

Implications of the GTAA Mitigation Measures for Aircraft Noise

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Introduction

In February 1997 the Ontario Ministry of Municipal Affairs (MMA) revised the aircraft policy to prohibit residential development above NEF/NEP 30. The previous threshold was NEF/NEP 35. In order to satisfy the development industry the MMA permitted any development that was already draft approved to proceed under the old policy. However, the Greater Toronto Airport Authority (GTAA) appealed these plans to the Ontario Municipal Board (OMB). In order to ensure that the GTAA withdrew its objection at the OMB an agreement between the GTAA and the developers was formulated. Each developer of the residential lands was required to enter into a binding agreement with the GTAA and the City of Mississauga that stipulated very specific conditions. These conditions are summarized below. Further the City of Mississauga, the municipality in which the Toronto International Airport is located, required that all the conditions be strictly followed. The importance of this is discussed in subsequent sections.

Aircraft Noise Warning Agreement

The Aircraft Noise Warning Agreement is a long and complex document that addresses many issues in addition to the construction conditions that are summarized below. One additional item of particular note is that the agreement required significant warning signs to be placed at the development site and at the sales pavilions. The details of the dimensions and locations of the signs were also stipulated in the agreement.

- a) All dwelling units are to be centrally air-conditioned.
- b) All exterior walls of dwelling units are to be constructed with brick veneer or other exterior finish providing a minimum STC rating of 55, for the full height, between the foundation wall and the roof.
- c) All roofs of dwelling units, including, without limitation, mansard roofs and dormers, shall be constructed such that any boundaries between the exterior and habitable interior space shall meet a minimum STC rating of 55.
- d) Windows for all dwelling units shall be designed and built such that there is compliance with CMHC indoor noise guidelines. Openable portions must not be without a sash.
- e) Bathroom and kitchen exhaust systems, roof vents, chimneys and similar openings to be configured or acoustically treated to prevent transmission of exterior sound to the inside in excess of CMHC residential noise guidelines.
- f) The air conditioning outside condensing units shall comply with MOE NPC-216, or its successor.

Implications

As indicated above the imposition of these requirements did have

implications. On the positive side strict enforcement of these mitigation measures ensured that a "simplistic" approach was taken to implementation of the mitigation. That is, every house was constructed with the same mitigation and consequently the review of the installation of the mitigation was simplified. However, there were some difficulties with the implementation of this agreement.

- All houses regardless of the actual NEF/NEP contour had to be constructed following the requirements of the GTAA Agreement.
- Brick veneer construction while rated at STC 55 also has the added benefit of mass, while other types of construction that are rated at STC 55 do not have the same mass as brick. This results in inferior performance at the frequencies most critical to aircraft noise.
- In some cases the use of brick veneer was excessive because the windows could have been selected to provide increased attenuation, while still maintaining the indoor sound level limits.
- By strictly enforcing only the mitigation described in the agreement placed restrictions on the architectural aspects of the development.
- The strict enforcement of the noise mitigation measures was contrary to the usual approach in the City of Mississauga, because the City normally permits the acoustical requirements to be re-evaluated at the time of building permit issuance and the mitigation modified as required provided that the indoor sound levels are achieved in accordance with the guidelines.
- In some cases the builders followed the normal City of Mississauga process and had to make modifications to the houses after the houses were constructed to ensure strict compliance with the GTAA Agreement.
- Requiring that all air conditioning units comply with NPC-216 was also contrary to the normal City of Mississauga process. The City normally requires that air conditioning condenser units have a 7.6 bel rating. Using NPC-216 resulted in air conditioning units that were rated significantly quieter than 7.6 bels. This is overkill in an area where the ambient is significantly influenced by aircraft noise because under the Ontario Ministry of the Environment guidelines aircraft noise is not included in the ambient.

Not all builders were part of this agreement when it was first implemented. Consequently many builders experienced construction difficulties as well as financial difficulties, attempting to implement these measures when they realized the cost of implementation and the subsequent follow-up that was required to ensure compliance.

Ensuring that all dwellings were constructed in accordance with the agreement required intimate involvement of the acoustical engineer prior to the issuance of building permits. The house plans had to be checked in detail and specific schedules detailing the required wall construction, window construction (for each window), acceptable methods of treating the external duct openings and the bel rating of the air conditioning unit had to be included with each house model. Any modifications to the house plan required a re-certification by an acoustical engineer.

The inspection of each house did not take place once the house was

completed, as is the usual process but rather as the house was being built to ensure that all the required elements were in fact incorporated into the house.

By entering into this agreement with the GTAA and the City of Mississauga, the developers and the builders, in most cases, avoided the costly OMB process. However, the implementation of the terms of the agreement proved to be onerous and expensive for the builders. The effectiveness of the mitigation measures remains to be seen.

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