ADDENDUM 02

Issue Date: June 8, 2026

Project Information

Client: Abla Griffin Partnership
Project Name: Southmoore HVAC Replacement
Project Location: OKC, OK
Owner: Moore Public Schools
Engineer: Salas O'Brien, LLC

Project No. 2550-02191-00

To Prospective Bidders

This Addendum forms a part of the Contract Documents and modifies the Bidding Documents dated March 24, 2026, (and previous Addenda), with amendments and additions noted below.

This Addendum consists of (2) pages and (4) attachments.

- Index of Attachments
  - M201
  - M601
  - Earthsmart Controls Proposal
  - 23 81 20 Large Custom Rooftop DX Air Handlers

Acknowledge receipt of this Addendum in the space provided on the Bid Form. Failure to do so may disqualify Bidder.

CHANGES TO BIDDING REQUIREMENTS

The attached Earthsmart Temperature Control proposal shall be included as part of the mechanical bid for this project.

CHANGES TO THE SPECIFICATIONS

23 81 20 – Large Custom Rooftop DX Air Handlers

- No substitutions.

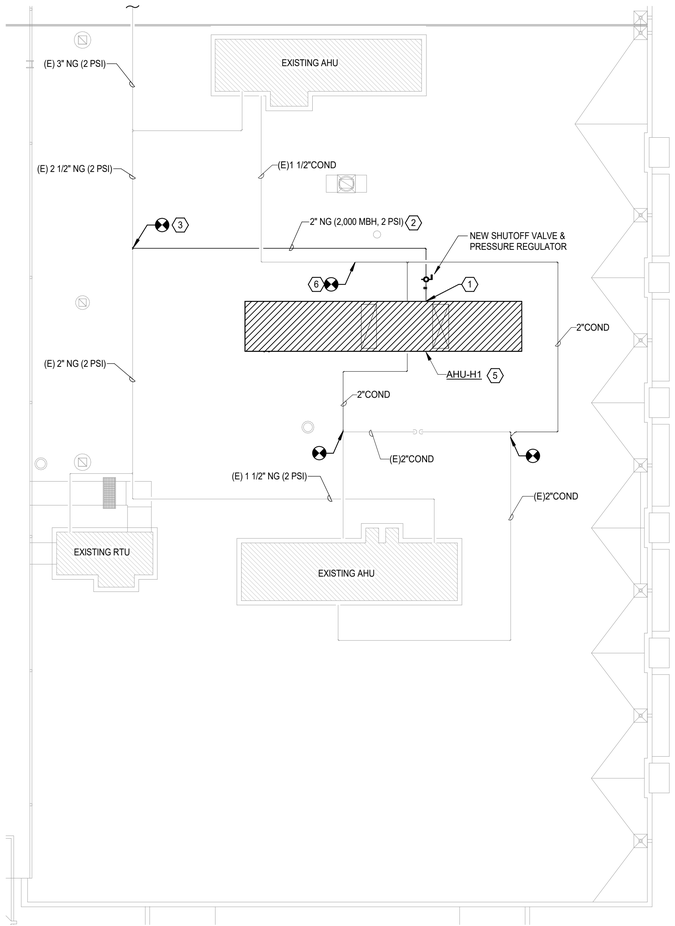
CHANGES TO THE DRAWINGS

Revisions have been made to the following drawings and are issued in the form of full-size plans. Edits are indicated by a revision delta and a cloud surrounding the affected portion of the drawing.

M601 – MECHANICAL SCHEDULES

- Refer to clouds and deltas for changes on plan.

END OF ADDENDUM [02]



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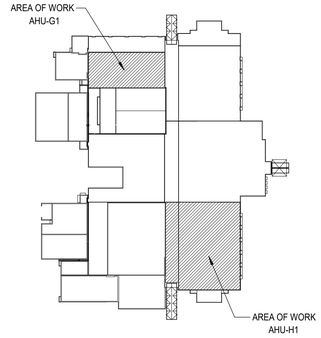
2 MECHANICAL ROOF PLAN - AHU-H1

Scale: 1/16" = 1'-0"



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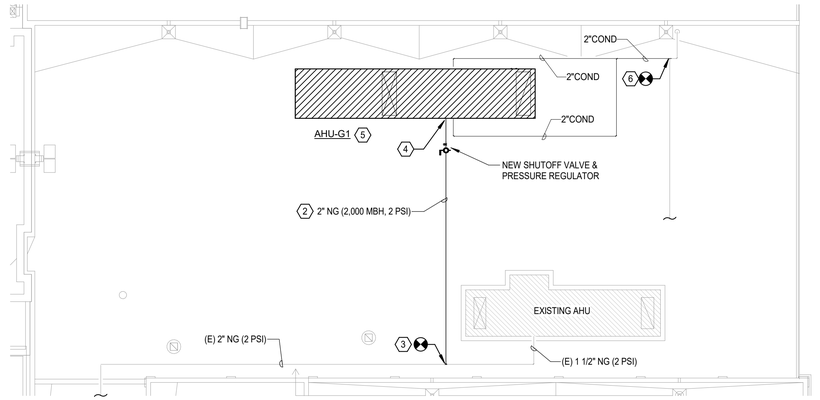
KEY PLAN

Scale: 1" = 160'-0"



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1 MECHANICAL ROOF PLAN - AHU-G1

Scale: 1/16" = 1'-0"

GENERAL NOTES

1. COORDINATE WORK WITH ALL TRADES ON SITE.
2. COORDINATE THE EXACT LOCATION AND WEIGHT OF UNITS WITH STRUCTURAL ENGINEER AND ARCHITECT PRIOR TO INSTALLATION OF CURB.
3. ALL ABOVE GRADE EXTERIOR NATURAL GAS PIPE SHALL BE CLEANED AND DEGREASED PRIOR TO BEING PRIMED THEN PAINTED YELLOW WITH WEATHER RESISTANT ZINC RICH PAINT.
4. ALL GAS PIPE SHALL COMPLY WITH IFGC. BRANCH LINES SHALL TAP OFF TOP OF GAS MAINS AND INSTALL SHUT-OFF VALVE ON BRANCH LINE.
5. PIPE IDENTIFICATION SHALL BE THE WORDS "NATURAL GAS" IN BLACK LETTERS AT 5 FOOT INTERVALS USING PLASTIC PIPE MARKERS OR STENCILED PAINTED LETTERS.
6. ROUTE DUCTWORK TO MAXIMIZE SERVICE CLEARANCES FOR RTU. REFER TO MANUFACTURER'S REQUIREMENTS FOR EXACT CLEARANCES.
7. ROUTE ALL RTU CONDENSATE LINES TO NEAREST ROOF DRAIN WITH COPPER PIPE PAINTED BLACK.

KEYED NOTES

1	PC SHALL INSTALL NEW 2" GAS (2,500 MBH, 2 PSI) LINE TO NEW ROOFTOP UNIT WITH PRESSURE REGULATOR, SHUT-OFF VALVE, DIRT LEG, UNION AND FINAL UNIT CONNECTION. COORDINATE WITH MC.
2	REMOVE EXISTING GAS PIPE AND REPLACE WITH NEW SIZE AS NOTED. PROVIDE ROOF PIPE SUPPORTS ON NATURAL GAS LINE.
3	FIELD VERIFY LOCATION OF EXISTING NATURAL GAS MAIN AND CONNECT NEW 2" GAS PIPE TO EXISTING 2" OR LARGER.
4	PC SHALL INSTALL NEW 2" GAS (1,800 MBH, 2 PSI) LINE TO NEW ROOFTOP UNIT WITH PRESSURE REGULATOR, SHUT-OFF VALVE, DIRT LEG, UNION AND FINAL UNIT CONNECTION. COORDINATE WITH MC.
5	PROVIDE NEW RTU AND CURB. NEW RTU SHALL BE ALIGNED TO REUSE EXISTING SUPPLY DUCT PENETRATION. PROVIDE NEW PENETRATION FOR RETURN. EXISTING DUCTWORK WITHIN CEILING SHALL BE MODIFIED TO CONNECT TO RTU. PROVIDE NEW DUCTWORK AS NEEDED FOR CONNECTIONS. INSULATE TO MATCH EXISTING. (1)
6	PROVIDE NEW 1-1/2" CONDENSATE PIPE TO CONNECT TO EXISTING PIPE.

AGP
the Abla Griffin Partnership L.L.C.

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MOORE, OK. 73160
405.735.3477
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www.theAGP.net

CEDAR CREEK
CIVIL

KFC ENGINEERING
STRUCTURAL

SALAS O'BRIEN
MECHANICAL / ELECTRICAL

KF
drawn by

DG
checked by

MARCH 2026
date

REVISIONS

Δ	DESCRIPTION	DATE
1	ADD 02	26.06.08

MOORE PUBLIC SCHOOLS

SOUTHMOORE HIGH SCHOOL HVAC REPLACEMENT

sheet no:

M201

Salas O'Brien

Salas O'Brien, Inc. - Oklahoma City
2900 S. Telephone Road, Suite 120
Moore, OK 73160
CA#: 9820 Expiration Date: 06/30/2027

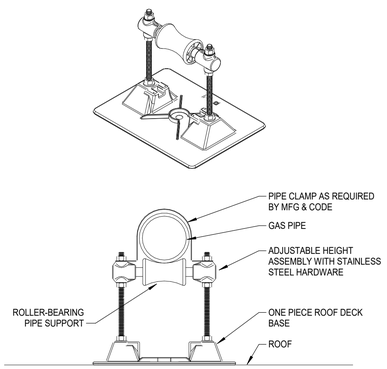
Salas O'Brien Project Number: 2550-02191-00

PACKAGED ROOFTOP UNIT - GAS HEAT

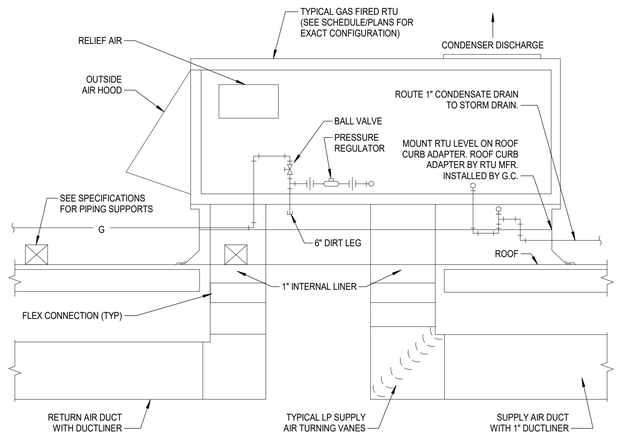
MARK	SUPPLY CFM	FAN							ENERGY RECOVERY PERFORMANCE						COOLING							HEATING						BASIS OF DESIGN					REMARKS
		OUTSIDE AIR CFM	EXT.STATIC PRESSURE (IN. W.C.)	HORSE POWER	CURRENT CHAR V	P	F	TYPE	SUMMER OA AIR DB/WB (°F)	SUMMER LAT DB/WB (°F)	EFFECTIVENESS S %	WINTER OA DB/WB (°F)	WINTER LAT DB/WB (°F)	EFFECTIVENESS %	AIR TEMPERATURE (°F) EAT DB	EAT WB WET BULB	LAT DB	LAT WB	AMBIENT TEMP	TOTAL CAPACITY (BTU)	SENSIBLE CAPACITY (BTU)	STAGES	MINIMUM EER/ SEER	ENTERING AIR TEMP.(°F)	LAT (°F)	INPUT (BTUH)	OUTPUT (BTUH)	STAGES (HEAT)	AFUE %	MANUFACTURER	MODEL	MCA	MOCP	WEIGHT (LBS)	
AHU-G1	38000	5,680	2.00	60.0	480	3	60	MZVAV	-	-	-	-	-	-	81.0	65.0	55 °F	53 °F	104 °F	1284000	1114000	VARIABLE	10.3	59	99 °F	2000000	1620000	MOD	80	INNOVENT	CAHU-38000-AC-IF-460	328	350	31000	1-17
AHU-H1	42000	10,471	3.00	75.0	480	3	60	MZVAV	110 / 74	83 / 64	83	0 / 0	47 / 41	83	73.0	60.0	55 °F	52 °F	104 °F	883000	865000	VARIABLE	9.9	62	98 °F	2000000	1620000	MOD	80	INNOVENT	ERU-OU-WH-42000-AC-IF-460	298	300	36600	1-16,18,19

GENERAL NOTES:
1. EXTERNAL STATIC PRESSURE INCLUDES LOSSES DUE TO DUCTWORK, AIR DEVICES, DAMPERS, AND DUCT MOUNTED HOT WATER COILS WHERE APPLICABLE. DIRTY FILTER AND UNIT CASING MUST BE ADDED TO EXTERNAL STATIC PRESSURE TO OBTAIN TOTAL PRESSURE LOSS. INCREASE HORSEPOWER AS REQUIRED TO MEET YOUR TOTAL PRESSURE LOSS. COORDINATE WITH ELECTRICIAN.
2. MAINTAIN MINIMUM CLEARANCE FOR COIL PULL AS RECOMMENDED BY UNIT MANUFACTURER. MAINTAIN MINIMUM CLEARANCE AS REQUIRED TO OPEN ACCESS AND CONTROL DOORS ON UNIT FOR SERVICE, MAINTENANCE, AND INSPECTION. MAINTAIN MINIMUM ELECTRICAL CLEARANCE AS REQUIRED BY NEC.

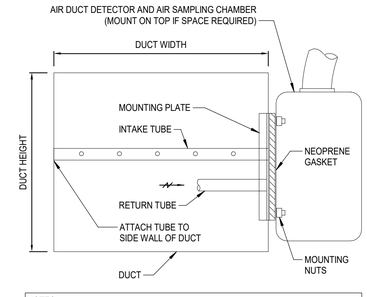
REMARKS:
1. PROVIDE UNIT WITH DISCONNECT SWITCH, HAIL GUARD, DUAL SIDED HINGED ACCESS DOORS, AND POWERED CONVENIENCE OUTLET.
2. PROVIDE UNIT WITH DUCT SMOKE DETECTOR IN SUPPLY AND RETURN DUCTWORK.
3. PROVIDE WITH NEW 14" CURB. EXISTING ROOF IS 1/8" PER FOOT SLOPE. CURB SHALL BE MOUNTED LEVEL ON SLOPED ROOF.
4. PROVIDE UNIT WITH LOW AMBIENT CONTROL.
5. PROVIDE UNIT WITH TEMPERATURE AND HUMIDITY SENSOR AND BMS PROTOCOL.
6. PROVIDE A WATER LEVEL SENSING DEVICE (FLOW SWITCH) IN THE PRIMARY DRAIN PAN. THIS DEVICE SHALL SHUT OFF THE APPLIANCE IN THE EVENT THE PRIMARY DRAIN LINE BECOMES RESTRICTED.
7. PROVIDE LOW LEAK ENTHALPY ECONOMIZER WITH POWERED EXHAUST.
8. PROVIDE UNIT WITH 304L STAINLESS STEEL HEAT EXCHANGER WITH MODULATING GAS HEAT WITH 20:1 TURNDOWN ON MODULATION.
9. UNIT SHALL HAVE DOWN SUPPLY AND RETURN DUCT CONNECTIONS.
10. PROVIDE UNIT WITH FULL-MODULATING HGRH.
11. PROVIDE FACTORY MOUNTED BACNET COMPATIBLE CONTROL FOR CONTROLS CONTRACTOR.
12. UNIT TO USE R-454B REFRIGERANT.
13. PROVIDE UNIT CASING SHALL USE DOUBLE WALL CONSTRUCTION WITH FOAM-INJECTED PANELS.
14. PROVIDE UNIT WITH COMPARATIVE ENTHALPY ECONOMIZER WITH LOW LEAK DAMPERS.
15. PROVIDE UNITS WITH VARIABLE SPEED COMPRESSOR FOR CAPACITY MODULATION FROM 15% TO 100%.
16. MECHANICAL CONTRACTOR IS RESPONSIBLE FOR ALL ELECTRICAL COSTS ASSOCIATED WITH ANY ALTERNATE UNIT IS PROVIDED WITH GREATER ELECTRICAL CHARACTERISTICS THAN SHOWN.
17. PROVIDE AIRFOIL RETURN FAN WITH SHAFT GROUNDING RINGS. PROVIDE FACTORY INSTALLED ABB VFDs AND MODULATE TO BUILDING PRESSURE CONTROL.
18. PROVIDE AIRFOIL EXHAUST FAN WITH SHAFT GROUNDING RINGS. PROVIDE FACTORY INSTALLED ABB VFDs AND MODULATE TO BUILDING PRESSURE CONTROL.
19. PROVIDE INTEGRAL TOTAL ENERGY RECOVERY WHEEL.
20. MC SHALL SUBMIT BASIS OF DESIGN AS BASE BID. SUBSTITUTION MANUFACTURER SHALL BE SUBMITTED AS ALTERNATE.



3 ROOF PIPE SUPPORT DETAIL
Scale: N.T.S.

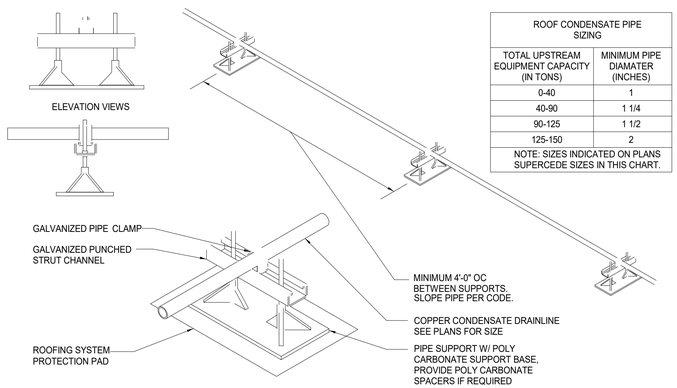


2 TYP. ROOF TOP UNIT GAS FIRED DETAIL
Scale: N.T.S.



NOTES:
1. SMOKE DETECTOR FURNISHED AND WIRED BY ELECTRICAL CONTRACTOR, AND MOUNTED BY MECHANICAL CONTRACTOR.
2. INSTALL IN STRICT ACCORDANCE WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS.
3. PROVIDE ACCESS DOOR AT SAMPLING TUBES.
4. THE TUBE SHALL BE INSTALLED PARALLEL TO LONG DIMENSION OF DUCT.
5. PRODUCT SHALL BE UL268A LISTED FOR DUCT MOUNTED SMOKE
6. DETECTORS, OR UL268A FOR ALL OTHER SMOKE DETECTOR TYPES.
7. EC SHALL TEST ACCORDING TO UL AND CODES IN THE PRESENCE OF CODE AUTHORITY.

1 SMOKE DETECTOR MOUNTING DETAIL
Scale: N.T.S.



ROOF CONDENSATE PIPE SIZING	
TOTAL UPSTREAM EQUIPMENT CAPACITY (IN TONS)	MINIMUM PIPE DIAMATER (INCHES)
0-40	1
40-90	1 1/4
90-125	1 1/2
125-150	2
NOTE: SIZES INDICATED ON PLANS SUPERCEDE SIZES IN THIS CHART.	

4 ROOF CONDENSATE SUPPORT DETAIL
Scale: N.T.S.

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MECHANICAL / ELECTRICAL

OKLAHOMA PROFESSIONAL ENGINEER Richard Mc Donald 23522 06/03/26

KF
drawn by

DG
checked by

MARCH 2026
date

REVISIONS

Δ	DESCRIPTION	DATE
1	ADD 02	26.06.08

MOORE PUBLIC SCHOOLS

SOUTHMOORE HIGH SCHOOL HVAC REPLACEMENT

sheet no:

M601

Salas O'Brien

Salas O'Brien, Inc. - Oklahoma City
2900 S. Telephone Road, Suite 120
Moore, OK 73160
CA#: 9820 Expiration Date: 06/30/2027

Salas O'Brien Project Number: 2550-02191-00

EARTHSMART CONTROLS
5305 N Santa Fe Avenue
Oklahoma City, OK 73118
www.earthsmartcontrols.com
Phone: (405) 778-8008
Fax: (866) 676-5602

To: Moore Southmoore High School Bidders **April 30, 2026**
Attn: Estimator

This is a proposal to provide controls for the Moore Southmoore High School HVAC Replacement project.

AHUs (2)

- Provide labor to integrate to **factory BACnet controls** and install sensors provided by equipment manufacturer.
- Commission the units to ensure proper operation.

Honeywell WEBS N4 Frontend

- Provide and install new HON-9000 onsite and integrate into N4 supervisor station (graphical user interface).
- JACE is licensed for 5 devices.
- Provide 4 hours of user training.
- ***Provide 1-year parts and labor warranty.***
- Provide graphical representations of equipment listed above.
- Provide custom trending and alarming.
- Provide scheduling capabilities and remote access.

The total price for the control work above is: $33,808.00
Thirty-Three Thousand Eight Hundred and Eight Dollars

****

Optional Add – Airflow Measure Stations

Airflow Measure Stations (3 per AHU)

- Provide and install 3 AFMS on each AHU. Wire into inputs provided by equipment manufacturer.
- Commission the units to ensure proper operation.

The add-on price for the control work above is: $43,382.00
Forty-Three Thousand Three Hundred and Eighty-Two Dollars

****

Optional Add - Commissioning of Units

- Provide full commissioning of units to customer specifications.
- Provide NEBB reports of commissioning upon completion.

The add-on price for the commissioning work above is: $4,860.00
Four Thousand Eight Hundred and Sixty Dollars

Continued on next page…

5305 N Santa Fe Avenue
Oklahoma City, OK 73118
www.earthsmartcontrols.com
Phone: (405) 778-8008
Fax: (866) 676-5602

We thank you for the opportunity to bid and look forward to working with you soon.

If you have any questions, please feel free to contact us at (405) 778-8008.

Exclusions for total job: Any wiring above 24V, AHU controls/sensors, carbon monoxide sensors, smoke detectors and anything not mentioned in this proposal.

Erin Bevill
Controls Manager
EarthSmart Controls, LLC

Company:_____ Signature: _____

Date:_____ Printed Name: _____

Title:_____ PO #: _____

SECTION 23 81 20

LARGE CUSTOM ROOFTOP DX AIR HANDLERS

PART 1 - GENERAL

1.1 WORK INCLUDED

A. Provide and install a large packaged, single-zone, electric air conditioner with gas fired heat exchanger for rooftop application.

1.2 RELATED WORK

A. Division 23 Mechanical.
   1. Ductwork.
   2. Air Balance.
   3. Electrical provisions for mechanical work.
   4. Air Filtration.
   5. Vibration Isolation.

1.3 PERFORMANCE

A. As scheduled on drawings

1.4 SUBMITTALS

A. If alternate equipment is submitted by contractor rather than the basis-of-design, a copy of the specifications must be submitted with mark ups indicating in the margin of each paragraph the following: COMPLY, DO NOT COMPLY, TAKING EXCEPTION, OR NOT APPLICABLE.

B. Manufacturer’s certified capacity data.

C. Submit manufacturer’s installation, start-up and service instructions.

D. Submit recommended clearance dimensions for air flow and service.

E. Submit coordination drawings as specified. Consideration shall be given to adjacent structures and their effect on air flow patterns.

F. Submit internal wiring diagram of Control Center.

G. Submit sequence of operation in narrative form.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. BASIS-OF-DESIGN: INNOVENT,.

B. ACCEPTABLE ALTERNATES: AAON.

C. Project is based on the specified equipment. Any additional re-engineering or installation costs associated with using alternate manufacturer’s equipment shall be borne by the installing contractor.

2.2 EQUIPMENT WARRANTY

A. Provide original equipment manufacturer's 3 year parts and labor warranty. Warranty shall start at time of startup or 18 months from equipment shipment. Warranty shall be provided by manufacturer only.

B. Provide 5-year compressor warranty.

C. Provide 15-year heat exchanger warranty.

2.3 UNIT CONSTRUCTION AND CASING

A. General: Construct unit as specified herein. Single wall construction is unacceptable and will be rejected. Frame and panel construction must be used with no individual panel exceeding 36" width. All panels on the unit must be fully removable without the use of cutting tools. All internal components must be removable without dismantling the structural framing of the unit. Unit shall be suitable for outdoor installation as detailed on the plan drawings.

B. Base: Constructed base of minimum 10 ga. welded structural steel with cross supports and integral lifting lugs. Bolted bases are unacceptable. Coat base exterior with 2 part epoxy primer and urethane modified enamel top coat. Removable lifting lugs are provided.

C. Framing: Frame is constructed of structural tube members designed to support flush-mounted double-wall panels. Vertical framing members must be easily removable, without the use of specialty tools or torches, for replacement of large internal components. Welded framing is not acceptable unless all internal components can be easily removed without cutting any welds. A closed-cell polyvinyl foam gasket with a thickness of 3/16" or greater must be applied between all framing members and panels.

D. Flooring: Floor shall be 2" thick double-wall, foam injected panel construction, with a minimum of 18 gauge galvanized steel walk on surface, and 22 gauge galvanized steel underside of paneled floor. Floor panels shall be foam injected for optimal support strength. Maximum deflection of the floor shall be L/500 (L=span in inches), and the maximum point load on the floor shall be 800 lbs (over 1 square foot). Floor shall be of a fastener free design, bonded to the unit base with an industrial adhesive, with all seams finished with an adhesive sealant providing a water tight floor system. Use of tack welding, caulk or screws penetrating the entire floor panel anywhere in the floor is unacceptable. The floor shall have a smooth and flat walk-on surface. A minimum 1" lip must be provided around all floor penetrations. Walk-on grating must be provided over all accessible floor mounted duct connections.

E. Panels: Unit shall have non-load bearing, fully-removable, heavy gauge 2" double-wall panels.

F. Exterior Materials: Exterior skin shall be galvanized G90 steel for unpainted equipment. Unpainted galvanized exterior unacceptable if unit casing or framework is welded.

G. Interior Materials: Interior skin shall be galvanized G90 steel.

H. Thermal break construction: The entire casing must be built such that no member on the exterior of the unit, excluding fasteners, has through metal contact with any member on the interior of the unit, excluding fasteners.

I. Casing Ratings: Maximum casing panel deflection shall not exceed L/250 at the design total static pressure (where L is the longest panel span on the unit). Casing shall meet a SMACNA duct leakage class (DLC) rating of 5.0 or better. The panel insertion loss, per octave band, shall not be less than the following:

Frequency (Hz):	100	125	250	500	1000	2000	4000	8000
Insertion loss (dB):	24	16	30	32	33	34	63	60

J. Insulation: All interior walls, floor, access doors, and ceiling shall be double wall and insulated with polyurethane injected foam insulation having a minimum R-13 thermal value. No insulation shall be exposed to the air stream. Fiberglass or non-injected foam insulation is not acceptable and will be rejected.

K. Access Doors: Provide double wall doors with the same thickness, insulation and inner/outer wall material as the rest of the air handler. Doors shall be full height (up to 72”) with industrial stainless steel hinges. Bi-directional compression latches with integral roller cam and hex-screw locking assembly must be provided. An EPDM type gasket must be provided in accordance with ASTM D 2000. Supply and exhaust air streams shall not be covered by a single door. Access panels in lieu of access door are unacceptable. Rain gutters are provided over all access doors that are not the full height of the unit casing. All doors that open with pressure shall be provided with a pressure relief safety latch. Provide doors for access to any area requiring routine maintenance.

L. Weather hoods (for outdoor units): Provide weather hoods with expanded aluminum bird screens over all exposed inlets and outlets. Hoods may ship loose for installation in the field.

M. Roof (for outdoor units): Provide roof with standing seam construction which allows removal of individual sections for inspection purposes without removal of the entire roof. A double wall foam injected panel must be provided below the roof liner creating 3 layers of metal between the conditioned air tunnel and ambient air. Pitch roof with sufficient slope to ensure water drainage. Units over 137” wide require double sloped roof designs. Roof overhang to be provided around complete perimeter of the unit. No penetrations can be made to the roof.

2.4 ENTHAPLY WHEEL

A. Provide aluminum or synthetic total energy heat wheel with performance as scheduled. Rotor performance must be certified by AHRI.

B. Construct wheel of aluminum honeycomb media coated with a 3 angstrom molecular sieve, non-migrating, water selective desiccant. Polymer wheel construction is not acceptable. Wheel must be cleanable using low pressure steam (<15 PSI).

C. Provided purge section to minimize cross-over of return air to supply air during rotation.

D. Provide a VFD factory wired to the wheel motor for defrost and economizer provisions.

E. A 10-year material and labor warranty shall be provided covering all materials supplied and installed by wheel manufacturer.

2.4 OUTSIDE AIR ECONOMIZER

A. Provide with fully modulating 0 to 100% motor and dampers, minimum position setting,

present linkage, wiring harness with plug, and spring return actuator.

B. Provide unit with low-leak economizer damper to meet ASHRAE 90.1 and IECC standards (4 CFM/ft^2@1" wg).

C. Economizer to be activated by comparative enthalpy control.

D. Unit to be equipped with demand control ventilation. Provide with duct-mounted CO2 sensor.

2.5 COMPRESSOR & REFRIGERANT SYSTEM

A. Unit to utilize R-454B low GWP refrigerant.

B. Unit to be provided with factory-installed suction service valves, replaceable core liquid filters, and liquid line filter drier.

C. Provide a thermally protected, serviceable semi-hermetic compressor with crankcase heaters.

D. Provide variable speed compressors allowing unit capacity to modulate from 15% to 100%. Digital scroll compressors or not acceptable.

2.6 EVAPORATOR AND CONDENSER COILS

A. DX coil: Provide fully-interlaced coil rated in accordance with AHRI 410-2001 with 0.016" thick seamless copper tubes, galvanized casing, and 0.006" thick aluminum fins. All refrigerant connections must remain inside the unit cabinet and run directly to the condensing section. Maximum face velocity is 500 FPM. Each coil is water immersion tested to 450 PSI prior to shipment

B. Cooling coil drain pan: All cooling coils must be provided with stainless steel IAQ drain pans that begin at the entering air side of the coil face and extend a minimum of 12" past the leaving air side of the coil face. Entire underside of the drain pan, including the piping run to the casing exterior, must be coated with no less than 2" of spray foam insulation to ensure no sweating occurs below. Coil must sit on "walk-on" stainless steel supports spaced a maximum of 6" apart to allow full access to the coil face without damage to the drain pan. The drain pan must be sloped in a minimum of 2 directions to ensure proper drainage.

C. Integral air cooled condensing section: Provide integral air cooled condensing system factory piped, wired, charged, and tested. Entire condensing section must be assembled by the unit manufacturer. Skid mounting another manufacturers condensing unit is not acceptable.

1. Refer to the schedule for the minimum condensing section or unit EER requirements. Equipment with EER's less than what is scheduled will be rejected.
2. Modulating head pressure control must be provided to keep system operational and optimize efficiency of the compressors.
3. Provide hermetic scroll type compressors with suction and discharge schrader ports, reverse rotation protection, sight glass, oil level adjustment, filter drier, anti-cycle timers and high/low pressure switches. Independent circuits shall be provided completely tested, dehydrated, and fully charged with R-410A and oil.

D. Provide microchannel coils or copper tubes with mechanically bonded aluminum fins for evaporator and condenser coils.

E. Evaporator shall be a minimum of 4 rows deep.

F. Provide with louvered metal condenser coil hail guards.

G. Provide with factory-installed frostat.

2.7 DEHUMIDIFICATION

A. Provide unit with modulating hot gas reheat dehumidification system consisting of reheat coil, piping, and modulating valve. Hot gas reheat shall modulate to maintain discharge air temp humidity rather than staging on and off repeatedly. Dehumidification shall run during unoccupied rather than relying on electric reheat in VAV boxes. Provide coil rated in accordance with AHRI 410-2001 with 0.016" thick copper tubes, galvanized casing, and rippled aluminum plate fin secondary surface with a thickness of 0.006. Provide coil with a three-way modulating control valve. Each coil is water immersion tested to 450 PSI prior to shipment.

B. Provide with duct-mounted humidity sensor to activate dehumidification system.

2.8 GAS HEATING SECTION

A. Heat exchangers shall be made from 304L stainless steel.

B. Gas Controls:
1. Modulating heat control. Minimum modulation turndown of 20:1.
2. Automatic gas valve and pressure regulator.
3. A manual shutoff valve.
4. An adjustable fan control.
5. Fixed high limit controls.

C. Unit shall be equipped with a direct spark pilot ignition system.
1. Electronic flame detection.
2. 100% safety shutoff.

D. Combustion air shall be induced by a positive pressure power venting fan.
1. Pre-purge of combustion chamber.

2.9 BLOWER/MOTOR

A. Supply & Exhaust blower: AF, BI or BC blade direct drive plenum fans shall be provided with fan blades continuously welded to the wheelback. Fan wheels shall be constructed of aluminum or painted steel. Fans shall be certified to bear the AMCA seal for air and sound performance. Fan brake horsepower shall not exceed the scheduled brake horsepower at the total static pressure and airflow scheduled. Provide the number of fans scheduled, no exceptions. Fan motors must be selected to run at 90 Hz maximum at design conditions. Any fan/motor combination selected to run at a higher frequency will be rejected due to decreased motor life.

B. Motors shall be 3 phase TEFC with a NEMA frame, cast iron construction and a 1.15 service factor. Motor brake horsepower shall not exceed scheduled values. Fan brake horsepower shall not exceed 90% of motor horsepower. All motors shall be premium efficiency with class F insulation. Shaft grounding will be provided on all VFD controlled motors 10 HP and larger.

C. Isolation: Blower and motor shall be mounted on a unitary base with [1" housed seismic rated spring isolators.

1. Variable frequency drives: Provide **ABB** variable speed drive per every supply and exhaust fan(s). **ABB** VFDs shall be factory mounted and tested.

2.10 DAMPERS

A. Motorized dampers shall be low leakage type with galvanized steel construction, formed blades, vinyl edge seals, metal jamb seals, and synthetic bearings. Gravity dampers shall have aluminum frame, aluminum blades, extruded vinyl edge seals, and synthetic bearings.

B. The following dampers shall be provided at a minimum (additional dampers may be required, please consult the sequence of operation to determine what is needed):

1. Outside air heat exchanger bypass damper, modulating actuator.
2. Heat wheel bypass dampers, modulating actuator (economizer operation).
3. Recirculation air control damper, modulating actuator.
4. Exhaust air shut-off damper, 2-position actuator.

2.11 FILTERS

A. Outside air filter: Provide 4" MERV 8 filter bank at the outside air inlet. Mount in a galvanized steel side access slide rack and size for 500 fpm maximum face velocity. Filters must be rated per U.L. standard 900.

B. Return air filter: Provide 4" MERV 8 filter bank at the return air inlet. Mount in a galvanized steel side access slide rack and size for 500 fpm maximum face velocity. Filters must be rated per U.L. standard 900.

C. Supply filter. Provide 4" MERV 13 supply filter bank in location shown on unit drawing. Mount in a galvanized steel front access rack and size for 500 fpm maximum face velocity. Filters must be rated per U.L. standard 900.

2.12 ELECTRICAL REQUIREMENTS

A. Through the base electrical option and single-point power connection.

B. Provide unit with 65,000A high fault short circuit current rating.

C. Provide non-fused disconnect, fan motor starters/protectors, contactors, control transformer, control circuit fusing, service switch, and terminal block. Units supplied with VFDs shall have individual branch fusing per drive. A motor protector shall be provided if equipment manufacturer's manual bypass is required.

D. Provide unit with powered weathertight 120V 2-plug GFCI convenience outlet.

E. Unit to be equipped with phase loss/reversal protection and phase monitor.

2.13 CONTROLS

A. Unit shall come with factory-installed microprocessor controls.

B. Unit shall come equipped with factory-installed discharge air temperature sensor and clogged filter switch.

C. Provide BACnet communication card (if required by schedule).

D. Provide unit with rapid restart option to provides immediate start-up upon power failure shutoff. Rapid restart will begin immediately after recovery from a power loss and work by restarting the compressors and supply fan quickly, providing full cooling within three minutes.

2.14 ROOF CURBS

A. Provide manufacturer’s standard flat uninsulated knockdown roof curb unless otherwise indicated on the schedule.

B. Installer shall field-level the curb by shimming unless otherwise indicated.

C. Installer shall field-insulate the curb during installation.

D. Curb to support the unit and provide a watertight enclosure to protect ductwork and utility services.

E. Use a design complying with National Roofing Contractors Association requirements.

F. Level curb according to manufacturer's recommendations.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install according to manufacturer's recommendations and as shown on drawings.

B. Unit is to be provided with a through-the-bottom service connection accessory package and must be used for electrical connections to unit. Use bulkhead connectors to make a waterproof connection.

C. Seal all duct connections to roof curb for airtight connection. Install a 90-degree flanged ductwork connection to the roof curb. Provide and install gasketing around duct flanges. Provide and install gasketing around outer edge of roof curb.

3.2 OEM STARTUP

A. Provide the services of a factory trained service technician employed full-time by the unit manufacturer to start-up the system, or manufacturer's factory authorized representative under the supervision of the factory trained service technician. STARTUP PERFORMED BY MECHANICAL CONTRACTOR IS NOT ACCEPTABLE. Upon completion of the installation, the system shall be started and commissioned by the manufacturer's factory authorized representative who will verify a completely fully functional system. The factory authorized representative will verify that accessories are installed and performing the specified functions.

B. The attached startup report shall be provided to the owner and engineer upon completion.

Start-Up and Service Data Checklist

Date: _____

Job Name: _____

Customer: _____

Address: _____

City: _____ State: _____ Zip Code: _____

Model No.: _____

Serial No.: _____

Start-Up Technician Name: _____ Signature: _____

Certification Number: _____

HVAC Contractor: _____ Phone: _____

Address: _____

Contractor's E-mail Address: _____

Electrical Contractor: _____ Phone: _____

Distributor Name: _____ Phone: _____

DESIGN APPLICATION INFORMATION

This information will be available from the specifying engineer who selected the equipment. When the system is VAV, the CFM is the airflow when the remote VAV boxes are in the fully open position. Do not proceed with the equipment start-up without the design CFM information.

Design Supply Air CFM: _____ Design Return Air CFM: _____

Design Outdoor Air CFM at Minimum Position: _____

Total External Static Pressure: _____

Supply Static Pressure: _____

Return Static Pressure: _____

Design Building Static Pressure: _____

Outside Air Dilution: Economizer Position Percentage: _____ CFM: _____

Supply Gas Pressure after Regulator without Heat Active: _____ Inches: _____

ADDITIONAL APPLICATION NOTES FROM SPECIFYING ENGINEER:

ELECTRICAL SAFETY PRECAUTIONS PRIOR TO INSPECTION

	Completed	See Notes
Voltage supplied to the unit is within the nameplate range	☐	☐
Voltage supplied to both unit power connections is within the nameplate range	☐	☐
Transformer(s) primary tap set for the voltage supplied	☐	☐
All power is disconnected from the unit for the remaining unit inspection items (except where noted)	☐	☐
All electrical connections are checked	☐	☐
Grounding wire from building service is attached to the unit grounding lug	☐	☐
Ultraviolet (UV) lamp installation is complete	☐	☐
Wet in use/ standard weather cover for convenience outlet is in place	☐	☐

GENERAL UNIT AND SYSTEM INSPECTION

	Completed	See Notes
Note any unit inspection deficiencies or damage		☐
Unit lifted properly as witnessed by a member of the start-up team	☐	☐
Verify refrigerant circuits do not have any refrigerant leaks	☐	☐
Unit has adequate clearance for operation and service	☐	☐
Split sections are assembled completely (split shipment units only)	☐	☐
Field supplied curb/field built-up unit support is installed and sealed weather-tight	☐	☐
Roof curb cap segment below unit condenser section properly assembled and sealed weather-tight	☐	☐
Return duct connection is sealed/gasketed to curb	☐	☐
Return duct connection is sealed weather-tight	☐	☐
Supply duct connection is sealed/gasketed to curb	☐	☐
Supply duct connection is sealed weather-tight	☐	☐
Return duct system is complete	☐	☐
Supply duct system is complete	☐	☐
VAV boxes are complete and operational	☐	☐
This unit is part of a twinned system	Yes ☐	No ☐
Isolation damper(s) is complete	☐	☐
Bottom/side utility openings are sealed	☐	☐
Condensate piping is complete and trap is primed	☐	☐
A field installed condensate switch was added	Yes ☐	No ☐
Door tieback brackets are installed on the unit base rail. NOTE: Door tieback brackets are used to secure the door in the open position while servicing. Brackets and chains are shipped loose in the supply fan section of the cabinet	☐	☐
Access door handle height positioned properly for application's needs (applies to all)	☐	☐
Condenser fans turn freely and set screws are tight	☐	☐

NOTES:

GENERAL UNIT AND SYSTEM INSPECTION (CONTINUED)

	Completed	See Notes
For Units with Outside Air/Economizer		
Outside air intake hoods are assembled and mist eliminators are in place	☐	☐
For Units with Exhaust Fan		
Exhaust hood is assembled and barometric dampers operate freely (if applicable)	☐	☐
Exhaust fan assembly tie-down bolts are removed	☐	☐
Exhaust fan assembly set screws are tight	☐	☐
Spare exhaust fan belts are properly stored	☐	☐
For Units with Return Fan		
Return fan assembly tie-down bolts are removed	☐	☐
Return fan assembly set screws are tight	☐	☐
Spare return fan belts for belt driven fans are properly stored	☐	☐
Supply Fan Section Inspection		
Supply fan assembly tie-down bolts are removed	☐	☐
Supply fan assembly set screws are tight	☐	☐
Humidifier Inspection		
A steam humidifier was added	Yes ☐	No ☐
Steam humidifier supply piping is completed and the control valve actuator is installed	☐	☐
Steam humidifier drain piping is completed and protected from freezing	☐	☐
Heating Section Inspection		
Gas Heat		
Type of gas supplied	Liquid Propane (LP) ☐	Natural ☐
Gas heat flue stack is installed and the combustion air openings are clear	☐	☐
Gas supply piping is completed and has a drip leg	☐	☐
High altitude natural gas conversion kit is installed (if applicable)	☐	☐
Field adjustment to local combustion conditions is completed	☐	☐
Propane gas conversion kit is installed (if applicable)	☐	☐
High altitude propane gas conversion kit is installed (if applicable)	☐	☐
Propane gas conversion kit for less than 4,000 feet is installed (if applicable)	☐	☐
Hot Water/Steam Heat		
Hydronic heat piping is completed and protected from freezing, and the control valve actuator is installed	☐	☐

NOTES:

GENERAL UNIT AND SYSTEM INSPECTION (CONTINUED)

	Completed	See Notes
Filters Inspection		
Draw-thru filter is installed (field or factory)	☐	☐
Draw-thru filters are clean	☐	☐
Draw-thru filter transducer/magnehelic gauge sensing tubing is in place	☐	☐
Final filter is installed (field or factory)	☐	☐
Final filters are clean	☐	☐
Final filter transducer/magnehelic gauge sensing tubing is in place	☐	☐
ERW outside air filters are clean	☐	☐
ERW exhaust air filters are clean	☐	☐
Controls and Sensors Inspection		
Display panel height positioned properly for application's needs	☐	☐
One or more zone CO_2 NetSensor(s) are connected on the SA bus (if applicable)	☐	☐
NetSensor with zone humidity sensing is connected to the SA bus (if applicable)	☐	☐
Supply duct static pressure sensing tubing is installed to the duct static pressure transducer HI port	☐	☐
Building static pressure sensing tubing is installed to the building static pressure transducer HI port	☐	☐
Red bird, atmospheric, and return air (as applicable with return fan) reference sensing tubing is installed to the duct and/or building static pressure transducer LO port(s)	☐	☐
Wiring is field connected for the main control board OCC-S input [24 VAC occupancy input status]	☐	☐
Wiring is field connected for the main control board SMOKE-A input [24 VAC smoke detector alarm contact]	☐	☐
SMOKE-A input is active in the factory unit configuration **NOTE:** If SMOKE-A is not active, contact Ducted Systems Product Technical Support to correct the issue.	☐	☐
Wiring is field connected for the main control board FC bus [3-wire + shield network]	☐	☐
Main control board FC bus networking is active with the Ethernet switch installed	☐	☐
Wiring is field connected for the main control board SS-S input [24 VAC safety switch status]	☐	☐
Wiring is field connected for the main control board SA bus [4-wire, shield recommended]	☐	☐
One or more zone temperature NetSensor(s) are connected on the SA bus	☐	☐
For Units with Options Board Installed in Controls Section		
Demand ventilation is active in the factory unit configuration **NOTE:** If demand ventilation is not active, contact Ducted Systems Product Technical Support to correct the issue.	☐	☐
Wiring is field connected for the options board COND-A input [24 VAC condensate alarm)	☐	☐
COND-A is active in the factory unit configuration **NOTE:** If COND-A is not active, contact Ducted Systems Product Technical Support to correct the issue.	☐	☐
Wiring is field connected for the options board DAT-SP input [0–10 VDC discharge air temperature reset)	☐	☐
Wiring is field connected for the options board DAP-SP input [0–10 VDC discharge air static pressure reset)	☐	☐

NOTES:

GENERAL UNIT AND SYSTEM INSPECTION (CONTINUED)

	Completed	See Notes
For units with Customer Terminal board installed in Controls section		
Wiring is field connected for the customer terminal board G, Y1, Y2, W1, and W2 inputs [24 VAC thermostat commands]	☐	☐
Wiring is field connected for the customer terminal board ADR-S input [24 VAC load shed command]	☐	☐
Wiring is field connected for the customer terminal board Safety1-S input [24 VAC smoke/purge command]	☐	☐
Wiring is field connected for the customer terminal board Safety2-S input [24 VAC smoke/purge command]	☐	☐
Wiring is field connected for the customer terminal board Safety3-S input [24 VAC smoke/purge command]	☐	☐
Wiring is field connected for the customer terminal board HUMIDISTAT input [24 VAC humidification command]	☐	☐
Wiring is field connected for the customer terminal board HUMIDISTAT input [24 VAC dehumidification command]	☐	☐
Ensure humidistat input can be used for both humidification and dehumidification **NOTE:** If the humidistat input does not operate for both applications, contact Ducted Systems Product Technical Support to correct the issue.	☐	☐
Wiring is field connected for the isolation damper(s) to the customer terminal board ISOD1-S and ISOD2-S inputs [24 VAC damper status] and ISOD-C output [dry contact]	☐	☐
Wiring is field connected for the customer terminal board EAD-REF input [0–10 VDC exhaust air damper positioning command]	☐	☐
Wiring is field connected for the customer terminal board EF-REF input [0–10 VDC exhaust fan speed positioning command]	☐	☐
Wiring is field connected for the customer terminal board HTGV-O output [0–10 VDC hydronic heating actuator positioning command]	☐	☐
Wiring is field connected for the customer terminal board HUM-O output [0–10 VDC steam humidifier actuator positioning command] and/or HUM-C output [dry contact steam humidifier enable command]	☐	☐
Wiring is field connected for the customer terminal board ALARM1-C output [dry contact remote alarming command]	☐	☐
Wiring is field connected for the customer terminal board VAVHTG-C output [dry contact VAV box interlock command]	☐	☐

NOTES:

PRE-OPERATION

Record the following values prior to start-up of the unit.	
Specified/required demand ventilation (indoor air quality (IAQ)) maximum outside airflow stated	CFM
Specified/required demand ventilation (IAQ) maximum outside airflow CFM	CFM
Specified/required demand ventilation (IAQ) maximum outside airflow percentage	%
Indoor dry bulb temperature	°F
Indoor wet bulb temperature	°F
Outside dry bulb temperature	°F

Power the unit for the remaining pre-operation checks in this section.		
⚠ WARNING	Lethal voltages exist within the control panels. Before performing the following checks, open and lock-out-tag out all disconnect switches.	
Voltage measured at the unit power supply connection: L1 to L2		Volts
Voltage measured at the unit power supply connection: L1 to L3		Volts
Voltage measured at the unit power supply connection: L2 to L3		Volts
(Dual point power only) Voltage measured at the second power supply connection: L1 to L2		Volts
(Dual point power only) Voltage measured at the second power supply connection: L1 to L3		Volts
(Dual point power only) Voltage measured at the second power supply connection: L2 to L3		Volts
Confirm the unit electrical grounding is intact; "lighting circuit voltage" is read from each power supply leg to the cabinet ground	Yes ☐	No ☐
⚠ WARNING	When the unit electrical grounding cannot be confirmed intact, an unsafe condition exists. DO NOT continue with unit start-up until electrical grounding is corrected.	
Voltage measured at the 1T control transformer secondary		Volts
Voltage measured at the 2T control transformer secondary		Volts
Voltage measured at the convenience outlet [3T control transformer secondary]		Volts
Voltage measured at the 3T control transformer secondary		Volts
Voltage measured at the 3T control transformer secondary		Volts
Voltage measured at the 3T control transformer secondary		Volts

NOTES:

AIRFLOW

	Completed	See Notes
Supply Fan Section		
Throughout this section, ensure all VAV boxes are set to their maximum cooling airflow and the duct pressure setpoint is set for the job site requirements	☐	☐
Throughout this section, ensure an occupied fan command is created so the supply fan operates with the fan % command at 100%	☐	☐
Supply fan operates with correct rotation (always shown)	☐	☐
Supply fan current draw does NOT exceed [service factor amps noted on the motor nameplate]	☐	☐
Initial supply fan airflow measurement **NOTE:** Increase/decrease supply fan variable frequency drive (VFD) maximum frequency as needed to meet the specified/required indoor airflow.		CFM
Supply fan current draw (at VFD maximum frequency after adjustment, measured at VFD L1)		Amps
Supply fan current draw (at VFD maximum frequency after adjustment, measured at VFD L2)		Amps
Supply fan current draw (at VFD maximum frequency after adjustment, measured at VFD L3)		Amps
Second supply fan [60-80 ton units] current draw (at VFD maximum frequency after adjustment, measured at VFD L1)		Amps
Second supply fan [60-80 ton units] current draw (at VFD maximum frequency after adjustment, measured at VFD L2)		Amps
Second supply fan [60-80 ton units] current draw (at VFD maximum frequency after adjustment, measured at VFD L3)		Amps
Redundant VFD [25-50 ton units] - Supply fan current draw (at VFD maximum frequency after adjustment, measured at VFD L1)		Amps
Redundant VFD [25-50 ton units] - Supply fan current draw (at VFD maximum frequency after adjustment, measured at VFD L2)		Amps
Redundant VFD [25-50 ton units] - Supply fan current draw (at VFD maximum frequency after adjustment, measured at VFD L3)		Amps

Return Fan Section		
Return fan control sequence is selected for the unit	☐	☐
Return fan operates with the correct rotation (always shown)	☐	☐
Return fan current draw does NOT exceed [service factor amps noted on the motor nameplate]	☐	☐
Return fan operates with the return fan VFD % command at 100%	☐	☐
Return fan pressure low and high setpoints are set for job site requirements	☐	☐
Return fan operates with the return fan VFD % command at 100% using the pressure setpoint	☐	☐
Return fan current draw (at VFD maximum frequency after adjustment, measured at VFD L1)		Amps
Return fan current draw (at VFD maximum frequency after adjustment, measured at VFD L2)		Amps
Return fan current draw (at VFD maximum frequency after adjustment, measured at VFD L3)		Amps
Redundant VFD [60-80 ton units] - Supply fan current draw (at VFD maximum frequency after adjustment, measured at VFD L1)		Amps
Redundant VFD [60-80 ton units] - Supply fan current draw (at VFD maximum frequency after adjustment, measured at VFD L2)		Amps
Redundant VFD [60-80 ton units] - Supply fan current draw (at VFD maximum frequency after adjustment, measured at VFD L3)		Amps

VENTILATION

	Completed	See Notes
If an exhaust fan is not installed on the unit, please move to the next section.		
Throughout this section, continue to operate the supply fan with the fan % command at 100%	☐	☐
Throughout this section, continue to operate the exhaust fan with the fan % command at 100%	☐	☐
Throughout this section, continue to operate the return fan with the fan % command at 100%	☐	☐
Throughout this section, continue to operate the ERW with the face and bypass dampers closed	☐	☐
Economizer return and outside air dampers operate through full stroke without binding	☐	☐
Ensure exhaust fan operates	☐	☐
Exhaust fan operates with correct rotation		
ERW operates with the face and bypass dampers closed **NOTE:** Increase/decrease exhaust fan VFD maximum frequency for the exhaust airflow needs of the application as needed.	☐	☐
Exhaust fan current draw (at VFD maximum frequency after adjustment, measured at L1)		Amps
Exhaust fan current draw (at VFD maximum frequency after adjustment, measured at L2)		Amps
Exhaust fan current draw (at VFD maximum frequency after adjustment, measured at L3)		Amps

NOTES:

HEATING

	Completed	See Notes
If a unit is cooling only, please move to the next section.		
Gas Heat	Yes ☐	No ☐
Throughout this section, ensure all VAV boxes are set to their maximum cooling airflow and the duct pressure setpoint is set for the job site requirements	☐	☐
Measure static/unit off inlet gas pressure		inches WC
⚠ **WARNING** Inlet gas pressure cannot exceed 14 inches water column (WC). Do not continue with unit start-up until unit gas inlet pressure is corrected.		
Measure gas valve 1 low fire manifold pressure		inches WC
Measure gas valve 1 high fire manifold pressure		inches WC
Measure gas valve 1 manifold pressure at lowest firing rate (modulating heat)		inches WC
Measure gas valve 1 manifold pressure at highest firing rate (modulating heat)		inches WC
Measure gas valve 2 low fire manifold pressure		inches WC
Measure gas valve 2 high fire manifold pressure		inches WC
Measure gas valve 3 low fire manifold pressure		inches WC
Measure gas valve 3 high fire manifold pressure		inches WC
Measure gas valve 4 low fire manifold pressure		inches WC
Measure gas valve 4 high fire manifold pressure		inches WC
Measure gas valve 5 low fire manifold pressure		inches WC
Measure gas valve 5 high fire manifold pressure		inches WC
Measure gas valve 6 low fire manifold pressure		inches WC
Measure gas valve 6 high fire manifold pressure		inches WC
Operate heat section at full capacity	☐	☐

		Completed	See Notes
Measure inlet gas pressure with heat section operating at fully capacity			inches WC
Gas heat input capacity to use for sensible heat calculation	Unit nameplate measurement		BTU
	Clocked meter measurement (7-digit number)		BTU

Electric Heat	Yes ☐	No ☐
Total/overall current draw of electric heat section L1		Amps
Total/overall current draw of electric heat section L2		Amps
Total/overall current draw of electric heat section L3		Amps

Hot Water/Steam Heat	Yes ☐	No ☐
Hot water heat control valve actuator operates at full stoke	☐	☐
Steam humidifier control valve actuator operates at full stoke	☐	☐

NOTES:

COOLING

	Completed	See Notes
Throughout this section, ensure all VAV boxes are set to their maximum cooling airflow and the duct pressure setpoint is set for the job site requirements	☐	☐
Operate cooling at full capacity	☐	☐
All compressors operate with correct rotation	☐	☐
⚠ **CAUTION** Do not continue with unit start-up until compressor rotation is corrected.		
All condenser fans operate with correct rotation	☐	☐
⚠ **CAUTION** Do not continue with unit start-up until condenser fan rotation is corrected.		
Allow time for refrigerant circuits to stabilize	☐	☐
Refrigerant circuit 1 suction pressure		psi
Refrigerant circuit 1 suction line temperature		°F
Refrigerant circuit 1 liquid/discharge pressure		psi
Refrigerant circuit 1 liquid line temperature		°F
Refrigerant circuit 1 discharge temperature		°F
Measurements for refrigerant circuit 1 are affected by the low ambient outside fan cycling/speed control	Yes ☐	No ☐
Refrigerant circuit 2 suction pressure		psi
Refrigerant circuit 2 suction line temperature		°F
Refrigerant circuit 2 liquid/discharge pressure		psi
Refrigerant circuit 2 liquid line temperature		°F
Refrigerant circuit 2 discharge temperature		°F
Measurements for refrigerant circuit 1 are affected by the low ambient outside fan cycling/speed control	Yes ☐	No ☐
Compressor 1A current draw L1		Amps
Compressor 1A current draw L2		Amps
Compressor 1A current draw L3		Amps
Compressor 1B current draw L1		Amps
Compressor 1B current draw L2		Amps
Compressor 1B current draw L3		Amps

	Completed	See Notes
Compressor 2A current draw L1	Amps	
Compressor 2A current draw L2	Amps	
Compressor 2A current draw L3	Amps	
Compressor 2B current draw L1	Amps	
Compressor 2B current draw L2	Amps	
Compressor 2B current draw L3	Amps	
Condenser fan 1A current draw L1	Amps	
Condenser fan 1A current draw L2	Amps	
Condenser fan 1A current draw L3	Amps	
Condenser fan 1B current draw L1	Amps	
Condenser fan 1B current draw L2	Amps	
Condenser fan 1B current draw L3	Amps	
Condenser fan 1C current draw L1	Amps	
Condenser fan 1C current draw L2	Amps	
Condenser fan 1C current draw L3	Amps	
Condenser fan 2A current draw L1	Amps	
Condenser fan 2A current draw L2	Amps	
Condenser fan 2A current draw L3	Amps	
Condenser fan 2B current draw L1	Amps	
Condenser fan 2B current draw L2	Amps	
Condenser fan 2B current draw L3	Amps	
Condenser fan 2C current draw L1	Amps	
Condenser fan 2C current draw L2	Amps	
Condenser fan 2C current draw L3	Amps	
Discharge air temperature with cooling is operating at full capacity	☐	☐
Dehumidification mode (hot gas reheat (HGRH)) operation is tested	☐	☐

NOTES:

CONTROL PARAMETERS

	Completed	See Notes
Set controller time and date	☐	☐
Set [unit] Name and DevName (Device Name) as needed for the application through the MAP gateway or local display	☐	☐
Touchscreen display setup completed – if applicable	☐	☐
Set the unit occupancy status according to one of the following options:		
Set OccMode (Occupancy Mode) to External for the unit occupancy response to the main control board OCC-S input [24 VAC occupancy command]	☐	☐
Set OccMode to External for the unit occupancy response to the communicated command	☐	☐
Set OccMode to Schedule and enter the application's occupied and unoccupied start times in the *Schedule* menu	☐	☐
Set Tstat-Only (Thermostat Only Control Enabled) to YES for unit response to the customer terminal board thermostat inputs	☐	☐
Set Tstat-Only to NO for unit response to sensor inputs	☐	☐
Set the SZVAVEn (SZVAV Enabled) to OFF to configure the unit for a VAV zoned duct system	☐	☐
Set the SZVAVEn to ON to configure the unit for an unzoned duct system	☐	☐
Set the temperature settings for heating/cooling mode auto changeover as needed for the application	☐	☐

CONTROL PARAMETERS (CONTINUED)

	Completed	See Notes
Set ClgDATUp-SP and ClgDATLo-SP (Cooling Discharge Air Temperature Upper and Lower Setpoints) as needed for the application	☐	☐
Set HtgDATUp-SP and HtgDATLo-SP (Heating Discharge Air Temperature Upper and Lower Setpoints) as needed for the application	☐	☐
Set the DAT-Spconfig (Discharge Air Temperature Setpoint Configuration) to External for unit response to the option board DAT-SP input [0–10 VDC discharge air temp reset]	☐	☐
Set the parameters for the discharge air temperature reset function for the application needs	☐	☐
Set HumidistatMode to Humidification for unit response to the customer terminal board humidistat input [24 VAC humidification command]	☐	☐
Set HumidistatMode to Dehumidification for unit response to the customer terminal board humidistat input [24 VAC dehumidification command]	☐	☐
Set SafetySetup1 for unit response to the customer terminal board SMOKE1-S input [24 VAC smoke/purge command]	☐	☐
Set SafetySetup2 for unit response to the customer terminal board SMOKE2-S input [24 VAC smoke/purge command]	☐	☐
Set SafetySetup3 for unit response to the customer terminal board SMOKE3-S input [24 VAC smoke/purge command]	☐	☐
Set parameters for the *Commission* > *FaultOut1* menu to configure the customer terminal board ALARM1-C output [dry contact remote alarming command]	☐	☐
Set parameters for the *Commission* > *FaultOut1* menu to configure the customer terminal board ALARM2-C output [dry contact remote alarming command]	☐	☐
Set parameters in the *Details* > *T24LoadShed* menu for the unit response to the customer terminal board ADR-S input [24 VAC load shed command]	☐	☐
Set the HydReverse (Hydronic Heat Valve Reverse Acting) for the hydronic heat control valve configuration	☐	☐
Set the Group ID and Device# as needed for the application	☐	☐
Set the ExDmprCtrlSrc (Exhaust Damper Control Source) to Hardware for unit response to the customer terminal board EAD-REF input [0–10 VDC exhaust damper positioning command]	☐	☐
Set the ExFanCtrlSrc (Exhaust Fan Control Source) to Hardware for unit response to the customer terminal board EF-REF input [0–10 VDC exhaust fan positioning command]	☐	☐
Set OADmprCtrlSrc (Outdoor Air Damper Control Source) to Hardware for unit response to the customer terminal board OAD-REF input [0–10 VDC exhaust damper positioning command]	☐	☐
Set the parameters for the economizer free cooling functions as needed for the application	☐	☐
Set the parameters for the demand ventilation functions as needed for the application	☐	☐
Set the Bldg-Sp (Building Pressure Setpoint) as needed for the application	☐	☐
Set the parameters for the dehumidification mode (HGRH) in the *Details* > *Humidity* menu as needed for the application	☐	☐
Set the parameters for the humidification mode (steam humidifier) in the *Details* > *Humidity* menu as needed for the application	☐	☐
Set the parameters for network communication in the *Controller* > *Network* menu as needed for the application	☐	☐
Insert a compatible flash drive into the main control board USB port and perform a backup (*Update* > *Backup* menu), and save the "BKP_" file	☐	☐

NOTES:

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END OF SECTION