



NOTE! The information concerning acoustic control of tropical rain noise that follows is general in nature only. We strongly emphasise that no decision to use **TC-417** insulation as an acoustic installation to control tropical rain noise in any building be made until:

- a) **Our relevant test data is obtained;**
- b) **A qualified, local acoustic engineer, familiar with the project, is retained to interpret our data and to make recommendations concerning the use of our material.**

The sound of tropical rain on a roof is defined as "impact sound" (technically known as IIC), which is structure-borne sound created when one body strikes another. The sound generated outside the building by the rain on the roof is generally of no concern. However, the impact sound is transmitted inward, and this is referred to as "sound transmission" and its mitigation or control is known as "Sound Transmission Control" (STC).

Ideally, the IIC value of the roof assembly should be equal to or better than the STC value of the



assembly in order to achieve equal performance in terms of both structure-borne and airborne sound. However, this is only possible if a "sandwich" or other roof design incorporating acoustic insulation is specified originally.

It is generally neither cost effective nor practical to modify the roof structure to achieve the required STC level, so impact sound must be mitigated by other means.

The sound generated by the impact of heavy tropical rain on a single-sheet metal roof with no external insulation, and transmitted through it, renders a stadium or other public building virtually useless during the storm period.

In the case of an existing building, it is unlikely that any impact cushioning material can be added to the top surface of a single-sheet roof assembly. Therefore, the entire acoustic treatment must be on the underside of the roof, and may include the installation of panels supported by, or under, the purlins to which some of the acoustic material can be attached.

(See stadium at left)

A spray applied fibre product such as **TC-417** is ideal for use in these situations. It can be sprayed directly on the underside of the roof and on to the flanges of the purlins. Thus, direct sound paths from the outside of the roof are reduced to those provided by the webs of the supports and any stacks, etc., that pierce the roof.

In most cases, applying sound insulation to the underside of the roof only, does not result in sufficient dampening of the transmission of the impact-generated sound. In these situations, it becomes necessary to add panels - either solid or open mesh - below the roof proper. These panels are then sprayed with **TC-417** to provide a further sound transmission barrier.

Note: When open mesh is used, the sprayed **TC-417** will protrude through the mesh on the upper side effectively covering the matrix of the mesh, adding to the installation thickness and improving the STC.

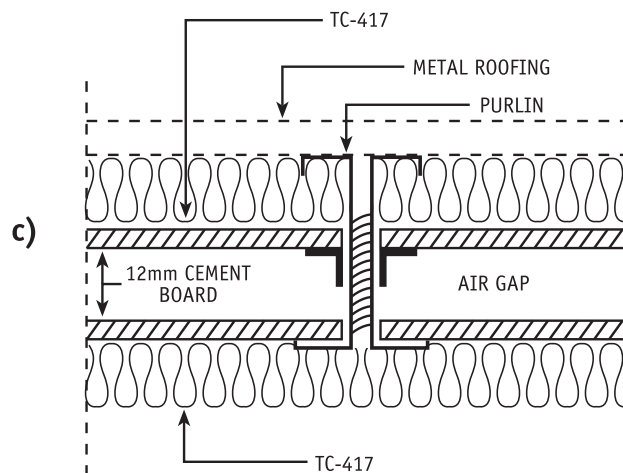
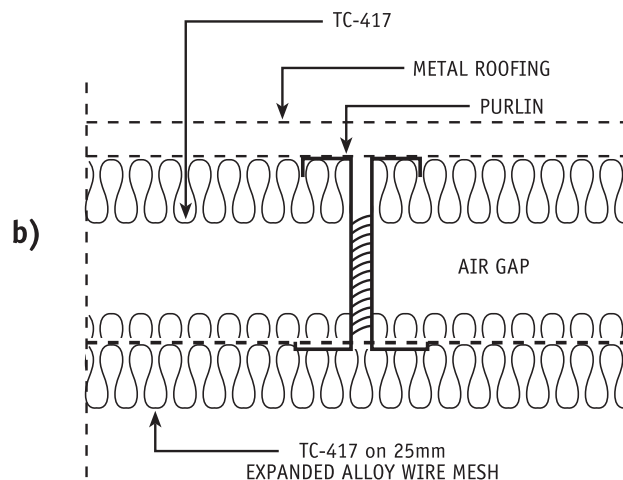
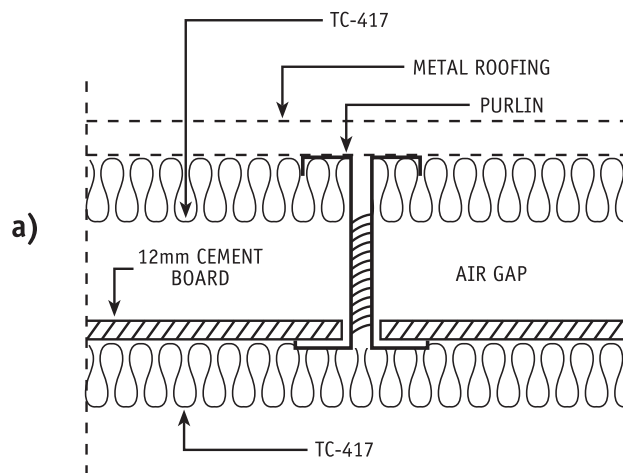
Diagram a) (right) illustrates an assembly incorporating two layers of **TC-417** and one layer of cement board or any other high-density, rigid board. This assembly may be all that is required in some circumstances.

Diagram b) and c) illustrate alternative assemblies that can be considered by an acoustic expert for given circumstances.

Should additional low frequency suppression be required, we suggest examining the possibility of adding an additional layer of rigid material such as cement board just below the roof installation of **TC-417** (diagrams a),c).

If final ceiling finish other than the white **TC-417** is desired, one of the following options can be considered:

- a) Install a suspended ceiling below our material;
- b) Use one of our colour additives mixed with the adhesive. We have two additives that provide either a light grey or charcoal final finish;
- c) Spray paint the cured material using any good quality water-borne paint of the desired colour.



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