



August 6, 2007

Mr. Charles M. McNabney
Construction Manager
HINES
2000 Peel Street
Suite 860
Montreal, QC H3A 2W5

Dear Mr. McNabney,

Re: Project Viger Revised Massing: Wind Environmental Conditions

Further to Edward Hercun's request and the subsequent meeting of August 3, 2007 in my office, this is a brief opinion on the impact the massing revisions made to the proposed complex "**Project Viger - Montreal**" between Notre Dame and St. Antoine, Berri and St. Christophe streets in the area east of Palais des Congrès in Old Montreal may have on the wind environmental conditions in public places at the pedestrian level. Our detailed study on the pedestrian wind conditions around the Viger project carried out in the boundary layer wind tunnel of our Building Aerodynamics Laboratory by using a 1:500-scaled model of the proposed complex and its surroundings in its former configuration has concluded the following:

"The study of the wind environmental conditions in the vicinity of the proposed Viger development has shown that pedestrian-level winds satisfy the criteria of the City of Montreal for all cases. It was found that construction of the buildings in the development will have little effect on the pedestrian wind environment. The maximum gust expected to occur once per month, on average, in the winter is approximately 40.6 kph and will occur at location 21, at the Rue St. Christophe entrance. Protective measures can be taken if this ever becomes a nuisance." [Report entitled: Wind Environmental study for Viger Development, submitted to 4348931 Canada Inc. in June 2007].

The main changes to the massing of the project (see Figure 1 of the above mentioned report) are as follows:

Sector A: No change

Sector B: The height has decreased from 38 meters to 35 meters and the east-west length has been shortened.

Sector C: This element has been subdivided into three blocks. The height of the east block is reduced from 44 meters to 40 meters, the height of the central block is increased from 44 meters to 60 meters and the height of the west block is reduced from 44 meters down to 30 meters.

Sector D: The 44 meter tower is reduced to a height of 30 meters.

Sector E: This element is subdivided into two blocks parallel to St-Hubert street. The southern end, the sector close to Notre-Dame, will be 38 meters in height, whereas the other sector will be 30 meters high or less.

Sector F: No change

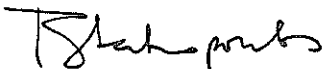
In order to express an opinion on the effect of these changes, the results of the points considered in the previous study were examined in the light of the revised building massing of the complex. Particular emphasis was placed at the most adverse cases, i.e. point 21 and others along St. Christophe street, as well as point 24 in park Viger, as well as for westerly and west-southwesterly wind directions, which are the only ones that produced critical data in the previous experimental study. Furthermore, height was considered as the most critical factor influencing wind environmental conditions around building complexes and height increase was only of real concern assuming, on the basis of aerodynamic considerations, that height reduction would only make pedestrian-level winds less severe. Finally, all locations on streets and public spaces for which the previous study had found expected maximum wind speeds above 25 km/hr to occur once per month in the winter were also looked at in view of the revisions made to the Viger project.

Under these premises, it appears that the most influential massing change imposed on Viger project was the change in the central block of C sector, raising from 44 to 60 meters. This change is not expected to produce any significant increases on the pedestrian level wind speeds at locations 21 and 24 for westerly or south-southwesterly wind directions; these might influence locations along Notre Dame street, which were found on the non-critical side in the previous study. Of course the subdivision of sector C in three blocks might create adverse wind effects in spaces between these blocks but these are locations not previously tested since they did not exist in the previous project configuration. In the event that pedestrian level wind conditions are found indeed problematic at these locations, mitigation measures such as implantation of non-deciduous (evergreen) trees or shrubs; placement of canopies, pergolas or other similar architectural elements will be likely effective windbreak measures.

Although actual prediction and quantification of any risk and probability of occurrence of particular wind conditions anywhere in the area cannot be made without a detailed experimental study carried out in a boundary layer wind tunnel simulating the natural wind conditions around this particular complex, it is the writer's expert opinion that the revised massing of the Viger project, as outlined in this letter, will be unlikely to create wind conditions exceeding the criteria set by the *Ville de Montréal*. This is based on the fact that the results of the previous experimental study met these criteria with a relatively high margin, i.e. exceedance probability of 8.8% when the criterion is 15%; exceedance probability of 5% when the criterion is 10%. Therefore, it is reasonable to expect that the new project configuration is likely to create tolerable wind conditions at the pedestrian level on streets and other public places around the Viger project as well.

I hope that the above is satisfactory. If you have any questions, please do not hesitate to contact me.

Yours sincerely,



Ted Stathopoulos, Ph.D, Eng, F. CAE, F. ASCE
Professor and Associate Dean