Recent fires in homes with mid-rise wood frame buildings have brought into focus the issue of fire safety in residential neighborhoods.

The Richmond, British Columbia (BC) fire in May is a case in point.

The blaze broke out at about 10:30 pm, quickly burning down the two six-story buildings that were still under construction and imperiling the neighborhood. According to news stories, the massive fire at the 251-unit condominium and social housing project burned for more than five hours before being brought under control. No lives were lost, but the danger underscores the need to re-examine the recent decision in BC to allow mid-rise wood frame construction, instead of the long-required, fire-resistant masonry materials such as concrete block.

Recent proposed changes to the Ontario Building Code and to the National Building Code, that would allow wood frame buildings over four-stories in other regions of Canada, are being strongly opposed by the masonry industry as dangerous to human life. The Richmond, BC project was to be the first example of a six-story all-wood structure, as allowed under the changes to the BC Building Code, which came into effect in 2009. The Masonry Institute in BC has issued a statement of concern over these changes to the Building Code.

“Human life and the safety of our neighborhood are at question here,” says Bill McEwen, executive director of the Masonry Institute of BC. “Engineered wood products, which are used extensively in these types of buildings, are fabricated with glue and can burn faster than regular wood products. The firewalls in the Richmond project were made of wood and drywall. Normal concrete block firewalls were not used, apparently due to concerns about the large amount of wood shrinkage expected in six-story wood construction. Concrete block walls could have protected these buildings, both during construction and, more importantly, during occupancy.”

Said McEwen on the scene of the fire, “If these buildings had been constructed with concrete block, we would not be here today.”

MasonryWorx reports that Deputy Fire Marshal for Ontario Doug Crawford has expressed concern in the past about fighting fires from within a six-story all-wood structure, as they incorporate engineered wood products that provide little fire resistance when exposed to high temperatures.

The 18m (59’) height limit in these six-story wood frame buildings was set in BC on the basis of the maximum ladder height available from fire rescue services. The expectation is that these fires will have to be fought from outside the structure and rescue operations would also be conducted from outside the structure.
Two six-story wood frame multi-family buildings in BC were under construction before the fire. The 59’ height limit set by code is based on the maximum ladder height available from fire rescue vehicles.

Paul Hargest, president of Canadian Concrete Masonry Producers Association, notes that wood composite elements, such as oriented strand board (OSB) give off fumes when they burn, increasing risk to firefighters on the scene and to occupants in the building, who may choke on the chemical fumes before they even realize there is a fire on the premises.

Composite wood I-joists, now common in wood frame construction, are known to collapse under fire conditions far sooner than traditional dimension lumber joists.

MasonryWorx, an industry association dedicated to maintaining construction standards and protecting public health and safety in construction and building, have issued a concern about the proposed changes to the Ontario Building Codes to allow six-story wood frame housing. In a letter to Ontario

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Members of Provincial Parliament (MPP), President of MasonryWorx, Dante Di Giovanni writes, “By the very nature of this change, it is unquestionable that the fundamental objectives of the Ontario Building Code (OBC) and the needed levels of structural and fire safety and performance will be compromised.”

Di Giovanni also states, “While we would all like to examine ways of lowering the cost of construction, compromising the safety and quality of building materials is not in the best interests of occupants.” The position of MasonryWorx against wood frame mid-rise construction is as follows:

**Adequacy of Fire Fighting Resources**
- The proposed OBC mid-rise changes will serve to increase the combustible building density in all regions of Ontario, not just the major centers.
- The fire services industry has expressed concern about the firefighting capabilities in smaller municipalities, many with only volunteer fire services.
- The personnel and equipment necessary to fight such fires will, it is felt, quickly overwhelm the fire resources in these centers.
- There is no internal rescue in these buildings. Adequate ladders are only available in some centers. Equipment and personnel in many rural centers are deficient in this regard.
- With no internal rescue possible, will fire drills be mandatory in such buildings?

**Fires during Construction Phase**
- This is a major concern of the Fire Marshal’s office and the Fire Fighters Association.
- Studies report that up to 70% of fires during construction are arson.
- Additional security and fire protection during construction was requested by the fire services sector in BC when these changes were adopted there, but the BC government rejected these requests.
- Ontario makes no mention of additional protection during the construction phase, simply suggesting that the sprinkler system be installed in parallel with construction of the building.

“It is essential to keep our communities safe,” says Di Giovanni. “It is our hope that the public will demand high standards in building codes and a safety first policy in all our building
practices. We urge Ontario residents to write to their local MPP and ask that our standards for safe building materials be maintained, not allowing mid-rise wood frame housing.”

Hargest adds, “It is critical that communities demand safe housing. Durable, reliable building materials, such as block and concrete, are proven to be effectively fire resistant, and should be demanded in all our buildings as essential to protecting human life. With changes to the Building Code being proposed that would allow six-story wood frame construction, all Canadian residents should contact their Member of Parliament and Provincial Members of Parliament and voice their concern.”

Dante Di Giovanni is president of MasonryWorx, an association of industry professionals working in brick, block and stone masonry. Its membership includes product manufacturers, suppliers and skilled professionals from across Ontario and it is committed to providing homebuyers, homeowners, architects, engineers and builders with accurate information about the use and benefits of brick, block and stone products. masonryworx.ca

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Paul Hargest is president of the Canadian Concrete Masonry Producers Association (CCMPA), which operates as Region 6 of the National Concrete Masonry Association, and is the representative voice for the Canadian concrete block manufacturing industry. ccmpa.ca

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