Submit a comment

Proposed Change 1768

Code Reference(s):	**NBC20 Div.B 3.2.4.16. (first printing)** **NBC20 Div.B 3.8.2.6. (first printing)**
Subject:	Other — Use and Egress
Title:	Accessible Controls for Manual Fire Alarm Stations
Description:	This proposed change clarifies the application of the accessible control requirements for manual stations.
Related Code Change Request(s):	CCR 1520

This change could potentially affect the following topic areas:

- ☐ Division A
- ☐ Division C
- ☐ Building operations
- ☑ Small Buildings
- ☐ Fire Protection
- ☑ Accessibility
- ☐ Building Envelope
- ☐ Heating, Ventilating and Air Conditioning
- ☑ Division B
- ☑ Design and Construction
- ☐ Housing
- ☑ Large Buildings
- ☑ Occupant safety in use
- ☐ Structural Requirements
- ☐ Energy Efficiency
- ☐ Plumbing
- ☐ Construction and Demolition Sites

Problem

The National Building Code of Canada (NBC) 2020 requires building controls that are intended to be used by building occupants to be accessible. This means that the controls should be operable with a closed fist position with limited force, so that people with disabilities related to dexterity are able to operate them. Furthermore, when in barrier-free paths of travel, these controls should be installed within a particular height range and in a location that can be reached by a person using an assistive mobility device. These provisions are especially important for the about 5% of Canadians with disabilities related to dexterity (Statistics Canada, 2017) and about 1% of community-dwelling Canadians who regularly use wheeled mobility aids (Smith et al., 2016).

Manual stations (or manual pull stations) are controls that are typically available so that building occupants can trigger the fire alarm system in the event of an emergency. However, the NBC does not clearly identify manual stations as building controls that must comply with the accessibility requirements with respect to reachability and dexterity. Some styles of manual stations, such as the common T-shape, may not comply with the requirements for accessible controls, thereby preventing a person with limited dexterity from triggering the fire alarm system.

Furthermore, the lack of clarity that manual stations are intended as "controls" covered by the accessibility provisions in the Code and the lack of explicit requirements for the installation location may result in manual stations being installed too high or low for users of wheeled

mobility aids. Manual stations that are inaccessible could lead to delays in notifying building occupants of an emergency to minimize the loss of life and property. This situation is inconsistent with the accessibility objective, which intends to limit the probability of a person with a disability related to dexterity or mobility being unacceptably impeded from using a building's facilities.

References:

Smith, E., Giesbrecht, E., Mortenson, W., Miller, W. Prevalence of Wheelchair and Scooter Use Among Community-Dwelling Canadians. *Physical Therapy.* 2016; 96(8):1135-42.

Statistics Canada (2017), "New Data on Disability in Canada, 2017", https://www150.statcan.gc.ca/n1/en/pub/11-627-m/11-627-m2018035-eng.pdf?st=v5UqujRh

Justification

This proposed change adds a cross-reference in Article 3.2.4.16. on manual stations to Article 3.8.2.6. on accessible controls, to highlight that manual stations should be considered as a control intended to be used by building occupants. This proposed change also adds "manual stations" to the list of examples of building controls in Sentence 3.8.2.6.(1) for clarity. This proposed change would inform Code users that manual stations are intended to conform to the accessibility design requirements specified in Article 3.8.3.8.

This proposed change is intended to clarify the interpretation of the NBC provisions without changing them substantially. By explicitly denoting manual stations as controls that are covered by the NBC provisions on accessibility, this proposed change would limit the probability that persons with disabilities related to dexterity or mobility will be unable to quickly trigger a fire alarm to notify building occupants of an emergency.

PROPOSED CHANGE

[3.2.4.16.] 3.2.4.16. Manual Stations

(See also Article 3.8.2.6.)

[1] 1) Except as permitted by Sentences (2) and (3), where a fire alarm system is installed, a manual station shall be installed in every *floor area* near

[a] a) every principal entrance to the *building*, and

[b] b) every *exit*.

(See Note A-3.2.4.16.(1).)

[2] 2) In a *building* that is *sprinklered* throughout, a manual station is not required at an exterior egress doorway from a *suite* that does not lead to an interior shared *means of egress* in a hotel or motel not more than 3 *storeys* in *building height*, provided each *suite* is served by an exterior *exit* facility leading directly to ground level.

[3] 3) In a *building* that is *sprinklered* throughout, a manual station is not required at an exterior egress doorway from a *dwelling unit* that does not lead to an interior shared *means of egress* in a *building* not more than 3 *storeys* in *building height* containing only *dwelling units*, provided each *dwelling unit* is served by an

exterior *exit* facility leading directly to ground level.

[4] 4) In a *building* referred to in Sentence (2) or (3), manual stations shall be installed near doorways leading from shared interior corridors to the exterior.

[5] 5) Where a fire alarm system is installed, a manually operated fire alarm station shall be installed on the roof at each *exit* from a helicopter landing area.

[3.8.2.6.] 3.8.2.6. Controls

[1] 1) Except as provided in Sentence 3.5.2.1.(3), controls for the operation of *building* services or safety devices, including electrical switches, thermostats, faucets, door hardware, manual stations and intercom switches, that are intended to be operated by the occupant shall comply with Subsection 3.8.3. (See Note A-3.8.2.6.(1).)

Impact analysis

Impact on accessibility and safety: This proposed change would clarify the need to install manual stations that are accessible to persons with disabilities related to dexterity or mobility. Five percent of Canadians have been diagnosed with disabilities related to dexterity (Statistics Canada, 2017) and would benefit from more inclusive provisions in the NBC for accessibility both within and outside of barrier-free paths of travel. Approximately 10% of Canadians have disabilities related to mobility (Statistics Canada, 2017), and 1% of community-dwelling Canadians regularly use wheeled mobility aids, such as wheelchairs or scooters (Smith et al., 2016), and would benefit from a restricted installation range for manual stations. While the percentage is low, these persons still need to be able to operate manual stations in case of a fire emergency.

The consequences of not quickly activating an alarm can be catastrophic for all building occupants, given the importance of alarms in prompting timely evacuations and emergency responses (Proulx, 1995). By explicitly denoting manual stations as controls that must comply with the accessibility requirements for dexterity and reachability, this proposed change would enable the many Canadians with disabilities related to dexterity or mobility to quickly trigger an alarm and prompt an evacuation. This would help prevent injury and death, as well as illness due to smoke inhalation, not only to the persons with disabilities who activate the alarm, but also to the other building occupants who need to evacuate quickly.

Impact on cost and manufacturing: The costs associated with the new provisions for mounting location are negligible, as this proposed change would simply restrict the installation height of manual stations, which are already required in buildings.

The dexterity requirements would enhance access to Canadian markets for manual stations that comply with this proposed change, although market access for non-compliant manual stations would be limited. Most manufacturers have at least one model that complies with the requirements for controls in the Americans with Disabilities Act (ADA) Standard (Section 309.4), as well as CAN/ULC-S528, "Standard for Manual Stations for Fire Alarm Systems," and the Ontario Building Code. These standards align with this proposed change to the NBC in most areas except the requirements for closed-fist operation and actuation force limits for manual stations not in the barrier-free path of travel (i.e., 67 N versus 22 N). At present, only one model of manual station is advertised online as offering "closed-fist

operation." However, the several manufacturers that were conferred with during the development of this proposed change were confident that their ADA-compliant models would meet the closed-fist operation requirement.

Regarding consumer costs, the cost differential between manual stations that comply with this proposed change versus non-compliant stations is negligible in relation to the construction cost of a building. With the widespread use of this technology that would be encouraged, consumer costs may decrease with innovation in the design, manufacturing and distribution of accessible manual stations. This proposed change may also reduce the costs associated with loss of property by enabling persons with disabilities related to dexterity or mobility to quickly activate alarms in the event of an emergency.

Impact on the provinces and territories: The impact of this proposed change would differ by jurisdiction, depending both on current provisions and their enforcement with respect to the definition of a "control." The Ontario Building Code includes explicit guidance on the design and installation of manual stations that is mostly identical to this proposed change, with the exception of the proposed NBC requirement for closed-fist operation and removal of the exemption for barrier-free paths of travel. The requirements in other provinces and territories are currently consistent with the NBC; hence, the impact on accessibility and enforcement elsewhere would exceed that in Ontario.

References:

Proulx, G. (1995). Evacuation time and movement in apartment buildings. *Fire Safety Journal. 24*(3):229-46.

Smith, E., Giesbrecht, E., Mortenson, W., Miller, W. Prevalence of Wheelchair and Scooter Use Among Community-Dwelling Canadians. *Physical Therapy.* 2016; 96(8):1135-42.

Statistics Canada (2017), "New Data on Disability in Canada, 2017", https://www150.statcan.gc.ca/n1/en/pub/11-627-m/11-627-m2018035-eng.pdf?st=v5UqujRh

Enforcement implications

Some typical designs for manual stations, despite being ULC-rated, may not comply with the NBC requirements for accessible controls. Building officials would need to be made aware that manual stations are explicitly covered under the controls that must conform to the accessibility requirements.

During inspections, building officials would also need to enforce the appropriate selection and installation of manual stations (e.g., adequate height, clear floor space and closed-fist operation). This enforcement could be completed by visual inspection and with basic measurement tools, similar to the inspection of other controls that comply with accessibility requirements.

Who is affected

Building occupants, particularly those with dexterity or mobility disabilities, including those who use wheeled mobility aids, would be able to use the manual stations in case of emergency.

Building officials would need to verify that the designs for the manual stations are appropriate and the manual stations are installed as required for accessibility purposes.

Designers and builders would need to select and install appropriate designs for manual stations.

Product manufacturers may need to modify their designs for manual stations.

OBJECTIVE-BASED ANALYSIS OF NEW OR CHANGED PROVISIONS

[3.2.4.16.] 3.2.4.16. ([1] 1) [F11-OS1.5]

[3.2.4.16.] 3.2.4.16. ([2] 2) [F02-OS1.2] [F12-OS1.2,OS1.5] [F10-OS1.5]

[3.2.4.16.] 3.2.4.16. ([3] 3) [F02-OS1.2] [F12-OS1.2,OS1.5] [F10-OS1.5]

[3.2.4.16.] 3.2.4.16. ([4] 4) [F11-OS1.5]

[3.2.4.16.] 3.2.4.16. ([5] 5) [F11-OS1.5]

[3.8.2.6.] 3.8.2.6. ([1] 1) no attributions