

**Solid Fuel Appliances**

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installation of fuel gas appliances, such as fuel supply connections and combustion air, you should refer to the appropriate IFGC sections. The purpose of this article is to focus on the IMC requirements.

Section 906.1 of the IMC entitled "General," requires that the solid fuel fired barbecue appliance be of an *approved* type and installed in accordance with the manufacturer's installation instructions. As defined in Section 202 of the IBC/2006, the word *approved* means "acceptable to the code official or other authority having jurisdiction." The building and fire subcode officials must review the plans for the installation of these appliances and the building subcode official has inspection responsibility for the installation of the appliance only. A barbecue appliance that is factory-built is NOT required to be listed and labeled and the code official has the authority to approve its installation. The manufacturer's installation instructions must be followed for clearances and location.

From an exhaust standpoint, Section 507.2.1 of the IMC/2006, entitled "Type I hoods" requires a Type I hood to be installed where the cooking appliance produces grease or smoke. Clearly, a wood- or charcoal-fueled barbecue appliance produces smoke; therefore, a Type I hood is required to be installed over the appliance. Furthermore, the definition of "Extra Heavy Duty Cooking Appliances" in Section 202 of the IMC/2006 includes solid fuel burning appliances as such. Section 507.2.4 of the IMC/2006, entitled "Extra-heavy-duty," states that the hood may not cover any other cooking appliance that requires a hood with a fire extinguishing system. Additionally, the exhaust from the hood covering the barbecue appliance must be independent from all other exhaust systems. "Solid Fuel Cooking Applications" are defined in Section 202 of the IMC/2006 as a commercial food service operation burning hardwood, mesquite, charcoal, or briquettes as the heat source for the cooking operations.

Section 507.13.1 of the IMC/2006, entitled "Extra-heavy duty cooking appliances," requires minimum exhaust ventilation between 550 to 700 CFM per linear foot of hood for these operations depending on the type of canopy installed. Section 508.1 of the IMC/2006, entitled "Makeup air," requires that makeup air must be approximately equal to the exhaust air flow.

If you have any questions, please feel free to call me at (609) 984-7609.

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## Equipotential Bonding and the NEC/2008



In the National Electrical Code (NEC), the purpose of the section on pool bonding has remained consistent: to reduce or eliminate voltage gradients in pool areas. That said, the change in language in the NEC/2005 caused some confusion regarding Section 680.26, "Equipotential Bonding," when the word "Equipotential" was added to the title (which had been "Bonding") and requirements were added to the code. An article in the Summer/Fall 2007 *Construction Code Communicator* attempted to clarify the equipotential bonding requirements of NEC/2005. This article attempts to clarify the equipotential bonding requirements of the NEC/2008. This appears to be particularly confusing because of the way that the sections were subdivided.

**1. Pool Shells, NEC/2008 Article 680.26(B)(1)** – Conductive pool shells consist of poured concrete, pneumatically applied or sprayed concrete, or concrete block with painted or plastered coating materials. Non-conductive pool shells include vinyl liners and fiberglass composite materials.

(a) – Typically, structural reinforcing steel is used in the conductive pool shells listed above. To be considered bonded, unencapsulated structural reinforcing steel is permitted to be secured together by steel tie wires.

(b) – When the pool reinforcing steel is encapsulated in a nonconductive material (coated rebar), then the bonding requirements, which are summarized in 1a above, no longer apply; however, a copper conductor grid must be installed within or under the pool and no more than 6 inches from the outer contour of the pool shell. The grid must be constructed of at least a #8 AWG bare solid copper conductor bonded to each other at all crossing points, and arranged in a 12 inch by 12 inch (12" X 12") grid with a tolerance of 4 inches.

**2. Perimeter Surfaces, NEC/2008 Article 680.26(B)(2)** – The NEC/2008 requires that ANY surface (e.g. soil, grass, concrete, pavers, etc.) around the pool or outdoor spa/hot tub must have equipotential bonding.

(a) – Unencapsulated structural reinforcing steel (summarized in 1a above) installed in a perimeter surface that extends three (3) feet from the pool wall is required to be bonded back to the pool shell at four (4) uniformly spaced points around the pool.

(b) – When the perimeter surfaces contain

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reinforcing steel encapsulated in a nonconductive material (coated rebar), or when the pool is fiberglass, or vinyl, then a copper conductor that meets the following must be used: (1) a minimum of a #8 AWG bare solid copper bonding conductor that follows the contour of the perimeter surface between 18 and 24 inches from the inside walls of the pool; (2) the bonding conductor shall be secured within (i.e. paved surface) or under the perimeter surface 4 to 6 inches below the subgrade (soil); and (3) listed splicing devices must be used.

**3. Pool Water, Article 680.26(C)**– This section requires a minimum conductive surface area of 9 square inches to be installed in contact with the pool or outdoor spa/hot tub. For example, the metal handrails of a ladder may be used as long as a minimum of 9 square inches is submerged in the pool in contact with the water. If there is no ladder (or other conductive surface), a component that

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meets the requirements of this section may be used. Please keep in mind that there are other items that are part of the equipotential bonding system that are not discussed in this article. As per Section 680.26(B), the following are also included, as applicable: metallic components, underwater lighting, metal fittings, electrical equipment, and metal wiring methods and equipment.

An example of typical equipotential bonding setup for an unencapsulated reinforced steel inground pool is provided below as a convenient accompaniment to this article. Please note that the graphic is an illustration only and is not a substitute for the code text.

If you have any questions, please call the Code Assistance Unit at (609) 984-7609.

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