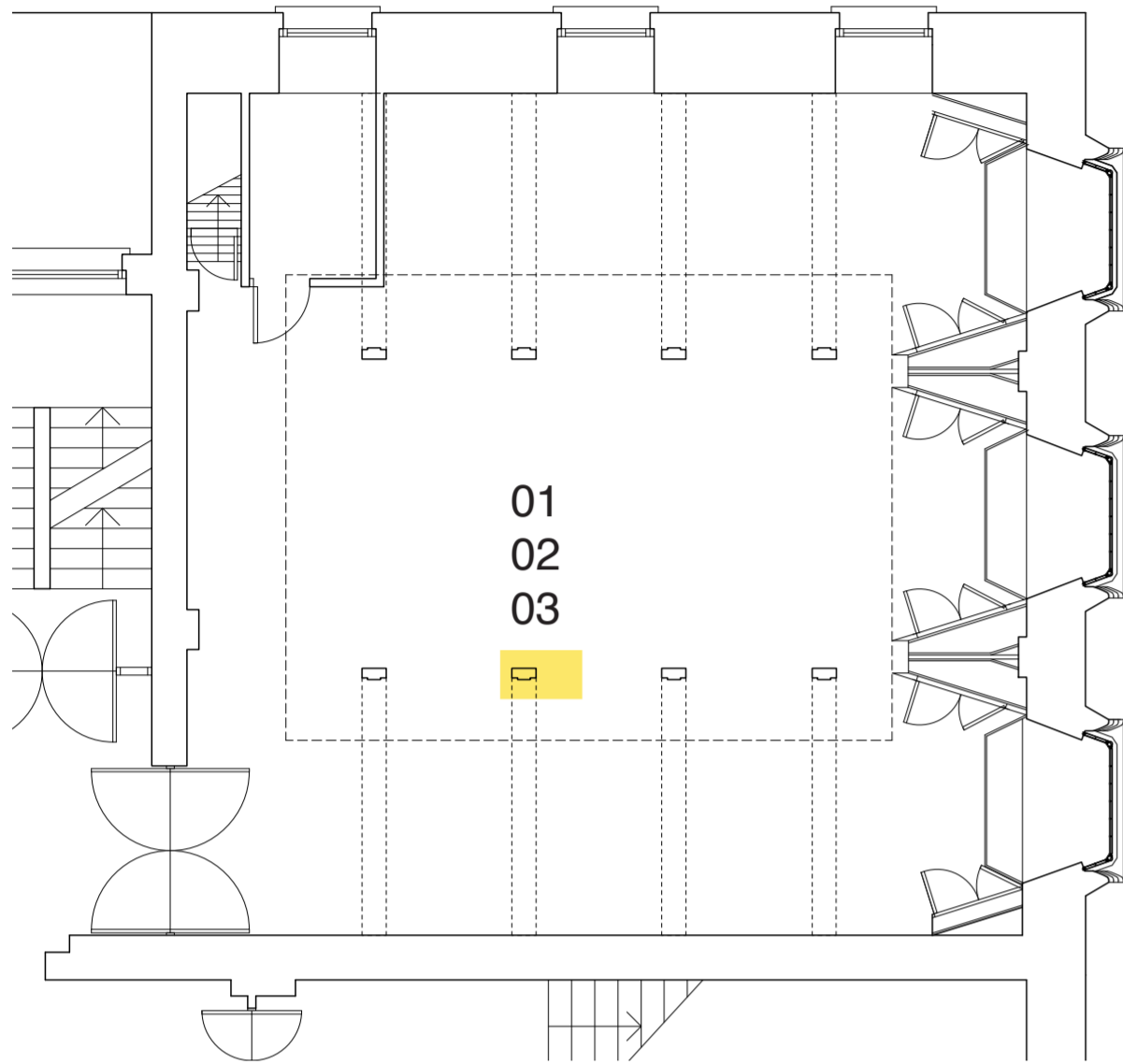


Piece by

Piece

00 Piece by Piece - Library

Contents

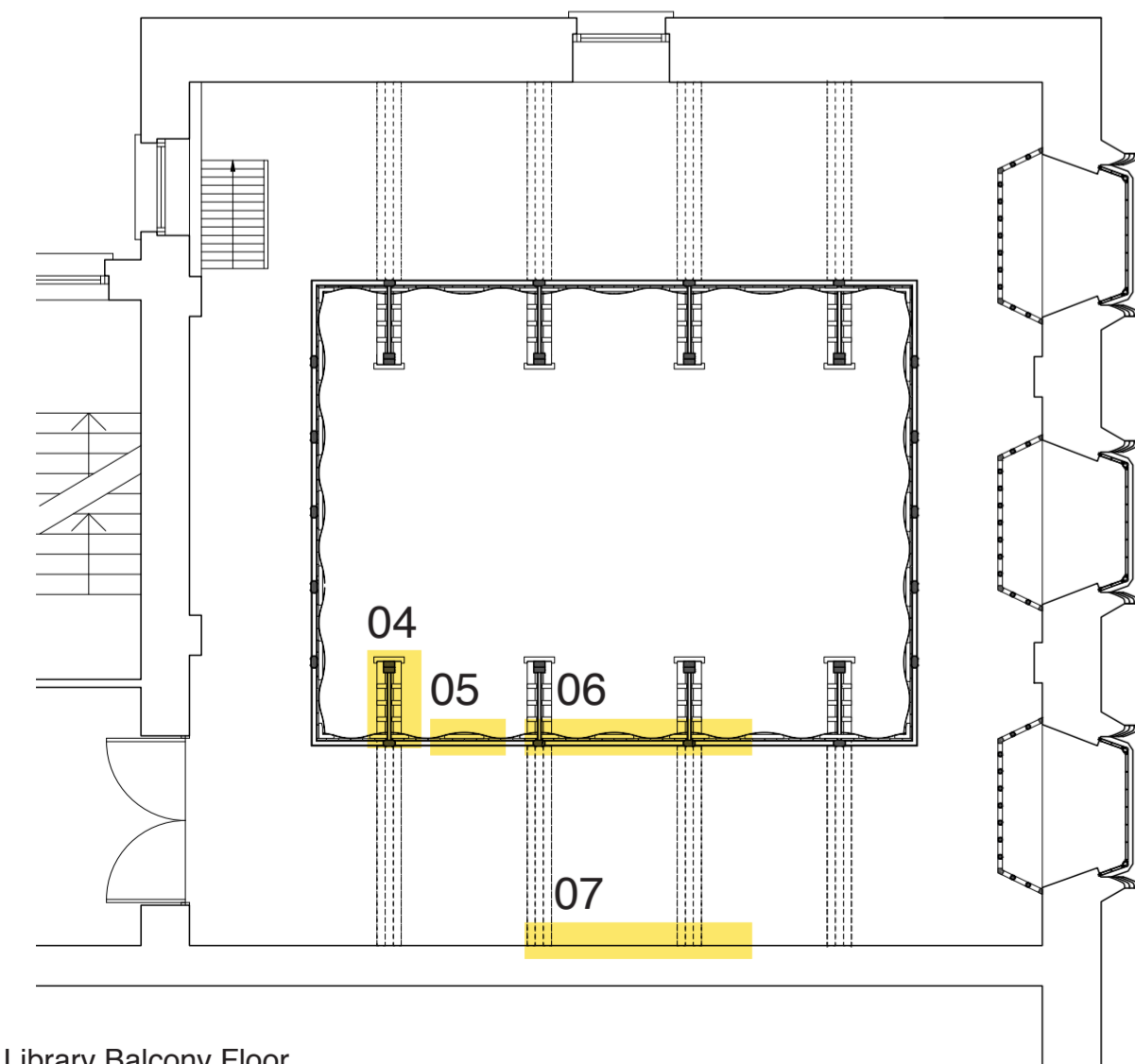


Library Floor

01 Plan of Timber Post

02 Section through Timber Post

03 Side elevation of Timber Post



Library Balcony Floor

04 Scalloped Balusters

05 Pendants

06 Profiled rails

07 Wall linings and floor build up



00 Piece by Piece - Library

Conservatio Creatio Aeterna Est / Introduction

Within the Piece by Piece document, we have chosen to examine the most significant room in the Glasgow School of Art; the Library. Often acknowledged as the most important form in all of Mackintosh's work, the Library was seen as the spiritual and intellectual heart of the Mackintosh building.

We decided to disassemble a single element, one that is repeated multiple times within the room; a single bay and post of the balcony. Accumulating knowledge about principal elements of the construction allows for further discussion surrounding other details that have not yet been included as a part of this exercise.

We believe that this document can form the base for discussion with people with a broad spectrum of expertise: craftsmen, joiners, masons, historians, designers, engineers and artists. The product of this exercise would add significantly to the knowledge of Mackintosh's work.

Our interpretation of the construction of the Library was based on Paul Clarke's measured drawings that were published in the Phaidon *Architecture in Detail* Series. Our knowledge has been supplemented by what was revealed by the fire – elements of the construction that were not possible to examine in full when the Library was intact. Paul Clarke, as a member of our team, oversaw the process and preparation of this document. Proportions and dimensions were checked against his measurements and notes from the time he was a meticulous explorer of the Library.

We also compared hundreds of photographs from various periods and from every possible angle, to assess them against each other and with our own assumptions of how the Library was put together. With the wealth of literature surrounding this room, we got to know the different interpretations and ideas surrounding Mackintosh's masterpiece. Surprisingly, these sources of information about construction and materials often contradicted each other.

To draw these strands together and test our own hypothesis, we prepared a physical model at 1:10, an extremely valuable addition to the process of reconstruction in our minds. We had a dedicated team of researchers, whose area of expertise lies specifically in conservation and traditional building techniques, ensuring this process was as accurate possible.

The Library was designed as a three level space: the ground floor, the balcony and a room directly above serving as a bookstore. The balcony was supported by two rows of four posts running east to west resting on steel beams which ran directly underneath. While the posts could not be moved closer to the wall as steel beams dictated their position, Mackintosh did not want the balcony to project so deeply into the room – the library floor would feel compressed and the proportions of the room would be compromised. Instead, the front of the balcony was set back from the supporting posts and the spaces in between were filled with square balusters, each scalloped along the corners and painted red, white, green and blue.

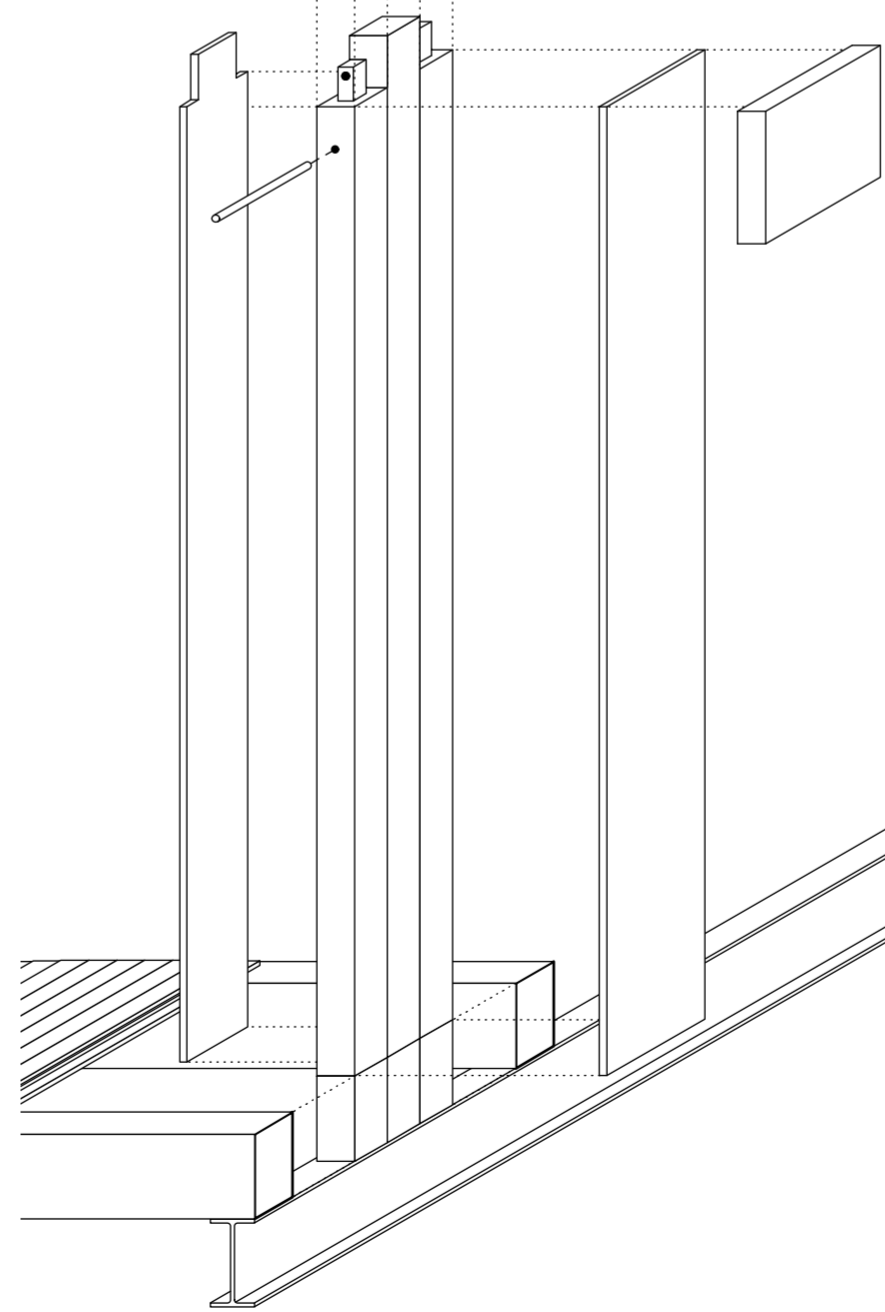
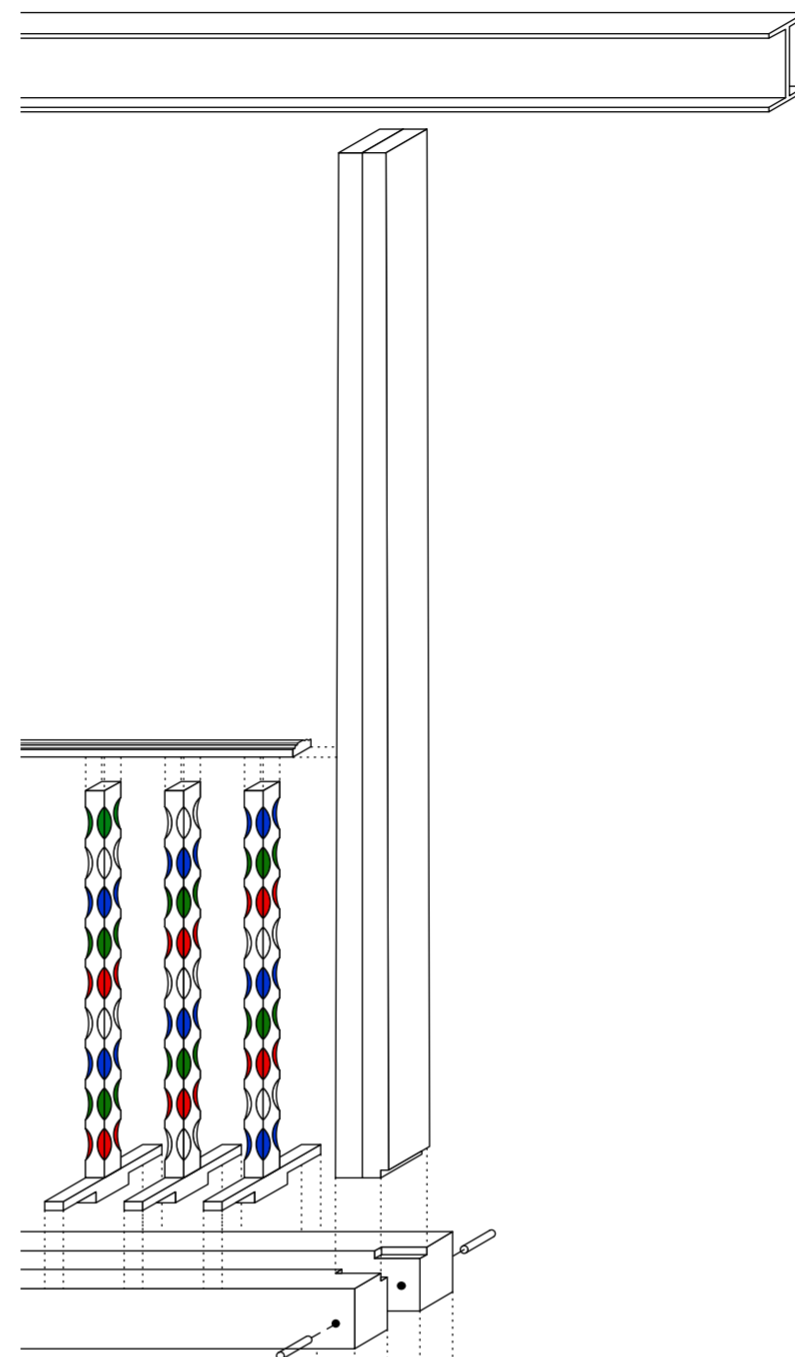
Our examination of the lower post revealed that it was in fact composed of five separate elements: three middle timbers and inner and outer fascias applied with rows of nails. The structure rests on a steel beam and is held in place by floor joists. Two outer joists are shorter than the middle one and are fixed by a tenon joint to the two balustrade beams running across to the wall socket. The balustrade beams are notched to accommodate the foot of the upper post that is composed of two components. The post is then fixed to the steel beams, bearing the weight of the floor of the former bookstore above the library. Square timber plate covers the joints in between the posts and balcony beams.

The balcony front is composed of a series of concave panels and pendants with the downward projection decorated with rows of pierced ovals. The motif of each pendant is individual, not repeated within the room. The panels are visually connected at their top with a curvy bond. Balcony panels are finished with a double ogee profiled rail. The same profile is repeated on the stiles running from the balcony rail to the curved ceiling rail.

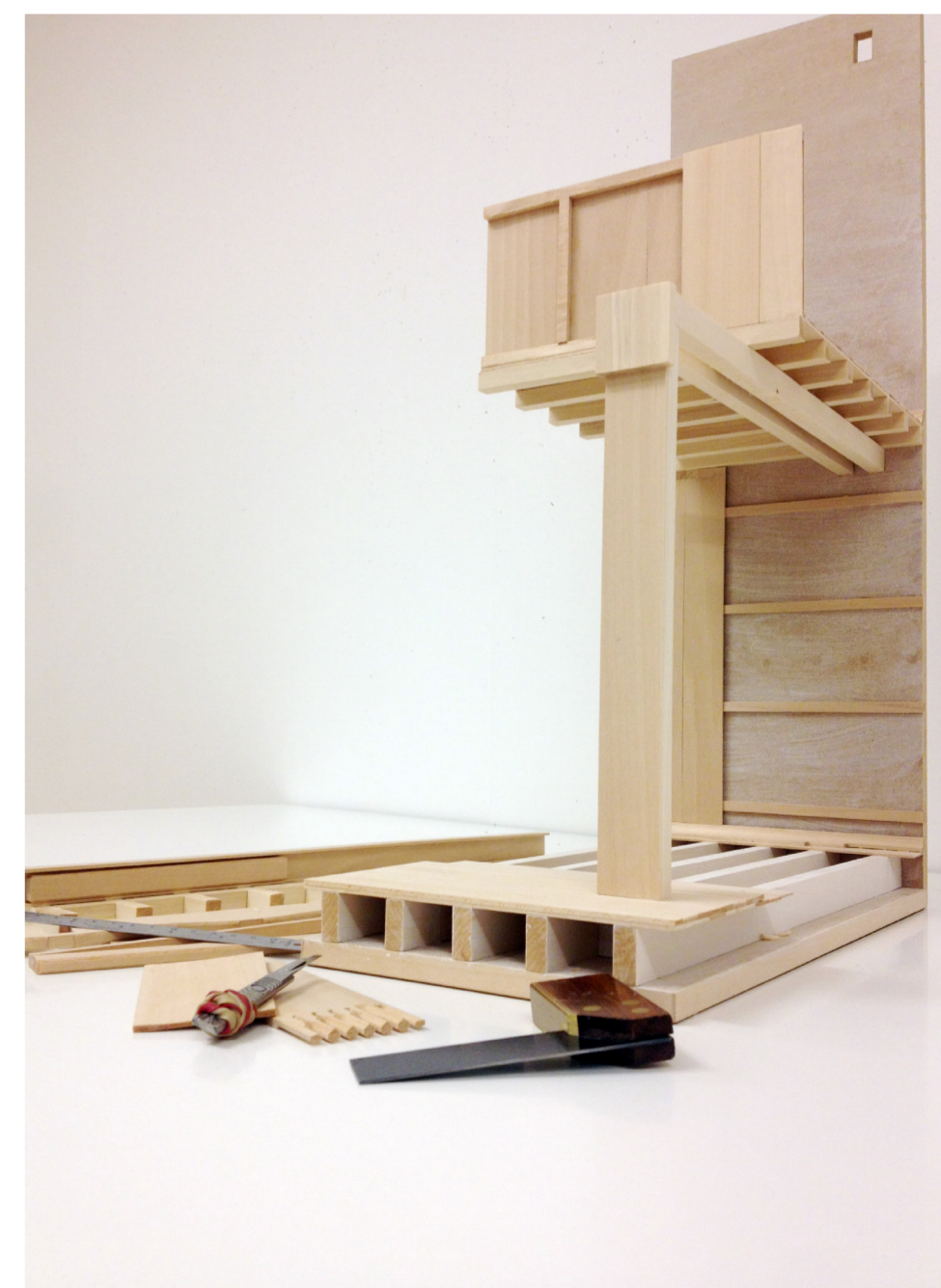
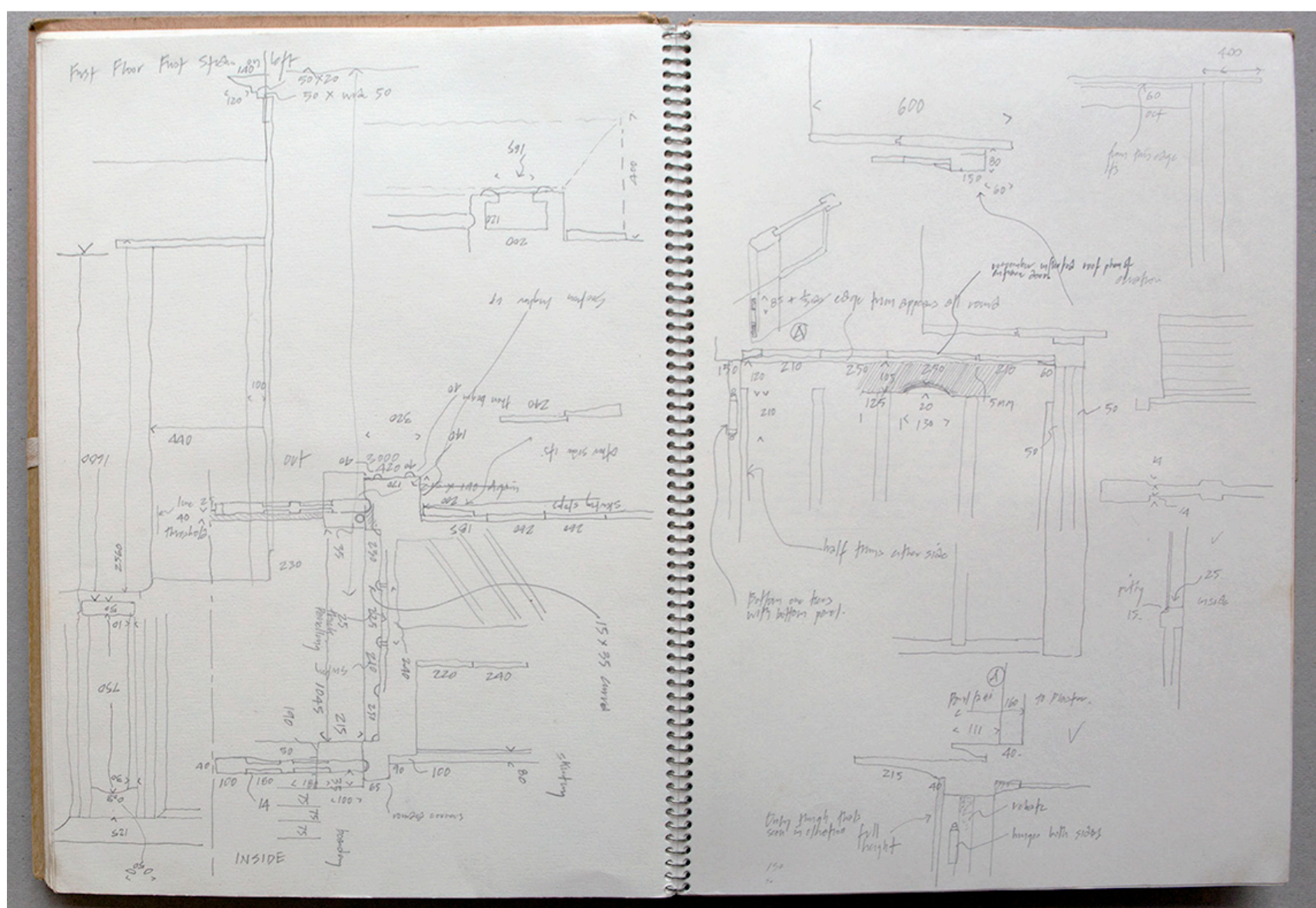
David Brett said in *C.R. Mackintosh: The Poetics of Workmanship* that the timber cage of the Library has been delicately inserted into the masonry container of the west wing. While the timber cage is lost the masonry container survived.

The knowledge and experience gained through the examination of this one crucial piece, encourages us to believe that, if desired, we can recreate Mackintosh's masterpiece within this 'shell', that further details of the Library can be constructed honestly and accurately, to be enjoyed and celebrated once more for generations to come.

1. Glasgow School of Art, Charles Rennie Mackintosh, Phaidon Press 1993.
2. David Brett. *C.R. Mackintosh: The Poetics of Workmanship*. Reaktion Books, 1992



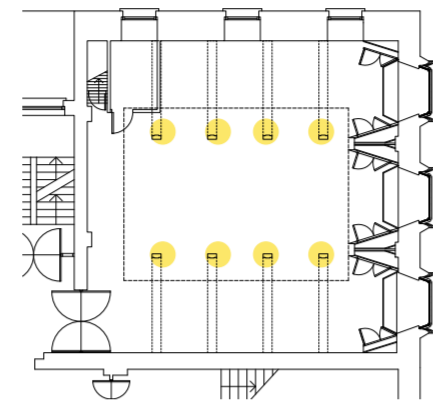
1. Measured survey of the Library by Paul Clarke



01 Piece by Piece - Library

Plan of Timber Post

Piece element: Timber Post to Balcony
Condition status: Damaged and partially destroyed.
Evidence: Limited remains suitable for measurements.
Research: Archive material, record photographs, Paul Clarke measured drawings / survey information.



Photographic evidence

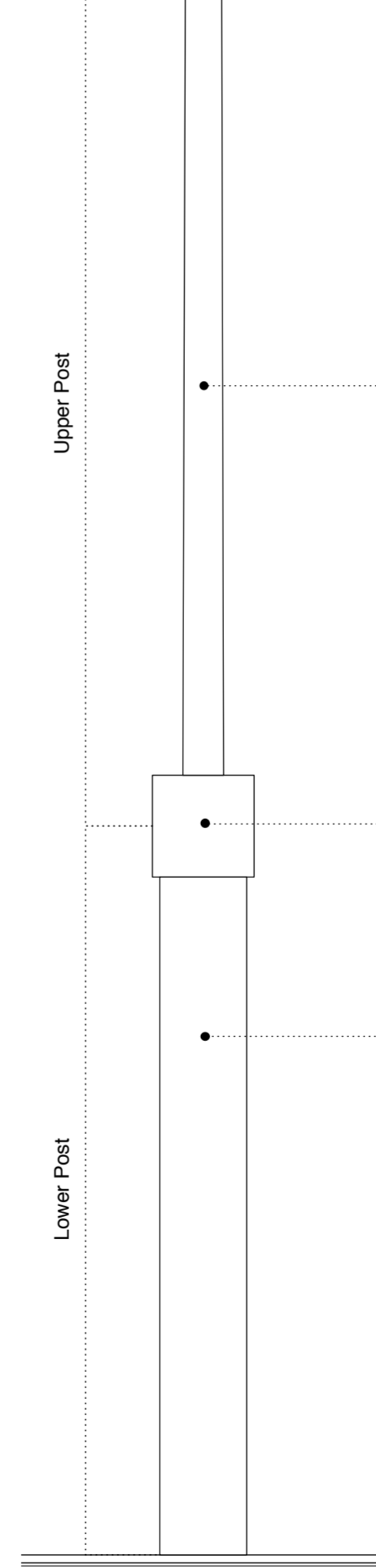
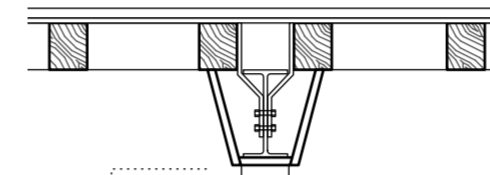


1. Photo by Henry Bedford Lemere, Library circa 1910 © RCAHMS
 2. Library pre-fire. Glasgow School of Art Collection.
 3. The Guardian, Library at Glasgow School of Art - 360 interactive panoramic.

Evidence post fire



1. Timber post post-fire
 2. Upper post.
 3. Upper post comprised of two composed.
 4. Timber plate covering joints junction.
 5. Plan of the post and timber plate. Thick nails fixing lower and upper post highlighted in circle.

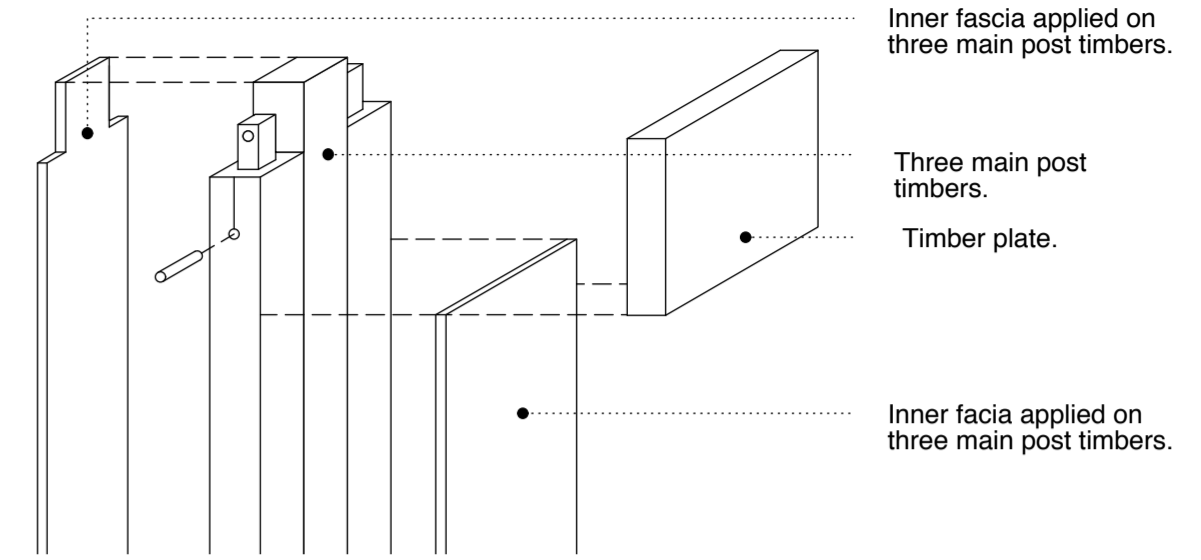


Front elevation of timber post
 Scale: 1:20

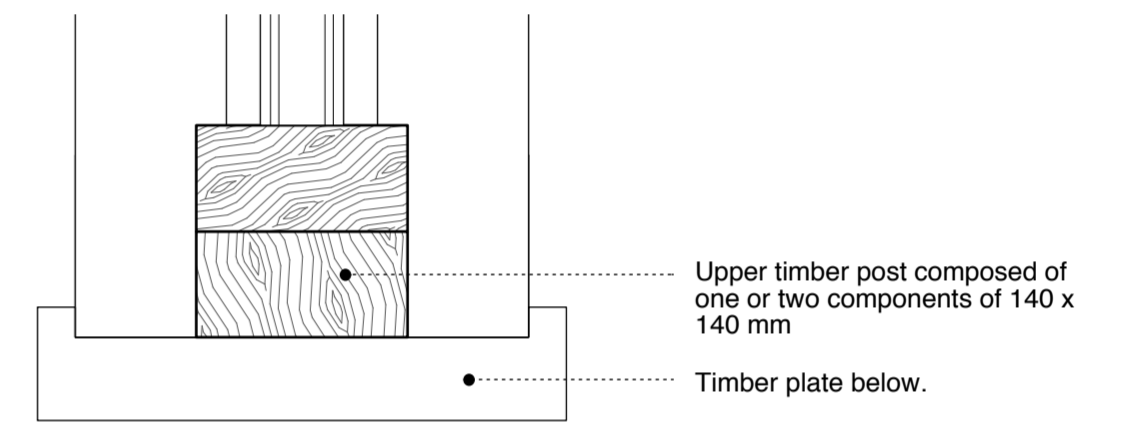
Upper timber post composed of one or two components tapering 0.15° . Refer to drawing 3 opposite.

Timber plate covers joist ends. Refer to drawing 2 opposite.

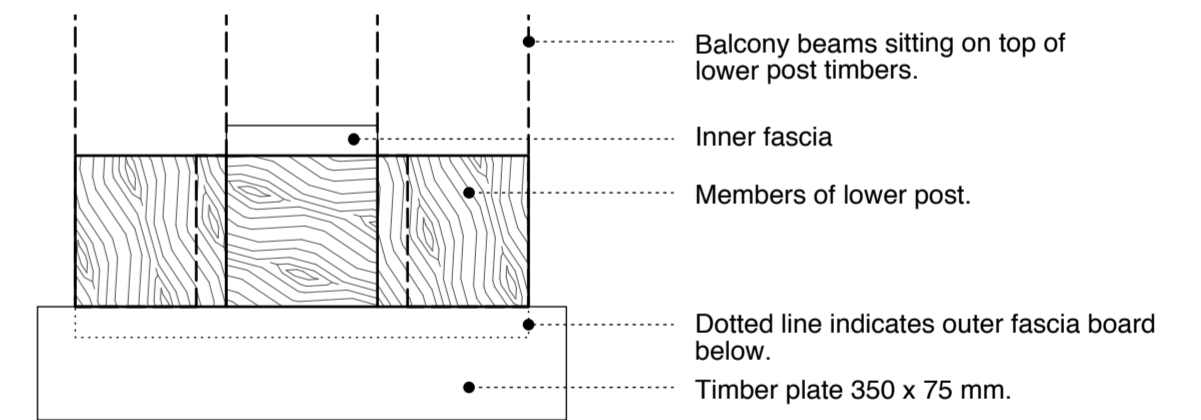
Lower timber post composed of five components. Refer to drawing 1 opposite.



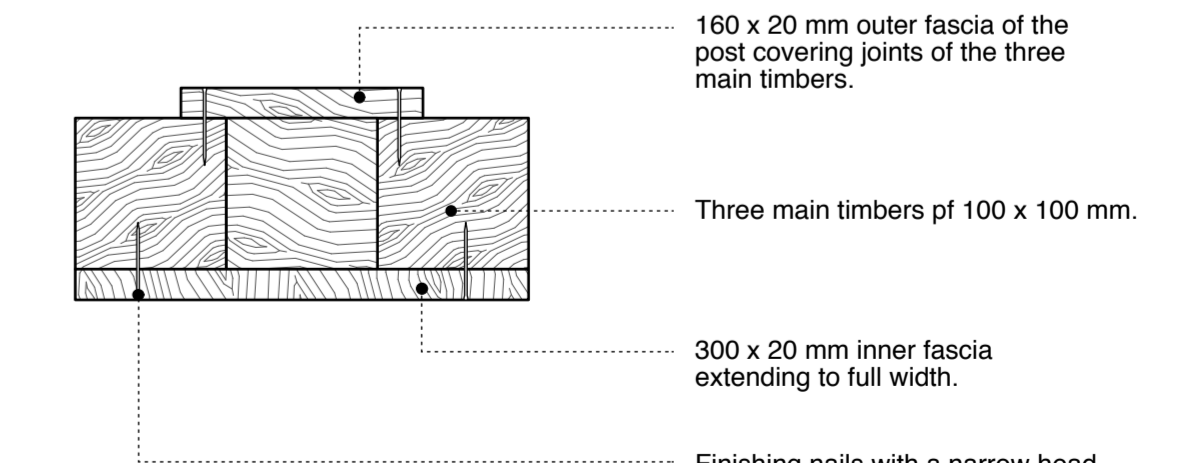
4 Isometric presenting elements of lower post
 Scale: 1:15



3 Plan of upper post
 Scale: 1:5



2 Plan of plate
 Scale: 1:5



1 Plan of lower post
 Scale: 1:5

Balcony beams sitting on top of lower post timbers.

Inner fascia
 Members of lower post.

Dotted line indicates outer fascia board below.
 Timber plate 350 x 75 mm.

160 x 20 mm outer fascia of the post covering joints of the three main timbers.

Three main timbers pf 100 x 100 mm.

300 x 20 mm inner fascia extending to full width.

Finishing nails with a narrow head. Heads slightly punched into surface of fascia with holes filled.

Inner fascia applied on three main post timbers.

Three main post timbers.

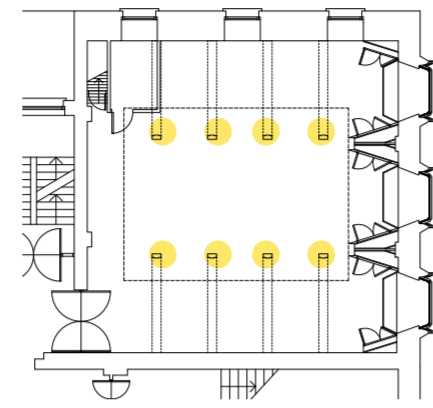
Timber plate.

Inner fascia applied on three main post timbers.

02 Piece by Piece - Library

Section through Timber Post

Piece element: Timber Post to Balcony
Condition status: Damaged and partially destroyed.
Evidence: Limited remains suitable for measurement.
Research: Archive material, record photographs, Paul Clarke measured drawings / survey information.



Photographic evidence



1.



2.



3.

1. Photo by author David Brett in *C.R. Mackintosh. The Poetics of Workmanship*, 1992
2. Library pre-fire, PJP Architects archive.
3. Photo by James Carney in *Mackintosh's Masterwork The Glasgow School of Art*, 1989

Evidence post fire



1.



2.



3.

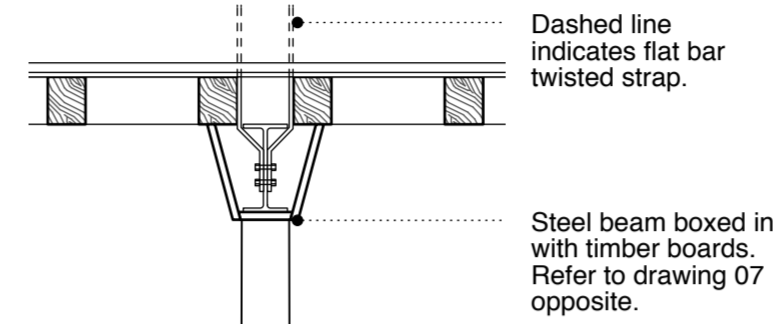


4.

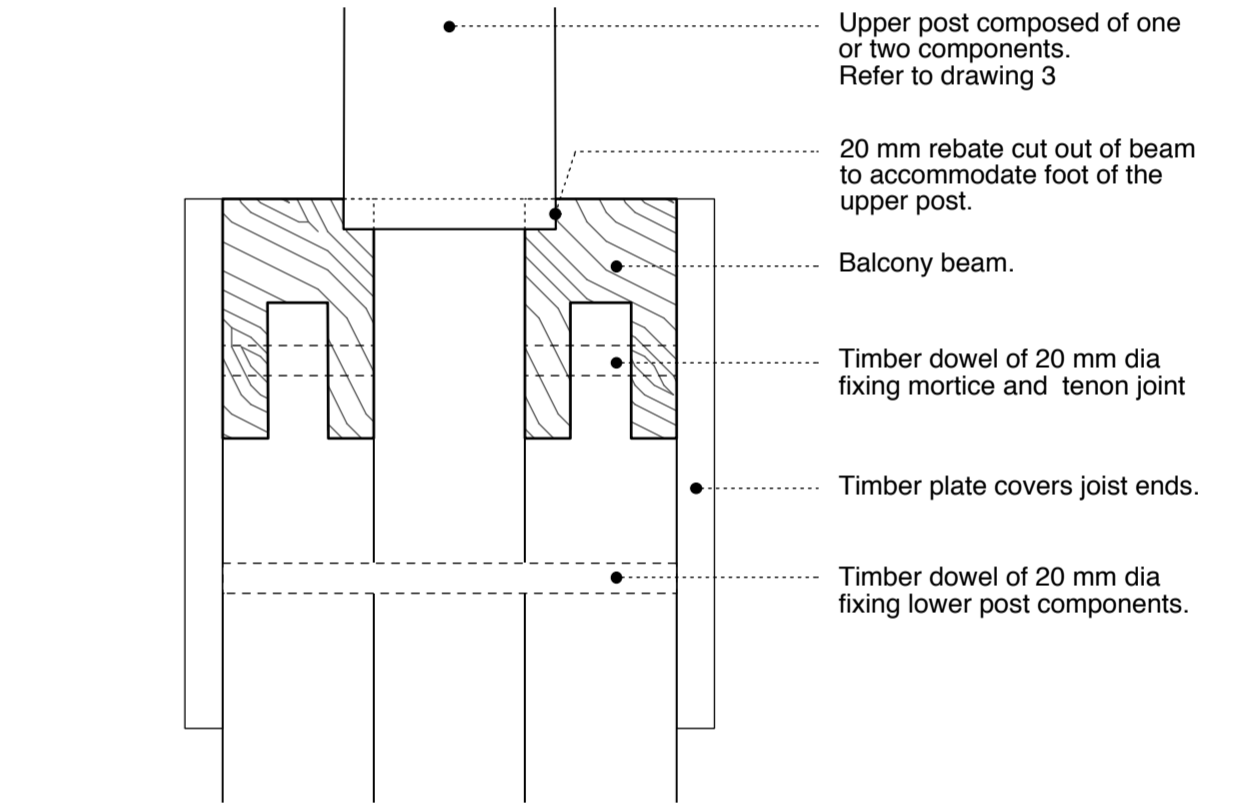
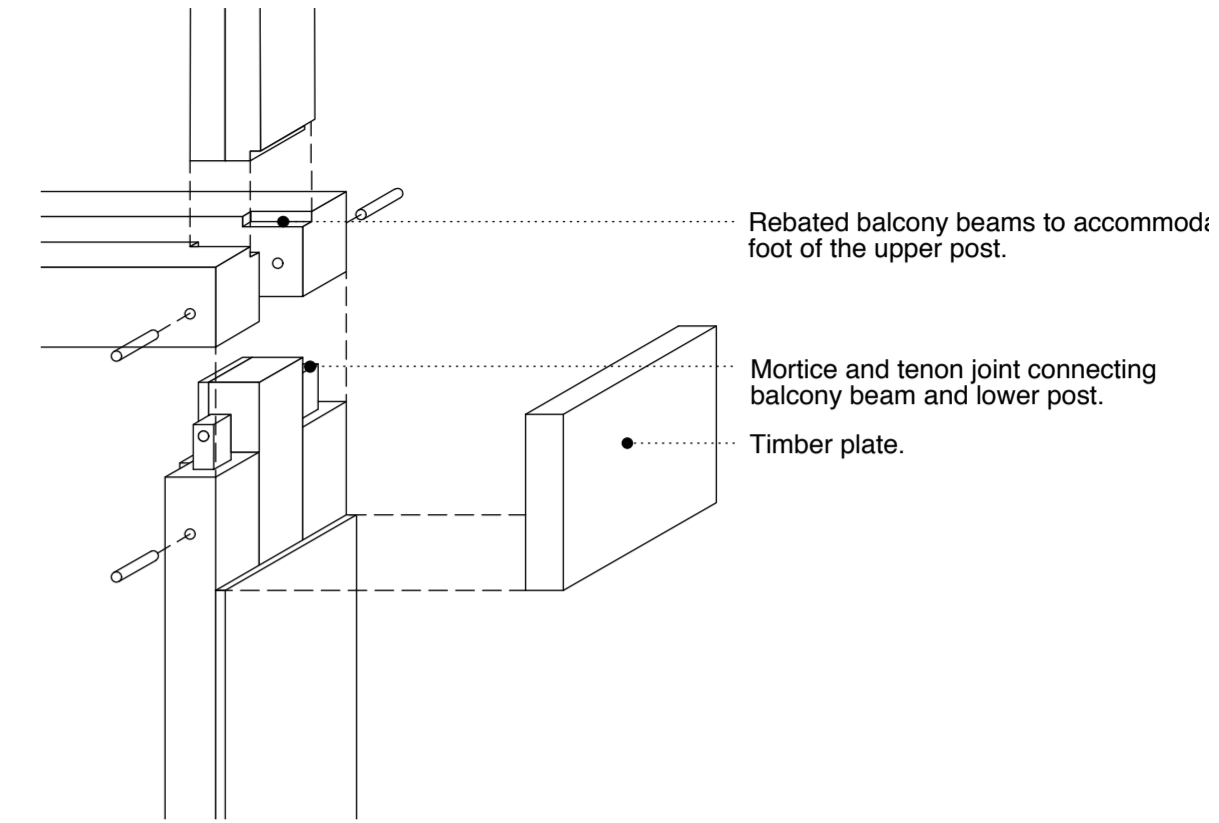


5.

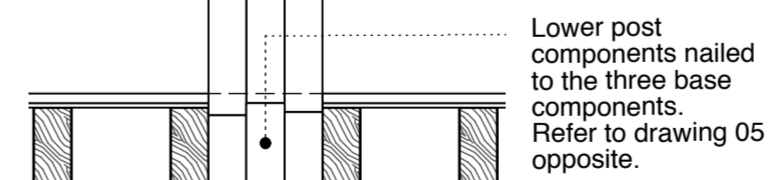
1. Timber post post-fire.
2. Outer elevation of the lower post and remaining end of the balustrade beam. Remain of tenon joint highlighted with circle.
3. Inner elevation of the lower post. Remain of tenon joint highlighted with circle.
4. Tenon joists secured with nails driven vertically highlighted in circle.
5. Base components of the lower post.



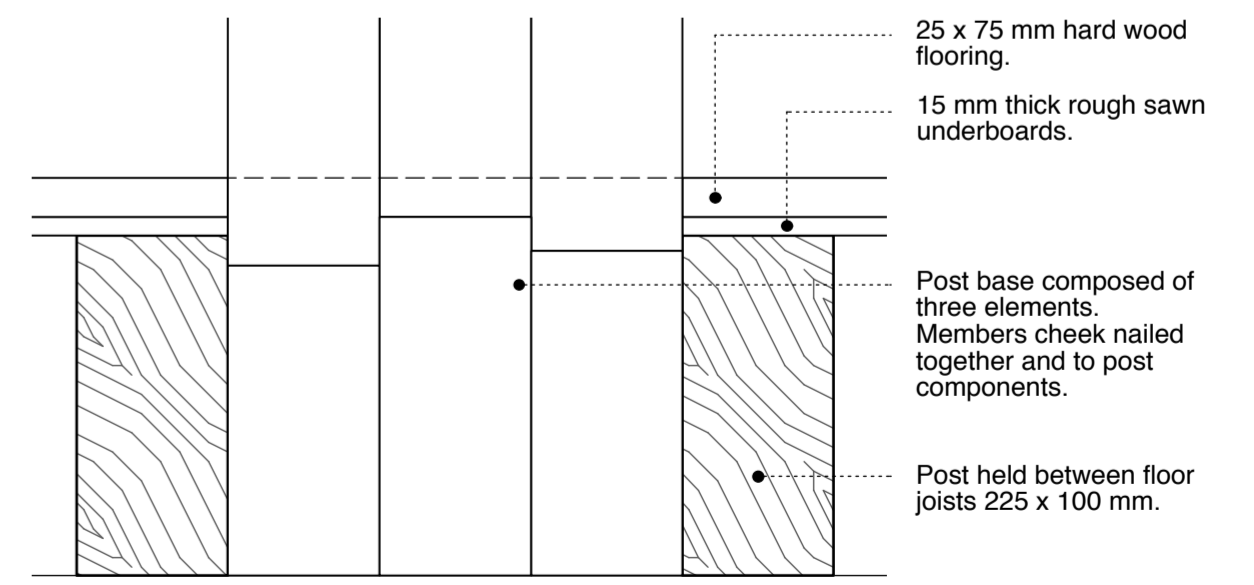
7 Axonometric presenting timbers build up. Scale: 1:15



6 Section through timber post. Scale: 1:5



Section through timber post. Scale: 1:20

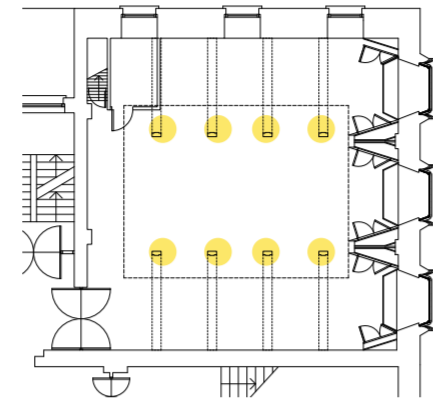


5 Timber post floor fixing. Scale: 1:5

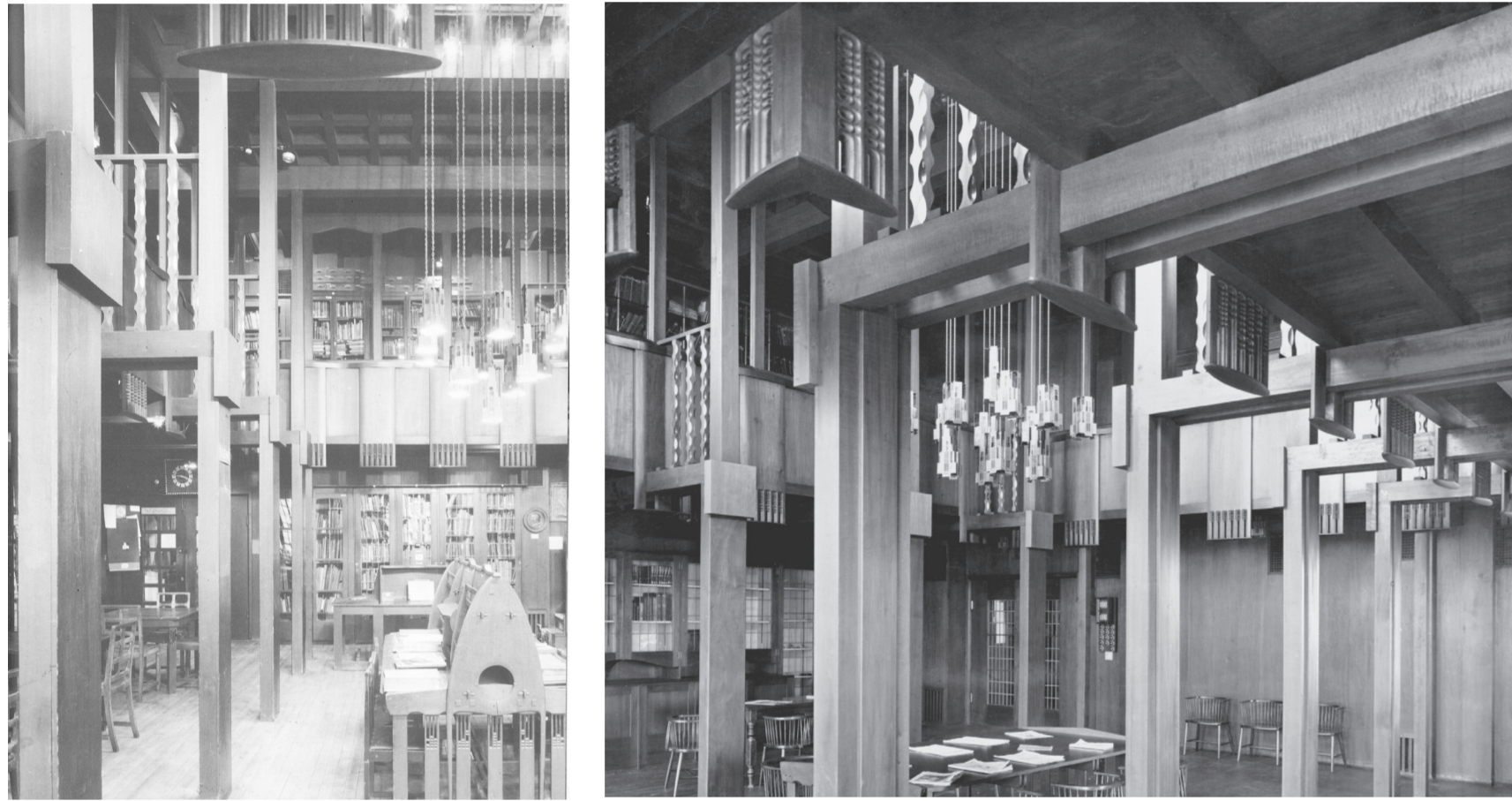
03 Piece by Piece - Library

Side elevation of Timber Post

Piece element: Timber Post to Balcony
Condition status: Damaged and partially destroyed.
Evidence: Limited remains suitable for measurement.
Research: Archive material, record photographs, Paul Clarke measured drawings / survey information.



Photographic evidence

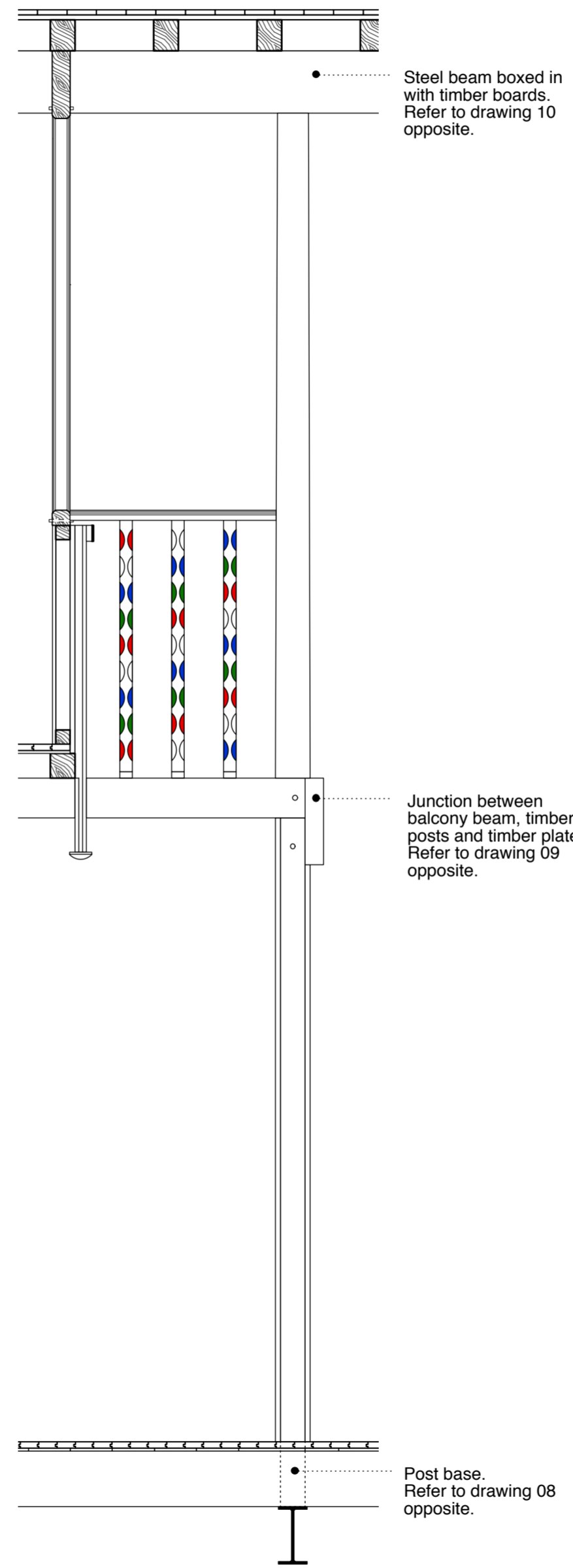


1. Photo by Keith Gibson © The Hamlyn Group in *Charles Rennie Mackintosh Architect and Artist*, by Robert Macleod, 1983
 2. Photo by Henry Bedford Lemere, Library circa 1910 © RCAHMS

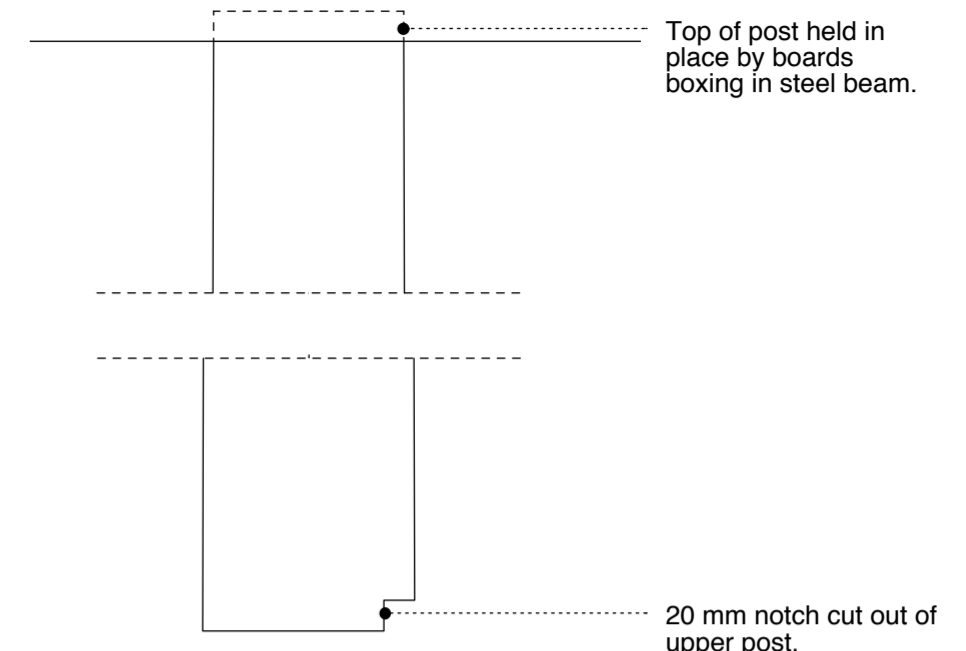
Evidence post fire



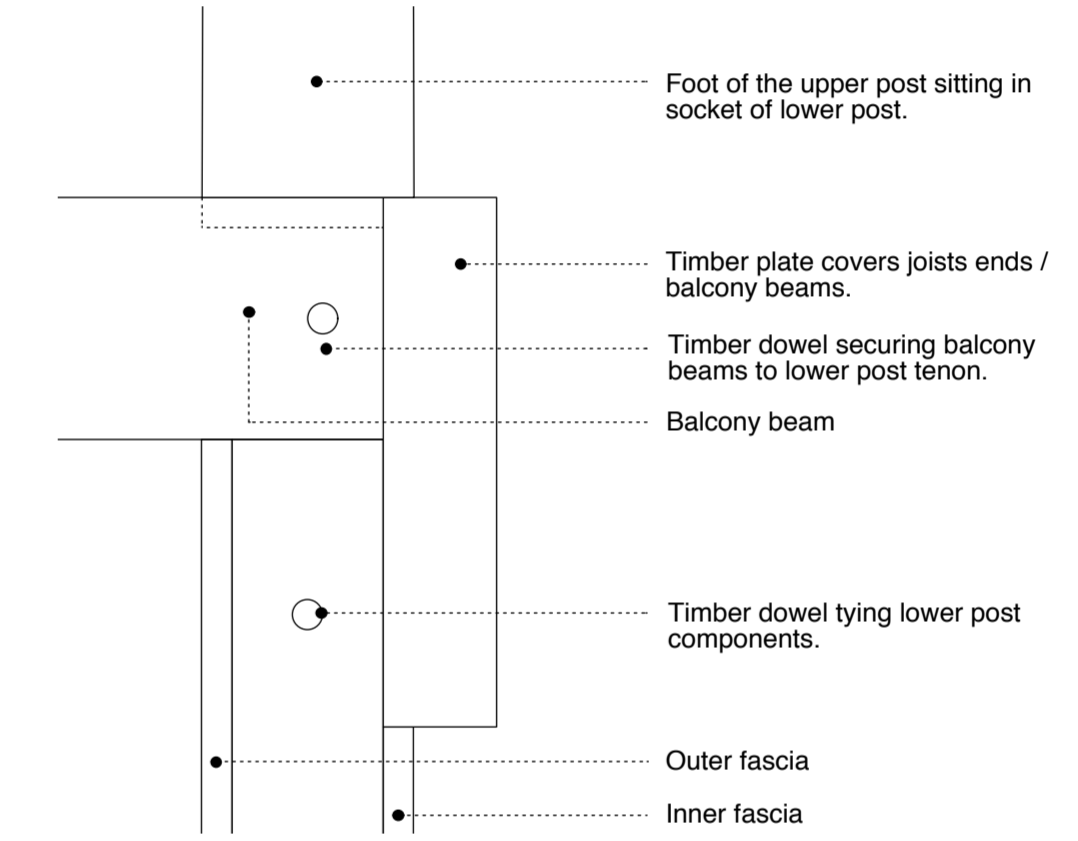
1. Side elevation of the lower post and timber plate.
 2. Outer elevation of the lower post. Nails outer fascia highlighted.
 3. Back elevation on timber plate. Screws driven with an angle securing the plate highlighted.
 4. Side elevation of the lower post. Timber dowel and nail securing the upper post highlighted.



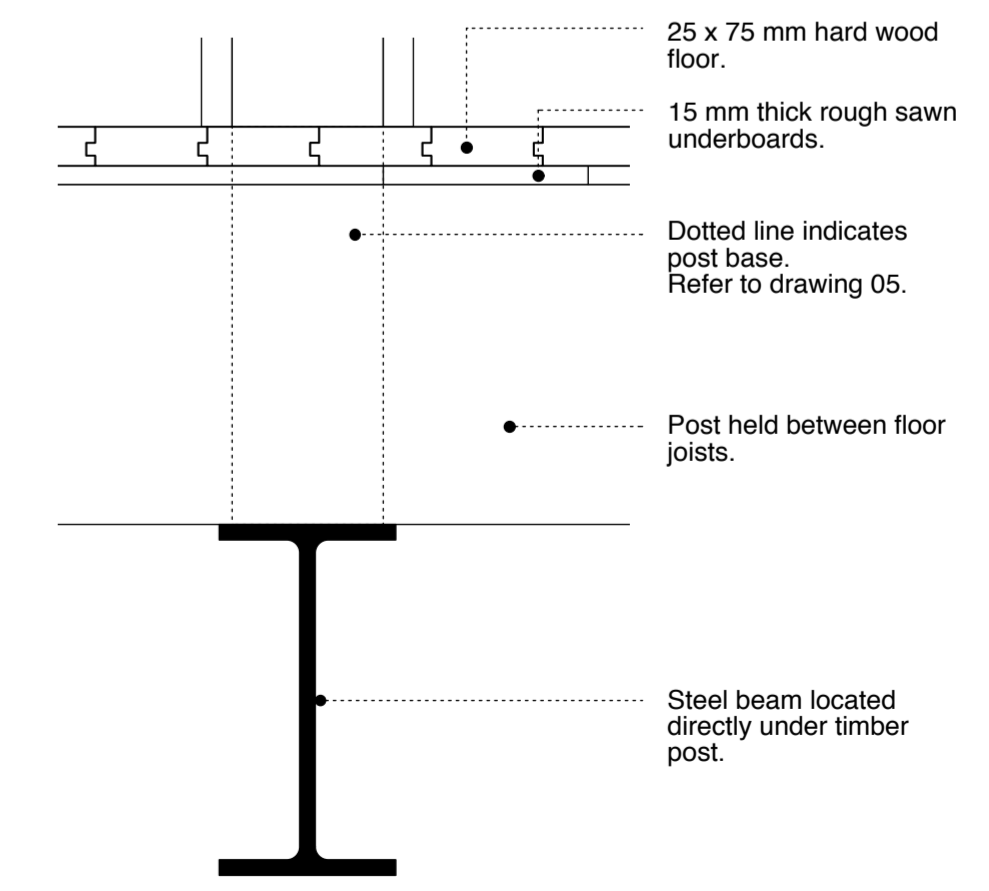
Side elevation of timber post
 Scale: 1:20



10 Side elevation of upper post
 Scale: 1:5



9 Side elevation of junction of balcony beam and post
 Scale: 1:5

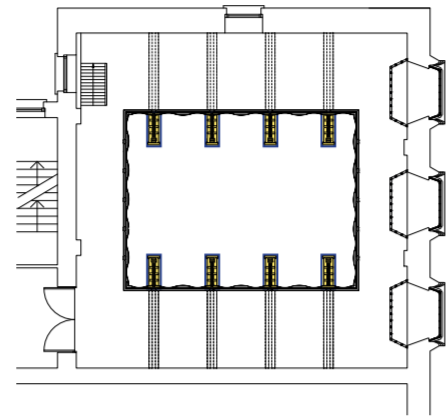


8 Floor build up
 Scale: 1:5

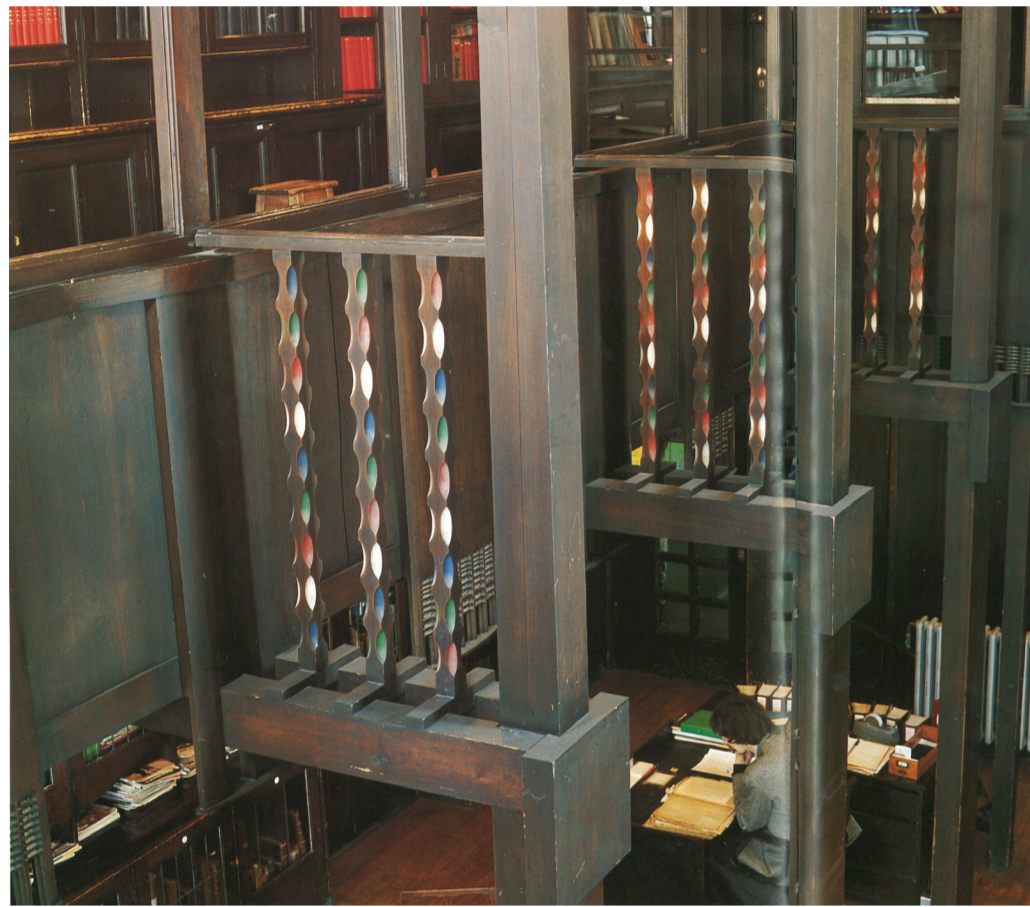
04 Piece by Piece - Library

Scalloped balusters

Piece element: Scalloped balusters
Condition status: Damaged and partially destroyed.
Evidence: Limited remains suitable for measurement.
Research: Archive material, record photographs, Paul Clarke measured drawings / survey information.



Photographic evidence



1.



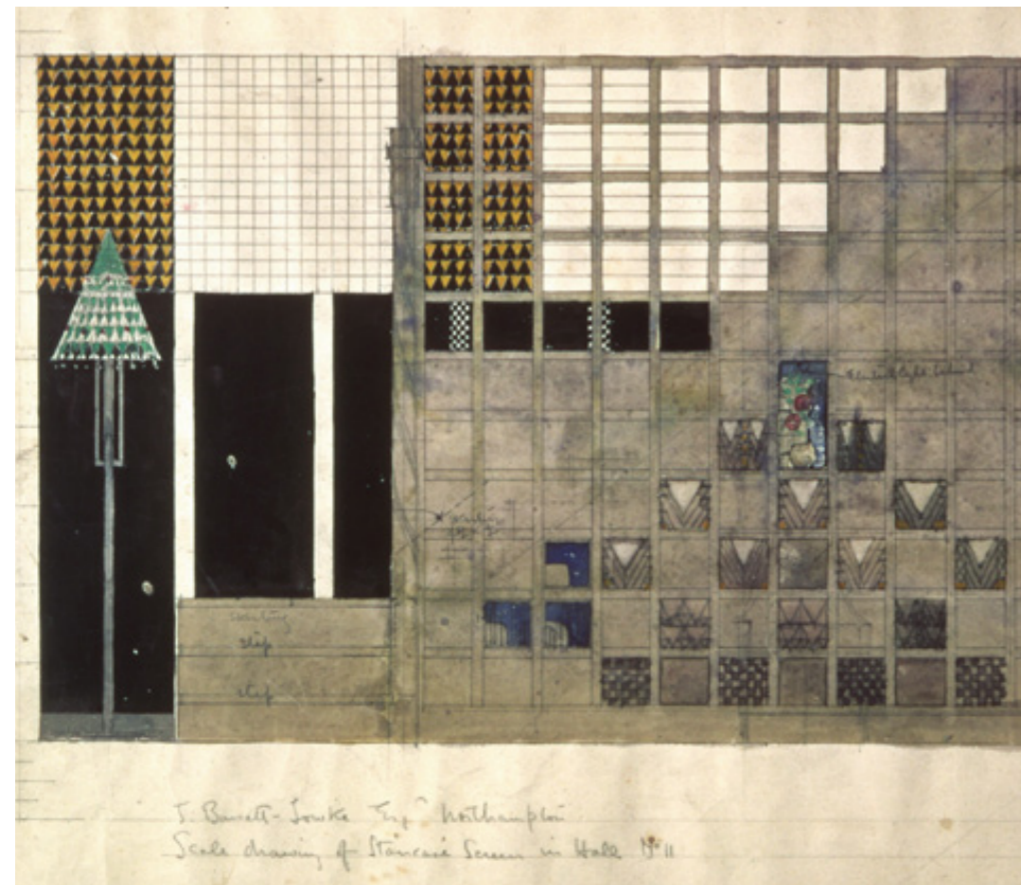
2.

1. Photo by James Carney in Mackintosh's *Masterwork The Glasgow School of Art*, 1989
 2. Library pre-fire. Glasgow School of Art Collection.

Evidence post fire

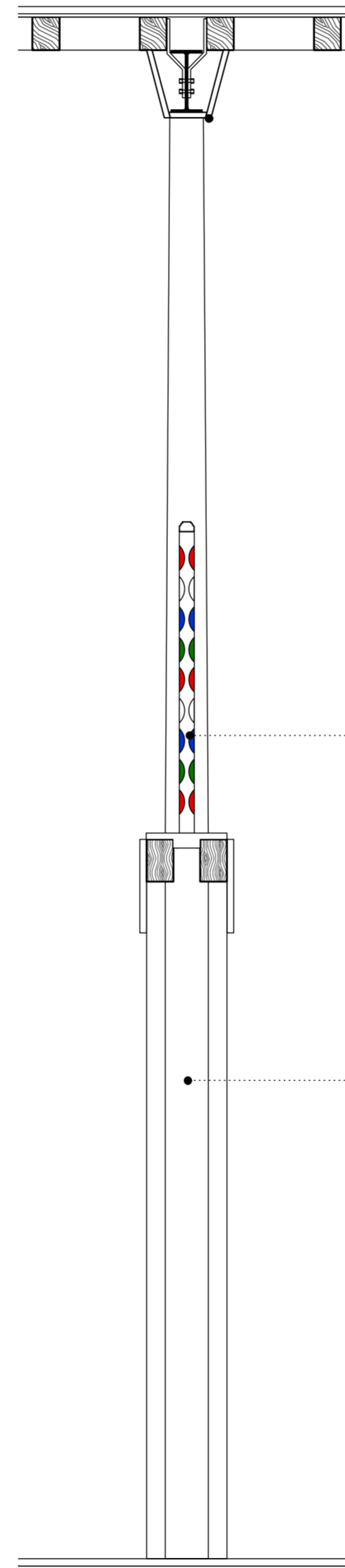


1.



2.

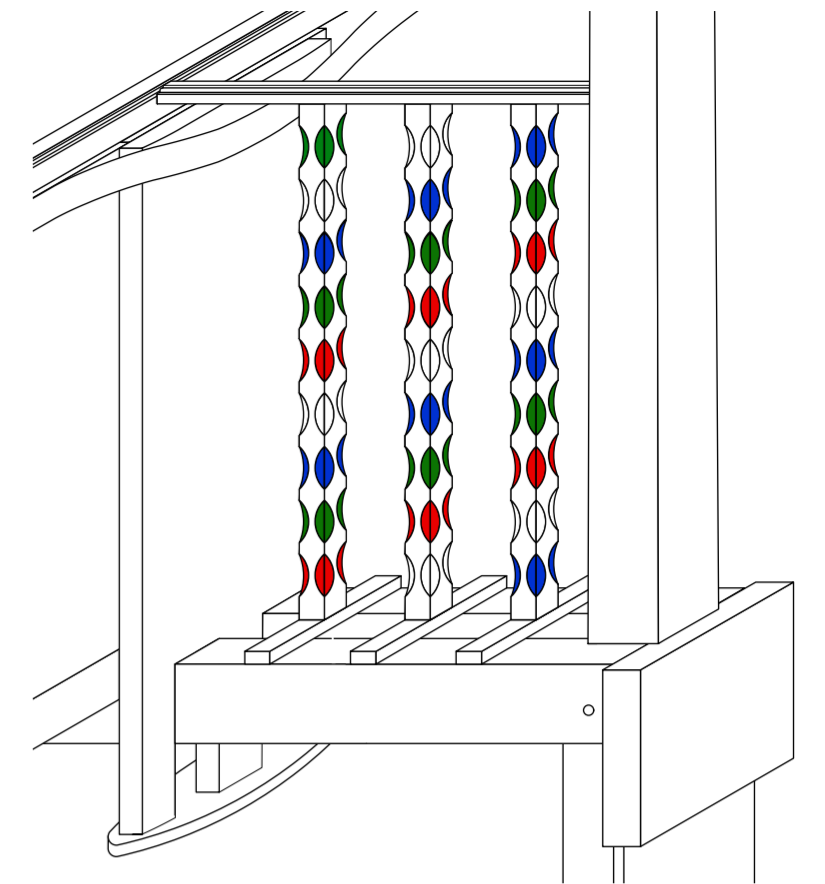
1. Timber balustrade post post-fire.
 2. Design for the staircase screen, 78 Derrigate, Northampton. Hunterian Art gallery Mackintosh Collections ref: GLAHA 41104. An example of the evolving geometrical style of Mackintosh.



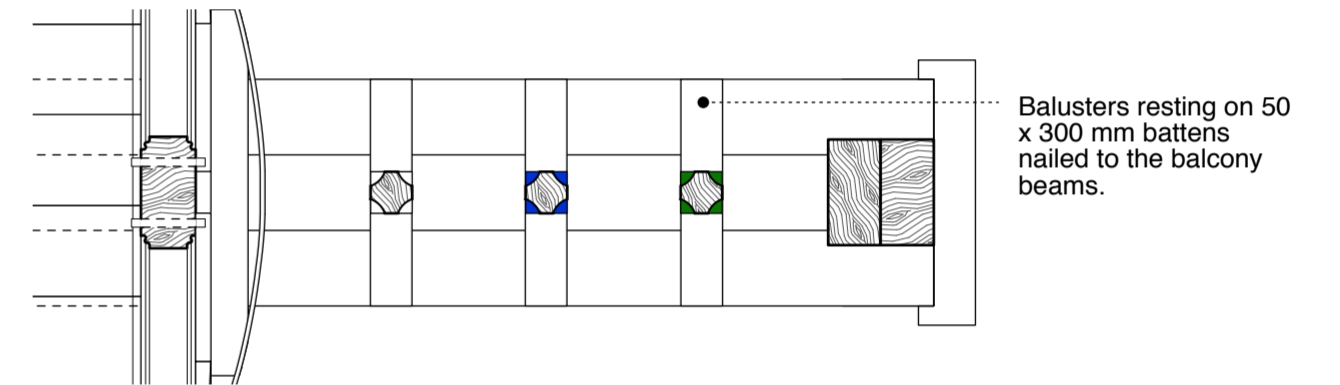
13 Back elevation of timber post
 Scale: 1:20



13 Plan of balustrade post
 Scale: Half Actual Size

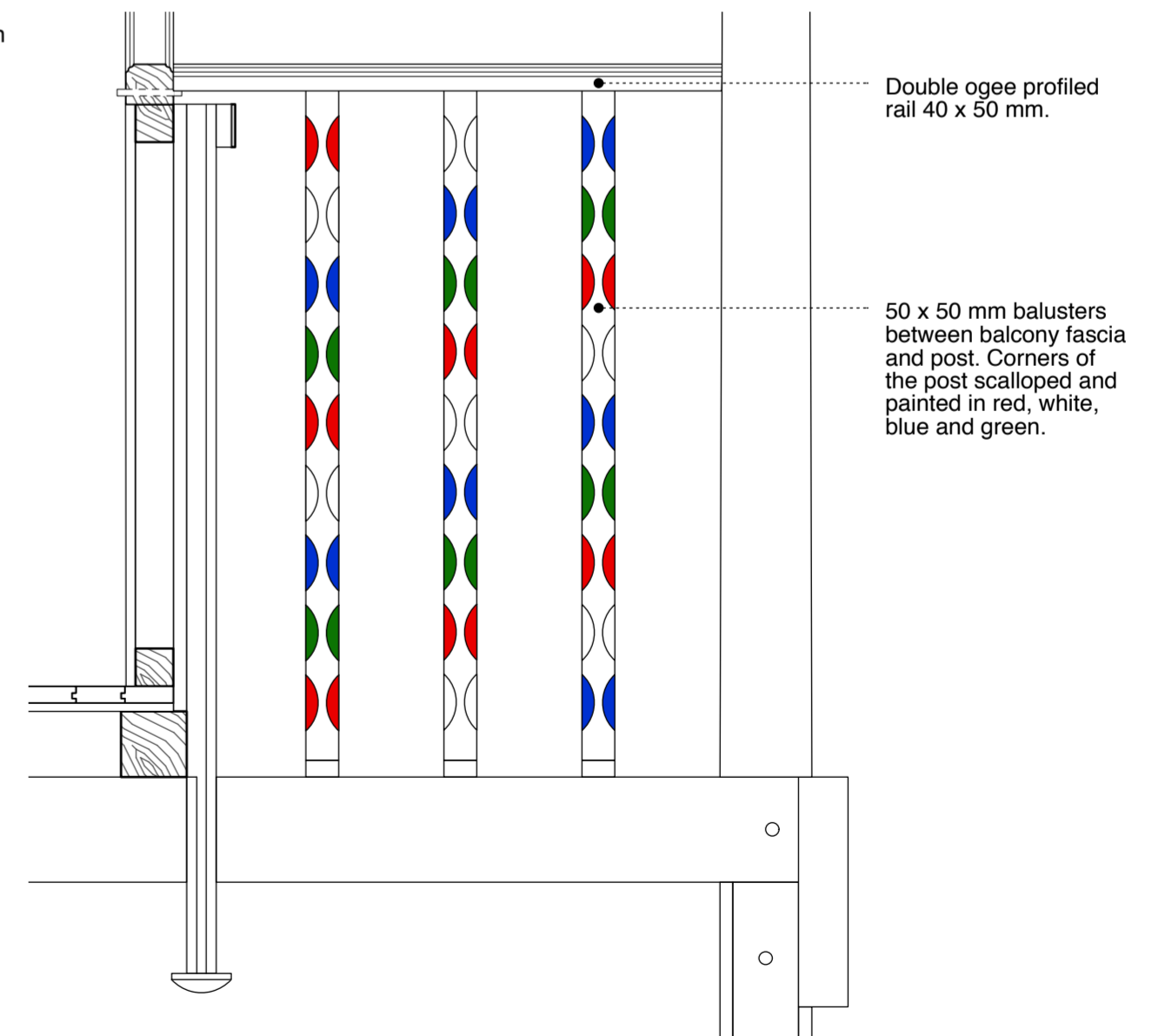


14 Isometric of balustrade posts
 Scale: 1:15



12 Balustrade and Balcony Plan
 Scale: 1:10

Balusters resting on 50 x 300 mm battens nailed to the balcony beams.



11 Side elevation of the balustrade
 Scale: 1:10

Double ogee profiled rail 40 x 50 mm.

50 x 50 mm balusters between balcony fascia and post. Corners of the post scalloped and painted in red, white, blue and green.

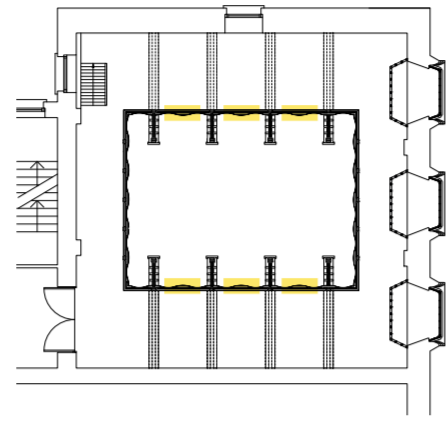
Position of balustrade post on balcony beams.

Inner fascia.

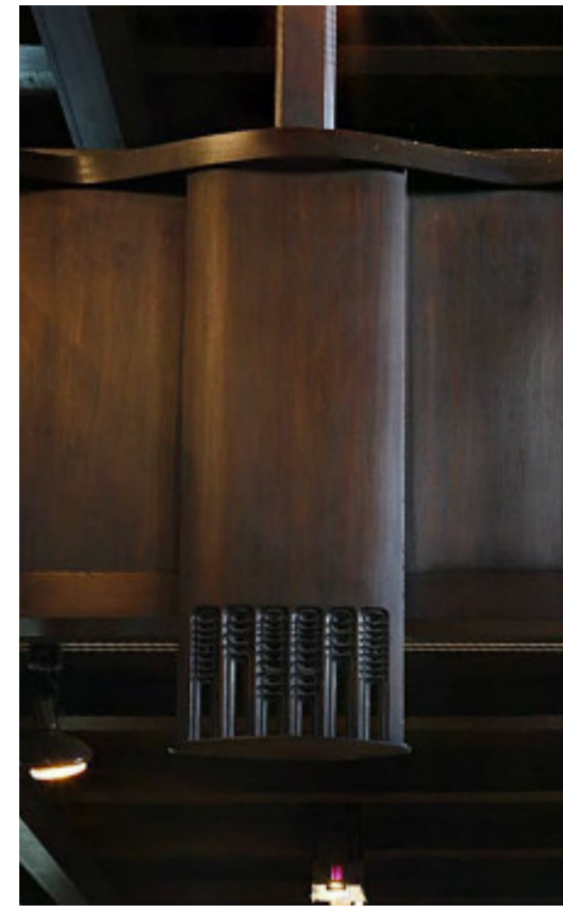
05 Piece by Piece - Library

Pendants

Piece element: Pendants to the balcony
Condition status: Destroyed
Evidence: No remains suitable for measurement.
Research: Archive material, record photographs, Paul Clarke measured drawings.



Photographic evidence

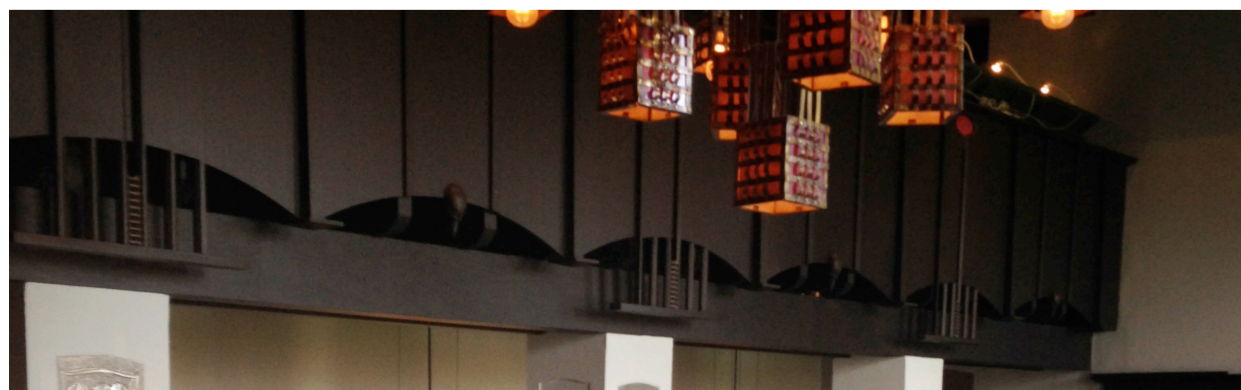


1.

2.

1. Library circa 1910
 © RCAHMS
 2. The Guardian, Library at Glasgow School of Art - 360 interactive panoramic..

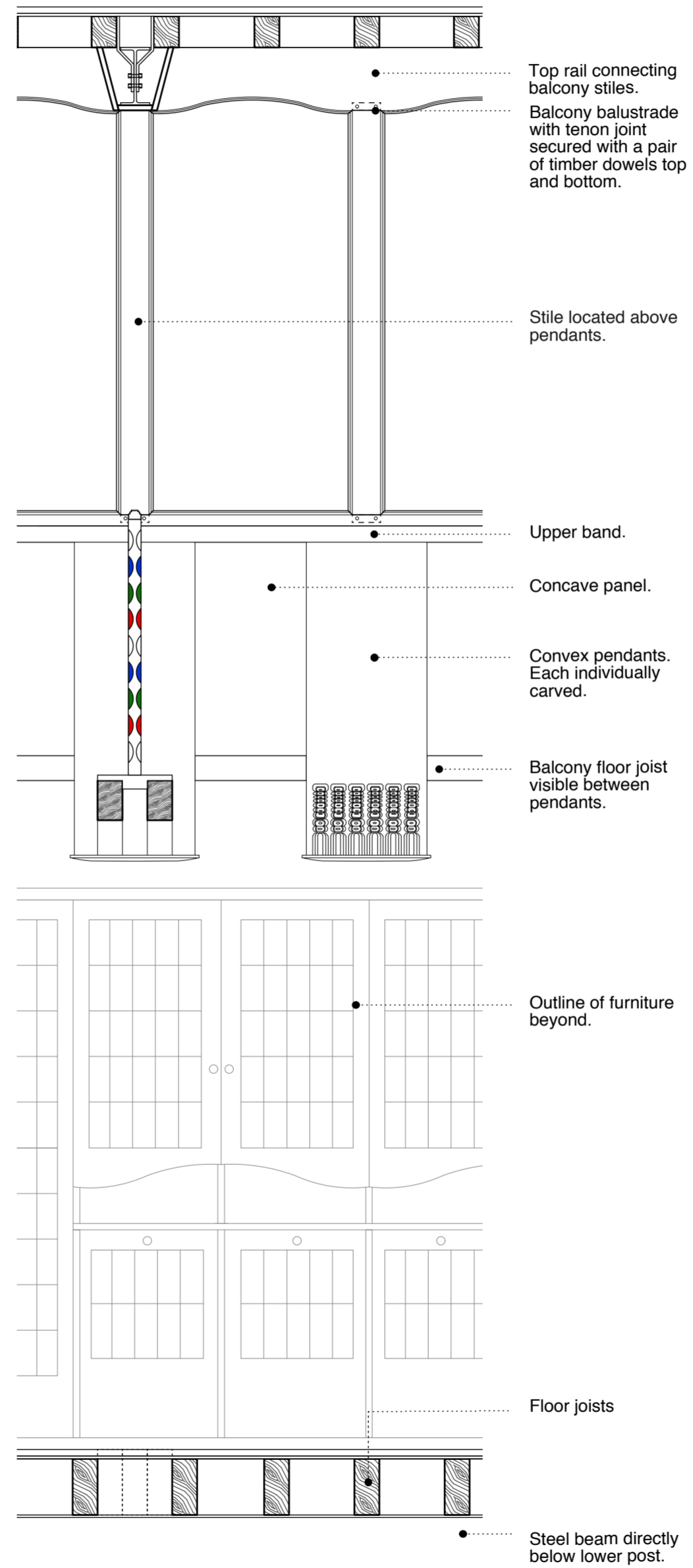
Evidence post fire



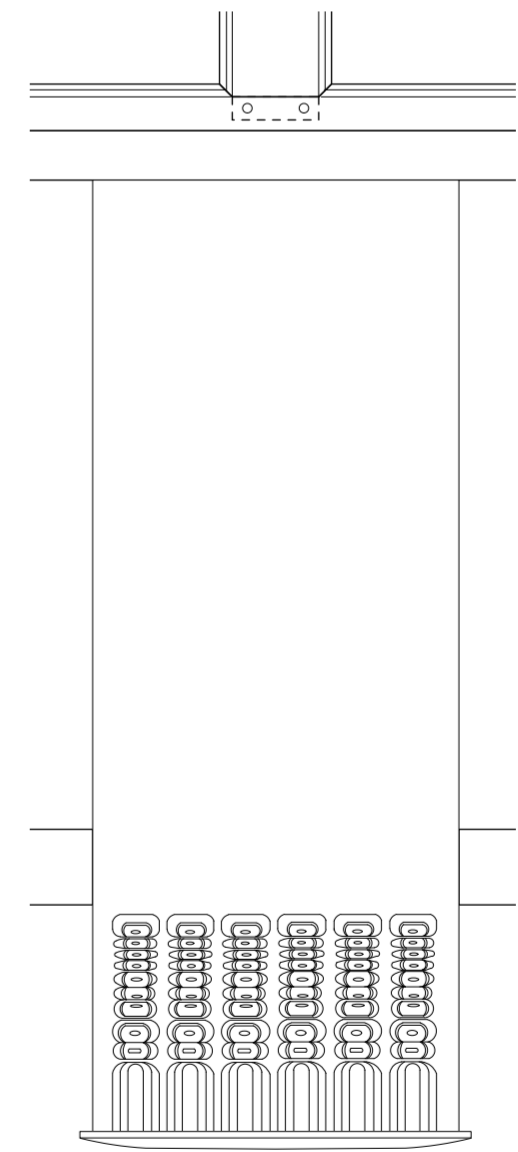
1.

2.

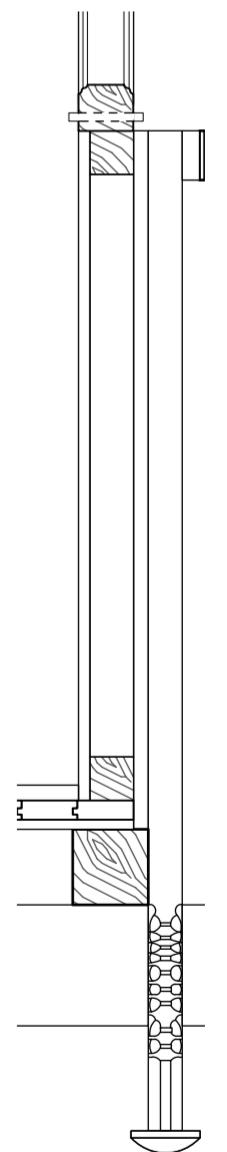
1. Balcony decoration House For An Art Lover, P/P Archive
 2. Balcony decoration Queens Cross Church.
 © RCAHMS.
 2. Bridge of Allan Parish Church, decoration detail, www.mackintosh-architecture.gla.ac.uk.



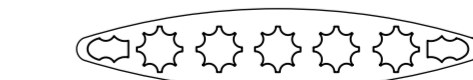
Elevation of balcony
 Scale: 1:20



16 Pendant elevation
 Scale: 1:10



17 Section through Pendant
 Scale: 1:10

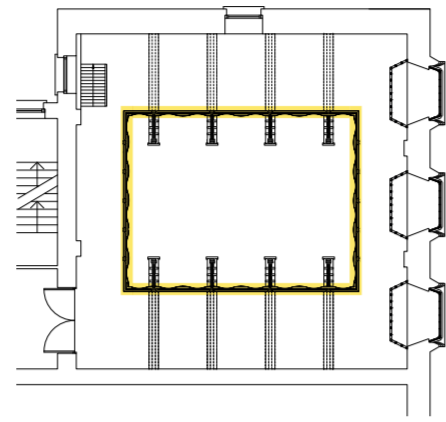


15 Plan of the Pendant
 Scale: 1:10

06 Piece by Piece - Library

Profiled rails

Piece element: Profiled rails
Condition status: Destroyed
Evidence: No remains suitable for measurement.
Research: Archive material, record photographs, Paul Clarke measured drawings.



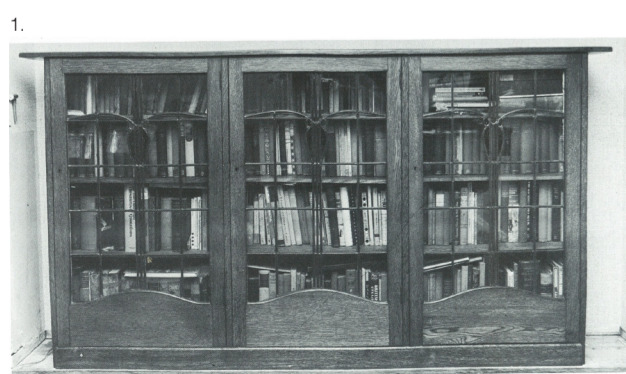
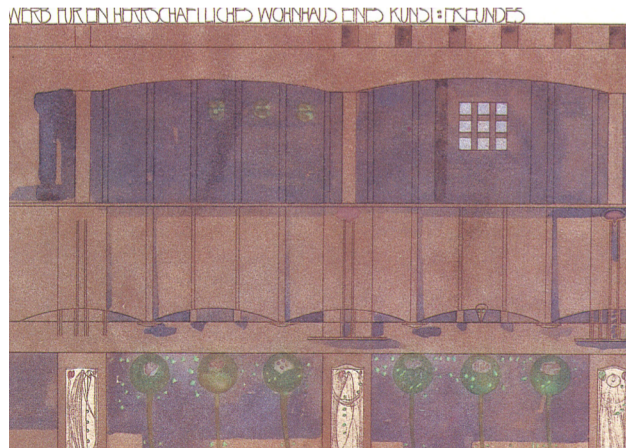
Photographic evidence



1.

2.

Evidence post fire



1.



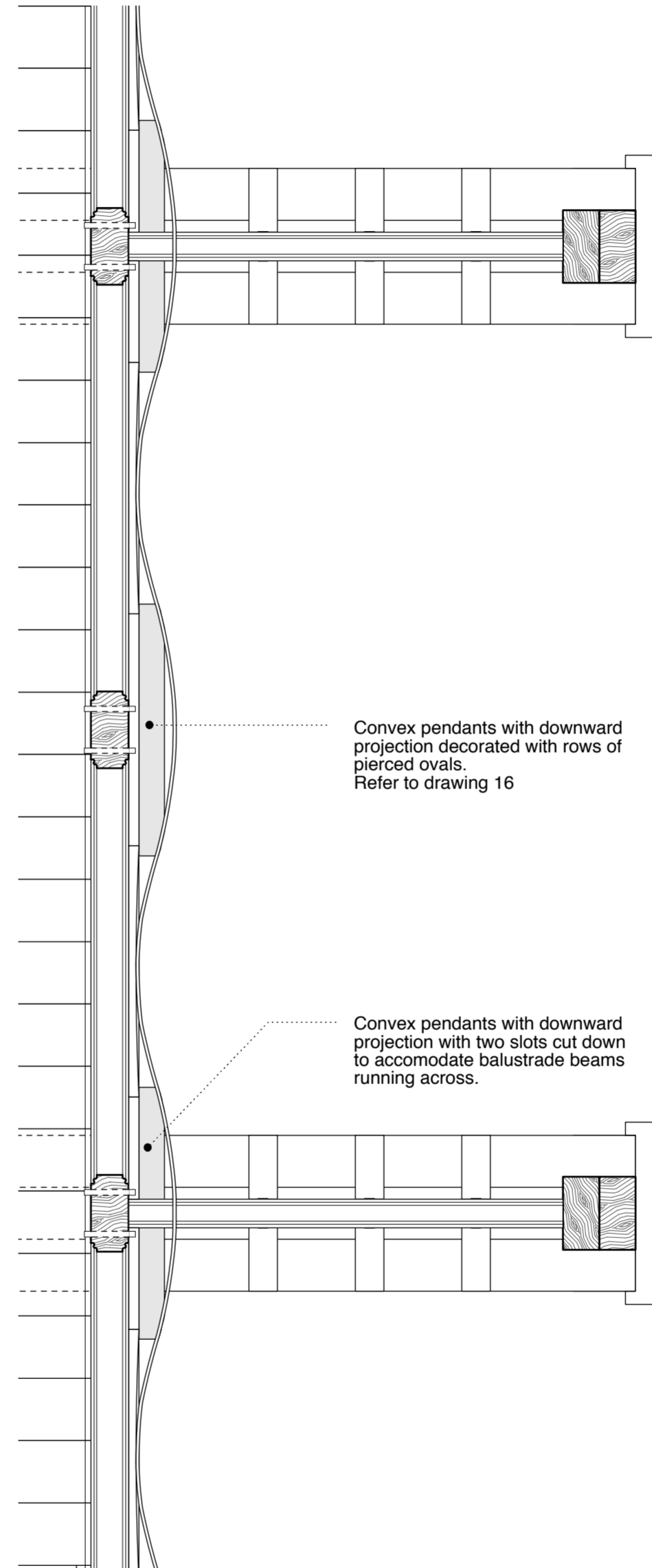
3.



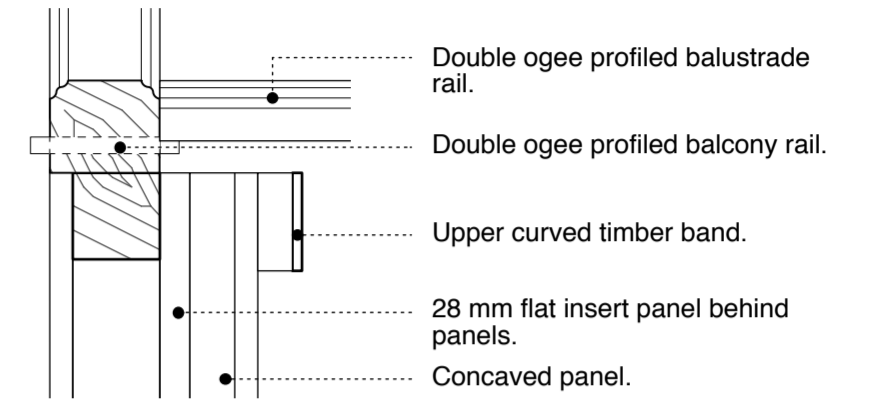
4.

1. Photo by Henry Bedford Lemere, Gallery of the Library, © RCAHMS
 2. Library balcony, © RCAHMS

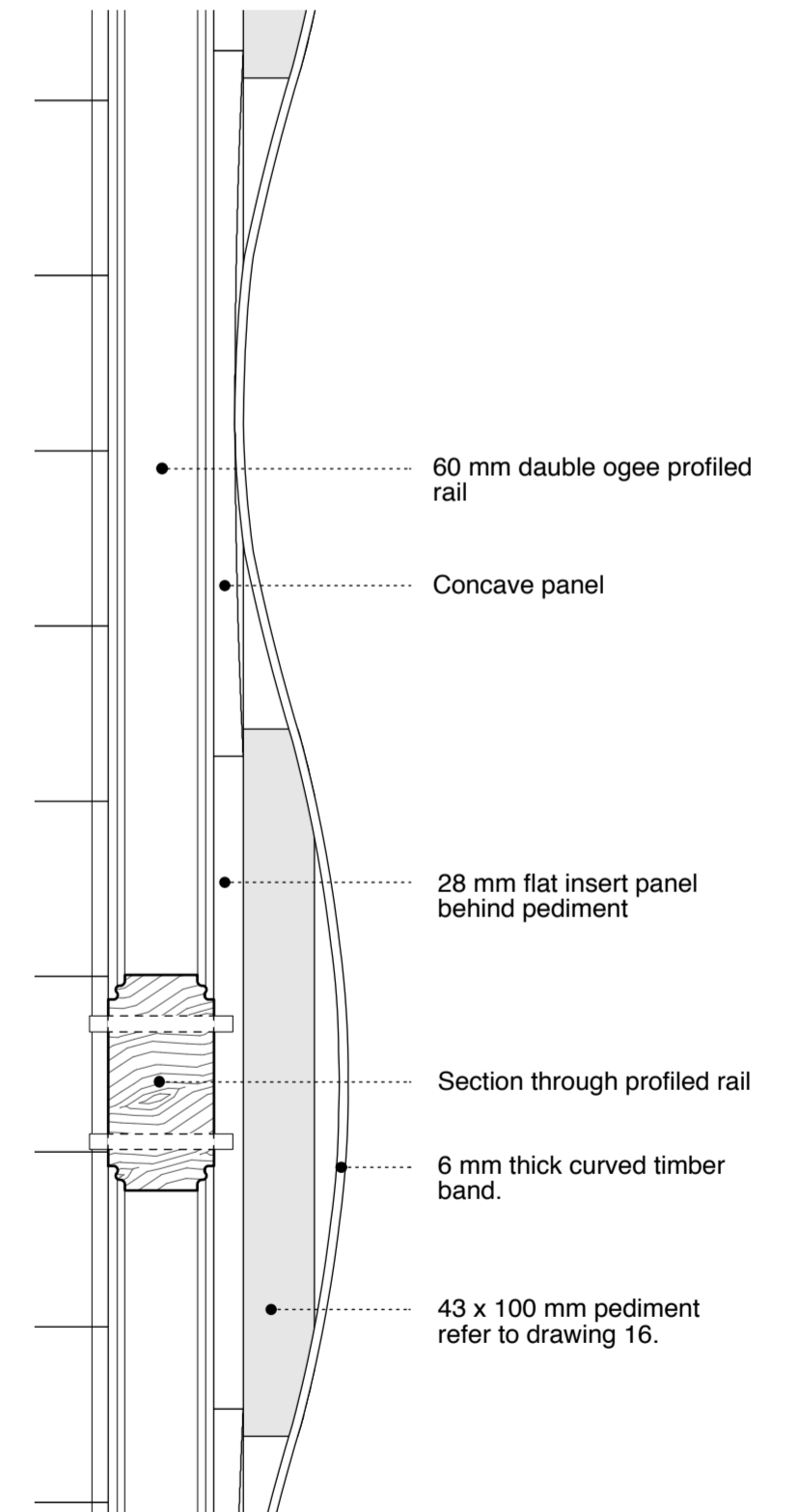
1. Elevation of the Gallery of the hall, House For An Art Lover, Plate XII from the portfolio published in 1902.
 2. Bookcase for Michael Diack, Roger Billcliffe, *Charles Rennie Mackintosh. The complete furniture, furniture drawings and interior design*, 1989.
 3. Sideboard for the Oak Room, Ingram Street Tea Room. Roger Billcliffe, *Charles Rennie Mackintosh. The complete furniture, furniture drawings and interior design*, 1989.
 4. Gallery in Oak Room, Ingram Street tea Room, Roger Billcliffe, *Charles Rennie Mackintosh. The complete furniture, furniture drawings and interior design*, 1989.



Plan of balcony and balustrade
 Scale: 1:15



19 Section through balcony rail
 Scale: 1:5

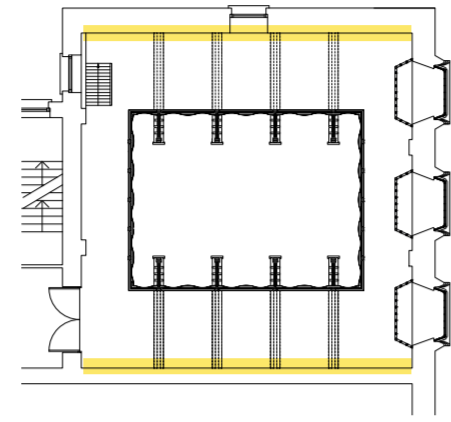


18 Balustrade and Balcony Plan
 Scale: 1:5

07 Piece by Piece - Library

Wall linings and floor build up.

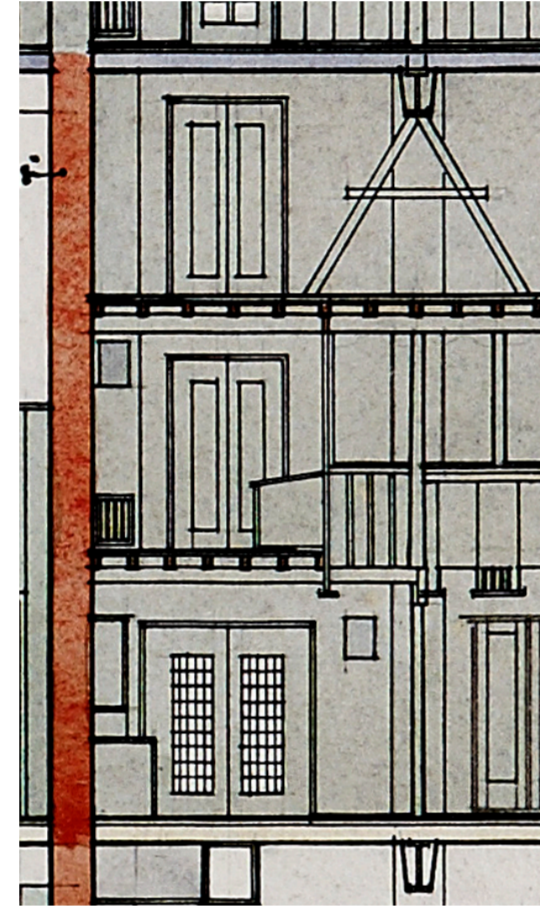
Piece element: Wall linings and floor build up.
Condition status: Damaged and partially destroyed.
Evidence: Limited remains suitable for measurements.
Research: Archive material, record photographs, Paul Clarke measured drawings / survey information.



Photographic evidence



1.



2.

1. Underside of the Balcony showing the balcony beam and balcony floor joists.
 © RCAHMS
 2. Section D-D through Library, balcony and furniture store 1910. Glasgow School of Art Collection.

Evidence post fire



1.



2.



3.

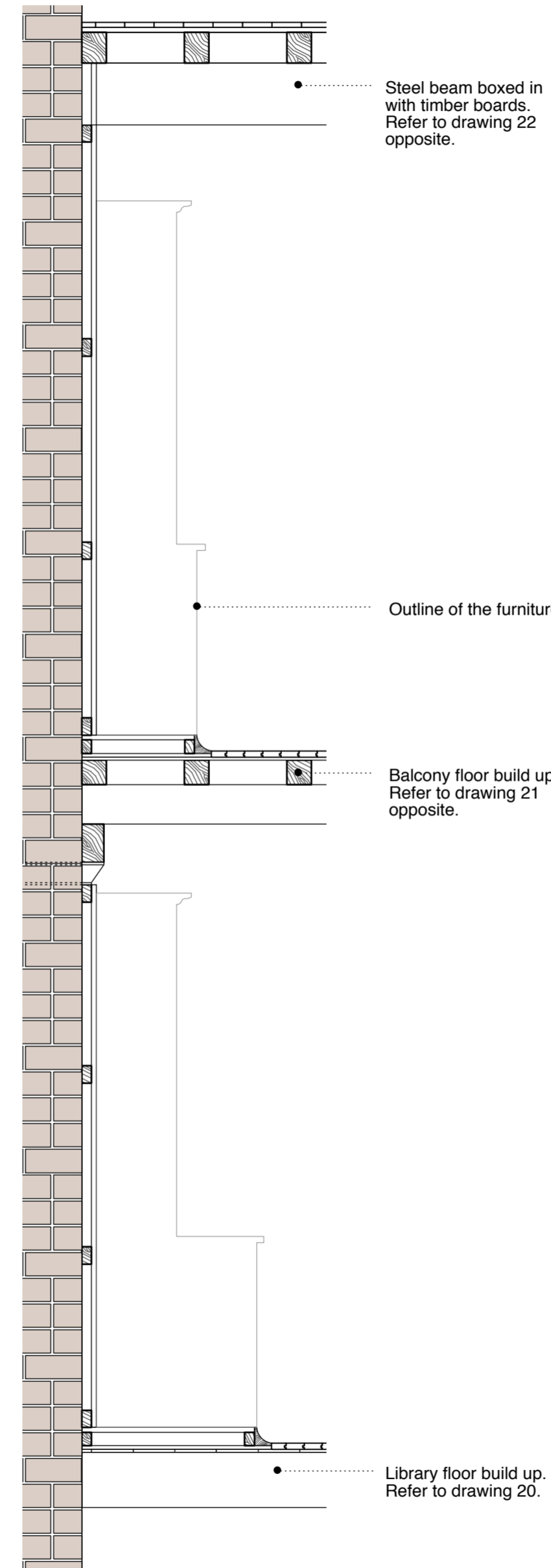


4.



5.

1. Steel straps tying I-beams to the Library ceiling with beams to the former bookstore. Upper posts were positioned directly below straps prior to fire.
 2. Remains of balustrade joists embedded into the wall.
 3. Steel T-bearers supporting timber beams running horizontally and balcony floor joists.
 4. Steel T-bearer and remains of timber panels below.
 5. Remains of timber panels fixed to battens.



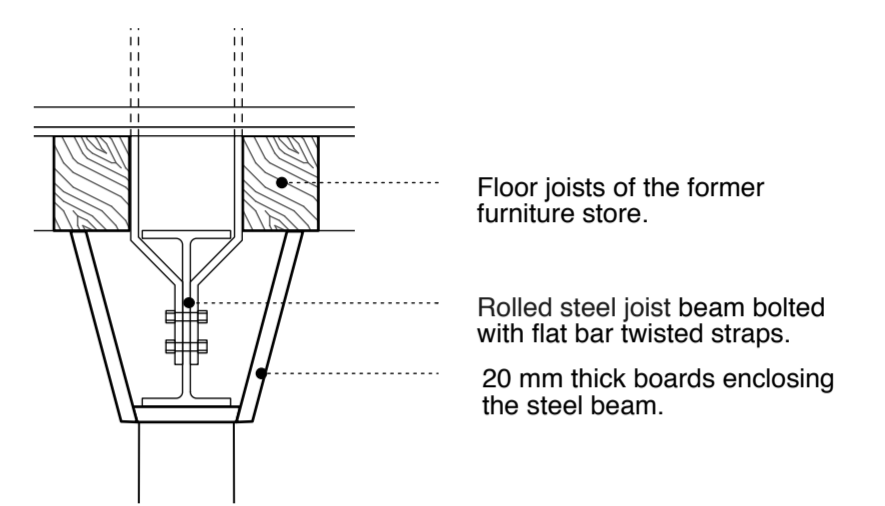
Section through west wall of the Library
 Scale: 1:20

Steel beam boxed in with timber boards. Refer to drawing 22 opposite.

Outline of the furniture.

Balcony floor build up. Refer to drawing 21 opposite.

Library floor build up. Refer to drawing 20.

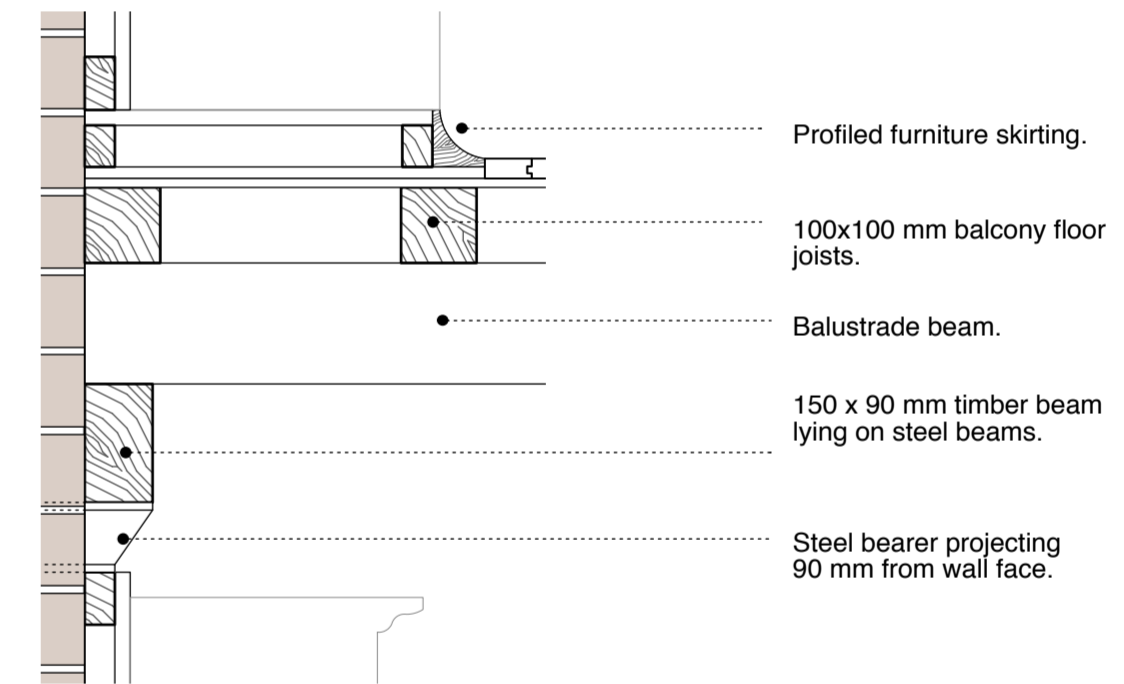


22 Section through metal beam
 Scale: 1:10

Floor joists of the former furniture store.

Rolled steel joist beam bolted with flat bar twisted straps.

20 mm thick boards enclosing the steel beam.



21 Section through timber panels - balcony level
 Scale: 1:10

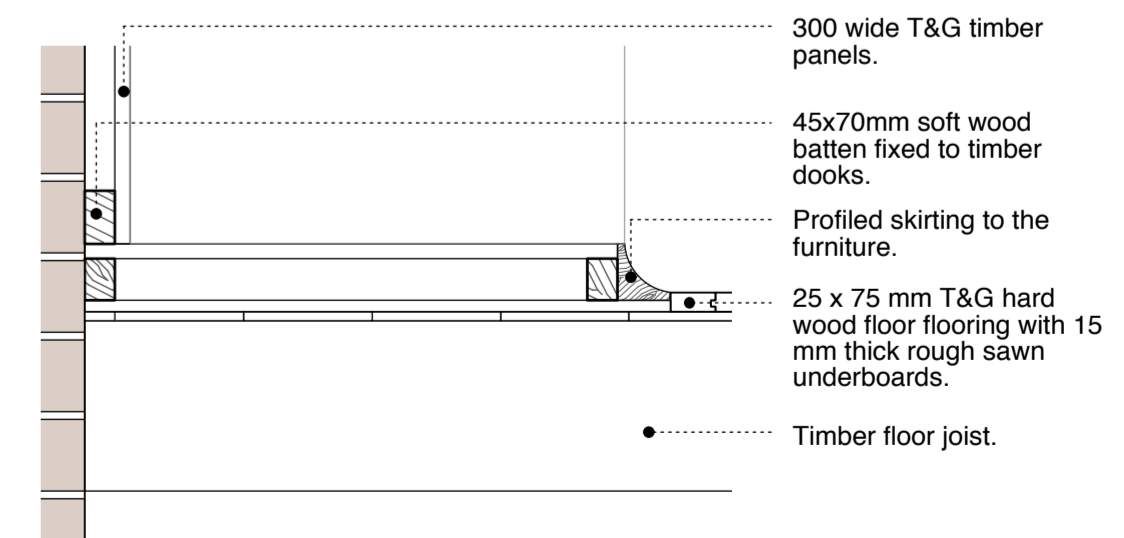
Profiled furniture skirting.

100x100 mm balcony floor joists.

Balustrade beam.

150 x 90 mm timber beam lying on steel beams.

Steel bearer projecting 90 mm from wall face.



20 Section through timber panels
 Scale: 1:10

300 wide T&G timber panels.

45x70mm soft wood batten fixed to timber dooks.

Profiled skirting to the furniture.

25 x 75 mm T&G hard wood floor flooring with 15 mm thick rough sawn underboards.

Timber floor joist.

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