

ARCHITECTURE IN RUINS



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A Visitors + Archaeological-Research Centre





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In memory of and dedicated to my Oupa Len. . .



+

“Experience is the act of living and experience is the arena in which adult learning occurs. The crucial question becomes: what kind of experiences do we want? If we want to learn a great deal or have our perspectives and beliefs challenged, we will aim for new, different and demanding situations. Can we deliberately construct our own learning experiences aimed at achieving what is most important to us? We can, and when we do that, ‘the act of living’ becomes the product of our own creativity.” (Morris, 2002:31)



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a place of memory, celebration, opportunity & future



West Fort in its surrounding context



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Submitted in partial fulfillment of the requirements for the degree of
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+ **ABSTRACT**

This dissertation investigates the relationship of the Fortifications in Pretoria to the public. The architectural problem of making the public aware of these Fortifications is investigated and responded to by designing a Visitors centre, to draw the public to the Fort, by creating an experience of moving through the landscape.

This experience orientates the visitor visually towards various other iconic monuments, by symbolically turning the visitor into a camera, capturing views and experiences for himself.

The program also provides facilities for Archaeological research which will be done on various other Fortification ruins and archaeological sites in Pretoria. The visitors experience and interaction with the landscape and the vision of the Fort as artefact contributes to the visitors being made aware of the gradual deterioration of the Fortifications in the city to ruins.

The Fortifications themselves are monumental ruins, but by adding to them yet still respecting their heritage qualities, makes this a sensitive and respectful response to an important problem of how to preserve historical artefacts and at the same time utilising them.

West Fort will become the catalyst for public awareness and experience to the other Fortifications within the city context.



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01

Introduction



+ “In Words, as Fashions, the same Rule will Hold;
Alike Fantastick, if too New, or Old;
Be not the first by whom the New are try’d,
Nor yet the last to lay the Old aside.”

Alexander Pope, *An Essay on Criticism*



fig. 1.1. Layered montage illustrating design intention and concept. (2010)

+ The layered concept is of a physical and historical origin. It was inspired by the Ukrainian artist Mark Khaisman, who uses packaging tape on plexi-glas in various layers to create his artistic impressions

+ Introduction

The intended project in the Lotus Gardens area, Pretoria West is to introduce to the public and create an awareness of the Military Fortification's in Pretoria. These iconic structures were built during the First and Second Anglo Boer Wars. The project will consist of a visitors centre and an archaeological didactic and research centre. The idea of the visitor is to be made aware and informed of various iconic structures within Pretoria, including Fort Klapperkop, Fort Schanskop, Fort Wonderboompoort, also buildings including the Union Buildings, Voortrekker Monument, Church Square and Freedom Park. The archaeological centre's focus will be on work done at archaeological sites and mainly the various other Fortifications within Pretoria. Therefore a primary focus being on the tourism potential being created by the project for the area.

The Fortification of Pretoria on the various ridges: Magaliesberg, Waterkloof and Waterberg, aimed at the visual safekeeping of Pretoria. The Forts ensured that people could not enter the city willingly during the Anglo Boer Wars. The concept therefore is to draw people to the Fort, a contrast to what it was intended for. The design approach is to inform the public about these historical monuments within our landscape.

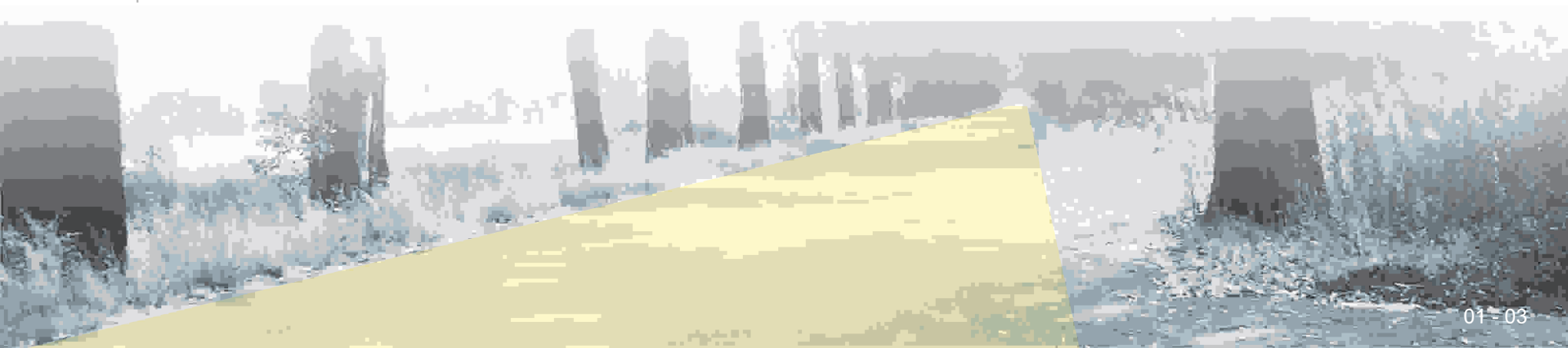
+ Vision

Memory - The site itself hosts the ruins of the West Fort (1898). History/Memory would be unveiled through the archaeological research and excavation, through which the *genius loci* (spirit of a place) of the area would be experienced on a physical and emotional level. The memory of the cultural heritage laying dormant on the site, gives rise to the incorporation of a visitors centre, that would encourage the public to explore the unexplored.

Celebration - The Archaeological and Didactic Research Centre will become a place for all the people of South Africa. By promoting cultural understanding and respect, it will promote social cohesion and the further development of a shared national identity, through the duality of information being explored.

Opportunity - The opportunity persists that the centre will be mainly used to educate the visitor about the various iconic structures and also within the field of archaeology. This will ensure that public participation is included, therefore educating people of many different races and genders in archaeology and also the Forts. This would start the concept of layering, where the opportunity exists for the discovery of more archaeological significant artifacts, dealing with the ruins. The opportunity to perceive the palimpsest of the city and its rich historical presence from the visitors centre will also influence the experience and celebration of the history of Pretoria.

Future - The vision of the centre is that it would become a didactic entity to the Western area of the city. The future concept of the centre would be to become the base and stepping stone to various archaeology works done on the other Forts and therefore informing people about these monuments and their functions of the past.



+ Architectural Problem

The specific problem is that the historical ruins of the Fort are present on the site, but we neglect it by overlooking its importance and opportunities for researchers discovering the undiscovered. The fact that most of the public and tourists visiting Pretoria, aren't aware of the significant Fortifications within the cityscape. Therefore these structures should be made more accessible to the public and researchers. One of the sub-problems are that only three of the 7 Forts in Pretoria have been restored and studied by archaeologists. The neglected Fortifications, sets an opportunity for archaeologists to restore and explore these ruins. The fact that their prominence and historical significance are not recognized diminishes their chance of survival.

+ Client

One of the proposed client's is the University of Pretoria and the Archaeology and Anthropology Department of the University of Pretoria. The Archaeology students go on various learning camps through the year to gain practical knowledge. The Department funds these trips themselves, therefore a new research/training centre would benefit the Department immensely. The centre would save the Department a lot of money and would ensure a space for the students to visit and learn. The centre would also be a didactic element to scholars, as the client/department visit schools to teach about archaeology. The centre would ensure the engagement of public and archaeologists, the interface needed to broaden both's knowledge.

The other proposed client is the Museum Park, which houses the National Cultural and Heritage Museum. They would benefit from the funds generated from the tourism aspect and will also be in charge of the Visitors/Information centre.

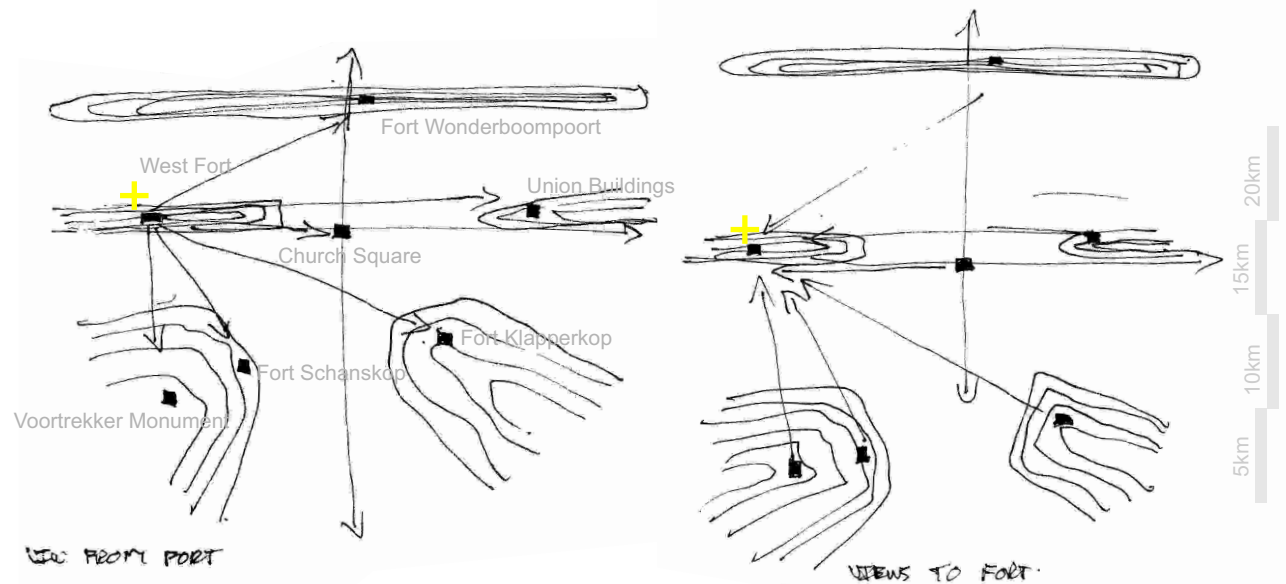


fig. 1.2. Sketch indicating relation of West Fort to other historical icons in Pretoria. (2010)

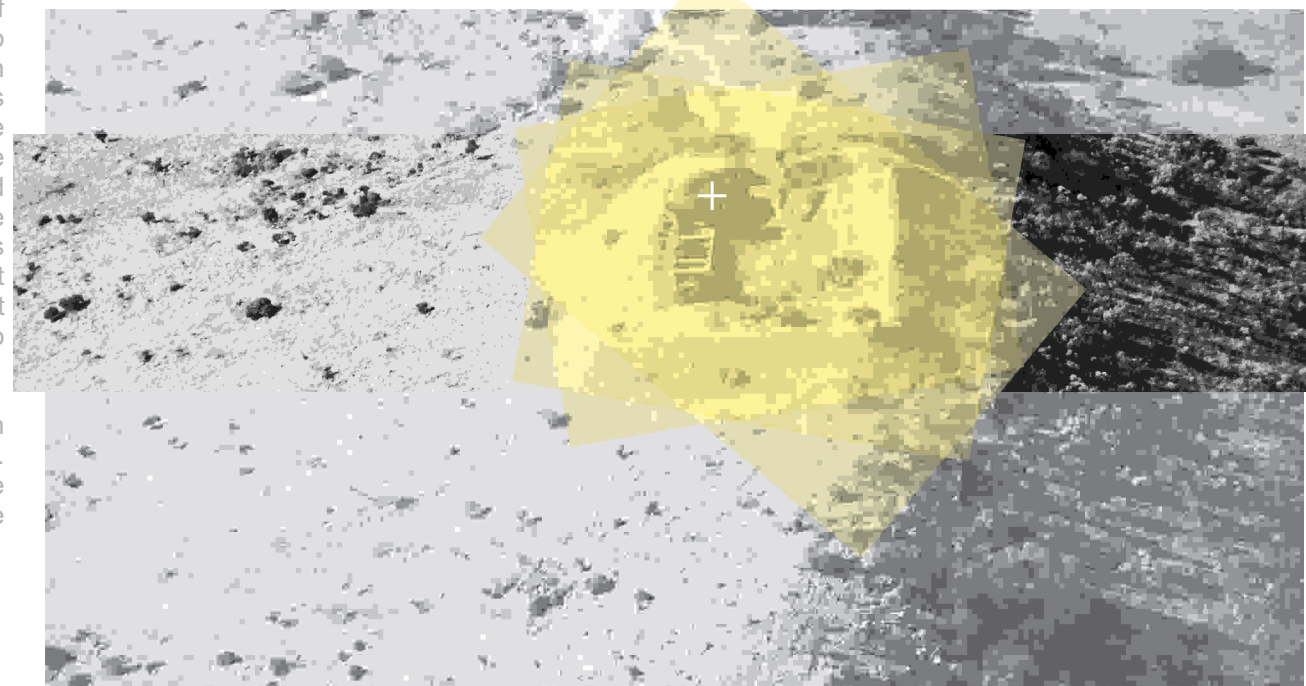


fig. 1.3. Layered image of the West Fort on the WitWaterberg ridge. (Holm Jordaan: 2008)

+ Program

The architectural program will consist primarily of a visitors/information centre and secondary to that an archaeological research and didactic centre. The visitors centre will contain information spaces informing the public on the South African Military history, the Fortification of Pretoria and specifically the West Fort history. The archaeological research area would include research spaces and didactic spaces where students and archaeologists would learn and research. The archaeological research will persist mainly on the Fortifications in Pretoria and will include other archaeological work of various cultural rich areas. The landscape will become the exhibition space, where the visitor will capture views across to the city and experience the spirit of the place, through the natural landscape.

The visitors centre will inform the public about the palimpsest of Pretoria and the history of the Fortification of the city. The archaeological research area will include research on the Fort and continue onto the other Fortifications in the city; restoring and researching these iconic artifacts. The public and tourism will sustain the building, whereas the archaeological aspect, will ensure continuous development and research into the restoration and excavation of the Forts.

Buildings in the heritage village at the foot of the mountain will be proposed to be used as accommodation for students and archaeologist using the research centre. Various other accommodation could also be included for tourists and the public, whom are visiting the city and exploring the various historical monuments.

The architectural program would then consist of:

- Visitors / Information Centre (approx. 200 tourists/day)
- Exhibition spaces (approx. 200 tourists/day)
- Archaeological research space (approx. 6 researchers)
- Exhibition spaces (approx. 200 tourists/day)
- Archival storage (Archaeological artifacts)
- Storage for archaeological tools (approx. 50m²)
- Teaching spaces (approx. 40 archaeological students)
- Offices (Curator & Manager)
- Ablution
- Parking (4/100m² of building space)
- Outdoor Performance and celebration area (150m²)

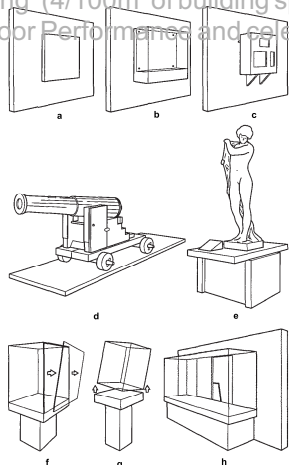


fig. 1.4. Exhibits may be of four dibasic types:
 a,b,c Hanging or wall mounted;
 d,e Free-standing and open exhibits;
 f,g,h Contained exhibits and display cases. (1999: 31-5)

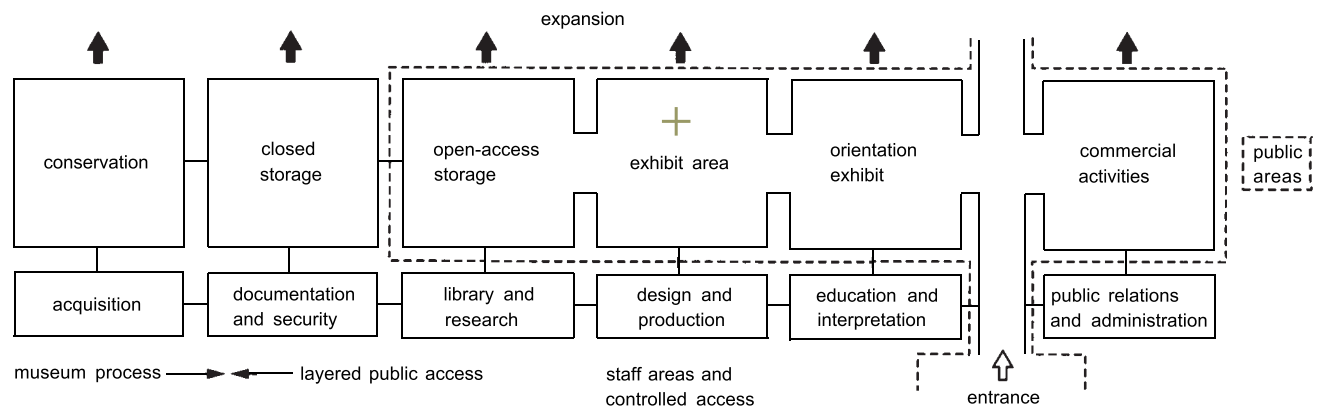


fig. 1.5. A layout concept showing a clear relationship between functions and an approach to zoning and expansion. (1999: 31-3)

Field site tools used by archaeologists illustrated below, informs the spatial size of the storage areas and informs the reader in the various tools used by archaeologists.

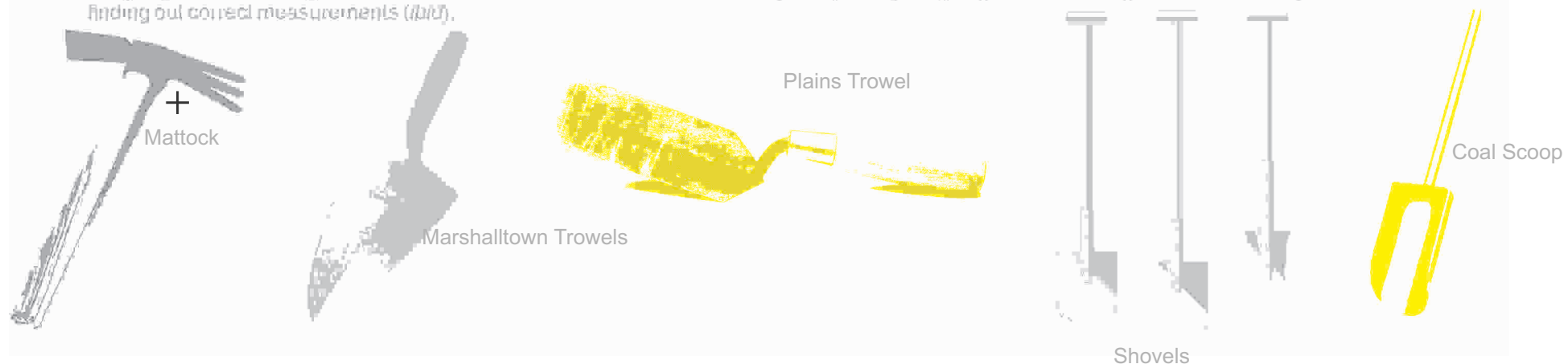
Field site equipment include digging tools, recording apparatus and safety kit. Digging tools help in breaking the soil crust and uncovering artifacts. Here is a list of the various tools used by archaeologists.

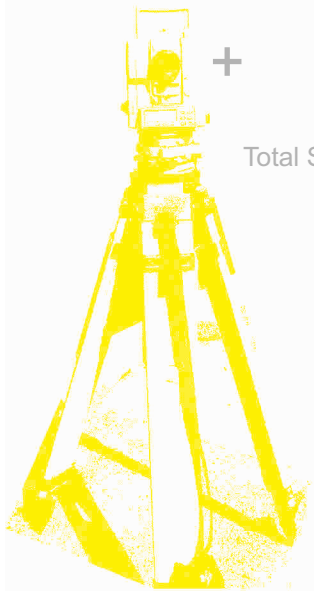
- **Mattock:** It is a digging tool similar to the pickaxe. The mattock is used to break hard ground and make the process of digging easy. The blade and handle of the mattock are perpendicular to each other. The blade is broad and resembles a chisel.
- **Marshalltown Trowels:** These trowels are commonly used in the United States. They have a sturdy body and flat blade which can be sharpened.
- **Plains Trowel:** This kind of trowel facilitates working in tight/awkward corners and in keeping the lines straight.
- **Shovels:** Shovels are of two types, i.e. round-ended and flat-ended.
- **Coal Scoop:** This is another field site tool used in collecting and carrying soil to the screeners. Archaeologists find this tool particularly useful when they have to deal with square holes.
- **Total Station Transit:** This tool is used to prepare a map of a particular archaeological site. The elements/details presented in such maps include surface topography of the site, different features of that area, positioning of the units engaged in excavation, and the relative location of artifacts.
- **Bucket Auger:** It is a handy tool that is used in exploration of buried sites. The need of using bucket auger arises in excavations of floodplain situations. The tool can be extended up to the length of 7 meters.
- **Shaker Screen:** The soil which is excavated by means of digging tools is sifted through shaker screens. This equipment has a ¼ inch mesh which helps in recovering artifacts that go unnoticed during excavation.
- **Dust Pan:** It is a simple tool used in taking excavated soil away from archaeological sites in a neat way (archaeology.about.com:2010).

TOOLS USED BY SPECIALISTS:

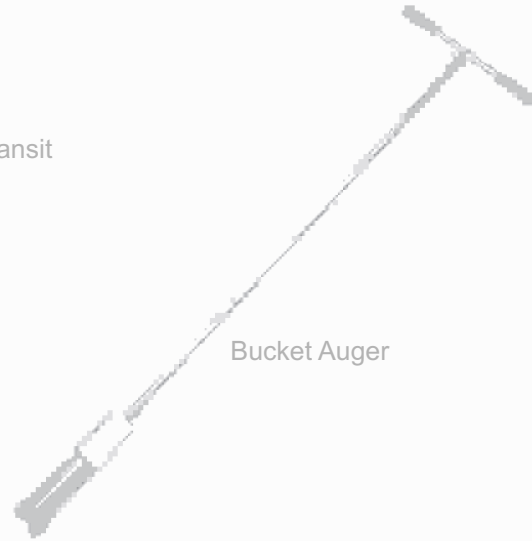
The archaeological tools mentioned below are mostly used in a laboratory environment. The information about what tools do archaeologists use in laboratories is presented below.

- **Flotation Device:** The flotation device is used to separate smaller and larger artifacts by the method of light and heavy fraction. Soil samples which contain artifacts are kept in metal baskets and washed by gentle streams of water. Light artifacts (for eg. seeds) float at the top, while the heavier objects sink down.
- **Equipment for Analysis:** Simple tools like calipers and cotton gloves are needed to carry out the analysis of artifact fragments. Gloves serve the purpose of preventing cross-contamination.
- **Nested Graduated Screens:** Nested graduated screens are used for size-grading. In the process of size-grading, the percentage of artifacts falling in different size-ranges are found out. Nested graduated screens used for this purpose have small mesh openings at the bottom and larger ones at the top.
- **Weighing and Measuring:** The artifacts obtained in excavations are carefully analyzed by weighing and measuring them. Different types of scales are used for finding out correct measurements (IBIT).

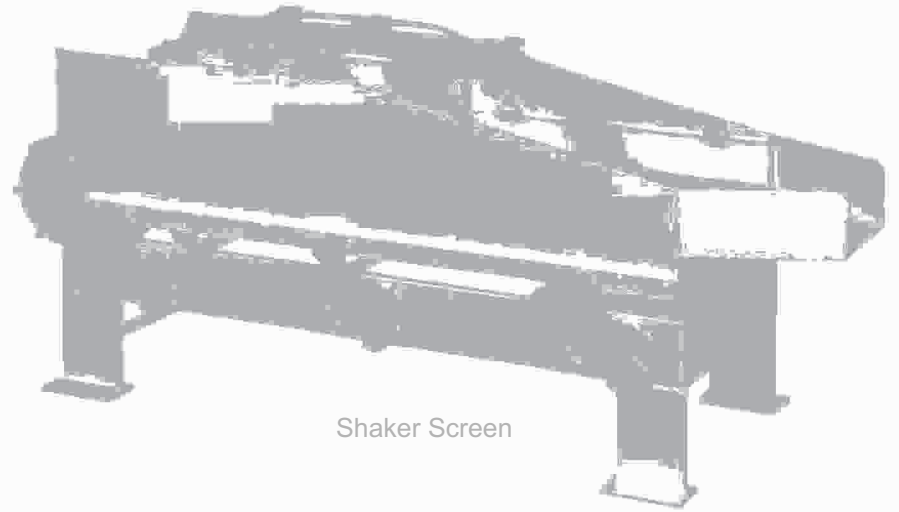




Total Station Transit



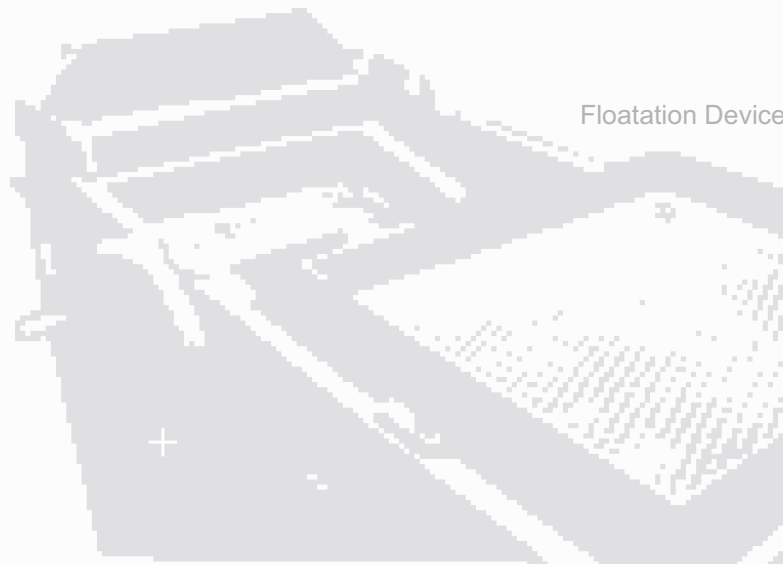
Bucket Auger



Shaker Screen



Dust Pan



Floatation Device



Nested Graduated Screens

+ Users

The following is a brief introduction for the different types of users of the proposed design. There are four types of users that will occupy the various buildings at different times of the day.

ARCHAEOLOGISTS

The archaeologists will use the Archaeology Research Centre on a daily basis. The intent of the Archaeologists on site is to work on the Fort, but the aim is to eventually work on the various remaining Forts in Pretoria. To preserve and restore the remaining ruins. Various other archaeological site in and around the area will also be used.

Archaeologists will be able to interact with the public and teach students visiting the centre. They will also have the opportunity to teach the students on site, being either work done on various Forts or field work. The archaeologists will also inform the public about archaeology and more important archaeological work done on the Forts.

STUDENTS

The archaeology students will visit the research centre to gain practical knowledge and field work experience. The students will visit and use the research centre on a bi-weekly basis or whenever they go on experiential camps or seminars.

They will use the research centre also to interact with the public. The students will use the existing heritage village to stay in and therefore interact with the local community as well. Inform the local people about archaeology and the various Forts hidden within the city.



TOURISTS / PUBLIC

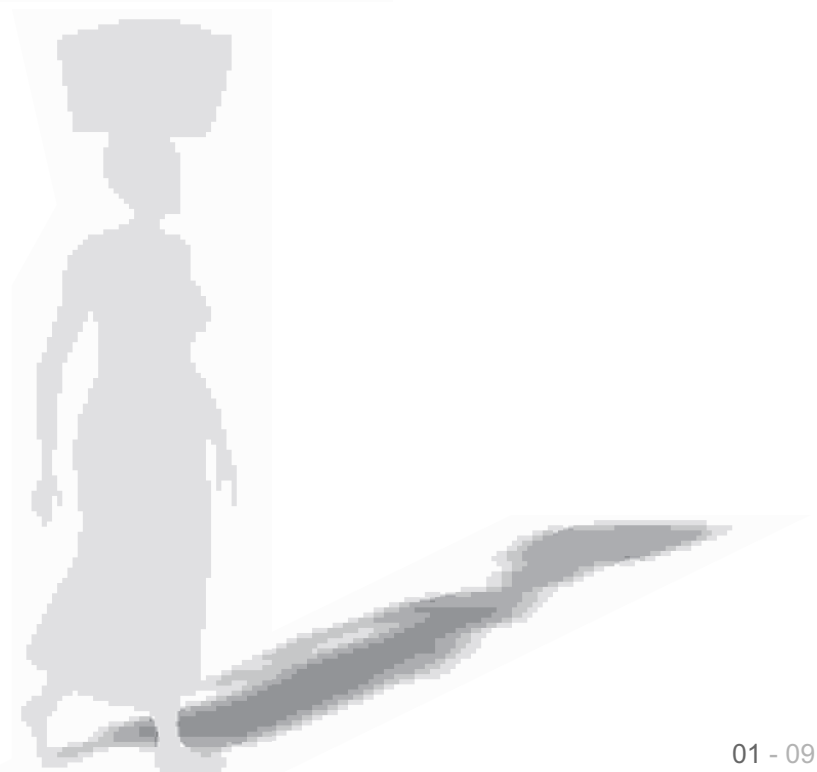
The public will be the main focus of the design. The conceptual approach of the design is focused on the public. The landscape as exhibition spaces will be used by the public (visitor) and tourists. The tourist and public's experience of capturing and recording images, will create a sensual and unique experience for each visitor. The aim of informing the visitor of the history of various iconic monuments and Fortification of Pretoria, is inherent to the conservation and restoration of the Forts in the city. The interaction between the public and archaeologists, will inform the public about the importance of the archaeological work done, be it on various Forts or on other archaeological field work.

The tourists and public will sustain the project, through donations, entrance fees, the curio shop and the use of the café/restaurant. Informing the public about the importance of the Fortifications, the archaeological research to uncover this legacy and monuments in the city is the main focus of the scheme.

LOCAL COMMUNITY

A sub-problem is to ensure the interaction of the local community with tourists and visitors. The aim is to incorporate the local communities into the design and an informal market area, where the local people will interact with the visitor, gaining knowledge on various levels, but also with the visitor being informed about the local culture and opportunities in the area.

The archaeological students will also interact with the local community when they stay in the heritage village. The local people will in a sense be informed about archaeology and this could create opportunities for them.



+ Architectural Intention

The main architectural intention, is to acknowledge the significance of the architectural and historical ruins, and the possibility of the different layers emerging to the surface. The archaeological and architectural presence in the area, will ensure that the heritage will not go forgotten. The main focus will be the didactic influence on the public and the students, where the visitor will be informed about the history and also archaeology. The intention is to let the visitor experience the landscape and the spirit of the place, and reflect back upon the views being framed towards the city. The visitor becomes the observer capturing “images” of various other iconic structures, but also learning and experiencing the art of archaeology. The landscape becoming an exhibition space in itself creates a poetic, tranquil scene for the visitor.

+ Pretoria

The following is a brief introduction into the history of Pretoria, to familiarize oneself with the origin of the city and the history that follows it. The first homestead in the Pretoria area was probably the home of J.G.S. Bronkhorst, who settled in the Fountains Valley in 1840. More Boer families put down roots around the nearby Elandspoort settlement. In 1855, two years after the Sand River Convention conferred formal independence on the territory north of the Vaal River, the residents of Elandspoort had the village proclaimed the ‘kerkplaas’ for central Transvaal. The following year it became the township of Pretoria, which, at the time, consisted of about 80 houses and 300 residents (2007:200).

Commandant-General Marthinus Wessel Pretorius had bought a large amount of land in the area, which was taken over by the government as they foresaw the development of a large centre. The town proper began to take shape in 1855 as a result of Andries du Toit, a presidential advisor, exchanging of one of his Basutho ponies for the entire area known, today, as Arcadia. He spent the next two years surveying his property with pegs and chains (*ibid*).



fig. 1.6. 1900 map indicating the initial layout of Pretoria by Zytse Wierda. (1987:50)

Stephanus Meintjies developed the area and was honoured by having a nearby hillock named Meinjieskop. This resulted in Pretoria extending from Potgieter Street in the west to Prinsloo Street in the east and from Boom Street in the North to Scheiding Street in the South (2007:201).

The initial full designation of the city was Pretoria Philadelphia ('the brotherhood of Pretoria') and it was not named after M.W. Pretorius, but after his brother Andries, victor of the Battle of Blood River. When Marthinus Pretorius failed to unite the Transvaal and the Orange Free State during his presidency he resigned and was replaced by Reverend Thomas Francois Burgers in 1870 (*ibid*).

Pretoria was declared the official capital of the independent Voortrekker Republic of the Transvaal in 1860. Not long after its establishment it became known as the 'city of roses' because its climate encouraged the growth of rambler roses, which covered gardens and hedges all around the city. In 1888 J.D. Cilliers, a resident and avid gardener, imported Jacaranda trees from Rio de Janeiro to plant in his Myrtle Grove garden. These trees flourished and as a result the city is now aptly known as the 'Jacaranda City', with about 50 000 Jacarandas lining its streets.

The British annexed the Transvaal in April 1877, which resulted in a steady flow of immigrants and migrants. During the Transvaal War of Independence the British withdrew and Paul Kruger took over. After the Anglo-Boer War Pretoria was named the capital of the new British colony and when the Union of South Africa was created in 1910 it became the administrative capital (*ibid*).

The grid system of Pretoria city was laid out by Sytse Wierda (1839 – 1911) and based on the Roman *urbis quadrata*, whereas the town was quartered by the intersecting cross of the *kardo* and *decumanus* (1987: chapter 3).

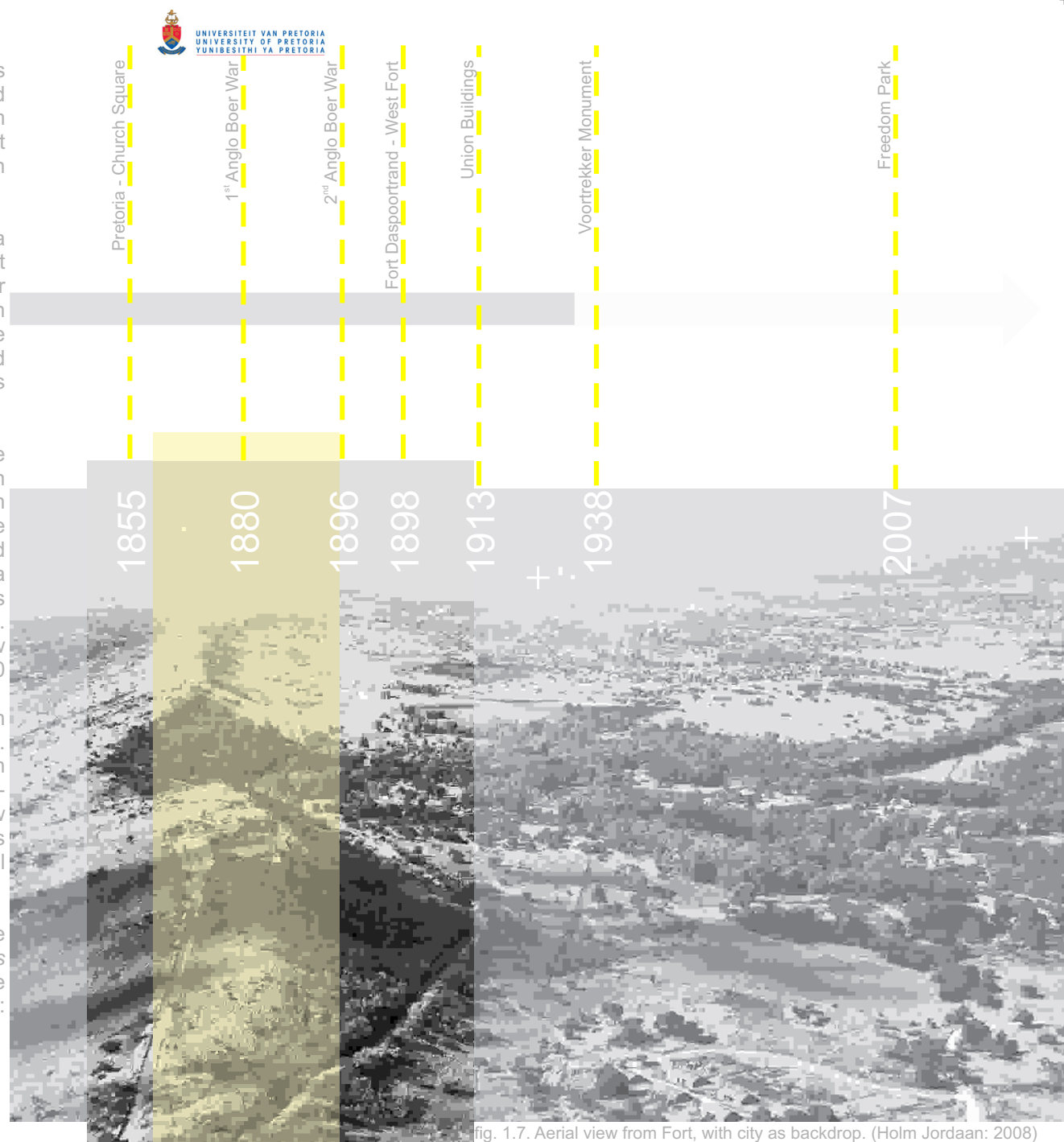


fig. 1.7. Aerial view from Fort, with city as backdrop. (Holm Jordaan: 2008)

ICONIC MONUMENTS

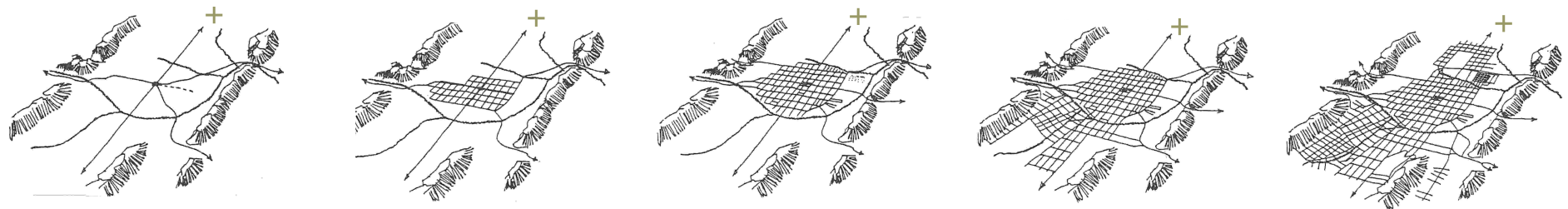
Pretoria, the capital city of South Africa, is discussed in terms of the influential effect of monuments and the monumentalising of structures of ideological significance built on its surrounding ridges, which more than any other natural assets, define its sense of place and influenced the original urban conceptualisation. These icons and military fortifications are significant tourist attractions in informative layered historical entities to the city. They are therefore discussed, with reference to their influence in the authors design decisions and concept.

The Union Buildings (1913), designed by Sir Herbert Baker (1862 - 1946), were built on the lower slope of Meintjieskop where there was an excavation from which slate was quarried. This building was the seat of government of the Union of South Africa, but in a sense it is a cultural monument, emblematic of the unity of the two Western colonial groups, Afrikaans and English, who jointly ruled the country to the exclusion of the indigenous black people. However, when former president Nelson Mandela was inaugurated there in 1994 the Union Buildings were appropriated by the new democracy. Even though it was not intended to be a monument in the traditional sense of the word, historically the Union Buildings have been afforded the status of a monument as a place of cultural significance (1996:96).

Some decades later the Afrikaners commemorated their ancestors trek from the Cape Colony to free themselves from British rule by building a monumental fortress, the Voortrekker Monument (1938), positioned on an elevated site on the Time Ball Hill, belonging to a geological range, which is not of any strategic or historical relevance to the theme of the monument, to be optimally visible from the old Pretoria-Johannesburg highway. The architect, Gerhard Moerdyk (1890 - 1958), designed this edifice to remind viewers of the indigenous roots of the Afrikaner by quoting elements of indigenous African stone buildings such as Great Zimbabwe. The Voortrekker Monument has commonly been designated an Afrikaner sacred place until its privatisation as a museum some years ago. It stands in a south/north relationship with the Union Buildings which, under British rule, the Afrikaners came to view as a Neo-classical colonial British place, not belonging in Africa. At present it retains the title of “monument”, but has been privatised for business purposes and attracts more visitors than any other monument in the country (1996:98).

In 2004, the mental image of Pretoria changed because another ridge, Salvokop (initially known as Time Ball Hill), had become the locus of the ANC (African National Congress) Government's venture to build Freedom Park, a monument to the struggle against apartheid. This monument to the struggle to free South Africa from the apartheid regime is called by the state president the “most ambitious heritage project ever to be undertaken in South Africa”. The design was to be decided on the basis of an international competition and according to the competition documents the cost of the total architectural project was estimated just under seven billion rand. Since no official winner had emerged from the three runners-up announced in July 2003, the Department of Cultural Affairs has appointed a team of traditional healers to allow indigenous people to play a part, landscape architects, architects and planners to design Freedom Park. The first stage, the “Garden of Remembrance”, has been completed in 2005 at an approximate cost of seventy million rand. The location, selected by a state department of culture because of its high visibility from the Johannesburg freeway, was consecrated by the state president. As in the case of the Voortrekker Monument it has no strategic or historical significance with respect to its function to be a place of remembrance for some two thousand black South Africans who died in the armed struggle against the previous government and whose spirits will come to rest there (1996:99).

The iconic monuments that are focused on in the study are the most prominent and serve as the greatest tourist attractions in Pretoria. The Union Buildings is the second most visited tourist attraction in South Africa (*ibid*).



+ Indicates West Fort site in relation to Pretoria

fig. 1.8. Initial layout and development of Pretoria through the ridges. (1987:50)

+ Concept

The Fortification of Pretoria excluded enemies and ensured a secluded environment during the Anglo Boer Wars. The inversion of this condition is the concept of this project. The building would be inviting and a didactic architectural experience, inverting the concept of seclusion, therefore questioning the original purpose of the forts.

The visitors centre will bring the public to the fort and ensure participation and information regarding the fortification and also archaeology.

The idea of exploring with different views from the fort, will inform the visitor about the various other fortifications and historical icons in the city scape. This informs the concept of the visitor being drawn to the fort, but then experiencing the cities' palimpsest from this vantage point. This idea of a palimpsest informs the layered historical approach of how the various other historical icons are viewed and reflected on from the fort.

Layering as a generator is inspired by the layering of the archaeological work done. The physical layering of the ground and the layering of time interlocks with the palimpsest of Pretoria. The layered concept will be experienced on a physical and emotional level, through the layered use of materials, nature and how they interact and bring forward the spirit of the place. The emotional layering is experienced through the use of space and the progression through these spaces. The various views through which the visitor perceives important icons references the layered approach towards the city and the inverse thereof. The hierarchal layering of spaces will define usage and how the program of events are experienced.

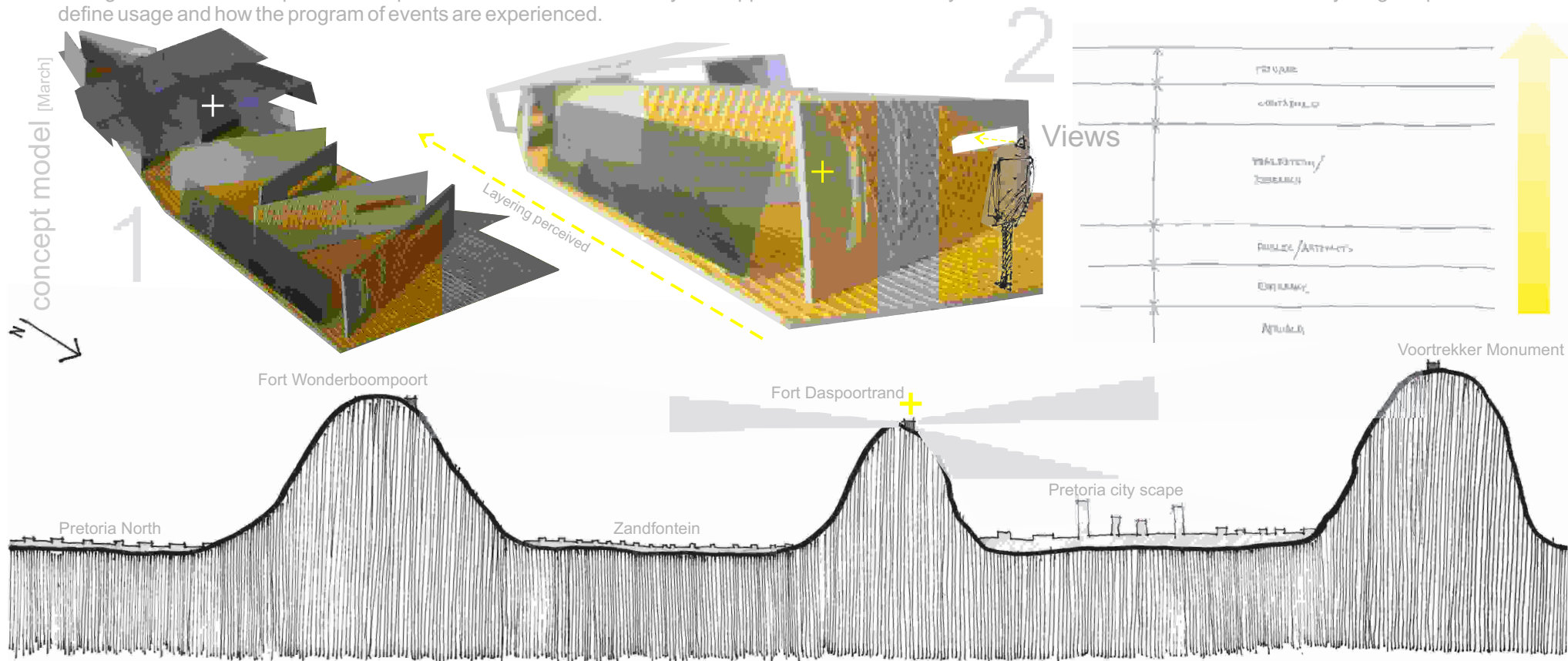


fig. 1.9. Section indicating views from West fort. (2010)

Camera = Latin for "room"
 Obscura = Latin for "dark"

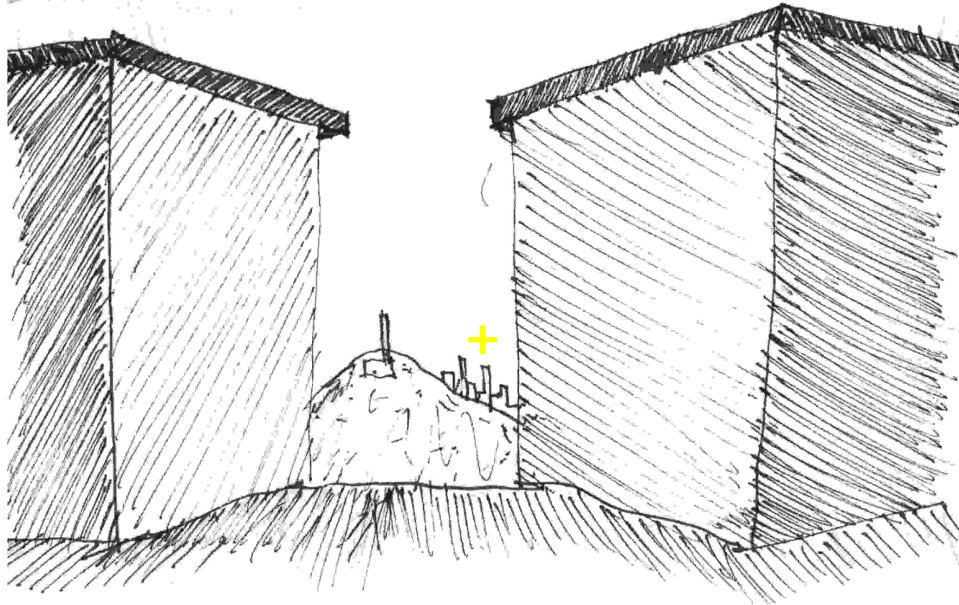
A brief introduction into the term "*camera obscura*", which was first used by the German astronomer Johannes Kepler in the early 17th century. He used it for astronomical applications and had a portable tent camera for surveying in Upper Austria (Brightbytes.com:2010).

The development of the *camera obscura* took two tracks. One of these led to the portable box device that was a drawing tool. In the 17th and 18th century many artists were aided by the use of the *camera obscura*. Jan Vermeer, Canaletto, Guardi, and Paul Sandby are representatives of this group. By the beginning of the 19th century the camera obscura was ready with little or no modification to accept a sheet of light sensitive material to become the photographic camera (*ibid*).

The other track became the *camera obscura* room, a combination of education and entertainment. In the 19th century, with improved lenses that could cast larger and sharper images, the camera obscura flourished at the seaside and in areas of scenic beauty (*ibid*).

The concept of camera obscura is a generative concept into the creation of various views towards the iconic monuments within the city from West Fort. The concept of the Fort is the point from which views will be captured and processed by the visitor and therefore experiencing the palimpsest of the city. In essence the visitor becomes the camera, capturing and experiencing views and history. The road to discovery; where the experience becomes the discovery of the undiscovered, where archaeology also relates to the concept of discovery.

The Fort's intention of visibility is now also brought back into the inverse, where its intention of visibility and views to keep the enemy out, contributes to the views/visibility of the user. The experience through the building also relates to the concept of the camera (user) relating to the historical icons discussed previously, but also interaction and viewing of archaeology. The viewing also relates to the learning/observing of the information exhibited.



- VIEW THROUGH FORT TOWARDS CBD.

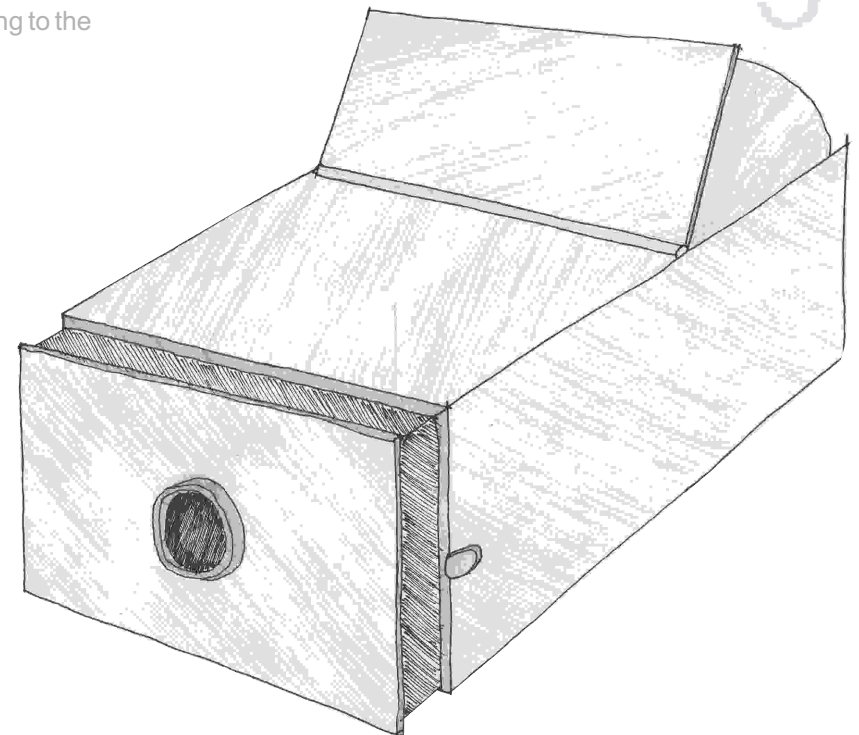
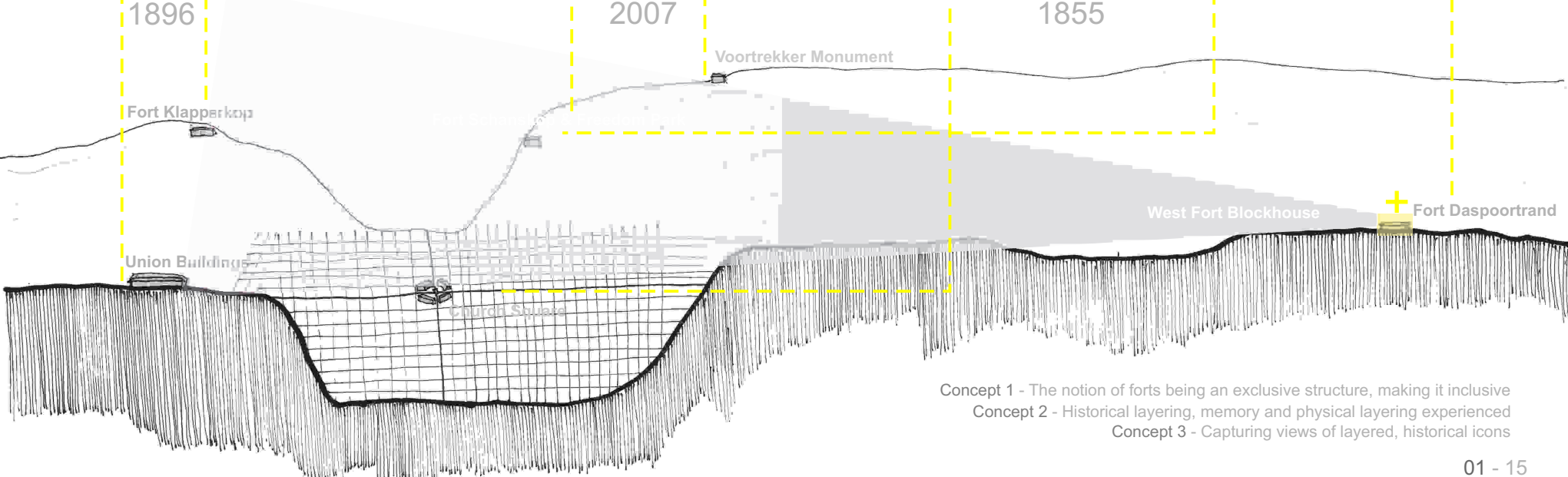
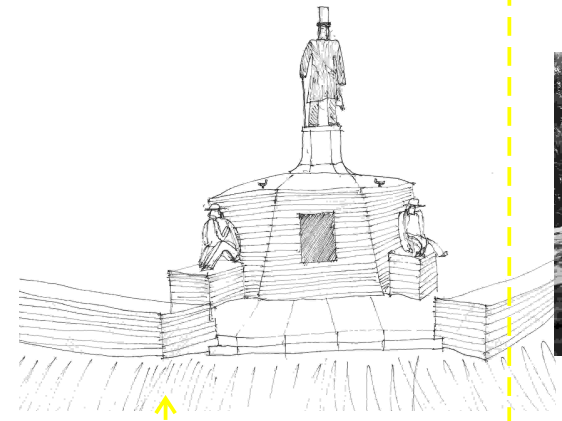
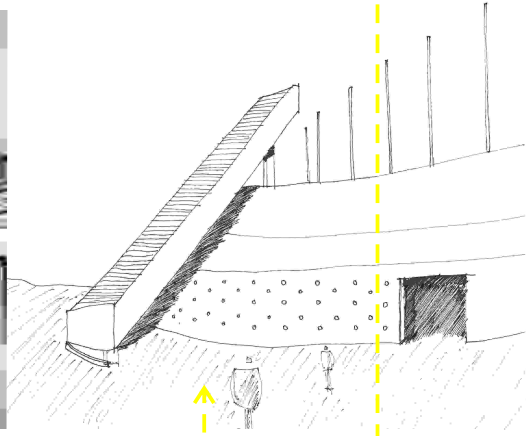
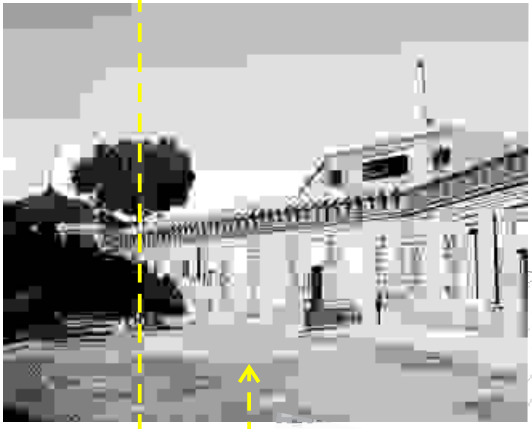


fig. 1.10. Sketch of a 1946 camera. (2010)



Concept 1 - The notion of forts being an exclusive structure, making it inclusive
 Concept 2 - Historical layering, memory and physical layering experienced
 Concept 3 - Capturing views of layered, historical icons

fig. 1.11. Section indicating iconic views from West Fort. (2010)

02

Fortification of Pretoria Historical Influence



fig. 2.1. Sketch indicating the entrance to West Fort. (2010)

+ West Fort Institution

According to historian, R.C de Jong, in the late 1880's a hospital for research into and treatment of smallpox was established on the outskirts of Pretoria. It was named Daspoort Hospital, because it was situated at the foot of the southern slope of the Daspoortrand or Witwaterberg. However, the facility was used since its inception as a hospital for leprosy patients. The earliest reference to the hospital is by the official architect of the ZAR Government, Zytse Wierda (1839 – 1911), in 1888. At this stage the hospital consisted of four rooms with an outside toilet, and housed eight patients. Leprosy barracks were added in 1890. Further accommodation was required in 1892 and additional bedrooms, a lounge, kitchen and dining hall were constructed. Daspoort Hospital housed 99 patients by 1896 (1999:66).

West Fort Hospital was originally built as an extension of Daspoort Hospital, but these two facilities soon merged to become known as the Pretoria Leprosy Hospital. In Wierda's guideline document to his architects and to the hospital staff, he stated that the place should provide in the most humane way a pleasant and attractive residence for those "unfortunates" who, through an incurable infectious disease, should be tied to it for as long as they lived. The first buildings were erected in 1898 and consisted of an administration block, smallpox clinic and staff accommodation. Initially lay people were appointed to manage the hospital, but in 1900 Dr Von Gernet were appointed medical officer in charge on a part-time basis.

The structures built during the ZAR period are characteristic of the type of building erected by the Department of Public Works under Wierda: elegantly proportioned, substantially built brick structures with corrugated iron roofs, stone plinths and sandstone detailing. Examples of these are the administration building, the post office, two of the staff residences and an octagonal Dutch Reformed Church. Some of the buildings from this period have been finished in stucco, such as the dispensary, certain dormitories for patients and the first hospital buildings (1999:66).

Hospital

1880

West Fort

1898

Roads

1906

Catholic church

1914

Transferring of patients

1918 - 1931

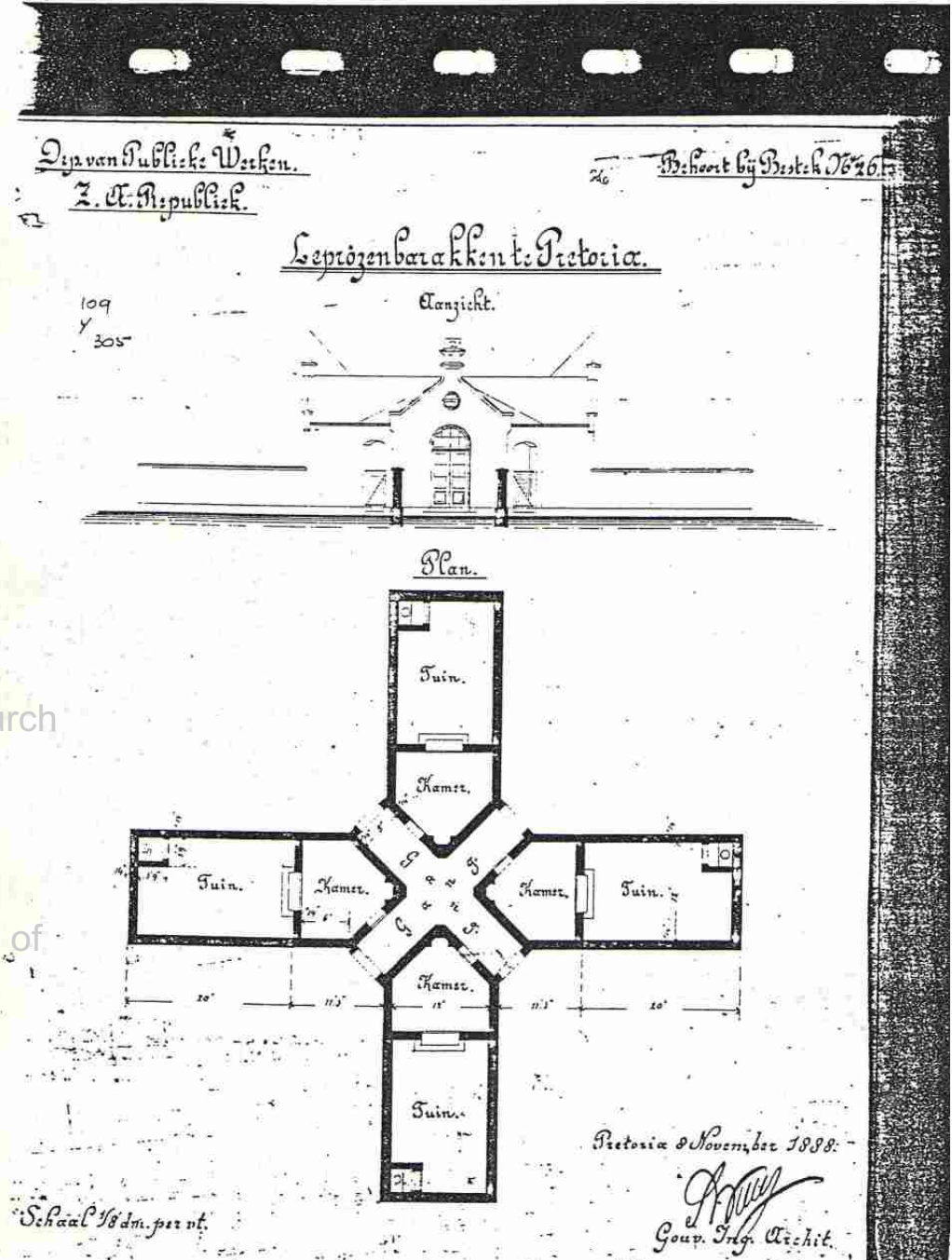


Fig. 2.2. Original plan of West fort hospital. (1996: 93)

It is likely that, due to the threat of war, further construction of buildings was halted as materials and labour were required for the construction of Fort Daspoortrand on the ridge above the hospital. In the first year 99 patients from Daspoort, 100 from Pankop and 6 from Rietfontein were transferred to West Fort. By 1902, 328 patients were housed at the hospital (ibid). The institutions was divided into White, Black and Indian sections, with males and females housed separately. First full-time medical superintendent was Dr George Turner from 1901 to 1906 (1999:67).

The institution managed its own farm during the early 20th century. With its own post-office, police station, churches, school and shops, it can be regarded as a virtually independant settlement. In February 1906 roads, a wall around the hospital and other site works were completed. An Anglican Catholic church was built in 1914, and in 1916 a Roman Catholic church was constructed. A carpentry shop, smithy, bookbinding shop and milk depot were added soon after. In 1917 eight watchtowers were erected to prevent patients from escaping.

A remarkable feature of the period 1900-1918 is the low brick and sandstone walls that enclose a number of wards. Apart from the stained glass windows and the panels painted by the artist Frank Brangwyn (now removed), the Roman Catholic church building possesses no exceptional architectural qualities. The same can be said of the Methodist church. The finest of the three churches built during this period is the Swiss Mission church, built in an Arts-and-Crafts style. The earliest workshop buildings are prefabricated, corrugated iron structure.

By 1918, all the leprosy patients in the Transvaal and the Orange Free State had been transferred to West Fort. The institution then housed 892 patients. In 1931 the leprosy hospital on Robben Island was closed down, as the island was required for other functions, and the patients were transferred to West Fort, pushing the patient population up to 2000. Under the auspices of the Department of Public Works, a number of substantial face-brick buildings were erected during this period (1999:67).



Fig. 2.3. West fort hospital: Pharmacy. (1996: 90)



Fig. 2.4. Burial places next to the hospital of leprosy patients. (1996: 97)

The most prominent buildings dating back from this time are the kitchen complex, theatre and store. With other leprosy hospitals closing down and patients being transferred to West Fort, more accommodation was needed, thus necessitating the construction of additional wards. As it was still believed at the time that leprosy was a highly contagious disease, the original pattern of constructing isolated rooms was followed. A new structural type was a concrete roofed *rondavel*, an attempt at making Black patients from traditional areas feel more at home (*ibid*).

This constitutes to a vernacular being created for the user to familiarize himself with his surroundings and “contain” a certain *genius loci*.

1. Church
2. Watchtower
3. Administration building
4. Postoffice
5. Living quarters
6. Hospital
7. Pharmacy
8. Inspection rooms
9. Wall
10. School
11. Dwellings
12. Police barracks
13. Nurse quarters

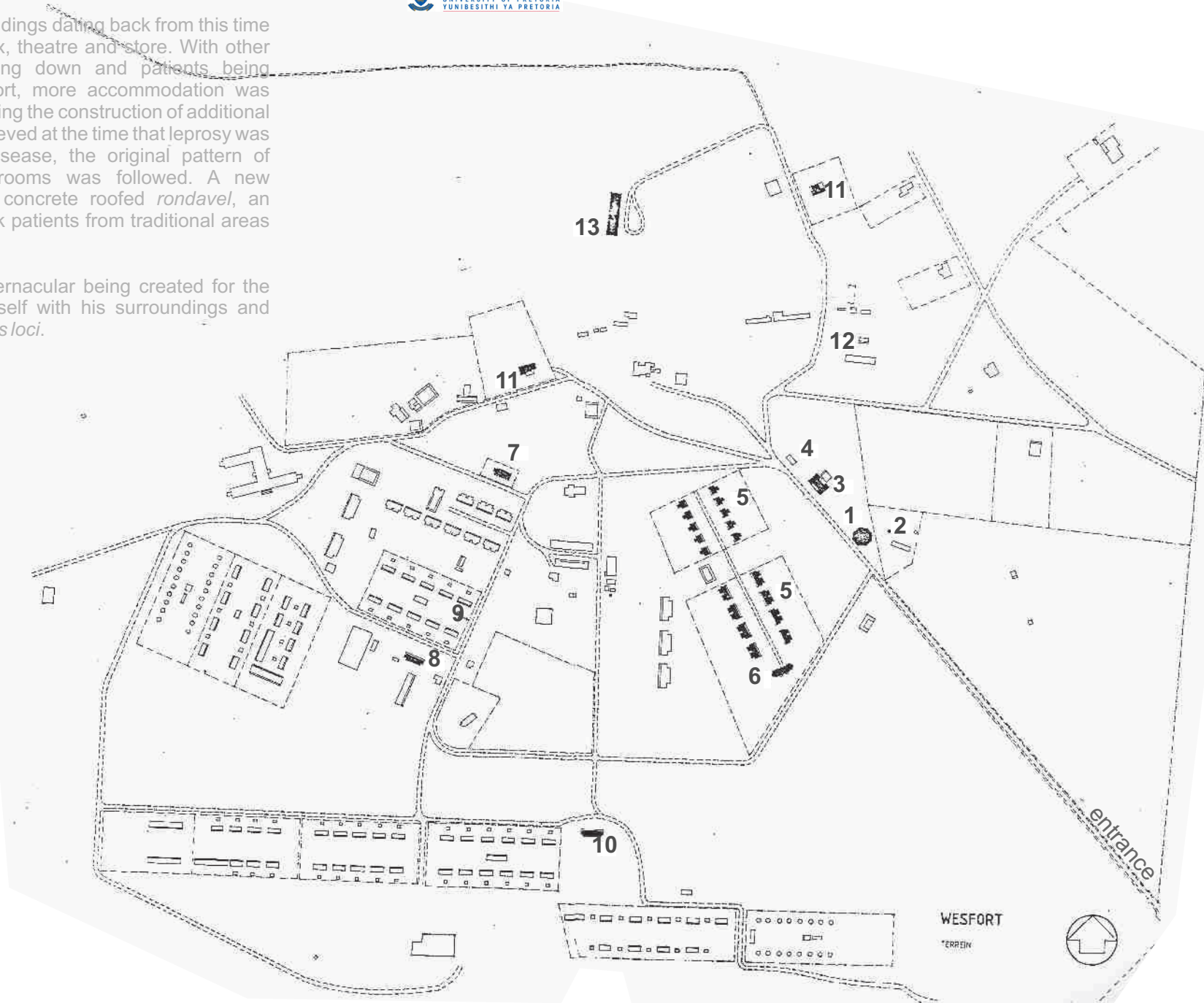
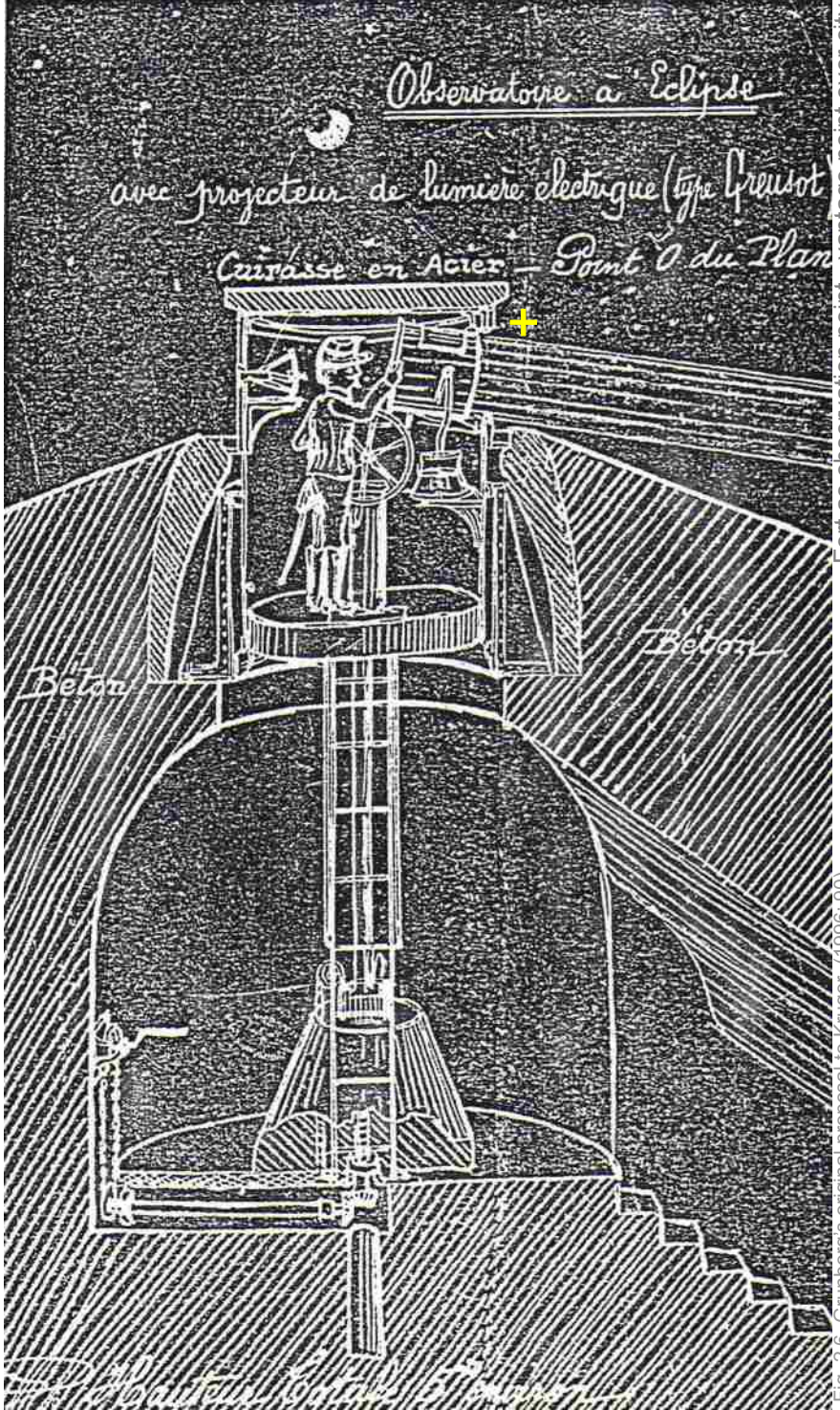


Fig. 2.5. 1890 site plan of West fort hospital and village. (1996: 97)



Fort as observation point - vantage point over city

Fig. 2.6. Grunberg's original proposal to Kruger. (1996: 90)

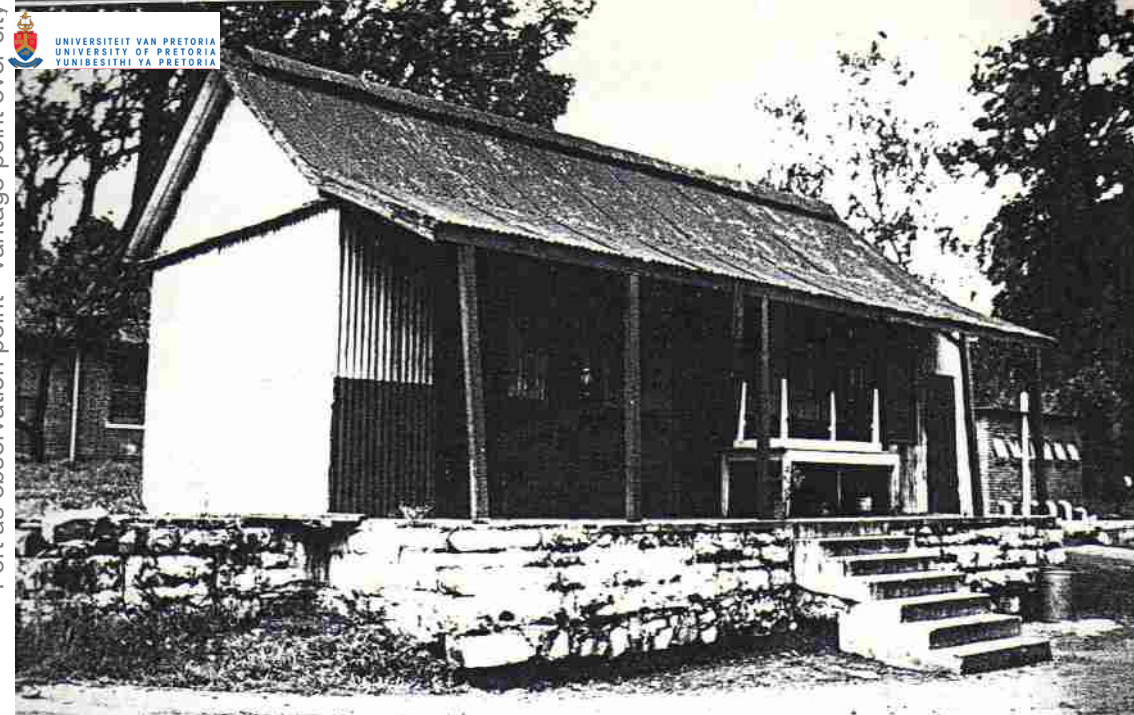
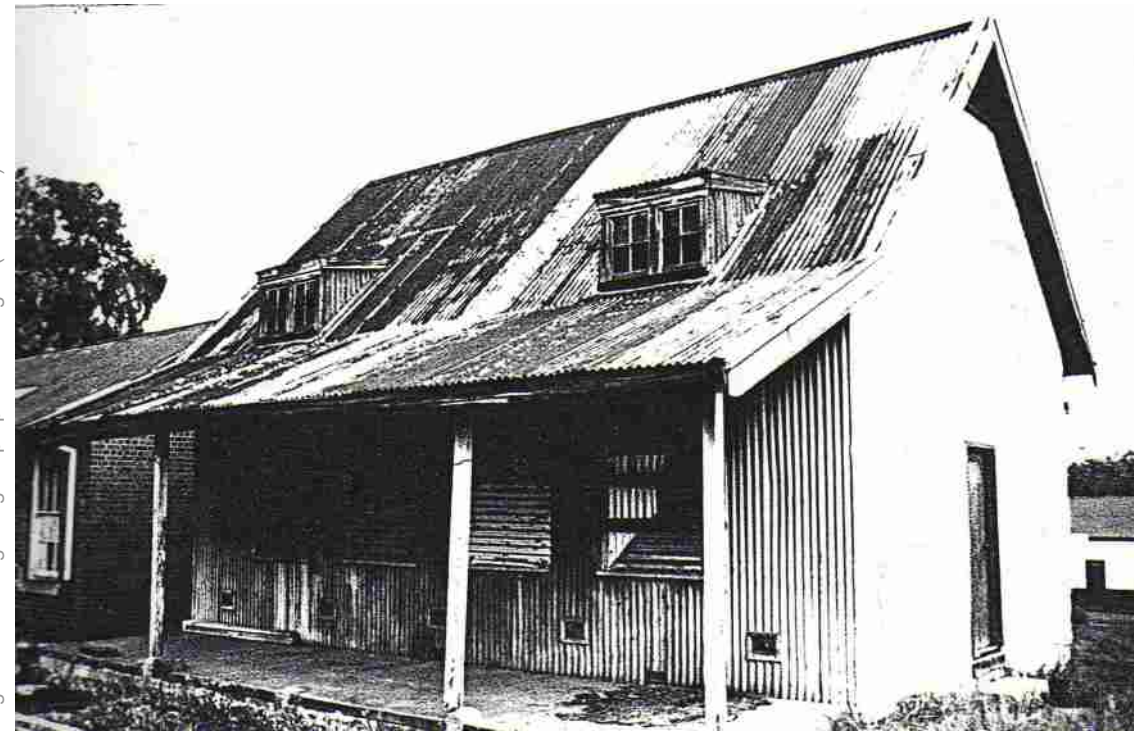


Fig. 2.7. West fort hospital: Workshed & Pharmacy. (1996: 90)



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S. A. Republiek

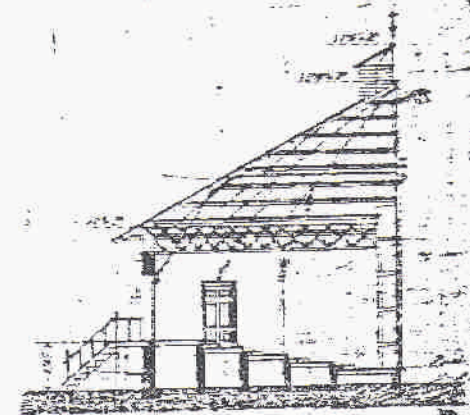
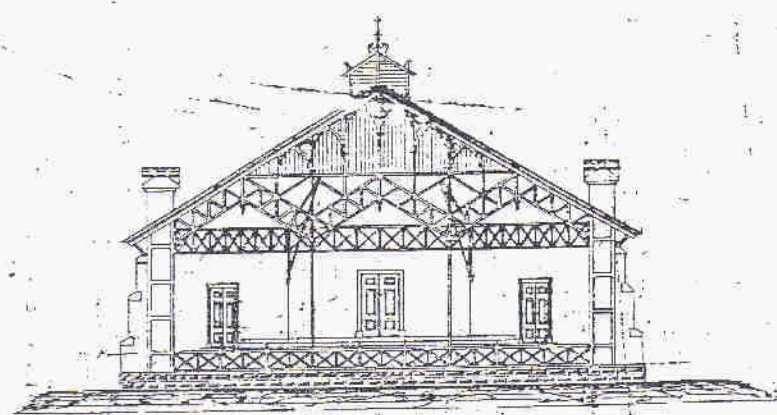
Seproxon in zichting te Pretoria
Open keek gebou w. c. a.

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Teekening n^o 1

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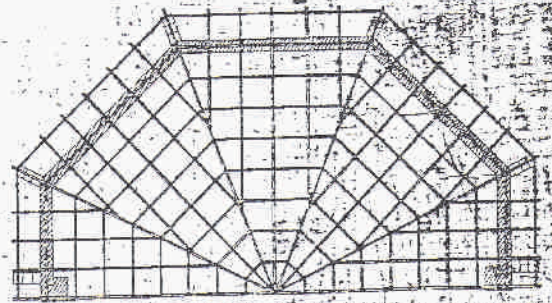
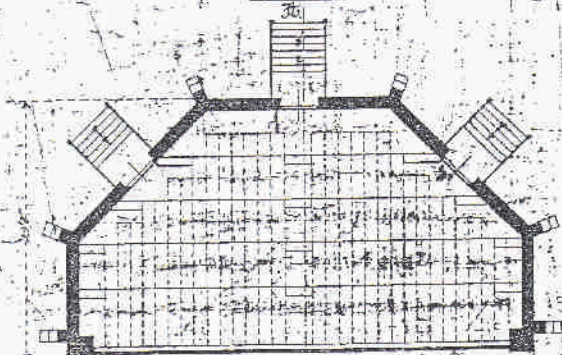
Danicht A.

Doornede St. B.



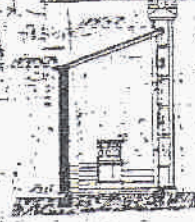
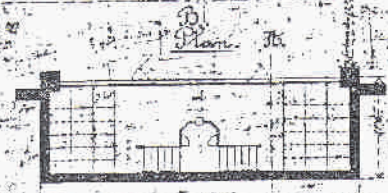
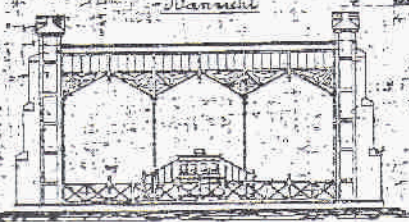
Plan

Kappelan



Plan n^o 1

Doornede St. B.



Pretoria 4 Aug 1896

[Signature]
Hoofd van Publ. Werken

Fig. 2.8. 1896 original plan of the church in the village. (1996: 93)

Gebouw voor Docters - Directie en Administratie.
A.

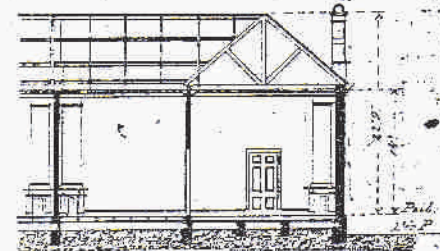
Voorgevel.



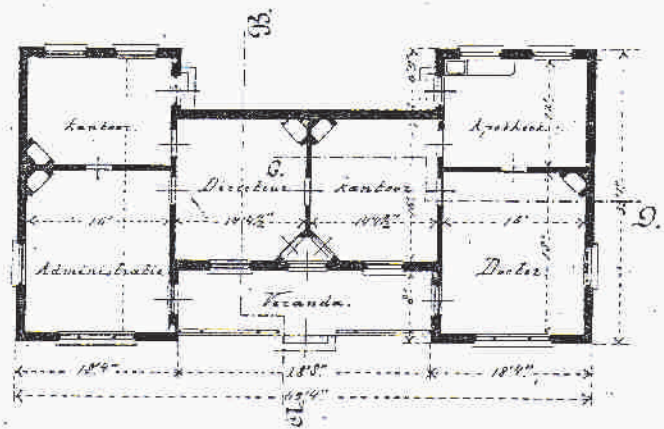
Doorsnede C. B.



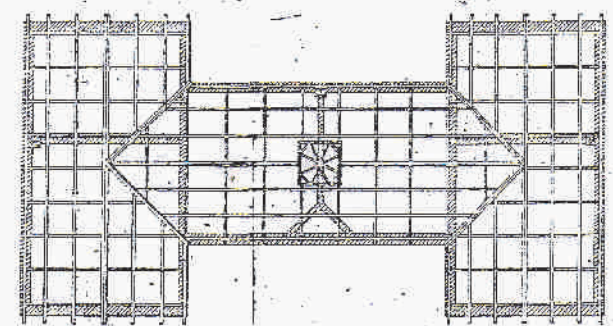
Doorsnede C. D.



Plan.



Kapplan.



Pretoria 20 Juni 1895



Hoofd van Publieke Werken

Schaal 1/8" per Voet.

Doorn van N. v. l. Wecken.
E. O. Republiek.

Behoort bij Bestek N^o 549
Teekening N^o 2.

Leproseninrichting bij Pretoria

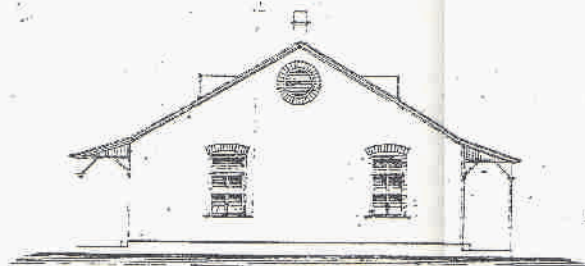
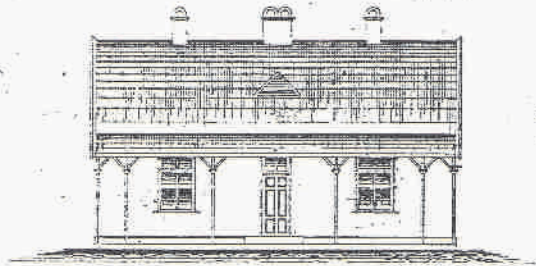
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7
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Centraal Keuken-gebouw

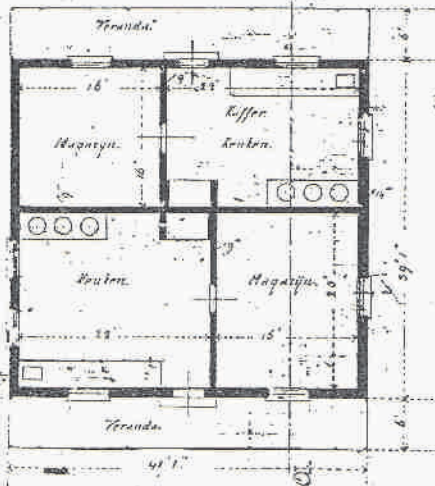
Voorgevel

B

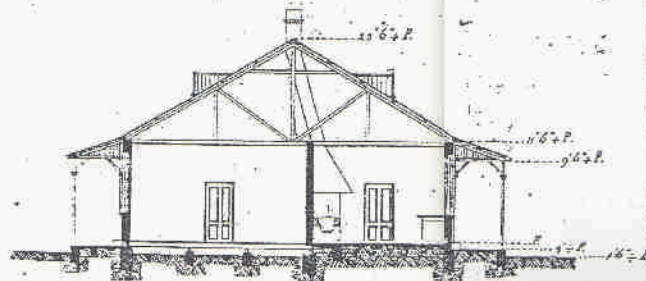
Zijgevel



Plattegrond



Doorsnede A-B



Schaal $\frac{1}{8} = 1$.

Pretoria 4 Augustus 1896

[Handwritten signature]

Hoofd van Publ. Werken

Since 1931, as treatment for leprosy became more effective, the number of patients gradually decreased. Some patient and staff accommodation was built after 1931, including hostel accommodation for nurses. West Fort was finally closed down in 1996. Policy regarding the treatment of leprosy patients has changed. It was found that leprosy is not a contagious disease and that the best treatment for sufferers is to be found in their own community (1999:67).

The area has also botanical and geological significance, forming a transition from a Highveld to a Bankenveld ecosystem. The *Acacia arabica* is the dominant indigenous tree type in this area. The site has been heavily planted with exotics, especially around the eastern perimeter of the hospital complex, such as eucalyptus trees, jacarandas and palm tree (*ibid*).

+ Anglo Boer War

FIRST ANGLO BOER WAR (1880 - 1881):

The British gradually realised that the Transvaalers were preparing for war. Troops were therefore sent in advance to keep order in all the most important towns of the Transvaal, including Pretoria. P.L. Bezuidenhout of Potchefstroom refused to pay certain costs additional to his taxes, as a result of which the British confiscated his wagon. On 11 November 1880 the wagon was violently reclaimed from the bailiff and returned to Bezuidenhout by P.A. Cronje and 100 men. A national convention which was set to take place on 8 January 1881, was rescheduled for 8 December 1880. On this day 8000 to 10 000 men gathered at Paardekraal (1998:29).

Shortly after the Bezuidenhout incident at Potchefstroom, the British in Pretoria started preparing to avert a possible Boer attack. Military reinforcements were summoned from Marabastad (close to present Pietersburg) and Lydenberg. Major Le Mesurier was told to prepare a defence strategy for Pretoria. All ammunition and supplies had to be guarded in the central magazine of the military camp and the artillery had to be placed at suitable positions in order to defend the town and the camp (1998:33).

Preparations were made for war and field-cornets were appointed. On 10 December 1880 the leadership of the ZAR was transferred to the hands of a triumvirate, comprising Paul Kruger (Vice-President), Piet Joubert (Commandant-General) and M.W. Pretorius (Ex-President). On 13 December 1880 they issued a statement which announced the restoration of the Republican Government. The seat of government was relocated to Heidelberg, where the republican flag was raised on 16 December 1880.

The first shots of this war were fired in Potchefstroom on 16 December 1880. Commandant P.A. Cronje and his troops had been sent to this town to have the first proclamation of the triumvirate printed there. Boer troops were dispatched to seven towns in the Transvaal in order to lay siege to the British garrisons there. The towns which were under Boer siege were Potchefstroom, Pretoria, Standerton, Lydenberg, Rustenberg and Marabastad.

During the night of 26 and 27 February 1881, General-Major Sir George Pomeroy Colley occupied the mountain Amajuba. At daybreak the Boers saw the British troops on the mountain and Commandant-General Joubert called for volunteers to charge up the mountain. At 06:00 150 volunteers started climbing up the face of the mountain under the protection of covering fire. By 11:00 the Boers were able to fire very accurately at the British. Still, Colley was so sure that they could not be taken that he even went to sleep during these events (1998:29).

At 12:30 he was woken by rifle shots and to his amazement found that his men were retreating. The Boers had reached the summit and some British soldiers took flight. During the battle, the Boers lost only two men, while more than 90 British soldiers, including Colley, died and more than 50 were captured (*ibid*).

According to Van Vollenhoven, during the First Anglo-Boer War eleven fortifications were erected. The development of Pretoria caused the destruction of most of these structures. The only fortifications of which remains probably still exist above ground, are Fort Commeline, the blockhouse at Eloff Cutting and Fort Tullichewan. It is possible that archaeological excavations at Magazine Hill will uncover parts of the structure of Fort Commeline (1998:40).

SECOND ANGLO BOER WAR (1896 - 1898):

The most important reason behind the Boers fortification of Pretoria was probably the Jameson Raid of 1895/96. This event and the contemporary unrest amongst the *uitlanders* (foreigners) on the Rand made the Government of the ZAR aware of an increasing foreign threat against peace was present (Van Vollenhoven, 1998:50).

The “Reformers” prepared a supply camp near Irene and were ready to march from there against Pretoria on 27 December 1896. Two hundred and fifty horses were allegedly kept at Halfway House for this purpose. Commandant-General Piet Joubert repeatedly expressed his fears about a possible attack on Pretoria. On New Years day 1896 Commandant D.E. Schutte requested him to guard the roads between Pretoria and Johannesburg.

The fact that the capital had been divided into defence wards and that a vigilance committee had been introduced there, proves that Pretoria did expect an invasion. All commandants in the Republic were instructed to have their men ready and Johannesburg was surrounded by Boer Commandoes.

The situation became even more serious when a secret map of Pretoria was discovered in the trunk of a British spy, Captain Robert White. He had already drawn this map in April 1895. Other proof of espionage activities were also found on him. It is a fact that the Jameson Raid was directly responsible for the Boers fortification of Pretoria (Van Vollenhoven, 1998:51).



Fig. 2.10. Image of a military canon used in the Anglo Boer Wars. (lydenburgmuseum.org: 2010)

+ Fortification of Pretoria

The French military engineer, Leon Grunberg, advised that armoured, revolving domed towers, provided with artillery, should be constructed at strategic points. The locations which he had in mind for these structures, were Schanskop, Kwaggaspoort, Daspoortrand, Magaliesberg West, Wonderboompoort, Derdepoort and Strubenkop. A vantage point, supplied with electric lighting, had to be constructed to monitor the nightly movements from Johannesburg. In other words, eight structures were proposed (Van Vollenhoven, 1998:51).

Grunberg's proposal was unacceptable, as the domed towers would not offer sufficient protection and housing for a substantial number of soldiers. It was decided rather to accept the plan of two German engineers, Otto Albert von Dewitz and Heinrich C. Werner. According to a report of Von Dewitz, dated August 1896, Pretoria would not only be protected, but would also become the base from where operations against the enemy could be launched.

THE FIRST FORTIFICATION

The first fortification of Pretoria took place during the First Anglo Boer War. It should be mentioned that at this stage, Pretoria was being occupied by the British forces and therefore was fortified by them in order to repel attacks by the Boer sieges. The Transvaal was annexed by Britain on 12 April 1877. After unsuccessful efforts were made to reverse the annexation by means of negotiations, the Boers resorted to armed resistance against Britain in December 1880. They (i.e the Boers) laid siege to Pretoria and the British fortified the town in order to be able to avert Boer attacks (1998:12).

According to Bellairs and Grobler, three forts, namely Fort Royal, Fort Tullichewan and Fort Commeline were erected, while the military camp, prison and convent were fortified. A blockhouse was also built to the north of Pretoria at the Eloff Cutting. Only Fort Tullichewan had ever been involved in action, namely on 17 January 1881 when British fired from inside this fort at Boers who were trying to rustle cattle.



Fig. 2.11. Archival photograph of Fort Commeline. (1998: 36)

The war ended with the Boer victory at Amajuba on 27 February 1881, where the forces of Commandant-General Piet Joubert thoroughly defeated the British under the command of General-Major Sir George Pommeroy Colley. The Boer Republic regained its independence. The First Anglo Boer War in all probability did not have the impact on South African history that the Second Anglo Boer War did. It was to a large extent, a prelude to the Second War. According to Archaeologist, Van Vollenhoven, it is therefore clear that an archaeological survey of these forts is required (Van Vollenhoven, 1998:13).

THE SECOND FORTIFICATION

The second fortification of Pretoria took place shortly after the start of the Second Anglo Boer War. The Jameson Raid convinced the Government of the ZAR of the necessity of fortification. This Raid was an unsuccessful attempt by Britain to take control of the ZAR Government. Following this event, four large forts were built between 1896 and 1898 as a defence around Pretoria, namely Fort Schanskop, Fort Wonderboompoort, Fort Klapperkop and Fort Daspoortrand (West Fort). Four more had been planned, but were never built due to a lack of funds. According to Ploeger and Botha, the Boers decided to defend Pretoria, because they thought that the manpower and armament that such a defense would take, would be of better use in the field (1998:13).

THE THIRD FORTIFICATION

After Pretoria had been occupied by the British Forces, it was fortified for the third time. This fortification transformed the town into an impenetrable citadel, as it supplemented the shortcomings of the second (incomplete) phase of fortification. There only exists information on seventeen fortifications, namely Cable Hill, Johnston, Eastern, Magazine, Quagga, Howitzer, Johannesburg Road and River Redoubt, as well as Vesting, Wesfort, Klapperkop, Kwaggapoort, Wonderboompoort, Meintjieskop, Hillcrest and Muckleneuk Blockhouse plus the blockhouse at Eloff Cutting (1998:14).

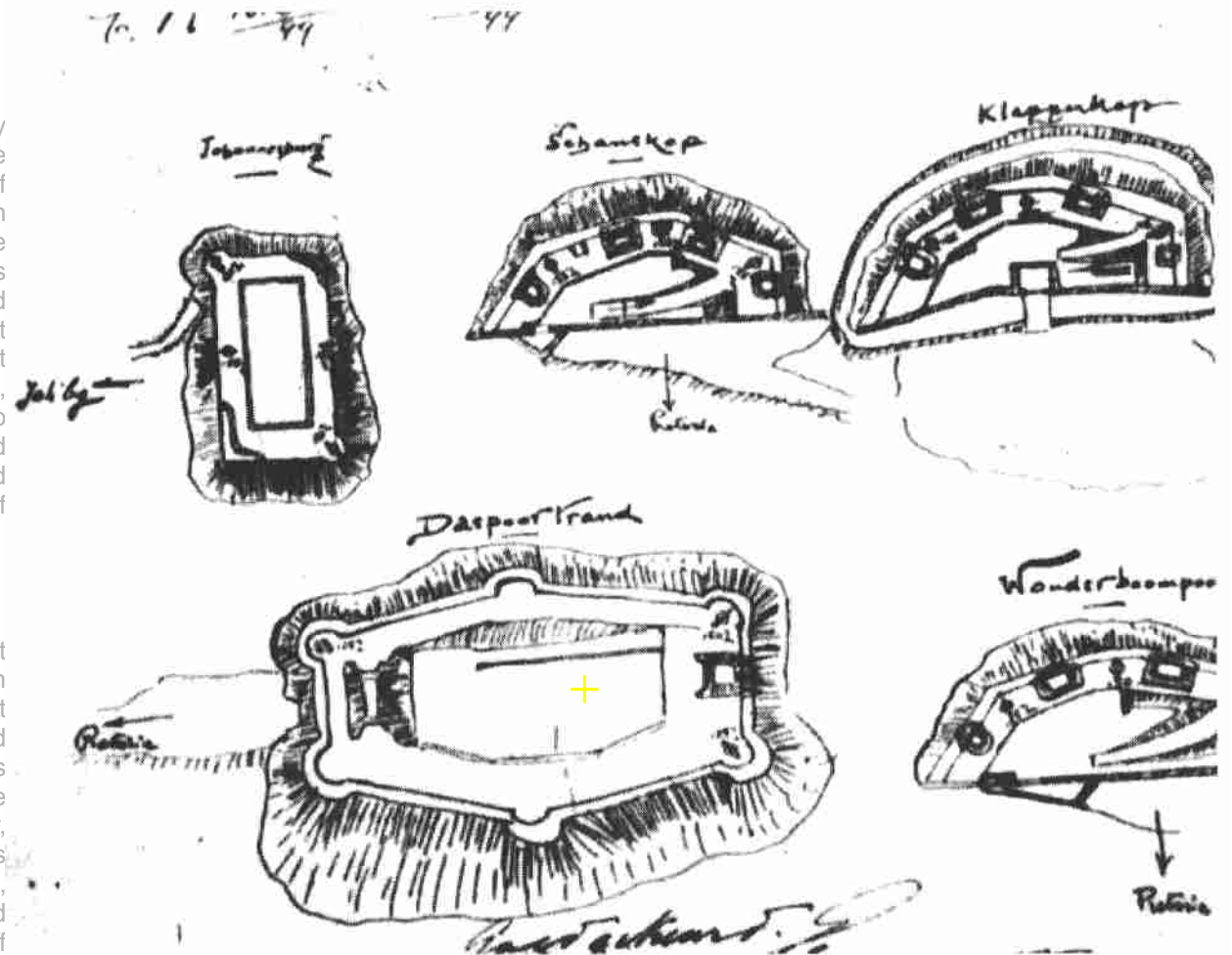


Fig. 2.12. Sketch by Major P.E Erasmus depicts the armament plans of the forts. (1998: 63)

As has already been mentioned, nightly manoeuvres on the Johannesburg road had to be monitored. This could prevent a surprise attack from Johannesburg. The forts also served as a deterrent - as is illustrated by the fact that the British troops hesitated to attack Pretoria (Van Vollenhoven, 1998:51).

Werner and Von Dewitz made a study of similar projects in the past in order to determine the most suitable positions for the forts. The British fortification scheme of 1880 - 1881 had already emphasized value of Elandspoortrand. Fort Schanskop and Fort Klapperkop would be constructed to control this southern access point to Pretoria. A fort at Wonderboompoort would control the northern entrance to the city. The British spy, Captain Robert White, had already underlined how important the access points at Wonderboom, Schanskop, Klapperkop, Daspoortrand and Magasynheuwel would be during a possible siege of Pretoria. From Schanskop it would be possible to control the road and railway links with Johannesburg and Lourenco Marques. Together with Fort Wonderboompoort, Fort Daspoortrand would control the western access route to the city. The roads to Soutpansberg and Middelburg (Transvaal) as well as the railroad to Lourenco Marques would be controlled by Fort Derdepoort. This network of fortifications would have been completed by the fort on Strubenkop (Van Vollenhoven, 1998:52).

As previously stated, the Government of the ZAR finally could only complete four of these forts during the Second Anglo Boer War, namely those at Schanskop, Wonderboompoort, Klapperkop and Daspoortrand (Fig. 2.13). After the British forces had occupied Pretoria, they constructed blockhouses to improve the defences of the city. Two of the latter were erected on Kwaggasrand and Strubenkop, which emphasizes the strategic importance of these locations.

+ DEFINITION

- Blockhouse* - Fortified stone building with loopholes
- Fort* - A fortified military construction, a stronghold, a rampart
- Fortify* - To supply with fortifications, to strengthen with forts
- Entrenchment* - A military fortification comprising a trench
- Fortification* - That which fortifies
- Stronghold* - A fortified place, a fort

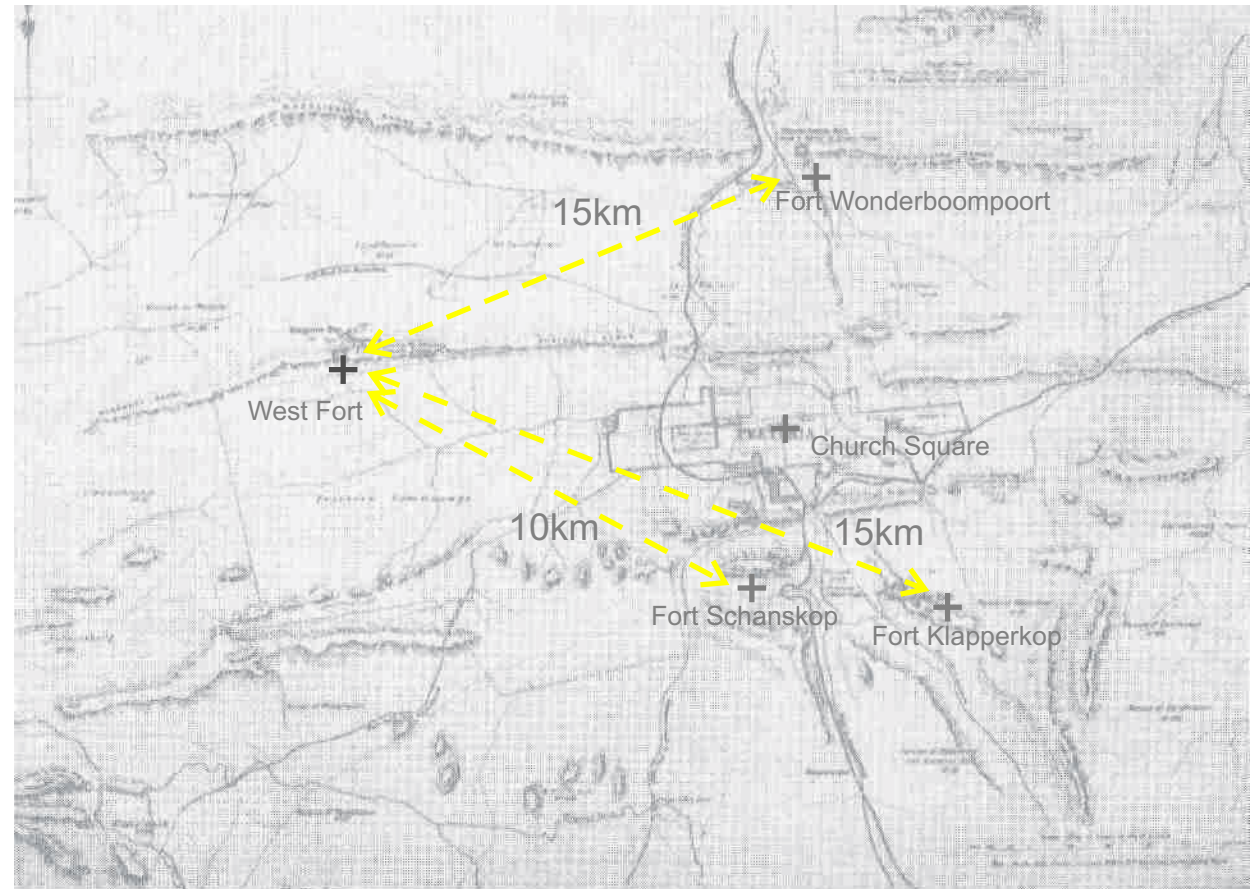


Fig. 2.13. 1899 map indicating the positions of the four forts of Pretoria. (1998: 52)

BRITISH FORTIFICATIONS OF THE SECOND ANGLO BOER WAR (1900-1902):

The war came to an end on 31 May 1902, with the signing of the Peace Treaty of Vereeniging. Although the Boer forces' efforts had astonished the world and several Boer generals, such as General C.R de Wet, had become famous, the overwhelming might of Britain could not be stopped (Van Vollenhoven 1998:80).

The Second Anglo Boer War was a decisive event in South African history. It resulted in the political unification of South Africa and strengthened Afrikaner Nationalism. Both of these factors would be of great importance on South Africa's road to unification.

THE BLOCKHOUSE SYSTEM

After Pretoria had been occupied by the British, it was clear that the railway links had to a large extent been left defenseless. In order to protect the railways and thereby communication in general, it was decided to erect fortified posts next to these routes. From July 1900 the erection of blockhouses started. The most important stations, bridges and other strategic points along the lines were fortified in this manner. Most of these blockhouses comprised two storeys with a machine gun mounted on the roof. Such a blockhouse could shelter a garrison of thirty men and took approximately three months to complete (1998:81).

By January 1901, the large scale erection of blockhouses next to the railway lines begun. These blockhouses were much smaller, so that it would take less time to complete them. They were respectively manned by a non-commissioned officer and five or six troopers. By March 1901, this type of blockhouse was also being erected at other strategic points such as roads, in order to curb mobility of the Boer Commandoes. This strategy of Lord H.H Kitchener was especially designed to entrap the Boers with battues against the blockhouse lines. By January 1902, the blockhouses were completed and this tactic could be executed (*ibid*).

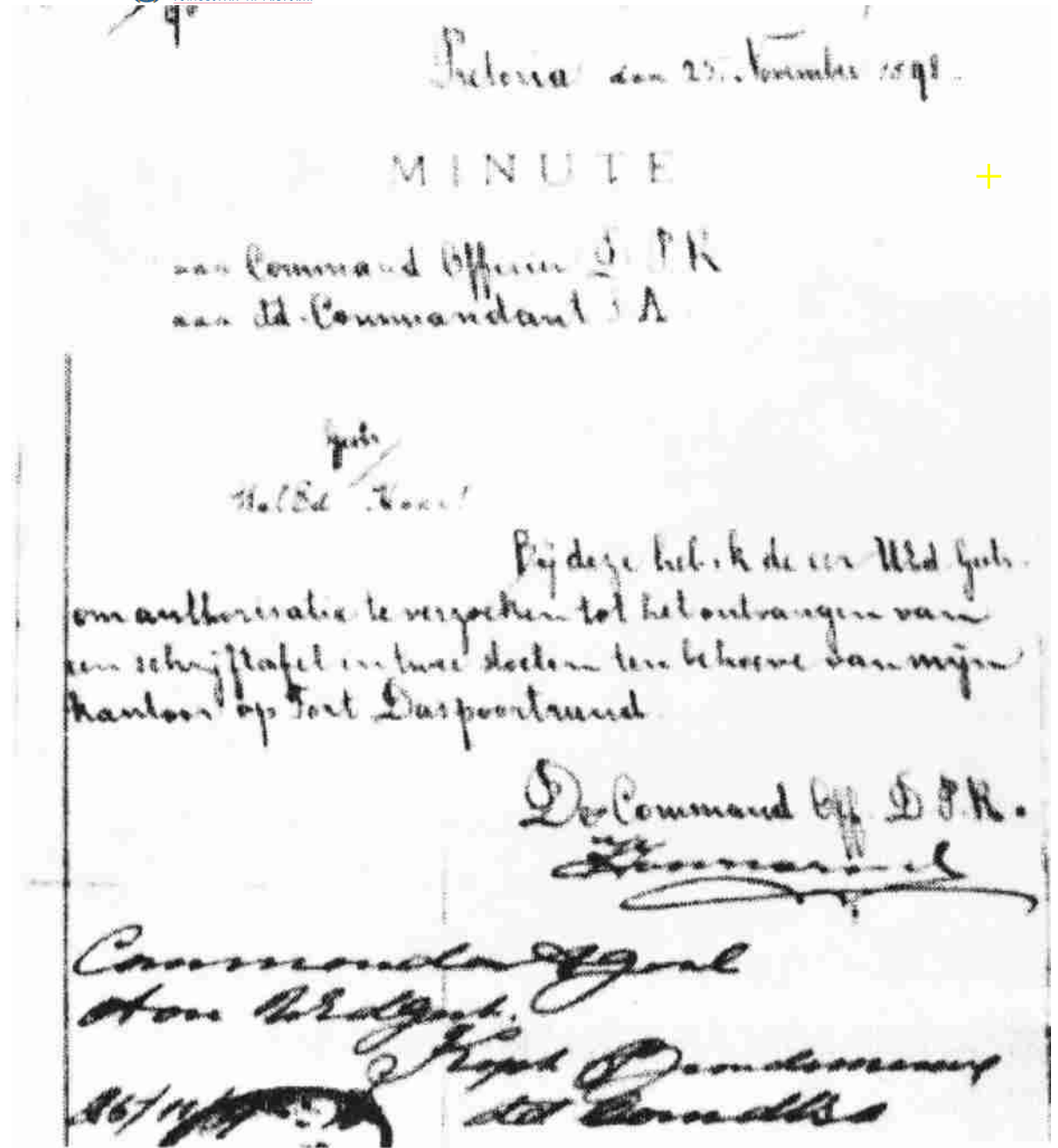


Fig. 2.15. A request letter for furniture from Lieutenant F. Townsend, Commader of Fort Daspoortrand. (1998: 60)

The blockhouses were erected from 1,2 - 2,4km from each other. Although Lords Roberts and Kitchener are regarded as the inventors of the blockhouse system, a certain Edward H. Fry claimed that he actually deserved this honour. Whatever the case may be, this system left a valuable historical heritage. At the end of the war, more than 8000 blockhouses had been built over an area of more than 6000 kilometers. They were manned by approximately 50 000 soldiers plus 16 000 non-white scouts and guards (Van Vollenhoven, 1998:81).

TYPES OF BLOCKHOUSES

The first type of blockhouses which were erected in January 1901, was octagonal with corrugated iron walls, such as the Bastion Blockhouse. Loopholes were cut into the walls. It also had corrugated iron roof and was ten to fifteen feet (3,05 - 4,57m) in diameter (1998:81).

By February 1901, the second kind was erected. It had been designed by Major S.R Rice and was an improvement on the first type. It was cheaper, as less wood was required for its construction.

The third type was also designed by Major Rice. It was a circular galvanised iron blockhouse, erected from March 1901. It was cheaper, larger and easier to erect than the previous types. Four - and -six sided galvanised iron blockhouses were also built.

Stone blockhouses, such as the Johnston Redoubt (fig. ?), were erected too. They were the most expensive kind of blockhouse and took the longest time to complete. Slight differences are found in the roofs and loopholes of these blockhouses.

The blockhouses were protected by erecting wire entanglements between them. These wires were anchored in many ways. Thick wire was vertically strung and plaited between strips of fencing. Different kinds of alarms were attached to these in order to warn the soldiers, should the enemy try to break through the wiring. Loaded guns were also set as traps. A trench of 1,52m wide by 1,22m deep was dug around every blockhouse (Van Vollenhoven, 1998:82).

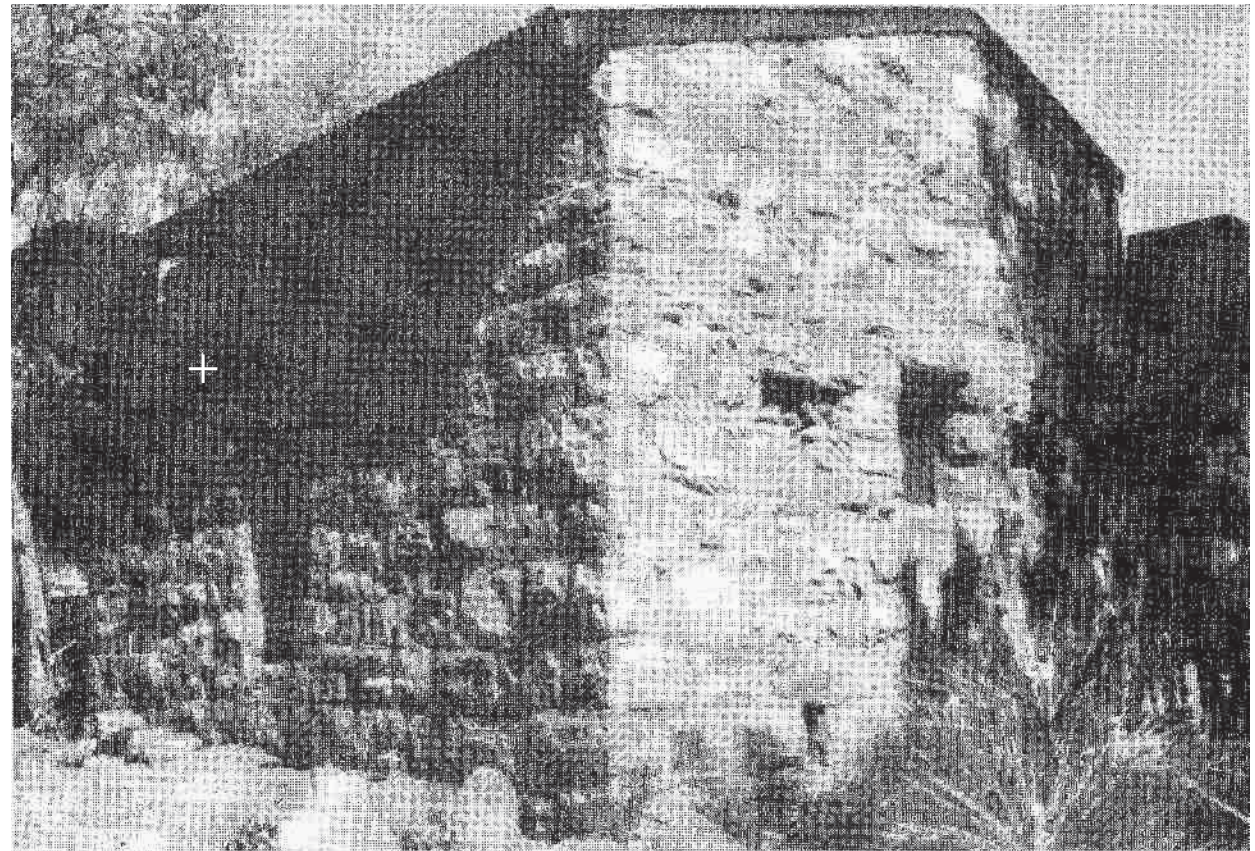


Fig. 2.16. The Johnson Redoubt is situated on the terrain of the State President's home in Pretoria. (1998: 85)

BLOCKHOUSES IN AND AROUND PRETORIA

After occupying Pretoria on 5 June 1900, it was of the utmost importance to the British to remain in control of the capital. It soon became clear that they were wrong in assuming that the war would come to an end soon. The war raged on and a number of fortifications were constructed in and around Pretoria to protect the city against a possible Boer attack (1998:83).

A total of 61 blockhouses, comprising 36 of stone (four of which were double storey structures) and 25 of corrugated iron were erected in and around Pretoria itself. The work was done by the 26th Company of the Royal Engineers. One has to bear in mind that the four Boer Forts were now manned by British soldiers and formed a part of the defence system of the capital. Information about the British fortifications is extremely limited and most of them have been destroyed since the war (*ibid*).

Blockhouses: Cable Hill Redoubt
 Johnston Redoubt
 Eastern Redoubt
 Howitzer Redoubt
 Vesting Blockhouse
 Magazine Redoubt
 Quagga Redoubt
 Kwaggapoort Blockhouse
 West Fort Blockhouse
 Klapperkop Blockhouse
 Blockhouse number 27
 Wonderboompoort Blockhouse
 Johannesburg Road Redoubt
 River Redoubt
 Hillcrest Blockhouse
 Muckleneuk Blockhouse
 Blockhouse at Eloff Cutting

WEST FORT BLOCKHOUSE

To the east of Fort Daspoortrand (West Fort) another blockhouse was erected (fig. 2.18). This circular structure was built of stone. It probably had a corrugated iron roof and its entrance on the western side seems to have been hidden (1998:90).

The blockhouse was connected to Fort Daspoortrand by means of a neat stone path. This path and the blockhouse are indicated on a geological map of Pretoria which was compiled in November/December 1904 and January 1905. The distance between the two structures is approximately one kilometer. It proves that Fort Daspoortrand was intensively involved in Britain's defence of Pretoria.

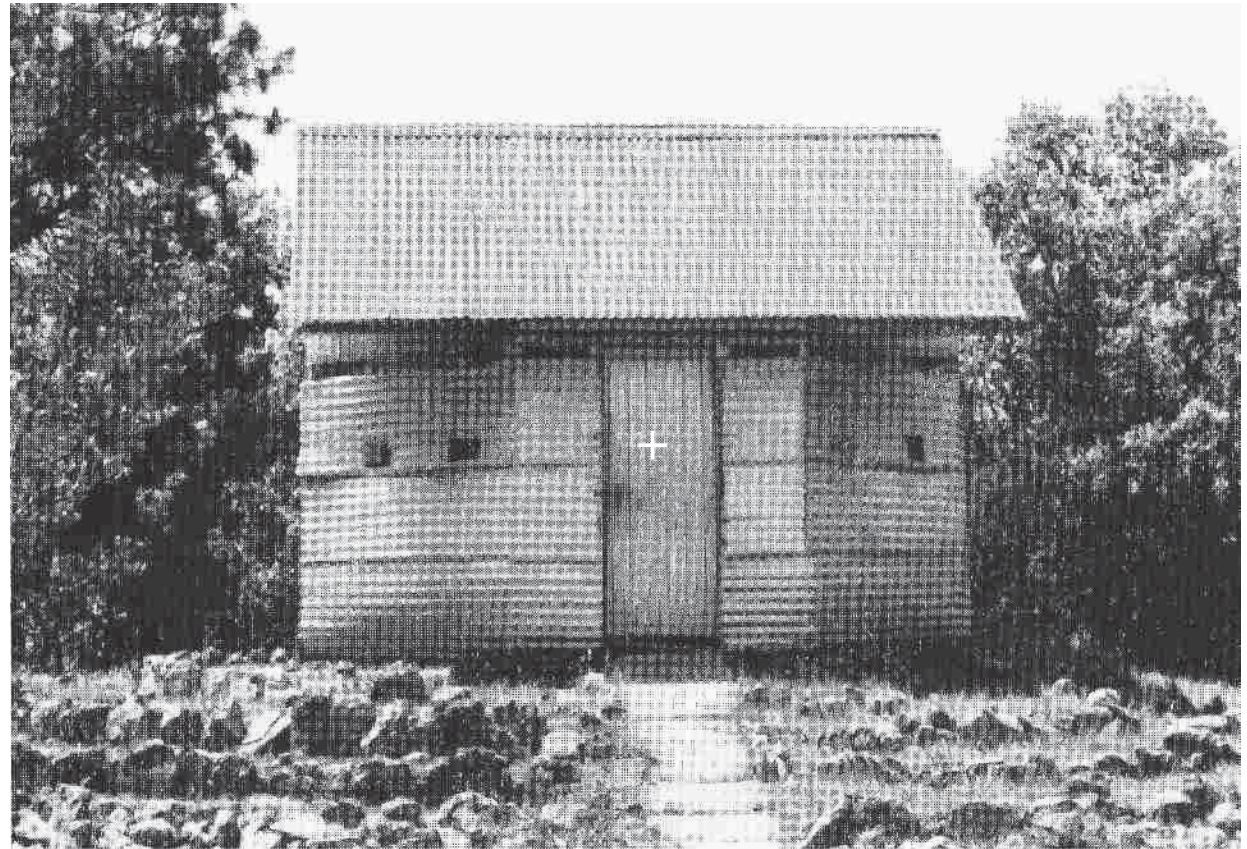


Fig. 2.17. The Vesting Blockhouse is the only blockhouse of corrugated iron in Pretoria which has been preserved. (1998: 87)



Fig. 2.18. Remains of the West Fort Blockhouse. (1998: 91)



Fig. 2.19. Remains of the Klapperkop Blockhouse. (1998: 91)

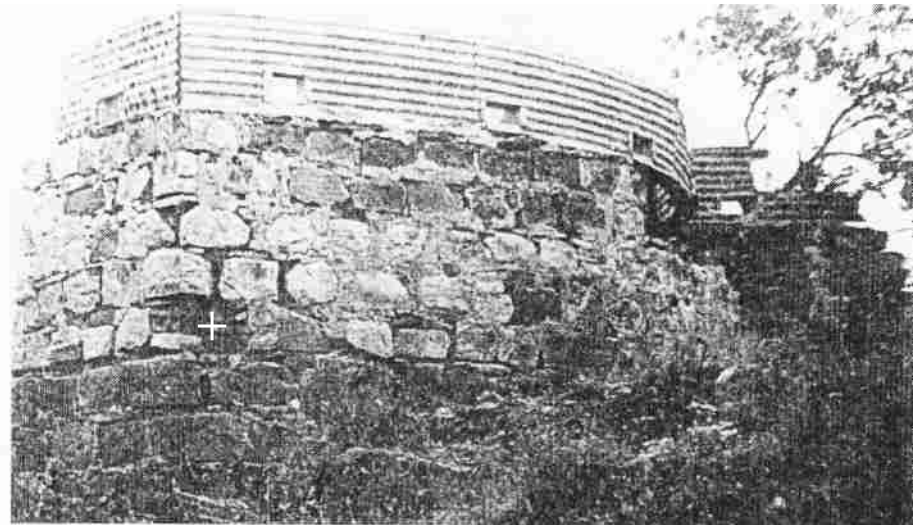


Fig. 2.20. 1970 photo of the Eastern Redoubt. (1998: 86)



Fig. 2.21. Remains of the Cable Hill Redoubt. (1998: 84)



Fig. 2.22. West Fort - Layered view of stone and nature (sky), (2010)

+ Fort Daspoortrand (West Fort)

Fort Daspoortrand is located on a hill above West Fort, the historical leprosy hospital of Pretoria. It is situated on the farm Broekscheur, number 318 JR in the Pretoria district. Its reference is 25° 43,9' southern latitude by 28° 04,4' eastern longitude according to Map 2528CA, Pretoria, of the South African 1:50 000 topographic series (Van Vollenhoven, 1998:102).

As has already been pointed out earlier, this fort is quite unique and forms the basis of the author's study. It appears as if both Commandant-General Joubert's pro-French sentiments, and the French-German competition in the ZAR contributed to the decision to award the contract for this fort to two military engineers, Leon Grunberg and Sam Lèon, and not to a German contractor, Heinrich C. Werner. The Executive Board invited the two parties to a meeting where the matter was laid to rest (Van Vollenhoven, 1998:58).

By July 1897, the construction of Fort Daspoortrand had already commenced and on 12 November 1898, it was officially handed over to the Government of the ZAR. Its total cost amounted to £ 46 500.

The engineer responsible for the construction of the fort, was Edgar Cassen. Other French and Italians who were involved in the building process, were Carlo Prina, Petro Testan and Joseph Allias. Their specific duties are not known.

Grunberg and Lèon were to have laid the foundations for the guns at all the forts in Pretoria. They would also have been responsible for installing the guns. This was done at Fort Daspoortrand and Fort Schanskop. Major Erasmus suggested that Fort Daspoortrand required two guns. The fort contained two 37mm Maxim-Nordenfeldt guns as well as a 155mm gun (Long Tom).

On 23 October 1899, 20 men were stationed here. They included the following: Officer in charge - Lieutenant F. Townsend, Adjutant P.J. Van der Merwe, E.A. Venter, E.A. Pretorius, C. Van Bogaarde, A. Fenske and R.Hirsch. A photograph published in the Pretoria Centenary Yearbook proves that 25 men were stationed here (fig. ?) (Van Vollenhoven, 1998:61).

The fort is a hexagonal fortification with bastions. The munition rooms are underground. They are connected to the courtyard by passages. The ammunition was hoisted to the surface through two shafts, one on the eastern and the other on the western side of the Fort.

A telegraph cable was laid between the fort and the central telegraph office. An overhead telegraph connection was also installed and the fort was equipped with a telephone as well. Two dynamos supplied electrical lighting in the fort. They also powered two search lights. Fort Daspoortrand had its own pump-station and a steam-driven pump house. Lighting conductors were installed.



Fig. 2.23. The garrison stationed at Fort Daspoortrand. (1998: 60)

ARCHAEOLOGICAL SURVEY OF WEST FORT

During the summer of 1989, parts of Fort Daspoortrand (West Fort) were excavated. The purpose was to be able to draw up a plan of the fort (fig. 41). It is standard practice not to excavate certain parts of the site, in order that it may be excavated by future archaeologists with improved methods (Van Vollenhoven, 1998:105).

Indentations, probably for flagpoles, are found on both sides of the entrance to the building. Right in front of the entrance a hole, lined out with cement, is found. It appears as if it is connected to a similar hole in the middle of the courtyard of the fort. It probably served as a drainage system (1998:102).

The plasterwork at the entrance still clearly depicts an imprint of the ZAR's coat of arms. The imprinted Republican motto, "Endracht maakt macht" is legible. Holes have been drilled through the latter, probably to affix metal letters here. When the holes are connected, they spell out "West Fort", which is the name given by the British to the fort. British soldiers also made inscriptions in the stone. Written details which are excavated, such as these examples, are known as paleographic information sources. As paleography might refer too literally to old handwriting, paleo-historiography will probably be a more acceptable term.

The roof had caved in all over but the fracture lines clearly indicate where it had been. A sturdy steel pillar, which had served as a roof support in a room, is still in position to the south of the gateway. Pitch was used to waterproof the roof. Many remains of this are still visible on roof debris.

On both the eastern and western sides of the fort, badly eroded stairs are found. They lead to the courtyard. The date completion of the fort, 1898 (another example of paleo-historiography), is still visible against the inner wall of the gateway, although it is eroded. The jagged edged battlement is a typical characteristic of forts. The battlement of the eastern wall is still standing, but on the western side, a part of it lies scattered in the courtyard.

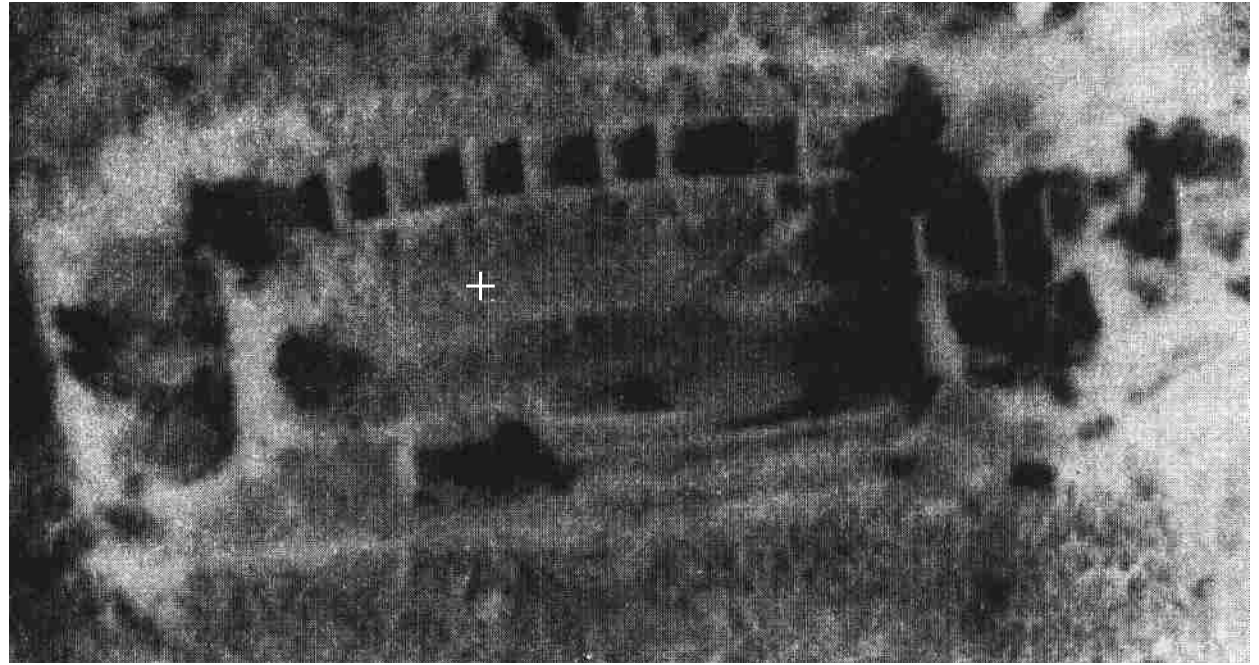


Fig. 2.24. 1968 Aerial photo of Fort Daspoortrand. (1998: 103)

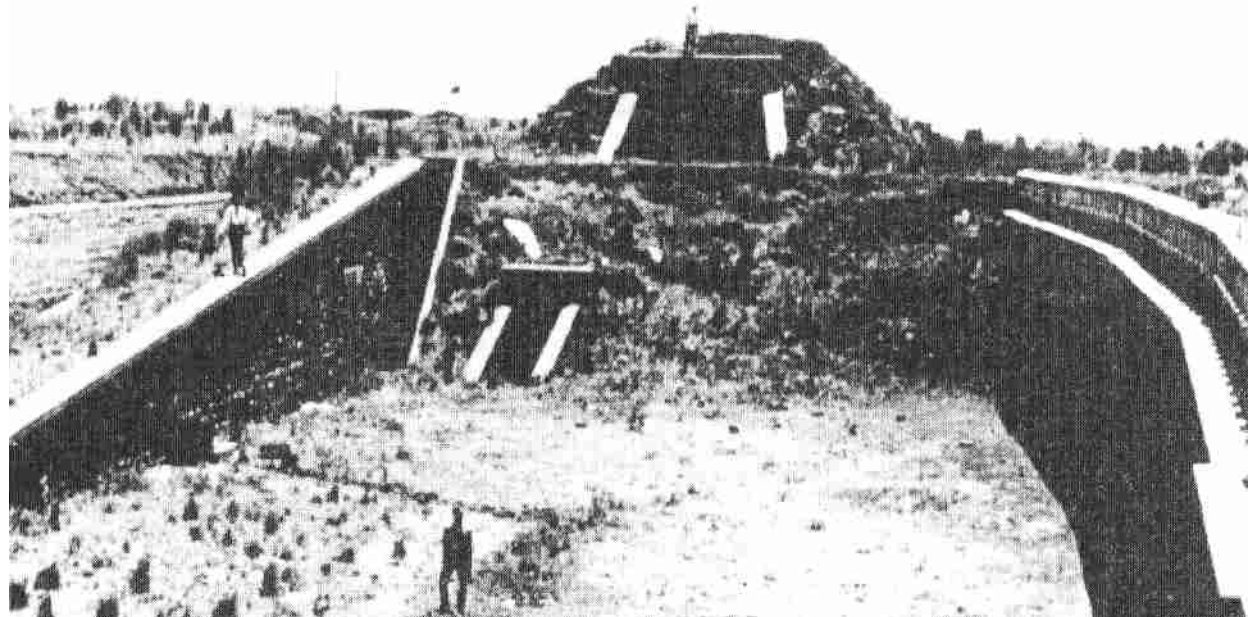


Fig. 2.25. 1913 Photo of Fort Daspoortrand (West Fort) of the western side. (1998: 105)

A passage which leads to the western shaft, is more readily accessible. At the entrance one has to walk in a crouching position, but further on you walk upright. Near the shaft two doorframes are found, one to the left and the other to the right of the passage. These are probably the entrances to two munition rooms (Van Vollenhoven 1998:104).

A second passage turns off to the right (north), a short way after the entrance to the first. It ends in the provisions rooms. Wooden blocks and porcelain portals which conducted the electrical wiring, were also found in these passages as well as the shaft. A large rectangular cement block, which would have been part of the shaft, lies outside the western shaft.

Outside the fort, on the south-eastern side, a number of stone terraces are found. Wire entanglements were probably erected here to protect the fort. A hill blocks the view from the fort to the old wagon trail east of the fort. A guard pit was dug to overcome this obstacle. Just east of the hill a neatly dressed stone floor was found. This might have been part of a sentry-box.

The old wagon trail can still be identified in some places, by means of the stones which formed its edge. It goes in an eastern direction and then swerves down against the northern side of the mountain. The fort is also connected to a small British blockhouse on the edge of the ridge, to the east of the fort. It is connected via a path, which is not clearly visible anymore.

A stairway leads from the north-eastern side of the fort to a terrace. Here a cement floor is found on which a structure might have been erected. It probably had to do with the construction of the Fort.

The parts where excavations were undertaken are:
the western munition shaft;
the provisions room;
the gateway.



Fig. 2.26. Fort Daspoortrand during construction. (1998: 59)

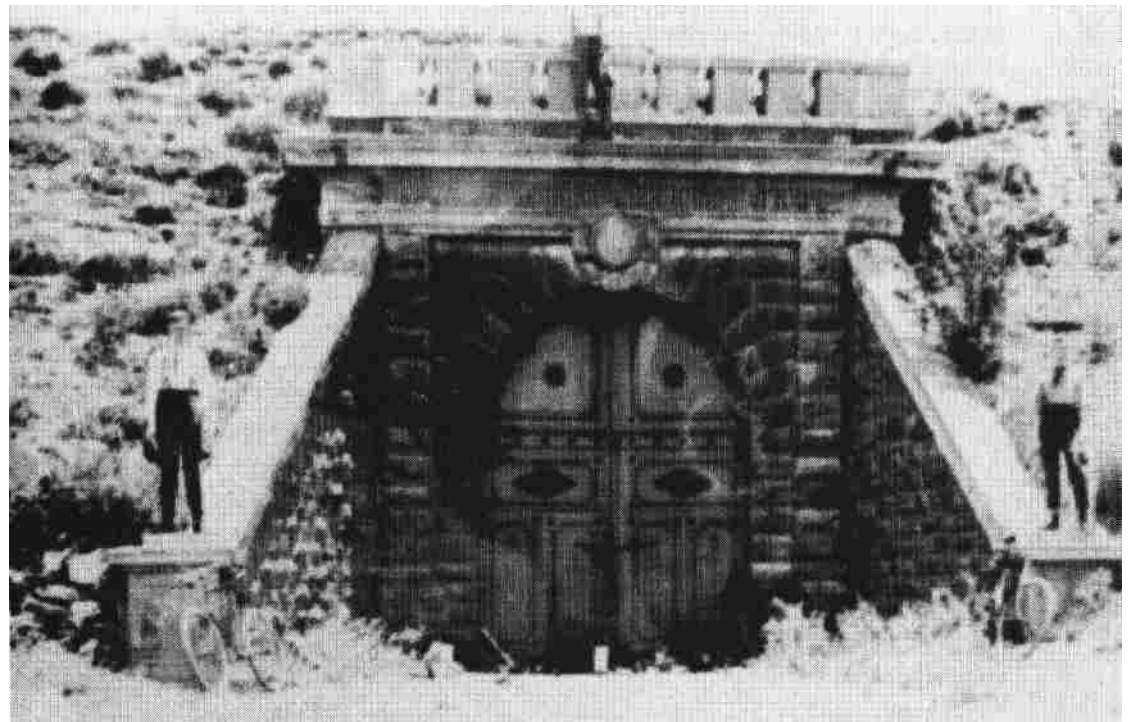


Fig. 2.27. Fort Daspoortrand after completion, with its impressive entrance. (1998: 59)

THE WESTERN MUNITION SHAFT

The purpose of the excavation here was to find the floor of the tunnel, in order to measure the depth. For this four trenches of 12m by 0,5m were measured out. It was soon clear that no stratification existed here, as the soil was alluvial soil which had washed down the shaft through the years (Van Vollenhoven, 1998:106).

THE PROVISIONS ROOM

Excavations were done here to determine the floor level of the rooms, as this is a different level from that of the munition shafts. First the grass had to be burned, in order to make the ground visible.

A test trench of 4,55m x 1,30m was measured out against the eastern wall of the room. It stretched from the northern wall up to the southern wall. From here onwards, the test trench was systematically deepened by means of arbitrary layers of 10cm each. No stratifications were found here and only two artefacts were uncovered.

At approximately door level, the point where the door frame protrudes above ground, at the depth of 60cm, therefore were already so many concrete blocks which barred the way, that an alternative had to be found in order to determine the floor level. These concrete blocks are too large to be moved by hand and a vehicle does not have access to the rooms to remove them.

THE GATEWAY

The gateway of Fort Daspoortrand is by far the most imposing entrance of all the forts in Pretoria. Apart from scientific purposes, it was a practical necessity to open up the gateway. This would make the fort accessible to vehicles which would make future work here much easier. The scientific reason behind this action was to determine the ground level or floor for plotting and to reveal and identify features hidden in this gateway (Van Vollenhoven, 1998:107).

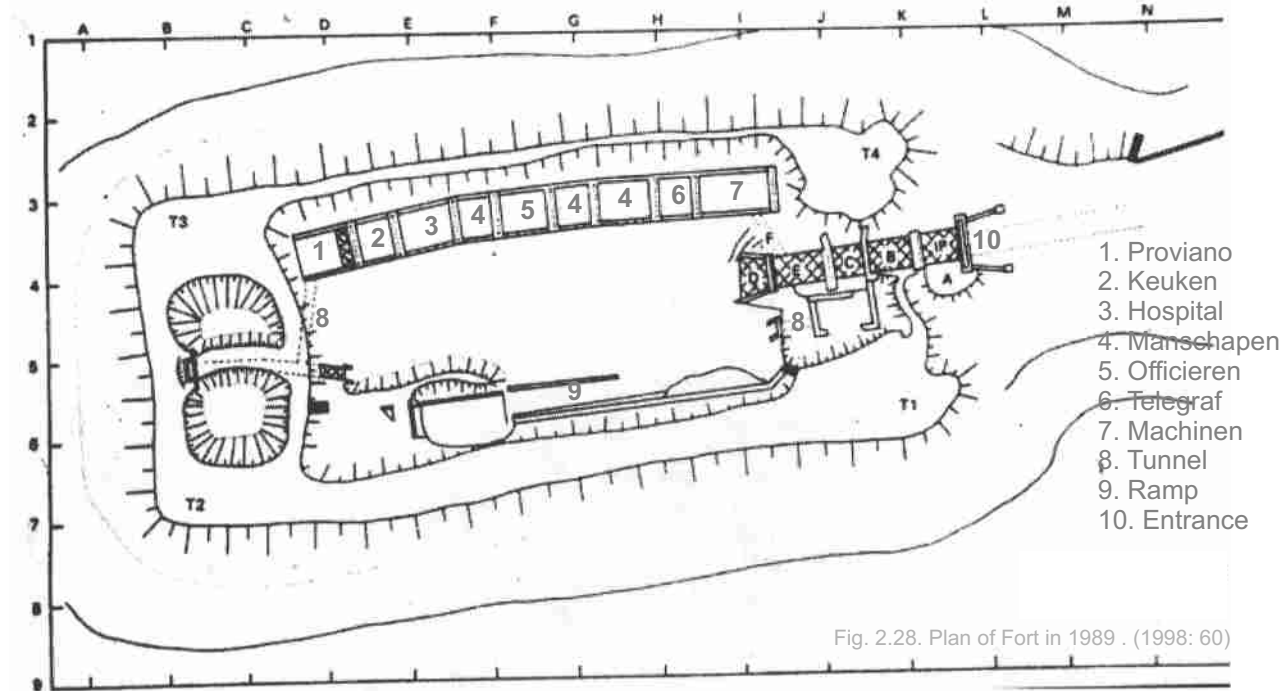
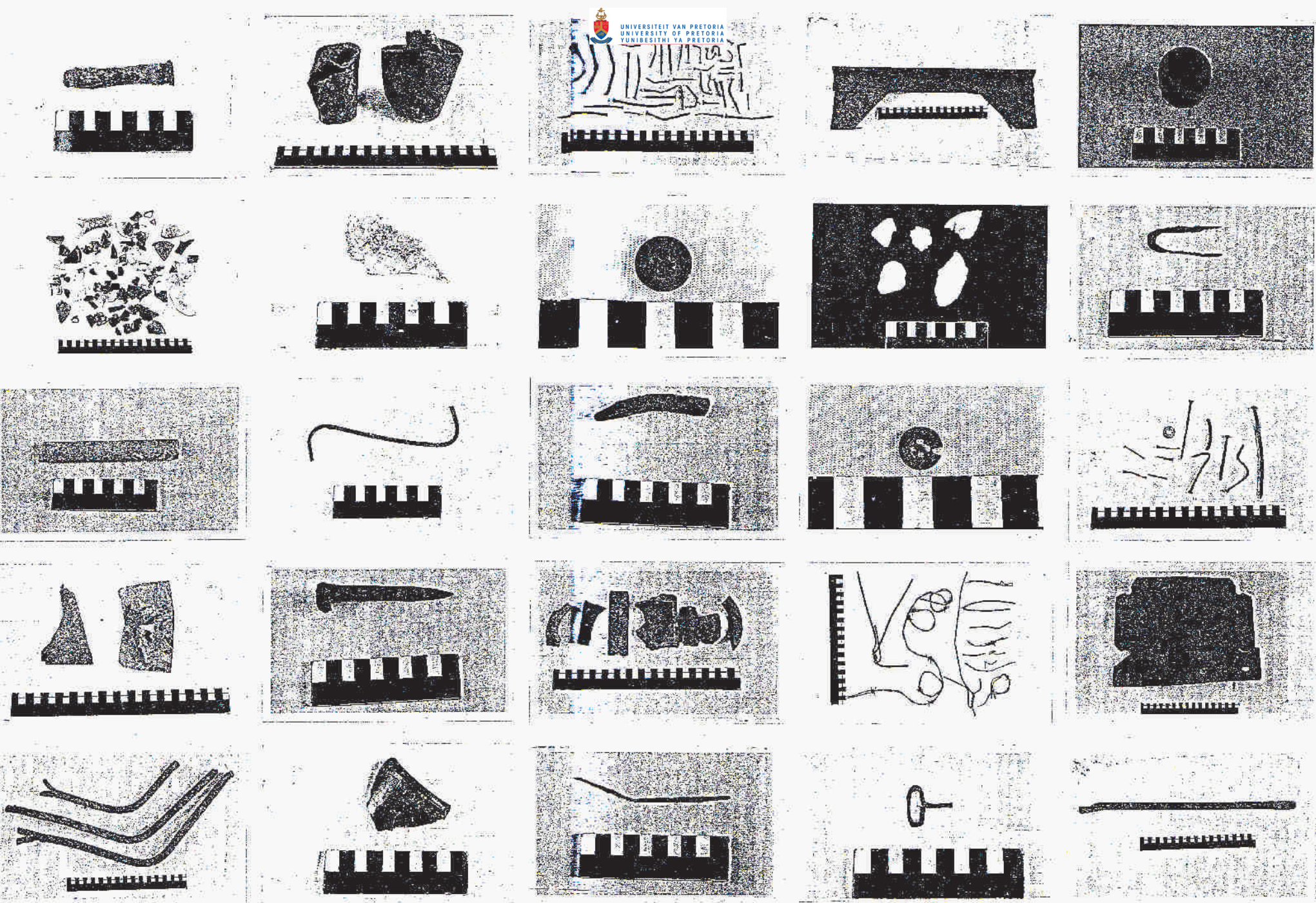
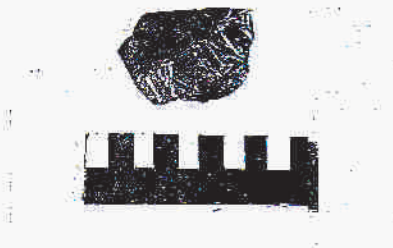
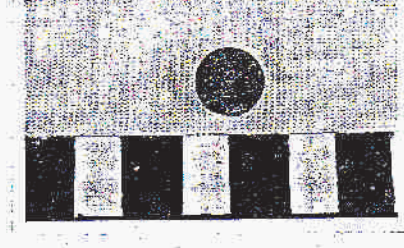
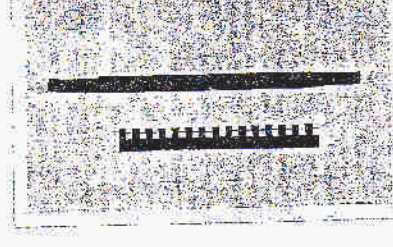
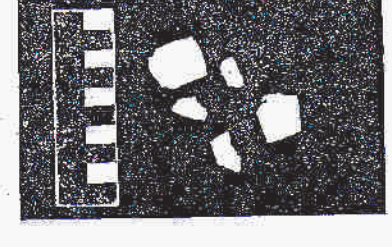
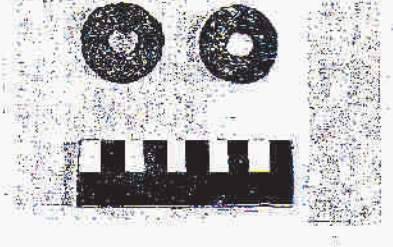
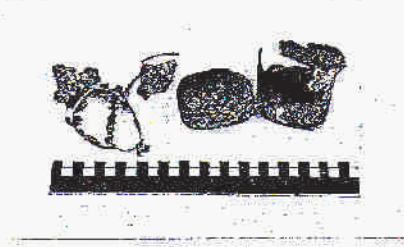
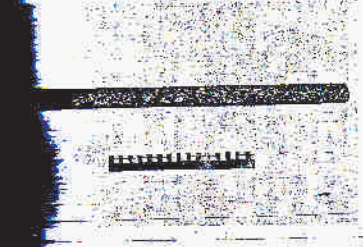
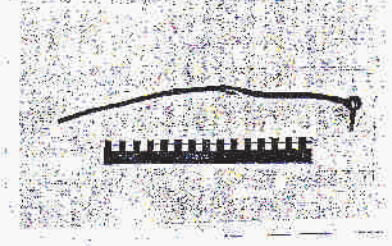
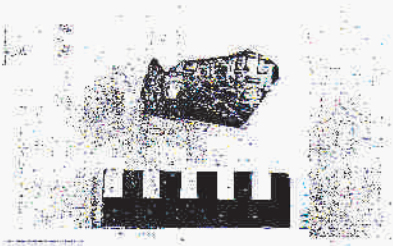
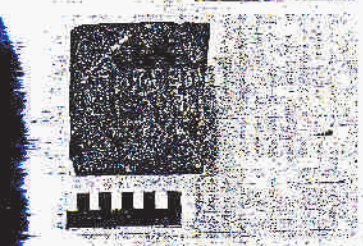
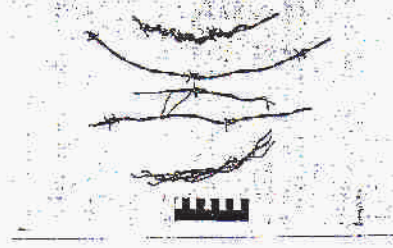
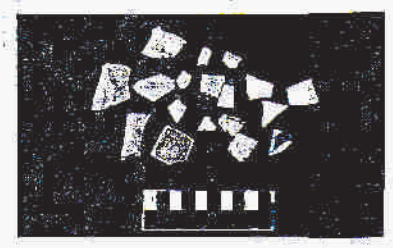
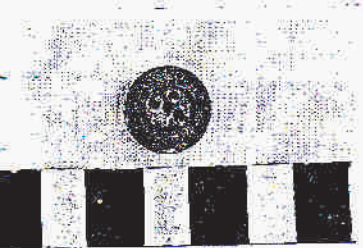
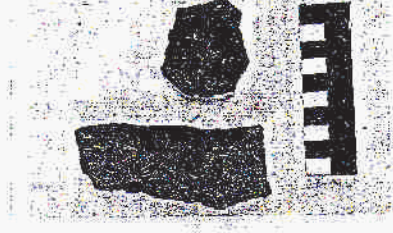
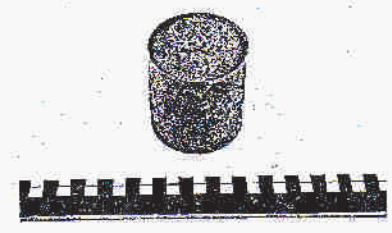
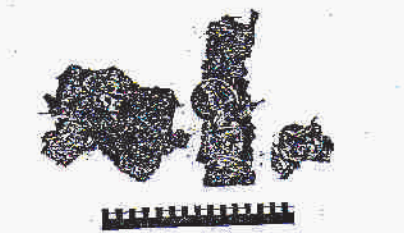


Fig. 2.29. Photos of the provision rooms in their current condition. (Viljoen, C: 2010)





Spanpoging nodig om forte te red

Willem Koetze

Pretoria — Al die inwoners van Pretoria moet betrokke raak by die bewaring van die vier ou forte om die stad. Die stadsraad en kultuurorganisasies soos die Rapportryers kan wel die leiding neem in 'n omvattende bewaringsveldtog maar dit behoort elke Pretorianer se trots te wees om die forte as kultuurerfenisse te behou.

Dit is die mening van mnr Anton van Vollenhoven van die van die nasionale kultuurhistoriese museum wat 'n meesters-verhandeling oor die 30 forte en blokhuse om die hoofstad geskryf het. Hy sê die ou erfenisse moet tot elke prys bewaar word. Vyftien van die ou vestings bestaan nog, maar is in verskillende toestande van verval. Fort Schanskop en Fort Klapperkop en die blokhuse op die terrein van die staatspresidentwoning en by admiraalshuis in Voortrekkerhoogte is nasionale gedenkwaardighede en het die beste behoue gebly.

Wanneer al die forte en blokhuse eendag opgeknop en geresoureer is, kan 'n fortroete soort-

gelyk aan die kunsroete ingestel word. Pretoria sal dan met 'n unieke toeriste-aantreklikheid kan spog omdat die forte 'n besondere uitsig op die stad bied en 'n groot kultuurbate kan wees.

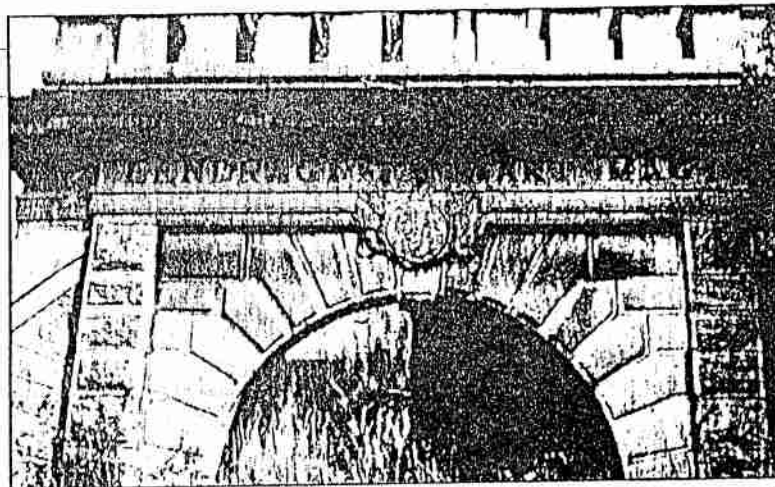
Mnr Van Vollenhoven sê dit is betreurenswaardig dat Wesfort by Daspoortrand in 'n toestand van algehele verval beland het. Dié fort is die enigste wat deur 'n Franse argitek ontwerp is en verskil heeltemal van die ander.

Die ou vesting staan op grond wat aan die provinsiale administrasie behoort.

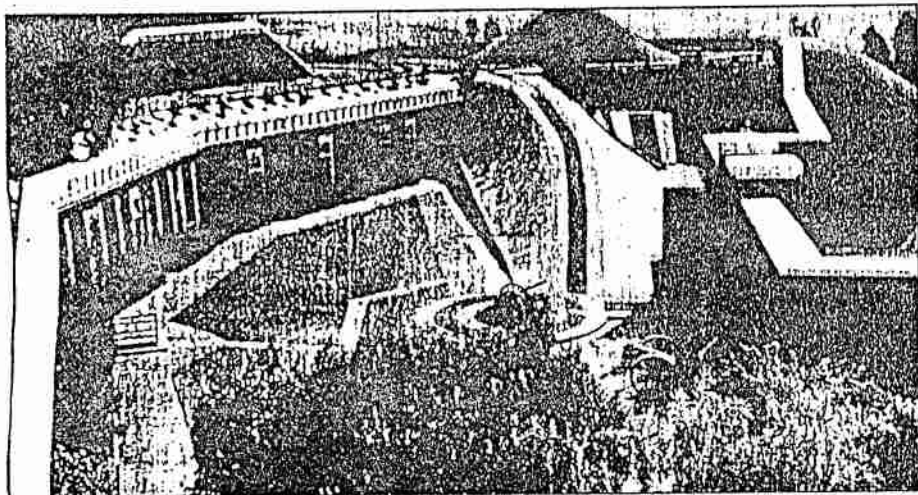
Fort Wonderboompoort, wat ook baie verwaarloos is, behoort reeds aan die stadsraad.

Fort Schanskop en Klapperkop is tot Maart verlede jaar deur die Weermag as museums gebruik en in stand gehou. Sederdien het die geboue ook verval begin raak.

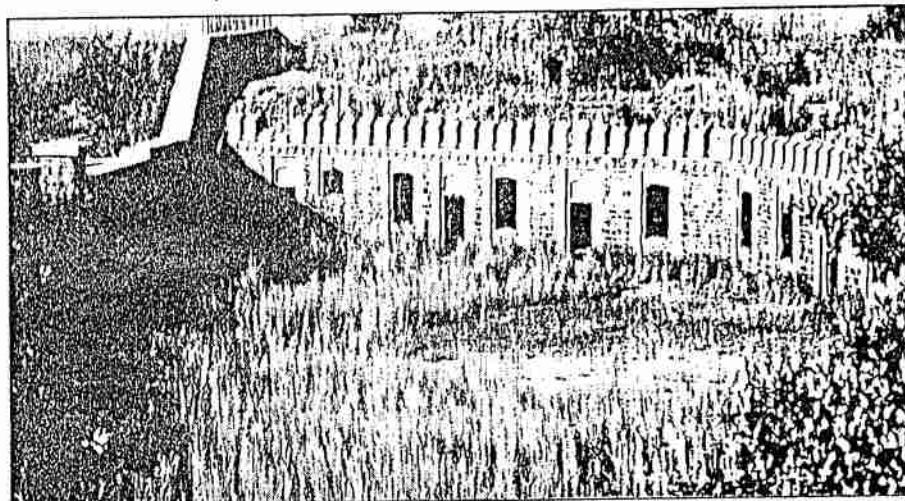
Die weermag het reeds die stadsraad gender om die geboue oor te neem en verkieslik weer in museums om te skep, maar die Departement van Openbare Werke moet eers die goen lig gee.



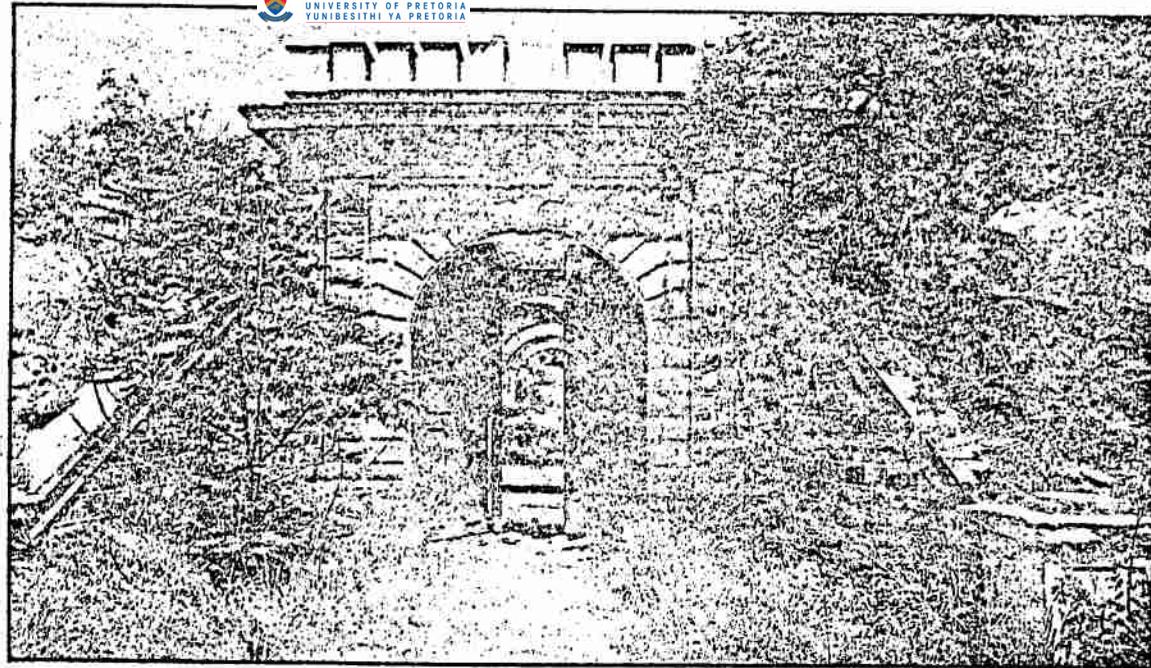
Wesfort by Daspoortrand, die enigste in Pretoria wat deur 'n Franse argitek ontwerp is, het heeltemal verval geraak.



Fort Klapperkop nadat dit deur die weermag oorgeneem en in al sy glorie herstel is. Verwaarloosing tree reeds in sedert die weermag in Maart verlede jaar onttrek het.



Fort Schanskop voordat dit deur die weermag oorgeneem en geresoureer is. As 'n plan nie gemaak word nie, lyk dit binnekort weer so.



Die gletysterhekke na Fort Daspoortrand is al beskadig, maar darem nog nie weggedra nie. Dié fort is die enigste van die vier ZAR-forte om die stad wat nog nie tot 'n nasionale gedenkwaardigheid verklaar is nie.

Foto: BENNY BOOYSEN

Pretorianers wil vier forte om stad beskerm, bewaar

Deur Marga Ley

'N GROEP bewaringsgesinde Pretorianers het uit hul eie bymekaar gekom en werp nou alles in die stryd om die laaste van die stad se vier geskiedkundige forte beskerm en bewaar te kry.

Fort Daspoortrand, later onder Engelse bewind bekend as West Fort, is op 12 November 1898 amptelik deur die destydse Zuid-Afrikaansche Republiek (ZAR) in ontvangs geneem en is die enigste van die vier forte wat deur die ZAR rondom Pretoria gebou

waarvan die dakke gemaak is. Dit is 'n staal van hoë gehalte en het gekeer dat die sandwalle bo-op die vertrekke die struktuur laat instort.

"Ná dié verwydering, hét die sandwalle ingestort. Ons doel is ook om met die hulp van vrywilligerorganisasies die sand te verwyder en die fort so ver as moontlik skoon te maak.

"Dan sou ons graag wou sien dat dit ingesluit word by die historiese roete deur die stad, met miskien 'n permanente tentoonstelling en gras op die walle om erosie te voorkom en mense plek te bied om maklik niks

voorsitter van die komitee wat hom beywer vir die bewaring van Fort Daspoortrand.

Bouwerk aan die fort het reeds in Julie 1897 begin. Dit boukoste was 46 500 pond. Die fort is 'n seskantige verdedigingswerk met bastions. Die ammunisiekamers was ondergronds en gange lei uit die binnehof daaraan. Die ammunisie is deur middel van twee skagte, een aan die voorkant en een aan die agterkant, omhoog gehys. Van die gange aan die agterkant is vandag nog oop, maar aan die voorkant het alreeds toegesluit omdat die sandwalle te hoog is. Die fort is 'n uitstekende voorbeeld van die boukuns van die destydse ZAR.

+ Archaeology

The word archaeology means “*the study of ancient things*” (The Concise Oxford Dictionary of Archaeology by T. Darvill, 2002).

Archaeology is the study of the people of the past: how they lived, where they lived, what they ate, and what their environment was like. Archaeologists use tools, houses, plant and animal remains, pollen, shells, and other evidence that they dig up in excavations to understand what the people of the deeper past were like and how they lived (Van Vollenhoven 1998:101).

In the mid-16th century, people in Britain working for King Henry VIII started making lists of old buildings and the history of the places that they visited. Later, in the 17th and 18th centuries, people started to collect old things, taking them home and displaying them in their homes. Some people were curious about these objects and started to study where they came from and what they meant, and so they started to dig into burial mounds to look for “treasures”.

By the late 19th century, many of these “treasure hunters” were digging all over Britain and Europe – for example Heinrich Schliemann, a German archaeologist who excavated at Troy. These “treasure hunters” were mostly men who were quite rich and had the money to pursue their hobby of collecting antiquities.

At the end of the 1900's, General Pitt-Rivers (who now has a museum named after him in Oxford, United Kingdom), was the first person properly to excavate archaeological sites. He laid out grid patterns and carefully mapped and collected all the artefacts that he found. He realized that once you have dug something up, you can never get back the information that gets lost as you dig through the site. General Pitt Rivers also wrote about the things that he found, so that people outside of his friends and family would know what he had discovered about the past.



Fig. 2.33. Image of the entrance to the Fort (2010).

Slowly but surely, other people started to follow his example and record what they had found. After the First World War, all sorts of inventions helped people to learn about the past, and finally, people (both men and women) started to pursue archaeology as a job, rather than as a hobby. Nowadays, most archaeologists work in museums and universities across the world (*ibid*).

METHODS OF EXCAVATION

The following is a basic introduction and description in archaeological surveying. This is to understand the process of archaeological work, to be able to investigate the principles in order to design the research centre. The ideal excavation would extract from the site everything that could possibly be known about it, everything that has survived the physical and chemical changes of centuries of burial (1993:100).

It should be “dissected logically from the surface down, in the way that the site dictates, layer by layer, feature by feature, down to the smallest visible unit, and sometimes beyond the mechanical or chemical analysis of deposits in order to understand their structure or contents.

A series of sections at critical points will provide the maximum practicable obtainable information, while, at the other end of the scale, it is helpful to section features of many sorts in order to reveal and record their structures. Some excavators attempt to get the best of both worlds by excavating in intensive areas, but leaving thin bulks, or undug strips, across the site, drawing visible faces of the balks as they proceed. The balks can be removed at any time to reveal the whole surface plan (1993:104).

DATA RETRIEVAL

The object of all excavation recording is data retrieval. At the end of the excavation all that remains are the site records, the drawings and photographs, and the finds. Any information which is not contained in one of these is lost for good. If it is there somewhere, but is difficult to find, its retrieval may be as laborious as the excavation itself (1993:162).

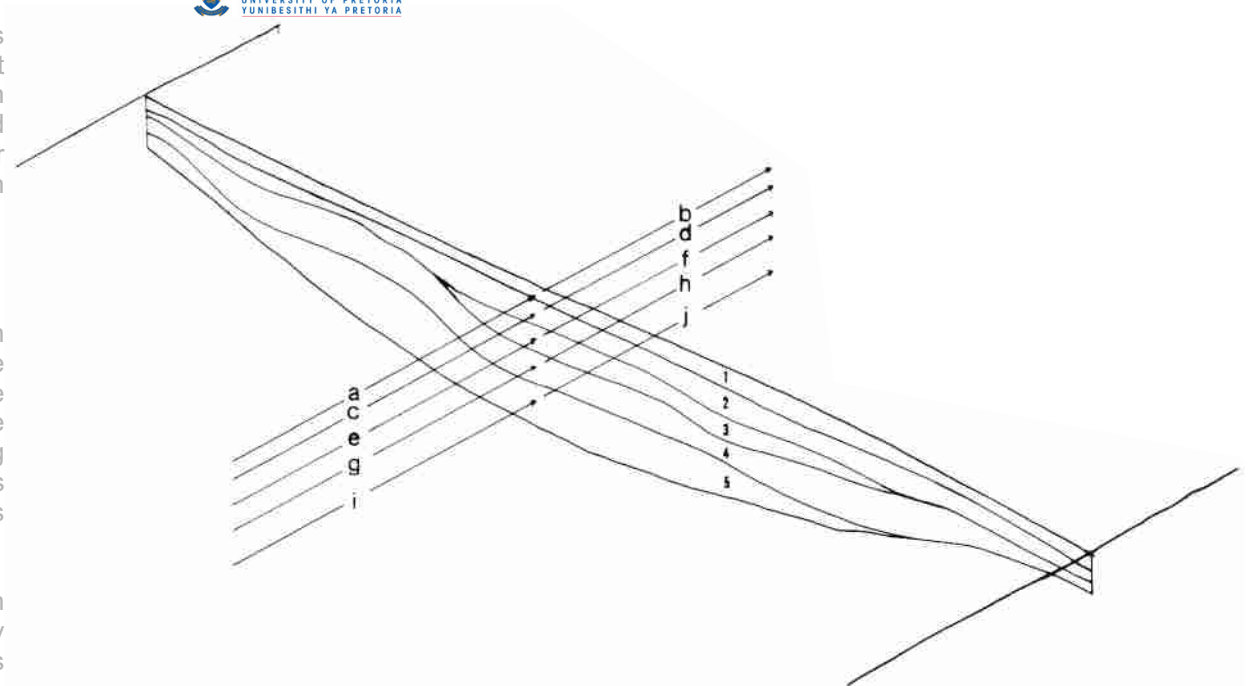


Fig. 2.34. Diagram indicating the layered process of archaeological excavations. (1993: 114)

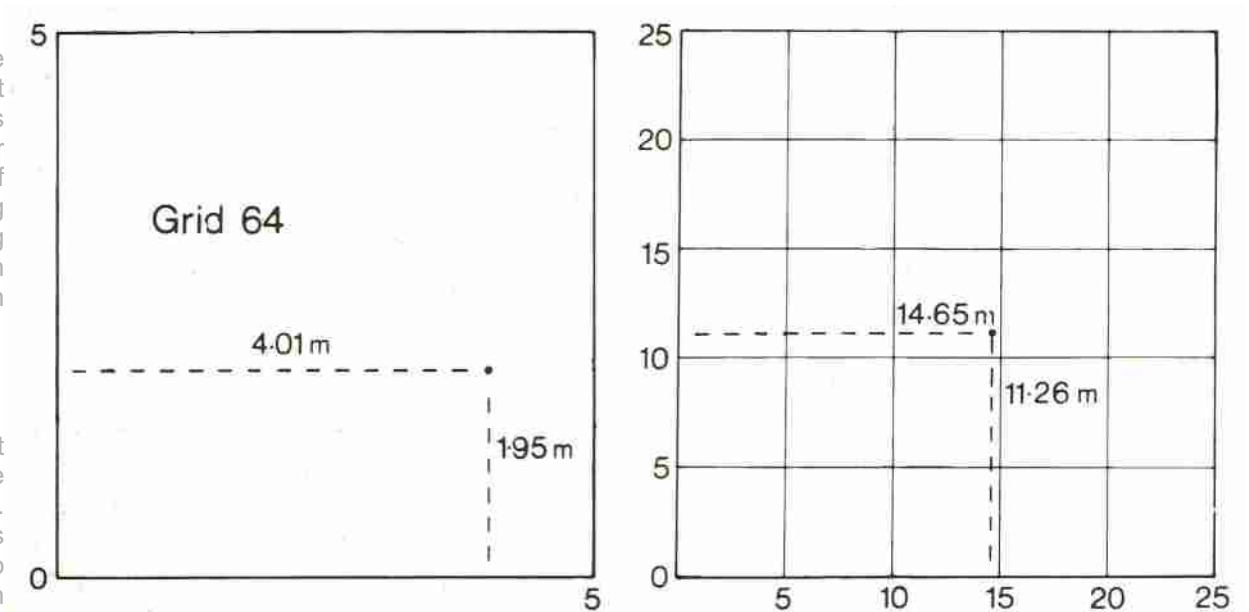


Fig. 2.35. The use of the site grid for excavations. (1993: 172)

All aspects of the site recording system visual, in the form of drawings, sections, contour surveys, together with photographs, vertical and oblique, in colour and black and white, or written, in the form of record cards, notebooks, punched cards, or tape should be devised so that they make interpretation, publication and storage as easy as possible (1993:162).

THE SITE GRID

The skeleton of any recording system must be the site grid. Under all but emergency conditions this should be laid out before the excavations begin; and it is essential to relate the excavation and its grid to permanent features in the landscape. With the advent if ever larger areas of development in towns, and the wholesale removal of hedgerows and other landmarks in the area, this is becoming increasingly difficult, and the excavator, in these circumstances, may become disorientated and literally may not know where the excavation is (1993:171).

In urban areas it is necessary to obtain the co-operation of the engineers and surveyors concerned with the development in order to locate precisely the excavation areas in the old and new townscapes. In the country, in the middle of a large gravel pit or an area of "prairie" farming, the situation may not be so easy; rather like fixing one's position in the desert, it may be necessary to do some very accurate surveying. It is necessary where an excavation is taking place in a radically altered landscape, to publish its relationship to the old landscape as well as to locate it in the new.

The metric units are standard on archaeological site (Fig. 2.36). Whether the co-ordinate system or a system of numbered or lettered grids is used, the corners of the squares should be pegged with accurately placed metal pegs, and it is an advantage to paint these corner pegs a bright colour so that they can be easily seen (1993:172).

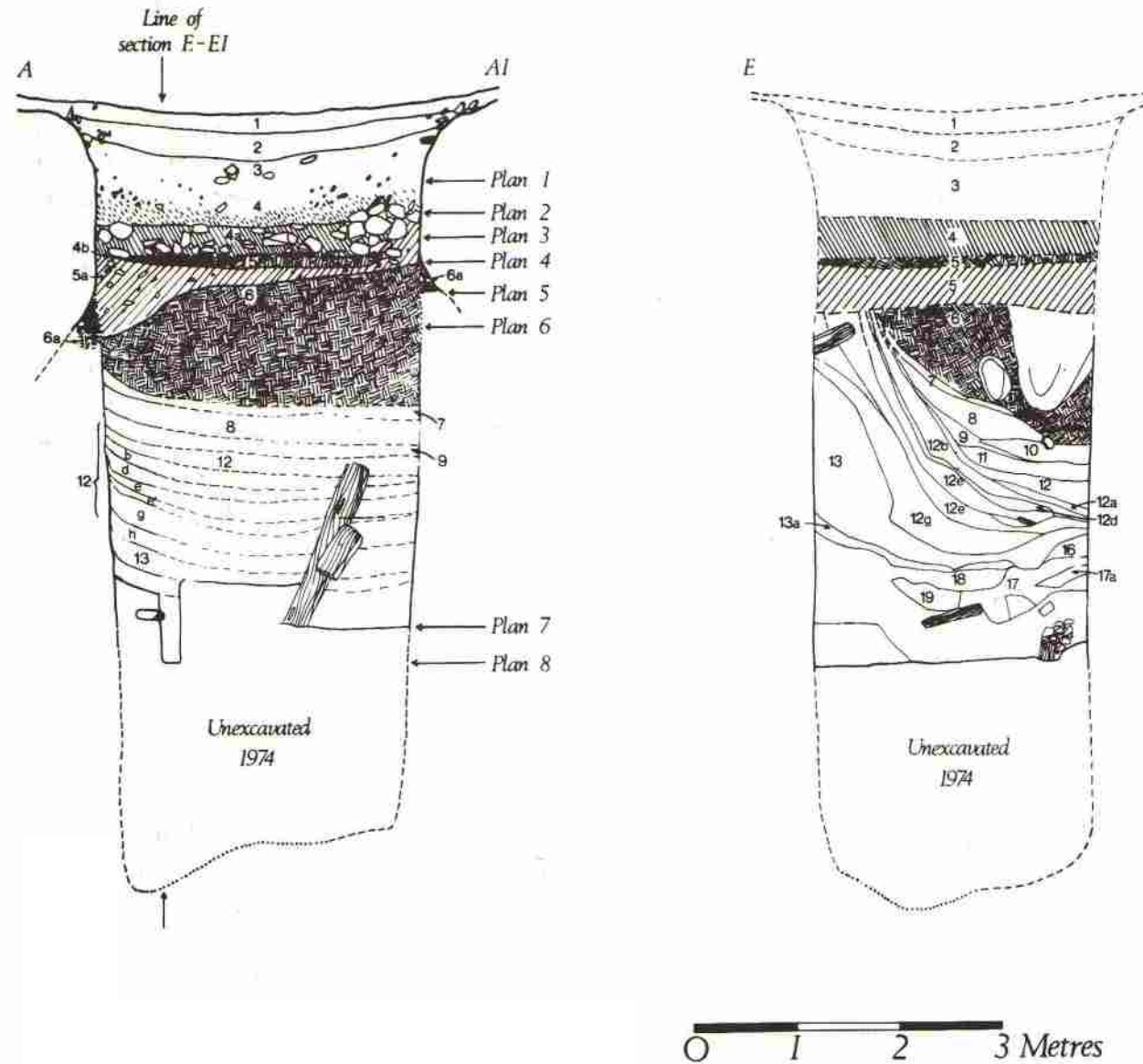


Fig. 2.36. Cumulative sections of a typical archaeological excavation. (1993: 116)



Fig. 2.37. Photo of the Manschappen provisions room. (2010)

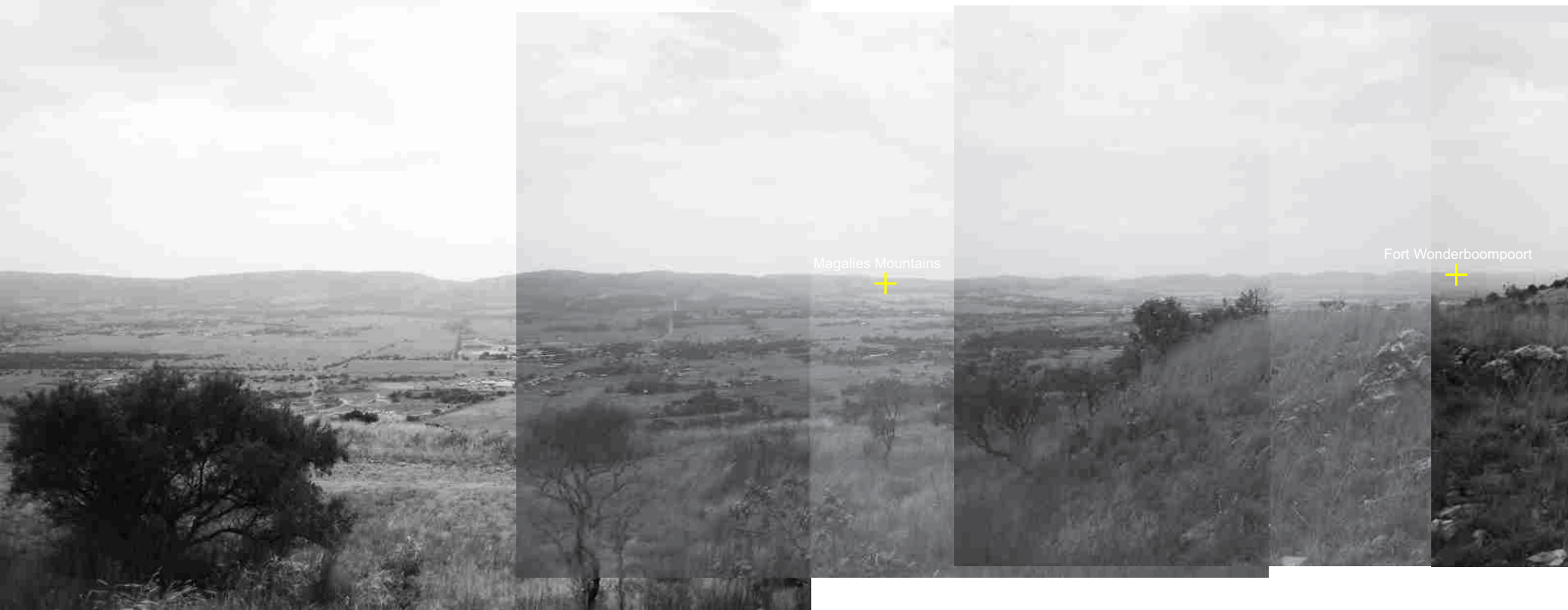
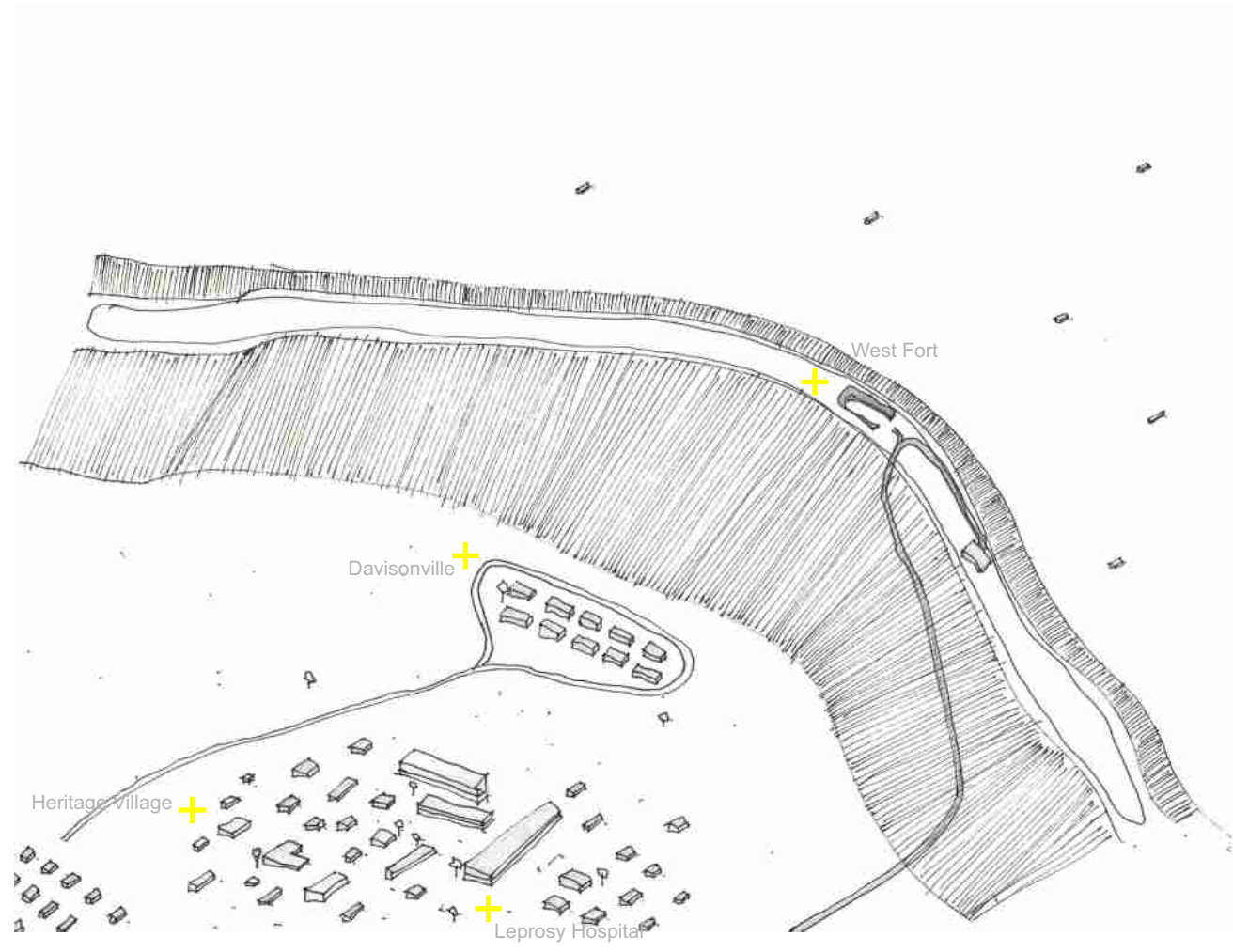




Fig. 2.38. Views from West Fort - Historical layering of iconic buildings in the city scape. (2010)

03

Site & Theoretical Approach



+ Site

CONTEXT

The site is situated to the West of Pretoria. The West Fort is located on the Waterberge, near Lotus Gardens and Danville. The area is very neglected and various RDP low-income housing surround the area. The site is approximately 400ha in extent. It is situated approximately 10km to the west of Church Square and to the north of the low income township Lotus Gardens. Access from the CBD of Tshwane is via the N4 Highway and Church Street (Holm Jordaan: 2008).

PHYSICAL CHARACTERISTICS TOPOGRAPHY

The northern boundary of the site is formed by the Daspoortrant also known as the Witwaterberg and forms part of the Magaliesberg. The site lies against the southern slopes of this ridge. The entire site therefore lies higher than existing developed areas and enjoys a view towards the southern parts of Tshwane. The upper slopes of the ridge does not allow for township development due to the steepness and also due to the presence of rocky outcrops.

MUNICIPAL WATER RESERVOIR

Slightly further east of the fort is a large municipal water reservoir at about 1521m, the highest point in the vicinity, just outside of the cadastral boundaries of the site.

THE ARCHAEOLOGICAL SITE

An archaeological site is situated near the western-most neck, near the top of the Daspoortrant. It is believed that the homesteads belonged to Sotho-Tswana speaking people and that it dates back to the 16th century.

national map

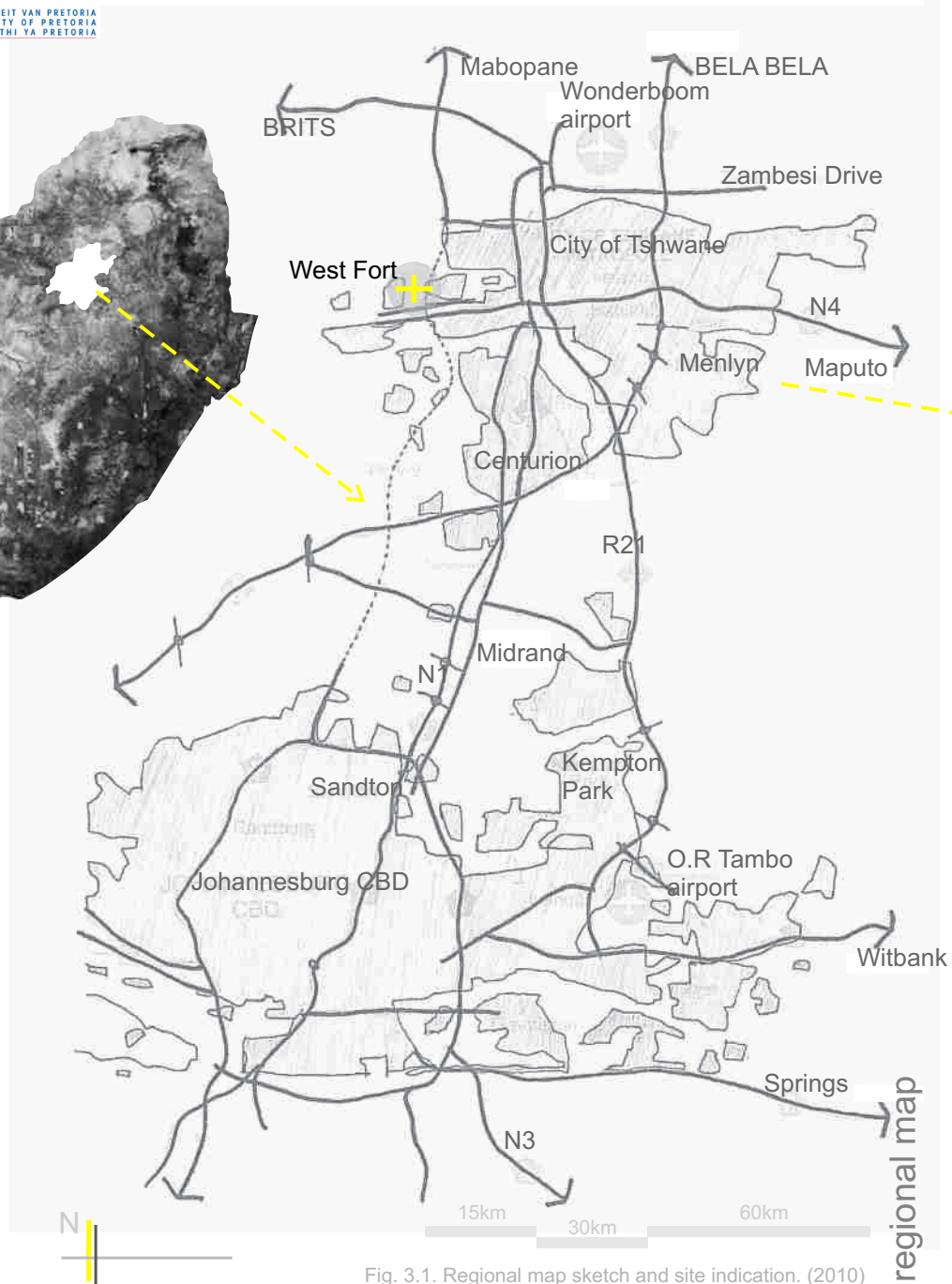
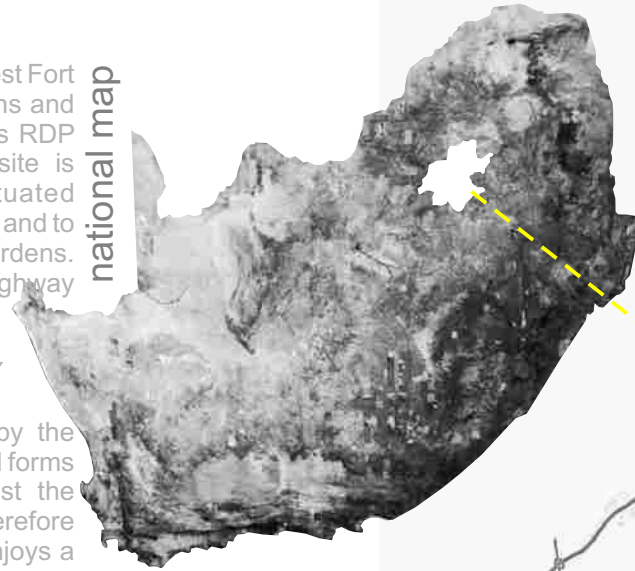


Fig. 3.1. Regional map sketch and site indication. (2010)

DAVISONVILLE

A small residential complex consisting of two rows of single dwellings on the upper reaches of the slopes of the Daspoortant in the north-central part is situated just south of the Westfort. There are a total of 14 houses in this small isolated cluster. The structures have historical value and must be protected.

ACCESS

This western part of Tshwane is regionally accessible via the N4 and Church Street running east west to the south of Lotus Gardens. There are two off-ramps from the N4 giving access to the townships south of the site and it is therefore regionally well served by access routes.

Access to the site is proposed from three points:

- One from the south-east: Van den Berg Street Extension, which is an existing major collector road in Elandsport. Presently it is the access to the Fort West Urban Village.
- One from the south: Citron Drive, which is the western of two existing access roads for the residential township of Lotus Gardens and has been constructed as a major collector road right up to the south-central boundary of the site.
- One leading from the eastern Access off the N4: Acridian Drive.

According to architectural theorist, Sandy Isenstadt, context is one of the concentric rings of circumstance comprising our understanding of site: from lot to plot, from neighborhood to region, from locality to landscape to climate. It implies the whole set of conditions from which an architect will construct an idea of site suitable to a specific scheme, and will include the technologies used to shape the site, such as infrastructure and earth-moving machinery, as well as technologies of seeing that mediate any conception of what is unique and local at a site with images from other places (2005: 157).

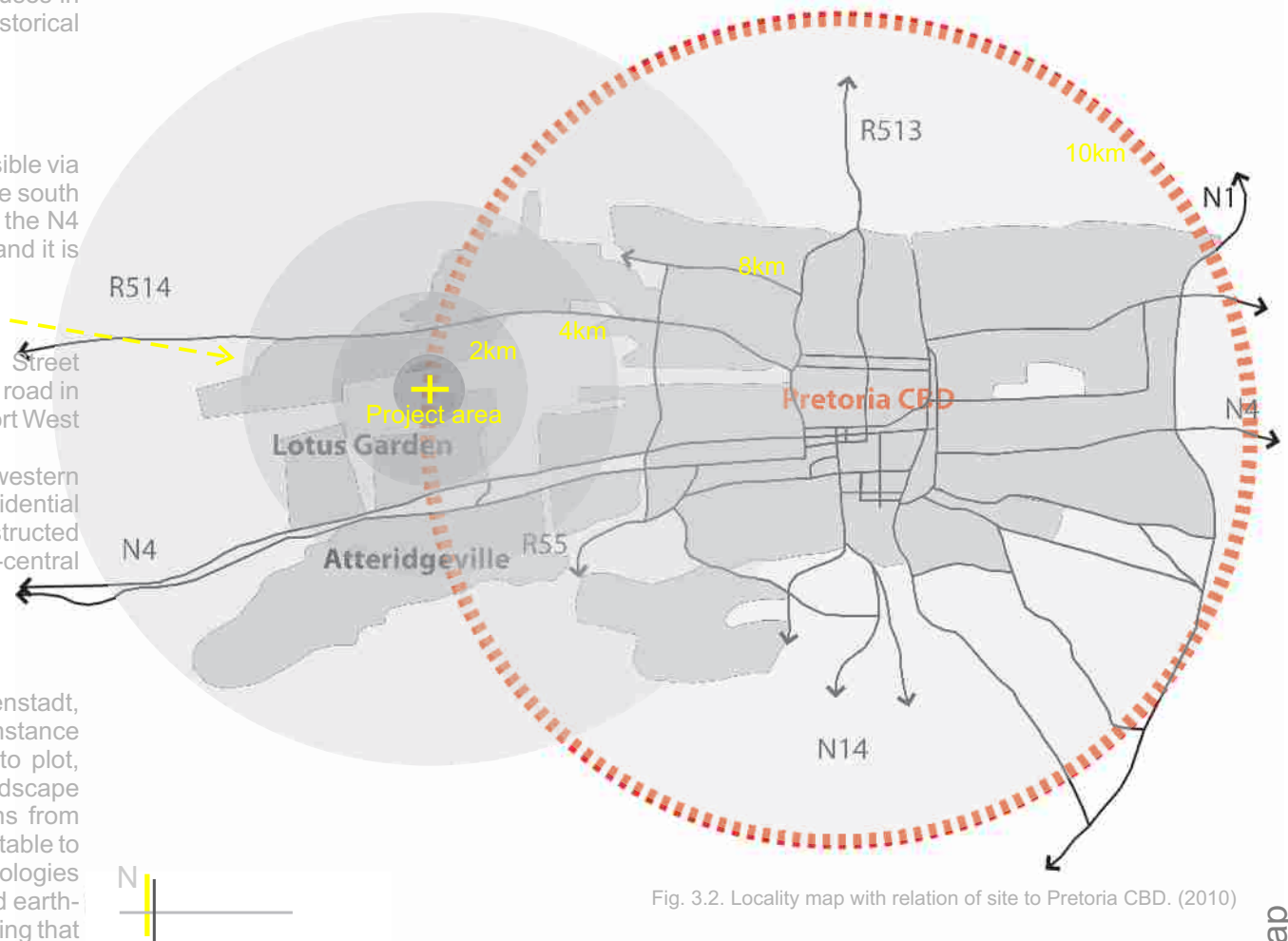


Fig. 3.2. Locality map with relation of site to Pretoria CBD. (2010)

Although clearly subject to various interpretations, context is a crucial concept for architecture. Despite its amorphousness, it must be addressed as part of the very fabric of architecture (*ibid*).

In this sense, the question of context is kin to that of style, which loomed large in the nineteenth century as a result of published accounts of archaeological discoveries and the cult of ruins (2005: 177).

According to Prof. Robert Beauregard, all sites exist first as places. Before places become objects of urban planning and design, they exist in personal experience, hearsay, and collective memories. Standing between planners and designers and the sites on which they hope to act are socially embedded narratives. And, while these place narratives can be ignored, they cannot be wholly erased. **Places are never empty** (2005: 38).

These images, in turn, prepare the way for other narrative constructions. When settlers establish wilderness outposts, for example, they enter into narratives of discovery, conquest, and the beneficence of civilization. These stories are possible only because the place has been first understood as alienated and empty, that is, because it existed in a prior narrative.

Antithetic to places unknown are places saturated with meaning. Densely imagined through overlapping histories and intersecting current events, they resist being turned into “cleared” sites.

Throughout all of this, the default position remains a site story, a narrative of professional interpretations and interventions. This is the dominant narrative of planning and design. Like all stories about place, it “weaves the tissue of habitats, educates the gaze, and informs the landscape.” It is the discourse of choice, meaningful within and resonant outside the design professions (2005: 55).



Fig. 3.8. Image capturing the tranquility of the landscape. (2010)



Fig. 3.4. Greenbelts through Pretoria, defining its natural defense ability.(2010)



+ The West Fort is a place of high cultural significance that should be conserved sustainably, effectively and efficiently in order to retain this significance and at the same time provide for appropriate uses. The spirit of the place will be experienced through the tangible and intangible qualities of the site and its cultural richness.

"Only a good for nothing is not interested in his past."
Sigmund Freud



Fig. 3.5. Panoramic view of the communal space inside West Fort. (2010)

+ Archaeological sites

The following mapping illustrates archaeological sites that are relevant to the author's study, to understand the proximity of these sites in relation to West Fort site. The influence and relation these sites have to the Archaeological Centre:

CRADLE OF HUMANKIND

Through the use of biochemical evidence they have argued that the split of the human lineage (Hominidae) from that of the African apes took place around 5-6 million years ago. The study of hominid fossils from sites in Africa thus enables scientists to understand how these hominids have changed and diversified since then (archaeology.about.com: 2010).

LYDENBURG (South Africa)

Early Iron Age site (5th century AD) in the Transvaal region of South Africa.

MAKAPANSGAT

Makapansgat is a series of very ancient archaeological sites in the Makapansgat valley of South Africa, with evidence for Australopithecus.

MAPUNGUBWE

Stone age and Iron Age occupations in the valley of the Limpopo River.

PHALABORWA

The archaeological complex of Phalaborwa consists of a series of iron and copper mining sites dated the early parts of the second millennium AD.

STERK FONTEIN

The ancient early man site of Sterkfontein is a cave in a dolomite hill of the Blaauwbank River Valley, about 10 kilometers northwest of Krugersdorp, South Africa.

SWARTKRANS

Swartkrans is a Lower Paleolithic cave site in South Africa, discovered in 1948 by Robert Broom and excavated by C.K. Brain in the 1960s.

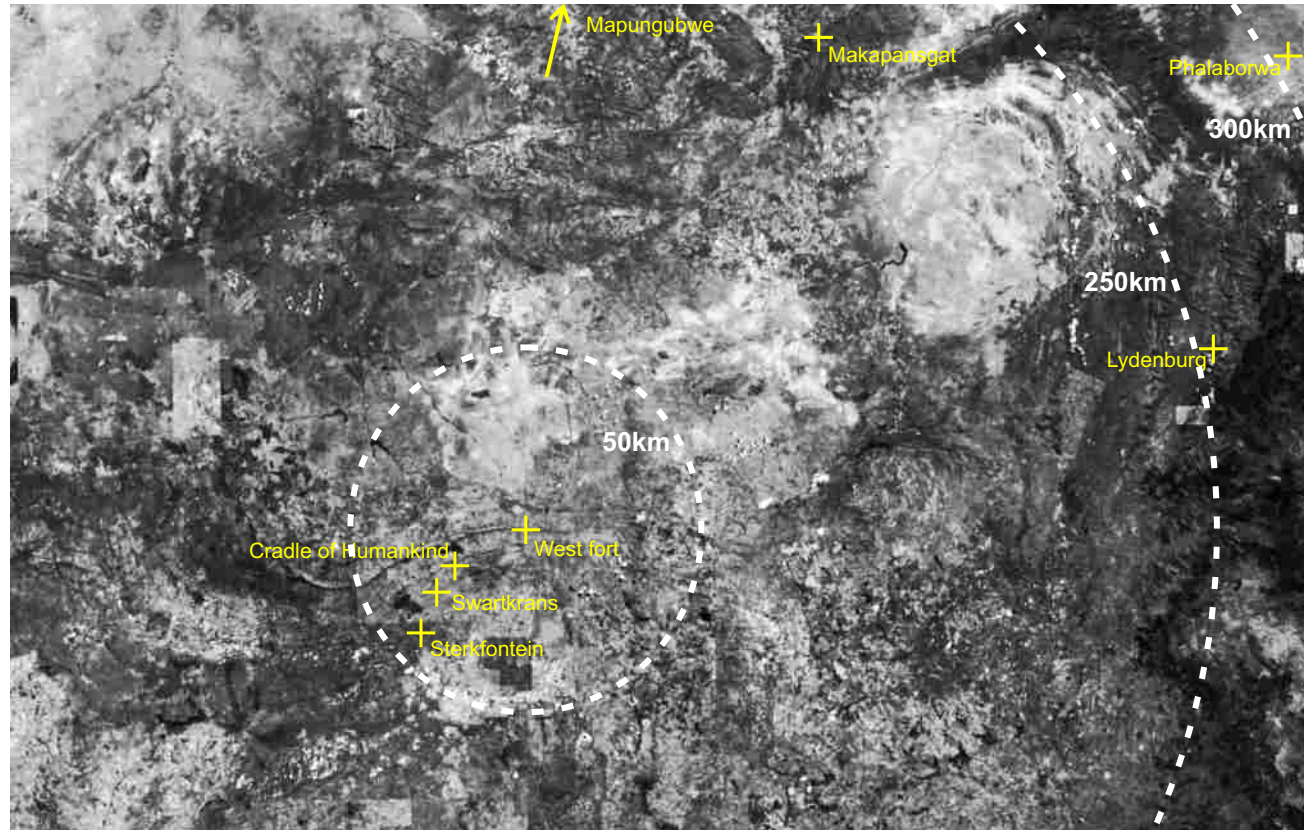


Fig. 3.6. Mapping of archaeological site in proximity to West fort. (2010)



Fig. 3.7. Sterkfontein caves. (archaeology.about.com: 2010)

+ Landscape

The following is a brief introduction into the various trees and shrubs that are found in the tranquil landscape in and around West Fort.

The Sickie pod, (*Dichrostachys glomerata*), is a sub-dominant tree. This tree looks a lot like an *Acacia*, but differs from the thorn trees, wherein that its thorns contain mainly shortened branches (1996:100).

Other common trees include the *Rhus lancea* and the *Rhus amerina*. The *Rhus lancea* is the well known “karee tree” which is widespread over the Gauteng area and is very common in Pretoria. It has long thin leaves, while the *Rhus amerina*, the “mountain tree”, which has small thin leaves.

The *Pavetta assimilis* is found a lot in the area and at the foot of the Witwaterberg. This type carries white flowers and later small purple berries.

The *Erythrina lysistemon* is a big tree from about 8 metres with black peels and red seeds, from which the Basoeto makes necklaces.

At the foot of the Witwaterberg another type is common, the *Vangueria infausta* and the *Clerodendron glabrum*, with its small, strong branches. Its got thick white flowers and the Zoeloes uses an extract of the roots as healing aid against snake bites.

The *Burkea africana* is very common higher up the mountain. It is a smaller tree, with a wide top and very dense leaves. According to Galpin, this is the wood used by the Voortrekker’s to build their wagons.

On top of the ridge is the *Rhus magalismontana*, n little bush of about 350mm high and is very common on Gauteng’s ridges and mountains, together with this specie, we find the *Brachylaena rotundata*, which is also part of the sunflower family. It is also very common in Gauteng.



Fig. 3.8. *Burkea africana*. (webegreencil.com: 2010)



Fig. 3.9. *Erythrina lysistemon*. (ibid)



Fig. 3.10. *Rhus magalismontana*. (ibid)



Fig. 3.11. *Clerodendron glabrum*. (ibid)





Waterberge

West Fort

Davisonville

Heritage Village

Leprosy Hospital

RDP Housing

Secondary School

Cemetery

Water reservoir

West Fort Blockhouse ruins

Study area

Bloekom tree strip

N4

Church Street

project area

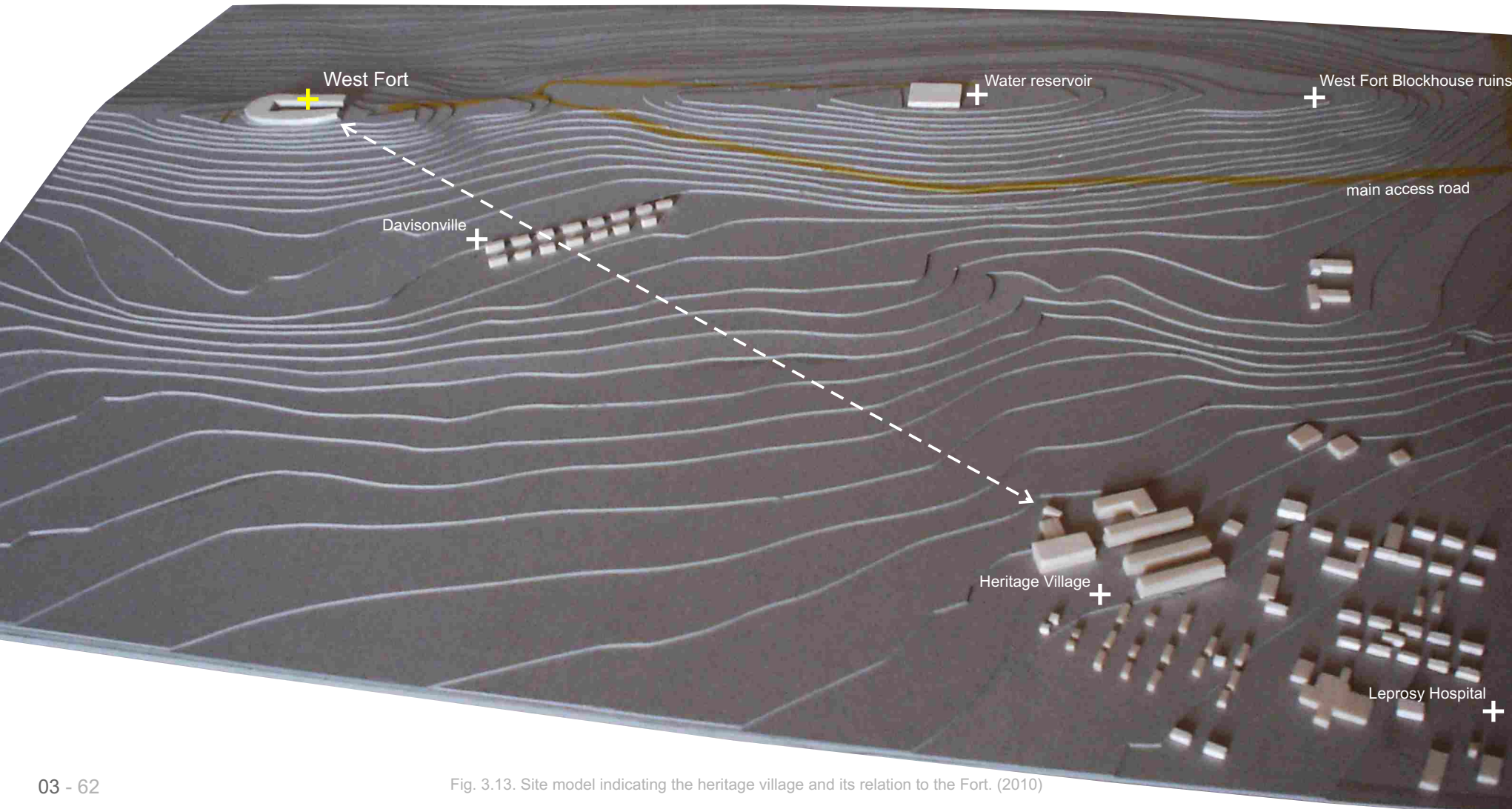
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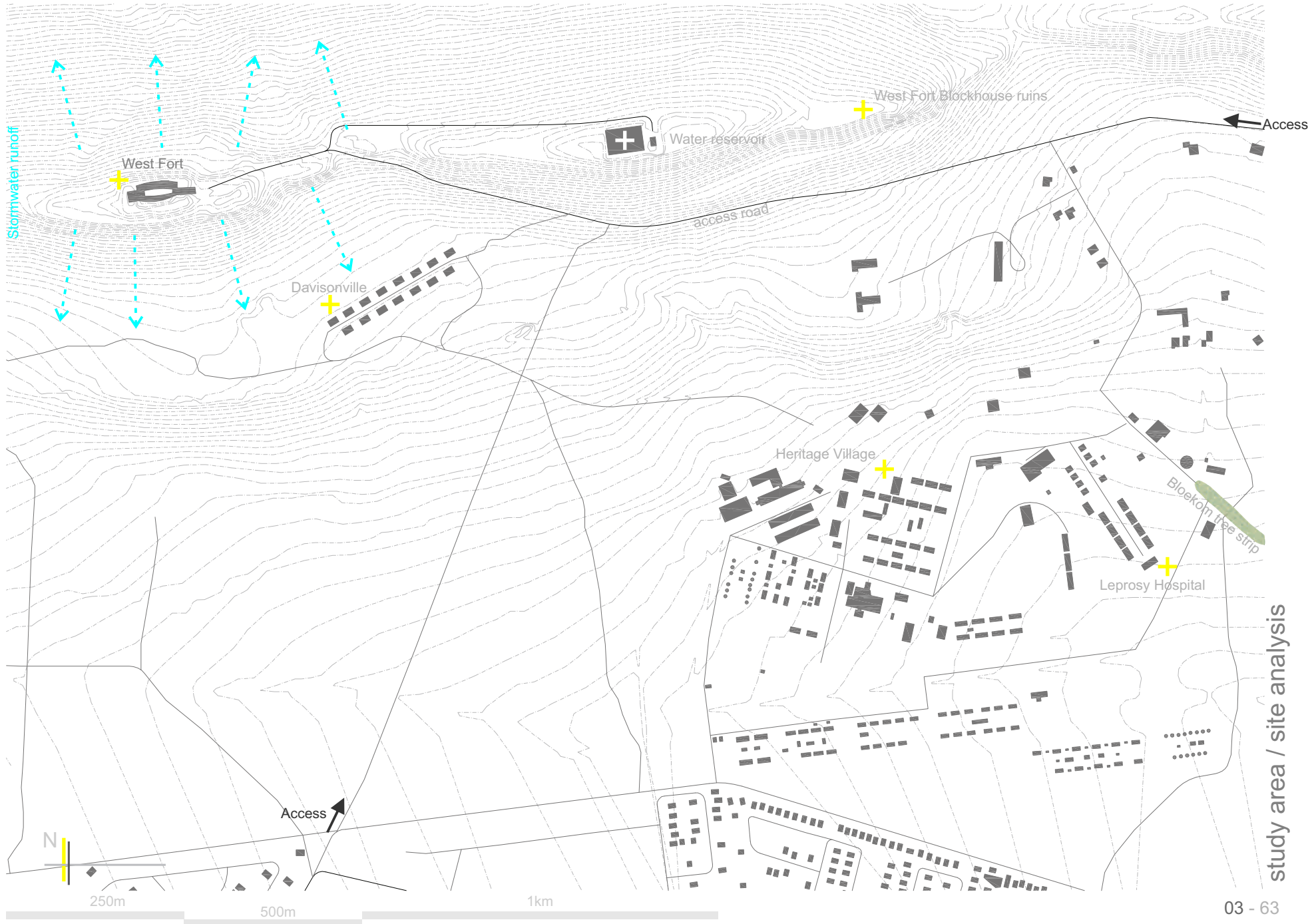
500m

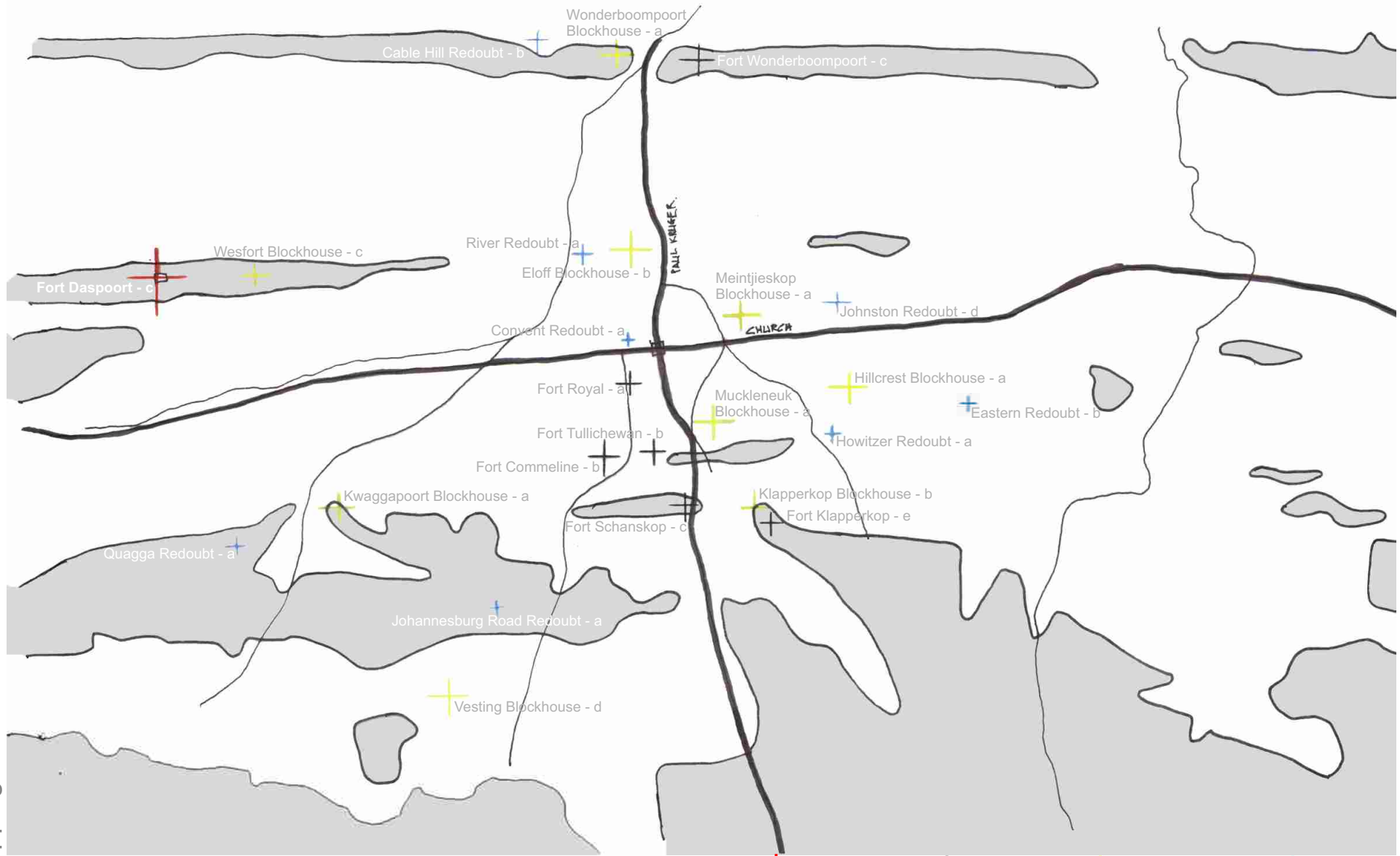
1km

2km

access to site







fort mapping



+ Site
 + Fort
 + Blockhouse
 + Redoubt
 a - Destroyed b - Foundations left c - Walls still standing d - No damage e - Restored

+ Theoretical Approach

The theoretical approach of phenomenology in architecture and the spirit of the place will be focused on and interpreted to support design decisions made by the author. The approach towards memory and ruins will also be discussed, as the Fort is the ruin and how its memory is perceived and exhibited.

Genius loci is a Roman concept. According to the ancient Roman belief every “independent” being has its *genius*, its guardian spirit. It suffices to point out that ancient man experienced his environment as consisting of definite characters. In particular he recognized that it is of great existential importance to come to terms with the *genius loci* if the locality where his life takes place (1996: 422).

According to architectural theorist, Christian Norberg-Schulz (1926 - 2000), the concrete things which constitute our given world are interrelated in complex and perhaps contradictory ways. Some of the phenomena may for instance consist of others. The forest consists of trees, and the town is made up of houses. “Landscape” is an “environment” to others. A concrete term for environment is *place*. Place is evidently an integral part of existence. A place is therefore a qualitative, “total” phenomenon, which we cannot reduce to any of its properties, such as spatial relationships, without losing its concrete nature out of sight (1996:414).

In the past, survival depended on a good relationship to the place in a physical as well as a psychic sense. In ancient Egypt, for instance, the country was not only cultivated in accordance with the Nile floods, but the very structure of the landscape served as a model for the layout of the public buildings which should give a man a sense of security by symbolizing an eternal environmental order.

Modern tourism proves that the experience of different places is a major human interest, although also this value today tends to get lost. In fact modern man for a long time believed that science and technology had freed him from a direct dependence on places. This belief has proved an illusion, pollution and environmental chaos have suddenly appeared as a frightening nemesis, and as a result the problem of place has regained its true importance.



Fig. 3.14. Entrance of West Fort looking back towards the city. (2010)

The problem of orientation has been given a considerable attention in recent theoretical literature on planning and architecture. Within the spectrum of *genius loci*, we may refer to the work of Kevin Lynch, whose concepts of “node,” “path” and “district” denote the basic spatial structures which are the object of man’s orientation. The perceived interrelationship of these elements constitute an “environmental image”, and Lynch asserts: “A good environmental image gives its possessor an important sense of emotional security. Accordingly all cultures have developed “systems of orientation,” that is, spatial structures which facilitate the development of a good environmental image (*ibid*).

According to architectural theorist, Norman Crowe, who took a closer look at ancient Greek civilization, which shows a resonance in language as well as in custom and artifacts. The Greeks open and exploratory approach to thought and nature, for instance, it is reflected in their word *theoria*. It meant “to experience a place as a whole through feeling, imagination and memory, together with intellect and the senses”. It was a concept that “implied a complex but organic mode of active observation, a perceptual system that included asking questions, listening to stories and local myths, and feeling as well as hearing and seeing. It encouraged an open reception to every kind of emotional, cognitive, symbolic, imaginative and sensory experience (1995: 74). This relates to the author’s approach to the Fort as artefact and the experience by the visitor of the artefact and memory thereof. The artefact experienced through visual and physical exploration, captured by the visitor and “recorded”.

Finnish architect, Juhani Pallasmaa (1936), states that the phenomenology of architecture is “looking at” architecture from within the consciousness of experiencing it, through architectural feeling in contrast to analysis of the physical proportions and properties of the building or a stylistic frame of reference. The phenomenology of architecture seeks the inner language of feeling. The inner architecture of the mind emerging out of feelings and memory images is built on different principles from the architecture developed out of professional approaches. Architectural effect is based on a number of what we could call primary feelings. These feelings form the genuine “basic vocabulary” of architecture and it is by working through them that a work becomes architecture or not. Architecture is a direct expression of existence, of human presence in the world (1996: 450).

An impressive architectural experience sensitizes our whole physical and mental receptivity. It is difficult to grasp the structure of feeling because of its vastness and diversity. In experience we find a combination of the biological and the culturally derived, the collective and the individual, the conscious and the unconscious, the analytical and the emotional, the mental and the physical (*ibid*).



Fig. 3.15. View over the tranquil landscape. (2010)

To conclude, the spirit of place is a caption of the theoretical stance of the author, to emphasize the importance of the tranquillity of the site and the context. By incorporating feeling and emotion and evidently the physical into the buildings experience by the visitor, would capture the concept and theory and portray it in the form of a structure. A structure denoted to the user of the building, whom in my approach, is the essence of the success of the building.

Renowned architect Tadao Ando (1941) states that the presence of architecture regardless of its self-contained character inevitably creates a new landscape. This implies the necessity of discovering the architecture which the site itself is seeking. Ando composes the architecture by seeking an essential logic inherent in a place. The architectural pursuit implies a responsibility to find and draw out a site's formal characteristics, along with its cultural traditions, climate, and environmental features, the city structure that forms its backdrop, and the living patterns and age-old customs that people will carry into the future. Without sentimentality, Ando aspires to transform place through architecture to the level of the abstract and universal. Only in this way can architecture repudiate the realm of industrial technology to become "grand art" in its truest sense (1996:461).

Peter Eisenman (1932) states that in his proposal for rhetorical figures, architecture is no longer seen as merely aesthetic or functional elements, but rather as an other grammatical counter, proposing an alternate reading of the idea of site and object. In this sense, a rhetorical figure will be seen to be inherently contextual in that the site is treated as a deeply scored palimpsest. But traditional contextualism is representational and analytic, treating place as a physical presence known as a culturally determined idea containing powerful symbolic and evocative meanings. The analogic or rhetorical, rather than analytic, character of this process dislocates site implications from their culturally predetermined meanings by superimposing two old contents to create a new content. In the resulting rhetorically, as opposed to aesthetically, structurally, or historically determined figuration, there is the revelation in the site of a repressed text. This text suggests that there are other meanings which are site specific by virtue of their pre-existence, however latent, within the context (1996: 179).



Fig. 3.16. View towards the courtyard, the Fort in ruins. (2010)

Why do we need the past? What do we want it for? What burdens and risks does regard for it entail? The consequences of our heritage are more momentous than those revealed in nostalgic dreams and time-travel fiction, for they concern real rather than make-believe worlds, yet the ensuing dilemmas have much in common. The legion of benefits the past provides clearly transcends nostalgia. “The most Polite part of Mankind”, wrote Vanbrugh almost three centuries ago, agree “in the value they have ever set upon the Remains of distant times. “Today a large proportion of mankind share that view. A taste so widespread may be a necessity.

Some need the tangible feel of native soil; mere traces of the past suffice to keep others in touch with their own development. The endurance even of unseen relics can sustain identity. “Many symbolic and historic locations in a city are rarely visited by its inhabitants”, writes Lynch, but the survival of these unvisited, hearsay settings conveys a sense of security and continuity (*ibid*). Therefore the concept which denotes the fort of being exclusive, by now becoming inclusive by the interaction and participation of the public and users.

Historian, David Lowenthal describes awareness of history likewise enhances communal and national identity, legitimating a people in their own eyes. “A collectivity has its roots in the past”, in the French philosopher, Simone Weil’s (1909 - 1943) phrase. “We possess no other life, no other living sap, than the treasures stored up from the past and digested, assimilated, and created afresh by us. Groups lacking a sense of their own past are like individuals who know nothing about their parents”. Parallels between personal and national identity, a powerful stimulus to early nineteenth century European nationalism, culminated a century later in Max Dvorak’s association of cherished family icons and heirlooms with the need to preserve national historic monuments (1985: 44).

Late nineteenth century taste gauged artifacts and landscapes by the “pictorial” criteria embodied in ruins. Time and weather made old trees and buildings picturesquely rough, while “moss, lichen, and other encrustations” added tonal richness. Decay yields valuable information about the past, which states evidently that architectural ruins, portrays a “story” of the past and the richness in memory it poses for the visitor and informs the visitor thereof.



Fig. 3.17. Photo of the Fort in its current condition - memory portrayed through the ruins. (2010)

The attractions of decay are seldom solely aesthetic. Indeed, it was the sad, sinister, or violated look of ruins that appealed to Romantics. Dismay as well as delight at the look of age give rise to manifold reflections. “No one of the least sentiment or imagination can look upon an old or ruined edifice without feeling sublime emotions”, declared a late eighteenth century essayist; “a thousand ideas crowd upon his mind, and fill him with awful astonishment (*ibid*).” We have heard the aesthetic overtones of these sublime emotions.

The thousand ideas decaying and moribund artifacts elicit once bore on every realm of life. The veneer of age on paintings and *objects d’art* symbolized long-standing social continuities; the ruinous decay of sombre mansions embodied some dreadful hidden crime; the crumbling stones of ancient ruins conveyed a haunting sense of temporal remoteness (1985: 173).

Retrospective wonder was a common Renaissance response and admiration not for existing remains but for the greatness of the original structures they recalled. In England monastic ruins ‘sett the thoughts a-worke to make out their magnificence, as they were when in perfection.’ Contrast of present decay with former grandeur inspired poets and painters well into the nineteenth century.

Demands for intelligibility often justify altering ruins; the picturesque but shapeless Roman sites, medieval castles, and monastic ruins in British state care have been made more comprehensible by lowering ground surfaces, heightening walls, revealing buried details. Subsequent additions that confuse the scene are removed. The surrounding sward, cropped with military tidiness, enhances the bleak, austere, and majestic mood the public has come to expect from ruins. It’s worth erring towards order and control, notes a heritage-guide reviewer, “to offer something to people who are not specialists in medieval history.” (1985: 273).



Fig. 3.18. The grandeur of ruins: Giovanni Paolo Panini, *Capriccio with Belisarius* - 1730. (1985: 154)



Fig. 3.19. The grandeur of ruins: John Constable, *Stonehenge* - 1835. (1985: 154)

STATEMENT OF CULTURAL SIGNIFICANCE

The statement of cultural significance is written to inform the reader about the value and significance of the Fort as a monument. This also states the author's position on heritage and conservation regarding the West Fort. While West Fort was never officially named as a National Monument, it is of great cultural significance.

With reference to the Australian Burra Charter, the meaning of "cultural significance" is a concept which helps in estimating the value of places. The places that are likely to be of significance are those which help an understanding of the past or enrich the present, and which will be of value to future generations (1999:12).

The Fort should be conserved and not restored. The author feels that the value and significant cultural information it has to the visitor, be kept as is. The Fort should therefore be studied by archaeologists, but the remaining Fortifications in the city should be conserved and restored, depending on their physical status and the archaeologists suggestions.

The Burra Charter states in its guidelines to conservation with regard to physical intervention, to identify the likely impact of any intervention on the cultural significance. Therefore, the author intends to design any intervention with respect to the Fort as a monument of significance. The intervention will not compete with the Fort and its significant value.

The typology of the Fort and the aesthetical value will be conserved and not restored in any way. the author will design any building, so that it does not compete with the significance of the Fort.



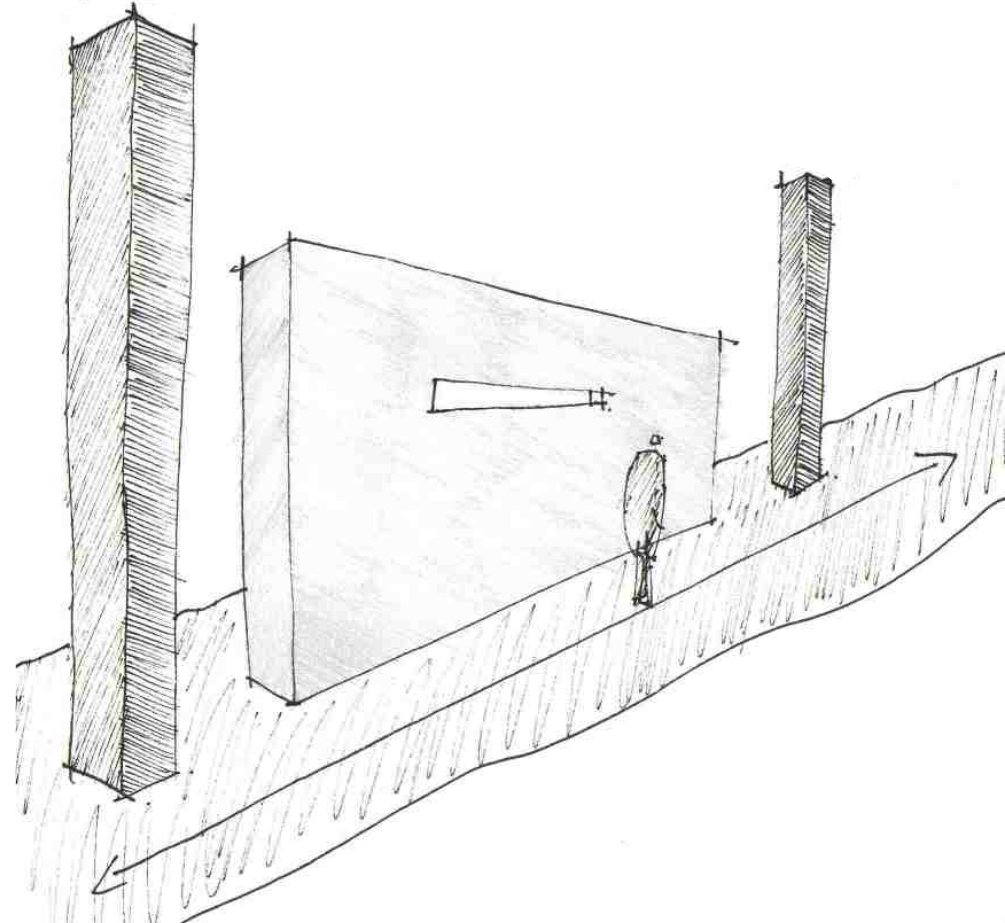
Fig. 3.20. Photo of the majestic landscape. (2010)



Fig. 3.21. Photo of the form, which portrays the title - *Architecture in Ruins*. (2010)

04

Precedent Study



+ Precedent study

The following precedents focus on the responses and influences regarding circulation, movement and views created by the architect. The perception and experience created by the buildings are studied on a theoretical and practical level, to ensure that the authors building responses adequately to the problem and its intention.

NEW ACROPOLIS MUSEUM (2009), ATHENS, GREECE BY BERNARD TSCHUMI

Located in Athens's historic area of Makryianni, the New Acropolis Museum stands less than 300m south-east of the Parthenon, at the entrance of a network of pedestrian walkways that link the key archaeological sites and monuments of the Acropolis. This location was carefully selected to enable a dialogue between the Museum's exhibition spaces and the Acropolis buildings (wallpaper.com: 2010).

The renowned architect of the New Acropolis Museum, Bernard Tschumi, states that the building has two layers; one leads to the excavations. It is quite unusual that you actually have to save and show the finds, so the whole building is on stilts. The ground floor is really structured so as to reveal the excavations, which is why you have all the glass, including the glass ramp leading to the galleries. The second layer has all the sculptures and the artefacts related to the Acropolis. This part of the building, its geometry, follows the street's geometry and pattern. But the top room, the glass enclosure, is really all about the Parthenon, it is absolutely parallel to it. This is why the building makes this strange shift on the top floor, and why the corners seem to stick out over the street (*ibid*).

"We first articulated the building into a base, middle and top, which are designed around the specific needs of each part of the program. The base of the museum floats on pilotis over the existing archeological excavations, protecting and consecrating the site with a network of columns placed in careful negotiation with experts so as not to disturb the sensitive work.



fig. 4.1. Museum in relation to the Acropolis and the view towards the iconic monument. (wallpaper.com: 2010)

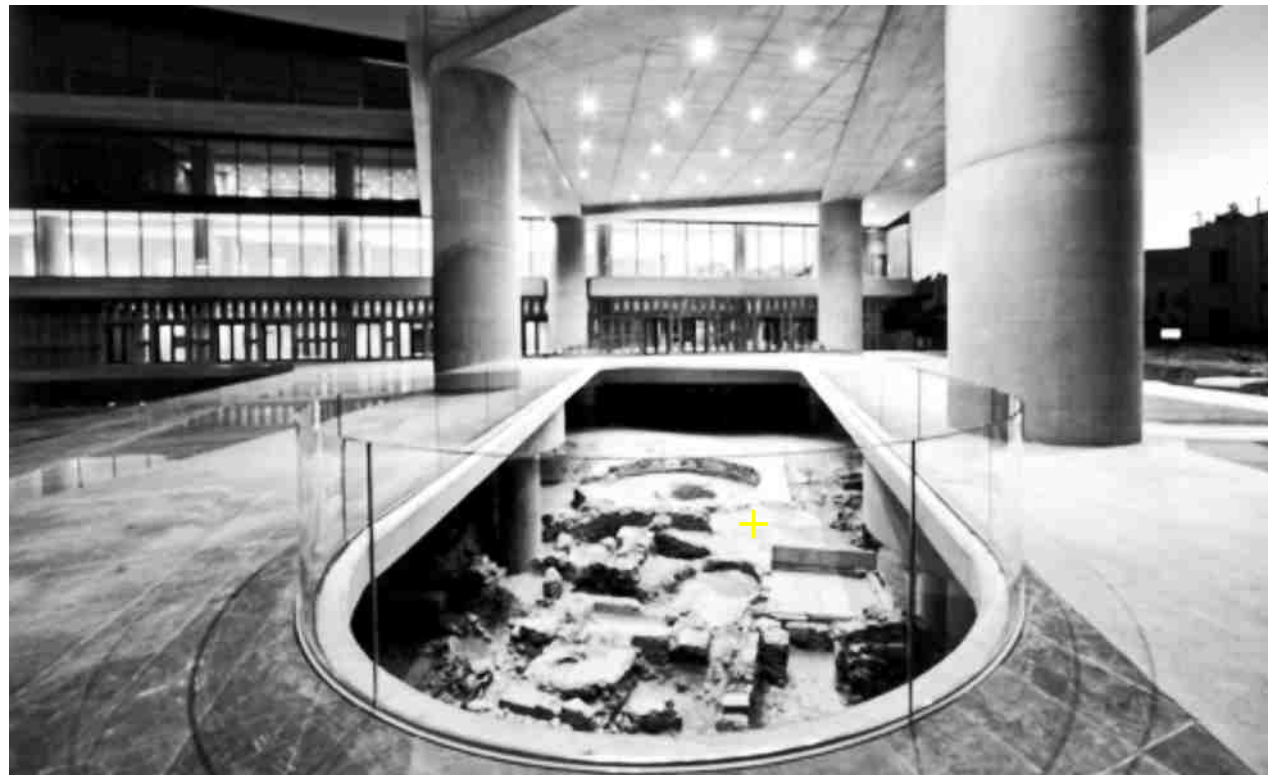


fig. 4.2. Image of archaeological excavations under the museum. (wallpaper.com: 2010)

This level contains the entrance lobby as well as temporary exhibition spaces, an auditorium, and all support facilities. A circulation route narrates a rich spatial experience from the city street into the historical world of the different periods of archeological inquiry. The visitor's route through the museum forms a clear three-dimensional loop, affording an architectural and historical promenade that extends from the archeological excavations, visible through a glass floor in the entrance gallery, to the Parthenon Frieze in a gallery with views over the city, and back down through the Roman period. Movement in and through time is an important aspect of architecture, and of this museum in particular. With more than 10,000 visitors expected daily, the movement sequence through the museum artifacts is designed to be of the utmost clarity" (*ibid*).

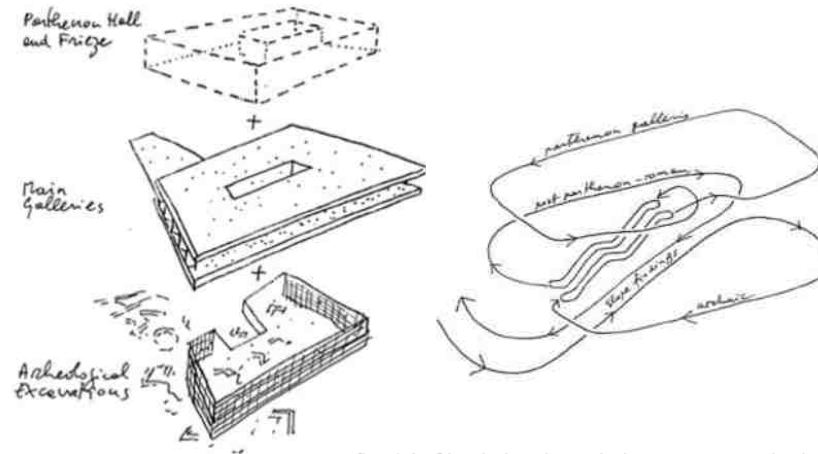


fig. 4.3. Circulation through the museum and relation shown to the Parthenon. (wallpaper.com: 2010)

Materials have been selected for simplicity and sobriety: glass, concrete, and marble are the materials of choice. Perfectly transparent glass gently filters the light through a silkscreen shading process. Concrete (both precast and cast-in-place) provides the main building structure and is the background for most of the artwork. Marble marks the floor: black for circulation, light beige for the galleries. Tschumi says that the construction has progressed according to exacting standards so that the building will age gracefully, despite the heavy traffic of an international travel destination (*ibid*).

To conclude, the New Acropolis Museum is relevant to the author's study, regarding its proximity and location to the Parthenon and Acropolis. It celebrates the ancient monument on the hill and the architect illustrates the respect the building shows to the Parthenon. The Acropolis' strong axial premise, influences the shape of the museum and its orientation. Through studying the circulation and movement patterns of the museum, the author identified that each floor contains important historical information. The narrative created through circulation, informs the visitor about the various historical "parts" of the Acropolis, but also about archaeology. The views up to the Acropolis from the museum, illustrates the iconic presence of the Acropolis.

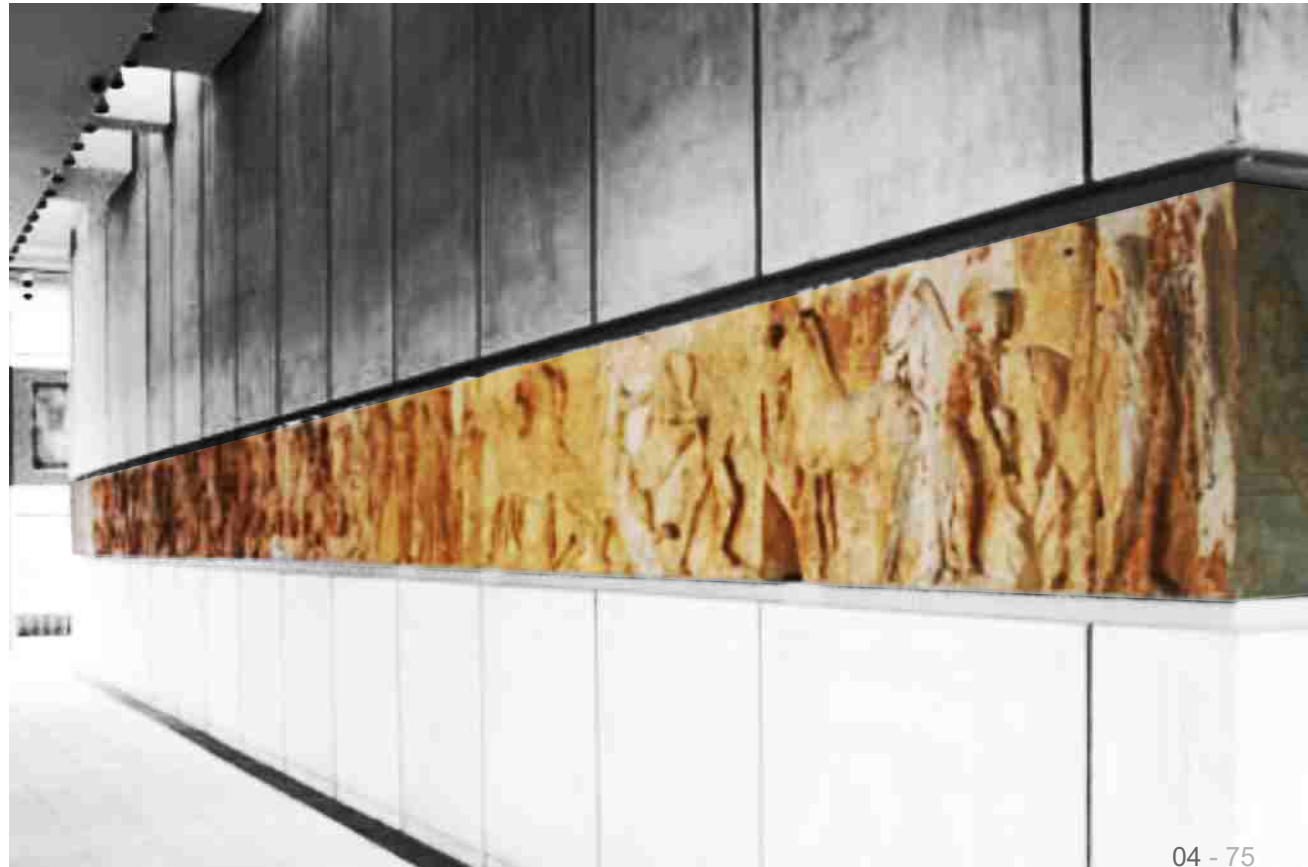


fig. 4.4. Exhibition space of the "Parthenon" gallery in the museum. (*ibid*)

BRION CEMETERY (1972), SAN VITO D'ALTIVOLE, ITALY, BY CARLO SCARPA (1906 - 1978)

The study of the Brion Cemetery involves the circulation and material textures used by Scarpa. The spaces created by the architect are studied and his approach will be used to respond to the spatial issues in the author's proposed project.

The Brion-Vega cemetery is located outside of San Vito d'Altivole, Italy. Designed by the world renowned Italian architect, Carlo Scarpa in 1969, it is an enclosed necropolis for the Brion family. The tombs, chapels, gardens and pathways were carefully designed and detailed by Scarpa. Scarpa said the project was "The place for the dead in a garden. I wanted to show some ways in which you could approach death in a social and civic way; and further what meaning there was in death, in the ephemerality of life." The experience is broken up by using a segmented path. Symbolic themes of life and death bring each segment together to form a cohesive whole. The family tomb surrounds an existing village cemetery. It is enclosed on all sides by a wall and separated from its surroundings. It abandons the grid (1986:64).

Scarpa uses form, texture, space and sequence to create the symbolic nature of the path. The main entrance is located inside the village cemetery. The entry, called the propylaeum, is located adjacent to the mausoleums. One of four destinations in the cemetery, it is one of two places of repose. The path narrows as one begins their journey to the platform. A glass door opens by recessing into the concrete floor. Even when fully recessed, it still must be stepped over, acting as a third threshold marker. When fully closed, the closure joins together to form a rough crucifix. When open, the closure is a fragmented pattern. After passing this threshold, the path now appears to float on a pool of water. Turning left, one enters the meditation platform (*ibid*).

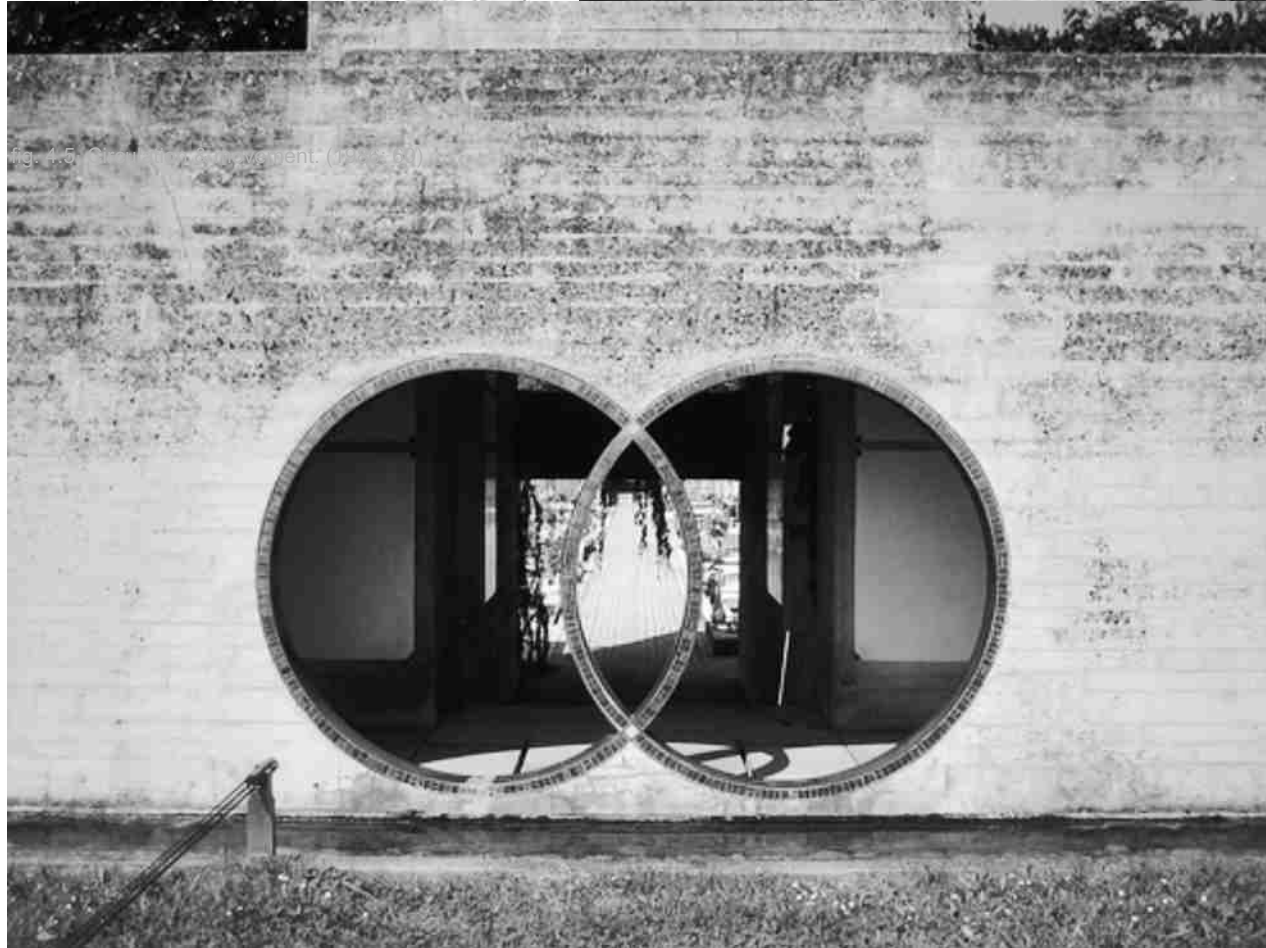


fig. 4.5. Circulation through the cemetery. (1986: 64)

fig. 4.7. Scarpa creates various spaces with views towards the landscape through the use of contradicting geometries. (1986: 62)

As one travels straight to the chapel, the path here is more open and provides experiences along the way. The long linear path is first open on one side and then closes. A perforated wall forms the enclosure on the right. The perforations allow slices of light to enter the space. Two steps up mark the threshold to the chapel. The path terminates as one reaches a large door with a smaller door set inside it. The wall on the left opens up here revealing the second means of entry, a secondary path used for village funeral services. The chapel is rotated 45 degrees off of the alignment of the path (1986:68).

The paving patterns and floor inlays further emphasize the diagonal orientation of the chapel. A pool of water marks this as the second place of repose. Surrounded on three sides by water, it also appears to float from certain views. A second door leads one out to the Priests' Cemetery. This path is concrete slabs that appear both above and below the surface of the water. The idea of straddling two worlds is further emphasized as one takes each step along this segment of the path. As one exits the cemetery this way, one has come full circle. Instead of following the path in back out, a second entrance transitions one back into the world. It suggests the unity of one's existence. The symbolic story of this experience is unique to each visitor. Each symbol is open to interpretation. The transcendent nature of the space provides individual insight to each visitor.

In conclusion, the way in which Scarpa created the sequence of spaces and their experiences, through the use of a path, influences the visitor emotionally and spiritually. Through these symbolic uses of space and movement, the visitor is made aware of his surroundings and influenced by what he experiences, by means of space and textures. These design interventions of path and space relationship, will be included in the authors project in the same practical manner, to create a tranquil experience for the visitor.



fig. 4.8. Linearity of path emphasized through the water channel. (1986: 68)

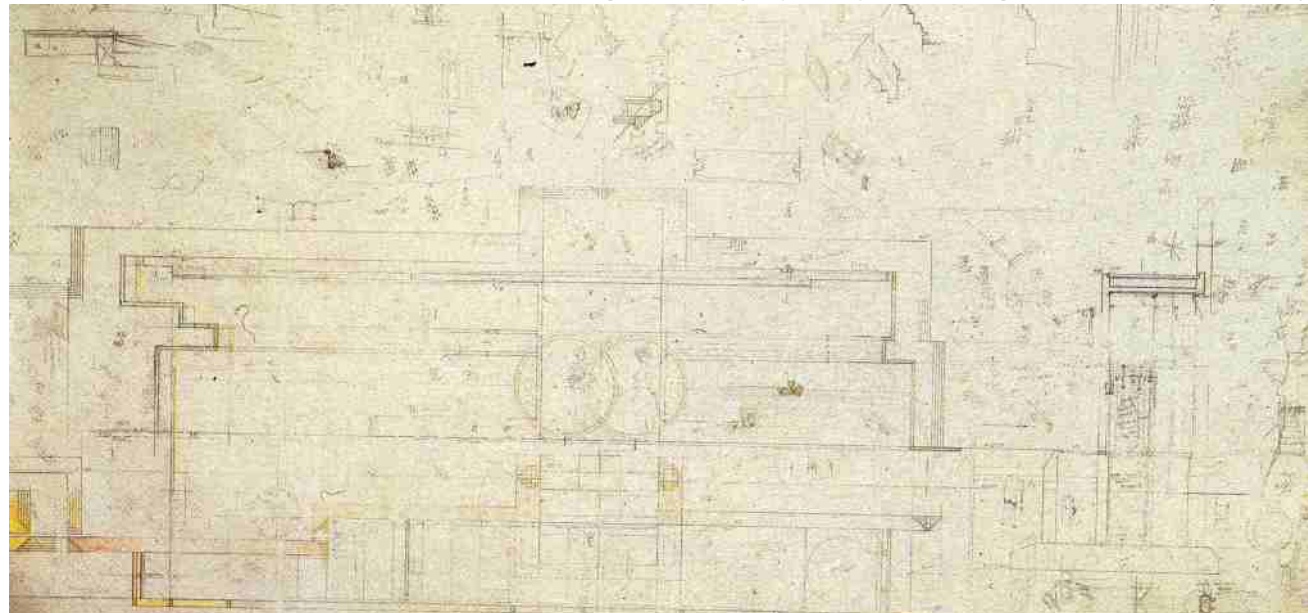


fig. 4.9. Elevation sketch by Scarpa, studying the geometry. (1986: 70)

FOSSAR DE LA PEDRERA (1986), BARCELONA, SPAIN, BY BETH GALI

The Fossar de la Pedrera's (Cemetery of the Quarry) design illustrates the movement and circulation in a more linear manner. The movement from certain points of interest through the landscape, narrates a journey of memory to the visitor.

Fossar de la Pedrera built in 1984 by the Spanish architect Beth Gali, is a part of Montjuïc cemetery. It was used as a common grave for 4,000 people executed by the Franco regime, particularly during the 1940's. The remains of Lluís Companys, the last president of the Generalitat de Catalunya during the Civil War, executed at the top of the hill at Montjuïc Castle in 1940, were moved here in 1985, and the space was dignified as a memorial garden. There are also a number of other graves and tributes to foreign and Spanish Republicans of different shades, and a tribute to the Holocaust (bethgali.com: 2010).

The monument is designed as a narrative to the visitor, creating a linear path, drawing the visitor to various interventions through the site. There are various symbolic references, for example the concrete plinths, commemorating the people that were executed. The gentle and subtle manner in which Gali used the natural landscape to emphasize the circulation and movement through the various spaces are noted by the author. The way in which she carved the narrative pathway into the landscape and gently guiding the visitor above the ground and also underneath to various points of interest.

The author intends to use these principals of Gali and acknowledge the majestic landscape and emphasize the *genius loci*. The principals of symbolic meaning given to certain elements in the design will also be explored, so that the visitor can acknowledge history and be informed about it on a physical and experiential level. The concept of simple but "bold" statements in the landscape to inform the visitor also through the architecture will be explored. The way in which Gali draws the visitor through the landscape and creates inquisitiveness is also studied by the author.

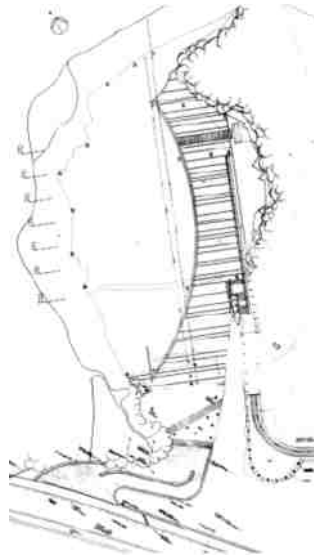


fig. 4.10. Plinths with the names of known victims act as visual remembrance. (bethgali.com: 2010)



fig. 4.11. The funeral procession would lead down to the grave terraces through a series of concrete hatches. (ibid)

THE ALHAMBRA (1390), GRANADA, SPAIN, ARCHITECT UNKNOWN

The study of the Alhambra by the author is focussed on the Mirador, which means a balcony or viewing platform. The Alhambra is a palace and fortress complex constructed during the mid 14th century by the Moorish rulers of the Emirate of Granada in Al-Andalus, occupying the top of the hill of the Assabica on the southeastern border of the city of Granada, now in the autonomous community of Andalusia, Spain.

The mirador as viewing platform also exists in numerous locations in the Albaicin. Squares overlooking the Alhambra have come to be defined as miradors by providing a stage for the display of the Alhambra across the valley, giving Granada the name of “city of miradors” (2001:59).

Miradors are constituted as a sequence of spaces connected through a system of movement from one significant viewing platform to the next. This is incorporated in a larger spatial system linking monument, historical buildings and squares. Prieto-Moreno drew a plan of the Albaicin, highlighting the system of spatial sequences and views that time and again captures and frames the Alhambra (ibid).

To conclude, the mirador is studied by the author to investigate the notion of viewing platforms in the landscape, framing certain views of significance. These miradors were incorporated into the city of Granada to capture and frame views of certain iconic structures. The Alhambra is one of these iconic fortress structures of importance.

Therefore, the Fort becoming the framed view (importance) and through a sequence of spaces created for viewing various iconic monuments within the city of Pretoria from the Fort, essentially becoming miradors in the landscape, but still respecting the importance of the Fort. Evidently the Fort becomes a mirador towards the city as well.

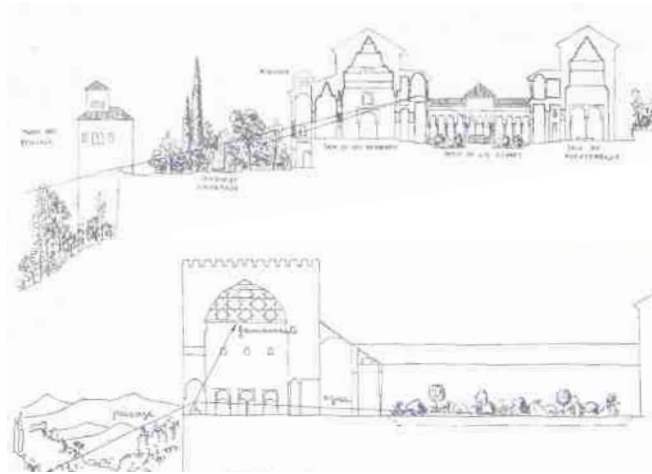


fig. 4.12. Mirador as viewing platform on top of the Silla del Moro tower. (2001:78)



fig. 4.13. Alhambra seen from the San Nicolas mirador in the Albaicin. (ibid)

CONSTITUTIONAL COURT(2006), JOHANNESBURG,
SOUTHAFRICA, OMM DESIGN WORKSHOP

Only a certain part of the Court building will be studied by the author, namely the Great African steps and the relationship to the Old Fort.

In 1893 a high-security prison was built on the Braamfontein ridge in Johannesburg. A few years later, the building of a series of Forts around it strengthened the establishment and gave it military capacity. That site became a landmark. It was known in some circles as the Johannesburg Fort and in others as Number Four, the name given to the frightening section in which black men were jailed (2006:15).

The relationship of the Court building to the Old Fort commemorates the historical value of the Fort and its importance in the context, which can be noticed in the approach up the hill with the fort in the background. The court building does not compete with the Fort.

The approach to the entrance of the Court building from the parking area is up the Great African Steps. As described by one of the architects of the court, Janina Masojada, The Great African Steps are many things, many places. They begin simply as a place between, a seam: as you wonder up the hill towards the entrance verandah of the court, towards the Constitutional Square and the grassy ramparts of the Old Fort, you pass between the solid stone wall of Number Four Prison on the right and, on the left, the west elevation of the Exhibition Gallery of the new Court building (2006:165).

The walk up the Great African Steps is a wondering route. The steps are interrupted by a path that follows the zig-zagging route one would naturally take when climbing a hill. This principle and hierarchy created by the architects, is studied by the author, to emulate the dramatic, but subtle approach towards the entrance of the building. As the author's site is of similar topography as that of the Court building, the same approach and wondering route will be investigated.

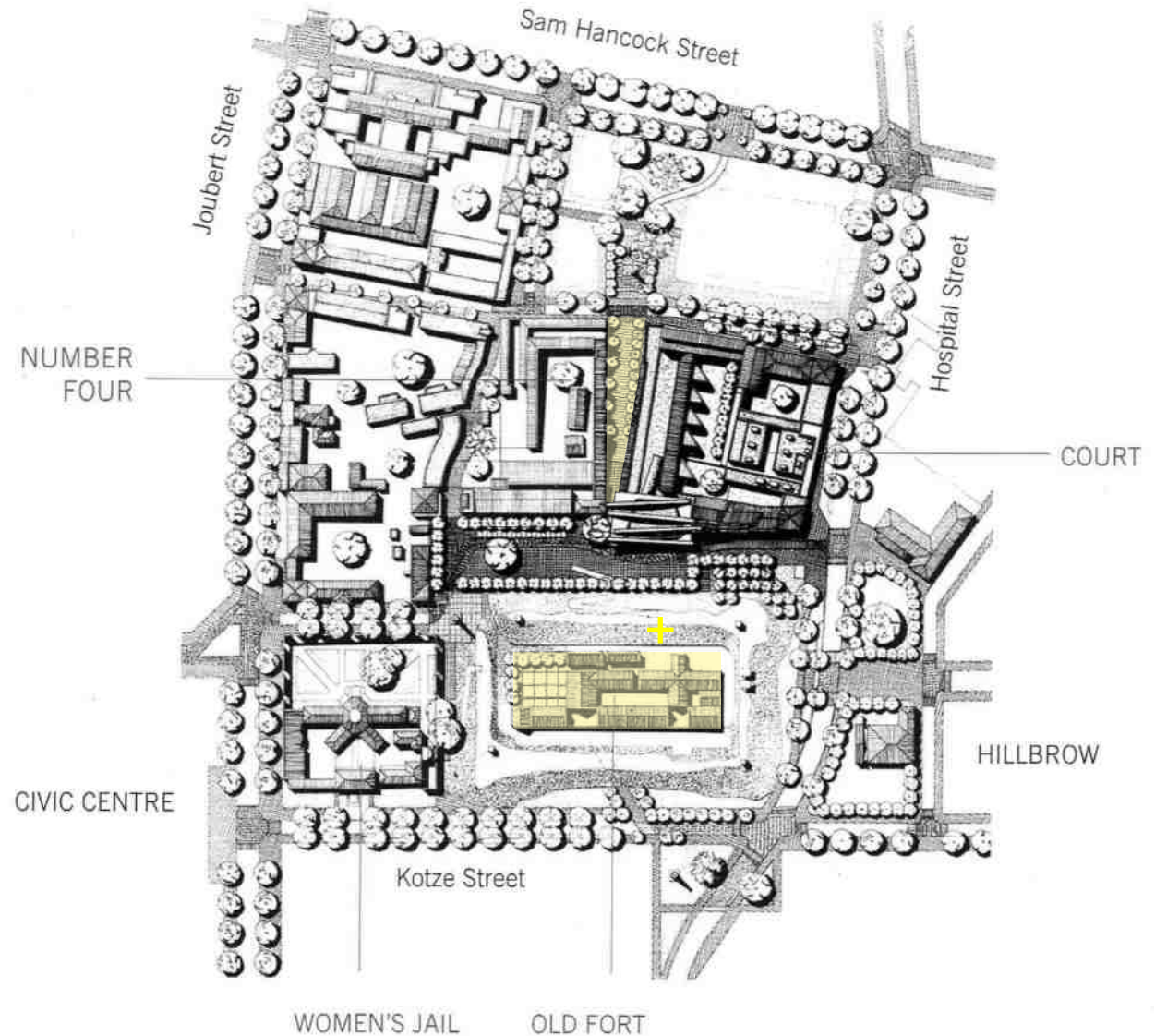


fig. 4.14. Architect's drawing showing the relation of the Court to the city. (2006: 16)

Rural associations extend to the making of places on the steps to pause and sit in the sun, the stepped bricks terracing as in the landscape, inviting rest. The bricks that pave the path were taken from the now demolished Awaiting Trial Block (2006: 165).

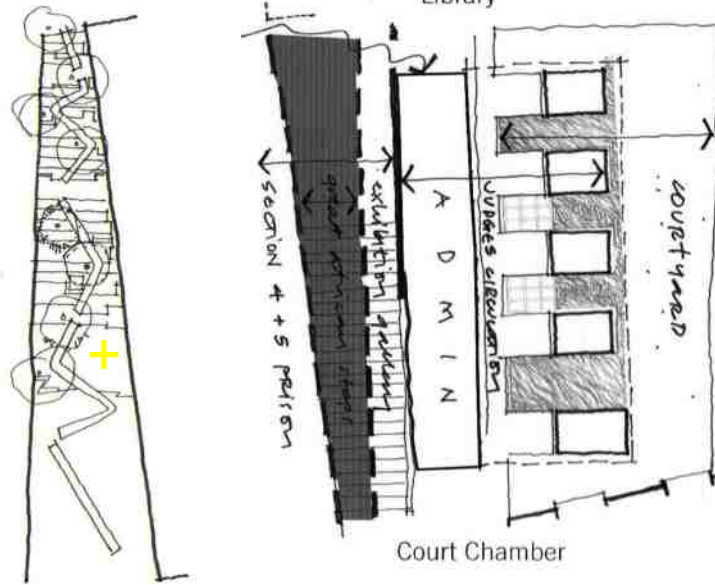


fig. 4.15. Sketches of the Great African Steps. (2006:165)



fig. 4.16. The approach towards the entrance of the Court. (2006:165)

THEORETICAL PRECEDENTS

The theoretical precedents are studied by the author to justify certain decisions made in the design process. These precedents are used in relation with the practical precedents, to understand them better, so the author will be able to apply the principles relevant to his design.



An axis is essentially a linear condition, it has qualities of length and direction, and induces movement and promotes views along its path.

AXIS

According to architectural theorist, Francis Ching (1943), the axis is perhaps the most elementary means of organizing forms and spaces in architecture. It is a line established by two points in space, about which forms and spaces can be arranged in a regular or irregular manner. Although it implies symmetry, it demands balance. The specific disposition of elements about an axis will determine whether the visual force of an axial organization is subtle or overpowering, loosely structured or formal (1996: 322).



For its definition, an axis must be terminated at both of its ends by a significant form or space.

The axis is used by the author to create a linear link between certain elements, with the Fort still being the main focus, with respect shown to the Fort and its importance in a subtle manner. The principle will be discussed further in Chapter 5, to show its relation to the design decisions made by the author.

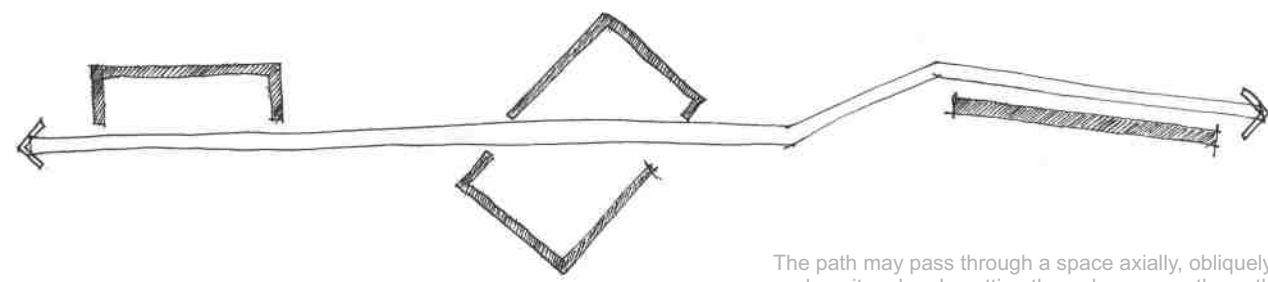


The notion of an axis can be reinforced by defining edges along its length. These edges can be simply lines on the ground plane, or vertical planes that define a linear space coincident with the axis.

PATH - SPACE RELATIONSHIP

All paths of movement, whether of people, cars, goods or services are linear in nature and all paths have a starting point, from which we are taken through a sequence of spaces to our destination (1996: 252).

The path - space relationship is studied by the author to use the principle in the connection of buildings and spaces through the path. The path becomes the circulation movement and exhibition spaces through the landscape, this relationship to the spaces are therefore very important.



The path may pass through a space axially, obliquely or along its edge. In cutting through a space, the path creates patterns of rest and movement within it.

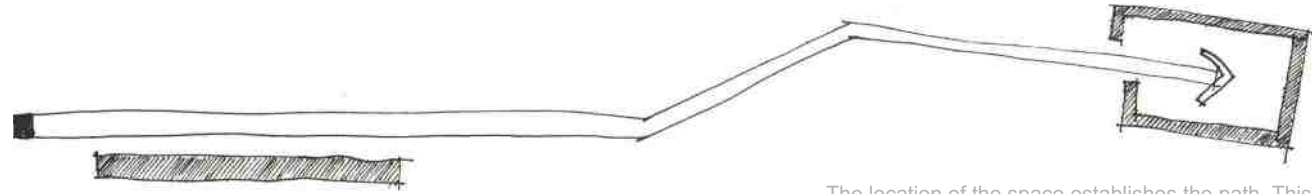
The nature of the configuration of a path both influences and is influenced by the organizational pattern of the spaces it links. The configuration of a path may reinforce a spatial organization by paralleling its pattern (*ibid*).

The path relates to the narrative of the experience of the visitor. The path flows into various functional spaces, which guides the visitor through the narrative of the historical icons and fortification.

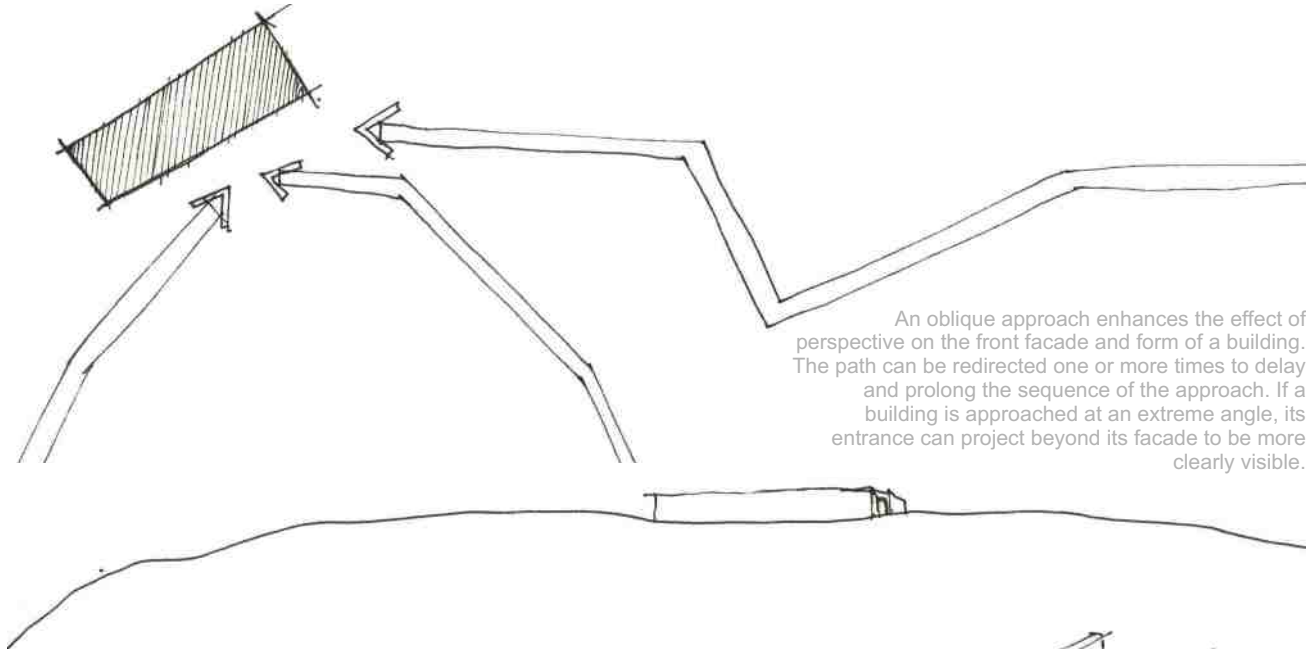
APPROACH

The approach to a building and its entrance may vary in duration from a few paces through a compressed space to a lengthy route. It may be perpendicular to the primary facade of a building or be oblique to it. The nature of the approach may contrast with what is confronted at its termination, or it may be continued on into the building's interior sequence of spaces, obscuring the distinction between inside and outside.

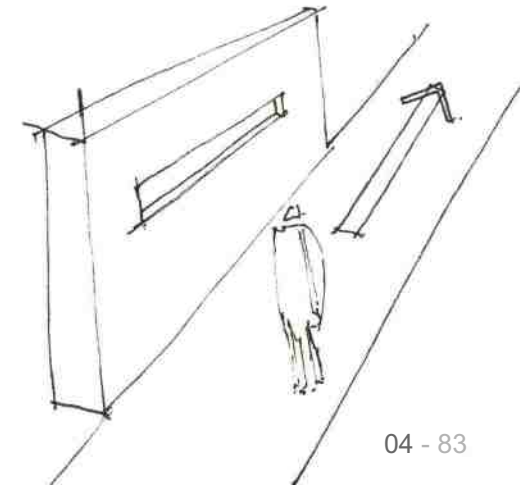
To conclude, these design principles are studied by the author to evidently justify certain design decisions made. These principles are used to emphasize the importance of the building within the landscape and the way in which the user experiences the buildings, but also the landscape. The *genius loci* of the site becomes hierarchically as important as the buildings themselves.



The location of the space establishes the path. This path - space relationship is used to approach and enter functionally or symbolically important spaces.

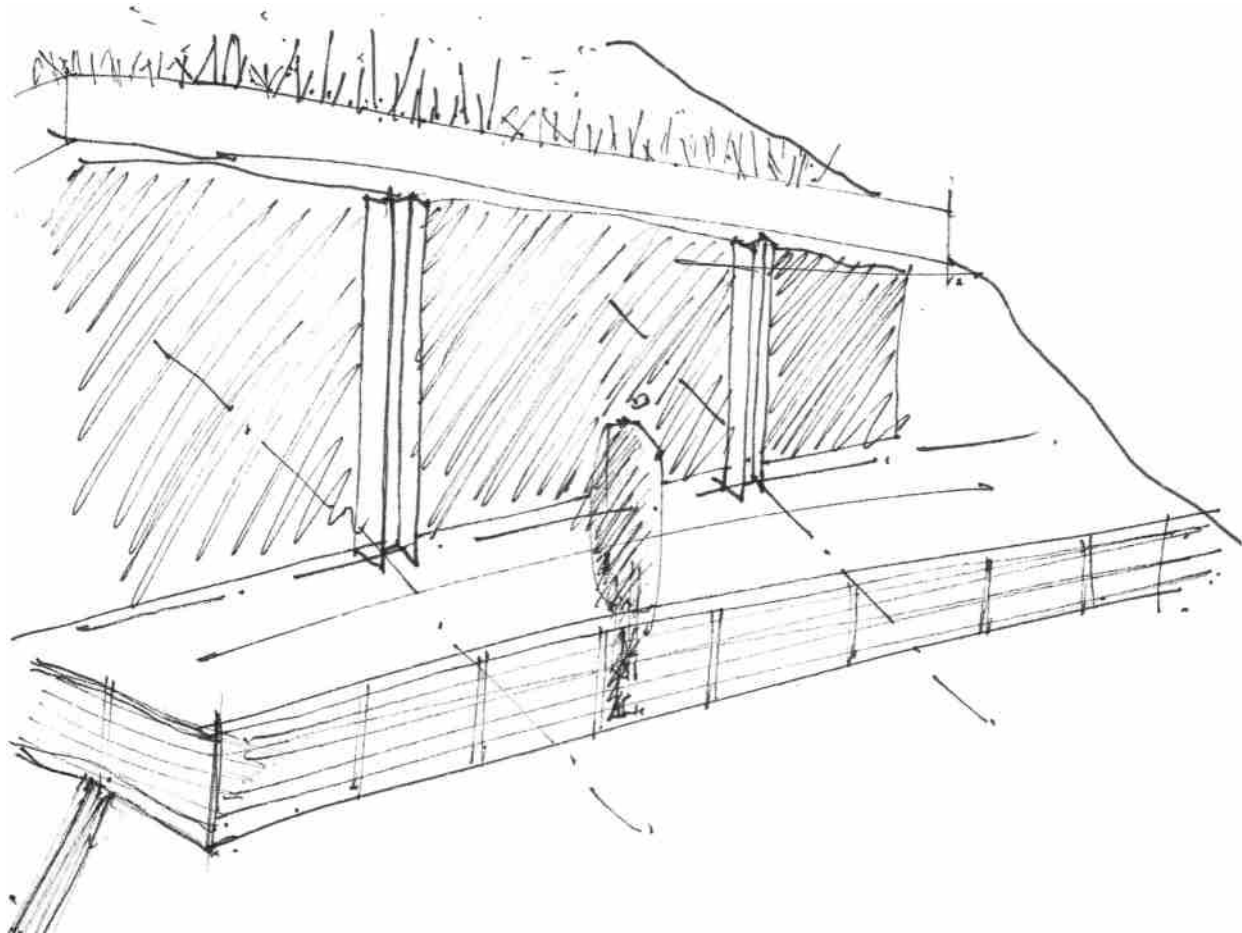


An oblique approach enhances the effect of perspective on the front facade and form of a building. The path can be redirected one or more times to delay and prolong the sequence of the approach. If a building is approached at an extreme angle, its entrance can project beyond its facade to be more clearly visible.



05

Design Development



+ Design Development

The design development begins with a more detailed analysis of the site by understanding the macro and micro climates and the pedestrian and vehicular movement on the site. Through this analysis the area is identified by the author that will best suit the location of the proposed design intervention.

It is clear that the landscape on the Northern escarpment, below the ridge is not as scarred as the landscape on the Southern part. The scarring of the landscape is by means of trees and some pedestrian movement. This distinct topography influences place making, where movement through the landscape to the ridge becomes a series of interventions of virtual and physical thresholds that frame views.

The close proximity of the Heritage village and Davisonville location houses act as a catalyst to draw the local communities people into the design. Retail and exhibition facilities gives them the opportunity to exhibit their own unique skills and to transfer these skills again to tourists visiting the building.

SITE INFORMATION:

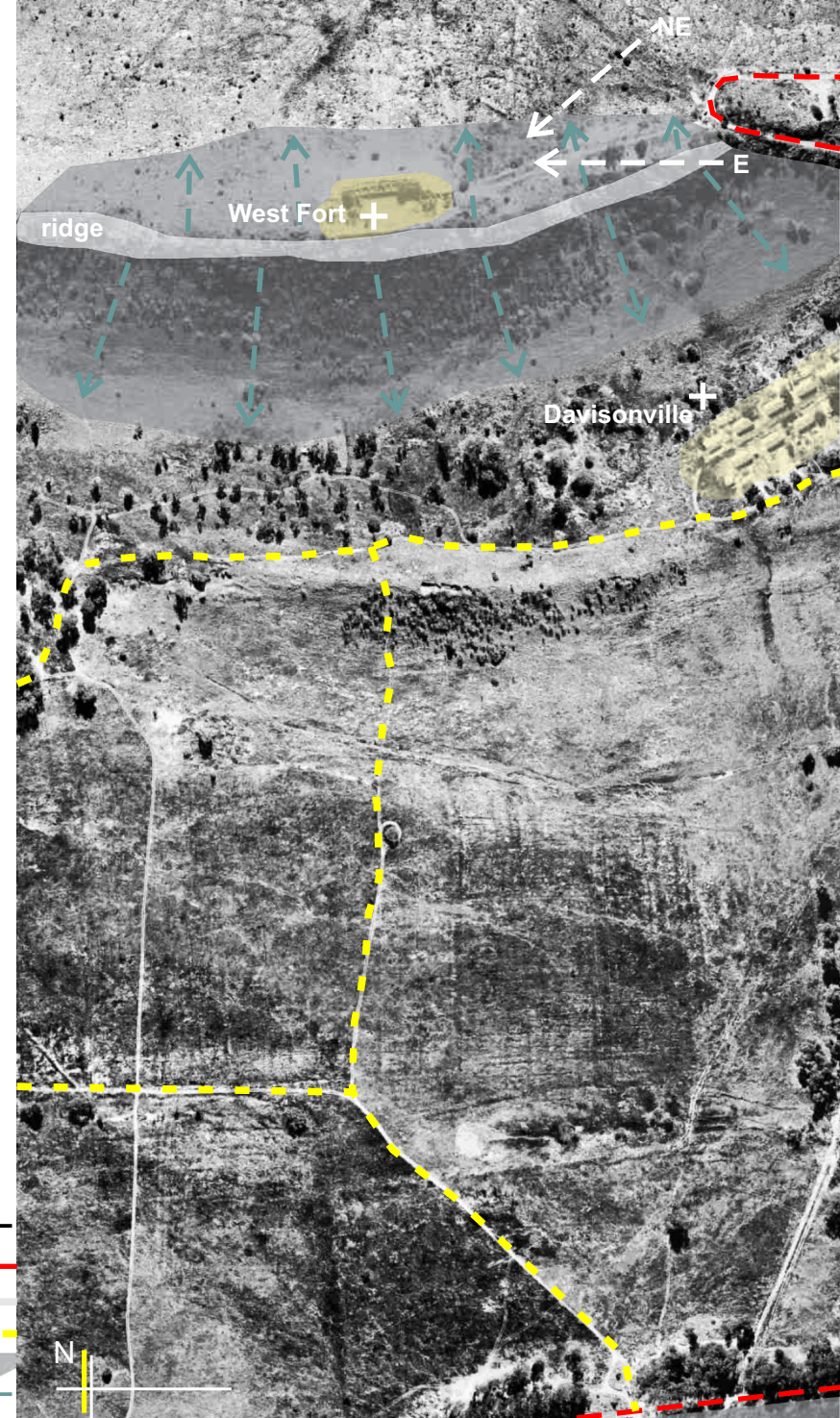
Latitude: 25.44S
Longitude: 28.11E

Average temperature: 30°C Summer
17°C Winter

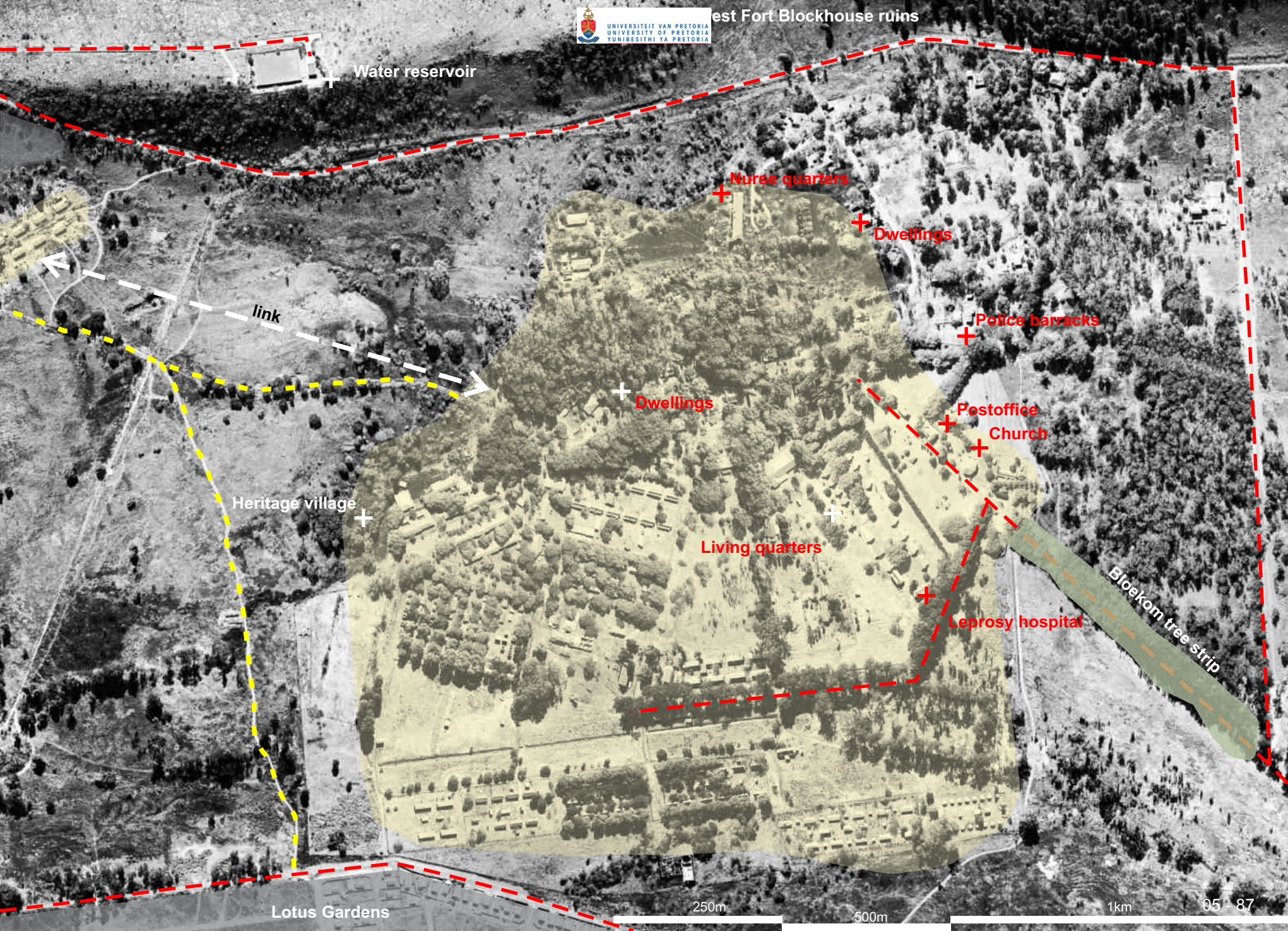
Average rainfall: 700 - 800mm annually

Wind: Prevailing wind direction is North East and East at an average 4 - 6 km/h

Relative Humidity: 56% Average annually



- prevailing wind direction ————
- tarred roads ————
- link to heritage village ————
- pedestrian movement ————
- study area ————
- stormwater run-off ————



Water reservoir

Nurse quarters

Dwellings

Police barracks

Dwellings

Postoffice
Church

Heritage village

Living quarters

Leprosy hospital

Bloekom tree strip

Lotus Gardens

250m

500m

1km

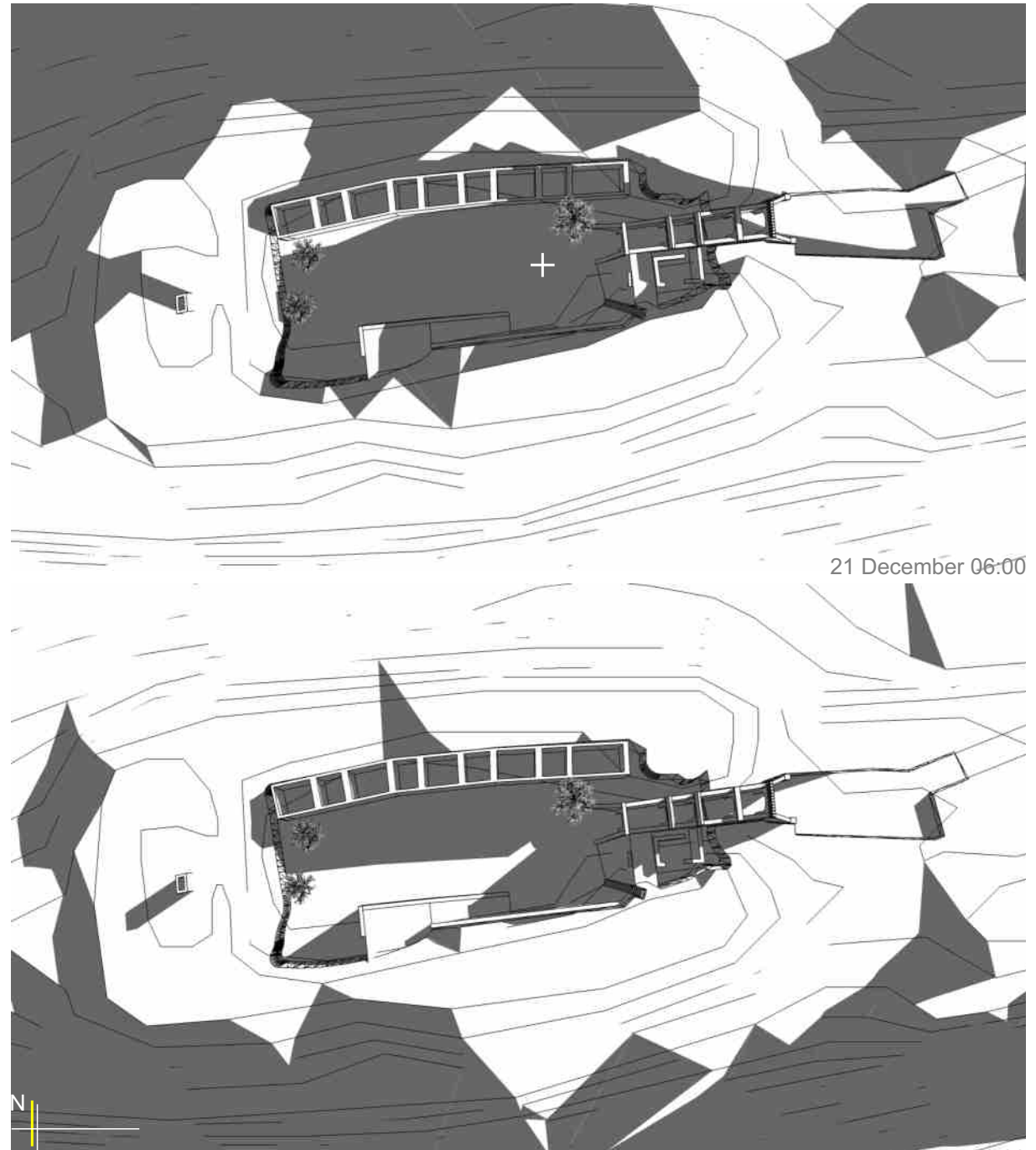
SOLAR STUDY

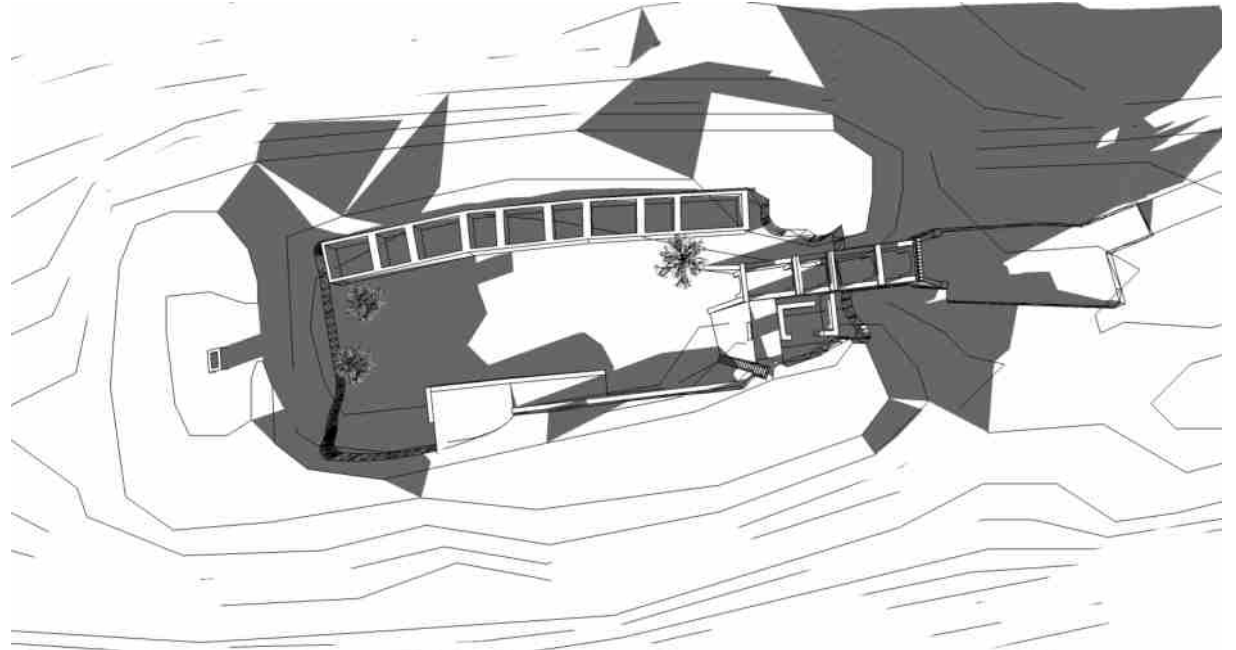
The following images show the solar angles of the sun on the site. The angles are taken on different days during the year. The times they were taken are early in the morning and late in the evening as indicated.

The reason for this study is to understand the sunlight that is available on the site and the shadows that will be cast. As the topography of the site is a steep incline, the sun light available becomes more important. As some of the buildings will be underground. To ensure that each building performs thermally well, the author concluded the study by doing various sun angle studies.

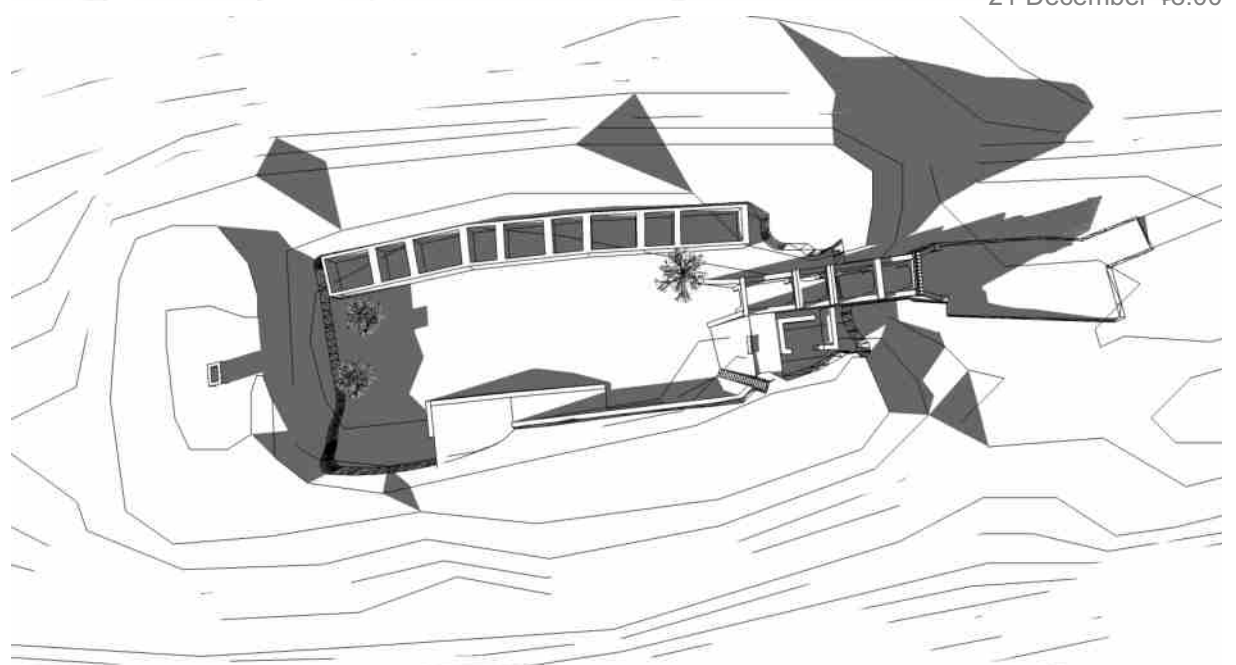
The site selection becomes evident in relation to this study, where the author chose the southern part of the mountain. The relationship between North and South will be discussed later in this chapter.

The southern slope is better climatically, as the southern slope will be a lot cooler in summer.





21 December 18:00



21 June 18:00

DEVELOPMENT

The following parti diagram indicates the first conceptual design decisions.

The programme is drawn out into four smaller spaces. The arrival space, Visitors centre, Archaeological research centre and an outdoor performance area. The movement and circulation is based on a pin-wheel concept. Where there is a point of departure and a sequence or narrative of spaces that follows.

The hierarchy culminates with the Fort, where the two points on the axis binds the presence of the Fort within the movement. The points / spaces are informed by the landscape as their placement is carefully considered with respect to its relationship to the Fort.

The landscape becomes the transitional space from each point to the next. The experience through the landscape expresses the *genius loci* of the site. The experience is captured by the visitor as he/she transcends to the next point / space. Each building in the landscape becomes a point of attraction, drawing the visitor to the building. This encourages inquisitiveness in the visitor, moving on to the next building, meandering through the landscape, while being informed about the history, fortification and iconic monuments within the city.

As one filters through the tranquil landscape, you stop at certain dedicated points, which will then frame a view towards a certain iconic monument in the city scape. This lets the visitor become the camera, capturing views and images for himself. The landscape as exhibition spaces, creates a sensual informative experience for the visitor, simultaneously informing the viewer about history, while experiencing the landscape for what it was; an open, tranquil and sensual vantage point.

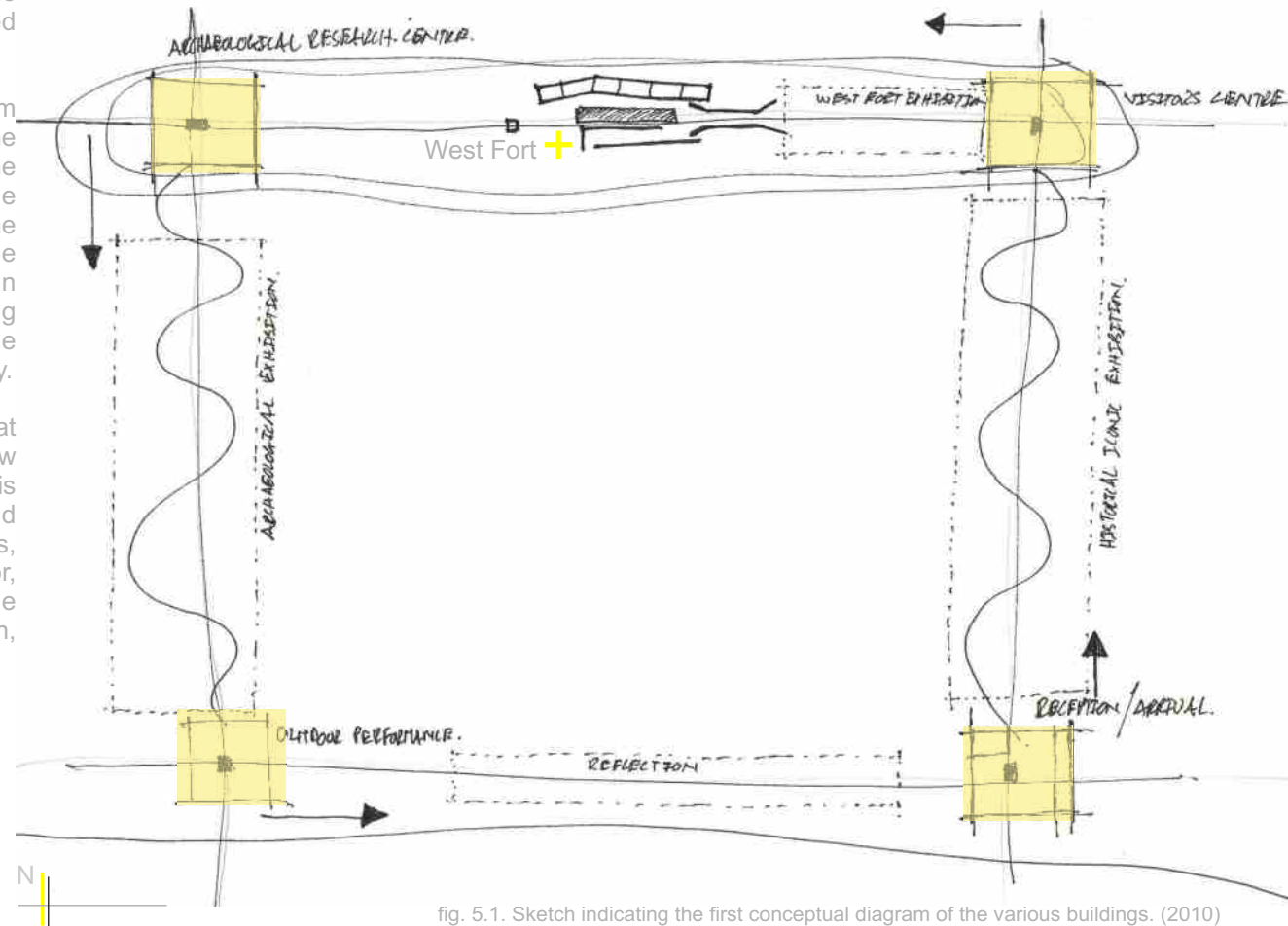


fig. 5.1. Sketch indicating the first conceptual diagram of the various buildings. (2010)

The concept model show the relationship of the buildings to the Fort and their placement in the study area. Each building becomes a threshold for the next, as each exhibition in the landscape becomes the informative space towards the following building.

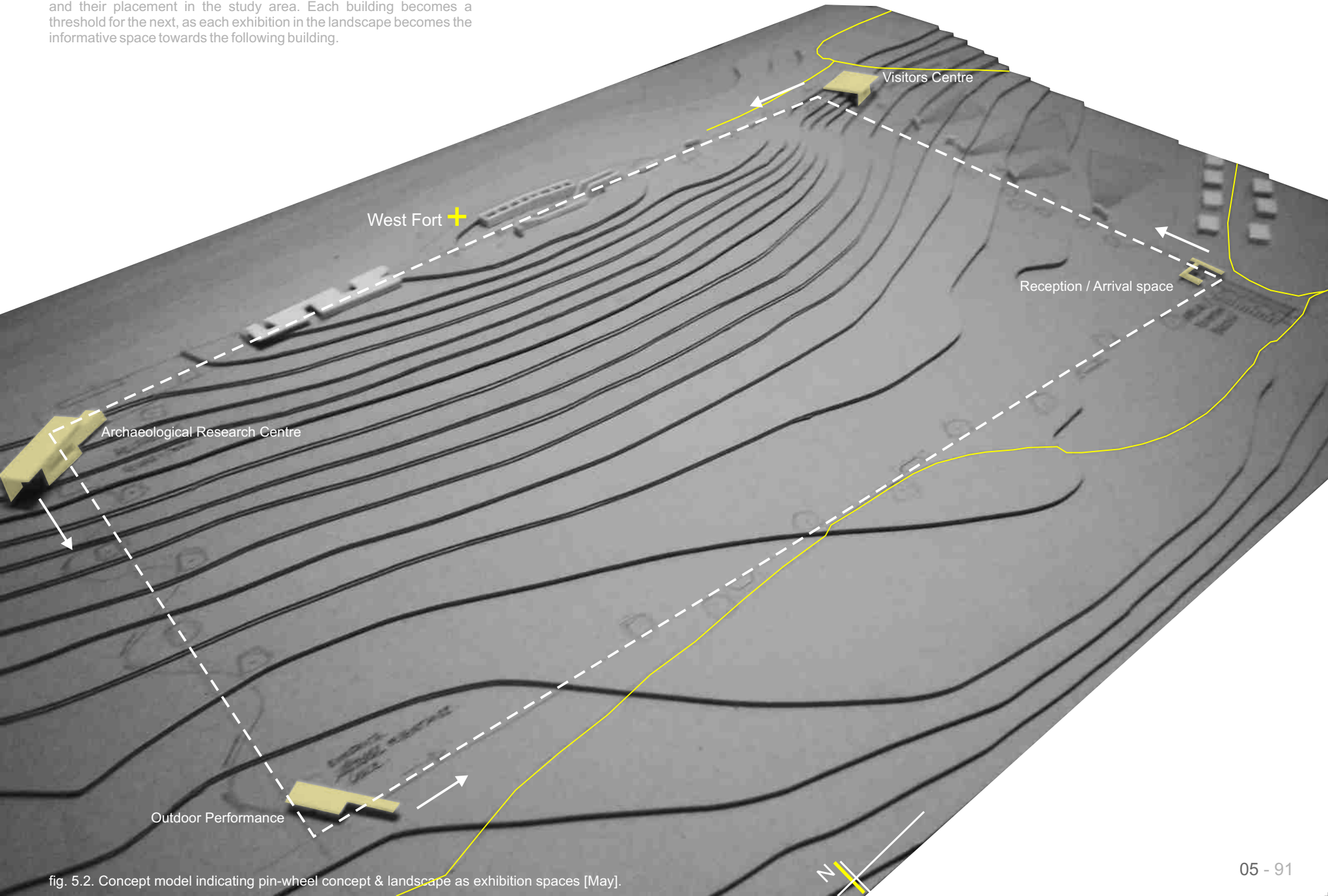


fig. 5.2. Concept model indicating pin-wheel concept & landscape as exhibition spaces [May].

The following is an introduction to the author's initial thought process by the author;
The visitor will arrive and start the journey at the reception / arrival space. The design of this area will create a space of interaction between the visitor and the local communities. The visitor will move from the reception area to the visitors centre.

The exhibition space in the landscape, which forms the threshold to the visitors centre, will focus on various views captured by the visitor of the iconic monuments in the city. This exhibition will inform the visitor about the iconic monuments and about the military history. While experiencing and capturing the views, the visitor will turn his back on the Fort, creating a feeling of importance towards the relationship of the monuments to the Fort. The Fort still being the hierarchial focus.

The visitors centre will be the second interaction and viewing point. Here visitors will be able to rest and interact with one another.

The visitor will from there be informed about the history and importance of West Fort. The exhibition space will become the threshold for the Fort. Passing through the Fort as artifact, the visitor will become aware of the build up that has taken place leading to his approach to the Fort. A viewing platform will ensure that the visitor can interact and visually capture the Fort in ruins.

The visitor will then leave this area and move towards the archaeological research centre, with the landscape's relationship with this building. Informing the visitor about archaeology. The building will also exhibit various archaeological sites that are currently being worked on. This exhibition will be based on a bi-weekly period of two weeks.

The archaeological research centre will be a space where the public can be informed about archaeology and interact with the archaeologists and students. The visitor will then move through the landscape back to the reception area. This is intended as a reflection route, which enables the visitor to process all the information he had been informed about.

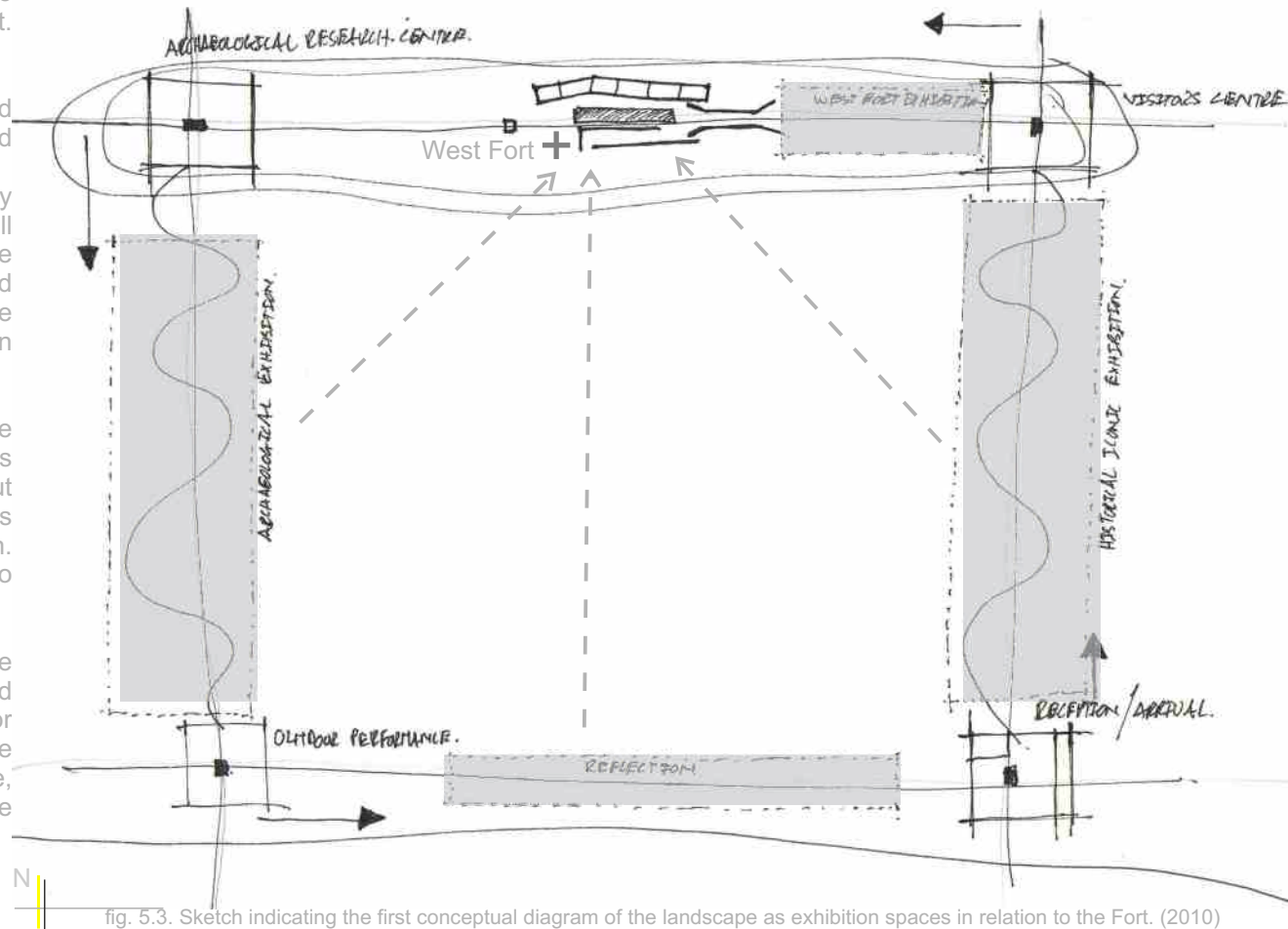


fig. 5.3. Sketch indicating the first conceptual diagram of the landscape as exhibition spaces in relation to the Fort. (2010)

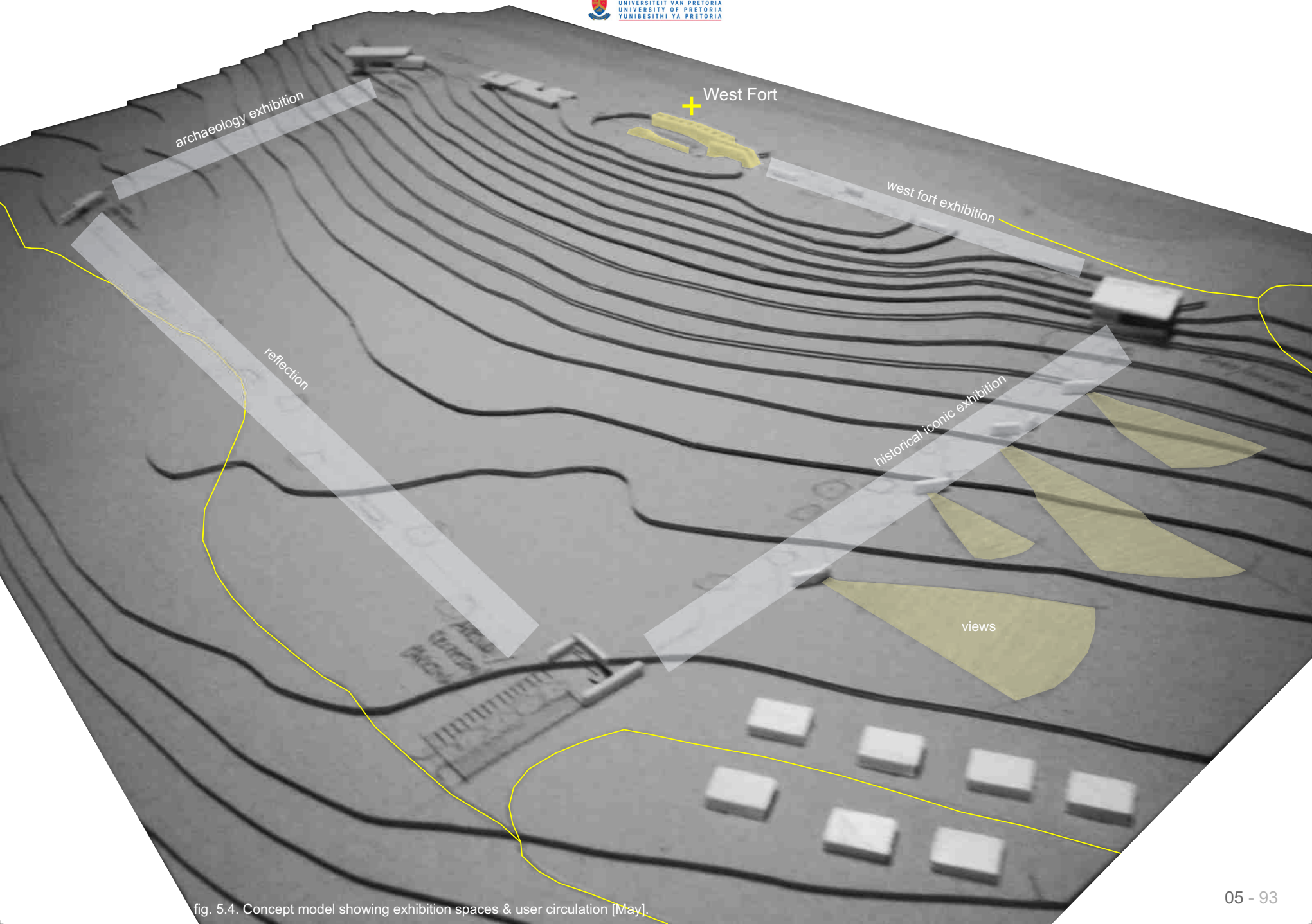
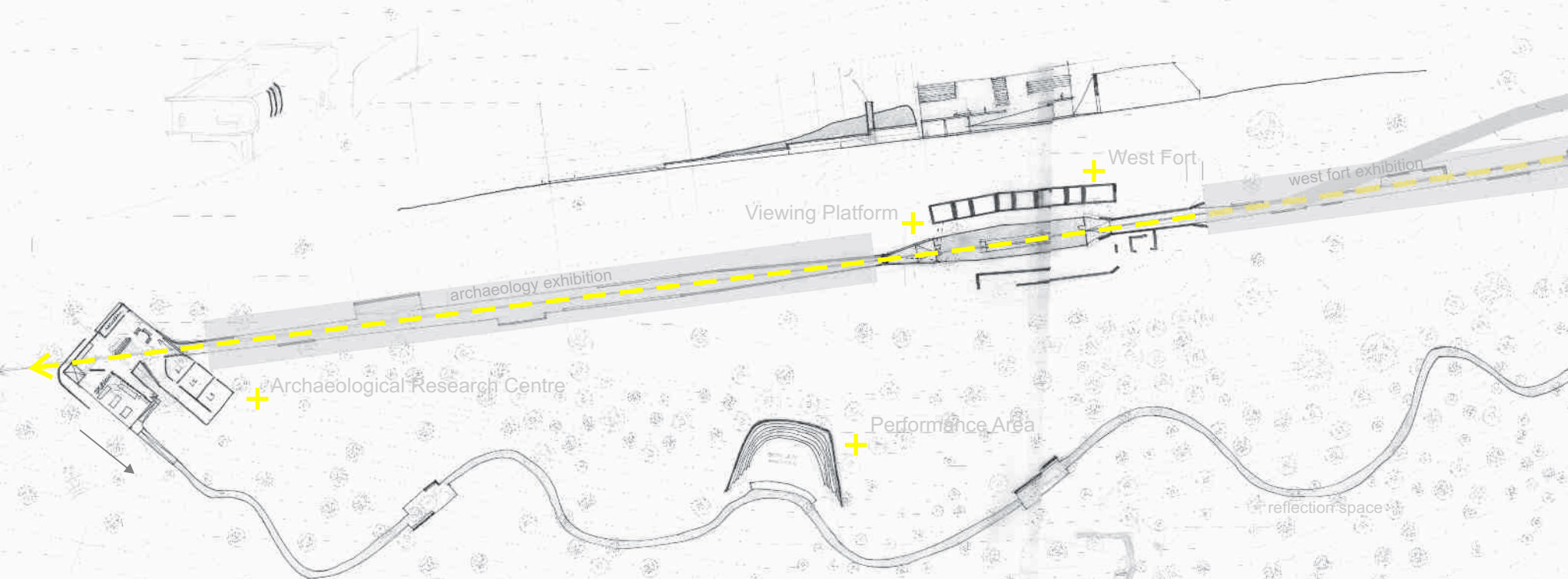


fig. 5.4. Concept model showing exhibition spaces & user circulation [May].



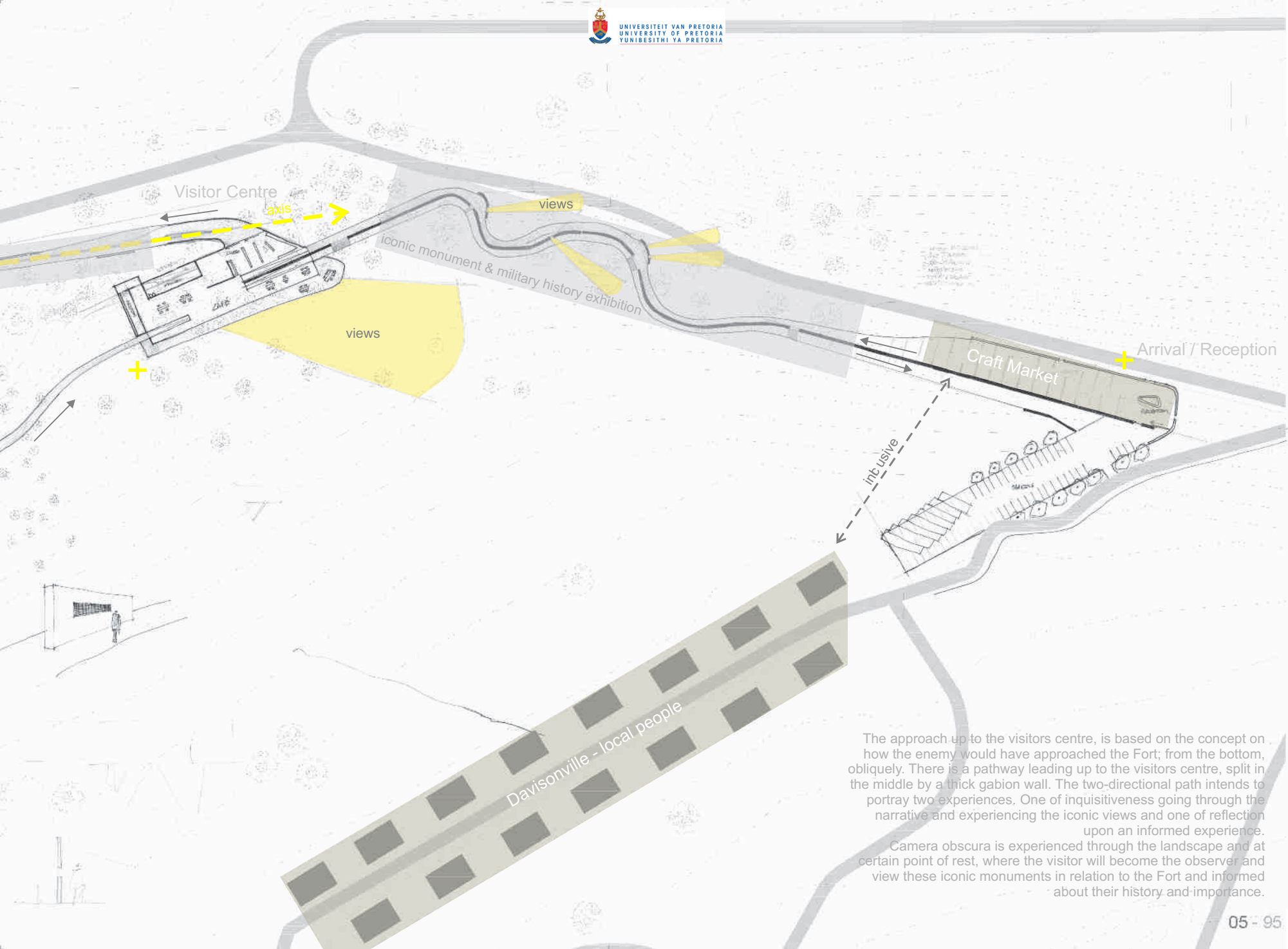
The following is the development from the parti diagrams & concept model:

The approach up the mountain was changed from the current access road, so that the approach is more of a military approach. The approach is derived from the conceptual visualization of the site, rather than a rigid and fixed one as seen in the parti diagrams. By placing the arrival space closer to the local community and heritage village, enables better interaction and also includes the community in the project on a larger, macro scale.

The reflection route also changes to a more free and meandering route, than the first rigid concept. This ensures the visitor experiencing the spirit of the place and its respect to the Fort as artifact. This means that the route is parallel to the Fort axis, which indicates hierarchy towards the Fort.



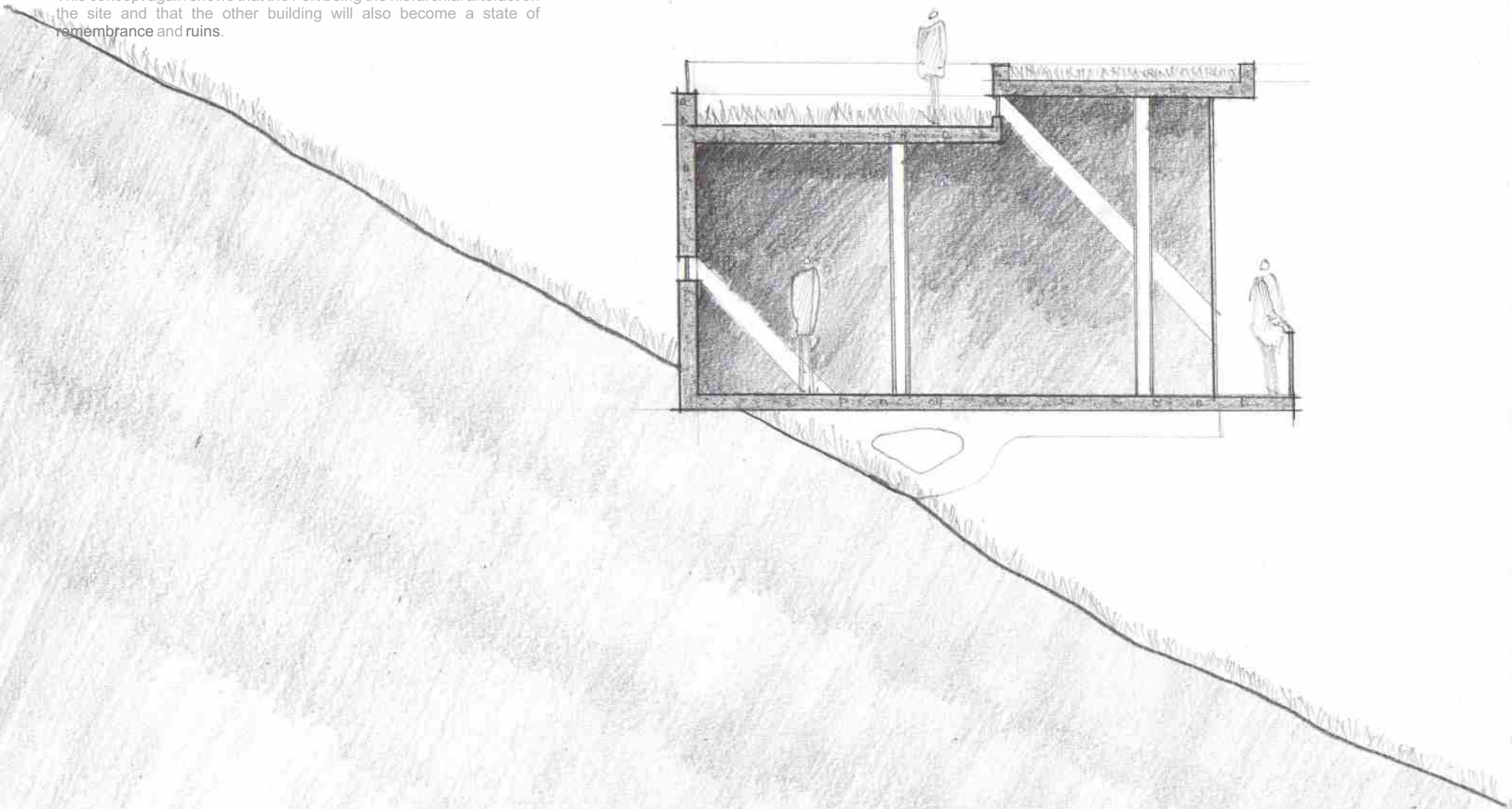
250m



The approach up to the visitors centre, is based on the concept on how the enemy would have approached the Fort; from the bottom, obliquely. There is a pathway leading up to the visitors centre, split in the middle by a thick gabion wall. The two-directional path intends to portray two experiences. One of inquisitiveness going through the narrative and experiencing the iconic views and one of reflection upon an informed experience.

Camera obscura is experienced through the landscape and at certain point of rest, where the visitor will become the observer and view these iconic monuments in relation to the Fort and informed about their history and importance.

The conceptual section through the visitors centre, shows the idea of the building touching the landscape lightly. The landscape should be integrated with the building, the same as the Fort's being sunken into the ground. The buildings becoming one with the landscape and vantage points towards the city scape. The concept of **permanence** and **transience** will be explored by the author. The visitors centre will be the catalyst and permanent building, whereas the archaeological research centre and craft market area, will become ruins in the future. This concept again shows that the Fort being the hierarchial artefact on the site and that the other building will also become a state of remembrance and ruins.



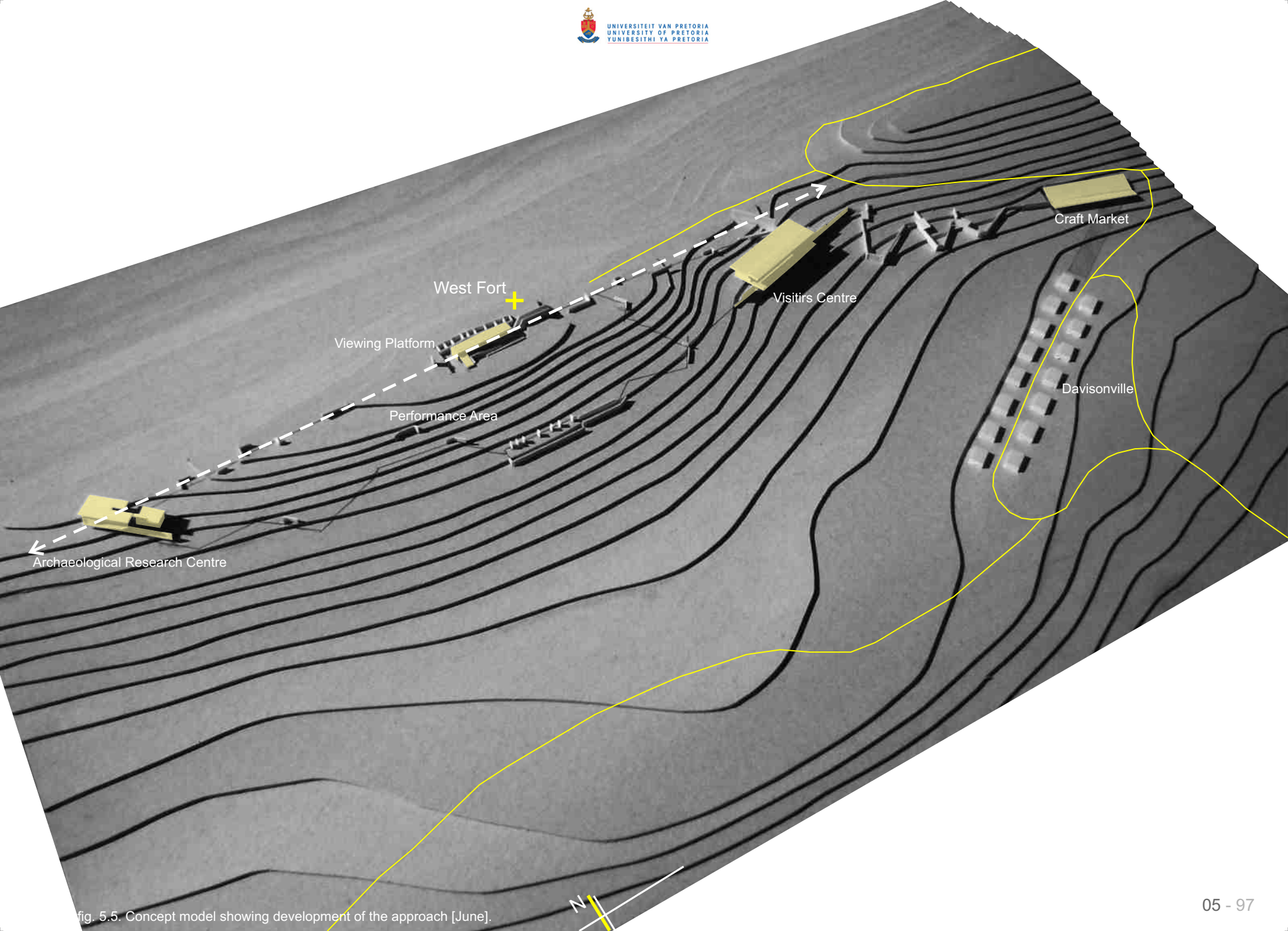
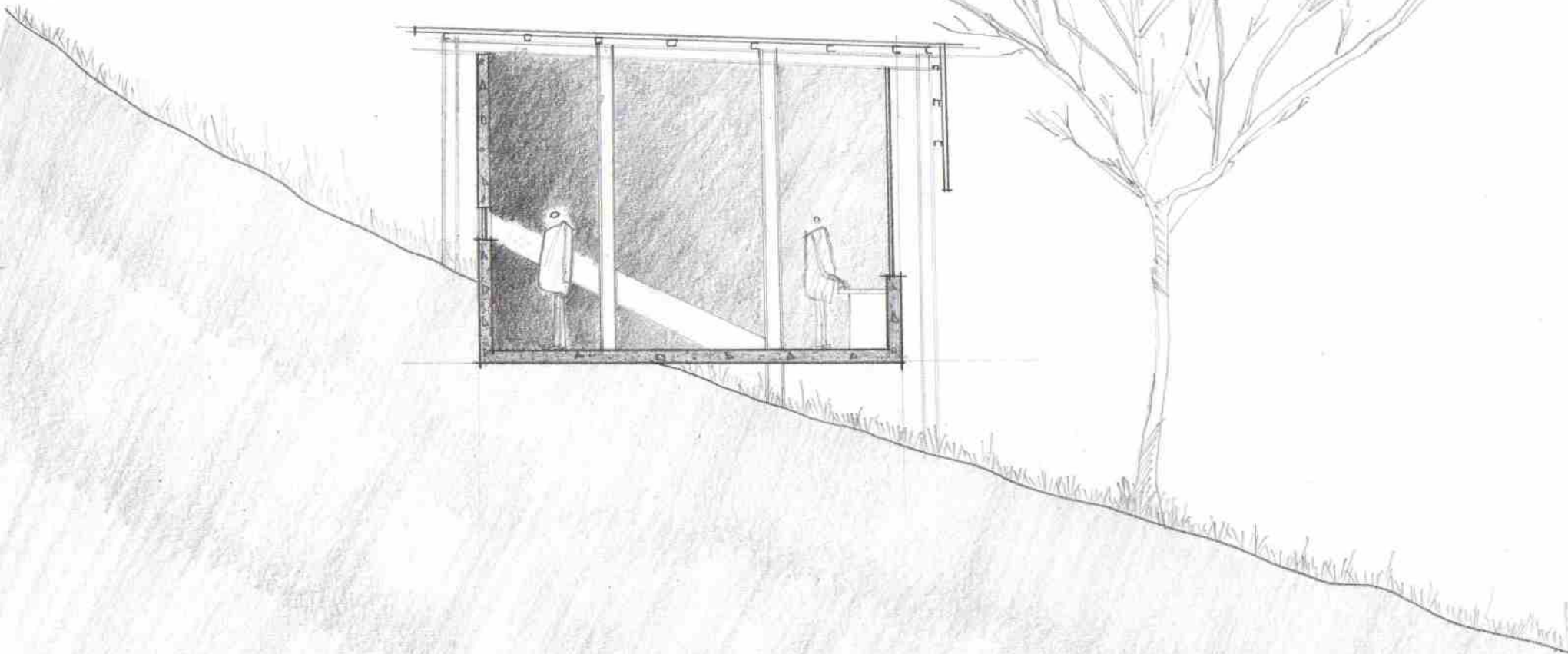


fig. 5.5. Concept model showing development of the approach [June].

A conceptual section through the archaeological research centre, indicates the idea of **transience**. This concept is generated from the idea of memory and its meaning. The Fort as artefact and in ruins, influenced this concept. The concept of transience will be explored through the use of materials and building placement. As stated earlier, the visitors centre will be the permanent building, while the other buildings, the Craft Market / reception area, exhibition spaces and the archaeological research centre will become ruins in themselves. The concept is that the Fort is still the most prominent artefact in the landscape. The other buildings will therefore become **land-art ruins** in later years and the visitors centre will be intact.

This concept of transience is also to support the fact that archaeology is exhaustive and not necessarily permanent. Therefore, as long as the buildings are occupied, the concept of transience will be delayed, but evidently they all again will become **ruins in the landscape**.



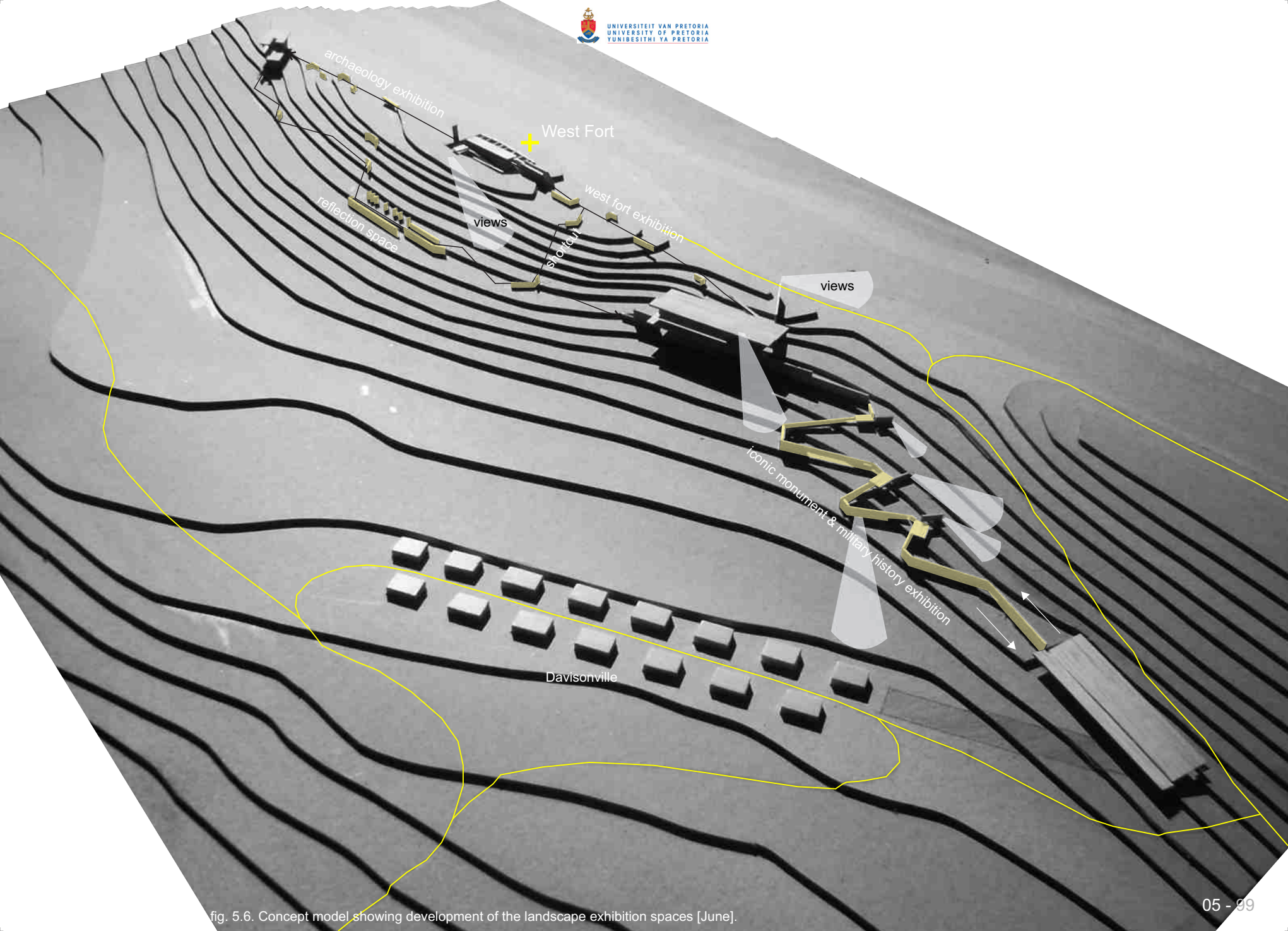


fig. 5.6. Concept model showing development of the landscape exhibition spaces [June].

The following are three dimensional exploration models, where the author started to explore and develop volumetric proportions and also materials.

The relationship between the Fort and the different buildings are explored. The way in which each building relates to the next is an essential part of the project. The buildings are experienced in a narrative form, which means that each building informs the next. The visitors centre informs the visitor about the history and iconic monuments, and the viewing platform in the Fort, informs the visitor about the Fort itself and becomes the threshold towards the archaeological building. The archaeological research centre informs the visitor about the archaeological work done on the Fort and various archaeological sites, as discussed in earlier chapters.

The thick, gabion wall leading up to the approach of the visitors centre becomes a linear, land-art element guiding the visitor up the hill, with various vantage points back to the iconic monuments in the city. The material chosen at this stage for the wall is to explore the concept of the wall “growing” out of the landscape. This concept enables the architecture to become one with the landscape and not compete with it. This is the same concept of the buildings not competing with the Fort. Essentially the Fort and the landscape becomes the hierarchial entities in the project.

This is portrayed to the visitor in response to the architectural problem stated earlier. The visitor should be informed about the importance of the Fort as artifact and that it should be protected and admired by all. The archaeological concept informs this by doing further work on the Fort and various others, always informing the visitors about the importance artifacts and ruins. These include the Blockhouses and other Forts that are in ruins in the city, lying dormant and unnoticed. Therefore the response to the problem is persisted in the visitor being informed about the other Forts and Blockhouses that are in ruins and the archaeological work that will be done on these.



fig. 5.7. 3D model of the Craft Market area & viewing platform in the Fort. (2010)

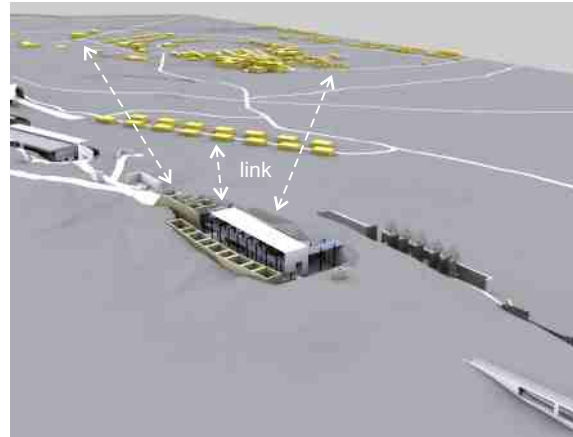
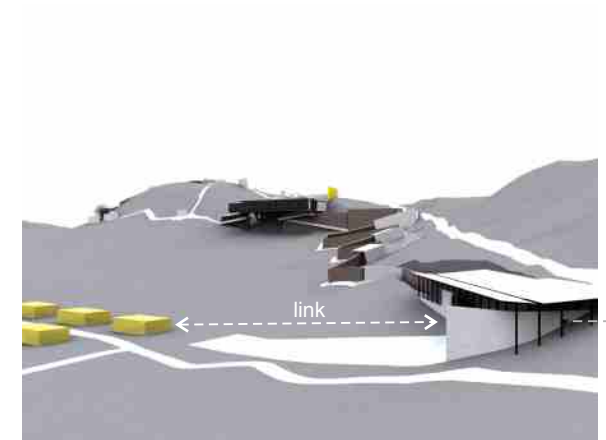


fig. 5.8. 3D model of the visitors centre floating above the landscape & the project in relation to the local community. (2010)

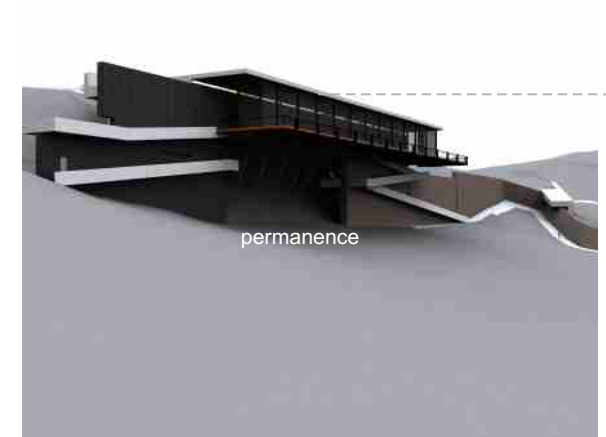


fig. 5.9. 3D model of the archaeological research centre, a lighter more transient building. (2010)

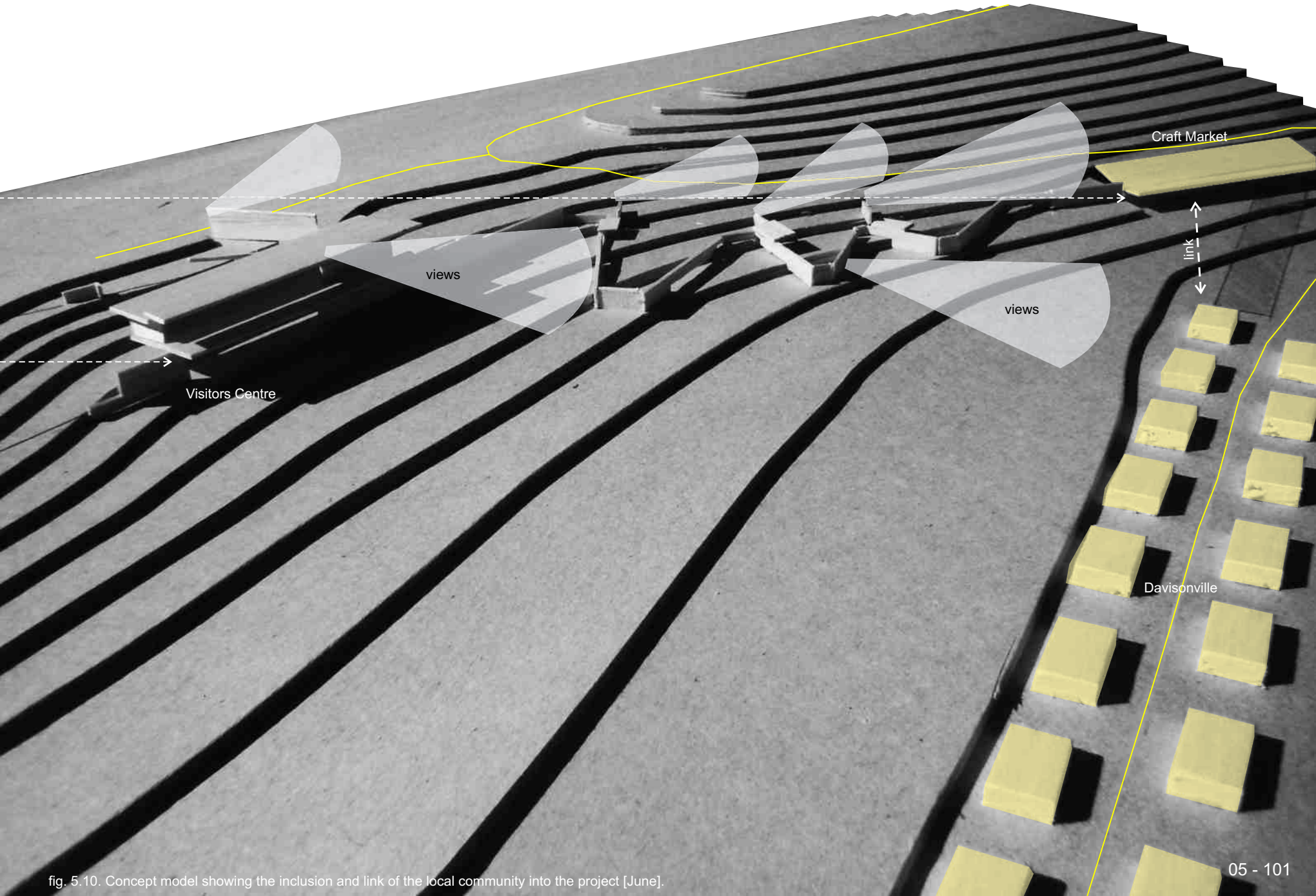


fig. 5.10. Concept model showing the inclusion and link of the local community into the project [June].

SUSTAINABILITY

The following is the investigation into the sustainability in the project.

The visitors centre becomes the most important part of the project being sustainable on an economical and social level. The visitor using the restaurant/ cafe area and buying artefacts in the curio shop, together with the entrance fees generated on a daily basis, will contribute to the project being sustained economically.

The concept of recycling and re-use will be introduced to include the limit the waste of materials generated in the restaurant. The idea is that all cans, plastics and paper be recycled and given to the local people, where they can use these materials to create and craft different artefacts and then sold by them in the crafts market to the visitors.

The concept of community participation and interaction at the crafts market area ensures that the visitors and local people learn from one another. This essentially is not only the arrival space to the project, but becomes the first form of educating the user.

The various technical sustainable systems, passive and active, will be discussed later.



fig. 5.11. 3D model of the viewing platform in the courtyard of the Fort. (2010)

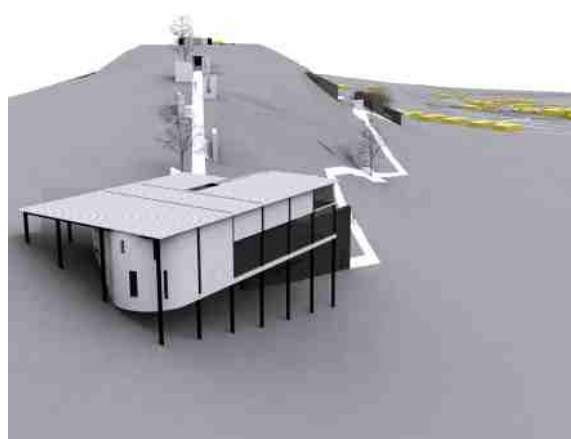


fig. 5.12. 3D model of the reflection route and the performance area. (2010)

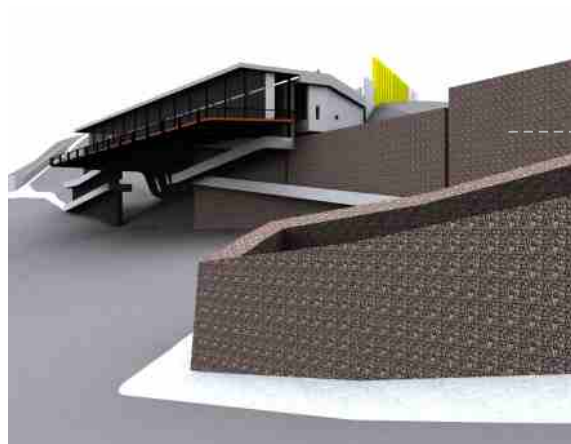


fig. 5.13. The gabion wall up to the visitors centre. (2010)

Archaeological Research Centre

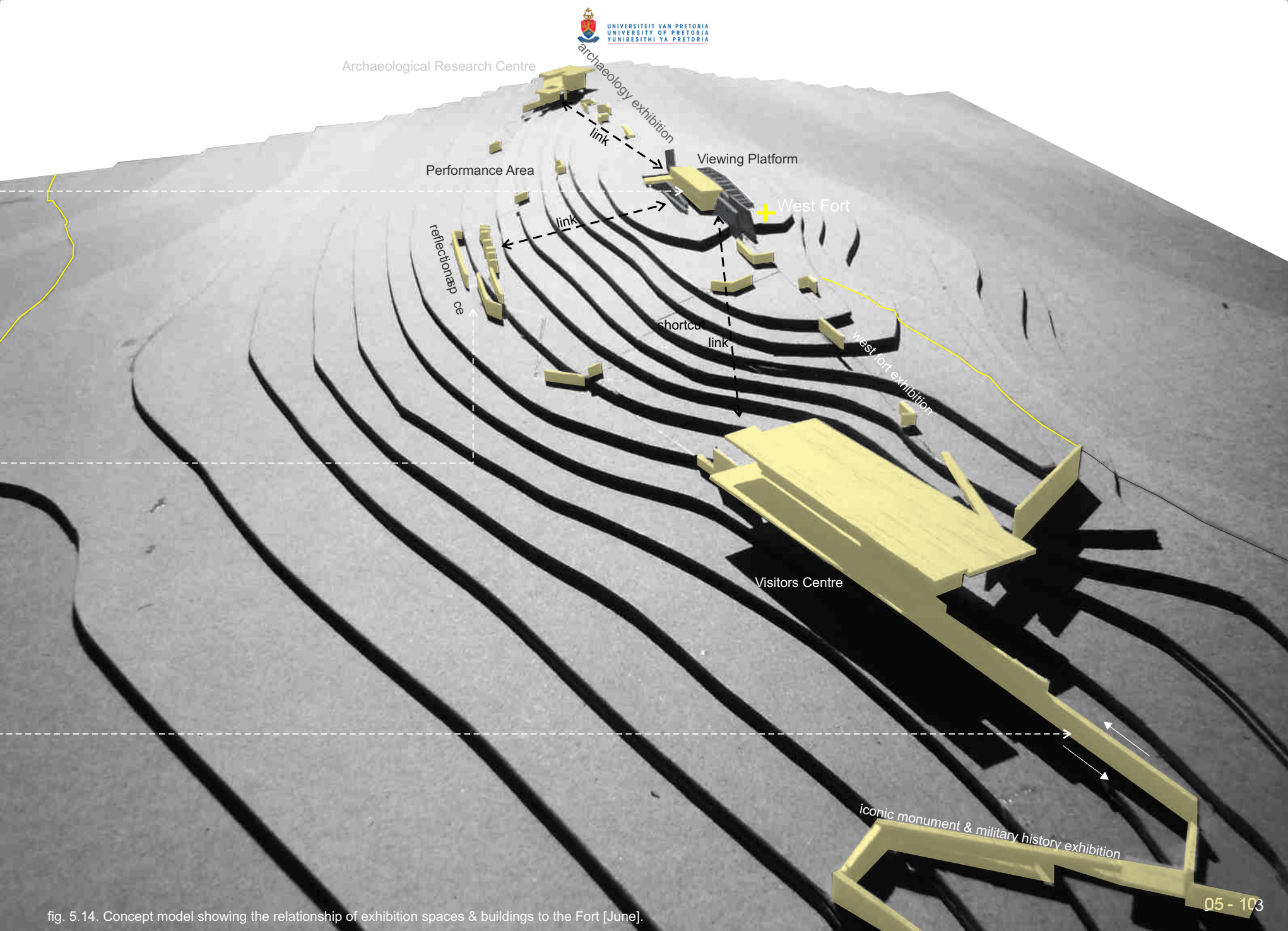
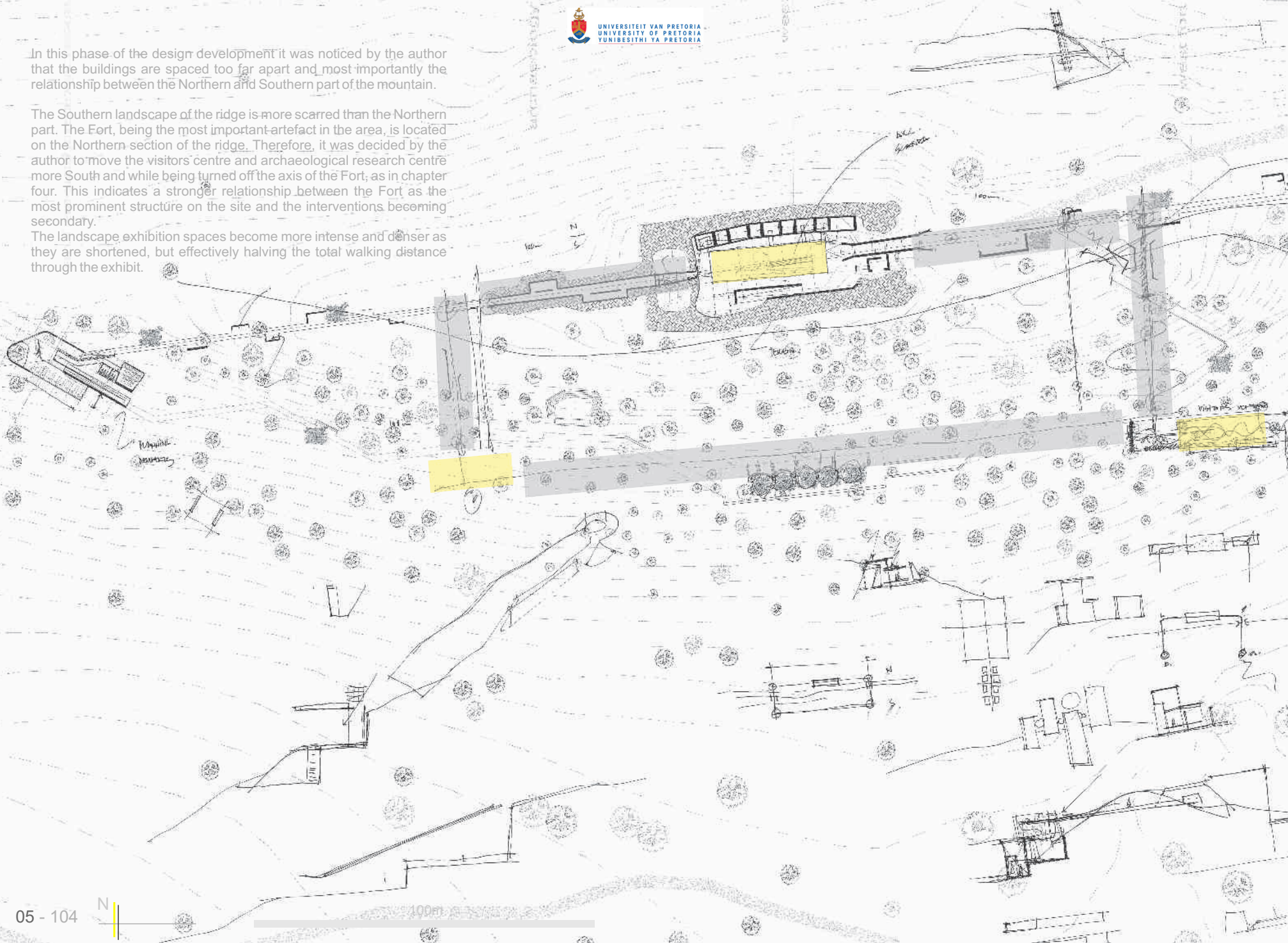


fig. 5.14. Concept model showing the relationship of exhibition spaces & buildings to the Fort [June].

In this phase of the design development it was noticed by the author that the buildings are spaced too far apart and most importantly the relationship between the Northern and Southern part of the mountain.

The Southern landscape of the ridge is more scarred than the Northern part. The Fort, being the most important artefact in the area, is located on the Northern section of the ridge. Therefore, it was decided by the author to move the visitors' centre and archaeological research centre more South and while being turned off the axis of the Fort, as in chapter four. This indicates a stronger relationship between the Fort as the most prominent structure on the site and the interventions becoming secondary.

The landscape exhibition spaces become more intense and denser as they are shortened, but effectively halving the total walking distance through the exhibit.





Davisonville

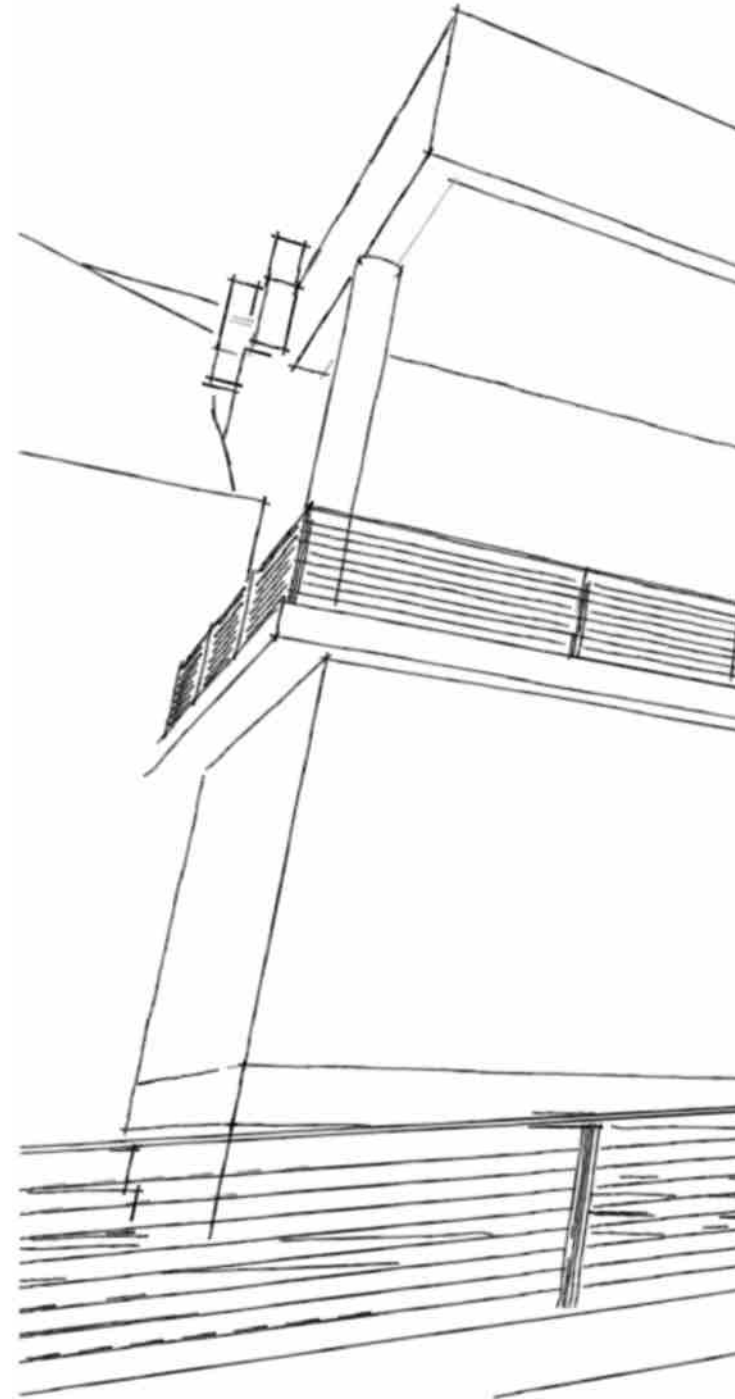
The typology of Fortification construction is introduced into the concept of the visitors centre and archaeological research centre. Both buildings are sunken into the landscape and contributes to the genius loci of the site, that constitutes subtle interventions. The buildings create a Fort like atmosphere. The arrival space is moved closer to the location houses, which illustrates the concept of inclusion more effectively.

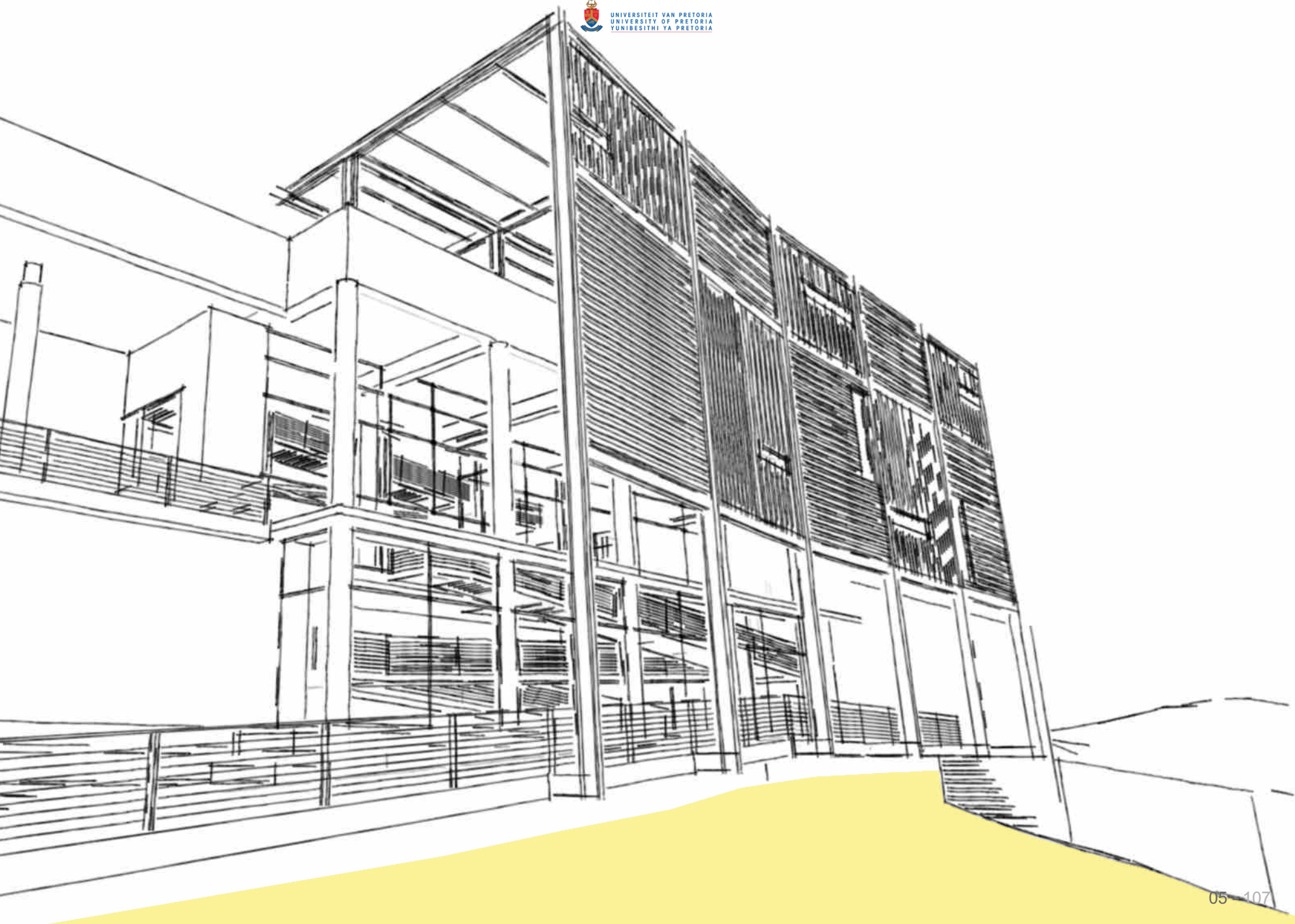
The new access road creates a feeling of enclosure and inclusion to the community and also creates space in the landscape for social usage for the visitor and local people.

The sketch by the author illustrates the concept of the visitors centre becoming a military like structure, by means of using mass and it being sunken into the ground like the Fort. The visitors centre's entrance space lets the visitor feel as if he is on the defended side, whereas he moves through the building towards the Fort, he crosses the threshold towards the defensible side. This anticipation builds up as one moves through the building. The way in which the structure steps towards the landscape and eventually the Fort, indicates movement and circulation. The volumetric quality of the building also illustrates the movement of the visitor.

From the entrance to the restaurant level and through the building, the visitor is guided by the various materials. The packed stone wall transforms into stone slate tiles, and again into a packed stone wall. This illustrates to the visitor the symbiotic relationship between inside and outside. The tectonic screen has viewing frames punched through it, to let the visitor again experience various focussed views towards the city.

The roof over the visitors centre is tilted upwards to the same slope as the natural landscape. This creates a feeling as if the roof is gently lifted out of the landscape and indicates the sensitivity towards the site. The roof is also planted, therefore , it looks as if the roof continues into the landscape.





The landscape is cut open just before the visitor enters the Fort, this creates another threshold towards the Fort, but also creates a visual link with the landscape. This insertion in the landscape conceptually portrays the entrance to the Fort. This also again links the old and the new; the old being the existing Fort, is mimicked in the landscape, but at the same time creates a feeling of progression towards the old.

The visual link is experienced through the movement of the visitor through the space, where the eye links up with the landscape on the other side of the mountain, again becoming an important threshold towards the Fort.

The same insertion in the landscape is made when the visitor moves through the archaeological exhibition space towards the archaeological research centre. This insertion indicates to the visitor that he/she is moving away from the Fort, therefore becoming a threshold for the next building. When the visitor moves through the space towards the archaeological research centre he is visually linked with an archaeological site at the foot of the mountain. This archaeological site is the Iron Age site. Both these insertion spaces in the landscape has the typology of the Fort's entrance and symbolises the importance of the Fort.

The archaeological research centre's labs and auditorium is located underground. This symbolises the concept of archaeology to the visitor. Where archaeology work is done in layering from above ground to below ground. The visitor's experience is therefore, moving from a visual link above ground, towards an underground level.

The archaeological centre is also set out on a grid. The structural grid symbolises the process of archaeology work done in practice, where the archaeological excavation is set out on a grid. The archaeological centre circulation is the inverse from the visitors centre, where one moves from the stereotomic underground mass, towards the tectonic structure. The structure is a light steel and timber box cantilevering out from the landscape. The visitors centre is the constant (permanence) and the viewing platform and the archaeological centre, becoming the variable (transience). This indicates the rationale behind the idea of the archaeological labs being underground. The steel and timber box containing the library will become ruins in the future and the archaeological labs will be left undisturbed and ruins underground.

The outdoor performance area is connected to the visitors centre. This allows for space making, but also serve as a visual link between the visitor and the performer, serving as the performance area for the visitor watching from the visitors centre. The performance area's space is again an illustration of contained space. The stone wall creates the idea of linearity and continuation into the landscape, but also the linkage towards the visitors centre.

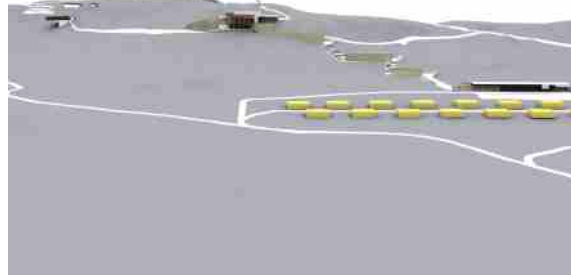


fig. 5.15. 3D model of the visitors centre and performance area creating space to the exterior. (2010)

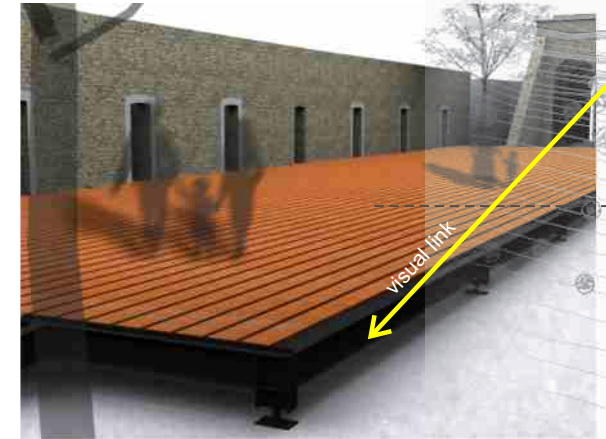
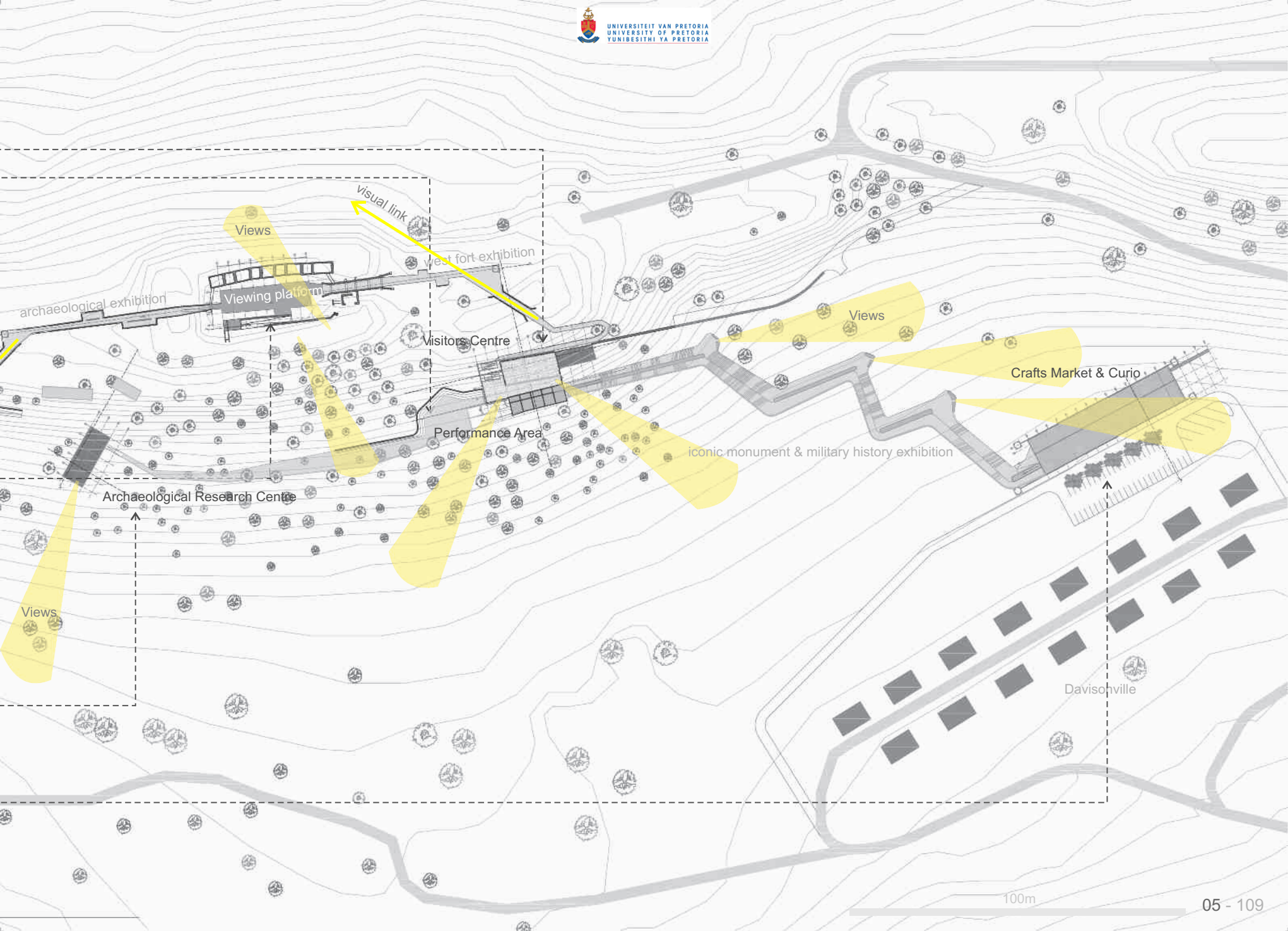


fig. 5.16. The viewing platform raised from the ground, "taken away" from the artefact. (2010)



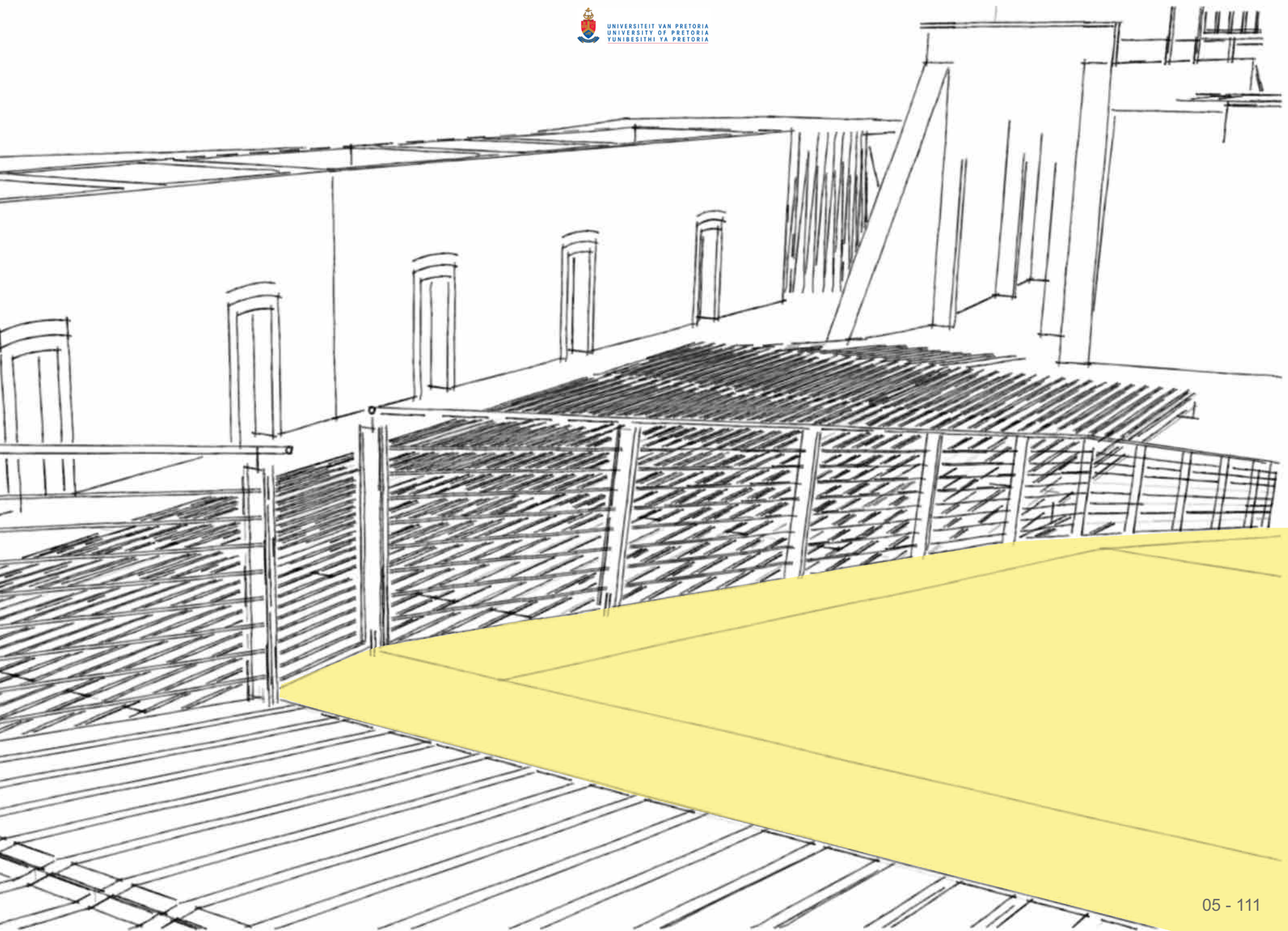
fig. 5.17. The crafts market area, also becoming the curio shop, integrated into the stone wall. (2010)



The sketch illustrates the viewing platform in the courtyard of the Fort. The Fort is stereotomic and heavy, while the platform becomes the tectonic structure. The concept of this space is to leave the Fort as an untouched artifact. This idea of taking the visitor away from the Fort physically, illustrates the importance and respect to the Fort. The platform is lifted slightly from the ground, to enhance the feeling of being pulled away from the Fort. The concept therefore relates to the concept of the visitor being the observer, capturing images for himself. This lets the visitors experience the Fort as monument visually.

The existing ramp will be extended by a steel and timber ramp to its original length. This will clearly indicate the relationship between new and old; the old being stereotomic and new being tectonic. The ramp extension will also be drawn away from the existing Fort structure, to again illustrate the concept of the new respecting the old, as artifact and ruin.





The 3D diagram illustrates the circulation through the sequence of spaces.

The experience starts at the Crafts Market area. The visitor will move from this space through the landscape to various spaces in the landscape. These spaces are framed views towards various iconic monuments within the cityscape, as discussed earlier in the chapter by the author.

Moving through these spaces, the visitor will be led up the mountain through a sequence of dry packed stone walls, which in themselves will become land art and from part of the iconic monument exhibition spaces.

Once through these spaces, the visitor will arrive at the Visitors Centre, where he will be able to experience the building as a catalyst and threshold towards the Fort, creating anticipation at the arrival point. The first floor of the visitors centre becomes the initial threshold, moving from the defended side, which is the city itself, towards the defensible side the Fort.

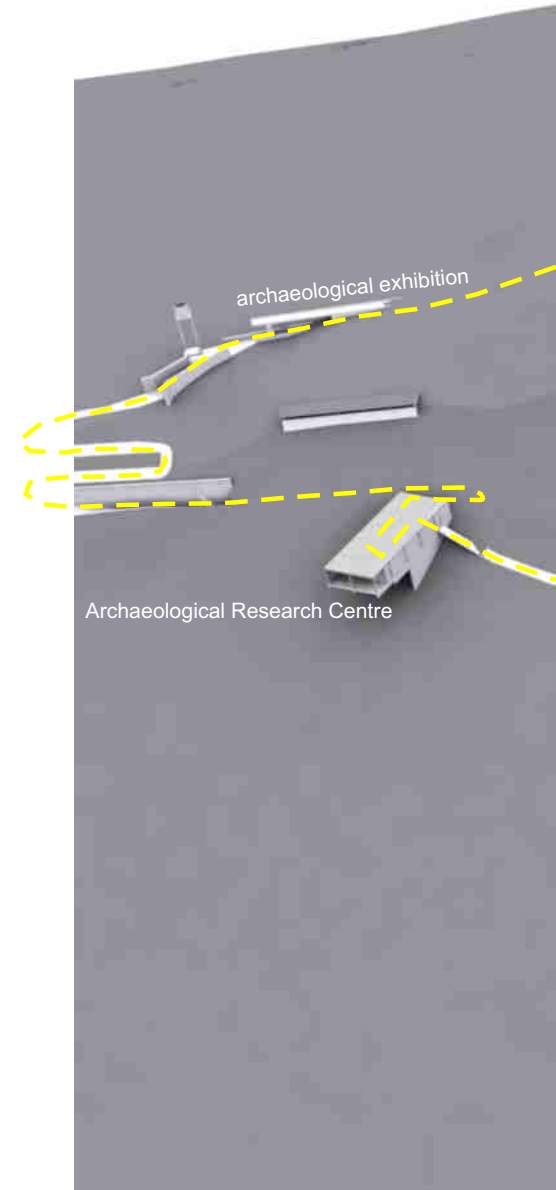
Once the visitor has passed through the visitors centre, he will move through the landscape towards the Fort, moving through a fort-like space to create a threshold before the arrival at the Fort. This exhibition space in the landscape, becomes the West Fort exhibition.

Inside the Fort, the visitor will be led onto a viewing platform, raised slightly from the ground, to create a feeling of seclusion and hierarchy towards the Fort. The visitor will be able to move up the existing canon ramp and new steel and timber extension, towards the landscape and capture a panoramic view of the cityscape.

The visitor will then move from the Fort underground through the archaeological exhibition towards the Archaeological Research Centre. The visitor will then move through these spaces back towards the Visitors Centre, where he will be led back to the Crafts Market and Curio shop. The visitor will circulate on the other side of the wall going back down.

This is to let the visitor experience other visitors arriving and moving up the mountain through the iconic monument exhibition spaces. The route going back towards the Crafts Market is 1500mm lower than the route going up. This is to illustrate that the visitor has experienced the narrative through the landscape, but most importantly, it creates a vantage point towards the visitors moving up the mountain.

The visitors will therefore experience one another visually, seeing how each visitor reacts to certain views captured and the experience of what he has “learnt” through the exhibitions.



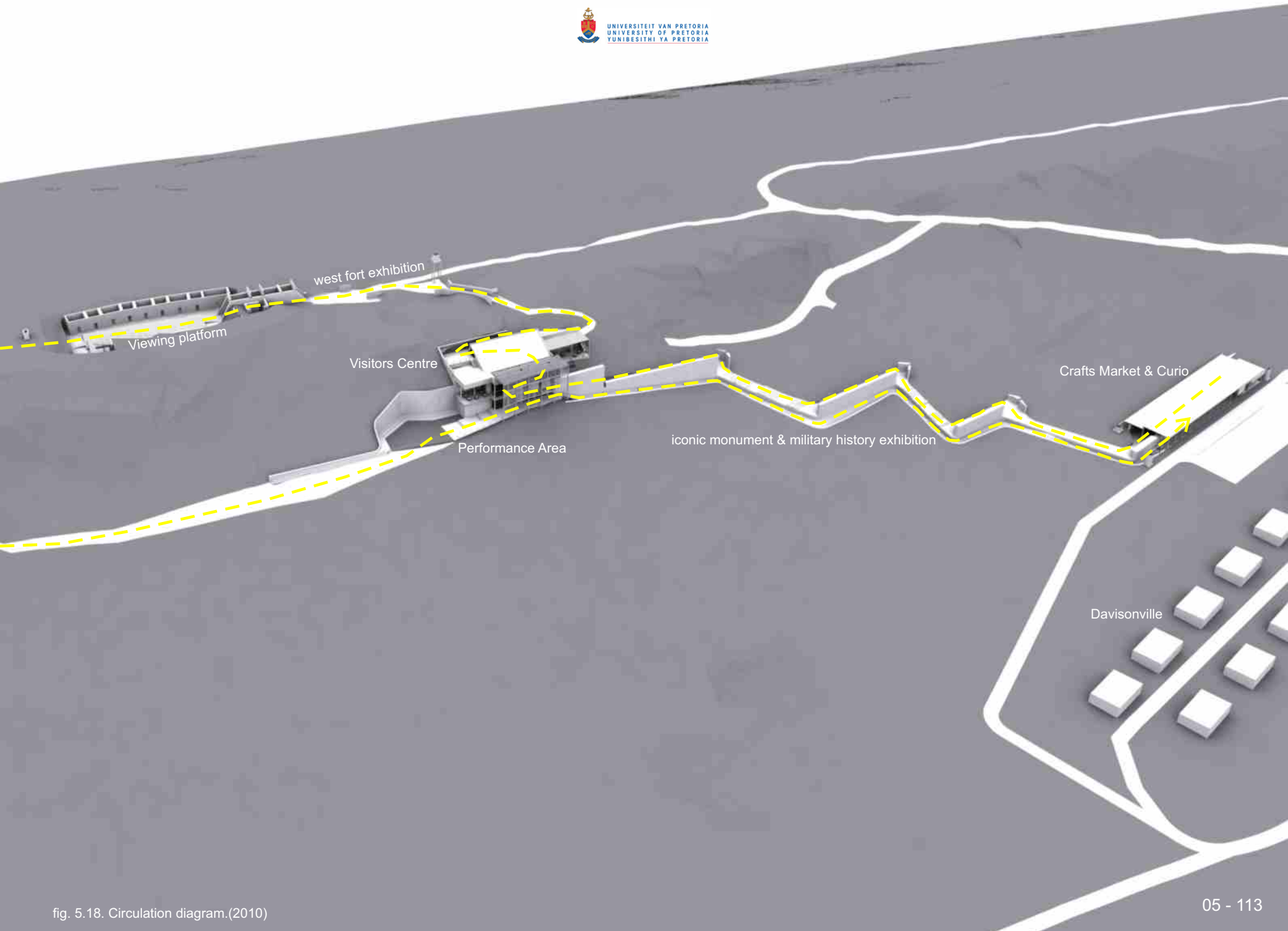


fig. 5.18. Circulation diagram.(2010)

ARCHITECTURE IN RUINS

The following relates to the concept of the architecture is ruins and respecting the context of the Fort [permanence & transience]. The Fort is currently a ruin and the other buildings, except the visitors centre, will eventually become ruins as well.

The visitors centre is the constant entity in the landscape. The stereotomic qualities of the visitors centre relates to the typology of the Fort. The heavy, stereotomic approach also ensures the visitors centre's permanence. As stated previously by the author, the archaeology aspect, influences the concept as well. This means that the archaeology building and arrival space / craft market area should become a ruins.

These ruins become land-art that responds to the aesthetic of the landscape. They respond in the context to the Fort as a ruin, but most importantly indicating that the Fort is still the most important ruin on the site. The Fort is the artefact that the new buildings respond to through the use of materials and construction.

The following is only an indication of how the author perceives the future aesthetics of the buildings and not necessarily how the buildings will respond in actual life. The concept is therefore portrayed to the reader in a hypothetical and conceptual manner.



fig. 5.19. Crafts market area - 2010



fig. 5.20. Crafts market area - 2030



fig. 5.21. Crafts market area - 2060

2010

2030

2060

architecture in ruins



fig. 5.22. Archaeological Research Centre - 2010



fig. 5.23. Archaeological Research Centre - 2030



fig. 5.24. Archaeological Research Centre - 2060

06

Technical Investigation

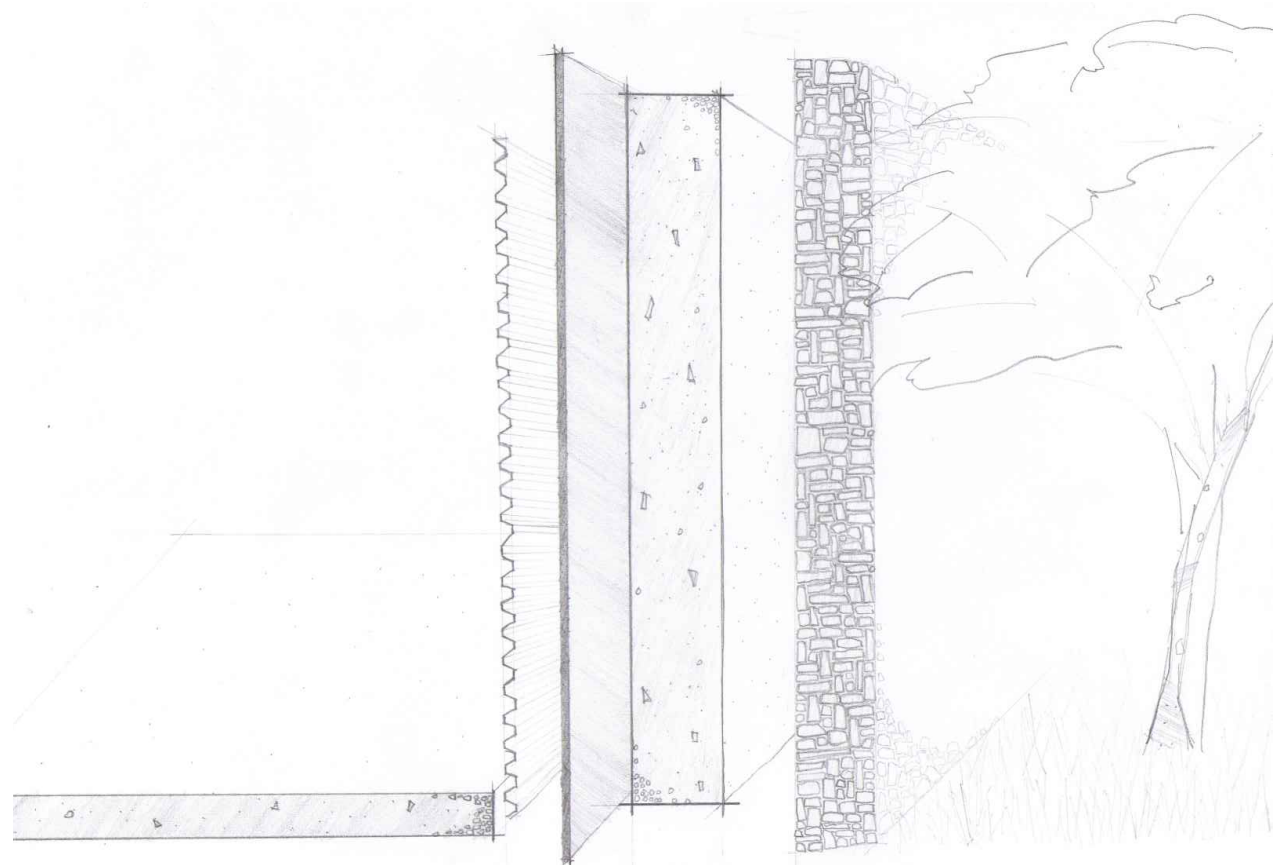


fig. 6.1. Sketch indicating the concept of layering and progression. (2010)

+ Technical Investigation

The following is a study in the poetics of construction. The study was done by the author to understand the relationship between stereotomic and tectonic qualities.

POETICS OF CONSTRUCTION

Construction and technology have evolved over the past centuries. The way in which we perceive construction and the theory thereof - from the construction of the Great Egyptian Pyramids, to the most recent buildings, has not changed much. Even though technology in construction has evolved, the poetics thereof has been reused and continuously explored. Many architects have developed their own “signatures” within construction, by either details, the uses of light and materials.

The German architect, Gottfried Semper (1803-1879) pointed out in his *Die Vier Elemente der Baukunst* [Four Elements of Architecture]; that the “earthwork”, the “hearth”, the “framework/roof” and the lightweight enclosing “membrane” classify the craft of building into two distinct procedures: “tectonics” and “stereotomics” (1995:5).

Whereas “tectonics of the frame, in which lightweight, linear components are assembled so as to encompass a spatial matrix, and the stereotomics of the earthwork, wherein mass and volume are conjointly formed through the repetitious piling up of heavyweight elements” (*ibid*).

These procedures are evident in the relation to how a construction detail would be designed and the use of different materials, within its specific purpose. The art of combining these construction procedures in a design is therefore often explored by well-known architects. The importance of the dialogue created between heavy and light, core and skin; should be explored in all architectural designs. The author can observe that these relationships should be investigated in the construction process by interpreting the value of the spaces created in the building procedure.

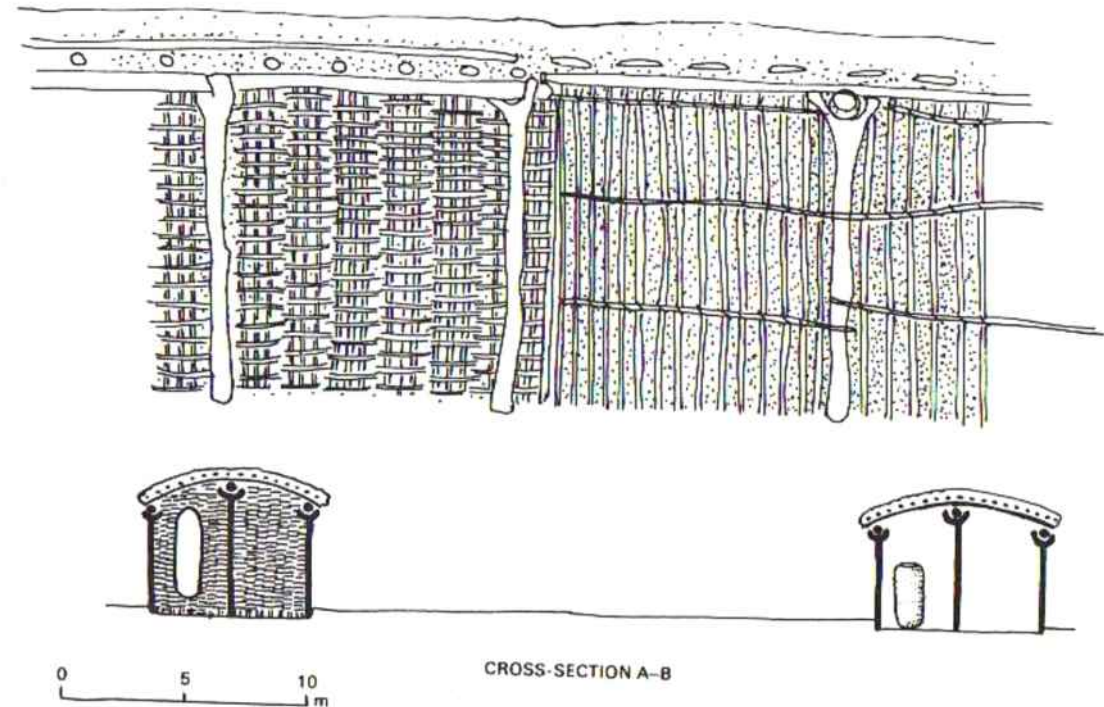


fig. 6.2. Gogo houses of Tanzania, detail of infill walls. (1995:7)

The interplay of light and heavy construction therefore creates curiosity in the design and space making process. By combining these procedures through the use of material, light and detailing the poetics of space is created.

The architectural theorist Kenneth Frampton testifies to the two modes of building: the “compressive mass” and the “tensile frame” (*ibid*). Semper also pointed out that, “the history of culture as it manifests occasional transpositions in which the architectonic attributes of one mode are expressed in another for the sake of retaining traditional symbolic value” (*ibid*). Frampton also stated that Semper’s Four Elements was borne from vernacular building throughout the world.

Architect and theorist Roger C Fisher states that “It could be argued that regionalist architecture will be generated by the designer directly responding to the following aspects in a specific way: climate, materials, site, defence, economics, and religion. To this could be added the particular cultural expression of the community” (1998:123). In addition, Semper illustrated that when traditional masonry is bonded into coursework, it is also a form of weaving. This illustrated that heavy construction, like masonry or concrete, can be perceived as woven or lighter entities within design construction.

Fig 6.3 indicates how Louis Kahn used light and filtered light to illustrate the concept of tectonic qualities to a space. The light was used to soften and lighten a space in a heavy, stereotomic environment.

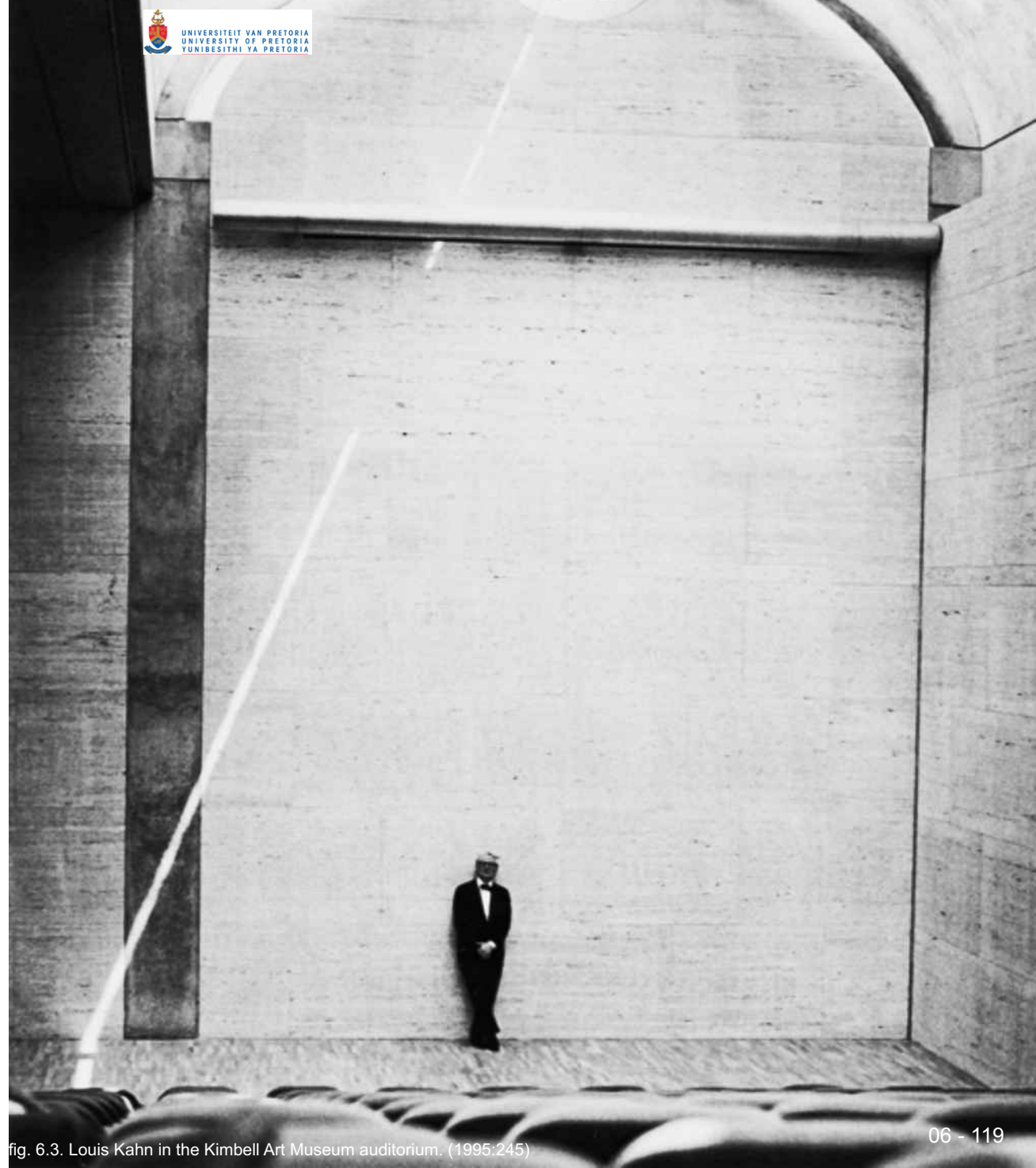


fig. 6.3. Louis Kahn in the Kimbell Art Museum auditorium. (1995:245)

STUDY ON THE POETICS OF CONSTRUCTION

The following is a study done by the author to further his understanding in the use of different materials to illustrate their stereotomic and tectonic values. The study was done to understand that light materials could also be used as stereotomic.

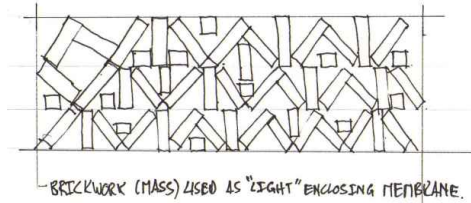
1. Weaving - weaving is a means to respond to the vernacular and the interplay of tectonic and stereotomic principles.

2. Vernacular - The use and precedents set by traditional vernacular architecture principles, should be interpreted and further developed today. The use of local heavy and light infill materials should be brought into regionalist designs.

3. Heaviness - The perception of heavy materials, e.g. brickwork and concrete, could be used as a "light" material, by means of weaving & light. The stereotomics of the earth, could be separated from the light material, creating articulation and hierarchy.

4. Lightness - Lighter materials, tectonics, could be used to "soften" heavy materials, and like heaviness, create distinction between the two, but in the same sense marrying the materials in an architectural manner.

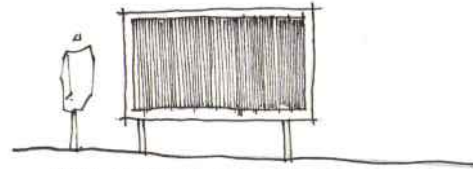
5. Light - light could be used as a building material, creating sensual spaces and the detailing thereof, also relates to the physical detailing of filtering the light into a space. Light is inevitably one of the profound design & construction generators.



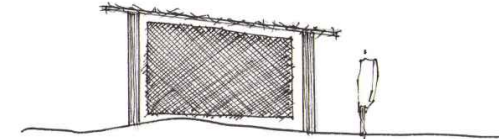
- BRICKWORK (MASS) USED AS "LIGHT" ENCLAVING MEMBRANE.



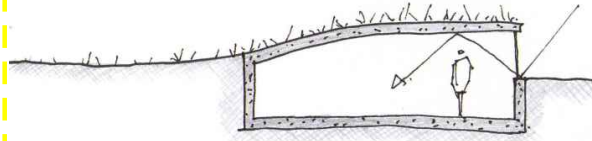
- STEEL USED AS WEAVING OF HANDRAIL.



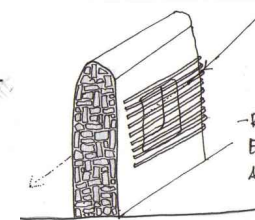
- NEW & OLD USED TOGETHER - LIGHT vs HEAVY



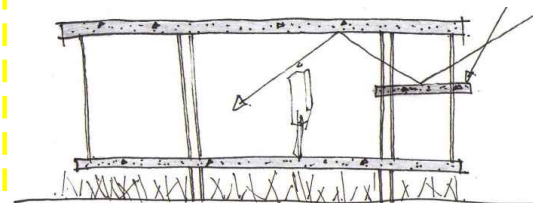
- USE OF LOCALLY AVAILABLE MATERIAL, INTERPLAY OF TECTONIC INFILL PANES & COLUMNS FIXED TO STEROTOMIC. (EARTH).



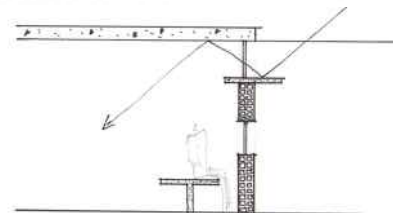
- HEAVINESS OF EARTH, SOFTENED BY USE OF NATURAL LIGHT.



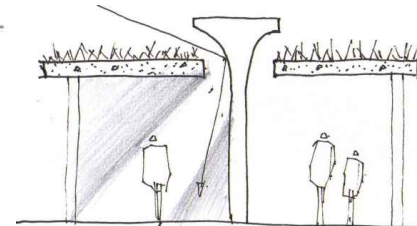
- RATTLED EARTH USED AS MASS & HEAVY ELEMENT, WITH LATS AS SLIM CONTROL ACTING AS A WHOLE, BUT LIGHT vs. HEAVY.



- HEAVY MASS IS PERCEIVED AS LIGHT, BY SEPARATING IT FROM THE STEROTOMIC. (EARTH).



- REFLECTED NATURAL LIGHT - CONTRAST OF HEAVY & LIGHT. LIGHT AS A MATERIAL IN DEMAND.



- LIGHTING A SPACE WITH NATURAL LIGHT, MASS IS PLACED IN CONTRAST WITH "LIGHTER" CREATION.

TECHNICAL CONCEPT

The technical concept therefore is derived from the study of the poetics of construction. The architectural typology of the Fort influenced the concept by means of structural mass being used. The structural mass of the Fort that is sunken into the landscape has stereotomic qualities.

The concept is therefore incorporated into the buildings, through the use of mass and buildings being sunken into the ground. The earth in this sense also becomes stereotomic.

The visitor centre's walls and floors have stereotomic qualities by retaining the earth. This references the typology of the Fort. The stereotomic mass becomes the primary structural element. The steel and timber screen containing the stereotomic structure have tectonic qualities. This tectonic structure becomes the secondary element in the structural system. This play between light and heavy not only relates to the architecture of the Fort, but it also illustrates movement through the building. One enters a tectonic structure and then is guided through the space towards the stereotomic structure. This spatial quality is also facilitated by the progression from the contained towards the retained space.

The movement from tectonic to stereotomic also has a definite threshold, where the visitor moves from the defended side towards the defensible side towards the Fort.

The glass, windows and doors become the tertiary structure, where they act as thresholds between spaces and also between stereotomic and tectonic structures.

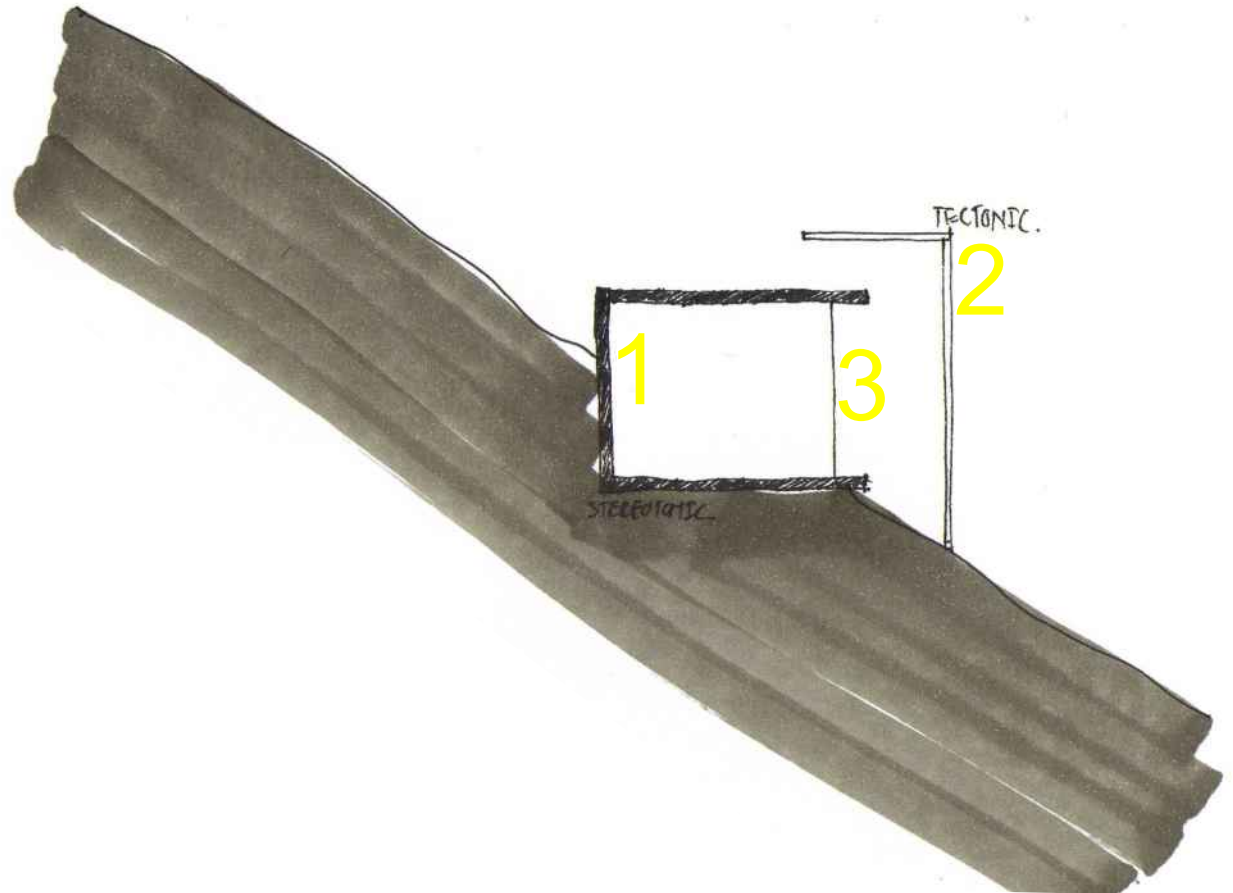


fig. 6.4. Conceptual diagram of stereotomic vs. tectonic, indicating retained vs. contained. (2010)

TECHNICAL PRECEDENT

The following precedents were studied by the author to learn about the correct use of materials and importantly the response to existing heritage buildings.

MUSEO DI CASTELVECCHIO, VERONA, ITALY, BY CARLO SCARPA (1906 - 1978)

The study of the Museo di Castelvecchio involves the study of how Scarpa approached the detailing of existing structure and the new.

Scarpa pulled the old away from the new, to distinguish between the two different structural qualities. Scarpa's detailing of the steel stairs at the Museo di Castelvecchio illustrates these principles, where he left a small gap between the new steel stairs and the existing masonry wall. This illustrates the idea of the old being celebrated and made the primary expression where one sees the old masonry wall in its pure form as an object, but you are subtly reminded of the new addition to it.

Scarpa illustrates the subtle approach by bolting these steel stairs sensitively to the existing masonry wall. These stairs curve upwards, as if they give way to the masonry wall, illustrating the sensitivity to the existing.

This detailing is perceived by the author, as tectonic meeting stereotomic. The existing masonry wall becomes the historical stereotomic element, where the steel stairs become the tectonic. The connection between these two elements are blurred and the intermediate gap between the two elements belongs to neither.

The gap therefore illustrates not only where new meets old, but also how the tectonic element meets the stereotomic element, in a subtle and blurred manner. The author notes the attention to detailing by Carlo Scarpa, and wishes to illustrate the same approach to detailing and conceptual manner in which new meets old. In this dissertation's case, how the new meets the old West Fort.



fig. 6.5. Scarpa's steel stair detail at the Museo di Castelvecchio. (centralbranchlibrary.com:2010)

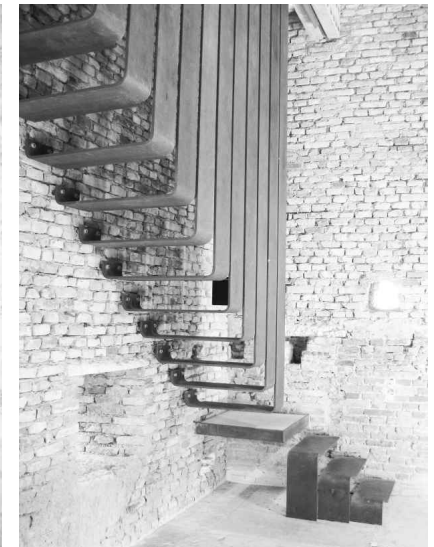


fig. 6.6 - 6.8. Scarpa's steel stair connection detail. (centralbranchlibrary.com:2010)

The following study by the author concerns the use of *Beton Brût* (Raw concrete) in various ways. The quality of the concrete and the finish it produces and the way it influences the user's experience are of interest to the author.

Materials, in renowned Swiss-French architect Le Corbusier's (1887 - 1965) mind occupied two distinct categories - natural and artificial. Concrete was for him a "material of the same rank as stone, wood and baked earth". Le Corbusier added that the "experience is of importance. It seems to be really possible to consider concrete as a reconstructed stone" (2007:18).

Le Corbusier chose finishes precisely for their abrasive, unsympathetic and downright defensive qualities. At La Tourette the interiors of the cells are finished so outrageously rough that a smooth panel is provided next to the bed to avoid continual injury and snagging of blankets. Such materials, so painful to the touch, seem to express something of the hardships of the life of the monk or indeed the pilgrim. A similarly repellent finish was achieved in the outbuildings of Ronchamp, except in reverse where imprints of stone can be seen in the surface of the concrete (2007:45).

The author intends to use *Beton Brût* for the finish of the concrete walls. The way in which Le Corbusier finished the cells at La Tourette is extreme and harsh. The author does not want the exact same brutal effect, a smaller, finer stone will be used in the aggregate to attain a smoother finish. The raw concrete therefore will have the *Brût* aesthetic and will be symbolic of the heritage and "oldness" of the Fort, illustrating to the user that the new material is used in an old manner, thus creating a feeling of used and *Brût*, relating to the harshness of a war or Fort environment and atmosphere.

The ruins of the Fort (fig. 6.9) is also symbolic of the concrete and vice versa.



fig. 6.9. The *Beton Brût* is symbolic of the Fort ruins. (2010)

MATERIALS

The material palette consists of various materials, but the three primary materials and finishes are Concrete, Stone and Steel.

These materials will be discussed briefly by the author briefly, to determine their structural qualities and their influence in the design process.

CONCRETE

The raw concrete finish will be used throughout the buildings. As discussed earlier, the concept of the concrete becoming symbolic of the Fort and ruins is important to illustrate that the new buildings are didactic in their use of materials as well. This means that the visitor will be aware of the rough, raw concrete, therefore visually and physically experiencing the material.

STONE

Dry packed stone walls again become symbolic of the Fort, which was partially built with concrete, but mainly of a very hard sandstone material. Certain dry packed stone walls come to function as land art elements, creating an aesthetic as if they are “growing” from the landscape, but still maintaining the Fort’s position as primary structure.

The stone walls become stereotomic, structural elements in certain spaces, while also functioning as directional elements as land art walls in the landscape. These walls “pull” the visitor through the spaces and lead them up the mountain.

The visitor experiences the stone walls as directional and symbolic to the Fort on approaching the visitors centre. As the visitors moves into the visitors centre, the floor finish becomes slate tile, cut in various shapes. The interior is therefore slate stone tiles and once exiting the building, the plane changes to stone walls again. This is to distinguish between exterior and interior, but keeping the threshold minimal.



fig. 6.10. The *Beton Brüt* finish the author intends using. (2010)



fig. 6.11. Dry packed stone wall is symbolic of the sand stone walls of West Fort. (centralbranchlibrary.com:2010)

The stone walls will be constructed by using stone from the site. Finer aggregate could be used in the concrete mix, to attain a *brüt* finish.

STEEL

The steel forms part of the secondary structural elements. The steel used in the project is mainly mild steel and a small amount of cor-ten panels as cladding.

The mild steel forms part of the tectonic elements. The steel becomes structural and contains the stereotomic elements.

The steel and timber viewing platform in the courtyard of the Fort will create a tectonic aesthetic in a stereotomic context. The extension of the existing canon ramp, will be constructed from mild steel. The mild steel also becomes symbolic on a smaller scale of the Fort, where mild steel beams were used as lateral support for the tunnels moving underneath the ground.

The cor-ten steel will enhance the effect of the archaeological research centre becoming a ruin in the landscape. The weathering steel will ensure that the building will look like a ruin before its time.

The mild steel will be finished with two coats of red oxide primer and painted black.



fig. 6.12. Sand stone wall of West Fort. (2010)

STRUCTURAL SYSTEMS

The structural systems are divided into three categories; Primary, Secondary and Tertiary.

STEREOTOMIC - PRIMARY

The following exploration was done by the author to further the technical development concept. These diagrams and images illustrate the application of the concept to the technical investigation done by the author.

The stereotomic structure becomes the primary structural element. The stereotomic mass acts as the retained element, which relates to the architectural typology of the Fort. The heavy, sand stone walls act as the stereotomic elements, retaining the soil, but also retaining the enemy in a conceptual manner.

The primary structure therefore is constructed of reinforced cast in-situ concrete. As discussed earlier, the *beton brut* aesthetic is used as final finish to the concrete.

The conceptual technical sketches (fig. 13), illustrates the development of the concept of retained and contained elements. Where the concept started as a diagram, evolving into structural and material systems.

In certain spaces the stereotomic becomes stone walls. Where this relates again to the symbolic relationship to the Fort. In fig. 6.15 we can see the relationship between the concrete as retained stereotomic mass and the stone wall, which also acts as a retaining element.

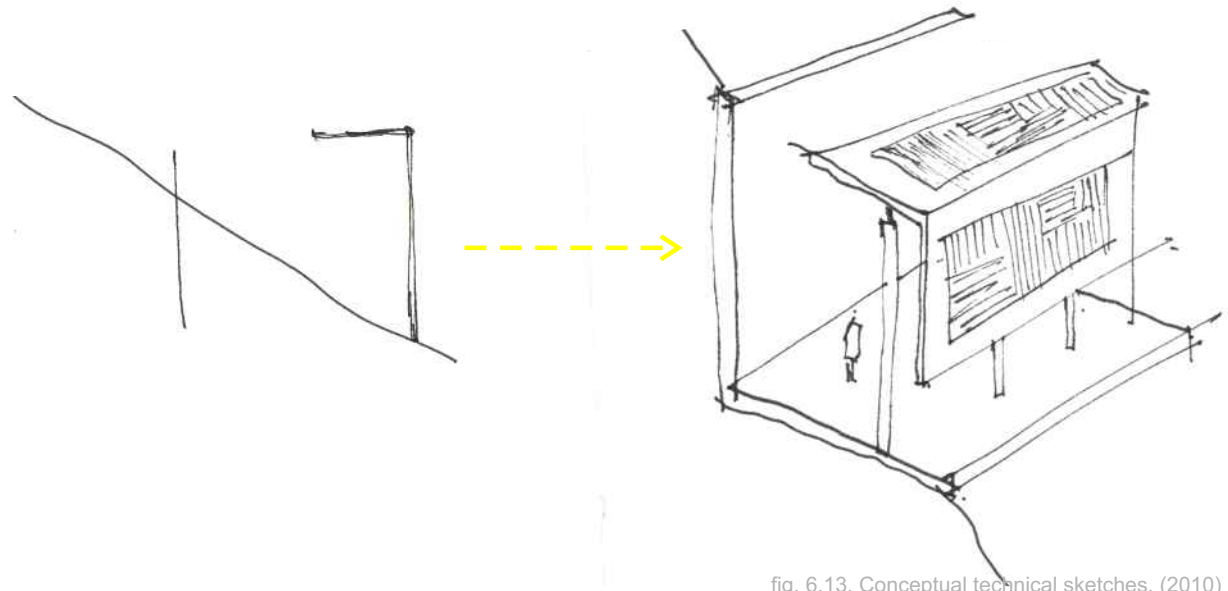


fig. 6.13. Conceptual technical sketches. (2010)



fig. 6.14. Image indicating the structural systems. (2010)



fig. 6.15. Section through visitors centre indicating possible thermal activity. (2010)

TECTONIC - SECONDARY

The steel and timber screen becomes the secondary tectonic element in the visitors centre (fig. 6.17). This screen acts as the contained element. This concept illustrates the way in which the lighter materials clip onto the heavy stereotomic elements. The idea is that the structural elements become directional as well. This means that the screen at the entrance guides the visitor through the building and spaces towards the stereotomic element.

These spaces become thresholds between the defended side and the defensible side of the Fort. The light materials give way to the heavier, stereotomic mass, which illustrates to the visitor that he is not just moving through these spaces, but also approaching the Fort.

The tectonic structure at the crafts market area and the archaeological research centre is designed to illustrate the same concept. At the research centre the visitor moves again from the stereotomic element towards the tectonic element. This is again symbolic of archaeology, where the visitor moves from underneath the ground towards the landscape and also the practice of archaeology, which is done underground and explores layering. This design again becomes directional and illustrates to the visitor the circulation and movement through the building, but also that the visitor is moving away from the Fort - again becoming a threshold towards the city.

The tectonic elements in these buildings are indicative of the idea of them eventually becoming ruins in the landscape as discussed earlier by the author.

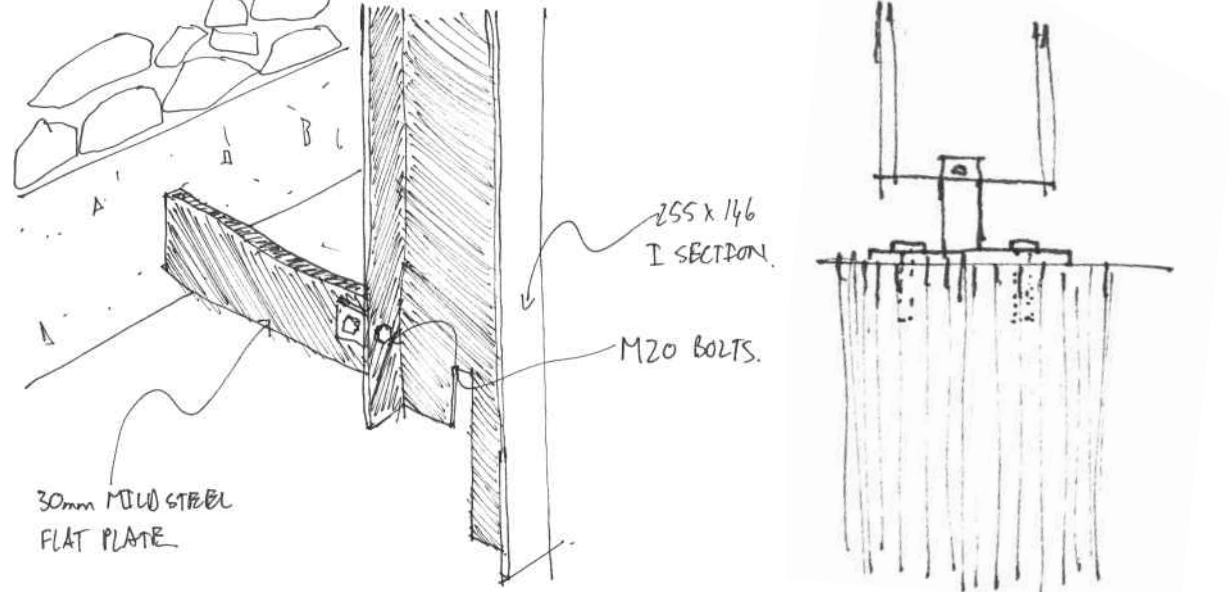


fig. 6.16. Connection detail sketches. (2010)



fig. 6.17. Layering of components and materials of screen. (2010)



fig. 6.18. Section through crafts market area, illustrating the concept of contain and retain. (2010)

TERTIARY

The glass screens, windows and doors form part of the tertiary structural system, where they act as thresholds between the stereotomic and tectonic structural elements.

The tertiary elements become the binding elements within the structural system. They tie together the stereotomic and tectonic elements. The glass screens and windows act as permeable thresholds, which also become the threshold between exterior and exterior.

The tertiary elements become miradors cut into the stereotomic and tectonic elements. They act as viewing portals, where the visitor will capture certain views that are focused on various iconic monuments within the city scape.

These portals / miradors are symbolic of the Fort and it's military like environment, where the enemy was watched by the military through various portal holes from in the Fortifications and the Blockhouses. This again also informs the concept of the visitor becoming the *camera obscura*, capturing views in a similar, military like manner.

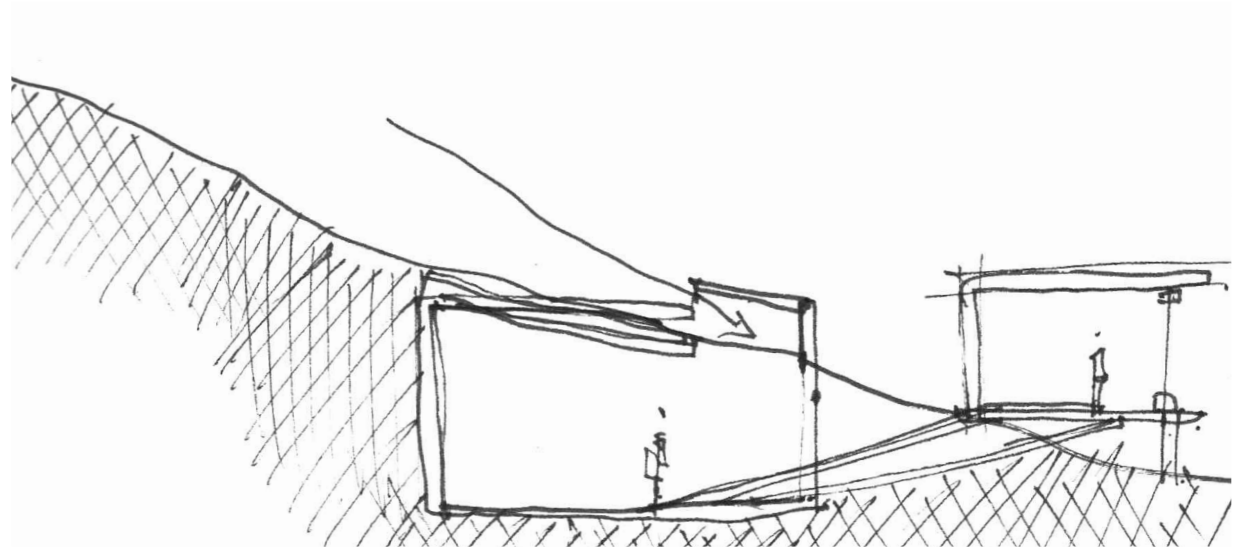


fig. 6.19. Structural system sketch indicating stereotomic vs tectonic system. (2010)

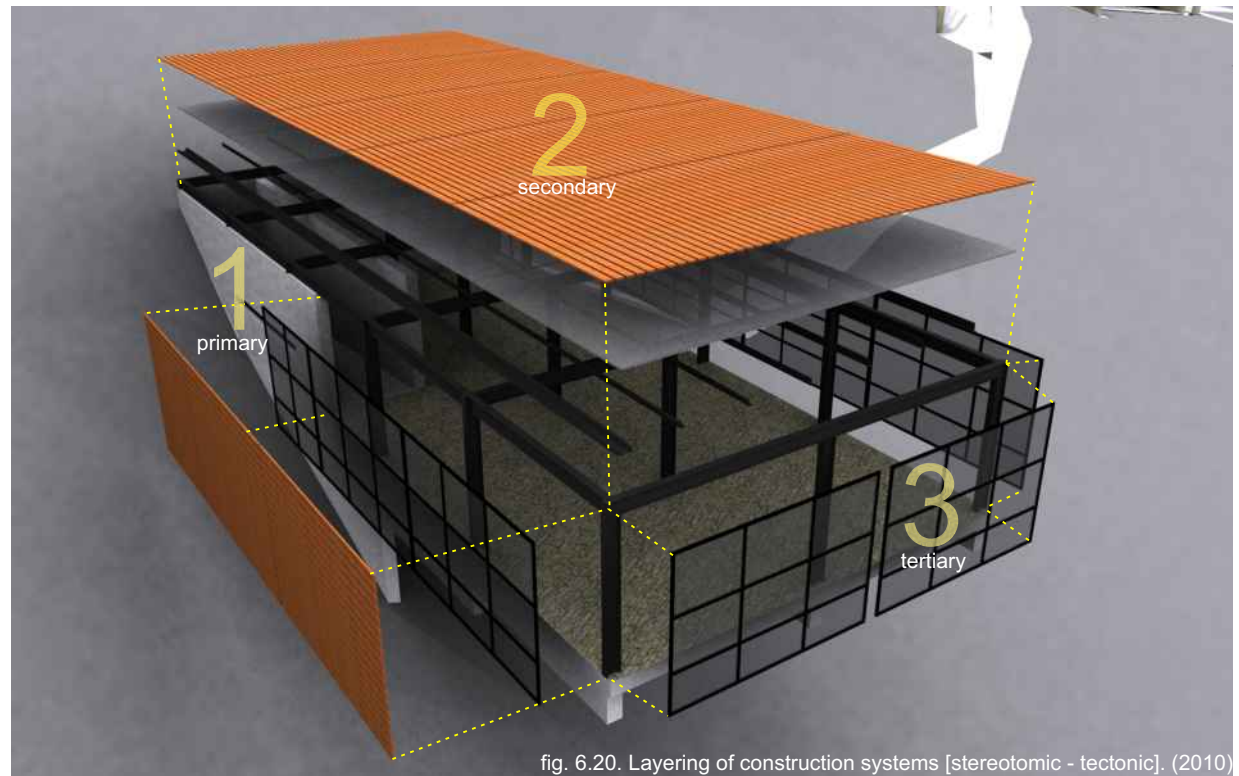


fig. 6.20. Layering of construction systems [stereotomic - tectonic]. (2010)



fig. 6.21. Archaeology Research Centre [stereotomic - tectonic]_material layering, but also building layering in terms of construction poetics. (2010)

DETAILING

The detailing is focused on the principle of the intermediate connection between the stereotomic and tectonic elements.

As discussed earlier, the connection detail of the steel and timber screen at the visitors centre becomes the in-between element. This illustrates that the connection does not belong to the stereotomic element, nor the tectonic element. The connection is therefore an element by itself. It relates to the concept of becoming an intermediate threshold. An element which subtly connects two systems together.

The connection detail of the extension to the canon ramp in the Fort's courtyard, is influenced by the author's earlier study of Carlo Scarpa's, Museo di Castelvecchio, where Scarpa pulled away the new from the existing. This demonstrates that the new structure acknowledges the importance of the existing structure. The new addition does not touch the existing sand stone walls of the Fort. This indicates the sensitivity of the author to the existing structure and the approach to the Fort being the primary monumental artefact. The importance of the Fort is shown through this detailing and the respect of the author towards the historical importance of the Fort.

The visitor will perceive the prominence of the Fort in the landscape and the designed ensemble of the Fort as he moves through the spaces, becoming aware of detailing as he passes from the existing ramp onto the new steel extension.

The ramp extension is done to rehabilitate the Fort's original canon ramp. A certain part of the ramp remains, therefore the visitor will experience the new and existing, but also the ramp as it originally was.

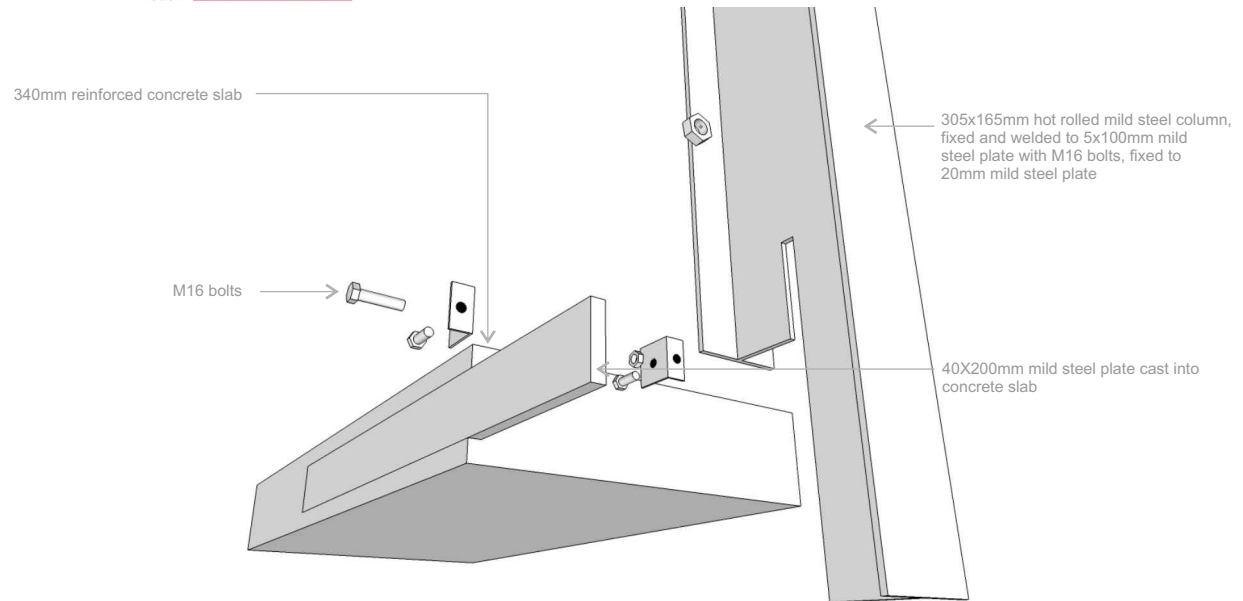


fig. 6.22. Connection detail where tectonic meets stereotomic, the connection becomes the "in between". (2010)

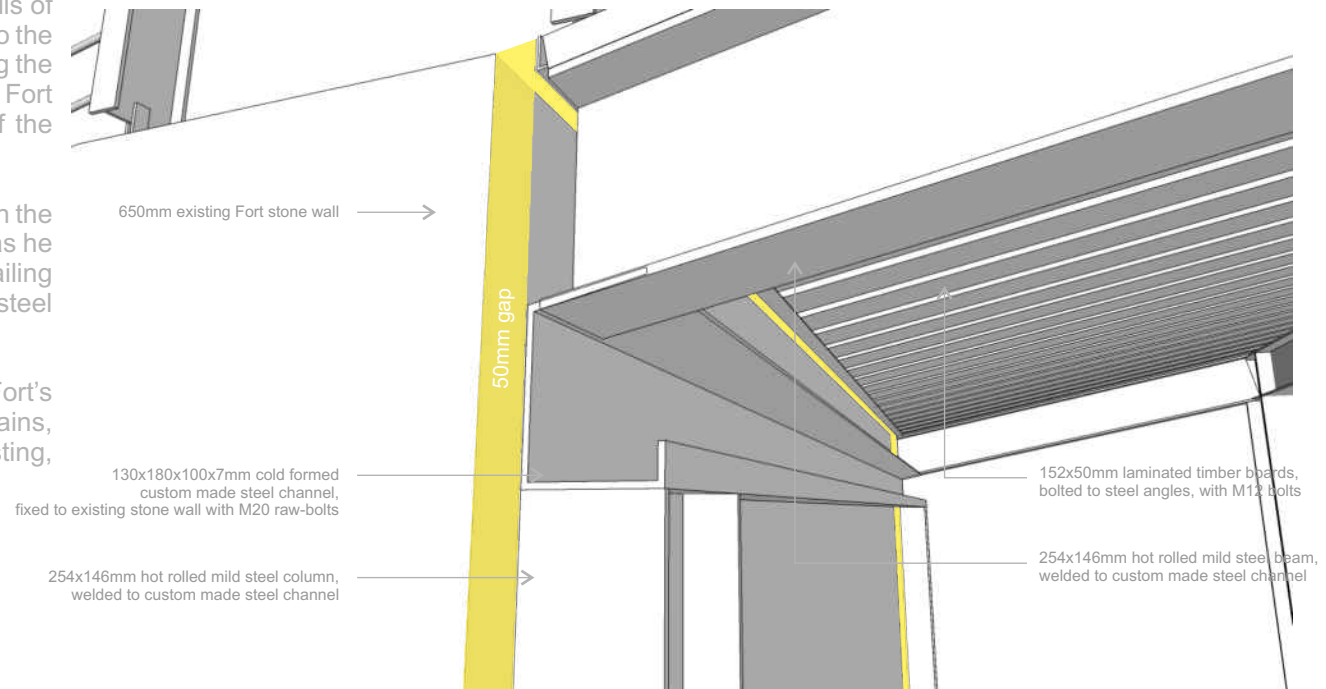


fig. 6.23. Connection detail where new meets existing (Fort). (2010)

SUSTAINABLE SYSTEMS

The buildings will function as a passive system. The idea is that all the buildings will be lit by filtered sun light during the day, either through windows or through light shafts. At night the building will be artificially lit with energy saving lights. The system will also provide natural ventilation.

In fig 6.15, 6.18 and 6.25 it is illustrated that the buildings will be passively ventilated and natural sunlight will enter the buildings. This means that during the day no active systems will be used except for the kitchen and ablutions.

Cold air will enter from below, through the ventilation pipes and into the building, hot air will then rise and exist at the top. In the case of the visitors centre, cold air will enter through the steel and timber screen and the shop front openings. Hot air will then escape through the window openings at the top. The building is two thirds submerged into the landscape, which will also aid in keeping the building cool in summer.

In the case of the archaeological research centre, the cold air will enter the building through an underground ventilation system. The prevailing winds will be directed into a pipe, which is then filtered into the research lab area and auditorium through a series of vents.

The hot air will then escape through the light shaft protruding the landscape above the lab area. This chimney effect will keep the building cool during summer. The light shaft will also provide natural light to filter into the lab area, creating a sustainable working environment.

During the winter months, the ventilation shaft will be closed and hot air will be trapped in the building to ensure a warm working environment. The light shaft will therefore also serve as a ventilation chimney.

The kitchen and ablutions will be artificially lit and therefore contain a suspended ceiling.

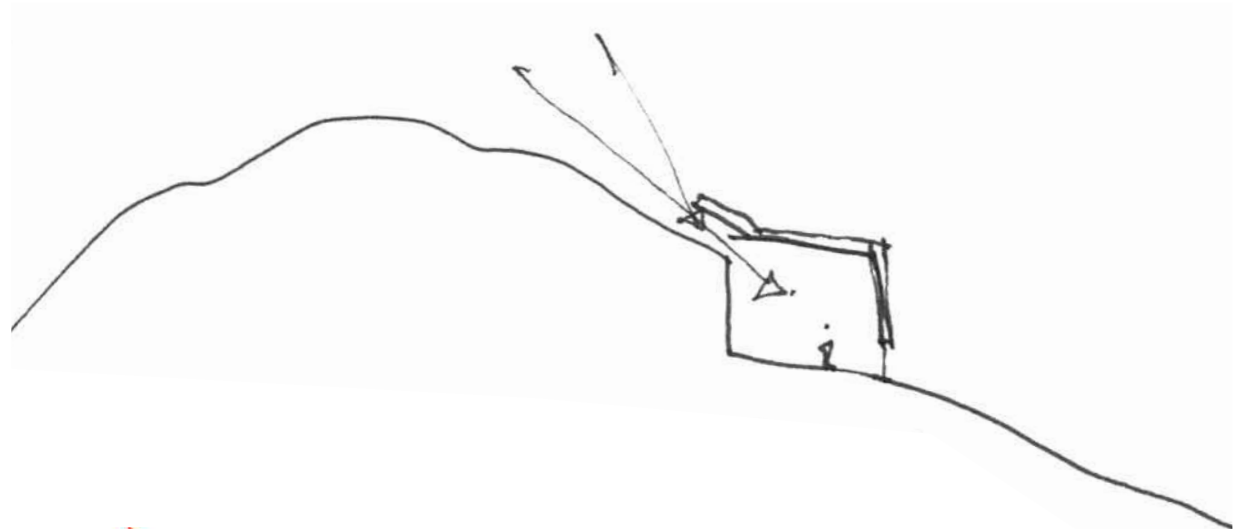


fig. 6.24. Conceptual sketch showing the passive ventilation approach. (2010)



fig. 6.25. Passive ventilation through the Archaeological Research Centre. (2010)

Water collected from the crafts market roof will be used in the local communities' dwellings as grey water to flush toilets and also for irrigation of ornamental and vegetable gardens. This concept also educates the local people about sustainability.

The run-off water from the roofs will be collected in water tanks from where it will then flow into a large underground water storage reservoir. The water will then be reticulated to the various dwellings and used accordingly.

Therefore the local people are connected physically and conceptually to the project and benefit from the project through business opportunities and water preservation.

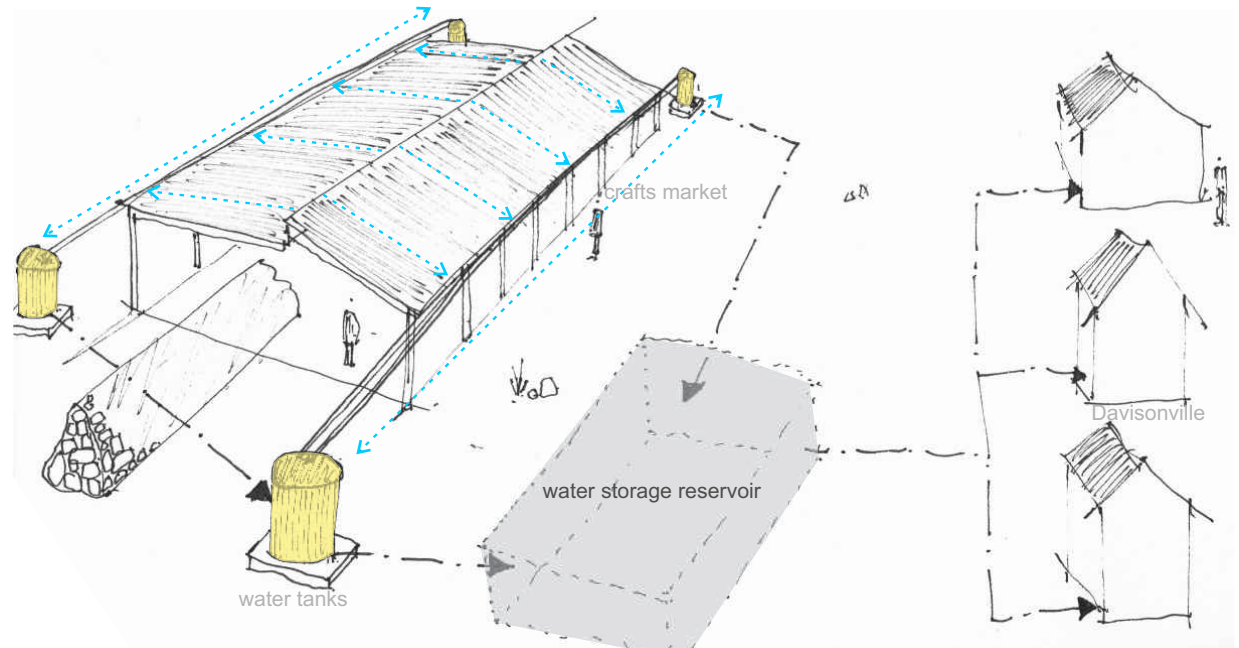


fig. 6.26. Sketch indicating the water collection process. (2010)

LEED

The LEED (Leadership in Energy and Environmental Design) green building certification program encourages and accelerates global adoption of sustainable green building and development practices through a suite of rating systems that recognize projects that implement strategies for better environmental and health performance (2005:4).

LEED is a third-party certification program and the nationally accepted benchmark for the design, construction and operation of high-performance green buildings. LEED gives building owners and operators the tools they need to have an immediate and measurable impact on their buildings' performance. LEED promotes a whole-building approach to sustainability by recognizing performance in five key areas of human and environmental health; sustainable site development, water savings, energy efficiency, materials selection and indoor environmental quality. LEED focuses on the design of the building and not on its actual energy consumption, and therefore it has suggested that LEED buildings should be tracked to discover whether the potential energy savings from the design are being used in practice (*ibid*).

The author used the LEED rating system to “certify” the design dissertation. The eventual rating is a reflection of the design response to sustainability and environmental sensitivity. The rating achieved is therefore an indication of the author’s intent to keeping materials and systems as sustainable and environmentally friendly as possible.

This approach also indicates the author’s sensitivity towards the environment and built environment, but as importantly, the sensitivity towards the site and the Fort as artefact.

The LEED rating achieved by the project is indicated in Appendix A. The dissertation received a Gold LEED rating. Therefore, this means that the project is of a high sustainable standard.

The author chose the LEED rating system as a guide to certain design decisions throughout the design process. The rating system helped the author to make certain choices regarding materials with low emitting VOC’s and adding bicycle parking.

The rating was achieved by comparing the design and design principles to each credit in the LEED checklist. Each credit is awarded for various sustainable approaches and methods used in the project. The author used each credit to score the design accordingly and fairly to the best of his knowledge.

The LEED rating system also rates the building in its construction phases. Therefore, the author made assumptions to what materials he will use. The materials with the lowest emitting VOC’s will be used. The stone that will be used for the dry packed stone walls will be stone collected on site.

This then ensures that a low embodied energy is generated and scores highly on the LEED rating system.

It is therefore concluded that the author used the LEED rating system as a guide in the design process to making sustainable design decisions, but also using it as a tool to assess the design decisions made. The rating achieved is a reflection of design decisions made, but also assumptions made by the author.

In the LEED rating system checklist, credit 8.1 describes the requirements to attain the specific credit; “to provide for the building occupants a connection between indoor spaces and the outdoors through the introduction of daylight and views into the regularly occupied areas of the building.”

Therefore it is noted that the author addressed this matter in the project to attain the credit.

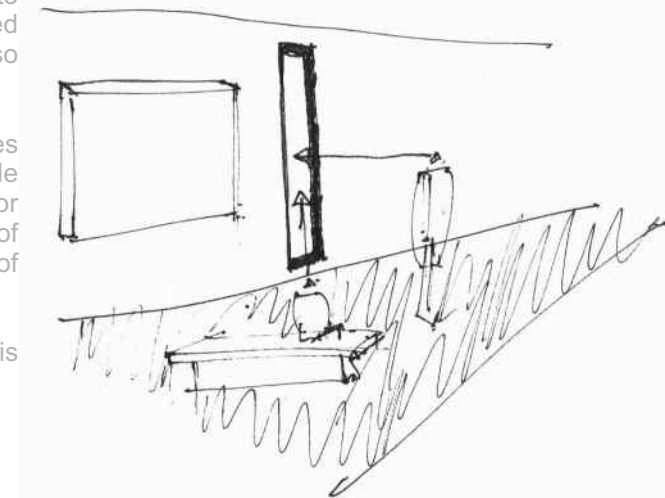


fig. 6.27. Sketch indicating the concept of the LEED credit 8.1 - Daylight & Views . (2010)

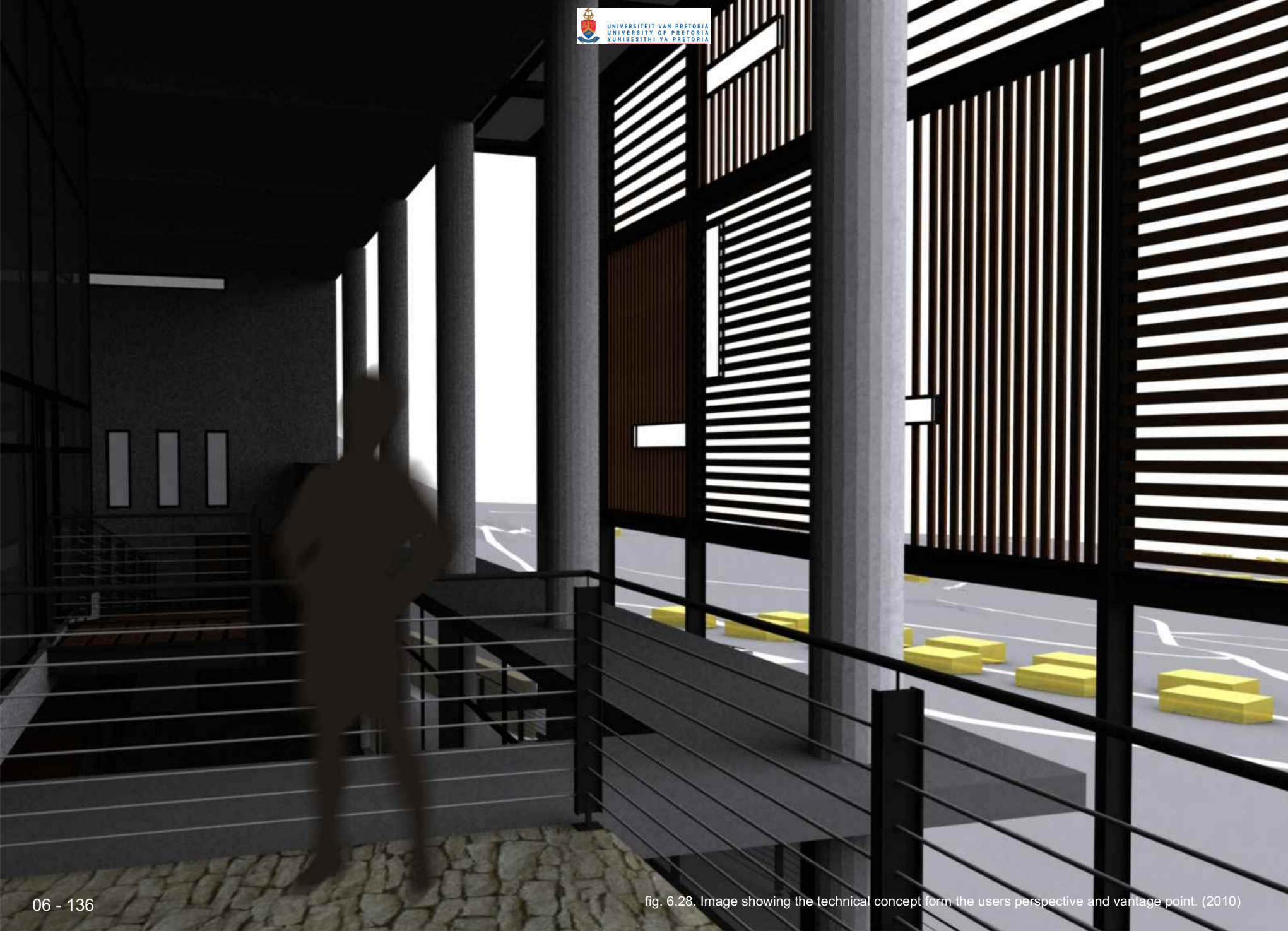
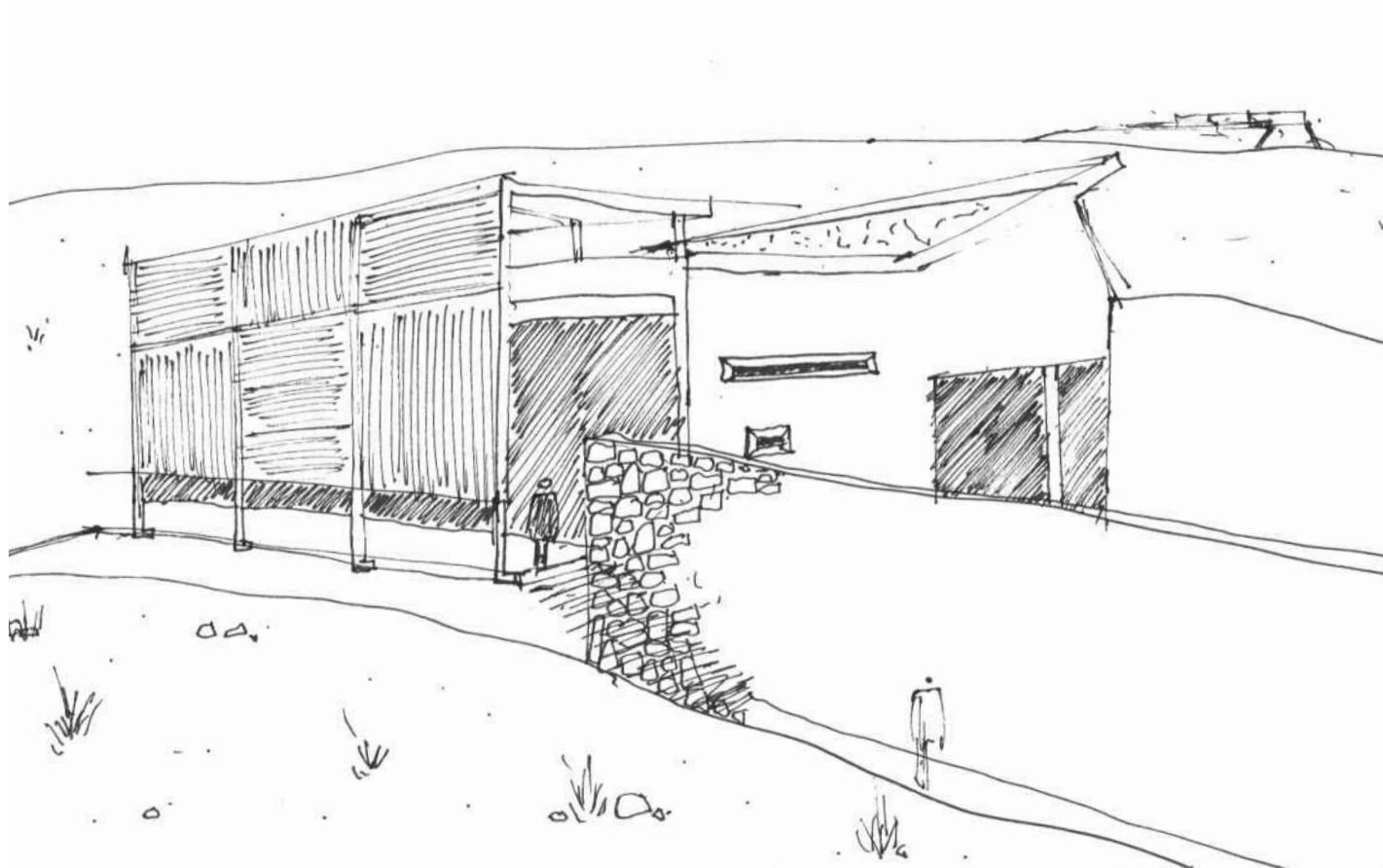




fig. 6.29. Interior view of library area, with the city scape becoming the backdrop view. (2010)

07

Conclusion



+ Conclusion

The design has attempted to create an awareness to the public in experiencing the West Fort and its relationship to the other Fortifications in Pretoria as an artefact and monument. The visitor's experience of moving through the landscape also functions as a didactic historical narrative.

The architectural problem is therefore resolved by the author by facilitating the interaction of the visitor and Fort. The visitor is constantly aware of the historical context and the various exhibition spaces in the landscape as didactic elements, creating thresholds and encouraging further exploration.

The design essentially is a response to the three-way relationship of the visitor, archaeological practice and most importantly the Fort itself in the landscape. The buildings allude to the Fort in a subtle, but symbolic manner, through exploration and integration of architectural typology and landscape.

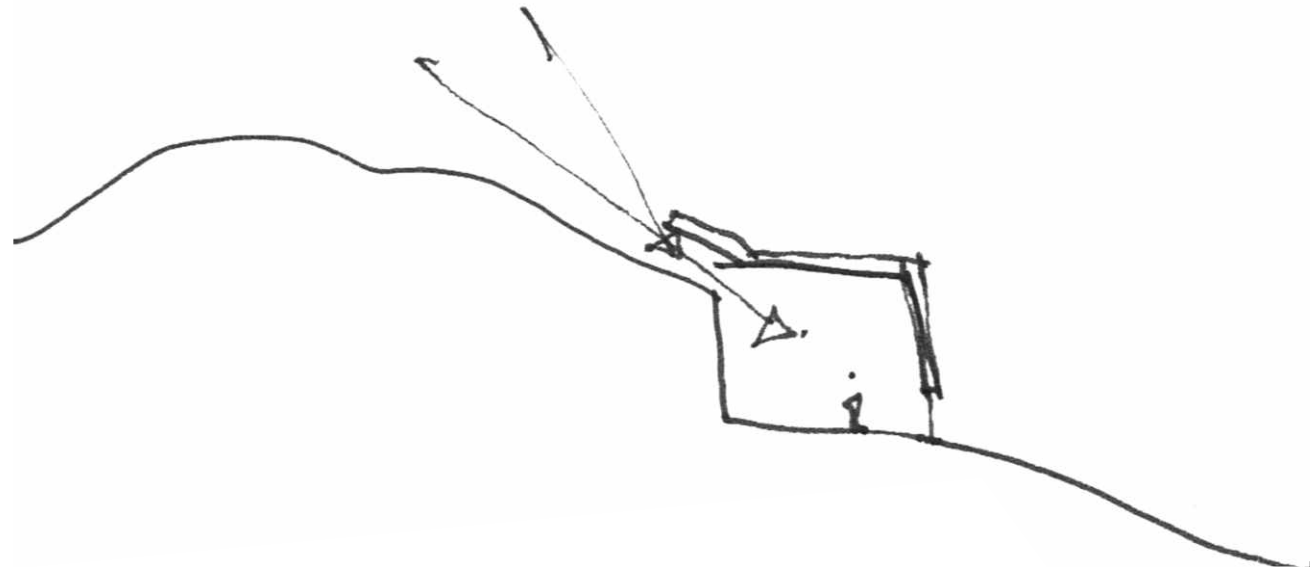
To conclude, the new buildings respond to the architecture in ruins (the Fort) and also influence each visitor in a unique manner. They respond to the landscape and contribute to the contextual language. Eventually the new buildings will also become ruins - both structurally, architecturally and symbolically.



fig. 7.1. Entrance to West Fort. (2010)

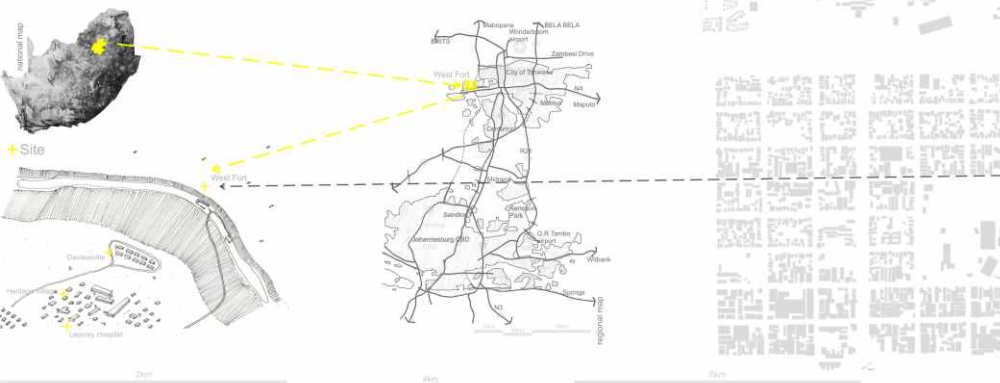
08

Drawings



ARCHITECTURE IN RUINS

A Visitors + Archaeological Research Centre

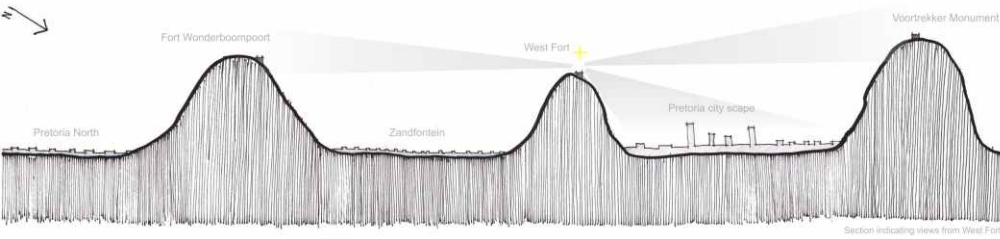


views observed through experience



Concept 1 - The notion of '90s being an archive structure housing a museum
Concept 2 - Historical layering, history and physical layering experiences
Concept 3 - Clustering views of history, historical sites

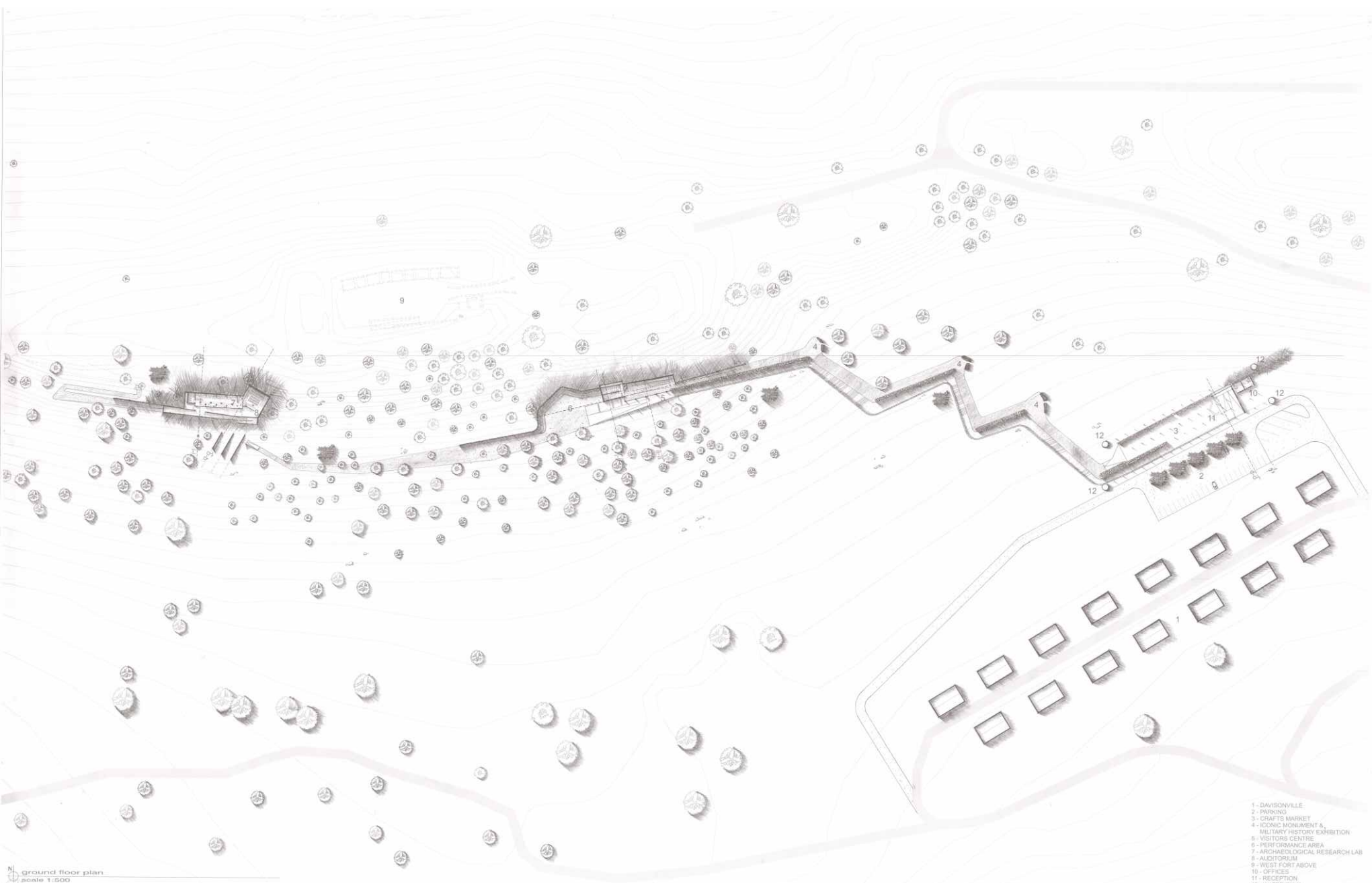
a road to discovery



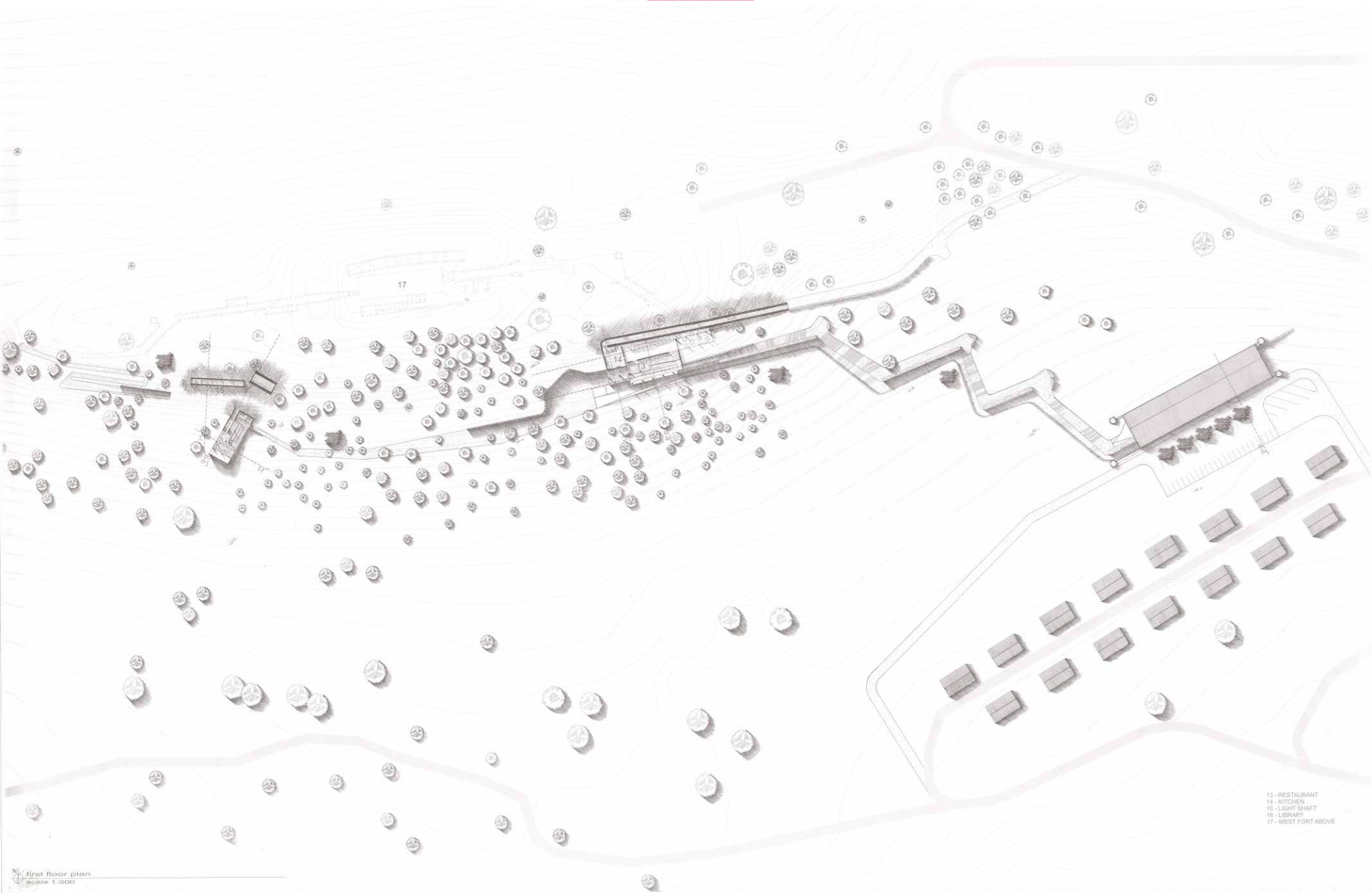
Section indicating views from West Fort





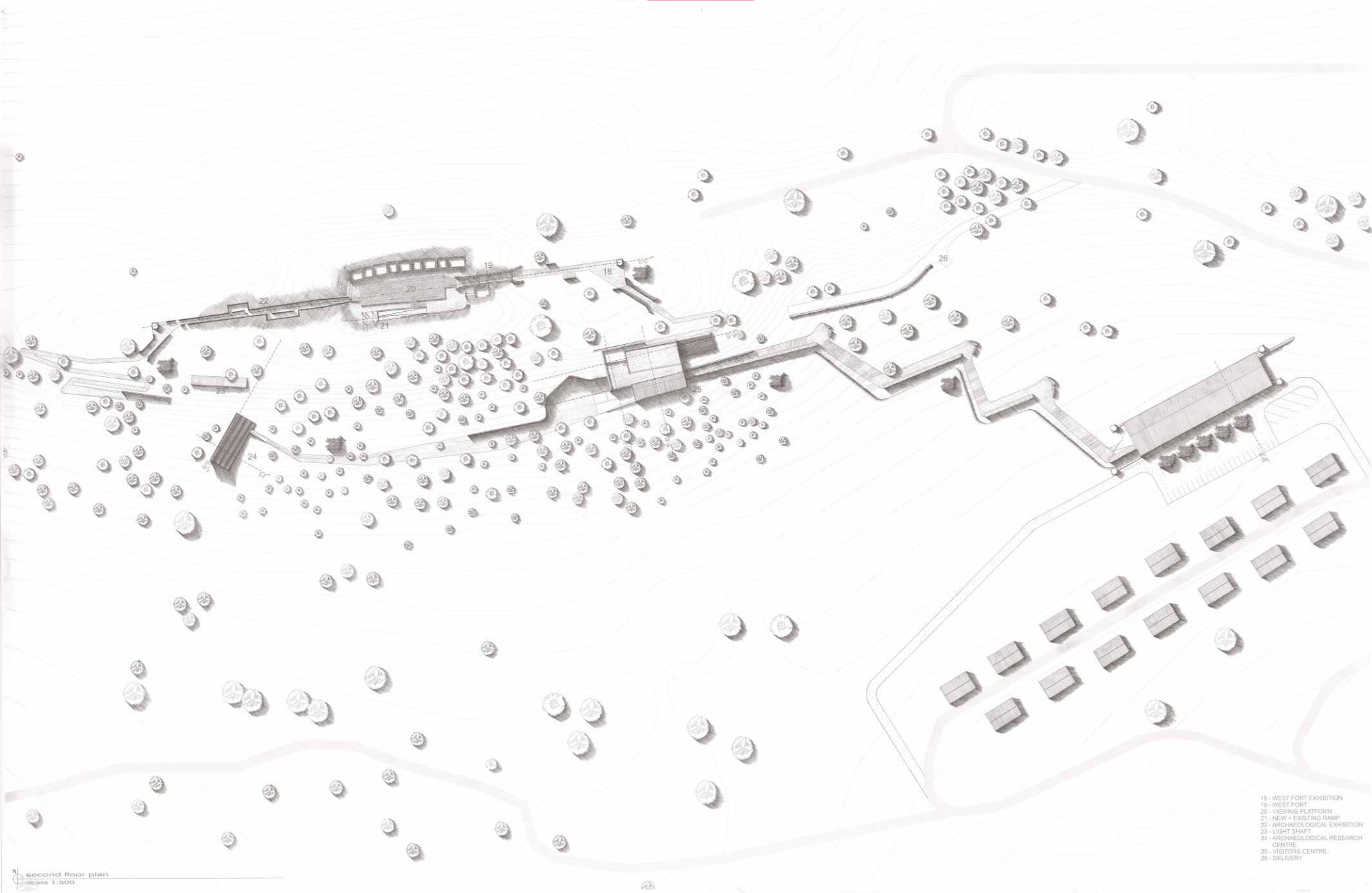


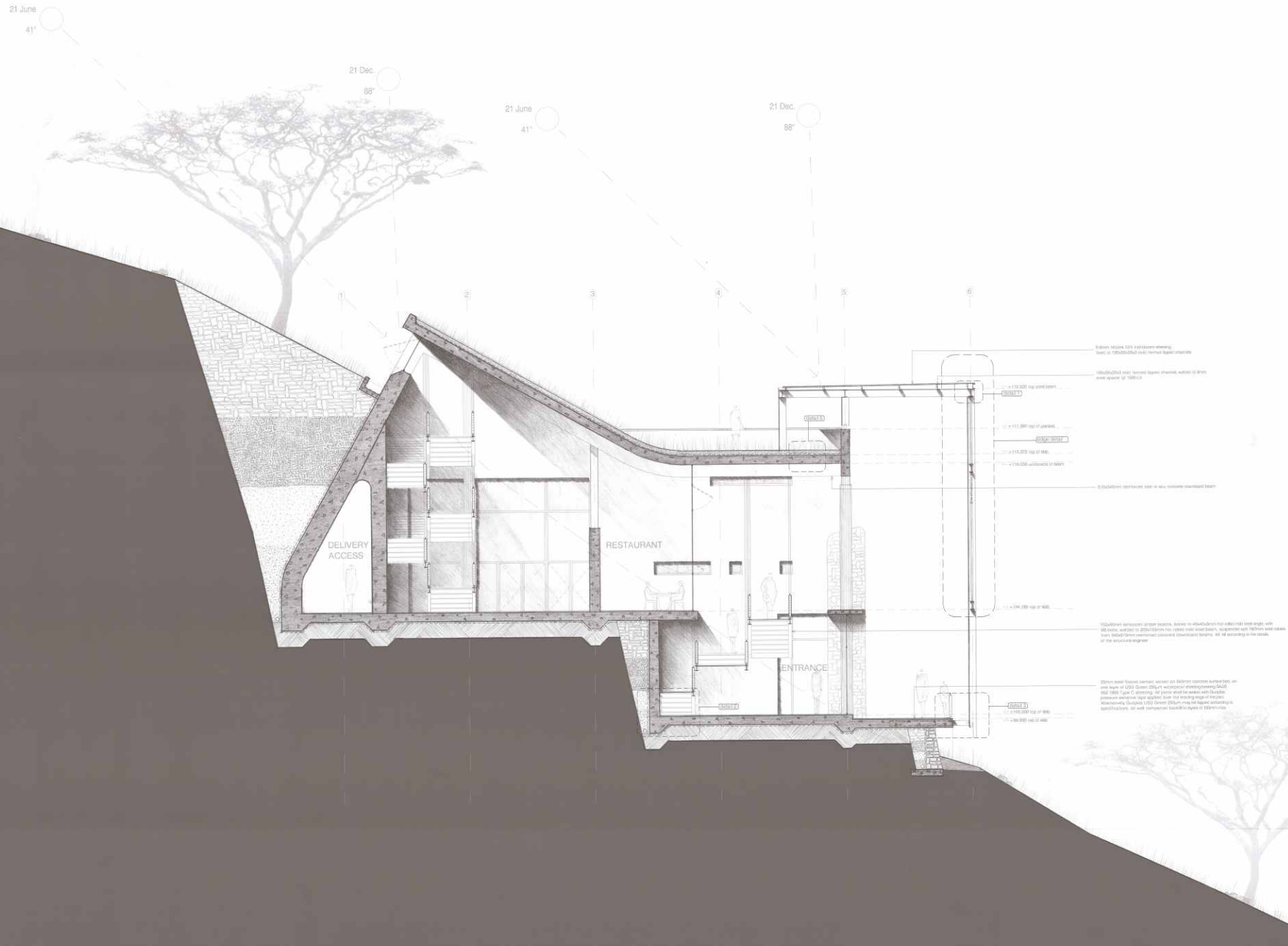
- 1 - DAVISONVILLE
- 2 - PARKING
- 3 - CRAFTS MARKET
- 4 - ISAC MONUMENT & MILITARY HISTORY EXHIBITION
- 5 - VISITORS CENTRE
- 6 - PERFORMANCE AREA
- 7 - ARCHAEOLOGICAL RESEARCH LAB
- 8 - AUDITORIUM
- 9 - WEST FORT ABOVE
- 10 - OFFICES
- 11 - RECEPTION
- 12 - WATER TANK



13 - RESTAURANT
14 - KITCHEN
15 - LIGHT SHAFT
16 - LIBRARY
17 - WEST PORT ABOVE

first floor plan
scale 1:600

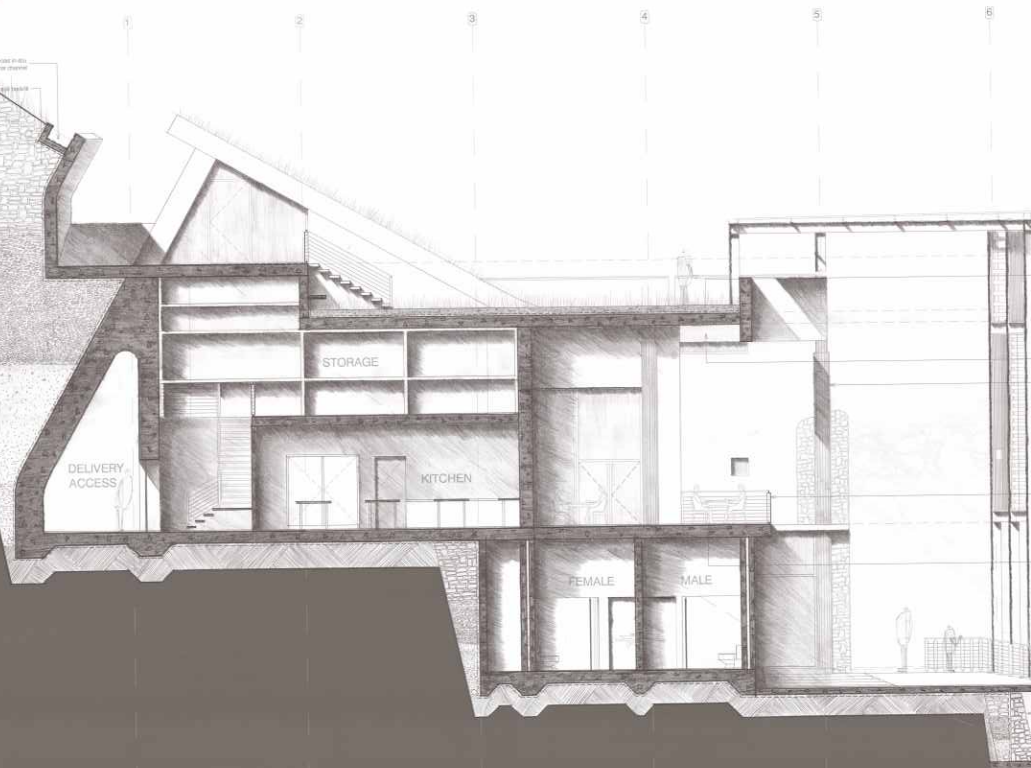
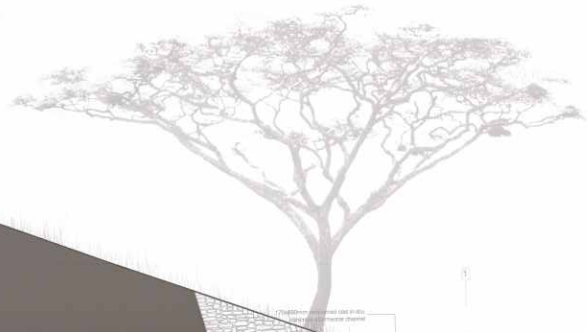




section aa
scale 1:50



section bb
 scale 1:50



DELIVERY ACCESS

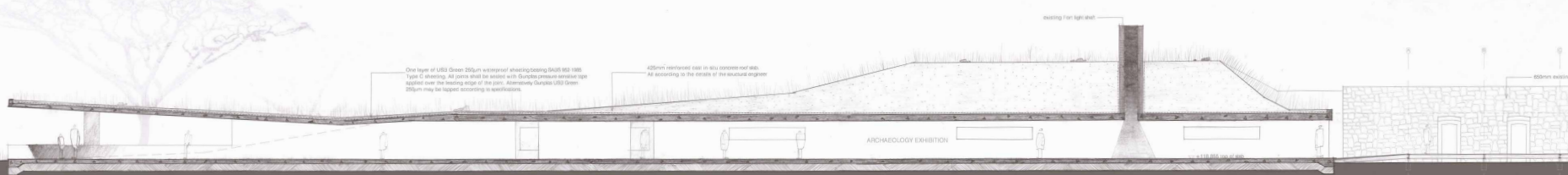
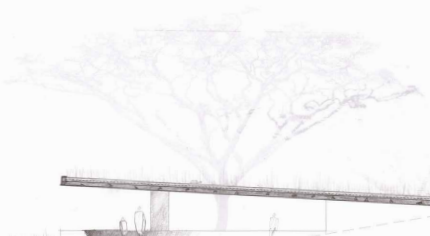
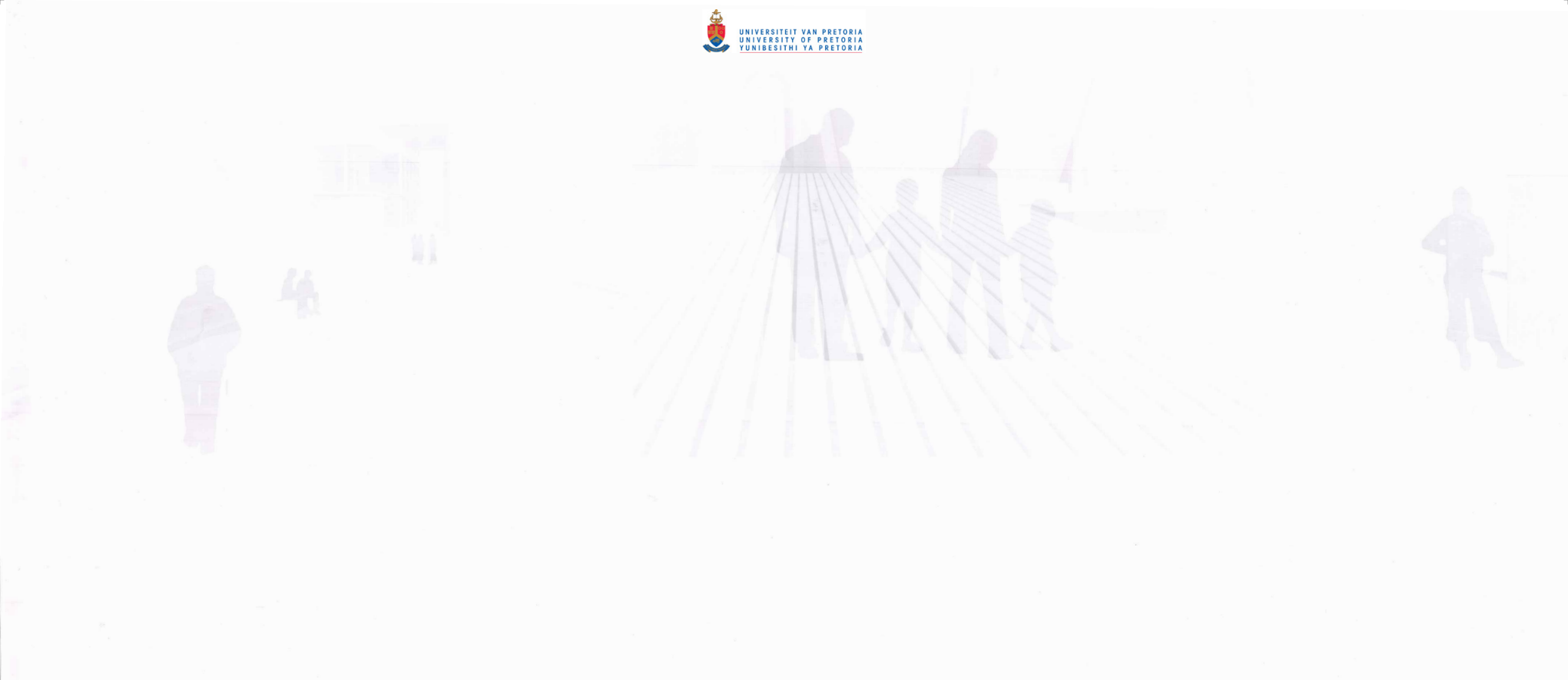
STORAGE

KITCHEN

FEMALE

MALE

- +111,000 top of slab
- 400mm mechanical slab on 150mm concrete and steel. Waterproofing according to specs. All according to the details of the structural drawings
- +110,250 top of slab
- +100,250 extension of floor
- 300mm concrete slab on 150mm concrete and steel
- 400mm mechanical slab on 150mm concrete and steel
- +100,000 top of slab
- 100mm brick wall on 200mm concrete slab on 150mm concrete and steel. Base of 1200mm brick wall waterproofing according to specs and waterproofing details in terms of drawings.
- +100,000 top of slab
- 100mm brick wall on 200mm concrete slab on 150mm concrete and steel. Base of 1200mm brick wall waterproofing according to specs and waterproofing details in terms of drawings.



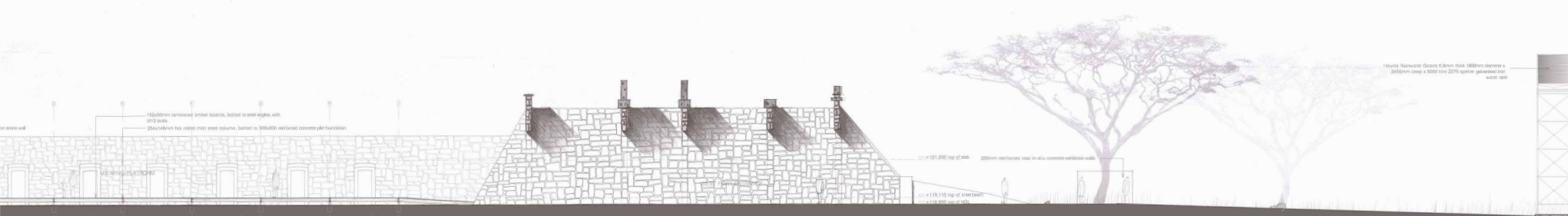
One layer of UBS Green 250um waterproof sheeting (BSR 903-180)
Type C sheeting. All joints shall be sealed with Guplex pressure sensitive tape
applied over the meeting edge of the joint. Assembly Details UBS Green
250um may be tapped according to specifications.

425mm reinforced concrete in situ concrete roof slab.
All according to the details of the structural engineer

existing fire light well

600mm existing

ARCHAEOLOGY EXHIBITION

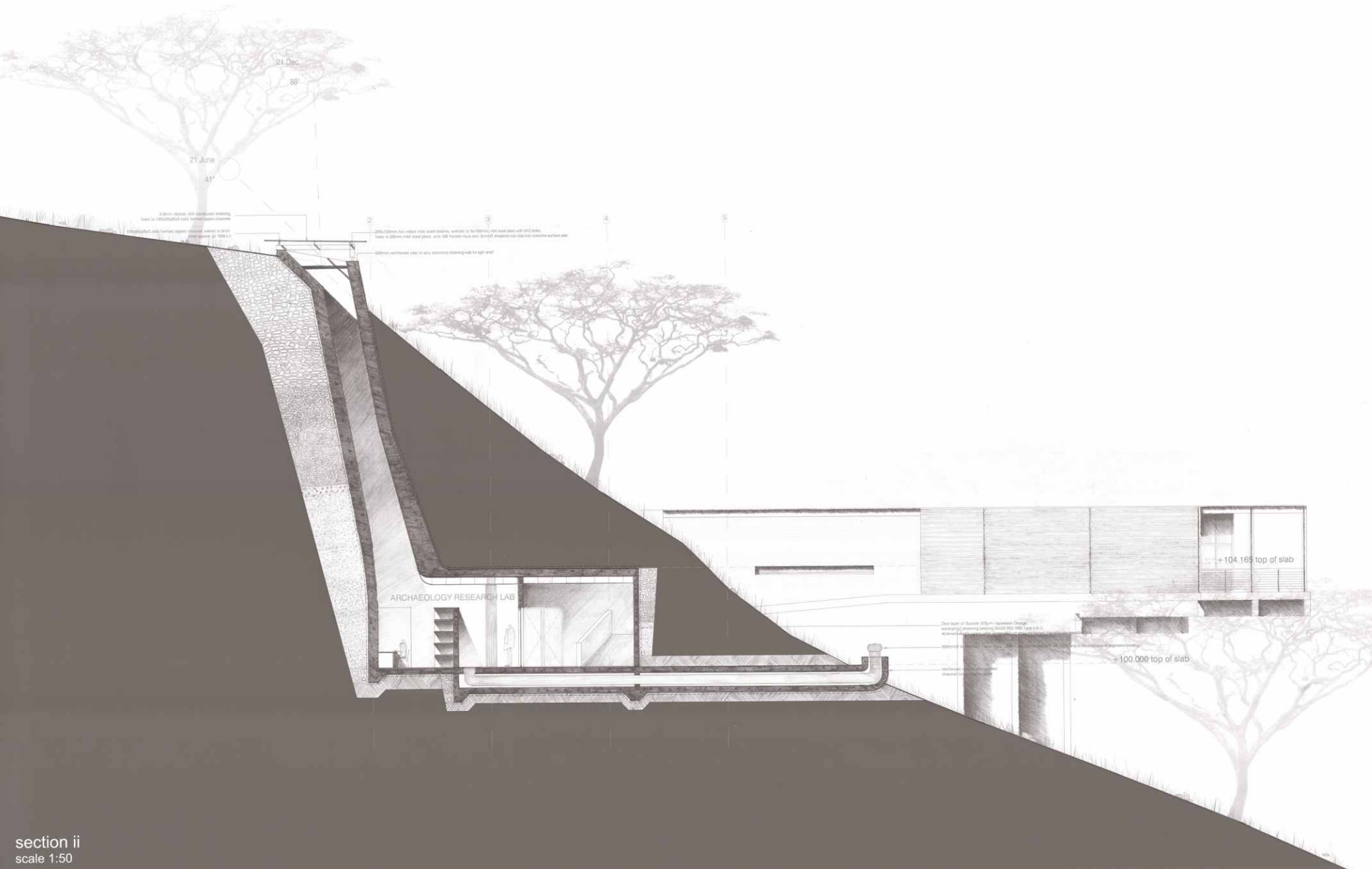


1300mm laminated timber beams, fixed to steel angles, with 402 bricks
254x140mm hot rolled mild steel columns, bolted to 300x300 reinforced concrete pile foundation

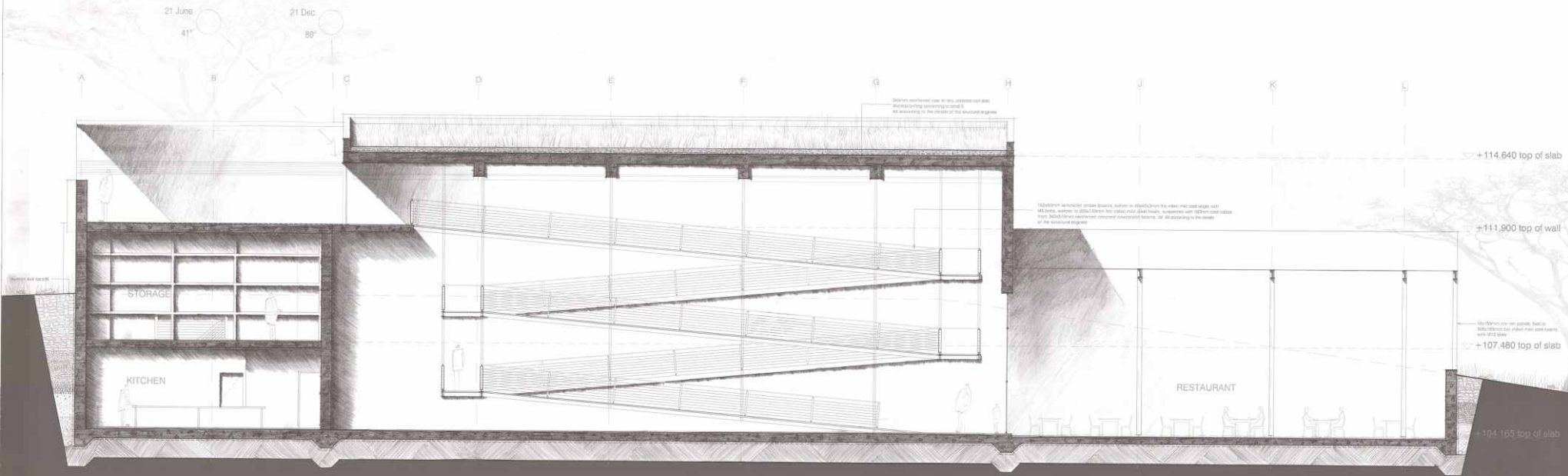
±121.200 top of 400 200mm reinforced steel for all concrete wall/beam end

±118.110 top of steel column
±118.020 top of 400

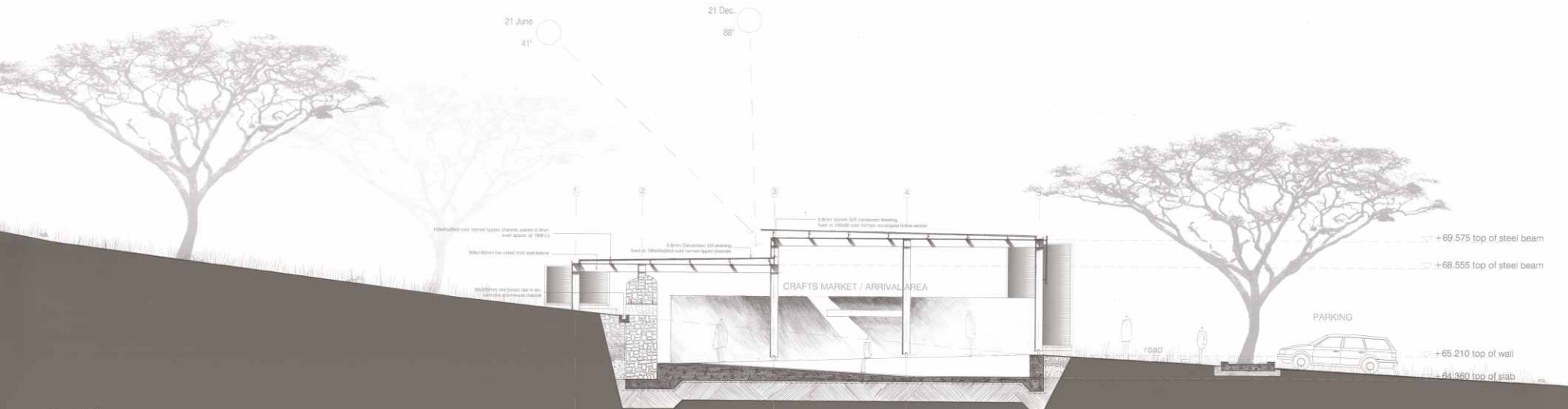
1800x1800mm doors 50mm thick 1800mm diameter x 1800mm deep x 5000 litre 2014 stainless galvanneal hot water tank



section ii
scale 1:50

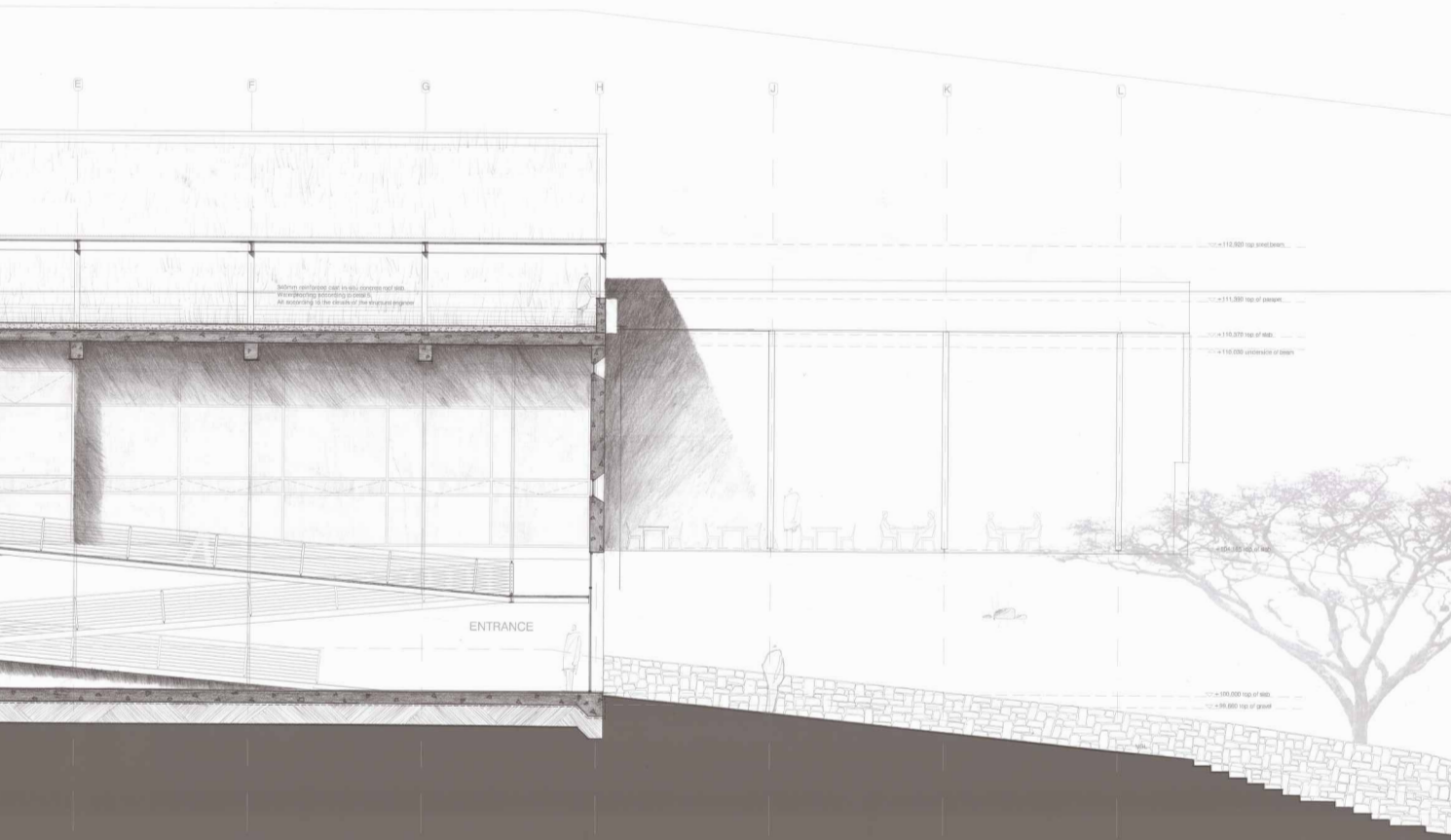


section gg
scale 1:50

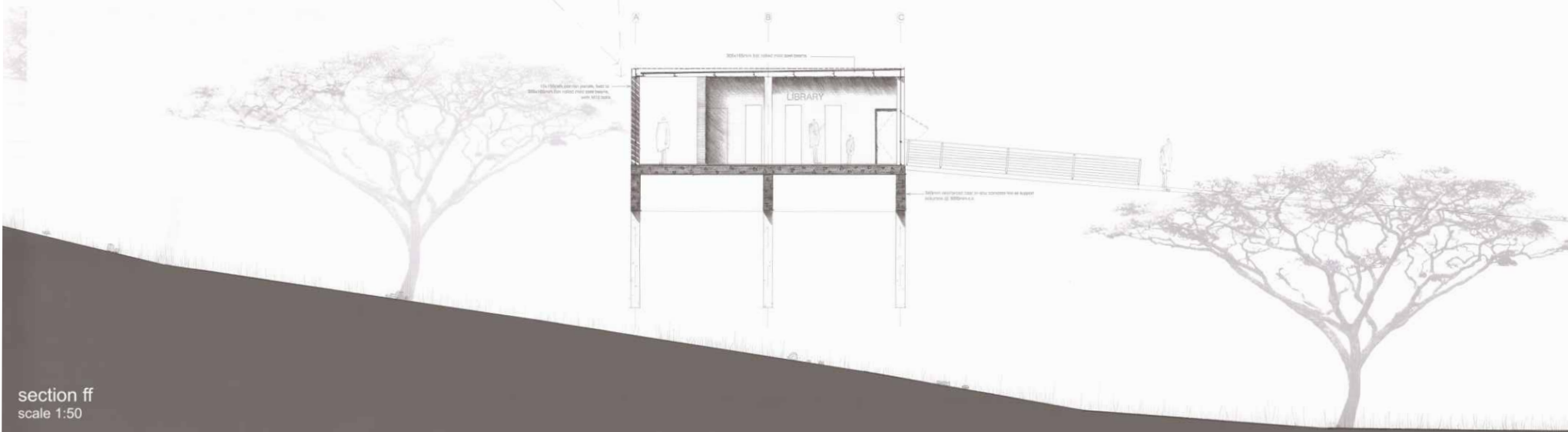


section dd
scale 1:50

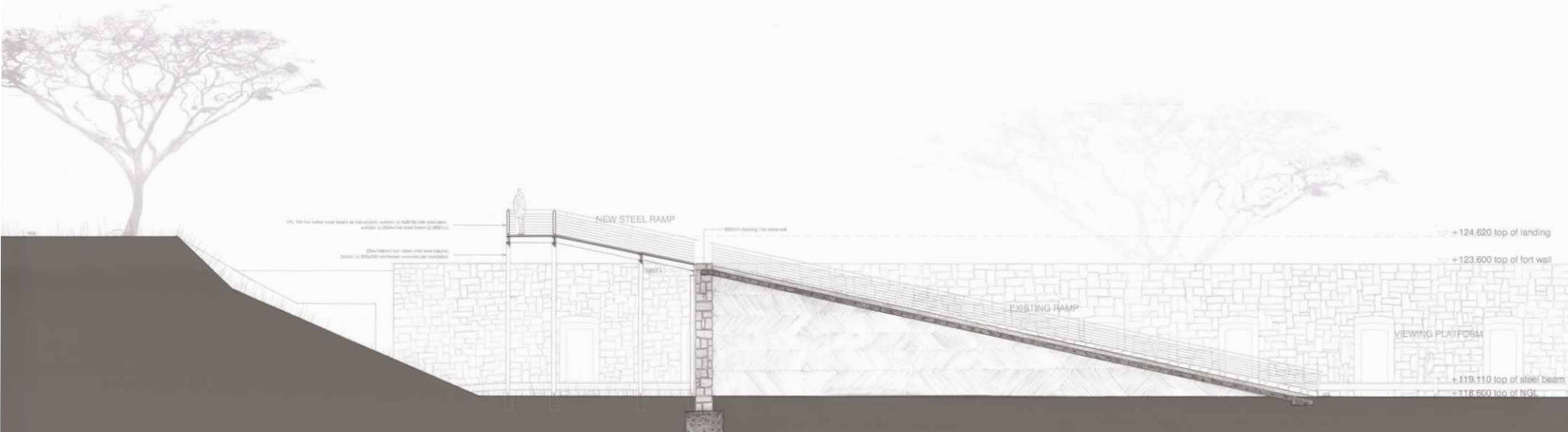




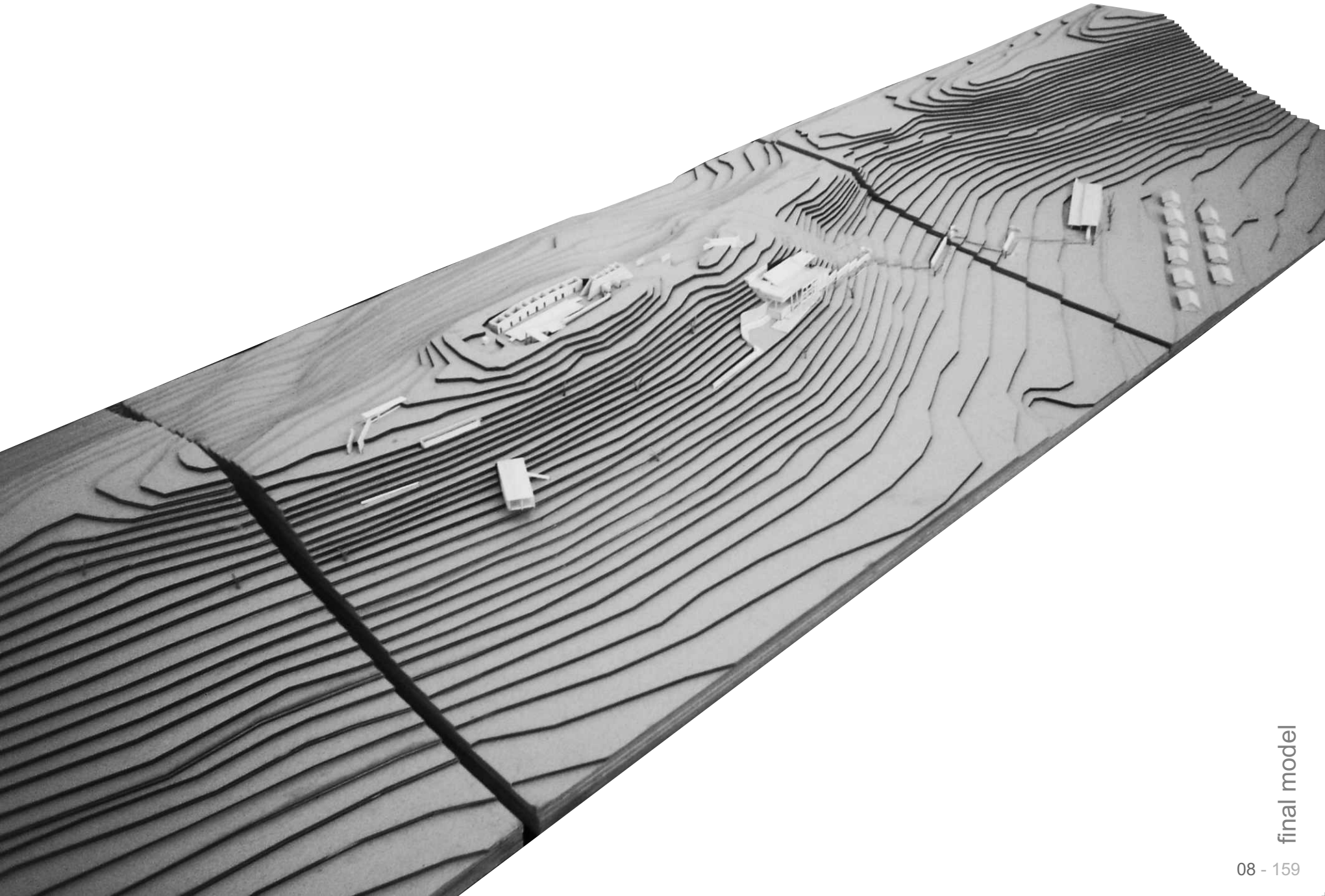
21 Juno 41°
21 Dec. 88°



section ff
scale 1:50



section hh
scale 1:50

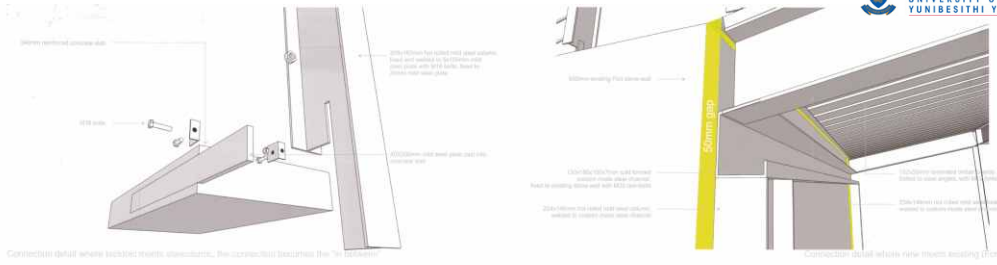






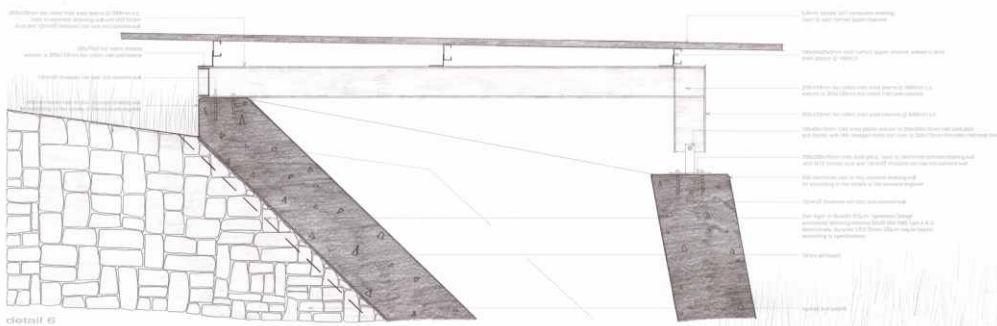






Connection detail where window meets stone wall, the connection is shown in section

Connection detail where new stone meeting frame



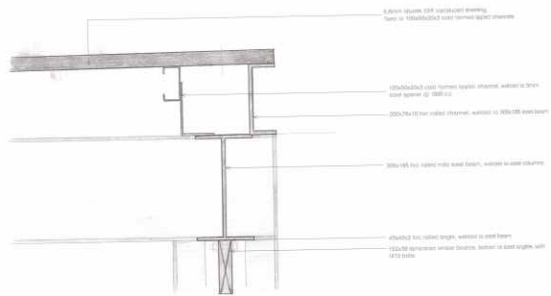
detail 6
scale 1:10



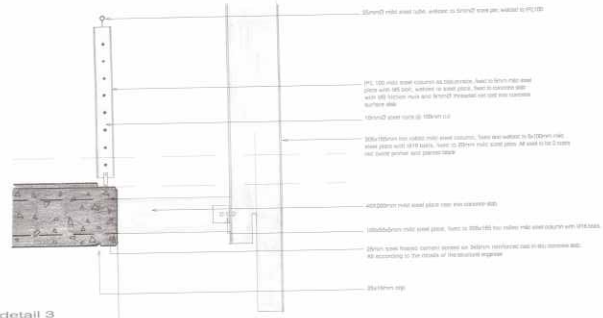
Evolution of facade design



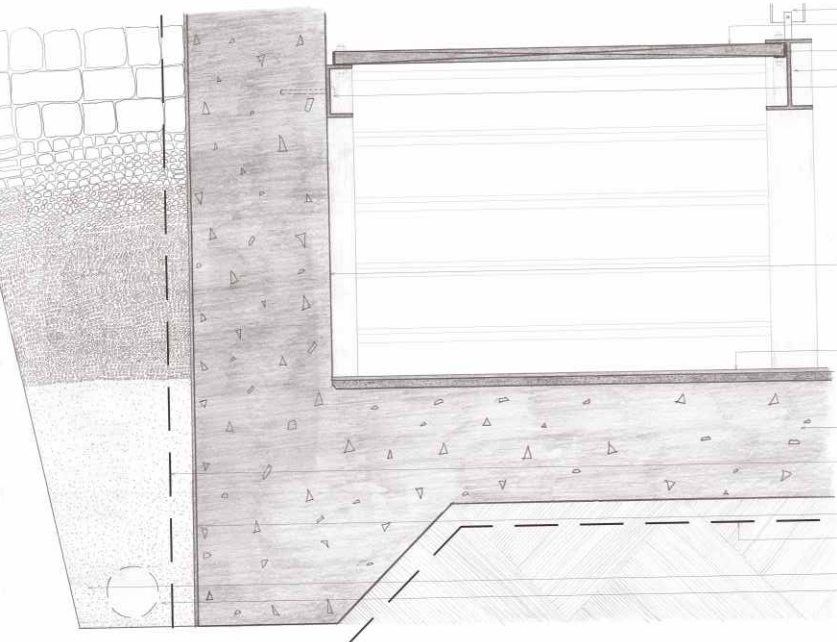
perspective section dd



detail 1
scale 1:5



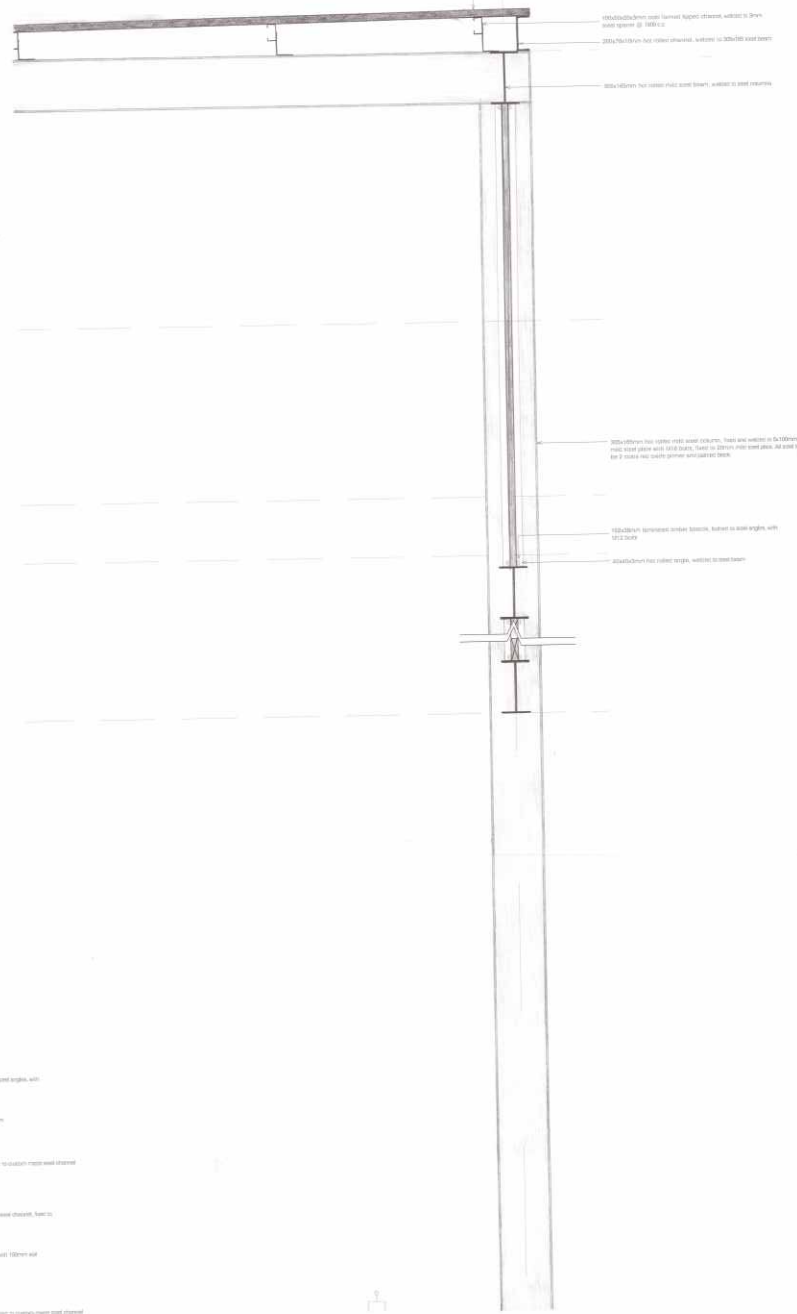
detail 3
scale 1:10



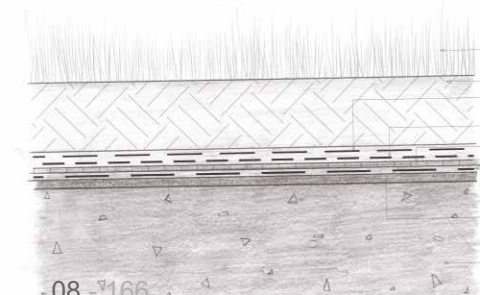
detail 2
scale 1:5



detail 4
scale 1:5



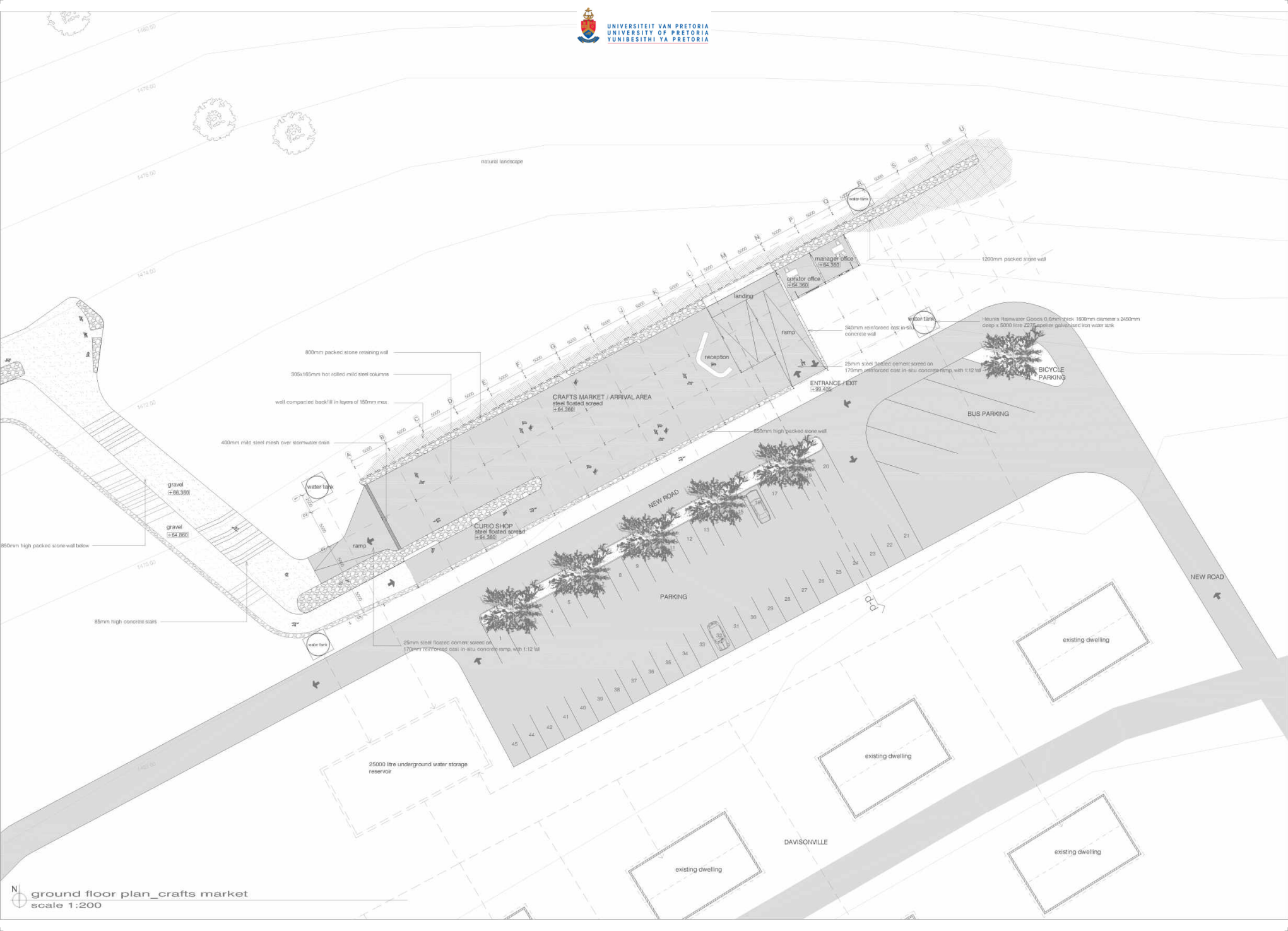
edge detail 1
scale 1:10

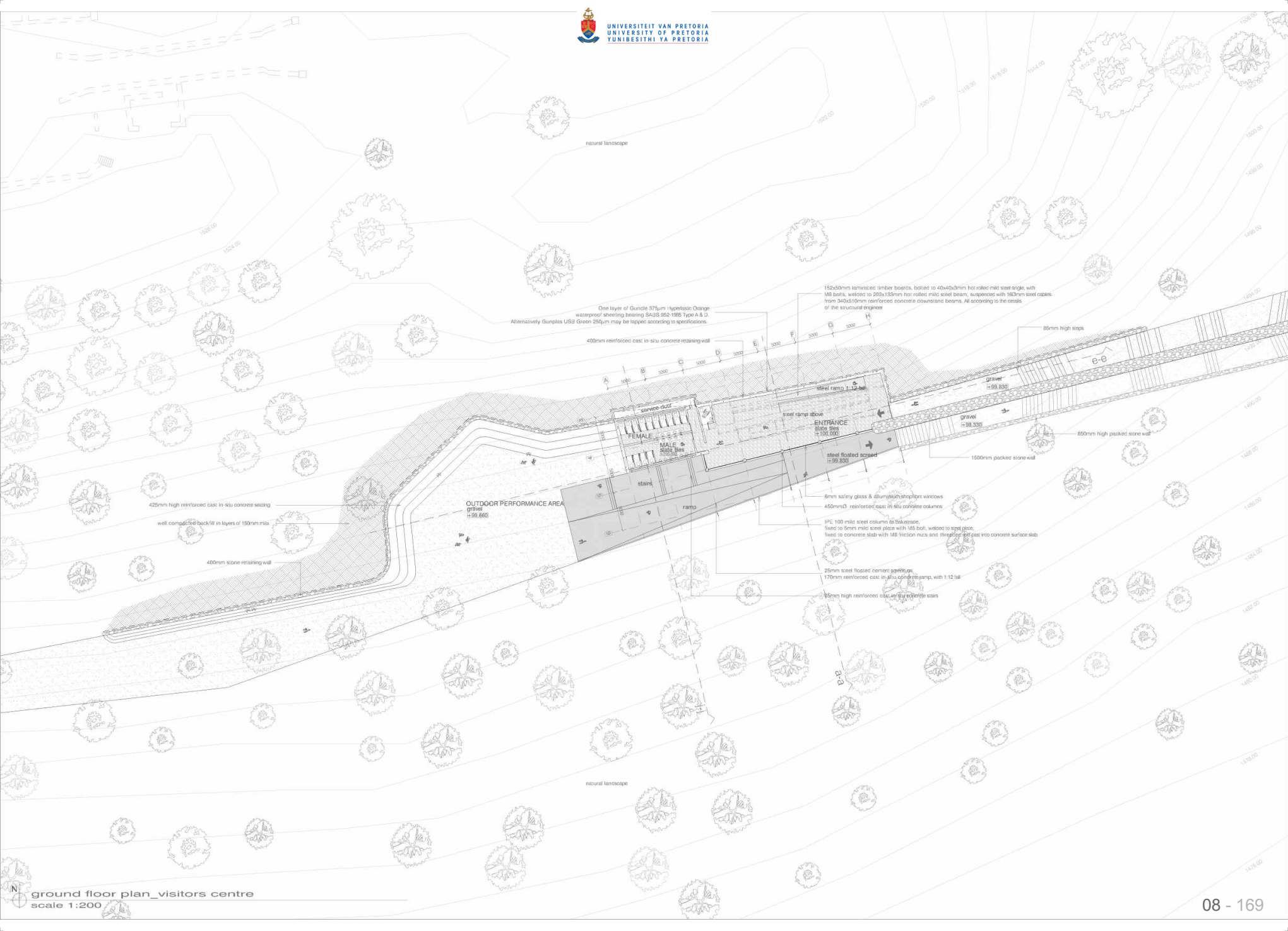


detail 5

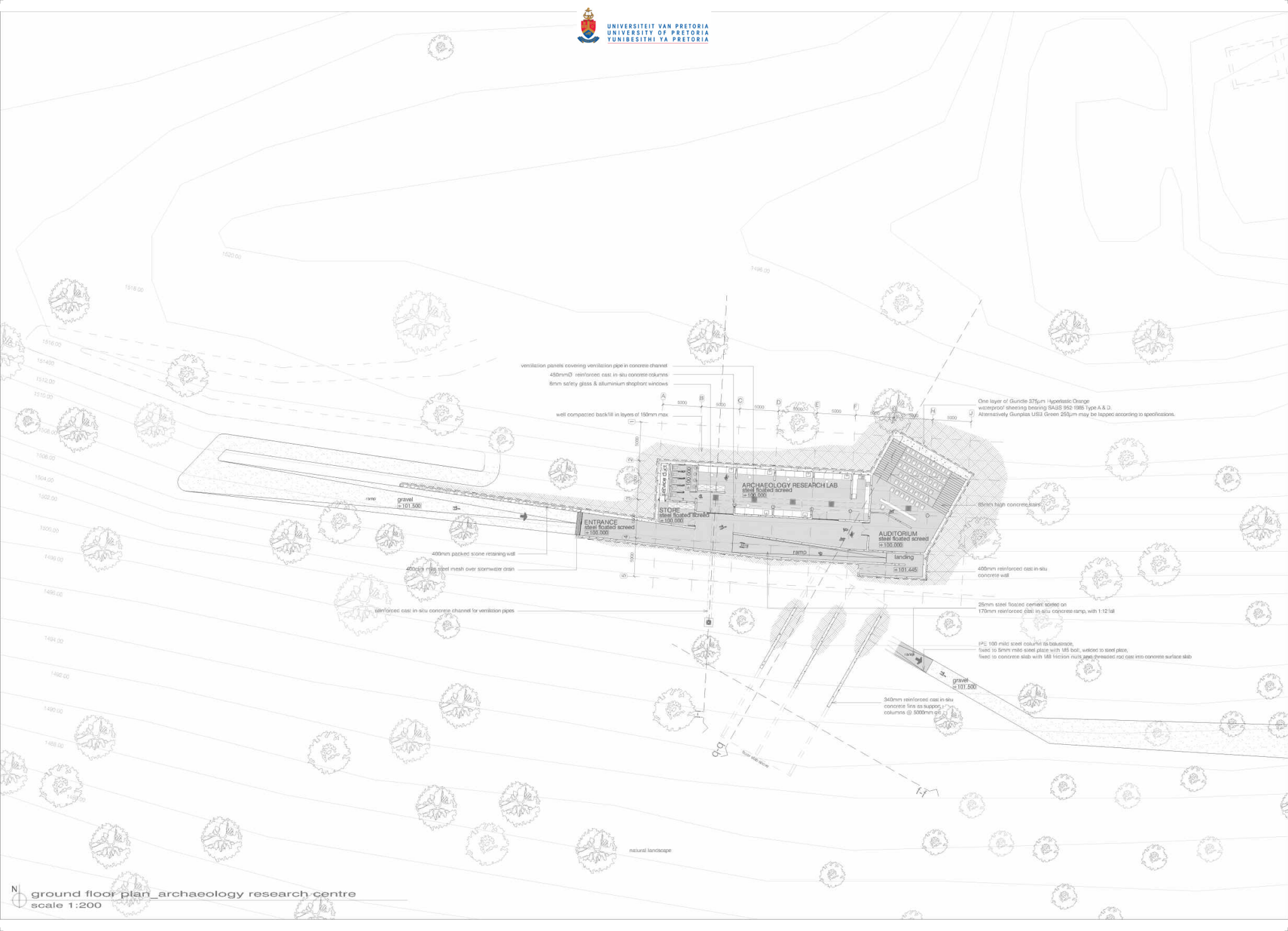
08-166







ground floor plan_visitors centre
scale 1:200



ventilation panels covering ventilation pipe in concrete channel
450mmØ reinforced cast in situ concrete columns
8mm safety glass & aluminium shopfront windows
well compacted backfill in layers of 150mm max

One layer of Guritide 375µm Hypertestic Orange waterproof sheering bearing SABS 952:1985 Type A & D. Alternatively Gumpies US3 Green 250µm may be tapered according to specifications.

ENTRANCE
steel floated screed
= 101.000

STORE
steel floated screed
= 100.000

ARCHAEOLOGY RESEARCH LAB
steel floated screed
= 102.000

AUDITORIUM
steel floated screed
= 101.448

180mm high concrete wall

400mm reinforced cast in situ concrete wall

25mm steel floated cement screed on 170mm reinforced glass in situ concrete ramp with 1:12 fall

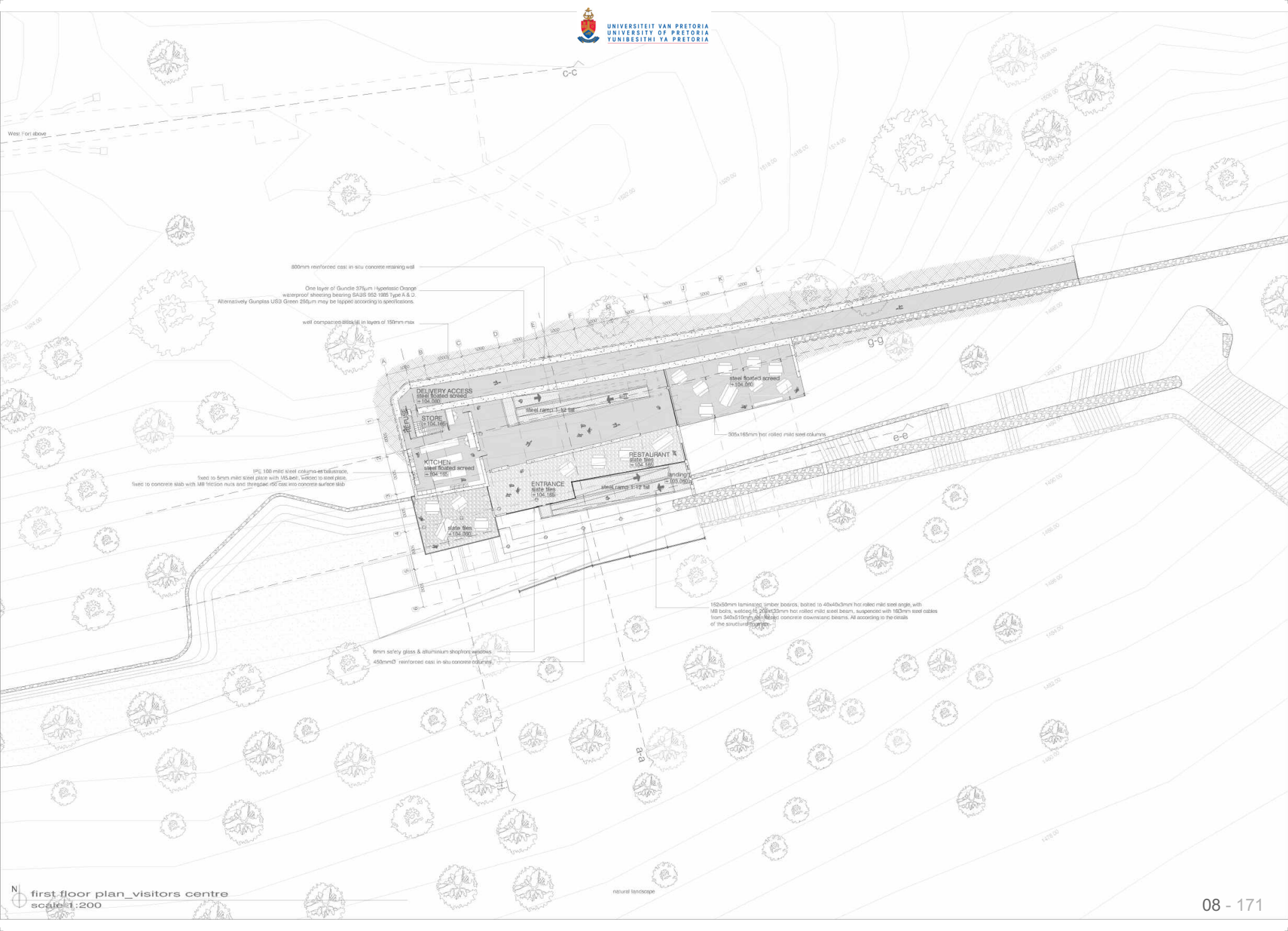
IP: 100 mild steel column/ribs as balustrade, fixed to 8mm mild steel plate with M5 bolt, welded to steel plate, fixed to concrete slab with 148 friction nuts and threaded rod cast into concrete surface slab

340mm reinforced cast in situ concrete line as supporting columns @ 5000mm g.c.

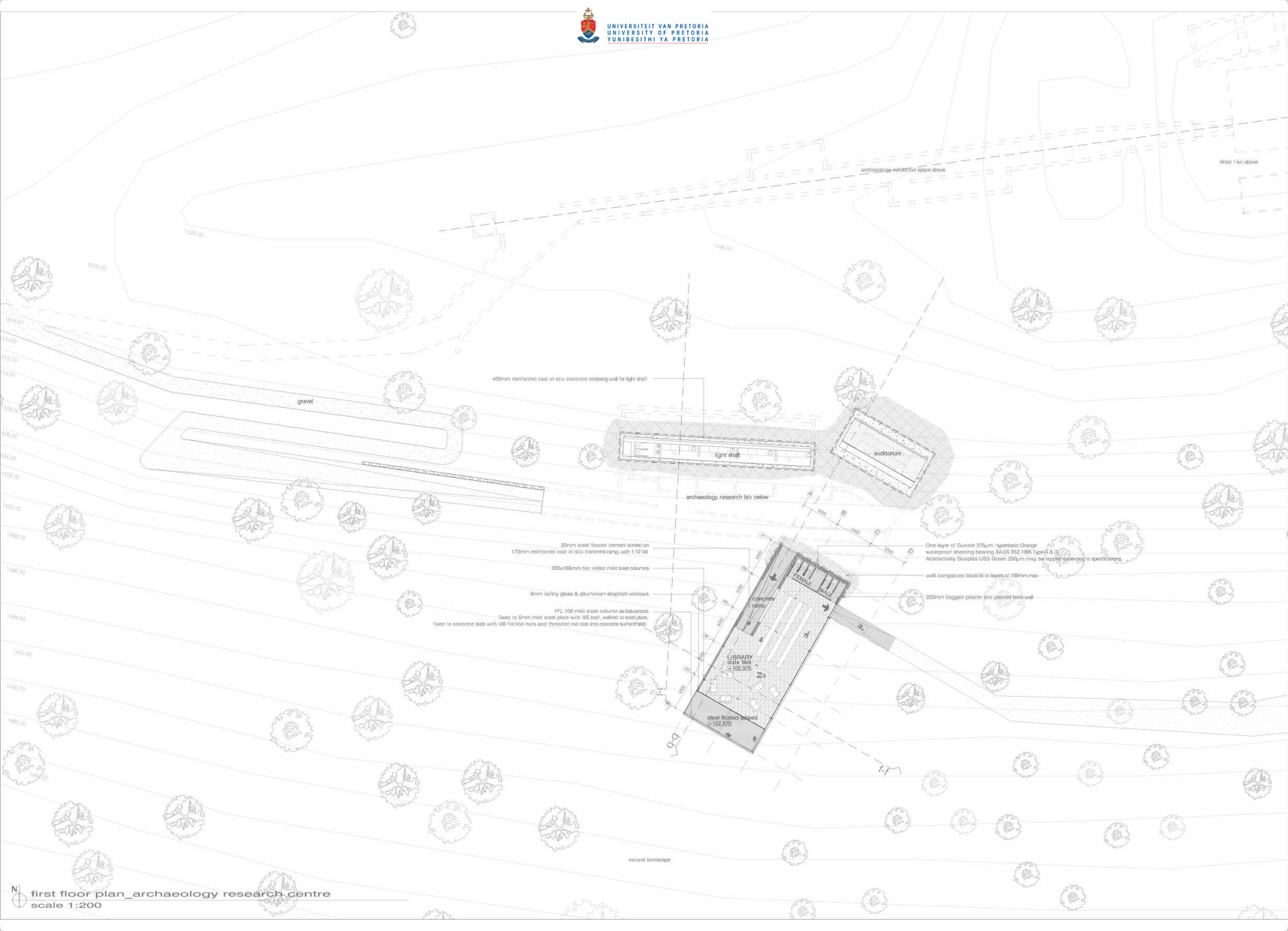
gravel
= 101.500

natural landscape

ground floor plan archaeology research centre
scale 1:200



first floor plan_visitors centre
scale: 1:200



archaeology-exhibition space above

West For above

400mm reinforced cast in-situ concrete retaining wall for light shaft

gravel

light shaft

auditorium

archaeology research lab below

25mm steel floated cement screed on 170mm reinforced cast in-situ concrete ramp, with 1:12 fall

305x165mm hot rolled mild steel columns

6mm safety glass & aluminium shopfront windows

PPE 100 mild steel column as balustrade, fixed to 5mm mild steel plate with M8 bolt, welded to steel plate, fixed to concrete slab with MB friction nuts and threaded rod cast into concrete surface slab

One layer of Gunitel 375µm Hypelastic Orange waterproof sheering bearing SABS 952:1985 Type A & B. Alternatively Gunitel USB Green 250µm may be lapped according to specifications

well compacted backfill in layers of 150mm max

220mm bagged plaster and painted brick wall

concrete stairs

LIBRARY

steel framed mezz

concrete stairs

steel framed mezz

concrete stairs

steel framed mezz

concrete stairs

steel framed mezz

concrete stairs

steel framed mezz

concrete stairs

steel framed mezz

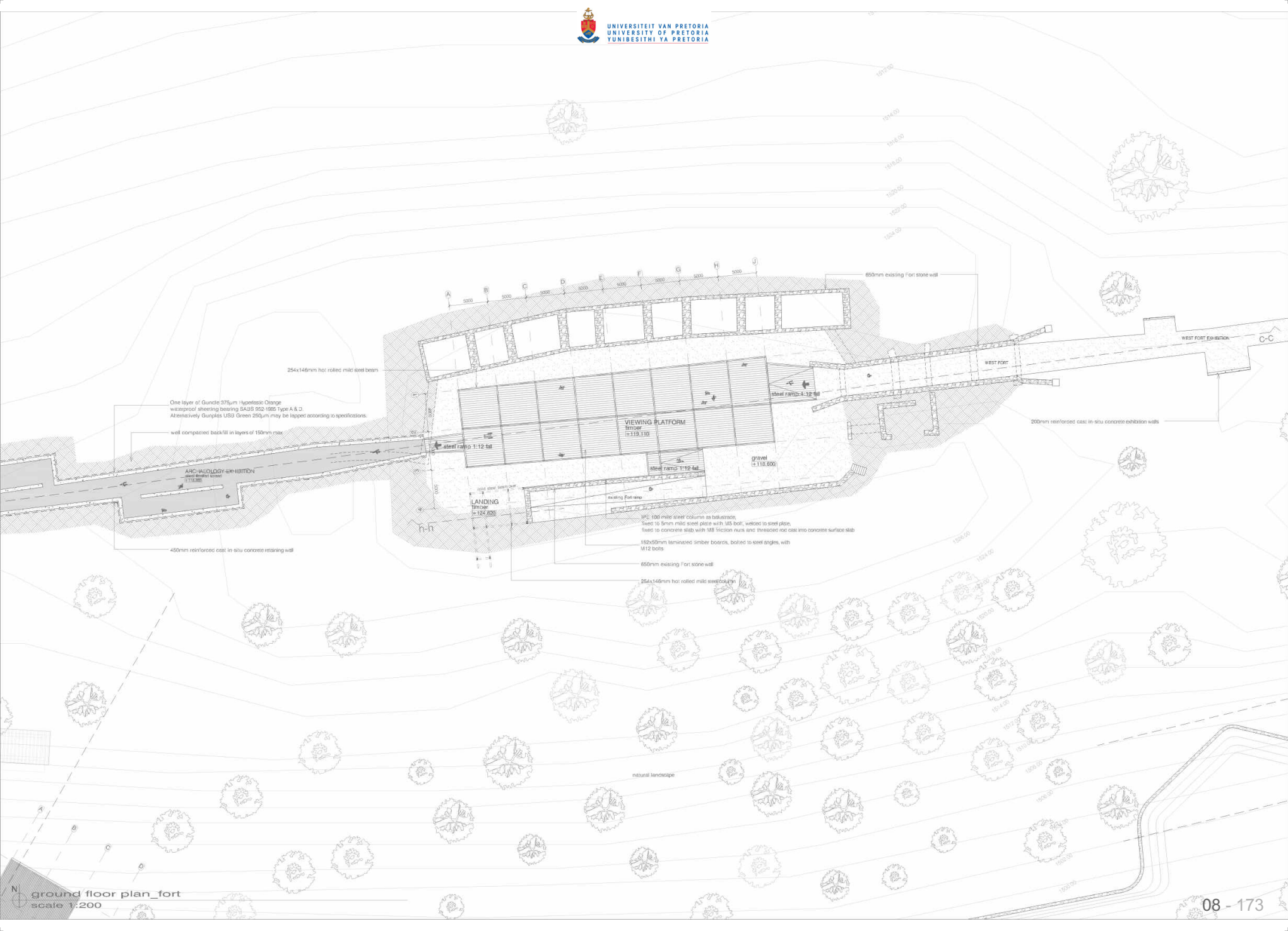
concrete stairs

steel framed mezz

concrete stairs

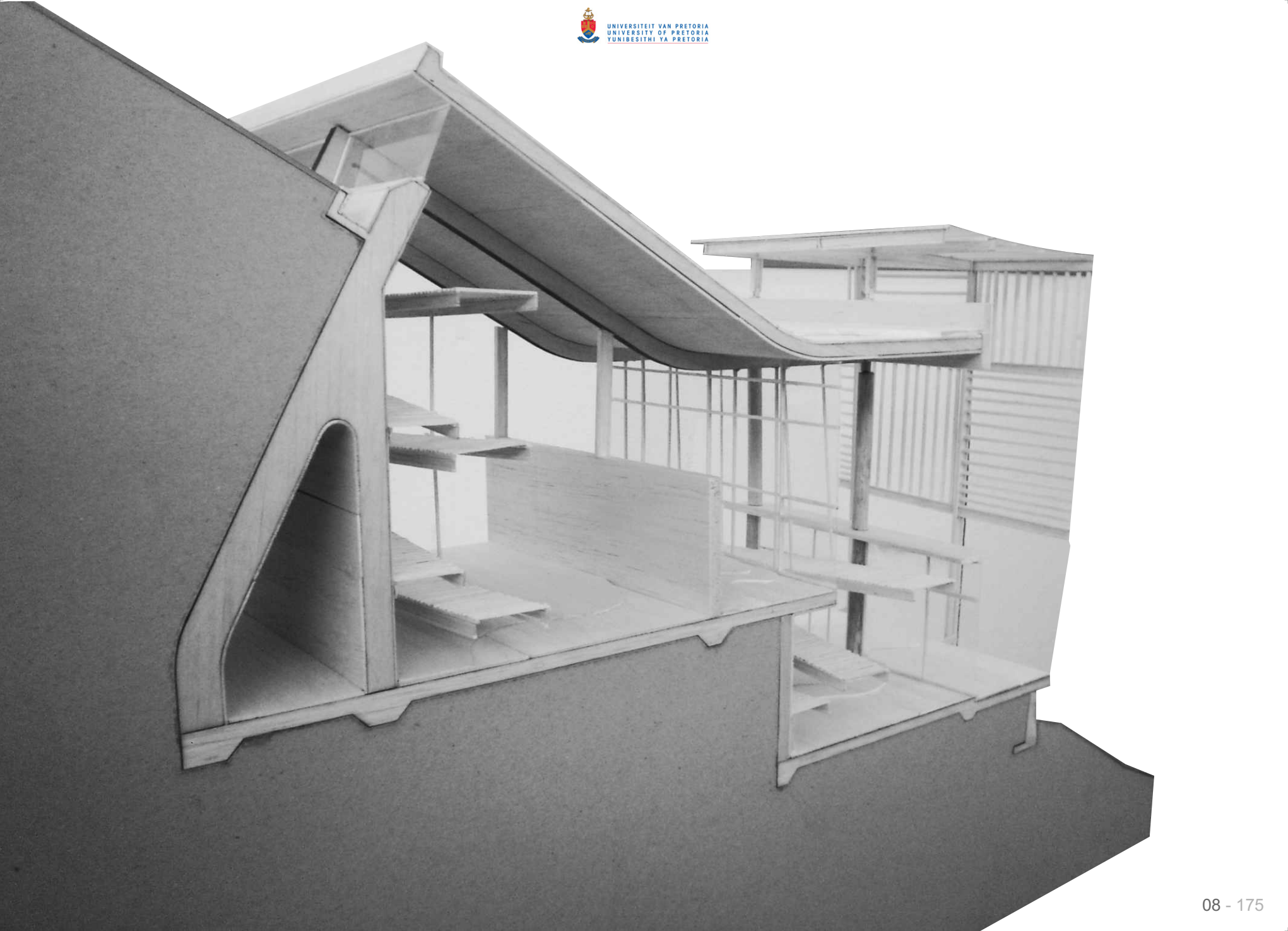
neutral landscape

first floor plan_archaeology research centre scale 1:200



ground floor plan_fort
scale 1:200







LEED for New Construction v 2.2 Registered Project Checklist

Project Name: A Visitors + Archaeological Research Centre

Project Address: West Fort, Pretoria

Yes	?	No					
44	4	8	Project Totals (Pre-Certification Estimates)				69 Points
GOLD			Certified: 26-32 points	Silver: 33-38 points	Gold: 39-51 points	Platinum: 52-69 points	

Yes	?	No		
9	2	3	Sustainable Sites	14 Points

Yes	?	No		
			Prereq 1	Construction Activity Pollution Prevention Required
1	0	0	Credit 1	Site Selection 1
1	0	0	Credit 2	Development Density & Community Connectivity 1
1	0	0	Credit 3	Brownfield Redevelopment 1
0	0	1	Credit 4.1	Alternative Transportation , Public Transportation 1
1	0	0	Credit 4.2	Alternative Transportation , Bicycle Storage & Changing Rooms 1
0	0	1	Credit 4.3	Alternative Transportation , Low-Emitting & Fuel Efficient Vehicles 1
1	0	0	Credit 4.4	Alternative Transportation , Parking Capacity 1
0	1	0	Credit 5.1	Site Development , Protect or Restore Habitat 1
1	0	0	Credit 5.2	Site Development , Maximize Open Space 1
1	0	0	Credit 6.1	Stormwater Design , Quantity Control 1
1	0	0	Credit 6.2	Stormwater Design , Quality Control 1
0	0	1	Credit 7.1	Heat Island Effect , Non-Roof 1
1	0	0	Credit 7.2	Heat Island Effect , Roof 1
0	1	0	Credit 8	Light Pollution Reduction 1

Yes	?	No		
3	1	1	Water Efficiency	5 Points

1	0	0	Credit 1.1	Water Efficient Landscaping , Reduce by 50% 1
1	0	0	Credit 1.2	Water Efficient Landscaping , No Potable Use or No Irrigation 1
0	1	0	Credit 2	Innovative Wastewater Technologies 1
1	0	0	Credit 3.1	Water Use Reduction , 20% Reduction 1
0	0	1	Credit 3.2	Water Use Reduction , 30% Reduction 1



LEED for New Construction v 2.2 Registered Project Checklist

Yes	?	No		
9	1	0	Energy & Atmosphere 17 Points	

Yes		Prereq 1	Fundamental Commissioning of the Building Energy Systems	Required
Yes		Prereq 1	Minimum Energy Performance	Required
Yes		Prereq 1	Fundamental Refrigerant Management	Required

***Note for EAc1:** All LEED for New Construction projects registered after June 26, 2007 are required to achieve at least two (2) points.

5	0	0		
			Credit 1	Optimize Energy Performance 1 to 10
			Credit 1.1	10.5% New Buildings / 3.5% Existing Building Renovations 1
			Credit 1.2	14% New Buildings / 7% Existing Building Renovations 2
			Credit 1.3	17.5% New Buildings / 10.5% Existing Building Renovations 3
			Credit 1.4	21% New Buildings / 14% Existing Building Renovations 4
			--> Credit 1.5	24.5% New Buildings / 17.5% Existing Building Renovations 5
			Credit 1.6	28% New Buildings / 21% Existing Building Renovations 6
			Credit 1.7	31.5% New Buildings / 24.5% Existing Building Renovations 7
			Credit 1.8	35% New Buildings / 28% Existing Building Renovations 8
			Credit 1.9	38.5% New Buildings / 31.5% Existing Building Renovations 9
			Credit 1.10	42% New Buildings / 35% Existing Building Renovations 10

0	1	0		
			Credit 2	On-Site Renewable Energy 1 to 3
			Credit 2.1	2.5% Renewable Energy 1
			Credit 2.2	7.5% Renewable Energy 2
			Credit 2.3	12.5% Renewable Energy 3

1	0	0	Credit 3	Enhanced Commissioning 1
1	0	0	Credit 4	Enhanced Refrigerant Management 1
1	0	0	Credit 5	Measurement & Verification 1
1	0	0	Credit 6	Green Power 1



LEED for New Construction v 2.2 Registered Project Checklist

Yes	?	No		
7	0	4	Materials & Resources	13 Points

Yes	?	No		
			Prereq 1	Storage & Collection of Recyclables Required
1	0	0	Credit 1.1	Building Reuse , Maintain 75% of Existing Walls, Floors & Roof 1
0	0	1	Credit 1.2	Building Reuse , Maintain 95% of Existing Walls, Floors & Roof 1
0	0	1	Credit 1.3	Building Reuse , Maintain 50% of Interior Non-Structural Elements 1
1	0	0	Credit 2.1	Construction Waste Management , Divert 50% from Disposal 1
1	0	0	Credit 2.2	Construction Waste Management , Divert 75% from Disposal 1
1	0	0	Credit 3.1	Materials Reuse , 5% 1
0	0	0	Credit 3.2	Materials Reuse , 10% 1
0	0	1	Credit 4.1	Recycled Content , 10% (post-consumer + 1/2 pre-consumer) 1
0	0	1	Credit 4.2	Recycled Content , 20% (post-consumer + 1/2 pre-consumer) 1
1	0	0	Credit 5.1	Regional Materials , 10% Extracted, Processed & Manufactured 1
0	0	0	Credit 5.2	Regional Materials , 20% Extracted, Processed & Manufactured 1
1	0	0	Credit 6	Rapidly Renewable Materials 1
1	0	0	Credit 7	Certified Wood 1

Yes	?	No		
14	0	0	Indoor Environmental Quality	15 Points

Yes	?	No		
			Prereq 1	Minimum IAQ Performance Required
			Prereq 2	Environmental Tobacco Smoke (ETS) Control Required
1	0	0	Credit 1	Outdoor Air Delivery Monitoring 1
1	0	0	Credit 2	Increased Ventilation 1
1	0	0	Credit 3.1	Construction IAQ Management Plan , During Construction 1
1	0	0	Credit 3.2	Construction IAQ Management Plan , Before Occupancy 1
1	0	0	Credit 4.1	Low-Emitting Materials , Adhesives & Sealants 1
1	0	0	Credit 4.2	Low-Emitting Materials , Paints & Coatings 1
0	0	0	Credit 4.3	Low-Emitting Materials , Carpet Systems 1
1	0	0	Credit 4.4	Low-Emitting Materials , Composite Wood & Agrifiber Products 1
1	0	0	Credit 5	Indoor Chemical & Pollutant Source Control 1
1	0	0	Credit 6.1	Controllability of Systems , Lighting 1
1	0	0	Credit 6.2	Controllability of Systems , Thermal Comfort 1
1	0	0	Credit 7.1	Thermal Comfort , Design 1
1	0	0	Credit 7.2	Thermal Comfort , Verification 1
1	0	0	Credit 8.1	Daylight & Views , Daylight 75% of Spaces 1
1	0	0	Credit 8.2	Daylight & Views , Views for 90% of Spaces 1



LEED for New Construction v 2.2 Registered Project Checklist

Yes	?	No		
2	0	0	Innovation & Design Process 5 Points	
1	0	0	Credit 1.1	Innovation in Design: Job Creation 1
1	0	0	Credit 1.2	Innovation in Design: Community Involvement and Awareness 1
			Credit 1.3	Innovation in Design: Provide Specific Title 1
			Credit 1.4	Innovation in Design: Provide Specific Title 1
0	0	0	Credit 2	LEED• Accredited Professional 1

Alle lof en eer aan die Hemelse Vader wat my die krag en verstand gegee het en wat altyd by my is - Dad en ma, vir al julle liefde en ondersteuning deur die lang jare, sonder julle sou ek nie dit kon doen nie! Christel, my baby, vir al jou ondersteuning en geduld, jy het dit vir my makliker gemaak en jou liefde was non stop - Die leeu, Chive en Trassie, my boetas, al julle laat oproepe en praatjies in die aande, dit het vir my baie beteken - Cliffie, dankie vir jou hulp, dit was awesome! Morne en Marguerite, dankie vir al die ondersteuning en laaang crits, julle is great - Last but not least, al my vriende dankie vir die odd kuiers en crits deur die jare - laaste, The National, wat my deur dik en din gehelp het! Lief vir julle almal! Oor en uit. . .



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