



San Juan County Community Development & Planning

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POLICIES / PROCEDURES / INTERPRETATIONS

Clearance Reductions for Unlisted Antique Solid Fuel Burning Devices John Geniuch Deputy Building Official / Plans Examiner	Issued 6/14/2011 BP-2011-03
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ISSUE:

The current editions of the International Residential Code (IRC) and International Mechanical Code (IMC), when addressing solid fuel burning devices, state, in part: *“Fireplace stoves and solid-fuel-type room heaters shall be listed and labeled and shall be installed in accordance with the conditions of the listing.”* (ref. IMC 905., IRC R1414.1). No exceptions are provided. Plainly stated, all solid fuel burning appliances shall be listed and labeled, as described in the code.

The Washington State Building Code Council (SBCC) amends the IRC and IMC for a statewide adoption by local jurisdictions. The amendments to the IRC include the following provision, governing solid fuel burning devices: **R303.8.3 Solid fuel burning devices.** *No used solid fuel burning device shall be installed in new or existing buildings unless such device is United States Environmental Protection Agency certified or a pellet stove either certified or exempt from certification by the United States Environmental Protection Agency.*

Exception: *Antique wood cook stoves and heaters manufactured prior to 1940.*

The SBCC allows antique woodstoves and heaters manufactured prior to 1940, however, this could violate the requirement of listing and labeling found in the IRC and IMC, as the age of the appliance potentially predates common practice testing and listing. What clearance and clearance reduction requirements should apply to an unlisted appliance installed in accordance with the provision for antique wood stoves and heaters?

ANALYSIS:

The primary concern that exists is establishing a safe clearance to combustibles for the appliance and its chimney or vent. Without the benefit of a manufacturer specification or listing by an approved testing agency, we will examine some historical code provisions for guidance. The 1997 Uniform Mechanical Code was the last adopted code recognizing the installation of unlisted appliances. Recognizing the integrity and safety provided by the 1997 UMC, we find the following provision (partial text):

“304.6 Clearances to Combustible Construction. Unlisted, heat-producing equipment shall be installed in such a manner to maintain the clearances to combustible construction specified in Table 3-A. Clearances to combustible construction for unlisted equipment in Table 3-A may be reduced from the required clearances by using the methods of protection specified in Table 3-B. Clearances from combustibles shall include but not be limited to such considerations as door swing, drawer pull, overhead projections or shelving and window swing, shutters, coverings and drapes. Devices such as door stops or limits, closers, drapery ties or guards and the like shall not be used to provide the required clearances.”

POLICY:

It shall be the policy of San Juan County to allow the installation of an unlisted antique woodstove or heater, manufactured prior to 1940, by utilizing the clearances and clearance reductions provided by 1997 UMC 304.6 and associated tables, with the application of all relevant footnotes. The remainder of the installation shall be in accordance with all other provisions of the IRC, IMC, and WSEC (*Washington State Energy Code*). This policy is specific to antique appliances manufactured prior to 1940, as defined in SBCC amendment R303.8.3 for 1

and 2 family dwelling units or their accessory structures. It does not presume to modify or waive any other applicable laws, codes, or statutes.

ATTACHMENTS:

The following attached documents, as described below, including all associated foot notes, represent the referenced tables of the 1997 UMC and will be used for clearance and clearance reduction determination:

[1] 1997 UMC TABLE 3-A "STANDARD INSTALLATION CLEARANCES, IN INCHES, FOR UNLISTED HEAT PRODUCING APPLIANCES" (pg. 21)

[2] 1997 UMC TABLE 3-A "STANDARD INSTALLATION CLEARANCES, IN INCHES, FOR UNLISTED HEAT PRODUCING APPLIANCES (CONTINUED)" (pg. 22)

[3] 1997 UMC TABLE 3-B "CLEARANCES, IN INCHES, WITH SPECIFIED FORMS OF PROTECTION" (pg. 23)

[4] 1997 UMC TABLE 3-C "CHIMNEY CONNECTOR AND VENT CONNECTOR CLEARANCES FROM COMBUSTIBLE MATERIALS" (pg. 23)

excavation shall be lined with concrete or masonry extending a minimum of 4 inches (102 mm) above adjoining grade having sufficient lateral-bearing capacity to resist collapse. The equipment shall be protected from flooding in an approved manner.

EXCEPTIONS: 1. Equipment designed for direct burial.

2. When approved, pits deeper than 12 inches (305 mm), but less than 36 inches (915 mm), may use stable earth with a slope no greater than 2 units vertical in 1 unit horizontal (200% slope).

304.5 Prohibited Locations. Equipment shall not be located in a hazardous location unless listed and approved for the specific installation. Fuel-burning equipment, electric resistance heating devices or electrostatic air cleaners shall not be installed in a surgical procedure or medical treatment room. Fuel-burning equipment shall not be installed in a closet, bathroom or a room readily usable as a bedroom, or in a room, compartment or alcove opening directly into any of these.

EXCEPTIONS: 1. Direct vent equipment and electric heat furnaces.

2. Access to furnaces located in an attic or underfloor crawl space may be through a closet.

3. A vented appliance located in an unconfined space in accordance with the combustion air requirements of Chapter 7.

4. A fireplace may be approved for installation in a bathroom or bedroom if equipped with an approved method of obtaining combustion air from outside.

5. A warm-air furnace in an enclosed space with combustion air obtained from outside the building in conformance with Chapter 7 and having a tightfitting gasketed door with a closer may have access through a bathroom or bedroom.

Equipment burning liquefied petroleum gas (LPG) or liquid fuel shall not be located in a pit, an underfloor space, below grade or similar location where vapors or fuel might unsafely collect unless an approved method for the safe collection, removal and containment or disposal of the vapors or fuel is provided.

In areas subject to flooding, equipment which would be damaged or create hazardous conditions if subjected to inundation shall not be installed at or below grade unless suitably protected by elevation or other approved means.

304.6 Clearances to Combustible Construction. Listed, heat-producing equipment shall be installed in such a manner as to maintain the required clearances to combustible construction specified in the listing. Unlisted, heat-producing equipment shall be installed in such a manner as to maintain the clearances to combustible construction specified in Table 3-A. Clearances to combustible construction for unlisted equipment in Table 3-A may be reduced from the required clearances by using the methods of protection specified in Table 3-B. Clearances from combustibles shall include but not be limited to such considerations as door swing, drawer pull, overhead projections or shelving and window swing, shutters, coverings and drapes. Devices such as door stops or limits, closers, drapery ties or guards, and the like shall not be used to provide the required clearances.

304.7 Clearances for Maintenance and Replacement. Clearances around equipment to elements of permanent construction, including other installed equipment, shall be sufficient to allow inspection, service, repair or replacement without removing such elements of permanent construction or disabling the function of a required fire assembly. Clearances to construction for furnaces and boilers in rooms or spaces not large in comparison with the size of the equipment shall not be reduced by any method from the clearances required by the terms of listing and the manufacturer's installation instructions. Warm-air furnaces within compartments or alcoves shall have a minimum working space clearance of 3 inches (76 mm) along the sides, back and top with a total width of the enclosing space being at least 12 inches (305 mm) wider

than the furnace. Furnaces having a firebox open to the atmosphere shall have at least 6 inches (152 mm) working space along the front combustion chamber side.

EXCEPTION: Replacement warm-air furnaces or air-conditioning cooling coils may be installed in an existing compartment or alcove with lesser width and depth when approved by the building official and provided that such width and depth are in compliance with conditions of listing. Combustion-air openings at the rear or side of the compartment shall comply with the requirements of Chapter 7 of this code.

304.8 Clearances from Grade. Equipment installed at grade level shall be supported on a level concrete slab or other approved material extending a minimum of 3 inches (76 mm) above adjoining grade or it shall be suspended a minimum of 6 inches (152 mm) above adjoining grade.

304.9 Protection from Damage. Equipment shall not be installed in a location where it is subject to mechanical damage unless protected by approved, substantial barriers.

SECTION 305 — TYPE OF FUEL AND FUEL CONNECTIONS

305.1 General. Fuel-burning equipment shall be designed for use with the type of fuel to which it will be connected and the altitude at which it is installed. Appliances shall not be converted from the fuel specified on the rating plate for use with a different fuel without securing reapproval from the building official and as recommended by the manufacturer of either the original equipment or the conversion equipment. The serving gas supplier may convert appliances in accordance with procedures approved by the building official without securing reapproval of the equipment if properly relabeled. Equipment shall not be installed or altered in violation of the provisions of this code nor shall the fuel input rate be increased beyond or decreased below the approved rating for the altitude at which the equipment is installed.

305.2 Fuel Shutoff Valves. An approved fuel shutoff valve shall be installed in the fuel supply piping serving each piece of fuel-burning equipment at an accessible location ahead of the union or appliance connector. The shutoff valve shall be located such that it is within 3 feet (914 mm) of the piece of equipment, in the same room or enclosure, and within sight of the equipment, and shall not interfere with maintenance or removal of any equipment.

EXCEPTIONS: 1. Shutoff valves may be accessibly located inside or under an appliance when such appliance can be removed without removal of the shutoff valve.

2. Shutoff valves may be accessibly located inside wall heaters and wall furnaces listed for recessed installation where necessary maintenance can be performed without removal of the shutoff valve.

305.3 Connections. Each piece of equipment shall be connected to its fuel supply piping by a union type connection; an approved appliance connector; or an approved, listed quick-disconnect device. Appliance connectors shall be listed for the fuel used and shall not exceed 3 feet (914 mm) in length.

EXCEPTION: Connectors for domestic range and domestic clothes dryer shall not exceed 6 feet (1830 mm) in length.

Appliance connectors shall not be concealed within or extend through a wall, partition, floor or ceiling. Appliance connectors shall not extend through the equipment housing or casing. Appliance connectors shall be of adequate size to provide the total demand of the connected equipment in accordance with Table 3-D-1 or 3-D-2, as applicable. Appliance connectors installed outdoors shall be listed for outdoor installation. Appliance connectors shall not be in contact with soil and use of aluminum alloy connectors shall be limited to interior locations and shall not be in contact with masonry, plaster or insulation nor shall they be subject to repeated corrosive wettings.

temperature limiting controls which will prevent the discharge temperature from exceeding 250°F (121°C).

311.3 Burners. Fuel-burning equipment shall be equipped with an approved automatic means which will shut off the fuel supply to the equipment in the event of ignition or flame failure.

EXCEPTION: The listed shutoff devices shall not be required on range or cooking tops, log lighters, lights or other open-burner manually operated appliances, or listed appliances not requiring such devices and specific industrial appliances as approved by the building official.

SECTION 312 — PERSONNEL PROTECTION

312.1 Moving Parts. Exposed moving parts such as, but not

limited to, flywheels, fans, pulleys, belts, shaft couplings and the like shall be provided with a suitable and substantial metal guard to prevent inadvertent contact. Such guards shall be removable for required maintenance.

312.2 Extreme Temperatures. Equipment which is intended to operate at temperatures above or below that at which injury by contact is likely to occur shall be so designed as to permit safe use or be insulated or isolated so as to prevent inadvertent contact.

312.3 Electrical Hazards. Equipment which presents a shock hazard shall be enclosed or installed as required by the Electric Code to guard against such hazards. Equipment capable of generating dangerous levels of electromagnetic fields shall be suitably shielded, grounded and isolated.

TABLE 3-A—STANDARD INSTALLATION CLEARANCES, IN INCHES, FOR UNLISTED HEAT-PRODUCING APPLIANCES
See Section 304.

RESIDENTIAL-TYPE APPLIANCES	Fuel	APPLIANCE				
		Above Top of Casing or Appliance	From Top and Sides of Warm-air Bonnet or Plenum	From Front ¹	From Back	From Sides
× 25.4 for mm						
Boilers and water heaters Steam boilers—15 psi (103.4 Pa) Water boilers—250°F (121°C) Water heaters—200°F (93°C) All water walled or jacketed	Automatic oil or comb. gas-oil	6		24	6	6
	Automatic gas	6		18	6	6
	Solid	6		48	6	6
Furnaces—central; or heaters—electric central Warm-air furnaces Gravity, upflow, downflow, horizontal and duct Warm-air—250°F (121°C) max.	Automatic oil or comb. gas-oil	6	6	24	6	6
	Automatic gas	6	6	18	6	6
Furnaces—floor For mounting in combustible floors	Solid	18 ²	18 ²	48	18	18
	Electric	6	6	18	6	6
	Automatic oil or comb. gas-oil	36		12	12	12
	Automatic gas	36		12	12	12
Heat exchanger Steam—15 psi max. (103.4 Pa max.) Hot water—250°F (121°C) max.		1	1	1	1	1
Room heaters ³ Circulating type Radiant or other type	Oil or solid ³	36		24	12	12
	Gas	36		24	12	12
	Oil or solid	36		36	36	36
	Gas	36		36	18	18
	Gas with double metal or ceramic back	36		36	12	18
Fireplace stove	Solid	48 ⁴		54	48 ⁴	48 ⁴
Radiators Steam or hot water ⁵		36		6	6	6
Ranges—cooking stoves	Oil	30 ⁶			9	
	Gas	30 ⁶			6	
	Solid clay-lined firepot	30 ⁶			24	18
	Solid unlined firepot	30 ⁶			36	18
	Electric	30 ⁶			6	6
Incinerators Domestic types		36 ⁷		48	36	36

(Continued)

TABLE 3-A—STANDARD INSTALLATION CLEARANCES, IN INCHES, FOR UNLISTED HEAT-PRODUCING APPLIANCES—(Continued)
See Section 304.

COMMERCIAL INDUSTRIAL-TYPE LOW-HEAT APPLIANCES ANY AND ALL PHYSICAL SIZES EXCEPT AS NOTED	Fuel	APPLIANCE				
		Above Top of Casing or Appliance ⁸	From Top and Sides of Warm-air Bonnet or Plenum	From Front ¹	From Back ⁸	From Sides ⁸
		× 25.4 for mm				
Boilers and water heaters 100 cu. ft. (2.83 m ³) or less Any psi steam	All fuels	18		48	18	18
50 psi (342 Pa) or less Any size	All fuels	18		48	18	18
Unit heaters Floor mounted or suspended—any size	Steam or hot water	1			1	1
Suspended—100 cu. ft. (2.83 m ³) or less	Oil or comb. gas-oil	6		24	18	18
Suspended—100 cu. ft. (2.83 m ³) or less	Gas	6		18	18	18
Suspended—Over 100 cu. ft. (2.83 m ³)	All fuels	18		48	18	18
Floor mounted—any size	All fuels	18		48	18	18
Ranges—restaurant-type Floor mounted	All fuels	48		48	18	18
Other low-heat industrial appliances Floor mounted or suspended	All fuels	18	18	48	18	18
COMMERCIAL INDUSTRIAL-TYPE MEDIUM-HEAT APPLIANCES	Fuel	APPLIANCE				
		Above Top of Casing or Appliance ⁹	From Top and Sides of Warm-air Bonnet or Plenum	From Front ¹	From Back ⁹	From Sides ⁹
		× 25.4 for mm				
Boilers and water heaters Over 50 psi (345 Pa) Over 100 cu. ft. (2.83 m ³)	All fuels	48		96	36	36
Other medium-heat industrial appliances All sizes	All fuels	48	36	96	36	36
Incinerators All sizes		48		96	36	36
INDUSTRIAL-TYPE HIGH-HEAT APPLIANCES						
High-heat industrial appliances All sizes	All fuels	180		360	120	120

¹The minimum dimension shall be that necessary for servicing the appliance, including access for cleaning and normal care, tube removal, etc.

²The dimension may be 6 inches (152 mm) for an automatically stoker-fired forced-warm-air furnace equipped with 250°F (121°C) limit control and with barometric draft control operated by draft intensity and permanently set to limit draft to a maximum intensity of 0.13-inch water gage (32 Pa).

³Approved appliances shall be installed on noncombustible floors and may be installed on protected combustible floors. Heating appliances approved for installation on protected combustible flooring shall be so constructed that flame and hot gases do not come in contact with the appliance base. Protection for combustible floors shall consist of 4-inch (102 mm) hollow masonry covered with sheet metal at least 0.021 inch (0.5 mm) thick (No. 24 manufacturer's standard gage). Masonry shall be permanently fastened in place in an approved manner with the ends unsealed and joints matched so as to provide free circulation of air through the masonry. Floor protection shall extend 12 inches (305 mm) at the sides and rear of the appliance, except that at least 18 inches (457 mm) shall be required on the appliance-opening side or sides measured horizontally from the edges of the opening.

⁴The 48-inch (1219 mm) clearance may be reduced to 36 inches (914 mm) when protection equivalent to that provided by Items 1 through 8 of Table 3-A is applied to the combustible construction.

⁵Steampipes and hot-water-heating pipes shall be installed with a clearance of at least 1 inch (25 mm) to all combustible construction or material, except that at the points where pipes carrying steam at not over 15 pounds gage pressure (103 kPa) or hot water emerge from a floor, wall or ceiling, the clearance at the opening through the finish floorboards or wall-ceiling boards may be reduced to not less than 1/2 inch (13 mm). Each such opening shall be covered with a plate of noncombustible material.

Such pipes passing through stack shelving shall be covered with not less than 1 inch (25 mm) of approved insulation.

Wood boxes or casings enclosing uninsulated steam or hot-water-heating pipes or wooden covers to recesses in walls in which uninsulated pipes are placed shall be lined with metal or insulating millboard.

Where the temperature of the boiler piping does not exceed 160°F (71°C), the provisions of this table do not apply.

Coverings or insulation used on steam or hot-water pipes shall be of material suitable for the operating temperature of the system. The insulation or jackets shall be of noncombustible materials, or the insulation or jackets and lap-seal adhesives shall be tested as a composite product. Such composite product shall have a flame-spread rating of not more than 25 and a smoke-developed rating not to exceed 50 when tested in accordance with UBC Standard 8-1.

⁶To combustible material or metal cabinets. If the underside of such combustible material or metal cabinet is protected with insulating millboard at least 1/4 inch (6 mm) thick covered with sheet metal of not less than 0.013 inch (0.3 mm) (No. 28 gage), the distance may be reduced to 24 inches (610 mm).

⁷Clearance above charging door must be at least 48 inches (1219 mm).

⁸If the appliance is encased in brick, the 18-inch (457 mm) clearance above and at sides and rear may be reduced to 12 inches (305 mm).

⁹If the appliance is encased in brick, the clearance above may be reduced to 36 inches (914 mm) and at sides and rear may be reduced to 18 inches (457 mm).

TABLE 3-B—CLEARANCES, IN INCHES, WITH SPECIFIED FORMS OF PROTECTION^{1,2}

TYPE OF PROTECTION Applied to the Combustible Material Unless Otherwise Specified and Covering All Surfaces within the Distance Specified as the Required Clearance with No Protection (Thicknesses are Minimum)	WHERE THE STANDARD CLEARANCE IN TABLE 5-A WITH NO PROTECTION IS:											
	36 Inches			18 Inches			12 Inches			6 Inches		
	× 25.4 for mm											
× 25.4 for mm	Above	Sides and Rear	Chimney or Vent Connector	Above	Sides and Rear	Chimney or Vent Connector	Above	Sides and Rear	Chimney or Vent Connector	Above	Sides and Rear	Chimney or Vent Connector
1. 1/4" in insulating millboard spaced out 1" ³	30	18*	30	15	9	12	9	6	6	3	2	3
2. 0.013" (No. 28 manufacturer's standard gage) steel sheet on 1/4" insulating millboard	24	18	24	12	9	12	9	6	4	3	2	2
3. 0.013" (No. 28 manufacturer's standard gage) steel sheet spaced out 1" ³	18	12	18	9	6	9	6	4	4	2	2	2
4. 0.013" (No. 28 manufacturer's standard gage) steel sheet on 1/8" insulating millboard spaced out 1" ³	18	12	18	9	6	9	6	4	4	2	2	2
5. 1 1/2" insulating cement covering on heating appliance	18	12	36	9	6	18	6	4	9	2	1	6
6. 1/4" insulating millboard on 1" mineral fiber batts reinforced with wire mesh or equivalent	18	12	18	6	6	6	4	4	4	2	2	2
7. 0.027" (No. 22 manufacturer's standard gage) steel sheet on 1" mineral fiber batts reinforced with wire or equivalent	18	12	12	4	3	3	2	2	2	2	2	2
8. 1/4" insulating millboard	36	36	36	18	18	18	12	12	9	4	4	4

¹For appliances complying with Sections 304.2 and 304.3.

²Except for the protection described in Item 5, all clearances shall be measured from the outer surface of the appliance to the combustible material, disregarding any intervening protection applied to the combustible material.

³Spacers shall be of noncombustible material.

NOTE: Insulating millboard is a factory-made product formed of noncombustible materials, normally fibers, and having a thermal conductivity of 1 Btu-inch per square foot per degree Fahrenheit [1.73W/(m·K)] or less.

TABLE 3-C—CHIMNEY CONNECTOR AND VENT CONNECTOR CLEARANCES FROM COMBUSTIBLE MATERIALS

DESCRIPTION OF APPLIANCE	MINIMUM CLEARANCE (inches) ¹
	× 25.4 for mm
Residential-type Appliances	
Single-wall Metal Pipe Connectors ²	
Gas appliances without draft hoods	18
Electric, gas and oil incinerators	18
Oil and solid-fuel appliances	18
Unlisted gas appliances with draft hoods	9
Boilers and furnaces equipped with listed gas burners and with draft hoods	9 ³
Oil appliances listed as suitable for use with Type L venting systems (but only when connected to chimneys)	9
Listed gas appliances with draft hood	6
Type L Venting System Piping Connectors	
Gas appliances without draft hoods	9
Electric, gas and oil incinerators	9
Oil and solid-fuel appliances	9
Unlisted gas appliances with draft hoods	6
Boilers and furnaces equipped with listed gas burners and with draft hoods	6
Oil appliances listed as suitable for use with Type L venting systems	4
Listed gas appliances with draft hoods	5
Type B Gas Vent Piping Connectors	
Listed gas appliances with draft hoods	5
Commercial-industrial-type Appliances	
Low-heat Appliances	
Single-wall Metal Pipe Connectors ²	
Gas, oil and solid-fuel boilers, furnaces and water heaters	18
Ranges, restaurant-type	18
Oil unit heaters	18
Unlisted gas unit heaters	18
Listed gas unit heaters with draft hoods	6
Other low-heat industrial appliances	18
Medium-heat Appliances	
Single-wall Metal Pipe Connectors ²	
All gas, oil and solid-fuel appliances	36

¹These clearances apply except if the listing of an appliance specifies different clearance, in which case the listed clearance takes precedence.

²The clearances from connectors to combustible materials may be reduced if the combustible material is protected in accordance with Table 3-B.

³The dimension may be 6 inches (152 mm), provided the maximum flue temperatures entering the draft hood do not exceed 550°F (288°C).

⁴If listed Type L venting system piping is used, the clearance may be in accordance with the venting system listing.

⁵If listed Type B or L venting system piping is used, the clearance may be in accordance with the venting system listing.