



WHEN CODES COLLIDE

As an industry, our business is regulated by myriads of codes and standards pertaining to plumbing, gas, fire, life safety, and building practices. While the level of expertise and specialization varies between the different stakeholder groups, contractors, manufacturers,

and wholesale distributors are called upon daily to apply this knowledge in the course of their operations.

The level of understanding of code issues can influence success in a competitive situation for both contractors and wholesalers. Knowing what really is suitable when it comes to installation practices or material requirements can separate the “men from the boys.”

How much knowledge should the plumbing industry have of building code issues? More than you might think. The plumbing code may allow you to use certain products in certain applications, while the building code may try to limit the use of these products in



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the same situation. While neither is wrong, it is important to understand your way through a situation when codes collide.

While many of these conflicts are clearly defined, others require an expert level of understanding in order to interpret the correct application of code statutes, or to determine what installation practice or detail would be suitable in a given situation. In cases where there is contention amongst the various stakeholders, the appeal process exists to review and rule on specific applications.

However, what happens when there

seems to be no clear path? And even while recognizing the need for resolution, the appeals process offers none? This sometimes happens as new installation practices develop in the field. Since they may not have been considered when the original code was developed, these new installation practices press the need for interpretation, appeal and subsequent code revision.

ORIGINAL FOCUS

Trevor Hildebrand is president of Phase Mechanical in Surrey, BC, a full service contracting firm that specializes in concrete high-rise construction. As a partici-

pant in this market segment, Hildebrand has seen many changes in the methods and materials used in the last five years. Such a situation exists now with the installation of combustible water distribution piping within CAN/ULC S-101-M89 fire resistant rated assemblies, specifically with the installation of combustible piping being run horizontally as water distribution piping in concrete structural slabs.

The installation advantage to be gained by the use of PEX pipe in place of copper was the original focus of attention. Hildebrand was among the first to recognize that he could overcome the flow velocity restrictions placed on copper piping and gain an advantage in both labour and materials. For example, a 1/2''-diameter

copper pipe could supply only 3-1/2 fixture units at a maximum flow velocity of 5 feet per second on a cold supply line. However, Hildebrand knew that by using 1/2''-diameter PEX pipe, he could supply up to 7 fixture units at a flow velocity of 8 feet per second. This would eliminate a number of runs per floor in a high-rise building.

It was his knowledge of the plumbing code that made this an obvious course of action. In due course it became apparent that he would have to focus his attention on developing issues related to fire stopping and fire separations. This required him to become much more aware of the related building code issues as well.

A key element in the use of PEX in this application is the need to use an approved fire stopping system that has the appropriate ULC listing for this application. It

is important to note that in order for a fire stopping system to gain approval under the CAN4-S115-M Standard for fire stopping systems, a burn test is conducted using a previously approved CAN/ULC S-101-M89 rated assembly. That assembly is then penetrated by the material for which the listing is being sought, with the penetrations being prepared as prescribed for the fire stopping product under test. Such was the case with PEX, where numerous manufacturers tested their fire stopping products in both vertical and horizontal fire separations for use with PEX up to 25 mm in diameter. These listings are generic in that they are not required to be specific to a particular brand of PEX.

DISTINCT COURSES

As more contractors started to use combustible piping, building inspection officials were compelled to consider the impact that the intercession of combustible piping materials had on both the fire resistance rating and the structural integrity of previously tested and approved CAN/ULC S-101-M89 rated assemblies.

An anomaly existed, however, where the building code specifically referenced the installation of combustible piping in vertical fire separations, but did not mention horizontal separations. Did this mean that you could not install combustible piping under these circumstances as a result?

Early interpretations lead to a variety of distinct courses of actions. Some local jurisdictions felt that as these products had been tested as part of the listing system for CAN4-S-115M approved fire stopping products, that they could then be installed in accordance with any relevant listing, either vertical or horizontal.

Others felt that as the code did not specifically address installations in horizontal separations, consultants would be required to offer a professional opinion which would be submitted to the local jurisdiction for review and approval as a building bylaw equivalency. This report, in addition to installation in accordance with the relevant listing, would seek to establish the safety of this practice.

A third camp held that you could employ combustible piping within vertical separations, but not in horizontal separations. It is safe to say that all felt more should be done in the way of testing to insure the integrity of these assemblies and the safety of this practice.

MISSING PROTOCOL

The simple answer would be to test combustible piping products in all of the rated assemblies in question. The problem is that at the present time a test methodology or protocol does not exist to govern such testing.

Questions arise such as how many pipes should be tested in a given assembly? How do you quantify this amount, as a maximum or as a minimum? How do you measure it, by weight per cubic foot of slab mass, or by surface area of pipe placed per square foot of floor area? How close can it be placed to the exposed underside of the slab (where the fire is)? Should it be full of water, or empty? Should the test assembly include cables, ducts, raceways and other combustible service equipment, such as would be found in a real

world application, many of which are exempted from any requirement for testing in this context?

INVOLVED AGAIN

Jack Robertson, from the United Laboratories of Canada Inc.'s office in Richmond, BC, has had many conversations on this topic and understands the needs and concerns of all parties involved. Prior to joining UL, Robertson was the director of the British Columbia Building Standards Branch. In the mid-

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’90s, he was involved with an ad hoc committee struck to study the issue. He recalls that when the government in BC ended the mandate of the Building Standards Branch and re-deployed its resources, the committee was wound down with no conclusion having been reached.

In his current role at UL, Robertson now finds himself again involved in this issue. Recognizing the need to answer these questions, UL is working with industry to undertake the

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development of a new testing protocol. It is part of UL's mandate to ensure that if products are to be listed they are subject to testing under prescribed conditions. The question faced by industry was this: without a protocol, could products that were listed as having been tested as part of specific rated assemblies be marked as CAN/ULC S-101-M89 approved?

DIFFERENT CRITERIA

Robertson confirmed that while products may be tested and listed for specific criteria, for example, flame spread or fire stopping, this does not necessarily mean the product has been listed as conforming to CAN/ULC S-101-M89. Instead, they

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would have to be marked with the number of the specific listing conferred as a result of compliance testing. Under these circumstances, the installation of these products would have to follow the specific details outlined in the listing. As such, if a

listing was obtained on an assembly that included an 8 inch-thick concrete structural slab, the listing certification could not be applied in circumstances where there were any job site deviations such as a change in concrete structural slab thickness. In order to remain in compliance, testing of the new assembly would be necessary.

However, if a protocol was in place, then the same product (after successful completion of testing) could be marked as listed under the protocol, which would address a broad range of installation parameters.

The idea of such a protocol seems to have the support of contractors, wholesalers, manufacturers and code enforcement officials alike. When installed in rated assemblies, products that were certified as listed under the protocol would provide a suitable level of performance and safety, in addition to being easily identifiable, thus ending market confusion. Says Hildebrand, “This would allow me to once again focus on the business of business, without the distractions brought on as a result of this code collision.”

CONFIDENCE BUILDER

This opinion is shared by Bruce Barclay, president of Barclay Sales Limited and a director and member of the BC board of the Canadian Institute of Plumbing and Heating. Barclay supports the development wholeheartedly.

“As an industry, we must recognize the need for codes and standards that facilitate universal and consistent application,” Barclay said. This new protocol will not only clearly define the testing requirements, but will also allow wholesalers and contractors to continue developing this important sector of the market with confidence”.

It's safe to say that, having taken the initiative to move past the current set of circumstances, UL Canada will undoubtedly enjoy the full support of the manufacturing community with compliance testing commencing as soon as the protocol is available.

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