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TO: All Concerned

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SUBJECT: “Sleeves” Through Concrete Floors

Section 313.10 of the 2006 UPC says “Sleeves *shall* be provided to protect all piping (passing) through concrete and masonry walls and concrete floors.”

The introductory statement in Chapter 2 [Definitions] says: “No attempt is made to define ordinary words, which are used in accordance with their established dictionary meanings” Essentially, words that are not specifically defined in the UPC are deferred to their dictionary meanings to provide clarification. The word “sleeve” is not defined in the UPC, therefore reference was made to Webster’s Ninth New Collegiate Dictionary which defines a sleeve as: “a tubular part (as a hollow axle or a bushing) designed to fit over another part; a tubular packaging or cover; a jacket.”

The IRC addresses penetration of concrete floors with the following language: “Pipes passing through concrete shall be protected against external corrosion by a protective sheathing or wrapping or other means that will withstand any reaction from lime or acid of concrete. Sheathing or wrapping shall allow for expansion and contraction of piping to prevent any rubbing action. Minimum wall thickness of material shall be 0.025 inch (0.64 mm).”

Pipe passing through walls at right angles where *shear* forces are possible shall pass through an opening that is at least two pipe sizes larger than the size of the pipe passing through that opening. The space between the pipe and the opening shall be sealed with a material that is sufficiently flexible to allow settlement or other structural movement without applying loads that might damage the pipe that is passing through. Vertical penetration of a concrete floor at right angles will not subject the penetrating pipe to potential shear loads. Longitudinal travel and lateral expansion would be insignificant factors when pipe is passing through a concrete floor.

The UPC also prohibits pipe being *directly* “embedded” in concrete or masonry. To embed is to encase or enclose one thing within another. Penetration *through* a concrete structure is altogether different from being encased or enclosed *within* a concrete structure. Pipe that must pass through a monolithic concrete pour [e.g., floor and stem wall] is allowed *only* when the pipe is wrapped or sleeved with a foam material that will allow freedom of movement (expansion, contraction) and that will not be compressed by the concrete pour to a degree that restrains the piping, and thus defeats the objective of providing an effective “void” to accommodate pipe movement and structural settlement.

In summary, the UPC now requires all piping that passes through concrete walls *and* floors to be “sleeved” in a manner that prevents direct contact between the pipe and the concrete it is penetrating. This includes waste and vent piping as well as water piping. A variety of sleeving or wrapping materials are available to accomplish this objective. One size does not fit all, therefore an acceptable method or material utilized for isolation will depend upon what part of the concrete structure is being penetrated. The intent is to use whatever means will accomplish the basic goal of protecting the penetrating pipe from stress failures, corrosion, and whatever potential damage might result as a consequence of making a penetration that is not adequately or appropriately protected.