

Proposed Transformation:

- User Requirements
- Design Development

User Requirements

The building consists of an unconventional combination of functions. These functions each have a different set of requirements and sometimes share facilities. The current and possible future users determined these functions. The following lists the user requirements.

Train Station

Function: Transportation link, basic facilitations

Critical Aspects: Circulation

Passenger details:

Temp booking hall 12C°

Day lighting $\geq 1/5$ surface area

Ticket off from 1500 x 2000 upwards

Type of surface: rough, hard pigmented concrete with epoxy finish

Walling up to 1 750 high with impact-resistant lining

All doors and gates to withstand the heaviest of demand

Arrangements for storing bicycles very simple: hung up neatly by front wheel

room	size	standard
Terminal	1300 m ²	(See table x)
Ticket office and information point	53 m ²	7 ticket booths
Ablution	114 m ²	14 female wc 6 male wc 7 u 3 par
Seating	118.1 m	Pre-cast concrete benches
Platforms	1709 m	4 platforms 90m long

Informal Traders

Function: Commerce

Critical Aspects: Situated next to the main pedestrian movement routes

room	size	standard
Stalls	75,5 m ²	+ -50
Storage	75,5m ² +	Underneath pre-cast tables and additional storage(see labour market)

Drive-through Labour Market

Function: Access to labour and skills, Workshops, Dormitories, Apartments, cleaning facilities.

Critical Aspects: Vehicular Access

room	size	standard
Market	2456 m ²	
Management office	57 m ²	200 lux
Exhibition space/ advertising/demonstrating	434 m ²	16 drive through parking bays
Storage	208 m ²	
Workshops	637 m ²	
Cleaning facilities	155 m ²	1-100 fall to drainage
Rainwater tank	23,5 m ³	
Apartments	580 m ²	3 x 4 bed dormitories 5 x 38 m ² bachelors flats 3 x 40 m ² 2bedrm flats
Ablution	72 m ²	9 female wc 4 male wc 4 ur 2 par

Bathroom

Function: Bathing

Critical aspects: Managing the rush-hour traffic, defensible clusters, damp

room	size	standard
Bathrooms	182 m ²	18 Shower cubicles 4 Baths
Reception	31 m ²	

Laundry

Function: Cleaning bathhouse's towels open to public

room	size	standard
total	68 m ²	Well ventilated

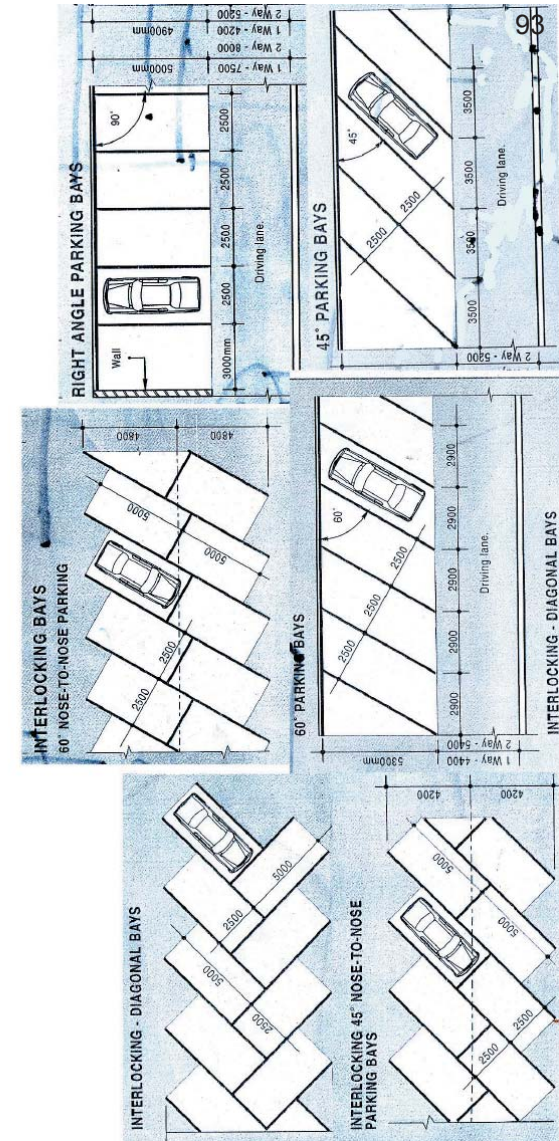


Fig 74: Parking bay requirements

Clinic

Function: Health care

room	size	standard
total	479 m ²	200 lux

Catering

Function: Provision of food and drink

Critical aspects: Deliveries

room	size	standard
Restaurant	416 m ²	Ablution facilities
Cafe-bars, small	221 m ²	3 x cafe-bars
restaurants		2 x small restaurants
Outside cooking		10 x pre-cast braai facilities + wash-up and preparation surface
Storage	184 m ²	Basement needs cavity walls to spec and pump

Police Office

Function: Public safety

Critical aspects: Passive surveillance, accessibility

room	size	standard
Reception	46 m ²	Ablution facilities
Offices	106 m ²	200 lux, kitchenette, lockers
Holding cell	50 m ²	300 reinforced concrete walls, wc
Gun safe	12 m ²	300 reinforced concrete walls, steel safe door to manufactures spec
Garage	115 m ²	4 cars, 3 motorbikes

Transport:

Taxi and bus depot

Function: Transport

Traffic organisation *NB diagrams apply to driving on the right (German data)*

“Busses needs to take corners especially wide: turning spread needs special

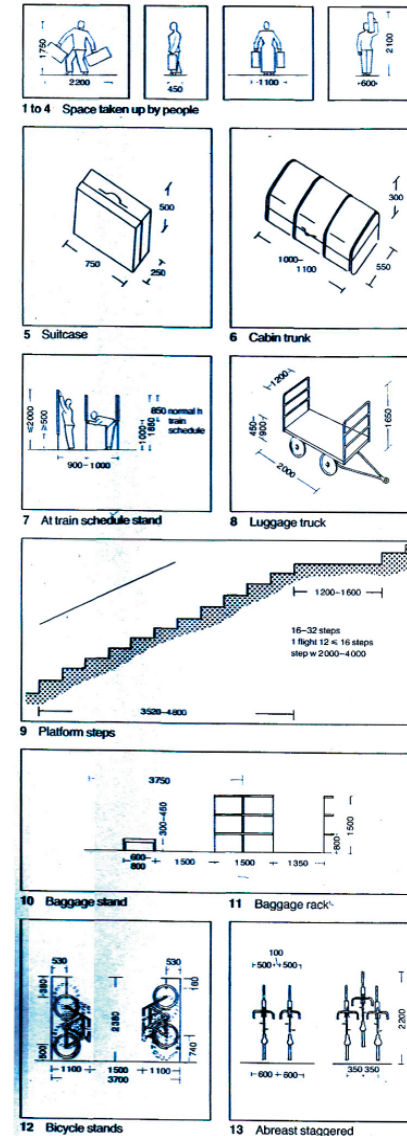


Fig 75: Related standards

watchfulness. Bus parks large and small an essential part of traffic planning. Bus stops should be under cover.” (Neufert xxx: 256)

Critical aspects: Access, Turning circles, Exhaust fume management

room	size	standard
Spaza shops	98 m ²	Semi-basement
Taxi rank	2382 m ²	24 parking bays
Bus	1331 m ²	7 bus parking

Space requirements for platform areas

Platform type	without passing lane			with passing lane		
	parallel	At 45°	At 90°	parallel	At 45°	At 90°
Relation to line of arrival						
Platform (m)	24	24	24	36-60	36-60	36-60
Platform w (m)	3	3	3	3.5-40	3.5-40	3.5-40
No of loading points						
A. coaches	2	2	2	2-3	2-3	2-3
B. vehicles with trailers	1	1	1	1-2	1-2	1-2
Area of platform & arrival spur (m ²)						
A. coaches	138	170	189	293	296	313
B. vehicles with trailers	276	340	378	439	444	470

(Neufert xxx: 256)

Space requirements for parking places

Relation to line of arrival	parallel	At 45°		At 90°	
1 each parking place (m)	32	12	24	12	24
Parking options	1. vehicle with trailer 2. coaches	1.coach	1. vehicle with trailer 2. coaches	1.coach	1. vehicle with trailer 2. coaches
W each parking place (m)	3.5	3.5	3.5	3.5	3.5
W arrival spur (m)	4.0	8.0	8.0	14	14

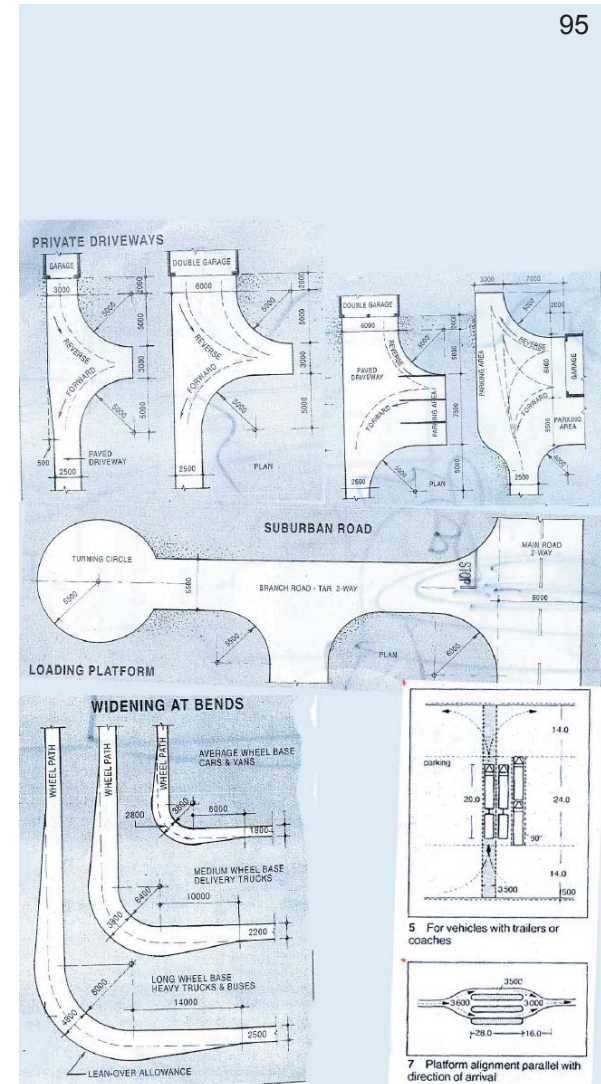


Fig 76: Turning circles

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Design development

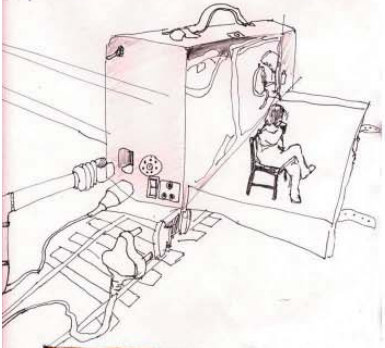
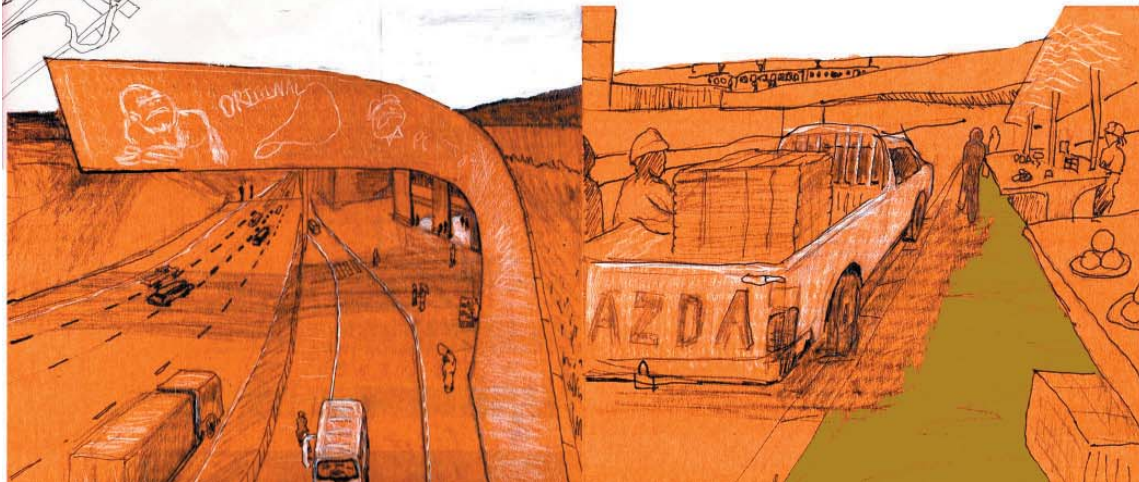
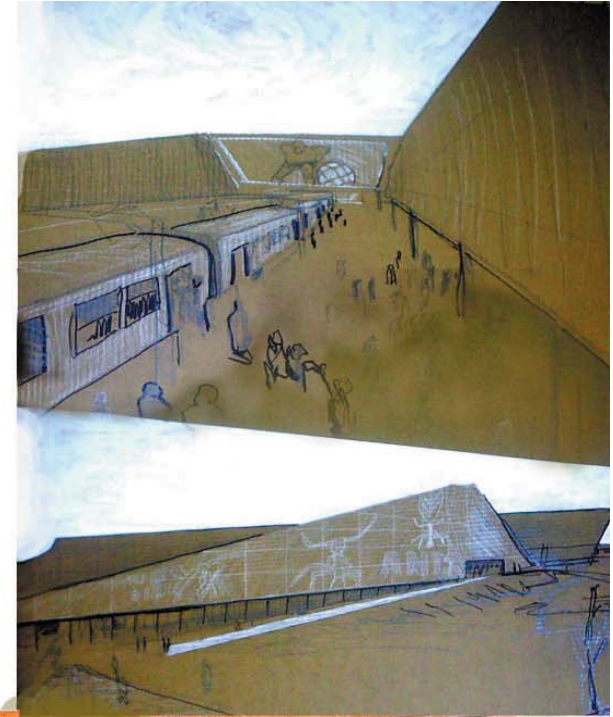
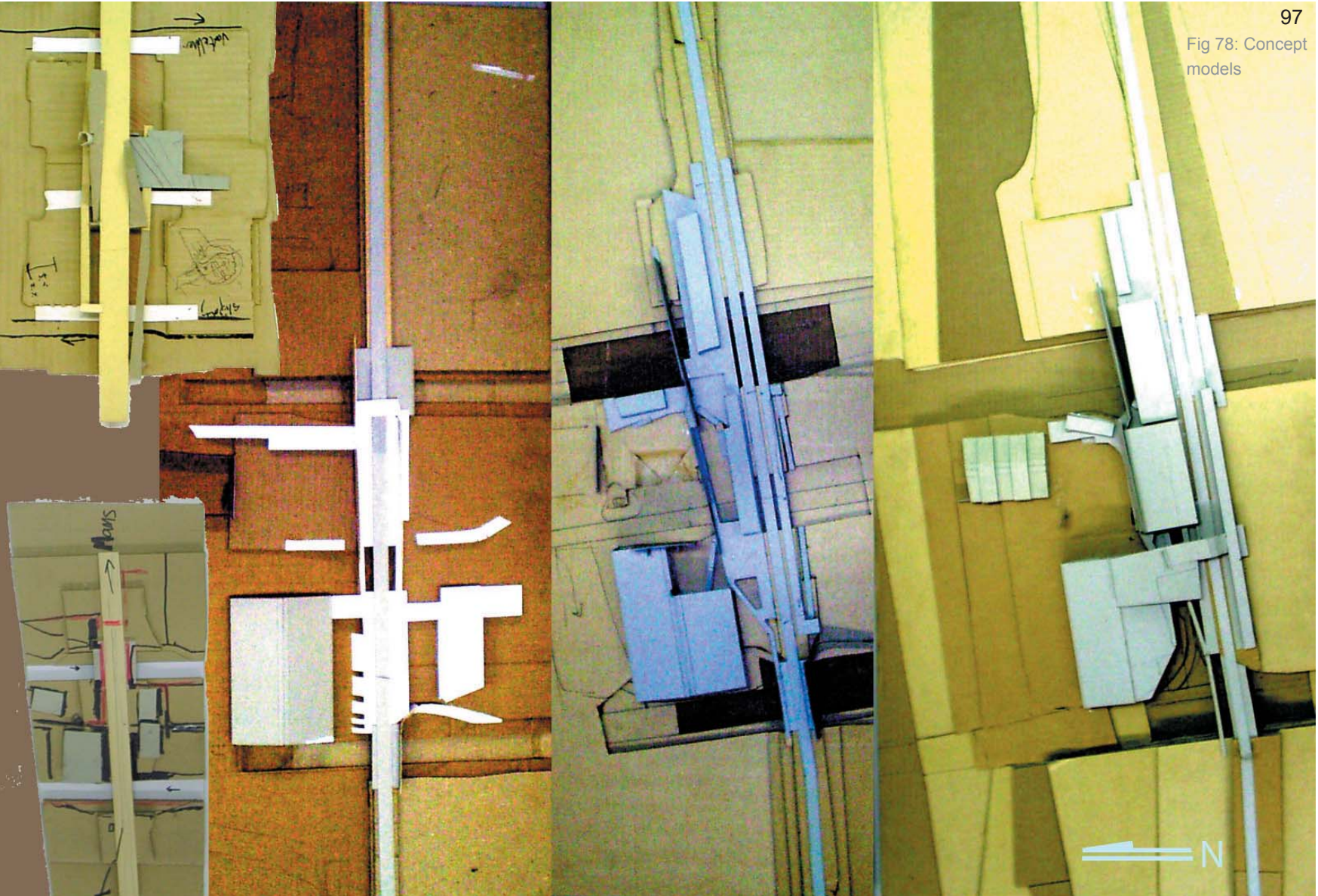


Fig 77: Design development





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Concept model no. 1

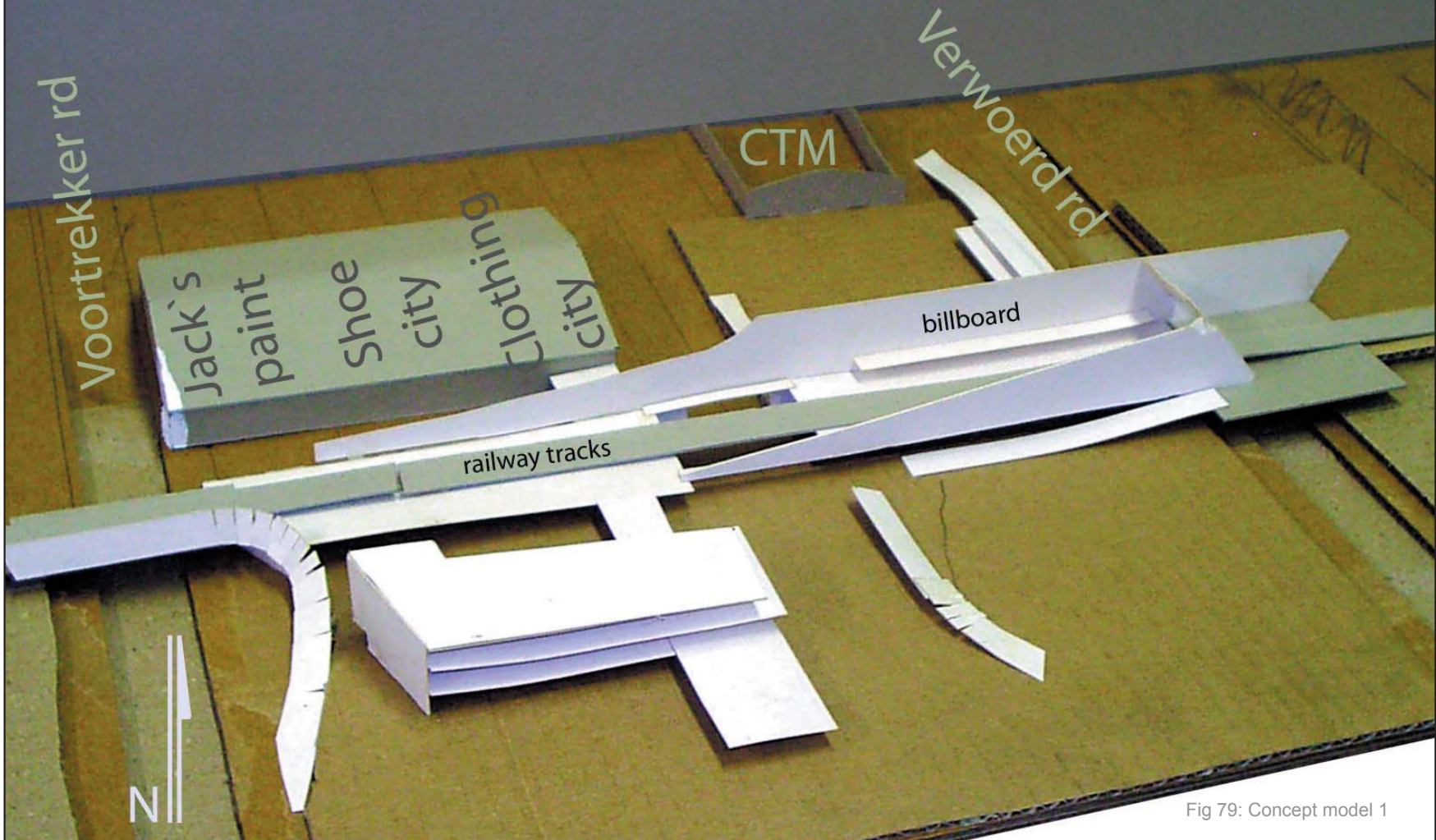


Fig 79: Concept model 1

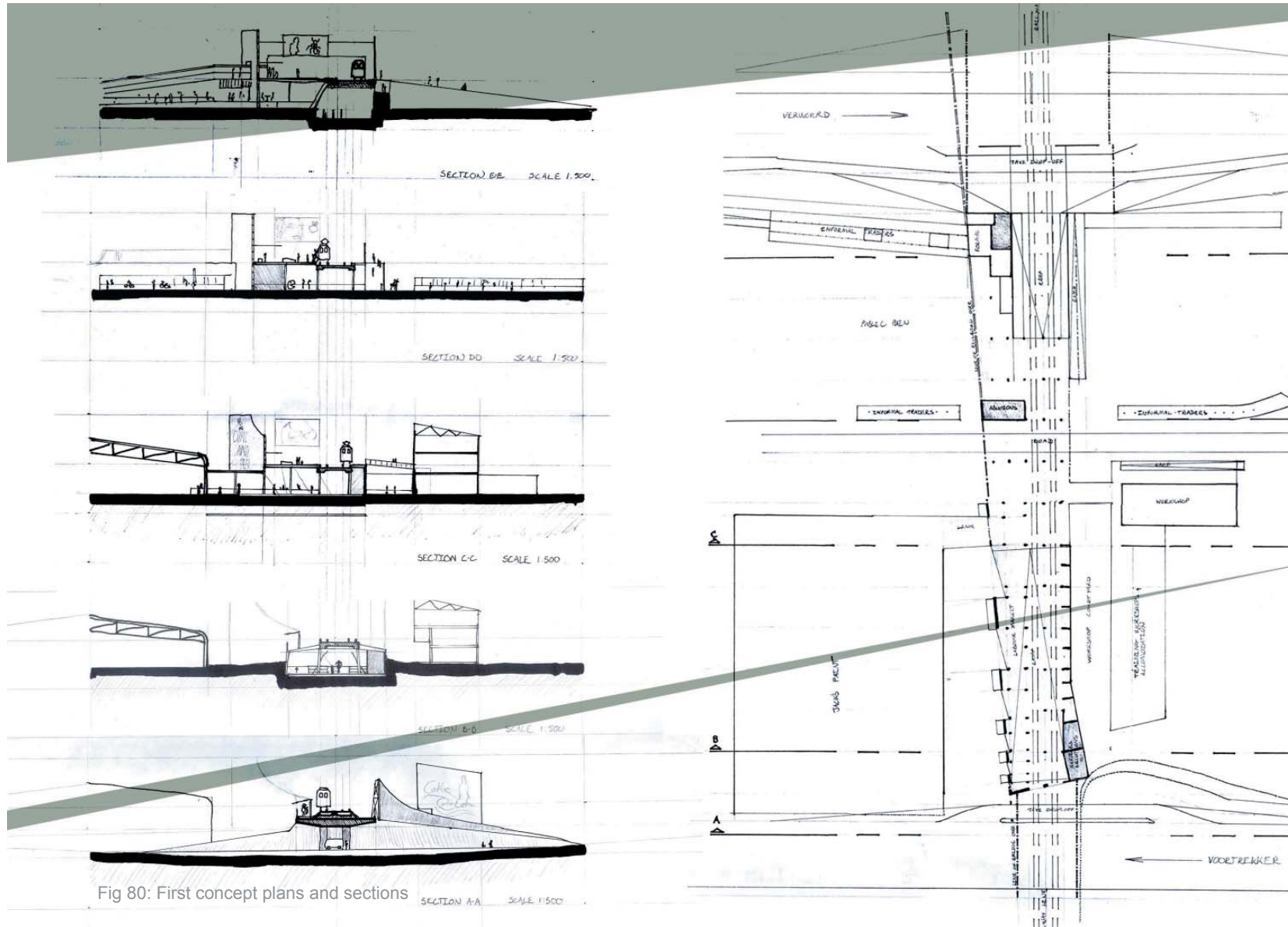


Fig 80: First concept plans and sections

100

Concept model no.2

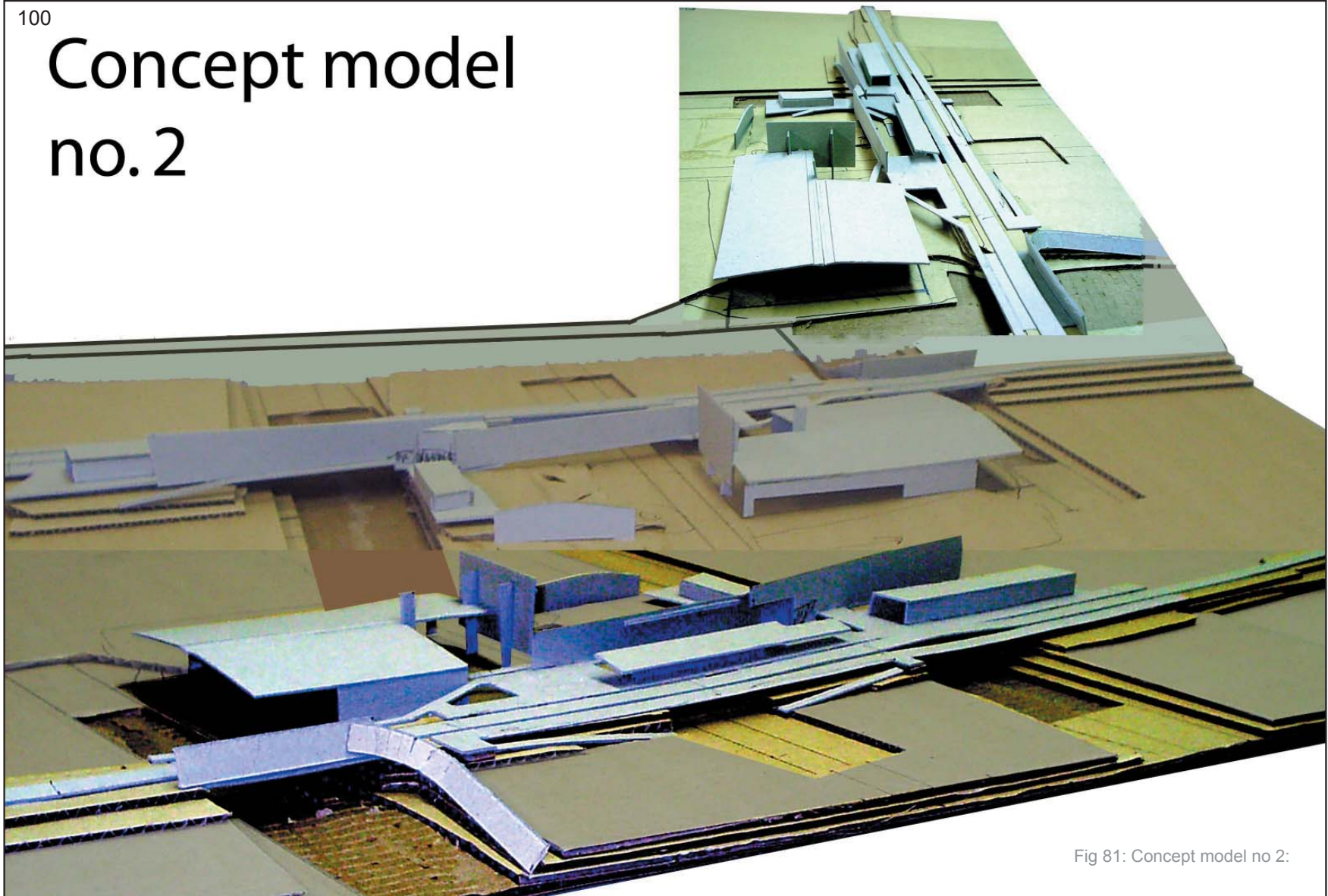


Fig 81: Concept model no 2:

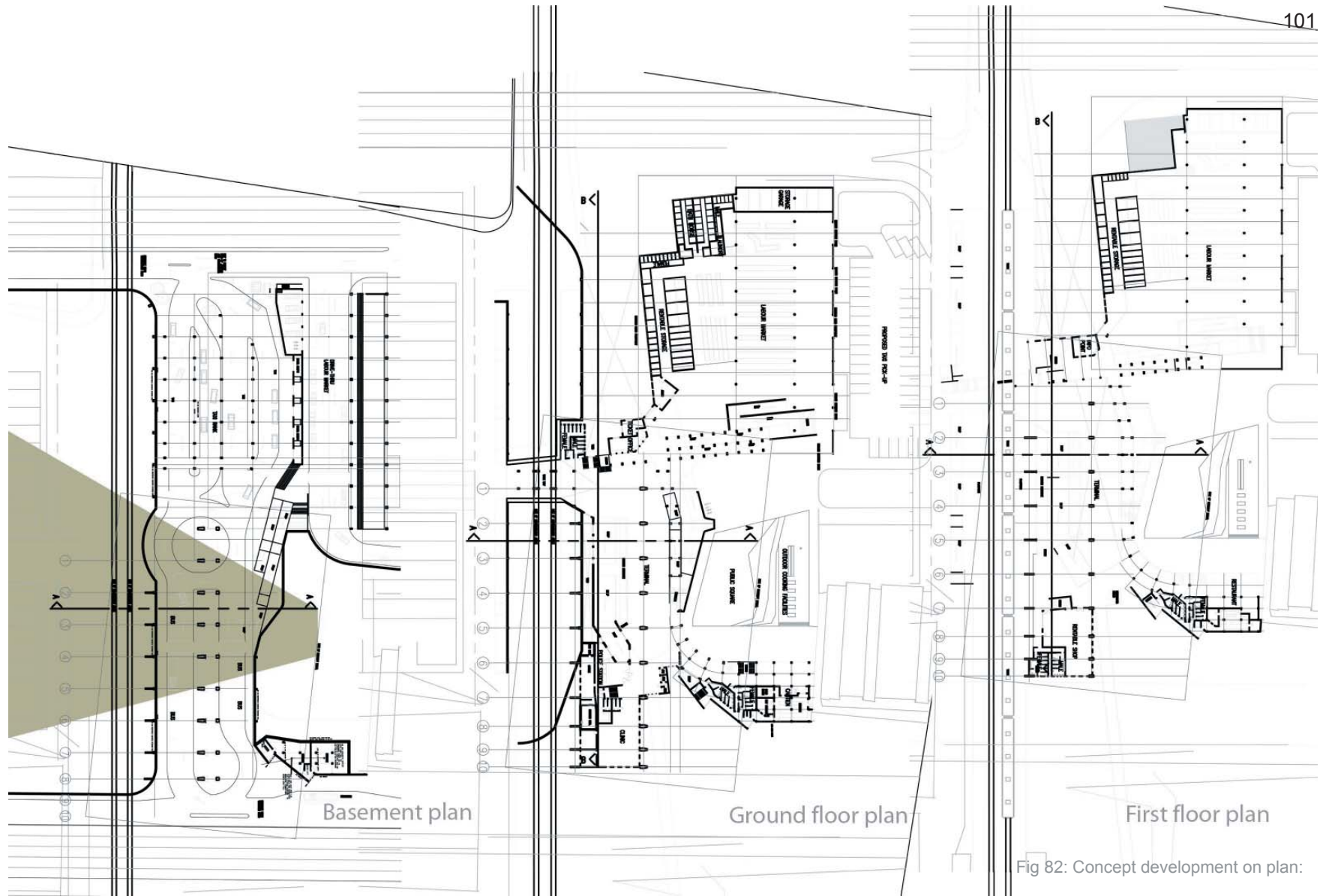


Fig 82: Concept development on plan:

102

Concept Model no.3

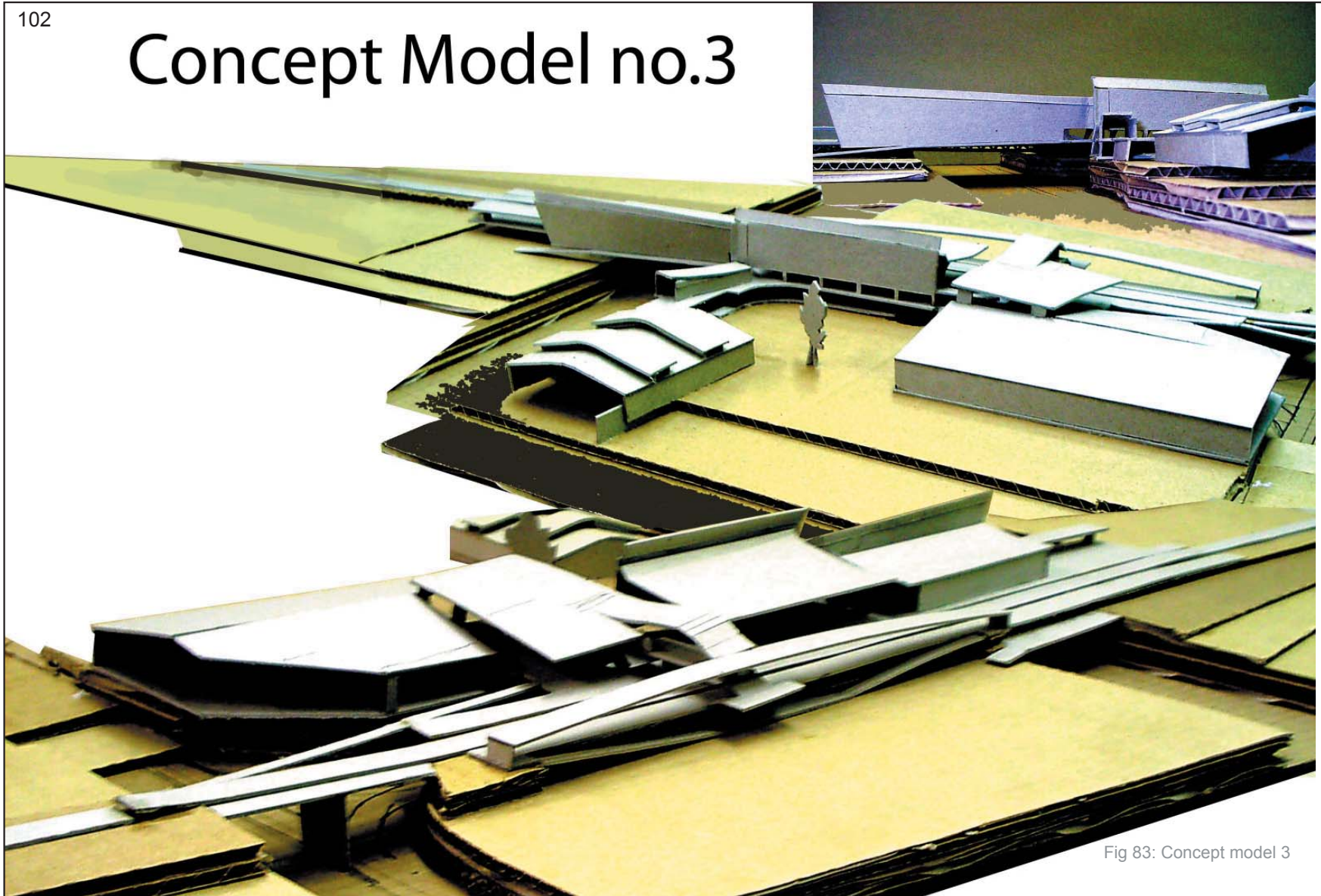


Fig 83: Concept model 3

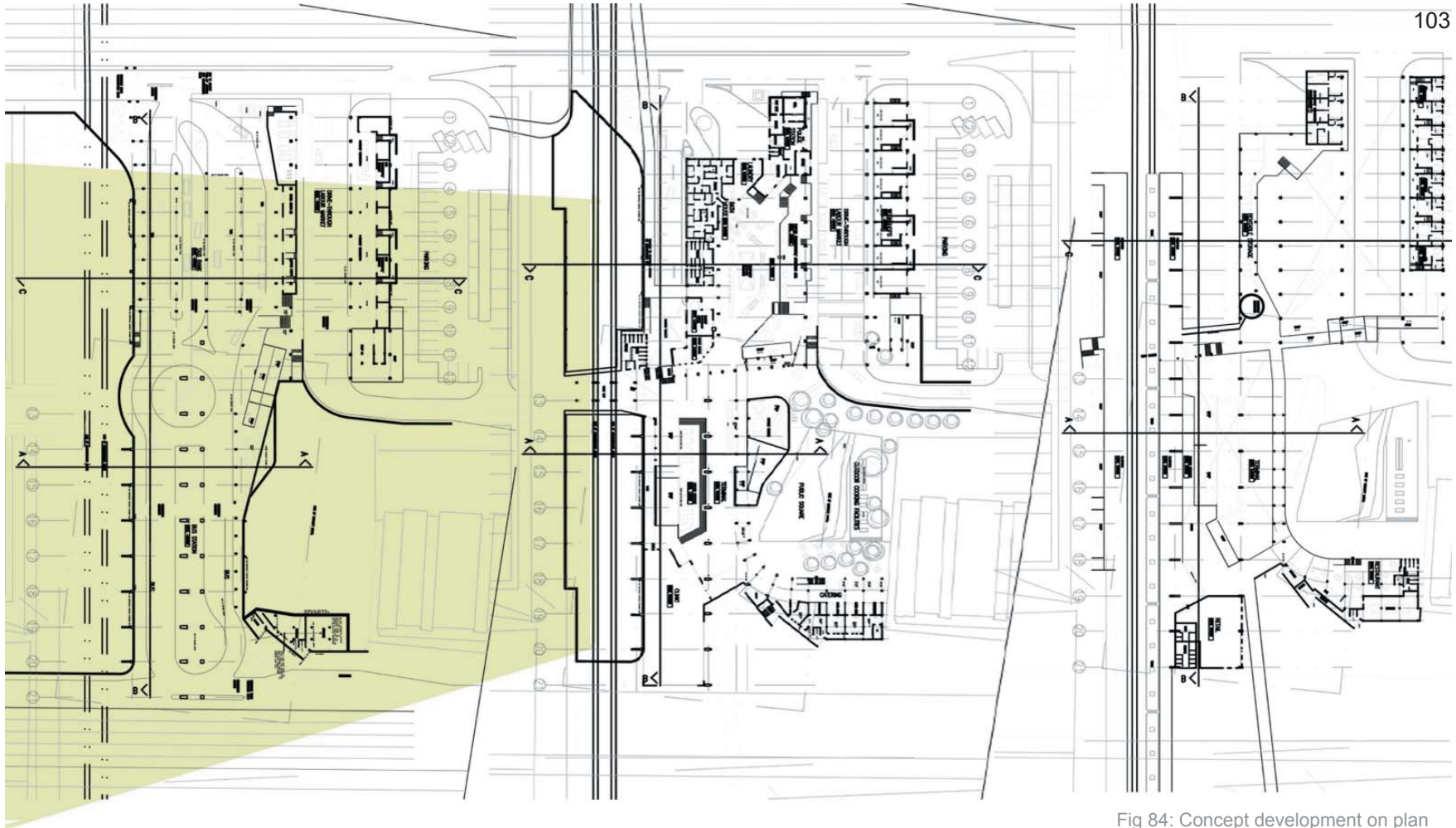
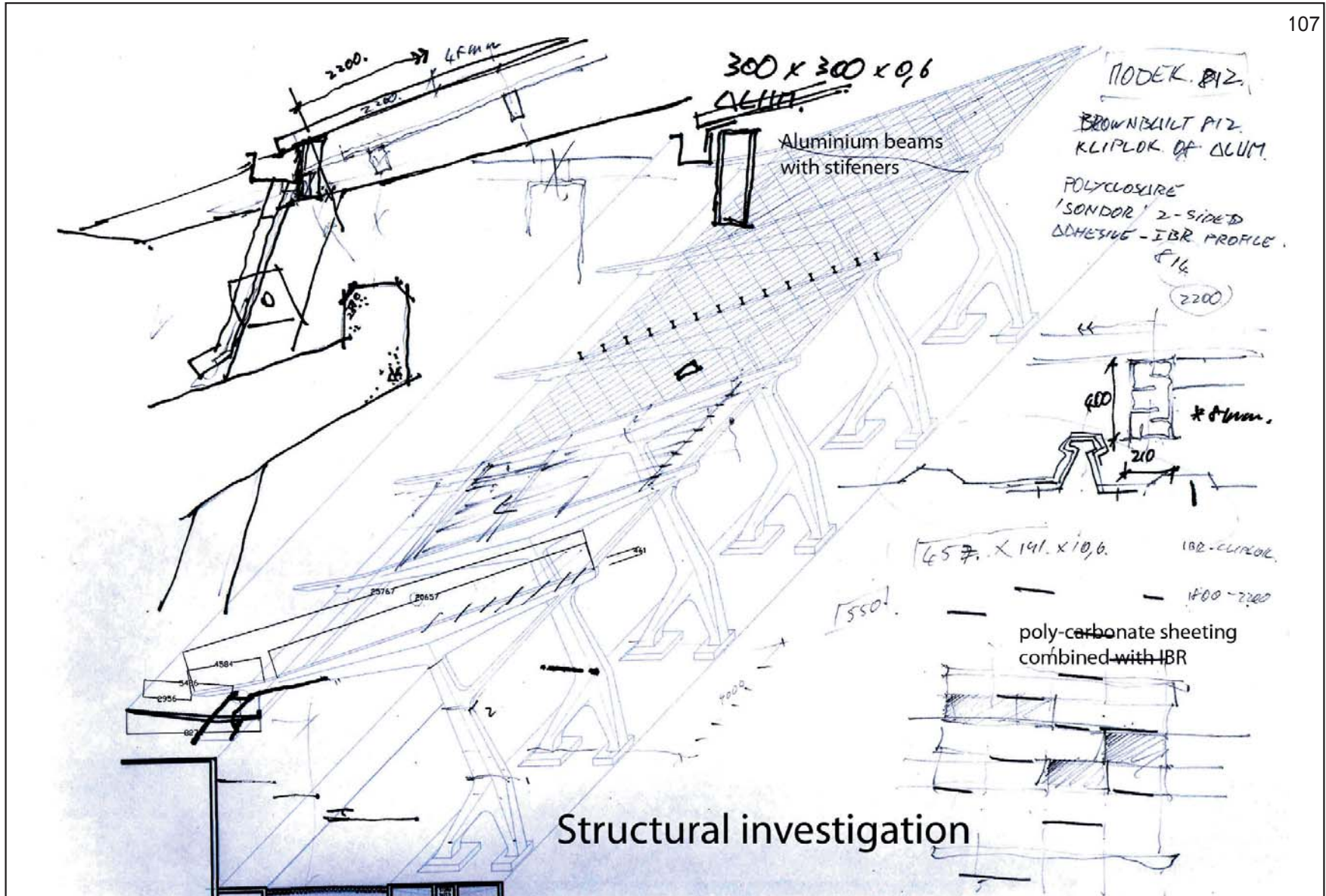


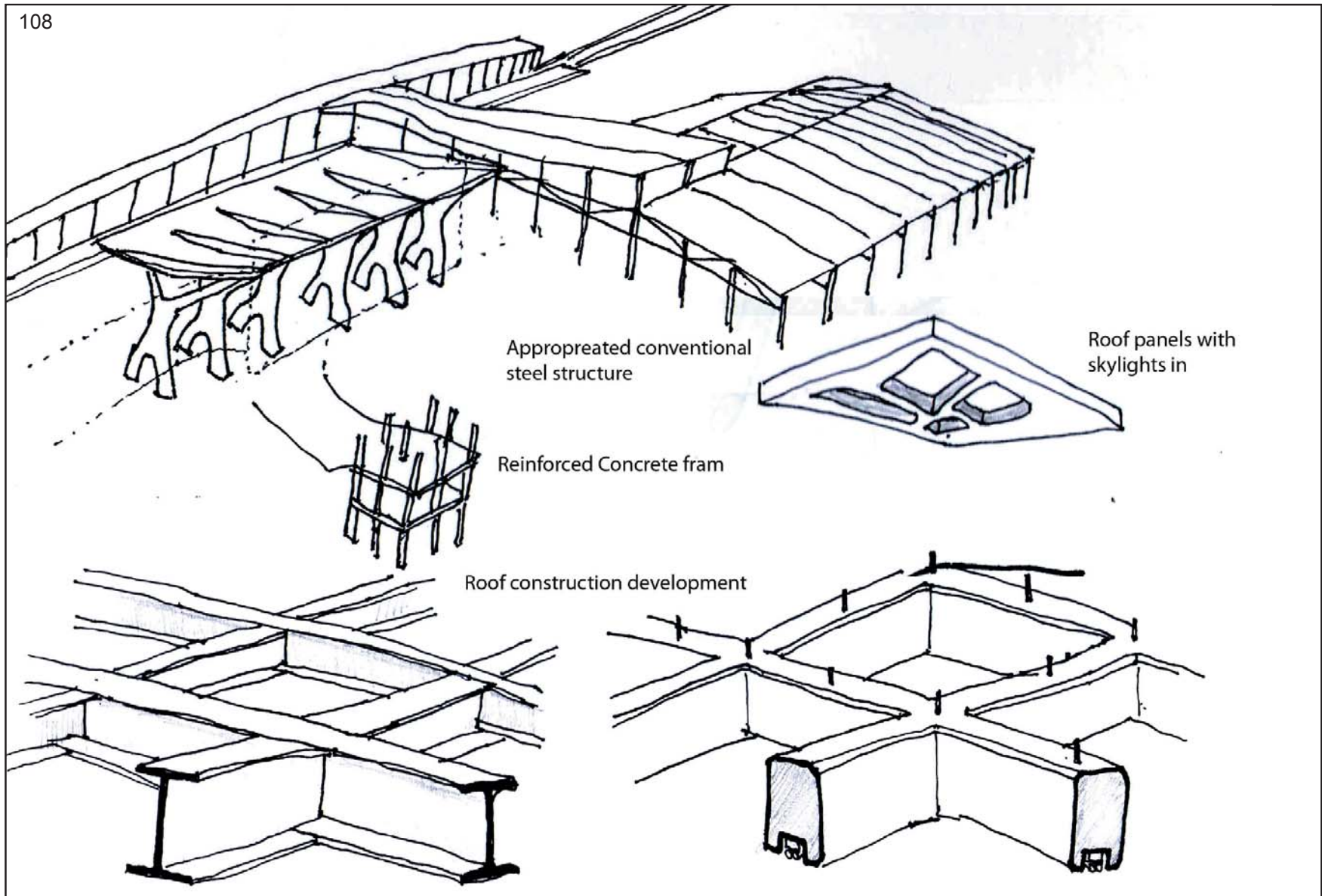
Fig 84: Concept development on plan

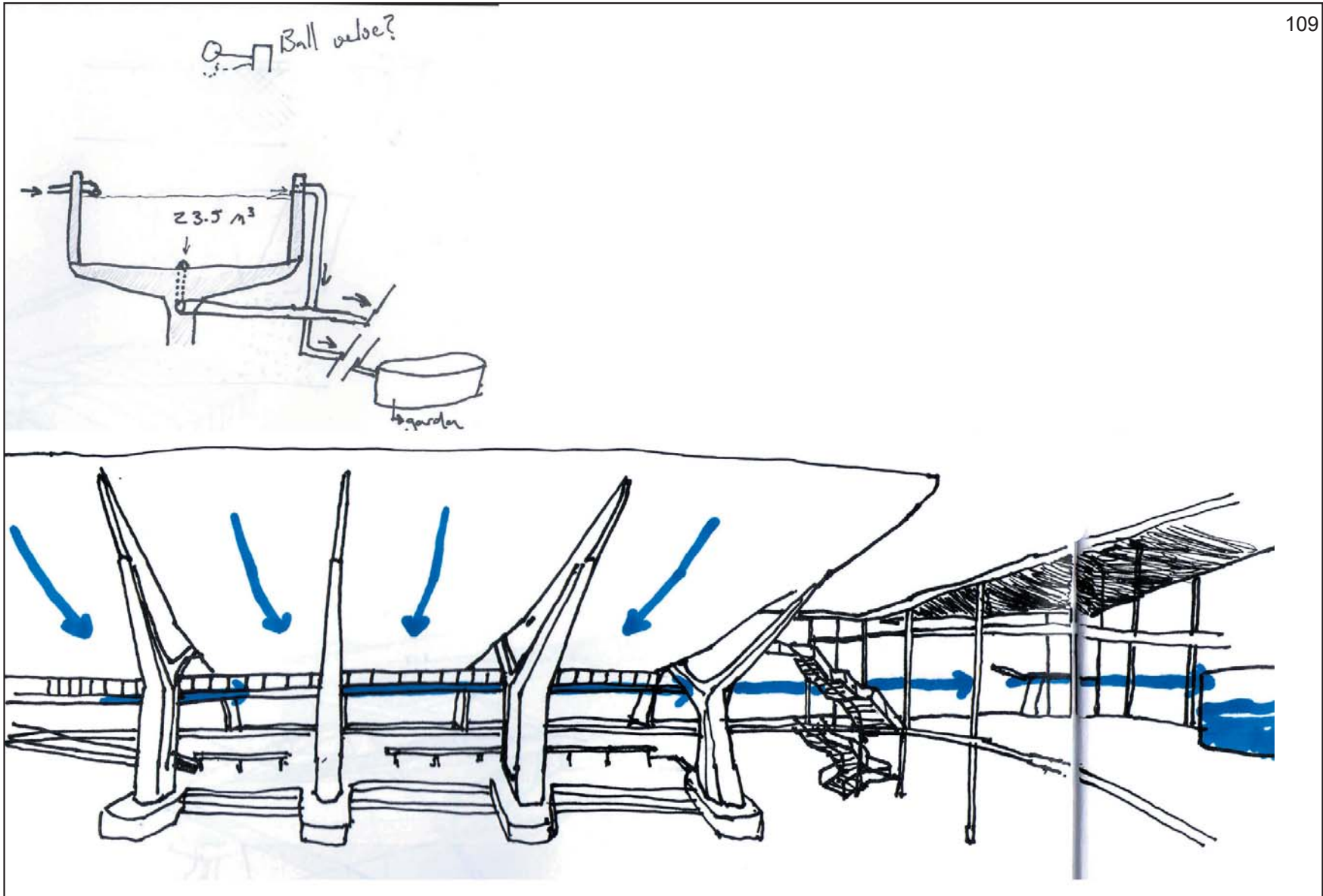
Technical Resolution:

- Structural investigation
- Details

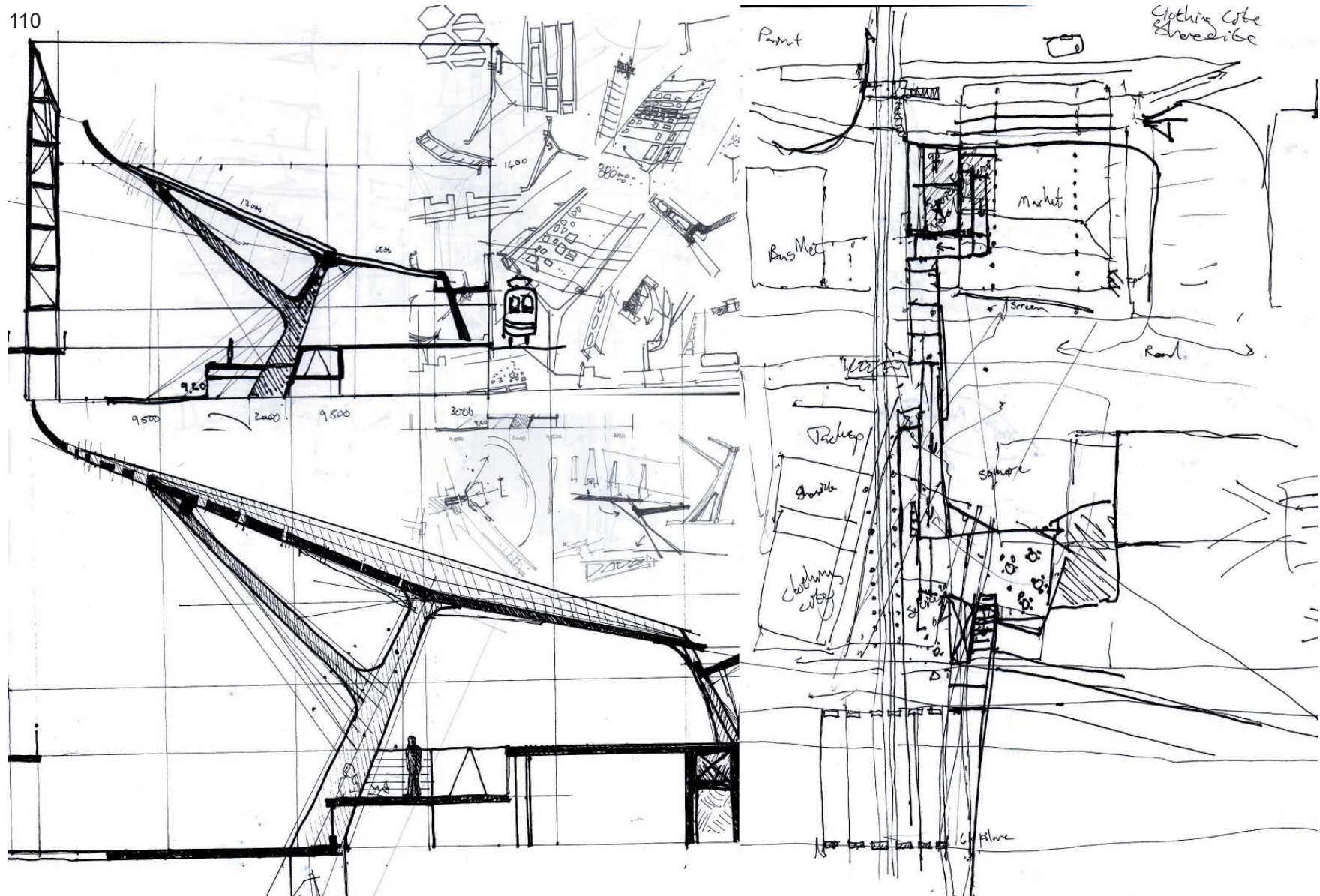








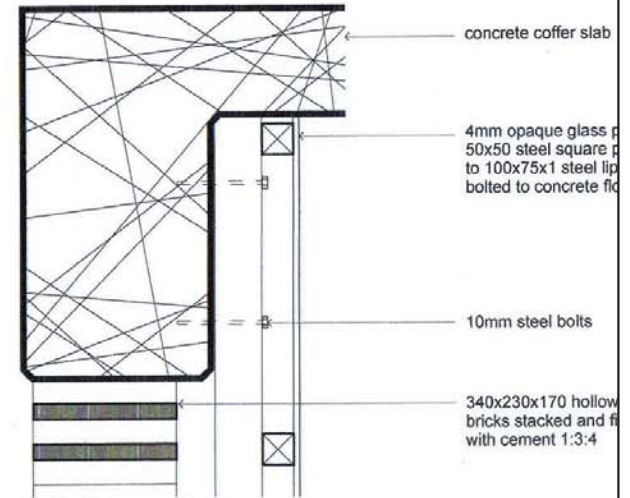
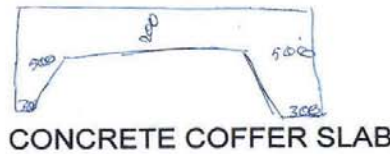
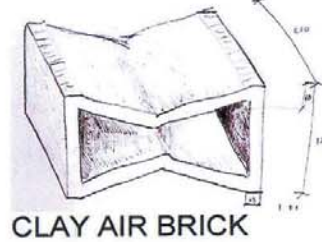
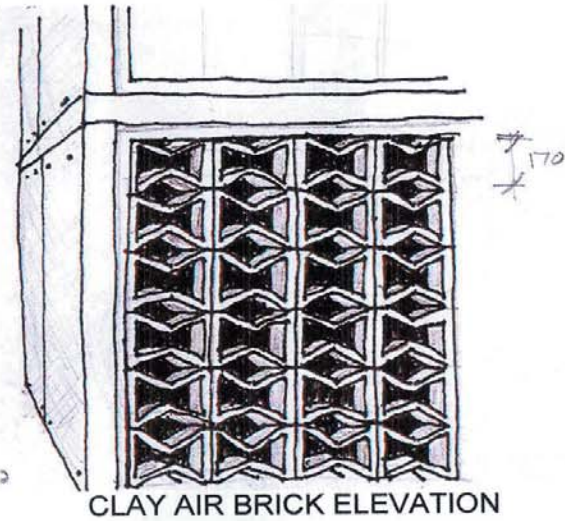
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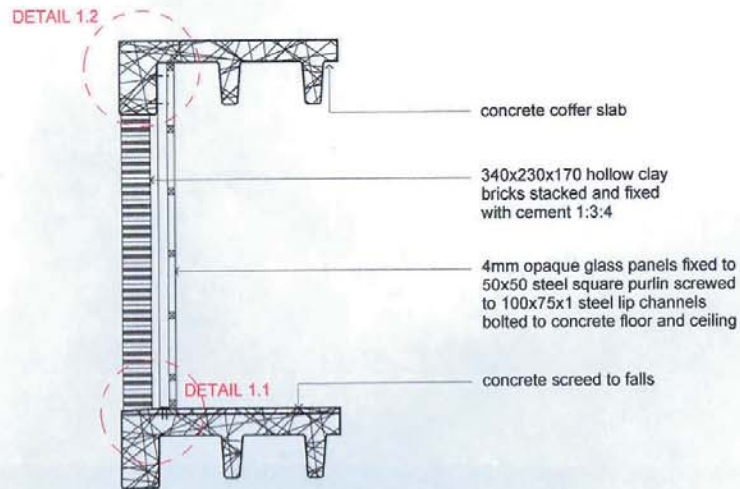
Details

1. Airbrick
2. Equipment Cleaning Facilities
3. Tables
4. Structure
5. Retaining wall

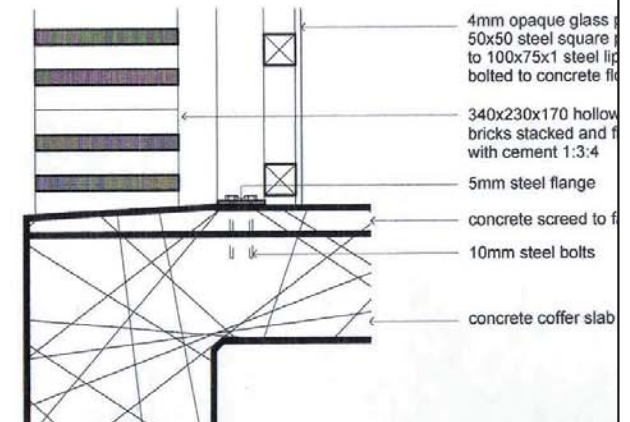
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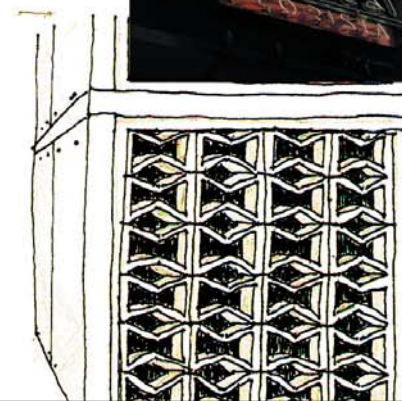
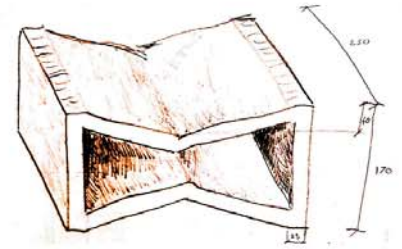
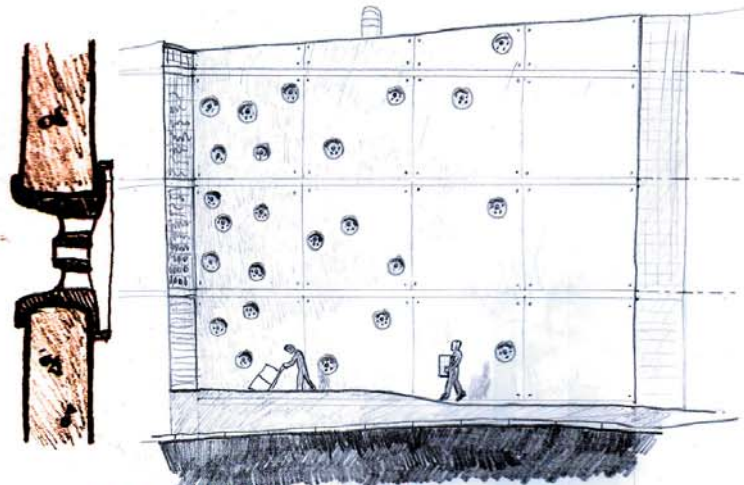
DETAIL 1.2
scale 1:10
BRICK AND STEEL/GLASS
STRUCTURE CEILING CONNECTION



DETAIL 1
scale 1:50

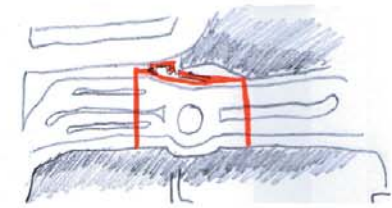
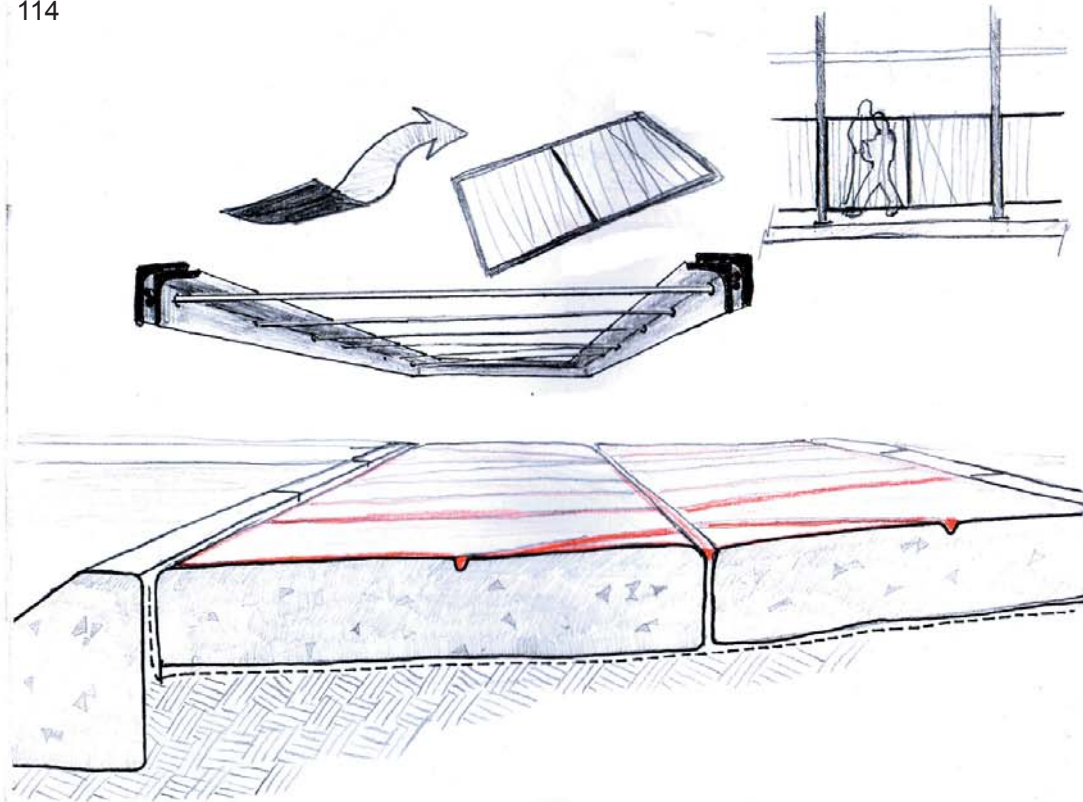


DETAIL 1.1
scale 1:10

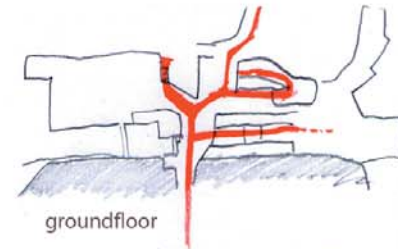


DETAIL 1
AIRBRICKS AND RECYCLED
RIM VENTILATORS

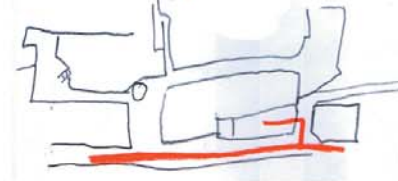
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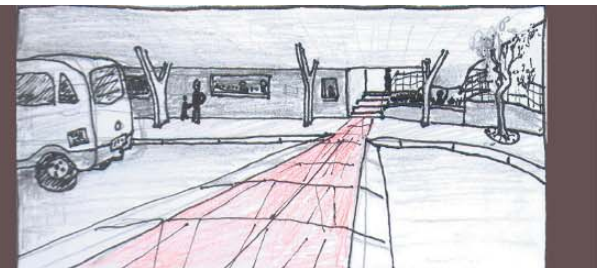
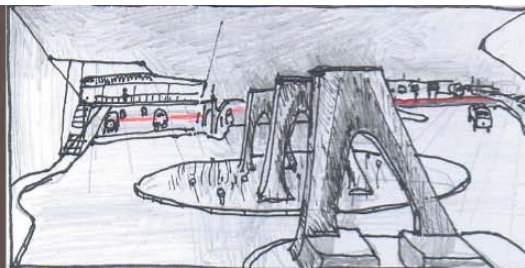
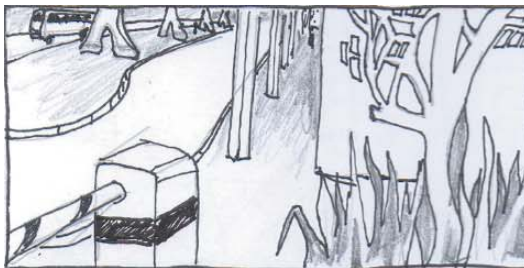
basement

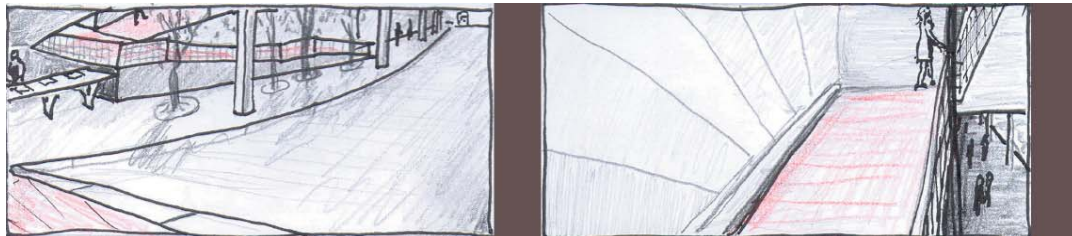
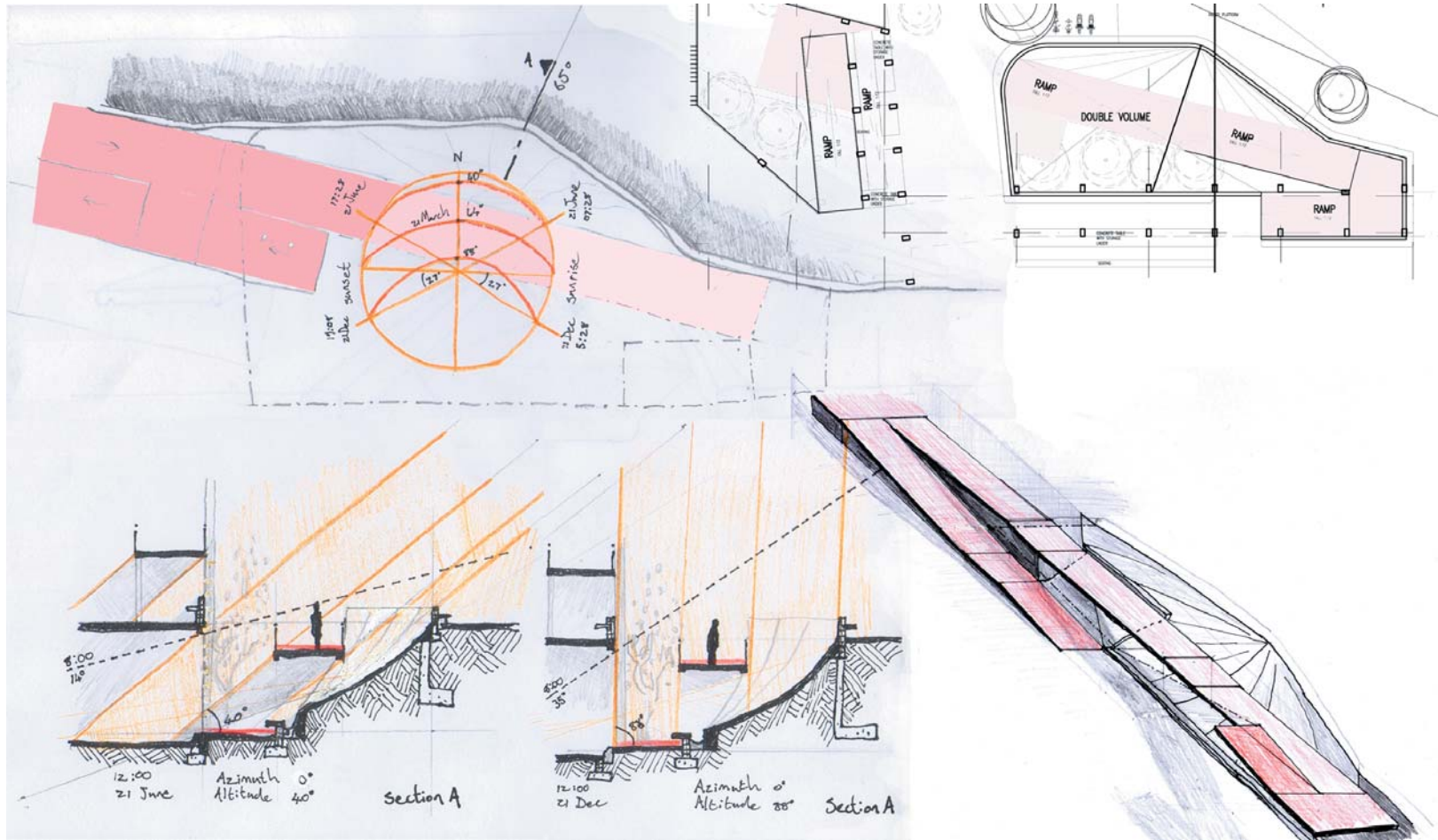


groundfloor



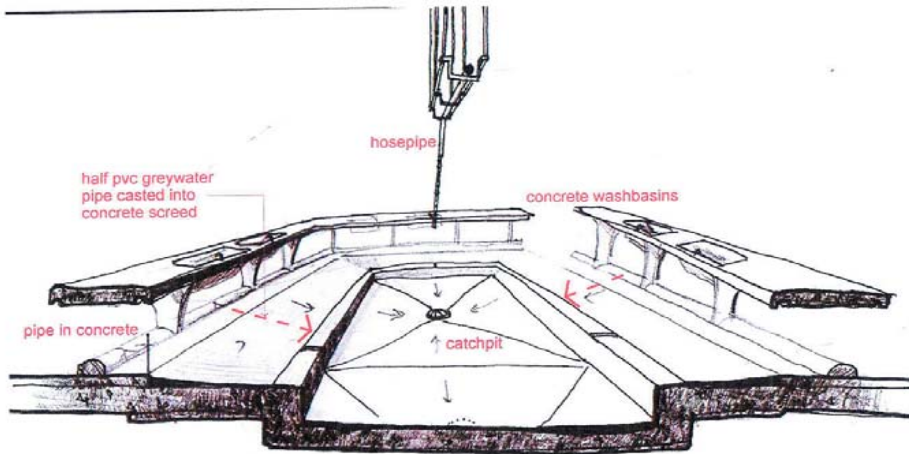
first floor



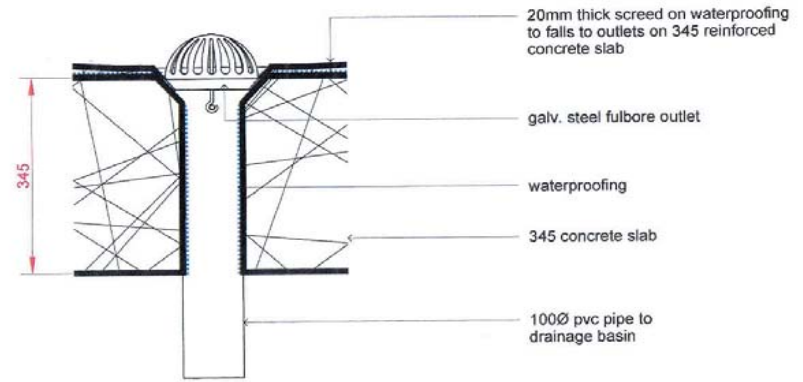


DETAIL :
ramp

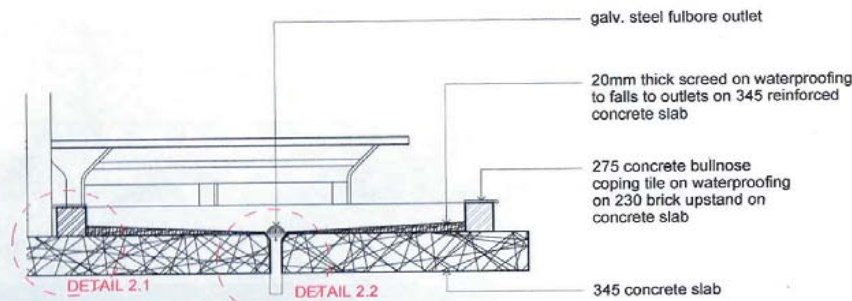
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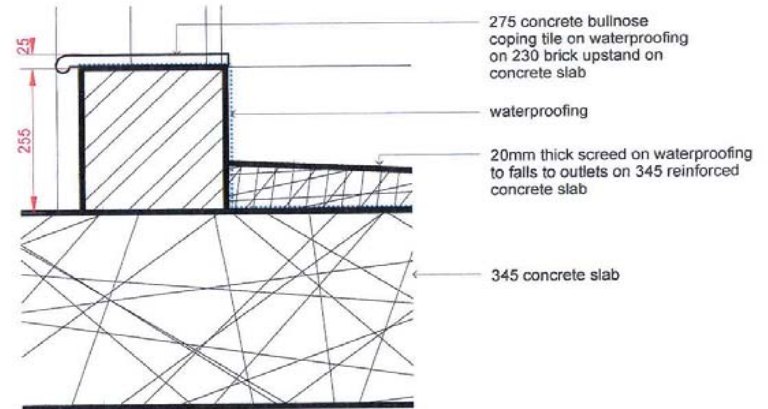
PERSPECTIVE DETAIL OF EQUIPMENT CLEANING FACILITIES



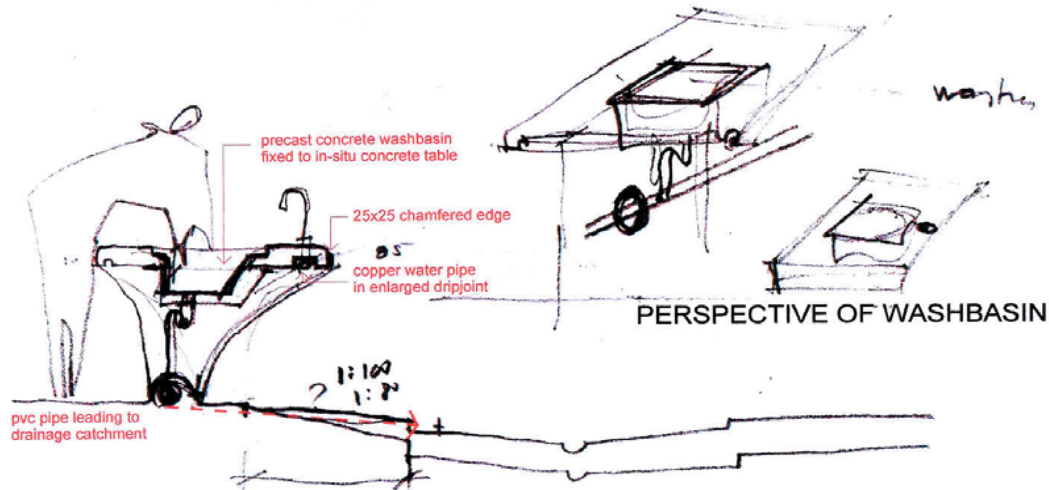
DETAIL 2.2
scale 1:10
WATER OUTLET DETAIL



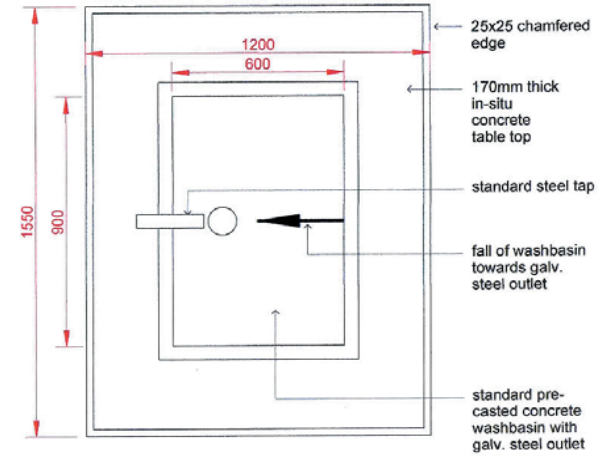
DETAIL 2
scale 1:50
HOLLOW CLAY AIR BRICKS
WITH GLAZING ON INSIDE



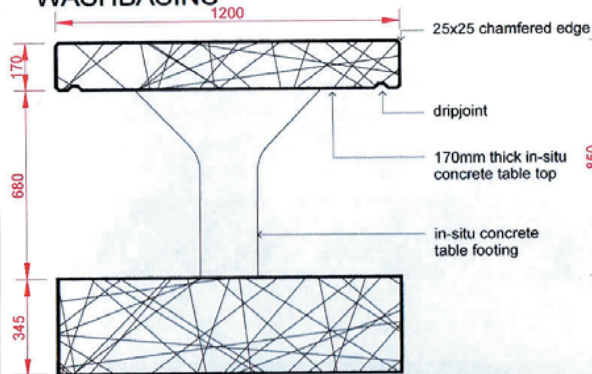
DETAIL 2.1
scale 1:10
BRICK UPSTAND WITH
WATERPROOFING



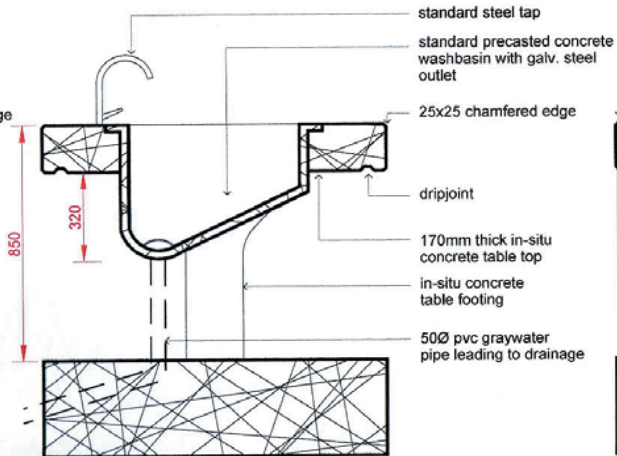
PERSPECTIVE OF WASHBASIN



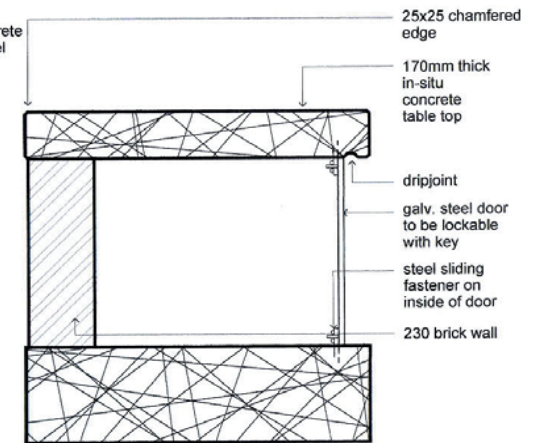
PERSPECTIVE DETAIL AND SECTION OF EQUIPMENT CLEANING FACILITIES WASHBASINS



DETAIL 3.1
scale 1:20
CONCRETE TABLE
STRUCTURE

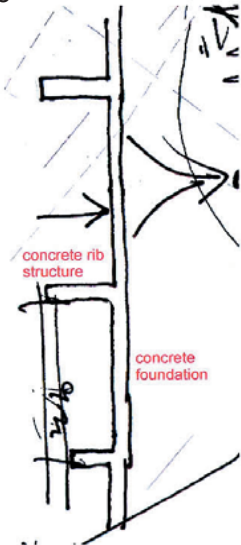


DETAIL 3.2
scale 1:20
CONCRETE WASHBASIN
STRUCTURE

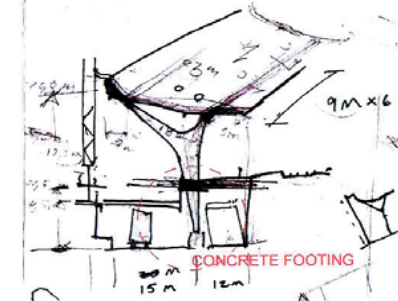


DETAIL 3.3
scale 1:20
CONCRETE TABLE
WITH LOCKABLE DOORS

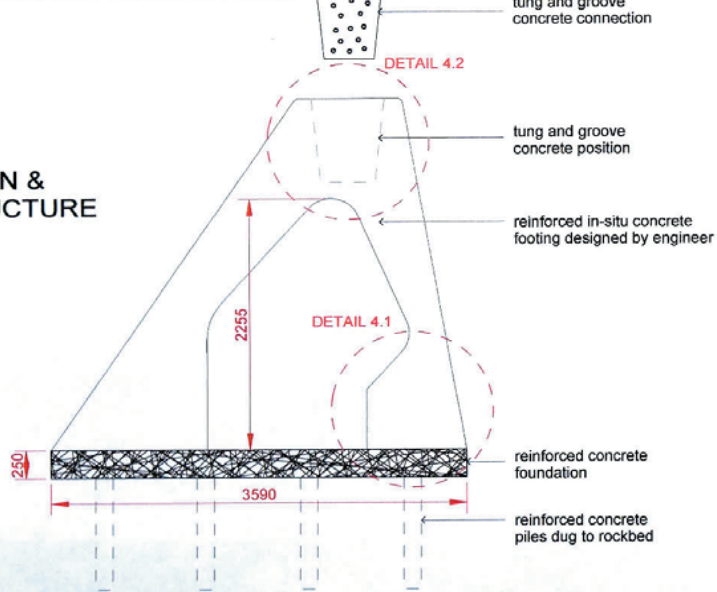
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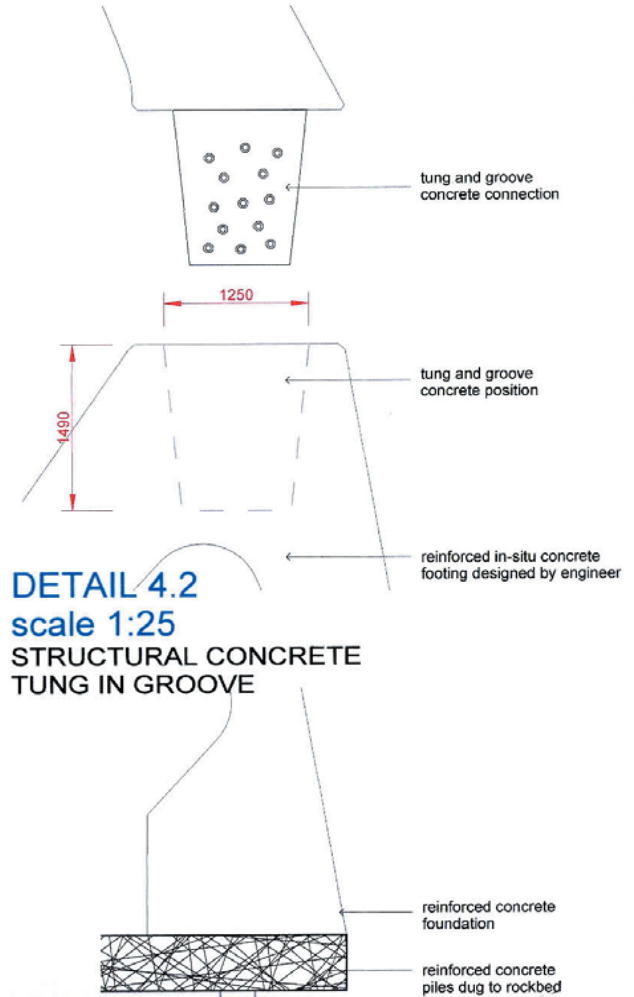
PLAN OF FOUNDATION & CONCRETE RIB STRUCTURE



CONCEPTUAL PERSPECTIVE DRAWING OF ROOF & CONCRETE STRUCTURE

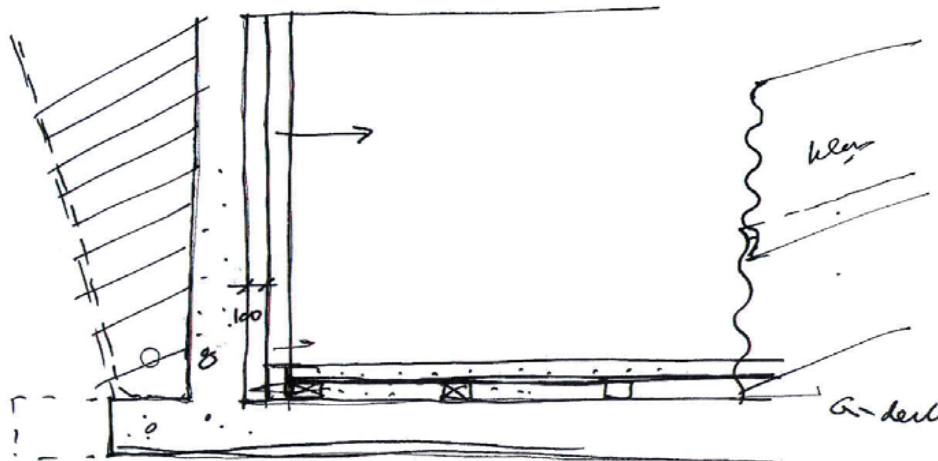


DETAIL 4
scale 1:50
IN-SITU STRUCTURAL CONCRETE FOOTING

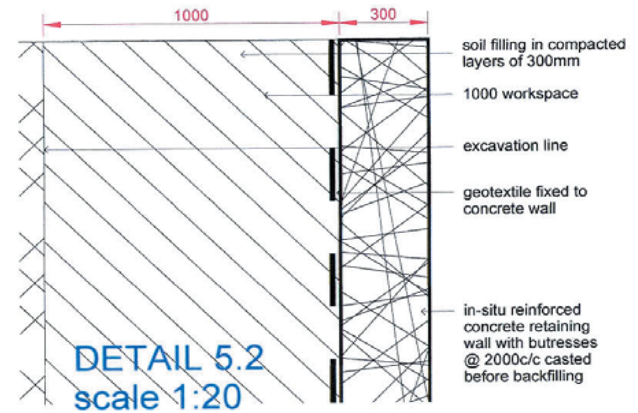


DETAIL 4.2
scale 1:25
STRUCTURAL CONCRETE TUNG IN GROOVE

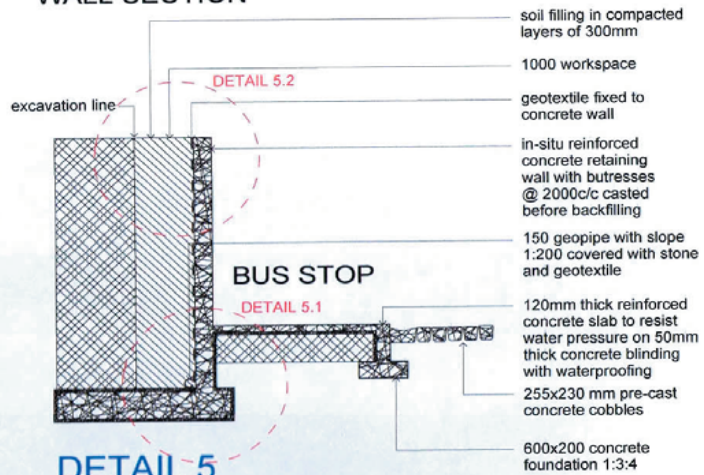
DETAIL 4.1
scale 1:25
IN-SITU STRUCTURAL CONCRETE FOOTING



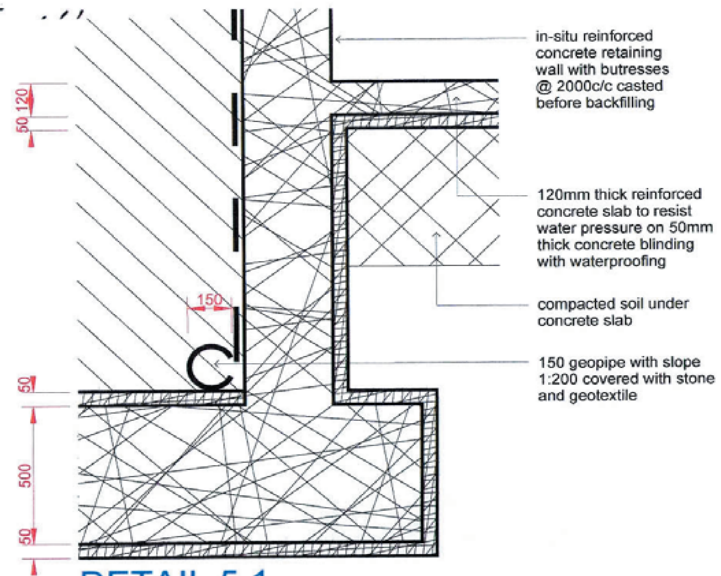
CONCEPTUAL RETAINING WALL SECTION



DETAIL 5.2
scale 1:20
WATERPROOFING IN RETAINING WALL



DETAIL 5
scale 1:100
STRUCTURAL RETAINING WALL



DETAIL 5.1
scale 1:20
GEOTEXTILE AND PIPE

- soil filling in compacted layers of 300mm
- 1000 workspace
- excavation line
- geotextile fixed to concrete wall
- in-situ reinforced concrete retaining wall with butresses @ 2000c/c casted before backfilling
- 150 geopipe with slope 1:200 covered with stone and geotextile
- 120mm thick reinforced concrete slab to resist water pressure on 50mm thick concrete blinding with waterproofing
- 255x230 mm pre-cast concrete cobbles
- 600x200 concrete foundation 1:3:4

- in-situ reinforced concrete retaining wall with butresses @ 2000c/c casted before backfilling
- 120mm thick reinforced concrete slab to resist water pressure on 50mm thick concrete blinding with waterproofing
- compacted soil under concrete slab
- 150 geopipe with slope 1:200 covered with stone and geotextile

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