



RESUBMITTAL COVER SHEET

PROJECT

Cincinnati Classical Academy

ENGINEER

Cunning and Associates

ARCHITECT

Silverpeak Engineering

SPECIFICATIONS NO.

ITEM

RTU - 1

Resubmittal #: 002.2

- Approved
 Disapproved

Date: 11/13/2024

Submitted by: Cole Kendig

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Submittal

Prepared For:
All Bidders

Date: November 13, 2024

Job Name:
CCA Rooftop Unit

Opportunity ID: 7887868

Trane U.S. Inc. is pleased to provide the following submittal for your review and approval.

Product Summary

Qty Product

1 3 - 25 Ton PKGD Precedent Unitary Rooftop

Dave Erwin
Trane U.S. Inc.
7446 Webster Street
Dayton, OH 45414

The attached information describes the equipment we propose to furnish for this project and is submitted for your approval.

Submittal acceptance and return is a critical step, so please ensure submittals are returned with approval to release to production within 14 days of submittal date.

Product performance and submittal data is valid for a period of 6 months from the date of submittal generation. If six months or more has elapsed between submittal generation and equipment release, the product performance and submittal data will need to be verified. It is the customer's responsibility to obtain such verification.

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Tag Data - 3 - 25 Ton PKGD Precedent Unitary Rooftop (Qty: 1)

Item	Tag(s)	Qty	Description	Model Number
A1	PREC-1	1	6- 25 Ton PKGD Precedent Unitary Rooftop	YHK240A4S0H**D000A1A100A

Product Data - 3 - 25 Ton PKGD Precedent Unitary Rooftop

Item: A1 Qty: 1 Tag(s): PREC-1

- DX Cooling / Gas Heat
- High Efficiency
- R-454B Refrigerant
- 20 Ton
- 460/60/3
- Symbio 700
- High Gas Heat
- Economizer, DB with Barometric Relief
- Through the Base Electric
- Non-Fused Disconnect Switch
- Unpowered 20A Convenience Outlet
- Advanced Controls and BACnet BAS
- Return Air Smoke Detector
- 3-year parts, coils & controls warranty
- 5-year compressor parts only warranty
- 10-year aluminized heat exchanger parts only warranty
- 18" Full Perimeter Knockdown Curb (Field Installed)

SUBMITTAL REVIEW

Submission of information by the Contractor is taken as evidence that the Contractor has prepared the information for the specific application, and has verified that adequate and complete conditions for installation and subsequent operation and maintenance will exist.

Engineers review is for general conformance with the design concepts of the project, and for general compliance with the information given in the contract documents. The Contractor is responsible for access and clearance code compliance, work methods and conditions, coordination of trades, safety, all in satisfactory performance of work.

- NO EXCEPTIONS TAKEN
- REJECTED-RESUBMIT
- EXCEPTIONS AS NOTED
- REVISE AND RESUBMIT

CUNNING & ASSOCIATES MCE

Date: Dec 31 2024

By: Norm Cunning

Performance Data - 3 - 25 Ton PKGD Precedent Unitary Rooftop

Tags	PREC-1
Cooling Entering Dry Bulb (F)	80.00
Cooling Entering Wet Bulb (F)	67.00
Summer Ambient (F)	95.00
Entering Dry Bulb (in HGRH) (F)	73.00
Entering Wet Bulb (in HGRH) (F)	64.00
Ambient (In HGRH) (F)	70.00
Heating Entering Air Temperature (F)	40.00
Design Airflow (cfm)	8000
Airflow Application	Downflow
Total SP (in H2O)	1.323
Elevation (ft)	0.00
Gross Total Capacity (MBh)	249.03
Gross Sensible Capacity (MBh)	186.81
Gross Latent Capacity (MBh)	62.22
Net Total Capacity (MBh)	239.13
Net Sensible Capacity (MBh)	176.91
Net Sensible Heat Ratio (%)	74.00
Coil LAT DB (F)	58.43
Coil LAT WB (F)	56.94
Cooling Leaving Unit Dry Bulb (F)	60.11
Cooling Leaving Unit WB (F)	57.61
Fan Motor Heat (MBh)	3.89
Dew Point Temperature (F)	56.02
Refrigerant charge - Ckt 1 (lb)	14.0
Saturated Discharge Temperature (F)	123.67
Saturated Suction Temperature (F)	50.76
Heat Static Pressure Adj (in H2O)	0.000
Component SP Add (in H2O)	0.323
Max Available ESP (in H2O)	1.677
Supply Motor Horsepower (hp)	3.000
Total Supply Operating Horsepower (hp)	3.820
Supply RPM (rpm)	1432
Compressor Power (kW)	17.86
System Power (kW)	22.88
EER @ AHRI (EER)	11.0
IEER @ AHRI (EER)	15.8
MCA (A)	55.00
MOP (A)	70.00
Compressor 1 RLA (A)	22.40
Compressor 2 RLA (A)	12.20
Condenser Fan FLA (A)	2.50
Evaporator Fan FLA (A)	4.60
Heating Input Capacity (MBh)	400.00
Output Heating Capacity (MBh)	324.00
Heating Leaving Air Temperature (F)	77.19
Heating Temperature Rise (F)	37.19
Height (ft)	4.92
Width (ft)	7.25
Length (ft)	10.25
Approx Installed Weight (lb)	2649.0
Corner weight A (lb)	754.0
Corner Weight B (lb)	516.0
Corner Weight C (lb)	337.0
Corner Weight D (lb)	493.0
Center of Gravity - Length (ft)	4.17

Tags	PREC-1
Center of Gravity - Width (ft)	2.83
Ducted Discharge - 63 Hz (dB)	87
Ducted Discharge - 125 Hz (dB)	94
Ducted Discharge - 250 Hz (dB)	81
Ducted Discharge - 500 Hz (dB)	75
Ducted Discharge - 1 kHz (dB)	70
Ducted Discharge - 2 kHz (dB)	66
Ducted Discharge - 4 kHz (dB)	66
Ducted Discharge - 8 kHz (dB)	65
Ducted Inlet - 63 Hz (dB)	79
Ducted Inlet - 125 Hz (dB)	85
Ducted Inlet - 250 Hz (dB)	74
Ducted Inlet - 500 Hz (dB)	68
Ducted Inlet - 1 kHz (dB)	64
Ducted Inlet - 2 kHz (dB)	61
Ducted Inlet - 4 kHz (dB)	61
Ducted Inlet - 8 kHz (dB)	59
Outdoor Noise - 63 Hz (dB)	89
Outdoor Noise - 125 Hz (dB)	89
Outdoor Noise - 250 Hz (dB)	91
Outdoor Noise - 500 Hz (dB)	89
Outdoor Noise - 1 kHz (dB)	86
Outdoor Noise - 2 kHz (dB)	82
Outdoor Noise - 4 kHz (dB)	79
Outdoor Noise - 8 kHz (dB)	73
Acoustic Footnote 1	Ducted Discharge/Ducted Inlet prediction data conform to AHRI 260
Heat pump heating ambient temperature (F)	47.00
Heat pump heating ambient relative humid (%)	70.00
Supply Fan Count (Number)	2.00
Indoor Fan Type	BC Plenum
Indoor Fan Drive Type	Variable Direct
Outdoor Fan Type	Propeller
Outdoor Fan Drive Type	Direct
Outdoor Fan Quantity	2
Replication Run	288

Mechanical Specifications - 3 - 25 Ton PKGD Precedent Unitary Rooftop
Item: A1 Qty: 1 Tag(s): PREC-1**General**

Packaged rooftop unit cooling capacities, heating capacities, and efficiencies are certified to the following standards:

- 3 to 5 ton units: AHRI Standard 210/240.
- 6 to 25 ton units: AHRI Standard 340/360.
- Gas Heating Units: ANSI Z21.47 and 10 CFR Part 431 for Commercial Warm Air.
- Convertible airflow.
- Symbio? controls operating range between 40°F and 125°F in cooling mode standard from the factory. Field-installed low ambient kit extends operating range down to 0°F.
- Factory assembled, internally wired, fully charged, and 100 percent run tested to verify cooling operation, fan and blower rotation, and control sequence.
- Colored and numbered wiring internal to the unit for simplified identification.
- cULus listed and classified in accordance for Central Cooling Air Conditioners.
- Unit shall be furnished with a leak detection system from the fact

Casing

- Zinc coated, heavy gauge, galvanized steel.
- Weather resistant pre-painted metal with galvanized substrate.
- Meets ASTM B117, 672 hour salt spray test.
- Removable single side maintenance access panels.
- Lifting handles in maintenance access panels (can be removed and reinstalled by removing fasteners while providing a water and air tight seal).
- Exposed vertical panels and top covers in the indoor air section insulated with a cleanable foil-faced, fire-retardant permanent, odorless glass fiber material.
- Base pan shall have no penetrations within the perimeter of the curb other than the raised 1 inch high downflow supply/return openings to provide an added water integrity precaution, if the condensate drain backs up.
- Base of the unit insulated with 1/8 inch, foil-faced, closed-cell insulation.
- Unit base provisions for forklift and/or crane lifting on three sides of unit.

Hail Guards

- Provides condenser coil protection.

Powered or Unpowered Convenience Outlet

- Powered GFCI, 120V/15A, 2 plug, convenience outlet or unpowered GFCI, 120V/20A, 2 plug, convenience outlet.
- When convenience outlet is powered, a service receptacle disconnect will be available.
- Convenience outlet is powered from the line side of the disconnect or circuit breaker, and therefore will not be affected
 - by the position of the disconnect or circuit breaker.
- Available to order when through-the-base electrical with disconnect switch or circuit breaker option is ordered.

Microchannel Coils

- Optimal heat transfer performance due to flat, streamlined tubes with small ports, and metallurgical tube-to-fin bond.
- Reduce system refrigerant charge by up to 50% leading to better compressor reliability.
- Compact all-aluminum microchannel coils reduce the unit weight.
- Recyclable all aluminum coils All aluminium construction minimizes galvanic corrosion.
- Strong aluminum brazed structure provides better fin protection.
- Flat streamlined tubes more dust resistant and easy to clean.
- Coils leak tested at the factory to ensure the pressure integrity.

Compressors

- All units have direct-drive, hermetic, scroll type compressors with centrifugal type oil pumps.
- Suction gas-cooled motor with voltage utilization range of plus or minus 10 percent of unit nameplate voltage.
- Internal overloads standard with scroll compressors.
- All units have dual compressors.
- Three stages of cooling available on 6 to 17.5 tons units and four stages of cooling available on 20 and 25 tons units.

Filters

- Two inch standard filters shall be factory supplied on all units.

Frostat

- Utilized as a safety device.
- Opens to prevent freezing temperatures on evaporator coil.
- Temperature will need to rise to 50°F before closing.
- Utilized in low airflow or high outside air applications (cooling only).

Gas Heating Section

- The heating section shall have a progressive tubular heat exchanger with corrosion-resistant aluminized steel tubes and burners as standard on all models.
- Stainless steel heat exchanger with 409 stainless steel tubes and 439 stainless steel burners shall be optional.
- Induced draft combustion blower shall be used to pull the combustion products through the firing tubes.
- Heater shall use a direct spark ignition (DSI) system.
- On initial call for heat, the combustion blower shall purge the heat exchanger for 20 seconds before ignition.
- After three unsuccessful ignition attempts, entire heating system shall be locked out until manually reset at the thermostat/zone sensor.
- Units shall be suitable for use with natural gas or propane (field-installed kit).

Indoor Fan

- Direct drive plenum fan design - 6 to 25 tons units.
- Plenum fan design - backward-curved fan wheel along with an external rotor direct drive variable speed indoor motor.
- Supply fan speed adjustments can be made using the Symbio 700 or Mobile App.
- Motors are thermally protected.
- Variable speed direct drive motors are high efficiency - 6 to 25 tons.

Heat Exchanger

- Compact cabinet features a tubular heat exchanger in low, medium and high heat capacities.
- Corrosion-resistant aluminized steel tubes and burners are standard on all models.
- Induced draft blower to pull the gas mixture through the burner tubes.
- Direct spark ignition and a flame sensor as a safety device to validate the flame.

Roof Curb

- Designed to mate with the unit's downflow supply and return.
- Provide support and a water tight installation when installed properly.
- Shall allow field-fabricated rectangular supply/return ductwork to be connected directly to the curb.
- Curb shall be shipped knocked down for field assembly.
- Shall include wood nailer strips.

Through-the-Base Electrical with Disconnect Switch

- 3-pole, molded case, disconnect switch with provisions for through-the-base electrical connections.
- Disconnect switch installed within unit in a water tight enclosure.
- Wiring provided from the switch to the unit high voltage terminal block.
- Switch cULus agency recognized.

Note: Disconnect switch sized per NEC and cULus guidelines but will not be used in place of unit overcurrent protection.

Economizer (Standard)

- Available with or without barometric relief.
- Fully modulating 0-100 percent motor and dampers, minimum position setting, preset linkage, wiring harness with plug, spring return actuator and fixed dry bulb control.
- Barometric relief shall provide a pressure operated damper that shall be gravity closing.
- Barometric relief shall prohibit entrance of outside air during the equipment "off" cycle.
- Optional solid state or differential enthalpy control.

- Arrives in shipping position and shall be moved to the operating position by the installing contractor.

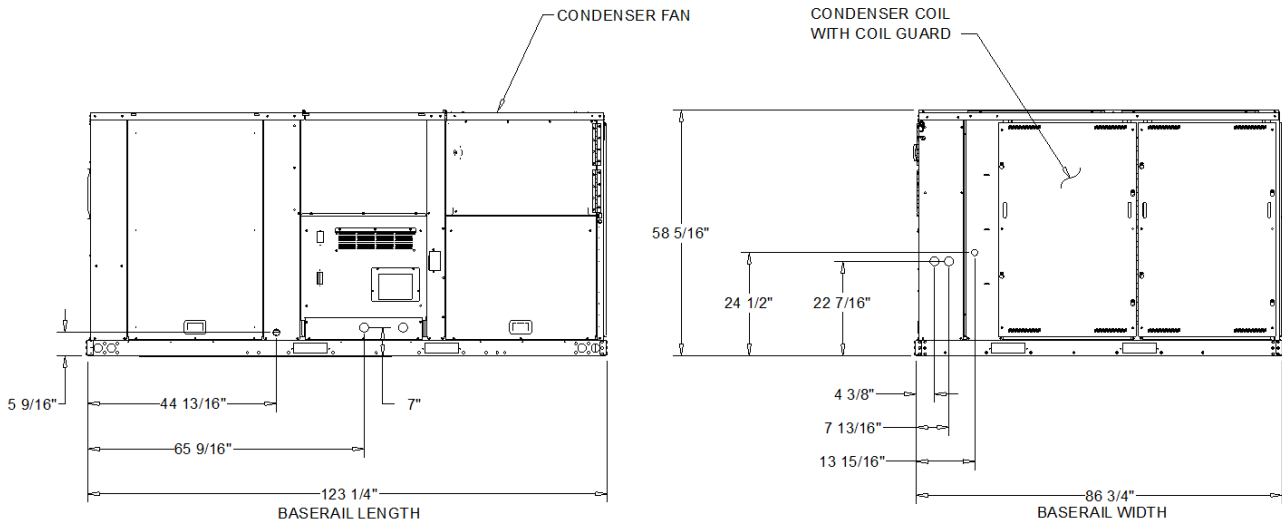
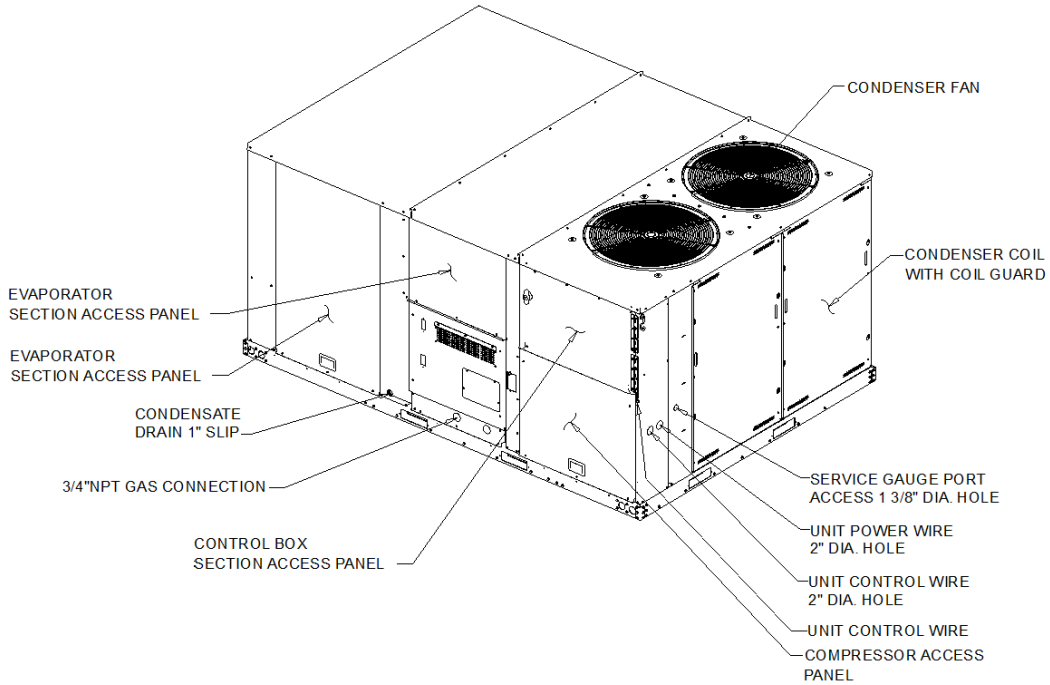
Reference or Comparative Enthalpy

- Reference enthalpy used to measure and communicate outdoor humidity.
- Unit receives and uses information to provide improved comfort cooling while using the economizer.
- Comparative enthalpy measures and communicates humidity for both outdoor and return air conditions, and return air temperature.
- Unit receives and uses information to maximize use of economizer cooling, and to provide maximum occupant comfort control.
- Reference or comparative enthalpy available when a factory or field installed downflow economizer ordered.

Dimensional Drawings - 3 - 25 Ton PKGD Precedent Unitary Rooftop

Item: A1 Qty: 1 Tag(s): PREC-1

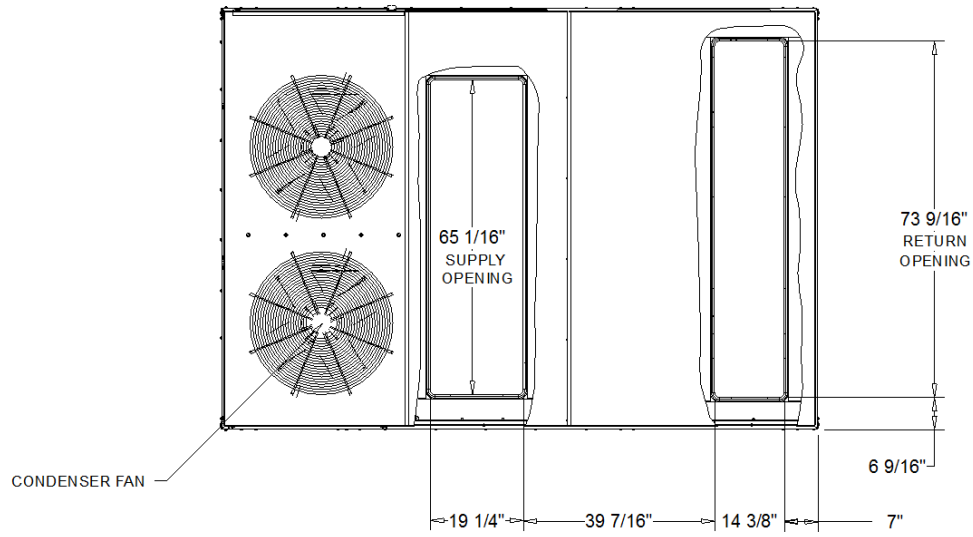
- NOTES:
 1. THRU -THE -BASE ELECTRICAL IS NOT STANDARD ON ALL UNITS.
 2. VERIFY WEIGHTS, CONNECTIONS, AND ALL DIMENSIONS WITH INSTALLER DOCUMENTS BEFORE INSTALLATION



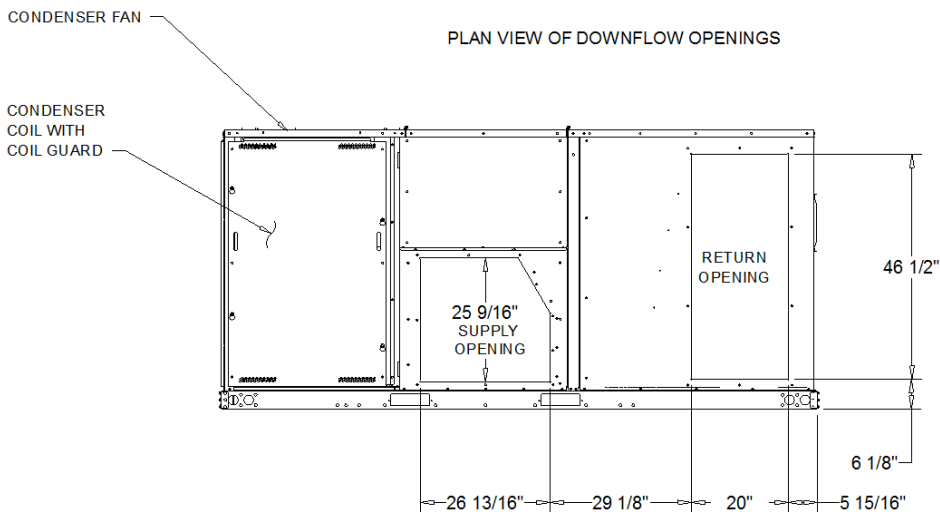
DX COOLING / GAS HEAT HIGH EFFICIENCY

DIMENSION DRAWING

Dimensional Drawings - 3 - 25 Ton PKGD Precedent Unitary Rooftop
Item: A1 Qty: 1 Tag(s): PREC-1



PLAN VIEW OF DOWNFLOW OPENINGS



HORIZONTAL AIR FLOW OPENING

DX COOLING / GAS HEAT HIGH EFFICIENCY

DIMENSION DRAWING

Weight, Clearance & Rigging - 3 - 25 Ton PKGD Precedent Unitary Rooftop

Item: A1 Qty: 1 Tag(s): PREC-1

NOTES:

- 1. APPROX. INSTALLED WEIGHT INCLUDES ALL SELECTED OPTIONS AND ACCESSORIES.
- 2. CORNER WEIGHTS ARE FOR BASE UNIT ONLY AND DO NOT INCLUDE OPTIONS OR ACCESSORIES.
- 3. WEIGHT INCLUDES BOTH FACTORY AND FIELD INSTALLED ACCESSORY.

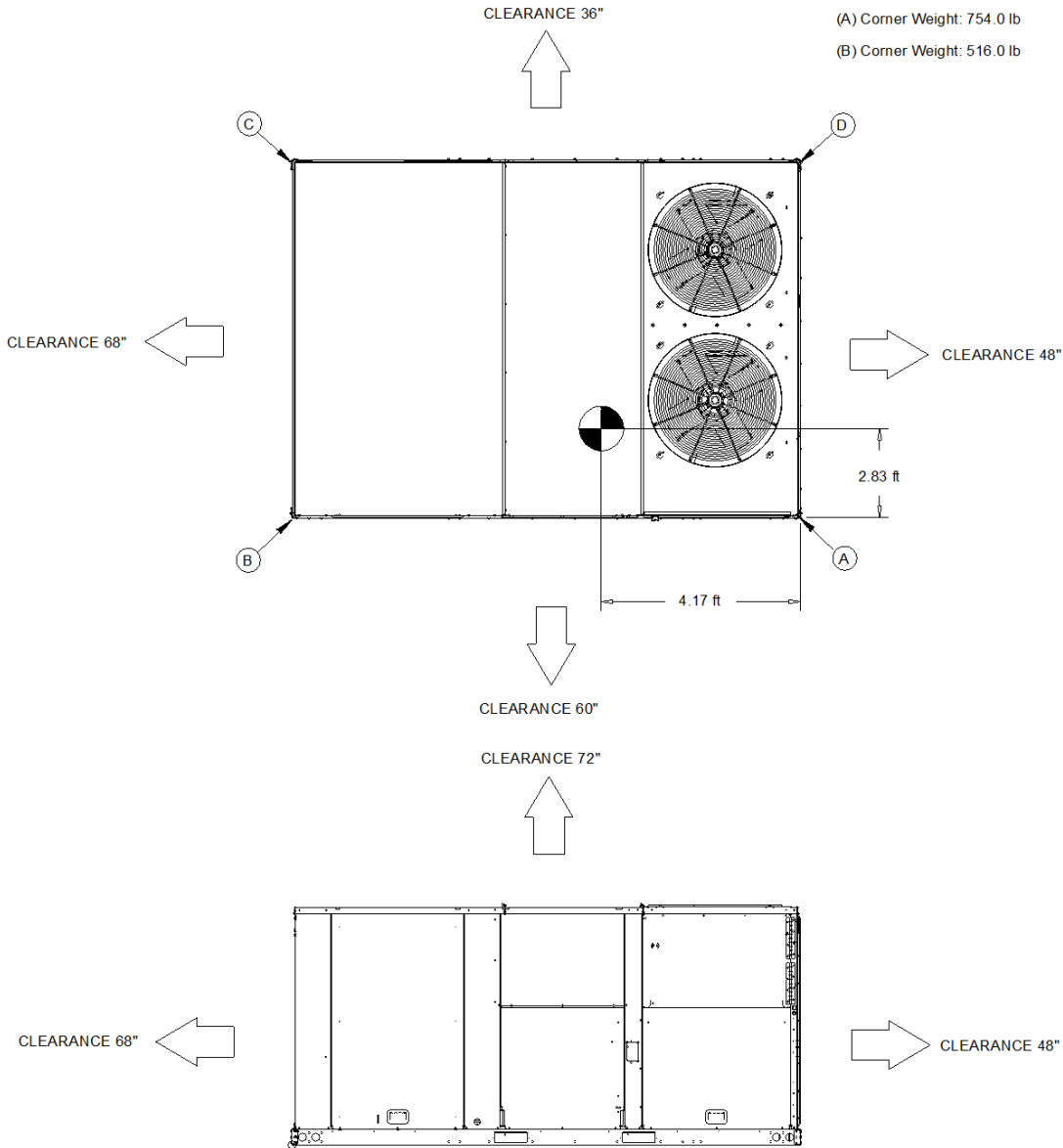
Approximate Installed Weight: 2,649.0 lb

(A) Corner Weight: 754.0 lb

(C) Corner Weight: 337.0 lb

(B) Corner Weight: 516.0 lb

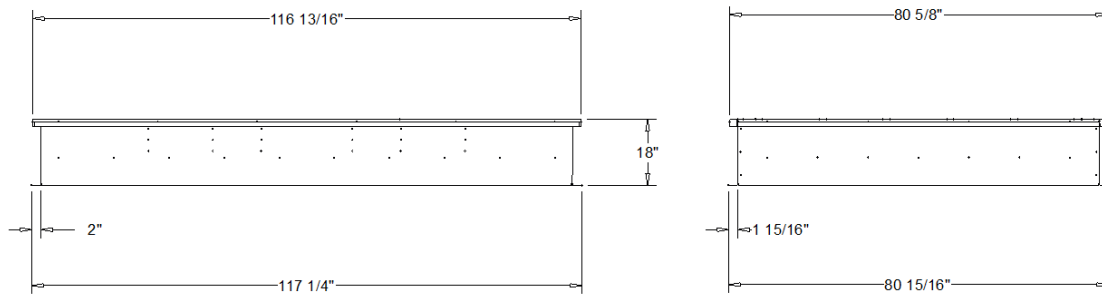
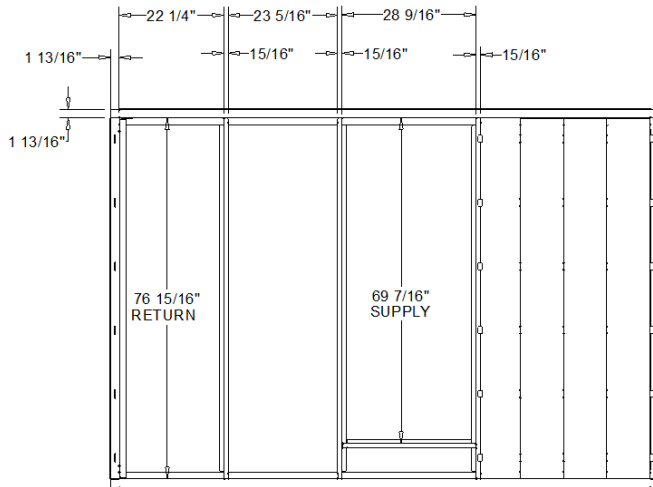
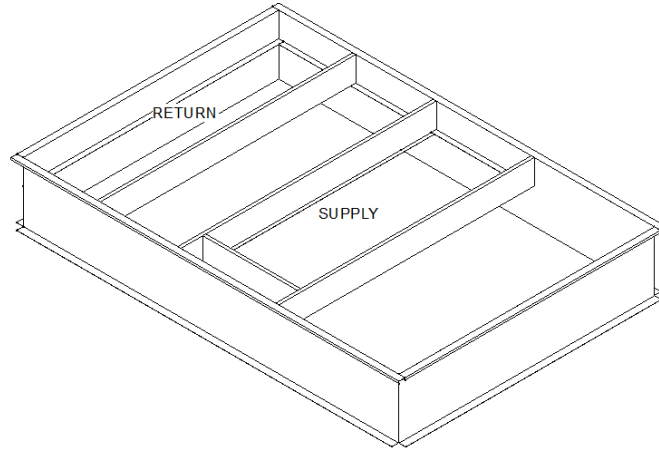
(D) Corner Weight: 493.0 lb



DX COOLING / GAS HEAT HIGH EFFICIENCY

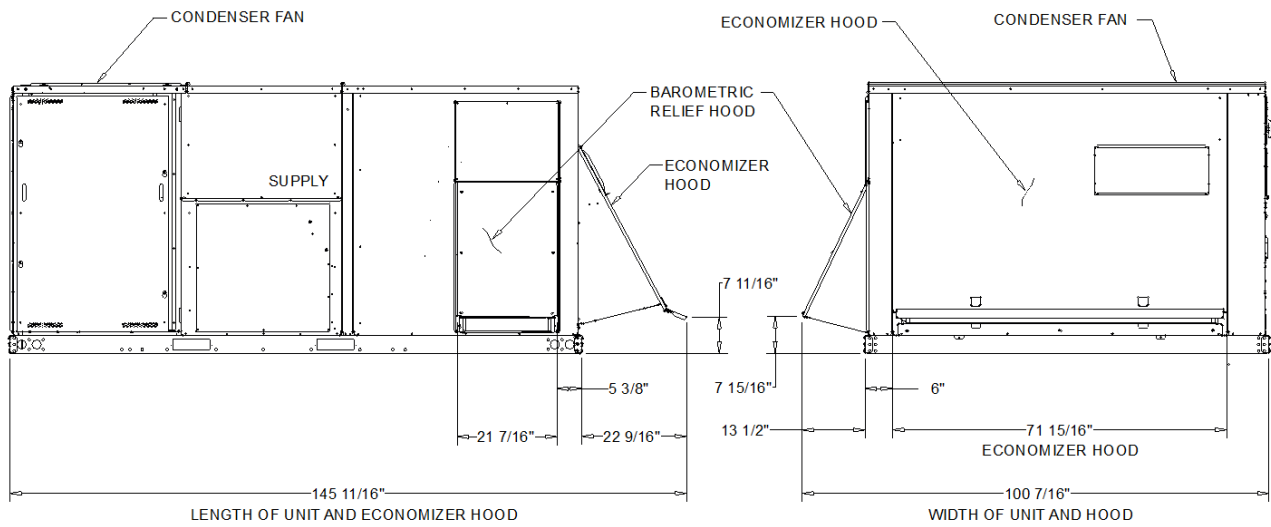
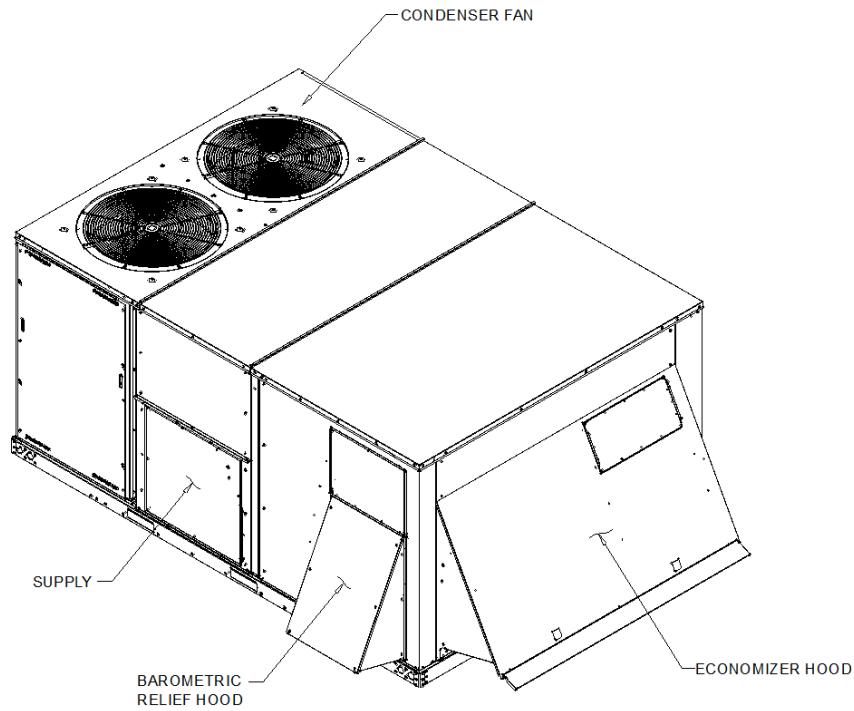
WEIGHTS AND CLEARANCES

Accessory - 3 - 25 Ton PKGD Precedent Unitary Rooftop
Item: A1 Qty: 1 Tag(s): PREC-1



DX COOLING / GAS HEAT HIGH EFFICIENCY

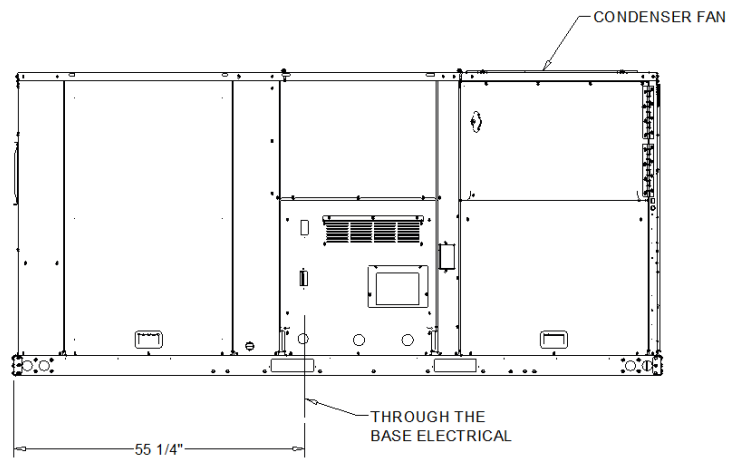
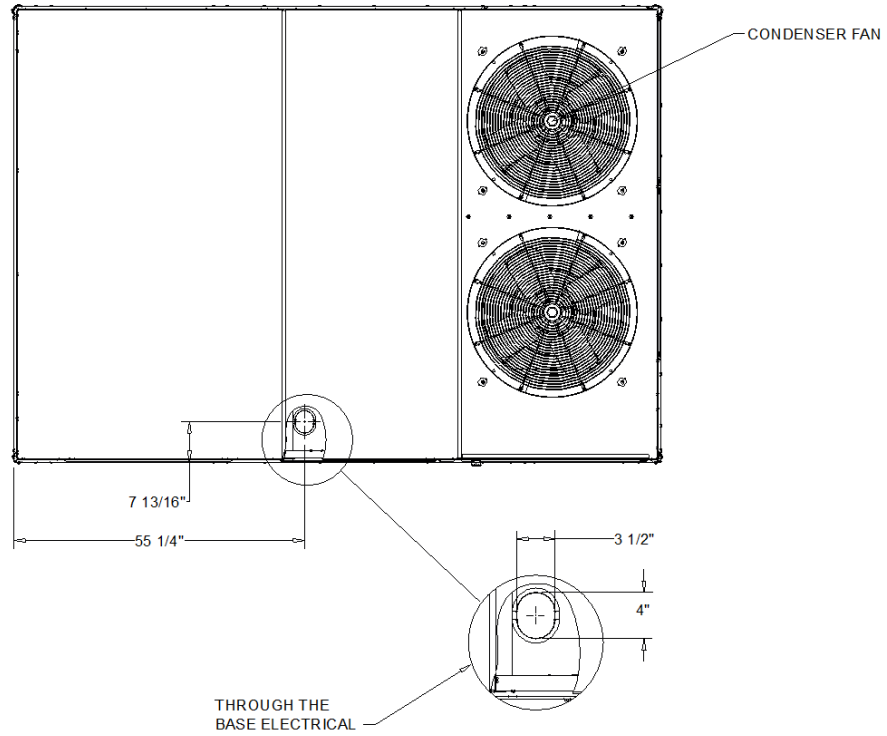
Accessory - 3 - 25 Ton PKGD Precedent Unitary Rooftop
Item: A1 Qty: 1 Tag(s): PREC-1



ECONOMIZER AND BAROMETIC AIR DAMPER(S) (OPTION)

DX COOLING / GAS HEAT HIGH EFFICIENCY

Accessory - 3 - 25 Ton PKGD Precedent Unitary Rooftop
Item: A1 Qty: 1 Tag(s): PREC-1

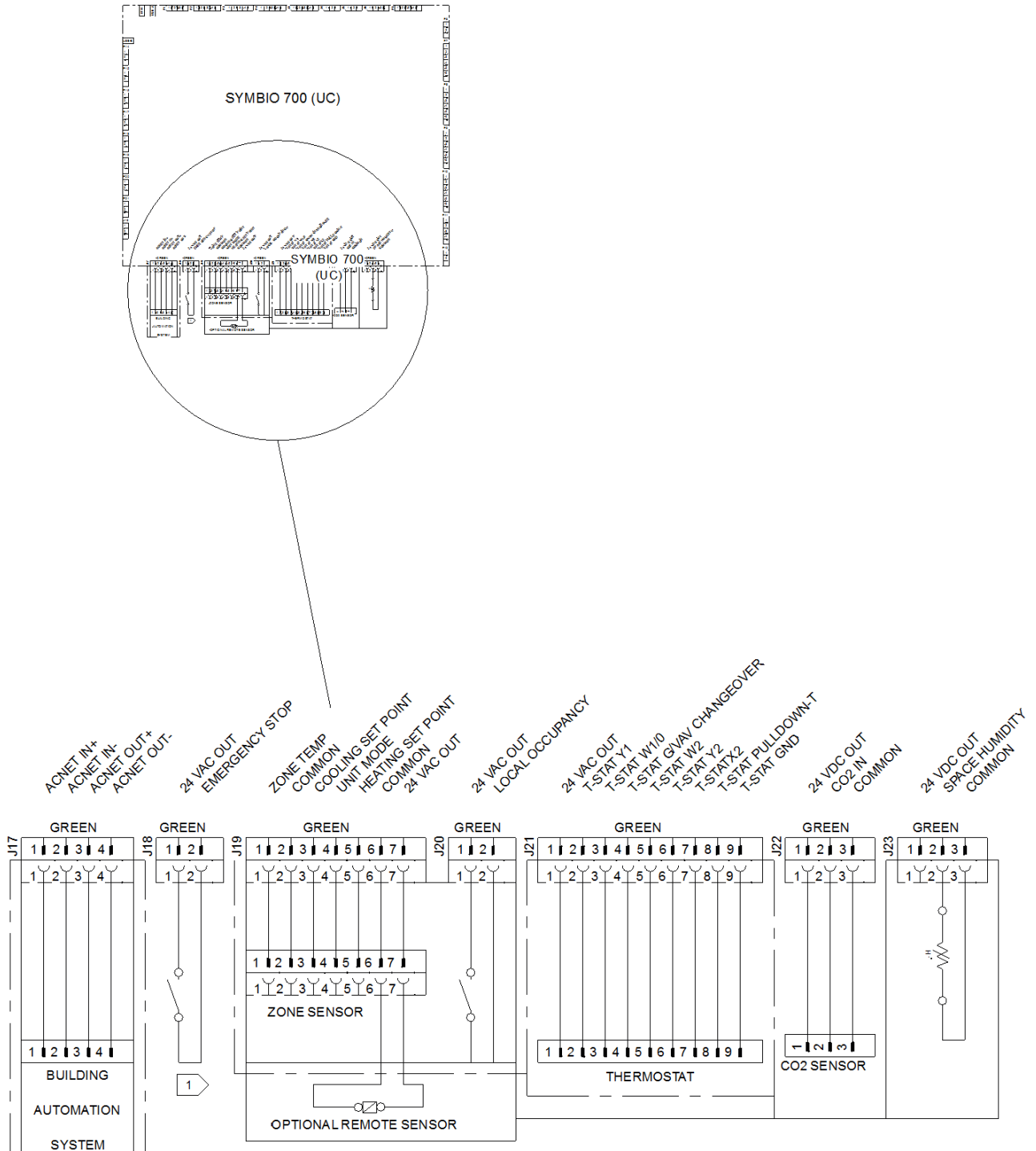


THROUGH-THE-BASE ELECTRICAL (OPTION)

DX COOLING / GAS HEAT HIGH EFFICIENCY

Field Wiring - 3 - 25 Ton PKGD Precedent Unitary Rooftop
Item: A1 Qty: 1 Tag(s): PREC-1

NOTES:
 1. VERIFY WEIGHT, CONNECTION, AND ALL DIMENSION WITH
 INSTALLER DOCUMENTS BEFORE INSTALLATION



SYMBIO 700 (J17, j18, J19, J20, J21, J22, AND J23)

FIELD WIRING DRAWING

Field Installed Options - Part/Order Number Summary

This is a report to help you locate field installed options that arrive at the jobsite. This report provides part or order numbers for each field installed option, and references it to a specific product tag. It is NOT intended as a bill of material for the job.

Product Family - 3 - 25 Ton PKGD Precedent Unitary Rooftop

Item	Tag(s)	Qty	Description	Model Number
A1	PREC-1	1	6- 25 Ton PKGD Precedent Unitary Rooftop	YHK240A4S0H**D000A1A100A

Field Installed Option Description	Part/Ordering Number
18" Full Perimeter Knockdown Curb	FIACURB804A