

# BC BUILDING CODE INTERPRETATION COMMITTEE

A joint committee with members representing  
**AIBC, APEGBC, BOABC, POABC**

**File No: 06-0095**

**INTERPRETATION**

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Interpretation Date:	September 27, 2011
Building Code Edition:	BC Building Code 2006
Subject:	Fire resistance rating of steel deflection columns
Keywords:	Steel deflection columns, fire resistance rating, loadbearing
Building Code Reference(s):	3.1.7.5.(1), Part 1 of Division A – definition of <i>loadbearing</i>

## Question:

In a building with flat concrete slab construction, occasionally the architectural layout dictates large spacing between certain concrete columns. In such cases the structural engineer designs the concrete flat slab to support all of the dead and live loads using only the concrete columns as the primary support for the slab. In order to improve the serviceability of the slab and to reduce slab deflections, which could have an adverse effect on the performance of the building envelope, the structural engineer may introduce structural steel columns at midspan of the excessively large spans. The sole purpose of these steel columns is to reduce deflections of the slab.

Do these deflection columns require a fire resistance rating to match the fire resistance rating of the floor or roof slab that they support?

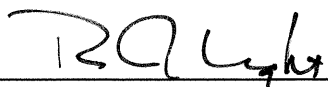
## Interpretation:

No (with provisions)

Sentence 3.1.7.5.(1) requires that all *loadbearing* walls, columns and arches in a storey immediately below a floor or roof assembly must have the same fire resistance rating as the supported floor or roof assembly.

*Loadbearing* is defined in Part 1 of Division A as a building element that is "subjected to" or "designed to" carry loads in addition to its own dead weight, except for wall elements that are subjected only to wind or earthquake loads.

Since the structural slab is designed to support all of the required design loads without relying upon the deflection columns, the floor slab will maintain its structural integrity under fire conditions.



R. J. Light, Committee Chair

The views expressed are the consensus of the joint committee with members representing AIBC, APEGBC, BOABC, and POABC, which form the BC Building Code Interpretation Committee. The purpose of the committee is to encourage uniform province wide interpretation of the BC Building Code. These views should not be considered as the official interpretation of legislated requirements based on the BC Building Code, as final responsibility for an interpretation rests with the local *Authority Having Jurisdiction*. The views of the joint committee should not be construed as legal advice.

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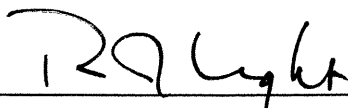
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Provided that the connections between the slab edge and the exterior wall assembly can accommodate the slab deflections without reliance on the deflection columns, then failure of the deflection columns during a fire will not compromise the structural integrity of the floor and wall assemblies.

If failure of the deflection columns under fire conditions could result in catastrophic collapse of the exterior wall assembly, then such deflection columns must be protected to achieve a fire resistance rating to match the supported floor assembly.



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