Date: 04/01/2024
Project Name: Loveland Middle School AHU Replacement
Addendum #1

This Addendum is generally separated into sections for convenience; however, all contractors, subcontractors, material suppliers and other involved parties shall be responsible for reading the entire Addendum. Failure to list an item(s) in all affected sections of this Addendum does not relieve any party affected from performing per instructions, provided the information is set forth one time anywhere in the Addendum.

This document shall become attached to and part of the construction documents for the aforementioned project.

CLARIFICATIONS AND **MODIFICATIONS TO THE PROJECT DOCUMENTS:**

DRAWINGS & SPECIFICATIONS

ITEM 01 Refer to attached drawing sheet M-400 – MECHANICAL DETAILS AND SCHEDULES:

1. Remark 11 on RTU schedule updated to clarify controls scope.

ITEM 02 Refer to attached drawing sheet E-101 – ELECTRICAL UPPER SECTION FLOOR PLAN:

1. New convenience receptacles removed from drawing as units have unit powered convenience outlets.

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MEP Engineering | Performance Contracting | Zero Energy Engineering | Technology | Commissioning

TAGGED NOTES

##	
E2	PROVIDE NEW BRANCH CIRCUIT FOR NEW HVAC EQUIPMENT FROM EXISTING PANEL.
E3	RECONNECT EXISTING SMOKE DETECTOR TO SHUTDOWN HVAC EQUIPMENT WHEN SMOKE IS DETECTED. WIRE PER MANUFACTURER'S INSTRUCTIONS.

1

CMTA

STATE OF OHIO
JAMES B. MESSNER
E-74397
REGISTERED
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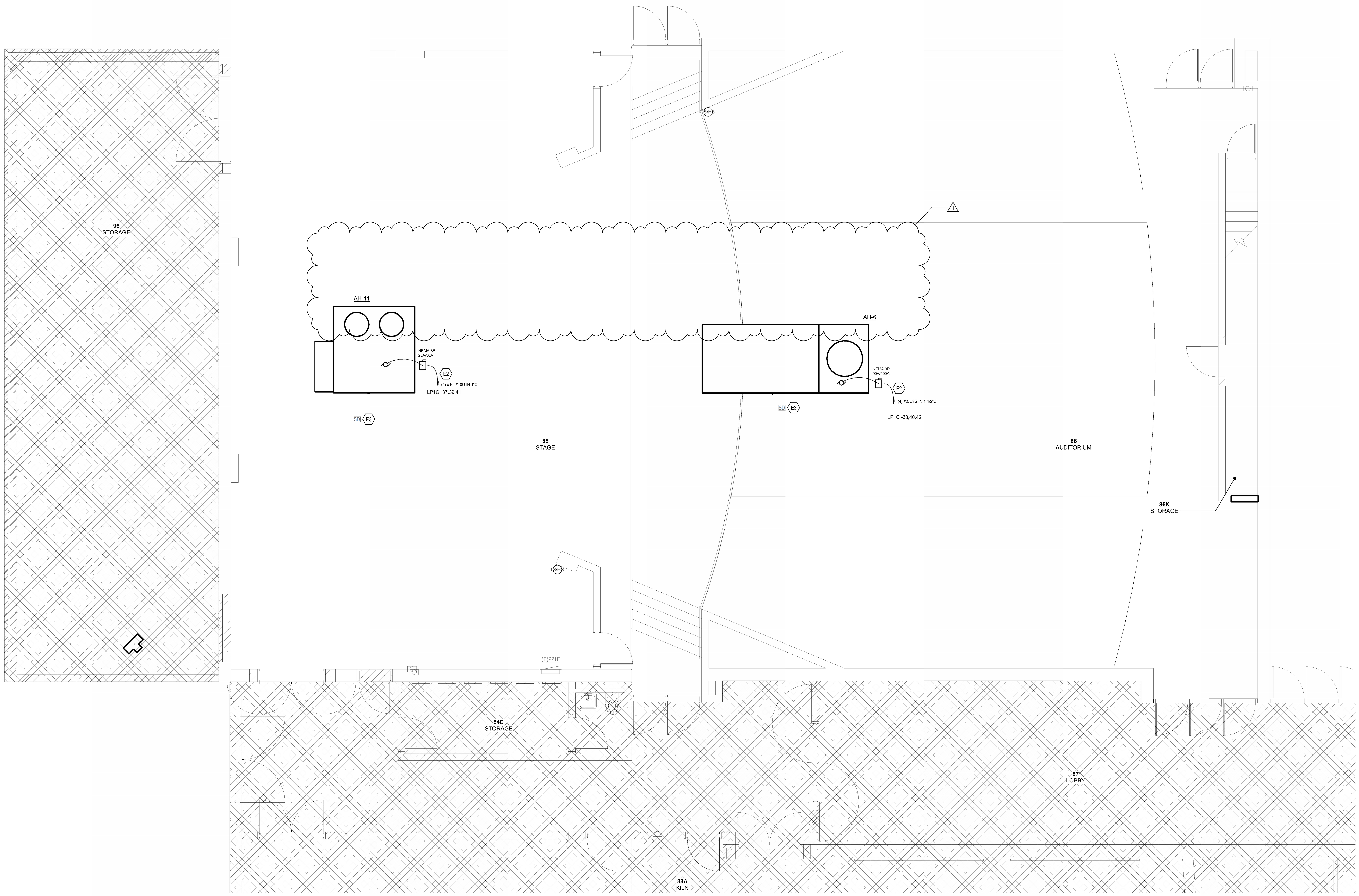
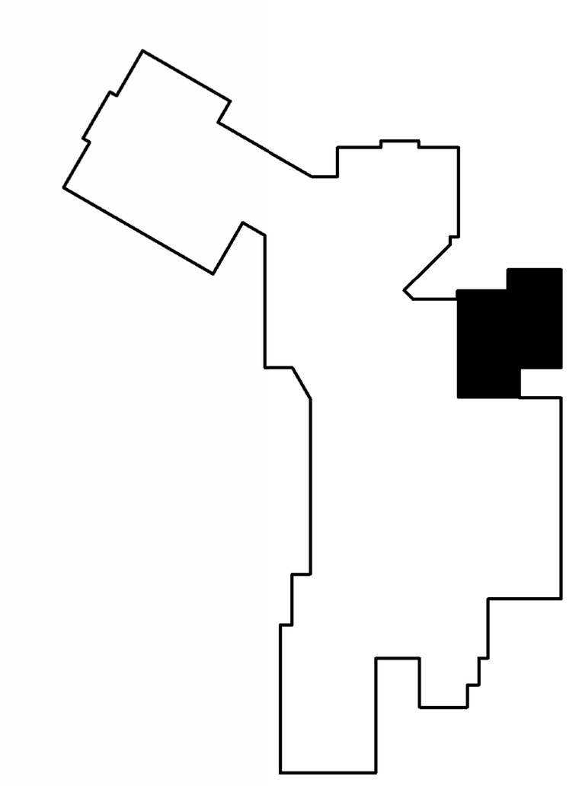
Loveland CITY SCHOOL DISTRICT

BID DOCUMENTS



1 E-101 **ELECTRICAL - AUDITORIUM & STAGE NEW WORK PLAN**
1/4" = 1'-0"

KEY PLAN



LOVELAND MIDDLE SCHOOL AHU REPLACEMENT
LOVELAND CITY SCHOOL DISTRICT
801 S Lebanon Rd, Loveland, OH 45140

ELECTRICAL UPPER SECTION FLOOR PLAN

CLIENT/CMTA JOB #:	OLMS23
DATE:	03/04/2024
DRAWN:	JJS
CHECKED:	JBM

REVISIONS

1	ADDENDUM 01	04/01/2024

E-101

PACKAGED ROOFTOP UNIT SCHEDULE

MARK	MANUFACTURER	Model	SERVICE	DIMENSIONS LENGTH (IN.)	DIMENSIONS WIDTH (IN.)	DIMENSIONS HEIGHT (IN.)	WEIGHT (LBS)	RETURN/EXHAUST FAN FAN TYPE	RETURN/EXHAUST FAN QUANTITY	RETURN/EXHAUST FAN HORSEPOWER	RETURN/EXHAUST FAN TOTAL CFM	RETURN/EXHAUST FAN ESP (IN.)
AH-6	DAIKIN	DPS028	AUDITORIUM	162.3	82.5	76.5	4103	DIRECT DRIVE - ECM	2	4.29	10000	0.5
AH-11	DAIKIN	DPS007	STAGE	91.0	56.8	96.5	2065	DIRECT DRIVE - ECM	1	4.0	2400	0.5

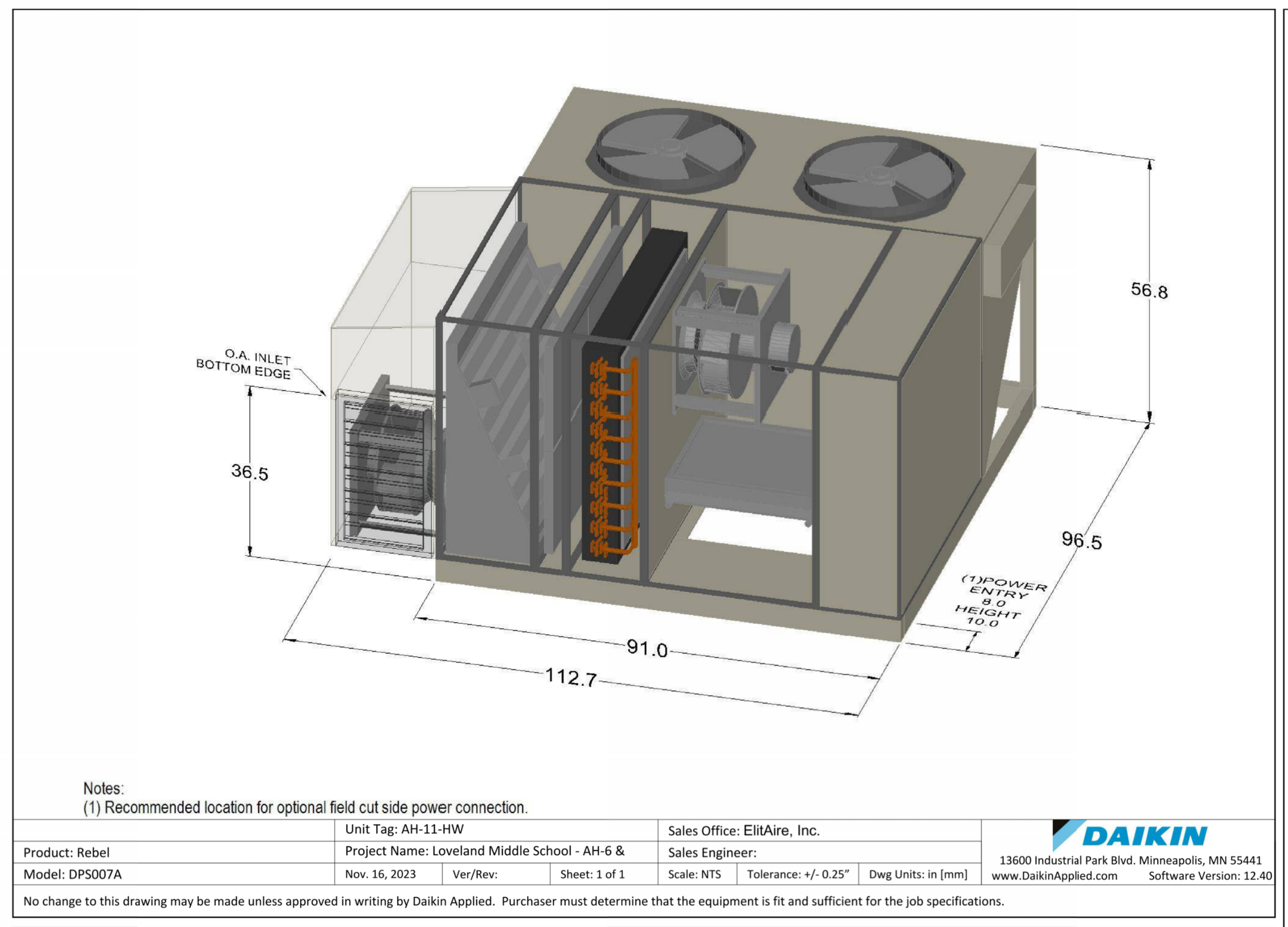
MARK	COOLING PERFORMANCE COOLING TYPE	REFRIGERANT	TOTAL CAPACITY (MBH)	SENSIBLE CAPACITY (MBH)	ENTERING (DB/WB)	LEAVING (DB/WB)	EER	IEER
AH-6	DX	R-410A	341.0	258.8	80.0/67.0	56.3/56.1	10.5	17.9
AH-11	DX	R-410A	91.6	66.3	80.0/67.0	54.7/54.7	12.3	20.3

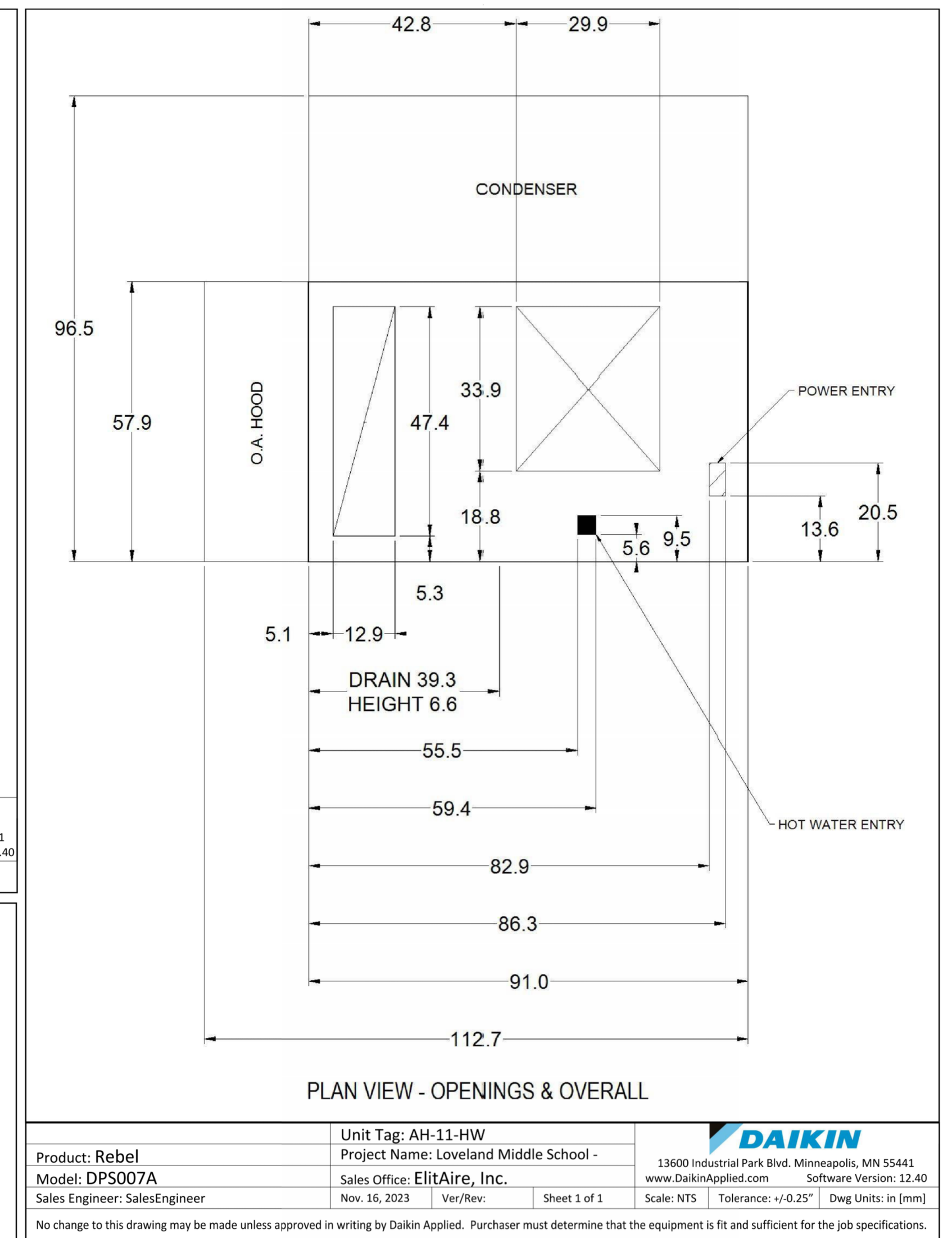
MARK	SUPPLY FAN FAN TYPE	QUANTITY	TOTAL CFM	ESP (IN.)	HORSEPOWER	HEATING PERFORMANCE HEATING TYPE	HEATING CAPACITY (MBH)	WATER TEMP (EWT/LWT)	FLOW (GPM)
AH-6	DIRECT DRIVE - VFD	1	10000	3.5	10.0	HEATING HOT WATER	502.1	180/150	34.1
AH-11	DIRECT DRIVE - ECM	1	2400	1.8	4.0	HEATING HOT WATER	127.0	180/150	8.5

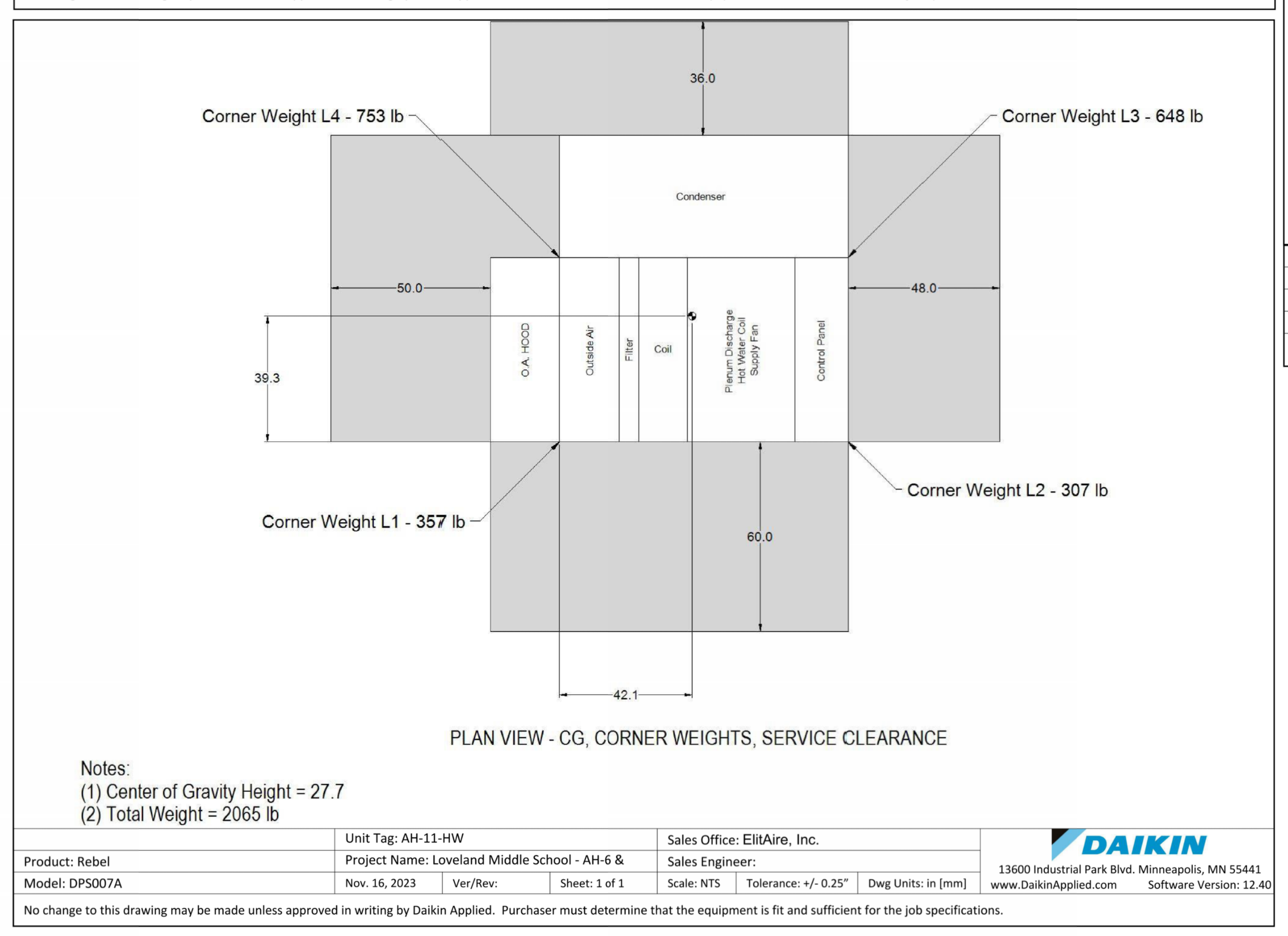
MARK	ELECTRICAL VOLTAGE	PHASE	FLA	MCA	MOCP	SCCR	REMARKS
AH-6	480	3	68.6	74.3	90	10	1-11
AH-11	480	3	19.1	20.4	25	5	1-11

REMARKS:
1. MODULATING HOT GAS REHEAT WITH COMBINATION SPACE TEMPERATURE AND HUMIDITY SENSOR.
2. 2" MERV 13 FILTER AND RACK.
3. DUCT MOUNTED CO2 SENSOR.
4. NON-FUSED DISCONNECT SWITCH.
5. UNIT POWERED CONVENIENCE OUTLET.
6. PHASE FAILURE MONITOR.
7. OUTSIDE AIR STATIC PRESSURE TIP (DWYER A-306).
8. OUTSIDE AIR HUMIDITY SENSOR WITH SUNSCREEN.
9. FREEZESTAT.
10. PROVIDE NEW CURB FOR EXISTING SLOPED ROOF.
11. PROVIDE FACTORY UNIT CONTROLLER. THE INTEGRATION OF THESE UNITS TO THE NEW BUILDING AUTOMATION SYSTEM SHALL BE DONE BY THE CONTROLS CONTRACTOR AS A PART OF A SEPERATE PROJECT. PRIOR TO INTEGRATION THESE UNITS SHALL RUN STAND-ALONE.

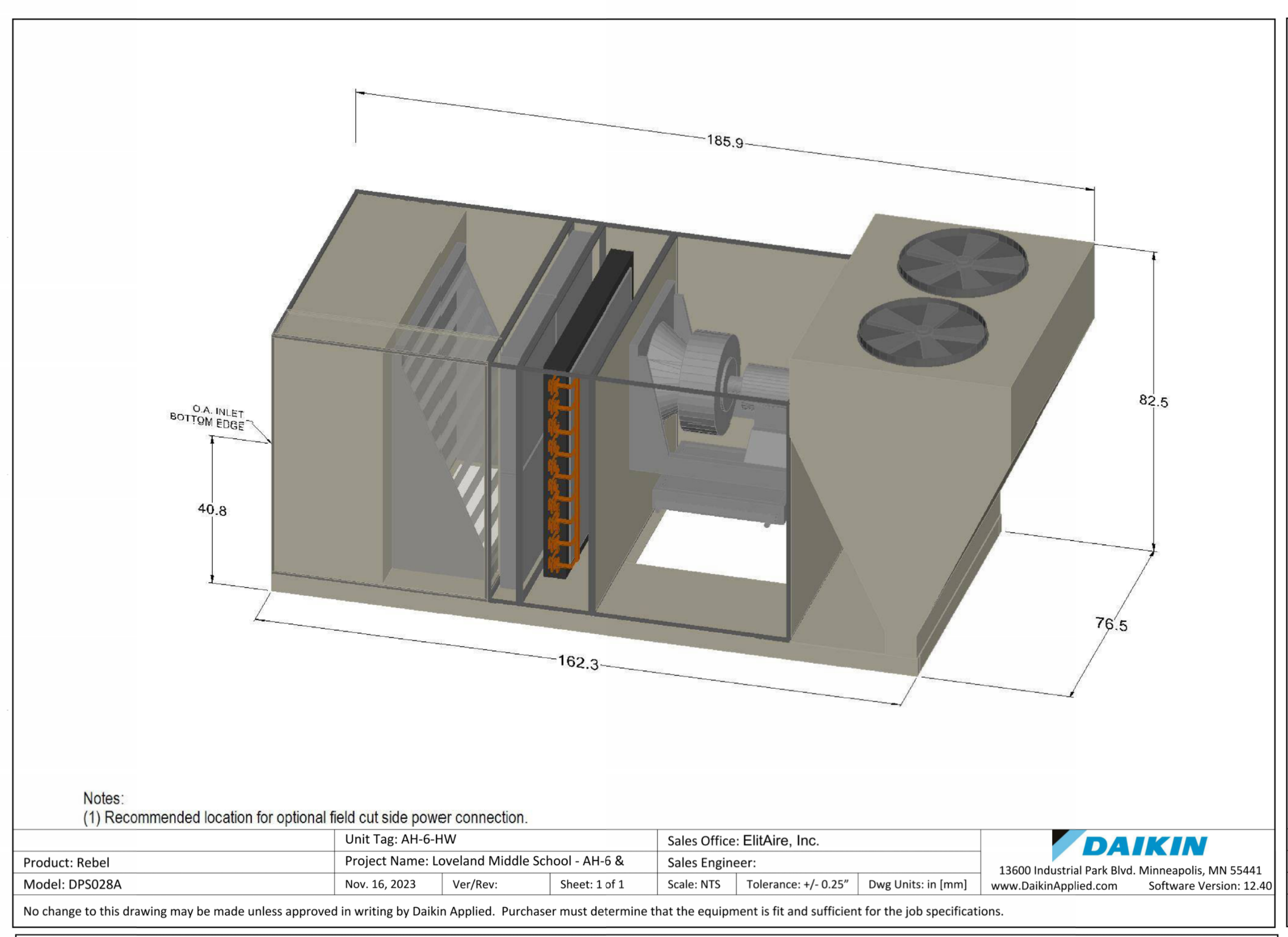
1

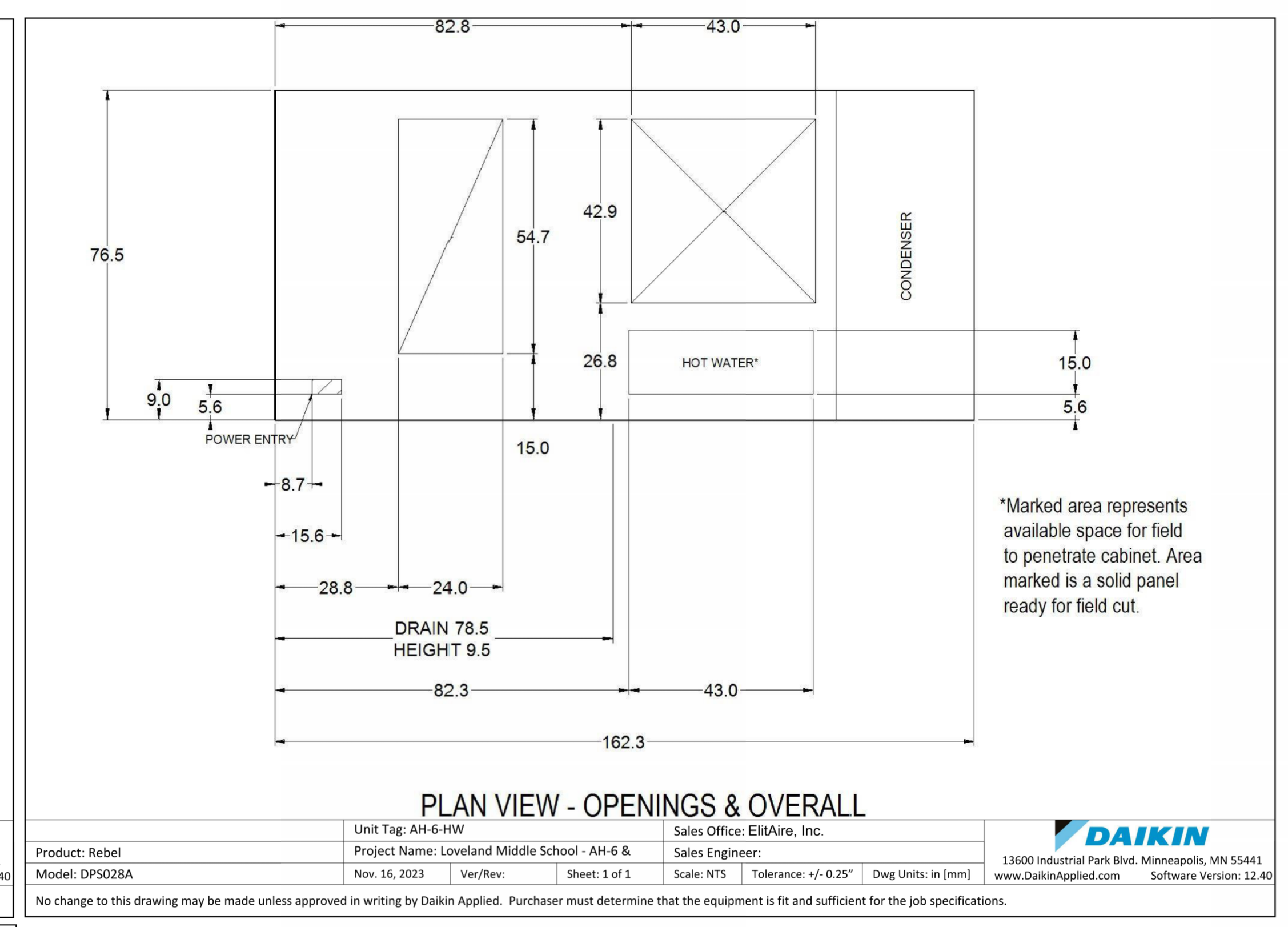




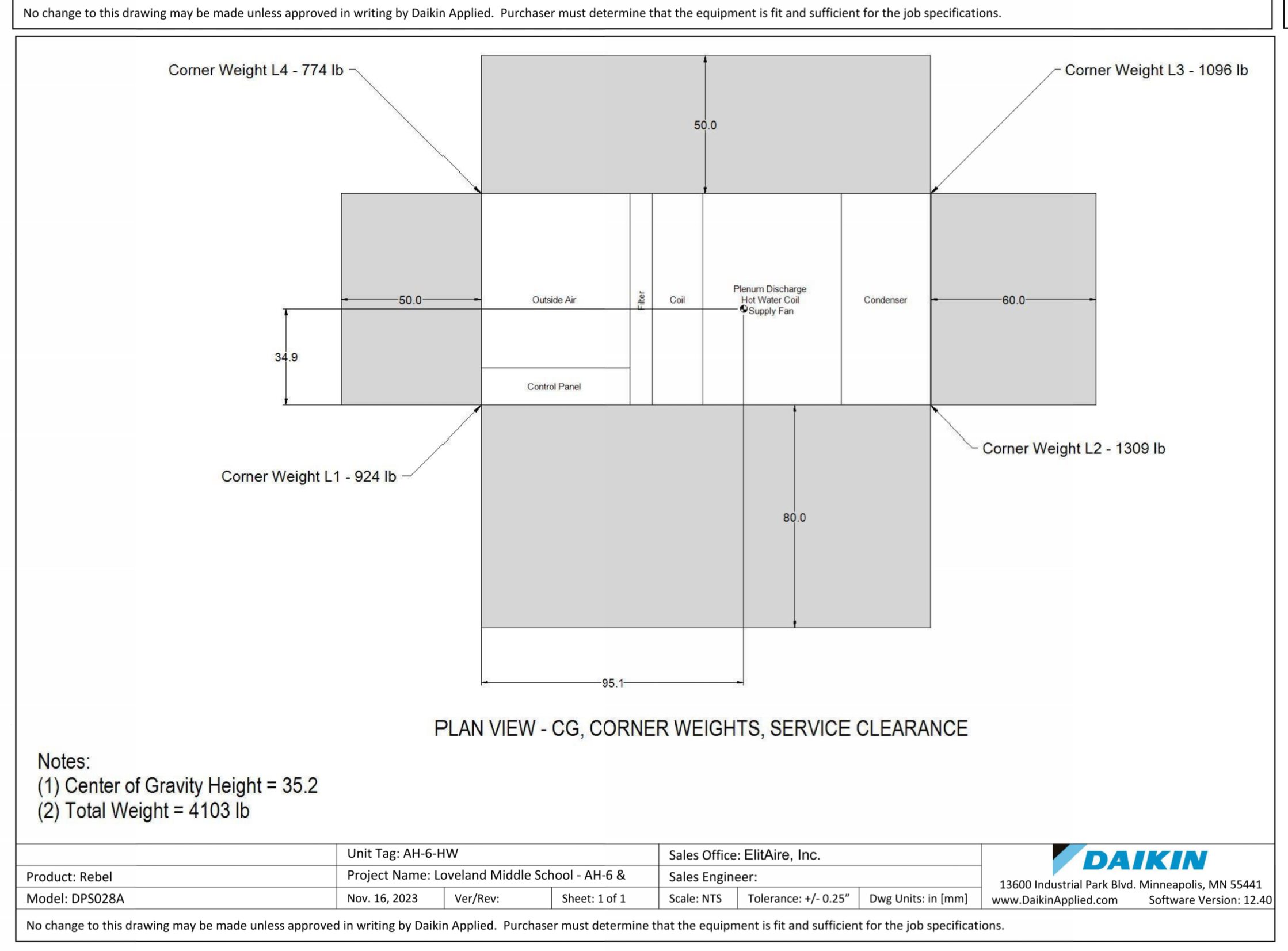


Corner Weight L4 - 753 lb
Corner Weight L3 - 648 lb
Condenser
Corner Weight L1 - 357 lb
Corner Weight L2 - 307 lb
PLAN VIEW - CG, CORNER WEIGHTS, SERVICE CLEARANCE
Notes:
(1) Center of Gravity Height = 27.7
(2) Total Weight = 2065 lb
Unit Tag: AH-11-HW
Product: Rebel
Model: DPS007A
DAIKIN

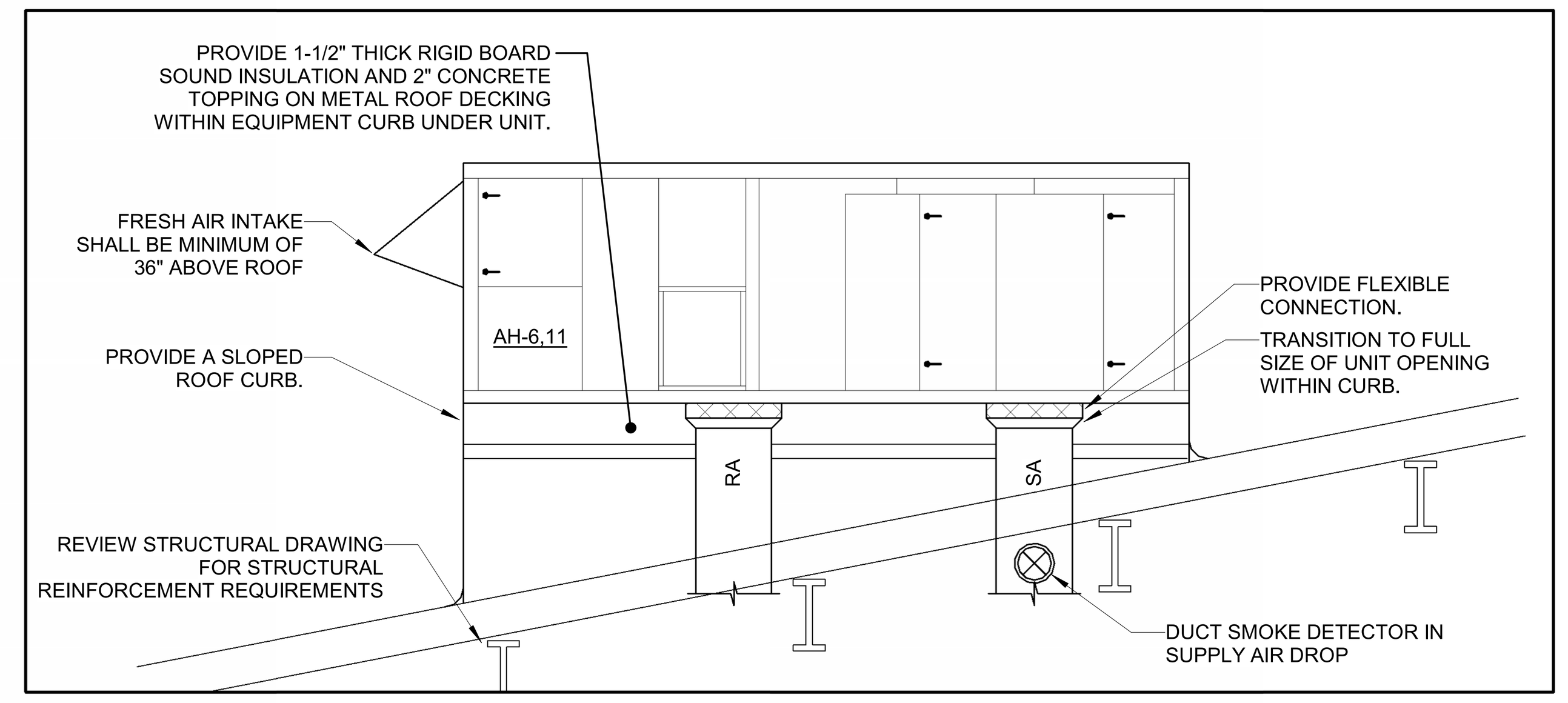




82.8
43.0
76.5
54.7
42.9
26.8
HOT WATER*
CONDENSER
15.0
5.6
9.0
5.6
POWER ENTRY
8.7
15.6
28.8
24.0
DRAIN 78.5
HEIGHT 9.5
82.3
43.0
162.3
*Marked area represents available space for field to penetrate cabinet. Area marked is a solid panel ready for field cut.
PLAN VIEW - OPENINGS & OVERALL
Unit Tag: AH-6-HW
Product: Rebel
Model: DPS028A
DAIKIN



Corner Weight L4 - 774 lb
Corner Weight L3 - 1096 lb
Corner Weight L1 - 924 lb
Corner Weight L2 - 1309 lb
PLAN VIEW - CG, CORNER WEIGHTS, SERVICE CLEARANCE
Notes:
(1) Center of Gravity Height = 35.2
(2) Total Weight = 4103 lb
Unit Tag: AH-6-HW
Product: Rebel
Model: DPS028A
DAIKIN



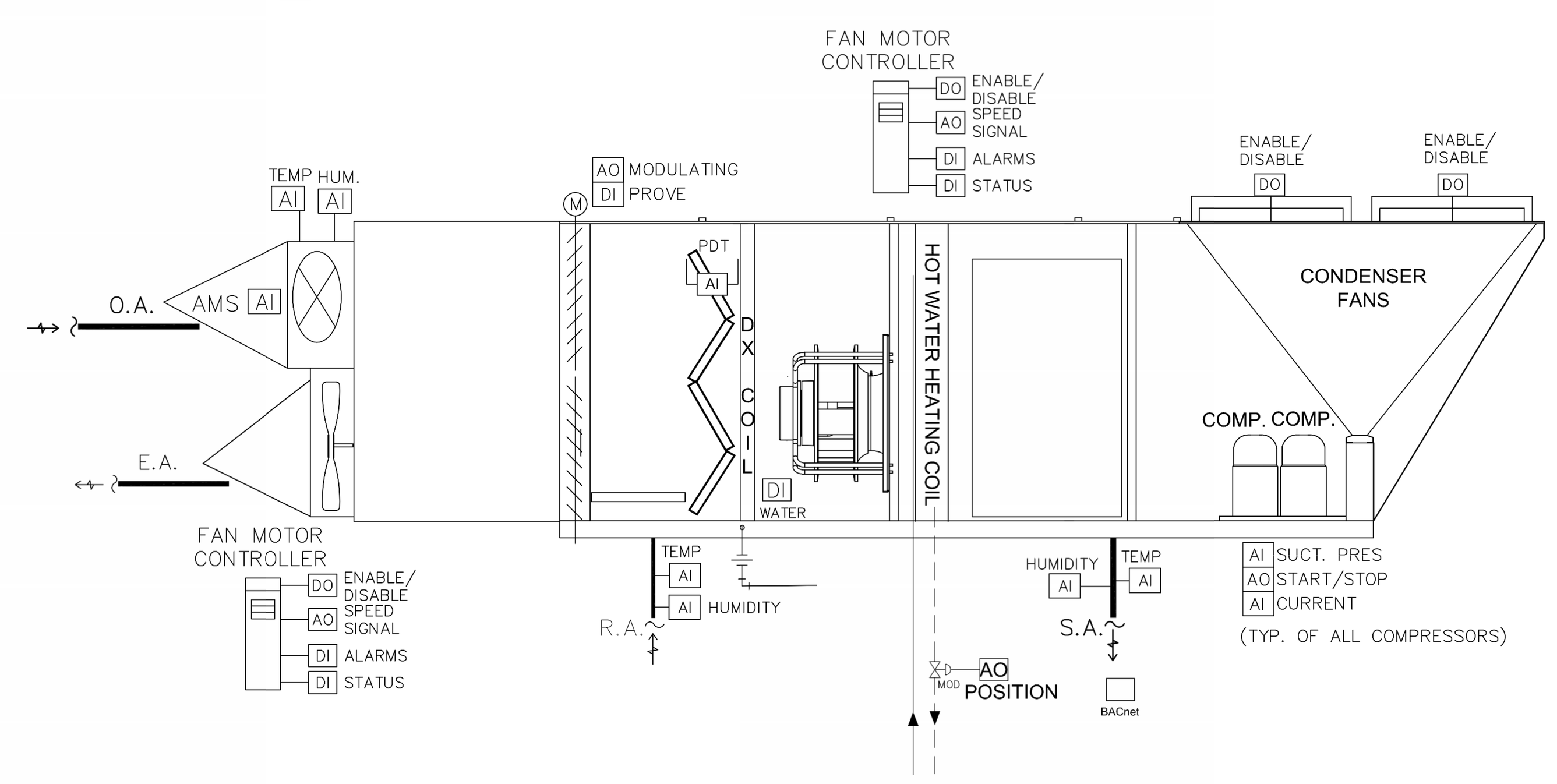
PROVIDE 1-1/2" THICK RIGID BOARD SOUND INSULATION AND 2" CONCRETE TOPPING ON METAL ROOF DECKING WITHIN EQUIPMENT CURB UNDER UNIT.
FRESH AIR INTAKE SHALL BE MINIMUM OF 36" ABOVE ROOF
PROVIDE A SLOPED ROOF CURB.
AH-6,11
RA
SA
PROVIDE FLEXIBLE CONNECTION.
TRANSITION TO FULL SIZE OF UNIT OPENING WITHIN CURB.
REVIEW STRUCTURAL DRAWING FOR STRUCTURAL REINFORCEMENT REQUIREMENTS
DUCT SMOKE DETECTOR IN SUPPLY AIR DROP

1 ROOF MOUNTED AIR HANDLING UNIT DETAIL

SCALE: NONE

AI GRAY SENSOR INDICATES DEVICE IS PROVIDED BY EQUIPMENT MANUFACTURER

AI BLACK SENSOR INDICATES DEVICE IS PROVIDED BY TEMPERATURE CONTROLS CONTRACTOR



FAN MOTOR CONTROLLER
DO ENABLE/ DISABLE
AO SPEED SIGNAL
DI ALARMS
DI STATUS
ENABLE/ DISABLE
DO
TEMP
HUM.
AO MODULATING
DI PROVE
O.A.
AMS
E.A.
HOT WATER HEATING COIL
CONDENSER FANS
COMP. COMP
DI WATER
TEMP
AI HUMIDITY
R.A.
HUMIDITY
S.A.
AI SUCT. PRES
AO START/STOP
AI CURRENT
(TYP. OF ALL COMPRESSORS)
AO POSITION
MOD
BACnet

AH-6 & AH-11

SINGLE ZONE W/ RETURN FAN SEQUENCE OF OPERATION

1. GENERAL: THE RTU SHALL BE PROVIDED WITH FACTORY CONTROLS. THE TCC SHALL PROVIDE AND INSTALL COMBINED THERMOSTAT/ HUMIDITY SENSORS, AND A WET BULB SENSOR INSTALLED IN THE JOIST SPACE BY THE TCC AND WIRED TO THE BAS. SEE PLANS FOR SENSOR LOCATIONS. THE BAS WILL PROVIDE AN OUTPUT TO THE RTU CONTROLLER.

2. THIS UNIT HAS THE FOLLOWING COMPONENTS:
   - a. POWER EXHAUST FAN (BUILDING RELIEF)
   - b. EXHAUST AND OUTSIDE AIR DAMPERS (ECONOMIZER MODE)
   - c. FILTERS
   - iv. STAGED COMPRESSORS
   - v. SUPPLY FAN
   - vii. HOT WATER HEAT
   - vij. HUMIDITY CONTROL

3. THE ROOFTOP UNIT SHALL BE PLACED INTO OPERATION BY THE DDC SYSTEM BASED UPON USER DEFINED SCHEDULE. THE FACTORY CONTROLLER WILL CHANGE FROM COOLING, FAN ONLY OR HEATING BASED ON THE HEATING AND COOLING SETPOINTS.

4. SUPPLY FAN CONTROL
   - 4.1. THE SUPPLY FAN WILL OPERATE CONTINUOUSLY BETWEEN A SPECIFIED MINIMUM AND MAXIMUM SPEED. THE UNIT WILL MODULATE THE SUPPLY FAN BETWEEN MINIMUM AND MAXIMUM BASED ON HOW FAR OR NEAR THE CONTROL TEMPERATURE IS AWAY FROM SETPOINT.

5. POWER EXHAUST AIR FAN: THE EXHAUST FAN WILL BE CONTROLLED BY A SPACE PRESSURE SENSOR LOCATED IN THE SPACES EACH UNIT SERVES. THE EXHAUST FAN SHALL MODULATE TO MAINTAIN +.01" W.C. PRESSURE IN THE SPACE.

6. OUTSIDE AIR DAMPER CONTROL: A DUCT MOUNTED CO2 SENSOR WILL SUPPLY A PPM READING TO THE UNIT CONTROLLER. THE UNIT CONTROLLER WILL OPEN THE OA DAMPER TO PROVIDE MORE VENTILATION AIR AS REQUIRED BY THE CO2 PPM READING.

7. HEATING MODE: WHEN THE SUPPLY AIR TEMPERATURE DROPS BELOW 55°F ENABLE HEAT MODE AND MODULATE THE HEATING HOT WATER VALVE AND ENABLE THE EXISTING HEATING HOT WATER UNIT PUMP TO MAINTAIN DISCHARGE AIR TEMPERATURE SETPOINT. THE MAXIMUM DISCHARGE AIR TEMPERATURE SHALL BE 90°F.
   - 7.1. FREEZESTAT: IF THE CONTACTS OF THE FREEZESTAT SEND A SIGNAL TO THE CONTROLLER THE HOT WATER VALVE SHALL OPEN TO 100% FOR A 10 MINUTE PERIOD AND THEN RECHECK THE FREEZESTAT STATUS. IF THE FREEZESTAT STATUS IS STILL INDICATING FREEZE PROTECTION THE TIMER SHALL RESET.THIS WILL CONTINUE UNTIL THE FREESTAT NO LONGER INDICATES THE COIL REQUIRES FREEZE PROTECTION.
   - 7.2. HEATING DISCHARGE AIR TEMPERATURE RESET: THE HEATING DAT SETPOINT SHALL RESET BY SPACE, RETURN, OAT, NETWORK, OR EXTERNAL SIGNALS. A LINEAR RELATIONSHIP BETWEEN DAT AND THE RESET VARIABLE WILL BE CREATED FOR THE MINIMUM AND MAXIMUM DAT SETPOINTS

8. COOLING MODE: COOLING SHALL BE CONTROLLED TO MAINTAIN SUPPLY AIR TEMPERATURE SETPOINT. ON A CALL FOR COOLING, THE HEATING SHALL BE DISABLED. ON A FURTHER CALL FOR COOLING THE COMPRESSORS SHALL BE STAGED ACCORDINGLY TO MAINTAIN THE SUPPLY AIR TEMPERATURE SETPOINT.

9. COMPARATIVE ENTHALPY SHALL BE ENGAGED WHENEVER THE OUTDOOR ENTHALPY OR DRY BULB IS LESS THAN THE RETURN AIR ENTHALPY OR DRY BULB TO UTILIZE OUTSIDE AIR FOR COOLING. OUTSIDE AIR AND RETURN AIR DAMPERS SHALL MODULATE TO MAINTAIN SUPPLY AIR TEMPERATURE SET POINT.

10. UNOCCUPIED SUPPLY AIR TEMPERATURE HEATING: IF THE SPACE HAS A CALL FOR HEATING, THE ROOFTOP UNIT SHALL START AND SUPPLY 65°F AIR TO THE SPACE. THE OUTSIDE AIR DAMPER POSITION SHALL BE 0%.

11. UNOCCUPIED SUPPLY AIR TEMPERATURE COOLING: IF THE SPACE HAS A CALL FOR COOLING, THE ROOFTOP UNIT SHALL START AND SUPPLY 55°F AIR TO THE SPACE. THE OUTSIDE AIR DAMPER POSITION SHALL BE 0%.

12. BUILDING WARM UP: THE UNIT SHALL USE OPTIMAL START TO WARM THE SPACE TO SET POINT. MAXIMUM SUPPLY AIR TEMPERATURE SHALL BE 90°F. OUTSIDE AIR TO REMAIN OFF.

13. BUILDING COOL DOWN: THE UNIT SHALL USE OPTIMAL START TO COOL SPACE TO SET POINT. THE OUTSIDE AIR DAMPER IS TO REMAIN CLOSED DURING THIS SEQUENCE. DURING BUILDING COOL DOWN THE LEAVING AIR TEMPERATURE FROM THE UNIT SHALL BE 55 DEG F.

14. MODULATING HOT GAS REHEAT: THIS SYSTEM SHALL BE CONTROLLED BY TWO POINTS, THE LEAVING COIL TEMPERATURE SENSOR (LCT), AND A DISCHARGE AIR TEMPERATURE (DAT). DURING DEHUMIDIFICATION THE REFRIGERATION CIRCUIT ALLOWS COMPRESSORS TO MAINTAIN THE LCT SETPOINT (ADJUSTABLE). THE UNIT SHALL BE ABLE TO COOL AND DEHUMIDIFY SIMULTANEOUSLY OR JUST DEHUMIDIFY IF NO COOLING IS NEEDED. DEHUMIDIFICATION WILL BE ACTIVATED WHEN THE RELATIVE HUMIDITY IN THE RETURN SPACE RISES ABOVE THE DEHUMIDIFICATION SET POINT.

15. SMOKE DETECTOR: WHEN THE SMOKE DETECTOR IS ALARMED, THE FIRE ALARM SYSTEM SHALL BE ALARMED AND THE AHU SHALL FAIL SAFE WITH MANUAL RESET AT THE FIRE ALARM PANEL. ELECTRICAL CONTRACTOR SHALL FURNISH, HVAC CONTRACTOR SHALL MOUNT & ELECTRICAL CONTRACTOR SHALL WIRE A UL LISTED PHOTOELECTRIC SMOKE DETECTOR PER LOCAL CODE AUTHORITY HAVING JURISDICTION.

16. MONITORS AND ALARMS:
   - 16.1. PROVIDE ALARM FOR SMOKE.
   - 16.2. MONITOR THE DIFFERENTIAL PRESSURE ACROSS THE FILTERS AND PROVIDE A NOTIFICATION WHEN THE FILTERS NEED TO BE REPLACED.
   - 16.3. MONITOR THE STATUS OF THE SUPPLY AND EXHAUST FAN WITH A CURRENT SWITCH. PROVIDE AN ALARM WHEN THE FANS ARE COMMANDED ON BUT A FAN IS NOT RUNNING.

17. SETPOINTS (ADJ.):
   - a. OCCUPIED COOLING: 74 °F (ADJ.) +/- 2 °F WARMER/ COOLER ADJUST (ADJ.)
   - b. UNOCCUPIED COOLING: 80 °F (ADJ.)
   - c. OCCUPIED HEATING: 70°F(ADJ.) +/-2°F WARMER/ COOLER ADJUST (ADJ.)
   - d. UNOCCUPIED HEATING: 60 °F (ADJ.)

CMTA

Loveland CITY SCHOOL DISTRICT

BID DOCUMENTS

LOVELAND MIDDLE SCHOOL AHU REPLACEMENT

LOVELAND CITY SCHOOL DISTRICT

801 S Lebanon Rd, Loveland, OH 45140

MECHANICAL DETAILS AND SCHEDULES

CLIENT/CMTA JOB #:	OLMS23
DATE:	03/04/2024
DRAWN:	OTG
CHECKED:	BKR

REVISIONS

1	ADDENDUM 01	04/01/2024

STATE OF OHIO BRIAN K. ROSE E-56979 REGISTERED PROFESSIONAL ENGINEER

M-400