

Case 12/2022

Issue: Methodology Report for Wind Tunnel Test

Recommendation: To accept the following methodology and parameters for wind tunnel test of the two high-rise residential towers of the proposed development:

(1) Topographic Model

Model scale: 1: 4,000

(2) Proximity Model

(a) Model scale: 1: 400

(b) Extent of model: all known existing and proposed surrounding buildings and structures within a radius of 500m from the subject site will be modeled.

(3) Wind Climate Study Results

Directional characteristics of typhoons affecting HK based on a Monte Carlo simulation of storms passing within 250km of HK, conducted by Applied Research Associates, Inc. (ARA).

(4) Removal of adjacent buildings that could provide significant shelter

8 buildings were proposed to be removed in the Proximity Model.

(5) Design Wind Loads Adopted in Superstructure Design

The followings in structural design of the proposed development were proposed:

(a) The finally adopted peak design combined wind moment for each high-rise tower will not be less than 70% of the maximum design wind moment of the tower based on code calculation in the most critical direction as derived from the design values given in the Code of Practice on Wind Effects in Hong Kong 2004 (the Wind Code);

(b) If the peak design combined wind moment for any of the high-rise towers determined in the wind tunnel test is found greater than the maximum design wind moment of the tower based on code calculation in the most critical direction as derived from the design values given in the Wind Code, the peak design combined wind moment of the tower determined in the wind tunnel test will be adopted for design;

- (c) The storey wind shears adopted for structural design of the high-rise towers shall be determined from the peak design combined wind moment established in accordance with sub-paragraphs (i) and (ii) above; and
- (d) The peak building acceleration assessment on human comfort under wind loads determined in the wind tunnel test shall be in accordance with the Code of Practice for Structural Use of Concrete 2013 clause 7.3.2. Limiting maximum peak acceleration at the top occupied floors of residential buildings to  $0.15\text{m/s}^2$  should be adopted.

Decision:

Having noted the background information and arguments together with RSE's supervision arrangement, members endorsed the recommendation.