Climate Zone:

**▲** COM*check* Software Version COM*checkWeb* Mechanical Compliance Certificate

**Project Information** Energy Code: Project Title: 23-168 FRANKLIN CO ACF Winchester (Franklin), Tennessee

**New Construction** Permit Date: 12/11/2023 Construction Site: GEORGE FRALEY PARKWAY WINCHESTER, Tennessee 37398 FRANKLIN CO. ANIMAL CONTROL FACILITY

JACOB FLOWERS GENESIS ENGINEERING GROUP, 134 4th Ave N FRANKLING, Tennessee 37064 (615) 628-7270 jflowers@geneng.net

Quantity System Type & Description

Mechanical Compliance Statement

Project Title: 23-168 FRANKLIN CO ACF

Mechanical Rough-In Inspection Complies?

to minimum per IMC Chapter 4.

Data filename:

mandatory requirements listed in the Inspection Checklist.

Proposed Part Load Efficiency = 18.20 IEER, Required Part Load Efficiency = 11.40 IEER Fan System: DOAS-1 | ANIMALS -- Compliance (Brake HP and fan efficiency method): Passes

Compliance Statement: The proposed mechanical design represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed mechanical systems have been designed to meet the 2018 IECC requirements in COMcheck Version COMcheckWeb and to comply with any applicable

efficiency grade, 0.0 total fan efficiency, 0.0 design fan efficiency

Fans: FAN 4 Supply, Constant Volume, 4885 CFM, 7.5 motor nameplate hp, 4.2 design brake hp (4.2 max. BHP), 80.0 fan

Credits: 1.0 Required 1.0 Proposed Dedicated Outdoor Air System, 1.0 credit Mechanical Systems List Quantity System Type & Description

1 EDH-1 (Single Zone w/ PerimeterSystem):

Additional Efficiency Package(s)

1 AHU & HP - 1 (Single Zone w/ PerimeterSystem): Split System Heat Pump Heating Mode: Capacity = 17 kBtu/h, Proposed Efficiency = 8.50 HSPF, Required Efficiency = 8.20 HSPF Cooling Mode: Capacity = 15 kBtu/h,
Proposed Efficiency = 14.50 SEER, Required Efficiency = 14.00 SEER
Proposed Part Load Efficiency = 0.00 , Required Part Load Efficiency = 0.00 Fan System: AHU-1 | OFFICE -- Compliance (Motor nameplate HP and fan efficiency method) : Passes

FAN 1 Supply, Constant Volume, 530 CFM, 0.3 motor nameplate hp, 0.0 fan efficiency grade, 0.0 total fan efficiency, 0.0 design fan efficiency , fan exception: Single fan <= 5HP 1 EH-1 (Unknown w/ PerimeterSystem): Heating: 1 each - Unit Heater, Electric, Capacity = 7 kBtu/h

No minimum efficiency requirement applies Fan System: EH-1 | UTILITY -- Compliance (Motor nameplate HP and fan efficiency method) : Passes Fans: FAN 2 Supply, Constant Volume, 300 CFM, 0.1 motor nameplate hp, 0.0 fan efficiency grade, 0.0 total fan efficiency, 0.0 design fan efficiency , fan exception: Single fan <= 5HP

Heating: 1 each - Duct Furnace, Electric, Capacity = 11 kBtu/h No minimum efficiency requirement applies
Fan System: EDH-1 | GARAGE -- Compliance (Motor nameplate HP and fan efficiency method) : Passes FAN 3 Supply, Constant Volume, 265 CFM, 0.1 motor nameplate hp, 0.0 fan efficiency grade, 0.0 total fan efficiency, 0.0 design fan efficiency , fan exception: Single fan <= 5HP

1 DOAS-1 (Multiple-Zone): Heating: 1 each - Central Furnace, Gas, Capacity = 204 kBtu/h
Proposed Efficiency = 81.00% Et, Required Efficiency: 80.00 % Et or 80% AFUE
Cooling: 1 each - Single Package DX Unit, Capacity = 359 kBtu/h, Air-Cooled Condenser, Air Economizer
Proposed Efficiency = 14.50 EER, Required Efficiency = 9.80 EER Project Title: 23-168 FRANKLIN CO ACF Report date: 12/08/23 Data filename: Page 1 of 12

Plumbing Rough-In Inspection Complies? C404.5, C404.5.2 Heated water supply piping conforms to pipe length and volume requirements. Refer to section details.

 $[-7]^3$  heater and storage tank have controls  $\square_{\mathsf{Does}}$  Not heater and storage Lain have contained that limit operation from startup to <= 5 minutes after end of heating 
Not Observable 
Not Applicable upon receiving a signal from the □Not Observable action of a user of a fixture or appliance and limits the temperature of the water entering the cold-water

 1 High Impact (Tier 1)
 2 Medium Impact (Tier 2)
 3 Low Impact (Tier 3)

□Not Applicable

C404.6.3 Pumps that circulate water between a Complies Requirement will be met.

piping to 104°F. Additional Comments/Assumptions:

Project Title: 23-168 FRANKLIN CO ACF

vestibule with heating setpoint <= 60F and cooling setpoint >= 80F.

condensers that comply with Sections C403.5.1 and refrigeration compressor systems that comply with C403.5.2..

Additional Comments/Assumptions:

Project Title: 23-168 FRANKLIN CO ACF

Data filename:

 $\square$ Does Not

C403.5, C403.5.1, C403.5.2 [ME123]<sup>3</sup> Refrigerated display cases, walk-in coolers or walk-in freezers served by remote compressors and remote condensers not located in a condenser should be condensers as the base for powered.

have means for air balancing.

condensing unit, have fan-powered Not Applicable

□Not Observable

□Not Observable

□Not Applicable

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

C403.3.3 Hot gas bypass limited to: <=240 [ME35]<sup>1</sup> kBtu/h - 50% >240 kBtu/h - 25%

Data filename:

C402.2.6 Thermally ineffective panel surfaces of ☐Complies sensible heating panels have ☐Does Not insulation >= R-3.5. ☐Not Observable □Not Observable □Not Applicable C403.11.3 HVAC piping insulation insulated in accordance with Table C403.11.3. Complies Does Not □Not Observable protected from damage and is ☐Not Applicable provided with shielding from solar C403.8.1 HVAC fan systems at design [ME65]<sup>3</sup> conditions do not exceed allowable Does Not fan system motor nameplate hp or fan System bho system bhp. □Not Applicable C403.8.2 HVAC fan motors not oversized beyond allowable limits.  $\square$ Complies Requirement will be met. □Not Applicable C403.8.4 Motors for fans that are not less than 1/12 hp and less than 1 hp are electronically commutated motors or have a minimum motor efficiency of 70 percent. These motors have the means to adjust motor speed. | C403.8.5 | Each DX cooling system > 65 kBtu and chiller water/evaporative cooling system with fans > 1/4 hp are designed to vary the indoor fan airflow as a function of load and comply with detailed requirements of this section. 403.12.1 Systems that heat outside the building Complies **Exception:** Requirement does not apply. [ME71]<sup>2</sup> envelope are radiant heat systems controlled by an occupancy sensing device or timer switch. □ Not Observable □ Not Applicable [ME112]<sup>3</sup> installed where applicable. □Does Not systems 5000 cfm or smaller. □Not Observable Requirement will be met. units having economizers. □Not Observable □Not Applicable C403.2.2 Natural or mechanical ventilation is Complies Requirement will be met. [ME59]<sup>1</sup> provided in accordance with International Mechanical Code Chapter 4. Mechanical ventilation has capability to reduce outdoor air supply to minimum per IMC Chapter 4.

Requirement will be met.

Report date: 12/08/23 Page 2 of 12

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3) Project Title: 23-168 FRANKLIN CO ACF Report date: 12/08/23 Page 6 of 12 Data filename:

Mechanical Rough-In Inspection Complies? Rough-In Electrical Inspection Complies? Comments/Assumptions C403.6.7 Parallel-flow fan-powered VAV air C405.6 | Low-voltage dry-type distribution electric transformers meet the minimum efficiency requirements of Table C405.6. Complies **Exception:** Requirement does not apply. **Exception:** Requirement does not apply. | ME136|3 | Terminals have automatic controls configured to 1) turn off the terminal fan except when space heating is required or where required for ventilation, 2) turn on the terminal fan Table C405.6. □Not Applicable C405.7 Electric motors meet the minimum efficiency requirements of Tables C405.7(1) through C405.7(4). as the first stage of heating before the heating coil is activated, and 3) during heating for warmup or setback C405.7(1) through C405.7(4).

Efficiency verified through certification under an approved certification program or the equipment efficiency temperature control, either operate the terminal fan and heating coil without primary air or, reverse the ratings shall be provided by motor manufacturer (where certification terminal damper logic and provide heating from the central air handler programs do not exist). by primary air. C405.8.2, Escalators and moving walks comply Complies Exception: Requirement does not apply. C403.6.8 Systems with DDC of individual zones [ME137]<sup>3</sup> Systems with DDC of individual zones pepting to the central control panel Does Not | Exception: Requirement does not apply. C405.8.2. with ASME A17.1/CSA B44 and have automatic controls configured to [EL28]<sup>2</sup> reduce speed to the minimum | Not Observa configured to reset the static pressure setpoint based on zone requiring the most pressure. The DDC is capable of □Not Observable permitted speed in accordance with ASME A17.1/CSA B44 or applicable local code when not conveying indicating the need for static pressure. C405.9 Total voltage drop across the [EL29]<sup>2</sup> combination of feeders and branch Does Not Exception: Requirement does not apply. C403.6.9 Static pressure sensors used to Complies control VAV fans located such that the Does Not circuits <= 5%. □Not Observable controller setpoint is <= 1.2 inches w.c.. Where this results in one or more sensors being located downstream of □Not Applicable □Not Applicable **Additional Comments/Assumptions:** major duct splits, not less than one sensor located on each major branch 03.6.6 Multiple zone VAV systems with DDC Complies Exception: Requirement does not apply. [ME135]<sup>3</sup> of individual zone boxes have static Does Not □Not Observable See the Mechanical Systems list for values. pressure setpoint reset controls. C403.4.1. Heating for vestibules and air curtains Complies Exception: Requirement does not apply. 4 with integral heating include [ME63]<sup>2</sup> automatic controls that shut off the heating system when outdoor air □Not Observable □Not Applicable temperatures > 45F. Vestibule
heating and cooling systems
controlled by a thermostat in the

Report date: 12/08/23

Page 9 of 12

Report date: 12/08/23

Page 5 of 12

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3) Project Title: 23-168 FRANKLIN CO ACF Report date: 12/08/23 Data filename: Page 10 of 12 **▲ COM***check* Software Version COMcheckWeb **Inspection Checklist** Energy Code: 2018 IECC

Requirements: 100.0% were addressed directly in the COMcheck software Text in the "Comments/Assumptions" column is provided by the user in the COMcheck Requirements screen. For each requirement, the user certifies that a code requirement will be met and how that is documented, or that an exception is being claimed. Where compliance is itemized in a separate table, a reference to that table is provided.

Plan Review Complies? Comments/Assumptions C103.2 Plans, specifications, and/or ☐Complies ☐PR2]¹ calculations provide all information with which compliance can be ☐Not Observa Requirement will be met. □Not Observable determined for the mechanical systems and equipment and document where exceptions to the □Not Applicable standard are claimed. Load calculations per acceptable engineering standards and Plans, specifications, and/or ☐Complies calculations provide all information ☐Does Not with which compliance can be determined for the additional energy efficiency package options. Additional Comments/Assumptions:

1 | High Impact (Tier 1) | 2 | Medium Impact (Tier 2) | 3 | Low Impact (Tier 3)

Project Title: 23-168 FRANKLIN CO ACF Report date: 12/08/23 Data filename: Page 3 of 12

# Mechanical Rough-In Inspection Complies? C403.7.1 Demand control ventilation provided Complies [ME59]¹ Demand control vertilidation provided for spaces >500 ft2 and >25 Depole/1000 ft2 occupant density and people/1000 ft2 occupant density and ☐Not Observable served by systems with air side economizer, auto modulating outside air damper control, or design airflow C403.7.3 Units that provide ventilation air to ME140] Complies Requirement will be met. Does Not combination with zone heating and cooling systems do not use heating or heat recovery to warm supply air to a temperature greater than 60°F when representative building loads or outdoor air temperatures indicate that the majority of zones require cooling. C403.7.6 [ME141]<sup>3</sup> HVAC systems serving guestrooms in Group R-1 buildings with > 50 guestrooms: Each guestroom is provided with controls that C403.7.6 | Complies | Exception: Requirement does not apply. | Complies | Does Not | Complies | Com provided with controls that automatically manage temperature setpoint and ventilation (see sections C403.7.6.1 and C403.7.6.2). C403.7.4 Exhaust air energy recovery on systems meeting Table C403.7.4(1) Does Not and C403.7.4(2). □Not Applicable C403.7.5 Kitchen exhaust systems comply with [ME116]³ replacement air and conditioned supply air limitations, and satisfy hood rating requirements and maximum exhaust rate criteria. □ Complies □ Does Not □ Not Observable □ Not Applicable Exception: Requirement does not apply. C403.11.1 HVAC ducts and plenums insulated in accordance with C403.11.1 and C403.11.2 constructed in accordance with [ME60]<sup>2</sup> C403.11.2, verification may need to occur during Foundation Inspection. C403.5, Air economizers provided where C403.5.1, required, meet the requirements for Does Not C403.5.2 design capacity, control signal, ventilation controls, high-limit shut-off, integrated economizer control, and provide a means to relieve excess outside air during operation. C403.5.3. Air economizers automatically reduce outdoor air intake to the design minimum outdoor air quantity when outdoor air intake will not reduce cooling energy usage. See Table C403.5.3.3 for applicable device types and climate zones.

and climate zones. C403.5.3. System capable of relieving excess outdoor air during air economizer operation to prevent overpressurizing the building. The relief air outlet Observable the building. The relief air outlet | Incated to avoid recirculation into the | Incated to avoid recirculation into the | 1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3) Project Title: 23-168 FRANKLIN CO ACF Report date: 12/08/23 Data filename: Page 7 of 12

Final Inspection C303.3, Furnished O&M manuals for HVAC systems within 90 days of system ☐Complies Requirement will be met. acceptance. □Not Observable □Not Applicable C403.2.2 | HVAC systems and equipment capacity does not exceed calculated  $\square$ Does Not Requirement will be met. □Not Applicable C403.2.4. Heating and cooling to each zone is Complies [FI47]<sup>3</sup> Minimum one humidity control device per installed humidification/dehumidification ☐Complies Requirement will be met. [FI42]<sup>3</sup> from coming on when not needed. □Not Observable □Not Applicable deadband. □Does Not □Not Observable □Not Applicable overlap restrictions. □Does Not □Not Applicable C403.2.4. Each zone equipped with setback controls using automatic time clock or Does Not [FI39]<sup>3</sup> programmable control system. □Not Observable □Not Applicable C403.2.4. Automatic Controls: Setback to 55°F Complies (heat) and 85°F (cool); 7-day clock, 2- Does Not C403.2.4. hour occupant override, 10-hour □Not Observable backup □Not Applicable □Does Not □Not Applicable C406.6 Dedicate outdoor air system efficiency Complies [FI52]¹ package: Buildings with hydronic Does Not and/or multiple-zone HVAC systems are equipped with an independent  $\square$ Not Applicable ventilation system designed to provide >= 100-percent outdoor air to each individual occupied space, as specified by the IMC. The ventilation system is capable of total energy recovery and includes HVAC system controls that manage temperature resets >= 25 percent of delta design supply-air / room-air temp. Reference

systems/equipment. 1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3) Project Title: 23-168 FRANKLIN CO ACF Report date: 12/08/23 Data filename: Page 11 of 12

section C406.6 for qualifying

Footing / Foundation Inspection Complies? Showhite intelling system and neeze protection systems have sensors and C403.12.3 controls configured to limit service for pavement temperature and outdoor temperature. future connection to controls Additional Comments/Assumptions:

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3) Project Title: 23-168 FRANKLIN CO ACF Report date: 12/08/23 Data filename: Page 4 of 12

Section # & Req.ID	Mechanical Rough-In Inspection	Complies?	Comments/Assumptions
C403.5.3. 5 [ME126] <sup>1</sup>	Return, exhaust/relief and outdoor air dampers used in economizers have motorized dampers that automatically shut when not in use and meet maximum leakage rates. Reference section C403.7.7 for details.	□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.
C403.4.1. 1 [ME75] <sup>2</sup>	Hydronic and multizone HVAC system controls areVAV fans driven by mechanical or electrical variable speed drive per Table C403.4.1.1.	□Complies □Does Not □Not Observable □Not Applicable	Exception: Requirement does not apply.
C403.4.1. 2 [ME67] <sup>2</sup>	VAV fans have static pressure sensors located so controller setpoint <=1.2 w.c	□Complies □Does Not □Not Observable □Not Applicable	Exception: Requirement does not apply.
C403.4.1. 3 [ME24] <sup>2</sup>	Reset static pressure setpoint for DDC controlled VAV boxes reporting to central controller based on the zones requiring the most pressure.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Exception: Requirement does not apply.
C403.4.3. 3.2 [ME121] <sup>3</sup>	Closed-circuit cooling tower within heat pump loop have either automatic bypass valve or lower leakage positive closure dampers. Open-circuit tower within heat pump loop have automatic valve to bypass all heat pump water flow around the tower. Open- or closed-circuit cooling towers used in conjunction with a separate heat exchanger have heat loss by shutting down the circulation pump on the cooling tower loop. Open- or closed circuit cooling towers have a separate heat exchanger to isolate the cooling tower from the heat pump loop, and heat loss is controlled by shutting down the circulation pump on the cooling tower loop.	□Not Observable	Exception: Requirement does not apply.
C403.6.1 [ME130] <sup>3</sup>	Supply air systems serving multiple zones have VAV systems with controls configured to reduce the volume of air that is reheated, recooled or mixed in each zone. See section for details.	□Complies □Does Not □Not Observable □Not Applicable	Exception: Requirement does not apply.
C403.6.2 [ME131] <sup>3</sup>	Single-duct VAV systems use terminal devices configured to reduce the supply of primary supply air before reheating or recooling takes place.	□Complies □Does Not □Not Observable □Not Applicable	Exception: Requirement does not apply.
C403.6.3 [ME132] <sup>3</sup>	Systems that have 1 warm air duct and 1 cool air duct use terminal devices configured to reduce the flow from one duct to a minimum before mixing of air from the other duct takes place.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Exception: Requirement does not apply.
C403.6.4 [ME133] <sup>3</sup>		□Complies □Does Not □Not Observable □Not Applicable	Exception: Requirement does not apply.
C403.6.5 [ME134] <sup>3</sup>	Multiple zone HVAC systems have supply air temperature reset controls.	□Complies □Does Not □Not Observable □Not Applicable	Exception: Requirement does not apply.
	1 High Impact (Tier 1)	2 Medium Impa	act (Tier 2) 3 Low Impact (Tier 3)

Data filename:

Section # & Req.ID	Final Inspection	Complies?	Comments/Assumptions
C408.1.1 [FI57] <sup>1</sup>	Building operations and maintenance documents will be provided to the owner. Documents will cover manufacturers' information, specifications, programming procedures and means of illustrating to owner how building, equipment and systems are intended to be installed, maintained, and operated.	□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.
C408.2.1 [FI28] <sup>1</sup>	Commissioning plan developed by registered design professional or approved agency.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C408.2.3. 1 [FI31] <sup>1</sup>	HVAC equipment has been tested to ensure proper operation.	□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.
C408.2.3. 2 [FI10] <sup>1</sup>	HVAC control systems have been tested to ensure proper operation, calibration and adjustment of controls.	□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.
C408.2.3. 3 [Fl32] <sup>1</sup>	Economizers have been tested to ensure proper operation.	□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.
C408.2.4 [FI29] <sup>1</sup>	Preliminary commissioning report completed and certified by registered design professional or approved agency.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C408.2.5. 1 [FI7] <sup>3</sup>	Furnished HVAC as-built drawings submitted within 90 days of system acceptance.	□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.
C408.2.5. 3 [FI43] <sup>1</sup>	An air and/or hydronic system balancing report is provided for HVAC systems.	□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.
C408.2.5. 4 [FI30] <sup>1</sup>	Final commissioning report due to building owner within 90 days of receipt of certificate of occupancy.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.

Page 8 of 12

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3) Project Title: 23-168 FRANKLIN CO ACF Report date: 12/08/23 Data filename: Page 12 of 12

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