

## BC BUILDING CODE 2012

# DRAIN, WASTE AND VENT PIPE TRANSITIONS

NEWSLETTER | October 2014

by Naki Ocran, MASC, EIT and Khash Vorell, M Eng, P Eng

Combustible drain, waste and vent (DWV) piping penetrations are permitted under Division B Sentence 3.1.9.4.(3) of the BC Building Code to penetrate a rated fire separation or a membrane which forms part of a rated fire separation as long as they are sealed at the penetration by a firestop system conforming to Sentence 3.1.9.4.(4).

Transitioning between combustible and noncombustible DWV pipes at vertical fire separations is permitted by the Building Code under Sentence 3.1.9.4.(5). The Building Code is, however, silent on the issue of transitioning between combustible and noncombustible DWV pipes at horizontal fire separations. This issue has been the subject of several interpretations, including [Interpretation 98-0139](#), which notes that a transition from a noncombustible pipe below a horizontal fire separation to a combustible pipe above is permitted; however, the reverse configuration is not envisioned due to the concern that in the event of a fire, combustible (i.e. plastic) pipe may melt, creating a chase through which fire and smoke could spread to upper storeys. The two configurations are illustrated in the following schematic diagram:

It is often desired to transition from plastic DWV to cast iron piping above a floor assembly (ie. above parking slab). This configuration is identified by Interpretation 98-0139 as not meeting the firestop intent of the Building Code. In the absence of a prescribed Building Code solution, an engineered alternative solution may be developed. This alternative solution should provide for an appropriate means of firestopping the transition in order to meet the minimum level of performance intended by the Building Code; to limit the probability that the integrity of fire separation will be compromised.

It is important to note that listed cast-in-place firestop systems are tested for a fire condition at the underside of a slab, but do not directly address the type of pipe, joint, or pipe transition located above the slab. As such, listed cast-in-place firestop devices are not intended to address the firestopping condition discussed above. Where the transition from plastic DWV to cast piping occurs above the slab, the listed firestop system must be tested to address a fire condition located above the slab.

The Building Code should be consulted for additional provisions applicable to combustible DWV piping. GHL has the requisite fire engineering experience to review and provide recommendations for this and other fire safety provisions which may apply to DWV pipes.

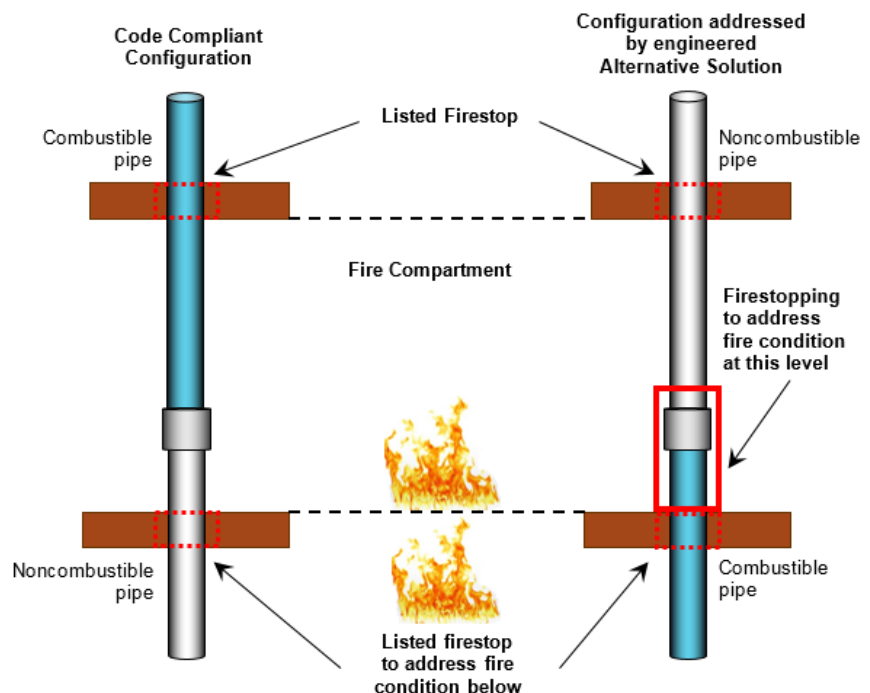
### About the Authors

**Naki Ocran (MASC, EIT)** holds a Master of Applied Science Degree in Civil Engineering from Carleton University, specializing in Fire Safety Engineering, and a Bachelor of Science Degree in Civil Engineering from Drexel University in Philadelphia, PA. Naki assists in developing Alternative Solutions and Building Code compliance with a special emphasis on fire modeling, evacuation modeling and heat transfer analysis. Naki is a registered Engineer-in-Training with APEGBC.

**Khash Vorell (M Eng, P Eng)** is Professional Engineer registered in the provinces of BC and Alberta, with 15 years of experience in Building Code consulting and Fire Protection Engineering in addition to his structural background. He holds a Master's Degree in Fire Protection Engineering and a Bachelor's Degree in Civil Engineering from UBC. Khash is an active member of APEGBC; he is a past Chair of the Building Codes Committee and a past board member of its Fire Protection Subcommittee. Khash is also a member of the Society of Fire Protection Engineers and the National Fire Protection Association.

*The information in this letter is for discussion purposes only. Refer to applicable Building Codes and Fire Codes for actual requirements.*

*The designer should always check with the AHJ for local policies and interpretations regarding the foregoing.*



### ABOUT GHL CONSULTANTS LTD

GHL is a team of fire engineers and building code professionals who have extensive experience and advanced training in fire safety codes and fire engineering. With expert knowledge in fire safety and an established working relationship with many authorities having jurisdiction, we are capable of solving a wide variety of fire engineering challenges that arise from the prescriptive codes. Our fire science background provides us with a strong capability in fire modelling and evacuation/egress modelling. With a dedicated team of fire modelling engineers, GHL can advise clients when fire modelling adds value to a project and when fire modelling analysis is required. For further information, visit our website at [www.ghl.ca](http://www.ghl.ca)