



Mechanical Plan Review Commercial Checklist

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This checklist is provided as a reference tool and it is not intended to be exhaustive of all possible mechanical requirements. It may also include more items than a specific set of mechanical plans may encompass.

Referenced Codes:

- 2021 Uniform Mechanical Code (UMC)
- 2021 International Energy Code Compliance (IECC)
- 2021 International Building Code (IBC)
- Local Amendments to the Uniform Mechanical Code
- Local Amendments to the International Fire Code
- Code of Federal Regulations 10

	Code Requirements	Code Section
A. General-Application		
1.	Verify number of stove hoods is provided and corresponds with the number of hoods shown on the plans.	N/A
2.	Verify number of walk-in freezers is provided and corresponds with the number of walk-in freezers on the plans.	N/A
3.	Verify number of walk-in coolers is provided and corresponds with the number of walk-in coolers on the plans.	N/A
4.	Mark "Yes" on the Building Application Checklist for required item #20 if the project consists of any type of mechanical scope and mechanical work is shown on the plans.	N/A
5.	Check off "Mech." on "Reviews Requested" if the project includes any type of mechanical work.	N/A
B. Submittal Plan Requirements		
6.	Provide a complete set of mechanical drawings if the project includes any mechanical scope.	N/A
7.	Provide a kitchen equipment list for all restaurants or kitchen areas where new kitchen equipment is to be installed.	N/A
8.	Provide a Mechanical COM-Check if the project includes installations of new HVAC equipment.	N/A
9.	Provide HVAC load calculations for all projects that include installations of new HVAC equipment.	N/A
10.	Provide structural verification if any new HVAC rooftop equipment exceeds 300 pounds.	N/A
C. Energy-Mechanical		
11.	COM-Check: Submit a Mechanical COM-Check under the currently adopted code (IECC/ASHRAE) for all new HVAC units being installed for a project.	2021 IECC C403.2.3
12.	SEER: Verify that all HVAC equipment complies with the minimum SEER requirements of the IECC/ASHRAE, and Code of Federal Regulations 10, chapter 2, section 430.32.	2021 IECC C403.2.3

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13.	Heating and Cooling Loads: Provide the design loads (in accordance with ANSI/ASHRAE/ACCA Standard 183 or by an approved equivalent computational procedure) associated with the heating, ventilating and air conditioning of the building.	2021 IECC C403.2.1
14.	Economizers: Verify on the mechanical schedule that all HVAC units 54,000 cooling British thermal units per hour (Btu/h) or more have economizers.	2021 IECC C403.3
15.	Roll-Up Door HVAC Shutoff: Verify that any overhead doors, cargo doors, sliding doors, folding and accordion-style wall systems, and other loading dock style doors that comprise part of the building's thermal envelope are equipped with a means of automatically shutting off the HVAC control equipment in the area that includes the door within 5 minutes of the door opening.	COA Amendments to 2021 IECC C403.2.4.8
16.	Commissioning Form: Submit a commissioning form if the total mechanical equipment capacity is equal to or more than 480,000 Btu/h cooling capacity and 600,000 BTU/h combined service water-heating and space-heating capacity.	COA Amendments to 2021 IECC C408.2
17.	Duct Insulation (Commercial): Verify that supply/return ducts located in unconditioned spaces have a minimum of R-6 insulation, and supply/return ducts located outside the building have a minimum of R-8 insulation.	2021 IECC C403.2.9
18.	Duct Insulation (Residential): Verify that supply/return ducts located in attics or outside the thermal envelope have a minimum of R-8 insulation.	COA Amendments to 2021 IECC R403.3.1
D. Architectural		
19.	Roof Access: Provide verification of permanent roof access for HVAC equipment installed on buildings taller than 15 feet.	2021 UMC 304.3.1
20.	Structural Verification: Provide structural verification, sealed by an engineer, for HVAC equipment or kitchen hoods installed on the roof or ceiling hung that exceed 300 pounds.	N/A
21.	Guard Rails: Verify the inclusion of 42-inch guardrails for HVAC equipment installed that are installed within 10 feet of the roof's edge on a building without a 42-inch parapet.	COA Amendments to 2021 UMC 303.8.4
22.	Parking Garage Ventilation: Provide continuous exhaust at a rate of 0.75 cubic feet per minute (CFM) for the parking garage deemed closed per the IBC.	2021 UMC 403.7.2
23.	Ladders: Provide permanent ladders for access to equipment located on roofs with parapets exceeding 30 inches in height.	COA Amendments to 2021 UMC 304.3.3
E. General		
24.	Outside Air Calculations: Provide calculations verifying that the minimum outside air rates for the space are being accommodated by the HVAC equipment.	2021 UMC 402.1.1
25.	Outside Air Clearance: Verify that all outside air intakes comply with the clearance requirements of section 402.3.1 of the City of Austin Amendments to the 2021 UMC.	COA Amendments to 2021 UMC 402.3.1
26.	Accessibility: The plans shall indicate access to the HVAC equipment, verifying 30 inches in depth, width and height of working space.	2021 UMC 504.1
27.	Ductwork: Provide a duct layout showing the size, class, duct gauge and register locations for all newly installed ductwork.	2021 UMC 601.2
28.	Labeling: All HVAC equipment shall be labeled and permanently identified as to the area or space served by the equipment	2021 UMC 303.6
29.	Mechanical Schedule: Provide a schedule listing the manufacturer's specifications for all new HVAC equipment.	2021 UMC 303.1
30.	Condensation Drain: Indicate the condensate discharge location for all new or relocated HVAC units, and verify they are being routed to an approved location.	2021 UMC 310.1, 310.5, and 310.6
31.	Duct Smoke Detectors: Show supply duct smoke detectors for all new/relocated HVAC equipment exceeding 2,000 CFM, or multiple HVAC equipment serving the same space that cumulatively exceed 2,000 CFM.	2021 UMC 608.1
32.	FPB Automatic Shutoff: Provide verification of automatic shutoff for all fan-powered boxes, whether through supply duct smoke detectors, or interconnection to the fire alarm system through the main air handler's supply duct smoke detector.	COA Amendments to UMC 2015 608.3.1

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33.	Specific Area Exhaust: Provide the minimum exhaust rates for all areas listed on Table 403.7 of the City of Austin Amendments to the 2021 UMC.	COA Amendments to 2021 UMC, Table 403.7
34.	Restroom Exhaust: Verify that all public restrooms receive a minimum exhaust rate of 50 CFM per water closet and urinal, and public restrooms with periods of heavy use receive a minimum exhaust rate of 70 CFM per water closet or urinal.	COA Amendments to 2021 UMC, Table 403.7
35.	Exhaust Termination: Verify discharge clearance requirements are met for all exhaust systems.	2021 UMC 502.2.1; 2021 UMC 510.9; 2021 UMC 502.2.2
36.	Dryer Exhaust: Show all dryer exhaust ductwork, and provide verification of dryer duct length code compliance, the inclusion of a backdraft damper in the duct, and the exclusion of any screens at the duct termination.	2021 UMC 504.4
37.	Flex Duct Length: Verify on all details, specifications, and floor plans that the flex duct is no longer than 5 feet.	2021 UMC 603.4.1
38.	Stairwell Enclosure/Exit Passageway: Verify that no HVAC equipment dwells in the stairwell enclosure or exit passageway.	2021 UMC 1105.6
39.	Combustibles Within Ducts/Plenums: Verify that all materials exposed within ducts or plenums are noncombustible.	2021 UMC 602.2
40.	Plastic Ducts: Verify that, if any plastic ducts are used, they are strictly located underground and listed for such use.	2021 UMC 603.6
41.	Combustion Air: Verify that adequate combustion air is being provided for all gas HVAC equipment/boilers through one of the methods covered in section 701.4 through 701.9.3 of the 2021 UMC.	2021 UMC 701.1
42.	Elevator Equipment Room: Provide an independent ventilation or air-conditioning system for all elevator equipment rooms.	2021 IBC 3005.2
43.	Elevator Shaft: Mechanical systems must be removed from elevator shafts unless verification is provided that proves the mechanical system is necessary for the functionality and safety of the elevator system.	2021 UMC 305.3
44.	Med Gas Ventilation: Provide independent ventilation for medical gas storage areas where containers of medical gases are between quantities of 300 cubic feet and 1,500 cubic feet. Exterior rooms shall have at least two vents within 12 inches of the floor and ceiling (both locations required). Interior rooms shall have supply and exhaust ducts enclosed in a 1-hour rated shaft to the exterior. Remove all other duct penetrations from this room.	COA Amendments to 2015 IFC 5306.2, 5306.2.1, 5306.2.2
45.	Cryogenics: Provide ventilation for storage rooms containing any quantity of stationary or portable containers of cryogenic fluids. Provide source capture ventilation for indoor areas where cryogenic fluids are dispensed.	COA Amendments to 2021 UMC 519.9.3
46.	Duct Shaft Penetrations: Indicate fire-smoke dampers at all duct penetrations of all shafts if the duct does not meet any shaft penetration exceptions.	COA Amendments to 2021 UMC 605.5.5
47.	Condensate Recovery: If a chillers cooling capacity of the project exceeds 200 tons, provide a condensate recovery system that includes a riser diagram illustrating an independent piping network with pipe sizes and tonnage through each pipe	COA Amendments to 2021 UMC 310.10 & 310.3
F. Restaurants/Kitchens		
48.	Kitchen Equipment List: Provide a list of all equipment in the kitchen.	N/A
49.	Grease Duct Slope: Verify that all grease ducts include a 2% fall per foot towards the hood and all grease ducts running longer than 75 feet include 8% fall towards the hood.	2021 UMC 510.1.3
50.	Grease Duct Cleanouts: Provide a detail or note indicating that cleanouts will be provided at every change in direction, at 12-foot intervals, and on every floor of the grease duct.	2021 UMC 510.3, 510.3.4.1
51.	Grease Duct Fire Wrap: Verify that all grease ducts not complying with combustible clearance requirements include a listed grease duct fire wrap in accordance with ASTM E2336 and will be installed per the manufacturer's installation instructions.	2021 UMC 507.3.2.2

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52.	Dishwasher: Provide a type-2 hood over all commercial grade dishwashers, unless verification (manufacturer's specifications) is provided indicating the dishwasher has a self-contained condensing system.	2021 UMC 508.1
53.	Solid-Fuel Exhaust: Verify that all Kitchen equipment utilizing solid-fuel includes an independent type-1 exhaust system.	2021 UMC 517.4.3
54.	Firebox: Provide a fixed-water pipe system with a hose in the kitchen capable of reaching the firebox for solid-fuel appliances with fireboxes exceeding 5 cubic feet.	2021 UMC 517.7.5
55.	Hood Fire Suppression: Verify that all kitchen equipment that produces grease-laden vapors are protected by fire-extinguishing equipment.	2021 UMC 513.1.1
56.	Air Balance: Provide an air balance that indicates the exhaust, replacement air, and net exfiltration of the space for all facilities with commercial kitchen ventilation systems.	2021 UMC 511.3.1
G. Dwelling Units		
57.	Rated Ceiling Penetrations: Verify that all ducts penetrating the rated ceiling membrane include ceiling radiation dampers at the point of penetration.	COA Amendments to 2021 UMC 605.6.2
58.	Dryer Closet Makeup Air: Provide a minimum opening of 100 square inches of make-up air for the dryer closet.	2021 UMC 504.4.1
59.	Mechanical Ventilation (Outside Air): Verify the use of mechanical ventilation for R occupancy buildings that are four stories or less.	2021 UMC 402.3
60.	Kitchen Exhaust: Provide 100 CFM intermittent or 50 CFM continuous exhaust, or show ductwork venting for the range/microwave hood to the exterior for all dwelling unit kitchens.	COA Amendments to UMC 2015 Table 403.7
61.	Condensate Discharge: Verify that the condensate discharge for all dwelling units is located in the area controlled by the same person controlling the air-conditioned space.	2021 UMC 310.6
62.	Return Air: Verify that Return air from one dwelling unit isn't discharging into another dwelling unit.	2021 UMC 311.4
63.	Ceiling Radiation/ Fire dampers: Provide the manufacturer's specifications for the ceiling radiation and fire dampers indicating compliance with UL 555C and UL 555, respectively.	COA Amendments to 2021 UMC 605.3.1, 605.6.2.1
H. Refrigeration		
64.	Condensing Unit Ventilation: Provide ventilation for condensing units in rooms not considered refrigerant machinery rooms, using either a permanent gravity ventilation opening not less than 2 square feet that routes directly to the outside OR a mechanical exhaust system that provides a complete change of air not less than every 20 minutes and discharges directly to the outside.	2021 UMC 1105.5
65.	Refrigerant Port Protection: Verify that all outdoor condensing unit refrigerant circuit access ports are protected from unauthorized access with locking-type tamper-resistant caps.	2021 UMC 1105.11
66.	Refrigerant-Vapor Alarms: Verify that all refrigerant machinery rooms contain refrigerant-vapor detectors that activate visual and audible alarms outside each entrance to the room.	2021 UMC 1106.4
67.	Refrigerant Machinery Room Separation: Verify that all refrigerant machinery rooms are separated from other portions of the building per the special hazards provision of the building code.	2021 UMC 1106.5
68.	Refrigerant Machinery Room Exhaust: Provide dedicated emergency purge exhaust for all refrigerant machinery rooms with the capacity to purge escaping refrigerant at a rate of 30 air changes per hour for ammonia, and 100 times the square root of the refrigerant mass in the largest system (pounds) for all other refrigerants.	2021 UMC 1107.2
69.	Refrigerant Machinery Room Emergency Shut-off: Provide a clearly identifiable emergency shut-off switch (of the break-glass type) immediately adjacent to and outside of the principal refrigeration machinery room entrance.	2021 UMC 1108.3