BC BUILDING CODE INTERPRETATION COMMITTEE

A joint committee with members representing

AIBC, EGBC, BOABC

File No: 18-0027 **INTERPRETATION**

Interpretation Date:	October 15, 2019
Building Code Edition:	BC Building Code 2018
Subject:	Height Factor A_x in Table 4.1.8.18.
Keywords:	Height factor, A_x
Building Code Reference(s):	4.1.8.2.(1), Table 4.1.8.18.

Question:

1. When a water storage tank is fastened directly to the slab on grade at ground level, is the Height Factor A_x = 1.0?

2. Is the maximum possible value for A_x = 3.0?

Interpretation:

1. Yes

A_x is defined in Sentence 4.1.8.2.(1) as the response amplification factor to account for type of attachment of mechanical/electrical equipment as defined in Sentence 4.1.8.18.(1).

h_x is defined in Sentence 4.1.8.2.(1) as the height above the base to level X, where the base of the structure is the level at which horizontal motions are considered to be imparted to the structure.

Level i is defined as any level in the building, i = 1.0 for for first level above the base

Level n is defined as the level that is uppermost in the main portion of the structure Ii.e. the main roof level).

Level x is defined as the level that is under design consideration.

Since the water storage tank is fastened directly to the slab on grade, the h_x factor would = 0.

Therefore $A_x = 1 + 2 \times (h_x / h_n) = 1 + 2 \times (0 / h_n) = 1.0$

Patrick Shek, P.Eng., CP, FEC, Committee Chair

2. No

If the water storage tank were located on the roof at a height of 30m above the ground, the h_x / h_n factor would = 1.0

Therefore $A_x = 1 + 2 \times (h_x / h_n) = 1 + 2 \times (30 / 30) = 3.0$

If the water storage tank were located in a service room above the roof level at a height of 33m above the ground, the h_x / h_n factor would = 33/30 = 1.1

Therefore $A_x = 1 + 2 \times (h_x / h_n) = 1 + 2 \times (33 / 30) = 3.2$

Patrick Shek, P.Eng., CP, FEC, Committee Chair