

# Alternate Plumbing Systems

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Each “Code Update” will discuss a specific plumbing concept as it is addressed by the International Code Council (ICC) and International Association of Plumbing and Mechanical Officials (IAPMO) plumbing codes. Our purpose is to outline the points of view found in each code, *not* to make a determination as to which of them is better. The question for this month is

**What process does your plumbing code require to gain approval for the installation of an alternate plumbing system (e.g., a Philadelphia stack system or a siphonic drainage system)? Does your code accept any engineered system designed by a registered professional engineer?**

Here are responses from Allen Inlow of IAPMO and Carl Marbery of the International Conference of Building Officials (ICBO).

## From IAPMO

The Uniform Plumbing Code (UPC) provides two directions for the approval of an alternate engineered system. Which of them to use depends on the engineer’s specific goals and application. Naturally, the administrative authority of codes in the installation’s jurisdiction makes the final determination. The administrative authority may, at its discretion, have specific requirements for that locale, but the UPC provides guidance even in those circumstances.

UPC Chapter 3, “General Regulations,” provides a method for the administrative authority to use in evaluating the possible use of alternate materials and methods of installation. Chapter 3 recommends that the administrative authority review materials, quality, strength, durability, safety, and performance and determine whether the proposals meet or exceed the intent of the code.

If sufficient evidence, documentation, or proof is provided and the

alternative is determined to be feasible, it may be approved. If the administrative authority is not satisfied with the documentation, the UPC notes that additional tests or information may be required.

Design and approval procedures for engineered plumbing systems are outlined in UPC Appendix L. An individual who is properly registered or licensed in plumbing design work must submit the design drawings and specifications. The designer and administrative authority must agree on a schedule of inspections to take place throughout the project. Upon project completion, the designer must submit a statement to the administrative authority that the installation is in compliance with the engineered system design as approved. The UPC requires the designer to supply the owner of the structure or system with adequate information to use in maintaining the system and making proper decisions regarding future modifications.

It is the intent of the UPC to provide clarity and direction to everyone involved in engineered systems on possible use of alternate materials as well as to make the process as workable as possible while maintaining integrity in health and sanitation.

—Allen Inlow

## From ICC

**What is the process to gain approval for the installation of an alternate plumbing system?** The International Plumbing Code (IPC) addresses alternate methods of plumbing (i.e., methods not specified in the code) in Section 105 and, specifically, Sections 105.2 (“Alternate materials, methods, and equipment”), 105.3 (“Required testing”), 105.3.1 (“Test methods”), 105.3.2 (“Testing agency”), and 105.3.3 (“Test methods”).

When initially responding to code questions, it is advisable to review the

definitions in the applicable code. The following definitions are related to the question:

*Approved.* Approved by the code official or other authority having jurisdiction

*Approved agency.* An established and recognized agency approved by the code official and regularly engaged in conducting tests or furnishing inspection services.

*Registered design professional.* An individual who is registered or licensed to practice professional architecture or engineering as defined by the statutory requirements of the professional registration laws of the state or jurisdiction in which the project is to be constructed.

Section 105.2 states, “The provisions of this code are not intended to prevent the installation of any material or to prohibit any method of construction not specifically prescribed by this code, provided that any such alternative has been approved.” The above definition of *approved* makes it clear that the “code official or other authority having jurisdiction” is responsible for approving or denying approval of an alternate material or method of construction. Section 105.3 gives the code official the “authority to require tests as evidence of compliance.”

The bottom line in gaining approval for installation of an alternative plumbing system is to convince the code official that the proposed system is the “equivalent of that prescribed by this code in quality, strength, effectiveness, fire resistance, durability, and safety” (IPC, 2000, Section 105.3). That is a tall order. The enforcing authority has the responsibility to make a reasonable attempt to evaluate proposed requests for alternate materials and methods. However, adequate information must be provided. A complete file of the information and data submitted must be maintained for future reference. The code official has the

authority to require additional tests and data if the information presented is determined to be inadequate. The code official also is justified in requesting a third-party evaluation if the technical aspects are beyond the ability of the enforcing authorities' staff to evaluate. This further evaluation could be an engineering evaluation or evaluation by one of the services provided by code organizations and listing agencies. The three organizations that publish the International Codes provide evaluation services and publish research reports on products and construction methods submitted for evaluation.

If the use of the alternate method or product is denied approval, an appeal can be submitted as provided for in Section 109 ("Means of Appeal").

**Does your code accept any engineered system designed by a registered professional engineer?** The answer is *yes*. Section 105.4 ("Alternative engineered design") outlines the

process for submitting an alternative engineered design.

The proponent of a new product or method should not overlook the possibility of submitting a code change. If approval for using an alternate method or product can be obtained, it should also be possible to obtain a code change. The ICC code change process is on an 18-month cycle starting in September 2002. Final decisions must be made on all submitted code changes after a period of 18 months. They will be approved as submitted, approved as modified, or disapproved. The 18-month cycle includes approximately 6-month periods for submission of code changes; publication and review before public hearing; and review of hearing results, submission of challenges to the hearing results, and publication of the final action agenda.

—Carl Marbery

*Note:* The views expressed here are those of Carl Marbery, senior staff

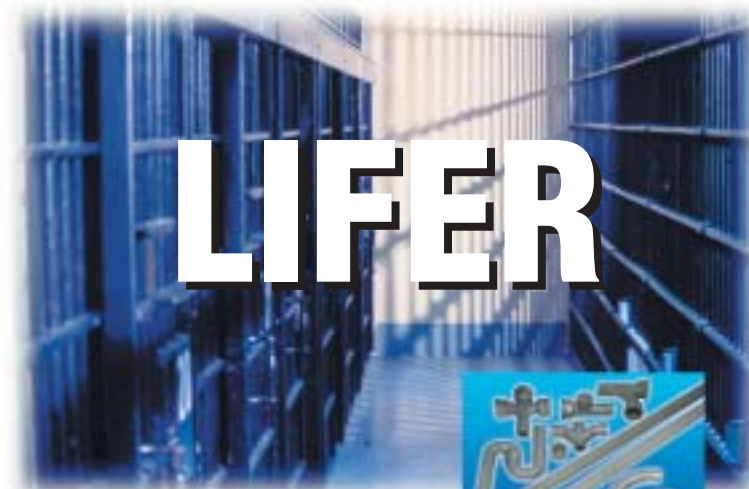
engineer at ICBO, and do not necessarily reflect the opinion of ICBO or ICC.

**Conclusion**

Both plumbing codes accept plumbing systems not specifically listed in the code. Plumbing designers should review specific code requirements before submitting the proposed design to the appropriate jurisdiction. ■



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