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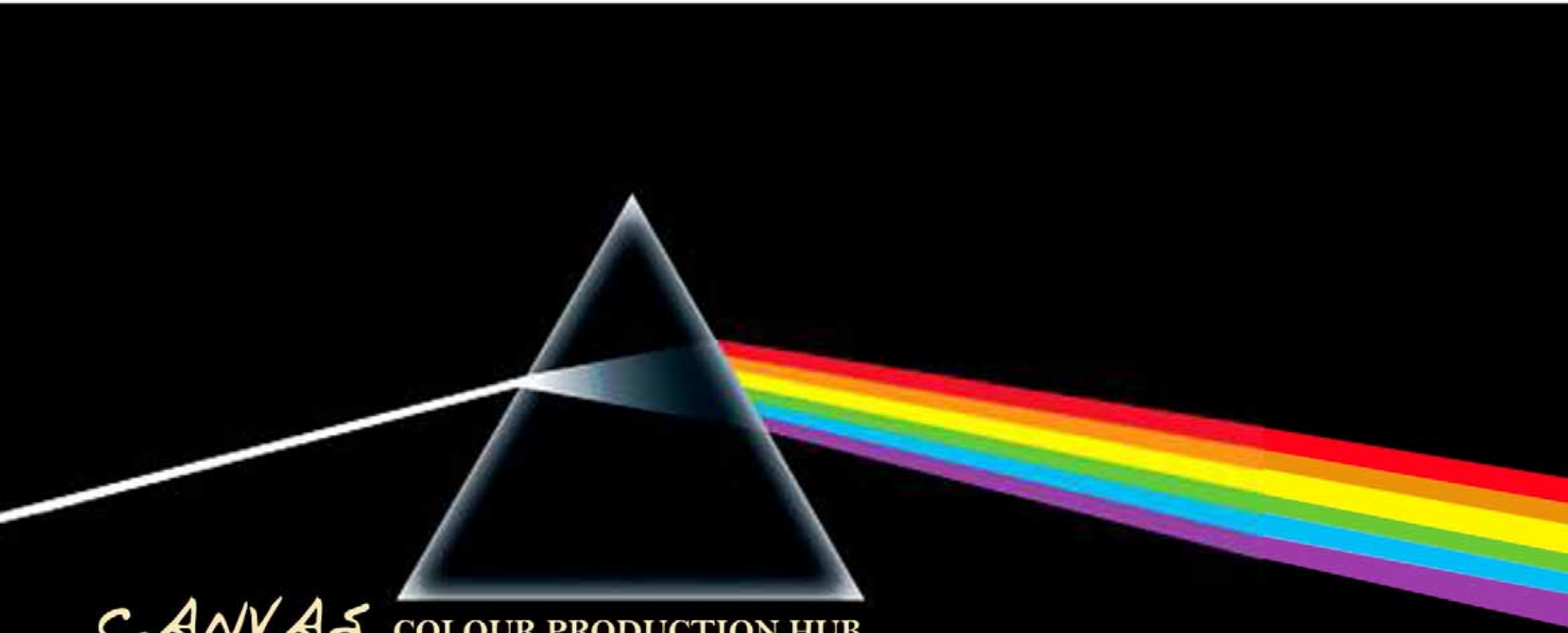

CANVAS_COLOUR PRODUCTION HUB

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Submitted as part of the requirements for the MArch(Prof)
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CONTENTS

1. INTRODUCTION

▪ "He did not wear his scarlet coat, For blood and wine are red, And blood and wine were on his hands. When they found him with the dead, The poor dead woman whom he loved, and murdered in her bed" - *Oscar Wilde (1854-1900)* ▪ "Red sky a night, sailors delight; red sky at morning, sailors warning" - *Proverb quotes* ▪ "Just when I had made my today secure with safe yesterdays. I see tomoroow coming with its pale glass star called hope. It shatters on impact, and falls like splinters on on cruel rain, and I see the red ol of life running from my wrists onto tomorrow's heart" - *Spike Milligan (1918-2002)* ▪ "The rose is a flower of love. The world has acclaimed it for centuries. Pink roses are love hopeful and expectant. White roses are for love dead or forsaken, but the red roses, ah, the red roses are for love triumphant"

1. INTRODUCTION

"To grasp light; to dominate light; let there be light! And there was light. The most eternal, the most universal of materials is thus erected as the central material to build with, to create space." (BAEZA 1994: 87)

If I had to teach architects – "Here is a golden rule. Use coloured pencils. With colour you accentuate, you classify, you disentangle. With black you get stuck in the mud and you are lost…Colour will come to your rescue." – Le Corbusier (PORTER 1982: p. 98)

The purpose of this investigation is to create meaningful space through the use of colour and light in architecture; within a city environment where the urban fabric has been defragmented into an island of lost space.

A site becomes a place when the link between architecture and nature is established. This could be established by capturing the spirit of a place. Through light and colour, the joining of architecture and nature could be established, forming a distinct architectural language with a local, contextual identity.

Bearing this in mind, on the fringes of a frayed urban fabric, major roads have left an island of lost space. Situated in an area rich with pedestrian movement, a defragmented corner building is the only evidence of what once was meant to be a gateway building to announce a person's arrival in the great city of Pretoria. This building, with significant heritage value is stripped bare and stands empty and unused, almost creating an obstacle for pedestrians to and from the busy Dr. Savage Taxi rank (illus. 1).
Soil remainded barren due to constant taxi movement and becomes the overwhelming character of the site, with trees planted haphazardly to provide meager shelter from the harsh sunlight prevalent on clear summer afternoons (illus. 2). This site forms an important gateway into the city of Pretoria. The roads carry tremendous traffic to Pretoria North and further townships, forming hard edges around the site (illus. 3).
With the hooting and associated sounds of traffic, a constant buzzing of activity surrounds the site, yet there is no formal gathering to celebrate the site and its significance in relation to the urban fabric.

The building should lure pedestrians and visitors to move through the site, in order to experience architectural space. Which then becomes a gathering space. It should provide a space for thinking, remembering, dreaming, wondering, learning, and celebrating. The celebration of a unique architectural identity…

The focus of this dissertation is thus to create a space which celebrates the site through the appropriate function of a building program. Thereby becoming one with nature and its inherent local context, by means of the play of light and colour in contrast. The theoretica study will investigate the use of these two mediums -colour and light. Early masters such as Le Corbusier, Louis I. Kahn and Alvar Aalto, as well as Steven Holl used these natural phenomena to create space that is meaningful.

The site analysis will attempt to choose the appropriate building program and building form for the given study area in context, while looking at the site on a pedestrian level. The main activities and movement are identified around the site. The precedent studies will look at national and international examples of buildings with more or less the same program (whether successful or not) as well as buildings, spaces and places created through the use of colour and/or light (mainly the work of EMBT). The design development is then presented from the initial conceptual phases, after which the design investigation is presented. Following the design investigation a conclusion is reached and a detailed design resolution follows synthesizing the theoretical and conceptual work into architectural language and form, closing the dissertation.

Illus. 1 Panorama of southern edge of proposed site, showing the existing Carbonatto building as an island of lost space. (Author 2007)

Illus. 2 Proposed site, looking towards Dr. Savage Road Taxi Tank. (Author 2007)

Illus. 3 Panorama showing Dr. Savage -, Du Toit -, Prinsloo -, Bloed -, Boom Street intersection (Author 2007)

2. THEORETICAL INVESTIGATION

▪ “Orange is the happiest colour” - *Frank Sinatra (1915-1998* ▪ “The majority of (painters), because they aren’t colourist, does not see yellow, orange or sulpur in the South (of France) and they call a painter mad if he sees with eyes other than theirs.”- *Vincent van Gogh (1853-1890)* ▪ “He hangs in shades the orange bright, like golden lamps in a green night.” - *Andrew Marvell (1621-1678)*

2. THEORETICAL INVESTIGATION

2.1 COLOUR AND LIGHT IN ARCHITECTURE

"Colour is life, for a world without colour seems dead. As a flame produces light, light produces colour. As intonation lends colour to the spoken word, colour lends spiritually realized sound to form." - Johannes Itten.

On a physical level, colour and light belong to a single radiant spectrum, and as such, without light the existence of colour is not possible. (MATTIELLO 2004: 190) In current architectural practice, it seems like these two aspects are dealt with separately, thus restricting the endless possibilities manifested in the combination of what ultimately is the same thing. Colour and light enriches our daily experiences, it influences our daily activities, our identity, our tastes our smells – without it, life would be a meaningless blank canvas. Yet, this canvas has the possibility to become a masterpiece of architectural form.

According to BAEZA (1994: 86) the architect only begins to understand something about architecture when he realizes that light is the central theme. Only then does he start to be a real architect. Fehrman (2004: 2) states that sunlight is the ultimate natural light source, and as such it has become the standard by which we measure colour, BAEZA (1994: 86) says that the sun does not rise everyday in vain, reiterating the notion that without light, there is no colour. Light must never be taken for granted as it is not something diffused or vague or just always there.

What is the importance of using light and therefore also colour, in architecture? BAEZA (ibid) states that light is matter and material, it is measurable and quantifiable and yet architects seem to ignore this (illus.4). However, the constant defiance of gravity through the current brilliance of technology is a fact the architects are happy to ignore. Yet, both light and gravity are unavoidable primitive realities. The creation of space lies in using light in its material form, as the most eternal and universal of all building materials - yet it is the only building material that has no gravitational force.

2.2MANIFESTED MEANING THROUGH COLOUR AND LIGHT

In order for architecture to transcend into a meaningful building with an identity of its own, it needs to have an intimate relationship with the site. This relationship is formed when the phenomenological link between architecture and site is formed – when architecture and nature are joined in the metaphysics of place. (HOLL 1991: 10) This could be established by capturing the spirit of place which is defined by Christian Norberg-Schulz as the element that denotes what a thing is or what it wants to be. (NORBERG-SCHULZ: chapter 1-Place) This joining of architecture and nature can literally be seen when a beam of sunlight falls on a facade, cascades down the wall, binding wall to floor, while reflecting back into space as architectural form. Steven Holl encapsulates this moment by saying: "We hear the music of architecture as we move through spaces while arcs of sunlight beam white light and shadows." (ESSAYS ON LOUIS KAHN: Between Silence and Light) Lenclos reiterates this, in his philosophy on creating a sense of place, by saying that the use of strong colours could be used as a 'humanizing' element whenever a building is considered out of scale and devoid of colour identity. (PORTER 1982: p.120)

Thus, through light and therefore colour, the building fuses with place, manifesting the meaning of the building onto the specific site. What architecture and nature thus want to be, is realized. What then, is the desire to be? Louis I. Kahn asserted in his writings on 'Between Silence and Light', "Silence, the unmeasurable, desire to be. Desire to express, the source of new need, meets Light, the measurable, giver of all presence, by will, by law, the measure of thing already made, at a threshold which is inspiration, the sanctuary of art, the treasury of shadow." (ESSAYS ON LOUIS KAHN: Between Silence and Light) This can be interpreted as the desire of the building to be in between shadow and light, at the threshold of silence and light.

Illus. 4 Alberto Campo Baeza, interior of the Bank in Granadam photograph of the model showing how light enters the room. (BAEZA 1994: p.87)

"It is a decision coming from commonality that you choose a place out of all places to build, a place where others can also settle. It is a very important decision, of the same importance as the positioning of a Greek temple amongst the hills. Of all the hills, the hill is chosen for the temple, and then all the other hills beckon to it as if bowing to this decision. You do not see the hills now except as respecting the decision of the placing of this eulogizing building, which is remarkable in that is has never been there before."

Between Silence and Light - Spirit in the Architecture of Louis Kahn by John Lobell

Kahn saw this threshold as the position (or the aura) of inspiration, and this inspiration is where the desire to be/to express meets the possible. It is the maker of presence and also the sanctuary of art where the centre of expression lies. (ARCHITECTURE AND URBANISM: p.279) The building is thus in the position of true inspiration, where it can be the sanctuary of art and expression. For the building to be what it wants to be, while realizing its spirit of place, the play of light and shadow becomes meaningful, with the threshold of inspiration, a blank canvas where the sanctuary of art lies. True expression can thus be found in art which is one with colour. The building becomes the medium of art, and through this, meaning is manifested: in the site, in the building, in the fabric of the city

2.3 ON THE USE OF COLOUR AND LIGHT

Colour is not the property of surfaces, space or objects, but mainly a sensation caused by certain qualities of light which the brain interprets, and therefore, as already stated, are inseparable. (MAHNKE & MAHNKE 1987: p.IX) There is a constant flow of urban energy (people, goods, investment) in cities, with this energy determining the distribution of intensities. (DEWAR & UYTEMBOGAARDT 1991: p.48) Just as this flow of energy is the basic function affecting our urban cities, colour, which is created by light, is also this fundamental property which, as a form of energy, affects our bodily functions, influences or minds and our bodily functions, influences our minds and emotions. (MAHNKE & MAHNKE 1987: p.1)

Colour has always fascinated man, dating back from our Paleolithic ancestors who adorned their caves with red and yellow ochre and mud pigments. The inspiring architecture of ancient Egypt, the Parthenon, Buddhist temples, Islamic mosques, Mayan cities and medieval cathedrals all prove that colour was an important part of architectural expression. (PORTER 1982: p.6) When the monochromatic grey stone public buildings of the modern western world became the main practice in architecture, it was viewed by some, as a very bleak prospect in architecture. Yet one cannot ignore the important work done by our early masters in the field of colour and light in architecture.

In Paxton's Crystal Palace, Owen Jones (the colour consultant to the project) prescribed red, blue, yellow and white for the interior as well as exterior of the building. He claimed that only the high points in art could be epitomized by the use of brilliant primary colours. (PORTER 1982: p.10) Le Corbusier had a great fondness for colour while believing that colour can create a feeling of space. His compositions in color were based on sound geometry, using red, yellow, blue and green in a way that complemented the geometric architectural composition (illus. 5). (MAHNKE & MAHNKE 1987: p.68) Le Corbusier's essays on colour was an attempt to return colour to architecture after it had been purged by a reaction against 'bourgeois taste' in the 1920's (in which he was himself greatly involved) (DAVEY 1998: p. 2) He wanted a standard system of architectural colours which could be found in all civilizations and folklore, and which in the end were similar to the colours for which Vitruvius gave elaborate recipes. Le Corbusier used colour to emphasize the nature of walls as planes, and by doing this he either subverted or emphasized the spatial and formal qualities of space and form. He believed that colour modifies our appreciation of space. To him, blue distances a wall and removes its quality of solidity, while red fixes a wall and affirms its exact position and presence. (Ibid) Le Corbusier used detached and sculptural primary colour against external planes of white, while inserting strong hues into indentations to scoop out space in colour seemingly left behind after the overall modeling of the form. (PORTER 1982: p.116)

To Le Corbusier, light was also intrinsic to architectural composition and formed a big part of the architect's vocabulary. He supported his architcural expression by the play of light and shade. (VAN RENSBURG 2003: p.18)

Illus. 5 Unite d'Habitation, Marseilles, Le Corbusier, 1952-55, showing his use of exterior colour in his insertion of primary hues into recesses and around apertures in the facade. (PORTER 1982: p.20)

"All material in nature, the mountains and the streams and the air and we, are made of Light which has been spent, and this crumpled mass called material casts a shadow, and the shadow belongs to Light."

Louis Kahn

Primary colours formed an integral part of the de Stijl movement in architecture in Holland during the 1920's. Piet Mondian attempted to tame pure colours on canvas, containing them in a grid-plan abstraction. Gerrit Rietveld projected primary colours as a means of spatial control on to the internal and external planes of his architecture. The articulation of the visual 'pushing' and 'pulling' qualities of colour were used by him to induce illusions of increased depth (illus. 6).(PORTER 1982: p.18)

The reorchestration of light is obtained through the use of colour by means of colour's ability to reflect light, thus emphasizing or modifying our impressions of form and space. Colour can also be used to intensify the boundaries between planes. (PORTER 1982: p.90)

When the building fuses with place through the use of colour and light, as was done by these architectural masters, it enters the threshold of true inspiration and expression as already mentioned. Colour and light is the true medium with which architectural expression could be achieved. Light as architectural form is inseparable from architecture's characteristics, (VAN RENSBURG 2003: p.19) and thus vital for the building to realize its true potential of being. This use of light in architectural form to fuse building and nature to place can be seen in the work of Louis I. Kahn (1909 – 1974) He declared that architectural space can only exist where it is revealed in natural light. (DEVILLERS 1992: 151) Kahn asserted that the plan of a building must read like a harmony of spaces in light, and that each and every space must be defined by its structure and the character of natural light. (ESSAYS ON LOUIS KAHN: Between Silence and Light) To him it was a great architectural event when, centuries ago, the walls parted and the columns became. He saw the column as the greatest event in architecture, where the play of shadow and light produces infinite mystery. The wall therefore opened, and the column became the giver of light. This experience was where Kahn discovered the power of the gift of light. As the building fuses with nature, the column can be seen as the tree in nature. (DOAN 2003: p. 1) As the tree grows from the earth and reaches to the heavens, so the column 'grows' from the floor to support the roof. As the sun light filters through the trees in an ever changing movement, binding the site to the context, so sunlight filters through the columns creating a harmony of spaces in light. This is also the quality which provides every site and situation with its own architectural language, unique materiality and form. (JEFFERSON 2005: p. 83)

Light and the mastery of its manipulation played a crucial role in the work of the Finnish architect Alvar Aalto (1898-1976). (GROAK 1992: p.217) Aalto used a great variety of materials for its composition of line and plane, yet it was the ambiguity of form by the dynamic behaviour of light on these material surfaces that intrigued him. To him light unites with material in animating site and function. (Ibid: p.226) Aalto placed architecture and planning at the opposition between Man and Nature. In other words, man being the rational order as opposed to the natural order. To him light represented Nature, and therefor, by controlling light, nature is controlled. His view on sunlight was that it is the animated form of natural light, and when the architect controls and mediates sunlight, life is brought into the building. Aalto was preoccupied with this flow of nature, and as such, the flow of space in and around buidings. (Ibid: p. 228-229) The animator (sunlight) thus becomes the medium through which space and therefore architecture is perceived.

2.4 PERCEPTION AND MOVEMENT THROUGH COLOUR AND LIGHT

With the theory of evolution which developed simultaneously by Alfred Wallace and Charles Darwin, the living world was perceived differently because it was seen to be a world in movement. This reinforced the notion that the creation is not static, but changes in time. (BRONOWSKI 1973: p.309) Our visual perception of the world and therefore architecture, as well as nature, changes daily through the constant rotation of the earth. Colour and light contributes vastly to a person's perception of his environment. With this notion comes subjective

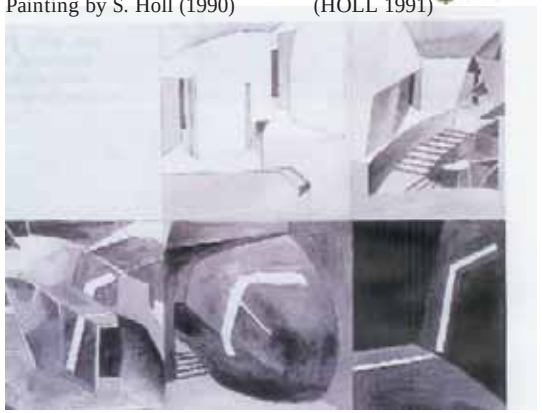
Illus. 6 Schroder House, Utrecht, Gerrit Rietveld, 1924, showing how he uses colour to give the affect of advancing and receding planes to define space, influenced by the paintings of Piet Mondrian. (PORTER 1982: p.19)

colour perception and the psychological effect of colour and light on the human being. But what remains constant is that light and colour are inseparable mediums through which perception is stimulated even though they are in a state of constant flux. In terms of the perception of time, the datum in architecture's record could be seen as sunlight, where the constant movement of the sun is analogous to the passing of time. The experience of movement though a space is enhanced by the way architecture is aligned with the sun, while the latter continuously animates the space, as mentioned before. Steven Holl sees this as movement that transcends architectural beauty. (HOLL 1991: p.10) Holl also explains time in terms of the movement of a projected beam of sunlight, which he calls Absolute time in his design for the Palazzo Del Cinema, in Venice, Italy (illus. 7). Through the use of light in space, light in shadow and light in reflection he solves the program of the building and the functional aspects thereof simultaneously (Ibid: 156)

The movement of the sun through architectural space is also a literal recognition of time, which can be seen in Steven Holl's D.E. Shaw and Company Office, 1991. Projected colours appear at certain moments in time based on the alignment of the sun. You know what time it is when you see the blue streak of light. This in turn realigns you with your subjective architectural experience. You sit and just watch the , blank wall, while thinking, remembering dreaming, wondering. (COOLEY 2004: p. 4)

The notion of preference in perception plays a vital role in the way a person experiences space and therefore architecture. According to this notion, an aesthetic theory could be deducted. In terms of colour preferences, a vast amount of research on the subject exists, therefore this will not be elaborated on. Principles on the psychology of perception can be applied to architecture as well as to graphic art, which originates from empirical experiments on vision. (VON MEISS 1991: p.21) These principles will bring about phenomena which are relatively more permanent than taste or style. While Christian Norberg-Schulz made a first attempt at proposing a theory of architectural form which would be based on the principles of perception, even partially so, (Ibid: p.22) we could reason that without the gift of light, there would be no gift of seeing, and therefore, one's experience of the physical environment, as well as architecture, would be quite different. The readability of forms and figures is one of the most important objectives of the architect, and by the use of colour and light, the language of the inherent architectural form becomes evident. Through colour and light, these forms become autonomous figures in front of ground, and therefore, the figure/ground phenomena, after Noli, plays a fundamental role in visual perception (illus. 8). Figure finds its autonomy by its edges, its contours, and therefore by the contact it has with its exterior, thus the rest of the world. (Ibid)

Therefor, through the use of colour and light - form and figure in architecture is perceived. This perception changes our experience of the physical world and can either binds us with nature and therefore with the spirit of place, or leave us without any identity and the feeling of not belonging.



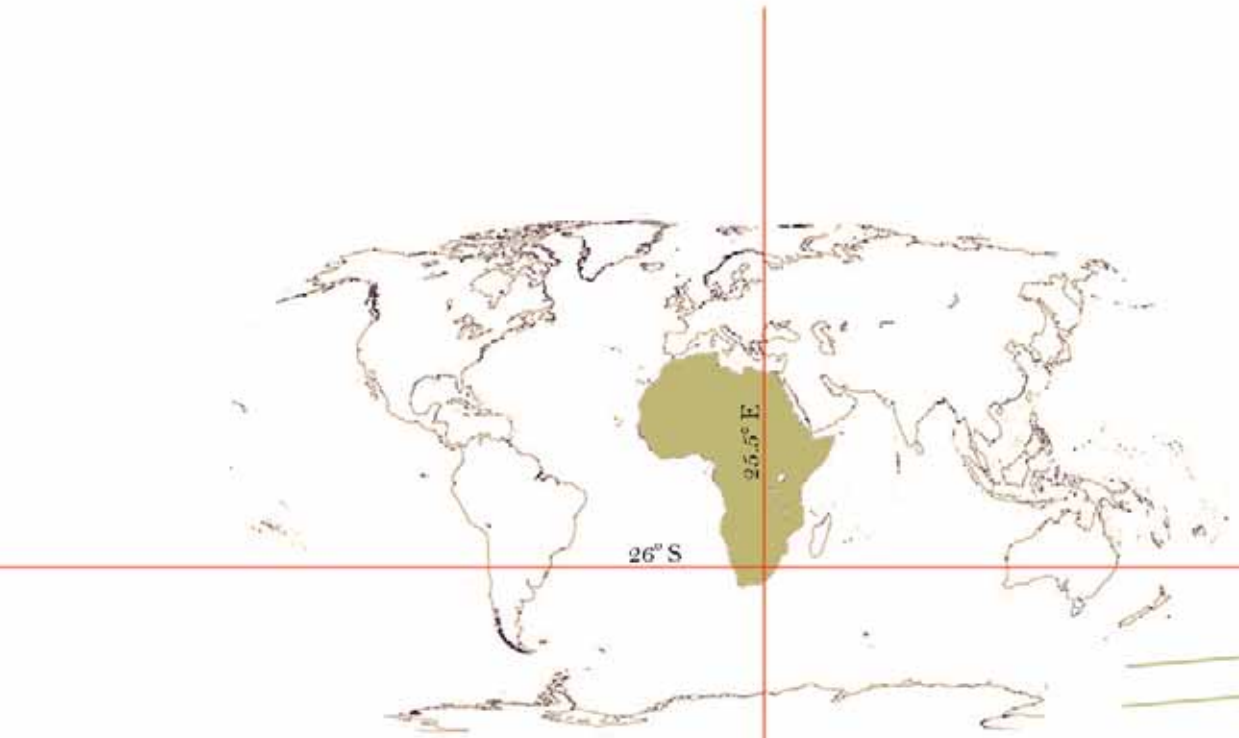
Illus. 7 Palazzo Del Cinema - Light in time. Painting by S. Holl (1990) (HOLL 1991)

Illus. 8 Figure/Ground map of Pretoria City, showing the figure/ground phenomena after Noli. (GAPP 2006: TICP SDF)

3. CONTEXT

- Some painters transform the sun into a yellow spot; others transform a yellow spot into the sun." - *Pablo Picasso (1881-1973)*
- "As the yellow gold is tried in fire, so the faith of friendship must be seen in adversity." - *Ovid quotes (43 BC)*
- "There is no blue without yellow and without orange." - *Vincent van Gogh (1853-1890)*
- "Gold! Gold! Gold! Bright and yellow, hard and cold." - *Thomas Hood (1799-1845)*
- "Only God, my dear, could love you for yourself alone, and not your yellow hair." - *William Burler Yeats (1865-1939)*

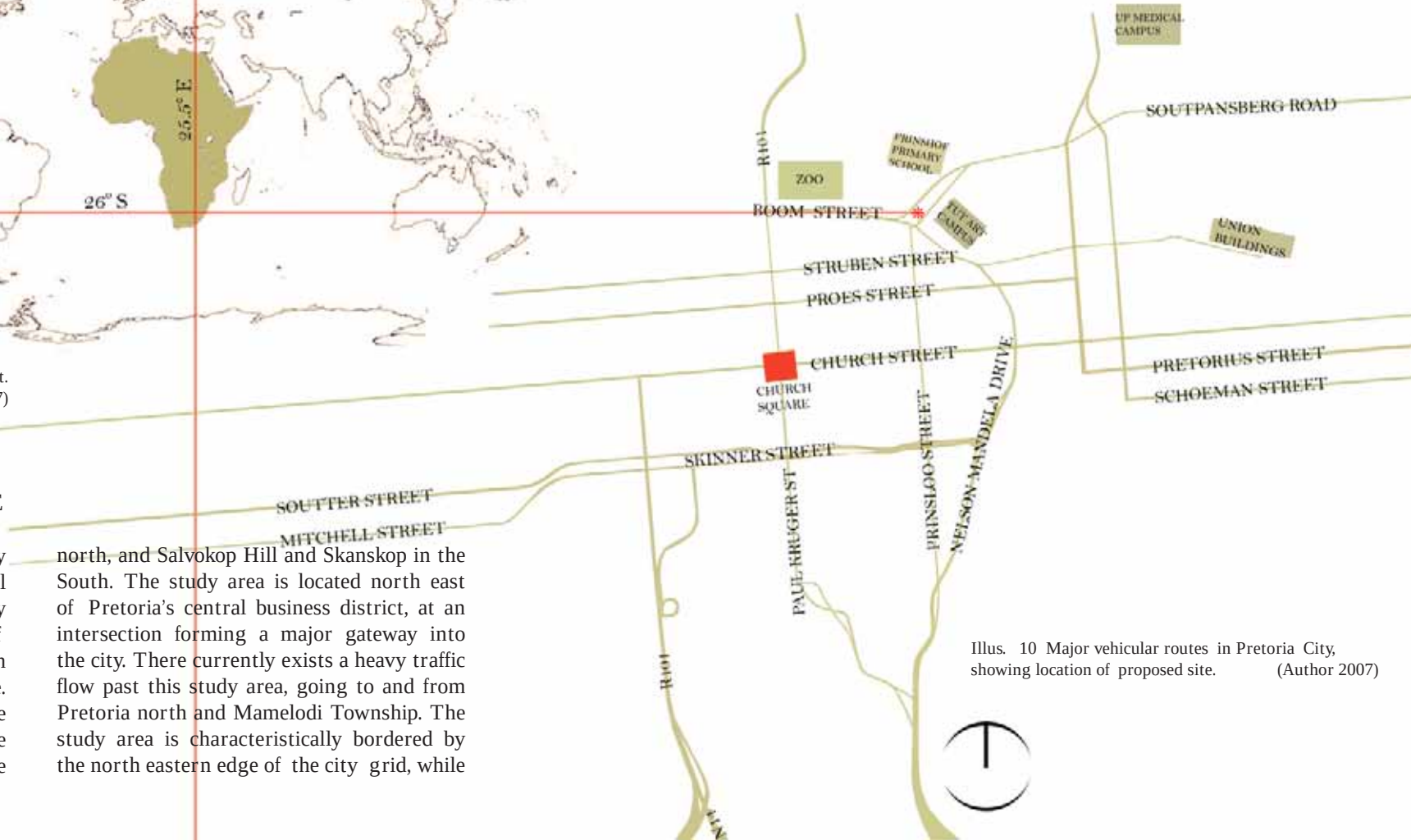
3.1 CITY SCALE



Illus. 9 Tshwane in the global context. (Author 2007)

1. CITY SCALE

Pretoria, being the administrative capital city of South Africa, is located in the municipal area of Tshwane (illus.9). The urban city grid has primarily been formed as a result of the physical boundaries surrounding it, with the origin of the grid being Church Square. These boundaries are the Apies River in the east, the Witwatersrand Mountain range through which the Apies River flows in the north, and Salvokop Hill and Skanskop in the South. The study area is located north east of Pretoria's central business district, at an intersection forming a major gateway into the city. There currently exists a heavy traffic flow past this study area, going to and from Pretoria north and Mamelodi Township. The study area is characteristically bordered by the north eastern edge of the city grid, while



Illus. 10 Major vehicular routes in Pretoria City, showing location of proposed site. (Author 2007)

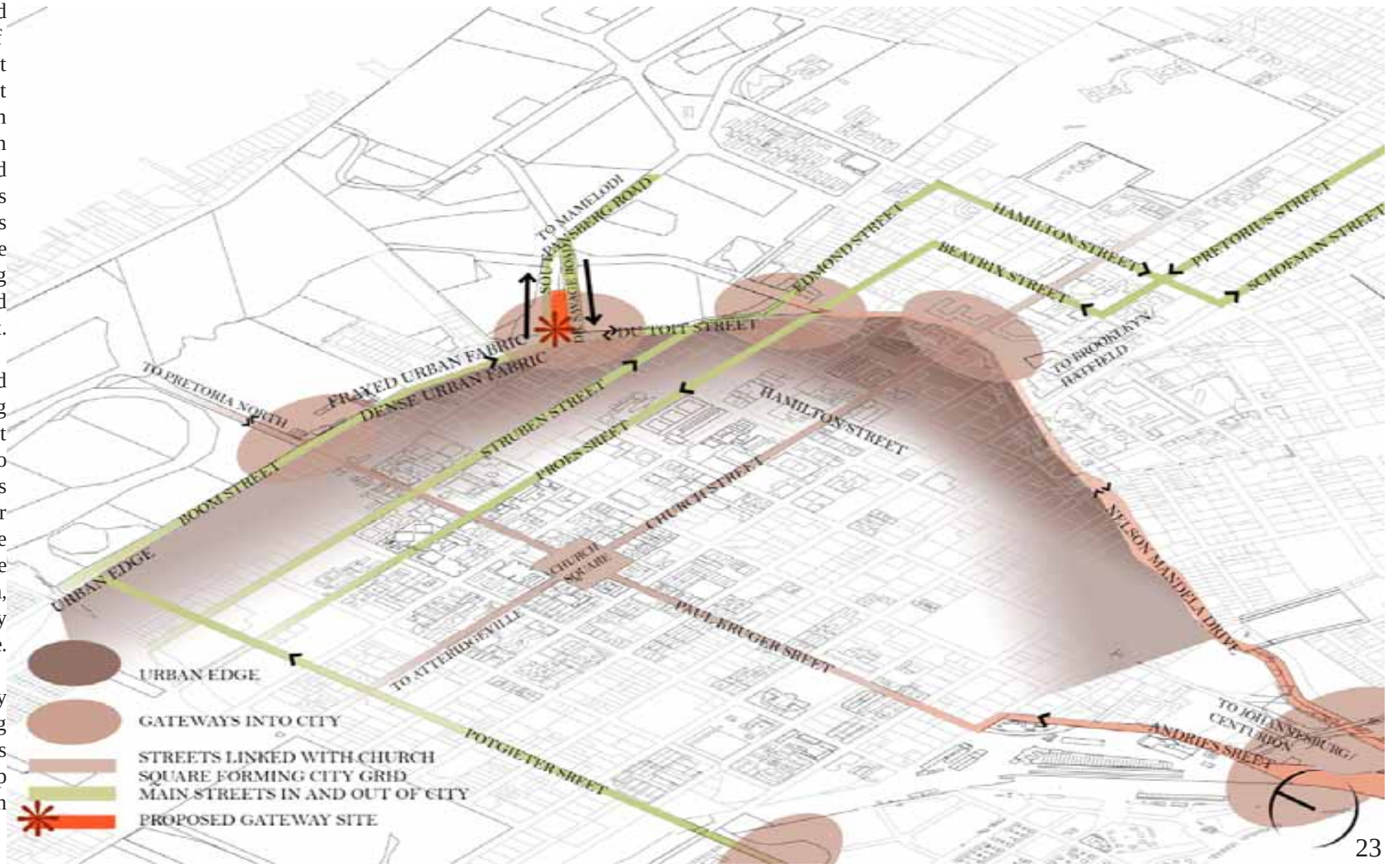
being wedged to form and island in between busy 4-lane streets converging into an intersection of 5 roads – Boom -, Bloed-, Dr. Savage-, Du Toit-, and Prinsloo Street.

A distinct urban edge has been formed around the central business district of Pretoria by the busy vehicular Boom Street in the north, continuing into Du Toit Street in the northeast corner and with Nelson Mandela Drive in the east (illus.). It is in this northeast corner that the city grid and ultimately the dense urban fabric lose its form and disintegrates into lost space. This lost space continues to the north with the major vehicular link being Soutpansberg Road leaving the city and Dr. Savage Road coming into the central business district.

As already mentioned, the study area is wedged in between these busy incoming and outgoing streets, forming a distinct 'island' of lost space, yet, this area is such a vital gateway into the central business district of Pretoria. This lost space causes a distinct loss of character and urban identity in this quadrant of the city, which makes the vision of Pretoria as the administrative capital city of South Africa, to be a city that represents the true identity of nation state, a little harder to achieve.

The ideal is to form a prominent activity corridor by means of an integrated layering along this defragmented part of Pretoria's grid which links Mamelodi Township and the extended Pretoria North with the inner city so that a true South African identity can be created - an identity of a city working together as a whole.

Illus. 11 Isometric view of Pretoria CBD, showing gateways into the city, main routes in and out of the city and the urban edge formed by the city grid. (Author 2007)



3.2 STUDY AREA

Illus. 12 Aerial photograph of Pretoria City with its land parcels, showing proposed site and its location within close distance from important facilities and buildings in the study area. (Author 2007)

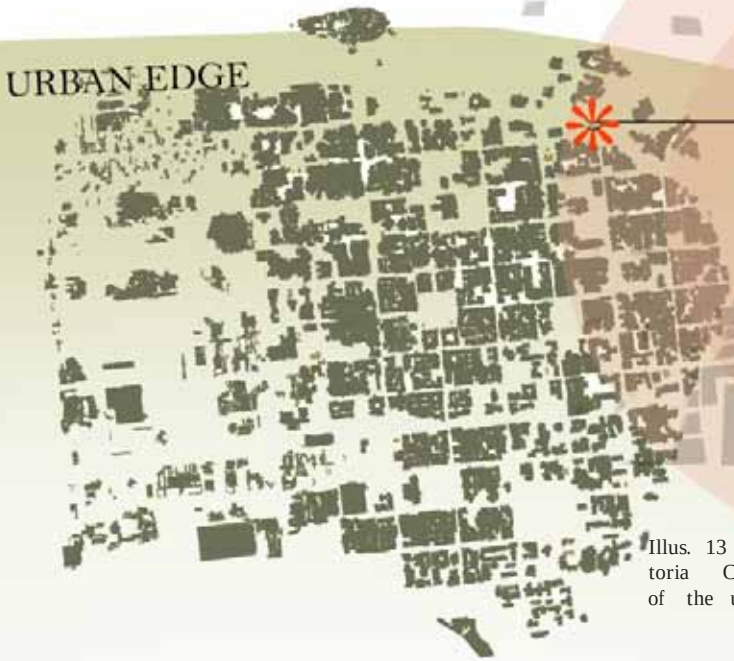
3.2 STUDY AREA SCALE

3.2.1 PHYSICAL LOCATION

- Tshwane: Administrative Capital of South Africa
- Pretoria Central, northeast corner
- Prinshof area
- Intersection of Boom Street, Soutpansberg Road, Dr. Savage Road, Du Toit Street and Prinsloo Street

3.2.2 SITE DISCRIPTION

The site is formed into a 'wedge' by Soutpansberg Street and Dr. Savage Road with the northern part of the site ending with the crossing of the Apies River. The Dr. Savage Taxi rank serving mainly long distance routing and the local Pretoria suburbs is located on the northern part of the site, contributing to the vibrant pedestrian movement around the site.



Illus. 13 Figure/Ground map of Pretoria City, showing defragmentation of the urban fabric in the study area. (GAPP 2006: TICP SDF)

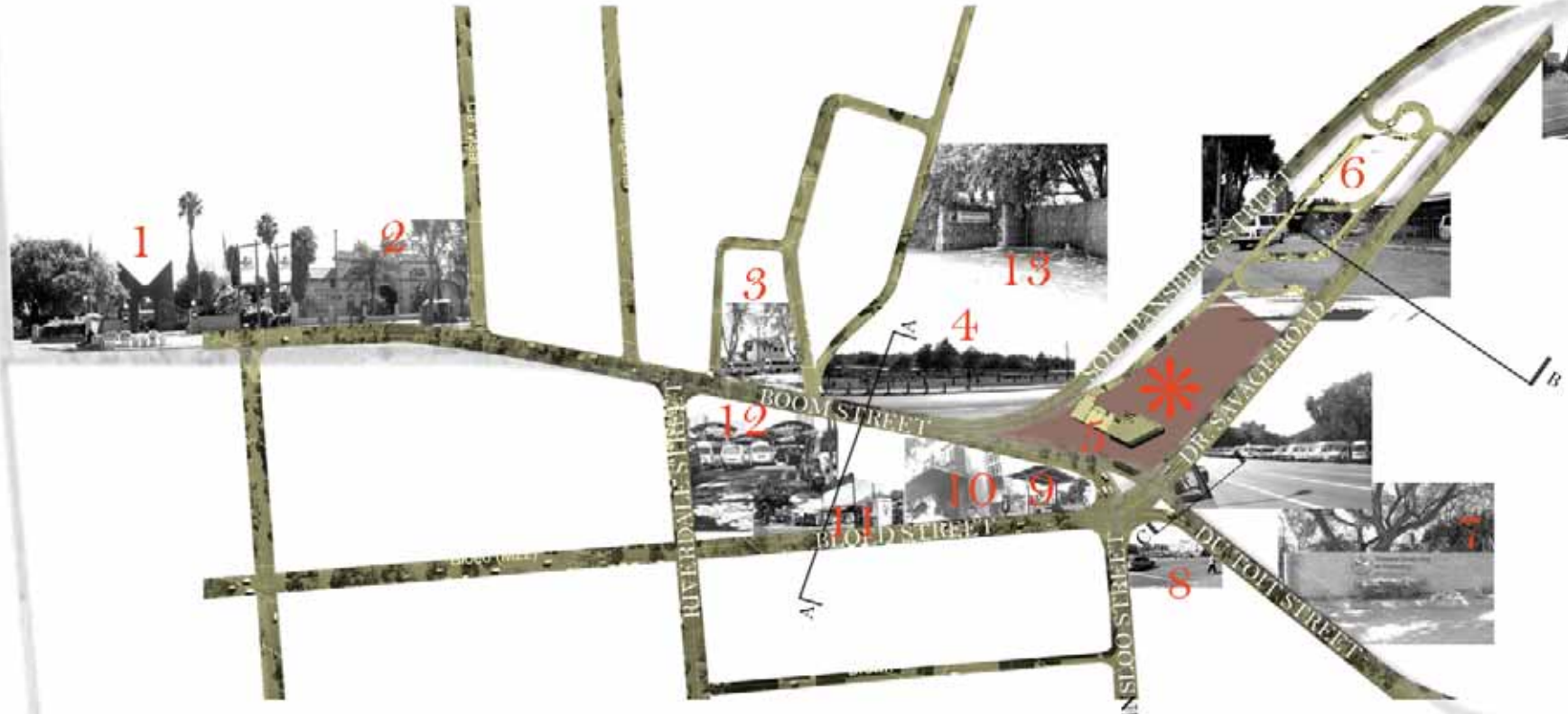
3.2.3 NORTH PRETORIA CENTRAL AND PRINSHOF AREA

The northern part of Pretoria CBD has a rich cultural character and a big tourism trade with the Pretoria Zoological Gardens and Aquarium as well as the Snake Park in Boom Street. The museum next to the zoo has significant heritage value as do the smaller houses in Boom Street, being older than 60 years.

Illus. 14 Figure/Ground map of Pretoria City, showing proposed site and its location in between Dr. Savage Taxi Rank and Bloed Street Taxi Ranks, illustrating the walking circles from both taxi ranks and where teh overlaps on the proposed site. (Author 2007)

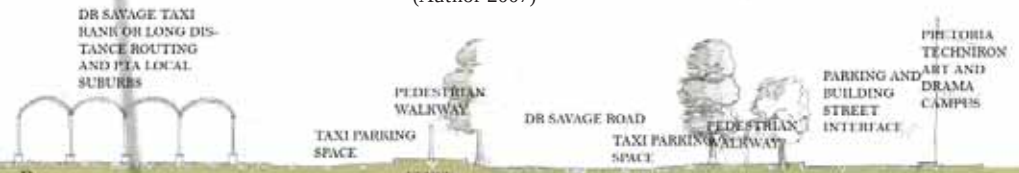
A building of very important historical value is located on the southeastern corner of the site, the Carbonatto Building built in phases from 1938 onwards and designed by Gordon McIntosh, with its peculiar current shape formed as a result of demolition. The Prinshof area houses a large amount of Institutional buidings such as the Tshwane University of Technology Art and Drama Campus, the Prinshof School for the sight impaired, the University of Pretoria Medical Faculty, the Pretoria Academic Hospital, the Association for the Disabled as well as the School for the Cerebral Palsy. The Prinshof Primary School is also located within walking distance of the site (illus. 12).

Du Toit Street splitting into Edmond Street links directly with the Union buildings located on Meintjieskop, which creates a very important visual link with the study area (illus. 12). The area located more to the centre of the CBD, where the fragmentation of the urban city fabric starts to appear (illus. 13), houses the very important Bloed Street Taxi Rank, and forms an activity node which is vibrant with pedestrian movement, social interaction and street vending. The 5 minute walking circles from the aforementioned Dr. Savage Taxi Rank and the Bloed Street Taxi Rank crosses where the proposed site is located, which makes it an ideal area for rest and rejuvenation (illus. 14).

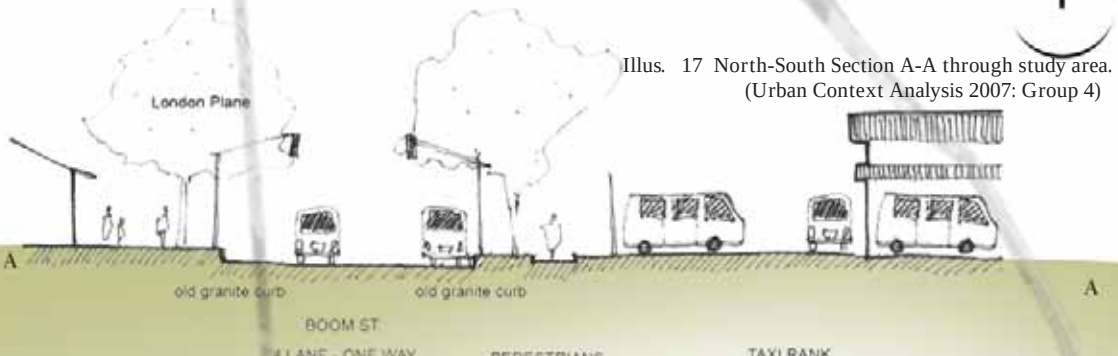


1. Pretoria Zoological Gardens
2. Zoo Museum
3. Historical Building (Densits)
4. Open site
5. Carbonatto Building
6. Dr. SavageTaxi Rank
7. TUT Art & Drama Campus
8. Auto Centre
9. Engen Garage
10. Food house
11. Bloed Street Taxi Rank
12. Bloed Street Taxi Rank
13. Prinshof Primary School
14. Intersection of Soutpansberg Road and Dr. Savage Road looking south

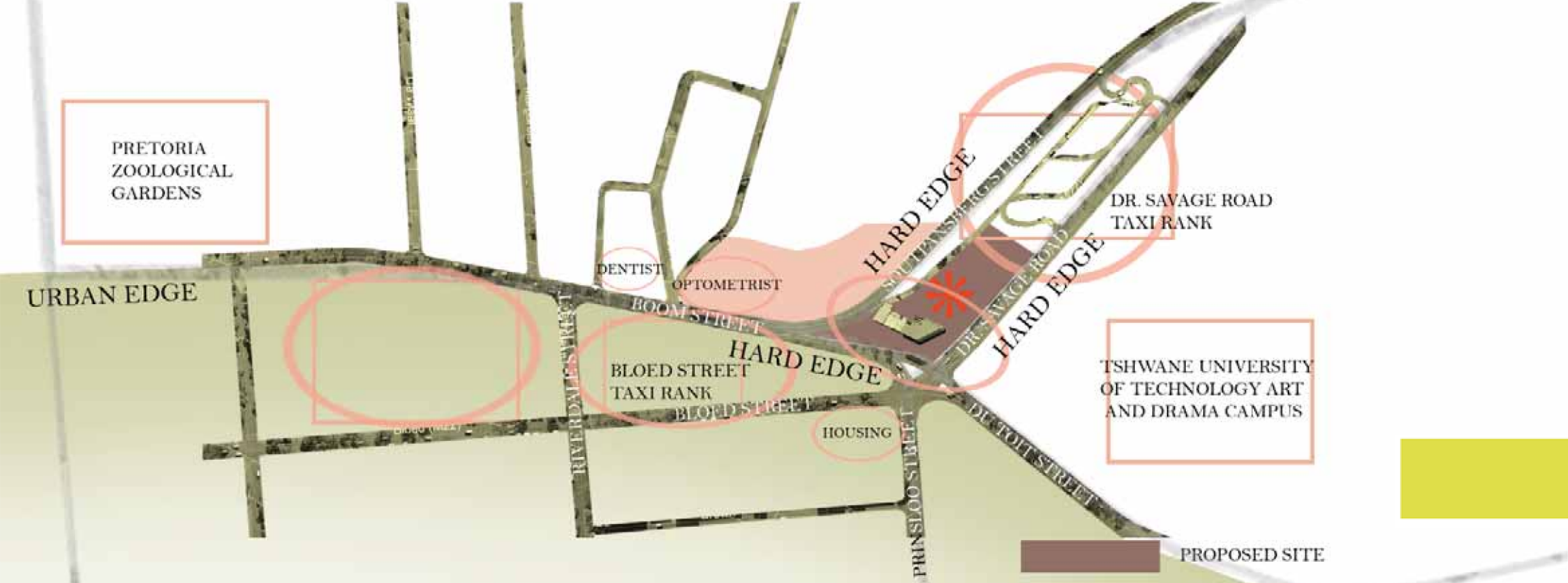
Illus. 15 Urban identity map of study area, showing location of proposed site as well as important facilities and buildings. (Author 2007)



Illus. 16 East-West Section B-B through study area. (Urban Context Analysis 2007: Group 6)



Illus. 17 North-South Section A-A through study area. (Urban Context Analysis 2007: Group 4)



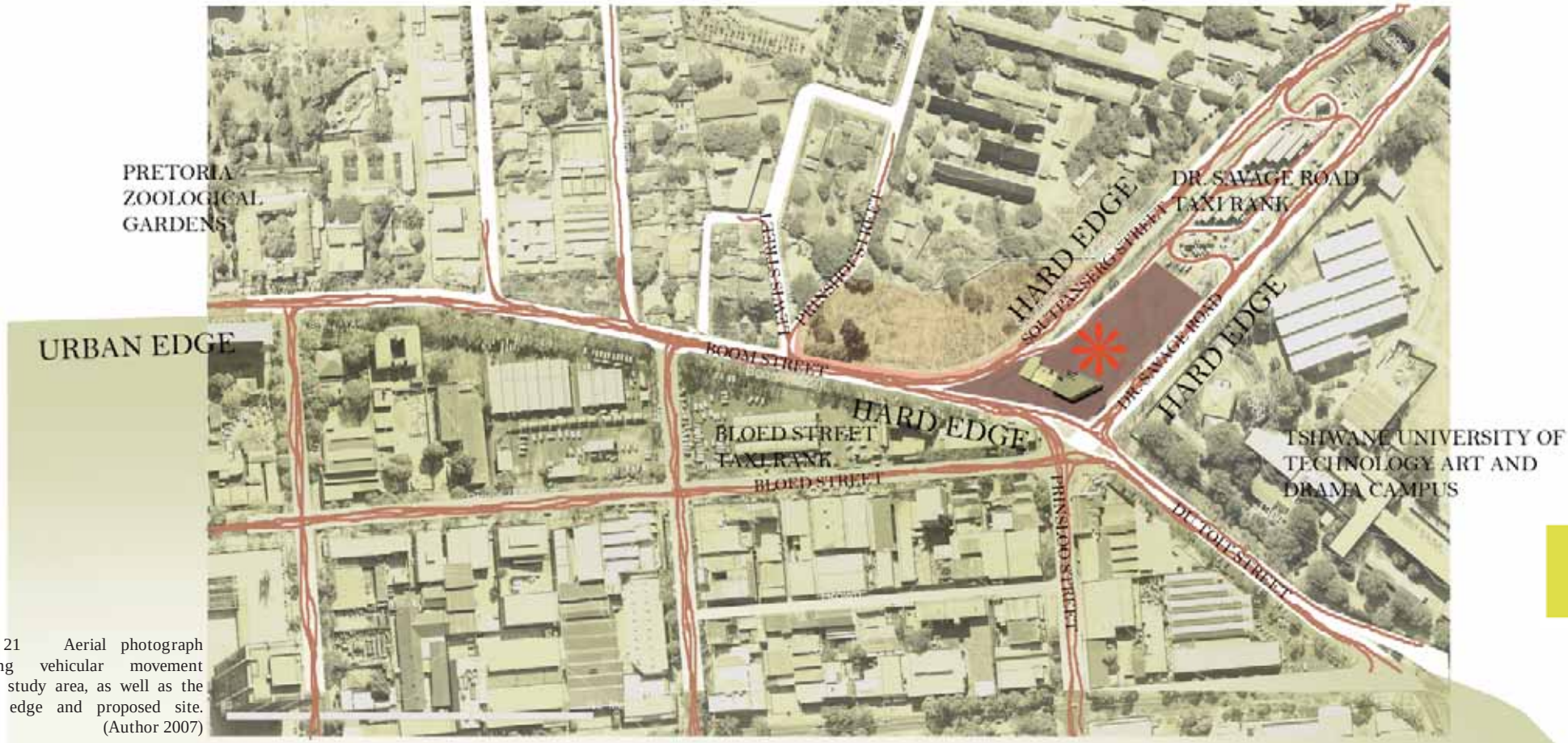
Illus. 18 Map of study area showing urban edge and proposed site, with activity nodes and gathering areas in the study area, as well as possible areas for development , (Author 2007)

Illus. 19 Northeast-Southwest Section C-C through study area. (Urban Context Analysis 2007: Group 4)

Illus. 20 Aerial photograph showing pedestrian movement in the study area, as well as the urban edge and proposed site. (Author 2007)

3.2.4 MOTIVATION FOR CHOICE OF SITE

Currently, it is a lost space with defragmentation of the urban city fabric on the periphery of the Tshwane CBD. It forms part of the northeastern gateway into the CBD and thus forms a site which can serve as a landmark for city inhabitants, tourists and suburban inhabitants. It is located next to the Dr. Savage Taxi Rank as well as within five walking minutes of the Bloed Street Taxi Rank. The site is located next to the busy Soutpansberg Road with vehicular movement to Riviera, Capital Park, Gezina, Rietondale etc, as well as the Mamelodi - and Soshanguve Township. The Carbonatto Buiding on the site is of high historical value with specific visual landmark importance. The site is located near the institutional buildings mentioned, the most important being the TUT Art and Drama Campus, the UP Medical Faculty and the Prinshof Primary School. The site is located in the same street as the



Illus. 21 Aerial photograph showing vehicular movement in the study area, as well as the urban edge and proposed site. (Author 2007)

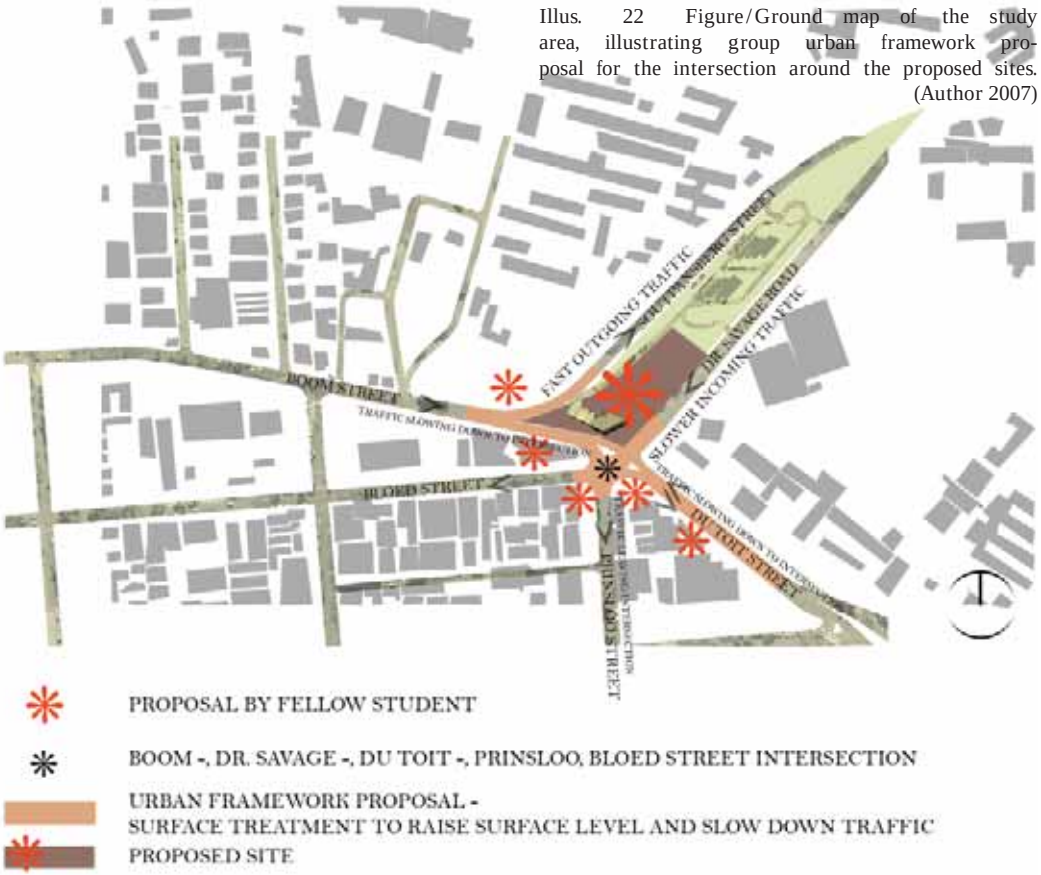
Pretoria Zoological Gardens – Boom Street
The site falls within the vehicular access road of the Union Buildings, as well as has a visual axis with the Union Buildings from the higher storeys of the Carbonatto Building and the proposed building.

3.2.5 OPPORTUNITIES AND POTENTIAL

The site has the potential to become a landmark site with the opportunity of starting the activity corridor needed to link the northern suburbs and townships with the Pretoria central business district. This in turn has the opportunity to be the golden thread with which the urban fabric could be 'stitched' together so that Pretoria's urban identity could become a national identity to be proud of.

3.2.6 SOCIO-ECONOMIC CONTEXT OF THE STUDY AREA

The study area is characterized by a medium to low density residential context, the residential society being multi cultural. A high level of informal trading exists along the Zoo entrance as well as around the two important taxi ranks. The majority of multi cultural pedestrians rely on public transport, which they access from the existing taxi ranks. The area is also characterized by heavy pedestrian movement during all times of the day, not only during peak hours as expected (illus. 20). Heavy vehicular traffic surrounding the study area occurs during peak hours to and from the townships and suburbs (illus. 21).



Illus. 22 Figure/Ground map of the study area, illustrating group urban framework proposal for the intersection around the proposed sites. (Author 2007)

3.2.7 GROUP URBAN FRAMEWORK PROPOSAL

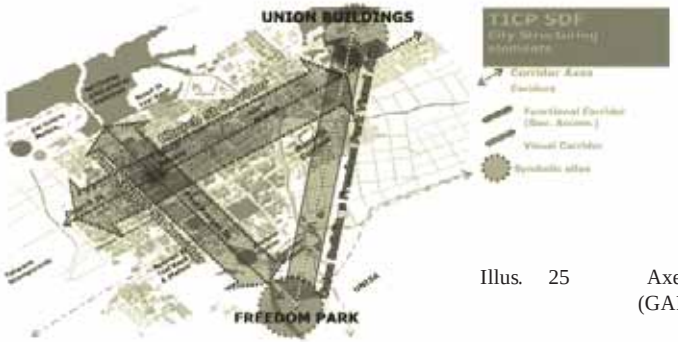
The study area includes several proposals by fellow students, on sites in close proximity to the authors proposed site. As this study area is characterized by heavy vehicular traffic on major intersecting streets, the study area, with the various proposals, has to accommodate the heavy pedestrian movement - already existing as well as anticipating an increase due to the other student proposals. The existing vehicular movement is currently slowed down to an extent by the traffic junction of the intersection, but further pedestrian safety is vital if the proposal for more pedestrian friendly movement is to succeed.

It is also evident that although very important proposals have been made on inner city spatial development, such as the Tshwane Inner City Spatial Development Framework (TICP SDF) by GAPP, these proposals do not include the study area under investigation. As this study area is an important gateway into the city, the urban framework proposal was thus made by the group to mainly target pedestrian and vehicular movement. It can not be denied that the busy four-lane Boom Street and Du Toit Street form a hard edge to the study area, and as such is vital for vehicular movement. This does however impede upon the pedestrian movement of the proposed study area and excludes the proposed site by the author from the urban city grid as already mentioned.

The urban framework for the study area was thus very simple but vital to the success of the proposal. The surface of the intersection with extended areas is to be raised and treated by means of various materials which will slow down the vehicular movement drastically so that the road area for the intersection will be pedestrian dominated (illus. 22). This would enliven the study area making informal trading and dwelling, part of everyday happenings.

Illus. 23 Pedestrian space and link network.
(GAPP 2006: TICP SDF)

Illus. 24 The seven development precincts.
(GAPP 2006: TICP SDF)



Illus. 25 Axes and Corridors.
(GAPP 2006: TICP SDF)

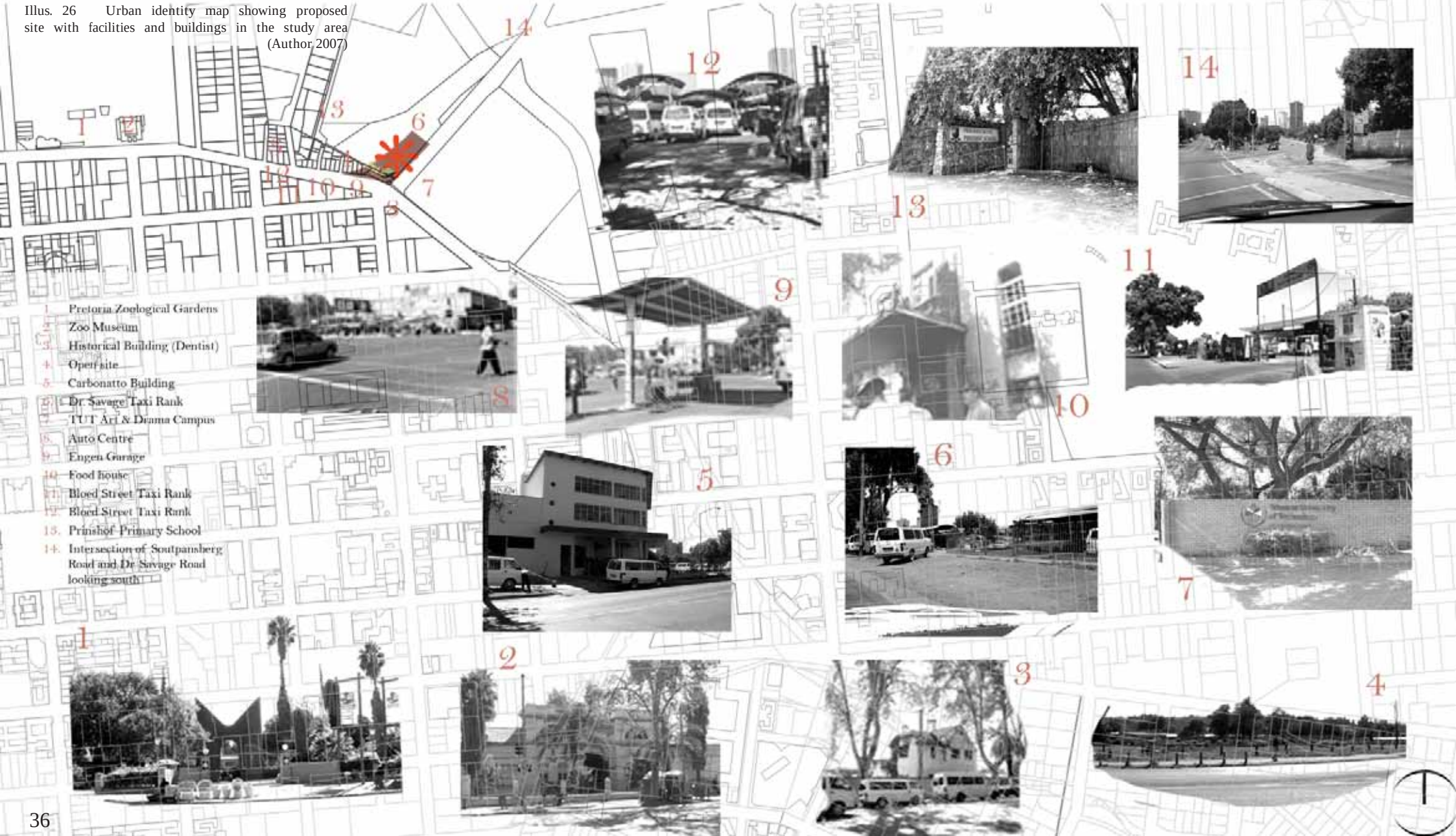
TSHWANE INNER CITY SPATIAL DEVELOPMENT FRAMEWORK (TICP SDF)

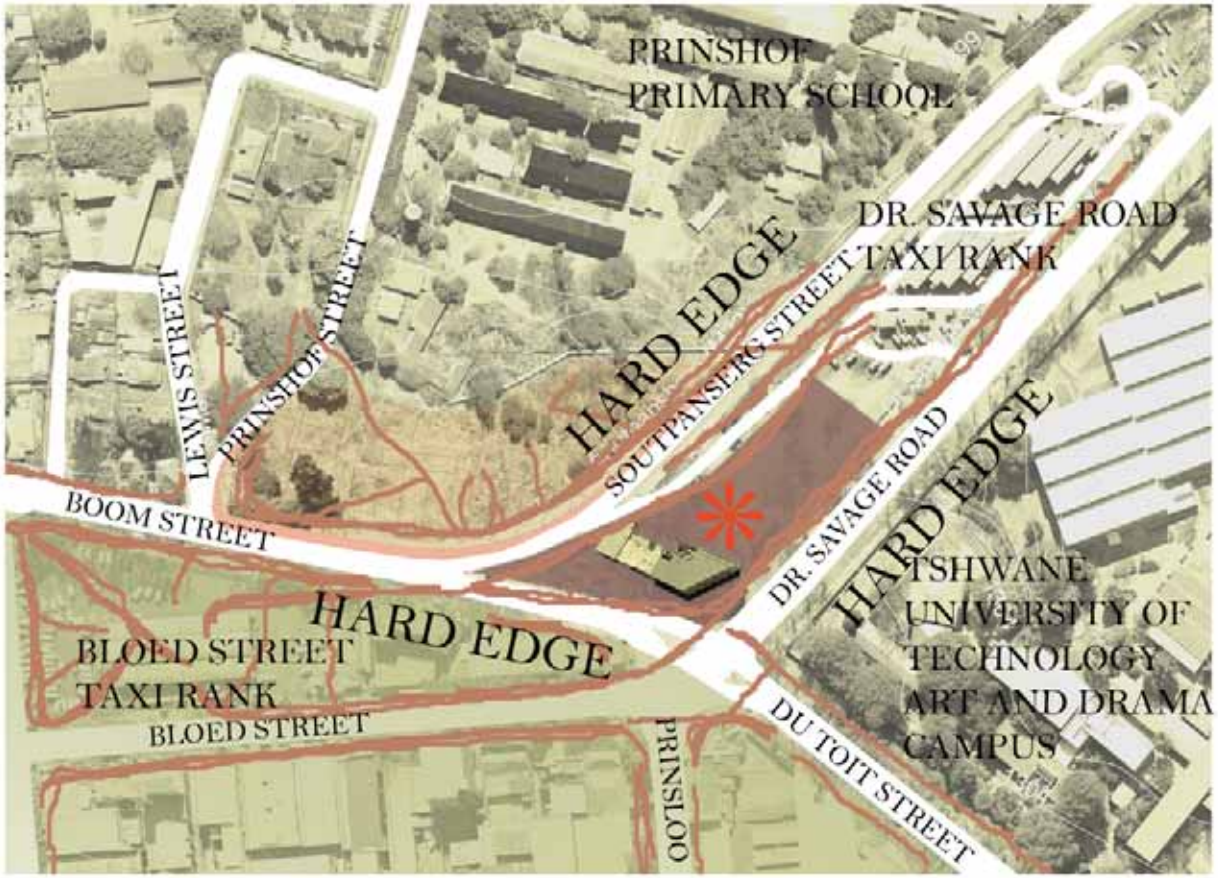
This inner city framework is a macro scale urban development framework to achieve sustainable urban renewal. The framework involves the strengthening of movement corridors, namely Paul Kruger and Church Street corridor, as well as the Union Buildings – Freedom Park visual axis (illus. 25). (TICP SDF 3 February 2006 by GAPP) *The movement corridor from the study area connecting the inner city with northeastern Pretoria is not included in this framework and is therefore on of the reasons for the choice of site.*

The framework also promotes a pedestrian friendly environment which is supported by an upgraded pubic transport system linking regional transport nodes with bus and taxi activities (illus.). (TICP SDF 3 February 2006 by GAPP) *The group framework thus proposed can add to this pedestrian friendly framework proposed by GAPP.*

3.3 SITE

Illus. 26 Urban identity map showing proposed site with facilities and buildings in the study area (Author 2007)





Illus. 27 Aerial photograph of the study area showing dominant pedestrian movement through and around the proposed site. (Author 2007)

3.3 SITE SCALE CONTEXT

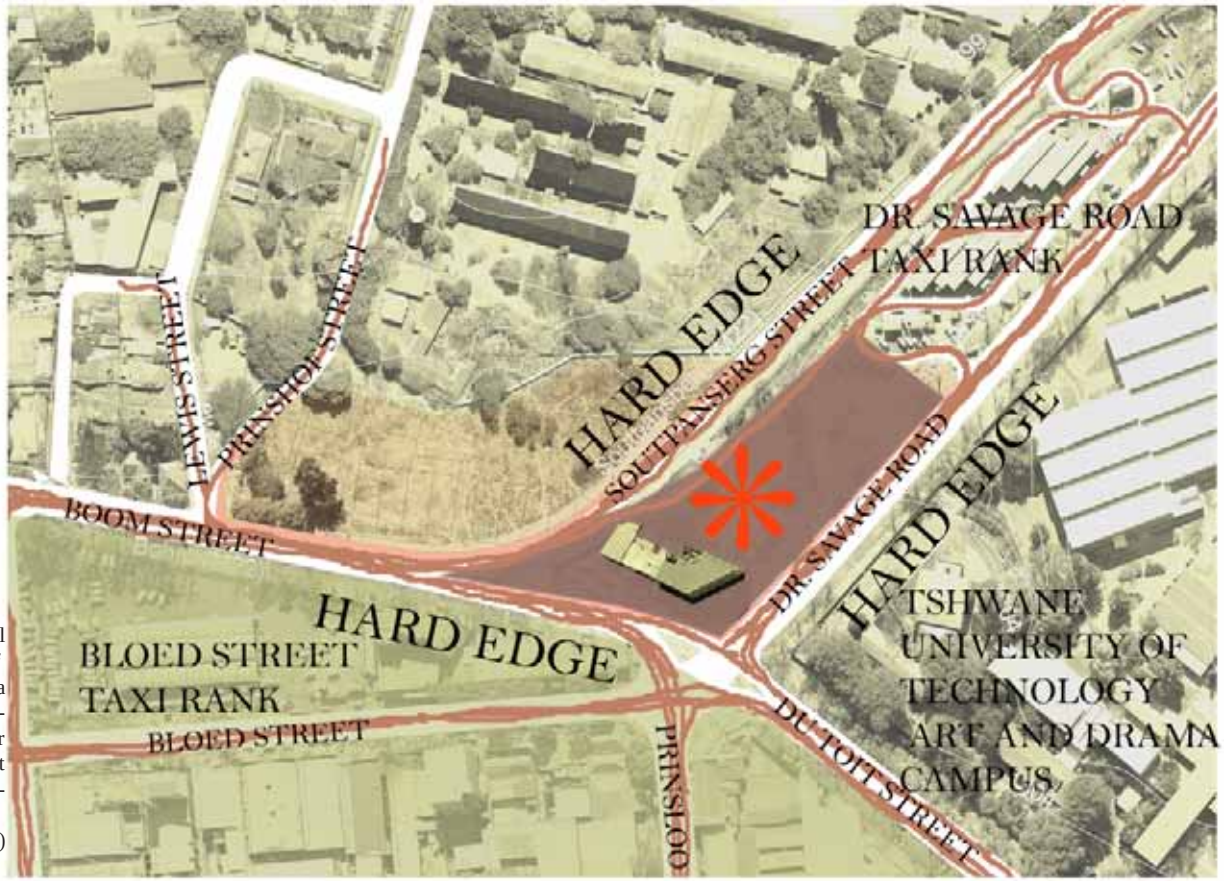
3.3.1 ACCESSIBILITY

PEDESTRIAN ACCESSIBILITY

Heavy pedestrian movement occurs from the Dr. Savage Taxi Rank on both sides of the site, moving toward the inner city (illus. 27). There is heightening of pedestrian movement during peak hours, as the long distance routing from the townships and northeastern suburbs brings people to and from their work in the CBD. Pedestrians moving from the east crosses over Dr. Savage Road from the TUT Art campus onto the site, normally wait for the robot and cross Boom Street toward the inner city. A constant pedestrian flow also exists on the eastern side of the proposed site from the taxi rank down. Prinsloo Street and vice versa. Free pedestrian movement across the site from the sidewalks on both the western and eastern side, which is the longest dimension of the site, is prevented by green fencing on both sides.

The existing Carbonatto building on the southeastern corner is currently not in use. It stands empty, while preventing free pedestrian movement by diamond wire fencing. Although this fencing is effective in prohibiting pedestrian movement, a person could easily get through this fence and stay illegally in the building which is currently not locked on the ground level.

It is of paramount importance that the group urban framework of making the study area more pedestrian friendly be implemented in order for the proposal on the site to work, as pedestrian movement through the site is very important and the major vehicular roads separating the site from the city grid makes pedestrian movement difficult and somewhat dangerous around the site.



Illus. 28 Aerial photograph of the study area showing dominant vehicular movement around the proposed site. (Author 2007)

VEHICULAR ACCESSIBILITY

Vehicular access to the site is one of the big constraints of the site due to the fact that three one-directional medium to fast feeding roads flank it (illus. 28). The outgoing Soutpansberg Road, incoming Dr. Savage Road, and continuing Boom Street respectively, form an almost impenetrable barrier on the western, eastern an southern edges of the site. The incoming and outgoing roads feed the inner city and north eastern suburbs with vehicular traffic. Even though access to the site is restricted by these major vehicular roads, the slipway access road from Soutpansberg Road to the Dr. Savage Taxi Rank could serve as both an access road and a delivery road for the site proposal, which becomes vital for the success of the design.

3.3.2 BOOM STREET

Boom Street originates from D.F. Malan west, moving east toward the proposed site. The Pretoria Zoological Gardens as well as the Bloed Street Taxi rank is reached from this road. Boom Street got its name from the unique London Plane Trees which grows along both sides of this four-lane street. This is the only street in Pretoria lined with these London Plane Trees, and is therefore very significant, as it distinguishes Boom Street from the other Jacaranda lined Streets in Pretoria Central. This road forms the southern edge of the site and ends in front of the porposed site at the busy intersection with Du Toit -, Prinsloo -, Dr. Savage -,and Bloed Street.

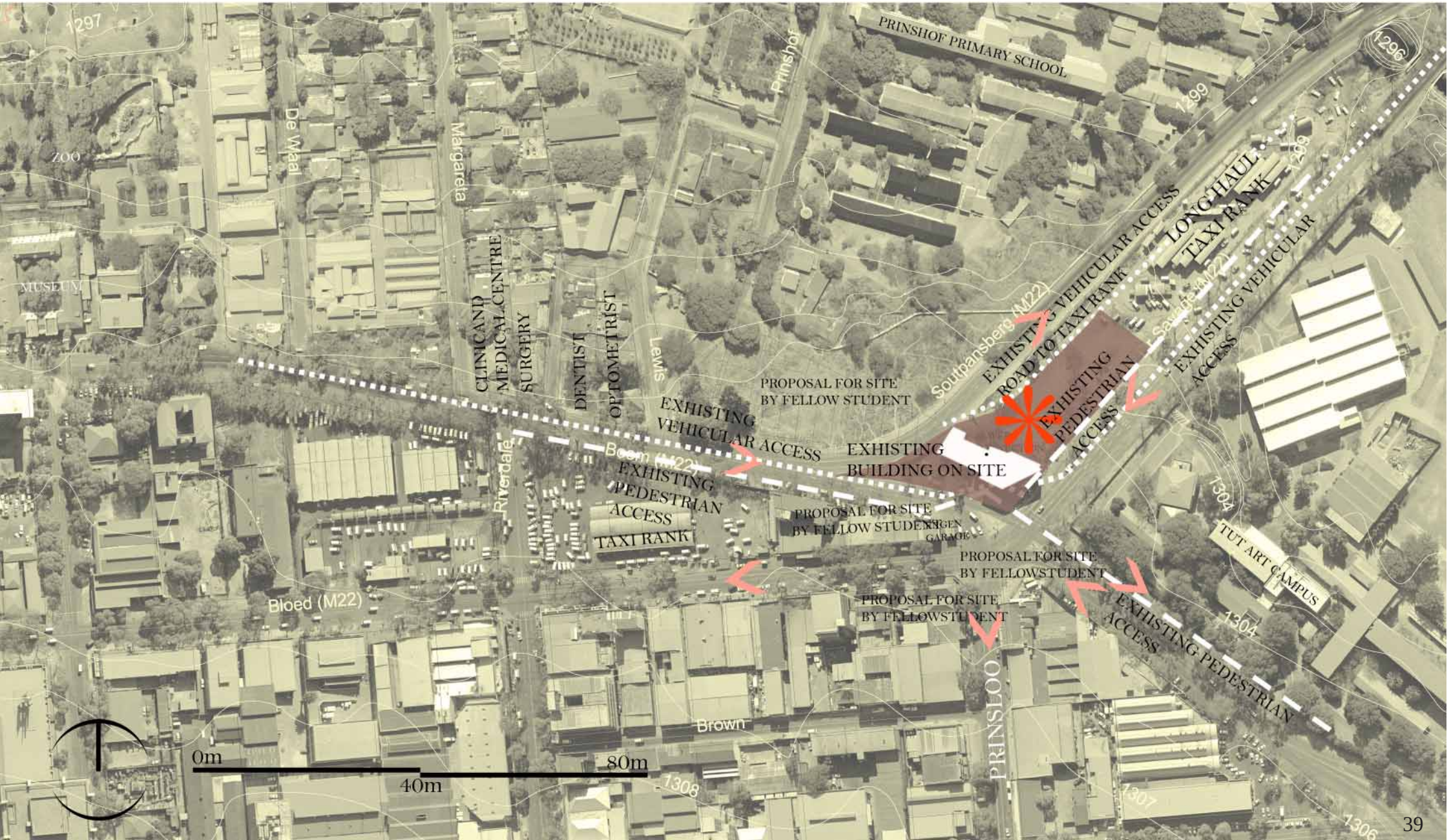
3.3.3 SOUTPANSBERG ROAD

Soutpansberg Road originates in Queenswood at the crossing with C.R. Swart Street, and connects Mamelodi Township, Eersterust etc. to the inner city through Stormvoël Road. Soutpansberg Road also connects Gezina, Riviera, Wonderboom etc. with the inner city.

3.3.4 DR. SAVAGE ROAD

Dr. Savage road forms the eastern edge of the site and connects with Soupansberg Road in the north where the Apies River crosses underneath. It crosses Soutpansberg Road and curves around to the east, passing the Pretoria Academic Hospital, the Centre for the Cerebral Palsy, and the University of Pretoria Medical Faculty.

Illus. 29 (opposite) Aerial photograph of the study area showing existing and proposed pedestrian/vehicular movement around the proposed site. (Author 2007)


PRINSHOF PRIMARY SCHOOL
ZOO
MUSEUM
De Wael
Margaretha
Prinshof
Lewis
Riverdale
Bloed (M22)
Boom (M22)
Soutpansberg (M22)
Savanna (M22)
Brown
PRINSLOO
CLINICAND MEDICAL CENTRE
SURGERY
DENTIST
OPTOMETRIST
EXHISTING VEHICULAR ACCESS
EXHISTING PEDESTRIAN ACCESS
TAXI RANK
PROPOSAL FOR SITE BY FELLOW STUDENT
EXHISTING BUILDING ON SITE
ROAD TO TAXI RANK
LONG HAUL TAXI RANK
EXHISTING VEHICULAR ACCESS
EXHISTING PEDESTRIAN ACCESS
PROPOSAL FOR SITE BY FELLOWSTUDENT
PROPOSAL FOR SITE BY FELLOW STUDENT
GARAGE
TUT ART CAMPUS
EXHISTING PEDESTRIAN ACCESS
1297
1296
1299
1304
1308
1307
1306
0m
40m
80m

3.3.5 BIO-PHYSICAL CONTEXT

3.5.1 METEOROLOGICAL ASPECTS

MACROCLIMATE

The site has dry and warm intermediary savannah biome with a summer rainfall of 125 – 375mm and a winter rainfall of 62 – 250mm.

TEMPERATURE

- The range of summer temperatures is 20 – 38 degrees Celsius
- The range of winter temperatures is 10 – 27 degree Celsius.
- The average relative humidity is 59%, with 60 to 80% sunshine per year.
- The prevailing winds in the summer are northeast, southeast, and southwest, northeast in the winter. (South African Weather Bureau – 2007)
- The summers are hot with characteristic thunderstorms generated by thermal air movements. Hail is not uncommon in the area (Napier 2000: 9.8)

MICROCLIMATE

The site is fairly tree rich which was planted haphazardly on the site. Three beautiful London Plane trees grow on the southern edge of the site, which continues the row of London Plane trees planted on the sides of Boom Street. Due to the Dr. Savage Road Taxi Rank, the soil on the site is barren without any grass covering. South from the taxi rank, the area is being used for parking and washing taxis causing further barrenness of the soil. Erosion due to run-off is thus a serious problem on the site in the case of thunderstorms which occur frequently in the summer months.

VEGETATION

The trees growing on the site that could be identified is mainly Jacaranda Trees, White Stinkwood (Celtis Kraussiana, Africana), and the 'Enkel Doring' (Acacia Robusta), as well as the already mentioned London Plane tree.

NOISE

Due to the Dr. Savage Taxi rank, as well as the Bloed Street Taxi Rank, there is a very high noise level around the site. A constant hooting and buzzing of noise is characteristic of this study area and thus also on the site, as it is situated in the middle of these two taxi ranks. The noise level around the site was also a major factor in choosing the appropriate program for the site.

3.3.6 ZONING

The proposed site is mainly zoned as Government, with the southern edge of the site being zoned as Special. (see documents in Addendum)

Illus. 30a-d Photographs from within the existing Carbonatto building on the site. (Author 2007)

VIEW OF RESERVE BANK FROM FIRST FLOOR OF EXISTING BUILDING

Illus. 30a

VIEW OF UNION BUILDINGS FROM FIRST FLOOR OF EXISTING BUILDING

Illus. 30b

Illus. 30c

VIEW OF TAXI RANK FROM EXISTING BUILDING BALCONY

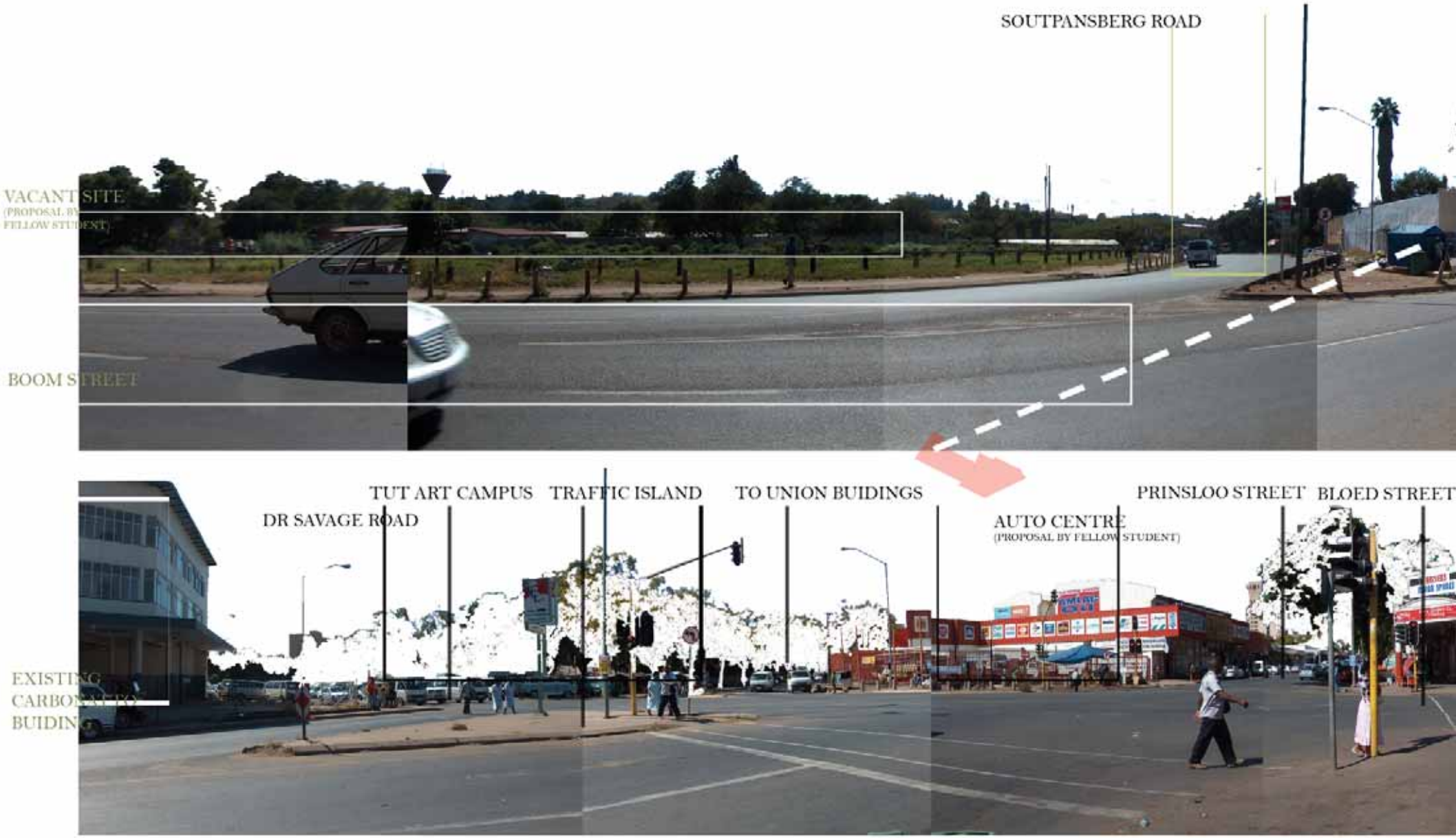
VIEW OF PRETORIA ACADEMIC HOSPITAL

Illus. 30d

Illus. 31 Photograph of unidentified tree on site. (Author 2007)

Illus. 32 Photograph of 'Enkel Doring' (Acacia Robusta) (Author 2007)

Illus. 33 Photograph of London Plane tree on site. (Author 2007)


SOUTPANSBERG ROAD
VACANT SITE
(PROPOSAL BY
FELLOW STUDENT)
BOOM STREET
TUT ART CAMPUS
TRAFFIC ISLAND
TO UNION BUIDINGS
PRINSLOO STREET
BLOED STREET
DR SAVAGE ROAD
AUTO CENTRE
(PROPOSAL BY FELLOW STUDENT)
EXISTING
CARBONATED
BUIDING

Illus. 34 Context Analysis (Author 2007)


LONDON PLANE TREES
LONDON PLANE TREE ON THE SITE
EXISTING CARBONATTO BUILDING 1938
TAXI PARKING AND WASHING ON THE SITE


EXISTING CARBONATTO BUILDING 1938
OPEN SITE/VELD
ABSA BUILDING
EATING HOUSE
RESERVE BANK

JACARANDA TREES ALONG DR. SAVAGE ROAD

BOOM STREET SEPARATING SITE FROM THE REST OF THE CITY GRID

PRINSHOF STREET

Illus. 35 Context Analysis (Author 2007)

SIDEWALK

DR. SAVAGE ROAD INTO CITY

JACARANDA TREES
CULTURAL VALUE

TAXI PARKING ALONG
DR.SAVAGE ROAD

TAXI RANK FENCED OFF FROM STREET INTERFACE
FORMING A HARD EDGE

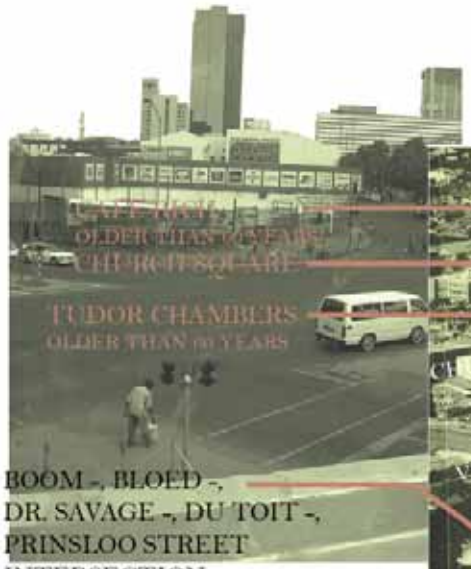
DR. SAVAGE ROAD SIDEWALK

TAXI PARKED ON ROAD EDGE

Illus. 36 Context Analysis (Author 2007)

3.4 HISTORICAL

Illus. 37 Elevated photograph of Pretoria CBD from the northeastern corner looking southwest, photographed in 1940, compared with photographs of the area surrounding the proposed site and how it looks at present. (1940 photograph: Unknown, other illustrations by Author 2007)

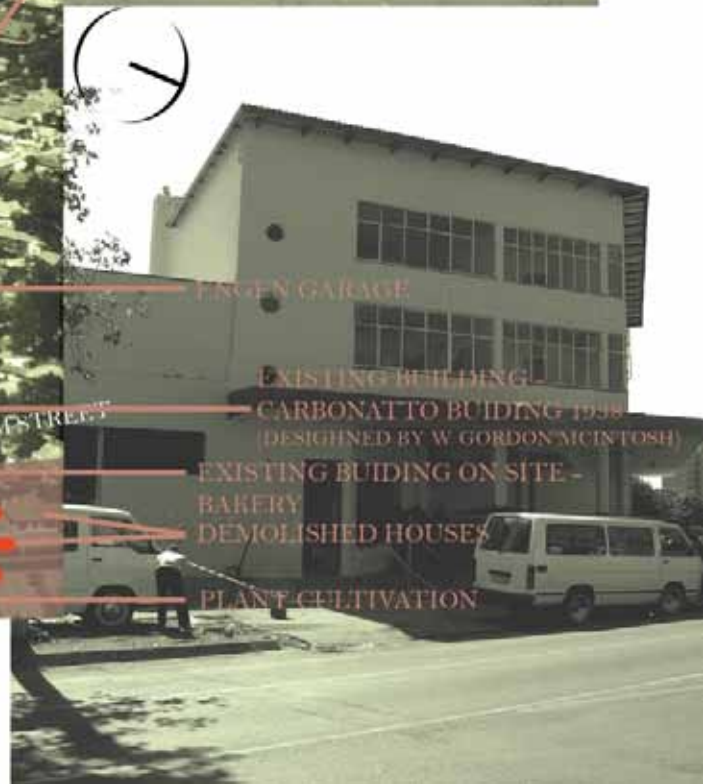


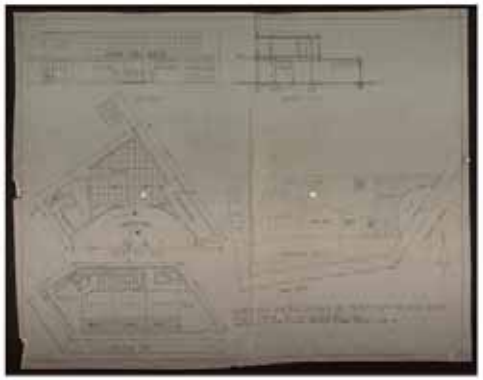
BOOM -, BLOED -,
DR. SAVAGE -, DU TOIT -,
PRINSLOO STREET
INTERSECTION

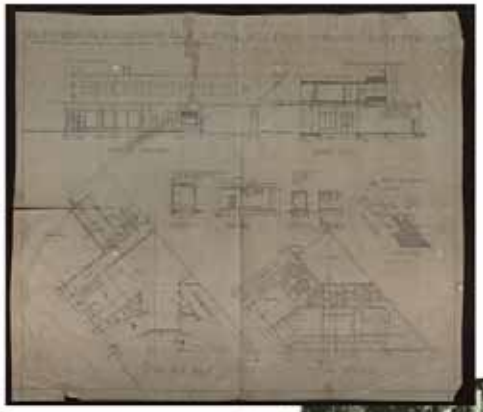
CORNER CAFE

AUTO CENTRE
CORNER

TUT ART CAMPUS CORNER



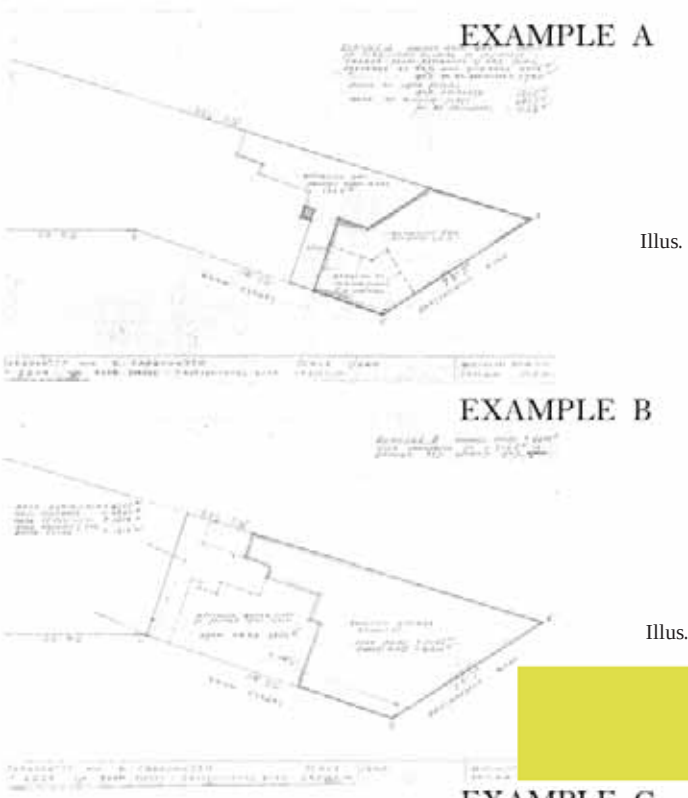




Illus. 38 Scans of the original plans of the Carbonatto Building, 1938 by W. G. McIntosh
(McIntosh: Original building plans: 1938)

3.4 HISTORICAL CONTEXT

The Carbonatto Buiding on the southern part of the site has a very high heritage value. The existing part of the building was designed by W. Gordon McIntosh in phases from 1938 onwards. (illus.38).The western part of the building existed long before this date, and served as a bakery, house and several shops. Unfortunately this part of the building has since been demolished and rebuilt with a structure without any significant identity in 1981. This structure is literally falling apart at present, with old wooden floors lifted up, walls broken down and painted in bright colours (illus.42a-d). It is evident from paintings on these walls that the structure was used as a nightclub of some sorts. McIntosh was first commissioned by Emilio Romeo Carbonatto and Ricardo Carbonatto to design a garage on the ground floor, which gave the main corner building its significant shape, with its high ceiling level and open façade with a definite column support system. The plans for the garage were approved by the City Counsel of Pretoria on the 10th of



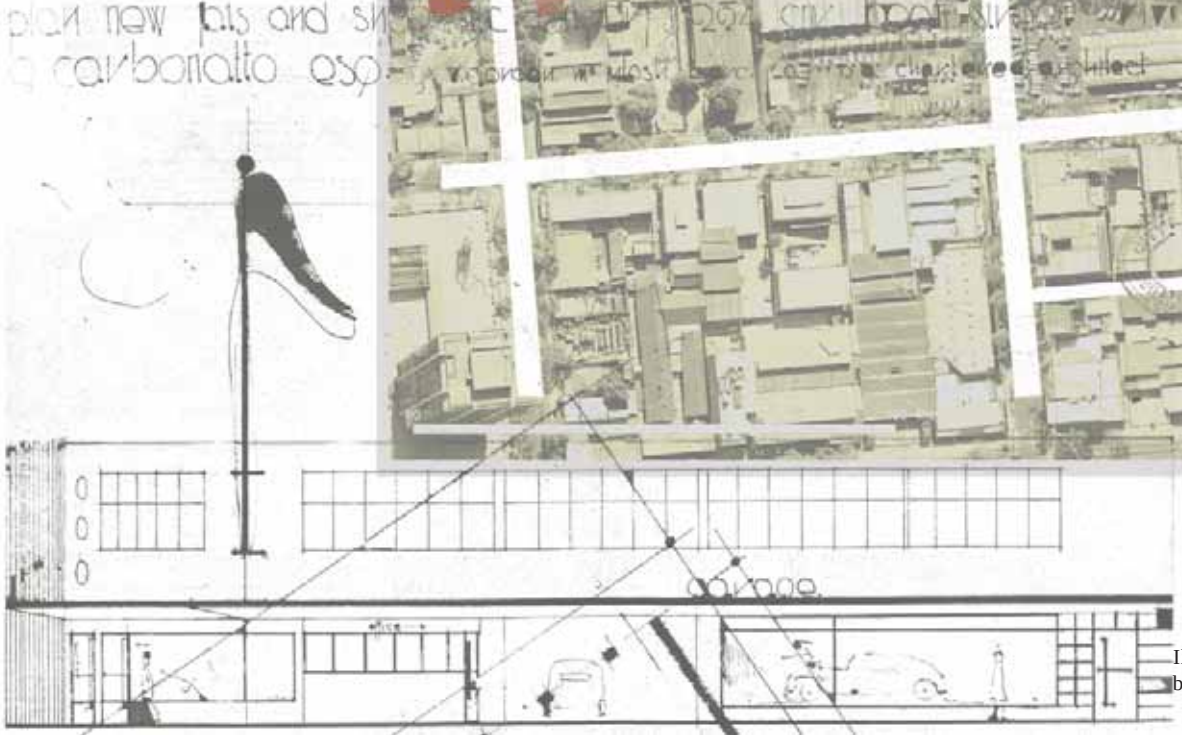
Illus.

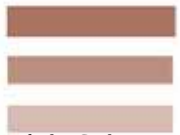
Illus.

Illus. 39 Scans of the original demolition plans of the Carbonatto Building by W. G. McIntosh
(McIntosh: Original building plans: 1938)

Illus.

Illus. 40 Aerial photograph showing buildings with high to low heritage. (Author 2007)





HIGH HERITAGE VALUE

MEDIUM HERITAGE VALUE

LOW HERITAGE VALUE

Illus. 41 Scan of the original elevation of the Carbonatto building, by W.G. McIntosh, 1938
(McIntosh: Original building plans: 1938)

March, 1937. Two years after the construction of the garage, the architect was commissioned to design flats on top of the newly built garage. The construction for the site finished ± 1940. The architect was again commissioned to do a second level of flats, which was approved on 11 March 1953 by the City Counsel of Pretoria. Since then no major construction work has been done on the building. Currently, the peculiar shape of the Carbonatto Building is as a result of demolition. Three designs of demolition plans were designed by McIntosh, and the first example chosen by the owners (illus. 39).

The Building is currently owned by a Close Corporation called The Kaprivi Investment Corridor CC, by Kamal Narotam Bhana since the year 2000. (CIPRO Company Search – 2007) The building is currently not in use, and sadly in a very bad physical state, with walls demolished, all the original wooden floors and designed cupboards removed (illus.). Only a shell with the interior walls is left standing.

As a significant heritage building, the Carbonatto Building was a very important design factor for the proposal, with the goal to reinstate the building as a landmark building in the area and to celebrate its heritage value.

Illus. 42a (Author 2007)

Illus. 42b (Author 2007)

Illus. 42c (Author 2007)

Illus. 42d (Author 2007)

Illus. 42a-d Photographs of the existing Carbonatto Building on site, showing its current physical state.
(Author 2007)

4. BRIEF [redacted]

- "O! beware, my lord, of jelousy; It is the green-eyed monster which doth mock the meat it feeds on." - *William Shakespeare (1564-1616)*
- "Sometimes our fate resembles a fruit tree in winter. Who would think that those branches would turn green again and blossom, but we hope it, we know it." - *Johann Wolfgang von Goethe (1749-1832)*

4. BRIEF

4.1 PROBLEM STATEMENT

The city of Tshwane has a profound vision of becoming a city with a true identity. The defragmentation of the city grid along the north eastern and western edges makes this vision hard to achieve. Furthermore, a definite barrier exists between Pretoria CBD and the surrounding townships. This is a result of the urban development strategy of the Apartheid era. These surrounding townships and neighbourhoods all contribute to the identity of the city, and being situated so far from the CBD without a definite urban link, the identity of a city as whole can not be achieved. The city grid is contained by a definite urban edge. This edge is formed by major vehicular roads, which have very important functions in the city. Beyond this edge, the grid starts to loose its form, creating a series of lost space.

This leads to a lost connection between the city and surrounding areas. It is this lost space that harm the identity of the city. If an activity corridor could be established through the development of this lost space, the connection between the surrounding neighbourhoods and townships could be established, which will give the City of Tshwane an identity of a being a city that functions as a whole. The objective of this dissertation is the development of a proposal for the continuation of the city grid, through the development of lost space into meaningful space, through the synergy between colour and light. The future vision of the proposal is to establish an activity corridor that will bind the whole of Tshwane into one canvas of identity.

4.2 CLIENT PROFILE

BARLOWORLD SOUTH AFRICA & THE TSHWANE UNIVERSITY OF TECNNOLOGY

The clients for the proposed project is Barloworld South Africa in conjunction with the TUT Art and Drama Campus. Barloworld South Africa consists of Barloworld Coatings, the market leader in architectural and automotive coatings in South Africa, with factories in Durban, Port Elizabeth, Cape Town and Johannesburg. They also have factories in Botswana, Malawi, Swaziland, Zambia and other Sub-Saharan African countries. To establish a factory or outlet in Pretoria is one of their main objectives. Their architectural brands include the premium Plascon range, as well as Crown, Professional and Poly-cell. They also supply specialized coatings to South African industrial and furniture markets, as well as paintbrushes through their Hamilton Brush company. To the automotive sector they also supply Plascon, Spies Hecker,

Standox and DuPont brands. Through the Plascon paint range, they have launched yearly forecast colours, with the goal of attracting a bigger market to their product. This includes 2007's "Colours Inspired by Discovery' and 2008's Light-Inspired Colours. The central aim is to inspire their clients in using their product as well as to show the user how these colours could be used in their environment. Barloworld also invests in research facilities. They currently have a research facility and laboratory in Stellenbosch that invents new technology to produce better quality paint at a lower cost, while altering the chemical make-up of the paint to be less harmful to the environment. (Creamer Media 2007)

The Art Department of the Tshwane University of Technology also has a need for extra studio space, as well as a facility where the students can exhibit or practice their art. This space should be allocated in close proximity to the main campus.

4.3 BRIEF

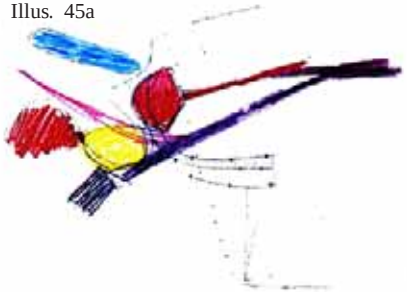
Barloworld South Africa needs to spread the production of their main product, Plascon paint. They need a site which is in Pretoria, the only major city in South Africa where they do not have a factory. It needs to be a facility where their new forecast colours can be manufactured and distributed. Research and testing laboratories must also be provided. A Concept Shop (similar in function to the Plascon Concept Shop in Design Quarter) must also be incorporated which will display their products while serving as an area where different concepts can be explored through which will rent this space from Barloworld.

5. PRECEDENT STUDIES

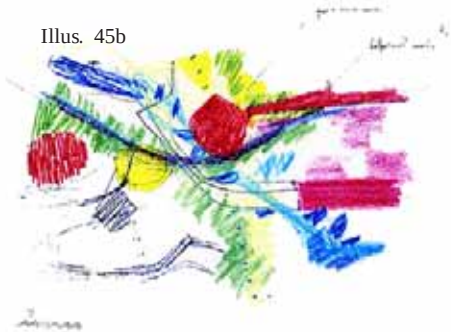
- "A handful of pine-seed will cover mountains with the green majesty of a forest. I, too, will set my face to the wind aned throw my handful of seed on high." - *Fiona Macleod (1855-1905)*
- "When the green woods laugh with the voice of joy, And the dimpling stream runs by; When the air does laugh with our merry wit, And the green hill laughs with the noise of it." - *Lord Byron (1788-1824)*

5.1 EMBT
5.2 ENRIC MIRALLES
5.3 studioMAS
5.4 GUNTHER HENN

Illus. 45a



Illus. 45b



Illus. 45c

Illus. 45a-c (right) Generative sketches and drawings, Mollet Del Valles Park, Spain, 2002, EMBT (Enric Miralles and Benedetta Tagliabue) (Arcspace 2007)

5. PRECEDENT STUDIES

5.1 EMBT

5.1.1 PARQUE DE LOS COLORES - MOLLET DEL VALLES, SPAIN

Starting Date: February 1992
Inaguration Date: March 2002
Architects: Enric Miralles and Benedetta Tagliabue (EMBT), Barcelona
Project Team: Enric Miralles, Lluis Cantallops, Joan Mias, Ricardo Flores, Josep Cargol, Jordi Artigues, Mary Rose Greene, Lucia De Colle, Nicolas Alvarez, Victoria Garriga, Sibyl Maurer, German Zambrana
Client: Mollet del Valles Town Counsel
Brief: Public Park in Barcelonan – to redefine a sense of place.

The Park of Colours is part of the urban renewal of public parks in Barcelona, which brings to life neglected and deprived parts of the city. This Park of Colours, designed by Enric Miralles and Benedetta Tagliabue, is the first phase in a masterplan that will eventually house a sports hall and civic centre. The site lies in Barcelona's industrial belt, and is surrounded by featureless apartment blocks. As a result of the lack of character and context, the architects had to redefine a sense of place. The architects used physical fragments, including bits of walls, pavement, and familiar elements throughout the city, to create a fictitious topography which would eventually merge with the planting and new construction. (BERTOLUCCI 2002: p.84)

"The main interest of this project is, maybe, not directly in it, but in the "themes" it contains; the suspension of the building, of graffiti becoming architecture, of the colours of a painting becoming places, if the suspended spirit of the users, of unexpected connections" – Miralles and Tagliabue.(ARCSPACE 2002)

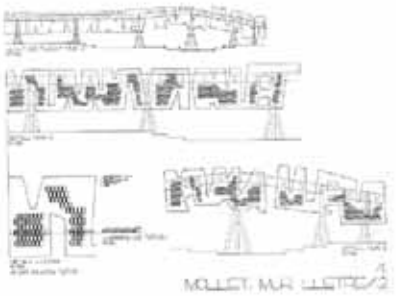
The man-made environment is penetrated by a series of long, horizontal pergolas made of fragments of brick, concrete and rusted steel, which evoke the forms of urban graffiti.(illus. 43) The pergolas are elevated on columns, and act as suspended screens that filter light and mark out where to walk and where to rest, by creating shadow zones and paths. The focus of

Illus. 43a

Illus. 43b

Illus. 43c

Illus. 43d



Illus. 47a

Illus. 47b

Illus. 47c

Illus. 47a-c (left) Plans and elevations, Mollet Del Valles Park, Spain, EMBT (Enric Miralles and Benedetta Tagliabue)
(Architectural Review 2002: p.84-87)

the composition is a small open air theatre that offers the potential for communal gatherings and performances. Antenna-like fittings resemble clusters of trees, while providing a virtual roof for the walkways and functional lighting by night. An existing Romanesque stone building was the 'model' for the civic center from the beginning, but later started to change, and separate from the original model. What remained though was the necessity to climb into it though long stairs and ramps. The new park has a richly varied texture that will evolve with time as the landscaping gets more established and the patterns of use begin t emerge in the park. "At times almost dream-like, the park has the quality of a complex, ever-changing stage set for the daily dramas of urban life." (BERTOLUCCI 2002: p.86)

The Park of Colours is a very good example of how the architects created a public gathering space through the use of elevated concrete pergolas, which filter light and provide shade. How the park is to evolve through future use patterns and the establishment of landscaping is also very important. What is very important is their concept of the colours of a painting to become part of the place, and thereby, create a sense of place in an area that was previously neglected and deprived.

Illus. 43e

Illus. 43a-e (left) Photos of Mollet Del Valles Park, Spain, 2002, showing the pergolas, crafted from concrete and steel which give it a strong sculptural quality while filtering light and providing shade. (Enric Miralles and Benedetta Tagliabue) (Arcspace 2007)

Illus. 44a

Illus. 44b

Illus. 44c

Illus. 44a-c (top) Photos of Mollet Del Valles Park, Spain, showing the antenna-like light fittings that resemble clusters of trees. (Enric Miralles and Benedetta Tagliabue) (Philips 2007)

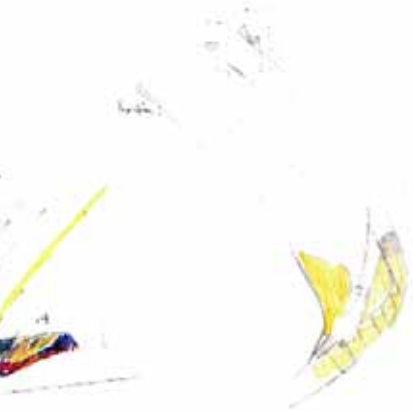
Illus. 46 (below) Generative sketches and drawings, Mollet Del Valles Park, Spain, EMBT (Enric Miralles and Benedetta Tagliabue) (Arcspace 2007)

5.1.2 SANTA CATERINA MARKET - BARCELONA, SPAIN

Starting Date: April 1997
Inauguration Date: May 2005
Architects: Enric Miralles and Benedetta Tagliabue (EMBT), Igor Peraza,Barcelona
Engineers: Robert Brufau, Jose Maria Velasco, Miquel Llorens
Client: Forment de Ciutat Vella S.A
Brief: Rehabilitation of Santa Caterina Market, Barcelona, Spain.

This reconstruction of the Santa Caterina Market brings life and light into one of the worst slums of Barcelona's Gothic Quarter. The area around the Santa Caterina Market is central, located three blocks from Barcelona Cathedral. People did not see a reason to cross the Via Laietana, which is dominated by vehicle movement. The Via Laietana has split the quarter since it was cut through in an early-20th-century "renewal". Previous interventions in this area resulted in large-scale demolitions. The architects design for the market grew out of a critique on these efforts. Miralles and Tagliabue saw an opportunity in Barcelona's declining public fresh-food markets to the changing needs and lifestyles of urban families.(COHN 2006: p.99+101)

The architects retained the white-painted masonry walls on three sides of the rectangular 1845 market structure.(illus.48c) This is covered with a brightly coloured tile roof (5 500 m²), which is visible from streets and plazas that lead to the cathedral, thereby advertising the market like a horizontal billboard.(illus. 49d) The roof's fluid form suggests the cantilevering awnings that cover patios in southern Spain. The 67 colours of the hexagonal roof tiles were inspired by heaped vegetables, fruits, seafood, meats and other fresh produce. (ibid: p.105)



Illus. 48c

Illus. 48a

Illus. 48b

The roof, made by assembling 300 000 ceramic hexagons, is supported by a "forest" of steel pillars that create movement in the organization of its interior. (ODDO 2005)

The importance of this project is how the architects used the original structure of the market, while introducing a colourful attraction to transform a dour fresh-food market into a high-spirited riot of colour. The architects gave people a reason to cross a busy road, and be part of an urban market and therefore, part of every day life.

Illus. 48a-d Photos of urban-renewal of the Santa Caterina Market, Spain, 2002, showing the brightly coloured tile roof. EMBT (Enric Miralles and Benedetta Tagliabue)
(Architectural Record 2006: p.99-106)

Illus. 48d

5.1.3 GRAN VIA EXPRESSWAY ACOUSTIC PANELS - BARCELONA, SPAIN

Starting Date: April 1997
Architects: Enric Miralles and Benedetta Tagliabue (EMBT)
Client: Forment de Ciutat Vella S.A
Brief: To design acoustic panels which prevent the noise from the expressway to reach the upper levels and buildings.(illus. 40)

A long row of acoustic screens prevents the noise of the fast traffic way (lower level) to reach the upper level, which is designated for slow traffic and pedestrians. This will provide an acoustic screen for the surrounding buildings as well. The screens consist of a resistant outer skin that surrounds an acoustic insulation core. The shape of the screens is designed to reflect noise. The inner material also helps with its absorbing qualities. The set conforms a body of 2, meters by 7,5 meters in length. The width varies between 10 and 50 cm. (EMBT 2007)

The importance of this program is the inventive use of concrete, with the architect's use of colour. A colour study was done by the architects. Through this study, coloured acoustic glass was chosen, and placed into slits carved in the concrete.(illus. 50) A constant movement of coloured light falls on the road and traffic below, creating an ever-changing movement of colour and light. This gives the 'stagnant' concrete panels a quality of interactiveness in its environment.

Illus. 49 Photograph of model of Gran Via Expressway acoustic panels, Spain, EMBT (Enric Miralles and Benedetta Tagliabue) (EMBT 2007)

Illus. 50 Photograph of Gran Via Expressway acoustic panels, showing the coloured glass inserted into the concrete skin, Spain, EMBT (Enric Miralles and Benedetta Tagliabue) (EMBT 2007)

Illus. 51 Photograph of Pavillion Arcelor Luxembourg, showing their use of colour on the exterior of the building, Luxembourg, EMBT (Enric Miralles and Benedetta Tagliabue) (EMBT 2007)


Illus. 53a

5.2 ENRIC MIRALLES & CARME PINÓS

5.2.1 IGUALADA CEMETRY - BARCELONA, SPAIN

Starting Date: 1984
Construction Date: 1985-1994
Architects: Enric Miralles and Carme Pinós

The Igualada Cemetery or the Cemetery Nou in Igualada, near Barcelona was constructed between 1985 and 1994 as a replacement for the old “Cemetery Vell”. The cemetery became widely regarded as one of the most poetic works of 20th century Catalan architecture. (WIKIPEDIA 2007)

The project was conceived, in part, as an earthwork that transforms the surrounding landscape and also serves as part of a metaphor for the river of life. A processional route descends from the entrance and serves as a pathway toward the burial area. Concrete loculi serving as retaining walls, line the route. The intention was to bring the bereaved down into the landscape to a ‘city of the dead’, an in-between place where the dead and the living are brought closer together. The spaces are designed to provoke thoughts and memories for the visitors. (ibid)

The cemetery can be considered as architecture of the land that involves a humanization of the brief and appreciation of the topography.

The importance of this project is the inventive use of concrete, which act as burial retainers, as well as concrete retaining walls. The concrete loculi have been detailed to be robust, yet read like poetry to the bereaved visitors. The concept of the ‘in-between’ used by the architects, is also very important, as this can be seen to link with the concept of Louis Kahn; “Between Silence and Light”, where inspiration and exploration is achieved.


Illus. 53b


Illus. 53c


Illus. 53d

Illus. 53a-d Details of concrete loculi, Igualada Cemetery, Igualada, Barcelona, Spain, (1985-1994) EMBT (Enric Miralles and Benedetta Tagliabue) (Wikipedia 2007)

Illus. 52a-b Photographs of concrete loculi, Igualada Cemetery, Igualada, Barcelona, Spain, (1985-1994) EMBT (Enric Miralles and Benedetta Tagliabue) (Wikipedia 2007)

Illus. 52b

5.3 soundspacedesign

5.3.1 LR PLASTICS - DURBAN, SOUTH AFRICA

Illus. 54 Photograph of refurbishment of the old Novilon building for the LR Plastics Factory, Durban, 2005-2006, studioMAS and soundspacedesign. (LOW 2007: p.88)

Illus. 55a

Illus. 55b

Illus. 55 a-b Computer rendering of the refurbishment of the old Novilon building for the LR Plastics Factory, Durban, 2005-2006, studioMAS and soundspacedesign. (LOW 2007: p.88)

Illus. 56 Photograph of re-facing with custom designed bird proof concrete blocks to enable natural cross ventilation and filtering of northern light. LR Plastics Factory, 2005-2006, Durban, studioMAS and soundspacedesign. (LOW 2007: p.93)

Illus. 57 Photograph of the diner, where staff and clients can mingle and interact during the course of the day, giving a genuine humane dimensuon to a factory setting. LR Plastics Factory, 2005-2006, Durban, studioMAS and soundspacedesign. (LOW 2007: p.94)

Comissioned:	2004
Designed:	2005
Completed:	March 2006
Architects:	soundspacedesign
Brief:	To relocate the LR Plastics flexible packaging company from Prospecton into the old Novilon building.
Client:	LR PLASTICS

The old Novilon building was designed in the early 1950's, and is renowned as a landmark building, as it is an example of the modern period 'Mobeni-style' face brick factories that populated the Southern Industrial band of Durban. The clients wanted a design which is contemporary and representative of their hi-tech flexible packaging brand.

The addition of 3000m² of design, sales and administrative offices increased the existing building with 35%. This afforded the opportunity for architectural re-branding in the form of a re-imagined 'landmark', as well as a resultant urban form and new interior environment suitable for the everyday use of workers and management. (LOW 2007: p.90) The architects designed each department with a clear identity, with their own kitchen, ablutions and lounge as well as administrative offices. The building is refaced with custom designed bird proof concrete blocks to enable natural ventilation and to filter the northern light.(illus.56)In complimenting the existing building, a clean-lined modernist approach has been adopted for the design intervention, with uncluttered elevations. Large areas of glazing on the north and east sides allow for visual permeability in an attempt to integrate the environment with the building. The landscaping is also similar to the established landscaping adjacent to and outside of the property. In this way, the conventional boundary is contested,

Illus. 58a

Illus. 58b

and public space made to be an extension of the site. The interior of the building has been carefully redesigned, by evolving an appropriate language of detailing.(ibid:p.92-93)

The importance of this design is how the architects dealt with the redesign of an industrial landmark, while providing a contemporary building that reflects the client's profile. The design of the interior with the use of bright colours that contrasts with the nature of the industrial materials and machinery gives a more humane dimension to the factory setting, as well as the inventive use of concrete to provide natural ventilation and filtering of light in a factory.

5.4 GUNTHER HENN

5.4.1 VOLKSWAGEN PHAETON FACTORY – DRESDEN, GERMANY

Architect: Gunter Henn

Illus. 59a

Illus. 59a-b Exterior photographs of Volkswagen's Phaeton Factory, showing the landmark glass tower, Dresden, Germany, 2005 (AUTOSPEED 2005)

Illus. 59b

Illus. 60a

Illus. 60b

Illus. 60a-e Interior photographs of Volkswagen's Phaeton Factory, showing how the factory functions as a 'Transparent Factory', Dresden, Germany, 2005. (AUTOSPEED 2005)

Illus. 60c

Illus. 60d

Illus. 58a-b (left) Photograph of interior space, showing the careful redesign and appropriate language of detailing, establishing an engaging interior. LR Plastics Factory, Durban, studioMAS and soundspacedesign. (LOW 2007: p.90-91)

Illus. 60e

The factory is located at the intersection of Lennéstrasse and Stübelallee, and located 100 meters from the Dresden Botanical Gardens in the city centre. The factory's landmark is a glass tower almost 40 meters high and visible from a considerable distance - finished vehicles are stored within it, ready for collection.(illus.59) The idea of a brand new and truly unique automotive plant in the heart of one of Europe's most beautiful cities was realized by the architect, Gunter Henn, who also designed Volkswagen's Autostadt Complex, which is part of the company's worldwide headquarters in Wolfsburg. Volkswagen's Phaeton luxury class vehicle is built behind 27,500 square meters of glazed facades in a production area covering 55,000 square meters. The glazed area and 24,000 square meters of parquetry floor create a light, airy atmosphere. Phaeton customers are encouraged to come to Dresden to see their car being built. (AUTOSPEED 2007)

The factory has also been named the 'Transparent Factory', as it is a glazed factory that displays the whole process of building a luxury vehicle to the visitor. The factory is also designed in such a way that the production floor is uncluttered while in constant motion as well as maintaining a very high level of cleanliness.

Illus. 61 Exterior view of entrance to Plascon Factory, Krugersdorp, South Africa. Unknown architect. (Author 2007)

Illus. 62 Aerial Photograph of Plascon Factory, Krugersdorp, South Africa. Unknown architect. (Author 2007)

Illus. 63 Display products in reception area. (Author

Illus. 64 Aerial Photograph of Plascon Factory, Krugersdorp, South Africa. Unknown architect (Author 2007)

5.5 UNKNOWN

5.5.1 PLASCON FACTORY– KRUGERSDORP

Illus. 65 Display products in reception area. (Author 2007)

Unfortunately, the author was not allowed to take any photos of the factory itself or any of the internal processes within the factory. Therefore, only the exterior of the factory could be photographed. The architect of the factory is unknown. The photographs of aerial photographs in the administrationoffices vaguely show the layout of the factory,. It is evident that no formal architectural style is employed in the factory, with corrugated iron structures built haphazardly on the rectangular site.(illus.62+64) Five different plants exist in the factory, each with their own function. The general layout and requirements for a paint factory is very important, and this was the importance of including the Plascon factory in the Precedent studies, although no genuine architectural style was found in the design of the factory. This provided an opportunity for architecture and engineering to merge in the design of a paint factory, and not merely engineered, as is evident in so many industrial buildings in South Africa. (Author 2007)

Illus. 66 Exterior view of dispatch area. Plascon Factory, Krugersdorp, South Africa. Unknown architect. (Author 2007)

6. DESIGN DEVELOPMENT

▪ "More varied than any landscape was the landscape in the sky, with islands of gold and silver, peninsulas of apricot and rose against a background of many shades of turquoise and azure." - *Cecil Beaton (1904-1980)* ▪ "For me, the summer will be pure gray - mother-of-pearl gray. To me this is the big statement for summer. Then we have light blue, light turquoise, lots of pink." - *Gianni Versace* ▪ "There were hot pink things and turquoise things and bright orange. The only thing that mattered to us was the gray-sale value, and if you really walked through the set, it looked a little jarring." - *Jan Pascale*

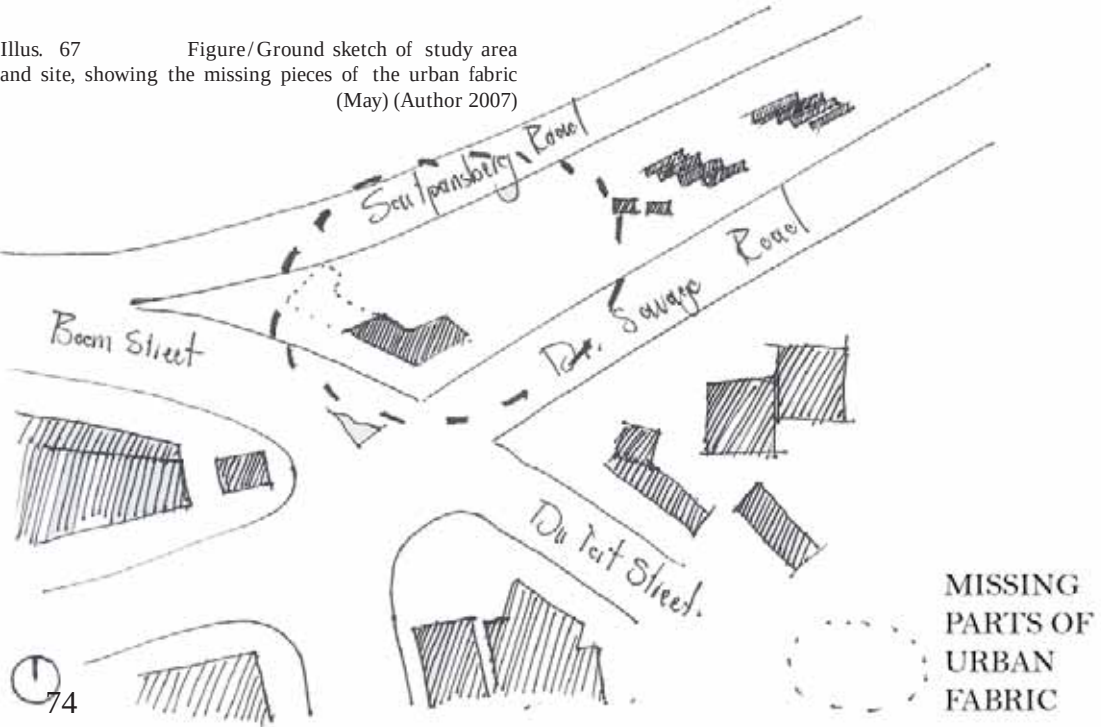
6.1 FACTORS INFLUENCING SITE SELECTION AND PROGRAMME
6.2 CONCEPTS

6. DESIGN DEVELOPMENT

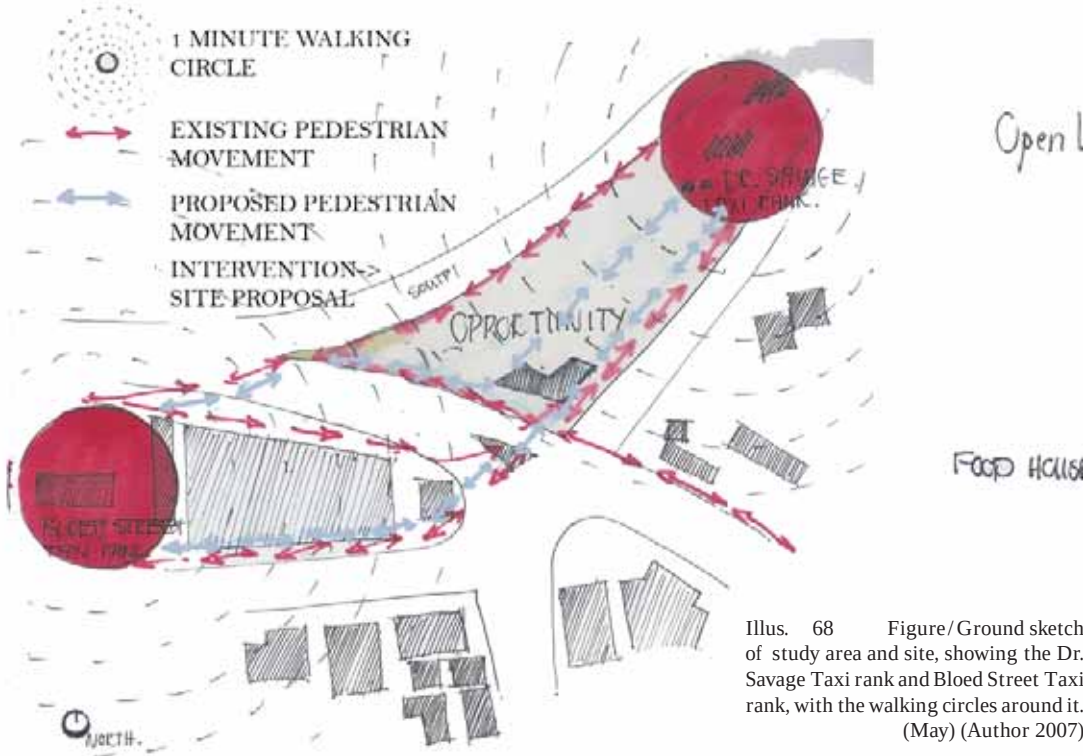
6.1 FACTORS INFLUENCING SITE SELECTION AND PROGRAMME

The figure-ground map of the study area indicates an undefined and illegible urban fabric, where a definite need for intervention on this north eastern edge of the city is necessary. As already mentioned, this area is characterized by major road networks which connect at a very important gateway intersection of the city of Pretoria. Due to the demolition of houses on the proposed site , as well as the demolition of part of the Carbonatto building, leaving it with its current form, the figure-ground map indicate not a missing piece of the urban fabric, but rather several missing pieces of the fabric.(illus.67) As a result, the existing building stands alone, alienated, like a torn piece from a canvas, eager to be threaded into the rest of the city canvas. This creates a need to connect the site to the urban city grid, which would hopefully be the start of an activity corridor connecting the rest of Pretoria North and surrounding Townships to Pretoria CBD. This need gave rise to a programme, which identified the elements from which the project took its form. (DEWAR ET AL 1991: 15) The idea of creating an activity corridor along the major connecting route to the north, contributed to the need of the site to be connected to the inner city grid. The surrounding context gave the idea of the activity corridor a specific place to connect from. (DEWAR ET AL 1991: 15) The proposed site, which is sandwiched in between busy incoming and outgoing routes, is in close proximity to the TUT Art Campus, the Prinshof Primary School and the UP Medical Campus and Academic hospital. These contextual factors gave a reality to the idea, after which several design responses followed.

Dewar and Uytenbogaardt see pedestrian movement as the primary definition of scale of urban development. Distance is the primary physical barrier to ease of access and therefore, the best situation arise when people can gain access to their daily activities by foot. (DEWAR ET AL 1991: 17) As the proposed site sits within five walking minutes from both



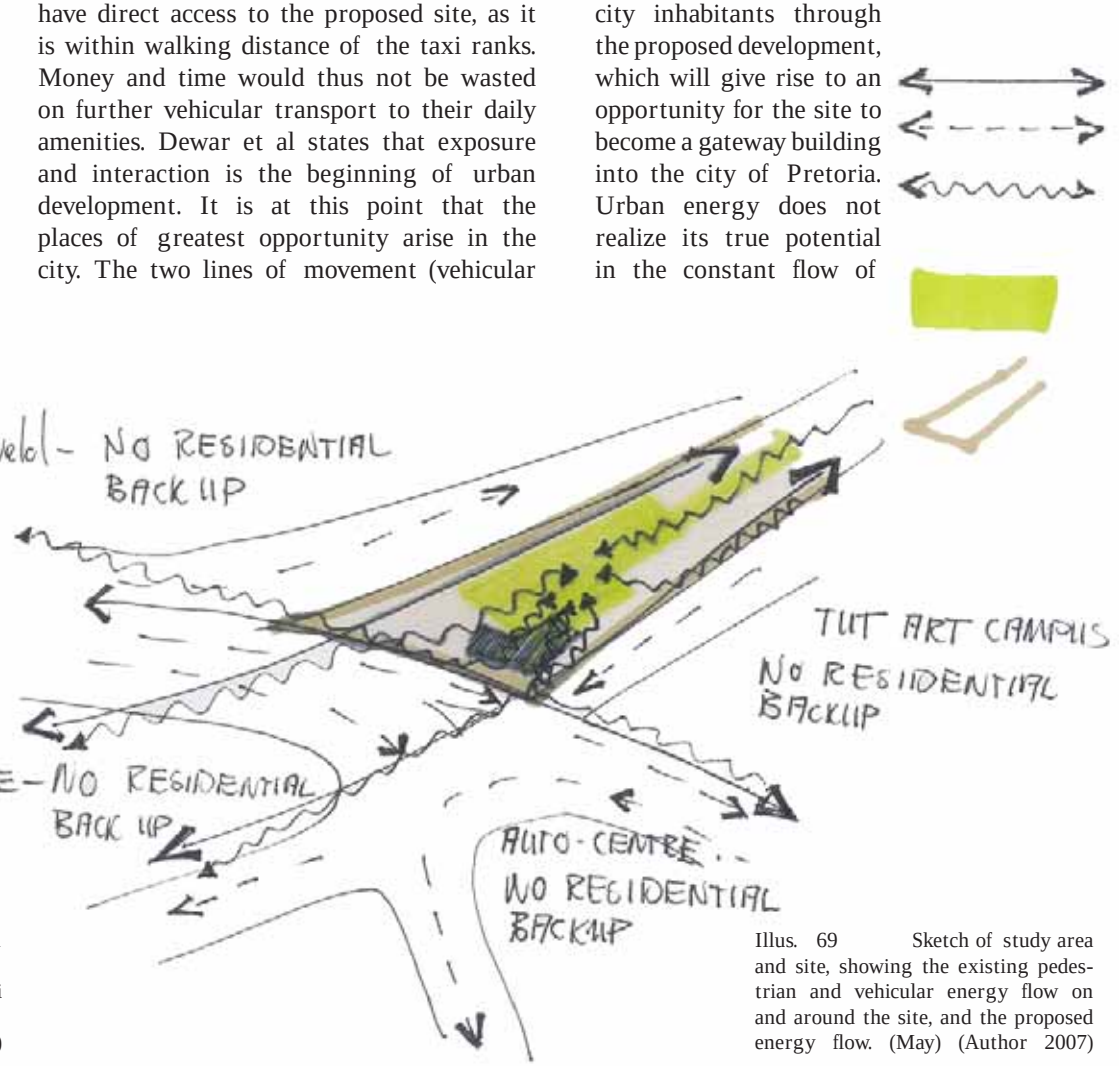
Illus. 67 Figure/Ground sketch of study area and site, showing the missing pieces of the urban fabric (May) (Author 2007)



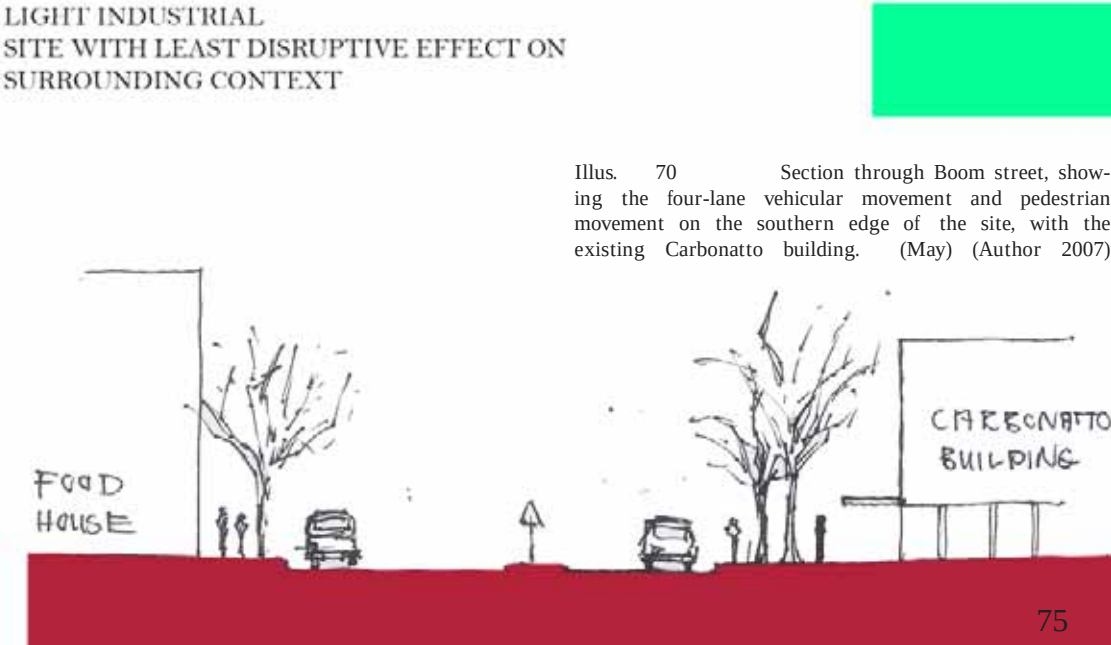
Illus. 68 Figure/Ground sketch of study area and site, showing the Dr. Savage Taxi rank and Bloed Street Taxi rank, with the walking circles around it. (May) (Author 2007)

the Bloed Street Taxi Rank and Dr. Savage Taxi rank, the site is easily accessible.(illus. 68) Workers for the proposed development that have to come into the city, therefore have direct access to the proposed site, as it is within walking distance of the taxi ranks. Money and time would thus not be wasted on further vehicular transport to their daily amenities. Dewar et al states that exposure and interaction is the beginning of urban development. It is at this point that the places of greatest opportunity arise in the city. The two lines of movement (vehicular and pedestrian) on and around the site coulcreate ample exposure as well as interaction amongst the city inhabitants through the proposed development, which will give rise to an opportunity for the site to become a gateway building into the city of Pretoria. Urban energy does not realize its true potential in the constant flow of pedestrian movement along and through the site, so that gathering occurs.(illus.69) This could be achieved by drawing the pedestrian's attention by means of colour and light into the site to promote gathering, whether it is to rest, to wonder, to dream or just to observe.

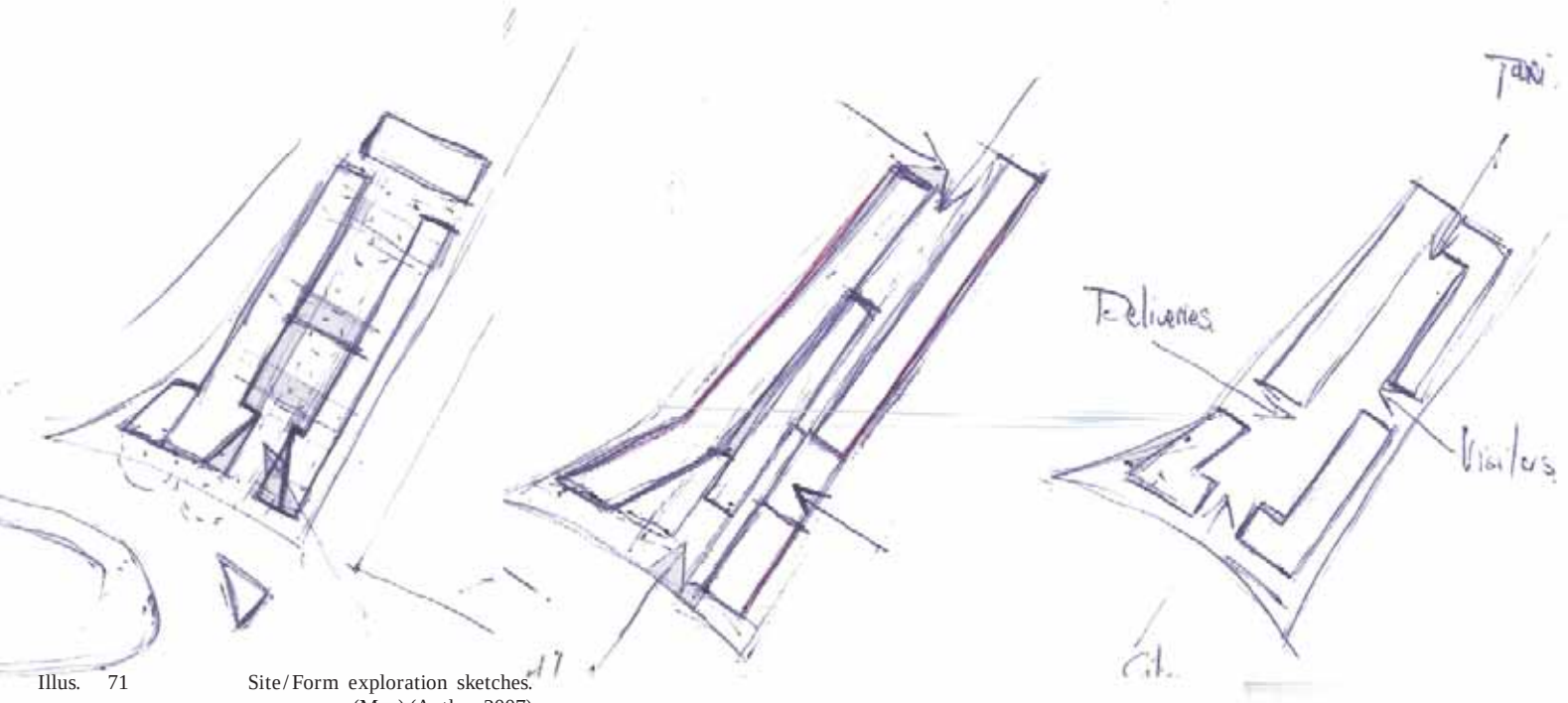
A central need in an urban city is the sense of wholeness, where the invisible is revealed. Through the revealing of something which is otherwise hidden from the city environment, the viewer would be interested and engaged which would eventually lead



Illus. 69 Sketch of study area and site, showing the existing pedestrian and vehicular energy flow on and around the site, and the proposed energy flow. (May) (Author 2007)



Illus. 70 Section through Boom street, showing the four-lane vehicular movement and pedestrian movement on the southern edge of the site, with the existing Carbonatto building. (May) (Author 2007)



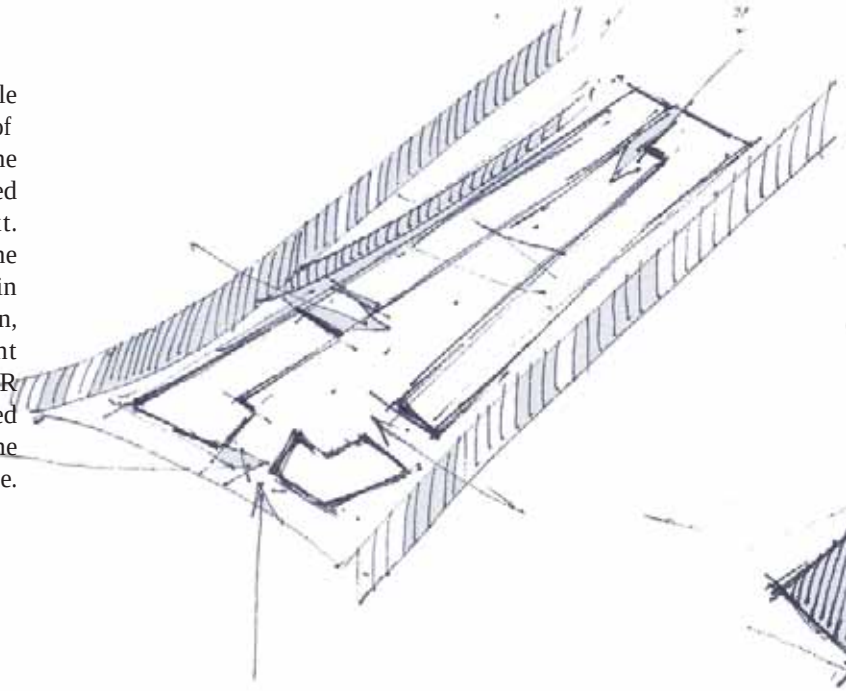
Illus. 71 Site/Form exploration sketches. (May) (Author 2007)

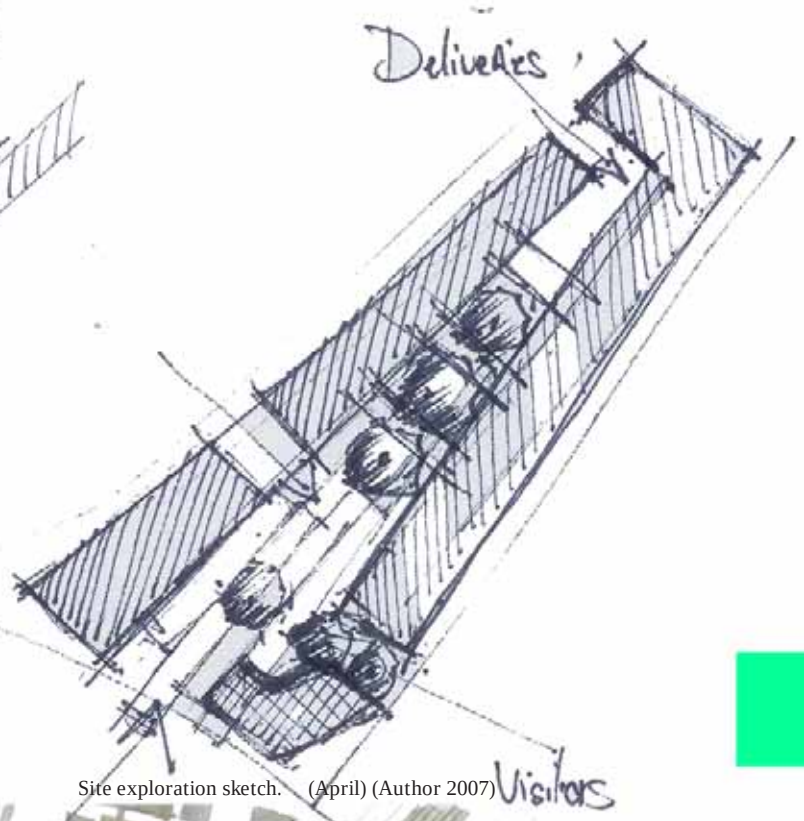
to a form of gathering, while an underlying sense of wholeness is experienced. CRANE 1960: p.280) The revealing of a specific process which is fundamentally part of our everyday lives, was one of the basic inspirations for the proposed development as a colour production hub, which would give pedestrians and visitors an opportunity to gather inside and around the space.

According to Dewar et al, industrial as well as space-intensive activities tend to occur where metropolitan accessibility is still high, with less residential back up.(illus.68) (DEWAR ET

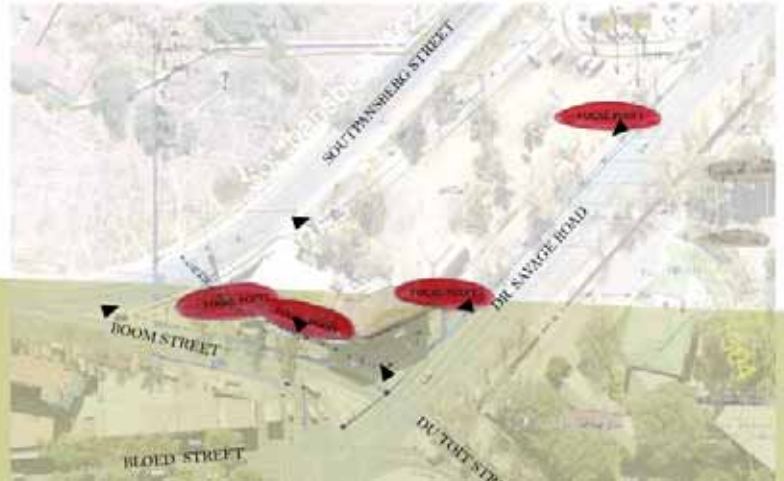
Illus. 72 North-South section through site. (April) (Author 2007)

AL 1991: 50) The proposed site is accessible on a city scale, with a definite lack of residential buildings in the area, making the light industrial programme of the proposed development feasible in the city context. The line of vehicular movement around the proposed site gives the space that forms in between an opportunity of lateral integration, where, according to Dewar et al, light industrial activities frequently occur. (DEWAR ET AL 1991: 50) This was also considered to be a main factor in the proposal for the development to be of a light-industrial nature.





Illus. 73 Site exploration sketch, showing the focal points onto the site. (April) (Author 2007)



Illus. 74 Site exploration sketch. (April) (Author 2007)

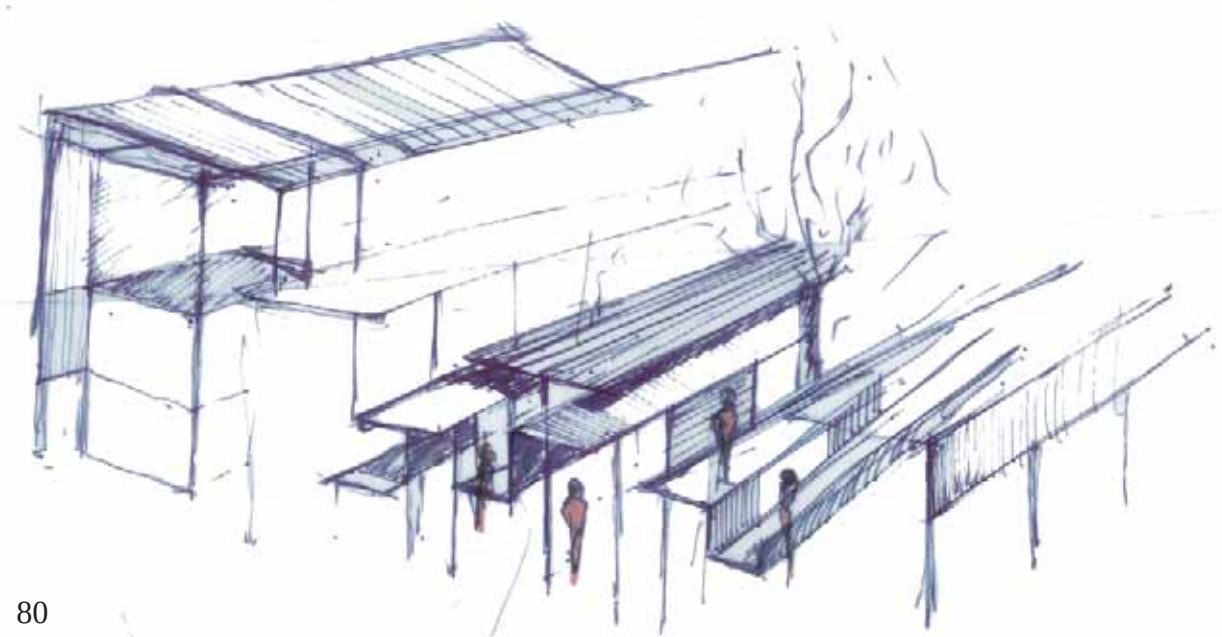
6.2 CONCEPTS

Through the site analyses it was established that the south western edge of the site would be best suited for the light-industrial paint production, as this programme has a definite need for deliveries of raw material, which would be possible from the taxi rank access road onto the site. The specific materials involved in the process of paint production created the need to be sheltered from direct exposure to sunlight and weather elements. These areas were placed on the western edge of the site, which would require protection from harsh western sun under any circumstances, as this is the longest edge of the site. The analysis also showed that the south western point of the site is best suited to announce the function of the building, as this area is where the major focal points from vehicular roads converge. The line of site of the approaching traffic from Boom Street turning either onto Soutpansberg Street or down Du Toit/Prinsloo Street, is also on this southern point of the site, making the façade ideal for imagery or or advertising. The design grew systematically from this southern point of the site.

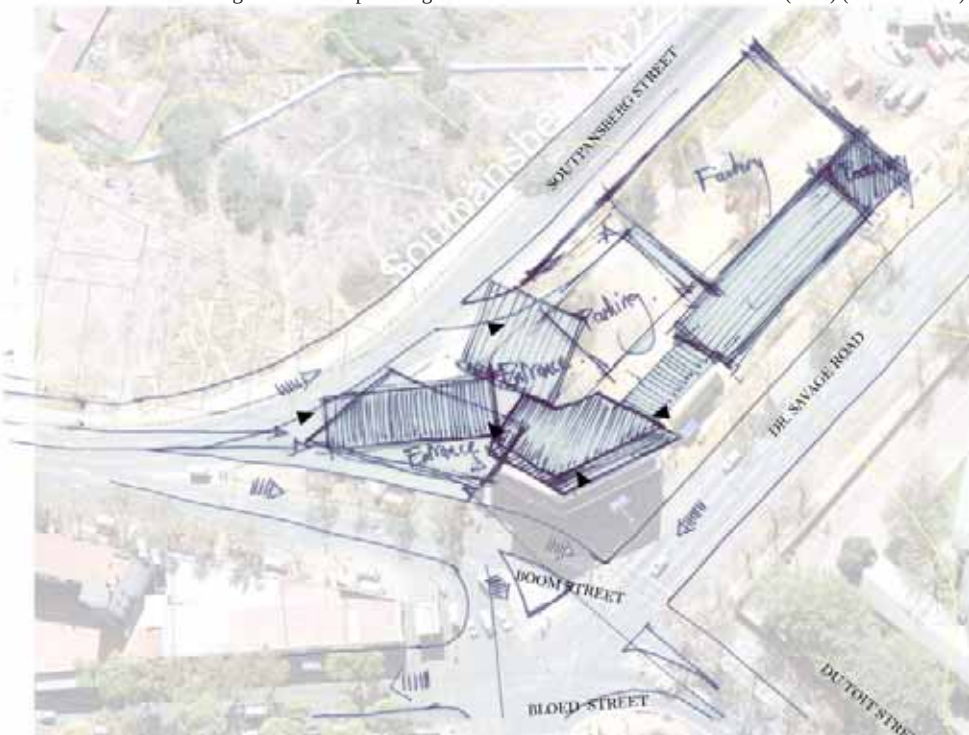
Pedestrian movement through the site was also a very important design factor from the start, where the concept of platforms and walkways originated. The visual link with these walkways was intended to spread in a fan pattern through the longitudinal site, drawing the observer and pedestrian into the central space between the buildings, through to the taxi rank, and vice versa. At this stage of the design the Carbonatto building's plans have not been found yet and thus not incorporated into the initial concept. This proved to be a challenge throughout the process of design.

Accessibility to and through the site was a major design factor as already mentioned. The longitudinal nature of the site made this requirement hard to incorporate into the program of the building, as a circular access road is normally employed in industrial buildings of this nature. The use of the taxi rank access road was employed from the second concept onwards, where the access

Illus. 75 Concept sketch. (June) (Author 2007)



Illus. 76a Design Process - planning (June) (Author 2007)

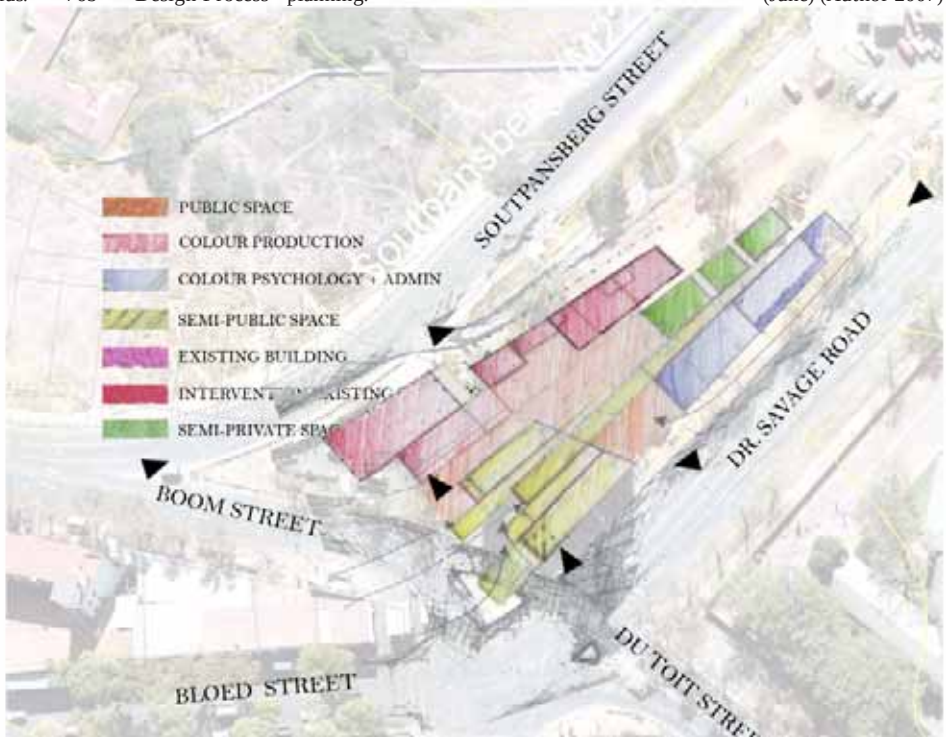


road split and leads into the main receiving entrance and delivery area. The delivery road turns towards the east on the northern side of the site, moving through an opening in the eastern building and turning into the one directional Dr. Savage Road, leaving the site.

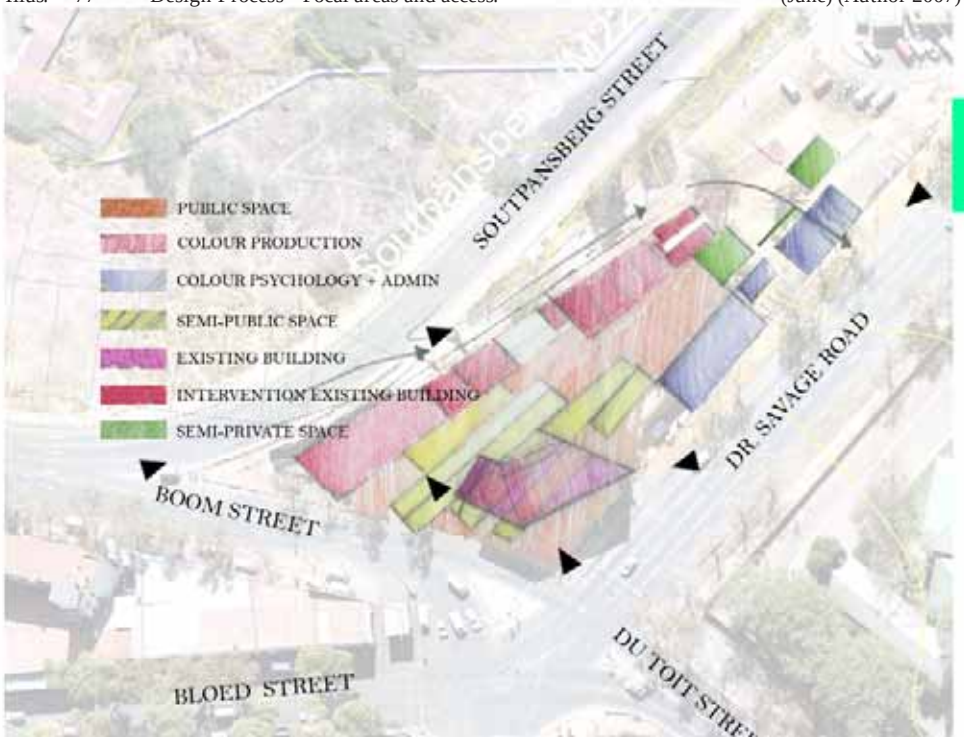
The main program required by the accommodation schedule, including the main paint production processes, was incorporated from early in the concept face. Each main function was allocated a specific colour code to make the program more legible. Red for colour production, blue for colour therapy and psychology, magenta for the exisiting building, green for access roads, orange for public space and yellow for semi-public space. From the first concepts to the last design resolution, there is a distinct resemblance between the allocation of the program, with only slight changes occurring where the existing building touches the proposed development, which is indicative of the level of difficulty by which such an existing structure is incorporated into a new design proposal. It was important that the proposed development not overshadow the existing Carbonatto building, but rather frame the building in a subtle way, so that the heritage and landmark value of the existing structure can be celebrated. The existing building would be refurbished, while completely opening up the ground floor through the removal of infill walls, leaving mainly the column structure. This would be more visually inviting on a pedestrian scale, as a visual link to the gathering space and rest of the development can be established.

Throughout the concept phases, the initial concept of the walkways remained central to the scheme of the project. Several design solutions for this concept was explored. It was important that the walkways act as a movement generator throughout the site, as well as serve dually as viewing platforms from where the paint manufacturing process could be observed. Public and semi-public space was also explored, while the security aspect played a big role in the solution thereof. Further in the concept phase, the fall of the site was incorporated to achieve a level of security from the casual observer

Illus. 76b Design Process - planning. (June) (Author 2007)



Illus. 77 Design Process - Focal areas and access. (June) (Author 2007)



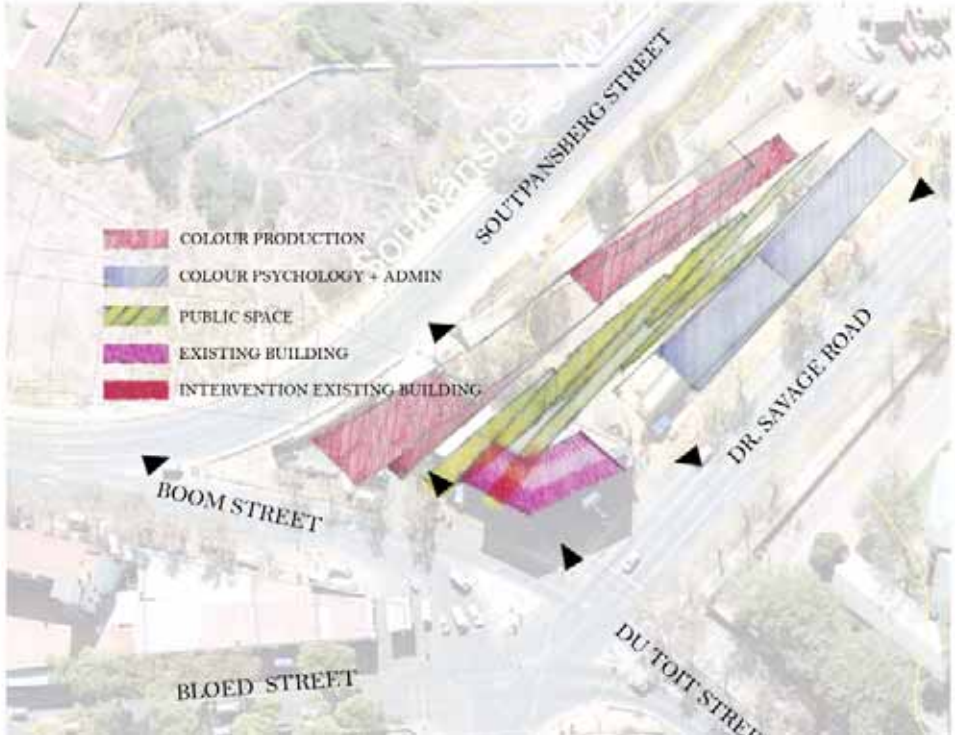
by cutting the ground level walkways into the ground surface, creating seating areas around the gathering space which lead back into the building on the eastern edge.

The basic form of the first concept was carried throughout the design process, with the southern half of the building extending and the north eastern half of the building receding. This concept developed as a result of the vehicular movement around the site, with both halves extending toward the direction of approaching vehicular movement. This extending of the two building volumes announces the passer by's arrival into, or departure from the city, almost as if in a hurry to grab their intension while subtly leading their gaze along the façade of the building. Where the building façade opens up, the spectator's gaze would be fixed onto focal areas of importance.

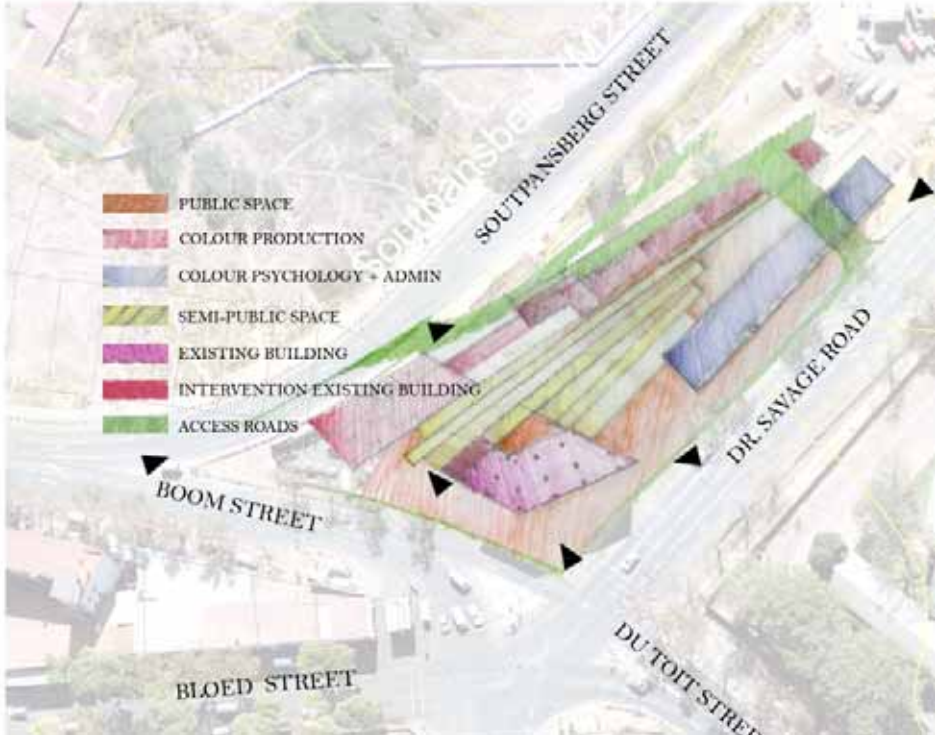
The final design resolution incorporated the notion of revealing the invisible by the distinct hierarchy between solid and transparent surfaces. Where the production process becomes visually important, as well as other areas that denote importance of programme, the façade becomes transparent through the use of glass boxes that penetrate the solid surface of the concrete structure. This form of contrast links with the concept of using raw concrete as main building element, while intervening with painted and coloured areas where light comes into play, to contrast with the shades of grey of the main concrete structure. The building literally becomes a canvas for the exploration of colour and light.

As the theoretical investigation concentrated on the use of colour and light in architecture, this was explored throughout the concept phases. Colour and light became the medium through which legibility of the proposed building could be achieved, by modifying our impression and perception of the building's form and planes. The effect that mainly colour, but also light has on the proposed development, will only be realized and understood with the final design resolution, through the building of a detailed scaled model, as well as through the use of perspectives showing the use

Illus. 78 Design Process - planning. (June) (Author 2007)



Illus. 79 Design Process - planning. (June) (Author 2007)

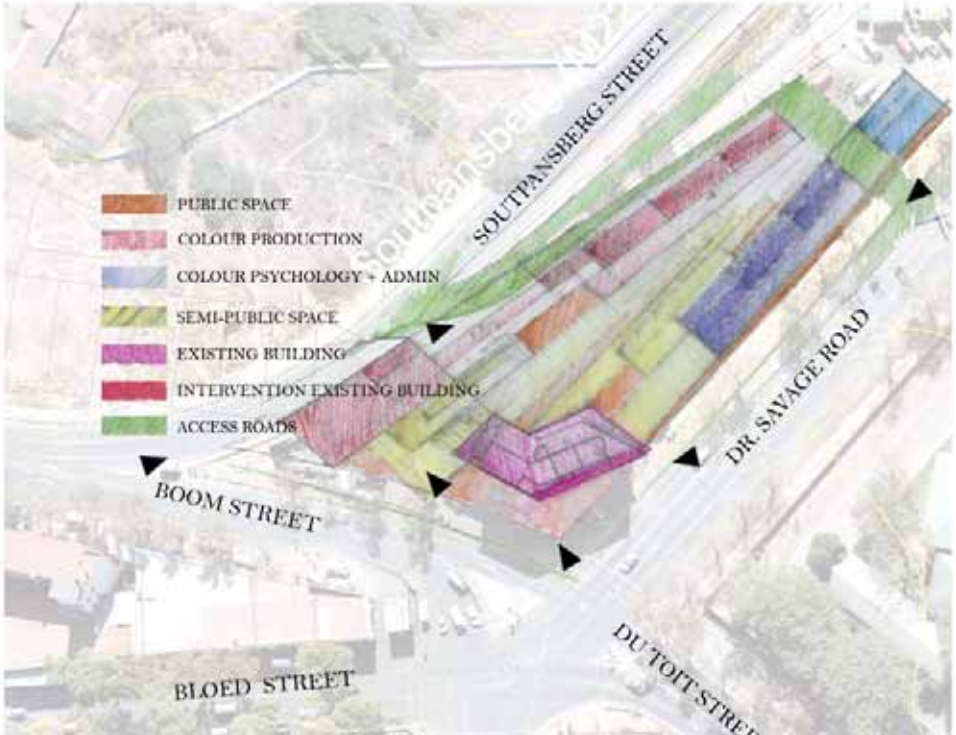


of colour. The initial concept models were built with balsa wood, as their function was mainly to explore the building's form and programme, and therefore colour was not explored in these models. The final model and perspectives is yet to be done, with which the application of the theoretical investigation would become evident in creating meaningful architectural space within the city fabric.

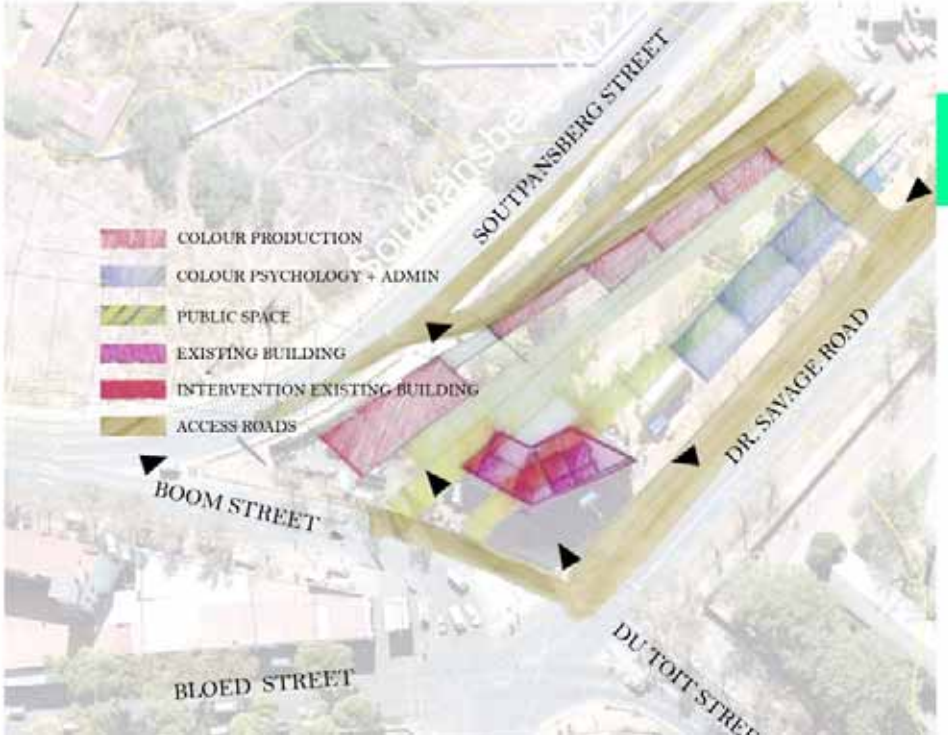
The architectural language of the proposed Colour Production Hub reflects the need of people to see what is concealed under normal circumstances. This revealing becomes evident in the language of the building by the use of transparent surfaces which offer the individual glimpses into the workings of a paint producing factory. This creates a direct relationship between the building and the individual, where he/she feels involved in the process and therefore involved in the working of the city's identity.

The therapeutic component of the design employs colour on a bigger scale, as the perceiving of colour has a direct with the individual's psyche. As the individual is constantly bombarded by colour, the emotional response to colour would only be realized by him/her when a definite application of colour is presented to him/her. The design therefore employs this medium that can only be experienced through the existence of light, to enhance the individual's perception of the building, and therefore recognize the importance of the building as a landmark in its context of a gateway, which must be celebrated.

Illus. 80 Design Process - planning. (June) (Author 2007)



Illus. 81 Design Process - planning. (June) (Author 2007)

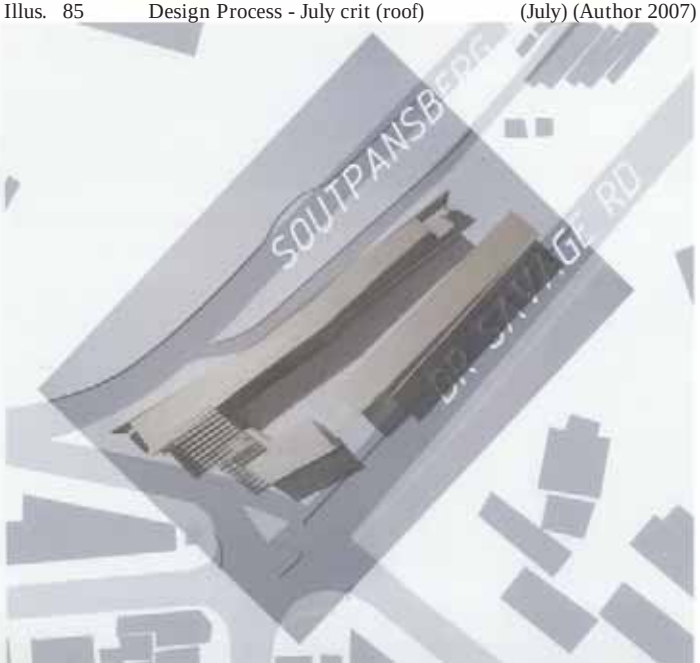


Illus. 82 Design Process - July crit (Focal points) (July) (Author 2007)

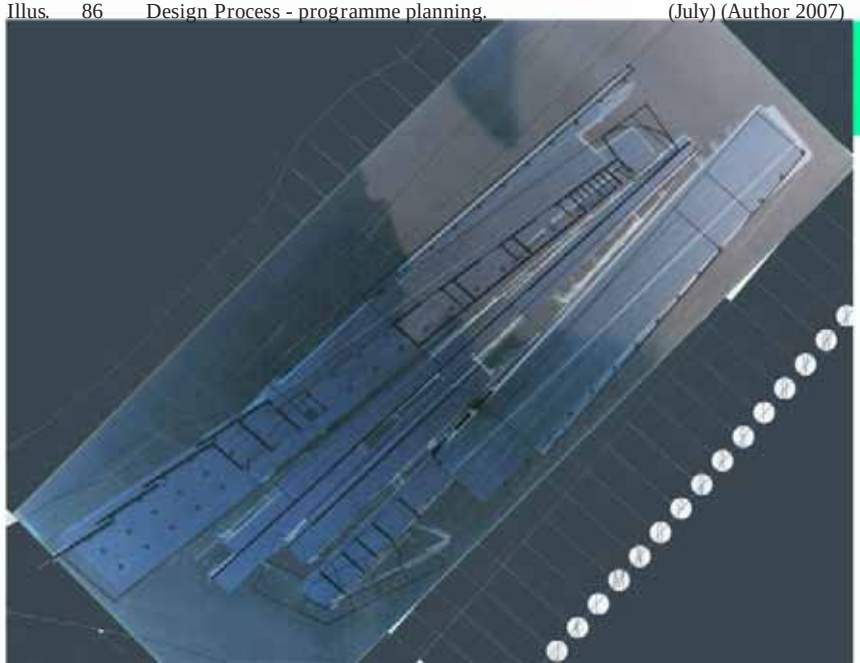
Illus. 83 Design Process - July crit (Primary, secondary, tertiary production) (July) (Author 2007)

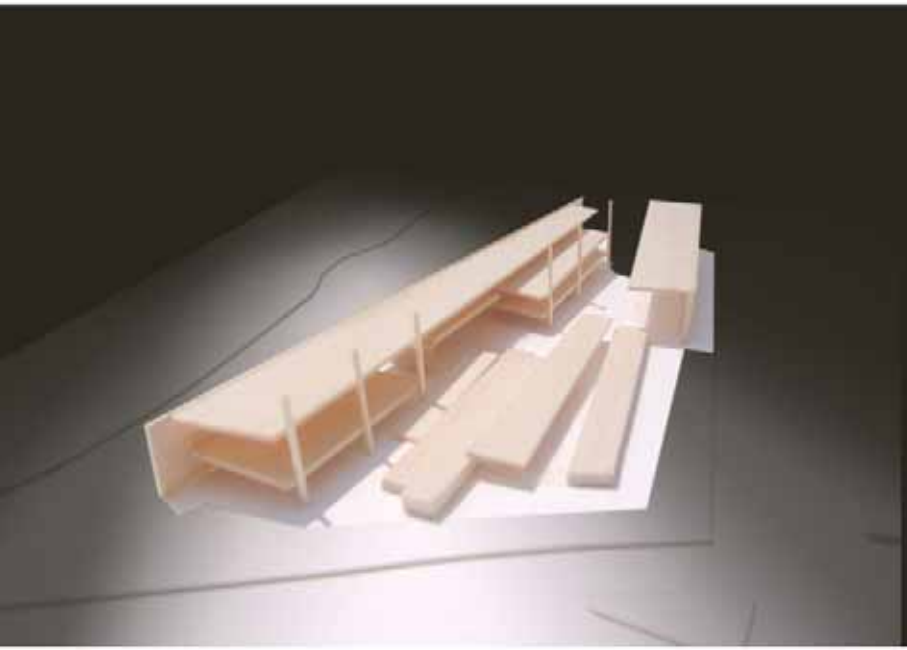
Illus. 84 Design Process - July crit (form) (July) (Author 2007)

Illus. 85 Design Process - July crit (roof) (July) (Author 2007)

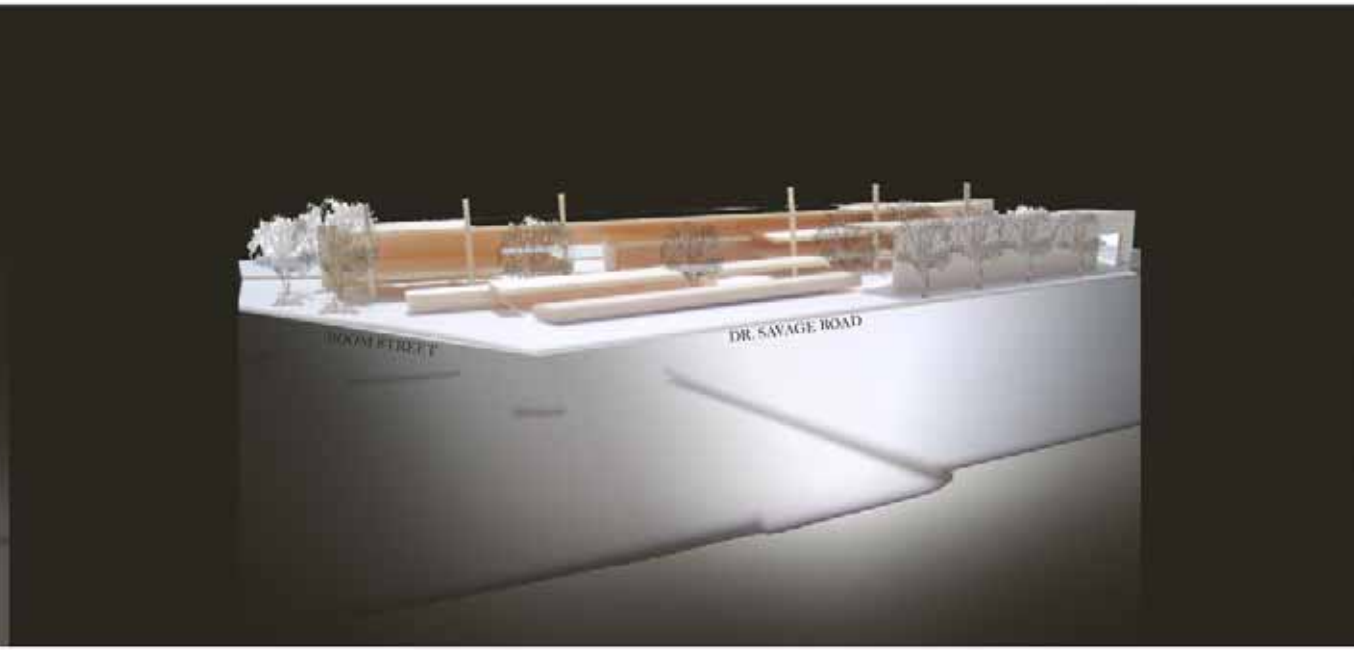


Illus. 86 Design Process - programme planning. (July) (Author 2007)



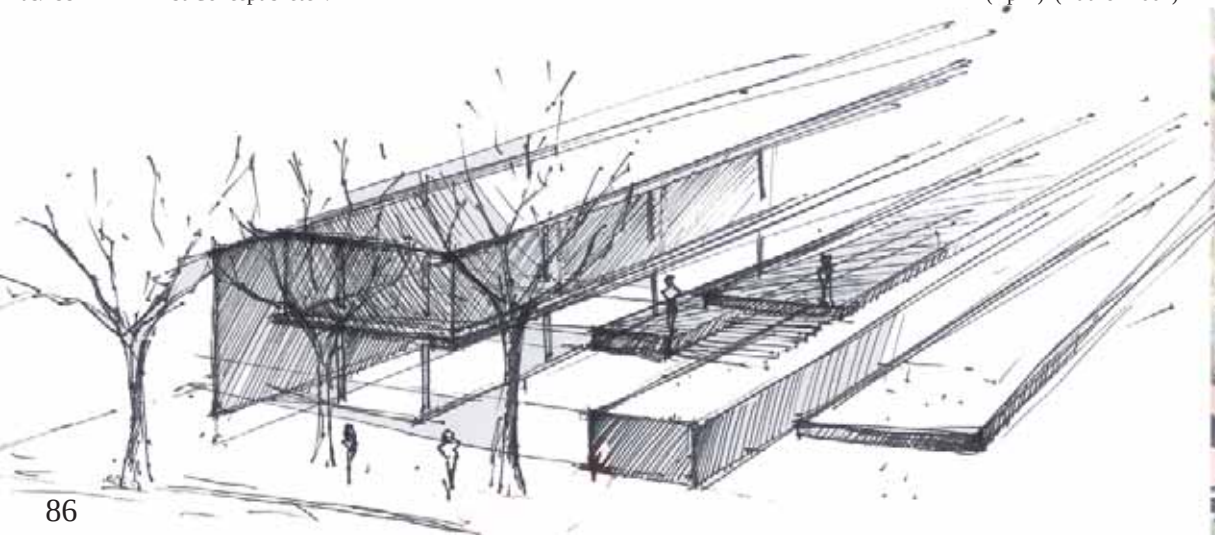


Illus. 87 Concept model 1, April 2007, Balsa wood. (Author 2007)

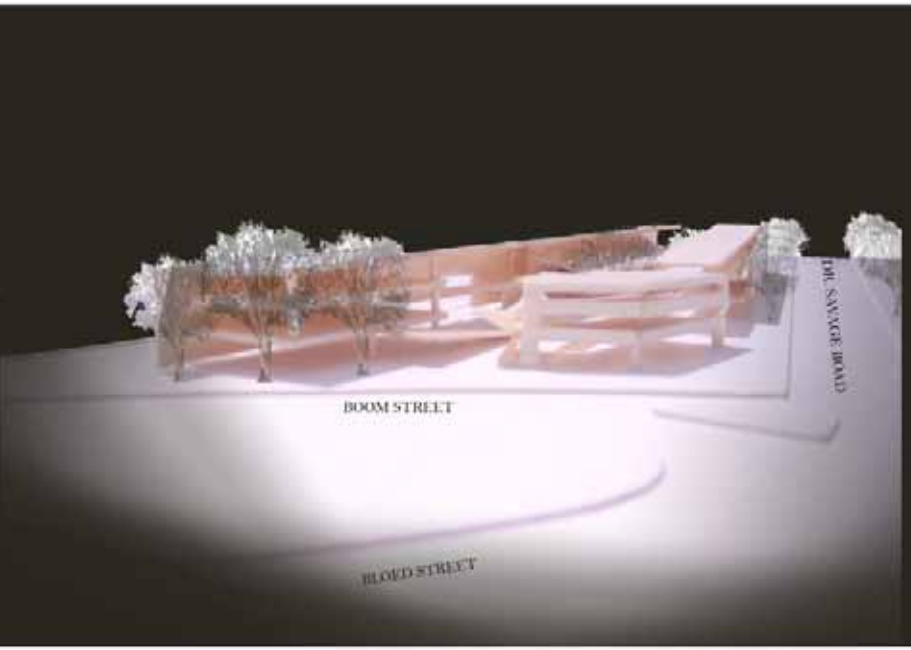


Illus. 89 Concept model 1, April 2007, Balsa wood. (Author 2007)

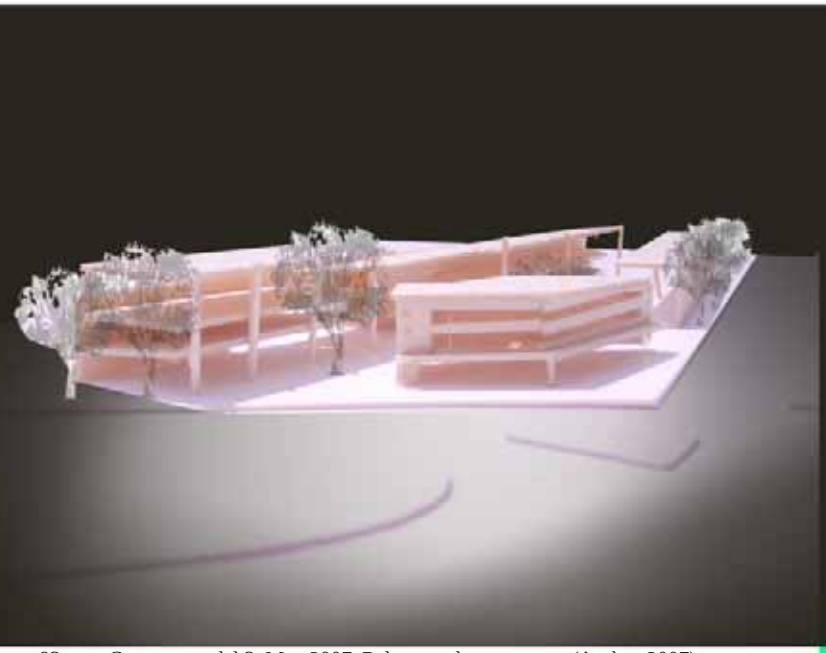
Illus. 88 First Concept sketch. (April) (Author 2007)



Illus. 90 Concept model 1, Aerial view. (April) (Author 2007)



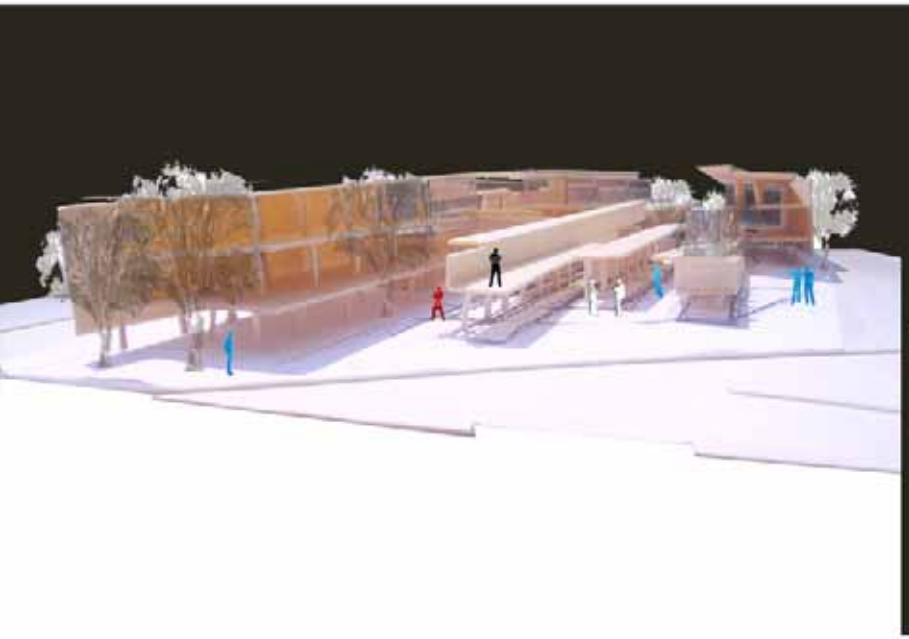
Illus. 91 Concept model 2, May 2007, Balsa wood. (Author 2007)



Illus. 93 Concept model 3, May 2007, Balsa wood. (Author 2007)

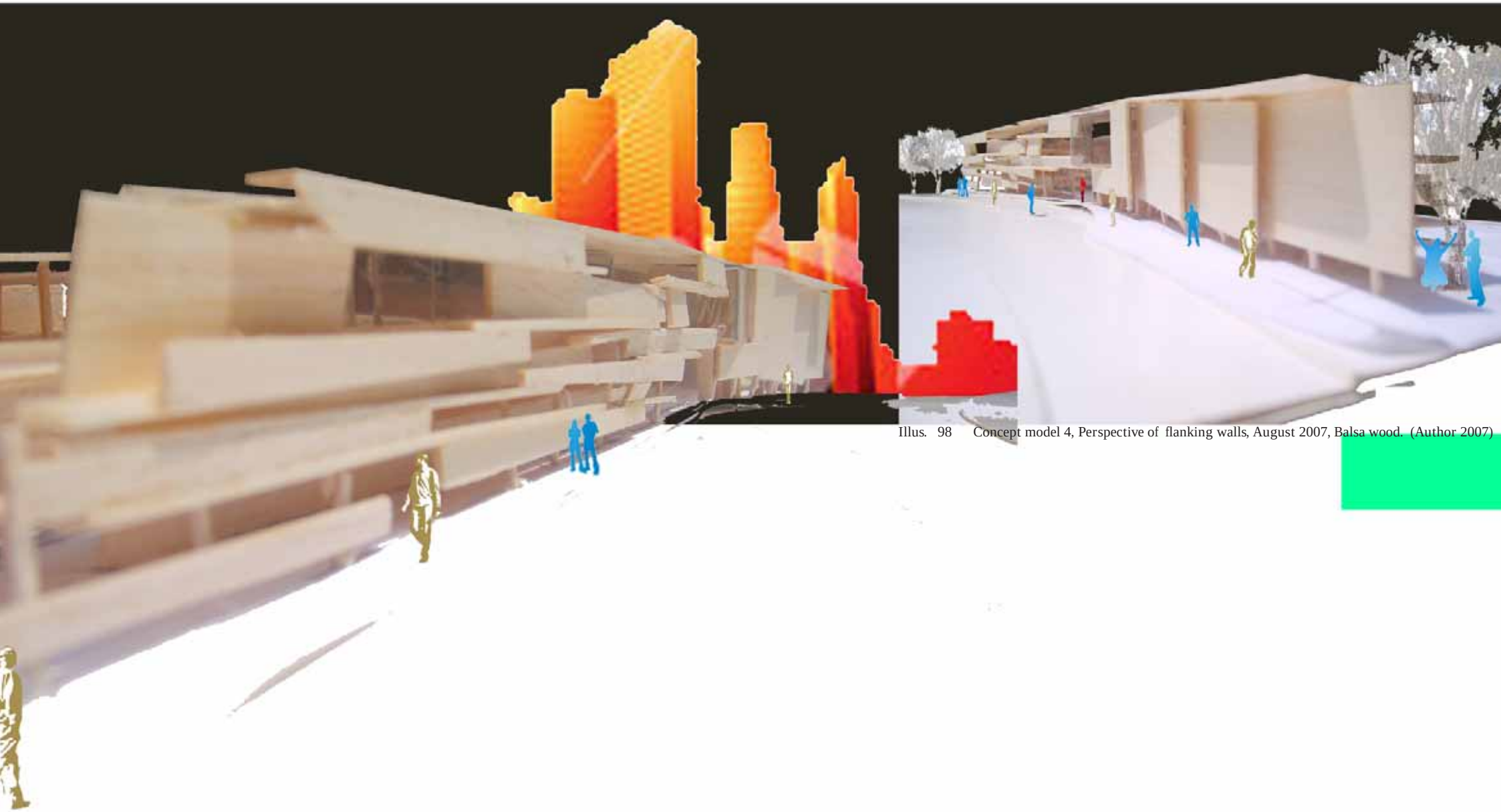
Illus. 92 Concept model 2, Aerial view. (May) (Author 2007)

Illus. 94 Concept model 3, Aerial view (June) (Author 2007)



Illus. 95 Concept model 4, Perspective of walkways, August 2007, Balsa wood. (Author 2007)

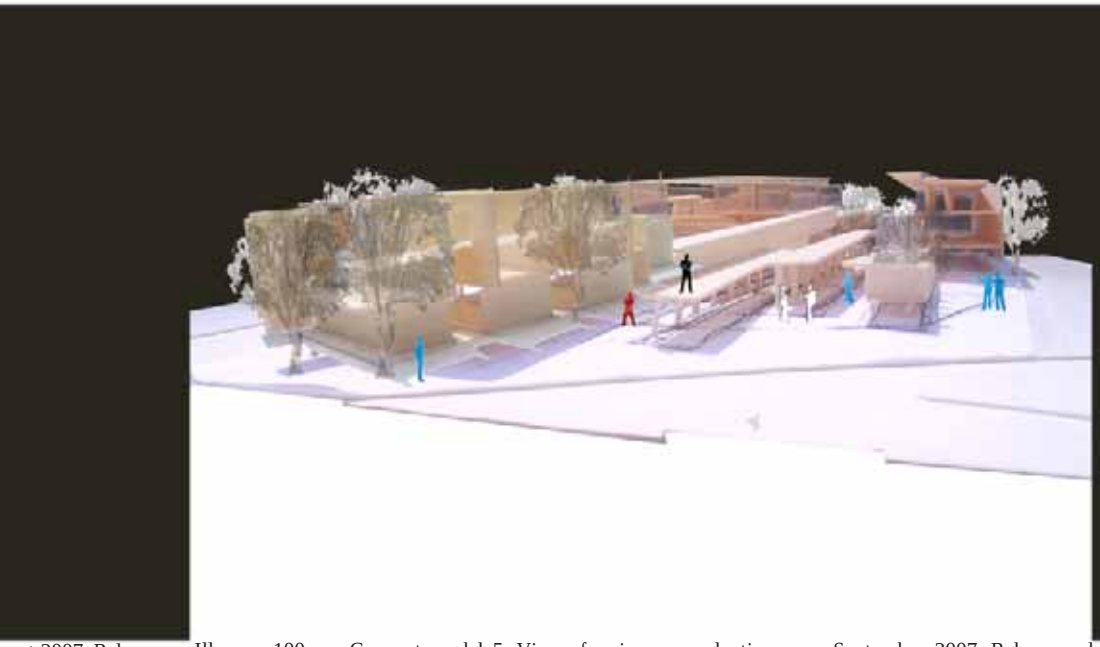
Illus. 96 Concept model 4, Perspective of the southern edge, August 2007, Balsa wood. (Author 2007)



Illus. 98 Concept model 4, Perspective of flanking walls, August 2007, Balsa wood. (Author 2007)

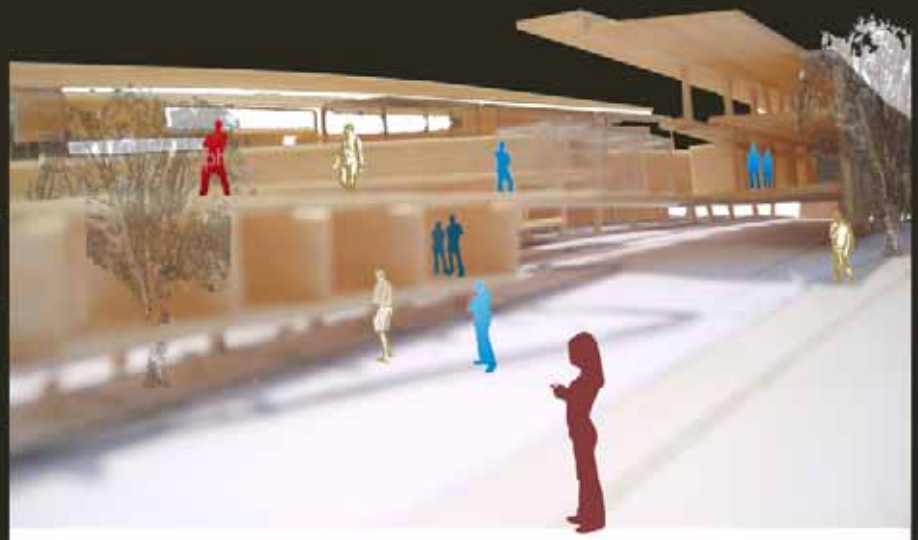
Illus. 97 Concept model 4, Perspective of western brise-soleil wall, August 2007, Balsa wood (Author 2007)

Illus. 99 Concept model 4, view toward the south, Aug
wood.



gust 2007, Balsa (Author 2007)

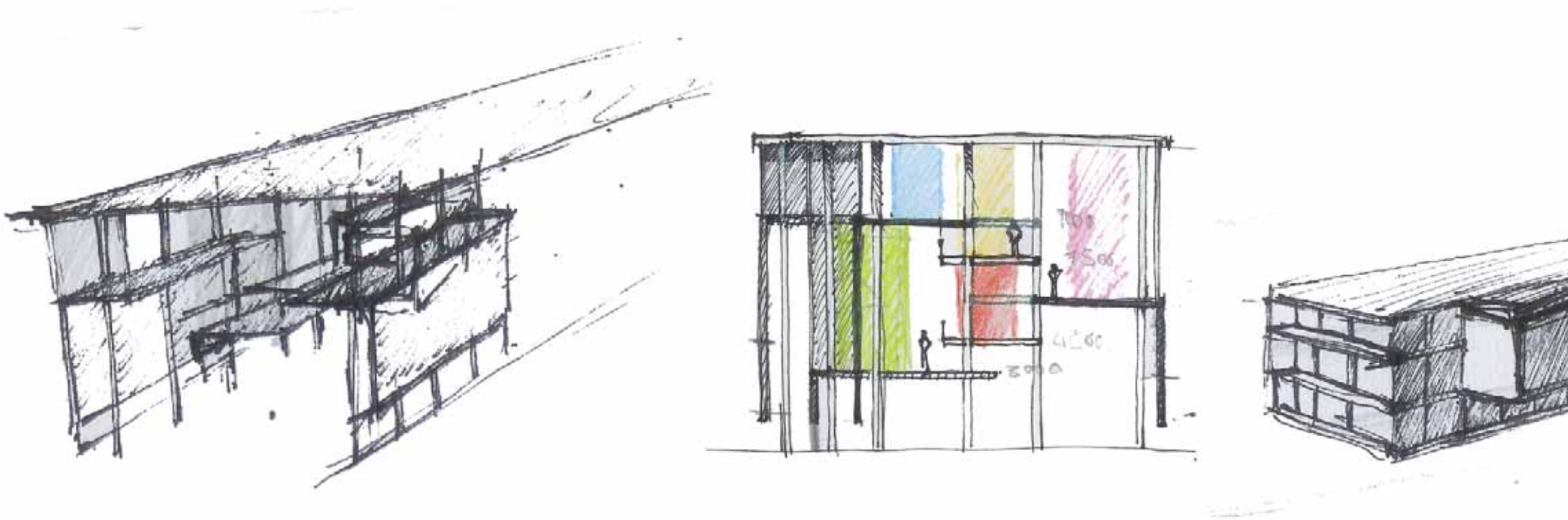
Illus. 100 Concept model 5, View of primary production area, September 2007, Balsa wood (Author 2007)



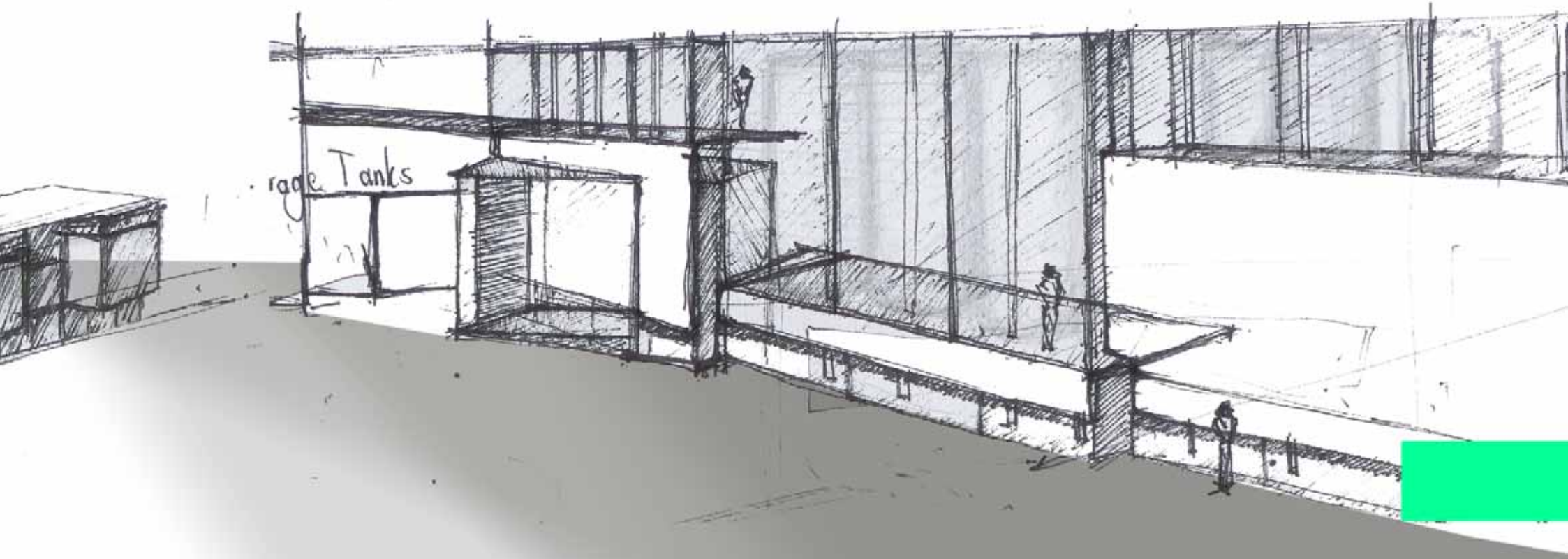
Illus. 102 Concept model 5, View of art exhibition space, September 2007, Balsa wood. (Author 2007)

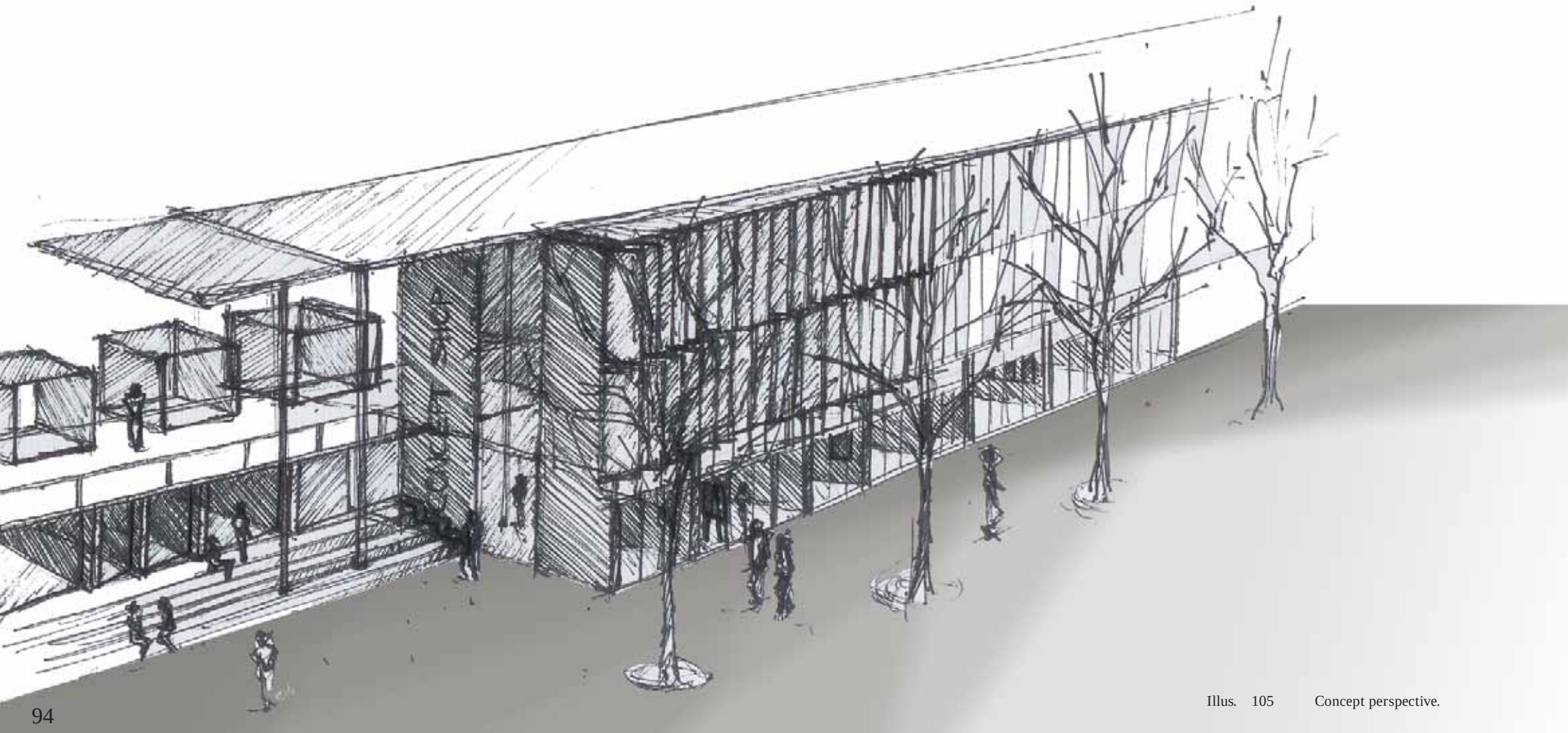
Illus. 101 Concept model 4, Aerial view. (August) (Author 2007)

Illus. 103 Concept model 5, Aerial view. (September) (Author 2007)



Illus. 104 Concept sketches. (Author 2007)


rage Tanks



Illus. 105 Concept perspective.

7. CONCLUSION

- "There are not more than five primary colours (blue, yellow, red, white and black), yet in combination they produce more hues than can ever be seen."
- "Life has loveliness to sell, all beautiful and splendid things, blue waves whitened on a cliff, soaring fire that sways and sings, and children's faces looking up, holding wonder like a cup." - *Sara Teasdale (1884-1933)*

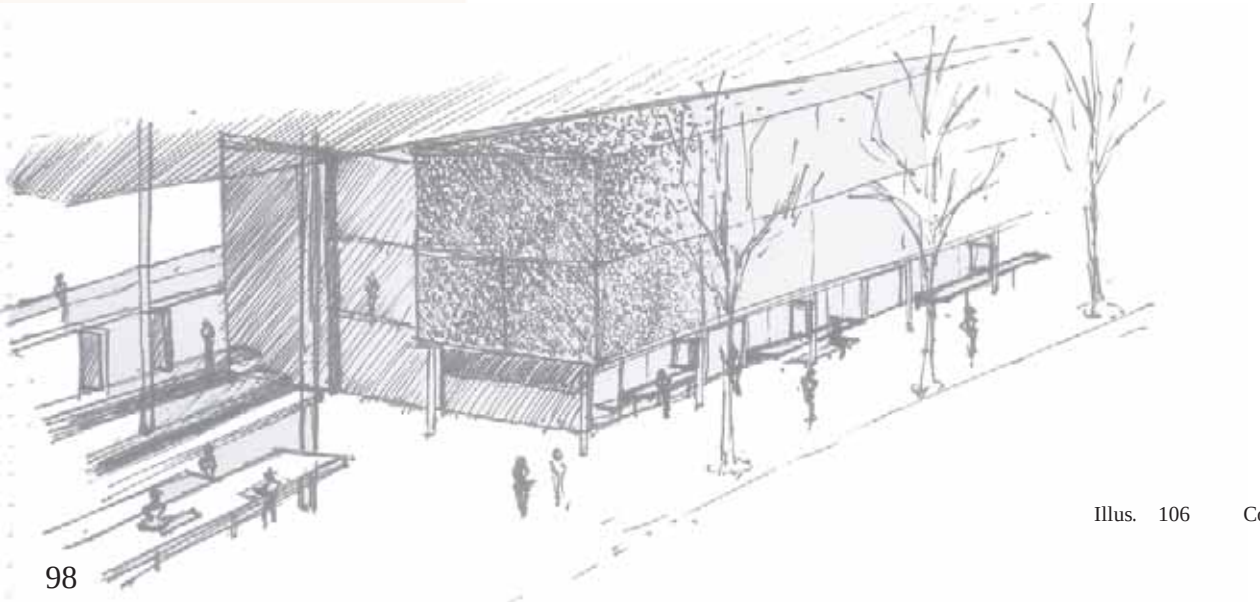
5. CONCLUSION

This dissertation is an investigation of the use of colour and light in creating a meaningful architectural identity and space in an urban environment. The author is of the opinion that there is a lack of attention given to these mediums which could, if used correctly, change the individual's perception of his surrounding environment. As colour and its significant emotional effects on the human being are subjective, there is no definite recipe for creating a meaningful architectural identity and space. Research on the subject produced only scientific information on colour, with a view references to colour and its use in architecture. Unfortunately these references tend to be outdated. This made the task of the author very hard as the written records of combining colour in architecture are limited.

The research was thus mainly based on visual references, where the designs of early masters, as well as a few contemporary architects and designers were investigated. It became evident that the synergy of light and colour in architecture has the ability to create architecture which is meaningful and visually stimulating. These architects understood the importance of using light (and therefore also colour) as medium to inform there architecture.

How a building is perceived and how it responds to its context is altered by the use of colour and light. The program of the building as mainly a paint production factory gives reference to the importance of colour in the individual's daily life. With the specific context of the site, and its importance as a gateway, the use of colour and the play of light in movement were employed in the design to celebrate the building, while simultaneously serving as a landmark. The context of the site became the main form giver together with the specific programme of the building. As colour does not exist without light, light became the main space defining medium of the building.

The site under investigation posed to be challenging in addressing the programme of the proposed building. The significance of the existing building on the site had to be considered in formulating an appropriate design solution. The author chose to frame



Illus. 106 Concept sketch (August) (Author 2007)

the existing building by the proposed development, while subtly penetrating into the ground floor space as to establish a physical connection between new and old development.

The architectural language of the proposed project strives to establish a connection between building and nature through the use of colour and light. The connection between individual and his/her physical environment would be established through the involvement of the individual with the colour producing process. The visitor to the site can use the building as a form of expression. This is achieved through the provision of studio spaces and walls to paint on, as well as areas where the visitor can produce his/her own paint. The individual's involvement in altering his/her environment through the use of colour, make him/her part of the process and therefore part of the urban fabric.

The proposed project does not serve as the exact answer on how to apply colour in the architectural field, but rather to explore how, through the use of this media and its interaction with light, meaningful architectural space within a given programme could be made in the urban fabric.

8. TECHNICAL INVESTIGATION

- "You don't have to travel aound the world to understand that the sky is blue everywhere." - *Johann Wolfgang von Goethe (1749-1832)*
- "Artists can colour the sky red because they know it's blue. Those of us who aren't artists must colour things the way they really are or people might think we're stupid." - *Jules Feiffer*

8. TECHNICAL INVESTIGATION

8.1 DESIGN INFLUENCES

Villa Mairea, Noormarkku, 1938
Architect: Alvar Aalto

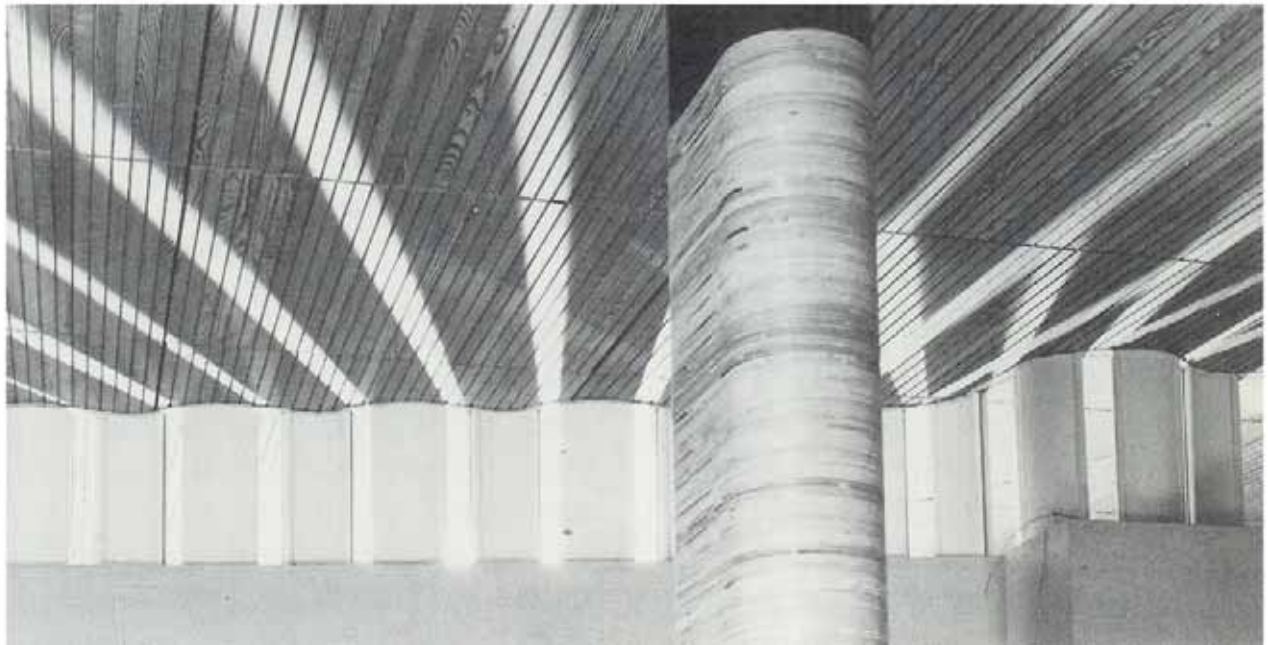
The building is a summer house for the family Gullichsen, which Aalto designed in 1937. A variety of free form elements changed the spirit of the building to one of playfulness. These elements can be seen on the entrance view, as volumes projecting and cantilevering at a different angle than that of the façade wall. A rich play of shadows can be seen on the façade as a result of this. Aalto also designed the living room details in such a way that light falls in dramatically through slices of clerestory windows, casting a play of shadows and light onto the wooden ceiling.
(PEARSON 1978: p.174-175)

Cemetry master plan, Lyngby, Denmark, 1951
Architect: Alvar Aalto

In the master plan for the cemetery, Aalto used his well known wedge or fan arrangement, which was taken from his established vocabulary. The pathways are themselves straight, although rarely parallel and different in length. This arrangement opens the space from one building or mass to another. Aalto frequently used this fan arrangement, in his planning as well as in design, to preserve some natural aspect of the site.
(PEARSON 1978: p.220-221)

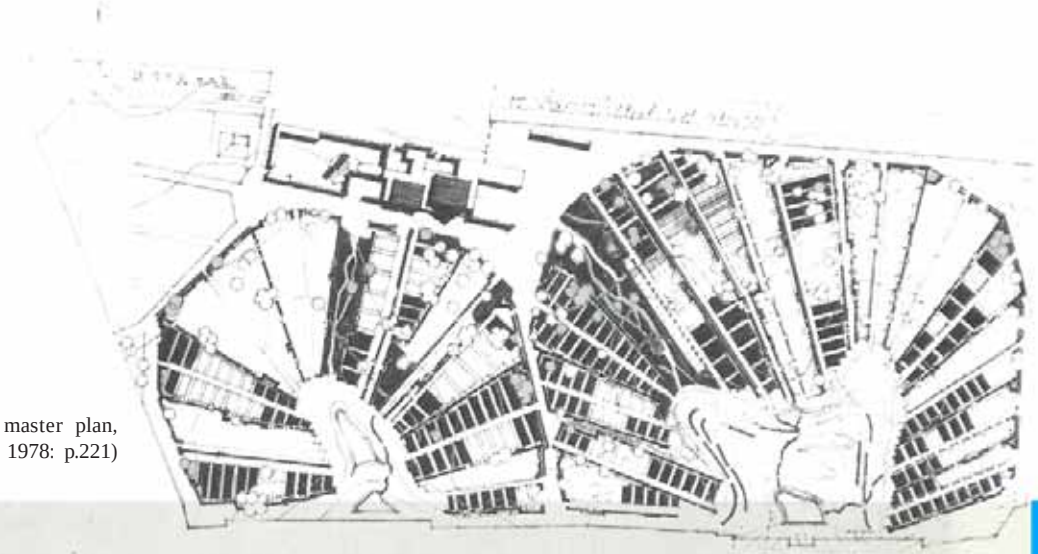
Town Center development, Seinäjoki, 1953-67
Architect: Alvar Aalto

The earthen steps at Seinäjoki are designed by Aalto as a way to preserve some natural aspect of the site. Here it is used as a reinforcement of the contour line. This element keeps the building in close contact with its natural context while giving it is unique architectural identity.
(PEARSON 1978: p.220-221

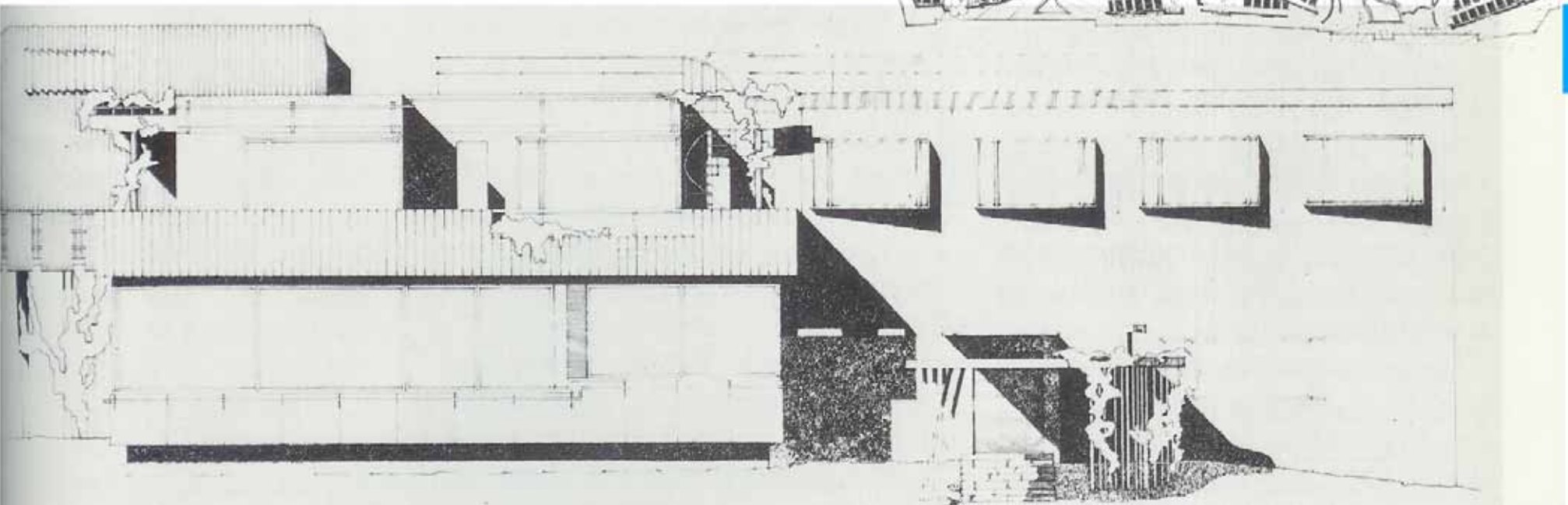


Illus. 107 (left) Villa Mairea, completed house, entrance view, Noormarkku, 1938, Alvar Aalto (PEARSON 1978: p.174)

Illus. 108 (right) Villa Mairea, completed house, living room details, Noormarkku, 1938, Alvar Aalto (PEARSON 1978: p.175)



Illus. 110 (right) Cemetery master plan, Lyngby, 1951, Alvar Aalto (PEARSON 1978: p.221)



Illus. 109 (below) Villa Mairea, final version, southern elevation, Noormarkku, 1938, Alvar Aalto (PEARSON 1978: p.175)

Salk Institute for Biological studies, La Jolla, California, 1959-65
Architect: Louis I. Kahn

Kahn used off-shutter concrete as the main building material in the Salk Institute. His love for raw concrete can clearly be seen in this design. The design shows his interpretation of 'Between Silence and Light', which was his main motivation behind the scheme, where the concrete formwork is emphasized by the play of shadows and light. Concrete formwork was also applied for the design of the water outlets (scupper), showing Kahn's ability to design everything to the last detail. (Architecture and Urbanism 1975: p.188-199)

Illus. 111 Town center development, view of town hall with church, Seinajoki, 1953-1967, Alvar Aalto. (BAIRD 1970: p.94-95)

Illus. 112 Salk Institute for Biological Studies, view through central court, La Jolla, California, 1959-1965, Louis I. Kahn. (ARCHITECTURE AND URBANISM 1975: p.188)

Illus. 113 Salk Institute for Biological Studies, passage under administration offices, La Jolla, California, 1959-1965, Louis I. Kahn (ARCHITECTURE AND URBANISM 1975: p.199)

Illus. 114 Salk Institute for Biological Studies, scupper on balcony corridor, La Jolla,California, 1959-1965, Louis I. Kahn.
(ARCHITECTURE AND URBANISM 1975: p.195)

Illus. 115 Salk Institute for Biological Studies, scupper from inside balcony corridor, La Jolla,California, 1959-1965, Louis I. Kahn.
(ARCHITECTURE AND URBANISM 1975: p.195)

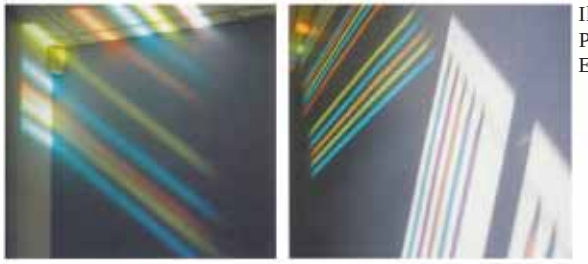
Fire and Police Station, Berlin, Germany, 2004 / Photonics centre, Berlin, Germany, 1998
Architect: Sauerbruch and Hutton

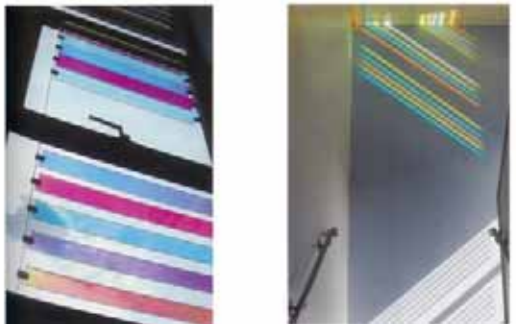
The glazing for the building is printed with an opaque enamel in a reverse dot pattern, with the dots clear and the background printed. At night the building is a dramatic patchwork of red and green. This design shows how the architects work with the dominant program of the building and the colour resembling this program. The red glazing is also contrasting with glazing in its complimentary colour, green, to form a façade with a unique architectural language. From a distance the Venetian blinds, at the Photonics Centre read as coloured glazing, with unusual patterns of reflections that are magnified by the organic form of the building. The blinds create a delicate and irregular play of light in the interior, which is different from the effects achieved with coloured glazing. The blinds can also be controlled individually by the occupants. The 36 different shades of the blinds allude to the theme of optical research that is carried on inside the building. (MOOR 2006: p.34-39)

Illus. 116 Fire and Police Station, Berlin, Germany, 2004, Sauerbruch & Hutton. (MOOR 2006: p.39)

‘Ladder of Light, Papworth Hospital, Cambridge, England, 2003
Architect: Chris Wood

This feature was designed by Wood to create an artwork for the large blank wall of the stairwell of a new extension to the hospital. This work is a simple structure of suspended panels dichroic glass, which project changing geometric forms of coloured light onto the opposite and adjacent walls when illuminated





Illus. 117 “Ladder of Light”, Papworth Hospital, Cambridge, England, 2003, Chris Wood (MOOR 2006: p.139)

by natural or artificial light. This is a clear example of the kinetic qualities that coloured glass possess, which engages the viewer directly with the optical kinetics produced by the shifting positions of the viewer and the varying quality of the light source. (MOOR 2006: p.139)

Illus. 118 Photonics Centre, Berlin, Germany, 1998, Sauerbruch & Hutton (MOOR 2006: p.34)

Storefront for Art and Architecture,
New York, 1993
Architect: Steven Holl Architets
with Vito Acconci

Holl used structural concrete board for the facade of this gallery which opens with hinged panels. The different angles at which the facade opens produces a play of shadows and light in the interior of the gallery space. The panels can also be changed to different angles, producing a constant change of light quality. (OJEDA ET AL 2003: p.54)

Illus. 119 Storefront for Art and Architecture, New York, 1993, Steven Holl Architects with Vito Acconci (OJEDA ET AL 2003: p.54)

High Court (Palais de Justice),
Chandigarh,India, 1956
Arhitect: Le Corbusier
(Charles-Édouard Jeanneret)

The extensive use of off-shutter concrete is the main materal used by Le Corbysier for the design of the High Court. He contrasts this robust material with the use of painted areas on the façade, to form a unique architectural language. The painted areas on the Brise-Soleil façade, which he is famous for, produce a unique play of colour with light and shadow. shadow. Le Corbusier mainly used primary colours, which is reminiscent of the painting of the artist Piet Mondrian, together with the griderion pattern of the Brise-Soleil wall. (TUCKER)

Illus. 120a-d High Court (Palais de Justice), Chandigarh, India, 1956, Le Corbusier .

(Photo SAARSTE) (Wikipedia 2007)

Illus. 120a

Illus. 120b

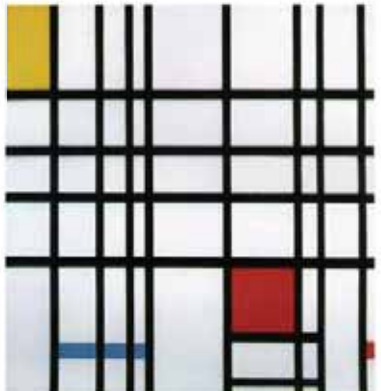
Illus. 120c

Illus. 120d

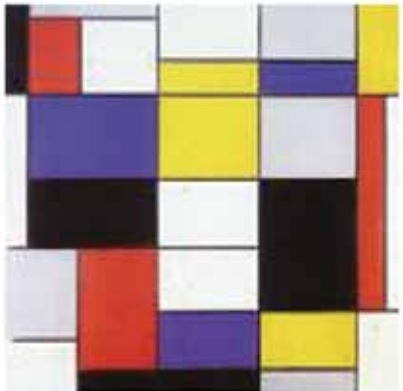
Illus. 121 Millowners Association Builsing, Gujarat, Ahmedabad, 1954, Le Corbusier.
(Photo SAARSTE) (Wikipedia 2007)

Illus. 122a-b Composition in yellow, red and blue,
Piet Mondrian (Wikipedia 2007)

Illus. 122a



Illus. 122b



8.2 MATERIAL SELECTION

Illus. 123 Salk Institute for Biological Studies, passage under administration offices, La Jolla, California, Louis I. Kahn

8.2.1 CONCRETE

The main building material of the proposed development is off-shutter reinforced concrete. The superstructure is a post-tensioned reinforced slab and column structure, including a reinforced concrete roof and exterior and interior walls.

There are numerous advantages of concrete construction:

- It can achieve large spans.
- It has a good thermal mass due to its high density.
- Various finishes and textures can be obtained with concrete depending on the formwork, and by adding pigments. Artevia produces a wide range of aesthetic concrete with pigments to produce a natural colour palette. Litracon TM is light transmitting concrete that, through the addition of optical fibers, produces concrete that transmit light, while retaining its high compressive strength. These advances in technology makes the use of concrete as a building material interesting while adding to the building's aesthetic appeal. The proposed design requires the off-shutter reinforced concrete walls to be cast with rough-sawn timber formwork shuttering, in a vertical texture, which is reminiscent of the industrial nature of the proposed paint producing area. 150mm wide by 38mm thick boards are used to create the texture, with chamfered edges and tight butt joints. The flanking reinforced concrete walls of the western façade is to be cast with Artevia coloured concrete, in three specific tones: Welsh Slate, Plum Slate and Alpine Green. The reinforced concrete floor and roof structure is to be cast with Self Compacting Concrete (SCC), which will finish of the delicate curve and cut-out detail of the floor and roof slabs. The light boxes on the first floor of the colour therapy area is to be constructed with Litracon TM, light transmitting concrete, to create a pay of light and shadow. The western façade wall, which separates the delivery area from the taxi rank access road, is designed to act as a Brise-Soleil wall, which protects the laboratories and offices

Illus. 125 (left) Litracon, Light Transmitting Concrete. (LITRACON 2007)

Illus. 126 (bottom) Home Office Building, London, England, 2005, View of multicoloured glass fins. (MOOR 2006: p.55)

Illus.124 Concrete texture created by rough sawn timber boards.(DEPLAZES 2005: p.57)

Illus. 127(top) Boehringer Ingelheim Pharmacological Research Laboratories, view of coloured glass facade, Biberach, Germany, 2002. Sauerbruch & Hutton. (MOOR 2006: p.37)

from the harsh western afternoon sun, while creating a play of shadows and light that disperses throughout the delivery area and into the laboratories and offices. This wall is constructed with a designed modular system of 6 precast reinforced concrete modules, which is bolted to galvanized steel profiles that is cast into the reinforced concrete columns.

8.2.2 COLOUR GLAZING

The glazing of the coloured boxes on the first floor passage is designed to be square panels of Smartglass Colourvue 15mm toughened safety glass. The glass box structure is steel H-columns and I-beams, with the glass fixed as an exterior cladding by 15mm toughened safety glass finn clamped by steel equal angles bolted to the steel H-columns and I-Beams. Smartglass Vanceva glazing is to be used, with every box in a different primary colour, with one square glass pane of the primary colour which will create a glow of secondary colour within the glass box. The different coloured glazing for each box would be: Deep Red with Deep Regal Blue to create purple secondary coloured light, Sahara Sun with Ruby Red to create orange secondary coloured light and Deep Coolblue with Golden Light to create green secondary coloured light. The elevated viewing concrete walkways have longitudinal pieces cut-out of the wall and roof area, which is filled with a spectrum of vanceva coloured glass. This creates changing geometric forms of projected coloured light, which will fall onto the floor areas of the walkway as well as onto the gathering space on the ground floor. The viewer will be engaged directly by the optical kinetics of the shifting position of the viewer and the varying quality of the light source.

Illus. 128 (left) Cranbrook Institute of Science, Michigan, 1999, Steven Holl Architects. Double layer perforated plywood panels showing the effect the perforated steel plate will have on the eastern facade.(OJEDA ET AL 2003: p.22)

8.2.3 PERFORATED STEEL PLATE

Perforated Steel Plate (50mm diameter cut-out holes) is used on the eastern façade. This will protect the interior spaces from direct eastern sun while giving the offices and therapy practices a large amount of privacy without compensating on the light quality within these spaces. The perforated plate has an H-column and steel equal angle structure that is fastened to the structure with a 500mm distance between internal glazing and the perforated structure. This will allow adequate ventilation to the interior spaces. The façade will have a double layer of coloured perforated steel plate, with a different colour plate as a second layer. This will create an illusion of colour 'mixing' as the pedestrian walk past, as well as for the passing vehicular traffic, which will experience this effect at a much faster pace. The effect will create a constant flux of colour on the façade, giving the spectator a sense of interactivity with the building façade.

Illus. 129a

Illus. 129b

Illus. 129c

Illus.129a-c(below)Sarphatistraat Offices, Amsterdam 2000, Steven Holl Architects. The outer perforated skin of prepatinated copper and inner stucco layer with intense colours, showing the effect the perforated steel plate will have on the eastern facade (OJEDA ET AL 2003: p.86-87)

Illus. 130a

Illus. 130b

Illus. 130c

Illus. 130a-c (top) Chapel of St. Ignatius, Seattle, Washington, 1997, Steven Holl Architects. Light shafts made of scratch-coat plaster, patterned by hand during application with large-toothed trowels and left unfinished. (OJEDA ET AL 2003: p.120-121)

8.2.4 INTERIOR WALL SURFACE

The interior surface of the reinforced concrete walls, as well as the brick infill wall surfaces in the store areas to be covered with scratch-coat plaster, patterned by hand during application with large-toothed trowels and left unfinished. Coloured glass inserts in the clerestory windows of the main production areas will cast different shades of colour onto the unfinished patterned walls, creating a coloured relief on the wall surfaces. This effect can be seen in Steven Holl's Chapel of St. Ignatius in Seattle, Washington, built in 1997.

Illus. 131 (right) Plascon 2008 Colour Forecast, 32 Light-Inspired Colours (Plascon pamphlet)

8.2.5 PAINT

The robustness of the concrete Brise-Soleil western façade wall is to be contrasted with Plascon painted areas, which will give the western façade a unique architectural identity, while dually acting as an advertising board for Plascon, where they show their forecast colour for the season. This will constantly be repainted as the forecasts change, altering the aesthetics of the façade so that it becomes an interactive façade that is in constant flux. The forecast for 2008 is Light-Inspired colours, alternating from Firstlight, Purelight, Twilight and Moonlight colours. Sunset in the Desert O3-B1-1, Angel's landing P2-C1-2, Wake Up Orange 05-A1-1, Lapis Blue B6-B1-1 and Burnt Horizon R7-B1-1 is recommended in a Plascon Double Velvet Exterior paint.


Firstlight
Tequila Pearl O1-C2-3
Cloud Number Nine B6-A2-
Dreamcatcher B4-B2-2
Veldrift Y2-D2-3
PLASCON
2008 COLOUR FORECAST


Purelight
Wake Up Orange O5-A1-1
Golden Daffodil Y3-A1-1
Lily Pad Home Y7-B2-1
Green Shrub G3-C1-3
Surfing Sarah B4-A1-4
Blue Bay B5-A1-3
Yellow Ribbon Y5-A2-1
PLASCON
2008 COLOUR FORECAST


Twilight
Platinum Bar P2-E1-4
Amarula Y2-B1-4
Dung Beetle Y1-E1-2
Beach Wood Y3-D2-1
Winter Sky B5-B2-1
Lapis Blue B6-B1-1
PLASCON
2008 COLOUR FORECAST


Moonlight
Stardust B5-C2-2
Moon Beam Y5-A2-3
Angel's Landing P2-C1-2
Moonlight Melody P4-D2-2
Gravel Road B5-E1-3
Black as Night B6-E1-1
Blueprint B6-C1-2
Evening Glade G3-E2-2
PLASCON
2008 COLOUR FORECAST

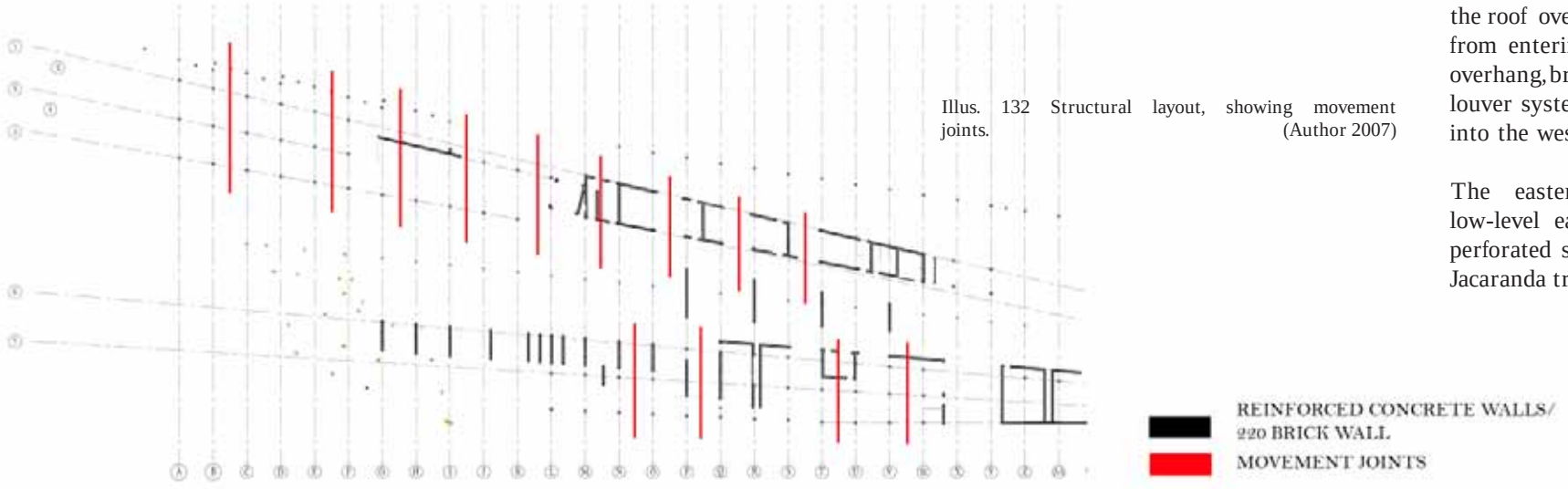
8.3 STRUCTURE

8.3.1 MAIN STRUCTURE

The main production area and laboratories, as well as the eastern building, have a 330mm diameter reinforced concrete column grid at 4600mm in the east/west direction, and an altering grid in the north/south direction. The altering grid is due to the liquids tank farm and hoisting passages. The western flanking walls are cast in-situ with 300 mm diameter reinforced concrete columns. The elevated concrete walkways in between the main building spaces is supported by 200 mm diameter reinforced concrete columns, which link the southern and northern part of the site and follows the main east/west grid. Concrete is to be cast with vertical movement joints, with a clean break through the entire structure. The vertical movement joints in the reinforced concrete walls are of 10mm bitumen-impregnated soft board. All reinforced concrete walls are 200mm thick and the thickness of the reinforced concrete floor slabs 255mm, with a maximum span of 10m.

8.3.2 ROOF STRUCTURE

The proposed project's roof structure is reinforced concrete with a minimum depth of 170mm. The minimum insulating cement screed thickness is 30mm laid with a minimum fall of 1:50 to full bores which is provided on the main grid pattern, and connects with 100mm diameter PVC down pipes which is cast into the reinforced concrete columns. The waterproofing of the concrete roof consists of a double layer 4mm modified bitumen membrane, with 100mm side laps and 150mm end laps. The waterproofing is sealed by torch-on fusion and taken up 200mm against parapet walls, protected with a 20mm parapet wall overhang.



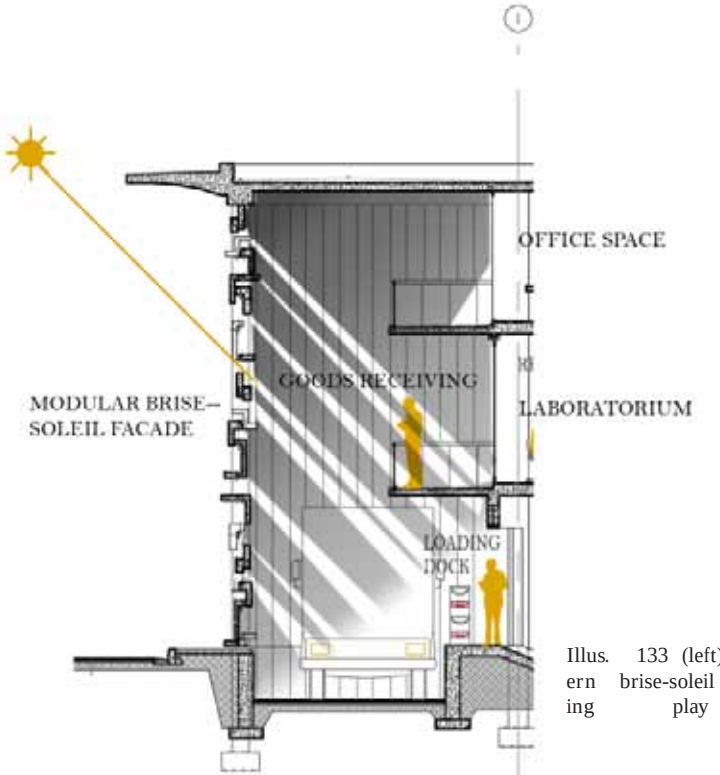
Illus. 132 Structural layout, showing movement joints. (Author 2007)

8.4 CLIMATE CONTROL

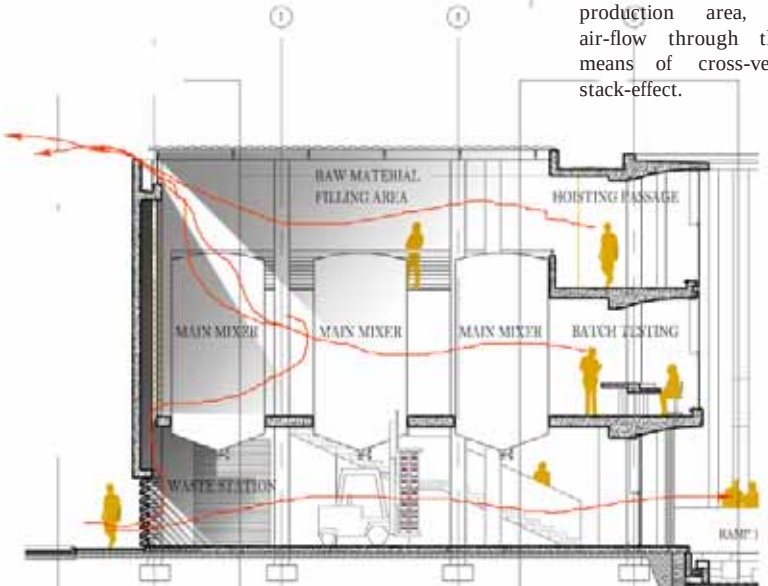
8.4.1 SOLAR CONTROL, NATURAL LIGHT AND ORIENTATION

The site is long, thin and wedge shaped, with the south-eastern and north-western boundaries forming the edges. As a result of this, the building has a long south-east and north-west facing façade. As natural daylight is 100% white light, it is very important to bring as much natural light as possible into areas that deal with products requiring good optical vision, especially in the laboratories and research areas. Natural daylight was thus incorporated into the design by means of clear and frosted glass facades for the laboratories as well as research and office areas. Roof lights are also incorporated to let as much daylight as possible into the building where the roof overhang prevents good light quality from entering the building. The large roof overhang, brise-soleil western wall and internal louver system prevents direct solar radiation into the west facing façade in the afternoons.

The eastern façade is protected from low-level eastern sun by the double layer perforated steel plate, as well as the row of Jacaranda trees along Dr. Savage Road's edge.



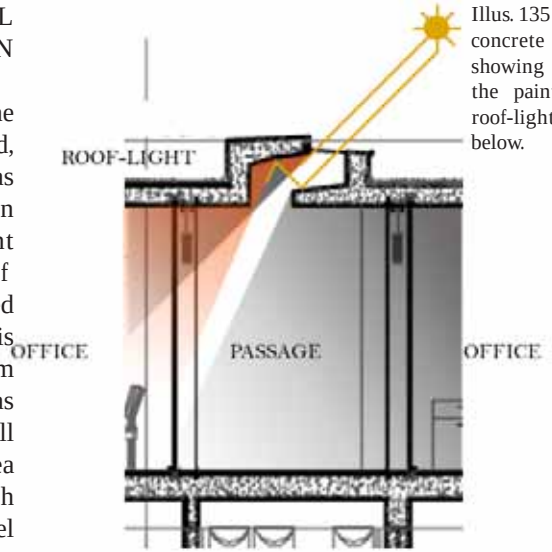
Illus. 133 (left)Section through western brise-soleil facade wall, showing play of light. (Author 2007)



Illus. 134 (below) Section through primary production area, showing passive air-flow through the building, by means of cross-ventilation and the stack-effect. (Author 2007)

8.4.2 NATURAL VENTILATION

In order to reduce the amount of energy used, passive ventilation was employed in the design of the building. The paint production area is one of the main spaces that need adequate ventilation. This is provided for by the bottom concrete fins, which act as open louvers. Fresh air will enter the production area through these fins, which are fastened onto steel angles spanning between the 300mm diameter concrete columns, at an angle that will prevent excessive wind and rain to enter the building. By means of cross ventilation the ground floor space will be ventilated. Stack ventilation as well as single sided ventilation will ventilate the production and mixing spaces on the first and second floor, by means of pulling in the fresh air through the concrete fins, which will in turn pass through a manually operated louver system on the southern ends of the production and mixing areas. Hot air will leave the space by means of clerestory windows which is manually operated. These ventilation systems result in cheaper capital cost and lower operating costs, with increased flexibility in workspaces and a reduced environmental impact. It must be remembered that there is a reliance on the user for the effectiveness of this system. The depth of the building is also narrow enough for the effectiveness of cross ventilation.



Illus. 135 (below) Section through concrete ceiling and roof light, showing how light reflect onto the painted undersides of the roof-light and back into the space below. (Author 2007)

8.4.3 THERMAL MASS

Thermal mass uses free cooling available when the outside air is cooler than that in the interior of the building. As concrete has excellent thermal mass properties, the flat concrete roof and exterior concrete walls will absorb solar radiation during the day, and radiate it into the space during the night, while the concrete is cooled down by ventilating the space which will result in reduced temperatures during the day.

9. TECHNICAL RESOLUTION

▪ "Roll on, deep and dark blue ocean, roll. Ten thousand fleets sweep over thee in vain. Man marks the earth with ruin, but his control stops with the shore." - *Lord Byron (1788-1824)* ▪ "If the sight of the blue skies fills you with joy, if a blade of grass springing up in the fields has power to move you, if the simple things of nature have a message that you understand, rejoice, for your soul is alive." - *Eleoora Duse (1858-1924)*

10. ADDENDUM

▪ “He wrapped himself in quotations - as a beggar would enfold himself in the purple of Emperors.” - *Rudyard Kipling (1865-1936)* ▪ “There is no dignity in wickedness, whether in purple or rags; and hell is a democracy of devils, where all are equals.” - *Herman Melville (1819-1891)* ▪ “The hunting-ground of the Indian is yonder, among the purple clouds of the evening. The stars are very thick there, and the red lights is heaped together like mountains in the heart of a forest.” - *Anna S. Stephens*

ACCOMODATION SCHEDULE

Colour Production Hub

Description: Existing Building
Function: Main Entrance to site and Small Business Enterprises's Offices

Room and Sub-Category	Level	Floor Area/m2	Norms and Standards	
Reception	Ground	23		
Waiting Area	Ground	28		
Protective gear room	Ground	3		
Storage	Ground	1.3		
File room	Ground	3.4		
WC	Ground	4.2		
Staff kitchen	Ground	5.8		
Lobby	First+Second	33		
Staff Kitchen x3	First+Second	12.2	1=4.3 / 2=5.3 / 3=2.6	200 lux
WC x3	First+Second	4.6	1.5 each	
Storage x2	First+Second	5.7	1=4.8 / 2=0.9	
Reception x3	First+Second	11.4	1=6.8 / 2=2.4 / 3=2.2	
Office x6	First+Second	38.8	1=8.0 / 2+3=4.8 / 4=7/ 5+6=7.5	200 lux
Lounge x2	First+Second	23.9	1=7.5 / 2=16.3	
Boardrooms x3	First+Second	28.4	1=8.4 / 2+3=10	8 persons each
Conference room	First+Second	22		8 persons each
Total		426.6		

Description: Primary Paint Production
Function: Production of Plascon paint

Room and Sub-Category	Level	Floor Area/m2	Norms and Stahdards	
Main service entrance	Ground	119.6		
Receiving				
Receiving Office	Ground	14.6		
Loading dock x3	Ground	9.45	3.15 each	
Storage				
Raw material store A	Ground	46		
Office		5		200 lux
Weighing area		4.4		
Packaging store B	Ground	42		
Office		5		200 lux
Weighing area		4.4		
Material store C	Ground	36		
Office		5		200 lux
Weighing area		4.4		
WC	Ground+First	24.5		Ceiling height min. 2.5
Men				
Women				
Tank farm	Ground to Second	101		
Hoisting area	Ground to Second	27		
Bulk liquids depot	Ground to 4.8m	43.7		
Waste station	Ground	36		
Oddment area	Ground	36		
Filling area	Ground	65		
Primary Process	Ground+First			Natural lighting preferable
Main mixing area	First to Second	72.5		Artificial Lighting:500-1000lux
Batch testing	First	15		Large windows:1/3 of floor space
Intermediate Process				Good natural ventilation
Intermediate storage area	First to Second	36		Natural lighting preferable
Small Business Enterprizes				Artificial Lighting:500-1000lux
mixing and filling	First to Second	36		Large windows:1/3 of floor space
Batch testing	First	15		Good natural ventilation
Secondary Process				
Emulsion mixing,				Natural lighting preferable
viscosity mixing,				Artificial Lighting:500-1000lux
colour testing	First to Second	72.5		Large windows:1/3 of floor space
Batch testing	First	15		Good natural ventilation
Team area		22		
Production floor manager's office		30		
Total		966.55		

Description: Laboratoriums and Research
Function: Testing of products and research of the product

Room and Sub-Category	Level	Floor Area/m2	Norms and Standards
Product testing	First	38.8	Natural lighting preferable
Washing area		3.6	Artificial Lighting:500-1000lux
Storage		5.4	Large windows:1/3 of floor space
Research laboratory	First	46	Natural lighting preferable
Washing area		3.6	Artificial Lighting:500-1000lux
Storage		4	Large windows:1/3 of floor space
Experimental laboratory	First	36	Natural lighting preferable
Washing area		3.6	Artificial Lighting:500-1000lux
Protective gear room		4	Large windows:1/3 of floor space
First Aid room	First	14.5	
Total		158.5	

Description: Administration
Function: Administrating the Primary Paint Production, Laboratoriums and Research area

Room and Sub-Category	Level	Floor Area/m2	Norms and Standards	
Administration office	Second	38.8		200 lux
Managers office	Second	23		200 lux
Secretary and waiting room	Second	20		200 lux
Boardroom	Second	18	8 persons each	
Conference room	Second	18	8 persons each	
Office x2	Second	24.5		200 lux
Staff kitchen	Second	14.5		200 lux
Total		158.8		

Description: Storage and Dispatch
Function: Storage and dispatch of finished and packaged product

Room and Sub-Category	Level	Floor Area/m2	Norms and Standards	
Storage area	Ground	178.5		
Product receiving office	Ground	13.2		
Weighing area	Ground	8		
Dispatch				
Dispatch office	Ground	4.8		200 lux

	Load assembly and check-off area	Ground	44.2	
	Loading dock	Ground	9.4	
Total			258.1	

Description: Employees ablution
Function: Employees ablution and change area

Room and Sub-Category		Level	Floor Area/m2	Norms and Standards
Men				Ceiling height min. 2.8
	WC x 2	Ground	3.2 1.6 each	
	Disabled x 1	Ground	2.8	
	Urinals x 3	Ground	2.8	
	Locker room	Ground	6.9	
	Locker cubicles x11	Ground		
	Showers x 3	Ground	6.2 each	Shower place with separating screens
	Hand basins x 3	Ground		
	Cleaning materials locker	Ground		
Women				Ceiling height min. 2.8
	WC x 2	Ground	3.2 1.6 each	
	Disabled x 1	Ground	2.8	
	Locker room	Ground		
	Locker cubicles x11	Ground		
	Showers x 3	Ground	6.2 each	Shower place with separating screens
	Hand basins x 3	Ground		
	Hairstyling space	Ground		
	Cleaning materials locker	Ground		
Total			33.7	

Description: Public Restrooms
Function: Restrooms for the public

Room and Sub-Category		Level	Floor Area/m2	Norms and Standards
Men				
	WC x 1	Ground	1.4	
	Disabled x 1	Ground	2.5	
	Urinals x 4	Ground	4.1	
	Hand basins x 3	Ground		
Women				
	WC x 3	Ground	4.2 1.4 each	
	Disabled x 1	Ground	2.4	
	Hand basins x 3	Ground		
Total			14.6	

Description: Plascon Concept Shop
Function: Shop where Plascon products are displayed and where the visitors can simulate their colour choices

Room and Sub-Category	Level	Floor Area/m2	Norms and Standards
Reception	Ground	14.2	Natural lighting preferable
Paint and products shop	Ground	87	Artificial Lighting:500-1000lux
Concept Room	Ground	14.2	Large windows:1/3 of floor space
Total		115.4	

Description: Art Display and Exhibition
Function: Exhibition and display of art in public space

Room and Sub-Category	Level	Floor Area/m2	Norms and Standards
Art display cubicles x 3	Ground	40.4 1=8.6 / 2=16.3 / 3=14.8	Natural lighting preferable
Seating area in front of cubicles	Ground	42	Artificial Lighting:500-1000lux
Painting and colouring space for artists and visitors	Ground	98	Large windows:1/3 of floor space
Total		180.4	

Description: Studios
Function: Studio space for students and rentable studio space for informal trading

Room and Sub-Category		Level	Floor Area/m2	Norms and Standards
Studio space x 3		Second	153.4 1=53.6 / 2=56.3 / 3=43.5	Natural lighting preferable
Rentable studio space				Artificial Lighting:500-1000lux
	Big x 8	Ground	44 8.8 each	Large windows:1/3 of floor space
	Small x 10	Ground	44 4.4 each	
Total			241.4	

Description: Colour Café
Function: Café that serves light lunches and meals to visitors, students, artists and office workers

Room and Sub-Category		Level	Floor Area/m2	Norms and Standards
Colour Cafe				
	Seating inside	First	52.8	24 seats
	Seating outside	First	20	16 seats
	Colour Box x 3	First	24 8 each	12 seats
Kitchen		First	13.5	200 lux
	Scullery	First	4.4	
Storage				
	Dry	First	7	
	Cold	First	6	
Total			190.7	

Description: Restrooms
Function: Restrooms for visitors, students, office workers and patients

Room and Sub-Category		Level	Floor Area/m2	Norms and Standards
Men		First+Second		
	WC x 1		1.4	
	Disabled x 1		2.6	
	Urinals x 4		4.1	
	Hand basins x 3			
Women		First+Second		
	WC x 3		4.2 1.4 each	
	Disabled x 1		2.4	
	Hand basins x 3			
Total			29.2	

Description: Workshop
Function: Workshop for Plascon factory and colour therapy

Room and Sub-Category	Level	Floor Area/m2	Norms and Standards
Factory/Colour workshop	First	70	Natural lighting preferable
Balcony	First	23	Artificial Lighting:500-1000lux
Total		93	

Description: Colour Therapy
Function: Therapy rooms and offices for alternative healing with colour

Room and Sub-Category	Level	Floor Area/m2	Norms and Standards
Colour therapy room x 5	First	79.8 1-4=16.7 / 5=13	
Reception x 6	First	58.5 1-4=44 / 5=9 / 6=5.5	

Office x 1	First	7	200 lux
Light/Therapy Box x 4	First	7.8	
Total		153.1	

Description: Public Gathering, Walkways and Viewing platforms
Function: Gathering space and walkways for public and visitors

Room and Sub-Category	Level	Floor Area/m2	Norms and Standards
Gathering space	Ground		
Walkways	Diff. Levels		
Seating area	Diff. Levels		

Description: Parking
Function: Employee and visitor parking space

Room and Sub-Category	Level	Floor Area/m2	Norms and Standards
Employee Parking	Ground		
7 bays		87.5 12.5 each	
1 Disabled		22	
Visitor Parking	Ground		
45 Degree angle x 22		275 12.5 each	
Disabled x 2		30 15 each	
Total		414.5	

Description: Circulation
Function: Movement of people and goods

Room and Sub-Category	Level	Floor Area/m2	Norms and Standards
Corridors		1,7m min width	
Stairs		170mm max risers	
		250mm min tread	
Ramps		All ramps, min. gradient of 1:12	
Walkways		2m min width	
Elevators			
Goods and passenger			
hydraulic lift	Ground-Second		
Passenger lift	Ground-Second		

Total	3376.45 (Without circulation area)	

10.2 LIST OF ILLUSTRATIONS

10.3 SITE INFORMATION

S. G. No. 3401/35

Approved

26 OCT 1935

for SURVEYOR GENERAL.

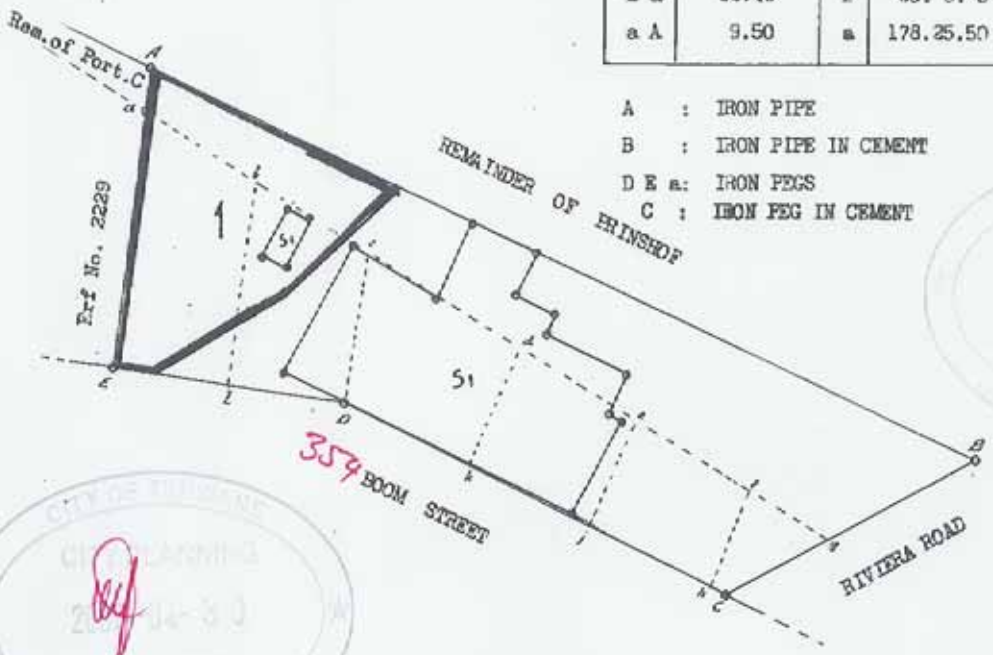
Sides Cape feet		Angles	
A B	231.83	A	74.37.40
B C	71.24	B	49.57.00
C D	107.26	C	128.16.30
D E	60.71	D	198.43.00
E a	62.43	E	90. 0. 0
a A	9.50	a	178.25.50

A : IRON PIPE

B : IRON PIPE IN CEMENT

D E a: IRON PEGS

C : IRON PEG IN CEMENT



* Now known as ~~Lot~~/Erf No. 3182

For Servitudes Deductions and Endorsements See Over.

Cape feet

Scale 1: 500

82/m²

The Figure A B C D E a A represents 11126 Square feet

of land Called * ERF No. 2224 situate in the Township of

PRETORIA

Comprising:

(1)	Figure	A B g a	being	Erf No.	2582	vide diag.	A No.	2585/34	annexed to Transfer No. 3930/35
(2)	"	f g C h	"	Rem. of Erf No.	2223	"	"	1474/13	" " No. 5382/13
(3)	"	c f h j	"	Erf No.	2224	"	"	1475/13	" " No. 5382/13
(4)	"	d e j k	"	" "	2225	"	~~Gen. Plan~~ diag. No.	~~2295/97~~	" " No. 1797/1898
(5)	"	c d k D	"	" "	2226	"	"	"	" " No. 1798/1898
(6)	"	b c D l	"	" "	2227	"	"	"	" " No. 1799/1898
(7)	"	a b l E	"	" "	2228	"	"	"	" " No. 2724/1898

District PRETORIA Province of Transvaal

Surveyed for Certificate of Consolidated Title

in September 1935 by me

J.H. Schmidt

Land Surveyor

This diagram is annexed to Certificate of Consolidated Title No. 16148/35

SR. 1101/35

Gen. Plan : SG No. 2295/97.

SR 50-24

DV

ONDERVERDELINGSKAART

SYE Meter		RIGTINGS-HOEKE
AB	22,00	283·16·40
BC	12,00	38·16·40
CD	12,08	49·07·50
DE	3,50	86·28·00
EF	19,67	176·19·30
FA	2,97	178·17·00

L.G. No. A

1545/81

Goedgekeur

nms. Landmeter-generaal.

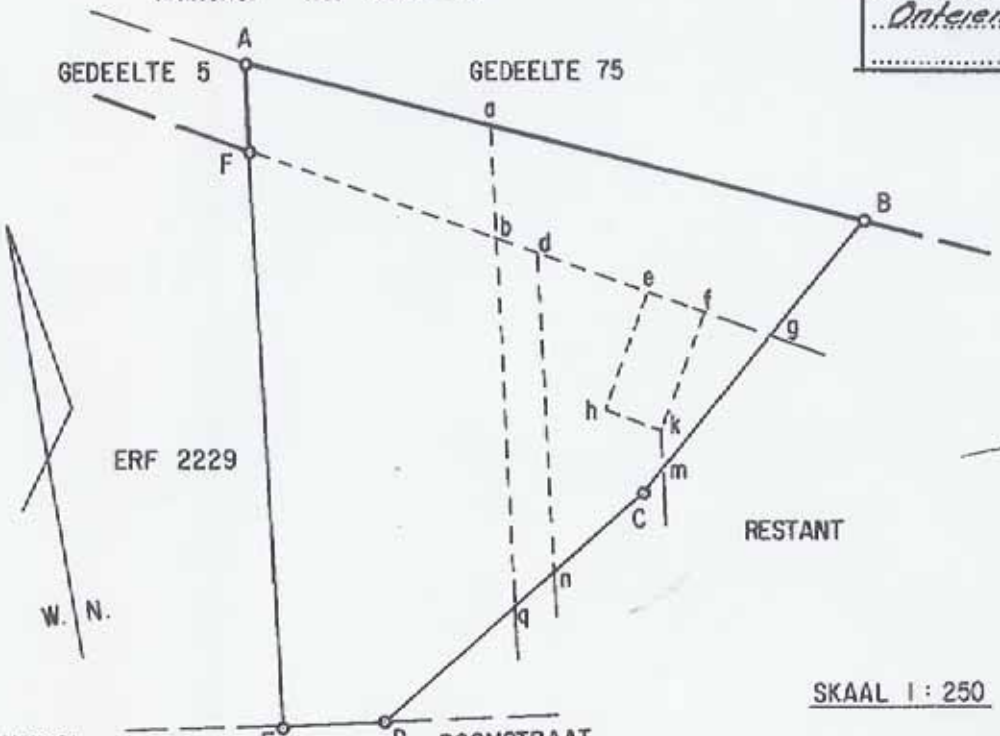
1981 -08- 21

BAKENBESKRYWING :

A	HOEK GEBOU
B	12mm. GAT OP BAKSTEENMUUR
C, F	12mm. YSTERPEN
D	12mm. GAT IN BETON
E	12mm. YSTERPEN IN BETON

Ontvangs

PRINSHOF NO. 349 – JR



SKAAL 1 : 250

NOTAS:

1. ~~DIE FIGUUR A.a.b.q.D.E.F.A. IS ONDERWORPE AAN 'N HUURKONTRAK, SIEN KAART L.G. NO. A8496/70~~
2. DIE FIGUUR e.f.k.h. STEL VOOR 'N HUURKONTRAKGEBIED, SIEN KAART L.G. NO. A3911/66 EN HUURKONTRAK NO. 116/1966

1981-07-06

Die figuur A.B.C.D.E.F.

stel voor 282 VIERKANTE METER grond synde

282 m²

GEDEELTE 1 VAN ERF 3182 VAN DIE DORP PRETORIA

DISTRIK PRETORIA

Provinsie Transvaal

opgemeet in FEBRUARIE EN MAART 1981 deur my

Landmeter.

R.J.STEENEKAMP

Hierdie kaart is geheg aan No. ged. t.g.v. T 9452/1984

Registrateur van Aktes.

Die oorspronklike kaart is L.G. no. A 2617/35

[redacted] 16148/1935

[redacted]ief

Leer TP 4969

M.S. No. 537/81

Komp. JR 5C-24 / D 2

S. G. OFFICE COPY

S.G. No. A 2564/1934

Approved

Surveyor General.

17 DEC 1934

SIDES Cape Feet.		ANGLES	
AB	17·06	A	123·27·30
BC	21·50	B	78·50·30
CD	28·55	C	106·0·0
DA	28·19	D	51·42·0

Description of Beacons.
A and D iron pegs.
B iron peg in cement.
C iron pipe in cement.

✱ Now known as Portion....

20 15 10 5 0 20 40 60 CAPE FEET

Scale 1: 250

49m²

The figure A B C D *represents* 496 *Square feet*
of land called ✱PORTION A OF ERF No. 2223 *situate in the Township*
of PRETORIA
District of PRETORIA *Province of Transvaal*

Surveyed in November 1934. *by me,*

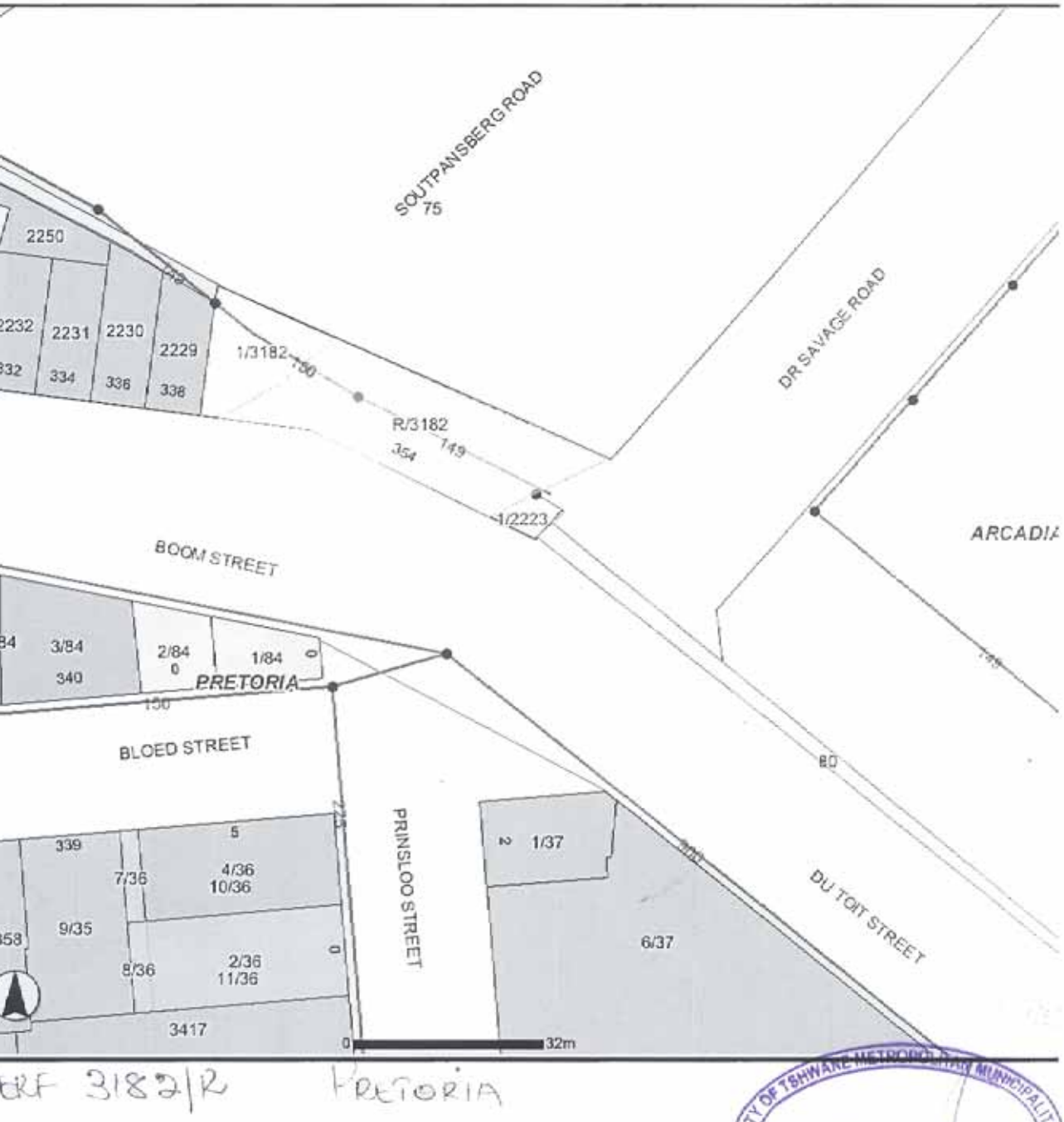
Land Surveyor.

This diagram is annexed to Deed of
No. 3921/35 *dated*
in favour of

General Plan No.
The original diagram is No. A 1974/13
annexed to Transfer N° 8282/07
5382/1913
Survey Records No 1047/34

Registrar of Deeds.

ArcIMS HTML Viewer

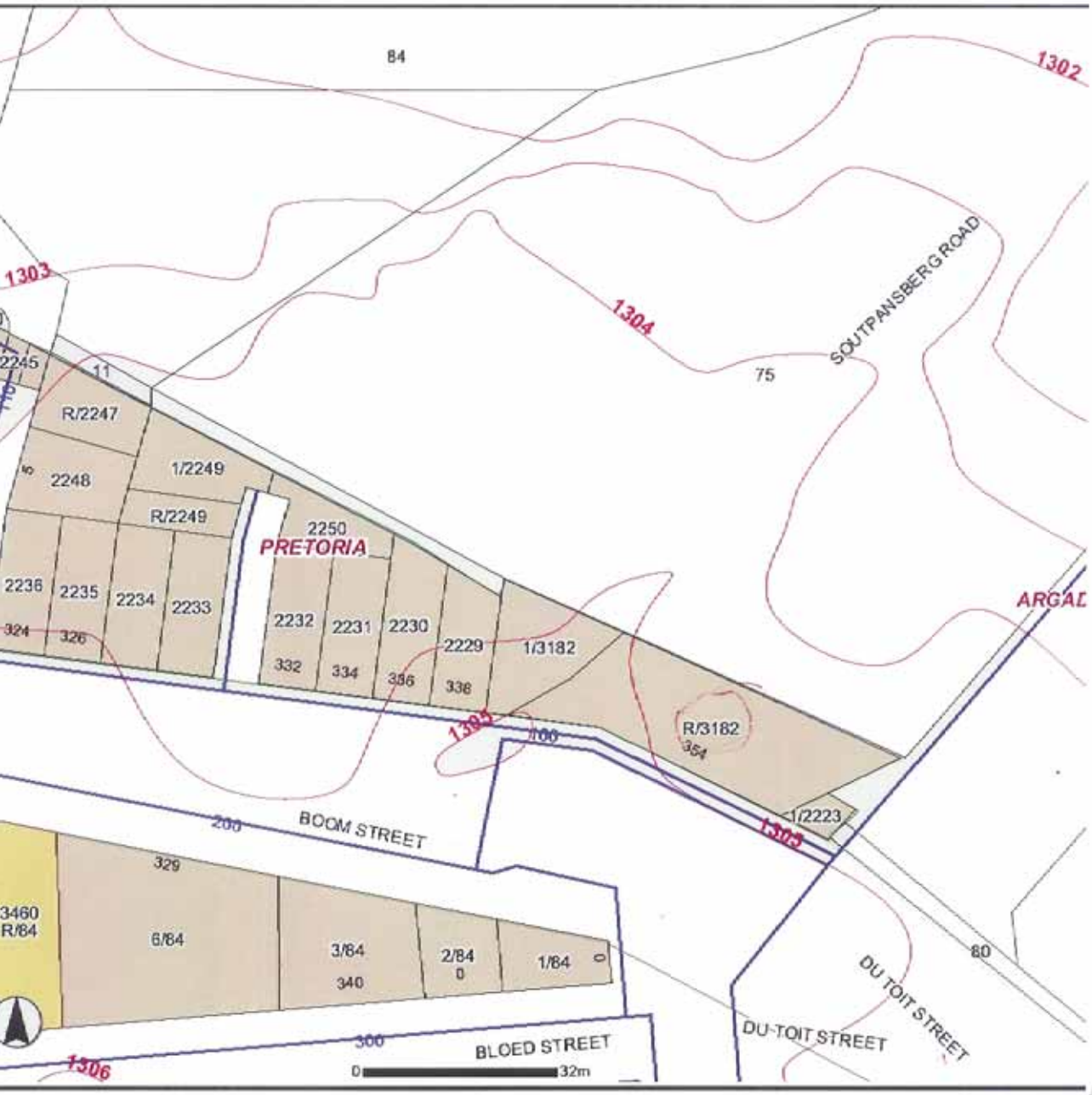


ERF 3182/R PRETORIA

ISKEY	OBJECTID	ADDRESS	STREET NAMF	TOWNSHIP	NAME	OWNER TENANT	ACTIVE INACTIVE	POSTAL ADDRESS	L
603182/1	723102	0000	HOOFINSKRYWING	PRETORIA	NO DEBTORS ON STAND				1
603182/1	723102	0000	BOOMSTRAAT	PRETORIA	CARBONATTO R	O	A	30 THE LOOP 30 THE LOOP	1
603182/R	904518	0354	BOOMSTRAAT	PRETORIA	SEKUTHE A S	T	A	354 BOOM STREET 354 BOOM STREET	1
603182/R	904518	0354	BOOMSTRAAT	PRETORIA	SITHOLE M J	T	A	CARBONATO 2 354 BOOM STREET	1
603182/R	904518	0354	BOOMSTRAAT	PRETORIA	MAGOTLE R T	T	I	6 CARBONATO 354	1

206

ArcIMS HTML Viewer



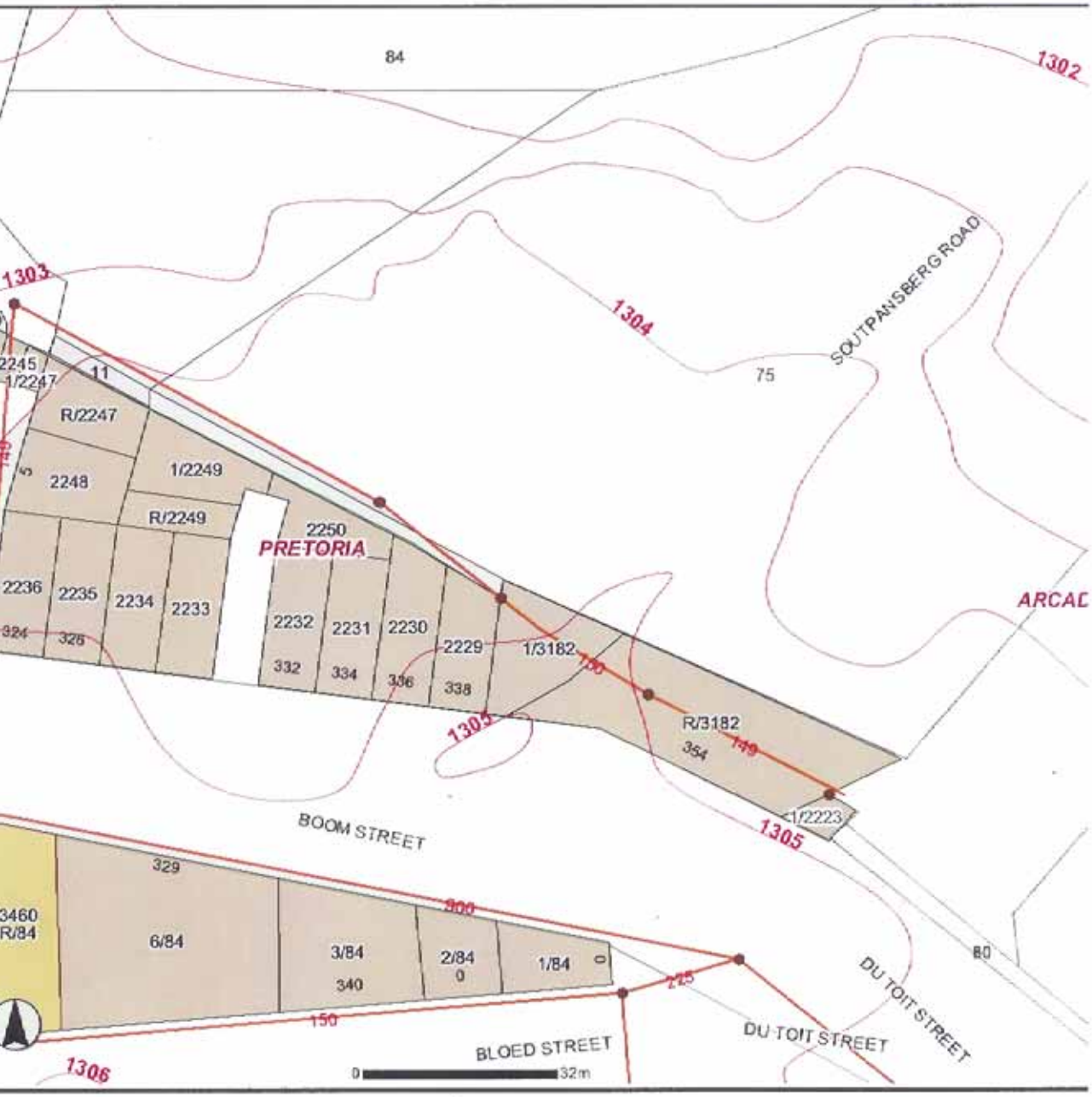
Pretoria

Water

CITY OF TSHWANE METROPOLITAN MUNICIPALITY
2007 -04- 24
DESIGN AND INFORMATION
WATER AND SANITATION

ISKEY	OBJECTID	ADDRESS	STREET NAME	TOWNSHIP	NAME	OWNER TENANT	ACTIVE INACTIVE	POSTAL ADDRESS	L
603182/1	723102	0000	HOOFINSKRYWING	PRETORIA	NO DEBTORS ON STAND				1
603182/1	723102	0000	BOOMSTRAAT	PRETORIA	CARBONATTO R	O	A	30 THE LOOP 30 THE LOOP	1
603182/R	904518	0354	BOOMSTRAAT	PRETORIA	SEKUTHE A S	T	A	354 BOOM STREET 354 BOOM STREET	1
603182/R	904518	0354	BOOMSTRAAT	PRETORIA	SITHOLE M J	T	A	CARBONATO 2 354 BOOM STREET	1
603182/R	904518	0354	BOOMSTRAAT	PRETORIA	MAGOTLE R T	T	I	6 CARBONATO 354	1

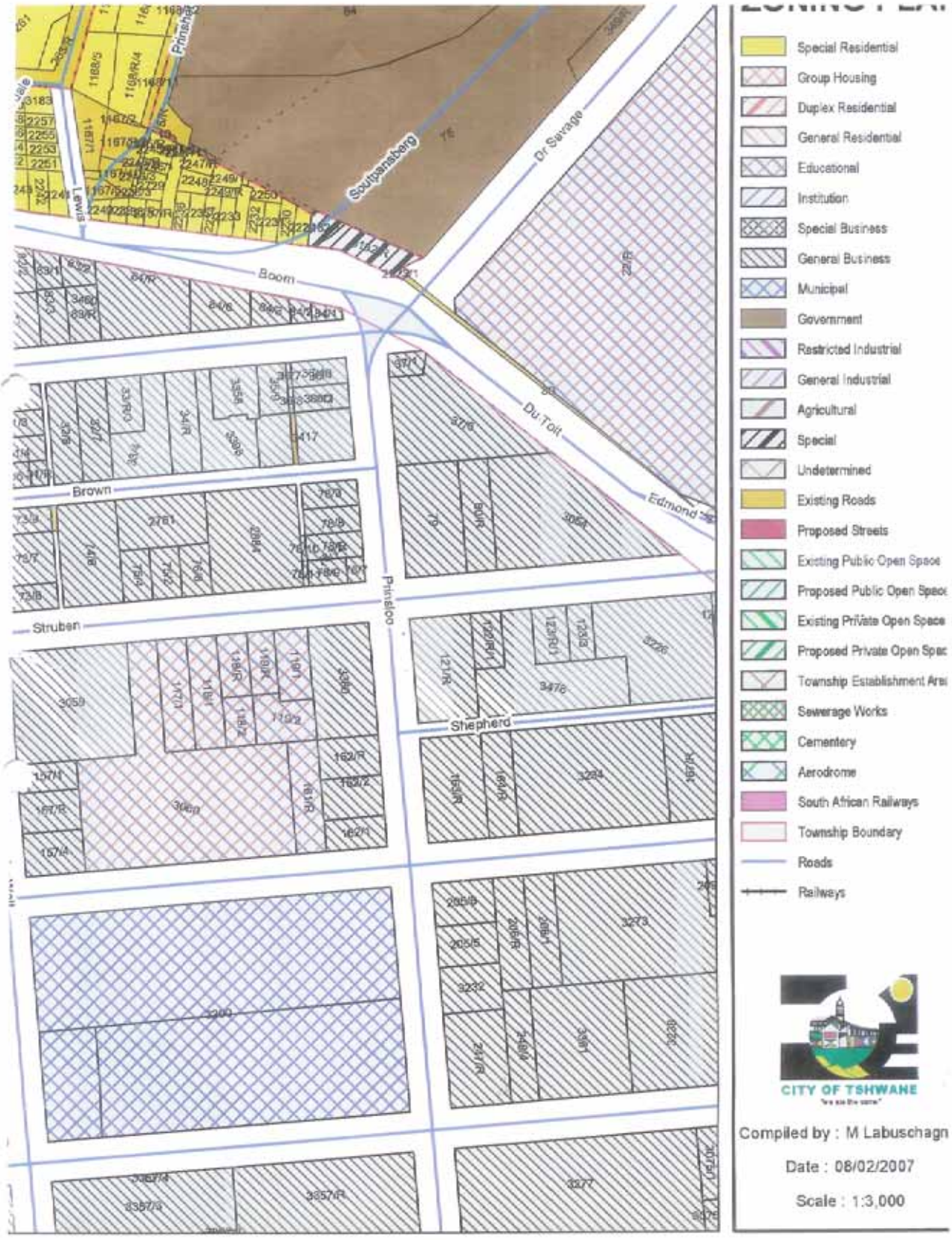
ArcIMS HTML Viewer



Pretoria

Sewerage

SKEY	OBJECTID	ADDRE. S	STREET NAME	TOWNSHIP	NAME	OWNER TENANT	ACTIVE INACTIVE	POSTAL ADDRESS	L
603182/1	723102	0000	HOOFINSKRYWING	PRETORIA	NO DEBTORS ON STAND				1
603182/1	723102	0000	BOOMSTRAAT	PRETORIA	CARBONATTO R	O	A	30 THE LOOP 30 THE LOOP	1
603182/R	904518	0354	BOOMSTRAAT	PRETORIA	SEKUTHE A S	T	A	354 BOOM STREET 354 BOOM STREET	1
603182/R	904518	0354	BOOMSTRAAT	PRETORIA	SITHOLE M J	T	A	CARBONATO 2 354 BOOM STREET	1
603182/R	904518	0354	BOOMSTRAAT	PR	MAGOTLE R T	T	I	6 CARBONATO 354	1



Okkupasie → D1 – D4
Populasie → 1 persoon per 15m²
11–100 mense → 0,4 m² p/p maar minstens 12 m²
→ Restrooms → 25 l/s lugverversing
→ Pakhuise → 7,5 l/s "
→ Verkoopsale, vertoonkamers → 7,5 l/s ".
→ Garage → 7,5 l/s "
→ Offices → Rook 7,5 Geen 5,0 l/s
→ Verver → 7,5 5,0
Rioolvuilwater / liter per persoon per dag → 140
Sanitêre toestelle → Getal mense

	Mans: Spoelklosetpanne	Urinale	Handwasbakke	Vrouens: WC's	Wasbak
15	1	1	1	2	1
30	1			3	2
60	2	3	2	5	3
90	3	5	3	7	4
120	3	6	4	9	5

Buitemuur Brandweerstand → D1 → 60 minute.
Jutte Adler p82.
- Office / WC area = 10–15% of work area
- p85 NB
- Paint factories → light-medium
- Design for extension / Design for change
- Internal clear hight = 6m
= Vehicle entrance doors = 5M
- Illumination → 200–750 lux
→ 300–500 lux E (illumination level)
$\frac{E_{min}}{E_{av}}$ must be at least 0.7
Warehouse, packaging → Daylight factor 2% (10–15% floor area) 300–500 lux
Small inspection → 1000 lux + DLF 10%.
- Air change rate → 5 l/s/p
- Foremans desk space
- 10–15% of production floor area for executive offices
- Parking → Production = 1 P. 50 m² gross floor area → public gallery = 1/30 m² visitors
Visitors = 10% of staff parking Staff = 1 per 2.
→ Storage = 1 P 200m²
→ Offices = 1 ...

11. REFERENCES

- "At zero there was the flash. The first thing I saw was a yellow-orange fireball....A mushroom-shaped cloud of glowing magenta began to rise over the desert where the explosion had been. My first throught was, "My God, that is beautful!"." - *Jeremy Bernstein (1929-)*
- "Life is like a box of crayons. Most people are the 8-colour boxes, but what you're really looking for are the 64-colour boxes with the sharpeners on the back. I fancy myself to be a 64-colour box, though I've got a few missing. It's ok though, because I've got some more vibrant colours like periwinkle at my disposal. I have a bit of a problem though in that I can only meet the 8-colour boxes. Does anyone else have that problem? I mean there are so many different colours of life, of feeling, of articulation..so when I meet someone who's an 8-colour type..I'm like, "hey girl, magenta!" and she's like, "oh, you mean purple!"..and I'm like, "no - I want magenta!"." - *John Mayer (1977-)*

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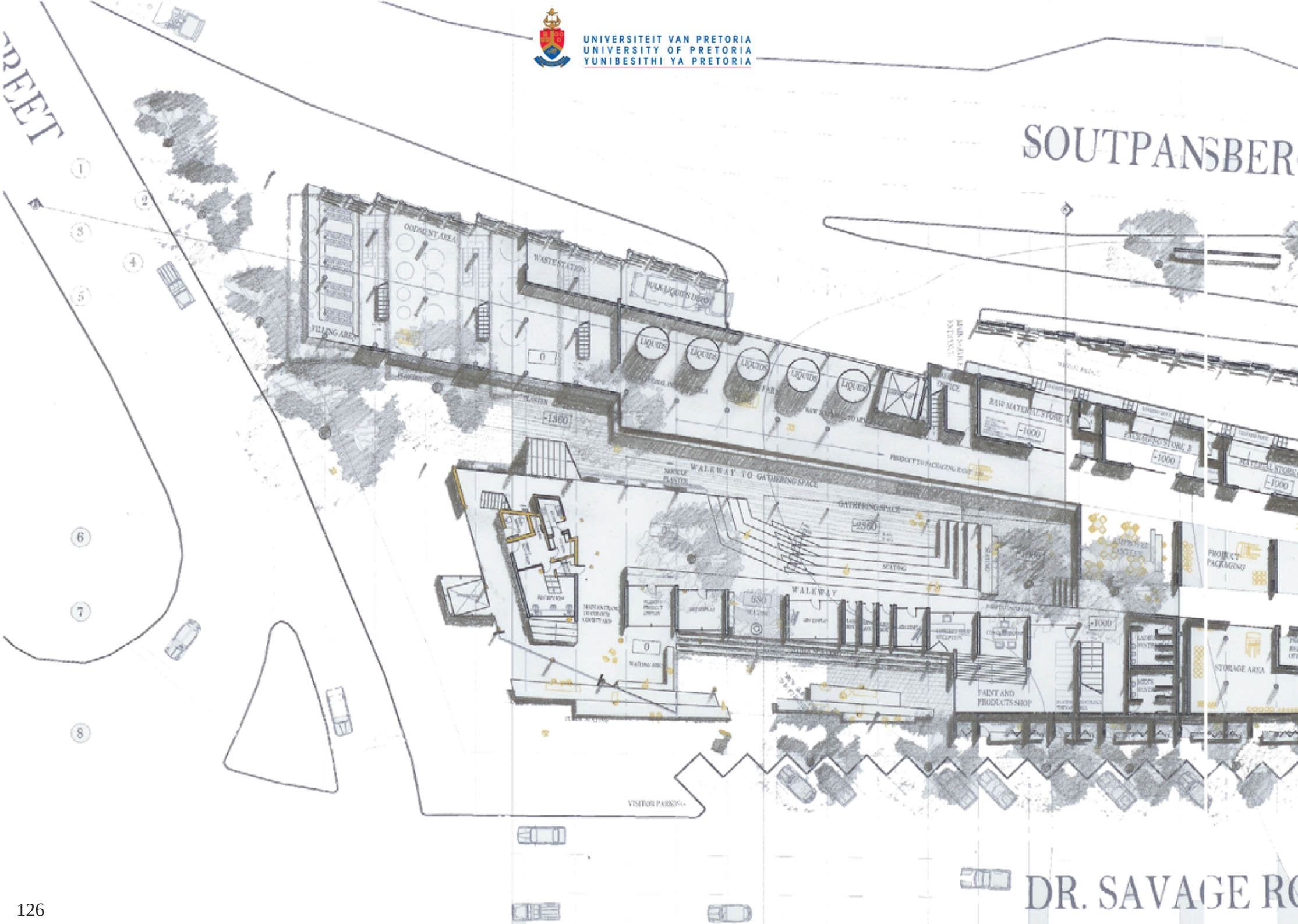
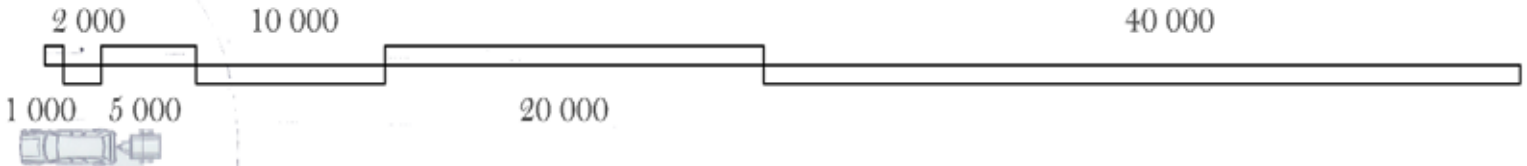
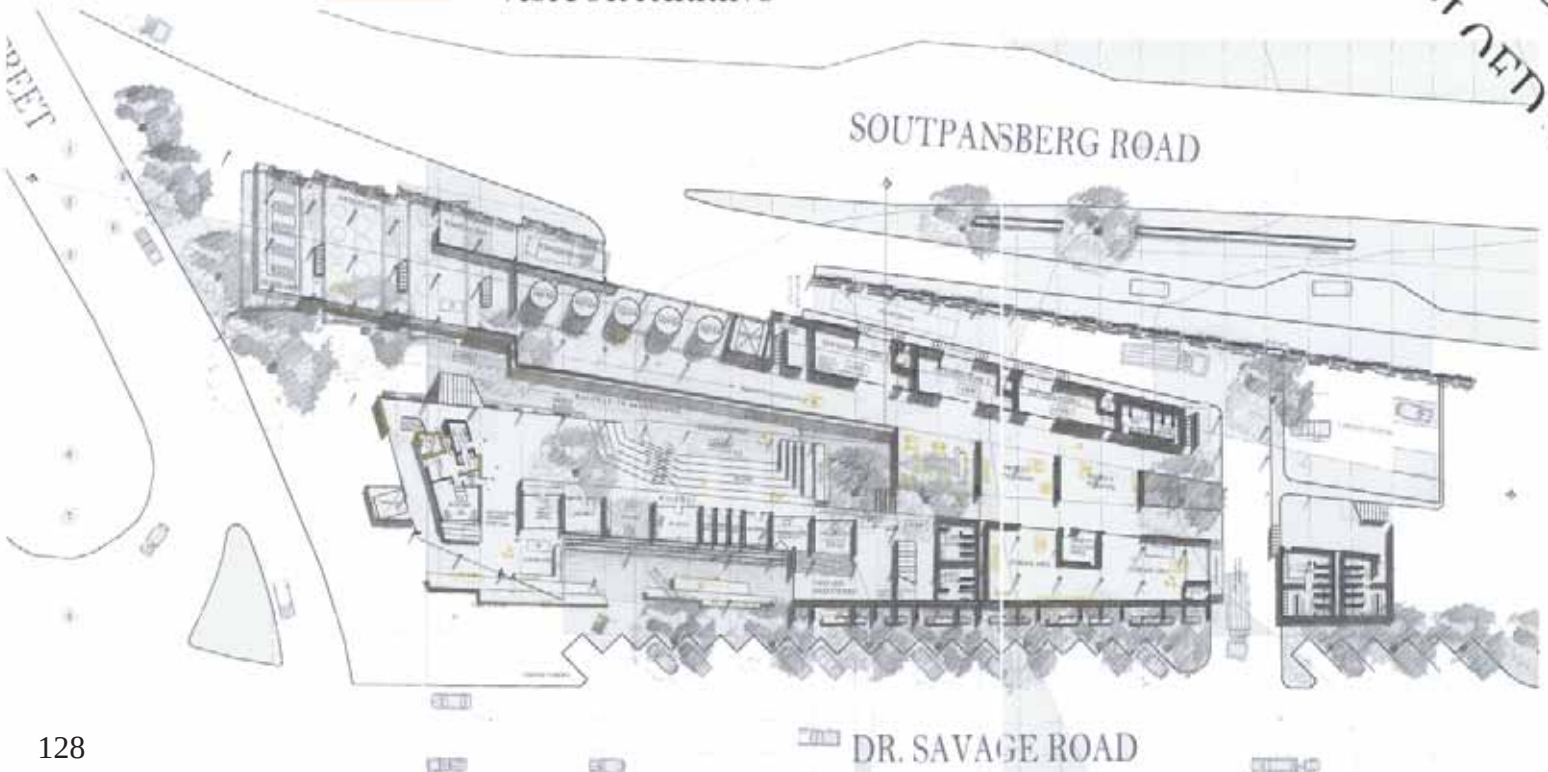
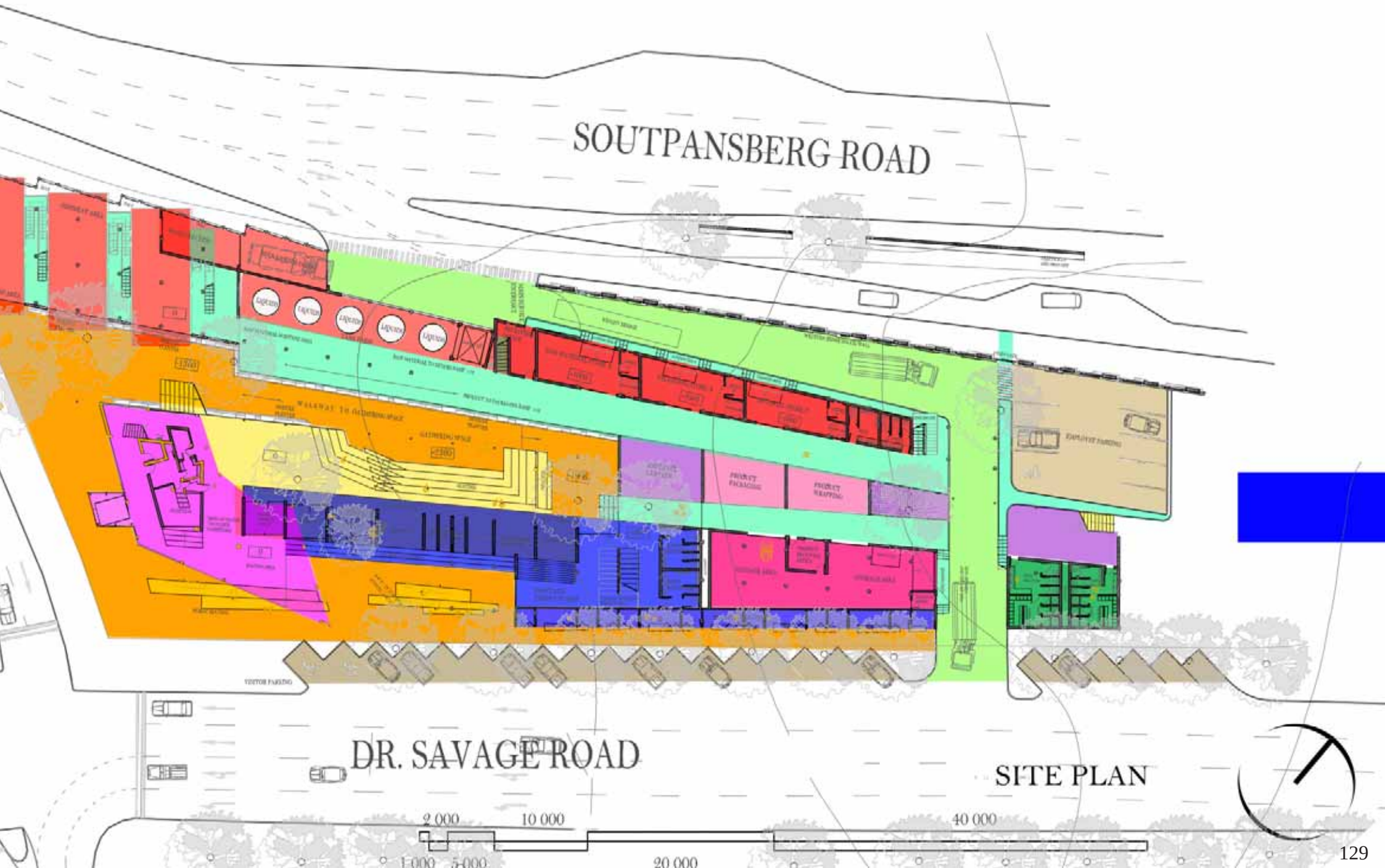

SOUTPANSBER
DR. SAVAGE RO
WALKWAY TO GATHERING SPACE
GATHERING SPACE
WALKWAY
SEATING
RECEPTION
WASTE STATION
RAW MATERIAL STORE A
PACKAGING STORE B
PRODUCT PACKAGING
STORAGE AREA
PAINT AND PRODUCTS SHOP
VISITOR PARKING
LIQUIDS
-1360
-1000
-860
680

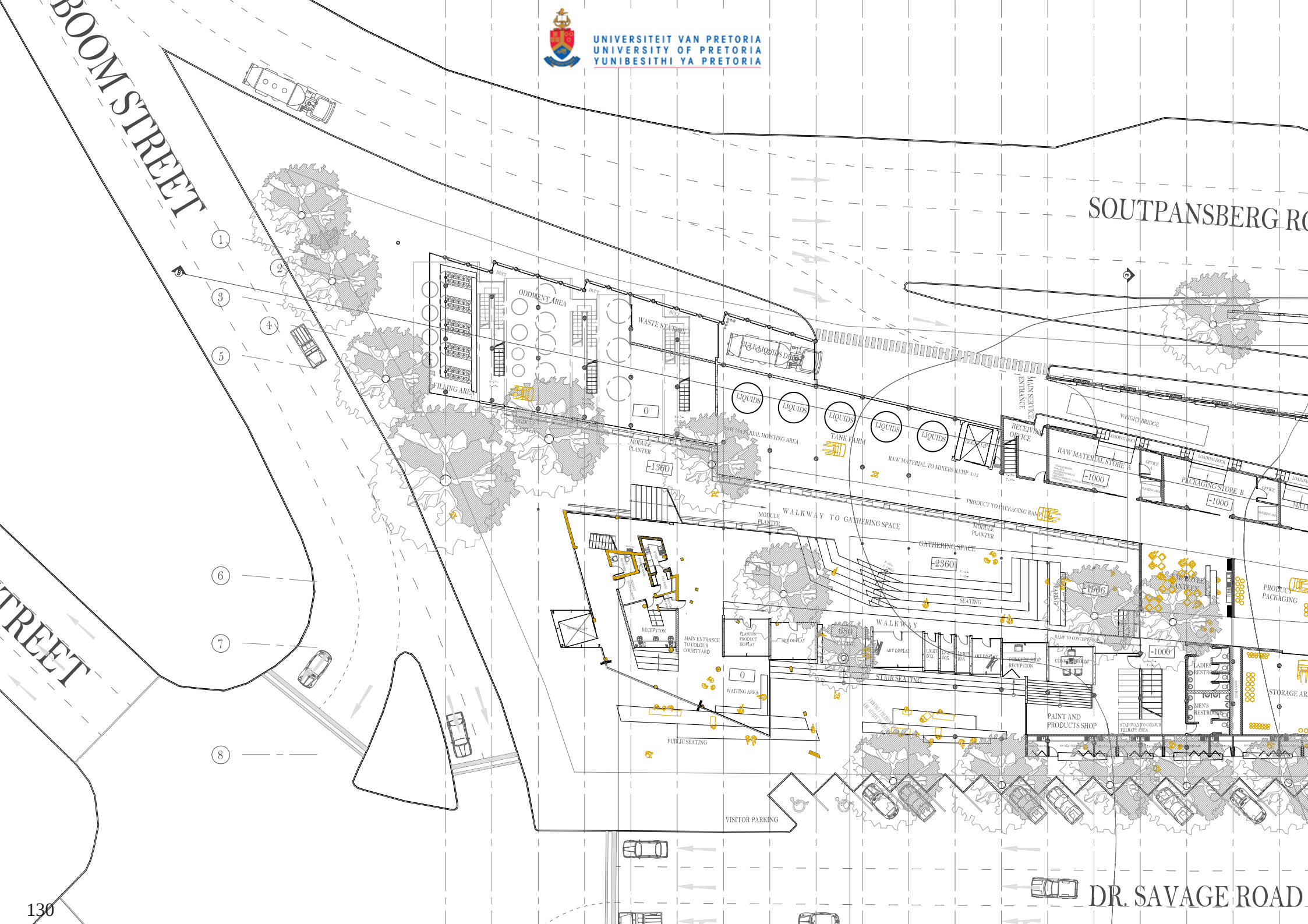
GROUND FLOOR PLAN 16h00

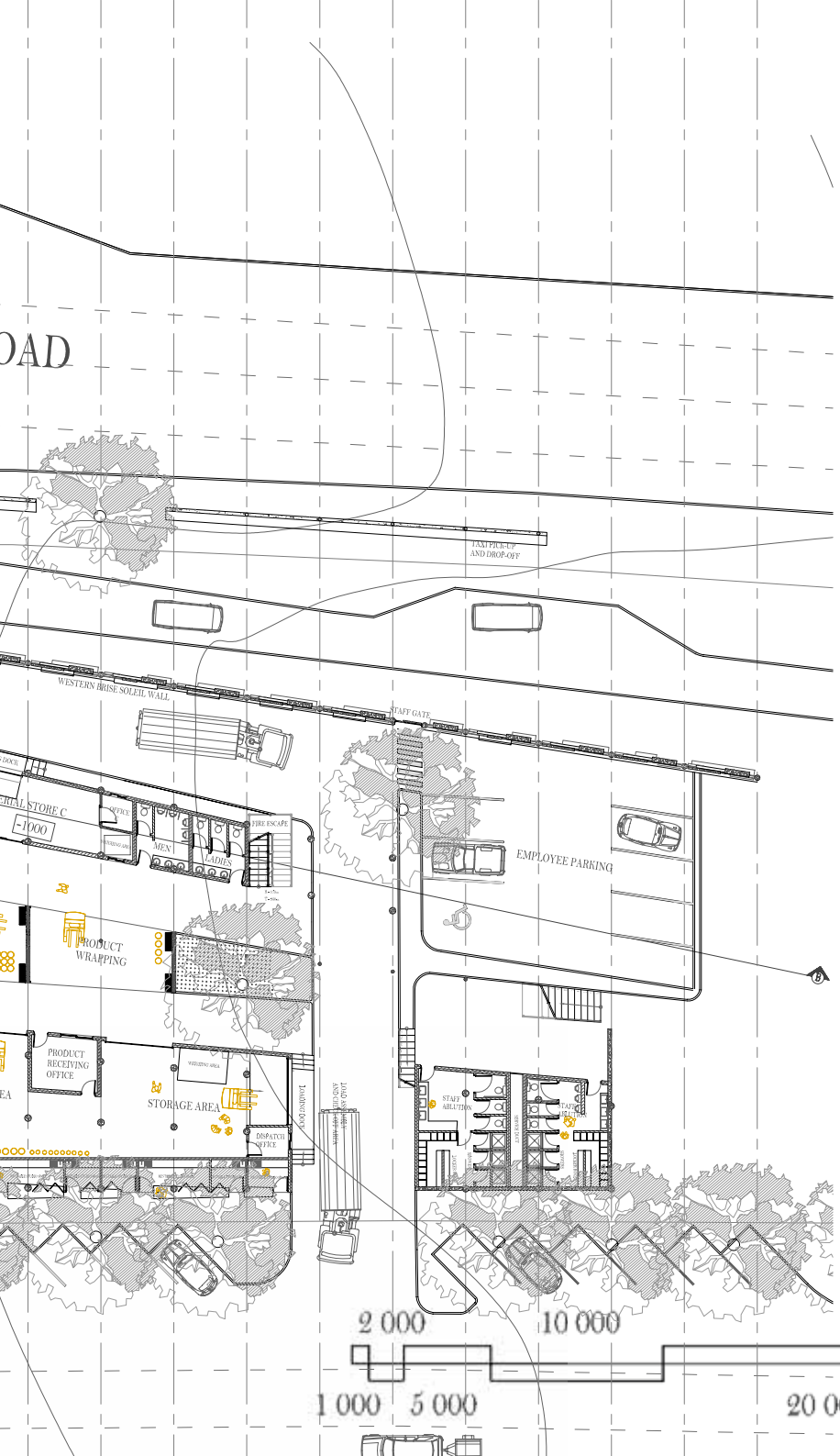


PRIMARY PRODUCTION AND MATERIAL STORES
PACKAGING AND WRAPPING
STORE AREA AND DISPATCH
ART EXHIBITION AND CONCEPT SHOP
MAIN RECEPTION AND OFFICE WAITING AREA
SEMI-PUBLIC SPACE
PUBLIC SPACE
SEMI-PRIVATE SPACE
PRIVATE SPACE
MAIN MOVEMENT - WORKERS
MAIN VEHICULAR MOVEMENT - DELIVERIES, EMPLOYEES, RECEIVING
EMPLOYEE PARKING
VISITOR PARKING



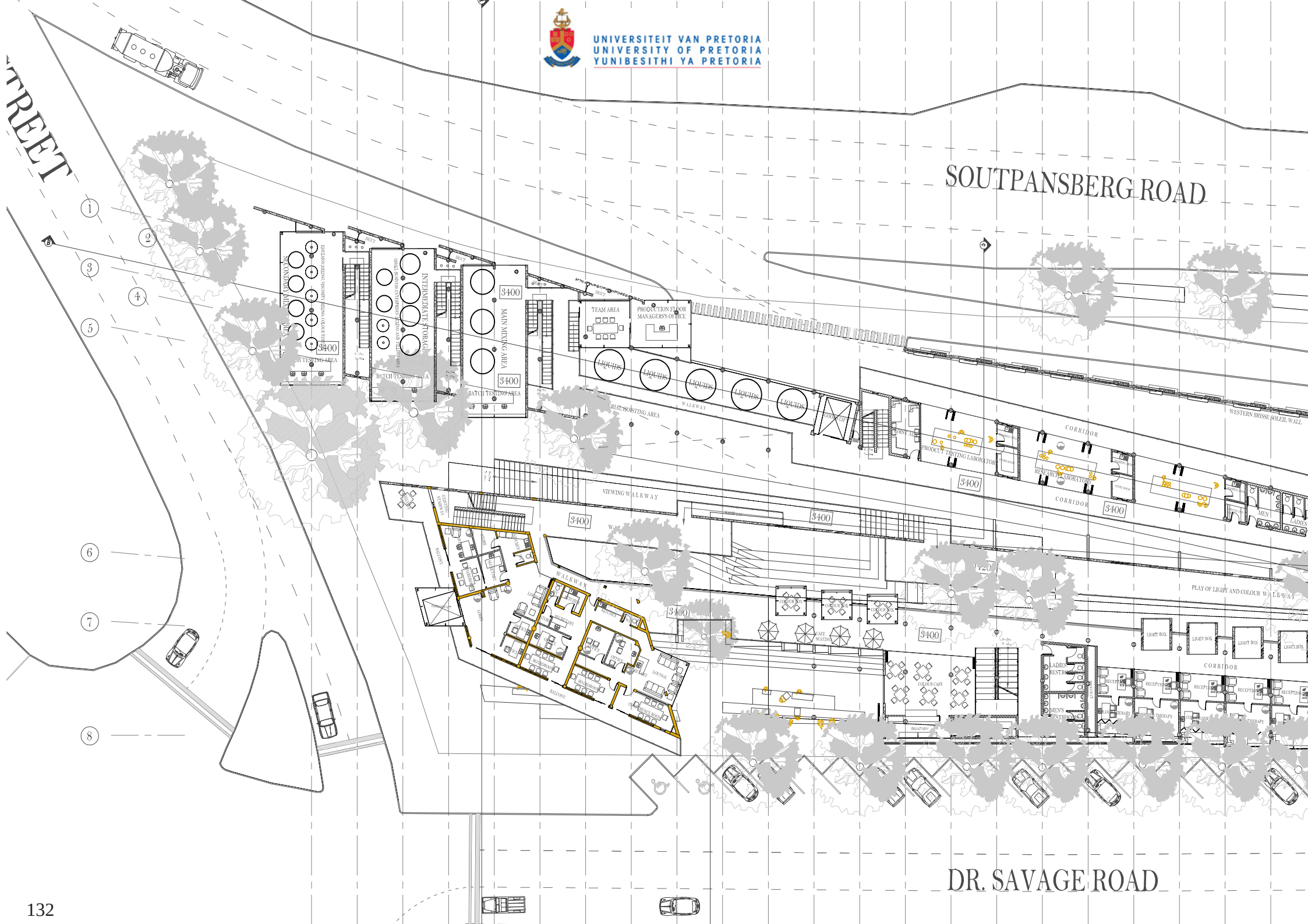

SOUTPANSBERG ROAD
DR. SAVAGE ROAD
SITE PLAN
2 000
10 000
40 000
1:000
5:000
20 000

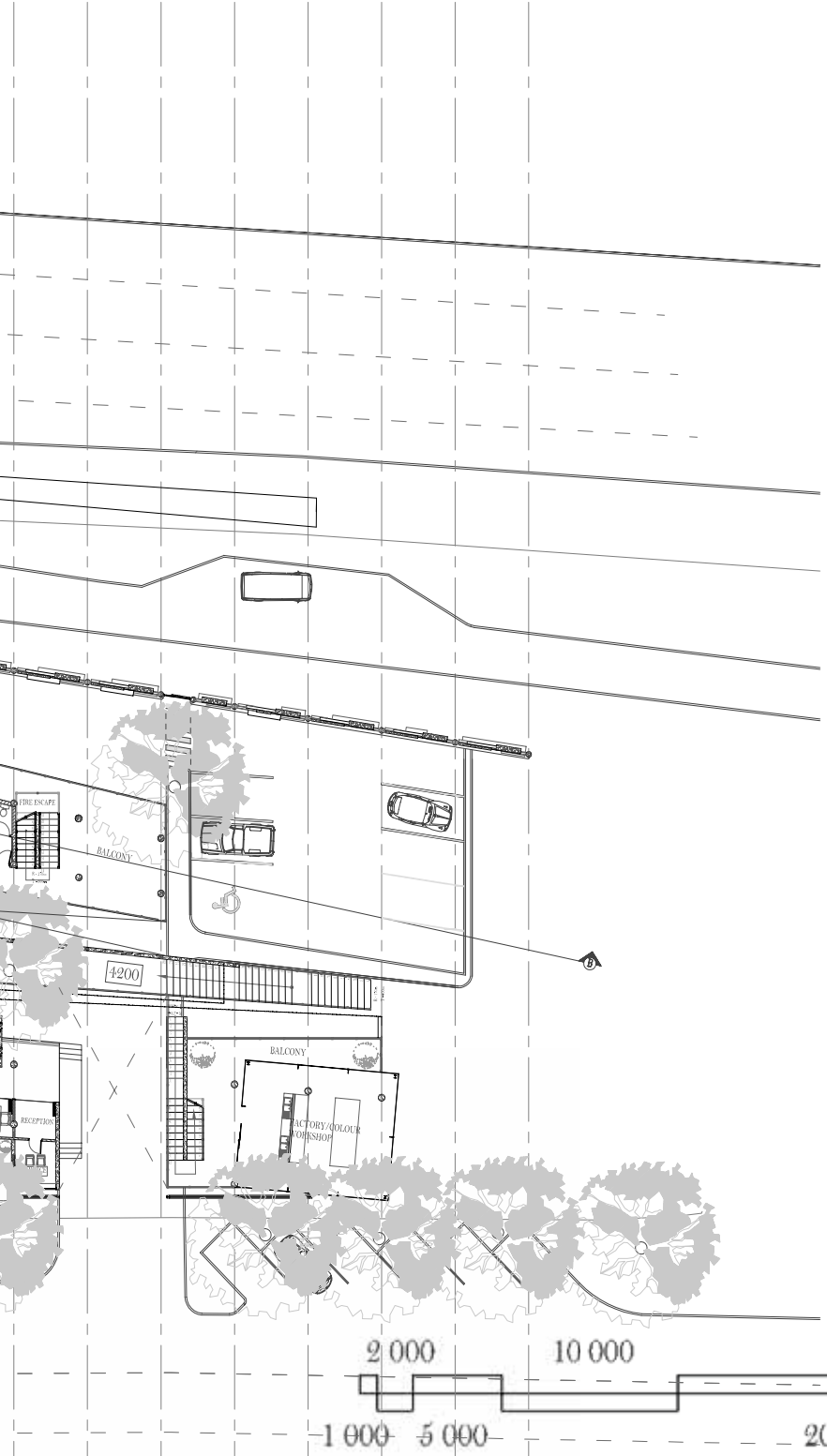

BOOM STREET
SOUTPANSBERG RO
DR. SAVAGE ROAD
TREET
1
2
3
4
5
6
7
8
ODDMENT AREA
WASTE STORAGE
HAZARDOUS DRUMS
FILLING AREA
MODULE PLANTER
LIQUIDS
LIQUIDS
LIQUIDS
LIQUIDS
LIQUIDS
TANK FARM
RAW MATERIAL HOISTING AREA
RAW MATERIAL TO MIXERS RAMP 1:12
MAIN SERVICE ENTRANCE
RECEIVING OFFICE
WRIGHT BRIDGE
RAW MATERIAL STORE A
PACKAGING STORE B
-1360
-1000
-1000
PRODUCT TO PACKAGING RAMP
MODULE PLANTER
WALKWAY TO GATHERING SPACE
MODULE PLANTER
GATHERING SPACE
-2360
-1906
SEATING
WALKWAY
PRODUCT PACKAGING
RECEPTION
MAIN ENTRANCE TO COLOUR COURTYARD
PLASCON PRODUCT DISPLAY
ART DISPLAY
ART DISPLAY
LIGHT BOX
LIGHT BOX
ART DISPLAY
RAMP TO CONCEPT SHOP
CONCEPT SHOP RECEPTION
CONCEPT ROOM
-1000
LADIES RESTROOM
MEN'S RESTROOM
STORAGE AR
WAITING AREA
STAIR SEATING
PAINT AND PRODUCTS SHOP
STAIRWAY TO COLOUR THERAPY AREA
PUBLIC SEATING
VISITOR PARKING

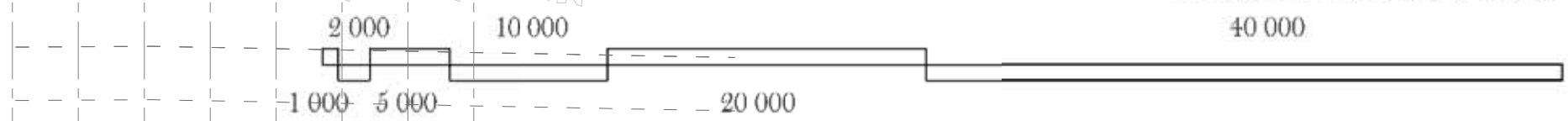


GROUND FLOOR PLAN

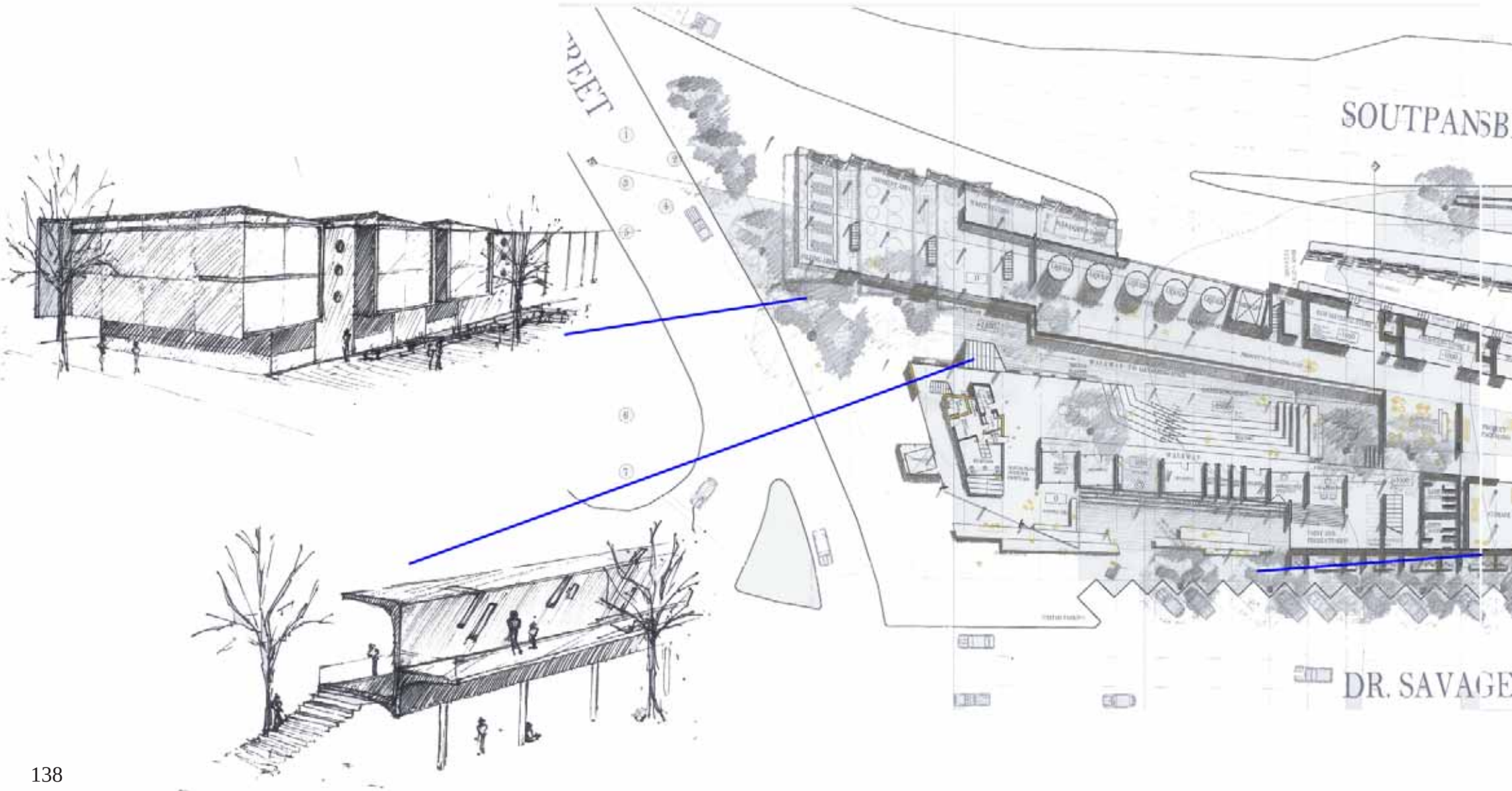
40 000

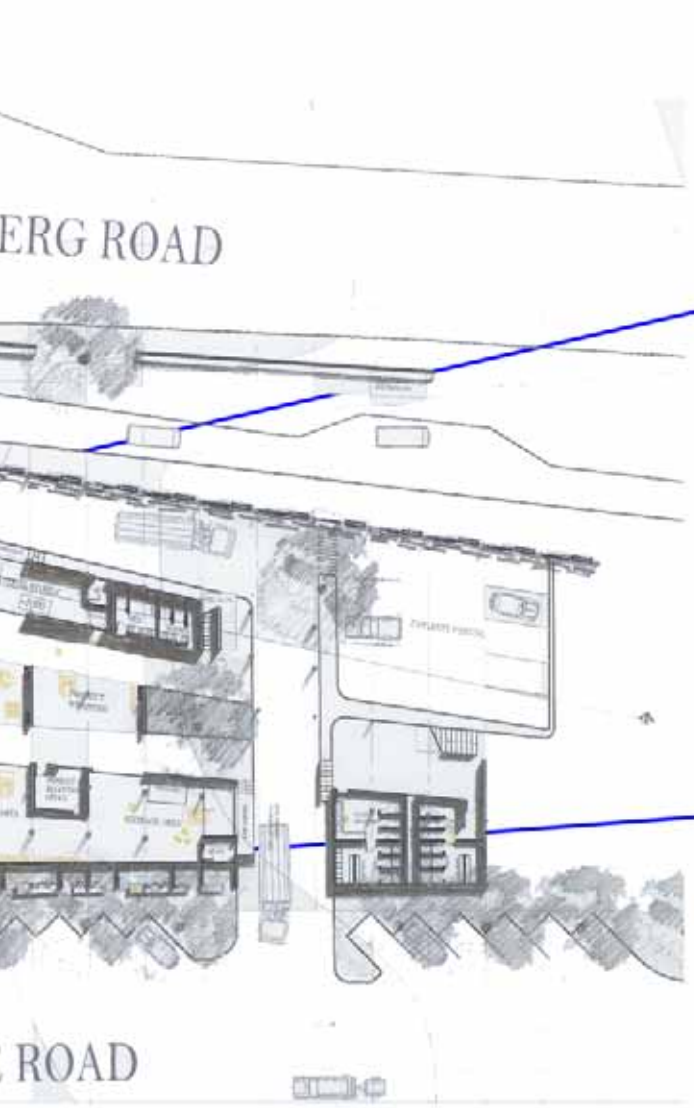

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA
SOUTPANSBERG ROAD
DR. SAVAGE ROAD
TREET
1
2
3
4
5
6
7
8
SECONDARY MIXING AREA
INTERMEDIATE STORAGE
MAIN MIXING AREA
BATCH TESTING AREA
TEAM AREA
PRODUCTION FLOOR MANAGERS OFFICE
LIQUIDS
WALKWAY
VIEWING WALKWAY
CORRIDOR
PRODUCT TESTING LABORATORY
RESEARCH LABORATORY
WESTERN BRISE SOLEIL WALL
PLAY OF LIGHT AND COLOUR WALKWAY
LIGHT BOX
COLOUR BOX
CAFE SEATING
COLOUR CAFE
LADIES RESTROOM
MENS RESTROOM
RECEPTION
THERAPY
3400

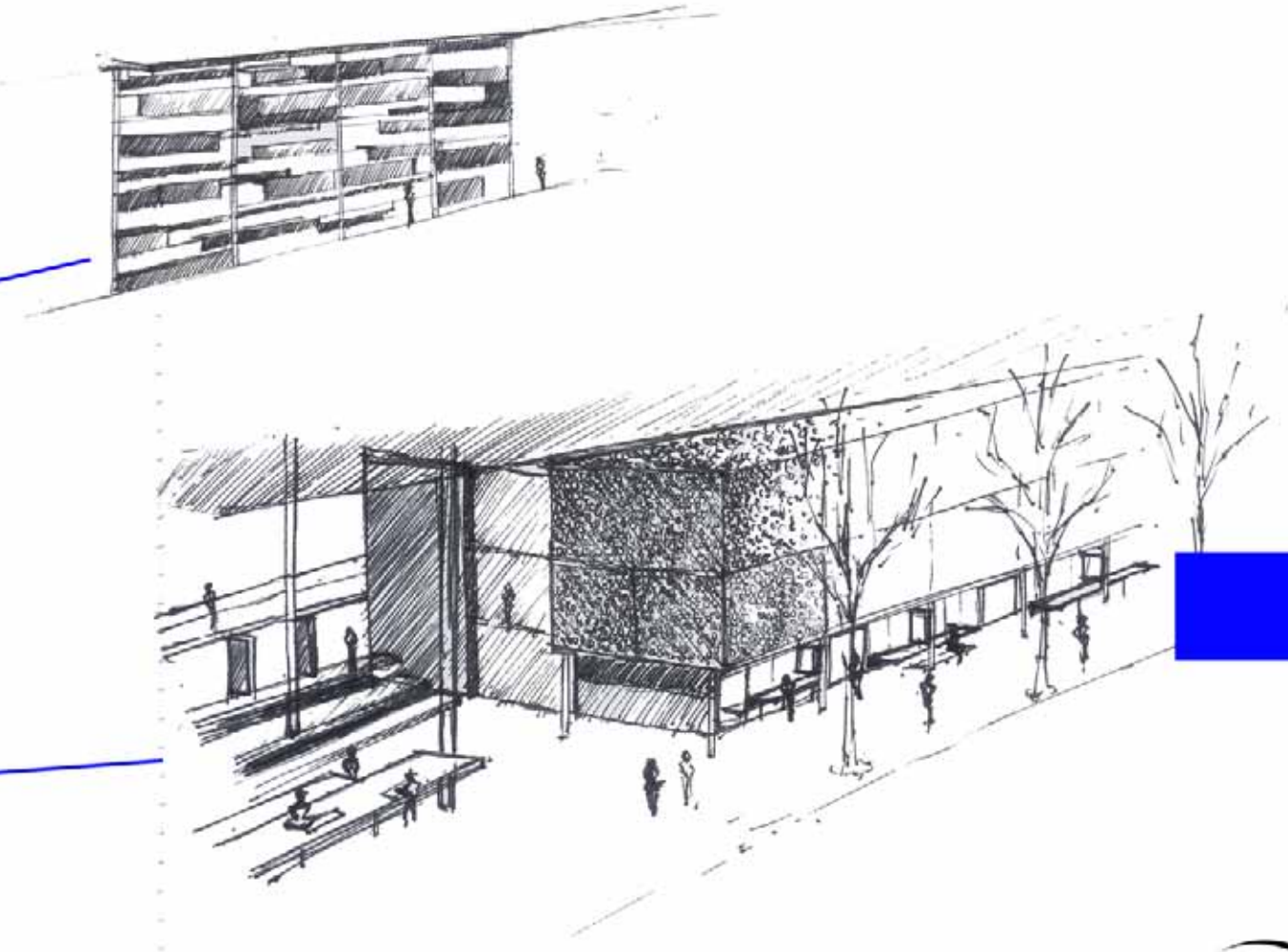




FIRST FLOOR PLAN


SOUTPANSB
DR. SAVAGE





PERSPECTIVES PLAN

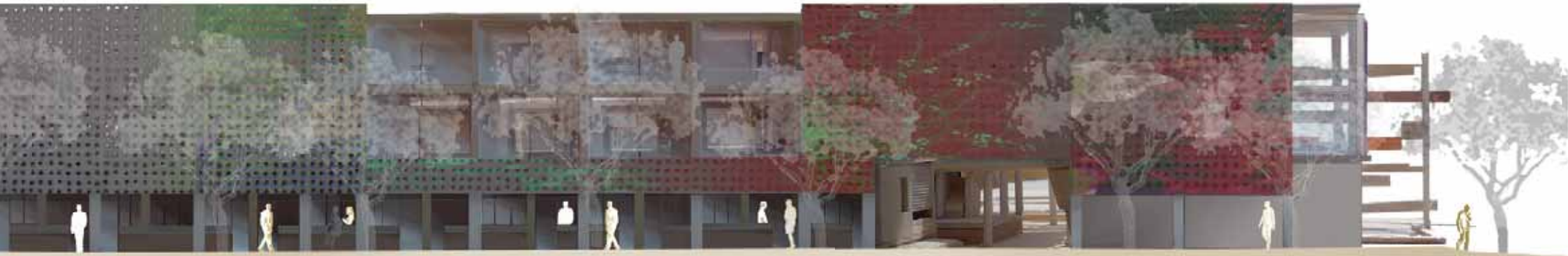
2 000 10 000 40 000
1 000 5 000 20 000

WITHOUT ROOF

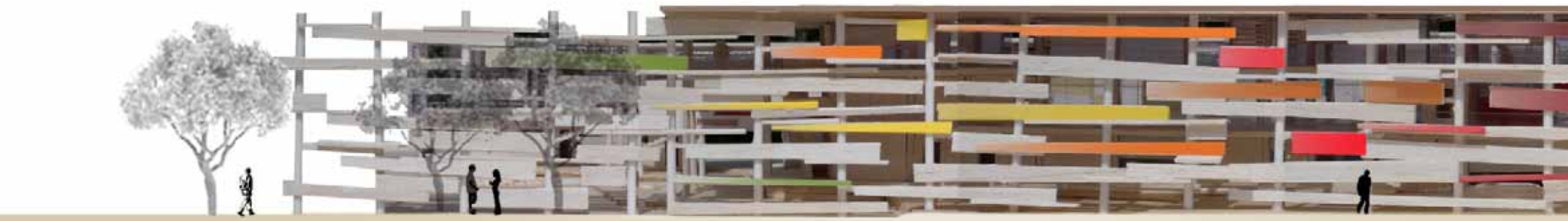
PLAN AERIAL VIEW

WITH ROOF

PLAN AERIAL VIEW



NORTH EASTERN ELEVATION



SOUTH WESTERN ELEVATION


COLOUR PRODUCTION
CANVAS

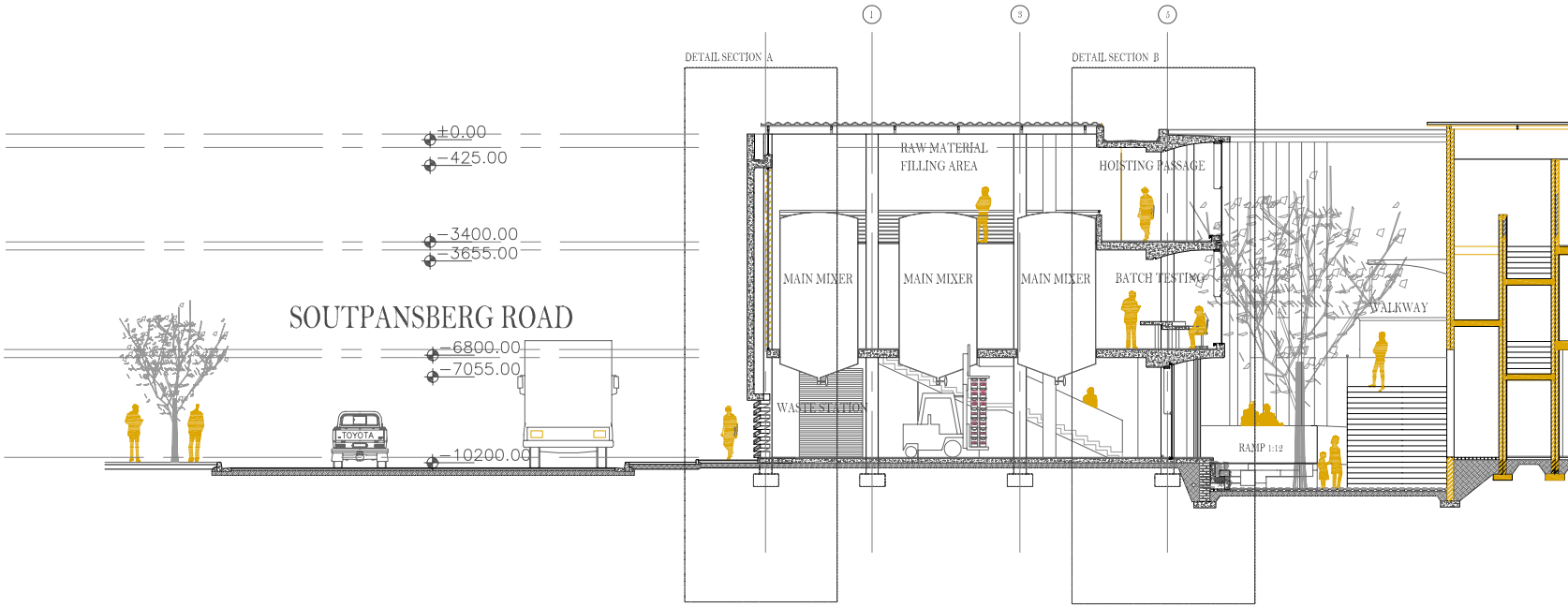
VIEW OF MAIN ENTRANCE
SHOWING THE EXISTING BUILDING

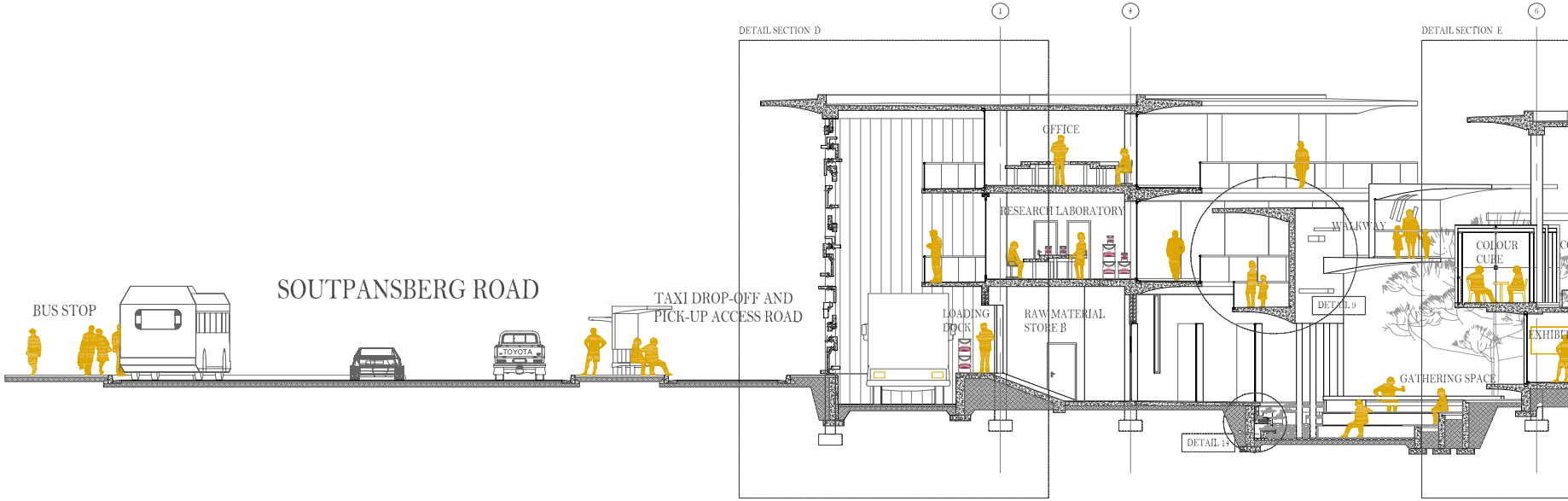
CORNER VIEW OF BUILDING AS SEEN BY APPROACHING VEHICLES FROM BOOM STREET

NORTHERN PERSPECTIVE OF BUILDING, SHOWING THE PLAY OF LIGHT AND COLOUR ON THE WESTERN BRISE SOLEIL WALL

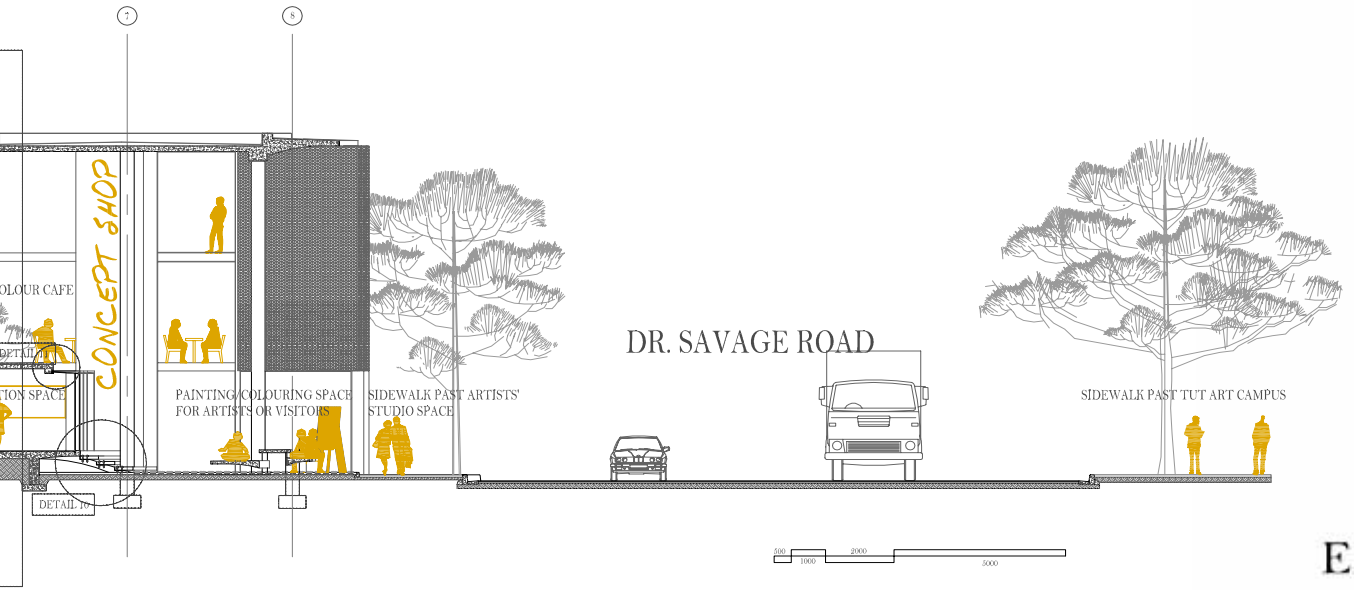
SOUTHERN PERSPECTIVE OF BUILDING SHOWING THE MOVEMENT THROUGH THE SITE

PERSPECTIVE SHOWING THE RECEIVING ENTRANCE AND TANK FARM WITH FLANKING WALLS


DETAIL SECTION A
DETAIL SECTION B
±0.00
-425.00
-3400.00
-3655.00
-6800.00
-7055.00
-10200.00
SOUTPANSBERG ROAD
RAW MATERIAL FILLING AREA
HOISTING PASSAGE
MAIN MIXER
MAIN MIXER
MAIN MIXER
BATCH TESTING
WALKWAY
WASTE STATION
RAMP 1:12
TOYOTA

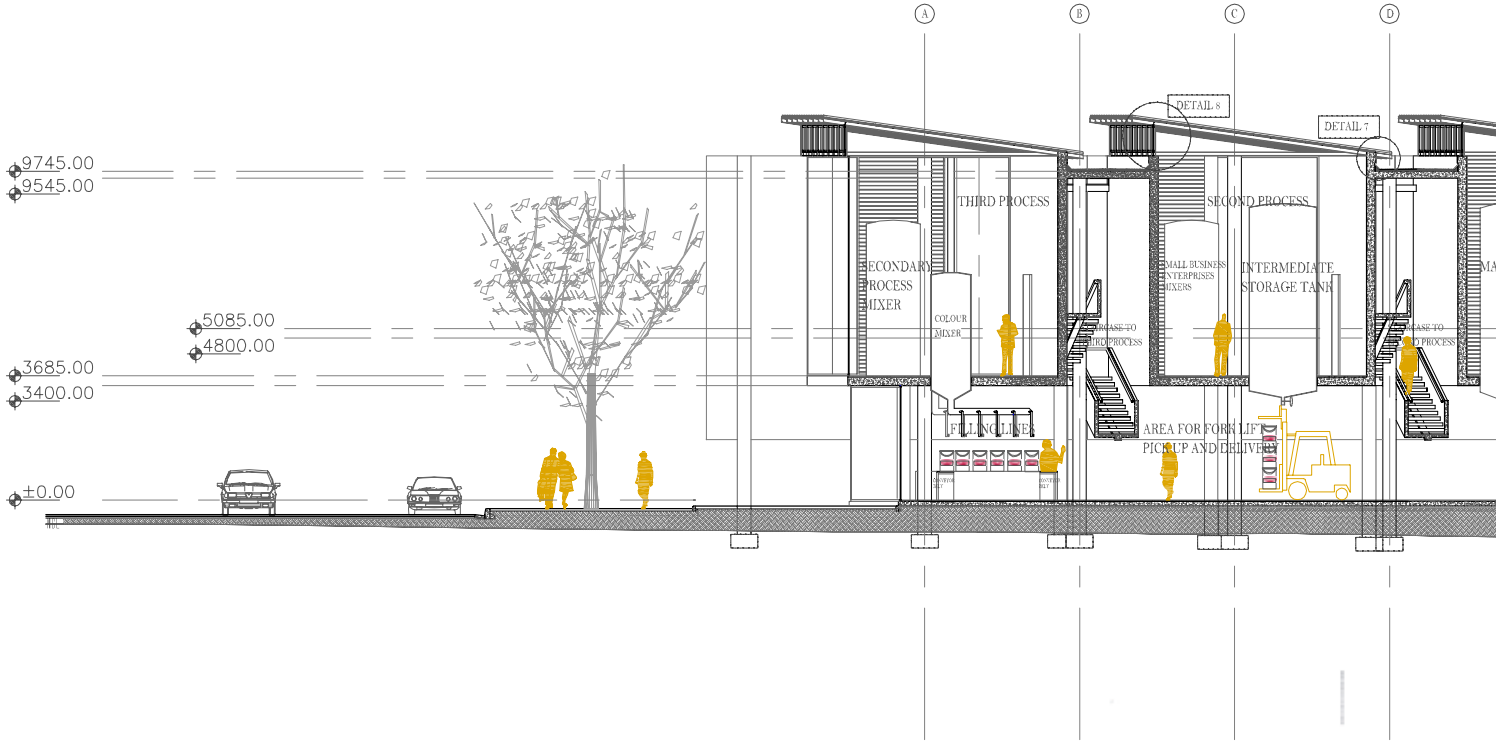

DETAIL SECTION D
DETAIL SECTION E
SOUTPANSBERG ROAD
BUS STOP
TAXI DROP-OFF AND PICK-UP ACCESS ROAD
OFFICE
RESEARCH LABORATORY
WALKWAY
COLOUR CUBE
LOADING DOCK
RAW MATERIAL STORE B
DETAIL 9
GATHERING SPACE
DETAIL 14
TOYOTA

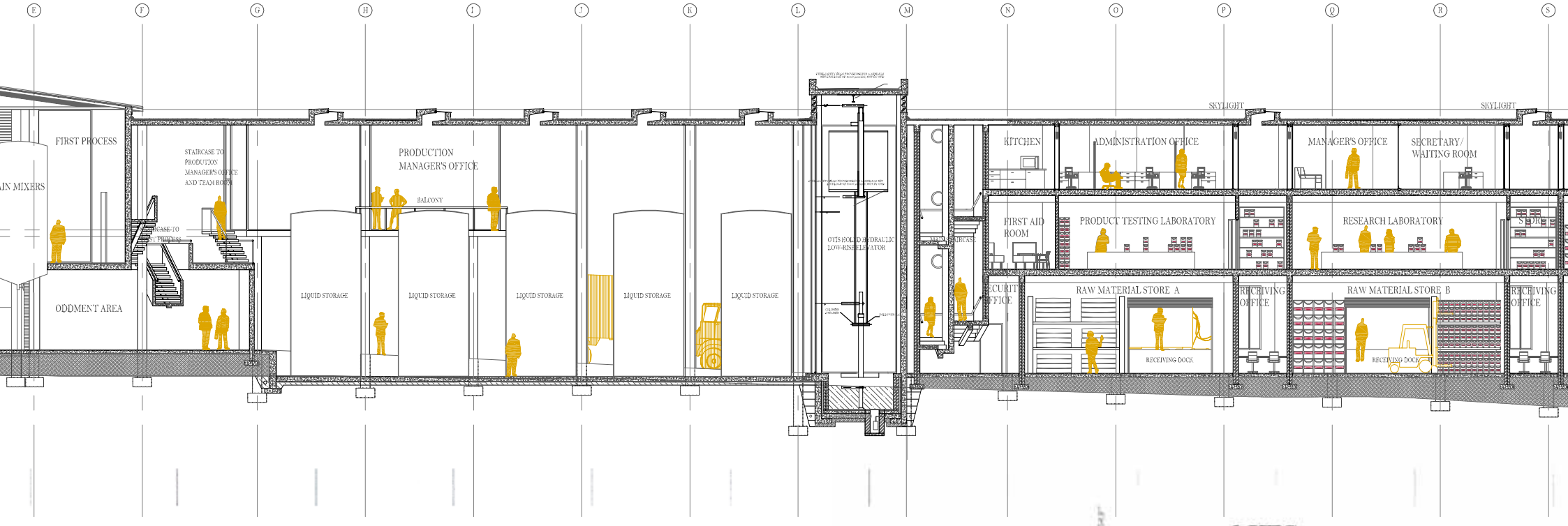
SECTION A-A



EXISTING STRUCTURE

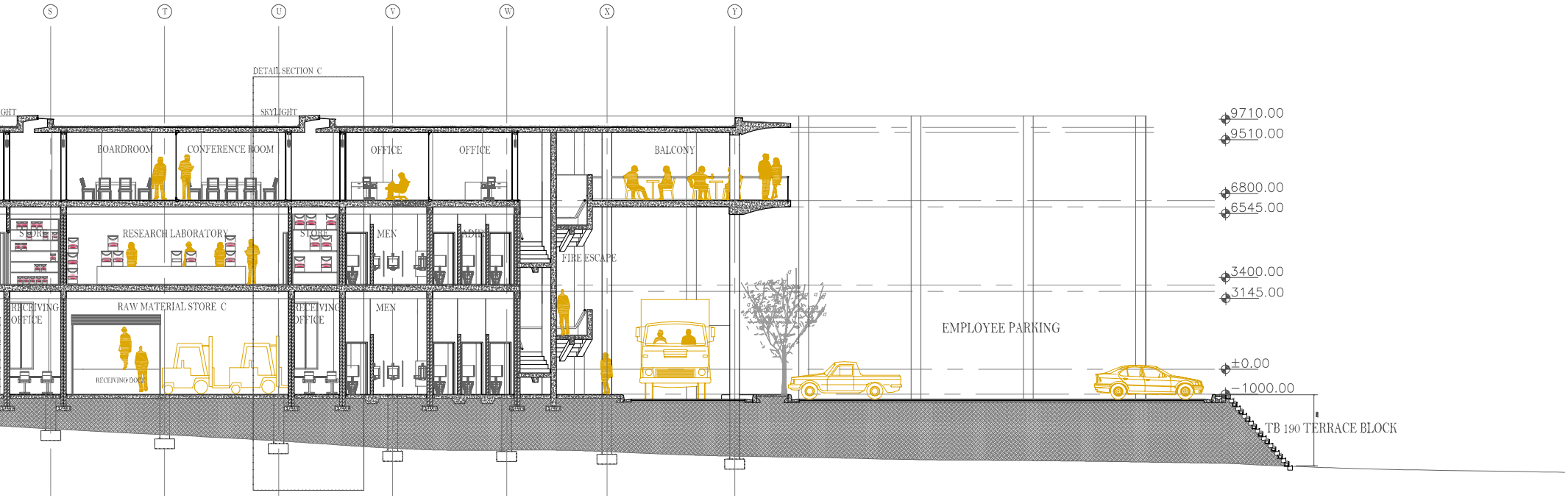
SECTION C-C


A
B
C
D
9745.00
9545.00
5085.00
4800.00
3685.00
3400.00
±0.00
DETAIL 8
DETAIL 7
THIRD PROCESS
SECOND PROCESS
SECONDARY PROCESS MIXER
COLOUR MIXER
SMALL BUSINESS ENTERPRISES MIXERS
INTERMEDIATE STORAGE TANK
FILLING LINE
AREA FOR FORK LIFT PICK UP AND DELIVERY

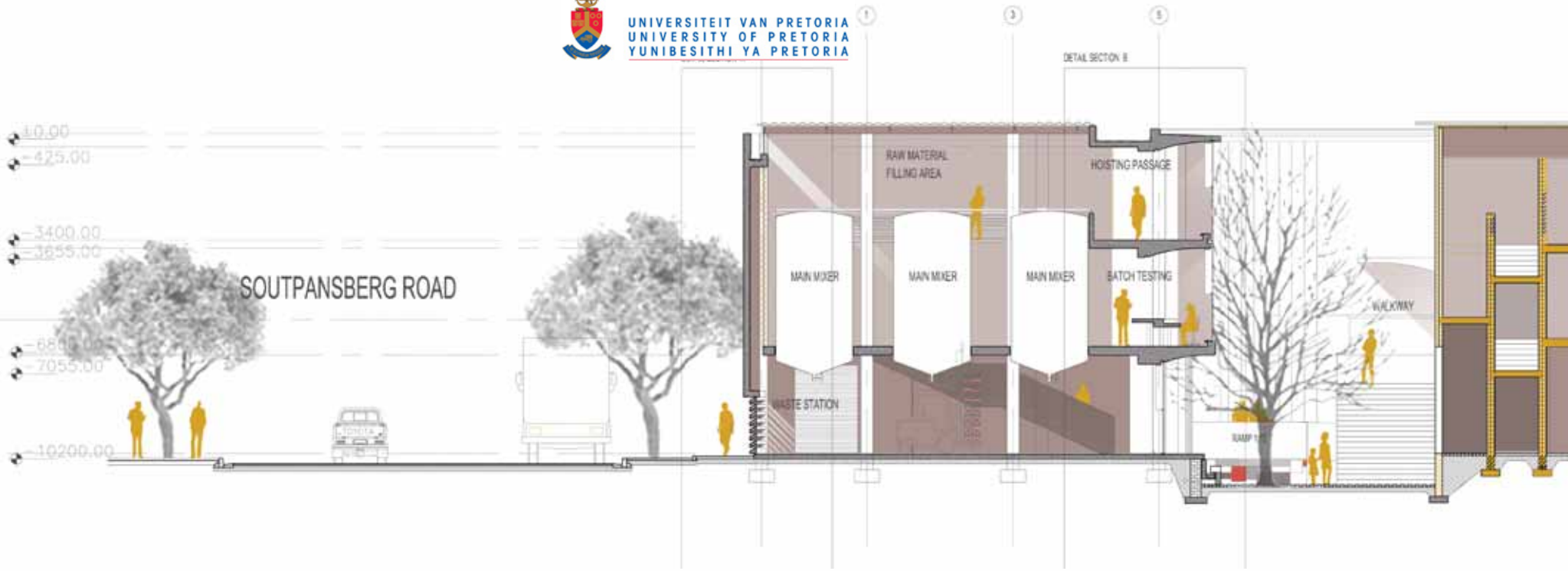


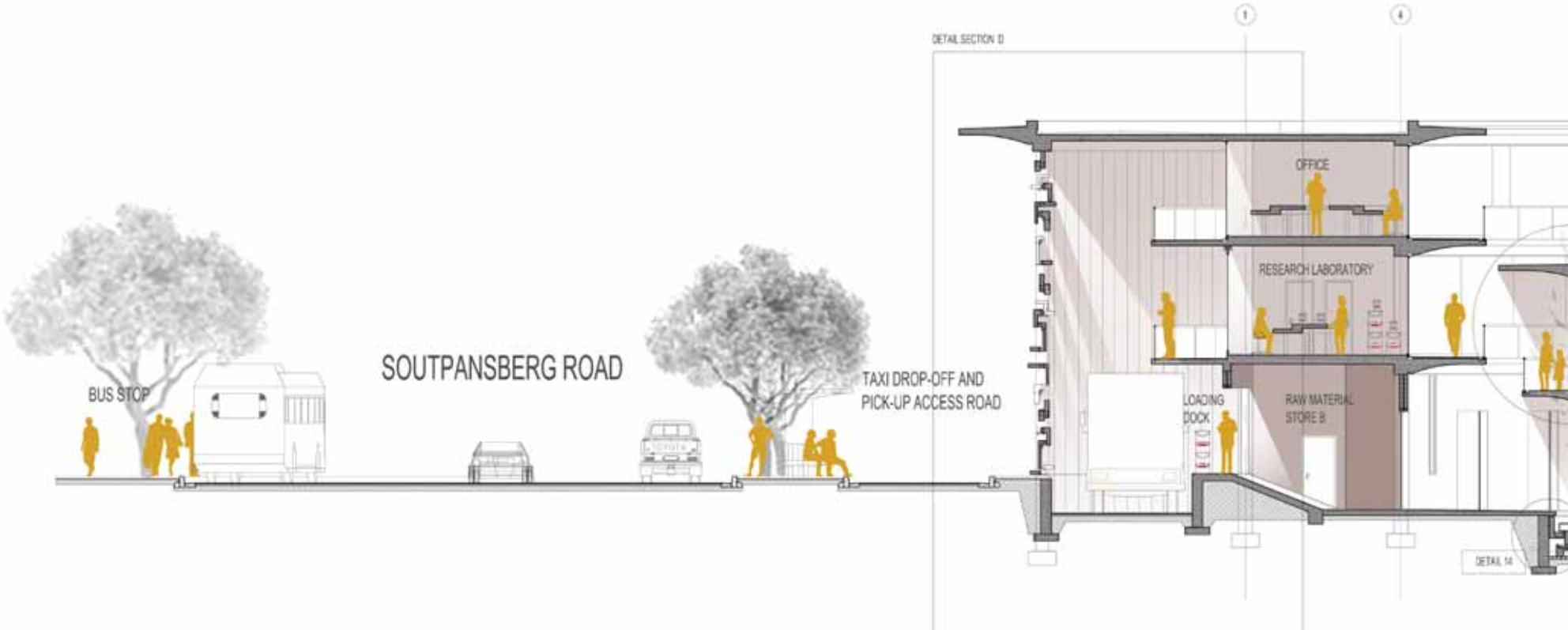
NTS

SECTION B-B


S
T
U
V
W
X
Y
DETAIL SECTION C
SKYLIGHT
BOARDROOM
CONFERENCE ROOM
OFFICE
OFFICE
BALCONY
RESEARCH LABORATORY
STORE
MEN
FIRE ESCAPE
RAW MATERIAL STORE C
MEN
EMPLOYEE PARKING
9710.00
9510.00
6800.00
6545.00
3400.00
3145.00
±0.00
-1000.00
TB 190 TERRACE BLOCK

NTS
SECTION B-B

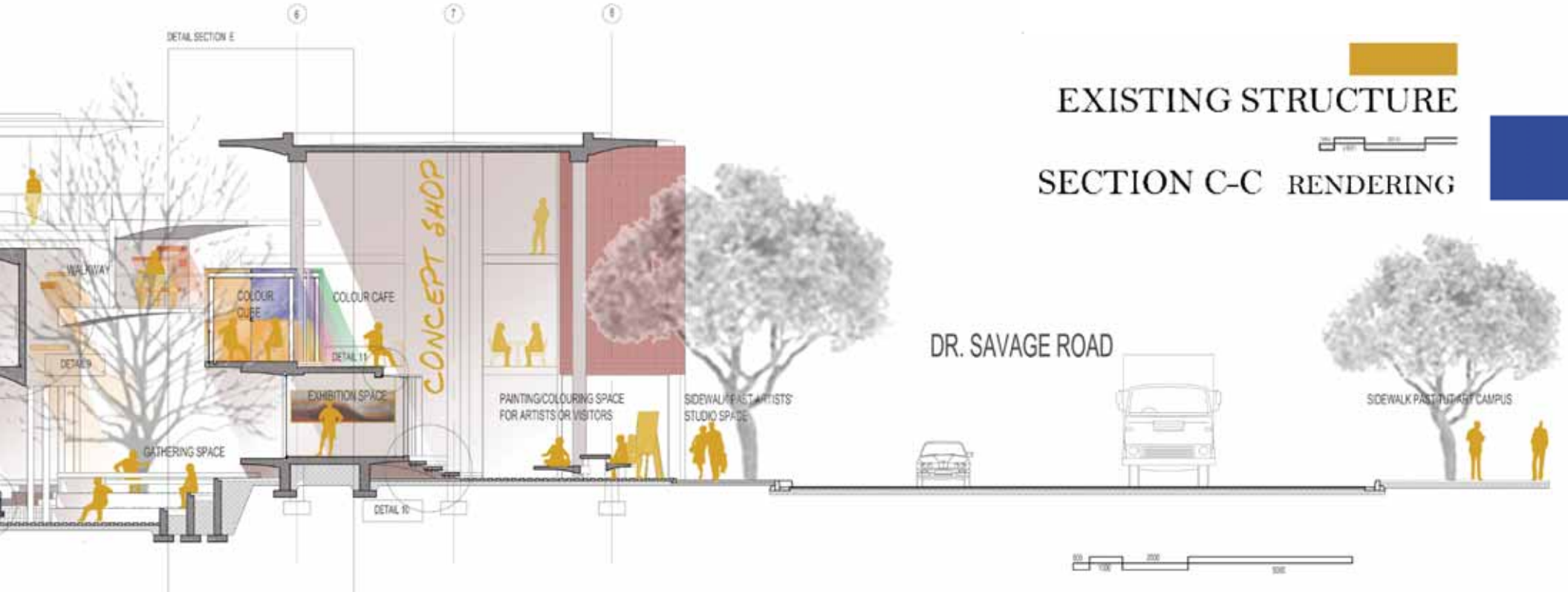

DETAIL SECTION B
10.00
-425.00
-3400.00
-3655.00
-7055.00
-10200.00
SOUTPANSBERG ROAD
RAW MATERIAL
FILLING AREA
HOISTING PASSAGE
MAIN MIXER
MAIN MIXER
MAIN MIXER
BATCH TESTING
WALKWAY
WASTE STATION

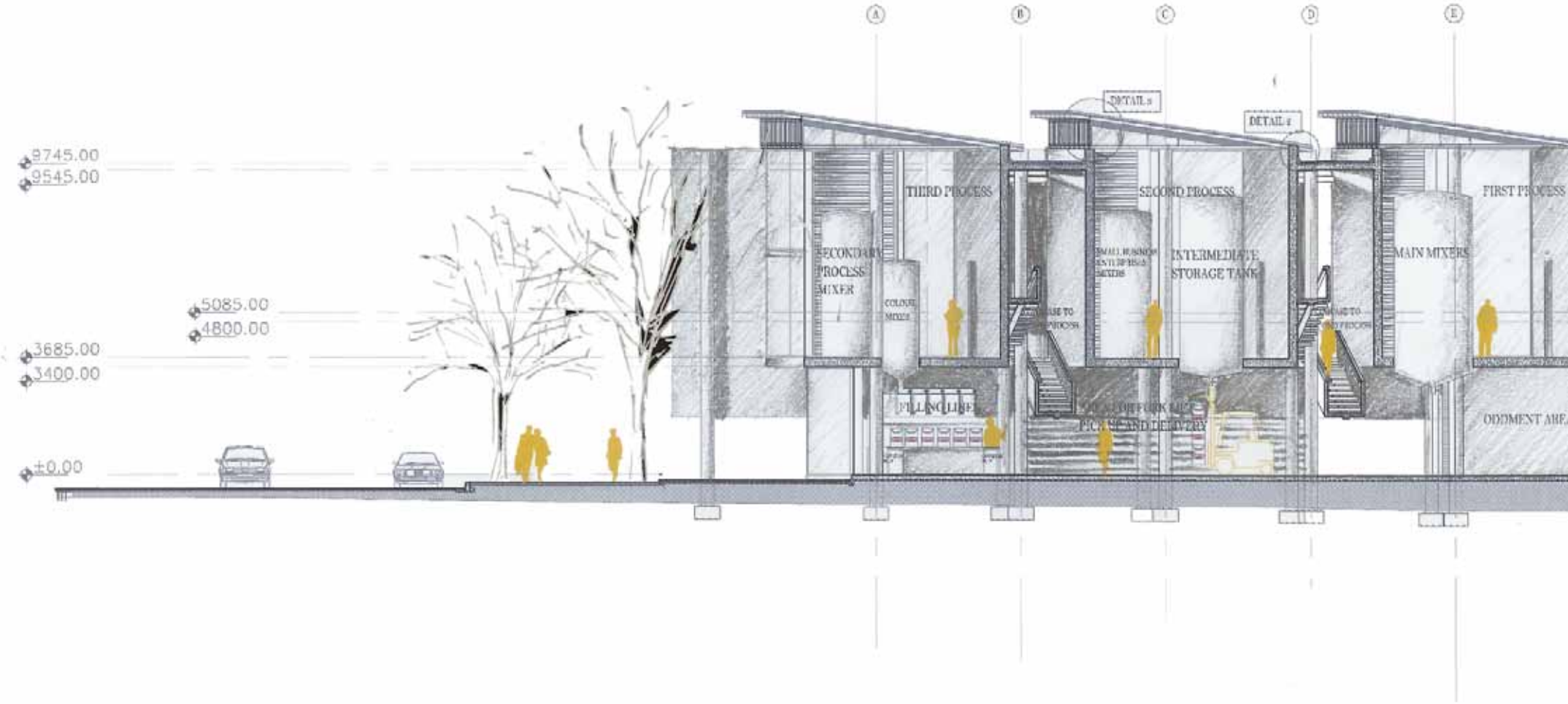

DETAIL SECTION D
BUS STOP
SOUTPANSBERG ROAD
TAXI DROP-OFF AND
PICK-UP ACCESS ROAD
OFFICE
RESEARCH LABORATORY
LOADING
DOCK
RAW MATERIAL
STORE B

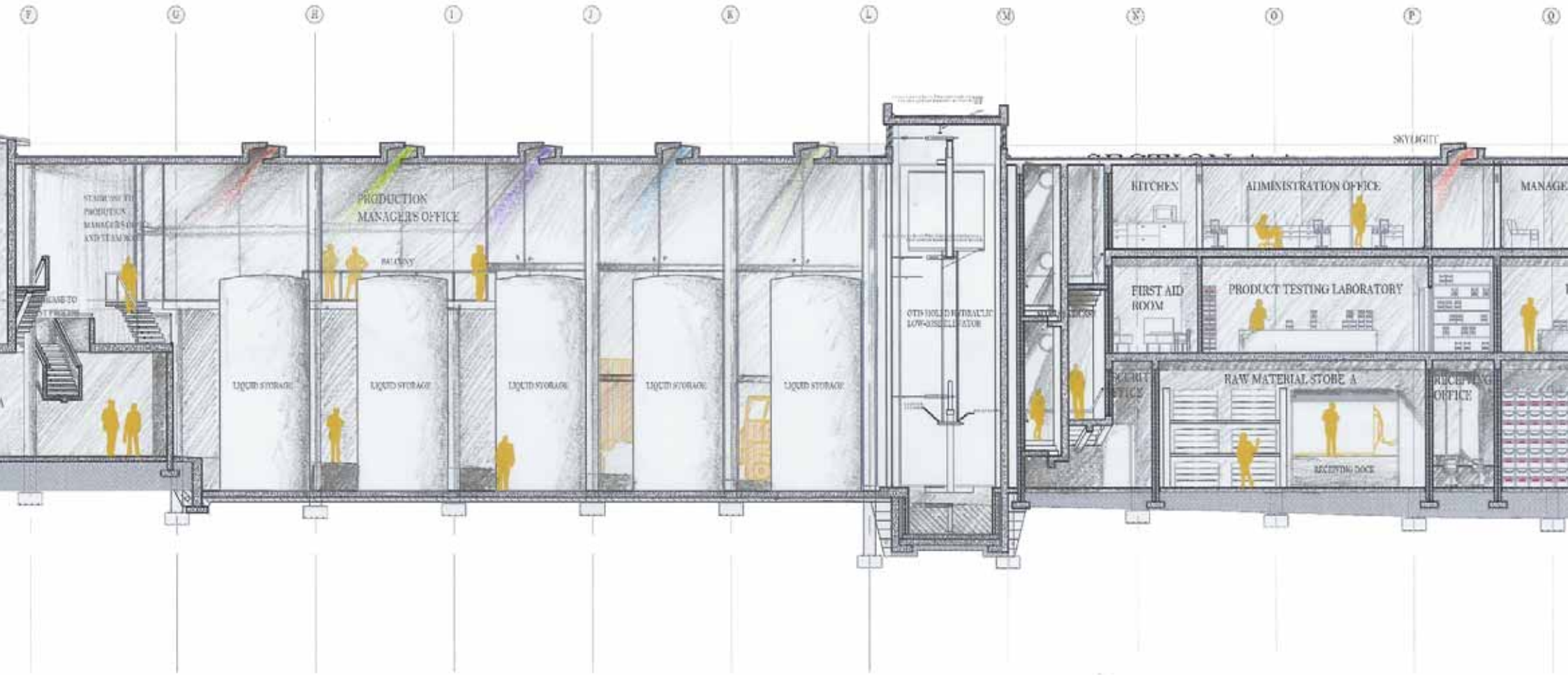
SECTION A-A RENDERING

EXISTING STRUCTURE

SECTION C-C RENDERING

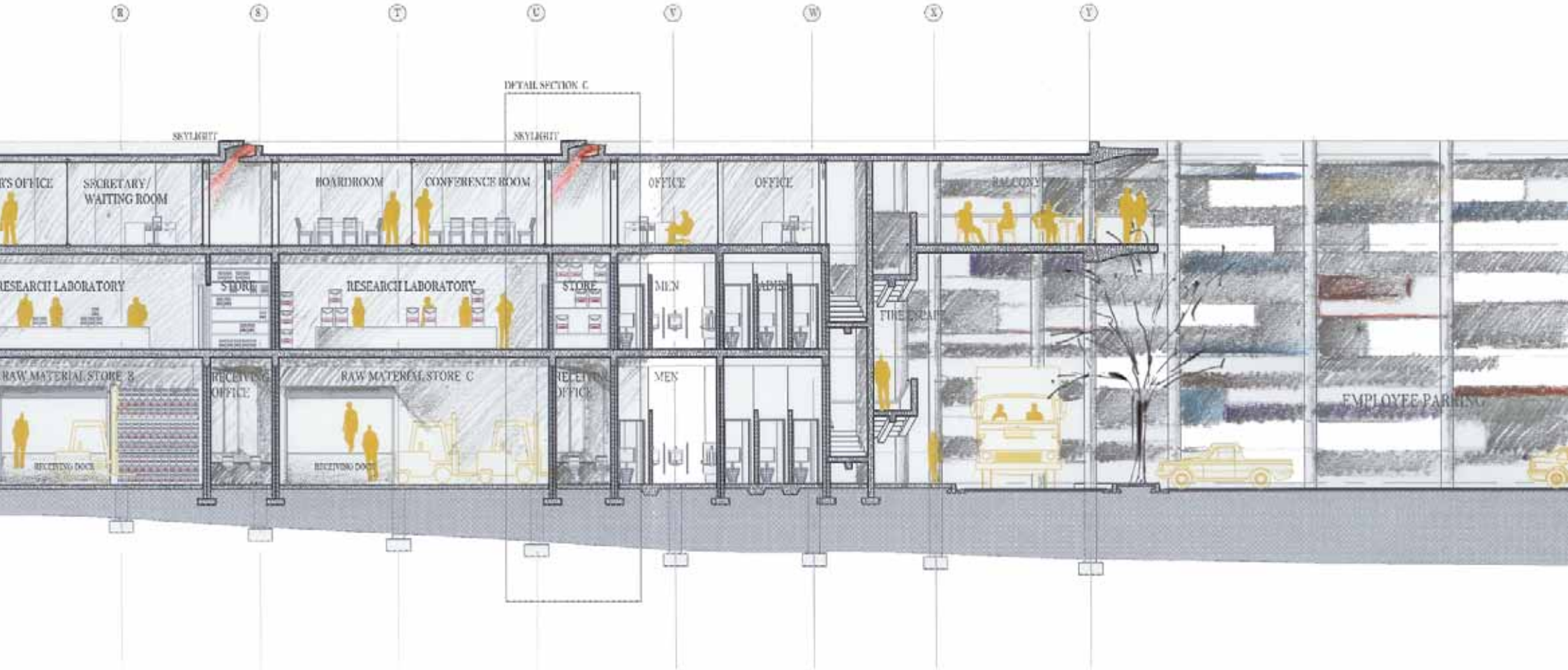



9745.00
9545.00
5085.00
4800.00
3685.00
3400.00
±0.00
A
B
C
D
E
DETAIL 5
DETAIL 6
THIRD PROCESS
SECOND PROCESS
FIRST PROCESS
SECONDARY PROCESS MIXER
COLOUR MIXER
INTERMEDIATE STORAGE TANK
MAIN MIXERS
FILLING LINE
ODDMENT ARE



NTS

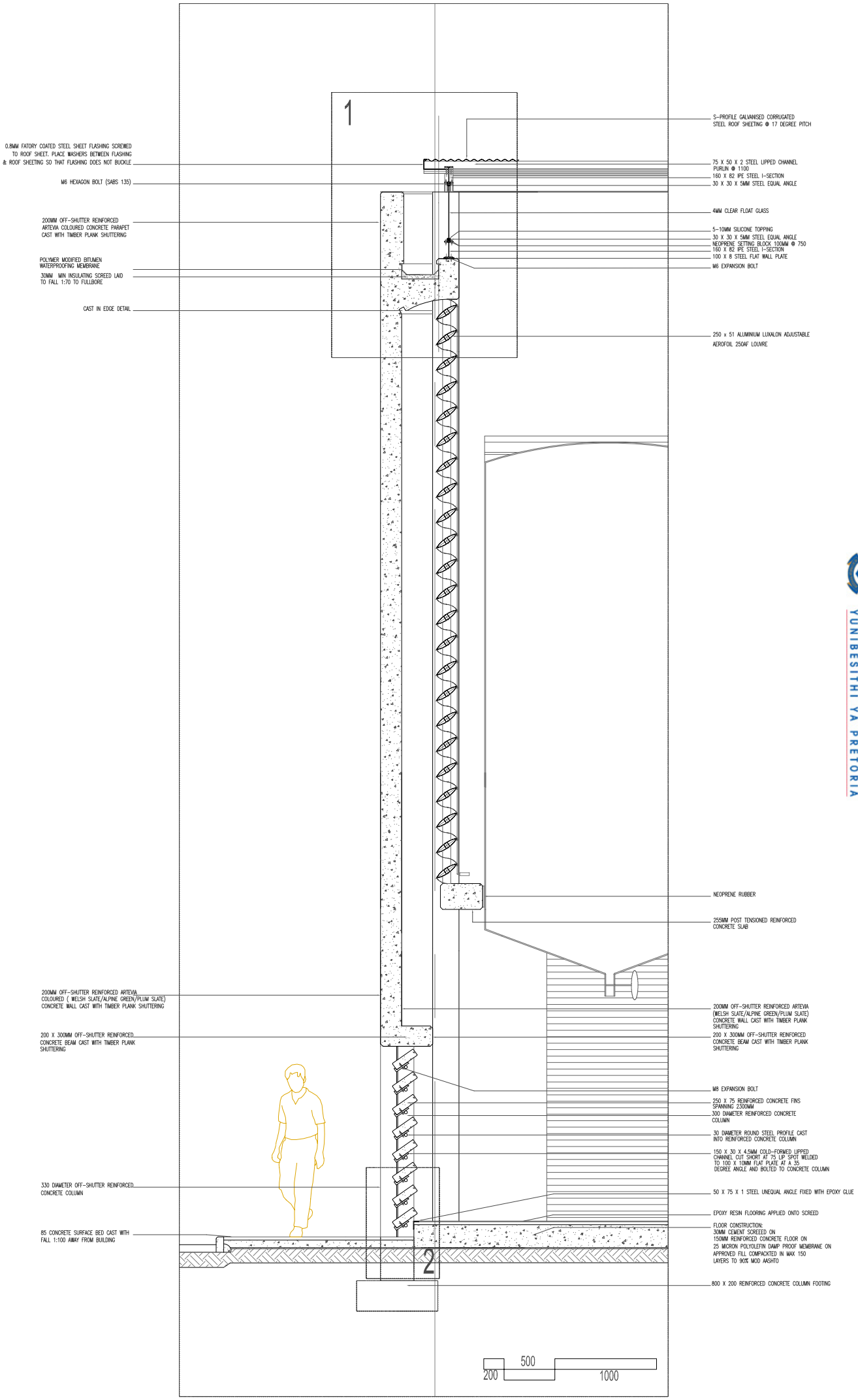
SECTION B-B HAND RENDERING


R
S
T
U
V
W
X
Y
DETAIL SECTION C
SKYLIGHT
SKYLIGHT
'S OFFICE
SECRETARY/
WAITING ROOM
BOARDROOM
CONFERENCE ROOM
OFFICE
OFFICE
BALCONY
RESEARCH LABORATORY
STORE
RESEARCH LABORATORY
STORE
MEN
FIRE ESCAPE
RAW MATERIAL STORE B
RECEIVING OFFICE
RAW MATERIAL STORE C
MEN
EMPLOYEE PARKING

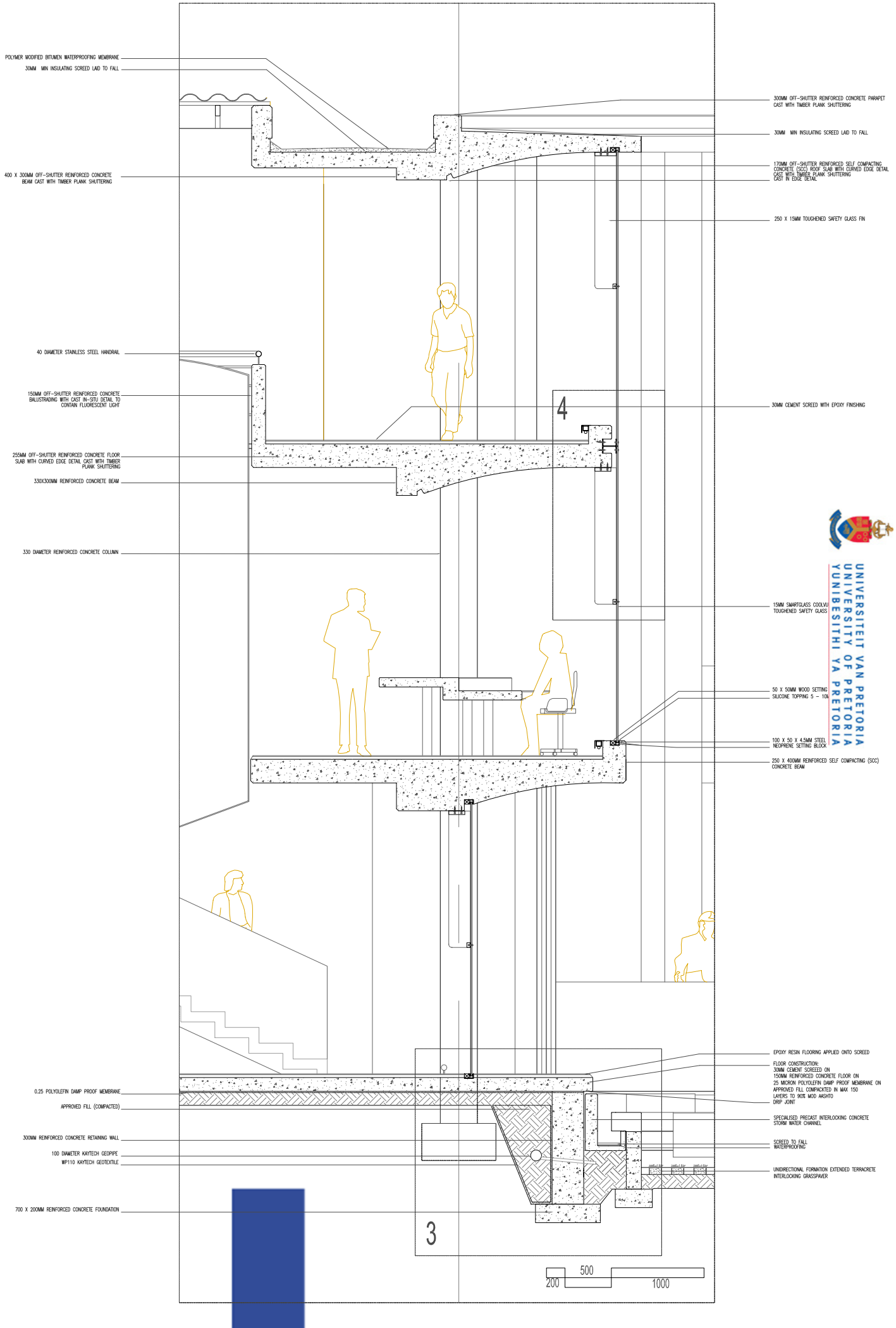
NTS

SECTION B-B HAND RENDERING

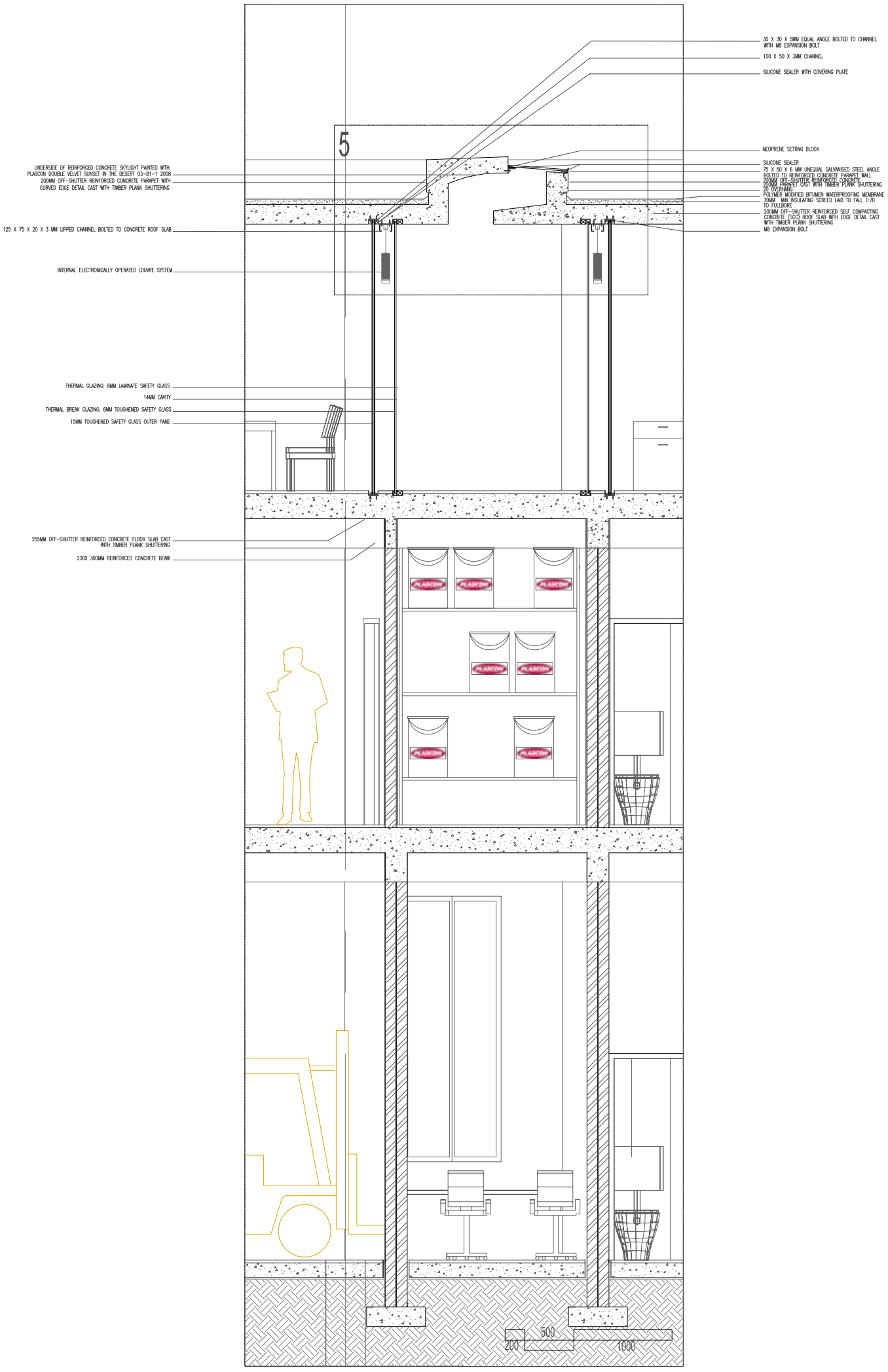
DETAIL SECTION A

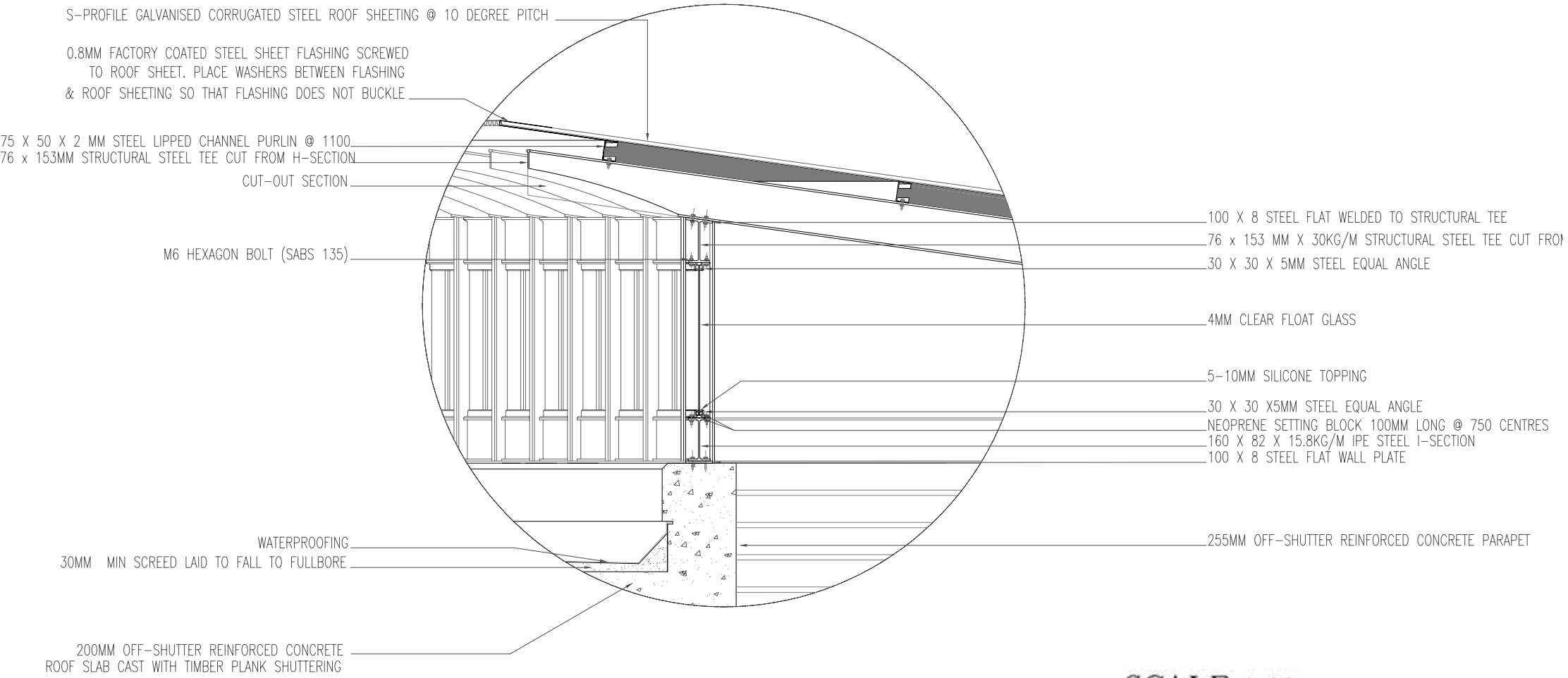


DETAIL SECTION B



DETAIL SECTION C

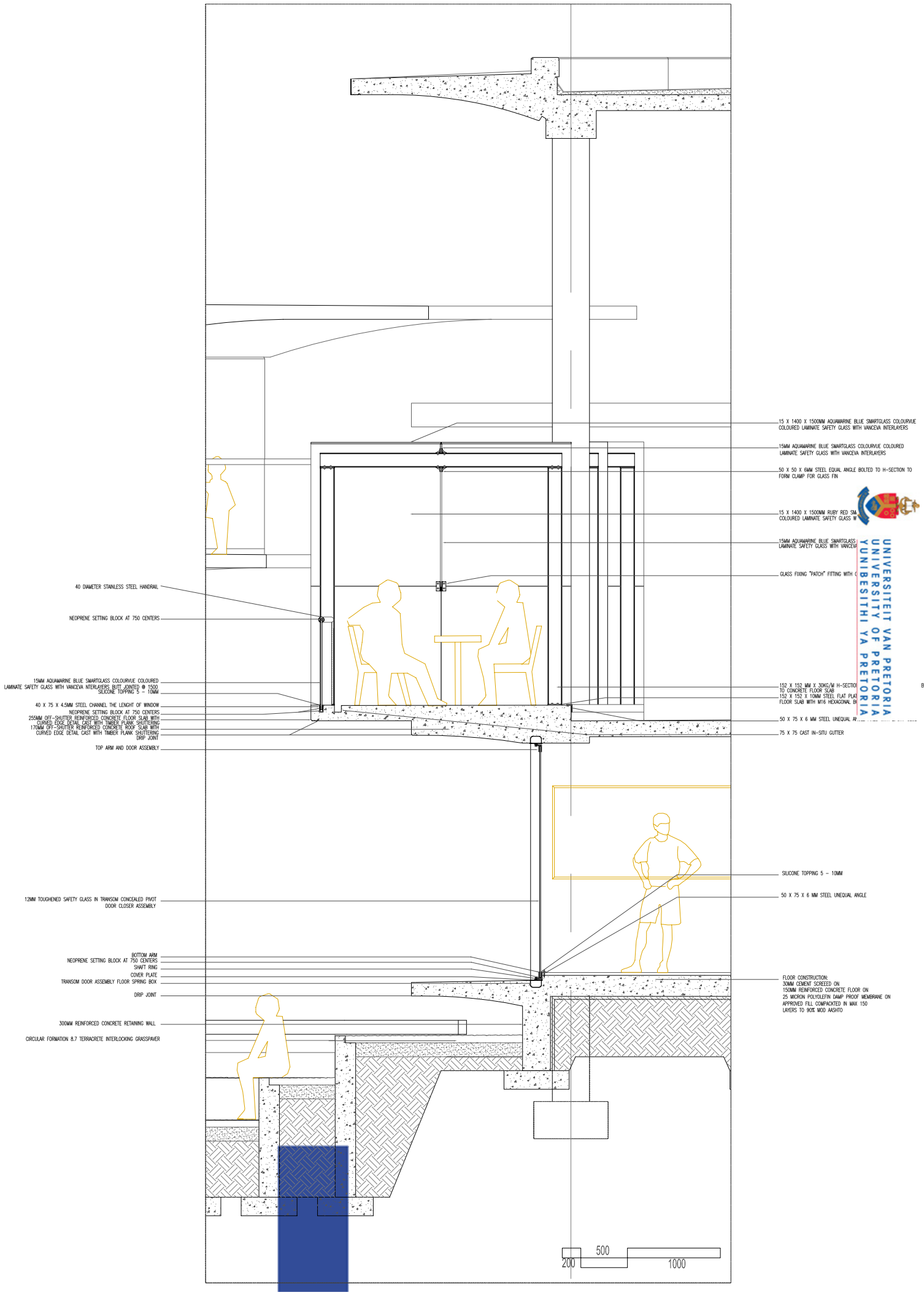




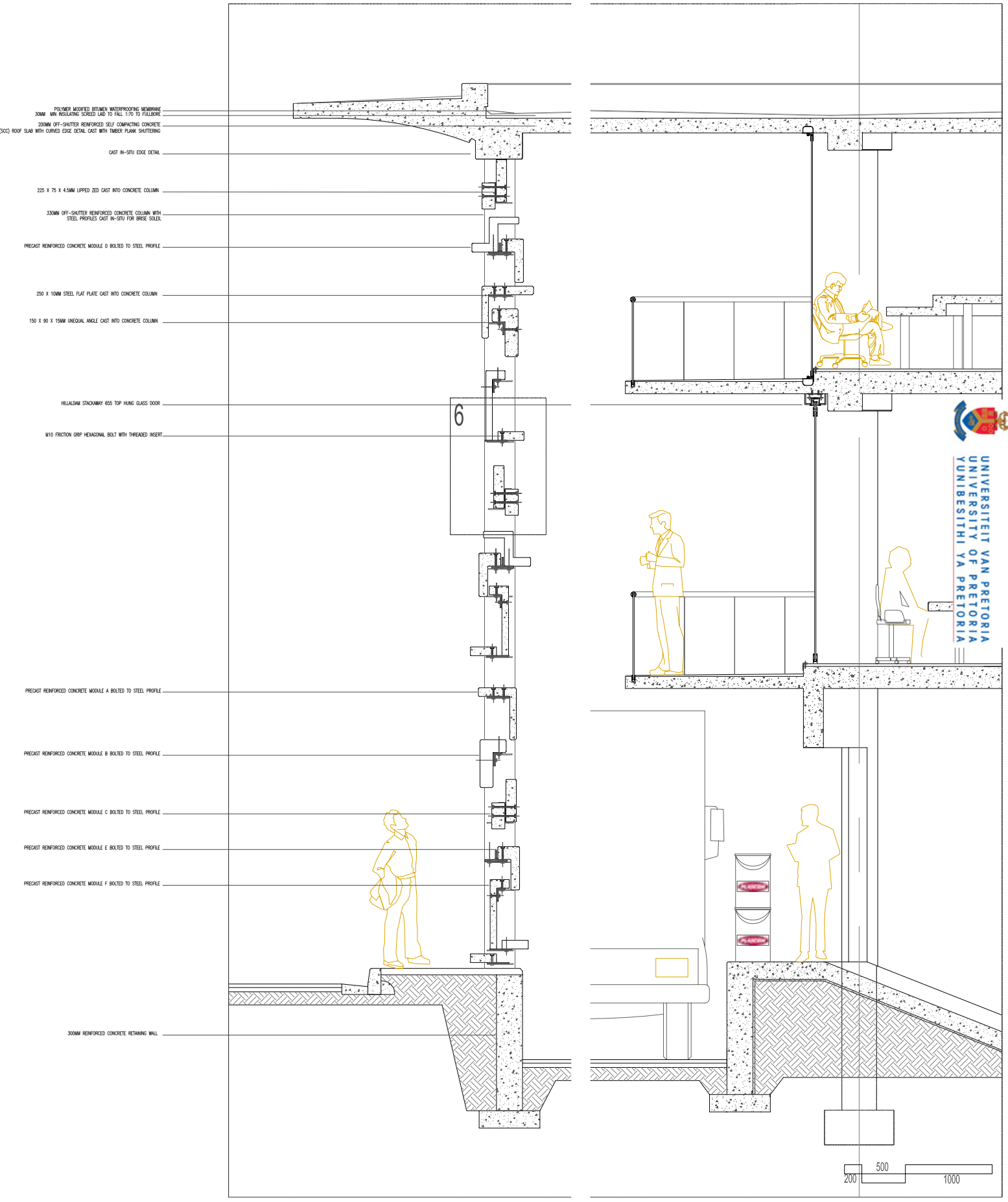
SCALE 1:20

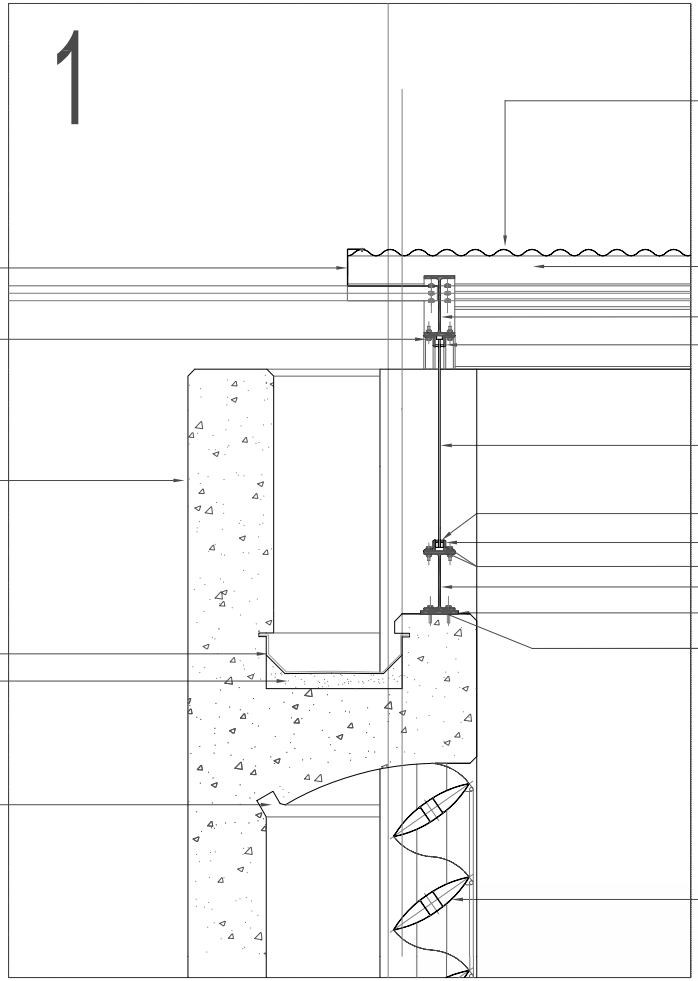
DETAIL 8

DETAIL SECTION E



DETAIL SECTION D





S-PROFILE GALVANISED CORRUGATED
STEEL ROOF SHEETING @ 17 DEGREE PITCH

0.8MM FACTORY COATED STEEL SHEET FLASHING SCREWED
TO ROOF SHEET. PLACE WASHERS BETWEEN FLASHING
& ROOF SHEETING SO THAT FLASHING DOES NOT BUCKLE

75 X 50 X 2 STEEL LIPPED CHANNEL PURLIN @ 1100

M6 HEXAGON BOLT (SABS 135)

160 X 82 IPE STEEL I-SECTION
30 X 30 X 5MM STEEL EQUAL ANGLE

4MM CLEAR FLOAT GLASS

200MM OFF-SHUTTER REINFORCED ARTEVIA COLOURED
CONCRETE PARAPET CAST WITH TIMBER PLANK SHUTTERING

5-10MM SILICONE TOPPING
30 X 30 X 5MM STEEL EQUAL ANGLE
NEOPRENE SETTING BLOCK 100MM LONG @ 750 CENTRES
160 X 82 IPE STEEL I-SECTION
100 X 8 STEEL FLAT WALL PLATE

M6 EXPANSION BOLT

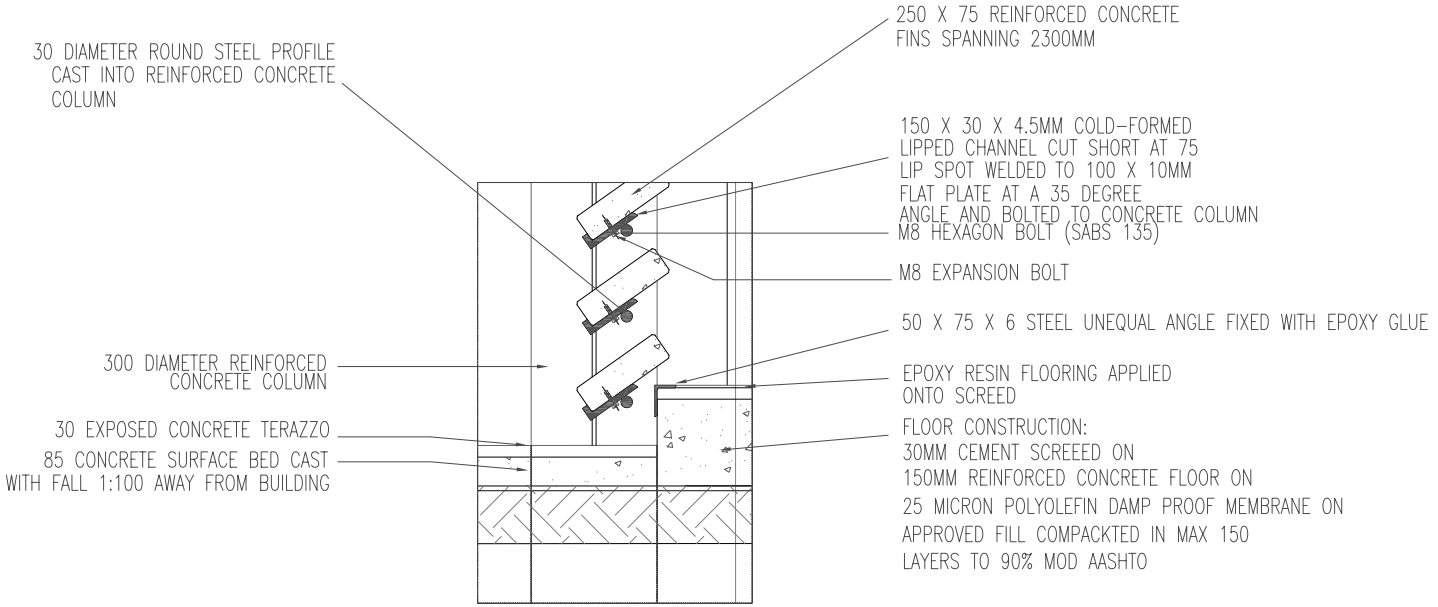
POLYMER MODIFIED BITUMEN WATERPROOFING MEMBRANE
30MM MIN INSULATING SCREED LAID TO FALL 1:70 TO FULLBORE

CAST IN EDGE DETAIL

250 x 51 ALUMINIUM LUXALON ADJUSTABLE AEROFOIL
250AF LOUVRE

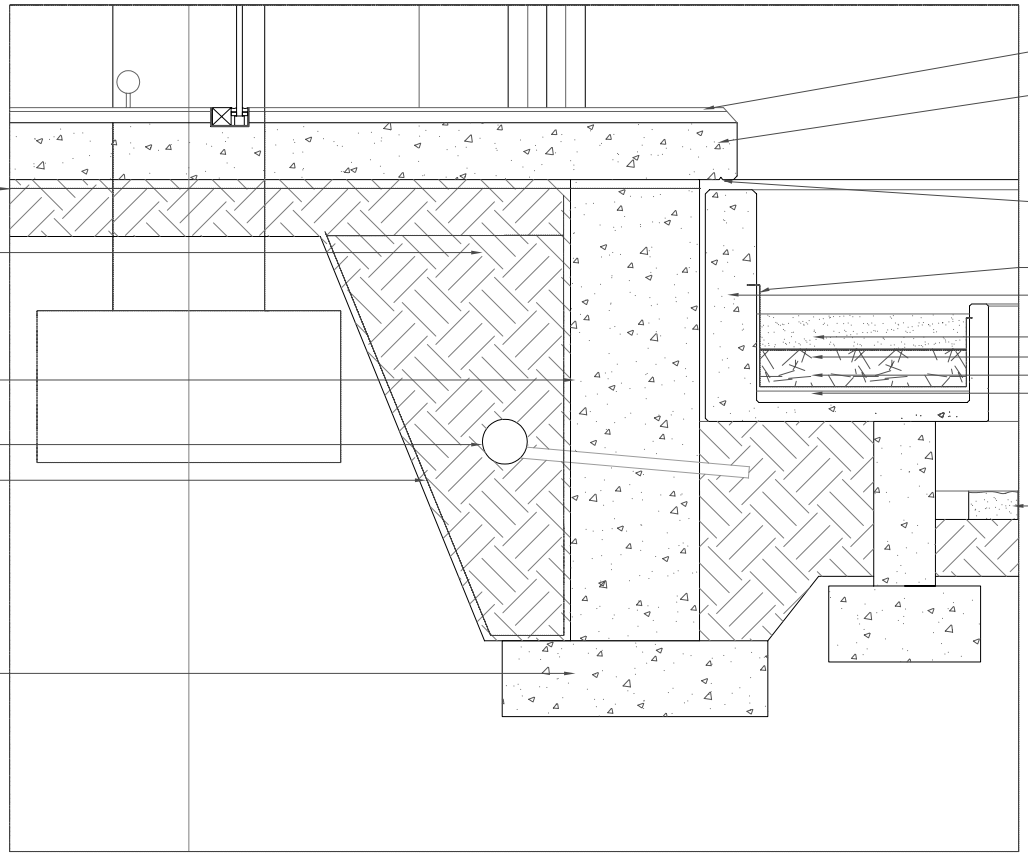
SCALE 1:20

DETAIL 1



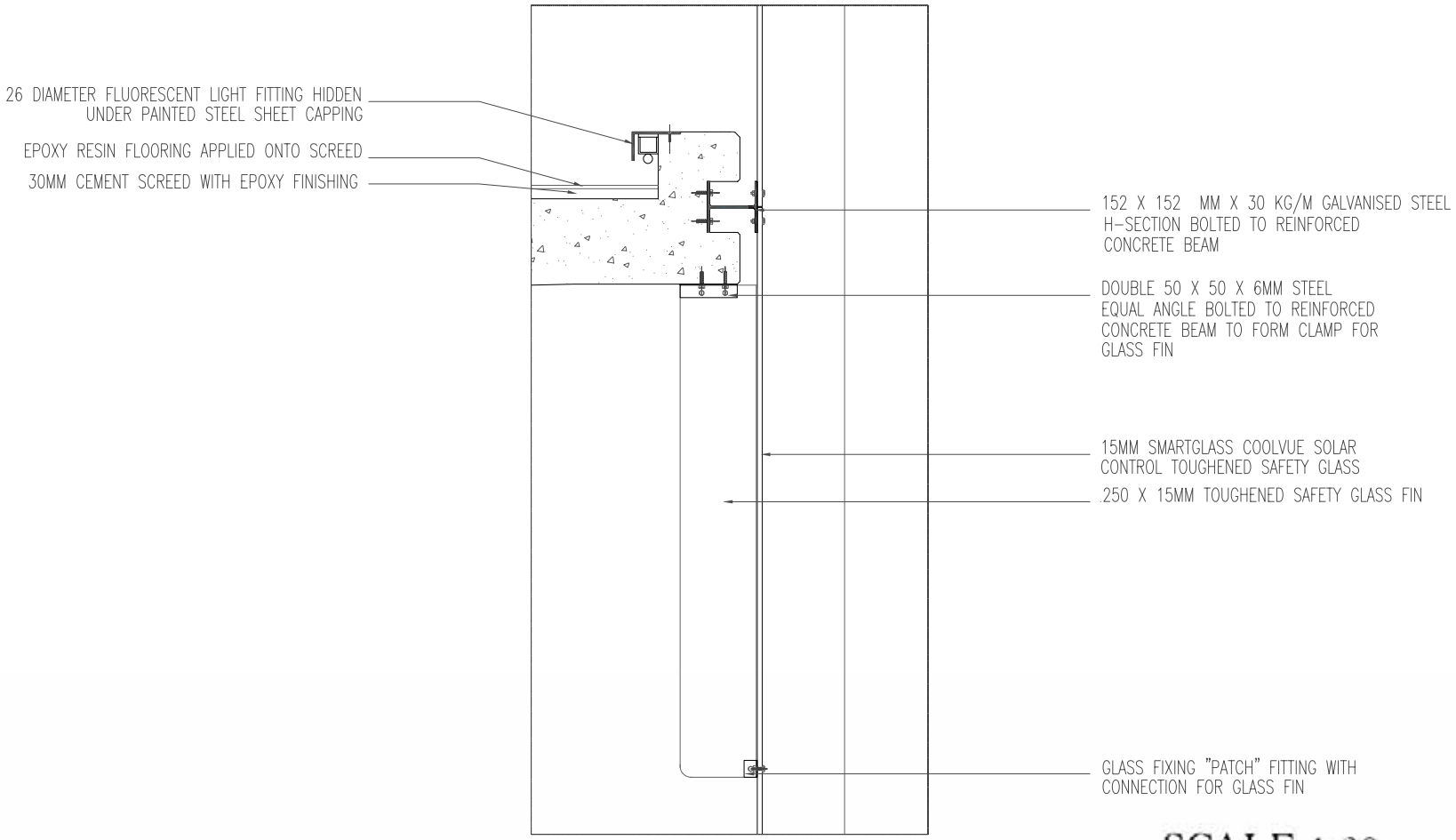
SCALE 1:20

DETAIL 2



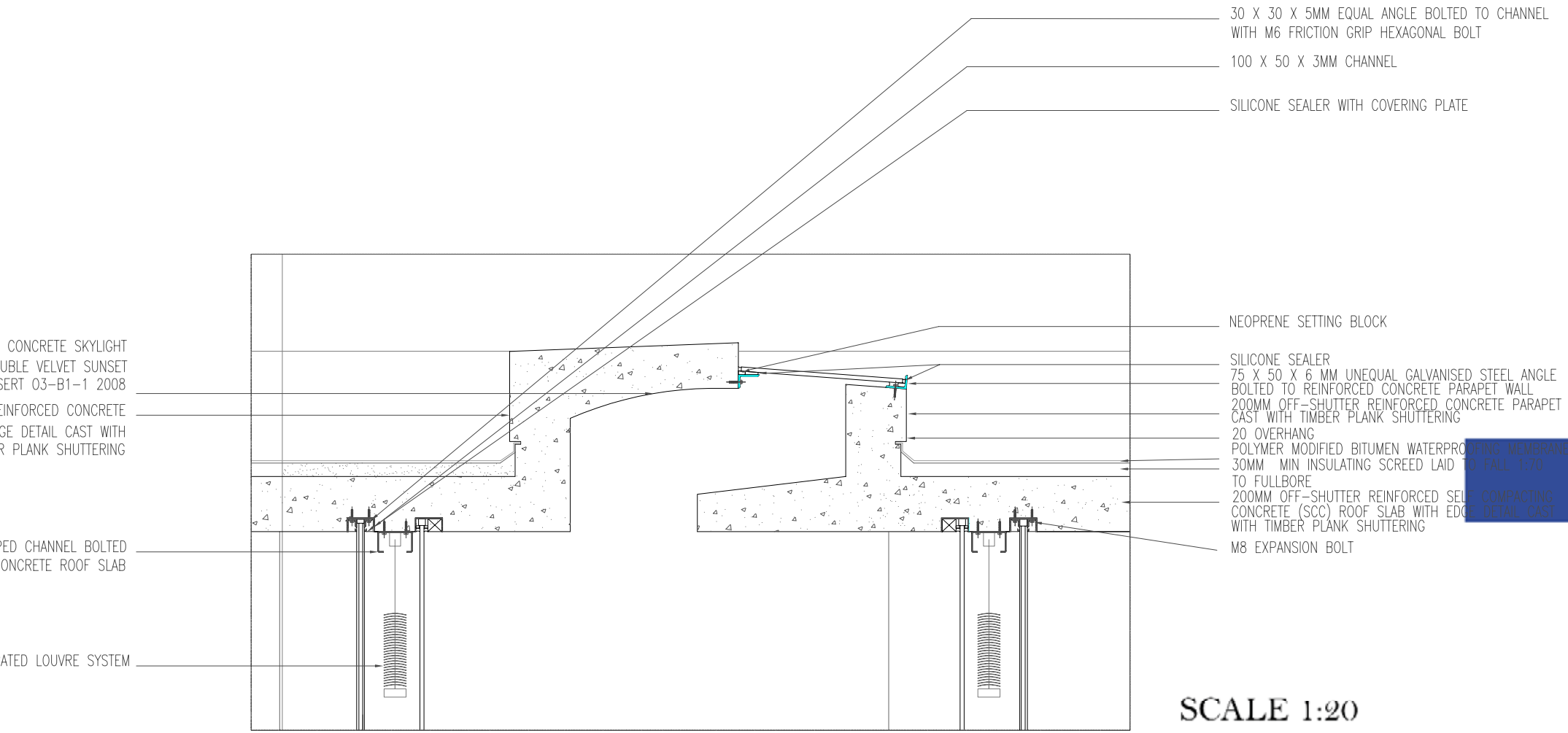
SCALE 1:20

DETAIL 3



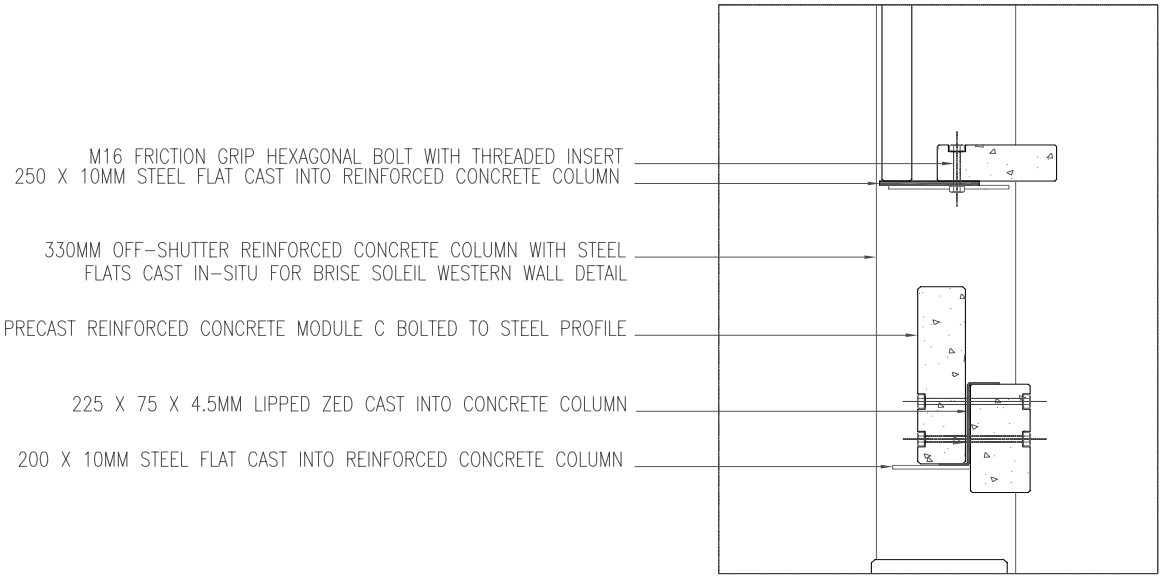
SCALE 1:20

DETAIL 4



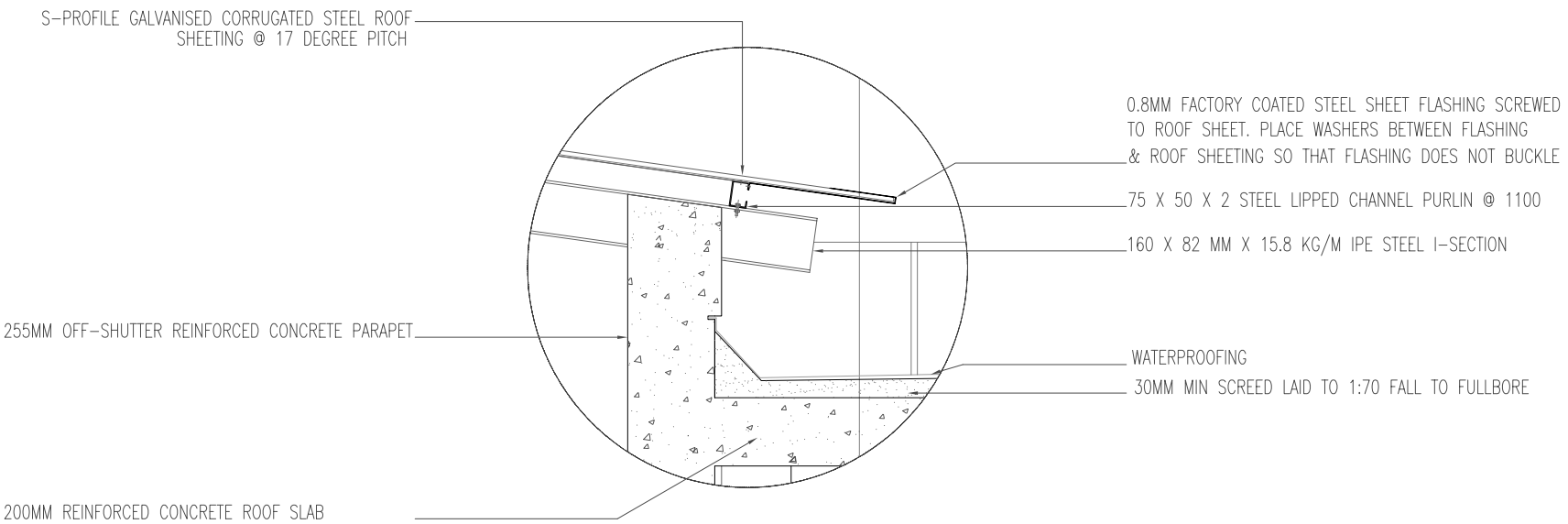
SCALE 1:20

DETAIL 5



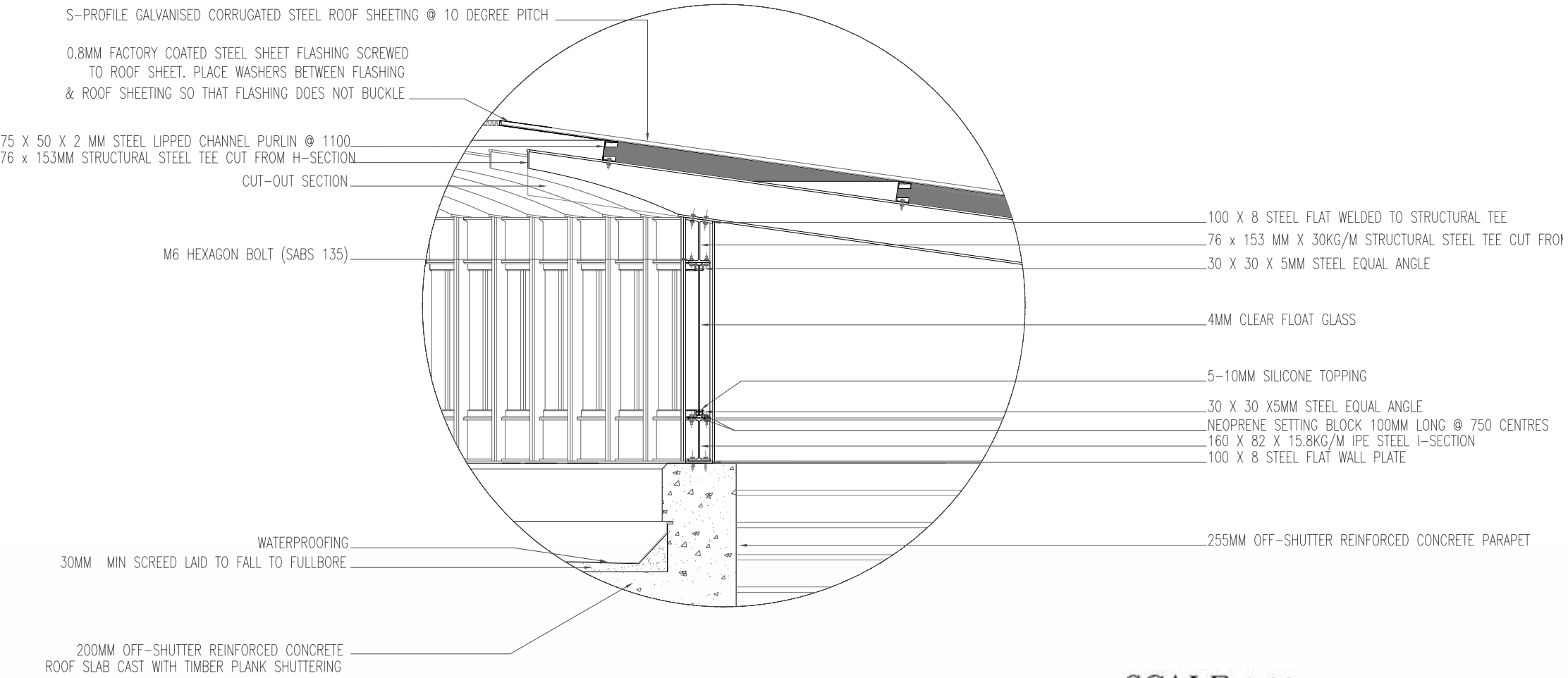
SCALE 1:20

DETAIL 6



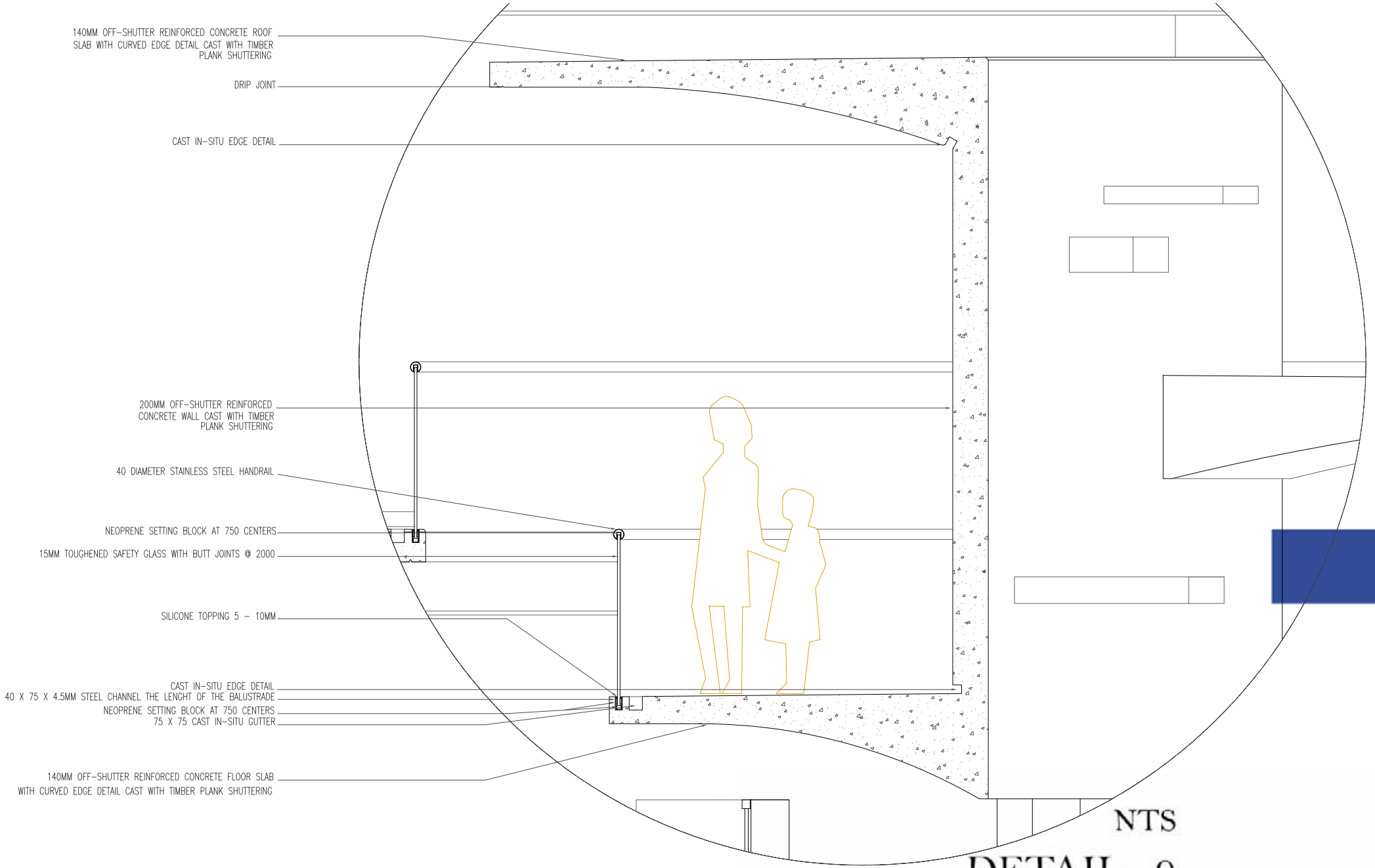
SCALE 1:20

DETAIL 7



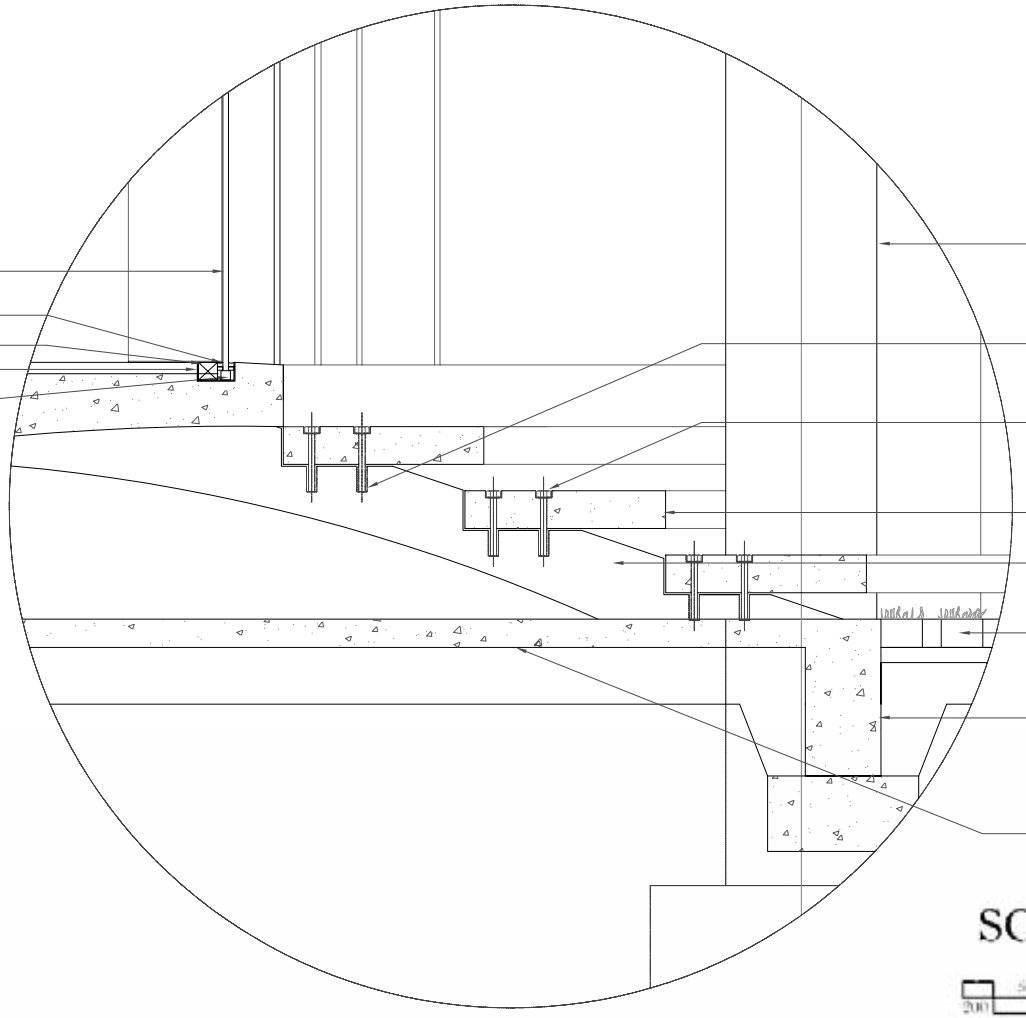
SCALE 1:20

DETAIL 8


140MM OFF-SHUTTER REINFORCED CONCRETE ROOF SLAB WITH CURVED EDGE DETAIL CAST WITH TIMBER PLANK SHUTTERING
DRIP JOINT
CAST IN-SITU EDGE DETAIL
200MM OFF-SHUTTER REINFORCED CONCRETE WALL CAST WITH TIMBER PLANK SHUTTERING
40 DIAMETER STAINLESS STEEL HANDRAIL
NEOPRENE SETTING BLOCK AT 750 CENTERS
15MM TOUGHENED SAFETY GLASS WITH BUTT JOINTS @ 2000
SILICONE TOPPING 5 - 10MM
CAST IN-SITU EDGE DETAIL
40 X 75 X 4.5MM STEEL CHANNEL THE LENGHT OF THE BALUSTRADE
NEOPRENE SETTING BLOCK AT 750 CENTERS
75 X 75 CAST IN-SITU GUTTER
140MM OFF-SHUTTER REINFORCED CONCRETE FLOOR SLAB WITH CURVED EDGE DETAIL CAST WITH TIMBER PLANK SHUTTERING

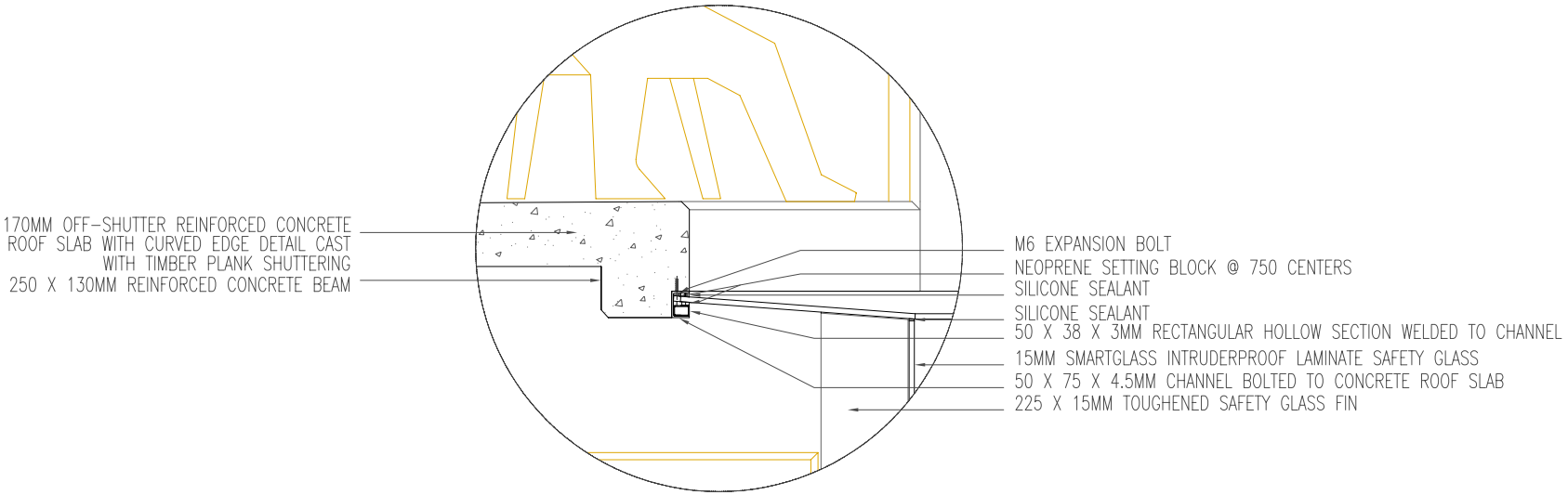
NTS

DETAIL 9



SCALE 1:20

DETAIL 10



SCALE 1:20

DETAIL 11