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## Proposed Change 1762

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<b>Code Reference(s):</b>	<b>NBC20 Div.B 3.2.7.1. (first printing)</b> <b>NBC20 Div.B 9.34.2.7. (first printing)</b>
Subject:	Accessibility — Anthropometrics
Title:	Illumination Levels
Description:	This proposed change introduces minimum levels of illumination over escalators and moving walkways, and at controls and signs in public and service areas in Part 9 buildings.

This change could potentially affect the following topic areas:

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|--|---|
| <input type="checkbox"/> Division A                                | <input checked="" type="checkbox"/> Division B              |
| <input type="checkbox"/> Division C                                | <input checked="" type="checkbox"/> Design and Construction |
| <input type="checkbox"/> Building operations                       | <input type="checkbox"/> Housing                            |
| <input checked="" type="checkbox"/> Small Buildings                | <input type="checkbox"/> Large Buildings                    |
| <input type="checkbox"/> Fire Protection                           | <input checked="" type="checkbox"/> Occupant safety in use  |
| <input checked="" type="checkbox"/> Accessibility                  | <input type="checkbox"/> Structural Requirements            |
| <input type="checkbox"/> Building Envelope                         | <input type="checkbox"/> Energy Efficiency                  |
| <input type="checkbox"/> Heating, Ventilating and Air Conditioning | <input type="checkbox"/> Plumbing                           |
|  | <input type="checkbox"/> Construction and Demolition Sites  |

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## Problem

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The current requirements for minimum lighting levels in Part 9 of the National Building Code of Canada (NBC) are not specific to escalators, moving walks, building controls or accessible legible signs, which could lead to inadequate lighting levels at these locations, which could lead to safety issues resulting in:

- trips, slips or falls when approaching, using or disembarking from an escalator or moving walk, which could lead to harm to persons,
- difficulty using a building's controls intended for the operation of building services or safety devices, including electrical switches, thermostats, faucets, door hardware and intercom switches, that are intended to be operated by the occupant, which could lead to delays or impediments when moving throughout the building during an emergency or unacceptably impeding a person with low vision from using a buildings controls, or
- difficulty reading signs that are intended to be accessible and legible, which could lead to delays or impediments when moving throughout the building during an emergency or unacceptably impeding a person with low vision from

using a buildings facilities.

New requirements in Part 3 were introduced in the NBC 2020 for minimum illumination levels at such locations. However, Part 9 requirements for small buildings were not updated in the same way thereby creating different levels of safety and accessibility.

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## Justification

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Adequate lighting levels are essential to facilitate the safe circulation of a building's occupants. While the NBC requires minimum lighting levels for some rooms and spaces used by the public, it does not specifically address the following critical areas that may require an enhanced lighting level above ambient conditions: escalators and moving walks, building controls, or signage intended to be legible.

The reviewed documentation showed that as humans age they tend to require a greater amount of light to complete a given task. For example, a 65-year-old person may require up to four times the amount of light compared to a 20-year-old person. This proposed change would increase lighting levels for these specific areas by introducing cross-references in Part 9 to revised Sentences 3.2.7.1.(6)-2025 to (9)-2025. The requirements are intended to serve all building occupants including those with low vision.

Escalators and moving walks were identified as being potentially hazardous because of the amount of physical and cognitive effort and coordination required to safely embark on and disembark from them and the significant risk of tripping or falling when using them. In addition, these devices typically have dark treads or walking surfaces that potentially have little contrast with the adjacent walking surfaces. Therefore, minimum lighting levels at escalators and moving walks are being proposed in Part 9 to mitigate some of the tripping and falling risks associated with the use of these devices.

The nature of the task to be completed also plays an important role in determining the required amount of light. For example, controls for the operation of building services or safety devices, including electrical switches, thermostats, faucets, door hardware and intercom switches, that are intended to be operated by the occupant require adequate illumination so people are able to find and use them, particularly where their use might affect health, safety and egress.

Because signage, such as emergency exit plans, room signs, and wayfinding signs, conveys critical information, it should be adequately lit to facilitate circulation and the use of the building and its facilities by everyone. The proposed illumination levels are representative of the requirements in most accessibility standards.

As many of the proposed Part 9 lighting requirements already exist in Part 3, this proposed change adds a cross-reference to Part 3 in Part 9 to avoid duplicating the requirements. Also, since one of the existing Part 3 requirements directs Code users to Part 9, this proposed change moves that Part 9 content into Part 3 (Sentences 3.2.7.1.(3)-2025 and (4)-2025) to facilitate use of the Code.

## PROPOSED CHANGE

### [3.2.7.1.] 3.2.7.1. Minimum Lighting Requirements

- [1] 1)** ~~An e~~Exits, a public corridors, or and corridors providing access to exit for the public or serving patients' sleeping rooms or classrooms shall be equipped to provide illumination to an average level not less than 50 lx at the levels of the floor, ~~or~~ treads and level handrails and at angles and intersections at changes of level where there are stairs or *ramps*.
- [2] 2)** The minimum level of the illumination required by Sentence (1) shall be 10 lx.
- [3] --)** Every public or service area in a building shall be equipped with lighting outlets with fixtures to provide illumination to every portion of the area.
- [4] --)** Except as provided in Sentences (6)-2025 to (9)-2025, the fixtures required by Sentence (3)-2025 shall provide illumination in conformance with Table 3.2.7.1.

**Table [3.2.7.1.]**  
**Lighting for Public and Service Areas**  
**Forming Part of Sentence [3.2.7.1.] -- ([4] --)**

<u>Public or Service Area</u>	<u>Minimum Illumination, lx</u>
<u>Garages</u>	<u>50</u>
<u>Public washrooms</u>	<u>100</u>
<u>Recreation rooms</u>	<u>100</u>
<u>Service hallways and stairways</u>	<u>50</u>
<u>Service rooms and laundry areas</u>	<u>200</u>
<u>Storage rooms</u>	<u>50</u>

- ~~**[5] 3)** Rooms and spaces used by the public shall be equipped to provide illumination as described in Sentences (4) to (7) and Article 9.34.2.7.~~
- [6] 4)** The minimum level of illumination over the entire length of escalators and moving walks shall be not less than 100 lx at the levels of the handrails, treads and walking surfaces.
- [7] 5)** Except as provided in Sentence (6) and except for light switches and internally illuminated controls, the minimum level of illumination at controls required by Article 3.8.2.6. shall be not less than 100 lx.
- [8] 6)** Where visual information is provided at controls referred to in Sentence (5), the minimum level of illumination at the controls shall be not less than 200 lx, except where the visual information is internally

illuminated.

- [9] 7)** Except for internally illuminated signs, the minimum level of illumination at signs displaying visual information required by Clauses 3.4.6.10.(5)(b) and 3.4.6.16.(5)(g), Subclause 3.4.6.16.(5)(l)(ii), Clause 3.4.6.16.(6)(d), Sentence 3.4.6.18.(3), Clause 3.4.6.18.(4)(a) and Articles 3.4.6.19., 3.8.2.10. and 9.9.11.5. shall be not less than 200 lx.
- [10] 8)** Lighting outlets in a *building of residential occupancy* shall be provided in conformance with Subsection 9.34.2.

### **[9.34.2.7.] 9.34.2.7. Public and Service Areas**

- [1] 1)** Every public or service area in a buildings shall be provided with lighting in conformance with ~~outlets with fixtures controlled by a wall switch or panel to illuminate every portion of such areas.~~
- [a] --)** Sentences 3.2.7.1.(3)-2025 to (9)-2025, and
- [b] --)** Article 9.9.12.2. for means of egress.
- ~~**[2] 2)** When provided by incandescent lighting, illumination required in Sentence (1) shall conform to Table 9.34.2.7. (See Article 9.9.12.2. for lighting in means of egress.)~~
- ~~**[3] 3)** When other types of lighting are used, illumination equivalent to that shown in Table 9.34.2.7. shall be provided.~~

**Table ~~[9.34.2.7.] 9.34.2.7.~~  
Lighting for Public Areas  
Forming Part of Sentences ~~[9.34.2.7.] 9.34.2.7.([2] 2) and ([3] 3)~~**

<b>Room or Space</b>	<b>Minimum Illumination, lx</b>	<b>Minimum Lighting Power Density, W/m<sup>2</sup> of floor area (incandescent lighting)</b>
<del>Storage rooms</del>	<del>50</del>	<del>5</del>
<del>Service rooms and laundry areas</del>	<del>200</del>	<del>20</del>
<del>Garages</del>	<del>50</del>	<del>5</del>
<del>Public water-closet rooms</del>	<del>100</del>	<del>10</del>
<del>Service hallways and stairways</del>	<del>50</del>	<del>5</del>
<del>Recreation rooms</del>	<del>100</del>	<del>10</del>

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## Impact analysis

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The estimated costs required to implement task-specific lighting at the levels required by this proposed change would represent less than 1% of the overall building costs. It should also be noted that the lighting levels being proposed are consistent with lighting levels already required by the NBC for the lighting of certain rooms or spaces in public areas.

The improved lighting requirements would help to reduce the likelihood that occupants with and without low vision might trip, slip or fall while circulating within a building (NBC Objective - Safety in Use). The improved lighting requirements could also help to limit the probability that a person with low vision might be unacceptably impeded from circulating within a building or from using the building's facilities (NBC Objective - Accessibility).

Recognizing that over 5% of Canadians above 15 years old have a disability related to vision that is not addressable with corrective lenses (Statistics Canada, 2017), this proposed change would facilitate circulation within a building and use of its facilities more safely.

### Reference

Statistics Canada, "Canadian Survey on Disability Reports: A demographic, employment and income profile of Canadians with disabilities aged 15 years and over, 2017", <https://www150.statcan.gc.ca/n1/pub/89-654-x/89-654-x2018002-eng.htm>

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## Enforcement implications

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As there are existing requirements requiring minimum lighting levels, it is expected that this proposed change can be enforced using the existing Code enforcement infrastructure.

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## Who is affected

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Building occupants would benefit from additional lighting while circulating within a building

Architects and engineers would need to ensure that the minimum lighting requirements are met in the buildings they design.

Authorities having jurisdiction would need to verify that adequate lighting is provided in buildings.

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## OBJECTIVE-BASED ANALYSIS OF NEW OR CHANGED PROVISIONS

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[3.2.7.1.] 3.2.7.1. ([1] 1) [F30-OS3.1] [F10-OS3.7]

[3.2.7.1.] 3.2.7.1. ([2] 2) [F30-OS3.1] [F10-OS3.7]

[3.2.7.1.] -- ([3] --) [F30-OS3.1]

[3.2.7.1.] -- ([4] --) [F30-OS3.1]

~~[3.2.7.1.] 3.2.7.1. ([5] 3) no attributions~~

[3.2.7.1.] 3.2.7.1. ([6] 4) [F30-OS3.1]

[3.2.7.1.] 3.2.7.1. ([7] 5) [F74-OA2]

[3.2.7.1.] 3.2.7.1. ([8] 6) [F74-OA2]

[3.2.7.1.] 3.2.7.1. ([9] 7) [F10-OS3.7]

[3.2.7.1.] 3.2.7.1. ([9] 7) [F74-OA2]

[3.2.7.1.] 3.2.7.1. ([9] 7) [F30-OS3.1]

[3.2.7.1.] 3.2.7.1. ([10] 8) no attributions

[9.34.2.7.] 9.34.2.7. ([1] 1) [F30-OS3.1]

~~[9.34.2.7.] 9.34.2.7. ([2] 2) [F30-OS3.1]~~

~~[9.34.2.7.] 9.34.2.7. ([3] 3) [F30-OS3.1]~~