



**APPENDIX C
CODE CHANGE PROPOSAL
NORTH CAROLINA
BUILDING CODE COUNCIL**

Item B – 4

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Petition for Rule Making

Item Number _____

Granted by BCC _____

Adopted by BCC _____

Approved by RRC _____

Denied by BCC _____

Disapproved by BCC _____

Objection by RRC _____

PROPONENT Reuben E. Clark PHONE (919) 781 -3411.

REPRESENTING CMI

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North Carolina State Building Code, Volume _____ - Section _____

CHECK ONE: Revise section to read as follows: Delete section and substitute the following.
 Add new section to read as follows: Delete section without substitution.

~~LINE THROUGH MATERIAL TO BE DELETED~~ UNDERLINE MATERIAL TO BE ADDED

Please type. Continue proposal or reason on plain paper attached to this form. See reverse side for instructions. For the existing 2017 NEC and when adopting the 2020 NEC, prescribe where a certain section is applicable by Inserting a new revision as follows:

680.26(B)(2)(b). Insert an additional paragraph to follow the five-item list and reading as follows:
“(6) This method shall only be permitted for above-ground pools.”

Will this proposal change the cost of construction? Decrease Increase No (only on In Ground Swimming Pools by less than \$400)

Will this proposal increase the cost of a dwelling by \$80 or more? Yes No

Will this proposal affect Local or State funds? Local State No

Will this proposal cause a substantial economic impact (≥ \$1,000,000)? Yes No

Non-Substantial - Provide an economic analysis including benefit/cost estimates.

Substantial - The economic analysis must also include 2-alternatives, time value of money and risk analysis.

REASON:

See Attached Sheet.

Signature Reuben E. Clark

DATE: 4-25-22

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For the existing 2017 NEC and when adopting the 2020 NEC, prescribe where a certain section is applicable by Inserting a new revision as follows:

680.26(B)(2)(b). Insert an additional paragraph to follow the five-item list and reading as follows:
“(6) This method shall only be permitted for above-ground pools, for in ground pools a copper grid is required as per 680.26(B)(1)(b).”

REASON:

This amendment leaves the new (c) as the only alternative to reinforcing steel as a method of providing the required equipotential bonding environment for perimeter pool surfaces for in-ground swimming pools. This method has been extensively studied at the EPRI research facility in Lenox, Massachusetts, with additional work done at a facility in Houston Texas, a residential pool in Florida, and two residential pools in North Carolina.

The copper ring wire bond, now allowed and that will continue to be allowed by right in the 2020 NEC, allowed an 80 mA current to flow through a resistance that approximated the resistance of a human appendage in contact with a concrete walk surface. When the same test was run with the wire bond out of the circuit, and a copper grid as described in (c) connected, the result was 3 mA current flow. This difference is over an order of magnitude, and the difference between minor discomfort and lethality. It is unusual to have such convincing test results that support a change in the NEC. The ring option would remain for above ground pools, which do not present the same step-off risks.

This amendment was previously considered but resolved in Residential Committee against unanimous support of Electrical Committee. Subsequent to that consideration, two North Carolina citizens experienced physical and financial harm because of the inadequacy of the NEC 2020 as adopted by State of North Carolina. These citizens built residential pools properly permitted and inspected per all building codes, yet found the pools presented an unacceptable risk due to electrical shocks experienced in the pool. Through counsel, the North Carolina citizens have contacted the NFPA to address the insufficiency of the NEC.

The problem experienced by the two North Carolinians is not unique. This same situation continues to arise elsewhere in North Carolina, the Proponent is aware of similar complaints on the Outer Banks and in other areas in North Carolina. Beyond North Carolina, the Commonwealth of Massachusetts has adopted the requested change. The list of jurisdictions with the appropriate level of protection against these electric shocks is growing – and there is no reason that North Carolina should be less safe than other areas of the country.

Preventing this problem by adopting this amendment is incrementally about \$400/pool. The cost of fixing these problems afterwards was \$16,500 to replace a newly constructed pool deck. The citizen did not expect this expense since the pool was built to code. The code is simply insufficient.

Preventing this problem also saves all North Carolinians' money (at least those who pay for electricity). Pool owners are being subsidized by all citizens who pay utilities. On a weekly basis, utilities investigate numerous incidents of electrical shocks on pool decks. These investigations take considerable time and money to attempt to determine the cause of shocks. Proponent understands from the utilities that the investigations cost – that are passed along to North Carolinians in their electrical utility bills – are far greater than the sum of requiring grids on new in-ground pool decks.

Attached for your reference is the letter to the NFPA that was sent by the two North Carolina citizens seeking that the NEC be amended in the same way requested by Proponent and which was recently adopted by the Commonwealth of Massachusetts.