

07

technical investigation

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Services

Lighting

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TECHNICAL INVESTIGATION

material and colour palette

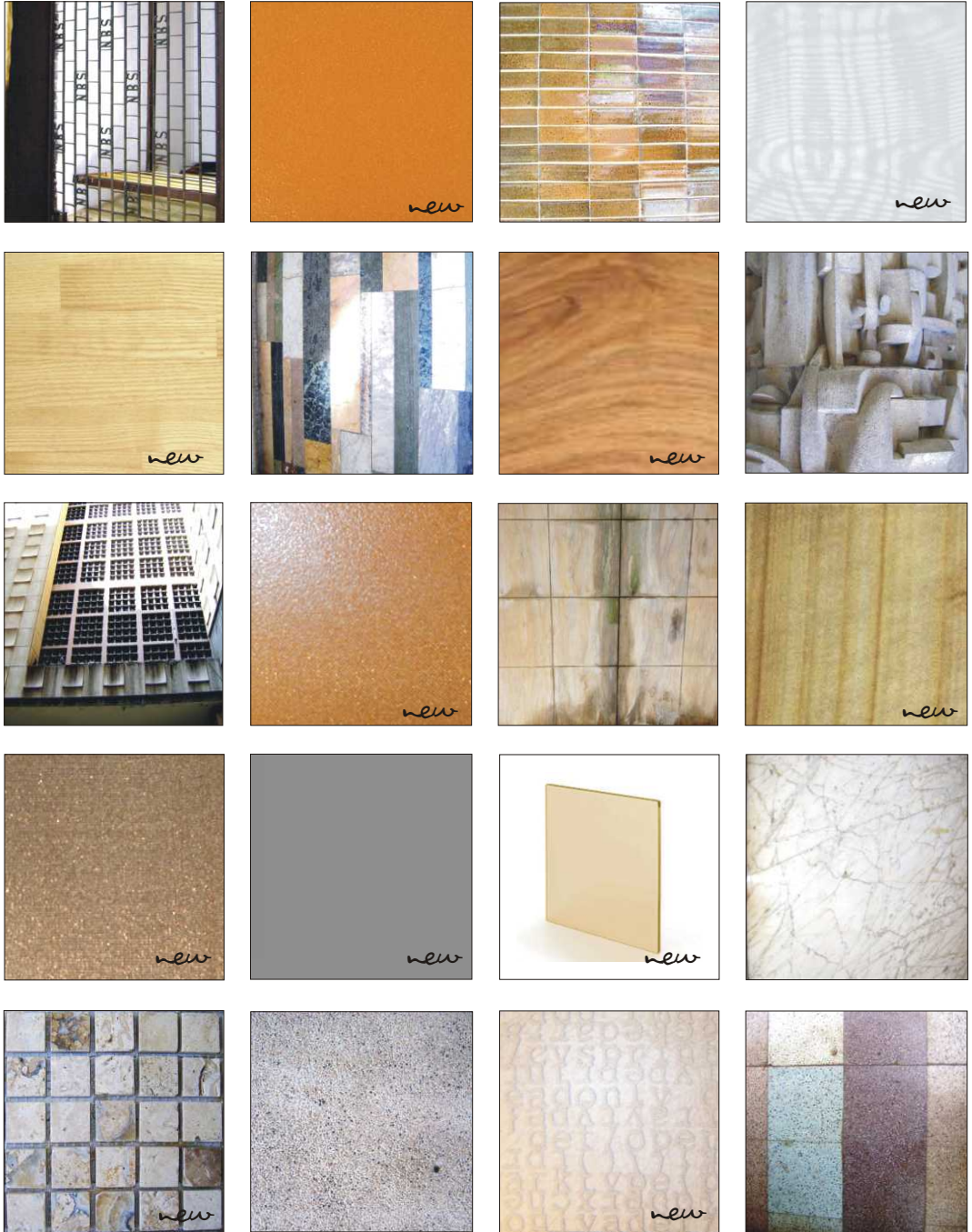
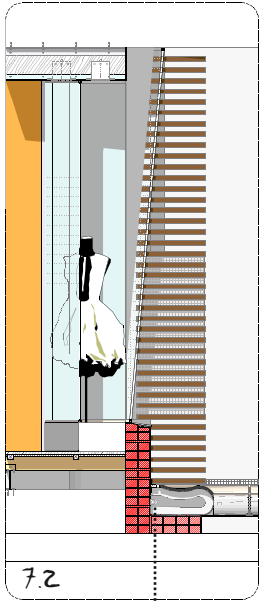


FIGURE 7.1 Palette of existing and new materials

seating/display areas



Kiaat timber slat
Screening panels,
and also used at
the back of edge
seating to form a
shadowline

FIGURE 7.2 Section through edge seating/display area
7.3 View of edge seating/display area



Exterior fluorescent Tube light, 8 Watt LUMILUX BRIK EL as per Osram

Luminous flux:
970 lumens
Lifespan: 20 000h



Mint tinted sandstone tile
300 x 300 mm
as per Tile Africa

Used for exterior storefront window sills, situated above exterior edge seating.



3 FORM Varia seating,
formed through heat bending
Product: Pure colour
Colour: Sable
Gauge: 25 mm



Mosaic mix
50 x 50 mm
Tile Africa

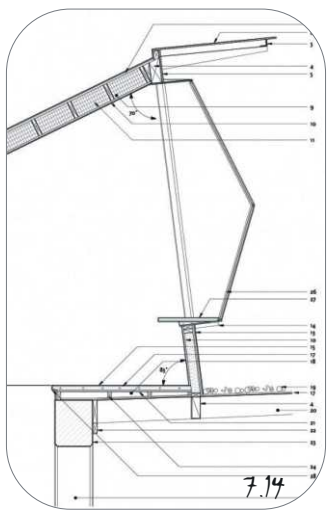
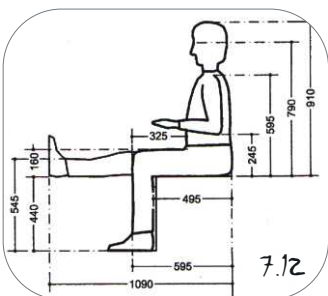
Used as a border,
to finish off edge
seating at the
top.



Perforated metal sheet cover, with
customised pattern
Gauge: 2 mm



3 FORM Varia
 Display box
 Product: Pure colour
 Colour: Mango
 Gauge: 5 mm



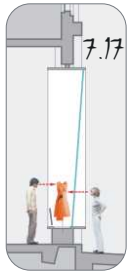
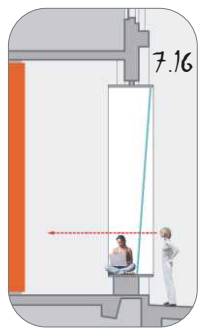
3 FORM Varia
 Seating panel
 Product: Courier
 Letter graphic
 Gauge: 5 mm

FIGURE 7.10 Section through edge seating/display area at medium size independent retail (bookshop)
 7.12 'normal distribution of human in sitting position'
 7.14 Section through facade, Tehama Grasshopper
 7.15 Tehama Grasshopper, USA, 2007
 7.16, 7.17 Section through facade of Sheila C. Johnson Design center



The materials and colours chosen for the permanent edge seating/display area compliment the natural textures and colours of the existing material palette of the arcade (fig 7.1). This creates a neutral backdrop for the temporary storefront displays. The displays, which usually consist of a variety of colours, materials and textures, thus come to the foreground to visually seduce the passer-by.

3 Form Varia is a translucent ecoresin panel that will be slightly shaped to suit the human form, through heat bending. The 3 Form panels and perforated metal allow artificial light through. Evening dwellers are thus drawn to these staying zones and then seduced by the interlinking display areas.



storefronts and display boxes

DORMA sliding storefronts and swing doors are used for the retail stores and public entrances in the arcade. The glass panels run on a track system and the various stacking configurations available make the DORMA system an ideal choice for an arcade edge with alternating levels.

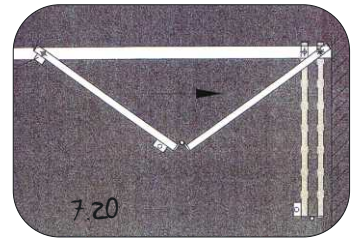
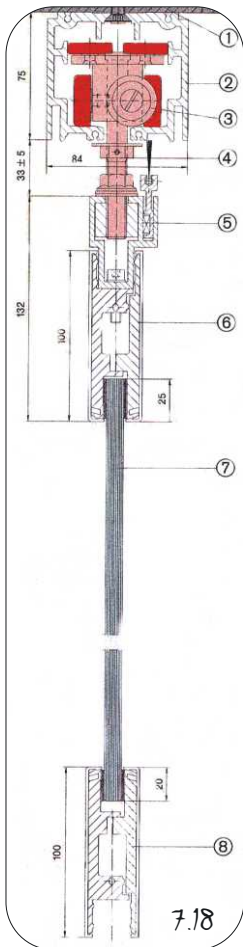
The following DORMA systems are used:

DORMA FSW

DORMA ACROS SYSTEM

DORMA HSW-G 150

(<http://www.dorma.com>)



Typical installation

DORMA HSW-G sliding shopfront systems are made up of the following components:

- Track ② for direct bolting to a steel girder ① or similar on the ceiling
- top ⑥ and bottom ⑧ rails composed of base rail, clip-on covers and end caps, which are clamped onto the toughened glass panels ⑦
- rollers ③, carriers ④, and carrier profiles ⑤ which ensure that the panels slide easily with minimum effort
- stacking areas, in which the sliding panels are neatly and compactly stacked when the shopfront is opened.

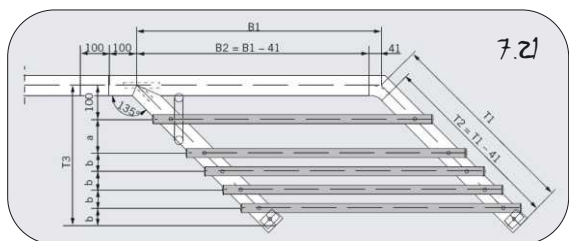
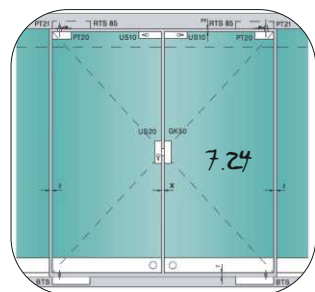


FIGURE 7.18 Section through DORMA HSW-G 150
 7.19 DORMA HSW-G 150
 7.20 Plan of DORMA FSW
 7.21 Plan of DORMA HSW-G 150
 7.22 DORMA SYSTEM
 7.23 DORMA ACROS top connector
 7.24 DORMA ACROS elevation



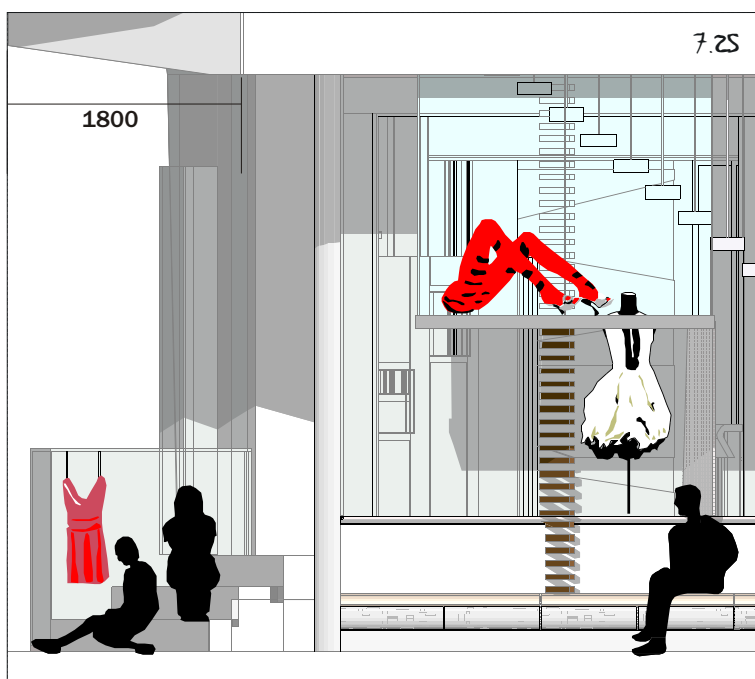
The following Smartglass glazing products, with specifications as shown, are used in the design:

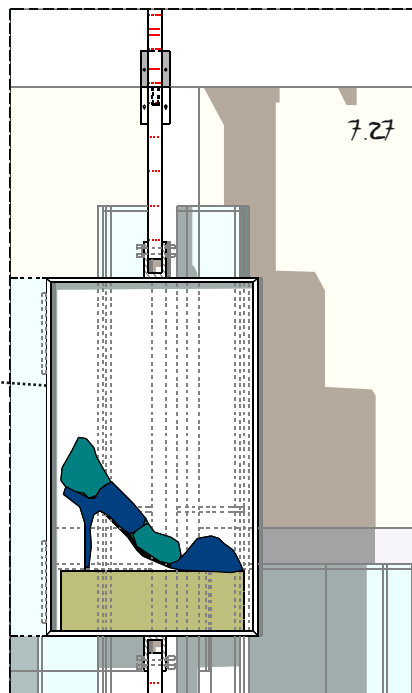


- Storefront windows and sliding doors - Intruderprufe Low E
7.38 mm HPR laminated safety glass
UV elimination: 99%
Visible light transmission: 82
Noise control rating: 34 dB
Maximum size: 3300 x 2440 mm
- Glass display boxes - 6.76 mm HPR laminated safety glass
UV elimination: 95%
Visible light transmission: 90
Noise control rating: 34 dB
Maximum size: 3210 x 2440 mm

(<http://www.smartglass.co.za>)

The 1800 mm overhang above the ground floor storefronts greatly reduces the amount of direct sunlight to the area. Intruderprufe Low E safety glass offers superior thermal insulation, retaining more heat in winter and blocking it out in summer. It is a clear glass that maximises light transmission, while blocking harmful UV radiation. Intruderprufe not only makes it significantly more difficult for criminals to intrude or break through a storefront but also blocks noise.





The glass display boxes are constructed by means of UV bonding. Glass panels are glued together using a UV curing adhesive, which is cured by either a UV light or a UV activator. The joints are stronger than glass itself and this frameless construction method allows for a high-end retail look.

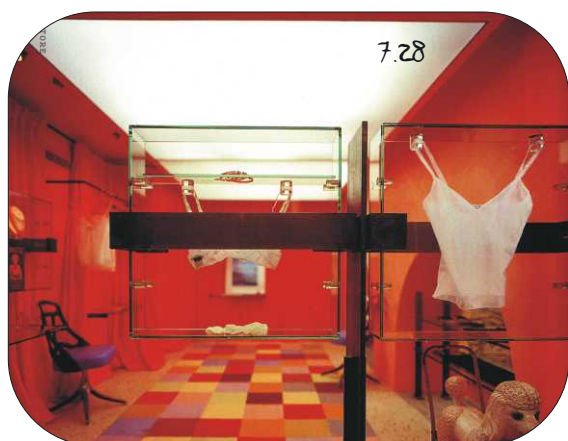


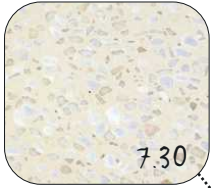
FIGURE 7.25 Elevation of storefront and display boxes
 7.26 View of storefront and display box
 7.27 Section through rotating panel with display box
 7.28 View of glass display boxes, PAUL SMITH store, Milan, Italy, 2001

public arcade and edge

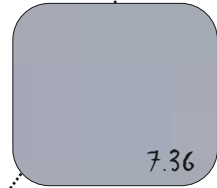
NEW ARCADE FLOOR FINISH
Flowcrete Flowtex HT epoxy screed
Colour: Mid Grey 280



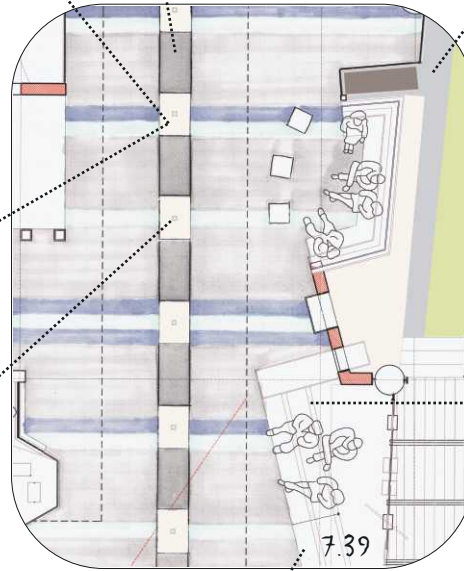
FIGURE 7.31 Flowcrete Peran STB floor finish
7.34 Section through brick seating
7.37 Flowcrete SL resin floor finish
7.38 View of existing arcade floor finish
7.39 Arcade floor finish design



NEW ARCADE FLOOR FINISH
Flowcrete Peran STB
Colour: Cream 7700



EDGE FLOOR AREA
Flowcrete Peran SL resin
Colour: Mid Grey 280



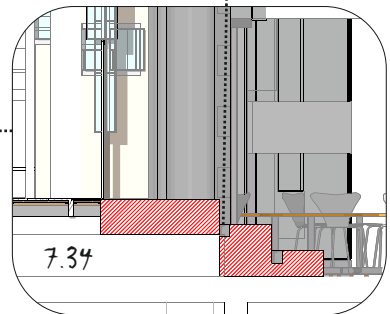
50 Watt
110 x 112 mm
ground light
LS520 - Radiant
lighting



105 x 95 X 90 mm
footlight
KJ35A-Radiant
lighting



EXTERIOR BRICK SEATING
Flowcrete Peran
WW resin
Colour: Silver grey
204



circulation

Redesigning the edge with alternating levels did not reduce the width of the arcade, which ensures comfortable circulation through the arcade space. In order to accommodate a public seating area along the edge opposite the performance platform and to prevent obstruction of pedestrian circulation through the arcade, the existing building edge was set back.

The new staircase in the entrance lobby of President building links up with the existing stairs. It is constructed out of a galvanised steel channel framework with smoked laminated safety glass and perforated metal treads. The staircase faces the public arcade and acts as an element of seduction. Dwellers lingering at the opposite edge seating can sit and watch this celebration of movement.

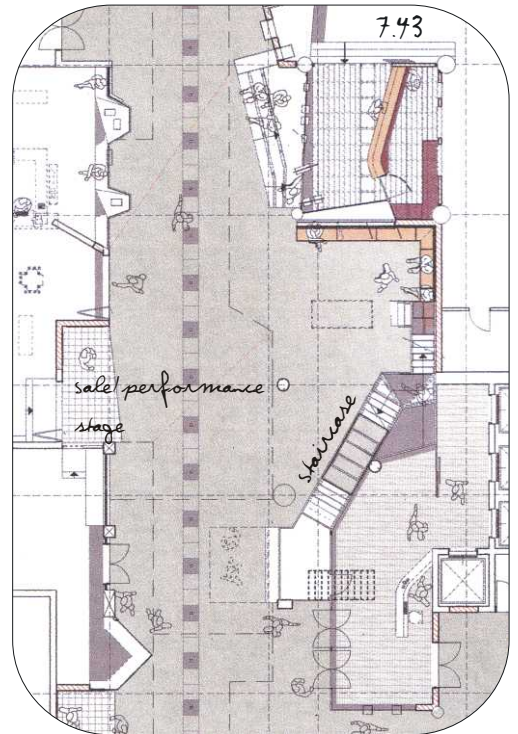
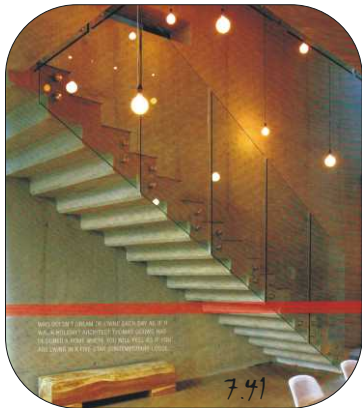


FIGURE 7.40 Staircase with floating treads fixed to a supporting glass panel
 7.41 Staircase at Lodge House, Thomas Gouws, Johannesburg, 2009.
 7.42 DNA stair, Studio P-H-A, Prague, 2008.
 7.43 Plan indicating position of staircase

fire

The existing retail stores in the arcade have direct access (i.e. no more than 45 m away from any given point in the store) to the open public arcade, as well as access to a fire escape route at the back. The new retail stores, restaurants and public facilities have access to a 1100 mm wide, unobstructed fire escape which links with the existing fire escape route. The fire escape doors of the retail stores and restaurants open in the direction of movement without obstructing circulation.

According to SABS 0400 part TT16.2 a building of more than three floors must have access to two separate escape routes that both include an emergency route. The buildings above the arcade have easy access to the ground floor escape route as well as to two separate fire escape routes, which exit into the ground floor arcade. The new walls of the escape route will, according to SABS 0400 part TT19.1, have a fire rating of 120 minutes.

According to SABS 0400 part TT45.1 the lift lobby in the existing entrance lobby of President building should be able to be closed off in the event of a fire. The enclosed wall is constructed with SCHOTT PYRAN S fire resistant glass. It is a toughened borosilicate glass with a fire rating of up to an hour, exceeding the minimum fire resistance of 30 minutes as required by SABS 0400 part TT45.1.

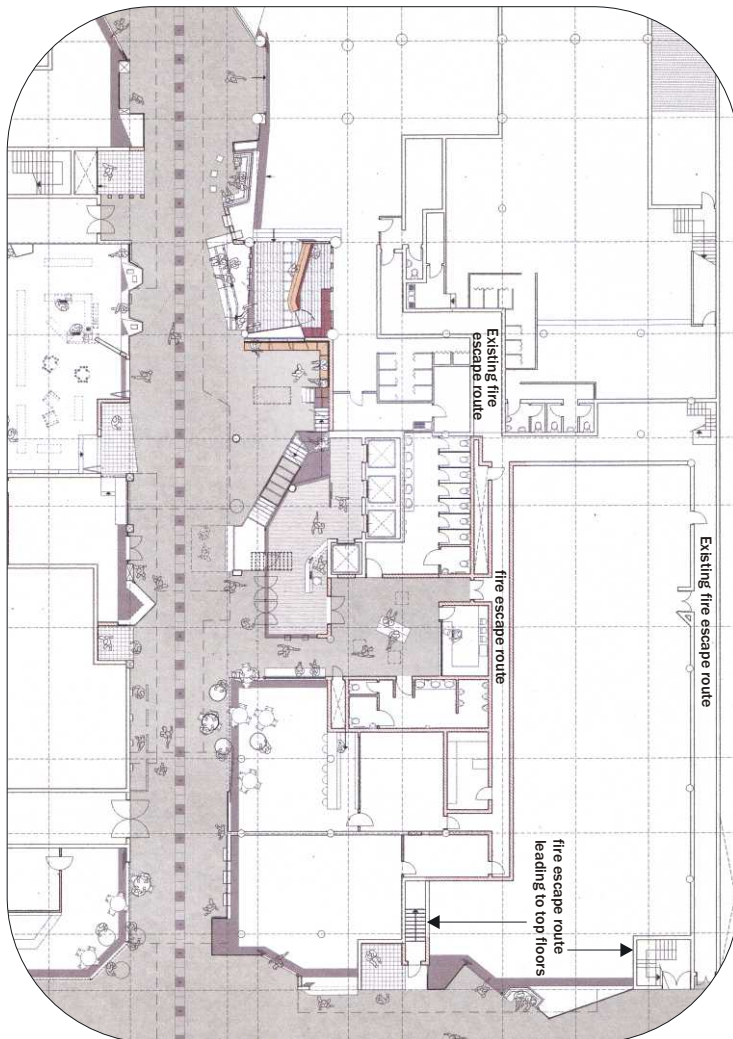


FIGURE 7.44 Plan indicating fire escape routes

public toilets

The public toilet facilities are centrally located and can easily be accessed from the arcade. Ladies' and gents' facilities can be accessed from a central waiting space where trade-off display boxes are suspended from the ceiling. In accordance with SABS 0400 part PP13, the number of sanitary fittings were determined as follows:

Restaurants are classified as an A1 occupancy class, allowing 1 person/m².

Retail stores are classified as an F1 (stores exceeding 250 m²) and F2 (stores smaller than 250m²) occupancy class, both classes allowing 1 person/10 m².

Total retail area - 1379 m ²	$1379/10 \text{ m}^2 = 137.9$
Total restaurant area - 189.4 m ²	$189.4/1 \text{ m}^2 = 189.4$
Total population	328
Retail staff (10% of total population)	30
328/2 (for ladies' and gents' facilities)	164
30/2 (retail staff)	15

The total number of sanitary fittings as per table 6 and 7 of SABS 0400 part PP13 are:

Gents' facility - 2 toilets, 5 urinals and 3 hand washbasins

Ladies' facility - 8 toilets and 5 hand washbasins

In both the ladies' and gents' facilities, one toilet cubicle caters for disabled visitors.

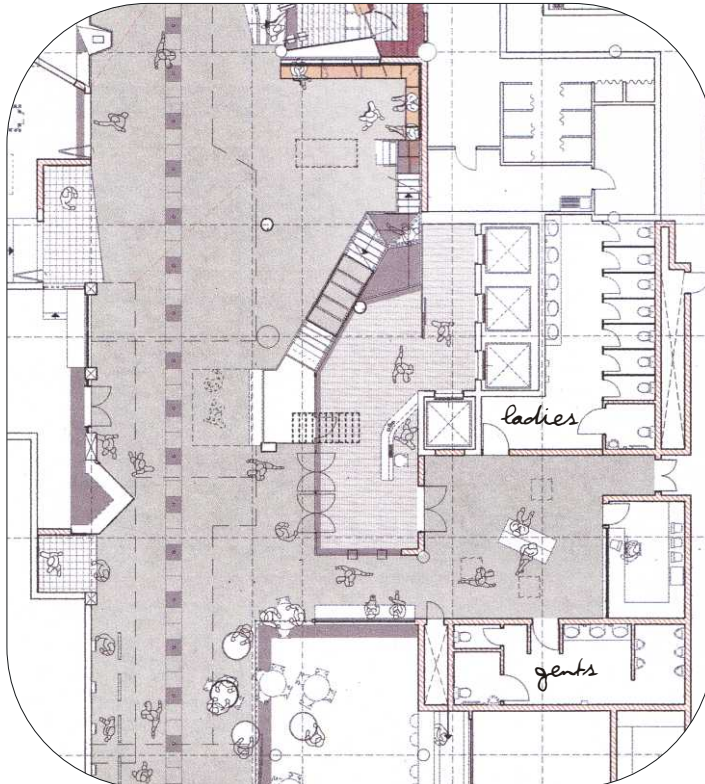


FIGURE 7.45 Plan indicating public toilets

detailed investigation of public storefront

The materials and finishes of the public storefront space were chosen to compliment the existing material palette, in order to be visually considered as part of the public arcade despite being a contained retail space. With a central countertop and a small service counter, equipped with a small fridge and power points, at the back, the space can accommodate various type of events. The service counter is screened off by means of a translucent ecoresin opening panel. Snacks and drinks can be served from here during a performance or exhibition, or it can serve as the sales counter during a book launch.



3 FORM Chroma countertop
Colour: Smoke grey
Gauge: 50 mm



Wall finish -
Cemcrete Cemwash
Colour: White



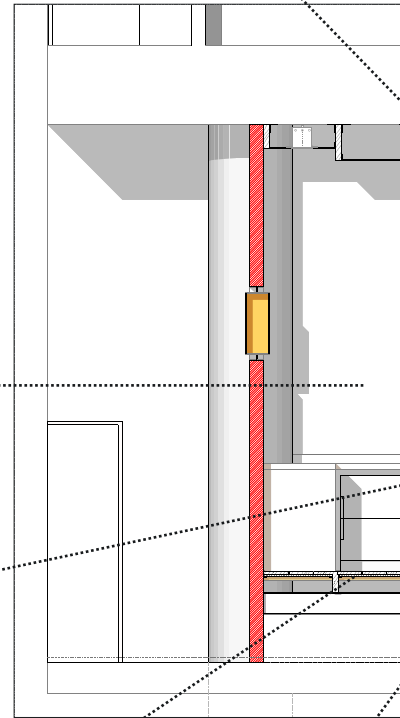
20 mm thick
ECO-FIBRE
Acoustic board

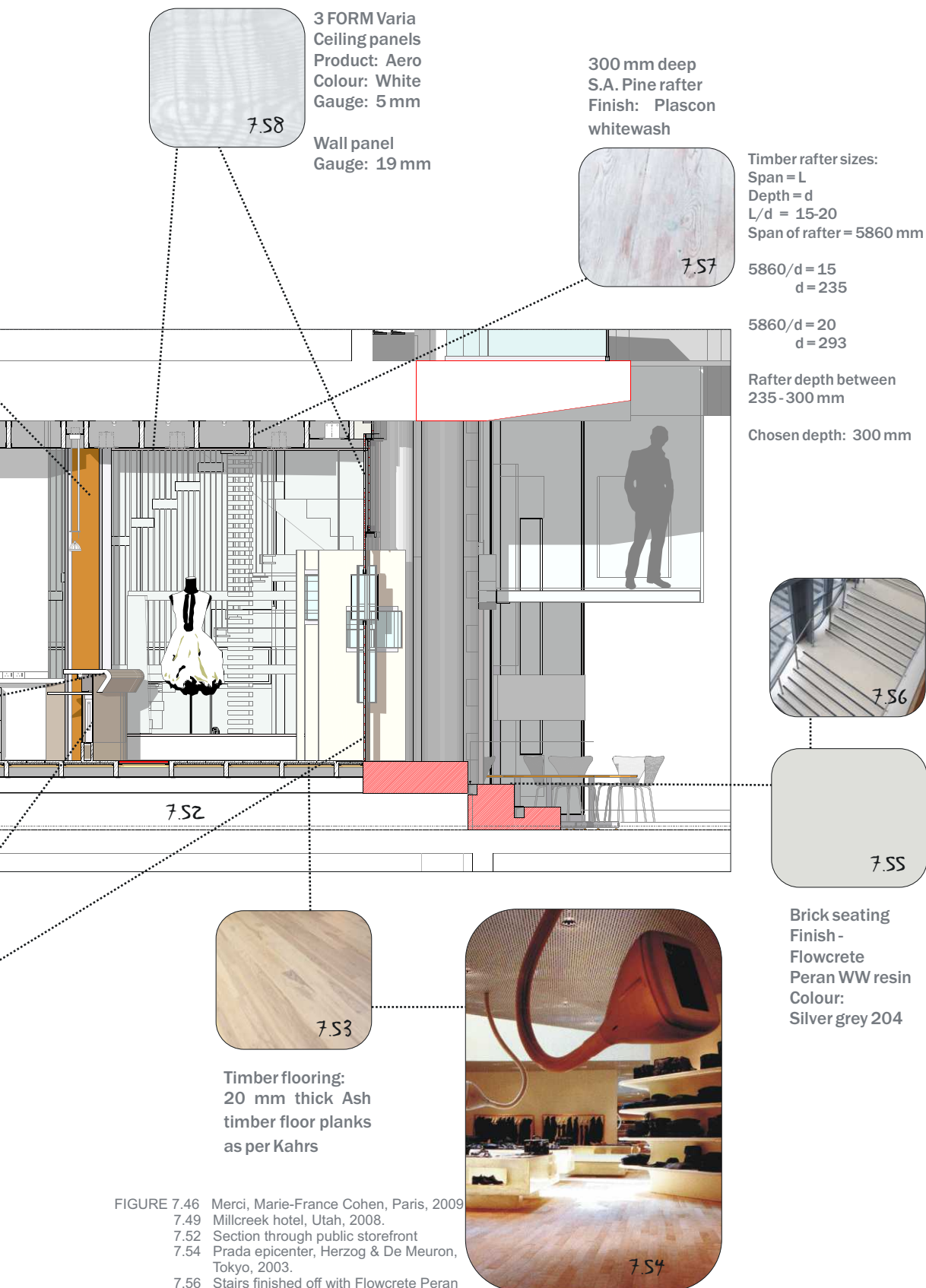


3 FORM Varia panels
Colour: Alu Bronze
Gauge: 10 mm
19 mm



3 FORM Varia
Opening panel
Product: Pure colour
Colour: Mango
Gauge: 19 mm





SERVICES

A raised timber floor is installed to level the storefront space with the exterior brick seating and also to accommodate electrical services. The suspended ceiling, constructed from wooden rafters and translucent ecoresin panels, accommodates the recessed light fittings and electrical wiring.

LIGHTING (see Appendix B)

The minimum required illuminance level for a retail space is 500 lux for merchandise display windows and 300 lux for general retail areas. The type and number of light fittings were chosen to supply the required illuminance levels at different areas in the space and can accommodate energy-saving light bulbs. The lifespan of light bulbs is important, because the large existing overhang reduces the amount of natural light that enters the space. The lights will probably be turned on for most part of the day and evening, while the downlights in the display window will be turned on permanently.

The allowed lighting power density for a retail space varies between 15-24 W/m², while 35-39 W/m² is allowed for fine merchandise display. The lighting power density for the public storefront space is 19.1 W/m² and the general illuminance level is 370 lux (See Appendix B for lighting study).

NATURAL VENTILATION

Owing to the combination of a 1800 mm overhang, low emissivity glass and rotating panels that open entirely into the arcade, mechanical ventilation is unnecessary for the 30 m² space. The storefront space is linked to the northern corner retail store by means of a glass sliding storefront, encouraging cross-ventilation through the space.

ACOUSTICS

When inside, the sounds from the exterior public space makes the user aware of the surrounding edges and spaces, which is important in this case. However, the incoming sound should not be overpowering and the use of Intruderprufe safety glass reduces the noise level more than normal safety glass does. ECO-FIBRE acoustic panels are installed underneath the raised timber floor to absorb noise when the public storefront is filled with people during an exhibition or book launch.

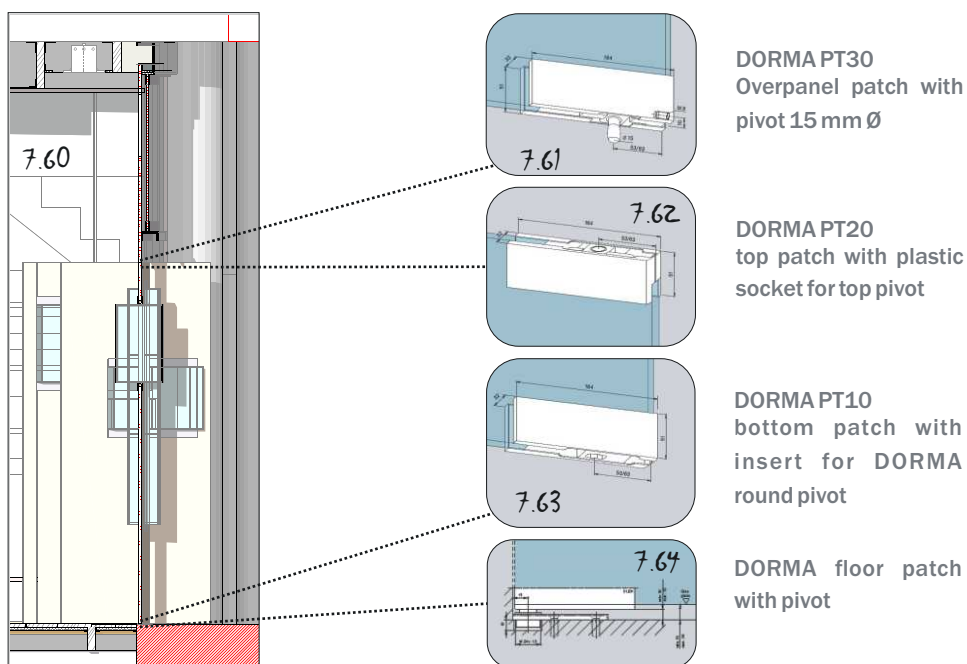


FIGURE 7.60 Section through rotating panel



7.65

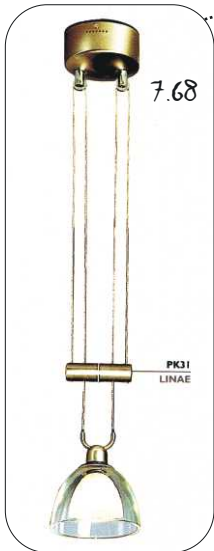


7.66



7.67

142 x 110 mm
Downlights
Finish: Satin silver
BK26 & BK01 -
Radiant lighting
with 35 Watt
OSRAM
Metal halide
Powerball
HCI-R111
Light bulb



7.68

130 x 1200 mm Pendant
Finish: Satin chrome
PK31 - Radiant lighting
with 35 Watt OSRAM
Tungsten halogen light
bulb

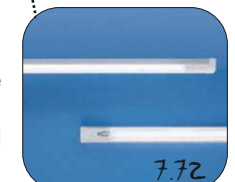


7.69



7.70

610 x 23 x 28 mm
Fluorescent tube
light
14 Watt OSRAM
LUMILUX SPLIT HE



7.72

382 x 27 x 20 mm
Fluorescent tube
light
8 Watt OSRAM
LUMILUX SPLIT FM

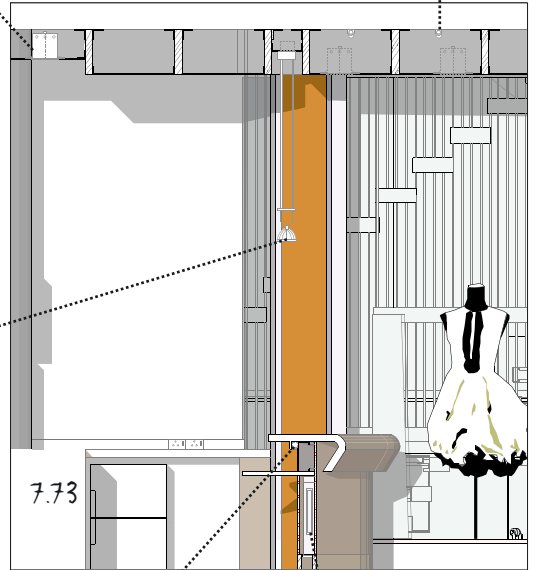


7.75



7.74

1200 x 26 mm Ø
OSRAM
32 Watt Lumilux
T8 Energysaver
tubular fluorescent
ceiling light in
KA14 light fitting -
Radiant lighting



7.73



7.71

FIGURE 7.67 Display window with metal Halide
7.71 Display case with LUMILUX SPLIT HE
7.73 Section showing lighting
7.75 Lighting effect of ceiling, PAUL SMITH store, Milan, Italy, 2001

MATERIAL INVESTIGATION

3FORM VARIA line



FIGURE 7.76 3Form varia line, used throughout design

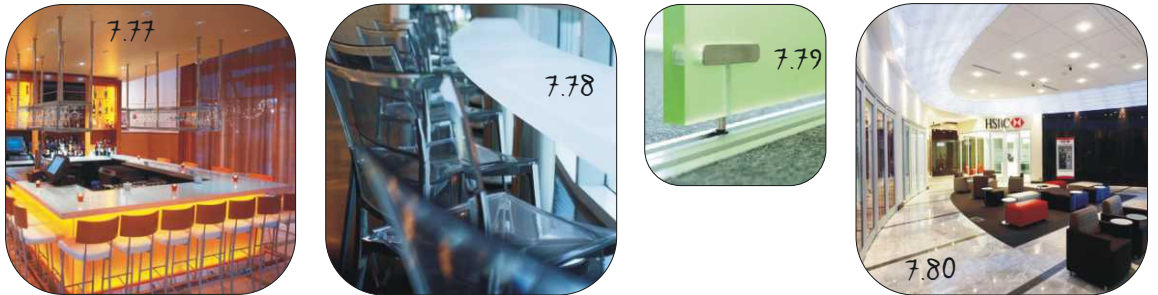


FIGURE 7.77 3Form varia counter with lighting behind, KKE Architects Inc., Minnesota, USA
 7.78 3Form varia bar counter, Healthways HQ, Franklin
 7.79 3Form varia sliding panel
 7.80 3Form varia ceiling panels, HSBC, Chicago

TRANSLUCENT ECORESIN PANELS

Non-toxic

Recyclable

High levels of reclaimed material

No harmful chemicals used in manufacturing

3Form Varia is a diverse material that allows the designer to custom-select the colour, pattern, texture, interlayer and finish. The material is made of an ecoresin of which 40% is recyclable. It has 40 times the impact strength of glass and are available with UV stabilization for outstanding exterior performance.

Gauges: 2, 3, 5, 6, 10, 13, 19, 25 mm

Panel sizes: 1220 x 2440 mm

1220 x 3050 mm

FASTENING AND BENDING

HEAT BENDING

Varia ecoresin panels can easily be shaped in various forms with a heat bending process.

MECHANICAL FASTENING

Varia can be fabricated into attractive joints with mechanical fasteners. Standard nuts, bolts, machine screws and tools that are used for machining plastics, wood or metal can be used to cut and fasten Varia panels.

BONDING

3Form specifies the use of Weld-on adhesives and clear 3M VHB tape to adhere Varia panels to a variety of non-plastic substrates like concrete, fibreglass, metal, wood or drywall.

www.3form.eu

3FORM CHROMA line



FIGURE 7.81 3Form chroma, Smoke grey
7.82 3Form chroma bar counter, Revolution lounge, Las Vegas

CAST POLYMETHYL METHACRYLATE (PMMA) RESIN

3Form Chroma® is a bold solid surface that is saturated with patented colour infusion technology and delivers unrivalled light transmission. It is a stable material that is engineered to be resurfaced and re-coloured again and again, preventing the material from entering the waste stream

Gauges: 12, 25, 50 mm

Panel sizes: 1220 x 2440 mm

FASTENING AND BENDING

HEAT BENDING

Chroma panels can easily be shaped to accommodate radius curves with a heat bending process.

MECHANICAL FASTENING

Chroma can be fabricated into attractive joints with mechanical fasteners. Mechanical fastening is recommended.

To be done by specialist.

BONDING

3Form specifies the use of Weld-on adhesives and clear 3M VHB tape to adhere Chroma panels to a variety of non-plastic substrates like concrete, fibreglass, metal, wood or drywall.

www.3form.eu

FLOWCRETE

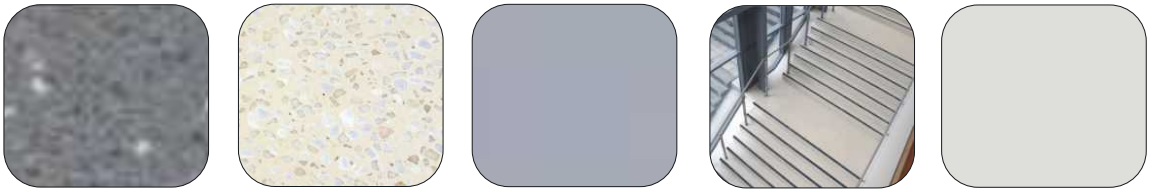


FIGURE 7.83 Flowcrete floor finish line, used throughout design

FLOWTEX HT (arcade) is a hardwearing epoxy screed that is used in areas that are subject to heavy traffic and impact. It is available with a gloss or matt seal and is easy to clean. Flowtex has a life expectancy of up to 10 years and the seamless surface reduces the need for repairs, maintenance and cleaning.

- quick set strength development to over 70 MPa
- high abrasion and impact resistance
- very good chemical resistance
- slip resistant

PERAN STB (arcade) is a hardwearing, decorative resin that consists of colour stable quartz granules encapsulated in a clear resin binder. It is an ideal floor finish for areas that are subject to heavy traffic and impact.

- high scratch resistance
- easy to clean and maintain
- excellent wear and impact resistance
- abrasion and chemical resistant

PERAN SL (edge floor area) and **WW** (brick seating) is a smooth gloss self-smoothing resin that is used in areas that are subject to intensive traffic like shops, department stores and restaurants.

- attractive floor finish, available in a variety of colours
- easy to clean and maintain
- hardwearing and chemical resistant
- slip and abrasion resistant

www.flowcretesa.co.za

ECO-FIBRE ACOUSTIC BOARD



FIGURE 7.84 Eco-fibre acoustic board

An eco-friendly mineralised fir wood-wool cement bonded panel with excellent acoustic and thermal properties that is made in South Africa. The panel consists of natural products, therefore there is no risk of pollution at the production or implementation stage.

Uses: Concrete casting insulation; flooring insulation; roofing insulation; internal and external facings; the facing of fire resistant walls; the facing of wooden, metal, etc. structures; acoustic insulation between floors and adjacent rooms; sound-absorbing, false ceilings.

Lengths: 1200 to 2400 mm

Width: 600 mm

Thickness: 20 to a max of 50 mm

- fire resistant class 1(B1)
- releases no toxic gasses and fumes in the event of a fire
- unlimited lifespan
- eco-bio compatible

www.genesisacoustics.co.za