

INTRUSIVE SURVEY

SITE DETAILS

Site Address: Queens Court, Reading RG1 7QF

Project description: Intrusive Survey

Scope of survey: Remove panels and coping and assess secondary support, insulation and cavity barriers

Client: Hines PLC

INTRODUCTION

This report has been prepared by Rachel Long, following a review of the external façades of Queen's Court. The property comprises of occupied student accommodation.

The visit took place on behalf of Hines PLC on March 19th 2019, as part of a pre-tender review before the proposed cladding remedial works to the high level façades of the property.

The purpose of the visit was to carry out a survey of the existing façade elements of the external cladding area at the 6th and 7th floor of the South elevation, which will represent an example of an area within the floors designated for replacement. The survey was aimed at evaluating the existing construction details and current condition of the façades.

The proposed works to the façades of the property involve the removal of the existing cladding panels fabricated from Aluminium Composite Material (ACM) and to reinstate with monolithic aluminium cladding panels. The works may also involve installation of new cavity barriers in front of compartment walls/floors, around openings and service penetrations; a review of the design of the panels and the secondary support system; replacement to the insulation layers and the secondary weather membranes at interface details as required.

The weather conditions on the survey day were light cloud.

SURVEY AREA

The survey was limited due to access and therefore only the area above the south elevation stairwell and coping above this area were observed. Please refer to Kovara as built drawing C3682-E039 between gridline C and B.

Panels removed A147, H103, H105, H107 and part H107 above. The coping removed was located on line of section D-D. The area surveyed was also limited due to the panels being fixed with rivets that were not accessible.

SITE OBSERVATIONS

PANELS



Photo of area prior to survey.



Panels removed A147, H103, H105, H107 and part H107 above.

The panels were observed to be ACM rainscreen panels with an approx. 30mm fold on the top edge and an aluminium angle sitting inside the bottom return. The panels H103 and H107 had a site made angle attached to either side.



Panels H108 and H105 could not be removed as they were fixed on the top edge with rivets that sat underneath the panels above so no further areas could be exposed. Fixings along the folds were of random centres between 400mm - 650mm. The fixings were consistently self coloured dome head screws with sealing washers and appeared to be stainless steel. Rivets were also used in places.

The panels did not have any additional strengthening or anti-drumming features.

It is understood that the new panels are proposed to be A1.

INSULATION

The existing external thermal insulation panels were observed to be 140mm Kooltherm K15 product by Kingspan.



The boards were observed to be installed with an insufficient number of fixings to secure the boards to the structure.



Where insulation anchors were present, there was one per board fixed with a plastic or nylon washer.

The insufficient fixings allowed the insulation to fall forward and the 40mm cavity was closed to approx. 25mm in places. See pictures below of the cavity with the insulation forward and then pushed back.



The insulation was originally taped to the carrier rails with silver foil tape but has subsequently come loose.

It is recommended all insulation is installed as per manufacturers recommendations with at least 1 stainless steel anchor and washer per 1m² for fire safety and to maintain the correct air flow the cavity.

If the insulation is to be replaced with rockwool then the u value would have to be calculated to ensure building regulation compliance. Kingspan K15 at 140mm has a u value of 0,18kw and 140mm Rainscreen Duo slab of

0,35kvw. It should be noted there is a significant cost difference between these two products and a specification should be agreed prior to commencement.

A minimum cavity depth of 25mm should also be observed throughout the rainscreen cavity including around heads and cills of the window openings and interface with copings and pressings.

SECONDARY SUPPORT SYSTEM

It was observed that;

Cavity depth was between 25mm and 40mm but we assume it was intended to be 40mm.

All fixings appeared to be stainless steel. Minimum edge distances for fixings had not been observed in many instances. No significant packing has been used.

It appeared the design allowed for adequate thermal expansion.

The panels edges did not always correspond with the carrier rails. The carrier rails had been extended with 2mm aluminum backing plates. The 2mm aluminum plate did not appear to be installed to negate deflection and may require an engineered solution.

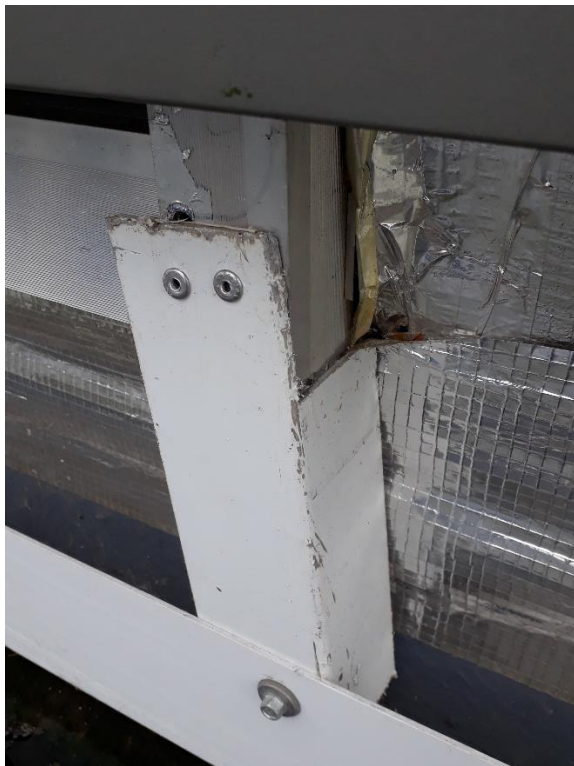


Carrier rails were 2.5-3mm aluminum fixed to 140mm helping brackets using 35mm hex head screws which appear to be stainless steel. The slotted retention bracket located at the lower portion of each panel appeared to be accurately located to ensure the panels were adequately retained. It was apparent that the carrier rails were fixed

at differing centres from 56cm to 64cm but we presume this is SFS structure. it is not evident whether the helping hands are fixed directly to the SFS structure.



The carrier rails had been extended to carry the bottom panels with various pieces of aluminum and a combination of rivets and hex head fixings.



It is recommended that all secondary support system and replacement panels are designed so they are adequately fixed to the structure.

Minimum edge distances for fixing should be observed and thermal expansion should be allowed for at a minimum of 1mm per 1 linear metre.

CAVITY BARRIERS

We were not in receipt of the as built before the survey morning and therefore had not reviewed the cavity barrier locations. The panels removed did not correspond to any cavity barriers locations and therefore we cannot comment on their installation, fixing or suitability.

It is recommended to establish if cavity barriers are present as indicated on the asbuilts. Cavity barriers should be installed as per manufacturers recommendations.

COPING & PRESSINGS

The coping removed was located on line of section D-D on drawing C3682-E039 above panels H100 & H101.



The copings appear to be 3mm aluminum faced fixed with dome head fixings with self seal washers which appeared to be stainless steel. They were installed on a continuous tray filled with rock wool over the roof membrane and on top of a 18mm plywood. The airgap appeared to be sufficient to allow air flow to ventilate the cavity as required. No insect mesh was present.

Numerous screws were raised from face of the coping. This could be due to thermal expansion, vibration or incorrect installation.

The pressings on the ring beams could not be accessed but it is believed they will be similar to the copings in material and fixing detail.

It is recommended that the coping be checked and designed to accommodate thermal expansion.

WEATHERING

The backing board was covered with a heavy breather membrane which we did not expose. Weathering to the coping and in and around the interface of the roof and walls looked robust with no signs of damage.

Neither the backing board or the membrane could be identified and therefore the fire rating could not be established.

It is recommended that the fire rating of the backing board and membranes are established.

CONCLUSIONS

The review of the existing façade elements at 7th floor of the South elevation was limited due to access. A number of likely remedial works were identified and will need to be considered with the proposed ACM replacement.

DISCLAIMER

This report applies only to the façade construction in the areas which were observed on the day of the visit.

The extent of this report is limited to the observations of the façade which may reasonably be made from the access provided by the Client or otherwise agreed to be provided by JPW Osprey under the Client's instruction.

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