
GUIDANCE ON ALTERNATIVE SOLUTIONS FOR PROTECTION OF VEHICULAR PASSAGEWAYS BETWEEN CONNECTED PARKADES

The purpose of this Bulletin is to provide guidance regarding protection of vehicular passageways between connected parkades serving buildings located on adjacent lots.

In order to achieve the minimum level of protection that is at least as good as that provided by the prescriptive requirements in the VBBL for buildings located at 0 m limiting distance, means of protection proposed in the alternative solution should address the following issues:

Reliance on Legal Agreements

The City cannot accept a full or partial reliance on legal agreements between property owners. Such agreements are viable only as they pertain to the joint uses of parkades and to liabilities arisen from the damage that occurred as a result of parkade uses under normal conditions. They cannot be considered to be a basis for waiving or any reduction in the level of fire and life safety between connected parkades. Accordingly, no legal agreements can be stated as mitigating features when compliance with the VBBL requirements is achieved on a basis of alternative solution.

Same Protection Measures on Both Sides of an Opening

Identical protection is to be provided on both sides of an opening. It is imperative that same level of safety be achieved for a fire occurring on each side of the opening and that the building owners would be equally responsible for maintenance of protective measures on their sides of the opening. Reliance on the single fire shutter provided on either side of the opening cannot be considered for an acceptance.

Smoke Migration across an Opening

When either of the connected buildings is classified as high building in accordance with requirements in Subsection 3.2.6., VBBL requires measures that prevent smoke migration between connected buildings be provided as per recommendations provided in Appendix B. While smoke migration across the openings between in connected parkades is sometimes not perceived as a risk that needs to be mitigated, the City of Vancouver sees it as a vital matter of importance in achieving the minimum acceptable level of fire and life safety.

PROTECTION OF VEHICULAR PASSAGEWAYS BETWEEN CONNECTED PARKADES

In accordance with Appendix B of the VBBL, a minimally acceptable level of protection may be achieved by the provision of a fire-rated pressurized vestibule between two buildings. Accordingly, when smoke migration prevention measures are required, fire shutters provided to protect a vehicular passage opening must provide the same level of reliability and endurance as a fire-rated pressurized vestibule. To achieve this, fire shutter activation must be reliably responsive to a close-proximity fire as well as to a remotely located sprinkler-controlled fire producing cold smoke. Activation of fire shutters by fusible links cannot be considered to provide a sufficient level of reliability to mitigate the risk of smoke migration as it will not respond to a fire located farther away from the opening and controlled by sprinklers.

In order to achieve this, fire shutters must be activated by a signal from the building's fire alarm system. The minimally acceptable will be the activation upon a signal from the parkade sprinkler system. However, it will be at the Consultant's discretion to determine whether it is sufficient and whether activation of other detection devices in the building of a fire origin must warrant activation of the fire shutter.

A sequence of fire alarm operation for activation of the fire shutter is to be provided in the Building Code Report and the alternative solution report. The proposed sequence of fire alarm operations is to be reviewed by Vancouver Fire.

Temperature-Rise Limit on the Opaque Surface of a Fire Shutter

In accordance with Sentence 3.2.3.5.(1) of the 2019 VBBL, a wall that has a limiting distance less than 1.2 m must be protected by closures whose fire-protection rating is in conformance with the fire-resistance rating required for the wall. Based on this requirement, a fire shutter provided to protect a vehicular passageway is to match the duration of the fire-resistance rating of the wall and be tested for temperature rise-limit to be permitted installed in a firewall as per Table 3.1.8.17 of the 2019 VBBL.

The City may contemplate an acceptance of omission of the temperature-rise limit on an alternative solution basis by means of providing close-spaced sprinklers. In this case, an alternative solution proposal must univocally state that that protection of the opening is provided on an acceptable solution basis in full conformance with the requirement in the VBBL except for the requirement for the temperature-rise limit and state Sentence 3.2.3.5.(1) as the only at variance requirement addressed on an alternative solution basis.

When close-spaced sprinklers are provided in lieu of fire shutters with a temperature-rise limit, fire shutters activated by means of fusible links cannot be accepted. Activation of close-space sprinklers provided above the openings may interfere with a proper operation of the fusible link. Sprinklers that have been activated first would cool down the surrounding environment and the shutter would remain in the open position. In order to avoid this outcome, provision of a fire shutter activated by the signal from the building's fire alarm system is necessary to achieve the minimum level of safety.

Summary

The following is a summary of the requirements imposed on the installation of fire shutters protecting openings within vehicular passageways.

- A ULC listed fire shutter is to be provided on each side of the opening in conformance with requirements in Subsection 3.1.8. of the VBBL.
- Both shutters are required to have temperature rise limits for installation in a firewall as per Table 3.1.8.17 of the 2019 VBBL. The City may contemplate an acceptance of reliance on close-spaced sprinklers to control a temperature rise on the opaque side of the shutter.
- For high buildings, fire shutters are to be activated by the signal from the building's fire alarms in order to prevent smoke migration between parkades. Likewise, activation of a fire shutter by the building's fire alarm system is required when close-spaced sprinklers are used in lieu of temperature-rise limit.
- A sequence of fire alarm operation for activation of the fire shutter is to be provided in the Building Code Report and coordinated with Vancouver Fire.

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