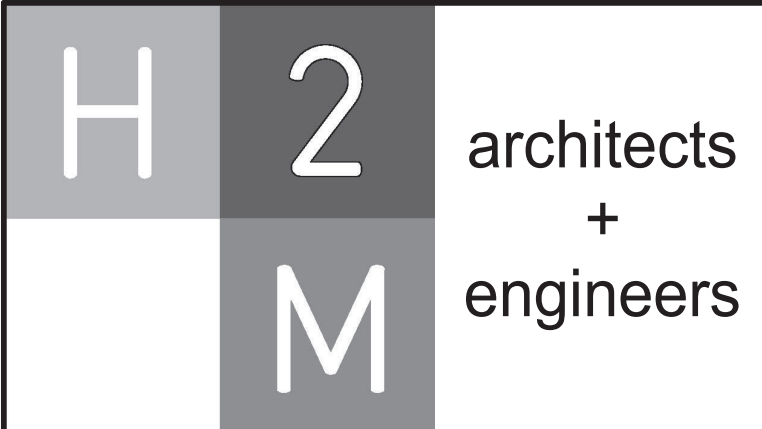
Key Plan  
SCALE: N.T.S.

GENERAL NOTES:

1. ALL DUCT SIZES ARE CLEAR INSIDE DIMENSIONS. REFER TO SPECIFICATIONS FOR ALL DUCT CONSTRUCTION REQUIREMENTS.
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KEYED NOTES:

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



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CONSULTANTS:

MARK	DATE	DESCRIPTION



DESIGNED BY: DKR	DRAWN BY: DKR	CHECKED BY: MJV	REVIEWED BY: JML
PROJECT No: VGFD2001	DATE: JULY 2022	SCALE: 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

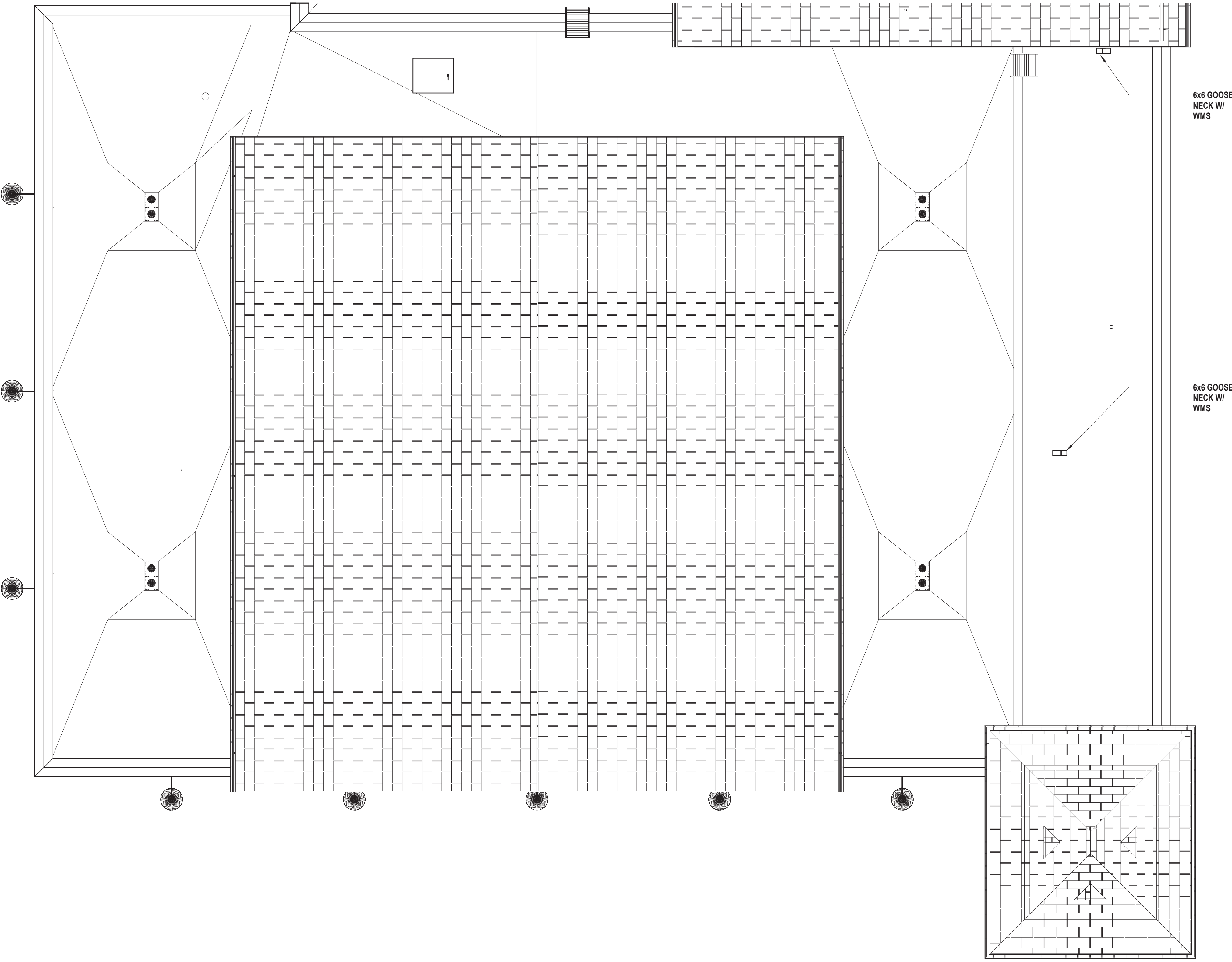
CONTRACT  
**CONTRACT G  
GENERAL CONSTRUCTION**

STATUS  
**FINAL BID DOCUMENT**

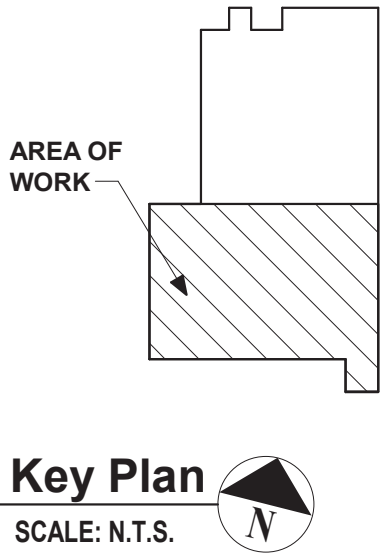
SHEET TITLE  
**SECOND FLOOR DUCTWORK PLAN  
AREA B**

DRAWING No.  
**M2 132B.00**





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



**Key Plan**  
SCALE: N.T.S.

H2M architects + engineers

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CONSULTANTS:		

MARK	DATE	DESCRIPTION

DESIGNED BY: DKR    DRAWN BY: DKR    CHECKED BY: MJV    REVIEWED BY: JML  
PROJECT No: VGFD2001    DATE: JULY 2022    SCALE: 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

CONTRACT

**CONTRACT G**  
**GENERAL CONSTRUCTION**

STATUS

**FINAL BID DOCUMENT**

SHEET TITLE

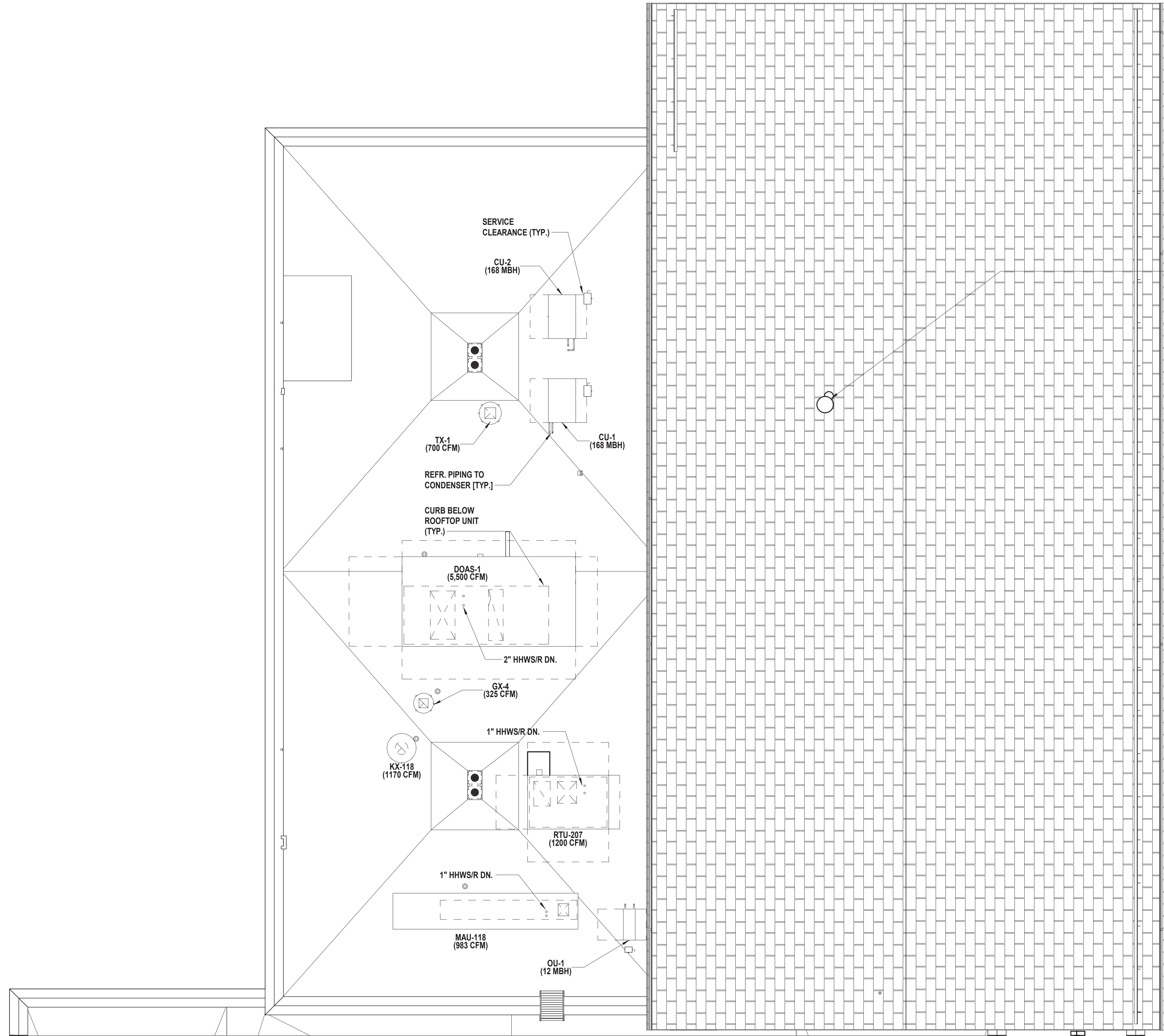
**HVAC ROOF PLAN AREA A**

DRAWING No.

**M2 133A.00**

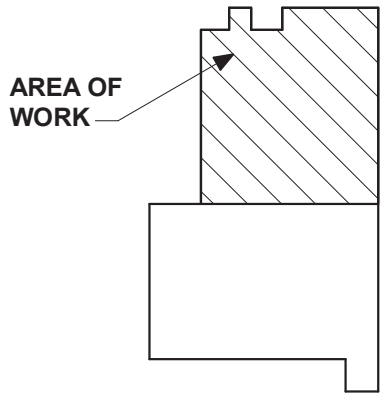


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PROVIDE ROOF CAP ASSOCIATED WITH DENLAR D1030-D-IF-G HOOD AND FAN. INSTALL ACCORDING TO MANUFACTURER'S INSTALLATION INSTRUCTIONS

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



**Key Plan**  
SCALE: N.T.S.

H2M architects + engineers

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Melville, NY 11747  
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CONSULTANTS:		

MARK	DATE	DESCRIPTION

STATE OF NEW YORK  
JOHN LAHEY  
LICENSED PROFESSIONAL ENGINEER  
101303

DESIGNED BY: DKR	DRAWN BY: DKR	CHECKED BY: MJV	REVIEWED BY: JML
PROJECT No: VGFD2001	DATE: JULY 2022	SCALE: AS SHOWN	

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**VAILS GATE FIRE DISTRICT**

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

VAILS GATE  
FIRE  
DEPT.  
EST. 1910  
N.Y.

872 Blooming Grove Turnpike  
New Windsor, NY 12553

CONTRACT

**CONTRACT G**  
**GENERAL CONSTRUCTION**

STATUS

**FINAL BID DOCUMENT**

SHEET TITLE

**HVAC ROOF PLAN AREA B**

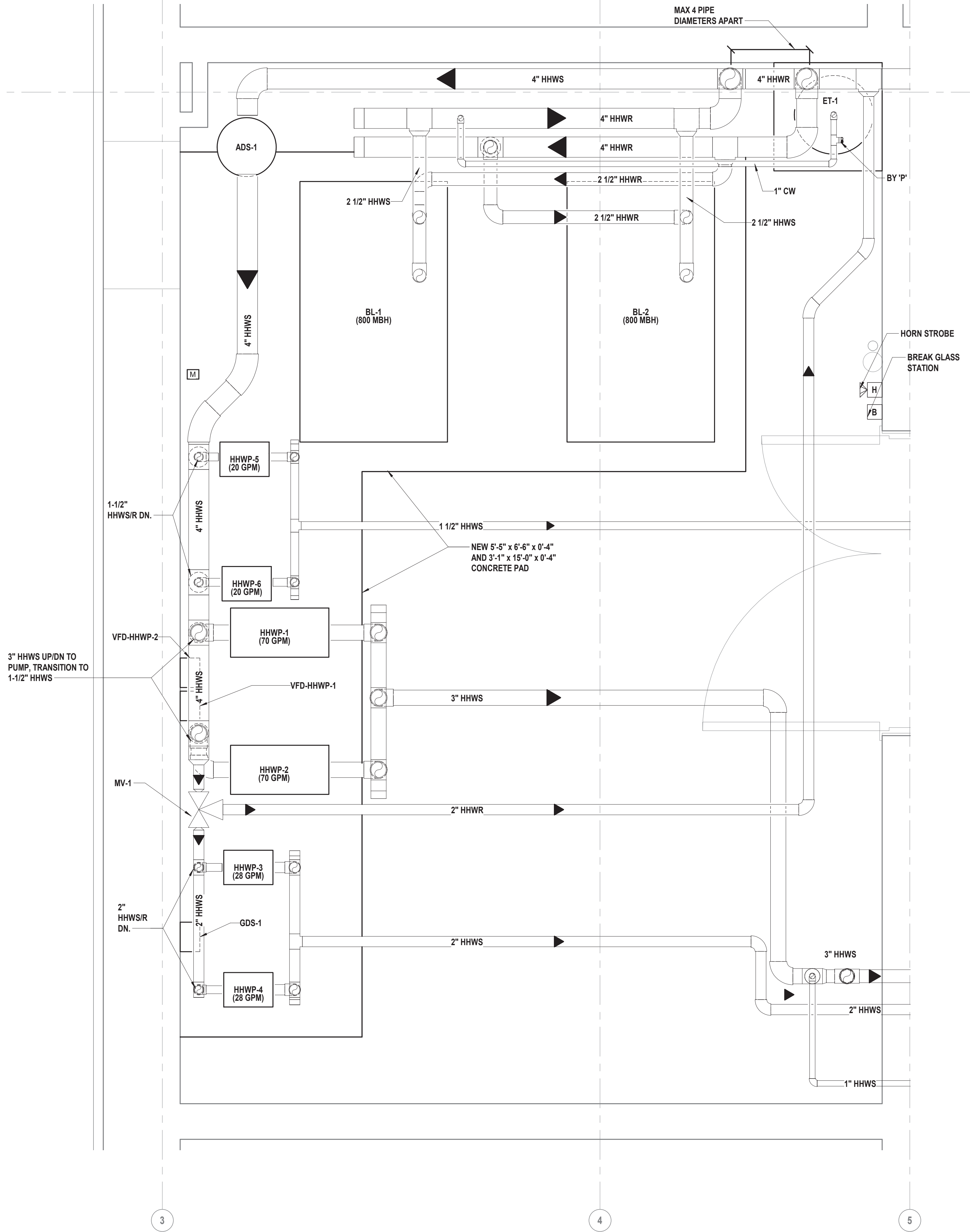
DRAWING No.

**M2 133B.00**



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E



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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5. MAINTAIN HEADROOM FOR ALL NEW HORIZONTAL DUCTWORK (6'-8" MINIMUM).
6. PROVIDE SOUND PROOFED PENETRATIONS THROUGH ALL NON FIRE RATED INTERIOR WALLS, USE TREMCO ACOUSTICAL SEALANT OR APPROVED EQUAL.

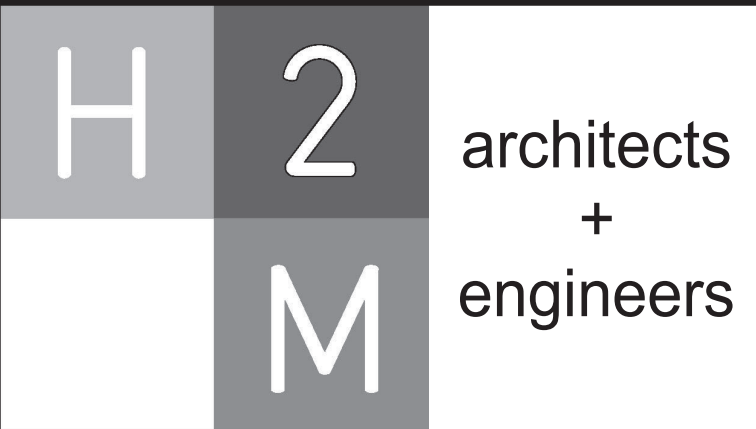
COMBUSTION AIR REQUIRED:

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<sup>3</sup>/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<sup>3</sup>/2 / 3,000 MBH ) = 573.33 IN<sup>2</sup> \* 1 FT<sup>2</sup> / 144 IN<sup>2</sup> = 3.98 FT<sup>2</sup>  
COMBUSTION AIR FREE AREA PROVIDED: 4.07 FT<sup>2</sup> > 3.98 FT<sup>2</sup>



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CONSULTANTS:

MARK	DATE	DESCRIPTION



DESIGNED BY: DKR	DRAWN BY: DKR	CHECKED BY: MJV	REVIEWED BY: JML
PROJECT No: VGFD2001	DATE: JULY 2022	SCALE: 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

CONTRACT

**CONTRACT G  
GENERAL CONSTRUCTION**

STATUS

**FINAL BID DOCUMENT**

SHEET TITLE

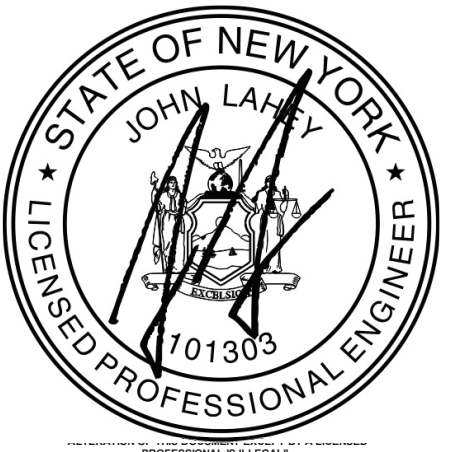
**BOILER ROOM EXPANDED HVAC  
PIPING PLAN**

DRAWING No.

**M2 401.00**



**CONSULTANTS:**

[illegible]

DESIGNED BY: <b>JML</b>	DRAWN BY: <b>DKR</b>	CHECKED BY: <b>MJV</b>	REVIEWED BY: <b>JML</b>
PROJECT No: <b>VGFD2001</b>		DATE: <b>JULY 2022</b>	SCALE: <b>AS SHOWN</b>

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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

CONTRACT

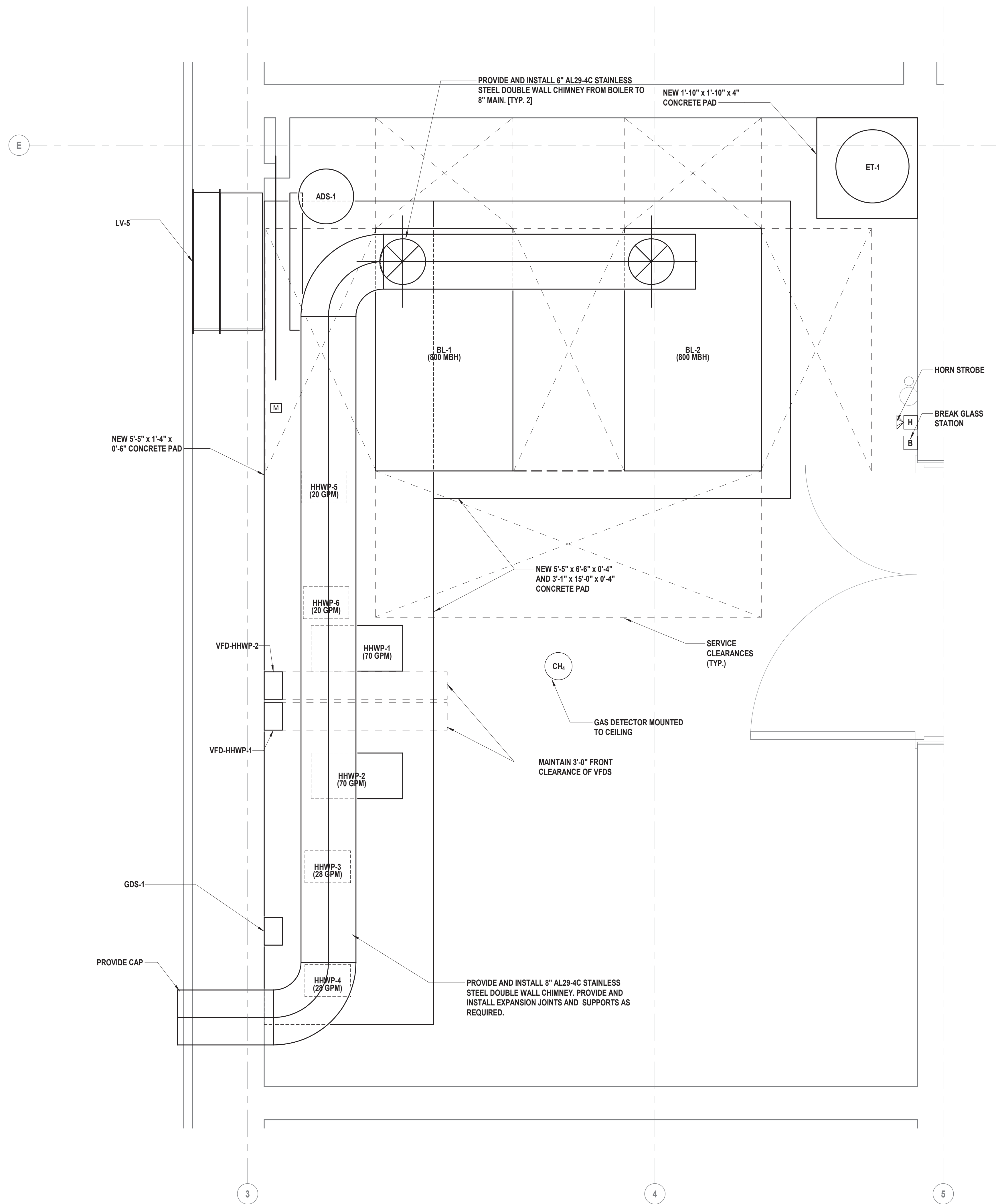
**CONTRACT G**

**GENERAL CONSTRUCTION**

STATUS **FINAL BID DOCUMENT**

**BOILER ROOM EXPANDED HVAC  
EQUIPMENT AND DUCTWORK PLAN**

DRAWING No. **M2 431.00**




### 1 Boiler Room Partial Equipment and Breeching Floor Plan









			
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DESIGNED BY DKR	DRAWN BY DKR	CHECKED BY MJV	REVIEWED BY JML
PROJECT No. VGFD2001	DATE JULY 2022	SCALE AS SHOWN	



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



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**CONTRACT G**

**GENERAL CONSTRUCTION**

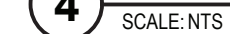
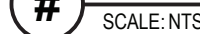
STATUS **FINAL BID DOCUMENT**

SHEET TITLE

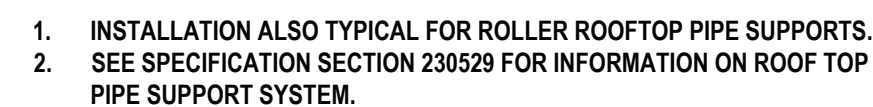
**HVAC DETAILS (2 OF 4)**

DRAWING No. **M2 501.00**






5. PROVIDE DRAIN SEAL AT EACH AC UNIT





--



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

## VAILS GATE FIRE DISTRICT

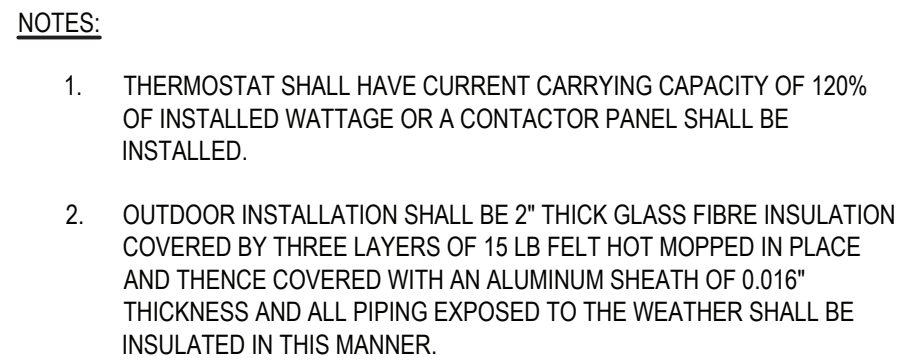


**CONTRACT G**  
**GENERAL CONSTRUCTION**

**FINAL BID DOCUMENT**

## HVAC DETAILS (4 OF 4)

**M2 503.00**



## 2 Typical Valve Tracing Pattern



**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 VENDOR INSTRUCTION. IN CASE OF ANY CONFLICTING REQUIREMENTS, THE VENDOR REQUIREMENTS SHALL SUPERCEDE THIS DETAIL.



**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.



X:\VGFD (Vails Gate Fire Dept)\VGFD2001\046a\_Cale\_F3-New Firehouse\03-BM-CADD\CD-Access\hvac\600.00 - Mechanical Schedules.dwg Last Modified: Jul 15, 2022 - 3:09pm By: jgagne

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	OFFICE	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	COMMISSIONER'S OFFICE	OFFICE	144	5	1	5	0.06	0.00	0	14	0.80	17	0
212	TRUSTEE'S OFFICE	OFFICE	142	5	1	5	0.06	0.00	0	14	0.80	17	0
213	COMPANY OFFICERS	OFFICE	118	5	1	5	0.06	0.00	0	12	0.80	15	0
214	ASST. CHIEF'S OFFICE	OFFICE	118	5	1	5	0.06	0.00	0	12	0.80	15	0
215	CHIEF'S OFFICE	OFFICE	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 (FT²)	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


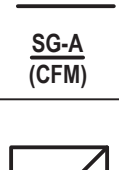





- NOTES:  
1. PROVIDE 24" SLEEVE WITH VCD-23 MOTORIZED DAMPER 115V/ 1 INTERLOCKED WITH OPERATION OF APPARATUS BAY GENERAL EXHAUST.  
2. PROVIDE 18" SLEEVE AND BLANK OFF PANEL.  
3. PROVIDE WITH INTERNAL BIRSCREEN.  
4. PROVIDE 12" SLEEVE.
5. PROVIDE WITH (120V/1) VCD-23 MOTORIZED DAMPER W/ INTERNAL ACTUATOR  
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.)	VOLTS /PHASE	OPERATING AMPERAGE	
HVLS-1 THRU 3	APPARATUS BAY	148	BIG ASS FANS	BASIC6-10	120 x 46.5	135	208 / 3	10 A	1,0

- 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 610V-O	DOUBLE DEFLECTION SUPPLY GRILLE	8 x 8 12 x 8 14 x 8	0-100	6 x 6	1
				101-225	10 x 6	
				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	
 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 GAUGE	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	MNF	MODEL NO.	NOMINAL DIMENSIONS L" x W" x H"	NOMINAL OPERATING WEIGHT (LBS.)		
		AIR FLOW (CFM) [LO-MED-HI]	SOUND LEVEL (dBA) [LO-MED-HI]	VOLTS / PHASE	OPERATING CURRENT (A)						FILTER EFFICIENCY
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



X:\VGFD (Vails Gate Fire Dept)\VGFD2001 (Vails Gate FD) New Firehouse\03-BM-CAP-DD-Condensate\H1601.00 - Mechanical Schedules.dwg Last Modified: Jul 15, 2022, 12:52pm By: jingyao

ROOFTOP UNITS

EQUIPMENT NO.	LOCATION	QUANTITY	AREA SERVED	PERFORMANCE/ CONSTRUCTION REQUIREMENTS																	BASIS OF DESIGN INFORMATION							NOTES	
				SUPPLY FAN			OUTSIDE AIR FLOW (CFM)	COOLING COIL				MIN TOTAL CAPACITY (MBH)	HEATING COIL						MNF	MODEL NO.	NOMINAL DIMENSIONS LxWxH (IN.)	NOMINAL OPERATION WEIGHT (LBS)	ELECTRICAL DATA						
				MAXIMUM FLOW (CFM)	EXT. S.P. (IN W.G)	BHP		REFRIGERANT TYPE	TOTAL CAPACITY (MBH)	SENSIBLE CAPACITY (MBH)	EER		SEER	AIR DATA		HOT WATER COIL							VOLTS/ PHASE	SUPPLY FAN HP	UNIT MCA/MOCP				
														ENT. DB/WB (°F)	LVG. DB/WB (°F)	FLOW RATE (GPM)	EWT (°F)	LWT (°F)								COIL WATER ΔP (FT H2O)	EAT (°F)		COIL LAT (°F)
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.
9. MECHANICAL CONTRACTOR TO INSTALL 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. MECHANICAL CONTRACTOR TO INSTALL 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	PERFORMANCE/ CONSTRUCTION REQUIREMENTS																				BASIS OF DESIGN INFORMATION								NOTES									
		SUPPLY FAN					EXHAUST FAN					COOLING COIL										HEATING COIL									MNF	MODEL NO.	NOMINAL DIMENSIONS L' x W' x H'	NOMINAL OPERATION WEIGHT (LBS)	ELECTRICAL DATA				
		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.)	QA DB (°F)	RA DB (°F)	EAT (°F)						MAX COIL LAT. (°F)	UNIT LAT (°F)			
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.
19. MECHANICAL CONTRACTOR TO INSTALL.
20. 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 / -2°F 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			
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 SPECIALALTIES PER MANUFACTURER'S RECOMMENDATIONS.
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
					REFRIGERANT	SUPPLY UNIT DATA					MANUF.	MODEL	NOMINAL DIMENSIONS L" x W" x H"	NOMINAL OPERATING WEIGHT (LBS.)	ELECTRICAL DATA					
						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 / -2°F WB [-3°F DB / -4°F WB ]	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	ARNU183TDQ4	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	ARNU183TDQ4	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	CU-1	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	BC-3	CU-1	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			R410A	396-388-353	-	34/35/37	18	19.15	13.82	22.2	LG	ARNU183TDQ4	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	BC-4	CU-1	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			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	-	-

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

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 (FT³)	REFRIGERANT DENSITY (LB/1000FT³)
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.

H2M

architects  
+  
engineers

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Melville, NY 11747  
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CONSULTANTS:

MARK	DATE	DESCRIPTION
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HEATING HOT WATER BOILERS

EQUIPMENT NO.	LOCATION	RATEF GROSS INPUT (MBH)	RATED GROSS OUTPUT (MBH)	GAS (%)	PERFORMANCE/ CONSTRUCTION REQUIREMENTS								BASIS OF DESIGN INFORMATION								NOTES
					WATER DATA				GAS DATA			BOILER VENT SIZE (IN)	MANUFACTURER	MODEL NO.	NOMINAL DIMENSIONS (L x W x H)	WEIGHT (LBS.)	ELECTRICAL DATA				
					FLOW RATE (GPM)	MAX RATED PRESS. (PSIG)	INLET TEMP. (DEG. F)	OUTLET TEMP. (DEG. F)	CFH	MIN PRESSURE (IN. W.C.)	MAX PRESSURE (IN. W.C.)						VOLTAGE	FLA	MCA	MOCp	
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

HEATING HOT WATER PUMPS

EQMT. NO.	LOCATION	SYSTEM SERVED	PERFORMANCE/CONSTRUCTION REQUIREMENTS					BASIS OF DESIGN INFORMATION					REMARKS
			WORKING FLUID	FLOW RATE (GPM)	TOTAL HEAD (FT.)	HP	PUMP SPEED (RPM)	MNF	MODEL NO.	NOMINAL DIMENSIONS L x W x H	NOMINAL OPERATING WEIGHT (LBS.)	VOLTS/ PHASE	
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

AIR/DIRT SEPARATORS

EQMT. NO.	LOCATION	SYSTEM SERVED	PERFORMANCE REQUIREMENTS		BASIS OF DESIGN INFORMATION				NOTES
			FLOW RATE (GPM)	MAX. PD (FT. H2O)	MNF	MODEL NO.	NOMINAL DIMENSION DIA. x H	NOMINAL OPERATING WEIGHT (LBS.)	
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			BASIS OF DESIGN INFORMATION					REMARKS
			SYSTEM DATA			MNF	MODEL NO.	NOMINAL DIMENSION DIA. x H	TANK VOLUME (GAL.)	SHIPPING WEIGHT (LBS.)	
			ESTIMATED VOLUME (GAL.)	MAX. OPERATING PRESS. RANGE (PSIG)	MAX. OPERATING TEMP. RANGE (°F)						
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.

FIN TUBE RADIATOR

EQMT. NO.	AREA SERVED	TOTAL CAPACITY (MBH)	PERFORMANCE / CONSTRUCTION REQUIREMENTS							REMARKS	
			HEATING COIL DATA					MNF	MODEL NO.		NOMINAL DIMENSIONS L"XW"XH"
			HOT WATER COIL								
			BTU/FT	PIPE DIA	FINS/FT	FIN DIMS W" x H"	GPM				
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).

WALL MOUNTED ELECTRIC HEATERS

EQMT. NO.	LOCATION	PERFORMANCE/ CONSTRUCTION REQUIREMENTS					BASIS OF DESIGN INFORMATION				NOTES
		FLOW (CFM)	TOTAL CAPACITY (MBH)	HEATING COIL DATA			MNF	MODEL NO.	NOMINAL DIMENSIONS L" x W" x H"	NOMINAL OPERATING WEIGHT (LBS.)	
				ELECTRIC DATA							
				VOLTS/PHASE	TOTAL KW	AMPS					
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.

GAS DETECTION SYSTEM

EQMT. NO.	LOCATION	SYSTEM SERVED	BASIS OF DESIGN INFORMATION				REMARKS
			MNF	MODEL NO.	NOMINAL DIMENSIONS L" x W" x H"	VOLTAGE / PHASE	
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 [FT²]	PERFORMANCE/CONSTRUCTION REQUIREMENTS							NOTES	
			TOTAL CAPACITY (BTU/HR)	HEATING COIL DATA			MNF	MODEL NO.	NOMINAL DIMENSIONS L"xW"xH"		
				HOT WATER COIL							
				EWI (°F)	GPM	CIRCUITS					
RFM-1	APPARATUS ROOM	2429	99621	123.6	9.7	10	10	UPONOR	A2721002	28 x 3.5 x 14.5	1-5
RFM-2	APPARATUS ROOM	2503	102663	123.6	10	10	10	UPONOR	A2721002	28 x 3.5 x 14.5	1-5
RFM-3	APPARATUS ROOM	266	8902	123.6	0.9	2	2	UPONOR	A2720202	11 x 3.5 x 14.5	1-5
RFM-4	APPARATUS ROOM	805	25634	123.6	2.4	4	4	UPONOR	A2720402	15 x 3.5 x 14.5	1-5
RFM-5	APPARATUS ROOM	260	6376	123.6	0.6	2	2	UPONOR	A2720202	11 x 3.5 x 14.5	1-5
RFM-6	APPARATUS ROOM	217	6973	123.6	0.7	2	2	UPONOR	A2720202	11 x 3.5 x 14.5	1-5
RFM-7	APPARATUS ROOM	229	6320	123.6	0.6	2	2	UPONOR	A2720202	11 x 3.5 x 14.5	1-5

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

CABINET UNIT HEATERS

EQMT NO.	LOCATION	CONFIGURATION	BASIS OF DESIGN INFORMATION										NOTES				
			FAN DATA			TOTAL CAPACITY (MBH)	AIR DATA		HEATING COIL DATA								
			FLOW (CFM)	HP	VOLTS/ PHASE		ENT. DB TEMP. (DEG. F)	LVG. DB TEMP. (DEG. F)	WATER								
									ENT. TEMP. (DEG. F)	LVG. TEMP. (DEG. F)	FLOW (GPM)	MAX. P.D. (FT. H2O)					
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

HOT WATER UNIT HEATERS

EQUIPMENT NO.	AREA SERVED	BASIS OF DESIGN															NOTES				
		FAN DATA		TOTAL CAPACITY (MBH)	AIR DATA				HEATING COIL DATA				ELECTRIC DATA			MNF		MODEL NO.	NOMINAL DIMENSIONS L"xW"xH"	NOMINAL OPERATING WEIGHT (LBS.)	MAX MOUNTING HEIGHT (FT)
		FLOW (CFM)	RPM		EAT (°F)	LAT (°F)	THROW (FT)	FPM	HOT WATER COIL				VOLTS/ PHASE	AMPS	HP						
									EWLT (°F)	LWT (°F)	GPM	ΔP (FT W.C.)									
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



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

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 NO	TAG	FILTER(S)				LIGHT(S)			UTILITY CABINET(S)						FIRE SYSTEM PIPING	HOOD HANGING WEIGHT	
		TYPE	QTY	HEIGHT	LENGTH	EFFICIENCY @ 7 MICRONS	QTY	TYPE	WIRE GUARD	LOCATION	SIZE	FIRE SYSTEM		ELECTRICAL			SWITCHES
												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 NO	TAG	OPTION
1		FIELD WRAPPER 18.00" HIGH FRONT, LEFT, RIGHT.
		BACKSPLASH 80.00" HIGH X 94.00" 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.

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

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

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 - 98694A15 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 - SLPDCN-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...			

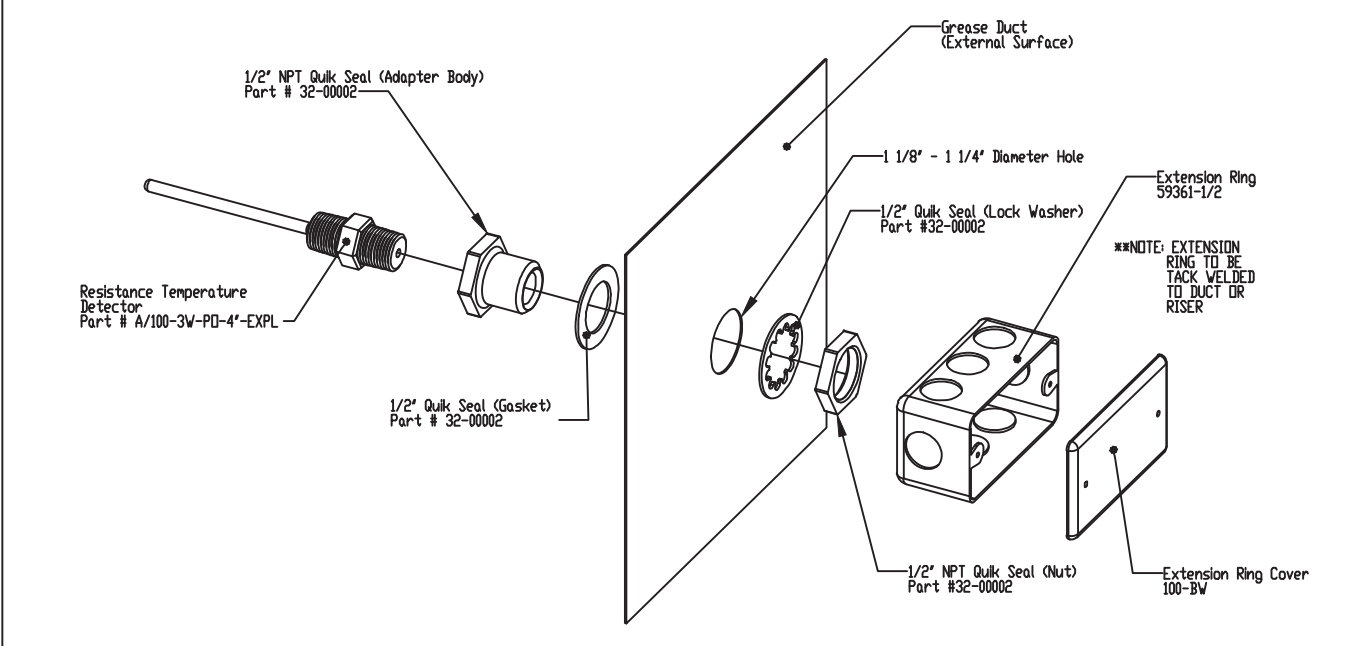
Particle Diameter (μm)	Fractional Efficiency (%)
0.5	0
1.0	0
2.0	0
3.0	0
4.0	0
5.0	1
6.0	2
7.0	3
8.0	15
9.0	45
10.0	85
12.0	88
15.0	85
20.0	85

Flow Rate (CFM)	Pressure Drop (in. H <sub>2</sub> O)
100	0.15
250	0.45
500	1.10
1000	2.90

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



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



**HANGING ANGLE**  
(HARDWARE BY INSTALLER)

1/2" - 13 TP1 GRADE 5 MINIMUM STEEL HEX NUTS

1/2" GRADE 5 MINIMUM STEEL FLAT WASHER

1/2" - 13 TP1 GRADE 5 MINIMUM STEEL ALL-THREAD

1/2" - 13 TP1 GRADE 5 MINIMUM STEEL HEX NUT

1/2" GRADE 5 MINIMUM STEEL FLAT WASHER

HOOD CORNER HANGING ANGLE (WEIGHT BEARING ANCHOR POINT FOR HOOD)

1/2" - 13 TP1 GRADE 5 MINIMUM STEEL FLAT WASHER

1/2" - 13 TP1 GRADE 5 MINIMUM STEEL HEX NUTS

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.

**HANGING ANGLE**  
(HARDWARE BY INSTALLER)

1/2" - 13 TPI  
GRADE 5 MINIMUM  
STEEL HEX NUTS

1/2" GRADE 5  
MINIMUM STEEL  
FLAT WASHER

1/2" - 13 TPI  
GRADE 5 MINIMUM  
STEEL ALL-THREAD

1/2" - 13 TPI  
GRADE 5 MINIMUM  
STEEL HEX NUT

1/2" GRADE 5  
MINIMUM STEEL  
FLAT WASHER

FULL LENGTH  
HANGING ANGLE  
(WEIGHT BEARING  
ANCHOR POINT  
FOR HODD)

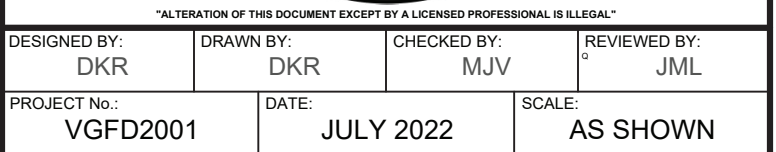
1/2" GRADE 5  
MINIMUM STEEL  
FLAT WASHER

1/2" - 13 TPI  
GRADE 5 MINIMUM  
STEEL HEX NUT

HANGING ANCHORS 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.

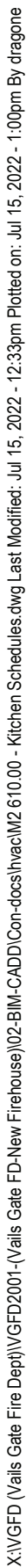
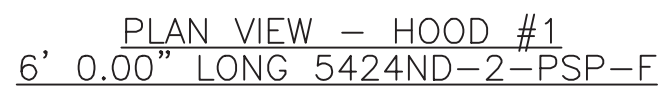
HANGING ANGLE MUST BE SUPPORTED WITH 1/2" - 13 TPI GRADE 5 (MINIMUM) ALL-THREAD, SANDWICH HANGING ANGLES AND CEILING ANCHOR POINTS WITH 1/2" GRADE 5 (MINIMUM) STEEL FLAT WASHERS AND 1/2" - 13 TPI GRADE 5 (MINIMUM) HEX NUTS AS SHOWN. MUST USE DOUBLED HEX NUT CONFIGURATION ABOVE CEILING ANCHORS. SINGLE 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.



[illegible]

**872 Blooming Grove Turnpike  
New Windsor, NY 12553**

**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	DUBSHFA	CAPTIVEAIRE	1170	1.500	1391	TEAD-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	MDCP	WEIGHT (LBS)	SONES
2	MAU-118	1	A1-15D-MPU	15MF-1-MDD	A1	450	983	0.500	1536	DDP,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

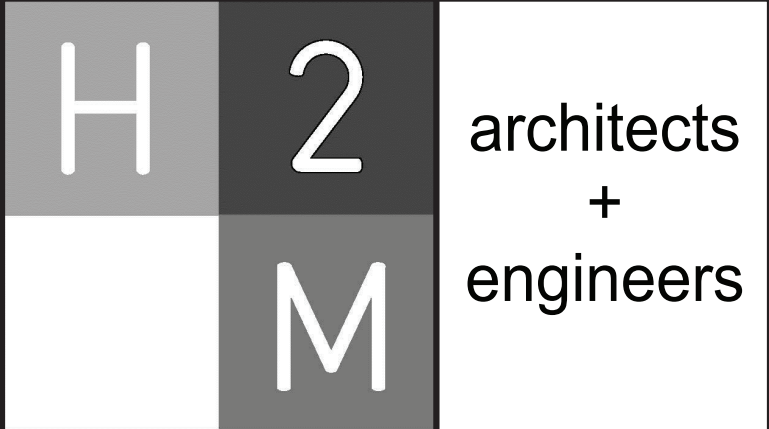
FAN UNIT NO	TAG	QTY	DESCRIPTION
1	KX-118	1	GREASE BOX
		1	ECM WIRING PACKAGE – PWM SIGNAL FROM ECPM03 PREWIRE (TELCO MOTOR), CCW ROTATION
		1	2 YEAR PARTS WARRANTY
2	MAU-118	1	SIZE 1 UNTEMPERED COMMERCIAL DOWN DISCHARGE FOR DIRECT DRIVE AHUS
		1	MOTORIZED BACKDRAFT DAMPER FOR SIZE 1 HOUSING – MEETS AMCA CLASS 1A RATING
		1	HOT WATER COIL SECTION A1-2 RDW, 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 MDD 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	MDD 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



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DESIGNED BY: DKR	DRAWN BY: DKR	CHECKED BY: MJV	REVIEWED BY: JML
PROJECT NO.: VGFD2001	DATE: JULY 2022	SCALE: 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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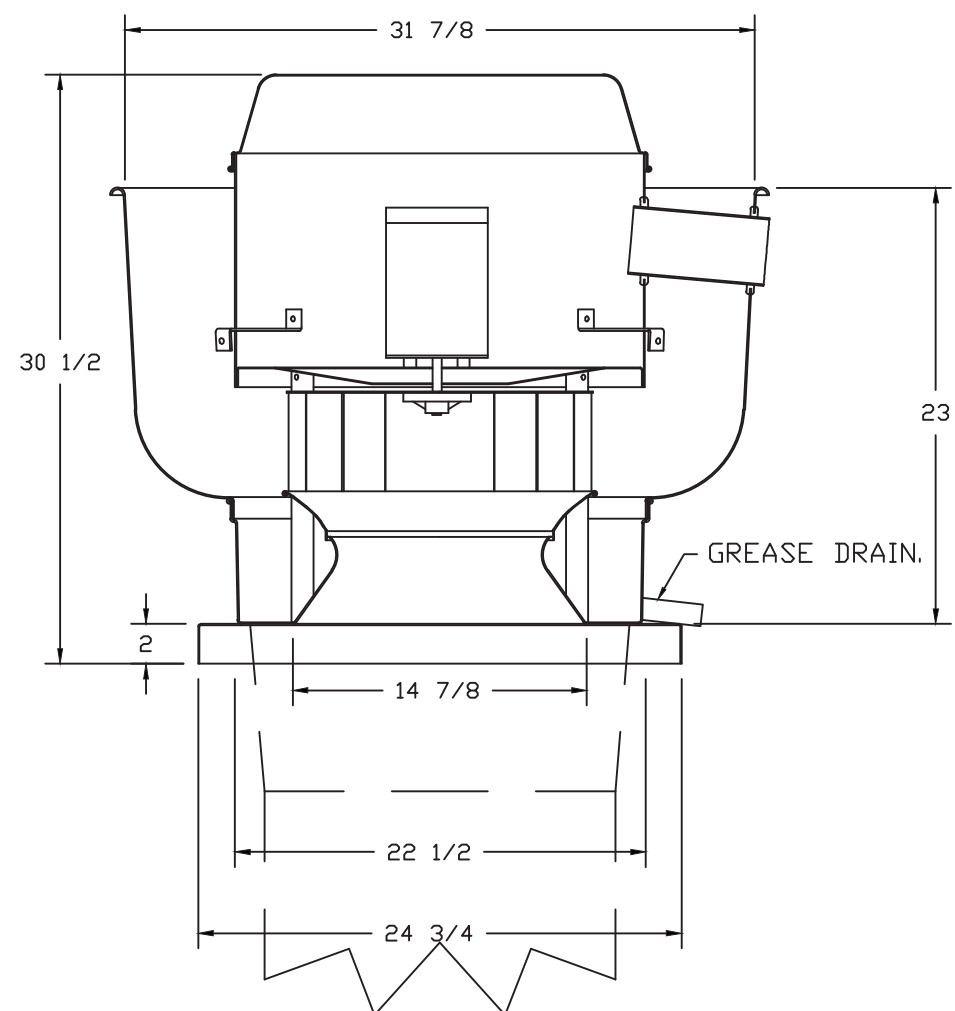
STATUS
FINAL BID DOCUMENT

SHEET TITLE
HVAC KITCHEN SCHEDULES (3 OF 10)

DRAWING No.
M2 612.00



FAN #1 DU85HFA - EXHAUST FAN (KX-118)



### 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

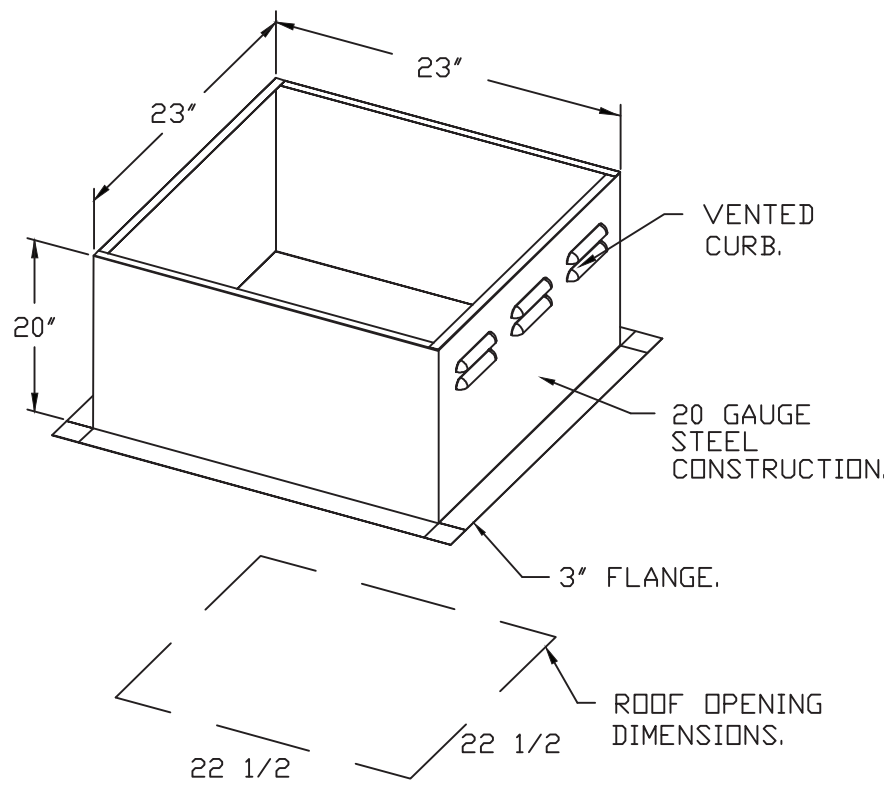
EXHAUST FAN MUST OPERATE CONTINUOUSLY WHILE EXHAUSTING AIR AT 300°F (149°C) UNTIL ALL FAN PARTS HAVE REACHED THERMAL EQUILIBRIUM, AND WITHOUT ANY DETERIORATING EFFECTS TO THE FAN WHICH WOULD CAUSE UNSAFE OPERATION.

### 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.

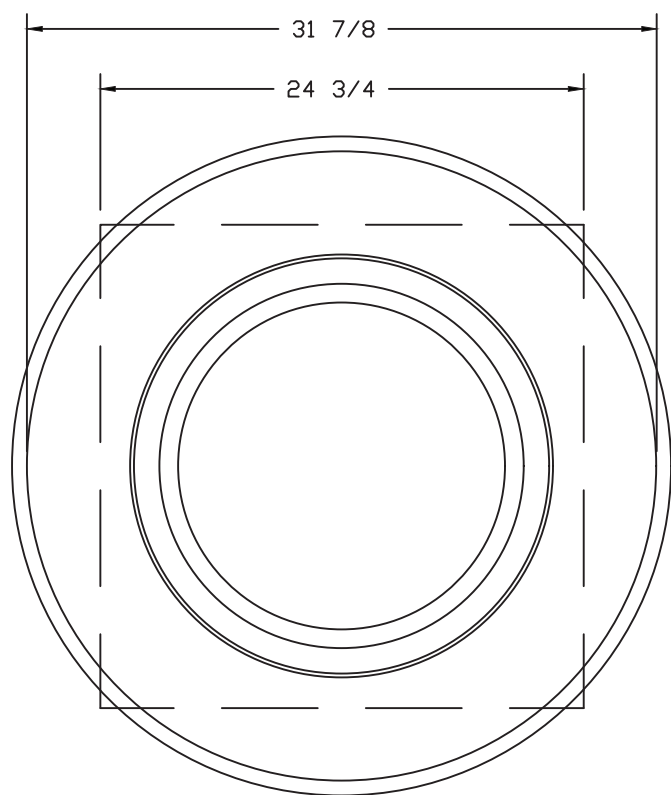
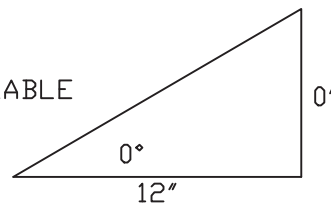
OPTIONS

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

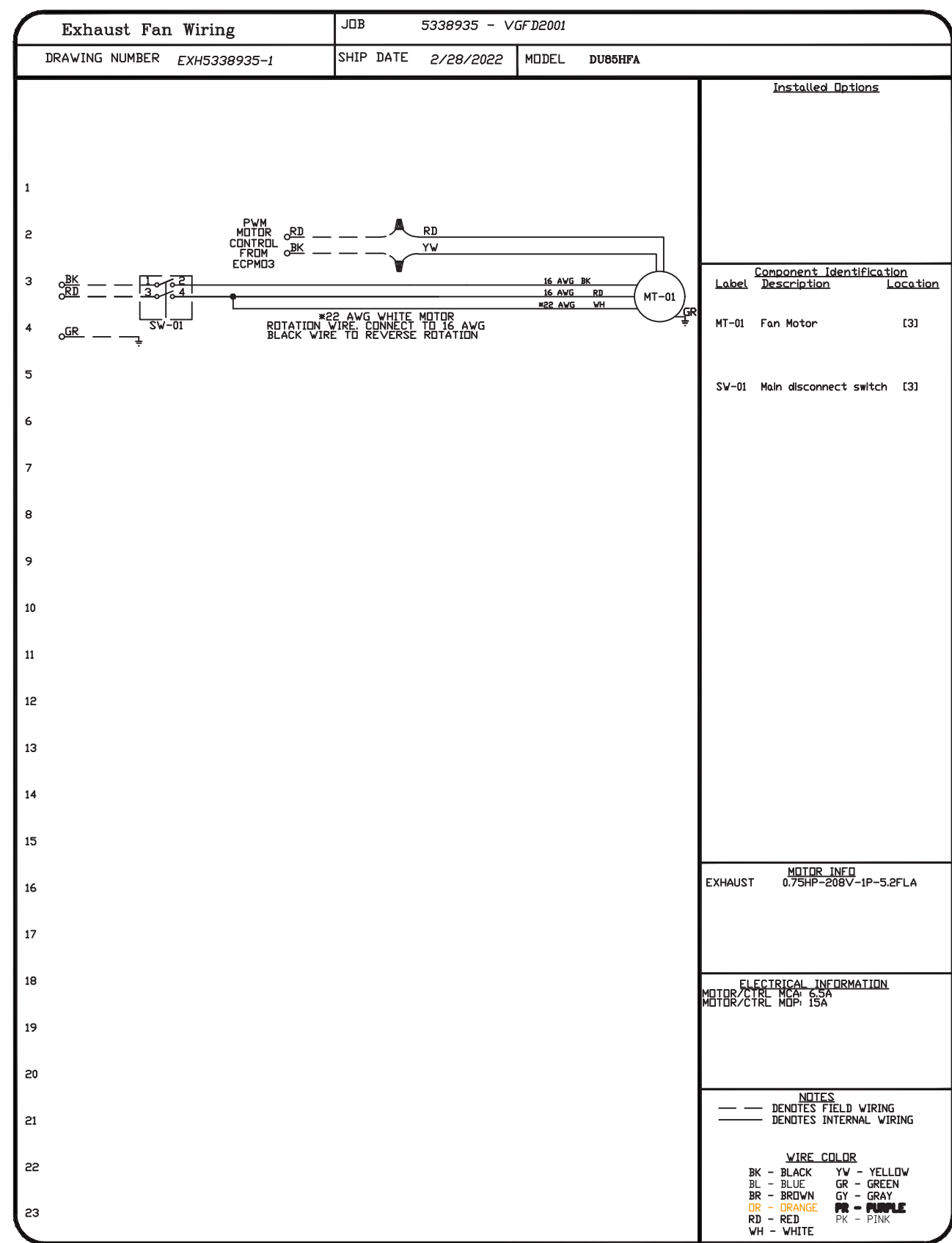


PITCHED CURBS ARE AVAILABLE FOR PITCHED ROOFS.

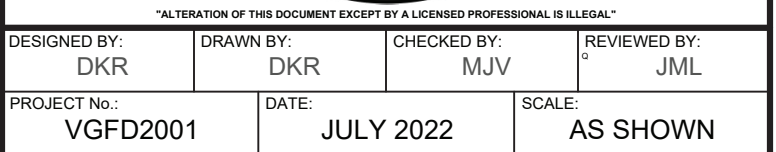
SPECIFY PITCH:  
EXAMPLE: 7/12 PITCH = 30° SLOPE.



TOP VIEW





[illegible]

**872 Blooming Grove Turnpike  
New Windsor, NY 12553**

**M2 614.00**

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 32" ROUND 20 GAUGE 430 STAINLESS INNER DUCT INSULATED WITH A 24 GAUGE 430 STAINLESS OUTER SHELL.





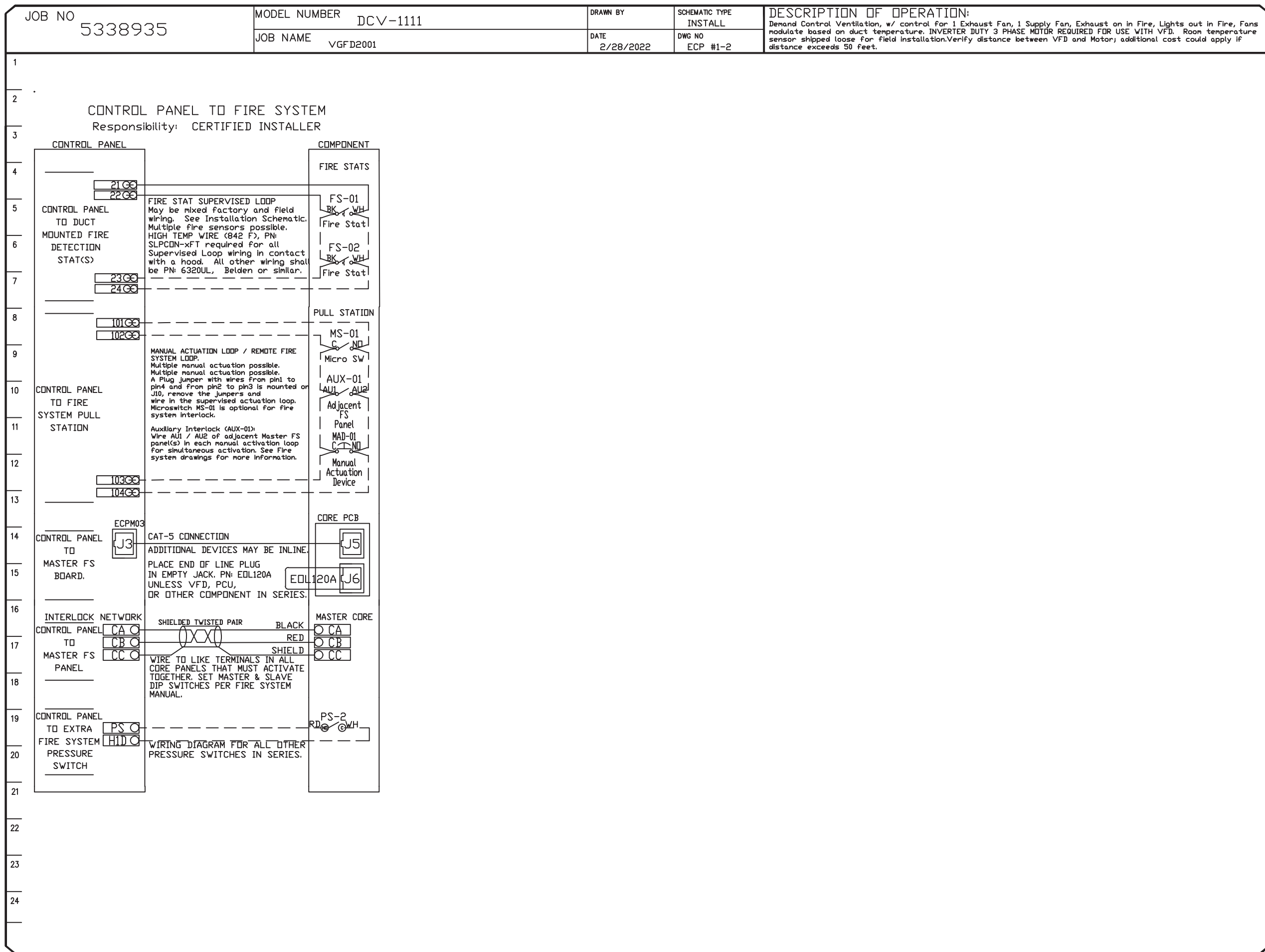
CLIENT

**VAILS GATE FIRE  
DISTRICT**



STATUS	<b>FINAL BID DOCUMENT</b>
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DRAWING No. **M2 615.00**



HOOD CONTROL PACKAGE INTERFACE  
with LCD Screen

ALARM INDICATING LCD SCREEN.  
BUTTON FUNCTIONS VARY BY  
MODEL TYPE.

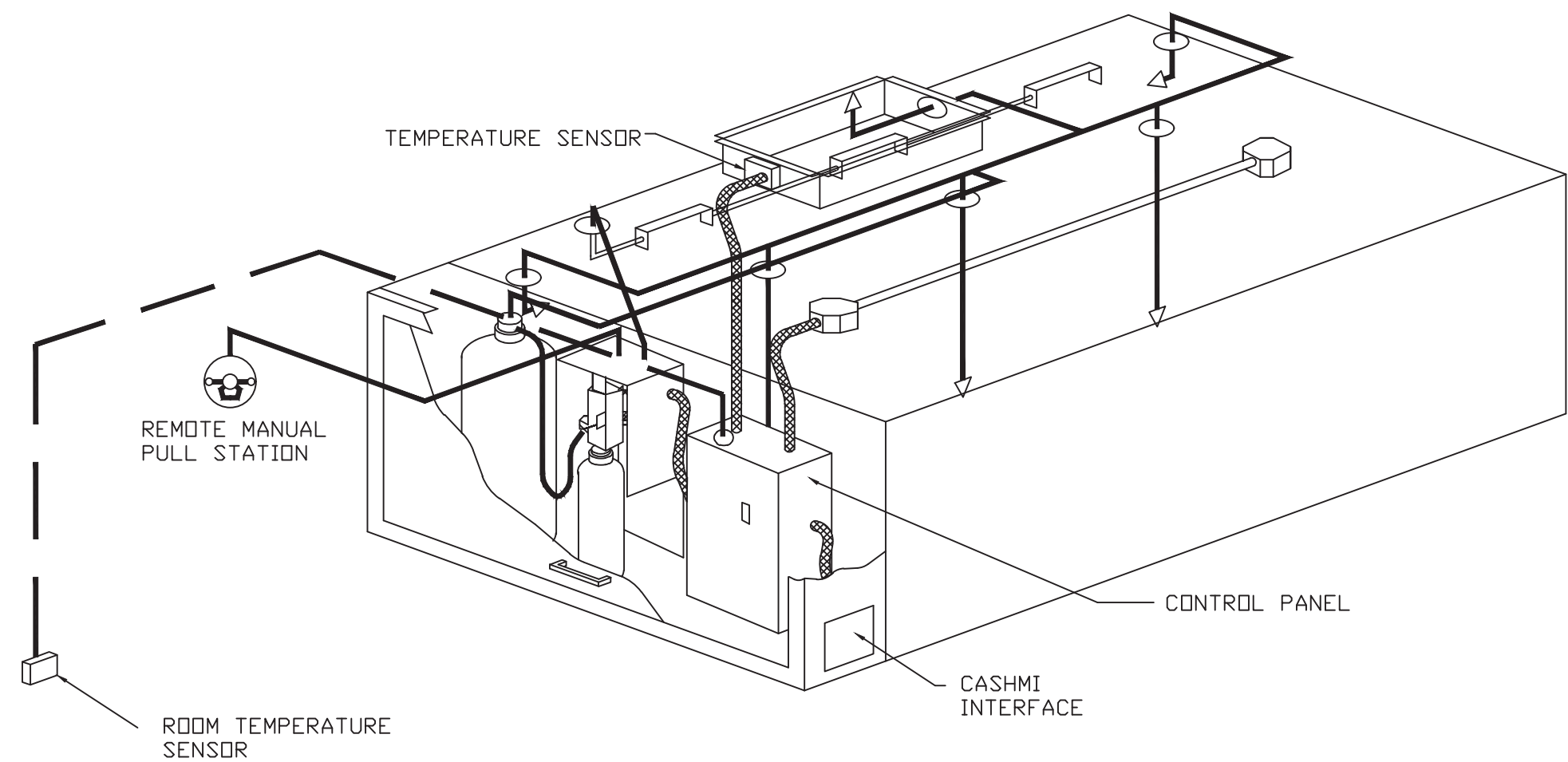
DEMAND CONTROL VENTILATION  
SAVINGS INDICATOR

SAVINGS: 73%

LIGHTS FANS

CAT-5 CONNECTION ON REVERSE.  
CONNECTED TO HOOD CONTROL  
PANEL.

MOUNTS IN STANDARD DOUBLE  
GANG JUNCTION BOX



### TYPICAL CONTROL CENTER INSTALLATION

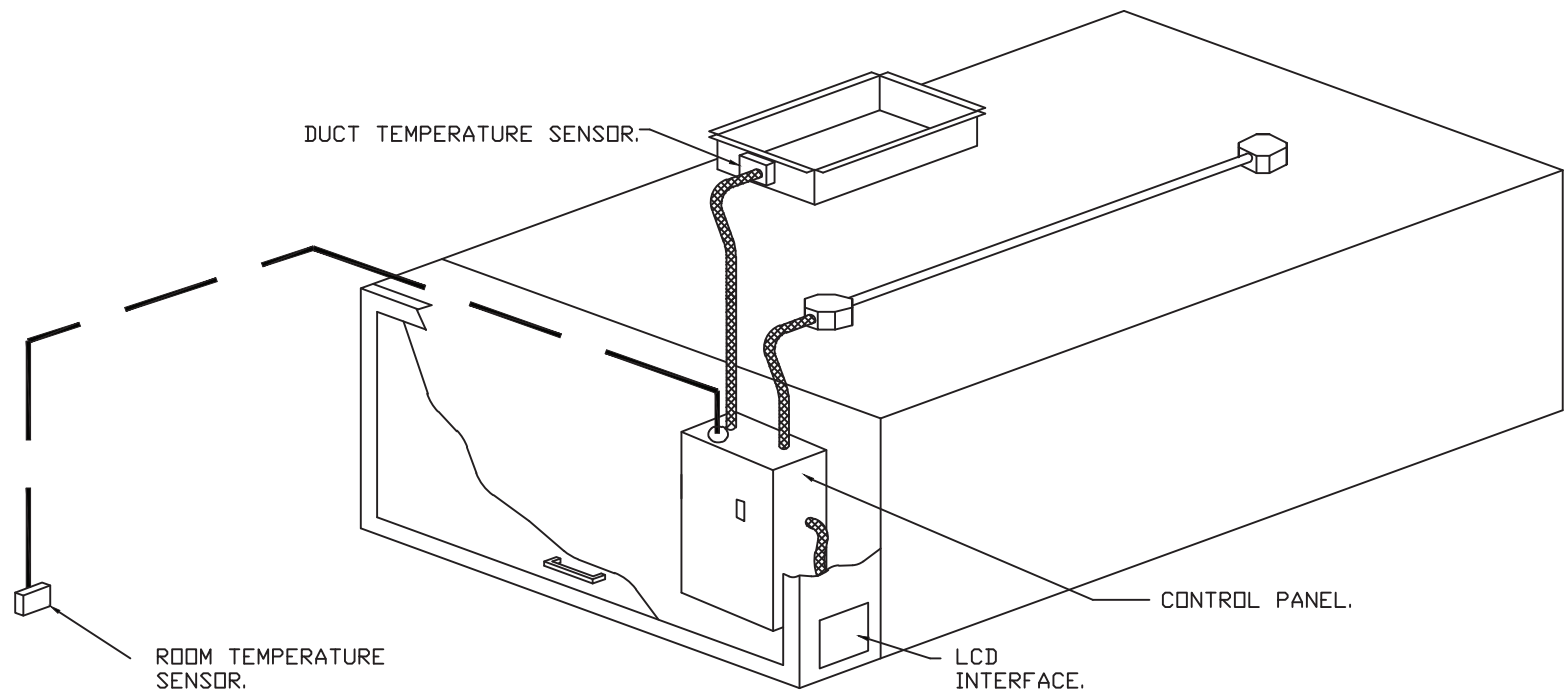






DEMAND CONTROL VENTILATION HOOD CONTROL PANEL SPECIFICATIONS:

- 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:

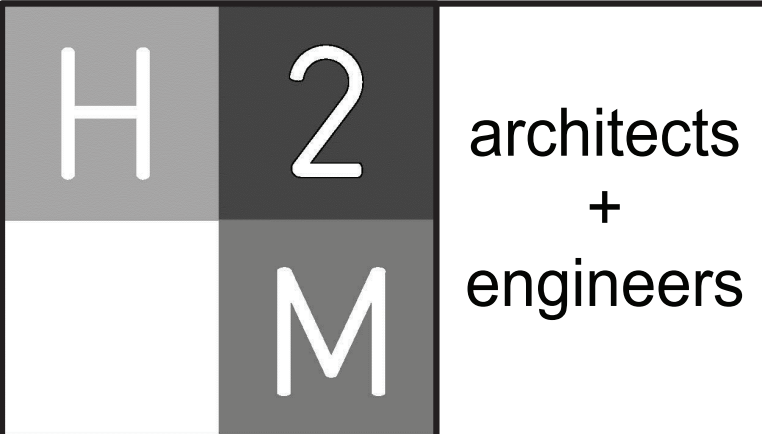
- **AUTOMATIC:** THE SYSTEM OPERATES BASED ON THE DIFFERENTIAL BETWEEN ROOM TEMPERATURE AND THE TEMPERATURE AT THE HOOD CAVITY OR EXHAUST DUCT COLLAR. FANS ACTIVATE AT A CONFIGURABLE TEMPERATURE DIFFERENTIAL THRESHOLD. DEPENDING ON THE JOB CONFIGURATION EACH FAN ZONE CAN BE CONFIGURED AS STATIC OR DYNAMIC. 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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CONSULTANTS:		

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STATE OF NEW YORK  
JOHN LARocca  
LICENSED PROFESSIONAL ENGINEER  
101303

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DESIGNED BY: DKR	DRAWN BY: DKR	CHECKED BY: MJV	REVIEWED BY: JML
PROJECT NO.: VGFD2001	DATE: JULY 2022	SCALE: 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

**CONTRACT G  
GENERAL CONSTRUCTION**

STATUS

**FINAL BID DOCUMENT**

SHEET TITLE

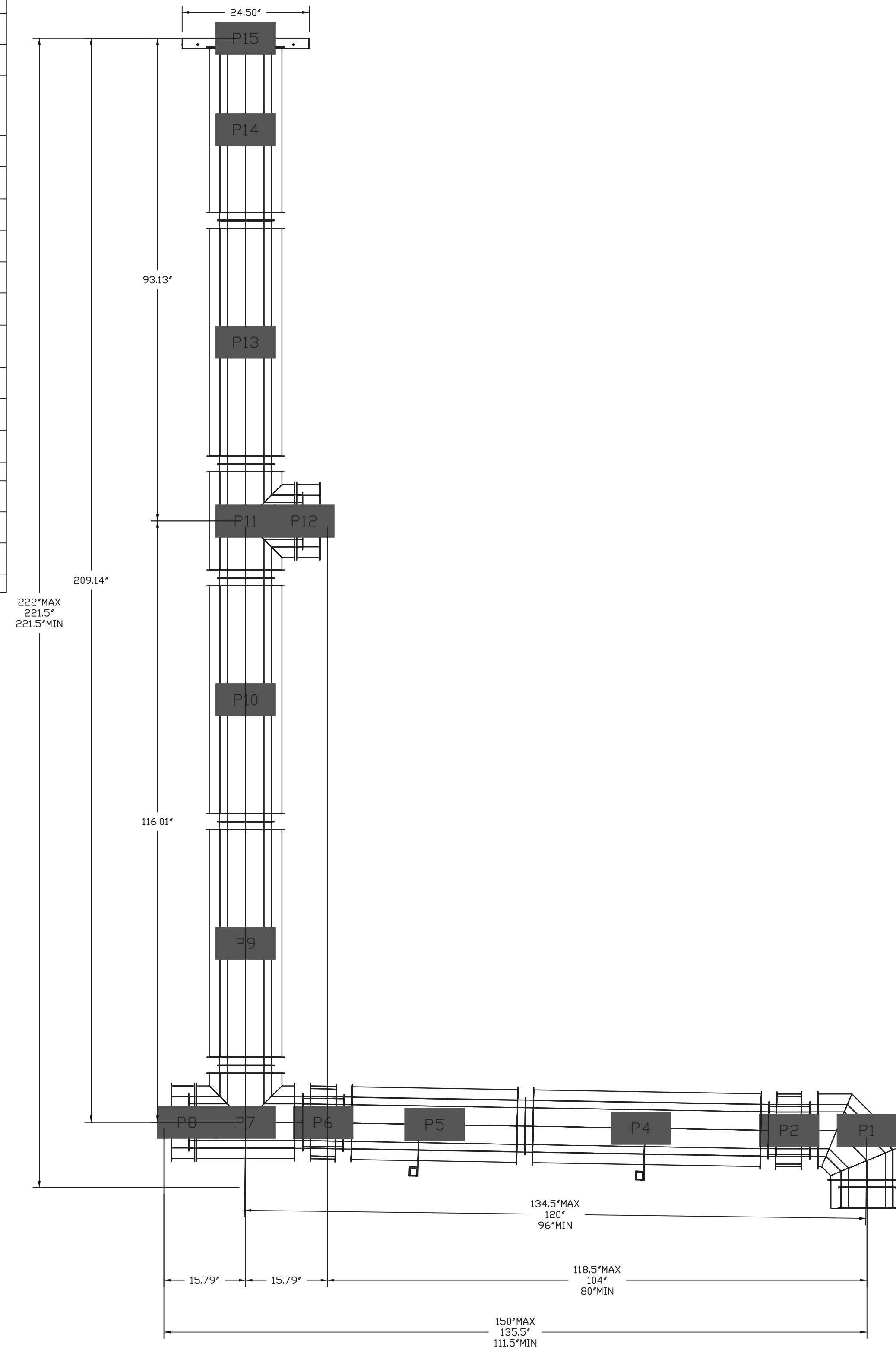
**HVAC KITCHEN  
SCHEDULES (8 OF 10)**

DRAWING No.

**M2 617.00**



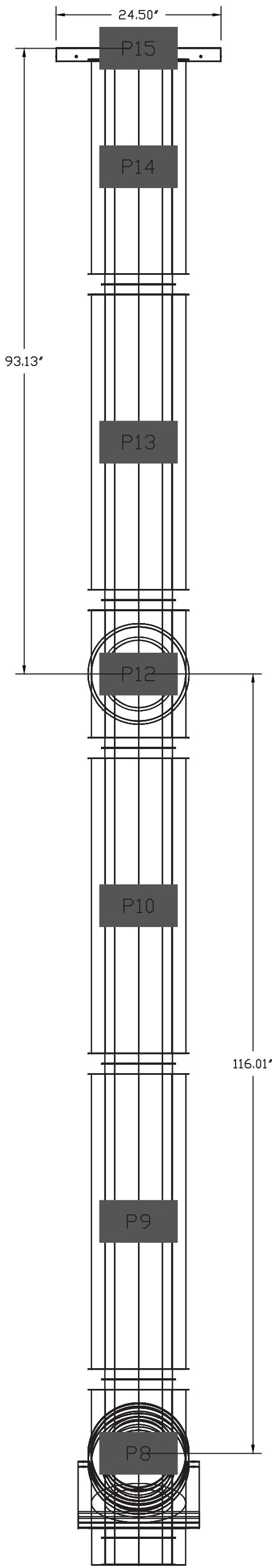
DO NOT LEAK TEST USING SMOKE BOMBS CONTAINING  
CHLORINES/CHLORIDES. CONSULT WITH CAPTIVEAIRE  
FOR PROPER LEAK TESTING METHODS.



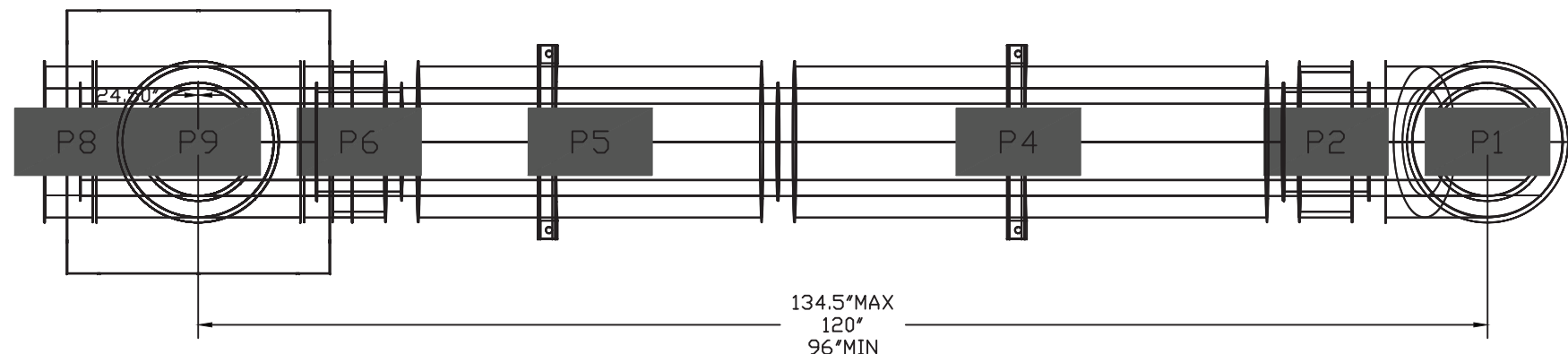
**M2 618.00**



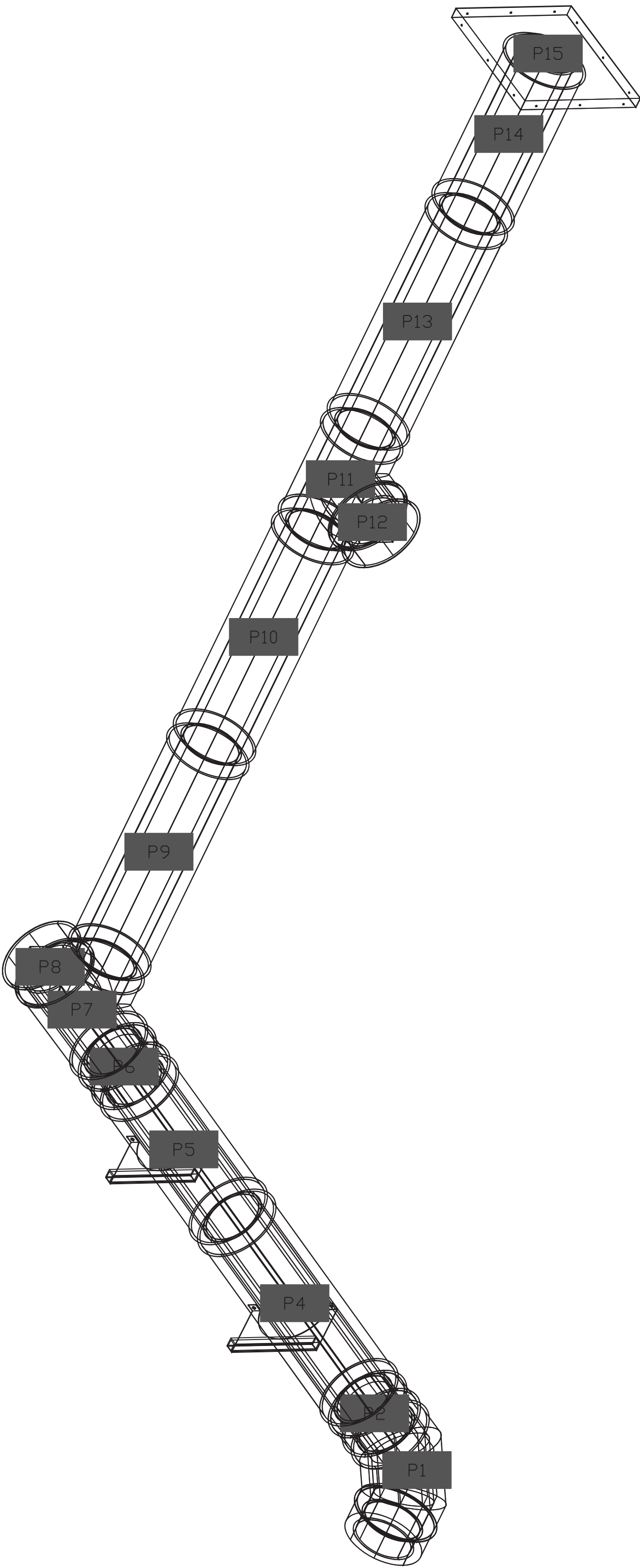
DUCTWORK #1 SIDE VIEW



DUCTWORK #1 TOP VIEW



DUCTWORK #1 SE VIEW



X:\VGFD (Vails Gate Fire Dept)\VGFD2001 (Vails Gate FD New Firehouse)\2-BRM-CADD\Construction\ME E 10.00 - Kitchen Schedules.dwg Last Modified: Jul 15, 2022 - 12:33pm Plotted on: Jul 15, 2022 - 1:02pm By: gmgagne

H2M

architects  
+  
engineers

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CONSULTANTS:		

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DESIGNED BY: DKR	DRAWN BY: DKR	CHECKED BY: MJV	REVIEWED BY: JML
PROJECT NO.: VGFD2001	DATE: JULY 2022	SCALE: 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

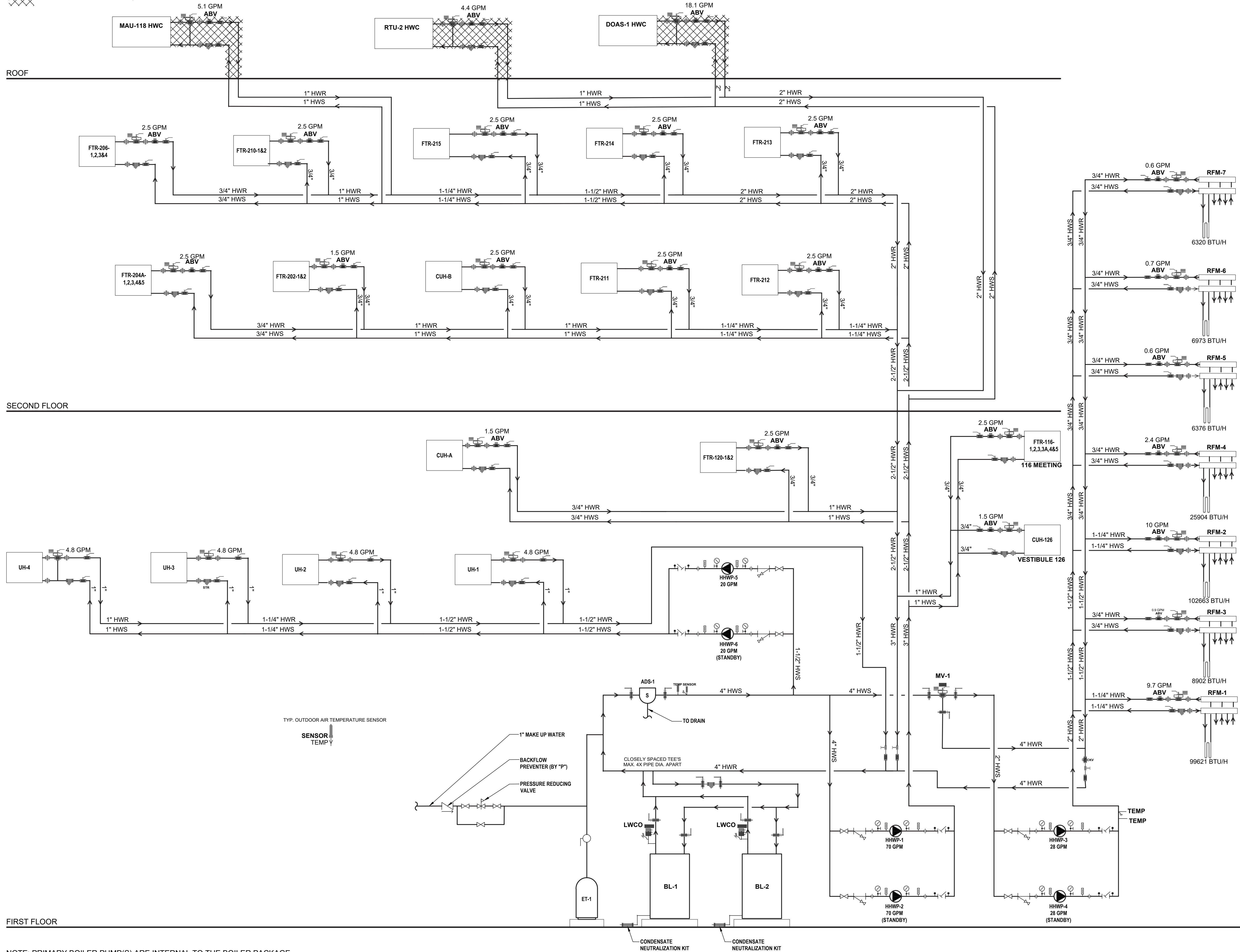
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HVAC KITCHEN SCHEDULES (10 OF 10)

DRAWING No.
M2 619.00



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XXXXX = PIPING ON EXTERIOR OF BUILDING, HEAT TRACED.



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CONSULTANTS:

MARK	DATE	DESCRIPTION



DESIGNED BY: DKR	DRAWN BY: DKR	CHECKED BY: MJV	REVIEWED BY: JML
PROJECT NO.: VGFD2001	DATE: JULY 2022	SCALE: 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**

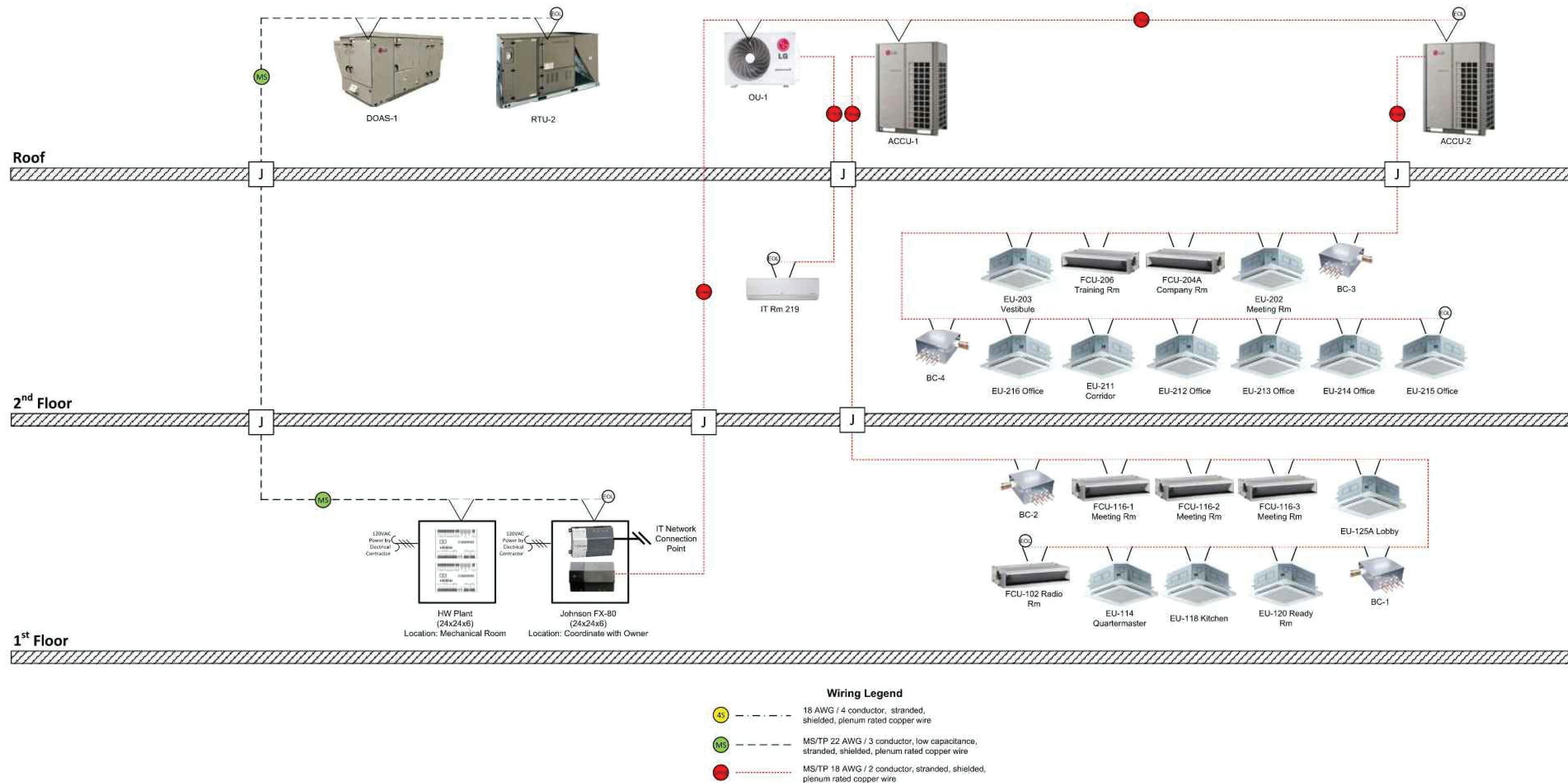
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**FINAL BID DOCUMENT**

SHEET TITLE  
**HVAC FLOW DIAGRAM (1  
OF 1)**

DRAWING No.  
**M2 640.00**

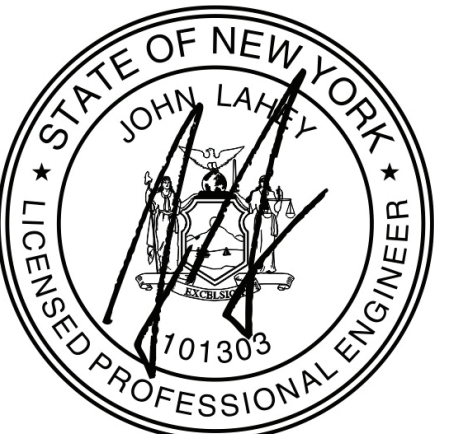


## System Architecture



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PROJECT No.: VGFD2001	DATE: JULY 2022	SCALE: 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 CONTROLS DIAGRAM**  
**(1 OF 1)**

DRAWING No. **M2 650.00**