

ENGINEERINGGROUP, LTD.
625 EAST NORTH BROADWAY STREET
COLUMBUS, OHIO 43214
614.225-1580
EMENGINEERINGGROUP.COM

PROJECT NUMBER: 210111
DESIGN BY: HM

**PROPOSED RENOVATION TO
JOSEPH AIRPORT HYUNDAI**
1220 W NATIONAL ROAD, VANDALIA, OHIO 45377

DRAWING SET

| | | |
|---|------------|--------------|
| ■ | 08/13/2021 | HYUNDAI 75% |
| ■ | 08/23/2021 | CHECK |
| ■ | 07/29/2022 | BID |
| ■ | 09/20/2021 | PERMIT |
| □ | | CONSTRUCTION |

REVISIONS

| | | |
|---|------------|--|
| ▲ | 10/27/2021 | |
| ▲ | 07/29/2022 | |
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SCALE



PROJECT NUMBER: 021076
SHEET TITLE: HVAC PLAN
SHEET NUMBER

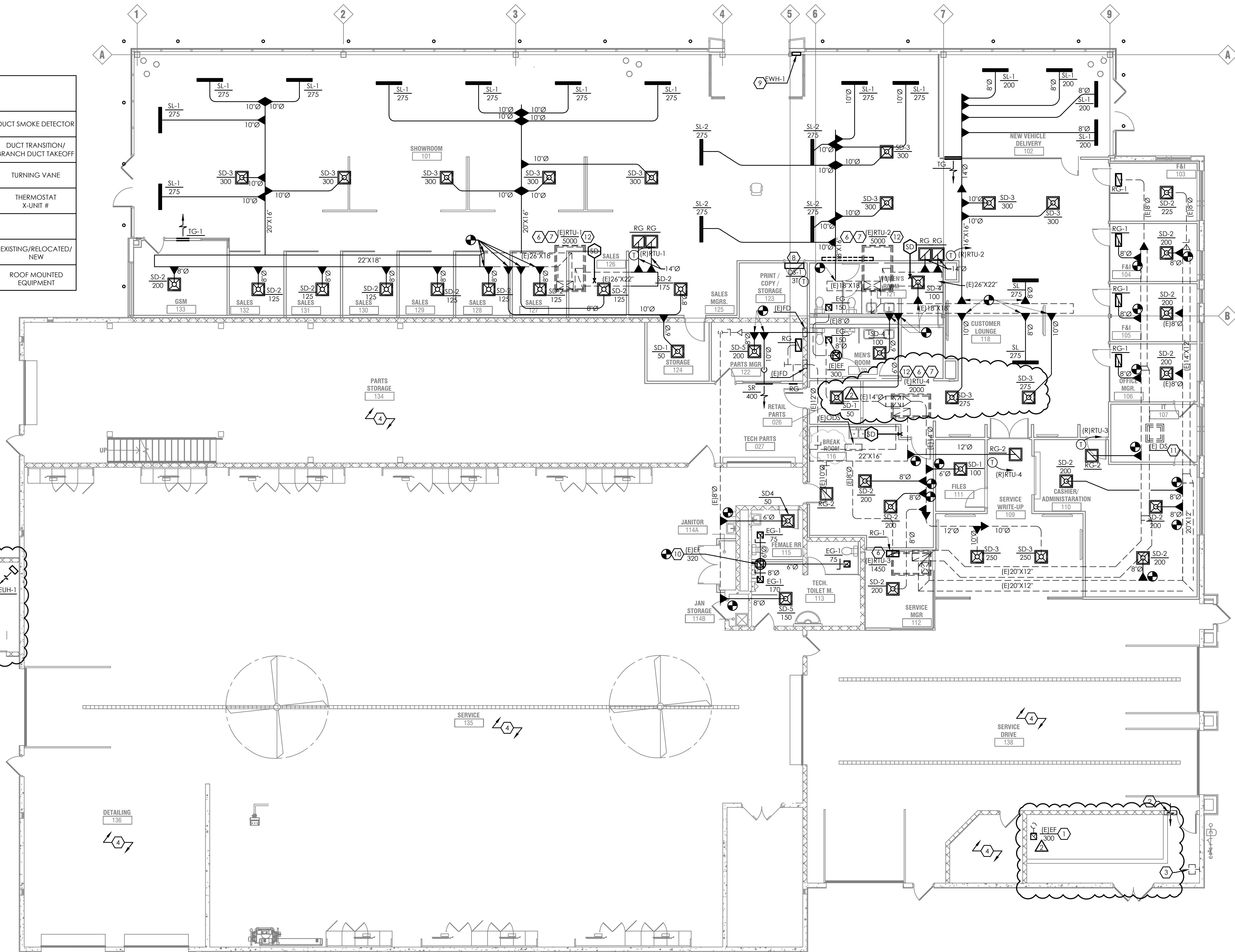
H1.01

HVAC LEGEND

| | | | | |
|-------------|-------------|------------------------------|-----------------|---|
| SD-2 400 | TYPE CFM | DIFFUSER DESIGNATION | SD | DUCT SMOKE DETECTOR |
| ☐ | | EXHAUST FAN | ▲ | DUCT TRANSITION/ BRANCH DUCT TAKEOFF |
| ☒ | | S.A. DIFFUSER | ⌂ | TURNING VANE |
| ☑ | | R.A. DIFFUSER | ⌂ | THERMOSTAT X-UNIT # |
| — | | MANUAL DAMPER | | |
| OA/SA/RA | | OUTSIDE/SUPPLY/RETURN AIR | (E) / (R) / (N) | EXISTING/RELOCATED/ NEW |
| ⊕ | | CONNECT TO EXISTING | ⊕ | ROOF MOUNTED EQUIPMENT |

HVAC CODED NOTES

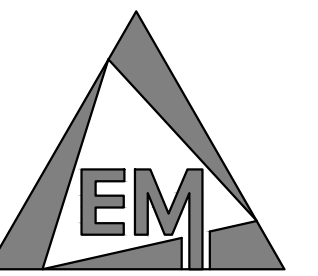
- EXISTING EXHAUST FAN TO REMAIN.
- EXISTING LOW SIDEWALL TRANSFER GRILL TO REMAIN. COORDINATE WITH OTHER TRADES FOR PROPER CLEARANCE.
- EXISTING ELECTRIC UNIT HEATER TO REMAIN. COORDINATE WITH OTHER TRADES TO RETAIN PROPER CLEARANCE FOR SERVICE.
- NO NEW WORK IN THIS AREA.
- EUH-1: NEW WALL MOUNTED ELECTRIC UNIT HEATER. QMARK MUH-0571, 277V/1PH, 5.0KW. FURNISH WITH WALL MOUNTED THERMOSTAT.
- EXISTING ROOFTOP UNIT TO REMAIN. INSPECT UNIT FOR PROPER OPERATION AND REPAIR AS NECESSARY FOR PROPER OPERATION.
- EXISTING DUCT MOUNTED SMOKE DETECTOR TO REMAIN. INSPECT FOR PROPER OPERATION, AND FIELD VERIFY THAT IT IS WIRED TO SHUT DOWN UNIT UPON ACTIVATION.
- DS-1: DUCTLESS SPLIT COOLING SYSTEM MOUNTED ABOVE DOORWAY WITH WALL MOUNTED WIRED THERMOSTAT. PROVIDE CONDENSATE PUMP AND ROUTE INSULATED CONDENSATE DRAIN LINE TO JANITOR'S SINK IN 114B AND TERMINATE WITH CODE REQUIRED AIR GAP. FIELD COORDINATE BEST ROUTE. INSTALL OUTDOOR UNIT (CU-1) ON ROOF ABOVE. ROUTE INSULATED REFRIGERANT LINES PER MANUFACTURER'S GUIDELINES. COORDINATE WITH OTHER TRADES.
- EWH-1: NEW SURFACE MOUNTED ELECTRIC WALL HEATER. QMARK AWH-4407F, 277V/1PH, 4.0KW.
- EXISTING ROOF MOUNTED EXHAUST FAN. INSPECT AND REPAIR AS REQUIRED FOR PROPER OPERATION. REWORK DUCTWORK AS SHOWN AND RE-BALANCE TO AIRFLOW SHOWN.
- EXISTING DUCTLESS SPLIT SYSTEM IN I.T. ROOM TO REMAIN.
- DEMO AIR DEVICES AND DUCTWORK FOR THIS EXISTING SYSTEM UNLESS NOTED AS EXISTING TO REMAIN. FIELD COORDINATE WITH EXISTING CONDITIONS AND OTHER TRADES.
- INTAKE LOUVER: 12'X12' GREENHECK ESD-403 WITH SLEEVE THROUGH WALL.



NOTED SIZES OF ALL EXISTING DUCTWORK AND EQUIPMENT ARE BASED ON PREVIOUS BUILDING DRAWINGS. CONTRACTOR TO VERIFY IN THE FIELD.

HVAC PLAN
SCALE: 1/8" = 1'-0"

ALL OPENINGS IN EXISTING DUCTWORK CREATED THROUGH DEMOLITION SHALL BE CAPPED AND SEALED (IF NOT REUSED). ALL CAPS IN SUPPLY DUCTWORK SHALL BE INSULATED.



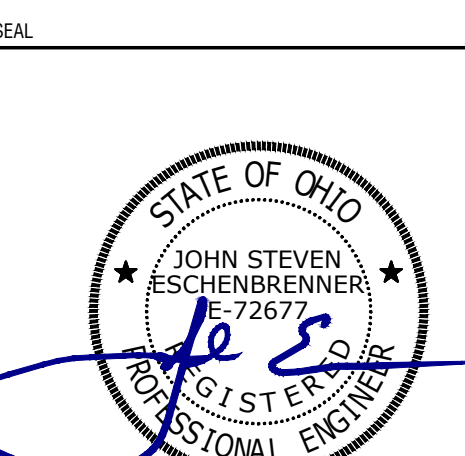
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REVISIONS
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PROJECT NUMBER: 021076
SHEET TITLE: MECHANICAL ENERGY COMPLIANCE
SHEET NUMBER:

H3.00

COMcheck Software Version 4.1.5.3
Mechanical Compliance Certificate

Project Information
 Energy Code: 90.1 (2010) Standard
 Project Title: Joseph Hyundai
 Location: Vandalia, Ohio
 Climate Zone: 5a
 Project Type: Alteration

Construction Site: 1220 W National Road, Vandalia, OH 45377
 Owner/Agent: OH
 Designer/Contractor: EM Engineering Group, 625 East North Broadway Street, Columbus, OH 43214, 614-225-1580

Mechanical Systems List
Quantity System Type & Description
 1 CU-10DS-1
 Cooling: 1 each - Split System, Capacity = 36 kBtu/h, Air-Cooled Condenser
 Proposed Efficiency = 19.89 SEER, Required Efficiency: 13.09 SEER
 Fan System: FAN SYSTEM - Compliance (Brake HP method) - Passes
 Fans:
 FAN 1 Supply, Constant Volume, 920 CFM, 0.1 motor nameplate hp, 0.1 design brake hp (0.1 max. BHP)
 SYSTEM VERIFICATION REQUIRED.

Mechanical Compliance Statement
 Compliance Statement: The proposed mechanical alteration project 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 90.1 (2010) Standard requirements in COMcheck Version 4.1.5.3 and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

JOHN ESCHENBRENNER - ENGINEER
 Name - Title: Signature: 8/20/2021 Date

Project Title: Joseph Hyundai Report date: 09/20/21
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 COMCheck.cck

COMcheck Software Version 4.1.5.3
Inspection Checklist
Energy Code: 90.1 (2010) Standard

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.

| Section # & Req ID | Plan Review | Complies? | Comments/Assumptions |
|---|--|--|---|
| 4.2.2.6.4 4.2.1.6.7 2 [PR2]† | Plans, specifications, and/or calculations provide all information with which compliance can be determined for the mechanical systems and equipment and document where exceptions to the standard are claimed. Load calculations per acceptable engineering standards and handbooks. | <input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable | Requirement will be met. |
| 4.2.2.8.4 1.1.9.4.1 2.8.7 [PR6]† | Plans, specifications, and/or calculations provide all information with which compliance can be determined for the electrical systems and equipment and document where exceptions are claimed. Feeder conductors sized in accordance with approved plans and branch circuits sized for maximum drop of 3%. | <input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable | Requirement will be met. |
| 6.7.2.4 [PR5]† | Detailed instructions for HVAC systems commissioning included on the plans or specifications for projects >=50,000 R2. | <input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable | Exception: Requirement does not apply. |

Additional Comments/Assumptions:

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| Section # & Req ID | Footing / Foundation Inspection | Complies? | Comments/Assumptions |
|--------------------|--|--|---|
| 6.4.3.8 [FO9]† | Freeze protection and snow/ice melting system sensors for future connection to controls. | <input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable | Exception: Requirement does not apply. |

Additional Comments/Assumptions:

Project Title: Joseph Hyundai Report date: 09/20/21
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| Section # & Req ID | Mechanical Rough-In Inspection | Plans Verified Value | Field Verified Value | Complies? | Comments/Assumptions |
|----------------------------------|---|----------------------|----------------------|--|---|
| 6.4.1.4.6 4.1.5 [ME1]† | HVAC equipment efficiency verified. Non-NAECA HVAC equipment labeled as meeting 90.1. | Efficiency: _____ | Efficiency: _____ | <input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable | See the Mechanical Systems list for values. |
| 6.4.3.4.1 [ME3]† | Stair and elevator shaft vents have motorized dampers that automatically close. | | | <input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable | Exception: Requirement does not apply. |
| 6.4.3.4.2 6.4.3.4.3 [ME4]† | Outdoor air and exhaust systems have motorized dampers that automatically shut when not in use and meet maximum leakage rates. Check gravity dampers where allowed. | | | <input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable | Requirement will be met. |
| 6.4.3.4.5 [ME39]† | Enclosed parking garage ventilation has automatic contaminant detection and capacity to stage or modulate fans to 50% or less of design capacity. | | | <input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable | Exception: Requirement does not apply. |
| 6.4.3.4.4 [ME3]† | Ventilation fans >0.75 hp have automatic controls to shut off fan when not required. | | | <input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable | Requirement will be met. |
| 6.4.3.9 [ME6]† | Demand control ventilation provided for spaces >500 R2 and >40 people/1000 R2 occupant density and served by systems with air side economizer, auto modulating outside air damper control, or design airflow >=3,000 cfm. | | | <input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable | Requirement will be met. |
| 6.4.3.10 [ME40]† | Single zone HVAC systems with fan motors >=5 hp have variable airflow controls. Air conditioning equipment with a cooling capacity >=110,000 Btu/h has variable airflow controls. | | | <input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable | Exception: Requirement does not apply. See the Mechanical Systems list for values. |
| 6.4.4.1.1 [ME7]† | Insulation exposed to weather protected from damage, insulation outside of the conditioned space and associated with cooling systems is vapor retardant. | | | <input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable | Requirement will be met. |
| 6.4.4.1.2 [ME8]† | HVAC ducts and plenums insulated. Where ducts or plenums are installed in or under a slab, verification may need to occur during Foundation Inspection. | R: _____ | R: _____ | <input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable | Requirement will be met. |
| 6.4.4.1.3 [ME9]† | HVAC piping insulation thickness. Where piping is installed in or under a slab, verification may need to occur during Foundation Inspection. | _____ in. | _____ in. | <input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable | Requirement will be met. |
| 6.4.4.1.4 [ME41]† | Thermally ineffective panel surfaces of sensible heating panels have insulation >= R-3.5. | | | <input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable | Exception: Requirement does not apply. |

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| Section # & Req ID | Mechanical Rough-In Inspection | Plans Verified Value | Field Verified Value | Complies? | Comments/Assumptions |
|----------------------|---|----------------------|----------------------|--|---|
| 6.4.4.2.1 [ME10]† | Ducts and plenums sealed based on static pressure and location. | | | <input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable | Requirement will be met. |
| 6.4.4.2.2 [ME11]† | Ductwork operating >3 in. water column requires air leakage testing. | | | <input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable | Exception: Requirement does not apply. |
| 6.5.2.3 [ME19]† | Dehumidification controls provided to prevent reheating, recirculating, mixing of hot and cold airstreams or concurrent heating and cooling of the same airstream. | | | <input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable | Requirement will be met. |
| 6.5.3.3 [ME42]† | Multiple zone VAV systems with DDC of individual zone boxes have static pressure setpoint reset controls. | | | <input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable | Exception: Requirement does not apply. See the Mechanical Systems list for values. |
| 6.5.4.1 [ME25]† | HVAC pumping systems >10 hp designed for variable fluid flow. | | | <input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable | Requirement will be met. |
| 6.5.6.1 [ME56]† | Exhaust air energy recovery on systems meeting Table 6.5.6.1. | | | <input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable | Exception: Requirement does not apply. |
| 6.5.7.1.1 [ME32]† | Kitchen hoods >5,000 cfm have make up air >=50% of exhaust air volume. | | | <input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable | Exception: Requirement does not apply. |
| 6.5.7.1.2 [ME46]† | Conditioned supply air to space with a kitchen hood shall not exceed the greater of a) supply flow required to meet space heating or cooling; or b) hood exhaust flow minus the available air transfer from available spaces. | | | <input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable | Exception: Requirement does not apply. |
| 6.5.7.1.5 [ME49]† | Approved field test used to evaluate design air flow rates and demonstrate proper capture and containment of kitchen exhaust systems. | | | <input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable | Exception: Requirement does not apply. |
| 6.5.7.2 [ME33]† | Fume hoods exhaust systems >=15,000 cfm have VAV hood exhaust and supply systems direct make-up air or heat recovery. | | | <input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable | Exception: Requirement does not apply. |
| 6.5.8.1 [ME34]† | Unenclosed spaces that are heated use only radiant heat. | | | <input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable | Exception: Requirement does not apply. |
| 6.5.9 [ME35]† | Hot gas bypass limited to: <=240 kBtu/h - 50% >240 kBtu/h - 25% | | | <input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable | Requirement will be met. |

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Additional Comments/Assumptions:

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| Section # & Req ID | Rough-In Electrical Inspection | Complies? | Comments/Assumptions |
|--------------------|--|--|---|
| 8.4.2 [EL10]† | At least 50% of all 125 volt 15- and 20-Amp receptacles are controlled by an automatic control device. | <input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable | Exception: Requirement does not apply. |
| 10.4.1 [EL9]† | Electric motors meet requirements where applicable. | <input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable | Requirement will be met. |

Additional Comments/Assumptions:

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| Section # & Req ID | Final Inspection | Complies? | Comments/Assumptions |
|---------------------|--|--|---|
| 6.4.3.1.2 [F13]† | Thermostat controls have a 5 °F deadband. | <input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable | Requirement will be met. |
| 6.4.3.2 [F20]† | Temperature controls have setpoint overlap restrictions. | <input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable | Requirement will be met. |
| 6.4.3.3.1 [F21]† | HVAC systems equipped with at least one automatic shutdown control. | <input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable | Requirement will be met. |
| 6.4.3.3.2 [F22]† | Setback controls allow automatic restart and temporary operation as required for maintenance. | <input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable | Requirement will be met. |
| 6.4.3.7 [F16]† | When humidification and dehumidification are provided to a zone, simultaneous operation is prohibited. | <input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable | Requirement will be met. |
| 6.7.2.1 [F17]† | Furnished HVAC as-built drawings submitted within 90 days of system acceptance. | <input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable | Requirement will be met. |
| 6.7.2.2 [F18]† | Furnished O&M manuals for HVAC systems within 90 days of system acceptance. | <input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable | Requirement will be met. |
| 6.7.2.3 [F19]† | An air and/or hydronic system balancing report is provided for HVAC systems serving zones >5,000 R2 of conditioned area. | <input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable | Requirement will be met. |
| 6.7.2.4 [F10]† | HVAC control systems have been tested to ensure proper operation, calibration and adjustment of controls. | <input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable | Requirement will be met. |
| 10.4.3 [F24]† | Elevators are designed with the proper lighting, ventilation power, and standby mode. | <input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable | Exception: Requirement does not apply. |

Additional Comments/Assumptions:

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