

# NVA CASE STUDY: LONDON ACADEMIES

## Application:

Vented Facade

Cross Ventilation

## Requirement:

BB93

BB101

## Key Products/Services:

Environmental Survey

Consultancy

NAT Vent Attenuator (NVA)

## Partners:

Fosters and Partners

Buro Happold

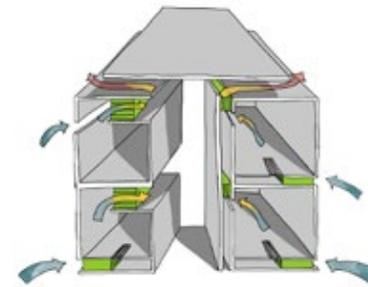
DfES and Barnet City



**MACH**  
PRODUCTS

London and West London Academies, two large £30M+ Academy are both designed around a natural ventilation, incorporating cross ventilation. Both schools were required to meet BB93 and BB101 'Ventilation of School Buildings'. MACH Acoustics worked with Fosters and Partners to develop a practical solution. Our findings were that the cost of conventional attenuators along with their size and short falls in performance prohibited the use of these devices but allowed for the NVA.

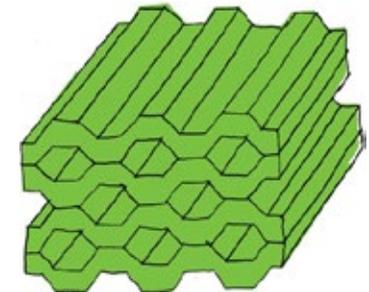
## Cross Ventilation.



Cross ventilation is one of the most effective forms of natural ventilation. One of the key benefits of the NAT Vent Attenuator is its simple implementation of cross ventilation through a corridor wall, whilst still maintaining acoustic integrity. It also enables cross ventilation to vertically stack rooms, vented through a single stack.

In the academies, window bulkhead vents, classroom to corridor cross-vents and a central atrium allow the building to naturally ventilate.

## NAT Vent Attenuator.



One of the main difficulties in designing low energy buildings is the prevention of noise break-in from the many noisy sources affecting modern buildings, including motorways, dual carriageways, trains, airplanes and inner city noise.

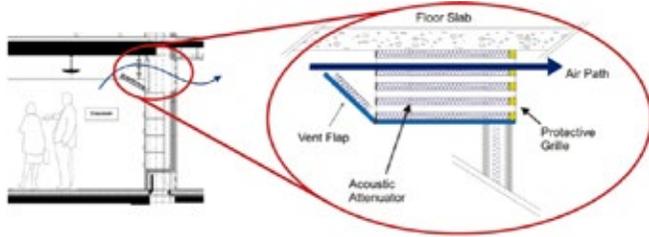
The NVA was designed to form a unison between natural ventilation and acoustics, without having to design your building around large bulkheads accommodating big heavy attenuators.

## Sustainable Acoustics

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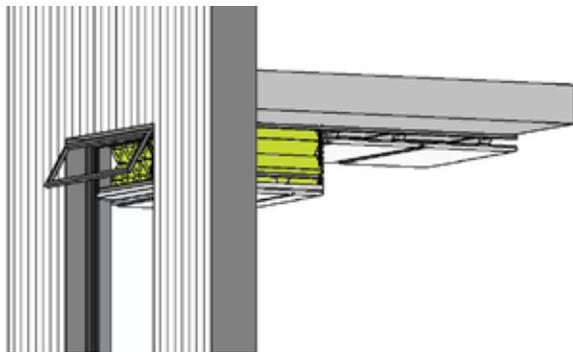
**Bristol** Trelawney House, Surrey Street,  
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# Design.



The academies featured many different imaginative implementations of the NVA as a cross ventilator, all venting into a central atrium. Air passed through the facade via actuated windows through bulkheads at ceiling height containing the NVA.

The main principle was to add an attenuator with 25% free area and a face area of 1.5m<sup>2</sup>, with small splitter sizes. The attenuator was to be located above a cupboard spaces as shown above. A flap enable the vent to be opened and closed. The Revit model below illustrates how a window bulkhead is used.



# Install.

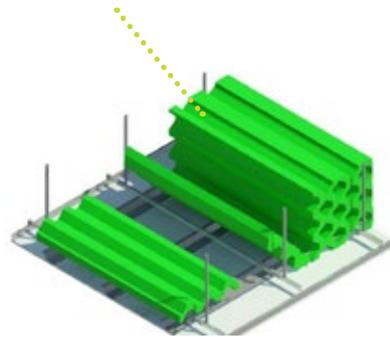
One of the main advantages of the NVA is the ease and simplicity of installation. Once the bulkhead has been constructed, the tessellating foam is arranged into honeycomb pairs by alternating orientation, then simply slid into the duct. Since the foam is malleable and can be cut, fitting around building services or any on-site alternations can be easily achieved. Installation generally takes under one hour - saving money and construction time.

With the window facade bulkhead, we were able to implement cost savings by negating the need for expensive weather louvres, using actuated windows instead. Not only was the cost significantly reduced but the installation was greatly simplified - both points highly valued by the contractor.

The tessellating foam is horizontally arranged in the bulkhead, forming the honeycomb formation. The process is

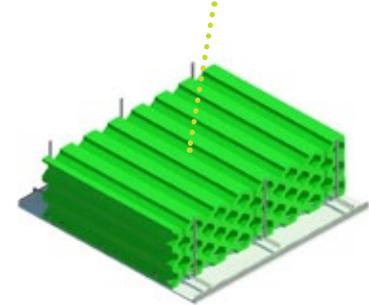
Once the NVA is in place, architectural grills are installed. It is important that the bulkhead is well finished, with no voids.

1.



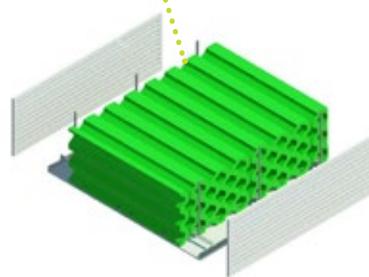
The assembled NVA bulkhead.

2.

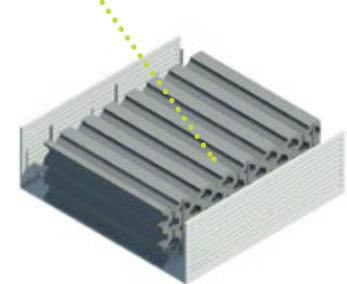


The finished bulkhead on the MF5 Tracking System.

3.



4.



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# Result.

The resulting builds are without a doubt, impressive. As one of the first schools project to use the NVA, there was no mandatory requirement to meet BB93 as the application was submitted before July 2003. Each academy still met both BB93 'Acoustic Design for Schools' and BB101 'Ventilation of School Buildings' as per the design requirement. Additionally, Buro Happold was complimentary of the cost savings and ease of use that the NVA provided.



- 1 Bespoke grills above the classroom doors, providing the cross ventilation to the corridor at one academy.
- 2 Alternative corridor/classroom vent, showing acoustic damping lights.
- 3 Atrium ceiling vents.

- 4 The openable vents placed above the locker spaces within classrooms.
- 5 Classroom window bulkhead, venting to facade. Photo also features acoustic damping lights.
- 6 Exterior view of classroom window facade. The natural ventilation has had little impact of the appearance of the build.



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