

Chapter 8

Techné

Performativity in the teché of negatives:

The preceding chapters have focused on deconstructing and mechanizing the *narrative of escape* on the levels of urban intervention, conceptual and programmatic thinking, and conceptual formgiving through the *negative*. This chapter, however, focuses on further absorbing the *narrative of escape* into the physical dimensions of the intervention, i.e. exploring its manifestation in the realm of construction, materiality, passive design and detail. This is accomplished not only through the physical abstract, but also, now, performative potential of the *negative*.

Tectonic concept:

2_ Two types of negatives

The *second artificial landscape* is, however, furthermore, produced through a layering of negatives which conceptually and tectonically articulates the artificiality of the architectural skin — thereby increasingly layering the skin itself with performative negatives of itself. This deepening of artificiality is performed architecturally through construction techniques of burrowing into and moulding of the cemetery's surface and substrata where memorialization, archiving and invention occurs within the program. The *Bioluminescent Conservatory*, *Cabinet of Obscurities*, *Inventory of Effigies* and *Imaginarium* are then burrowed into the surface, and its spaces formed through a process of moulding. Shale, being the predominant soil condition where the intervention is located, is inherently structural and can therefore facilitate the performative construction process of excavation and moulding, whereby concrete is cast into excavated trenches, leaving behind a negative imprint of the shale on the wall surface when the existing, surrounding soil is excavated to form occupiable cavities between the walls. Friction caused between the shale and concrete elements is adequate to alleviate the structural members from requiring loadbearing footings.

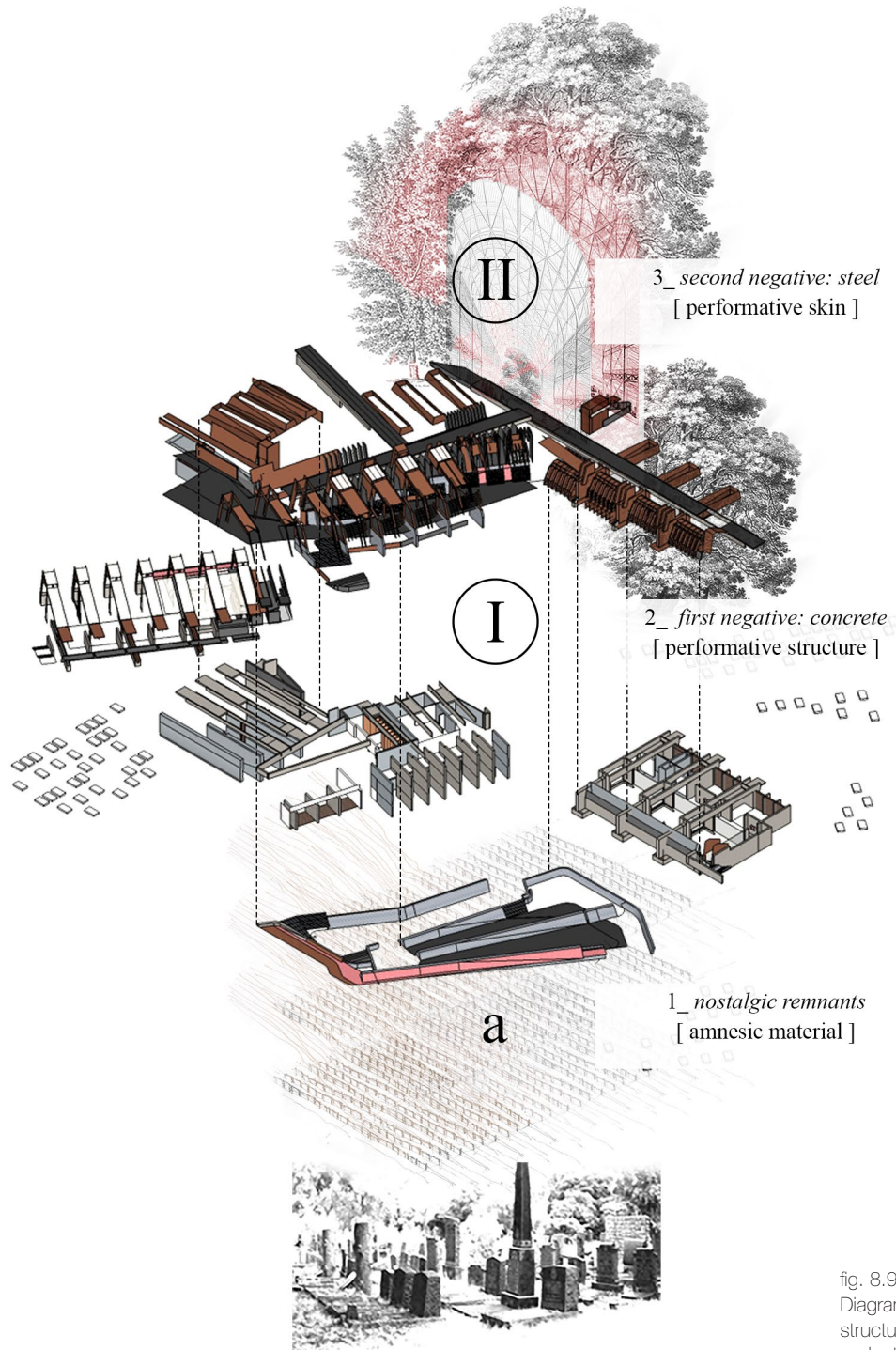


fig. 8.99. (author)
Diagram of the structural assembly and artificial layering of the architectural skin responding to the cemetery's conditions.

This moulded structure is articulated with a contrasting, rigid, tectonic structural language, constructed from oxidized steel. This skin comprises the architecture's roof and walls, providing shelter whilst articulating niches and vistas towards existing and created, spatial devices, passages for circulation, explore lighting and ventilation strategies, hosts services and , as it 'weaves' through the moulded concrete elements. The skin is made performative both through this articulation (the skin gaining depth through programming) and through its functional and textural contradiction with the moulded concrete structure. Furthermore, the *Maturation Loculi* being submersed below the cemetery's surface, grants the profanity of this invention a sublimity. In its detachment from the rest of the program, it situates itself on the periphery of the surface's familiarity, creating a physical portal into artificial wonder and therefore the unknown. This unfamiliar inventory of bioluminescent botany can only be uncovered through descent — confrontation with the unknown, inversely, now, attained through *escape*. Its isolation from the *Spectral Garden* is, furthermore, necessitated to allow for controlled cultivation of the botany that will be relocated to the columbarium and *Spectral Garden* adjacent to the *Imaginarium*, and to maintain emphasis on the *Spectral Garden* that makes the cemetery habitable through the columbarium. The bioluminescent botany of the *Spectral Garden* performatively mimics the nostalgic forest's ephemerality, artificiality, amnesia and chaos with a living skin which shrouds and unveiling this nested structure within the forest as plants wither and burgeon.

The *negative's* acute performance of artificiality, culminates in the third, and deepest, layer. It is here where the dweller, having been exposed to the *negative*, and its performative relation to *physical-*, *amnesic-* and *reimaginative* death through a gradual descent, is lead to the *Imaginarium*. In this intimate, isolated space, the *Imaginarium* meets the *Spectral Garden*. The proximity of these two programs with each other, offer the dweller a space where these *deaths* also become proximal in the dweller's imagination.

This reveals the mechanism by which significance can be restored, through the acceptance of reimagination of artificiality and the inevitable amnesic material it produces (which inevitably loses significance), thus reanimating not only the remnant, but transmuting the artificial into a medium for intimation, through *escape*. Again, in the descent from the surface, *the real* is engaged. Through this more profound sense of reimagination - *La Petite Mort* - the architecture achieves intimacy with the dweller. The dweller's discovery of this mechanism, through the *second artificial landscape*, not only pertains to the reimagination of architecture as a device for intimation, but uncovers the potential of *La Petite Mort* as a tool with which the *vestiges of the real* regain significance. There is a profound optimism in this revelation: in the acceptance, and reimaginative reassembly of the *vestiges of the real*, fragments of a *third intimate landscape* start to surface.



SITE PLAN 1:500

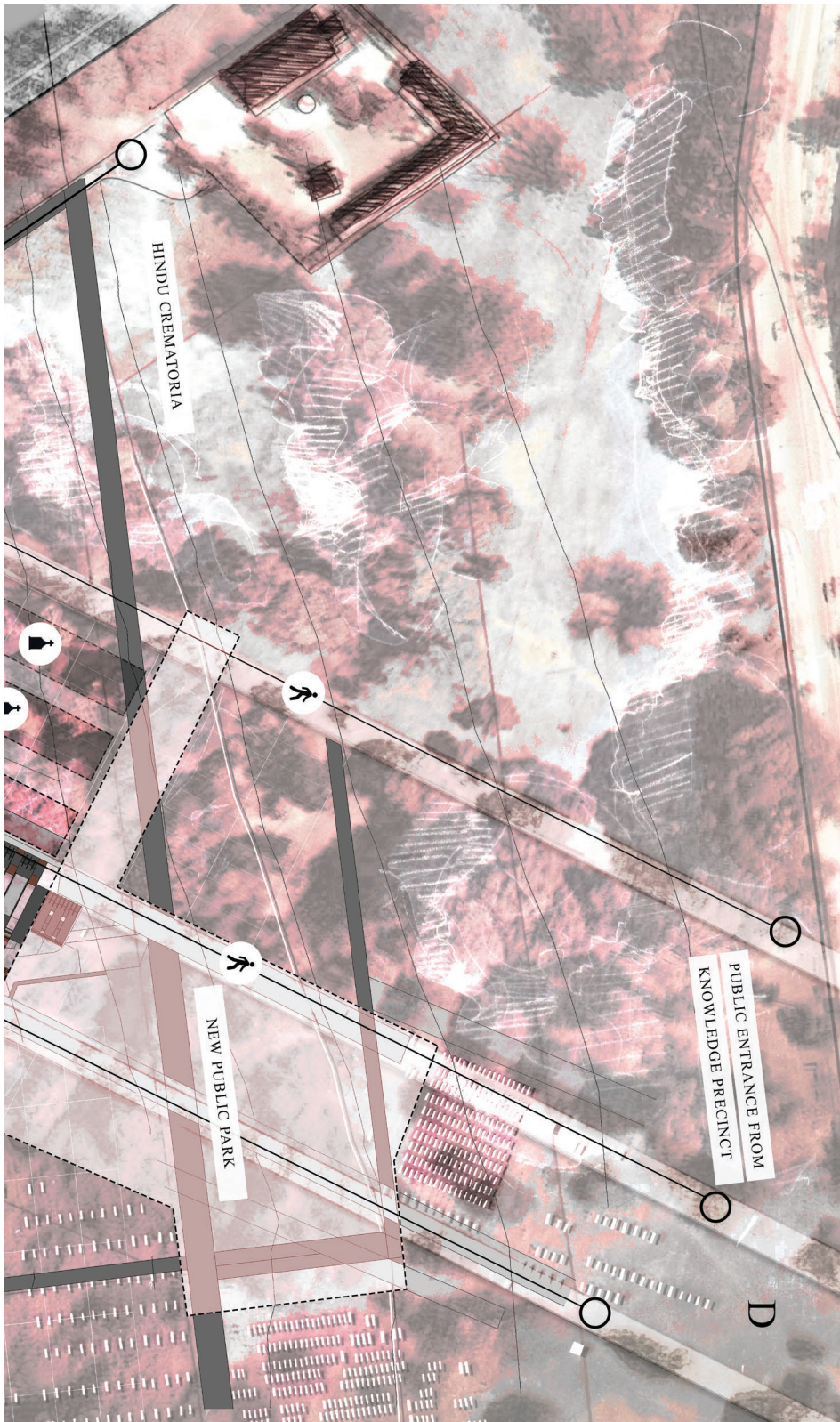


fig. 8.100. Site Plan.

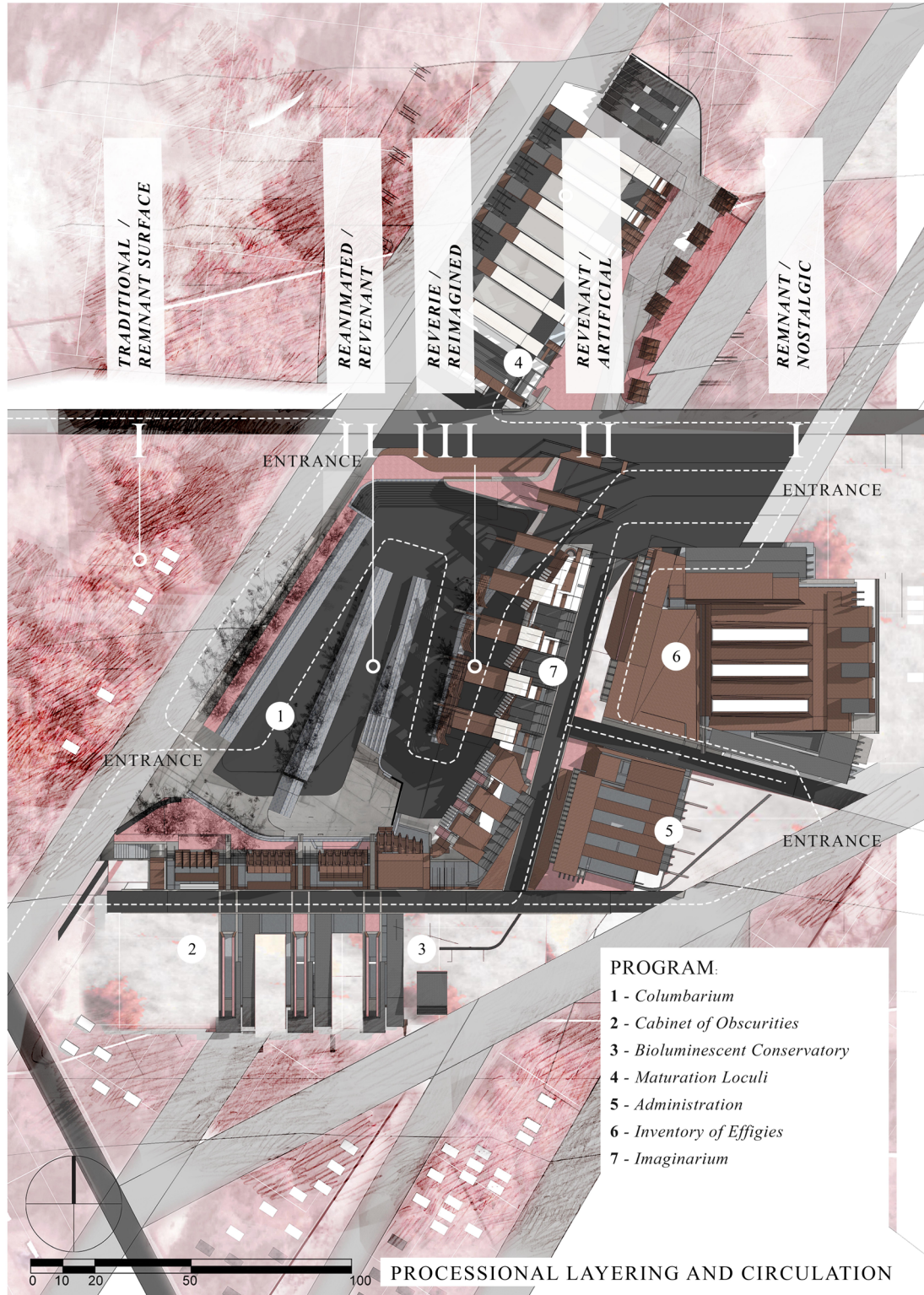
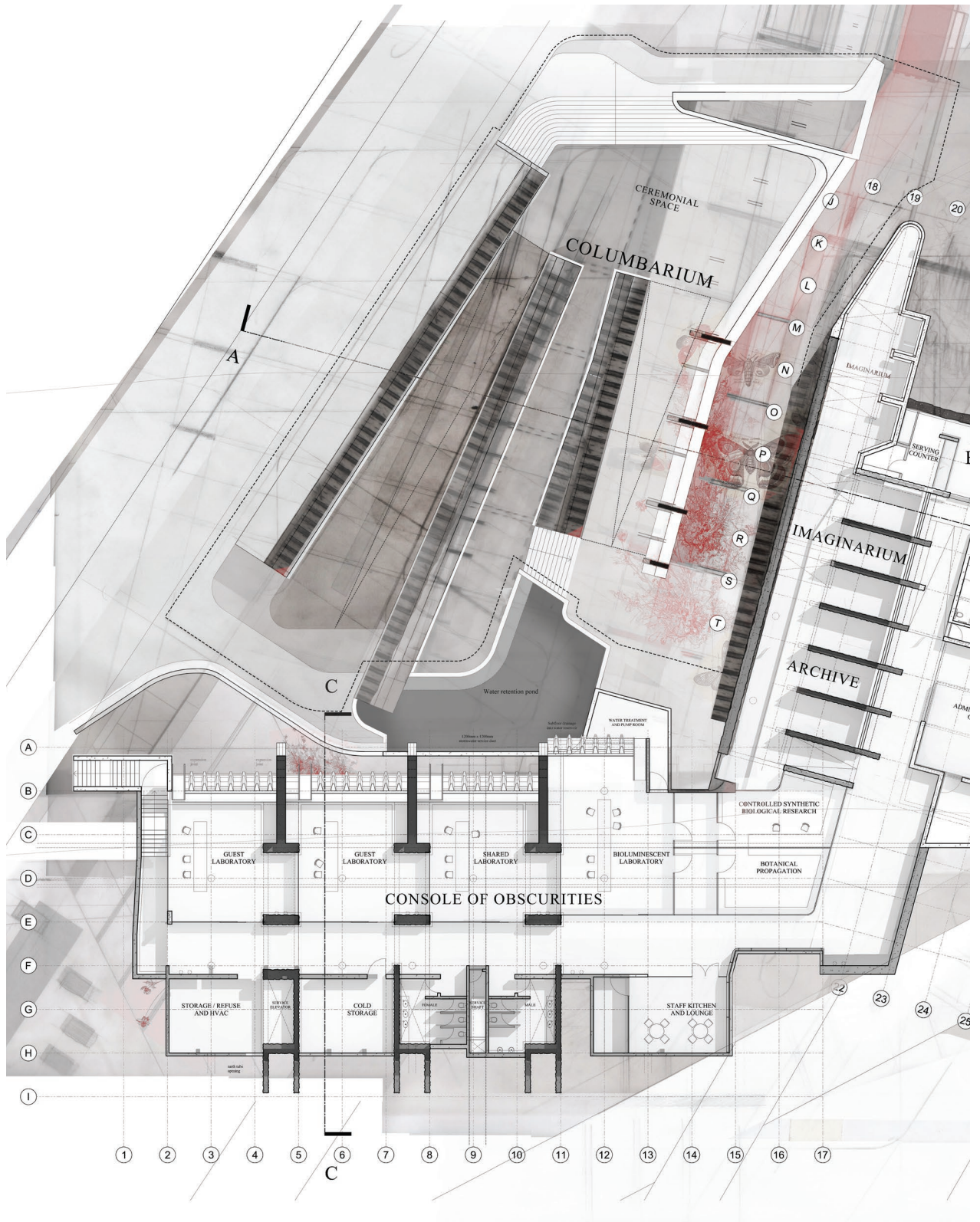


fig. 8.101. Roof Plan.



fig. 8.102. Plan.



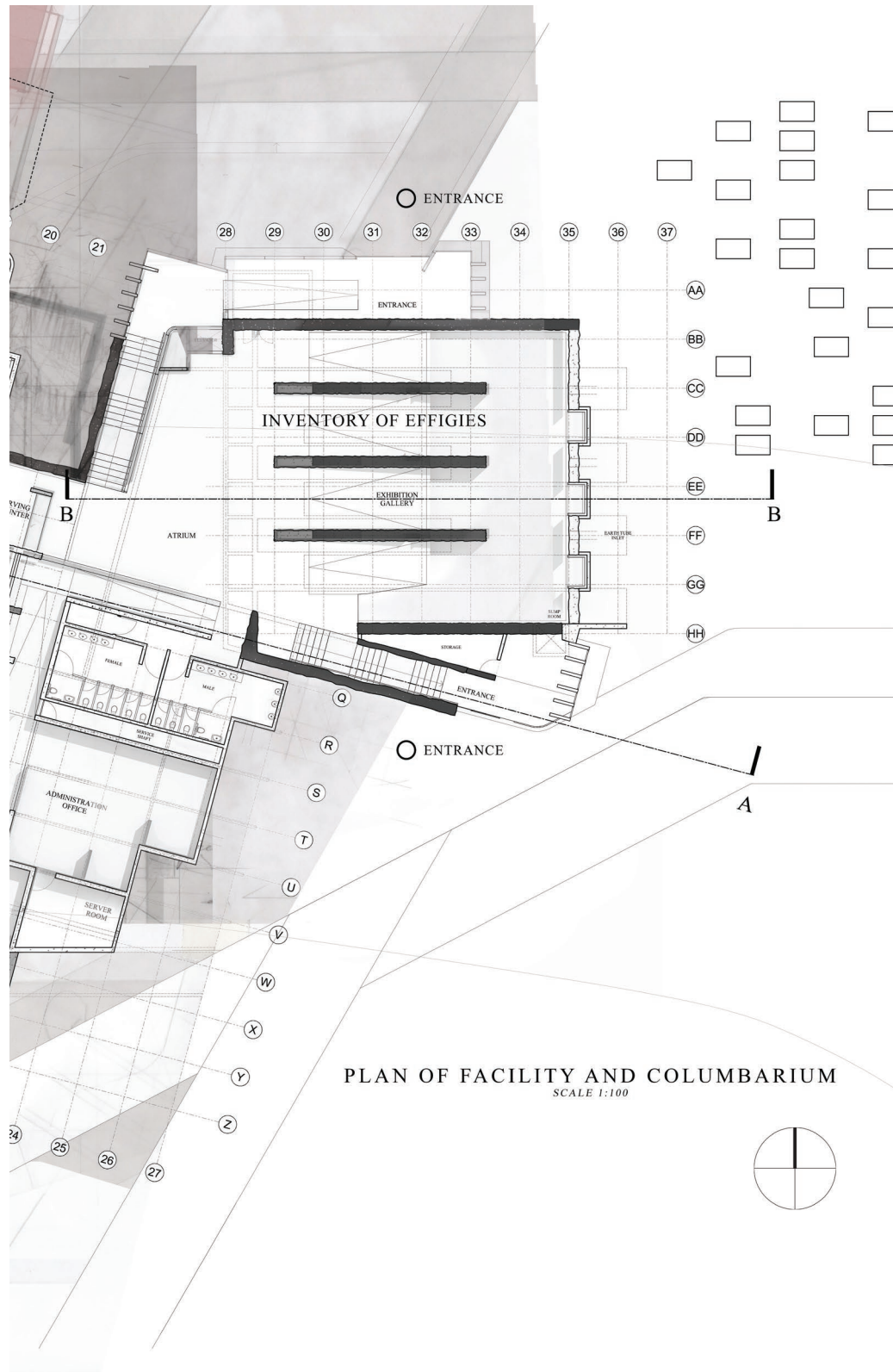


fig. 8.103. Plan of Research and exhibition facility.



fig. 8.104. Glass blown details by R&Sie(n).

fig. 8.105. Glass blown details by R&Sie(n).



fig. 8.106. Artificial nature veiling the concrete shell.

Conceptual and tectonic precedents:

Developing the *negative* as architectural design strategy:

Lost in Paris

Location: Paris, France

Date: 2008

Architect: R&Sie(n)

Keywords:

Synthetic forest, artificial nature, hydroponic, tectonic veil, enchanted

"Lost in Paris" is an experimental residential project by architect Francois Roche from the firm R&Sie(n) situated in a Parisian courtyard and shrouded in an artificial forest, cultivated to disguise a bare concrete shell with a living botanical skin of ferns. The dense thicket of hydroponically sustained ferns was imagined as a radical bucolic antithesis of Paris' manicured urban condition, which not only evokes, but relishes in the tensions existing between architecture and nature, purity and corruption, attraction and repulsion (Slessor, 2009). This project is a precedent for how artificiality can successfully be transmuted and reduced to a detail scale. The characteristic feature of the project is a fragile hydroponic system of glass containers blown into botanical forms, which were manufactured to host the natural, living skin of the building. Both the artificially created and sustained forest of ferns, as well as the material detailing of the building manifest as a newly imagined artificial nature. Both in its ephemerality and its enchantment through glass blowing, nature and artificiality is made performative, and becomes as much the material of the architecture as the concrete, glass and steel. The artificial layering of the project is articulated as the synthetic 'botanical' glass skin cocoons the shell of the building while being overgrown by nature.



fig. 8.107. Conceptual model of the *City of Culture's* artificial surface.

fig. 8.108. Artificial layering inherent in the *City of Culture*.



fig. 8.109. Artificiality captured in the material construction of the *City of Culture*.

The City of Culture, Santiago de Compostela

Location: Galicia, Spain

Date: 2011

Architect: Eisenman Architects

Keywords:

Tectonic mimicry, artificial landscape, mimicry, *negative*

Although this project is heavily scrutinized by the architectural community for its obscene insensitivity and theoretical debasement,

Although this project is heavily scrutinized by the architectural community for its obscene insensitivity and theoretical debasement, the *City of Culture* (2011) in Santiago de Compostela, Spain, can be interpreted as a *second artificial landscape*. Designed by architect Peter Eisenman, this project is conceptualised by overlaying the geometry of the town of Santiago de Compostela over a new, imagined artificial mountainous geography. Furthermore, responding to the topography⁴¹ of the surrounding context and emulating the nearby mountainous outcrop, it is an alluring image of a “folded artificial landscape sliced by crossing streets” distorting the old city of Galicia (Curtis, 2010). This palimpsest of layers filter “the natural surroundings into the artificial world of the architecture” (ibid., 2010) allowing the architecture a perceived degree of autonomy in its generation through which significance is layered into the new, inevitably artificial, architecture. This is further emphasised in the materiality of the buildings through the use of stone cladding sourced from a nearby mountain and its application as new skin on the surface of the building.

Both the concept and technology of the building as *second artificial landscape* becomes performative of its artificiality, through these *negatives*. The building hosts a cultural and educational program further enticing imagination.

⁴¹ As observed by Curtis (ibid., 2010) the project promoted for its topographical sensitivity, ironically required the complete decapitation of the local hill *Monte Gaias* and the removal of millions of cubic metres of soil from site.



fig. 8.110. Set design
for Opera Elektra (2011),
Anselm Kiefer.

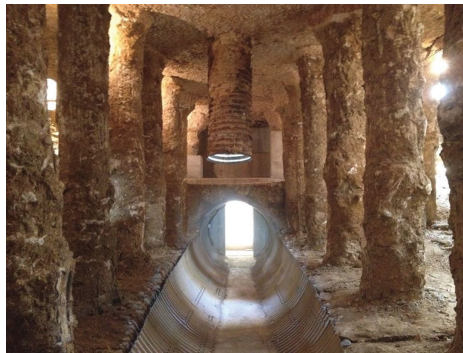


fig. 8.111. Underground
gallery, Anselm Kiefer
(undated).

fig. 8.112. Underground
gallery, Anselm Kiefer
(undated).

A
Opera Elektra set design

Location: Madrid, Spain
Date: 2011
Artist: Anselm Kiefer

B
Underground gallery

Location: Barjac, France
Date: unknown
Artist: Anselm Kiefer

Keywords:

Tectonic mimicry, *negative*, moulding, burrowing

Both the *Opera set design for Elektra* (2011) in Madrid, Spain, and his *underground gallery* in Barjac, France, are sculptural and land art installations by artist Anselm Kiefer, in which the artificiality of reproduced originals are made performative for the spectator. He accomplishes this in his set design for Elektra through a technique of stacking and arranging shipping containers into a mould, into which concrete is cast. This mould is stripped after the curing process, leaving behind a three layered, crumbling, concrete *negative* which not only becomes a performative reproduction of the original, but also performs the process of its creation through the traces left on the *negative* from this method of construction. The process itself is thus made into a *negative*, allowing the art to function autonomously.

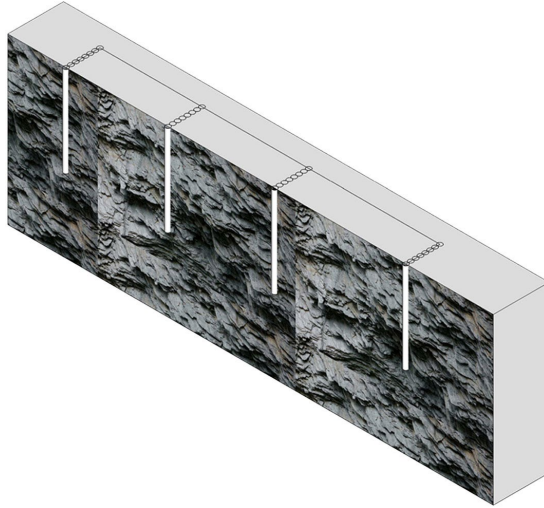
This *negative* is further made performative through its spatiality and programming: a vertical narrowing is produced as the layers descend, forming a *negative* mastaba, which culminates in the claustrophobic focal point of both the set design and opera. Cavities (negative space) left between the walls of the concrete *negatives* are host backstage services.

In his underground gallery at Barjac, this process is imitated through burrowing a mould into the natural landscape by excavating trenches into to earth, into which concrete is then cast. The earth, or the original landscape, forming the mould beneath this new artificial surface is then excavated, similarly leaving behind a *negative* of the original.

This performative process of 'memorialization' allows the reimagination (*reverie / verbeelding*) of the original through the artificial representation (*revenant / verbeeld-ing*) of the created. This technique informs the architectural intervention as technological and conceptual precedent in the creation of the columbarium (the artificiality of memorialization acts as the method to engage the viewer's imagination) and throughout the programs concerned with collection, archiving, documentation and memorialization: the *Cabinet of Obscurities*, *Inventory of Effigies*, *Imaginarium columbarium*, and the columbarium.

Performativity in the concrete construction process and materiality through the first negative:

This section is an exploration and appropriation of the concrete moulding construction technique used by artist Anselm Kiefer described on the previous page. This construction section relates to section C-C (Cabinet of Obscurities) as indicated on the final plan.

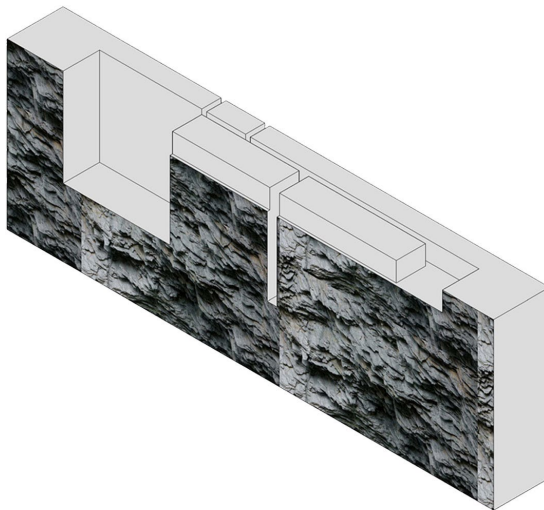


Phase 1:

Mapping and piling

Map positions to bore excavation grid using 600mm diameter piling drill, used as guides for further excavation.

fig. 8.113. (author).



Phase 2:

Trenching and excavation

Excavate shale using 600mm diameter piling drill where narrow elements are to be moulded. A 305mm wide back hoe excavator is further used for deep voluminous excavation, while a 300mm wide rotary trencher (1600mm max depth) is used for shallow trenching.

fig. 8.114. (author).

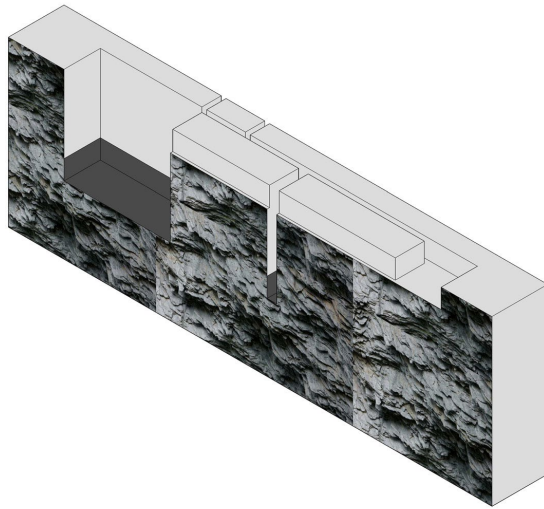


fig. 8.115. (author).

Phase 3:

Waterproofing

A 375 Micron damp proof membrane is used as waterproofing which is installed onto a Kay-tech bidim A10 6,4mm geo-textile fixed to the exposed shale rock face with steel anchors.

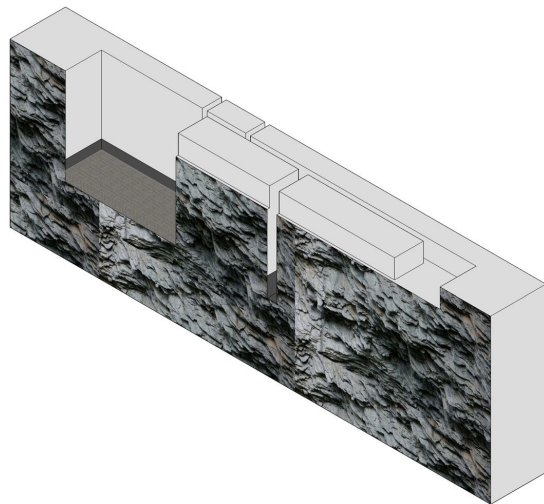
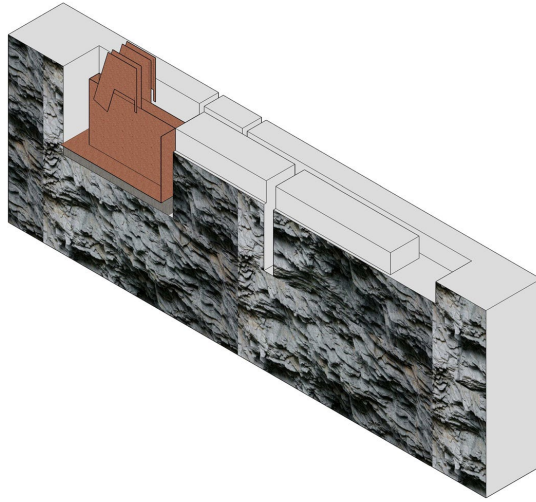


fig. 8.116. (author).

Phase 4:

Casting foundation

A concrete foundation is cast in-situ over which a steel formwork for further casting will be fixed in place. Mild steel reinforcement is casted into the concrete slab to join and reinforce further casting.

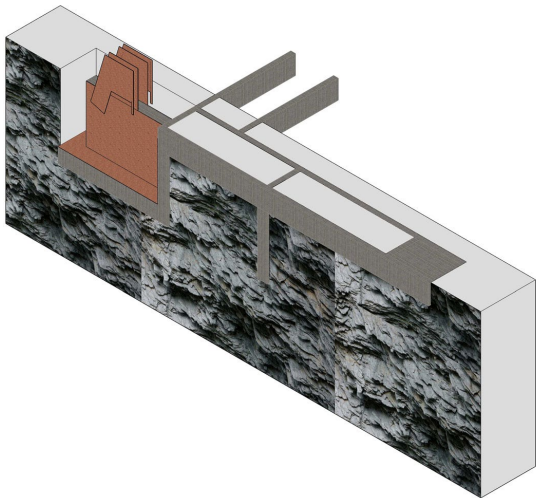


Phase 5:

Suspending steel formwork

The steel formwork element is placed over the casted concrete footing. This steel element/skin becomes the base to further articulations, including lighting apertures, planters and passive ventilation elements. These elements are the *negative* articulations of the steel skin.

fig. 8.117. (author).



Phase 6:

Casting

Concrete is cast into the excavated shale mould, vibrated and left to cure before further excavation takes place.

fig. 8.118. (author).

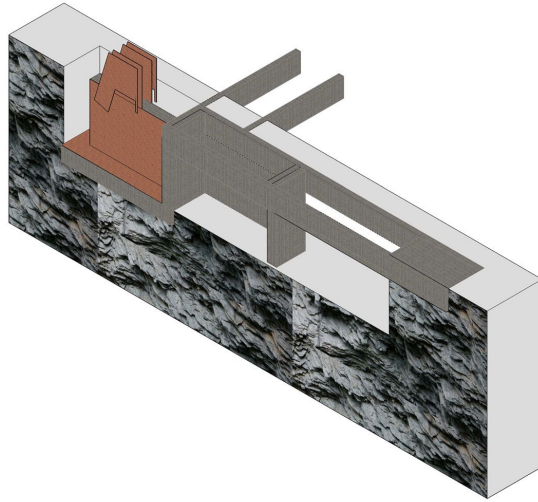


fig. 8.119. (author).

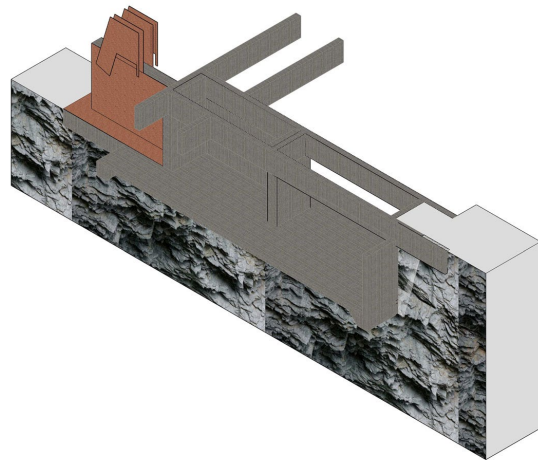


fig. 8.120. (author).

Phase 7:

Further excavation

Shale surrounding the concrete elements is excavated after the concrete has sufficiently cured. These excavated voids form the hollows which the programs will occupy, while the newly exposed moulded concrete element is a *negative* produced from the cemetery's material, with memory of the removed shale imprinted on its surface. The concrete element becomes the structural, stereotomic base to the steel *negative* which will cover it.

Phase 8:

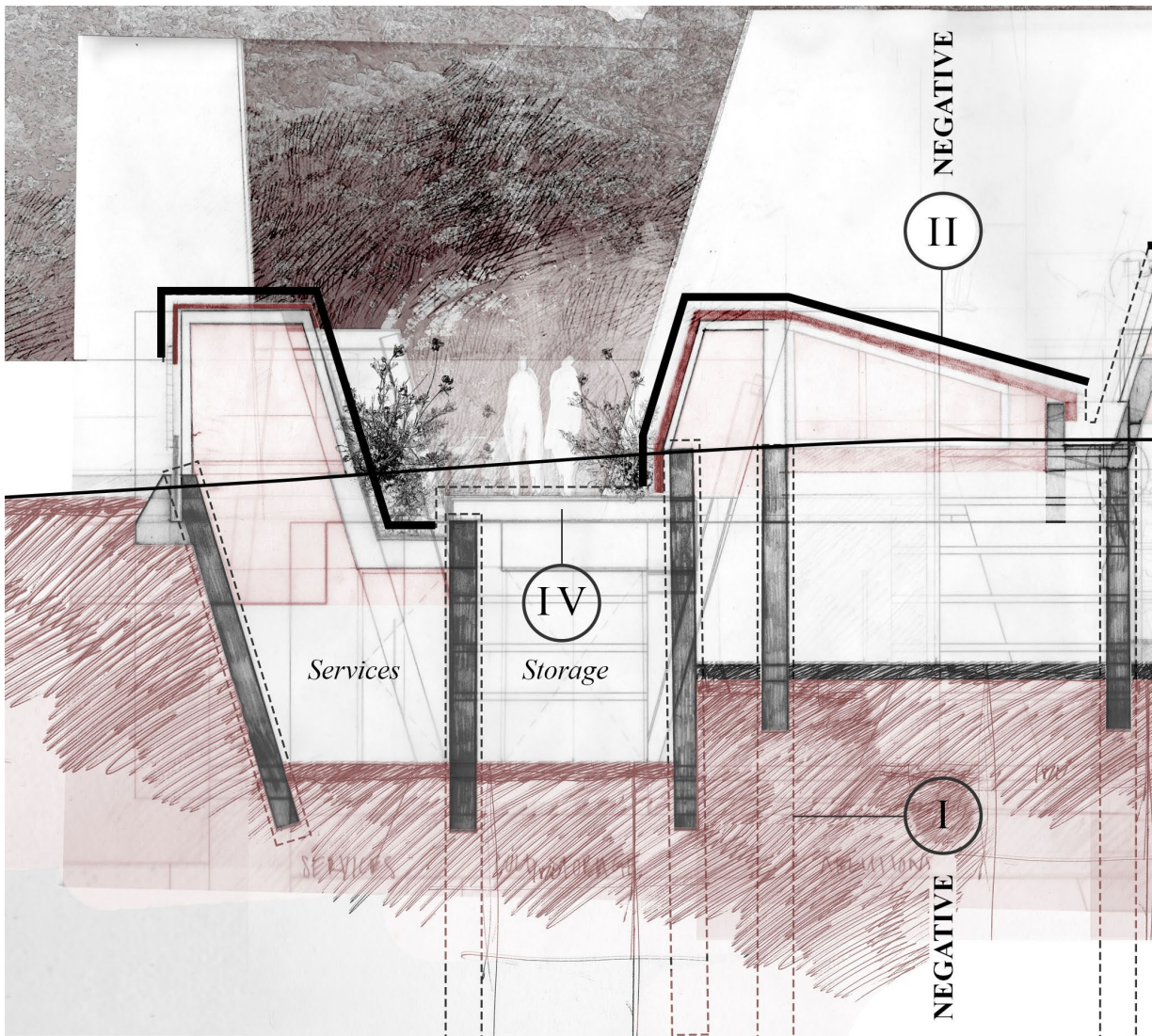
Second casting

A false concrete floor slab with a no-fine concrete slab base, along with concrete retaining walls are cast between the moulded concrete elements using standard concrete casting techniques and shuttering. This duality of concrete construction techniques and the textural difference on these surfaces emphasize the performativity of the concrete moulding process.

Performativity in layering the moulded concrete with the weathering steel elements articulated as the second negative:

While the subterranean moulded concrete elements (the first negative indicated as I in the diagram) form the stereotomic base to the memorializing, collecting and archiving programs and elements of the building, the shelter of the building is provided by covering these elements with a contrasting weathering, oxidized steel skin.

The steel skin (indicated as II in the diagram) not only forms the roof of the building but is also designed to articulate circulation throughout the building, accommodate the



hydroponic systems and planters which sustain the bioluminescent botany (indicated by IV), and provide passive lighting and ventilation to the building (indicated at III).

- I_ Concrete *negatives* produced by moulding concrete in burrowed trenches,
- II_ Roof articulated as *negative* steel skin,
- III_ Synthetic bioluminescent botany creating an artificial forest within the building - a *negative* of the cemetery's forest.
- IV_ The architecture thereby creates layers of escape through creating circulation which guides the dweller through the architectural negatives produced from the cemetery and its forest.

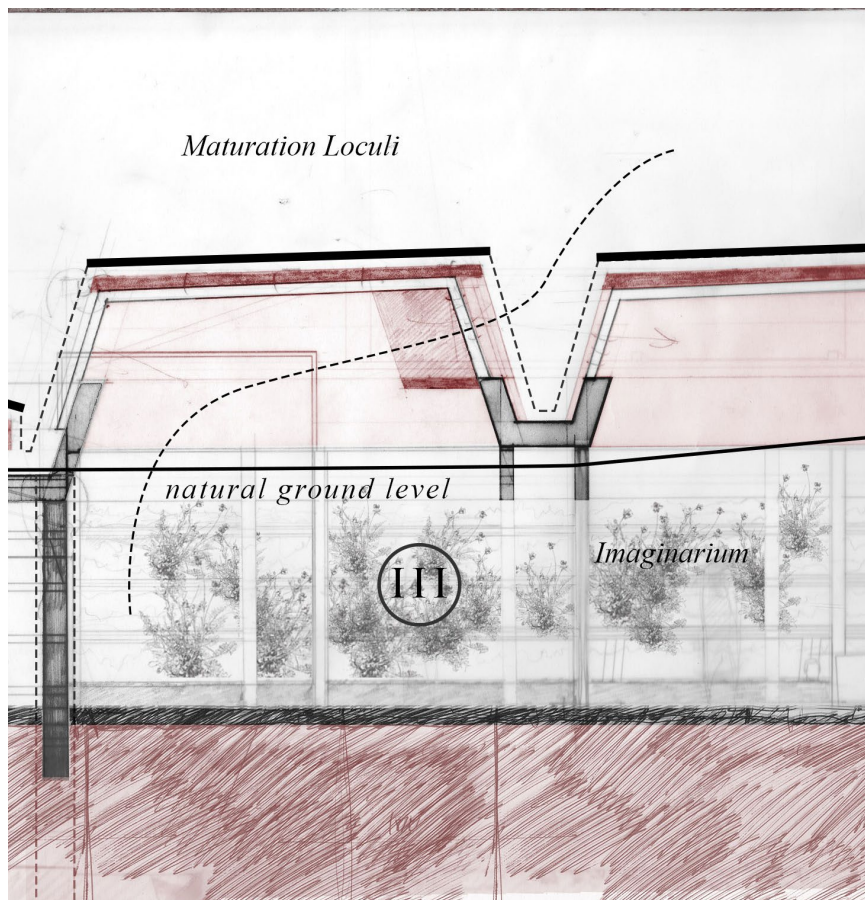


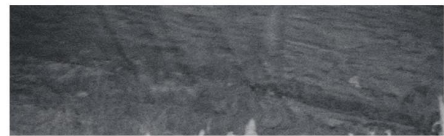
fig. 8.121. (author)
Tectonic performativity:
section through *Inventory
of Effigies* showing the
material expression of the
two types of *negatives*.
First iteration.

PERFORMANCE IN MATERIALITY



Shale

Shale, being the predominant soil condition where the project is located, is inherently structural and can therefore facilitate the performative construction process of *excavation* and *moulding* whereby concrete is cast into excavated trenches, leaving behind a negative imprint of the shale on the wall surface. Friction caused between the shale and concrete elements alleviates the structural members from requiring load-bearing footings.



Moulded concrete

Excavation and moulding is the process whereby the first negative is constructed. This is accomplished by excavating into the cemetery's earth (predominantly shale) and by casting concrete into these trenches, after which the earth surrounding the elements is removed. A negative, formed from the 'formwork' earth, is therefore left behind as a memorialization of what has been removed. This not only imitates memorialization occurring in the cemetery, but furthermore mimics the creation of the artificial granite landscape in the cemetery.



Botanical skin

The skin of the building surrounding the laboratories, imaginarium and columbarium is shrouded in a bioluminescent botanical skin. The exoticism/otherness, seasonality and ephemerality of the forest is therefore transmuted into a living skin which shrouds the harshness of the building and allows for its melding into the cemetery.



Granite

Granite has formed a new artificial surface in Brixton cemetery, especially visible in the Jewish section which has been completely covered in granite tombstones and mausolea. These granite elements exist as *axis mundi* in the cemetery is us therefore charged with the escape from the mundane into the sublime. Granite is used in the entrance portals and vista windows of the exhibition gallery and laboratories, not only binding the building to the existing, but also facilitating the passage into the *otherness* of the building.



Oxidized steel

While the moulded concrete elements provide a stereotomic base to programs dealing with memorialization, archiving and collection, steel is used as tectonic alternative to shelter these elements. The one-dimensionality of this material is, however, made performative by allowing this contrasting tectonic skin to become functioning design elements which guide circulation, emphasize light and space, host services and articulate passive design strategies. Oxidized steel is further performative in its weathering process, which imitates that of the cemetery.

Solar heat chimney ventilation system note:

300mm Exhaust fan fixed to galvanized steel bracket fixed to 203x203x25mm I-beam steel column
Double layer glazing separated by max. 150mm cavity suspended over 200mm reinforced concrete slab with black painted finish bolted to 45x45mm galvanised steel angles
Derbigum Bitumen torch-on waterproofing to manufacturer's specification applied below concrete slab
100mm PIR rigid foam thermal insulation edges fully bonded glued to all faces but exposed solar face

Roof note:

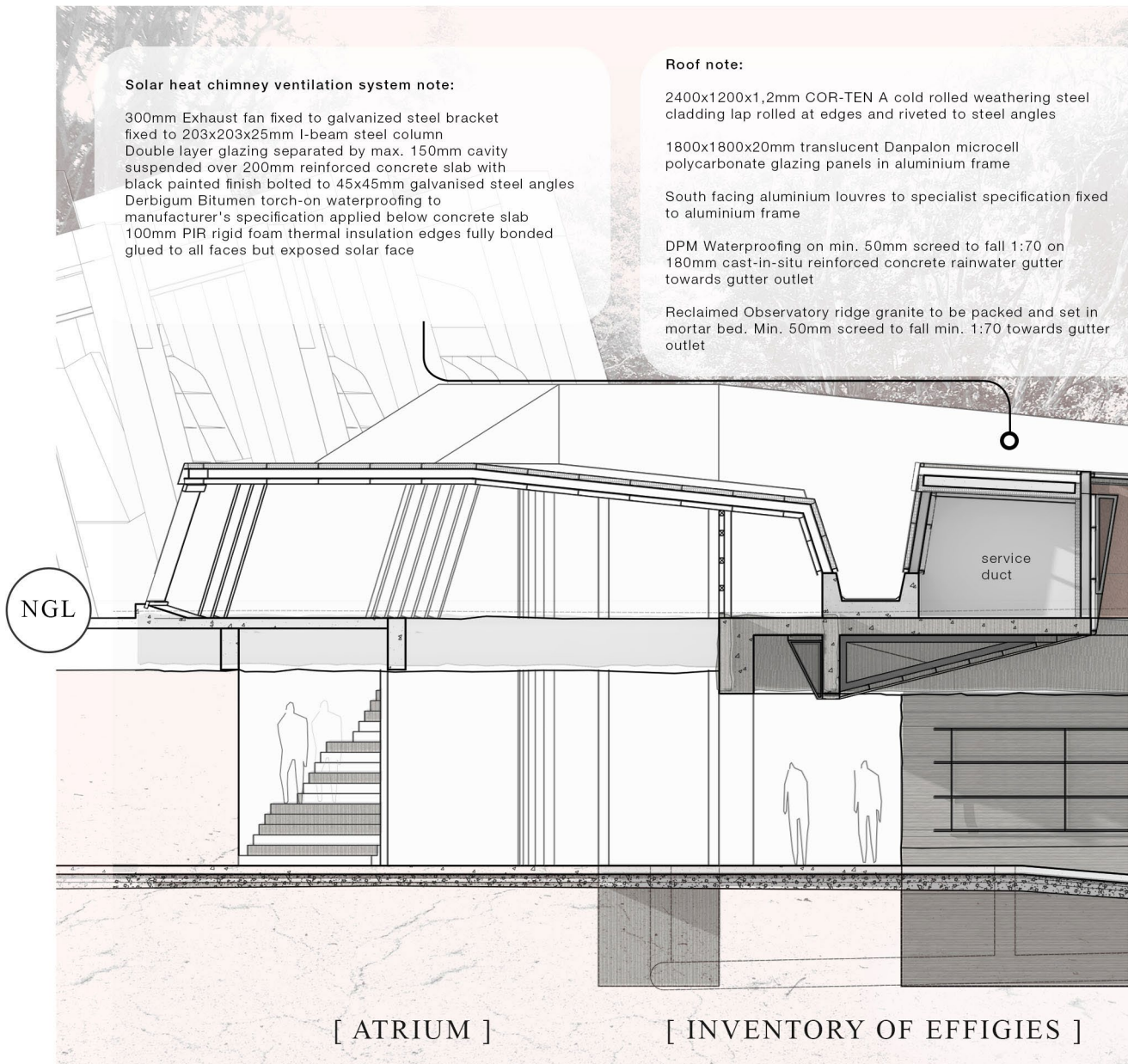
2400x1200x1,2mm COR-TEN A cold rolled weathering steel cladding lap rolled at edges and riveted to steel angles

1800x1800x20mm translucent Danpalon microcell polycarbonate glazing panels in aluminium frame

South facing aluminium louvres to specialist specification fixed to aluminium frame

DPM Waterproofing on min. 50mm screed to fall 1:70 on 180mm cast-in-situ reinforced concrete rainwater gutter towards gutter outlet

Reclaimed Observatory ridge granite to be packed and set in mortar bed. Min. 50mm screed to fall min. 1:70 towards gutter outlet

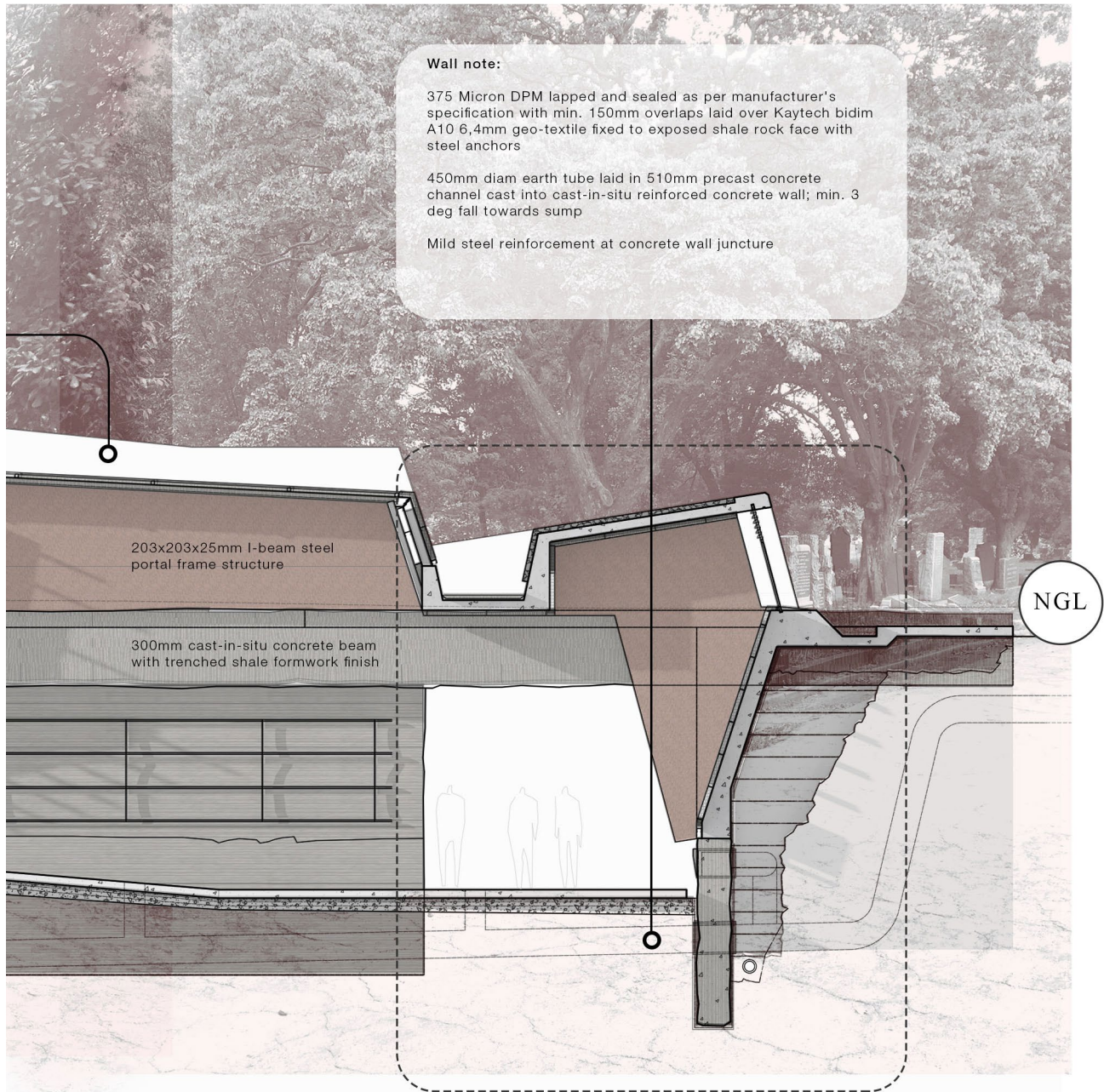


Gallery note:

45x45mm Galvanised and power coated angles as exhibition framework roll-bolted to 600mm cast-in-situ concrete wall with trenched shale formwork finish

SECTION B-B

INVENTORY OF EFFIGIES
[EXHIBITION GALLERY]



Wall note:

375 Micron DPM lapped and sealed as per manufacturer's specification with min. 150mm overlaps laid over Kaytech bidim A10 6,4mm geo-textile fixed to exposed shale rock face with steel anchors

450mm diam earth tube laid in 510mm precast concrete channel cast into cast-in-situ reinforced concrete wall; min. 3 deg fall towards sump

Mild steel reinforcement at concrete wall juncture

203x203x25mm I-beam steel portal frame structure

300mm cast-in-situ concrete beam with trenced shale formwork finish

NGL

1:20 WALL SECTION DETAIL

fig. 8.122. (author)
Section through the
Inventory of Effigies.

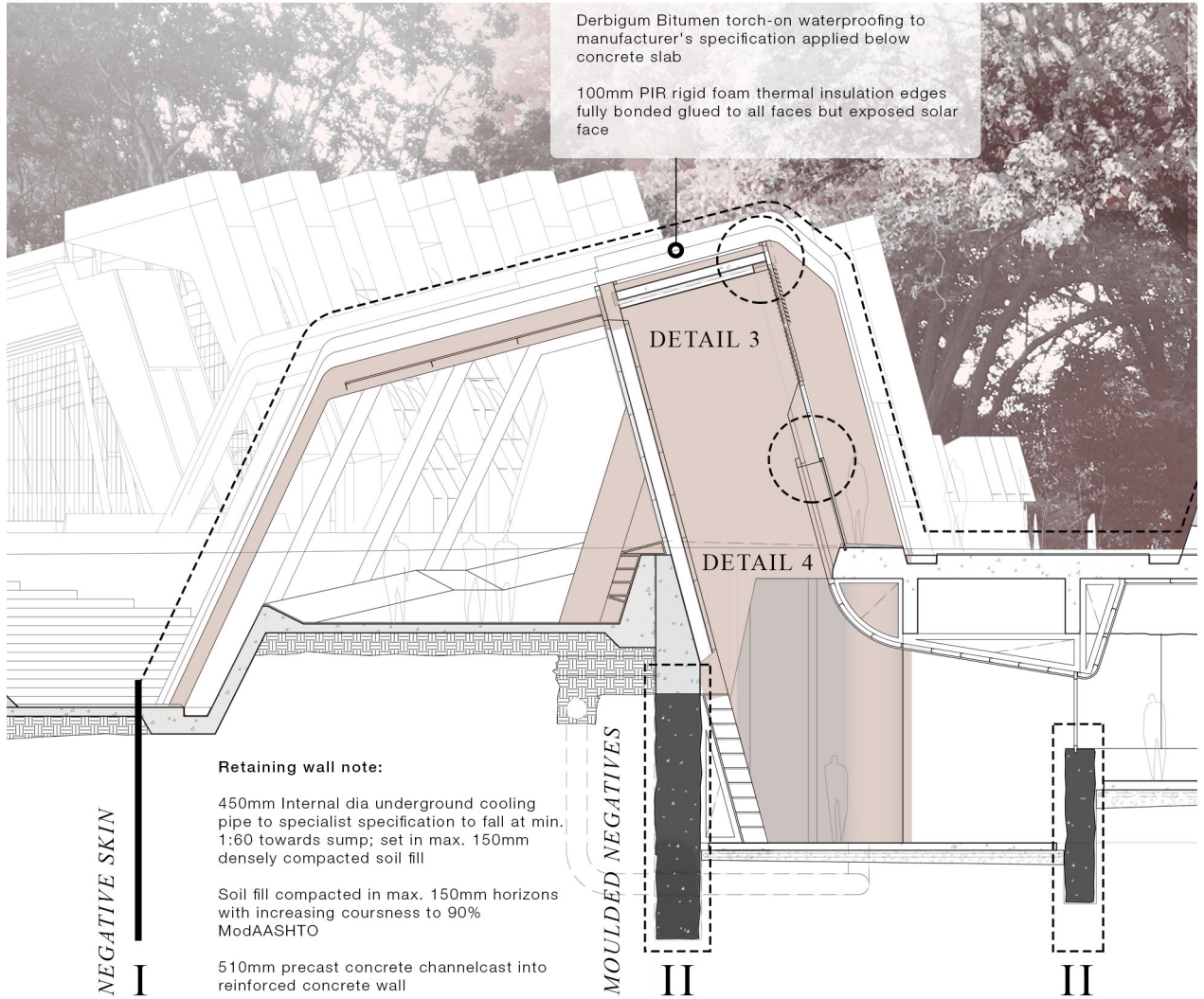
Solar heat chimney ventilation system note:

300mm Exhaust fan fixed to galvanized steel bracket fixed to 203x203x25mm I-beam steel column

Double layer glazing separated by max. 150mm cavity suspended over 200mm reinforced concrete slab with black painted finish bolted to 45x45mm galvanised steel angles

Derbigum Bitumen torch-on waterproofing to manufacturer's specification applied below concrete slab

100mm PIR rigid foam thermal insulation edges fully bonded glued to all faces but exposed solar face



Retaining wall note:

450mm Internal dia underground cooling pipe to specialist specification to fall at min. 1:60 towards sump; set in max. 150mm densely compacted soil fill

Soil fill compacted in max. 150mm horizons with increasing coursness to 90% ModAASHTO

510mm precast concrete channelcast into reinforced concrete wall

SECTION A-A
ARCHIVE AND IMAGINARIUM
[EXHIBITION GALLERY]

Steel roof note:

203x203x25mm I-beam steel portal frame structure

2400x1200x1,2mm COR-TEN A cold rolled weathering steel panel roof, lap rolled at edges and riveted to 90x90x2 galvanized steel cleats at max. 600mm cc; Sealed with silicon at fixtures and overlaps. Roof to fall at min. 1:70 towards rainwater gutter.

100mm PIR Rigid Foam Thermal Insulation Edges fully Bonded

Double glazing laminated safety glass fixed window unit in aluminium frame bolted in grinded channel in concrete beam and sealed with structural silicon

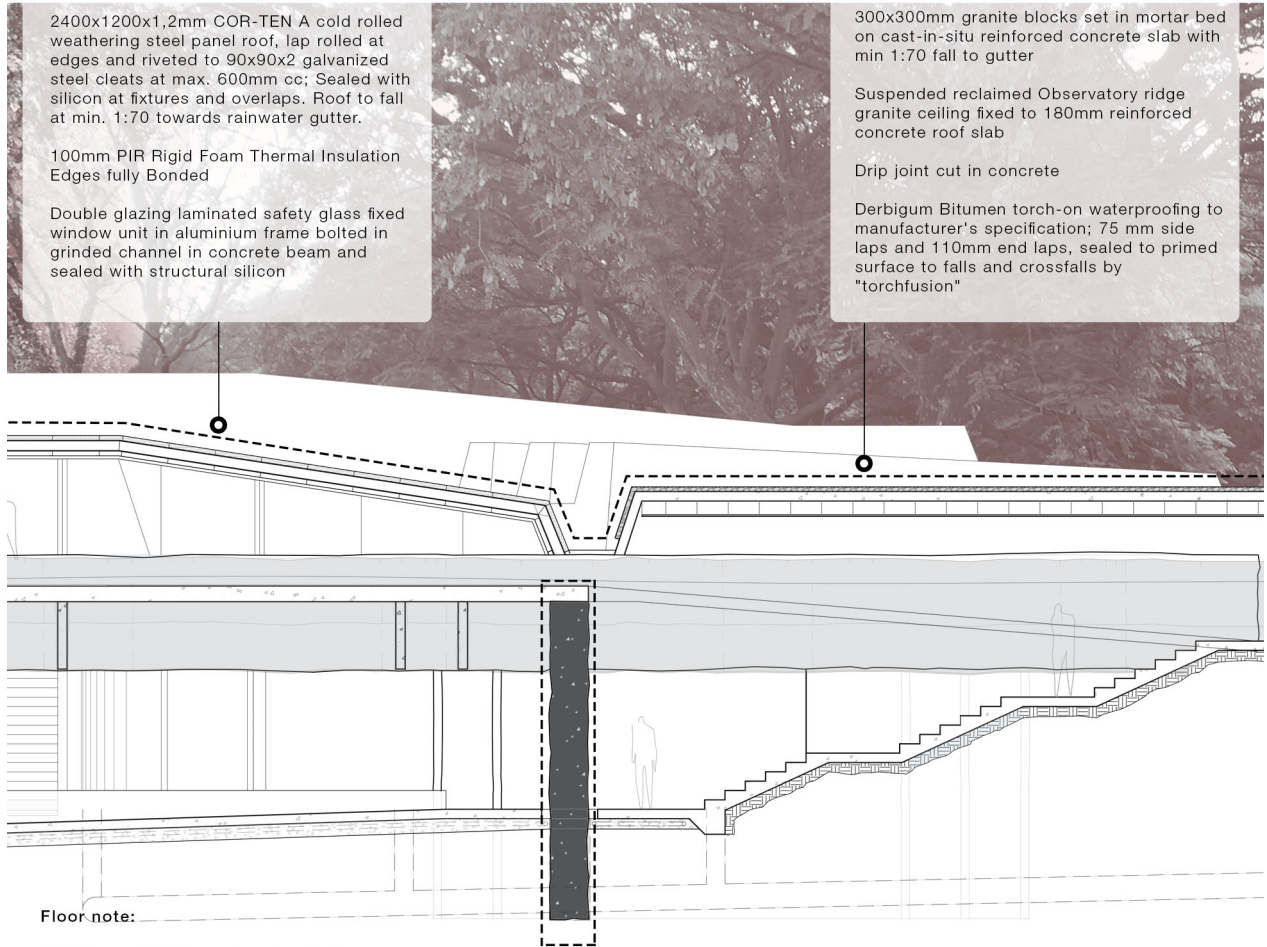
Concrete roof note:

300x300mm granite blocks set in mortar bed on cast-in-situ reinforced concrete slab with min 1:70 fall to gutter

Suspended reclaimed Observatory ridge granite ceiling fixed to 180mm reinforced concrete roof slab

Drip joint cut in concrete

Derbigum Bitumen torch-on waterproofing to manufacturer's specification; 75 mm side laps and 110mm end laps, sealed to primed surface to falls and crossfalls by "torchfusion"



Floor note:

375 Micron DPM lapped and sealed as per manufacturer's specification with min. 150mm overlaps laid over Kaytech bidim A10 6,4mm geo-textile fixed to exposed shale rock face with steel anchors

Kaytech Kaypipe 75mm drain pipe cast in min. 200mm no-fine concrete false floor laid to fall at min. 1:50. Drain pipe perforated openings to face upwards at false floor edges.

450mm diam earth tubes to fall at 3 deg towards sump

fig. 8.123. (author)
Section through the
Imaginarium.

Steel facade note:

406x178x31mm I-beam steel portal frame structure

8mm Laminated clear Solarview Low-E safety glass fixed to mild steel angle window frame with structural silicon

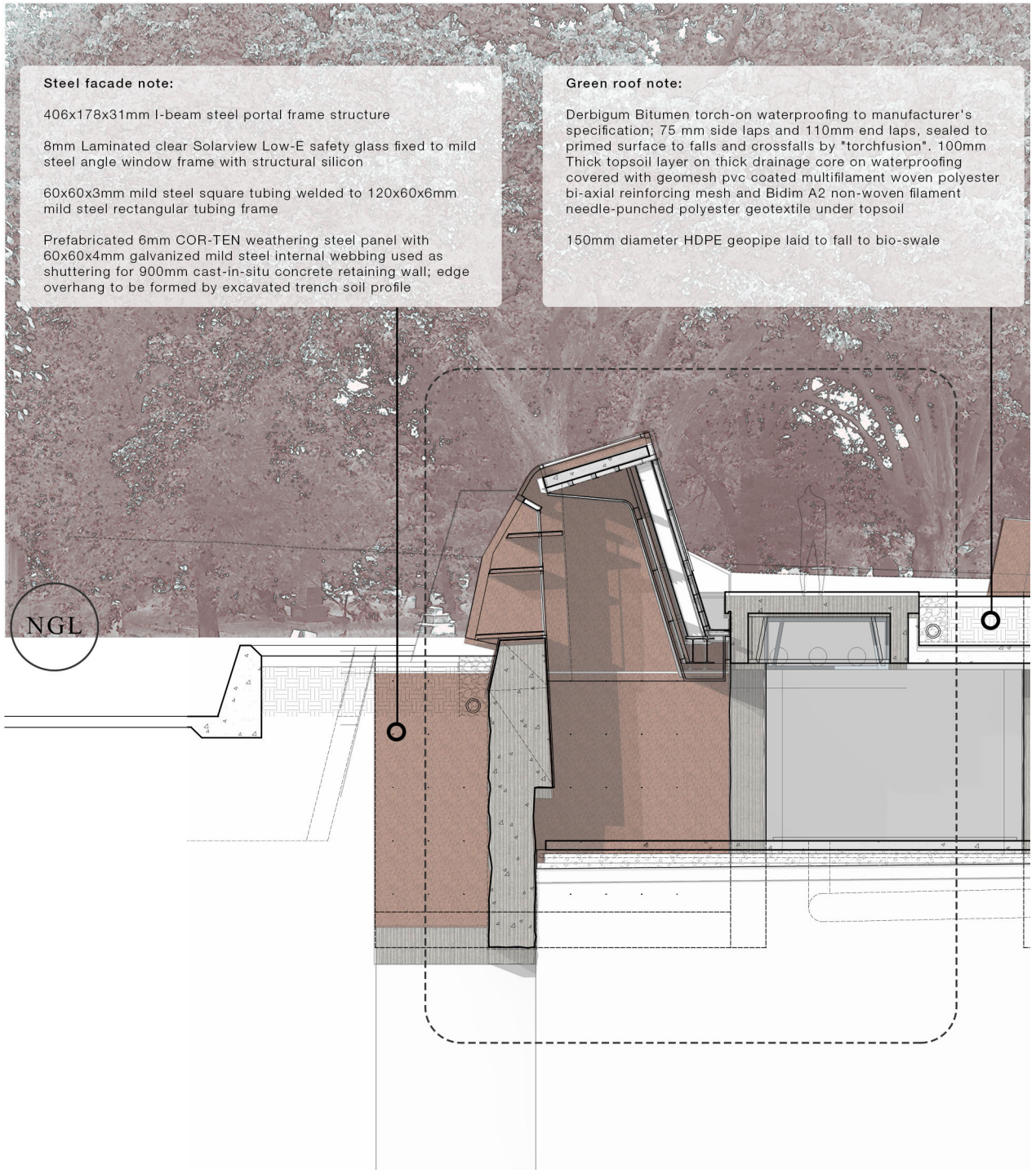
60x60x3mm mild steel square tubing welded to 120x60x6mm mild steel rectangular tubing frame

Prefabricated 6mm COR-TEN weathering steel panel with 60x60x4mm galvanized mild steel internal webbing used as shuttering for 900mm cast-in-situ concrete retaining wall; edge overhang to be formed by excavated trench soil profile

Green roof note:

Derbigum Bitumen torch-on waterproofing to manufacturer's specification; 75 mm side laps and 110mm end laps, sealed to primed surface to falls and crossfalls by "torchfusion". 100mm Thick topsoil layer on thick drainage core on waterproofing covered with geomesh pvc coated multifilament woven polyester bi-axial reinforcing mesh and Bidim A2 non-woven filament needle-punched polyester geotextile under topsoil

150mm diameter HDPE geopipe laid to fall to bio-swale



SECTION C-C
CABINET OF OBSCURITIES
[GUEST RESEARCH FACILITIES]

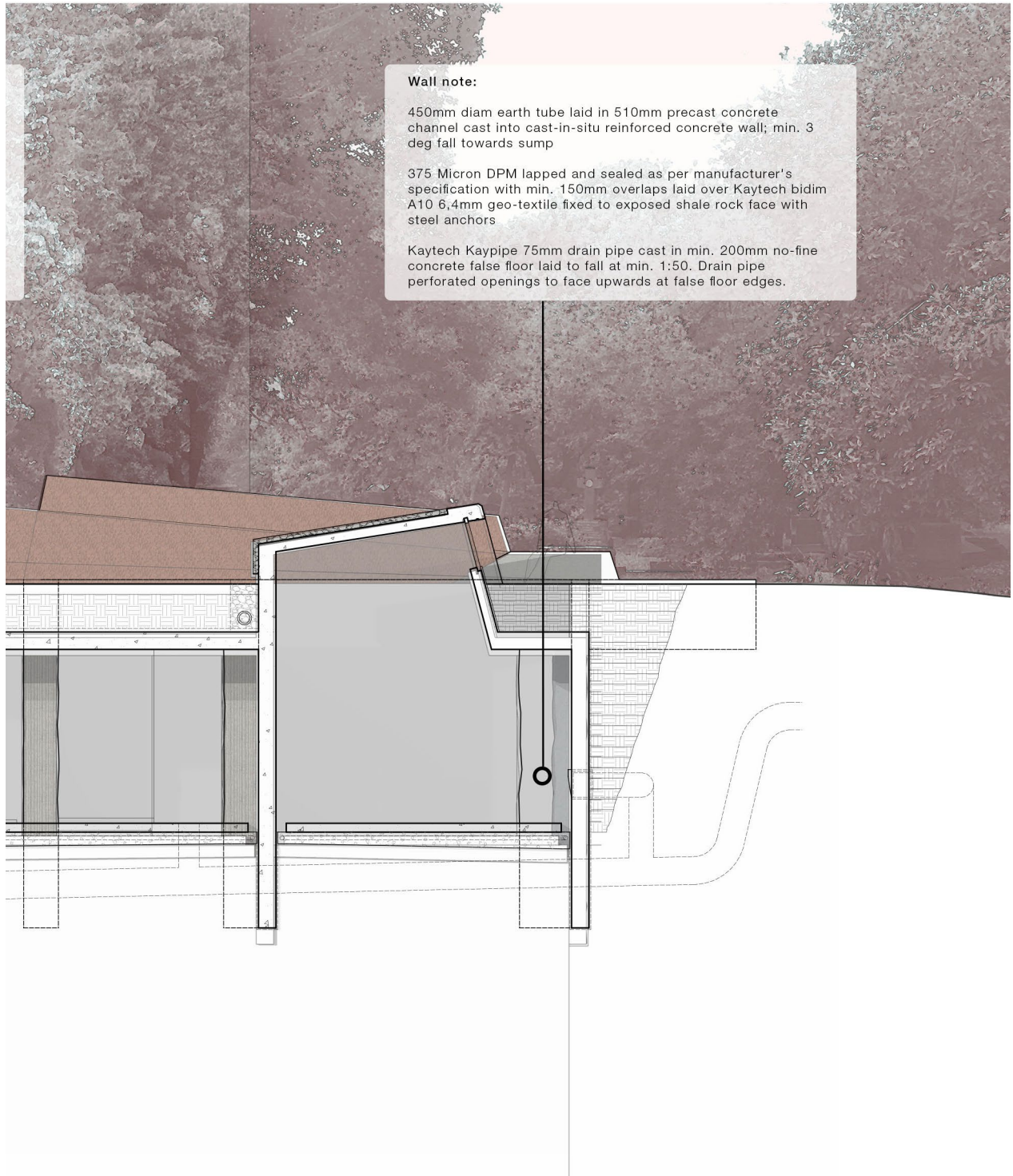
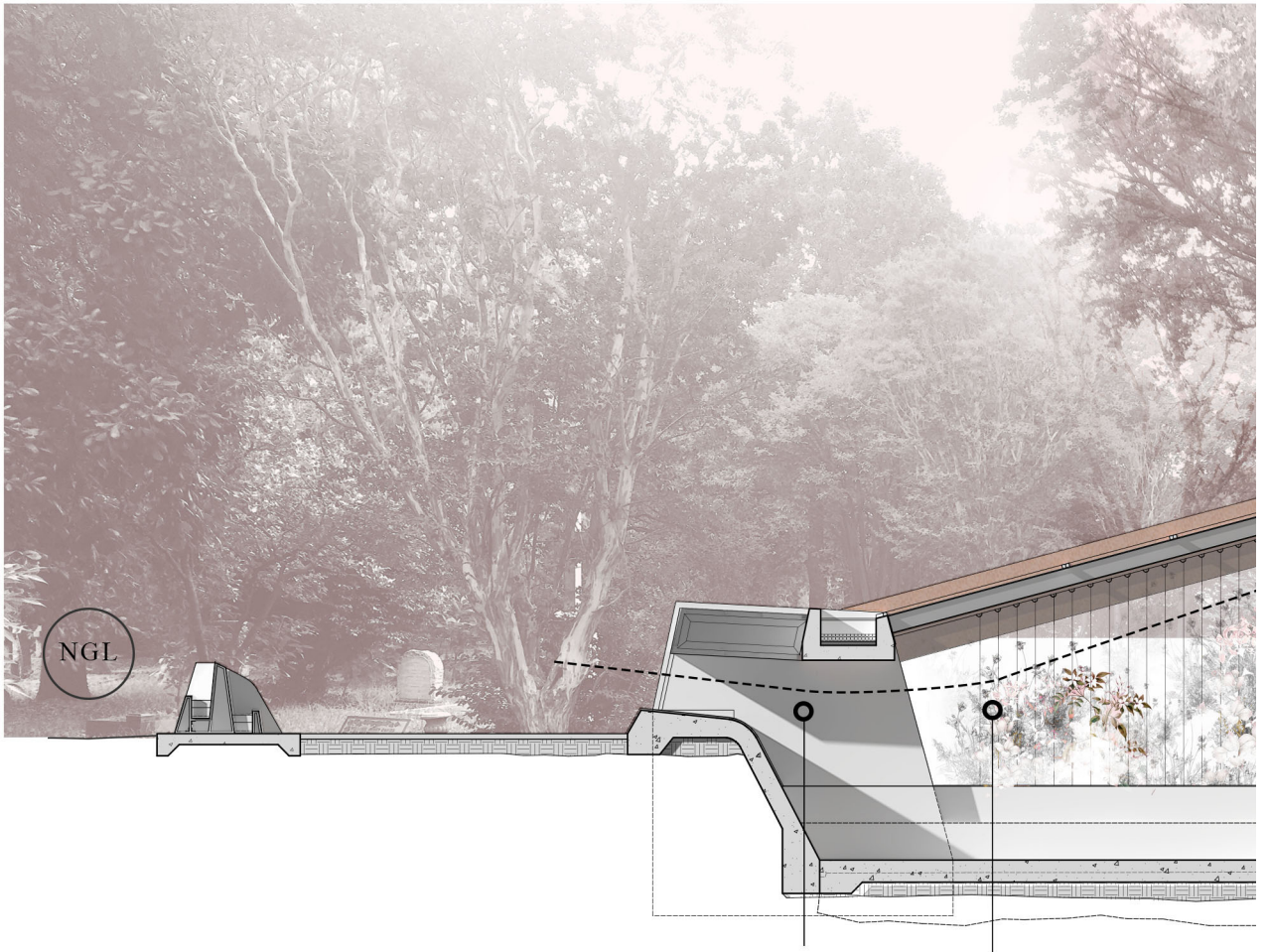


fig. 8.124. (author)
Section through the
Cabinet of Obscurities.



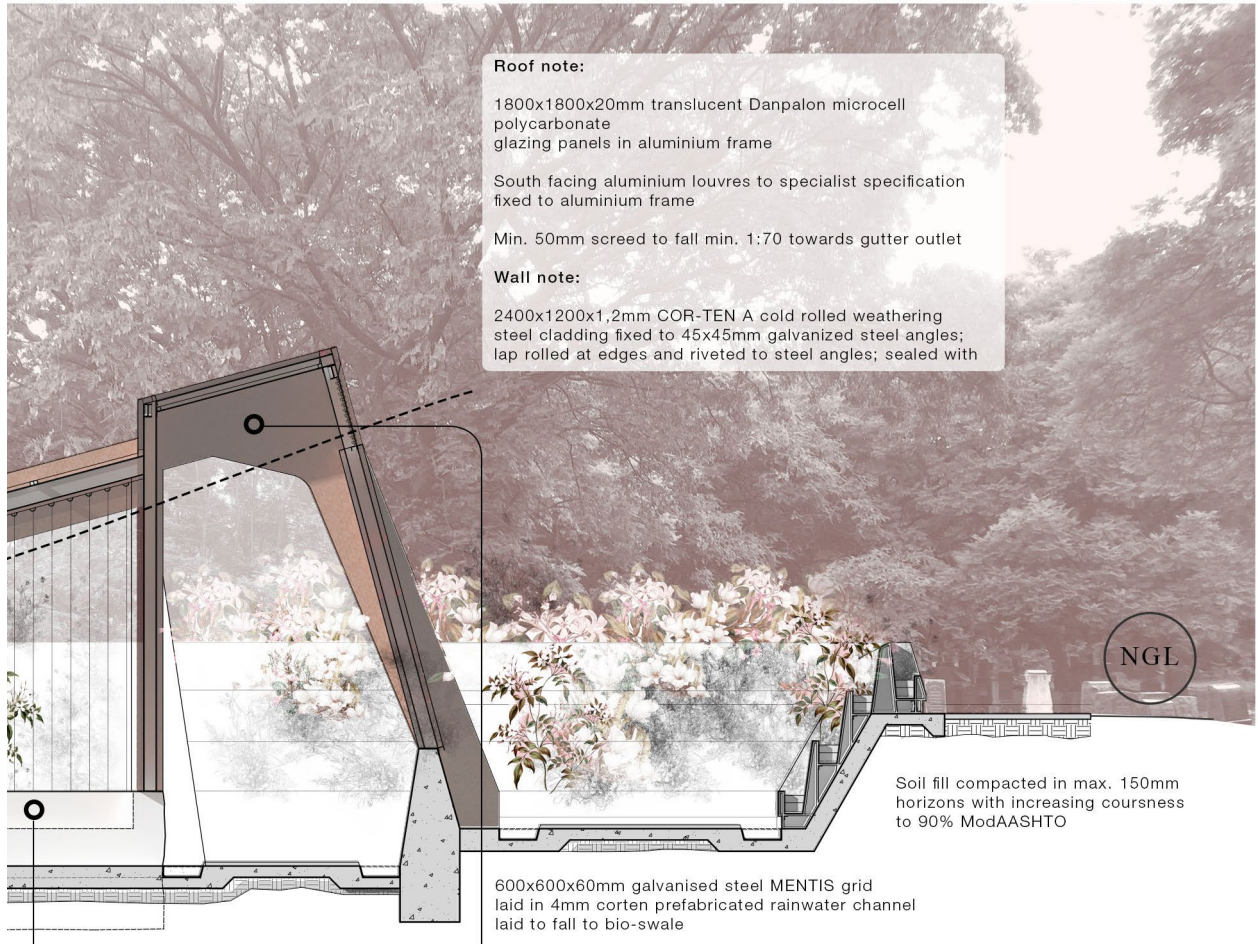
**RAINWATER
CATCHMENT TANK**

Rainwater catchment tank
and purification system
feeding to cast-in-situ
concrete hydroponic growing
beds

**GROWING STRUCTURE FOR
BIOLUMINESCENT PLANTS**

2mm Galvanized steel wire rope to
carry hydroponic vessels bolted at
top and bottom to custom COR-TEN
weathering steel anchors

**SECTION D-D
BIOLUMINESCENT CONSERVATORY
[MATURATION LOCULI]**



Roof note:

1800x1800x20mm translucent Danpalon microcell polycarbonate glazing panels in aluminium frame

South facing aluminium louvres to specialist specification fixed to aluminium frame

Min. 50mm screed to fall min. 1:70 towards gutter outlet

Wall note:

2400x1200x1.2mm COR-TEN A cold rolled weathering steel cladding fixed to 45x45mm galvanized steel angles; lap rolled at edges and riveted to steel angles; sealed with

NGL

Soil fill compacted in max. 150mm horizons with increasing coarseness to 90% ModAASHTO

600x600x60mm galvanised steel MENTIS grid laid in 4mm corten prefabricated rainwater channel laid to fall to bio-swale

WATER CHANNEL FOR HYDROPONIC SYSTEM

4mm COR-TEN A weathered steel prefabricated water channel 900mm used as formwork for cast-in-situ concrete beam with trenched shale formwork finish; Water channel retained in cast-in-situ concrete channel

PASSIVE VENTILATION THROUGH LOUVRED APERTURE

1800x1800x20mm translucent Danpalon microcell Polycarbonate glazing panels in aluminium frame

South facing aluminium louvres to specialist specification fixed to aluminium frame

Min. 50mm screed to fall min. 1:70 towards gutter outlet

fig. 8.125. (author)
Section through the
Maturation Loculi.

SANS 10400

The SANS 10400 document was consulted for the design process in order to achieve a building which complies to the national standards and regulations:

SANS 10400

Part A: Occupancy and Building classification

Table 1 & 2:

The building falls in a combination of classifications including

- C1 - Exhibition: 1 person per 20m²
- C3 - Laboratories: 1 person per 15m²
- D4 - Services: 1 person per 15m²
- G1 - Offices: 1 person per 15m²
- J3 - Storage: 1 person per 50m²

Part P: Ablutions

Total requirements for categories C1, C3, D4, G1 and J3:

1_ Columbarium:

Required:

Male:

2 Toilet pans

3 Urinals

3 Wash hand basins

Provided:

2 Toilet pans

3 Urinals

3 Wash and hand basins

Female:

5 Toilet pans

3 Wash hand basins

5 Toilet pans

3 Wash and hand basins

Two disabled bathroom facilities are provided (male and female).

2_ Administration and exhibition gallery:

Required:

Male:

2 Toilet pans
3 Urinals
4 Wash hand basins

Provided:

3 Toilet pans
3 Urinals
4 Wash hand basins

Female:

5 Toilet pans
3 Wash hand basins

5 Toilet pans
3 Wash and hand basins

Two disabled bathroom facilities are provided (male and female).

3_ Research facilities:

Required:

Male:

1 Toilet pan
2 Urinals
2 Wash hand basins

Provided:

2 Toilet pans
2 Urinals
3 Wash hand basins

Female:

3 Toilet pans
2 Wash hand basins

3 Toilet pans
3 Wash hand basins

Part O: Ventilation

- Exhibition: 2 air changes per hour
- Laboratories: 2 air changes per hour
- Library: 2 air changes per hour
- Offices: 2 air changes per hour

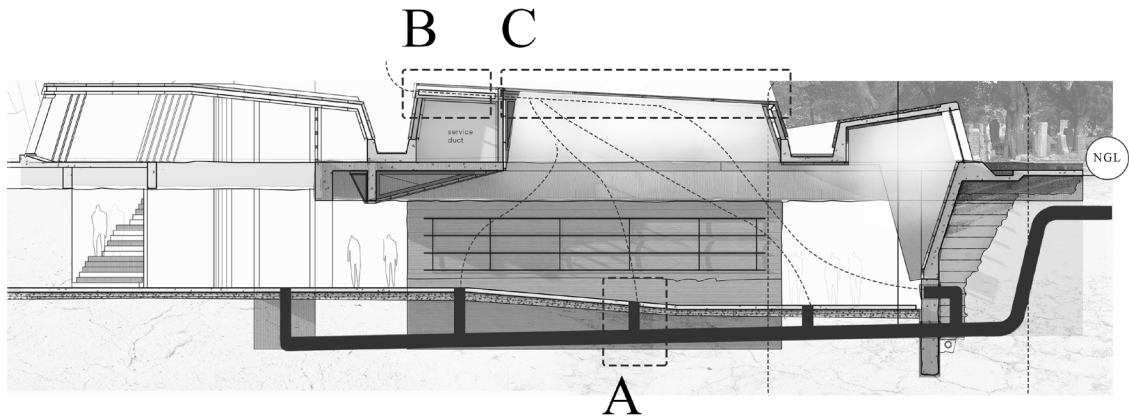


fig. 8.126. (author)
Passive ventilation and
lighting strategy in the
Inventory of Effigies
(section A-A).

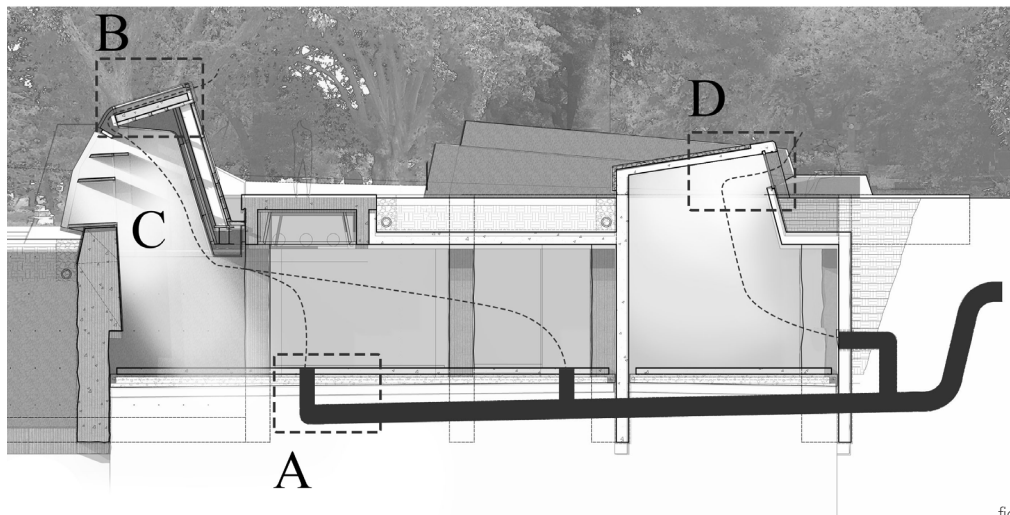


fig. 8.127. (author)
Passive ventilation and
lighting strategy in the
Cabinet of Obscurities
(section C-C).

Environmental strategies

Articulating the steel skin to accommodate passive strategies:

The steel skin is, furthermore, articulated to accommodate passive lighting and ventilation strategies, as indicated in the diagrams. Passive ventilation is accomplished in the *Inventory of Effigies*, *Cabinet of Obscurities* and *Imaginarium* through the use of earth tubes (indicated by A in the diagrams) which provide fresh air which has been climatized to the ambient temperature of the earth to the facilities. In addition to the use of earth tubes, the air flow is passively generated through the use of solar chimneys (indicated by B in the diagrams). The solar chimneys are hosted in the steel skin, further creating depth to its one-dimensionality, and thereby further emphasizing its performativity.

The steel *negative* is further articulated to accommodate roof lights (indicated by C on the diagrams), constructed from translucent polycarbonate sheeting, in these

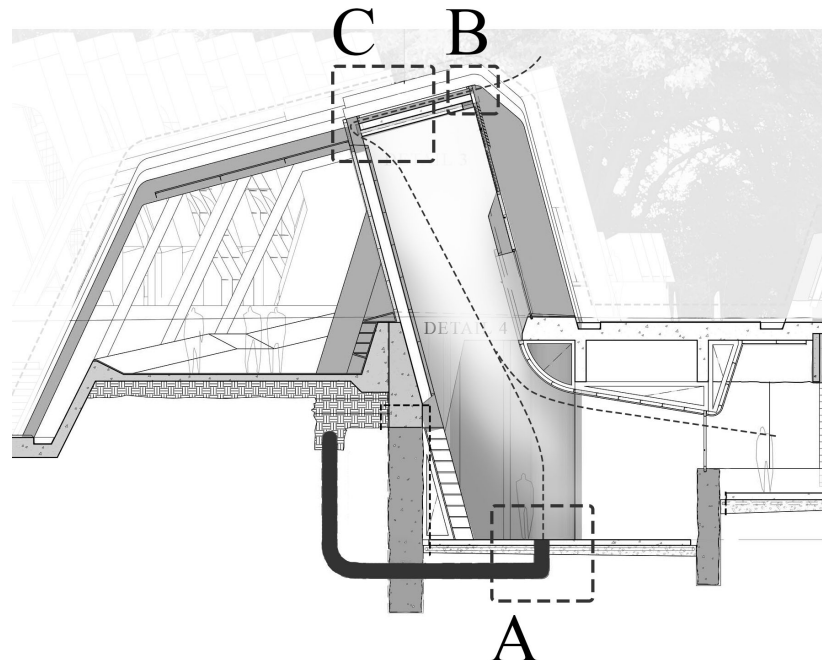
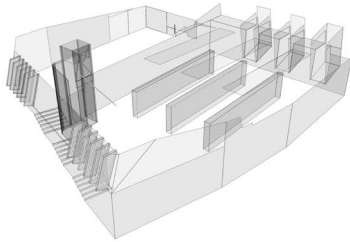
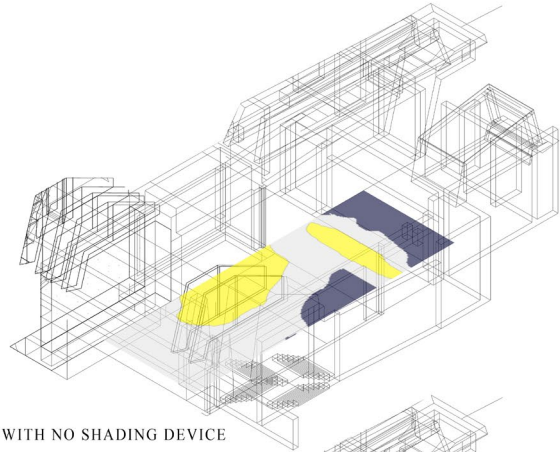


fig. 8.128. (author)
Passive ventilation and
lighting strategy in the
Imaginarium (section
B-B).

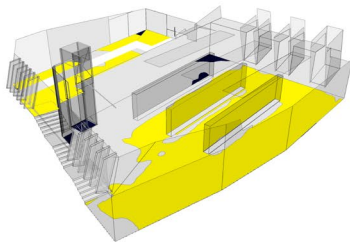
DAYLIGHT ANALYSIS SEFAIRA OVERLIT & UNDERLIT



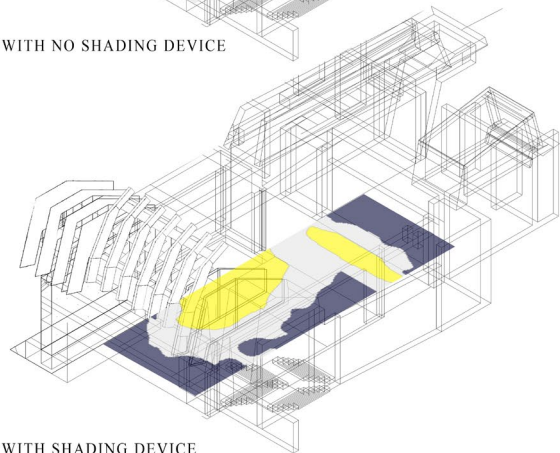
EXHIBITION SPACE ENVELOPE



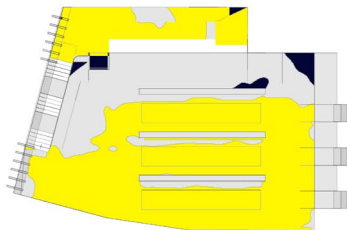
LABS WITH NO SHADING DEVICE



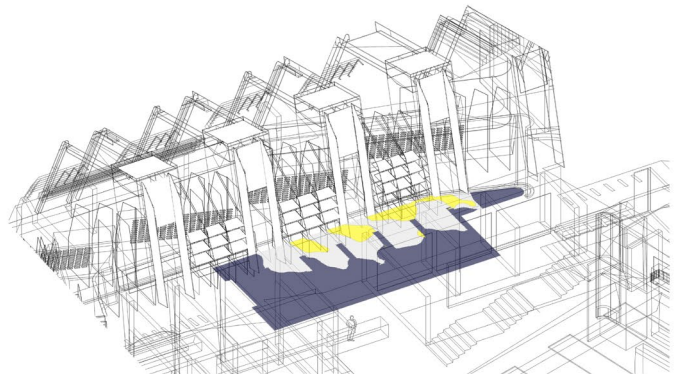
OVERLIT ■
WELL LIT ■
UNDERLIT ■



LABS WITH SHADING DEVICE



DAYLIGHTING ON PLAN



IMAGINARIUM LIGHT SHAFTS

spaces, which allow for passive lighting. While this provides an abundance of light to the spaces, lighting models tested in Safeira indicated that this lighting was excessive (as shown in the diagrams). South facing aluminium steel louvres were therefore introduced to these elements, not only to prevent direct light from entering the spaces, but also to control passive heat gain from the direct sun light.

It is, however, important to note that these tests were conducted without taking the shading provided from the forest into account. An excess of day light was therefore reflected in the calculations and light models, which can be compensated for through the reduction and orientation of the aluminium louvres. The malleability of the steel skin does, however, provide a further means to control light gain into the building.

The building achieved an overall SBAT rating of 4.6, with energy and resource use being the lowest scores, each amounting to a rating of 3.

SB SBAT REPORT Achieved **4.6**

SB1 Project

Hinterland

SB2 Address

Brixton Cemetery, Johannesburg

SB3 SBAT Graph

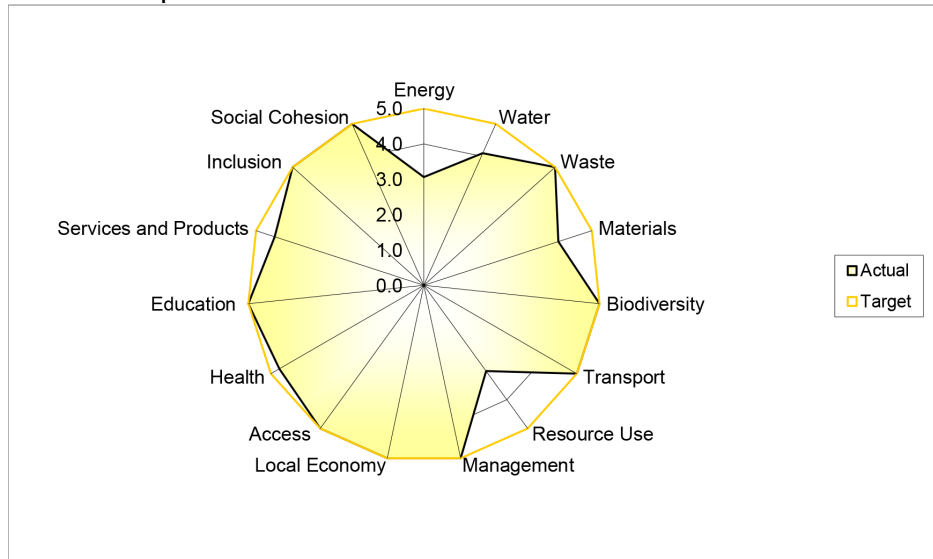
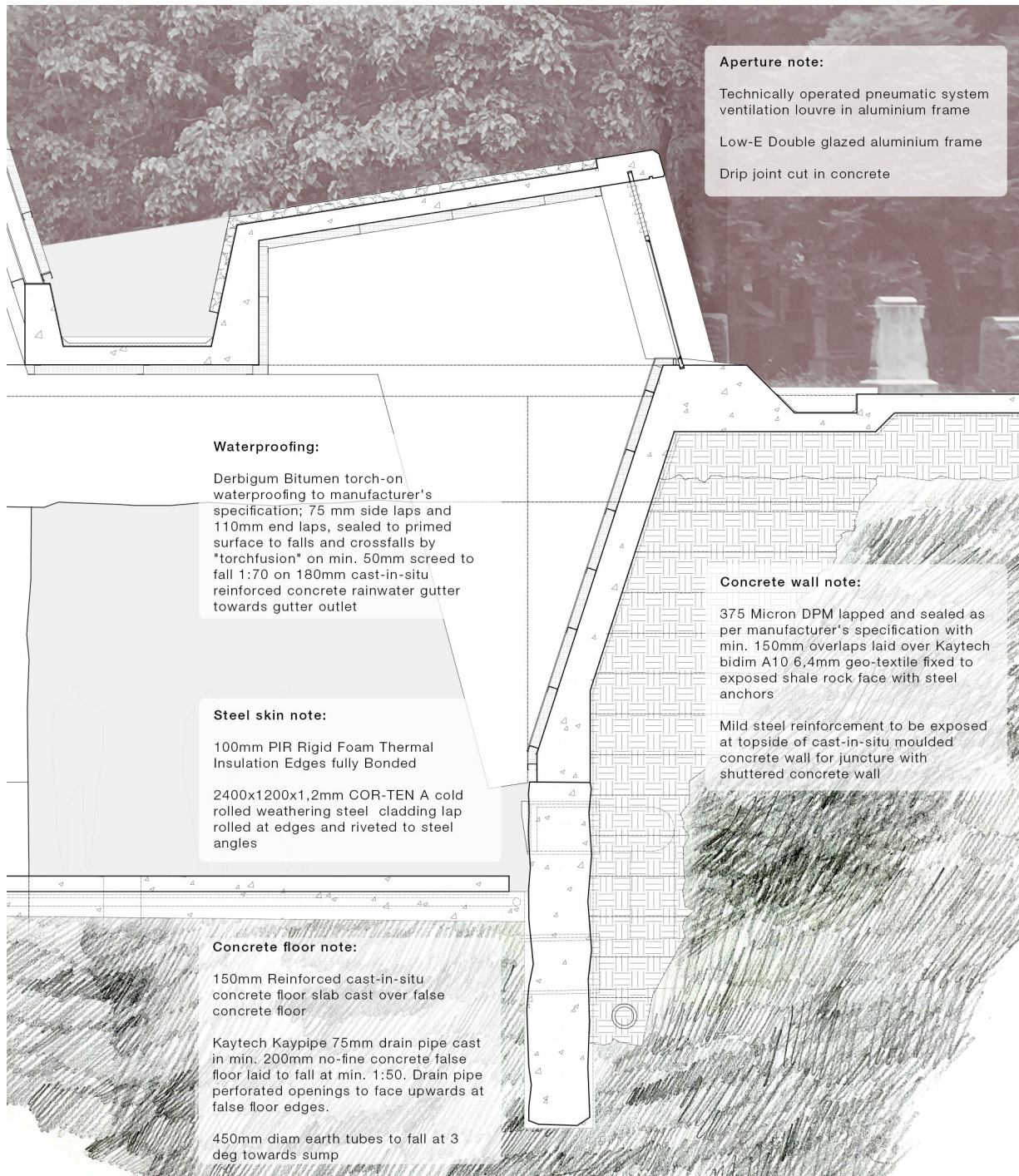


fig. 8.129. (author)
Daylight analysis
generated in Safeira.

SB4 Environmental, Social and Economic Performance

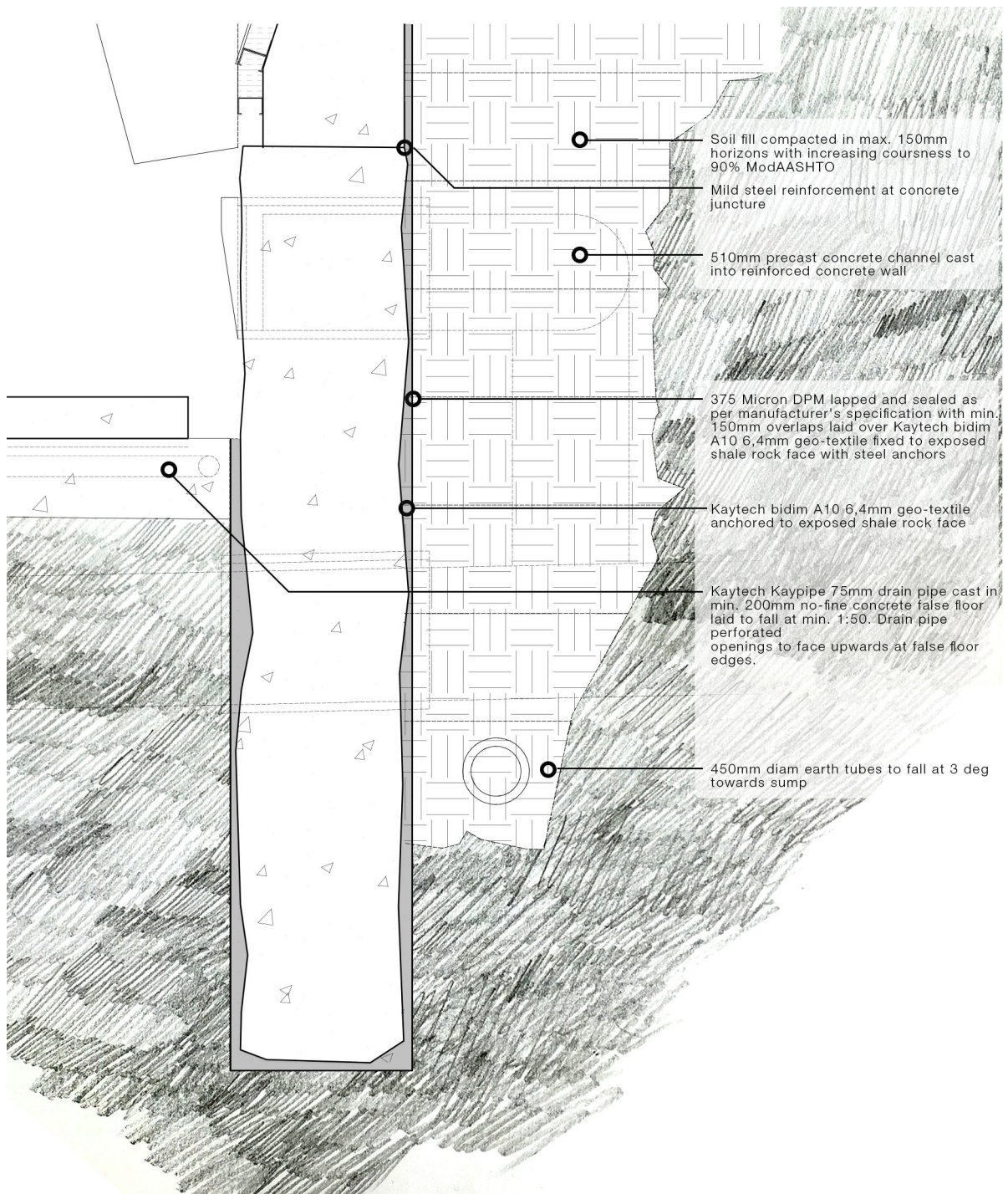
	Score
Environmental	4.2
Economic	4.6
Social	4.8
SBAT Rating	4.6

fig. 8.130. (author) SBAT
report generated with the
online SBAT tool available
online.



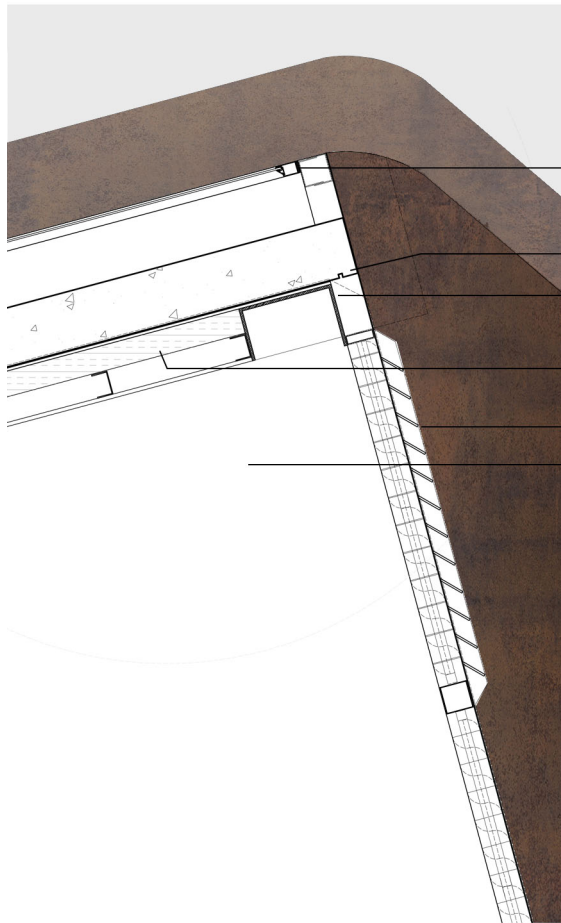
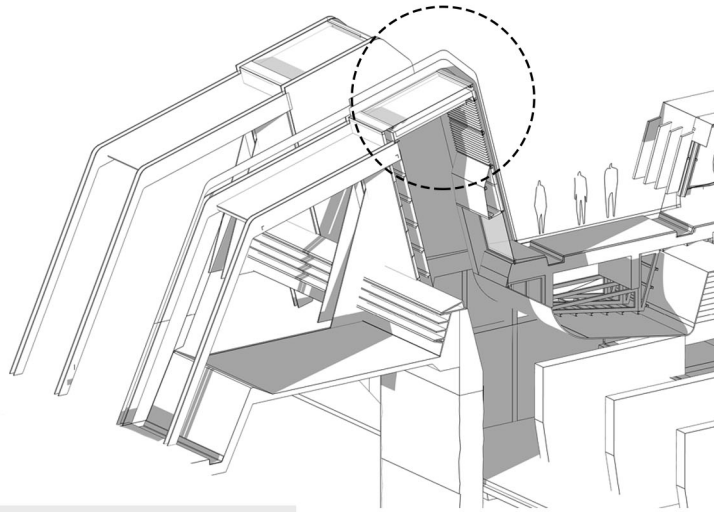
WALL DETAIL INVENTORY OF EFFIGIES [EXHIBITION GALLERY]

fig. 8.131. (author) Wall detail.



**WALL SECTION
DETAIL FOR BURROWING AND
CONCRETE MOULDING**

fig. 8.132. (author) Wall detail.



Solar heat chimney

Extruded aluminium frame bolted to 50x50x3mm hot-rolled mild steel square tubing with 6mm double layered laminated safety glass; sealed with neoprene seal

Drip joint in 200mm pre-cast reinforced concrete slab

260x90x8mm Hot-rolled mild steel channel profile welded to 203x203x25mm I-beam steel portal frame structure

100mm PIR Rigid Foam Thermal Insulation Edges fully Bonded

Technically operated pneumatic system

1800x1200x1,2mm COR-TEN A cold rolled weathering steel cladding lap rolled and riveted to 75x50x2mm galvanized mild steel channel profile

0.45 polyolifin DPM (black) to comply with SANS 1526 with 300mm overlaps

Solar heat chimney ventilation system note:

300mm Exhaust fan fixed to galvanized steel bracket fixed to 203x203x25mm I-beam steel column Double layer laminated glazing separated by max. 150mm cavity suspended over 200mm pre-cast reinforced concrete slab with black painted finish bolted to 45x45mm galvanised steel angles Derbigum Bitumen torch-on waterproofing to manufacturer's specification applied below concrete slab 100mm PIR rigid foam thermal insulation edges fully bonded glued to all faces but exposed solar face

DETAIL 2
IMAGINARIUM
[SOLAR CHIMNEY]

fig. 8.133. (author) Detail of solar chimney at the *Imaginarium*.

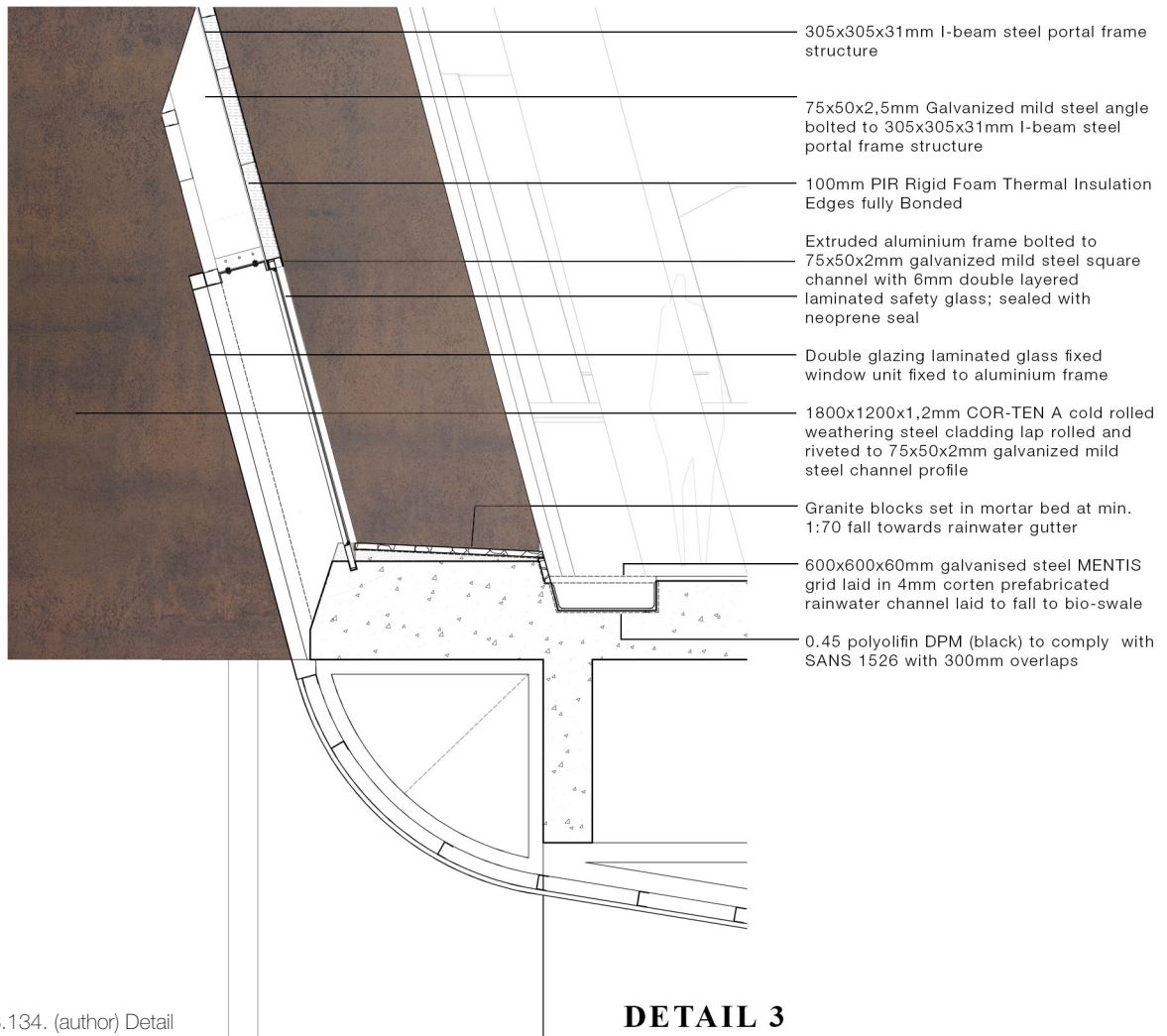
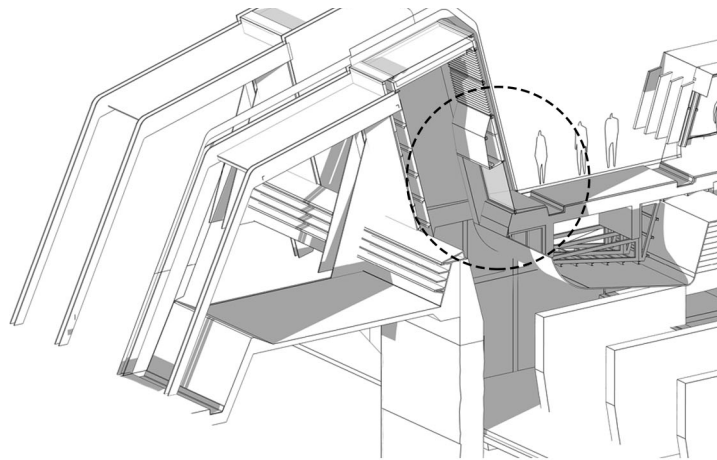
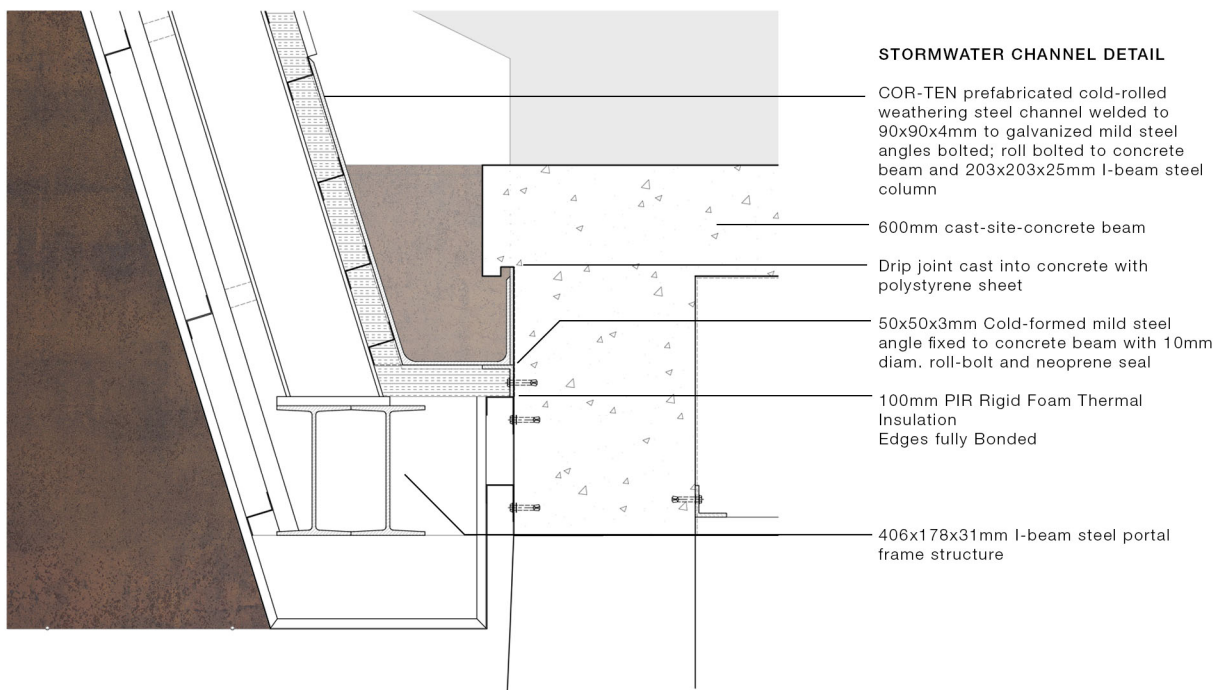
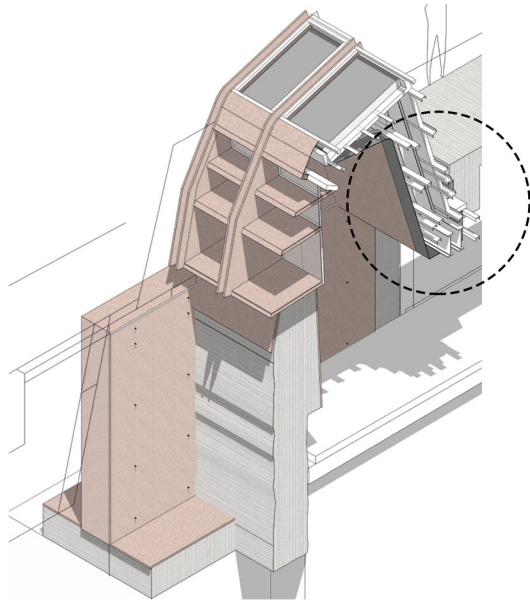


fig. 8.134. (author) Detail of viewing window into *Imaginarium*.

DETAIL 3
IMAGINARIUM
[VIEWING APERTURE]



DETAIL 4
CABINET OF OBSCURITIES
[STEEL SKIN]

fig. 8.135. (author) Detail of withering oxidized steel skin and gutter at the *Cabinet of Obscurities*.

