

## **Model codes bring simplicity, order to plumbing engineer's work**

Not much can do more to derail a plumbing engineer's day as when blueprints come back from plan check with a bunch of comments referencing "code non-conformance." You have the most "up to date" plumbing code and all the systems are correctly connected, now where is the problem?

It happens time and again where what was once covered by the county building department has been incorporated into a city and is now under a revised set of codes. In many cases, these problems arise because many local jurisdictions make amendments to the model code and the designer may not have the amended code that is the law for that jurisdiction. But what exactly is a model code?

As design professionals, you know that in section 204.0 of the Uniform Plumbing Code "codes" are defined as "a standard that is an extensive compilation of provisions covering broad subject matter or that is suitable for adoption into law independently of other codes and standards." And in Section 203 of the International Plumbing Code "codes" are defined as "these regulations, subsequent amendments thereto, or any emergency rule or regulation that the administrative authority having jurisdiction has lawfully adopted."

By their own definition the purpose and intent of the model codes is to provide "minimum requirements and standards for the protection of the public health, safety, and welfare" ... "by regulating and controlling the design, construction, installation, quality of materials, location, operation and maintenance or use of plumbing equipment and systems."

A model code allows a local jurisdiction a time- and cost- saving alternative to developing in total their own compilation of product standards and installation methodologies. The body of work that is the foundation for the model codes has almost an inestimable number of hours of dedicated writing by practical plumbing professionals, engineers and product manufacturers. They consider real world solutions as well as the mathematical models necessary to ensure the designed systems work for the long term. The language is often dense, as it must be binding for contracts to be enforceable yet somewhat flexible enough to allow for new product innovations and local conditions.

The advantage of a uniform plumbing code adopted by various local jurisdictions has long been recognized. Disorder in the industry as a result of widely divergent plumbing practices and the use of many different and often conflicting plumbing codes by local jurisdictions influenced the Western Plumbing Officials Association (now the International Association of Plumbing and Mechanical Officials [IAPMO]) to form a committee of plumbing inspectors, master and journeyman plumbers, and sanitary and mechanical engineers, assisted by the public utility companies and the plumbing industry, to create a basic plumbing document for general use. The result of this effort, the first edition of the Uniform Plumbing Code® (UPC®) was officially adopted by IAPMO in 1945. The widespread use of the code over the last six decades by jurisdictions throughout the United States and internationally is testament to the merit of codes written by experts and adopted into law by the local authority having jurisdiction.

The model codes are designed to provide consumers with safe and sanitary plumbing systems while, at the same time, allowing latitude for innovation and new technologies. The model codes are updated periodically to incorporate the dynamic nature of the industry and the pressing concerns regarding water usage.

*What is the benefit to the system design engineer?*

In setting the minimum requirements for safeguarding life, health, public welfare, and property, the codes provide for better buildings. They encourage uniformity in building laws and offer a means to police construction materials and methods. Codes become laws when a state, city, or authority having jurisdiction adopts them. When these codes directly reference a standard, that standard in turn also becomes law. The different codes share product standards with each other, which is ideal for uniformity.

As design professionals, knowing that there is a level of standardization takes much of the additional research out including a product in your specification. An easy check to ensure that the manufacturer has a mark of conformity to a product standard allows that product choice to be used in that jurisdiction. The manufacturer provides installation details according to the requirements of the model code and the installation professional has a prescribed way of installing the system correctly. This takes the guess work and, in many cases, additional liability off the designer, as you do not have to make special calculations for system loads — these already have jurisdictionally approved values. And when the design does not fit the codes, there are established parameters that allow for design accommodations.

This is true even within other segments of the building industry. According to a recent article written by Jeff Griffiths, CSI in *Construction Specifier*, “there is a growing desire to harmonize the array of standards and facilitate cooperative recognition among testing agencies. This is increasingly becoming the goal, whether one is a design professional trying to specify a product or a manufacturer trying to produce one.”

In the United States, the public expects the water and the sanitation systems to work. The process of innovation drives the model codes to be periodically updated and these updates require the involvement of everyone involved in the process of approving products and innovation. From manufacturers to designers to installation professionals to building safety inspectors, everyone has a valuable contribution to make to ensure the codes meet the needs of the public.

As design professionals, your knowledge of the model code and the local amendments is the value you bring to your clients. By including the name and date of all the appropriate codes and standard documents in one’s specifications, you can avoid many of the “code non-conformance” questions from the jurisdiction’s plan review. By being aware of any local amendments or exceptions that affect the plumbing or mechanical systems and including them in the construction documents, your contribution to the success of your clients’ projects often results in a long-term business relationship.