Llwynderw Primary School
Swansea

Site Assessment 24/04/08

May 08

1.0 Introduction

This note presents the findings of a site assessment undertaken on Thursday the 24th April 2008 at Llwynderw Primary School, Swansea.

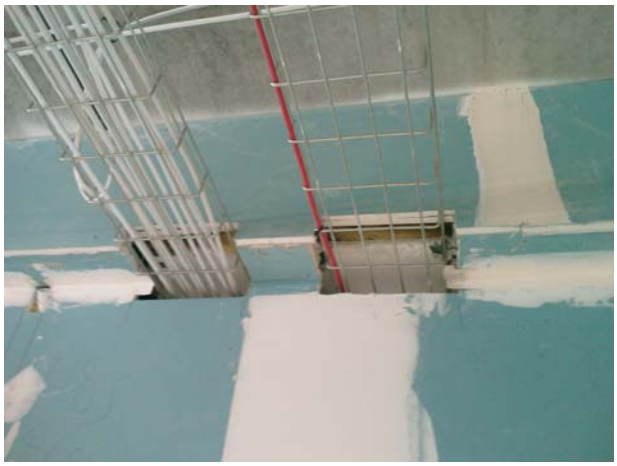
2.0 Cable Penetrations

Service penetrations are one of the main risk areas in failing to meet BB93's acoustic requirements. Below are some details which will require to be addressed. Appendix A provides standard penetration details for these elements.

2.1 Between Classrooms

The main service run between classrooms is through separating partitions, as shown below. Services should always run within corridors and break off into classrooms above the doors.

As per Appendix A, all cables passing across a separating partition must be run through square or round trunking, for at least a 0.5m either side of the wall. The trunking is then required to be sealed with sandbags and mineral wool. All gaps should be sealed with non hardening mastic.



The details below are required to be fully sealed with patress panels, with an equal mass to that of the partitions. All holes are to be sealed with mineral wool and non hardening mastic, including the opening to the trunking.

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2.2 To Circulation Spaces

This is a less critical detail since the acoustic performance of the door within corridor walls is a limiting factor in these partitions. The low grade penetration details should be used in these instances.

2.3 To Music Classrooms

As in the case of classrooms, there are cable trays passing directly between classrooms and adjacent music rooms. Due to the high acoustic performance of the separating wall between these two spaces, cable runs are required to be re-routed.

All services entering and leaving the music rooms must be through the corridor walls only.

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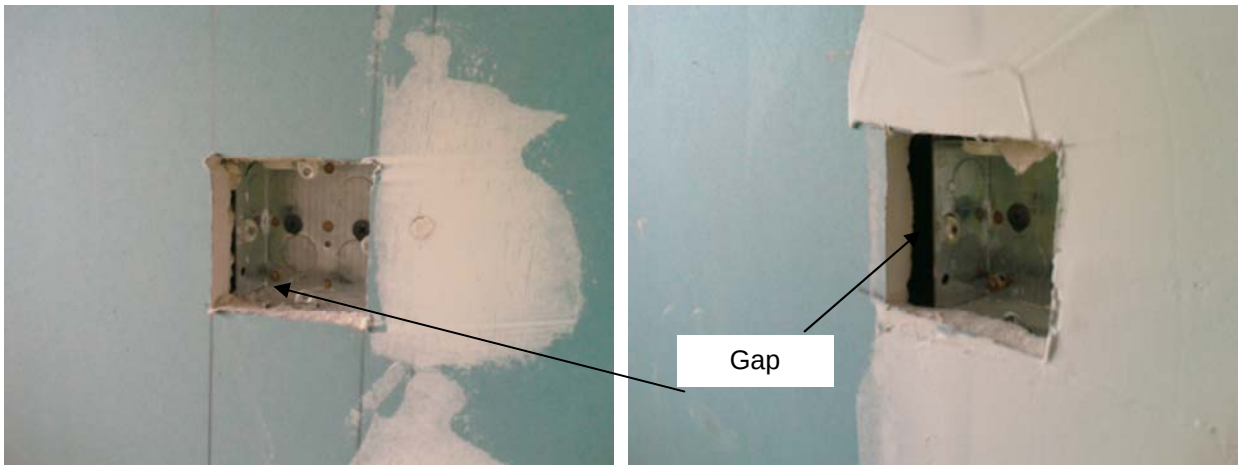
3.0 Electrical Sockets

The quality of acoustic sealing around electrical sockets is poor. Ideally, electrical sockets in separating walls should be sealed with acoustic back boxes. Alternatively they should all be sealed with acoustic putty. In both cases, it is important to seal the electrical box to the plasterboard.

Note that acoustic back boxes are required to all sockets on both sides of separating partitions, between music rooms. An improved solution would be to have no services within these walls.

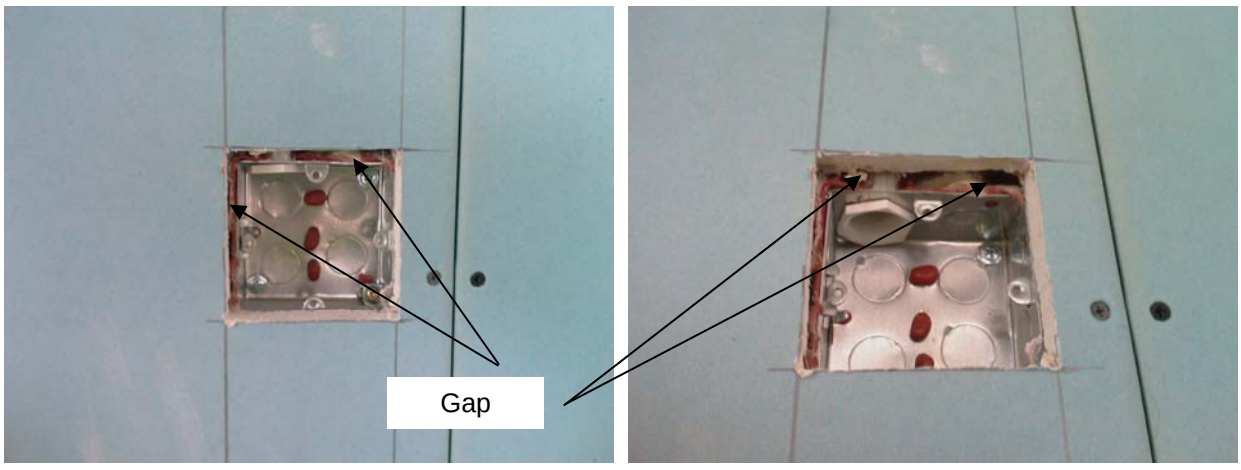
3.1 Puttied Electrical Sockets

In most instances, electrical boxes have not been sealed with acoustic putty. Additionally and more importantly, these electrical boxes are not sealed to the plasterboard. This adds risk by comprising the acoustic performance of walls.



3.2 Sealing and Puttied Electrical Sockets

The sockets below have been sealed with putty. On the other hand, the large gaps around the sockets will compromise this detail and negate the effect of the putty.



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4.0 Separating Walls

The acoustic performance of separating walls within this development is rated at 50 dB R_w i.e.
2 * 12.5mm SoundBloc on both sides of a 48mm stud, 25mm ISOwool within the void.

As can be seen from the photo below, walls between classrooms are formed from 1 layer of Soundbloc on one side of the stud, and two layers of board on the other side.

MACH Acoustics do not have data for this form of construction. On the other hand, modelled data for the construction above i.e. one layer of board on one side only and two on the other, shows a 4 dB reduction in the performance of the partition.

Note that this reduction will be reduced if 15mm of Soundbloc is used or if larger studs have been used.

5.0 Floor Slabs

In many instances there are large voids within the floor. To correct this, shuttering will be required to be applied to the underside of the slabs. Wet concrete with a mass of 2400kg/m^2 will require to fully fill all gaps within the slabs. The in fill sections of the slab will require to have a mass equal to that of the adjacent slab.

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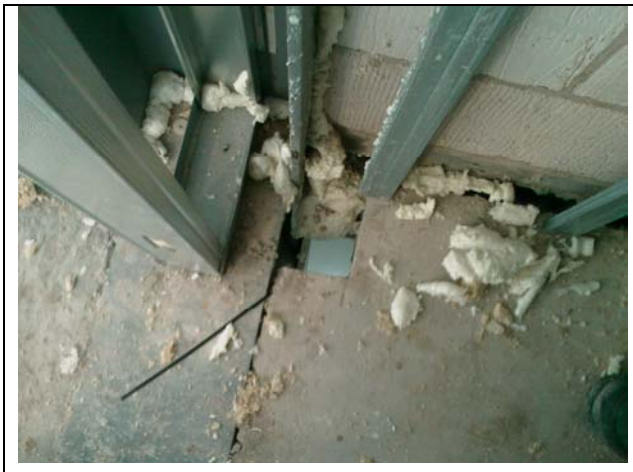


6.0 Sealing Around Steels within the Roof Structure

6.1 Structural Penetration within Corridor Walls – Second Floor Classrooms

There is a difficult detail at the interface point between separating walls, corridor walls and the roof steel. From a site inspection, light can be seen passing through these details. To ensure the performance of this detail, this junction is required to be fully sealed by means of a plasterboard enclosure formed from two layers of 12.5mm wall board. All joints are required to be sealed with mastic. The enclosure must form an air tight seal around this detail.




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6.2 Structural Penetration within Corridor Walls – Second Floor Classrooms

There are a few instances where steels and purlins pass through corridor walls. These are required to be fully sealed with a plasterboard patress panel or filled to the full depth of the block wall with motar.

6.2 Sealing to the Metal Deck Roof – Second Floor Classrooms

From the site inspection, it was observed that there is a gap between the steel above the separating walls on the Second Floor and the metal deck. This gap is illustrated within the photo below.

To prevent an acoustic breach, this gap should be packed with 100kg/m^2 of mineral wool, to the full depth of the steel. The two exposed mineral wool edges should then be fully sealed within non hardening mastic.

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7.0 Moveable walls

There appears to be a sprinkler pipe passing through the proposed location for the moveable wall within the Reception Classrooms.

It is extremely difficult to achieve acceptable levels of acoustic separation across a moveable wall. It is therefore advised that this pipe be redirected.

8.0 Head Detail to Block Work

To prevent an acoustic breach, the gap between the head of the block work and steel/concrete slab, should be packed with 100kg/m^2 of mineral wool, to the full depth of the blockwork. The two exposed mineral wool edges should then be fully sealed within non hardening mastic.

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Appendix A – Standard Penetration Details

High grade details are to be used in separating walls between classrooms, low grade details used within corridor walls only. There should be no penetrations made within separating walls to music spaces.

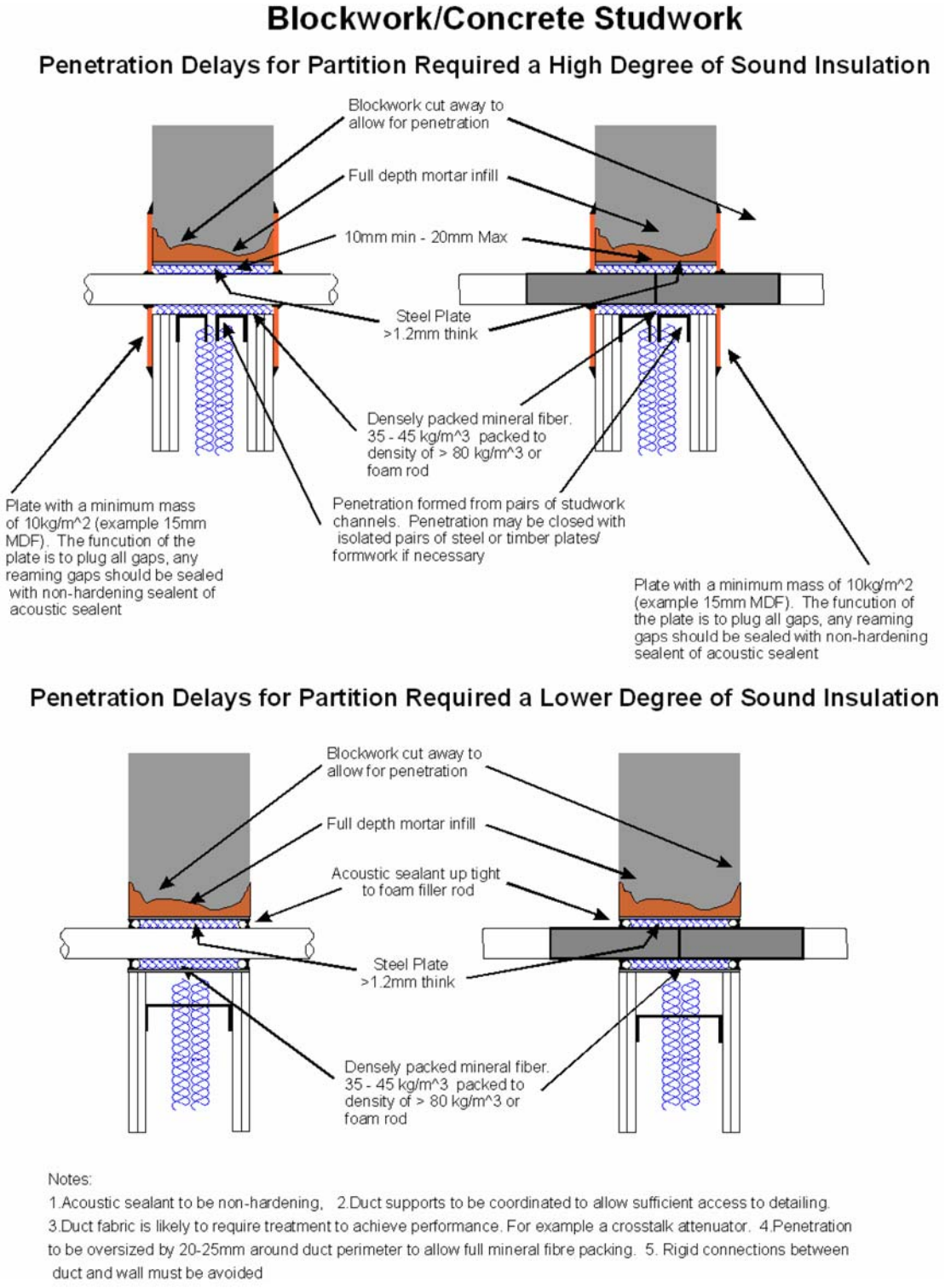

Figure A1. Trunking and pipe work penetration details

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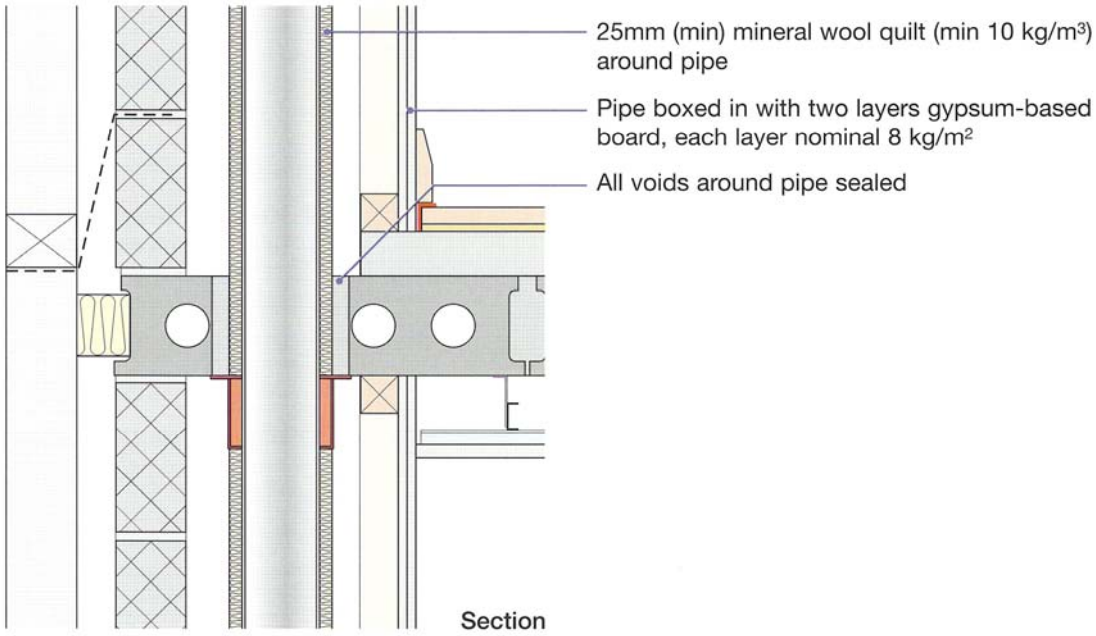
Separating Floor – Concrete E-FC-1

5. Services – Service pipes through separating floor



Sketch shows FFT5 type floating floor treatment and CT3 type ceiling treatment

Figure A.2 Penetration details around vertical services and attenuator enclosures

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Details for Acoustic Backboxes

SRS RD Compliant Socket Boxes

Designed to maintain the acoustic integrity of any wall lining or skin following the installation of flush mounted electrical sockets or light switches. SRS Socket boxes are also fully compliant with Robust Details E-WT-1, E-WT-2, E-WS-1 and E-WS-2. All 'standard' boxes are designed to accommodate a 35mm deep standard back box, allowing flush installation onto a 15mm plasterboard skim. Please notify sales if you require specific sizing.

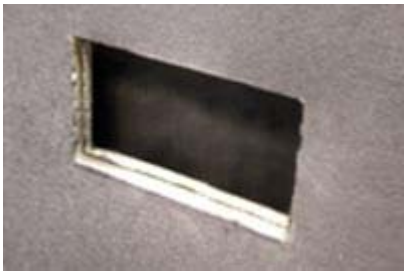
The boxes are provided with a timber strip to allow the installer to screw fix them securely in the cavity. It is advised that a bead of SRS Gripfix adhesive is applied to the edges of the box both to provide a seal and to permanently bond the box to the partition linings.

Single Socket/Switch Boxes : These can only be installed when there is complete access to the internal face of the skin of the partition, i.e. prior to fitting the opposing skin or to be fitted on the inside of a new skin.

Double (or larger) Socket/Switch Boxes: These can be fitted retrospectively into an existing partition, although it is easier to install them while the partition or lining is being installed.

Installation

We recommend that SRS Acoustic Socket Boxes are installed during "First Fix".



• Identify the location of each electrical socket/switch and cut a suitably sized opening in the plasterboard/Maxiboard skin to allow access to the backbox (typically 75mm by 75mm or 75mm by 135mm).

• Remove the rear knockout from the metal electrical tray and drill a corresponding hole in the SRS Acoustic Socket Box to allow cable routing. The hole should be as small as the cable will allow.

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• Apply a bead of SRS Gripfix around the front edges of the SRS Acoustic Socket Box before fixing to the back of the plasterboard/Maxiboard. The SRS Acoustic Socket Box should be fixedusing two 25mm drywall by fixing from the front, through the plasterboard/Maxiboard, into the softwood bearers.

• When retro fitting into existing partitions, it is possible to "post" double or larger boxes through the rectangular opening in the plasterboard/Maxiboard skin, then using a length of stiff wire to pull the box against the inside face of the plasterboard.

• The metal electrical tray should have grommets fitted to the holes , and can then be installed into the partition by either screwing or bonding to the SRS Acoustic Socket Box. The electrical unit in the facia can then be connected by a suitably qualified installer.

• To ensure the best acoustic performance, sockets and switches must not be located back to back.

For further details please see

http://www.soundreduction.co.uk/product_info.php?Product=AcousticSocketServiceBoxes&Route=InstallationGuide

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