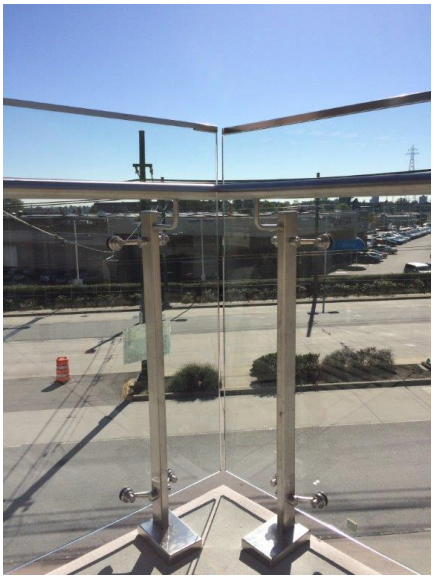
CITY OF VANCOUVER

PLANNING AND DEVELOPMENT SERVICES
Office of the Chief Building Official

BULLETIN 2015-009-BU *December 01, 2015*

GLASS GUARDS

INTENT:
The intent of this bulletin is to clarify how Articles 4.1.5.14. and 9.8.8.2., Loads on Guards, in the 2014 Vancouver Building By-law apply to guards incorporating structural glass. A Professional Engineer or Architect must be retained by the owner and Letters of Assurance (Schedules B and C-B) will be required for each project involving glass guards. A secondary means of structural support and top edge protection must be provided.



Mere conformance with the structural load requirements in Articles 4.1.5.14. and 9.8.8.2. is not sufficient as the requirements in the two noted Articles are supplemented by Sentences 4.3.6.1.(1) and 9.6.1.3.(1) stating that all glass guards shall be designed in accordance with CAN/CGSB-12.20-M, Glass Guards and Balustrades. CAN/CGSB-12.20-M has additional structural requirements that need to be fulfilled in order to minimize the risk of progressive or localized collapse of structural glass panels with possible catastrophic consequences. Some of the glass failure modes that are being addressed by the requirements in CAN/CGSB-12.20-M are:

- Glass breakage due to normal manufacturing imperfections.
- Glass breakage following a hard body impact on an edge.
- Glass breakage as a result of installation or design deficiencies causing a direct contact of glass with metal or similar hard elements.

Article 7.1 of CAN/CGSB-12.20-M requires any free standing glass guard be capped by a rail which is continuous. In addition, the Appendix notes clarify that rigid continuous supports over one or more panels are required as means of structural redundancy to ensure that there is a barrier between the floor area and the edge of the opening in the case of a glass panel collapse. The guards and their components are to mount into the base building structure. Notwithstanding structural requirements, guards and handrails mounted into base building shall meet all size and height limitations in Part 3 and Part 9 of the By-law.

Based on the foregoing, the following requirements will be applicable to all glass guard installation in the City of Vancouver:

- Glass guards without the top edge protection will not be permitted unless a report that explicitly justifies how the glass guard complies with structural redundancy in CAN/CGSB-12.20-M is prepared by the Structural Engineer.

- In accordance with the APEGBC Professional Practice Guidelines “Designing Guards for Buildings,“ a Professional Engineer or Architect shall submit Letters of Assurance (Schedules B and C-B) taking responsibility for structural conformance with CAN/CGSB-12.20-M in relation to factored design loads after failure of alternate lights and the connection to the base building, including the effect on the base building. The Professional of Record will specify in the Schedule B that he/she takes

responsibility for Item 1.5, Performance and physical safety features (guardrails, handrails, etc.). If appropriate, this would include clarification that the Professional takes responsibility only for the design of glass guards within that project and all other guards are outside of his/her scope of responsibility. In accordance with APEGBC guidelines, a Registered Professional of Record completing Schedule B shall cross off and initial items that do not apply to his/her scope of responsibility in that project.

- In order to ensure continuity of responsibility between multiple disciplines that may be involved in the design and construction of guards, the Professional of Record who assumes the responsibility for Item 1.5, Performance and physical safety features (guardrails, handrails, etc.), will be responsible for liaising, coordinating and collecting Schedules from Specialty Professionals taking responsibility for a variety of guard elements (glass panels, steel components, wood elements, connections, etc). In tenant improvement and Part 9 projects with no registered Architect, a registered Architect or Engineer will be retained by the building owner or the general contractor to act as the Registered Professional of Record who responsible for the entire guard system, in lieu of a Project Architect.

- Schedule S is a mechanism endorsed by APEGBC and AIBC to receive assurance from the Specialty Professionals providing supporting engineering or architectural services for particular subcomponents. The Registered Professional of Record for the guard system can sign his/her Letters of Assurance (Schedule B and Schedule C-B) for the specific component based on the assurance represented by the Schedules S from the Specialty Professionals. However, in accordance with APEGBC and AIBC guidelines, Schedules S are not intended to be submitted to the City of Vancouver in support of the application for the building permit. The responsibility to collect and maintain Schedule S rests with the Registered Professional of Record who signs Letters of Assurance (Schedule B and Schedule C-B) for the entire guard system.

Additional information regarding means to achieve structural redundancy and coordination of the guard design and installation processes are available in the following publications:

- CAN/CSB-12.20-M89 “Structural Design of Glass for Buildings”
- APEGBC Professional Practice Guidelines “Designing Guards for Buildings”
- Glazing Systems Specification Manual, National Version 2010

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