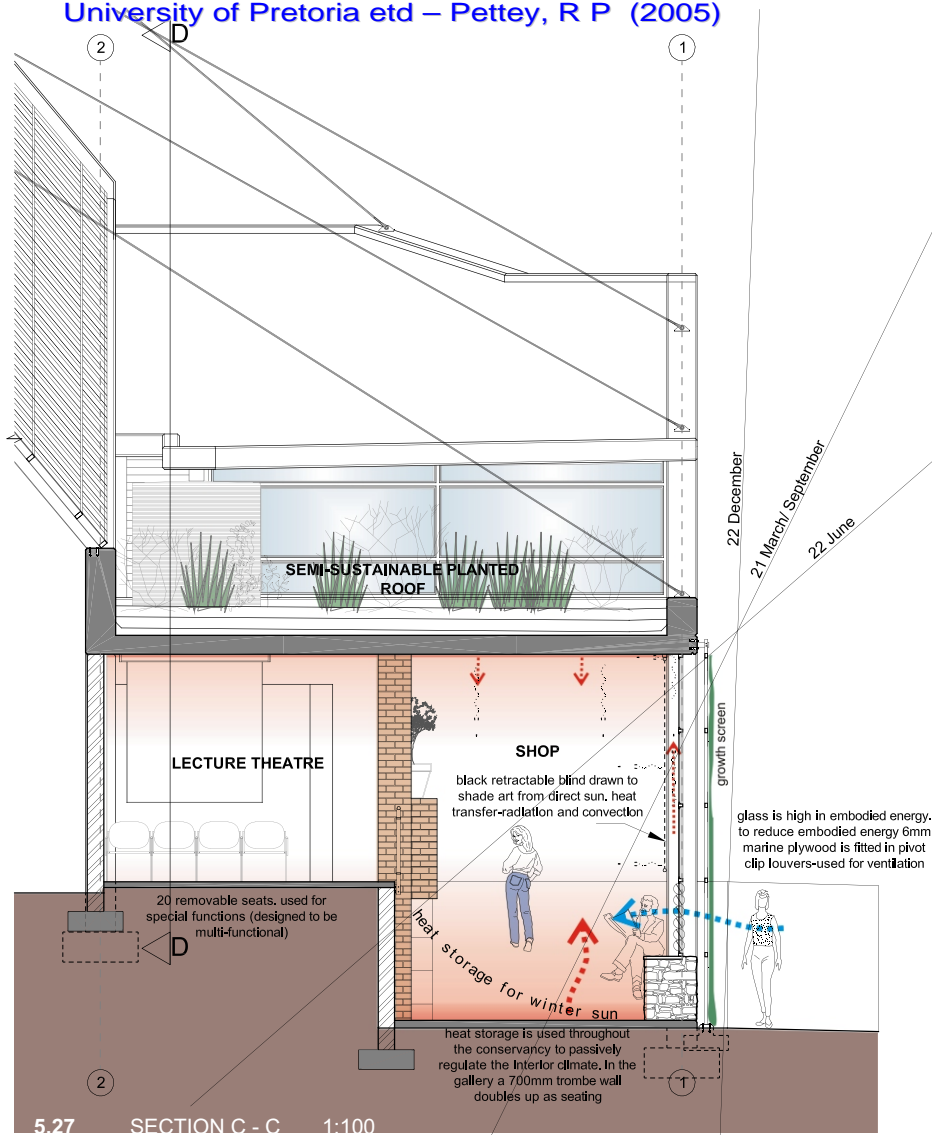


▽104 415
concrete upstand beam
▽103 750
concrete upstand beam
▽103 000
off-shutter concrete ceiling

▽100 000
ground floor

▽97 500
base level

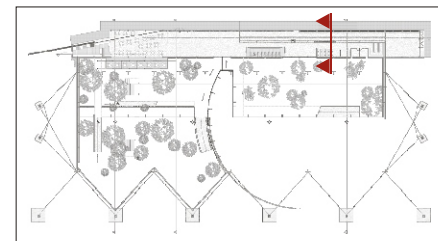


Ventilation within the Ridged Core

Ventilation is provided naturally. Passive ventilation, natural convection and existing wind patterns are utilized to facilitate air changes.

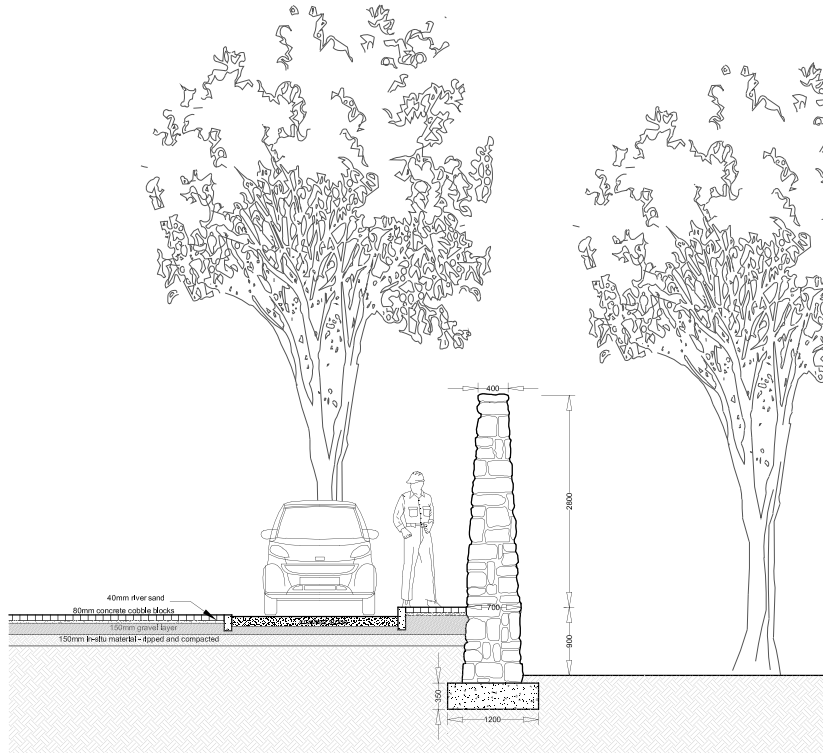
Sun Penetration

All aspects of a passive climatic system have to function as a unit. The growth screen together with thermal mass would be useless if the sun angles and orientation of the structure were not properly considered and calculated. Refer to figures 5.27 and 5.38.



5.28 KEY PLAN





5.29 SECTION G - G 1:100

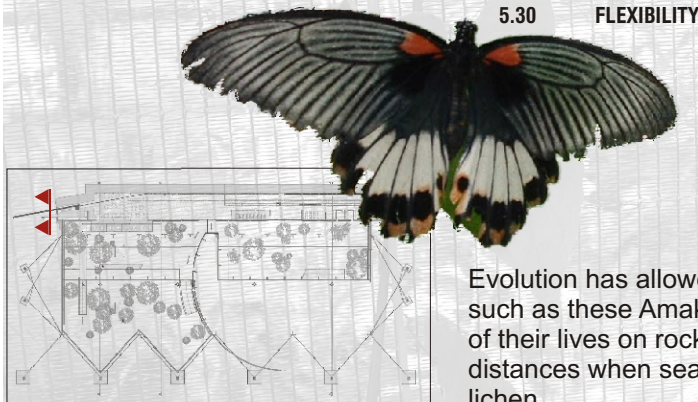
Stonewalling

To the west of the ridged core is a quartzite stonewall that stands 3.7m high at its highest point and protrudes into the landscape cutting into the contour for 25m. As with the stone infill panels the quartzite will be purchased from a local quarry. Mass concrete foundations with a compression strength of 15MPa will be required. The stone will be chiselled into shape and built into the wall using class III mortar. Joints are to be 25 - 50mm wide and deep, square recessed.

The area behind the stone wall functions as the service core; providing access to the service entrance of the kitchen, the refuse disposal zone and the escape exit of the first floor. Six parking areas are also provided for the staff.

Adaptable and Flexible

The adaptive use of space was a key issue when creating a design that represented holistic sustainability. All areas have the potential of being used for more than one purpose. The manipulation of internal spaces will increase operational income as well as ensure a prolonged building life cycle. The repetition of spaces was also avoided, so as not to create areas that had the potential of becoming stagnant, unused, dead zones.



5.32 KEY PLAN



5.31 ADAPTATION

Evolution has allowed butterflies to adapt to their environment, such as these Amakoza rocksitters. These butterflies spend most of their lives on rocks and boulders and only fly very short distances when searching for a mate. They feed on rock lichen.

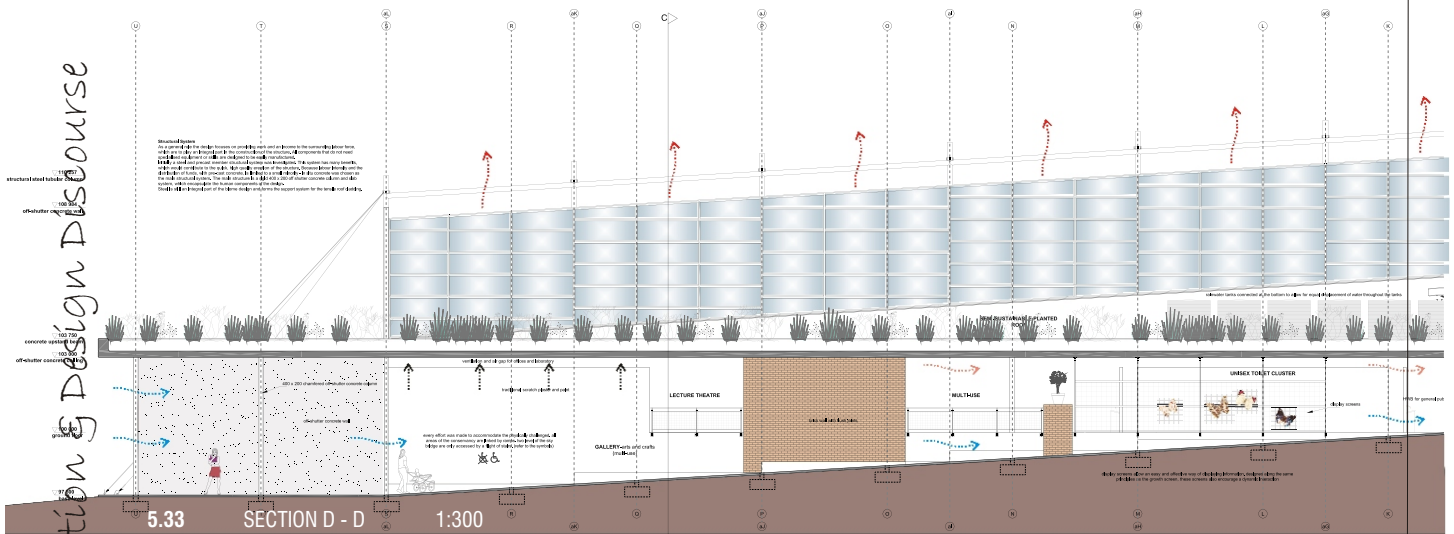
Capital and Ongoing Costs

Materials that need constant replacing and maintenance are used to promote the building as a dynamic system which grows and adapts over time. Vegetation is not normally seen as a building material but is used in the conservancy as one of the most important elements in this environmentally sensitive scheme.

Water Use and Collection in the Ridged Core

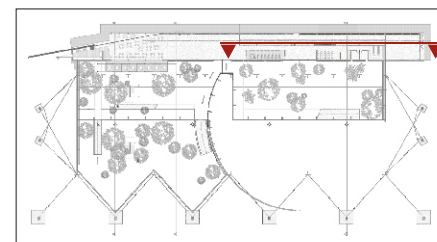
Rainwater collected off the roof is stored in galvanised steel tanks each with a capacity of 3800 litres. The stored water is used directly below in the toilet cluster. The close proximity of the tanks to the toilets reduces piping and allows gravity flow to be used to feed the water into the cisterns.

Many factors influence the water consumption within the conservancy. Assuming that 60 people visit the conservancy every day for 365 days a year, and on average, each uses 20 litres of water, 438 000 litres of water will be needed annually. The amount of water that can be collected on an annual basis far exceeds this demand.



Passing Through

Movement is the only way to perceive space. The design of the conservancy addresses many aspects with regard to movement; approach, waiting space, threshold, leaving and arriving space and entrance space. By this stage in the technical investigation, a visitor visiting the conservancy would have approached the conservancy from the parking access route and moved through the gallery entrance up towards the shop and restaurant. Section D - D illustrates the pedestrian flow through the ridged core.

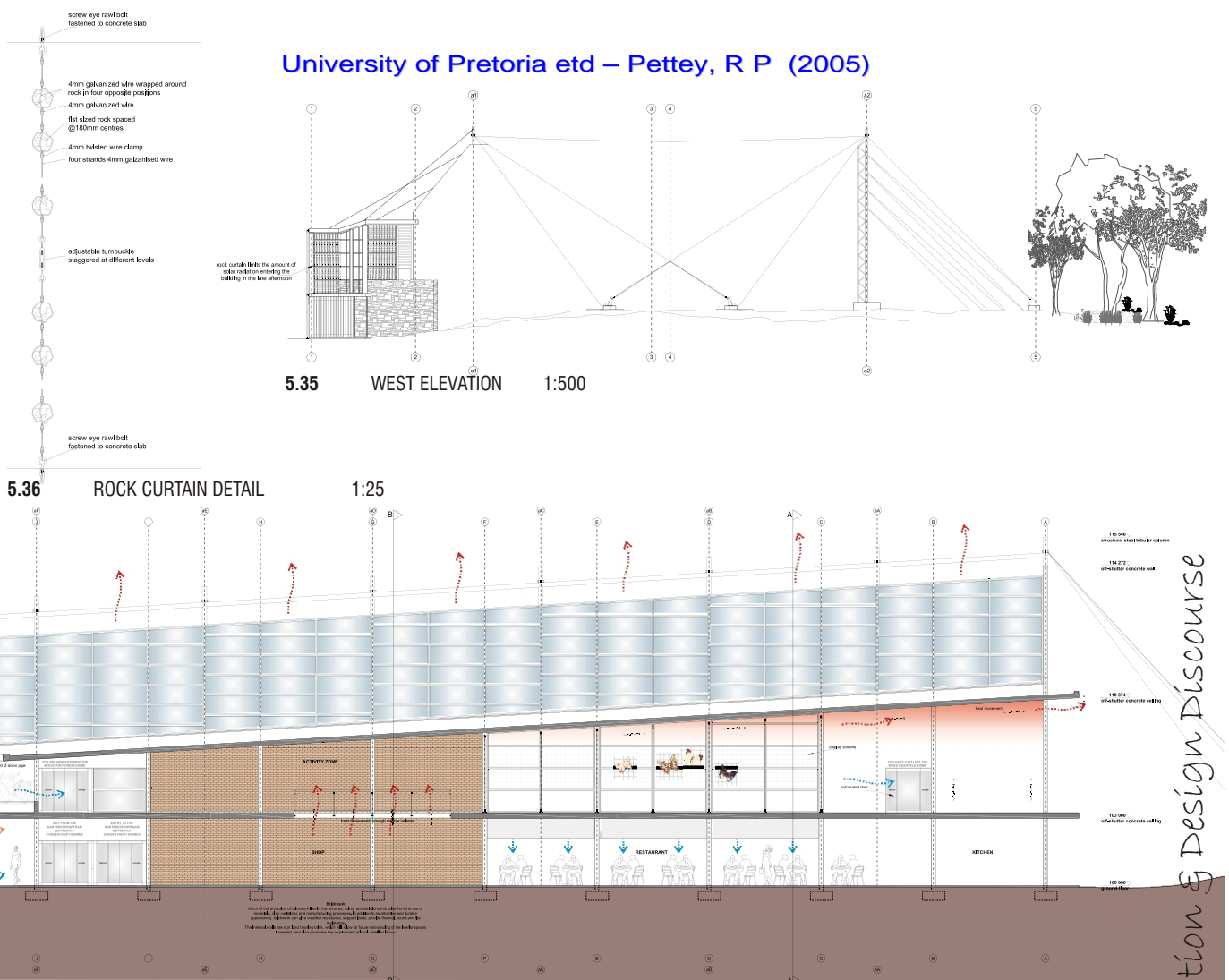


5.34 KEY PLAN

Technical Investigation & Design Discourse



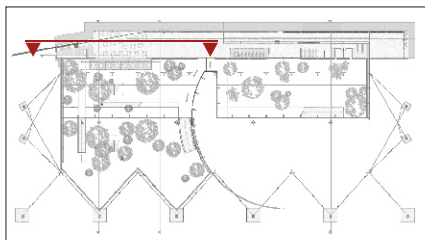
University of Pretoria etd – Pettey, R P (2005)



Brickwork

Much of the attraction of brickwork lies in the textures, colour and variations that arise from various clays and manufacturing processes. In addition to an attractive and durable appearance, brickwork can provide weather resistance, support loads and provide; thermal, sound and fire resistance.

Brick is reused from the demolished house for the internal non-load bearing walls. This allows internal spaces to be altered if the use of the space changes in the future.



5.37 KEY PLAN

Western Elevation - Rock Curtain

The rock curtain limits the amount of solar radiation which enters the building in the late afternoon. The construction is very simple and is low in embodied energy. The stones also enhance the grounded and earthiness of the building, which ensures that the users remains in contact with nature throughout their visit.

Technical Investigation & Design Discourse

045

