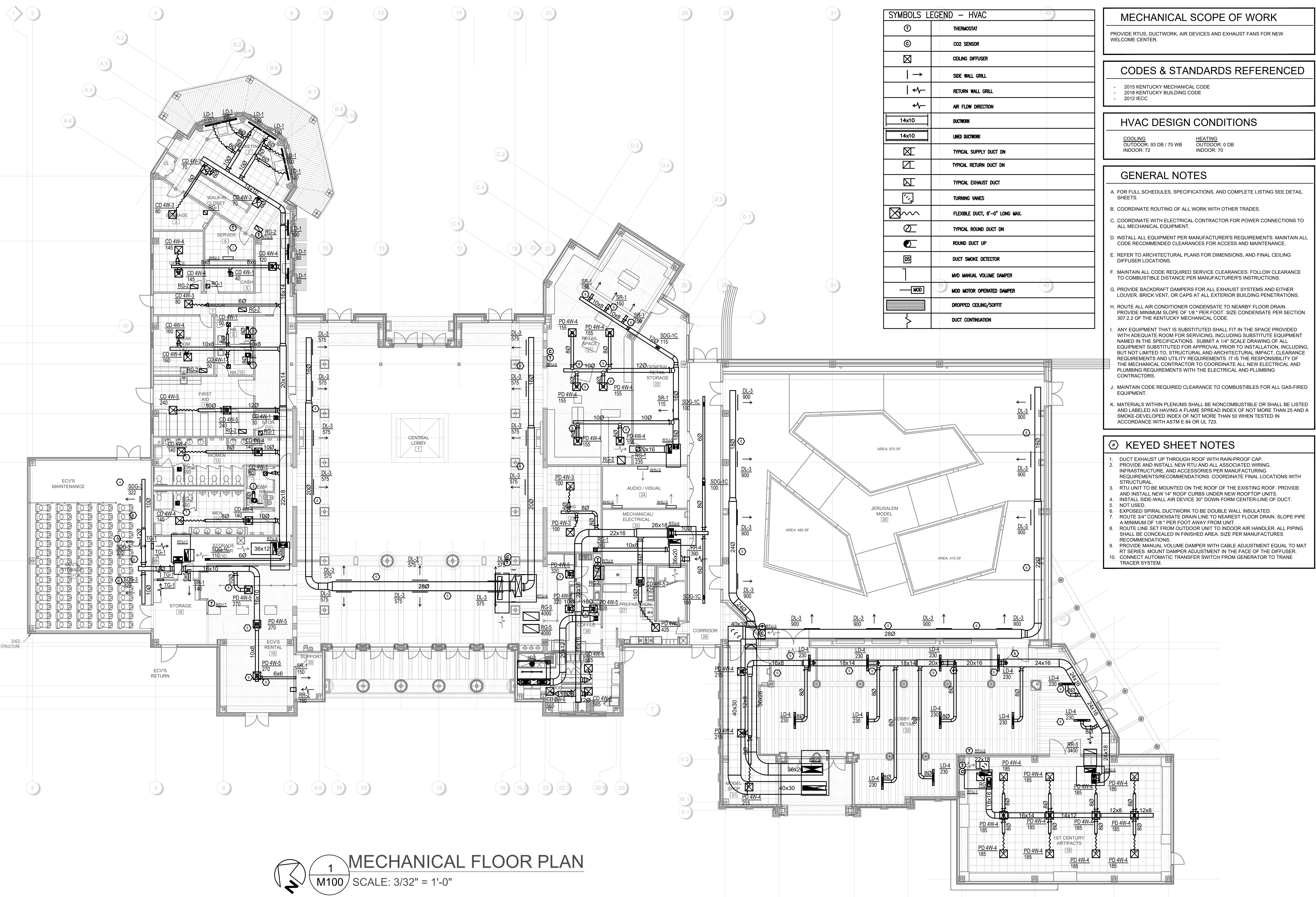


2. The Client, WELCOMECENTER, is the owner of the project and is responsible for providing all necessary information and approvals. The Contractor is responsible for ensuring that all work is completed in accordance with the contract documents and applicable codes. The Contractor is not responsible for any delays or cost overruns caused by the Client's failure to provide information or approvals in a timely manner. The Contractor is not responsible for any damage to the existing building or its contents caused by the Contractor's work. The Contractor is not responsible for any claims or lawsuits filed against the Contractor or its employees, agents, or subcontractors. The Contractor is not responsible for any claims or lawsuits filed against the Client or its employees, agents, or subcontractors. The Contractor is not responsible for any claims or lawsuits filed against any third party. The Contractor is not responsible for any claims or lawsuits filed against any third party. The Contractor is not responsible for any claims or lawsuits filed against any third party.



SYMBOLS LEGEND - HVAC	
⊖	THERMOSTAT
⊙	CO2 SENSOR
⊠	CEILING DIFFUSER
→	SIDE WALL GRILL
←	RETURN WALL GRILL
↔	AIR FLOW DIRECTION
14x10	DUCTWORK
14x10	UNED DUCTWORK
⊠	TYPICAL SUPPLY DUCT DN
⊠	TYPICAL RETURN DUCT DN
⊠	TYPICAL EXHAUST DUCT
⊠	TURNING VANES
⊠	FLEXIBLE DUCT, 8'-0" LONG MAX.
⊠	TYPICAL ROUND DUCT DN
⊠	ROUND DUCT UP
⊠	DUCT SMOKE DETECTOR
⊠	MVD MANUAL VOLUME DAMPER
⊠	MOD MOTOR OPERATED DAMPER
⊠	DROPPED CEILING/SOFFIT
⊠	DUCT CONTINUATION

**MECHANICAL SCOPE OF WORK**

PROVIDE RTUS, DUCTWORK, AIR DEVICES AND EXHAUST FANS FOR NEW WELCOME CENTER.

**CODES & STANDARDS REFERENCED**

- 2015 KENTUCKY MECHANICAL CODE
- 2018 KENTUCKY BUILDING CODE
- 2012 IECC

**HVAC DESIGN CONDITIONS**

COOLING OUTDOOR: 93 DB / 75 WB INDOOR: 72	HEATING OUTDOOR: 0 DB INDOOR: 70
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**GENERAL NOTES**

- FOR FULL SCHEDULES, SPECIFICATIONS, AND COMPLETE LISTING SEE DETAIL SHEETS.
- COORDINATE ROUTING OF ALL WORK WITH OTHER TRADES.
- COORDINATE WITH ELECTRICAL CONTRACTOR FOR POWER CONNECTIONS TO ALL MECHANICAL EQUIPMENT.
- INSTALL ALL EQUIPMENT PER MANUFACTURER'S REQUIREMENTS. MAINTAIN ALL CODE RECOMMENDED CLEARANCES FOR ACCESS AND MAINTENANCE.
- REFER TO ARCHITECTURAL PLANS FOR DIMENSIONS, AND FINAL CEILING DIFFUSER LOCATIONS.
- MAINTAIN ALL CODE REQUIRED SERVICE CLEARANCES. FOLLOW CLEARANCE TO COMBUSTIBLE DISTANCE PER MANUFACTURER'S INSTRUCTIONS.
- PROVIDE BACKDRAFT DAMPERS FOR ALL EXHAUST SYSTEMS AND EITHER LOUVER, BRICK VENT, OR CAPS AT ALL EXTERIOR BUILDING PENETRATIONS.
- ROUTE ALL AIR CONDITIONER CONDENSATE TO NEARBY FLOOR DRAIN. PROVIDE MINIMUM SLOPE OF 1/8" PER FOOT. SIZE CONDENSATE PER SECTION 307.2.2 OF THE KENTUCKY MECHANICAL CODE.
- ANY EQUIPMENT THAT IS SUBSTITUTED SHALL FIT IN THE SPACE PROVIDED WITH ADEQUATE ROOM FOR SERVICING, INCLUDING SUBSTITUTE EQUIPMENT NAMED IN THE SPECIFICATIONS. SUBMIT A 1/4" SCALE DRAWING OF ALL EQUIPMENT SUBSTITUTED FOR APPROVAL PRIOR TO INSTALLATION, INCLUDING, BUT NOT LIMITED TO, STRUCTURAL AND ARCHITECTURAL IMPACT, CLEARANCE REQUIREMENTS AND UTILITY REQUIREMENTS. IT IS THE RESPONSIBILITY OF THE MECHANICAL CONTRACTOR TO COORDINATE ALL NEW ELECTRICAL AND PLUMBING REQUIREMENTS WITH THE ELECTRICAL AND PLUMBING CONTRACTORS.
- MAINTAIN CODE REQUIRED CLEARANCE TO COMBUSTIBLES FOR ALL GAS-FIRED EQUIPMENT.
- MATERIALS WITHIN PLENUMS SHALL BE NONCOMBUSTIBLE OR SHALL BE LISTED AND LABELED AS HAVING A FLAME SPREAD INDEX OF NOT MORE THAN 25 AND A SMOKE-DEVELOPED INDEX OF NOT MORE THAN 50 WHEN TESTED IN ACCORDANCE WITH ASTM E 84 OR UL 723.

**KEYED SHEET NOTES**

- DUCT EXHAUST UP THROUGH ROOF WITH RAIN-PROOF CAP.
- PROVIDE AND INSTALL NEW RTU AND ALL ASSOCIATED WIRING, INFRASTRUCTURE, AND ACCESSORIES PER MANUFACTURER REQUIREMENTS/RECOMMENDATIONS. COORDINATE FINAL LOCATIONS WITH STRUCTURAL.
- RTU UNIT TO BE MOUNTED ON THE ROOF OF THE EXISTING ROOF. PROVIDE AND INSTALL NEW 14" ROOF CURBS UNDER NEW ROOFTOP UNITS.
- INSTALL SIDE-WALL AIR DEVICE 30" DOWN FROM CENTER-LINE OF DUCT. NOT USED.
- EXPOSED SPIRAL DUCTWORK TO BE DOUBLE WALL INSULATED.
- ROUTE 3/4" CONDENSATE DRAIN LINE TO NEAREST FLOOR DRAIN. SLOPE PIPE A MINIMUM OF 1/8" PER FOOT AWAY FROM UNIT.
- ROUTE LINE SET FROM OUTDOOR UNIT TO INDOOR AIR HANDLER. ALL PIPING SHALL BE CONCEALED IN FINISHED AREA. SIZE PER MANUFACTURER'S RECOMMENDATIONS.
- PROVIDE MANUAL VOLUME DAMPER WITH CABLE ADJUSTMENT EQUAL TO MAT RT SERIES. MOUNT DAMPER ADJUSTMENT IN THE FACE OF THE DIFFUSER.
- CONNECT AUTOMATIC TRANSFER SWITCH FROM GENERATOR TO TRANE TRACER SYSTEM.

**MECHANICAL FLOOR PLAN**  
 1 M100 SCALE: 3/32" = 1'-0"

4858 CLOUGH WOODS DR.  
 BATAVIA, OH 45103  
 PHONE: (513) 943-5300  
 FAX: (513) 943-5310  
 O.H.C. LIC. #16557  
 K.Y. LIC. #R02376

**Bachman's**  
 HVAC SOLUTIONS

ROD BACHMAN  
 PRESIDENT

ISSUANCES

NO. 1	DATE	DESCRIPTION

FR-15397  
**ENGINEERED BUILDING SYSTEMS INC.**  
 515 Monmouth Street, Suite 204  
 Newport, KY 41071 | (859) 241-5885  
 MEP Consulting Services, Inc. in OH  
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**WELCOME CENTER AND JERUSALEM BUILDING**  
 WILLIAMSTOWN, KY

DRAWN BY: RIT | CHECKED BY: SSS  
 PROJECT NO.: 23-0895  
 SCALE: AS NOTED  
 DATE: 05-30-2024  
 DRAWING TITLE: MECHANICAL FLOOR PLAN  
 SHEET NO: M100







MECHANICAL SPECIFICATIONS

- 1. General
a. Refer to architectural drawings, general notes, instructions to bidders, general conditions, supplementary general conditions, base building specifications and drawings, shop drawings manuals and as-built plans, except as noted herein, which apply in all respects to this section.
2. Use of Drawings And Specifications
a. EBS drawings and specifications are intended to convey design intent only. All means and methods sequences, techniques, and procedures of construction as well as any associated safety precautions and programs, and all incidental and temporary devices required to construct the project, and to provide a complete and fully operational mechanical system are the responsibility of the mechanical contractor.
3. Standards
a. Equipment and materials shall conform with appropriate provisions of AGA, ARI, ASME, ASTM, CISPI, UL, NEIMA, ANSI, SMACNA, ASHRAE, NFPA, NEC, as applicable to each individual unit or assembly. All equipment must bear UL label.
4. License / Experience
a. Contractor must be licensed by the state to install HVAC systems/equipment. Contractor must also have a minimum of 5 years of experience and have installed at least (5) successful project installations of similar size and scope.
5. Codes
a. All work shall be performed in strict accordance with all applicable state and local codes and ordinances.
6. Permits and Fees
a. The mechanical contractor shall procure and pay for all permits, fees, taxes, and inspections necessary to complete the mechanical work.
7. Site Examination
a. The mechanical contractor shall thoroughly examine all areas of work where equipment, ductwork, and piping will be installed and shall report any condition that, in his opinion, prevents the proper installation of the mechanical work prior to bid.
8. Contractor Coordination
a. Coordination drawings showing system and component installation layout, routing, details, etc. Shall be produced by the mechanical contractor and under the supervision of the general contractor/construction manager, or appropriate party as applicable.
9. Shop Drawings / Submittals
a. Submit to the architect electronic copies of complete and certified shop drawings, descriptive data, performance data and ratings, diagrams and specifications on all specified equipment, including accessories, and materials for review.
10. Record Drawing
a. The mechanical contractor shall be responsible for creating record drawings where required.
11. Testing
a. All mechanical systems shall be tested for proper operation.
12. Fire Stopping
a. Provide fire stopping at all penetrations through rated separations per local codes & regulations & per UL recommendations for assemblies used in project.
13. Access Panels
a. Provide ceiling and wall access panel quantities & locations to the general contractor prior to bidding.
14. Cutting and Patching
a. Neatly do all cutting as required and patch all cut surfaces to match building construction.
15. Flashing & Counterflashing
a. Roof flashing shall be furnished and installed by the roofing contractor.
16. Warranty
a. The mechanical contractor shall unconditionally warrant all work to be free of defects in equipment, material and workmanship for a period of one (1) year from the date of final acceptance by owner.
17. Mechanical Work
a. The mechanical contractor shall provide new hvac equipment, fans, ductwork, piping, air devices, controls as indicated on drawings and as specified.
18. Owner's Instructions
a. Provide two sets of complete operating and maintenance instructions with drawings, typewritten instructions and operating sequences and descriptive data sheets.
19. Final
a. Put all equipment in service and demonstrate that all conditions of the contract have been fulfilled.
20. Sheetmetal Ductwork
a. All sizes of ducts shown on the drawings are interior duct dimensions.
21. Adhesives and Sealants
a. Seal all longitudinal and transverse duct joints with a UL 181A or 181B non-hardening, non-migrating mastic or liquid elastic sealant of a type recommended by the manufacturer for sealing joints and seams in sheet metal ductwork.
22. Duct Supports
a. Furnish and install hot-dipped galvanized steel fasteners, hangers, anchors, rods, straps, trim, and angles for support of ductwork.
23. Flexible Connections
a. Furnish and install neoprene flexible duct connections at the inlet and discharge of units and fans.
24. Duct Manual Volume Dampers
a. Furnish and install opposed-blade, leak-proof volume control dampers where indicated on drawings and locations in

- 32. Temperature Controls and Control Wiring
a. The mechanical contractor shall provide all control wiring necessary for the complete and proper operating temperature control system.
b. Exposed wiring: All wiring exposed to the space shall be run in conduit.
33. Testing, Balancing, and Adjusting
a. The individual performing the air balancing shall be a certified test and balancer and a member of NEBB or AABC, using calibrated equipment.
34. Sequence of Operation
a. Exhaust Fans
i. E-1: exhaust fan shall run on a switch (furnished by the electrical contractor).
ii. E-2: exhaust fan shall run on a timeclock (furnished by the electrical contractor).
b. Rooftop units
i. RTU-1: unit shall be controlled from a thermostat in the space.
ii. Heating mode - when the thermostat calls for heating the fan shall run and the gas fired heat exchanger shall fire to maintain temperature setpoint.
iii. Cooling mode - when the thermostat calls for cooling the refrigeration system shall engage, the fan shall run, and the dx cooling coil shall cool the air to maintain temperature setpoint.
iv. Economizer mode - when the economizer is enabled (the outside air enthalpy is lower than the return air enthalpy), the economizer becomes the first stage of cooling.
c. Split Systems
i. AHU/HP-1/2/3:
ii. Cooling mode - when the thermostat calls for cooling the heat pump unit shall run in cooling mode, the air handler fan shall run, and the dx cooling coil shall cool the air to maintain temperature setpoint.
30. Piping Supports (Metal Pipe)
a. Furnish and install hot-dipped galvanized steel fasteners, hangers, anchors, rods, straps, trim and angles for support of piping.
31. Piping Supports (Plastic Pipe)
a. Furnish and install hangers for plastic piping per manufacturer's requirements.

Zone RTU-5 Ventilation
System Primary Airflow: 1,680 CFM
Average Outdoor Air Fraction: 0.212
Occupant Diversity: 1
Uncorrected Air Intake: 356 CFM
System Ventilation Efficiency: 0.959
Outdoor Air Intake: 285 CFM

Room Information
Room: 21 - RETAIL SPACE (HIGH CEILING)
Room Type: Retail-Sales
Rate: 7.5, People: 4.9, Total CFM: 37, Area CFM/ft^2: 0.12, Total Area: 324, Breathing Zone Outside Airflow: 39, Zone Outdoor Airflow: 76, Zone Discharge Airflow: 95, Discharge Outdoor Air Fraction: 456, Zone Ventilation Efficiency: 0.208

\*VENTILATION CALCULATIONS PER IMC 2015 TABLE 403.3.1.1

Zone RTU-1 Ventilation
System Primary Airflow: 2,000 CFM
Average Outdoor Air Fraction: 0.125
Occupant Diversity: 1
Uncorrected Air Intake: 250 CFM
System Ventilation Efficiency: 1
Outdoor Air Intake: 200 CFM

Room Information
Room: 33 - 1ST CENTURY ARTIFACTS
Room Type: Public-Museums/Galleries
Rate: 7.5, People: 69.1, Total CFM: 519, Area CFM/ft^2: 0.06, Total Area: 1,730, Breathing Zone Outside Airflow: 104, Zone Outdoor Airflow: 623, Zone Discharge Airflow: 779, Discharge Outdoor Air Fraction: 2,000, Zone Ventilation Efficiency: 0.389

\*VENTILATION CALCULATIONS PER IMC 2015 TABLE 403.3.1.1

Zone RTU-3 Ventilation
System Primary Airflow: 10,000 CFM
Average Outdoor Air Fraction: 0.125
Occupant Diversity: 1
Uncorrected Air Intake: 1,250 CFM
System Ventilation Efficiency: 1
Outdoor Air Intake: 1,000 CFM

Room Information
Room: 30 - JERUSALEM MODEL
Room Type: Public-Museums/Galleries
Rate: 7.5, People: 179, Total CFM: 1,340, Area CFM/ft^2: 0.06, Total Area: 6,040, Breathing Zone Outside Airflow: 363, Zone Outdoor Airflow: 1,710, Zone Discharge Airflow: 2,130, Discharge Outdoor Air Fraction: 10,000, Zone Ventilation Efficiency: 0.213

\*VENTILATION CALCULATIONS PER IMC 2015 TABLE 403.3.1.1

Zone RTU-4 Ventilation
System Primary Airflow: 4,000 CFM
Average Outdoor Air Fraction: 0.106
Occupant Diversity: 1
Uncorrected Air Intake: 423 CFM
System Ventilation Efficiency: 0.856
Outdoor Air Intake: 338 CFM

Room Information
Room: 23 - AIG INTRO
Room Type: Office-Office Space
Rate: 5, People: 1.6, Total CFM: 8, Area CFM/ft^2: 0.06, Total Area: 312, Breathing Zone Outside Airflow: 19, Zone Outdoor Airflow: 27, Zone Discharge Airflow: 34, Discharge Outdoor Air Fraction: 191, Zone Ventilation Efficiency: 0.178

Room Information
Room: 26 - COFFEE
Room Type: Retail-Sales
Rate: 7.5, People: 7, Total CFM: 53, Area CFM/ft^2: 0.12, Total Area: 464, Breathing Zone Outside Airflow: 56, Zone Outdoor Airflow: 109, Zone Discharge Airflow: 136, Discharge Outdoor Air Fraction: 963, Zone Ventilation Efficiency: 0.141

Room Information
Room: 27 - PREPARATION
Room Type: Food-Kitchen (cooking)
Rate: 0, People: 0, Total CFM: 0, Area CFM/ft^2: 0, Total Area: 357, Breathing Zone Outside Airflow: 0, Zone Outdoor Airflow: 0, Zone Discharge Airflow: 850, Discharge Outdoor Air Fraction: 0, Zone Ventilation Efficiency: 1.408

Room Information
Room: 28 - FOOD PREP
Room Type: Food-Kitchen (cooking)
Rate: 0, People: 0, Total CFM: 0, Area CFM/ft^2: 0, Total Area: 342, Breathing Zone Outside Airflow: 0, Zone Outdoor Airflow: 0, Zone Discharge Airflow: 1,700, Discharge Outdoor Air Fraction: 0, Zone Ventilation Efficiency: 1.108

Room Information
Room: 29 - CORRIDOR
Room Type: Public Spaces-Corridors
Rate: 0, People: 0, Total CFM: 0, Area CFM/ft^2: 0.06, Total Area: 620, Breathing Zone Outside Airflow: 38, Zone Outdoor Airflow: 38, Zone Discharge Airflow: 48, Discharge Outdoor Air Fraction: 295, Zone Ventilation Efficiency: 0.163

\*VENTILATION CALCULATIONS PER IMC 2015 TABLE 403.3.1.1

Zone RTU-7 Ventilation
System Primary Airflow: 2,820 CFM
Average Outdoor Air Fraction: 0.129
Occupant Diversity: 1
Uncorrected Air Intake: 365 CFM
System Ventilation Efficiency: 0.844
Outdoor Air Intake: 432 CFM

Room Information
Room: 17 - ECVS STORAGE
Room Type: Storage-Warehouses
Rate: 0, People: 0, Total CFM: 0, Area CFM/ft^2: 0.06, Total Area: 1,420, Breathing Zone Outside Airflow: 86, Zone Outdoor Airflow: 86, Zone Discharge Airflow: 108, Discharge Outdoor Air Fraction: 1,660, Zone Ventilation Efficiency: 0.065

\*VENTILATION CALCULATIONS PER IMC 2015 TABLE 403.3.1.1

Zone RTU-8 Ventilation
System Primary Airflow: 3,180 CFM
Average Outdoor Air Fraction: 0.0758
Occupant Diversity: 1
Uncorrected Air Intake: 241 CFM
System Ventilation Efficiency: 0.826
Outdoor Air Intake: 292 CFM

Room Information
Room: 2 - TICKETING
Room Type: Office-Office Space
Rate: 5, People: 3.5, Total CFM: 18, Area CFM/ft^2: 0.06, Total Area: 705, Breathing Zone Outside Airflow: 43, Zone Outdoor Airflow: 61, Zone Discharge Airflow: 76, Discharge Outdoor Air Fraction: 834, Zone Ventilation Efficiency: 0.0911

\*VENTILATION CALCULATIONS PER IMC 2015 TABLE 403.3.1.1

Zone RTU-8 Ventilation
System Primary Airflow: 3,180 CFM
Average Outdoor Air Fraction: 0.0758
Occupant Diversity: 1
Uncorrected Air Intake: 241 CFM
System Ventilation Efficiency: 0.826
Outdoor Air Intake: 292 CFM

Room Information
Room: 3 - STORAGE
Room Type: Storage-Warehouses
Rate: 0, People: 0, Total CFM: 0, Area CFM/ft^2: 0.06, Total Area: 140, Breathing Zone Outside Airflow: 9, Zone Outdoor Airflow: 9, Zone Discharge Airflow: 11, Discharge Outdoor Air Fraction: 132, Zone Ventilation Efficiency: 0.0833

\*VENTILATION CALCULATIONS PER IMC 2015 TABLE 403.3.1.1

Room Information
Room: 6 - CASH
Room Type: Storage-Warehouses
Rate: 0, People: 0, Total CFM: 0, Area CFM/ft^2: 0.06, Total Area: 199, Breathing Zone Outside Airflow: 12, Zone Outdoor Airflow: 7, Zone Discharge Airflow: 9, Discharge Outdoor Air Fraction: 36, Zone Ventilation Efficiency: 0.25

Room Information
Room: 7 - CORRIDOR
Room Type: Public Spaces-Corridors
Rate: 0, People: 0, Total CFM: 0, Area CFM/ft^2: 0.06, Total Area: 339, Breathing Zone Outside Airflow: 21, Zone Outdoor Airflow: 21, Zone Discharge Airflow: 26, Discharge Outdoor Air Fraction: 310, Zone Ventilation Efficiency: 0.0839

Room Information
Room: 8 - BREAK ROOM
Room Type: Office-Office Space
Rate: 5, People: 1.2, Total CFM: 6, Area CFM/ft^2: 0.06, Total Area: 234, Breathing Zone Outside Airflow: 15, Zone Outdoor Airflow: 21, Zone Discharge Airflow: 26, Discharge Outdoor Air Fraction: 315, Zone Ventilation Efficiency: 0.0825

Room Information
Room: 9 - RR
Room Type: Public Spaces-Toilet Rooms
Rate: 0, People: 0, Total CFM: 0, Area CFM/ft^2: 0, Total Area: 68.2, Breathing Zone Outside Airflow: 0, Zone Outdoor Airflow: 0, Zone Discharge Airflow: 0, Discharge Outdoor Air Fraction: 24, Zone Ventilation Efficiency: 0

Room Information
Room: 10 - RR
Room Type: Public Spaces-Toilet Rooms
Rate: 0, People: 0, Total CFM: 0, Area CFM/ft^2: 0, Total Area: 78.3, Breathing Zone Outside Airflow: 0, Zone Outdoor Airflow: 0, Zone Discharge Airflow: 0, Discharge Outdoor Air Fraction: 28, Zone Ventilation Efficiency: 0

Room Information
Room: 11 - FIRST AID
Room Type: Office-Office Space
Rate: 5, People: 1.9, Total CFM: 10, Area CFM/ft^2: 0.06, Total Area: 387, Breathing Zone Outside Airflow: 24, Zone Outdoor Airflow: 34, Zone Discharge Airflow: 43, Discharge Outdoor Air Fraction: 474, Zone Ventilation Efficiency: 0.0907

Room Information
Room: 12 - STOR.
Room Type: Storage-Warehouses
Rate: 0, People: 0, Total CFM: 0, Area CFM/ft^2: 0.06, Total Area: 64.4, Breathing Zone Outside Airflow: 4, Zone Outdoor Airflow: 4, Zone Discharge Airflow: 5, Discharge Outdoor Air Fraction: 23, Zone Ventilation Efficiency: 0.217

Room Information
Room: 13 - WOMEN
Room Type: Public Spaces-Toilet Rooms
Rate: 0, People: 0, Total CFM: 0, Area CFM/ft^2: 0, Total Area: 364, Breathing Zone Outside Airflow: 0, Zone Outdoor Airflow: 0, Zone Discharge Airflow: 0, Discharge Outdoor Air Fraction: 280, Zone Ventilation Efficiency: 0

Room Information
Room: 14 - MEN
Room Type: Public Spaces-Toilet Rooms
Rate: 0, People: 0, Total CFM: 0, Area CFM/ft^2: 0, Total Area: 331, Breathing Zone Outside Airflow: 0, Zone Outdoor Airflow: 0, Zone Discharge Airflow: 0, Discharge Outdoor Air Fraction: 280, Zone Ventilation Efficiency: 0

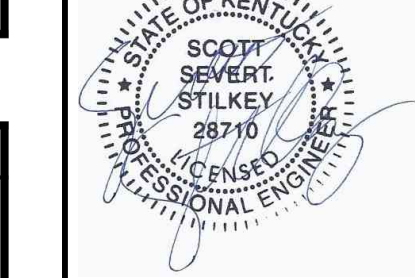
Room Information
Room: 15 - FAM. RR
Room Type: Public Spaces-Toilet Rooms
Rate: 0, People: 0, Total CFM: 0, Area CFM/ft^2: 0, Total Area: 72.2, Breathing Zone Outside Airflow: 0, Zone Outdoor Airflow: 0, Zone Discharge Airflow: 0, Discharge Outdoor Air Fraction: 50, Zone Ventilation Efficiency: 0

Room Information
Room: 16 - STORAGE
Room Type: Storage-Warehouses
Rate: 0, People: 0, Total CFM: 0, Area CFM/ft^2: 0.06, Total Area: 303, Breathing Zone Outside Airflow: 19, Zone Outdoor Airflow: 19, Zone Discharge Airflow: 24, Discharge Outdoor Air Fraction: 110, Zone Ventilation Efficiency: 0.218

\*VENTILATION CALCULATIONS PER IMC 2015 TABLE 403.3.1.1

4868 CLOUGH WOODS DR.
BATAVIA, OH 45103
PHONE: (513) 943-5300
FAX: (513) 943-5310
OHIO LIC. #16857
KY LIC. #162276
Bachman's HVAC SOLUTIONS
ROD BACHMAN
PROJECT MANAGER

ISSUANCES
DATE
DESCRIPTION
1
PERMIT



FR-10307
ENGINEERED BUILDING SYSTEMS INC.
TEAMWORK • COLLABORATION
SHARED SUCCESS
515 Monmouth Street, Suite 204
Newport, KY 41071 (859) 241-2822
MEP Consulting Services, Inc. in OH
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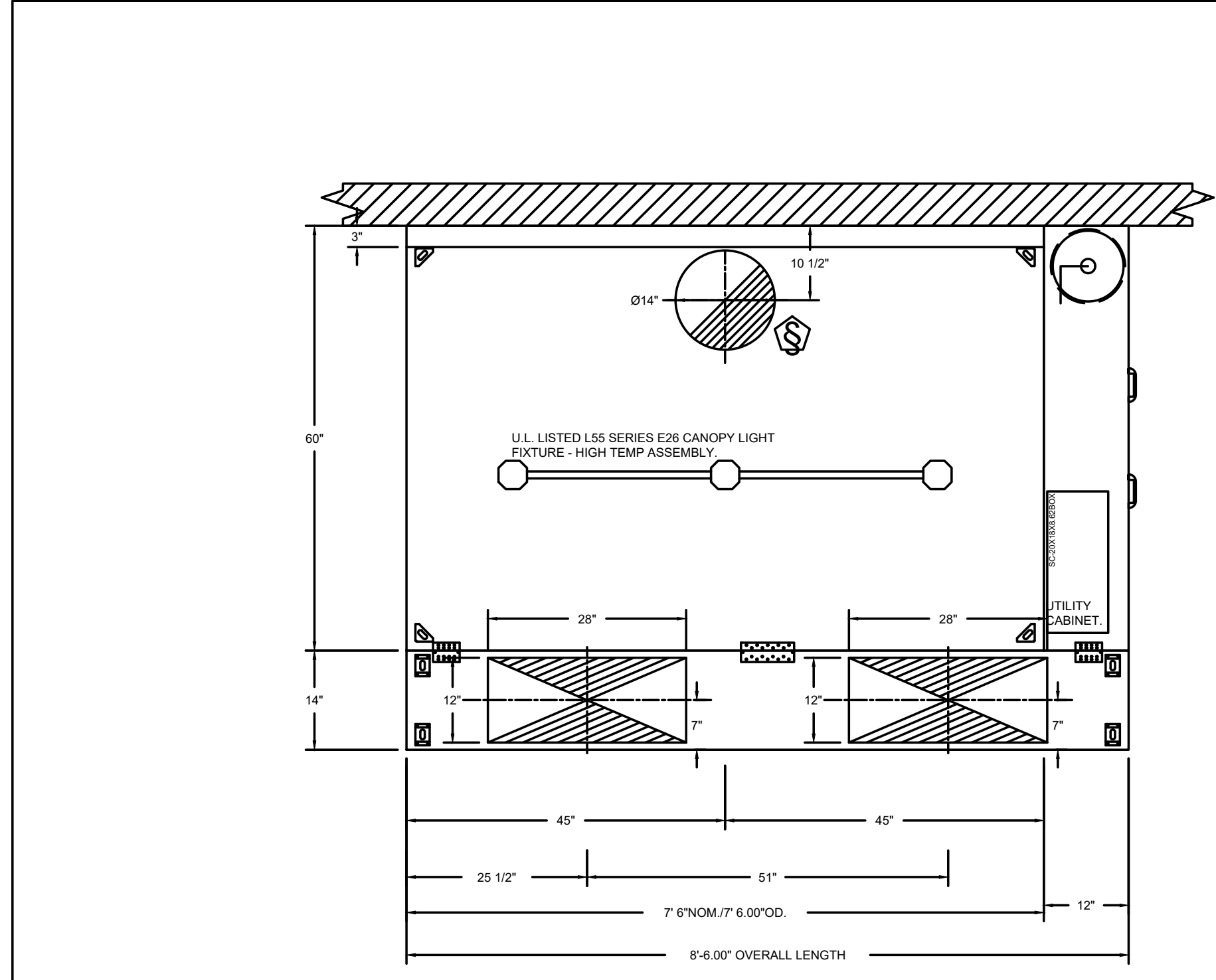
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WELCOME CENTER AND JERUSALEM BUILDING
WILLIAMSTOWN, KY
DRAWN BY RIT
CHECKED BY SSS
PROJECT NO.: 23-0895
SCALE: AS NOTED
DATE: 05-30-2024
DRAWING TITLE MECHANICAL DETAILS
SHEET NO. M201

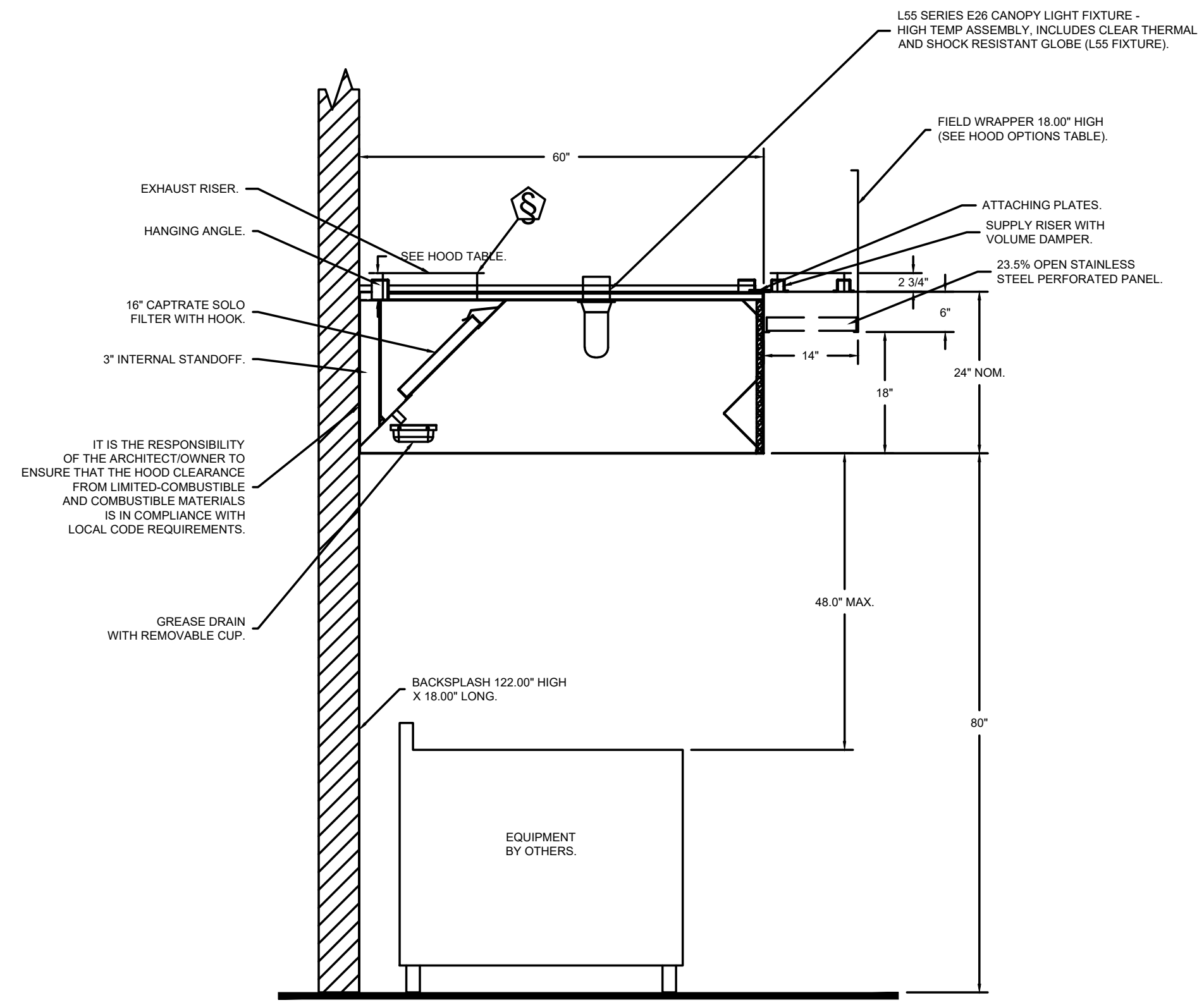
Vertical text on the left margin: THE INSTALLING CONTRACTOR IS RESPONSIBLE TO ENSURE THAT ALL MATERIALS AND METHODS OF CONSTRUCTION ARE INSTALLED IN ACCORDANCE WITH ANY CONTRACTUAL AGREEMENT THAT MAY EXIST WITH AN OWNER, CONSTRUCTION MANAGER, GENERAL CONTRACTOR, ETC. EBS ACCEPTS NO RESPONSIBILITY OR LIABILITY FOR THE COMPLETION OF EXISTING EQUIPMENT AND WIRING.



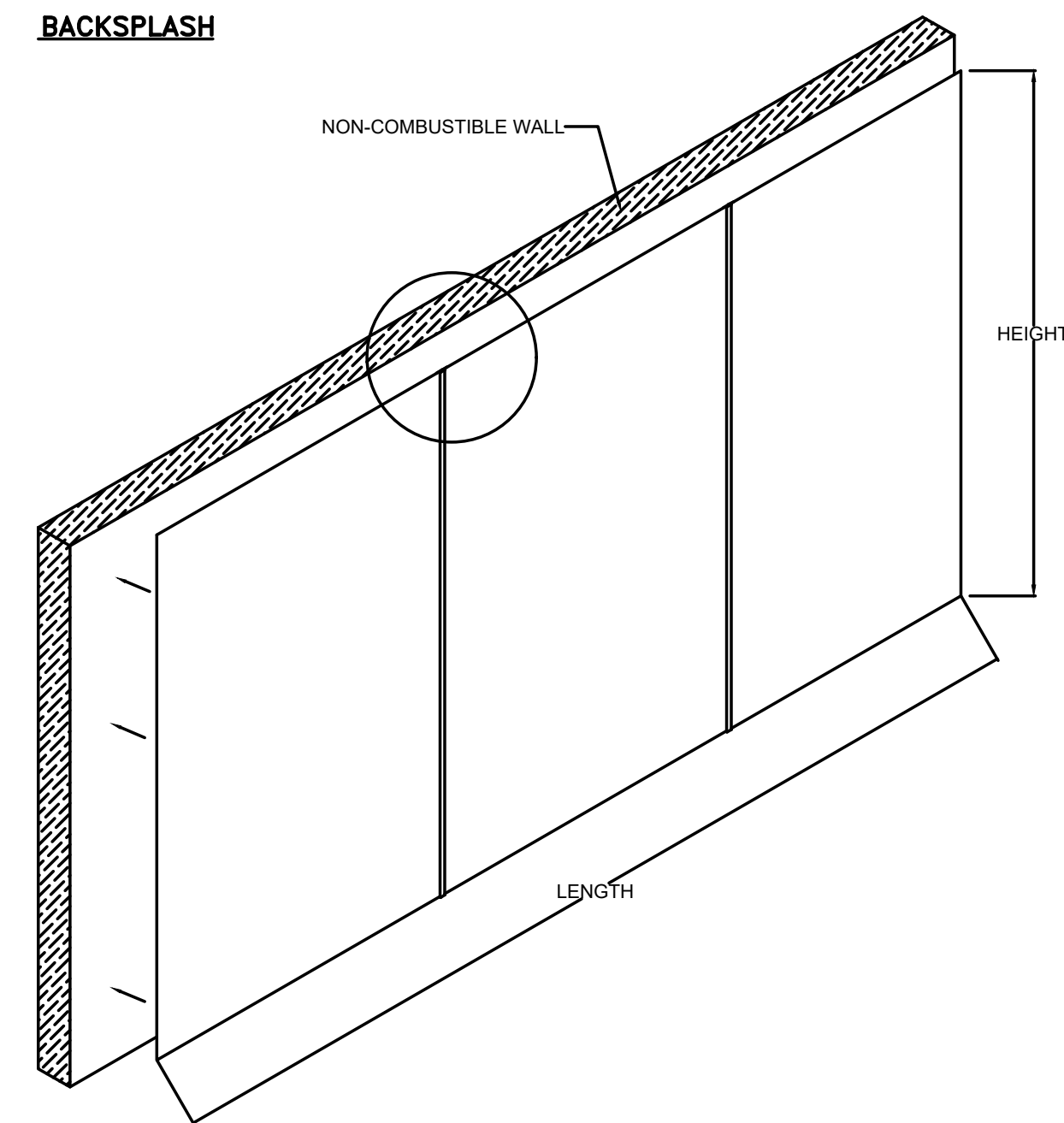
2. The Architect, Engineer, Designer, Manufacturer, Installer, and others shall be responsible for providing the information necessary to determine code compliance. The installing contractor is responsible to ensure that means, methods, and materials used in construction are installed in accordance with any contractual agreement that may exist with an owner, construction manager, general contractor, etc. EBS ACCEPTS NO RESPONSIBILITY OR LIABILITY FOR THE COMPLIANCE OR CONDITION OF EXISTING EQUIPMENT AND WIRING.



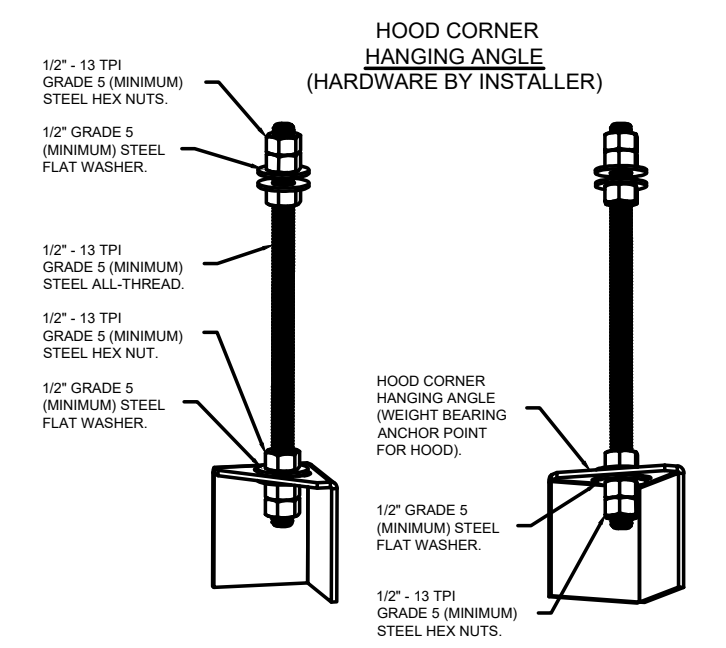
**PLAN VIEW - HOOD #1 (HD)**  
7' 6.00" LONG 6024EX-2-PSP-F



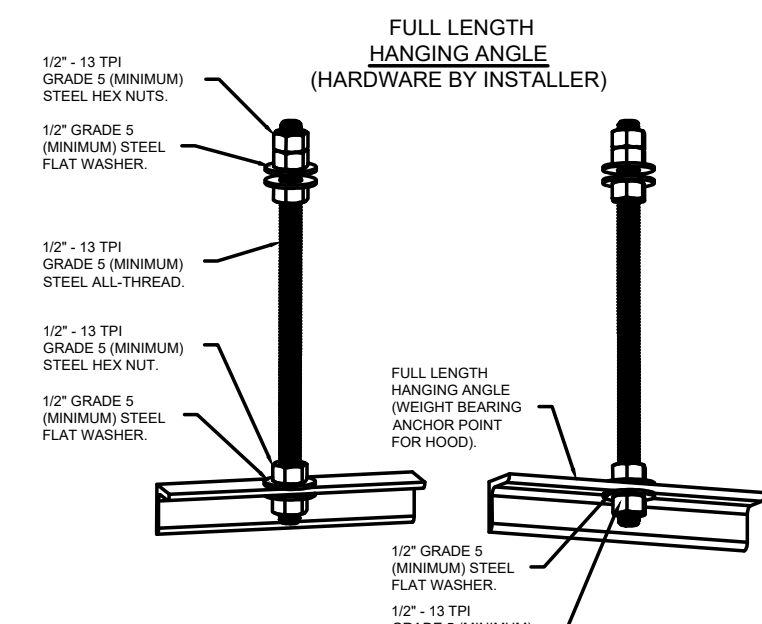
**SECTION VIEW - MODEL 6024EX-2-PSP-F**  
HOOD - #1 (HD)



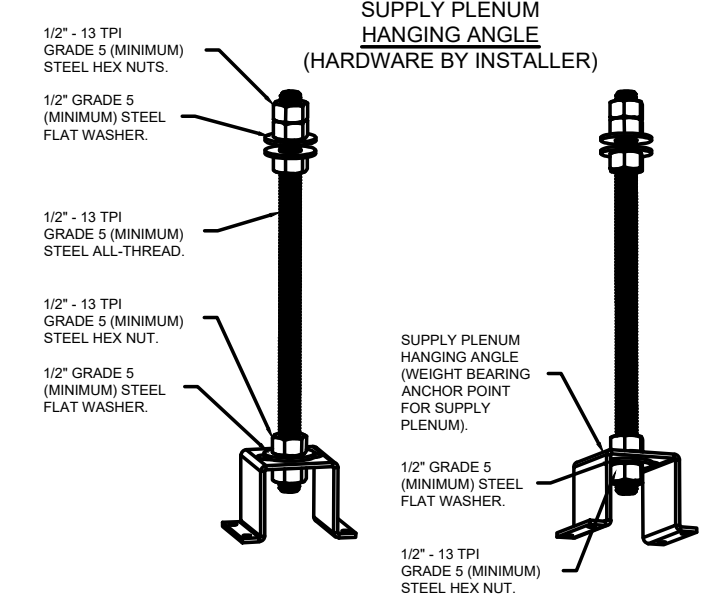
- BACKSPASH IS NOT INSULATED AND IS UNSUITABLE FOR INSTALL AGAINST COMBUSTIBLE WALLS



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



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



**ASSEMBLY INSTRUCTIONS**  
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.

REVISIONS	
DESCRIPTION	DATE



Ark Welcome Center - Williamstown, KY  
WILLIAMSTOWN, KY, 41097

DATE: 11/2/2023

DWG.#: 6311040

DRAWN BY: grant.homan

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

MASTER DRAWING

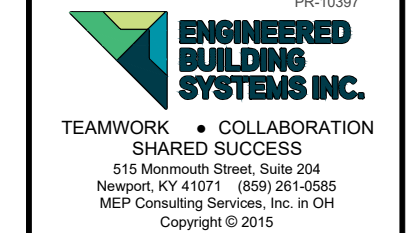
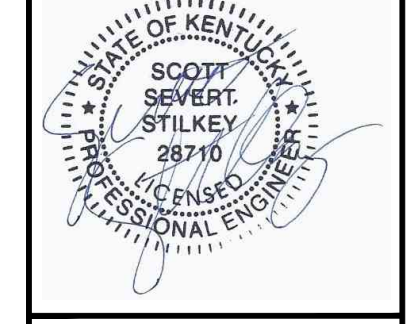
SHEET NO. 2

4868 CLOUGH WOODS DR.  
BATAVIA, OH 45103  
PHONE: (513) 943-5300  
FAX: (513) 943-5310  
OHIO LIC. #16857  
KY LIC. #R02376



ROD BACHMAN  
PRESIDENT

ISSUANCES	FOR	DESCRIPTION	DATE



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WELCOME CENTER AND  
JERUSALEM BUILDING  
WILLIAMSTOWN, KY

DRAWN BY: RIT CHECKED BY: SSS

PROJECT NO.: 23-0895

SCALE: AS NOTED

DATE: 05-30-2024

DRAWING TITLE  
MECHANICAL  
DETAILS

SHEET NO.  
M203

2. The Client, Bachman's, warrants that the drawings are prepared by a duly licensed professional engineer or architect. Bachman's shall not be responsible for any errors or omissions in the drawings. Bachman's shall not be responsible for any damage or injury resulting from the use of the drawings. Bachman's shall not be responsible for any damage or injury resulting from the use of the drawings. Bachman's shall not be responsible for any damage or injury resulting from the use of the drawings.

**EXHAUST FAN INFORMATION - JOB#6311040**

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	EF	1	EADU85H	ECON-AIR	1688	1.250	1402	TEAO-ECM	1.000	0.5280	1	230	6.5	534 FPM	98	12.3

**MUA FAN INFORMATION - JOB#6311040**

FAN UNIT NO	TAG	QTY	FAN UNIT MODEL #	BLOWER	HOUSING	MIN CFM	DESIGN CFM	ESP	RPM	MOTOR ENCL	HP	BHP	PHASE	VOLT	FLA	MCA	MOCF	WEIGHT (LBS)	SONES
2	MAU	1	EA1-D.250-15D	15MF-1-MOD	A1-D.250	1000	1350	0.500	1594	TEAO-ECM	1.000	0.6040	1	230	6.5	9.2A	15A	500	12.9

**GAS FIRED MAKE-UP AIR UNIT(S)**

FAN UNIT NO	TAG	INPUT BTUs	OUTPUT BTUs	TEMP RISE	REQUIRED INPUT GAS PRESSURE	GAS TYPE	BURNER EFFICIENCY(%)
2	MAU	98477	90599	65°F	7 IN. W.C. - 14 IN. W.C.	NATURAL	92

**FAN OPTIONS**

FAN UNIT NO	TAG	QTY	DESCRIPTION
1	EF	1	GREASE BOX
		1	FAN BASE CERAMIC SEAL - SHIP LOOSE - FOR GREASE DUCTS
		1	ECM WIRING PACKAGE - PWM SIGNAL FROM ECPM03 PREWIRE (TELCO MOTOR), CCW ROTATION
		1	2 YEAR PARTS WARRANTY
2	MAU	1	SIZE 1 TEMPERED COMMERCIAL DOWN DISCHARGE FOR DIRECT DRIVE AHUS
		1	INLET PRESSURE GAUGE, 0-35"
		1	MANIFOLD PRESSURE GAUGE, -5 TO 15" WC
		1	SHIP LOOSE GAS STRAINER 3/4"
		1	MOTORIZED BACKDRAFT DAMPER FOR A1-D HOUSING - MEETS AMCA CLASS 1A RATING
		1	CURB DUCT HANGER
1	ECM WIRING PACKAGE - DD SUPPLY - PWM SIGNAL FROM ECPM03 PREWIRE (TELCO MOTOR)		
1	2 YEAR PARTS WARRANTY		

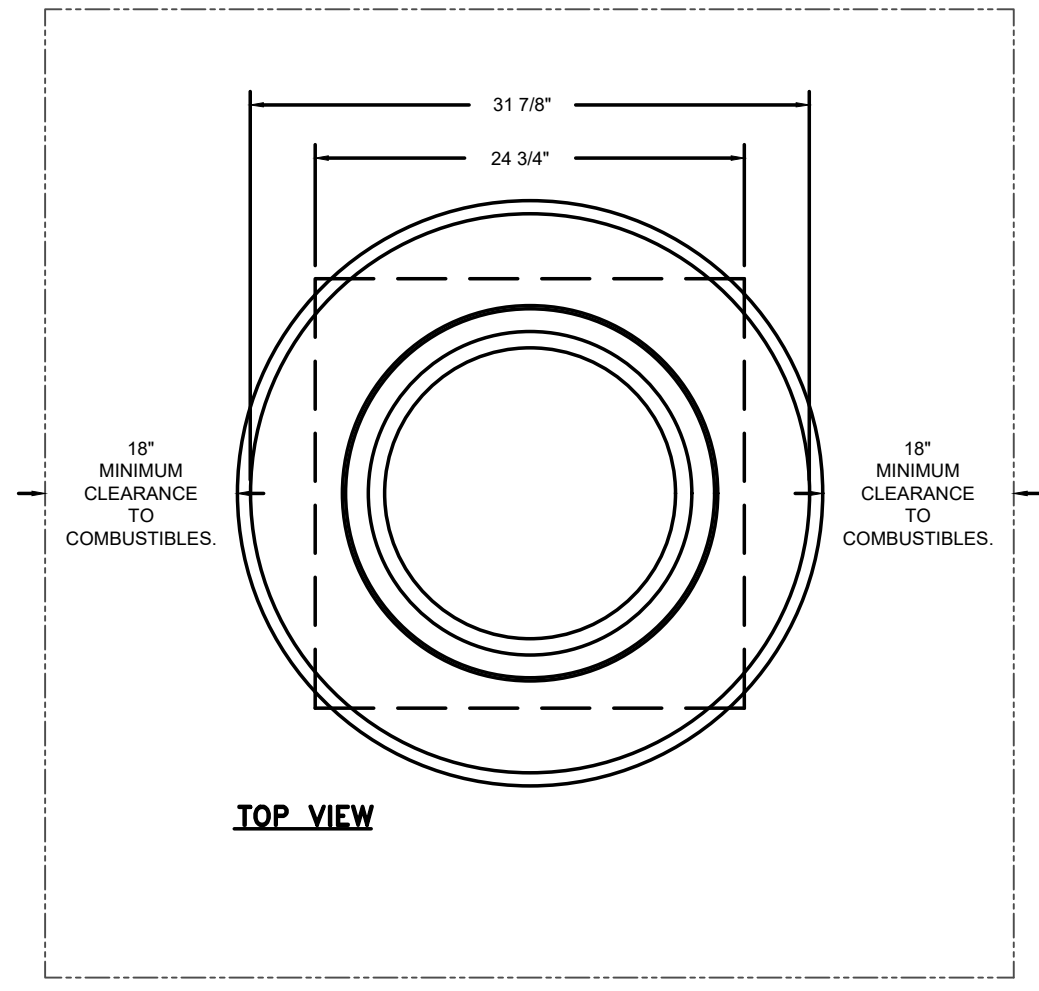
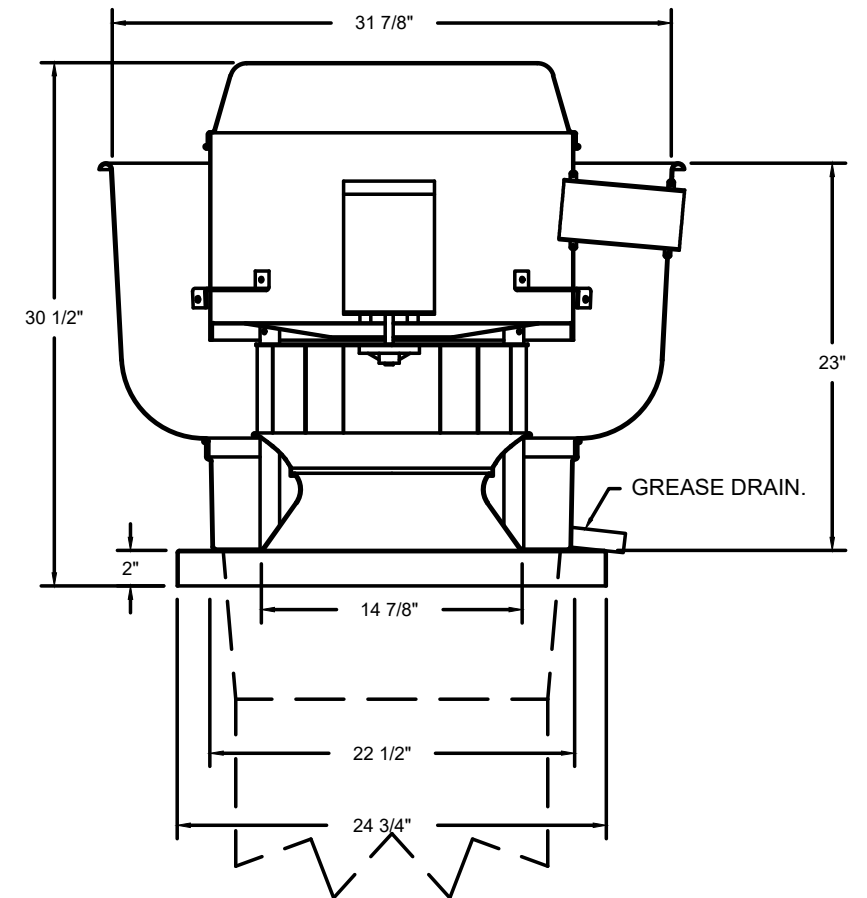
**FAN ACCESSORIES**

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

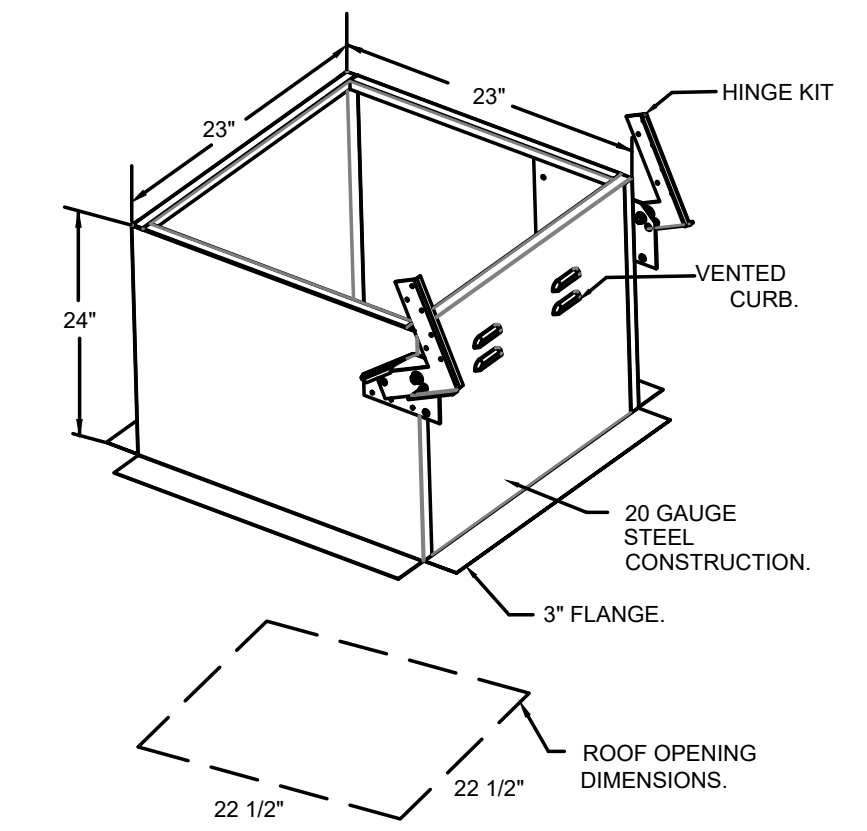
**CURB ASSEMBLIES**

NO	ON FAN	TAG	WEIGHT	ITEM	SIZE
1	#1	EF	41 LBS	CURB	23.000"W X 23.000"L X 24.000"H VENTED HINGED.
2	#2	MAU	63 LBS	CURB	21.000"W X 71.000"L X 16.000"H INSULATED.

FAN #1 LEADURSH - EXHAUST FAN (EF)



- FEATURES:**
- DIRECT DRIVE CONSTRUCTION (NO BELTS/PULLEYS)
  - ROOF MOUNTED FANS
  - RESTAURANT MODEL
  - UL705 AND UL782 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
  - FAN BASE CERAMIC SEAL - SHIP LOOSE
  - FOR GREASE DUCTS
  - ECM WIRING PACKAGE - PWM SIGNAL FROM ECPM03 PREWIRE (TELCO MOTOR), CCW ROTATION
  - 2 YEAR PARTS WARRANTY



**REVISIONS**

NO	DATE	DESCRIPTION	BY

**econ·air**  
Western OH Mechanical  
www.econair.com  
Cincinnati, OH 45226 PHONE: (513) 275-4988 FAX: 9155 105745 EMAIL: reg133@econair.com

Ark Welcome Center - Williamstown, KY  
WILLIAMSTOWN, KY, 41097

DATE: 11/2/2023  
DWG.#: 6311040  
DRAWN BY: grant.homan  
SCALE: 3/4" = 1'-0"  
MASTER DRAWING

SHEET NO. 3

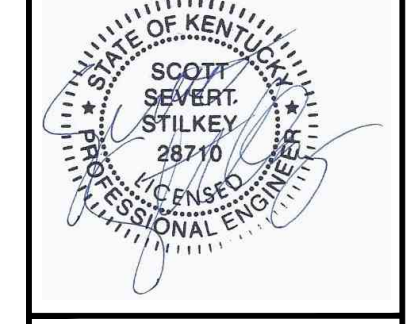
4688 CLOUGH WOODS DR.  
BATAVIA, OH 45103  
PHONE: (513) 943-5300  
FAX: (513) 943-5310  
OHIO LIC. #16857  
KY LIC. #R02376

**Bachman's**  
MECHANICAL  
ELECTRICAL  
PLUMBING SOLUTIONS

ROD BACHMAN  
PRESIDENT

**ISSUANCES**

NO	DATE	DESCRIPTION



FR-10397  
**ENGINEERED BUILDING SYSTEMS INC.**  
TEAMWORK • COLLABORATION  
SHARED SUCCESS  
515 Monmouth Street, Suite 204  
Newport, KY 41071 (859) 261-5885  
MEP Consulting Services, Inc. in OH  
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WELCOME CENTER AND  
JERUSALEM BUILDING  
WILLIAMSTOWN, KY

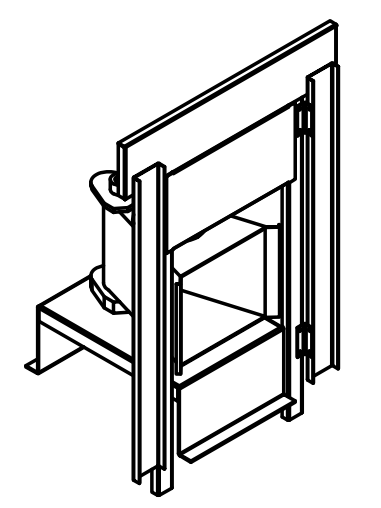
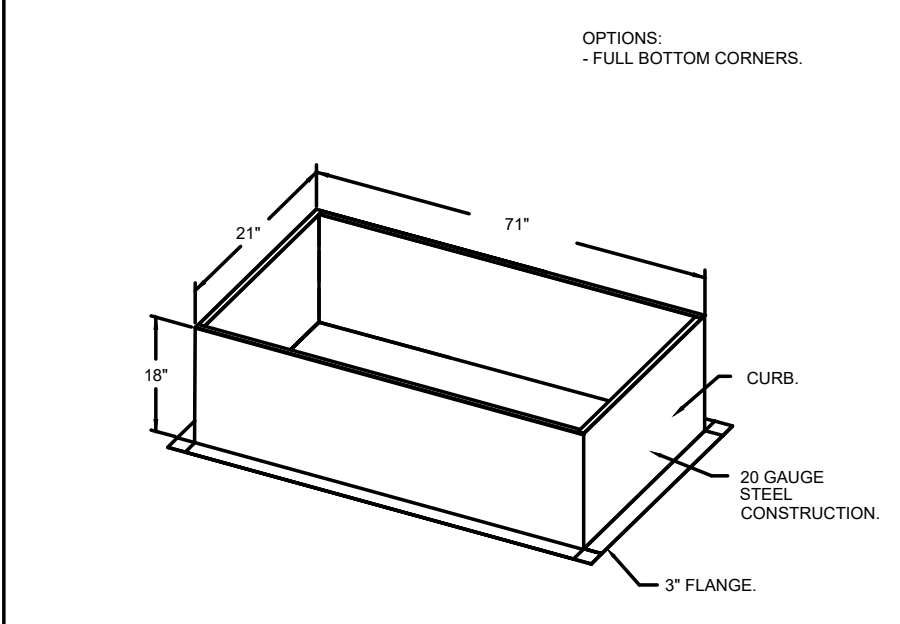
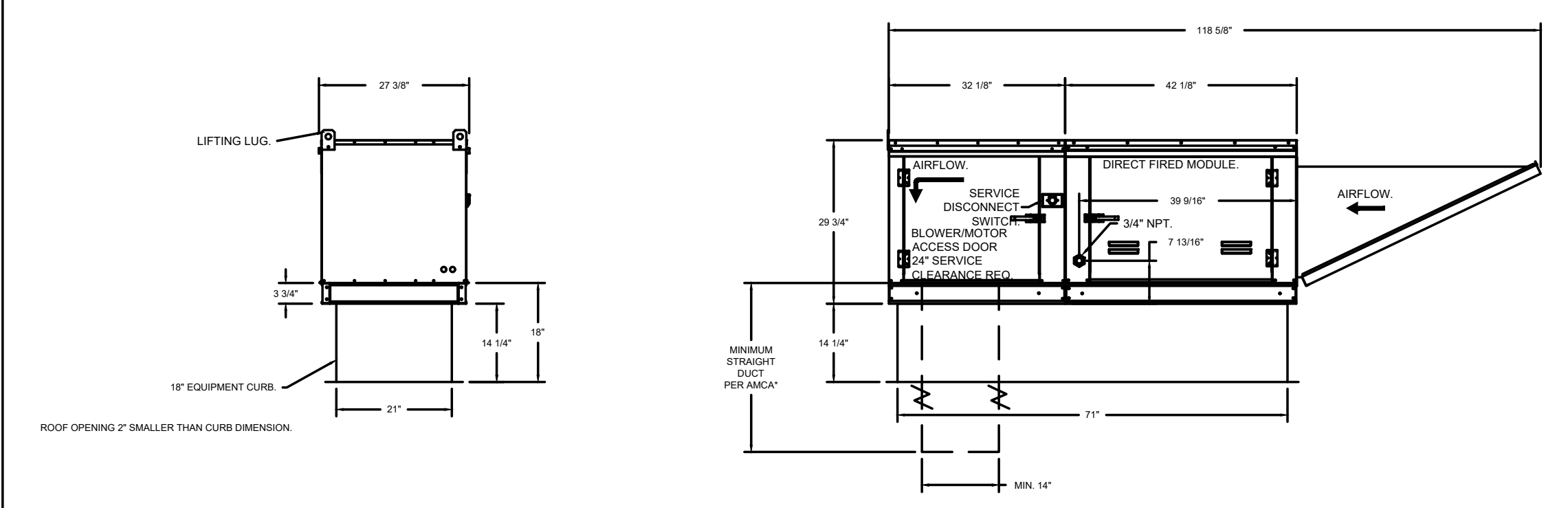
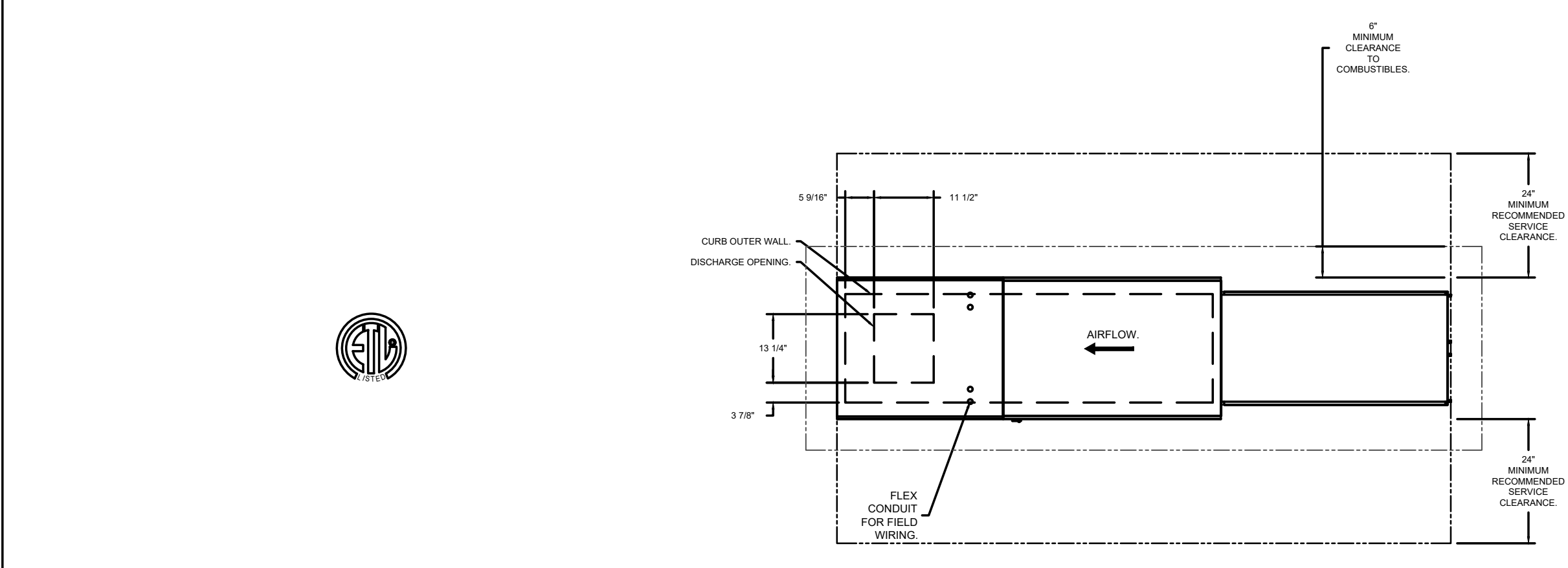
DRAWN BY: RIT CHECKED BY: SSS  
PROJECT NO.: 23-0895  
SCALE: AS NOTED  
DATE: 05-30-2024  
DRAWING TITLE  
MECHANICAL  
DETAILS  
SHEET NO.  
**M204**

2. The Client, Bachman Woods, is not responsible for the design of the equipment or the installation of the equipment. The Client is responsible for providing the correct information to the contractor. The contractor is responsible for the installation of the equipment in accordance with the manufacturer's instructions. Bachman Woods is not responsible for the design of the equipment or the installation of the equipment. The Client is responsible for providing the correct information to the contractor. The contractor is responsible for the installation of the equipment in accordance with the manufacturer's instructions.

- FAN RE (A-D) 250-100 (HEATER (A-M))
1. DIRECT GAS FIRED HEATED MAKE UP AIR UNIT WITH 18" MIXED FLOW DIRECT DRIVE FAN.
  2. INTAKE HOOD WITH HEAT FILTERS.
  3. DOWN DISCHARGE. AIR FLOW RIGHT → LEFT.
  4. DOWN DISCHARGE CONSTRUCTION FOR SIZE 1 DIRECT DRIVE AIR UNIT.
  5. GAS PRESSURE GAUGE 0-30" W.C. 1/4" THREAD SIZE.
  6. GAS PRESSURE GAUGE 0-15" W.C. 1/4" THREAD SIZE.
  7. SHIP LOOSE GAS STRAINER TO BE INSTALLED UPSTREAM OF UNIT CONNECTION. 3/4" CONNECTION.
  8. FORTIFIED BACK DRIFT DAMPER 18" X 18" FOR USE IN STANDARD & MODULAR HEATER UNITS HEATED/DIRECT DRAFT. STANDARD GALVANIZED CONSTRUCTION. 3/4" REAR FLANGE. LOW LEAKAGE. TRILLOS ACTUATOR INCLUDED.
  9. CURB DUCT HANGER - 1/4" ANGLE IRON FRAME HELD TO CURB TO SUPPORT STANDARD SIZE DUCTWORK. PRICED PER CURB. ONLY AVAILABLE WHEN CURB ASSEMBLY IS ORDERED.
  10. CURB ASSEMBLY PACKAGE FOR SUPPLY UNITS WITH PHM SIGNAL FROM EXHAUST PRESSURE.
  11. WINGED DOUBLE WALL INSULATED DOOR ASSEMBLY (BURNER/LOWER SECTION).
  12. 2 YEAR PARTS WARRANTY.

**SUPPLY SIDE HEATER INFORMATION**

1. WINTER TEMPERATURE = 10°F. TEMP. RISE = 60°F. BTU'S CALCULATED OFF ACTUAL AIR DENSITY. OUTPUT BTU'S AT ALTITUDE OF 10 FT. = 101847.
2. INPUT BTU'S AT ALTITUDE OF 60 FT. = 101869.
3. OUTPUT BTU'S AT ALTITUDE OF 100 FT. = 101899.
4. INPUT BTU'S AT ALTITUDE OF 140 FT. = 101929.



DIRECT FIRED (DF) PROFILE PLATE ASSEMBLY

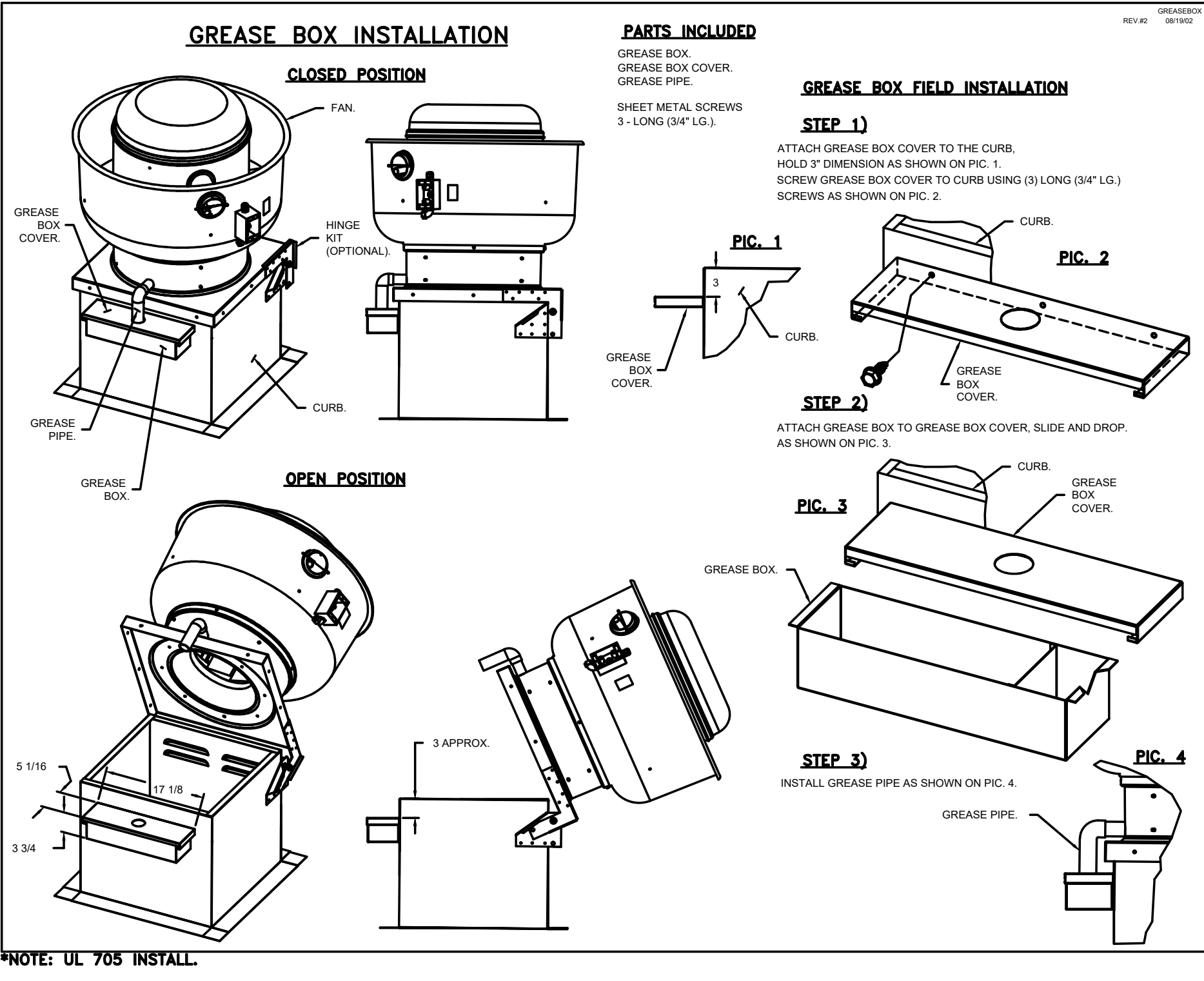
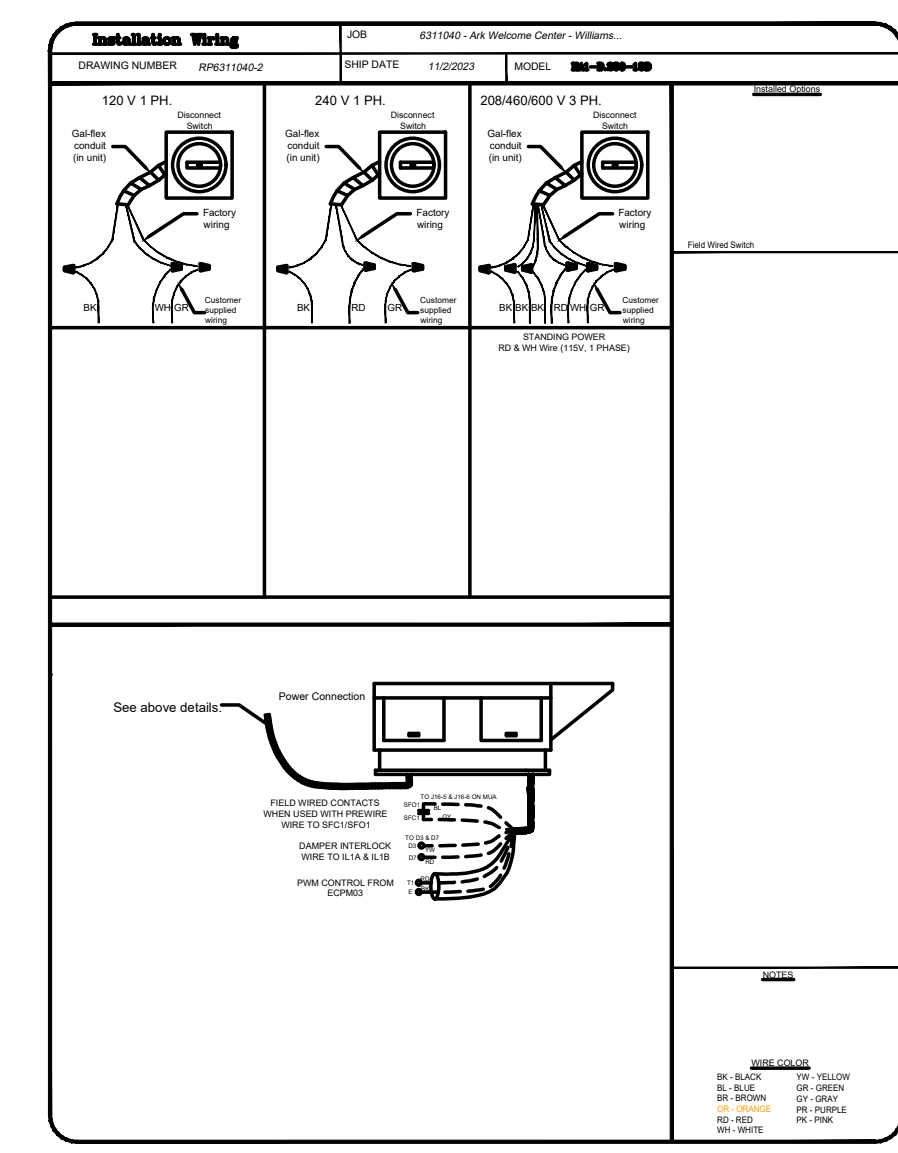
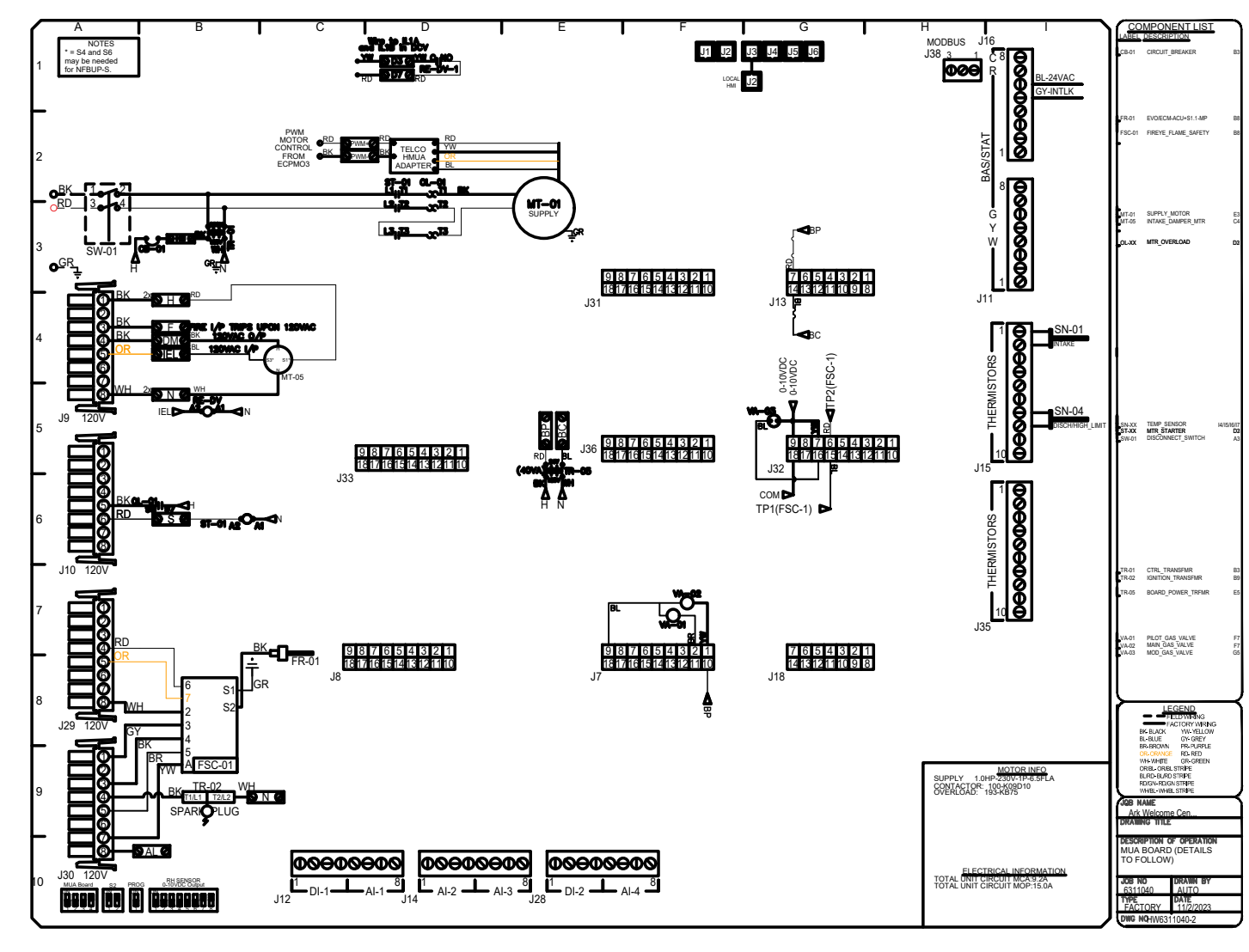
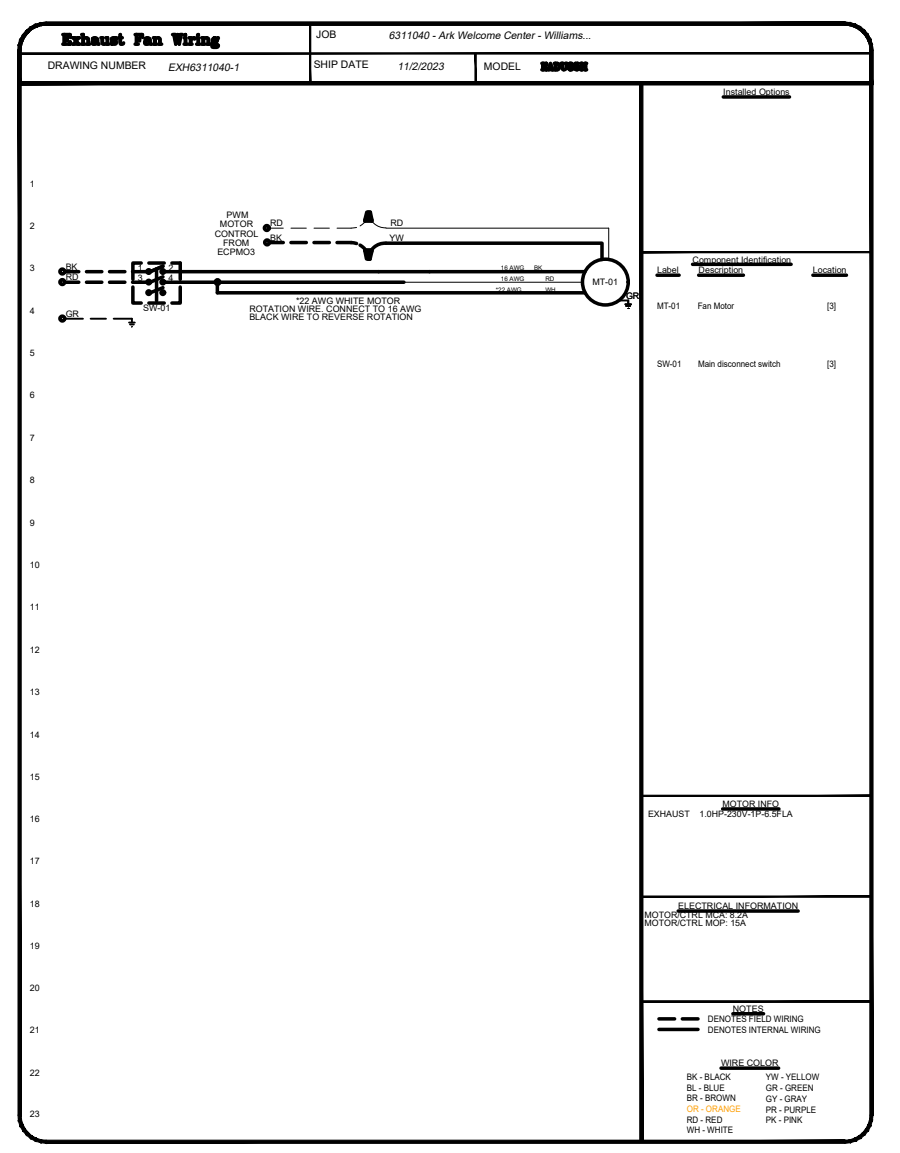
**SELECT FROM PROFILE PLATE SPECIFICATIONS**

**DESCRIPTION**  
DIRECT FIRED BURNER PROFILE PLATE SPECIFICATIONS. SELF-ADJUSTING PROFILE PLATES DESIGNED TO ENGINEER PROPER AIR VELOCITY AND PRESSURE DROP ACROSS THE BURNER. PROFILE PLATES SHALL ALLOW BURNERS TO ACHIEVE CLEAN COMBUSTION BY LIMITING PRODUCT LEVELS TO A MAXIMUM OF 0.001% OF CARBON MONOXIDE (CO) AND 0.001% OF NITROGEN DIOXIDE (NO<sub>2</sub>). DIRECT FIRED UNITS SHALL BE CONFIGURED WITH THE BLOWER MOUNTED DOWNSTREAM OF THE BURNER. THIS ARRANGEMENT WILL ENSURE A CONSISTENT AIRFLOW, REGARDLESS OF INLET AIR TEMPERATURE.

**APPLICATION**  
SPRING-LOADED BURNER PROFILE PLATES ARE ENGINEERED TO AUTOMATICALLY REACT TO THE MOMENTUM OF A FRESH AIR STREAM, WITHOUT THE NEED FOR ANY MOTORS OR ACTUATORS TO MECHANICALLY ADJUST THEM WITH THIS FEATURE. ALL OF UNITS ARE DESIGNED FOR DEMAND CONTROL VENTILATION (DCV) REQUIREMENTS.

**CERTIFICATIONS**  
BURNER PROFILE PLATE ASSEMBLIES SHALL BE INCLUDED IN THE DUCT UNITS ETL LISTING AND COMPLY WITH COMBINED SAFETY STANDARDS ANSI Z89.4 AND CSA 3.7 (NON-RECOGNIZING OF HEATERS) AND ANSI Z89.18 (FOR CIRCULAR DUCT HEATERS).

**GENERAL CONSTRUCTION**  
PROFILE PLATES SHALL BE FORMED FROM 0.090 GALVANIZED STEEL.  
PROFILE PLATES SHALL HAVE AN INCH PER INCH.  
PROFILE PLATES SHALL BE MOUNTED ALONG THE SAME PLANE AS THE DISCHARGE OF THE BURNER.  
PROFILE PLATES SHALL INCORPORATE PROPERLY TORQUED, PERMANENTLY MOUNTED SPRING HINGES.  
SPRING HINGES SHALL BE MADE FROM PLATED STEEL.



NOTE: UL 705 INSTALL.

REVISIONS	
DESCRIPTION	DATE

**econ·air**

Western OH Mechanical

www.econair.com

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Newport, KY 41071 (859) 261-5282  
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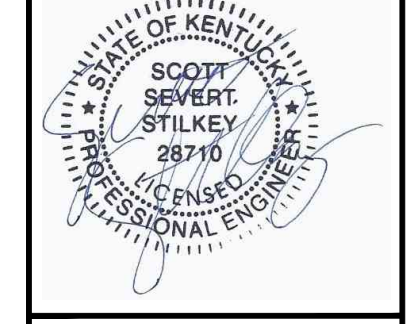
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BATAVIA, OH 45103  
PHONE: (513) 943-5300  
FAX: (513) 943-5310  
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MECHANICAL SOLUTIONS

ROD BACHMAN  
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SHARED SUCCESS

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Newport, KY 41071 (859) 261-5282  
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