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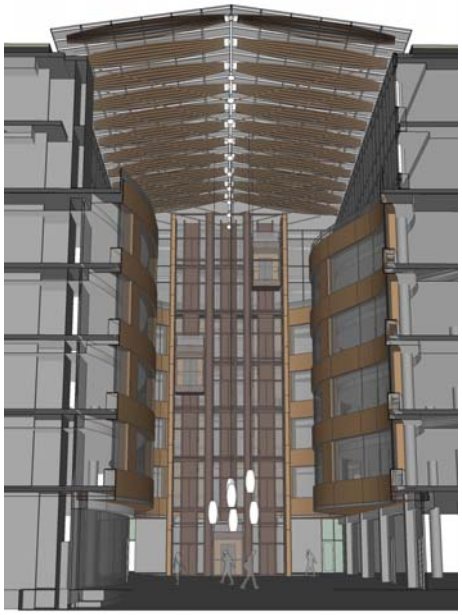
USE OF WOOD ELEMENTS IN BUILDINGS OF NONCOMBUSTIBLE CONSTRUCTION

Whether for cost effectiveness, aesthetic or sustainability purposes, there is an increased desire towards incorporating wood elements in buildings. The Building Code has numerous limitations on the use of combustible material in buildings of noncombustible construction. Although utilizing wood as a structural member or as an interior finish is limited by the Code, Alternative Solution approaches may be developed to permit its use.

The use of Alternative Solutions can assist architects and designers in achieving their design objectives while still meeting the acceptable level of fire safety. The following Alternative Solutions may be developed to address the use of combustible material in buildings of noncombustible construction:

- The use of heavy timber roof construction.
- The use of heavy timber columns and beams.
- The use of wood in soffits and ceiling finishes.
- The use of combustible cladding.
- The use of combustible heavy timber trellises.
- The use of wood or vinyl windows.
- The use of architectural decorative wood including door frames, brackets, trim, guards and rails, cornices and fascias.



7 Storey Atrium

Schematic rendering by D'Ambrosio Architecture + Urbanism

In a recent project designed by D'Ambrosio Architecture + Urbanism, **GHL** CONSULTANTS LTD developed an Alternative Solution using a performance-based approach to evaluate the use of combustible timber members and exposed steel cables supporting a roof assembly in a 7 storey high atrium space. As part of our analysis, computational fluid dynamics (CFD) based fire modelling was conducted to establish the atrium temperature resulting from a significant fire. Knowing the ignition temperature, charring characteristics of heavy timber and load-reduction factors of steel at elevated temperatures, we were able to demonstrate that the use of combustible timber members and exposed steel cables would satisfy the minimum level of performance required by the Building Code in such a building.

Our Role in Providing Alternative Solutions

GHL is a leading fire protection consulting firm with extensive experience in fire hazard analysis and preparation of performance-based approaches to Building Code compliance through the use of Alternative Solutions. Our team of professional staff has a wide range of experience and a background in fire science, life safety and Building Code consulting, which enables us to provide clients with innovative Building Code and fire engineering solutions. Performance-based analysis using CFD based fire modelling is just one example of how GHL can assist clients in solving Building Code challenges that arise when pursuing non-traditional construction practices. For further information, please visit www.ghl.ca .

The information in this letter is for guidance only. Refer to applicable Building Codes and Fire Codes for actual requirements. The designer should always check with the AHJ for local policies and interpretations regarding the foregoing.

Design-Build of Timber Skylite Support Structure: StructureCraft Builders Inc - Structural Eng: Fast+Epp Structural Engineers