

Building Code Acoustic Requirements for the Airport Vicinity Protection Area

Part 11 of the National Building Code (Alberta Edition) [NBC (AE)] contains exterior acoustic insulation requirements for buildings constructed within the Airport Vicinity Protection Area [AVPA]. Exterior acoustic insulation can reduce aircraft noise in buildings and can be provided in specially constructed exterior walls, roofs, windows and doors.

The AVPA Regulation outlines uses that are not allowed in certain locations in Calgary, identified as NEF areas, due to potential noise impacts from aircraft flying over communities during arrival at or departure from the Calgary International Airport. Part 11 of the NBC (AE) only applies to buildings that are permitted to be constructed within the AVPA.

If a building is permitted to be constructed, different levels of noise reducing insulation are required for different types of rooms and spaces within building types to help reduce aircraft noise. There are four levels of noise reducing insulation required.

1. Sleeping rooms, classrooms and teaching rooms are required to have the highest level of noise reducing insulation.
2. The second highest level is required for living rooms, dining rooms and recreational rooms.
3. The third highest level is required for kitchens, bathrooms, laundry rooms, private offices, conference rooms and meeting rooms.
4. The lowest level is required for general offices, reception areas and other types of rooms and spaces not mentioned above.

Exterior walls, roofs, windows and doors enclosing each of these spaces must be constructed with noise-reducing features. Part 11 of the NBC (AE) provides advice on how to design these elements in order to provide the appropriate level of exterior acoustic insulation. Places of worship and halls & auditoriums would typically fall under Points 3 and 4 above; designers should be aware of this when designing these building types. The following are some examples of construction methods which would be permitted under Part 11 for these buildings:

- a) Exterior Walls: 12.7 mm gypsum board, vapour barrier, 38 × 89 mm studs with a minimum 50 mm mineral wool or glass fibre batts, sheathing and 20mm cementitious stucco.
- b) Roofs: 12.7 mm gypsum board, minimum 75 mm insulation batts, flat roof joist and beam construction with built-up roofing membrane.
- c) Windows: Increased thickness of both glass and interpane spacing for double glazed units.
- d) Doors: 44mm thick steel door with foam or glass-fibre insulated core (no glass permitted in door).

The calculations needed to determine the appropriate level of exterior acoustic insulation are complex. In practice, professional engineers complete these calculations and submit a report or letter to The City during the building permit review process, and this would certainly be the case for a Change of Use application where existing construction is in place.

As part of the Development Permit circulation process, the applicant will be advised that a building applied for within the AVPA must comply with the acoustic insulation requirements set

out in Part 11 of the NBC (AE). Thereafter the applicant will need to incorporate these requirements into their building permit submission and the onsite construction of the building.