

Case 40/2019

Issue: Methodology Report for Wind Tunnel Test

Recommendation: To accept the following methodology and parameters for wind tunnel test at the proposed development:

(1) Topographic Model

Model scale: 1: 4,000

(2) Proximity Model

(i) Model scale: 1: 400

(ii) Extent of model: all known existing and proposed surrounding buildings and structures within a radius of 570m from the subject site will be modeled.

(3) Wind Climate Study Results

The Sector Method Wind Speed Method will be adopted. The directionality used for this study will be based on Monte Carlo typhoon simulation of storms passing within 250km of Hong Kong performed by Applied Research Associates, Inc. (ARA) in 2014. The largest directional wind speed will match 59.5m/s hourly mean wind speed at 500m over open sea exposure.

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

22 building groups were proposed to be removed in the Proximity Model.

(5) Design Wind Pressures Adopted in Cladding Design

The followings in design of the exterior claddings and curtain walls of the study development:

(i) The finally adopted peak design wind pressures will not be less than 70% of the maximum design wind pressures 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);

(ii) If the peak design wind pressures determined in the wind tunnel test are found greater than the maximum design wind pressures based on code calculation in the most critical direction as derived from the design values

given in the Wind Code, the peak design wind pressures determined in the wind tunnel test will be adopted for design;

- (iii) The highest peak net and differential design positive and negative pressures, relevant to the design of the cladding elements and cladding systems of the proposed development will be provided on the 50-year return period wind speed of 59.5m/s at 500m;
- (iv) The pressures on the facade of the proposed development will be presented as peak net cladding pressures, which incorporate internal pressures for using pressure coefficients of -0.3 and +0.2 with the requirement of the Wind Code and the Explanatory Materials to the Wind Code 2004 (“Explanatory Materials”); and
- (v) The wind pressures on architectural features of the proposed development where both sides of surfaces are exposed to the wind, will be assessed as peak differential pressures, i.e. resulting net wind force.

Decision:

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