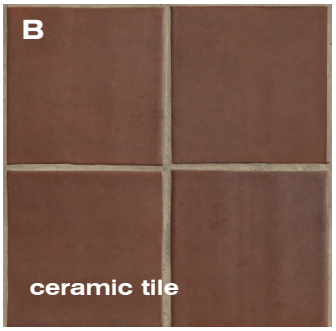
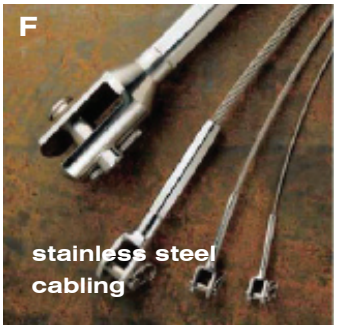
7 TECHNICAL INVESTIGATION





The ground floor and first floor are focused on for the technical investigation and technical final resolution. The prominent spaces include: the entrance threshold, thoroughfare, staircase and bridge, exhibition space and workshop space.

Material choices are based on: durability; relationship to concept of craft or craftsmanship; regional qualities and availability.

7.1 MATERIAL AND COLOUR PALETTE

A. concrete pavers to be used on the exterior at the main entrance area in order to articulate transition from the pavement into the building

B. ceramic tile to be used as main flooring material in thoroughfare, used in combination with pavers to emphasise entrance foyer as transition space

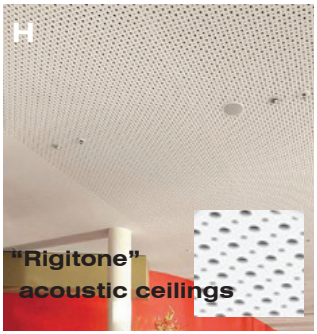
C. hard-baked stockbrick to be used as main exposed surface in thoroughfare

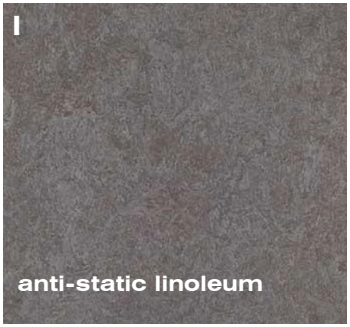
D. timber slats to be used for the stairs and landing in the atrium as well as in the exhibition nooks next to the vertical circulation

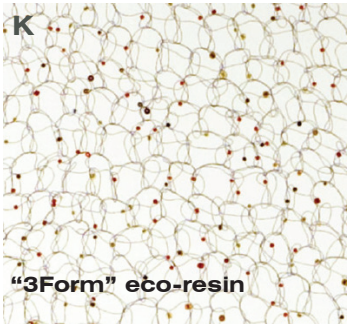
E. to be used as part of the new aesthetic on the main facade, reacting to the deterioration of the existing windows

F. structural cabling to be used in new vertical circulation as fixing methods of frame to stair landing

Figure 7.1 (left and opposite): Material palette (Author, 2011).







G. crafted energy-saving light fittings (Animal Farm) as ambient lighting, to be used in public thoroughfare

H. acoustic ceiling to be used in workshop spaces

I. flooring to be used in workshops

J. stainless steel plate: signage and staircase

K. translucent panels to be used in exhibition spaces to articulate and emphasise the product on display

L. for acoustic- and textural purposes, to be used in exhibition space

M. chemically-treated screed

public circulation

member circulation

fire escapes

service lift

main lift

7.2 BUILDING ELEMENTS

7.2.1 CIRCULATION AND SERVICES

The main circulation routes through the ground- and first floors consist mainly of the thoroughfare and the vertical circulation element (atrium).

On ground floor, the general public will have access to certain elements and members of the crafts centre, to others (see Figures 7.2).
Public persons will have a constant interaction with the ground floor retail- and leisure component, and exhibition spaces on the first floor. This use will not interfere with member- and staff use.

Exhibition spaces on the upper floors are open at all times, during working hours when classes are given. Furthermore, members consisting predominantly of students of crafts and design, will utilise the computer facilities on ground floor, take part in lectures and watch information sessions on the first floor.

An existing fire escape in the north-east corner is kept as is, with the addition of a dedicated fire escape in the south-west corner. This one was strategically decided upon, in order for people to have easy access at all times, wherever in the building. Doors open onto the stairs, which have landings of minimum 1200x1200 as per regulations.

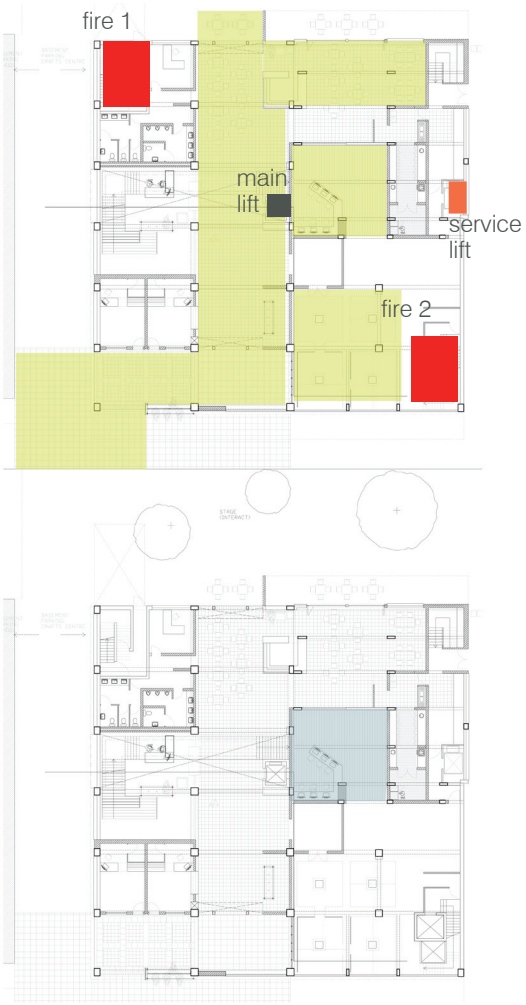
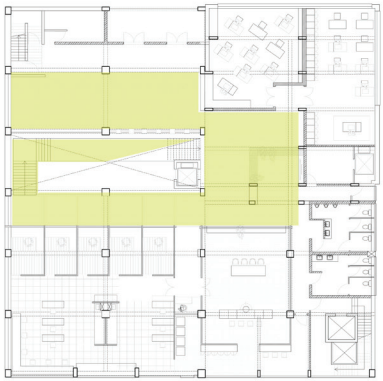
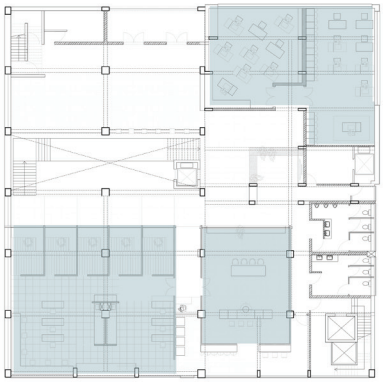


Figure 7.2: Diagrams illustrating circulation and services in building (Author, 2011).





existing lift = new HVAC central core

7.2.2 COOLING

The interior requires ventilation on all levels, public and private. The nature of the ground floor level is one that does not require mechanical ventilation in the main circulation spaces, like the above floors, as it is a public thoroughfare which has a ceiling height of 3m<. Openable doors during the day and the humidity levels in the Pretoria region means that there is no need for mechanical cooling here.

The ablution facilities, retail components and the kitchen and restaurant do, however, require cooling; the kitchen area, an extraction system in particular.

A new HVAC system is to be incorporated into where the existing lifts were. An HVAC central core is used to cool the floors, 2 separate systems for the 2 floors (ground and first; first and second) respectively. A central core was envisioned to cater for all floors, but logistically 2 will be needed to serve 2 floors, each with a plant room to be placed on the roof. Return air core is situated adjacent to supply air core.

The main duct will run from the core to the designated spaces, with smaller secondary ducts emanating from it, opening onto the designated spaces through aluminium diffusers.

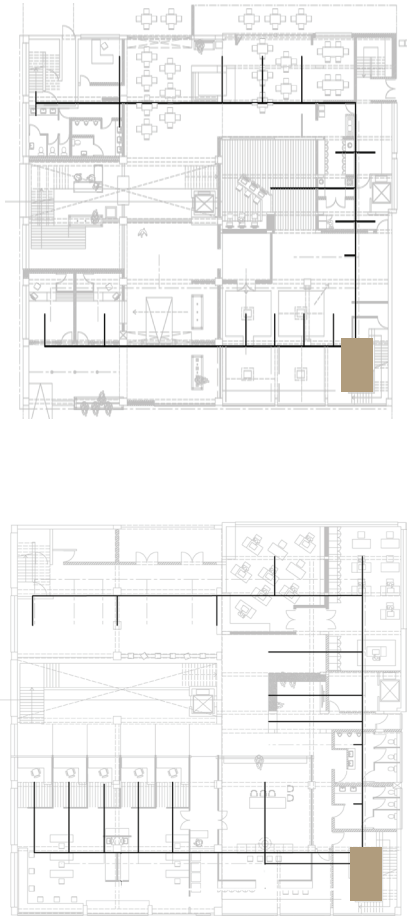


Figure 7.3: Diagrams showing HVAC system on ground- and first floor (Author, 2011).

7.2.3 LIGHTING

Natural lighting is introduced by means of the addition of the atrium, allowing the adjacent circulation spaces and exhibition spaces to be lit. Furthermore, artificial lighting is implemented in the rest of the building: public circulation spaces- locally-crafted energy-saving light fittings by Animal Farm for conceptual purposes; a series of metal halide downlights for the restaurant area; industrial light fittings for the main entrance area; halogen spotlights for the reception area and fluorescent lighting to accentuate the seams where ceilings meet columns and walls.

Figure 7.4: Lighting examples for intervention (Spazio, 2008).

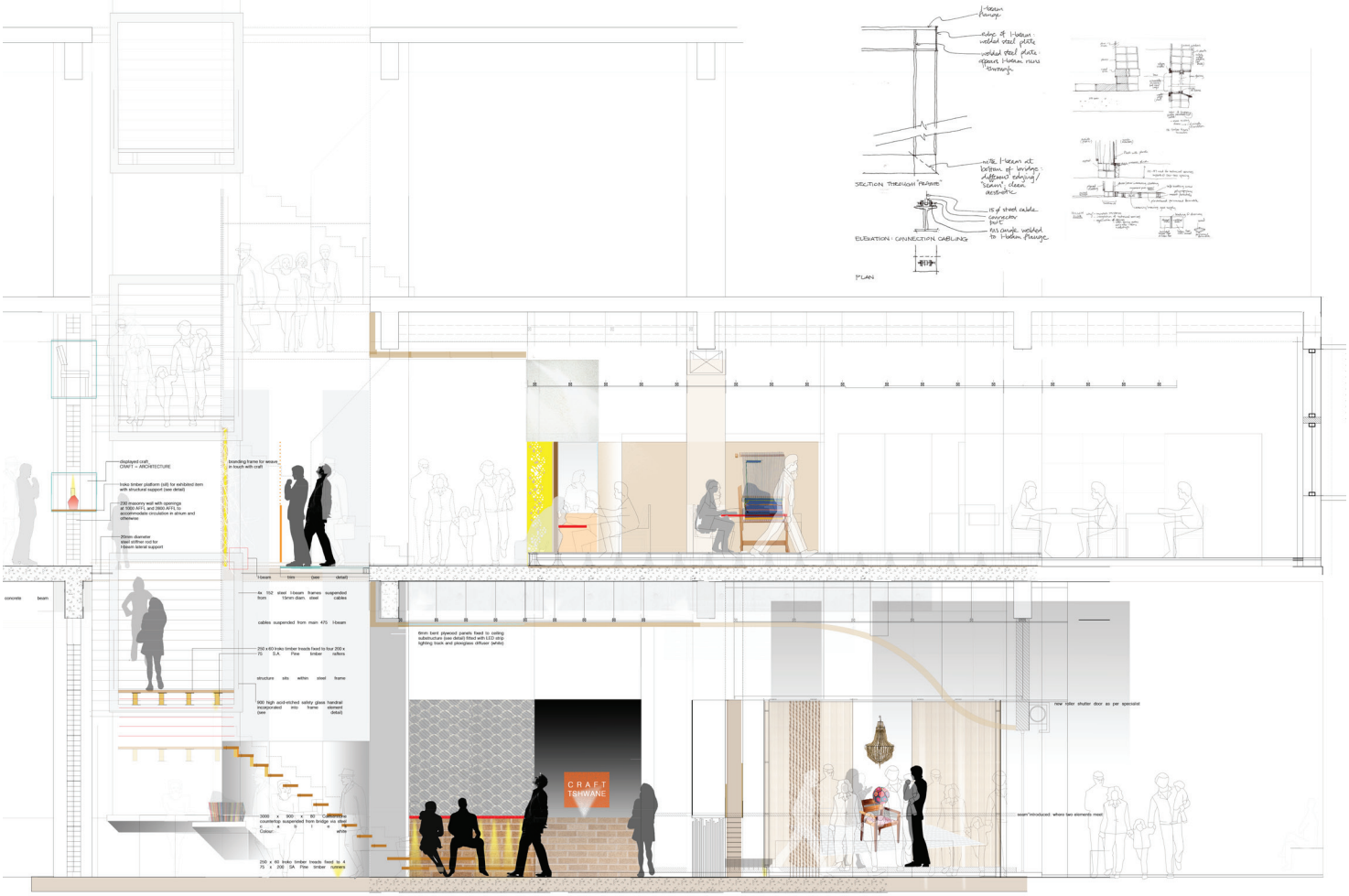


Figure 7.5: Section investigating atrium, entrance and exhibition space- not to scale (Author, 2011).

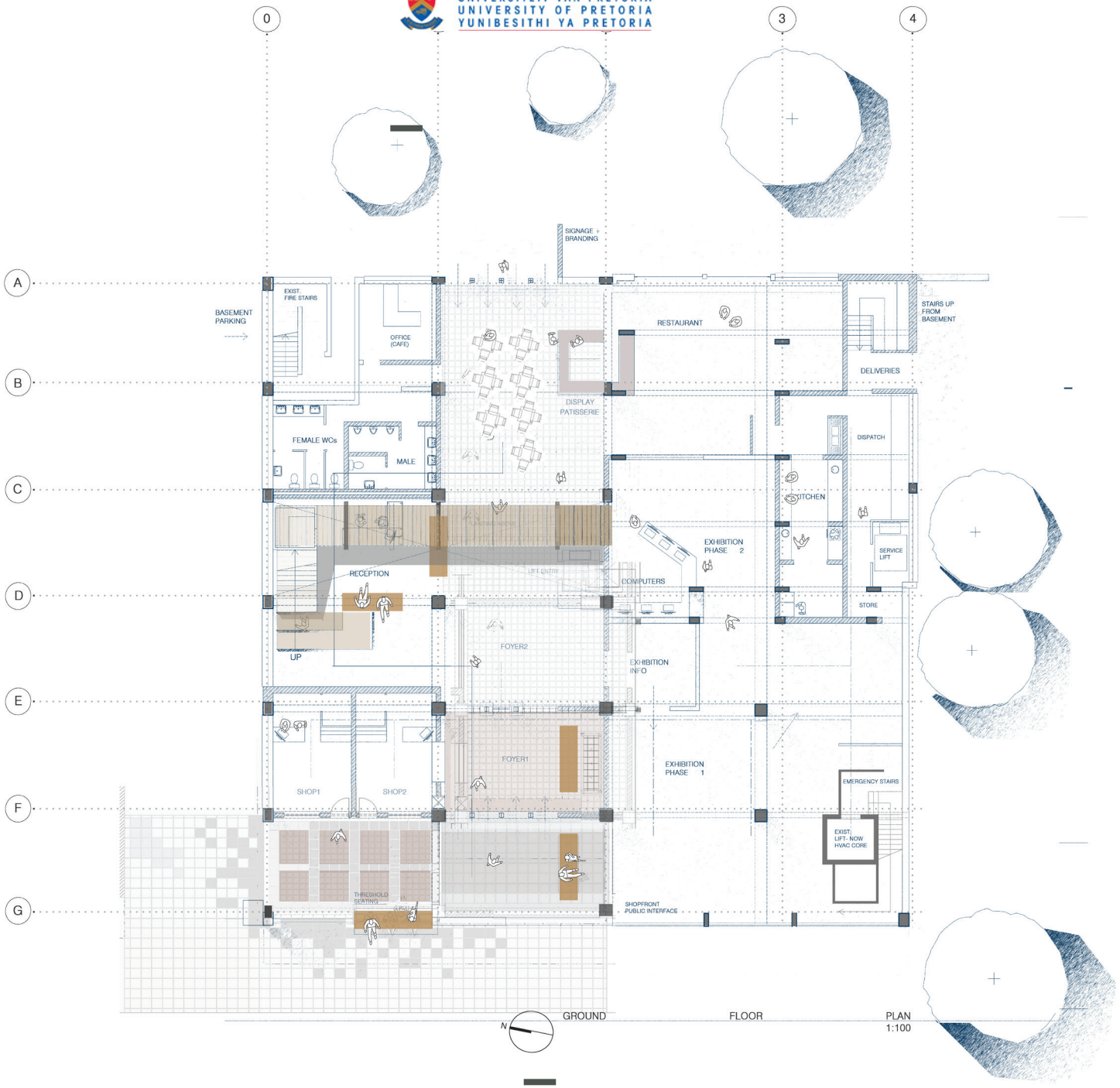


Figure 7.6: Ground Floor Plan- not to scale (Author, 2011).

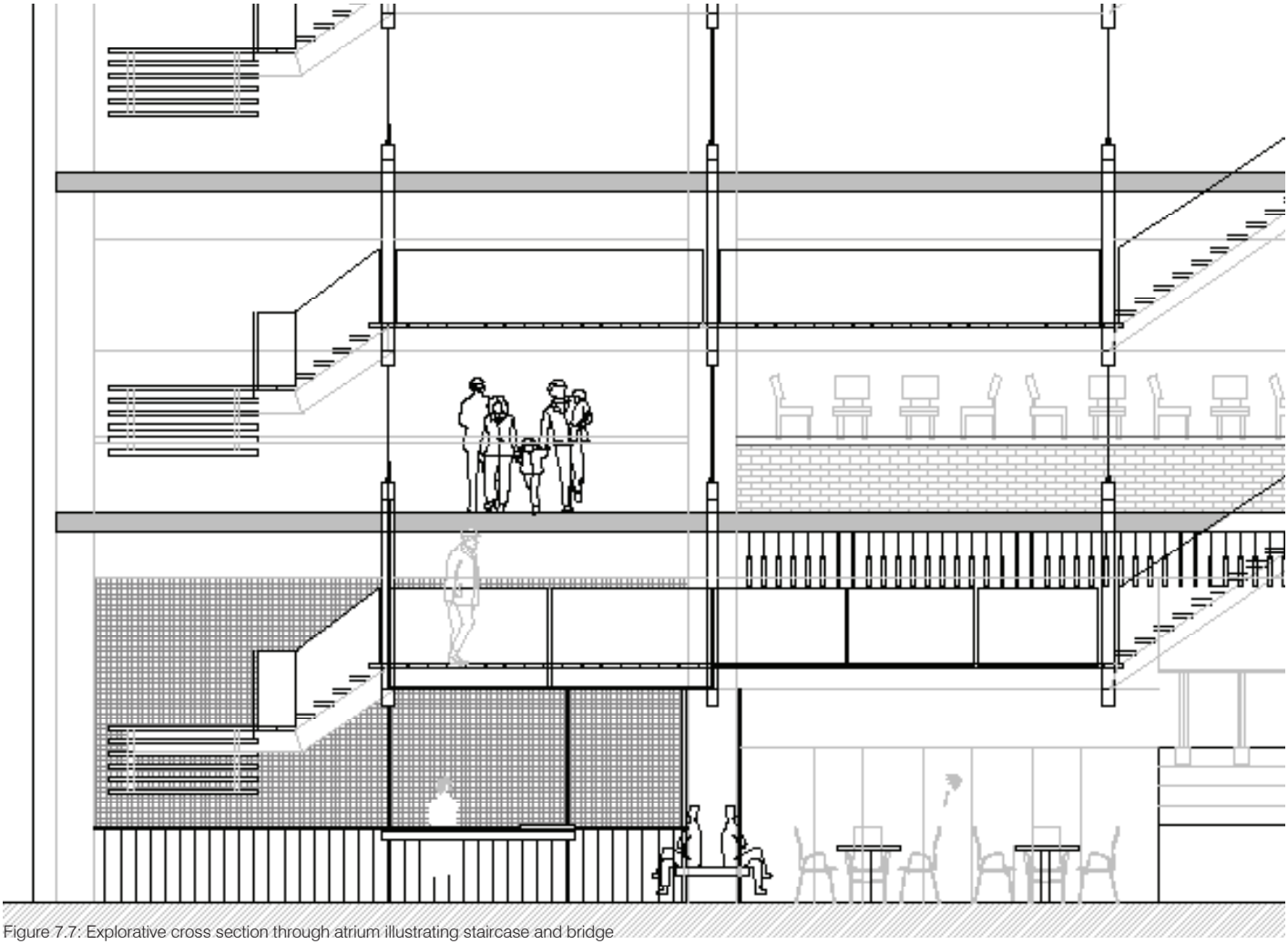


Figure 7.7: Explorative cross section through atrium illustrating staircase and bridge construction- not to scale (Author, 2011).

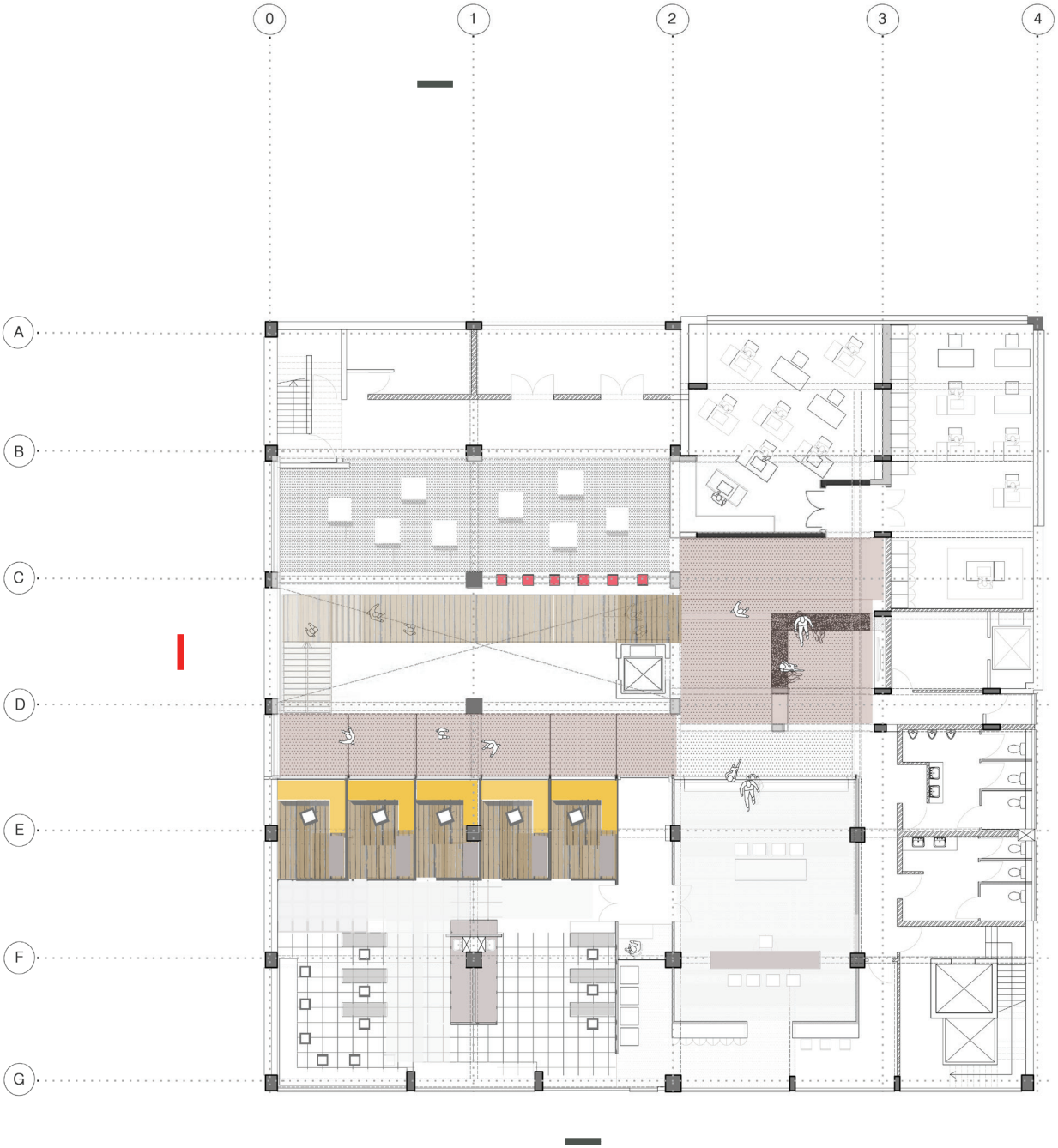
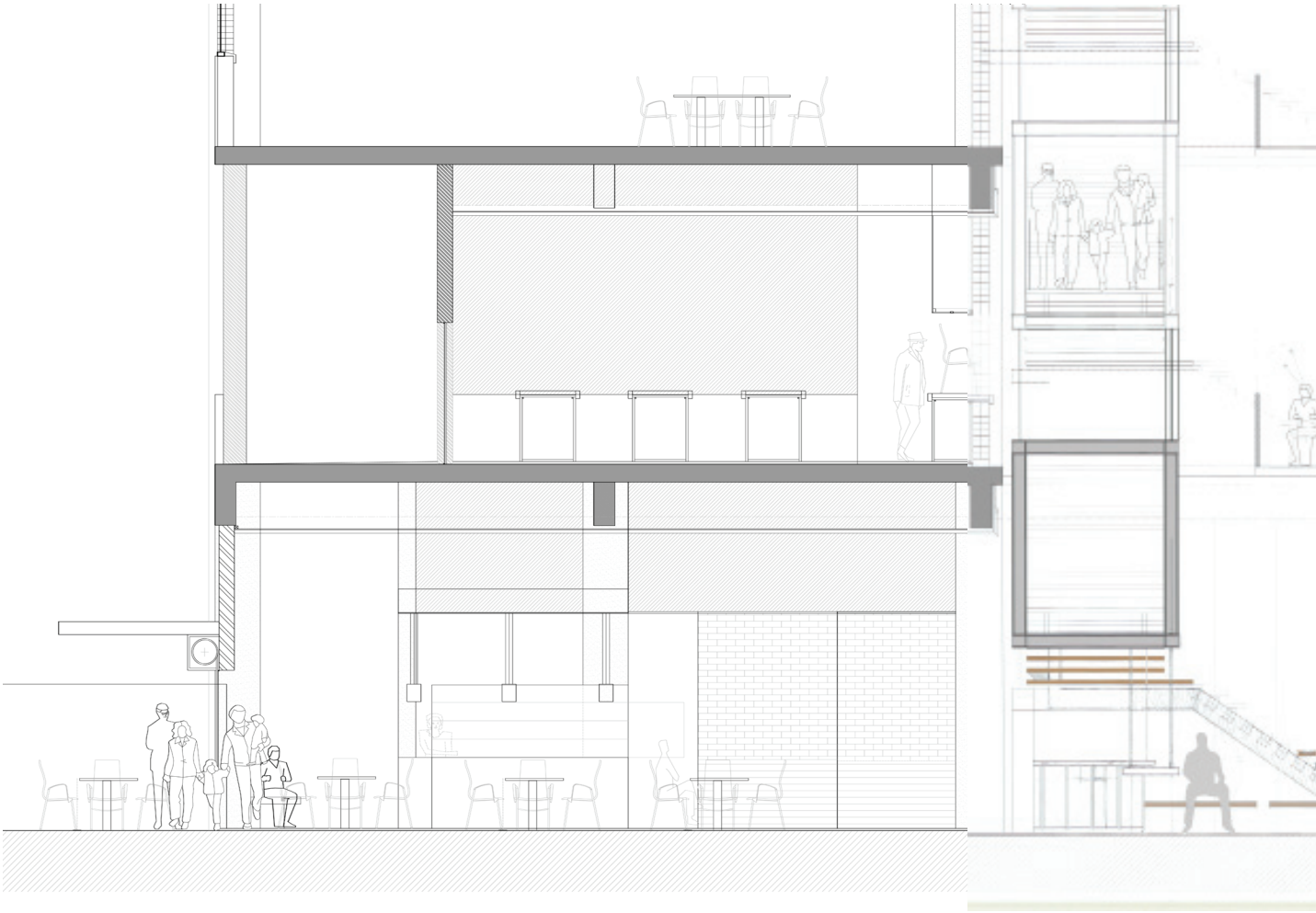


Figure 7.8: First Floor Plan indicating atrium, exhibition space and workshop- not to scale (Author, 2011).

Figure 7.9: Explorative section indicating activity spine and atrium- not to scale (Author, 2011).



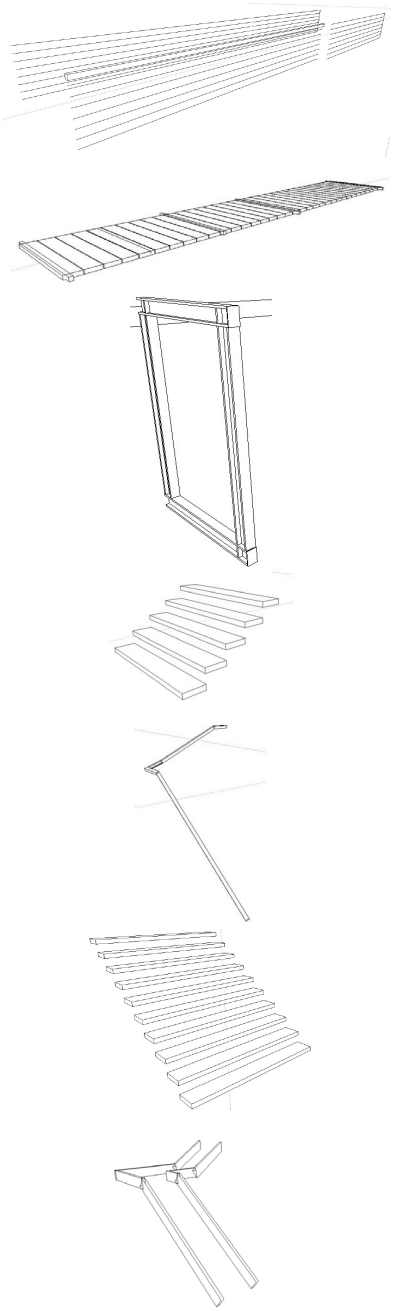


Figure 7.10: Exploded diagram of main staircase- “the seam” (Author, 2011).

7.3 DETAIL DESIGN ELEMENTS

7.3.1 STAIRCASE AND BRIDGE AS REPRESENTATIVES OF CONCEPT

1. The structure for the staircase consists of 305x165x12 steel I-beams as the supports for the treads and landing.

2. The sub-structure consists of 3 sets of “frame” elements, composed of a set of 4 I-beams each, of 203x152x12. These are the links between the supporting cables and the staircase bridge.

3. The I-beam frames are then suspended by 2 sets of 16diametre stainless steel cables, which are in turn suspended from a main I-beam resting on the atrium’s slab above.

4. The bridge’s support consists of 2 sets of 305x165x12 steel I-beams that span an approximate distance of 4m each. These carry perpendicular to them, Iroko timber slats, with a lifespan of at least 30 years, handled with a water-based treatment to negate the need for sanding it back to the old finish. Iroko is a highly durable hardwood.

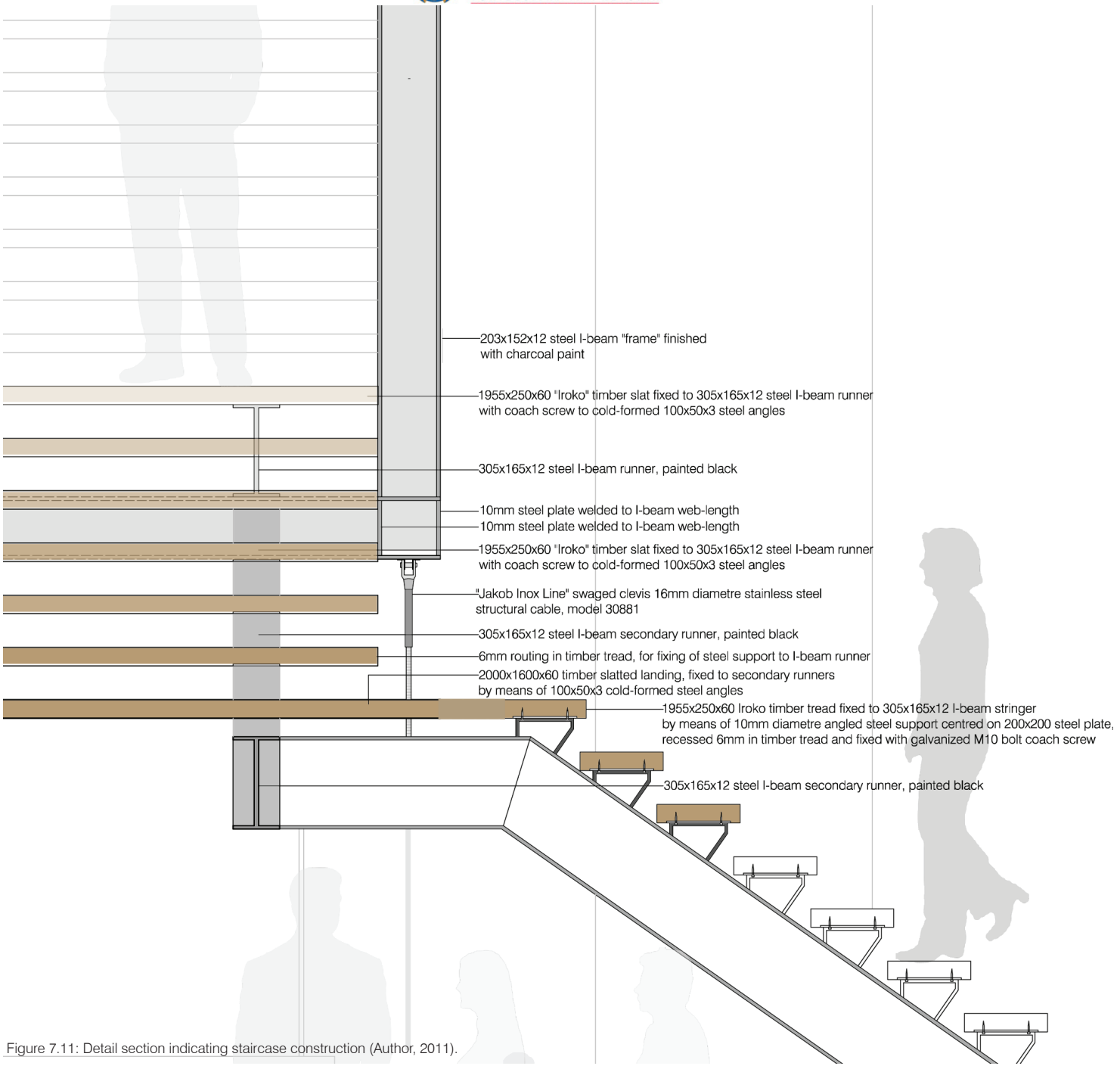


Figure 7.11: Detail section indicating staircase construction (Author, 2011).

7.3.2 APPROACH TO EXHIBITION ELEMENTS

The exhibition is initially noticed when ascending the staircase and walking across the bridge. The concept entailed: making the craft items on display an integral part of the architecture. An exposed masonry display wall is noted, followed by a timber platform, and finally an overhead bulkhead element that forms, as a whole, a lit display nook for crafted items produced in the centre. These items would reflect the companies renting in the centre.

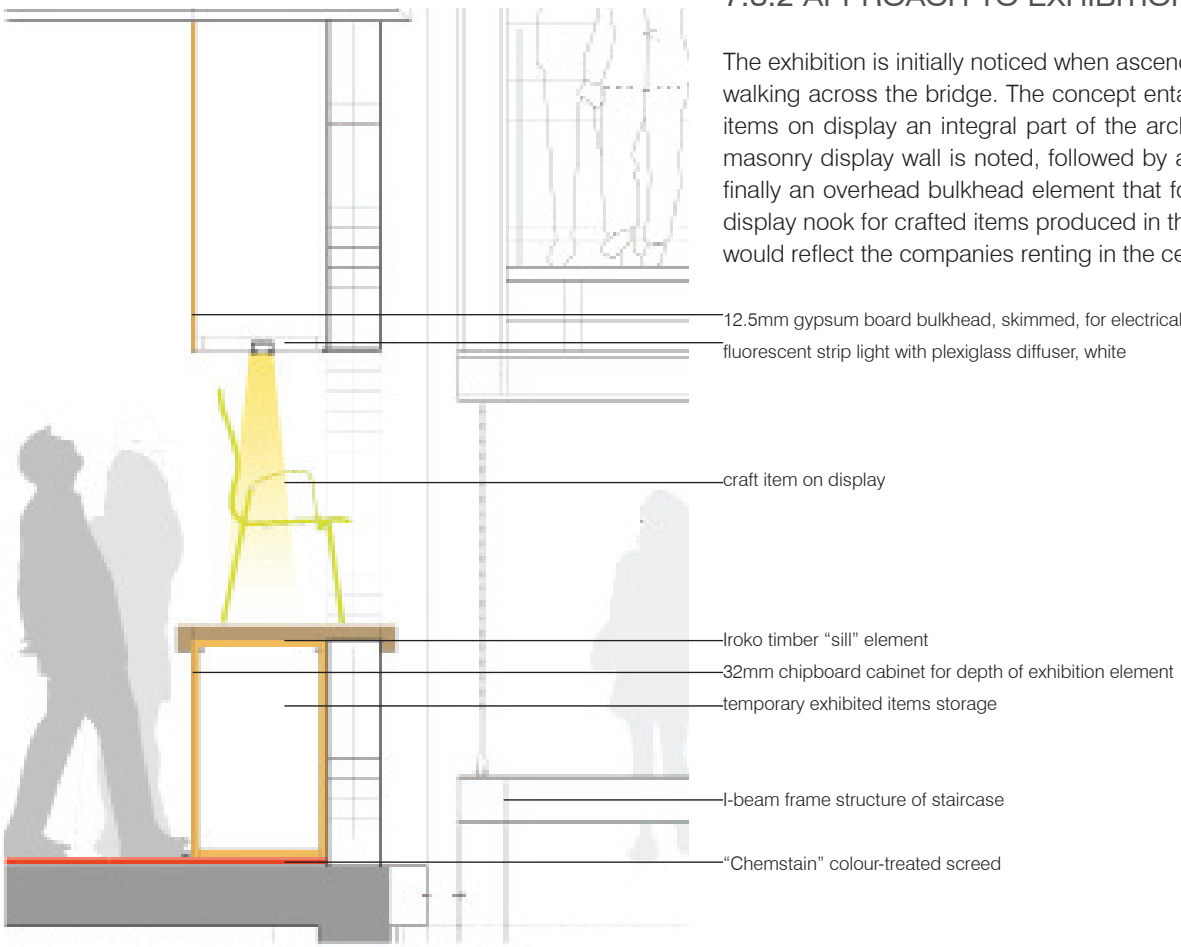
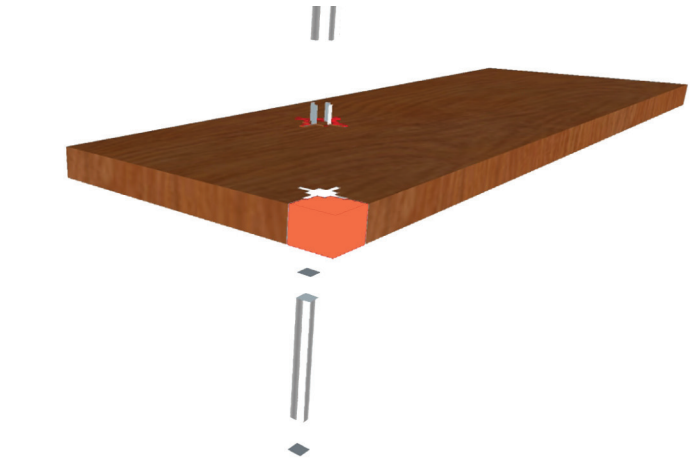
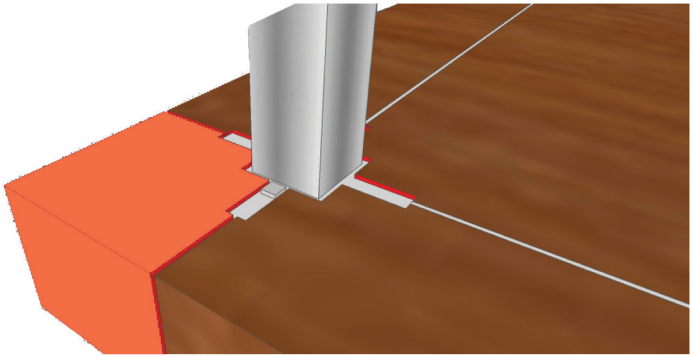


Figure 7.12: Section indicating exhibition platform principles (Author, 2011).





7.3.3 APPROACH TO PERMANENT SEATING

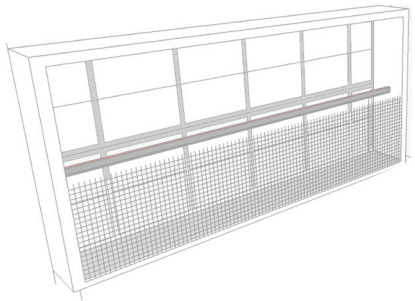
The permanent seating, visible when entering the centre, is approached in a similar way as the staircase, in terms of allowing "making" to be visible in the composition, as well as it being an attribute inherent in the construction.

CONSTRUCTION:

1. Iroko timber seat
2. metal base plate, bolted to FFL
3. 50x50x3 square hollow, fixed to base plate with steel angles and screws
4. steel plate: fixed to square hollow
5. timber seat in place
6. 100mm from corners- routing
7. 4x steel brackets positioned, screwed to timber face (countersunk wood screws)
8. 50x50x3 square hollow placed over upstands of brackets and kept in place
9. square hollow fixed to soffit/ ceiling by means of bolts
10. 1mm routing continued around perimeter of seat, 100mm from edge

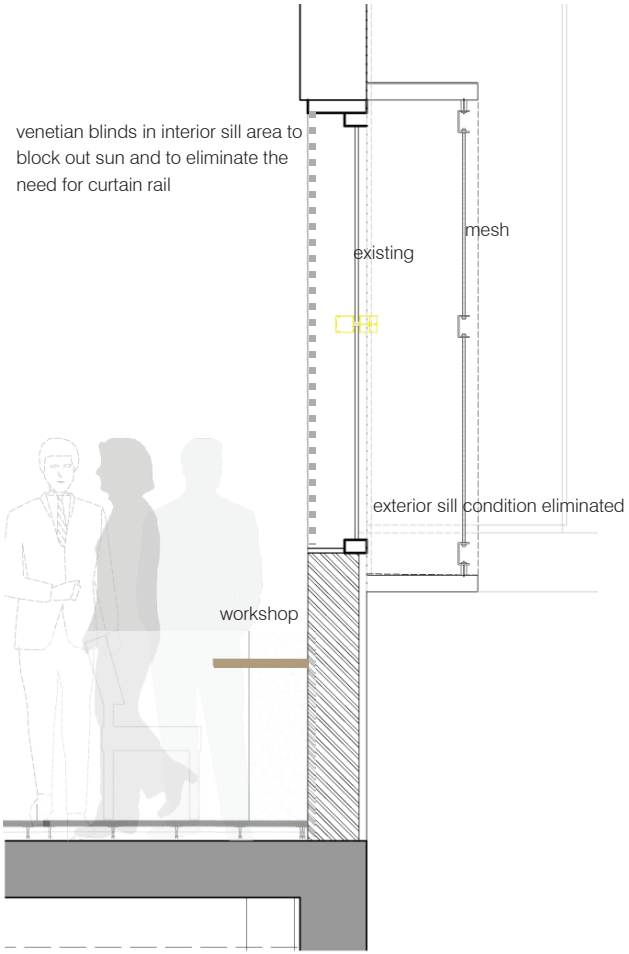
Conceptual approach behind tectonics: craft as making; branding/ identity carried throughout design; idea of elements joined together by means that are visible- routing as representative of seam; the idea of tying together, or something holding this element in one piece. Materiality: durability (Iroko); standard size square hollow as element through which bench is "threaded".

Figure 7.13: Technical exploration of seating (Author, 2011).



7.3.4 APPROACH TO FACADE TREATMENT

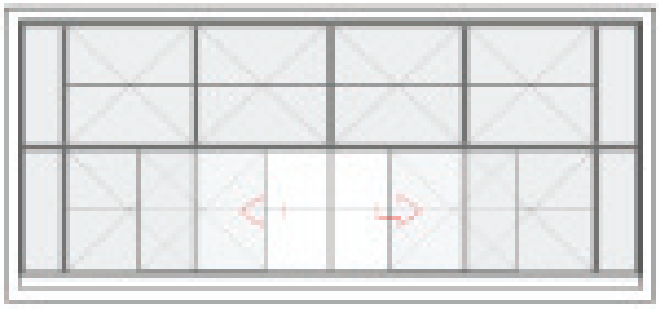
Figure 7.14: Section indicating facade treatment (Author, 2011).

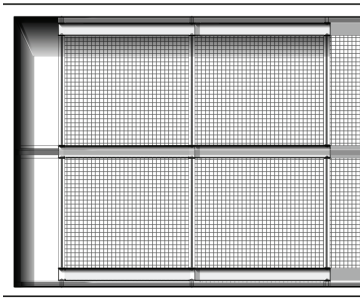


The facade's current condition is in decay, allowing for opportunity to alter it, without damaging the heritage-related aspects of it. As discussed, proportions of the modern period are essential to maintain. Another aspect of importance is the fact that the facade is west-facing, making solar control a problem. Workshops front this facade and therefore need to be kept cool, whilst being a naturally-lit environment.

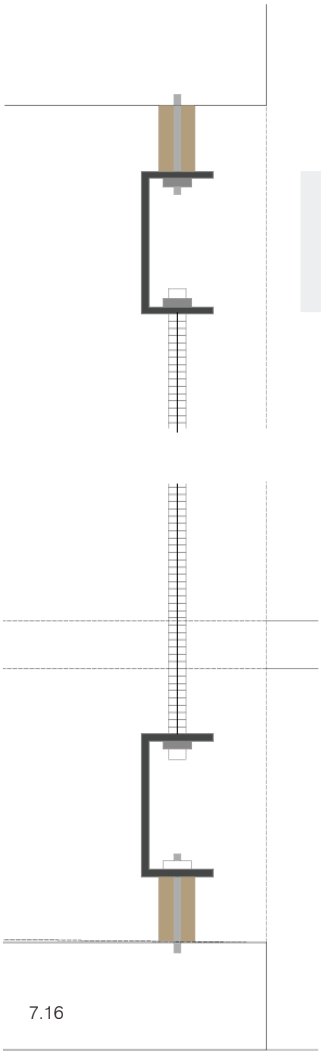
It is proposed to extend the window slits by adding another row. The top row would be static whereas the bottom, openable by workshop employees.

Figure 7.15: Window elevations (without/ with mesh addition) (Author, 2011).

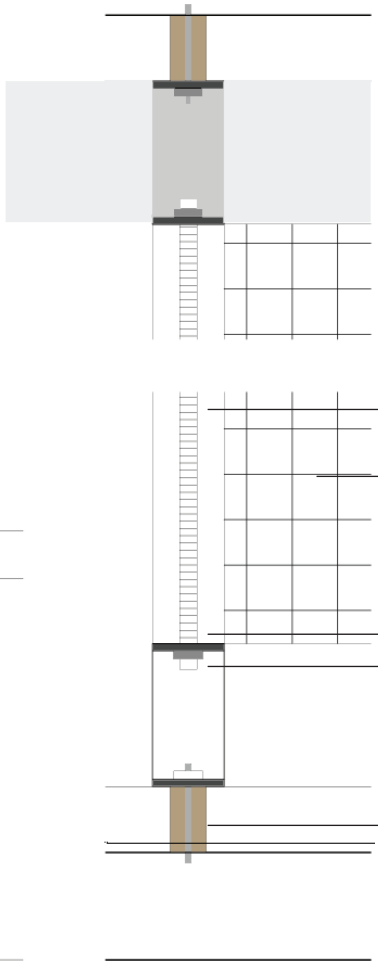


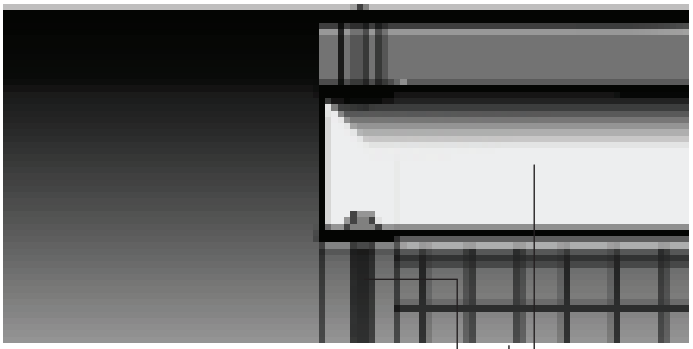


The idea of the SEAM is present in the articulation of of the details, because the existing is respected, whilst a contemporary layer is added to the facade, without diminishing its character. The existing steel window frames are replaced with aluminium frames.



7.16





7.17

12mm diameter threaded rod to hold mesh in place

stainless steel architectural mesh

100x50x50x5 galvanized steel channel

threaded rod fixed to steel angle with galvanized steel nut and washer

50x25 timber spacer fixed to angle with bolt coach screw, and bolted to protruding concrete box; at 900 spacings

Figure 7.16 and 7.17: Mesh screen mechanism detail (Author, 2011).