



Building Officials Newsletter

Building Standards
January 1999

Special Change for Roof Truss Design

9.4.2.4. Attics

1) Residential attics having limited accessibility to preclude storage of equipment or material shall be designed for a total specified load of not less than 0.35 kPa where the total specified load is the sum of the specified *dead load* and the specified live ceiling load.

A-9.4.2.4.(1) Specified Load for Attics with Limited Accessibility. Typical residential roofs are framed with roof trusses and the ceiling is insulated.

Residential trusses are placed at 600 mm on centre with web members joining top and bottom chords. Lateral web bracing is installed perpendicular to the span of the trusses. As a result, there is limited room for movement inside the attic space or for storage of material. Access hatches are generally built to the minimum acceptable dimensions of 500 mm by 700 mm, further limiting the size of material that can be moved into the attic.

With exposed insulation in the attic, access is not recommended unless protective clothing and breathing apparatus is worn.

Thus the attic space is recognized as uninhabitable and loading can be based on actual dead load. In emergency situations or for the purpose of inspection, it is possible for a person to access the attic without over-stressing the truss or causing damaging deflections.

The Canadian Commission on Building and Fire Codes (CCBFC) has approved a special change to the National Building Code of Canada (NBC) 1995. When updated versions of the referenced standards in Table 2.7.3.2. were being considered for inclusion in the First Revisions and Errata to the NBC 1995, concerns were raised about adoption of the 1996 version of TPIC's "Truss Design Procedures and Specifications for Light Metal Plate Connected Wood Trusses." A task group was formed, under the Standing Committee on Houses, to investigate the concerns and provide a recommendation.

The task group recommended that the reference in Table 2.7.3.2. be updated and that the proposed

change be accepted. This means that CSA-O86.1-M94 and CSA-O86.1 Supplement 1-98, both based on limit states design, apply to all wood truss designs in Part 9 buildings, and that bottom chord loading in Part 9 residential buildings are changed. The Standing Committee and the CCBFC accepted this recommendation as a special change.

The Truss Plate Institute of Canada (TPIC) has contacted Building Standards with a request that the special change be implemented. Since changes approved by the CCBFC do not become part of Saskatchewan law until they are issued, the formal implementation will be delayed. However, based on the industry preference stated in the letter from TPIC, building officials should immediately begin looking for compliance with the 1996 TPIC document and the special change (see shaded text). This will help to eliminate confusion within the industry and move to limit states design for all wood trusses in Part 9 buildings. §

What's Inside ...

Fall 1998 SBOA Conference —	
Panel Session Questions	2
Soil Gases and Housing: A Guide for	
Municipalities	3
Municipal Duty of Care	4
New Certification Mark for Plywood	5
Candle Sooting	5
Commercial Cooking Equipment	5
Towards an Improved Code Development	
System for Canada	5
Fire Door Labelling	6

Attached to this Issue ...

Codes, Professionalism and a House in	
the Suburbs	
Building Officials Newsletter Index	

Fall 1998 SBOA Conference — Panel Session Questions

We are pleased to share with you some questions and answers from the Building Standards Panel Session held during the Saskatchewan Building Officials Association Inc. (SBOA) fall conference in Saskatoon. We look forward to having the same opportunity to hear what's on your minds at the spring conference, scheduled for March 24–26, 1999 in Yorkton.

Q: An owner builds an access ramp for their home without a building permit. The ramp and guards do not meet code requirements and may be dangerous. Should a building official attempt to correct the situation or assume that the owners are fully responsible if an accident occurs?

A: The owner is responsible to obtain necessary permits and comply with the requirements. However, if a building official knows of construction that was done without a required permit, he or she should notify the owner that a permit is required and assist the owner to meet requirements. Even in the case where construction is completed, there may be features that should be corrected to make the construction safer. If there is clearly a safety concern, the building official should use all available enforcement tools to attempt to remedy the situation.

Q: Vibration control calculations for floors take into account the assembly of the floor. Are there checks in place to assure that the actual floor assembly meets the design (subfloor thickness, bridging, blocking)? A drywall ceiling on the underside of a floor assembly is not normally included in a structural inspection. When the ceiling is included in calculation of floor performance and vibration, who checks that it is installed?

A: The building official does periodic inspections on the construction of the floor assembly as he or she does for all other code-regulated features of a building. Requiring that the owner provide access to design drawings on site is intended to assist the building official in checking that the construction meets the design. This applies for all elements of the floor assembly, including a drywall ceiling on the underside of the assembly. It is the responsibility of the builder to comply with the design. Owners and designers should also check the construction.

Q: Our code still allows 3/4 in. plywood or OSB rim joist for I-joist floors, but U.S. codes do not. However, for residential construction our code does

say that lateral loading on long, unsupported walls cannot be ignored. Who, if anyone, checks for this?

A: Appendix note A-9.4. of the NBC 1995 shows why lateral loading on long, unsupported walls of Part 9 buildings must be considered. Experience has shown that plywood rim joists for I-joist floors often fail to transfer loads adequately and become a weak spot in the structure. This is particularly problematic on long, unsupported walls where lateral loads such as wind and earthquake loads may not be adequately resisted. Structural elements in Part 9 buildings should be checked during plan review and periodically inspected on-site by building officials.

Q: Our code describes the conditions under which a 3 in. (73 mm) adjustable steel pipe telepost may be used (2 wood-frame floors, maximum 5 m supported joist length, maximum 2.4 kPa live load). The code does not state how far apart these columns can be under these load conditions. At the stated limits, there can be enough load to restrict an 8,000 pound capacity post to maximum 5 foot spacing. Why? Who checks?

A: The NBC 1995 does in fact state how far apart these columns can be, because maximum beam lengths are prescribed in tables in Appendix A. With loading conditions that allow use of the tables and within the conditions noted for teleposts, 3 in. steel teleposts will provide adequate strength. Inclusion of prescribed structural elements in the code is intended to eliminate the need for specific design, but may result in elements that are oversize for actual conditions. When any limiting condition for the tables or the teleposts is exceeded, professional design is required. The column footing may also need to be professionally designed. As previously noted, structural elements in Part 9 buildings should be checked during plan review and periodically inspected on-site by building officials.

Q: When factory-built housing is certified under CAN/CSA-A277, what does that mean?

(continued on page 3)

(continued from page 2 — Fall 1998 SBOA Conference)

A: When factory-built housing is certified to this CSA standard, it means that the manufacturer's plant has met certain quality assurance standards. Periodic inspections of the plant are done to ensure that the processes and procedures set out in the quality control documents are being met. Certification to A277 does not mean compliance to any particular standard, except as compliance is set out in the manufacturer's procedures. For the certification to mean anything to a building official, it is necessary to find out what construction standard is being used (CSA-Z240 or the NBC or another alternative). For example, if the plant is building to CSA-Z240, only those elements regulated in the standard are certified for compliance and any product out of the plant would need to be examined for compliance with other NBC requirements (i.e., ventilation). Appendix note A-2.1.4.1.(1) in the NBC 1995 explains this situation further.

Q: Some installers are finding that the prescriptive requirements for ventilation in the NBC 1995 can result in inadequate amounts of supply air being brought into a furnace where the furnace fan is being used to circulate ventilation air. Is this a common problem and what solutions are available?

A: We haven't heard this concern raised before. If an installation does not perform as intended, the only solution for the installer is to re-analyse the system in accordance with CAN/CSA-F326-M "Residential Mechanical Ventilation Systems" or Part 6 of the NBC 1995 and make necessary changes to the equipment.

Q: Two recent fires in apartment blocks have identified that unrated balcony floors and cedar siding can have devastating effects on the spread of fire. Are changes to the code being considered?

A: We are not aware of any proposed changes in these provisions. Article 3.2.2.11. of the NBC 1995 requires that exterior balconies be constructed in accordance with the type of construction required for the building (noncombustible or combustible) but does not require that the balcony floor conform to the requirements for floors or mezzanines (as are elevated exterior passageways in Article 3.2.2.12.). Cedar shingles and shakes are permitted as siding on exterior walls if:

- combustible cladding is permitted by spatial separation calculations,
- the cladding meets the requirements of Article 3.1.5.5. when used on buildings required to be of noncombustible construction, and
- the cladding meets the requirements of the appropriate CSA standard. §

Soil Gases and Housing: A Guide for Municipalities

The CMHC (Canada Mortgage and Housing Corporation) 1993 publication *Soil Gases and Housing: A Guide for Municipalities* provides useful information about the existence of the soil gas problem and awareness of related issues. The publication includes a general description of the soil gas problem, common types of soil gases, how soil gases enter buildings, why and how monitoring is done, solutions, and the legal perspective.

The most common soil gas contaminants in Canada are hydrocarbons from petroleum products, landfill gas (primarily methane) and methane from other sources, and other volatile organic compounds (VOCs). Another important soil gas, radon, is discussed in a separate CMHC publication, *Guide to Radon Control*.

The publication outlines the position of municipalities as existing property owners, as they acquire property through purchase, expropriation or tax default, as regulators through planning, zoning, granting permits, and inspections, and as polluters. By identifying, addressing and effectively managing the soil gas problem, municipalities will protect themselves, their ratepayers, and the environment.

To obtain copies of this and other CMHC publications, phone 1-800-668-2642, fax 1-800-245-9274, write to CMHC, Box 35005, Station BRM B, Toronto ON M7Y 6E5, or visit their website at www.cmhc-schl.gc.ca. §

If you are planning to write a building official licence examination, call Building Standards for a copy of the "Reference Syllabus for Candidates — Building Official Examinations."

Municipal Duty of Care

Two recent court cases demonstrate how the courts are currently interpreting the concept of duty of care owed by municipalities in carrying out building construction control. The following cases were reported by Paul Sandori in the *Construction Law Letter*, Vol. 15, No. 1 (September/October 1998), and Vol. 15, No. 2 (November/December 1998), respectively. For a more accurate description, these reports or the court records should be consulted.

Ingles v. Tutkaluk Construction Ltd.

In Toronto, a home owner sued a contractor for breach of contract and the City of Toronto for negligent inspection. The owner wished to lower the basement of his 80 year old house, and hired the contractor to underpin the old foundations. Work was begun without obtaining a building permit. When building inspectors visited the site, the underpinning was complete. The inspectors accepted the contractor's assurance that the work had been done in accordance with the plans that had been submitted for a building permit. After the work was completed and the contractor was paid, it became apparent that the work was unsatisfactory. The owner hired another contractor to complete additional work and repairs.

The trial judge found the contractor liable for 80 per cent of the damage and the City for 20 per cent. However, the City's liability was then reduced because of the owner's contributory negligence in not obtaining a building permit before the building work began.

The City appealed, claiming that the City owed no duty of care because the owner let the contractor start work without a permit. Although the Court of Appeal agreed that the City, by making the policy decision to inspect building plans and construction, owed a duty of care to any person whom the City might reasonably expect to be injured by a breach of the duty, it also considered actions that might negate or limit the duty. The Court of Appeal concluded that the owner had, by his conduct, taken himself outside the class of persons to whom the City owed a duty of care. It allowed the appeal, set aside the judgement against the City, and dismissed the action, with costs for the trial and the appeal.

Beutel Goodman Real Estate Group Inc. v. The City of Halifax

In Halifax, the owner of a 2 storey retail building sued the City for damages claiming negligent misrepresentation regarding barrier-free access requirements. The building plans, designed by an architect, showed an escalator and stairway to provide access to the second storey, but no elevator. The City issued a building permit and inspections were completed during construction. No violations of code requirements regarding barrier-free access were identified.

Upon completion of construction, the building was to be sold. The prospective owner retained another architect to review the plans for code compliance. This architect advised the prospective owner about the lack of a barrier-free path of travel to the second storey. (Article 3.7.1.4. of the National Building Code of Canada 1990 would have required a barrier-free path of travel to the second storey because of the existence of the escalator.) The original architect confirmed that the design, without an elevator, was acceptable to the City. The sale was completed.

Two years later the building was the subject of a complaint to the Nova Scotia Human Rights Commission. Upon consideration, the City changed its position and ordered the owner to either install an elevator or remove the escalator. The owner installed an elevator and brought the case against the City.

The Court concluded that the City was not liable to the owner because, although the City was negligent and was not absolved of liability by disclaimers, the owner did not "reasonably" rely on the City's interpretation. The owner had ignored the advice of the architect that was hired to complete the pre-purchase review, and the owner was still responsible for ensuring that the building is constructed in accordance with the code. It should be noted that the original builder had in fact "reasonably" relied on the City's misrepresentation, and might have been successful in a claim against the City. §

New Certification Mark for Plywood

The Canadian Plywood Association has notified us that they are introducing a new "CANPLY" certification mark for plywood. The CANPLY mark will replace the old COFI EXTERIOR mark on January 1, 1999. All members are expected to begin using the new mark by the end of 1998, with the transition being completed by the end of March 1999. The applicable Canadian standard (i.e., CSA O121, O151, or O153) will be shown in the lower wear bar of the new stamp. §



Candle Sooting

Investigation has shown that soot produced by scented candles, jar candles, and oil candles are likely the cause of increased complaints regarding blackened carpets, baseboards, plastic switch plates, kitchen appliances, and television screens, as well as dark lines on ceilings and walls. The length, thickness, and strength of the wick, the composition of the wax, and the type of fragrance added to the wax can all affect how a candle burns. §

Commercial Cooking Equipment

Building Standards has completed preparation of another brochure, titled "Commercial Cooking Equipment." Public health inspectors raised concerns about unsatisfactory installations of ventilation systems that serve commercial cooking equipment. The National Building Code of Canada (NBC) 1995 requires that these ventilation systems comply with NFPA 96-1994 *Ventilation Control and Fire Protection of Commercial Cooking Operations*. The brochure briefly describes listed equipment, clearances, exhaust hoods and fans, duct systems, make-up air, fire extinguishing systems, and operations and maintenance.

To obtain copies of the brochure, contact Building Standards. (See the back page of this newsletter for contact information.) §

Towards an Improved Code Development System For Canada

The Final Report of the Joint CCBFC/PTCBS Task Group on the Code Review and Development Process was released in November 1998.

"A new and improved single, coordinated building, fire and plumbing code review and development system is being proposed that will meet the needs of the provinces and territories, and at the same time, retain the best features of the present system.

"As a result, Canada's construction industry will have better, more uniform codes resulting from a system featuring more widespread participation by code users and a coordinated public consultation procedure. Differences among codes across Canada will be greatly reduced or eliminated and new code provisions will be developed and come into use in a shorter overall time frame."

Copies of the report were sent to groups and associations in Saskatchewan that represent frequent users of the codes. If you would like to receive a copy of the report, please contact Building Standards. The report may also be viewed on the CCBFC website www.ccbfc.org/ccbfc/tgs/review/index_E.shtml. §

BUILDING SAFETY WEEK APRIL 4-10, 1999

Fire Door Labelling

Adoption of the National Building Code of Canada (NBC) 1995 introduced a significant change in the labelling procedures for fire door and frame manufacturers. Subsections 3.1.8. and 9.10.13. of the NBC 1995 reference NFPA 80 "Fire Doors and Fire Windows" in its entirety. (Previous editions of the NBC referenced only part of NFPA 80.)

Chapter 1 of NFPA 80 requires that preparation of fire door assemblies for locks, latches, hinges, remotely operated or remotely monitored hardware, concealed closers, glass lights, vision panels, louvers, and astragals, and application of plant-ons and overlays, be performed in accordance with labelling service requirements. This means that only manufacturers, or distributors that have been accepted under the manufacturer's label service, may make these modifications to fire doors and apply fire labels.

On-site preparation for surface-applied hardware, function holes for mortise locks, holes for labelled viewers, 19 mm (3/4 in.) maximum undercutting on wood and composite doors, and application of protection plates to a maximum of 406 mm (16 in.) above the bottom of the door are permitted without affecting the label applied by the manufacturer. Surface-applied hardware is applied without removing material from the door other than drilling round holes to accommodate operational elements and through-bolts. §

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HAVE THINGS CHANGED? Please send us your corrections.

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