MEMORANDUM

J.L. Richards
& Associates Limited
864 Lady Ellen Place
Ottawa, ON Canada
K1Z 5M2
Tel: 613 728 3571
Fax: 613 728 6012

J.L.Richards
ENGINEERS · ARCHITECTS · PLANNERS

To: City of Ottawa

Date: September 8, 2022

JLR No.: 31500-000

CC:

From: Kris Mierzejewski, P.Eng.

Re: HONI Orleans OPERATIONS CENTRE (OC) – FIRE PROTECTION WATER REQUIREMENTS_REV 03

This technical memorandum has been prepared by J.L.Richards and Associated Limited (JLR) on behalf of Brookfield Global Integrated Solutions Canada LP (BGIS) to support the site Plan Control application of Hydron One Network Inc. (JONI) new Operations Centre (OC), at 3440 Frank Kenny Road, Ottawa, Ontario.

We have calculated the size of the required fire protection water, based on the current building size (1683 m sq.)

1) According to the OBC Section A.3.2.5.7. the required fire protection water supply would be:

$Q = K \times V \times S$ (litres)

Where:

K = 17 for F2 occupancy, where building is of noncombustible construction with fire separations and fire resistance ratings provided in accordance with Subsection 3.2.2., including loadbearing walls, columns, and arches.

V = total building volume in cubic meters (mean assumed building height at 6.4 m) = 10,771 m cubed.

S = Spatial Coefficient = 1.0

$Q = 17 \times 10,771 \times 1.0 =$ **183,110 litres.**

From table 2 the required flow would be 5,400 l/min (1429 gpm)

2) According to Fire Underwriters Survey (FUS, 1999) design methodology, the fire flow required is determined by the formula:

$F = 220 \times C \times (A^{1/2})$

Where:
F = The required fire flow in litres per minute
C = coefficient related to the type of construction (0.8 for non-combustible construction – unprotected metal structural components, masonry or metal walls)
A = The total floor area in square metres in the building being considered.

Following assumptions have been applied:
-   "Rapid Burning" occupancy – based on F2 category
-   No sprinkler system
-   Non-combustible construction (as above)
-   45m of separation to the nearest building on each side.

F = 9025 l/min (2388 gpm)

Based on the required flow rate, the required duration of fire flow is approx. 2 hrs.
This results in the total required fire protection water supply of **1,083,000 litres**.

The discrepancy between methods is significant.

We base our design on OBC figures, taking into account the opinion of fire department official, recorded in Due Diligence Report, October 7 2016, deeming the OBC calculation method acceptable.

J.L. RICHARDS & ASSOCIATES LIMITED

Prepared by:

Kris Mierzejewski, P.Eng.
Mechanical Engineer

KM:km