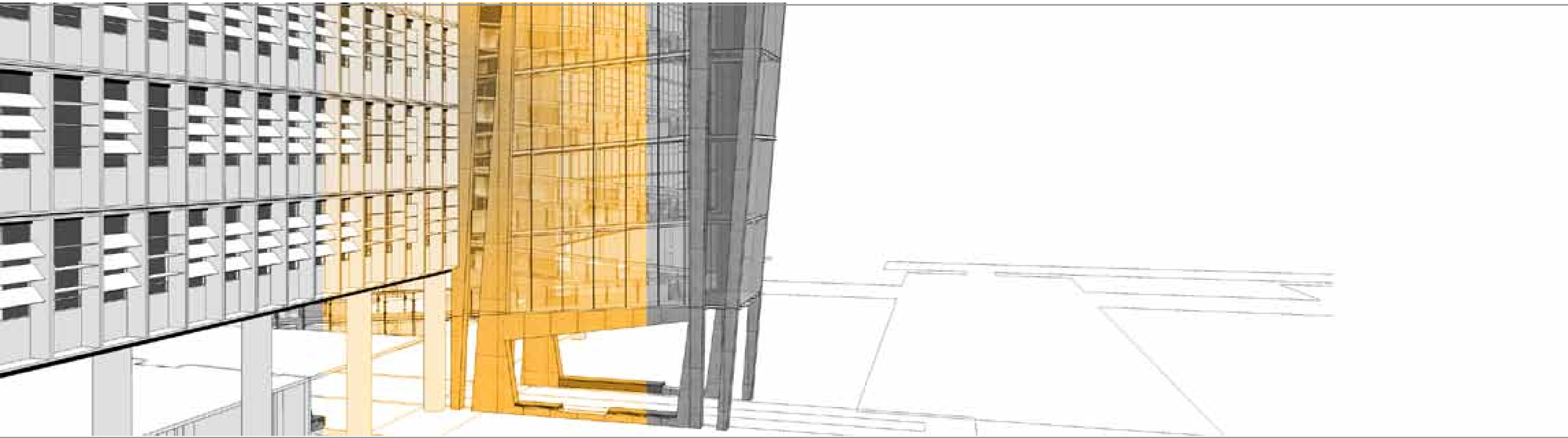
CHAPTER 5
Design and Technical Exploration

Chapter five illustrates an integrated approach towards design and construction.



[5] Design and Technical Exploration

5.1 Plans

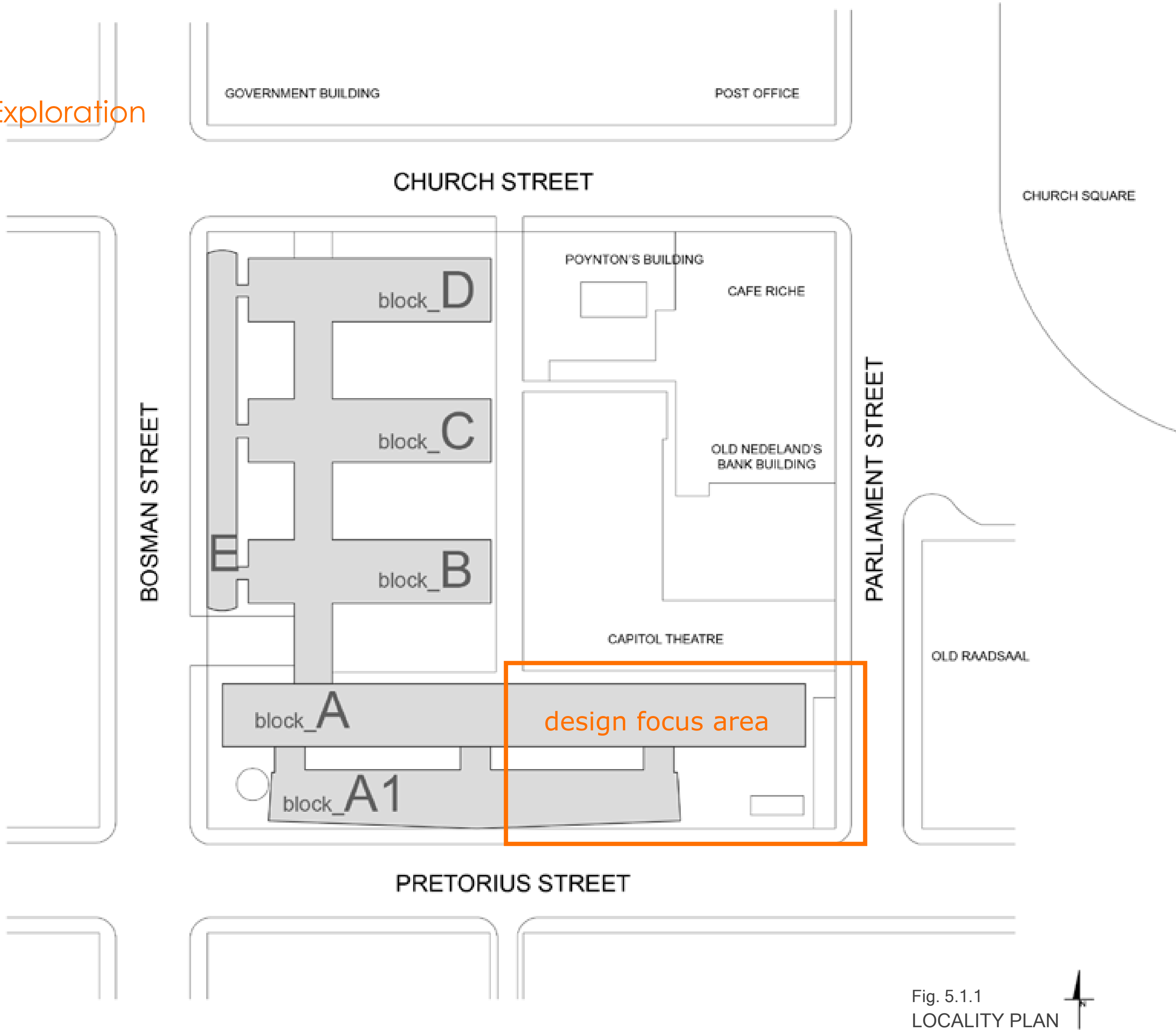


Fig. 5.1.1
LOCALITY PLAN

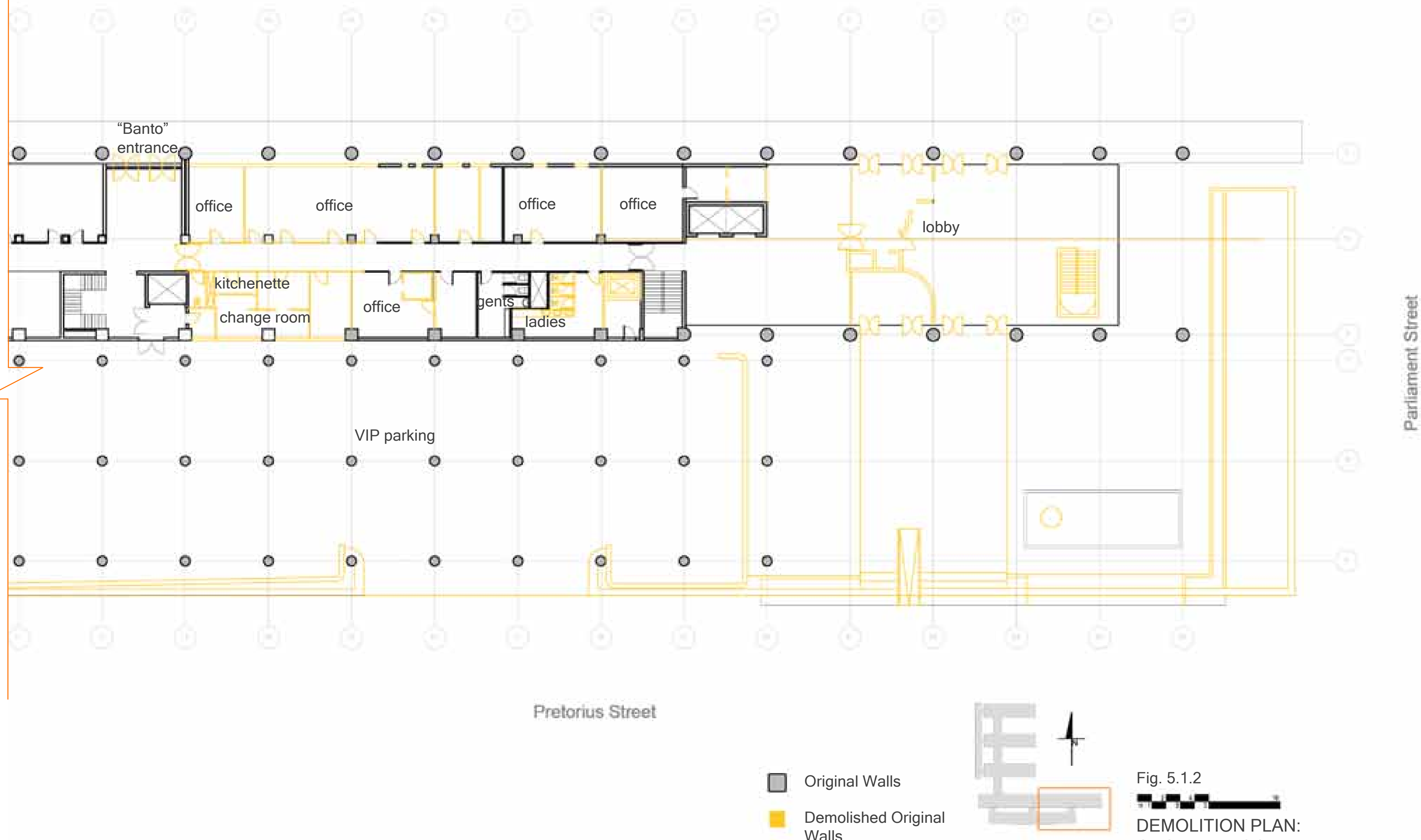
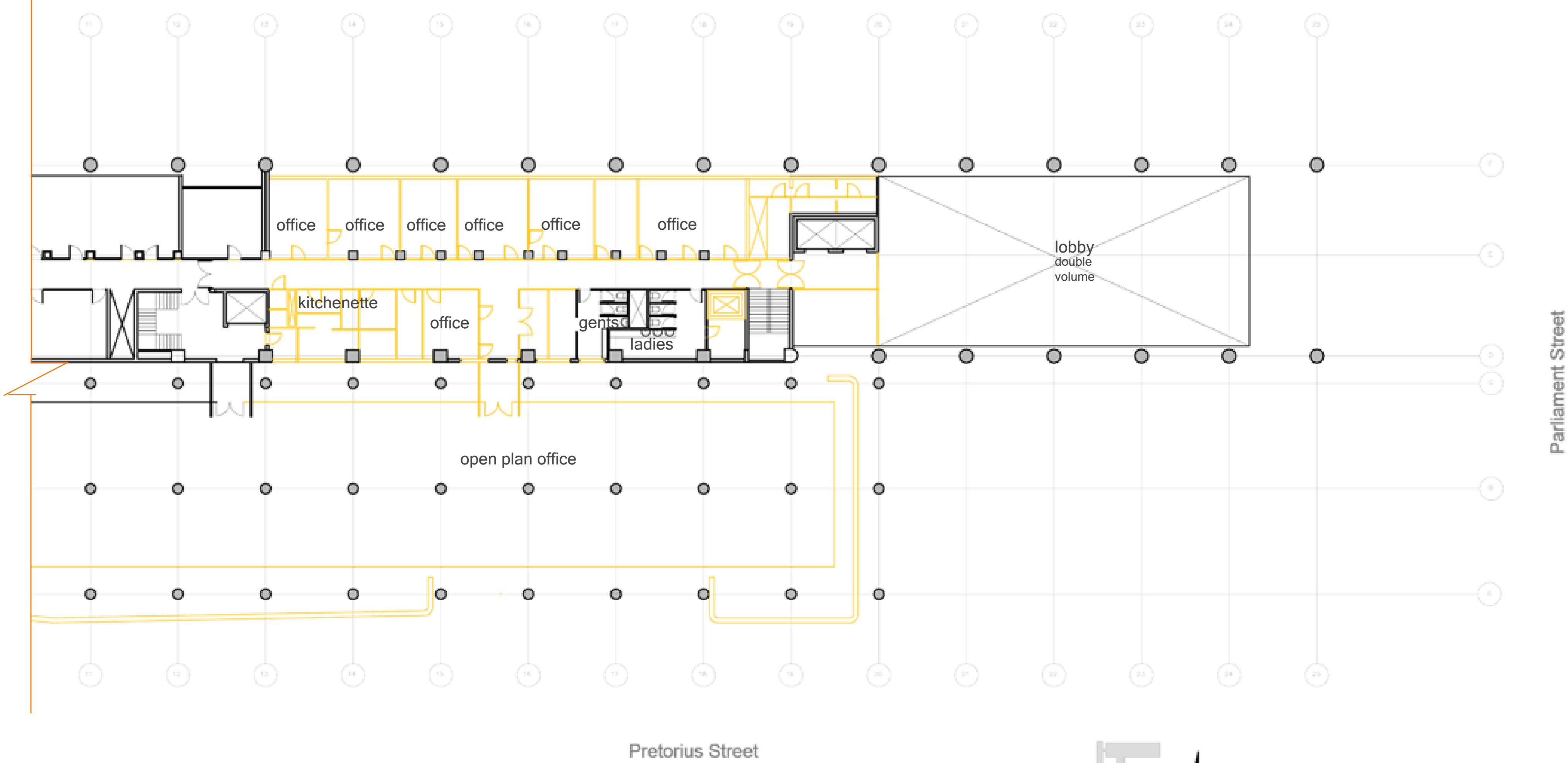


Fig. 5.1.2

DEMOLITION PLAN: GROUND FLOOR



Original Walls

Demolished Original Walls

Fig. 5.1.3

DEMOLITION PLAN:
FIRST FLOOR

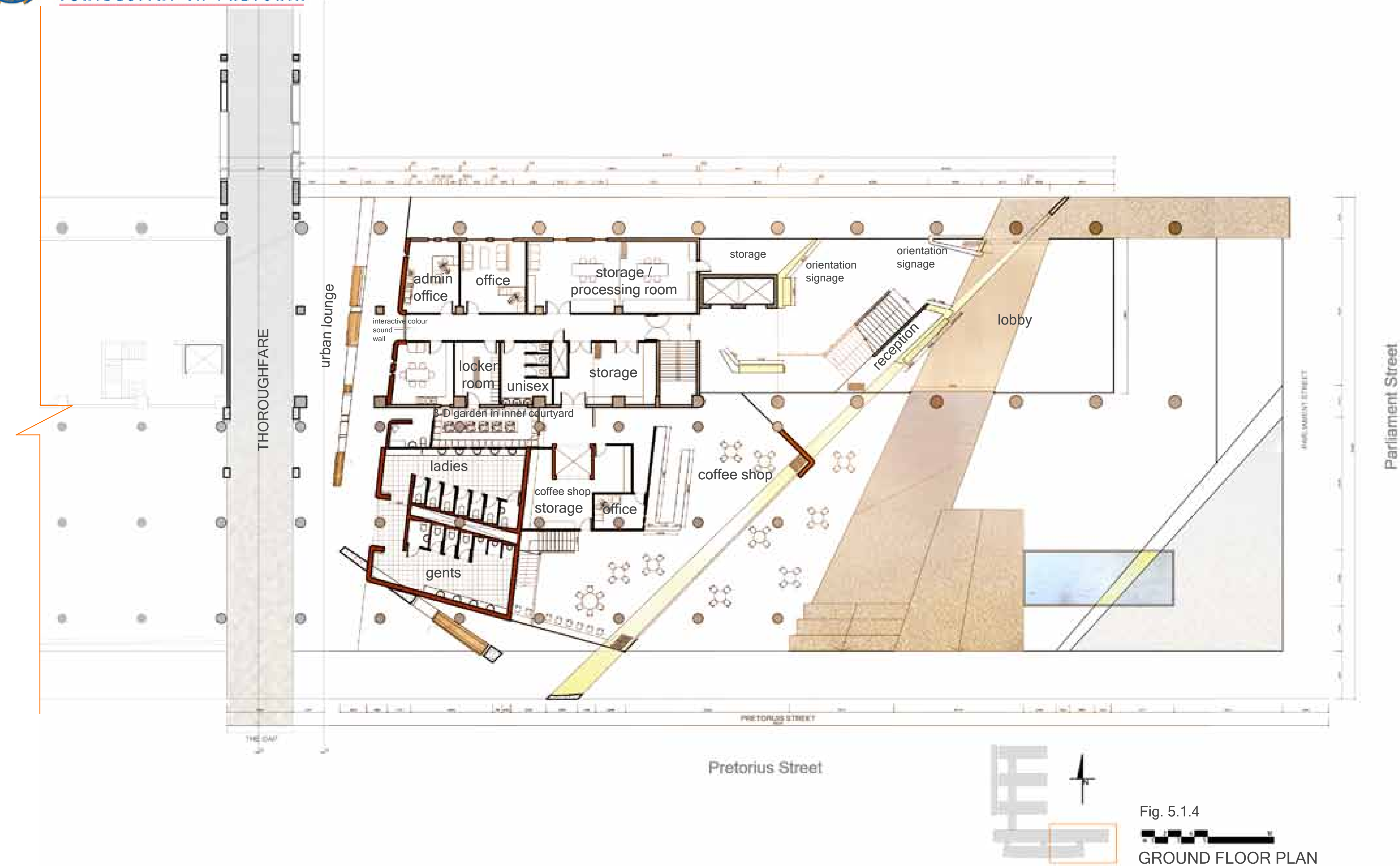


Fig. 5.1.4

GROUND FLOOR PLAN

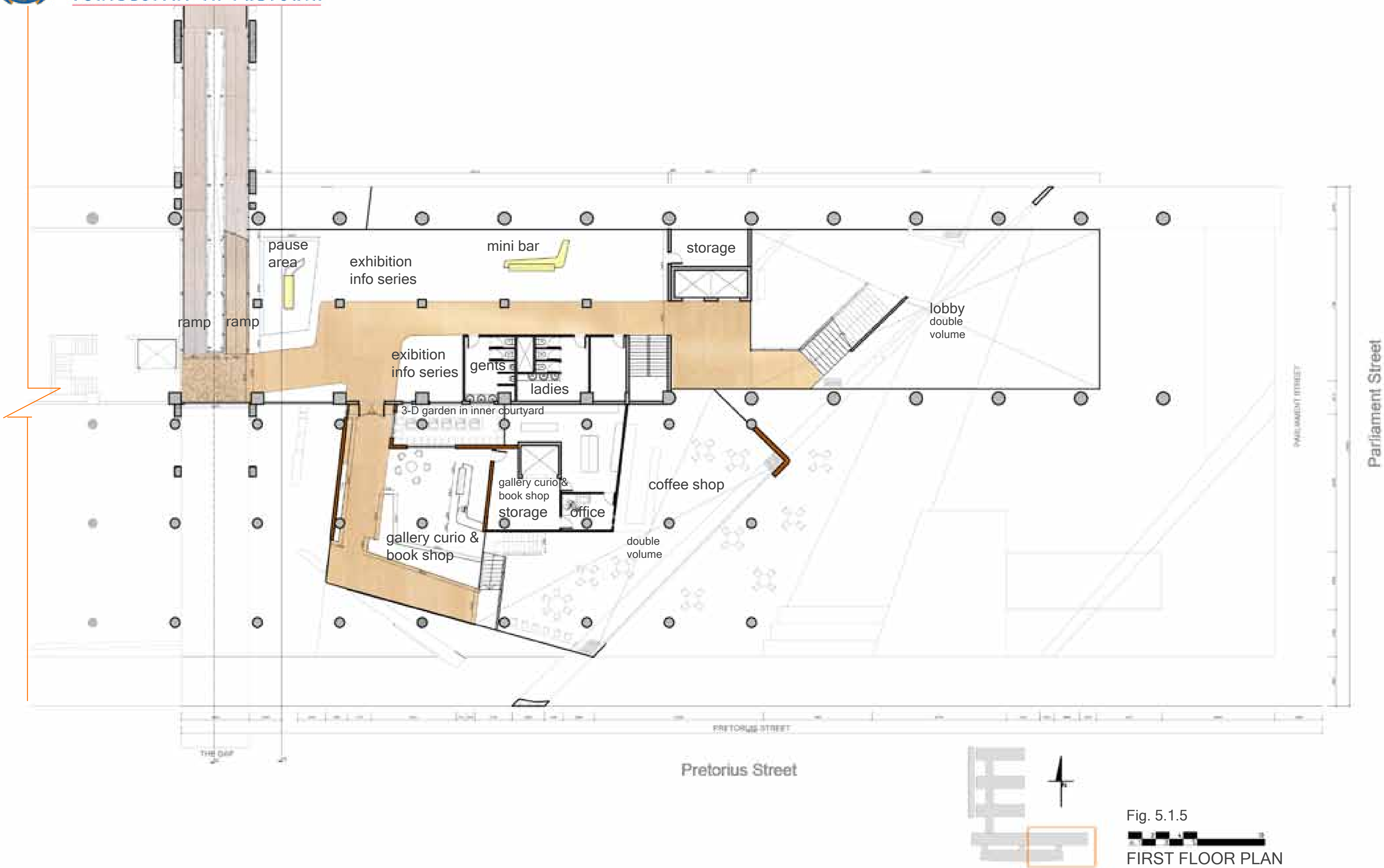
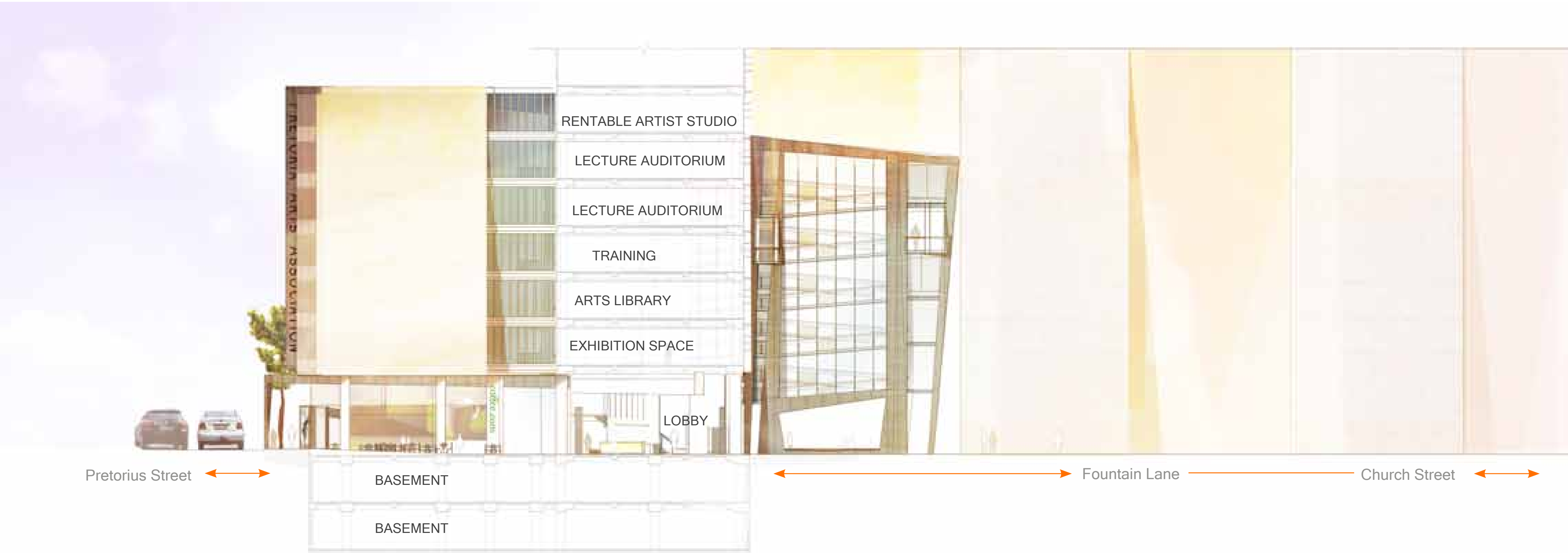


Fig. 5.1.5

FIRST FLOOR PLAN



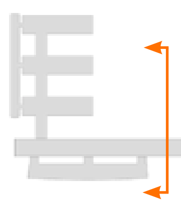


Fig. 5.2.1

SECTION AA

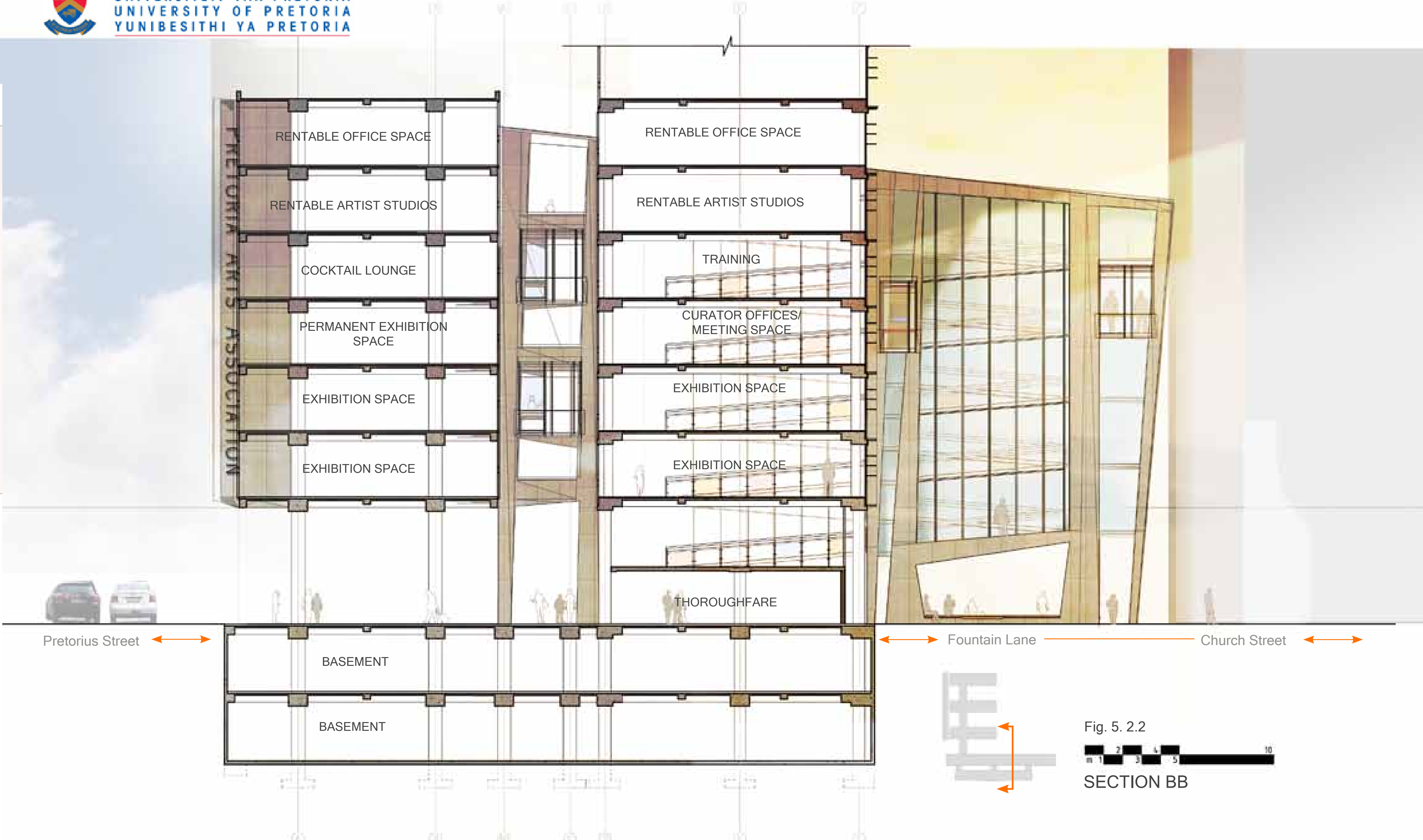


Fig. 5. 2.2

SECTION BB

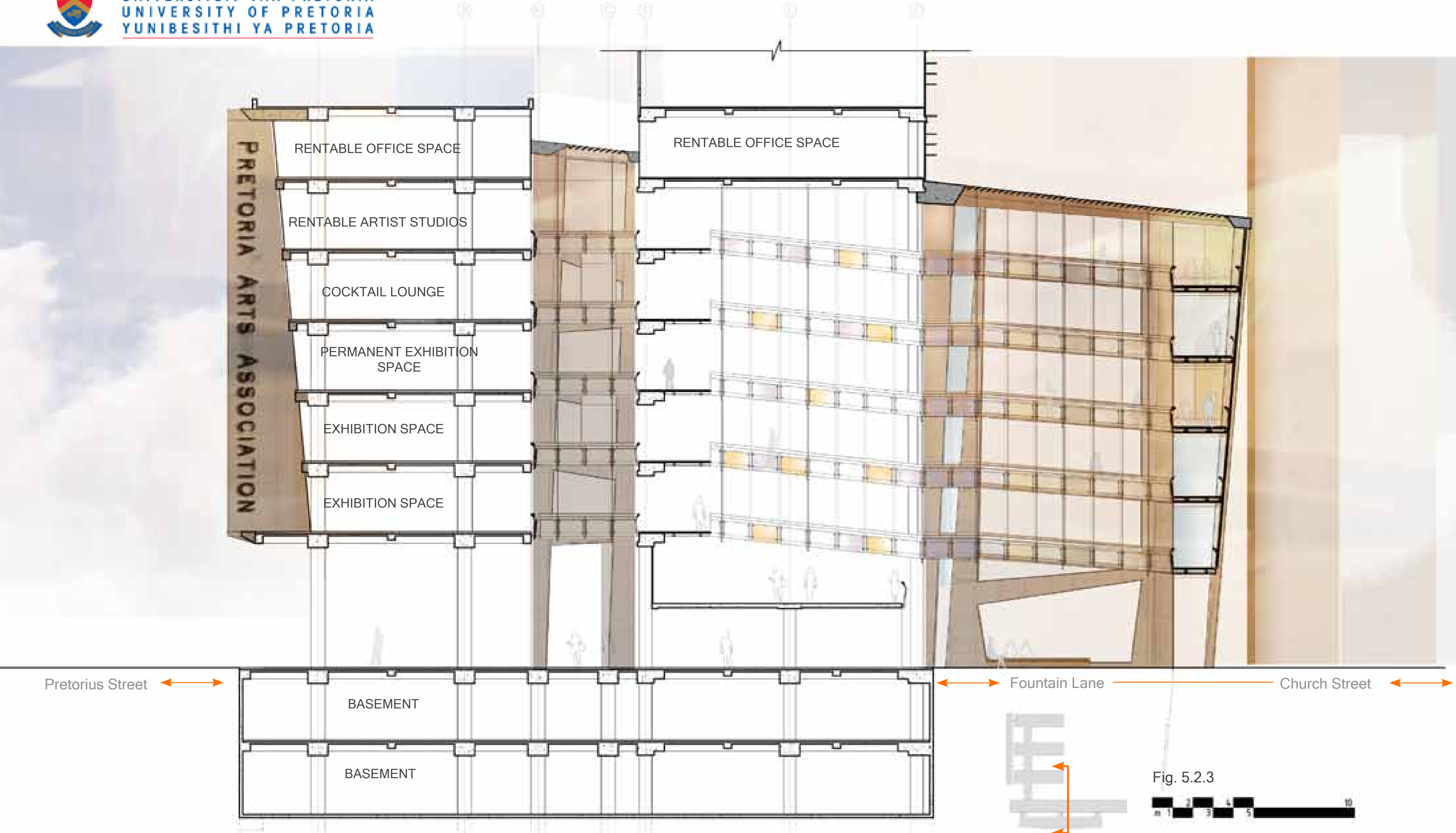


Fig. 5.2.3

SECTION CC

5.3 Urban texture_ material strategy

Texture helps us to recognise and identify certain places. Mathews (2003, p.11) states; "Our existence plays off in towns and cities, and the urban grain helps us to make this world our own". In accordance with the dissertation's main themes, materials were selected according to their ability to be functional and, at the same time, to enhance sensory associations.

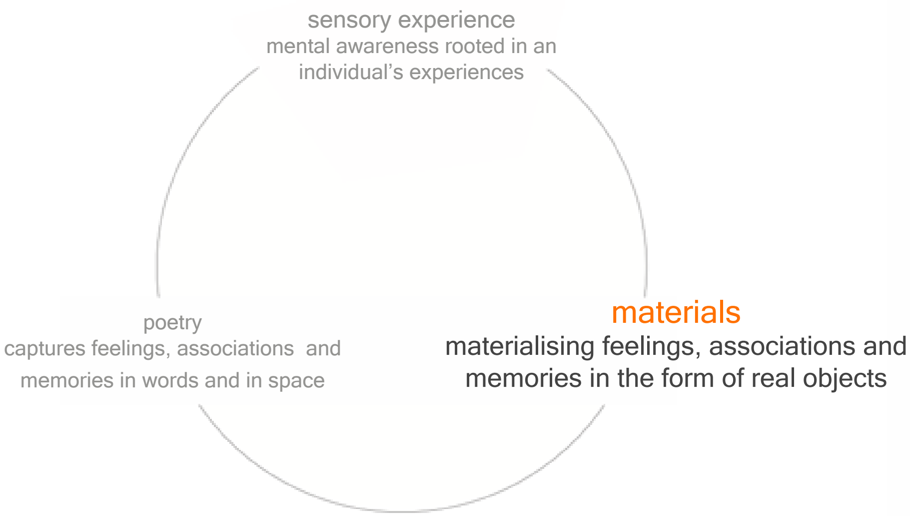
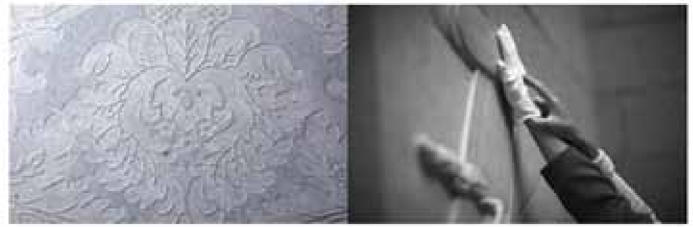


Fig.5.3.1 The three key dissertation themes.

Concrete_ is a cold, hard, liquid stone. It has the ability to transcend the purely visual realm to form mouldable tactile surfaces that intersect, define and respond to the city environment.

Wood_ is a natural, warm material with a spectrum of textures and musky odours. It can be both smooth and grainy.

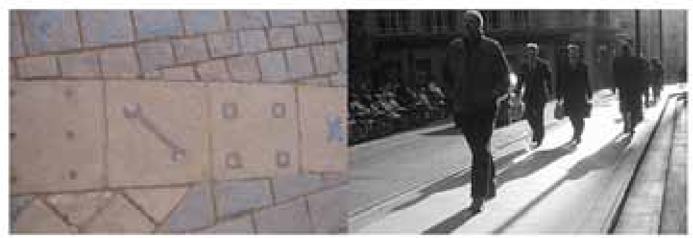
Polymers_ are synthetic materials with the capacity to be moulded into complex shapes. The materials' colour can range from being transparent to translucent to opaque.



Concrete casted with texture.

Fly-ash reinforced concrete with crushed concrete aggregate

LiTraCon
(light transmitting concrete)



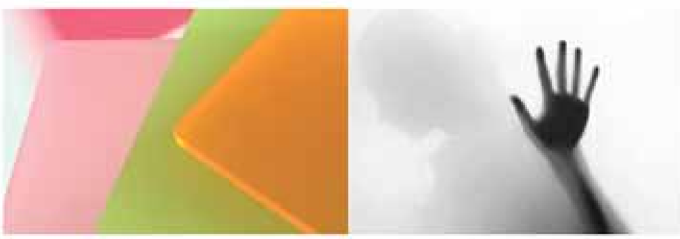
Granite cobblestones and concrete strips with decorative embedded steel utensils.

Fig. 5.3.2 Material and sense palette.

Laminated pine wood

Engineered bamboo flooring

Plexiglas Satinice

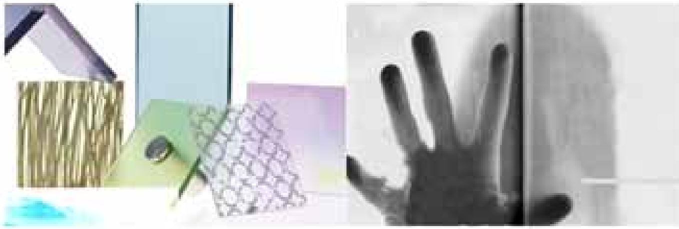


Plexiglas Satinice (colour)

Fig. 5.3.3 Material and sense palette.

sensibility
imagination
sound space
sensory circulation
hapticity sensation of touch
sensory experience
sense of rhythm
soft spaces
tangible
heat
smell
sound
sensuous
sensibility
ecoSENSE

Fig.5.3.4 Illustration of the tactile sense.



3Form
(Cast Polymethyl Methacrylate
[PMMA] resin.)

Surinno Solid Surfacing

Polished screed floor

Jasmine
Jasminum multipartitum

Fig. 5.3.5 Material and sense palette.

Fig. 5.3.6 Image illustrating the way smell is perceived in a city.

5.4 Details

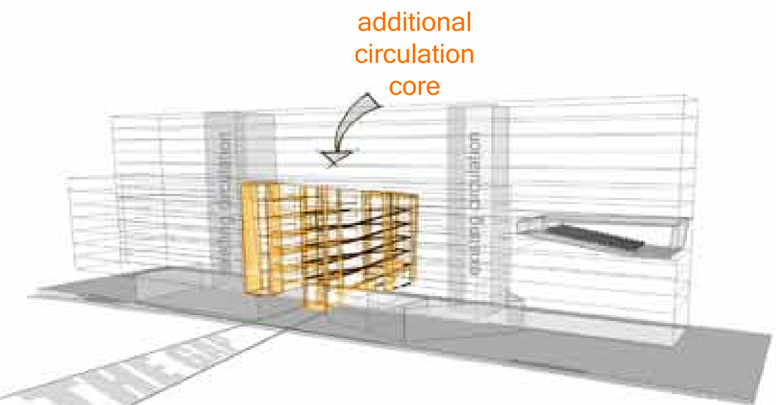


Fig. 5.4.1 Additional vertical circulation core introduced within the TPA building.

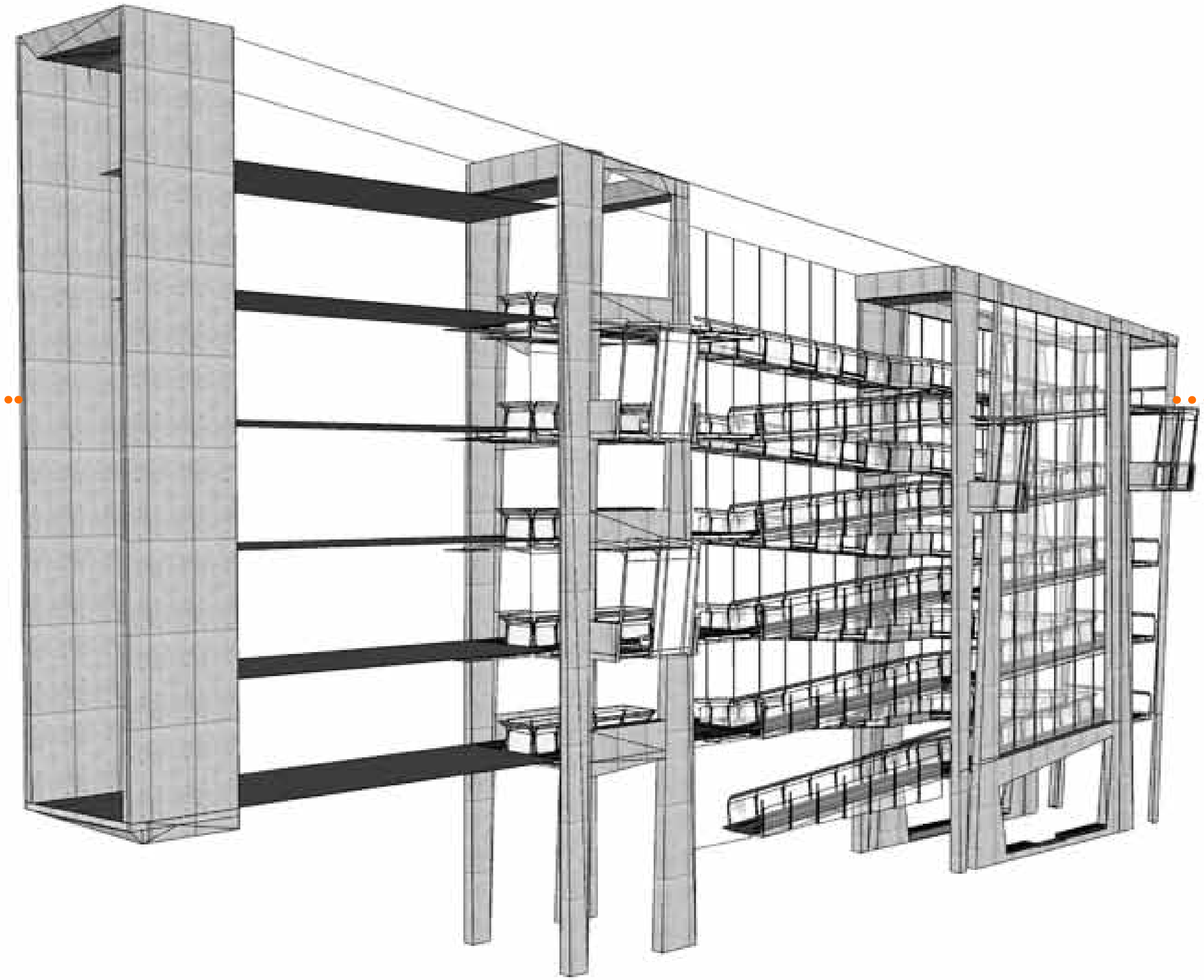


Fig. 5.4.2 Additional vertical circulation core structure.

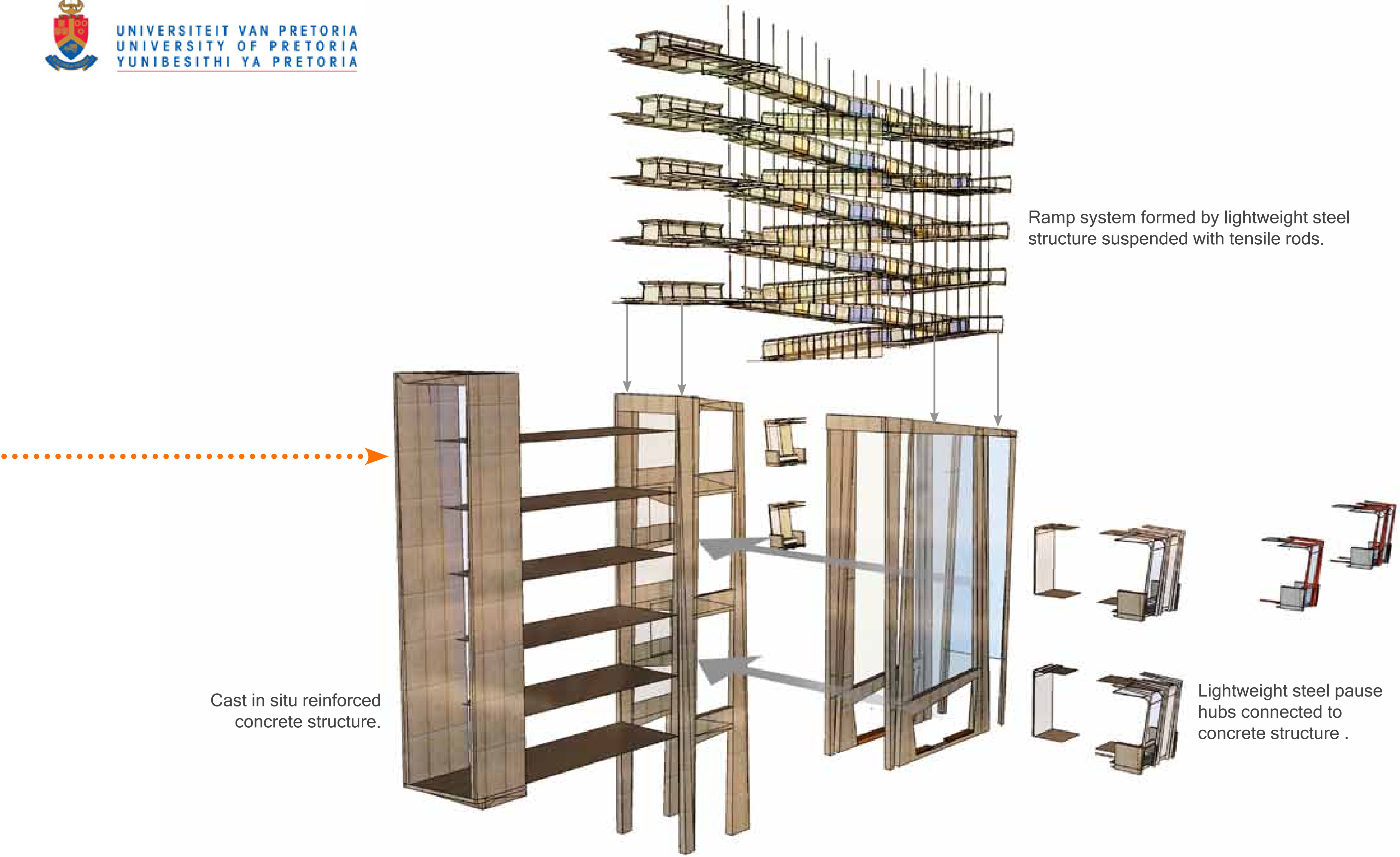


Fig. 5.4.3 Axonometric diagram of the additional vertical circulation core.

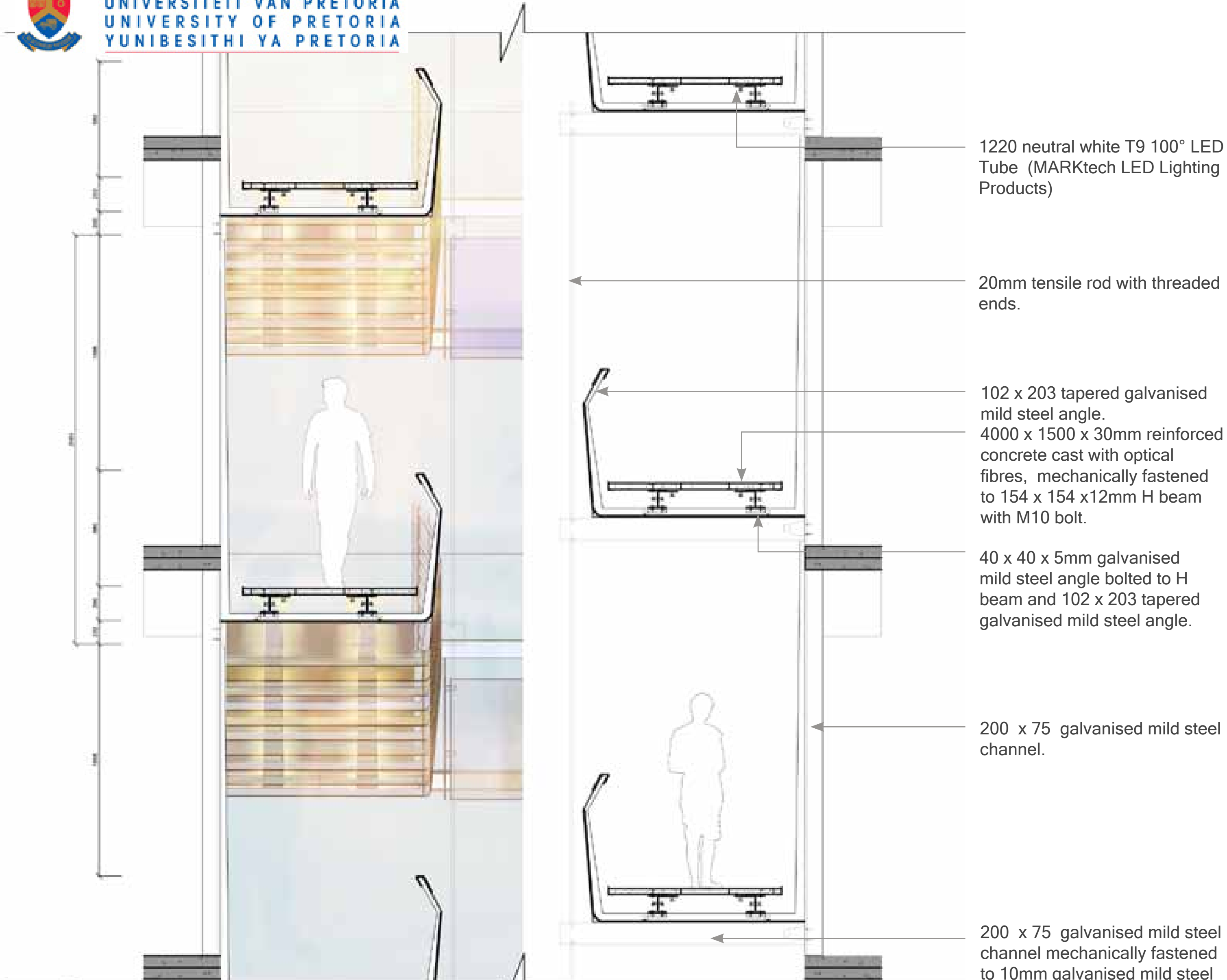


Fig. 5.4.4
SECTION _ RAMP

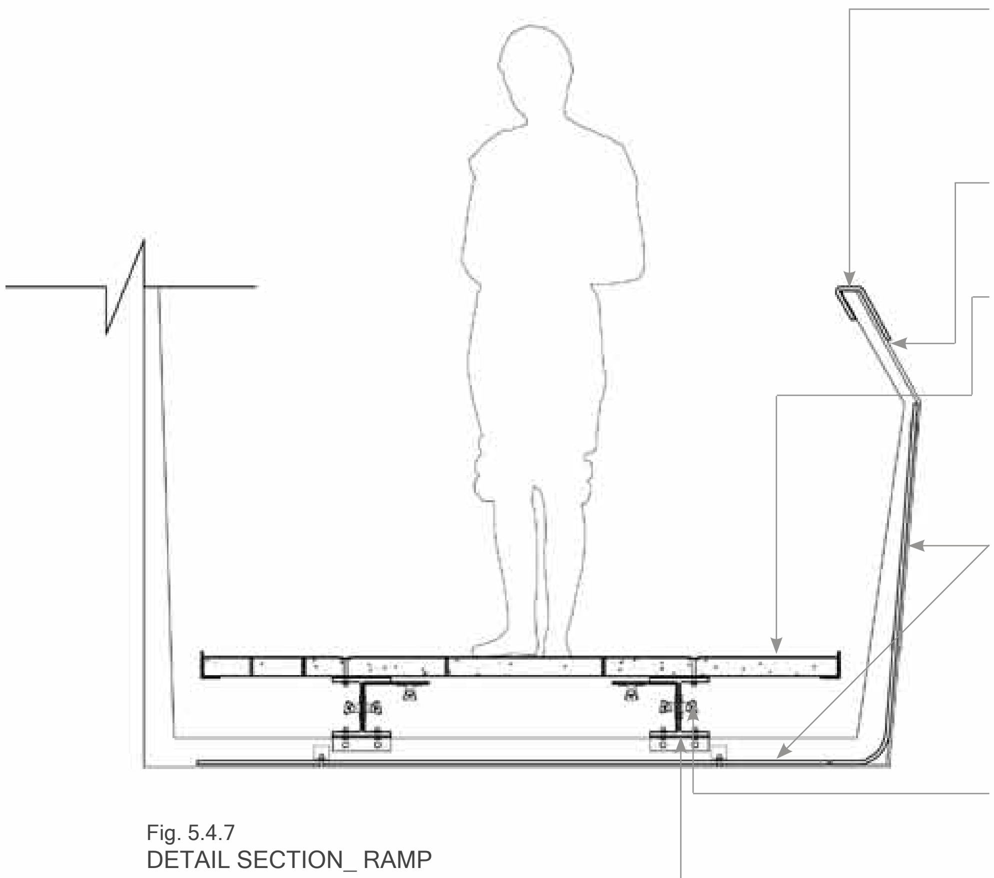
Suspended walkway technical precedents_

Fig. 5.4.5

O. R. TAMBO INTERNATIONAL AIRPORT, Johannesburg.

Fig. 5.4.6

DEPARTMENT OF FOREIGN AFFAIRS, Pretoria.



10mm Plexiglas Satinice handle bent to specific form fastened with 5mm countersunk square bolt.

102 x 203 tapered galvanised mild steel angle

4000 x 1500 x 30mm reinforced concrete cast with optical fibres, mechanically fastened to 154 x 154 x12mm H beam with M10 bolt.

9mm 3Form panels bolted to 40 x 40 x 3mm galvanised mild steel angle with M10 countersunk square bolt.

1220 neutral white T9 100° LED Tube (MARKtech LED Lighting Products)

200 x 75 galvanised mild steel channel mechanically fastened to 10mm galvanised mild steel hinge connection .

Fig. 5.4.7
DETAIL SECTION_ RAMP
Scale 1 :10

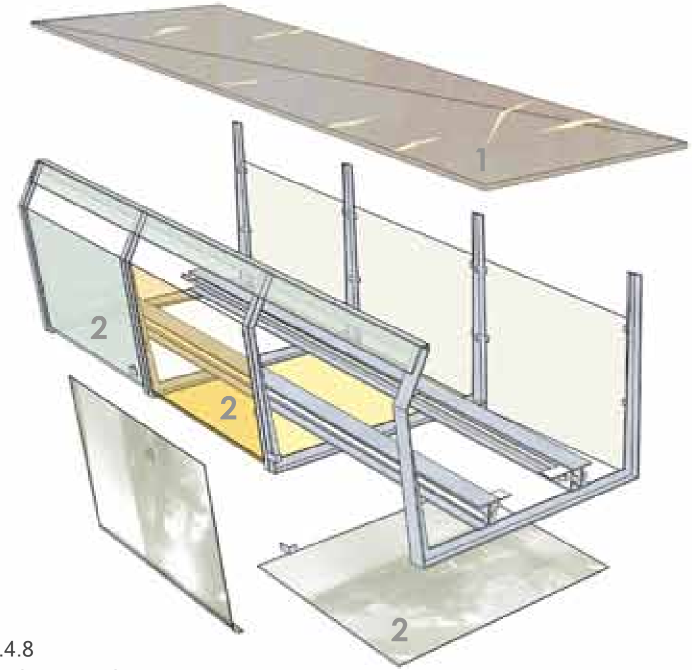
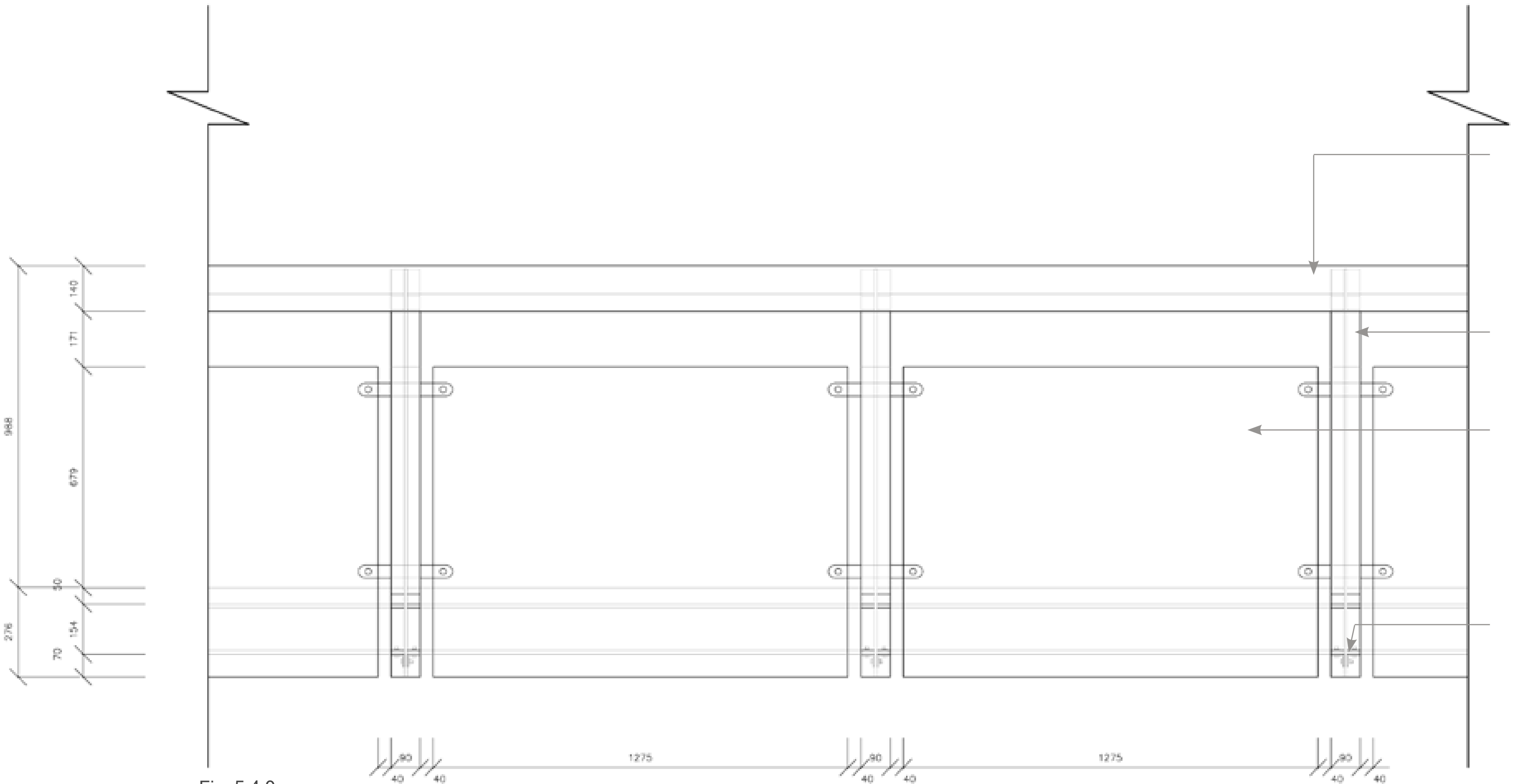


Fig. 5.4.8
AXONOMETRIC_ RAMP

LiTraCon

3Form (Cast Polymethyl Methacrylate [PMMA] resin.)



10mm Plexiglas Satinice handle bent to specific form fastened with 5mm countersunk square bolt.

102 x 203mm tapered galvanised mild steel tee handrail.

9mm 3Form panels bolted to 40 x 40 x 3mm galvanised mild steel angle with M10 countersunk square bolt.

200 x 75 galvanised mild steel channel mechanically fastened to 10mm galvanised mild steel hinge connection.

Fig. 5.4.9
ELEVATION_ LANDING
Scale 1 :10

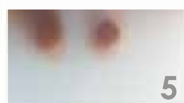
Fig. 5.4.10
PAUSE HUB

LiTraCon

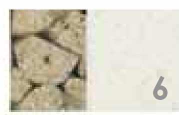
Reinforced concrete

Textured concrete

Plexiglas Satinice



Smartglass [frosted]



Surinno Solid Surfacing

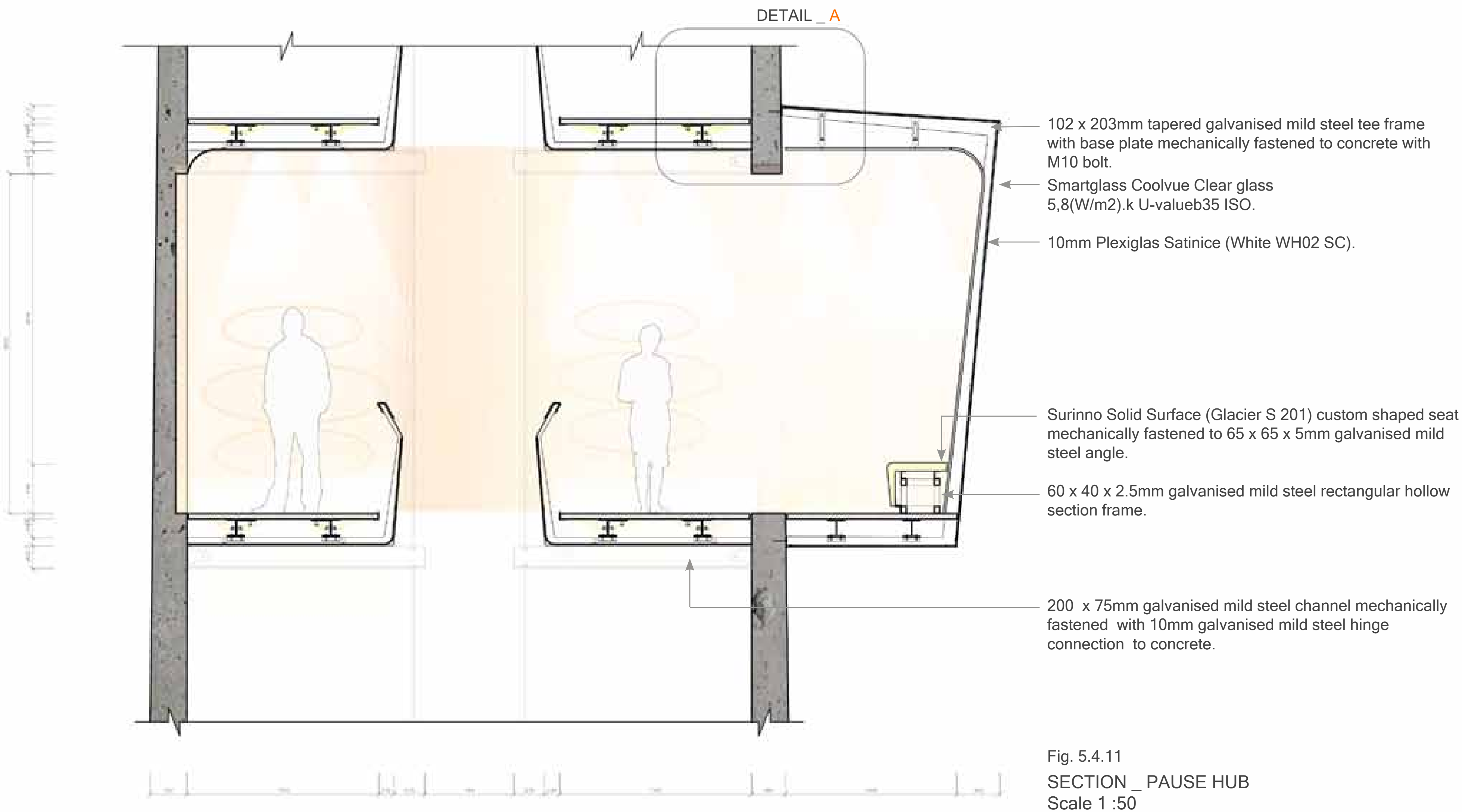


Fig. 5.4.11
SECTION _ PAUSE HUB
Scale 1 :50

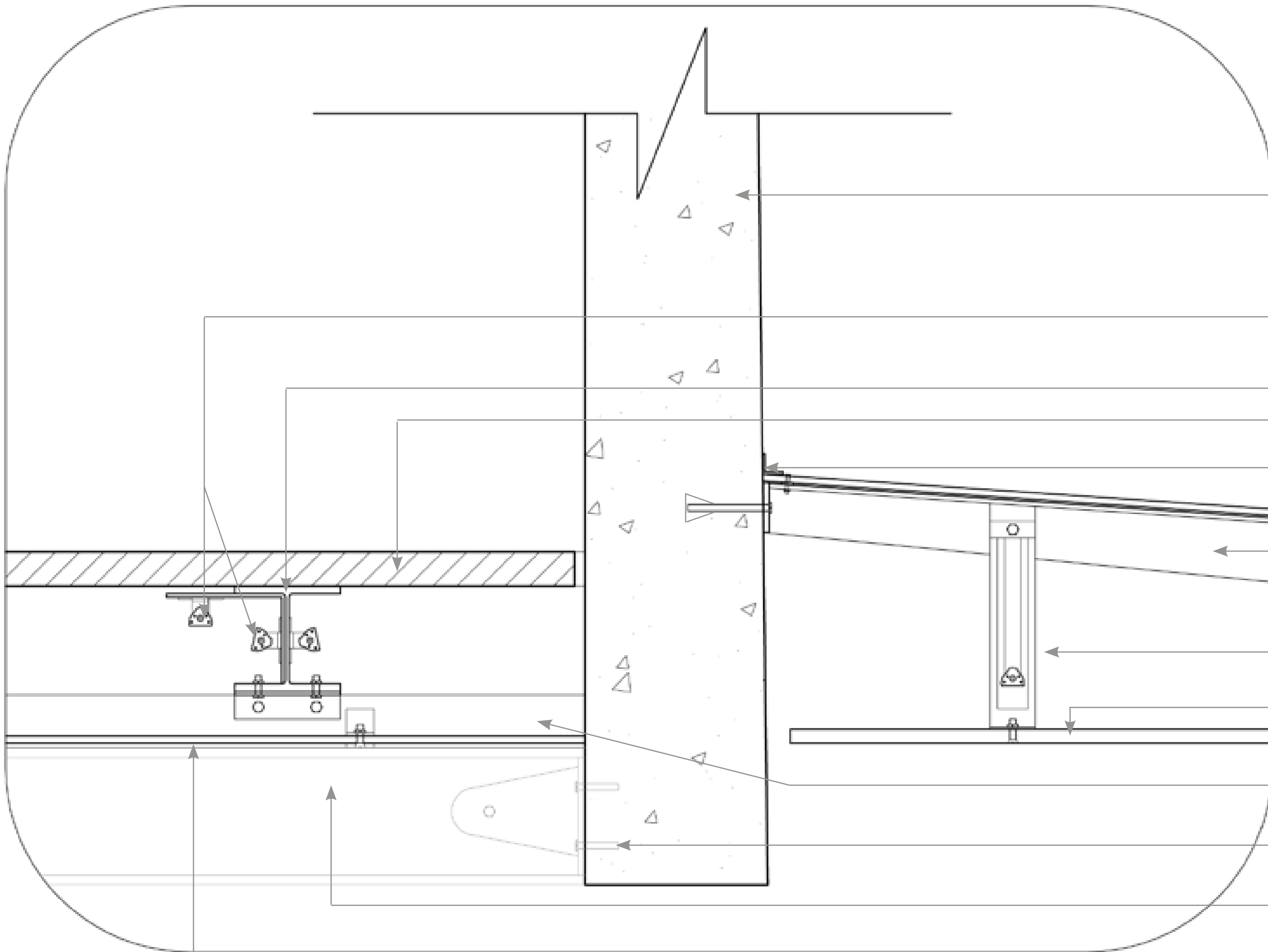


Fig. 5.4.12

DETAIL_ A
Scale 1:10

Fig. 5.4.13 Illustration of staircase.

1 Polished screed floor
2 Engineered bamboo flooring
3 LiTraCon
4 Surinno Solid Surfacing
5 Plexiglas Satinice
6 3Form (Cast Polymethyl Methacrylate [PMMA] resin.)

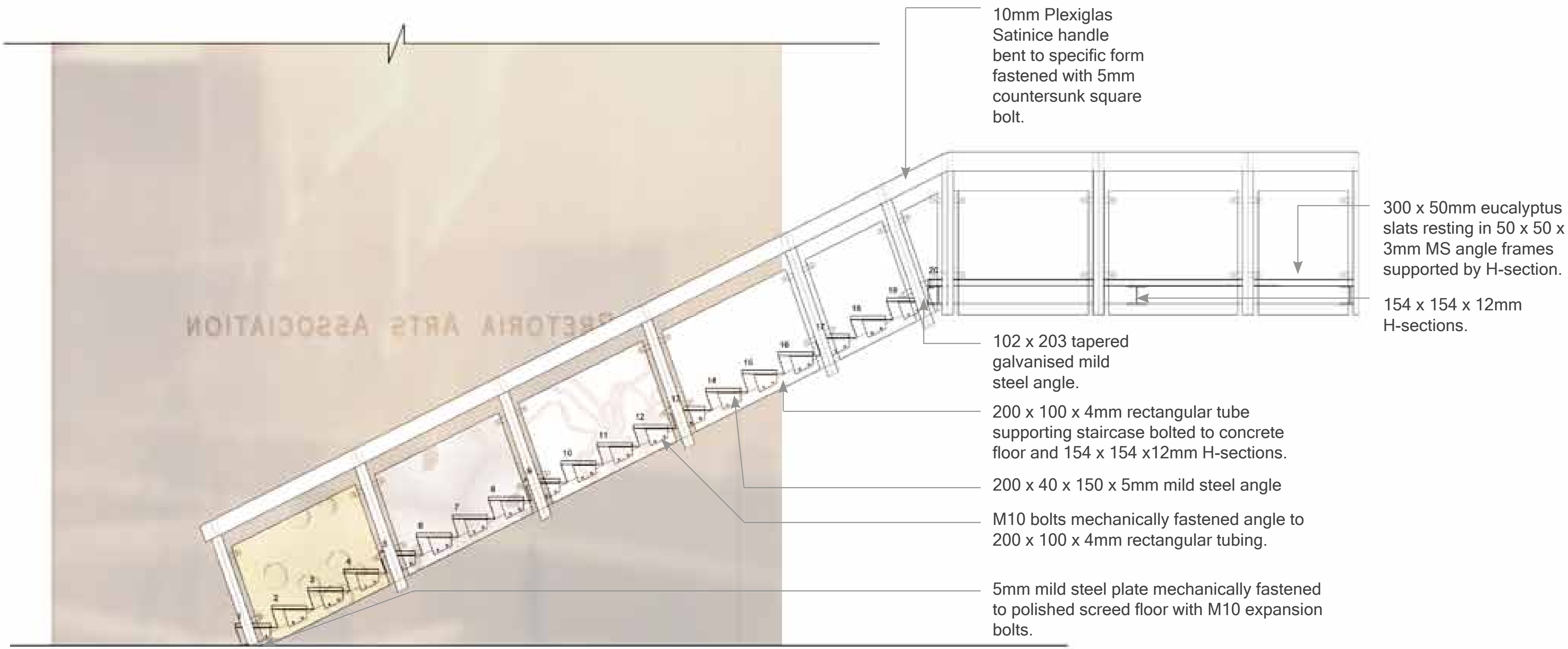
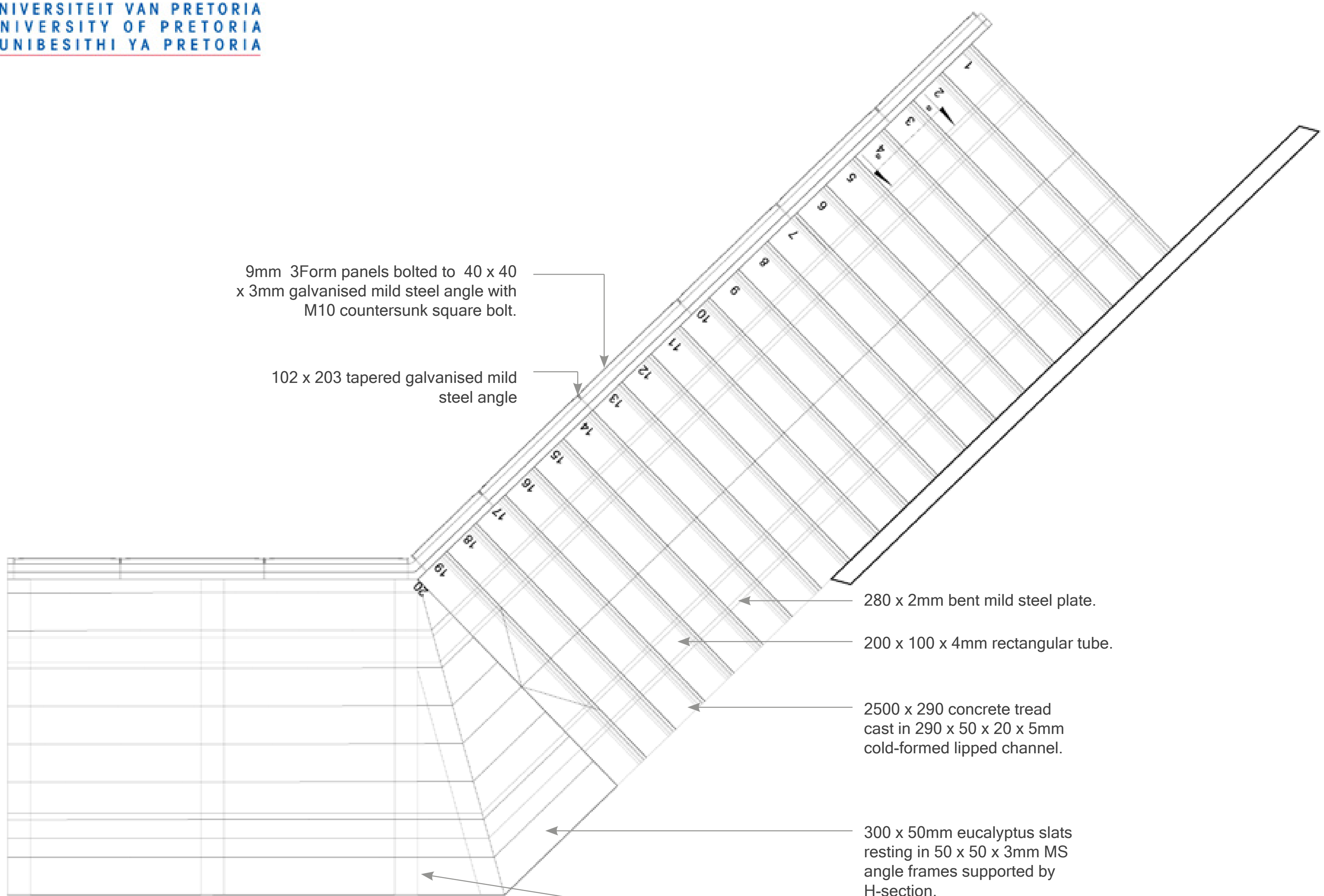


Fig. 5.4.14
NORTHERN ELEVATION_ STAIRCASE
Scale 1 :50

9mm 3Form panels bolted to 40 x 40 x 3mm galvanised mild steel angle with M10 countersunk square bolt.

102 x 203 tapered galvanised mild steel angle



280 x 2mm bent mild steel plate.

200 x 100 x 4mm rectangular tube.

2500 x 290 concrete tread cast in 290 x 50 x 20 x 5mm cold-formed lipped channel.

300 x 50mm eucalyptus slats resting in 50 x 50 x 3mm MS angle frames supported by H-section.

154 x 154 x 12mm H-sections.

Fig. 5.4.15

PLAN _ STAIRCASE
Scale 1 :50

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

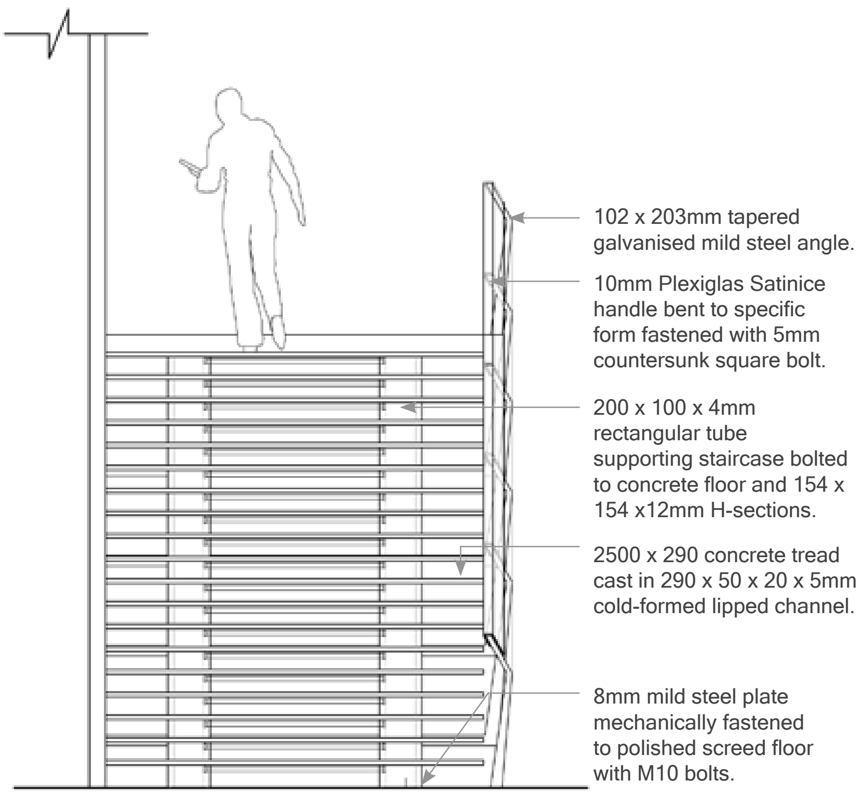


Fig. 5.4.16
EASTERN ELEVATION_ STAIRCASE
Scale 1 :50

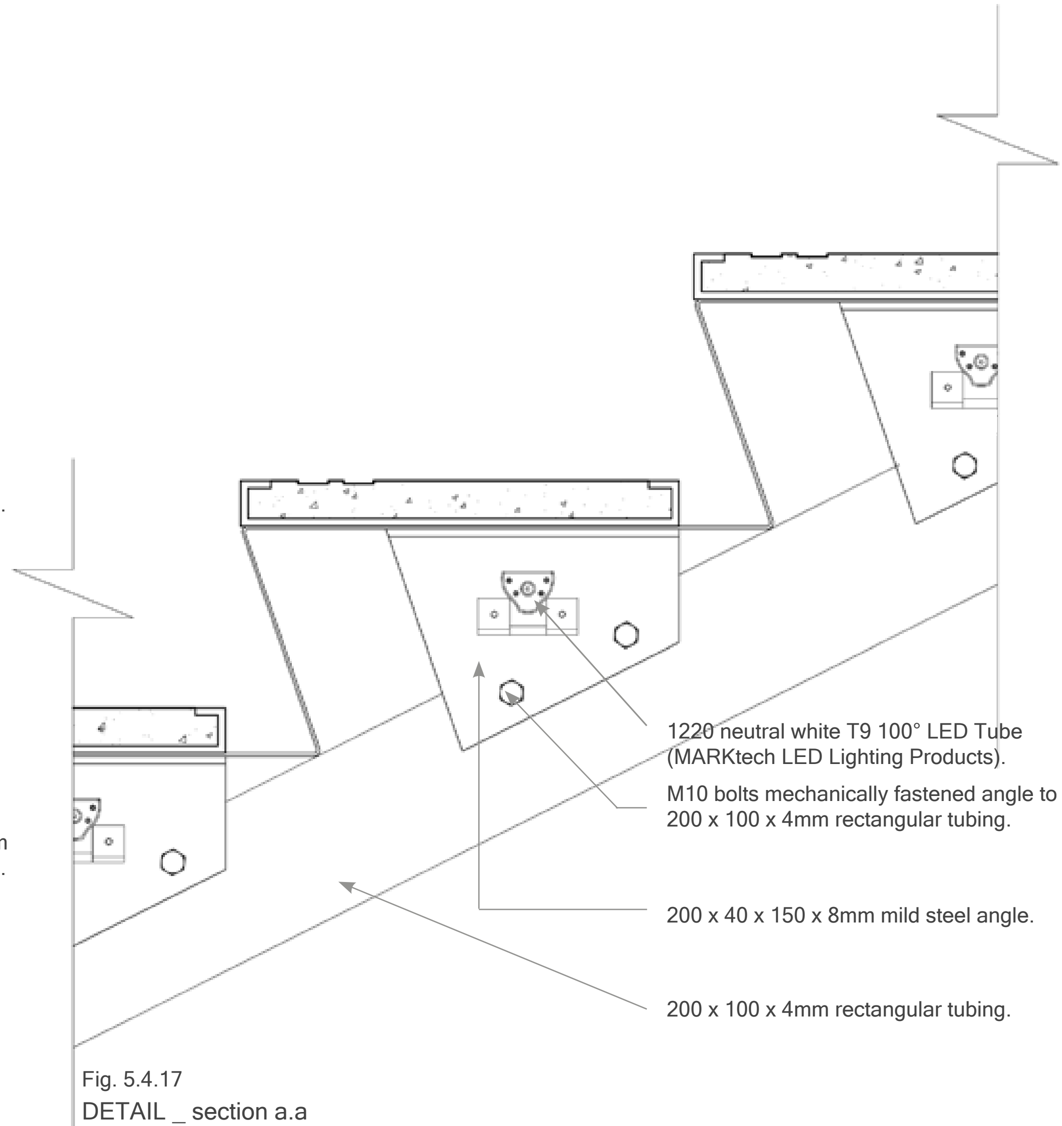


Fig. 5.4.17
DETAIL _ section a.a
Scale 1 :5

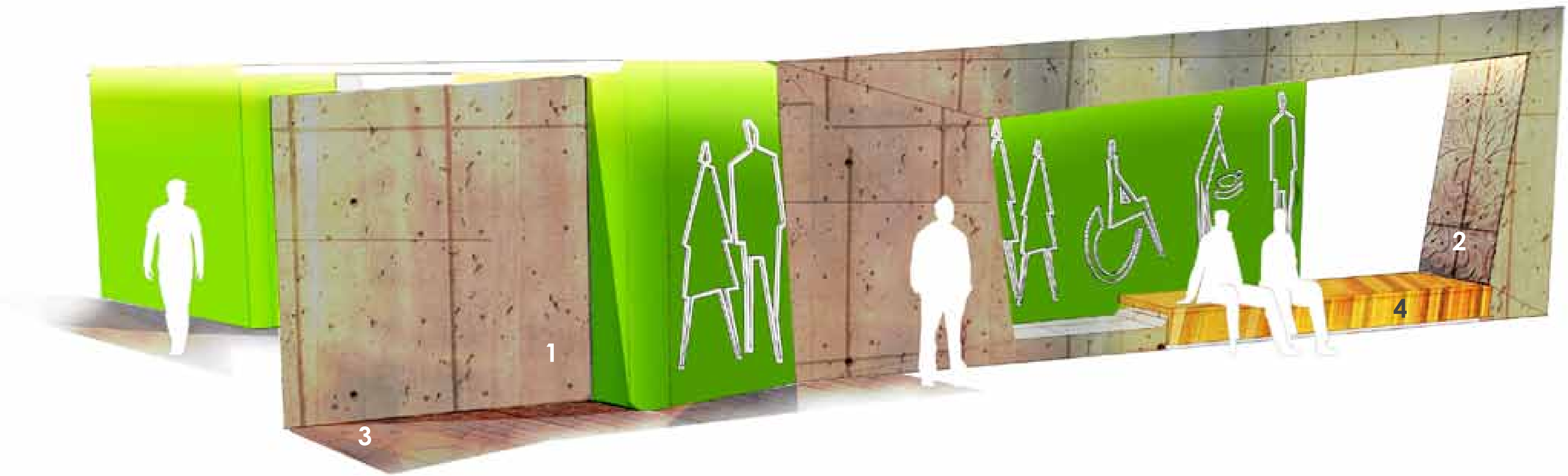
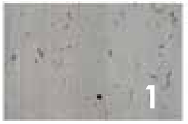
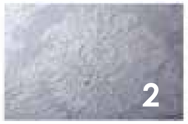


Fig. 5.4.18 Illustration of public toilets signage wall with incorporated street furniture.



Reinforced concrete



Textured concrete

Granite cobblestones and concrete strips with decorative embedded steel utensils.

Laminated wood

Signage precedent_

Fig. 5.4.19

BILLRING SHOPPING CENTRE'S PUBLIC TOILETS, Birmingham.

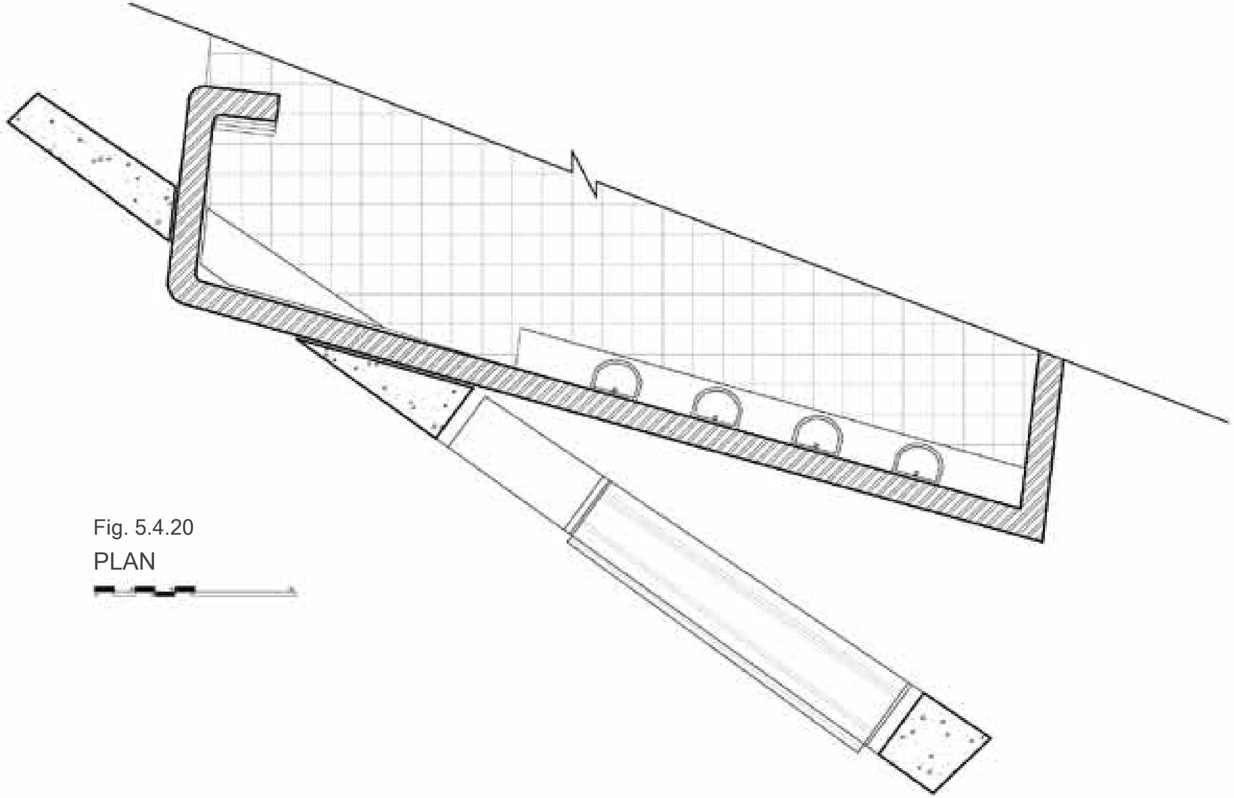


Fig. 5.4.20
PLAN

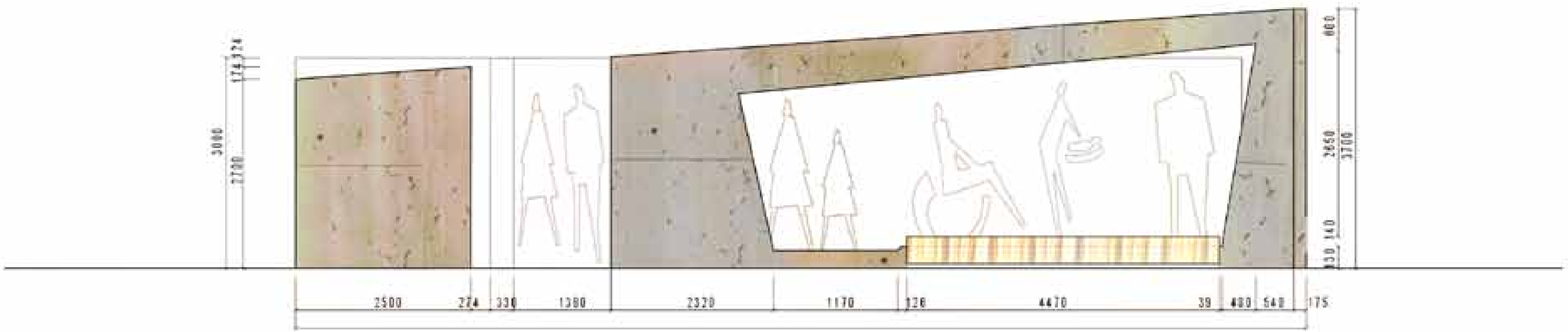


Fig. 5.4.21 ELEVATION

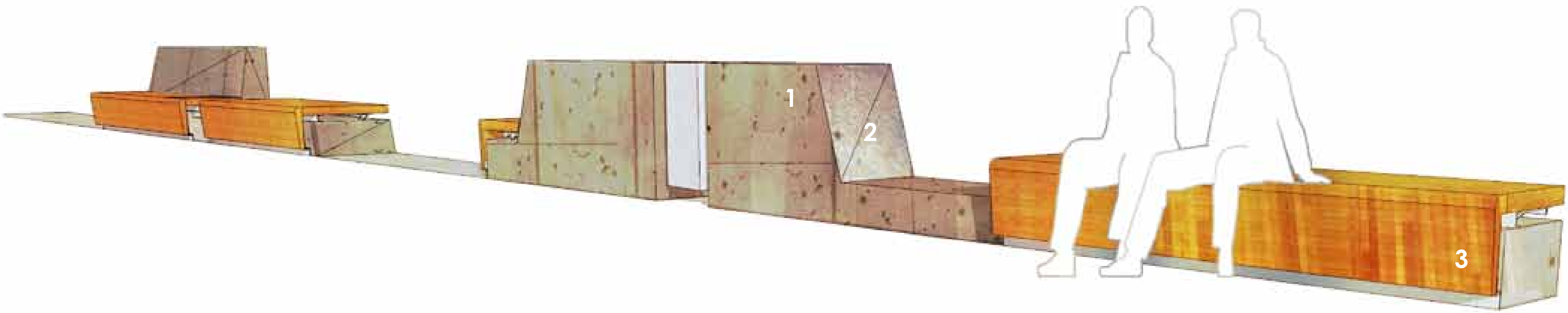


Fig. 5.4.22 Urban lounge street furniture.

Reinforced concrete

Textured concrete

Laminated wood

Fig. 5.4.23 Urban lounge street furniture components.

65 x 50 x 5mm galvanised mild steel angle fastened to laminated wood with 4.8 mm countersunk self tapping screw.

Custom made laminated wood seat.

65 x 50 x 5mm galvanised mild steel channel fastened to laminated wood with 4.8 mm countersunk self tapping screw.

In situ cast concrete block.

65 x 50 x 5mm galvanised mild steel angle fastened to laminated wood with 4.8 mm countersunk self tapping screw, welded to a similar angle mechanically fastened to concrete with M10 bolt.

J-bolt cast in concrete.

Fig. 5.4.24

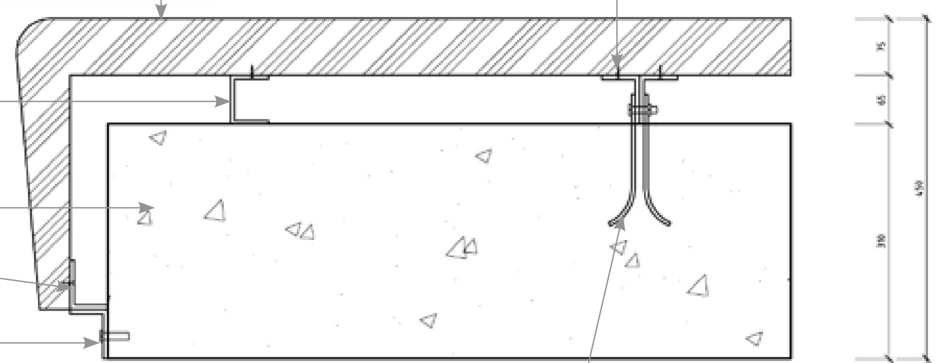


Fig. 5.4.25 SEAT DETAIL
Scale 1 :10