

Vantage Quay

Design and Access Statement.



1.0 Introduction

This design & access statement has been collated to supplement the planning submission for the Emergency Recladding works to Vantage Quay, for the consideration of Manchester City Council's planning department.

Vantage Quay is located on Brewers Street in Manchester. The building is a residential building, rectilinear in plan with a triangular cur out on the Southern tip following the line of the canal and 8 storeys tall from external ground level.

The Ground Floor level contains a covered car park, with residential apartments to the floors above. The penultimate storey is set back from the levels below; with the uppermost storey set back further. There is a combination of cladding materials used to envelop the property: brickwork, zinc cladding panels and render. The top two storeys are solely clad in a metal cladding panel.

The front (Brewer Street) and North elevations are predominantly clad in brickwork (with a small amount of stonework to low level). There are also two vertical areas of metal cladding panels to two stairwells on this elevation.

Following the Grenfell disaster and the subsequent review of the Fire Risk Assessment carried out at Vantage Quay regarding the structure's compliance with Part B of Schedule 1 to the Building Regulations 2000 (Part B), and further intrusive investigations to verify the construction behind the cladding, concerns over the fire compartmentation and combustibility of materials within the cladding systems were raised, resulting in a scheme of emergency remediation works to mitigate these defects.

The following statement provides a narrative of the methodology establishing the scope of works and the details and materials that are to be installed. This was as follows: -

- + A desk top review of as built information and reports such as the fire engineer Fire Risk Assessment External Wall.
- + Intrusive surveys which opened up sections of the construction to verify or update the as built information.
- + Analysis of the existing details to determine the condition of the existing construction and components that were non-compliant.
- + Development of proposed details and consideration of replacement materials.

The development of the proposals was constantly reviewed by the design team and contractor.

Note that the access around, into the building and within the building is unaffected by the proposed works.



Figure 1 - West Elevation (Brewer Street)

2.0 Existing Building and Context

The existing building sits on a North South axis, the east and south elevations facing the canal quay, the west elevation fronts Brewer Street and overlooks the Piccadilly Basin car park and the North elevation is adjacent to Jacksons Warehouse.

The surrounding buildings are of similar height and scale with the Jacksons Warehouse, a listed asset setting the precedence for the area in terms of materiality – the buildings are generally brick clad.

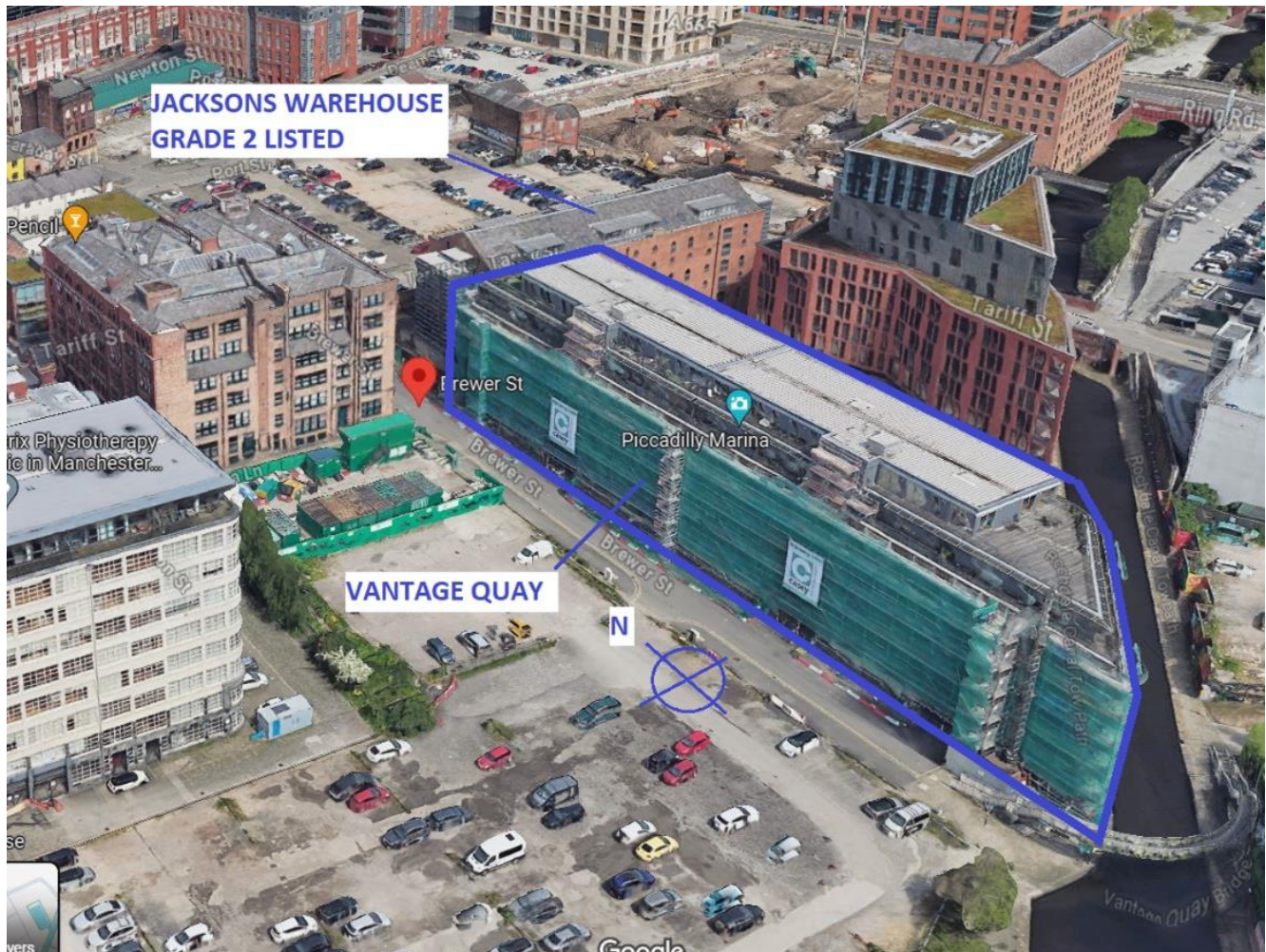


Figure 2 - Birds Eye View of Vantage Quay in Context



Figure 3 - South and West Elevations

3.0 Vantage Quay Defective Construction Requiring Remediation

Following in depth intrusive investigations, the following items were noted of the existing cladding systems – the descriptions are a brief summary of the main defects identified: -

3.1 Render System

The render system is constructed off a metal SFS frame, consisting of: -

- + Cement particle sheathing board.
- + Drained cavity
- + Insulation
- + Render.
- + Decorative trellis / Juliet balcony guarding.

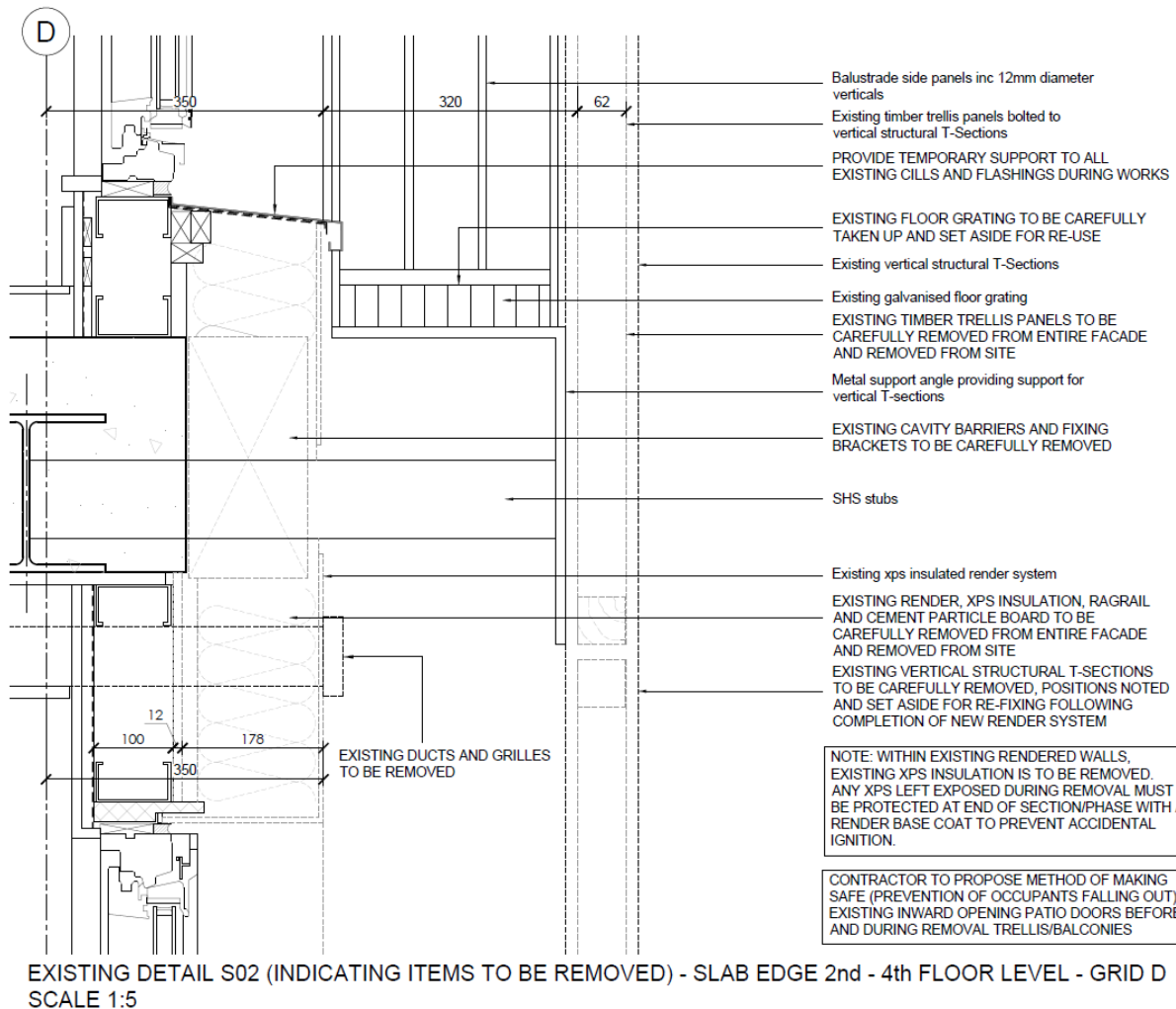


Figure 4 - Existing Sectional Detail showing system build up

The following issues were identified.

- + The insulation is expanded polystyrene and combustible.
- + The drained cavity is complex to install and maintain the cavity and intumescent strips at compartment lines and openings.
- + The decorative trellis / guarding is constructed from timber which is combustible.
- + Cabling to downlights was not protected or encased in timber, combustible.
- + Party Wall junctions did not extend through to the external wall offering potential for passage of smoke/heat/flame.



Figure 7 - Detail view of East elevation showing the cream render and timber trellis



Figure 6 - Interface of East and North Elevations



Figure 5 - Interface of East and South Elevations

3.2 Brick Cladding

The brick cladding system is constructed off a metal SFS, consisting of: -

- + Phenolic insulation
- + PIR insulation
- + Drained cavity
- + Brick cladding
- + Cantilevered balconies

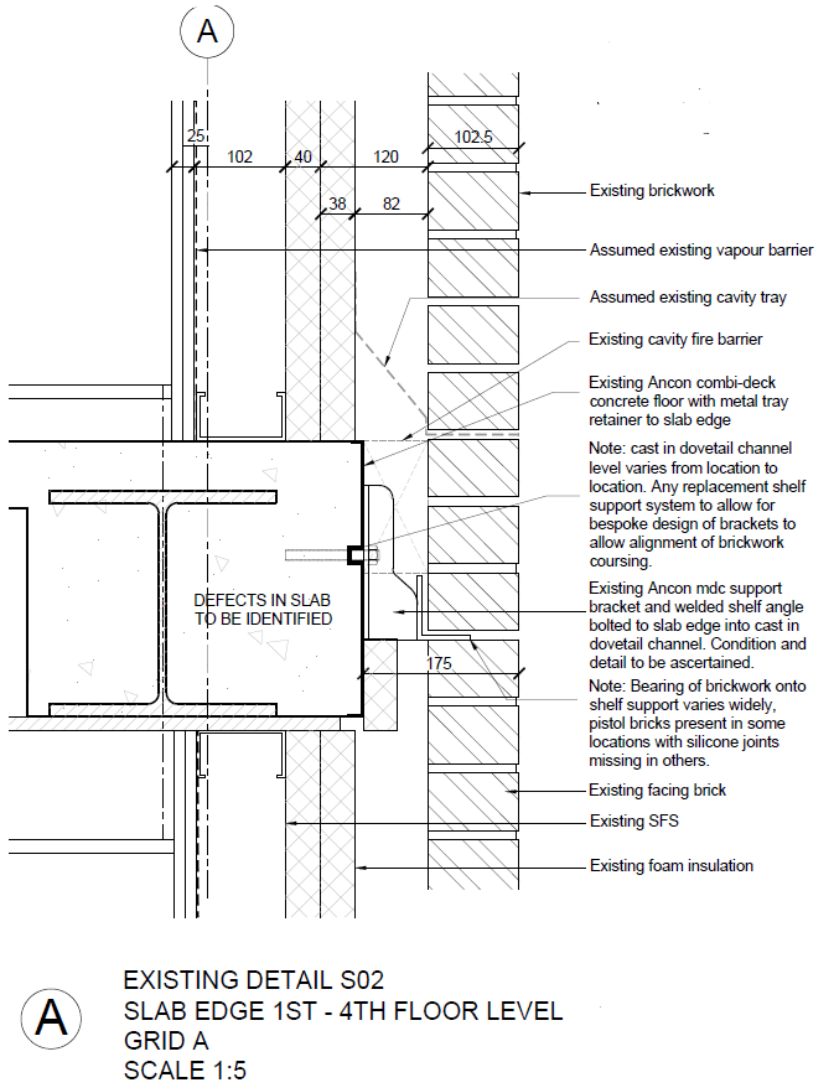


Figure 8 - Existing detail of brick cladding system showing build up

The following issues were identified: -

- + No cement particle board sheathing was present in the system – this is very unusual in this system and not advised.
- + Inadequate and insufficient cavity barriers and closers at compartment lines and openings increasing the risk of fire spread through the cavity, especially given the combustible insulants.
- + Phenolic insulation is combustible.
- + PIR insulation is highly combustible.
- + Poorly installed support system for the brick cladding.
- + Combustible timber decking to the balconies – the stacking of 4 balconies created a fire spread risk up the façade.
- + Poor condition of uneven face of the concrete slab – see opening-up photographs above.



Figure 9 - View of West Elevation showing elevational features / details and brick colours / texture



Figure 10 - View of West and South Elevation interface

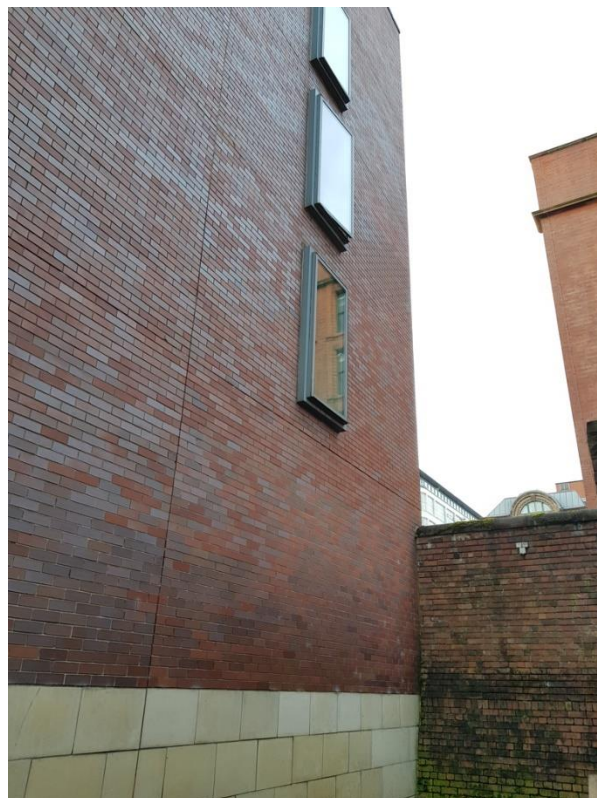


Figure 11 - View of North Elevation

3.3 Zinc Cladding to Stair Cores

The zinc cladding is constructed off a metal SFS and the windows are glazed into frames:-

- + Sheathing board fixed to the SFS.
- + Mineral wool insulation.
- + Zinc panels on metal bearers.

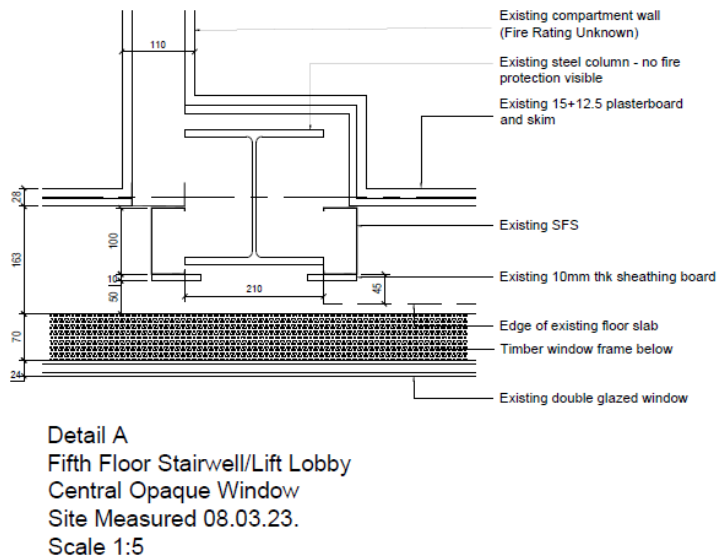
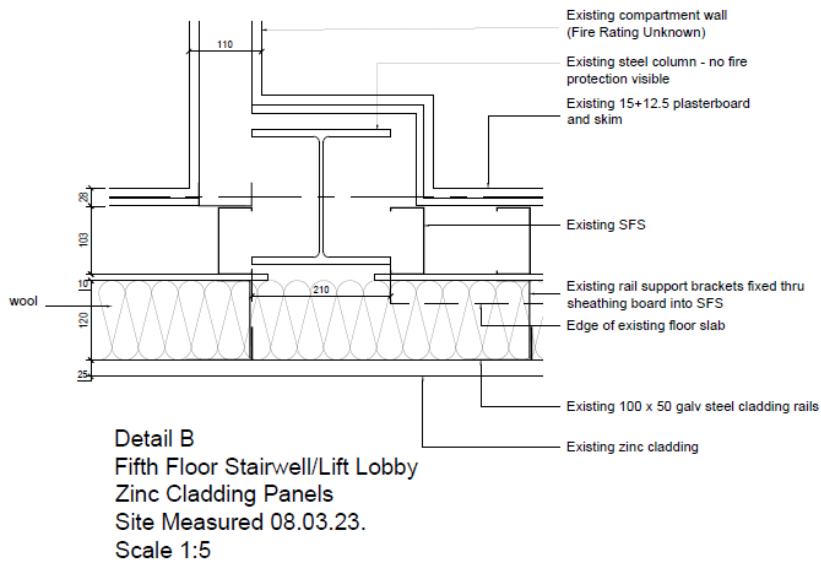


Figure 13 - Plan details showing build-up of zinc cladding

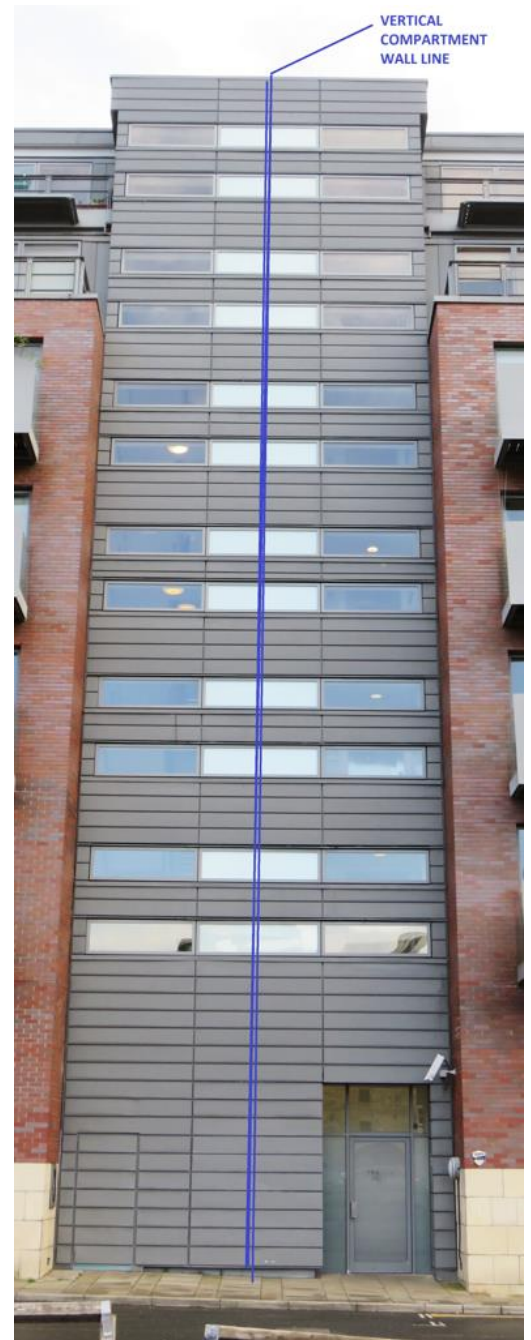


Figure 12 - View of stair core with vertical compartment superimposed as a blue line

The following issues were identified: -

- + Non-compliant sheathing board.
- + No cavity barriers evident on the vertical compartment line between the staircase and lift lobby.
- + Obscure glazed windows on the vertical compartment line between the staircase and lift lobby. Glass is not a suitable material for a panel against which a cavity barrier abuts.

3.4 Conclusions

In conclusion the brick cladding and render systems and their relevant attachments – the balconies and trellis respectively - were found to contain combustible elements which required replacing with A-rated alternatives.

Works to the zinc stair cores was also required to resolve issues of compartmentation.

In the case of the brick cladding, the investigations have revealed major structural issues with the support system, the presence of combustible insulants within the system and compartmentation issues caused by a lack of fire barriers at compartment walls and floors and closing openings in the external facade. The lack of adequate compartmentation has compounded the risks of fire spread posed by the highly combustible insulants described above.

We initially investigated a picture framing strategy to insert cavity barriers to an enhanced fire and heat insulation standard at compartment wall and floor locations to: -

- + retain the existing brickwork and limit any new brickwork as replacements to unsalvageable bricks from breaking out to enable access to install the cavity barriers.
- + Mitigate the risk of fire spread via conduction between the retained combustible insulants.

However, as we carried out further intrusive investigations and opened up more of the existing construction behind the brick cladding, further defective work was revealed, the most serious being the defective ancon system to support the brick cladding.

A survey by the structural engineer confirmed that it was not fit for purpose and requires replacement throughout. Defects included but were not limited to: -

- + The very poor condition of the concrete floor slab edge. Widespread spalling, cracking, pitting was noted and in some cases the slab was incomplete. The slab edge was not in a condition to securely fix the cladding support into.
- + Shelf support angle lengths incomplete, areas of brickwork are bearing onto the masonry below potentially overloading the shelf angles in lower panels.
- + Bolts fixing the brick shelf support brackets into the concrete were missing.
- + Issues with the seating of the bricks on the shelf support angles. Standard bricks rather than pistol bricks were used resulting in thin / inadequate joints.
- + No horizontal movement joints resulting in the brick support shelf angles not acting as structurally intended and the loading being transferred through the brick cladding to the ground.
- + Likely issues with the existing lintels not being 'fit for purpose' which would be apparent once the brickwork has been demolished.

This view was also supported by the manufacturer of the system who were also present at the inspection. They advised that whilst they were not surprised with the defects, they condemned the installation of the brickwork/supports.

This is an urgent repair as the structural integrity of the brick cladding is compromised.

In order to install a new brick support system, the existing brick cladding will be required to be taken down in its entirety and as we are replacing all the brickwork, we are required to replace all the insulation to meet funding and statutory requirements.

4.0 Vantage Quay Proposed Remedial Works

Following extensive design works involving a team of consultants, the contractor and manufacturer technical departments, a scope of proposed works was developed to remediate the defects and proposed construction details developed.

4.1 Render System

The following works are proposed: -

- + Strip off the existing render system including render, insulation, drained cavity.
- + Strip off the existing cement particle board.
- + Install new A rated direct fix render system including A rated cement particle board sheathing, stone wool insulation.
- + Strip off existing timber trellis / guarding.
- + Install new A rated metal trellis / guarding system.

4.2.1 Brick Cladding System

The following works are proposed: -

- + Strip off the existing brick cladding system including brick work, cavity barriers, cavity trays, brick support system, insulation.
- + Carefully take out the top course of stone cladding, clean and set aside for reuse.
- + Install new A rated rock wool insulation within the metal SFS framing.
- + Install new A rated cement particle board sheathing and A rated breather membrane to the face of the SFS frame.
- + Install new A rated rock wool insulation to partially fill the drained cavity.
- + Install new cavity barriers and closers to compartment lines and openings.
- + Install new brick cladding and Ancon support system and ancillary components. Include for re-bedding of the top course of salvaged stone cladding and replace any damaged stone cladding.
- + Strip off the timber decking to the balconies.
- + Install new A rated metal decking to the balconies.

4.2.2 Brick Cladding System - Concrete remedial repairs to floor slab edge

The following works are proposed to repair or reinstate the slab edge to provide fixing substrate for the provision of new proprietary masonry support system and fire barriers: -

- + Existing Ancon combi-deck concrete floor with metal tray retainer to slab edge. Retainer to be cut off to top 100mm to ensure integrity and insulation of proposed horizontal cavity fire barriers.
- + Spalls and voids in the concrete to be filled using Fosroc Renderoc hb30 high performance fibre reinforced concrete reinstatement mortar.
- + Small cracks in concrete to be injection sealed with Nitofill lv epoxy resin injection grout by Fosroc.
- + Where full reinstatement of the concrete slab is required, new reinforcement to be position and filled with RC32/40 concrete.

4.3 Zinc Cladding System

The following works are proposed: -

- + Carefully strip out the existing zinc panels on the line of the vertical compartment between the stair and Lift Lobby and set aside for reuse.
- + Carefully strip out the existing glazing panels on the line of the vertical compartment between the stair and Lift Lobby and remove from site.
- + Install Vermiculux panels on the face of the steel column flanges to create a suitable sub strate for the new cavity barriers.
- + Install new vertical cavity barrier.
- + Reinstate the salvaged zinc panels.
- + Install new zinc panels in lieu of the glazed panels.



Figure 16- West Elevation as Proposed (Brewer Street)



Figure 17 - East Elevation as Proposed

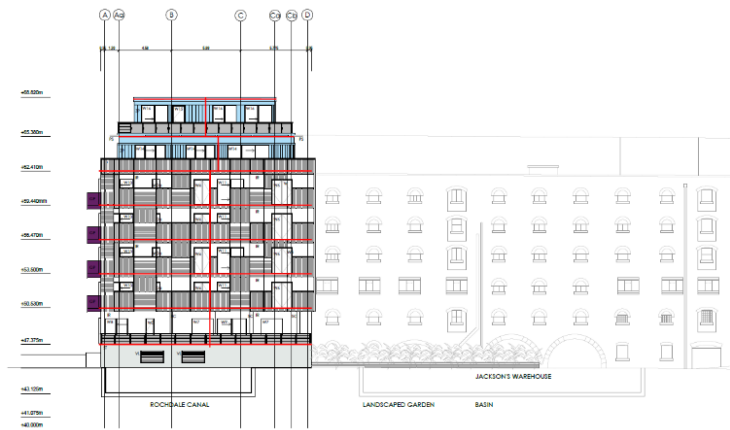


Figure 15 - South Elevation as Proposed

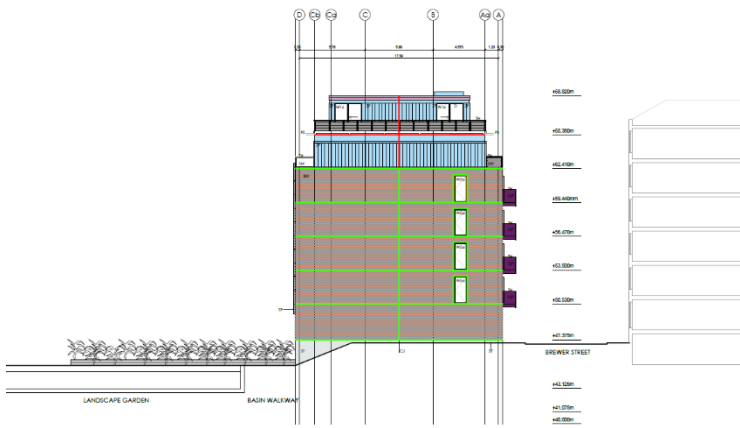


Figure 14 - North Elevation as Proposed

Materials Key:

- Existing feature stonework to lower level to be replaced only where necessary with similar stone to allow insertion of new support system.
- Existing brickwork inc ties, foam insulation and ancon support system, cavity barriers, d.p.c's to be carefully taken down and removed from site - refer to detail drawings 6100 series. All to be replaced with new ancon support system, new bricks, wall tie restraints, new rockwool duo slab insulation, new 12mm thk Y-wall sheathing board and sfs filled with rockwool flexi slab. To be pointed with mortar, colour and joint type to match existing. New wall ties to be installed where required to structural engineer's details. Build in 10mm wide vertical movement joints as existing locations. Refer to AEW drawings for brick details
- New direct fix A2 rated render system fixed to SFS frame on new A1 rated sheathing board. Refer to AEW drawings for render details
- New non-combustible Class A2 metal feature trellis (to match existing in size and profile) Refer to AEW drawings for trellis details
- Zinc cladding system to be retained to upper floors only. Cladding removal required to 2no stair cores for cavity barrier insertion only. All to be replaced with matching cladding.
- Existing balconies to be reinstated following completion of the works
- Within Zinc Cladding. Tenmat NVFB vertically and VFB open state horizontally.
- NOTE:** All 'Party Wall/Party Floor Lines' and around openings and to interfaces with changing cladding materials to be installed and verified by Contractor plus at no less than 20m vertical centres in any case.
- Position of compartment wall lines to rendered elevations indicated.
- NOTE:** All 'Party Wall/Party Floor Lines' to be verified by Contractor
- To Brickwork. Proposed Tenmat NVFB 82mm cavity barrier to be installed to manufacturers details and recommendation and site personnel. Inc visqueen mechanically fixed non combustible dpc and cavity trays.

5.0 Proposed Replacement Materials

A significant amount of time and consideration has been taken to choose the replacement materials. The materials selected and a brief summary justifying the selection are as follows:-

5.1 Render System

The proposed render system is a Wetherby Direct fix system: -

- + System: Wetherby Stone Wool Silicone External Wall Insulation System
- + Substrate: Steel Frame Sheathed in 12mm Y Wall Cement Board
- + Insulation: 160mm Stone Wool Insulation
- + System Finish: WBS Heck Silicone 'K' 1.5mm Textured Finish
- + The colour is cream to match the existing render colour.
- + The finished texture of the render system matches the existing render system.
- + The system is the same thickness as the existing system.

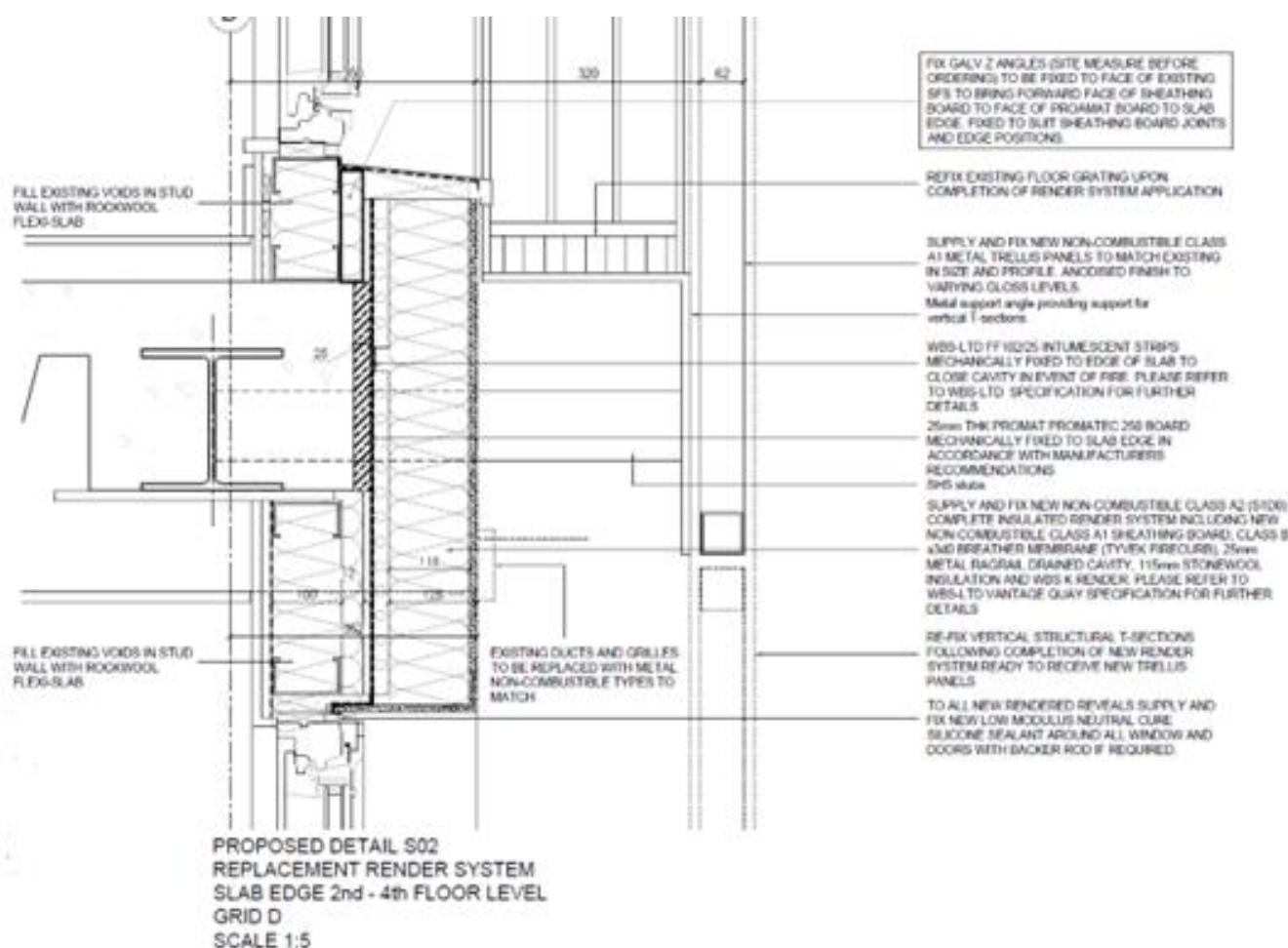


Figure 18 - Sectional Detail showing Proposed build-up

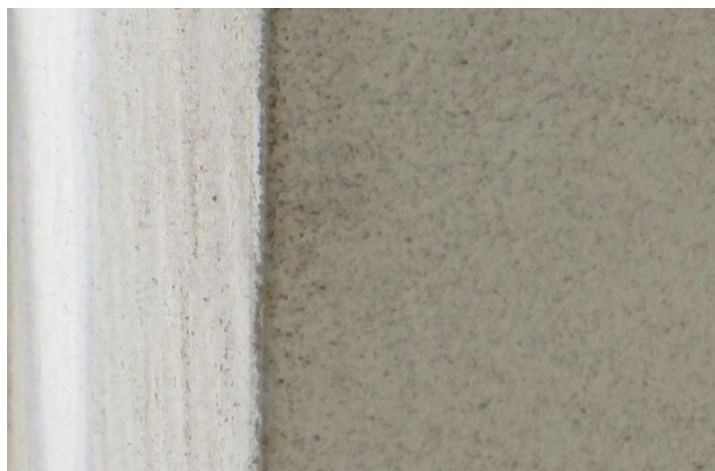


Figure 19 – Photograph of the existing render to be removed. The new render system finish will be colour matched.

The proposed trellis is a powder coated aluminium system which fixes to the wall via the existing steel bracketry: -

- + The aluminium framed panels will match the horizontal and vertical rail arrangement of the existing timber trellis.
- + The section size of the aluminium rails and framing and centres will match the existing timber trellis components.
- + The proposed colour of the new trellis is RAL7043 Traffic Grey 2 to match the metal decorative screens on the building on the opposite side of the canal quay to create cohesion between the two buildings.

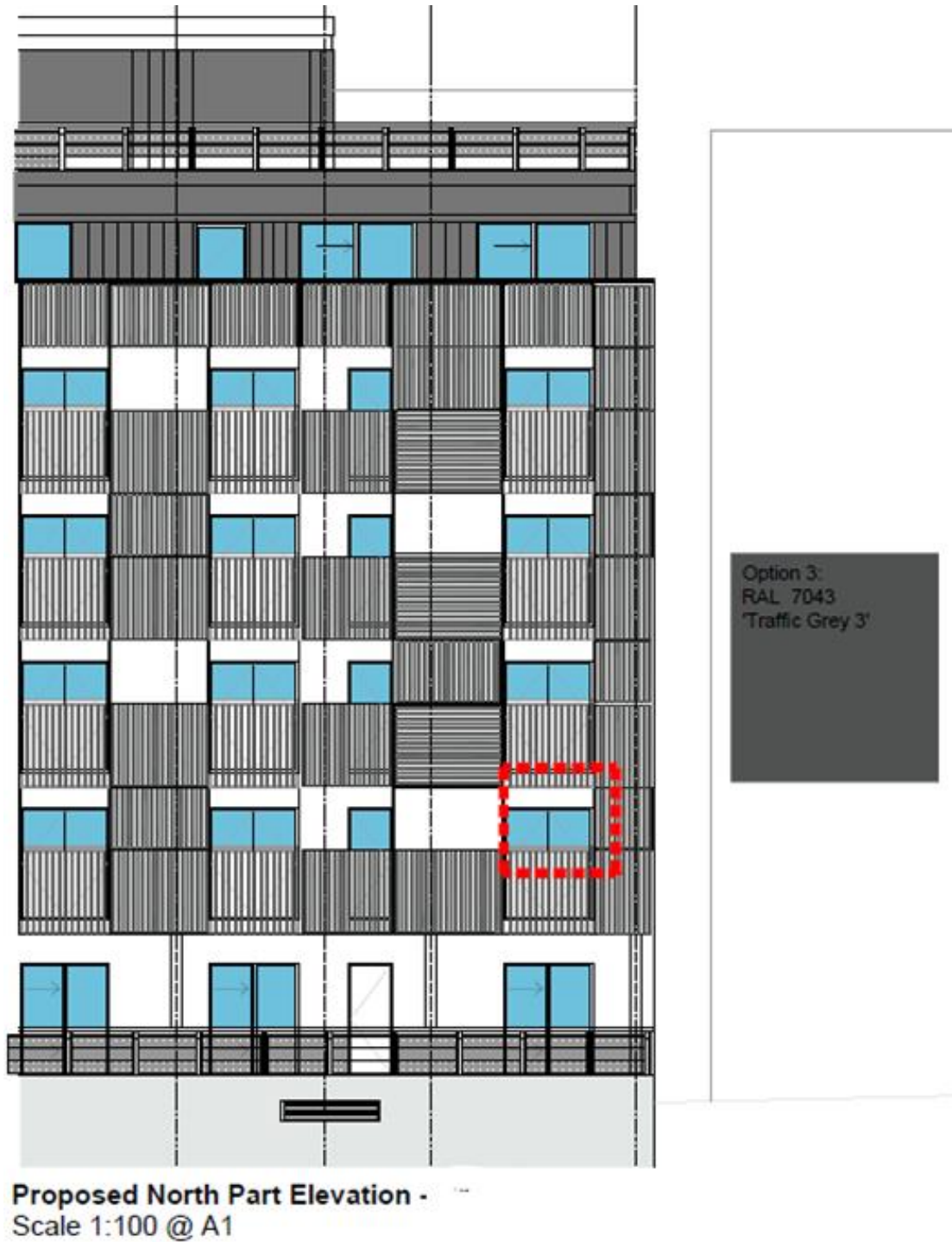


Figure 20 - Part East Elevation showing the new traffic grey 3 coloured trellis

5.3 Balcony System

The proposed balcony decking system is Ryno BalcaSmart® Aluminium decking system: -

- + The planks are extruded aluminium – more durable than the existing timber planks.
- + Supporting structure - the new planks fix to and span the retained existing steel frame.
- + The planks are free draining – the existing planks are free draining.
- + The section size of the new aluminium planks match the existing timber planks.
- + System Finish: polyester powder coated.
- + The colour is RAL 7006 'Beige Grey', a close match to the existing weathered planks.
- + The system is A – rated for combustion.



Figure 21 - Existing balcony timber decking

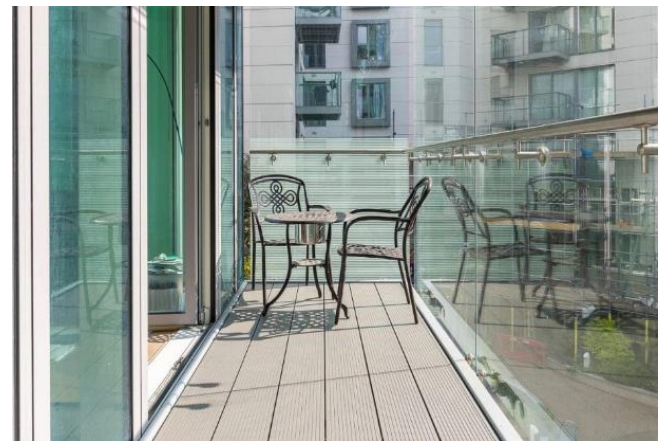


Figure 22 - Image of new aluminium decking from Manufacturers brochure

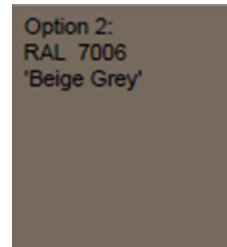


Figure 23 - Colour of new aluminium decking



Figure 24 - Image of new aluminium decking from Manufacturer brochure

5.4 Brick Cladding System

The proposed Brick cladding system comprises the following A-rated individual components: -

- + Rockwool FLEXI insulation within the retained metal SFS frame.
- + RCM Y-WALL cement particle board.
- + Rockwool DuoSlab insulation.
- + Ancon steel support system.
- + Tenmat Cavity Barriers.
- + Obex breather membranes, EPDMs and Visqueen Cavity trays.
- + New facing brick.

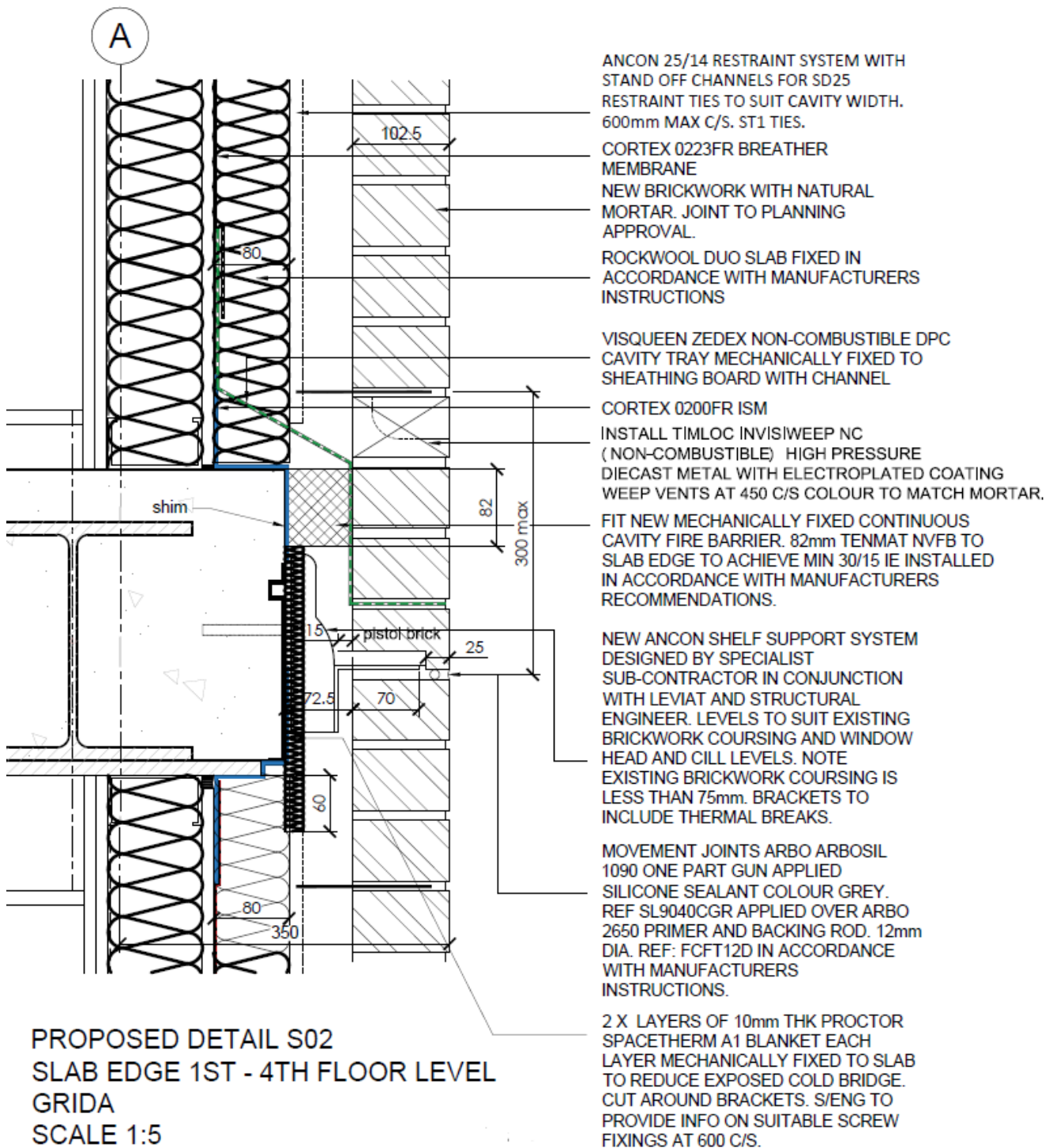


Figure 25 - Section Detail of the new brick cladding system build-up

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The selection of the replacement brick was challenging as the existing brick was quite unusual in its colour variety, but it was no longer manufactured. The salvaging of the bricks for reuse in the façade was not practicably possible as the arises were not particularly durable and easily damaged despite the care taken by the contractor appointed for the intrusive investigations. The following considerations were made in selecting a replacement brick: -

- + The existing bricks were individually quite consistent in colour.
- + As a collective, there were 3 different colour groups, 2 reds and a blue / purple. The most numerous were the red type.
- + The brick finish were smooth.
- + The original bricks had lent towards a contemporary aesthetic, despite the listed Jacksons Warehouse being in close proximity.

Following extensive investigations and theorizing regarding the brick finish, the following principles were favoured: -

- + To stick with the contemporary aesthetic of the original brick.
- + The proposed bricks to have a smooth finish.
- + The proposed bricks to have a consistent colour as close a match to the original bricks.
- + 1 brick type selected, colour tone red to match the more numerous existing brick type.

A search of the different brick types available provided 1 red coloured brick that was a close match to the original red brick type as illustrated below. We propose one colour choice as the closest match to the predominant / more numerous red tone in the existing brick work. To achieve the variation and mix as the existing bricks, we believe this would involve mixing different types / manufacturers which could in turn lead to supply and compatibility issues.

Our proposal adheres to the concept of the original design by laying red coloured bricks with smooth facings and consistent colour using a natural mortar – we propose a bucket handle pointing as opposed to the existing recessed method of pointing as the bucket handle joint is more robust and durable. We have proposed red coloured bricks as the purple / blue tones were extremely problematic to match. The existing buildings that are immediately adjacent use red toned brick – our approach with be cohesive within the context.



Figure 26 - LBT Brick & Facades – BLB41 Hadley Brindle Smooth



Figure 27 - Brick panel samples with Hadley Brindle Smooth and natural mortar

5.5 Zinc Cladding System

The proposed Zinc cladding system comprises the following A-rated individual components: -

- + Rockwool FLEXI insulation within the retained metal SFS frame.
- + RCM Y-WALL cement particle board.
- + Tenmat Cavity Barriers.
- + New zinc panels to replace the obscure glazed panels, colour to match the existing zinc panels.

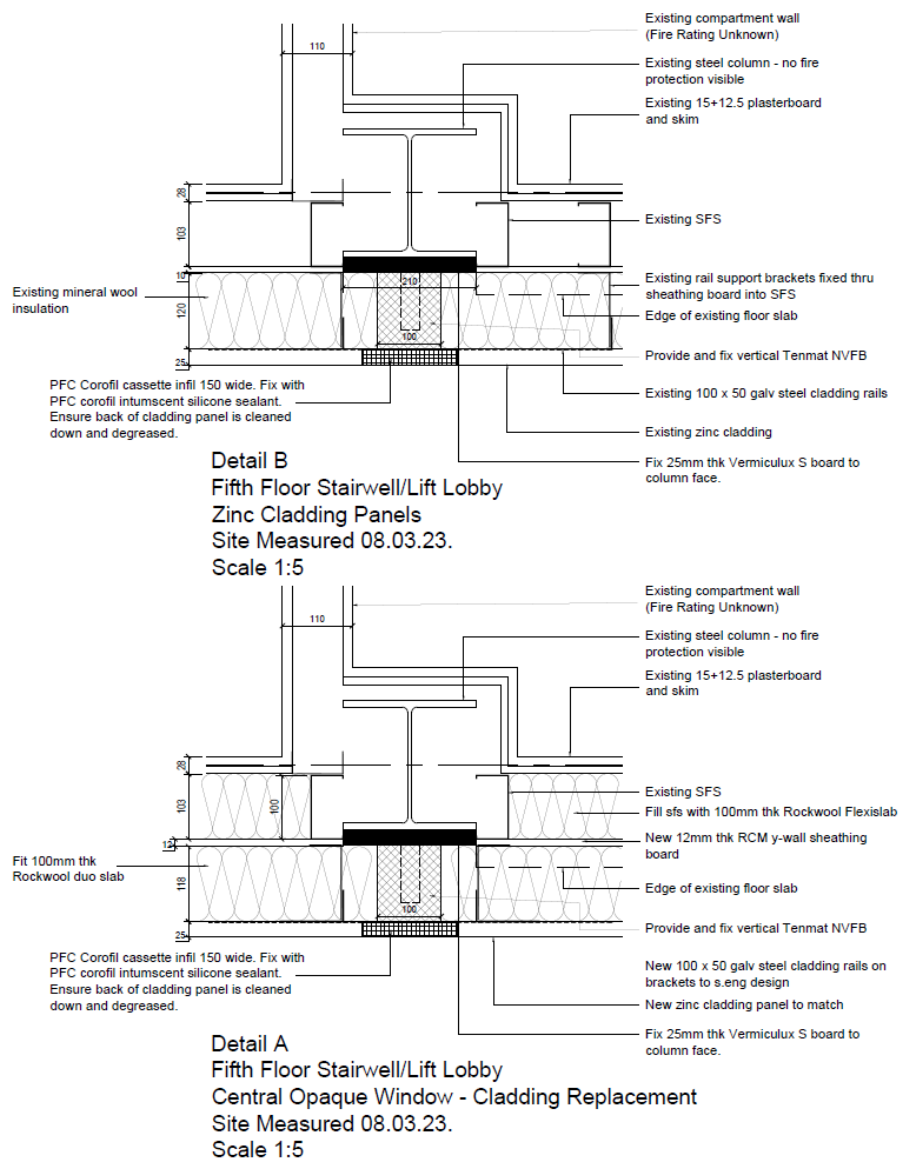


Figure 29 - Proposed Plan details



Figure 28 - New zinc panels to replace the glazed panels to match the existing zinc

5.6 Stone Cladding System

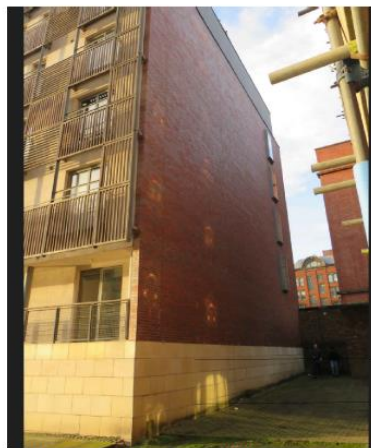
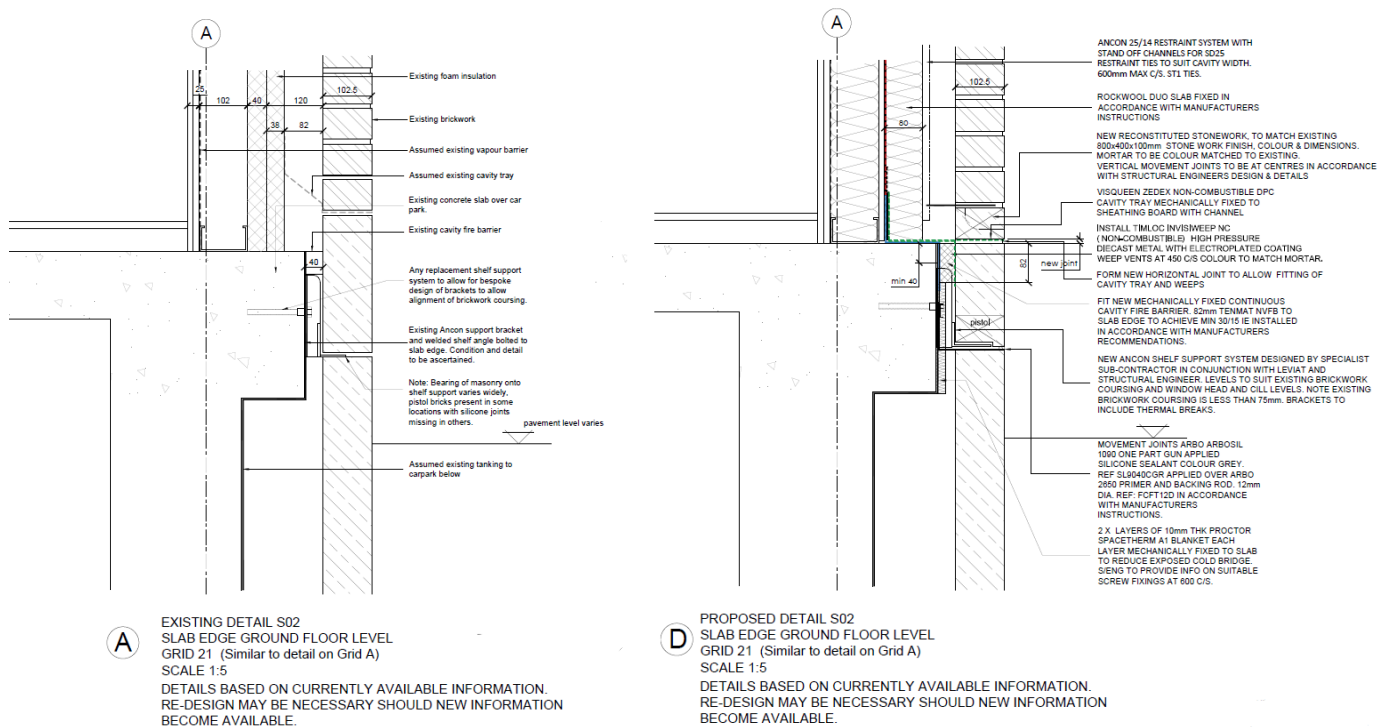
It is noted that the building incorporates an existing feature stonework plinth to the lower level to all elevations / wall system types. Although the system is not included to be replaced wholesale, its interface with the brick cladding system necessitates limited intervention.

- + The top course of stonework onto which the brick cladding sits bears on to the first shelf angle of the Ancon support system.
- + There is a breach in the horizontal compartmentation.
- + The concrete floor slab edge is currently uninsulated and is consequently a cold bridge which will create potential condensation and heat loss risks.

The following works will be carried out to remediate these issues - The top course of stone will need to be carefully removed, cleaned, and set aside for reuse to enable: -

- + The brick support system to be removed and replaced with a new system.
- + A horizontal fire barrier and ancillary components to be fitted to close the compartmentation breach.
- + Insulation installed to the slab edge.
- + Re-bedding of the existing salvaged stone to enable the new brick cladding to be installed.

It is the intention to re-use the existing stone. However should any of the stone be damaged during the works, it will be replaced with new stone of matching colour, type and section size.



GABLE ELEVATION STONE PLINTH

- 100mm thk ASHLAR TO BE RETAINED
- 50mm thk ASHLAR



BREWER STREET ELEVATION STONE PLINTH

T.O GROUND FLOOR SLAB AND PROPOSED POSITION OF HORIZONTAL OPEN STATE CAVITY BARRIER (CAR PARK BASEMENT BELOW)



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