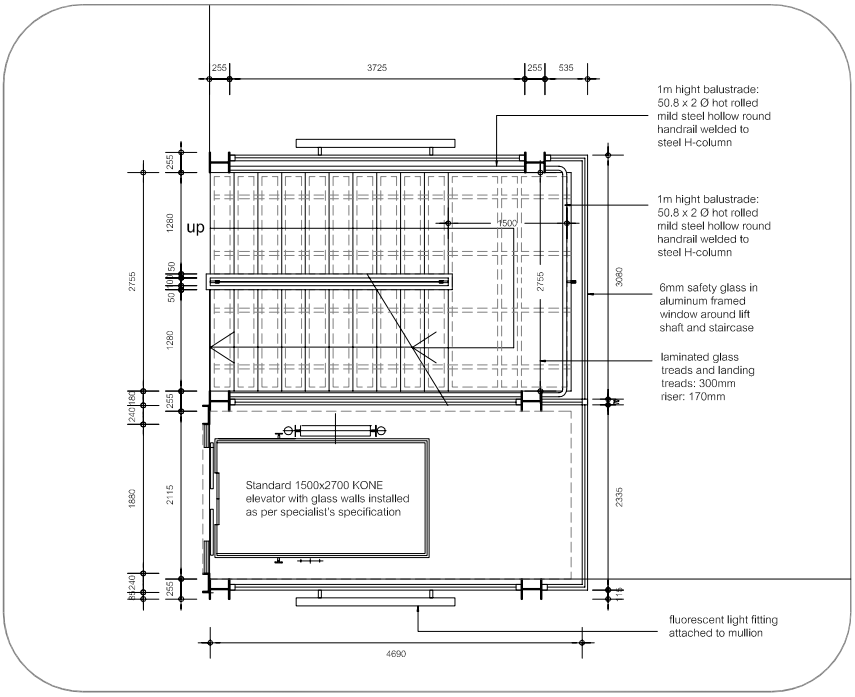
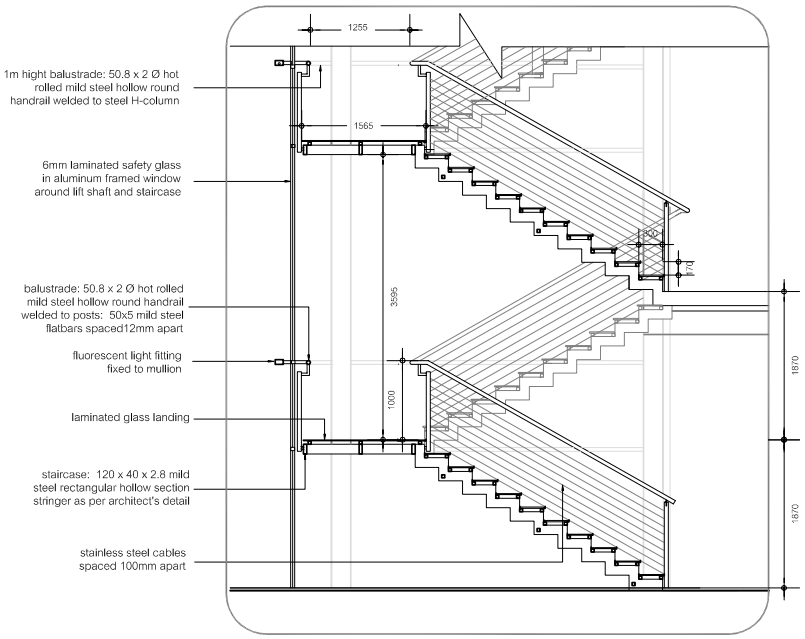
DETAIL C2: Staircase detail

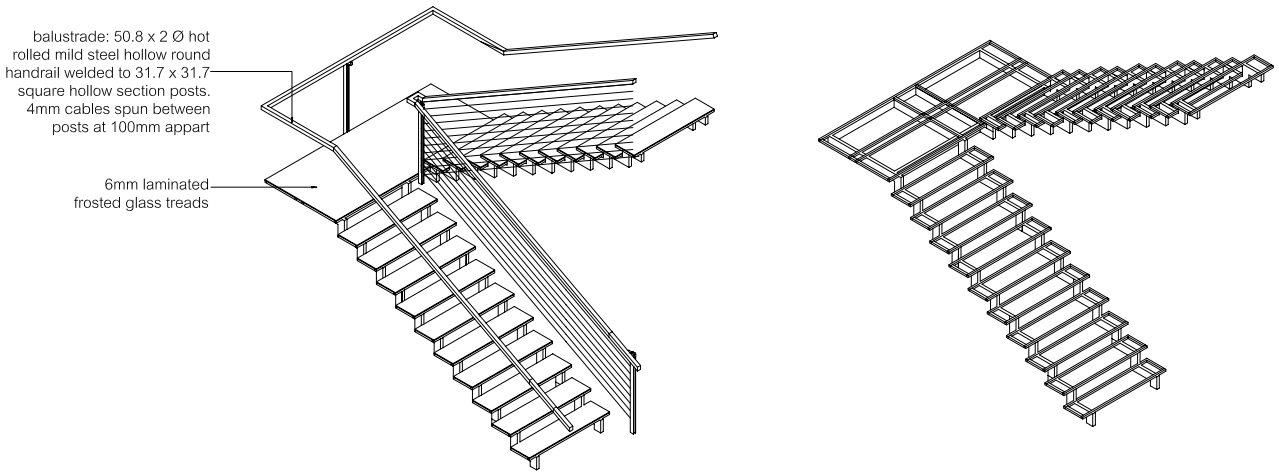
DETAIL C2.a. Plan



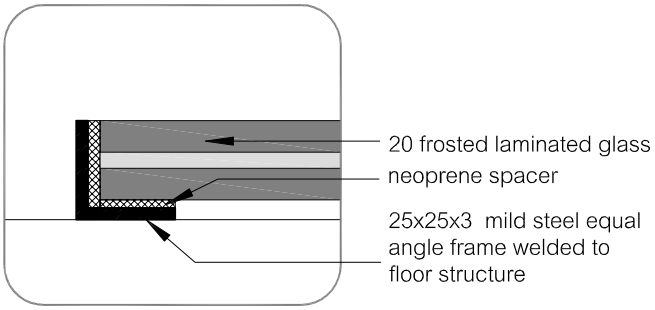
DETAIL C2.b. Section



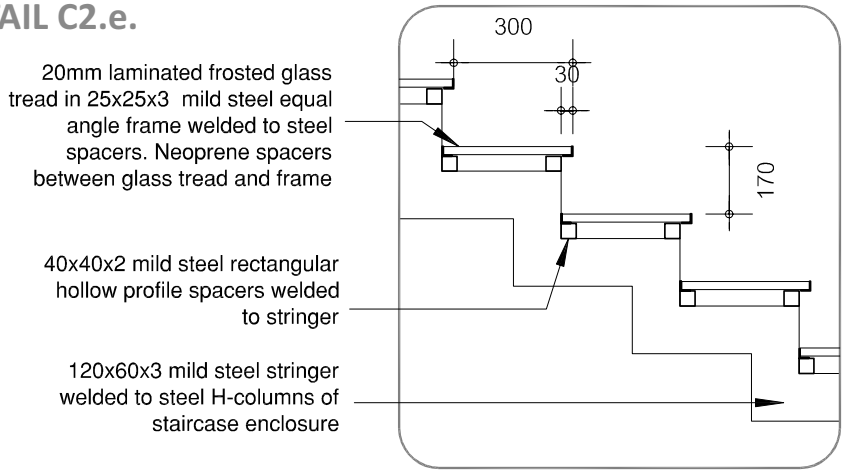
DETAIL C2.c. 3D views



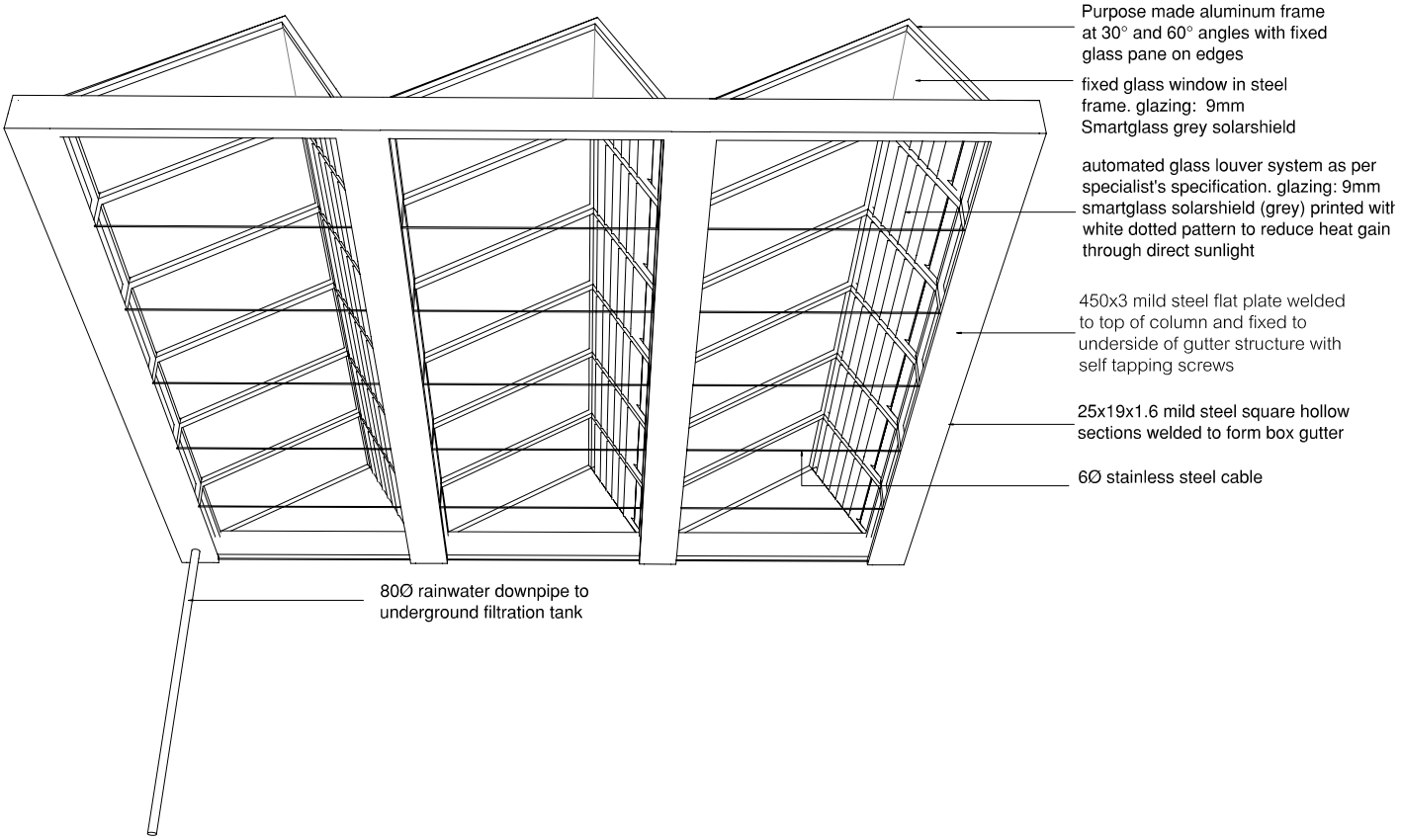
DETAIL C2.d.



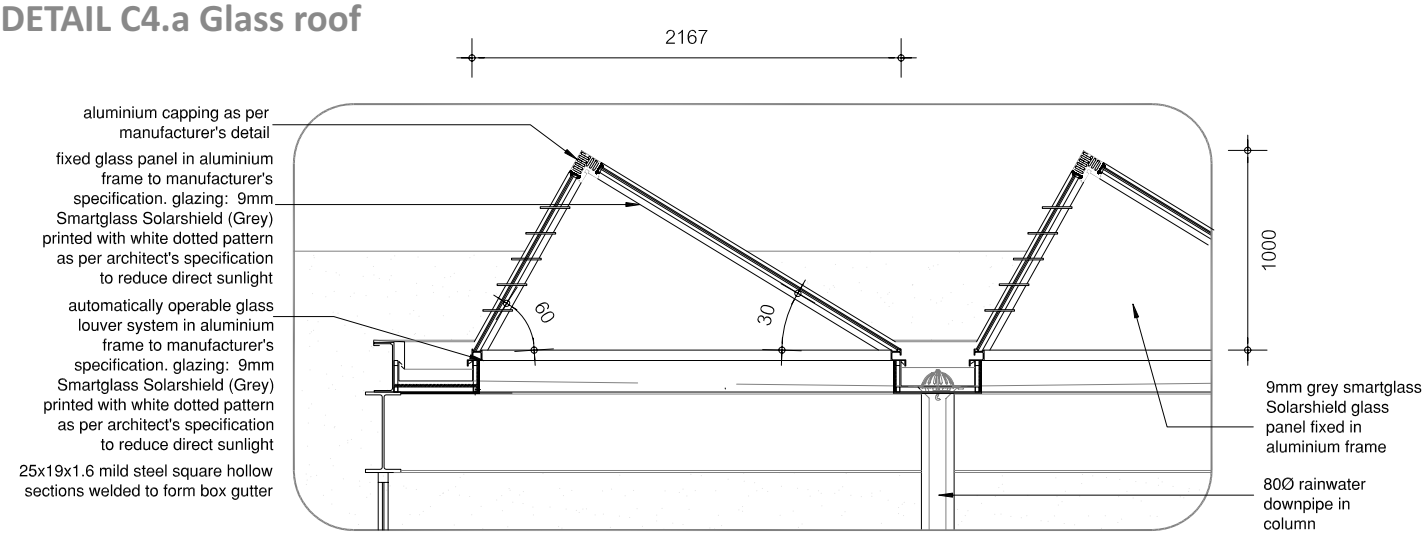
DETAIL C2.e.



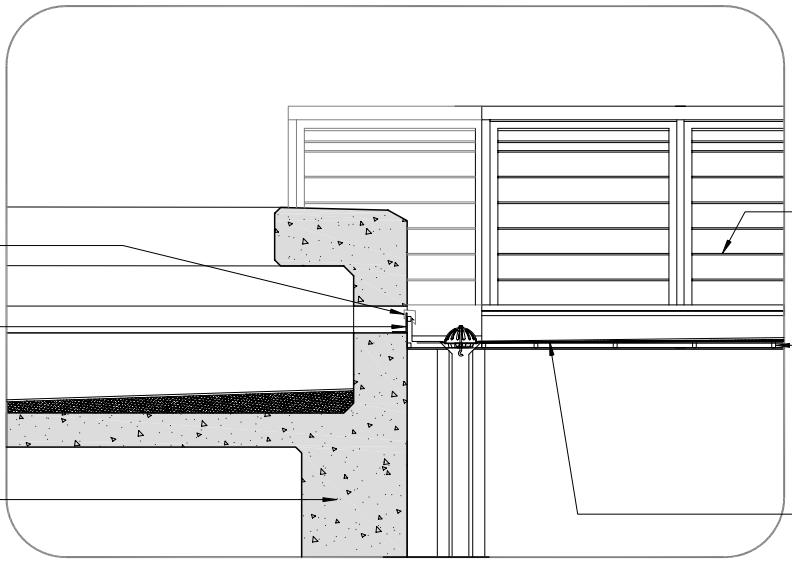
DETAIL C4: Glass roof



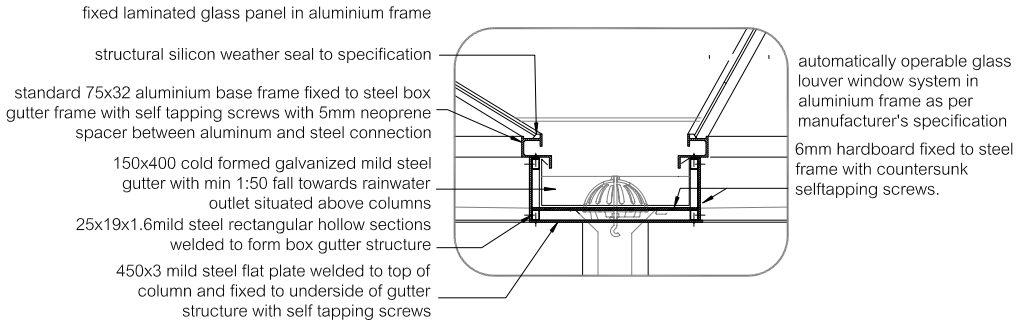
DETAIL C4.a Glass roof



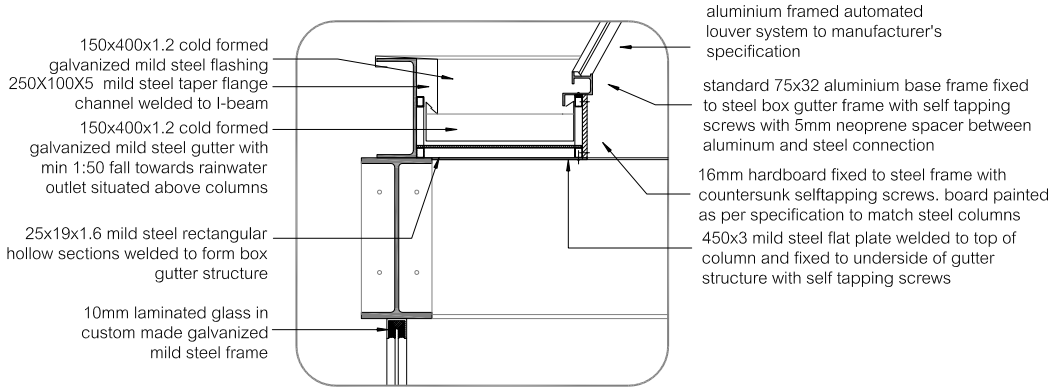
DETAIL C4.b Glass Roof Connection to existing buildling



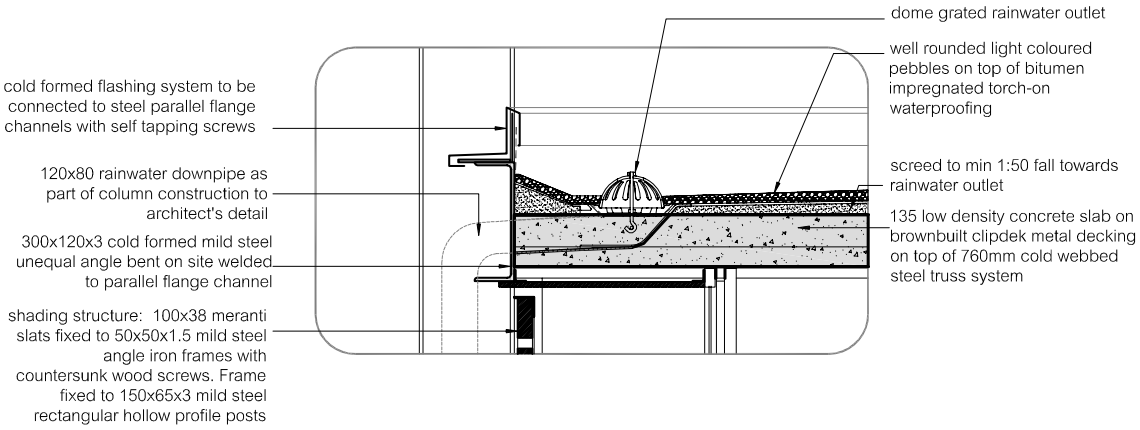
DETAIL C4.c Glass roof rainwater outlet

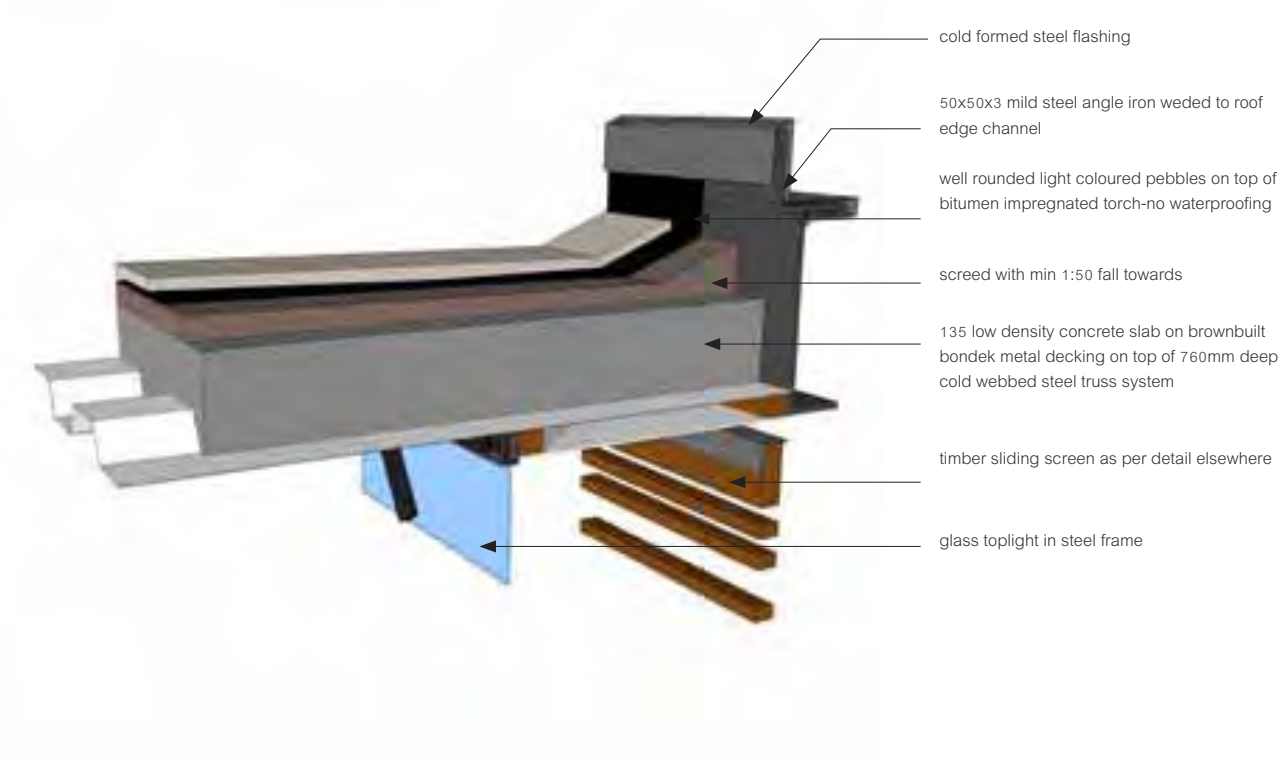


DETAIL C4.d Glass roof facade connection

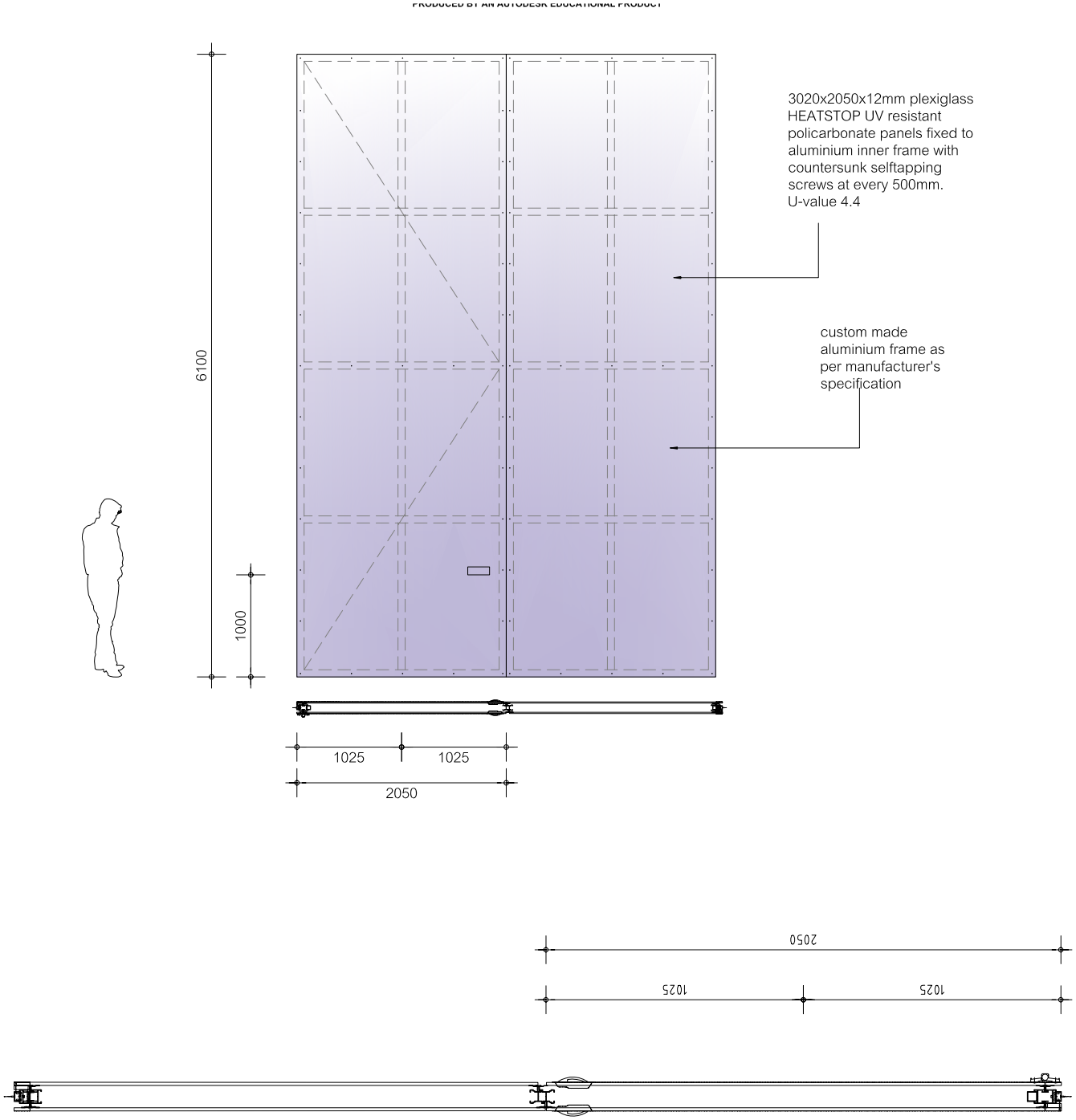


DETAIL C3: Roof edge detail



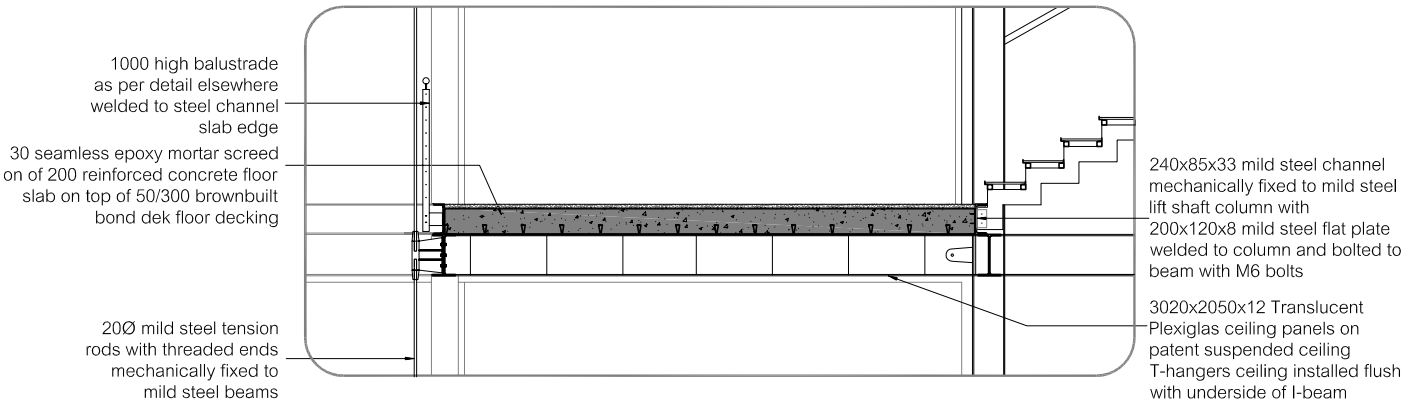


DETAIL C5: Sliding door details

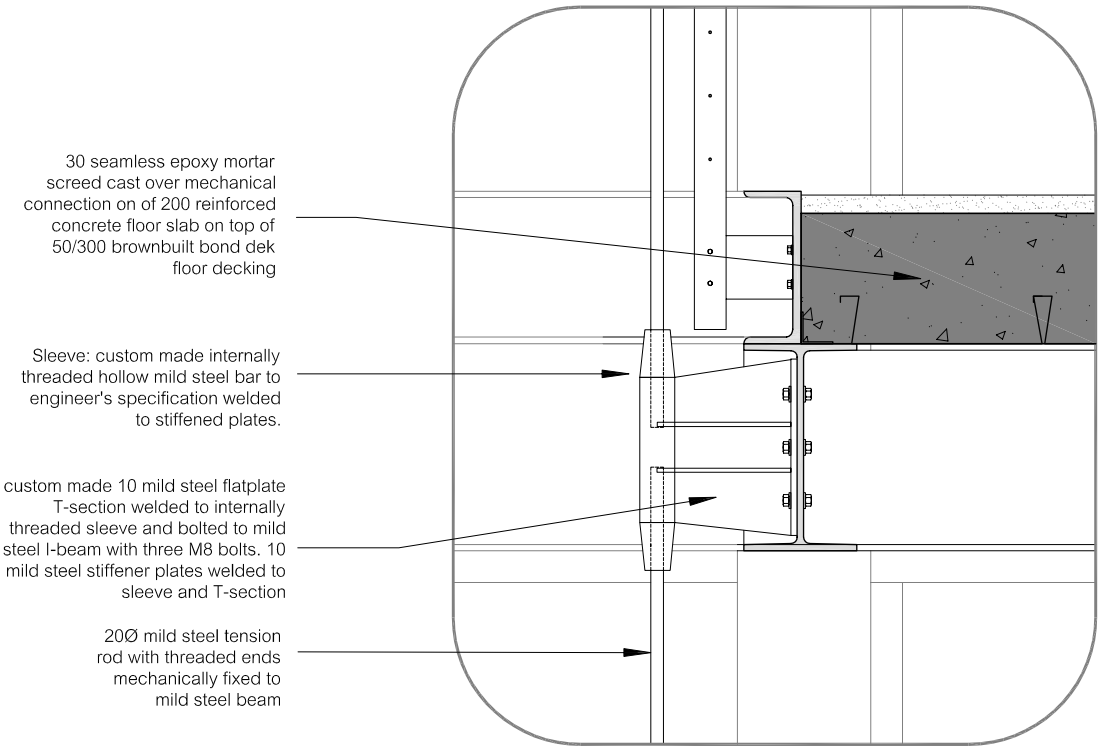


DETAIL C6: Suspended walkway

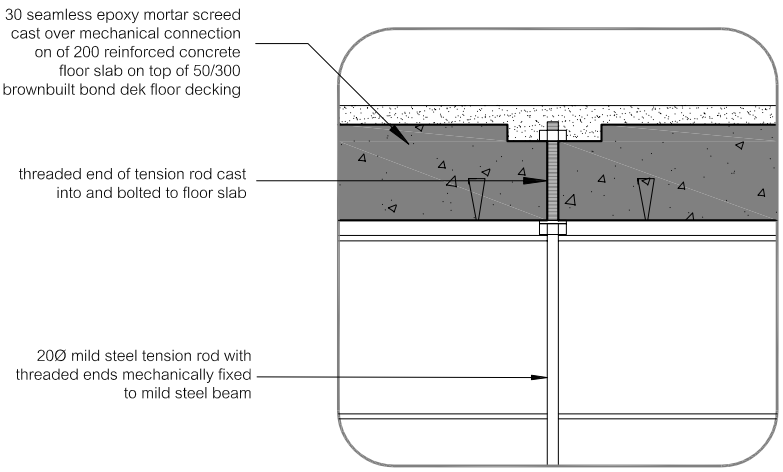
DETAIL C6a: Section



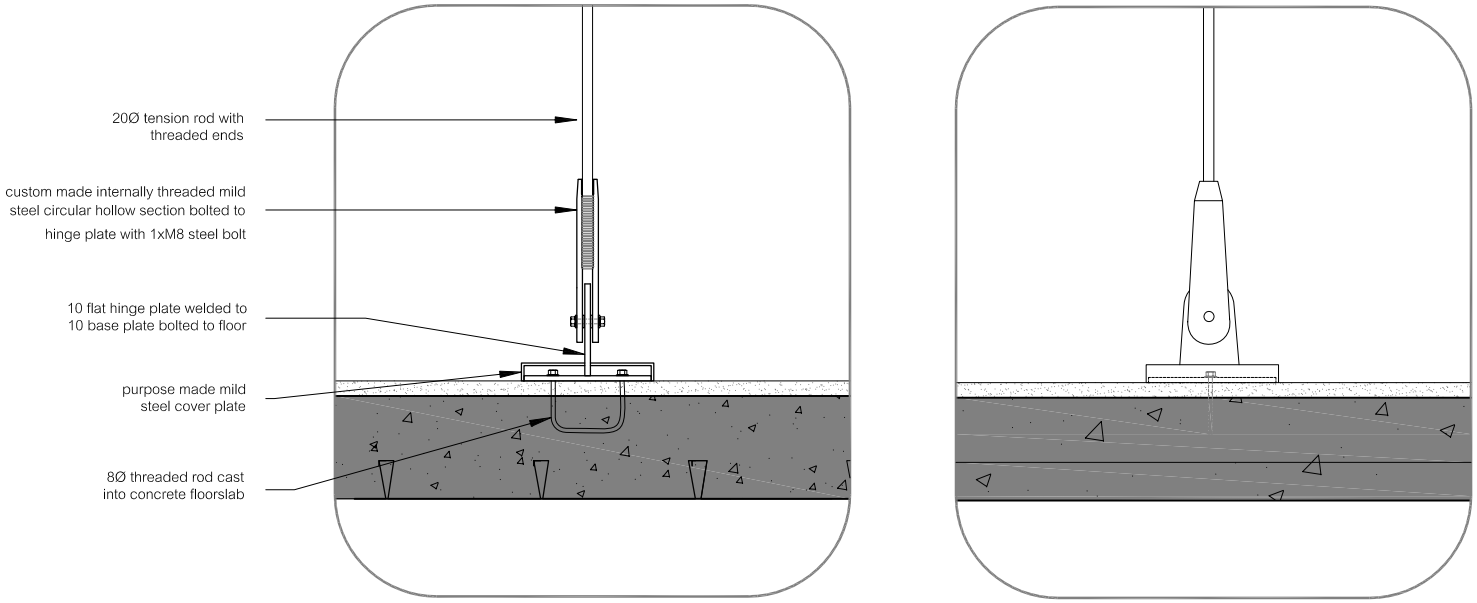
DETAIL C6b: Floor edge detail



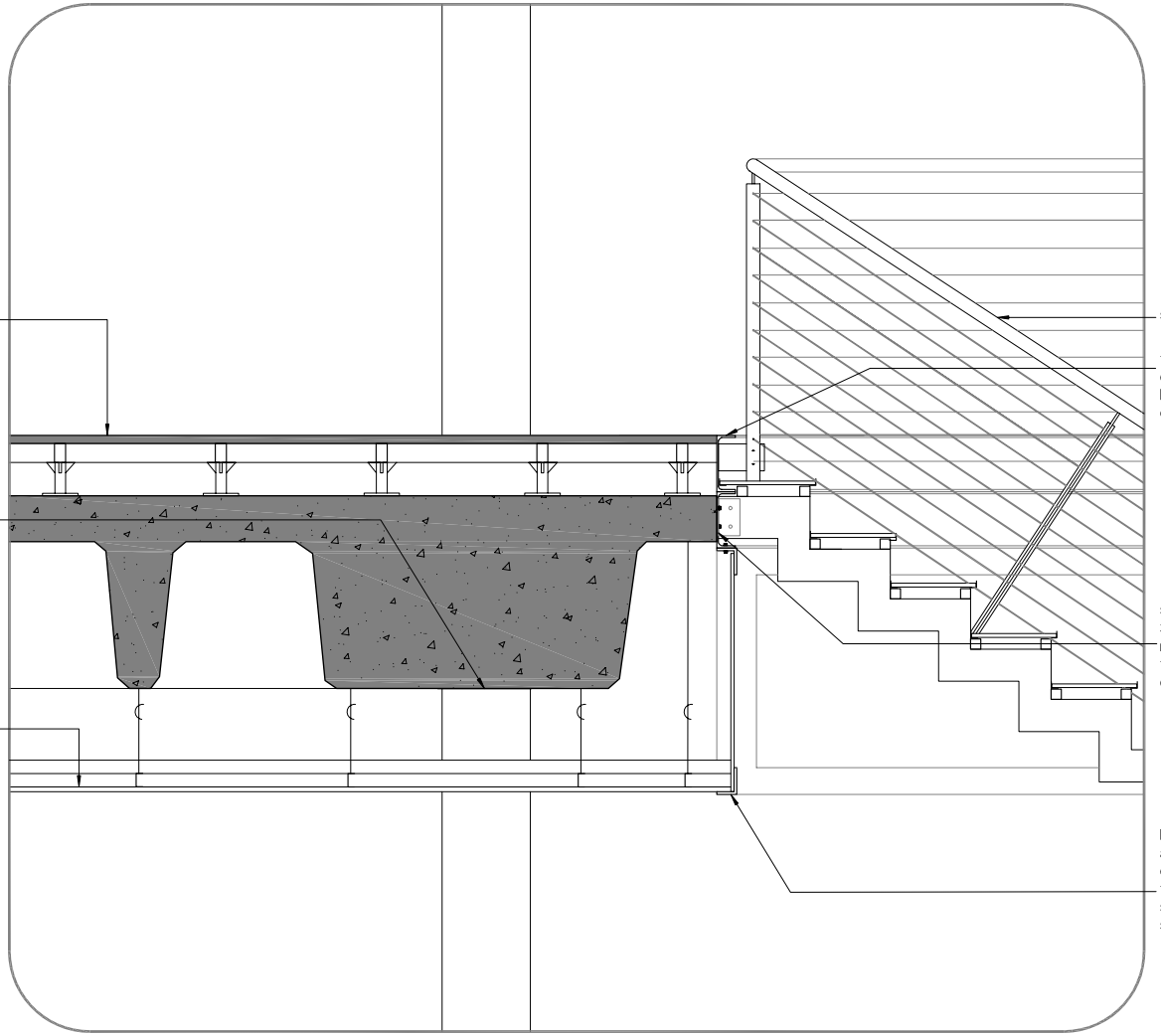
DETAIL C6c: Connection to soffit



DETAIL C6d: Connection to floor

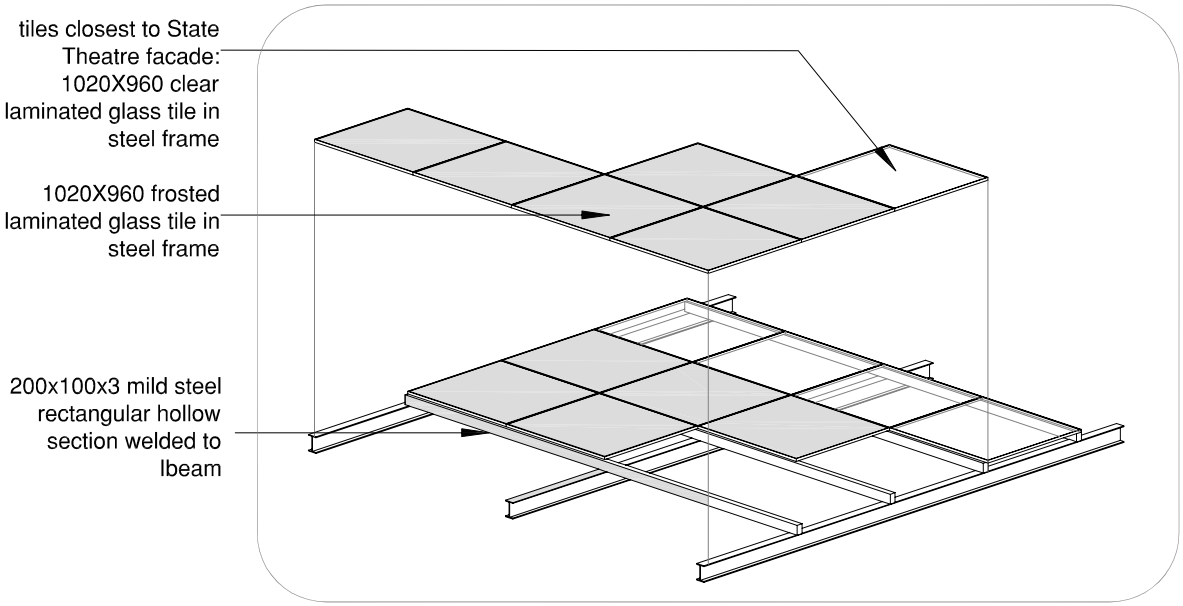


DETAIL C7: Connection to basement

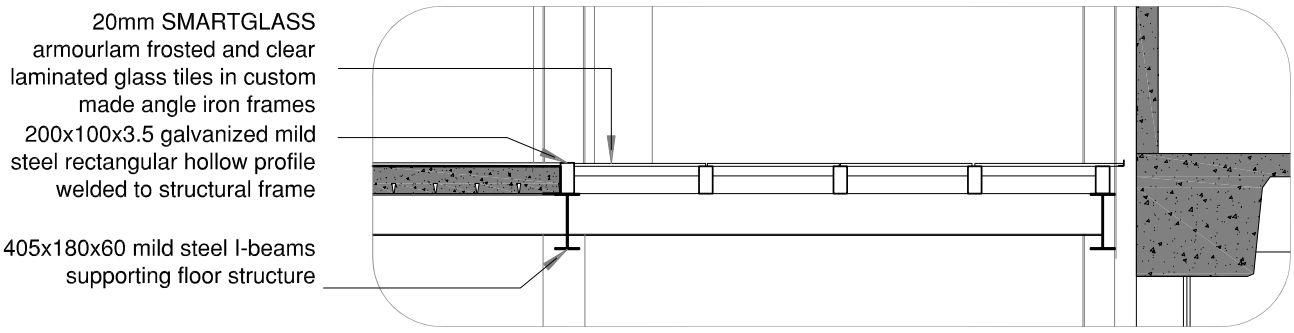


DETAIL D1: Glass Floor

DETAIL D1.a: Axonometric view



DETAIL D1.b: Section

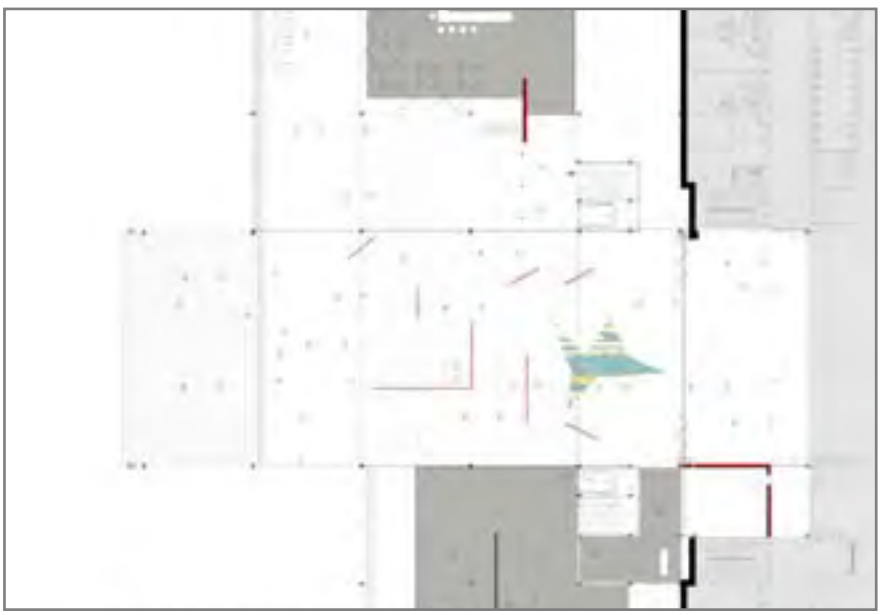


APPENDIX A: EXHIBITION/DISPLAY SYSTEMS

TEMPORARY EXHIBITION SPACE

Panels used as stage curtains during performance

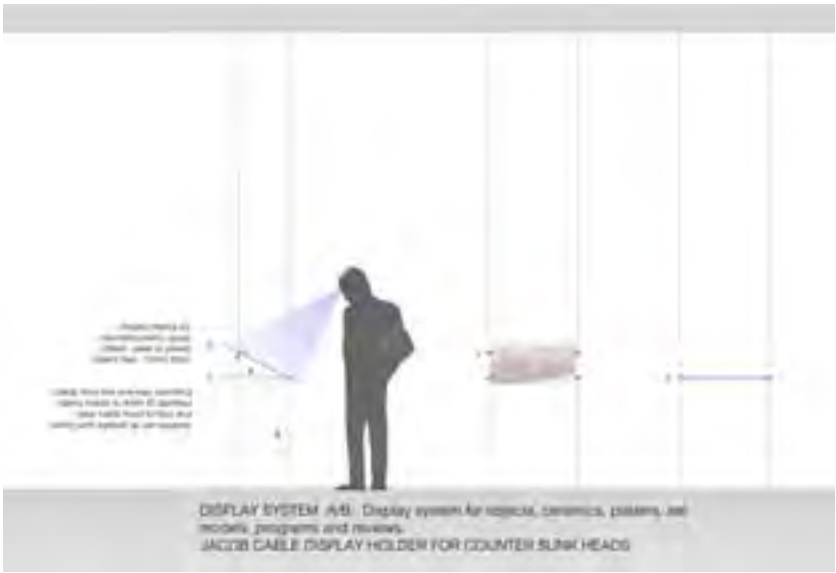
Panel arrangement during exhibition



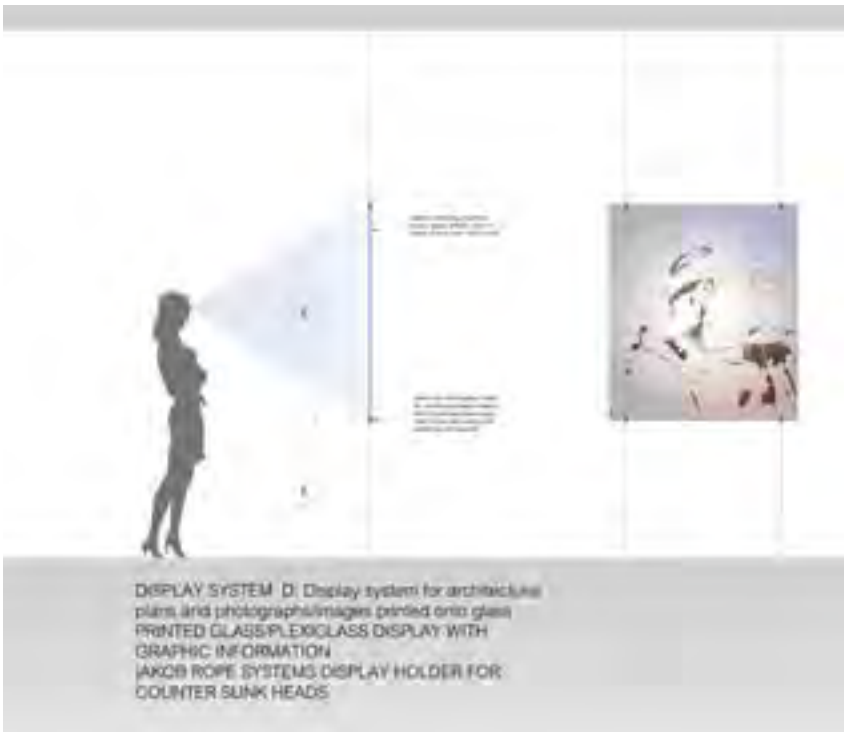
Panels in screen arrangement for movie screening

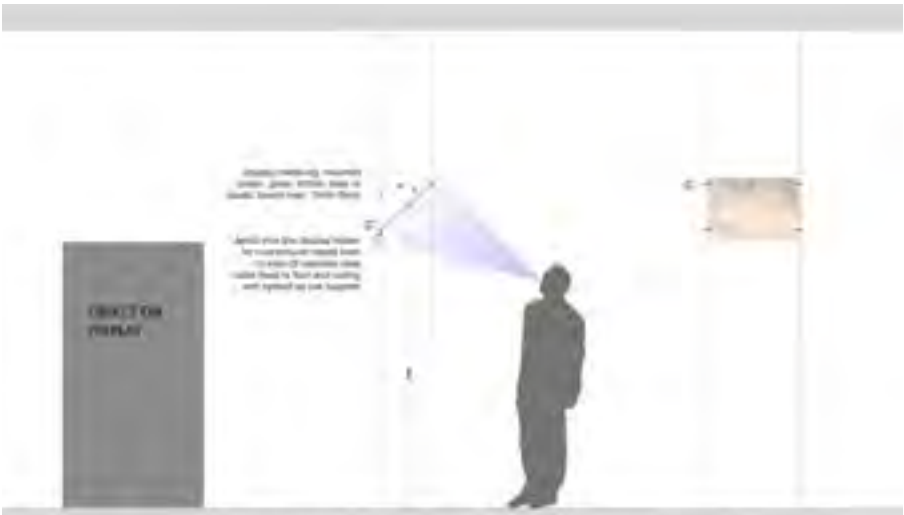
Panels in lockable position (night time)

GALLERY



DETAIL C1.b.





Interior view of gallery

APPENDIX B

OCCUPANCY

Museum – 1 person per m²
Place of Entertainment – 1 person per m² or number of fixed seats.
Place of instruction – 1 person per 5m²
Parking garage – 1 person per 50m²
Small shops - 1 person per 10m²

CALCULATIONS OF ELEMENT SIZES

Note: Calculations were done using values given in Orton(1988:41-43) table 1.10 and a Structural engineer's suggestions.
Standard steel sizes as per South African Steel construction handbook

COLUMNS:

Structural frame for temporary exhibition:
Description: the frame will consists of steel columns and beams arranged according to the existing column grid of the basement under Lillian Ngoyi/Performance square. The structure must permanently carry a light weight roof that produces wind load, and the first floor balcony, producing live loads. Columns must be of sufficient size to carry temporary floors for exhibitions and must therefore be able to carry a bigger live load.

d = H/30 for load bearing elements
d = H/50 for non-load bearing elements

d=H/30
d= 7185/30
d=239.5mm

Engineer suggests that a 152x152x40mm mild steel I-beam would be sufficient size
Closest available H-column:
203x203x46mm (Can have up to 8m unsupported height)
254x254x107mm

Solution:
240x85x33mm galvanized steel parallel flange channels on either side of 60x120x3mm galvanized mild steel rectangular hollow profile as per detail
d = 85 + 85 + 60 = 230mm

INTERIOR COLUMNS:
LARGEST UNSUPPORTED HEIGHT: 4500mm
d=H/30
d= 4300/30
d= 144mm

Average height:
d=H/30
d= 3200/30
d= 106mm

BEAM SIZES:
L/d = 20
d = 8475/20
d= 423.75mm

L/d = 20
D = 9150/20
d = 457.5mm

Size can be reduced by creating stud beams with composite floor system: decking is fixed to beams with steel studs before concrete is poured. The floor and beam now work together as a larger beam thereby reducing the size of the beam.

Further reduction of beam size: more smaller beams to be used in the same direction.

L/d = 30
d = 8475/30
d=282.5mm

L/d = 30
d = 9150/30
d= 305mm

305x165x41mm
305x203x60mm mild steel I-beam up to 9m span (according to South African Steel Construction Handbook)

LONG SPAN BEAMS OVER EXHIBITION AREA/DANCE STUDIO
Mild steel I-beam:
18300/d = 28
d= 653mm

No available size. Uneconomical and heavy
Rolled steel trusses:
18300mm span
L/d = 15
18300/d = 15
d = 1220mm

Roof above dance studio:
L/d = 25
d = 18300/25
d = 732mm

DOWNPIPES
Total roof area: 2592.8 m^2
100mm^2 downpipe per 1m^2 roof area
Total nr of downpipes required =x
x= 2592.8x100
Total area of downpipes = 259280mm^2

Suggested size 120x60mm = 7200m^2
Total nr. Of downpipes needed:
259280/7200=36 downpipes
Total nr of columns available for downpipes: 34 + two additional downpipes

GUTTER SIZE (WALKWAY)
Total size of walkway = lxb
= 63.618x 8.355
=531.5m^2

140mm^2 gutter per m^2
cross sectional area of gutter = 140xsize of area sloping to gutter
531.5 x 0.140= 74410mm^2
Suggested gutter size = 400x100

Selection of Stage lifting mechanism
Lifting height: 7.6m
Size of stage:

Lifting system	Description	Maximum Lifting height	Speed	Acoustic qualities	Positive considerations	Negative considerations
Gala Spiralift system	Stainless steel spiral coil system that forms a stable column	3-12m	Approx. 6m/min-9.1m/min.	quiet	Commercially available and used in theatres	Unattractive appearance
Link-lift system	Chain of steel links that can be assembled to form a stable column	Up to 20m	200mm/s	quiet	Commercially available and used in theatres	Unattractive appearance
Mechanical Scissor lift/Parallelogram lift	Hydraulic lifting mechanism with large steel components	1m for parralellogram, up to 20m for scissor lift	Slow (up to 5mins per 700mm)	Unknown	No commercially available sizes of elements	Possible unattractive appearance + large structural elements. Regular maintenance.
Cable lifting system	Cable lifting system based on counter weight system	Unlimited (Height of lifting = movement of cable + weights	Fast	Quiet	Fast and effective. Requires least amount of energy	Needs large structure. Unattractive appearance in public space.
Hydraulic lift (custom designed)	Column system as per detail		Fast	Quiet	Attractive appearance can be designed by architect	Not commercially available. Requires energy. Requires pump room and pit.

APPENDIX C: ABSA BUILDING SKETCHPLANS

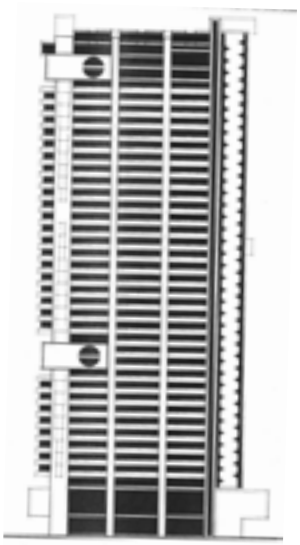


Fig.1.NORTH ELEVATION

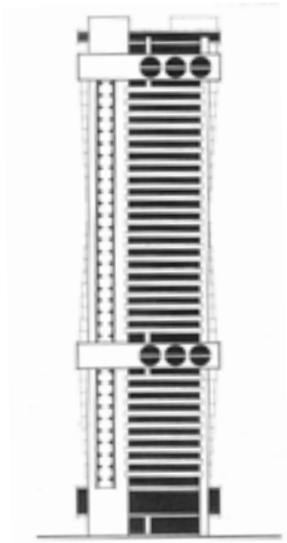


Fig.2.EAST ELEVATION

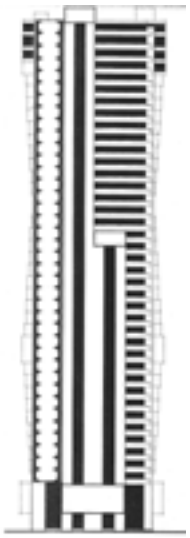


Fig.3.WEST ELEVATION

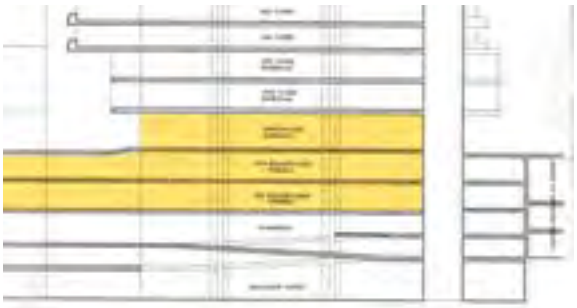


Fig.4.SECTION N/S LOOKING EAST

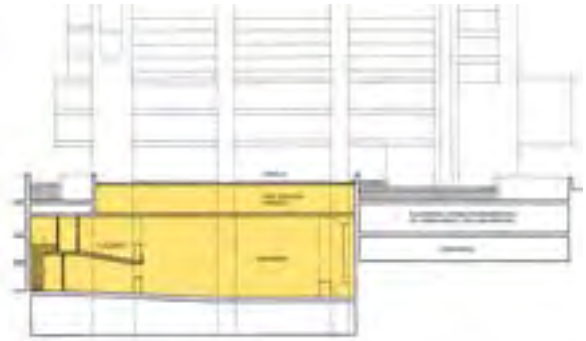


Fig.5.SECTION THROUGH CINEMA

Fig.6.N/S SECTION LOOKING WEST

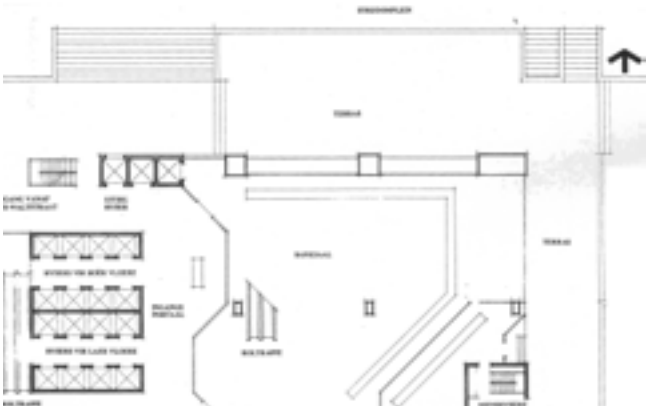


Fig.9.PLAN GROUND FLOOR

Fig.8.PLAN UPPER BASEMENT LEVEL

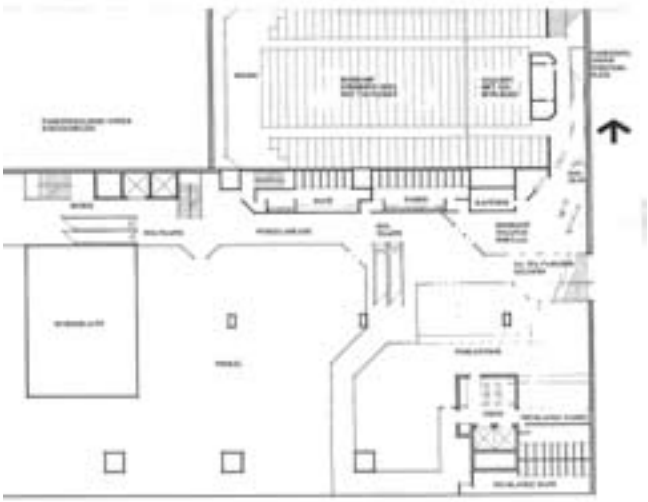


Fig.7.PLAN LOWER BASEMENT LEVEL

APPENDIX D

Fig.10. SECTION THROUGH VAN DER WALT STREET

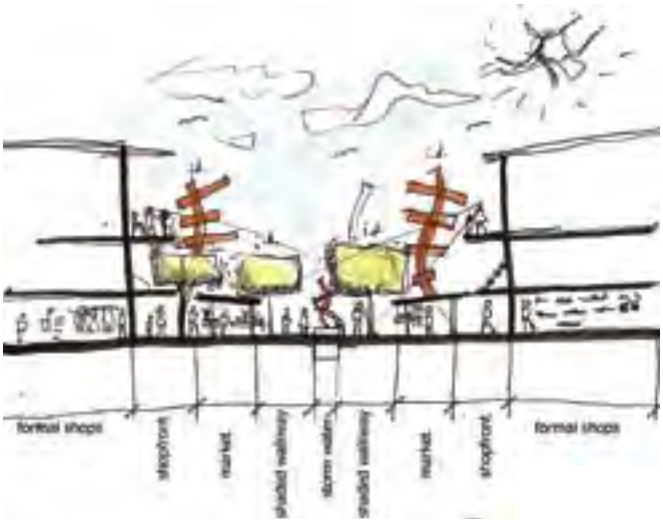


Fig.11. SECTION THROUGH CHURCH STREET

GROUP URBAN DEVELOPMENT FRAMEWORK

"On the one hand, people look for order, security and a sense of completeness in their immediate spatial experiences; on the other hand, they look for mystery, challenge, and stimulation." Goldsteen, J.B. & Ellliott, C.D. 2004: 136.

Pretoria, despite being one of the capital cities of South Africa, is not an internationally known destination city. It lacks the facilities and attractions of Johannesburg and Cape Town, and therefore does not enjoy the international attention received by these two cities. This framework aims to celebrate Pretoria's unique identity and to strengthen this identity, thereby creating a world-class city. It specifically focuses on issues of orientation within the city, and creating a unique character by highlighting certain important paths and precincts.

Aims of the framework

1. To make Pretoria a destination:
2. To enhance its unique identity
3. To orientate the user
4. To enhance movement on a pedestrian scale
5. To define CBD precinct & unique character
6. To define main routes and create new pause spaces
7. To enhance visual clarity

The framework proposes the celebration of the two major axes in the city: Church Street, and Paul Kruger Street by giving each a specific identity. A series of public spaces exists along these streets, and a number of new nodes and "pause areas" are proposed. These nodes and "pause spaces" allow visitors and city users to orientate themselves when moving through the city, and to pause to notice their surroundings.

Paul Kruger Street is defined as the "historical" spine. This street contains a number of buildings of historical importance. Intersections along this street are to be raised and paved with brightly coloured mosaic representing images of the city's unique character. Sculptures and public art works are to be placed on the corners of these intersections. Buildings along this street are to have screens/panels/shading devices in an orange colour to give the street a unique identity. A new Northern gateway is proposed in the area of the Pretoria Zoo.

Church Street is defined as the cultural market spine. A large section of this street is already a pedestrian boulevard. Spaces and buildings along this street should reflect this identity. Public functions, restaurants, pubs and evening entertainment are to be placed and extended in this street. The street character must be extended to a new eastern and western gateway node.

Fig.12.FIGURE GROUND OF PRETORIA CBD

Van der Walt Street is defined as the market street stretching from the Bloed Street Mall to Burgers Park in the south. More commercial activities are to be introduced in this street and pedestrian access is to be optimized.

Vermeulen, Pretorius and Schoeman Streets are identified as important movement streets in the inner city. These streets are to be paved and planted with indigenous trees.

New buildings along these streets should:

- React to existing arcades
- Relate to the specific character of the street
- Have interactive facades at street level.

Furthermore, movement spines must be intersected with pause areas, main orientation must be towards the street, thereby unveiling elements of surprise (arcades and smaller squares placed outside main movement spines. High activity is encouraged around open spaces.

Framework: 2009

Group: A. Seabrook, C.Theart, L.Cloete, A. Verster. R. van der Walt, P. du Toit, A. Allers.

APPENDIX E: PHYSICAL MODELS