06

CHAPTER 06

TECHNICAL DEVELOPMENT

TECTONIC CONCEPT

The tectonic concept is derived from an interpretation of the physical features of the surrounding elements and context. Built up by three layers, these layers are an interpretation of navigating and connecting (both) the site with the building, and the two buildings with one another.

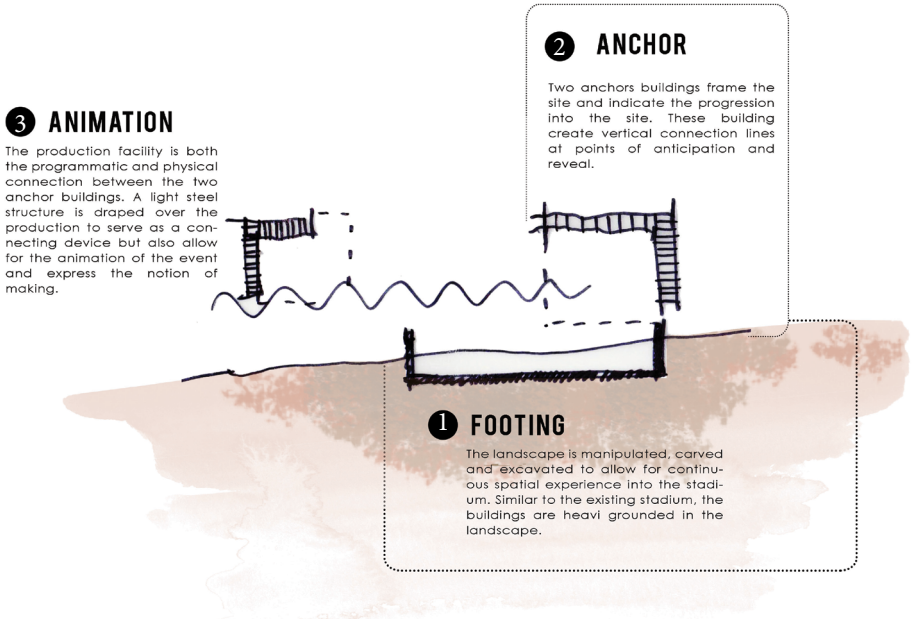


FIG. 93: Tectonic Concept *(Author, 2016)*

01

First, the landscape is manipulated, carved and excavated to allow for continuous spatial experience into the stadium. Similar to the existing stadium, the buildings are heavily grounded in the landscape with a concrete base. The concrete base allows for activities of the production, while creating a podium for the design house. This is also a programmatic decision, so that deliveries and storage can happen unobstructed at ground level. Where the ground level of the production facility retains the berm is at a slightly lower level than the entrance to the site. This allows the production facility to also have a distinct border from the general public entrance and movement into the stadium.

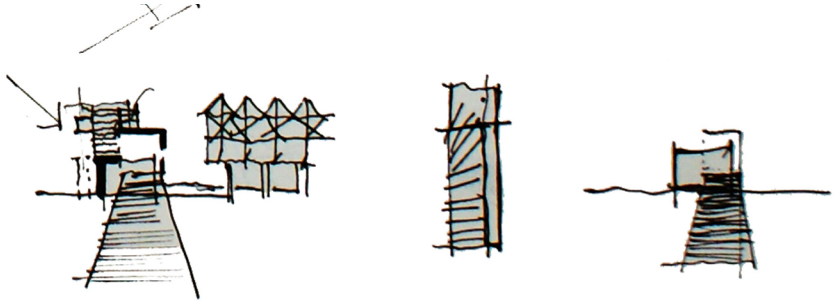


FIG. 94: Tectonic Development *(Author, 2016)*

02

Second, two anchors buildings frame the site and indicate the progression into the site. These building create vertical connection lines at points of anticipation and reveal of the event. The concept of an urban balcony is incorporated in the design of the anchors buildings. Staff working in the design house will be able to view athletes arriving at the stadium through balconies and openings in the screen of the anchor building roof.

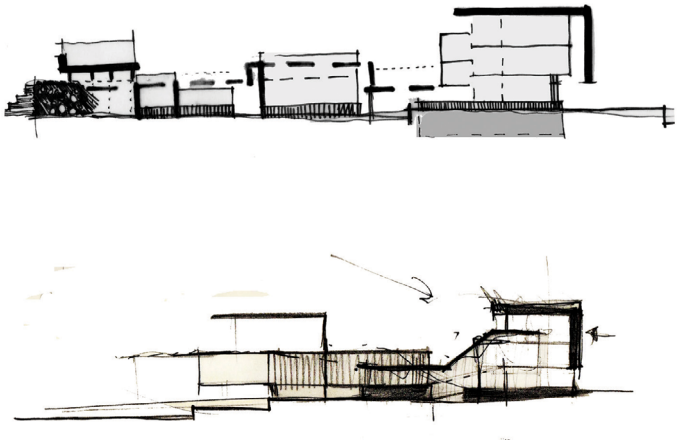


FIG. 95: Visual diary sketches *(Author, 2016)*

03

Thirdly, the production facility is both a programmatic and physical connection between the two anchor buildings. A light steel structure is draped over the production to serve as a connecting device but also allow for the animation of the event and express the notion of making. The animation roof covers the delivery area, to protect good during rain or harsh sun. The idea was to explore how the building can visually express the event and production through edge, texture and animation. The idea was to incorporate panels that can respond to different experience and use of space, and in terms of a climatic response. Precedent was drawn from the Mataboo Architects Offices to create various ambiences for work spaces.

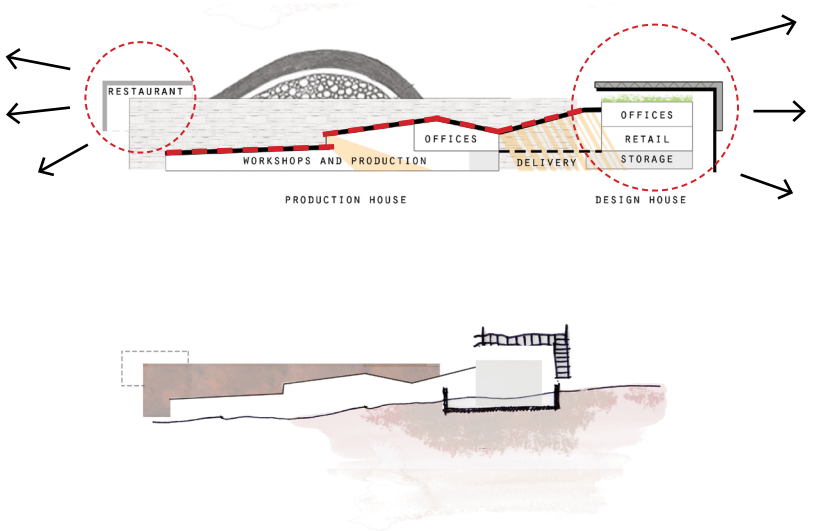


FIG. 96: Diagram development *(Author, 2016)*

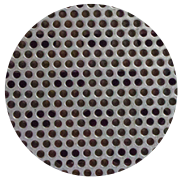
MATERIAL LIBRARY

In order to create contextually appropriate design, the design needs to respond to existing building materials on site. The architectural language is derived from the existing stadium and surrounding industrial context. The natural landscape of the berm, the stadium and the industrial context surrounding the stadium build up the elements of the proposed architectural language. The existing stadium consists of a heavy concrete base with intricate heavy steel roof. Found in the industrial contexting surrounding Pilditch stadium, warehouse construction define the materiality of the area: steel, corrugated sheeting, brick and plaster is widely used. The design should create a new identity to the site for the new community users, that is still respectful of the current identity of the stadium. The new proposed buildings should also express concepts in the production process and layer various patterns, sheets and panels to express the existing industrial grain.

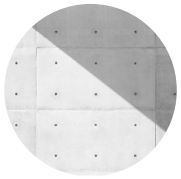
GLAZING

NEWLOK SHEETING

MASONRY



STEEL



CONCRETE

STEEL

NEW PROPOSED

CONTEXT

RESIDENTIAL CONTEXT

RUTO MILLS

VIEW FROM WARM UP

CONTEXT

BRIDGE

CONTEXT

FIG. 97: Material library *(Author, 2016)*

FIG. 98: Existing materials *(Author, 2016)*

CONTEXT

SHOWGROUNDS

RETAINNING WALLS

STADIUM ROOF

STADIUM VIEW

SOUTTER STREET

CONTEXT BUILDINGS

SHOWGROUNDS

SHOWGROUNDS

ENTRANCE TO SHOWGROUNDS

TICKET OFFICES

EVENT

STADIUM FROM BERM

STADIUM

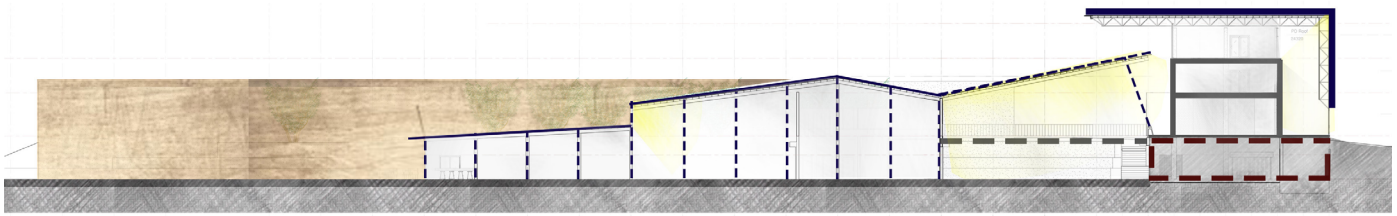


FIG. 99: Diagram of materiality *(Author, 2016)*

Concrete floor slabs and rectangular columns create the primary structure with brick infill and the steel frame roof (as a clip on) secondary structure.

The roof is developed from a steel structure of steel angle trusses placed on a grid of 4800 mm intervals. These steel trusses reference the existing intricate and visual steel roof of the stadium. The triangulation of the steel trusses (exposed in the walkway) display elements of the making process and ties the design building with the industrial nature of the production house.

The Safintra NEWLOK roofing system with secret fix profiles was chosen as the roof and side cladding material of the design. The secret fix allows for unrestrained thermal expansion or contraction (Safintra, 2016). The clips are installed under the sheet and holds the sheet down. This application prohibits the sheet from being punctured with fasteners. This roofing system is ideal for long spans, industrial use and very low pitch roofs (*ibid*). The cover width of the sheet is 445mm with two stiffening ribs of 50.8mm in the pan. Custom lengths can be rolled on site with the aid of a mobile rolling mill. Clamps can be attached to the ribs without puncturing the roof sheet. These clamps can attach solar panels, mechanical equipment and other lightweight attachments to the roof. The direct attachment with clamps remove the need for railings (*ibid*).

To allow for natural daylight and building envelope transparency, a combination of laminated clear safety glass and polycarbonate sheeting is used. The polycarbonate sheeting is mostly used in larger open spaces such as the production house and roof applications. The laminated safety glass is used for the office, retail and workshop spaces in the design house.

01

DESIGN HOUSE

The design house responds to the design of the stadium. Concrete is used as the primary material and steel as the mediating and expressive material. The mediating material serves as connection device between different materials at ground, floor or roof connections.

MATERIAL APPROACH

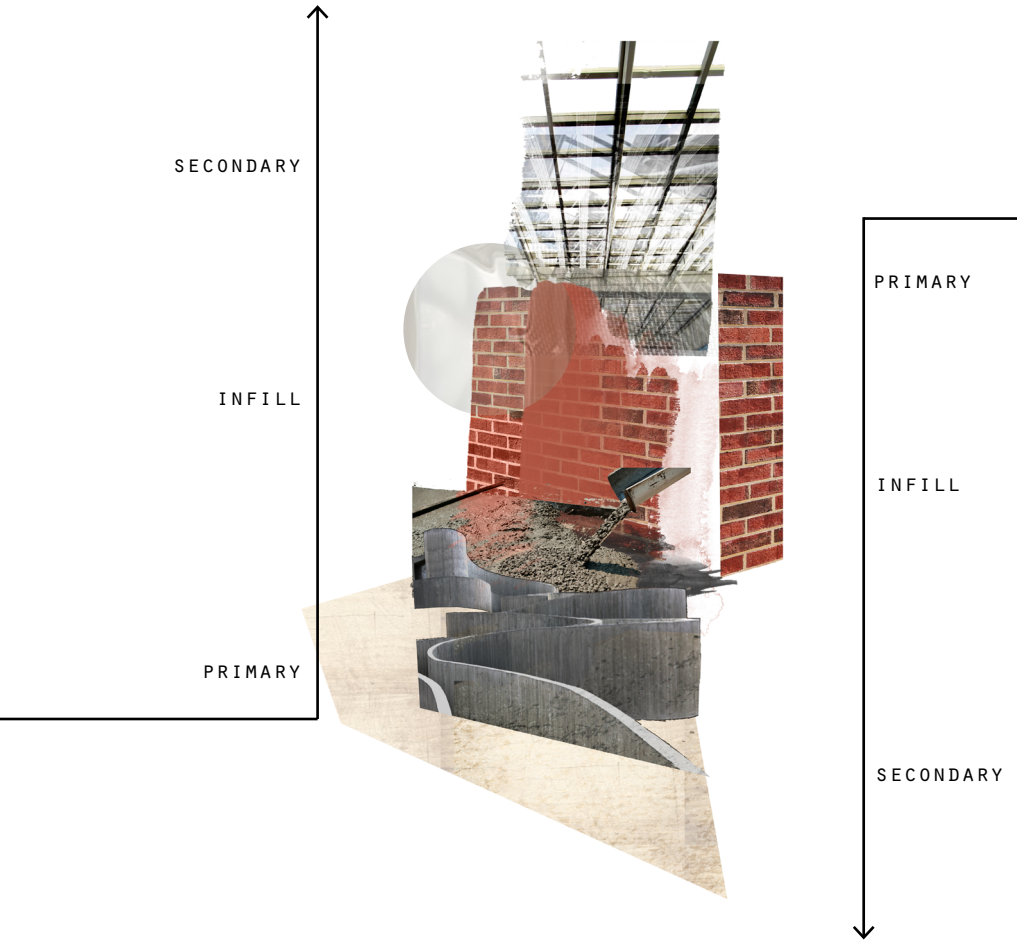


FIG. 100: Material approach *(Author, 2016)*

02

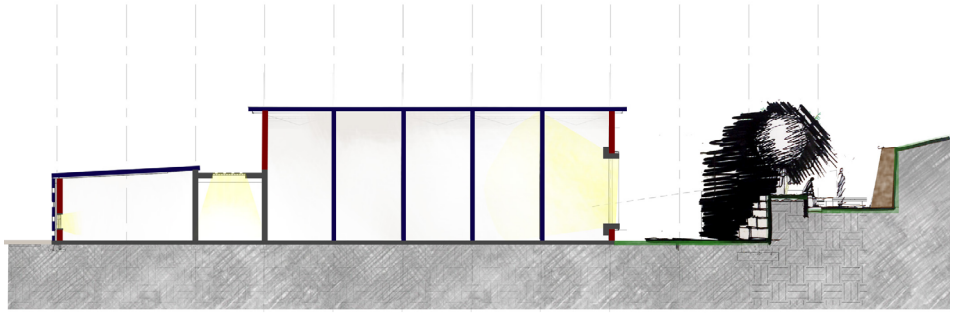
PRODUCTION HOUSE

With the production facility, steel is used as the primary structure and concrete as the mediating material. Here, a steel portal frame is the primary structure with brick infill and concrete secondary structure.

The contemporary (and alternative) roof silhouette of the production facility serves to mediate between the stadium roof design and typical warehouse construction found in the area. The animation of the roof attempts to place the building in both the current context of industrial buildings, while maintaining its identity as a place of event within the stadium precinct.

230mm Masonry brick walls are used as infill between steel and concrete columns. A 280mm cavity wall provides thermal mass on the western elevation of the building. The interior leaf of the masonry walls are made of stock brick, plastered and painted. The exterior leaf is made of exposed facebrick.

FIG. 101: Daigram of materiality *(Author, 2016)*



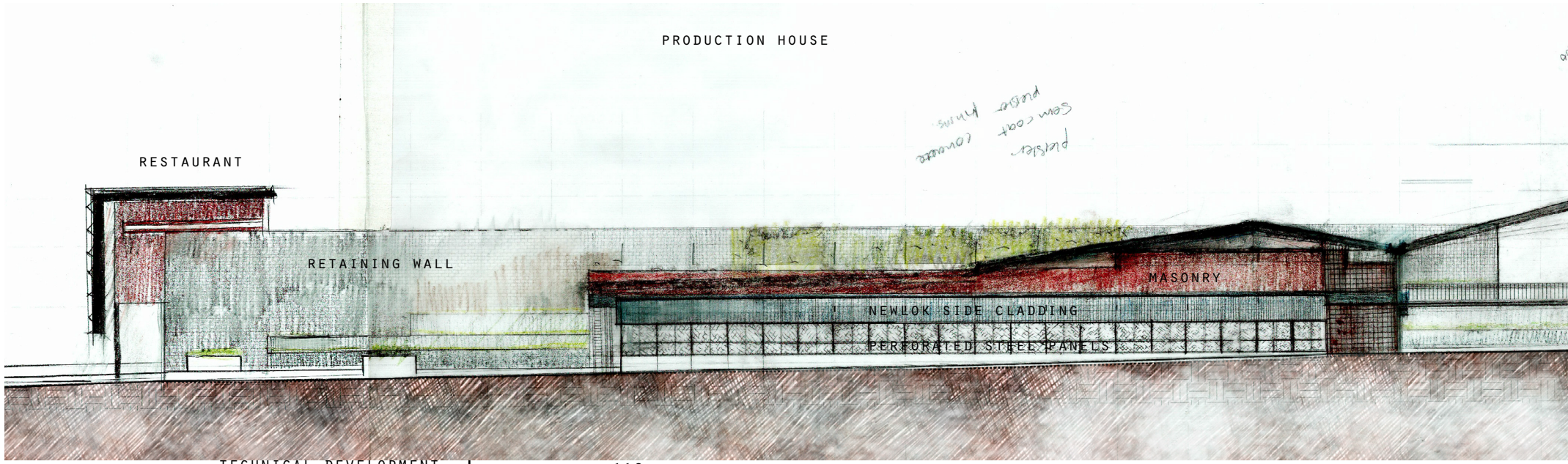
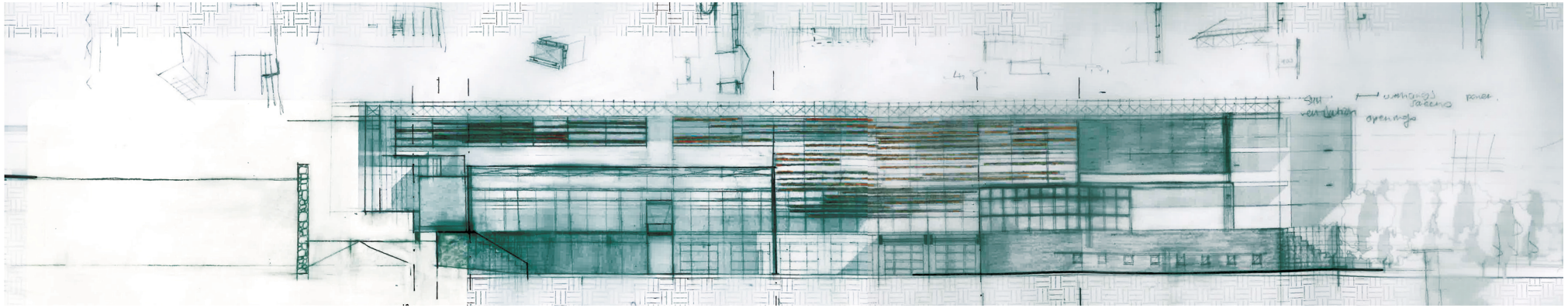
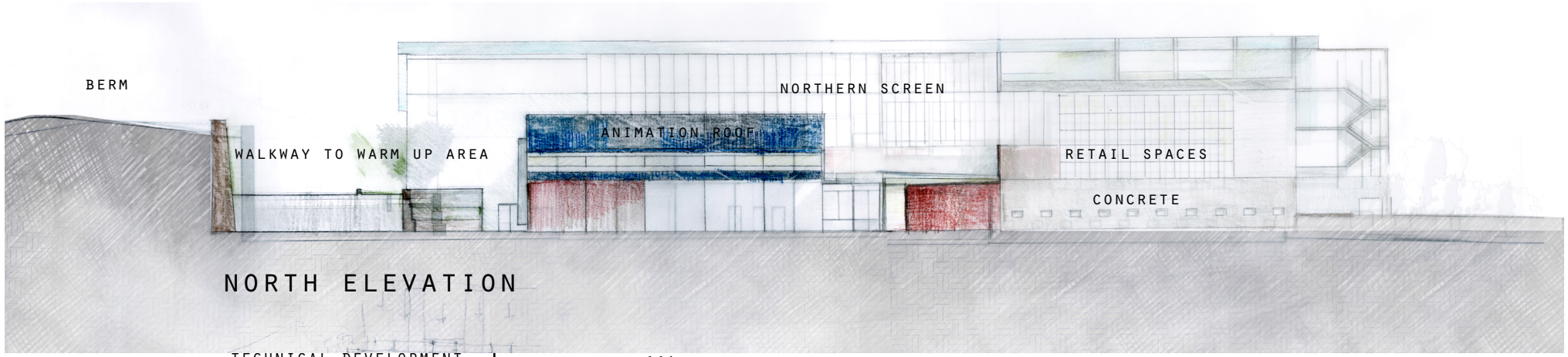


FIG. 102: Sketch elevation *(Author, 2016)*



PROCESS



NORTH ELEVATION

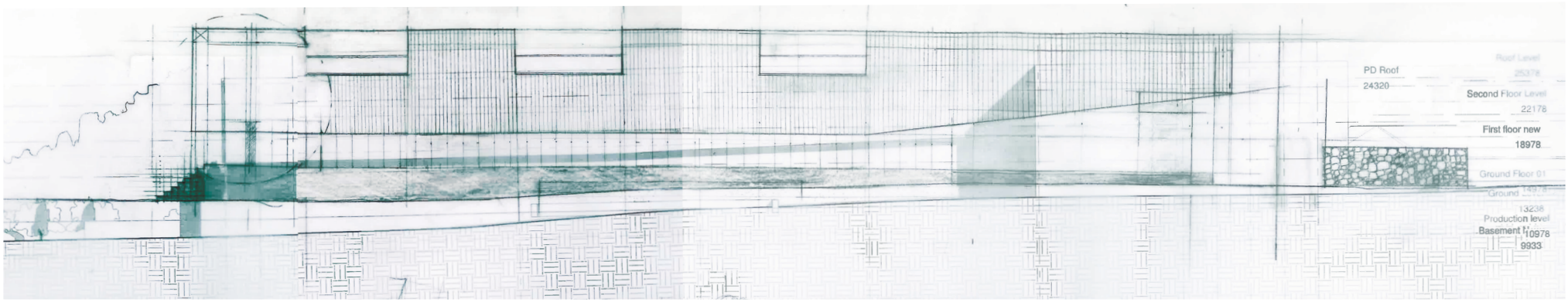
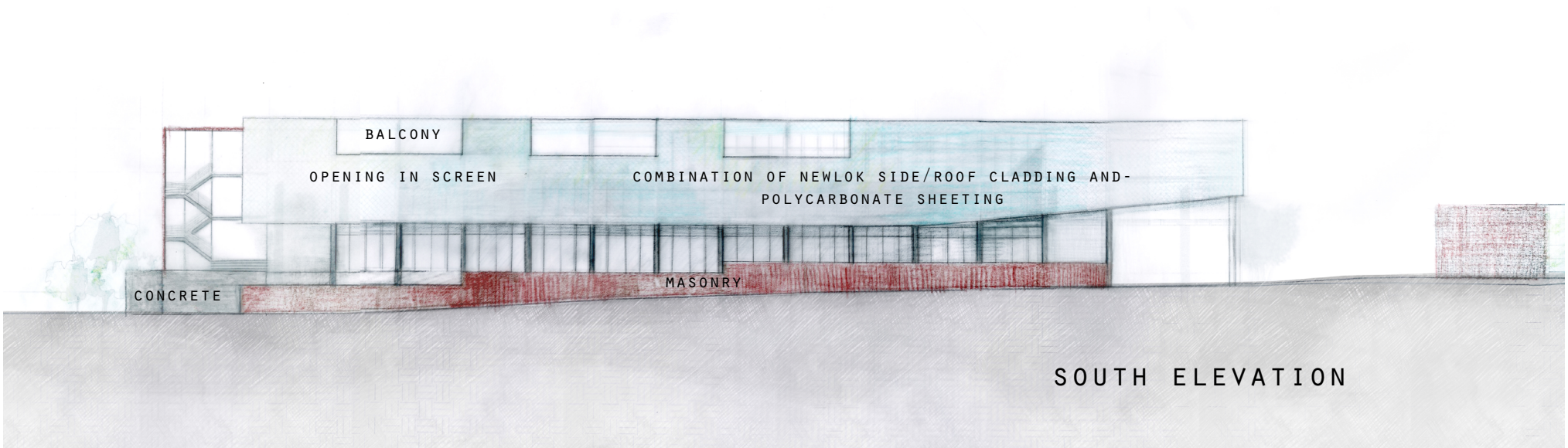


FIG. 103 A-D: Sketch elevations *(Author, 2016)*



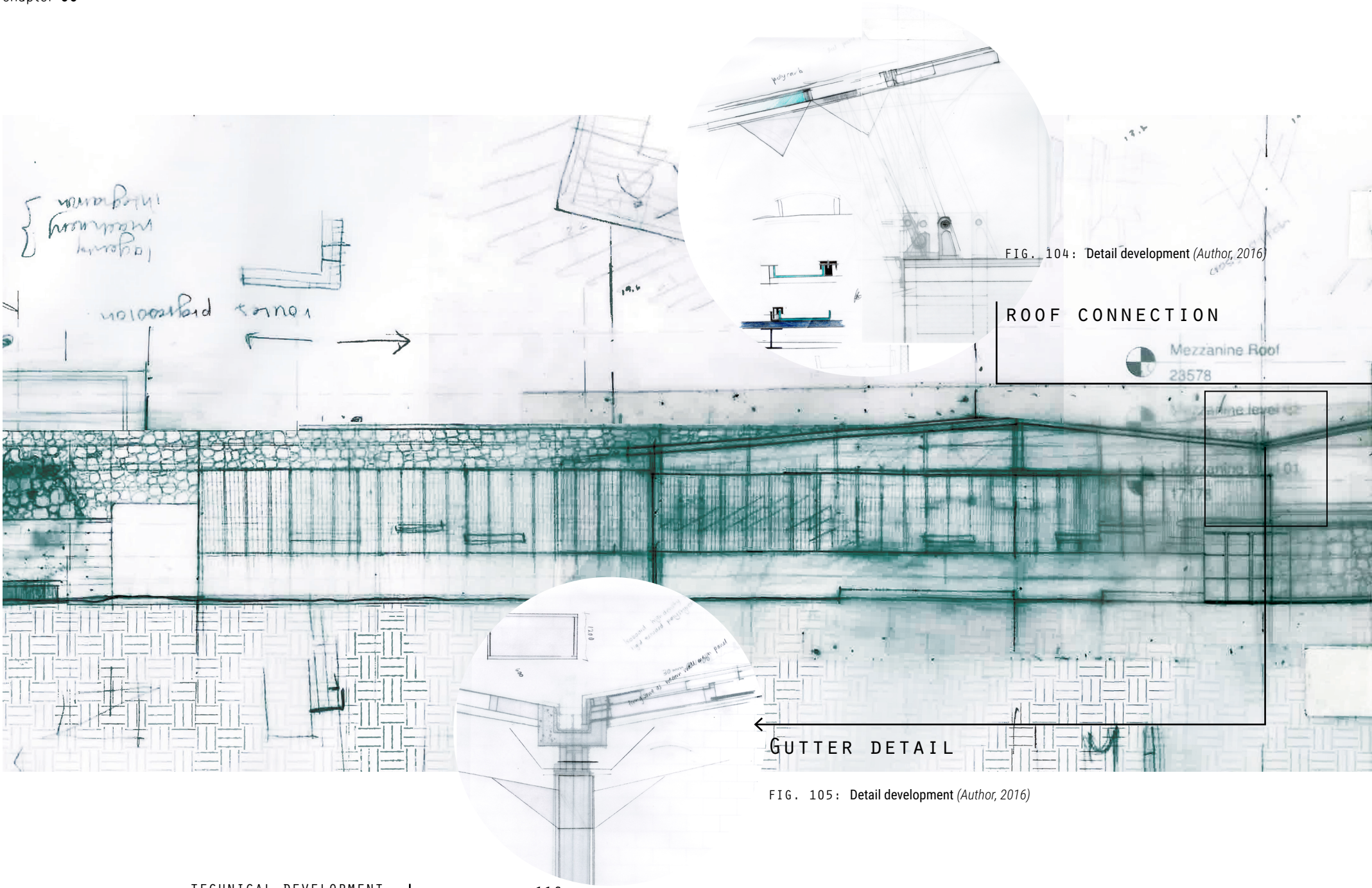


FIG. 104: **Detail development** *(Author, 2016)*

FIG. 105: **Detail development** *(Author, 2016)*

DETAIL DEVELOPMENT

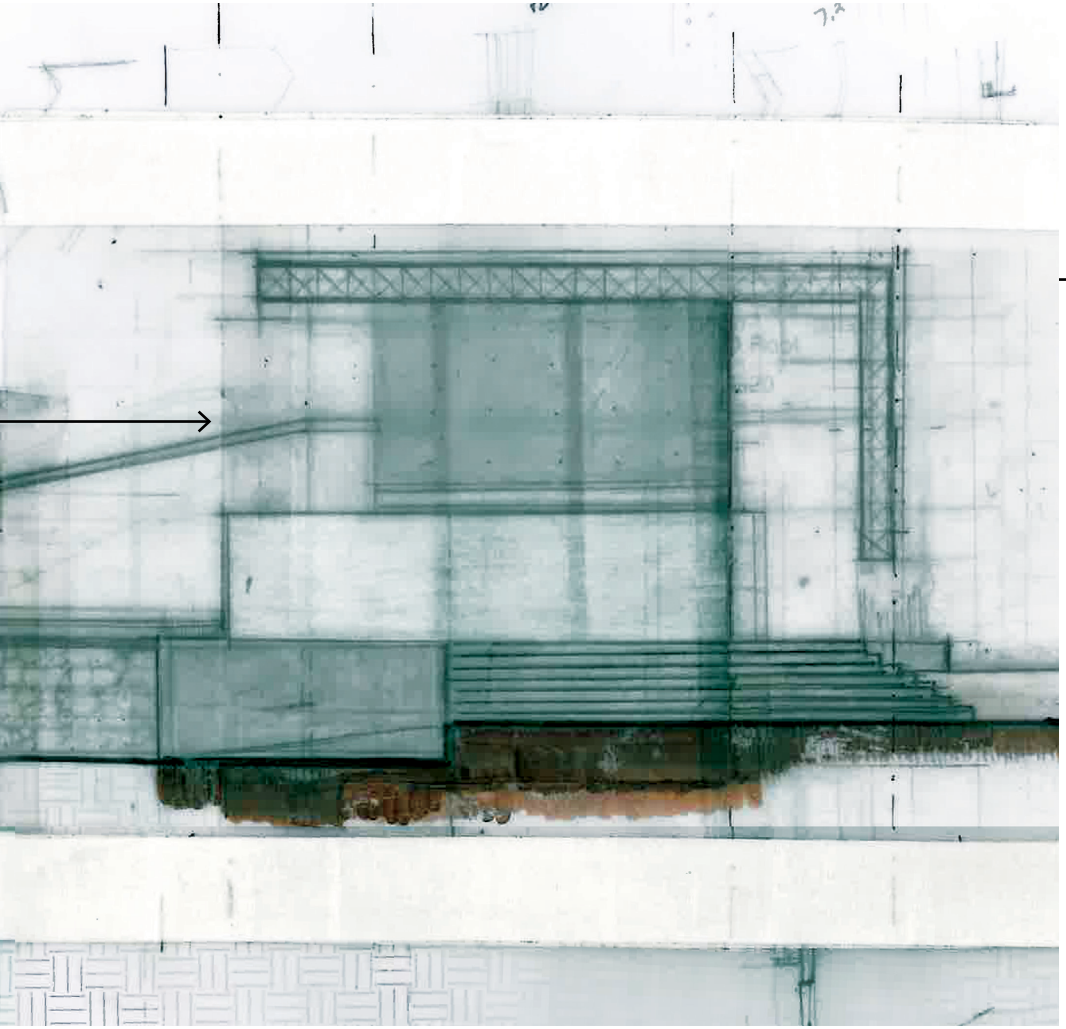
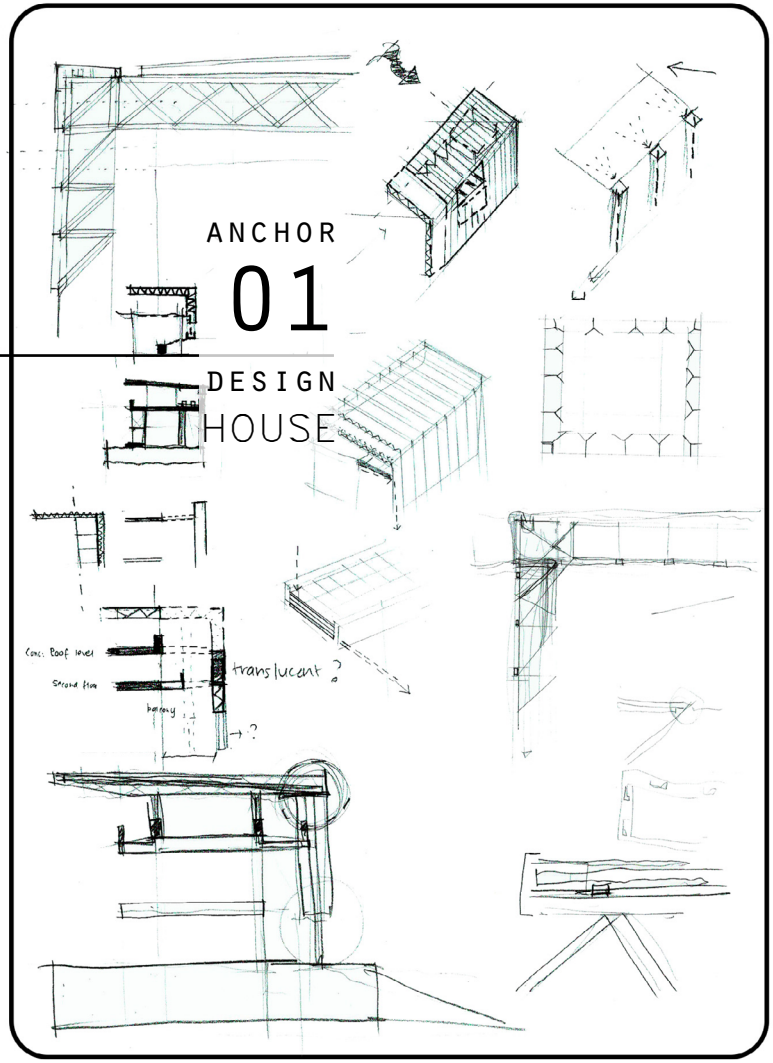
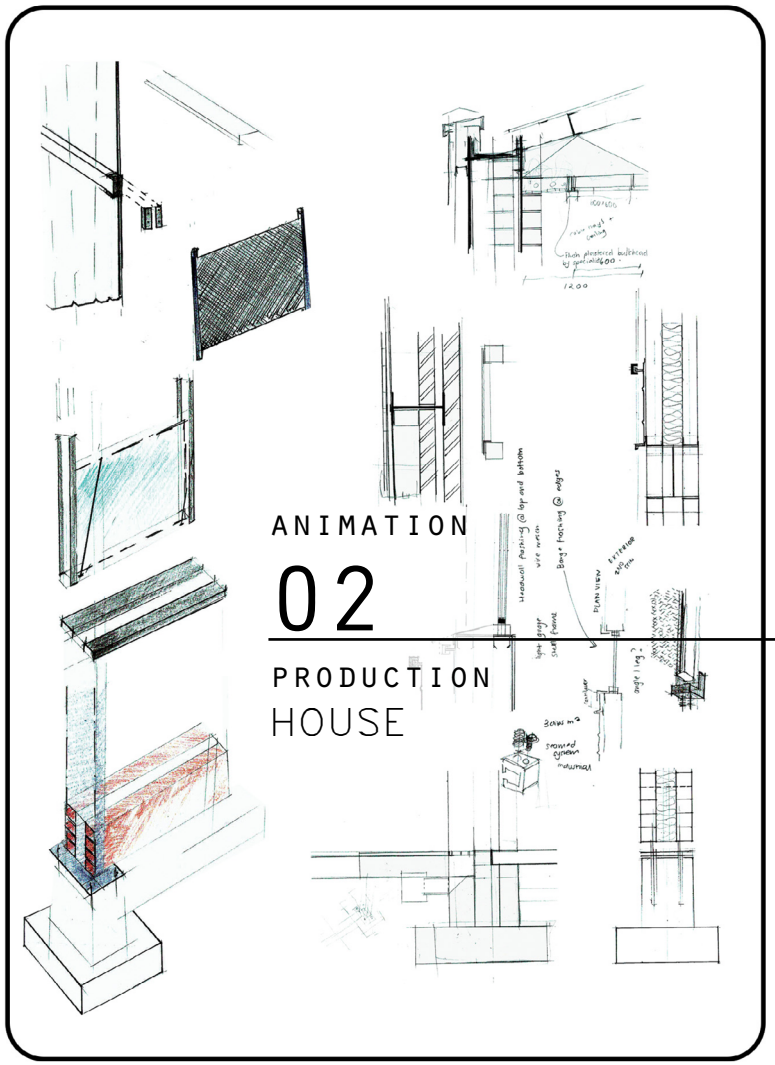


FIG. 106: Process elevation *(Author, 2016)*



ROOF DETAIL

FIG. 107: Technification process *(Author, 2016)*



WESTERN WALL DETAIL

FIG. 108 A: Technification process *(Author, 2016)*

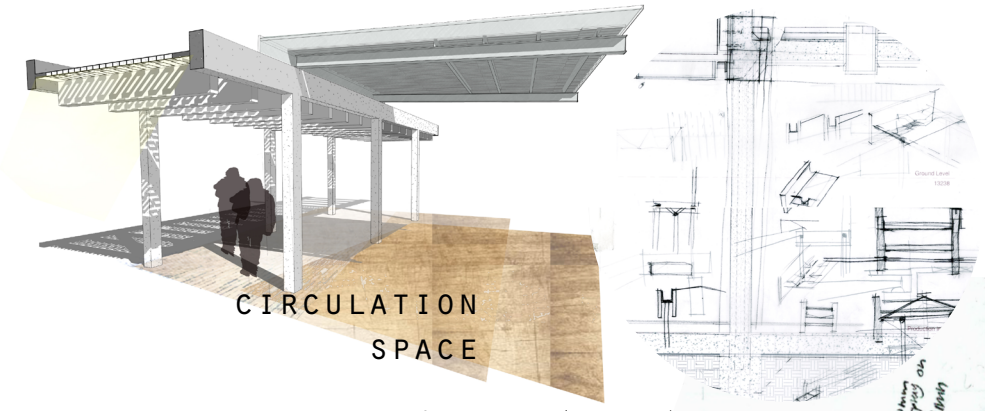
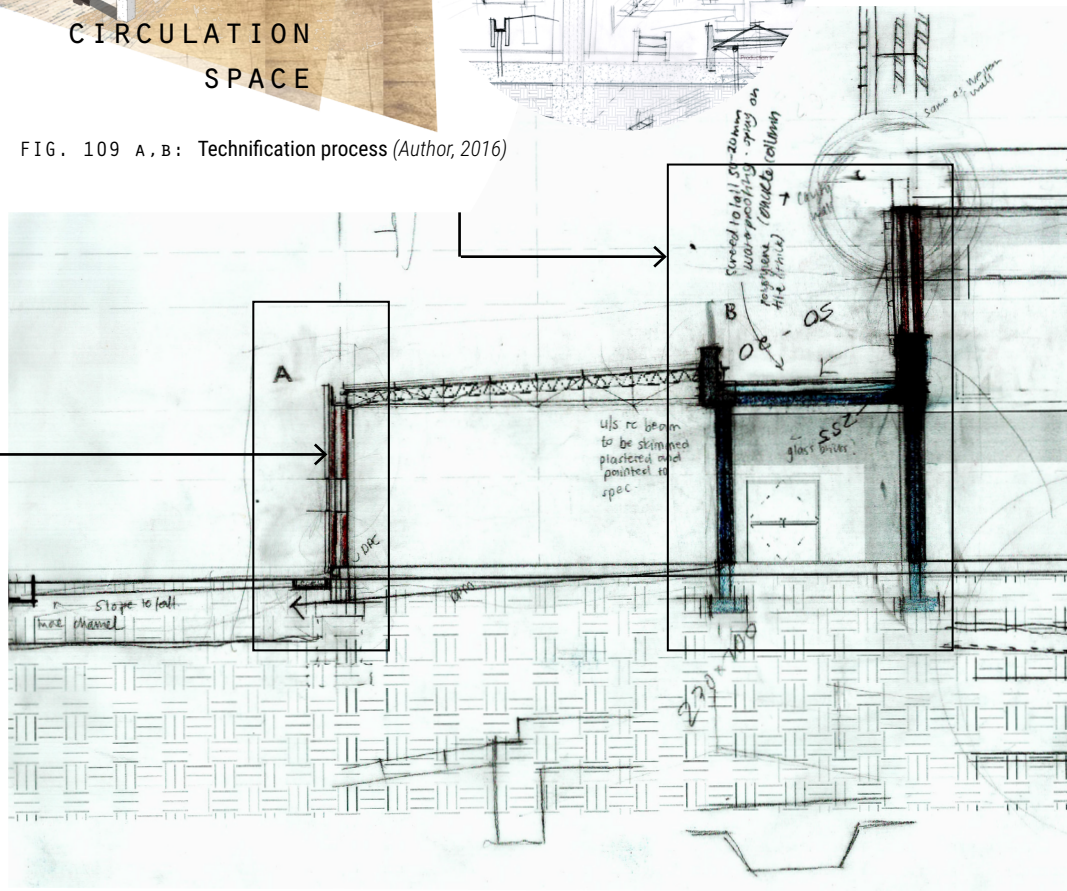
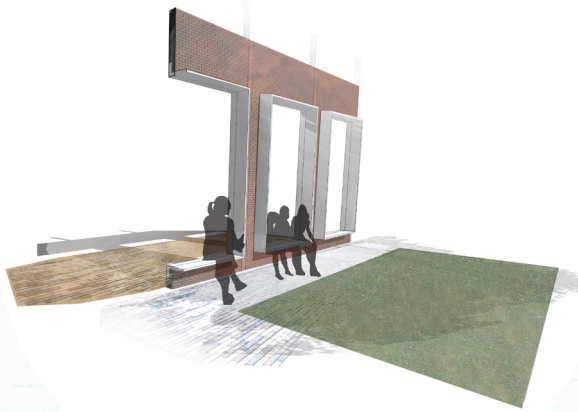


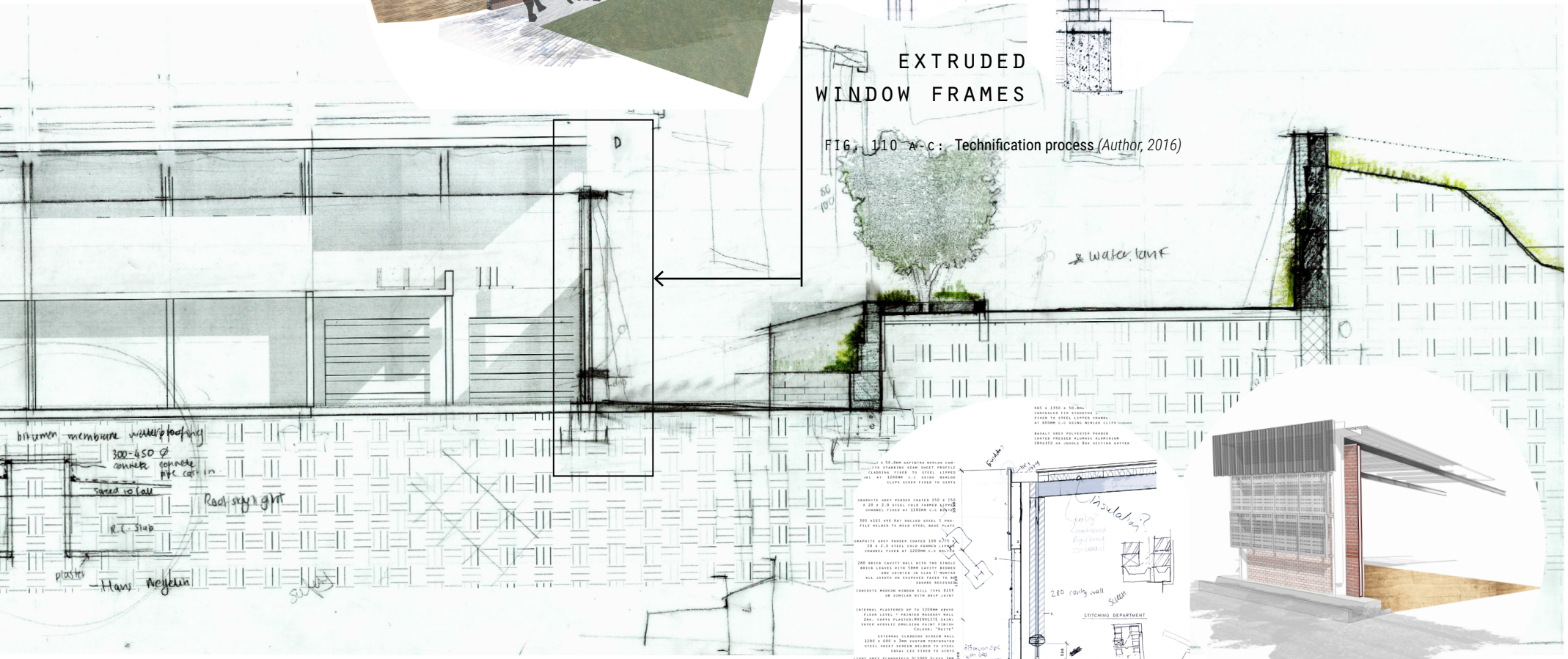
FIG. 109 A,B: Technification process *(Author, 2016)*





EXTRUDED
WINDOW FRAMES

FIG. 110 A-C: Technification process *(Author, 2016)*



WESTERN WALL

FIG. 111 A,B: Technification process *(Author, 2016)*