
FIRE PREVENTION AND BUILDING SAFETY COMMISSION
Department of Homeland Security

Written Interpretation of the State Building Commissioner

Interpretation #: SBCD-2023-33 [2012 IPC-305.6.1]

Building or Fire Safety Law Interpreted

675 IAC 16-1.4 2012 Indiana Plumbing Code Section 305.6.1 Waterlines. Waterlines shall not be installed outside of a building, in attics or crawlspaces, or in any other place subjected to freezing temperatures, unless adequate provision is made to protect such waterlines from freezing by insulation, ambient heat, or alternate heat source. No waterlines shall be concealed in outside walls, above grade.

Issue

Whether the use of pipe insulation alone is sufficient to comply with the requirements of *2012 Indiana Plumbing Code* (IPC) Section 305.6.1.

Interpretation of the State Building Commissioner

The question of the compliance with *2012 IPC* Section 305.6.1 of the use of insulation alone must be left to the judgment of the local official, based on their observation of the conditions at the site.

Rationale

The language of Section 305.6.1 of the *2012 IPC* names three methods for protecting water lines from freezing when they are installed outside the temperature-controlled spaces of a building, or in other locations subject to freezing: the installation of insulation, the application of ambient heat, or the application of an alternate heat source.¹ However it would be an error to assume any of the individual named methods would automatically be considered compliant when used alone because the code includes an overriding performance standard – the method(s) used must be "adequate. . .to protect such waterlines from freezing."

Insulation never completely prevents heat transfer – it only delays it. It slows the migration of energy from warm to cold until it has dissipated completely and temperatures on both sides of the insulation have equalized. In the complete absence of a heat source, insulation will eventually prove useless, regardless of how effective it is at delaying the rate of heat transfer. Additional heat energy is always required to prevent freezing when ambient temperatures drop below the freezing point. That energy can be provided by any number of methods, whether direct (e.g., heat tape on the pipe) or indirect (e.g., solar gain in the space, the energy inherent in the water contained in the pipe – and its flow rate, if any – and energy leakage into the space from an adjacent heated enclosure). And it can also be lost by any number of methods – installation in an uninsulated envelope, water standing static in cold pipes, leaky fenestration or even, in the case of a garage, leaving the door open.

325 S. Alabama Individual sites are likely to include a combination of these conditions, in a nearly infinite variety. The code cannot adequately anticipate all possible sets of conditions in a single blanket requirement without either being overly burdensome at more temperate locations, or too lenient at colder locations. The question of compliance of a certain design – in a given environment – must be left to the judgment of the jurisdictional enforcement authority. Because the code's language focuses on the desired effect in addition to the allowable methods, it must be considered a performance requirement rather than a purely prescriptive one. Whatever methods the design utilizes, it must be effective at preventing the freezing of the water in the pipes. That is the standard against which the building official must measure to determine compliance.

¹ See *CEB-2021-39-2012 IPC-305.6.1* for a discussion of lack of intent by the Commission to limit acceptable protection methods to only these three.

Interpretation Replaces: New

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