

Construction Code Communicator



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Air Leakage and the Building Envelope

There are many sources of air leakage in a building thermal envelope. Typically, people think of recessed luminaires in a ceiling assembly below an attic space (conditioned space vs. unconditioned space), which is addressed specifically in Section 502.4.7 of the International Energy Conservation Code (IECC) 2006. However, there are many other locations in a building envelope that are considered an air leakage problem. Section 402.4.3 of the IECC/2006 follows, for your convenience:

402.4.3 RECESSED LIGHTING

Recessed luminaires installed in the building thermal envelope shall be sealed to limit air leakage between conditioned and unconditioned spaces by being:

1. IC-rated and labeled with enclosures that are sealed or gasketed to prevent air leakage to the ceiling cavity or unconditioned space; or
2. IC-rated and labeled as meeting American Society for Testing and Materials Standard E283 when tested at 1.57 psi (75 Pa) pressure differential with no more than 2.0 cfm (0.944 L/s) of air movement from the conditioned space to the ceiling cavity; or
3. Located inside, and labeled for an airtight sealed box with clearances of at least 0.5 inch (12.7 mm) from combustible material and 3 inches (76 mm) from insulation.

Air leakage in a building envelope can be minimized in many ways. Openings and penetrations are required to

be sealed with caulking materials, or closed with a gasketing system compatible with the construction materials. Joints and seams are required to be sealed in the same manner, or taped or covered with moisture vapor-permeable wrapping material. Keep in mind, sealing materials spanning joints should allow for expansion and contraction.














Here's an example of when air leakage needs to be minimized: The exterior wall of a house is insulated to create a portion of the building envelope. This wall is covered with a moisture vapor-permeable house wrap on the exterior for joints and seams. The batt insulation used has a moisture vapor retarder, as per Section R318 of the International Residential Code 2006, installed against the interior drywall. However, there are some receptacles and light switches installed in the interior of this wall. Where the backing of the insulation or moisture vapor retarder is penetrated by the device box, a gasketed cover is required. (Typically, this is an exterior wall issue; however, an example of an interior wall where this would apply is an interior wall between a conditioned house and an unconditioned garage.)

Note: For projects under the previous Energy Subcode, Section 502.3.3 of the Council of American Building Officials Model Energy Code 1995 would apply in the same manner.

If you have any questions, please contact me at (609) 984-7609.

Source: Rob Austin
Code Assistance Unit

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Use of a Backflow Preventer in Boiler Applications

The Department of Community Affairs (DCA) has been receiving many calls pertaining to the requirement for a check valve in the domestic water supply for the boiler water makeup, in addition to the backflow preventer as required by the Plumbing Subcode. The check valve violation is being issued by an insurance company's inspector or by an inspector from the New Jersey Department of Labor and Workforce Development, Bureau of Boiler and Pressure Vessel Compliance (BB&PVC.)

A check valve and stop valve or cock are required by the American Society of Mechanical Engineers (ASME) standard, which is referenced through *N.J.A.C. 12:90, Boilers, Pressure Vessels, and Refrigeration Compliance Regulations*. ASME Section IV, HG-705(a) and (b), states that a check valve must be installed in the boiler water makeup system supply line. Also, a stop valve or cock must be installed between the check valve and the boiler. The ASME standard is enforced by the BB&PVC.

The BB&PVC has determined that a standard backflow preventer, as required by the Plumbing Subcode, would not prevent the backflow of water from a boiler into the potable water system due to the fact that the seats on the backflow preventer check valves would not be able to withstand the high-temperature hot water from the boiler should there be a break in the water supply system which would cause a back siphonage from the boiler into the potable water system. Typically, backflow preventers are rated at 140 degrees to 180 degrees Fahrenheit. Check valves are rated at 250 degrees Fahrenheit. The ratings of the backflow preventers and check valves were verified through the manufacturer of the devices.

Also, with the use of a reduced-pressure backflow preventer assembly, should the check valve in the backflow preventer fail due to the high-temperature water backflow from the boiler, the backflow would discharge through the relief vent, which puts the boiler at risk for a dry-firing condition and could result in a catastrophic failure or a boiler explosion. This would also apply to a double check valve assembly should the assembly check valves fail due to the high-temperature water which would backflow into the potable water supply.

DCA-licensed plumbing subcode officials are to ensure that the proper required backflow preventer is

installed on the potable water supply for a boiler water makeup, per the Plumbing Subcode. The plumbing subcode official should not approve the installation unless the proper additional check valve and stop valve or cock are installed in the boiler water makeup supply, as required by *N.J.A.C. 12:90* through ASME, which is enforced by the BB&PVC. During the plan review stage and during your inspection of a boiler which would be regulated by the BB&PVC, you should bring to the attention of the contractor that an additional check valve and stop valve or cock will be required per the *N.J.A.C. 12:90* regulations in order to pass the BB&PVC inspection.

If you notice any problems, please report them to Milton Washington, Chief of the BB&PVC, at (609) 292-2921.

To help DCA inspectors, the following is the text of the scope of the BB&PVC regulations, which are found at *N.J.A.C. 12:90-4*:

N.J.A.C. 12:90-4.1(b) This subchapter shall not apply to:

1. Steam boilers having adequate relief devices set to discharge at a pressure not greater than 15 psig when such boilers serve buildings of less than six dwelling units or other dwellings with accommodations for less than 25 persons;
2. Hot-water boilers having relief devices set to discharge at a pressure not greater than 160 psig and hot-water boilers limited to temperatures not exceeding 250 degrees Fahrenheit when such boilers serve buildings of less than six dwelling units or other dwellings with accommodations for less than 25 persons;
3. Any steam or hot-water boiler having less than 10 square feet of surface;
4. Any steam or hot-water boiler having a heat input of less than 10 kilowatts or less than 40,000 BTU per hour;
5. Any steam or hot-water boiler under the jurisdiction and control of the United States Government when actively regulated by a federal agency; and
6. Any steam or hot-water boiler used solely for the propulsion of a motor vehicle regulated by the Motor Vehicle Act, Title 39 of the Revised Statutes.

As stated above, these regulations do not apply to boilers in buildings with fewer than six dwelling units.

Should you have any questions, you may contact me at (609) 984-7609.

Source: Thomas C. Pitcherello
Code Assistance Unit

Determining the Fixture Count

Determining the population for the plumbing fixture requirement is one of the most frequently asked questions the Code Assistance Unit receives from architects, engineers, and code officials. This article is an effort to try to clear up some of the confusion there seems to be with determining the population count and the number of plumbing fixtures required by the National Standard Plumbing Code (NSPC). [NOTE: See accompanying article on “use group” designations in the NSPC 2006 and the International Building Code (IBC) 2006.]

- ☞ NSPC 2006, Section 7.21.2, Occupant Load, states that “The minimum number of plumbing fixtures shall be based on the number of persons to be served by the fixtures, as determined by the person responsible for the design of the plumbing system.”

This section makes it clear that the design professional is responsible for determining the number of persons to be served by the fixtures. If the design professional knows the actual number of persons that will occupy the building, that number can be used to determine the number of plumbing fixtures.

- ☞ NSPC 2006, Section 7.21.2.b states that “Where the occupant load is not established and is based on the egress requirements of a building code, the number of occupants for plumbing purposes shall be permitted to be reduced to two-thirds of that for fire- or life-safety purposes.”

Paragraph b states that, if the occupant load is based on the building code egress calculations of the number of persons per square foot permitted for that use, the egress number can be reduced by two-thirds for the purpose of determining the plumbing fixture count.

- ☞ NSPC 2006, Section 7.21.2.c states that “Whenever both sexes are present in approximately equal numbers, the total occupant load shall be multiplied by 50 percent (changed from 60 percent in the 2003 NSPC) to determine

the number of persons of each sex to be provided for, unless specific information concerning the percentage of male and female occupants is available.”

As paragraph c states, if the percentage of male and female occupants is NOT known, the 50 percent rule applies.

- ☞ NSPC 2006, Section 7.21.4, Separate Facilities, includes Exceptions (2), (3), and (4). Exception (2) states that “In occupancies serving 15 or fewer people (changed from 10 in the 2003 NSPC), one toilet facility, designed for use by no more than one person at a time, shall be permitted for use by both sexes.” Exception (3) states that “In business occupancies with a total floor area of 1500 square feet or less, one toilet facility, designed for use by no more than one person at a time, shall satisfy the requirements for servicing customers and employees of both sexes.” Exception (4) is the same as Exception (3) and applies to mercantile occupancies.

Exception (2) is very clear. If you have 15 or fewer people, one unisex toilet facility is permitted. Questions remain pertaining to Exceptions (3) and (4). If you have a business use that is more than 1500 square feet and the known population 15 or fewer employees or customers, can you provide only one unisex toilet facility? The answer is YES. This is because the population complies with Exception (2) – there are 15 or fewer people. However, when the actual population is not known, and the occupancy is based on the building code egress calculations and the occupant load and exceeds 15 people, after the two-thirds reduction, then separate toilet facilities for each sex are required.

Another frequently asked question is how to perform the calculations when the male/female ratio is not known. When the population calculations are based on the building code egress, the total egress population is permitted to be reduced by two-thirds, and that population is then multiplied by 50 percent to determine the male/female population numbers for purposes of determining the fixture count. There has been some confusion that the two-thirds reduction and the 50 percent ratio could not be used together. They must be used together to correctly calculate the fixture requirement using the building code egress calculations. Refer to NSPC, Section 7.21.2.b and c.

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EXAMPLE

Use Group: Business

Floor Area: 2575 square feet, single story

Population: Based on building egress calculations (IBC/2006, Table 1004.1.1, Business Use; 100 square feet per occupant, gross floor area)

$$2575 \div 100 = 25.75, \text{ rounded to 26 persons}$$

$$26 \text{ persons} \times .67 \text{ (two-thirds reduction)} = 17.42, \\ \text{rounded to 18 persons total}$$

Because there are more than 15 persons, separate male and female toilet facilities are required (based on the 18-person total).

NEXT: To determine the male/female fixture requirement:

$$18 \times .5 \text{ (50\%)} = 9 \text{ male and 9 female}$$

Plumbing fixtures required are based on NSPC 2006, Table 7.21.1, Business Use. Therefore, the fixtures required are:

Male: 1 water closet and 1 lavatory

Female: 1 water closet and 1 lavatory

NOTE: 1 drinking water facility and 1 service sink are also required.

Should you have any questions, you may contact me at (609) 984-7609.

Source: Thomas C. Pitcherello
Code Assistance Unit

Energy Requirements Now in Rehab Subcode

Previously, the Rehabilitation Subcode, *N.J.A.C. 5:23-6*, did not reference any requirements from the Energy Subcode other than the underlying notion that one could not reduce the level of existing energy conservation. Now, in times of higher fuel prices, the following two new provisions have been added to *N.J.A.C. 5:23-6* for repair, renovation, alteration, and reconstruction projects.

1. When the work exposes the entire framing of any wall, floor, ceiling, or roof assembly that is part of the building thermal envelope (encloses conditioned space) and there is no insulation in the cavities, insulation that meets an R-value shall be installed that fills the cavities of the framed assembly.

- i. If only a small amount of interior finish remains on the framed assembly, the installation of insulation applies; or
 - ii. If high-efficiency equipment is installed as per the Energy Subcode, the above requirement for installation of insulation does not apply to the basement.
2. When window assemblies are replaced, the U-factor (thermal transmittance) cannot exceed 0.5 or the U-factor of the window assembly being replaced, whichever is lower.

To put this in perspective, an example might help: Picture a 1920's home. Typically, these homes were not initially built with wall insulation. So, if the owner of this home decides to tear down the old plaster and expose the entire wall, or nearly, to put up sheetrock in its place, the first above requirement would require insulation to be installed where there was none before.

Since different insulation manufacturers make R-value insulation in many different shapes and sizes, it is safe to say the insulation R-value a code official should look for in a 2x4 wall is an R-13; 2x6 walls should be R-19. Of course, if a greater R-value is used and properly fits in the wall with no or minimal compression, this is also acceptable.

With regard to the windows of the same 1920's home, it is very possible that there are some old single-pane windows. So again, if the owner decides to replace the old windows, the new replacement windows should have a U-factor of 0.50 or lower (the lower the number, the better in this case). If for some reason, this home already has a window better than 0.50, say 0.33 U-factor for a triple-pane window, then the 0.33 should be maintained if they decide to replace this specific window also.

Please note that the compliance documentation of *N.J.A.C. 5:23-2.15(e)1.vi* does not apply to rehabilitation projects; this specific documentation applies to new construction and additions only.

If you have any questions, please contact me at (609) 984-7609.

Source: Rob Austin
Code Assistance Unit

Efficiency Upgrades in ASHRAE Standard 90.1-2004 

Based on recent federal energy requirements, minimum equipment energy efficiencies have changed, and the following tables of your American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) Standard 90.1-2004 need to be updated. Because ASHRAE does not print updated editions of its standards, but instead provides “addenda,” the ASHRAE tables that contain the changes to minimum efficiency requirements in ASHRAE 90.1 are being provided here for the convenience of code users. The usefulness of the tables is that they provide all the changes to minimum efficiency requirements that have been made since the last published edition. By using these tables, code users can determine whether their edition, including addenda, contains the most up-to-date information. It is important to note that these tables contain only the portions of each table that have been changed; the remainder of each table remains unchanged:

TABLE 6.8.1A – Electrically Operated Unitary Air Conditioners and Condensing Units

Equipment Type	Size Category	Heating Section Type	Sub-Category or Rating Condition	Minimum Efficiency ^b	Test Procedure ^a
Air conditioners, air cooled	<65,000 Btu/h ^c	All	Split system	10.0 SEER (before 1/23/2006) 12.0 SEER-13.0 SEER (as of 1/23/2006)	ARI 210/240
			Single package	9.7 SEER (before 1/23/2006) 12.0 SEER-13.0 SEER (as of 1/23/2006)	
Small duct high velocity, air cooled	< 65,000 Btu/h ^c	All	Split system	10 SEER	

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Fire Sprinklers and Half Ceilings 

It has come to the Department of Community Affairs’ attention that designers are designing half ceilings (which are also called “clouds”) without providing protection for the area above the half ceiling (clouds).

Some engineers believe sprinklers are only required at the ceiling of the lowest area, and not in the concealed space between a full ceiling and half ceiling. That is not correct. In National Fire Protection Association (NFPA) Standard 13, Section 5-13.23, Spaces Above Non-Storage Areas, requires the installation of sprinklers in the concealed spaces. The requirement is more clearly stated in the NFPA 13/2002 edition, where a language change specifies “any concealed ceiling area.”

Source: Gerry Grayce
Office of Regulatory Affairs

Fire Sprinklers and Elevator Shafts 

The installation of fire sprinklers in elevator shafts has once again caused a lot of questions.

National Fire Protection Association (NFPA) Standard 13, Section 5-13.6.1 exempts fire sprinklers at the bottom of elevator shafts if the shaft does not contain combustible hydraulic fluids. Section 5-13.6.3 exempts the shaft from sprinklers when the elevator car enclosure material meets requirements of American Society of Mechanical Engineers (ASME) A17.1, Safety Code for Elevators and Escalators. The fire subcode official has jurisdiction with regard to fire sprinkler requirements.

NOTE: NFPA 13/2002, the referenced standard in the recently adopted International Building Code 2006, has the same requirement as above.

Source: Gerry Grayce
Office of Regulatory Affairs

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TABLE 6.8.1A -- Electrically Operated Unitary Air Conditioners and Condensing Units (continued)

Equipment Type	Size Category	Heating Section Type	Sub-Category or Rating Condition	Minimum Efficiency ^a	Test Procedure ^b
Air conditioners, air cooled	≥65,000 Btu/h and <135,000 Btu/h	Electric resistance (or none)	Split system and single package	10.3 EER (before 1/1/2010) 11.2 EER (as of 1/1/2010)	ARI 340/360
		All other	Split system and single package	10.1 EER (before 1/1/2010) 11.0 EER (as of 1/1/2010)	
	≥135,000 Btu/h and <240,000 Btu/h	Electric resistance (or none)	Split system and single package	9.7 EER (before 1/1/2010) 11.0 EER (as of 1/1/2010)	
		All other	Split system and single package	9.5 EER (before 1/1/2010) 10.8 EER (as of 1/1/2010)	
	≥240,000 Btu/h and <760,000 Btu/h	Electric resistance (or none)	Split system and single package	9.5 EER (before 1/1/2010) 10.0 EER (as of 1/1/2010) 9.7 IPLV	
		All other	Split system and single package	9.3 EER (before 1/1/2010) 9.8 EER (as of 1/1/2010) 9.5 IPLV	
	≥760,000 Btu/h	Electric resistance (or none)	Split system and single package	9.2 EER (before 1/1/2010) 9.7 EER (as of 1/1/2010) 9.4 IPLV	
		All other	Split system and single package	9.0 EER (before 1/1/2010) 9.5 EER (as of 1/1/2010) 9.2 IPLV	

GFCI Receptacles to be Ordinary Maintenance 

On February 5, 2007, the Department of Community Affairs published in the *New Jersey Register* an adoption of a rule providing that the replacement of standard receptacles with those that are required to be Ground-Fault Circuit Interrupter (GFCI) -protected (in accordance with Section 210.8 of the Electrical Subcode) is ordinary electrical maintenance. Therefore, no permit is required. This rule was adopted with an “operative” date. That means that this requirement will not be effective until

July 1, 2007. At that time, you will receive this amendment with your Uniform Construction Code subscription service. Why the two dates, you ask? Well, industry has recently introduced a “fail-safe” type GFCI receptacle and the operative date allows these new devices to become readily available. Therefore, the rule treating the replacement of outlets with GFCI receptacles as ordinary maintenance is as follows:

N.J.A.C. 5:23-2.7(c)3.i – Prior to July 1, 2007:

Ordinary electrical maintenance shall include the

TABLE 6.8.1B – Electrically Operated Unitary and Applied Heat Pumps

Equipment Type	Size Category	Heating Section Type	Sub-Category or Rating Condition	Minimum Efficiency ^b	Test Procedure ^a
Air cooled, (cooling mode)	<65,000 Btu/h ^c	All	Split system	10.0 SEER (before 1/23/2006) 12.0-13.0 SEER (as of 1/23/2006)	ARI 210/240
			Single package	9.7 SEER (before 1/23/2006) 12.0-13.0 SEER (as of 1/23/2006)	
Small duct high velocity (air cooled, cooling mode)	< 65,000 Btu/h ^c	All	Split system	10 SEER	
Air cooled, (heating mode)	<65,000 Btu/h ^c (cooling capacity)	-	Split system	6.8 HSPF (before 1/23/2006) 7.4-7.7 HSPF as of 1/23/2006)	
			Single package	6.6 HSPF (before 1/23/2006) 7.4-7.7 HSPF as of 1/23/2006)	
Small duct high velocity (air cooled, heating mode)	< 65,000 Btu/h ^c (cooling capacity)	-	Split system	6.8 HSPF	

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Discount on ASHRAE Standards

We are happy to inform you that the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) has agreed to continue the "Code Official's Discount" when purchasing any of the ASHRAE standards.

In order to receive the discount, "CODE OFFICIAL DISCOUNT" must be indicated clearly on the order form. All orders must be submitted on letterhead imprinted with the name of the municipality and title. A government purchase order and government check must be included.

Please mail your order to:

ASHRAE
1791 Tullie Circle, NE
Atlanta, Georgia 30329
Attention: Customer Service Manager

Don't forget to indicate "CODE OFFICIAL DISCOUNT" on the order form!

Should you need to contact ASHRAE, the telephone number is (800) 527-4723. Should you have any questions, you may contact me at (609) 984-7609.

Source: Thomas C. Pitcherello
Code Assistance Unit

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TABLE 6.8.1B -- Electrically Operated Unitary and Applied Heat Pumps (continued)

Equipment Type	Size Category	Heating Section Type	Sub-Category or Rating Condition	Minimum Efficiency ^a	Test Procedure ^b		
Air cooled (cooling mode)	≥65,000 Btu/h and <135,000 Btu/h	Electric resistance (or none)	Split system and single package	10.1 EER (before 1/1/2010) 11.0 EER (as of 1/1/2010)	ARI 340/360		
		All other	Split system and single package	9.9 EER (before 1/1/2010) 10.8 EER (as of 1/1/2010)			
	≥135,000 Btu/h and <240,000 Btu/h	Electric resistance (or none)	Split system and single package	9.3 EER (before 1/1/2010) 10.6 EER (as of 1/1/2010)			
		All other	Split system and single package	9.1 EER (before 1/1/2010) 10.4 EER (as of 1/1/2010)			
	≥240,000 Btu/h	Electric resistance (or none)	Split system and single package	9.0 EER (before 1/1/2010) 9.5 EER (as of 1/1/2010) 9.2 IPLV			
		All other	Split system and single package	8.8 EER (before 1/1/2010) 9.3 EER (as of 1/1/2010) 9.0 IPLV			
	Air cooled (heating mode)	≥65,000 Btu/h and <135,000 Btu/h (cooling capacity)	-	47°F db/43°F wb outdoor air		3.2 COP (before 1/1/2010) 3.3 COP (as of 1/1/2010)	ARI 340/360
				17°F db/15°F wb outdoor air		2.2 COP	
≥135,000 Btu/h (cooling capacity)		-	47°F db/43°F wb outdoor air	3.1 COP (before 1/1/2010) 3.2 COP (as of 1/1/2010)			
			17°F db/15°F wb outdoor air	2.0 COP			

Residential Fire Sprinklers

Hurray, my job just got easier. I've already done two articles explaining the exceptions to the fire sprinkler requirements of the International Building Code (IBC) for Group R-2 occupancies and explaining why a two-story R-2 is not required to have fire sprinklers, while the same building with a basement does require fire sprinklers. Now I do not ever have to do another one.

Why, you ask? Because the IBC/2006, New Jersey Edition, Section 903.2.7 now requires automatic fire sprinklers to be installed throughout all buildings with a Group R fire area. There are no longer any exceptions.

If you have any questions, and you shouldn't, you can call me at (609) 984-7672.

Source: Gerry Grayce
Office of Regulatory Affairs

TABLE 6.8.1D – Electrically Operated Packaged Terminal Air Conditioners, Packaged Terminal Heat Pumps, Single-Package Vertical Air Conditioners, Single-Package Vertical Heat Pumps, Room Air Conditioners, and Room Air-Conditioner Heat Pumps

Equipment Type	Size Category (Input)	Subcategory or Rating Condition	Minimum Efficiency	Test Procedure
SPVAC (Cooling Mode)	All Capacities <65,000 Btu/h	95°F db/ 75°F wb Outdoor Air	8.6 EER 9.0 EER	ARI 390
	≥65,000 Btu/h and <135,000 Btu/h	95°F db/ 75°F wb Outdoor Air	8.9 EER	
	≥135,000 Btu/h and <240,000 Btu/h	95°F db/ 75°F wb Outdoor Air	8.6 EER	
SPVHP (Cooling Mode)	All Capacities <65,000 Btu/h	95°F db/ 75°F wb Outdoor Air	8.6 EER 9.0 EER	
	≥65,000 Btu/h and <135,000 Btu/h	95°F db/ 75°F wb Outdoor Air	8.9 EER	
	≥135,000 Btu/h and <240,000 Btu/h	95°F db/ 75°F wb Outdoor Air	8.6 EER	
SPVHP (Heating Mode)	All Capacities <65,000 Btu/h	47°F db/ 43°F wb Outdoor Air	2.7 COP 3.0 COP	
	≥65,000 Btu/h and <135,000 Btu/h	47°F db/ 43°F wb Outdoor Air	3.0 COP	
	≥135,000 Btu/h and <240,000 Btu/h	47°F db/ 43°F wb Outdoor Air	2.9 COP	

In reference to the equipment above, add the following definitions:

Single-Package Vertical Air Conditioner (SPVAC) is a type of air-cooled, small or large commercial package air-conditioning and heating equipment; factory assembled as a single package, having its major components arranged vertically, which is an encased combination of cooling and optional heating components; is intended for exterior mounting on, adjacent interior to, or through an outside wall; and is powered by single or three-phase current. It may contain separate indoor grille(s), outdoor louvers, various ventilation options, indoor free air discharge, ductwork, wall plenum, or sleeve. Heating components may include electrical resistance, steam, hot water, gas, or no heat, but may not include reverse cycle refrigeration as a heating means.

Single-Package Vertical Heat Pump (SPVHP) is an SPVAC that utilizes reverse cycle refrigeration as its primary heat source, with secondary supplemental heating by means of electrical resistance, steam, hot water, or gas.

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replacement of any receptacle, switch, or lighting fixture, rated at 20 amps or less and operating at less than 150 volts to ground, with a like or similar item. Replacement of receptacles in locations where GFCI protection is required by the Electrical Subcode shall not be considered ordinary maintenance.

N.J.A.C. 5:23-2.7(c)3.i – On and after July 1, 2007: Ordinary electrical maintenance shall include the replacement of any receptacle, switch, or lighting fixture rated at 20 amps or less and operating at less than

150 volts to ground with a like or similar item, including receptacles in locations where GFCI protection is required.

If you have any questions, please contact me at (609) 984-7609.

Source: Rob Austin
Code Assistance Unit

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TABLE 6.8.1F – Gas- and Oil-Fired Boilers

Equipment Type ^a	Size Category (Input)	Subcategory or Rating Condition	Minimum Efficiency ^b	Test Procedure ^c
Boilers, Gas-Fired	300,000 Btu/h	Hot Water	80% AFUE	DOE 10 CFR Part 430
		Steam	75% AFUE	
	300,000 Btu/h and ≤2,500,000 Btu/h	Maximum Capacity ^d	75% E_t^b and 80% E_c	H.I. Htg Boiler Std. DOE 10 CFR Part 431
Boilers, Oil-Fired	>2,500,000 Btu/h ^a	Hot Water	80% E_c	
	>2,500,000 Btu/h ^a	Steam	80% E_c	
	300,000 Btu/h		80% AFUE	DOE 10 CFR Part 430
	300,000 Btu/h and ≤2,500,000 Btu/h	Maximum Capacity ^d	78% E_t^b and 83% E_c	H.I. Htg Boiler Std. DOE 10 CFR Part 431
Boilers, Oil-Fired (Residual)	>2,500,000 Btu/h ^a	Hot Water	83% E_c	
	>2,500,000 Btu/h ^a	Steam	83% E_c	
	300,000 Btu/h and ≤2,500,000 Btu/h	Maximum Capacity ^d	78% E_t^b and 83% E_c	H.I. Htg Boiler Std. DOE 10 CFR Part 431
	>2,500,000 Btu/h ^a	Hot Water	83% E_c	
	>2,500,000 Btu/h ^a	Steam	83% E_c	

A These requirements apply to boilers with rated input of 8,000,000 Btu/h or less that are not packaged boilers, and to all packaged boilers. Minimum efficiency requirements for boilers cover all capacities of packaged boilers

B E_t = thermal efficiency. E_c = combustion efficiency. See reference document for detailed information.

C Section 12 contains a complete specification of the referenced test procedure, including the referenced year version of the test procedure.

D Minimum and maximum ratings as provided for and allowed by the unit's controls.

These changes (in I-P units) and others (such as S1 units) can be found at <http://www.ashrae.org> under the "Standards Addenda" link.

If you have any questions, please contact me at (609) 984-7609.

Source: Rob Austin
Code Assistance Unit

Home Improvement Contractors

Home improvement contractors who had applied for registration prior to the December 31, 2005 deadline, but had not yet received their registrations from the Division of Consumer Affairs, were allowed to sign a certification indicating that they had applied prior to the deadline and that the application had not been denied. This was done by the Division of Consumer Affairs by rule so that contractors could continue to obtain permits while their applications were pending, since there were so many applications filed just prior to the deadline.

This rule is still in place. However, more than a year later, there should be few, if any, contractors who applied before the deadline and have not received registrations. To try to identify and resolve any outstanding issues with the remaining few, the Division of Consumer Affairs has asked that code officials take the following additional steps. If a contractor applies for a permit with the certification that application was made before the December 31, 2005 deadline, then please check the Division of Consumer Affairs web site for the contractor's name. The web site is:

<http://www.njconsumeraffairs.com/contractor>

Please note that there are two lists to check: the list of registered home improvement contractors and the list of home improvement contractor applications denied or withdrawn. (There are only about 30 names on the second list.) If you do not find the name on the web site and the contractor is still trying to use the 2005 certification to pull permits, please e-mail Veronica Hursthouse at the Division of Consumer Affairs with the contractor's name, date of application, and business address. Her e-mail address is Hursthousev@dca.lps.state.nj.us. She will review what has happened with the application and advise you as to how to proceed.

Thank you for your continuing cooperation in the enforcement of this (relatively) new law.

Source: Amy Fenwick Frank
Division of Codes and Standards

New Jersey Register Adoptions

Date: January 2, 2007
Adoption: 39 NJR 28(b)
Summary: The adopted amendments to *N.J.A.C.* 5:23-6.3, 6.22; 5:70-1.5, 4.3, and 4.7 require the installation of automatic sprinkler protection throughout all existing nursing homes. This retrofit requirement is in the Uniform Fire Code (UFC). The amendments in the Uniform Construction Code (UCC) apply to projects subject to the Rehabilitation Subcode. The adopted amendments eliminate the exception for nursing homes of noncombustible construction.

Date: January 16, 2007
Adoption: 39 NJR 370(b)
Summary: The adopted amendments to *N.J.A.C.* 5:23-2.18, 2.31, and 4.5 permit a construction official to issue and enforce a stop construction order for an entire residential development upon a written, documented finding of a pattern or practice of similar violations affecting framing, fire safety, or structural safety in most or all of the units.

Date: February 5, 2007
Adoption: 39 NJR 370(a)
Summary: The adopted amendment to *N.J.A.C.* 5:23-2.7 designates as "electrical ordinary maintenance" the replacement of a receptacle in a location that requires ground-fault circuit-interrupter protection, and eliminates the permit and inspection requirements under the UCC. NOTE: The operative date of this rule is July 2007. Please take note of the companion article in this *Construction Code Communicator*.

Date: February 5, 2007
Adoption: 39 NJR 363(b)
Summary: The adopted amendments at *N.J.A.C.* 5:10-27.1 and 27.4 delete the requirement that the bars of window guards have a dimension of one-half inch. The requirement that window guards allow for natural light and ventilation has been retained. The adopted amendments provide for the acceptance of window guards that meet the American Society for Testing and Materials standards as complying with the requirements of the Regulations for Maintenance of Hotels and Multiple Dwellings (*N.J.A.C.* 5:10).

Date: February 5, 2007
Adoption: 39 NJR 371(a)
Summary: The adopted amendments to *N.J.A.C.* 5:23-3.14, 6.13, 6.13A, 6.31; 5:70-1.5, 4.3, 4.7, 4.9, and 4.11 adopt more stringent requirements for nightclub occupancies under the UFC and the UCC. The adopted amendments define "nightclub." The adopted amendments require an automatic fire-suppression system in nightclubs, or portions thereof, with an occupant load of 300 or more. The adopted amendments require the installation of an automatic fire-alarm system in nightclubs, or portions thereof, with an occupant load of 100 or more that are not otherwise required to have an automatic fire-suppression system. The adopted amendments require that nightclubs, or portions thereof, with an occupant load of more than 300, have a main entrance with an egress capacity of at least two-thirds of the total occupant load.

Date: February 5, 2007
Adoption: 39 NJR 376(a)
Summary: The adopted new rule at *N.J.A.C.* 5:23-9.3 is an interpretation which clarifies that recreational park trailers are subject to the adopted subcodes of the UCC. Additionally, as part of this interpretation, the Department of Community Affairs will be withdrawing UCC Bulletin Nos. 93-6 and 90-2.

Grill Safety Information Available

Spring is a time when many of us return to the outdoors to grill. Nationally, there are about 600 grill accidents a year. The Liquefied Petroleum Gas Education and Safety Board and the Department of Community Affairs are trying to educate consumers on measures to take to grill more safely. A brochure on grilling safety tips, which can be used as a counter document, is available on the Department's web site. It's available in pdf format and can be downloaded at www.nj.gov/dca/codes/.

Source: Michael Baier
Bureau of Code Services

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Permits Not Required

As we all know, the list for when a Uniform Construction Code (UCC) permit is not required is a lot smaller than the list for when a permit is required. This list can be found at *N.J.A.C. 5:23-2.14*. This section is entitled “Construction Permits — When Required” and the following are the exceptions, or when a permit is not required.

1. A permit is not required for ordinary maintenance, as defined in *N.J.A.C. 5:23-2.7*. There is no requirement to provide notice to the enforcing agency. Sections 2.7(c)1 through (c)6 contain specific maintenance items that are considered ordinary maintenance for the building, plumbing, electrical, fire protection, mechanical, and elevator subcodes, respectively.
2. A permit is not required for temporary structures (excluding tents, tensioned-membrane structures, canopies, and greenhouses) covering an area less than 120 square feet, including all connecting areas or spaces with a common means of egress or entrance that remain in place for less than 180 days.
3. Although the tents, tensioned-membrane structures, and canopies that meet all of the criteria below do not require a UCC permit, they are subject to the permitting requirements of the Uniform Fire Code (UFC) (*N.J.A.C. 5:70-2.7*).

- ☞ The tent, tensioned-membrane structure, or canopy is 140 feet or less in any dimension and 16,800 square feet or less in area, whether it is one unit or is composed of multiple units;
 - ☞ The tent, tensioned-membrane structure, or canopy remains in place or will remain in place for fewer than 180 days;
 - ☞ The tent, tensioned-membrane structure, or canopy is used or occupied only between April 1 and November 30;
 - ☞ The tent, tensioned-membrane structure, or canopy does not have a permanent anchoring system or foundation; and
 - ☞ The tent, tensioned-membrane structure, or canopy does not contain platforms or bleachers greater than 11 feet in height.
4. A permit is not required for a temporary greenhouse, also called a “hoophouse” or “polyhouse,” that meets the criteria of *N.J.A.C. 5:23-3.2(d)*.

NOTE for #3 and #4: Regardless of whether the structure of the tent, tensioned-membrane structure, canopy, or greenhouse requires a permit, a permit is required for any electrical equipment, electrical wiring, or mechanical

Peer Review Activities

Another year, another article, another busy year for Peer Review and the Office of Regulatory Affairs. This is the third consecutive year I have written this article with the hope of helping code officials understand that they are accountable for their actions and that their peers believe in high ethical standards. In 2006, the Office of Regulatory Affairs brought 19 individuals before Peer Review. In addition, 3 individuals surrendered their licenses and 42 received another sanction, including a Letter of Warning or a Letter of Reprimand. Following are brief synopses of several cases and the recommended sanctions:

The Office of Regulatory Affairs proposed a revocation of all the Uniform Construction Code (UCC) licenses held by a working official for submitting a false test result, which certified that he passed the Mechanical Test when he had failed the test. The Plumbing Peer Review Committee affirmed the Office of Regulatory Affairs' recommendation.

The Office of Regulatory Affairs proposed a 10-day suspension of all UCC licenses held by an individual who submitted inconsistent statements in an application for licensure. The Building Peer Review Committee recommended a \$500 penalty and a Letter of Reprimand. The Penalty and Order issued were consistent with the Peer Review recommendation.

The Office of Regulatory Affairs proposed a 60-day suspension of all UCC licenses and a \$5,500 penalty for performing 70 inspections in one day, and for building code deficiencies subsequently uncovered. The Building Peer Review Committee recommended revocation of the Building Subcode Official and Building Inspector licenses, and a \$5,000 penalty. The Order to Revoke and Order to Pay Penalty issued were consistent with the Peer Review Committee's recommendation.

The Office of Regulatory Affairs proposed revocation of all UCC licenses held by an individual who, while performing inspections on a project, obtained trusses from the developer at a discounted price. The Building Peer Review Committee affirmed the Office of Regulatory Affairs' recommendation. The individual subsequently surrendered the licenses prior to a Revocation Order being issued.

The Office of Regulatory Affairs proposed revocation of all UCC licenses of an individual who provided architectural services in adjacent municipalities while working as a construction official, a clear violation of the Conflict-of-Interest provisions. The Building Peer Review Committee affirmed the Office of Regulatory Affairs' proposal. The Order to Revoke was issued and the case is currently awaiting a trial date.

We would like to remind you, if any official is not sure what to do in a certain situation, to please give us a call. We will attempt to help resolve any ambiguities. We also provide recommendations to ensure that the issues you face do not escalate into problems that could result in sanctions.

If you have any questions, please call the Office of Regulatory Affairs at (609) 984-7672.

Source: Louis Mraw
Office of Regulatory Affairs

Required Permits for Mechanical Equipment in R-3 or R-5 Dwellings

Back in 1994, Michael Baier wrote an article in the *Construction Code Communicator* entitled "How Many Permits Do I Need." I am now writing a follow-up article since the question regarding the replacement of furnaces, boilers, heating/air-conditioning equipment, and domestic water heaters in Group R-3 or R-5 dwellings is still popular.

In the 1990s, the Department of Community Affairs established a mechanical subcode inspector for the mechanical work in Group R-3 and R-5 dwellings. It was thought that a municipality would use the mechanical subcode official to review and inspect the mechanical work, and would require only one mechanical technical section, excluding the required electrical or plumbing technical sections, if applicable. Unfortunately, having a mechanical subcode official is voluntary and it never took off. Therefore, if a municipality did not use the mechanical subcode official, three or four technical sections were required for a simple furnace or boiler replacement.

The Department receives many calls complaining about the high cost of permit fees for a replacement because municipalities have set a minimum fee for each required technical section. Some municipal fees accumulate to over \$200 for a furnace replacement. It is hard for a homeowner to comprehend such an excessive permit fee for such a simple job.

N.J.A.C. 5:23-3.4(d) states:

"Any mechanical inspector employed by the Department or by a municipality, and so assigned by the construction official, shall have the responsibility for enforcement of the provisions of the code, except electrical, relating to the installation of mechanical equipment, such as refrigeration, air conditioning or ventilating

(continued from page 13)

- equipment that would otherwise require a permit.
5. A gas utility company is not required to obtain a permit, or give notice to the enforcing agency, for moving a meter (and related appurtenances) from the interior to the exterior of a building when that meter is owned by the gas utility company.
 6. A permit is not required for a sign that meets all of the following conditions; however, the construction official has the authority to require the removal of any sign that creates an unsafe condition, or otherwise to require correction of any such condition:
 - ☞ It is supported by uprights or braces in or upon the ground surface;
 - ☞ It is not served by an electrical circuit directly connected to the sign;
 - ☞ It is not greater than 25 square feet in surface area (one side); and
 - ☞ It is not more than 6 feet above the ground (mounted height).
 7. A permit is not required for lead abatement work performed on a steel structure or other superstructure, or in a commercial building.
 8. A permit is not required for garden-type utility sheds and similar structures that are 100 square feet or less in area; 10 feet or less in height; and accessory to buildings of Group R-2, R-3, R-4, or R-5. Such garden-type utility sheds and similar structures are required to comply with the requirements at *N.J.A.C. 5:23-9.9*.
 9. A permit is not required for fences 6 feet or less in height. This exception does not apply to barriers surrounding public or private swimming pools.
 10. A construction permit is not required for an outdoor maze unless it is 6 feet or greater in height, or contains any electrical equipment. However, outdoor mazes that do not require a UCC permit are subject to the permitting requirements of the UFC (*N.J.A.C. 5:70-2.7*).

The above are exceptions from a UCC permit altogether. There are some instances where a UCC permit is required, but work may begin before the permit is obtained. These are:

1. Minor work, as defined by *N.J.A.C. 5:23-2.17A*, requires a permit. However, work may proceed, upon notice to the enforcing agency, before the permit is issued.

2. Emergency work that does not involve lead abatement requires a permit; the permit application may be provided as soon after the work begins as is practicable, but not later than 72 hours thereafter.

Anything not mentioned above must follow the normal UCC permit process to construct, enlarge, repair, renovate, alter, reconstruct, or demolish a structure; or to change the use of a building or structure, or portion thereof; or to install or alter any equipment for which provision is made, or the installation of which is regulated, by the UCC; or to undertake a project involving lead abatement in accordance with *N.J.A.C. 5:17*.

If you have any questions, please contact me at (609) 984-7609.

Source: Rob Austin
Code Assistance Unit

Use Group Classifications: Building Subcode and Plumbing Subcode

The following is based on the 2006 edition of the National Standard Plumbing Code (NSPC), New Jersey's adopted Plumbing Subcode.

First, let's touch base on the issue of the proper group classification. In the Spring 2005 *Construction Code Communicator*, I wrote an article addressing the different group classifications in the International Building Code (IBC) and the NSPC. The Department of Community Affairs is still receiving many calls from architects, engineers, and code officials as to the proper group to use for determining the required number of plumbing fixtures. A couple of examples might help: Restaurants are Group A-2 in the IBC, but are Group A-3 in the NSPC; higher-education facilities are Group B in the IBC, but are Group E in the NSPC.

I would like to emphasize that the descriptions of the building use (as set forth in the Building and Plumbing Subcodes), and NOT simply the group classification, must be used.

Should you have any questions, you may contact me at (609) 984-7609.

Source: Thomas C. Pitcherello
Code Assistance Unit

(continued from page 14)

apparatus, gas piping or heating systems, in Group R-3, R-4, or R-5 structures.

1. When assigned by the construction official, a plumbing subcode official shall have the responsibility for the enforcement of the provisions of the code, except electrical, for the replacement of heating or cooling equipment or water heaters in Group R-3, R-4, or R-5 structures. A plumbing subcode official need not be a mechanical inspector to perform these inspections."

N.J.A.C. 5:23-4.18(c)5, Standards for Municipal Fees, clearly states: "The municipality shall set a flat fee for a mechanical inspection performed by a mechanical inspector or a plumbing inspector in a structure of Group R-3, R-4, or R-5. No separate fee shall be charged for gas, fuel-oil, or water piping connections, including the bonding conductor (jumper), associated with the mechanical equipment inspected."

In order to avoid discouraging individuals from obtaining permits for projects involving the simple replacement of equipment due to the high cost of the permit fees, the Department encourages municipalities that do not employ a mechanical inspector to assign to the plumbing inspector enforcement responsibility for the Mechanical Subcode for direct replacement heating or cooling equipment. Also, the municipality needs to set a flat fee for mechanical inspections. In addition to establishing a reasonable cost for the work performed, this would eliminate the need for a homeowner to have to stay home for multiple inspections that may occur on different days.

As a guide, the following technical items require inspection whether there is a mechanical inspector, or enforcement responsibility is assigned to the plumbing inspector for replacement heating or cooling equipment applicable to work in buildings of Groups R-3 and R-5.

- ☞ Gas-Fired Furnace (replacement): mechanical and electrical
- ☞ Direct-Vent, Gas-Fired Furnace (replacement): mechanical and electrical
- ☞ Gas-Fired, Hot-Water Boiler (replacement): mechanical and electrical; plumbing, if a backflow preventer is required to be replaced

The following requires inspection by a mechanical inspector where a mechanical inspector is assigned for the installation of new heating or cooling equipment:

- ☞ New Direct-Vent, Gas-Fired Furnace: mechanical and electrical
- ☞ New Gas-Fired, Hot-Water Boiler: mechanical and electrical; plumbing, if a backflow preventer is required to be installed

For new heating and/or cooling equipment work in a building of Group R-3 or R-5, the following technical items require inspection as indicated where a mechanical inspector is not assigned:

- ☞ Gas-Fired Furnace: plumbing, fire, electrical, and possibly building, depending on the chimney type
- ☞ Direct-Vent, Gas-Fired Furnace: plumbing, electrical, and fire
- ☞ Gas-Fired, Hot-Water Boiler: plumbing, fire, electrical, and possibly building, depending on the chimney type

This should be considered a guide to help determine what technical sections are required for some equipment installations. This is not a total list. Also, check *N.J.A.C. 5:23-3.4*, Responsibilities, to verify responsibility for plan review and inspections for Group R-3 and Group R-5.

Should you have any questions, you may contact me at (609) 984-7609.

Source: Thomas C. Pitcherello
Code Assistance Unit

Visible Alarm Notification – IBC/2000 and ICC/ ANSI A117.1-1998: Clarification of the Winter 2005 Communicator Article

In the *Construction Code Communicator* published in the winter of 2005, there was an article concerning visible alarm notification appliances in Group R-2 buildings. This article stated that Section 907.9.1.3 of the International Building Code (IBC) 2000 requires occupancies of Group R-2 that are required to have a fire-alarm system as per Section 907.2.10.1.2 to be provided with the capability to support visible alarm notification appliances within all of the dwelling units. An error was made referencing Section 907.2.10.1.2 for R-2 fire-alarm systems. Section 907.2.10.1.2 is for single- or multiple-station smoke alarms in Groups R-2, R-3, R-4, and I-1. **The correct section is 907.2.9. Section 907.9.1.3 changes to 907.9.1.4 in the International Code Council 2006 edition.**

Note: Section 907.2.10.1.2 requires Groups R-2, R-3, R-4, and I-1 to have single- or multiple-station smoke alarms installed and maintained, regardless of occupant load.

The device installation associated with the visible alarm notification appliance is an adaptable feature. This is similar to providing grab bars, which are an adaptable feature; the supportive blocking is installed in the wall and the actual grab bar is installed when needed by the occupant. Based on the same principle, the wiring for the notification appliance must be provided for the future installation of a visible alarm notification appliance.

Addition to this Article:

Some questions have arisen about number 1 of Section 907.2.9. This section requires manual alarms to be installed in buildings three or more stories above the lowest level of exit discharge. There is a question as to what is considered the lowest level of exit discharge. Any time this statement is used in the code, the floor count starts above the ground floor or the lowest level of exit discharge. In this case, a building with dwelling units or sleeping units four stories above grade must comply with this section and must be provided with the capability of supporting visible alarm notification appliances within all of the dwelling units.

Hopefully, this helps clarify this section. If you have questions, I may be reached at (609) 984-7609.

Source: Michael E. Whalen
Code Assistance Unit

NFPA 13R -- When It's Appropriate/When It's

Not 

In both the International Building Code (IBC) and in the National Fire Protection Association (NFPA) standards itself, the scoping for an NFPA 13R sprinkler system limits the use of a 13R system to residential occupancies up to and including four stories in height (above grade). What happens when another group is located below a residential occupancy? Is a mixed system appropriate: NFPA 13 for the nonresidential use and NFPA 13R for the residential portion?

Example #1: A grade-level, nonresidential space is appropriately separated from three residential stories above (a four-story building). The grade level (nonresidential) is protected with an NFPA 13 system. Can

the three residential stories be protected with a 13R system? The answer is yes.

In the IBC, Section 903.3.1.2 (IBC/2000 and IBC/2006) limits an NFPA 13R system to Group R buildings that are up to and including four stories in height.

Therefore, in the example above, it would be permissible to install an NFPA 13 system on the first (nonresidential) floor and an NFPA 13R system in the three stories of Group R above. This is based on the fact that the total building does not exceed four stories in height.

Example #2: A grade-level, nonresidential space is appropriately separated from four residential stories above (a five-story building). The grade level is protected with an NFPA 13 system. Can the four residential stories be protected with a 13R system? The answer is no.

Based on the same code sections cited above, the required fire-sprinkler system for the entire building, including the residential portion, is NFPA 13. This is based on the fact that the total building is greater than four stories in height.

Example #3: A four-story residential occupancy is situated above a grade-level parking garage (S-2) and is appropriately separated. Can an NFPA 13 system be installed in the S-2 portion and can the residential portion be protected with an NFPA 13R sprinkler system? The answer is yes.

In the IBC, Sections 508.2 (IBC/2000) and 509.2 (IBC/2006) permit a Group S-2 enclosed parking garage to be separated in accordance with the provisions of the section, and to be considered a separate building from the occupancy above. Because the total building does not exceed four stories in height, the residential occupancy can be protected with an NFPA 13R system.

If you have any questions, please call me at (609) 984-7672.

Source: Gerry Grayce
Office of Regulatory Affairs

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