

ACOUSTIC TECHNICAL NOTE



To:	Aart Koning, DMRWR Architects
From:	Martin Raisborough
Date:	05 th April 2024
Project:	135167 – Lincoln Gate, Manchester
Revision	0
Subject:	Façade Sound Insulation Review

Dear Aart,

We are pleased to confirm having undertaken our acoustic review of the proposed modifications to the external façade systems at Lincoln Gate, Manchester - a 10-storey residential building. It is understood that the existing façade on the building is to be removed and replaced as part of upgrade works to the building, and it is necessary for the new façade systems to perform at least as well acoustically as the existing systems.

The details and outcomes of our reviews are presented in the following sections.

1.0 TYPE 1 - BRICKWORK

It is understood that the construction of the existing brickwork cladding system is as follows:

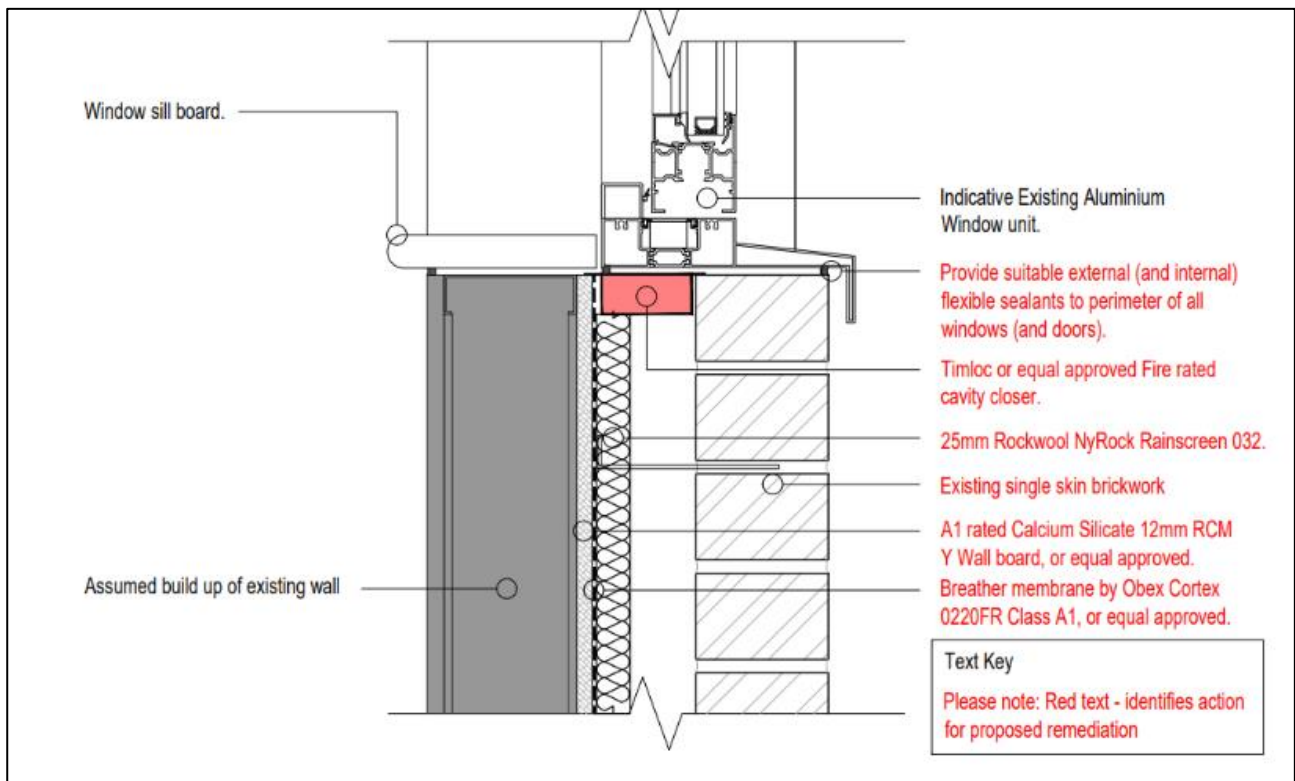
- 75mm brick
- Rigid Foam Insulation within 78mm cavity
- Circa 100mm metal framing to slab edge
- Plasterboard on inner face of metal framing.

The proposed changes to the external façade system are presented below in red:

- 75mm brick
- Rigid Foam Insulation within 78mm cavity - **Replaced with 25mm Rockwool NyRock Rainscreen 032. Fire cavity closer at top edges with glazing.**
- Circa 100mm metal framing to slab edge
- **12mm Calcium Silicate Board on outside face, plus breather membrane**
- Plasterboard on inner face of metal framing.

The section detail of this façade arrangement is indicated in Figure 1 below. The proposed modifications are highlighted in red.

Figure 1 – Type 1 Brickwork Façade System
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The expected performance of this cladding system, before and after the refurbishment works, is presented in Table 1 below:

Table 1 – Type 1 Brickwork Acoustic Performance

Detail	Sound Reduction Index (SRI, dB) @ Octave Band Centre Frequency (Hz)								R _w
	63	125	250	500	1k	2k	4k	8k	
Existing Cladding Performance	29	45	53	51	48	55	60	63	48
Refurbished Cladding Performance	29	45	53	58	66	70	72	75	63
Change	0	0	0	+7	+18	+15	+12	+12	+15

It can be seen that the refurbished cladding is expected to perform better than the existing system, mainly due to the introduction of the Calcium Silicate Board. The improvement in low frequency performance is expected to be limited due to the introduction of double cavities, and associated resonances.

2.0 TYPE 2 – COMPOSITE PANELS

It is understood that the construction of the existing composite panel cladding system consists of a structural framing system (SFS) within composite metal outer panels and plasterboard internal face. The detailed construction is as follows:

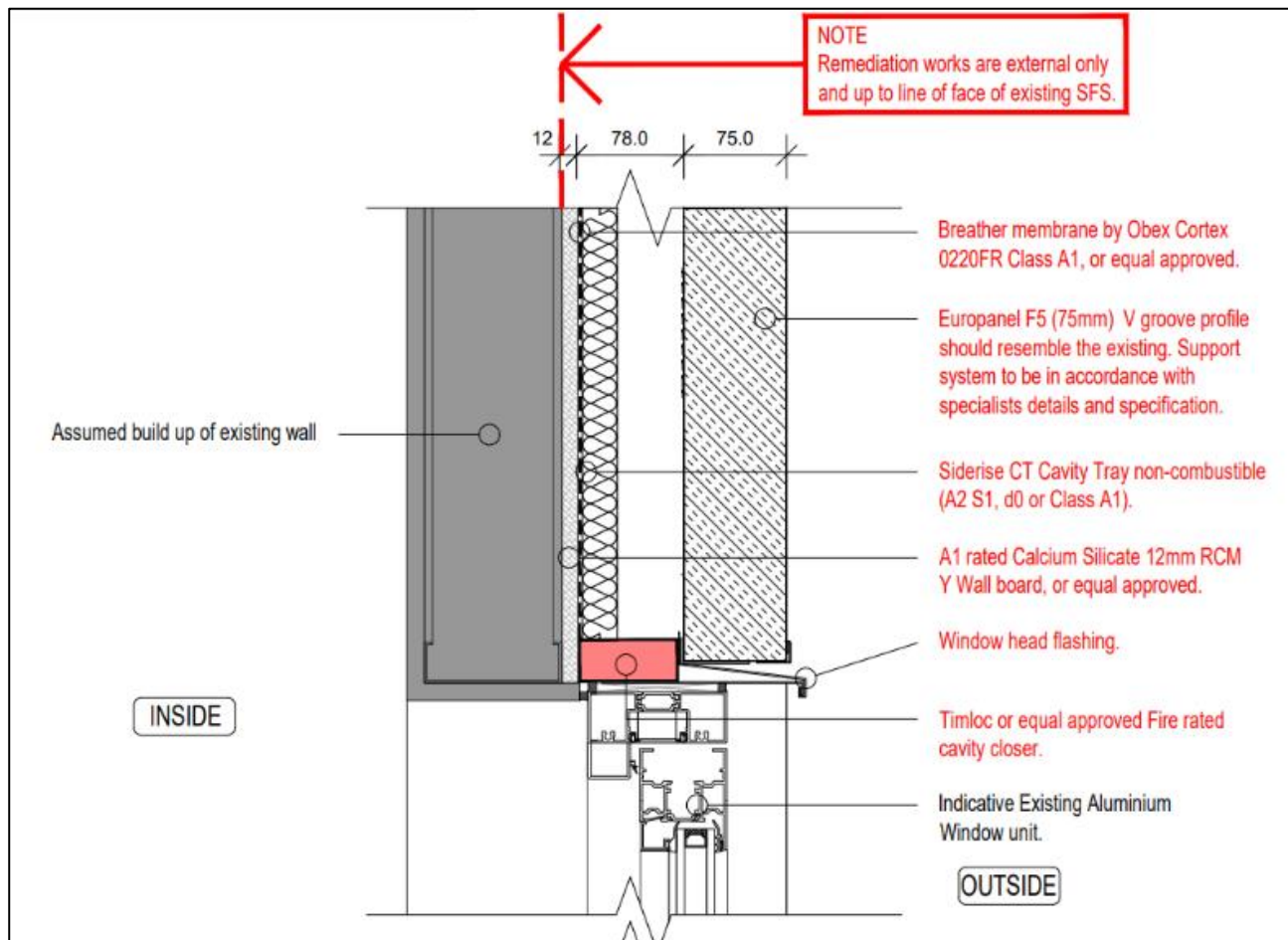
- Composite metal insulated panels (Kingspan or similar), circa 50mm
- SFS framing
- Metal framing to slab edge
- Plasterboard on inner face of metal framing.

The proposed changes to the external façade system are presented below in red:

- Composite metal insulated panels (Kingspan or similar), circa 50mm - **Replaced with 75mm Europanel**
- **Introduction of 25mm Rockwool NyRock Rainscreen 032. Fire cavity closer at top edges with glazing.**
- Metal framing to slab edge
- **12mm Calcium Silicate Board on outside face, plus breather membrane**
- Plasterboard on inner face of metal framing.

The section detail of this façade arrangement is indicated in Figure 2 below. The proposed modifications are highlighted in red.

Figure 2 – Type 2 Composite Panel Façade System



The expected performance of this cladding system, before and after the refurbishment works, is presented in Table 2 below.

Table 2 – Type 2 Composite Panel Acoustic Performance

Detail	Sound Reduction Index (SRI, dB) @ Octave Band Centre Frequency (Hz)								Rw
	63	125	250	500	1k	2k	4k	8k	
Existing Cladding Performance	11	22	35	40	40	43	55	58	42
Refurbished Cladding Performance	15	29	44	52	57	58	61	65	53
Change	+4	+7	+9	+12	+17	+15	+6	+7	+11

It can be seen that the refurbished cladding is expected to perform better than the existing system, mainly due to the introduction of the Calcium Silicate Board and insulation material within the cavity.

We trust this is of assistance. Please call should you have any questions or wish to discuss in more detail.

Regards

Martin Raisborough