

Deka Lake – Sulphurous Lake – Mixed Use Buildings

The BC Building Code requires every building and parts thereof to be classified according to its occupancy. Different occupancies are subject to different life safety and fire requirements specific to that type of use (i.e. Occupancy). The major occupancies at the two buildings are:

- Fire Hall – F3 Low-hazard industrial occupancy
- Community Hall – A2 – Assembly occupancies other than Arenas and Viewing occupancies

In the case of mixed-use buildings containing fire halls and community centres, the BCBC requires specific fire and safety requirements to permit these uses within the same building. Additionally, any major renovation to these buildings would require an architect to act as a coordinating professional.

A recent site visit to both the Deka Lake and Sulphurous Lake VFD buildings revealed numerous fire and life safety compliance issues. These issues are generalized below. This should not be considered an exhaustive list of all requirements to bring these buildings into compliance, but rather a bird's eye view of the major issues.

Fire Separations

There are numerous fire safety requirements that need to be addressed. The major fire requirement that needs to be addressed in these mixed-use buildings is fire separations.

Each occupancy has fire separation requirements for assemblies that separate occupancies. This is to protect the building occupants and the building structure. In the mixed-use building case, the BCBC requires separations with a minimum 1 hr fire resistance rating (FRR) between F3 and A2 occupancies. All structural elements supporting the fire separation are required to have the same minimum fire resistance rating. This means that all walls, posts and beams supporting the floor that are acting as a fire separation would require to be protected with an assembly with a 1 hr FRR.

Deka - The floor, and all of its supporting elements, separating the fire hall from the community centre would require a fire separation and fire resistance ratings.

Sulphurous – The wall separating the fire hall from the community centre would require a fire separation from the foundation to the underside of the roof.

Fire separations can be costly and difficult to construct in renovation construction. While it is possible to renovate our mixed-use buildings to have the required fire separations and fire resistance ratings, I do foresee it being challenging and costly.

HVAC

A fire separation must be continuous to be an effective barrier to fire. Openings are permitted for ventilation ducts to pass through; however, they must be protected by rated closures (fire dampers).

Both buildings utilize a shared HVAC system with ducts that pass-through assemblies (floor and walls) and have numerous locations where the ducts penetrate what would, or should, be fire separations. Where a duct penetrates a fire separation, a portion of the duct on either side of the separation might collapse in the heat of a fire and expose the opening through the fire separation, allowing smoke and flames through.

The HVAC system would have to be reconfigured to ensure that all penetrations through the fire separations are equipped with rated closures. Or the systems could be reconfigured so that each occupancy had its own dedicated heating system.

Plumbing

Similar to the HVAC requirement, all combustible plumbing that penetrates a fire separation must be protected by a closure. Various penetrations were observed that require protection.

Safety Requirements

Each occupancy has specific and different life safety requirements associated with each use. This document will not describe the differences in detail but rather bring items of concern to attention for consideration. Some of the major safety items that need to be addressed in these mixed using buildings are:

1. Structural design requirements for different occupancies (i.e. floor load)
 - a. Structural engineer to provide a code compliance assessment for each building.
2. Egress and exit requirements - Items that need to be considered are number of exits, width of exits, distance to exits, access to exits, fire protection of exits, etc.
 - a. The number of exits and width of exits appeared compliant. However, panic hardware was missing on various doors.
3. Emergency lighting was partially present but additional lighting will be required.
4. Bathrooms
 - a. No accessible or universal washrooms at either location.
5. Access for persons with disabilities
 - a. Assembly occupancies are required to be accessible buildings.
 - i. Deka – The lift that is installed in this building is not an approved lift for accessibility. Additionally, it has reduced the width of the exit to below the required width. An approved lift would be required.
 - ii. Sulphurous – No major accessibility issues noted as it has ground level access.

Architect

Assembly occupancies are “part 3” buildings. Therefore, an architect would be required for the renovations required to bring these buildings into compliance as required by both the BCBC and Architect’s Act of BC.

Conclusion

Staff recommendation is to have each building reviewed by an architect with the goal of developing a scope of work. This scope of work can then be put to market to obtain quotes for the renovations.