

The Garland Company UK, Ltd.

Roof Asset Management Programme



CLB Building

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Prepared For
Project Team

Table of Contents

Central Lecture Block / Facility Summary 3

Central Lecture Block / All Flat Roofs / Construction Details 4

Central Lecture Block / All Flat Roofs / Inspection: Feb 10, 2020 5



Facility Summary

Client: Brunel University

Facility: Central Lecture Block



Facility Data	
Address 1	Brunel University
Address 2	Kingston Lane
City	Uxbridge
County	London
Postal	UB8 3PH
Type of Facility	Higher Education
Square Meters	3,145

Asset Information			
Name	Date Installed	Square Meters	Roof Access
All Flat Roofs	Unknown	3,145	Via Tankhouse



Construction Details

Client: Brunel University

Facility: Central Lecture Block

Roof Section: All Flat Roofs

Information			
Year Installed	Unknown	Square Meters	3,145
Slope Dimension	Some Falls	Eave Height	4 Story
Roof Access	Via Tankhouse	System Type	Mastic Asphalt



Inspection Report

Client: Brunel University

Facility: Central Lecture Block

Report Date: 10/02/2020

Roof Section: All Flat Roofs

Inspection Information

Inspection Date	10/02/2020	Core Data	Yes
Inspection Type	Core Analysis	Leakage	Yes
Deck Conditions	Fair		

Flashing Conditions

Perimeter	Poor	Wall	Poor
Projections	Poor	Counterflashing	N/A

Miscellaneous Details

Brick Chases	N/A	Debris	Yes
Control Expansion Joints	N/A	Ponding Water	Minor
Parapet Wall	Poor	Coping Joints	N/A

Overall

Rating	Poor
Condition	The approximate area of the combined roof sections is 3,145 metres. This is made up of the higher and lower level roofs, as follows; Higher level roofs: 2057 Lower level roofs: 1088 Core samples were taken to establish the current build up and condition of the existing waterproofing system. Following these core sample,s taken in various areas, the following build up was found to be present throughout. Concrete deck 25mm mastic asphalt bituminous adhesion 2 layers of torch on membrane. There was water between the asphalt and the membranes in various areas. The perimeters of the roof consist of concrete wall upstands, low parapet walls (to the

lower areas) perimeter check details and areas with a level perimeter, with no check and no external gutter.

All of the wall upstand details are to concrete walls. The overlay felt has been installed up the walls, and in every details have been terminated with a narrow aluminium mechanically fixed termination bar, with the top joint sealed with mastic. The width of the aluminium bar gives no protection at all to the top joint of the felt, and the mastic seals are starting to fail in some areas. There are areas of the perimeter detail where water has got behind the termination bar and has caused water to enter the system. It is inevitable that as time progressed, the top joints will fail more and more water will enter the system, leading to ingress into the building below.

The perimeter parapet details also have the same aluminium termination bars used, both at the vertical upstands, and, in some areas, mechanically fixed in the horizontal plane. The vertical details are exactly the same as the wall upstand details, and are in the same condition, but the horizontal detail has numerous mechanical fixings penetrating the felt, and, inevitably, has lead to some water entering the system at these penetrations.

The check details, and all of the level details, have the same horizontally installed aluminium bar, with mechanical fixings, which is contrary to any good roofing practice.

Overall, due to the method and condition of the mechanical fixings, and the thin aluminium bar employed, together with the water entering the system in some areas of the upstands, the perimeter details are considered to be in poor condition.

The field of the roof, on first visual inspection, appears to be in fair condition, with the 2 layer overlay appearing to have been quite well installed and probably under 10 years old. On closer inspection, however, it is clear that there are areas of the roof with water trapped within the system, most prevalently within the internal gutter details, where there is evidence of trapped water.

There are also some areas where paint on repairs have been installed, suggesting that there may have been ingress issues in the past, as well as some ruckling to the membrane.

Overall, due to the trapped water and the few areas of ruckling, the field of the roof is considered to be in poor condition.

The roof drains to internal gutters and internal outlets, both within the gutters and also independent of them.

There are some areas where there is evidence of ponded water, but this appears to be quite minor, and can be improved with the introduction of insulation and sumped outlets.

Overall, despite the evidence of standing water, the drainage of the roof is considered to be fair.

There is considerable plant on the roof, mainly on the higher level main roof area. The plant is a mixture of A/C units sited directly on the roof and larger items, such as vents and large trunking of extracts. The larger items of plant appear to be old and many items are in very poor condition. It is suggested that a full audit of the plant is undertaken, to assess which items are in use and which items are redundant. Measures should also be taken to adapt, or replace, items of plant which are sited directly on the roof and those that penetrate the roof.

Other penetrations on the roof consist of soil/vent pipes and brick built vents, possibly original vents for the concrete deck, and miscellaneous pipes.

The soil/vent pipes have been wrapped, incorrectly, with the overlay felt. It is therefore impossible to comment on the condition of the original pipes, but it is recommended that new telescopic refurbishment units are installed during potential roofing works, to ensure that the pipes do not present a weakness in the new system.

The brick built vents appear to be redundant, and it is recommended that these are removed during roofing works, to remove this potential weakness.

Overall, due to the poor perimeter details and the water present in the existing system, together with the ingress experienced over the past 2 or 3 years, the roof of the CLB building is considered to be in poor condition. It is recommended that it is renewed within a full renewal specification.



Photo 1

Image giving an overview of the higher roof section.



Photo 2

Image showing a central gutter, which has water between the layers of felt.



Photo 3

Image showing one of the curved side roof areas.



Photo 4

Image giving a closer view of the end detail.



Photo 5

Image showing the very poor termination at the wall upstand detail, with a mechanically fixed thin aluminium bar used at all details.



Photo 6

Further image showing a wall upstand detail, with an internal outlet with a paint on repair also shown.



Photo 7

Image showing a small side area to the higher level roof area.



Photo 8

Image showing an area of the higher roof which leads to stairs and an access door.



Photo 9

Image showing one of the small side roof sections, with no upstand heights at the perimeters.



Photo 10

Image showing one of the large vent units on the roof, with some small A/C units adjacent. All plant will need raising or setting aside during proposed roofing works.



Photo 11

Image showing a smaller vent unit, which will also require adaption, or removal during proposed roofing works.



Photo 12

Image showing another of the large vents. The lower element of the metal units is rusted through.



Photo 13

Image showing the very low threshold. Once insulation is introduced, this will be below roof level.



Photo 14

Image showing large trunking which will also require adapting to accommodate the new roof, and associated heights.



Photo 15

Further image showing the large trunking.



Photo 16

Image showing a large item of plant, which will require removal to facilitate roofing works.

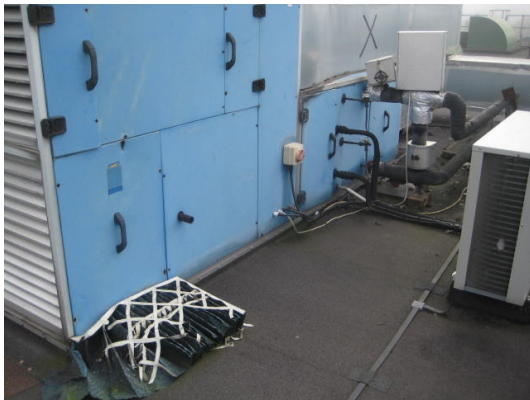


Photo 17

Further image showing the plant.



Photo 18

Image showing a low front detail to a glass mono pitch roof light.



Photo 19

Image showing the rear elevation of the mono pitch roof light.



Photo 20

Image showing an adjacent internal outlet, which will enable a gutter to be introduced.



Photo 21

Image showing a temporary repair to a troublesome outlet adjacent to the mono pitch roof light. There has been significant ingress beneath this area.



Photo 22

Further image showing the paint on repair.



Photo 23

Image showing one of a number of brick built vents on the roof areas.



Photo 24

Image showing the brick vent with the concrete paver removed, revealing a simple void. The brick built vents can therefore be removed from the roof.



Photo 25

Image showing a pipe penetration on the roof, which will need alteration, or renewal to facilitate roofing works.



Photo 26

Image showing a low laying door threshold, which will require raising during proposed roof works.



Photo 27

Image showing a set of stairs, which will require adapting during potential roofing works.



Photo 28

Image showing one of the lower level roof sections.



Photo 29

Image showing an internal gutter, adjacent to a wall upstand detail, with an internal outlet present. There is significant water held within the system in this area, and to a number of the internal gutters.

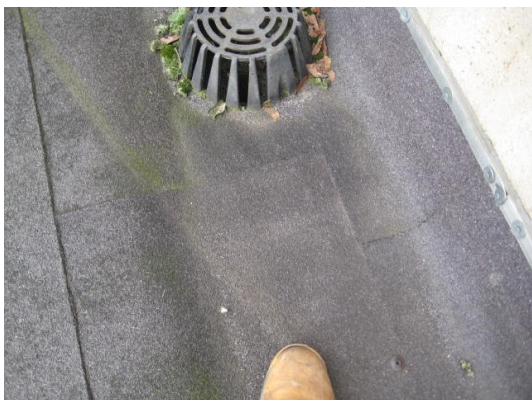


Photo 30

Image showing pressure being put on the water held within the system.



Photo 31

Further image showing the extent of the water held within the system.



Photo 32

Image showing water exiting the system at an upstand detail.



Photo 33

Image showing a poor area of detailing, adjacent to a a metal clad additional structure.



Photo 34

Image showing an area of patch repair to the perimeter check detail.



Photo 35

Image showing the perimeter detail, with the membrane mechanically fixed with an aluminium bar, as used at all wall upstand details.



Photo 36

Image showing a broken section of the aluminium bar. Water can now get behind the membrane.



Photo 37

Image showing soil/vent pipes, wrapped with felt. This is very poor detailing and all pipes should have telescopic units installed.



Photo 38

Image showing the 2 layer overlay membranes removed, exposing the asphalt beneath.



Photo 39

Image showing the core cut to the concrete deck.



Photo 40

Image showing another core cut on the roof, with the same build up as the rest of the roof sections.



Photo 41

All cores are sealed with torch on membrane, to ensure continued waterproofing integrity.