LEGISLATIVE INTERPRETATIONS

Topic: Ship's Ladders	Issued by: Director, Compliance and Regulatory Review
Statute: *General Regulation 91-191*	Date Issued: DRAFT
Sections: 115, 121	Date Revised:

"Service stairway" means a stairway used for access for purposes of maintenance and repair and not used as part of a travelway;

Stairways

115(1) An employer shall ensure that a stairway

(a) is of sufficient strength to sustain a live load of 4.8 kPa,
(b) is a minimum of 1.12 m in width,
(c) is pitched not less than 20 degrees and not more than 35 degrees from the horizontal,
(d) has risers constant in height that are not less than 127 mm and not more than 200 mm,
(e) has a maximum height of 3.7 m between landings,
(f) has landings, if any, with a minimum clearance of 1.12 m measured in the direction of the run,
(g) has a vertical clearance of 2.05 m from the top of the tread at all points in the stairway,
(h) has treads constant in width and not less than 225 mm in width, and
(i) has a non-slip nosing or a strip of non-slip material not less than 50 mm in width and installed 25 mm from the front edge of the tread on all treads where there may be a hazard of slipping due to the material of the tread.

115(2) Paragraphs (1)(b), (c) and (h) do not apply to a service stairway.

115(3) An employer shall ensure that a service stairway

(a) is a minimum of 900 mm in width,
(b) is pitched not less than 20 degrees and not more than 50 degrees from the horizontal, and
(c) has treads constant in width and not less than 150 mm in width.

Fixed Ladders

121(1) An employer shall ensure that a fixed ladder

(a) is of adequate strength and length
(b) is clean and free from grease,
(c) is maintained in a safe condition,
(d) is securely held in place at the top and bottom and at such intermediate points as are required to prevent sway,
(e) has a clearance of at least 165 mm maintained between the rungs and the structure to

which the ladder is affixed,
(f) does not have any rungs that extend above a landing,
(g) has side rails or other secure hand holds that extend at least 1.07 m above the landing and are spaced not less than 685 mm apart, and
(h) is removed from service when it has loose, broken or missing rungs, split side rails or other defects that may be hazardous to an employee

121(2) An employer shall ensure that a fixed ladder that is more than 6 m in height is equipped with ladder cages.

121(3) Subsection (2) does not apply where an employee on the ladder uses a fall-arresting system.

121(4) Where a ladder cage is used on a fixed ladder, an employer shall ensure that
(a) the cage is provided with metal hoops spaced to prevent an employee from falling away from the ladder and to contain an employee who may lean or fall against the cage,
(b) the cage extends not less than 685 mm and not more than 725 mm from the centre line of the rungs of the ladder,
(c) the cage is not less than 685 mm wide where it attaches to the ladder,
(d) the cage extends from a point 2.5 m from the base of the ladder to the top of the ladder
(e) the inside of the cage is free of projections, and
(f) if the fixed ladder is more than 9 m in height, it is equipped with a rest platform at intervals of no more than 9 m.

Question
We currently have a need for a service stairway to allow our maintenance staff access to equipment that requires periodic inspections and repairs. Staff may need to transport hand tools and other equipment to the area to conduct the work.

Because we have limited space, we would like to substitute the service stairway for a ship ladder. Could we proceed with its construction and still comply with the regulation for service stairways?

Answer
A ship's ladder is a specific style of stairway initially used on ships. Since ships have limited deck space, ship builders had to design stairs with unusually steep slopes. These stairs became known as ship's stairs or ship's ladders.

As a result of their design (especially the steep slope they are usually built to), ship ladders may resemble fixed ladders.

While *General Regulation 91-191* does not have specific provisions for the design and construction of such systems, research shows that they have a use under certain circumstances in the workplace and can be designed and used safely. Other Canadian legislation and standards including the *National Building Code* address the design and construction of ship ladders. The conditions set out below have been established by WorkSafeBC and are acceptable to WorkSafeNB.

As a result, WorkSafeNB will allow service stairways or fixed ladders to be substituted by ship ladders under the following conditions:

A ship's ladder must:

- Be designed so the angle between the side rails and the horizontal is between 50° and 70°. The preferred angle is in the range of 60° to 68°.
- Serve only a single platform or landing and have a maximum height of 4 metres (12 feet).
- Have tread width of at least 130 millimetres (mm) (5 inches), with a non-skid finish, uniformly spaced (rise) at no more than 305 mm (12 inches). Treads should be at least 430 mm (17 inches) long, but not longer than 630 mm (24 inches).
- Have a minimum design working load of 1.1 kilo newton (kN) (250 pounds) applied uniformly to a 90 mm (3.5 inch) strip across the centre of the tread.
- Have handrails provided on both sides of the ladder at approximately 900 mm (36 inches) above the tread nosing.
- Have a safety guard installed parallel to the slope of the ladder and offset approximately 150 mm (6 inches) from the rear of the treads. (This guard is to stop a worker's leg from passing through to the backside of the ladder if a foot slips off the back side of the tread.)

In addition, it should be noted that a ship's ladder is a permanent load-carrying structure and needs to be properly engineered. Design drawings and specifications should show all information necessary for the fabrication and installation of the ship's ladder, including details on how it is to be secured in place. The completed installation will need to be certified by a professional engineer as being fabricated and installed in accordance with good engineering practice.

Please note that other design and standards for ship ladders will be considered by WorkSafeNB.

Furthermore, the following safe ladder use criteria will be required to be met:

The user of a ship's ladder must:

- Be instructed on the correct way to use the ladder.
- Face the ladder when ascending or descending.
- Have both hands free to grasp the handrails when using the ladder. Tools or other items which prevent both hands from being free to grasp the handrails should not be carried up or down the ladder.

Maintain "three points of contact" when using the ladder. Three points of contact means two feet and one hand or two hands and one foot in contact with the ladder and handrails at all times. (This is recommended practice when using any type of ladder.)