06 | TECHNE

6. TECHNÈ

The craft of building

The exploration of programme and spatial experience is driven by the relationship between the mundane and the extraordinary. Spatial and aesthetic inspiration is drawn from the existing conditions in Atteridgeville. The goal is to translate these qualities into something inspiring, so that merely entering the precinct becomes an escape - an invitation to lose oneself in the space.

The investigation into the craft of construction is context-driven. Form, material consideration and threshold resolution are inspired by existing conditions. These elements are manipulated and enhanced to achieve the theoretical and conceptual intentions. There is a search for complexity in the scheme from an urban scale through to the smallest detail. Individual materials are to be honoured, with an emphasis on connections.

Six informants; namely scale, the fence, paving, light, water and the border; are used to guide the technical development of the scheme. This is reinforced by the three overarching themes: connect, interface and activity. These principles are used to create a sense of familiarity (the mundane) in the civic realm, but present it in a new light to create something spectacular. The intention is to demonstrate a poetic interpretation of simple construction technologies and systems thinking to ensure maximum comfort and delight.

I. SCALE

The programmatical requirements demands that a large scale be introduced into the fine grain of Atteridgeville. The use of face brick is to make reference to existing public buildings, but also to take advantage of the modular scale of a brick. This is to be complimented by the articulation and celebration of structural elements, as well as secondary systems.

II. FENCE

The fence in Atteridgeville is not implemented for security measures, but instead serves as an adornment. An interpretation of this threshold will be used to define spaces in a similar manner to manipulate the layering of spatial experience.

III. PAVING

The surface treatment of driveways has been exploited in various areas of Atteridgeville. There is an emphasis on the extension of the street into the home. This will be utilised as a language to articulate the horizontal plane, exposing patterns on site.

IV. LIGHT

Light will be used to define and delineate space according to the various levels of 'loss' associated with each programme. Solar control will be considered to ensure the most natural and comfortable conditions for each space.

V. WATER

The control of water throughout the site will be used as a means of creating connections between various spaces in association with memory and dreams.

VI. BORDER

The building will be used to highlight support spaces along a route recognising the border as the place to dwell.

DEVELOPMENT

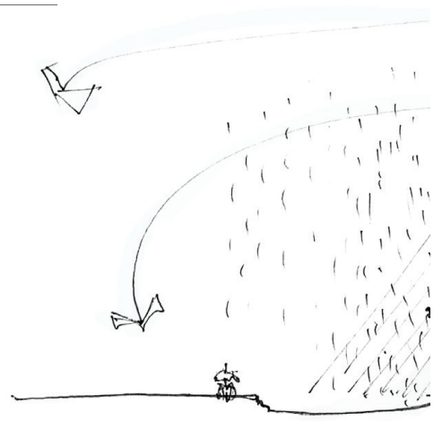


Fig. 251. Strategies for the site (right). This diagram indicates the potential to utilise passive strategies. Considering the large volumes of the selected programmes, as well as the occupancy, it is proposed that hybrid systems are used to reduce the dependence on mechanical systems. The first consideration is earth tubes, taking advantage of the constant temperature below natural ground level. Depending on the season, the pre-heated or -cooled air will be circulated through the volumes from below. The diagram also indicates how the edge conditions create spaces to protect users from the elements. Thermal mass will be used to keep spaces cool during the day, and night flushing will expel the radiant heat in the evenings during summer.

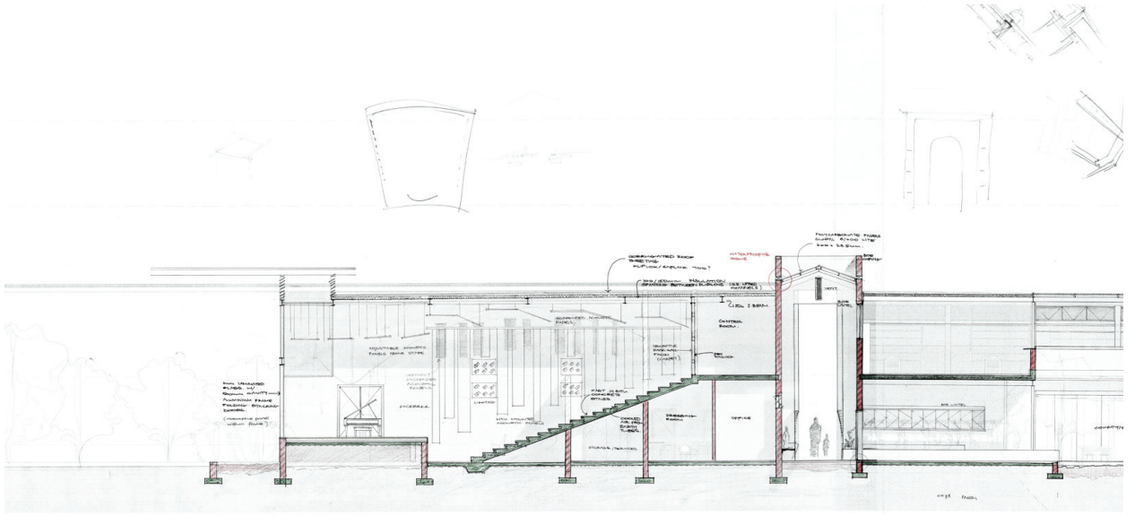
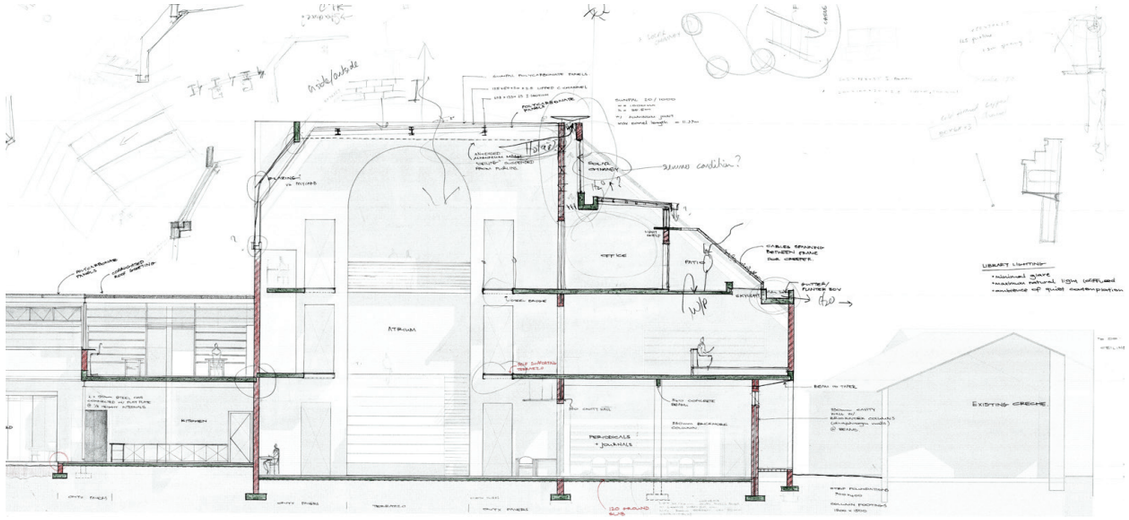


Fig. 252. North-south section through recital hall, restaurant, library (Sept.). This section was used to explore the requirements for each programme. A steel roof system was tested in this iteration, as opposed to a concrete flat roof of previous iterations. Suspended and wall mounted acoustic panels are considered for the recital hall, as well as a new roof to allow for stack ventilation, incorporating a heat exchange system to pre-heat water for use in the dressing rooms and radiant heating in walls where required.



The northern facade of the library was interrogated in this section. The goal was to step down the scale towards the crèche, and provide an undercover stoep for the children. The second storey accommodates the offices, so a balcony is proposed to cater for staff. The first storey hosts the majority of the books, thus a more robust structure should be considered. A solar chimney with a mild steel cap painted black, is proposed as a heat store to create a draft, and extract heat from the large atrium space as well as the offices. The skylight presents many issues, considering solar heat gain and quality of light. This calls for a more detailed resolution.

EXPLORATION

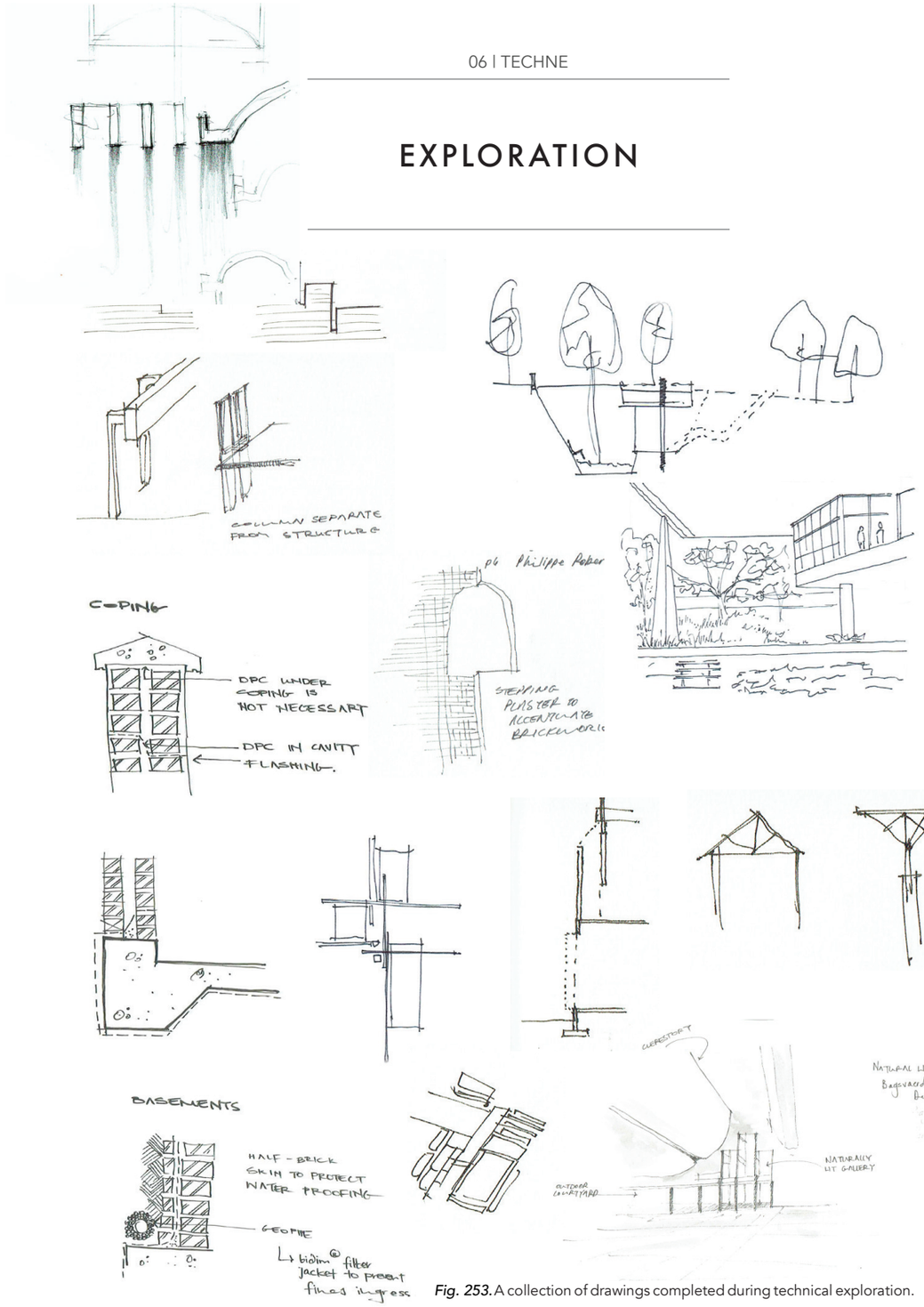


Fig. 253. A collection of drawings completed during technical exploration.

BRICKS

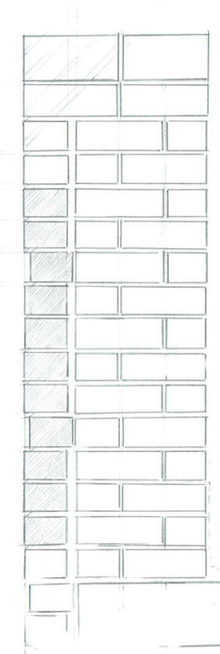


Fig. 254. Face brick was chosen as the primary material due to the modular form and tactile quality. As mentioned previously, the scale required for the performance spaces create large imposing masses in a fine-grain suburban fabric. The intention is to accentuate the horizontal lines by recessing every fifth brick course to bring down the scale. The use of glazed bricks and ceramic tiles will accentuate certain spaces which fragment the brick mass, or highlight the relationship to natural elements, for example, water. Openings are highlighted by sloping the sills and exposing the thickness of the masonry walls.

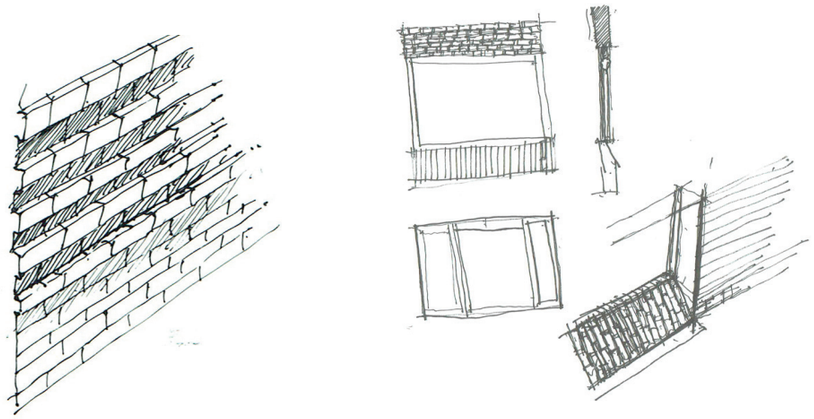
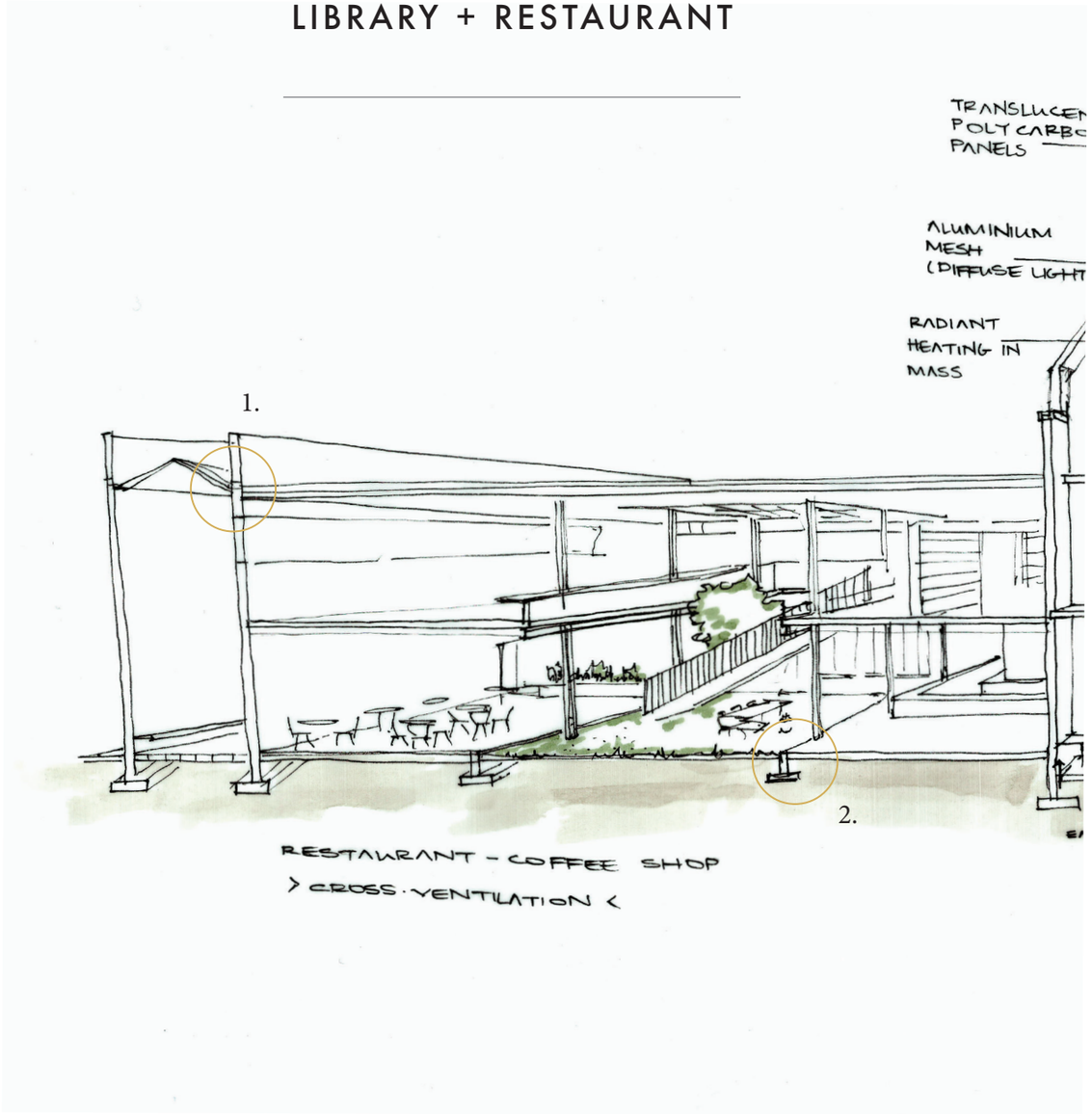


Fig. 255. Articulating bricks.

LIBRARY + RESTAURANT



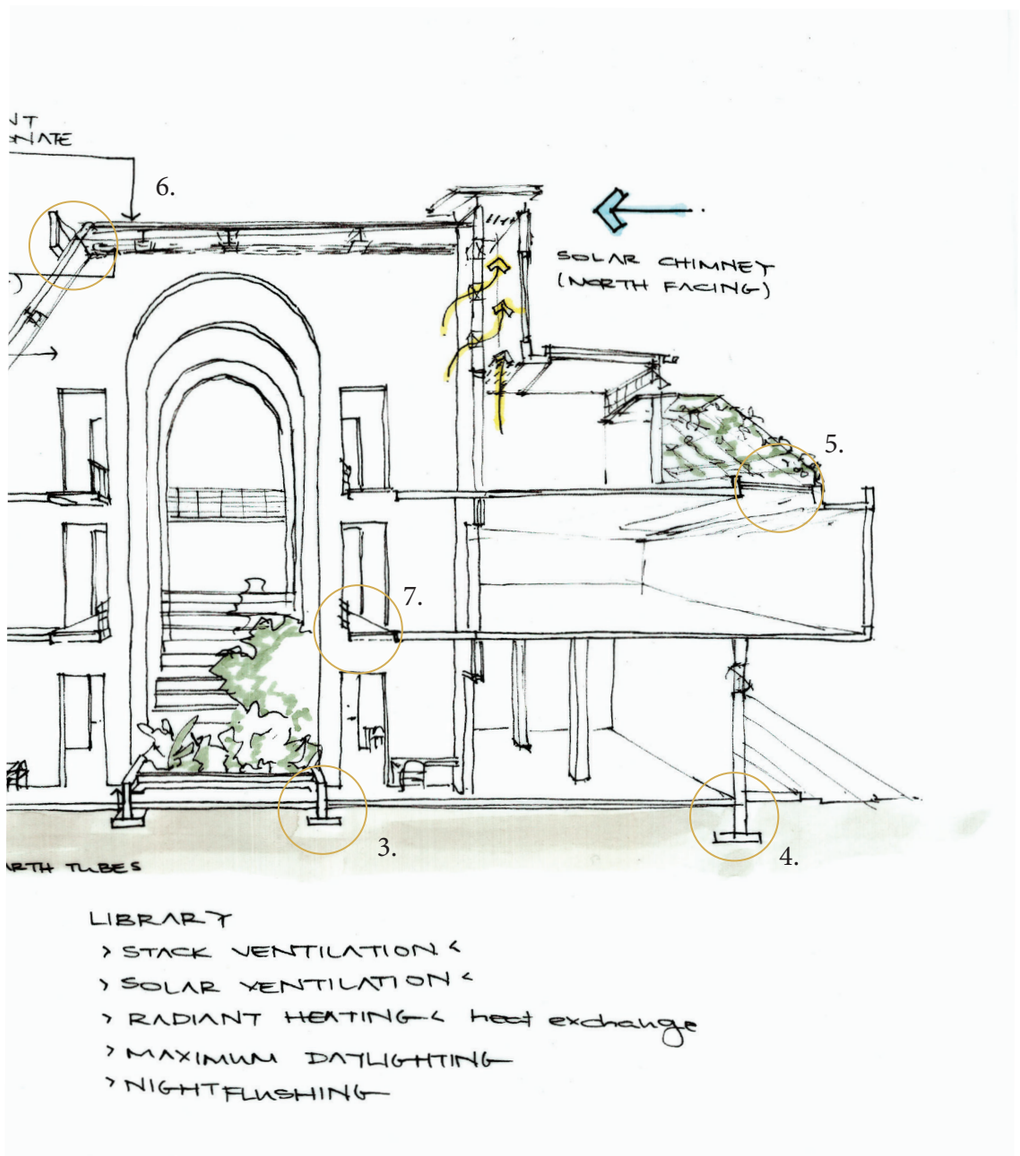


Fig. 256. Sectional Perspective (Aug). The above sectional perspective explored the desired spatial quality, thermal comfort and structural considerations. Each aspect will be explored individually in the pages to follow.

1 + 2

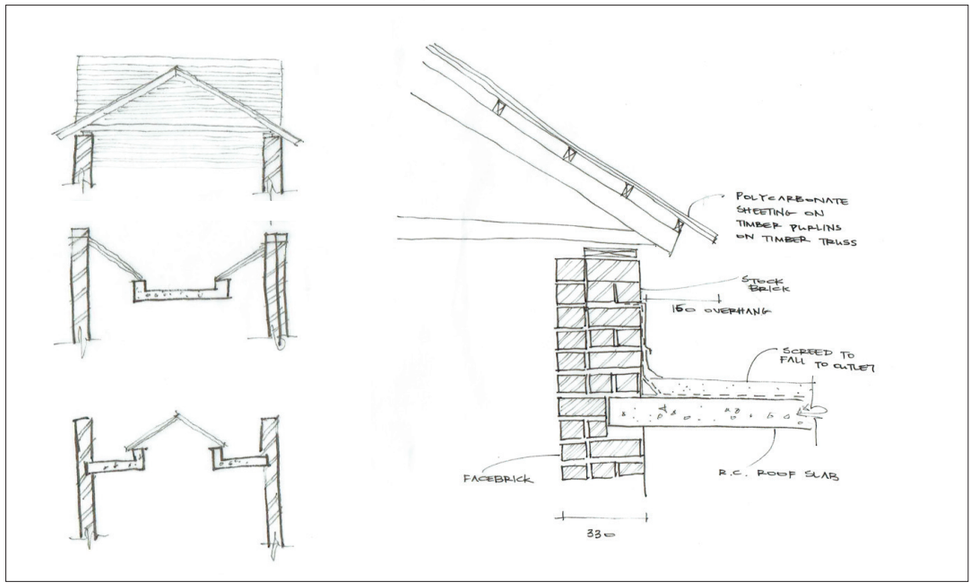


Fig. 257. Arcade skylight. The arcade separating the recital hall and restaurant will welcome pedestrian users from the west of the square. The high, narrow volume with filtered light slows pedestrians down upon entering the square. The intention is to hide the pitched skylight from street views using a parapet, but make reference to the pitched roofs of the neighbouring houses once entering the space. Water will drain directly onto the adjacent flat roofs.

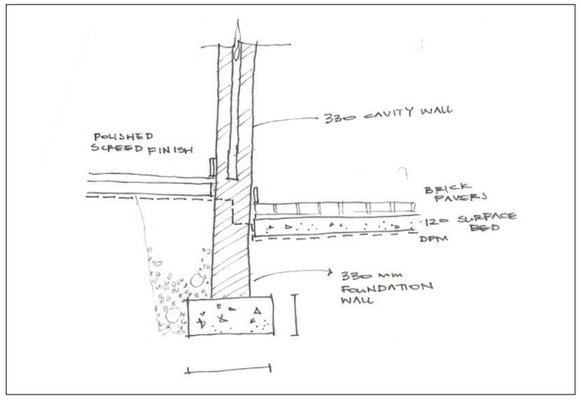
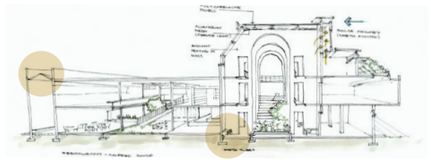


Fig. 258. Foundation - restaurant and library. This sketch does not take into account a movement joint between the two spaces. It is proposed to have two 220mm walls connected by a movement joint instead.



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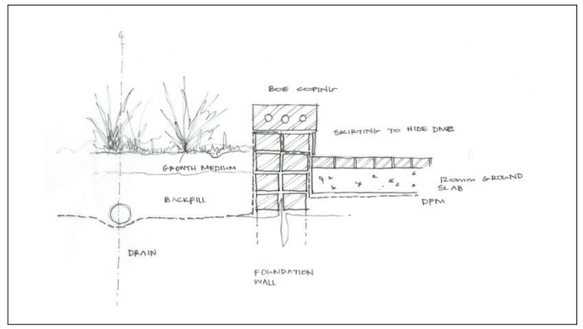


Fig. 259. Planter-box-seat in library. The atrium hosts a series of planter-boxes along it's length. This detail investigates the potential drainage issues: considers waterproofing the entire box, and inserting a drain to remove the water from the building. The floor finish at this threshold is brick pavers, linking internal and external spaces.

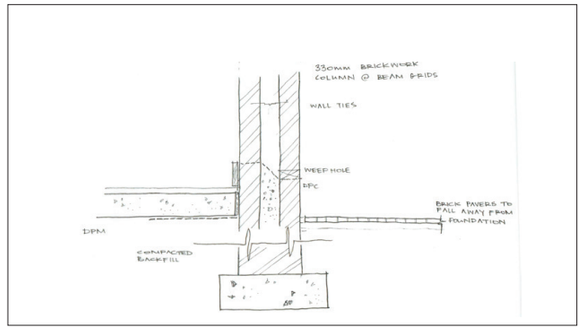


Fig. 260. Foundation detail - library and covered stoep. A 330mm cavity wall with brickwork columns spaced according to the beams.

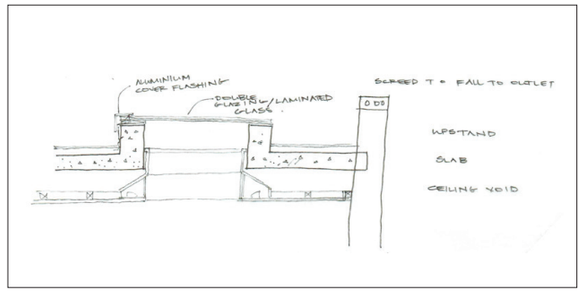
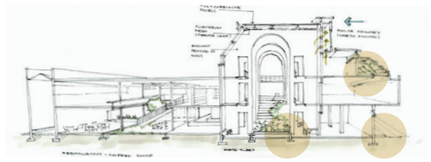


Fig. 261. Skylight at office balcony. The quality of light in the first floor library space was poor in previous iterations. It is proposed to include a skylight at this point, with a planted screen above filtering the light, connecting users to the sky and nature from within the library.



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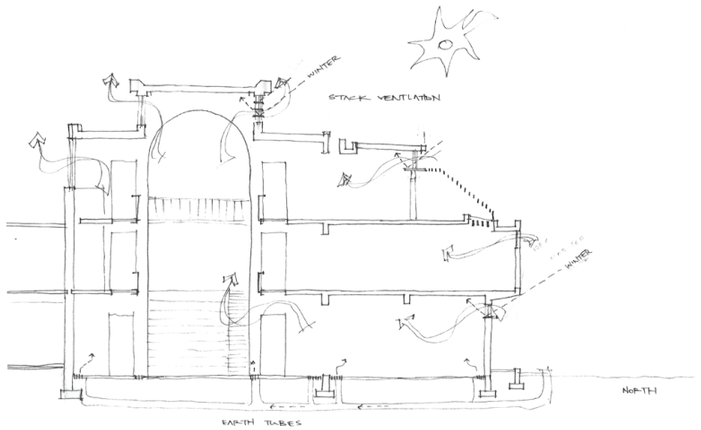
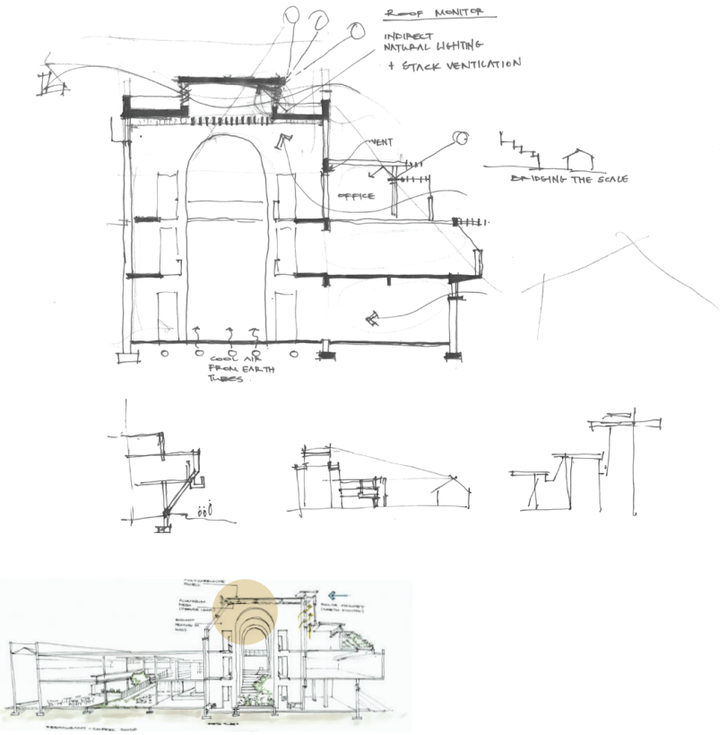


Fig. 262. Roof monitor. These diagrams explore the option of clerestory windows above the atrium. Cross-ventilation and stack-ventilation is permitted, as well as reducing the solar heat gain by removing the fully glazed atrium. This approach reduces the scale required along the aisles, but this stepping of the volumes is undesirable.

Fig. 263. Roof monitor 02. It is proposed that a heat exchange system is utilised, collecting the heat from the air at extraction points, and the solar chimney (where applicable). This heat and the heat from the kitchens will be used to preheat water which will run through the library walls for radiant heating during the winter months.



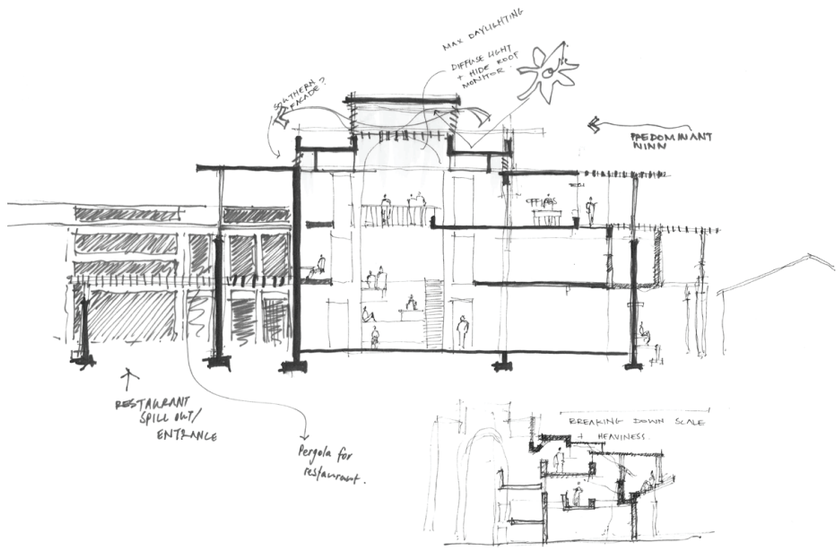


Fig. 265. Clerestory above atrium. This sectional exploration considers a roof-monitor above the atrium, which will allow for stack ventilation to occur. The reflected and diffused light will provide a gentle, even lighting throughout the atrium space. Secondly, the roof planes on the north and south are explored to reduce the scale.

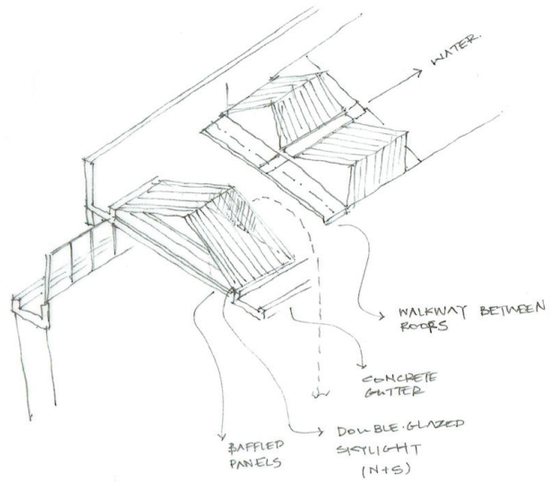


Fig. 264. Lighting. The above diagram explores alternative skylight solutions above the library atrium. Water drainage and maintenance are aspects to consider, and so it is proposed that walkways are placed above the brick arches with concrete gutters on either side of the pitched skylight. The connection between the southern window to the structure is a cause for concern.

7.

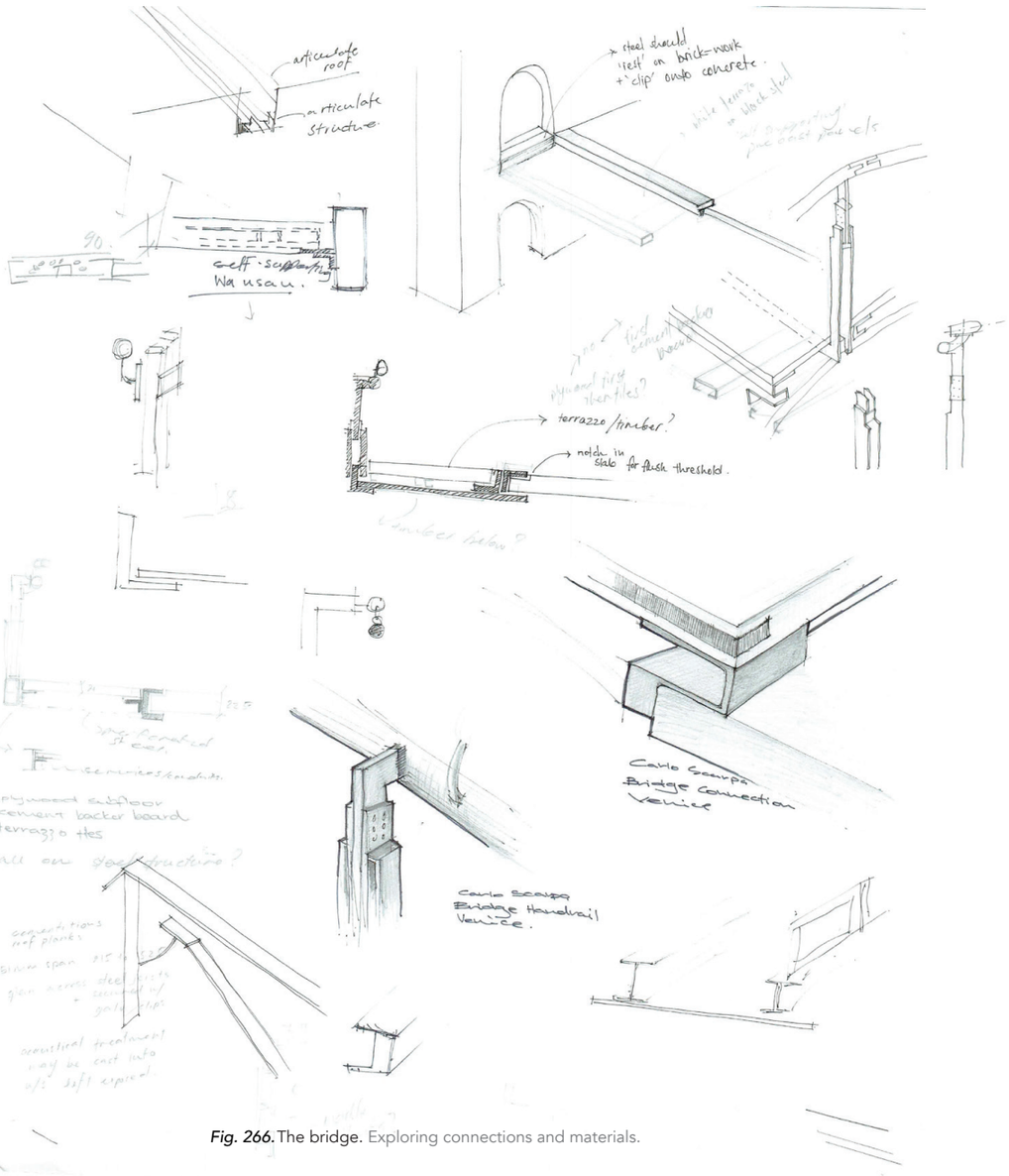


Fig. 266. The bridge. Exploring connections and materials.

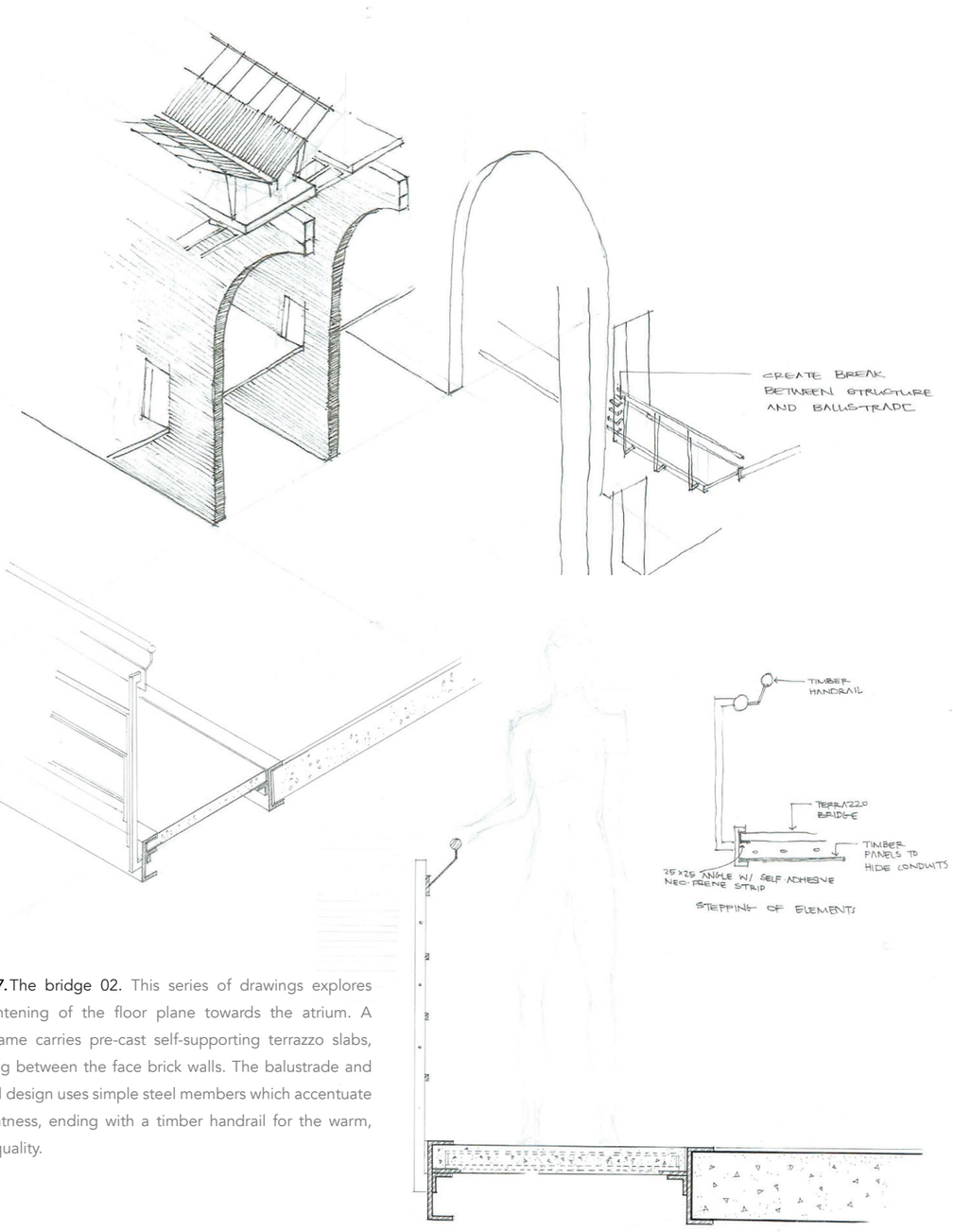
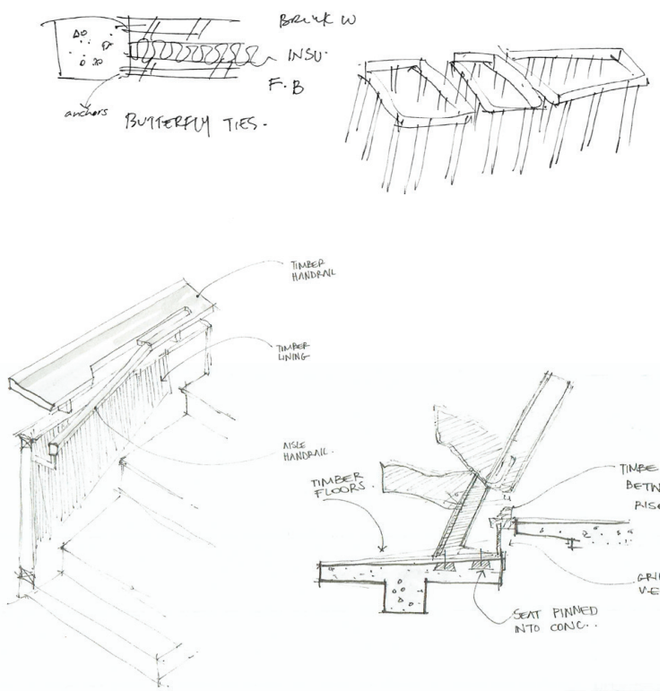


Fig. 267. The bridge 02. This series of drawings explores the lightening of the floor plane towards the atrium. A steel frame carries pre-cast self-supporting terrazzo slabs, spanning between the face brick walls. The balustrade and handrail design uses simple steel members which accentuate the lightness, ending with a timber handrail for the warm, tactile quality.

THEATRE

Fig. 268. Structure. Reinforced concrete ring beams and columns for the theatre design. Each volume is treated individually. 1020mm reinforced concrete ring beams will be used to carry the flytower, along with 425mm stiffener beams. The seating will require at least 1020mm beams due to the large span.

Fig. 269. Seating. The seating configuration should allow for vents where cooled air from the earth tubes may pass over viewers. The tactile quality of the seating areas and circulation routes is considered - timber will be used here.



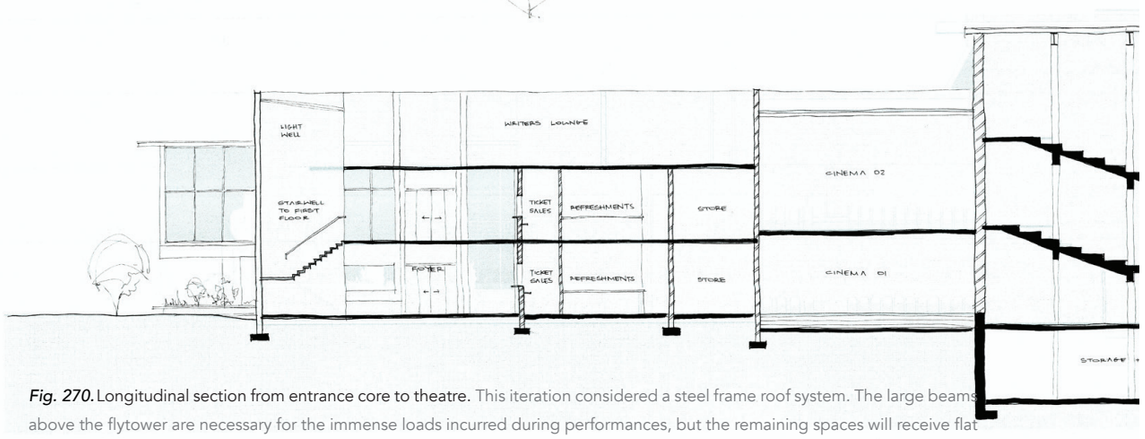


Fig. 270. Longitudinal section from entrance core to theatre. This iteration considered a steel frame roof system. The large beams above the flytower are necessary for the immense loads incurred during performances, but the remaining spaces will receive flat roofs instead to aid in thermal and acoustic control.

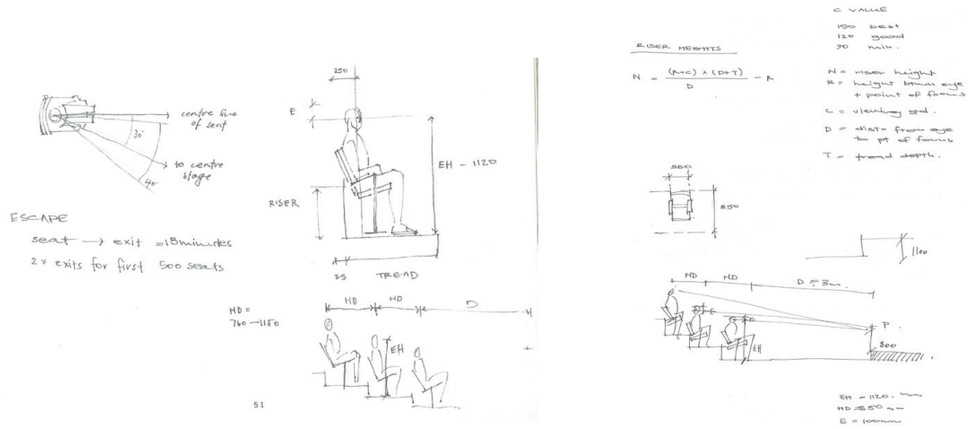
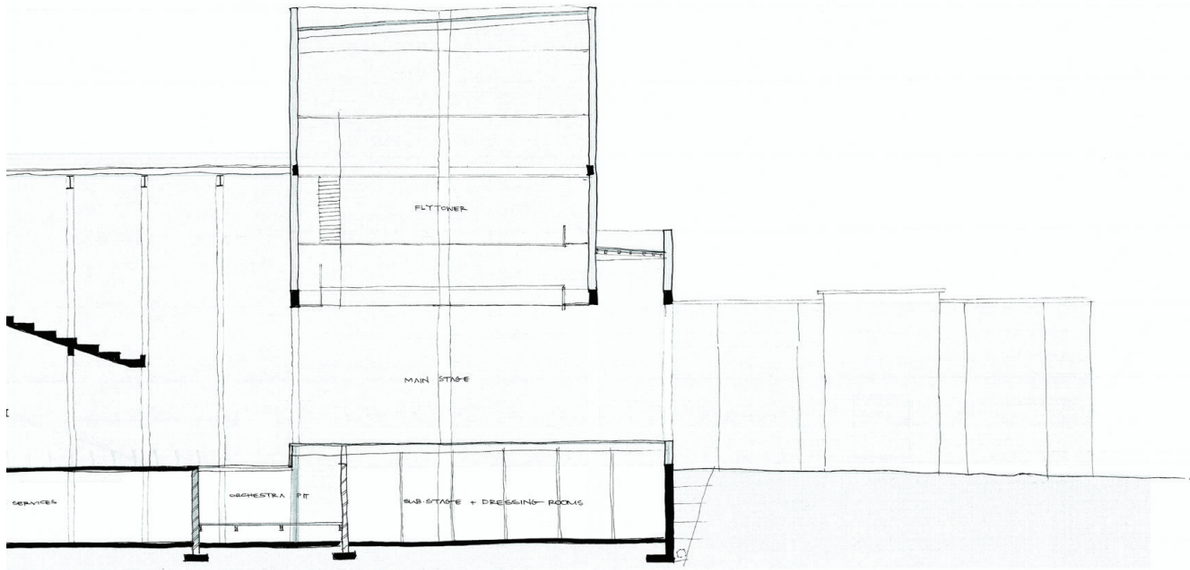


Fig. 271. Auditorium seating requirements in theatres. The above considerations were taken into account when designing the seating for the theatre.



EDGES

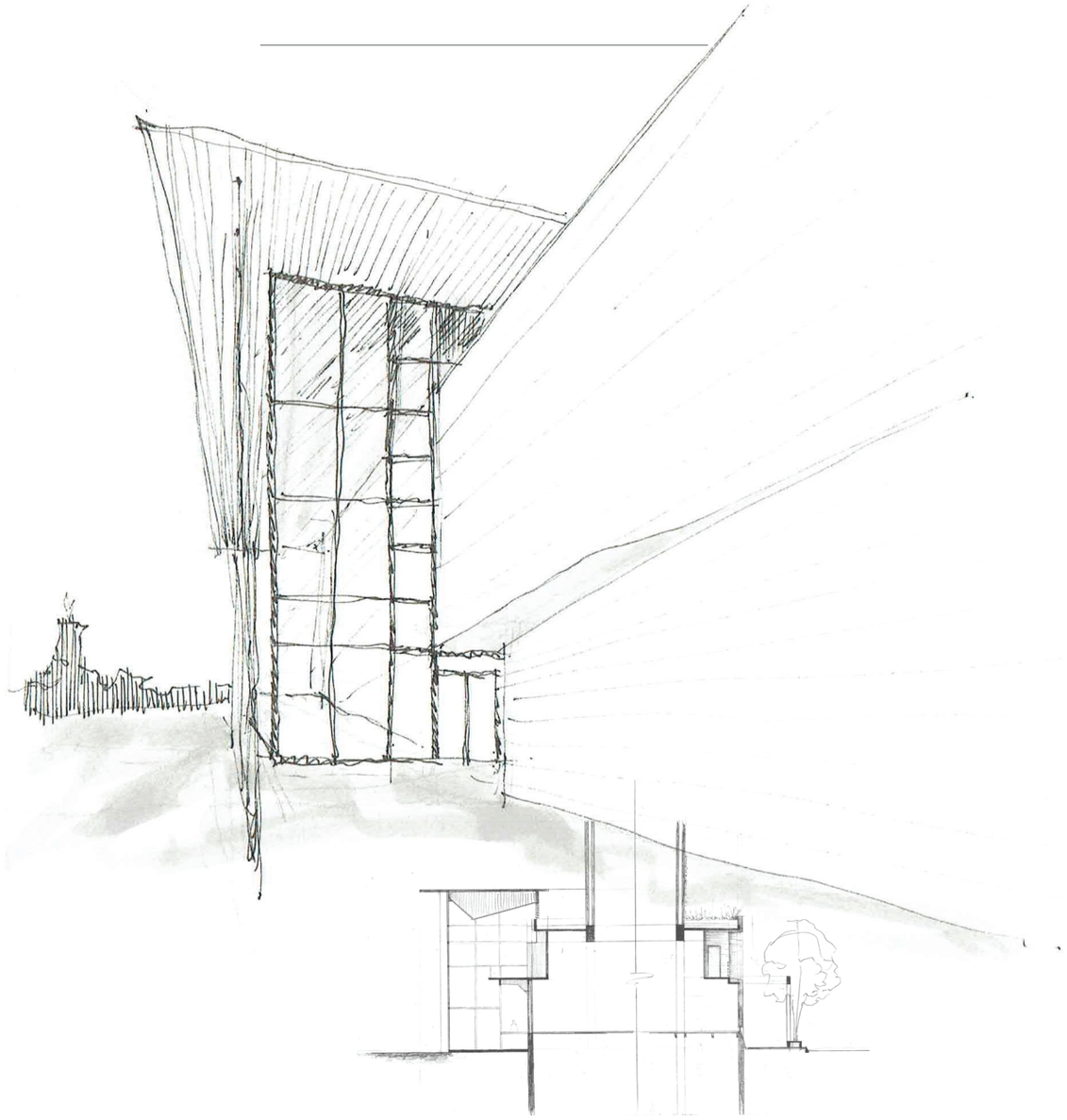


Fig. 272. Proposed foyer and entrance to theatre. The intention of this entrance is to break the scale of the large performance space by using lighter materials. This will also put visitors on display, as will be done in the circulation cores.

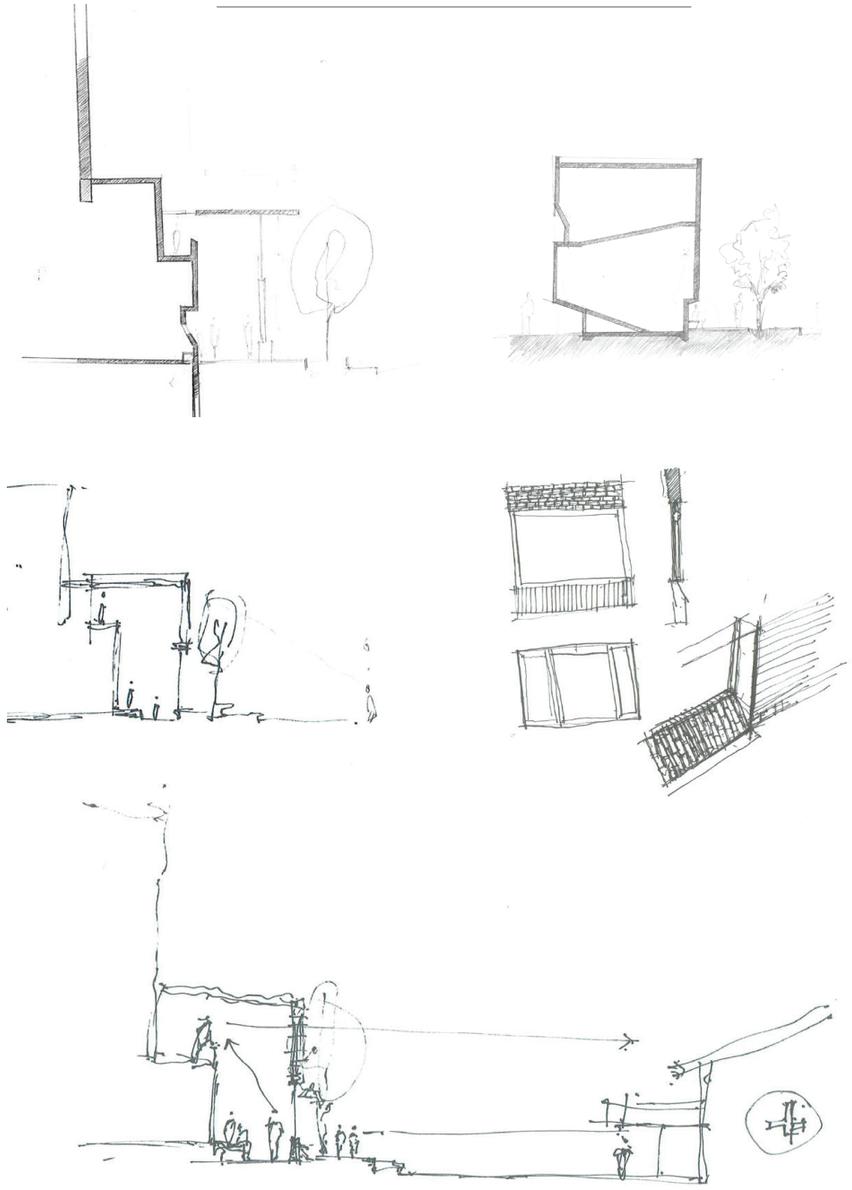


Fig. 273. Negotiating the southern facade. The large scale of the theatre presents many problems on the street edge. Considering the surrounding suburban scale it was necessary to re-look at the way the scale was being addressed. It is proposed that an actors balcony be exposed, linking performers to passers-by. A pergola-like structure will frame the space, protecting pedestrians and defining a walking route. Views into the theatre will be offered to curious children. This portion will also be clad in black, reflective glazed bricks, making reference to the black box inside.

ELEVATION

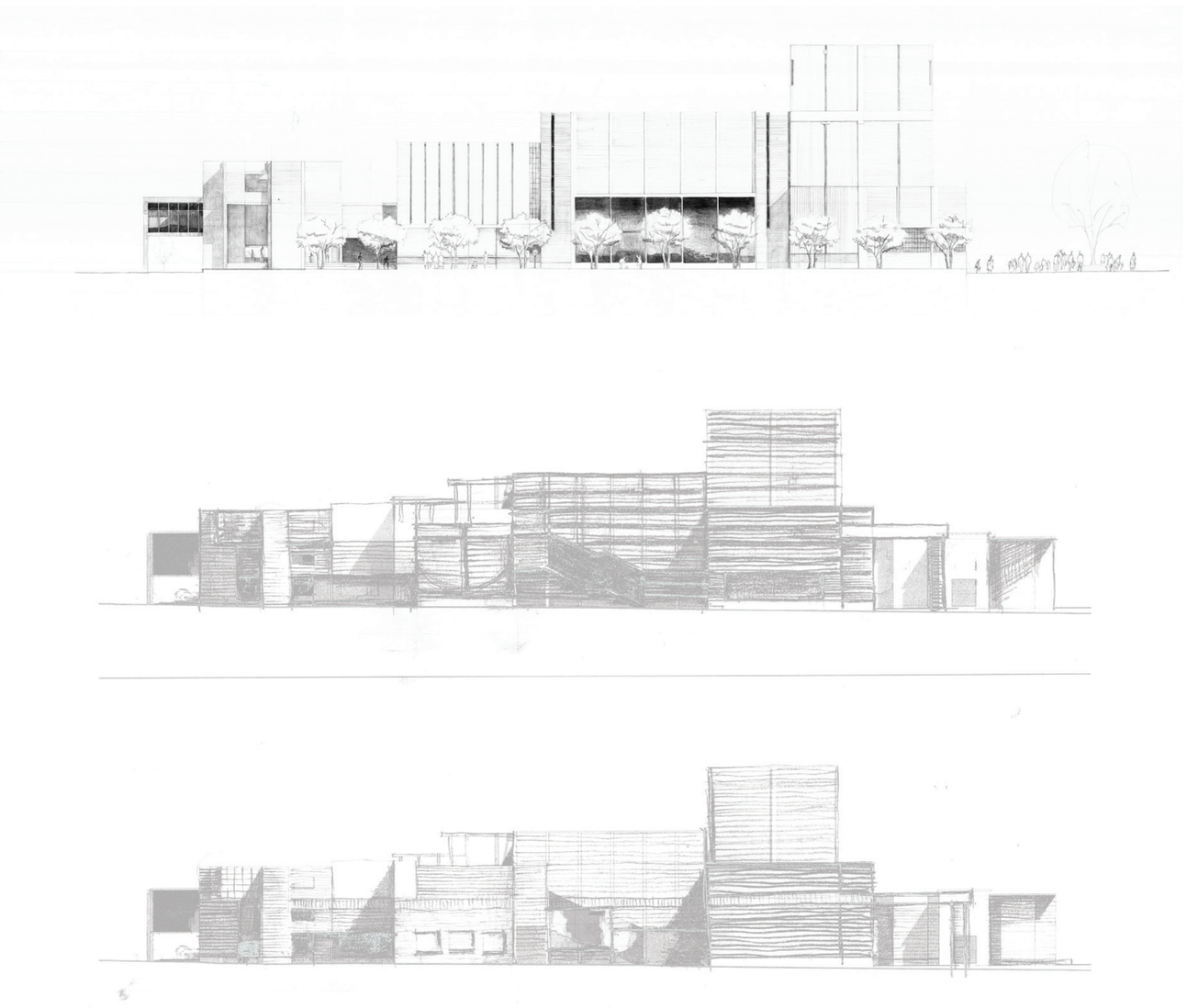
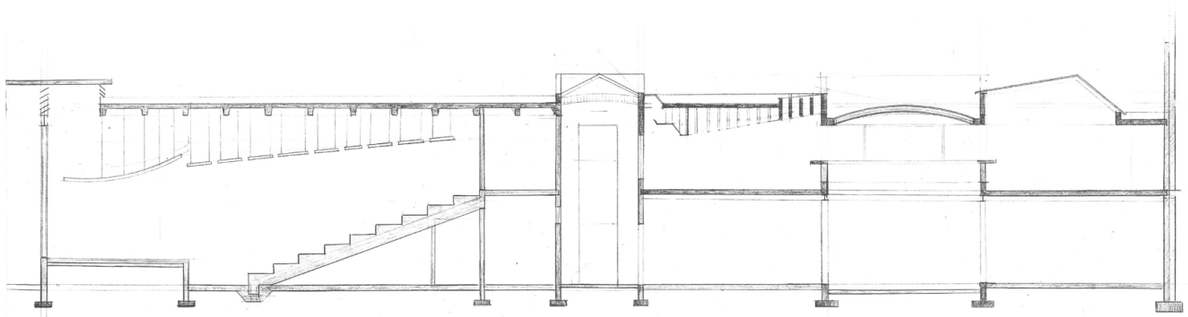


Fig. 274. Negotiating the southern facade. Testing materials and composition (Sept.).

FINAL ITERATION



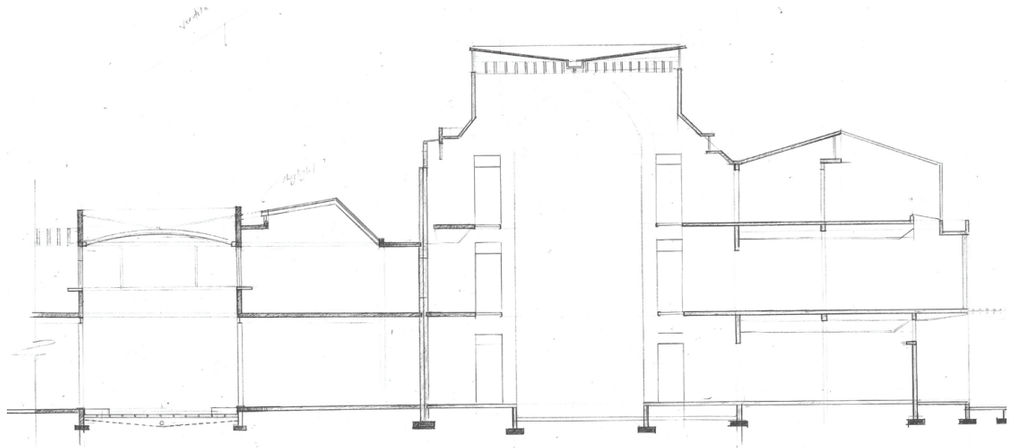
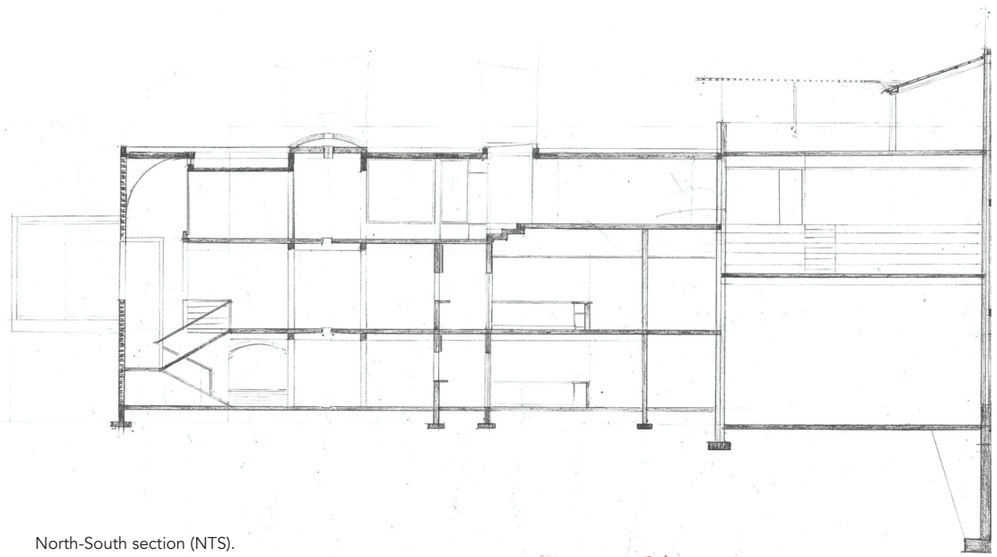


Fig. 275. Final design sections (Oct). These sketches indicate the final exploration of the two longitudinal sections. The focus of the exploration was the admission of light into different spaces to create the experiences outlined in the original intentions. Considerations of materiality were considered, specifically regarding acoustic control in the performance spaces. Composition and proportion determined the final resolution to ensure a clear language is carried through the entire scheme, and the repetition of forms and rhythms is used to create 'memories' as one moves through the various spaces.



North-South section (NTS).