



Canadian Standards Association  
Mississauga, Ontario  
**To the Part I Committee**

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Subject No. 3090

Chair: T. Olechna

Date: January 18, 2005

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Title: Consumer's Service Conductors run in a Fire Resistant Construction, Rule 6-208(1)(d)

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**Submitted by:** Ark Tsisserev of City of Vancouver on September 28, 2002.

**Proposal:** Request for an Amendment to the following rule in Section 6:

Request (specifically worded):

- 1) To amend Rule 6-208(1) by adding new Paragraph (d) to read as follows:  
**. 6-208(1)(d) "In installations not exceeding 750 V, run in a shaft enclosure of at least two hour fire resistance construction"**
- 2) To add the wording **"(See appendices B and G)"** to the title of Rule 6-208.
- 3) To add Appendix B Note on Rule 6-208 to read as follows:

**Rule 6-208 Appendix B Note:**

**"The intent of this Rule is to specify conditions under which raceways or cables containing consumer's service conductors are permitted to be installed in the building for the purpose of their termination in a service box, when it is impracticable to locate the service box in conformance with the requirement of Rule 6-206(1)(e).**

**It is deemed by this Rule that the building is adequately protected against exposure to fire that might originate in the consumer's service conductors, when a condition (a), (b), (c) or (d) of Subrule (1) is met.**

**Users of this Code should be aware that a protection against exposure to fire by means of constructing a 2 hr rated gypsum wallboard shaft enclosure is intended only for services that do not exceed 750 V.**

**Fire resistance ratings of the shaft enclosure walls can be found in Article 3.1.7. of the National Building Code of Canada"**

- 4) To add reference in Appendix G as follows:

**"Rule 6-208(1) 3.1.7. Fire resistance ratings"**

**Reason for request and supporting information:**

There are numerous installations where it is virtually impossible to achieve the requirement of Rule 6-206(1)(e) – to locate a service box in the building "as close as practicable" where consumer's service conductors enter the building.

Present criteria (a) to (c) of Rule 6-208(1) allow running consumer's service conductors for a variety of applications where an underground consumer's or supply service is used in a residential, commercial, institutional or industrial building.

However, in applications where a service is provided from an overhead supply to a single dwelling, installation of a raceway with a consumer's service conductors is done on a building surface in order to meet the requirement of Rule 6-208(1) – to be located outside.

This installation was found to interfere with the building envelope requirements. The practice of installation has demonstrated that the safest approach is to allow this raceway to be installed inside the building provided that the remainder of the building is protected against fire that might originate in the service conductors.

**Note:** Sometimes such installation is done inside a garage, if the service box is located in the garage.

Such protection could be accomplished if the service raceway is fully “boxed in” by a gypsum wallboard with 2-hr fire resistance rating.

The addition of Paragraph (d) will resolve the existing problems related to the installation of an overhead consumer's service in a building and will make such an installation safer from the shock, fire protection and the building envelope points of view. Wording of this paragraph also clarifies the intent of the Code – to allow such method of protection only for low voltage installations.

**Chair's Comments:** I agree with the proposal with some additional background information.

The section of the Building Code that is used as a basis is:

#### Section 3.1.7. Fire-Resistance Ratings

##### 3.1.7.1. Determination of Ratings

(1) Except as permitted by Sentence (2) and Article 3.1.7.2., the rating of a material, assembly of materials or a structural member that is required to have a fire-resistance rating, shall be determined on the basis of the results of tests conducted in conformance with CAN/ULC-S101-M, "Standard Methods of Fire Endurance Tests of Building Construction and Materials".

(2) A material, assembly of materials or a structural member is permitted to be assigned a fire-resistance rating on the basis of the Supplementary Guidelines.

In addition to Table 2.3.4.A. the consideration was to use values in table 8.1 in supplementary guidelines

I have attached a copy of these two tables for your reading pleasure

### **COMMENTS FROM SUBCOMMITTEE DISCUSSION**

Agree

More practical than concrete

Easier for modifications

Agree

Comments: THE 2<sup>ND</sup> LAST PARAGRAPH OF APPENDIX B NOTE IMPLIES THAT THE SHAFT ENCLOSURE HAS TO BE GYPSUM WALL BOARD. THE WORDS "FOR EXAMPLE" COULD BE INSERTED AFTER "CONSTRUCTING".

Agree

Comments:

HOW DO WE ENSURE COMPLIANCE AT THE ROUGH WIRING INSPECTION STAGE WHERE THE PROPOSED 2 K RATING SHAFT ENCLOSURE HAS NOT BEEN INSTALLED? WHO WILL ENFORCE THIS?

Disagree

c) Disagree for the reasons stated ✓

Comments: "Shaft" is not a good choice - suggest "enveloped in an enclosure."

Disagree

**Attachment to reply form, Section No. 6 Subject No. 3090.**

1. Is the term "shaft enclosure" a defined term in the Building Code?
2. Is there a requirement for a "shaft enclosure" to be air tight to prevent a chimney effect?
3. Without stating distance limits, a supply service may be installed in a "shaft enclosure" through a number of row house type of units to a remote service location.
4. Minimum available fault current on a 2500 ampere network service, 120/208 volt 3 phase 4 wire, is listed at 150000 amperes in the local utility service manual. A fault of this magnitude would certainly ignite wood framing in the shaft enclosure and likely burn through the gypsum wallboard.

Disagree

c) Disagree for the reasons stated ✓ WITH THIS WORDING IN (d)

Comments:

~~AS PER~~  
HERE IN MANITOBA WE FEEL THE RULES IN THE CODE. NOW ARE WORKING AND DO NOT NEED ANY CHANGES.

**Chair Comments:**

The voting was, five agree and three agreed with comment and three disagreed.

That is a eight for and three against, which states that the majority of individuals do support this proposal

Some clarification on the comments made:

Questions were raised if “Shaft” is a common term used in the building code, and I scanned the Building Code and that term appears in 30 rules. This requirement would fall under the Building Code jurisdiction and there are specific rules for fire stops, etc.

**Subcommittee Recommendation:**

The subcommittee recommendation based on this discussion is to accept the proposal, and clarify that the gypsum wallboard is as example.

Request (specifically worded):

2) To amend Rule 6-208(1) by adding new paragraph (d) to read as follows:

**6-208 Consumer's Service Conductors Location**

(1) Raceways or cables containing consumer's service conductors shall be located outside of buildings unless they are:

- (a) Embedded in and encircled by not less than 50 mm of concrete or masonry where permitted by [Section 12](#); or
- (b) Directly buried in accordance with Rule [6-300](#) and located beneath a concrete slab not less than 50 mm thick; or
- (c) Run in a crawl space located underneath a structure, provided such a crawl space:
  - (i) Does not exceed 1.8 m in height between the lowest part of the floor assembly and the ground or other surface below it; and
  - (ii) Is of noncombustible construction; and
  - (iii) Is not used for the storage of combustible material.

**(d) “ In installations not exceeding 750 V, run in a shaft enclosure of at least two hour fire resistance construction”**

2) To add the wording **“(See appendices B and G)”** to the title of Rule 6-208.

3) To add Appendix B Note on Rule 6-208 to read as follows:

**Rule 6-208 Appendix B Note:**

**“The intent of this Rule is to specify conditions under which raceways or cables containing consumer’s service conductors are permitted to be installed in the building for the purpose of their termination in a service box, when it is impracticable to locate the service box in conformance with the requirement of Rule 6-206(1)(e).**

**It is deemed by this Rule that the building is adequately protected against exposure to fire that might originate in the consumer's service conductors, when a condition (a), (b), (c) or (d) of Subrule (1) is met.**

**Users of this Code should be aware that a protection against exposure to fire by means of constructing a 2 hr rated shaft enclosure, such as gypsum wallboard, is intended only for services that do not exceed 750 V.**

**Fire resistance ratings of the shaft enclosure walls can be found in Article 3.1.7. of the National Building Code of Canada”**

4) To add reference in Appendix G as follows:

**“Rule 6-208(1)**

**3.1.7. Fire resistance ratings”**