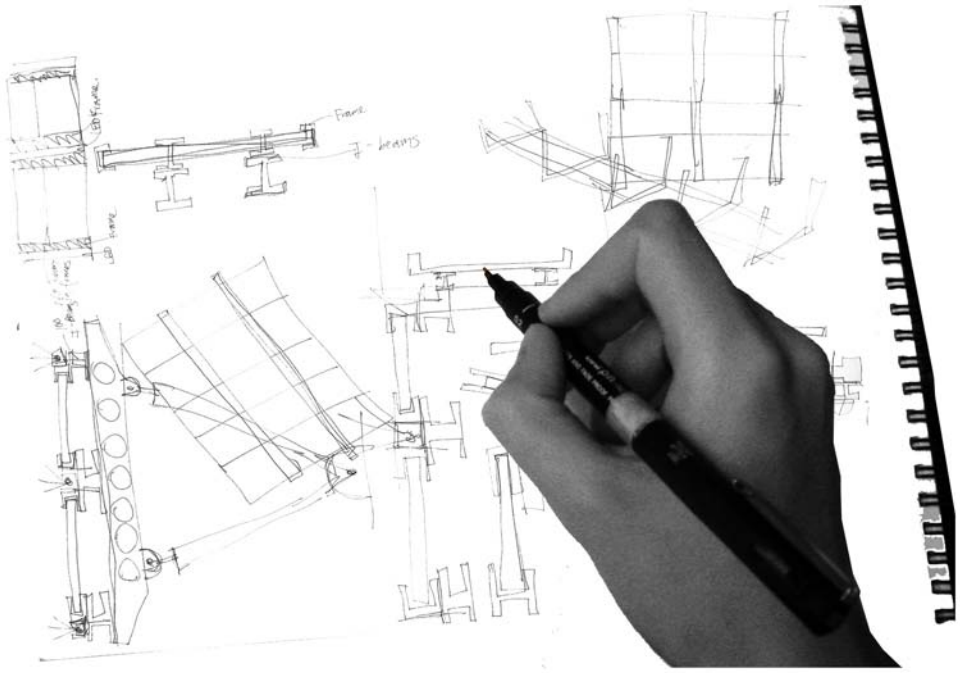


FIGURE 9.1 *Technical drawing,* Digital Collage

09

TECHNICAL RESOLUTION

Barcelona Chair
Mies van der Rohe

THE ROUTE OF THE OBJECT

Ditsong: National Museum of Cultural History

New Museum Storeroom in Standard Bank Centre

New Museum Ramp Display in Standard Bank Centre

New Museum Story Room Exhibition

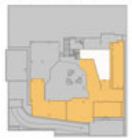
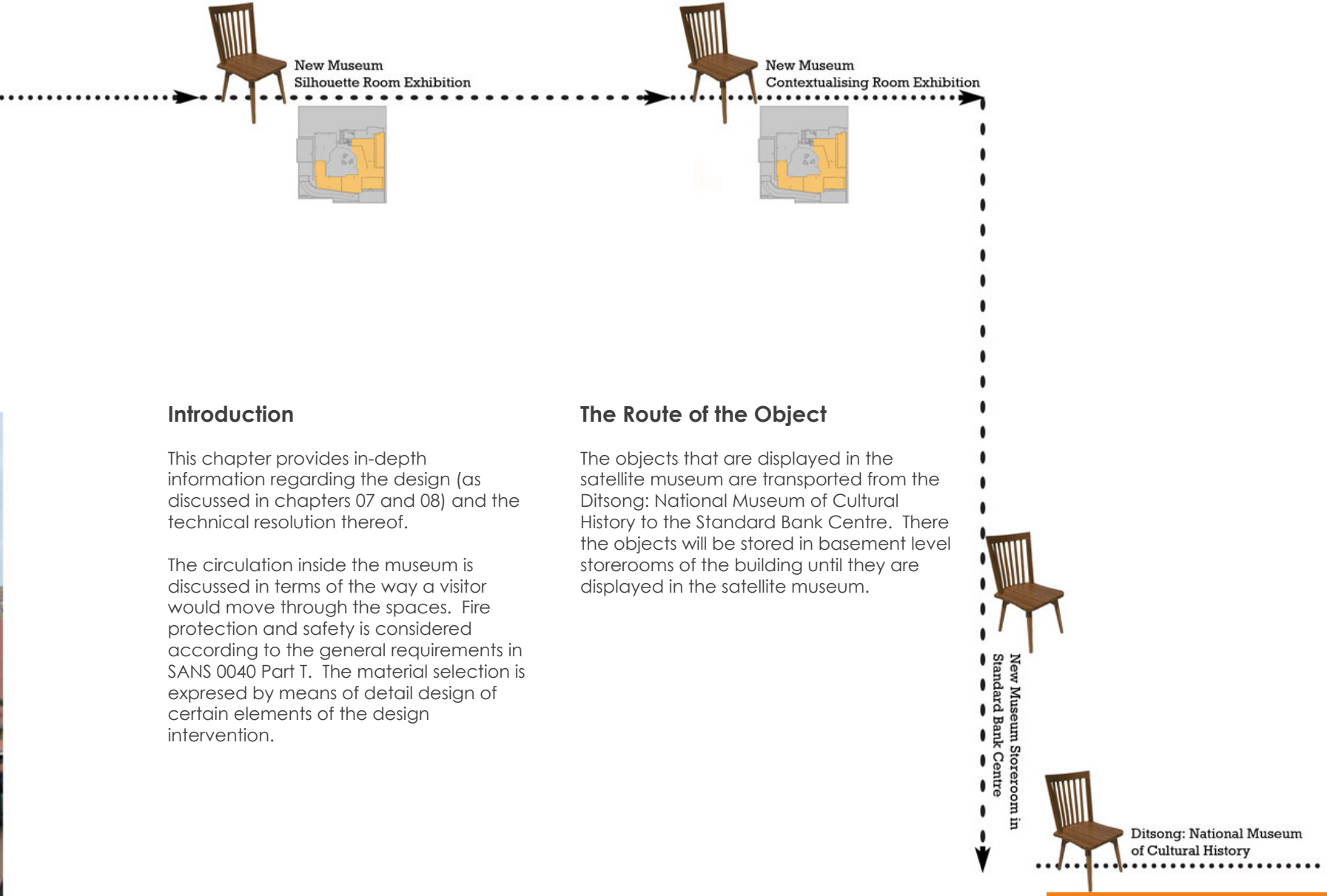


FIGURE 9.2 Diagram indicating the route a museum object would follow from the Distong: National Museum of Cultural History to an exhibition in the Satellite Museum.



Introduction

This chapter provides in-depth information regarding the design (as discussed in chapters 07 and 08) and the technical resolution thereof.

The circulation inside the museum is discussed in terms of the way a visitor would move through the spaces. Fire protection and safety is considered according to the general requirements in SANS 0040 Part T. The material selection is expresed by means of detail design of certain elements of the design intervention.

The Route of the Object

The objects that are displayed in the satellite museum are transported from the Ditsong: National Museum of Cultural History to the Standard Bank Centre. There the objects will be stored in basement level storerooms of the building until they are displayed in the satellite museum.

FIGURE 9.3

LOWER GROUND FLOOR MEZZANINE PLAN

Path and Visitor Orientation
(Circulation)

The form of the ramp influences the shape and space of the museum exhibition rooms on the lower ground floor mezzanine. An orange coloured bulkhead that also serves as lighting element guides visitors through the museum on a defined route. The bulkhead orientates the visitors inside the museum. This route is indicated with a thick orange line on the plan. There are additional spaces and activities that visitors can explore by leaving the defined route and following their own path through the displays. These routes are indicated with a thin orange line on the plan.

The path a visitor will follow through the museum is discussed by numbering certain points on the museum route.

1. A person walks down the ramp from the ground floor to the lower ground floor mezzanine. Where the ramp meets the mezzanine level, the shape of the ramp guides a person to walk through glass doors to the ticket counter. A double volume with a suspended neon light sculpture attracts a person's attention and creates interest.

2. A person buys a ticket for the museum and collects information at the ticket counter.

3. The orange bulkhead leads a visitor into the first exhibition space, the Story Room. In this room a visitor can sit on the museum chairs in niches on the one side of the room. The path encircles three sound pods where a visitor can sit and listen to recorded stories of Pretoria.

4. The visitor has the option to enter a recording room where a person can record memories and recollections of the city. These recordings will be played in the sound pods.

5. A visitor exits the Story Room at the opposite side of the room entrance.

6. A visitor is guided by an orange bulkhead to enter the Silhouette Room. Chairs are displayed on 'pedestals' and lit to be experienced in silhouette.

7. The Objects Room is a contemporary version of the 'Cabinet of Curiosities'. A vistor has to determine his/ her own path around shelves and display panels. A visitor can open the shelves to find objects related to the making and restoration of chairs inside.

8. The visitor enters the Context Room and circulation is guided by the element in the center of the room around which chairs are displayed and contextualized against. A visitor walks around the display element to the exit.

9. The exit route leads a visitor through the Objects Room to the museum exit.

10. A visitor is guided to the ramp that leads to the lower ground floor.

FIGURE 9.3 Lower ground floor mezzanine plan of a visitor's circulation in the museum.

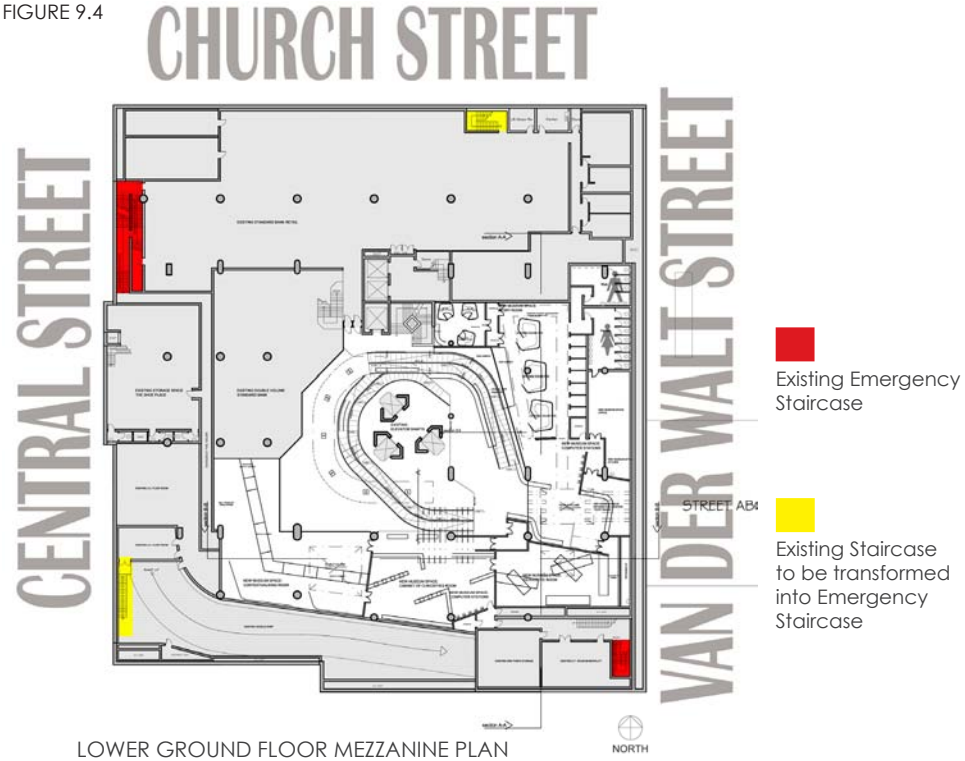
FIGURE 9.4 Lower ground floor mezzanine plan indicating escape staircases, not to scale.

Fire Protection

General Requirements according to SANS 0400 Part T

According to the SANS 0040 Part T, all buildings must be provided with one or more escape routes that can be used in the case of an emergency or fire. The maximum travel distance to the nearest escape door must be 45m. The escape routes should be positioned in such a manner that in case one of the routes become inaccessible, the other route can still be used. The width of an escape route should be no less than 800mm for a room with a population of more than 25 people. An escape route should have headspace of 2,4m. A staircase that forms part of an escape route must have an exit to a street or approved open space.

FIGURE 9.4



LOWER GROUND FLOOR MEZZANINE PLAN

Existing Situation

As is indicated on the plan, there are two existing fire escape staircases on the lower ground floor mezzanine. The ramp cannot be viewed as an escape route, as the travelling distance from the lower ground floor mezzanine to the ground floor is 46m and the threshold of the ramp is 16m from the nearest entrance of the building. The two existing fire escapes have sufficient exits on street level onto pedestrian walkways. The existing escape routes are wider than 800mm and have non-slip floor surfaces.

The museum requires more escape routes, as there are museum spaces that are more than 45m travelling distance from an escape door. Two existing staircases shall be transformed into fire escape routes and routes leading to the new escape staircases will be provided. The lighting of the emergency routes shall be a minimum of 0.3 lux.

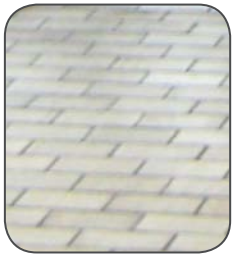
According to SABS 0040 Part TT31.3 the museum is provided with an alarm system that can be manually operated. The building is a non-smoking building, and will be clearly marked as such with the necessary signage. The building is provided with the necessary fire hydrants, portable extinguishers and hose reels.

Markings and signage

All the emergency routes in the building will be clearly marked with the necessary signage at be lit with an intensity of more than 50 lux. The emergency power supply of the building will ensure that the signs will be illuminated for a minimum of 120 minutes.

FIGURES 9.5 Materials of the design intervention.

MATERIAL AND COLOUR PALETTE




EXISTING MATERIALS

COMMERCIAL PLYWOOD

3 FORM VARIA CHROMA
COLOUR:CAMEL

SALIGNA LATTICE

LAZERCUT SHEETMETAL

NEW MATERIALS

PLEXIGLASS

SHADES OF ORANGE AND AMBER

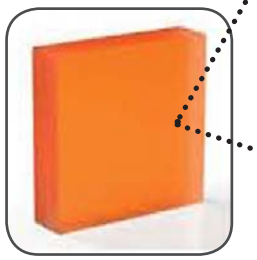
FIGURE 9.5

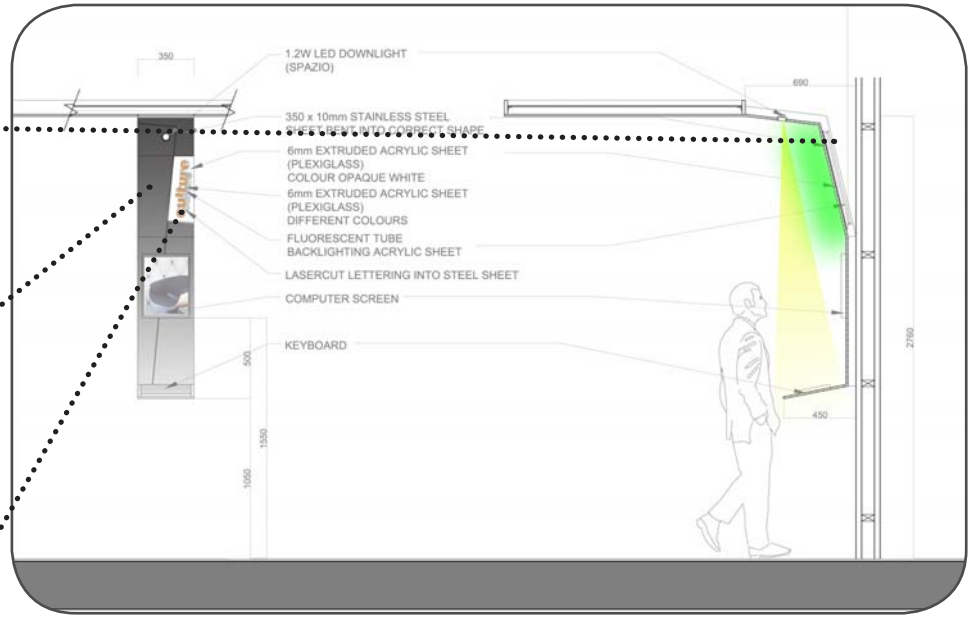
COMPUTER STATIONS

LUMILUX T5 HO ES HIGH OUTPUT ENERGY SAVER tubular
G5 base, 45 Watt

Lazercut Stainless Steel sheet
used as panel to which computer and keyboard are attached

Extruded Acrylic
used as signage and lighting element in computer station.

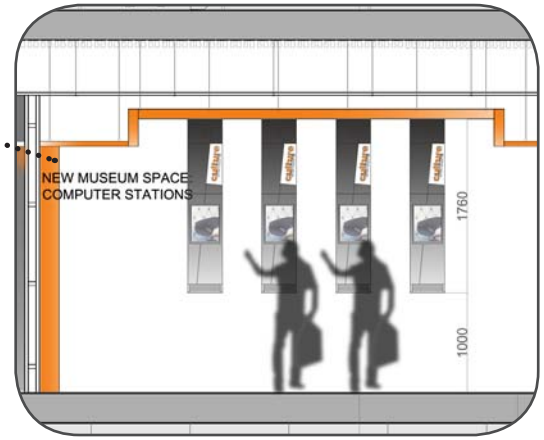




Section and Elevation of Computer Station
(not to scale)

FIGURE 9.6

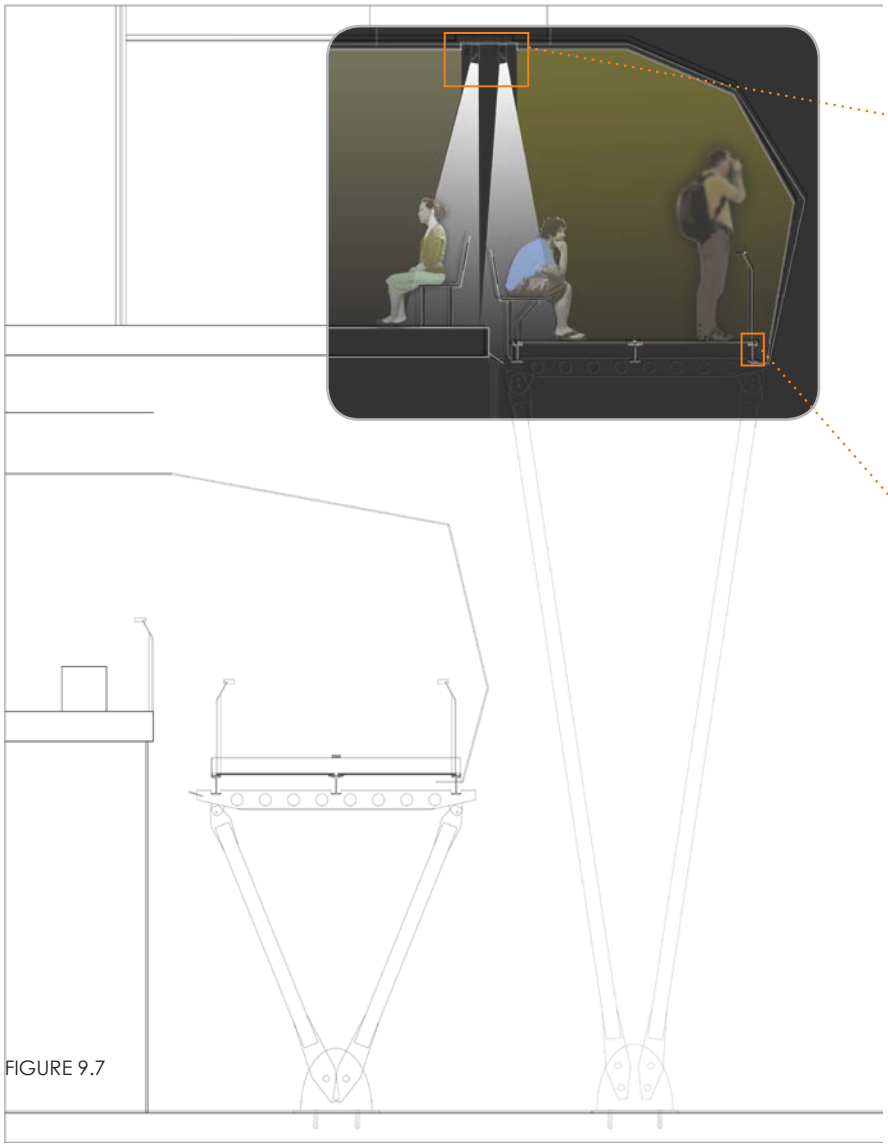
The materials and colours selected for the computer station were chosen to create a sleek computer station that defines a space for the individual using the computer while not seperating the user from the larger space. The lighting and arylic sheets contribute to the flexibility of signage while not distracting the user from the computer images.

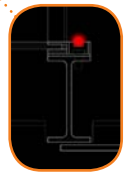


Elevation of Computer Stations
(not to scale)

RAMP

FIGURE 9.6 Drawings indicating construction of Computer stations.
FIGURE 9.7 Drawings indicating construction of ramp.





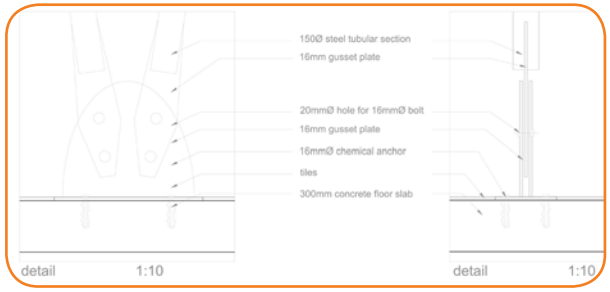


FIGURE 9.7

CONTEXT ROOM DISPLAY ELEMENT

FIGURE 9.8

FIGURE 9.9

The Context Room displays objects in similar situations as one would encounter them in a real life situation. The display element in the centre of the room generates circulation and creates exhibition possibilities. Chairs are positioned in relation to the element to suggest the context in which the chair would normally be seen. The display element is experienced as a floating element between the floor and the ceiling. The element is connected to the floor and ceiling with cables and rods.
Other temporary space-making elements such as display walls and curtains are used to make the room more flexible.

CONTEXT ROOM DISPLAY ELEMENT

FIGURE 9.8, 9.9 Scenarios of exhibitions in Context Room. FIGURE 9.10 Drawings indicating construction of display element.

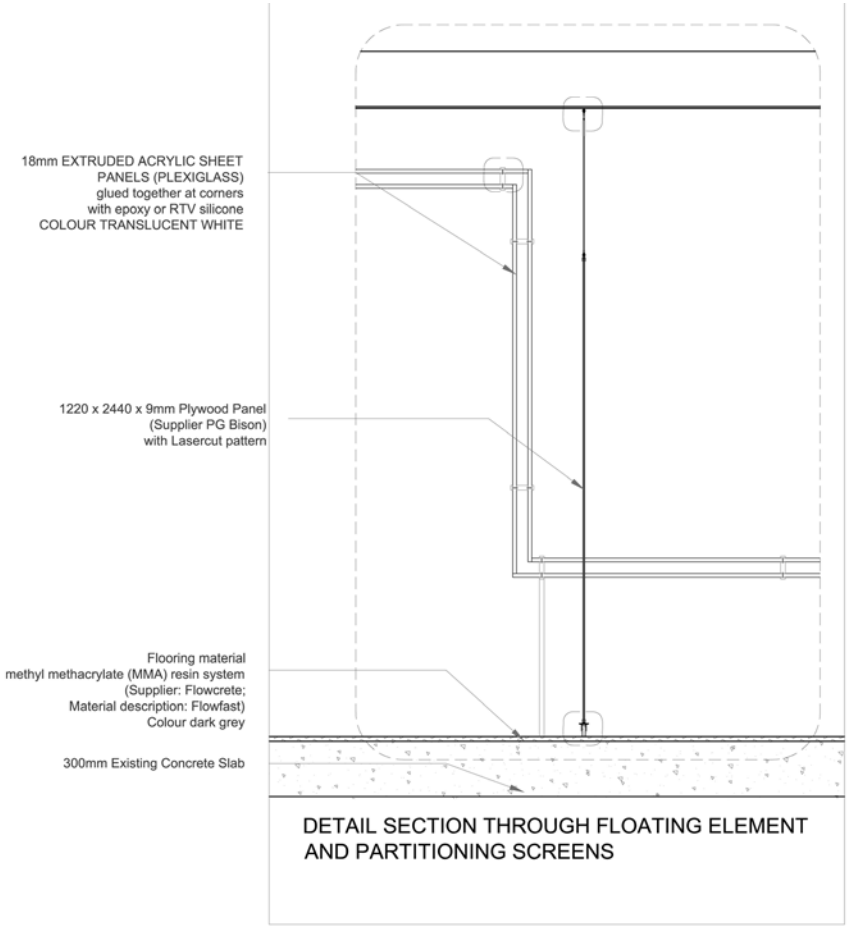
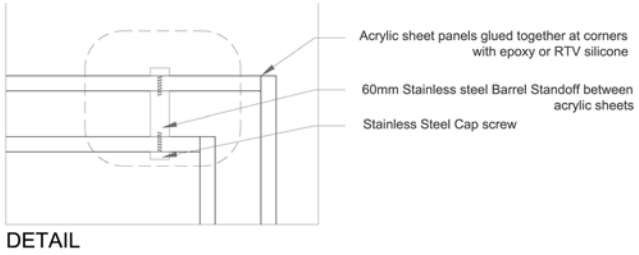
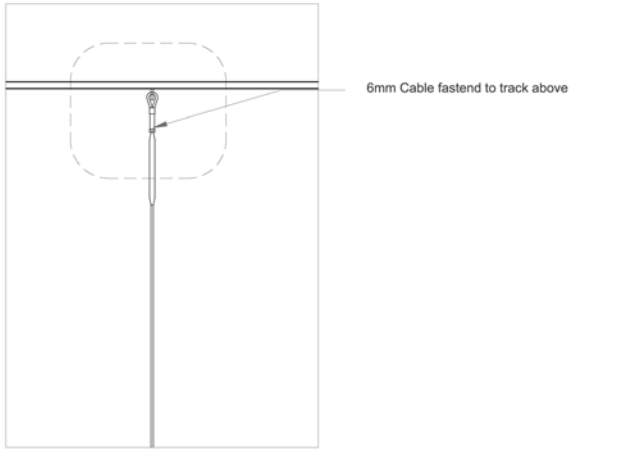


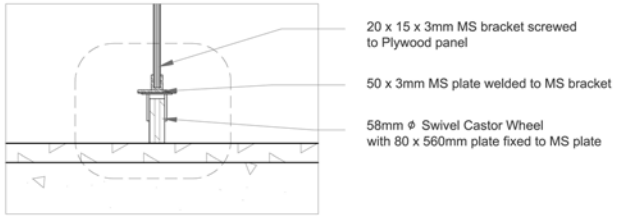
FIGURE 9.10



DETAIL



DETAIL



DETAIL

SOUND POD IN STORY ROOM

FIGURE 9.11 Sketch indicating noise distribution and absorption in and around sound pod. FIGURE 9.12 Section of soundpod, not to scale.
FIGURE 9.13 Perspective of soundpod.
FIGURE 9.14 Plan of soundpod with material selection, not to scale.
FIGURE 9.15 Section of soundpod in Story Room, not to scale.

FIGURE 9.11

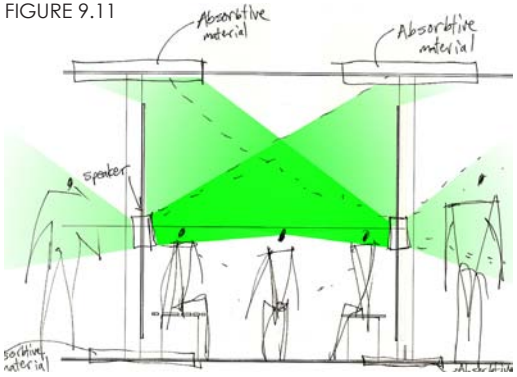
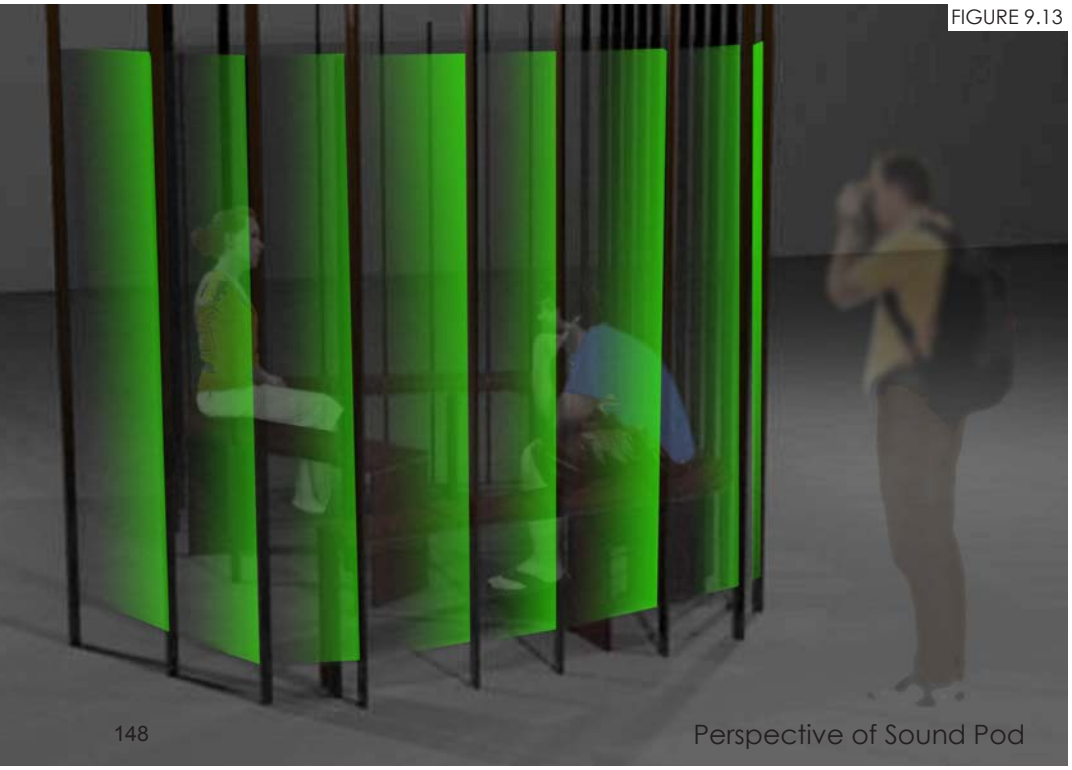


FIGURE 9.12

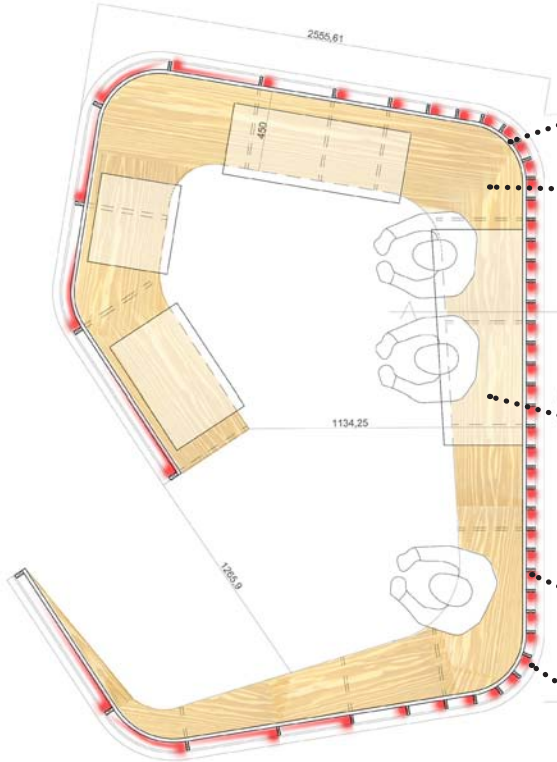
FIGURE 9.13



Perspective of Sound Pod

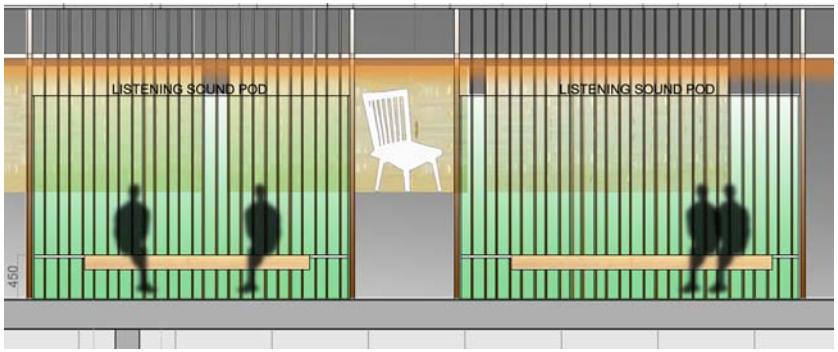
SOUND POD IN STORY ROOM

FIGURE 9.14



Plan of Sound Pod
(not to scale)

FIGURE 9.15



Section of Sound Pod in Story Room
(not to scale)

Extruded Acrylic
used as enclosing element for sound pod. (Translucent)

Commercial Plywood
used as seating in sound pod.

Extruded Acrylic
used as seating in sound pod. (Thermaformed)

Saligna Lattice
used as structural vertical elements that connects the sound pod to the floor and ceiling.

RBG LED Colour-changing lights
attached to saligna lattices

FIGURE 9.16 The existing lights in the arcade that leads to the parking area. FIGURE 9.17 Existing lights in the staircase. FIGURE 9.18 View of the skylight from the atrium floor. FIGURE 9.19 Conceptual lighting plan of museum spaces, not to scale.

LIGHTING

Existing Daylight Condition

The atrium form allows for the use of natural daylight by illuminating centers of buildings with natural light, and eliminating dark spaces (Bednar, 1986:85). Good daylighting means the right quality of light delivered to the greatest plan-depth possible (Saxon, 1983:77).

FIGURE 9.16

FIGURE 9.17

Michael Bednar (1986:85) identified three considerations around which the analysis of daylighting in atria can be organized around:

1. Daylight Source

(How is the daylight brought into the atrium?)

The aspect of allowing daylight inside a building is an important contribution to energy conservation (Saxon, 1983:77). Daylight is brought into the Standard Bank Centre through the overhead skylight. The spaces that are not illuminated by daylight are lit by means of artificial lighting.

2. Light Box

(How is the daylight distributed within the atrium?)

The atrium acts as a light duct (Saxon, 1983:80). The lighting provided by the sky-light is not enough to illuminate the space surrounding the atrium and additional articial lighting contributes to the overall illumination. The plants in the atrium space absorbs light and should be minimized (Saxon, 1983:81).

3. Illumination

(How is daylight utilized within occupied spaces?)

The daylight entering the atrium is not utilized optimally. The spaces bordering on the atrium do not make use of the day-light.

FIGURE 9.18

FIGURE 9.19 Conceptual Lighting Plan
(not to scale)

FIGURE 9.20 Lighting detail, not to scale.
FIGURE 9.21 Section of functional lighting, not to scale.
FIGURE 9.22, 23 Lighting details, not to scale. FIGURE 9.24 Section of effect lighting, not to scale.
FIGURE 9.25 Lighting detail, not to scale.

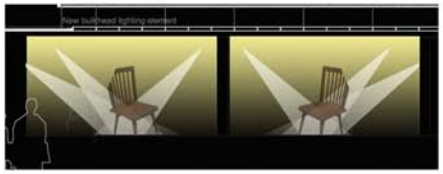


FIGURE 9.20

DETAIL

NICHE DISPLAY LIGHTS
(NOT TO SCALE)

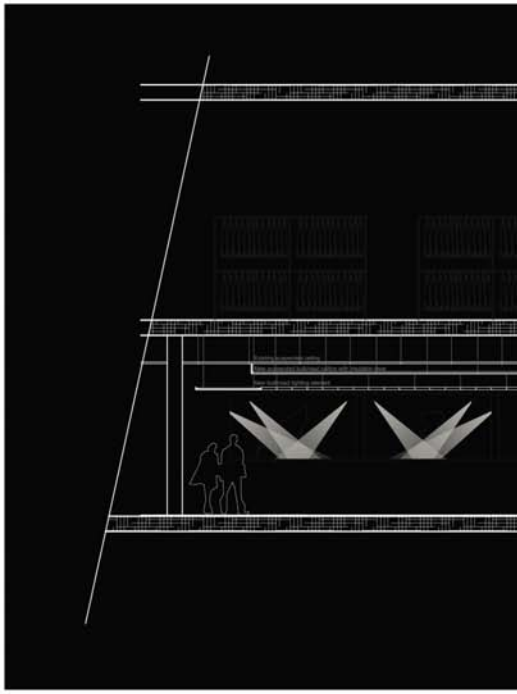


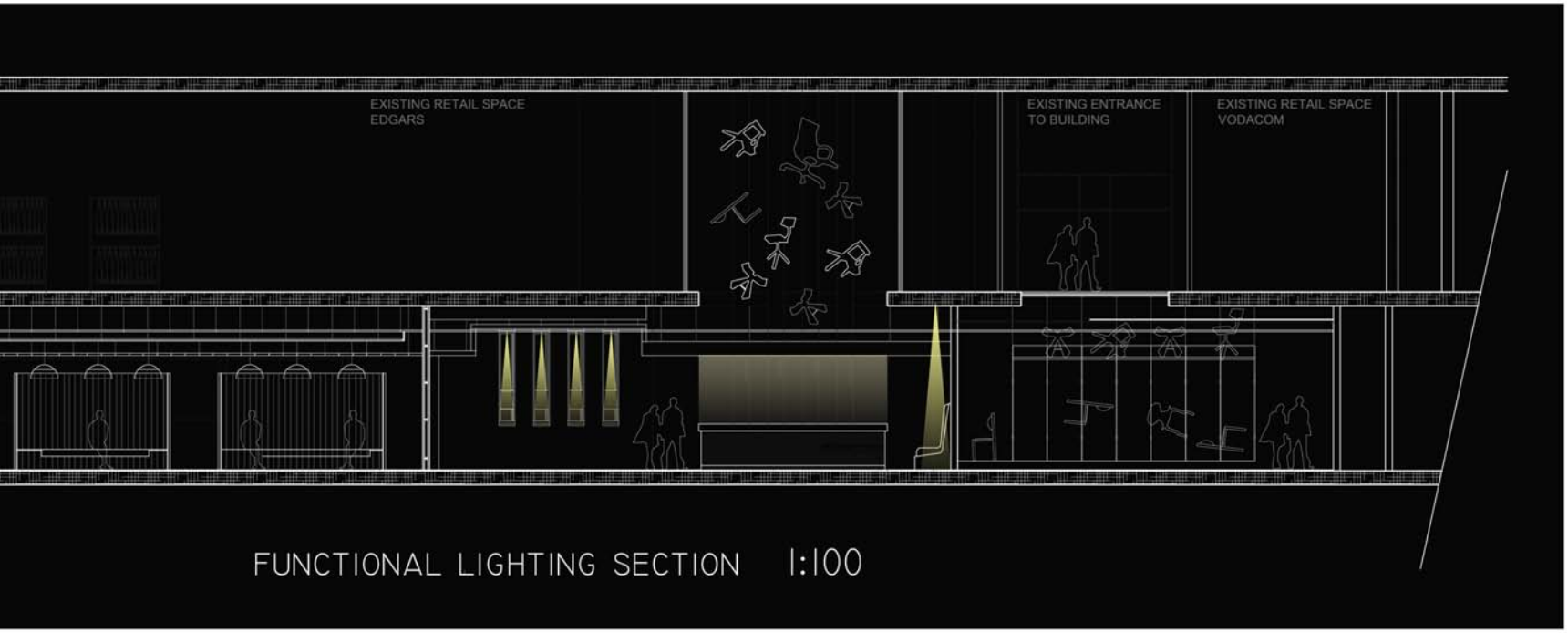
FIGURE 9.21

ADJUSTABLE TRACK

Functional Lighting

PURPOSE: To provide a space with the correct amount of light measured in lux levels needed for the activity that will take place in the space.

Examples include:
- Focused Workspace Lighting: offices, ticket counter, computer stations
- Focused Display Lighting: adjustable lights for illuminating objects
- Display Lighting: sufficient lighting to read text and signage



FUNCTIONAL LIGHTING SECTION 1:100

LIGHT

STAR RANGE

Product Code
2293/1/18: Star tilt cool white
2293/2/18: Star tilt warm white
2292/1/18: Star tilt cool White
2292/2/18: Star tilt warm white
2291/1/18: Star fixed cool White
2291/2/18: Star fixed warm white
2290/1/18: Star fixed cool White
2290/2/18: Star fixed warm white

Technical Description
LED downlight range with body in die-cast aluminium.

Colours
☐ 18 Silver

Light Sources
LED
1.2W/2.4W 12V LED

Remote LED driver required.
1.2W 350mA driver
2.4W 700mA driver

Technical Characteristics
Flammable
Class III
IP 20
2293: **Cutout** Ø 40
2292: **Cutout** Ø 40
2291: **Cutout** Ø 30
2290: **Cutout** Ø 30

TASK DOWNLIGHT

DUPLO
RECESSED
SINGLE

Product Code
3981.1.05

Technical Description
See DUPLO RECESSED

Colours
☐ 05 Nat. Anodized

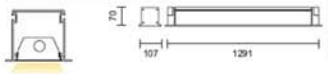
Light Sources
Linear Fluor. T5
Max: 54W/230V/G5
Code: LA/4454/11 Cool
LA/4454/13 Warm

Complete with Electronic Control Gear

Technical Characteristics
Flammable
IP 44
Class I
Cutout 90 x 1260

Technical Description
T5 Fluorescent lamp for recessed application
Available in the following variations:
- One light symmetric
- Two light symmetric
- One light asymmetric

The fixing bracket accessory is necessary for walls and false ceilings with a thickness of between 1mm and 30mm
The body is made in extruded aluminium with a specular steel reflector and polycarbonate diffuser
The Duplo fitting is supplied complete with electronic control gear
Dimmable version available on request



GENERAL DOWNLIGHT

FIGURE 9.22

DETAIL
SUSPENDED ILLUMINATED BULKHEAD
(CIRCULATION LIGHTING ELEMENT)

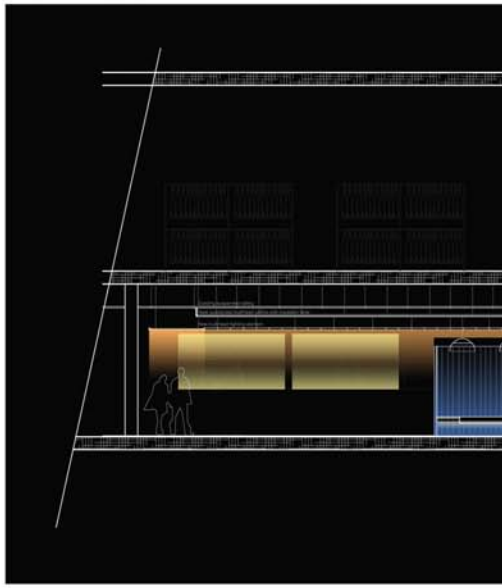
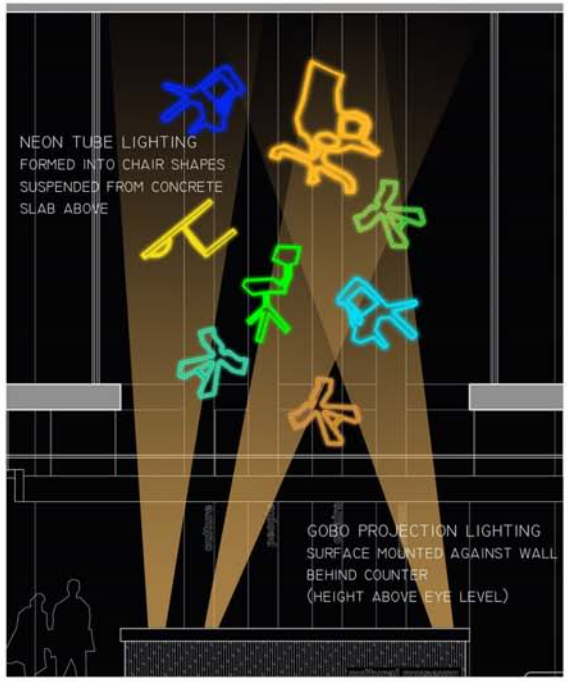


FIGURE 9.24

Effect Lighting

PURPOSE: To enhance the spatial qualities of an exhibition room, to create focal points and to manipulate visitor circulation.

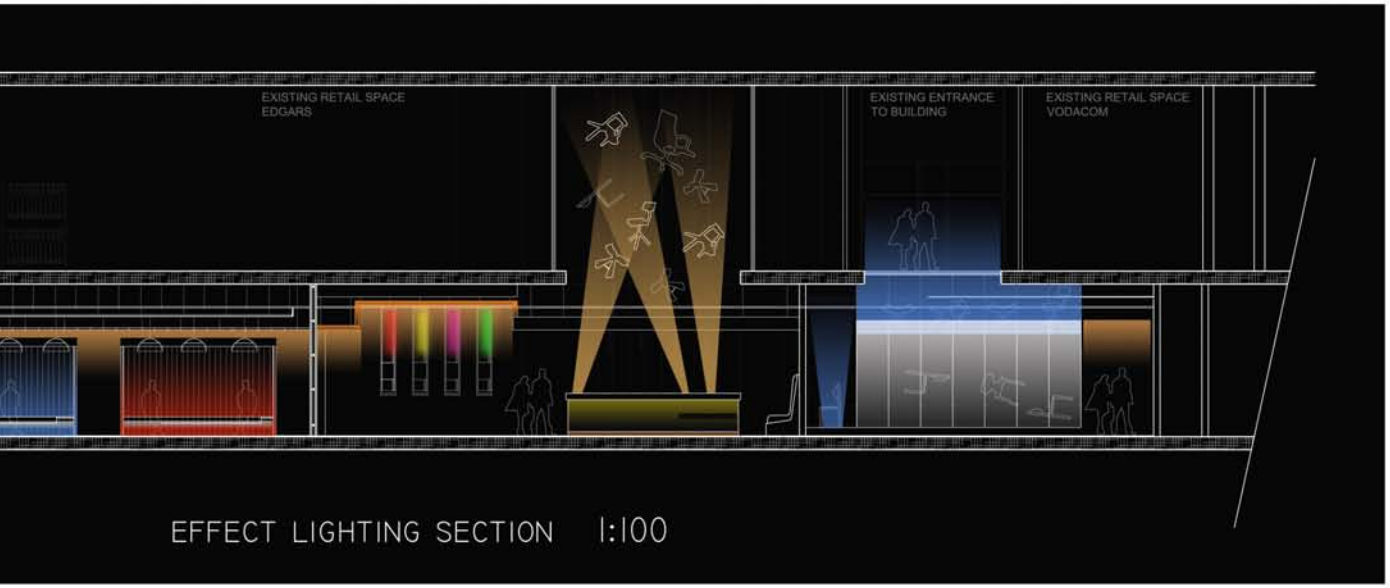
Examples include:
- Colour and RGB Colour changing Lighting
- Spotlights
- Cove lighting
- Wall washing/ Up lighting



DETAIL
NEON SCULPTURE IN DOUBLE VOLUME
(NOT TO SCALE)

FIGURE 9.23

NEON TUBE LIGHTING



EFFECT LIGHTING SECTION 1:100

LED STRIP LIGHTING

GOBO LIGHT EFFECT

FIGURE 9.25

DETAIL
TICKET COUNTER LIGHTING
(ENTRANCE)
(NOT TO SCALE)

FIGURE 9.26 Ramp details, not to scale
(November exam presentation).

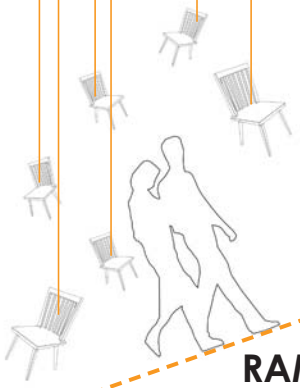
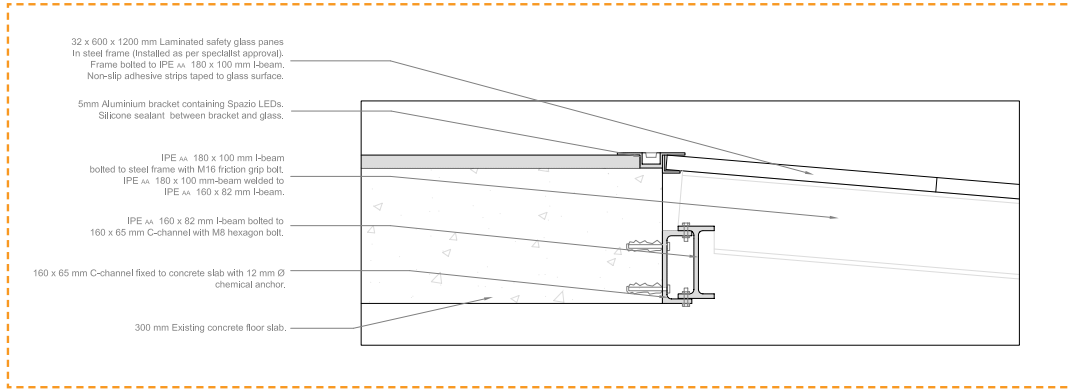
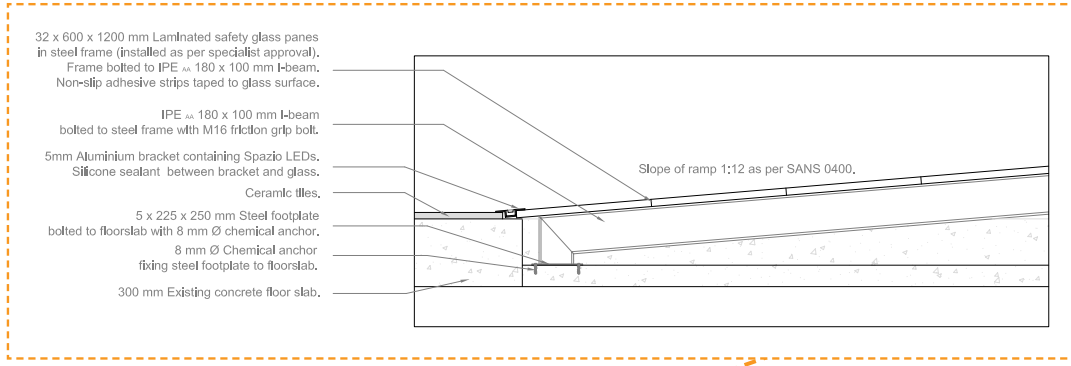


FIGURE 9.26

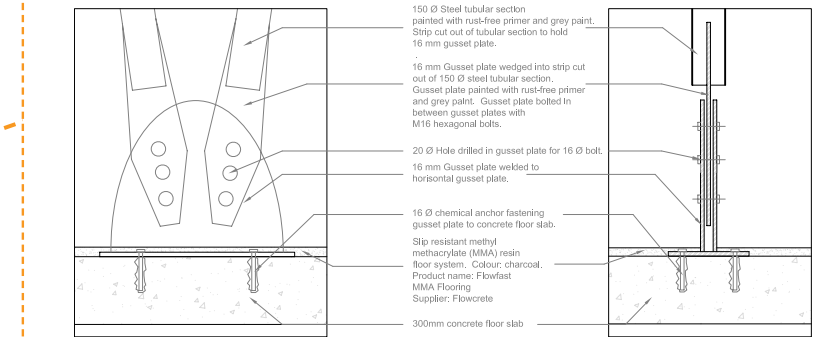
RAMP DETAILS



detail Ramp to Ground Floor slab connection (start of ramp experience) 1:5



detail Ramp to Lower Ground Floor slab connection (end of ramp experience) 1:10



detail Ramp structure to floor of atrium elevation 1:10

Ramp structure to floor of atrium section 1:10

FIGURE 9.27 Ramp details, not to scale (November exam presentation).

RAMP DETAILS

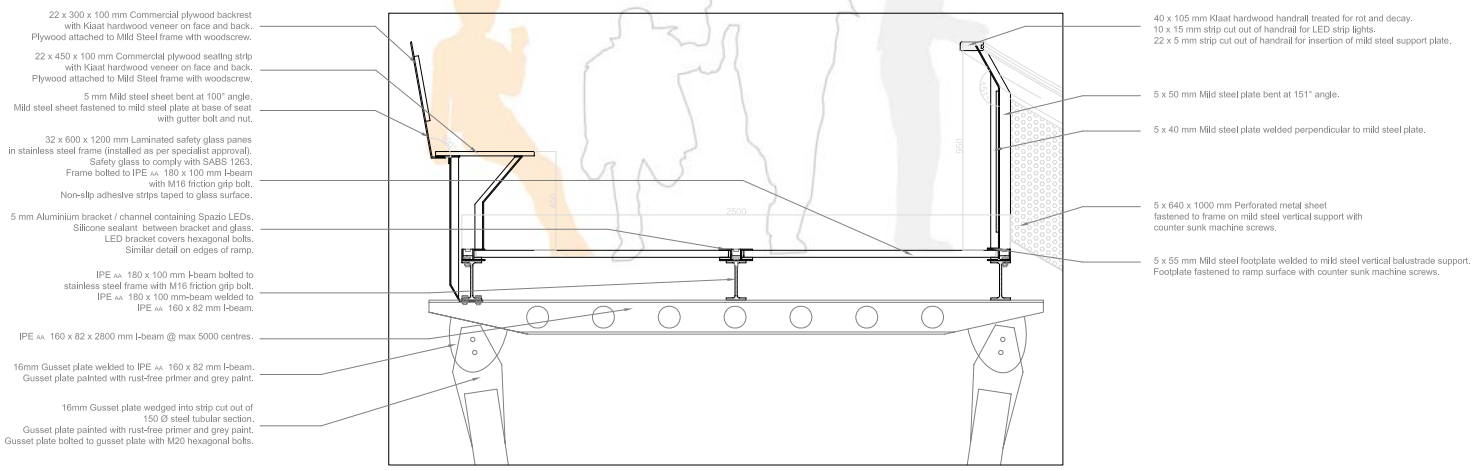
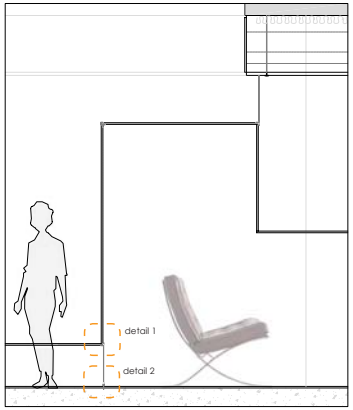


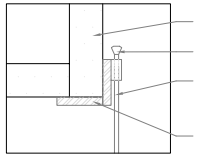
FIGURE 9.27

detail Section through ramp surface with bench and balustrade detail 1:10

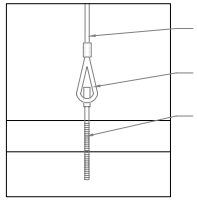
FIGURE 9.28 Details, not to scale
(November exam presentation).



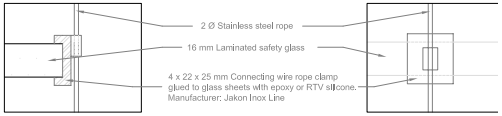
section Floating element 1:20



detail 1 corner 1:1



detail 2 fastening to floor 1:1

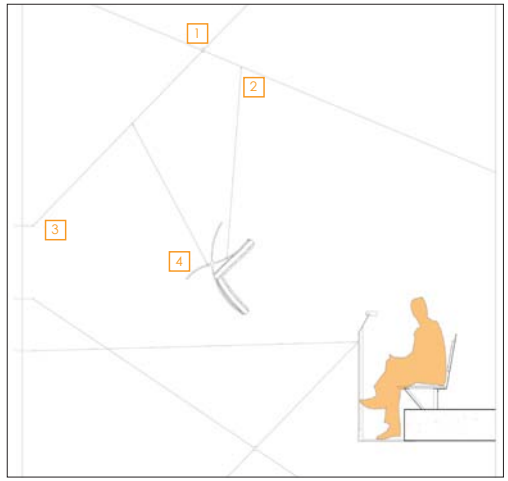


detail elevations of connections 1:1

example of detail
(image from Jakob Inox catalogue)

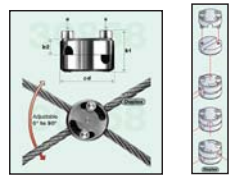
FLOATING ELEMENT DETAILS

WIRE SYSTEM DETAILS

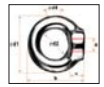


elevation of chair hanging from stainless steel wire system 1:20

1 Connection between wires:
30 dia. adjustable Duplex cross clamp.
(images from Jakob Inox catalogue)



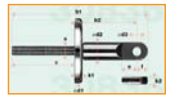
2 Connection between wires:
Carabiner with eyelet hooked onto eye nut clamped to cable.
(images from Jakob Inox catalogue)



Eye nut

Carabiner

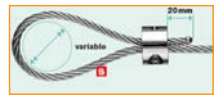
3 Wire fixed to vertical concrete element
(images from Jakob Inox catalogue)



Eye end with support washer fixed to elevator shaft.

Screwed clevis attached to eye end.

4 Connection between cable and chair:
Wire looped around chair and fastened with light two-part loop clamp
(image from Jakob Inox catalogue)



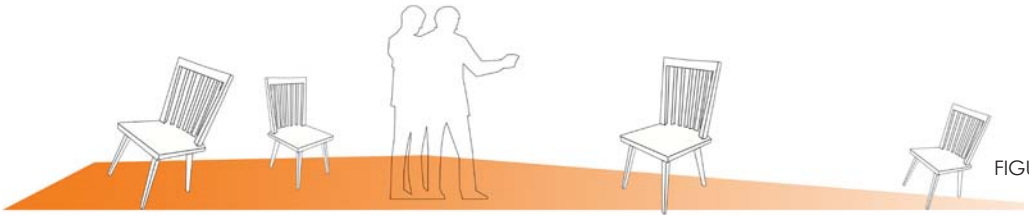


FIGURE 9.28