

INDEPENDENT INSPECTION & REPORT

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STANDING SEAM ROOF

-at-

CHIPPING NORTON LEISURE CENTRE BURFORD ROAD CHIPPING NORTON OX7 5DY

Prepared By:

Report Date:

Report Ref

Guy Kilbey F.I.o.R

22nd December 2022

08/12/2022publicagroup





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STATEMENT OF TRUTH

I confirm that in so far as the facts stated in my report are within my own knowledge, I have made clear which they are and I believe them to be true, and that opinions I have expressed represent my true and complete professional opinion.

Guy tilles

22/12/2020

1.0 INSTRUCTION

I have been instructed via email dated 3rd November 2022 from Mr A. Dike of Publica Group to undertake an inspection of the aluminium standing seam roof in accordance with our fee proposal dated 31st October 2022.

2.0 INFORMATION

- 2.1 Prior to my site inspection I have been provided with the following information
 - Bickerdike Allen Partners report dated 17th September 209
 - Bickerdike Allen Partners Draft Outline Scope of Works dated 7th March 2011
 - Bickerdike Allen Partners Roof Investigation Report dated 31st May 2012

3.0 SITE INSPECTION

- 3.1 The site inspection commenced at 10.00 am on Thursday 8th December 2022.
- 3.2 At the time of the inspection the weather was sunny with an ambient temperature of 0° C
- 3.3 Access to the roof was via designated access routes onto the roof and access ways installed onto the roof for maintenance purposes.
- 3.4 In attendance during the inspection were 3 operatives from SPV projects whom were in attendance to open up areas of the roof to be inspected.



4.0 **OBSERVATIONS**

4.1 Long term water ingress was reported to me by the centre mangers as occurring in the areas highlighted on the image below.



- 4.2 The roof has been weathered using an insulated aluminium standing seam system roof manufactured by KeyBEMO.
- 4.3 Where checked we were able to identify the presence of a vapour control layer, although we were unable to inspect the sealing of VCL end and side laps.



BEMO vapour control layer in place, but I could not inspect the sealing of end and side laps

4.2 On the underside of the aluminium roof sheets we identified the presence of condensation which at the time of my inspection was frozen. It's not unusual to find an element of condensation on the underside of metal roofs but this ordinarily vents out through seams etc, however in this case the quantity of moisture did appear quite high, although this may be due to the current exceptionally cold weather conditions.



Condensation build up on underside of aluminium roof sheets

4.3 When the insulation was moved away in the areas where the roof was opened up there was evidence of water staining on the VCL



Water staining on VCL surface









Water staining on VCL



Water staining on VCL where it turns up at the roof lights

- 4.4 Where checked the aluminium roof sheets have been turned up at the head of the roof sheet to prevent rainwater from being driven over the end of the roof sheet by wind pressure and turned down at the eaves to aid the draining of rainwater from the eaves of the roof sheet.
- 4.5 The detailing of the drip flashings around the roof light has been poorly executed resulting in the flashing having a back fall on it allowing water to sit against the vertical upstand section of the flashing. Due to poor sealing of the flashing water can track through the butt joints in the flashing, where checked the mastic seals used to seal the butt joint had failed providing a ready route for water to drain into the roof build-up and onto the VCL



Back fall to roof light flashings will allow water to sit on the flashing rather than drain off it



Water staining on flashing shows how the water sits along the back edge of the flashing



Where water pools over a flashing butt joint, if the seal is not 100% as in this case water will drain in tothe roof build up



Butt joint completely failed when this was opened up the insulation was wet and staining on the VCL was visible



Further evidence of failed but joints in the drip flashings to the roof lights

Ditto last



Ditto last

4.6 It was noted that there is water staining arising from a possible leaking gutter along the top of the wall to the sports hall area. Water from the gutter appears to be draining down the wall. The lead flashing directly below has not been correctly sealed leaving a possible route for water to enter the cavity wall below the level of the cavity tray, from where it could manifest as a leak int the building.



Water draining down wall from upper roof gutter, some of which could be entering the cavity at the head of the louver screen whilst the remainder drains down the louver and onto the wall below



The water drains down onto the dpc and lead flashing



When the joint between the lead flashing and the DPC was probed it was possible to slide the probe into the cavity wall which will also be a possible water track into the cavity wall at a level below the DPC which could manifest as a leak in the building

Water staining could be seen on the top edge of the lead flashing where it is turned into the brickwork indicating the presence of moisture

4.7 Where capping's were removed it can be confirmed that a dpc has been installed, however it is of insufficient width to protect the underlying cavity is allowing any water that gets onto it to drain into the cavity rather than draining to the outside. There was also evidence of not only fresh deposits of water in the cavity but also water staining.



Water was present on top of the cladding rails.

Ditto

Ditto

- 4.8 A vent on the roof was found to have been dislodged leaving a large, unweathered hole in the roof, although I don't believe this had been like this for any real length of time. However, what was interesting was to see the amount of water staining on the plywood boarding used to support the vent which would suggest that water has been getting into the vent detail for some time.
- 4.9 The joint between the plastic vent cowl and the aluminium was probed, the probe could be pushed all the way into the joint suggesting there is no seal, or the seal has now broken down.Water entering vis these vent details will drain onto the VCL below and naturally drain down the roof slope towards the eaves/gutter line



Note water staining to fixing bracket



Water staining to plywood support under aluminium vent cap

The joint between plastic vent and aluminium vent cap is not effectively sealed



The joint between plastic vent and aluminium vent cap is not effectively sealed 4.10 At the time of my inspection the gutters were clear of any debris and I assume they had recently been cleaned out with no reports of the gutters being over whelmed, even during the recent heavy rains experienced in October/November of this year

5.0 CONCLUSIONS

- 5.01 Within the roof areas inspected we did identify areas along the eaves of the roof sheets where foot traffic had caused a dishing of the roof sheets which pan and has created a back fall at the eaves. Whilst this is allowing water to pond at the eaves, I am not of the opinion that this is leading to water ingress problems being experienced on the roof as the ends of the sheets has been bent down and a drip edge has also been installed under the sheet creating a water check/drip directing any water that was to track back under the roof sheet into the gutter.
- 5.02 Where checked we did not identify any failings in the roof sheets i.e. splits in the aluminium sheets due to insufficient allowance for thermal movement which could be likely to lead to the water ingress being experienced into the building.
- 5.03 Therefore in my opinion where checked I am not of the opinion the leaks being experienced are due to failings in the actual roof sheeting itself but more likely due to poor execution of the detailing around the roof perimeter, interfaces and penetrations through the roof. and therefore, I don't believe replacement of the roof in its entirety is a necessary course of action in the short to medium term.
- 5.04 Opening up of the roof has identified water staining on the VCL. This could come from water entering at the roof lights via the poor flashing detail and or the vent caps. There is some evidence of condensation on the underside of the aluminium roof sheets. However, at this time of year with current ambient temperatures it is not surprising to find condensation drips on the underside of the aluminium and I suspect this seasonal rather than being a defect in the roof's construction, also the insulation didn't show any indication of constant wetting from moisture dripping onto it from above.

- 5.05 The drip flashing along the length of the roof light has been installed with a back fall allowing water to pool along the back edge of the flashing. Where the butt joints have failed water will drain into two areas, either on to the VCL and drain down to the roof eaves leading to some of the mould and water ingress in the reception area, and staff rooms. The other area water from entering the building via the drip flashing to the roof lights is the corridor are immediately below the roof light.
- 5.06 Water ingress into the corridor could also be contributed to by the incorrect detailing of the cavity tray and lead flashing exacerbated by the poor detailing of the capping to the sports hall roof which is allowing water to drain down the wall directly above the lead flashing detail.
- 5.05 Another contributing cause of the mould in the reception area and staff room is leaks arising from the poorly sealed vent caps allow water into the roof build up.
- 5.06 Water ingress via the poor detailing of the metal capping's and associated dpm/dpc below the capping's which appears to be allowing water to drain into the parapet wall build up, from where it could access the roof build-up adding further to water ingress being experienced in the reception area and also the gymnasium.

6.0 **RECOMMENDATIONS**

Short to Long term works

Aluminium Capping's Qty 1 Carefully remove existing aluminium capping's and dispose of from 72m site to the areas highlighted below 2 Cap off the existing cavity to parapet wall with 18mm marine grade 72m plywood allow for associated packings and timber bearers as necessary 3 Overlay marine plywood with foiled faced reinforced self-adhesive 72m bitumen membrane and dress onto external faces of parapet wall N.E 50mm 4 Supply and fit new once weathered Ali-fabs Architectural copping 72m system including all requisite concealed fixing straps and double jointing bracket complete with EPDM rubber seal, colour to be

system including all requisite concealed fixing straps and double jointing bracket complete with EPDM rubber seal, colour to be confirmed. Allow for all corners, upstands and stop ends tee junctions etc to be factory manufactured and **NOT** site fabricated. Allow for weathering new capping to existing and also weathering to brickwork



Total

£p

Lead Flashing to Rooflights

- 5 Carefully remove existing lead cover flashings weathering the roof lights to the brickwork and dispose of from site to the areas highlighted below
- 6 Carefully rebate the brick and below the dpc to create a chase 8mm chase immediately below the dpc, the new chase should be cut a minimum of 25mm into the brickwork creating a chase 8mm wide x 25mm deep.
- 7 Supply and fit new 150mm code 4 lead cover flashing in lengths N.E 46m 1500mm with a minimum of 100mm laps between pieces of lead. The new flashings should be dressed a minimum of 25mm into the newly created chase and wedged into position using lead wedges positioned at centres N.E 450mm.



8 Point lead flashing into chase using lead sealing mastic and make good 46m to any disturbed pointing above the existing dpc.



Total

£p

46m

Qty

46m

| | Aluminium Cover Flashing to Rooflights | Qty |
|----|--|-----|
| 9 | Carefully open butt joints to cover flashings weathering the roof lights to the roof and clean residual sealant off the butt straps and drip flashings and make ready to receive new butyl sealing strips. | 57m |
| 10 | Apply new butyl sealing strips to both sides of joint and re-rivet drip flashing. | 57m |
| 11 | Apply a reinforced liquid coating bandage (Triflex Pro-detail or equally approved) to the full girth of the drip flashing and 300mm wide (150mm either side of butt joint) | 57m |



Total

£p

Sports Hall Gutters

12 Clean out eaves gutters to sports hall roof and prepare gutter for relining using a reinforced liquid coating (Triflex Pro-detail or equally approved) to full length of both runs of eaves gutters



Total

Qty

72m

22

Ventilation caps

- 13 Carefully disconnect ventilation ducts from ventilation cowls and remove existing ventilation caps complete and dispose of from site.
- 14 Supply and fix with new vent caps and cowls ensuring the cowls are fully sealed to the metal caps. Allow for re-connecting ventilation duct once installed.

20 (prov qty)

Qty

20 (prov qty)



| | Sundry Items | Qty | £p |
|----|---|----------|-----------|
| 15 | Allow a provisional sum of for attending to other items that may come to light during these works | Prov Sum | 10,000.00 |