City of Scott City

Residential Mechanical Rough-in
Inspection Checklist

This inspection checklist reflects the code requirements of the 2006 International Mechanical Code (IMC), the 2008 National Electric Code (NEC) and the 2015 International Residential Code (IRC)

Please verify the following before calling for a Mechanical Rough-in Inspection.

Permits and Plans

- ☐ Job address is posted in a visible location. (IRC R319.1)
- ☐ Permit and approved plans and specification for roof and engineered systems are on site and accessible to the inspector (IRC R106.3.1 and R105.7)

Forced-Air Furnace

General: It is important to note that there are exceptions to these general code references. If you question a specific application of the code, first research the code then contact the building official that will be inspecting the installation.

- ☐ Fuel burning appliances cannot be installed in sleeping rooms, bathrooms, toilet rooms, storage closets, or in a space that opens into such rooms or spaces unless they are direct vent or listed for use within living spaces. (IRC G2406.2)
- ☐ Heat producing equipment installed maintains clearances to combustibles as required by the listing of the appliance and the Manufacturer's installation instructions. (IRC M1402.2, IMC 304.7)
- ☐ Appliances installed in a compartment, alcove, basement or similar spaces are accessed by an opening or door and an unobstructed passageway large enough to allow removal of the largest appliance in the space (not less than 24"). (IRC M1305.1.2)
- ☐ Appliances have at least 30" deep and the height of the appliance unobstructed space in front or on the service side of the appliance. (IRC M1305.1.2, IMC 306.2)
- ☐ Appliances installed in attics or crawlspaces meet the requirements of IRC M1305.
- ☐ Working space 30" deep to height of unit or minimum 30", clearance of 3" along sides, back and top with a total width if the space being at least 12" wider than the furnace. Furnaces having a firebox open to the atmosphere have at least a 6" working space along the front combustion chamber side. (IRC M1305.1.1, IMC 306.1.1)
- ☐ Electrical receptacle is required at or near the appliance. (IRC M1305.1.3.1, IMC 306.4.1) (within 25 ft. per NEC 210.63)

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- ☐ Switch controlled lighting (with lighting protected from damage) is installed near the appliance. (IRC M1305.1.3.1, IMC 306.4.1)
- ☐ Means of disconnect required within sight of the appliance or the breaker is capable of being locked in the open position. (NEC 422.31(B))
- ☐ Refer to the listing and manufacturer installation instructions along with IRC Section M1409 and IMC 909 for the installation of a wall furnace.

Under floor/Attics

- ☐ When a furnace is installed in an underfloor area it is suspended a minimum of 6" above grade or installed on a slab extending above adjoining grade. (IRC M1305.1.4.1, M304.9)
- ☐ When equipment is installed on wood platforms the framing and sheathing is preservative treated when installed within 18" of soil to bottom of framing. (IRC R317)
- ☐ Where excavation is required to allow space for equipment, refer to IRC M1305.4.2 and IMC 303.7 for requirements.

Garage

- ☐ Equipment which has a flame, generates a spark, or uses a glowing ignition source which is open to the space in which it is installed is elevated such that the source of ignition is at least 18" above the floor, unless the appliance is listed as "flammable vapor ignition resistant" (FVIR). (IRC M1307.3, IMC 304.3)
- ☐ Ducts which penetrate a wall or ceiling separating the garage from the dwelling are 26 gauge with no openings to the garage. (IRC R302.5.2)

Condensate Disposal

- ☐ Condensate drains by gravity to an approved place of disposal or UL 508 condensate pump. (IRC M1411.3)
- ☐ Drain pipe is a minimum of ¾" and is an approved material. Drain slopes at a minimum of 1/8" per foot. (IRC M1411.3 and M1411.3.2)
- ☐ Evaporative Cooling Equipment connected to a potable water supply must have backflow protection. (IRC M1413.1)

Ducting

General

- ☐ Use of gypsum products to construct return air ducts or plenums is allowed, provided that the air temperature does not exceed 125°F and the exposed surfaces are not subject to condensation. (IRC M1601.1.1.5)
- ☐ Use of stud wall cavities and the spaces between solid floor joists to be used as air plenums comply with the following (IRC M1601.1.1.7):

- The cavities or spaces are not used as a plenum for *supply* air
- The cavities or spaces are not part of a fire-rated assembly
- The stud wall cavities do not convey air from more than one floor level
- Stud wall cavities and joist space plenums are isolated from adjacent concealed spaces by tight fitting fireblocking (see IRC R602.8)
- Stud cavities in the outside wall of the building envelope are not used as air plenums

- ☐ Joints, longitudinal and transverse seams, and connections in ductwork are securely fastened and sealed with welds, gaskets, mastics, mastic-plus-embedded-fabric systems, liquid sealants or tapes. Tapes and mastics are listed and labeled in accordance with UL 181A. (IRC M1601.4.1)
- ☐ Crimp joints for round metallic ducts have a contact lap of at least 1" and are mechanically fastened by at least three sheet metal screws or rivets equally spaced around the joint. (IRC M1601.4.1)
- ☐ Factory made ducts are supported per manufacturer instructions. Shop or field made ducts are supported every 10'. (IRC M1601.4.4 and SMACNA HVAC Standards)
- ☐ Ducts are installed with at least 4" clearance from the earth (except where they meet the requirements of M1601.1.2). (IRC M1601.4.8)
- ☐ Ducts in the garage and ducts penetrating the walls or ceilings separating the dwelling from the garage are constructed of a minimum no. 26 gauge sheet steel or other approved material and do not have openings into the garage. (IRC R302.5.2)
- ☐ The crawlspace may not be used as a plenum in new structures. (IRC M1601.5)
- ☐ Appliance venting systems do not extend into or pass through any fabricated air duct or furnace plenum. (IRC G2427.3.4)

Return Air

- ☐ Return air openings are not within 10' (measured in any direction) from an open combustion chamber or draft hood of another appliance located in the same room or space. (IRC M1602.2.1)
- ☐ The amount of return air taken from any room or space is not greater than the flow rate of the supply air delivered to the room or space. (IRC M1602.2.2)
- ☐ Return air is not taken from a closet, bathroom, toilet room, kitchen, garage, mechanical room, boiler room, furnace room or unconditioned attic. A dedicated forced air system serving only the garage may obtain return air from the garage. (IRC M1602.2.4)
- ☐ Return air from one dwelling unit is not discharged into another dwelling unit. (IRC M1602.2.6)

Vents and Connectors

- ☐ Vents do not extend into or pass through any supply air duct or return air plenum. (IRC M1801.8)
- ☐ Openings around vents, pipes, ducts, cables and wires are ceiling and floor level are fireblocked with an approved material to resist the free passage of flame and products of combustion. (IRC R301.11.4)

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- ☐ A vent connector does not pass through any floor or ceiling. The connector does not pass through a wall or partition unless it is listed and labeled for wall pass-through and installed per the listing. (IRC M1803.3.1)
- ☐ Single-wall metal pipe is guarded by a ventilated metal thimble not less than 4" larger in diameter than the vent connector. A minimum 6" of clearance is maintained between the thimble and combustibles. (IRC M1803.3.1.2)
- ☐ Exhaust vent terminations for mechanical draft and direct venting are not less than 4' below or 4' horizontally from, and not less than 1' above a door, an operable window or a gravity air inlet into a building, nor less than 3' above any forced air intake within 10', nor within 12" of grade. (IRC M1804.2.6)
- ☐ Exhaust vent terminations may not be within 3' of a gas meter. (IRC M1804.2.6)
- ☐ Power exhauster terminations are located at least 10' from lot lines and adjacent buildings. (IRC M1804.2.6)

Exhaust Venting

- ☐ Kitchens require exhaust fans capable of 100 cfm intermittent or 25 cfm continuous. (IRC Table M1507.4)
- ☐ Bathrooms and toilet rooms require exhaust fans capable of 50 cfm intermittent or 20 cfm continuous. (IRC Table M1507.4)
- ☐ All exhaust fans are discharged outdoors. Air is not exhausted into an attic, soffit, ridge vent or crawl space. (IRC M1501.1)

Appliances

Clothes Dryer

- ☐ Exhausted per manufacturer's instructions. (IRC M1502.1)
- ☐ Exhaust duct terminates outside but not within 3' in any direction to openings in the building. Termination is equipped with a backdraft damper. Screens are not installed at the duct termination. (IRC M1502.3)
- ☐ Duct is a minimum of 4" diameter and is constructed of metal with a smooth interior finish with a minimum thickness of 0.0157 inches (28 gauge). (IRC M1502.4.1)
- ☐ Ducts are supported at least every 12 feet. (IRC M1502.4.2)
- ☐ Ducts are not joined with screws or other fasteners than protrude more than 1/8" into the inside of the duct. (IRC M1502.4.2)
- ☐ Exhaust duct length is less than 35 feet. Deduct 2.5 feet for each 45-degree bend and 5 feet for each 90 degree bend. (IRC M1502.4.5.1 & Table M1502.4.5.1)
- ☐ If the specifications f or the appliance to be installed are supplied to the building official at the time of rough-in, the manufacturer's instructions shall determine the maximum length of the exhaust duct. (IRC M1502.4.5.2)

- ☐ If the duct length exceeds 35', the total length of the duct is identified on a permanent tag or label within 6' of the exhaust duct connection. (IRC M1502.4.6)
- ☐ Dryer exhaust duct is required at the time of occupancy. If dryer is not installed, the exhaust duct is capped or plugged and marked "future use". (IRC M1502.4.7)
- ☐ Protection plates are installed if there is less than 1.25" from the duct and the finished face of the framing member. (IRC M1502.5)

Range Hood

- ☐ Exhaust discharges outdoors through a duct. The duct has a smooth interior surface, is air tight and is equipped with a backdraft damper. (See exception for listed and labeled ductless range hood.) (IRC M1503.1)
- ☐ Ducts shall be constructed of galvanized steel, stainless steel or copper. (see exceptions.) (IRC M1503.2)

Air-Conditioning

- ☐ Refrigerants used in direct refrigerating systems conform to applicable provisions of ANSI/ASHRAE 34. (IRC M1411.1)
- ☐ When a cooling coil is located in the supply plenum of a warm-air furnace, the cooling coils are installed downstream from the heat exchanger. (IRC M1411.2)
- ☐ Condensate drains are sloped at least 1/8" per foot and discharge to an approved locations (discharge to a street or alley is not permitted). (IRC M1411.3)
- ☐ Auxiliary or secondary drain pan systems are installed if damage to building could occur if primary drain becomes plugged or stopped. (IRC M1411.3.1)
- ☐ Refrigerant pipes are insulated to R-4 and an external permeance not exceeding 0.05 perm. (IRC M1411.6)

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