RE - LOCATION

DISCOVERING MEANING AND MEMORY IN MARABASTAD
A TRADE SCHOOL

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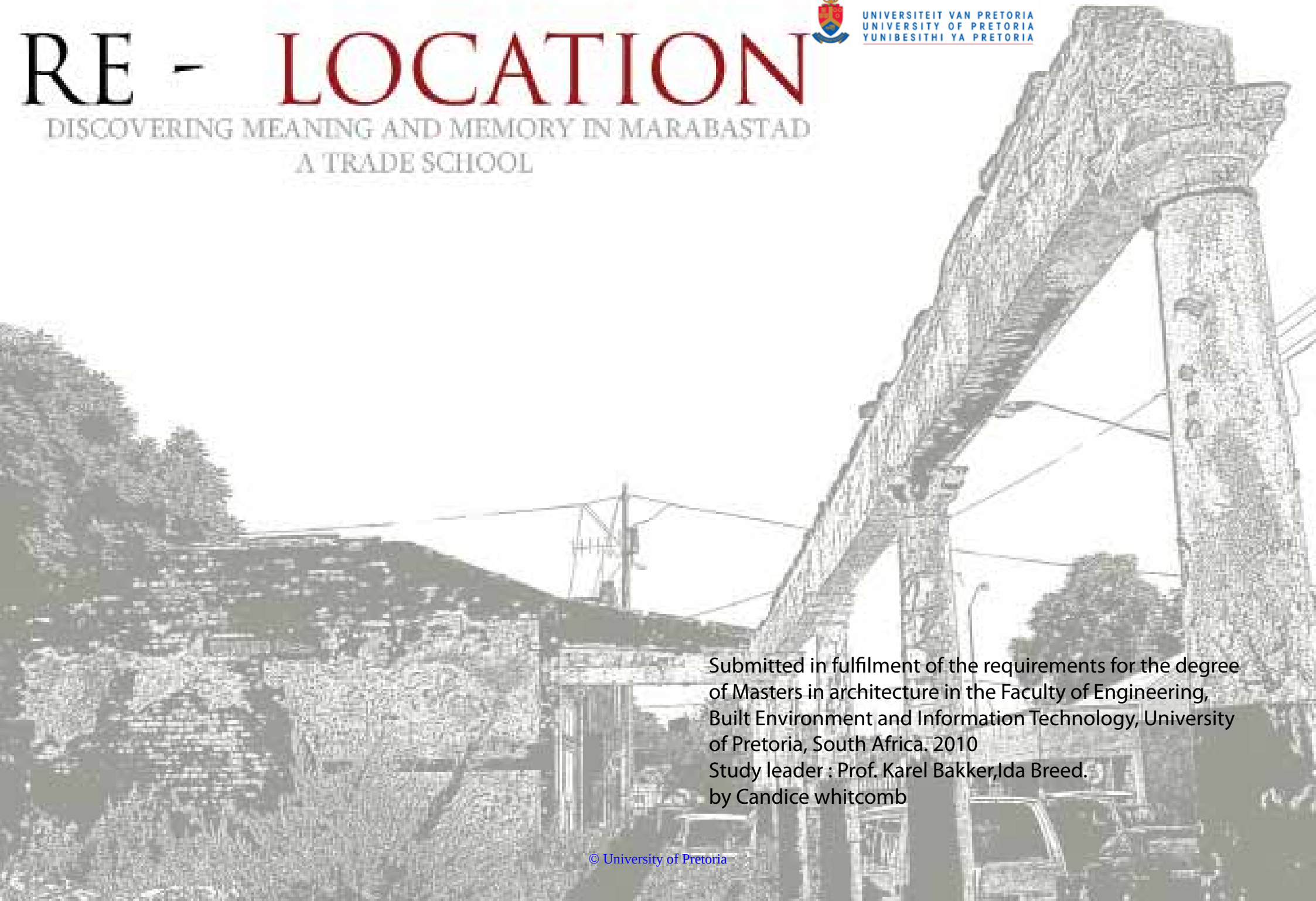

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Abstract

This research dissertation explores how memory can be used as a design tool when dealing with sites or places that have undergone political oppression in the past. It aims to explore the ways in which memory can inform and invigorate identity and meaning to regain the spirit of the place.

The study area is in Marabastad, Pretoria, South Africa, which underwent political oppression including forced relocation, racial separation and destruction of its urban fabric. The future development plans for Marabastad propose that previous residents have the opportunity to return to their land. The use of memories in the future design and development plans becomes important for people who know Marabastad past and for those who don't because it creates a reference to the past that can be identified with. Marabastad's meaning lies within its memories and it is important to have this connection to the past in order to build a meaningful future.

Definitions

Township : Apartheid Government imposed the identity on the township as the dwelling place for the African who was defined as a rural dweller and temporary worker in the city.
Locations : Locations were built in the beginning of the twentieth century and demolished under the rule of the National Party, South Africa. They were characterized by racial-mixing, their proximity to town centres and their vibrant cultural life.

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IN -TRODUCTION

FIGURE 1.2. Dilapidated door in Marabastad. (Author, 2010)

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1.1 Background to study

Relocation in urban areas leaves scars on the physical environment. In most cases, all that is left in a place, which has been stripped of most of its tangible fabric, are the memories of what used be there and memories of what happened to create the current conditions.

"Around the world, involuntary resettlement processes caused by development projects are only a subset of a much broader population movement process. The latter are caused by economic mobility, industrialization and urbanization, or by war, ethnic strife, or natural calamities such as drought"(World Bank,2000:8).

In Africa history is filled with massive involuntary population resettlements, most of which are triggered by social or political causes (World Bank,2000: 12). Further studies of the World Bank indicate that many people subjected to forced removals were already financially compromised before displacement, or are in a marginal economic situation. Removals aggravate rather than alleviate poverty (World Bank,2000: 18). South Africa has an infamous history with relocation. The Group Areas Act of 1950 restricted ownership and the occupation of land to a specific statutory group. The act assigned racial groups to different residential and business sections in urban areas in a system under apartheid. An effect of the law was to exclude non-Europeans from living in the most developed areas, which were restricted to people from European descent. It caused many non-Europeans to commute large distances from their homes in order to be able to work. Eventually one out of four black and coloured persons and one out of six Asians (against only one in 667 whites) across the country were forced to move (Giliomee & Mbenga. 2007 : 319). Giliomee & Mbenga's (2007) research further show that these newly developed townships couldn't develop any economic or social dynamism. Removals even broke up families, dumped people in areas that lacked infrastructure and were a considerable distance from their employment. Murray & O'Regan (1990 : 17) states that at the end of the Apartheid regime 3, 5 million people were forcibly removed from their homes and their communities.
"By 1958 many former slums in and around the major cities had been cleared and some 100 000 houses for blacks had been built under supervision of Verwoerd's developments, the abodes were small and the township architecturally monotonous, with few public amenities" (Giliomee & Mbenga, 2007 : 319).
The city centre of Tshwane was one of these major cities that experienced the inhumanity of Apartheid's relocation strategies. The scars left by relocation are evident in Marabastad, west of Tshwane's CBD. From 1912 people were relocated to townships like Atteridgeville and Laudium (Friedman,1994 : 34). The Slums Act of 1934 gave authorities power to demolish areas they deemed to be slums. Marabastad was declared a slum in 1934 and the vast majority of the homes in Marabastad were demolished (Friedman. 1994 : 65). The Freeway Proposal of 1967 planned to demolish the existing fabric of Marabastad. The proposal was never realised, but by that time it was too late and most of the existing structures had been demolished (Bruinette,1967).

Due to the above mentioned facts, the current urban fabric of Marabastad has a lack of density unlike the rest of the CBD blocks. There is a vast decay of the urban fabric and its finer grid doesn't overlap with the larger inner city grid. The people of Marabastad were removed from their homes, opportunities and their community. Community development was stopped in its tracks and left only memories to identify with. It is also lacking an identity of self-sustainability where people can empower themselves and create their own resources like self-employment and eligibility for employment.

A trade school is proposed for Marabastad and is informed by the memory of relocation in Marabastad. The Group Areas Act of the 1950s forced people to relocate and they were taken away from resources like employment that left them in poor economic conditions. This programme is a reaction to the above-mentioned memory and it attempts to improve people's economic situations by empowering them to become self - employed, eligible for employment and create an identity of self-sustainability in the Marabastad area.

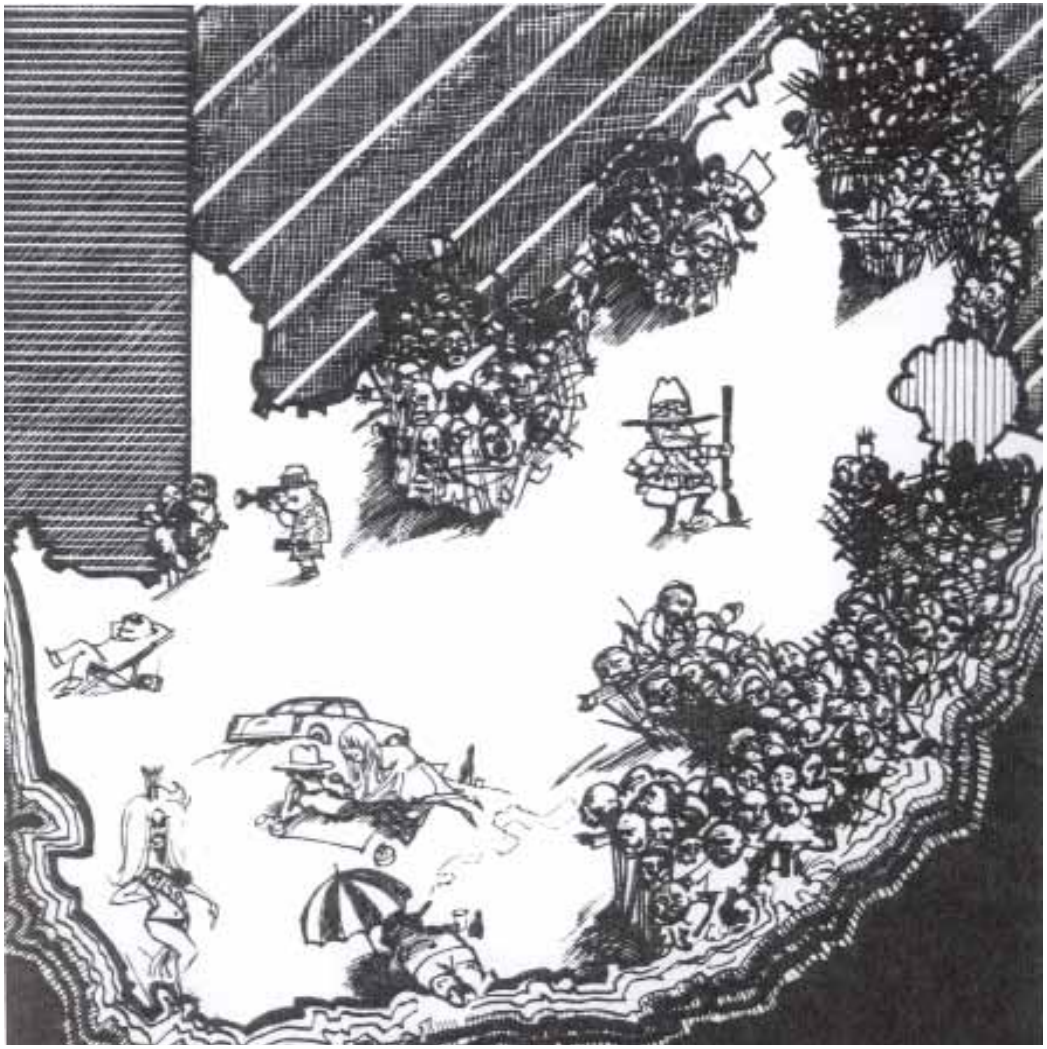


FIGURE 1.3.
Cartoon by Richard Wilson that points out the racial allocation of land and public facilities. 13% of South Africa's land was reserved for 80% of its population. (Giliomee& Mbenga, 2007 : 319).

1.2 Problem Statement

In an environment that has social and urban scars due to forced removals, the question arises how memory can be used as a design tool that can inspire the architectural intervention in a post-liberating context.

1.3 Hypothesis

Memory as a design informant can invigorate contextual identity and meaning and guide the architectural intervention in a post-liberating context.

1.4 SubProblems

The sub questions that will guide and inform research are:

1.4.1. What is the memory of Marabastad?
1.4.2. What is the role of memory in identity?
1.4.3. How can memory give meaning to place and space?
1.4.4. How can memory act as a tool for design decisions?
1.4.5. What is the relationship of memory (the past) and new interventions?
1.4.6. How can contextual identity and meaning be incorporated in design?

1.5 Design and Research Methodology

The theoretical methodology includes Norberg- Schulz's ideas on character or spirit of place. He argues that a true sense of belonging is born from a strong sense of orientation and of identity with one's environment (1984:21). The spirit of Marabastad lies in its history and memory. It is a place of memory in a post-liberating context.

Memory:

Memory is used as a reference in the existing world. It becomes the

middle ground that links past and future, old and new. *"Reference manifests itself in architecture as a resemblance to an existing or previously existing reality"* (Wolff, 2009 : 175).

Identity:

Synonyms of identity of place are character, uniqueness, distinctiveness and personality. To identify with a place or objects is to recognize, categorize or discover it. According to Schulz, (in Nesbit,1996 : 423) a person needs to identify with his/her environment to perceive *"how he is in a certain place"*. Identity is the name we give to the manner we orientate ourselves or are oriented by others in the account of history. (Jeffrey,Kolick. & Robbins.1998 : 122). Identity in a post-liberating context can also be influenced by memory and new interventions.

Meaning:

Synonyms for meaning are connotation, significance and importance. Schulz refers in his theoretical premise on spirit of place to orientation. "Man has to be able to orientate himself; he has to know where he is" (Nesbitt.1996: 423). In Marabastad memory becomes significant through its meaning. For man to orientate himself in Marabastad he needs to understand its meaning. Therefore orientation can be interpreted as meaning in the context of Marabastad. Meaning can also be influenced by memory and new intervention.

The design methodology includes three concepts that enrich and inform each other in order to create a cohesive and holistic design. The reasons and thinking behind this is explained in the theoretical premise, chapter 3.

The three concepts are

- Memory
- Identity
- Meaning

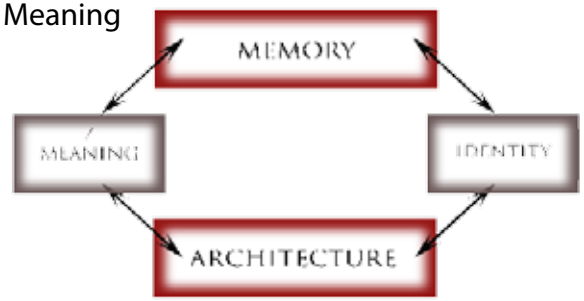


Figure 1.4.
Methodology diagram showing how different concepts influence each other
(Author, 2010).

Memory is the driving force that influences identity and meaning. Identity and meaning will in return influence the architectural intervention.

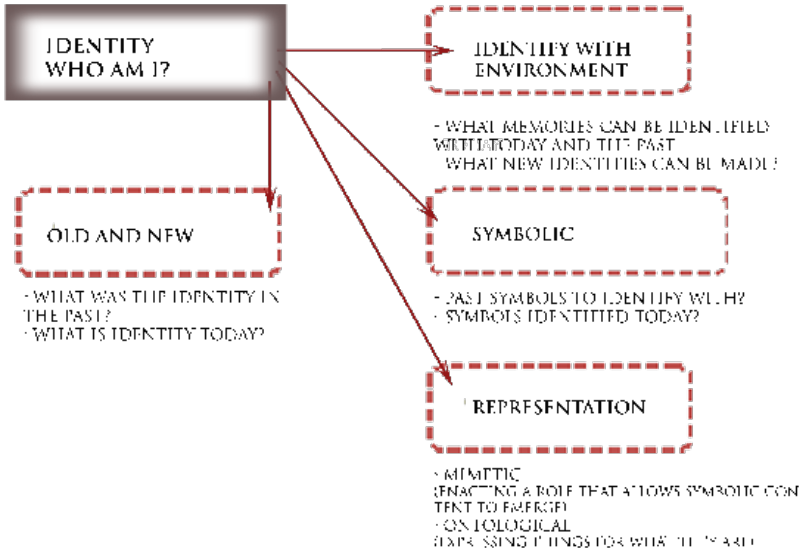


Figure 1.5.
Diagram showing factors influencing identity
(Author, 2010).

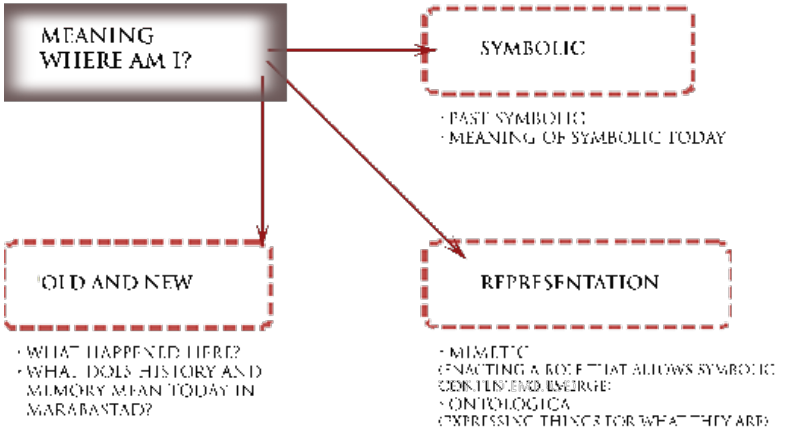


Figure 1.6.
Diagram showing factors influencing meaning
(Author, 2010).

1.6 Research Methods

In order to determine what, where and how memory can influence the design process, the descriptive and historical survey methods will be used.

The descriptive survey method aim is to gain data from observing the research area, taking photographs and interviewing people that live or lived in the area. The data will be dynamic and will include patterns, norms, non-bias criteria and meaning on a social scale (Leedy.1985: 90-92).

The historical survey method includes gaining data about the historical context of the researched site. Data is obtained from the written records and visual data like photographs and published literature of the area's history. A thorough understanding of changes throughout history can be observed through this method (Leedy. 1985: 90-92).

Through these methods an understanding of the history of the area can be obtained and reveal the many layers of memory, identity and meaning that areas where relocation took place contain.

1.7 Client

The proposed architectural intervention will empower people to become sustainable in employment. The Department of Labour could invest in a project since it can help deal with South Africa's high unemployment rate.

Job creation can help in South Africa's housing crisis. This could also motivate the investment of the Department of Housing.

Adult training can be viewed as higher education which can get the Department of Education involved.

1.8 Delimitations

- The research into memory will be bound to the Marabastad area, West of the Tshwane CBD. The boundaries are the Steenhovenspruit on the eastern side, Struben Street to the South, D.F Malan drive in the West and Bazaar Street in the North
- As there are too many memories to consider, the memories of what left Marabastad in the urban condition it is today will be considered like racial separation, relocation and destruction of the physical environment.

1.9 Assumptions

- The dissertation is based on and informed by the Tshwane CBD North: connectivity through activity group framework in conjunction with the Aziz Tayob Integrated framework for Marabastad and assumes their implementation.
- The proposed housing development according to the above mentioned frameworks will ensure that enough and adequate housing will be implemented.

It is assumed that :

- previously relocated people from Marabastad will join new inhabitants due to the proposed housing development.
- Marabastad will grow to a more urban scale ensuring a larger flow of people apart from the usual daily commuters travelling through.
- the departments of labour and housing will be responsible for the implementation of the architectural intervention.
- the owner of the proposed site with successful land claim will sell the land to the financial investors of the project.

1.10 Site Location

The site of study is located west of the Tshwane CBD, Gauteng, South Africa (Figure 6). The boundaries of the selected site are Grand Street (North), 8th Street (East), Bloed Street (South) and 7th Street (West) (Figure 1.7).

The reason this site was chosen is that it has a direct link with Belle Ombre station and with Bloed Street via 7th Street, which will allow

easy access for commuters but also have easy access for vehicular deliveries. It is also a site within Marabastad where there is still some existing fabric left. These existing structures contrast to the cavities left by political oppression. This site has memory on it (cavities and existing structures) that could assist the design process. Sites South of the chosen site have been completely cleared of their physical fabric and North of the chosen site are a busy commercial strip. The selected site becomes a window that glimpses into the past and becomes a foundation on which to build a better future.

1.11 Aim of study

Marabastad is a place of memory. It has endured social injustice and inequality. The aim of the study is to propose an architectural intervention that responds to these memories in a post liberating context. It needs to represent the memories of Marabastad's past in order for its inhabitants to identify with and find meaning in a place scarred by relocation. It also important for new residents to gain a sense of place, and that place is derived from the memory of Marabastad.
Furthermore the goal is to connect Marabastad to the inner city of Tshwane as well as to improve connections within Marabastad that were lost during its political history.

FIGURE 1.7.
Map of South Africa highlighting the Gauteng Province and Tshwane CBD (SAMAPS,2010).

FIGURE 1.8.
Marabastad in context with CBD. Map manipulated by author (Munitoria, 2009).

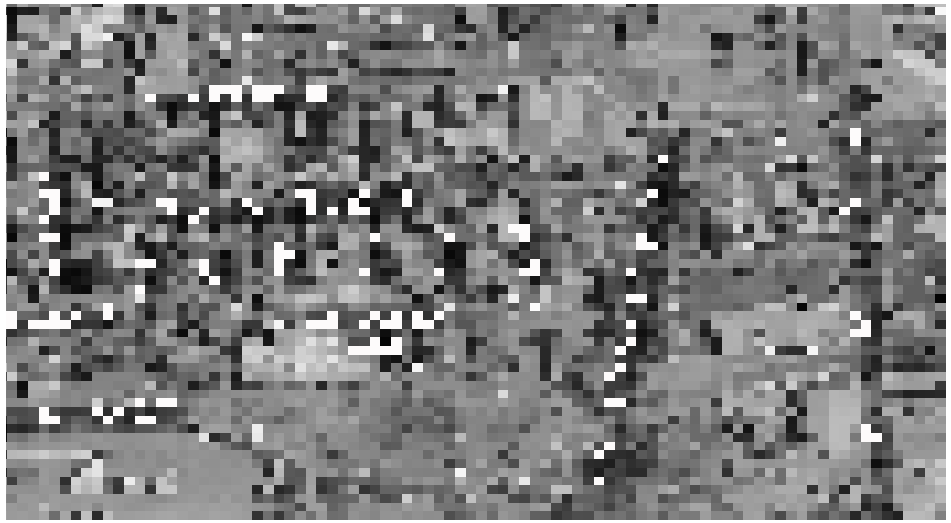


FIGURE 1.9.
Proposed site in Marabastad. Map manipulated by author (Munitoria, 2009).

CHAPTER 2 : CONTEXT

2.1 Project location

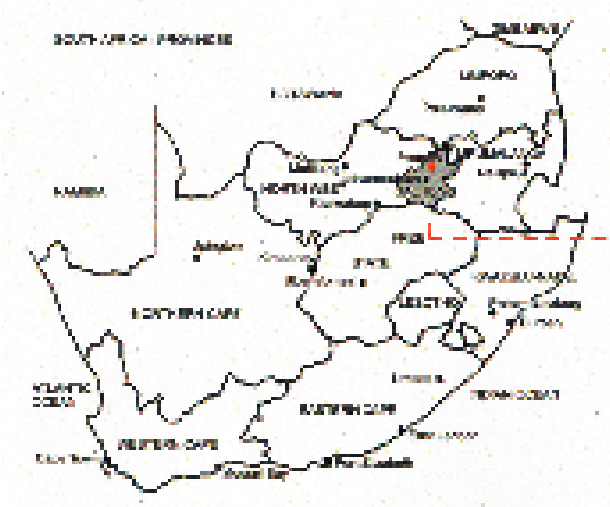


Figure 2.1
Southern Africa with Pretoria, Tshwane, in the North of Gauteng
(Samaps, 2009).

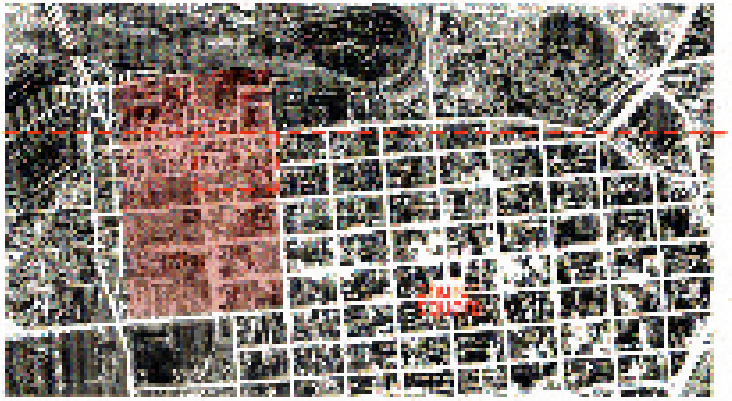
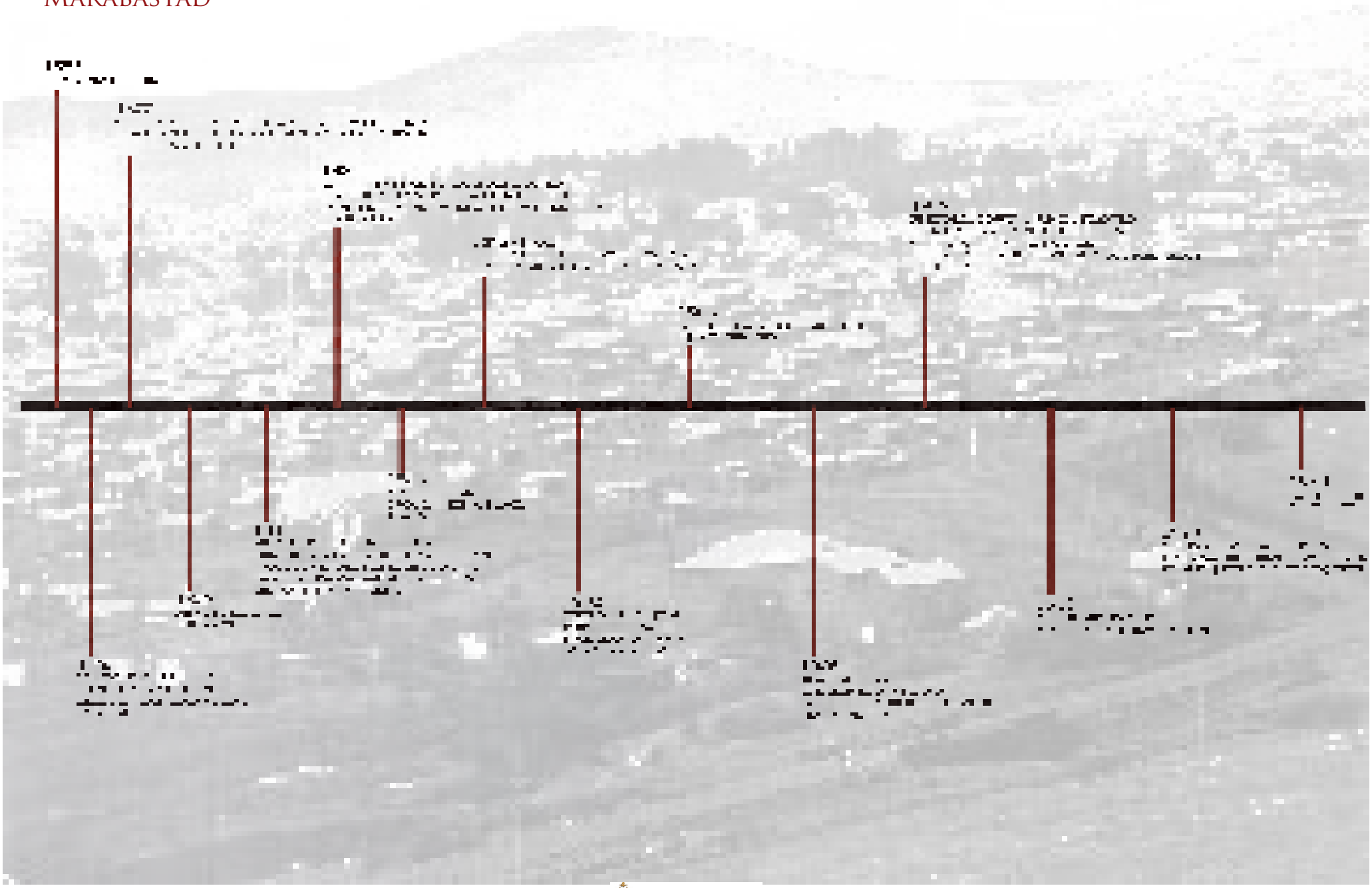
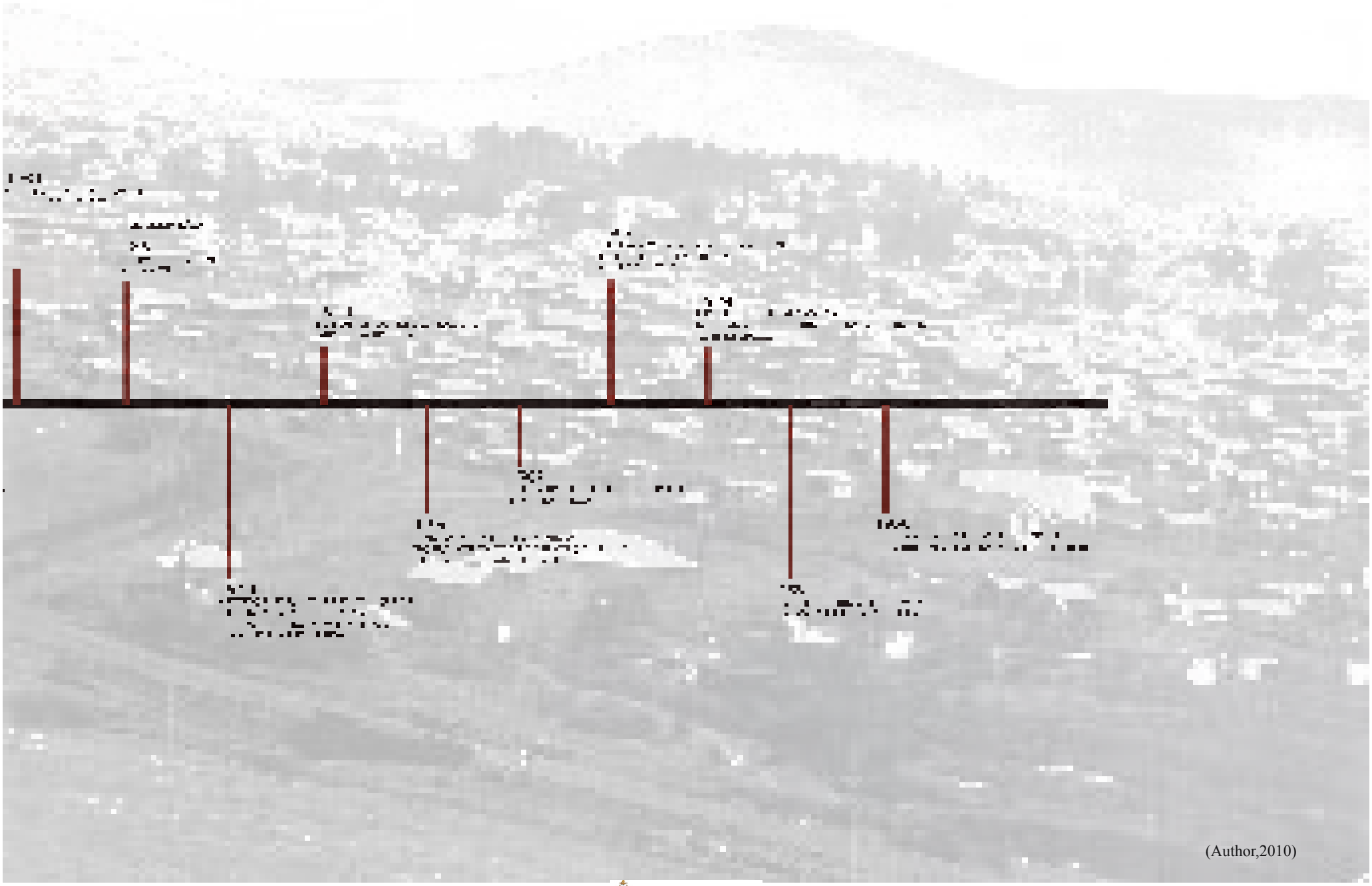


Figure 2.2
The CBD of Tshwane with Marabastad highlighted in red and the specific site framed with the red box
(Council Munitoria, 2007).

Figure 2.3
Selected site with surrounding context
(Council Munitoria, 2007).

2.2 HISTORICAL TIME LINE OF MARABASTAD





(Author,2010)

2.3 HISTORICAL BACKGROUND

2.3.1 1850-1900

Segregation and Overpopulation

The history of Marabastad tells the story of political oppression where non-Europeans were not allowed to develop economically, socially and educationally without being subjected to complex interference and attempts at control on the part of the state.

Marabastad is located in Pretoria, Tshwane. In 1853 M.W Pretorius bought Elandspoort and Daspoort which attracted many traders, prospectors and hunters. These two farms were proclaimed as a town in 1855 by the Volksraad and was called Pretoria (Elliot,1975 : 3). North-West of Church square the Berlin mission society established a mission station in 1867 called 'Frischgewaagd'. This land came to be known as 'Schoolplaats' which was bordered by Boom Street(south), Steenhovenspruit(west) and farm land in the east (Friedman,1994 : 19) (see figure 2.4 and 2.5).

The mission stations, under control of state required that every African male living at Schoolplaats had to be employed by a white employer in the town and should he leave that employment he had eight days to find alternative employment or be forced to move out of the area (Bergh,1980 : 57).

The British influence in South Africa (1881) and thus Pretoria, gave more rights to people from Indian descent in the Transvaal (now Gauteng) and they began settling in Pretoria. After complaints from the European population, government began to resettle Indians in certain wards or 'bazaars'. Bazaars had elevated status above so called locations and people were able to trade, own immovable property and build religious buildings (Van der Waal, 1998 : 6). The boundaries of the Coolie Location was Bazaar Street (North), Steenhovenspruit (West), Struben Street(south) and Von Wielligh (East), (see figure 2.4). The bazaar was divided into 380 erfs that had were smaller than those North in Marabastad, and Van der Waal (1998 : 6) argues that the cause for that could have been to prevent sub-letting to informal settlers.

By 1887 Schoolplaats was so overpopulated that there were concerns about degrading health conditions (Bergh.1980:68). In 1888 sixty seven erfs, west

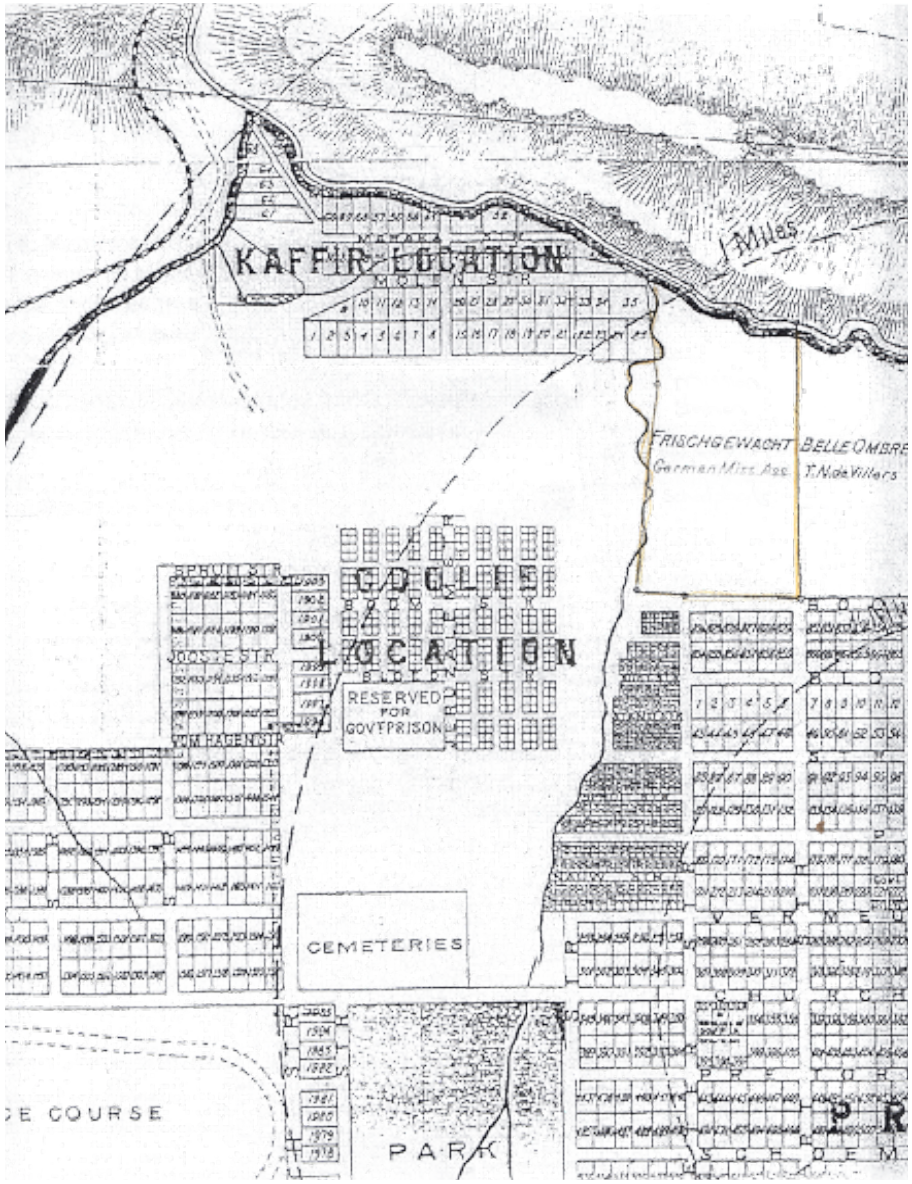


Figure 2.4
1902 Map showing separation of races in Marabastad. Frischgewacht later known as Schoolplaats top right (National Cultural History Museum, 1995).

of Schoolplaats, and the first African location in Pretoria came into existence (Peacock, 1987:244).The area became known as Marabastad, named after Chief Maraba who not only had a kraal in this area but was translator to the Landdrost of Pretoria (Sack, 1964:31).
1890s attracted many Cape coloureds to Pretoria due to the discovery of gold. The government set aside an area south of the Coolie Location, known as the Cape Location. Tensions arose between the Coloureds and the Africans due to the encroachment in the same employment fields. The Cape Location was between Bloed and Struben Street and all coloureds not living on their European employers' property were forced to move to this location (Friedman, 1994: 36).
By 1900 Marabastad was now becoming overpopulated and could not sustain its residents and emigrants moving to the city. The empty land between Marabastad and the Asiatic bazaar was filled with emigrants informally settling there. This became known as the New Marabastad (see Figure 2.5).

2.3.2 1901-1988

Domination, Relocation and Destruction

In 1903 the Coolie Location was renamed the Asiatic Bazaar and resurveyed into 464 stands (Figure 2.5). The management of new and old Marabastad, the Asiatic Bazaar and the Cape Location were transferred to the City Council of Pretoria. Resurveying was done by the council with intentions to implement rates and regulations. New and old Marabastad was proclaimed one township, namely Marabastad, in 1906 (Van der Waal,1998: 8).
A sewerage farm was built in 1907 by council in the old Marabastad area. Residents were resettled to the New Location later known as Bantule and this only aggravated the population situation (Van der Waal,1998:8).
In 1934 Marabastad became even more overpopulated as numerous people were also relocated there from Schoolplaats. This area could not expand as the Steenhovenspruit to its East and Von Wielligh to the West prevented it. 1934 also saw many demolitions of homes in the Marabastad area due to the Slums Area Act (Van der Waal,1998:9).
The National Party came into power in 1948 and also gave rise to the Apartheid-regime.

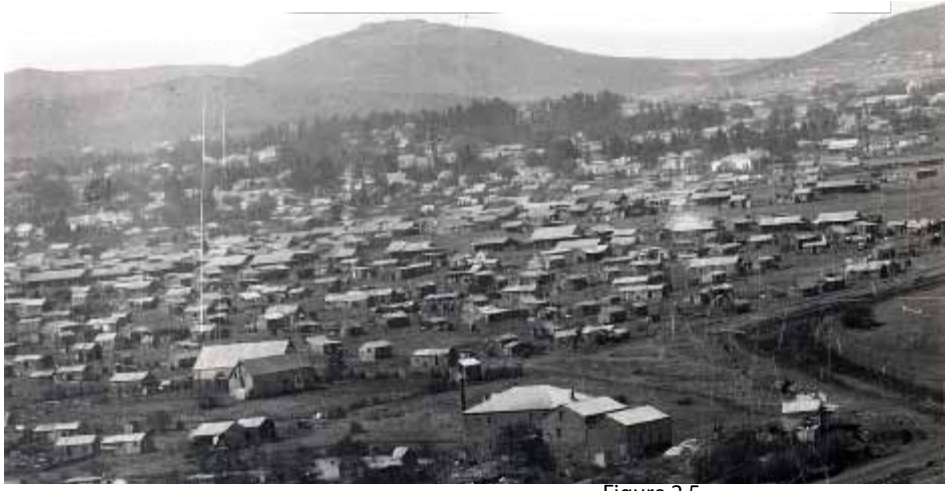


Figure 2.5
Aerial view of Schoolplaats 1902
(Tayob, 2002)

Figure 2.6
Present map showing where previous townships were located.
(Aerial photograph manipulated by Author, 2010)

New policies were implemented that could gain more control over the population. These were influx control over non-Europeans, slum declaration and removals and racial segregation. From the 1950s many new Acts were implemented. The Population Registration Act of 1950 classified people according to the colour of their skin, language and descent. The Group Areas Act proclaimed separate group areas classified according to a person's population registration. From 1940 to 1950 Africans from Marabastad were relocated to Atteridgeville South-West of the city centre (Figure 2.7). 1950 saw more demolitions in Marabastad as it was de-proclaimed. (Today Belle Ombre station is situated on the place where New Marabastad was occupied) (Van der Waal, 1998:9). In 1959 Claudius had been proclaimed a group area for Indians and in 1960 Laudium followed. Residents from the Asiatic Bazaar had to move to these two townships and the Bazaar was eradicated as a residential area. Relocation for the coloured population occurred from 1962 to 1965 to Eersterust and most of the buildings in the Cape Location were demolished (Van der Waal, 1998:14).

A Freeway proposal for Pretoria in 1967, Marabastad was to become part of a major circulation system giving access to the city via an interchange over the Asiatic Bazaar (Figure 2.8). Most of the structures in this area were demolished when suddenly the idea was dismissed. But it was too late as most of Marabastad's urban fabric had already been destroyed (Bruinette, 1967). Today this urban cavity is still evident in the Marabastad fabric (Figure 2.9).

In 1988 the remaining residents of Marabastad were relocated and Belle Ombre station was built to accommodate a large number of commuters that now needed to travel far distances to the city (Van der Waal,1998:24).

From 1934 to 1988 Marabastad went from a highly dense populated urban

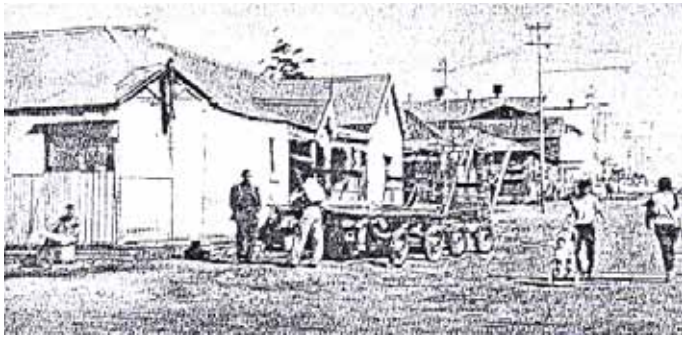


Figure 2.7
Horse-drawn wagons such as these were used to cart household possessions during 1940 relocations from Marabastad to Atteridgeville
(Holm Jordaan & Partners,

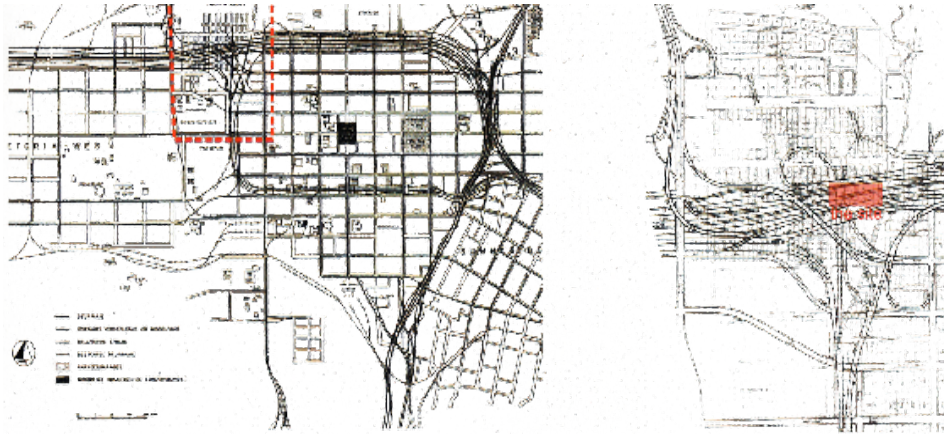


Figure 2.8
Freeway Proposal of 1967.
Red block indicates where the chosen site would have been in 1967
(Tayob, 2002 : 95).

Figure 2.9
Demolition of 377 Cowie Street during 1972 evictions
(Holm Jordaan & Partners, 1998).

1934

1965

2010

Figure 2.10
Comparative figure ground study of Marabastad from 1934 to present day. Red block indicates selected site (Tayob, 2002 : 52).

city to a place with less than half its urban fabric and almost none of its former residents left (see figure 2.10). Political oppression has left many physical and social scars in Marabastad that need to be addressed.

2.4 Marabastad today

Marabastad is one of the most undeveloped parts of the Tshwane CBD. The area between Bloed and Boom Street has some urban fabric that has been preserved but has many cavities that with the remaining structures hold memories of the relocation and destruction that occurred in Marabastad. (Figure 2.10) Stands are small and orientated with its longer measurements East-West. These small stands also allow for short walking distances which contribute to a pedestrian friendly Marabastad (Figure 2.11). Boom Street and the Orient bazaar in the North of Marabastad are buzzing with commercial activity. Belle Ombre station also located in the North of Marabastad, creates a major transport node and is also the most dominating and large structure in the area (Figure 2.14). The BRT route runs through Boom Street which connects to the station. There are many options for commuters

Figure 2.11
Aerial photo manipulated by Author(2010) showing orientation of sites, short distances between them and the cavities within the urban fabric (Munitoria,2010).

when changing modes of transport with a bus depot to the South and many informal taxi stops in the area Dewar (2002:68) says that large amounts of pedestrians generated by transportation interchanges create high activity, engagement between people and social activities.

2.5 Architecture in Marabastad : memories and the present

The mission station in Schoolplaats brought many people to settle there. As seen in figure 2.5 architecture from early Schoolplaats was modest but of a better quality than those of Marabastad. According to Friedman (1994 : 129) buildings in Schoolplaats were mostly made of brick and some are iron shanty structures. The stands were larger and had gardens with trees. Houses in Marabastad were built from wood and iron on order from Town Council and any alterations and improvements were prohibited. The city council had plans to demolish Marabastad and did not want to encourage any form of permanence (Friedman, 1994 : 129).

From photographic studies of present and past architecture of Marabastad some elements and patterns were identified. There is not a lot of new development in Marabastad and the present architecture is a glimpse into the past. There are some important landmark buildings in Marabastad that are important to mention like The Orient Hall, the Mariammen Temple, The Ismaili or white mosque in Boom Street and the old Empire Theatre (Figure 2.12). These buildings carry the memories of a Marabastad that had energy and vibrancy. These were places of entertainment, culture and music that Marabastad was famous for. They tell the story of the 'Marabi' culture that involved a working class culture that flourished in Johannesburg and Pretoria during the 1930s which is considered to have originated from Marabastad. It is also the name given to a style of music that combines Afrikaans and Coloured traditions, local African rhythms and American Jazz (Ilife, 1987:128).

Further investigations show that on a site surrounded by streets there are several small buildings that occupy it. These created smaller hierarchies and linking pathways within a site (Figure 2.11). From figure ground studies

Figure 2.12
Collage by Author(2010) showing Major Landmarks in Marabastad. clock wise. A. Orient Hall, B. Empire theatre,C. Ismaili or white mosque
and the D. Mariammen Temple (Author,2010).

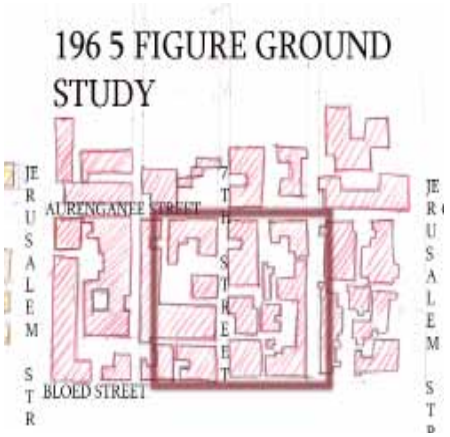


Figure 2.13
Figure ground studies by author(2010) from 1934 to 2010, determining occupation,scale and spatial importance.
Red box indicates selected site (Author,2010).

buildings on the corner of the site are mostly occupied and is important on the street edge (Figure 2.13).The building's scales are more or less the same, and heights don't surpass 3 storeys with the exception of Belle Ombre built 1988 (Figure 2.14). Most buildings are built from brick and is plastered and have corrugated iron roofs.(Figure 2.16) Buildings that edge on the street have beautiful verandas that allow pedestrians to move close to them (Figure 2.17).

Marabastad has a fine grained urban fabric and a more intimate human scale (Figure 2.15). It gives orientation and identity to its surroundings which are according to Norberg-Schulz(1986) the function to the 'spirit of place' which will be discussed in Chapter 3.

Figure 2.14
Belle Ombre Station, important transport node in Marabastad. This building has the largest scale in the area
(Tayob, 2005 : 190).

Figure 2.15
View of Boom Street. Notice Old Empire Theatre on left and small intimate street scale
(Author, 2010).

Figure 2.16
Photograph by author (2010) showing material use in present Marabastad.

Figure 2.17
Photograph by Author(2010) showing how Verandas define street edge with balconies on top
(Author,2010).

2.6 Group urban framework :
Connectivity through activity : an urban framework for the Northern ridge of the CBD

The northern and north-western parts of the Inner City are highly neglected areas that are in desperate need of urban regeneration. Marabastad, the National Zoological Gardens, and the area in between form the study area of the urban framework. With the city strategy development plan (2005) that aims to develop the Northern parts of Pretoria, the development of the Northern part of the CBD becomes important to create connections to the inner city.

Vision

- Pretoria is a culturally rich city with exceptional physical qualities and economic opportunities. Urban decline in the north of the CBD is evident
- Through a clear vision and implementation strategy this can be stopped
- The aim is to create a memorable and people friendly city – a people's place
- Nodes must be integrated through activity spines and the integration of activities to demote sprawl
- Reconnect Marabastad to inner city
- Enhance tourism around Zoological Gardens.
- Zone between Paul Kruger and Potgieter Street to act as catalyst for
- Regeneration of inner city activity

Strategy

- A city with an unique identity
- Inner city Precincts
- Diversity of land use
- A thriving tourism industry
- Inner city natural environments
- Mobility and access

Sustainability

The framework proposes an activity spine running from the Bloed Street Mall to link up Grand Street in Marabastad. This spine will connect the Northern nodes with each other with this pedestrian spine (see Figure 2.18). Figure 2.19 shows the main proposed entrance spine linking the greater North of Pretoria to the inner city.

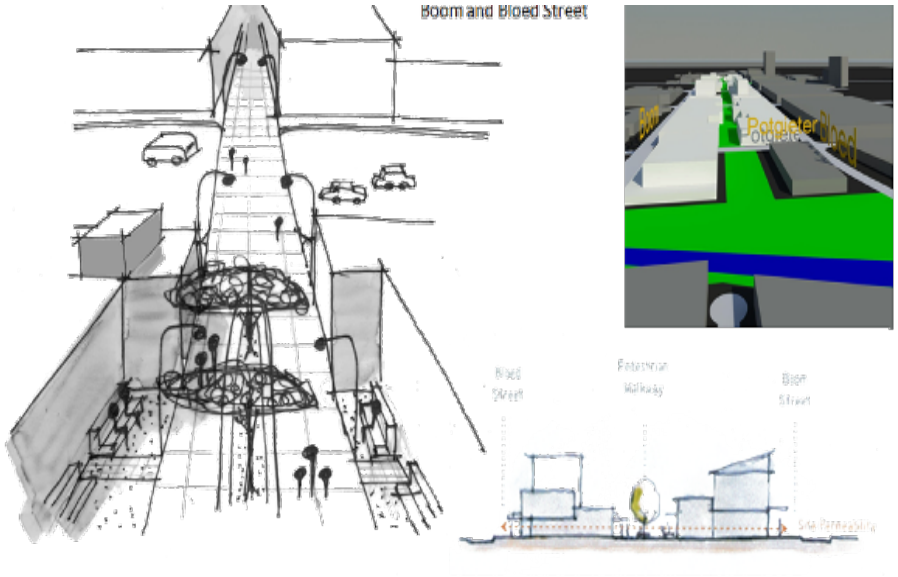


Figure 2.18
Collage showing Activity Spine linking up with existing Grand Street in Marabastad (Author, 2010).

Figure 2.19
Entrance node to city from North (Author, 2010).

2.7 Marabastad framework

The Marabastad framework is a combination of the group framework, connectivity through activity, and the Aziz Tayob Architects Integrated Urban framework for Marabastad. The main aim is to weave together the diverse strands of social, economical and physical environments within Pretoria CBD. The cavity left by political oppression needs to be filled with an environmentally and socially sustainable development (Aziz Tayob Architects, 2002 : 22). It needs to be revived within the CBD of Pretoria, becoming a tourist attraction and in effect the African market of Tshwane.

Housing is proposed in the southern parts of Marabastad and East of the Steenhovenspruit (Figure 2.20). A tourist route is also proposed running from Church Square with Church Street towards Marabastad, through Marabastad , to the Zoological gardens North-East and back to Church square. The activities on this spine, creates connections within the city. Activities include sport functions, educational facilities, art galleries and educational facilities. The areas between Mogul Street, Boom Street, Grand Street and Bloed Street is the area proposed for the "African Market" indicated in yellow (Figure 2.20) Marabastad has sufficient public transport and this makes for adequate accessibility within the area. There is a bus terminus and taxi rank at Belle Ombre station. Taxi stops will also be provided on the traffic islands between the two D.F Malan Drives East and West. The Putco bus depot to the South (where Cape Boys Location used to be) will have to be relocated, possibly to the Belle Ombre loop, in order for the smaller grid to return to the site and to reach high density housing of 60 units per hectare. (Aziz Tayob Architects, 2002 : 160). In order to implement pedestrian movement the majority of north-south are pedestrianised thus the west-east routes carry faster moving traffic (Figure 2.22).
Covered walkways and hawker stalls line these routes.

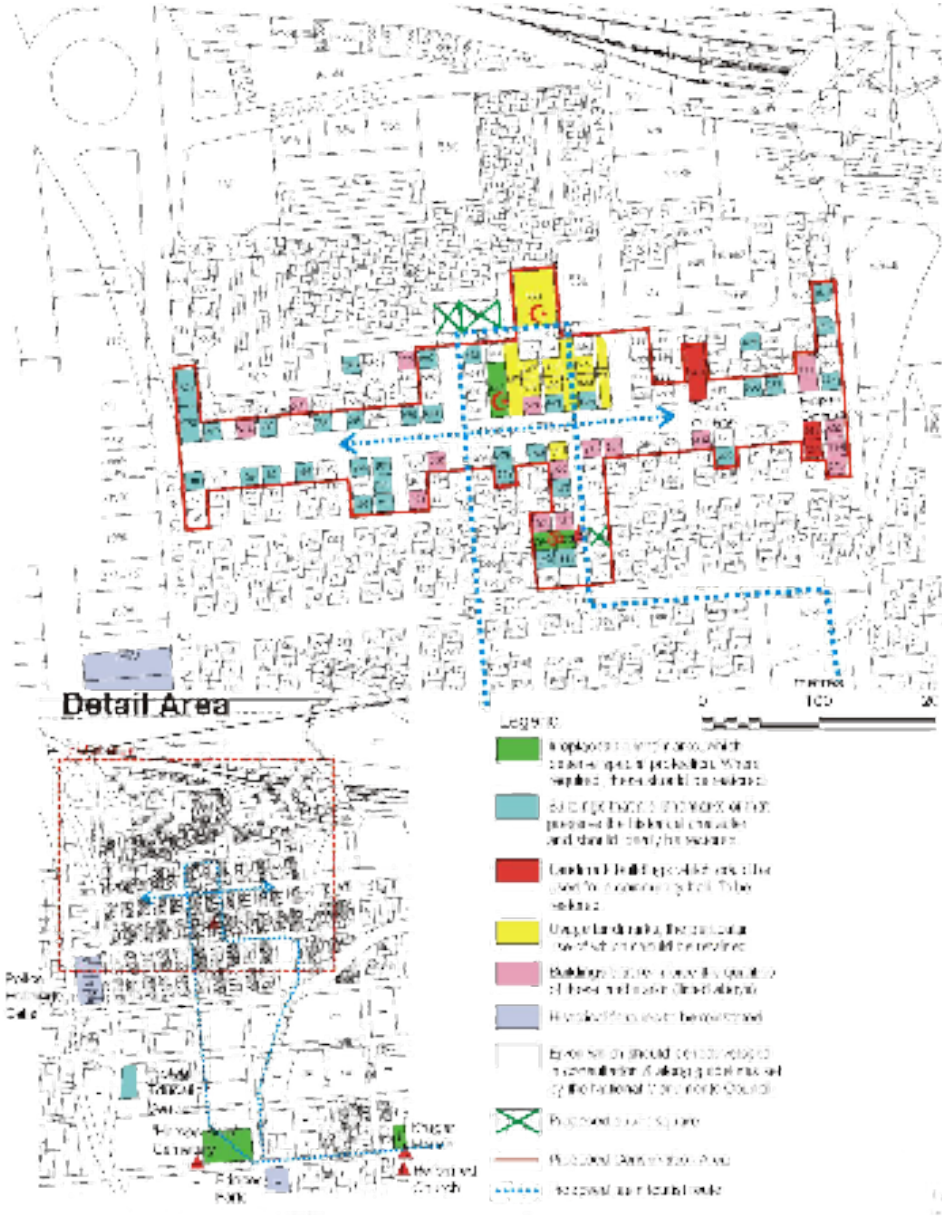


Figure 2.20
Heritage route with major landmarks (Aziz-Tayob Architects, 2002 : 169).

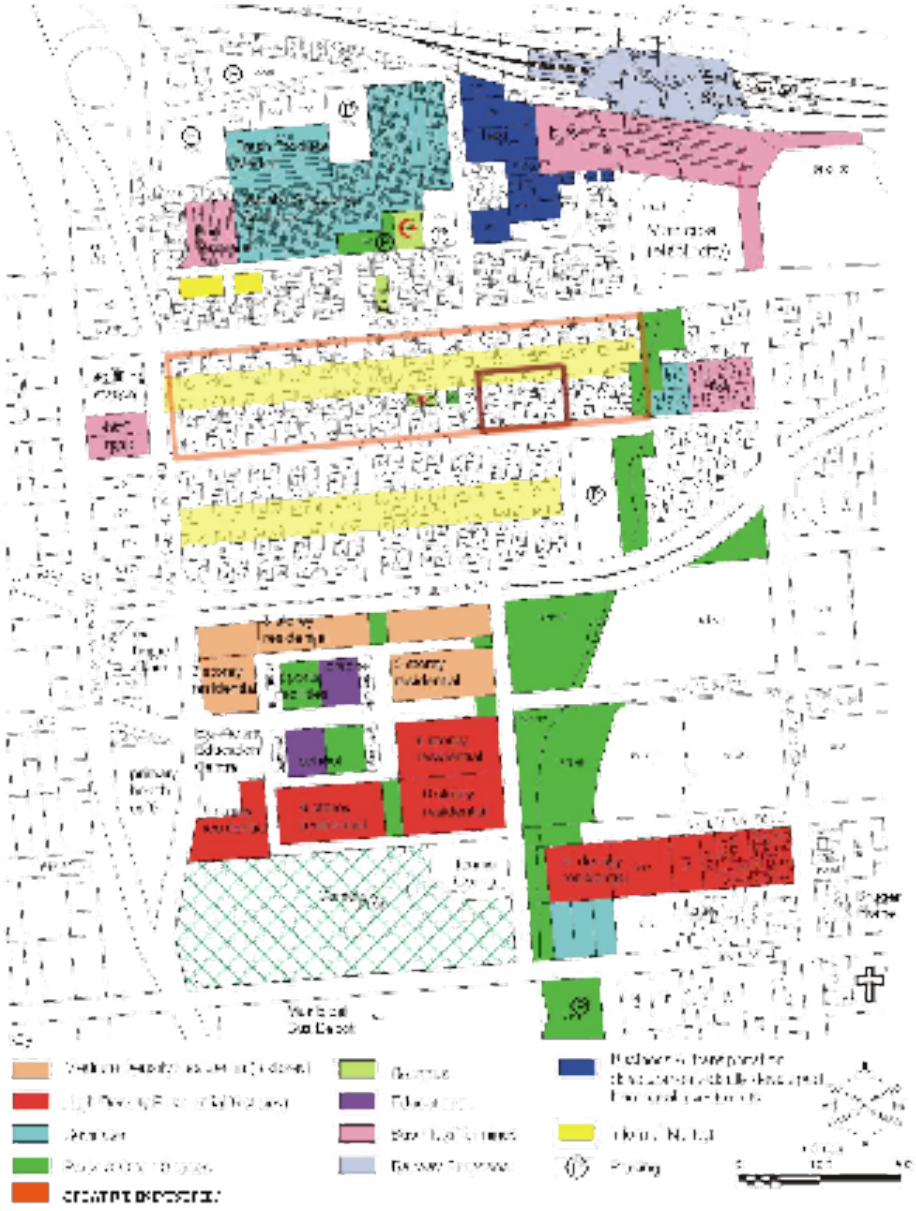
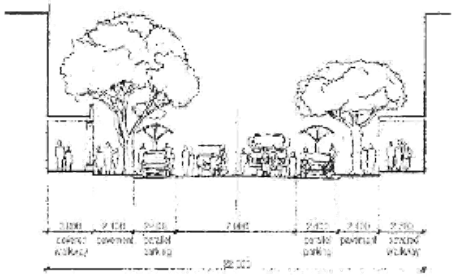
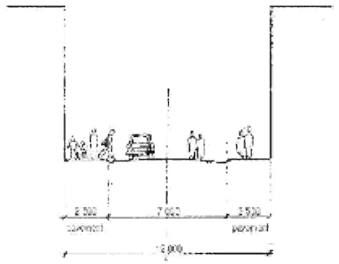


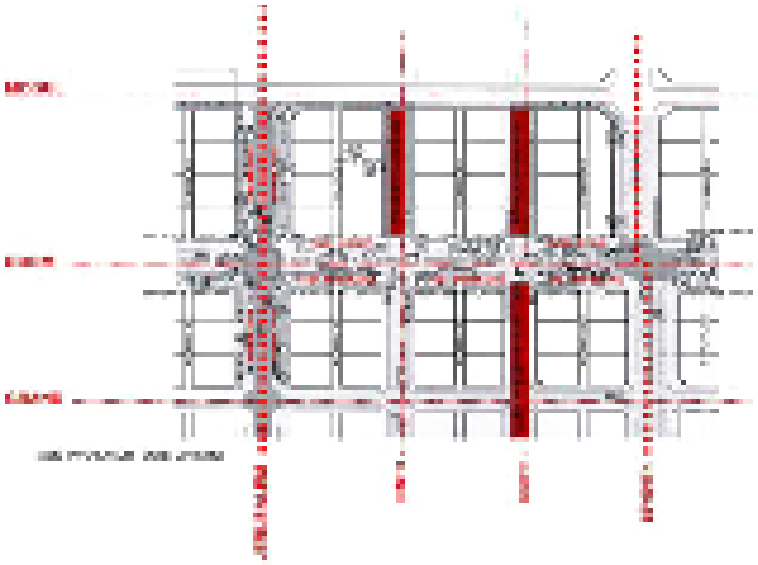
Figure 2.21
Proposed land use for
Marabastad manipulated by Author.
Site indicated with red box
(Aziz-Tayob Architects, 2002 : 169).

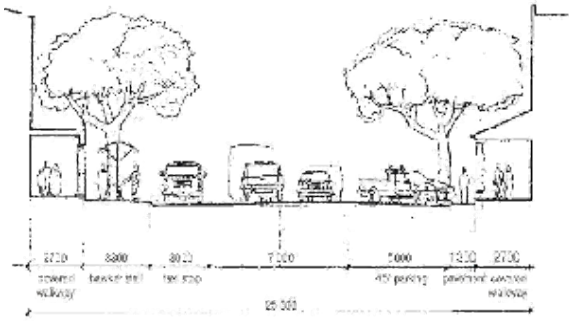


TYPICAL SECTION THROUGH JERUSALEM STREET



TYPICAL SECTION THROUGH A SIDE STREET





TYPICAL SECTION THROUGH BOOM STREET

Figure 2.22
Proposed streets scapes for Marabastad
adopted from framework
(Aziz-Tayob Architects, 2002:170).

2.8 Infrastructurural analysis

Access to Marabastad is adequate due to the main traffic arteries, indicated in figure 2.23. D.F Malan allows for access from the North-West. Church Street gives access to Atteridgeville township from the West and Mamelodi township from the East. Bloed and Boom Street feed in and out of Marabastad from East to West and vice versa.
The inner city bus route and the BRT runs through Marabastad, connecting it to the rest of Pretoria.

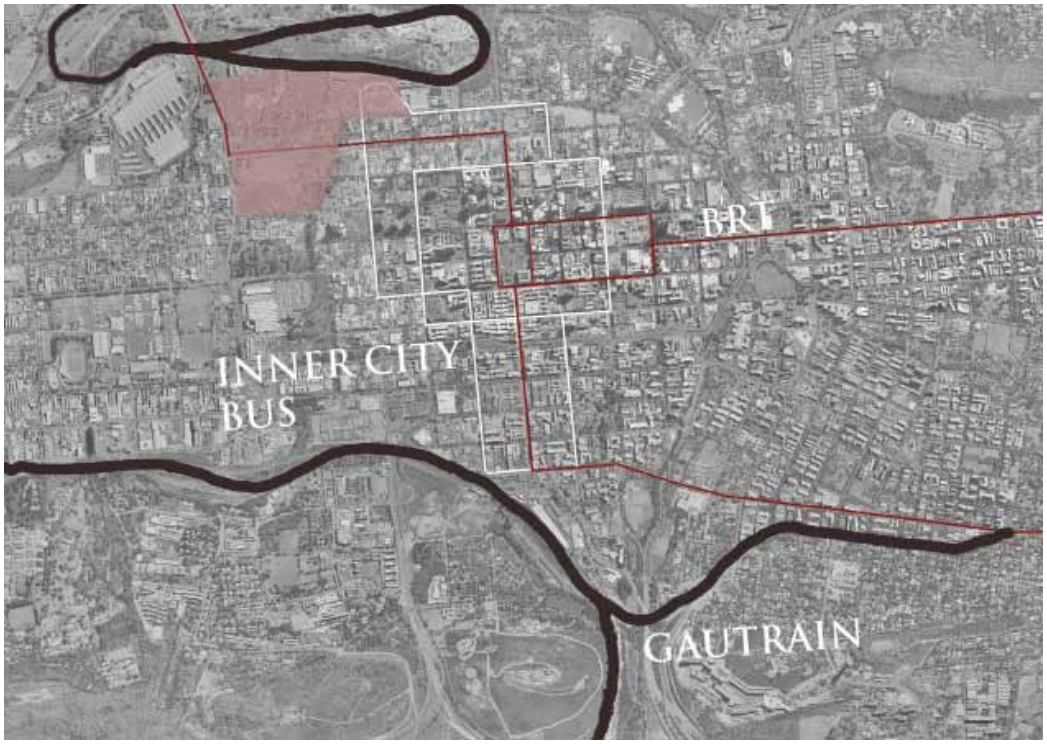


Figure 2.23
Map manipulated by Author (2010) showing major routes connecting Marabastad city (Aziz-Tayob Architects, 2002 : 169)

2.9 Social and Economical Analysis

Marabastad hosts 18% of Pretoria's informal trading and with all the commuters passing through via different means of transport it is clear why trading is a growing economy. Most of the commuters are from the north-west passing through Marabastad every day (Aziz Tayob Architects, 2002 : 103).
Most people that trade in Marabastad have been there for years selling to their loyal customer passing through. The formal traders of Marabastad consist mainly of the Indian community whereas the informal trade is a mixture of black cultures (Aziz Tayob Architects, 2002:126).

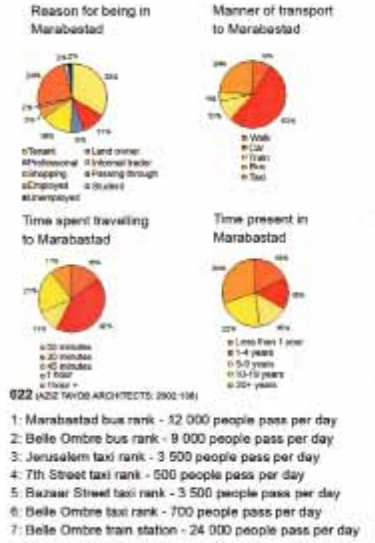


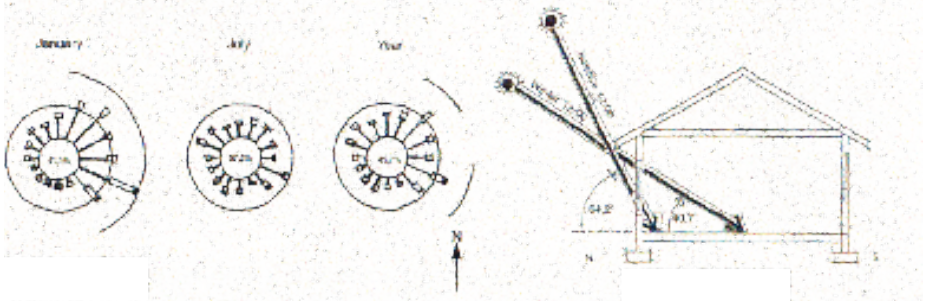
Figure 2.24
Social analysis of Marabastad (Aziz-Tayob Architects.2002:169).

2.10 Bio - Physical Analysis

Climate : Marabastad is characterised by generally high temporal relatively low local humidity frequently combined with high afternoon temperatures in the summer. The summer rains reach an average of 741mm per year. Large roof areas could contribute in the sustainability vision from the group framework by catching and storing of rainwater (Holm, 1990).

Wind : Prevailing winds are calm and blow from the north-east in the morning backing to the north-west in the afternoon. During winter cold snaps bring winds from the south, while in the summer thunderstorms are accompanied by turbulent wind patterns. The proposed roof structures and facilities should be designed to maximise cross ventilation by utilising the prevailing wind directions.

Topography : Marabastad falls in gentle slope from the south-west to the north-east at about 1 : 36. This slope places no constraints on development. The underlying geology is composed of localised Andestic lava with inter bedded agglomerate, shale and tuff. Soil conditions are such that highly variable foundations conditions may be expected to occur, from solid rock at shallow depth to potentially expensive residual andesite soils.



Jan	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ave
Maximum average monthly temperature (°c)	28,6	28	27	24,1	21,9	19,1	19,6	22,2	25,5	26,6	27,1	28	24,81
Minimum average monthly temperature (°c)	17,4	17,2	16	12,2	7,8	4,5	4,5	7,6	11,7	14,2	15,7	16,9	12,13
Average monthly amplitude (K)	11,2	10,8	11	11,9	14,1	14,6	15,1	14,6	13,8	12,4	11,4	11,2	12,68
Average monthly relative humidity (%)	58,0	59,5	60,0	58,5	56,0	52,0	50,0	48,0	45,0	49,5	54,0	56,5	53,83
Average monthly rainfall (mm)	136	75	82	51	13	7	3	6	22	71	98	110	96,17
Rham 72	74	76	78	76	75	71	64	61	64	68	70	75	70,76
Rham 44	45	44	41	34	31	29	28	29	35	40	43	44	36,92

Figure 2.25
Bio-physical information
(Holm, 1990).

CHAPTER 3 : THEORETICAL PREMISE

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Chapter 3: Theoretical premise

This chapter explores the sub questions that are derived from the hypothesis of the research. It communicates how memory could be used as a design tool when designing architecture in a post liberating context like Marabastad.

3.1 Spirit of place

Norberg Schulz's theory of the 'genius loci' or 'spirit of place' leads this theoretical investigation. Schulz (1986) argues that everyday life consists of tangible and intangible phenomena. The tangible being rocks, flowers, sky, earth etc. (anything you can see or touch) and the intangible (cannot see or touch) are experiences like emotions and memory. Memory is an intangible phenomenon that can evoke specific "feelings" or vice versa. *"... remembering is the fleeting correspondence through which a present sensation evokes an earlier, lost experience"*(Mcole, 1997). Schulz (1986) further states that *"when man dwells, he is simultaneously located in space and exposed to a certain environmental character"*. He describes two functions that are involved, namely identification and orientation. Schulz argues that a person needs to orientate him/herself to know where he/she is in a place but also needs to identify with his/her environment. Memory in Marabastad becomes significant through the meaning it provides. For a person to orientate him/herself in Marabastad he/she needs to understand the meaning it contains. Therefore orientation can be interpreted as meaning in the context of Marabastad. Identity in this context through memory can act as a familiarity to identify with. To create tangible phenomena, in this case architecture, the intangible memories could be used to inform the identity and meaning which according to Schulz are needed to grasp the "spirit of place".

3.2 Memory

Memory is something that we all possess. It is our sub-conscious reminding us that we have lived. *"All memory is unavoidably both borne out of individual subjective experience and shaped by collective consciousness and shared social processes so that any understanding of the representation of remembrance and of the past more generally must necessarily take into account both contexts"*(Combes.2003:7). *As* mentioned in the historical background (Chapter 2), Marabastad has a dire memory of political oppression which includes racial separation, forced relocation and destruction of personal property and integrity. These factors ultimately created the conditions in which Marabastad finds itself today.

"The strategic – political ultimately moral historical question is how to move towards understanding without forgetting, but to remember without constantly rekindling the divisive passion of the past. Such an approach is the only one which would allow us to look down into darkness of the atrocities of the past and to speculate on their causes at the same time as we haul up the waters of hope for a future of dignity and equality." (Alexander,2002 : 72)

Memory is a reference to the past in a place which has an oppressed history. It reminds us of our past, and the mistakes of our forefathers. Without a reference to the past we cannot move forward to create a future that will avoid the same hardships. It is thus of importance to have architecture in a previously oppressed context that has reference and is represented as a reaction to that past. *"Architecture becomes intelligible through reference"* (Wolff, 2009 : 175)
If memory is a reference, it could manifest itself as a *"resemblance to an existing or previously existing reality"* (Wolff, 2009 : 175). This resemblance in an architectural intervention opens the possibility for its dwellers to identify with it and find meaning in its spaces. *"With no connection to the familiar world, architecture runs the risk of being inaccessible, elitist and sitting uncomfortably with the people who use it"* (Wolff, 2007 : 66)

3.3 Identity

Norberg - Schulz argues that two functions are needed to create a sense of place, identity being the first. *"...he [she] also has to*

identify himself with the environment, that is, he has to know how he is in a certain place" (Norberg-Schulz, 1980 : 423). Butina, Watson & Bentley (2007) define place-identity as meanings related with any particular cultural landscape which any certain person or group of people draws on in the making of their own personal or collective identities. These definitions demonstrate that people are the vital informants when dealing with identity and place making. There is a mutual relationship between people and the places they inhabit. Mcdowell(1997) states that people produce places and then derive identities from them: "*people are constituted through place*" (McDowell, 1997). Identity of place becomes important when creating spaces in order for people not to feel alienated. A present identity informed by memory creates a reference or familiarity that contributes to a non-elitist environment.

"*One way in which identity is connected to a particular place is by feeling that you belong in that place. It's a place in which you feel comfortable because part of how you define yourself is symbolised by certain qualities of that place*" (Rose, 1995 : 87). It is evident from above mentioned arguments that identity becomes an important part of how people experience a place. The question arises how this identity could inspire the architectural intervention. Adam (2009) claims that symbolism of place is a technique to give new architecture an identity that relates to its memory and context. Adam goes on to explain conceptualist Jurgen Mayer's approach to symbolism which is taking local materials that they could reinterpret as something new. Mayer's approach is to relate their architecture to its context but not have it looking like buildings from the past. Identity includes people into the architectural equation. It assists in the "spirit of place" and creates spaces that people can dwell and feel at home in.

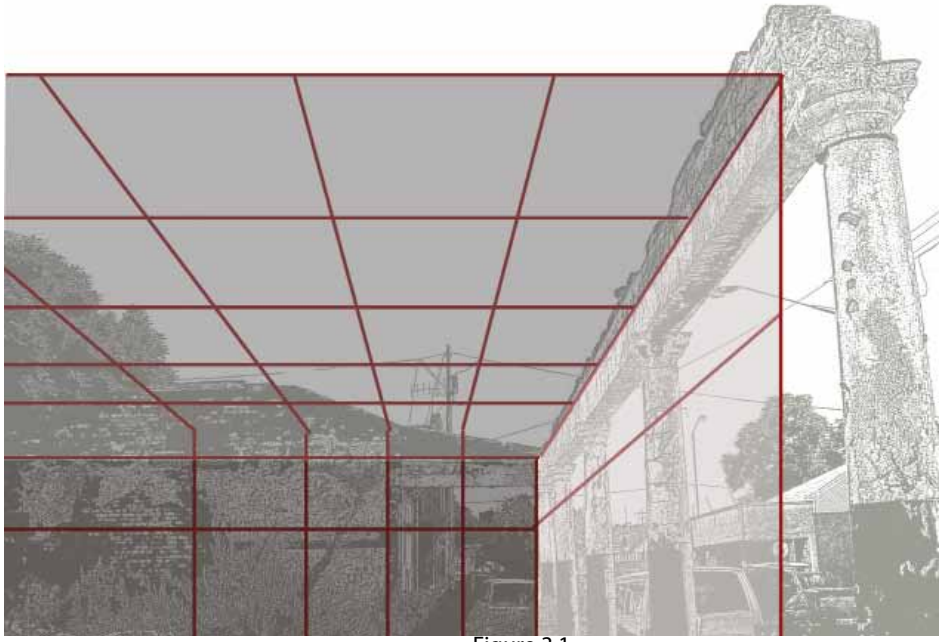

Figure 3.1
Using old to create new. Memory of the old gives meaning and something to identify with. Photograph manipulated by Author (2010).

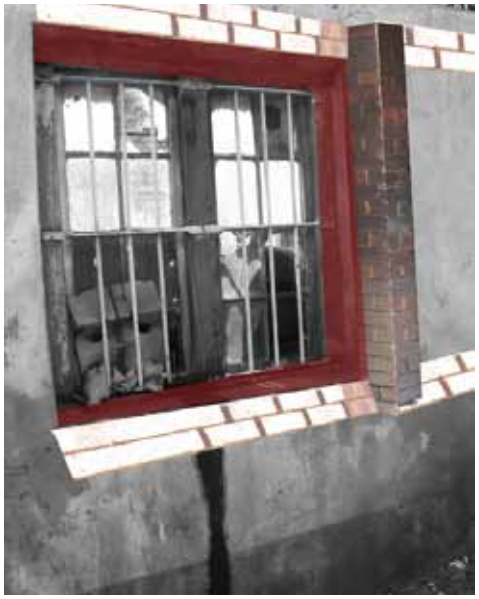

Figure 3.2
Using local materials or familiar symbols to create identity. Photograph manipulated by Author (2010).

3.4 Meaning

The second function that defines 'spirit of place' is orientation. Norberg-Schulz explains that a person needs to be able to orientate himself, or know where he is in his/her environment. Kevin Lynch (1960) identifies spatial structures or 'systems of orientation'. He further states that these elements that make these structures are "concrete things" with "meaning". In Marabastad, that has been stripped of most of its spatial structures,

meaning can become an architectural or spatial informant. If a place has meaning to a dweller, he will be able to orientate him/herself. "*Monuments, streets, neighbourhoods, buildings, churches and parks are all material things, but they also evoke specific kinds of meanings and serve as spatial coordinates of identity*"(Lynch, 1972). Architecture in Marabastad should contain specific meanings that could create spaces of orientation. In Marabastad, there is meaning in the memories it holds and when applied to architecture it can create spaces of orientation.

3.6 The relationship between the old and the new

"*The sociopolitical realities of the post-liberating context demand both renewal to move forward and a connection to the past in order to engage with repressed history and identity*" (Wolff, 2009 : 178).
Memory in Marabastad is the 'old' in Marabastad and is the reference that could give a new architectural intervention familiarity which users could relate to. With these memories of old, the new should evolve and create spaces that glimpse at the past but don't hold on to it so that the future cannot be embraced. Wolff (2009) states that there should be caution not to relive and recall the past in such a way that it 'collapses into conservatism' but it should inform the faith in the future. The memory (old) and the programme of the architectural intervention's requirements (new) create a tension that could inform the design decisions. These tensions need not be resolved by the language of representation which is informed by these dialectics, communal and judgements that "*constitute the engagement with the dialectic*" (Wolff, 2009 : 178).Through the identification of these tensions and relationships between the old and new patterns could emerge that could start to give form to an architecture.

3.6 Conclusion

Memory is the driving force to create architecture in a post-liberating context. Memory that informs identity and meaning could invigorate the 'spirit of place'. This could be achieved by using familiar symbolism like local materials or keeping Marabastad's spatial integrity. The new program and memories create tensions that when attempting to resolve could inspire design decisions.
Marabastad has undergone much political oppression in the past and these memories could represent its history but also invigorate a faith in the future that reacts to these memories through place-identity and meaning.

CHAPTER 4 : PRECEDENT STUDIES

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4.1 PROJECT : ALEXANDRA HERITAGE CENTRE

Location : Alexandra, Gauteng, South Africa

Architects : Peter Rich Architects

4.1.1 Background

The design of the centre was driven by site constraints and a study of the organic nature of Alexandra's internalised yard spaces. The topography suggested a bridge building that links the two corners of the site, domestic and civic spaces are combined through the use of material and manipulation of spatial sequences. There is a tension between the crafted finishes and recycled materials that is derived of the memory of a resourceful township fabric. This project is open-ended and able to be reprogrammed for future uses.
(Decklar et al., 2006 : 46-49)

Figure 4.1
Bridge connecting two corners of site
(Decklar et al., 2008 : 48-49).

Figure 4.2 Polycarbonate sheeting, steel frame and brickwork
(Decklar et al., 2008 : 48-49).

Figure 4.3
Shows internalised yard spaces of Alexandra incorporated into new building spaces of site.
(Decklar et al., 2008 : 48-49).

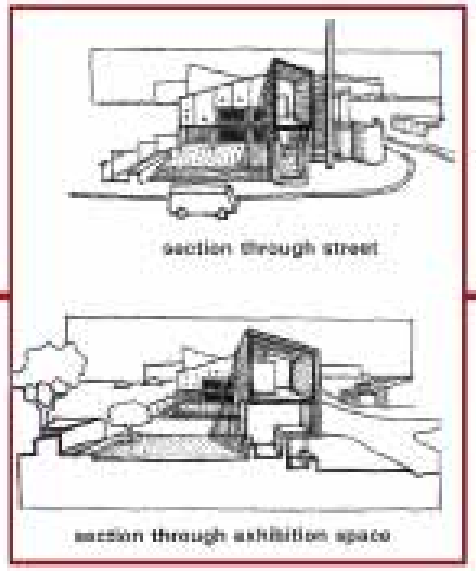


Figure 4.4
Sections showing relationship with street and bridge connecting opposite sides of site
(Decklar et al., 2008 : 48-49).

4.1.2 Influences

- The memory of materials used in the township influenced the material selection
- Spatial memory of internalised yards of township was reinterpreted in project.
- Adaptable steel frame building that allows for spatial flexibility and choice
- Reference of existing structures used in building.

4.1.3 Materials used

- Cement blocks
- Clay Bricks
- Steel H - Columns and I-Beams
- IBR Profile Metal Sheeting

4.2 Project : Chapel of Light

Location : Vaal University of Technology, Vander bijlpark, Johannesburg, Gauteng, South Africa

Architects : Comrie Wilkinson Architects and Urban Designers

4.2.1 Background

The chapel is situated in the centre of Vaal University of Technology. There is little context to respond to which made the development of a design concept difficult. Thus a conceptual and physical site had to be constructed within which to locate the building. The inside of the chapel is illuminated by direct and indirect sunlight. The red brick exterior is animated with light and shadow. The interior atmosphere is the opposite of the exterior which is calm and peaceful with its bagged wall finish, timber ceilings and dark slate flooring. (Joubert. 2009 : 210)

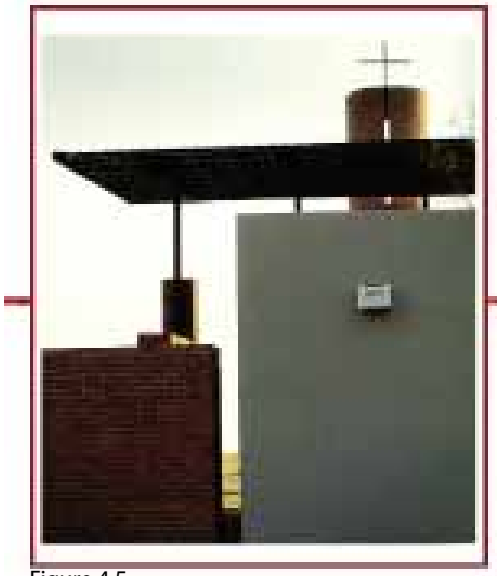


Figure 4.5
Elemental aesthetic of building
(Joubert, 2009 : 211).

Figure 4.6
Manipulation of light entering building giving a calm atmosphere
(Joubert, 2009 : 211).

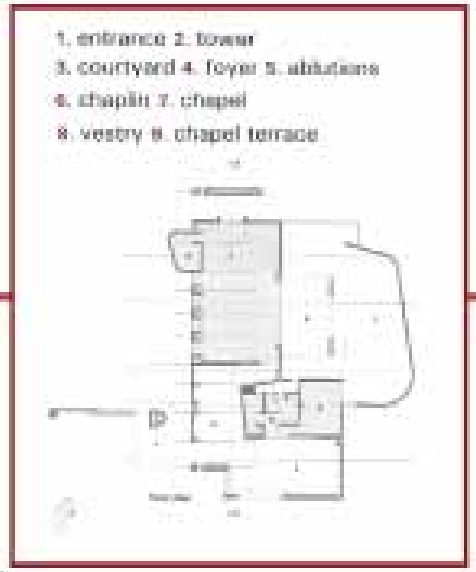


Figure 4.7
Plan showing flow of spaces
(Joubert, 2009 : 211).

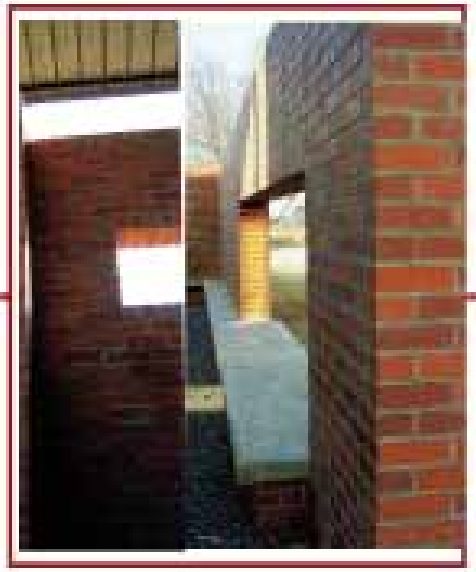


Figure 4.8
Exterior light is more animated that interior
(Joubert, 2009 : 211).

4.2.2 Influences

- Little context to respond similar to the dissertation.
- Construction of a physical and conceptual site
- The manipulation of light and use of different materials to create different atmospheric exterior and interior spaces.
- Elemental aesthetic, clear distinction between horizontal and vertical elements.

4.2.3 Materials used

- Face Brick
- Bagged Masonry Wall
- Timber
- Slate
- Steel H-Columns
- Steel trusses
- IBR Roofing

4.3 PROJECT : FACULTY OF LAW BUILDING

Location : Hillcrest, University of Pretoria, Gauteng, South Africa

Architects : KrugerRoos Architects and Urban Designers

4.3.1 Background

The Faculty of law building is situated on the Northern part of the University of Pretoria's main campus. The space of the campus is drawn inside and imitated to create a well-defined and context conscientious outdoor space. It has the sense of a smaller campus within the larger campus. This concept is evident in the sketch - plans with a circulation spine connecting lecture halls, gathering spaces and courtyards, offices to the library and the administrative core. The four - storied circulation spine welcomes Pretoria's moderate climate into the interior spaces. The lofty roof allows light to penetrate the building and the tactically placed walkways control sun penetration (Joubert, 2009 : 70).

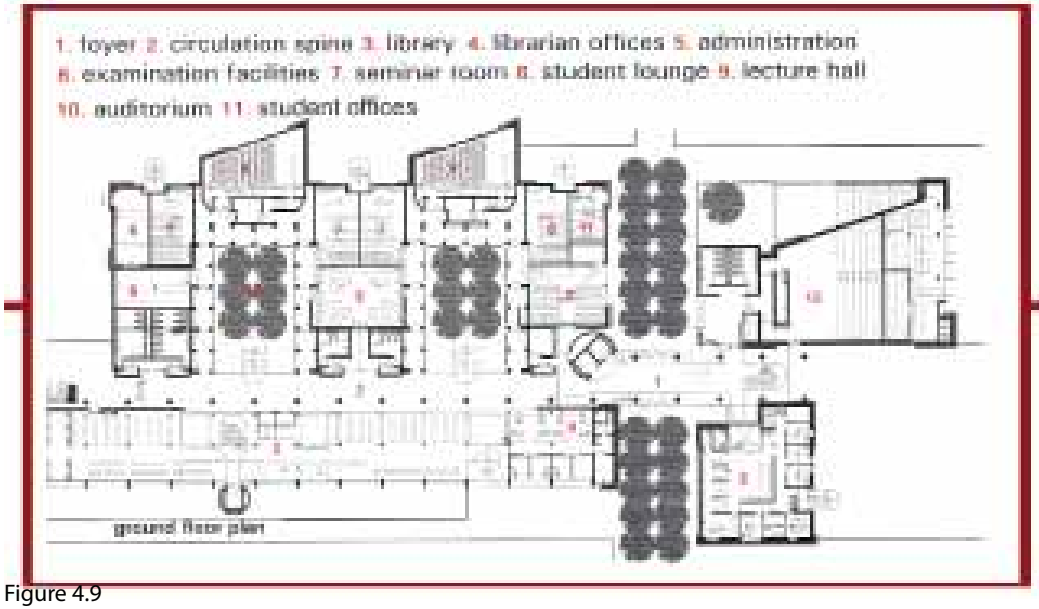


Figure 4.9
Plan showing 4 storey circulation spine(2) that creates mini campus atmosphere (Joubert,2009 : 211).

Figure 4.10
Interior showing lofty roof and walkways that control light quality into library (Joubert, 2009 : 211).

Figure 4.11
One of the interior courtyards with spiral staircases connecting different spaces atmosphere
(Joubert, 2009 : 211).

4.3.2 Influences

- Context of a campus space interpreted on the interior of the building.
- Different atmospheres are achieved for interior and exterior.

4.3.3 Materials used

- Steel profiles
- Glass
- Plastered masonry walls
- Concrete

4.4 PROJECT : GUGULETHU MEAT MARKET

Location : Gugulethu, Cape Town, South Africa

Architects : CS Studio Architects

4.4.1 Background

The market is magnet for social activities that include music, food and interactions. The project consists of a large open space and a series of small enclosed spaces. The trading occurs underneath a large roof. The large open space opens up towards the street with an L-shape building wrapping the south-west boundaries. The scheme enhances the existing spatial pattern and doesn't alienate local traders.
(Smuts.1999:44-46)

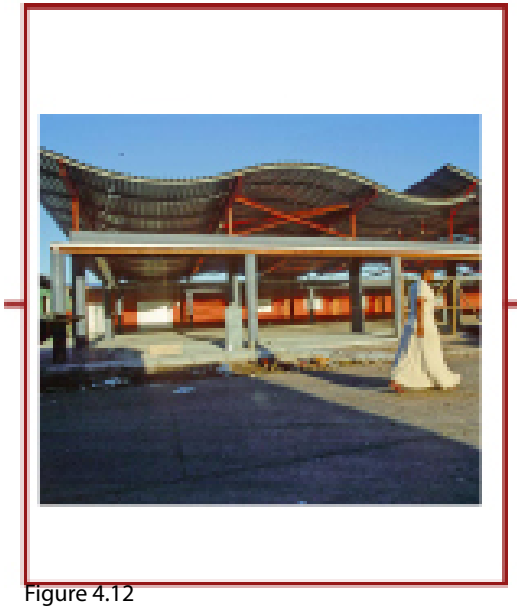


Figure 4.12
Roof over market space with shops at the back. Clear distinction between spaces and programme
(Smuts, 1999 : 44).

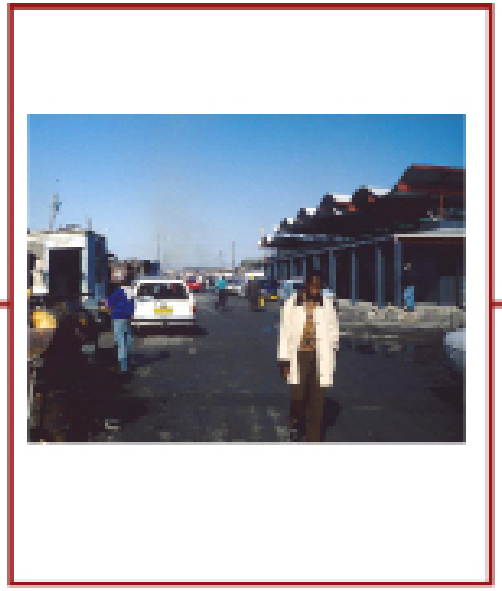


Figure 4.13
Market space opening up towards street edge.
(Smuts, 1999 : 44).

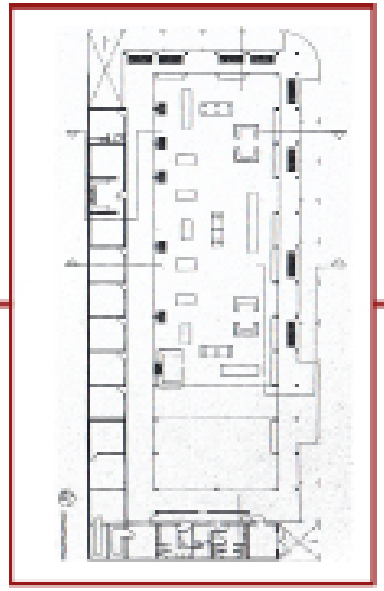


Figure 4.14
Plan showing flow of spaces into each other. From left to right are shops into market into street
(Smuts, 1999 : 44).

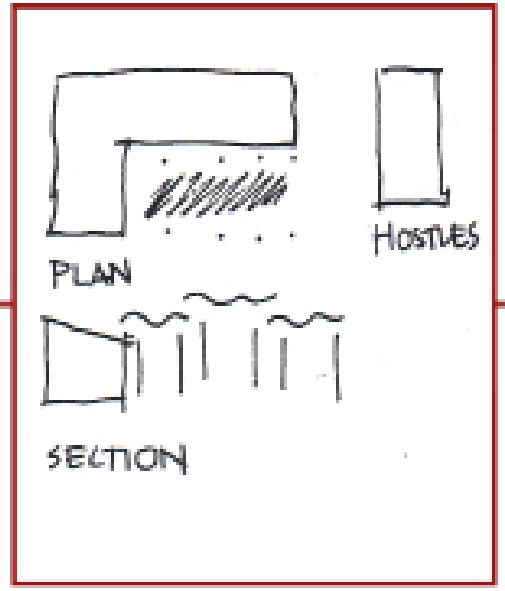


Figure 4.15
Conceptual sketches showing hierarchy and flow of spaces
(Smuts, 1999 : 44).

4.4.2 Influences

- Hierarchy of spaces that flow into each other. Shops into the market and the market onto the street.
- Distinction of spaces and programmes is clear.
- Tectonics of steel and concrete.

4.4.3 Materials used

- Steel profiles
- IBR sheeting
- Concrete
- Masonry

4.6 PROJECT : SOWETO CAREERS CENTRE

Location : Soweto, Gauteng, South Africa

Architects : Jo Noero

4.6.1 Background

The centre creates a community focus and relates well to its context, topography, site limitations and existing buildings on site. It has a variety of well designed spaces suitable for a mixture of functions. Materials were resourcefully selected and typical vernaculars of self built houses were used to demonstrate to the users the good aesthetic and functional performance potential thereof. The centre has a hybrid design that allows multi- functional use of spaces allowing the centre to be active most of the time (Slessor, 1994 : 22-29).

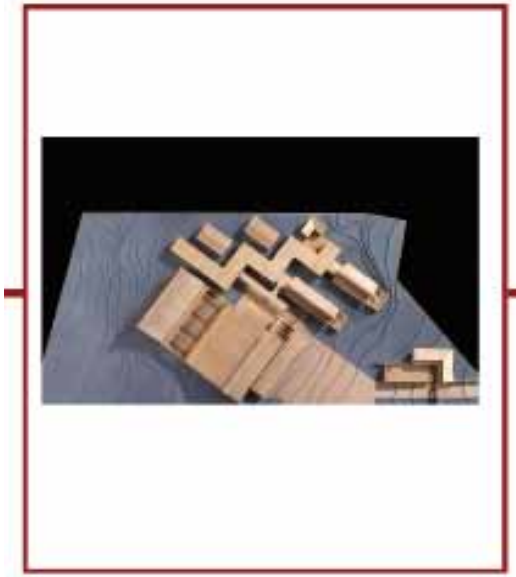


Figure 4.16
Top view of model.Note how interior spaces open up onto courtyards
(Slessor, 1994 : 23).

Figure 4.14
Steel frame and IBR cladding allow for adaptable spaces
(Slessor, 1994 : 23).

Figure 4.15
Smaller intimate scale creates transitions between interior and exterior spaces
(Slessor, 1994 : 24).

Figure 4.16
Hybrid open interior space that opens up to larger courtyard.
(Slessor, 1994 : 24).

4.6.2 Influences

- Construction of steel and IBR - profile metal sheeting and masonry brick walls
- The hybrid designed spaces create an open variety of functions within one complex development.
- Hierarchy of spaces. Small intimate scale to large open spaces.

4.6.3 Materials used

- IBR profile metal sheeting
- Steel columns
- Plastered finishes brightly painted masonry brick walls.

4.5 PROJECT : THOMASTON FARMER'S MARKET

Location : Thomaston, Newbern, USA

Architects : Rural Studio

4.5.1 Background

The Thomaston market is the rural studio's first foray into architecture to advance economic and town development. It is a civic building that hosts a farmer's market and is mainly columns and a roof, a butterfly of corrugated metal with a prominent drain at its centre. The roof's support is ribbed metal purlins, horizontal steel piping and piped steel columns.
(Oppenheimer. 2002 : 134-137)

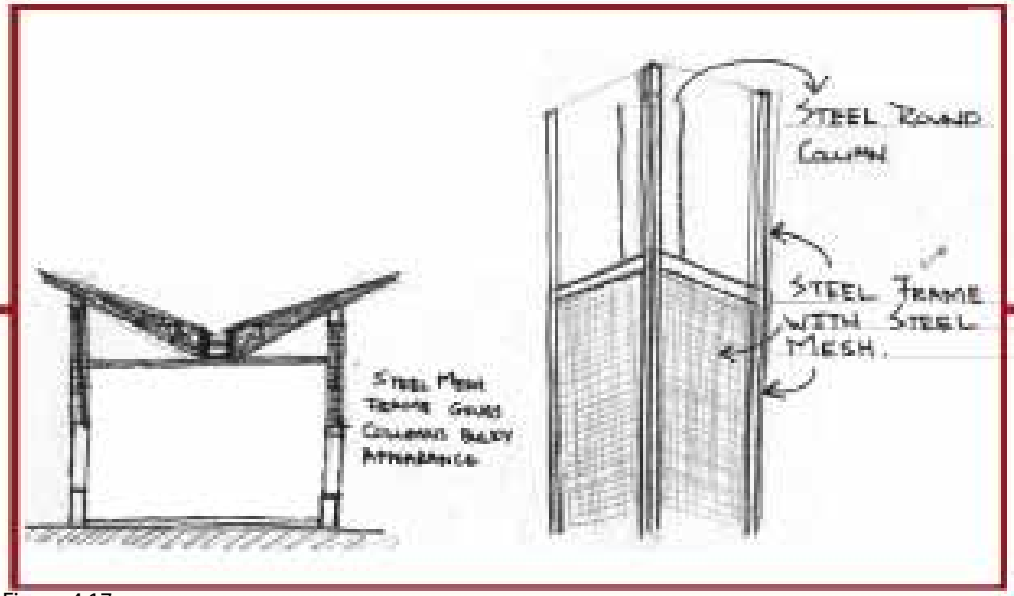


Figure 4.17
Sketch that illustrates the use of steel frame with mesh to create bulky aesthetic
(Author, 2010).

Figure 4.18
Columns with bulky appearance and roof with light aesthetic
(Oppenheimer, 2002:134).

Figure 4.19
Construction of columns with concrete, steel and steel mesh to create bulky appearance more economic than column made of only concrete
(Oppenheimer, 2002:134).

4.5.2 Influences

- Round steel columns are fixed to concrete footing and surrounded with steel mesh frames which gives it its bulky appearance.
- The roof is light in appearance contrasting with the bulky columns. The manipulation of steel components can assist in the visual appearance of certain elements.
- Well balanced scale for type of market needed in dissertation.

4.5.3 Materials used

- Steel columns and trusses.
- Steel wire mesh.
- Painted cast in-situ concrete.

CHAPTER 5 : CONCEPT DEVELOPMENT

5.1 CONCEPTUAL STATEMENT

The representation of the layers and tensions between the old(memory) and the current (Programme, architecture).

"The sociopolitical realities of the post-liberating context demand both renewal to move forward and a connection to the past in order to engage with repressed history and identity" (Wolff, 2009 : 178).
The dissertation calls on the memories of the past to create a reference and sense of meaning to identify with. These informants are used to create a new layer in a post-liberating context. For every action there is a reaction. There are good and bad memories in Marabastad, memories made in the past will have a reaction on the present and future.

5.2 THE OLD (MEMORY)

5.2.1 Memory in Marabastad.

From Chapter 2's contextual analysis memories concerning Marabastad can be identified that could act as design generators. These are

- Forced Relocation
- Racial Separation
- Physical Destruction
- Figure Ground Spatial Patterns
- Small Intimate Space

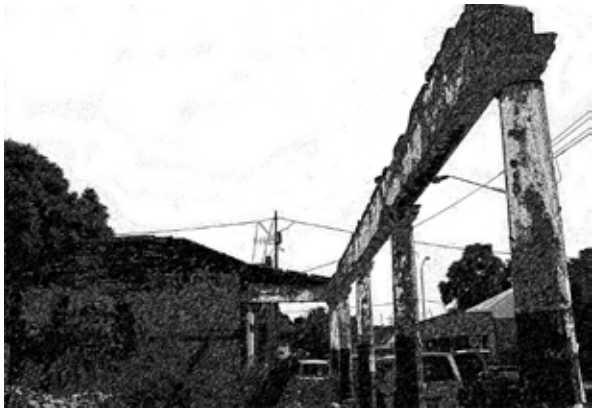


Figure 5.1 Partly demolished structure in Grand Street
(Author, 2010).

Figure 5.2
Aerial View of Marabastad from 1952 showing small intimate scale and density
(Tayob, 2002).

5.2.2 Memory on selected site

The selected site for this dissertation is surrounded by four streets. Grand Street to its North, 7th Street to the West, Bloed Street to South and 8th Street to the East,(see Figure 5.3).
The site was located in the Indian location (figure 5.4) in the centre of Marabastad.

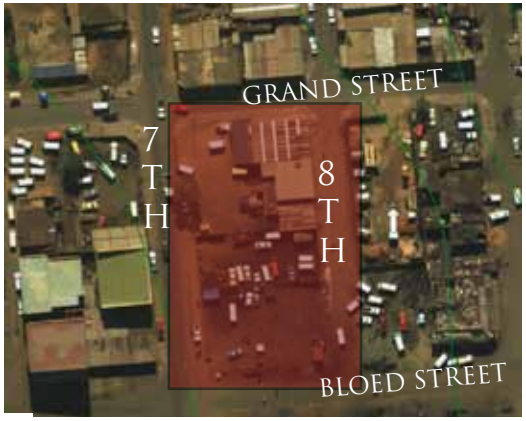


Figure 5.3
Selected Site. Previous structures have been demolished and the site is mostly open
(Munitoria, 2010)

Figure 5.4
An old photograph showing an Indian Home on the corner of 7th and Grand Street. Notice stoep and detail on roof
(Clarke,2008:40).

Most of the homes were demolished during forced relocations. These homes were mostly live-work units (see Figure 5.5).

Figure 5.5
Live work unit on the corner of Bloed and 7th Street. Notice internal courtyards and pathways
(Clarke,2008:29).

Through the analysis of ground figure photographs from 1932-2010 spatial memory was identified (Figure 5.6).The analysis of the ground figures memories and spatial patterns are identified.

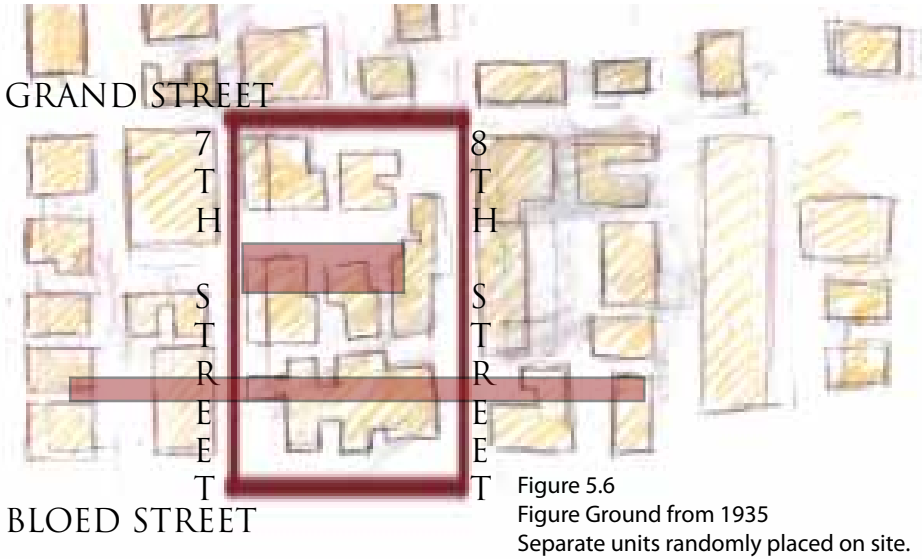


Figure 5.6
Figure Ground from 1935
Separate units randomly placed on site. Paths leading through site. Notice internal courtyards and pathways created by buildings
(Author, 2010).

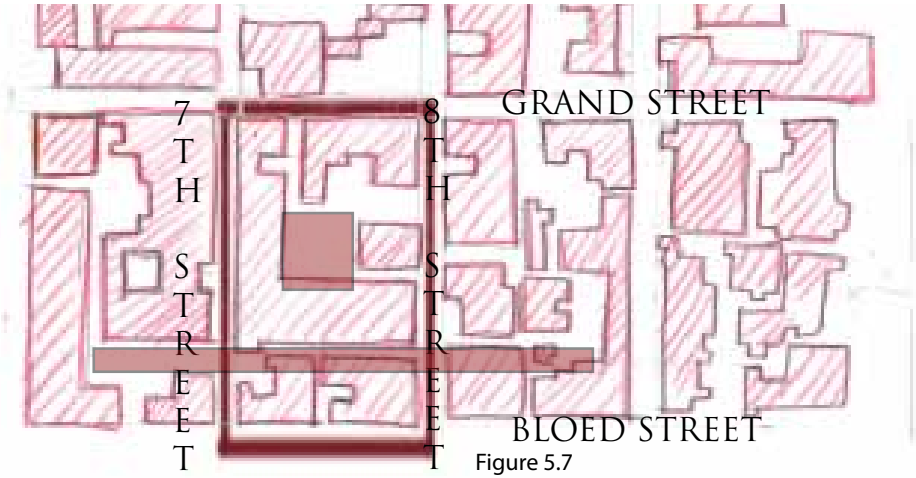


Figure 5.7
Figure Ground from 1965
Smaller units become single larger units
(Author, 2010).

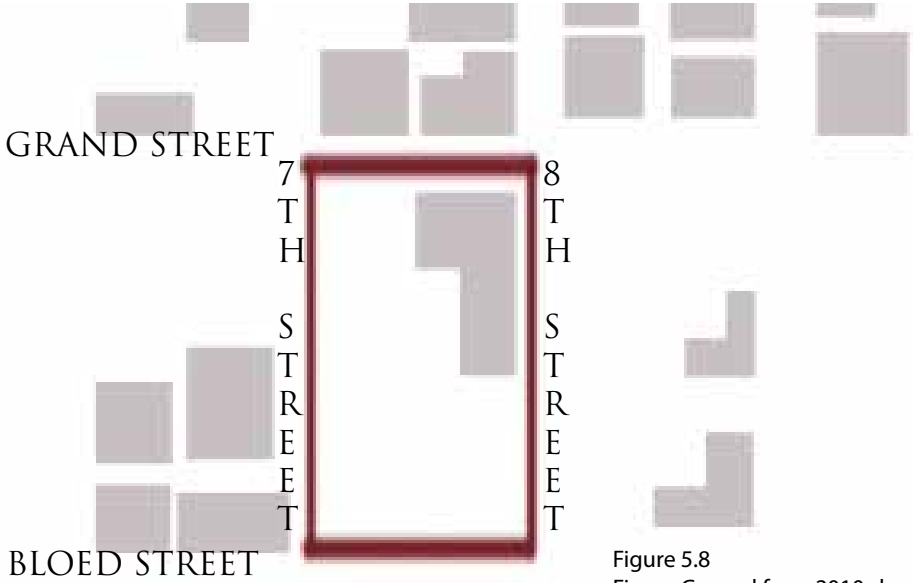


Figure 5.8
Figure Ground from 2010 showing demolition of structures and existing buildings left on site.
(Author, 2010)

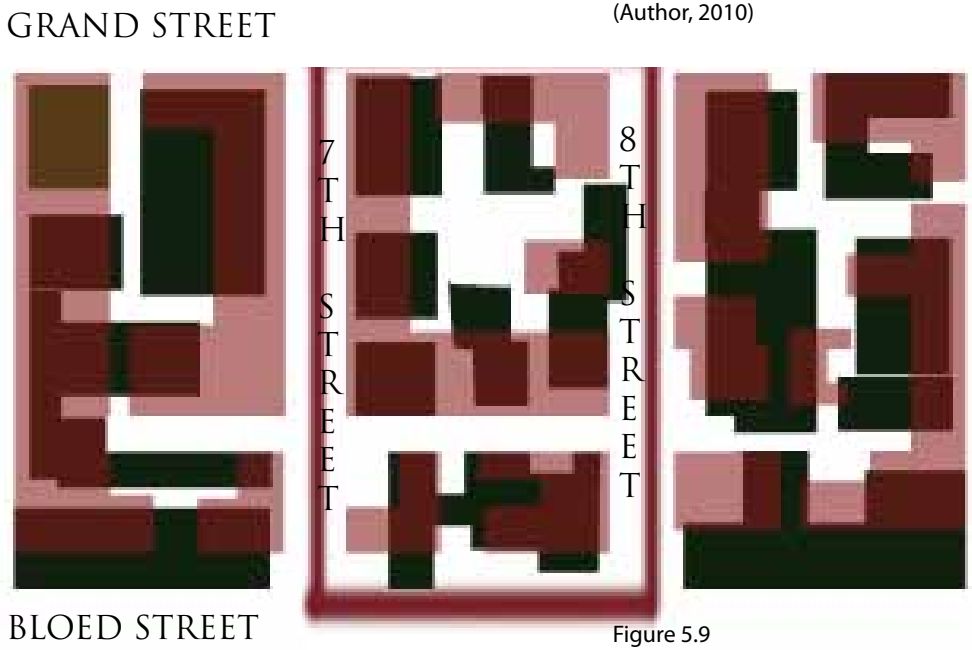


Figure 5.9
Figure Grounds from 1935-2010 synthesized Notice mostly occupied spaces.
(Author, 2010)

The following memories on site were derived from ground figures

- Small intimate scale
- Paths through site
- Courtyard spaces
- Smaller units altered to become larger units
- L-shaped buildings that creates courtyards and edge with the street.

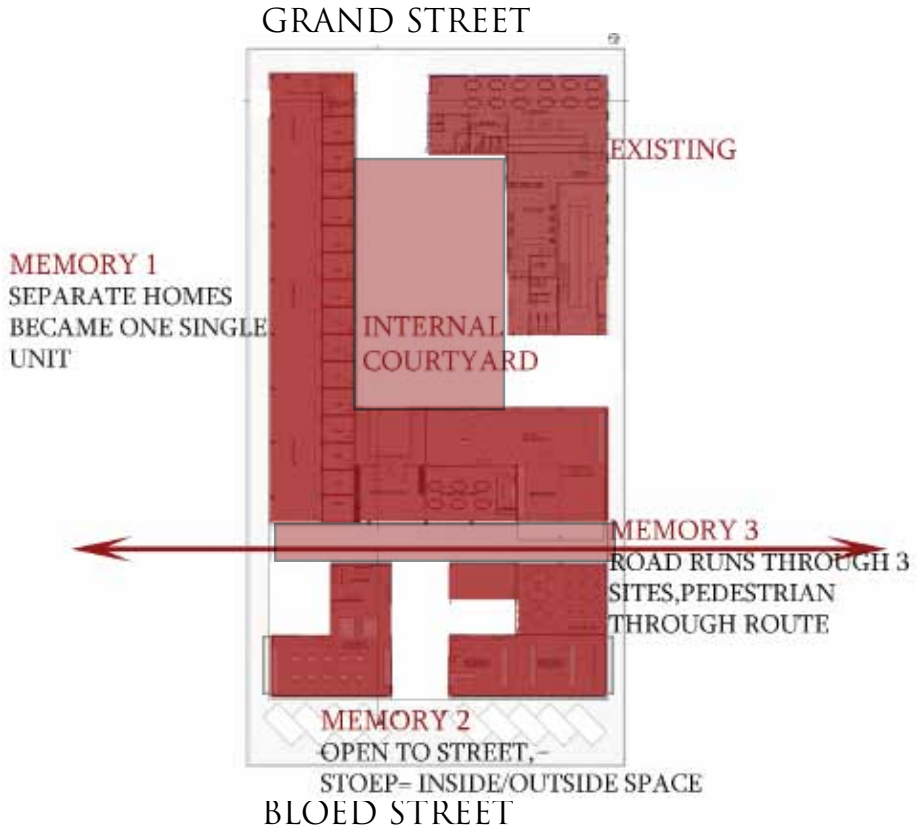


Figure 5.10
Memories and spatial patterns inspired by studies of figure ground diagrams
(Author, 2010).

5.3 THE NEW

To create a new layer the memories need to be reinterpreted and represented through the architecture. The new layers that will be added onto the old are :

- The Urban Framework
- Site Analysis
- The Building's Programme

5.3.1 The Urban Framework

The Aziz Tayob Framework and the group framework suggest that Marabastad keep its commuting identity and does this by introducing taxi stops and parking on the edge of a wide sidewalk for pedestrians and informal traders (see Figure 5.10).

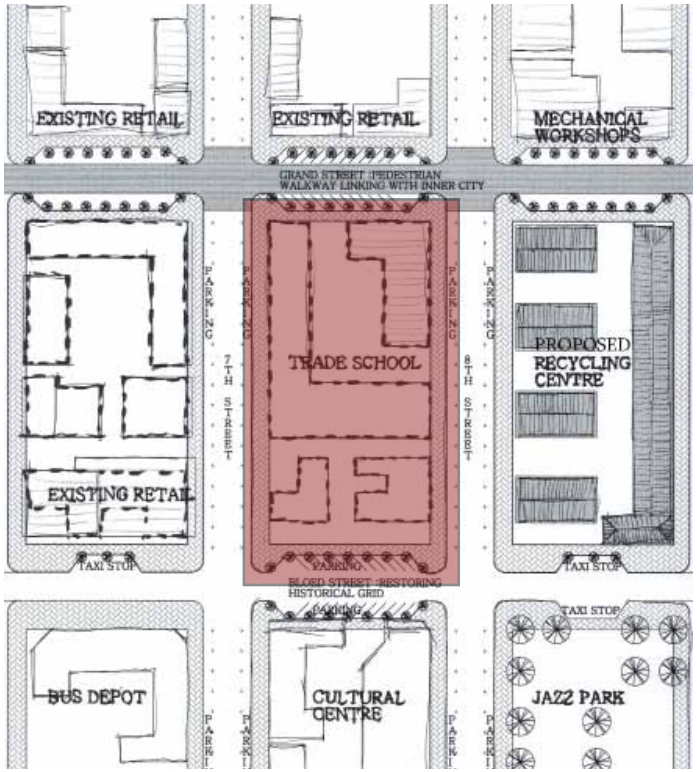


Figure 5.11 Site Plan with Urban Framework Layer (Author, 2010).

The programmes of the surrounding buildings fall in the category of creative
industries that include existing programmes like retail and mechanical workshops. Street edges adhere to memory of the veranda and pedestrian sidewalks (see figure 2.21).

5.3.2 Site Analysis

The selected site's (see Figure 5.10 in red block)
longer edge is orientated west and east which suggests that the new design needs to allow for Northern and Southern exposure while shading the Western edge.
Surrounding buildings are L-shaped buildings and some sites have internal courtyards and pathways running through the site.

5.3.3 The Program : Trade School

The most important new layer that needs to be added to the site is the building's program. The program will adhere to the memory of the site, and the placement of functions will be selected on its compatibility with the memory of a specific place. The selected program, a trade school (see chapter 1,1.1), is separated into two categories namely quite and noisy functions.

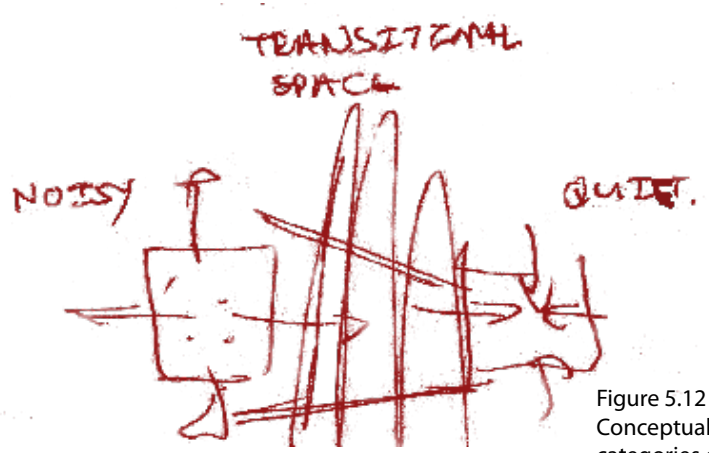


Figure 5.12
Conceptual diagram showing two categories of program namely quiet and noisy, notice buffer or transitional space between them (Author, 2010).

Programs that are more private
Quiet Program Category :
- Temporary Housing, semi-private
- Theoretical classrooms, semi-private
- Courtyard, semi - private

Programs that have many people and use noisy machinery,
Noisy Program Category :
- Cafeteria, public
- Market, public
- Pathway, public
- Practical Workshops, semi-public

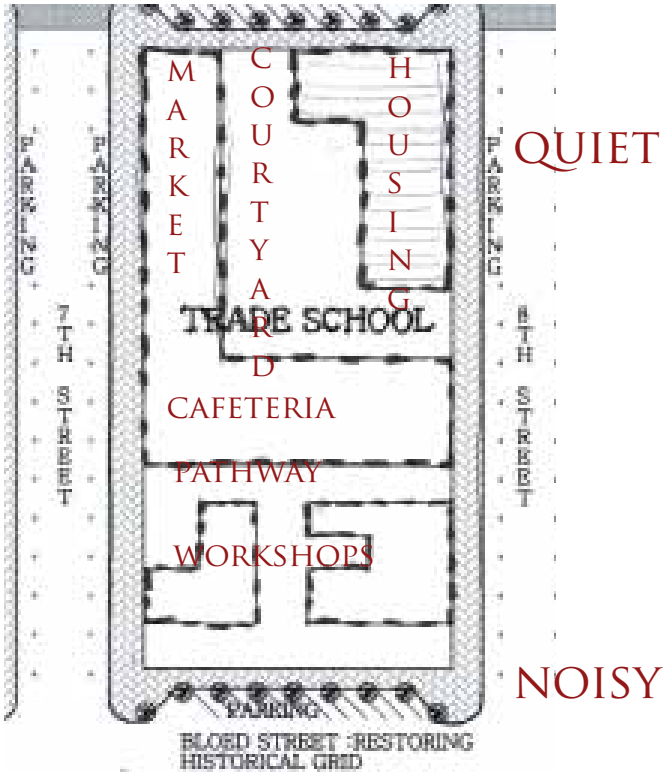


Figure 5.13
Site Plan showing program layer onto memory layer.
(Author, 2010).

5.4 The reaction

There are negative memories in Marabastad and the spatial concept is to react to these past mistakes. The reaction to negative memories will be the tool to design new meaningful spaces. Negative memories to react to :

- Racial Separation
- Forced Relocation
- Destruction

5.4.1 Racial Separation

The reaction to this memory is to create spaces and architecture that will allow a certain degree of integration between public and students,whether it be visual or physical. Spaces where this occur are the market, balconies,the historic pathway running alongside workshops and the cafeteria.
The users of the public space and street edges should have visual access to the interior spaces of some skills training workshops. This creates an identity of self empowerment and pride adding meaning for the trainee and public.

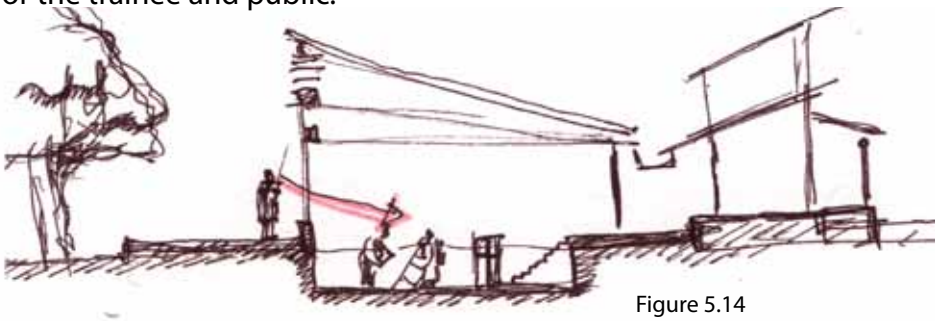


Figure 5.14
Conceptual sketches showing spatial and visual integration. Public is allowed to view skill training
(Author, 2010).

5.4.2 Forced Relocation

The reaction to this memory is to create spaces that provide choice or flexibility. Spaces will provide variety of size, movement and combinations of interior with exterior spaces. This gives the building a hybrid function. The cafeteria and workshop or classrooms and

courtyard act as a training facility during the day but at night it could be an exhibition space or entertainment facility.

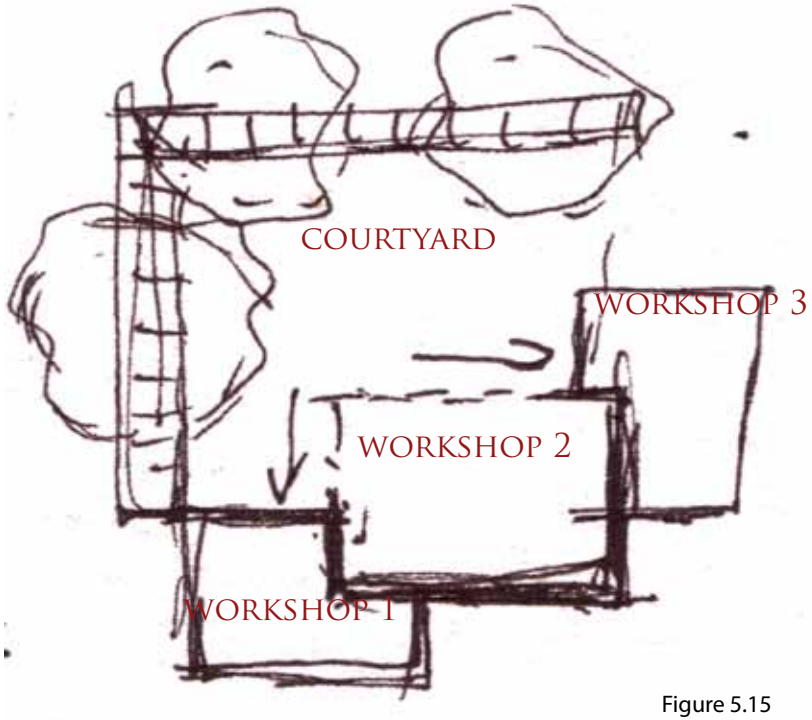


Figure 5.15
Conceptual sketches showing space that provides choice
(Author, 2010).

5.4.3 Destruction

Marabastad has a landscape with many half demolished structures that are reminders of its political history. These structures symbolise the forced relocation and the destruction of people's homes. The reaction to these memories is to create adaptable spaces that could become bigger or smaller depending on the event. Using steel allows for adaptability to structures over time.

Material choice in the dissertation was also obtained from the memory of destruction. Homes in Marabastad had to be built from steel and galvanised steel profile sheeting, no masonry was allowed by law (Friedman,1994 : 54).

This was done so that homes could be easily demolished.

As a reaction to past reality, materials that are used are steel structures with masonry and profile sheeting as cladding. Vertical patterns of sheeting inspired wall finish and memory of walled architecture inspired solid aesthetic.

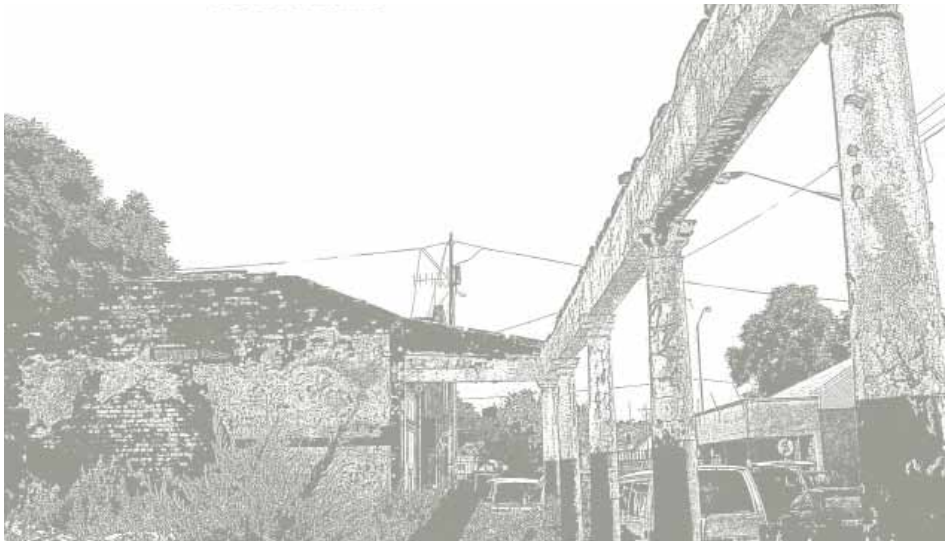


Figure 5.16
Photograph of half demolished home on corner of 8th Street and Grand Street
(Author, 2010).

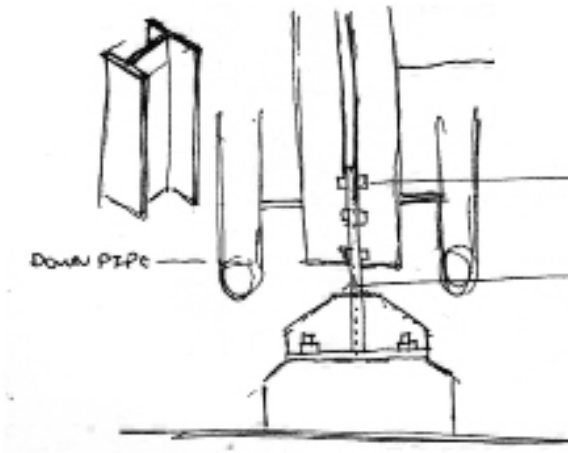


Figure 5.17
Conceptual sketch for columns showing light column aesthetic
(Author, 2010).

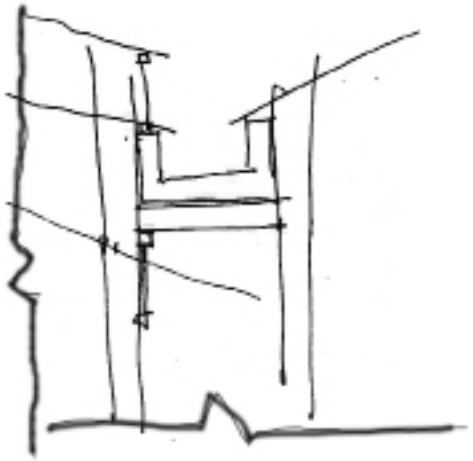


Figure 5.18
Conceptual sketches showing concrete slab carried by steel structure. Gutter detail (Author 2010).

Figure 5.19
Conceptual sketch showing interactive wall edges. People in Marabastad use edges of buildings as social spaces. Possible introduction of seating into walls (Author 2010).

CHAPTER 6 : DESIGN DEVELOPMENT

6.1 Connections

Based on the group framework (see chapter 2,2.6) and existing site conditions there are four important links to the selected site namely : Belle Ombre station to the North, the Bus Depot South of the site, 7th street on the Western edge linking Belle Ombre and the Bus Depot and Grand Street on the Northern edge of the site which is a pedestrian walkway linking with the CBD. See Figure 6.1.

Figure 6.1
Site map with pictures showing major feeder routes and important links. Photos by and manipulated author 2010 (Munitoria,2010).

6.2 Streets and surrounding buildings

6.2.1 Streets

Marabastad has two major vehicular feeder roads namely Bloed Street to the South of the selected site and Boom Street (Figure 2.15) a block North of the site. These two routes take people into the CBD from the West of Pretoria and out to the West from the CBD. On the edges of these streets are wide sidewalks that
allow pedestrians to travel in and out of the CBD. This indicates that there is a large number of people moving through Marabastad and close to the selected site. To add to the quantity of people moving past the selected site is 7th Street which is a direct road from Belle Ombre Station (figure 2.14) to the Bus Depot and Grand Street which according to the urban framework links Marabastad with the CBD with its pedestrian character.
The framework suggests upgrading the sidewalks, making it 2-2.5m wide and keeping the colonnaded veranda character that exists within Marabastad (see figure 6.2 and also see urban framework).

6.2.2 Surrounding Buildings

The adjacent buildings to the selected site are mostly 1-2 storeys high which is appropriate to the suggested 3 storey maximum height of the urban framework. It creates a small intimate scale which is also evident in the memory of Marabastad architecture. There are many dilapidated buildings in this area like the structure on the corner of 7th and Grand Street (See 6.3.a). Buildings that are in better condition are mostly used for small retail (See figure 6.3.c). The Mariammen (Figure 2.12D) temple that is a block West of the selected site is 3 storeys high and visible from site. It is also a reminder of the memory of this previous Indian location (See figure 6.3.b). The surrounding existing buildings are mostly walled architecture constructed as gable walls using face brick or plastered finish which contrast with the memory of Marabastad where masonry construction was prohibited.
On the Eastern side of the site is the Recycling Centre from the urban framework. This project uses mainly materials like portal frame steel structures and masonry walls.
On the Southern edge is the Jazz Park's which brings some green space to this area. The jazz park's hard surfaces and structures are constructed with interlocking paving and red facebrick.

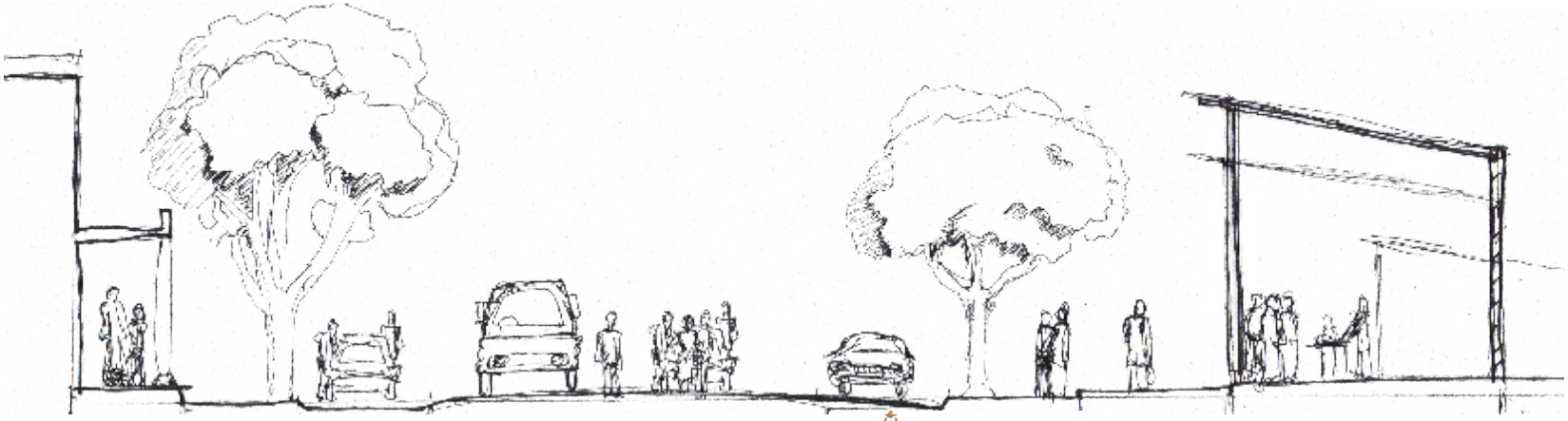


Figure 6.2
Section through
7th Street. Notice double sidewalk, with sidewalk closest to building that keeps colonnaded veranda character (Author, 2010).

Figure 6.3.a
Half demolished structure corner of 7th and Grand Street. See brick and plaster material use
(Author, 2010).

Figure 6.3.b
Merriamen Temple in 6th Street. Notice detailed facade and use of colour
(Author, 2010).

Figure 6.3.c
Existing retail in 7th Street opposite site. See use of face brick and intimate scale
(Author, 2010).

Figure 6.3.e
Corner of 8th and Grand Street
(Author, 2010).

Figure 6.3.f
Proposed Recycling Centre. Notice portal frame structures
(Kunz, 2007).

Figure 6.3.g
View from Jazz Park. See existing structures of IBR-sheeting and face brick
(Author ,2010).

Existing retail on 7th Street.

Mariammen temple on 6th street

Existing retail on 7th Street. notice walled architecture and use of gable walls

Jazz park on southern edge of selected site

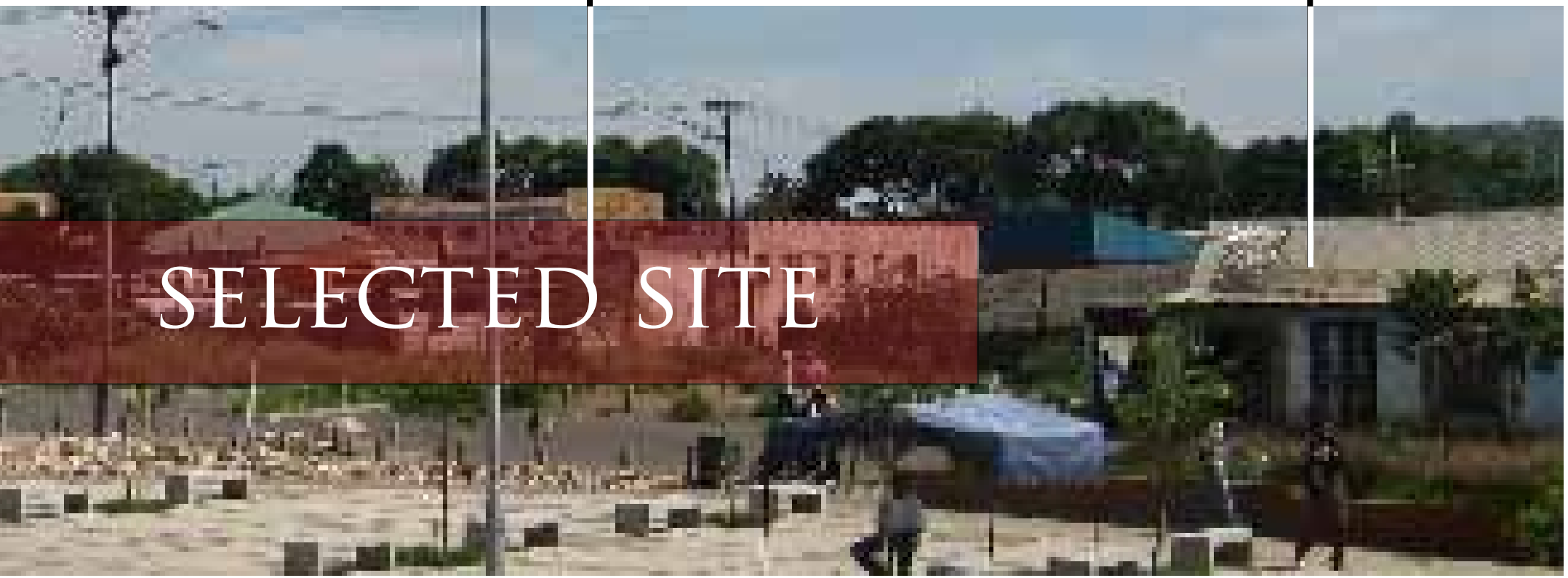


Figure 6.4
Site view of selected site and surrounding buildings (Author, 2010).

6.3 Hierarchy of spaces according to memory

The selected site had four buildings, a courtyard and a pathway on site that was discovered through the figure ground study. It is important to respect these previous spaces so that the intimate scale, the internal courtyards and movement patterns of Marabastad may be retained.
To give some order to the memory on the site each of these spaces needs a ranking in order to determine where the program and functions will be allocated.

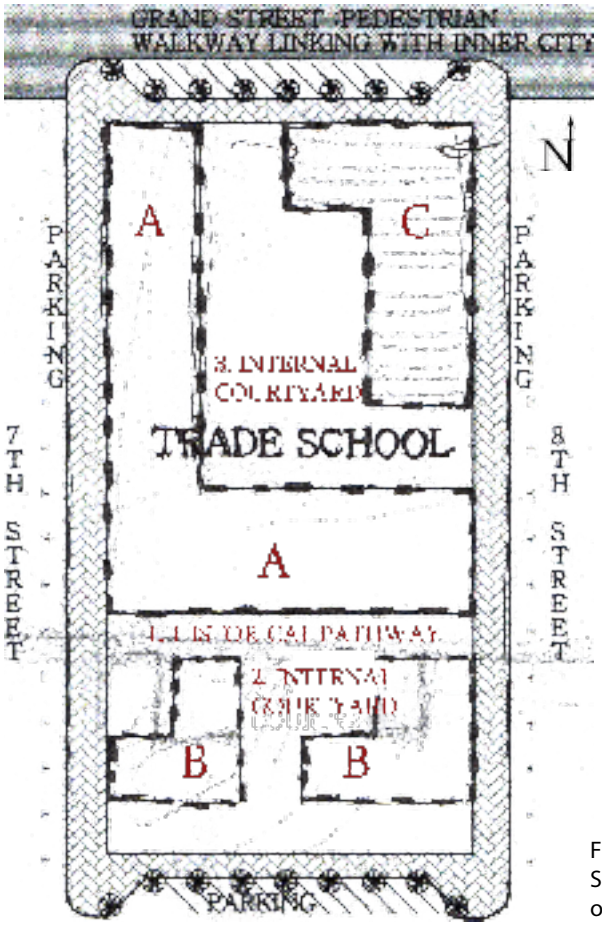


Figure 6.5
Site plan with the lines of previous buildings on site and the exterior spaces it created.This sketch also shows the allocation of hierarchy on site
(Author, 2010).

1. Historical Pathway
This route goes through the selected site and the two adjacent sites. This path creates a buffer or transitional space that divides the site into two sections. This is ideal to create the two categories named in the concept development chapter namely noisy and quiet.

2. Internal Courtyard (Noisy)
This courtyard between two buildings becomes a transitional space from the pathway to the adjacent buildings. It also allows for adjacent spaces to open up to it that creates a larger space. An even larger space could be created if A and B opens up to this courtyard.

3. Internal Courtyard (Quiet)
The second courtyard is bigger than the first that could be used by students as a quiet or private courtyard. The adjacent spaces can also open up to this space to create a variety of spatial use.

A. Large L-shaped building
This L-shaped building that had previously been on the site created an edge along 7th Street which didn't accommodate the many feet moving along this edge. It also neighbours the historical route and should represent the intimate scale of a pathway in Marabastad. Its central position is ideal to have a buffer space between the noisy and quiet parts of the site.

B. Two smaller L-shaped buildings on Southern edge
These two previous buildings created an edge for internal courtyard 2 and also created an edge condition on the Western and Eastern sides of the site.

C. Existing L-shaped building on Northern edge
This is the only existing structure on site. It is not a heritage building and is very dilapidated and structurally unsound. It does however enclose the same space of the previous building that was on site. This structure will be demolished and its material used as pavement material in the courtyard and the sidewalks of the site.

6.4 ALLOCATING THE PROGRAM

Considering the memory of the selected site, the quiet and noisy sections and the hierarchy on site the program or function is allocated.

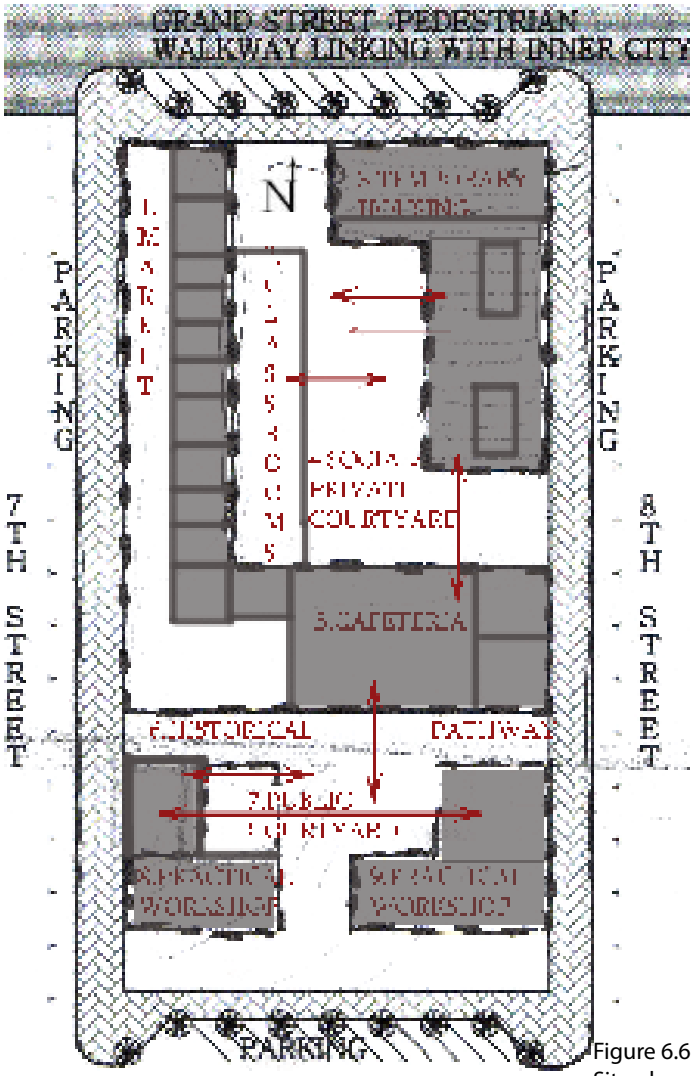


Figure 6.6
Site plan showing allocation of program. Arrows indicate how different spaces open up to each other creating variety of spatial use.
(Author, 2010).

1.Market

The market has been allocated next to 7th Street because it is a direct link to Belle Ombre Station and the bus depot. This means that there will be a lot of feet moving along this edge and that it is an appropriate place for the market. The market space will have storage space and an open covered space where previous students of the trade school could sell to the public.

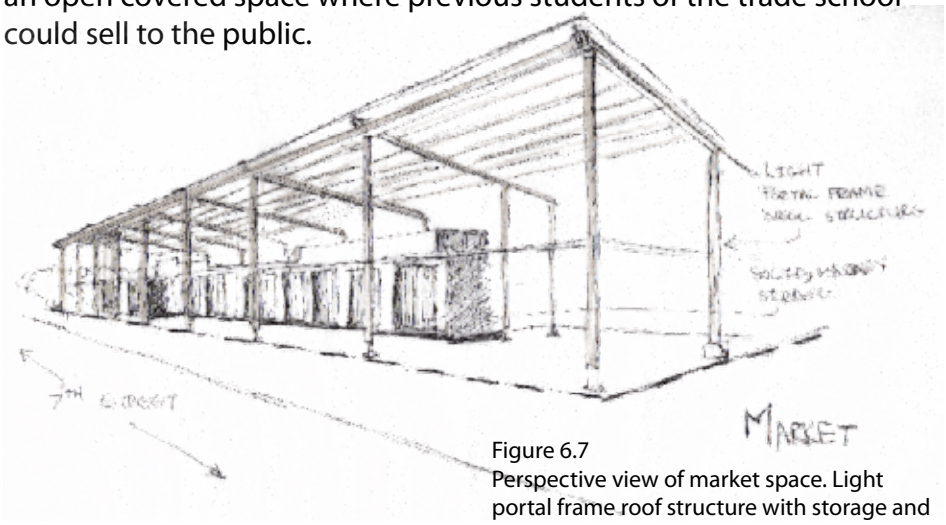


Figure 6.7
Perspective view of market space. Light portal frame roof structure with storage and trading space underneath it.
(Author, 2010).

2. Classrooms

The classrooms are placed in the private courtyard or quiet section where theoretical lectures will be held. Each classroom can open up into each other to create one big space or different sized classrooms depending on the need (see figure 6.8 and 6.9).

Figure 6.8
Section through market,classrooms,courtyard and housing. Notice how classrooms and social spaces open towards courtyard
(Author, 2010).

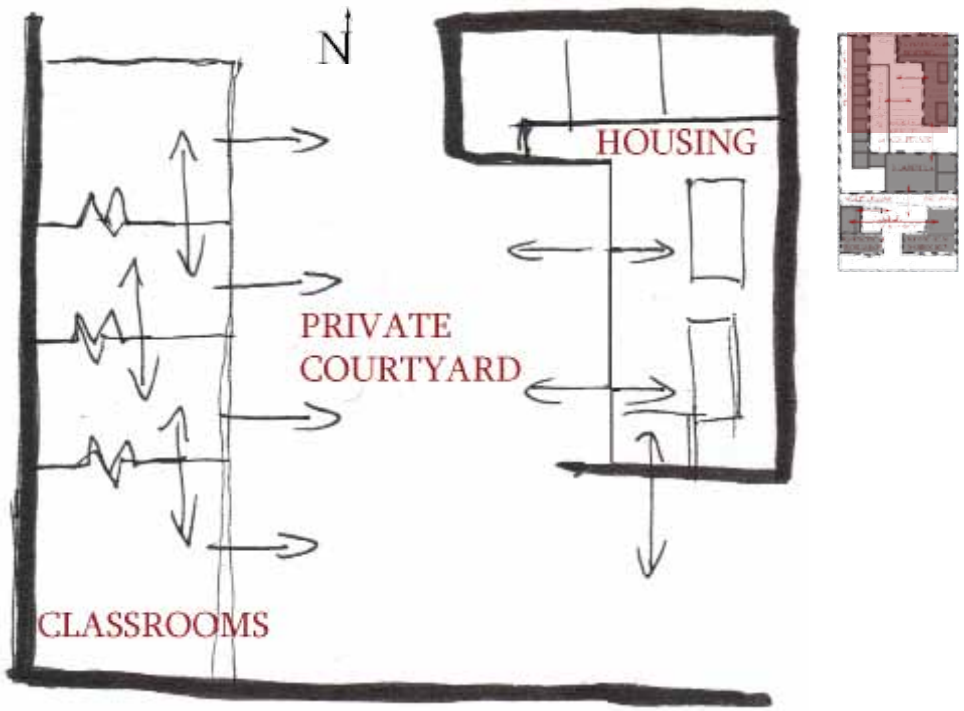


Figure 6.9
Plan showing how classrooms open up and become one bigger space and spaces opening towards courtyard
(Author, 2010).

3. Temporary Housing

Temporary housing is provided for trade school students at the Northern side of the site. Social spaces open up towards the courtyard (see figure 6.8 & 6.9).

4. Social/Private Courtyard

This courtyard between the classrooms, cafeteria and temporary housing is a more private courtyard that will be used by students of the trade school for social interaction (see figure 6.8 & 6.9).

5. Cafeteria

The cafeteria is in the middle of the site. It will be used by the students of the trade school and by the public, allowing a sense of integration between public and private. The cafeteria acts as a buffer space between the quiet and noisy sections of the site.

6. Historical Pathway

This pathway that runs through the site and adjacent sites is a very important space in the project. It keeps the integrity of the memory of scale, use of space and movement patterns of Marabastad. From this route skills training can be viewed by the public and thus allow for visual integration. It is also a transitional space between the cafeteria and the workshops.

7. Public Courtyard

The public courtyard between the workshops can be used by the students but can also become a public space where workshops open up to the courtyard.

8 & 9. Practical Workshop

The workshops are placed on the Southern side of the site or the noisy section. They will be wood, tailoring, plumbing and electrical practical workshops, this was chosen due to the proposed new housing development which would acquire these services. These workshops are private but allow for visual integration by public to create an awareness of self - empowerment through skills training.

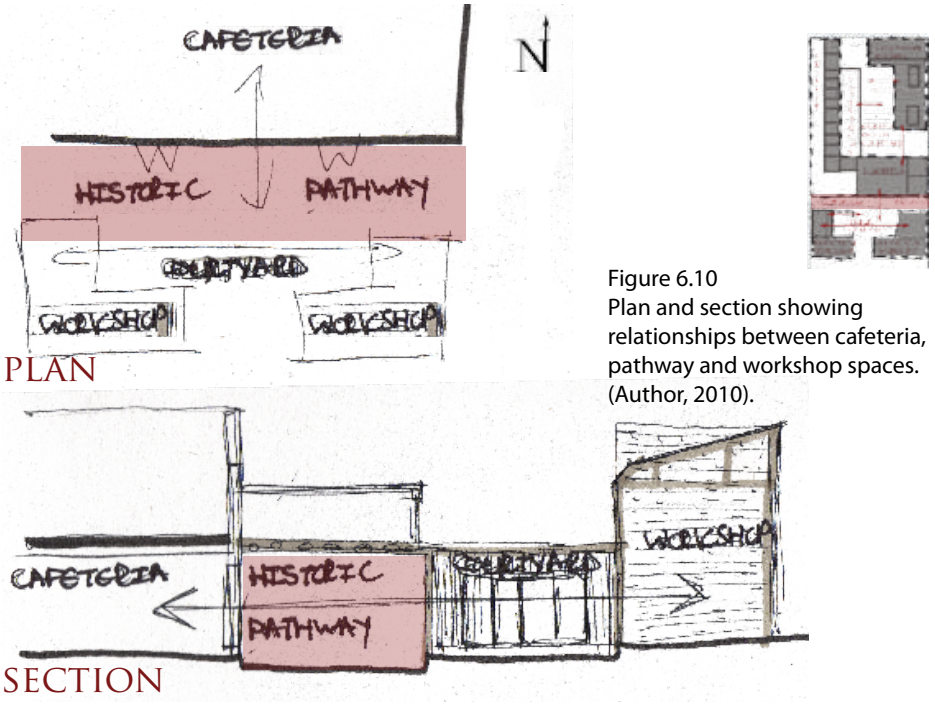


Figure 6.10
Plan and section showing relationships between cafeteria, pathway and workshop spaces.
(Author, 2010).

6.5 Contemporary purpose of program

The contemporary purpose of the program is also inspired by memory. The programme of a trade school was chosen to bring resources back to Marabastad which are skills. People were forced to leave their homes and with that they left behind business and educational opportunities. The trade school allows the public to view the skills training in the workshops which brings back a sense of self empowerment to the community. There is opportunity for students and public to socialise and brings back the sense of community. The students also have the opportunity to live on site which brings back the live-work culture that Marabastad had. The trade school is socially sustainable as it allows former students to use the market space and some of the workshop facilities until they get employment or get their business on its feet.

6.6 Transitions and edges

The edges of the site are surrounded by sidewalk and street conditions on all sides. The edges of buildings also act as transitional spaces between interior and exterior spaces. The sidewalks are wide enough to introduce trees and public seating (see figure 6.12).

6.5.1 Northern edge

The northern edge borders on Grand Street which is a pedestrian road moving into the CBD. It is a quieter road with parking on the edge of the site. Between the market and Housing are seating facilities for the public or students before entering the private courtyard (see figure 6.15).

6.5.2 Eastern edge

This edge is also a quiet road with less feet than the other edges. The sidewalk allows for trees. There is seating against the walls of this edge. The historic road can be accessed from this edge (see figure 6.11 & 6.12).

6.5.3 Southern edge

The edge borders on Bloed Street and hosts the entrance to the practical workshops. This edge is wide enough to have a public space between Bloed Street, which is a busy road, and the workshops. The Southern edge also becomes a visual advertisement for the trade school (see figure 6.13 &6.14).

6.5.4 Western edge

The Western edge borders 7th Street which links Belle Ombre Station and the bus depot. This edge host the market which is a covered public space. The historic pathway can also be accessed from this edge (see figure 6.5 & 6.6).

6.5.5 Historic Walkway

This walkway moves straight through the site and is a transitional space between the cafeteria and workshops. The walkway has a light structure overhead with the appropriate scale that contrasts the solid buildings around it (see figure 6.10).

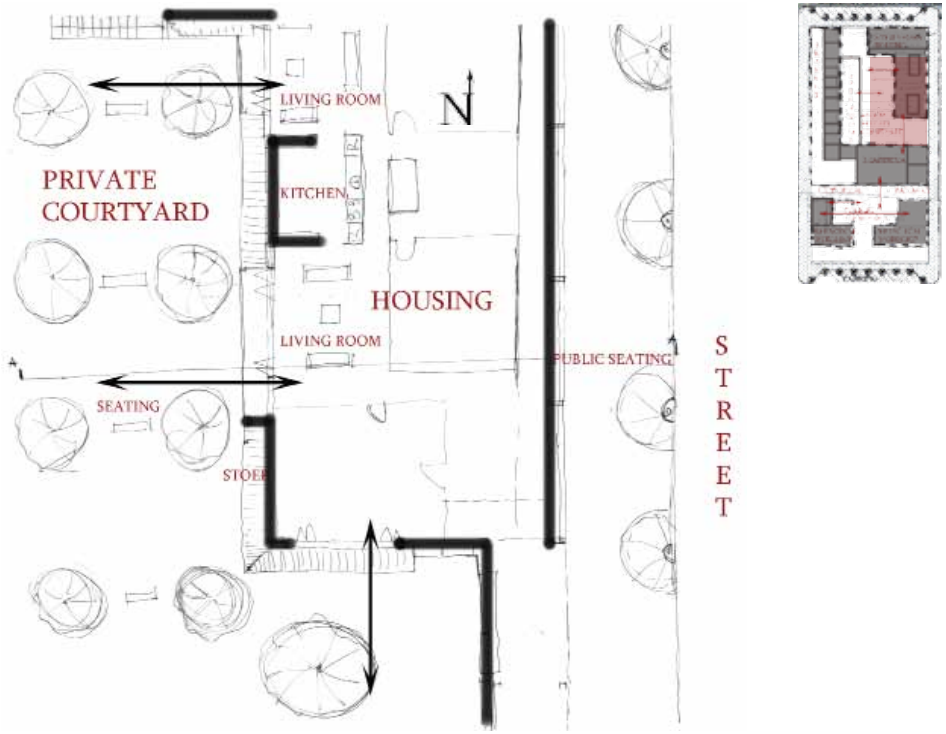


Figure 6.11
Plan of housing and courtyard showing the treatment of the edge conditions allowing them to be interactive through social activities
(Author, 2010).

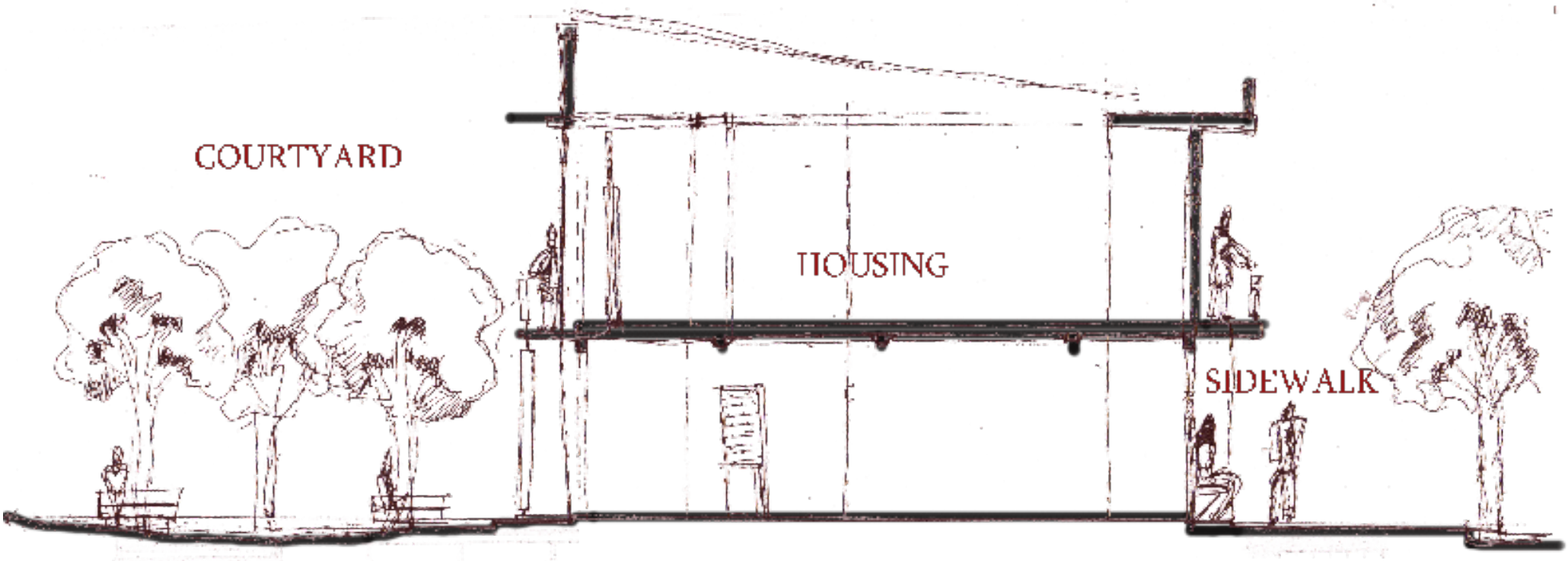


Figure 6.12
Section through courtyard, housing, sidewalk and street. Notice seating and balcony at sidewalk edge. Seating allows for social interaction and balconies create small intimate space on sidewalk. Housing social spaces open up to the courtyard space (Author 2010).

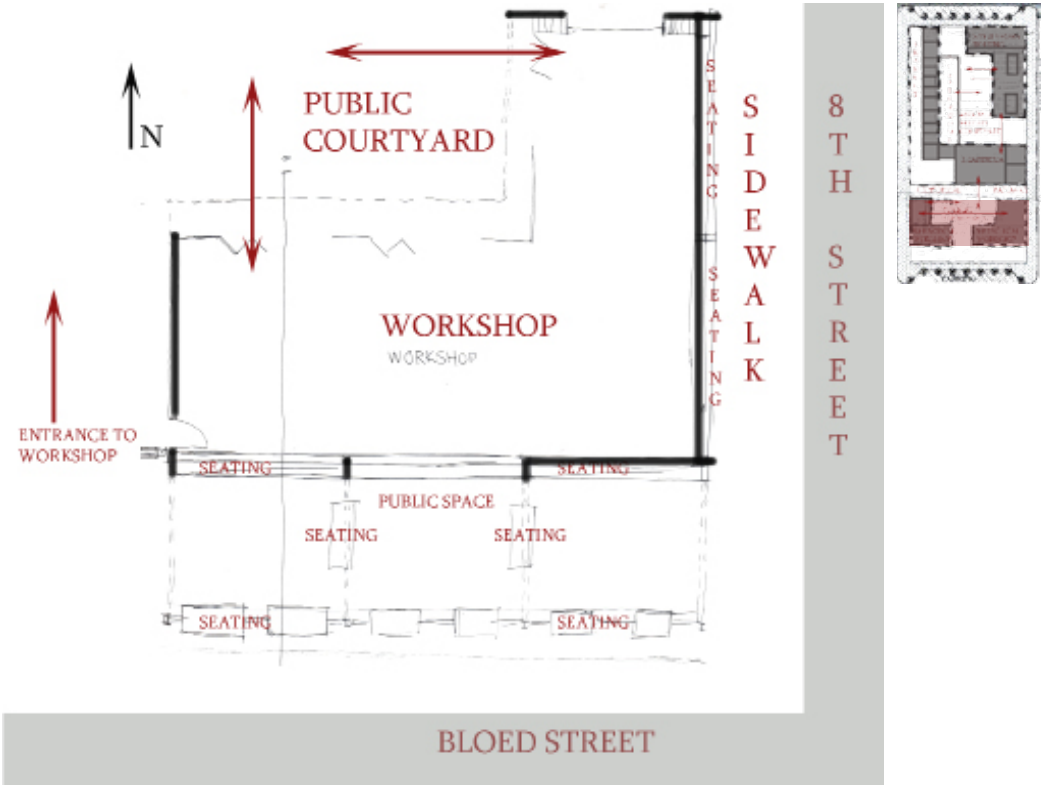


Figure 6.13
Plan showing spatial relationship between workshop, public space and sidewalk. Notice interactive seating on Eastern and Southern edges (Author 2010).

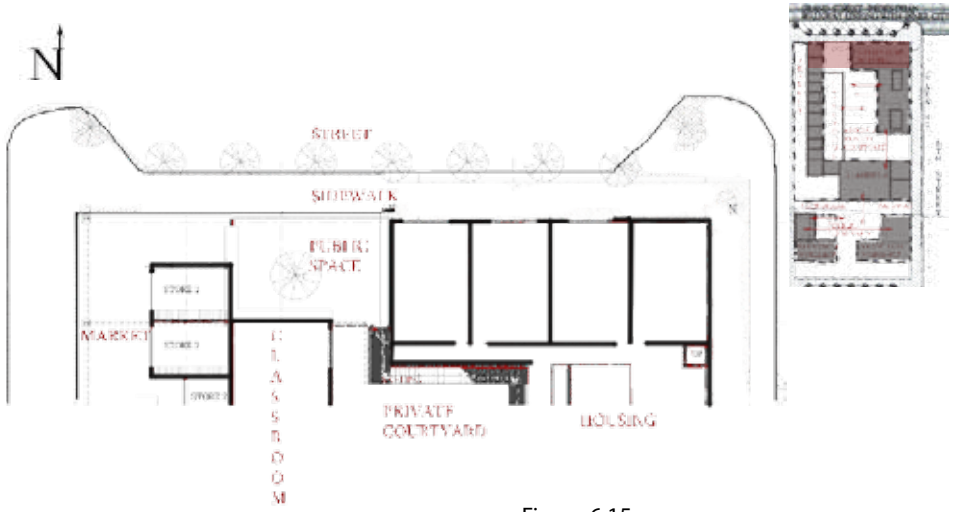
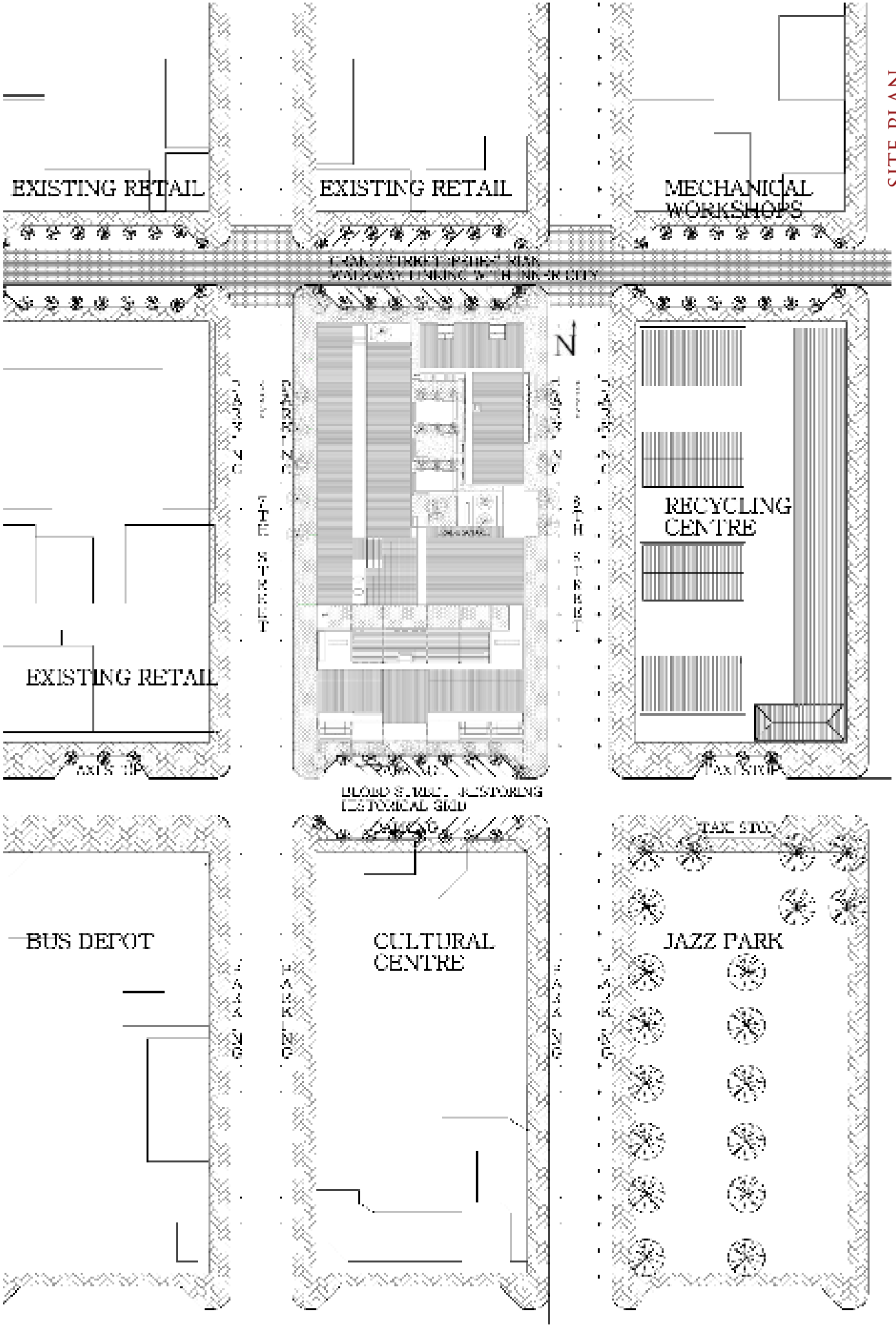


Figure 6.15
Plan showing edge condition on Northern edge of site. Notice solid and open conditions and flow of spaces into each other (Author 2010).

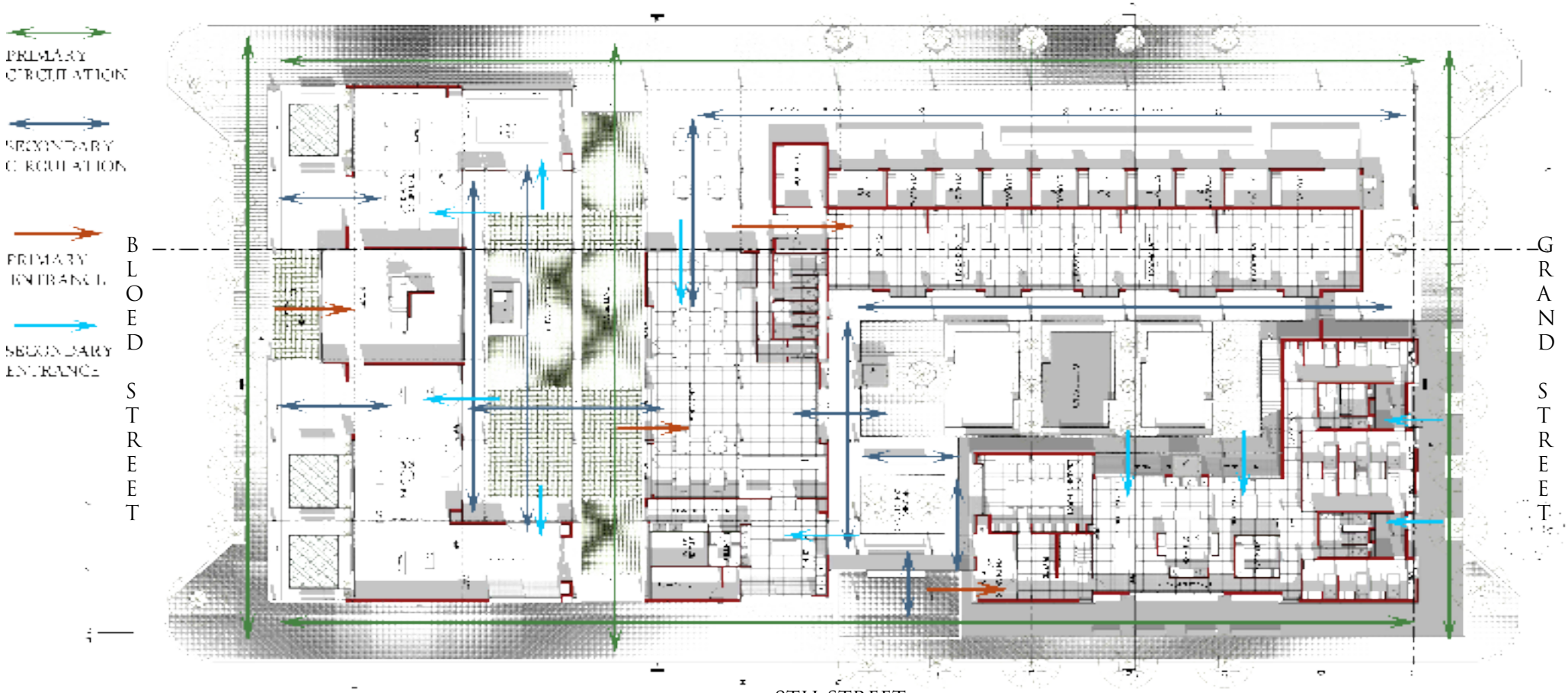
Figure 6.14
Section showing spatial relationship between workshop, public space and sidewalk. Notice interactive seating and Southern edges (Author 2010).

CHAPTER 7 : DESIGN CLARIFICATION

SITE PLAN

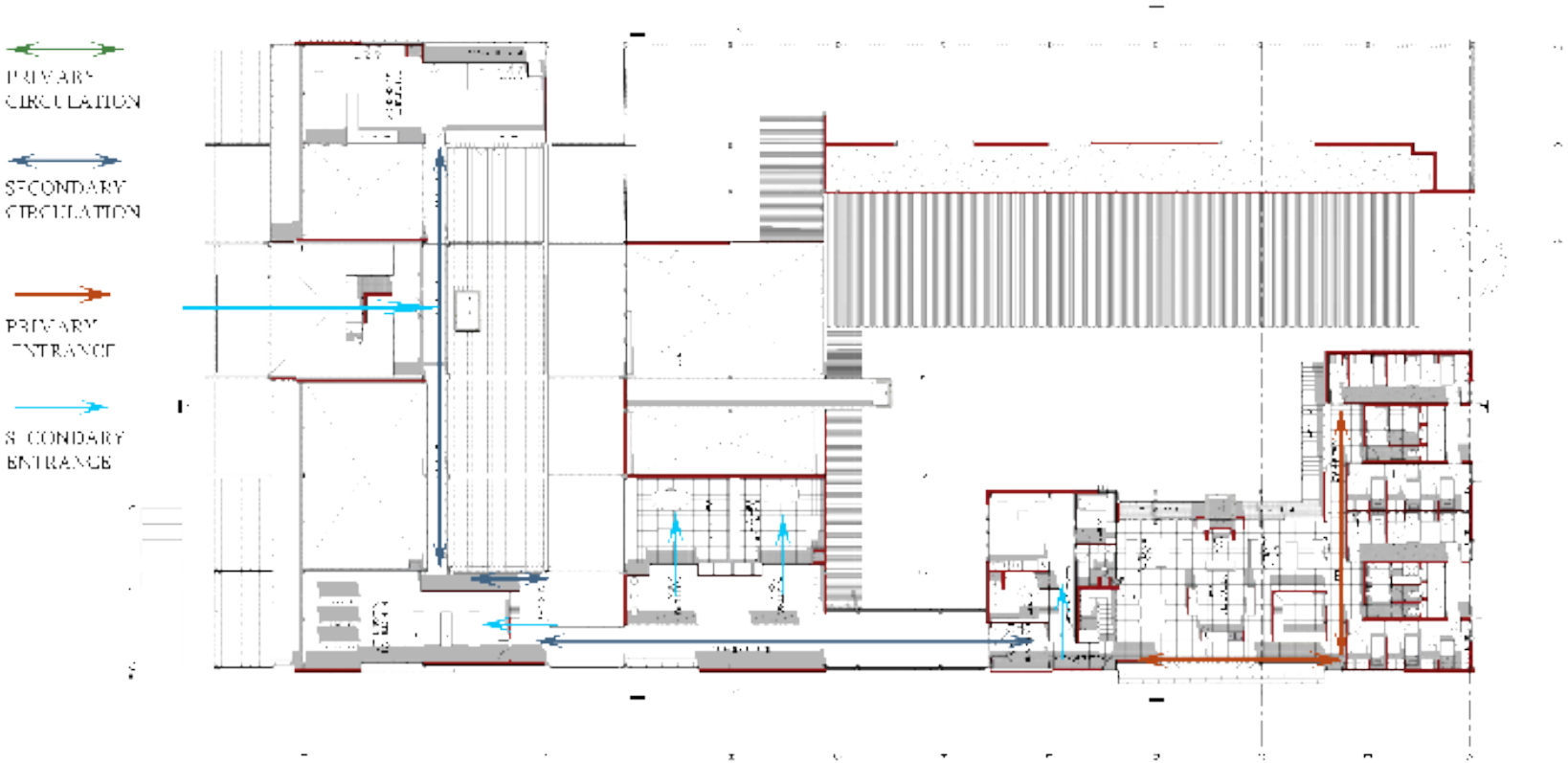

EXISTING RETAIL
EXISTING RETAIL
MECHANICAL WORKSHOPS
MAIN STREET PEDESTRIAN WALKWAY LINKING WITH INNER CITY
N
EXISTING RETAIL
RECYCLING CENTRE
TAXI RANK
BUS DEPOT
CULTURAL CENTRE
JAZZ PARK
TAXI STOP

7TH STREET



8TH STREET

Ground level plan



FIRST LEVEL PLAN

7.1 CATEGORIZING OF THE SITE

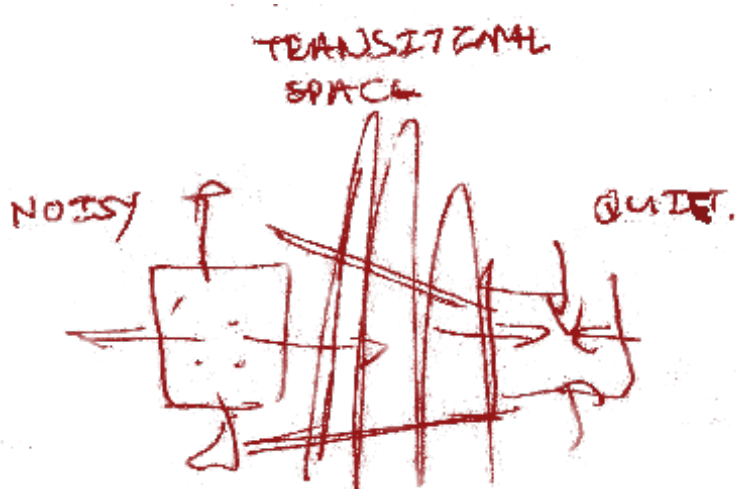


Figure 7.1
Conceptual spatial diagram that separates site into a quiet and noise filled section
(Author, 2010).

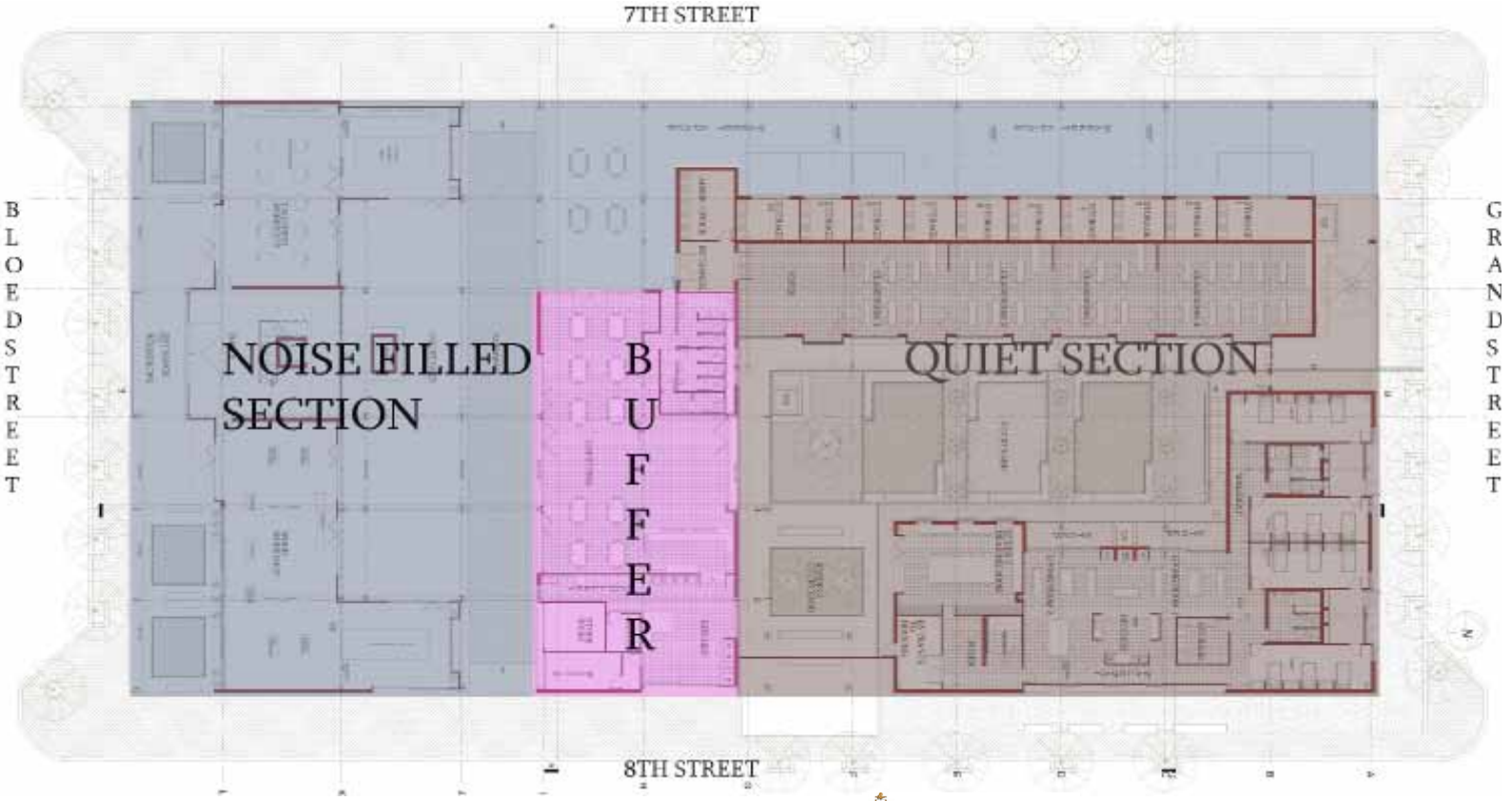


Figure 7.2
Diagram showing site divided according to concept
(Author, 2010).

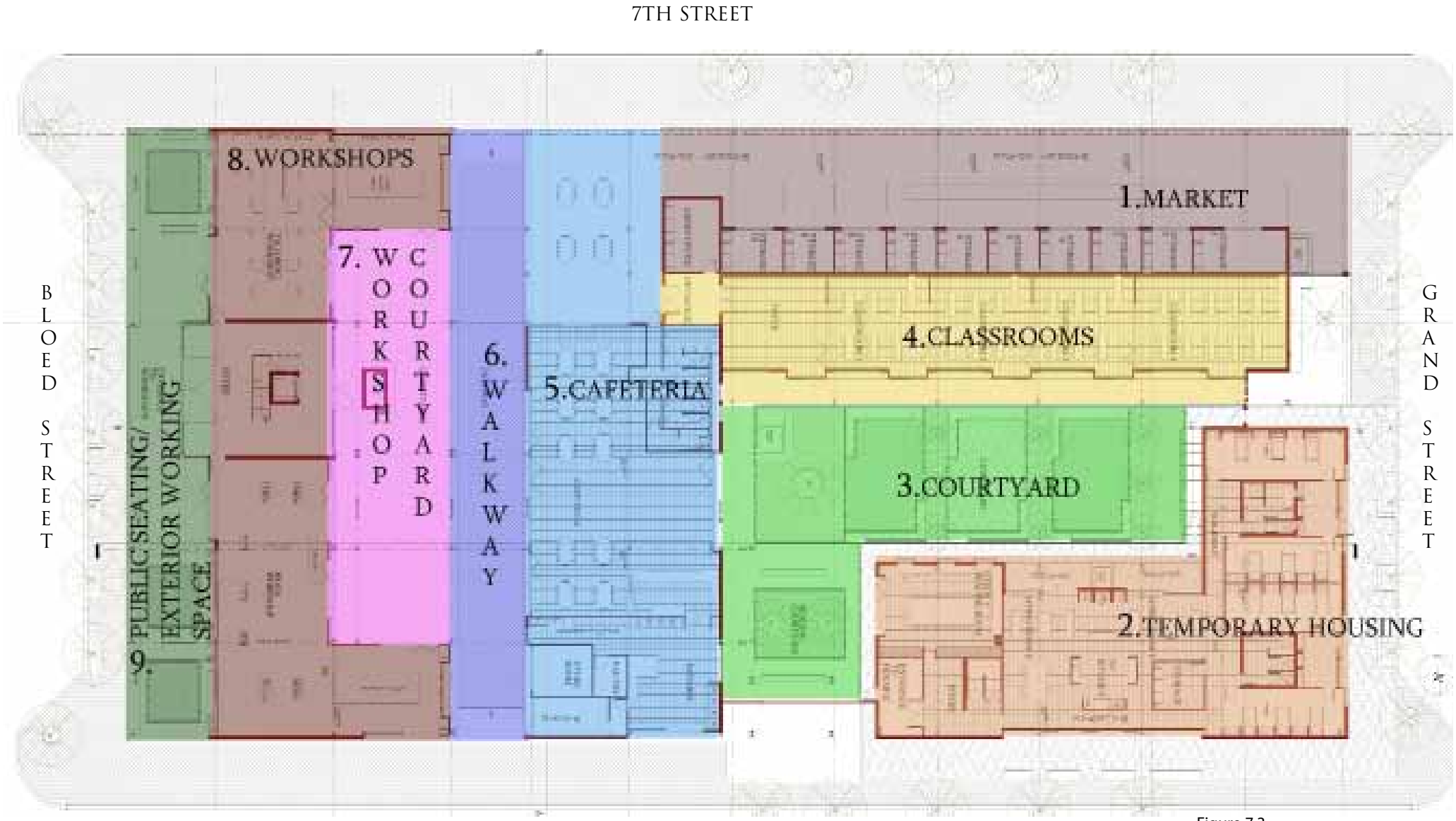


Figure 7.3
Site diagram indicating the allocation of programs
(Author, 2010).

7.2.1. The Market

The market is located next to 7th Street which is a busy pedestrian route from Belle Ombre station to the bus depot. It also links up with Grand Street that is a pedestrian route linking up with the CBD. This heavy pedestrian movement makes it the ideal placement for a market space.
The market consist of storage space (1a) and exterior covered trading space (2a) which will be used by previous students of the trade school for a temporary amount of time until they get their businesses started or obtain employment. The walkway (1c) is opposite the exterior trading space so that it doesn't interfere with heavy pedestrian movement.

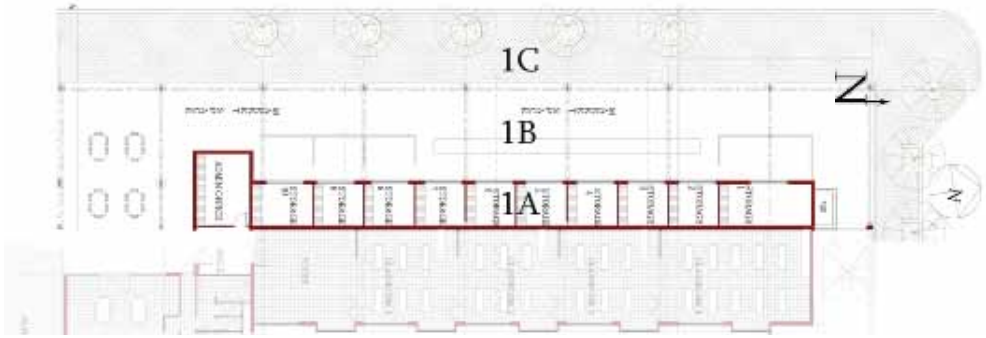


Figure 7.4
Ground level plan of Market
(Author, 2010).

7.2.2 Temporary Housing

There is temporary housing located on the Northern side of the site on the corner of Grand and 8th Street. Access to the housing is on the Eastern side (2c) which neighbours onto a quieter street namely 8th Street.
Temporary housing will be used by the students and the caretaker.
Temporary housing is introduced not only due to practical reasons but because of the memory of this site having houses on it that was demolished in the 1960s.

The housing social space (2B, living rooms and kitchen) open up to the courtyard extending the interior social space into the exterior social space.

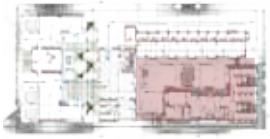


Figure 7.5
Ground level plan of temporary housing and courtyard
(Author, 2010).

7.2.3. Courtyard

This private courtyard sits between the temporary housing and the classrooms. It may be used by the students for social interaction or by students using the classrooms.
The courtyard was used and shared in the past by the families who owned homes on this site. It gave them some privacy and also allowed for social interaction.

7.2.4. Classrooms

The classrooms are situated within the private courtyard used by the students. It is part of the quieter section of the site where theory teachings can occur.

The classrooms will be used by the students and the lecturers for theoretical teachings. The classrooms can also have access to the private courtyard.

Figure 7.6
Ground level plan of classrooms and courtyard
(Author, 2010).

Figure 7.7
Ground level plan of cafeteria
(2010, Author. 2010)

7.2.5. Cafeteria

Acting as the buffer space between the quiet (North) and the noisy (South) sections of the site, the cafeteria is situated in the centre of the site.
The cafeteria may be used by the trade school's students and the public.

7.2.6. Walkway

This walkway is situated between the cafeteria and the workshop courtyard. This walkway was used in the past to move to the adjacent roads and sites.

This walkway is used by the students and the public and was a walkway used in the past by both owners of the previous homes on the site and by the public as a short cut from on site to another.

7.2.7 Workshop Courtyard

The workshop courtyard situated on the Northern side of the workshops is a transitional space between the pathway and the workshop.
Students can work in this courtyard allowing public to view the skills training in action.

7.2.8. Workshop

The Workshops are situated on the most Southern side of the site. The workshops are also situated north of Bloed Street which is an extremely busy vehicular street.
The workshops are used by the students and the lecturers for practical training. The skills training are wood, tailoring, electrical and plumbing workshops. These skills have been selected due to the small trade industry in Marabastad and the future housing needs introduced by the urban framework.

7.2.9. Public Seating and Exterior Workshop

On the Southern edge of the workshops are public seating where people can wait for transport and view the skills training. The workshops also open up to this space if the students would want to work outside. This space also links up with the Jazz Park on the Southern side of Bloed Street.

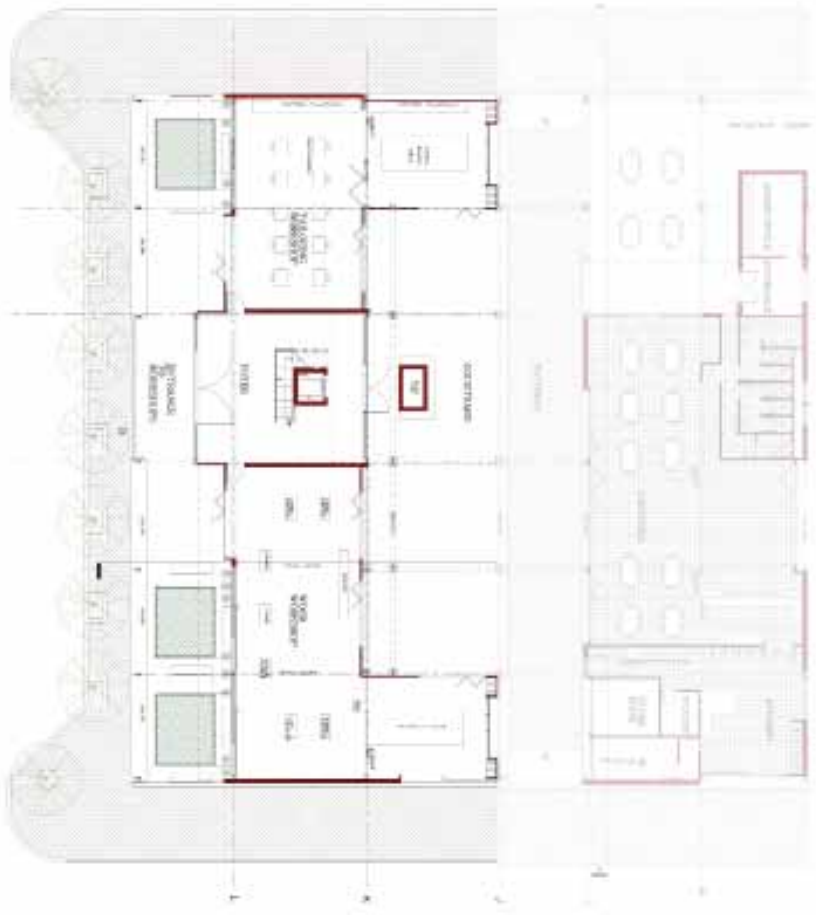


Figure 7.8
Ground level plan of pathway,workshop courtyard,workshops and public seating and exterior workshop
(Author, 2010).

7.3 REPRESENTATION OF MEMORY

Memory is used in this dissertation to assist in the design process to invigorate identity and meaning in an environment that has little or no physical context to respond to. The challenge is to represent memory that is not a direct interpretation of the past but an inspirational tool in design decisions.

7.3.1 Spatial memory

Scale

Compared to the rest of the CBD, Marabastad has and had a much smaller and intimate scale (see figure 7.9 & 7.10). The buildings don't rise to more than 3 storeys and street edges are intimate social spaces. Designing on an empty site that has little context to respond to, memory was used as inspiration. The footprints of previous buildings on site that were discovered through analysis of satellite photographs from 1935-2010 (see chapter 5 & figures 5.6 - 5.10) are used as parameters for the new design in order to keep the integrity of the small intimate scale that existed on site.

Courtyards

Internal courtyards where important social spaces for families and neighbours and are still used today (see figure 7.13).These courtyards were often used by more than one family on site and increased social meetings and neighbourliness. The private courtyard (see figure 7.5 & 7.6) are used by the students and connects the social spaces within the temporary housing, the classrooms, the reading room and the cafeteria.

Edges

As mentioned in Chapter 6, figure 6.5, the edges of the site are surrounded by sidewalk and street conditions. The sidewalks are wide enough to introduce trees and public seating. In the past and present Marabastad has busy fast moving edges where trade occurs and slower quieter street edges where trade doesn't occur. In the design the Western edge or market edge is the busy street edge and the eastern edge more quiet. Therefore the Western edge has a more light and open aesthetic where the Eastern edge's has a solid walled aesthetic. Social spaces are introduced on both edges (see figure 7.26 & 7.27).

Movement on site

The memory of movement on site was divided into private and public. People living on site used the internal courtyards to move between units and the public used street edges and a pathway on the southern side of the site that runs through the site (see figure 5.10 & 7.8).

Spatial integration

As mentioned in chapter 5, figure 5.4, there are negative memories to respond to that help create meaningful spaces. These memories are forced relocation, racial separation and destruction of the physical environment. The reaction to this is to have spaces that provide spatial choice (spaces can be opened up to each other to make bigger or smaller interior or interior-exterior spaces, see ground level), visual and social integration (activities in workshops can be viewed from the historical walkway and cafeteria, cafeteria is used by the students and public, internal courtyards can be viewed from the cafeteria, and adaptability to buildings where the steel and wall structures are independent from each other (see figure 6.7).

7.3.2 Architectural memory

The memory of Marabastad architecture is divided into permanent and temporary structures. The structures that where built with brick were built to be permanent and the steel and wooden structures were meant to be temporary so that it could be demolished. The architectural features that are prominent are verandas in the busy retail areas, gable walls either face or plastered brick, balconies and temporary steel structures (see figure 2.12).

7.3.3 Materiality

Materials used in the design represent the past and present aesthetic of Marabastad in a contemporary way. The materials chosen were plastered and face brick walls that was used in the past (see figure 2.12), steel structures that represent the informal nature of Marabastad, and galvanised steel sheeting. The selected site was in the Indian location and the buildings were made of wood and galvanised s-profile sheeting (see figure 5.4).

The finishes on the walls were inspired by the Indian presence on site and Marabastad. Vertical lines will be scratched into plaster to represent s-profile sheeting that was used on site as cladding. The face brick walls has a Flemish bond that allows some bricks to protrude from the wall to create patterns on the wall. This was inspired by the religious buildings in Marabastad mostly used by the Indian population (see figure 2.12).

MARABASTAD SMALL AND INTIMATE SCALE

Figure 7.9
Aerial view of Marabastad showing its small and intimate scale (SAMaps, 2010).

SECTION OF REST OF CBD OF PRETORIA WITH LARGER LESS INTIMATE SCALE

Figure 7.10
Aerial view of Centre of Pretoria's inner city. Notice bigger less intimate scale compared to Marabastad
(SAMaps, 2010).

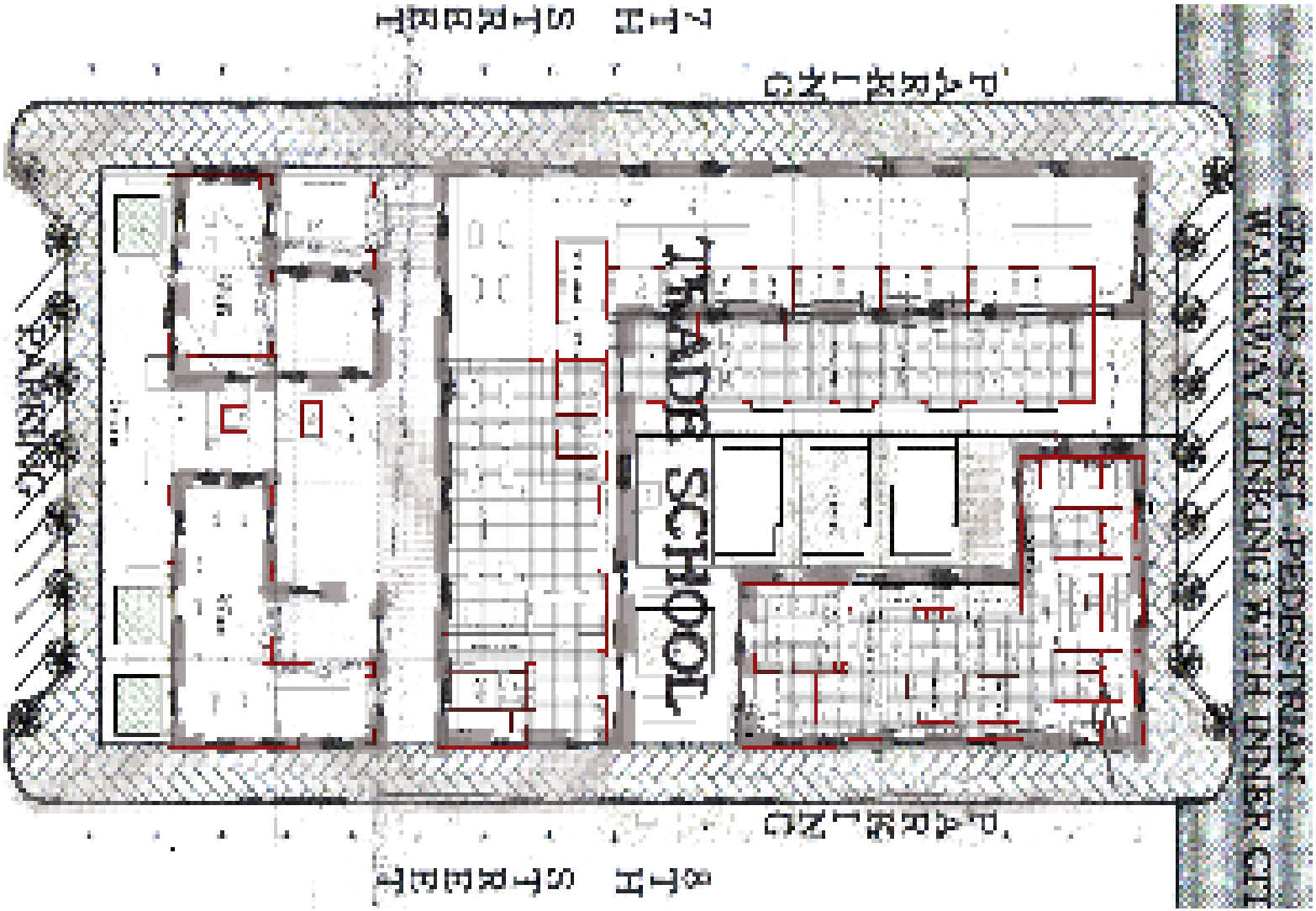


Figure 7.11
Image indicating new layer or design onto footprints of the previous buildings that were on site. The dotted lines representing the memory of the previous buildings serve as guidelines so that integrity of small scale is kept (Author, 2010).

7.4 Sections

SECTION C-C

This section compares the small intimate urban scale of Marabastad to the large scale of the rest of the CBD. It indicates a very intimate scale that is not elitist but familiar. This familiarity creates a sense of meaning that is easily identified with. This section also shows the different social spaces that the design provides. On the Eastern edge there is quieter social space on the sidewalk, the private intimate courtyard in the centre and the busy market space on the Western edge.

Figure 7.12
Grandfather and grandson play in the street,1961. The streets in Marabastad are social spaces for the public and community (Clarke, 2008 : 44)

Figure 7.13
Aerial perspective
of Marabastad in 1952 showing
memory of small intimate scale
(Tayob, 2002).

SECTION C - C

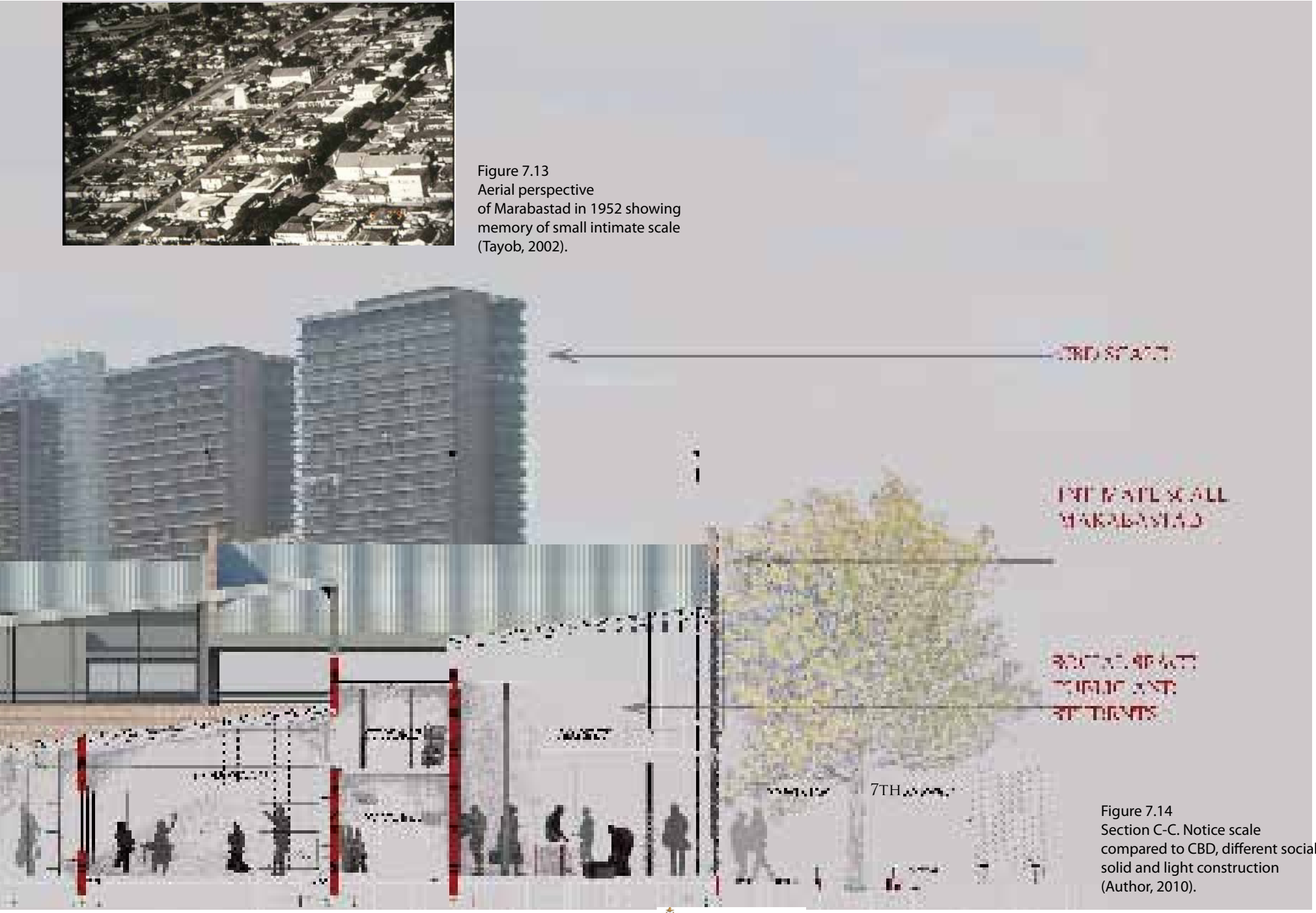


Figure 7.14
Section C-C. Notice scale
compared to CBD, different social spaces and
solid and light construction
(Author, 2010).

SECTION B-B

Section B-B indicate the quiet and noise filled spaces and the cafeteria as their buffer space. The temporary housing is in the quiet section and the workshops in the noise filled section. Notice how spaces become more intimate and private in the quiet section and more open and public towards the noise filled section. It also shows the transitional spaces in the project. Between the cafeteria and the workshops is the historical pathway which was used in the past to move through the site to adjacent sites and on site. The pathway is another transitional space between the cafeteria and workshops. The cafeteria and workshops are spaces that allow for spatial choice as mentioned in chapter 5,5.4.2. These spaces open up toward each other to create larger spaces when needed. The bridge on the first level connects the quiet and noise filled spaces that are used by students.

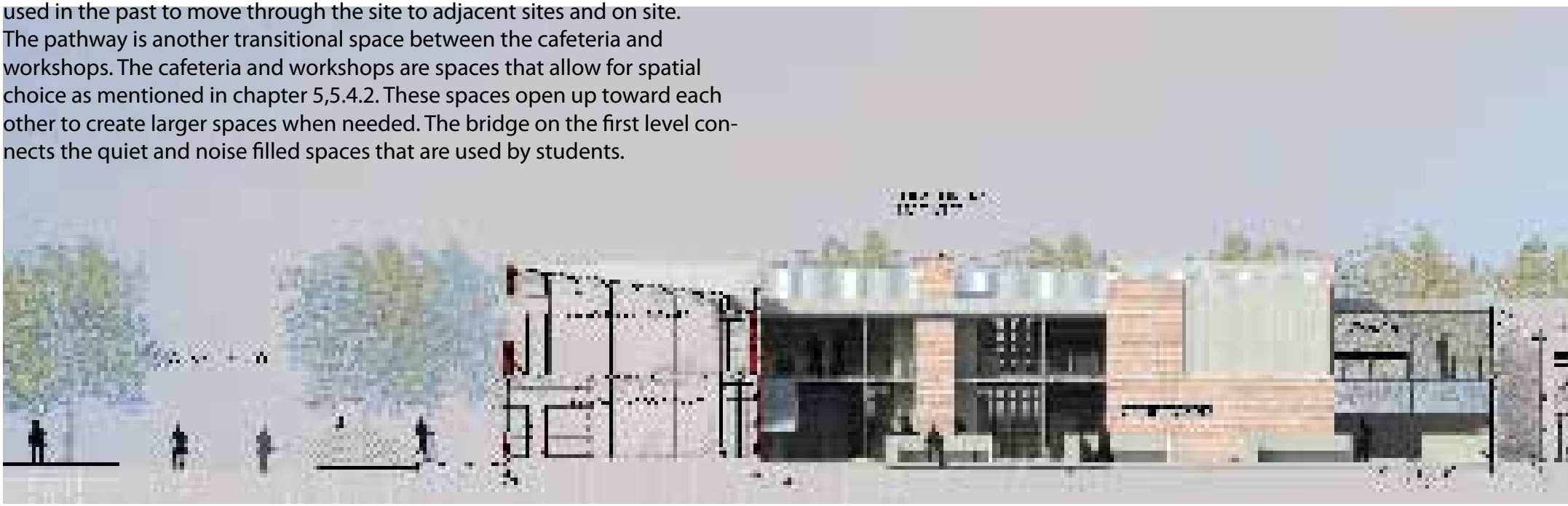


Figure 7.15
Woman washing clothes in 1960's in the courtyard of her home on the site between 5th Street and Grand Street
(Clarke, 2008 : 24).

SECTION B - B

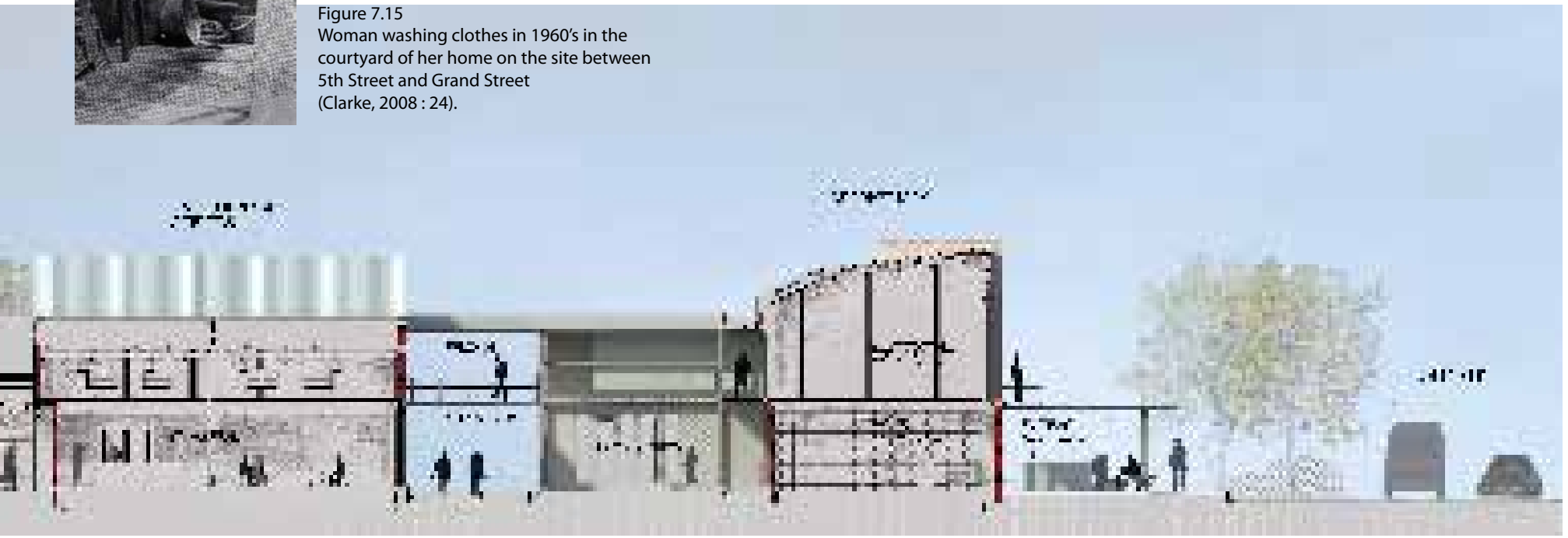


Figure 7.16
Section B-B. Notice transition of solid to light aesthetic from housing to workshops. Also see different courtyards, private and public and how the building aesthetic changes to create appropriate spatial qualities
(Author, 2010).

SECTION A-A

Section A-A is through the cafeteria and the end of the market space which acts as the buffer space between the quiet and noise filled sections of the design. Notice the codependency of wall and steel structures which is a morphed version of the independent and dependent wall and steel construction mentioned in chapter 5. The cafeteria can be used by the students. The cafeteria space opens towards the workshops and the cafeteria which allows for different use of space. If opened to both sides it can be a big space for a function or to one side a smaller intimate event (see diagrams chapter 6, 6.5 & section B-B).

SECTION A - A

Figure 7.17
Section A-A. Cafeteria as the buffer space between the noise filled and quiet section of the design. Notice codependency of steel and wall structure
(Author, 2010).

Figure 7.18
Private Courtyard accommodating housing and classrooms,has smaller intimate scale for semi - private use. Notice scale of CBD in background.
(Author, 2010).

Figure 7.19
Western view of the Cafeteria spilling outside, the walkway leading to adjacent streets and the workshops. Notice brick detail on walls. This represents Indian influence (Author, 2010).

PERSPECTIVE
CAFETERIA, HISTORIC PATHWAY & WORKSHOPS

Figure 7.20
View of Cafeteria and historic walkway from workshop courtyard. Notice change in floor patterns showing craftsmanship in design
(Author, 2010).

PERSPECTIVE
CAFETERIA, HISTORIC PATHWAY & WORKSHOP COURTYARD

7.6 ELEVATIONS

NORTH ELEVATION

This view shows the temporary housing, classrooms and market space. Where a wall touches the edge of the previous buildings footprints, the wall has a facebrick finish. Facebrick is chosen due to the fact that the first buildings' built in Marabastad were constructed from unplastered brick. The plastered brick walls are set back, representing the second phase of Marabastad architecture. The plaster has a vertical scratched finish that represents the s profile cladding also previously used on site. Notice the use of gable walls. Many of the heritage buildings in Marabastad have gable walls and were used in the design to create a solid wall aesthetic in the private quiet section.

Figure 7.21
Street scene of Grand Street. Notice the use of face brick and plastered brick. Also see intricate detail on Mariammen temple (Clarke, 2008 : 14).

Figure 7.22
The Empire Theatre in Boom Street. See gable wall and use of veranda on street where trading occurs
(Clarke, 2008 : 20).

NORTH ELEVATION

Figure 7.23
North Elevation. Notice gable walls and veranda inspired steel structure over market space
(Author, 2010).

EAST ELEVATION

This view shows the Workshops, Historic Walkway, Cafeteria and Temporary housing. Notice how facade becomes more solid towards the housing as it becomes a more quiet and private space in contrast to the workshops which are noise filled and more publicly accessible. The patterns that the protruding brick bond makes also represent the change of spaces. The patterns are very concentrated on the workshop walls and fade as they move towards the housing's walls.

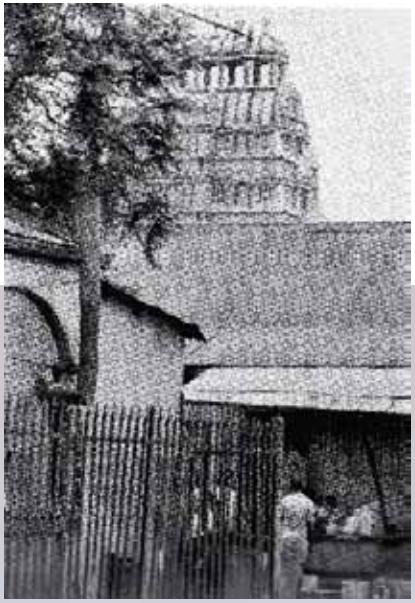


Figure 7.24
Previous buildings on selected site. Notice use of plaster and s-profile sheeting
(Clarke, 2008 : 26).

Figure 7.25
Diagram showing previously used materials to create new wall finish. Also see figure 5.4 &5.5. Manipulated by author, photos by Clarke (Clarke, 2008 : 26).

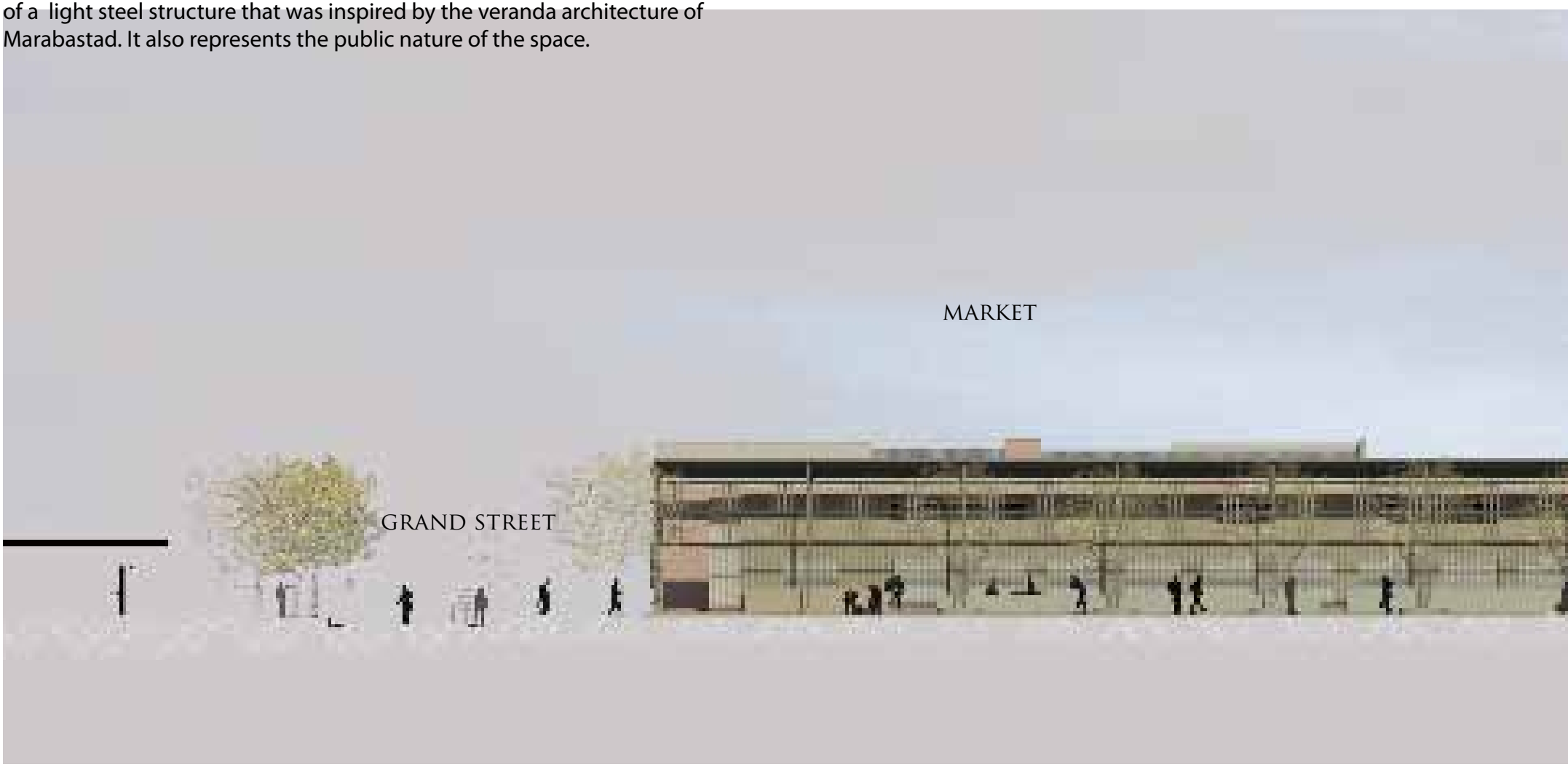
Figure 7.26
Diagram showing Indian influence on brick patterns. Photos by author Clarke (Author, 2010).

EAST ELEVATION

Figure 7.27
East Elevation
Notice brick patterns that represent Indian influence on site. The plastered walls have vertical patterns scratched on that represent s- profile cladding used on site in the past (Author, 2010).

WEST ELEVATION

The Western Elevation houses the market space, the historical walkway and workshops. This edge is on 7th Street which is a busy pedestrian and vehicular road which is a direct link to Belle Ombre station. The Western edge is the social transitional space between the trade school and the public. Former students sell their services and products in the market and are a direct reflection of the skills developed at the school. The market space consists of a light steel structure that was inspired by the veranda architecture of Marabastad. It also represents the public nature of the space.



WEST ELEVATION

Figure 7.28
West Elevation
Notice light steel structure of market representing its public nature and is inspired by use of verandas in Marabastad (Author, 2010).

SOUTH ELEVATION

The Southern Elevation advertises the Trade School. The main entrance to the workshops is on this edge and skills training can be viewed while sitting at the public seating or while waiting for a taxi on the busy Bloed Street edge. This elevation has a light, glass aesthetic that represents its public and integrative spaces.

SOUTH ELEVATION

Figure 7.29
South Elevation. This view is the advertisement to the public of the trade school.
(Author, 2010).

7.6 PERSPECTIVE CONTINUE

Figure 7.30
North-West Elevation. See relationship of verandas and steel structure over market space. Also see the transition of solid to light aesthetic.
(Author, 2010).

NORTH-WESTERN VIEW

Figure 7.31
South-East Elevation. See how brick patterns become less concentrated where spaces behind become more private and quiet. See social and visual integration on Southern edge (Author, 2010).

SOUTH-EASTERN VIEW

CHAPTER 8 : TECHNICAL DOCUMENTATION

8. TECTONIC AND MATERIAL USE

8.1 Technology Concept

The representation of memory (old) through structural independence or partnership depending on the programme (new).
As mentioned in chapter 7, the design has a noise filled and quiet section. The quiet spaces require a more solid aesthetic (scenario 1 Figure 8.1) and the noise filled section a lighter open aesthetic (scenario 2 Figure 8.1). The buffer space is a combined aesthetic as is shown in scenario 3 (Figure 8.1).

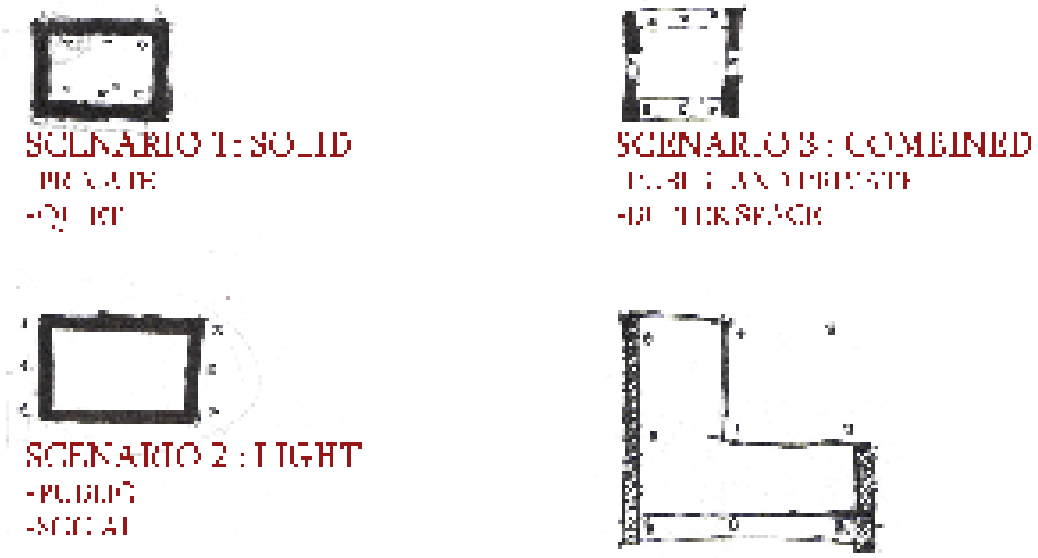


Figure 8.1
Conceptual diagrams showing different tectonic use where steel and wall structure is independent of each other or dependent on each other depending on memory or program
(Author, 2010).

8.2 Material use

The use of material is inspired by the memory and present use of materials in Marabastad. The memory of Marabastad material use was mostly temporary structures of wood and steel as the use of masonry was prohibited in the early 1920-50's for private homes in the Indian location. Public buildings like the Orient theatre and Merriamen temple could be constructed with masonry.

Currently Marabastad has a mostly walled architecture with some temporary structures scattered across the Marabastad area.

Material use :

Face brick (first material used in Marabastad at Schoolplaats, see Chapter 2, Figure 2.5).
Plastered brick (Seen in most heritage buildings in Marabastad, see Chapter 2, Figure 2.12).
Steel profiles (Represents informal nature in Marabastad and gives a light aesthetic).
Steel cladding (S-profile cladding was used for homes in Indian location).
Steel mesh (Keeping with light aesthetic, allows for ventilation and security, 8.3).

8.2 STRUCTURAL DESIGN

The structure of the building consists of steel portal frames that bear the roof and floor slab loads (see detail B4 and B5). Precast concrete rib and block slabs are used so that it can be placed on top of steel structure, so that in future it can be removed. High rising walls are fixed to the steel columns to prevent out of plane buckling (see appendix A)

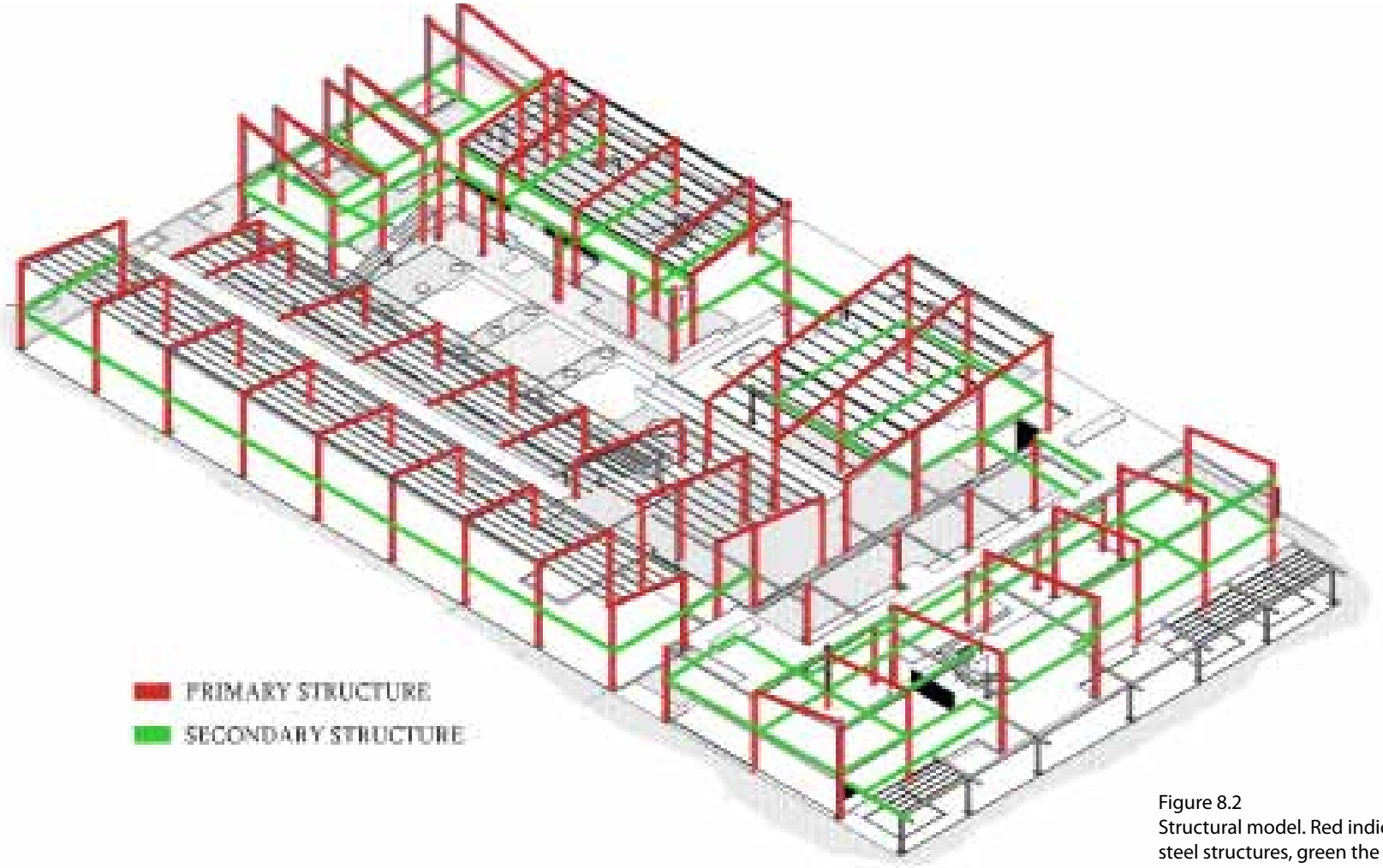


Figure 8.2
Structural model. Red indicate portal frame steel structures, green the secondary structure upon which the slabs are lain. (Author, 2010).

8.3 Services

The services of the building are plumbing and electrical. The plumbing is controlled through shafts. The electrical services are also grouped through shafts and distributed through the hollow concrete slabs.

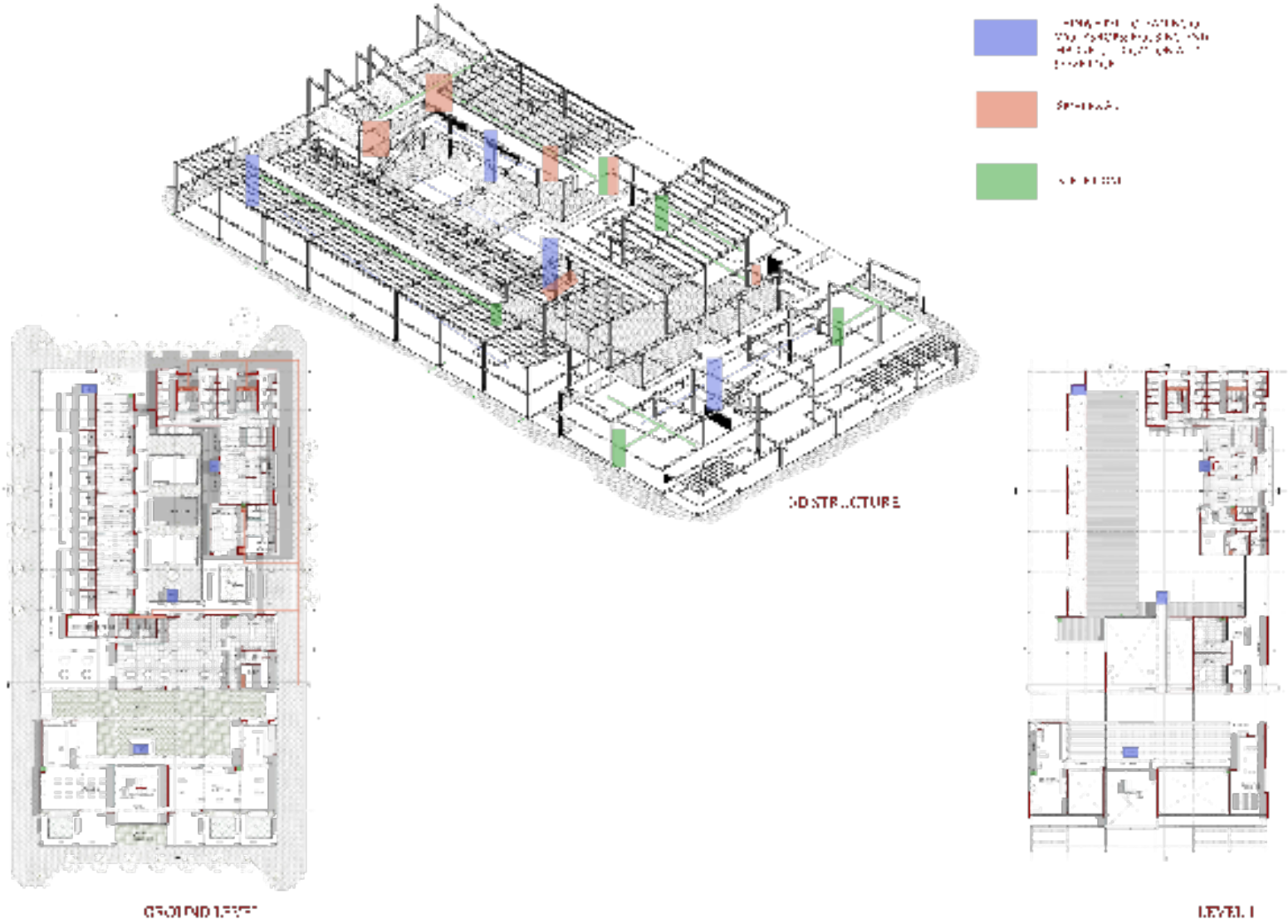


Figure 8.3
3D model showing service ducts and connections
(Author, 2010).

8.4 SUSTAINABLE DESIGN

8.3.1 Natural Ventilation

Prevailing winds are calm and blow from the north-east in the morning backing to the north-west in the afternoon (Holm,1990). This allows for cross-ventilation in the buildings and the placement of courtyards accommodates this (see appendix B).

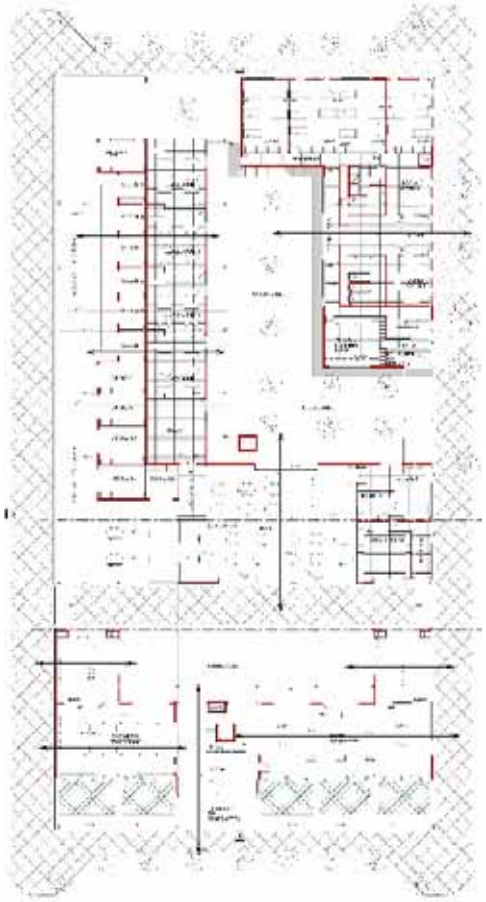


Figure 8.4
Plan showing ventilation through buildings and courtyards
(Author 2010).

8.3.2 Rainwater catchment

The rainwater gathered via the roofs of the buildings will be used for the cleaning of the workshops and classrooms, water closets and irrigation.

Max volume of run-off per year/per month
Run-off (litres) = A x (rainfall -B) x roof area
A = efficiency of collection variable = 0.8
B = loss associated with absorption = 2
Run-off housing = 67840 l = 5653 l per month
Run-off market = 48960 l = 4080 l per month
Run-off cafeteria = 56160 l = 4680 l per month
Rub-off workshop = 77600 l = 6466 l per month
These figures add up to 250560 l per year that could be gathered on site (see appendix B)

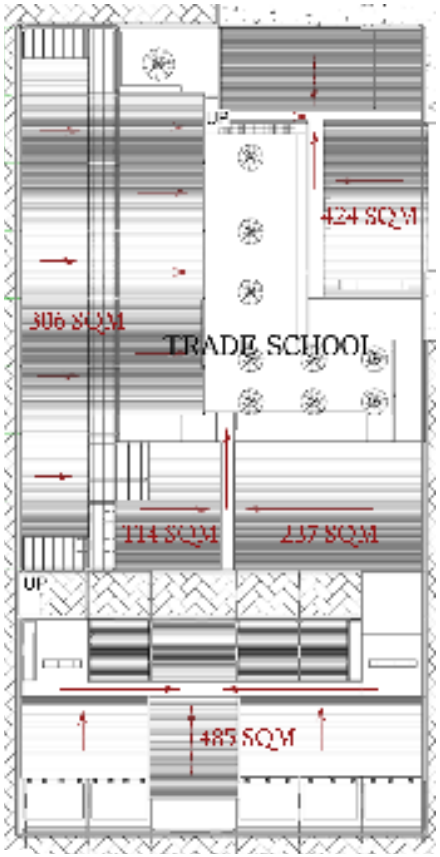


Figure 8.5
Roof plan showing slope directions of roofs, flow of rainwater and sqm of roofs
(Author 2010).

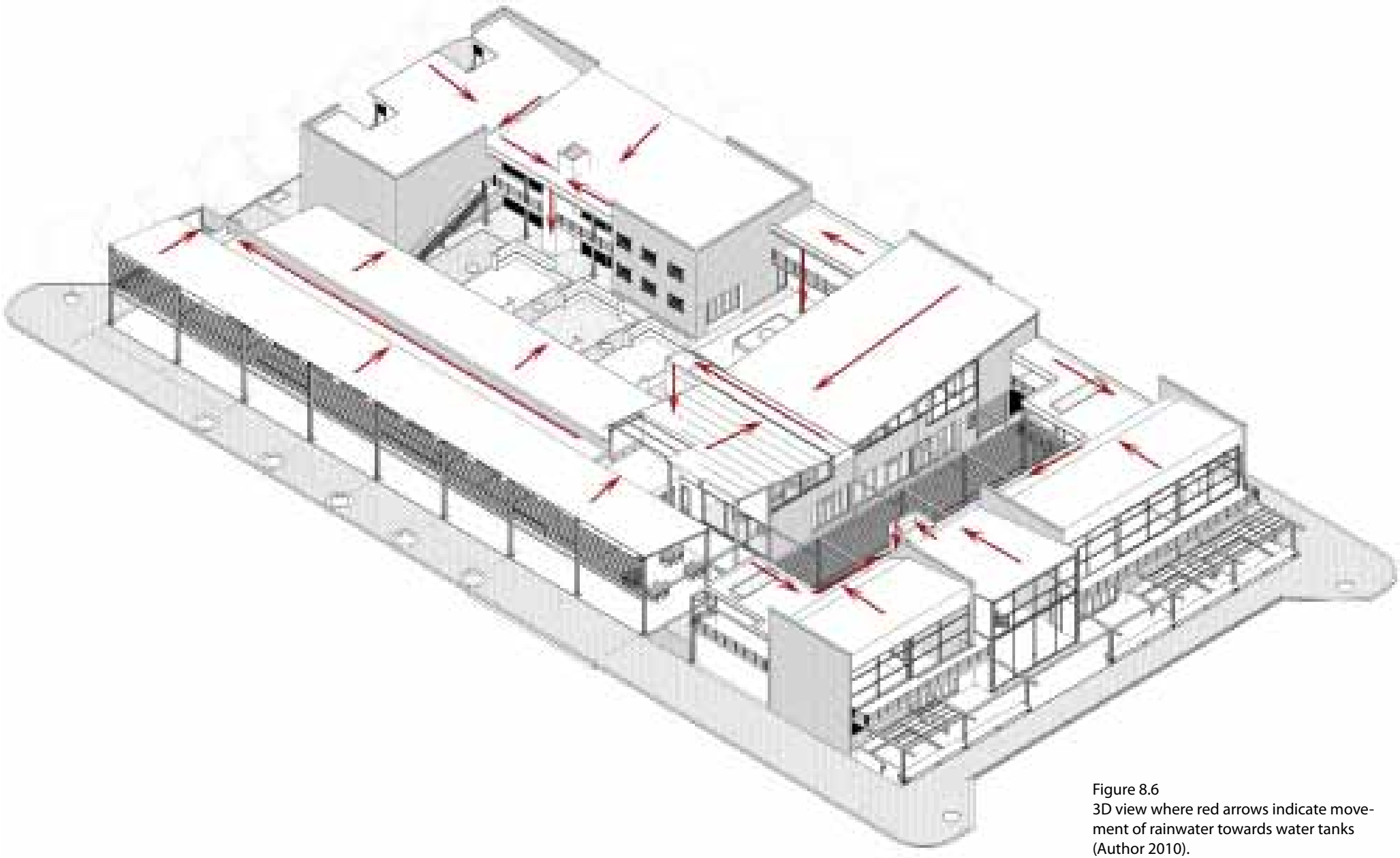
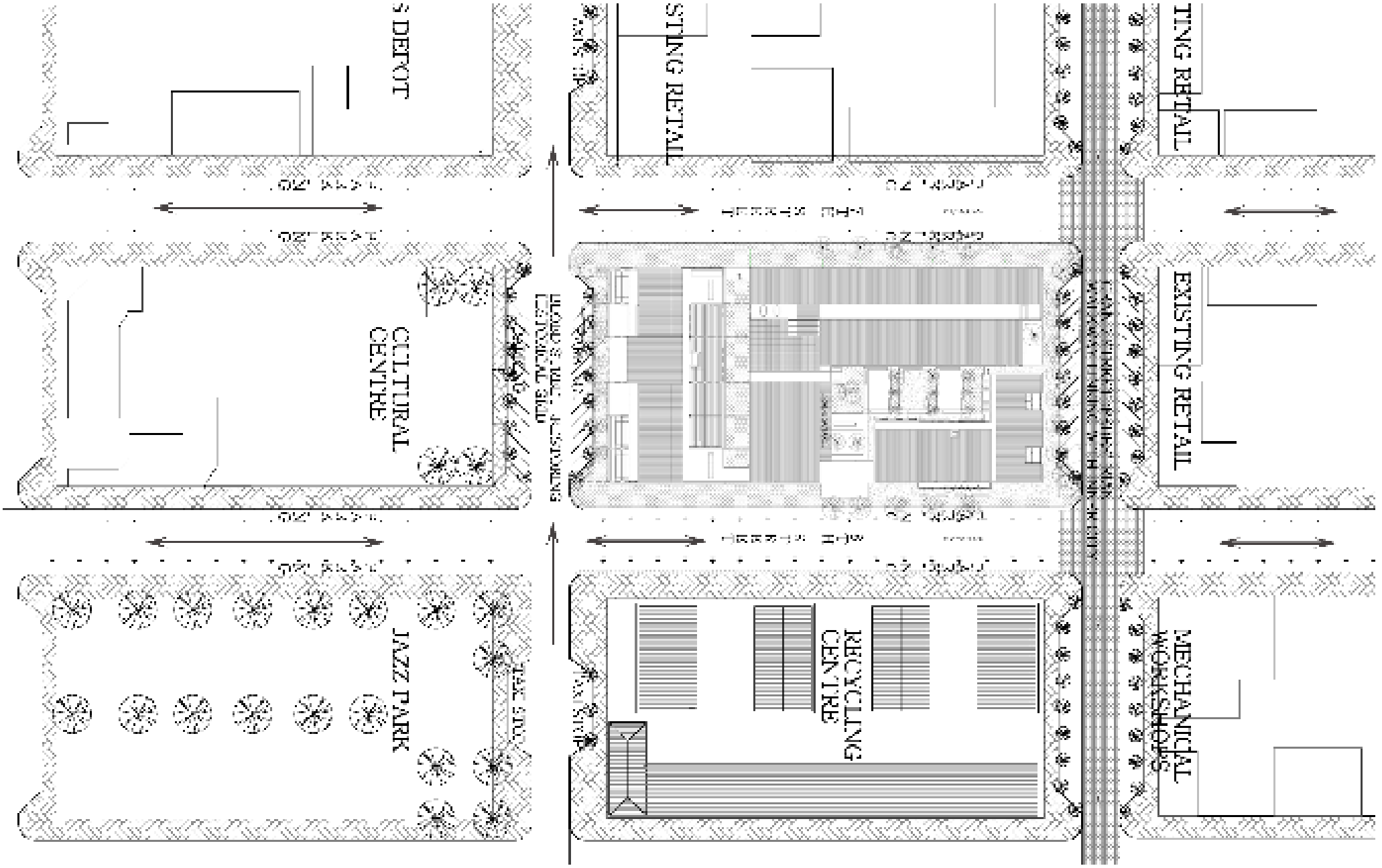


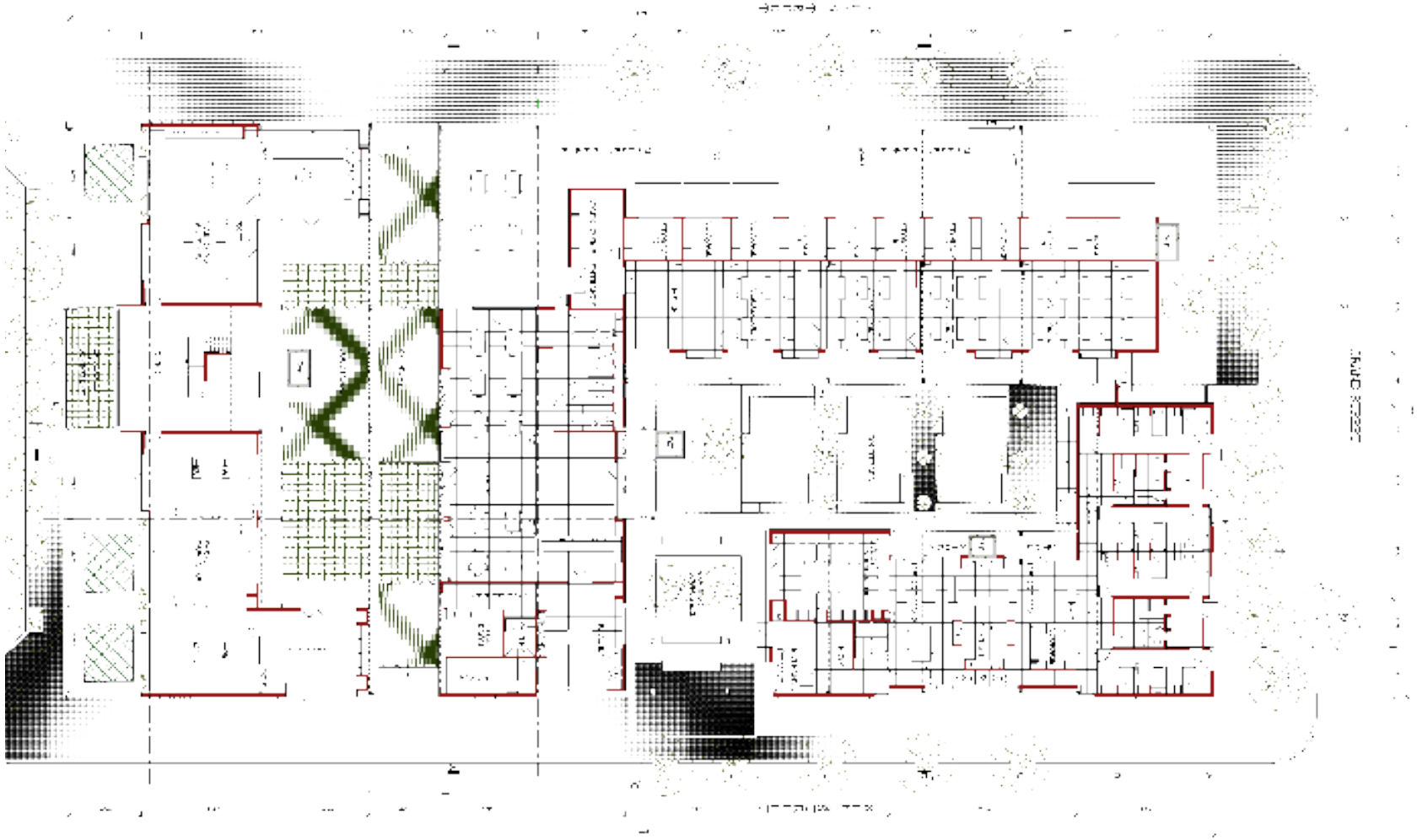
Figure 8.6
3D view where red arrows indicate movement of rainwater towards water tanks (Author 2010).


EXISTING RETAIL
EXISTING RETAIL
EXISTING RETAIL
MECHANICAL WORKSHOPS
RECYCLING CENTRE
CULTURAL CENTRE
JAZZ PARK

SITE PLAN

7TH STREET

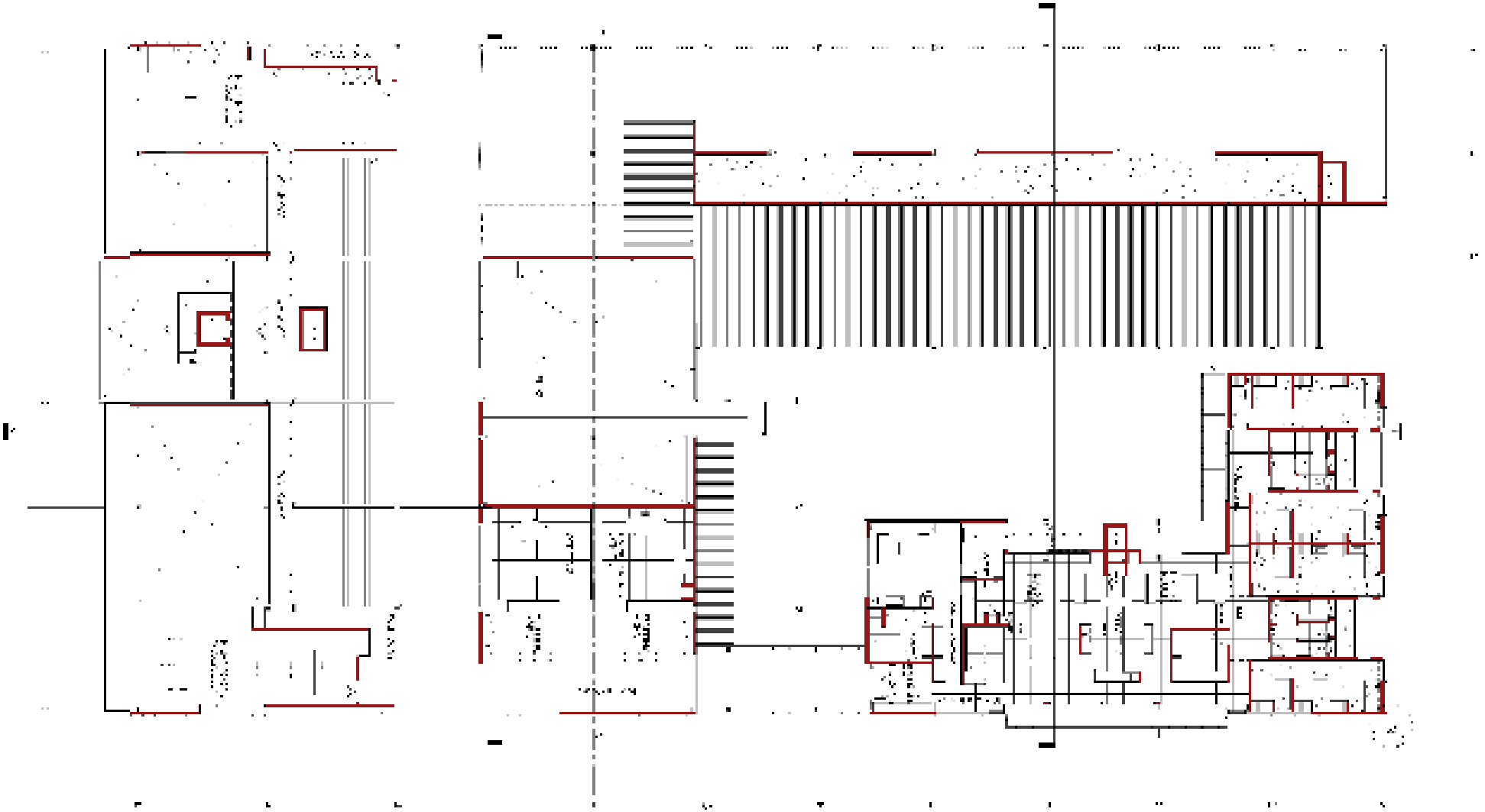
BLOED STREET



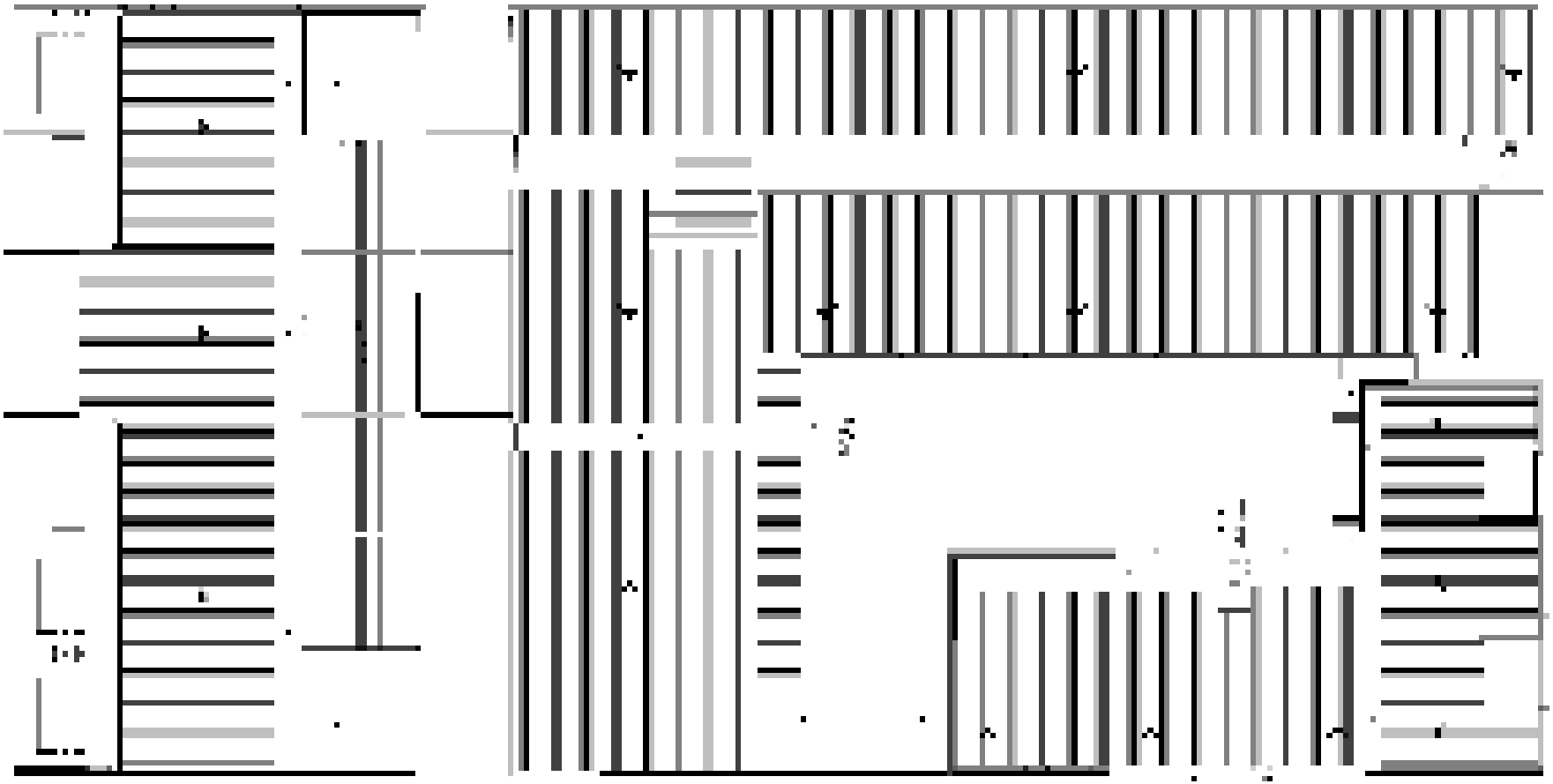
GRAND STREET

8TH STREET

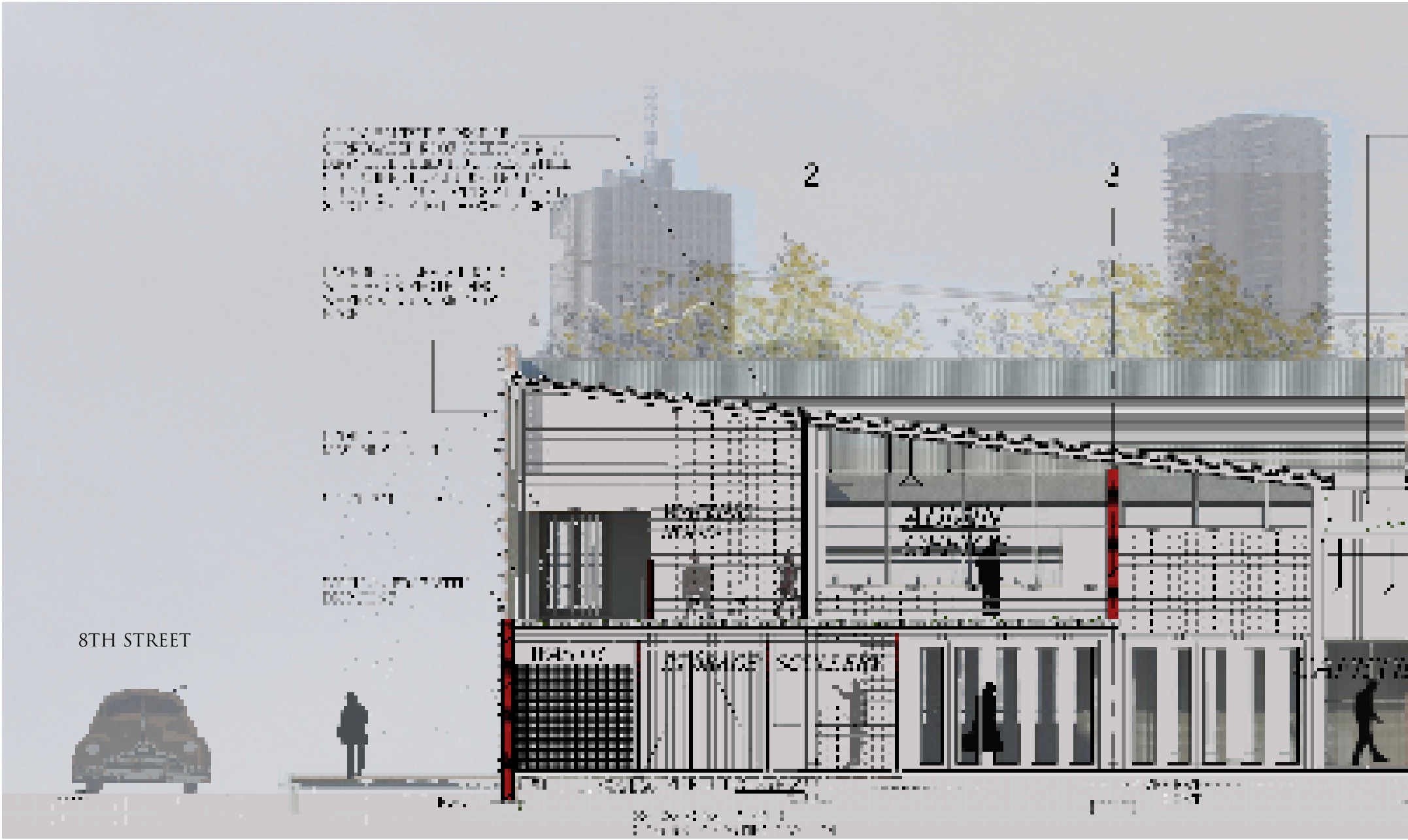
Ground level plan



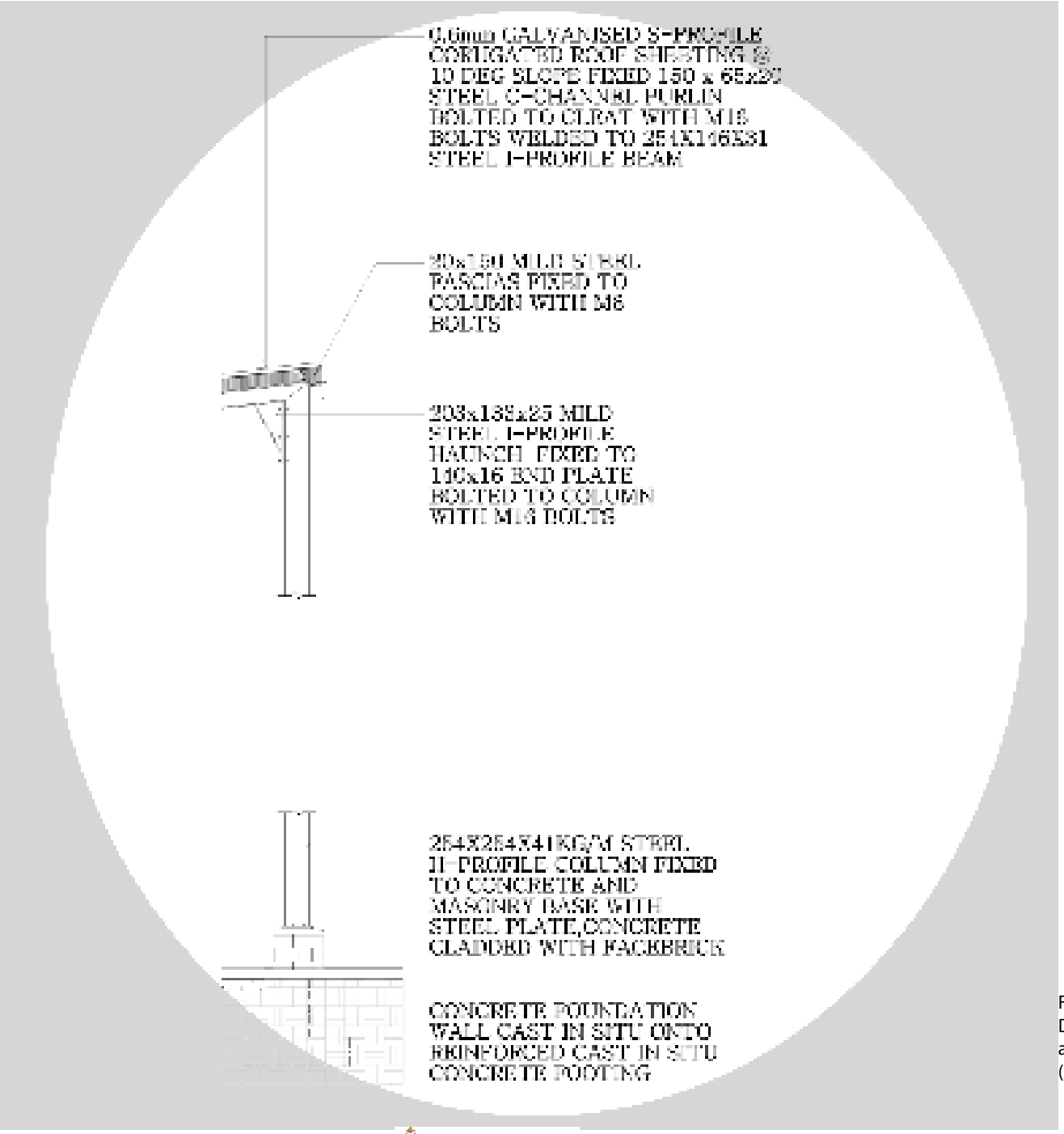
FIRST LEVEL PLAN



ROOF PLAN

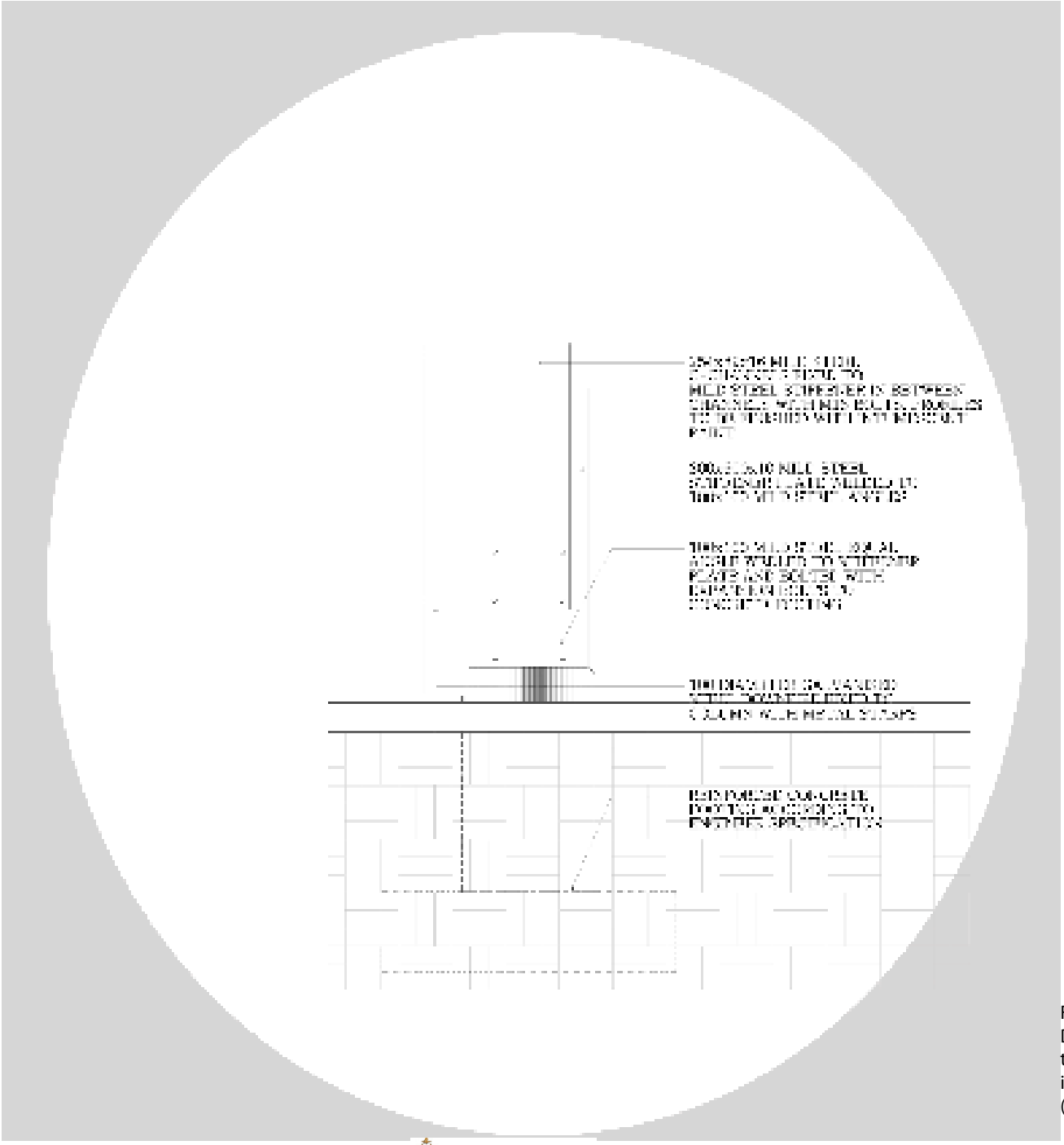

2
2
8TH STREET

SECTION A - A
7TH STREET



DETAIL A1

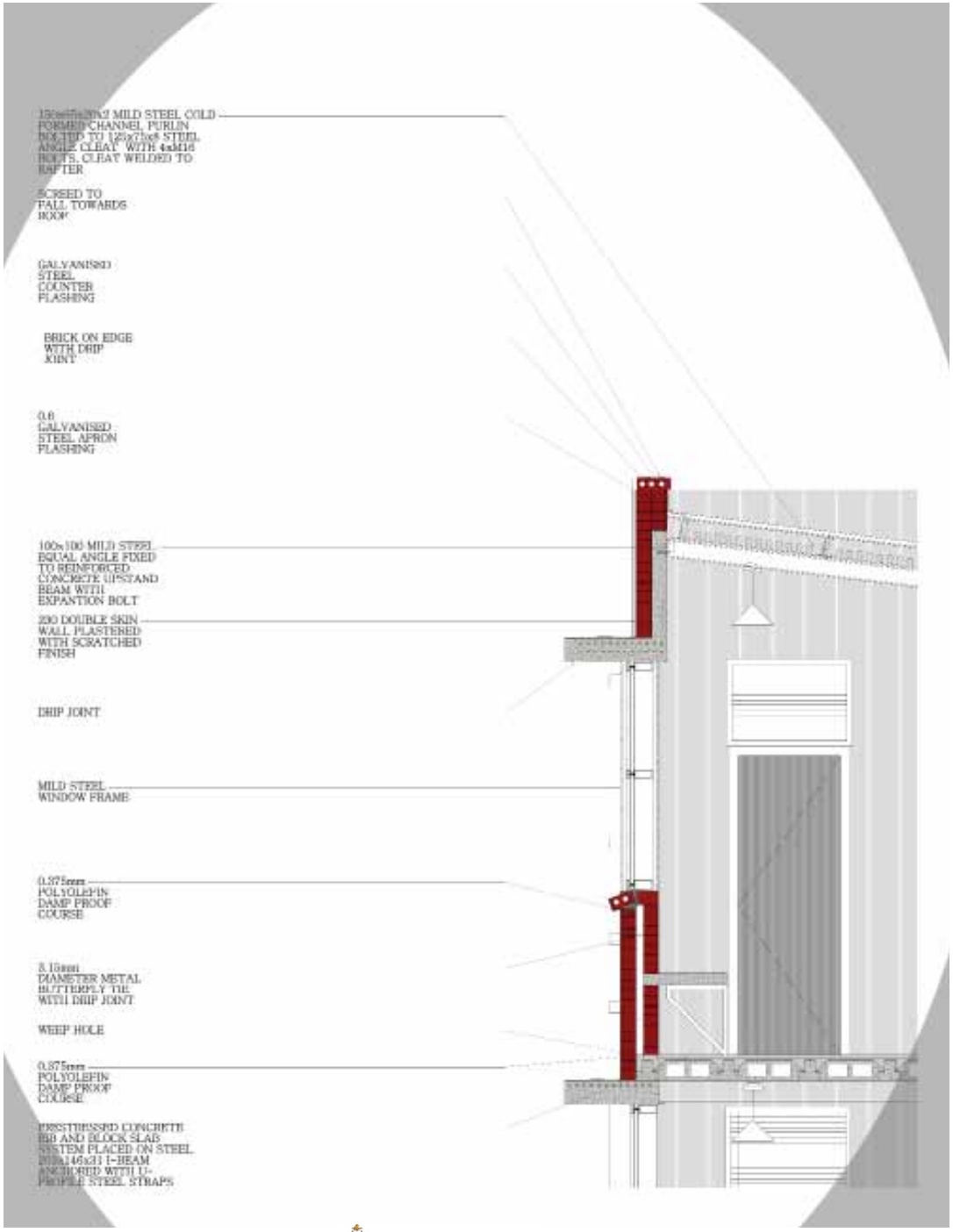
Figure 8.7
Detail of portal frame, column and roof detail (Author, 2010).



DETAIL A2

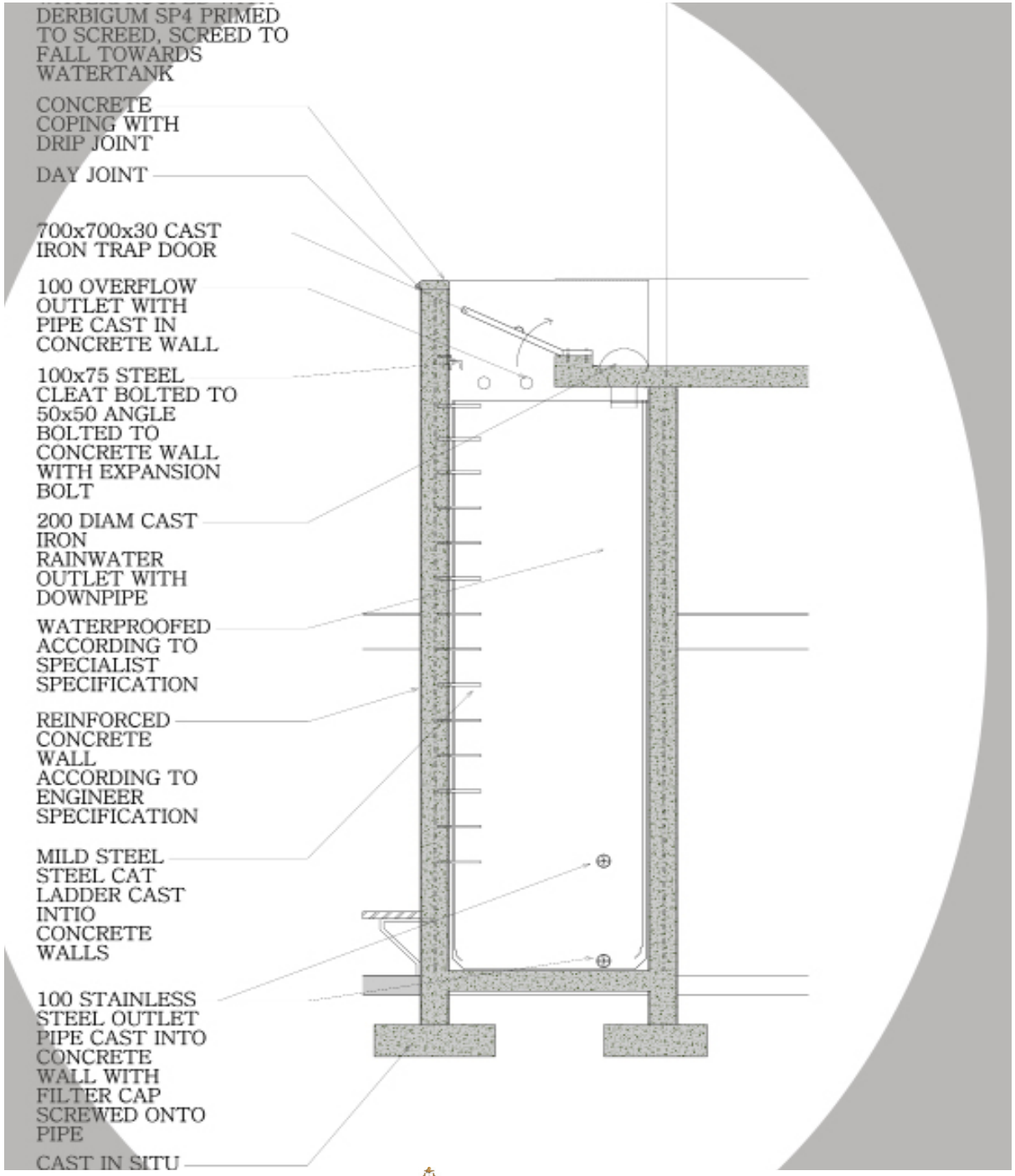
Figure 8.8
Detail of column base. Compared to detail A1, detailing represents independent concept (Author, 2010).

SECTION B - B



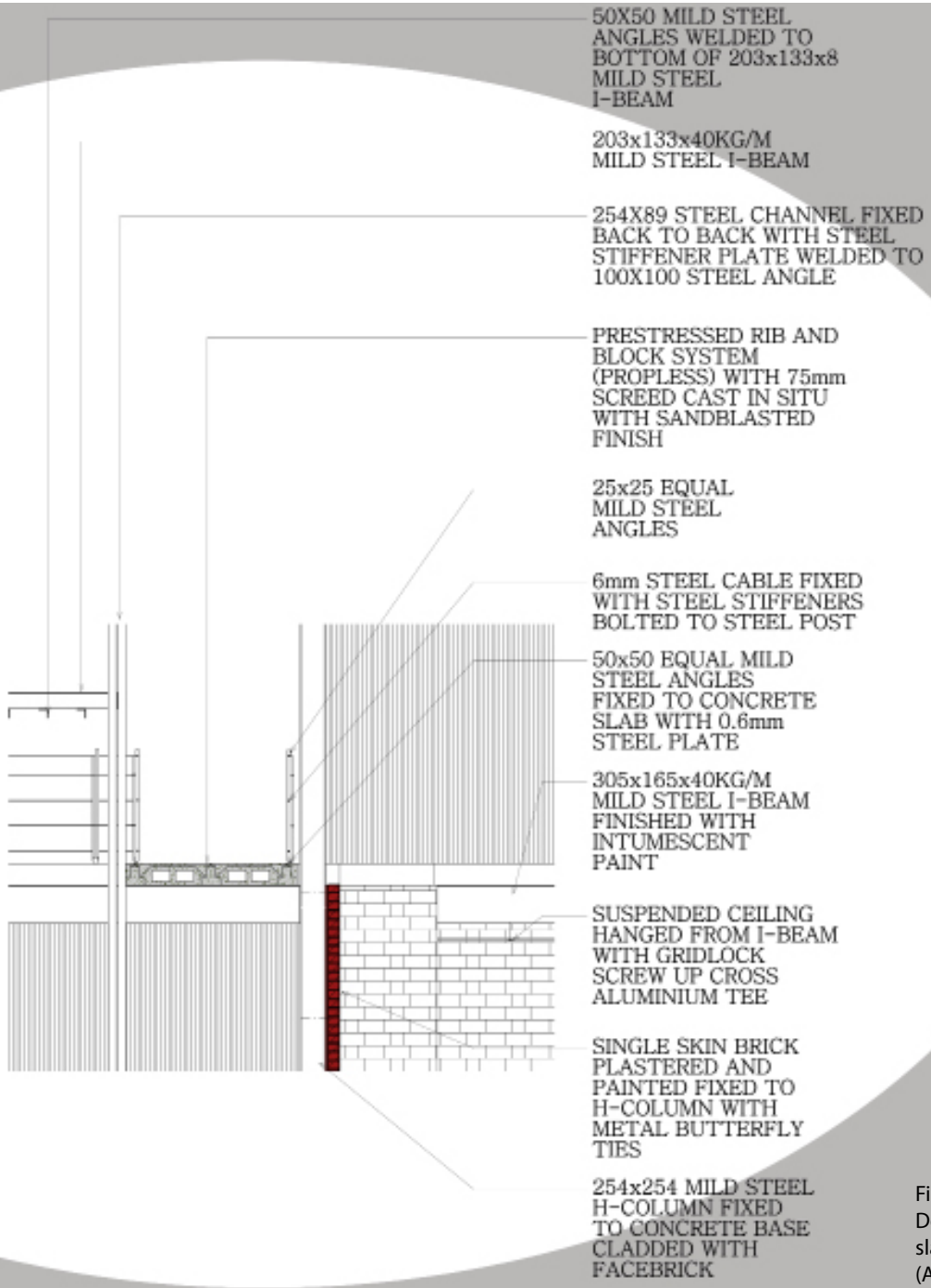
DETAIL B1

Figure 8.9
Detail through sleeping quarters. See cavity wall that allows for different finishes and planes (Author, 2010).



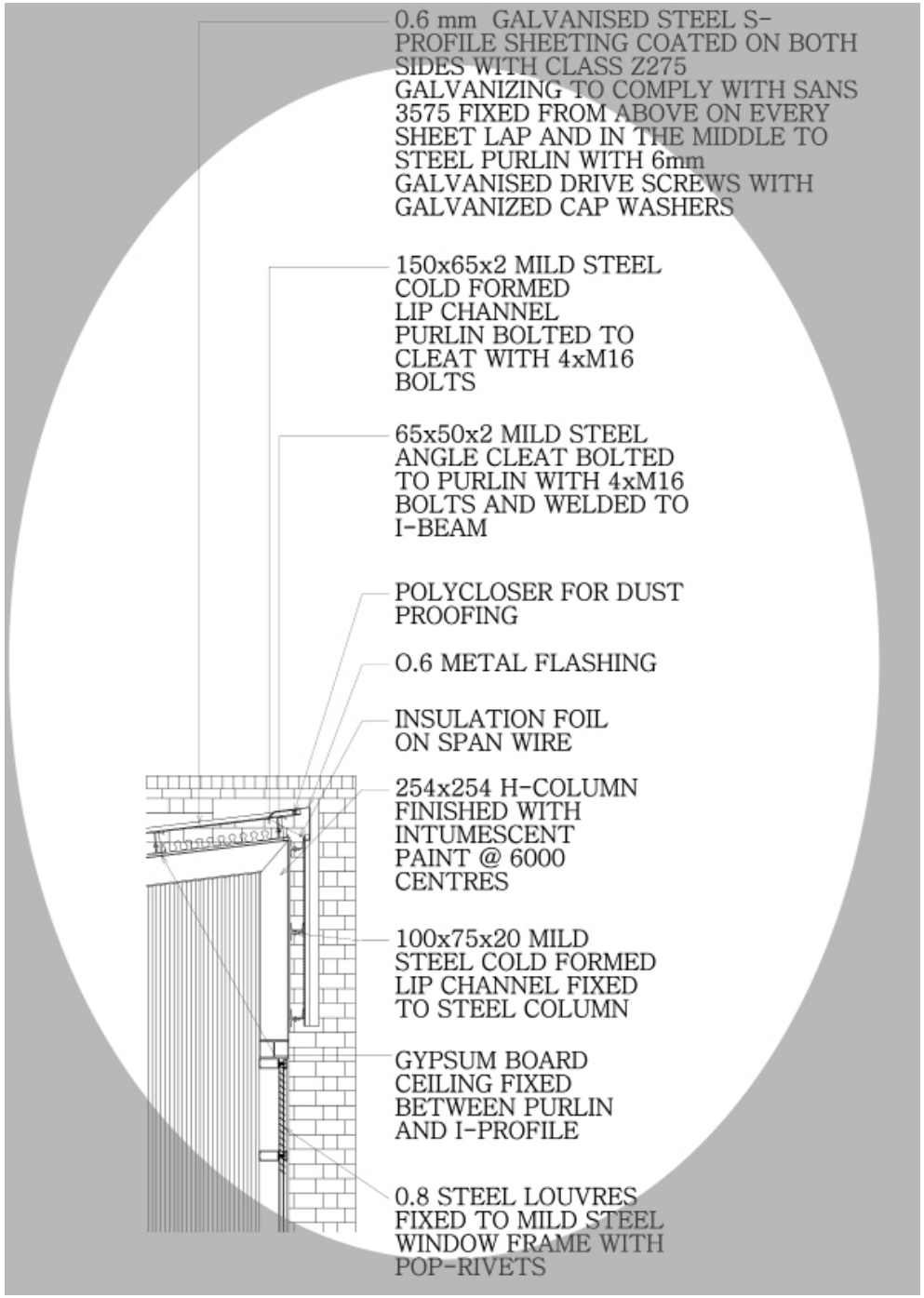
DETAIL B2

Figure 8.10
Detail of water tank. Notice use of concrete for water pressure (Author, 2010).



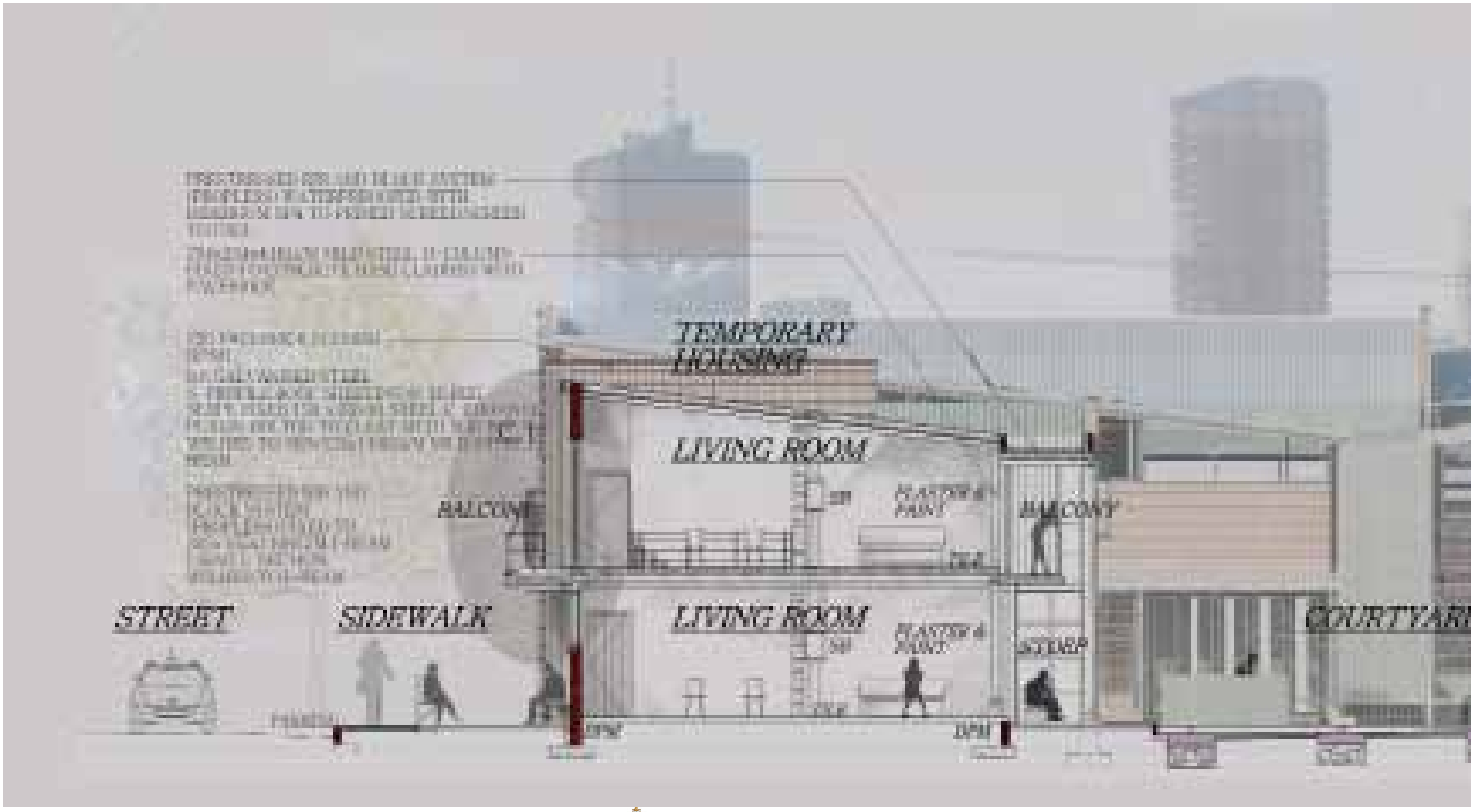
DETAIL B3

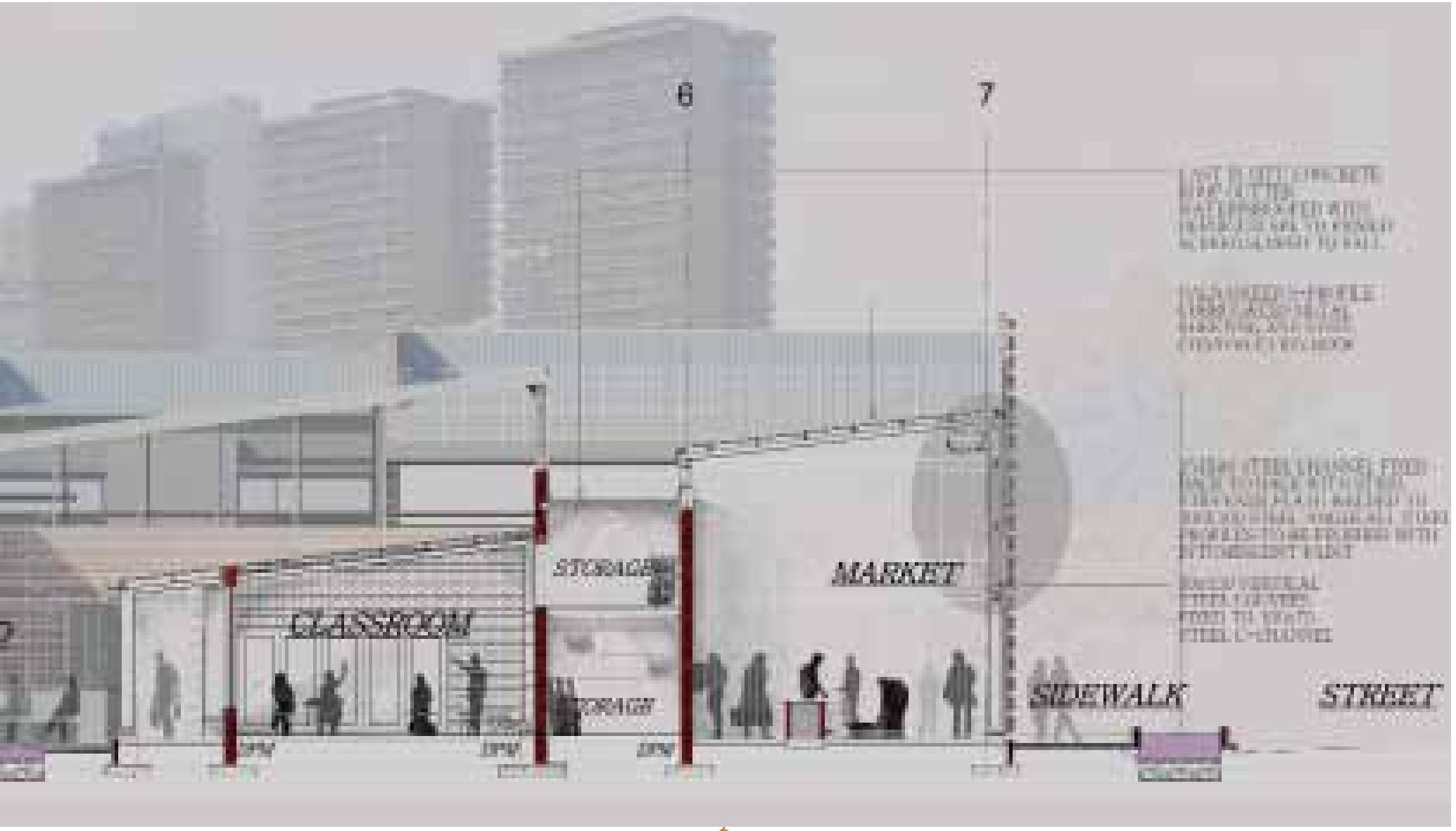
Figure 8.11
Detail showing hollow concrete slabs placed upon steel structure (Author, 2010).



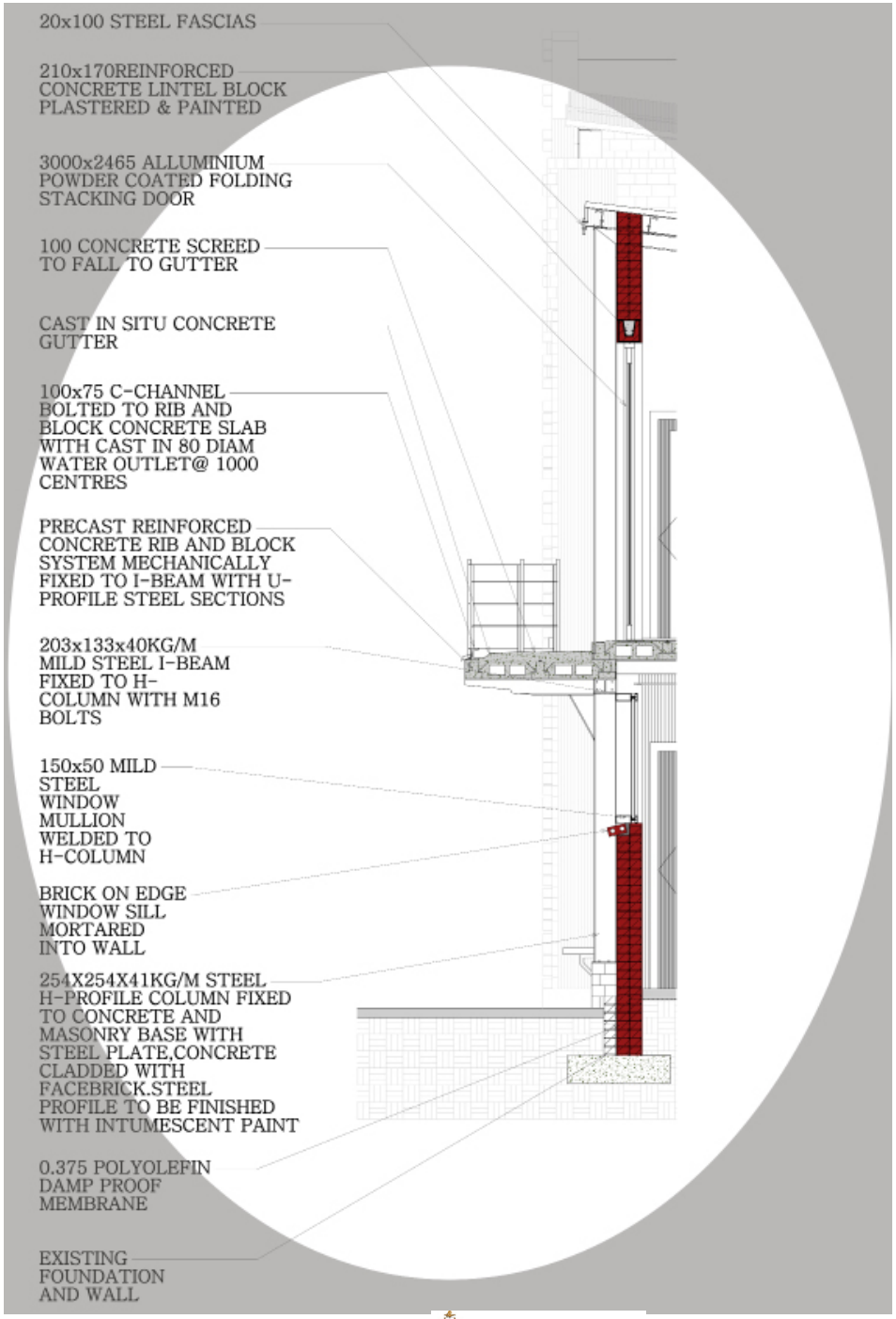
DETAIL B4

Figure 8.12
Detail of portal frame, showing roof construction of workshops (Author, 2010).


TEMPORARY
HOUSING
LIVING ROOM
BALCONY
STREET
SIDEWALK
LIVING ROOM
BALCONY
COURTYARD

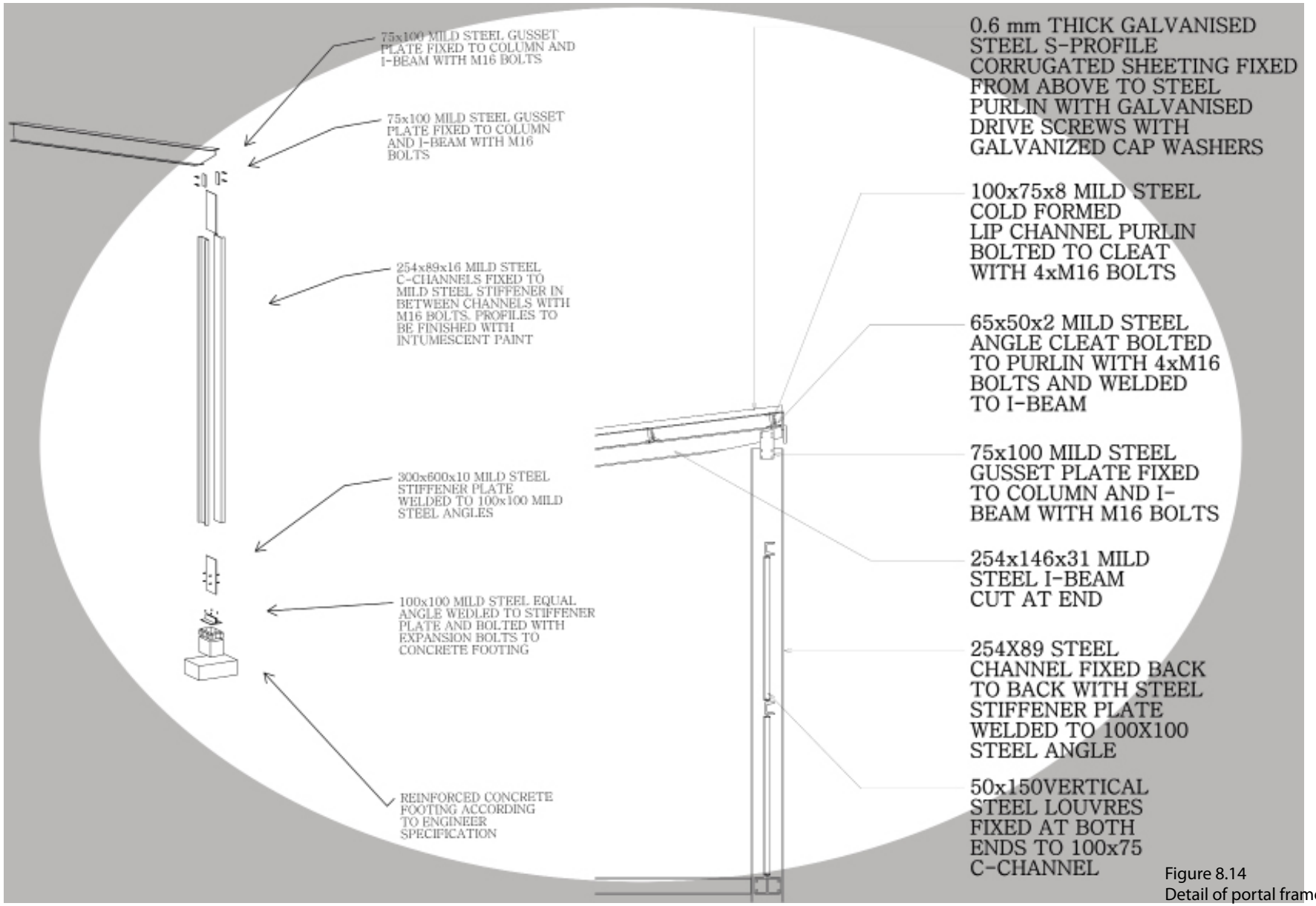


SECTION C - C



DETAIL C1

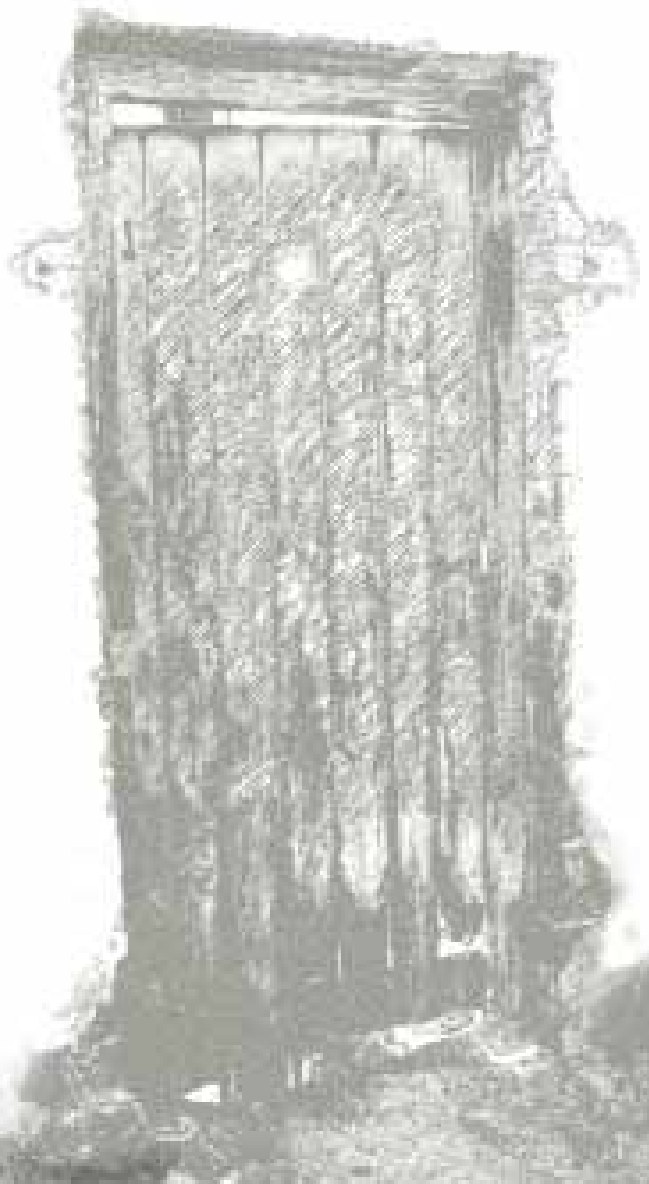
Figure 8.13
Detail of balcony at temporary housing. Notice solution of water drainage with the use of steel channels to control water flow (Author, 2010).



DETAIL C2

Figure 8.14
Detail of portal frame at the market, notice independent components
(Author 2010).

CHAPTER 9 : CONCLUSION



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9. Conclusion

South Africa's political history has left scars on many urban environments. When designing on these cultural landscapes it needs to be approach with sensitivity towards its memory of place, space and culture. Marabastad is one of these landscapes. It has a history of racial segregation, forced removal and physical destruction of the building environment but also of being a culturally and socially vibrant part of Pretoria's CBD. Due to the above mentioned destruction, there is little context to respond to. All that remains on the selected site is the memory of place and space. These memories were discovered through historical photographs and publishing on Marabastad history.

This dissertation explored the potential of using memory as a design tool to invigorate identity and meaning in an environment that has undergone political oppression. Marabastad has many memories and the selection process had to undergo many filtering processes. Memories were chosen that were site specific, could be responded to spatially and that contained social importance. The chosen memories are: racial separation (the site was used for housing in the Indian location), forced removal (site consisted of temporary and some permanent structures that could easily be demolished), and physical destruction (use of footprints of previous buildings on site). In terms of creating architecture, spatial memory was an important factor to consider. Compared to the rest of the CBD, Marabastad has a small intimate scale. To keep the integrity of this scale, the footprints of the previous buildings on site was used as parameters for the new structures. This not only kept the spaces intimate but also created private and public courtyards. Craftsmanship introduced through finishes and brick bonds which brings a humane character to the design.

Memory is represented in this post – liberating context to create a reference to the past. "Architecture becomes intelligible through reference" (Wolff. 2009 :175). Reference in return creates a sense of meaning in a place which is more easily identified with than architecture without it.

These memories inspired spaces that allow for choice, visual and social integration and adaptable structures. Materials and finishes where inspired by previously surrounding buildings, Indian religious buildings and materials used on site in the past.

The chosen program, a trade school, was also inspired by the history of Marabastad. People were forced to move away from their homes, communities and employment. The trade school brings back employment opportunities, allows for social integration between students and the public and provides new proposed housing developments with specialised skills like plumbing and electrical services.

Using memory as a design tool can be challenging when choosing specific memories to respond to. A careful filtering process is needed to choose memories that correspond to the new program, the desired atmosphere of space and human interface.

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Member Design for Combined Stresses

Task: PORTAL FRAME

Combine Ver 92.5.03
Element 1-2 Evaluate current section

Le Eff = 5.655 m Mlx = 0.60
Ly Eff = 5.655 m Mly = 1.00
Le Eff = 4.200 m M2 = 1.75
Py = 300 MPa Pa = 450 MPa
Tension area factor (Ane/Ag) = 1.00
Flange class: 2 Web class : 1

Critical Load Case : C2

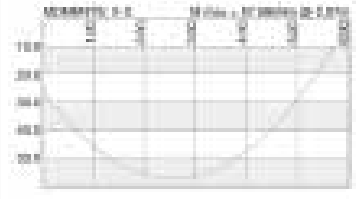
Section 254x254x73 H-sections (Web vert)

SANS 0162 - 1993 13.8.1 :
a) Cross-sectional strength (Crit. pos.= 4.200 m)
Cx Mxx Mxy 23.9 26.1 0.00
-- + --- + --- = ---- + ---- + ---- = 0.11
Cr Mrx Mry 2508 267 125

b) Overall member strength
Cx UiaMxx UiyMxy 27.6 26.1 0.00
-- + ------ + ------ = ---- + ---- + ---- = 0.07
Cr Mrx Mry 1972 267 125

c) Lateral torsional buckling strength
Cx UlaMxx UlyMxy 27.6 26.1 0.00
-- + ------ + ------ = ---- + ---- + ---- = 0.11
Cr Mrx Mry 1972 267 125

Slenderness Ratio: L/r = 57



Combine Ver 92.5.03
Element 2-4 Evaluate current section

Le Eff = 5.135 m Mlx = 1.00
Ly Eff = 5.135 m Mly = 1.00
Le Eff = 5.041 m M2 = 1.00
Py = 300 MPa Pa = 450 MPa
Tension area factor (Ane/Ag) = 1.00
Flange class: 2 Web class : 1

Critical Load Case : C2

Section 254x254x73 H-sections (Web vert)

SANS 0162 - 1993 13.8.1
a) Cross-sectional strength (Crit. pos.= 2.517 m)
Cx Mxx Mxy 3.52 57.6 0.00
-- + --- + --- = ---- + ---- + ---- = 0.22
Cr Mrx Mry 2508 267 125

b) Lateral torsional buckling strength
Mxx Mxy T/A 57.6 0.00 .4164
--- + --- - ------- = ---- + ---- - ------ = 0.28
Mrx Mry Mrx/Zpx 243 129 249.4

Slenderness Ratio: L/r = 79

Combine Ver 92.5.03
Element 1-2 Evaluate current section

Le Eff = 5.655 m Mlx = 0.60
Ly Eff = 5.655 m Mly = 1.00
Le Eff = 4.200 m M2 = 1.75
Py = 300 MPa Pa = 450 MPa
Tension area factor (Ane/Ag) = 1.00
Flange class: 2 Web class : 1

Critical Load Case : C2

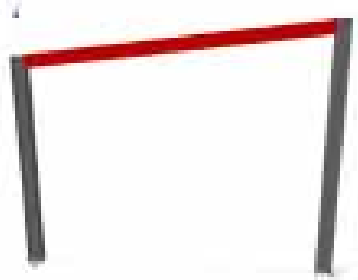
Section 254x254x73 H-sections (Web vert)

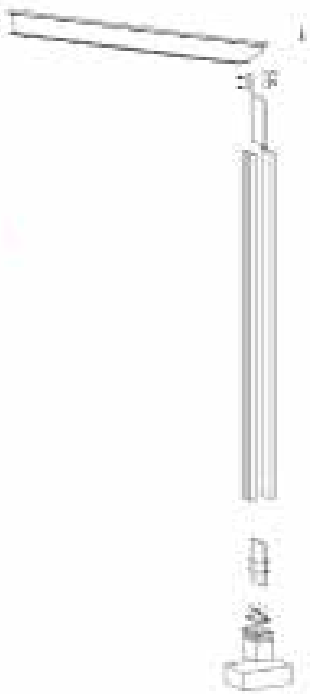
SANS 0162 - 1993 13.8.1 :
a) Cross-sectional strength (Crit. pos.= 4.200 m)
Cx Mxx Mxy 23.9 26.1 0.00
-- + --- + --- = ---- + ---- + ---- = 0.11
Cr Mrx Mry 2508 267 125

b) Overall member strength
Cx UlaMxx UlyMxy 27.6 15.7 0.00
-- + ------ + ------ = ---- + ---- + ---- = 0.07
Cr Mrx Mry 1972 267 125

c) Lateral torsional buckling strength
Cx UlaMxx UlyMxy 27.6 26.1 0.00
-- + ------ + ------ = ---- + ---- + ---- = 0.11
Cr Mrx Mry 1972 267 125

Slenderness Ratio: L/r = 57





COLD-FORMED LIPPED CHANNEL PURLIN DESIGN

Input

Attributes

fy	200 MPa	Yield stress
E	200 Gpa	Modulus of elasticity
Span	6 m	Purlin span length
Sag bars	1	Number of sag bars
Unbraced L	3 m	Laterally unsupported length
Continuity	Simply supported	Design system choose
Spacing	1 m	Horizontal purlin spacing
Sheet brace	No	
Span /	200	Deflection ratio

Loads

DLmax	0.43 kN/m2	Max dead load for D+L load case
LLmax	0.50 kN/m2	Max live load for D+L load case
DLmin	0.18 kN/m2	Min dead load for D+W load case
WLmax	0.63 kN/m2	Max wind uplift load for D+W load case

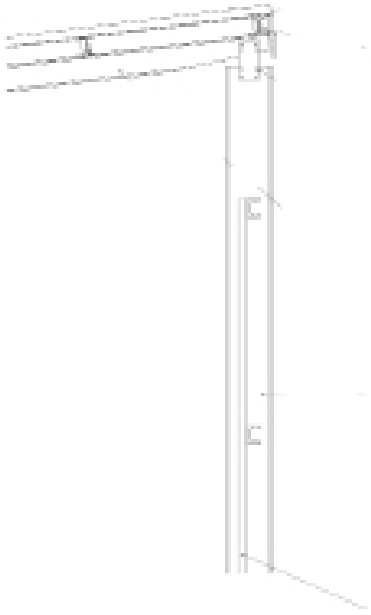
Load factors	ULS	SLS
DLmax	1.2	1.1
LLmax	1.6	1.0
DLmin	0.9	1.0
WLmax	1.3	0.8

Combined loads

D+L	1.32	0.97	kN/m
D+W	0.55	0.56	kN/m

Section selected: CFLC 150 x 75 x 20 x 2.5

Section mass 6.31 kg/m



Calculation

Simply supported

Laterally supported	M_u	$0.125\ wL^2$ 0.125 x 1.316 x 36 5.92 kN.m	(Table 8.4)	
	Φ	0.9		
	Ze	36.8 10^3mm^3	(Table 8.2)	
	f(Zc)	1.00	(Table 8.1)	
	Zc	36.8 10^3mm^3		
	fc	200.0 MPa	fy	
	Mr	6.99 kN.m		
	Mu/Mr	**0.85**	**OK**	
Laterally unsupported	Mu	$0.125\ wL^2$ 0.125 x 1.316 x 36 5.92 kN.m	(Table 8.4)	
	Φ	0.9		
	Cb	1.67	(Table 8.4)	
	f_b	374.2 MPa	(Table 8.2)	
	f'	222.0 MPa		
	fb > f'/2 f' - $(f')^2/4f_b$ > fy	True False		
	fc	166.1 MPa		
	Ze	36.8 10^3mm^3	(Table 8.2)	
	f(Zc)	1.00	(Table 8.1)	
	Zc	36.8 10^3mm^3		
	Mr	6.60 kN.m		
	Mu/Mr	**0.90**	**OK**	
Deflection	δ_{max}	0.013 wL^4/Ei	(Table 5.19)	
		59.01 mm		
	δ_{allow}	30.0 mm		
	Span /	213		
	$\delta_{max}/\delta_{allow}$	**0.64**	**OK**	

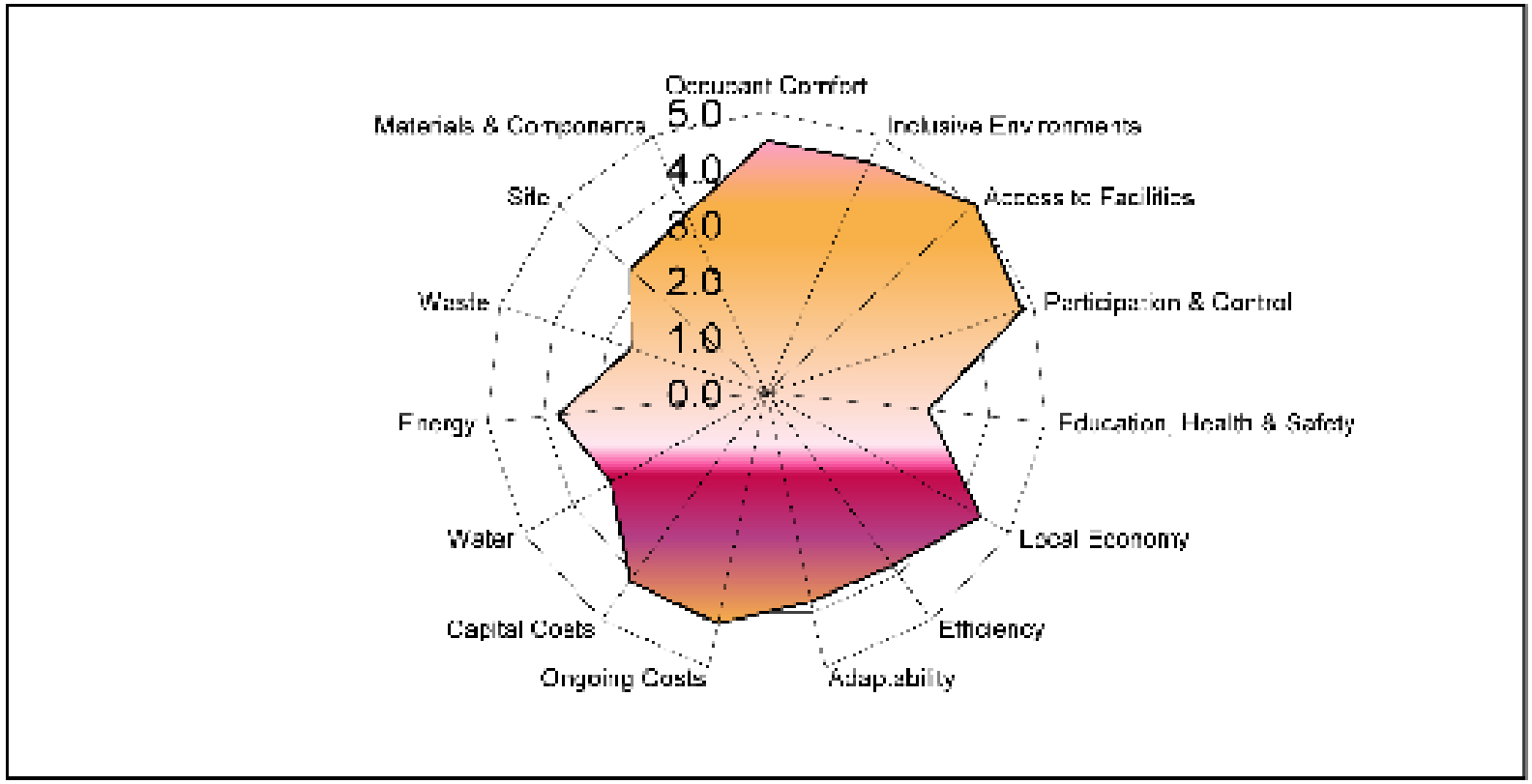
Fully continuous

Laterally supported	Mu	$0.08\ wL^2$ 0.08 x 1.316 x 36 3.78 kN.m	(Table 8.4)
	Φ	0.9	
	Ze	36.8 10^3mm^3	(Table 8.2)
	f(Zc)	1.00	(Table 8.1)
	Zc	36.8 10^3mm^3	
	fc	200.0 MPa	fy
	Mr	6.99 kN.m	
	Mu/Mr	**0.54**	**OK**
Laterally unsupported Worst case at Support	Mu	$0.11\ wL^2$ 0.11 x 1.316 x 36 5.07 kN.m	(Table 8.4)
	Φ	0.90	
	Cb	2.08	(Table 8.4)
	f_b	466.1 MPa	(Table 8.2)
	f'	222.0 MPa	
	fb > f'/2 f' - $(f')^2/4f_b$ > fy	True False	
	fc	194.5 MPa	
	Ze	36.8 10^3mm^3	(Table 8.2)
	f(Zc)	1.00	(Table 8.1)
	Zc	36.8 10^3mm^3	
	Mr	6.79 kN.m	
	Mu/Mr	**0.75**	**OK**
Deflection	δ_{max}	0.0008 wL^4/Ei	(Table 5.20)
		15.8 mm	
	δ_{allow}	30.0 mm	
	Span /	401	
	$\delta_{max}/\delta_{allow}$	**0.58**	**OK**

Appendix B : Sustainable building assessment results

SUSTAINABLE BUILDING ASSESSMENT TOOL (SBAT- P) V1

PROJECT	ASSESSMENT
Project title:	Date:
Location:	Undertaken by:
Building type:	Company / organisation
Internal area (m2):	Telephone: Fax:
Number of users:	Email:



Social	4.3	Economic	4.1	Environmental	3.3
Overall	3.9	Classification	Good		

Dedication

All glory to God for His blessings and grace. My father, mother and sister for supporting me in my architectural quest. To all my friends, thank you for keeping a smile on my face when I most needed it. And my best friend and fiancé, thank you for giving me our own memories and inspiring new meaning in the years ahead.

To those we lost this year, M & A, we miss you and will keep you in our memory.

Peace and love to all!