

LITERACY ENHANCEMENT CENTRE

Colin Christiaan Strydom
Study leader: Mr Piet Vosloo

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ABSTRACT

The majority of adults in the Tshwane municipal area have limited or no literacy or numeracy skills. Illiterate adults live mainly in marginalised townships and informal settlements across Tshwane. The relocation of people away from the opportunities offered by the city centre in the past forms part of the reason for the illiteracy problem. Various institutions have started programmes to enhance literacy, but the number of people and the wide distribution of the settlements complicate these efforts (Ministerial Committee on Literacy: 2007).

The aim of this dissertation is (among others) to investigate the best possible location for the development of a literacy enhancement centre. Such a centre should be on a major commuter route to ensure that passers-by benefit from the facility and that it is accessible to the general public. The centre should take cognisance of its surrounding location, be approachable in design, both internally and externally, and take into account all factors related to literacy.

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Dedicated to my Creator,
and my love, Christelle.

My warm thanks to the woman of the Winterveld Project for the embroidered pictures and to the woman of the ABET class at Mamelodi East Community centre for writing the heading of each chapter.



INTRODUCTION

01: INTRODUCTION



Margaret Moekebare 63

Yes I can help my children with homework

01: INTRODUCTION

1 - BACKGROUND

1 - BACKGROUND

The fact that you can read this dissertation makes you one of the fortunate literate adults in South Africa today. It is difficult to comprehend that approximately 10 million people, or 32% of the total adult South African population, are illiterate or functionally illiterate, with schooling up to grade seven (Ministerial Committee on Literacy: 2007).

The world revolves around literacy, the ability to read, write and count. Literacy influences all levels of society:

- At an economic level, an adult may not be able to receive adequate training to stand a chance of accessing a range of formal employment opportunities. Limited physical labour with minimum wages may be the only option.
- Socially, a lack of reading skills may restrict one's ability to address health and medical issues and may even limit the ability to administer the correct dosage of medicine to a sick child.
- Physically, travelling to a new destination could prove impossible, as an illiterate person may not be able to interpret directions and cannot obtain a driver's licence.

Literacy is an essential tool for recognising opportunities and for a meaningful life in our demanding and dynamic society. It is difficult to imagine how one can live a fulfilling life without being literate.

2 - PROBLEM STATEMENT

The problem is addressed in terms of the following:

ILLITERACY AND THE PHYSICAL STATUS OF TSHWANE

Statistics of the Education Department and Statistics SA prove that many adults in Tshwane (and in the rest of South Africa) are illiterate or functionally illiterate. A large number of these illiterate adults live in townships and informal settlements scattered in remote locations on the edge of Tshwane, far from the economic opportunities, social amenities and basic institutional services of Pretoria's central business district. Reaching every illiterate adult individually is impossible. A literacy enhancement centre may therefore prove to be the perfect opportunity if it is placed on a major commuter route and is exposed to a large amount of pedestrian movement. It will be essential for the centre to relate to the user, and for this reason the illiteracy problem should be investigated in more detail.

SUBPROBLEM

The literacy problem is analysed in detail in terms of the following questions:

- What is literacy?
- Why is there an illiteracy problem?
- Who are the illiterate and where do they live?
- What is done to enhance literacy at present?
- What will be done in future?

3 - RESEARCH METHODS

The following research methods were used to understand the underlying issues and to obtain a suitable solution:

PRECEDENTS:

In order to understand the end-user and to design an appropriate centre, a variety of **precedents** were investigated. Five focus areas were used and precedents in each of these focus areas were researched in order to highlight the thought process. The focus areas are:

focus area	precedent
Influential architect	Alvar Aalto
Layering and progression	Constitutional Court, South Africa
Library	University Library, Tokyo, Japan
Adult illiteracy centre	Mamelodi East Community Centre
Materials	Work by Thomas Gouws (Architect)

DESCRIPTIVE METHODS:

Informal interviews were held with the following stakeholders involved in **education and literacy programmes** in Tshwane:

person	designation
Eilyah Sekgobela	Teaching professor – UNISA, ABET
Lukas Machipa	Head of Library, Mamelodi East Community centre
Thembi Kgosana	ABET Teacher, Mamelodi East Community centre
Betty Masemola	ABET Teacher, Lyttelton High school, Centurion
Annemarie Swart	National Library, Pretoria
Colleen Higgs	Centre For the Book, Cape Town
Oranje Theron	Head of library, Gauteng Department of Education
Lettie Klein	Creative Writing, University of Pretoria

During visits to the ABET classes at the Mamelodi East Community Centre, informal surveys were conducted to obtain information on appropriateness of design elements in respect of personal interaction and observation with the illiteracy problem, size of functional areas, etc.

Informal interviews were held with the following stakeholders involved with **Marabastad and Tshwane**:

person	designation
Loura Lourens	City of Tshwane Inner City, Marabastad
Esra Prins	City of Tshwane, Town planning, Marabastad
Arnold Mills	City of Tshwane, Department of Transport
Anne Mohale	City of Tshwane, Informal Trade
Madeline Oosthuizen	City of Tshwane, City Planning

LITERATURE REVIEW

Additional books, articles, maps and reports were reviewed systematically to obtain relevant information and statistics on the problem, detailed information on the subject area of Marabastad etc.

4 - ASSUMPTIONS

The following assumptions will guide the study:

- The present status in terms of the existing transportation system as well as pedestrian movement will not change materially in the near future.
- Current land use will not change significantly in the area surrounding the site.
- The Pretoria CBD will remain the major source of job opportunities in the Tshwane metropolitan area.

5 - DELIMITATIONS

The study is delimited in respect of the following:

- Only current material and techniques are used in the design and construction of the project; high-technology materials are not used.
- Only the Tshwane area is investigated in respect of the literacy problem.
- The Pretoria CBD area is demarcated in respect of movement of people between transport nodes and job opportunities.
- The focus is on the Marabastad area for pedestrian movement and position of transport interlinks.

6 - OBJECTIVE OF THE STUDY

The aim of the project is to create an opportunity for the Tshwane community to enhance literacy levels. The project will develop a literacy enhancement centre in an ideal location, between important transport nodes and exposed to a large number of pedestrians on a daily basis. The centre will be accessible to any adult with access to transport in the Tshwane area.

The aim of the design is to create an approachable and inviting building. The design attempts to relate to people of all ages and backgrounds and to create spaces that are comfortable and on a human scale.

The function of the building – **enhancing literacy** – must be communicated through the design language of the building and should be obvious to the passing pedestrians.



Figure 1.1: The world through the eyes of the illiterate

7 - DISSERTATION PROCESS LAYOUT

The figure below illustrates the process that was followed in this dissertation to reach a possible solution for the stated problem.

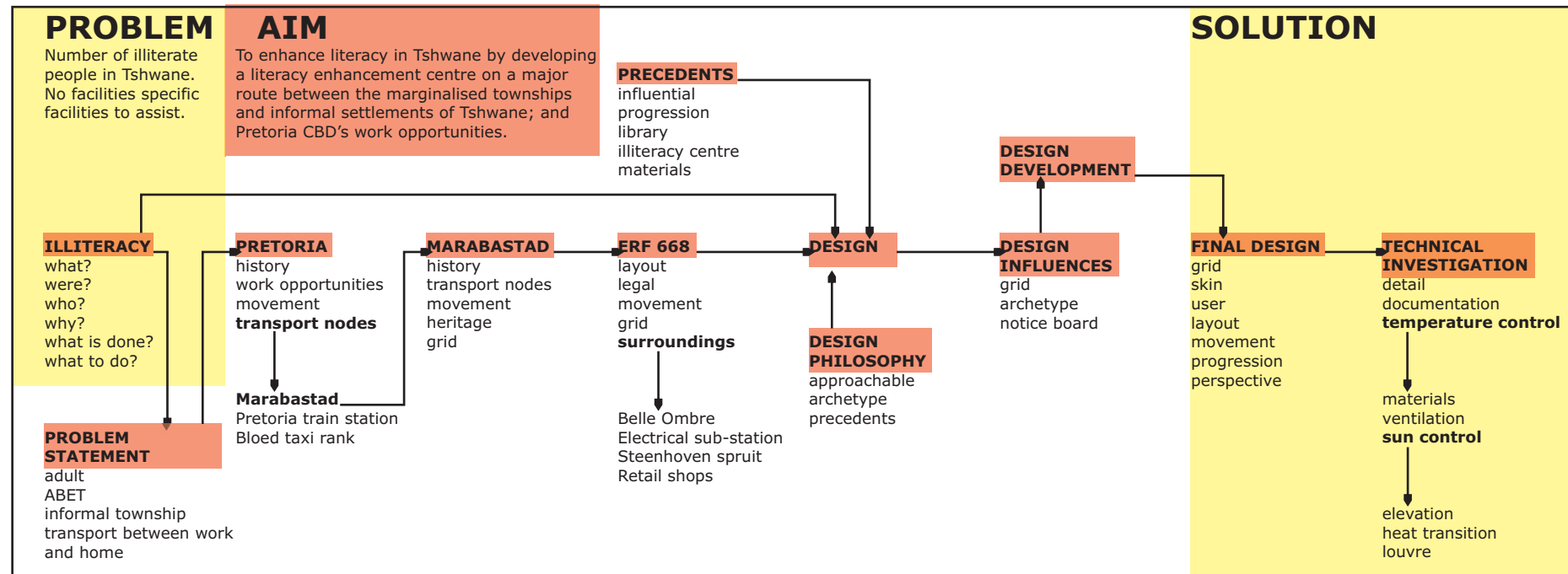


Table 1.1: Dissertation process layout

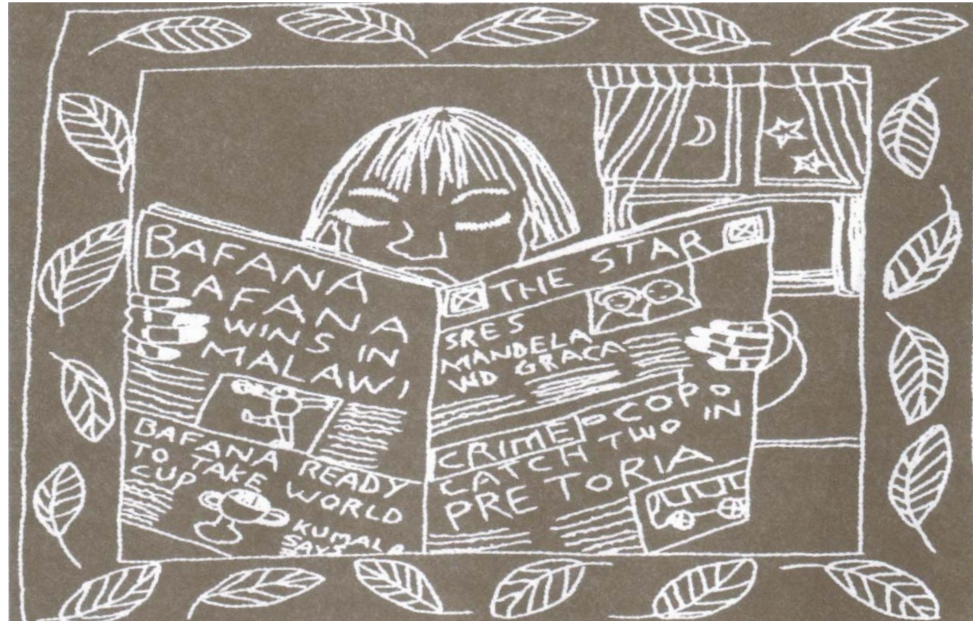
Figure 1.2: The world through the eyes of the literate





LITERACY ENHANCEMENT

02: LITERACY ENHANCEMENT



THANK, MASHABELI 52 years

I CAN HELP MY CHILDREN WITH HOMEWORK

02: LITERACY ENHANCEMENT

To address the illiteracy problem, all aspects of illiteracy should be investigated and analysed in detail:

- What is literacy?
- Why is there an illiteracy problem?
- Who are the illiterate?
- Where are the illiterate located?
- What was done in the past to enhance literacy?
- What is being done to enhance literacy at present?

1 - INTRODUCTION - WHAT IS LITERACY ?

Literacy can be defined as the ability to read, write and count. These basic skills enhance every person's livelihoods, health and living conditions. Education, including education in one's own language, is a basic right, as set out in South Africa's constitution (Ministerial Committee on Literacy 2007: 5).

2 - WHY IS THERE AN ILLITERACY PROBLEM?

Illiteracy is a problem that is prevalent everywhere in Africa. The continent of Africa contributes only 11 percent to the world's population, but 60 percent to the world's illiteracy rate (Sturges 1998: 4). It accounts for a mere one percent of the world's book production, newspaper circulation and paper consumption. The following factors contribute towards the illiteracy problem in Africa and South Africa:

- Poor economic circumstances;
- The absence of a reading culture,
- The small publishing industry;
- The lack of appropriate libraries.

POOR ECONOMIC CIRCUMSTANCES

Most parts of Africa face droughts, wars and/or economic depletion. The need for clean water, medical supplies and basic nutrition is of a much greater concern than the ability to read. Before Africa's people can be educated, their basic needs should be met, which is extremely difficult because of a lack of stability and economic growth.

THE ABSENCE OF A READING CULTURE

African culture has always been based on oral traditions. Despite the paper and printing industry of modern times, most African societies still use the oral mode of communication exclusively, especially in rural areas. The strength of the African culture lies in its oral tradition. Two types of oral communication can be distinguished, namely the general and the specialised type. The general type comprises the conversations needed to communicate with others on a daily basis, to express feelings or ideas. The specialised type is of importance to the whole community and consists of poetry or songs to be passed on down the generations (Sturges 1998: 54). Generally, knowledge and information are communicated wherever people meet – at markets, commuting nodes, worship gatherings and the like. In order to reach the people of Africa and to create a literacy culture, the oral traditions of Africa should be combined with the world of reading and writing.

THE SMALL PUBLISHING INDUSTRY

Although a significant amount of books have been published in South Africa in the past, publishing was mainly focused on the distribution of English and Afrikaans books, with little or no attention to the African languages. It is important to learn to read and write in one's own language, but for this there must be suitable books. South African writers must be encouraged to publish work in their own languages. According to Lettie Klein (2007) from the Department of Creative Writing at the University of Pretoria, the traditional way of publishing expensive hard cover books must be limited. Instead, the aim must be to publish books to the public in more cost-effective ways – on the internet or in a smaller format and of lesser quality.

THE LACK OF APPROPRIATE LIBRARIES

Sturges (1998: 94) states that libraries in Africa, including South Africa, were established and developed by Europeans. The current libraries are based on western models and are designed for the exclusive use of Europeans. The general collections that are held in libraries all over South Africa are of little relevance to a large portion of the population (Sturges 1998: 98). One option is to replace the traditional library with smaller literacy centres that are situated on selected sites and offer relevant information that will help improve the users' daily life.

3 - WHO ARE THE ILLITERATE ?

According to the National Census of 2001 (www.statssa.co.za), it is estimated that approximately 4,7 million adults in South Africa are illiterate and approximately 4,9 million people are functionally illiterate. Any person who stopped schooling before secondary school is classified as functionally illiterate. According to the National Census of 2001, 18% of adults older than 20 have no education at all and a further 16% have only some basic schooling. According to the table below, 94% of the illiterate population speak African languages, and 61% of these groups are of Zulu, Xhosa and Pedi origin. 60% of the illiterate population are female and Africans are affected most (www.statssa.co.za)

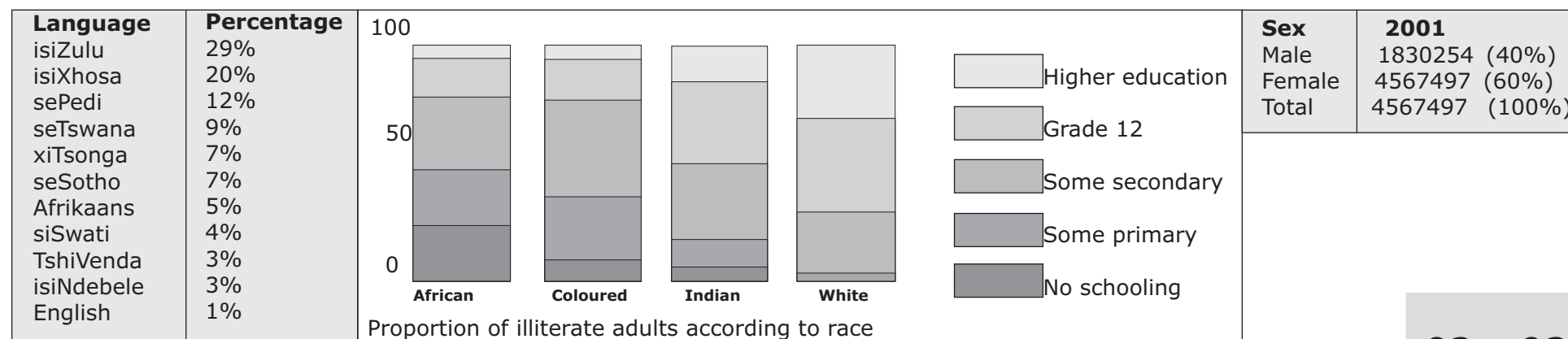


Table 2.1: Proportion of illiterate adults according to language, race and sex (www.statssa.co.za)

4 - WHERE ARE THE ILLITERATE LOCATED?

The figures below indicate that the majority of adults with no schooling reside on the western and northern boundaries of Tshwane. The population density is also the highest at these areas and the general race is of African origin. This confirms that the illiteracy problem is mostly in the rural townships of Tshwane.

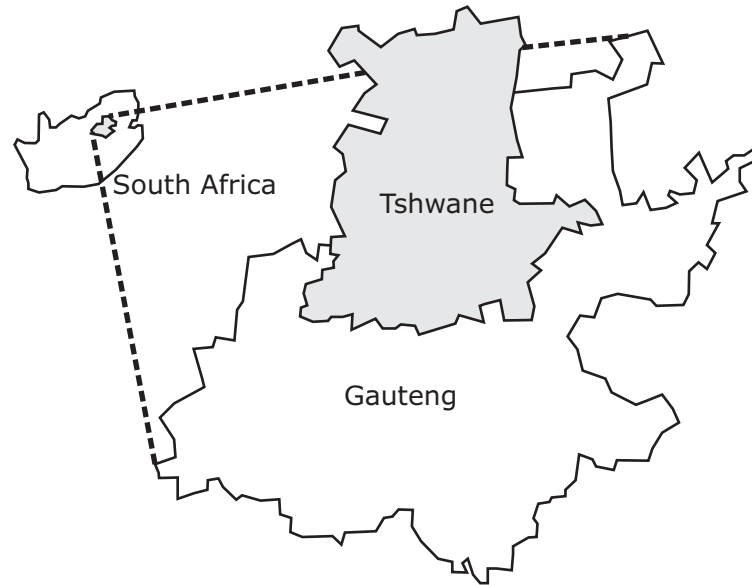


Figure 2.1: Tshwane in relation to South Africa

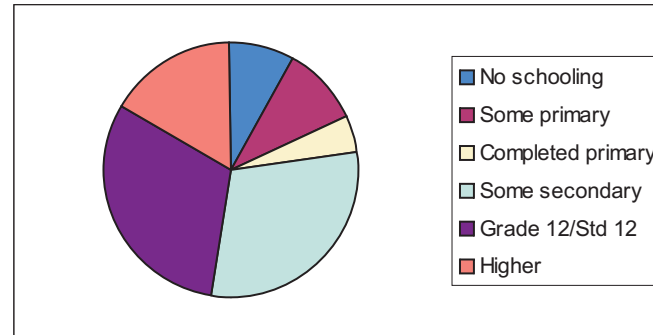


Figure 2.3: Ratio of education levels in Tshwane (www.statssa.co.za)

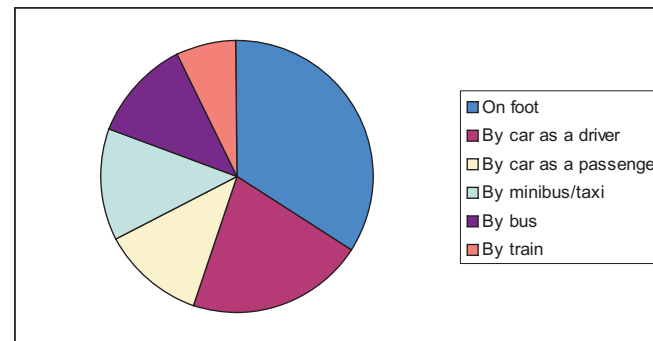


Figure 2.4: Ratio of transport modes in Tshwane (www.statssa.co.za)

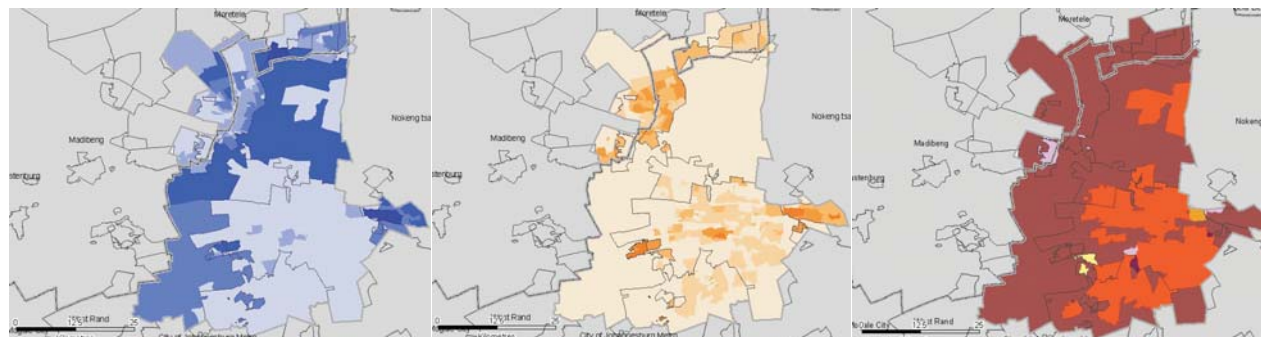


Figure 2.2: Adults with no schooling, population density and general race (www.statssa.co.za)

TSHWANE	
Metropolitan area	2199sq.km2
Total population	1986019people (2001)
Population growth	1.7%p.a
Unemployment rate	31.5%
Economic Growth rate	5.1%

Table 2.2: Tshwane (Tshwane IDP 2005)

5 - WHAT IS BEING DONE TO ENHANCE LITERACY AT PRESENT?

No organisation exists that governs and monitors adult literacy projects in Tshwane or in South Africa. This makes it difficult to determine the total number and locations of adult literacy programmes in Tshwane. The University of South Africa (UNISA) and "Project Literacy" train tutors with the Adult Basic Education and Training (ABET) programme. Various organisations implement the ABET programme by means of their own adult literacy classes. These organisations include the local municipalities, the Department of Education, Project Literacy and private companies. Besides reading, writing and numeracy, current teaching includes life skills, income generation and HIV policies. To date, the South African National Literacy Initiative has been the biggest campaign in South Africa aimed at enhancing literacy.

THE SOUTH AFRICAN NATIONAL LITERACY INITIATIVE

SANLI was launched in 2000 by the Department of Education, but never realised its full potential because of a lack of funding and organisational problems. In collaboration with UNISA's ABET institute and funding by the British Department of International Development, 343 000 learners were reached between 2002 and 2003. In the same time, 7000 literacy units and packages were tested and evaluated. This initiative was a good pilot run for future mass education campaigns (Ministerial Committee on Literacy, 2007: 6).

6 - WHAT WILL BE DONE TO ENHANCE LITERACY IN FUTURE?

MINISTERIAL COMMITTEE ON LITERACY

The Department of Education established up a Ministerial Committee on Literacy in 2006. The Committee is currently setting up an organisational model and developing materials. Between 2008 and 2012, the aim will be to implement the national literacy campaign. The committee consists of the following members:

- Dr Cassius Reginald Lubisi (Chairperson and HEDCOM representative);
- Prof John Aitchison (University of KwaZulu-Natal Centre for Adult Education);
- Prof Veronica McKay (UNISA ABET Institute);
- Ms Leonie du Plessis (Project Literacy);
- Mr Rod Grewan (Digital Partnership and Bridges to the Future Initiative);
- Dr Obert Maguvhe (Disability Sector Representative);
- Mr Martin Ngcobo (National Youth Commission);
- Mr Vernon Jacobs (Department of Education) and
- Ms Mercedes Zamora (Cuban literacy expert) (Ministerial Committee on Literacy 2007: 3).

THE AIM OF THE COMMITTEE

The committee aims to implement a national literacy campaign to reach 4,7 million illiterate South Africans by the end of 2012 (Ministerial Committee on Literacy 2007: 3). The campaign, with a total estimated cost of R 6,1 billion, will start in 2008 and will concentrate on youths, women and adults with special learning needs. The plan will address problems such as the shortage of African literature, mobilisation issues and the promotion of electronic media. The campaign is intended to reach the goals that were set out at the 2000 Dakar Framework for Action to reduce illiteracy by 50% by 2015 in South Africa. The committee has investigated previous successful massive literacy campaigns in various countries which managed to reduce illiteracy to less than 4 percent (Ministerial Committee on Literacy 2007).



Figure 2.5: The ABET programme in context (Mario Sales 2002)

THE ORGANISATIONAL STRUCTURE

The organisational structure will be implemented and governed at five levels: national, provincial, district, local and site. There will be nine provincial committees which will oversee district literacy coordination units and coordinators at local level. Staff will be trained as literacy advisors, supervisors and coordinators at district level and as tutors at teaching and learning sites (Ministerial Committee on Literacy 2007: 16).

TEACHING

Illiterate adults will be taught by means of personal interaction between the tutor and the students. The tutor will be supported by tools such as student workbooks, pictures, videos and other media devices, all of which will be assessed and developed on an ongoing basis. The training of the educational staff and volunteers will be of the utmost importance and will form the core of the campaign. The tutors will have to be trained and provided with ongoing support. To reach the estimated 1,2 million illiterate adults in the first year, approximately 60 000 tutors, 6 000 coordinators and 300 supervisors will have to be trained (Ministerial Committee on Literacy 2007: 20).

7 - CONCLUSION

THE CONCEPT OF A LITERACY ENHANCEMENT CENTRE

For the Mass Literacy Campaign to be successful, literacy enhancement centres are needed for each of the selected provincial committees. The centre can be used as an administrative base for the Committee to oversee the selected province as well as for training the literacy advisors, supervisors, coordinators and the tutors of the specific province.

The facilities at the centre should be optimised and the centre should be placed at an accessible point to serve the general public. Facilities at the centre should serve people of all ages and different literacy levels. The following facilities could be provided:

- Auditoriums can be used to train tutors in the mornings and illiterate adults in the afternoons.
- A post-literacy programme should also be implemented for the literate public and the newly literate to improve their new skills.
- Students and the general public will benefit from a study hall and an informal reading room.
- A basic writing school could also be located at the centre to educate the potential writer and illustrator to write literacy improvement books for children and adults. These books can be developed and distributed to the illiterate communities.
- The centre must also be able to facilitate exhibitions to educate the public.



CONTEXT ANALYSIS

03: CONTEXT ANALYSIS



CHRISTINA KHANYISA MABUYA 66 yrs

I can read and write

03: CONTEXT ANALYSIS

1 - MACRO SCALE

PRETORIA

1 - 1 INTRODUCTION

In order to identify the best possible location for the proposed facilities, the following aspects were considered:

- Development history;
- Transport routes towards Pretoria CBD;
- Work opportunities and transport nodes in Pretoria CBD,

1 - 2 DEVELOPMENT HISTORY

The Pretoria CBD is located in a river valley in the Magaliesberg mountains and lies between the Highveld and Bushveld climate zones in the north-east of South Africa. The city was named in 1855 by a Voortrekker leader, Marthinus Pretorius. The sheltered and fertile valley, previously inhabited by Nguni-speaking settlers, has become the capital city of South Africa (<http://www.tshwane.gov.za>). According to Gerrit Jordaan (Jordaan: 1989), Pretoria's layout has a symbolic connotation. The city is located between two mountain ridges (male) with a river (female) flowing through. The layout of the city is positioned on a symbolic cross with Church Square as the centre point. Because of the mountain ranges to the north and south, the city expanded eastward and westward. For many decades the previous government shaped Pretoria as the model apartheid city, with black people being forcefully removed from areas like Marabastad to rural townships on the outskirts in order to create a "whites-only" city (Mufamadi 2001). The site demographics and post-apartheid planning has left the business district isolated from some communities, especially on the edge of the more recently demarcated municipal area of Tshwane. This separation forces these marginalised communities to travel great distances every day by means of public transport.

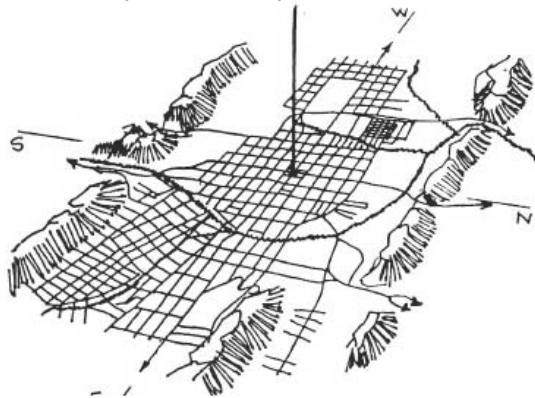


Figure 3.1: Layout of Pretoria (Jordaan 1989)

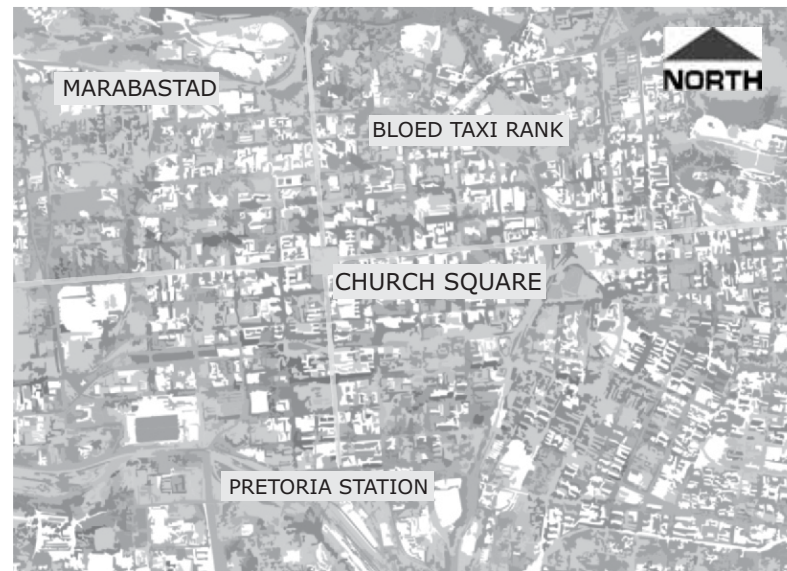


Figure 3.2: The symbolic cross of Pretoria

1 - 3 TRANSPORT ROUTES TOWARDS WORK OPPORTUNITIES

1.3.1 - TSHWANE

The following figures indicate the position of work opportunities in Tshwane and the movement towards these opportunities. The figures indicate that Pretoria's CBD is the prominent destination for the majority of commuters, who are mainly from the marginalised townships and the informal settlements of Tshwane.

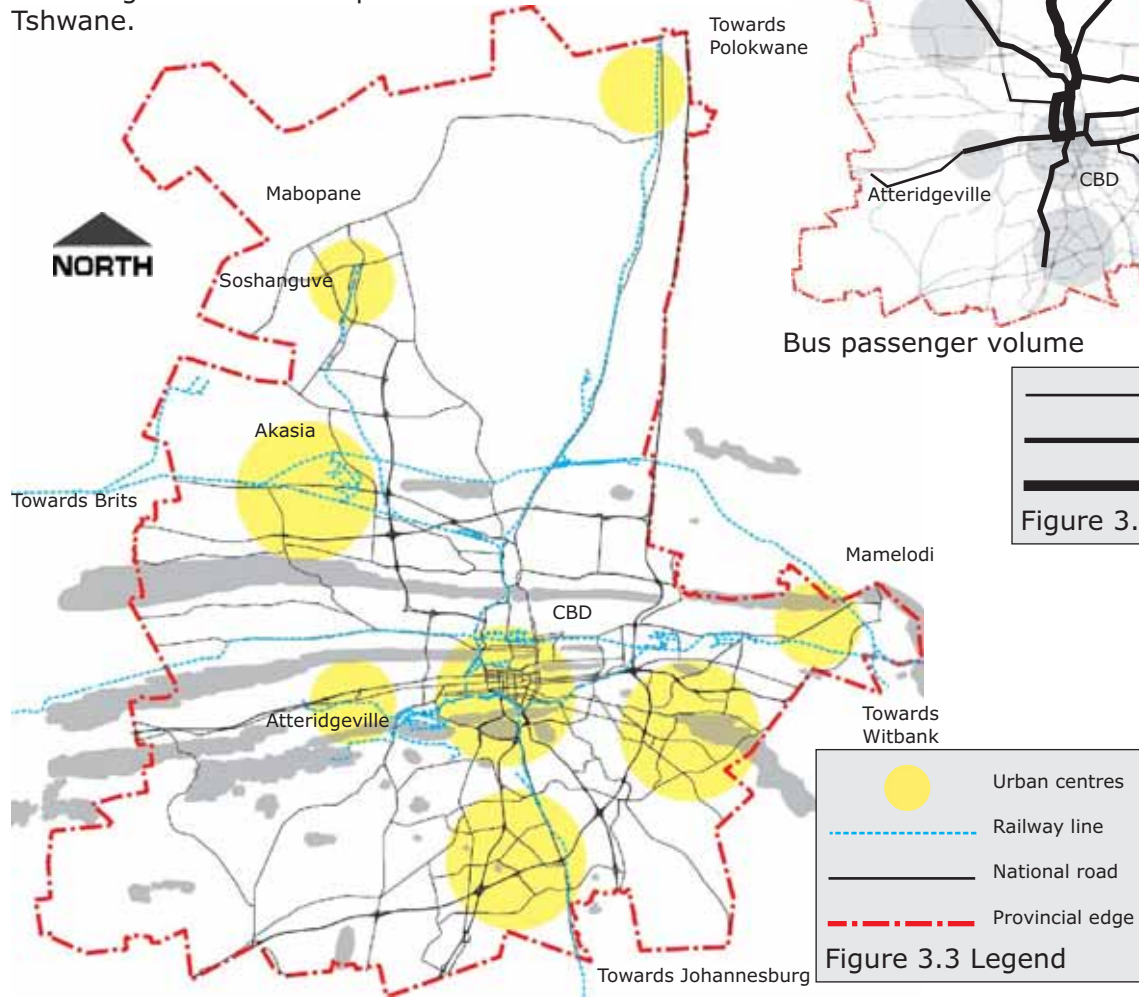


Figure 3.3: Transport routes of Tshwane (Nyeleti Consulting 2006)

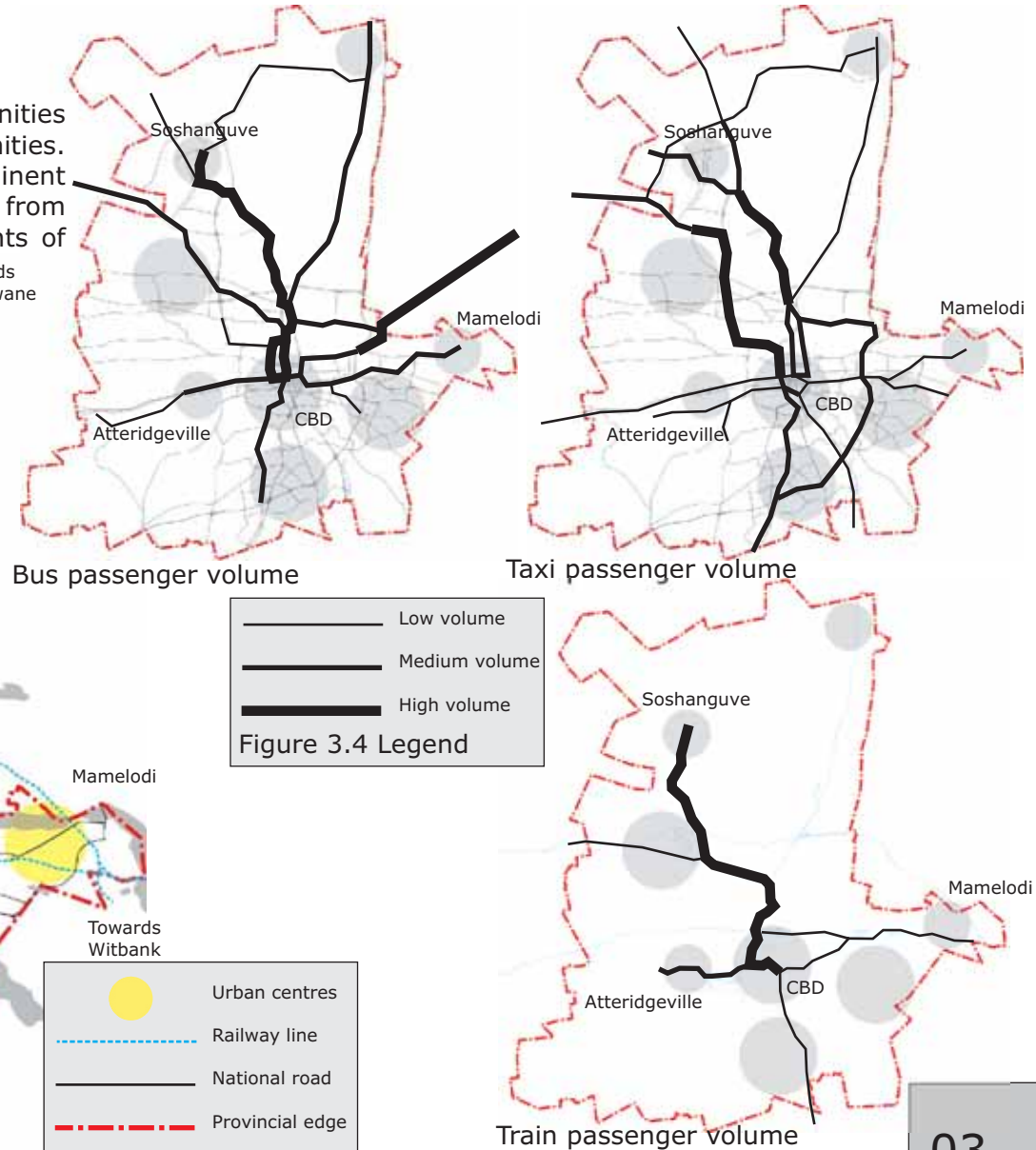


Figure 3.4: Passenger volumes in Tshwane (Nyeleti Consulting 2006)

1.3.2 - PRETORIA CBD

On a larger scale, movement from major transport nodes towards the primary work opportunities is indicated in the figure below

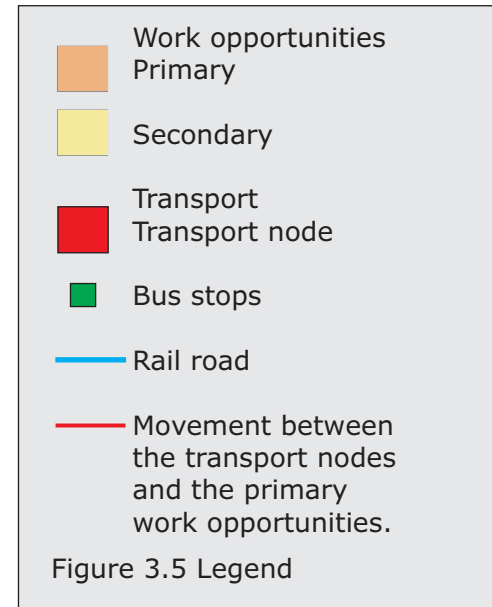
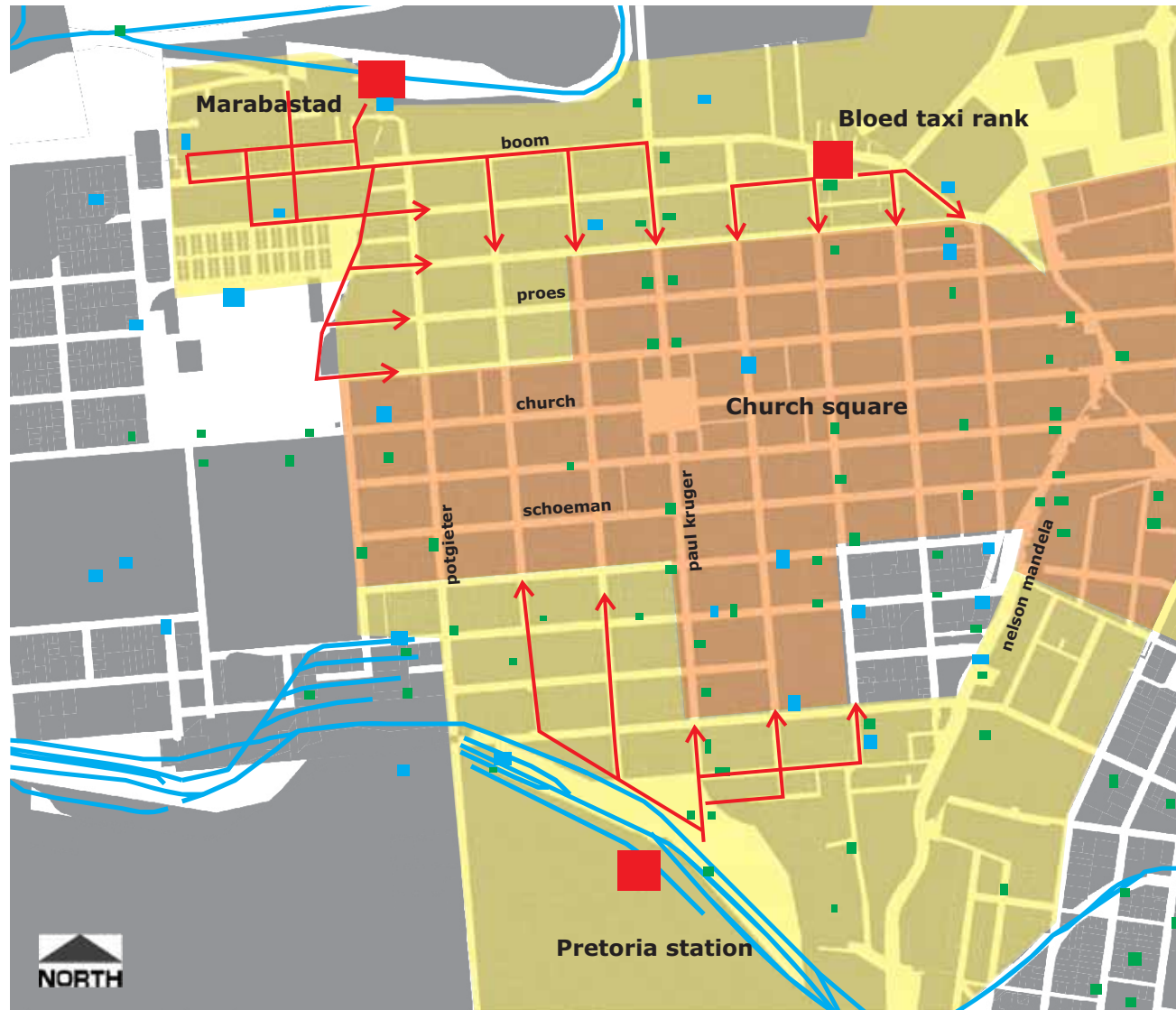


Table 3.1 Traveling towards Pretoria CBD (Nyeleti Consulting 2006)

Mode	%
Taxi	15,1%
Bus	9,5%
Train	6,5%
Car	33%
Walk	33%

Figure 3.5: Work opportunities and transport nodes (Nyeleti Consulting 2006)

2 - MESO SCALE MARABASTAD

2 - 1 INTRODUCTION

Marabastad hosts a number of major transport nodes linking the Pretoria CBD with the greater Tshwane area and beyond. Shopping centres, retail stores and informal traders have developed around the transport interlinks that are scattered across Marabastad. The following aspects should be investigated to identify a possible site for the placement of a literacy enhancement centre:

- History
- Layout plan
- Transport interlinks
- Historical conservation area

Temperature (Average)	Day 25deg Night 12deg
Rainfall	741mm per year
Cloud cover (Average)	33%
July	13%
December	54%
Wind primary	North-east
secondary	North-west
Humidity	
September at 08/00	57%
at 14/00	29%
March at 08/00	75%
at 14/00	48%



Figure 3.6: The boundaries of Marabastad (Marabastad framework Master's group 2007)



Figure 3.7: Building footprint of Marabastad (Author 2007)

2 - 2 HISTORY

The history of Marabastad reflects the development of the area and explains the current positions of buildings and movement patterns of pedestrians. Marabastad has historical significance that needs to be conserved. The history diagram describes the history of Marabastad on a time line. (Marabastad framework Master's group 2007)

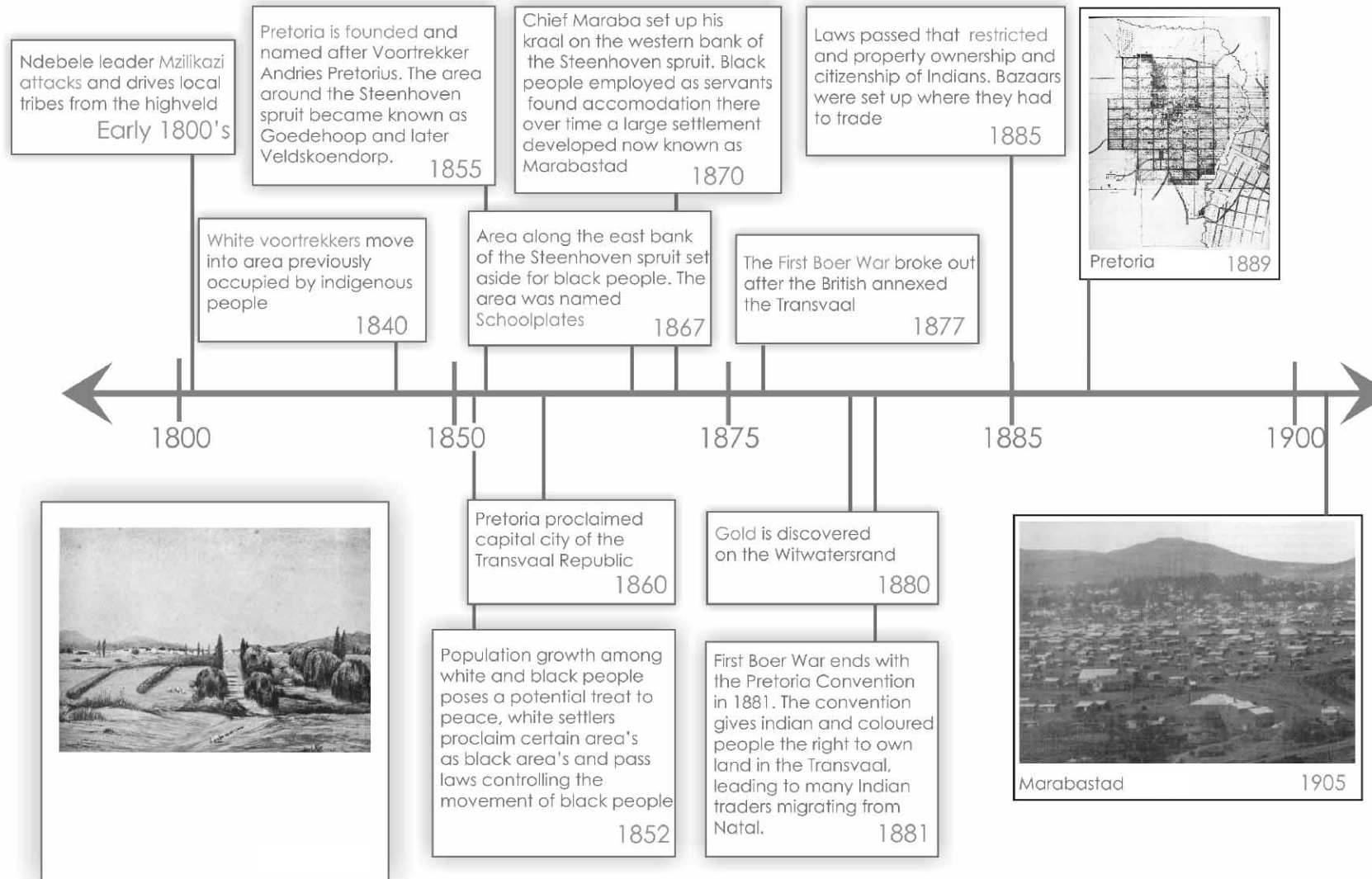


Figure 3.8: Marabastad history (1800 - 1900) (Aziz Tayob Partnership: 1998)

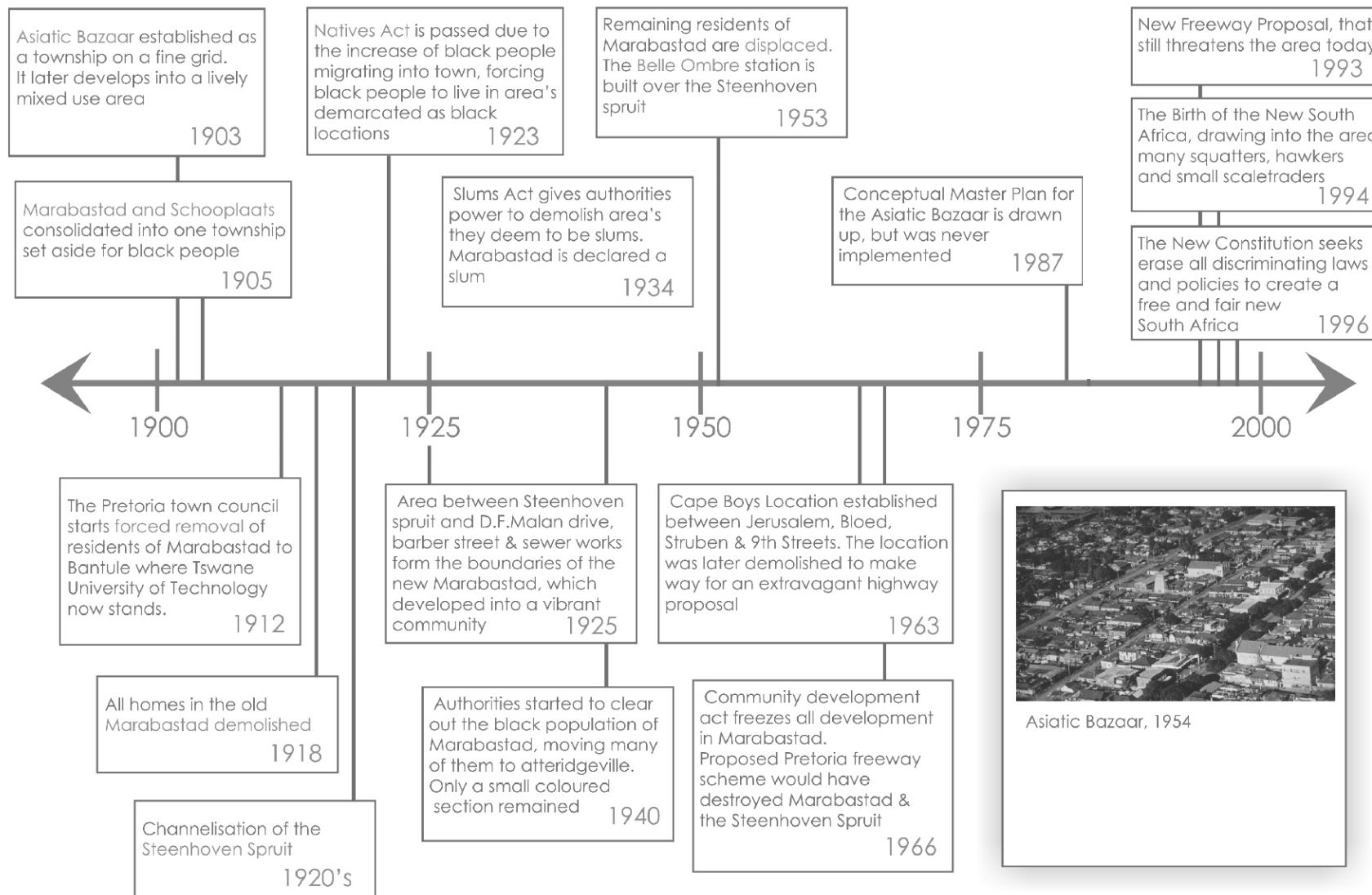


Figure 3.9: Marabastad history (1900 - 2000) (Aziz Tayob Partnership: 1998)

2 - 3 LAYOUT PLAN

In this section the author investigates the footprint of the buildings and their relation to surrounding open spaces. In addition, the primary and secondary vehicle routes and their origins and destinations are identified.

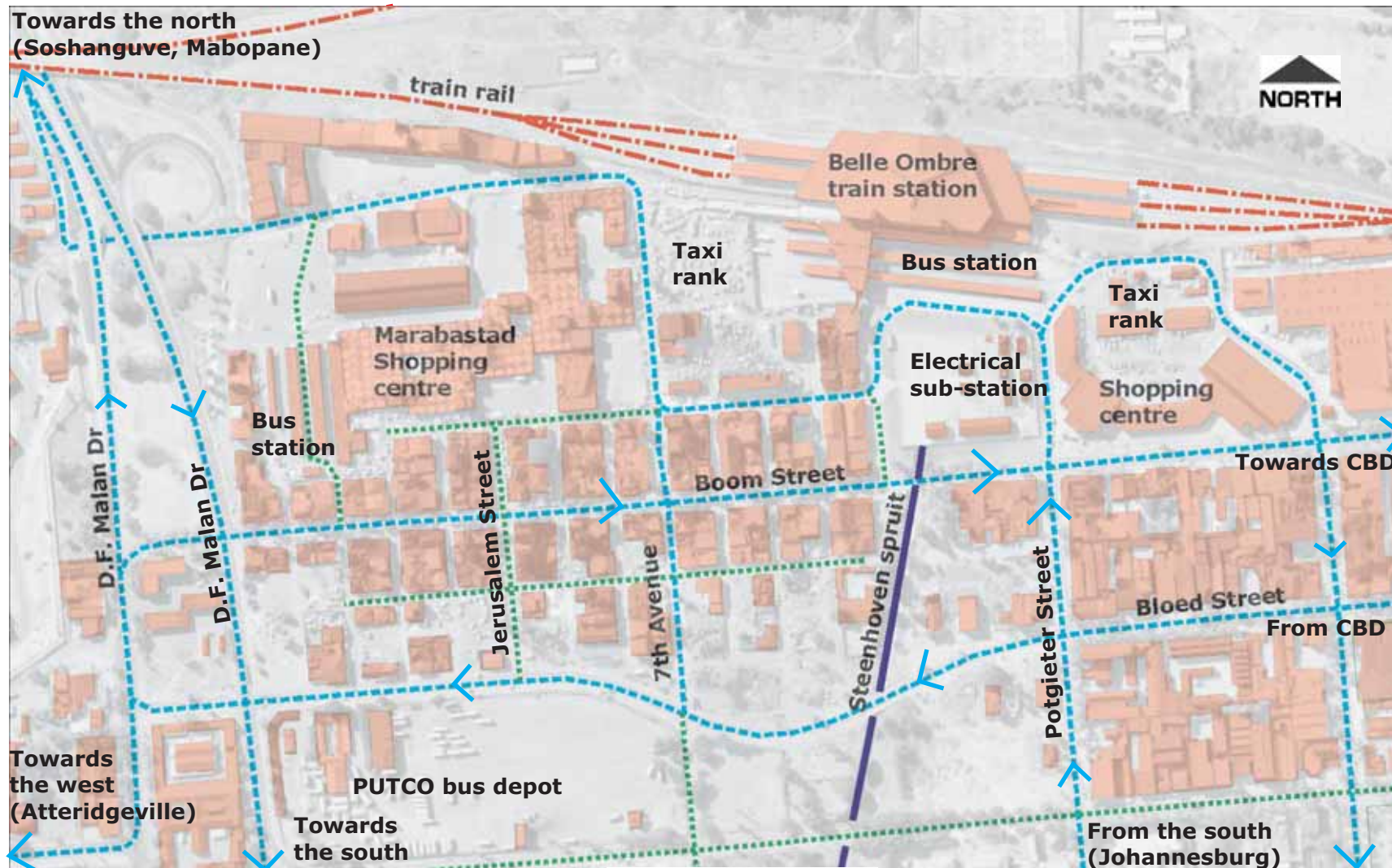


Figure 3.10: Layout plan of Marabastad (Author 2007)

2 - 4 HISTORICAL CONSERVATION AREA

A comprehensive survey of the buildings of Marabastad was done by Schalk le Roux Uys Kruger Architects in 1991. According to this survey, the buildings in the conservation area must not be seen as individual elements, but rather as an urban collective which reflect a certain way of life (Le Roux: 1991). The proposed site should not fall in the conservation area; the area should be preserved.

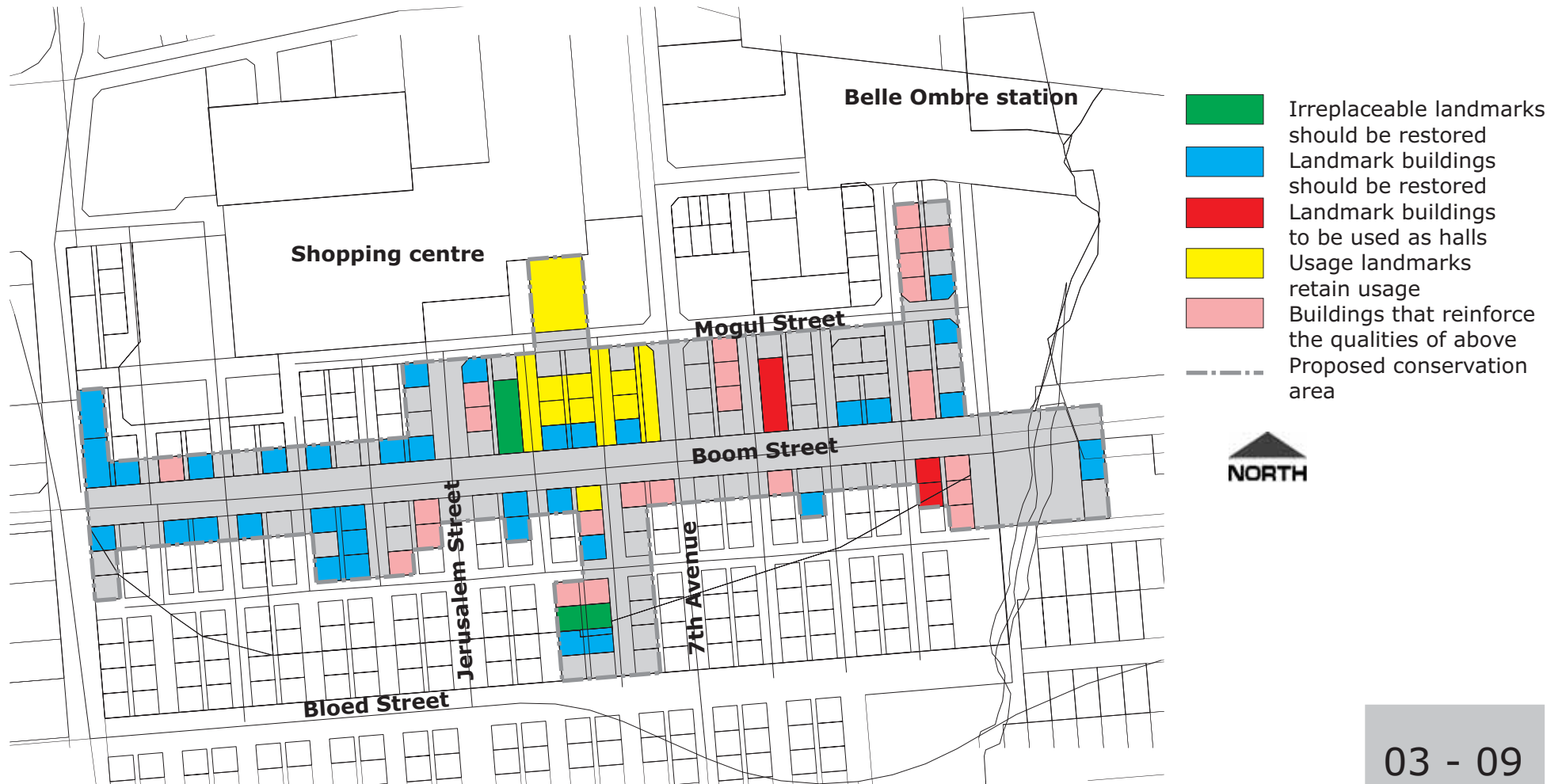


Figure 3.11: Proposed conservation area of Marabastad

2 - 5 TRANSPORT FACILITIES

In this section the author identifies the transport interlinkages and investigates the points of departure and destinations of the commuters. A site should be identified at a central point between the interlinkages to take advantage of the high number of pedestrians.

The following transport modes are located in the Marabastad area.

RAIL

There is a normal daily rail service, with most passengers arriving in the morning and departing in the afternoon.

BUS

Two bus operators provide services, Putco and Northwest Star.

Northwest Star transports passengers from north and east of Hammanskraal and north-west of Rust de Winter. Most of these passengers head for the Pretoria CBD as their end destination. Putco transports people mostly from Kwandebele to Marabastad.

TAXI

BAZAAR STREET TAXI RANK

This taxi rank is located on the western side of the Belle Ombre Station at the end of Bazaar Street between the station and 7th Street. Numerous long-distance trips take place to and from the Bazaar Street Taxi Rank including: Marble Hall; Soshanguve; Mabopane Station; New Eersterust (Stinkwater); Brits; Mogogelo (Soutpan); Kyalami; Randburg and Soweto (Baragwanath).

7TH AND MOGUL STREETS

This informal rank is located at the parking area on the north-western corner of 7th Street and Mogul Street. Taxis travel to and from Laudium.

JERUSALEM STREET TAXI RANK

The south-western corner of Jerusalem and Grand Streets is used as a taxi rank. Destinations include: Alexandra; Midrand; Valhalla; Johannesburg; Rooihuiskraal; Mabopane; Mamelodi; Kwandebele; Dennilton and Villieria.

BELLE OMBRE TAXI RANK

This rank mainly caters for passengers to Centurion.
(Marabastad Public Transport Study 2002)



Figure 3.12: Transport facilities in Marabastad (Author 2007)

2 - 6 IDENTIFYING A CENTRAL POINT BETWEEN THE TRANSPORT FACILITIES

The following illustration show the relation between the conservation area and the transport facilities. A central point between the transport facilities is identified and the proposed site should be located as close as possible to this point.

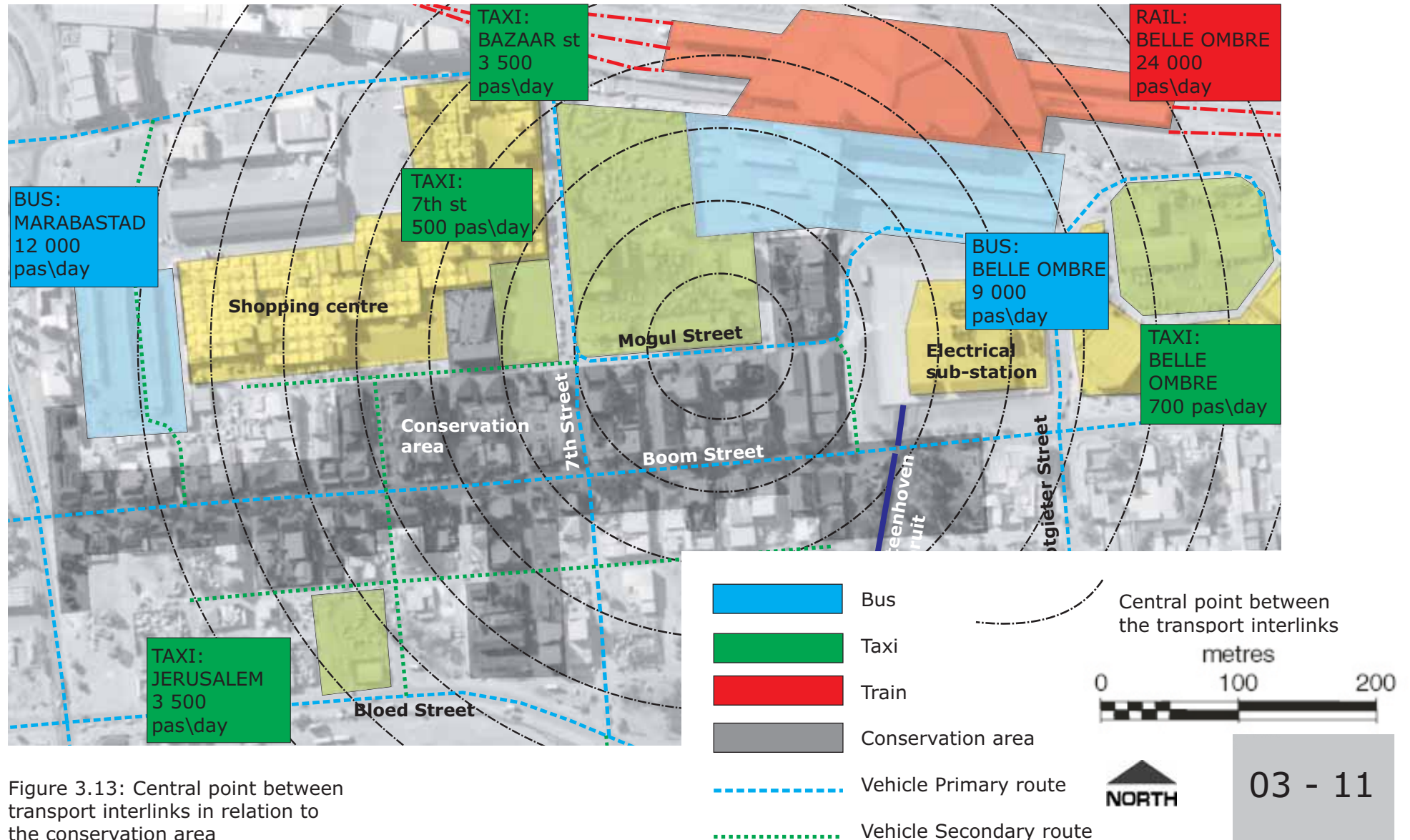


Figure 3.13: Central point between transport interlinks in relation to the conservation area

2 - 7 IDENTIFYING THE SELECTED SITE

Based on the research and assessment in previous sections a site was selected for the development of the literacy enhancement centre.

The selected site is erf 668, Asiatic Bazaar ext 1. The site is the closest available vacant property from the original central point between the transport interlinks and lies between - The Belle Ombre train and bus station; Boom Street; the urban edge of Marabastad and the electrical substation.

A high number of pedestrians use 11th Avenue to walk between Pretoria CBD and Marabastad, making this the ideal site to reach the communities of the rural townships of Tshwane. It is also ideally located between major transport facilities and along commuting routes.

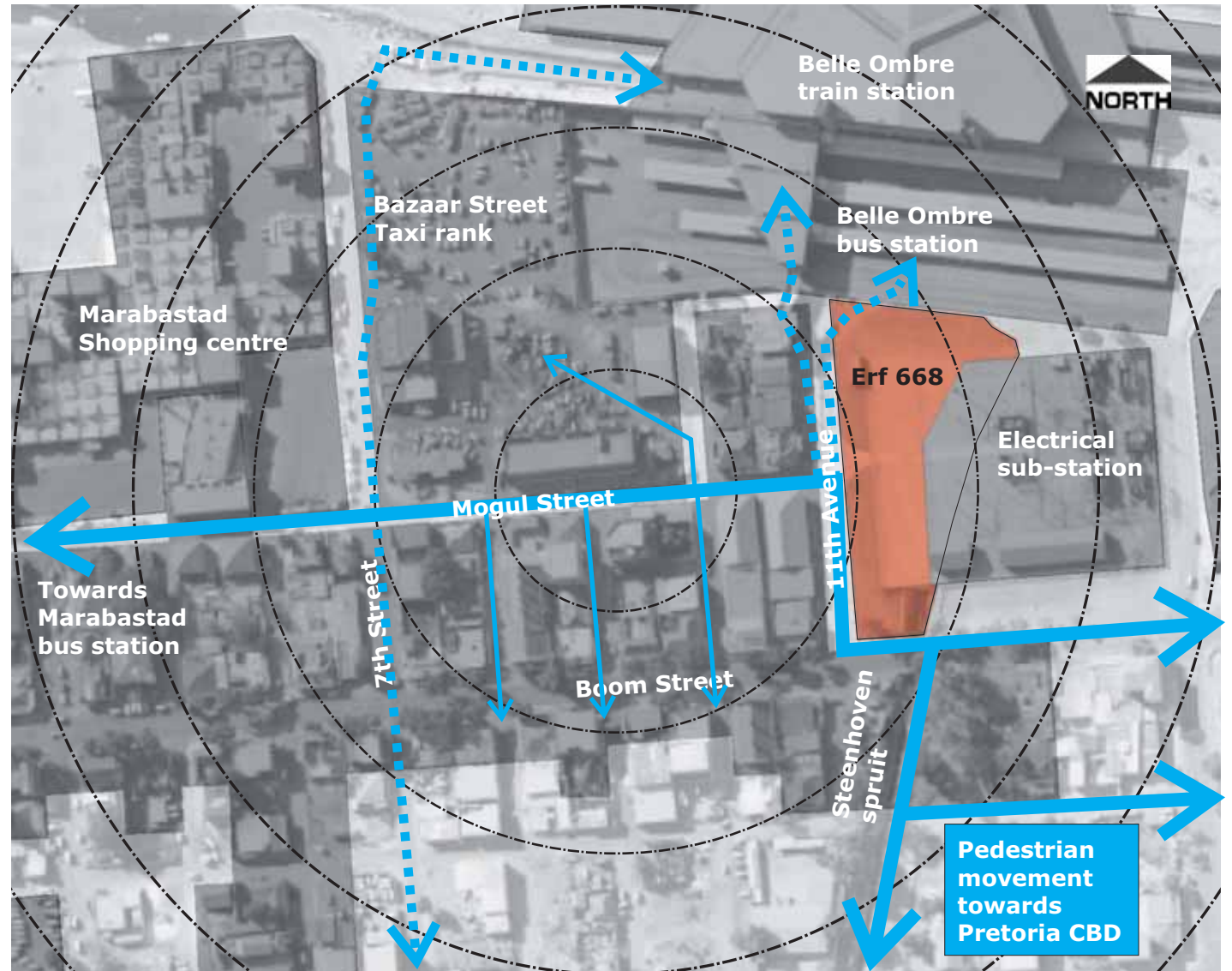
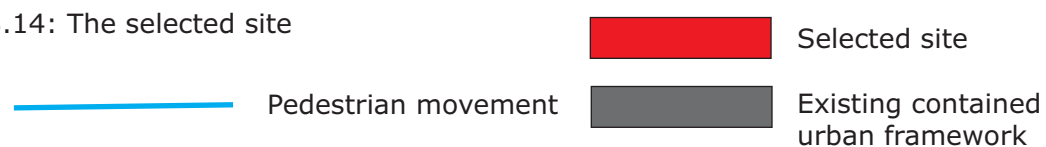


Figure 3.14: The selected site





SITE ANALYSIS

04: SITE ANALYSIS



ROSINA MALATTI 63

I can count my change at the shop

04: SITE ANALYSIS

MICRO SCALE ERF 668, ASIATIC BAZAAR

1 - INTRODUCTION

The proposed site, erf 668, is located between Boom Street and Belle Ombre station (north-south axis) and 11th Avenue and the electrical sub-station (east-west axis). Two servitudes run through the site: a sewer servitude on the western side and the underground canal on the eastern side. The vacant site is located on the edge of Marabastad. The site has an elongated shape created by the unique grid of Marabastad and the border of the Steenhoven Spruit.

The primary movement of vehicles past the site is along Boom Street and 11th Avenue. Boom Street is a one-way street running towards the Bloed Street taxi rank and the Pretoria CBD. Taxis from Atteridgeville, Mabopane and Soshanguve use Boom Street to enter Pretoria. The Belle Ombre bus station area is reached from Potgieter Street. 11th Avenue, linking on to Mogul Street, is the most convenient exit towards DF Malan Street, the main route to the north and west of Tshwane.

Many pedestrians pass the proposed site moving between the transport facilities and between Marabastad and the CBD of Pretoria.

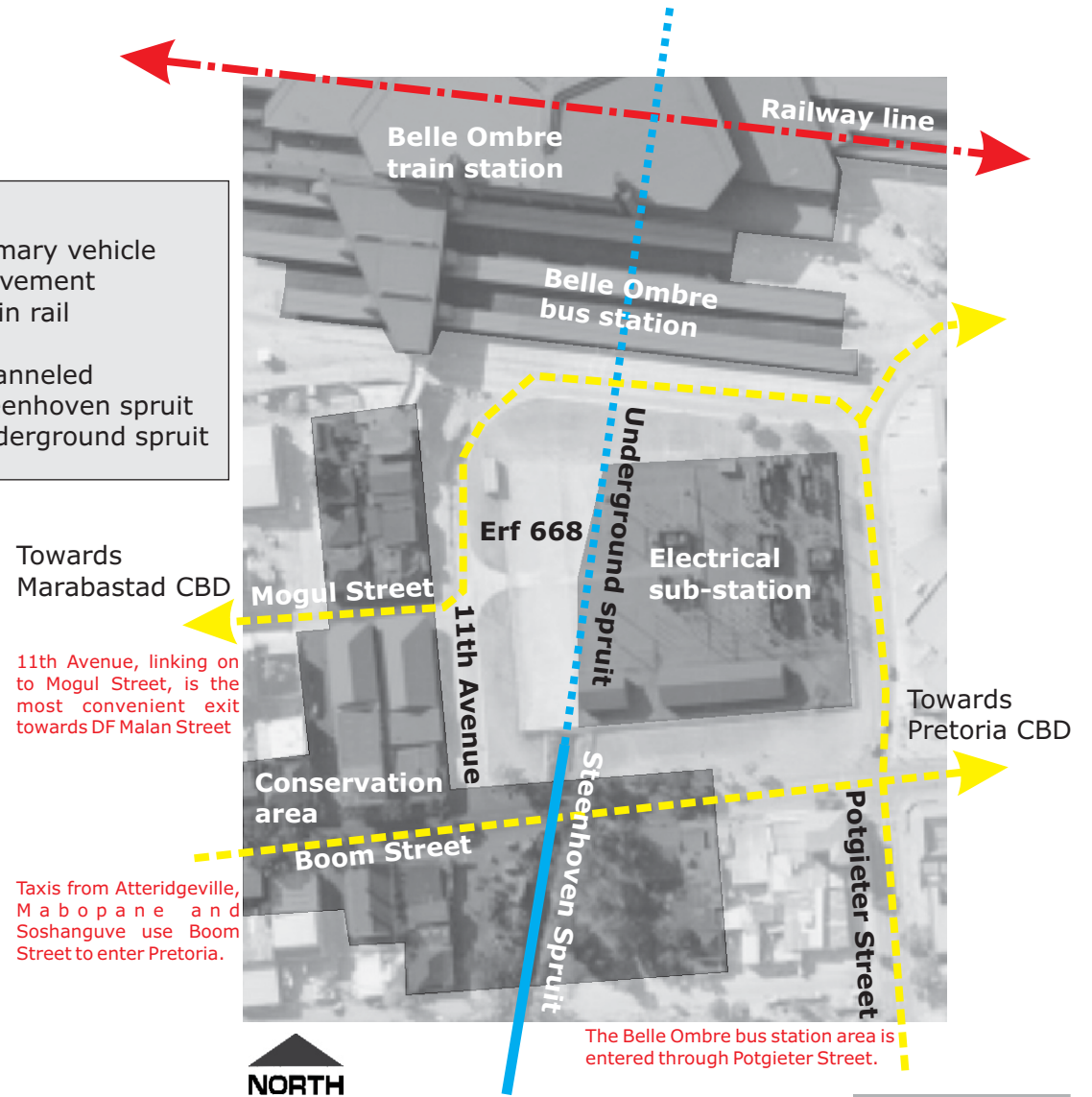
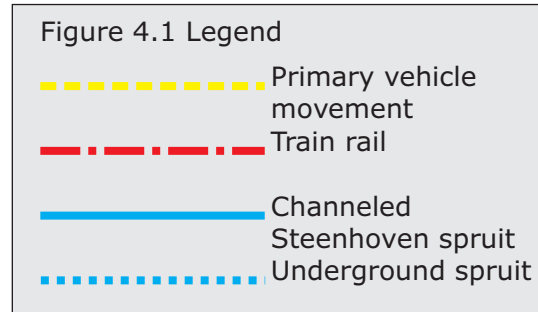


Figure 4.1: Primary vehicle movement around erf 668

2 - LAND LEGAL STATUS

Table 4.1 Land legal status

Registrar	Pretoria
Property type	Erf
Township name	Asiatic Bazaar Ext 1
Erf number	668
Owner	Local Authority
Zoning	Special
Size	7707 sqm
Height	3 storeys
Coverage	80%
F.S.R	2,0
Building line	0 m
Prescribed usage	Shops, offices, instruction, social hall, place of amusement, place of public worship

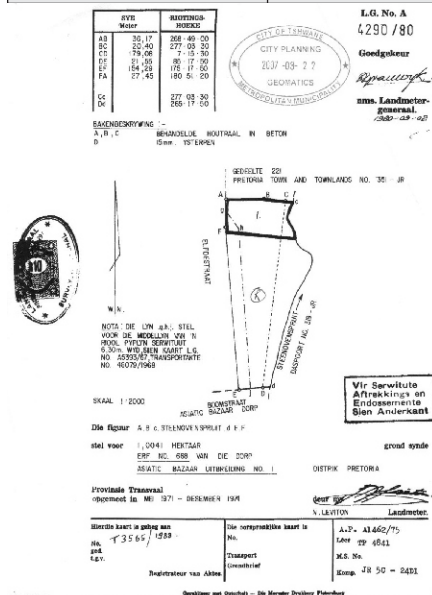


Figure 4.2: SG Diagram obtained from Tshwane Municipality

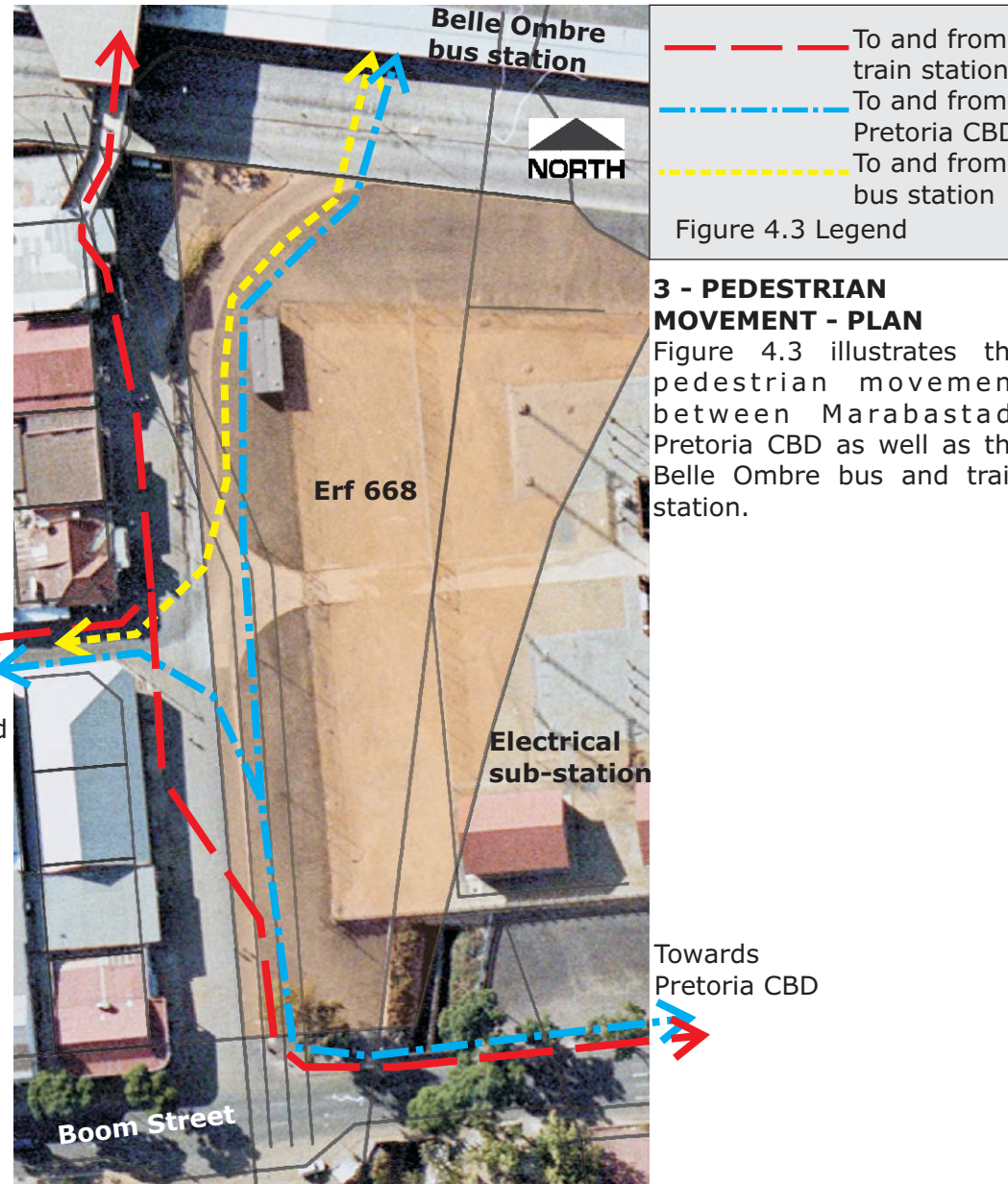


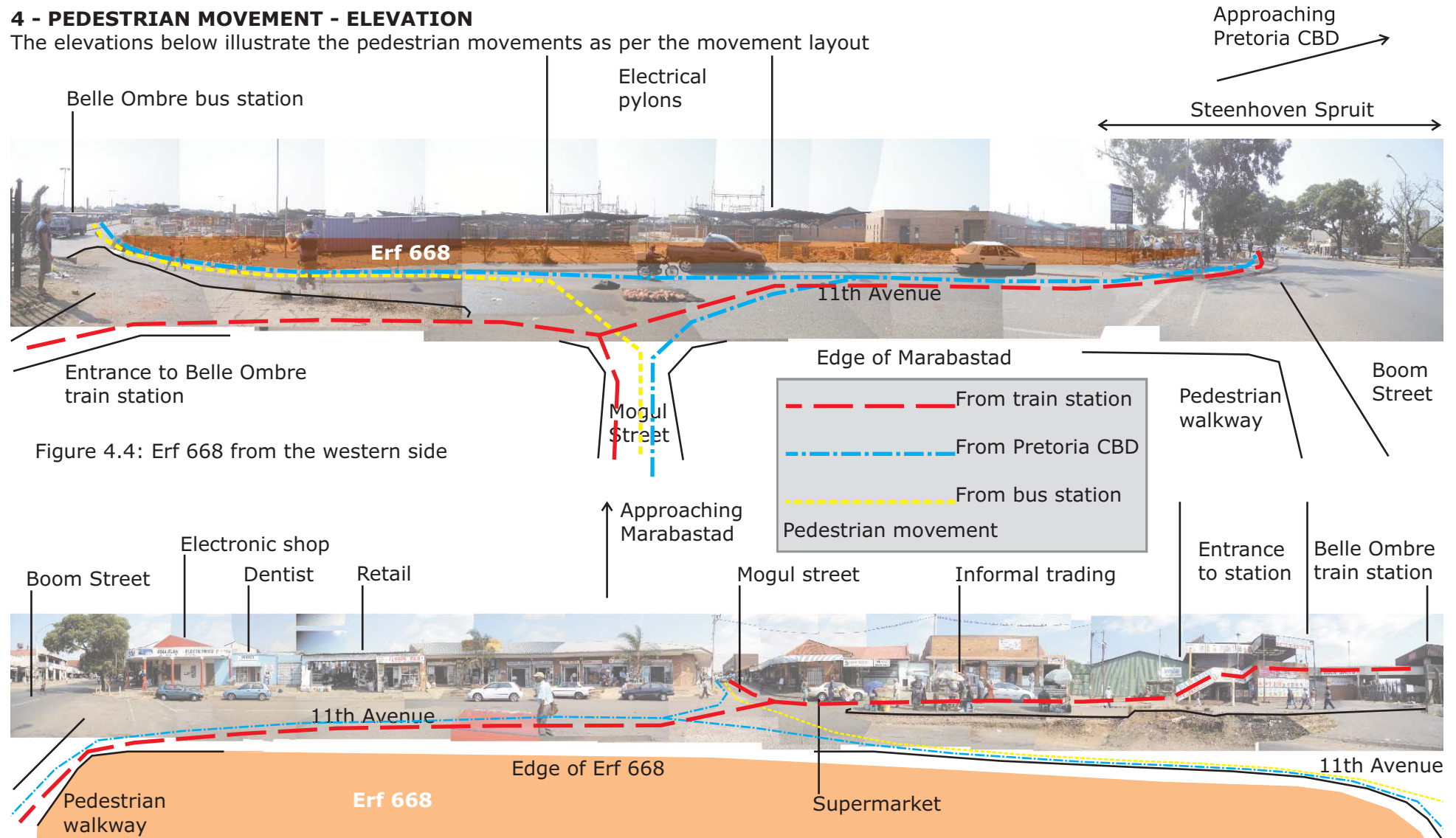
Figure 4.3: Pedestrian movement

3 - PEDESTRIAN MOVEMENT - PLAN

Figure 4.3 illustrates the pedestrian movement between Marabastad, Pretoria CBD as well as the Belle Ombre bus and train station.

4 - PEDESTRIAN MOVEMENT - ELEVATION

The elevations below illustrate the pedestrian movements as per the movement layout



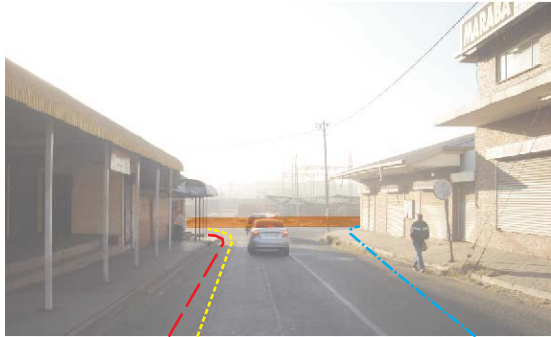


Figure 4.6: Erf 668 from Mogul Street

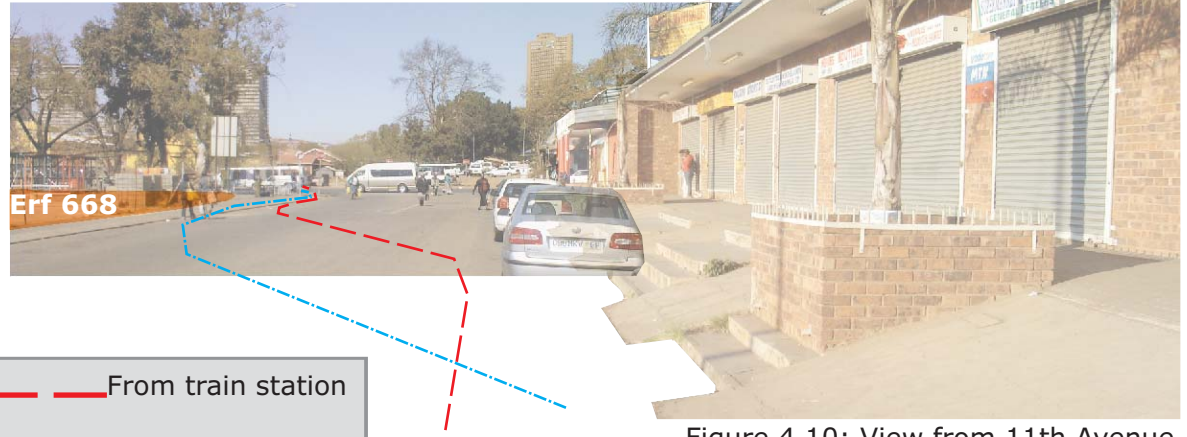


Figure 4.10: View from 11th Avenue



Figure 4.7: View of Belle Ombre from 11th Avenue

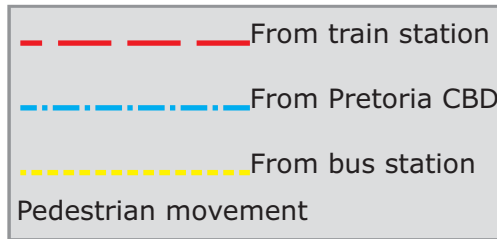


Figure 4.8: View of Belle Ombre train station and access bridge



Figure 4.11: Corner of Boom Street and 11th Avenue



Figure 4.9: View of erf 668 and electrical substation from Belle Ombre bus station

5 - INFLUENTIAL ELEMENTS

The following elements have a direct influence on the proposed site.

STEENHOVEN SPRUIT

The spruit is in an open concrete canal up to the southern edge of erf 668 and continues underground through a pipeline on the eastern side of erf 668. Pedestrians walk along the spruit between Pretoria CBD and Marabastad.

MARABASTAD FACADE

The unique grid and lack of building lines gave rise to interesting facades. The grid can be distinguished by different materials, heights and building styles.

ELECTRICAL SUBSTATION

The substation was originally placed on the edge of the city, which developed around the substation over time.

BOOM STREET

Boom Street is a very important access route to the Pretoria CBD from the north and west of Tshwane. Boom Street has retail shops on both sides in the Marabastad area.

BELLE OMBRE STATION

The train station is part of the ring railroad around the Pretoria CBD and was created in the Apartheid era to keep the transport nodes separated from the central business district. The distance between the nodes and the CBD currently forces people to use alternative transport or walk between the nodes and the CBD.



Figure 4.12: Steenhoven Spruit



Figure 4.13: Marabastad facade

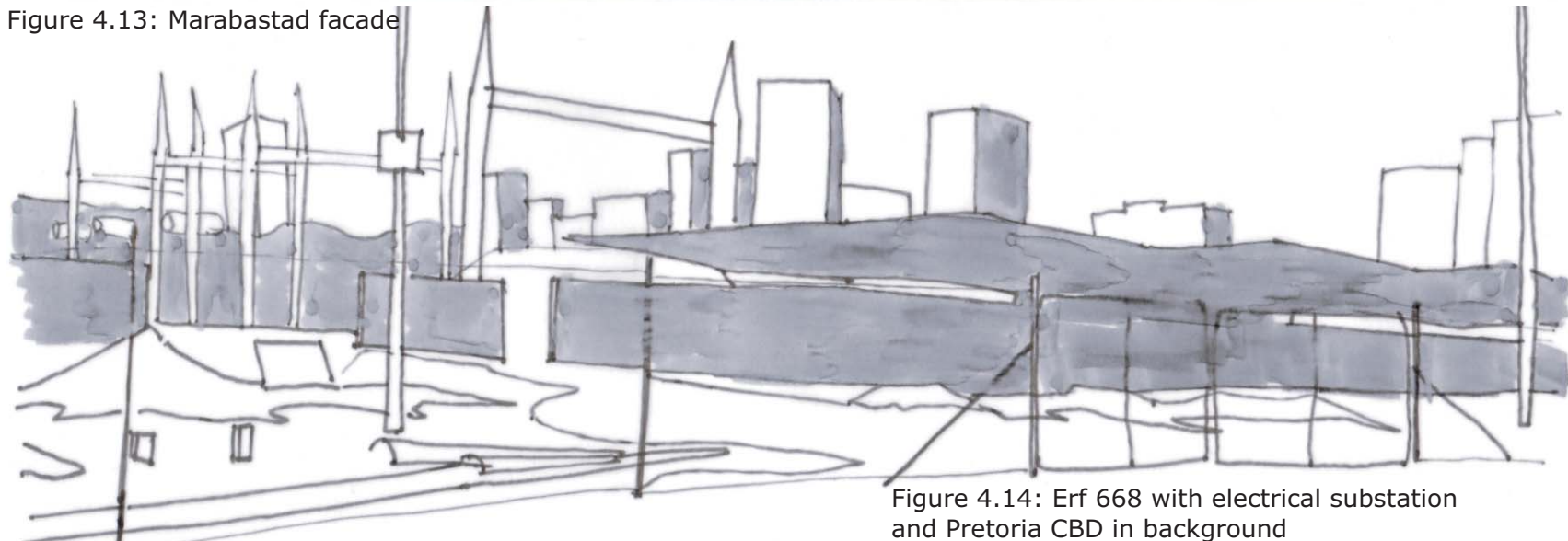


Figure 4.14: Erf 668 with electrical substation and Pretoria CBD in background



Figure 4.15: Boom Street

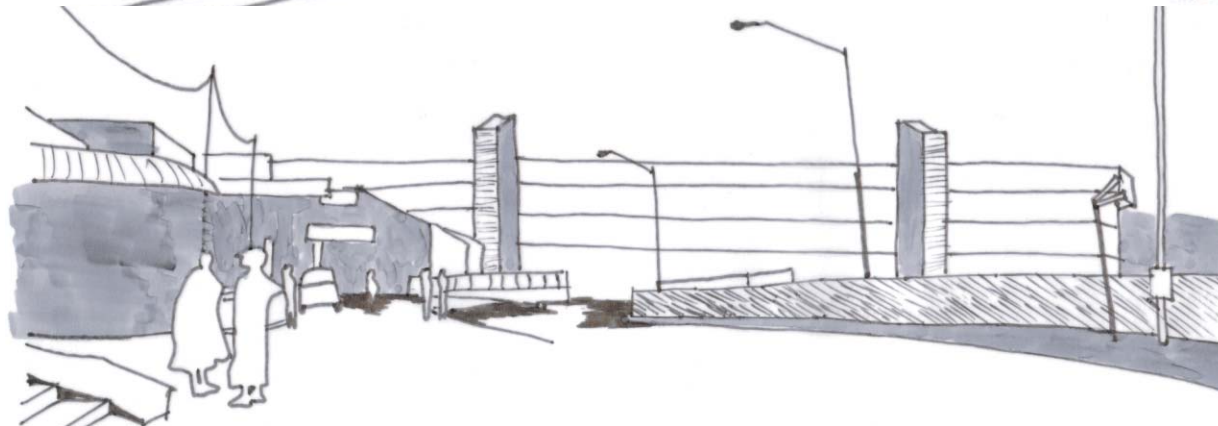


Figure 4.16: Belle Ombre
from 11th Avenue

6 - SECTIONS THROUGH ERF 668

The sections below illustrate the relation between the proposed site and its immediate surroundings. The proposed site is located in the middle of height and facility progression and between the massive train station on the northern side and the even surface of Boom Street to the south. The same progression is observed on the east-west axis. The one- and two-storey shops are overshadowed by the electrical pylons. The proposed building on Erf 668 should incorporate the existing progression of the immediate area.

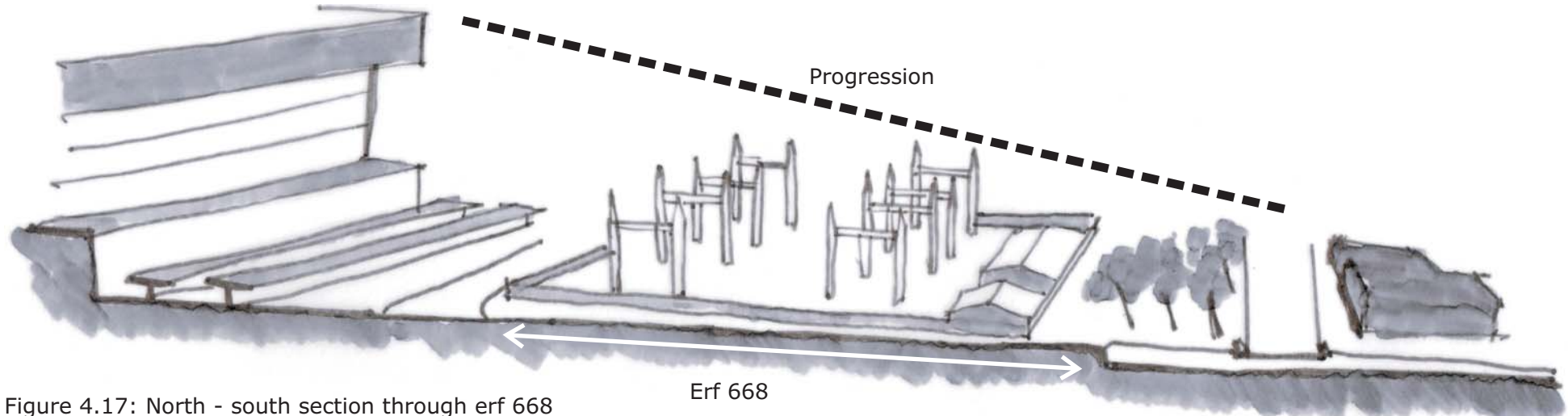


Figure 4.17: North - south section through erf 668

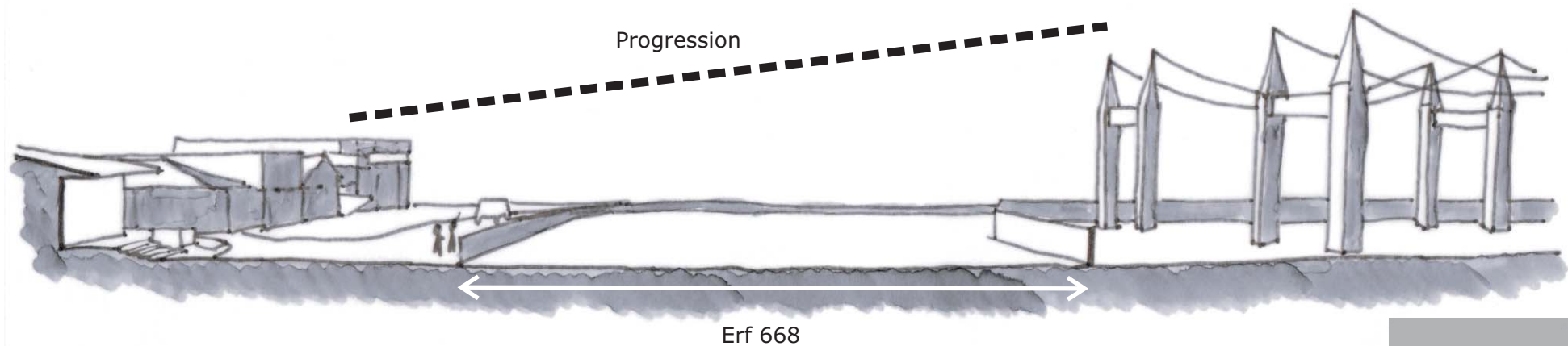


Figure 4.18: East - west section through erf 668



PRECEDENTS

05: PRECEDENTS



MARIA MAPHOSO 66 years.

I can speak to anybody

05: PRECEDENTS

The following precedents were investigated because of their influence on the author.

1 - INFLUENTIAL ARCHITECT

ALVAR AALTO (1898 - 1976)

Alvar Aalto designed each building with a good understanding of the site, the function of the building and the proposed human interaction with the building. Each project was a continuous experiment, and similarities can be seen in following projects. Aalto used a wide range of materials and technologies while maintaining a balanced relation between them. All materials and functions were part of a whole (Groak 1992: 210).

Aalto believed that architecture is the mediator between the natural and the rational order, between nature and man. The ideogram of sky, rational and horizon, natural can be seen in various plans and section of Aalto's work, portraying the contrast between natural and man-made, free form and regular.

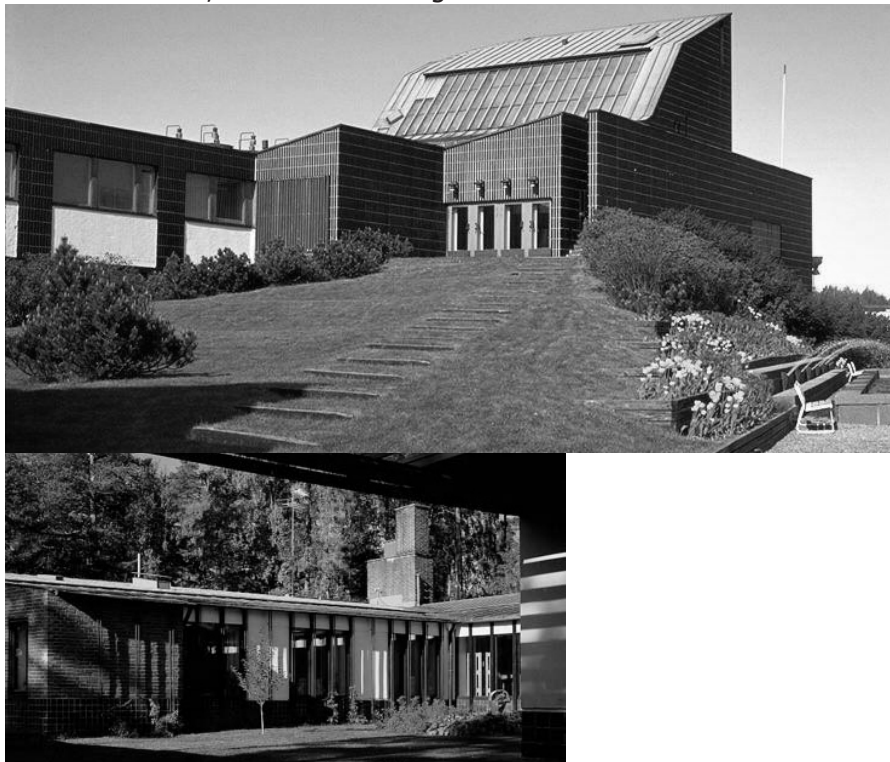


Figure 5.1: Courtyard, Town Hall, Saynatsalo (Weston 1993)

Figure 5.2: View of the Town Hall, Senajoki, Finland, 1965 (Groak 1992: 217)

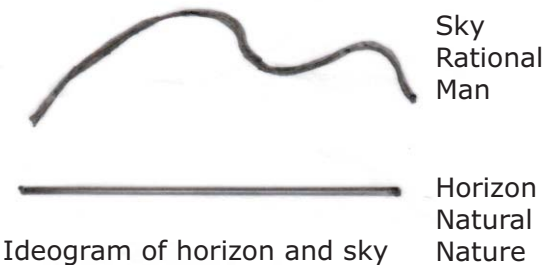


Figure 5.3: Ideogram of horizon and sky

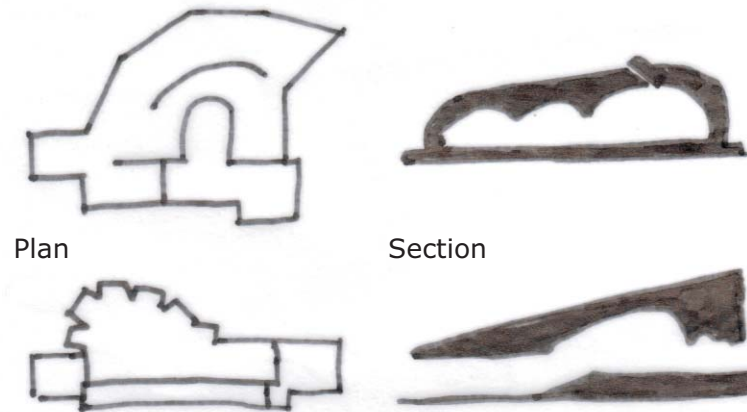


Figure 5.4: Ideogram represented in plan and section

In any of Aalto's projects, the site is the main generator of the design and is analysed by means of morphology, dimension, orientation, infrastructure and relationship with the surroundings (Groak 1992: 212). The original site was highlighted by emphasising the contours by creating retaining steps. External courtyards were always connected with the overall site, open for use by the general public. Of equal importance were the three considerations of the route:

- The path of the sun, capturing and manipulating the sunlight penetrating the building;
- The route of the observer around the site, reading and observing the site;
- The route of the observer inside the building, exploring and discovering new elements on the route (Groak 1992: 213).

Light, or the control of light, was an important factor and was manipulated to enhance the journey through the building. The primary reason for windows was to bring light into the building, not to serve as visual mediums. Aalto used all types of materials: reinforced concrete, brick, timber and many more. The only material he never really used was structural steelwork and cladding. Materials were always used in their natural form and never painted. Materials were not just used for their physical properties, but rather for their compositional and geometric qualities. Alvar Aalto focused on the human experience and acknowledged the site, using a holistic way to create humane and relevant architecture.



Figure 5.5: Entrance to library, Vyborg (Fleig: 1995)

Figure 5.6: Lending room, Library, Vyborg (Fleig: 1995)

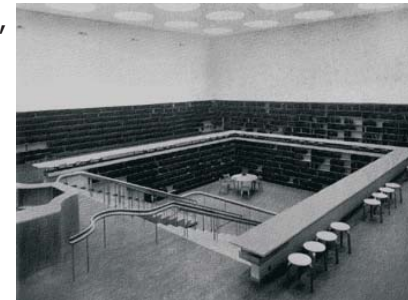


Figure 5.7: Auditorium, Library, Vyborg (Fleig: 1995)

2 - LAYERING AND PROGRESSION

CONSTITUTIONAL COURT OF SOUTH AFRICA OMM DESIGN WORKSHOP

The concept of elders openly dispensing justice under a tree is highlighted and well represented as the main concept of the project. This building celebrates the constitutional democracy on the site of a previous apartheid regime prison. The architectural style originated in the existing surroundings and evolved into a language that speaks of openness and interwoven layering.

The court is made up of paths with distinct functions. The African stairs walkway is on the outside, leading up towards the entrance and square. Parallel on the inside is the exhibition gallery walkway that is a semipublic gallery, linking the court with the library. Between the exhibition walkway and the outside courtyard is the judges' walkway, visually linked to the main building, but isolated and private (Law-Viljoen 2006: 20).

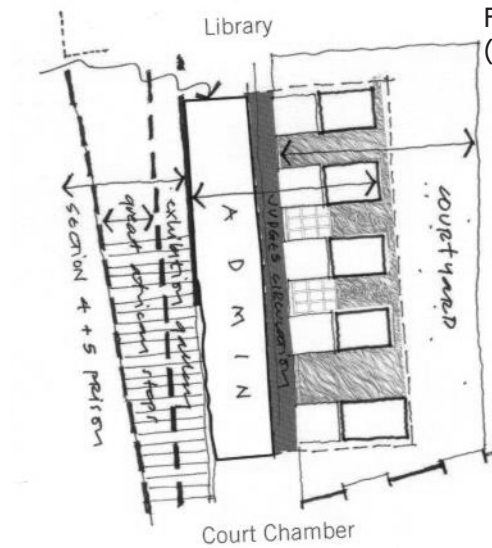


Figure 5.8: Walkway layout plan
(Law-Viljoen 2006: 59)



Figure 5.10: Louvered windows
in foyer (Author 2007)

Figure 5.11: Court seen from the square
with glass tower on the right (Author 2007)



Figure 5.9: Building name at
entrance (Author 2007)

Areas and functions are highlighted by the movement and progression towards them. To reach the important court chamber, one must first move through the outside square, the entrance podium and the public foyer. Even though all these spaces are public, a definitive progression of importance is felt as one approaches the chamber.

Cast concrete is the main building material and is applied in a wide range of applications – from smooth surfaces to raw planes, always in perfect harmony with surrounding materials such as glass, steel and brick. Much consideration has been given to natural ventilation in all the spaces and to embracing the sun in the winter season and shading it during summer months. A passive cooling system, a grey-water harvesting system and the selection of materials all play an important role in the day-to-day running of the building (Law-Viljoen. 2006: 140).

Figure 5.12: Different concrete usages in foyer (by author 2007)

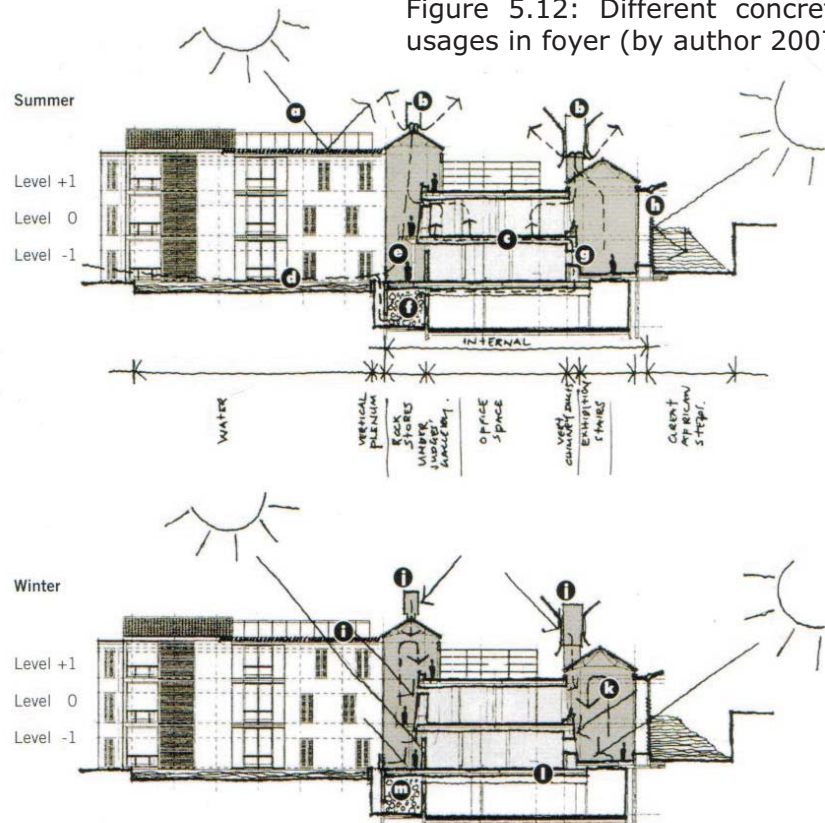


Figure 5.13: Passive cooling system (Law-Viljoen 2006: 140)

Figure 5.14: The African stairs (Author 2007)



3 - LIBRARY

UNIVERSITY LIBRARY, TOKYO, JAPAN SHIGERU BAN

Shigeru Ban, who is known for his lightweight structures and use of recycled materials, designed the University library in Tokyo, Japan, his largest building to date. The five-storey library is positioned on the opposite side of the main entrance of the university with a plaza in between. The building is a combination of solid and void, and in full harmony with the neighbouring Neo-Classical buildings of the century-old campus (Webb 2007: 60).

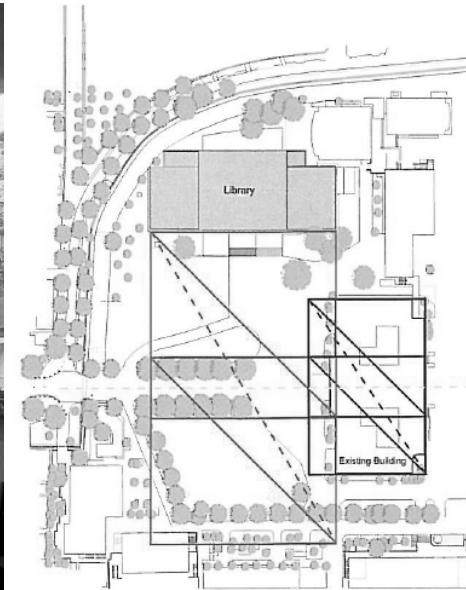
The plan and elevation were generated from three golden rectangles, in direct relation with the original building it replaced. The building is made up of three sections which are structurally independent from each other (Webb 2007: 60). The side sections house the bookshelves and private glass cubicles for solitary study. The ground floor of the middle section houses the reception and reading room. The lobby is divided into different talking layers. At the entrance is an isolated lobby, a glass-walled lounge acting as the mediator between the quiet study area inside and the noisy outside. The second layer is in the atrium and only allows quiet conversation.



Figure 5.15: Approach to library
(Webb 2007: 60)



Figure 5.16: The pods in the atrium
(Webb 2007: 63)



site plan

Figure 5.17: Site plan
(Webb 2007: 60)

In the atrium space of the middle section there are five mushroom-like pods, constructed of arched steel ribs with glass in between and accessed by a flying bridge (Webb 2007: 64). The oval pods serve as meeting rooms for seminars or just break-out areas for students.

A definitive layering of privacy exists without hampering visibility. The private pods are visible from the lobby with no interference by activities in the lobby. The bookshelves are almost hidden in the side wings, with the human facilities in a primary position in the middle. The human experience and interaction between 'man and literacy' was the most important consideration.



Figure 5.18: Front elevation at night (Webb 2007: 62)



Figure 5.19: Section progression

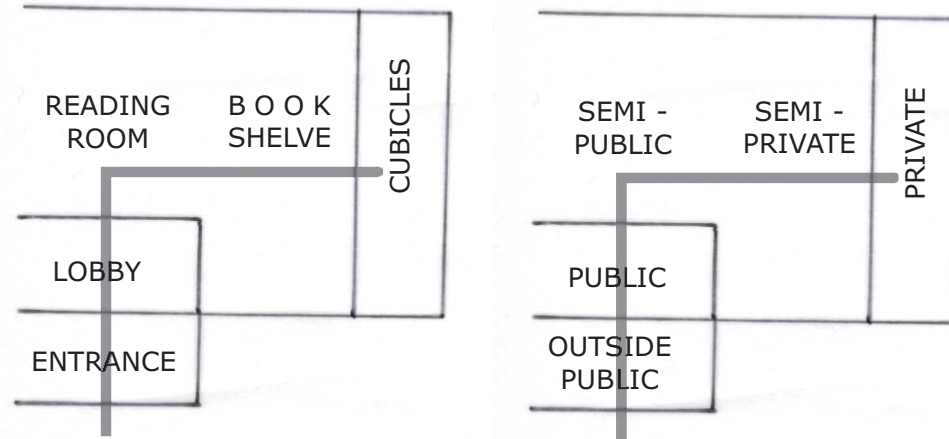


Figure 5.20: Progression in privacy on plan

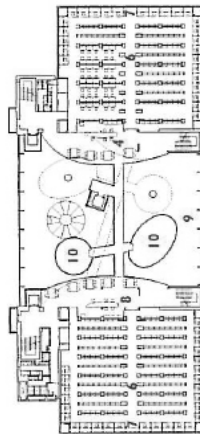


Figure 5.21: Typical floor layout (Webb 2007: 62)



Figure 5.22: View inside a pod (Webb 2007: 65)

4 - ADULT ILLITERACY CENTRE

MAMELODI EAST COMMUNITY CENTRE

For a precedent dealing with adult illiteracy, the author investigated various adult literacy programmes in Tshwane. The ABET programme at the Mamelodi East Community centre was thoroughly investigated by the author. The selected programme is part of an ABET campaign by the City of Tshwane Metropolitan Municipality. Two trained ladies have been appointed to educate the illiterate adults at the community centre, which consists of a hall, administrative office, auditoriums, a kitchen and a library.

THE LIBRARY

Every space in the 100 square metre library is optimised to serve the community. With no educational facilities at home, the public makes full use of the library. The counter area serves as an internet café, the administrative area and the book checkout point. Bookshelves line the walls, with tables and chairs in between. The desks are used for studying and casual reading with no privacy or isolation.



Figure 5.23: Mamelodi community centre's library - view of reading room (Author 2007)

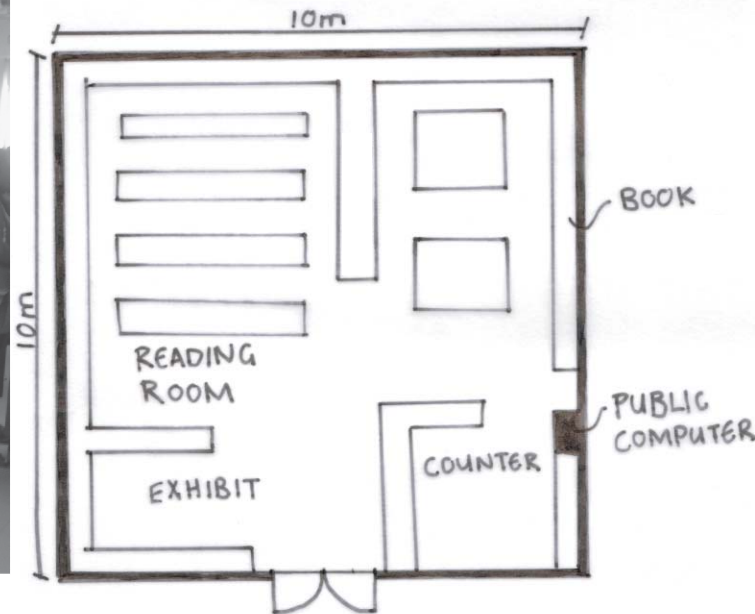


Figure 5.24: Layout plan of the Mamelodi community centre's library

THE ABET CLASSES

As there are no classrooms or auditoriums, the ABET classes are presented in any available space. All that is needed to educate the illiterate adults is seats and a portable board for the teacher to write on. During all the visits by the author, the level one and two Abet classes were held in the community centre's kitchen. Plastic chairs are used as seats and the kitchen workbench doubles as a table. The majority of learners are elderly women, who struggle with the inadequate lighting and the high work bench. The level three class is held in a more suitable hall.

Figure 5.25: Level three class in auditorium (Author 2007)



Figure 5.26: Level 1 and 2 class in kitchen (Author 2007)



Figure 5.27: Lady at kitchen workbench (Author 2007)

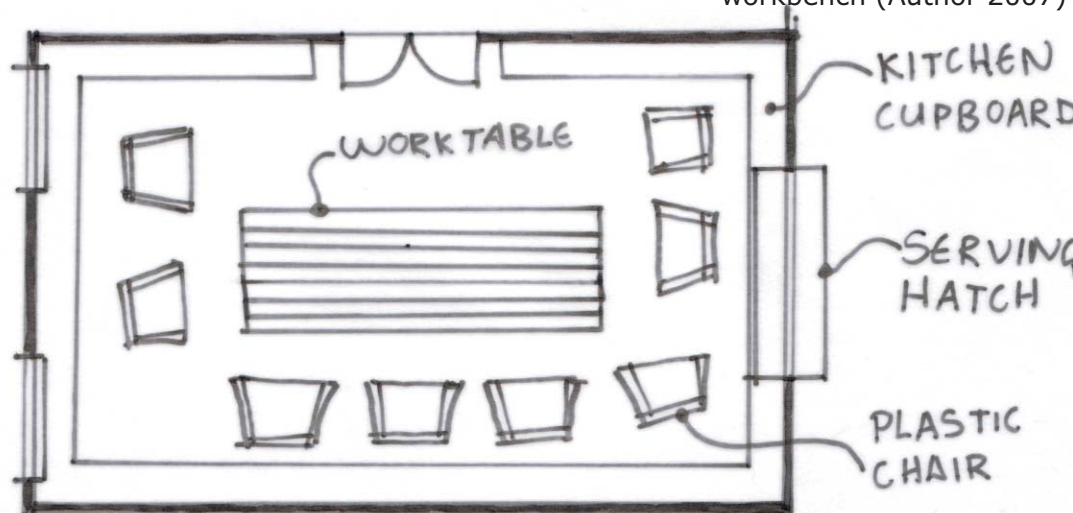


Figure 5.28: Layout plan of kitchen used for ABET class (Author 2007)

5 - MATERIALS

TOLPLAN OFFICES AND HOUSE STEYN/KUNZ, PRETORIA THOMAS GOUWS (ARCHITECT)

Both project layouts are based on an H-shape with courtyards that are in contact with the outer site. The sites were investigated in detail by Gouws to determine the right location to optimise natural light. Familiar materials were used and attention was given to the details where materials and elements meet. Thomas Gouws complements the African landscape by using materials in harmony like face brick, concrete, glass and steel. According to Botes (2006: 52), the pitch roofs define the space and do not contain it. Overhangs are supported by I-beams and the beam filling and gable ends are glazed to create the illusion of floating.

The richness and spatial awareness of the projects can only be appreciated when visiting the buildings. The projects of Thomas Gouws speak of an understanding of the site and the full use of the selected materials.



Figure 5.31: House Steyn - balcony detail (Botes 2006: 53)

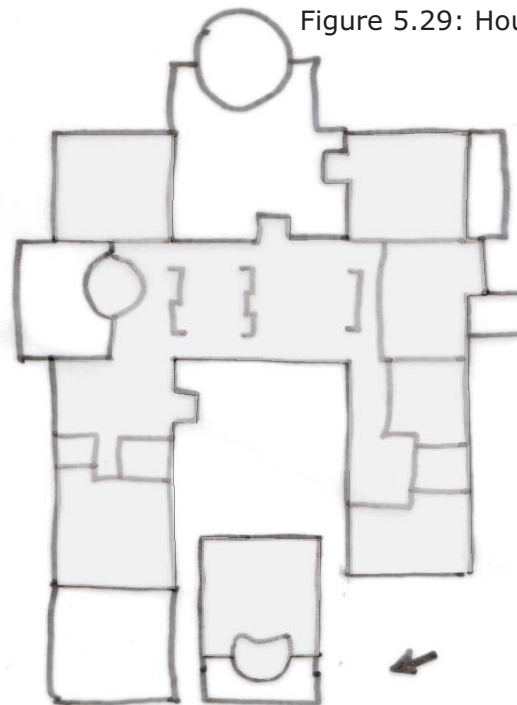


Figure 5.29: House Steyn - layout plan

Figure 5.30: House Steyn - The courtyard (Botes 2006: 53)



Figure 5.32: House Steyn - entrance (Botes 2006: 51)



Figure 5.33: Tolplan - concrete fins (Author 2007)



Figure 5.34: Tolplan - approaching the entrance (Author 2007)

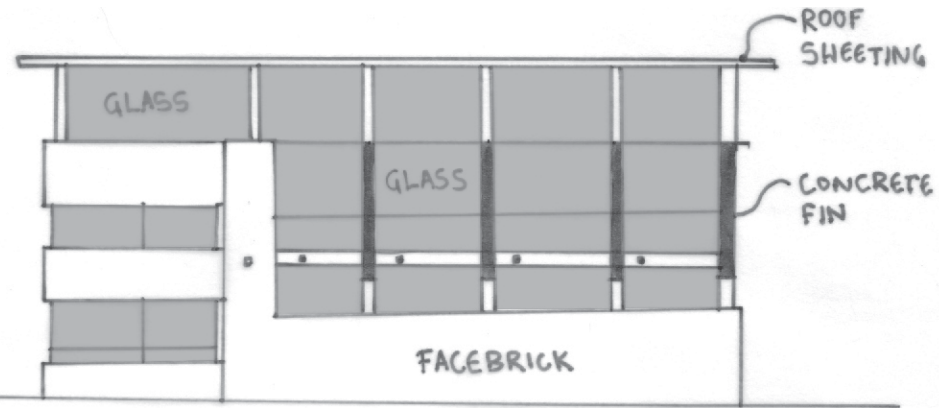


Figure 5.35: Tolplan - north elevation

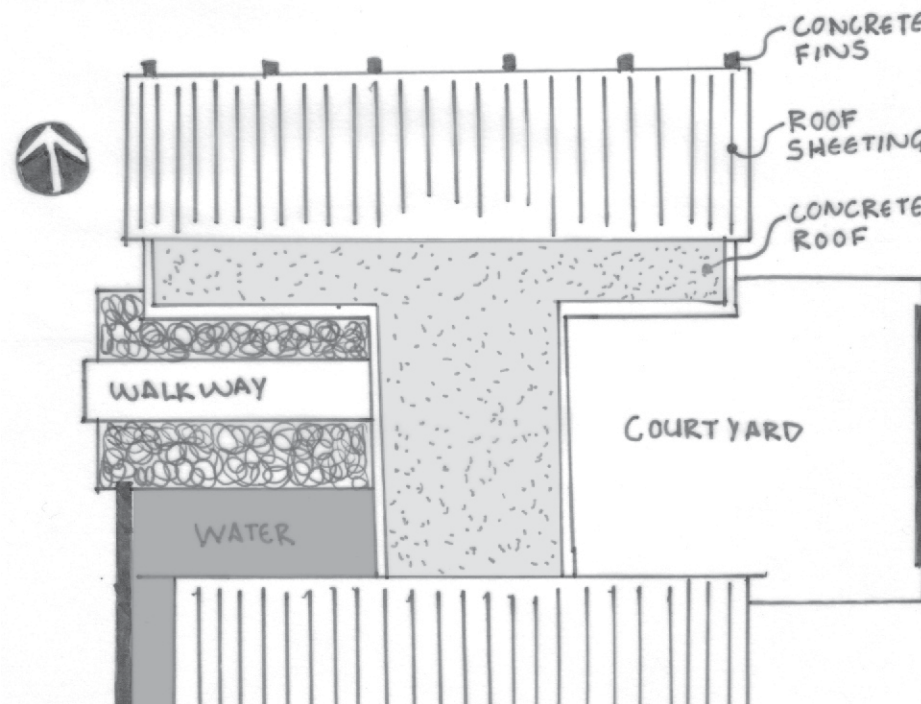


Figure 5.36: Tolplan - site plan



Figure 5.37: Tolplan - front facade from Lynnwood street (Author 2007)



Figure 5.39: Tolplan - north facade (Author 2007)



Figure 5.38: Tolplan - Eastern facade with courtyard (Author 2007)

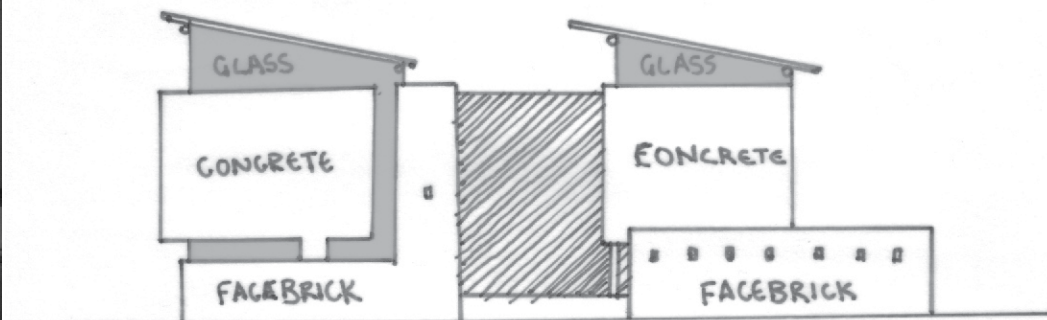
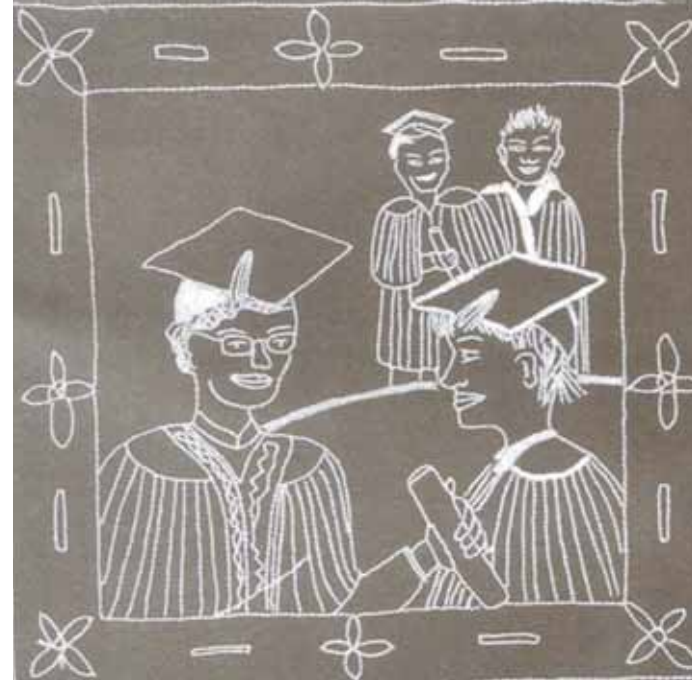


Figure 5.40: Tolplan - west elevation



DESIGN

06: DESIGN DEVELOPMENT



meriza mbuyane

(MERIZA MBUVANE, 54 YEARS OLD)

am literate and proud of myself

(I AM LITERATE AND PROUD OF MYSELF)

06: DESIGN DEVELOPMENT

1 - DESIGN PHILOSOPHY: ARCHETYPES

1- 1 THE SEARCH FOR AN APPROACHABLE BUILDING

The proposed site is located on a strategic intersection between train, taxi and bus transfer points of Marabastad and on the pedestrian route towards the city centre. Many pedestrians pass the proposed site everyday on their route between work and home. The majority of the passing pedestrians live in lower-income townships and informal settlements all over Tshwane and beyond. The location of the site creates the ideal opportunity to attract the large number of passing pedestrians to be the daily users of the proposed centre. The question is how to design the centre so as to be inviting and approachable for the passing pedestrian.

“The buildings we call beautiful contain in a concentrated form those qualities in which we are deficient”
(De Botton 2006: 167)

According to John Ruskin (1819 – 1900), the famous art critic, a good building is a shelter which communicates. Buildings that the general public admire communicate qualities of friendliness, kindness or strength (De Botton 2006: 98). These good qualities can be experienced in respect of buildings built by different civilisations over the decades. The same mystical presence and esoteric meaning of space and form can be experienced at the Chartres Cathedral and at the Pyramids in Egypt. On the other hand, it is argued that the majority of buildings of the Modern age do not possess these qualities and are uninhabitable and emotionless. Before Modernism, people expressed insight into a higher spiritual reality and portrayed their spiritual creator as beauty through their buildings. The traditional expression of design has been discarded by the Modern architect (Bangs 2007: 3).

The industrial revolution and the fading away of spirituality gave rise to a new era of architecture. Function and production became the norm and natural, human and environmental concerns were disregarded. Buildings became planes of repetition and dehumanisation (Fleming, 1995: 679). Most of the iconic buildings of the Modernist era, for example Farnsworth House by Mies van der Rohe, were scientific and mechanical masterpieces, but uninhabitable to their users.

Robert Venturi, an architect of the 60s, was the first to openly criticise the modernist approach in a book entitled *Complexity and Contradiction in Architecture*. According to Venturi, architects should focus on the existing and improve it instead of reinventing it. Venturi and Scott-Brown, his partner, proposed a new symbolist architecture with the ability to adapt to the speed and mobility of modern society (Fleming, 1995: 681).



Figure: 6.1: Farnsworth House
(Zimmerman 2006: 65)



Figure 6.2: Chartres Cathedral
(Fleming 1995: 203)

1.2 - ARCHETYPES

Carl Gustav Jung (1875 – 1961), a Swiss psychologist and founder of analytical psychology, developed the theory of the archetype. According to Jung the archetype consists of the ideas and materials drawn from the organised structure of the mind to create images in the unconscious. The organised structure makes thoughts possible and creates our perception of the world. An archetype is an image we see and connected to an underlying reality that has been part of human consciousness since the primordial age (Bangs, 2007: 84).

“Architecture is both symbol and shelter: symbol of the divine reality and shelter for our physical bodies”

(Bangs 2007, p73)

1.3 - ARCHETYPE OF SHELTER

THE CAVE

“The cave, as shelter, is imprinted in the generic fabric of our being”

(Bangs 2007, p88)

Man's first shelter, preceding the hut or tent, was the cave. According to ancient beliefs, the earth is seen as the mother and the cave is therefore the womb, the haven of shelter and protection (Bangs, 2007: 92). The cave, as the archetypal image of shelter, can best be seen in places of worship, from the dome-shaped Orthodox churches to Le Corbusier's church in Ronchamp. Le Corbusier designed this church at the end of his career as a free-flowing concrete cave with light penetrating through coordinated openings, unlike in his previous work. Philip Johnson, another master of the Modernist Era, only realised the significance of the cave after he designed his own house, the Glass House in Connecticut, USA. The original design was a rectangular glass and steel structure; after its construction, Johnson realised he had no privacy or protection against the onlooker or the environment. A second building was constructed, an enclosed box across from the first, to be used as a shelter for protection and privacy.



Figure 6.3: The Glass House, Philip Johnson (Bangs 2007: 92)

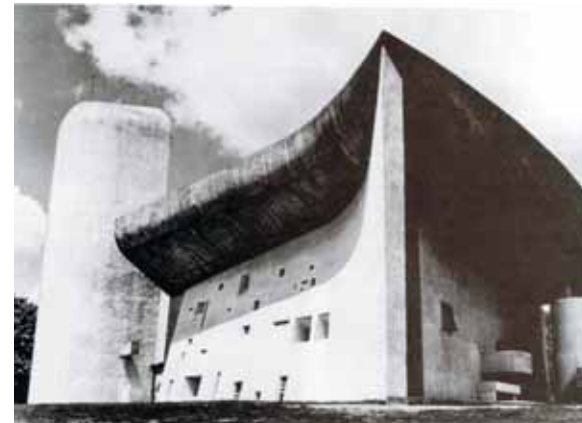


Figure 6.4: Notre-Dame-du-Haut, 1955 (Fleming 1995: 656)

THE CLEARING

This is the outside space where we as humans can move freely and see the sky. Every city in the world has squares and parks for gatherings and relaxation, binding the urban framework. The clearing is the counterpart of the cave, representing light and masculinity.

THE OPENING

The opening is the boundary between the female cave and the male clearing. The opening must always resemble the boundary between the inside and outside. The mass production of large glass planes at the beginning of the 20th century gave the architects the technology to create borderless glass walls with no definition between the clearing and the cave. Frank Lloyd Wright acknowledged the importance of the definition and never dissolved the wall. Wright saw all parts of the building as related to each other as a continual and integrated whole, the fundamentals of organic architecture (Pfeiffer, 1991: 28).

THE GARDEN

We as humans are dependent on plants for our existence, and the garden is our link to the earth, our origin. Frank Lloyd Wright integrated the building with the site and acknowledged the importance of nature. According to Wright, a close relationship with nature will better your personal, spiritual and physical well-being (Pfeiffer, 1991: 26).

THE PRESENCE OF WATER

Water is the life giver to everything on earth, a physical and psychic element of existence (Bangs 2007: 109). Water has always been an important factor which has shaped most of the cities in the world. "The falling water house" by Frank Lloyd Wright is one of the 20th century's masterpieces. This house consists of various different planes spreading towards nature and cantilevering over a natural waterfall.



Figure 6.5: Solar Hemi-cycle house, 1948
Frank Lloyd Wright
(Pfeiffer 1991: 154)
The opening and the garden

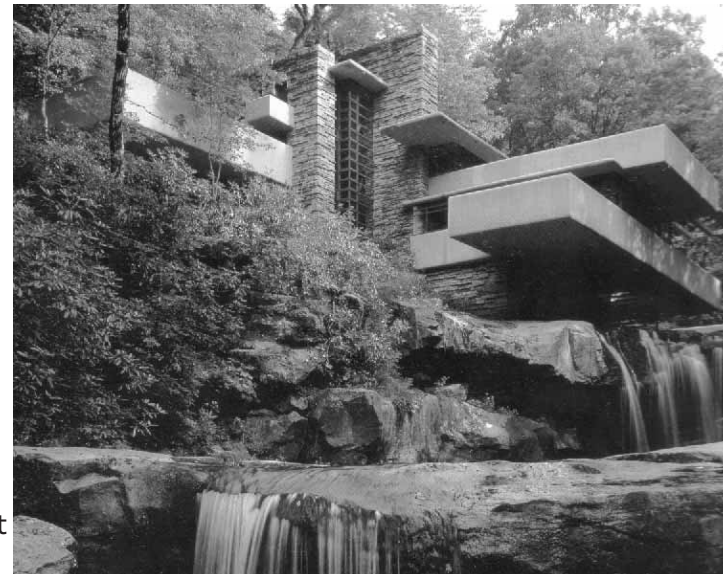


Figure 6.6: Falling water, 1939, Frank Lloyd Wright
(Pfeiffer 1991: 92)

THE FOUR ELEMENTS

The relationship between the four elements and the archetypes of shelter is:

- Earth = the cave, hard, dark
 - Air = the clearing, space and light
 - Water = water, ultimate source of life
 - Fire = the garden, the sun that gives energy to all living elements
- (Bangs, 2007: 115)

1.4 - ARCHETYPES OF DESIGN

DUALITY

Duality is best illustrated in the eastern philosophy as yin and yang. The ancient yin and yang symbol refers to duality within unity or hormonal diversities. One can't exist without the other, light and dark, cave and clearing or fire and water.

HIERARCHY

Hierarchy is the organisation of importance, from the sun and its orbiting planets to the atoms of a molecule. The design of a building must be based on the hierarchy of human participation. Active and important areas should be dominant compared with minor and service functions. An example of the wrong usage of hierarchy can be seen at the Pompidou Centre, designed by R. Rogers and R. Piano in Paris (Bangs, 2007: 126). The hierarchy is focused on the mechanical systems, the ducting and piping, which is placed on the outside and overwhelms the building.

MATERIALS

Materials are usually chosen for their physical characteristics of strength or durability. It is also necessary to consider the fundamental elements of materials. Rock, for example, must be used and interpreted as rock, a symbol of hardness, solidity and mass. A thin wall with rock cladding or a suspended stone wall above a glass plane gives an impression of instability. Materials should be used in their natural form and not covered or hidden.



Figure 6.7: Guild House, 1965, Robert Venturi (Fleming 1995: 682) Hierarchy and proportion

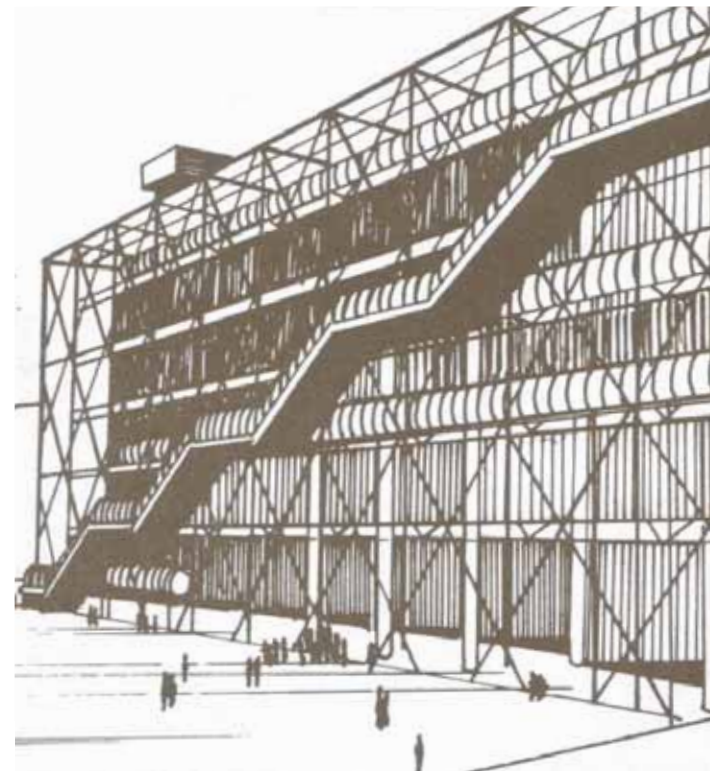


Figure 6.8: Pompidou Centre, 1971, R. Rogers and R. Piano (Stimpson 1985: 140)

2 - DESIGN INFLUENCES

2.1 - THE NORTH-SOUTH AXIS:

The approach to the design is to use basic shapes and principles to create a straightforward building that any observer can interpret and understand. In terms of literacy, a building is equivalent to a book – it should be easy to read.

The overall design concept focuses on a reading room with internal functions that caters for all literacy needs. The building will be rectangular in shape to optimise usable space.

The high number of pedestrians walking on a north-south axis as well as the building lines necessitated elongation of the design concept on a north-south axis with a central internal and western external walkway.

The western facade and external walkway need to be shaded against the sun, while the facade must remain visible and readable to the observer as it faces the street.

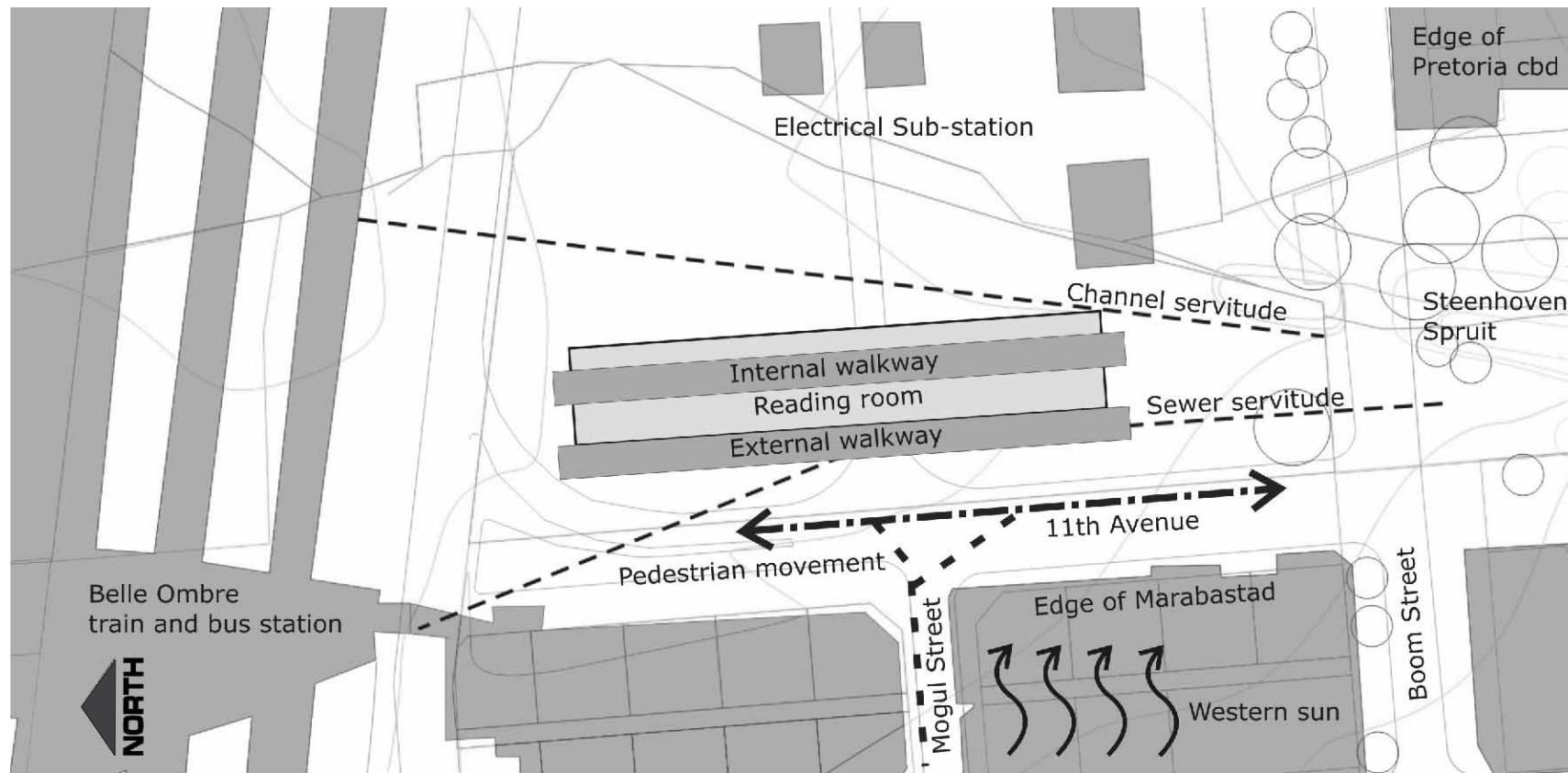


Figure 6.9: Concept plan

2.2 - THE EXISTING GRID:

The morphology of Marabastad is shaped by a formal grid and stands of approximately 260 sqm in size. The existing buildings of Marabastad are positioned against each other due to the lack of building lines; this creates an uninterrupted yet interesting street facade. The original grid can only be identified by the different materials, building methods and heights of the individual buildings. This unique grid and the miscellaneous facades of the existing buildings must be amplified in the proposed design to ensure that the character of the existing urban fabric is enhanced.

The proposed site is positioned in a void created by contrasting land uses and transitional environments, including the edge of Marabastad, Belle Ombre station, the electrical sub-station and the Steenhoven Spruit. The proposed project must fill the void and attempt to creatively integrate these locations.



Figure 6.10: Existing elevation of buildings across the proposed site

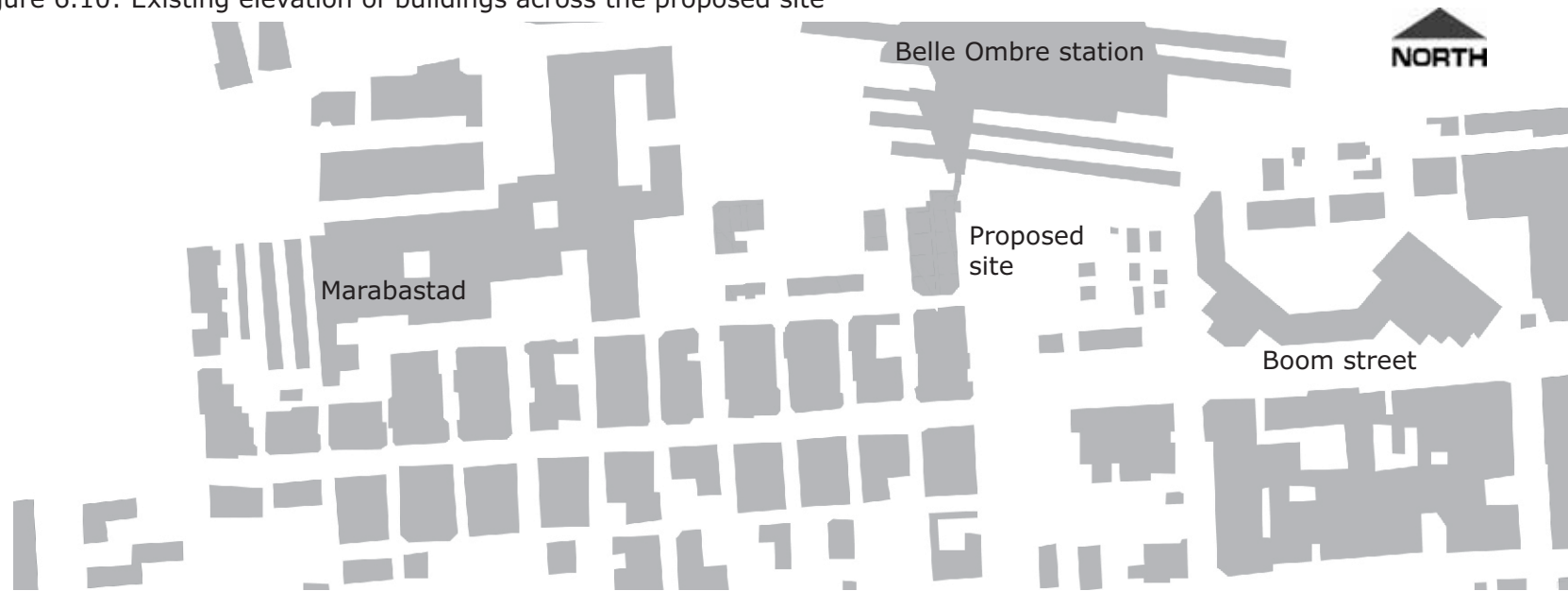


Figure 6.11: Building footprint of Marabastad

2.3 - ARCHETYPES:

2.3.1 - ARCHETYPES OF SHELTER:

THE CAVE: Viewed in the site context, the building is the cave and the auditoriums are the primary chambers of the cave. The auditoriums are concrete boxes, isolated from the outside, places of learning and concentration.

THE CLEARING: Clearings are places where people can walk freely and observe the sky. The canopy and pavement walkways and the square on the western side are public areas with seats and shade that allow for informal gatherings.

THE OPENING: The opening is the link between the building and the outside. Variations elements have been used – from frameless glass walls, aluminum shopfronts and Winblok panels to face brick walls. The main entrance is a glass door punched into a concrete box, clearly identifiable as a place to enter.

THE GARDEN: The garden is a retreat to nature and to humankind's origins. Courtyards with trees and lawns are positioned on the eastern side behind the building, private and quiet.

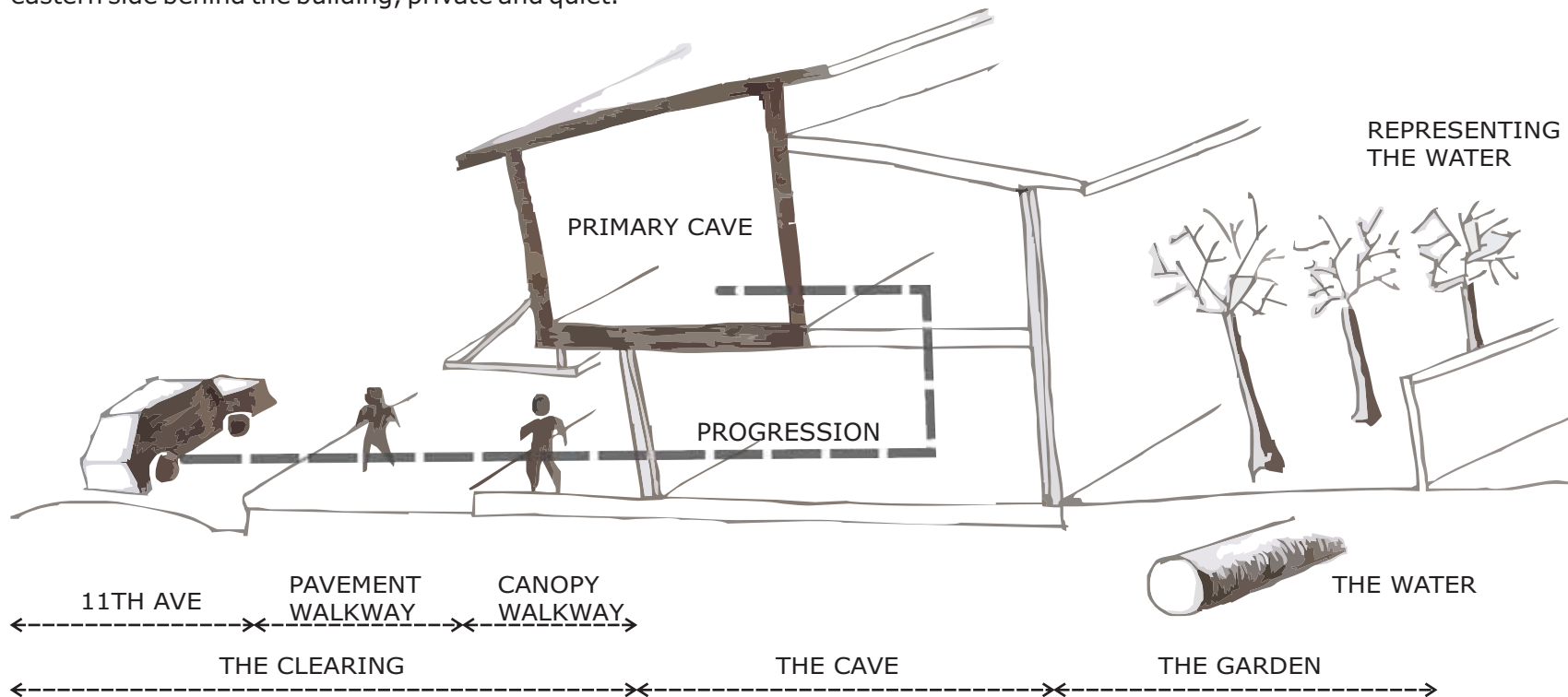


Figure 6.12: Archetype section

2.3.2 - ARCHETYPES OF DESIGN:

DUALITY: Duality divines the idea of difference, the balance between opposites. Dark and light is the most basic expression of dualism.

HIERARCHY: The order of importance is amplified by height and visibility. The auditoriums are the learning hubs of the centre and are placed on the first floor, projecting through the front facade. Service elements with no importance to literacy are hidden behind a wall at the back of the building.

MATERIALS: Materials are considered for their physical and symbolic characteristics. Private areas are enclosed by concrete and public areas are opened up with glass.

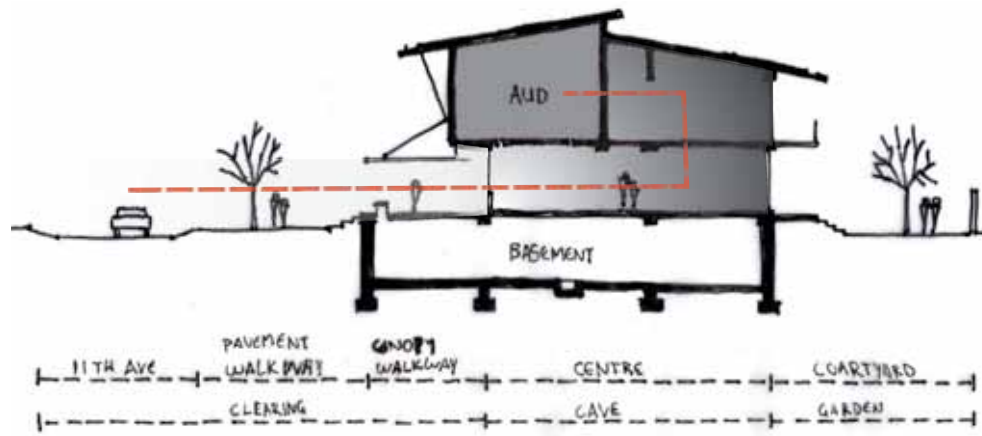


Figure 6.13: Progression section

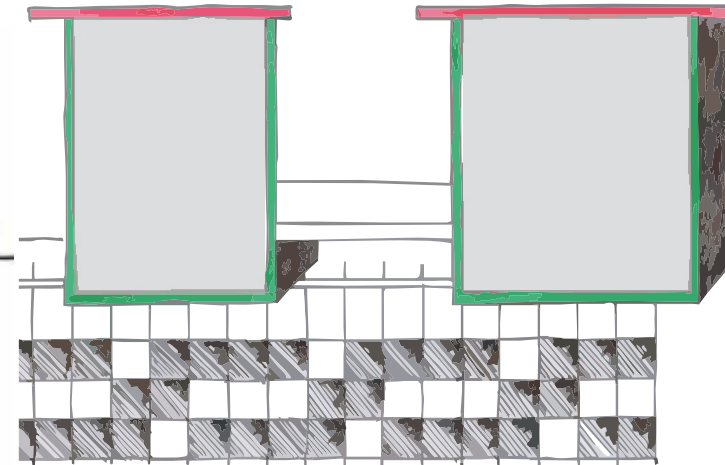


Figure 6.15: Duality between dark and light - plan

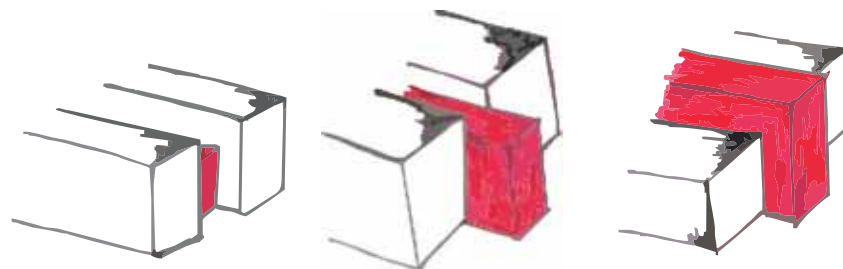


Figure 6.14: Hierarchy: experimenting with the height of the walkway

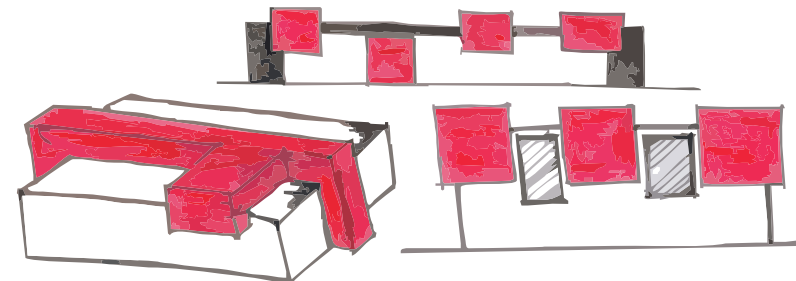


Figure 6.16: Hierarchy: experimenting with the importance of the auditoriums

2.4 - THE NOTICE BOARD

The notice board is a simple way of informing the public by pinning up information for everybody to view. Normally, notice boards are used at corporate or education institutions and also next to the road in the form of billboards. The western facade of the proposed building creates an opportunity to inform and educate the pedestrians as they pass. Three mediums are used to inform and educate:

1 - BENCHES:

The benches are located on the pavement walkway with a double-sided glass panel down the centre. Anything can be placed between the glass panels, including the daily newspaper.

2 - CANVAS:

The western facades of the auditoriums and the canopy have been designed as display canvases towards the pavement walkway and the road. The canvases will be created by the illustrator students with monthly themes and educational messages.

3 - GLASS WALL:

The western facade of the ground floor is a frameless glass wall with benches. These glass panels make it possible for the pedestrian to view the interior of the building, showing the pedestrian the possibilities of using the centre. It is also possible to use the glass panels as a notice board. A thin grid of A4 rectangles will be sandblasted on the inside of the glass panels. The students can put up their work on the inside of the glass panels for the passer-by to see.

EXHIBITIONS:

It is possible to use the benches, canvases and glass panels for outdoor exhibitions. These exhibitions can be visited by schools or the public without any internal interruption at the centre.

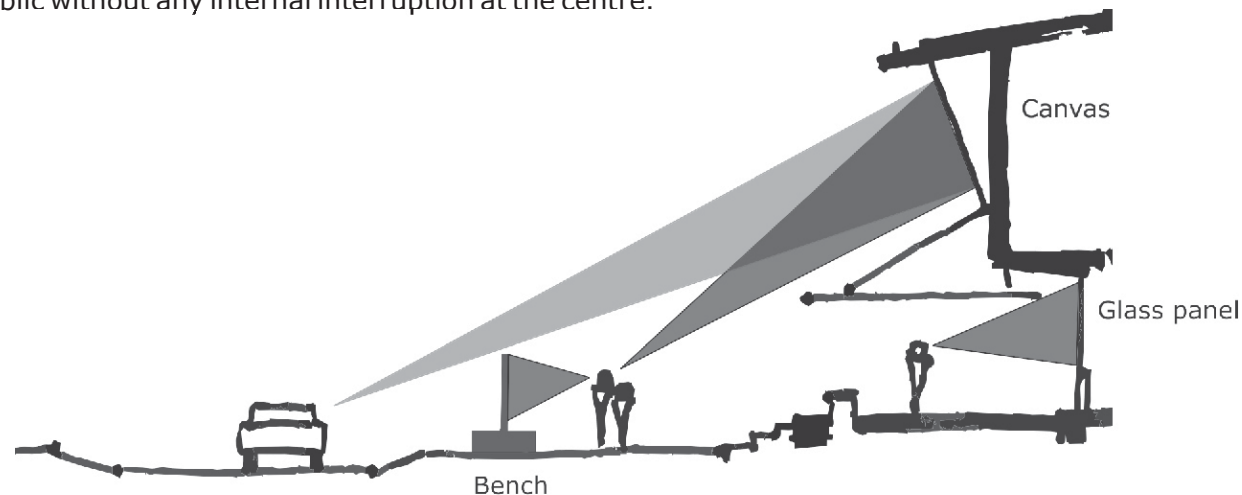


Figure 6.17: Notice board section



Figure 6.18: Entrance of Boukunde building at the University of Pretoria (author 2007)

3 - DEVELOPMENT OF THE DESIGN

THEME OF THE RESEARCH:

ORIGINAL CONCEPT: The original concept of the research addressed only the distribution and storage of books.

FINAL CONCEPT: After much thought and investigation, the author realised that there is a greater need to educate the illiterate adults of Tshwane. A person can't read a book if he or she is illiterate, and therefore a literacy enhancement centre was chosen as the theme.

CLIENT:

ORIGINAL CONCEPT: Centre for the Book, which is a specialist unit of the National Library and mainly distributes books to rural areas.

FINAL CONCEPT: With the theme change to literacy, the author investigated the ABET (Adult Basic Education and Training) programme which is run by various institutions all over Tshwane. The Ministerial Committee on Literacy, a government initiative to combat illiteracy, was selected as the client of the proposed centre. The committee is made up of various organisations and funded by the Minister of Education.

FACILITY:

ORIGINAL CONCEPT: The original function of the centre was a library and a storage space for books.

FINAL CONCEPT: Auditoriums to educate illiterate adults, a reading room and study hall to read as well as a writing and illustrator school.

TECHNOLOGY:

ORIGINAL CONCEPT: A high-tech approach was chosen with computers and electronic screens and no human interaction.

FINAL CONCEPT: A humanist approach with only the basic elements, including chairs, desks and notice boards.

VISIBILITY:

ORIGINAL CONCEPT: Because of the western facade, the front of the building was screened with a solid canopy and enclosed the building towards the street.

FINAL CONCEPT: Better methods of screening are used to open the building towards the street. Pedestrians can observe inside the building and read the messages on the glass panels as they pass. The screen above the walkway is lowered to a human scale and allows for canvas notices above.

PRIVACY:

ORIGINAL CONCEPT: The building was enclosed towards the street and open on the inside with no provision for privacy or a place for relaxation.

FINAL CONCEPT: The western screen is dissolved, which opens the building to invite the public to enter. The public reading room is located on the ground floor and the private auditoriums are located on the first floor. Courtyards are located behind the building for relaxation.

3.1 - DEVELOPMENT MODEL 1

The first concept was to use three different buildings linked by ramps. The buildings were elevated, with no relation to the ground level. The distances between the buildings and the lengths of the ramps resulted in long walking distances. The complex consisted of a library, a media centre and a bookshop, functions that are provided at many other establishments all over Tshwane.

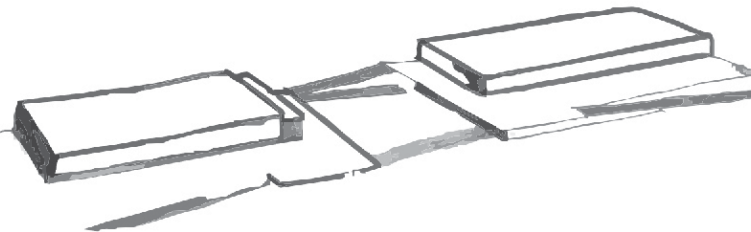
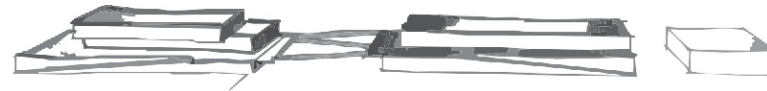
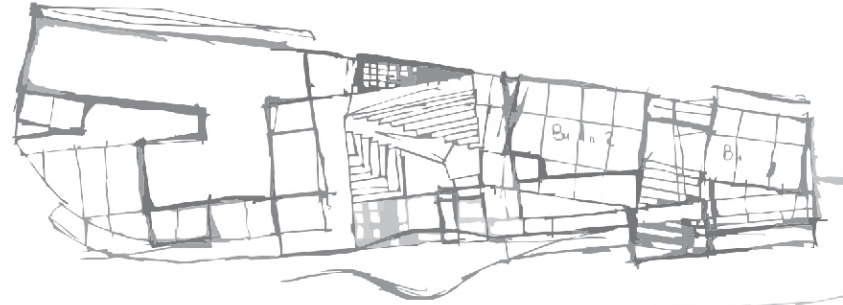
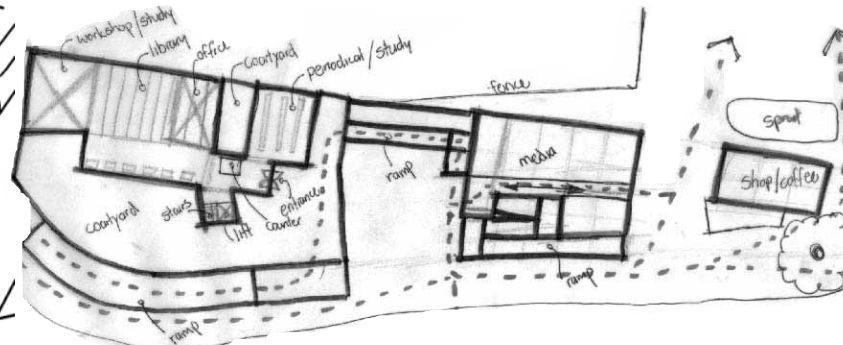
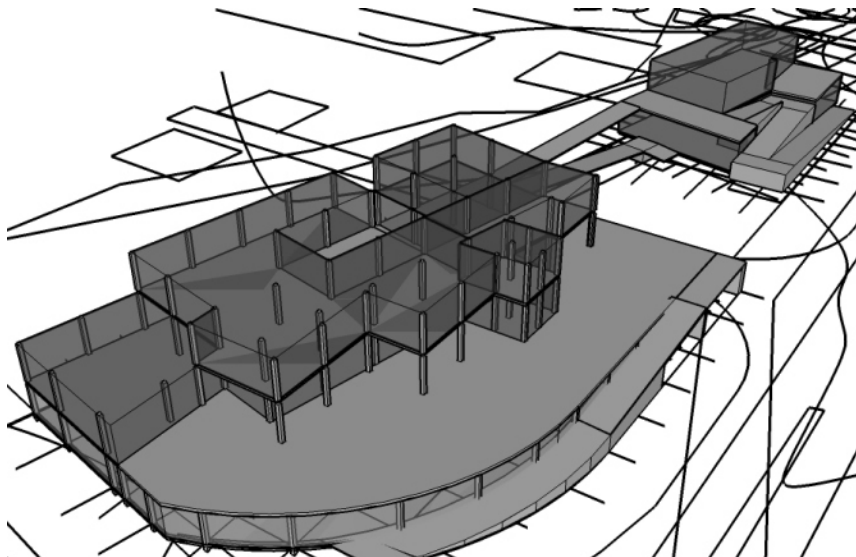


Figure 6.19: Development model 1 sketches



3.2 - DEVELOPMENT MODEL 2

The second concept consisted of the same functions as the first. One building was used with a double-volume lobby to link the functions. The entrance was visually closed by a screen wall and the rest of the front facade by a canopy. The building had no connection with the surroundings, with the passing pedestrian or with nature. Passive climate control or sun shading was not taken into consideration.

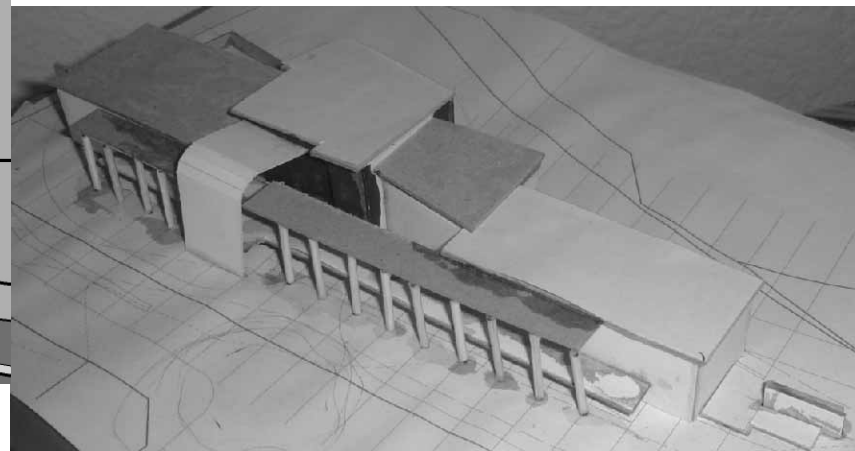
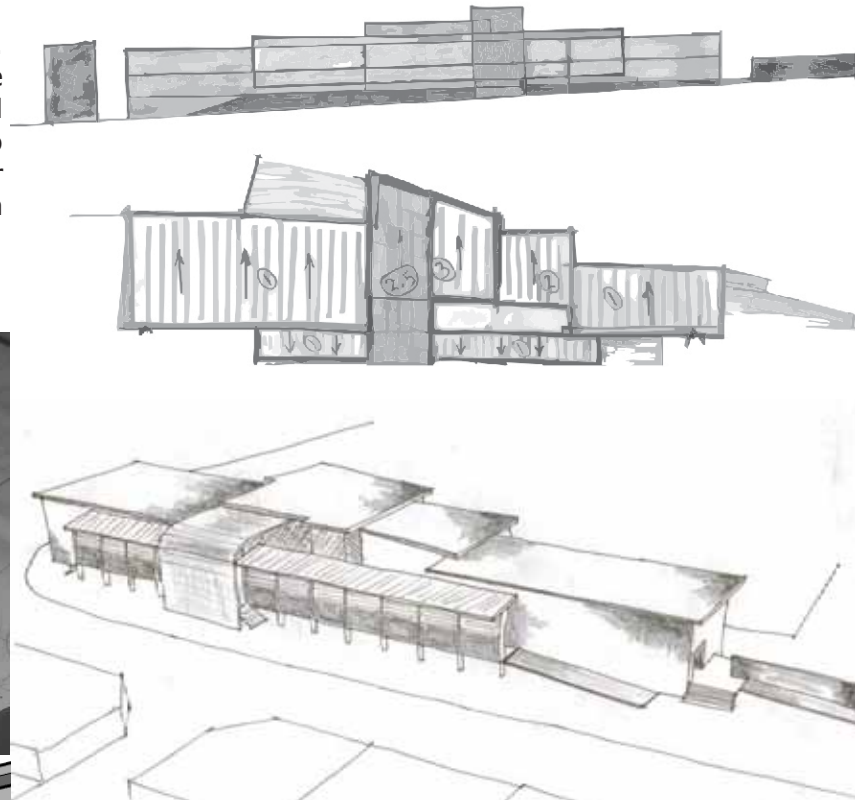
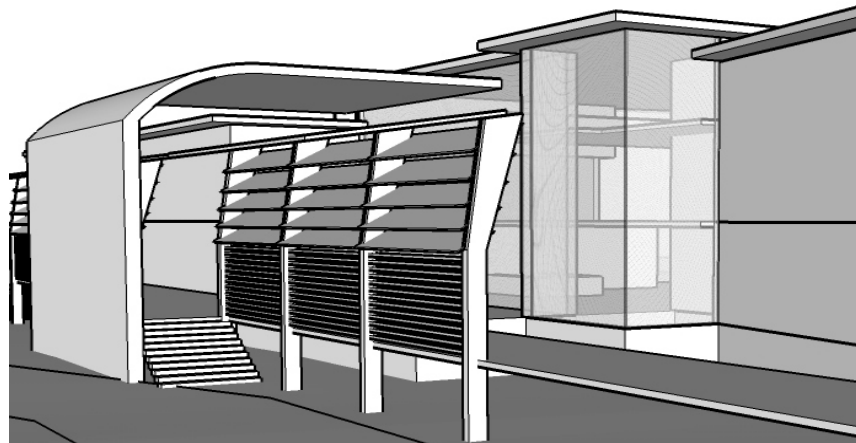
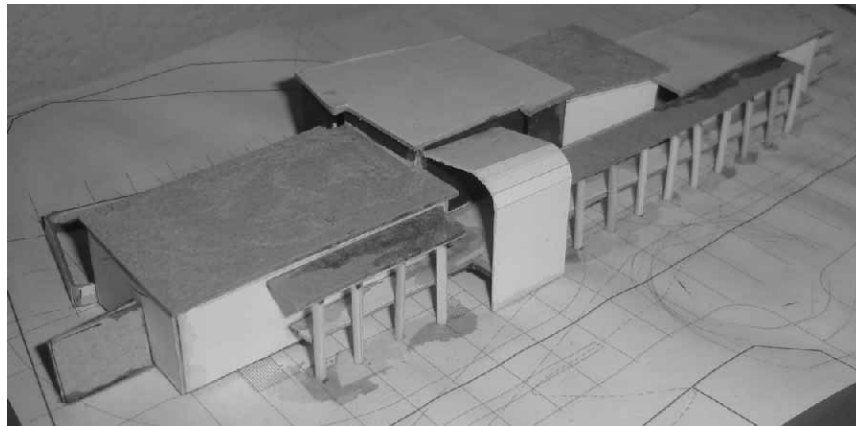


Figure 6.20: Development model 2 sketches

3.3 - DEVELOPMENT MODEL 3

The third model was a variation of the second, with some technical modifications. The canopy was more prominent, with no relation to human height. The main functions of the building changed to a library, study hall and hovering auditoriums. There was still no relation with the surroundings or a prominent concept.

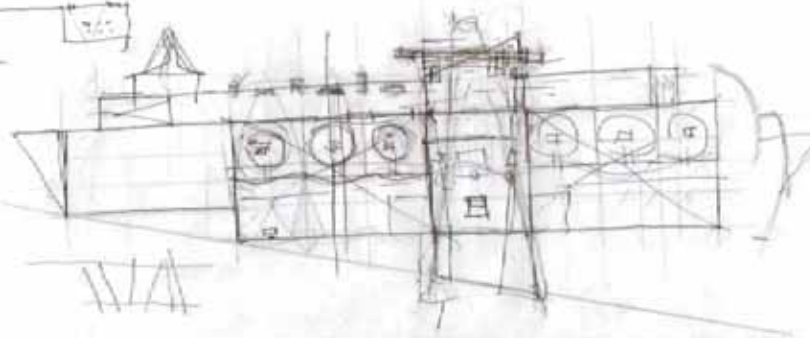
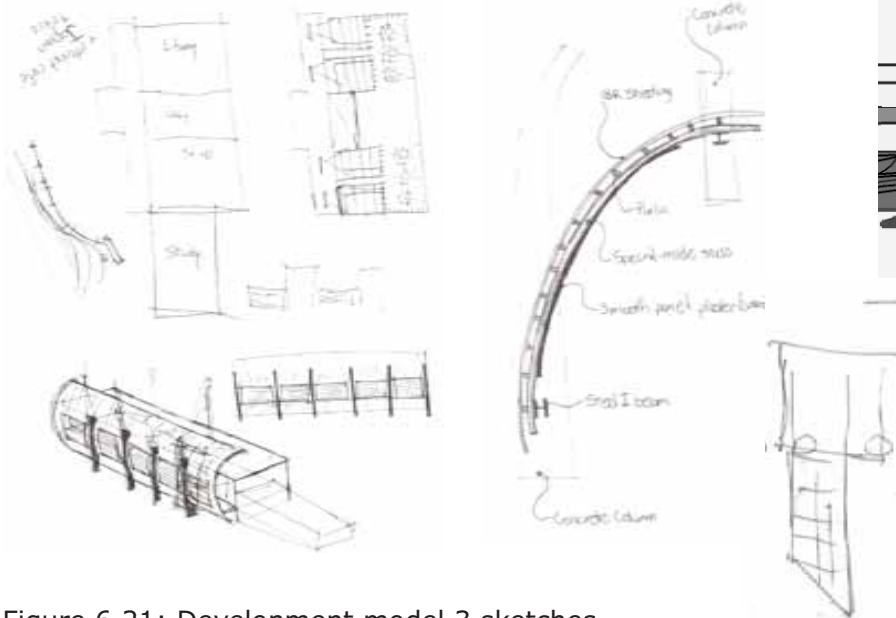
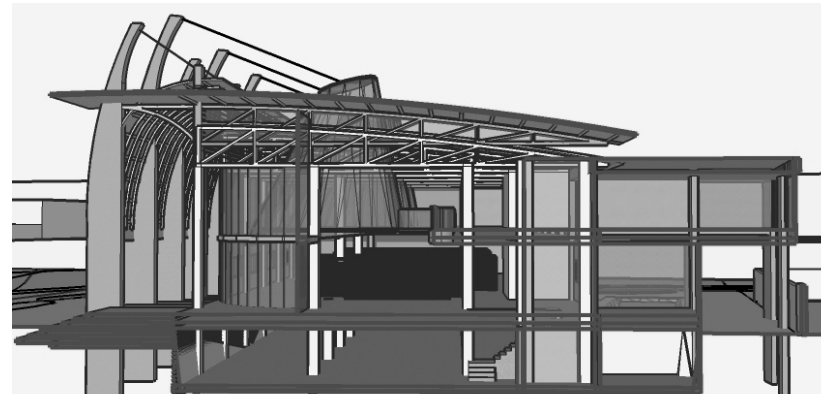
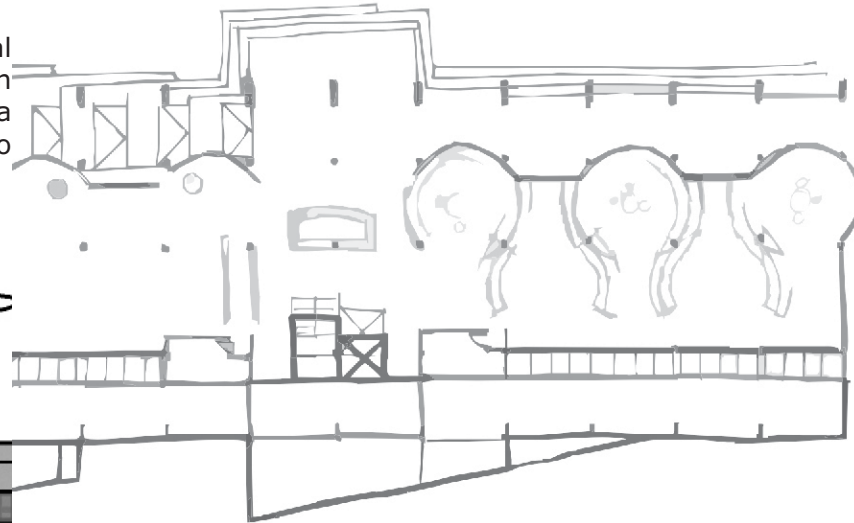
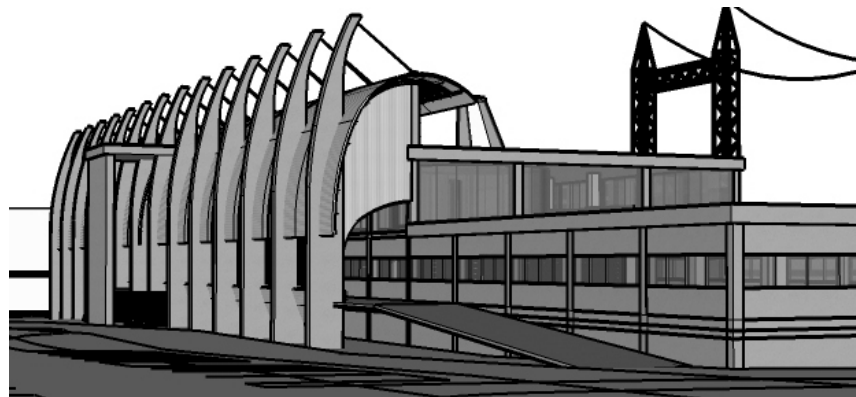


Figure 6.21: Development model 3 sketches

3.4 - DEVELOPMENT MODEL 4

The last concept had no relation to its predecessors. With a better understanding of the problem, the site and the discovery of the archetypes, a strong conceptual design was formulated. The building was in relation with the passing pedestrians, the surroundings and nature. By trial and error, the building was designed to passively control temperature by means of various solutions like sun screens. All the materials, the construction methods and the shapes were been designed and chosen for specific reasons.

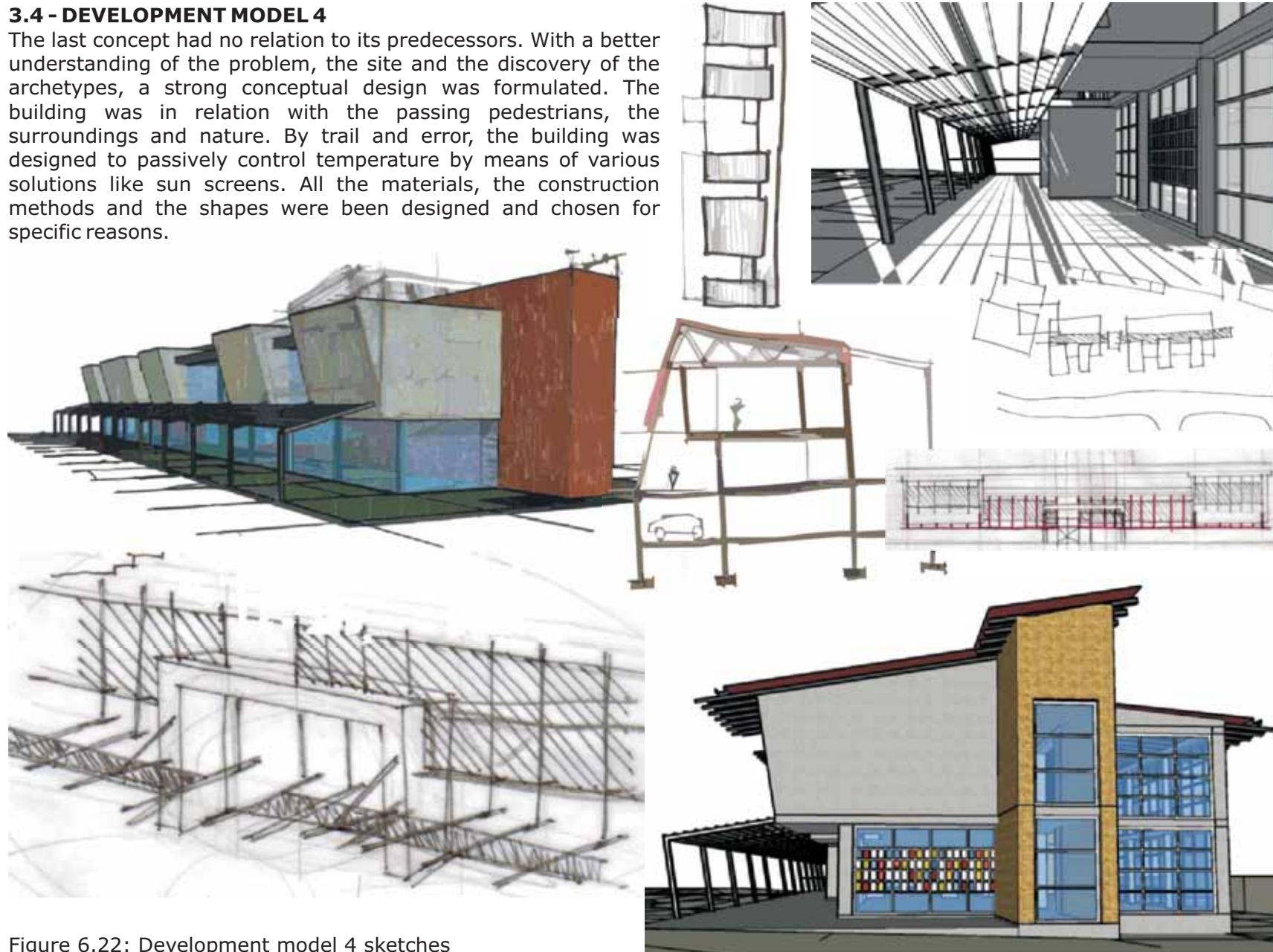


Figure 6.22: Development model 4 sketches

4 - FINAL DESIGN

4.1 - THE GRID AS GENERATOR

HORIZONTAL:

The structural grid for the proposed building is based on the parking layout in the basement. The grid consists of 5,5 x 5,5 m and 5,5 x 7,7 m spacings. The ground and first floor are respectively layered above the basement, with the structural columns positioned on the intersections of the grid. The grid is not confined by the building walls and repeats in the surrounding landscape with variations of concrete, grass and paving surfaces.

VERTICAL:

The continuous plane of the front facade is interrupted with recessed planes, varying heights and different materials. These variations create the illusion of multiple buildings built side-to-side as seen in the rest of Marabastad.

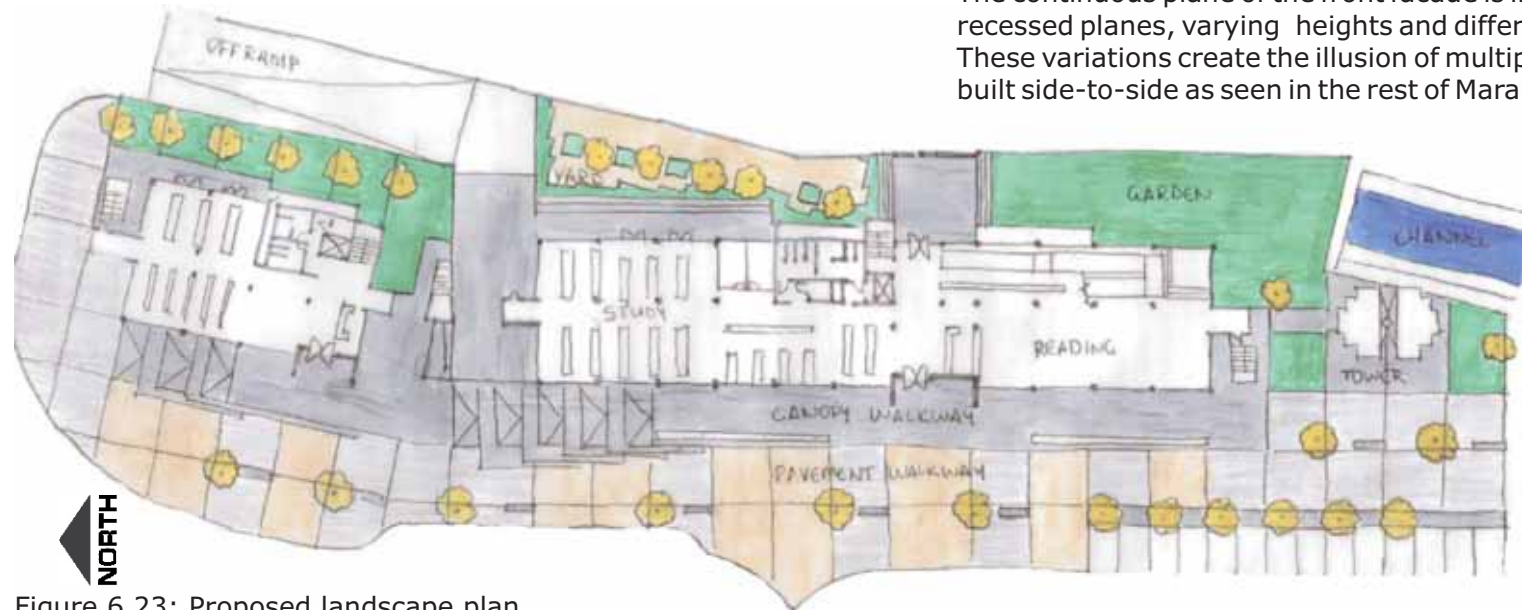


Figure 6.23: Proposed landscape plan

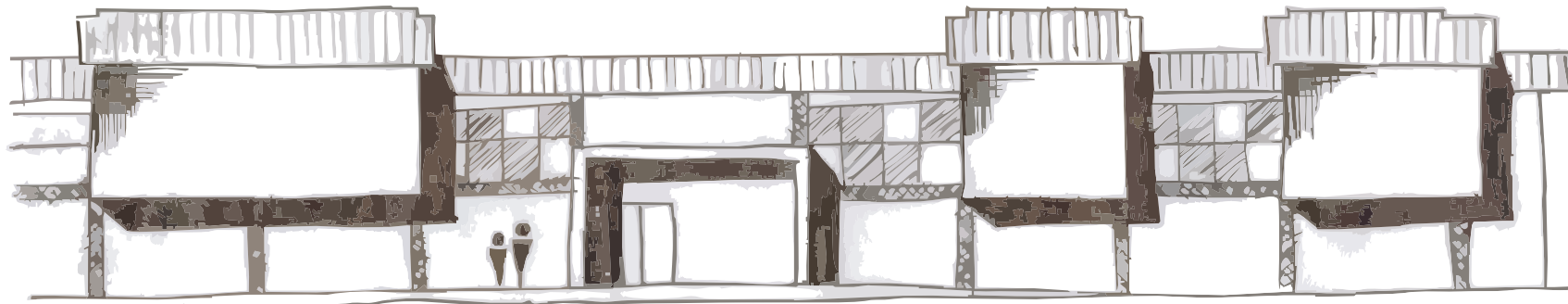


Figure 6.24: Grid influence on proposed front elevation

4.2 - THE SKIN OF THE BUILDING

Five different elements have been used. The western facade is screened against the sun with louvres and a frameless glass wall is used to optimise visibility. The north-eastern part of the building is allocated to office use with aluminium shop fronts with adjusting windows. The ramp is located on the south-eastern side and screened by Winblok windows. The depth of the Winblok window shades the interior and still allows visibility. The entrance is a concrete box with a glass door. The concrete box defines the entrance and screens the lobby for privacy. The service area is screened with a face-brick wall with randomly placed windows. The different materials break the rectangular building to create a more exciting and enriched design.

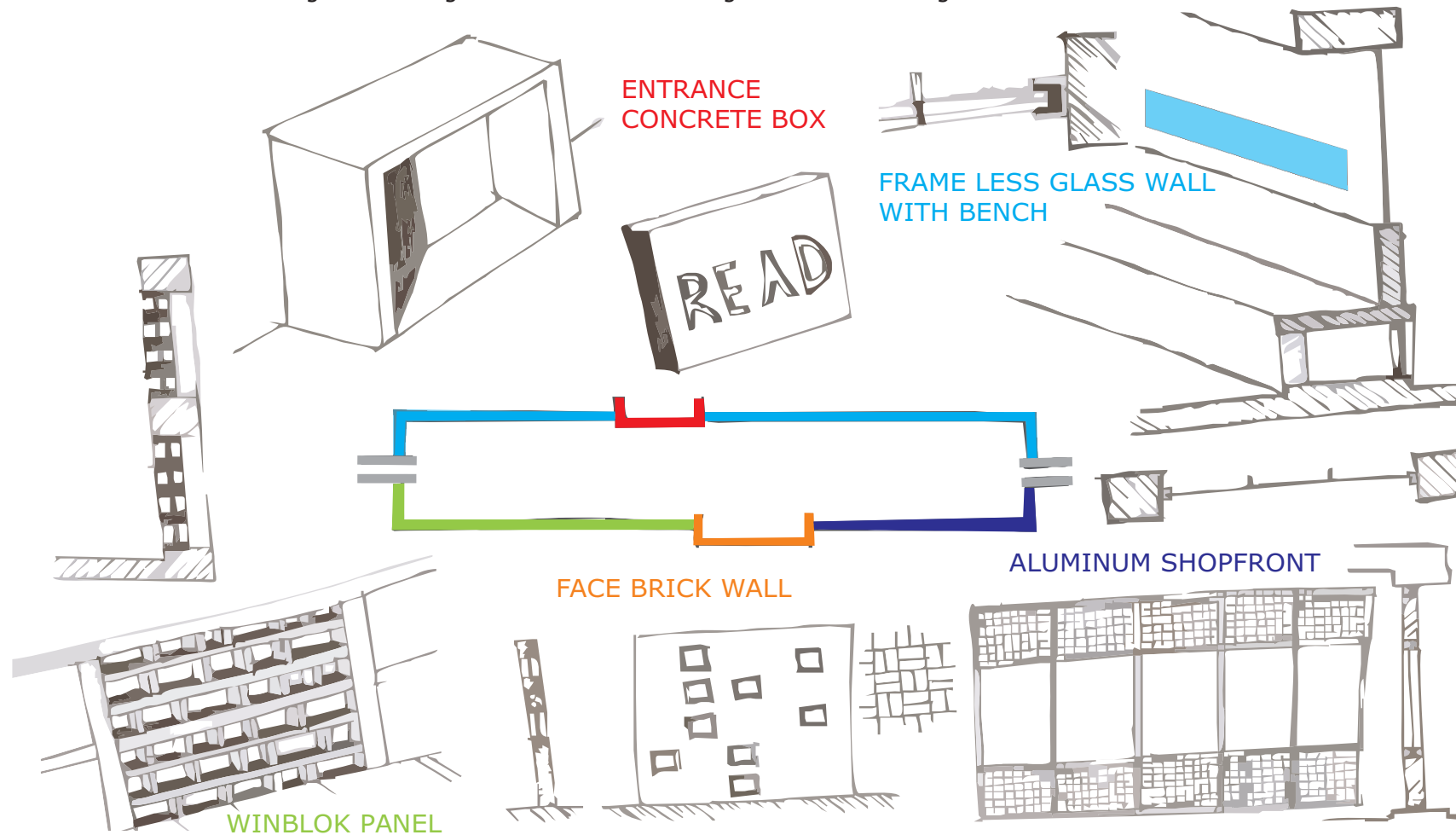


Figure 6.25: Concept of building skin

4.3 - BUILDING USERS:

THE ILLITERATE:

The illiterate adult learns how to read, write and count with the ABET system.

The facility provided: Auditoriums that allow for isolated and private learning opportunities. The ABET system demands individual attention, which suggests a class consisting of about 15 students. For this reason, the auditoriums are divided into 2 sizes; the smaller rooms can facilitate 16 people and the bigger rooms 32. The auditoriums can also be used for workshops, lecture halls or as boardrooms for the community.

THE SEMI-LITERATE:

The existing school or tertiary student and the literate public can use the facility on a daily basis.

The facility provided: A study hall and a computer lab for the existing student. Currently, students stand in queues at local libraries all over Pretoria for a seat and desk to study. A more informal reading room with relevant reading material is also provided. A pedestrian waiting for his bus or a local employee on his lunch break can relax and read the daily newspaper, magazines or a book.

THE POTENTIAL WRITER:

The literate student who wants to be a writer or illustrator of mainly adult literacy and/or children's books.

The facility provided: A school with studios and a library with relevant information. The auditoriums for the illiterate will be used for the student's formal lectures. The potential writers can be trained and used as teachers for the illiterate classes.

THE MINISTERIAL COMMITTEE ON LITERACY:

This committee is assigned to the national literacy campaign by the Minister of Education. The committee aims to reach 4,7 million illiterate or functionally illiterate adults by 2012. The committee is represented by various bodies and organisations and has no formal location.

The facility provided: Office space on the 1st floor; the auditoriums could be used for meetings.

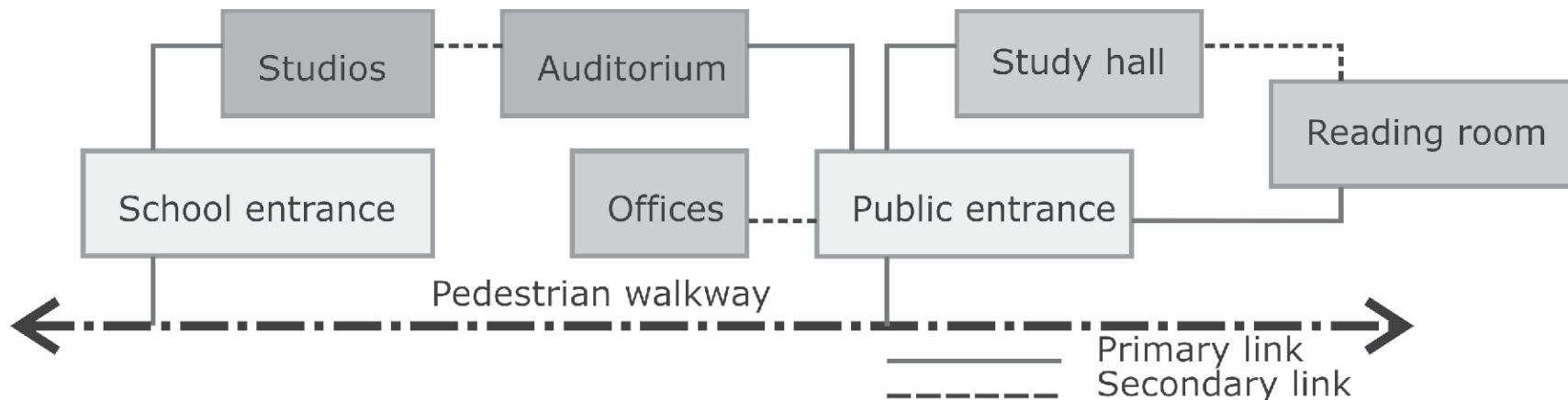


Figure 6.26: Building occupation diagram



4.4 - LAYOUT PLAN

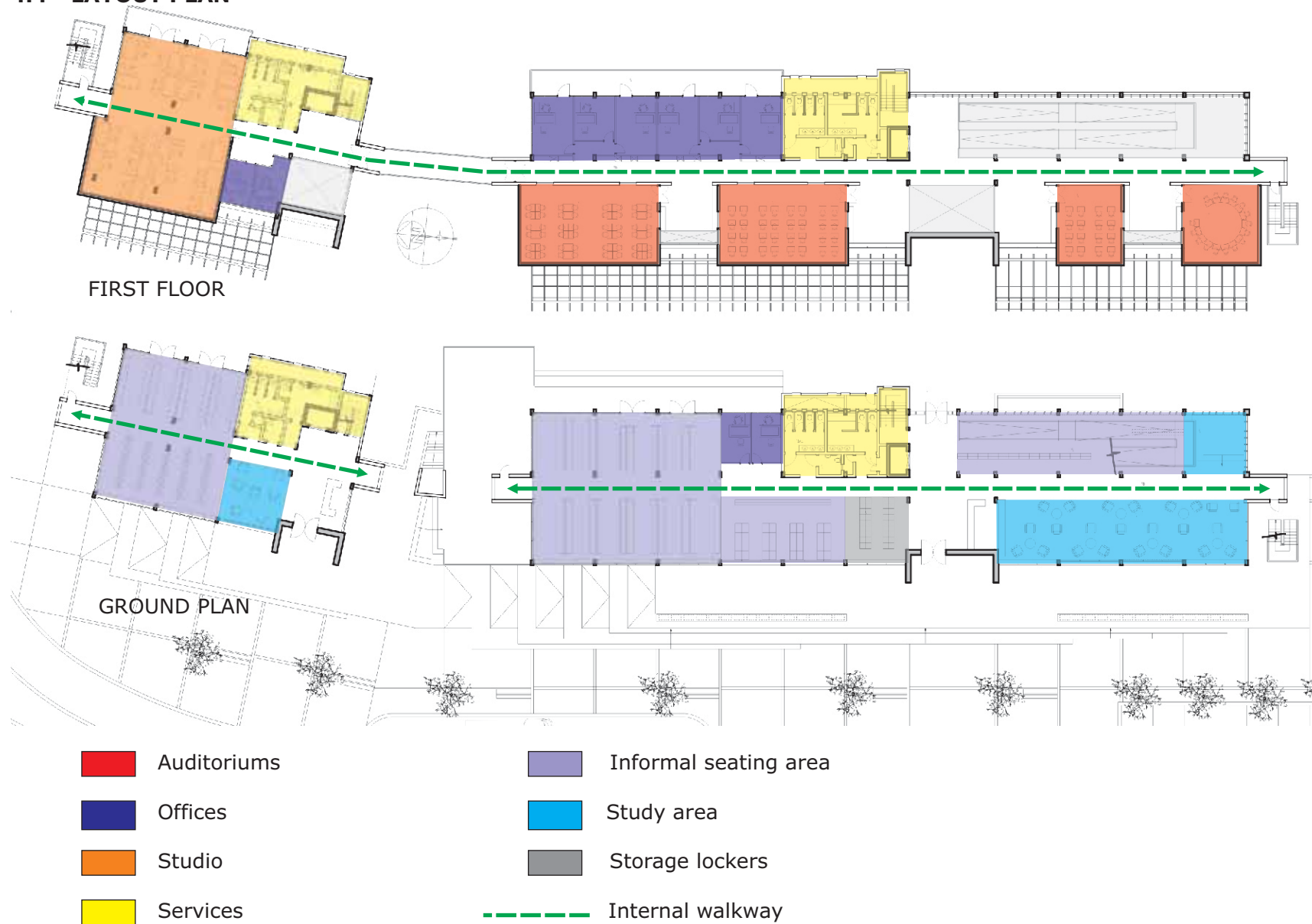


Figure 6.27: Layout plan



4.5 - MOVEMENT PLAN

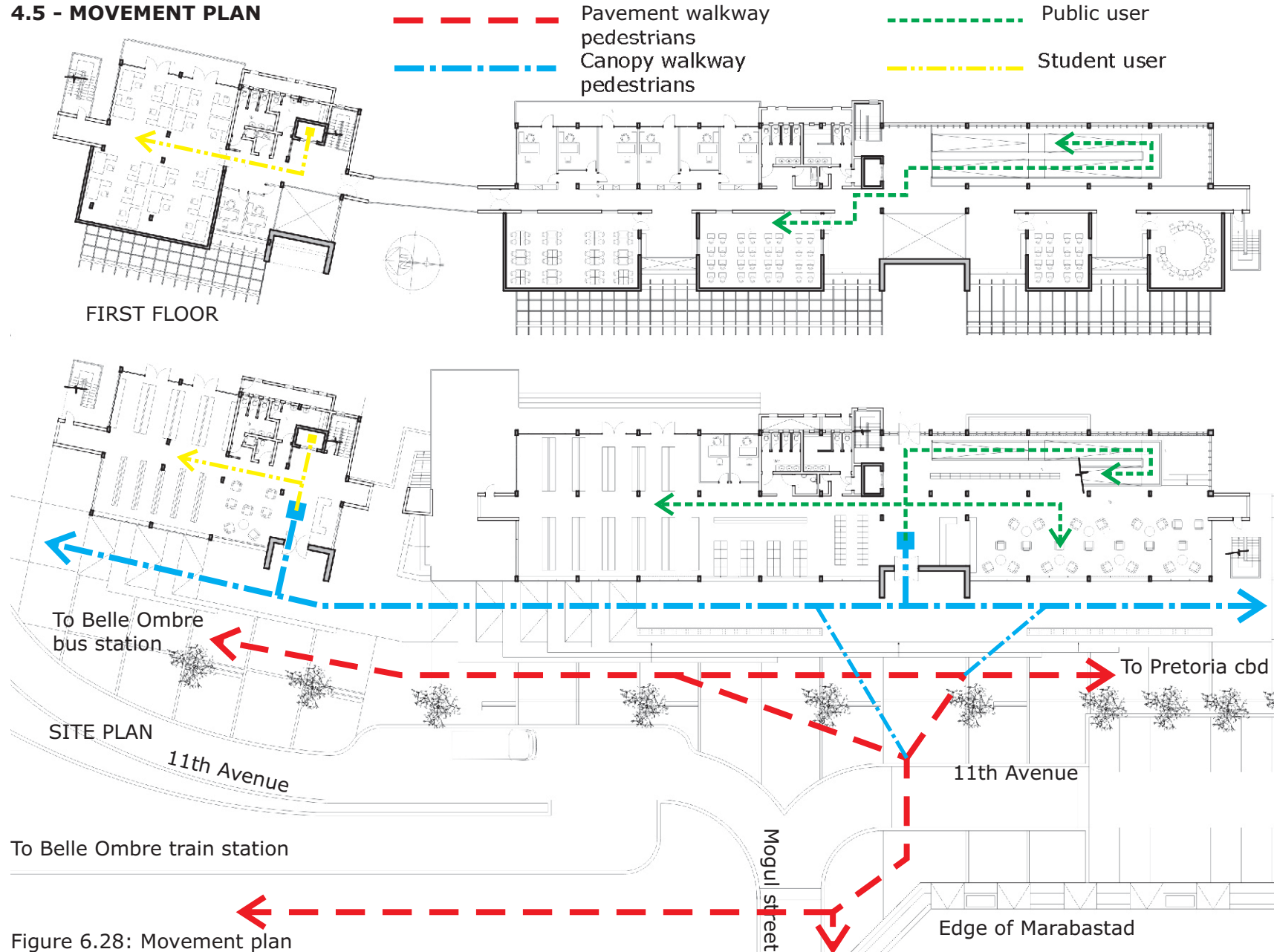


Figure 6.28: Movement plan

4.6 - PROGRESSION

4.6.1 - THE BUILDING

The table below explains the idea of progression of importance, design elements, usage and facilities

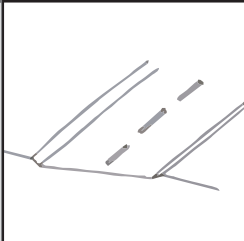
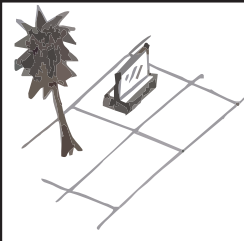
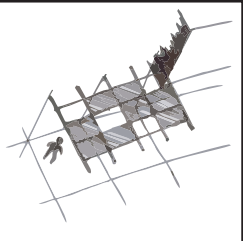
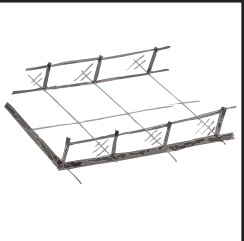
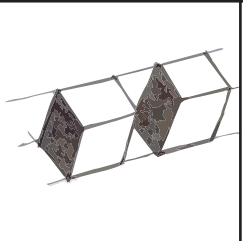
	Public		Private			
	Light		Dark			
	Open		Closed			
Description	11th Avenue	Pavement walkway	Canopy walkway	Public building	Auditoriums and offices	Courtyards
Archetype	The clearing			The cave		The garden
Privacy	Public	Public	Semi - public	Semi - private	Private	Semi - private
User	Mainly taxis	Pedestrians	Pedestrians	Reading public	Illiterate adult	Public
Facility	Road and parking	Benches	Benches and louvres	Reading and study	Classroom, lectures	Informal seating
Objective	Transport	Clear path	Path with sun protection	Study and read	Learn to read and write	Relaxation
Material	Road surface	Pavement and trees	Steel grid canopy	Glass and concrete	Solid concrete	Lawn and trees
Shape						

Table 6.1: The progression of the approach

4.6.2 - COMPARISON BETWEEN ABET AND APPROACHING THE BUILDING

The table and illustration below explains how the approach to the building symbolizes the progression from illiterate to literate

	Literate				
	Illiterate				
ABET progression	Can't read or write	Learn letters	Learn words	Learn sentences	Can read and write
Example	- - ----, ---- - ----.	- -a- --a-, ---- a- ----.	- can --a-, ---- and ----.	I can read, write and count.	
Approaching the building	Boom street See outline of building	11th avenue Distinguish grid pattern	Pavement walkway Distinguish boxes and notice boards	Canopy walkway Read writing on glass walls	Inside building Read, study or learn

Table 6.2: Approaching the building

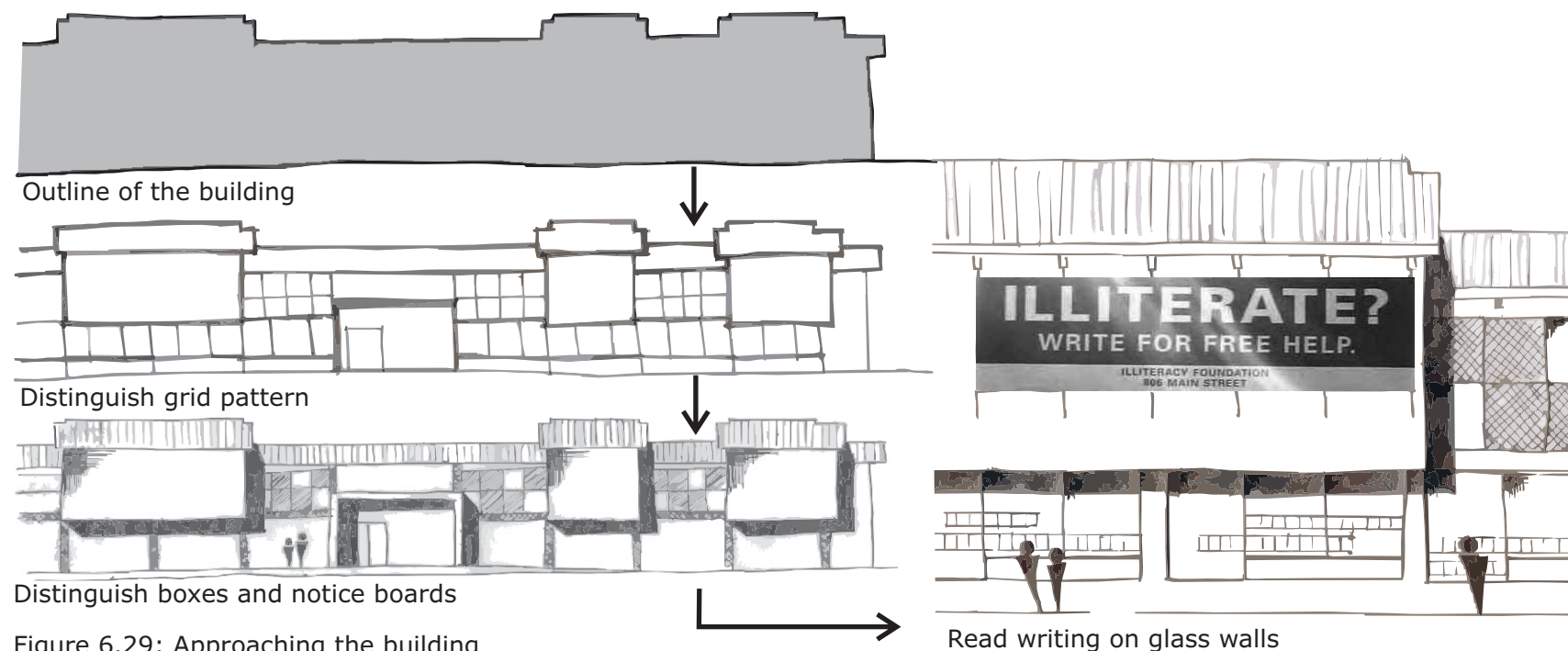


Figure 6.29: Approaching the building

5 - PERSPECTIVES

5.1 - LAYOUT PLAN INDICATING VIEW POSITIONS

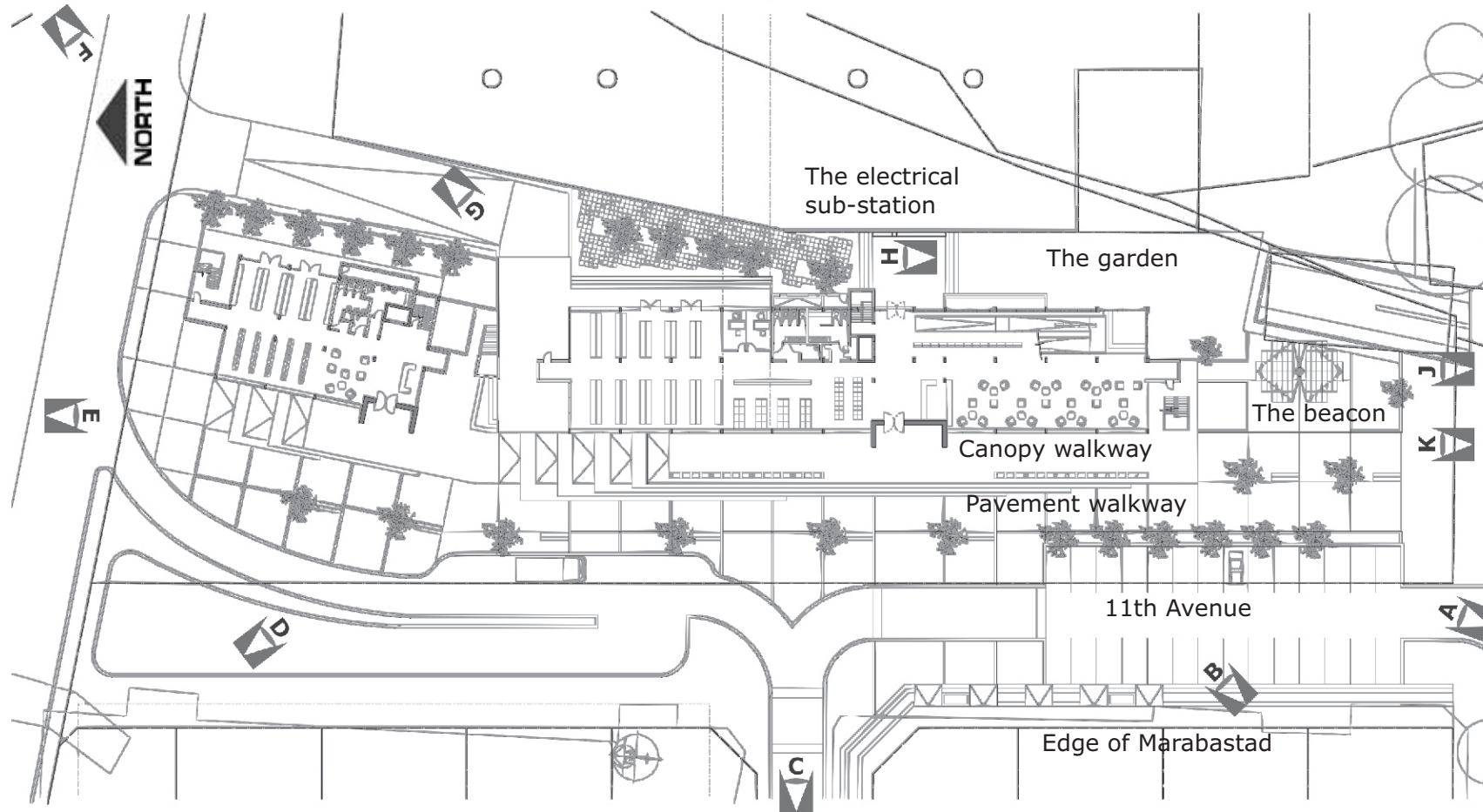


Figure 6.30: Layout plan with perspective angles

5.2 - GENERAL VIEWS

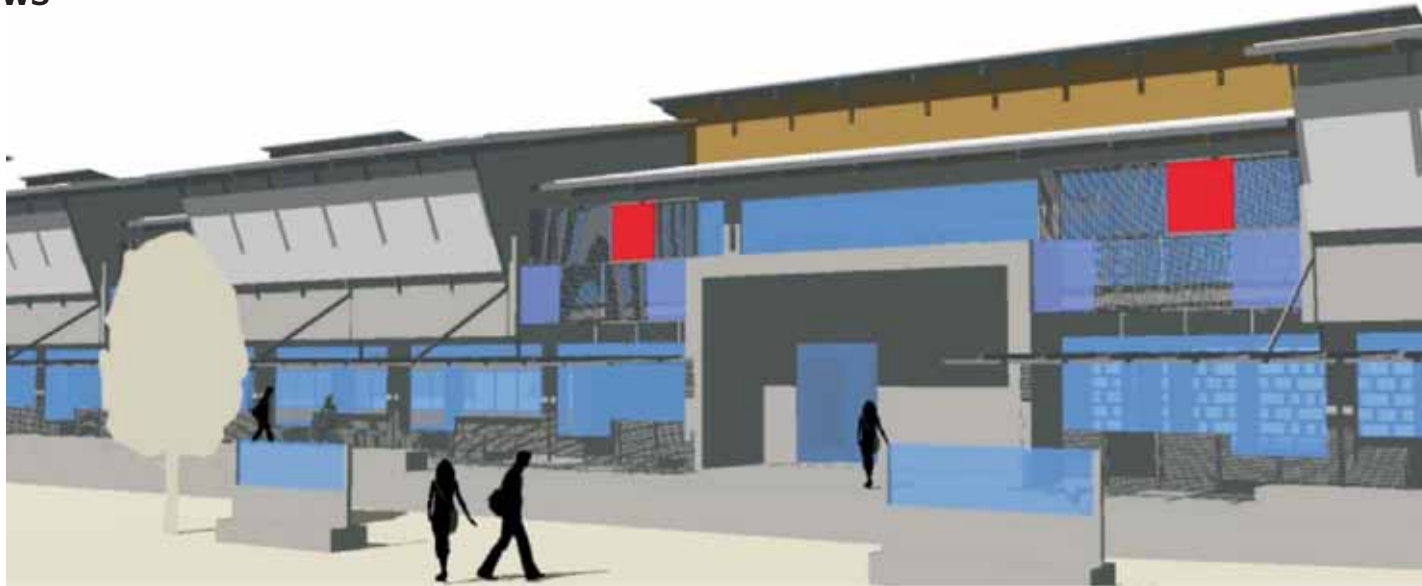


Figure 6.32: Perspective BB - The entrance



Figure 6.31: Perspective AA - View from Boom Street

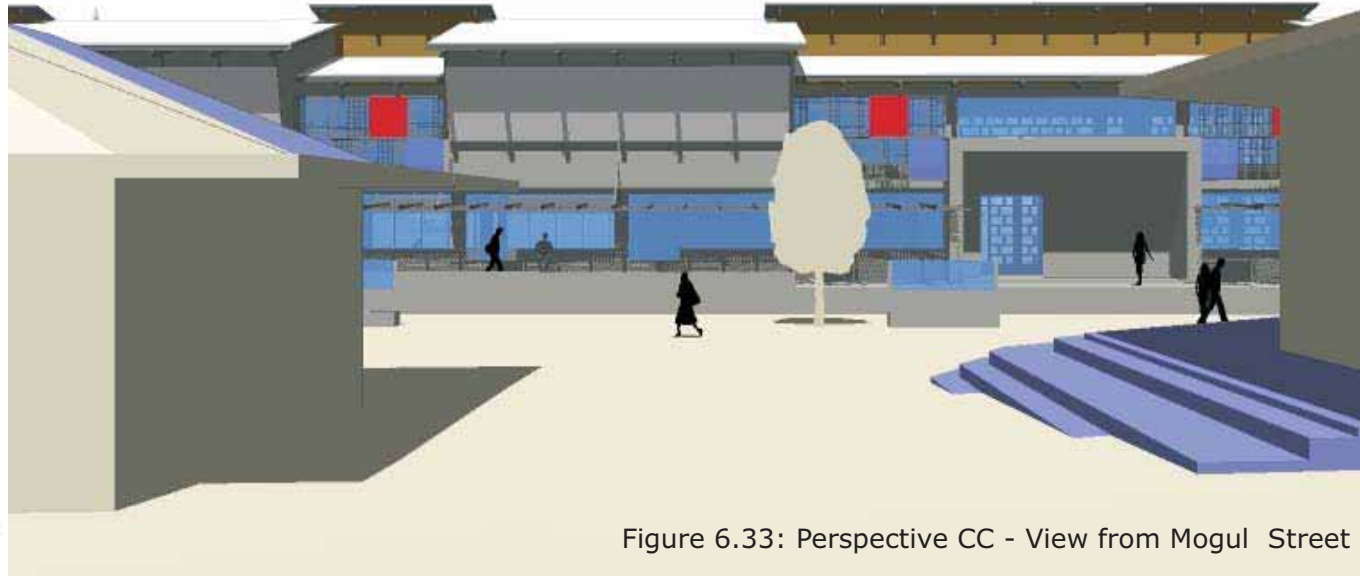


Figure 6.33: Perspective CC - View from Mogul Street

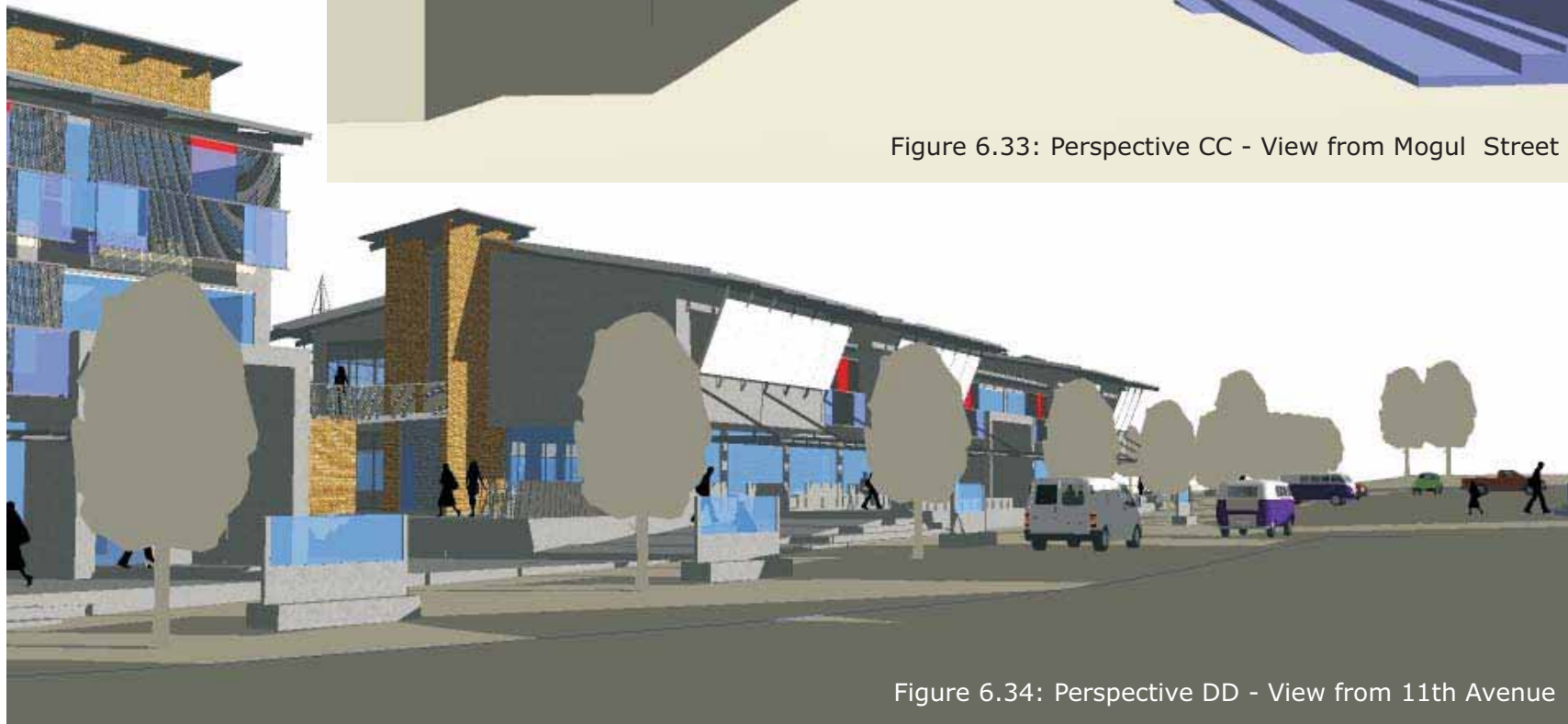


Figure 6.34: Perspective DD - View from 11th Avenue



Figure 6.35: Perspective EE - Approaching the school



Figure 6.36: Perspective FF - View from bus station

Figure 6.37: Perspective GG - Approaching the bridge between the buildings

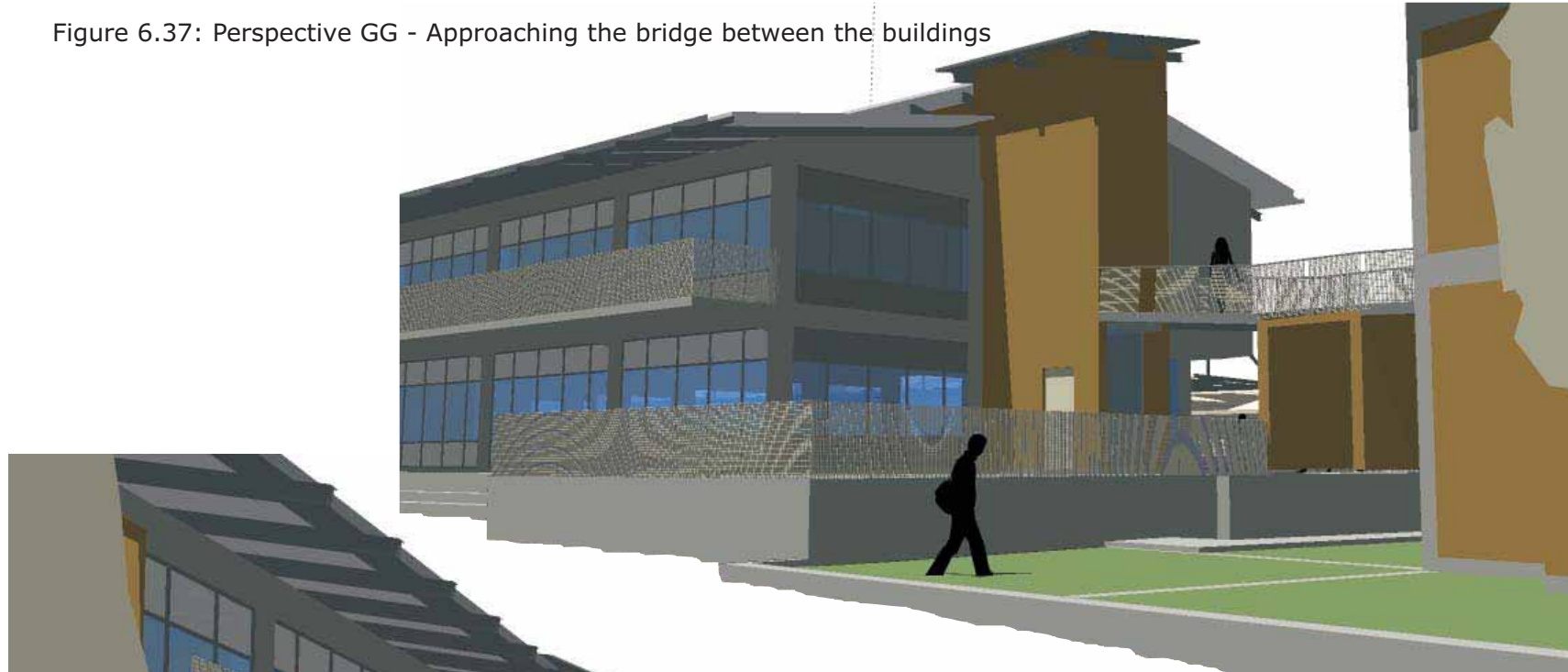


Figure 6.38: Perspective HH - View from the garden



Figure 6.40: Perspective KK - Relation between the walkways and building

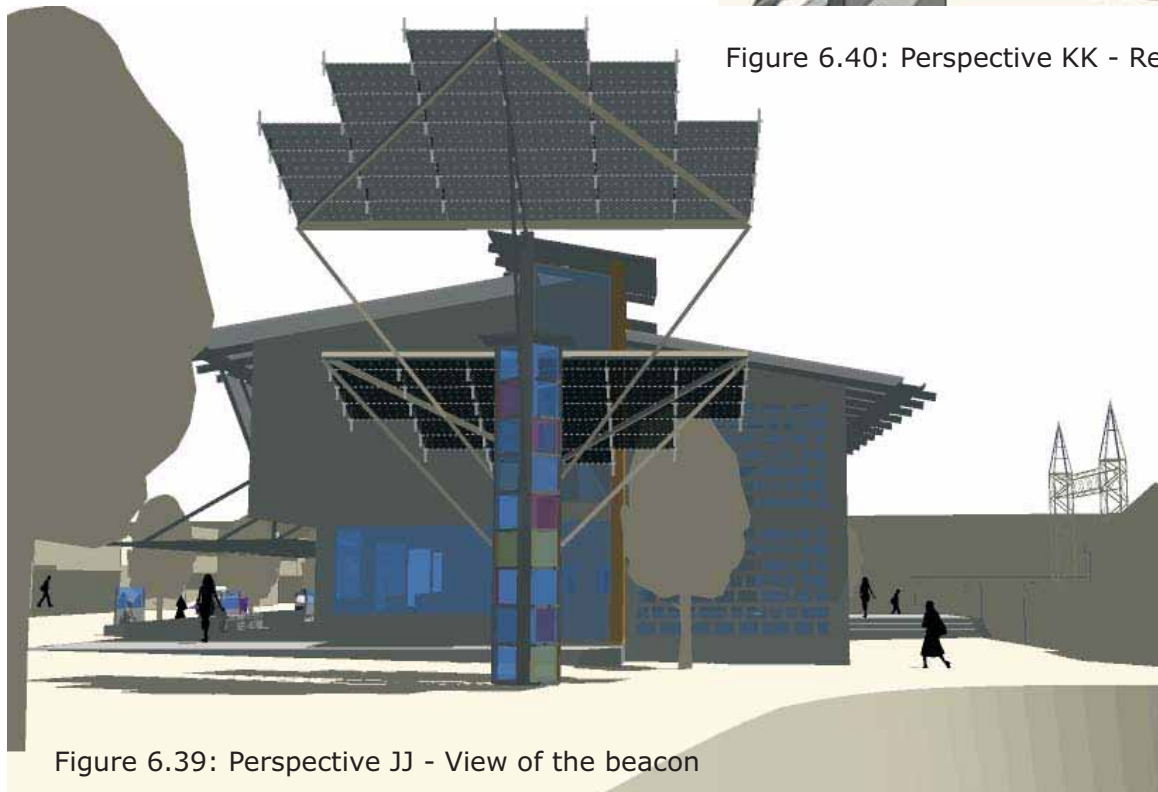
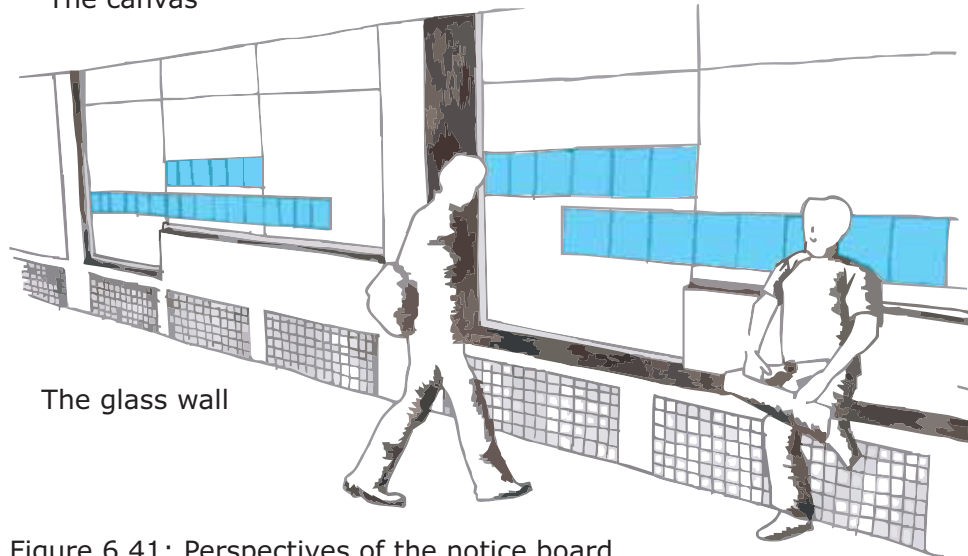


Figure 6.39: Perspective JJ - View of the beacon

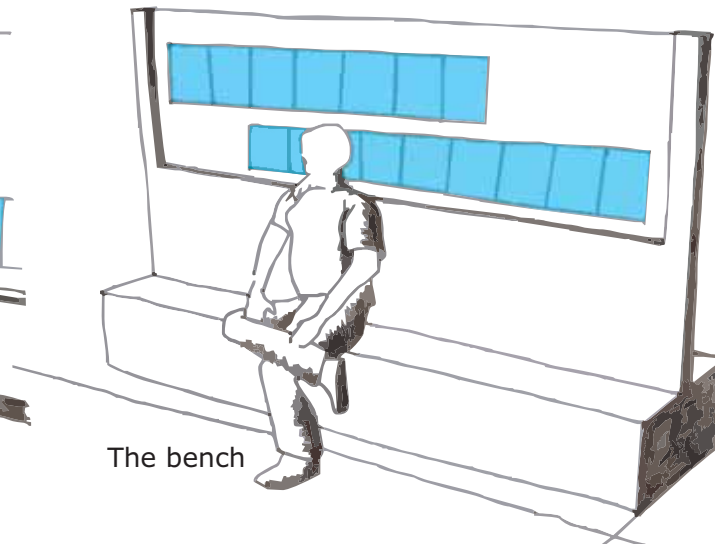
5.3 - THE NOTICE BOARD



The canvas



The glass wall



The bench

Figure 6.41: Perspectives of the notice board



TECHNICAL INVESTIGATION

07: TECHNICAL INVESTIGATION



Jane Mushwana 67.

I am part of the community

07: TECHNICAL INVESTIGATION

1 - PASSIVE TEMPERATURE CONTROL

Passive temperature control will be achieved by incorporating the following aspects:

- Materials;
- Passive ventilation;
- Sun control;
- Mechanical ventilation system for the auditoriums.

1.1 - MATERIALS

CONCRETE:

Concrete is a mixture of cement, coarse and fine aggregate, and water. Concrete is dense and low cost and will be used for the main structure, slabs, columns and retaining walls. The walls of the auditorium will be concrete with a smooth surface, 600 x 300 mm steel shuttering will be used with timber letters attached.

BRICK:

Clay and shales are extracted, crushed, blended, ground, screened and mixed with water. This mixture is then extruded, wire-cut, set to dry and then burned in clamp kilns (Wegelin 2006: 6.2).

GLASS:

Glass is made up of soda lime and silicate and heated to a fluid and flattened on a molten tin surface and cooled. Glass transmit light and solar radiation and is translucent. 13mm Laminated glass will be used for the project with three different applications, frameless glazing, shop fronts and winbloks. Laminated glass consists of two panes of glass that are joined with an inner layer of polyvinyl butyral. Laminated glass reduces sound transmission and blocks out solar radiation (Wegelin 2006: 6.10).

STEEL:

Steel is a ferrous alloy of iron mixed with carbon. Steel will be used for the roof and for the secondary functions of the building, the ramp, balustrades and the louvers. 0,8 mm CQ Steel "Brownbuilt" roof sheeting will be used (Wegelin 2006: 8.3).

FLYWHEEL PRINCIPLE

For the project, materials have been chosen with heavier mass, like concrete and bricks. In the sunny winter, the building will remain warm after sunset, because of the absorptive and emissive qualities of the heavier mass. These same materials and qualities will cool the building during the day in summer, based on the reasoning that the building mass cool during the night (Napier 2000: 3.6).

1.2 - PASSIVE VENTILATION

CROSS VENTILATION

For cross ventilation to happen openings are needed on low levels for air inlet and openings on high levels for air outlet. The air inlet openings should be on the predominant wind direction side of the building. The opening should ideally be on opposite sides of a room to create a flow.

STACK EFFECT

The basic principle that under calm conditions, warm air rises towards the ceiling and the cooler air stays low. The auditoriums have high ceilings to create enough height for the warm air to rise above the lower seating area. All the pitched roofs slope upwards towards openings for hot air to escape.

VENTURI EFFECT

A projection of deflecting air will draw air from the interior because of the lower pressure zone (Napier 2000).

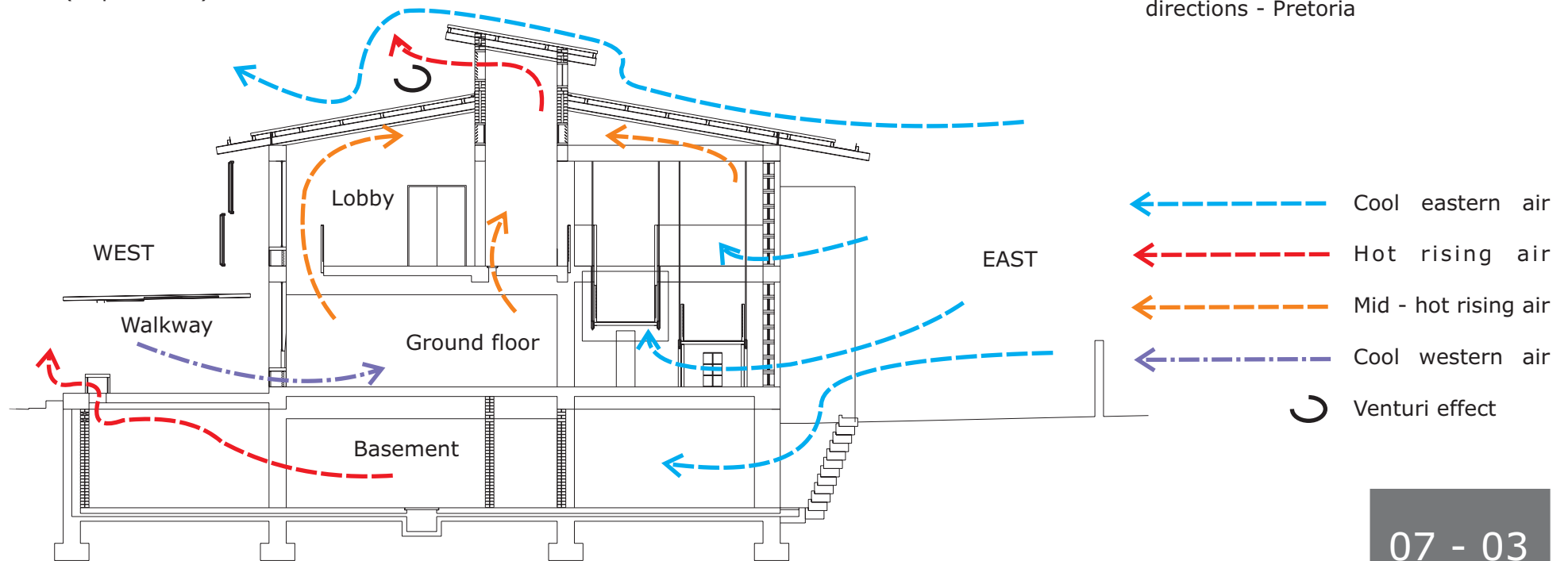


Figure 7.1: Section through Lobby

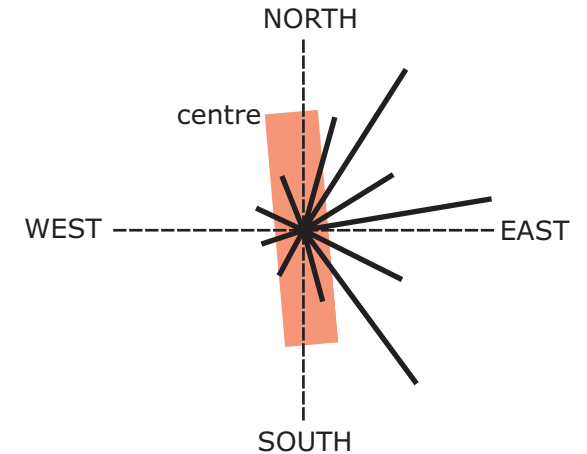


Figure 7.2: Summer wind directions - Pretoria

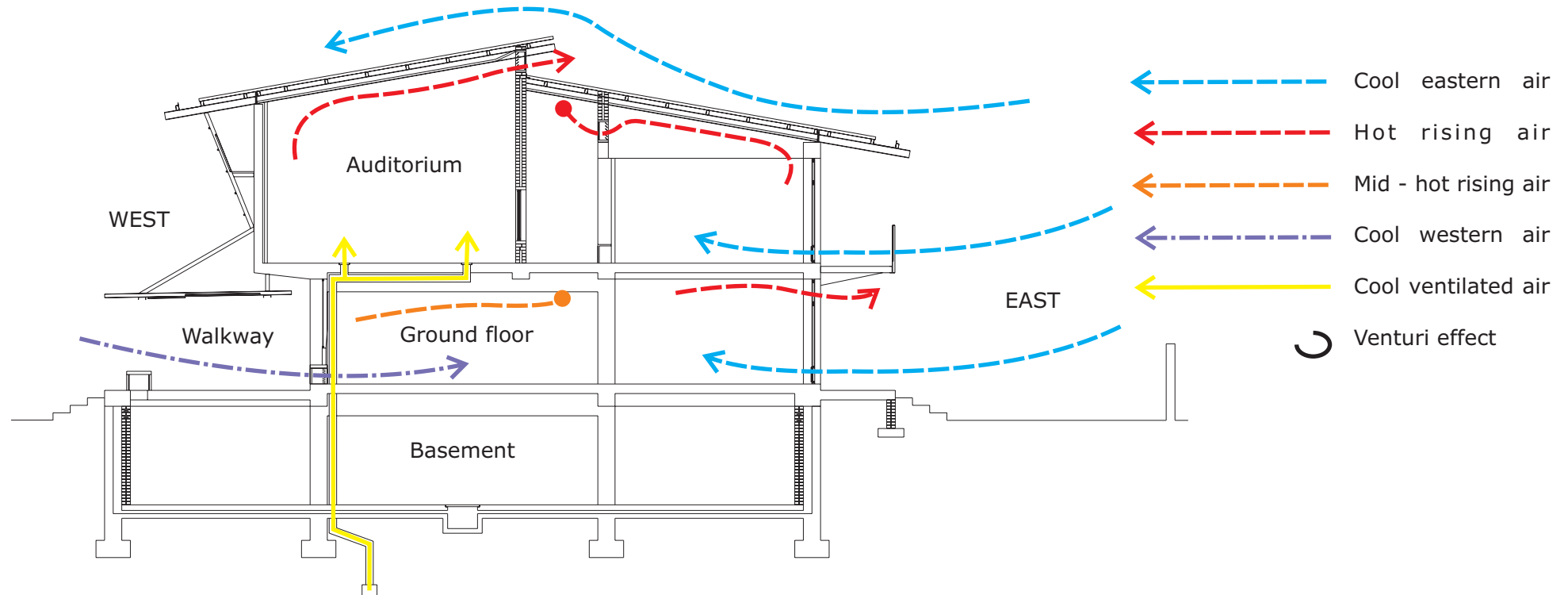


Figure 7.3: Section through Auditorium

1.3 - SUN CONTROL

The predominant elevations face east and west. The building should be shaded in the summer and heated in the winter. The control of sun shading will be achieved by the following:

- Treatment of elevations;
- Heat transmission prevention;
- Adjustable louvres.

1.3.1 - TREATMENT OF ELEVATIONS

North elevation = shaded with the roof overhang.

East elevation = Admin Section = Roof overhang and balcony.

= Ramp Section = Winbloks arranged in groups.

West elevation = The western elevation is the front facade of the building facing towards the street. Adjustable louvres will screen the building and the passing pedestrian. The louvres need to be carefully designed for the building to be visible and readable.

After studying the proposed building and site on a computer simulation, the following times and sun angles were relevant.

Eastern sun onto the building: Summer = 06h00 – 09h00 (50°)

Winter = 07h00 – 12h00 (40°)

Western sun onto the building: Summer = 17h00 - 19h00 (20°)

Winter = 12h00 - 17h30 (40°)

The figure below illustrated the use of moveable louvre panels to control the sun unto the building.

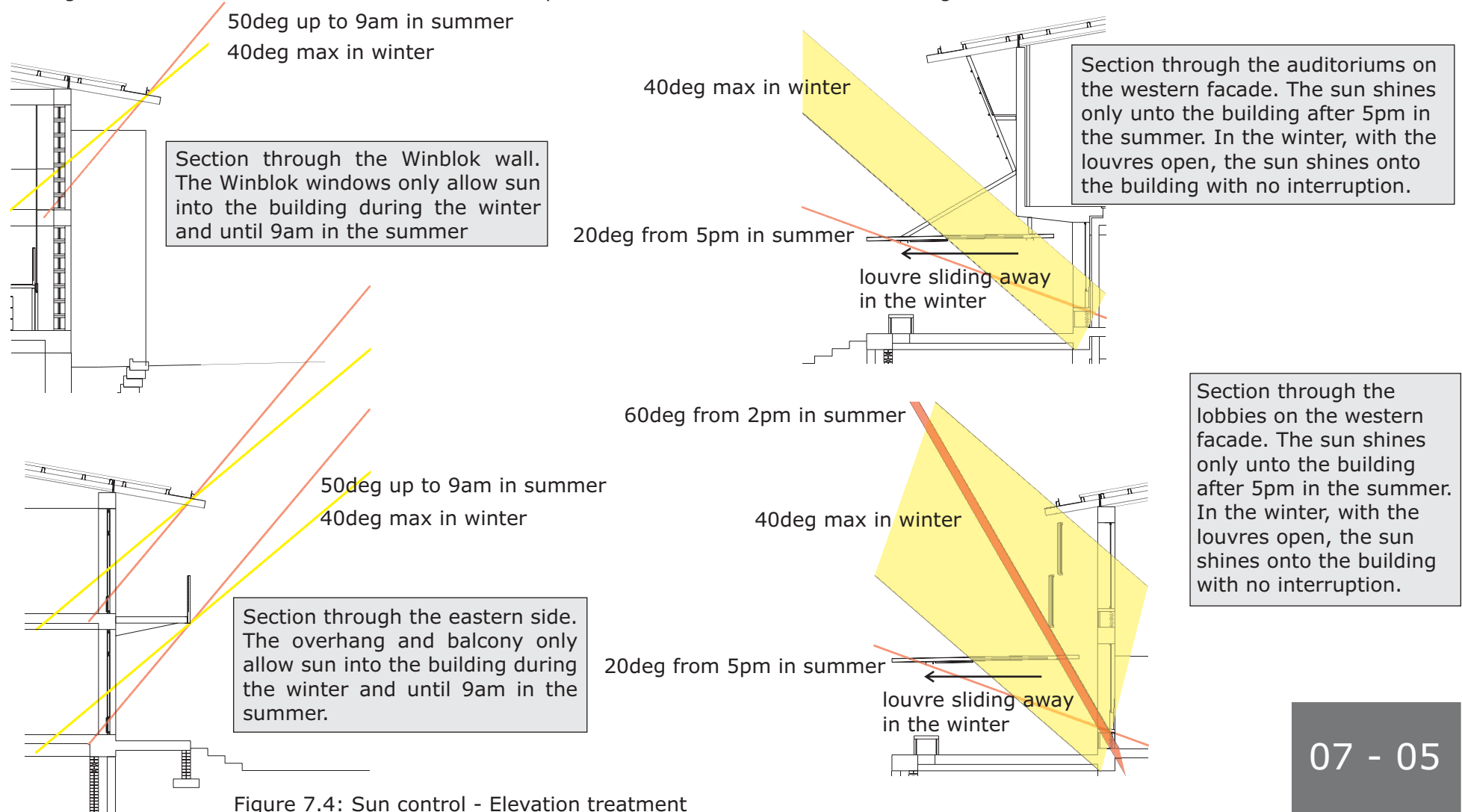


Figure 7.4: Sun control - Elevation treatment

1.3.2 - HEAT TRANSMISSION PREVENTION

The figures below illustrate the importance of isolation to prevent heat transmission into the building. Isolation is used underneath the roof sheeting and between the 280mm cavity wall.

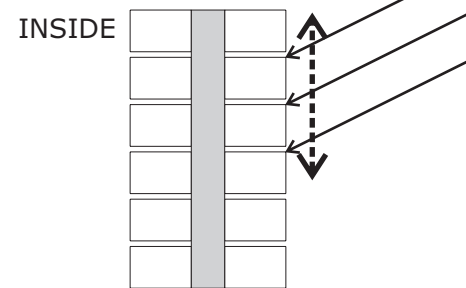
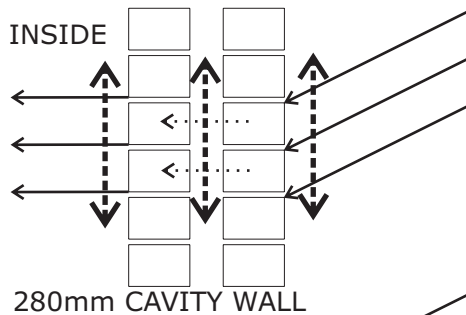
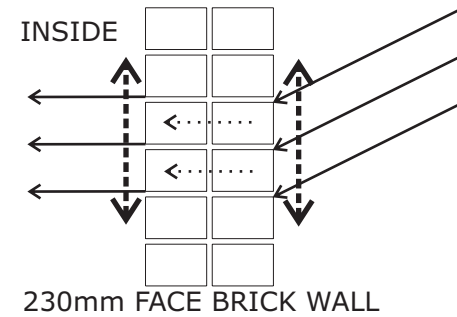


Figure 7.5: HEAT TRANSMISSION-WALL

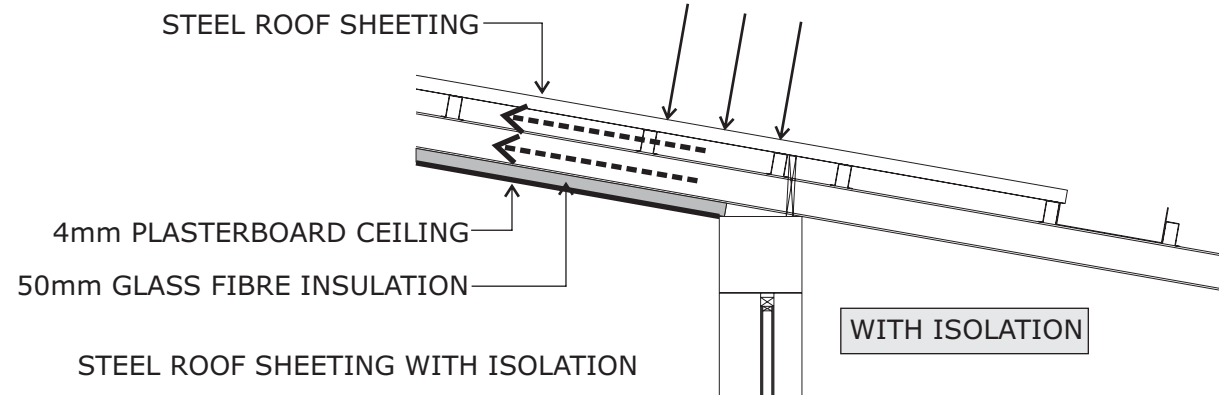
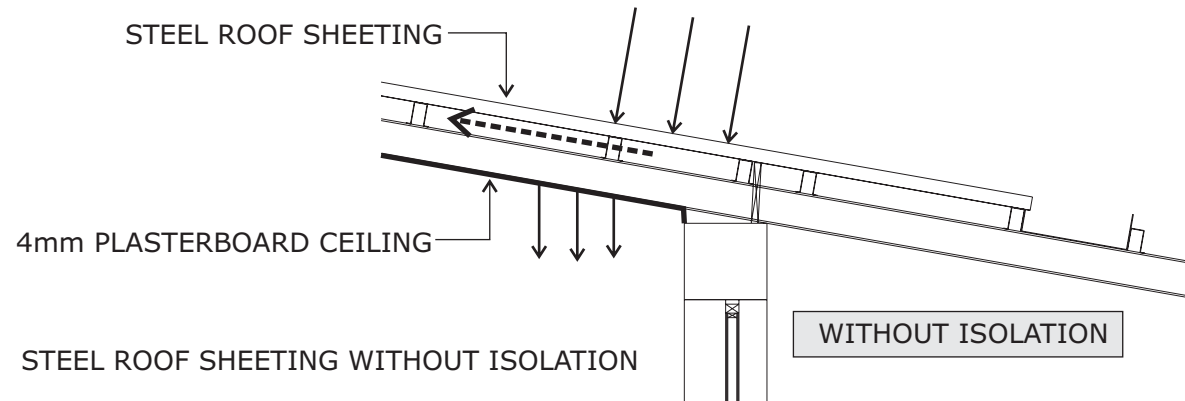


FIGURE 7.6: HEAT TRANSMISSION - ROOF

- > CONVECTION
- > RADIATION
-> CONDUCTION

1.3.3 - ADJUSTABLE LOUVRES

The louvres will be located on the western side all along the facade, except in front of the entrance. A Horizontal louvre structure is needed to shade the ground floor and the passing pedestrian. Vertical louvre structure is needed between the auditoriums to shade the first floor. A few considerations had to be taken into account before designing the louvres:

- Horizontal directed louvres prevent visibility.
 - Vertical directed louvres allow sun through.
 - Louvres should be on the outside of the building.
 - Louvers should be painted a light colour to reflect maximum light.
 - Louvres should be a distance from the windows to prevent warmed air from entering the building.
 - To allow sun into building in winter, louvres should slide away.
- (Napier 2000)

After investigating various options, the author decided to use Vitaloc screens. The screen is made up of a 40 x 40mm grid and 20mm deep, allowing for shade from all directions and visibility from the front.

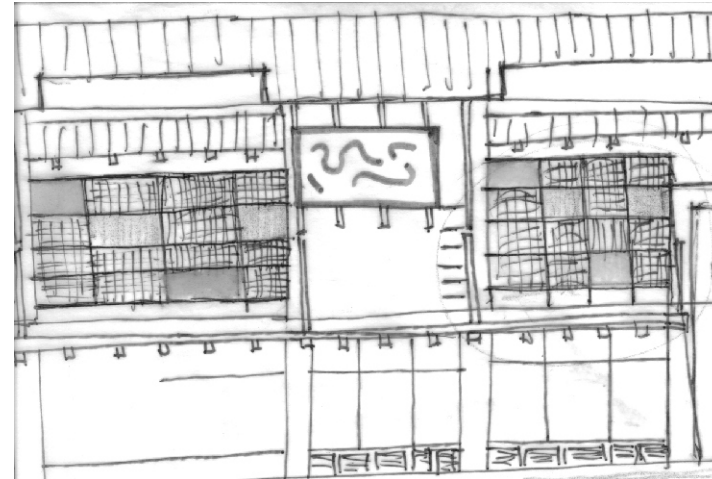


Figure 7.8: Elevation - vertical louvre proposal

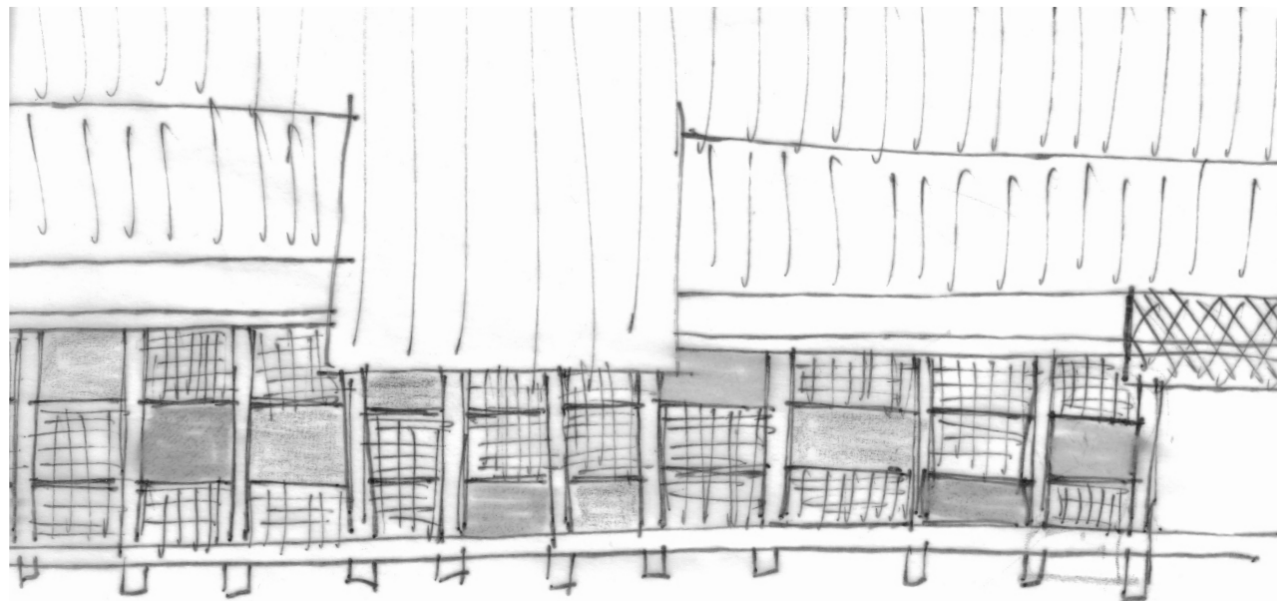


Figure 7.7: Plan - horizontal louvre proposal

LOUVRE DEVELOPMENT

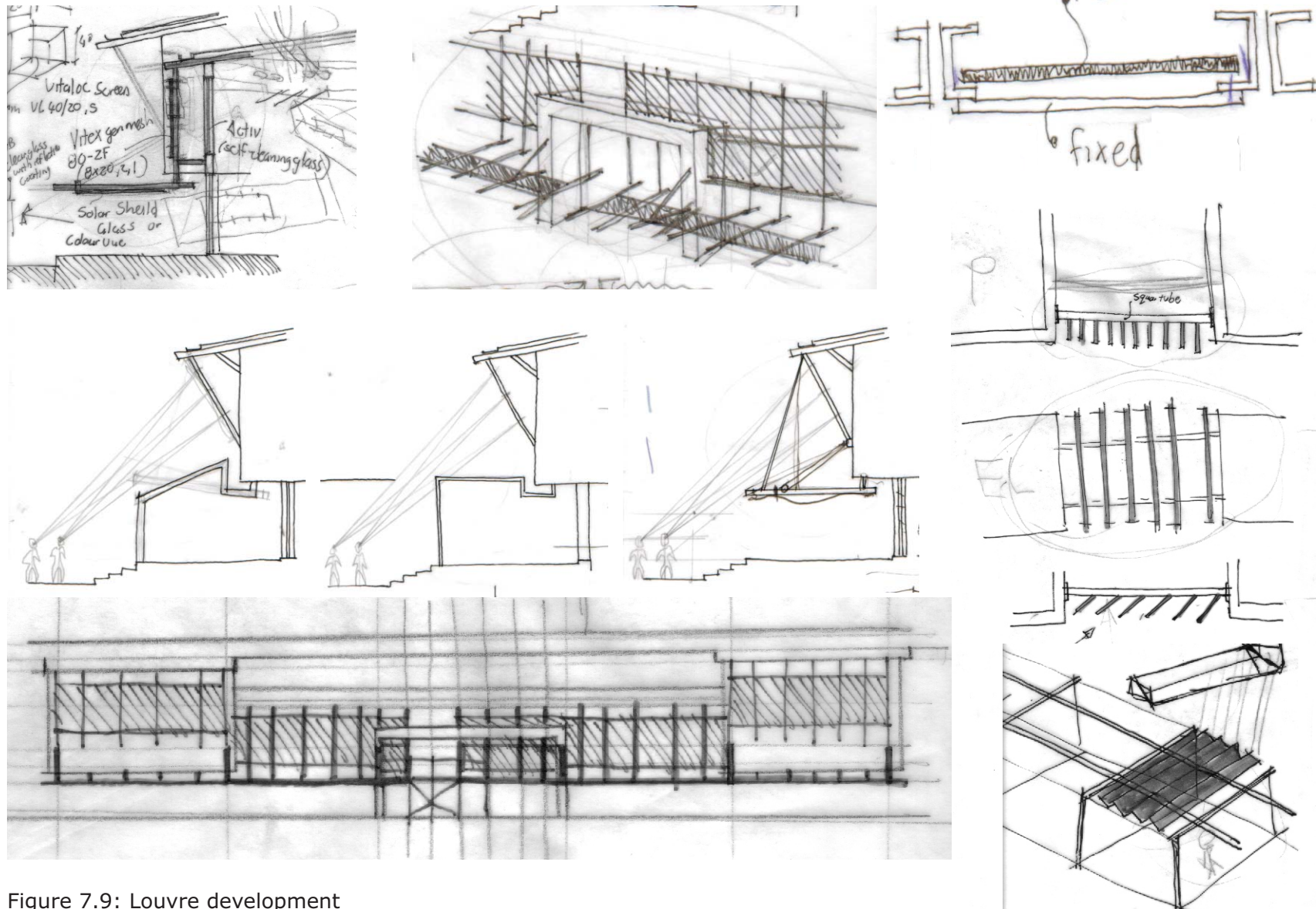


Figure 7.9: Louvre development

HORIZONTAL LOUVRE

The panels slide away from the building to allow sun unto the building in the winter.

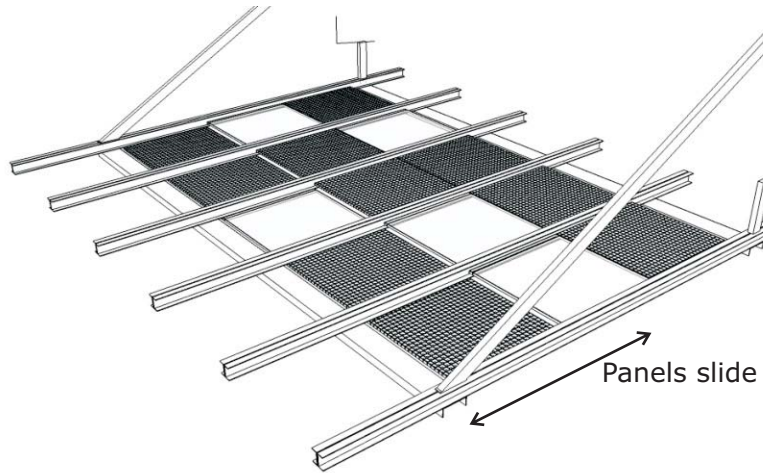


Figure 7.10: Horizontal louvre - summer

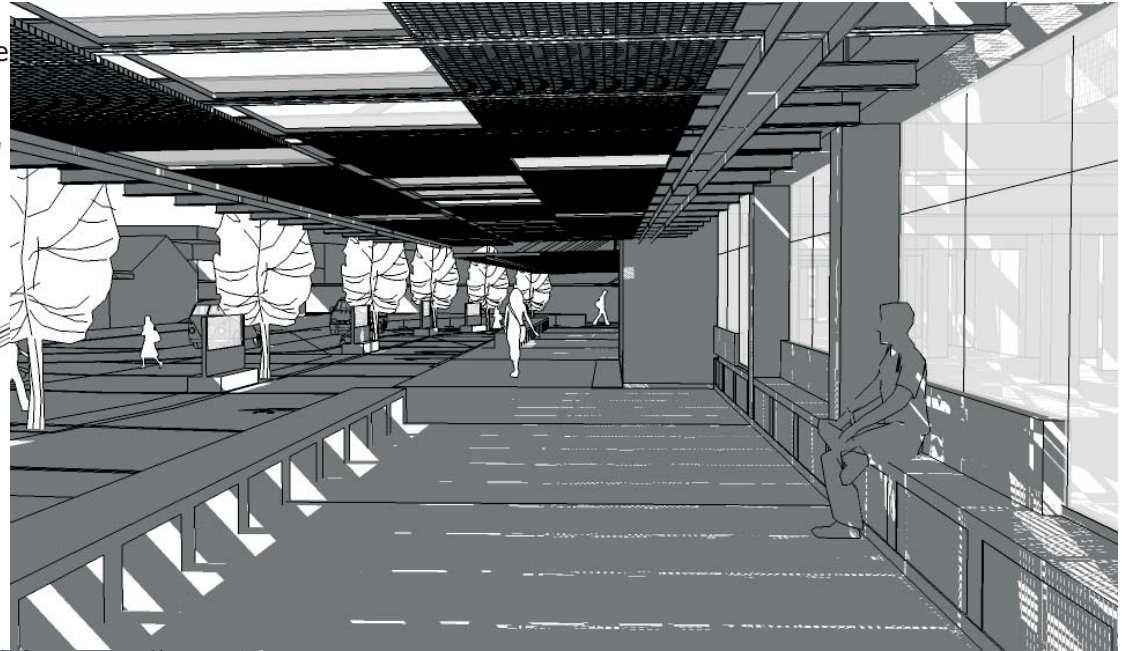


Figure 7.11: Canopy walkway - summer

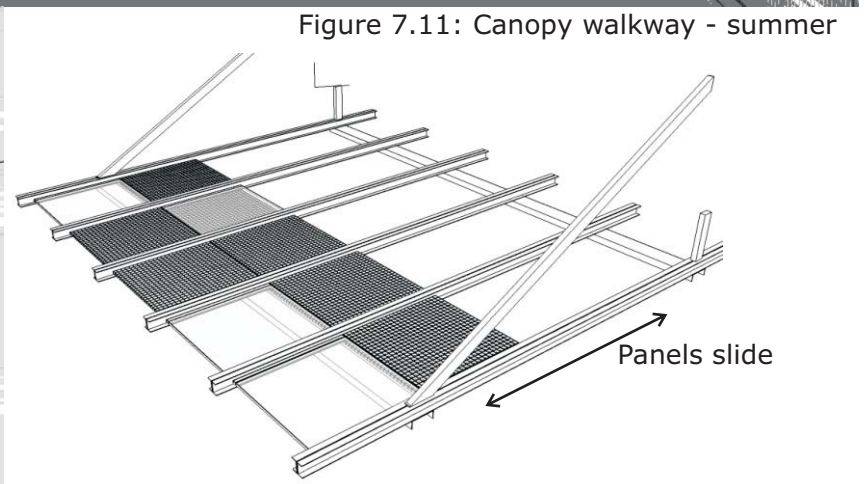
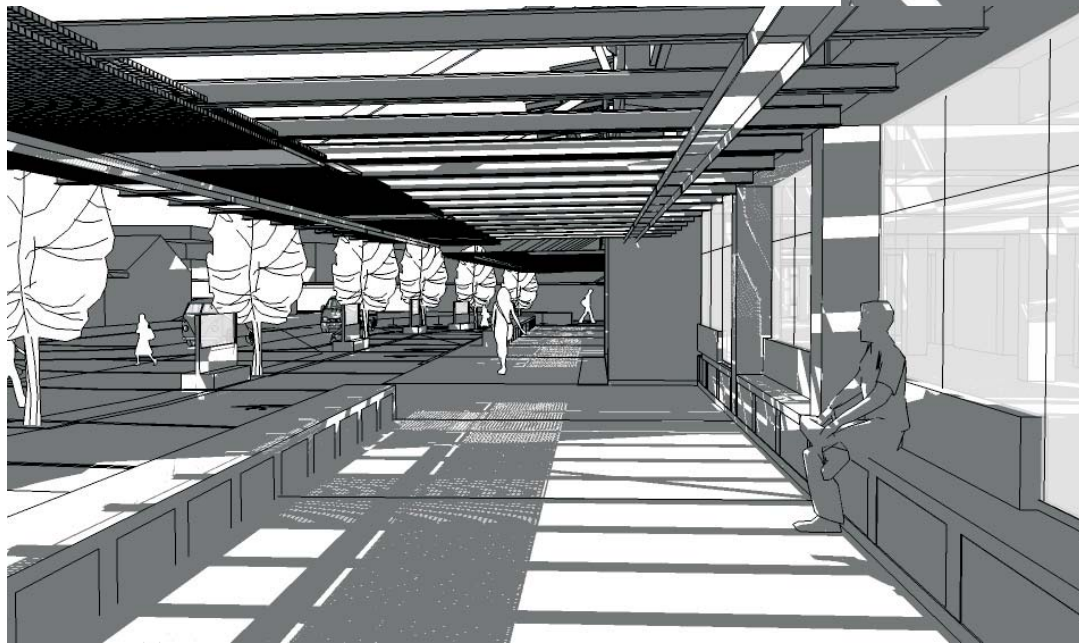


Figure 7.12: Horizontal louvre - winter

Figure 7.13: Canopy walkway - winter

VERTICAL LOUVRE

The panels slide to the side to allow sun unto the building in the winter.

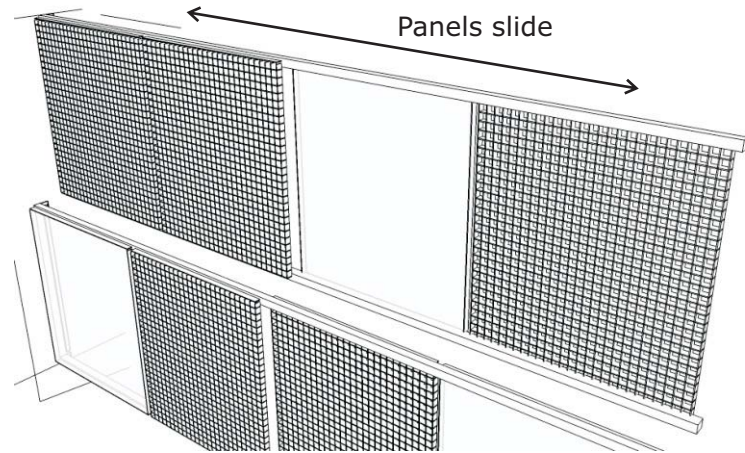


Figure 7.15: Vertical louvre - summer

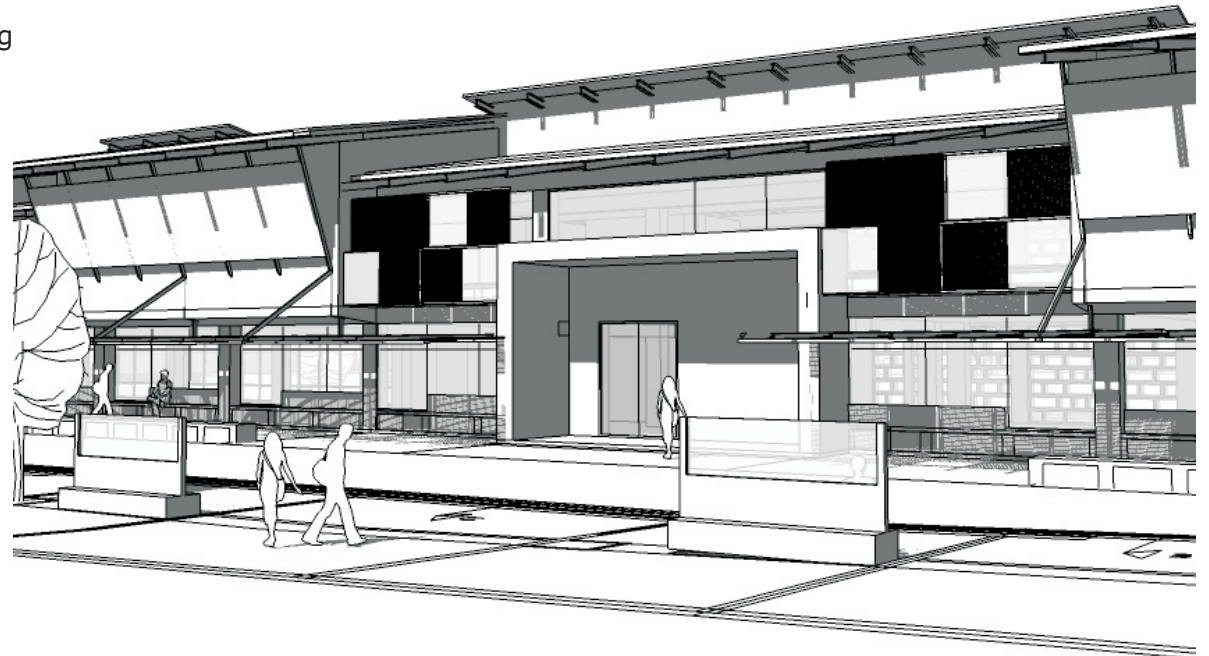


Figure 7.16: Front facade - summer

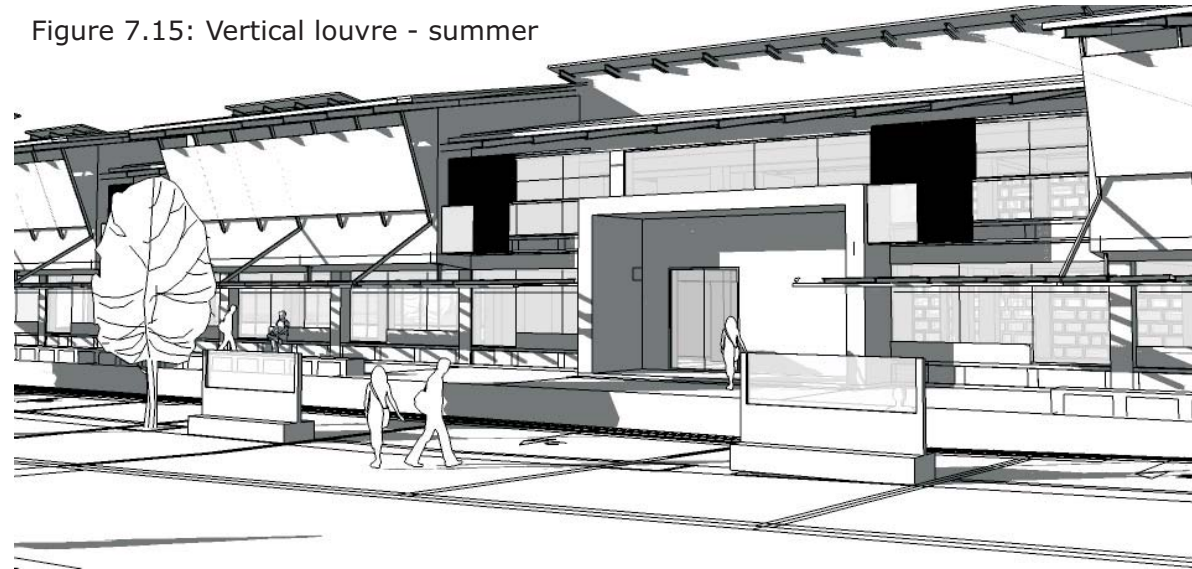


Figure 7.17: Front facade - winter

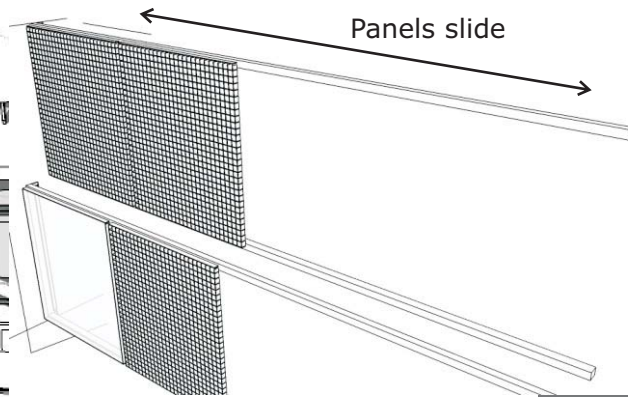


Figure 7.18: Vertical louvre - winter

1.4 - MECHANICAL VENTILATION SYSTEM FOR THE AUDITORIUMS

The auditoriums will mainly be used for adult literacy classes and need to be isolated from the city noise. For this reason, vertical openings for air inlet will not be considered due to the lack of noise isolation. A ventilation specialist have advised the author to use floor inlets for ventilation. Natural air will be forced down a pipe on the southern side of the site with a mechanical fan. The air will be channeled underneath the basement to the relevant auditoriums.

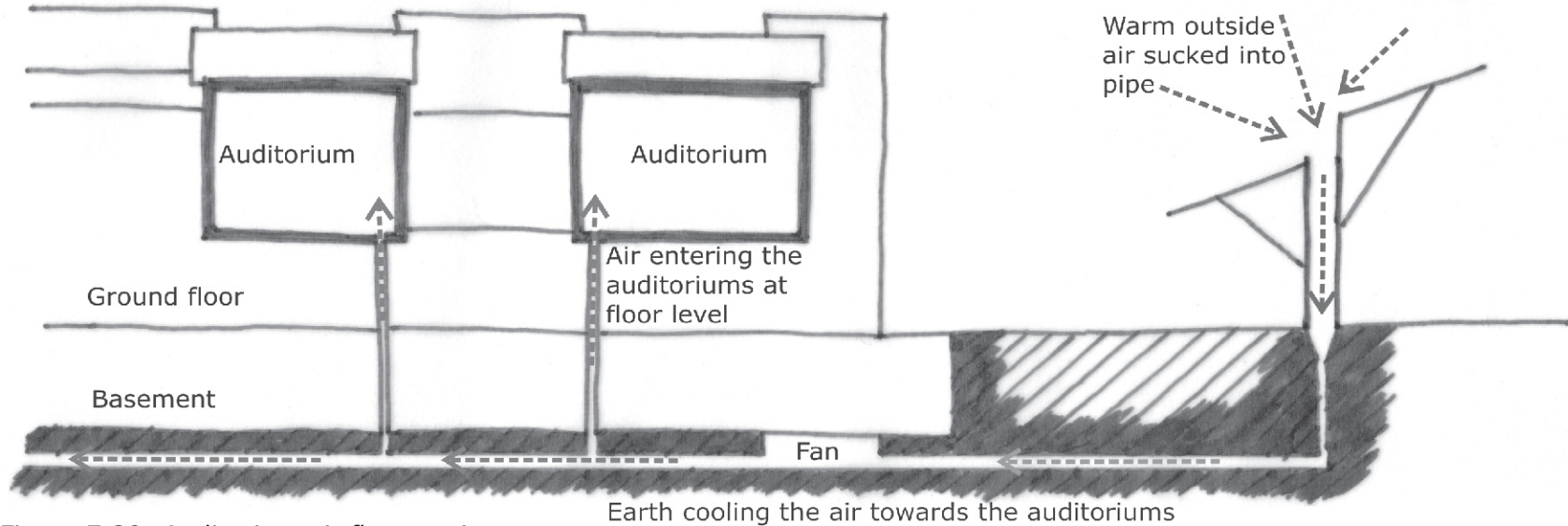


Figure 7.20: Auditorium air flow section

1.4.1 - AUDITORIUM AIR FLOW CALCULATION

Room sizes:

2 x type a: 5.5 x 7 x 5m high

2 x type b: 11 x 7 x 5m high

population:

2 x type a: 16 learners (16 x 2 = 32)

2 x type b: 32 learners (32 x 2 = 64)

total: 64 + 32 + 4 teachers = 100 people

distance (between room and fan)

type a1 = 15m, type a2 = 25m

type b1 = 45m, type b2 = 55m

Air flow:

Requirement: 5m/sec per person

100 PEOPLE X 5m/sec = 0.5 m²/sec + 50%(distance) = 0.75m²/sec

1.4.2 - MECHANICAL VENTILATION CALCULATION

After consulting with a ventilation engineer company, Luft industries, 2 different fans were considered which would provide the amount of air for the auditoriums.

- a cased axial industrial fan, 7.5kw, 400pascal pressure, 1m dia fan, ducting: 680 x 800mm.
- centrifugal fan, 3kw, 500pascal pressure, ducting: 240 x 360mm

2 options for obtaining the energy needed to run the fan was considered, a wind turbine and solar panels.

Wind turbine: the lack of consistent strong winds in Pretoria makes a wind turbine inefficient to create 3 or 7.5kw of energy.

Solar panels: a solar power company, Plan my Power, was consulted.

Information used:

Solar panels = 80watt, 4.6amps, 1,1 x 0,6m

Regulator = 20a (1 per 3 x 80w solar panels)

Batteries = 105ah (only 50% efficient = 50a)

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

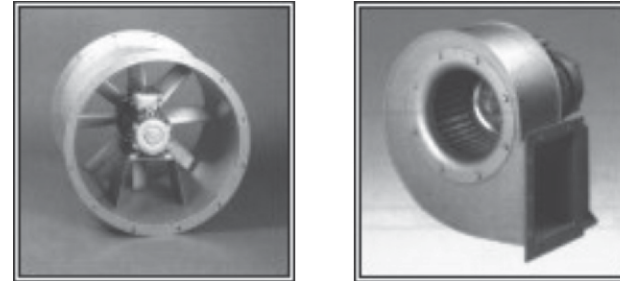


Figure 7.21: Fans (<http://www.luft.co.za>)

	cased axial fan (7.5kw)	centrifugal fan (3kw)
Usage/day	7 500 w x 8hours = 60 000 w.day	3000 w x 8hours = 24 000 w.day
Dayusage/ sunhours	60 000/5.6hours = 10 714 + 20%	24 000/5.6hours = 4 285 + 20%
+ 20%(inefficiencies)	= 12 857 w	= 5 142 w
W/80 w solar panel	12 857 w/80 = 160 solar panels	5 142 w/80 = 64 solar panels
Inverter	2 x 3000w and 1 x 1500w inverter	1 x 3000w inverter
Batteries	160 x 4.6a = 736 x 5.6hours = 4121ah 4121/50a = 82 batteries	64 x 4.6a = 294 x 5.6hours = 1646ah 1646/50a = 32 batteries
Regulator	160 / 3 = 54 20a regulators	64 / 3 = 22 20a regulators

Result: Isb 325/43 centrifugal fan

Solar panel sqm = 64 x 80w solar panels, 1.1 x 0.6m x 64 = 42.24sqm

1.4.3 - THE BEACON

The ventilation inlet and the 64 solar panels were incorporated into a beacon. The beacon has a tree shape and form part of the line of trees above the storm water channel that is underground on the eastern boundary. The main core is an air tight glass and steel structure with only an air inlet at the top. The air inlet allow air to enter the core and pass down the core towards the mechanical fan and auditoriums. The beacon is a kinetic sculpture that acts as the mouth of a body, providing air to the auditoriums.

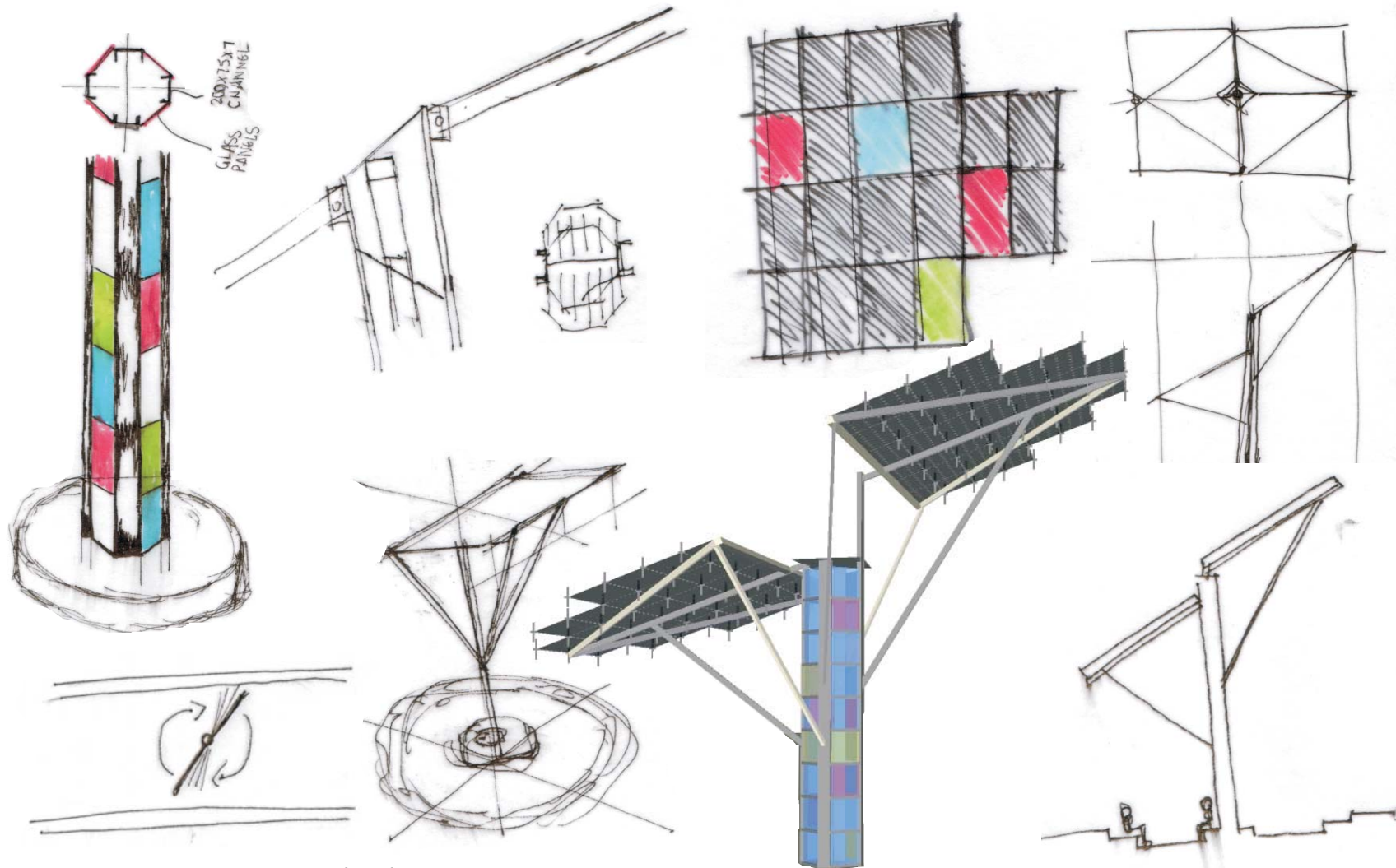


Figure 7.22: Beacon concept sketches

2 - DETAILS

2.1 - DETAIL DEVELOPMENT

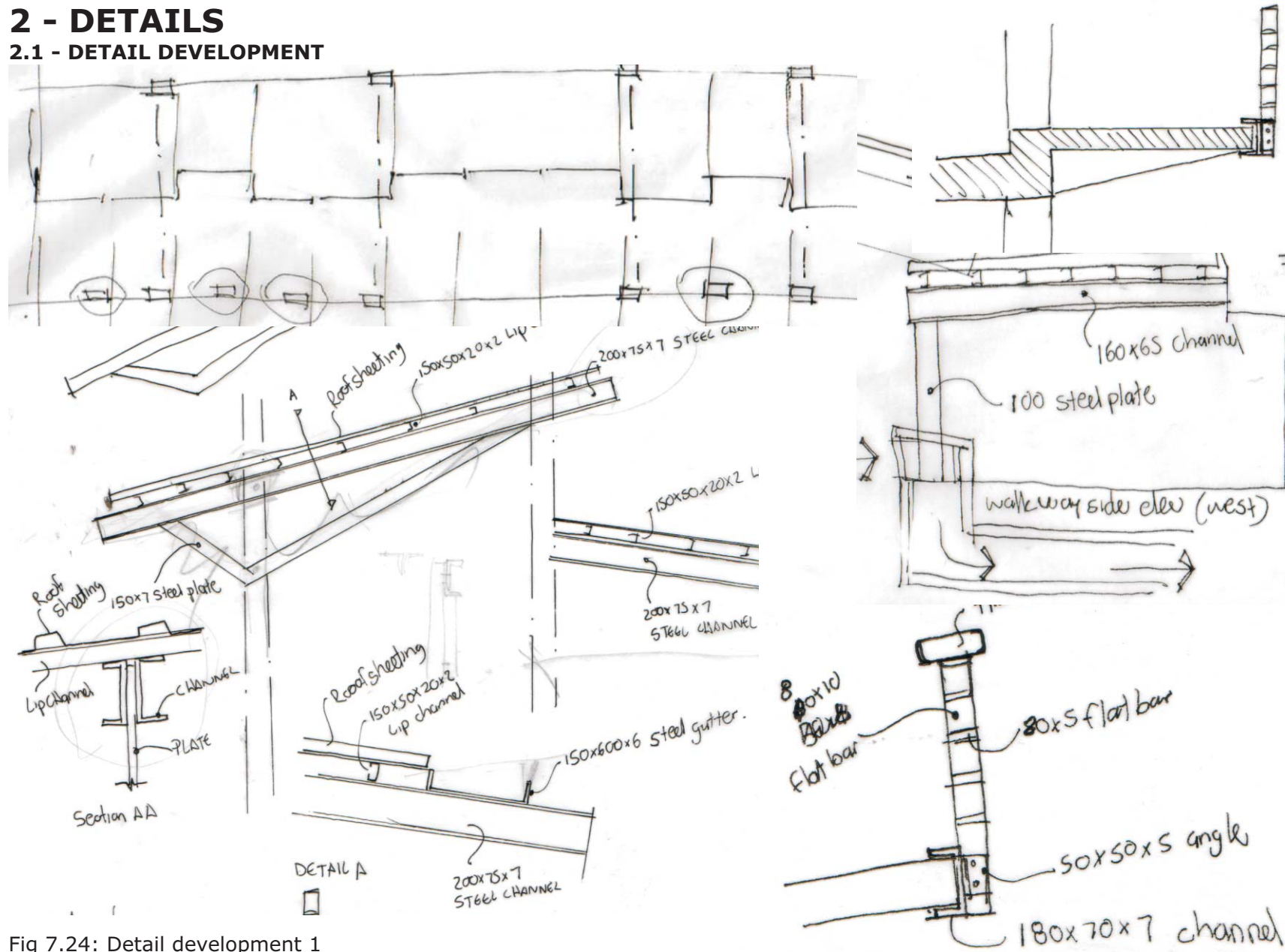


Fig 7.24: Detail development 1

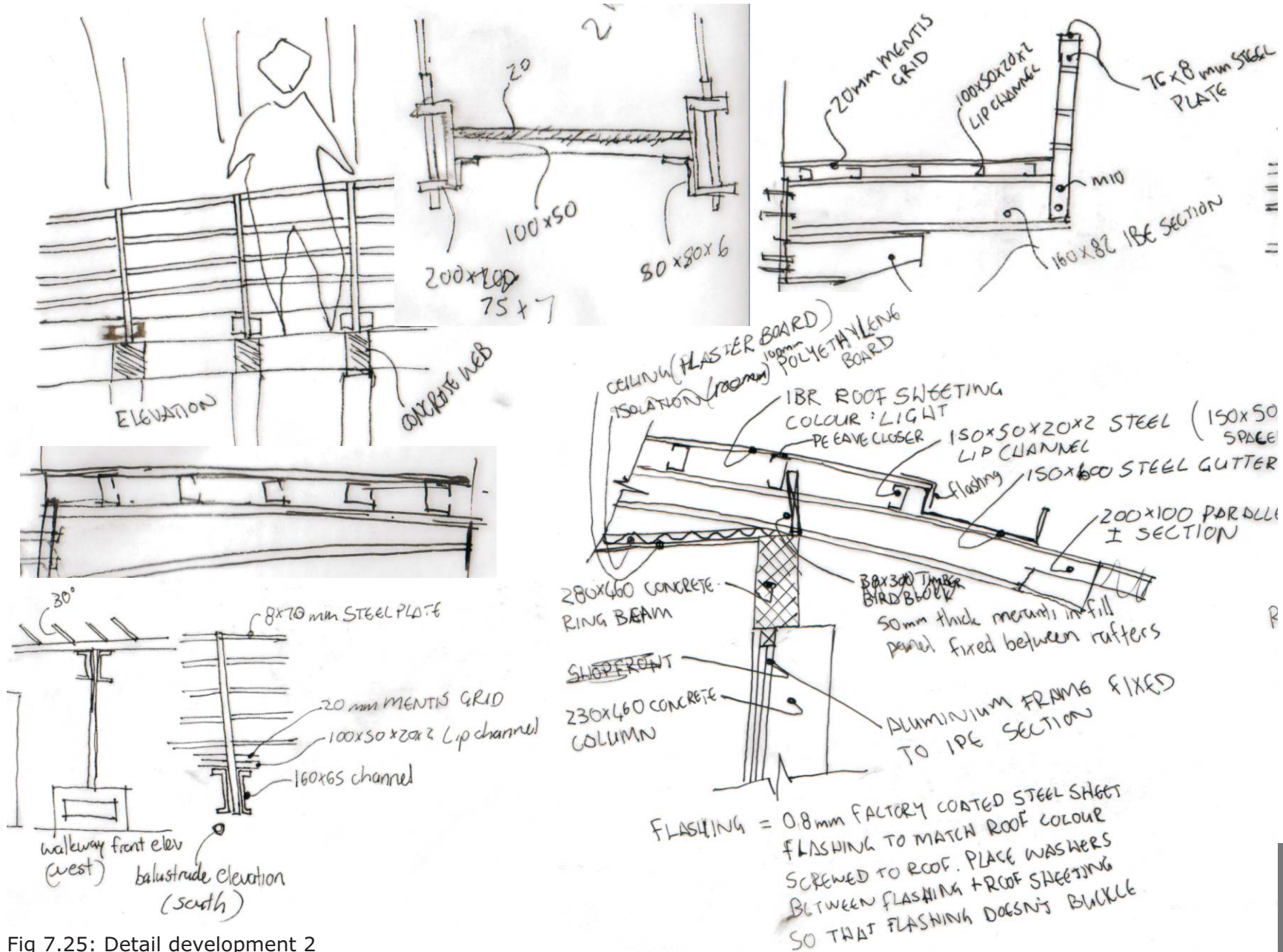


Fig 7.25: Detail development 2



3 - TECHNICAL DRAWINGS



REFERENCES

08: REFERENCES



Josephine Buthelesi, 74

I carried the bible

08: REFERENCES

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ADDENDUM

- Addendum A: Accommodation schedule
- Addendum B: Building usage schedule
- Addendum c: Sustainable Building Assessment Tool

ACCOMMODATION SCHEDULE :		AREA (sqm)
DISCRIPTION		
LITERACY ENHANCEMENT CENTRE		3740
MAIN BUILDING		1500
GROUND FLOOR		811
STUDY HALL	214 (100 seats)	
READING ROOM	117 (30 seats)	
LIBRARY / RAMP	144 (30 children)	
COMPUTER LAB	49 (32 seats)	
SELF STORAGE	30	
OFFICE	24 (2 offices)	
LOBBY	39	
SERVICE	73	
COMMON AREA	121	
FIRST FLOOR		689
AUDITORIUM	232 (100 seats)	
OFFICE	121 (7 offices)	
SERVICE	73	
COMMON	263	
BASEMENT		1358
PARKING	961 (29 bays)	
STORAGE	358	
SERVICES	39	
SCHOOL		882
GROUND		294
LOBBY	24	
LIBRARY	146 (40 seats)	
SERVICE	52	
COMMON	44	
LOUNGE	28 (10 seats)	
UPPER LEVELS (FIRST = SECOND)		588
ONE LEVEL		294
STUDIO	171 (20 seats)	
OFFICE	22 (2 offices)	
SERVICE	52	
COMMON	49	

Table 8.1: Accommodation schedule

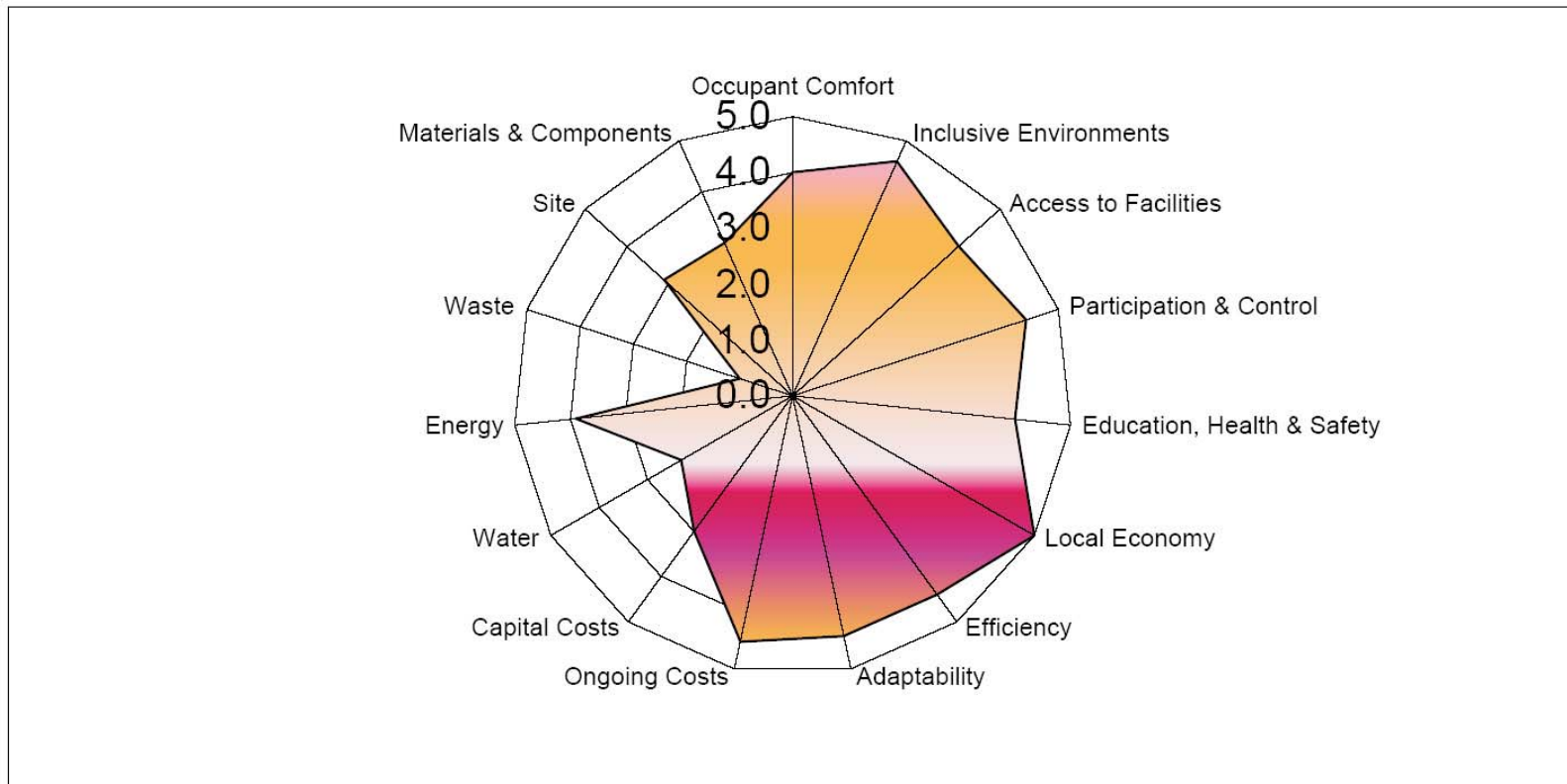
BUILDING USAGE SCHEDULE

	8am	9am	10am	11am	12am	1pm	2pm	3pm	4pm	5pm	6pm	7pm	8pm
STUDY HALL						GENERAL PUBLIC							
READING ROOM						GENERAL PUBLIC							
OFFICES						PROVINCIAL COMMITTEE							
AUDITORIUM						TUTORS AND CORPORATE TRAINING					ADULT LITERACY (ABET)		
STUDIO						STUDENTS							
LIBRARY						STUDENTS							

Table 8.2: Building usage schedule

SUSTAINABLE BUILDING ASSESSMENT TOOL (SBAT- P) V1

PROJECT	ASSESSMENT
Project title: Literacy Enhancement Centre	Date: Oct-07
Location: Erf 668, Aziatic Bazaar	Undertaken by: CC Strydom
Building type: Education	Company / organisation Student
Internal area (m2):	Telephone: Fax:
Number of users:	Email: coldesign@hotmail.com



Social	4.2	Economic	4.3	Environmental	2.7
Overall	3.7	Classification	GOOD		

Building Performance - Social

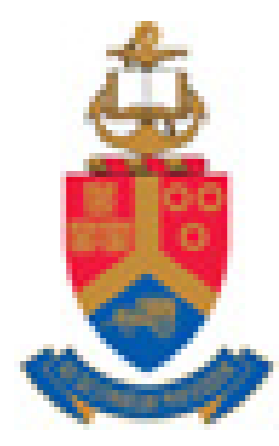
Criteria	Indicative performance measure	Measured	Points
SO 1 Occupant Comfort			4.0
SO 1.1 Daylighting	% of occupied spaces that are within distance 2H from window, where H is the height of the window or where there is good daylight from skylights	60	0.6
SO 1.2 Ventilation	% of occupied spaces have equivalent of opening window area equivalent to 10% of floor area or adequate mechanical system, with upolluted air source	100	1.0
SO 1.3 Noise	% of occupied spaces where external/internal/reverberation noise does not impinge on normal conversation (50dbA)	80	0.8
SO 1.5 Thermal comfort	Tempreture of occupied space does not exceed 28 or go below 19oC for less than 5 days per year (100%)	80	0.8
SO 1.5 Views	% of occupied space that is 6m from an external window (not a skylight) with a view	80	0.8
SO 2 Inclusive Environments			4.6
SO 2.1 Public Transport	% of building (s) within 400m of disabled accessible public transport	100	1.0
SO 2.2 Information	High contrast, clear print signage in appropriate locations (100%)	60	0.6
SO 2.3 Space	% of occupied spaces that are accessible to ambulant disabled / wheelchair users	100	1.0
SO 2.4 Toilets	% of space with fully accessible toilets within 50m	100	1.0
SO 2.5 Fittings & Furniture	% of commonly used furniture and fittings (reception desk, kitchenette, auditorium) fully accessible	100	1.0
SO 3 Access to Facilities			4.0
SO 3.1 Children	All users can walk (100%) / use public transport (50%) to get to their childrens' schools and creches	100	1.0
SO 3.2 Banking	All users can walk (100%) / use public transport (50%) to get to banking facilities	50	0.5
SO 3.3 Retail	All users can walk (100%) / use public transport (50%) to get to food retail	100	1.0
SO 3.4 Communication	All users can walk (100%) / use public transport (50%) to get to communication facilities (post, telephone and internet)	100	1.0
SO 3.5 Exercise	All users can walk (100%) / use public transport (50%) to get to recreation / excersise facilities	50	0.5
SO 4 Participation & Control			4.4
SO 4.1 Environmental control	% of occupied spaces able to control their thermal environment (adjacent to openable windows/thermal controls)	100	1.0
SO 4.2 Involvement	% of users actively involved in the design process (workshops / meetings with models / large format drawings)	40	0.4
SO 4.3 Social spaces	Social informal meeting spaces (parks / staff canteens / cafes) provided locally (within 400m) (100%)	100	1.0
SO 4.4 Sharing facilities	5% of facilities shared with other users / organisations on a weekly basis (100%)	100	1.0
SO 4.5 User group	Active representative user group involved in the management of the building / facilities / local environment (100%)	100	1.0
SO 5 Education, Health & Safety			4.0
SO 5.1 Education	Two percent or more space/facilities available for education (seminar rooms / reading / libraries) per occupied spaces (75%). Construction training provided on site (25%)	100	1.0
SO 5.2 Safety	All well used routes in and around building well lit (25%), all routes in and around buildings (25%) visually supervised, secure perimeter and access control (50%), No crime (100%)	0	0.0
SO 5.3 Awareness	% of users who can access information on health & safety issues (ie HIV/AIDS), training and employment opportunities easily (posters/personnel)	100	1.0
SO 5.4 Materials	All materials/components used have no negative effects on indoor air quality (100%)	100	1.0
SO 5.5 Accidents	Method in place for recording all occupational accidents and diseases and addressing these	100	1.0

Building Performance - Economic

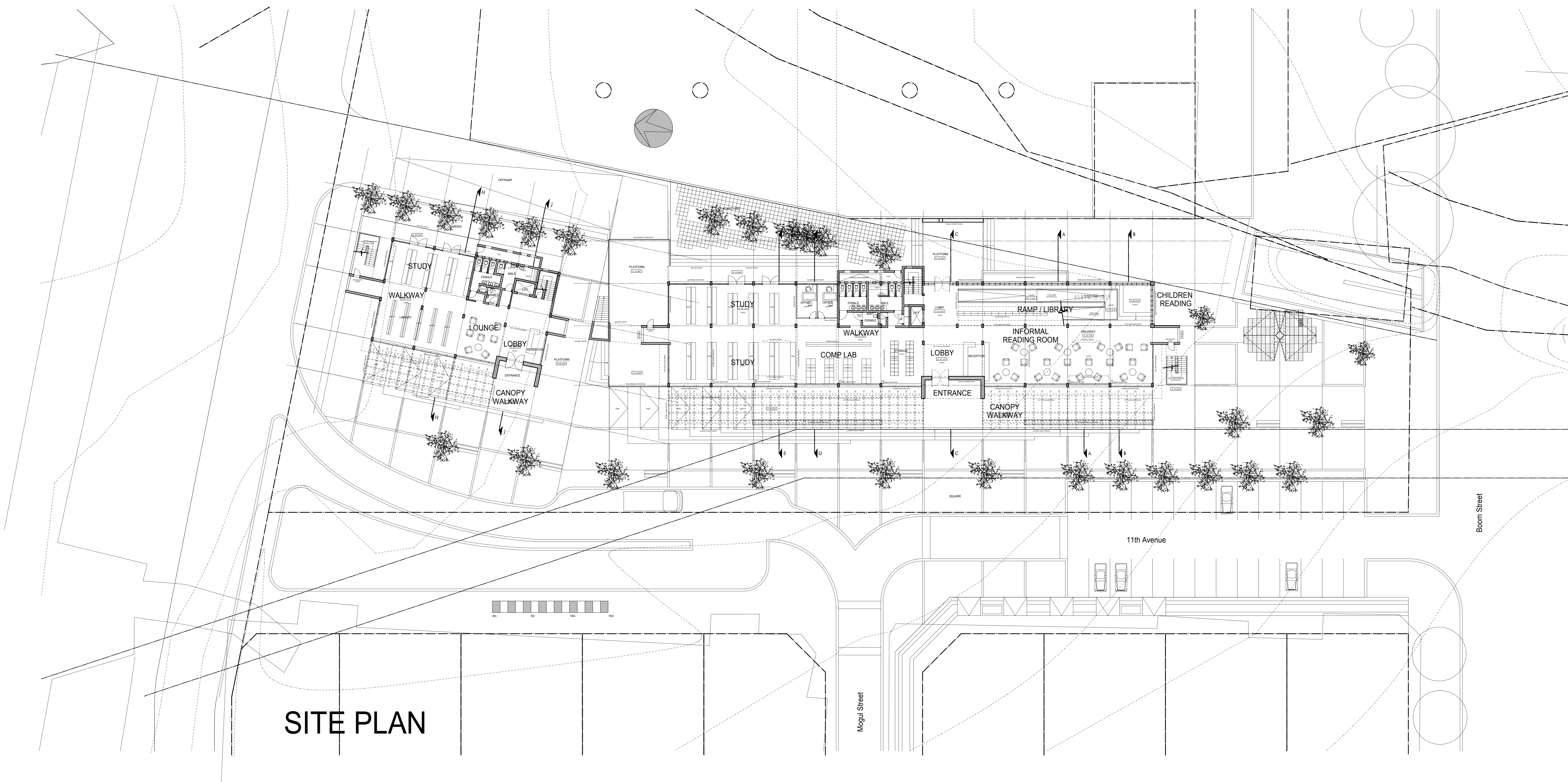
	Criteria	Indicative performance measure	Measured	Points
EC 1	Local economy			5.0
EC 1.1	Local contractors	% value of the building constructed by local (within 50km) small (employees<20) contractors	100	1.0
EC 1.2	Local materials	% of materials (sand, bricks, blocks, roofing material) sourced from within 50km	100	1.0
EC 1.3	Local components	% of components (windows, doors etc) made locally (in the country)	100	1.0
EC 1.4	Local furniture/fittings	% of furniture and fittings made locally (in the country)	100	1.0
EC 1.5	Maintenance	% of maintenance and repairs by value that can, and are undertaken, by local contractors (within 50km)	100	1.0
EC 2	Efficiency			4.4
EC 2.1	Capacity	% capacity of building used on a daily basis (actual number of users / number of users at full capacity*100)	80	0.8
EC 2.2	Occupancy	% of time building is occupied and used (actual average number of hours used / all potential hours building could be used (24) *100)	60	0.6
EC 2.3	Space per occupant	Space provision per user not more than 10% above national average for building type (100%)	100	1.0
EC 2.4	Communication	Site/building has access to internet and telephone (100%), telephone only (50%)	100	1.0
EC 2.5	Material & Components	Building design coordinated with material / component sizes in order to minimise wastage. Walls (50%), Roof and floors (50%)	100	1.0
EC 3	Adaptability			3.5
EC 3.1	Vertical heights	% of spaces that have a floor to ceiling height of 3000mm or more	40	0.4
EC 3.2	External space	Design facilitates flexible external space use (100%)	100	1.0
EC 3.3	Internal partition	Non loadbearing internal partitions that can be easily adapted (loose partitioning (100%), studwall (50%), masonry (25%)	25	0.3
EC 3.4	Modular planning	Building with modular structure, envelope (fenestration) & services allowing easy internal adaptation (100%)	80	0.8
EC 3.5	Furniture	Modular, limited variety furniture - can be easily configured for different uses (100%)	100	1.0
EC 4	Ongoing costs			4.5
EC 4.1	Induction	All new users receive induction training on building systems (50%), Detailed building user manual (50%)	100	1.0
EC 4.2	Consumption & waste	% of users exposed on a monthly basis to building performance figures (water (25%), electricity (25%), waste (25%), accidents (25%)	50	0.5
EC 4.2	Metering	Easily monitored localised metering system for water (25%) and energy (75%)	100	1.0
EC 4.3	Maintenance & Cleaning	Building can be cleaned and maintained easily and safely using simple equipment and local non-hazardous materials (100%)	100	1.0
SO 4.5	Procurement	% of value of all materials/equipment used in the building on a daily basis supplied by local (within the country) manufacturers	100	1.0
EC 5	Capital Costs			3.0
EC 5.1	Local need	Five percent capital cost allocated to address urgent local issues (employment, training etc) during construction process (100%)	100	1.0
EC 5.2	Procurement	Tender / construction packaged to ensure involvement of small local contractors/manufacturers (100%)	0	0.0
EC 5.3	Building costs	Capital cost not more than fifteen % above national average building costs for the building type (100%)	100	1.0
EC 5.4	Sustainable technology	3% or more of capital costs allocated to new sustainable/indigenous technology (100%)	100	1.0
EC 5.5	Existing Buildings	Existing buildings reused (100%)	0	0.0

Building Performance - Environmental

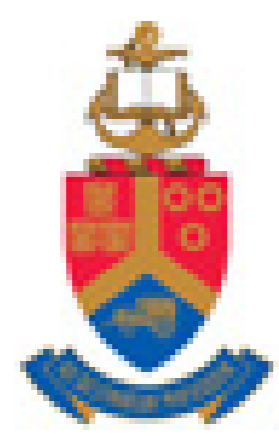
Criteria	Indicative performance measure	Measured	Points
EN 1 Water			2.3
EN 1.1 Rainwater	% of water consumed sourced from rainwater harvested on site	30	0.3
EN 1.2 Water use	% of equipment (taps, washing machines, urinals showerheads) that are water efficient	100	1.0
EN 1.3 Runoff	% of carparking, paths, roads and roofs that have absorbant/permeable surfaces (grassed/thatched/looselaid paving/ absorbant materials)	100	1.0
EN 1.4 Greywater	% of water from washing/relatively clean processes recycled and reused	0	0.0
EN 1.5 Planting	% of planting (other than food gardens) on site with low / appropriate water requirements	0	0.0
EN 2 Energy			3.9
EN 2.1 Location	% of users who walk / use public transport to commute to the building	100	1.0
EN 2.2 Ventilation	% of building ventilation requirements met through natural / passive ventilation	80	0.8
EN 2.3 Heating & Cooling	% of occupied space which has passive environmental control (no or minimal energy consumption)	100	1.0
EN 2.4 Appliances & fittings	% of appliances / lighting fixtures that are classed as highly energy efficient (ie energy star rating)	100	1.0
EN 2.5 Renewable energy	% of building energy requirements met from renewable sources	10	0.1
EN 3 Waste			1.0
EN 3.1 Toxic waste	% of toxic waste (batteries, ink cartridges, flourescent lamps) recycled	0	0.0
EN 3.2 Organic waste	% of organic waste recycled	0	0.0
EN 3.3 Inorganic waste	% of inorganic waste recycled.	0	0.0
EN 3.4 Sewerage	% of sewerage recycled on site	0	0.0
EN 3.5 Construction waste	% of damaged building materials / waste developed in construction recycled on site	100	1.0
EN 4 Site			3.1
EN 4.1 Brownfield site	% of proposed site already disturbed / brownfield (previously developed)	100	1.0
EN 4.2 Neighbouring buildings	No neighbouring buildings negatively affected (access to sunlight, daylight, ventilation) (100%)	100	1.0
EN 4.3 Vegetation	% of area of area covered in vegetation (include green roofs, internal planting) relative to whole site	40	0.4
EN 4.4 Food gardens	Food gardens on site (100%)	0	0.0
EN 4.5 Landscape inputs	% of landscape that does not require mechanical equipment (ie lawn cutting) and or artificial inputs such as weed killers and pesticides	70	0.7
EN 5 Materials & Components			3.0
EN 5.1 Embodied energy	Materials with high embodied energy (aluminium,plastics) make up less than 1% of weight of building (100%)	60	0.6
EN 5.2 Material sources	% of materials and components by volume from grown sources (animal/plant)	0	0.0
EN 5.3 Ozone depletion	No materials and components used requiring ozone depleting processes (100%)	100	1.0
EN 5.4 Recycled / reuse	% of materials and components (by weight) reused / from recycled sources	40	0.4
EN 5.5 Construction process	Volume / area of site disturbed during construction less than 2X volume/area of new building (100%)	100	1.0



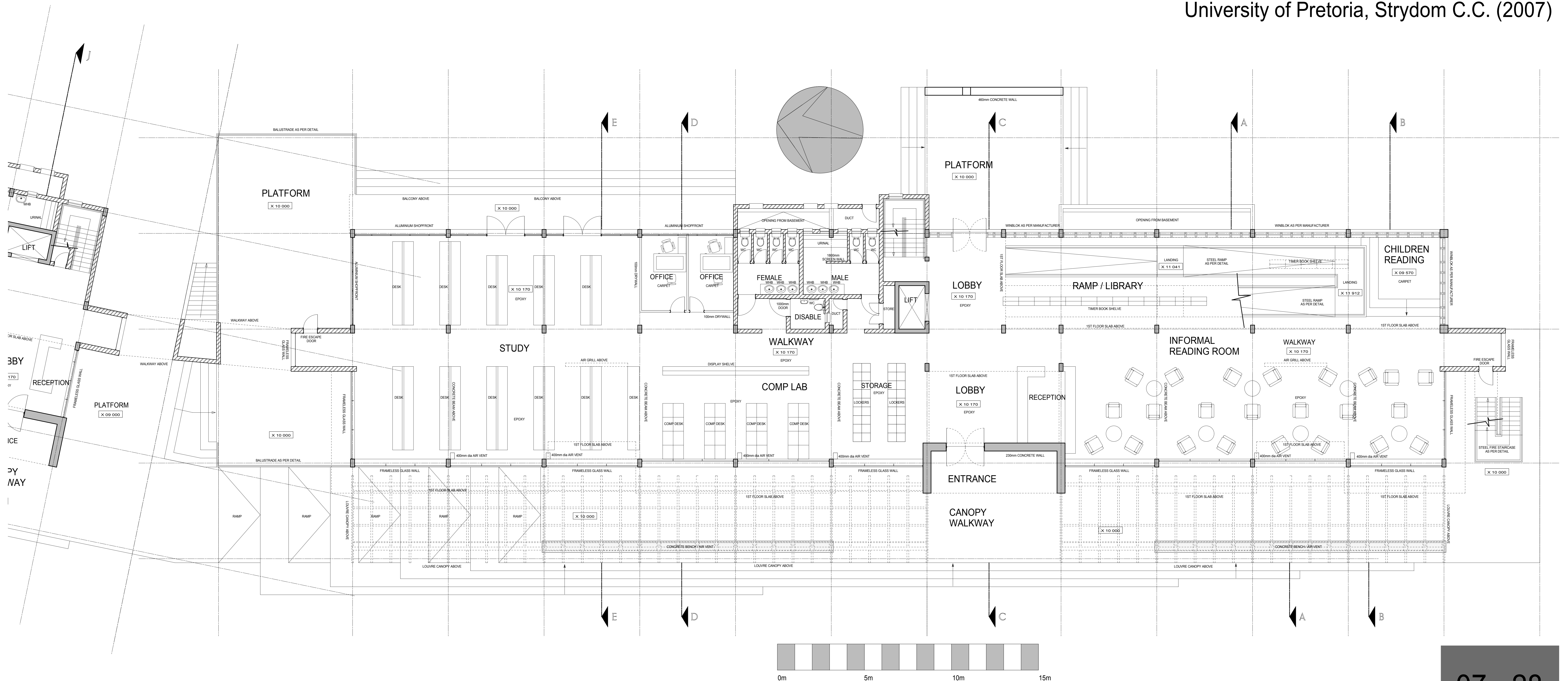
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SITE PLAN



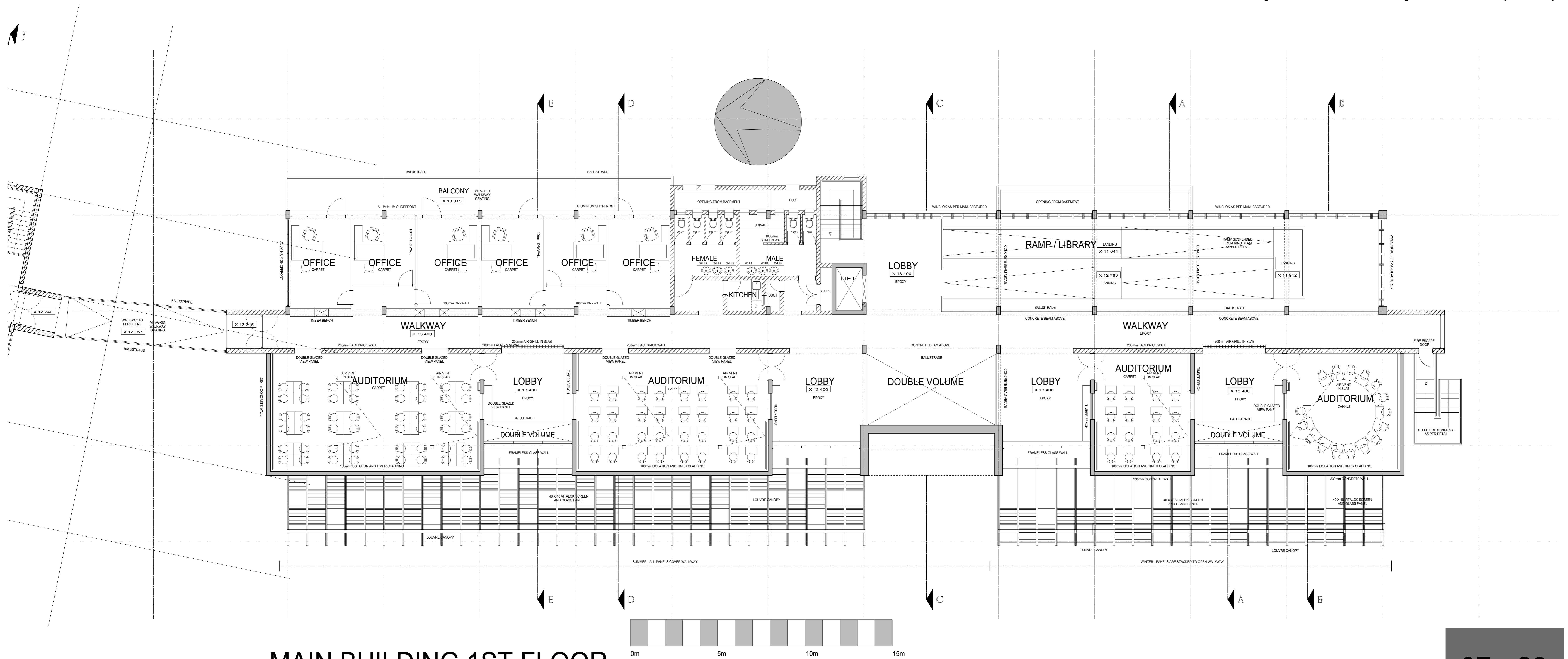
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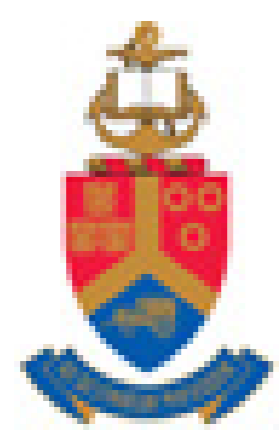
MAIN BUILDING - GROUND FLOOR



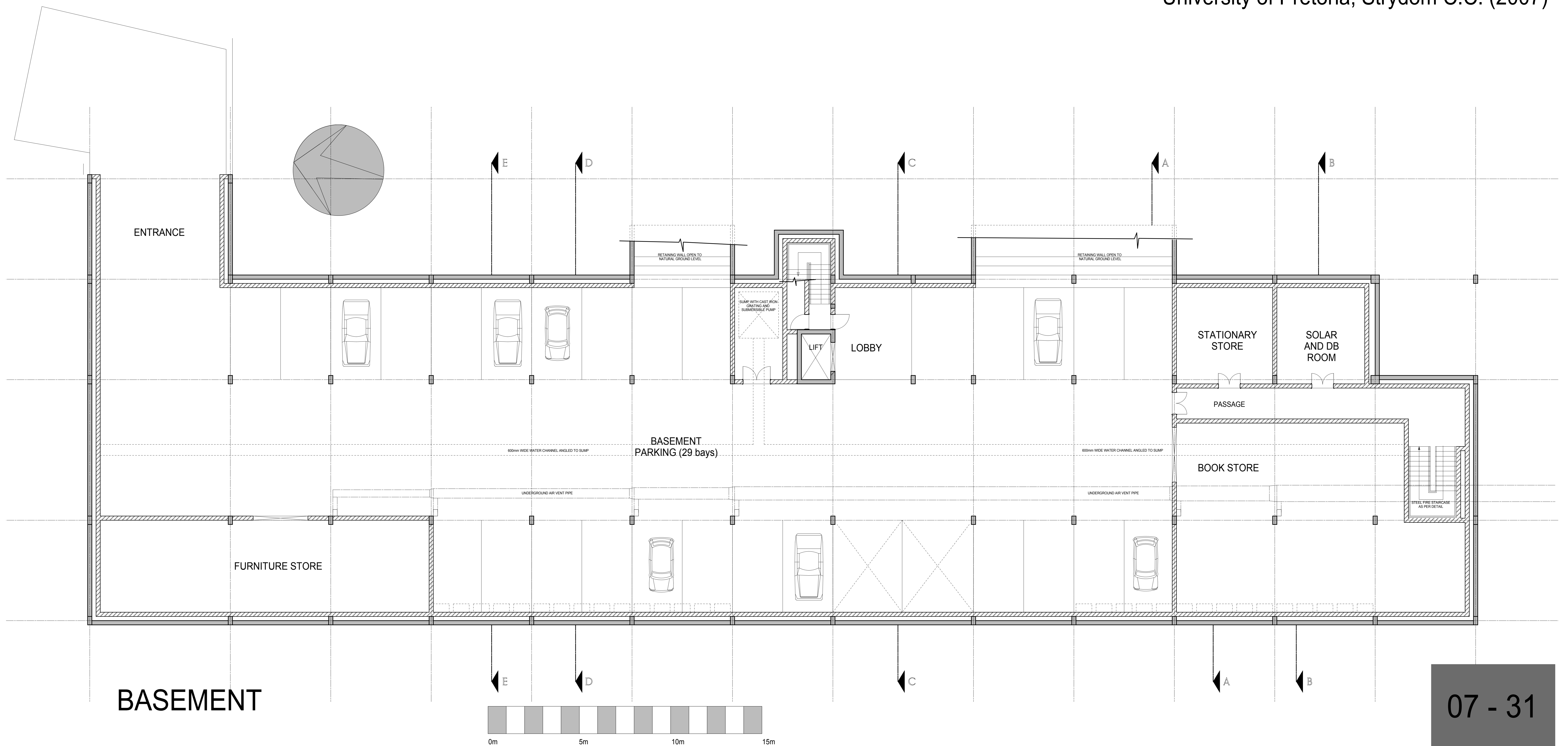
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MAIN BUILDING 1ST FLOOR

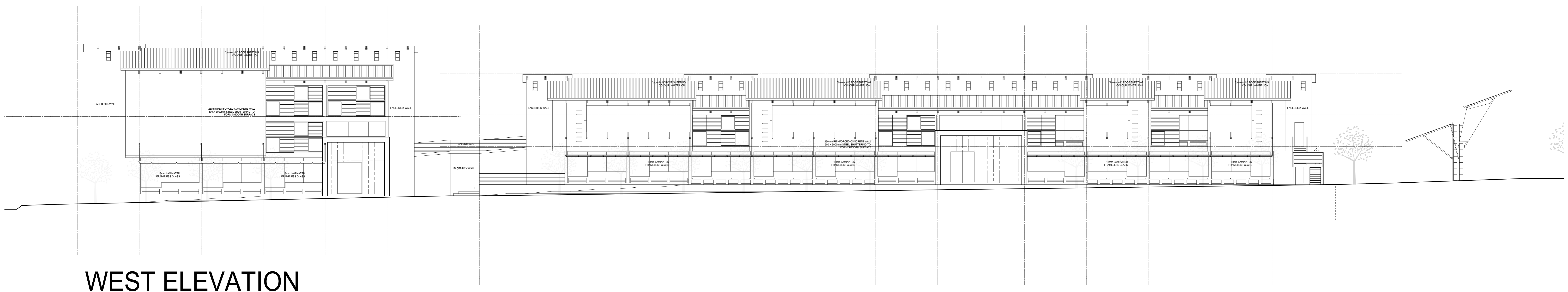


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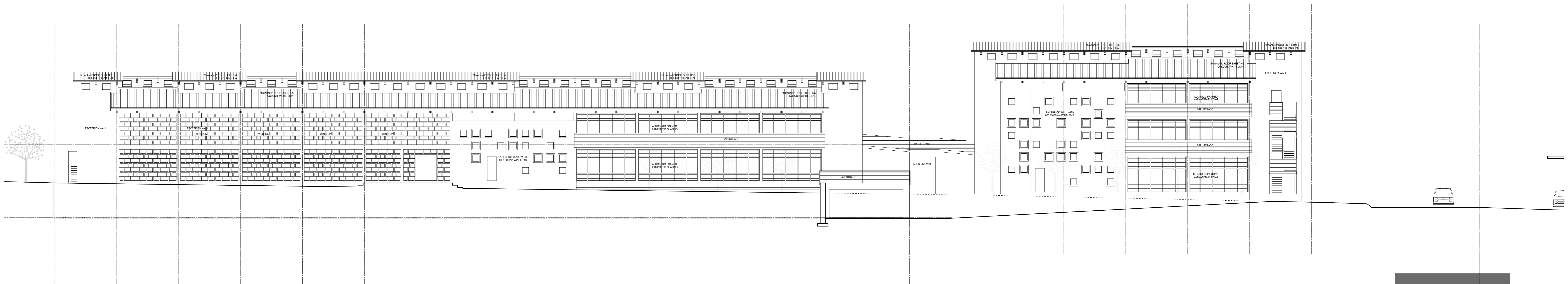




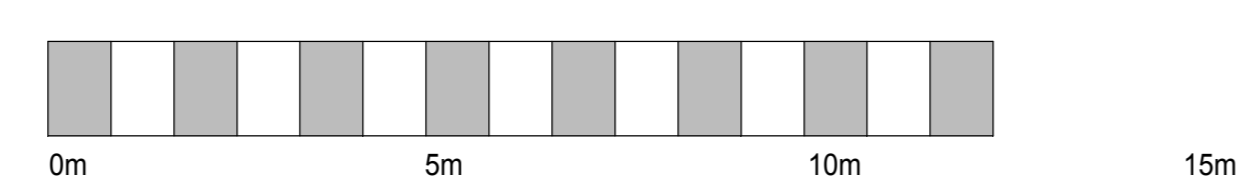
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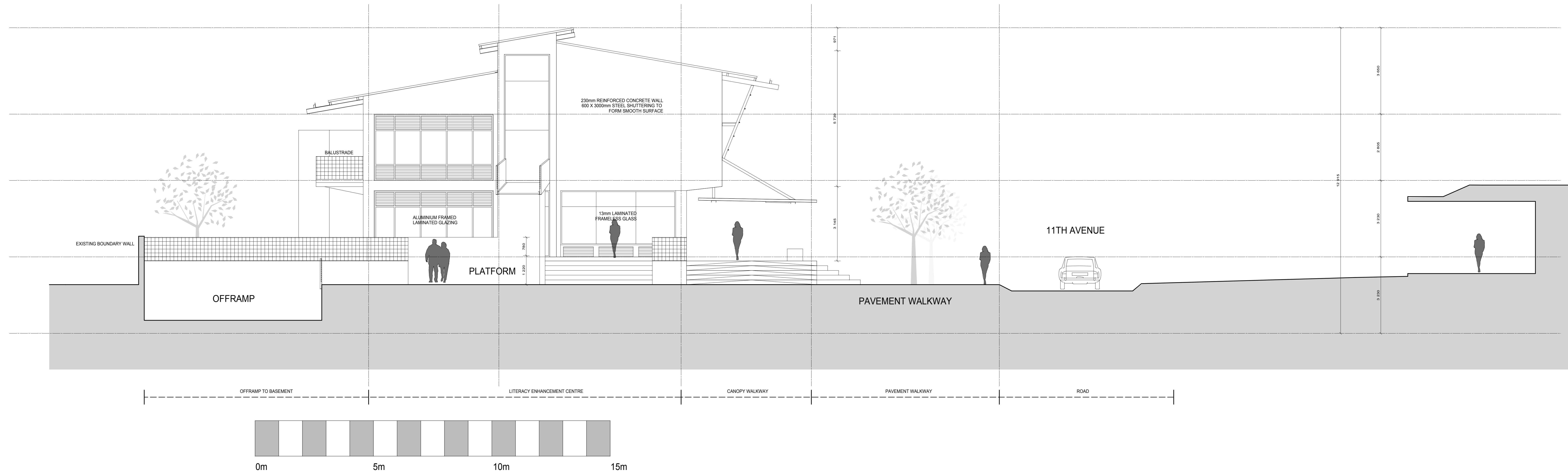


WEST ELEVATION

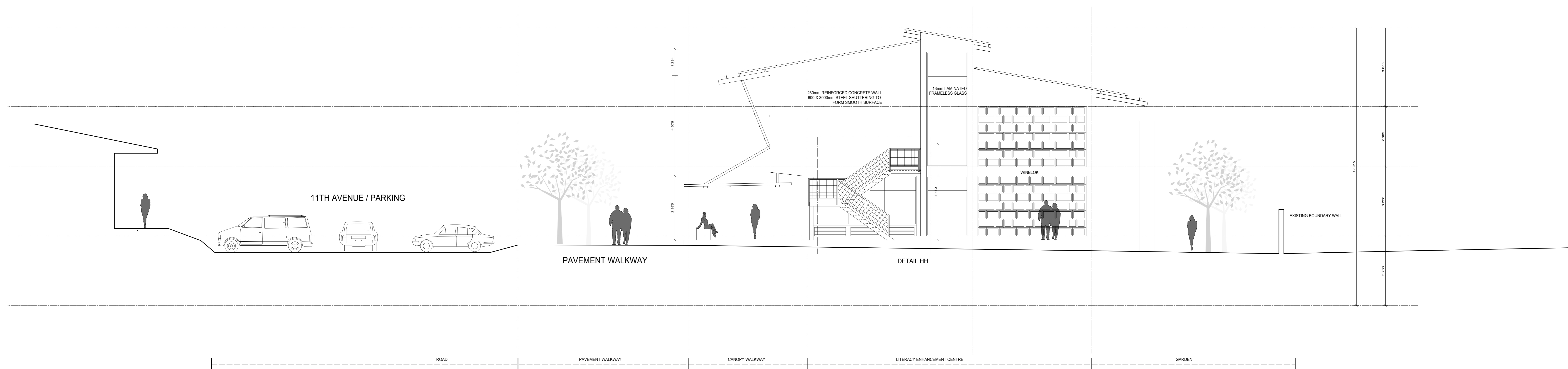


EAST ELEVATION

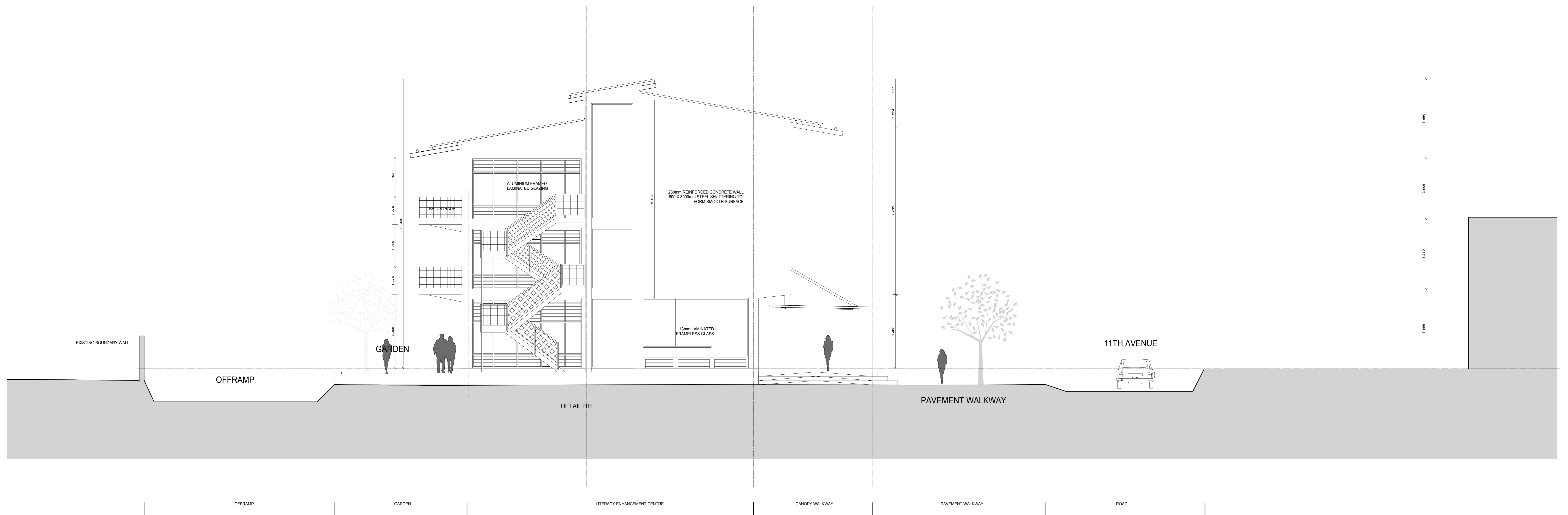




MAIN BUILDING NORTH ELEVATION



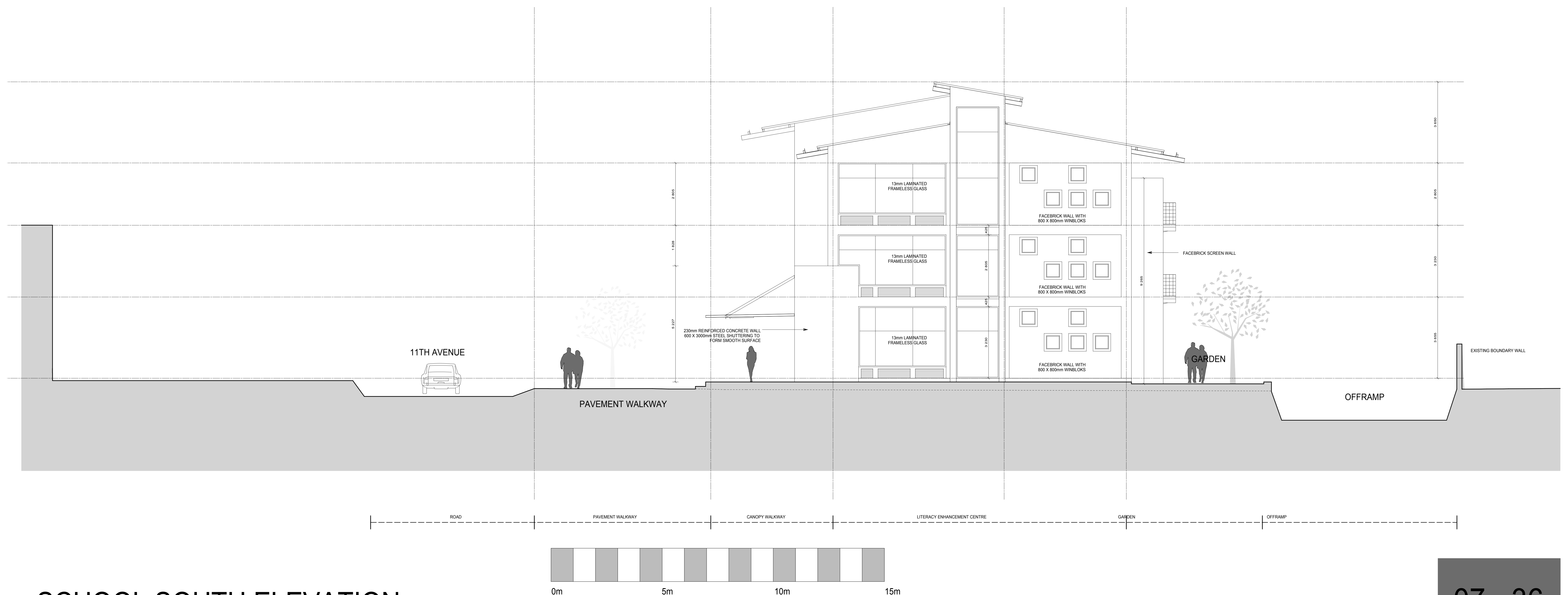
MAIN BUILDING SOUTH ELEVATION



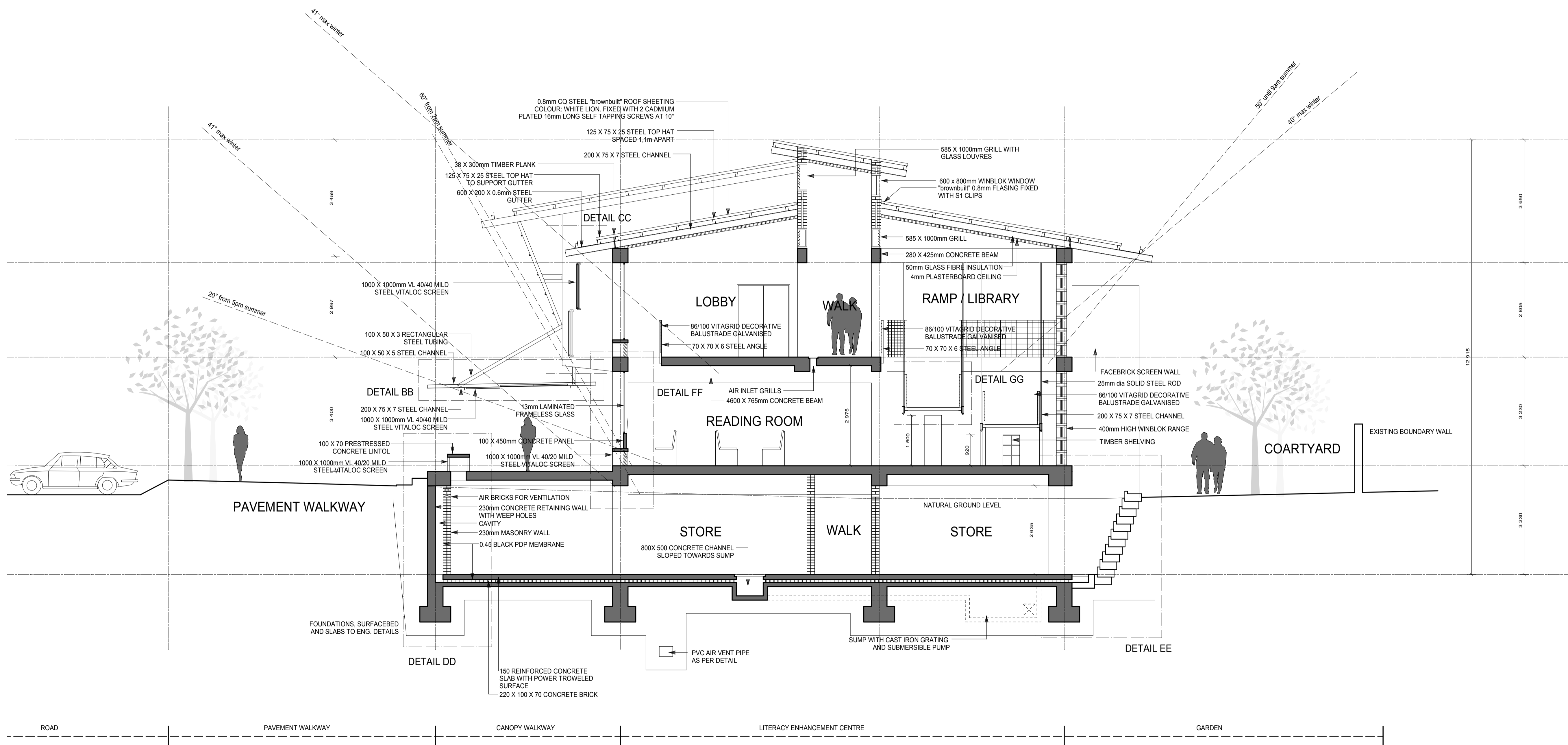
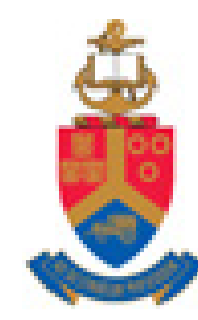
SCHOOL NORTH ELEVATION



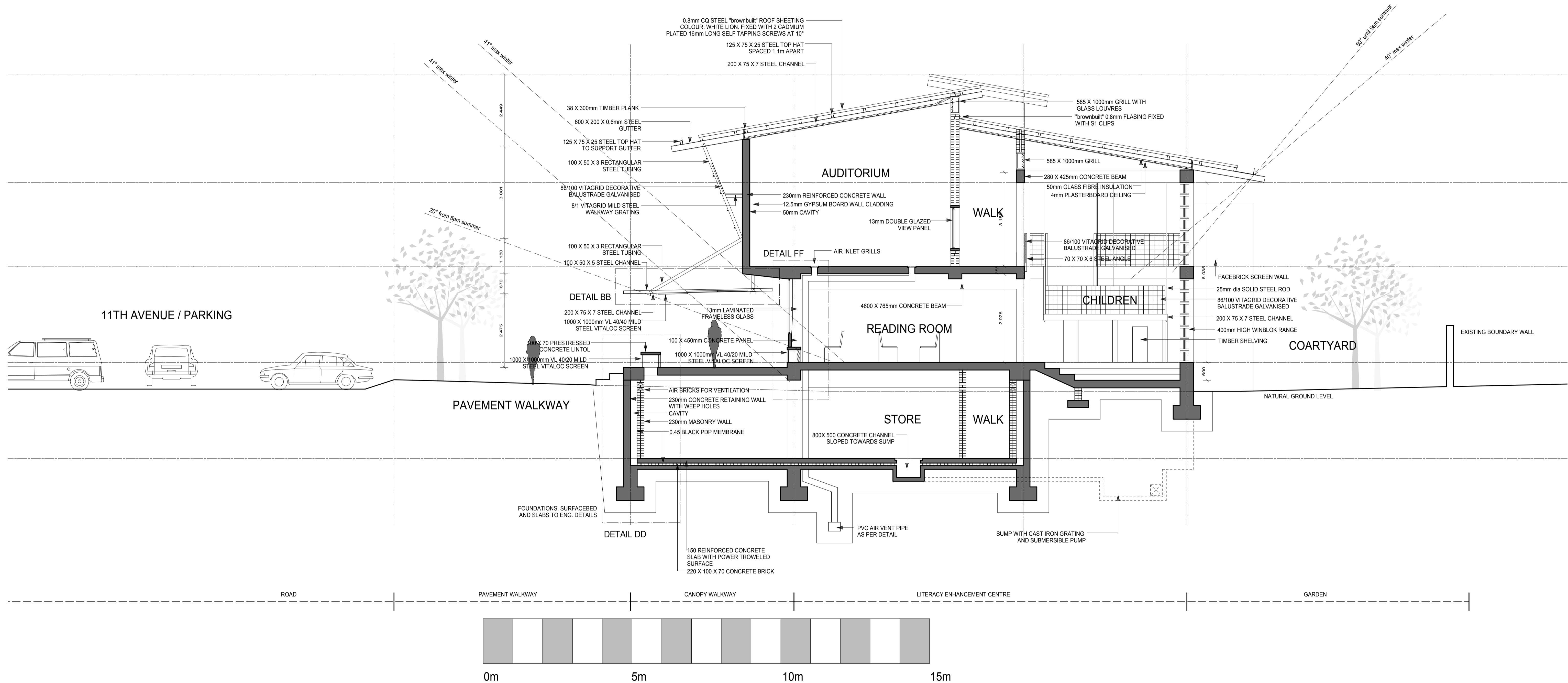
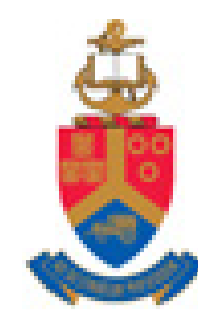
University of Pretoria, Strydom C.C. (2007)



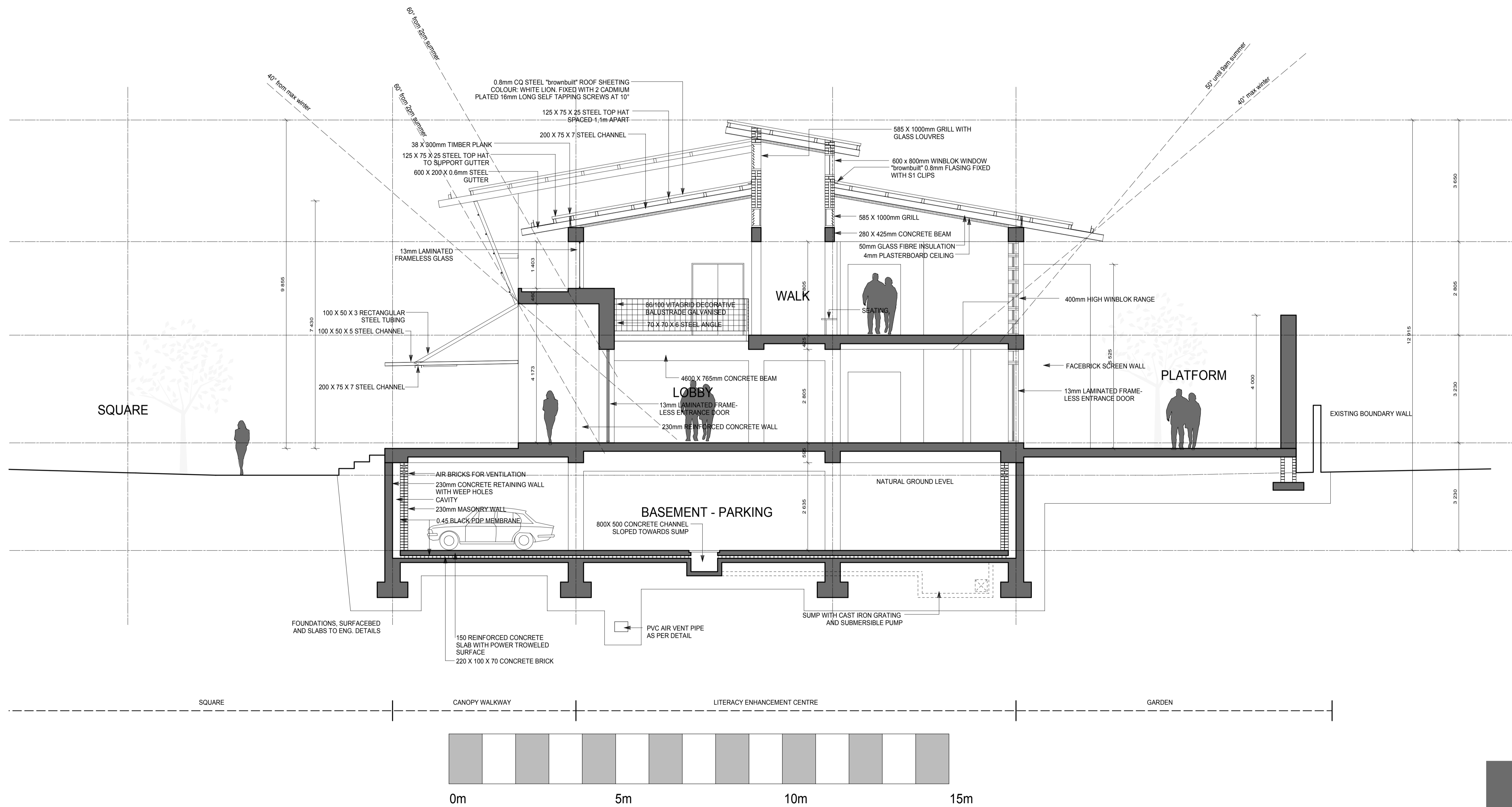
SCHOOL SOUTH ELEVATION



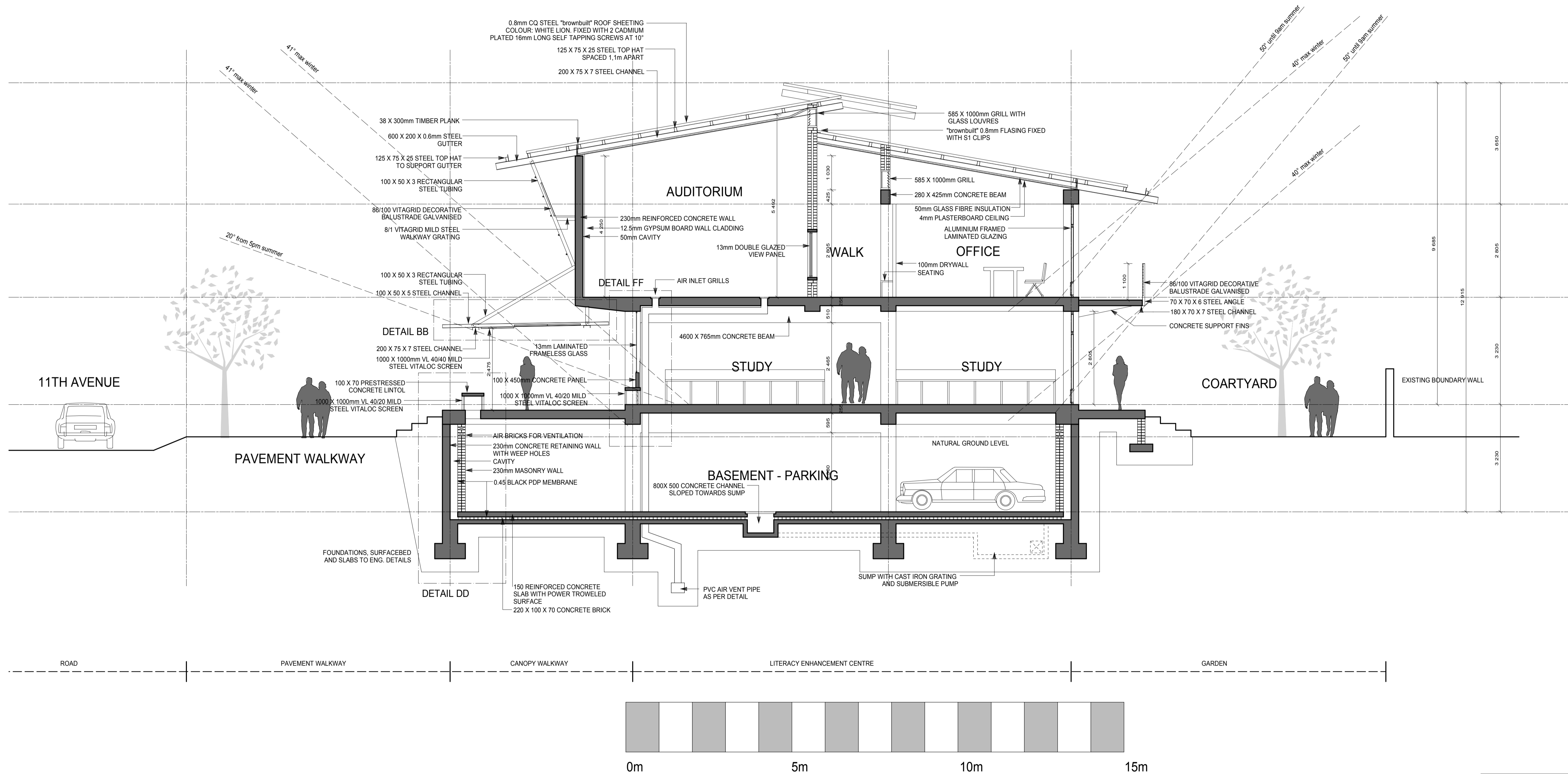
SECTION AA



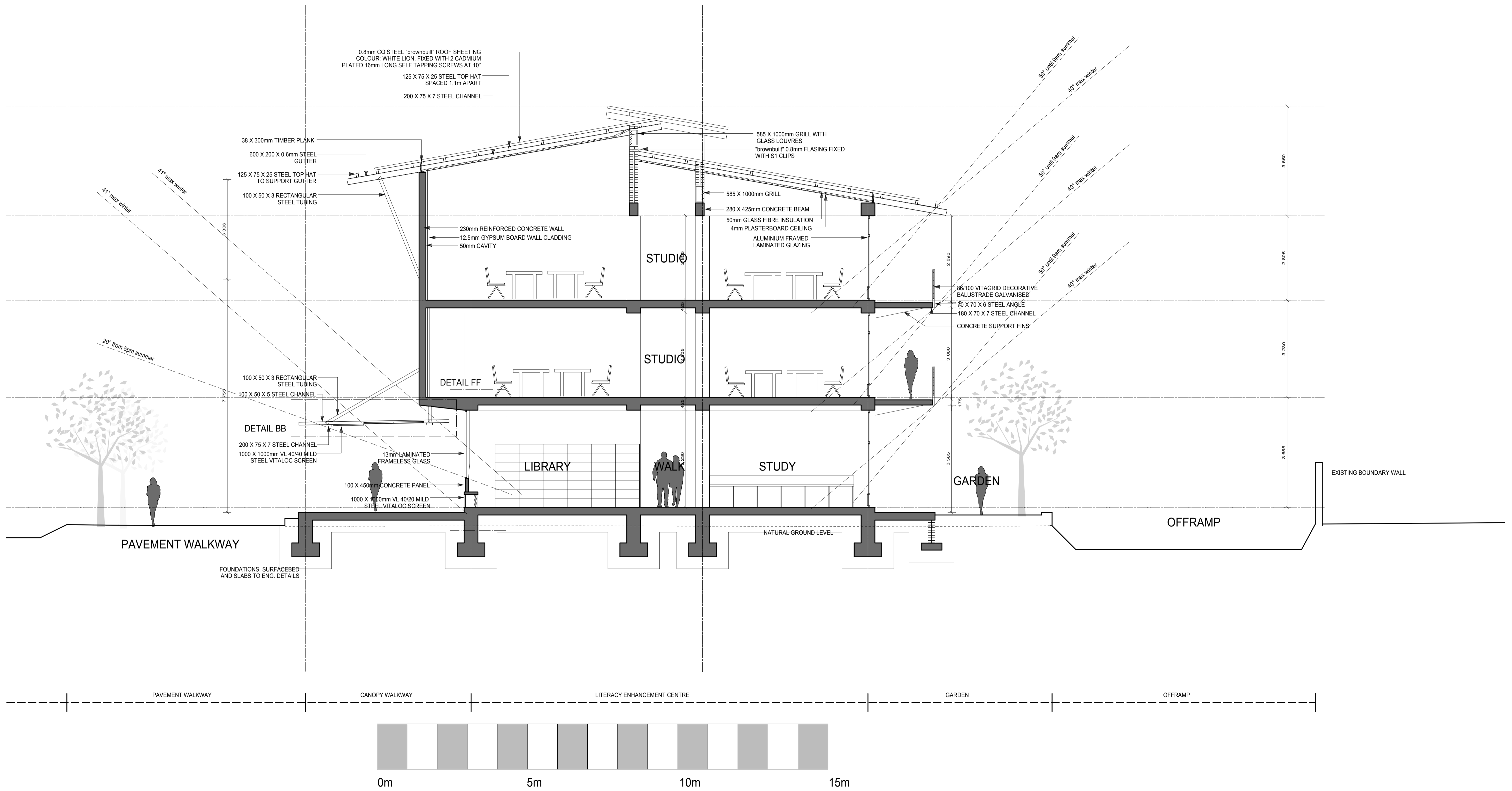
SECTION BB



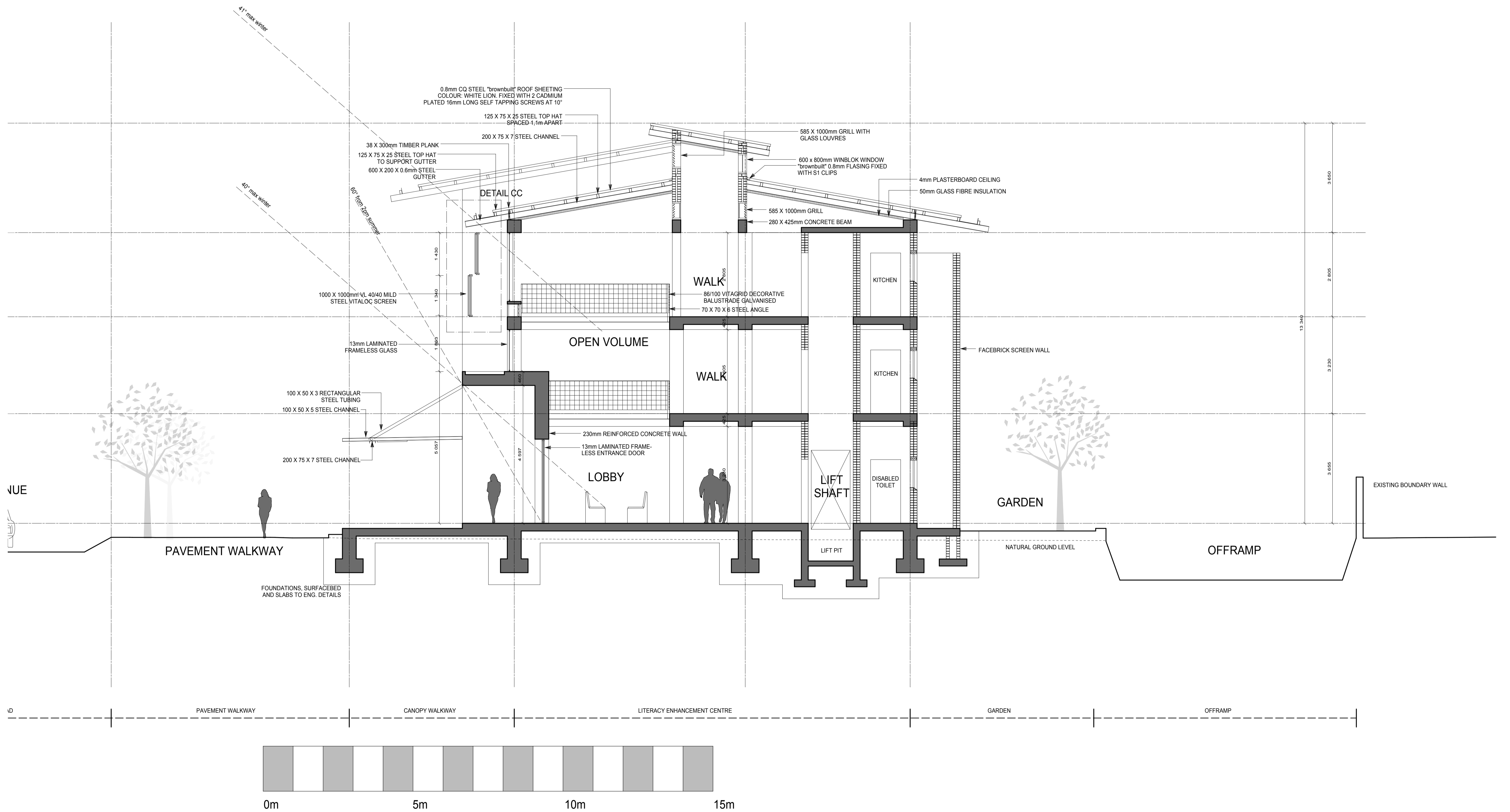
SECTION CC



SECTION DD



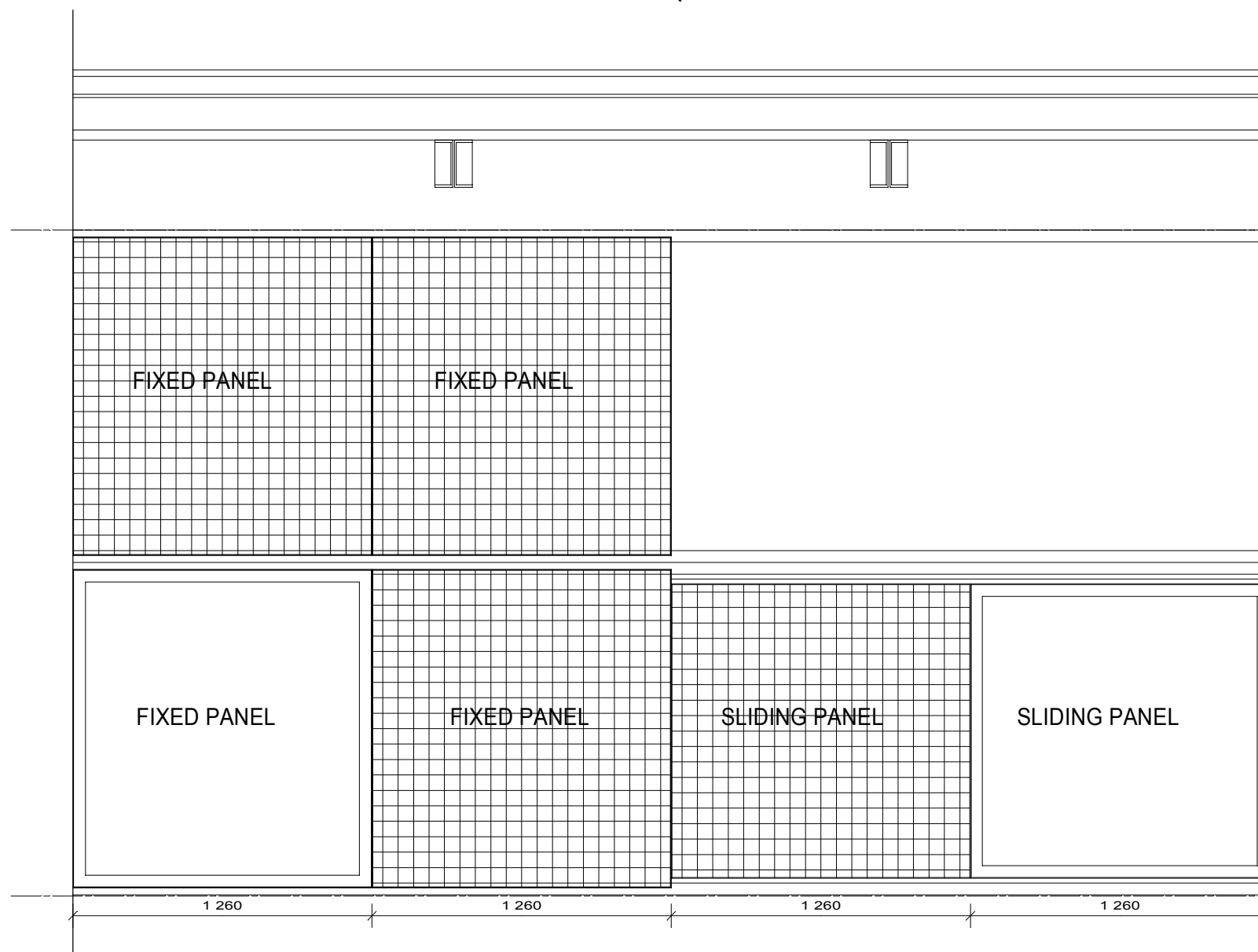
SECTION HH



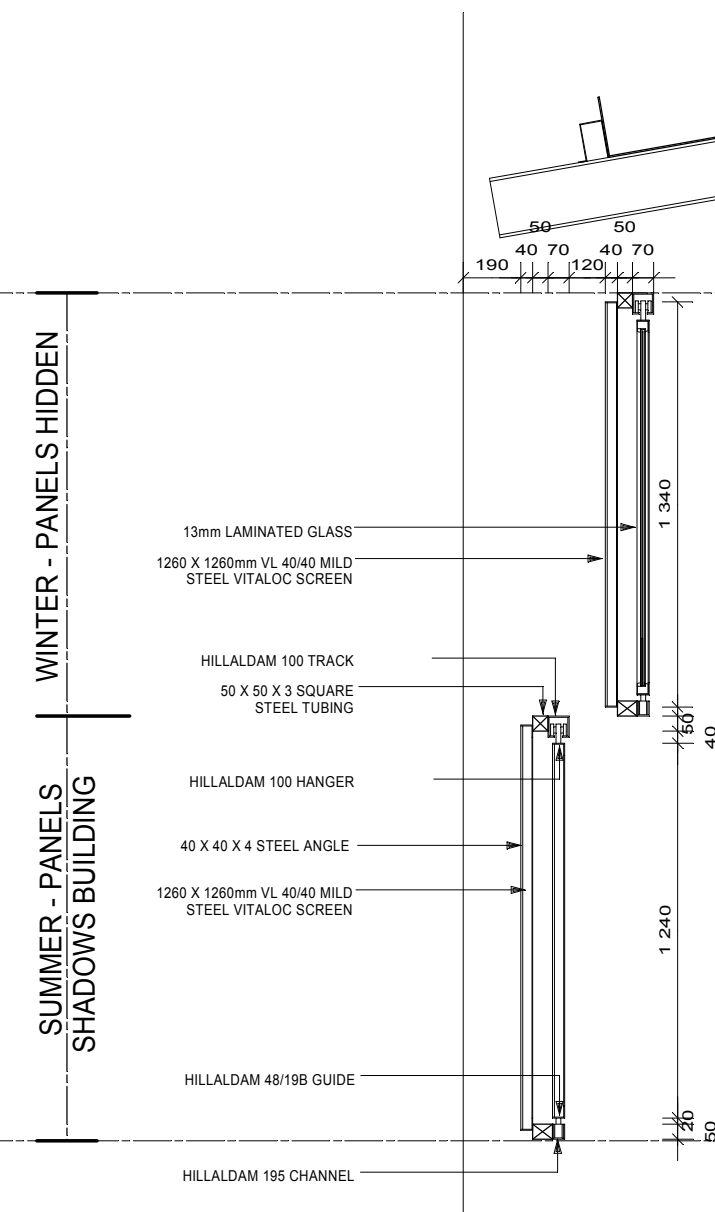
SECTION JJ



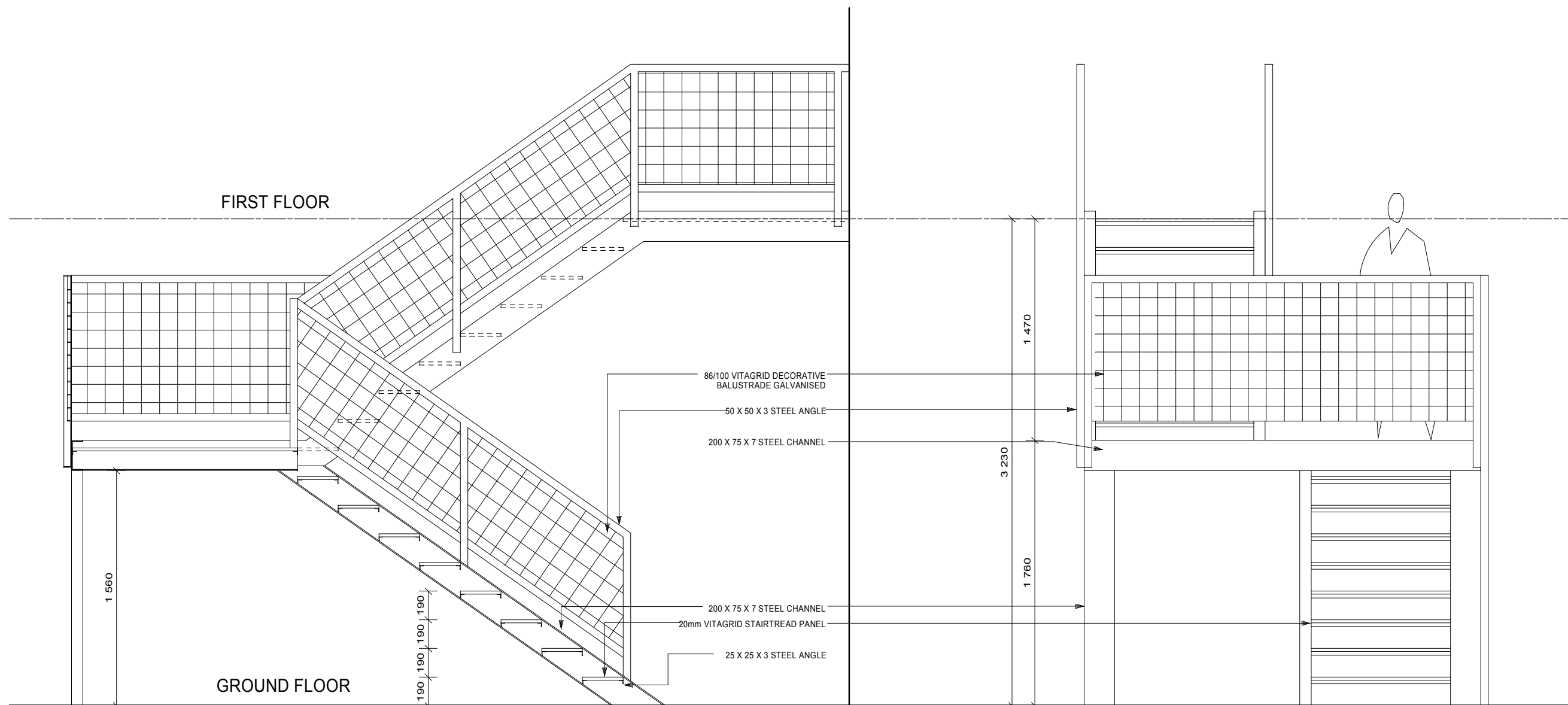
DETAIL CC - VERTICAL LOUVRE (REFER TO GENERAL DRAWINGS)



FRONT ELEVATION
SCALE 1:25



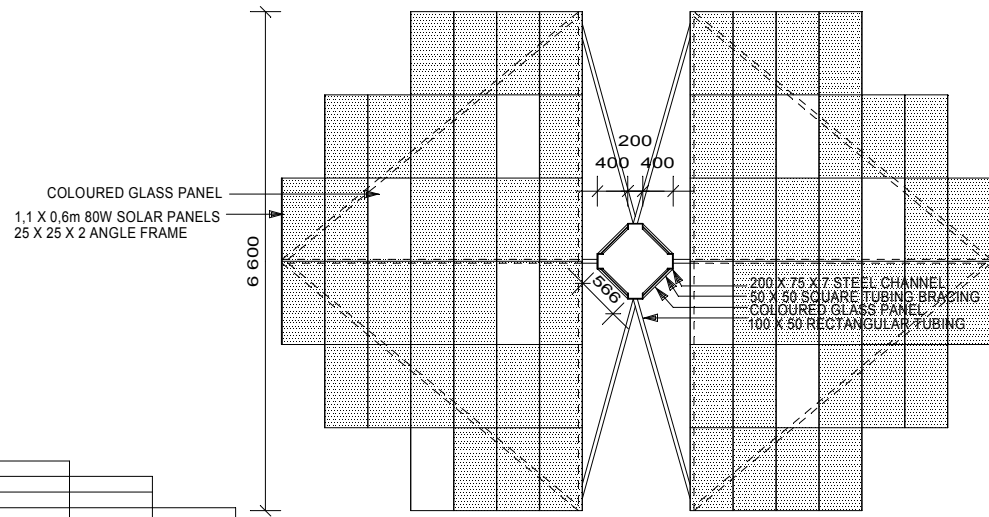
SECTION
SCALE 1:25



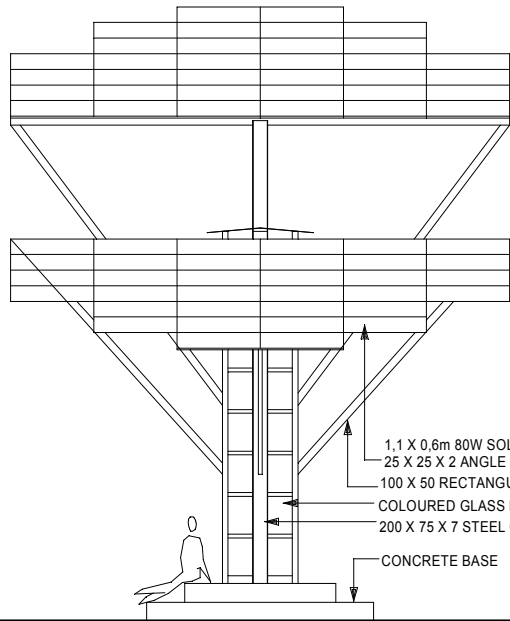
SECTION
SCALE 1:30

ELEVATION
SCALE 1:30

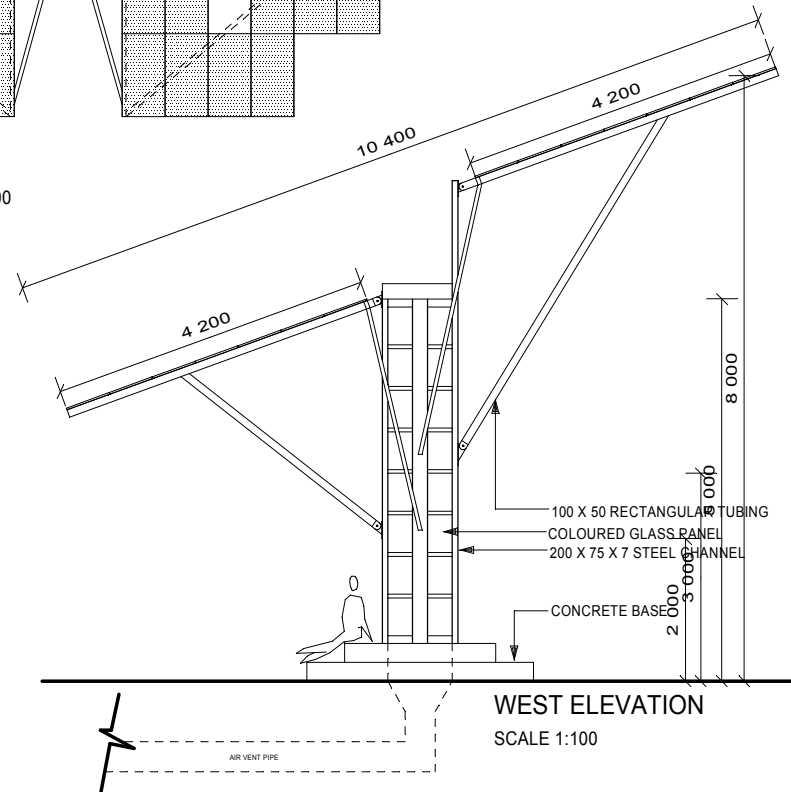
DETAIL HH - FIRE ESCAPE STAIRS (REFER TO GENERAL DRAWINGS)



PLAN
SCALE 1:100

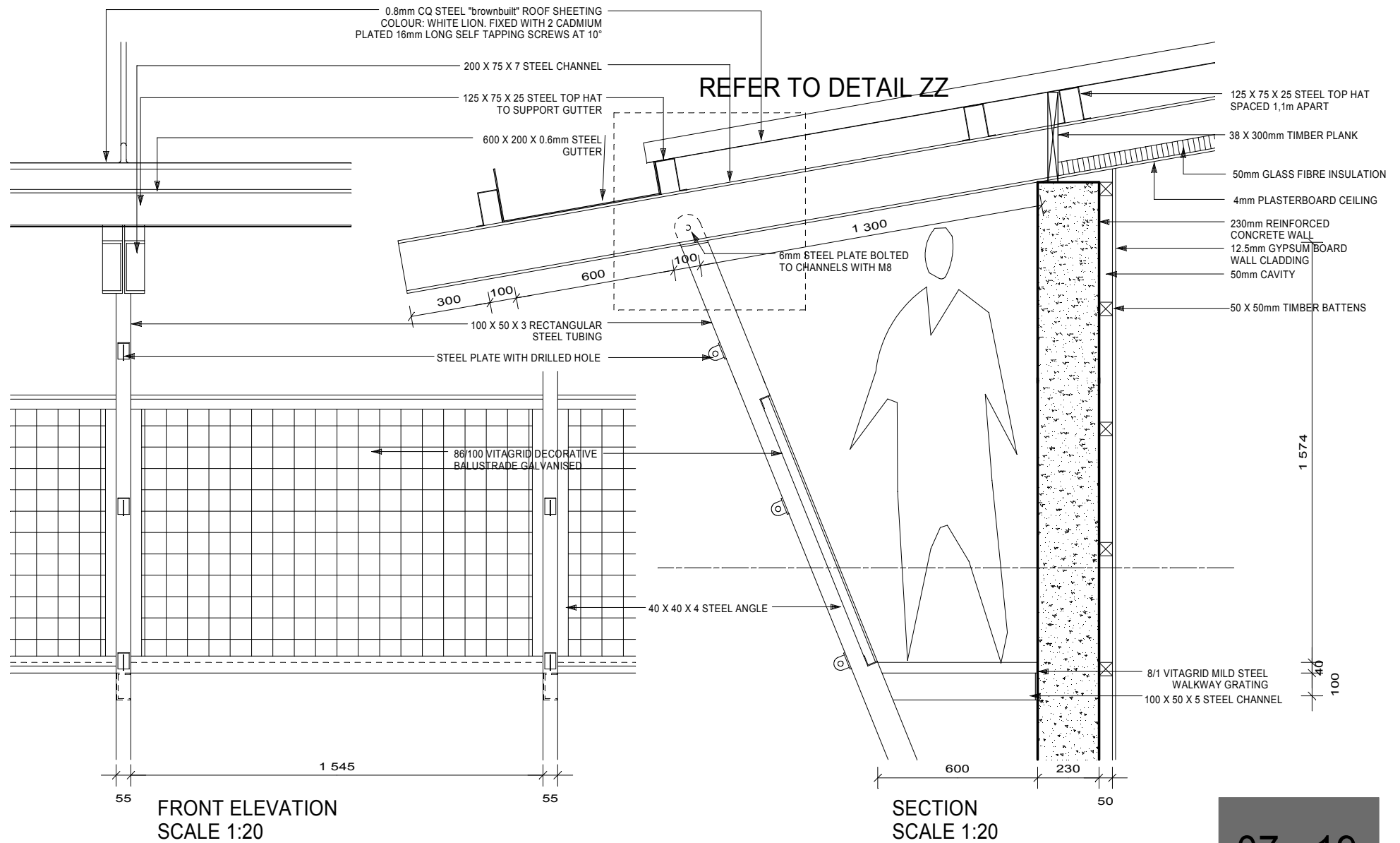


NORTH ELEVATION
SCALE 1:100

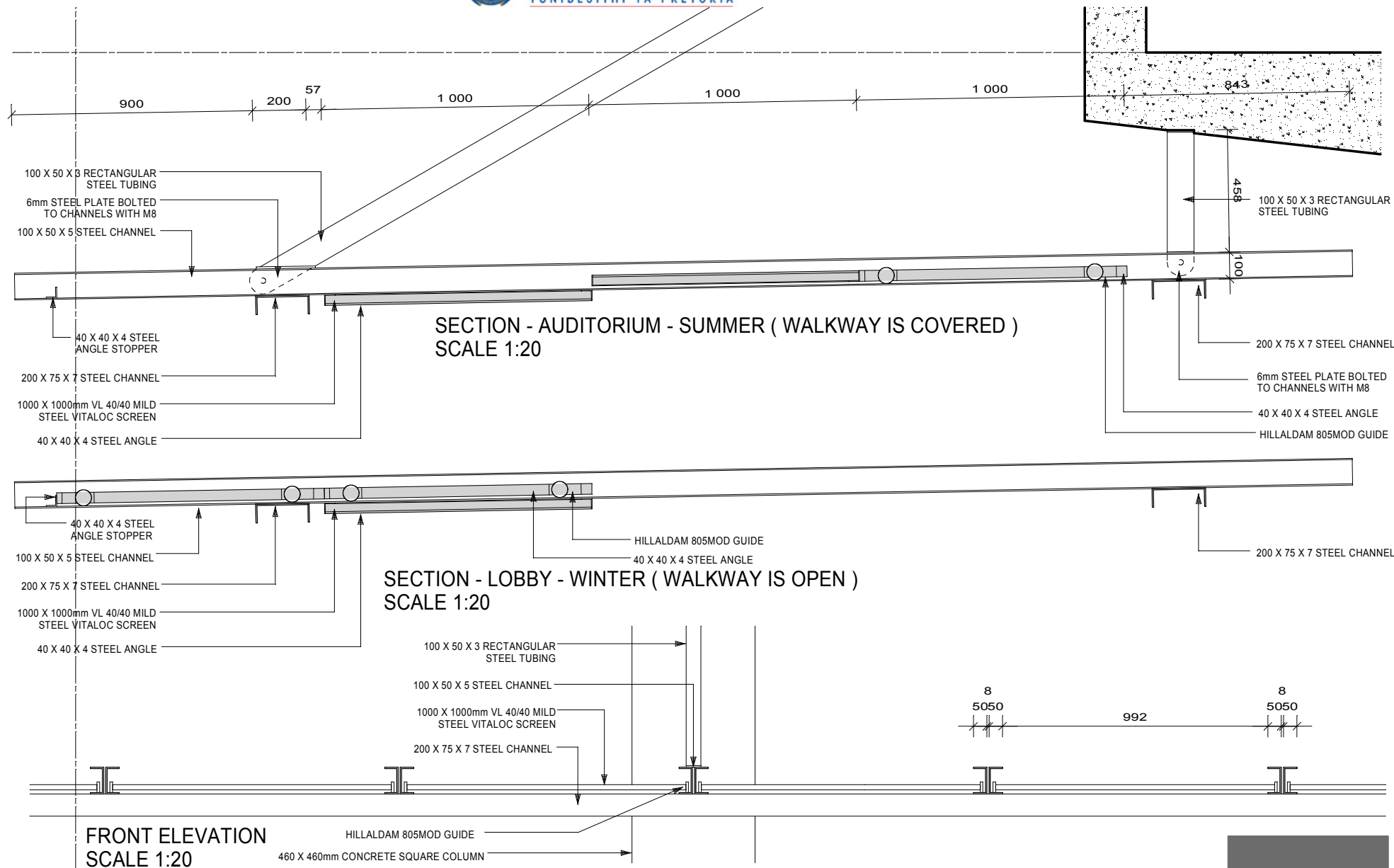


WEST ELEVATION
SCALE 1:100

BEACON DETAIL



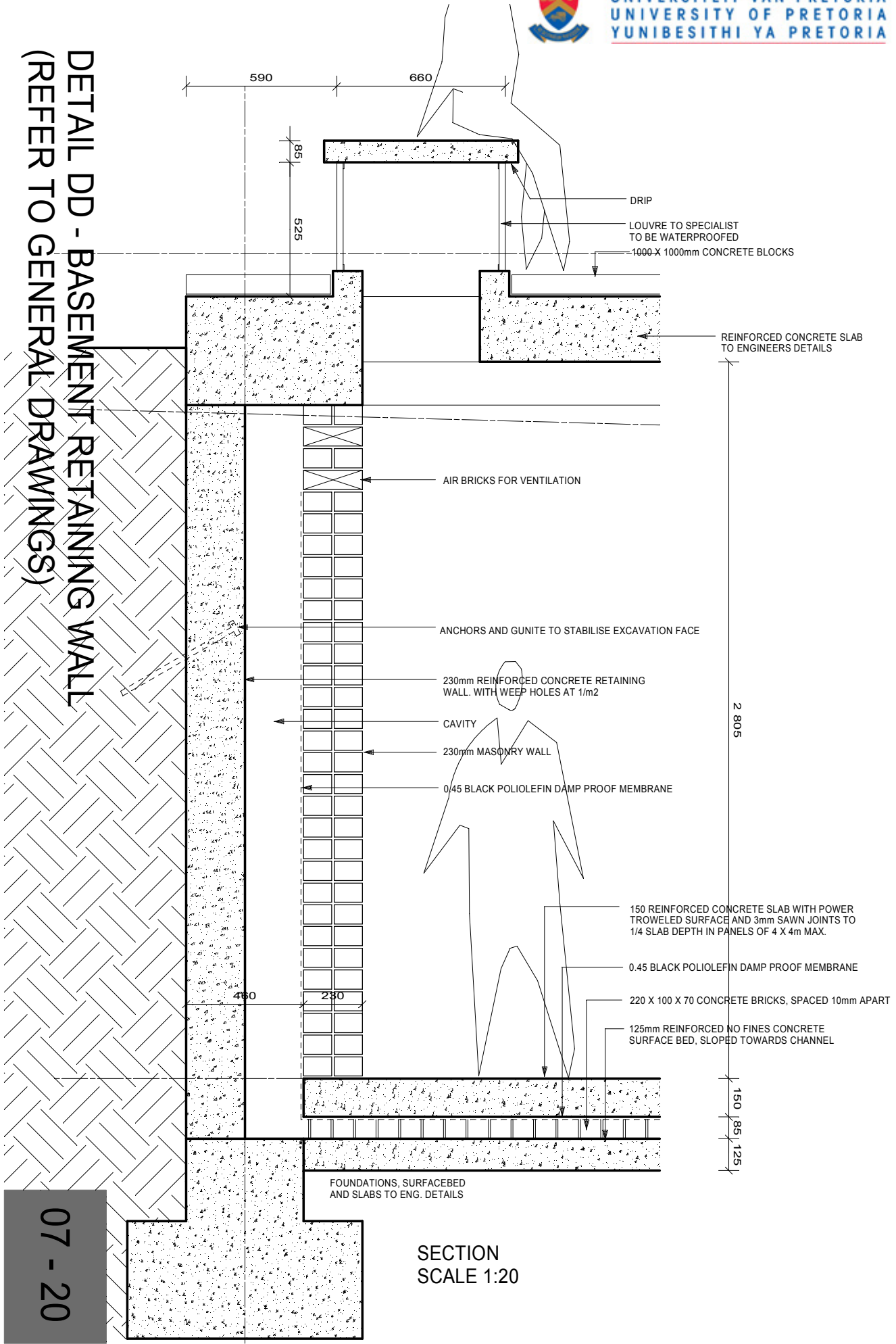
DETAIL AA



DETAIL BB - HORIZONTAL LOUVRE (REFER TO GENERAL DRAWINGS)

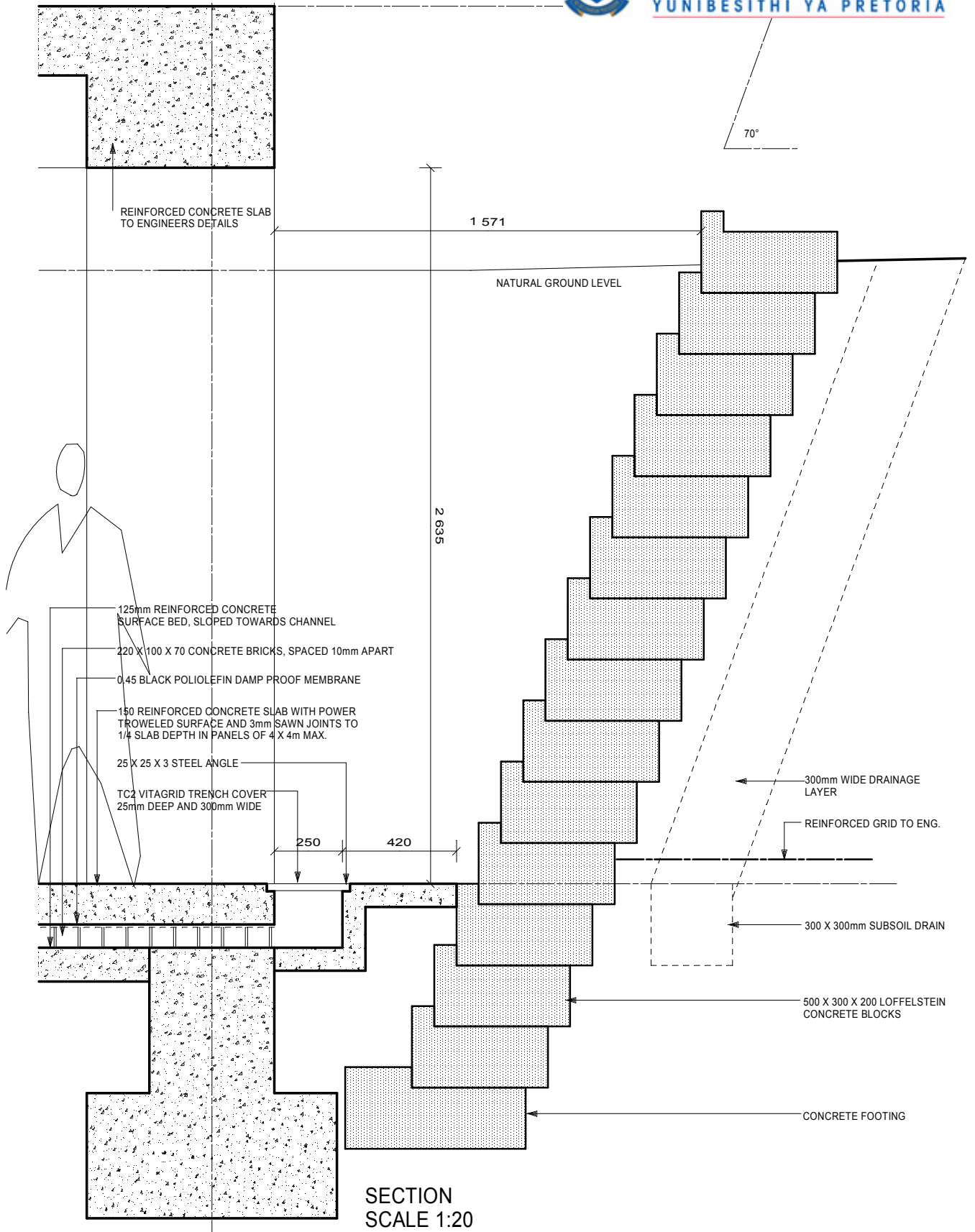


DETAIL DD - BASEMENT RETAINING WALL
(REFER TO GENERAL DRAWINGS)



SECTION
SCALE 1:20

07 - 20



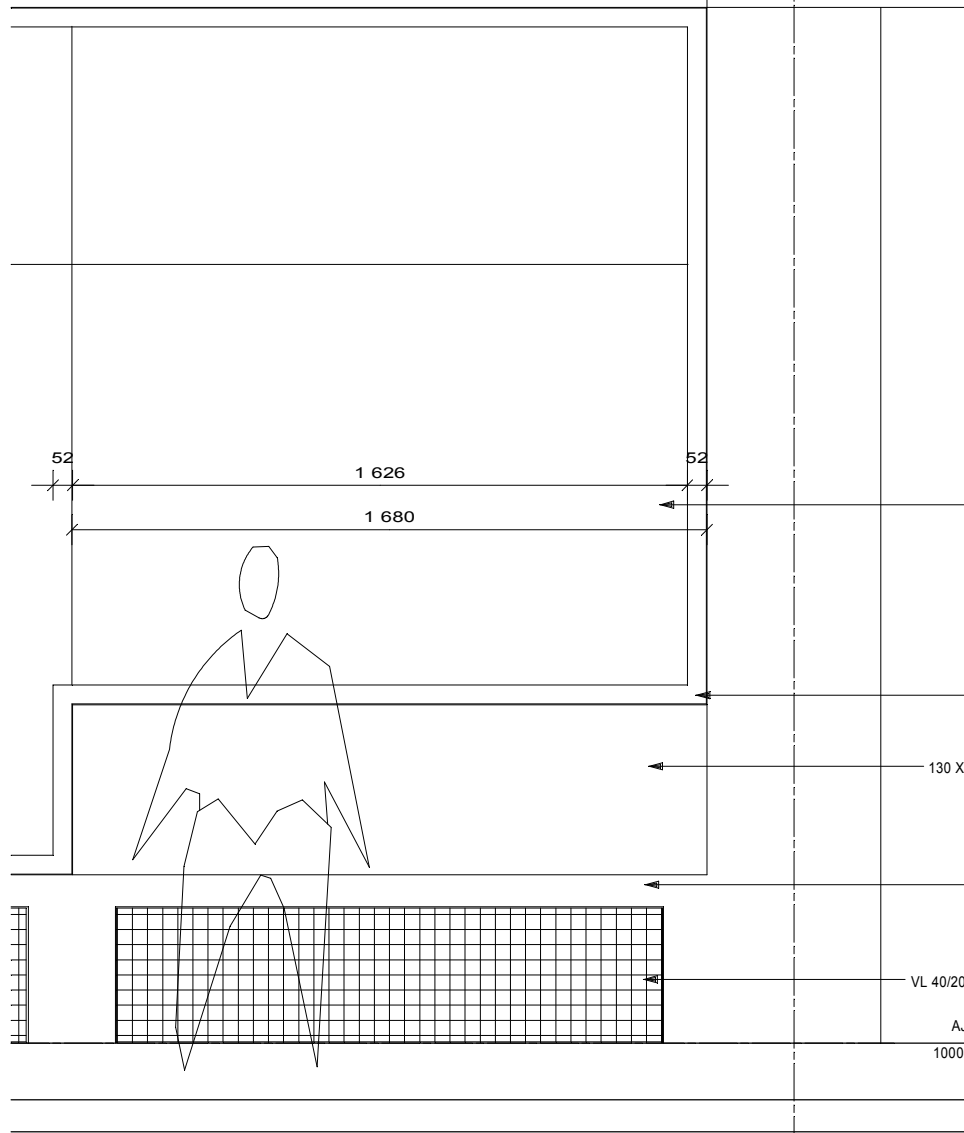
University of Pretoria, Strydom C.C. (2007)

07 - 21

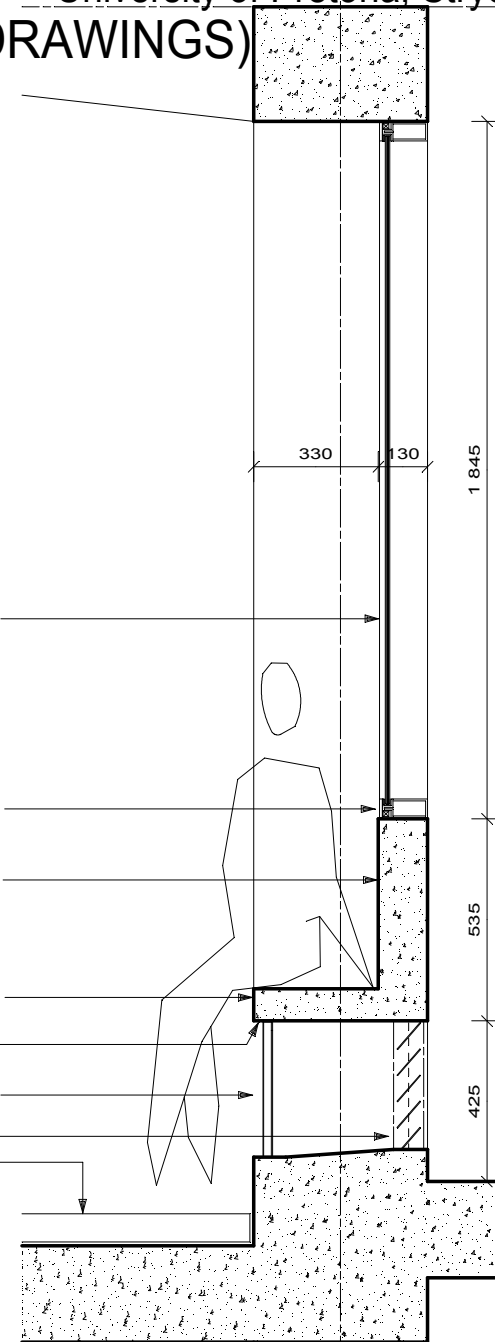
DETAIL EE - RETAINING WALL (REFER TO GENERAL DRAWINGS)



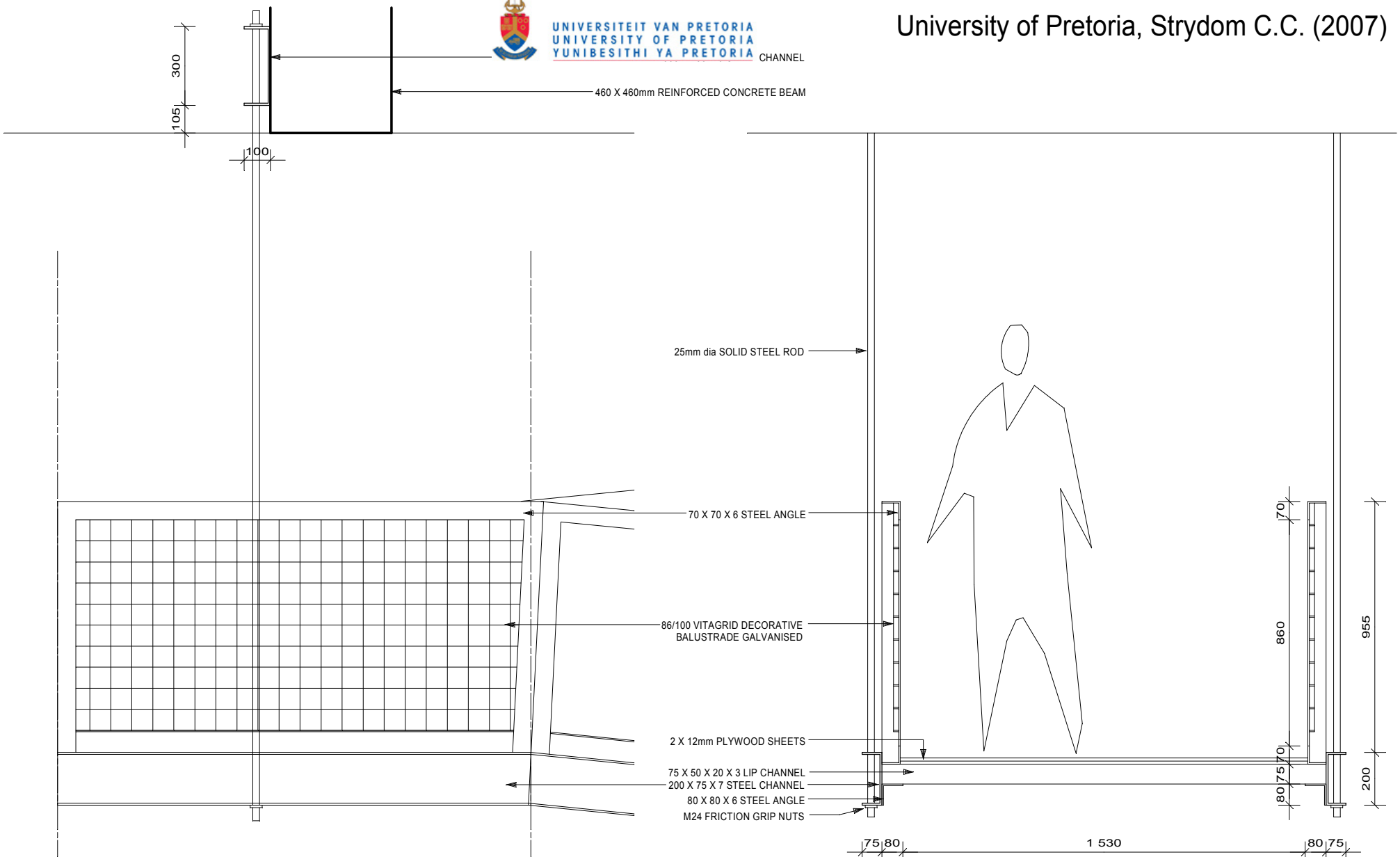
DETAIL FF - GLASS WALL (REFER TO GENERAL DRAWINGS)



FRONT ELEVATION
SCALE 1:20



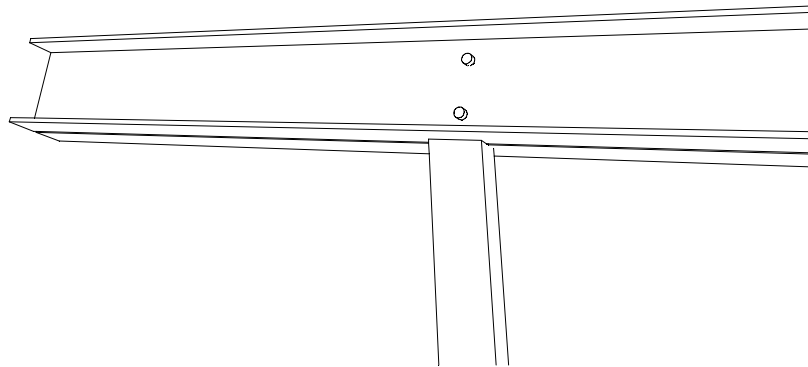
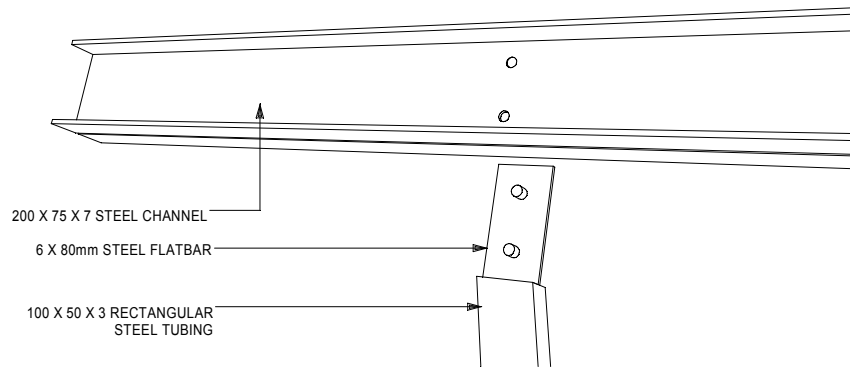
SECTION
SCALE 1:20



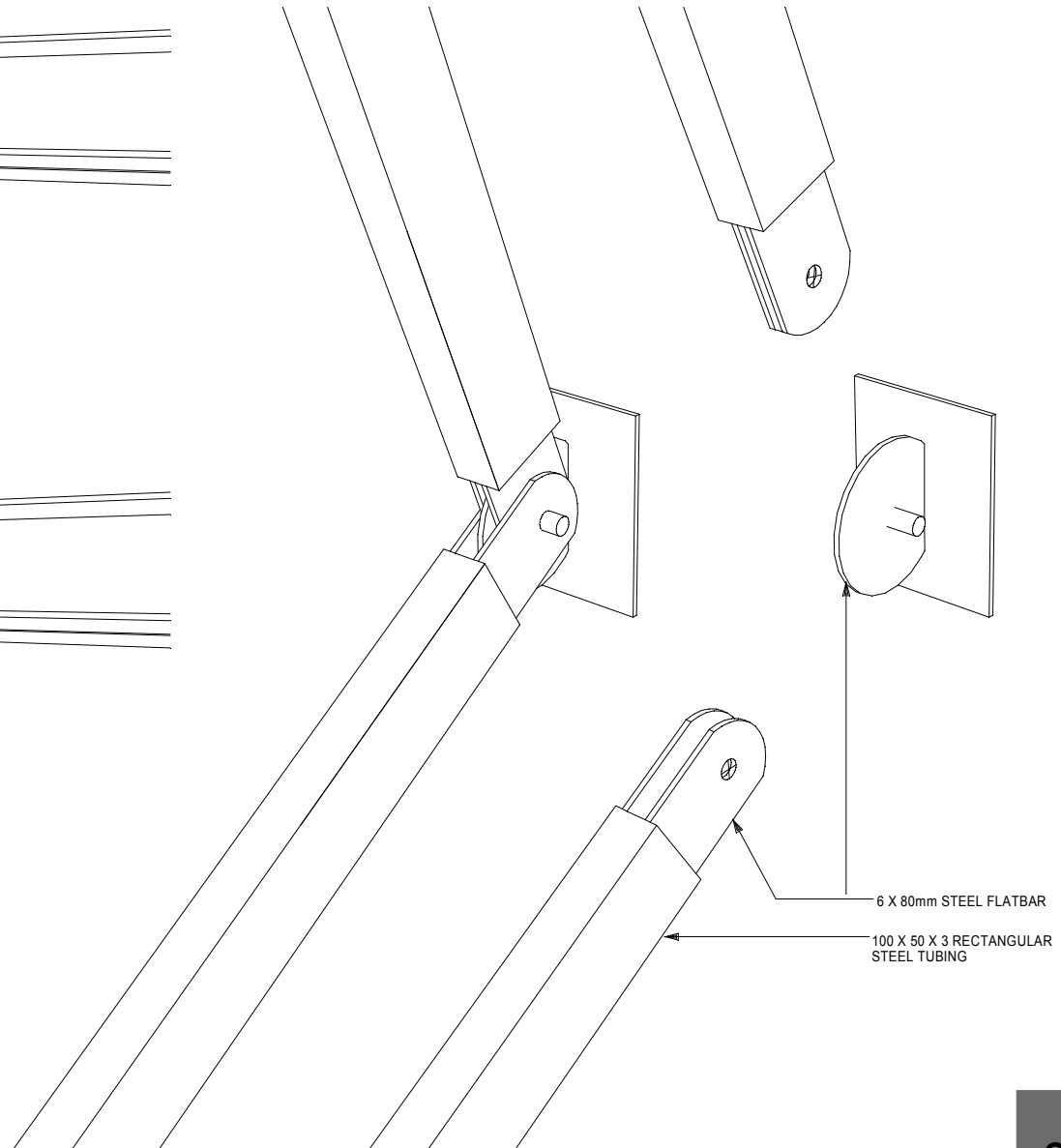
SIDE ELEVATION
SCALE 1:20

SECTION
SCALE 1:20

DETAIL GG - RAMP (REFER TO GENERAL DRAWINGS)



DETAIL ZZ
(REFER TO DETAIL AA)



DETAIL YY (REFER TO GENERAL DRAWINGS)