



Advisory

October 9, 2019

Subject:

Administration of Apparent Sound Transmission Classification Class (ASTC) Requirements

Background:

The National Building Code – 2019 Alberta Edition (ABC 2019) introduced new requirements for enhanced protection of dwelling units from airborne noise. Where previous editions of the building code provided requirements for protection based on the sound transmission class (STC), the 2019 edition has enhanced the STC requirements and introduced new protection requirements in the form of apparent sound transmission class (ASTC) ratings which includes flanking noise.

The noise protection provisions deal with the transmission of airborne noise between a dwelling unit and every other space in a building where noise may be generated. The provisions apply to the separating assemblies and adjoining constructions between semi-detached houses, between row houses, and between dwelling units and adjacent spaces in multi-residential buildings. The purpose is to make airborne noise originating in an adjacent dwelling unit or space less objectionable to the occupants of a dwelling unit.

In general, the separating assembly and adjoining construction must together provide an ASTC rating of at least 47, or the separating assembly must provide an STC rating of at least 50 and adjoining constructions must conform to the applicable Part 5 or Part 9 article depending upon the part of the building code the building is constructed under. For a house with a secondary suite, a somewhat lower level of protection from airborne noise is acceptable because the occupants of each dwelling are only affected by noise from one other dwelling unit.

The requirements for protection from airborne noise can be found in the ABC 2019 in Section 5.8 for larger Part 3 buildings and in Section 9.11 for smaller buildings constructed under Part 9. Further resources for the application of the requirements can be found in the following:

- Illustrated User's Guide – NBC 2015 Part 9 of Division B Housing and Small Buildings, NRC publication
- Guide to Calculating Airborne Sound Transmission in Buildings, NRC research report RR-331

The purpose of this Advisory is to provide guidance to code users as to how the City of Calgary will administer the protection from airborne noise requirements. The administration includes what documentation will be required and when.

Advisory:

The ABC 2019 allows two options to complying with sound transmission requirements for all dwelling units except secondary suites in addition to specific choices for secondary suites. The builder must indicate on the drawings which option they are choosing to use to comply with the requirements for protection from airborne noise.

Option 1 – Use STC

In this option the choice is to install an assembly with an STC rating of 50 or greater and construct adjoining assemblies in accordance with Article 9.11.1.4. The STC rating can be determined in one of two methods:

1. according to the classification as per ASTM E413 based on lab tests as per ASTM E90 or,

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2. by using an assembly from the fire and sound resistance tables 9.10.3.1.-A or 9.10.3.1.B of the ABC 2019

In either method, the details of the assemblies, must be provided on the drawings and the results of the testing must be submitted at the time of building permit application. It will be up to the builder to construct adjoining assemblies in accordance with 9.11.1.4. and the design. We will review the components of the assemblies shown on the plans to the extent possible in order to assess compliance to 9.11.1.4 during the plan examination stage as well as during the normal course of inspection.

Option 2- Use ASTC

In this option the choices and administration methods are one of the following:

1. Install an assembly with an ASTC rating not less than 47 based on ASTM E413 and determined through in-situ testing using ASTM E336. The details of the assemblies must be provided on the drawings submitted for building permit and the results of the testing showing a successful ASTC rating must be submitted prior to occupancy. If the building is constructed to Part 5 of the ABC 2019 the testing report must stamped by a professional architect or engineer.

In-situ testing to ASTM E336 will be required for each separation in each building that is different. For example the separation between two dwelling units in a multiunit building would only need to be done once assuming that each dwelling is constructed the same and the separation is the same. Likewise if two buildings are being constructed the same, in-situ testing from the first building can be used to support the second building, assuming that the conditions are the same in each building. The conditions that must be the same include the finishes used as they can have a substantial bearing on the ASTC rating (i.e. carpet vs hardwood) and, the partition construction being the same. If tests from another building that is the same are being used they are to be submitted at time of building permit application.

2. Install an assembly with an ASTC rating not less than 47 determined through calculations conforming to article 5.8.1.4. (detailed method) or 5.8.1.5. (simplified method) of ABC 2019. At the time of building permit application the details of the assemblies must be provided on the drawings and a letter verifying the calculation methods used must be submitted from a professional architect or engineer indicating that either the detailed method or the simplified method was used regardless of whether Part 5 or Part 9 applies to the building.
3. Install an assembly from Table 9.10.3.1.-A or 9.10.3.1.-B that has an STC rating of not less than 50 in conjunction with adjoining assemblies construction that conform to Article 9.11.1.4. The details of those assemblies must be provided on the drawings submitted at building permit application. In this case it will be up to the builder to construct adjoining assemblies in accordance with those determined in the design. We will review the components of the assemblies shown on the plans to the extent possible in order to assess compliance to Article 9.11.1.4. during the plan examination stage and during the normal course of inspection.

Secondary Suites

There are three means of dealing with protecting the suite and the primary dwelling from airborne noise.

1. Install an assembly meeting the prescriptive requirements from Clause 9.11.1.1.(2)(a). In this option the details of the assemblies must be provided on the drawings at time of building permit application and they must indicate the required materials. We will review the components of the assemblies shown on the plans to the extent possible in order to assess compliance during the plan examination stage and during the normal course of inspection.



2. Install an assembly having an STC rating of not less than 43. Refer to “Option 1 – Use STC” above for administration requirements
3. Install an assembly and adjoining constructions having an ASTC rating of not less than 40. Refer to “Option 2 – Use ASTC” above for administration requirements

Note: This interpretation is made by the Codes and Standards Technical Interpretation Committee (CSTIC), October 9 2019.

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