

Building Better

A First Nations National Building Officers Association publication

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First Nations Fire Traps

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Cold winter weather in Canada conjures up images of skating on outdoor rinks and tobogganing. Unfortunately, it also brings fire losses and deaths, especially in First Nations communities. This happened recently in Pelican Narrows, Sask., where two boys died in a house fire. Fire deaths among Canada’s First Nations people are the highest in North America. The fire incidence rate is 2.4 times greater per capita than that for the rest of Canada, the fire damage per unit 2.1 times greater, the fire injury rate 2.5 times greater, and the death rate 10.4 times greater.



A house burns in Pelican Narrows, Saskatchewan (Source: Pelican Narrows RCMP)

The reasons for such high fire losses, injuries and deaths include overcrowding (as many as 15 or 30 people living in a 1,200 square foot house), dangerous behaviours relating to substance abuse, and the fact that many aboriginal homes are fire traps that do not meet minimal fire code regulations.

The responsibility to ensure that band members live in safe homes built according to fire code regulations falls squarely on chief and council. In First Nations communities, however, too few homes have installed smoke or fire alarms (which are mandatory on reserve in all provinces and territories). Most older homes have no alarms. In homes that do have smoke alarms, they may be disconnected because the alarm goes off too easily, or the batteries may have died and not been replaced.

There is furthermore a lack of fire safety with respect to renovations and the installation of wood burning stoves. In some homes, the occupants have failed to install proper fire protection barriers underneath or behind stoves. In one case, to save some money, an occupant of a home installed a wood burning stove without removing the wooden shipping pallet attached to the unit. The pallet subsequently caught fire resulting in deaths and destroying the home. Sadly, when fire safety hazards are brought to the attention of councils, the response too often is that they do not have the funds to address them.

In many aboriginal communities, fire suppression activities are excellent. Larger communities have a full time fire chief and crew. However, the majority of communities only have volunteer firefighters at best, and in some instances no volunteers. Because of the distance of available help, fire losses have occurred by the time firefighters arrive at the scene — they can only stop the spread of the fire or help with recovery.

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President's Message

Plan reviews for modular homes must be mandatory

I've argued with both manufacturers and CMHC that CSA certification (through the CAN/CSA-Z240 MH Series-92, Mobile Homes Industrialized Building Construction, and its corresponding standard, A277-01, Procedure for Certification of Factory-Built Houses) does not guarantee compliance with building-code standards. A sticker stating that the housing unit was built in a CSA-accredited plant is not enough to ensure a quality dwelling is the end result.

Several start-up RTM manufacturers are entering the First Nations housing market. But manufacturing plants are not required to draw up building permits, and are therefore exempt from third-party inspections. FNNBOA has long argued that the lack of oversight on construction marketed to First Nations lead to disposable housing. Recent events demonstrate that.

A Case Study: Start-up company markets energy efficiency

A new manufacturing plant recently opened, promoting energy-efficient homes to service First Nations communities. With one of the Canada Economic Action Plan's programs having to demonstrate energy efficiency, these factory-built modular homes were popular. Wishing to expand on that success, the company began installing HRVs into newer units, a year after the program.

When they came into communities, I questioned the engineering, and requested that the company provide verification of air flows, as required by the F326 standard (Residential Ventilation Standards). The company balked at this request, but as clients moved into the units, it quickly became apparent that the installation was in fact not installed to code. Clients complained of higher heating costs, condensation in the ductwork and windows, uncom-

fortable temperatures (cool air distribution) and a constantly running furnace.

A look at the installation revealed several problems:

1. *Unit was undersized.* No evaluation was done on determination of ventilation capacity. A room-count evaluation would have revealed the Total Ventilation Capacity at 110cfm (55Ls). The units were made by Fantech, Model # VHR 704R. (Model names are by capacity, so 70CFM, with four ports.)
2. *Unit had poor air distribution.* The installation used the down-flow furnace ductworks, however, delivery to return-air was through a ceiling opening directed down to the furnace. In addition, the dryer was installed in the same room, and when running would exhaust the fresh air coming in. The furnace fan was incapable of running at low speeds, so fresh-air distribution was only achieved when the furnace was at high speed.
3. *Unit had poor exhaust-air capabilities.* The units had only one exhaust pickup, in the bathroom. No exhaust-air pickups were in other key locations, such as the kitchen and laundry room. An override switch was installed in the bathroom, but since the HRV was interconnected to the furnace, anyone turning on the bath exhaust would also turn on the furnace fan. This also increased energy bills.
4. *Exhaust ductwork was run through the roof space.* Condensation in the exhaust duct gathered in low spots and dripped back to the HRV. In one case, the occupant had to use a bucket to catch the condensation rather than let it drip on the floor.
5. *Controls were operated by a humidistat.* Humidistat controls are



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typically installed to decrease humidity levels. This method only works when you can replace outgoing moist air with dry air. In winter months, this is achievable, but during summer months, when the temperature is above 15C, humidity levels outside would cause the HRV to run constantly. You are in effect replacing moist stale air with moist fresh air. Since the HRV in these units is interconnected, the client's power bills increased dramatically. You could turn the humidistat controls off, but then there would be no ventilation capabilities.

6. *Access to the balancing dampers was poor.* The units were hung close to the ceiling, with no trap installed to prevent sewer gases from entering the HRV.
7. *Duct hood openings were under 450mm high.* The duct openings were on the roof. During winter months, high snow loads could block these openings.
8. *No ventilation was provided for crawlspace.* The units were designed to sit on a four-foot heated PWF foundation. Although heat runs were provided, there were no exhaust-air capabilities.

These problems required a holdback on the units. Using a modified ventilation-compliance certificate, I asked the manufacturer to provide TVC calculations and air-flow measurements (in situ). The certificates subsequently provided were unsatisfactory, and the holdback remains in place.

Because of the issues with this installation, I argued for a plans review before approval of 2012/2013 Section 95 projects. The units approved now have fresh air supplied to all the bedrooms and living areas; stale air is being removed from the bathrooms, laundry area and kitchen. The controls are simple, as is access to the units for maintenance. Exhaust ductwork is now through the floor, with little chance of condensation.

Off-reserve plans are submitted for review regardless of origin (engineered or loose-leaf). These reviews ensure compliance, and safe, structurally sound homes. Yet on reserve, no plan reviews are done on manufactured units. Several manufacturers know this and will submit

draft floor plans (only), knowing they can hide behind CSA certification.

All homes built on First Nations lands should be subject to plan reviews. Lack of planning and oversight is reflected in the poor life cycle of First Nations homes. Particularly troubling is the failure rate of mobile homes brought in to address housing shortages. A substantial number of bands are paying off mortgages on homes that don't exist.

Plan reviews cost CMHC \$142. It's not a lot of money to ensure safe, healthy homes in First Nations communities.



HRV installation: No access to adjusting dampers, no trap in condensate line. Undersized ventilation capacity.



Fresh air delivery above downflow furnace. No assurance of fresh air delivery to all rooms.

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There have been instances in which volunteer fire-fighters were unable to attend to a fire because trucks and equipment were in poor condition. The truck battery was dead, or they could not find the keys, or water was left inside the tank. In at least one instance, because the electrical bill was not paid, the main heater in the garage no longer worked and the water in the tanker froze, damaging the fire truck. In other situations, theft and vandalism have left communities without adequate fire-fighting equipment. All these points have been identified in coroner's inquests.

The financial support provided to First Nations for on-reserve fire suppression consists of Aboriginal Affairs and Northern Development Canada funding to provide fire halls, fire-protection trucks, and other firefighting equipment. Ironically, the National Fire Protection Association level of service standards are higher for reserves than for off-reserve communities, yet fire losses for the former are much greater.

The answer is not more funding for fire suppression on reserves, but more effective governance. The solution lies with the chief and council. They are the authority with jurisdiction and they are responsible to ensure homes are built or renovated according to the national fire code. This includes fire code inspections, effective educational programs, requiring the installation and maintenance of smoke and fire alarms in all homes, and having homes inspected, especially when a wood source appliance is installed. Developing a national fire prevention initiative based on these principles can help prevent needless deaths and disruption in our First Nations communities.

Communities Wanted!

Does your community want to improve housing conditions? Are you planning to improve how band homes are built? If you've answered yes, FNNBOA wants to hear from you.

Over the past few years, AANDC has funded projects in which FNNBOA provides an overview of your building and inspection activities, at no cost to the community.

FNNBOA gets many requests, and resources may be limited.

Priority will be given to those who contact FNNBOA first and provide the necessary supporting documents.

If interested, please send an email to info@fnnboa.ca or contact Bud Jobin at (780) 523-8357.

FNNBOA Membership Form

Current Home Mailing Address	
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