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Report

Ingenium Building, Grey Court School, Ham
Street, Richmond

Inspection carried out 23 November 2021



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The Governors of Grey Court School
Ham Street
Ham
Richmond
Surrey
TW10 7HN

Re: Ingenium Building, Grey Court School, Ham Street, Richmond

Further to your instructions, we report as follows:

Client:	The Governors of Grey Court School
Weather:	Cold / fine
Date of survey:	23 November 2021
Orientation:	The front elevation faces west

General description

The Ingenium building is a 1990s plastic-shelled pod style unit with a suspended timber floor that appears to be constructed on an aluminium frame. There are no windows other than the glazed entrance wall and circular rooflights.

Limitations of the survey & report

The report is based on the findings of an inspection made from ground level, floor level and other readily accessible positions. Unless otherwise stated, the inspection has not included woodwork or other parts of the structure which are covered, unexposed or inaccessible and we are therefore unable to report that any such part of the property is free from defect. Furthermore, we must stress that we have not carried out any investigation to determine whether High Alumina Cement was used during the construction of the building inspected and we are therefore unable to report that the building is free from risk in this respect. In view of the possible potential danger connected with High Alumina Cement we strongly recommend that the appropriate investigations, inspections and tests be carried out immediately by a suitable qualified specialist, should it be appropriate.

Particular items not inspected or covered by this report (unless otherwise stated in the report):

- a) Inaccessible roof voids or inaccessible lofts.
- b) Voids between or below suspended floors.
- c) Flues or ducts.
- d) Only sample timbers inspected.
- e) Drains not tested.
- f) Panelling not removed.
- g) Fittings not removed.
- h) Furniture not removed.
- i) Floor coverings not lifted.
- j) Parts of the building hidden or obstructed by storage.
- k) Floorboards not lifted.
- l) Heating installation not tested.
- m) Electrical installation not tested.

Generally

This report has been requested further to severe leaking of rainwater and partial collapse of the timber suspended floor towards the rear of the unit, and no other areas of the property have been examined or reported upon.



Observations

The pod is an interesting and contemporary idea, but flawed in its design as a working building. It is understood that there are only two of these units in existence, and that the twin unit nearby has been relegated to a storage unit due to similar dilapidation.

The external plastic shell concept has no management for rainwater, and therefore it is clear that this is the root of most of the noted issues.

Rain falls onto the shell, which then runs down the sides. As the surface is smooth, the surface water will not drip off, but remain on the surface as it runs beneath the waist, and only drip away when it reaches the aluminium floor sub-frame. This causes all the water that falls upon the shell to be directed to the perimeter of the floor structure, causing eventual erosion of the ground around the perimeter of the base, and water ingress by soaking into the timber floor structure, causing rot.

Now that the ground is subsiding around the perimeter, the shell is stretching as it pulls apart at the welded seams, and breaking its back over the non-eroded ground at the centre of the floor space.
(ref drawing 5823 01)

The shell being plastic or fibreglass, there is no possible accommodation for tension in the skin, and so the plastic welded seams of the shell are simply pulled apart. The distortion to the shell also causes the rooflight inserts to no longer fit the apertures, and therefore the rooflights now leak. The distortion across the width of the glazed entrance doors is easily visible at the door cill, and I understand that one glass panel imploded due to compression of the shell structure onto a glazed unit.

Internally, it can now be seen that the lining panels no longer fit the interior shape of the pod correctly, and much of the shell externally has been duct-taped in an attempt to hold the shell together at the positions of the opening welded seams.

The rainwater now entering the outer shell now falls upon the internal panels and leaks onto shelves and equipment through the panel joints.

The support above the front glazed entrance displays sagging, indication of an inadequate internal framework, and the interior perimeter walls lean outwards, although it is impossible at this juncture to know whether this is movement, or as the original design intended.

This is a Building Regulation drawing only and not to be used for construction. It is the responsibility of the client to ensure that Party Wall Act matters have been attended to. All dimensions to be verified on site prior to any shop or site works being commenced. Any discrepancies to be reported to the Architect before any work is put in hand. Do not scale from this drawing. This drawing is to be read in conjunction with all relevant consultants and specialists drawings and details. The Structural Engineers drawings are for the purposes of locating structural members and details to the scheme and in no way should be used for the setting out, or reference to, the general layout of the scheme. Setting out of the overall project must be made to the Architects current drawings and details. Member sizes are the minimum to be used, but sizes may be increased if required for insulation depth, etc. GDPR: No projects calculations or drawings or client details will be released by us to anyone other than the client, unless given written instruction for distribution. All steelwork to be carried out by CE registered fabricator to EXC Class 2

Ingenium Building
 Grey Court School
 Ham Street
 Richmond

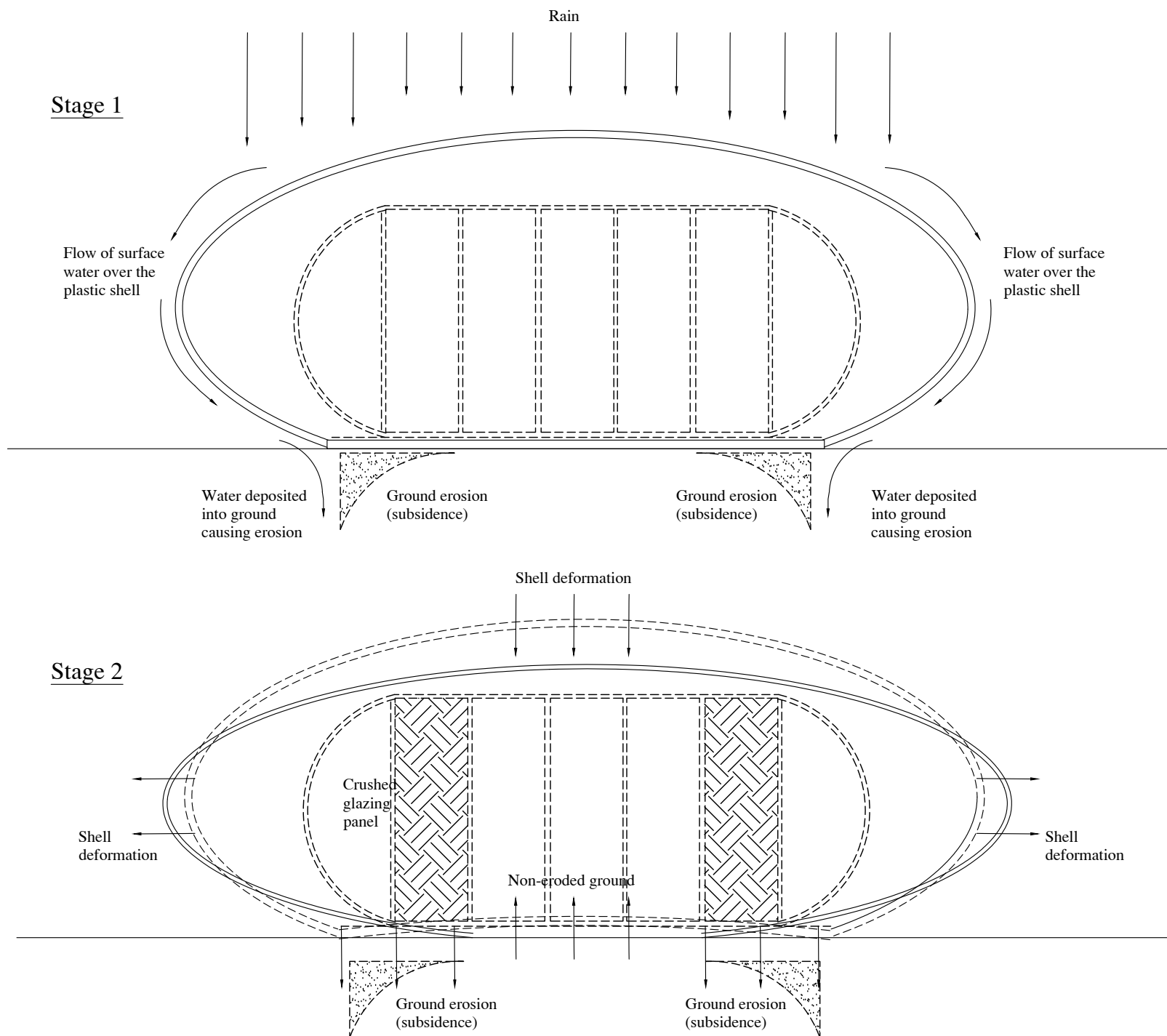
Cause of dilapidation

A4:1:50 November 2021 RIDS



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5823 01





Ill-fitting internal wall lining panels due to overall distortion of the shell



Water damaged shelving at the rear of the Ingenium Pod

Repair

In order to repair the Ingenium Pod, it would be necessary to dismantle it and firstly address the foundation. In order to make the foundation immune from deposited ground water around the perimeter, it would be necessary to provide a reinforced concrete raft slab suspended on a piled foundation, taking support from the ground beneath the level that could suffer the effects of erosion from the lack of rainwater management in the Pod design.

The internal structure of the Pod is currently unknown, but it is likely that examination of the internal frame will result in re-engineering the shell framework being necessary to some degree. Thereafter, and with the Pod framework reinstated upon a new raft slab, the exterior shell could be replaced, and either seam-welded in the original manner, or re-skinned, possibly by a specialist willing to undertake the project, which would likely be a yacht-builder.

It is very unlikely that the work could be accurately costed, and extremely unlikely that any warranty could be offered. The future maintenance requirements and longevity of the refurbished structure would also remain an unknown quantity.

The Pod is somewhat unique and I believe to be a valuable architectural curiosity, but unsuited to use by a school for safe, secure and reliable classroom accommodation for everyday teaching purposes. Therefore, I cannot recommend that unknown sums of money be invested into rebuilding this structure, though I do believe it has a value and could possibly be sold if the right buyer could be found.

In my opinion, replacement of the Pod with a conventional new teaching classroom would be a far more pragmatic use of funds, and provide better functionality, albeit less interesting and architecturally unique.

A handwritten signature in black ink, consisting of a large, stylized 'R' followed by a long horizontal line.

Robert I D Struthers I Eng., AMI Struct E
RID Struthers Limited Structural Engineers