

This technical report is a response to the baseline document, explaining and illustrating the systems and technical aspects of the design.

This document should be read together with the construction drawings as a continual reference.

00.1 MOVEMENT SYSTEMS

These systems connect all movement on site and strengthen the concept of an intertwined indoor-outdoor system.

PADDLING

This element entices passers-by; is an audible, visual and dynamic connection spine and serves as a storm water channel that receives rainwater from the related shop's roof.

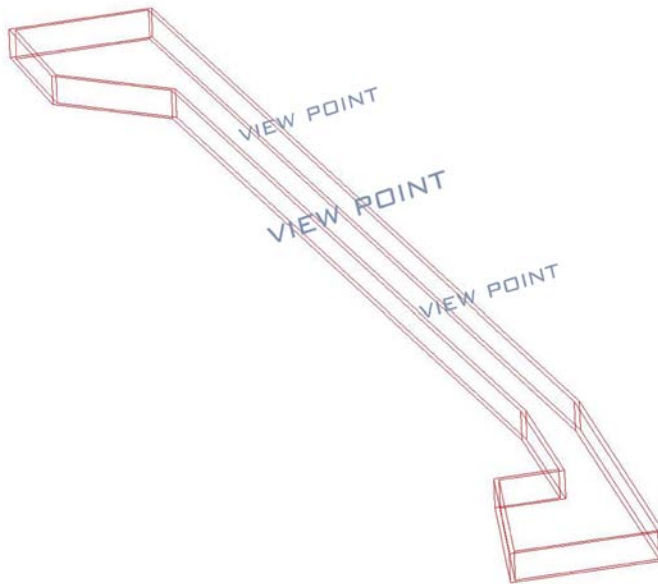


Fig. 056 3D of the kayak channel

MOUNTAIN BIKE TRACK

This track runs through and around the site, forming and braking boundaries, connecting indoor and outdoor programmes; involving and entertaining both visitors and pedestrians alike.

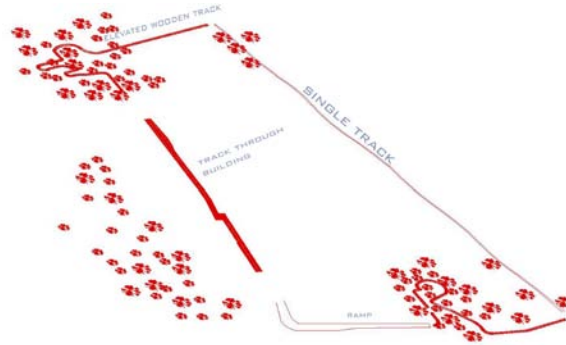


Fig. 057 Mtb track

CLIMBING

The climbing routes are designed to exist and evolve in and around the retail area. To evoke, inspire and involve all visitors; to express the precision of motion in space.

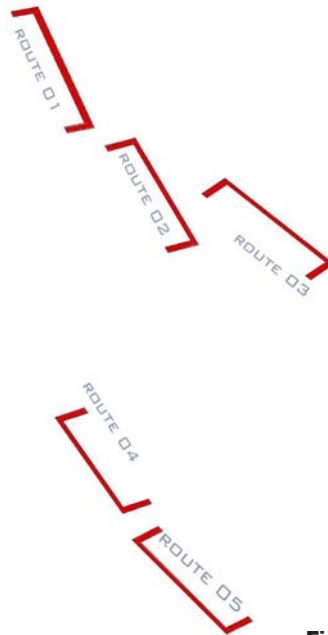


Fig. 058 Plan of climbing walls

PEDESTRIAN MOVEMENT.

This movement system directs pedestrians and visitors along different routes on changing levels, always allowing full views across the site [also refer to "routes" in this document].

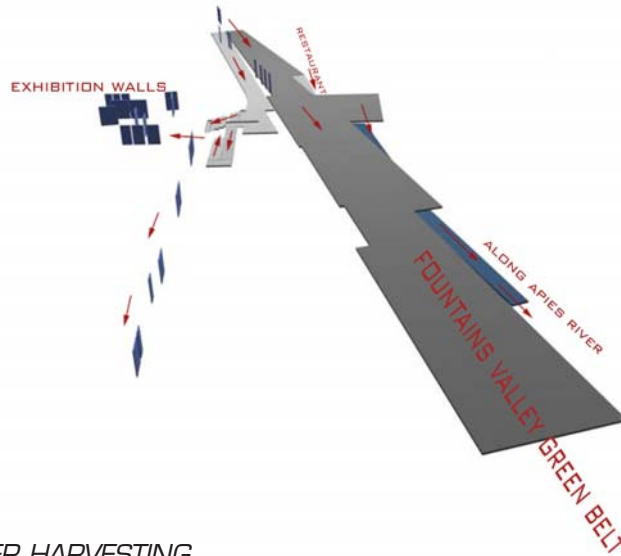


Fig. 059 3D of the pedestrian walkway and exhibition walls

00.2 RAINWATER HARVESTING

Rainwater is drained to spill basins from where it is either stored for irrigation purposes, or it is channelled to the on site water channel [kayak paddling channel].

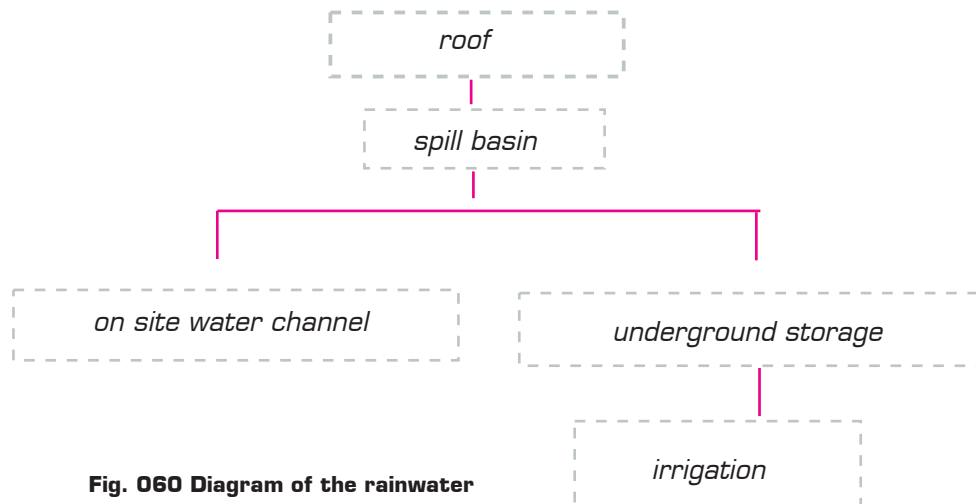


Fig. 060 Diagram of the rainwater harvesting system

00.3 ON SITE WATER CHANNEL SYSTEM

Water is pumped from the Apies River into the on site water channel. This on site channel also receives harvested rainwater. The water level is regulated and access water is pumped back into the Apies River.

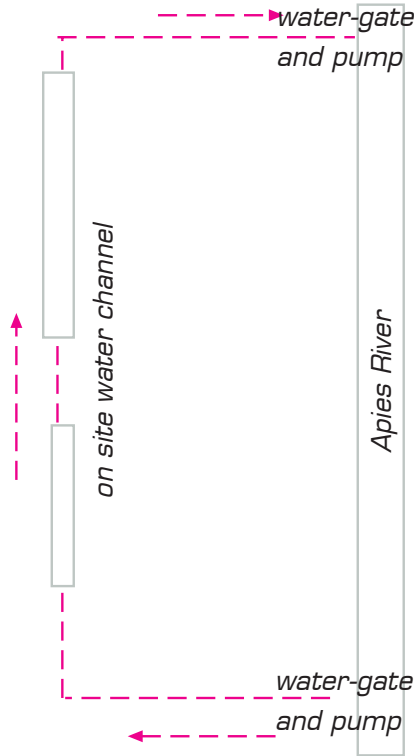


Fig. 061 Diagram of on site water chanel

00.4 RAIN ROOM SYSTEM

Weather tight gear is tested in this rain room. Water is released through several showerheads and is drained into the adjacent duct.

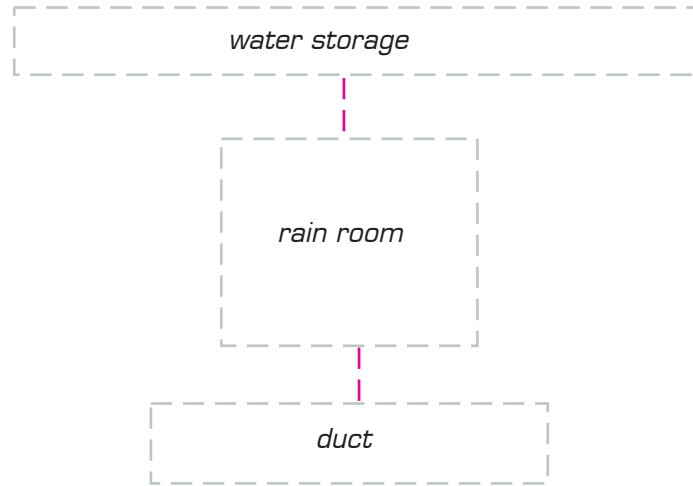


Fig. 062 Diagram of rain room system

00.5 MATERIALS

Materials were chosen that give a raw feeling and leave a blunt physical presence of construction.

CONCRETE

This material is used in most structural and envelope construction. The choice of this material is justified by its appearance, flexibility and thermal performance.

Allmost all external walls are off-shutter concrete walls, using 2.4 x 1.2 m steel formwork panels to achieve a smooth finish. The walls are constructed to appear as if they are free standing and become the transfiguring elements that express the plan and generate movement and a sense of surprise and intrigue, guiding visitors through the site.

A lowered extension of the pedestrian walkway, that functions as public seating, twists 90° to become the entrance façade of the administrative building. This wall and all other applications are cast in-situ and finished off.

The roofs become horizontal extensions of the walls, magnifying the intentions of the walls. Outer roofs are sloped inward, with suitable drips at the slab edges, where the inner roofs receive the runoff water. Inner roofs are constructed with parapet walls in such a way that the roofs still appear to be continuous,

flat concrete slabs. The roofs are finished off with 25mm inward-sloped screed, which is waterproofed, and runoff water is drained to a purpose made precast concrete spout.

Most floors are finished with 25mm concrete screed tinted with red-oxide and finished with a layer of 6mm clear epoxy, mimicking the earth found in this region and further blurring the boundaries between the interior and exterior.

The climbing walls are constructed with in-situ cast rib columns, laterally supported by concrete rib beams @ 3m centres. This structure supports a 150mm concrete slab.

FACE BRICK

Walls that are designed for functional purposes only are constructed with Corobrick silhouette satin face bricks, flush jointed. Where a visual link is necessary these bricks are turned on their edges to expose the extruded holes of the bricks.

STEEL

The decision to use corten steel was made due to the fact that this material alters its appearance over time and finds its application to the decorative panels on the mountain biking bridge crossing the central square and the shading devices on the western façade of the kayak and canoe centre. These panels are patterned for both structural and aesthetic purposes, creating changing shadow lines and patterns.

GLASS

Glass is used throughout the building: frameless glass is applied to the horizontal strip windows in the eastern and western facades. Larger fenestration comprises a designed glazing system, consisting of a 120 x 60 x 6 GS angle iron to which GS flat bars are welded to form the louvres [to be painted]. A framed glass window is fixed to the interior of this frame and can either be openable or rigid depending on its location.

Frosted glass is employed in longitudinal openings in the pedestrian walkway to provide light to the functions below.

O1.1A Views

The western and eastern facades are dominant, mostly solid concrete walls, with openings on specific locations to direct views on activities.



Fig. 063 Fenestration designed to direct views

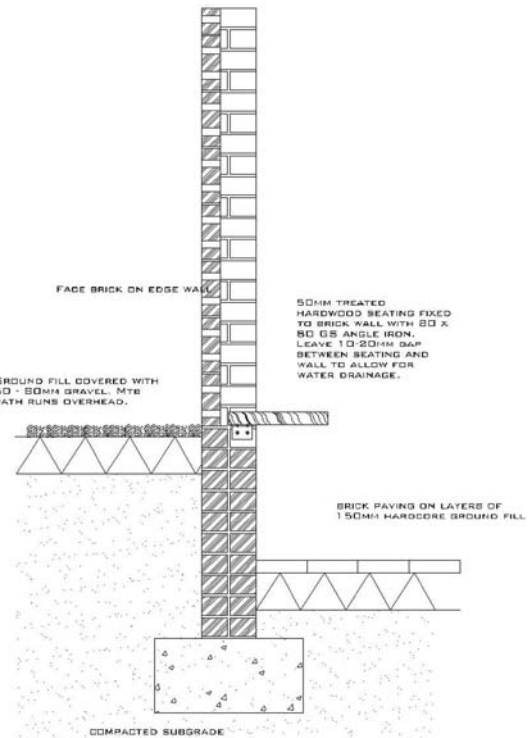


Fig. 064 Detail of landscape seating

O1.2 INCLUSIVE ENVIRONMENTS

O1.2A Routes

Routes are constructed out of concrete, brick pavers or natural ground. Seating areas are detailed and natural vegetation is used to create a human scale.

O1.2B Changes in level

Level changes on site are employed to enhance the sensory experience of the visitor, to direct and to manipulate views. Refer to the sections of the construction drawings.

01.4 PARTICIPATION AND CONTROL

01.4A Social spaces

These spaces are designed to be life enhancing. Meticulous detail is given to landscape seating, quiet and more serene spaces are created midst all the activities and all the access points to the site lead to the central square.

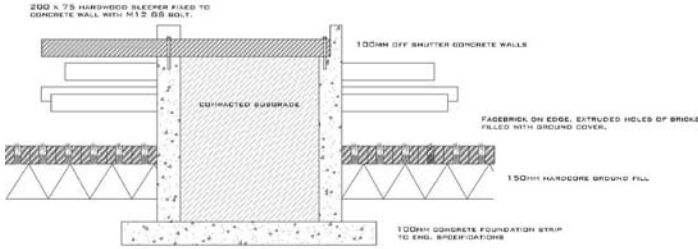


Fig. 065 Climber's seating

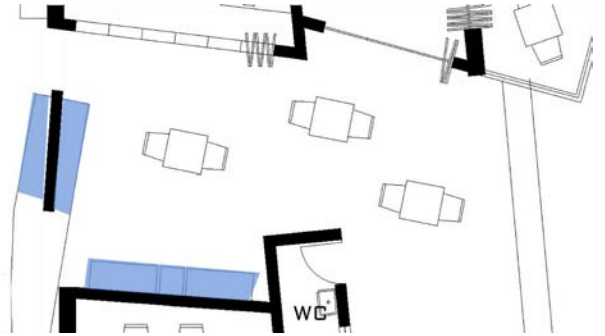


Fig. 066 Quiet and serene spaces

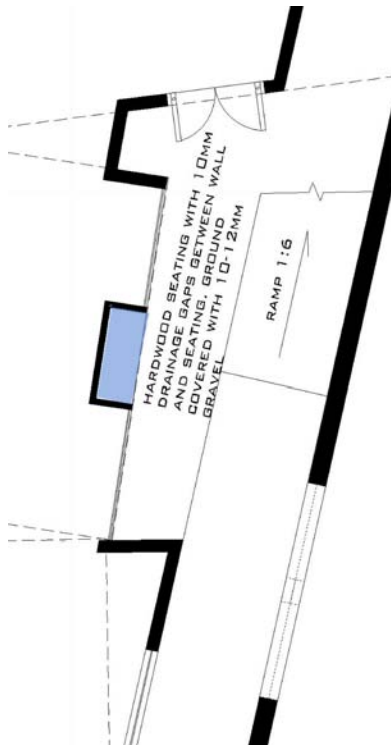


Fig. 067 Quiet and serene seating

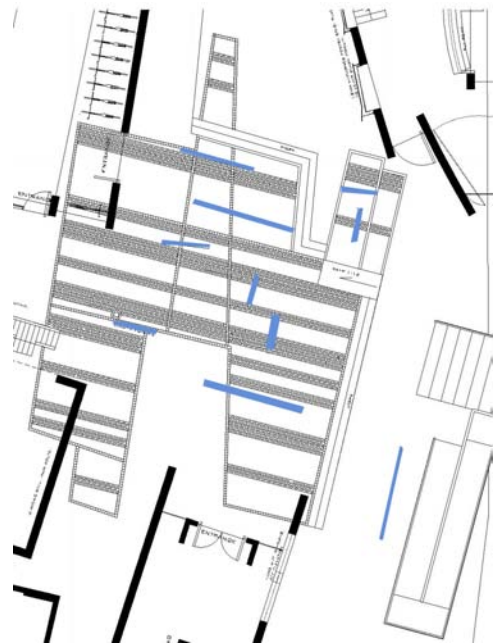


Fig. 068 Central square with exhibition walls

The following tables show the cost estimate, feasibility study and the risk analysis that was done on the project.

description of area		total area	rate	total cost
retail				
	ground floor	1007 m ²	R1900/m ²	1,913,300
	first floor	481 m ²	R2055/m ²	988,455
TV studios		38 m ²	R2055/m ²	78,090
offices		147 m ²	R2000/m ²	294,000
restaurants		165.5 m ²	R1900/m ²	314,450
landscaping		2486 m ²	R200/m ²	497,200
open parking		739 m ²	R160/m ²	118,240
			total building cost	4,203,735

Cashflow after completion of project					
years	2004	2005	2006	2007	2008
cross income [no vacancy factor]					
escalates @ 10 % /year	801 084	881 192	969 311	1 066 242	1 172 866
current expenses					
escalates @ 12 % /year	144 195	161 498	180 868	202 572	226 880
nett income [no vacancy factor]	656 889	719 694	788 443	863 666	945 986
LESS vacancy factor [%]	5%	3%	2%	0%	0%
nett income [with vacancy factor]	624 045	698 104	772 674	863 666	945 986
LESS Bond repayments R4					
697 969 @ 15% over 30 years payable in advance	704 695	704 695	704 695	704 695	704 695
nett income before tax	R-80650	R-6591	R67 979	R158 971	R241 291

Identified risks	Risk assessment [consequence]	Control assessment risk factor [probability]	Assurance priority [category]
Insufficient budget		4	3
Life span		5	4
Continual suitable management		4	4
Development relies on the upgading of the Apies River scheme		5	3
Insufficient marketing		3	2
Delay in schedule		4	4
Adaptability and flexibility of design		4	4
Culture differentiation		2	3
Environmental sensitive area		3	3
Floods		4	2
Water restrictions		4	2

Identified risks	Risk quantification
Insufficient budget	medium
Life span	high
Continual suitable management	high
Development relies on the upgrading of the Apies River scheme	high
Insufficient marketing	low
Delay in schedule	high
Adaptability and flexibility of design	high
Culture differentiation	low
Environmental sensitive area	medium
Floods	medium
Water restrictions	medium

Identified risks	Risk assessment [consequence]	Control assessment risk factor [probability]	Assurance priority	Mitigation Measure
Life span	catastrophic	moderate	high	Ensure sufficient marketing and managing of the project. Ensure that the development is feasible and profitable before lifespan ends. Ensure a good financial system and appoint a QS to oversee the development
Continual suitable management	major	moderate	high	Increase security by increasing financial stakeholders
Development relies on the upgrading of the Apies River scheme	catastrophic	unlikely	high	Ensure continual negotiations with the Tswane City Council on the development of the Apies River scheme. Implement a risk analysis on whether this project could go on with out the Apies River development. Consider the possibilities of another site.
Delay in schedule	major	moderate	high	Provide external oversight and good project management to enable phasing of this project. Implement a strict adherence to the schedule and provide channels of reporting
Adaptability and flexibility of design	major	moderate	high	Even though this project is a function specific design, ensure, as far as possible, that floor to floor heights and internal walls are adaptable and flexible.

03.1 Water

Refer to "Systems" diagrams 00.2, 00.3 and 00.4.

03.2 Energy

Solar control is achieved by minimilising the openings on the exposed eastern and western facades and also by protecting the northern and southern facades with elongated E and W facades. A steel louvre system [discussed in "glazing"] is designed to protect some of the facades.

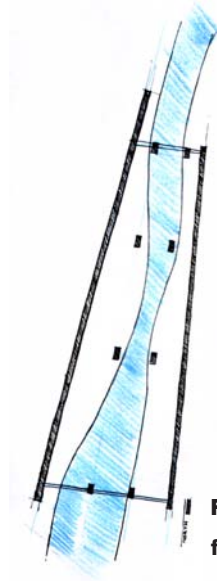


Fig. 069 Mostly solid E and W facades allows for N-S ventilation

03.3 Natural light

The minimised openings on the E and W facades created the opportunity to introduce alternative means of light entry and the variation of lighting levels in specific spaces.

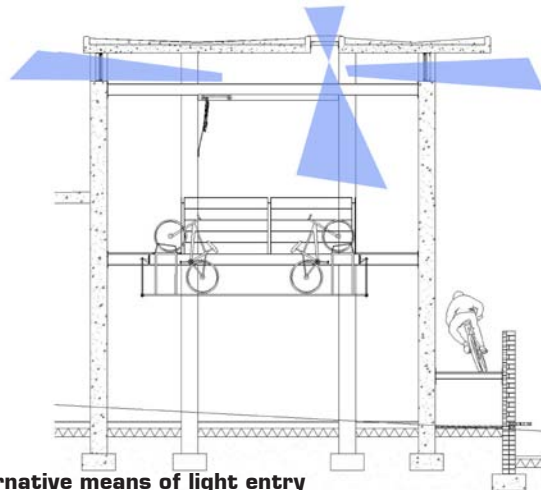


Fig. 070 Alternative means of light entry

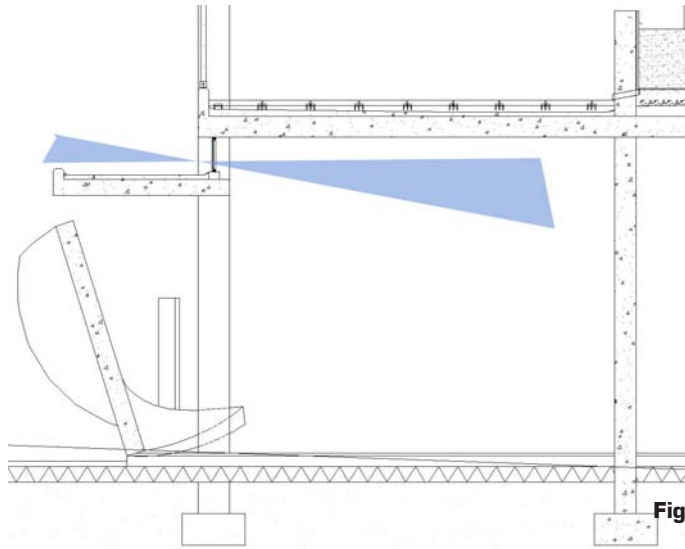


Fig. 071 Alternative means of light entry

0.3.4 Vegetation and landscape

A strip of Red Autumn Gras runs along two main pedestrian entrances. To further enhance the rough veldt feeling on site brick pavers will be filled with ground cover and veldt weed/grass will be left to grow in it.

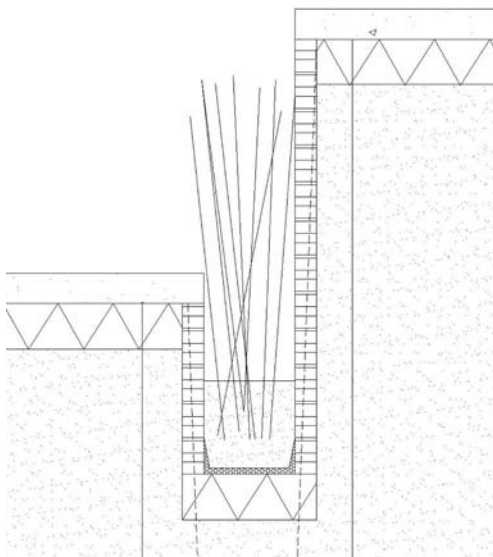


Fig. 073 Rooigras grass strip running through the site

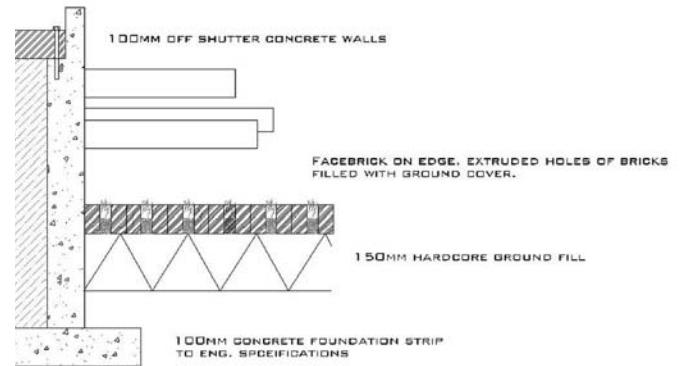


Fig. 073 Detail of the central square paving



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"... The little prince went off to look at the roses again.

"None of you is at all like my rose. As yet you are nothing," he said to them. "Nobody has tamed you and you have tamed no one. You are like my fox when I first encountered him. He was just a fox like a hundred thousand other foxes. But I made him my friend and now he is unique in all the world."

And the roses were greatly embarrassed.

"You are beautiful but you are empty," he continued. "One cannot die for you. To be sure an ordinary passer-by would believe that my very own rose looked just like you, but she is far more important than all of you because she is the one that I have watered. And it is she that I have placed under a glass dome. And it is she that I have sheltered behind a screen. And it is for her that I have killed the caterpillars (except for the two or three saved to become butterflies). And it is she I have listened to complaining or boasting or sometimes remaining silent. Because she is my rose."

[De Saint-Exupery, 1944, p81-82]

shawni

bernard

vonni

marleen

chris

my parents

linelle

theoi

You have tamed me...

*"Your love colours the dawn.
Your voice, the power of thunder.
Your hand the healer of the weak.
Your love fills oceans and Your voice calms seas...
and You created me.*

Your eyes are so amazing, so deep like crashing waves on a cloudy sea and these pounding waves they consume me.

But there is so much more to you, so much I do not know, so much love I have yet not encounter, so much You overflow.

*And just when I think I know Your complexities, You step into the light.
And just when I think I know Your voice, You open up my ears.
It is like trying to know every single glowing star on a cloudless night, but Your depth and Your vastness keep me running after You..."*

[Rieger, F., 1999, Remnant Records]

It is truly only in You that I live and move and have my being

