

## **ACOUSTIC DESIGN OF SCHOOLS, BUILDING BULLETIN 93 NOTE TO DESIGNERS – November'06**

All schools announced in the March 2006 major capital starts list must be designed in accordance with the Department for Education and Skills, "Building Bulletin 93 – Acoustic Design of Schools – a design guide".

### **Relaxations :**

The following relaxations are to be applied to BB93 to facilitate the particular design requirements for new schools in Northern Ireland as recommended in the various DE Building Handbooks.

### **PRIMARY SCHOOLS**

In NI primary schools there is a requirement for pupils to work between a classroom and its adjoining resource area (that is also shared with other classrooms), and for the resource area to be considered as an extension to the classroom. For the purpose of designing in accordance with BB93 and to permit the adequate provision of wall vision panelling and a door (with vision panelling) in the wall common to a classroom and its resource area, relaxations on room-to-room sound transmission limits will apply.

Resource areas for which the room-to-room sound transmission limits are being relaxed and that could disturb a different, or the same class group, should have a value of  $D_{nT}(T_{mf}, \max), w$  of 25dB or greater, between the resource area and the classroom. There is no need to estimate or measure the value in the other direction.

Resource areas for which the room-to-room sound transmission limits are being relaxed, and that could disturb a different class group, and that are less than 300m<sup>3</sup> in volume should have a reverberation time of  $T_{mf, \max} \leq 0.4s$ . For larger resources areas of this type, or those in which it is impossible to measure the reverberation time (e.g. corridor type areas), an amount of absorbing material should be specified such that the estimated reverberation time using the Sabine formula would be  $\leq 0.4s$ .

### **SECONDARY SCHOOLS**

In Secondary Schools there are also requirements for pupils to work between particular classrooms and their adjoining support spaces, therefore for the purposes of designing to BB93, and to permit the adequate provision of wall vision panelling and a door (with vision panelling) in the common wall between rooms, relaxations on room-to-room sound transmission limits will apply to the following spaces.

1. Manufacturing rooms and their associated planning or systems/design rooms in technology and design suites.
2. Home economic classrooms and their associated multi-purpose area.
3. Art studios and their associated ICT rooms and 6<sup>th</sup> form annexes in art and design suites.
4. ICT classrooms and their associated resource bases.

Support spaces for which the room-to-room sound transmission limits are being relaxed should have a value of  $D_{nT}(T_{mf}, \max), w$  of 25dB or greater, between the

support space and the classroom. There is no need to estimate or measure the value in the other direction.

Support spaces for which the room-to-room sound transmission limits are being relaxed should have a reverberation time of  $T_{mf,max} \leq 0.4s$ .

### **Design Approach.**

It should be noted that often the recommendations of the Primary and Secondary Handbooks include for stores, cloaks or resource bases between classrooms, which can act as acoustic buffers, and therefore assist in the consideration of sound transmission between classrooms.

### **Noise Survey**

A noise survey of the school site will be required at an early stage in the design process, and with regard to section 2.3 of BB93, the school hours during which measurements are to be taken are between 9:15 and 16:00.

### **Ventilation**

Reference should be made to the Department for Education and Skills “Building Bulletin 101, Ventilation of School Buildings”. In certain circumstances alternative acoustic performance standards for the building envelope, for specific areas within individual schools, may be considered to facilitate the provision of ventilation to schools by natural means. Written requests seeking approval to the use of alternate acoustic performance standards should be submitted to DE for consideration; requests should contain the required information as detailed in BB93 section 1.2.1.

### **Rain Noise**

It is noted that although rain noise is not covered under BB93 we are aware it has been a problem in some recently completed schools and ask that designers and specifiers consider this in roof design, see 3.1.1 of BB93.

### **Special Hearing Impaired Units**

The requirement for rooms specifically designed for use by hearing-impaired pupils (within a special hearing impaired unit) should be agreed at Development Proposal stage.

### **Compliance/Testing**

Acoustic testing is not currently a Building Control requirement in Northern Ireland, although it is likely to be included in the future, however, in accordance with sections 1.3 and 1.3.1 of BB93, an acoustic test must be carried out on all completed school buildings in NI to demonstrate that the requirements of BB93 have been met. The equipment used and the means of carrying out the tests must all be in accordance with the requirements of BS EN ISO 3382: 2000 Acoustics – measurement of

reverberation time of rooms... and the various parts of BS EN ISO 140: 1998  
Acoustics – Measurement of sound insulation in buildings and of building elements.  
Buildings that fail to comply with acoustic tests shall have remedial measures carried out such that a re-test will ensure compliance with the requirements of BB93; DE will not fund any necessary remedial measures or re-tests.

### **Costs**

Construction cost limits will be increased to meet the additional requirements of BB93 - based on average site locations. If a site has particular external noise sources, specific abnormal costs to meet these requirements will be considered. The case for these abnormal costs must be demonstrated by the Acoustic Consultant and must include a site noise survey.

### **Acoustic Consultant**

A suitably qualified and experienced Acoustic Consultant must be appointed on all major capital projects to carry out an initial noise survey, assist with design development, check design details and on-site construction, and to carry out acoustic tests to confirm that the building achieves the required acoustic performance. Consultants must be Constructionline registered.