GREAVES

Pool Mesh for Equipotential Bonding NEC 2005

FAQ What is the situation with "wire mesh" for Equipotential Bonding in pool construction?

BACKGROUND For pool/spa construction, the concept of the equipotential (common) bonding grid is now well accepted. Most metal objects, including structural reinforcing steel in concrete, must be bonded together, either to each other or linked with copper conductor (#8 solid minimum), per 2005 NEC 680.26B.

NEC But code changes have resulted in various interpretations and much discussion. States, localities, and AHJs are adopting the 2005 NEC at various times and in various ways, so there is uneven adoption and some confusion.

In pool walkway or decking, 2005 NEC 680.26C calls for reinforcing steel that is within 3 ft of the inside pool wall to be included in the equipotential bonding grid. While 680.26C(1) implies that "structural reinforcing steel" is "rod", general practice is also to include structural steel wire "mesh" in this category. It is likely that the next NEC will clearly include structural steel "mesh" in concrete.

CONNECTIONS There is also discussion on how to connect steel wire mesh to the grid or to another section of mesh:

- One method to connect rebar-to-mesh or mesh-to-mesh is with the "usual steel tie wires" installed by the mechanical or concrete contractor.
- Another method is with exothermic welding.
- In terms of electrical connectors, there are bronze split bolts which are direct burial-rated for copper-to-copper applications. But there is no known connector listed for steel-to-steel or copper-to-steel wire applications. However, a properly sized bronze split bolt which is listed for direct burial, is accepted by most authorities for steel-to-steel wire, or copper-to-steel wire connections. This acceptance is based on the precedent that this copper-to-steel material combination is the same as copper-to-rebar, for which connectors of the same materials are listed.

While 12 X 12 inch copper mesh is available for use under paving stones, its structural strength for concrete reinforcement is in question. While steel mesh is structurally appropriate for concrete decking, it should be supported during the pour, so as to be totally embedded within the concrete (vs laid directly on grade and therefore susceptible to corrosion).

Examples of various state code situations about which we have been informed, include:

- In Massachusetts NEC 680.26C has been deleted until 1/1/2008. Until then, it is not necessary to install mesh or grid in decking. However, if grid is already in place, then it must be connected. Most inspectors accept the Greaves A-DB Mesh-Bug for this copper-to-steel application.
- Connecticut and Louisiana require a bonding grid to be installed in pool decking.
- New Jersey requires the steel wire mesh in pool decking to be connected to the grid, and most inspectors accept the Greaves A-DB Mesh-Bug. Where no steel mesh is present, such as under paving stones, New Jersey inspectors require copper mesh to be installed and bonded, per 680.26C(3).

Always refer to your local AHJ for specific job requirements.

PRODUCTS AVAILABLE from Greaves Corp.
Greaves offers the A-DB Mesh-Bug Series for connecting bonding conductor to mesh. This series is UL listed for direct burial on copper wire(see above). Greaves also offers the entire Jones Bond^{tm} System for use in pool/spa construction. See pages 76-77 in the 2006 Greaves catalog, or visit www.greaves-usa.com.

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