Canadian Wood Council / Conseil canadien du bois

Wednesday, May 18th

Fire Safety of Wood Buildings is not on Trial!

By Michael Giroux
President, Canadian Wood Council

In the last few weeks, including just today in B.C., there have been many outrageous comments published in the media questioning the safety of wood frame buildings in reaction to the recent construction fire at the Richmond Remy jobsite. While we all wait for the results of the official fire investigation, I would like to set the record straight on some key facts about wood construction.

Wood is a safe, durable building material. In Canada, we've been living and working in wood-frame structures, including houses, townhouses and multi-storey apartment buildings, for a long time. According to construction statistics, more than 90 per cent of Canadian homes are built with wood.

Wood mid-rise construction was common in the early 1900s, and some of these buildings in Vancouver are still in use today.

To suggest that the outcome of the May 3rd fire at the Remy project in Richmond would have been the same if the building had been fully completed, is not plausible.

The Remy fire occurred while the building was under construction. This meant that fire safety features such as sprinklers and gypsum board protection, as well as fire doors in firewalls, all required in the completed building had not yet been installed. The firewalls in the Remy project were made of steel and two layers of one-inch-thick gypsum liner panels – with wood-frame walls to protect them from day-to-day wear, as required by the British Columbia Building Code. The use of other types of noncombustible firewalls likely would not have stopped the fire under these same circumstances.

The fire safety of a completed building involves a lot more than its structural composition. The whole system must be taken into consideration, including the building's contents and its use. Research shows that the size and severity of the majority of fires are related to the contents of a building and the living and working habits of its occupants.

Canada's National Building Code and the Provincial and Territorial regulations based upon it require that, regardless of what materials they are made of, buildings be designed to minimize risk of unacceptable loss by including fire protection features to contain a

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fire, limit its effect on the supporting structure, and control the spread of smoke and gases.

Wood- walls, floors and roofs must be designed to provide fire resistance ratings of up to two hours, a level of fire performance also required for other types of building materials - contributing to the time needed for occupants to escape and emergency responders to perform their duties.

Minimize Risk

For more than 50 years, the Canadian Wood Council has been at the forefront of wood-related code issues, most notably those related to fire. Our work has resulted in a better understanding of wood's capabilities and its place in the Code. The Canadian Wood Council was one of several stakeholders consulted by the provincial government before it approved revision of the B.C. Building Code to permit six-storey wood frame construction.

No structure can ever be completely fireproof, and all construction materials can be affected by fire as we've seen in images from the recent devastating fires in Slave Lake, Alberta. Some building materials may not burn, but they can degrade and fail when exposed to a typical building fire, which could lead to a complete structural failure.

Wood construction is an excellent choice for any residential, commercial, industrial or public building – it has a low environmental impact, is safe, durable and aesthetically appealing. Wood-frame structures are flexible and perform as well as or better than other major building materials under extreme conditions such as earthquakes. Canadian wood-frame construction technology is being adopted in both emerging and developed economies throughout the world that want the same level of comfort and safety we have enjoyed for decades.

At the Canadian Wood Council, our experts continually work with engineering professionals, fire services, local government, builders and designers to identify appropriate solutions using wood construction. You will find more information on our website www.cwc.ca.

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Building and design professionals, elected local government representatives and a fire chief speak out about the Remy construction fire

"I remain committed to rebuilding our six-storey wood frame building (Remy). Ours is not the only building to have suffered this kind of calamity, however, the list is very small relative to the amount of wood frame construction undertaken every year. The fact it is a six-storey project was not a factor in the fire. I am confident in our project and equally confident in wood as a construction material. My company has built hundreds of units in wood without incident. Our strong reputation for quality homes attests to the durability and value of what we build."
-Dana Westermark, Oris Consulting (developers for Remy in Richmond)

"Wood has become an increasingly important part of our practice. It is the only structural building material made by the sun, benefitting nature throughout its life. We can extend those benefits by using wood (2/3 carbon by weight) as an enduring carbon sink. Design professionals, policy makers, contractors, developers and policy makers need to work to ensure wood's viability in all building types and sizes in the future."
-Peter Busby C.M., AIA, FRAIC, MAIBC, MAAA, MOAA, BCID, LEED AP, DSc (Hon.) Managing Director, Perkins+Will Architects

"There is always a time during construction when a building is more vulnerable to fire – this is before the fire protection measures specified by the building code are in place and before the building is occupied. The Remy fire wouldn't have happened if the building was complete, as it would have been sprinklered, equipped with a fire alarm and fire compartments and so on. As a result of this fire, additional measures will likely be developed and enforced on construction sites to help mitigate the risk of fire on buildings during construction. CFT Engineering as well as the rest of the industry is presently looking into codes, standards and construction practices used on-site so that we can develop those measures further for buildings under construction."
-Brad Walton, A.Sc.T.
Principal, CFT Engineering, Vancouver (fire and building code specialists)

"Most of the concerns people have about the fire safety of taller wood buildings come from a lack of information about how fires behave and about how buildings are constructed to protect people and limit the spread of fires. There's more fire protection in a mid-rise wood frame building than in most buildings already in the community. The Remy fire should not become a six-storey fire issue -- Remy was a construction fire. In response, I have asked my staff to review our requirements for fire safety plans on construction sites, which is a time of vulnerability for buildings, to ensure all responsible precautions are taken to prevent fires."
-Len Garis, Fire Chief, City of Surrey and Adjunct Professor in the School of Criminology and Criminal Justice, University of the Fraser Valley

"When a wood building project is completed with all fire protection measures in place, the building should perform as well as any building constructed with other materials during a fire. A wood building with fire-rated gypsum wall board and fire suppression system installed is as safe as any building constructed with other materials – whether it's a two-storey, four-storey or six-storey building. Also, wood frame buildings, being much lighter than other material-type buildings, have superior performance in an earthquake."

Wood fibre is produced by nature and has the least carbon footprint amongst all building material. It is the only building material that one can touch and feel its charm and warmth. I have no concern in continuing to specify wood in future projects."
-Thomas Leung, P.Eng., Struct.Eng., MIStructE – Thomas Leung Structural Engineering Inc., Vancouver, BC

"Although the construction fire was unfortunate the building was unoccupied. It is important to note that none of the three redundant fire safety features were installed - fire sprinklers, fire separations or firewalls. Had any one of these been complete the extent of the fire would have been significantly less."
-Andrew Harmsworth, M.Eng, P.Eng, CP, GHL Consultants Ltd., Vancouver, BC (building code consultants and fire protection engineers)

"There is no problem with six-storey wood construction – the challenge is fire protection of wood buildings during the construction phase when they are vulnerable to fire. We can look at getting sprinklers in as floors, fire walls and doors are completed at an earlier stage and ensure there's a high level of security to protect framed buildings from the threat of arson, which is the most common cause of fire during construction and before occupancy."
-Casey VanDongen, President – Tri City Contracting (BC) Ltd., Kamloops, BC (developer of the six-storey Library Square project in Kamloops, BC)

"The City of Surrey will continue to promote the use of wood in our communities – we have absolutely no concerns with wood or six-storey wood construction. I have worked in the construction trades myself, and I understand that these construction fires can and do happen before the sprinklers and firewalls are in place to stop a fire. The Remy fire is not a six-storey issue – this is an issue about preventing a fire during the vulnerable construction phase of any construction project."
-Marvin Hunt, Councillor, City of Surrey

"The Remy fire was discussed by some politicians at the recent Southern Interior Local Government Association. Wood frame construction is very valued in our communities and I understand that it is very possible to have added protection to wood buildings during the construction phase which is the vulnerable stage."
-Sharon Shepherd, Mayor, City of Kelowna