

INTERIOR STAIRWAYS FOR ROOF ACCESS TO HVAC EQUIPMENT

PURPOSE

This variance covers the use of steel rung-type ladders or “ship’s ladders”/“fixed industrial stairs” as an alternative for interior stairways for accessing rooftop HVAC equipment.

DISCUSSION

When access through a roof assembly is required by the National Building Code-2019 Alberta Edition (NBC(AE)) to facilitate the servicing of HVAC equipment, Article 3.6.4.7. specifies the access be provided by an interior stairway. Where ramps and stairways form part of an access to exit, they must conform to the dimensional, guard, and handrail requirements that apply to exits. However, if the ramps and stairways are only intended for occasional use for servicing equipment and machinery, Sentence 3.3.1.14.(2) specifies they do not need to conform to those requirements.

CODE REFERENCES

Article 3.6.4.7. states:

3.6.4.7. Roof Access

- 1) A *building* shall be provided with direct access to the roof by an interior stairway if
 - a) heating, ventilating or air-conditioning equipment is installed on the roof, and
 - b) the roof elevation is more than 4 m above *grade*.
- 2) Fixed access shall be provided to rooftop heating, ventilating or air-conditioning equipment that is installed on a sloped roof.

While Sentence 3.3.1.14.(2) exempts these stairs from the dimensional, guard, handrail and slip-resistance requirements of the NBC(AE), the Occupational Health and Safety Code (OHS) may contain additional dimensional and handrail requirements. Refer to the OHS Code for more specific information.

Article 3.3.1.14. states:

3.3.1.14. Ramps and Stairways

- 1) Except as permitted by Sentence (2), Article 3.3.4.7. and Subsection 3.3.2., ramps and stairways that do not serve as *exits* shall conform to the requirements for *exit* ramps and stairways stated in Sentence 3.4.3.2.(8) and Articles 3.4.3.4., and 3.4.6.1. to 3.4.6.9.
- 2) Ramps and stairways that serve *service rooms*, *service spaces* or *industrial occupancies* need not comply with Sentence (1), provided

Unless stated otherwise, all Code references in this STANDATA are to Division B of the National Building Code-2019 Alberta Edition

Issuance of this STANDATA is authorized by
the Provincial Building Administrator

The logo for the province of Alberta, featuring the word "Alberta" in a stylized, cursive font with a small blue square at the end of the word.

[Original Signed]
Paul Chang

- a) they are intended only for occasional use for servicing equipment and machinery, and
- b) they do not serve as *exits*.

APPLICATION

This variance applies specifically for periodic or occasional access to service roof-top HVAC equipment.

VARIANCE

This variance provides approximately equivalent or greater safety performance with respect to persons and property as provided for by the *Safety Codes Act* and the NBC(AE).

Interior roof access for the servicing of HVAC equipment as per Sentence 3.6.4.7.(1) is permitted to be provided alone or in combination by the following methods:

1. A fixed staircase as shown in, or similar to the illustrated example in Figure 1 in Appendix A of this Standata. Maximum vertical height of 3.7 m between landings.
2. A rung-type fixed ladder from a landing to a roof hatch meeting the requirements of the Occupational Health and Safety Code Section 130, for fixed ladders is permitted. Maximum height of the ladder not to exceed 3 m between landing platforms.
(see <https://www.qp.alberta.ca/documents/OHS/OHSCode.pdf>)

For the purpose of this variance a ship's stair may be considered as a stairway that is equipped with treads, stair rails, landings c/w guards, open risers, and has a slope that is not more than 70 degrees from the horizontal. A landing shall be provided at the top and bottom of each *flight*.

Notes: Article 3.2.5.3. is deemed to be satisfied by this variance.

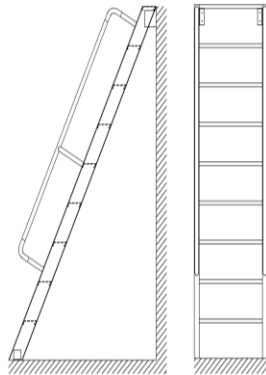
“Ship's ladder” and “Ship's stairs” are interchangeable terms.

Ship's “ladders” and rung-type vertical ladders are permanent, load-carrying structures that require engineering. Occupational Health and Safety regulations are applicable. Ship's ladders and rung-type ladders may be used in combination with each other where divided by landings. Design drawings and specifications should show all information necessary for the fabrication and installation, certified by a professional engineer as being fabricated and installed in accordance with good engineering practice.

This VARIANCE applies throughout the province of Alberta.

APPENDIX A

Figure 1- SHIP'S STAIR



NOTE: Figure 1 is provided for illustration purposes only. A landing is required at top and bottom or every 3.7 m (maximum).

- **OSHA Ships Stairs information: 1910.25(e)**
https://www.osha.gov/pls/oshaweb/owadisp.show_DOCUMENT?p_table=STANDARDS&p_id=9717
 - Maximum vertical height 3.7 m between landings.
 - Headroom clearance is required. Ideally, a roof hatch should be openable from a landing.