Structural Report

on

The Roof Structure at

84-86 Abbey Road, London

for

London Borough of Camden

9772
June 2009

Project No:	9772
Project:	84-86 Abbey Road, London
Client:	London Borough of Camden

1.0 Introduction and Brief

1.1 Tully De'Ath in association with Baily Garner were instructed by the Client, London Borough of Camden, to undertake a structural survey of Community Centre, 84–86 Abbey road, London.

This report was commissioned to comment on the structure of the roof slab and comment on its capacity to take the weight of a green roof on the existing flat slab.

1.2 We limit our advice solely to the above noted aspects. This report does not purport to be a full structural survey of the entire property, nor does it deal with those items normally associated with a building surveyors report, such as services, roof coverings, dry rot, timber infestation, dampness etc.

1.3 This report has been based on inspection of the property undertaken on 21st May 2009 and a desk study of archived architect's drawings. Assumptions have been made comparing British codes relevant at the time of the building's construction (1979) and those relevant at the time of survey. Only those areas of the property which were visible have been inspected and commented upon.

Some areas were inaccessible, such as the waffle slab and some parts of roof, and we are therefore unable to report that any such part of the property is free from defect. No intrusive survey has been done; no trial pits were dug during our inspection, nor were any tests carried out on the materials used in the construction of the building.

Archive Architectural drawings used for the study:

- (90)10 Revision D – Axonometric View 2
- (20)02 Revision E – ¼ Plan – 1
- (20)07 Revision E – Sections

We are unaware of the status of these drawings but they are the only drawn information available to us.

British codes used for study:

- CP3: Chapter V: Part 1: 1967 Loading
- CP110: Part 1: 1972 The structural use of concrete
- BS 6399-1: 1996 Loading for building
- BS 8110-1: 1997 Structural use of concrete

The report should be read in conjunction with the drawing produced in Appendix A.

1.4	**Client:**	London Borough of Camden
1.5	**Survey By:**	Rikesh Shah MEng. Sandra Butkute BEng
1.6	**Checked By:**	Neil Mortimer BSc CEng MICE
1.7	**Weather:**	Dry, warm, sunny
1.8	**Scope of Inspection:**	To undertake a structural survey of the existing roof slab and evaluate whether a green roof could be constructed on top of the existing flat roof.

2.0 General Description

2.1 The Property

The property is a substantial one storey building with an activity room, a workshop and an office.

The roof is flat with different levels throughout. Some parts of the roof are inaccessible but most of the roof could be accessed with existing stairs.

2.2 The Site

The site is generally sloping with a retaining wall to the north east side of the building.

The building is situated on Abbey Road and has what is believed to be residential properties on three sides and a playground on the north east side.

2.3 Geology

A Site Investigation has not been carried out and therefore the geology of the surrounding area is unknown. The foundations are likely to be formed from a mixture of loadbearing slab, strip footings and pad footings and due to its age, the building is likely to have fully settled under its current use and loading. This assumption is made without the aid of a Site Investigation and the likely impact of changing the use and loading may impact on the future behaviour of the founding material.

3.0 Observations

3.1 Roof

The current roof has different levels throughout. Drawing SK01 indicates the boundaries of changes in levels. Planting Roofs – 1, 2 and 3 have no easy access but all other roofs referenced as Terraces have easy access from RC stairs.

Measurements taken from site coincide with archived architectural drawings therefore the assumption is made that structural element thickness can be taken from the archive drawings. Slab thicknesses are shown on SK01 and beam, wall and column thicknesses are shown on SK02.

The archived Architectural drawings indicate that some parts of the roof were to be covered with planting, but the current roof in these areas has a tiled surface.

Terrace gully (picture 3) gives an indication of screed thickness which appears to be 100mm thick. This assumption is proven on the north east of the building where the screed thickness is exposed (picture 4).

The planting roof areas have no access and no indication of what thickness of screed has been used. Taking into account that slab thickness on the planting roofs is smaller than on the Terrace roofs, the screed thickness is assumed to be 75 mm.

4.0 Discussion and Conclusion

4.1 General

The following discussion and conclusions are based simply on the record drawings and site observations without the benefit of intrusive testing. As such the following recommendations give the additional loads we are able to prove given the current level of information.

If these are not sufficient then intrusive investigation would be required to confirm concrete strengths and reinforcement quantities which may, but there is no guarantee, add to our information and allow us to refine our current calculations.

For the purposes of our report, we have broken the roof down into two sections.

4.2 Planting Roof

Based on archived architects drawings this roof was meant to be used for planting it could therefore be assumed that this part of the roof is capable of carrying more than its minimum design weight. However, there is no record of any allowance within the calculations. If the intention was to have planted bays and it was designed for these then these parts of the roof should be able to carry approximately 5.4 kN/m^2, but this would need to be proven either by record engineer's drawings or by intrusive survey.

The slabs of this roof have small spans therefore there is limited risk of overloading them, but the concern would be about the beams that the slab spans onto. Therefore we have carried out an analysis on the adjacent beams.

Analysis has been done to beam 1 (see drawing SK02 for reference) and it proved that the planting roofs 2 and 3 are capable of carrying a load of 4 kN/m^2 but this assumes that no access is possible other than for maintenance and repairs.

The result from the beam 3 analysis shows that assuming it has minimum reinforcement, there is no spare capacity in the beam, therefore our recommendation for Planting Roof 1 would be to remove current finishes (75mm screed) and replace with tanking and a green roof which does not exceed removed finishes weight which will be 1.95 kN/m^2 ($195Kg/m^2$). This assumes access is restricted to maintenance only.

4.3 Terrace Roof

Analysis of the beams supporting the terrace slab indicated that assuming minimum reinforcement, i.e. the worst assumption, there is no capacity for additional loading on this roof therefore the options are:

- If terrace roof retains it function and remains accessible then our recommendation is to remove finishes (100 mm screed and paving slab) and install a tanking system and a green roof which does not exceed removed finish weight which will be 2.4 kN/m^2 ($240Kg/m^2$).

- If the terrace is restricted to maintenance access only then the allowable weight will be 3.2 kN/m^2 (320Kg/m^2).
- If the terrace is restricted to maintenance and access only and in addition finishes (100 mm screed and paving slab) is removed then the allowable additional weight would be 5.6kN/m^2 (560Kg/m^2).

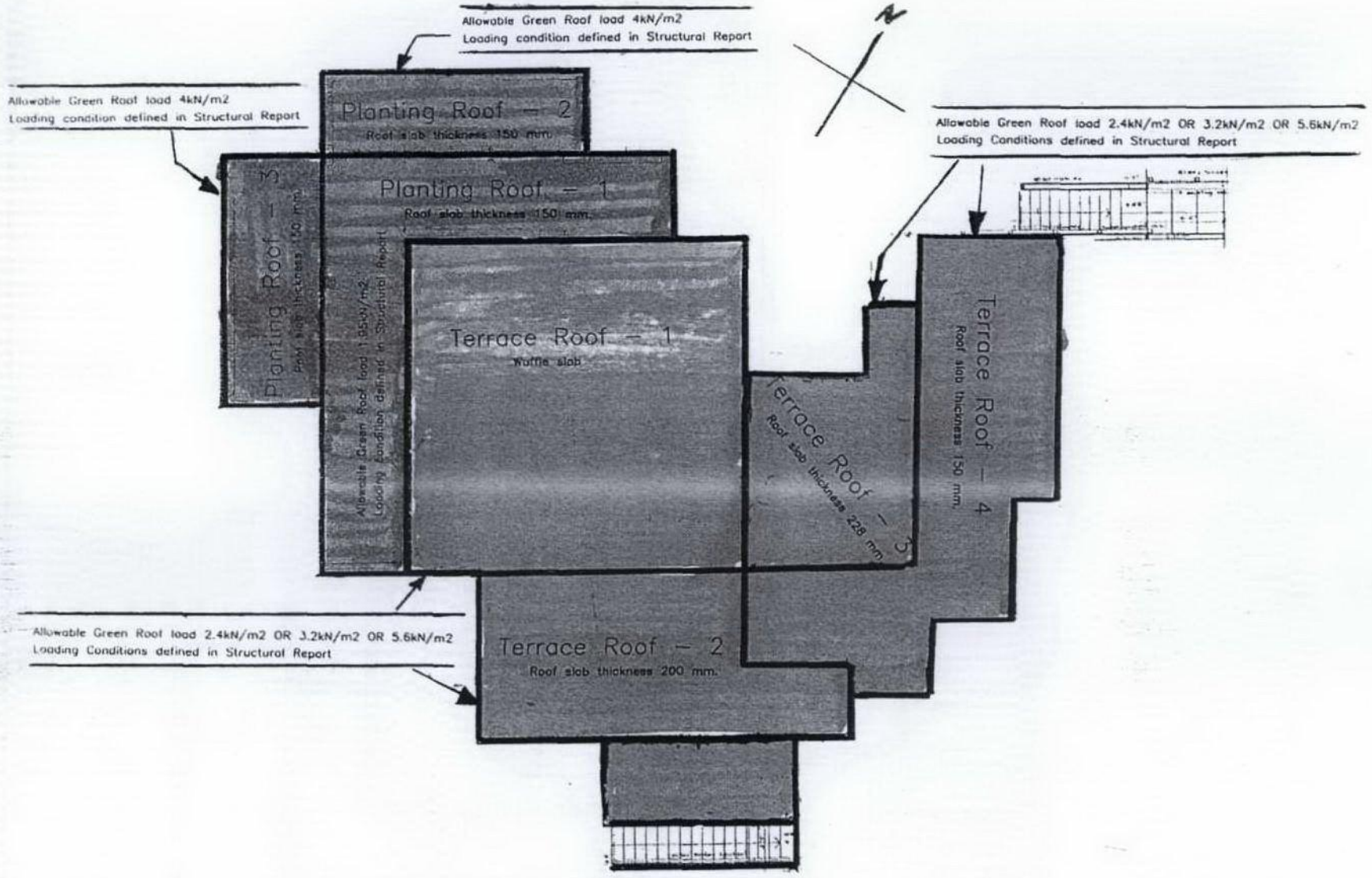
5.0 Final Proposals

At the time of writing this report we are unaware of the nature of any green roof that is proposed. Once a decision has been made, Tully De'Ath would be pleased to assess these recommendations on behalf of the client.

Signed: Sandra Butkute

Sandra Butkute BEng
For and on behalf of Tully De'Ath Consultants Ltd

Appendix A
Roof and Ground Floor Sketches



– Indicates area with assumed screed of 75 mm.
– Indicates area with assumed screed of 100 mm.

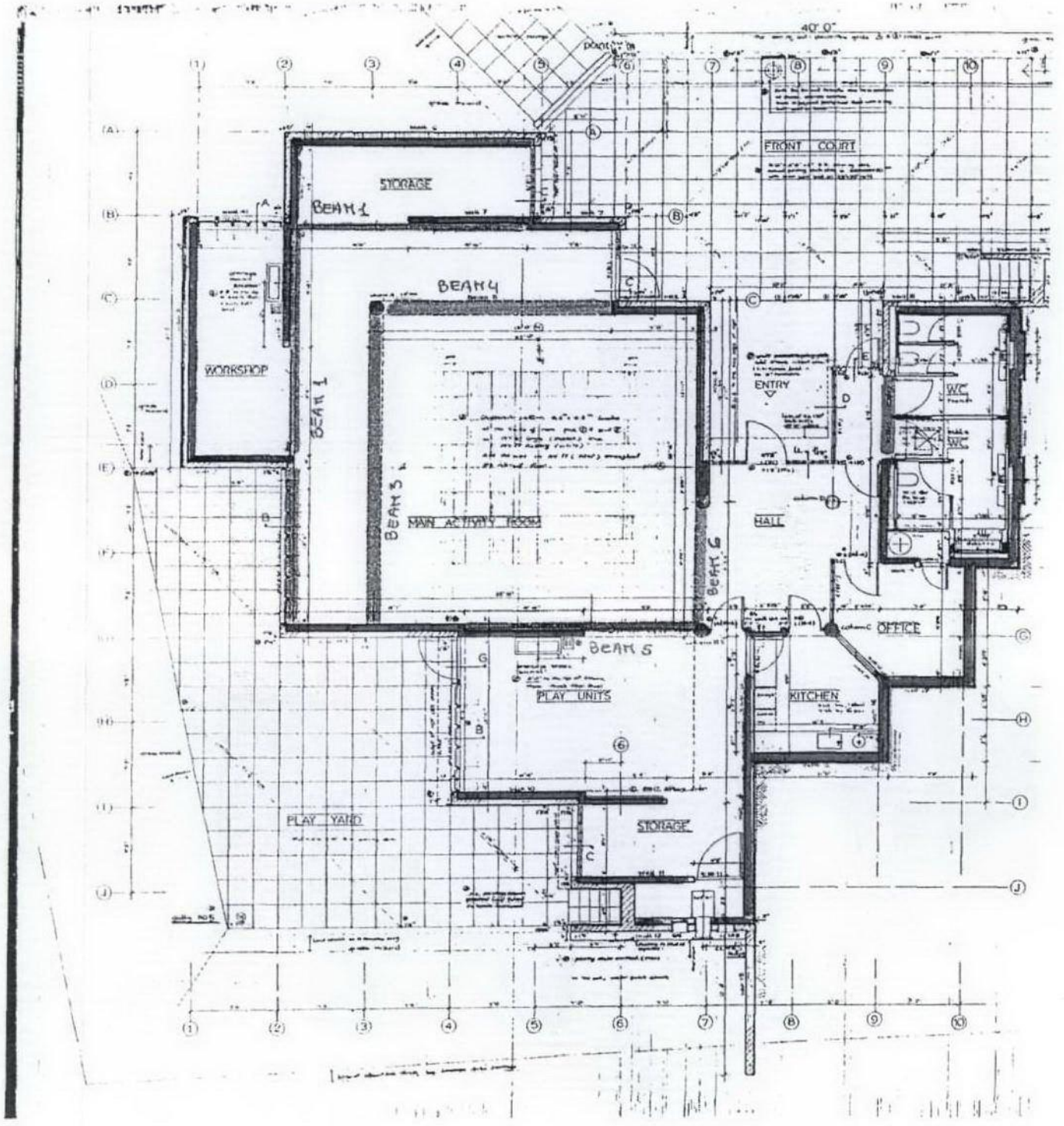
BAILY GARNER

Roof layout

84–86 Abbey Rd,
London

9772 SK01

Tully De'Ath consultants



– Indicates RC walls and columns
– Indicates RC beams

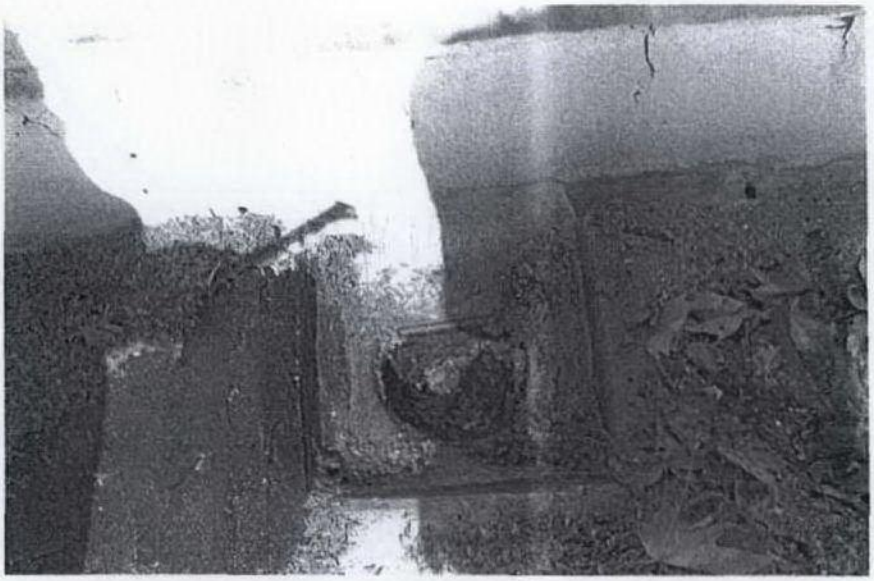
Ground Floor Layout

84–86 Abbey Rd,
London

9772 SK02

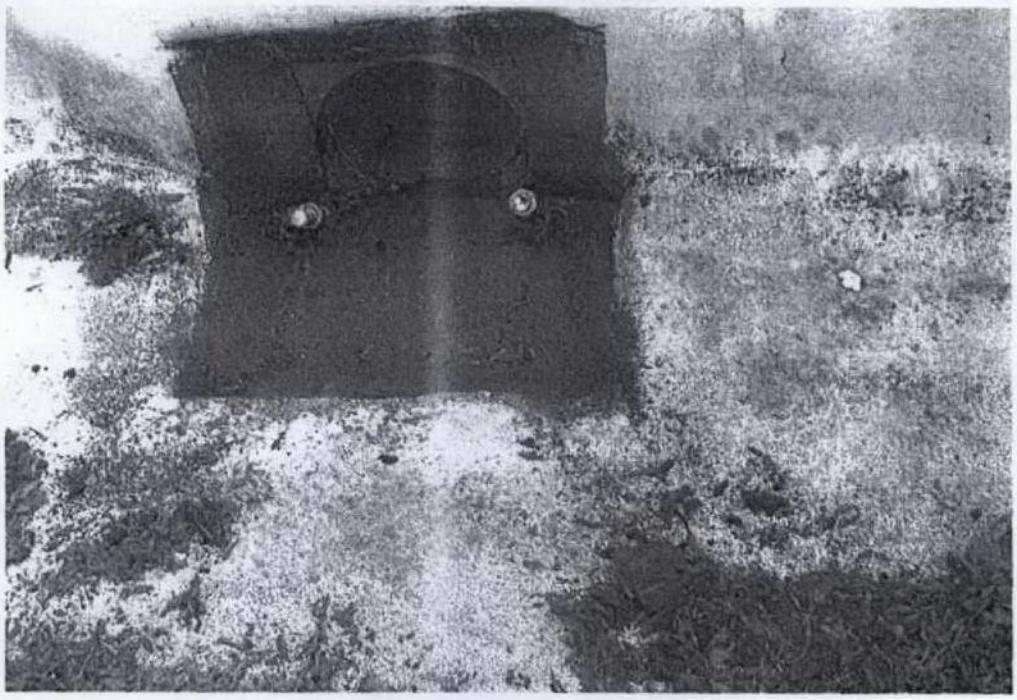
Tully De'Ath consultants

Appendix B
Photographs following site visit on 21/05/09

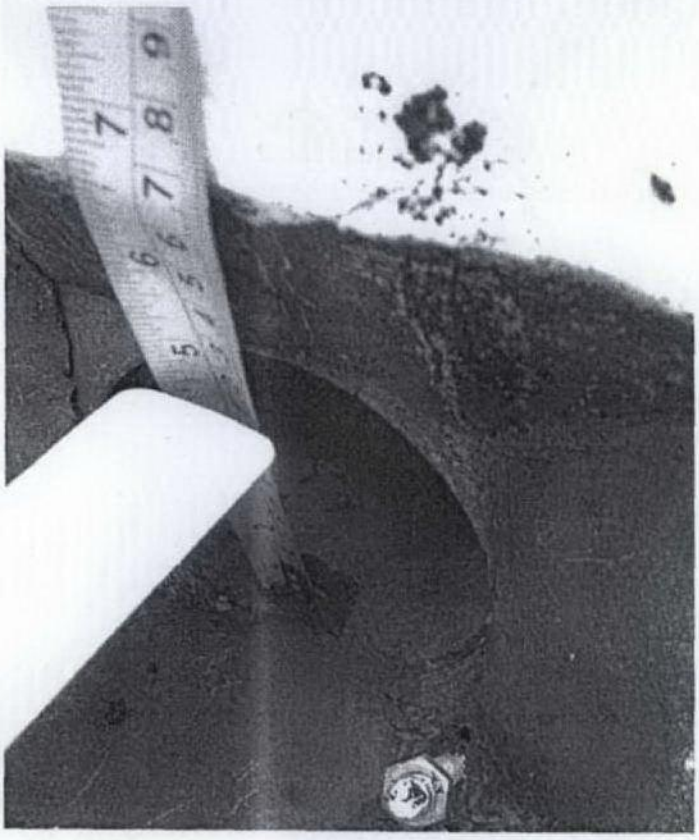


Photograph 1
Gully at Terrace Roof 1

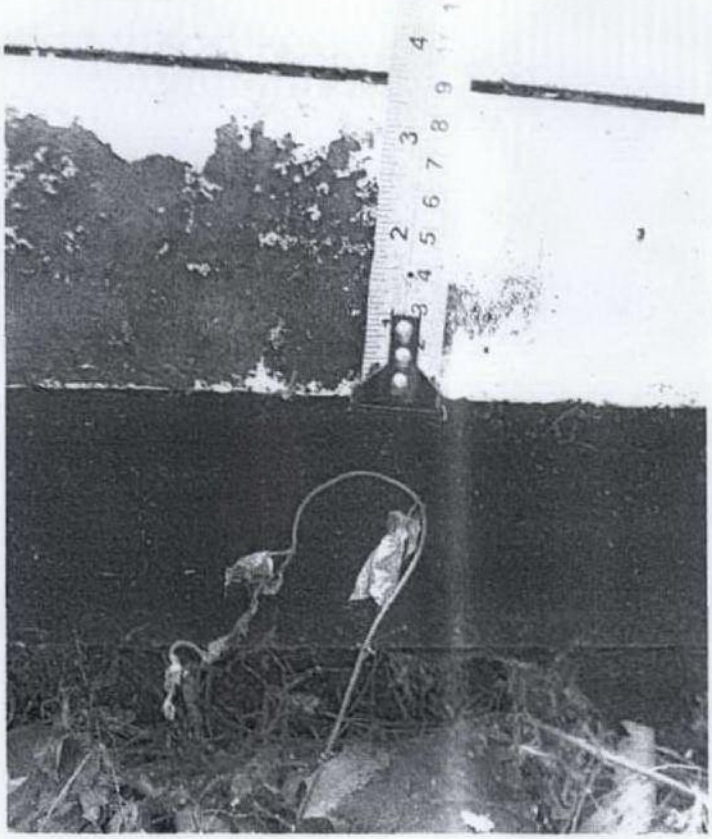
Photograph 2
Gully at Terrace Roof 1 screed measurement



Photograph 3
Gully at Terrace Roof 2 screed measurement

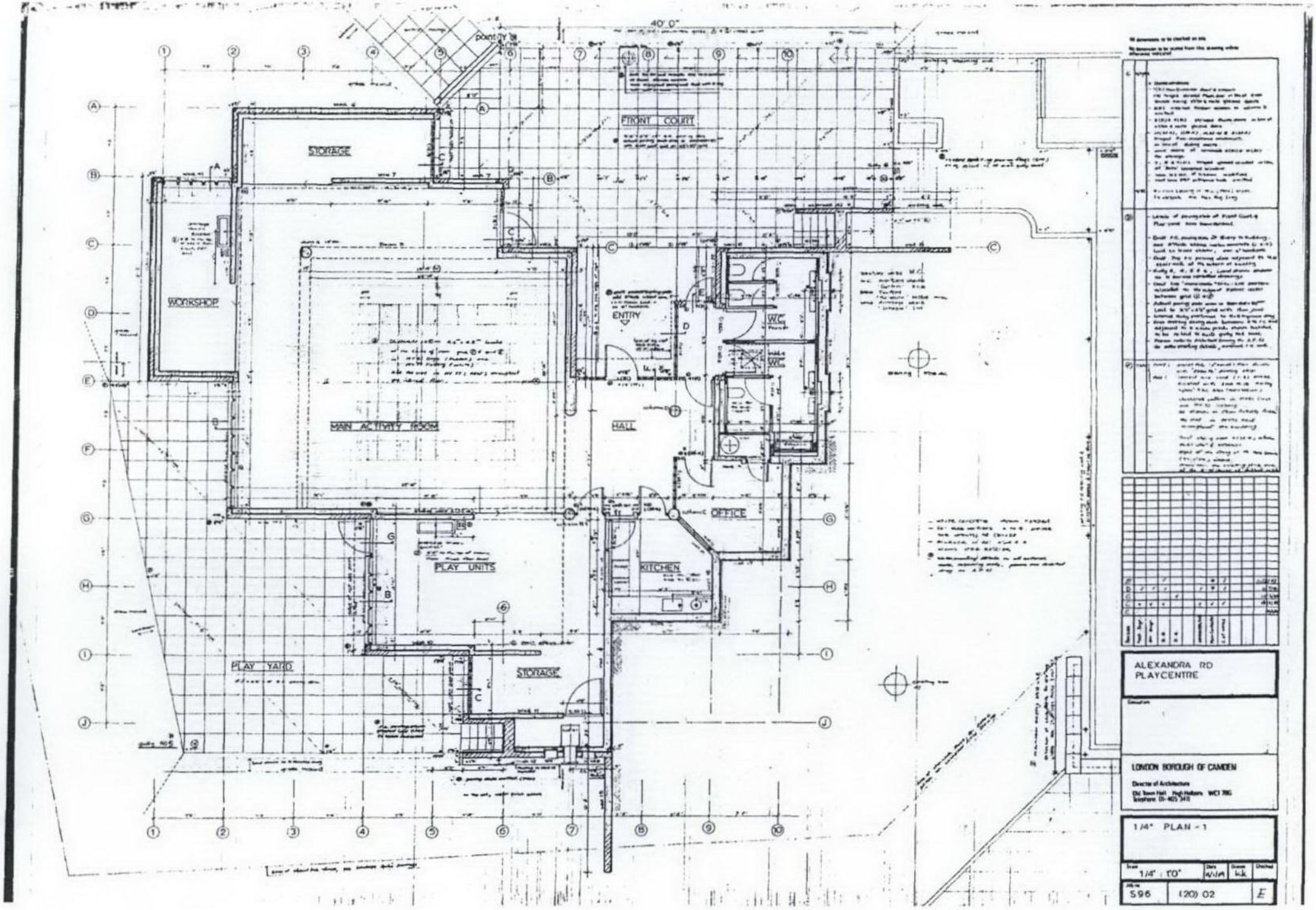


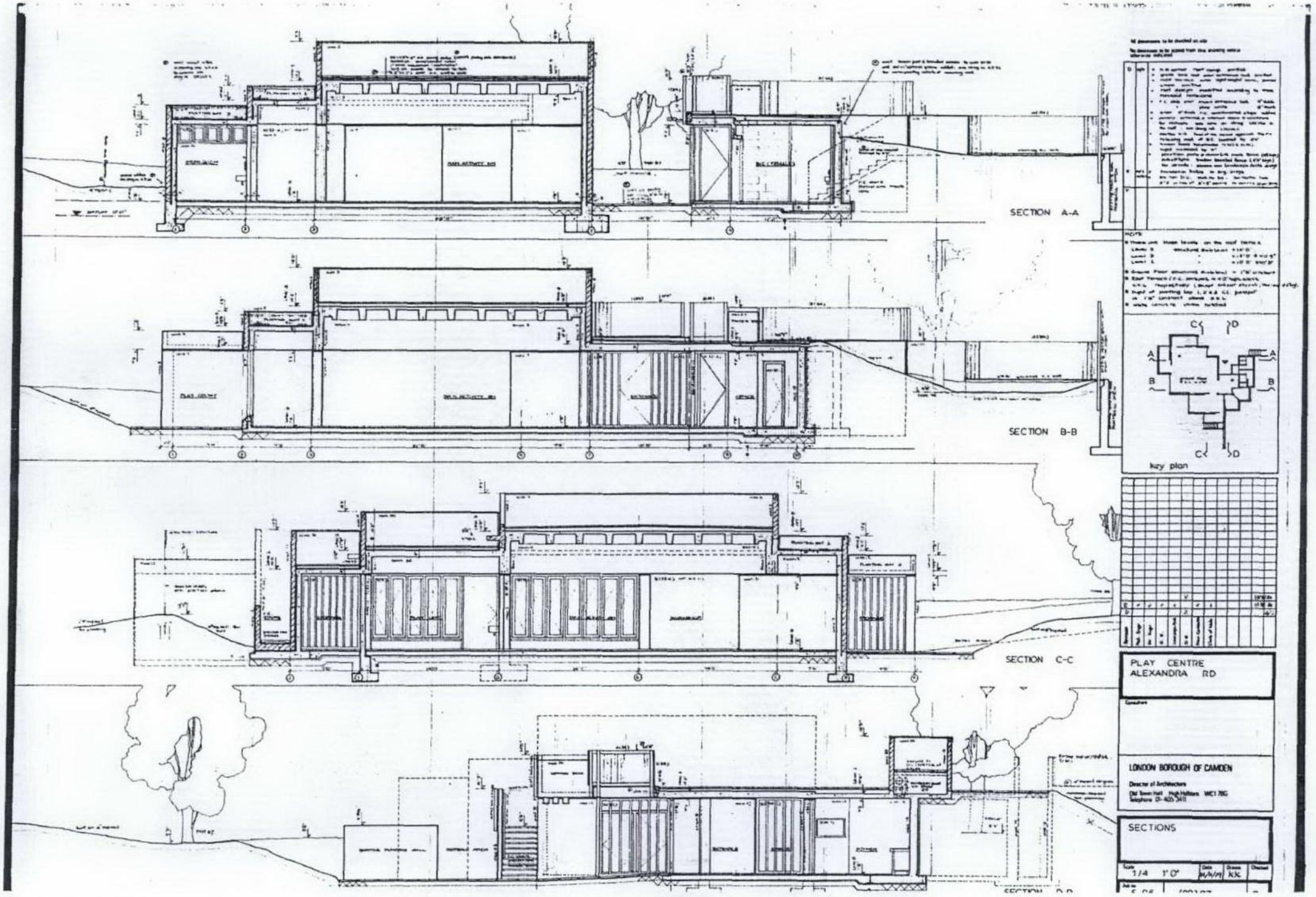
Photograph 4
Gully at Terrace Roof 2 screed measurement

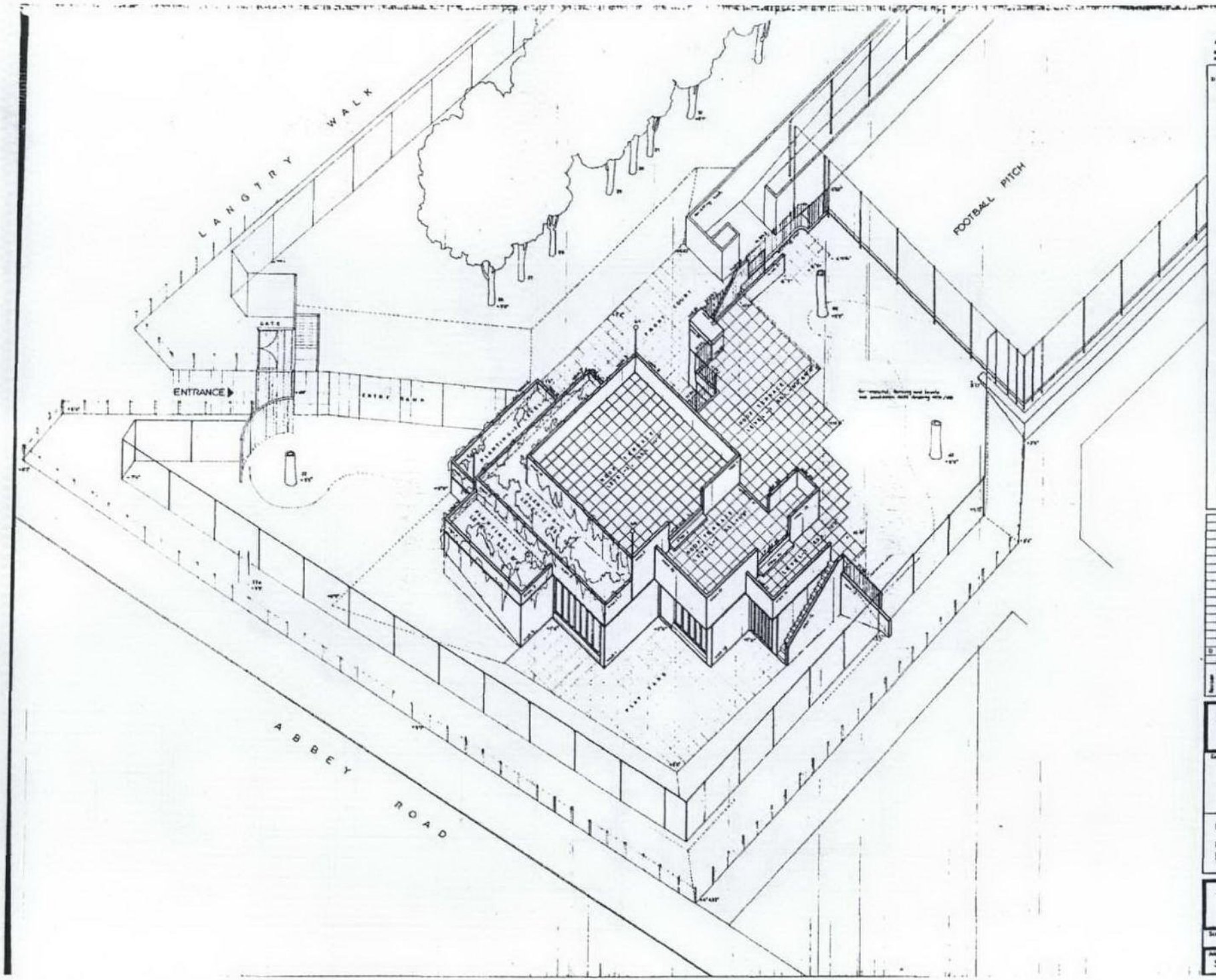


Photograph 5
Screed measurement at North east side of the building

Appendix C
Archive Architects Drawings used for Desk Study


40' 0"
FRONT COURT
STORAGE
WORKSHOP
ENTRY
WC
WC
MAIN ACTIVITY ROOM
HALL
OFFICE
KITCHEN
PLAY UNITS
PLAY YARD
STORAGE
ALEXANDRA RD
PLAYCENTRE
LONDON BOROUGH OF CAMDEN
1/4" PLAN - 1
1/4" : 1'0"
596
(20) 02
E


SECTION A-A
SECTION B-B
SECTION C-C
key plan
PLAY CENTRE
ALEXANDRA RD
LONDON BOROUGH OF CAMDEN
SECTIONS



ALEXANDRA RD
PLAY CENTRE

LONDON BOROUGH OF CAMDEN

AXONOMETRIC VIEW 2

S 96 | (90)10