MUSIC PERFORMANCE LAB

ARCHITECTURE AS A SENSORY CONDUCTOR

MUSIC IS A SAFE KIND OF FIX JIMI HENDRIX

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Submitted in Fulfillment of part of the requirements for the degree of Masters of Architecture (Professional) in the Faculty of Engineering, the Built environment and Information Technology.

University of Pretoria, South Africa

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Chapter

The aim of this dissertation is to build an argument around the subject matter of architecture as a sensory phenomenon, raising the question of how we experience architectural space through our senses in a predominantly ocular-centric society. The primary research topic for this dissertation is termed a sensory phenomenon in space, which investigates the nature of being through the performance of life. The principal methodology adopted investigates various theoretical subquestions that respond to the primary research statement. These subquestions are generated on a broad spectrum of scales, so that informative responses throughout the design process can strengthen the given argument, corresponding to a coherent and rich thread of theory as underlying basis.

On an urban scale, the discourse explored the notion of space as sensory performa, how we create a CREATIVE urban realm that embraces our cultural diversity, allowing individuals to contribute to the performance of life? On an architectural formative and tectonic level the discourse explores the notion of architecture as sensory conductor: how architectural articulation conducts, orientates and guides a user through various spatial experiences. These research questions have been chosen so that they act as ordering system for the discourse document. The primary outcome of the discourse would be that all design aspects should relate to, meaningfully strengthen, and test the given argument. The design becomes the realisation and ultimate test of the theoretical approach.

A second theoretical statement, questioning the development of Western performance spaces, provides the basis for the chosen programmatic and spatial design brief and responses. In conjunction with the architectural concept of architecture as sensory conductor, these two notions summarise the design concept. The parallels between the lack of sensory experience in architectural and theatrical performance space will be used to position the programmatic argument in line with the primary theoretical and formative research questions stated above.

1

Glossary

Sensory
Phenomenon
In
Space
Investigate
Nature
Being
Performance
Life

Smell, taste, see, hear and feel
occurrence, observant fact, ex
Here, inwards, appearing in, ta
room, breathing space, interva
inquiring into, questioning, sea
scenery, life, environment, cha
living being, human being, pers
presentation, recital, act, routi
existence, being, time, living, s

xperience, happening, incident, event, trend
king part in, participating in, featuring in
l, opening, place, pause, threshold space
rching, examine, look into, explore, inspect, study, consider
racter, personality, quality, characteristic, features
son, individual
ne, concert, show, piece, occurrence, functioning, executing
oul, vitality,

Introduction to study area

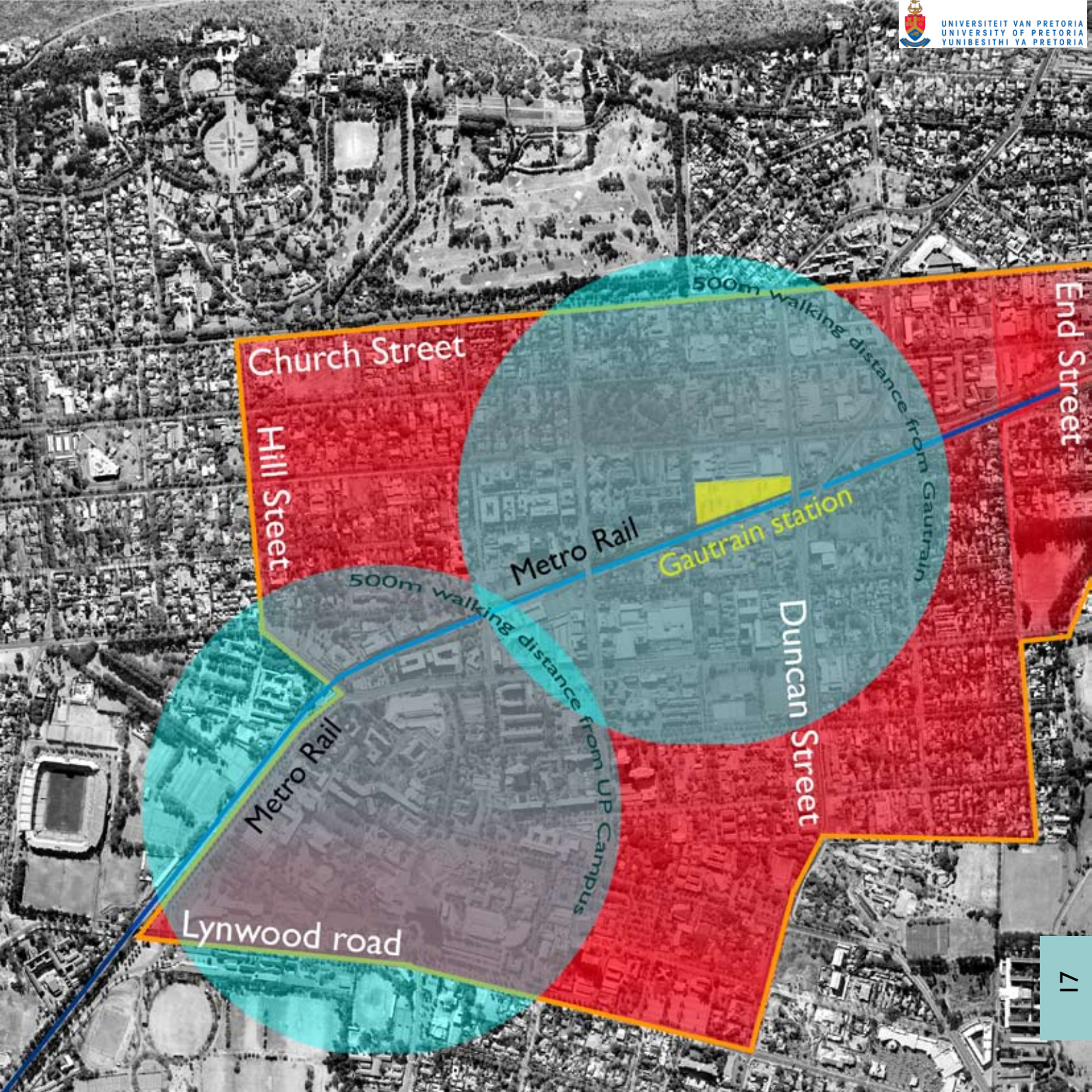
The chosen study area is situated in the larger Tshwane Metropolitan Area. The specific study area is divided into the current proposed Hatfield Development core, as outlined by the City of Tshwane's development framework, and the Gautrain development framework done in 2007. With the prospect of the Gautrain and 2010 Soccer World Cup, various new developments that aim to densify Hatfield are currently in progress. However, vast underutilised space and dilapidated built fabric, combined with the inconsistency of the urban grain, governs the current context and forms the bulk of the urban realm.

Although these new interventions rejuvenate the area to some extent, the lack of a proper spatial design framework will yet again result in an environment governed by privatised commercial prosperity with little consideration to the urban longevity. Numerous of these dilapidated sites border the train track, resulting in a spatial divide created by the track. There is a serious lack of quality public space within the area due to development failing to be regulated by an approved urban spatial master plan. As an initial response, our proposed development framework has been designed with the aim of creating a vibrant spine of public space within Hatfield.

The primary development objectives of the Tshwane Metropolitan Council have been focused on two central development zones. The first is a central development core that has been allocated in a 500 m radius walking distance of the Gautrain station. The University of Pretoria creates the second development core within a 500 m radius walking distance from its boundaries. The overall area extends to Church Street in the north, End Street on the eastern edge, Lynwood Street on the southern edge and Hill Street edging the area on the western boundary. According to the Tshwane Metropolitan Council, the key driving forces behind the development plan are as follows:

- Tshwane Metropolitan Area spatial design frame work
- Gautrain development framework
- Proposed bus rapid transit system
- The University of Pretoria
- National sports facilities
- Movement linkages

FIG 1.1_Location map of chosen study area


UNIVERSITEIT VAN PRETORIA
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Church Street
Hill Street
End Street
500m walking distance from Gautrain
Metro Rail
Gautrain station
Duncan Street
500m walking distance from UP Campus
Metro Rail
Lynwood road

FIG 1.2_View from Rissik Station towards chosen site

From these key driving forces, various deliverables have also been stated. These deliverables provide the foundation from which appropriate design responses can be generated:

- Integrated land use and transportation
- Mixed land-use developments
- Integration of land use with social needs
- Integration of public and private businesses
- Promotion of cultural and urban activities
- Foci of civic identity
- Quality of urban space
- Transport-orientated development (Tshwane, 2007).

Various problems hampering the achievement of these development outcomes were outlined:

- Student population resulting in seasonal fluctuation
- Lack of quality urban open space
- Defined precinct identity
- Lack of meeting, dwelling, working, visiting, walking and entertainment spaces.
- Lack of through routes and destination spaces(Tshwane, 2007).

These problems that were identified, provide an important basis for the initial brief development of the proposed development framework done for Hatfield. The importance of getting the provincial and private sectors to collectively work towards the same goal of providing a vibrant urban realm stands central to the realisation of such a proposal.

These problem areas have been seen as initial design criteria so that suitable opportunities for responding to each problem can be translated into informed design responses satisfying the municipality as well as private investor criteria. These opportunities can be summarised as follows:

- The opportunity to connect the existing Rissik Station to the proposed Gautrain station via an activity spine, providing much-needed public interac tion space within Hatfield.
- The opportunity to develop an activity spine connecting Festival and Hilda Street to the proposed new Gautrain station.
- The possibility of linking across the existing train track, connecting to the new residential hub devel opment done by City Property, reclaiming the vacant site.
- The opportunity to increase the urban identity and legibility of the Hatfield precinct, thus providing foci of civic identity.
- Encouraging informal meeting and social interaction spaces along the activity spine with vibrant day/night activity, which will provide much-needed public surveillance to the Hatfield precinct.

Chosen site

and urban approach

A dilapidated vacant site bordering the train track has been chosen. The proposed area falls in a larger spatial framework which links activities from the proposed Gautrain station with the western Rissik Station and then along an activity spine that connects Hatfield with the Pretoria University. The chosen site is shared by two other projects and together we define our site as the creative resource node, including fashion, visual art and the performing arts.

Collectively the proposed framework is shared by seven projects, which make up the activity spine. The proposed Gautrain station forms part of the activity spine. The framework is called START- social transition through activation of regenerative techniques, which ultimately aims to create a network of social space extending across the train track to reclaim this divided piece of land. The analogy of a spine has been explored.

FIG 1.3_Location map indication the seven proposed interventions

Client

The client and owner of the site is Intersite, which forms part of the property portfolio of SA RAILS. City Property has a lease on the site opposite the track. For a successful link across the track a synergy between the two parties should be established. For this synergy to transcend into a viable investment, a shift in development methodology is necessary. This shift requires that, instead of maximising the bulk development on each site, a maximum public space creation approach is adopted. It has been decided that Intersite will initially fund the project in association with City Property as part of its community engagement responsibilities enforced by government regulations.

The strength of the joint venture lies in the fact that the private sector works with the Tshwane municipality to not only gain returns on investment in built interventions, but also provide an enriched urban realm that can be enjoyed by all. This approach will yield a far greater return on investment and longevity for these new interventions. By creating the activity spine, Intersite establishes its existing movement routes as primary activity sectors. A constant influx of users will provide not only vital arrival and departure points, but also destination places for users to linger and enjoy. The proposed scheme ultimately sets an important precedent for the effective rejuvenation of lost space adjacent to train tracks. City Properties gains a much needed spill out space for its occupants, with the added advantage of being centrally located for major movement and activity zones, the urban green corridor and the University of Pretoria, ultimately increasing the popularity of the overall development.

FIG 1.4_Property ownership involved framework implementation

Design

outcome

The primary objective of this intervention is to collectively create a vibrant, creative, interactive destination place that will not only provide a much needed creative resource node for Pretoria, but also a place for people to enjoy and be despite the rush of urban living. The architecture should encourage public interaction and an active contribution to the urban realm by providing the platform for creativity to emerge. The user should be made aware of the various facets of the performing arts industry, with the opportunity created for emerging artists to succeed in the music business. This place should embrace the performance of life, celebrating and enriching our unique cultural diversity. It should be a place where scholar, student, street artist and professionals can share artistic ideas; a place where I am part of the performance of the everyday life; a place that I can use, a place where I can just be…..

1 PRIVATE PROPERTY

2 INTERSITE PROPERTY

3 SA RAILWAYS

4 CITY PROPERTY LEASED

Assumptions

and delimiters

Within the chosen research topic, various different ideologies surrounding the terminology, relevance and method of studying of spatial experience through the senses have been identified. I have chosen various important writers and philosophers whom I believe contribute appropriately to the argument. I take their arguments as foundation on which I build my argument and do not attempt to criticise the validity of their thoughts, but rather draw from different relevant scopes with the aim of indicating a homogeneous train of thought. On an urban framework scale responses have been based upon approved spatial design frameworks and the statistics given are seen as legitimate.

The contexts created are a proposed projection of future development done according to these approved framework projections, and the proposed interventions respond to this projected context.

Theoretical

abstract

In our current ocular-centric society few spatial experiences stimulate the full penchant of our senses. Most experiences of space can be reduced to a single experience of sensory bliss. How do we create a functioning civic environment which addresses the full spectrum of sensory phenomena, stimulating the performance of life, allowing individuals the opportunity to express their unique individuality? What role does architecture play in the phenomenon of lived space? How do we create such a place? In my view such a place should not only be accessible to the selected few, but should be a commonality in an urban realm shared by all, appreciated by all, experienced by all. In an increasingly consumerist society there is an immense need for non-commercial space without the prerequisite of money.

For this environment to be successful, it should be easily accessible and used on a frequent basis with enough diversity in activities sustaining the ever-changing user requirements. The architectural interventions should be an active participant within the larger stage set of activities. How do we develop an architectural language that enhances our sensory experience of the built environment? Can this be that we are striving once again to create real places and spaces for people and communities to engage in?

h e a r

s e e

t a s t e

s m e l l

f e e l

Analogy

As I move through the space, en route to my end destination, I am suddenly confronted with a spatial contradiction. Through the rumbling voices, the rush of the city and my own brain racing to make sense of the experience, I can softly hear the beautiful sound of musicians rehearsing. Stopping to buy food, I sense the wonderful atmosphere of people procrastinating, enjoying coffee, laughing, engaging and unknowingly participating. I catch a glimpse from the corner of my eye of bodies rhythmically caressing the studio space, unaware of my presence. How can it be that this previously dilapidated site now represents a sensory nucleus of creative energy, that I unexpectedly experience an intense creative moment in a public space catering for an amalgamated South African society, participating in everyday activities? What do I bring to this place? My unique sense of being, my presence, my creativity, or merely the fact that I happen to be in the right place at the right time? How can it be that I suddenly feel creative, that the opportunity that I have waited for for so long has finally revealed itself?

Filtering through the intervention I suddenly find that the previous role of spectator has suddenly changed, and I feel, sense, believe for that brief instance that I am the musician rehearsing that song, that I am part of the visual dialogue between the other performers. As one of the artists briefly makes eye contact with me, I can sense the satisfaction that he must have felt when he saw the way that I was subconsciously keeping the beat of his song, feeling every note as if I were playing it.

As I continue through the intervention, numerous multi-disciplinary creative nodes are experienced, and I soon realise that art, performance and creativity have finally been reinstated as public commentary device; that I, as an aspiring artist, can contribute to this environment in a way that opens up endless possibilities to one day be able to be that artist in the recording studio. Working on my own album, dreaming of my new destiny and looking across the crowd to spot the next young performer, dancer, student and individual waiting for that once-off opportunity to be part of something life changing. I walk on and suddenly stop and turn around to catch my last glimpse of the amazing experience I have witnessed, no – rather participated in, and realise that I am proud to be me, that this was a place that includes rather than excludes and that the creative energy freely experienced was amazing.

This was a place that I will return to, captivated to experience more of art as sensory performa ……

AND SO THE JOURNEY BEGINS

FIG 1.5_Photo of Author

Chapter

The chosen study area falls into the larger area known as the Tshwane Metropolitan Area. Before an informed spatial development framework can be proposed, a thorough understanding of the context as a complex system of interdependent parts should be obtained. This chapter deals with the study area as a whole and the analysis of the area pre-empts the proposed development framework. Hatfield is currently on the threshold of an immense development boom. According to the Tshwane development framework, all existing zoning regulations can be reinterpreted. However, this results in an anything goes approach. Although this development, occurring in an unregulated fashion, uplifts Hatfield, the mounting pressure on infrastructure, energy use and spatial continuity if it is not done according to a spatial development framework, will have a disastrous effect on the current urban grain.

The area has a complex spatial character that demands an even richer understanding. Understandably, the aim of this approach is to draw development into the area, but this should not be allowed to happen at the expense of a quality urban realm with rich social diversity. The importance of spatial continuity cannot be stressed sufficiently. The negative effect of this reinterpreted approach is clearly visible in the area, with single storey houses next to multi-storey developments. There is a serious lack of public interaction spaces and it is within this problem that the analysis and resulting framework originated.

2

Transportation

The chosen study area is centrally located in close proximity to an efficient transportation network linking Hatfield to the CBD as well as neighbouring suburbs. Private vehicular transport forms the bulk of transportation, resulting in an ever-increasing congestion on streets. The Metrorail service provides efficient public transport to people working in the Hatfield area from suburbs such as Hammanskraal, Atteridgeville and Shoshanguve. The area has a lot of pedestrian activity due to the large numbers of students moving from Campus to Hatfield and student residences. Vehicular transport dominates the hierarchical order of users, which can be seen in the wide streets and narrow sidewalks, which do not facilitate a rich network of public interaction space.

To the northern edge of the study area, Pretorius Street and Schoeman Street direct traffic from main feeder routes such as the N4 and N1 to and from the CBD via four-lane one-way streets in an east-west direction. Church Street provides a secondary connection, alleviating the congestion along these primary connectors. Within the Hatfield core, Burnett Street provides the link to primary connection streets such as Duncan Street. Burnett Street is also the primary commercial activity corridor, resulting in congestion between pedestrians, who use Burnett as a place, and motorists, using Burnett as a connector road to get to main feeder networks. The lack of speed bumps and a speeding-prevention infrastructure encourages high vehicular speeds, resulting in dangerous intersections for pedestrians and cyclists. Lynnwood Road provides an important link to the area and runs in an east-west direction, facilitating access from the eastern suburbs of Pretoria to Hatfield.

Duncan Street runs in a north-south direction, connecting traffic from areas such as Brooklyn with the primary feeder roads like Schoeman, Pretorius and Lynnwood Road. Duncan Street is the primary connector of north-south movement to the area with Festival Street and Hilda Street, providing a secondary north-south connection. The proposed Gautrain aims to provide an alternative to privatised vehicular transport. If successful, the Gautrain will facilitate connection to areas such as Johannesburg, with the added advantage that people can live in Hatfield and work in Johannesburg without the current situation of long travelling times on over-congested roads.

EAST WEST CONNECTION ROUTE

SECONDARY NORTH SOUTH CONNECTION

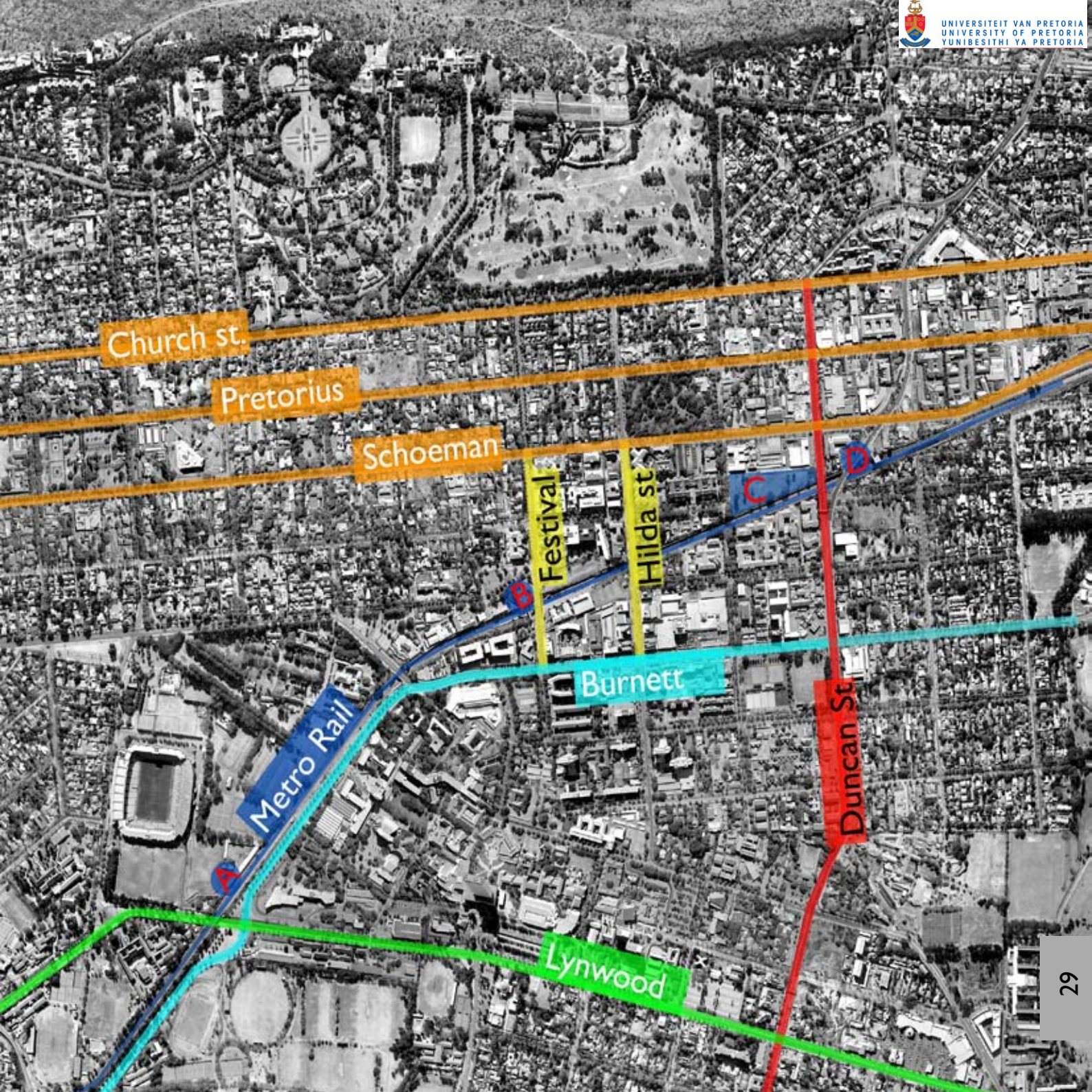
ACTIVTY CONNECTOR

EAST WEST CONNECTION ROUTE

PRIMARY NORT SOUTH CONNECTION ROUTE

METRO RAIL

FIG 2.1_Transportation map


UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA
Church st.
Pretorius
Schoeman
Festival
Hilda st
Burnett
Metro Rail
Duncan St
Lynwood
A
B
C
D

Land use

Within the study area there is a good spread of land use, consisting of high, secondary and tertiary-order facilities. In the southern and western areas the land use can be zoned in two categories, namely educational and sport and recreation. The largest area belongs to the University of Pretoria, which consists of the main campus and the secondary campus on the southern edge. Boys High, Girls High and the Afrikaans Boys' High School, together with the university, form the educational hub.

The Loftus stadium on the western edge is an important high-order facility, and together with the surrounding school sports facilities, creates an efficient network of recreational opportunities. Adjacent to the university a dense distribution of student accommodation is found, which results in large numbers of students living within walking distance of Hatfield and the main campus. Areas like Arcadia and Brooklyn form the residential edges, with single residential facilities dominating the demographic. Commercial activities within Hatfield can primarily be seen as ancillary functions for student needs Lighter industries and office space are found in the area between Arcadia and Duncan Street. Although there is a good spread of land use within Hatfield, there is a serious lack of a network of non-commercialised public interaction space that connects different land uses within Hatfield, allowing for a specific urban identity to emerge.

MIXED USE RESIDENTIAL

SCHOOLS

SPORT AND RECREATIONAL FACILITIES

UNIVERSITY OF PRETORIA

HATFIELD DEVELOPOMENT PARAMETER

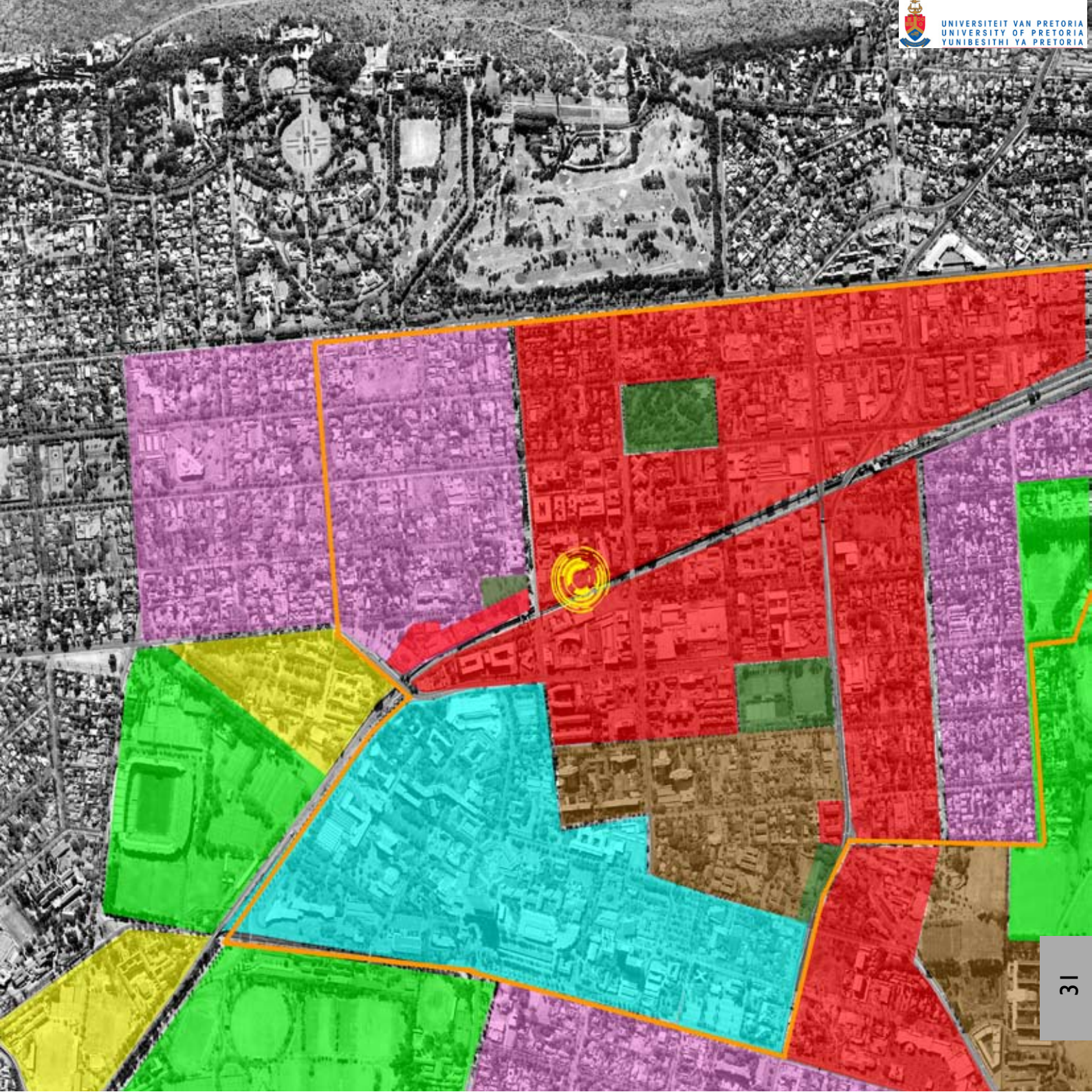
COMMERCE

ANCILLORY FUNCTIONS OF UNIVERSITY

GREEN SPACES

CHOSEN SITE

FIG 2.2_Land use distribution



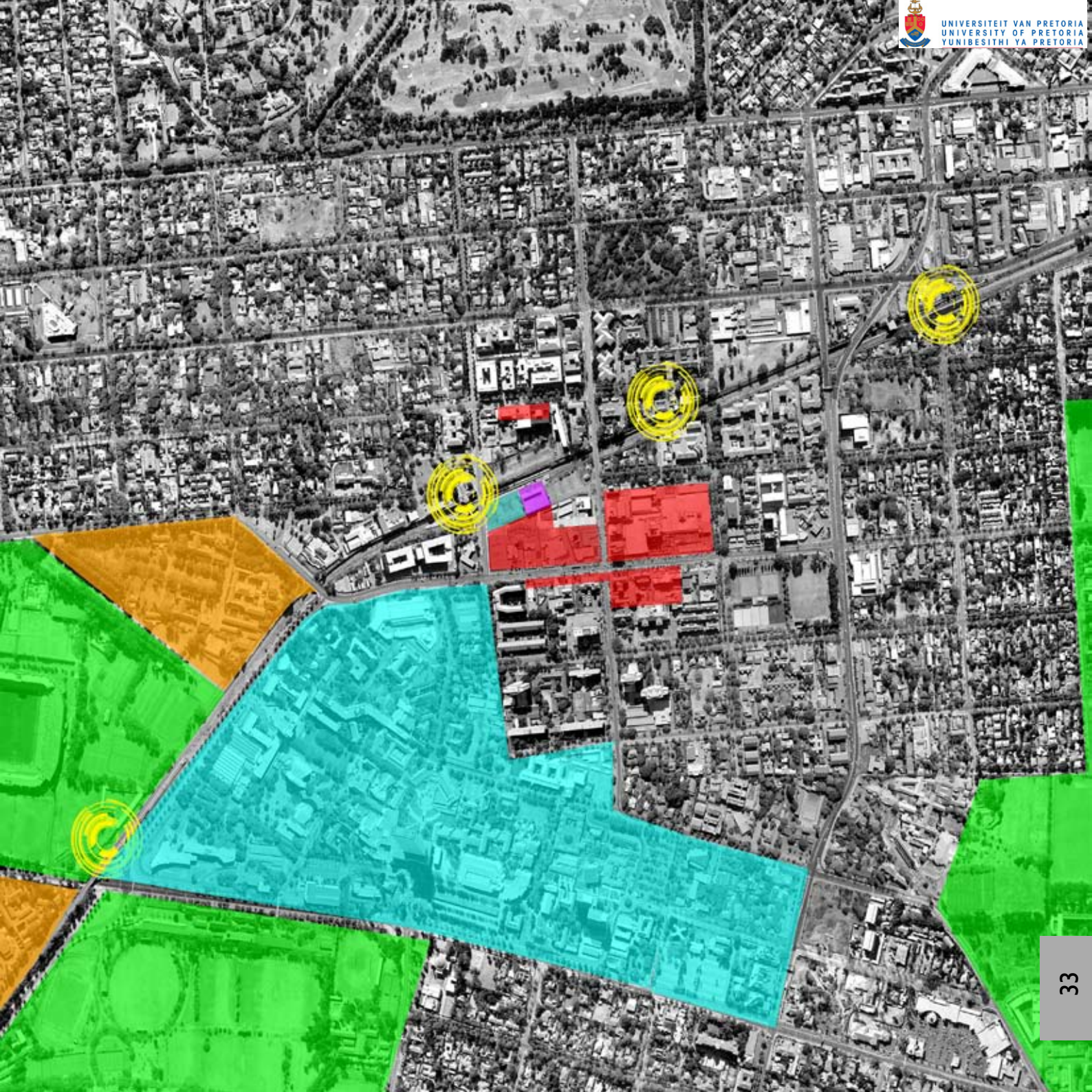
Activity nodes

For any publicly used urban activity to function efficiently, energy flow is required to sustain and provide longevity to such activities. The efficiency of such energy flow is achieved in the degree to which humans use such activities. Within the study area, high-order facilities such as the university, Loftus and surrounding schools provide immense energy to the area.

However, the problem is that these activities fluctuate dramatically in for instance holidays and weekends, when these facilities do not contribute to the energy flow like in times of high usage. This problem of energy fluctuation has also been identified by the Tshwane framework for Hatfield. Within this problem lies the opportunity to, over time, develop the Hatfield precinct into a vibrant working, living and activity hub that will provide a sustained energy supply to the area.

An important aspect of a constant influx of users is found where nodal interchanges occur. If these users can be channelled along an activity spine, a vibrant social network sustained by enough energy can be established. It is important that the emphasis be placed on public social space as opposed to commercialised space.

FIG 2.3_Urban activity nodes



Scale and Urban Density

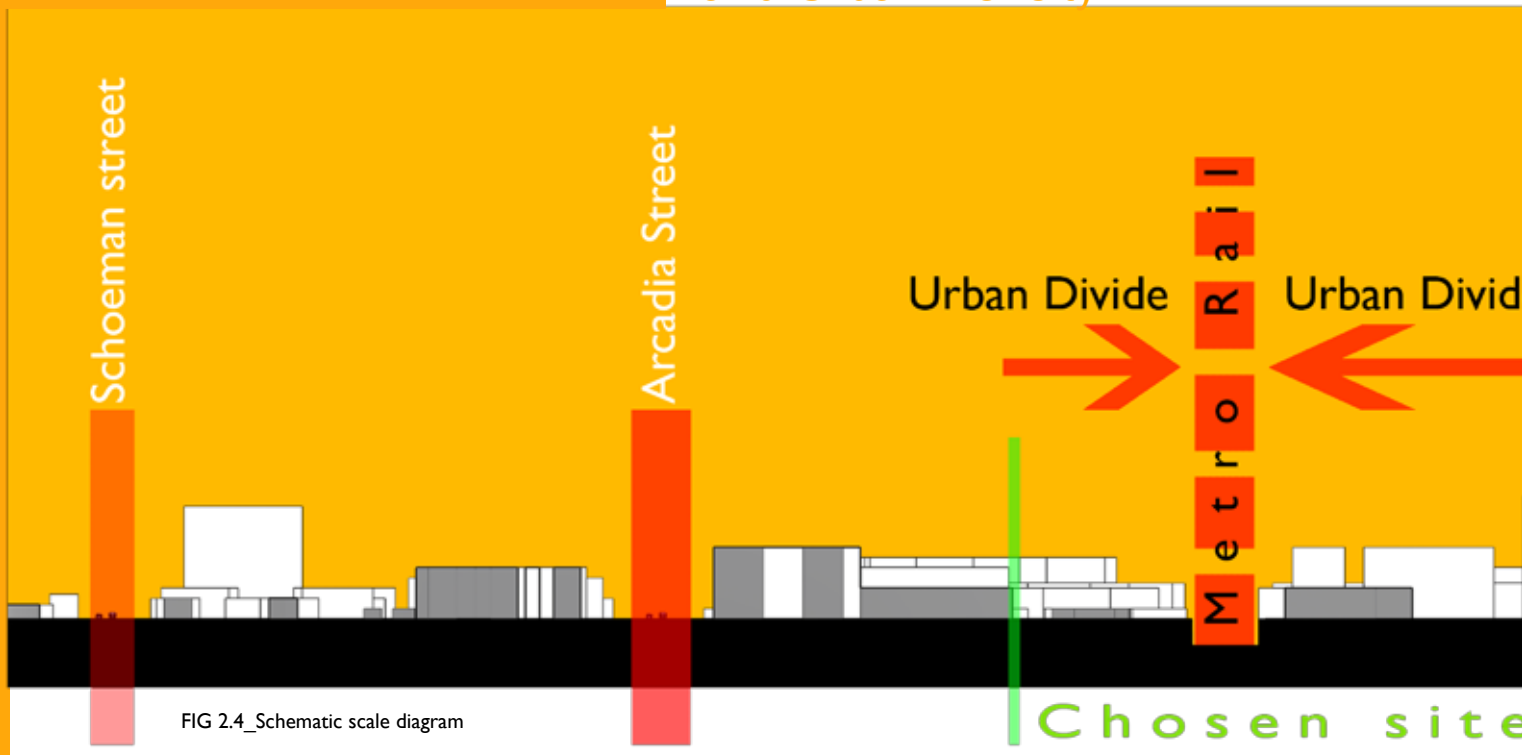
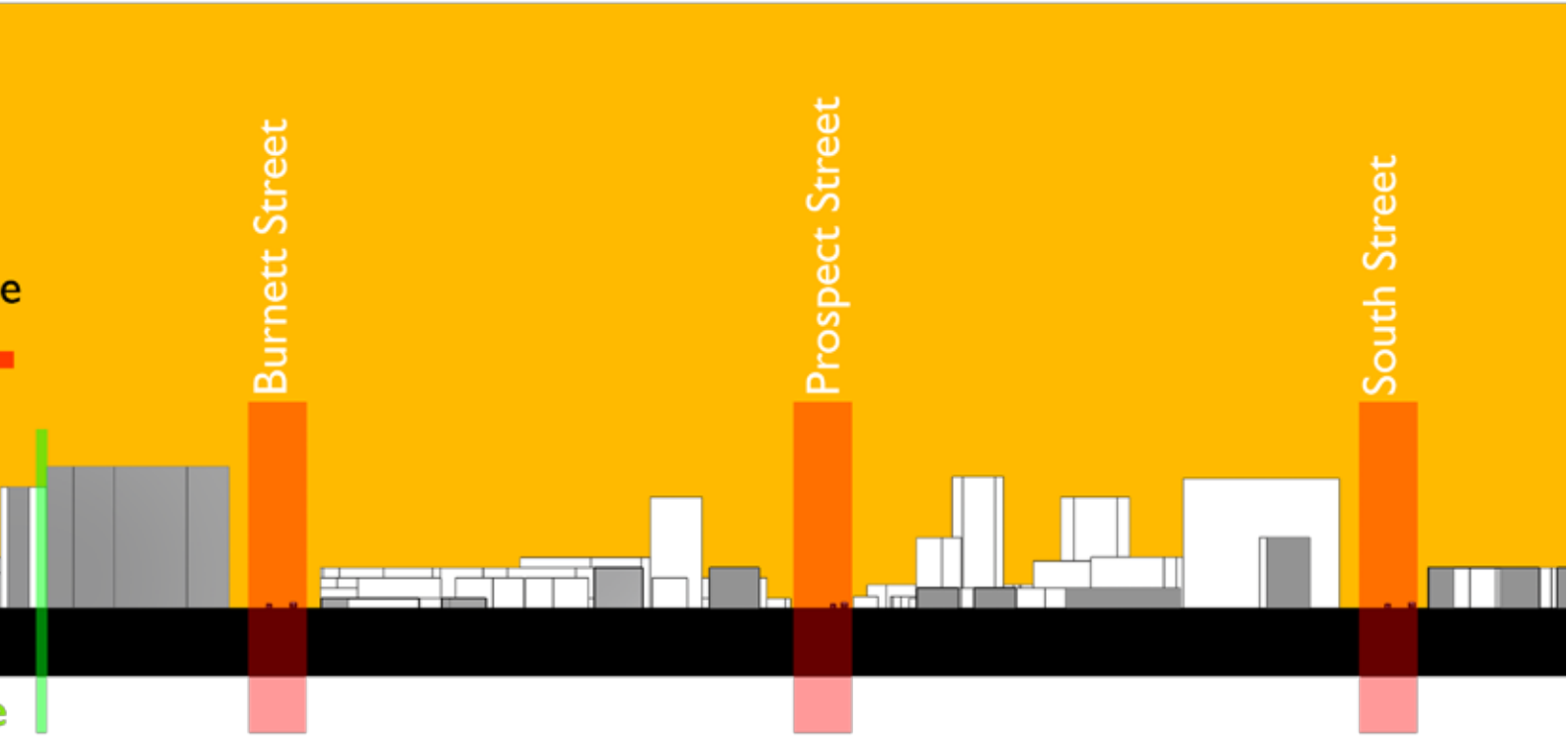


FIG 2.4_Schematic scale diagram

As can be seen in the section from Schoeman Street to South Street, there is a distinct scale difference along the section. This lack in consistent urban scale results in a low-density urban use, with single-storey buildings next to multi-storey apartments.

Thus various dilapidated and open pockets of land are found within the area. A distinct spatial divide can be seen between the edges situated next to the railroad.



This divide in the urban grain results in underutilised open pockets next to the track, causing dangerous and health-hazardous slum areas that further extend the divide.

No distinct urban continuity is experienced by the user in terms of the interface between the building envelope and the street, resulting in an urban environment lacking identity and deprived of efficient urban interaction space between buildings.

Character

photographic analysis

Schoeman Street

FIG 2.5_ Portion one: site character

FIG 2.6_ Portion two: site character

Arcadia Street

FIG 2.7_ Portion three: chosen site character as seen from Festival street

Chosen Site

CHOSEN SITE

FIG 2.8_ Portion four: site character as seen from Rissik station

Burnett Street

S.T.A.R.T Framework

(START – social transition through activation of regenerative techniques)

- ☐ Social - life, welfare, and relations of human beings in a community
- ☐ Transition - passage, or change from one position, state, stage, subject, concept, to another, modulation
- ☐ Activation - to make active; cause to function or act
- ☐ Regenerative - to re-create, reconstitute, or make over, to revive or produce anew; bring into existence again, to reform;
- ☐ Technique - method of performance; technical skill; ability to apply procedures or methods so as to effect a desired result.

Transportation goes red…….???

☐ City-wide scale

The proposed transportation system functions on a metropolitan scale. The major highways (blue routes) feed into the city of Tshwane from all four directions. At these junctions where blue and red lines meet, there will be multi-level parking garages that will accommodate users who want to change their mode of transport in order to get to a destination in a quick, transport-efficient way. These routes link all major areas, including the CBD, and the two major Gautrain stations. The main drive behind this initiative is to alleviate congestion and long travelling times. It also reduces the cost of travelling, while integrating all modes of public transportation.

☐ Hatfield precinct

The vision for Hatfield is to see it grow into a bustling, vibrant, destination node in Tshwane. With the new Gautrain station at its heart, Hatfield becomes an area of high accessibility, making it a sought-after place to live. The proposal therefore initiates certain strategies to enhance transportation routes, densifi residential backup and commercial activities, and provide high-quality public space as the canvas for social interactions and expression.

☐ BRT (Bus rapid transit) – RED ROUTE

The RED transportation system comprises buses that run in dedicated lanes in all major axes of the city, thus creating a grid of continuous, direct transportation channels across the metro area, which integrates different modes of transportation (Manifesto for change, 1991:80). In the Hatfield precinct, the drop-off points coincide with public open green spaces, thus reinforcing the spatial logic of the transportation channels (Manifesto for change, 1991:80). At these stops, provision should be made for informal traders to facilitate the needs of commuters on the go.

☐ Burnett and Grosvenor activity routes

☐ Grosvenor Street

This connector route connects the red-line axis travelling in a north-south and east-west direction. Grosvenor Street intersects with the Hatfield Gautrain station, therefore forming an activity spine that connects the two major modes of transportation (Manifesto for change, 1991:50). The street edge should be activated and wide enough to facilitate this intensive flow of people and activity intensity (Manifesto for change, 1991:49). Greening of this activity route is essential, thus connecting the two major green open spaces and extending the natural habitat via a green corridor. The proximity of these major transportation systems increases accessibility and minimises the need to travel long distances to find intersecting systems.

☐ Burnett Street

Burnett Street forms the main commercial activity spine in the Hatfield precinct. This spine is the primary flow of goods, people and capital, acting as the glue that integrates the various precincts within Hatfield. The street should give preference to pedestrians, be well defined and increase ease of movement. The street should also be well articulated with urban greenery, lighting and street furniture to define spatial hierarchy and enhance legibility and a sense of place.

The street should be cobbled where cars can travel to increase the awareness of the street's activity. The development of this area should encourage the natural integration between larger and smaller activities, thus creating opportunities for small enterprises in these areas of highest accessibility (Manifesto for change, 1991:53).

Metro Scale

PRIMARY FEEDER ROUTES N1, N4

SECONDARY FEEDER ROUTES

METRO RAIL NETWORK

ACCESS ROUTE TO SITE

NATURAL RIDGES

POSSIBLE POSITION FOR MULTI LEVEL PUBLIC PARKING

PRETORIA CBD

FIG 2.9_Group framework indicated on Pretoria metro scale


THE SITE

Implementation metro scale

Bring the people….

For any successful urban strategy, energy is needed. This energy comes from people and the variety of activities they perform on a day-to-day basis: work, sleep, eat, play, socialise, relax, and engage. We therefore suggest the densification of three distinct areas in the Hatfield precinct, thus providing the energy needed to produce a rich, vibrant and multi-functional urban environment.

☐ Red sector

The area east of Duncan and north of Church Street forms one of the gateways to Pretoria. This sector should be developed into a high-density mixed-use sector, consisting of commercial activities and office space.

☐ Orange sector

Areas of highest accessibility should be backed up with residential fabric. This sector currently consists of single-storey residential units and small businesses. The sector should be densified and restricted to a building height of three to five storeys to retain the low-rise character of Hatfield. This sector has easy access to all transport facilities and public amenities, which makes it a sought-after place to stay.

☐ Yellow sector

The sector east of Duncan Street forms a large part of the University of Pretoria's residential backup. This area currently consists of single-storey communes, with a few two- to three-storey residential developments emerging in the urban fabric. This area should be developed to respond positively to the existing character, guided by a height restriction of two to three storeys. The edges on Burnett and South Streets should be activated by some commercial activities, as these form the main connection to LC de Villiers sports grounds and the students' residential housing.

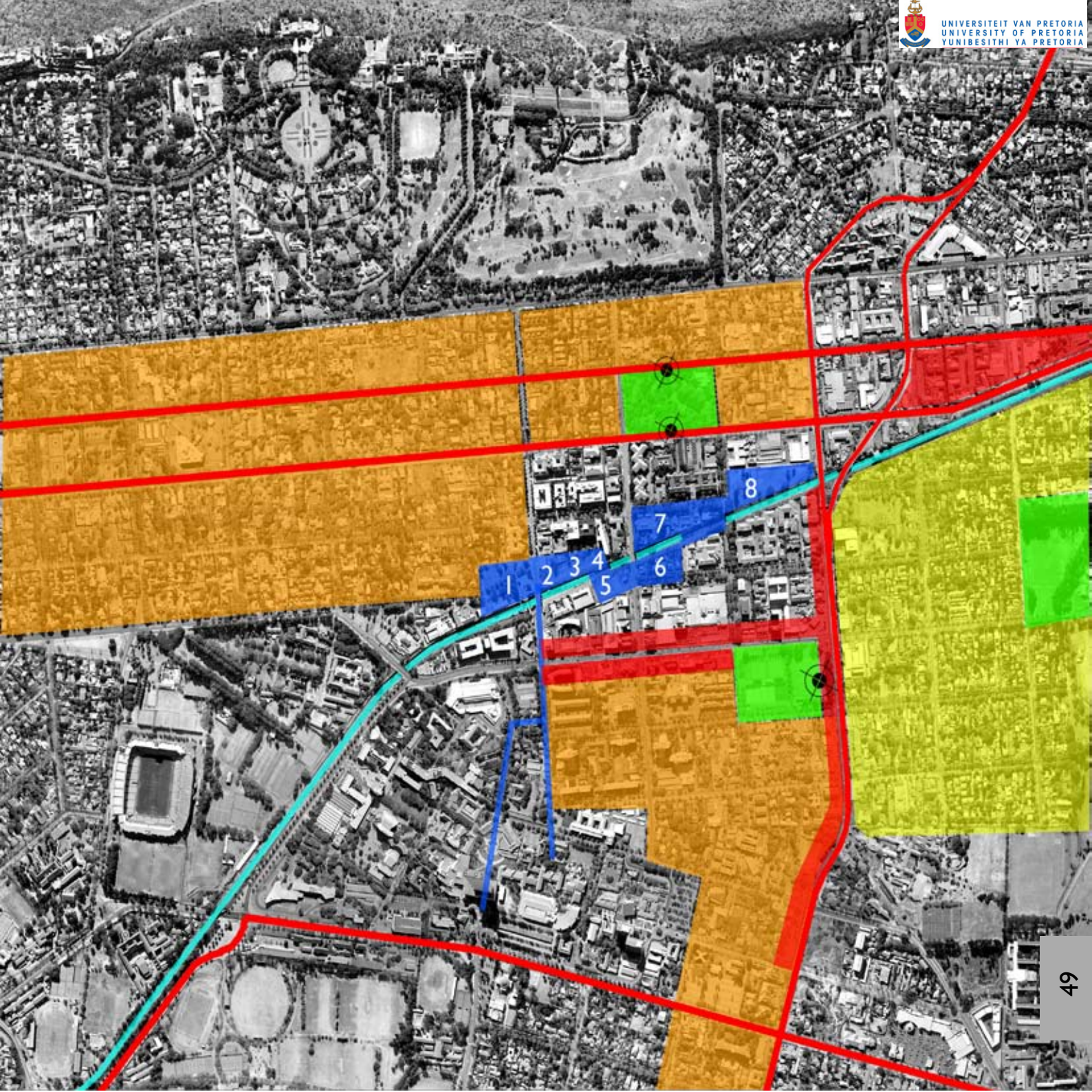
☐ Blue sector

This sector consists of the proposed projects with the aim of creating a vibrant activity spine connecting the Gautrain station with Rissik Station, stitching across the train track to connect the edges currently divided by the train track.

☐ Green Sector

The green sector rejuvenates the existing green spaces within the Hatfield area and proposes that public transportation interchange points be located along Duncan, Pretorius and Schoeman Streets, which will not only provide legibility for the users, but also renewed usage of existing green space.

FIG 2.10_Group framework implementation map


1
2
3
4
5
6
7
8

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Site scale

2 3 4 ARTS PRECINCT : VISUAL ART
PERFORMING ART
FASHION SCHOOL

5 COMMUNITY ENGAGEMENT

6 CULTURAL PRECINCT: AFRICAN EMBASSY

7 GAUTRAIN BUS DEPO

8 GAUTRAIN STATION

UNIVERSITY OF PRETORIA

BURNETT ACTIVITY

PROPOSED ACTIVITY NETWORK

METRO RAIL

ACTIVITY SPINE FROM CAMPUS

VEHICULAR CONNECTIONS

FIG 2.11_ Framework implementation on chosen site


Actvity spine from Gautrain statio
towards the Rissik station
Hilda Street
8
7
metro rail
4
3
6
5
Burnett street
Activity link from Burnett Street
through city Propperty
residential development

What makes a successful urban place ?

Abstract

There are no sure recipes or cookie-cutter solutions for creating a successful urban space. Each scenario must adhere to inherent spatial, contextual and cultural aspects in order to make the response unique and contextually responsive, therefore the right solution for a place; thriving urban space. However, there are characteristics present in every successful place that can be adapted to guide urban development, therefore laying the foundation for the constant process of humanity in transition.

7 guiding principles of successful places (CABE: 2006:5)

☐ Character – a sense of place and history (CABE:2006:5)

Character is how we distinguish one place from the next. It is about place-making (Manifesto for change, 1991:22). It reflects local culture, tradition and context. It establishes recognisable patterns through the use of natural features, distinctive landscapes, diverse spaces, and physical and psychological clues that are embedded in a spatial identity, the blueprint of that place. It enables environment, encapsulating timeless qualities in space.

☐ Continuity and enclosure – clarity of form (CABE: 2006:5)

What should be open and what should be closed? Who should have access and who should not? Good public space has a clear hierarchy and definition between public and private space. Positive urban environments require freedom and constraint, setting preconditions for activities and growth to occur (Manifesto for change, 1991:23). Deliberate/purposeful articulation of urban space therefore ensures the development of healthy ownership roles and public care. Definition should occur by means of buildings that define these spaces at a scale that responds to the character of the place and that feels comfortable on a human scale.

☐ Quality of public realm – sense of well-being and amenity (CABE: 2006:5)

The public realm is the zones of greatest interaction, and therefore the areas of greatest opportunity (Manifesto for change, 1991:17); it is the setting for the formation of social networks and public ties (Manifesto for change, 1991:18). These spaces usually have distinct and clear routes and a good sense of safety and security, provide equal access to public amenities, and are detailed with good lighting, urban greenery, street furniture and public art. These spaces are structured to respond and adapt to the needs of everyone.

☐ Ease of movement – connectivity and permeability (CABE: 2006:5)

Movement is vital in our daily ritual of life, for it is the method by which we get from one place to the next. Therefore, the urban fabric should be developed to improve ease of movement with a choice of safe, high-quality connector routes. Roads, footpaths and public spaces should be well connected and provide high accessibility to public transport systems.

☐ Legibility – ease of understanding (CABE: 2006:5)

Places should have focal points, landmarks, distinct views and gateways that act as points of reference, provide visual order and guide passage through space. Good articulation of built form, adequate lighting, signage and creative way-markers provide the basis for a good sense of direction and provide the clues needed to equip the user to navigate public space.

☐ Adaptability – ease of change (CABE: 2006:5)

Spaces that can only be used for a single purpose, remain empty most of the time. Therefore it is essential for spaces to have flexible uses, and to be adaptable to current and future spatial requirements. Adaptive re-use of buildings with historic value also improves the quality of the public realm and enhances the character and legibility of a space.

☐ Diversity – ease of choice (CABE: 2006:5)

Monotony is the enemy. Diversity increases the range of choices that people are exposed to (Manifesto for change, 1991:17). Places should be multifunctional and provide for a mix of compatible uses and programmes. These places should cater for diverse communities and cultures and offer a wide spectrum of activities and communal functions. Spaces that possess a healthy diversity of people, culture and architecture are the groundwork for positive social interaction and expression.

For the people……inclusive design!

☐ The principles of inclusive design

[They include you]

The necessity to design environments that include rather than exclude cannot be stressed adequately. Practitioners are all aware that built fabric should be designed with disabled users in mind, but as can be seen in current new interventions, this is rarely the case. As the heading explains, able-bodied humans should be included in inclusive design thinking when considering how un-legible urban space, public transport and urban signage have become.

[Good design is inclusive design -CABE, 2006:10]
All appropriate civic used buildings should be designed keeping a diverse spectrum of users in mind, aiming to include rather than exclude as a given and not a privileged necessity.

Inclusive design deliverables

☐ 5 inclusive design guidelines

1 Inclusive design places people at the heart of the design process. As an obvious first step, avoid steps. Replace them with a gentle incline between floors and add low windowsills for a better view. Wheelchair access should be the base level, not an optional extra. The same goes for pushchair access.

2 Inclusive design acknowledges diversity and difference. Ensure that doors are highly visible. Lay non-slip mats and make automatic doors the automatic choice.

3 Inclusive design offers choice where a single design solution cannot accommodate all users. An inclusive environment does not attempt to meet every need. By considering people's diversity, however, it can break down barriers and exclusion and will often achieve superior solutions that benefit everyone.

4 Inclusive design provides for flexibility in use. Meeting the principles of inclusive design requires an understanding of how the building or space will be used and who will use it. Places need to be designed so that they can adapt to changing uses and demands.

5 Inclusive design provides buildings and environments that are convenient and enjoyable to use for everyone. Ensuring this 'intellectual' and 'emotional' access means considering signage, lighting, visual contrast and materials. At the beginning of the design process it is important to analyse the transport patterns to and within a development. Roads, parking, walkways, building entrances and other routes should be considered. People's opportunity to use all elements within the site, including the inside of buildings, is crucial.


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Site analysis

The chosen site lies centrally located between the proposed new Gautrain station and the existing Rissik Station. No traces of any infrastructure on the site could be established. Maps found in the South African Archives indicate that the site has been vacant from as early as 1908. Surrounding infrastructure, including the Mozambican café, was occupied during the 1920s. Currently the site is owned by the property portfolio company of the South African Railway called Intersite. To date, no development plans are on the table for this piece of vacant land, but Intersite did inform me that they are currently researching interventions abroad that address the same problems of vacant land next to the railway track. The possibility of stitching across the railway track was also mentioned as part of the initial concept enquiring into solutions for the spatial divide created by the railway track.

Currently the site is in dire need of rejuvenation and forms a problematic slum area, encouraging unauthorised squatting within the Hatfield development core deducting from the already poorly divined urbanity. As was previously indicated on the cross section, the scale of the existing built fabric slopes down from both sides towards the site, creating the atmosphere of an urban amphitheatre, with surrounding buildings looking down onto the piece of land. This opens up the possibility of developing this piece of land as a vibrant destination space within the built fabric.

However the railway track creates a spatial divide, hindering efficient use and spatial continuity of the site due to the immense insertion into the typography. Before any informed design responses can be generated, it is important to understand the existing scale, architectural language and surrounding land uses. The following pages address these issues, pre-empting the proposed design responses for the site.

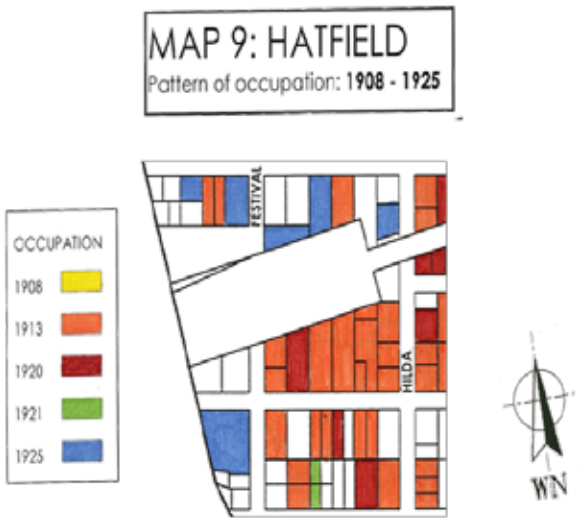

FIG 2.12_ Photographic orientation diagram

FIG 2.13_ Historical site occupancy map

FIG 2.14_ Site panorama taken from City Property development

FIG 2.16_ Site panorama taken from Damlin

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FIG 2.15_ Site panorama taken from Festival Bridge

These photos taken on the site clearly indicates the dilapidated nature of the site. At the time of these photos the site was used to dump building rubble and to provide for construction worker residencies working on the city property development. The internal courtyard behind the Mosambiquan café is used as a waste paper disposal depot and for informal agriculture. Within the scope of the proposed Hatfield development methodology these areas does not contribute to the sense of place of the area and needs drastic intervention to uplift and regenerate the area. These areas, if left unchanged, will encourage unauthorized squatting becoming a health and safety risk and stimulate criminal activities within the area. The challenge is to develop the site as a destination place within Hatfield, while positively contributing to the surrounding areas so that the enhanced energy generated by the site users can create a means of passive surveillance allowing for a safe urban environment. C

FIG 2.19_ Panoramic view from site towards gym

FIG 2.17_ Site used as construction worker informal residency

FIG 2.18_ Current state of site


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Surrounding building use

a RISSIK STATION

b MOZAMBIQUE CAFE

c DILAPIDATED HOUSE

d STORE ROOM

e TELKOM

f MOTORCYCLE RENTALS

g FLATS

h OFFICES AND RETAIL

i TWO LEVEL PARKING

j FLATS

k FLATS

l JAZZ BAR

m VERGIN ACVTIVE GYM

n DAMELIN

o FIELD 15 FLATS

p BURNFIELD HOTEL

q CITY PROPERTY FLATS

r ABSA BANK BUILDING

FIG 2.20_Surrounding building use distribution


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Existing fabric

The existing fabric ranges from recently completed projects such as the City Property residential apartments completed in 2008 to buildings dating back to the 1920s, such as the Mozambique café erected in 1925. For any new proposed development to become routed within its context it is important that the surrounding architectural language be understood.

The surrounding context thus contains a range of architectural eras, from early modern expressions to post-modern architecture. No scale correlation between neighbouring buildings can be established with single-level buildings next to multi-storey apartment and office blocks. The experience on a human scale becomes problematic in such a context, with varying degrees of public to private hierarchies. This lack of architectural continuity results in architectural space definition that is not easily readable by the public.

Although no continuity on the basis of scale can be established, the materiality of these surrounding buildings does display a strong similarity. The architectural tectonic of face brick combined with exposed concrete structures forms the bulk of the context materiality employed. This is identifiable regardless of the era in which the building was erected. Although, as was mentioned before, no scale continuity can be established in the surrounding buildings, I do believe that the materiality of these creates a specific character for the site. Some people might argue that this language developed due to the availability and cost-efficiency of these materials, which I agree to, but I feel that regardless of availability and cost implications, this language is rooted in the Pretoria context.

The question now remains how we create an architectural language in an era of immense development boom responding to a contemporary architectural era, but at the same time rooted in the surrounding context.

These photos taken on the site clearly indicate the dilapidated nature of the site. At the time of these photos the site was used to dump building rubble and to provide a place to stay for construction workers working on the city property development. The internal courtyard behind the Mozambique café was used as a waste paper disposal depot and for informal agriculture. Within the scope of the proposed Hatfield development methodology these areas do not contribute to the sense of place of the area and drastic intervention is needed to uplift and regenerate the area. These areas, if left unchanged, will encourage unauthorised squatting, which can become a health and safety risk and stimulate criminal activities within the area. The challenge is to develop the site as a destination place within Hatfield, while positively contributing to the surrounding areas so that the enhanced energy generated by the site users can create a means of passive surveillance, allowing for a safe urban environment.

FIG 2.21_Photographic orientation diagram

FIG 2.22_Current development on Burnett street

FIG 2.23_Surrounding building materiality

FIG 2.24_Current state of Mozambique cafe

1	City Propperty appartments
2	Vergin Active Gym
3	ABSA Bank building
4	Mozambique café
5	Rissik Station

FIG 2.25_Surrounding materiality

FIG 2.26_Historical important landmark

FIG 2.27_Surrounding building materiality

FIG 2.28_Scale of recently completed residential block

6	Telkom Services
7	Appartments
8	Office building
9	Motorcycle rentals
10	City Property development

FIG 2.29_Traditional face brick tectonics

FIG 2.30_Surrounding building use

FIG 2.31_Building forms backdrop to our site, basement parking entrance

Chapter

This chapter deals with the design development of the project. It initiates the development process, illustrating the urban development done for our portion of the urban scheme, comprising three projects. Our site design is generated from a terminology called START. Within the scope of our site it stands for social transition through art. This synergy between the other creative disciplines, including visual, performance and fashion, has plays a vital role in the sense of place envisaged for the site. The chosen project for my discourse is located centrally on the activity space and can be called a performing arts laboratory, urbanely functioning as the events building, highlighting the various facets involved within the performing arts industry.

The development then illustrates the process followed for my specific project, highlighting the important design parameters and influences that have resulted in an architectural tectonic. The following chapters build upon these ideas and collectively form part of the design development. A selection of development material done until the June examination has been illustrated within this chapter.

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start

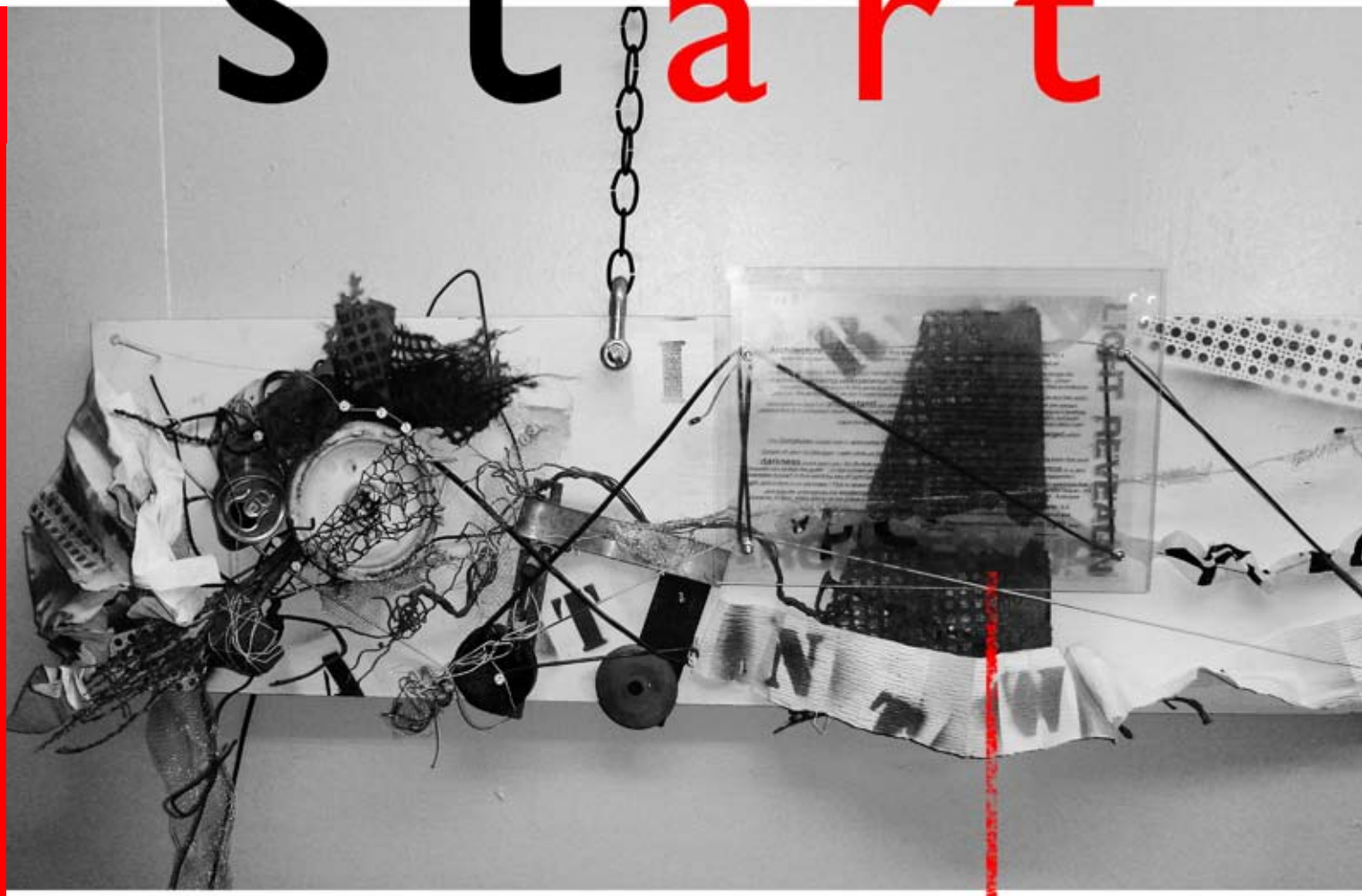
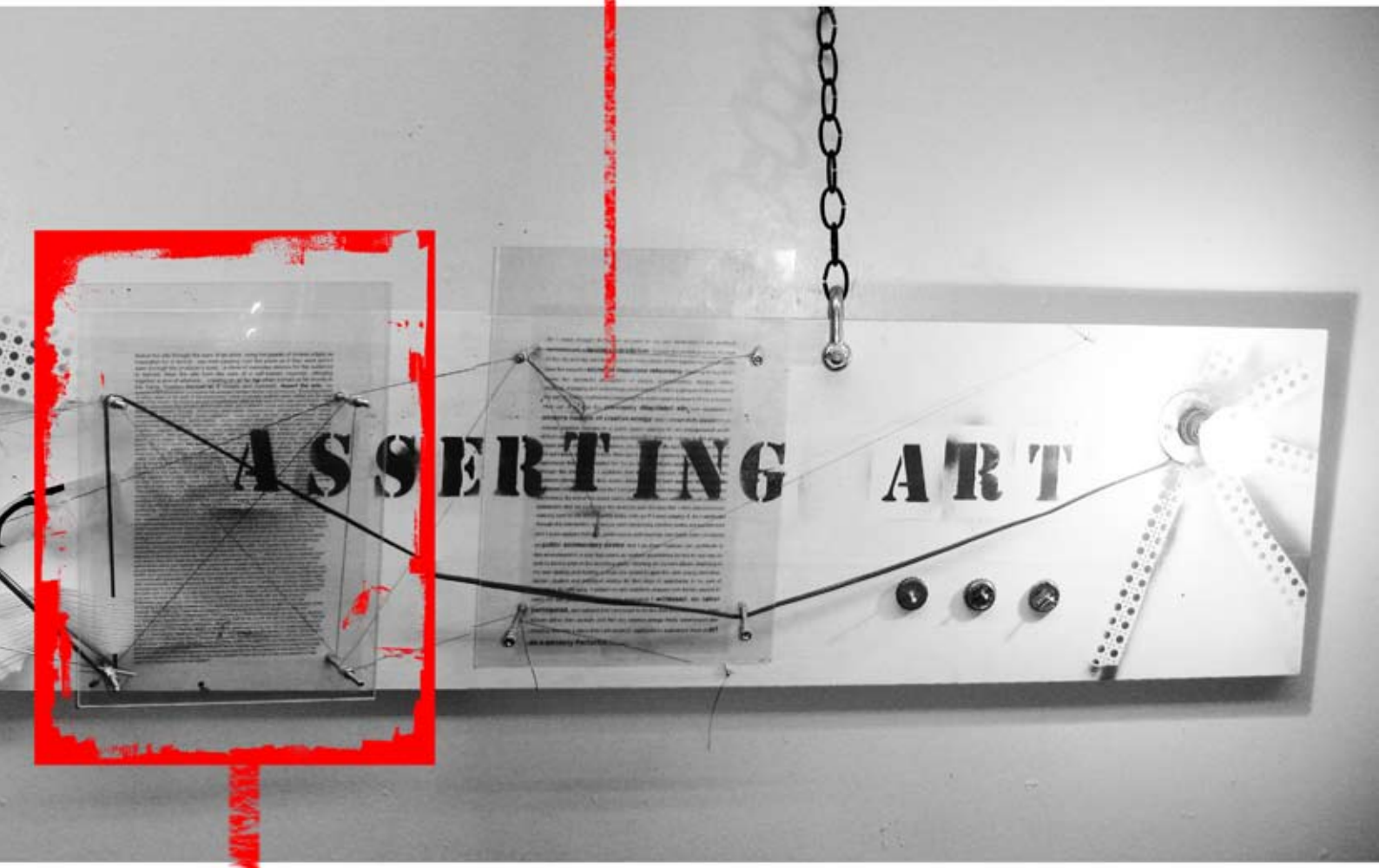


FIG 3.1_Touch stone project collectively designed to indicate interdependencies of the arts within an urban context

visual art

per

fashion



forming art

FIG 3.2_Laptop plug-in incorporated in furniture

FIG 3.3_Urban performance space, Federation Square Melbourne, Australia by LAB Architecture Studio

FIG 3.6_Sense of place enhanced by digital media

FIG 3.7_Urban identity enhanced by digital clock, The roppongi Hills Project

FIG 3.4_Urban activity friendly design, Chasse Terrein,Breda, The Netherlands by West 8 landscape Architects

FIG 3.5_Approprately scaled street furniture relates to space scale

FIG 3.8_Fabric stitched together by articulation of in-between spaces

FIG 3.9_Urban activity encourages in controlled environment

The initial idea explored in the spatial arrangement of the proposed interventions responded to the existing urban grid imposed onto the site by the railway track. The existing built fabric adjacent to the railway track follows this urban grid, thus our urban approach explored the idea of placing the new interventions in such a way that the urban activity space occurs behind the proposed built fabric.

Spatially this approach accentuates the divide that the railway track imposes onto the spatiality of the site.

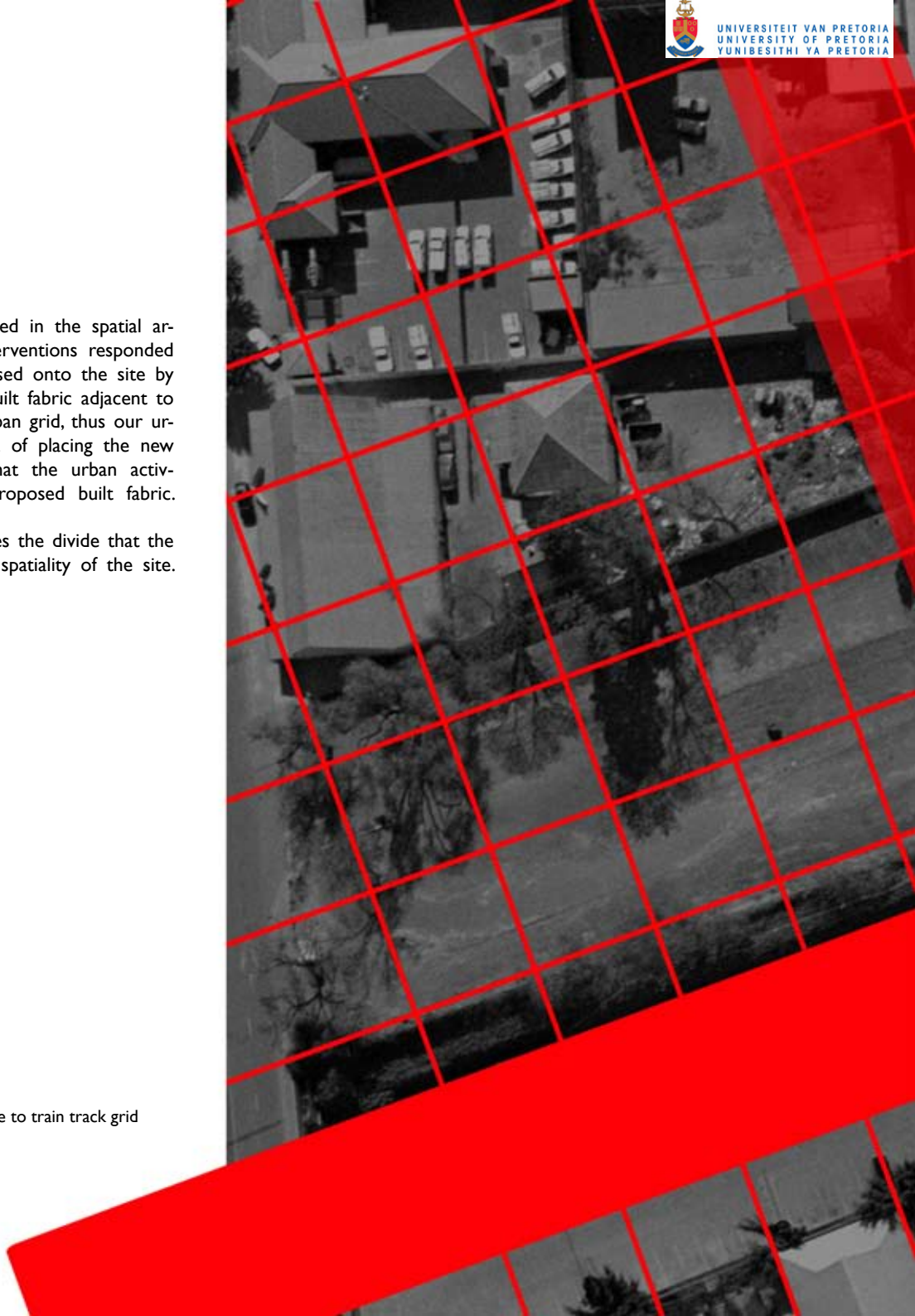


FIG 3.10_Innitial response to train track grid

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METRO RAIL

As part of the design process, the placement of the primary urban space behind the new intervention contradicted the idea to stitch across the site.

Spatially the urban activity space, if placed next to the railway track, allowed for the proposed interventions to hold the space at the end of the site.

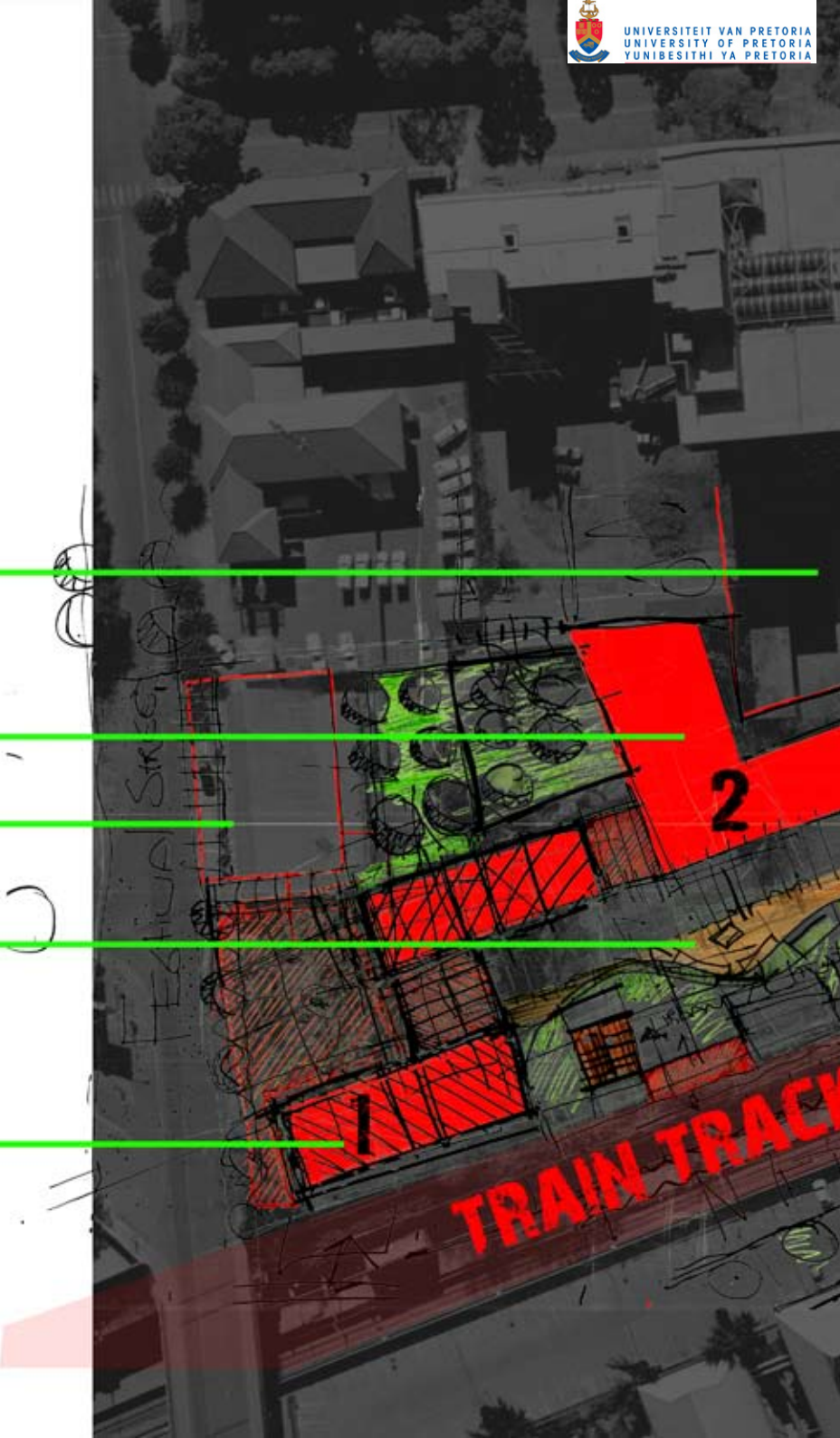
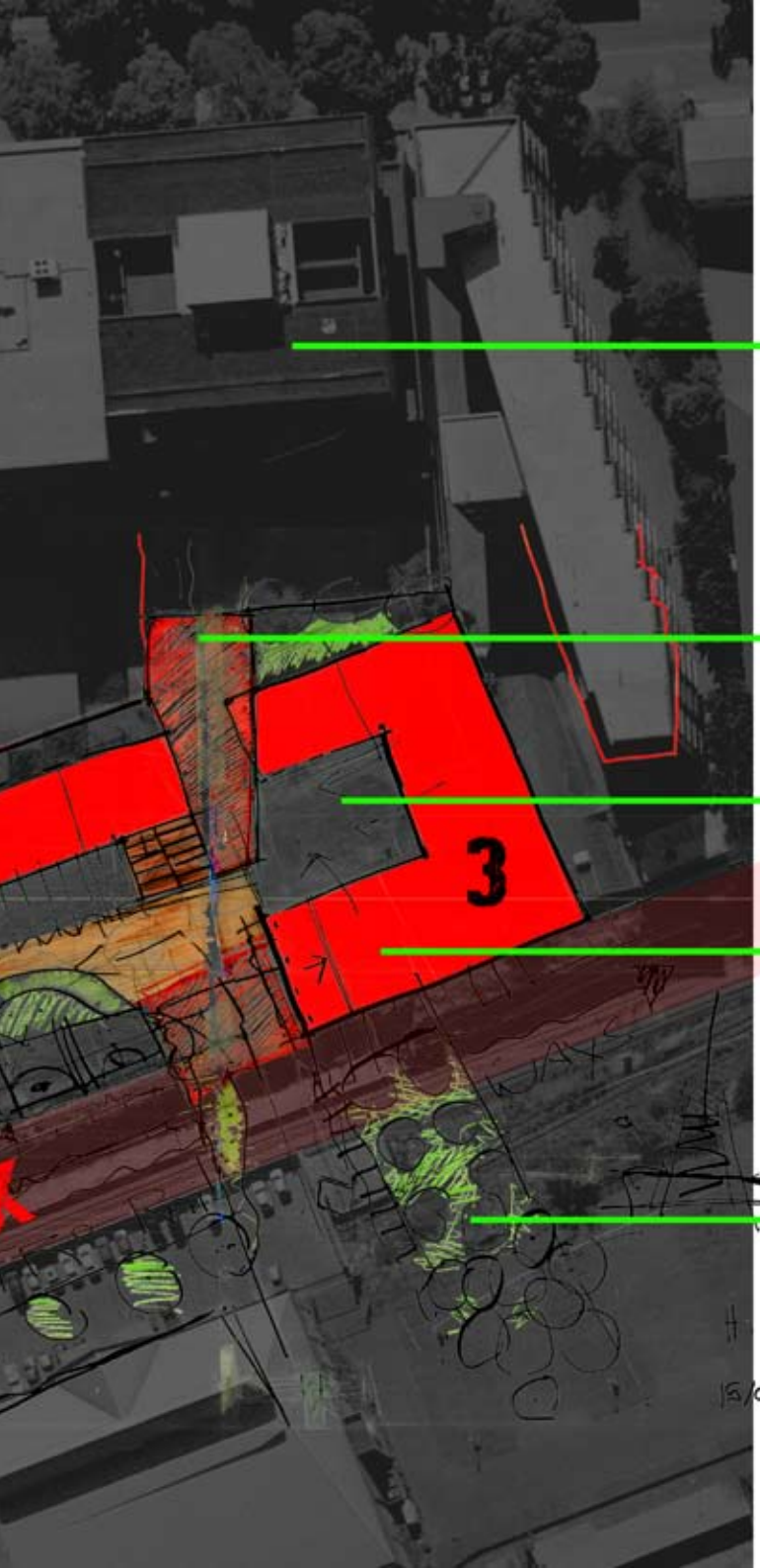


FIG 3.11_Innitial design sketches done for site



EXISTING BUILT FABRIC NOT RESPONDING TO TRAIN TRACK GRID

ACCESS TO PROPOSED BASEMENT FROM ARCADIA STREET

INTERNAL SEMI PUBLIC SPACE TERMINATING AT PROPOSED INTERVENTION

INTERVENTION PLACED ON TRAIN TRACK CREATING SPATIAL PERIPHERY TO URBAN ACTIVITY SPACE ALLOWING FOR URBAN EDGE TO TERMINATE

URBAN GREEN SPACE NEXT TO TRACK

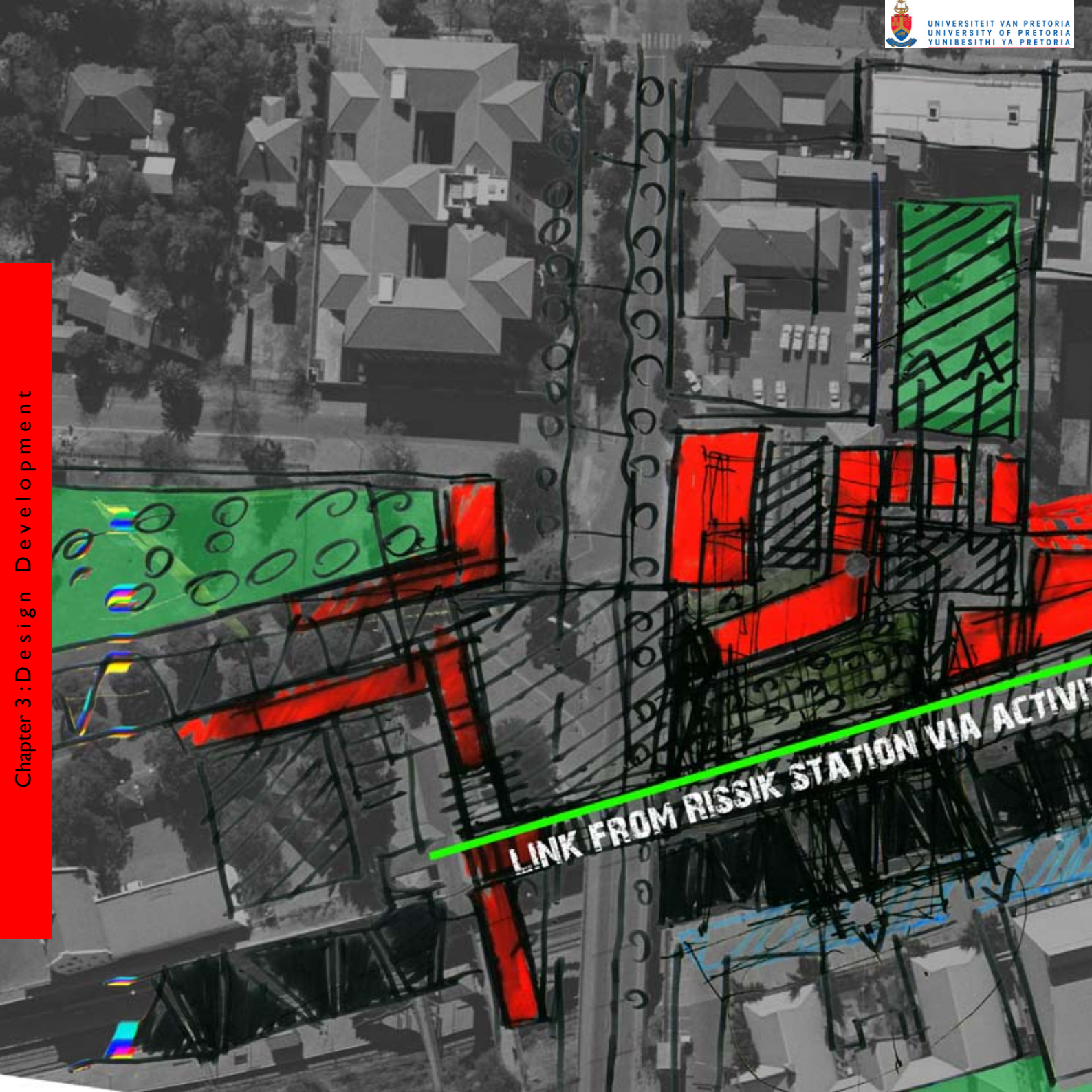


FIG 3.12_Spatial design of larger framework

The second approach responds to the existing fabric grid due to the fact that the initial response allowed for the divide, created by the railway track, to extend into the existing urban fabric, contradicting the orientation thereof. Spatially the urban space responds to the railway track grid while newly proposed interventions relate to the existing urban grid. Due to the site size and placement of the tree interventions, the spaces between each intervention become an important spatial connector.

The synergy between the programmatic responses allows for the interventions to partly share functions and for users to mediate between buildings. All three interventions relate to the creative industry and collectively articulate the urban activity space through visual art, performance art and fashion.

FIG 3.13_Second design implementation responds to both grids

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FIG 3.14_Spatial design development sketch

INTERNAL SPACE BETWEEN MY BUILDING AND THE EXISTING PARKING

SPATIAL EDGE TERMINATING AGAINST EXISTING FABRIC

SEMI PUBLIC SPACE LINKING TO INTERNAL SPACE OF PERFORMING ARTS LAB

FASHION SCHOOL
CIRINE STEGMAN

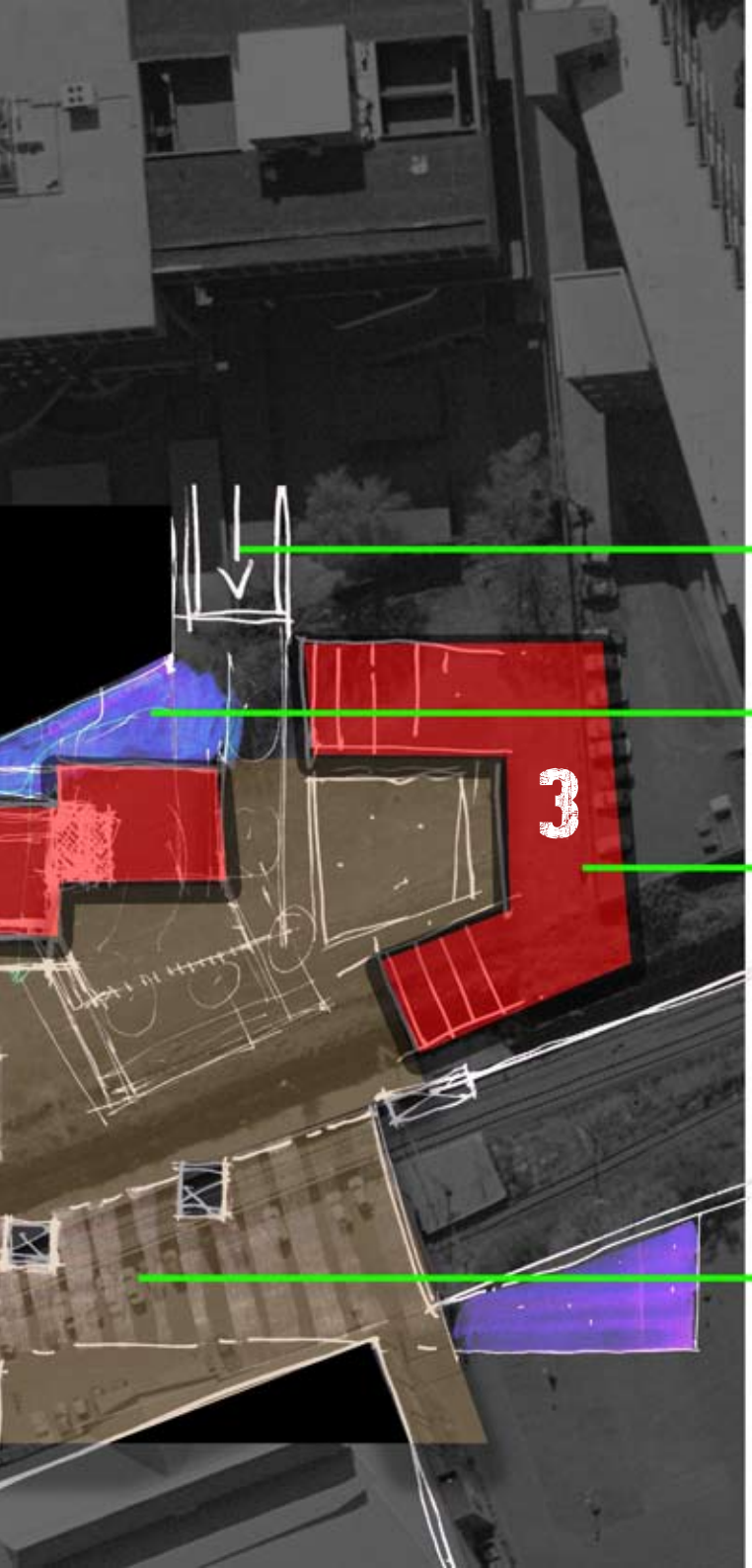
TRANSITION SPACE BETWEEN PERFORMING ARTS LAB AND FASHION SCHOOL

PERFORMING ARTS LAB
SERVAAS DE KOCK

FIG 3.15_Elementry building massing diagram

On our portion of the site three spatial arrangements were given for three proposed interventions, with the common denominator being that the placement of these building had a specific urban responsibility to play onto the designed public urban activity space. These arrangements allowed for a series of semi-public and private spaces to be articulated behind and between the buildings.

The chosen location for my building required that the proposed intervention create a series of public events onto the urban realm due to the central location on the activity space. Spatially the building had to link activities from the other two interventions and guide the user into the spaces between interventions.



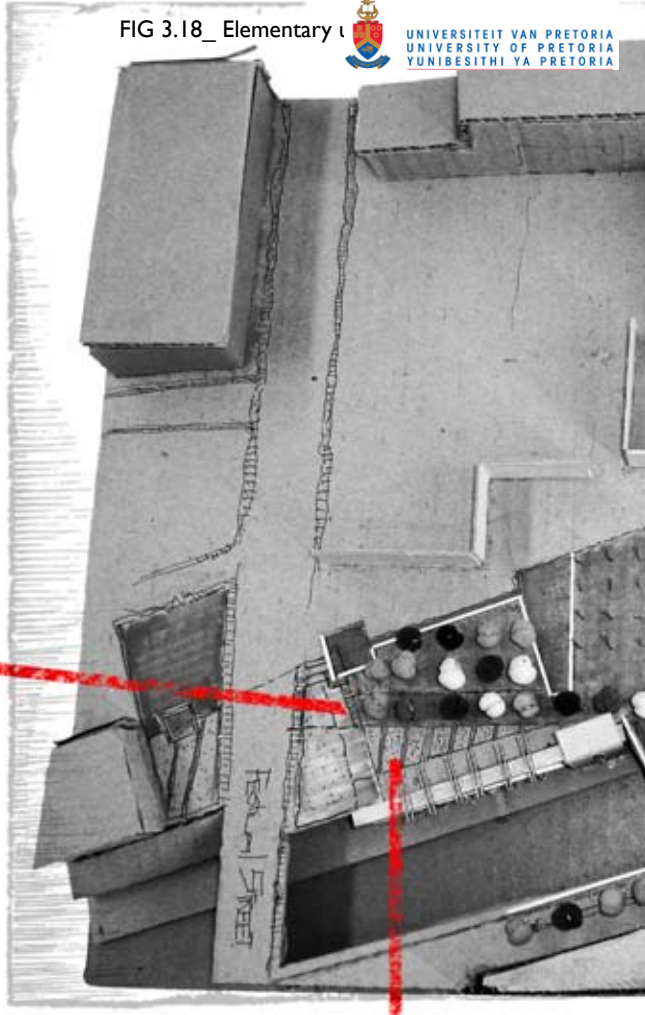
HISTORICAL ACCESS FROM ARCADIA STREET REINSTATED TO FORM VEHICULAR ACCESS TO BASEMENT PARKING

INTERNAL SPACE BETWEEN MY BUILDING AND THE EXISTING PARKING

FASHION SCHOOL BY CURINE STEGMAN

LINK ACROSS TRAIN TRACK

FIG 3.18_ Elementary u



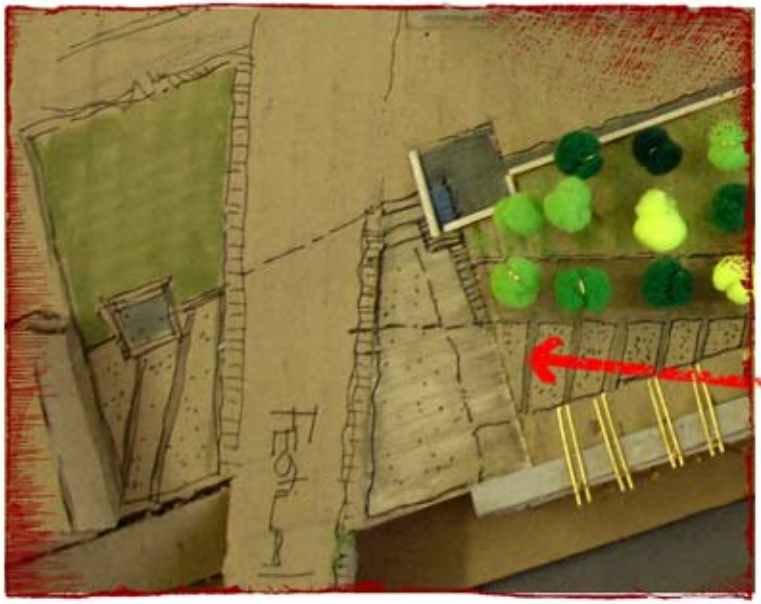
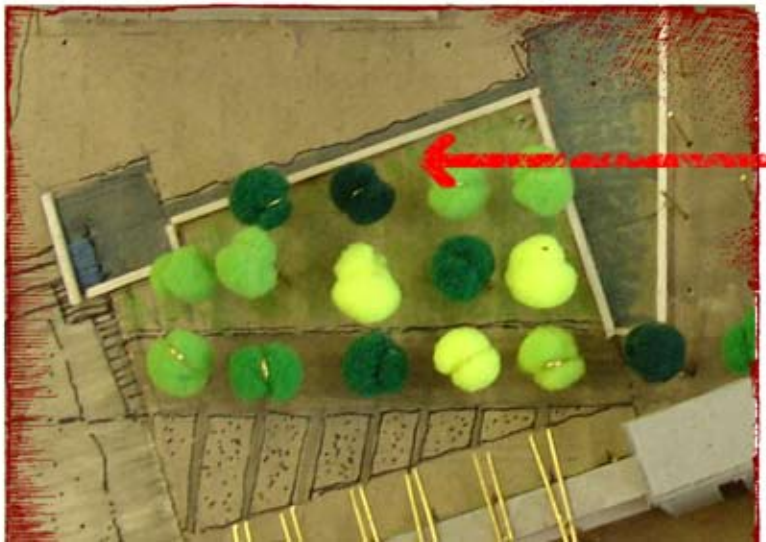


FIG 3.16_ Urban green pocket across the bridge connecting to proposed urban space at Rissik station intervention

FIG 3.17_ First point of orientation when vertical site circulations are used



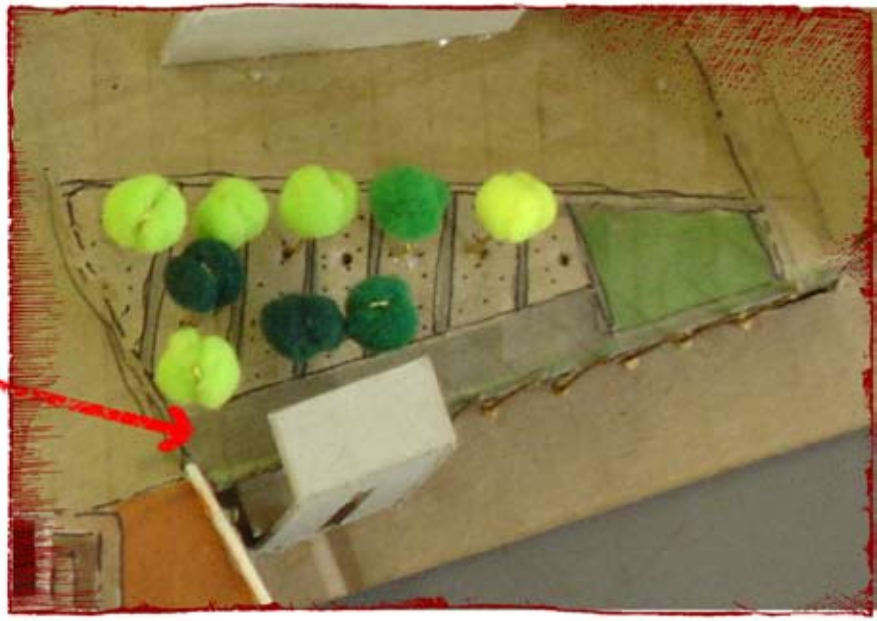


FIG 3.19_ Urban green pocket in front of fashion school

FIG 3.20_ Public transition space between urban activity zone and community engagement intervention

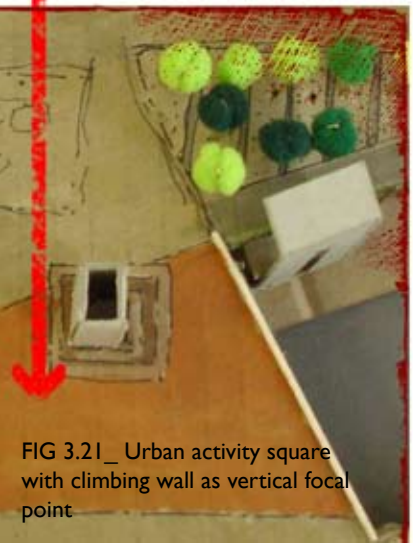
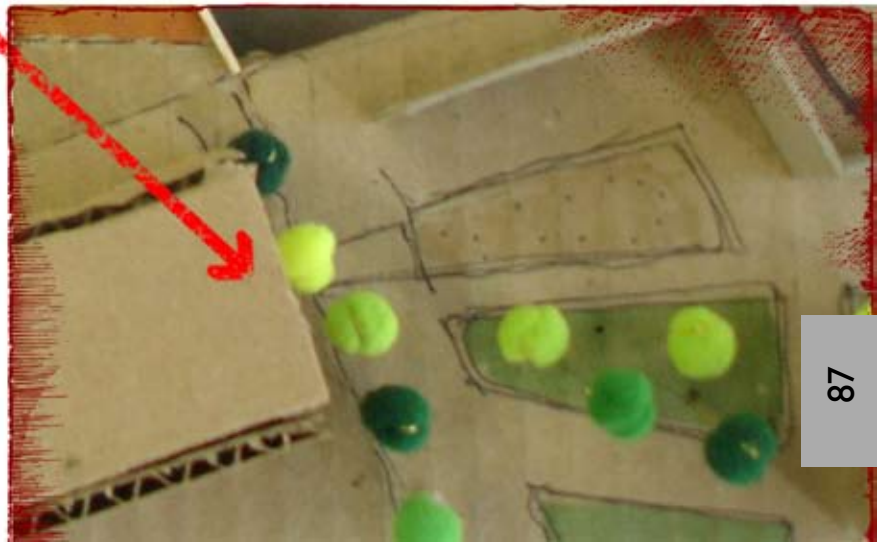
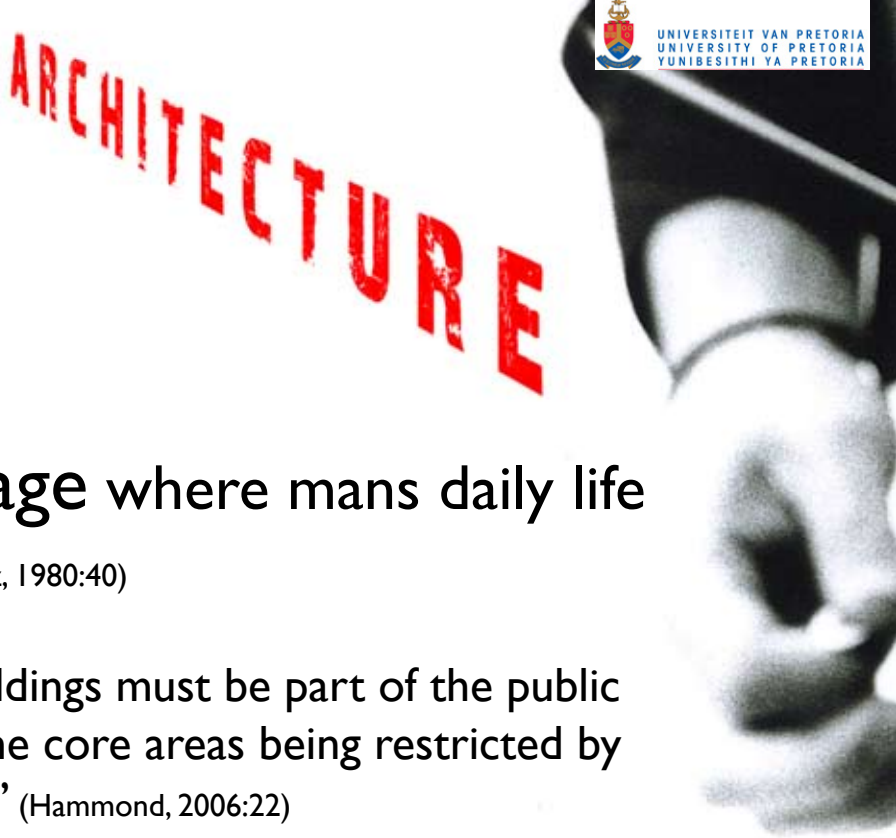


FIG 3.21_ Urban activity square with climbing wall as vertical focal point





"The earth is the **stage** where mans daily life takes place" (Norberg-Schulz, 1980:40)

"The new generation of buildings must be part of the public realm with access to only the core areas being restricted by the requirement of a ticket." (Hammond, 2006:22)

"The building must create an experience and a sense of place for its increasingly demanding" audience" (Hammond, 2006:24)

"Space is not read but experienced by means of the body which walks, smells, tastes and in short lives a space."
Henri Lefebvre (Wiles, 2003:10)

FIG 3.22_ Photo of author

Conceptual approach

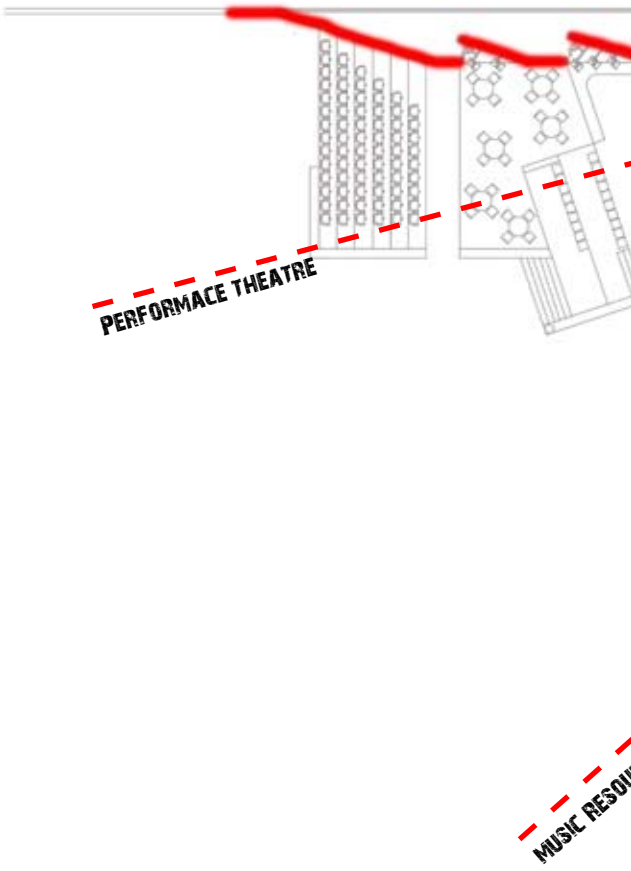
The architectural concept explored throughout the design can be summarised as architecture as a sensory conductor.

This notion can be explained on various scales.

1. On an urban scale the role of the building, due to its urban function and placement on the public space, is to conduct a series of events on the central public space.

2. On a programmatic building scale the role of the intervention is to make the user aware of the various facets of the performing arts industry and the processes involved in becoming a professional artist. Its location on a public activity space provides the opportunity for users to venture through the intervention and to experience these various facets for themselves as part of the public realm.

These two aspects of the concept are manifested through the skin of the building which creates, orientates, guides and articulates these experiences.



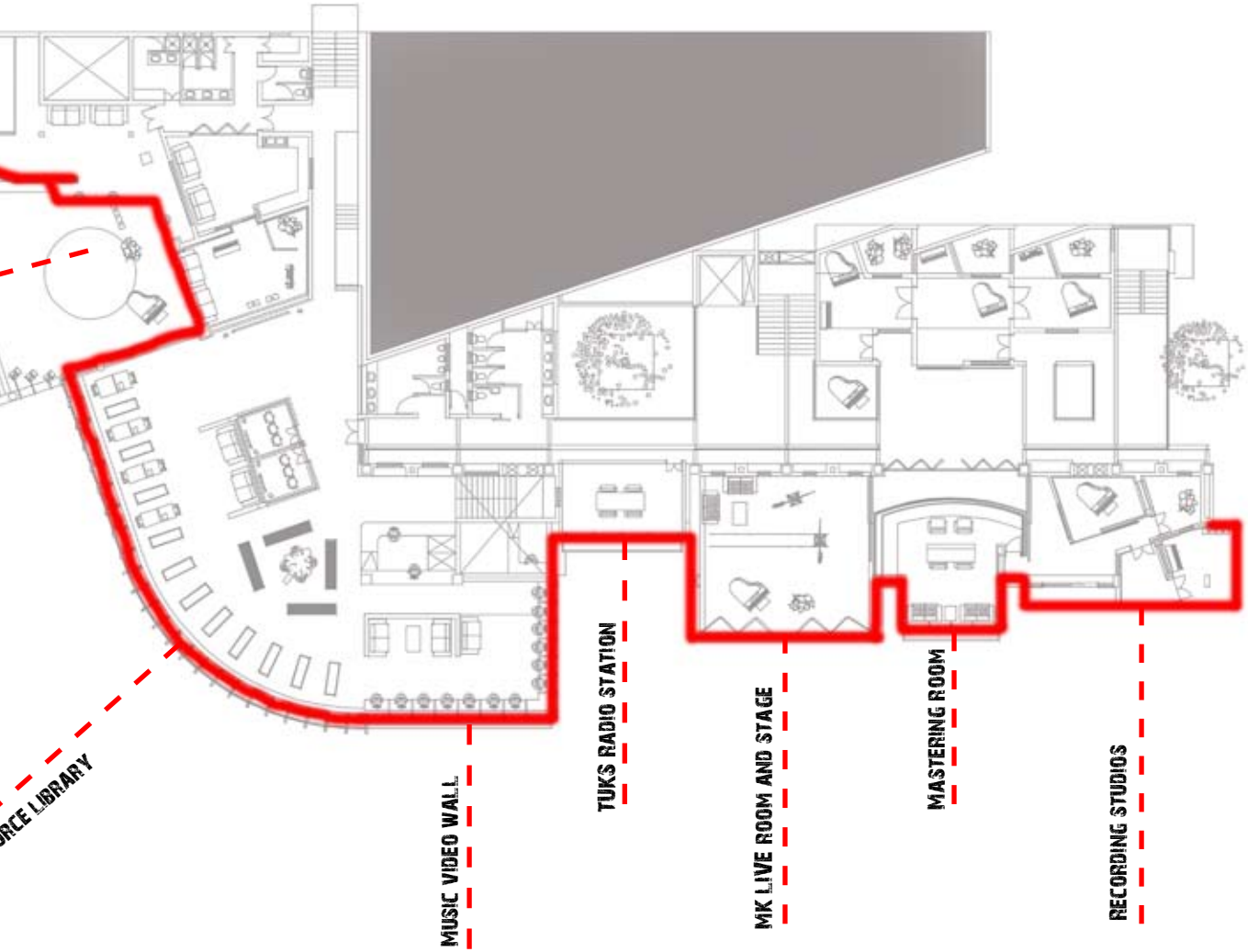
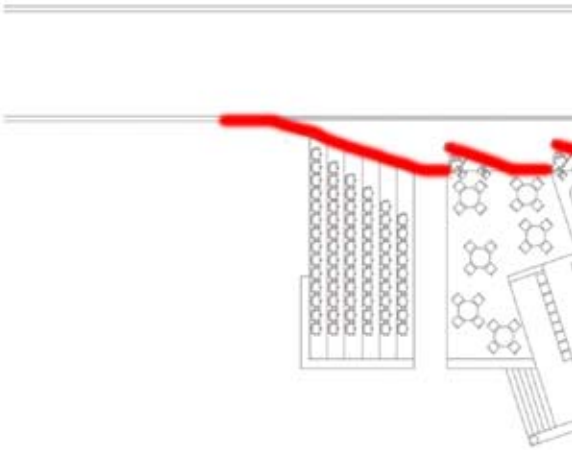


FIG 3.23_Layout diagram highlighting skin articulation on plan

Planning



Robert Venturi writes "The wall is the divide between the outside and the inside" (A. Sestini, il paesaggio. Milano, p. 92).

Within the scope of this project the walls are programmatically and tectonically expressed as the divide between the final product on the outside and production in progress on the inside.

The outside experience is created by the skin and creates the public experiences on the space, which includes the final marketable product. However, behind the scenes, articulated by the wall, the inside experience reveals the various processes involved in achieving the final marketable product. Spatially the outside is part of a vibrant activity space, while the inside space is experienced as a semi-private internal space providing a moment away from the rush of urban living, stimulating a sensory experience. The circulation becomes the conducting element and is separated from the wall, which allows the public to be part of the processes involved, but also allows enough privacy so that these processes can continue without disturbance. As part of the philosophical approach the connectivity between the internal space and the external space is important. Therefore the circulation is part of the internal courtyard, allowing for an outside experience before entering through the wall into the internal spaces.

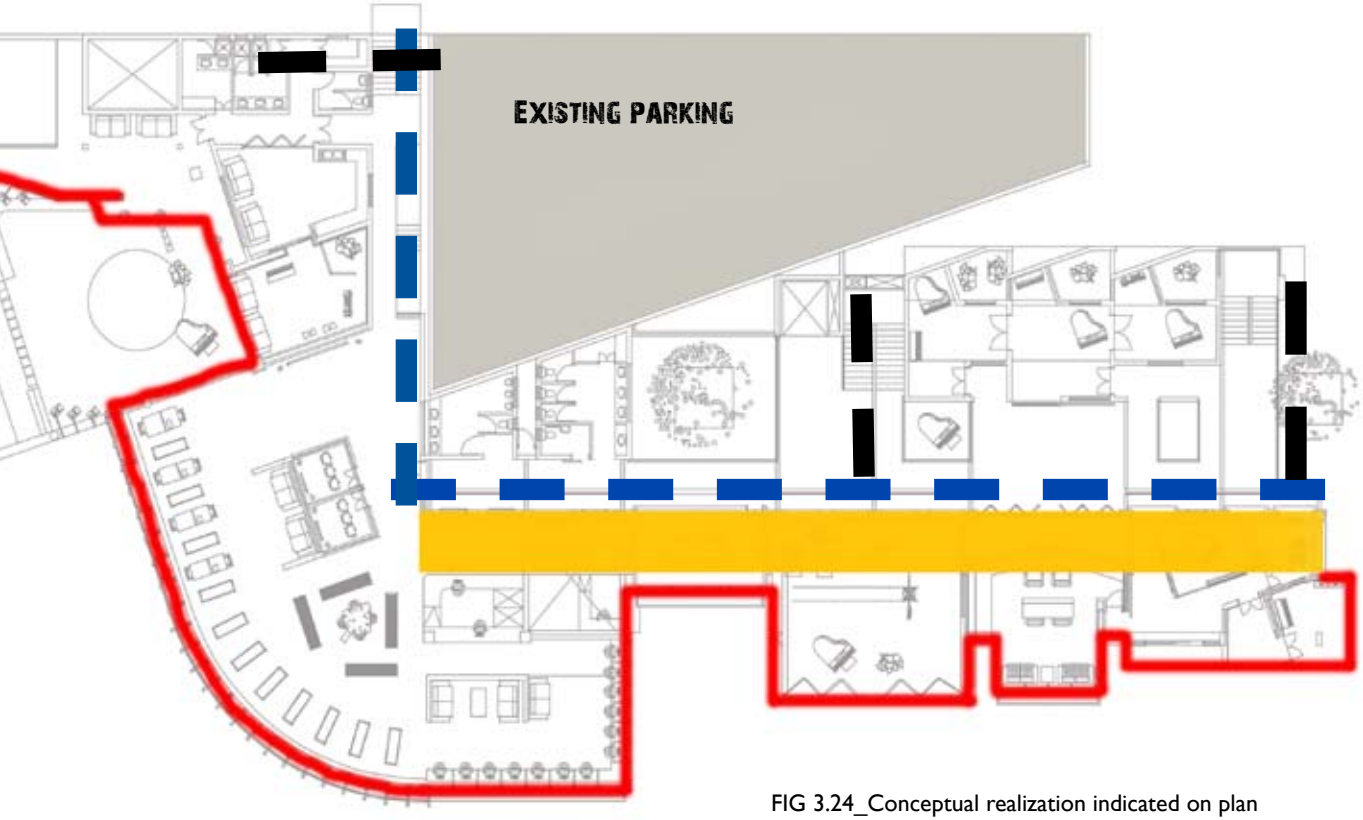


FIG 3.24_Conceptual realization indicated on plan

THE WALL

THE SKIN

CONDUCTOR CIRCULATION

VERTICAL CIRCULATION

Design process

Due to the chosen location on site, the primary concerns explored within the initial design sketches enquired into how the building should wrap around the existing parking, while at the same time guiding people into the transition spaces between the other two buildings. The geometry of the design had to respond to the urban grid and the train grid. Spatially the building becomes a permeable edge guiding urban activity to filter into and between the visual art workshop and fashion school. Programmatically the building is responsible for producing public events relating to the performing arts industry on the urban realm.

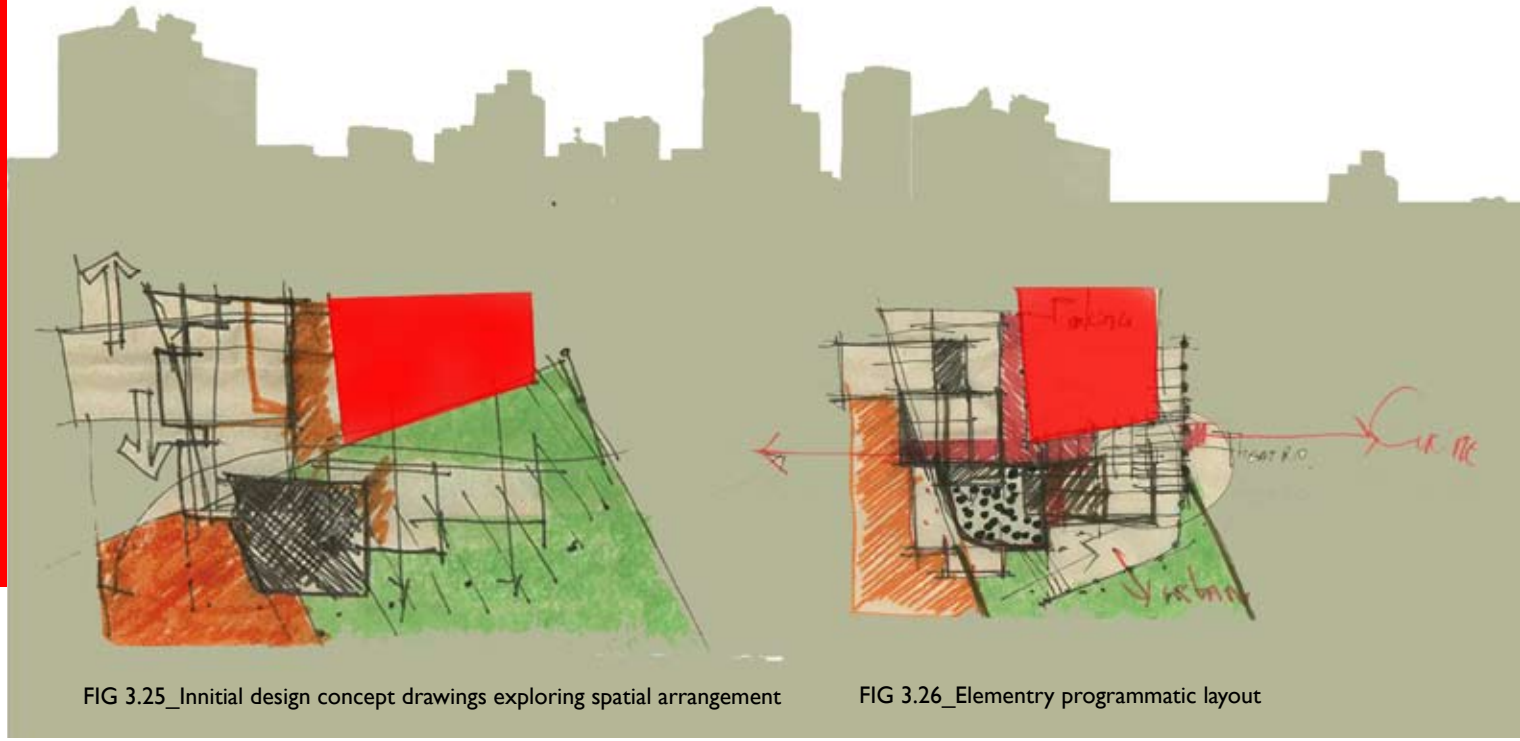


FIG 3.25_Innitial design concept drawings exploring spatial arrangement

FIG 3.26_Elementry programmatic layout

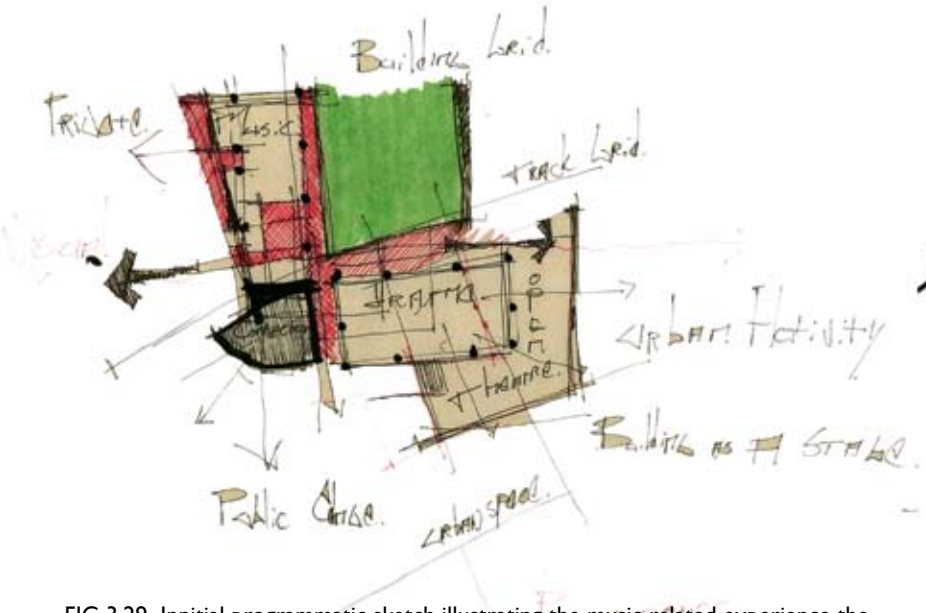


FIG 3.29_Innitial programmatic sketch illustrating the music related experience the building needs to portray to provide insight into the processes involved within the performance industry

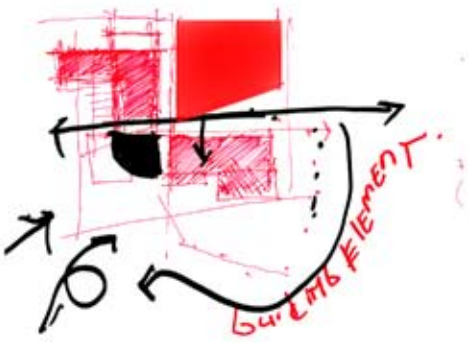


FIG 3.30_First conceptual sketch illustrating the skin as the sensory guiding element folding around the public interface

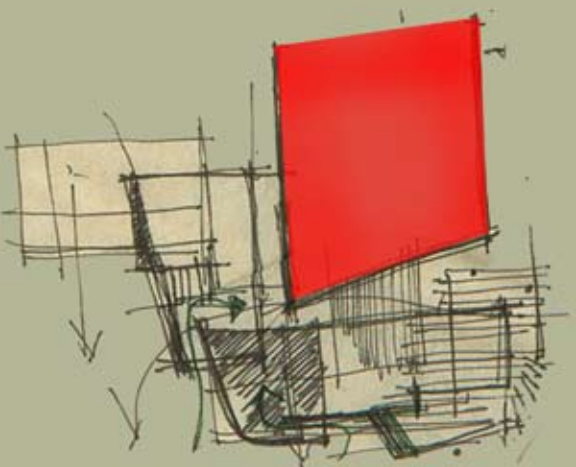


FIG 3.27_Spatial sketch exploring public circulation route

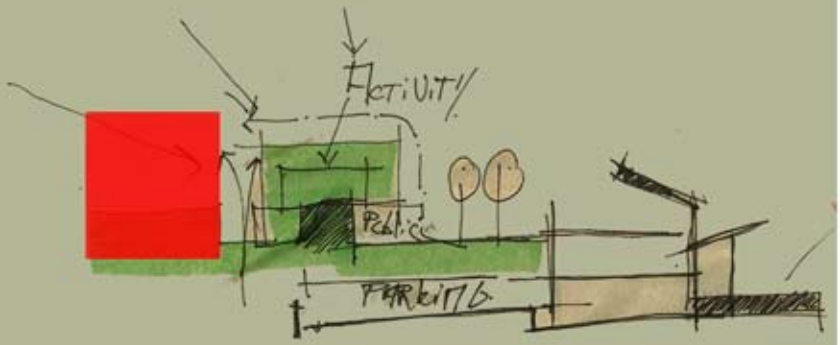


FIG 3.28_Innitial sectional exploration enquiring into how the permeable skin can create the visual experiences onto the urban space

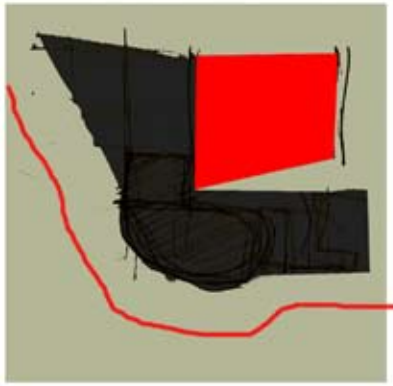


FIG 3.31_Conceptual development diagram

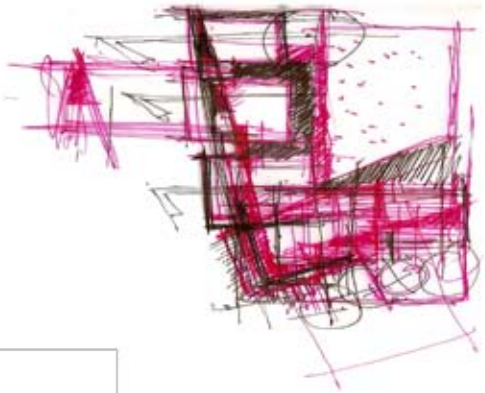


FIG 3.32_Design diagram exploring the corner articulation which needs to draw people in between buildings

FIG 3.33_Circulation

FIG 3.34_Concept model 1

exploration on first floor

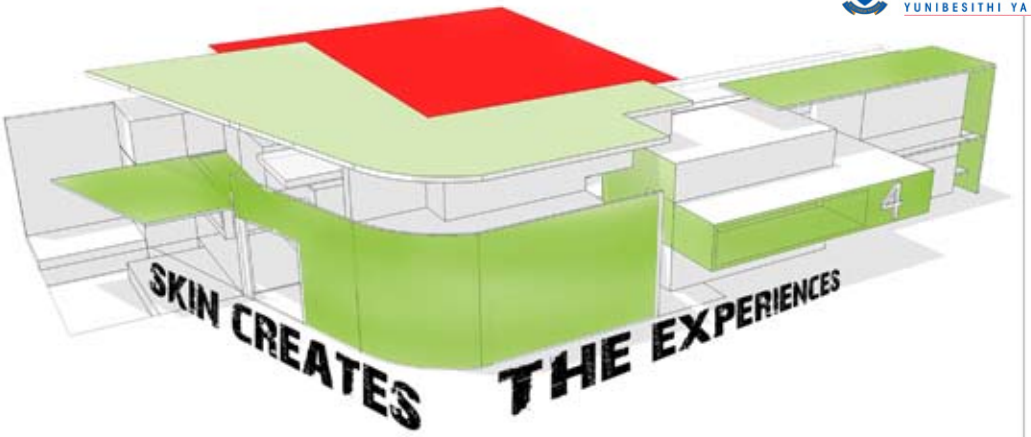


FIG 3.35_Elementry 3 Dimensional model 1 exploring skin articulation

The skin of the building folds and wraps to create the various spatial articulations on the front façade. The idea that the skin should fold up and then become the roof was explored at this stage of the development. The tectonic skin plays off against the stereotonic wall.

FIG 3.36_Conceptual diagram exploring building entrance and circulation network

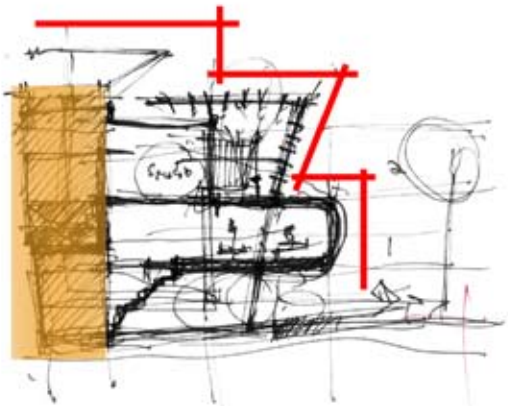
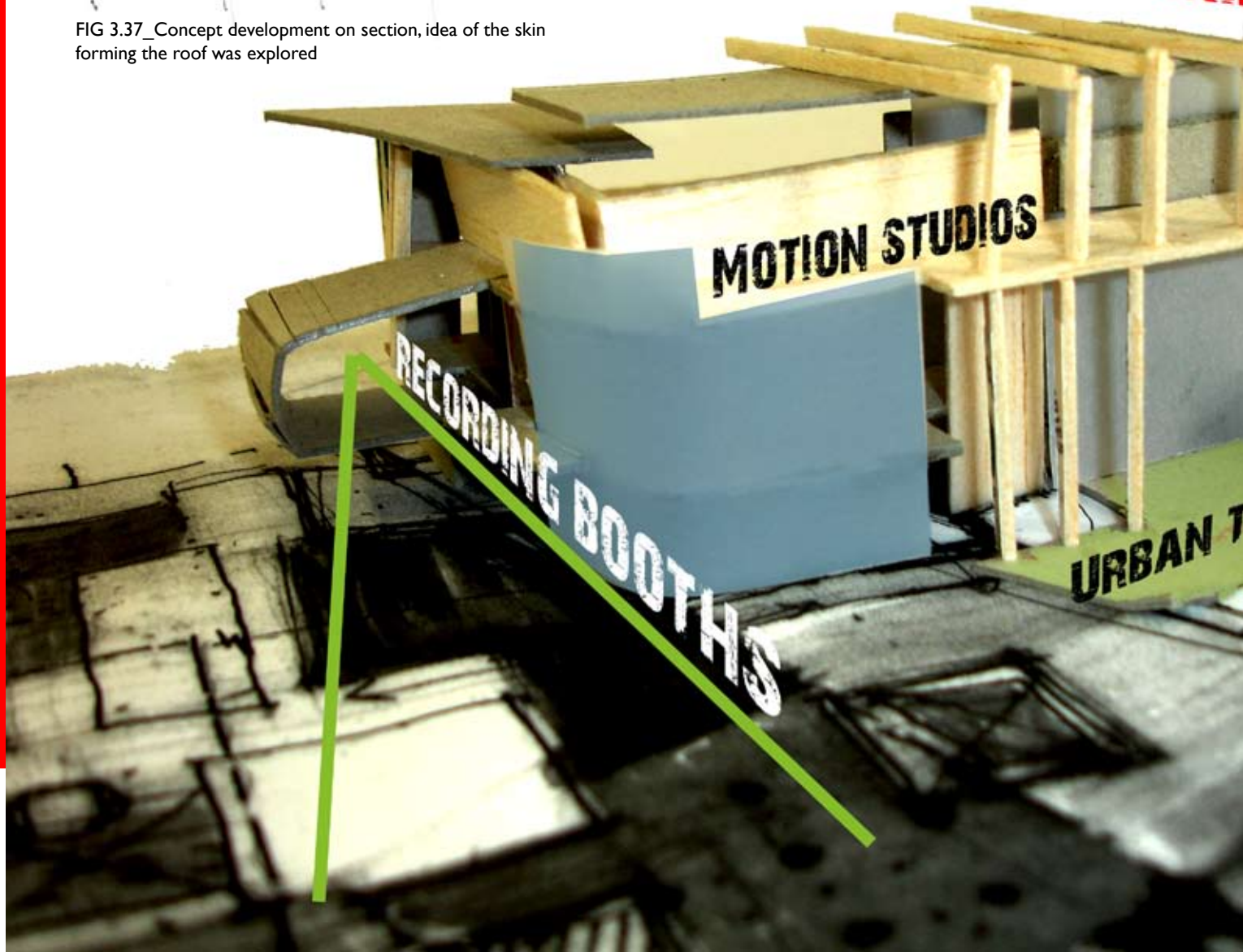


FIG 3.37_Concept development on section, idea of the skin forming the roof was explored

FIG 3.38_Sectional exploration indicating the external visu contrast to the internal multi sensory experience



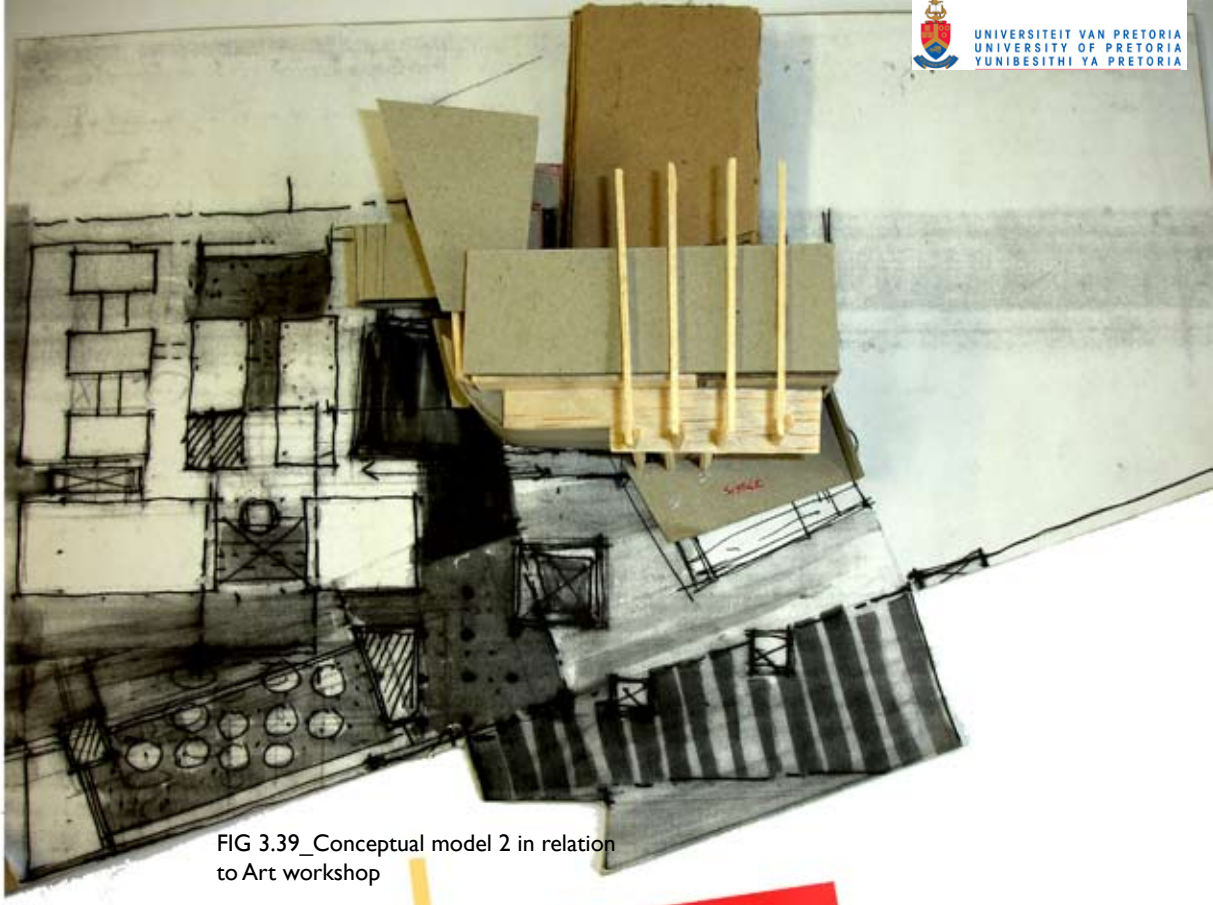


FIG 3.39_Conceptual model 2 in relation to Art workshop

FIG 3.41_Concept model 2

FIG 3.40_Diagram indicating circulation network

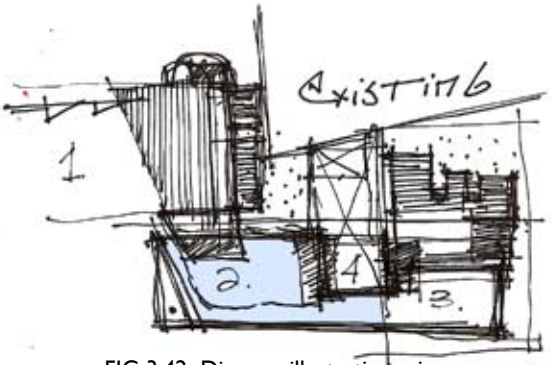


FIG 3.42_Diagram illustrating primary programmatic components of building

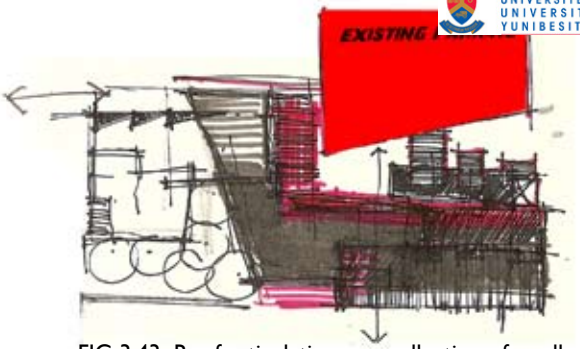


FIG 3.43_Roof articulation as a collection of smaller separated roofs

The roof over the different functional spaces, as seen in this concept model, was articulated as separate entities. As the design developed, the roof began to simplify so that it became the binding element over the intervention. The roof over the resource library continued the curved façade, but later changed to allow the curved screen element to read separate from the roof. This gave more presence to the curved screen. The entrance to the building did not read clearly enough and a stronger vertical element was investigated so that the façade became more legible.

FIG 3.44_Concept model 3: MK live room prominent interactive facade experience

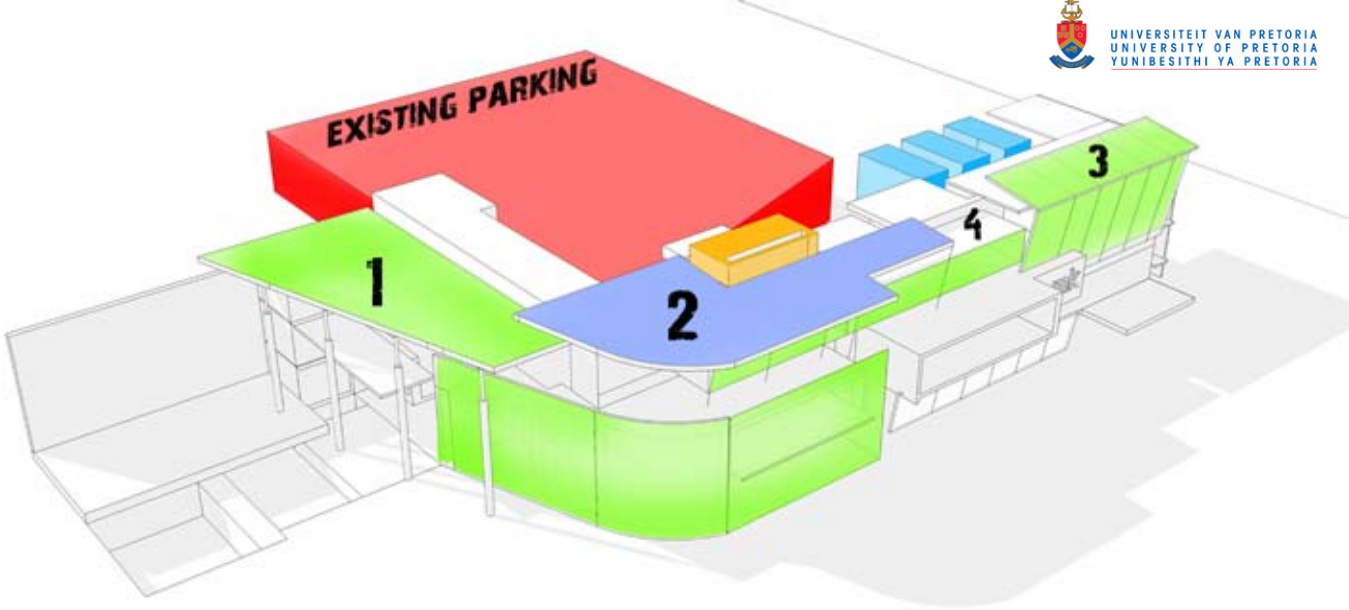


FIG 3.45_3 dimensional model exploring roof articulation and massing

Within the initial concept models the intervention was separated from the existing parking. This model started to explore the possibilities of attaching to the structure to create a space on the first and second floor levels looking down into the internal courtyard providing a richer layering of vertical space definition.

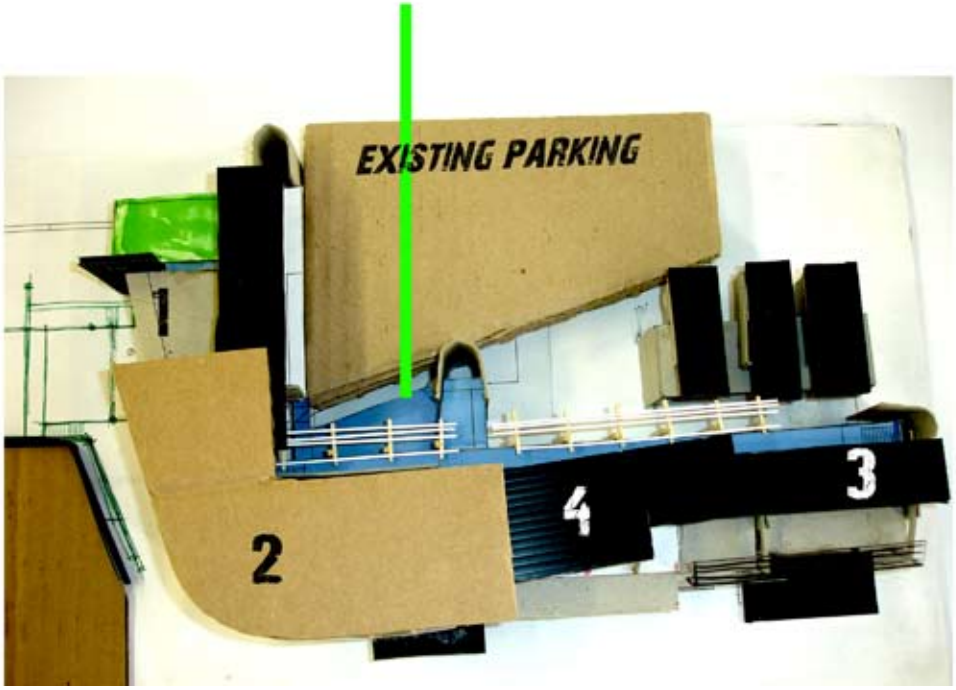


FIG 3.46_Concept model 3: Spatial relationship between existing parking explored

FIG 3.47_Concept model 4: Roof orientation changes

An important design change came when it was decided that the orientation of the primary roof would open out towards the urban activity instead of to the north. Until this stage the response was that the roof should open towards the north and spatially close down towards the urban space. This change in roof articulation allowed for the possibility that the roof could be expressed as a separate binding canopy over the wall element, supported on the column grid so that the space articulated through the skin can wrap up to become the roof element. This separation from the wall allowed for the internal space to be articulated by the underside of the roof canopy. Due to the spatial arrangement, large glazed surfaces on the south façade could now receive maximum southern light. The scale of the urban space justifies a more prominent roof structure appropriately orientated to the public interface of the square.

FIG 3.48_Concept model 4: Music related experiences refined

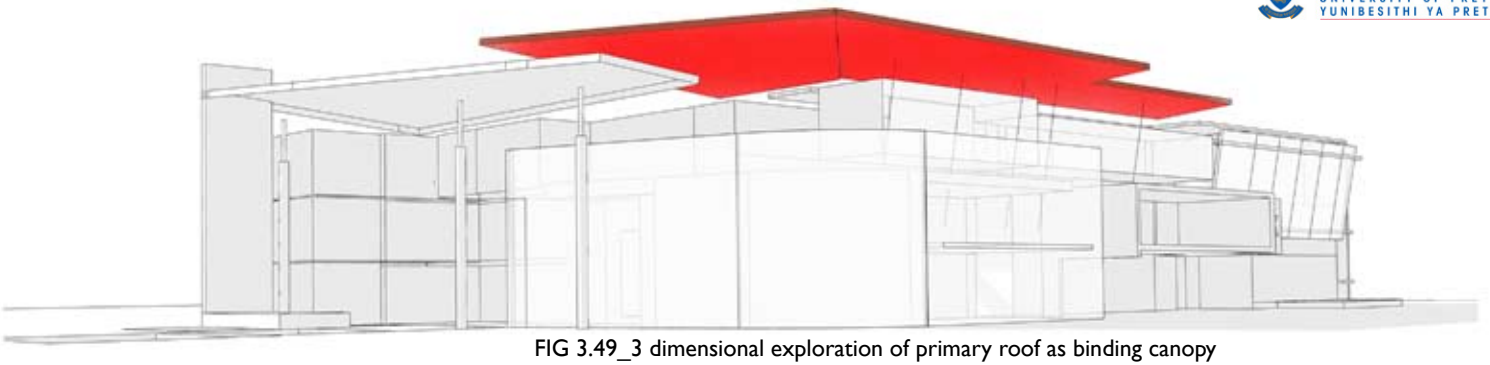


FIG 3.49_3 dimensional exploration of primary roof as binding canopy

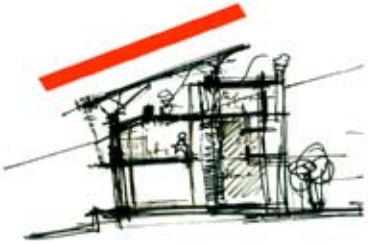


FIG 3.50_ Initial spatial orientation of roof

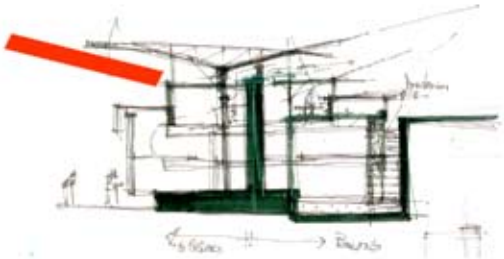


FIG 3.51_ New orientation, primary roof structure seperated from wall

This change in roof articulation allowed for the wall to read as a separate mass element. This created the possibilities that the programmatic divide between outside and inside becomes more legible.

FIG 3.52_ Diagram indicating the spatial divide between outside and inside experience articulated by the wall indicated in blue

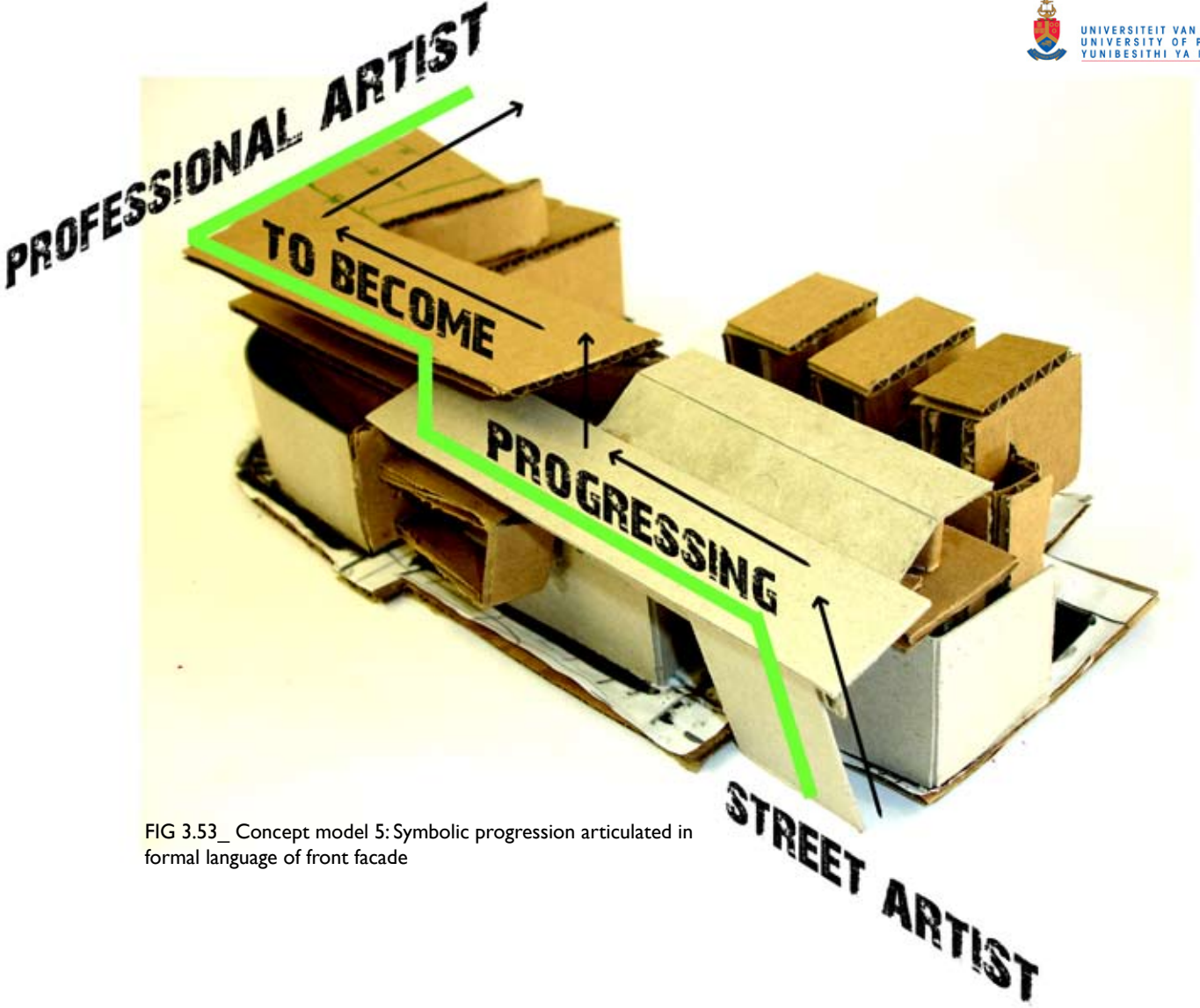


FIG 3.53_ Concept model 5: Symbolic progression articulated in formal language of front facade

To allow the user to understand the processes involved in reaching the top of the performing arts industry it was important that the formal language express this progression through the front façade of the building. The skin folds over the façade and increases in scale, and conceptually expresses the idea of the progression through the various facets of the industry.

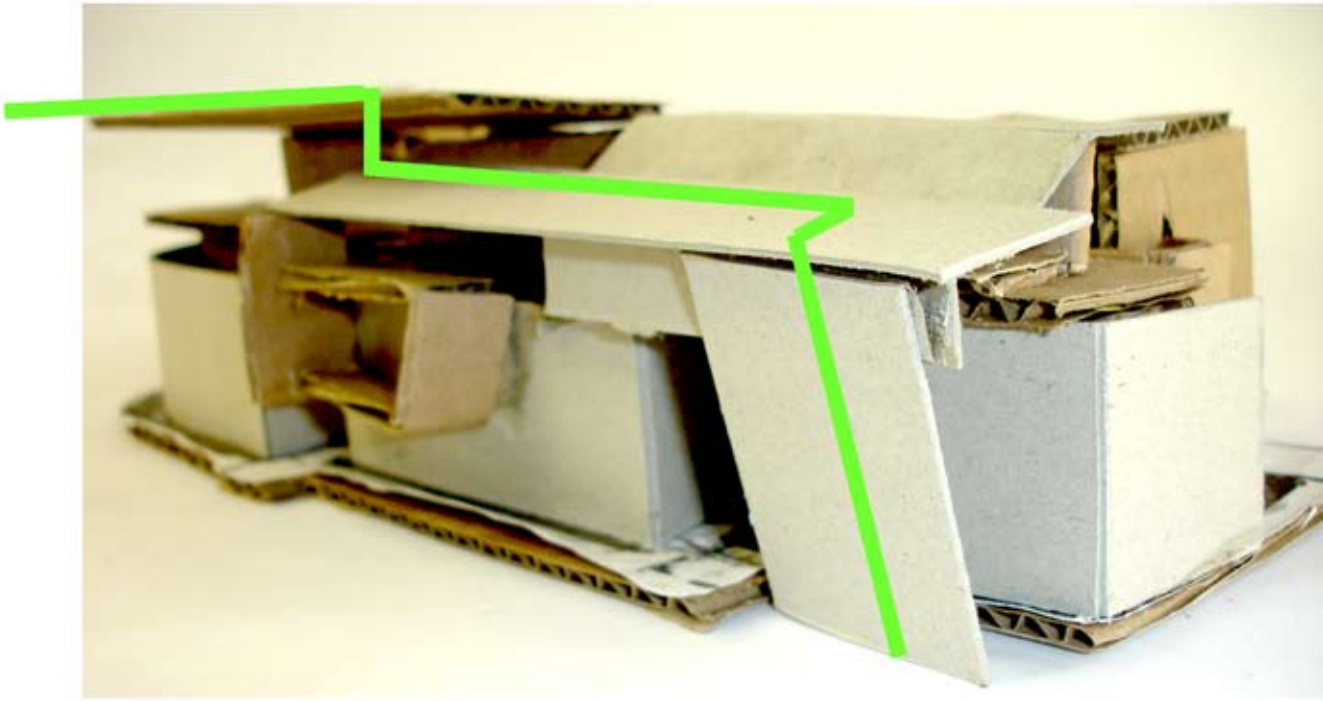


FIG 3.54_Concept model 5: Skin folds up and becomes the roof plane

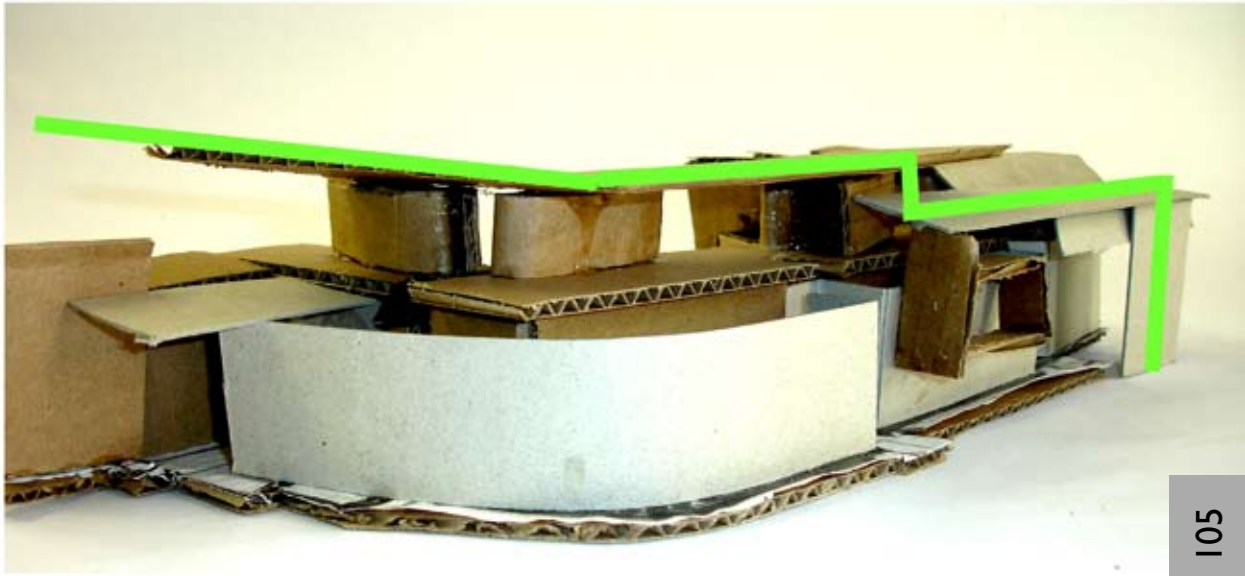


FIG 3.55_Concept model 5: Roof reaches its highest point over theatre and film production studio conceptually reflecting the highest point reached within the industry provided at this facility

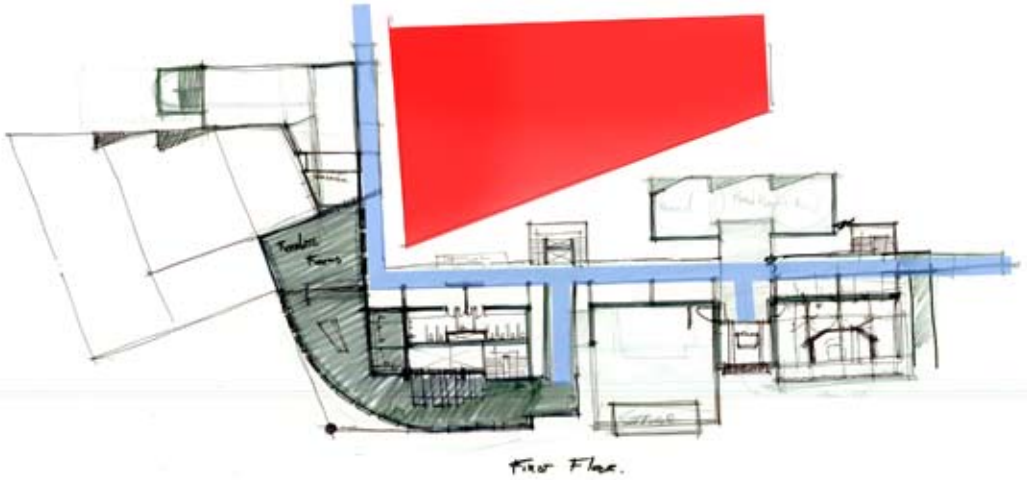


FIG 3.56_Circulation diagram articulating primary and secondary space orientation, circulation begins to separate from building

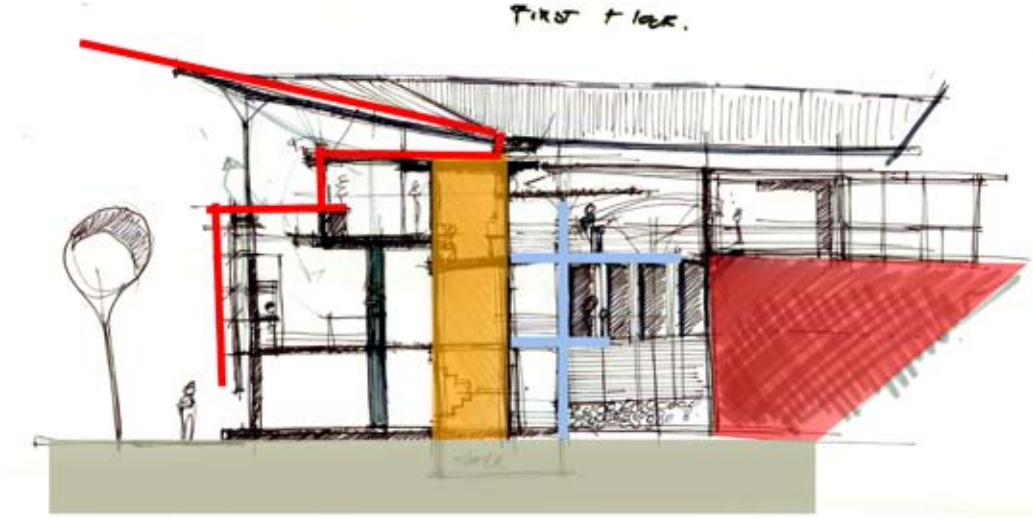
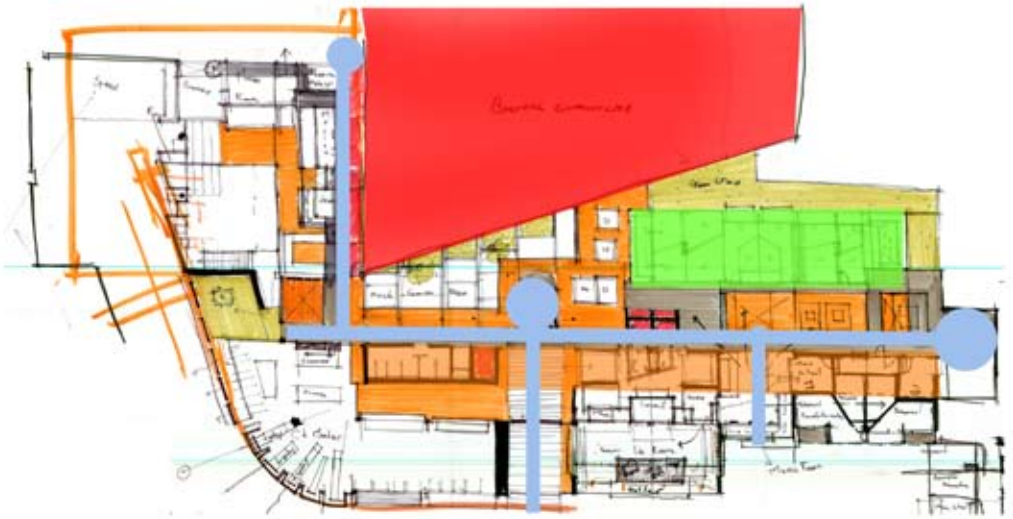


FIG 3.57_ Elementary design section illustrating the skin, wall and detached circulation network

FIG 3.58_ Circulation termination points articulated by means of vertical circulation network



The spatial planning underwent a series of arrangement changes, with the aim that the planning should reflect the same tectonic rationale as the section, clearly illustrating the aspects relating to the wall and the experiential skin. The initial design parameters as set out in the spatial urban design diagram guided the functional layout so that it reflected the public and private spaces of the neighbouring buildings.

Circulation routes were incorporated within a spine connected to the wall. As it is a public intervention the need for circulation legibility was addressed with vertical circulation points at the start and end of the spine. The primary circulation of the building is visible through the entrance volume, situated within the internal courtyard. This approach draws users into the internal volume, which provides a visual connection to the above levels, allowing them to orientate themselves to which part of the building to use or explore.

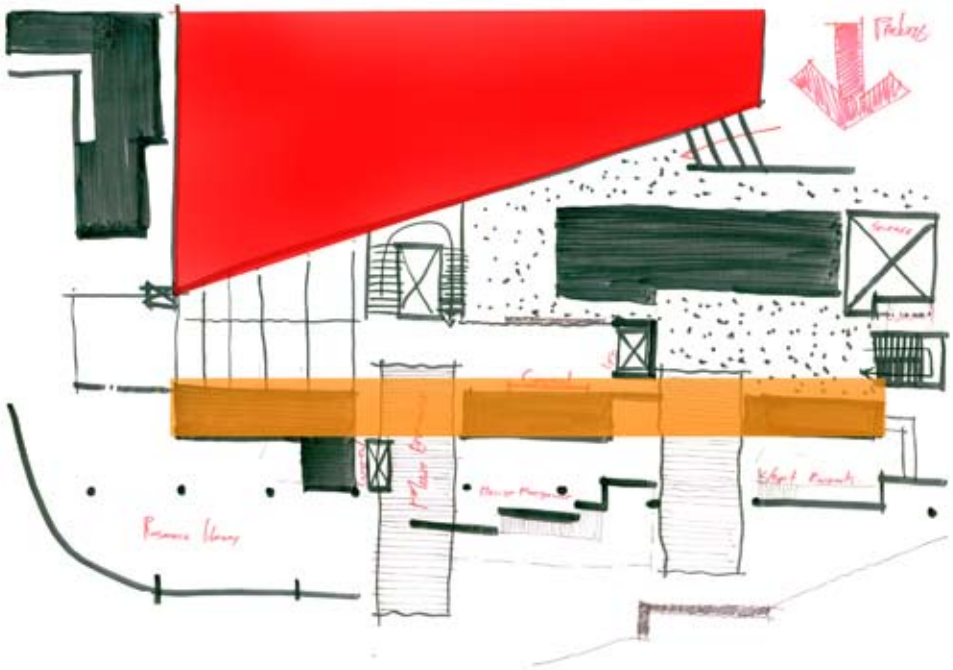


FIG 3.59_Spatial diagram enquiring into programmatic articulation of wall

GROUND FLOOR

FIG 3.60_Ground floor plan, June 2008

FIRST FLOOR

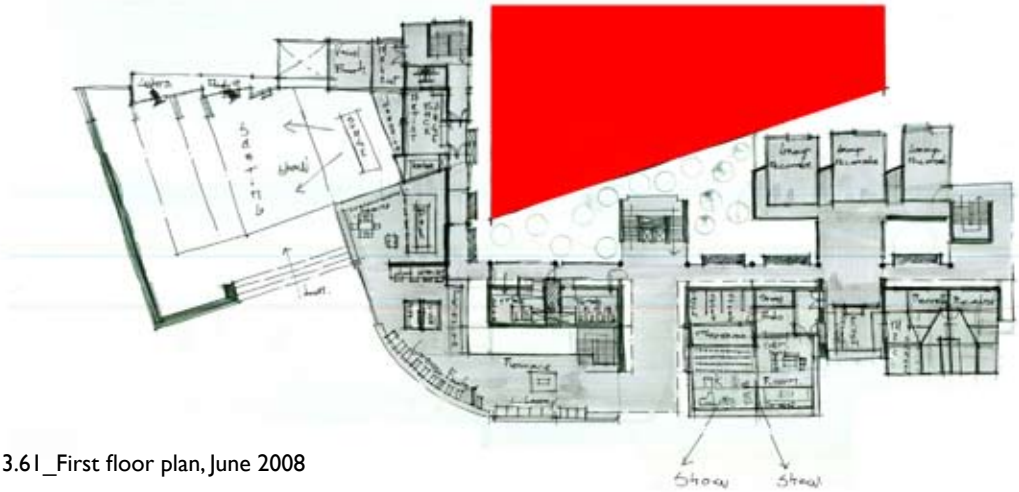


FIG 3.61_First floor plan, June 2008

SECOND FLOOR

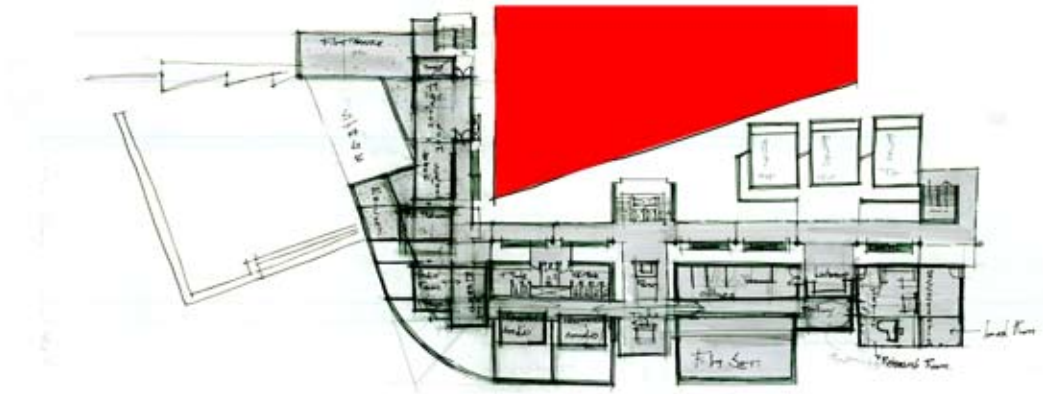


FIG 3.62_Second floor plan, June 2008

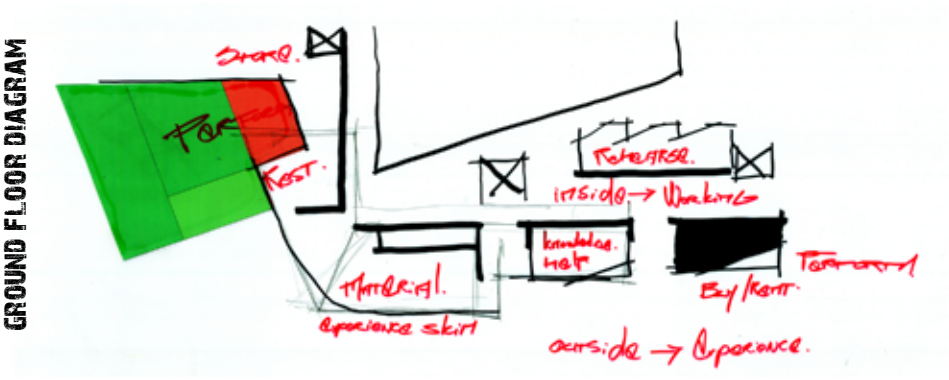


FIG 3.63_Ground floor layout diagram, June 2008

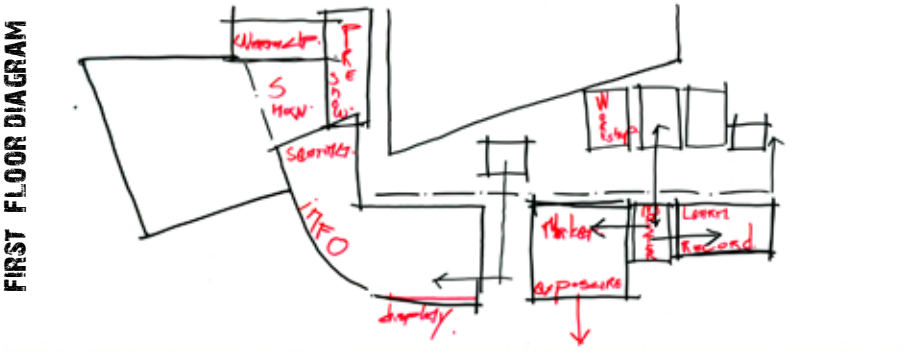


FIG 3.64_First floor layout diagram, June 2008

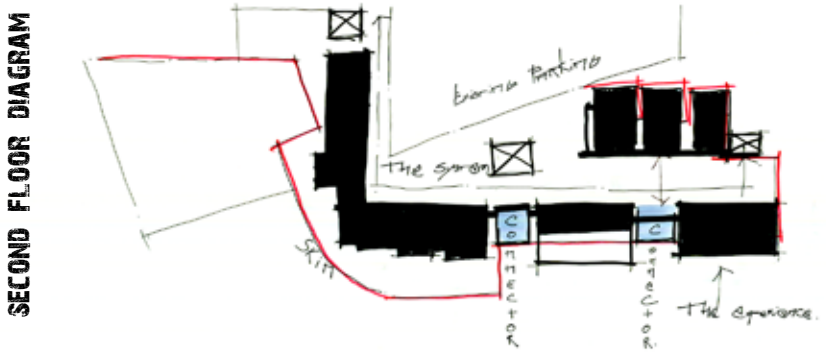


FIG 3.65_Second floor layout diagram, June 2008

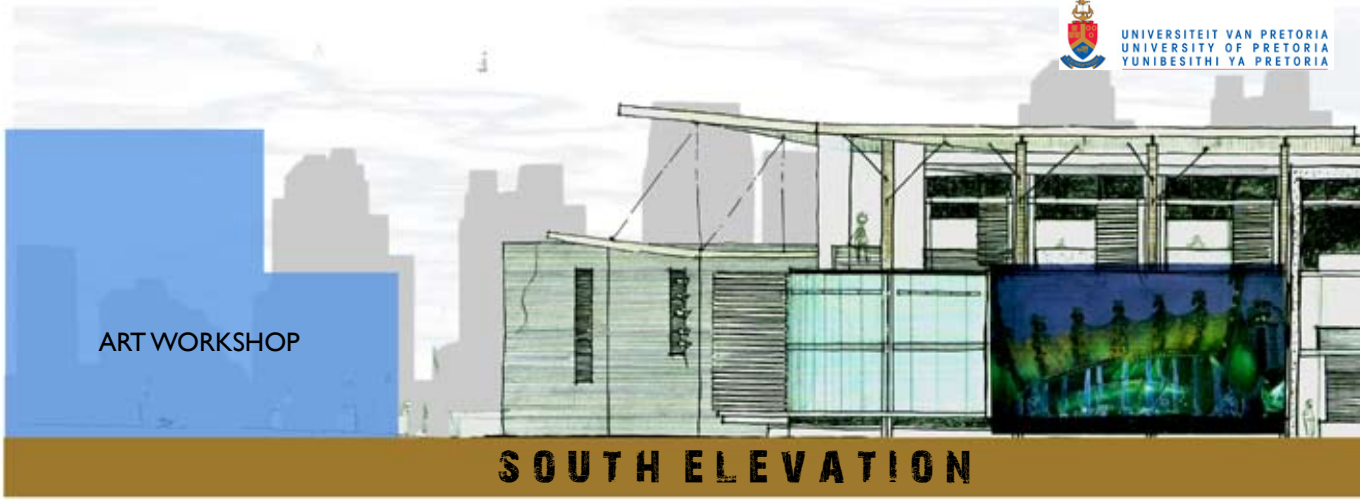
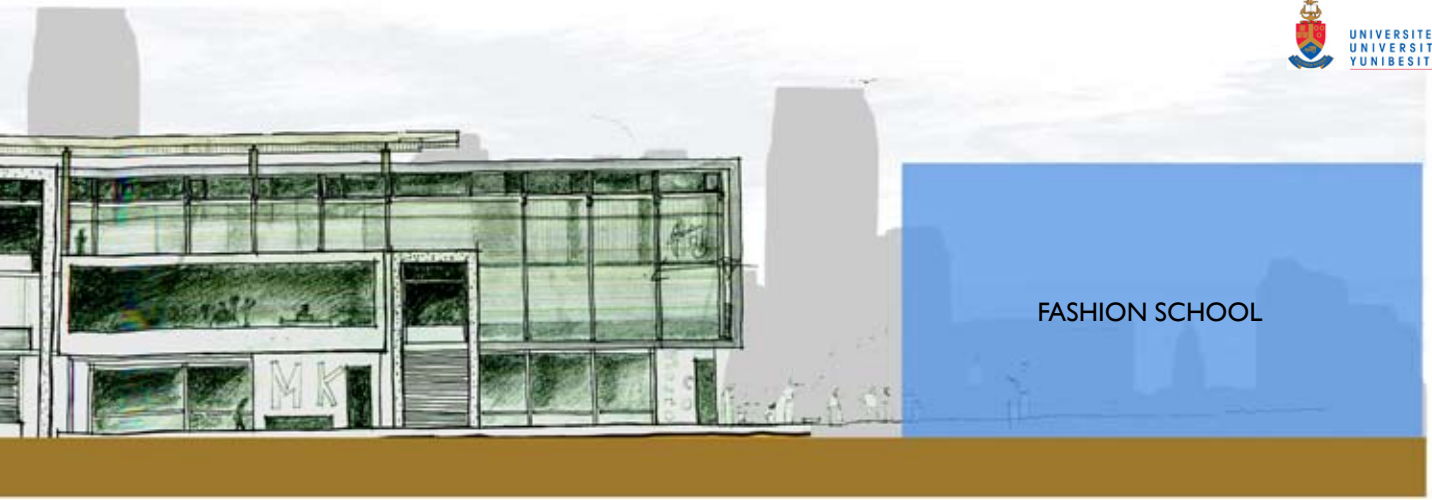
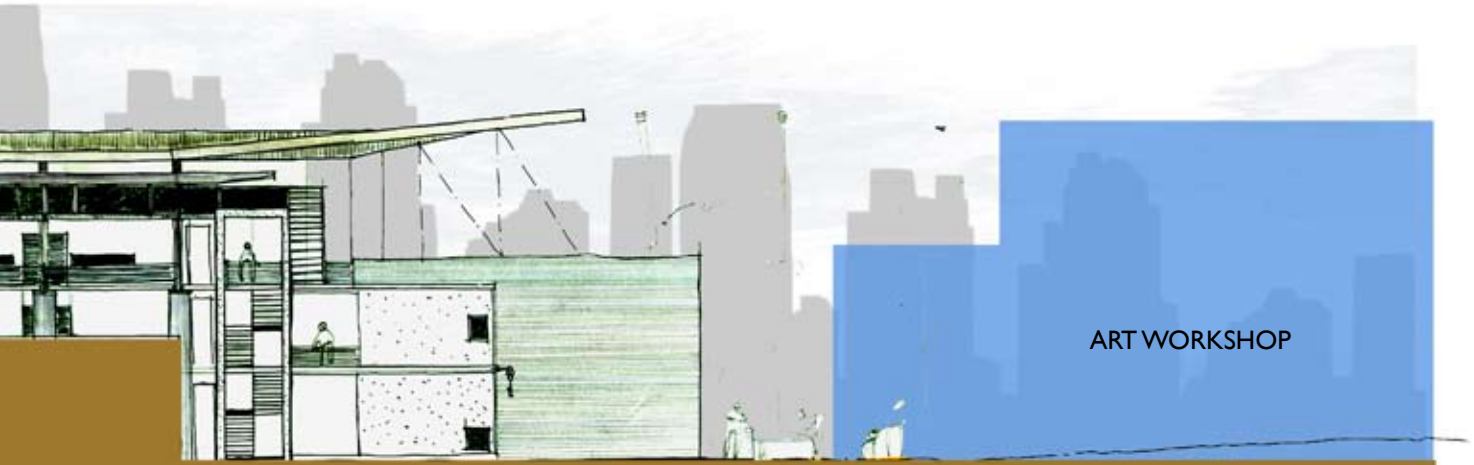


FIG 3.66_Southern Facade, June 2008

FIG 3.67_Northern Facade, June 2008

FIG 3.68_Western Facade, June 2008





NORTH ELEVATION

FIG 3.69_Eastern Facade, June 2008

EAST ELEVATION

FIG 3.70_Perspective view from activity space, June 2008

The design development illustrated within this chapter is a reflection of work done until June 2008. The development was further explored in terms of the theoretical, structural and tectonic nature of the design while responding to feedback gained from the June examination. The following chapters develop these ideas further and should be seen as an extension of the design development process.

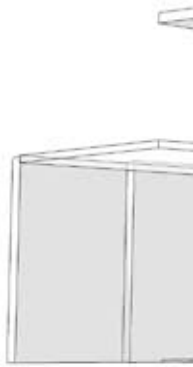
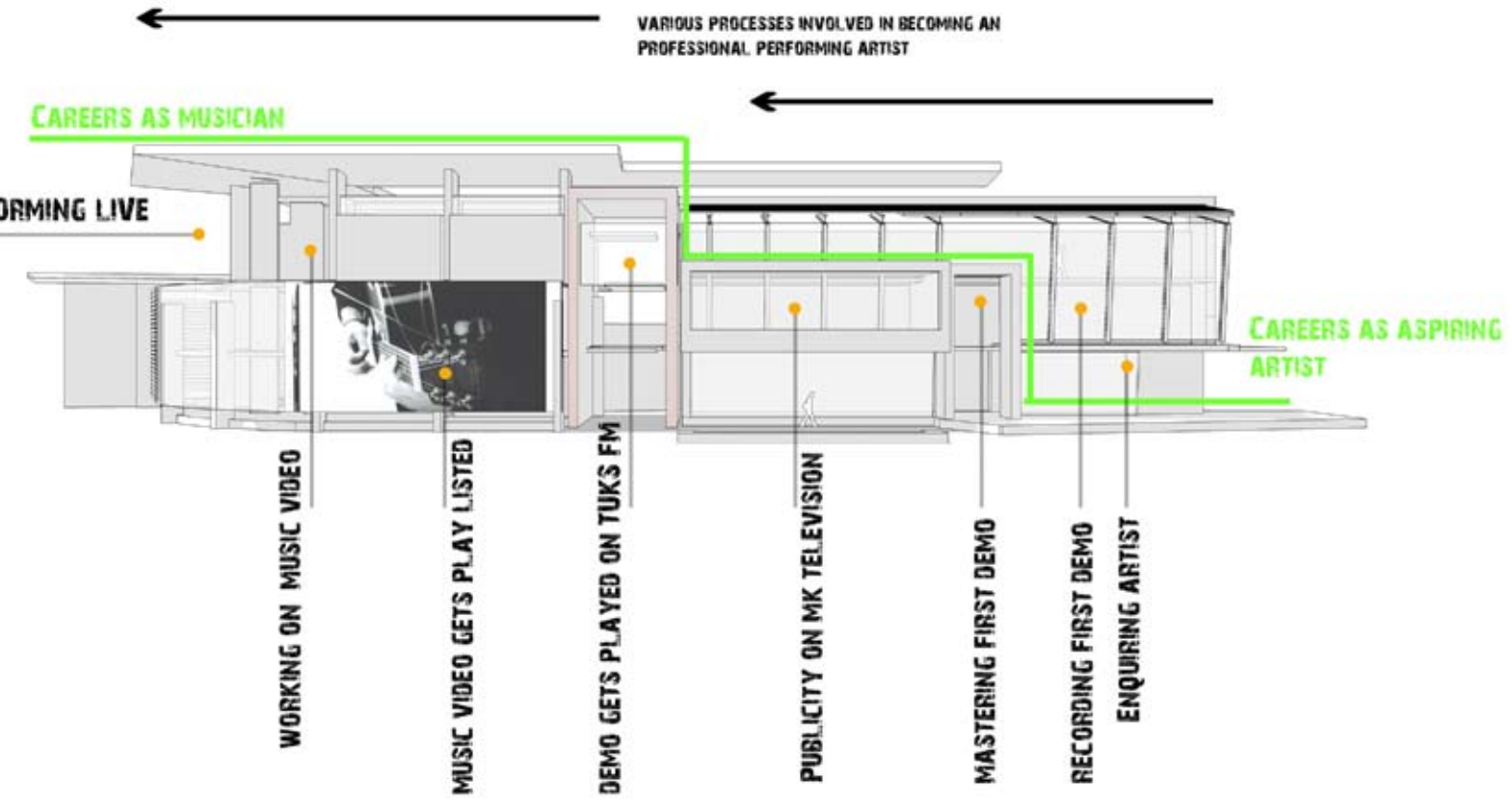


FIG 3.71_Artist progression through intervention



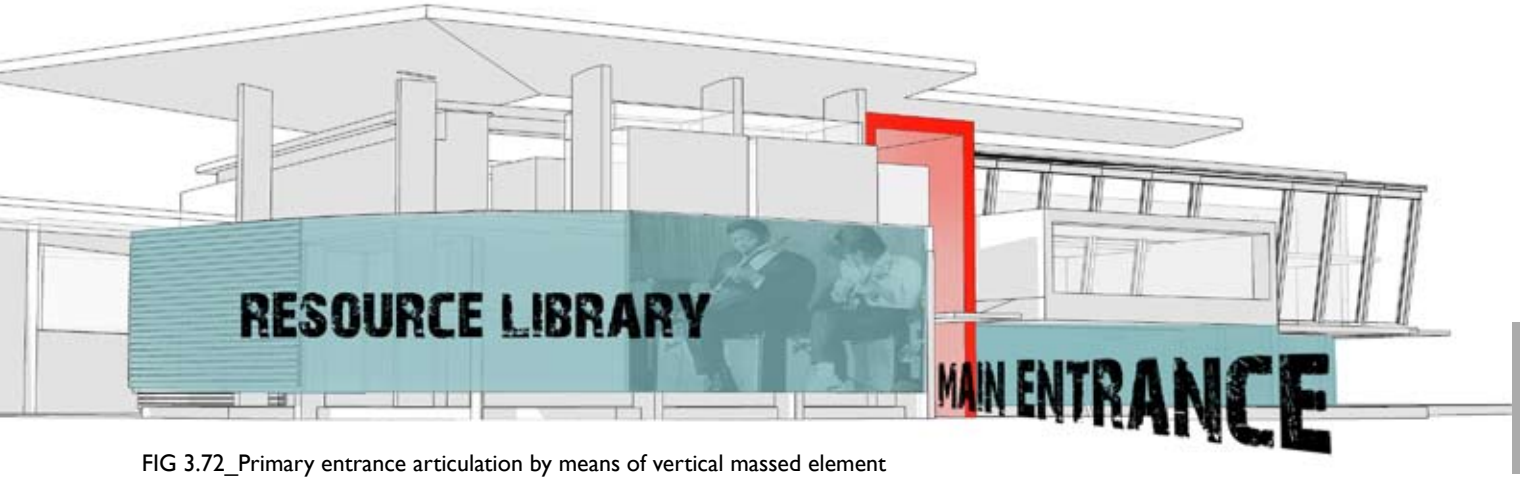


FIG 3.72_Primary entrance articulation by means of vertical massed element

Tectonic development

The wall represents the stereotonic and the skin the tectonic articulation of the building. The wall constructed from brick spatially and conceptually creates a separation between the outside and the inside experience.

Due to the philosophical approach adopted, the sensory qualities of architecture have been used to motivate and meaningfully strengthen the tectonic language of the intervention. The relationship between internal and external space has been strengthened due to the fact that the circulation network detaches itself from the wall. This creates the spatial experience needed to strengthen the exteriority of the internal courtyard space before progressing into the building. Within the scope of the programme and nature of the performance industry, long strenuous hours within the recording, mastering and production studios can often be an overwhelming creative block for an inexperienced artist. The connection with the courtyard provides an important relief from the often overwhelming interiority of buildings, creating interaction spaces along the circulation routes.

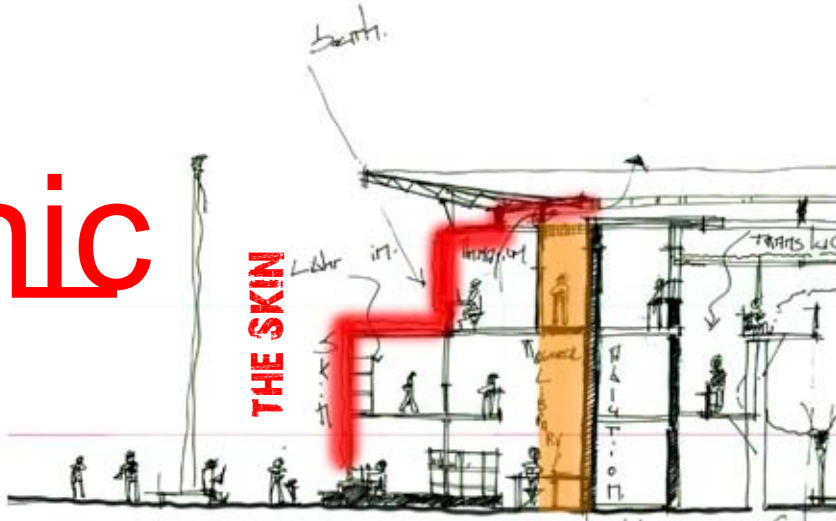


FIG 3.73_Tectonic section, June 2008

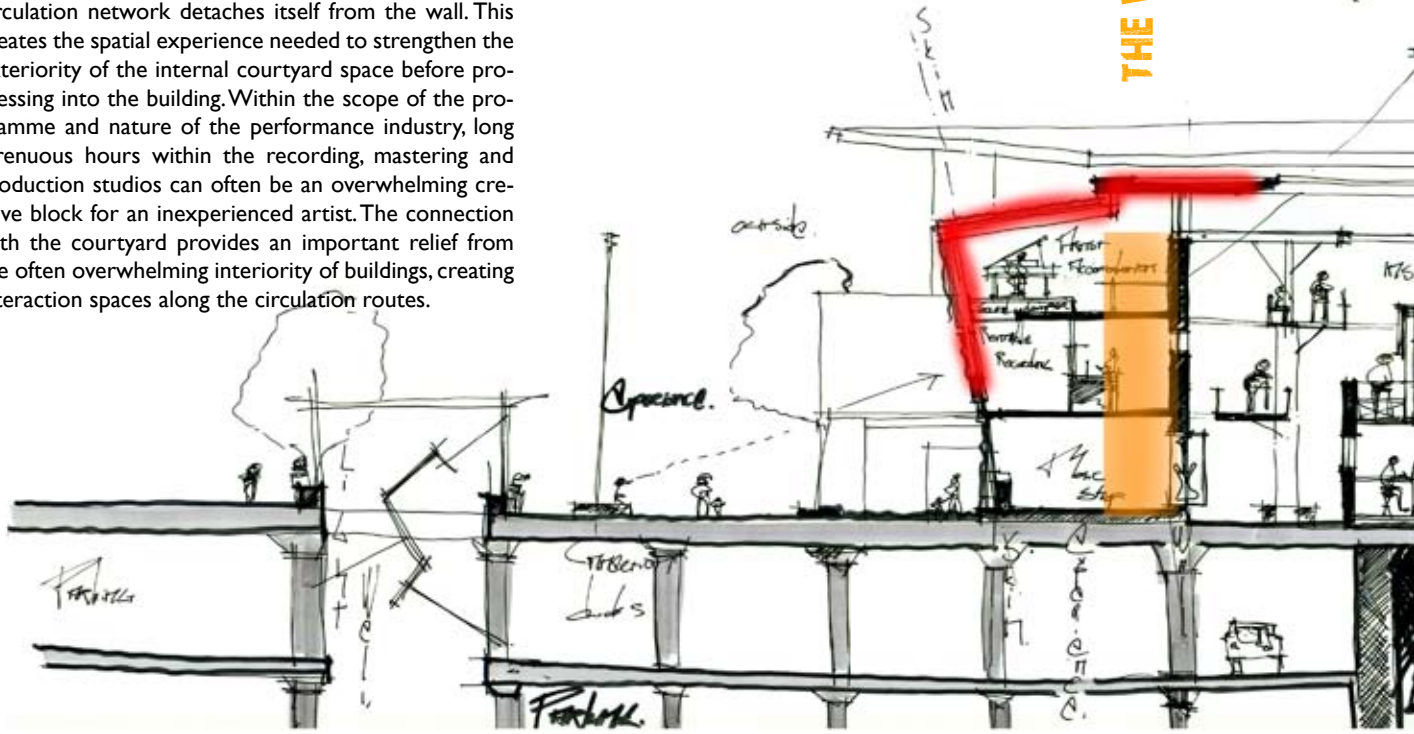


FIG 3.74_Tectonic section indication user activities in urban space, June 2008

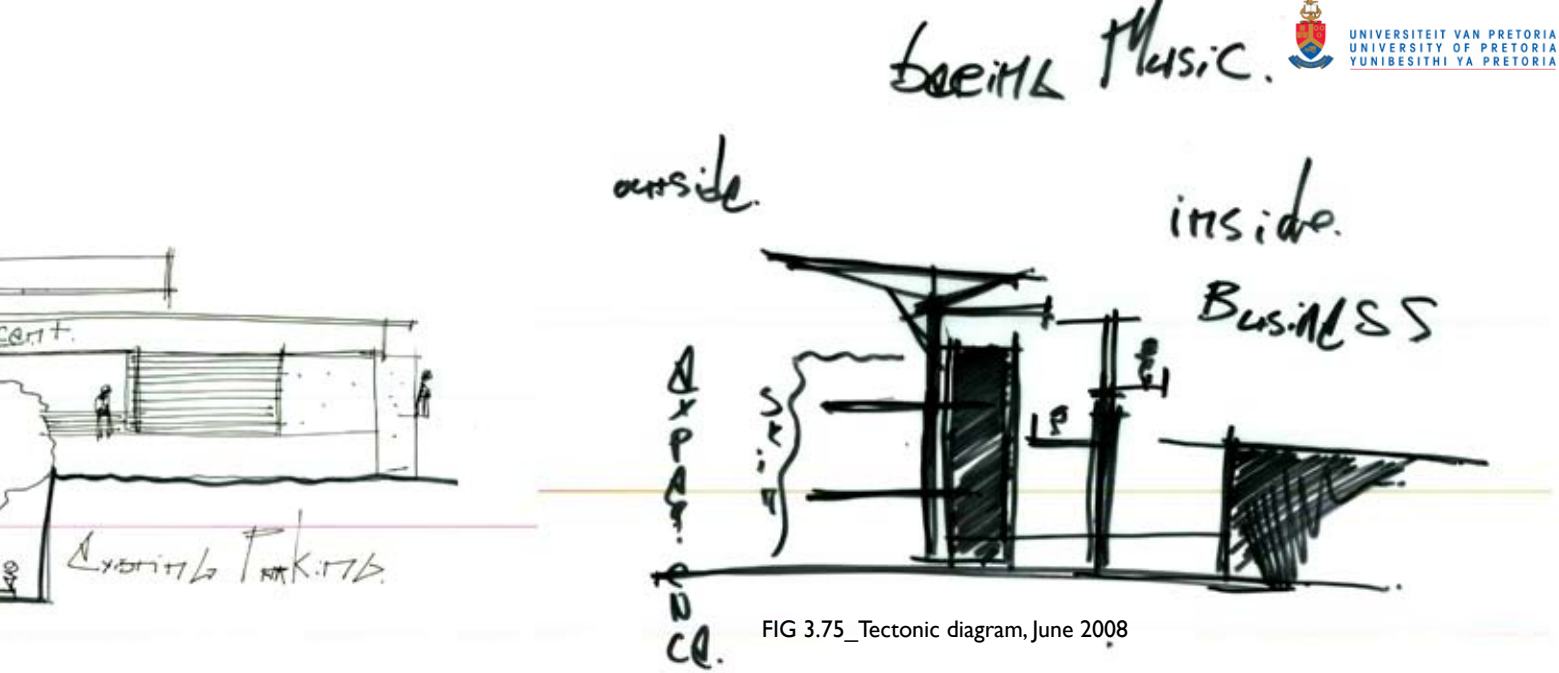


FIG 3.75_Tectonic diagram, June 2008

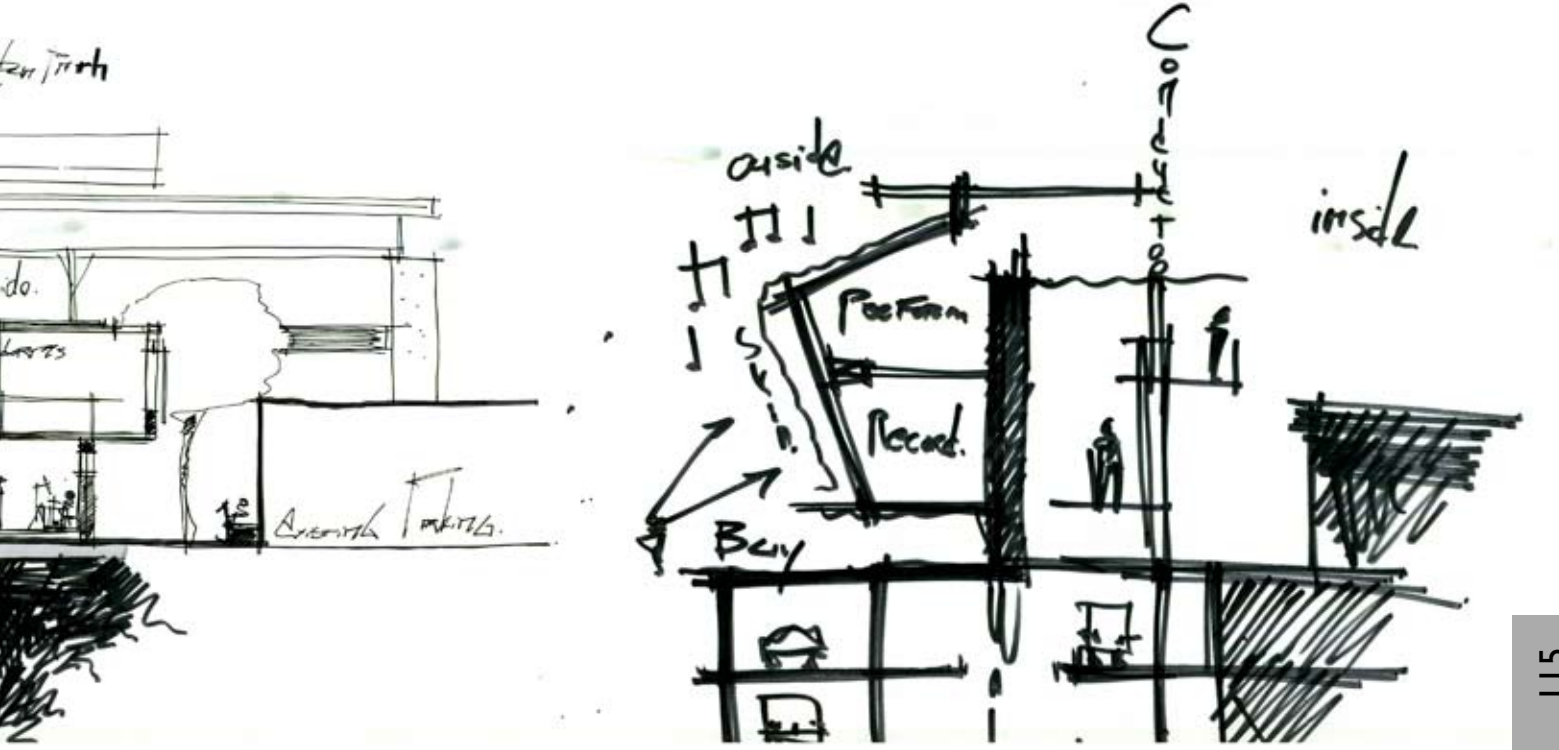


FIG 3.76_Outside public orientated experience compared to internal working aspect of performance industry

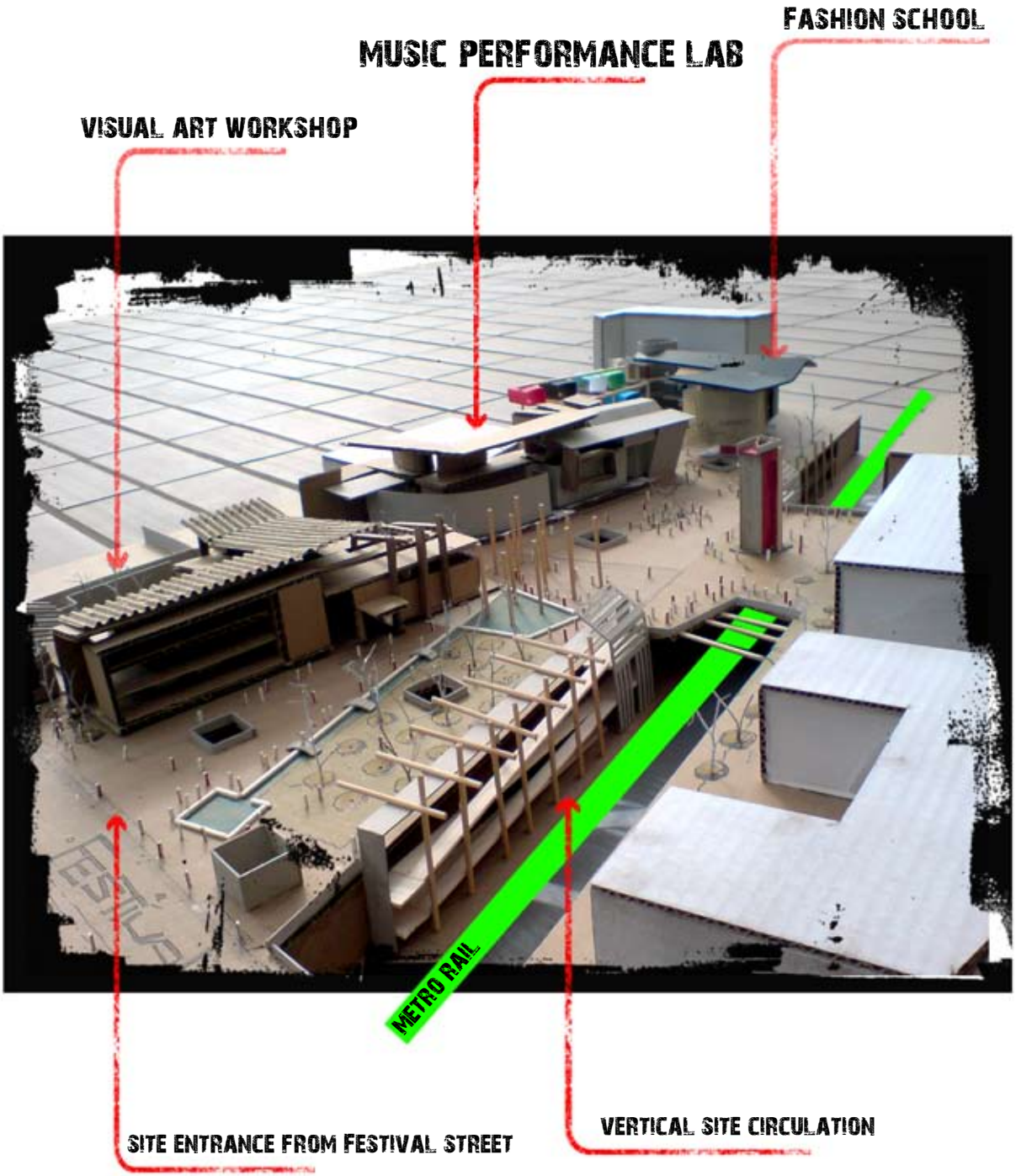


FIG 3.77_Urban model 2 : Indicating the visual art workshop, Music Performance Lab and Fashion school in relation to the designed urban activity space

FIG 3.78_Urban model 2 :View from Risski station design towards our site

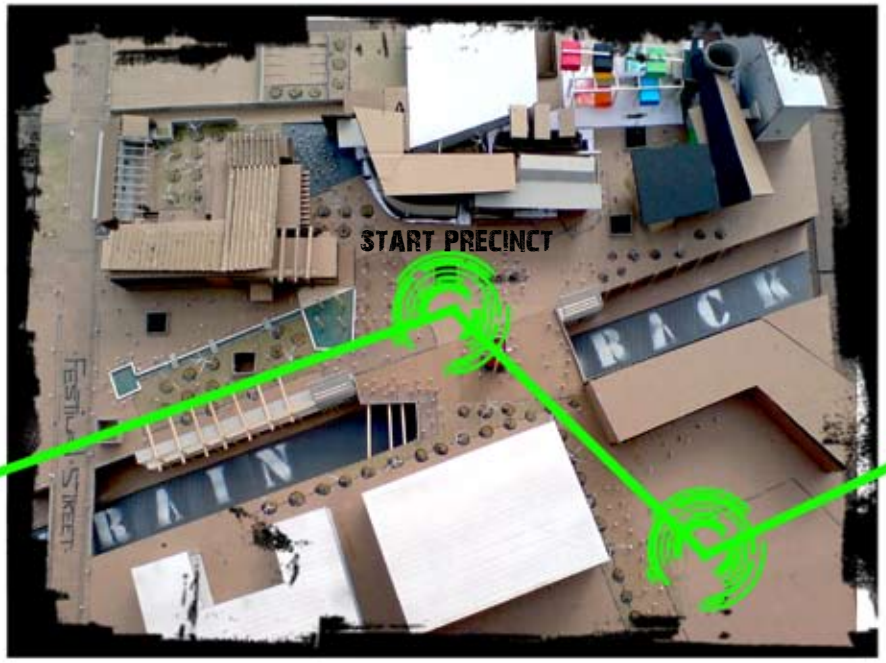


FIG 3.79_Urban model 2 : Connection to other schemes which forms part of the designed framework

FIG 3.80_ Transition space between visual art workshop and Music Performance lab

FIG 3.81_ View of spatial arrangement between buildi

FIG 3.83_ Three projects in relation to each other

FIG 3.84_ Central activity space catering for urban pe

ngs

FIG 3.82_ Transition space between Music Performance lab and Fashion school

erformances from MK LIVE room

FIG 3.85_ Urban activity space in relation to train track

Chapter

4

Sensory architecture

INTRODUCTION

In our current ocular-centric society few spatial experiences stimulate the full spectrum of our senses. Architecture, being the only art form capable of producing lived space, provides the spatial boundaries within which we as human beings experience space. However, most experiences of articulated space today can be reduced to a single experience of sensory bliss, with predominantly aesthetically pleasing designs dominating our built environment. Juhani Pallasmaa writes about this predominantly visual architecture of our time and believes that this has definitely led to "the disappearance of sensory and sensual qualities from the arts and architecture" (Pallasmaa, 2005:10).

In the words of David Michael Levin: "I think it is appropriate to challenge the hegemony of vision in the ocular centrism of our culture. And I think we need to examine very critically the character of vision that predominates today in our world" (Pallasmaa, 2005:78).

Mourice Merleau-Ponty (Merleau-Ponty, 1964:48) believes that architecture cannot be seen only, and I quote, as a "sum of audible givens" and describes the simultaneity of experience and sensory interaction as follows:

"My perception is therefore not a sum of visual, tactile, and audible givens: I perceive in a total way with my whole being: I grasp a unique structure of the thing, a unique way of being, which speaks to all my senses at once" (Pallasmaa, 2005:78). This notion of being, relating to architectural space, has been illustrated by Christian Norberg-Schulz, writing about the work of Martin Heidegger, as the primary role of architecture, which is, as Heidegger terms it, to provide human beings with an existential foothold, ultimately allowing human beings to dwell within space (Norberg-Schulz, 1980:5).

Thus this dissertation aims to build a theoretical argument around the importance of a multi-sensory experience within architectural place-making, rethinking an aesthetics-only approach, motivated to create a methodology for architectural place-making that allows human beings to dwell. I strongly believe that a re-emphasis on sensory experiences in architecture as formative design generator will provide an enriched architectural tectonic that will positively influence its users. As a result, this dissertation primarily seeks to provide a proactive executable approach to a sensory architectural methodology with the primary aim of being translated from a theoretical premise to an executable architectural tectonic.

To achieve this methodology, it is important that the argument follow a chronological order while building upon important philosophical ideas that trace back the argument so that informed responses for a 21st century architectural expression can be motivated.

THE NATURE OF BEING

The question of man's existence within the world encompasses the basis of all philosophical thoughts but it is the aspect of exactly how we experience our sense of being within the world that stands central to my argument.

"the possibilities and destinies of philosophy are bound up with man's existence, and thus with temporality and with historicality" (Heidegger,1975:I)

This section investigates how man's existence relates to his being, and how architecture directly influences our perception of being within a specific place. For Heidegger the primary purpose of life is to dwell. Heidegger describes this terminology of dwelling as follows: "The way in which you are and I am, the way in which we humans are on earth, is dwelling" (Norberg-Schulz, 1980:10).

However, to be able to dwell, one needs a specific environment in which to dwell. Heidegger describes the role of architecture in an existential sense as "to allow for a specific site to become a place" (Norberg-Schulz, 1980:5). Christian Norberg-Schulz (Norberg-Schulz, 1980:5) illustrates this through an understanding that for such a place to be successful, it needs to have a distinct character. This character he terms the specific Genius Loci of a place. The specific character of the place thus allows us to dwell within that given space, and it is within this specific area where architecture can mould the physical parameters that human beings can be. Juhani Palaasma sums up this ongoing quest of architecture when he states that "Architecture, as with all art, is fundamentally confronted with questions of human existence in space and time, it expresses and relates man's being in the world" (Pallasmaa, 2005:16).

Gabriel Marcel claims that "I am my body" (Pallasmaa, 2005:64). Noel Arnaud takes this statement one step further and proclaims that "I am the space, where I am in" (Noel Arnaud in Pallasmaa, 2005:64). As can be seen from these statements, the relationship between place, space and the search for individual being works on a twofold ideology. Firstly, it is the individual experience of that place, and secondly it is the combined experience with others which collectively facilitates, as Pallasmaa puts it, our human rootedness (Pallasmaa, 2005:19).

However, the questions I ask are how we physically experience a place, and through what means architecture enhances this experience. For an answer to these questions I believe it is important to introduce the philosophy of phenomenology, which stands central to various architectural theorists enquiring into how we experience architecture.

PHENOMENOLOGY IN ARCHITECTURE

Various definitions of phenomenology have been identified, but the definitions adopted by the philosopher Edmund Husserl and Martin Heidegger for the sake of my argument describe phenomenology the best. For Husserl, phenomenology is "the reflective study of the essence of consciousness as experienced from the first-person point of view" (Smith,2007). Heidegger extended this definition and introduced the philosophy of ontology, with ontology being "the study of conceptions of reality and the nature of being and [he] believes that phenomenology is the method of the studying being itself".

Many architectural theorists have adopted a phenomenological approach to architecture, which in essence can be defined as an approach that incorporates a multi-sensory experience of place-making, striving towards a methodology of creating spatial phenomena. However, the challenge lies not in a single sensory experience, but in a collective environment stimulating all of our senses. This collective experience of our senses is explained by James J Gibson, not in terms of our five senses as we know them, namely smell, taste, see, hear and feel, but rather as a collection of these. He describes them as five sensory systems that include visual systems, auditory systems, the taste-smell systems, the basic-orienting system and the haptic system (Pallasmaa, 2005:41-42). Bachelard (Bachelard, 1971:6) talks about a polyphony of the senses and believes that there are in fact nine senses that can be defined as a combination of the known five.

"Space, Lefebvre maintains, is not read but experienced by means of the body which walks, smells, tastes and in short lives a space" (Wiles, 2003:10)

It is from a phenomenological approach that Pallasmaa proclaims that "Every touching experience of architecture is multi-sensory; qualities of space, matter and scale are measured equally by the eye, ear, nose, skin, tongue, skeleton and muscles" (Pallasmaa, 2005:41).

The challenge now lies in how we create a multi-sensory experience, and as seen in our current ocular-centric society, this challenge imposed on architecture seems more complex than ever before.

"Today the depth of our being stands on thin ice" (Steven Hall in Pallasmaa, 2005:8).

Architecture is in a crisis

The view in this chapter might not be shared by all. In an era with immense architectural wonders, literally defining the laws of gravity and achieved through an awesome display of contemporary materials, this statement definitely is not shared by all. However I feel that a critique of this statement has to be evaluated according to the current state of our society. I draw my argument from the debate by theorists who view our current society as an ocular-centric society.

"The pathology of today's architecture can be understood through a critique of the ocular bias of our culture. Architecture has turned into an art form of instant visual image" (Pallasmaa, 2000:78).

The idea of an ocular-centric society places vision as the primary sensory stimulant that dominates creative expression. The reason that I use the terminology of dominating creative expression is because this bias towards vision is seen in other art forms and not only in architecture. Pallasmaa writes:

"The Bias towards vision and the suppression of the other senses has resulted in the disappearance of sensory and sensual qualities from the arts and architecture" (Pallasmaa, 2005:10).

In a society dominated by mass media and consumerist trends, bombarded by visual stimuli transmitted via television, internet and advertising, this bias towards vision is understandable. However, when this bias is critically assessed and with the negative effect that an ocular-centric approach has on the richness of our urban realm clearly evident, I have to agree with Pallasmaa when he states that: "our cities have lost their echo altogether. The wide open space of contemporary streets does not return sound. And in the interiors of today's buildings echoes are absorbed and censored" (Pallasmaa, 2005:51).

It is important that when an approach towards a multisensory architecture is proposed, the philosophy of phenomenology stated previously should be understood in context to our point in society. Norberg-Schulz states that:

"Phenomenology was conceived as a return to things as opposed to abstractions and mental constructions" (Norberg-Schulz, 1980:8), ultimately arguing for an architectural approach that stimulates the full penchant of our senses through a return to essential architectural elements, lost in contemporary architecture.

This return to things should, however, not be misinterpreted and does not negate technological advances. It aims to recreate awareness into an architectural language that can promote intimacy, and ultimately a

language that aims to unite us with the built environment through an articulation done according to the human scale. This shift in articulation encourages users as active participants instead of uninvolved spectators.

Palaasma describes this challenge towards a contemporary sensory architecture as follows: "Around the world today we are attempting to re-sensualise architecture through a strengthened sense of materiality and haptisity, texture and weight, density of space and materialized light" (Pallasmaa, 2005:37).

Steven Hall, on the other hand, describes this approach in much simpler terms and states that architecture should strive towards a language where "The way spaces feel, the sound and smell of these places, has equal weight to the way things look" (Steven Hall in Pallasmaa, 2005:7).

Le Corbusier wrote: "The purpose of architecture is to move us. Architectural emotions exist when the work rings within us in tune with a universe whose laws we obey, recognize and respect" (Norberg-Schulz, 1980:6).

The question now remains: how do we create an architectural tectonic that can stimulate multi-sensory phenomena? How can such a tectonic express technological advancement and a return to a more traditional approach at the same time?

TOWARDS A SENSORY ARCHITECTURAL LANGUAGE

To achieve such a methodology it is important to recognise physical examples that successfully address a sensory architecture. However, when these examples were studied I realised that a common denominator throughout these examples was the awareness created through the architecture regarding the spatial relationship between nature and the constructed reality. Nature in this sense not only includes scenic beauty, as seen in many examples, but also often aspects that are taken for granted, such as light intensity, shadows, the sound of rain on a roof, materiality of a road or even just the feeling of a calm breeze in our faces. The challenge lies in the skill of making the user aware and appreciating these aspects.

I believe that these simplistic natural elements, if exploited appropriately, will result in an architecture that embraces our being within the world without a brute domination of the environment. Luis Barragan confesses to this approach by saying that: "most contemporary public spaces would become more enjoyable through lower light intensity and its uneven distribution" (Barragan, 1989:242).

Pallasmaa states that "In great architecture there is a constant deep breathing of shadow and light; shadow inhales and illumination exhales light (Pallasmaa, 2005:47), which reminds one of the famous credo of Le Corbusier proclaiming that "Architecture is the masterly, correct and magnificent play of masses

brought together in light" (Le Corbusier, 1959:31).

The relationship between our natural environment and the built phenomena experienced within architecture is substantiated when Pallasmaa believes that tranquillity is the most essential auditory experience created by architecture.

The challenge now lies in the fact that not all sites are located in a place that has an inherited spiritual connection between building and nature. However I believe that all sites have the inherited potential to express natural phenomena in a masterly display of space creation. It is exactly in this challenge that this dissertation aims to initiate a thought process that will work towards a sensory architectural experience, regardless of site location.

A large number of buildings today completely negate the experience of natural phenomena. Terminology such as 'sick building syndrome' sums up how negative interior-orientated buildings can be for their inhabitants. Artificially regulated environments remove us from the reality and sensory qualities of the world. I believe that an architectural language that blurs the edges between the outside and inside of a space invites us to start projecting our thoughts towards an architecture that reinstates sensory experiences, tranquillity and human rootedness within our urban environments.

Materiality plays an important role in the search for architecture of sensory expression. Building materials provide the essential building blocks with which our creative ideas are brought to life. So in the process of establishing an architectural tectonic, I feel it is necessary to elaborate on the basis on which materials are selected. In our current society, the ageing effect of buildings is not often seen as a positive aspect, with expansive claddings and finishes altered as soon as they show signs of decay.

Pallasma rightfully illustrates our current fixation with ageless beauty by saying that "The architecture of the modern era aspires to evoke an air of ageless youth of a perceptual present." (Pallasmaa, 2000:79).

I will have to agree with this and believe that some solution to this can be found in the credo of Louis Khan that "a building should be what it wants to be" (Bron, xxxx:xx). This approach stands central to an honest materiality that expresses the sensory experience of these materials in its purest form. It embraces the ageing effect of the materials in a way that celebrates the patina of age.

From a formative approach to sensory architecture Gianni Vittimo introduced the notion of "weak ontology" and "fragile thought", similar to Goethe's method of Delicate Empiricism (Pallasmaa, 2000:81). Pallasmaa (2000:81) reinterpreted this approach, which he

termed a fragile architecture. As he points out, in our current society the idea of a fragile architecture might be negatively understood, but this ideology can be better understood through Pallasmaa's direct translation: An architecture of "weak" or "fragile" or, more precisely, an "architecture of weak structure and image", as opposed to an architecture of "strong structure and image" (Pallasmaa, 2000:81). He further describes such an approach as an architecture that is contextual and responsive, encouraging inhabitants to linger and explore. However, I believe that strong structure and image should be combined with a strong sense of materiality and texture that respects our human scale, and with a constant breathing of light and shadow that are rooted in our context to establish an appropriate language.

The question stated previously as to how such a tectonic can express technological advancement and promote a return to a more traditional approach to architecture can be answered as follows:

I believe that the strength of a contemporary architectural language that stimulates a multi-sensory approach lies in the combination of traditional and contemporary technologies.

This direct contradiction illustrates the architecture of our time in a way that projects a new beginning, while remaining deeply rooted in the phenomena of our past, and embracing the performance life. When the spatial arrangement of these new buildings promotes intimacy and tranquillity with an awareness of natural phenomena, I believe that technologically advanced screens, claddings and skins can be used to complement and further enhance these spaces.

Conclusion

The quest to create a multi-sensory methodology is a complex one, with each project asking for its own unique interpretation. I also believe that, as Jan Smuts proclaimed: "The whole is more than the sum of its parts". A multi-sensory architecture cannot be abstracted to individual combined elements, but when it is used collectively, it is the combined magical musical harmony that these tectonic elements produce, in conjunction with the energy human beings bring to the place, that proclaims an architecture that touches the soul as a symphonic whole with each aspect performing in tune.

FIG 4.1_Mesh transparency when not activated

FIG 4.2_Mesh transparency when activated

FIG 4.3_Mesh creates multimedia experience on building facade

FIG 4.4_Mesh spacing determines visible distance of media

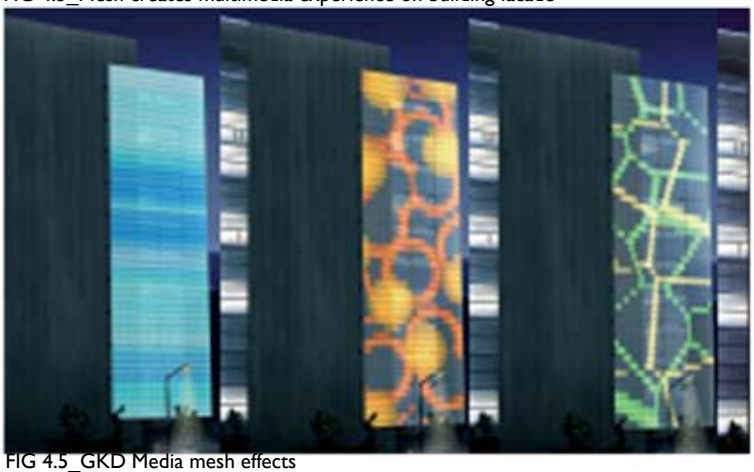


FIG 4.5_GKD Media mesh effects

FIG 4.6_GKD Media mesh on building facade

Light

FIG 4.7_Density of space enhanced through shadow articulation

FIG 4.8_Materiality enhances shadow

FIG 4.10_Filtered light quality

FIG 4.9_Colour panels creates colorful shade spectrum

"In great architecture there is a constant deep breathing of shadow and light; shadow inhales and illumination exhales light
(Pallasmaa, 2005:47)

FIG 4.11_Shadow ads to the layered depth of planer elements

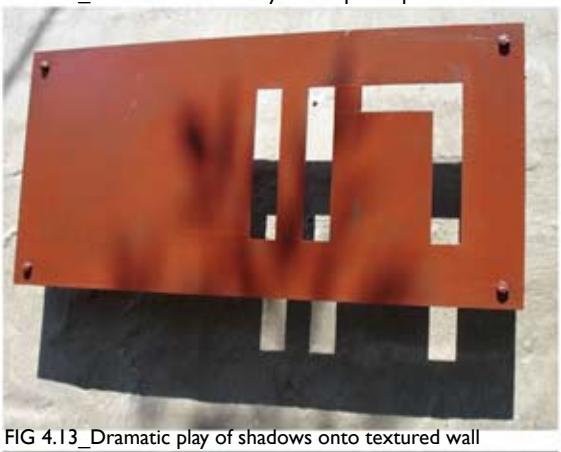


FIG 4.13_Dramatic play of shadows onto textured wall

FIG 4.12_Soft light filtering into space interior

Materiality

FIG 4.14_Layered materiality

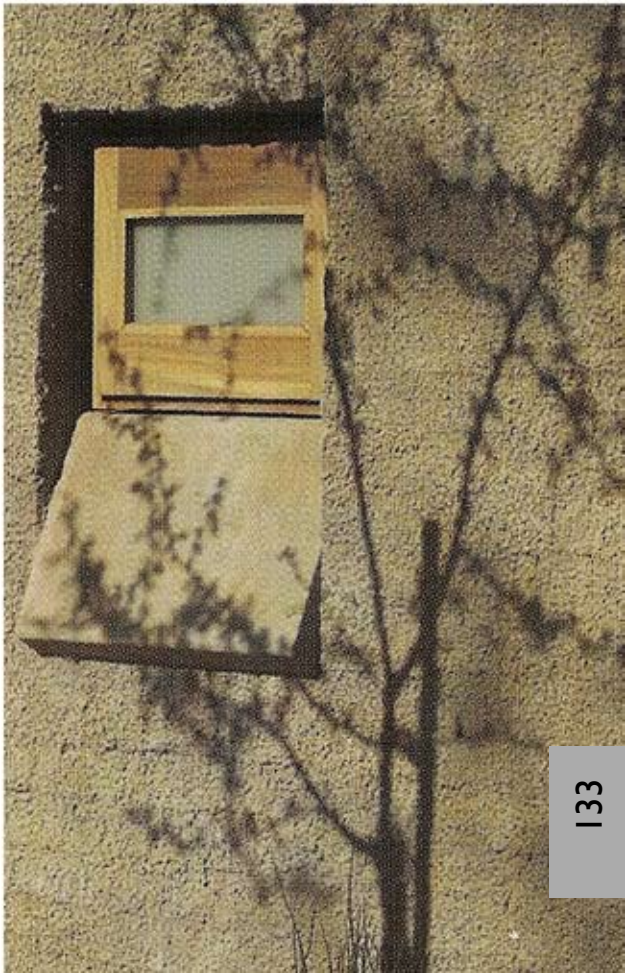
FIG 4.15_Shadows reveals true textured materiality on wall

FIG 4.16_Colourfull palette of brickwork

"Around the world today we are attempting to re-sensualise architecture through a strengthened sense of materiality and haptisity, texture and weight, density of space and materialized light"
(Pallasmaa, 2005:37).

FIG 4.17_Nutral surface brought to life through shadow articulation

FIG 4.18_Textured depth enhanced trough light



Spatiality

FIG 4.19_Tranqual roof space

FIG 4.20_Spatial relationship between external and internal space

FIG 4.21_Focussed view onto courtyard space

FIG 4.22_Spatiality enhanced by color

FIG 4.23_Spatial connection between internal and external environment

"Nature spelled with a capital N the way you spell God with a capital G"[Frank Lloyd Wright further proclaimed that] "Nature is all of the body of God we will ever know" Frank Lloyd Wright
(Pfeiffer,2007:26)

FIG 4.24_Light shaft provides spatial continuity with external environment

FIG 4.25_Tranquility enhanced trough material choice

FIG 4.26_Natural connection

FIG 4.27_Internal courtyard

Massing

FIG 4.28_Opening placement enhances mass articulation

FIG 4.29_Window placement enhances wall depth experience

"Architecture is the masterly, correct and magnificent play of masses brought together in light"
(Le Corbusier, 1959:31).

FIG 4.30_Light enhances the formal language of the masses

FIG 4.31_Mass to void relationship

Chapter

This chapter deals with the technical investigation conducted for the dissertation. Various technical aspects have been three-dimensionally illustrated so that the reader can visualise these technical aspects as an integrated whole throughout the spatial design of the project. Relevant precedents have been included so that the body of work done for the technical documentation can be understood through an analysis of informed built examples. These examples were chosen so that the principal aspects highlighted within them can be reinterpreted within the scope of the design.

5

Tectonic development

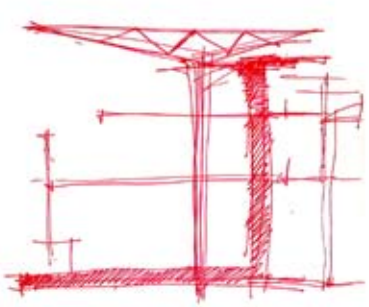


FIG 5.1_Tectonic section illustrating the essence of the structural logic

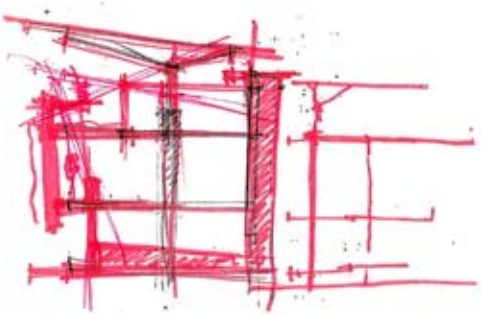


FIG 5.2_Tectonic language illustrated on diagrammatic section

The tectonic development was guided by the theoretical argument so that each of the technical aspects could relate back and appropriately strengthen the design. The experiential aspect of the design provides the basis for the design decisions. It was important that these experiences occur on a human scale so that the user can be made aware of the materiality, spatiality, massing and light quality within the architecture. Resulting from this the materials chosen had not only to convey the tectonic and conceptual approach, but also had to satisfy the practical cost, construction and thermal requirements of the project.

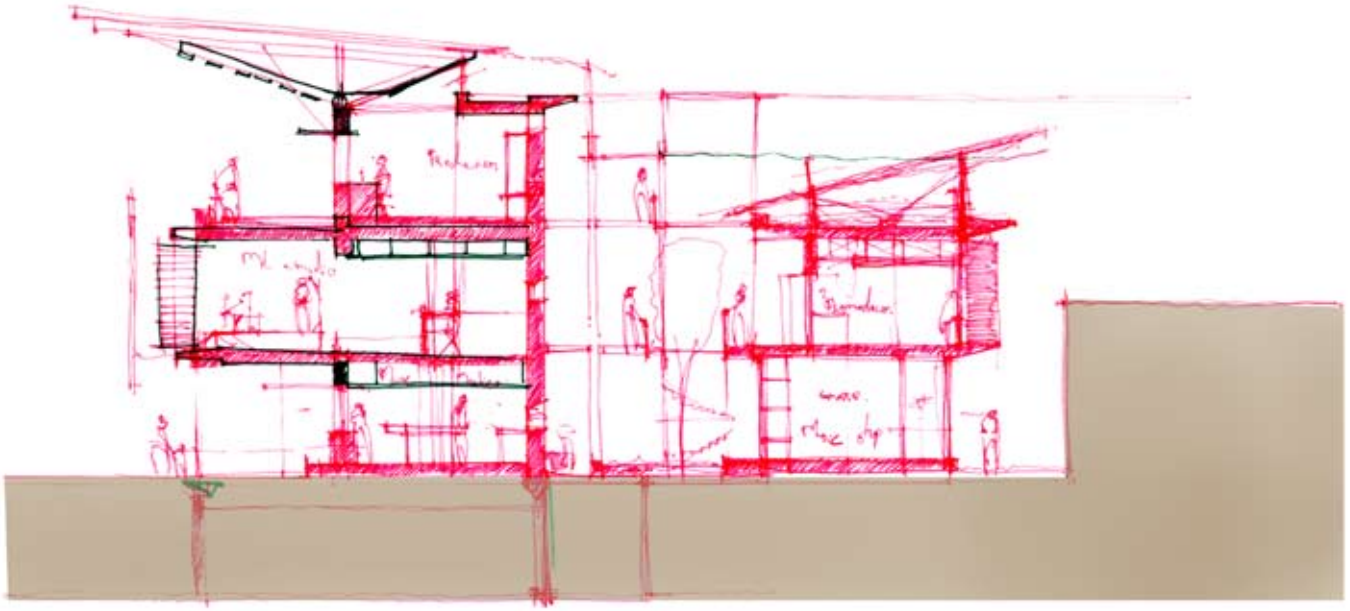


FIG 5.3_Section through MK Live room

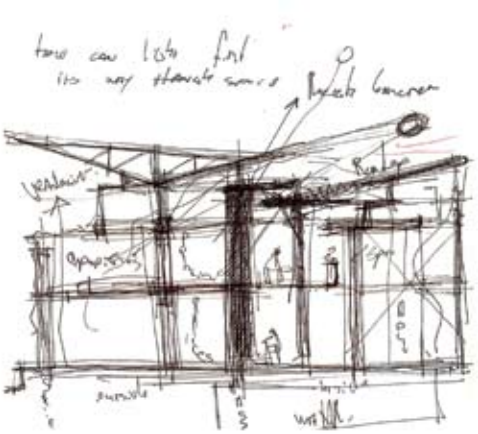


FIG 5.4_Srtuctural system explored in relation to sun angles

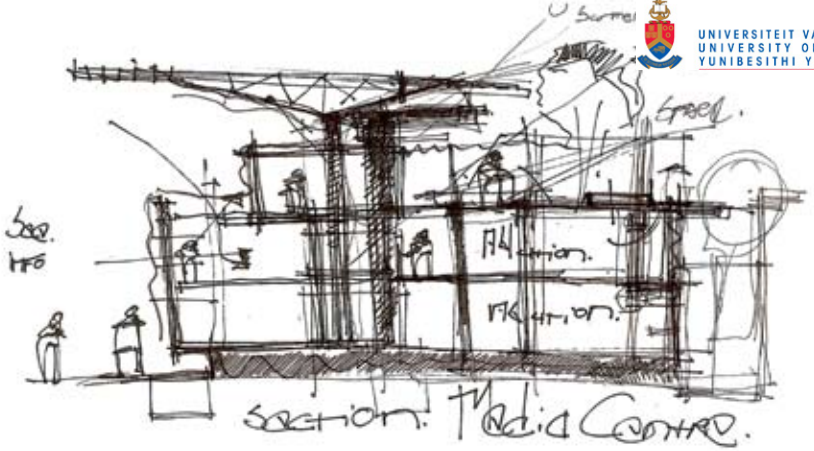


FIG 5.5_Spatial section through Resource library

The development process shown illustrates the process the design underwent to simplify the various facets of the design so that all parts collectively form part of a legible structural system. Due to the fact that the design, on a site scale, incorporated a super-level basement, the structural spacing of the basement was projected vertically so that a readable order within the building can be seen.

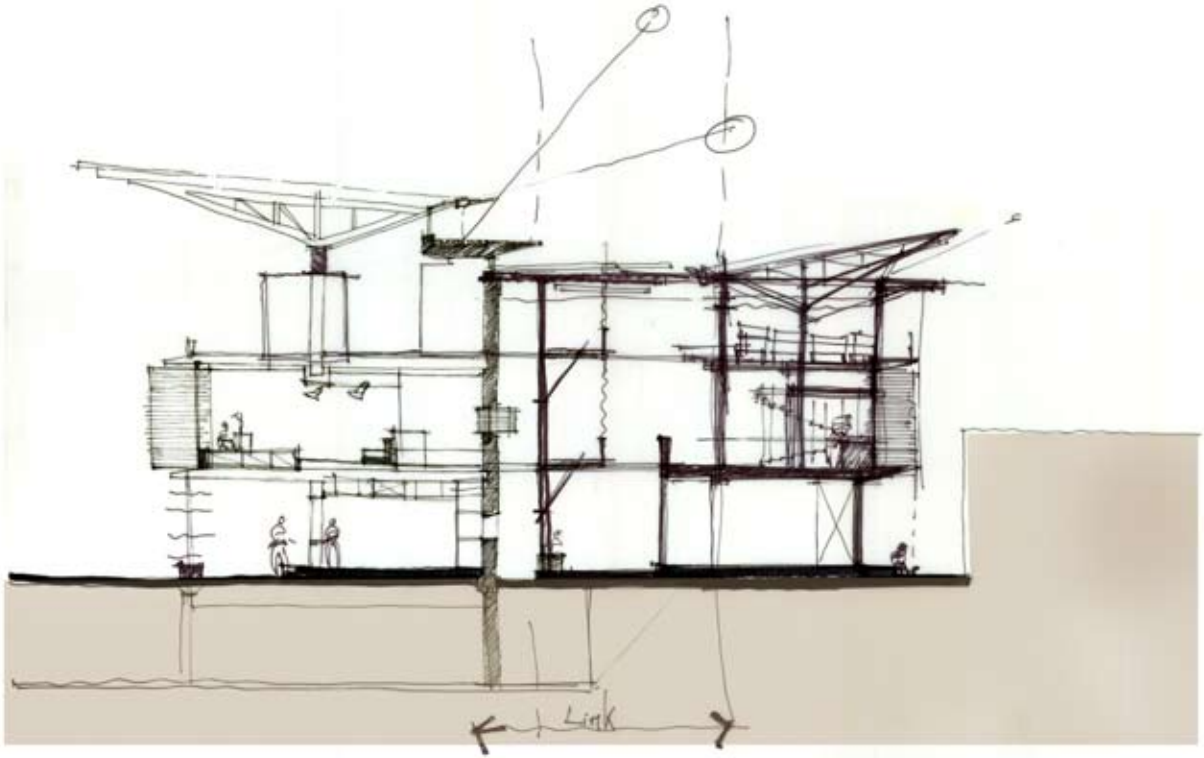


FIG 5.6_Section taken through recording booths and MK live room

STRUCTURAL GRID

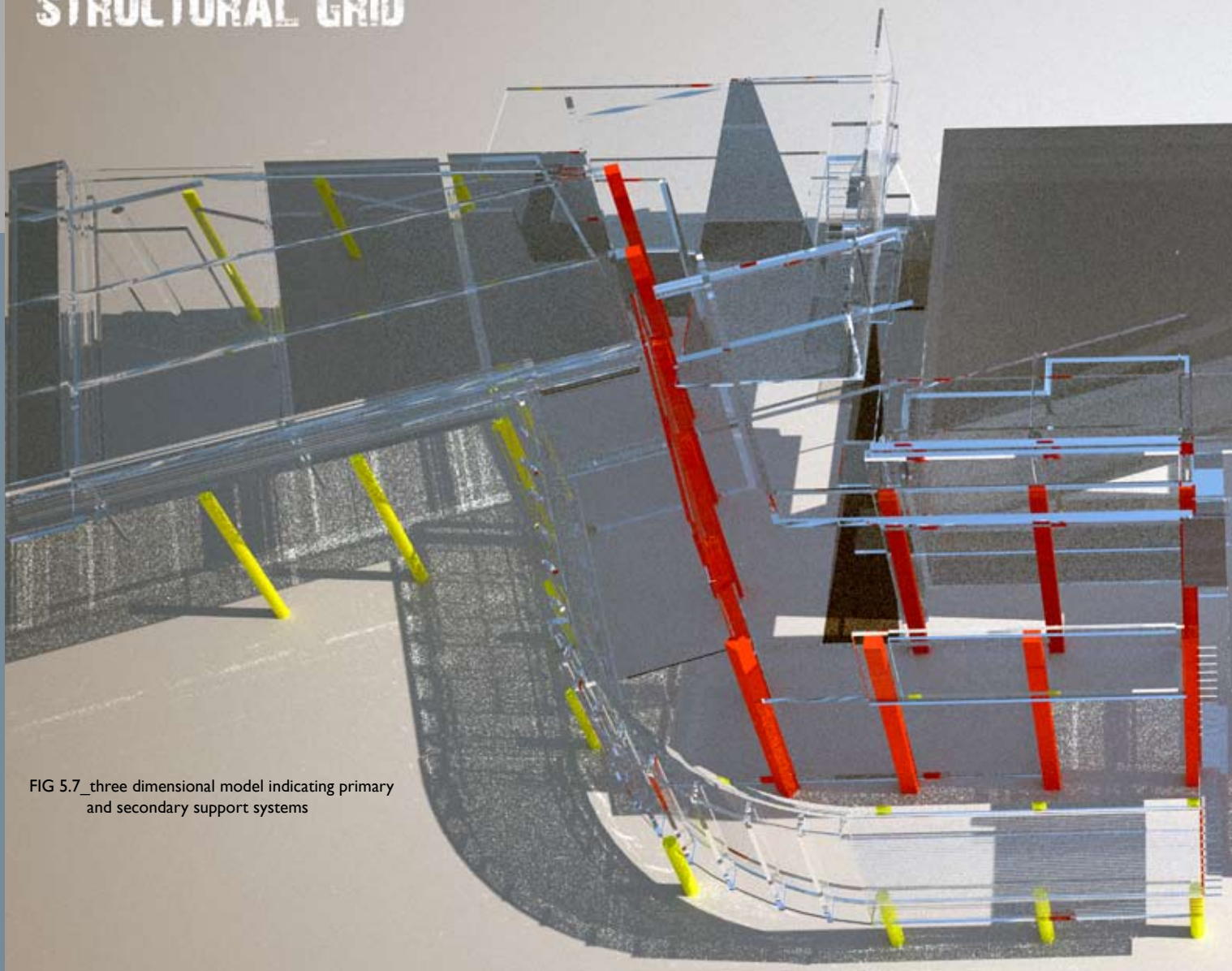
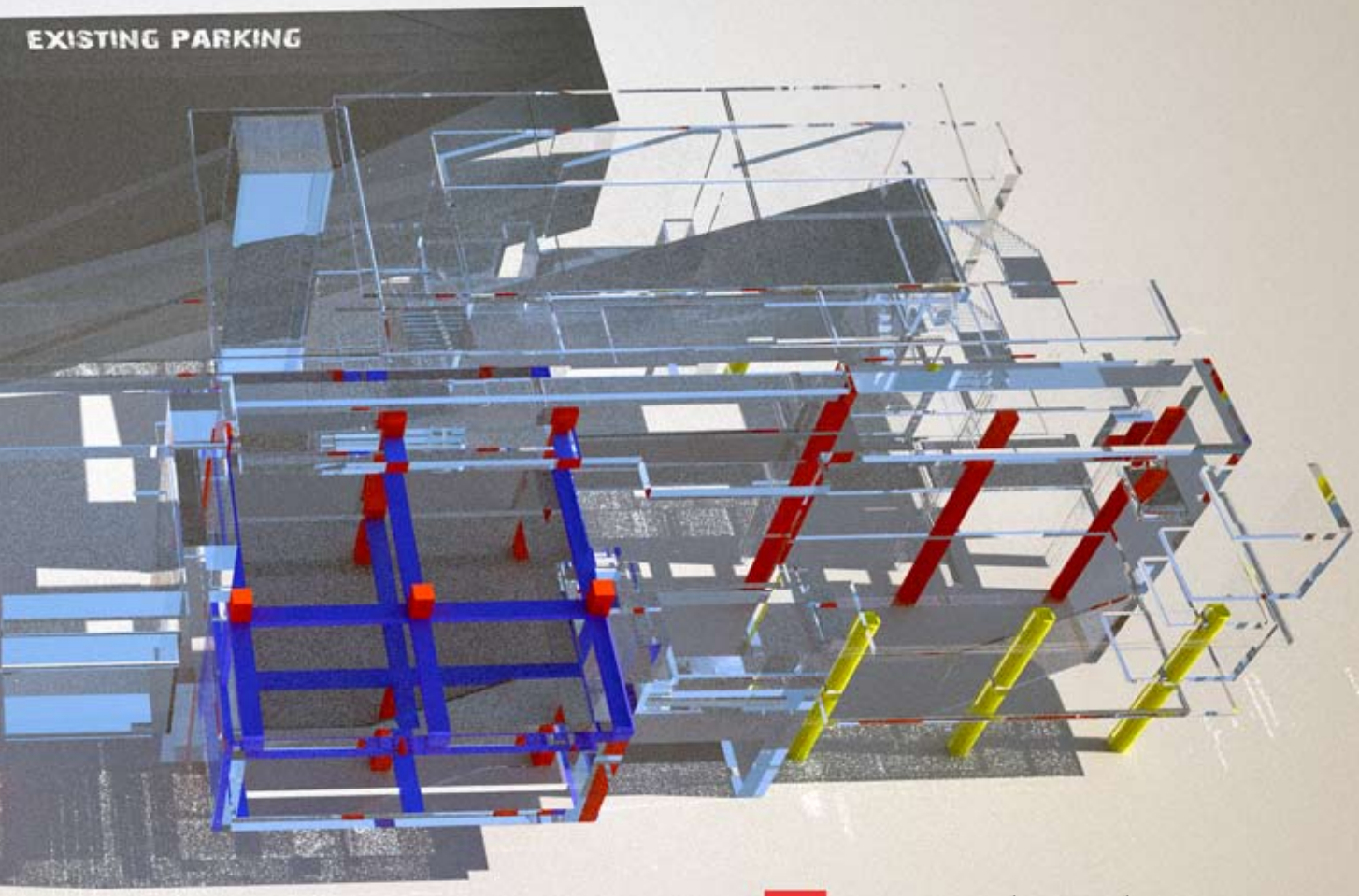


FIG 5.7_three dimensional model indicating primary and secondary support systems

The primary structural system employed within the building is a concrete frame and beam system with concrete flat slabs between floors. The layout of the basement is done in such a way that the column spacings are at intervals of 5 and 8 metres in an east-west orientation and a 6 metres spacing in a north-south direction. A structural rhythm of 558 can be seen in the front façade. This provides the opportunity for the structural system to articulate the primary and secondary entrances with the 8 m spacing. The primary columns are rectangular in shape due to the immense forces applied to the structure from the roof. The secondary columns are circular in shape to allow a spatial continuity between the internal and external space. The projected concrete cantilever was designed in conjunction with a structural engineer.



PRIMARY 550MM X 550MM REINFORCED CONCRETE COLUMNS

SECONDARY 460MM DIAMETER REINFORCED CIRCULAR CONCRETE COLUMNS

550MM X 650MM REINFORCED CONCRETE BEAMS SUPPORTING CONCRETE CANTILEVER

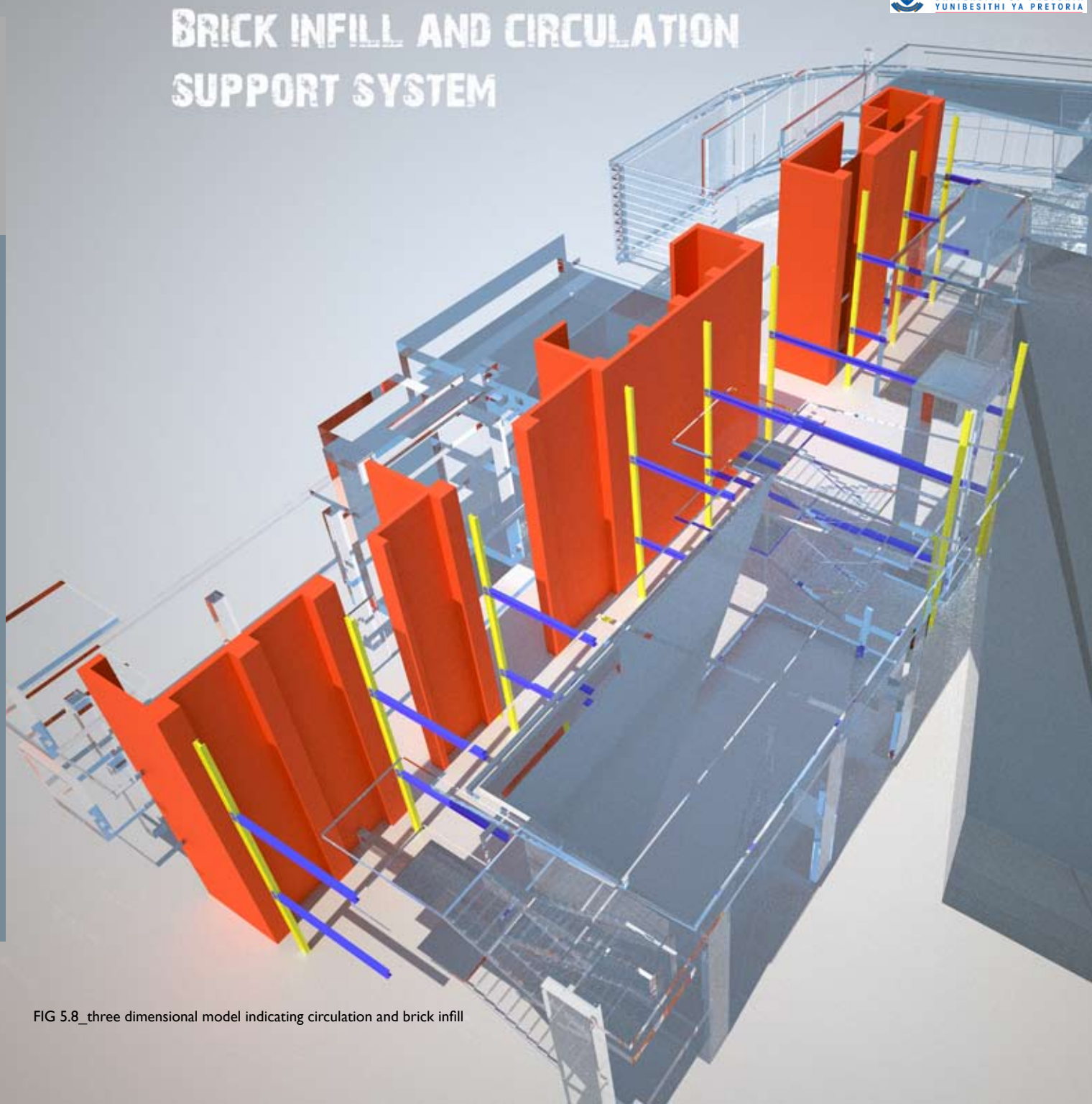


FIG 5.8_three dimensional model indicating circulation and brick infill

MASONRY INFILL **THE WALL**

254MM X 171MM GALVANISED MILD STEEL
VERTICAL SUPPORTING COLUMNS

254MM X 171MM GALVANISED MILD STEEL
HORISONTAL BEAMS

The **WALL HIGHLIGHTED IN RED** plays an important role, not only in the conceptual approach of the building, but also in the tectonic and experiential language thereof. Due to the fact that the primary structural system consists of concrete columns and beams, the wall has been designed to read as a singular brick mass and not as brick infill with the concrete frame visible, as is often the case with concrete-framed buildings.

This has resulted in a substantial thick cavity-wall construction. The thickness of the wall provides the necessary acoustic requirements needed within the recording studios. The thermal mass that the wall provides also satisfies the thermal properties required within a building located within the Pretoria context. The circulation is separated from the wall and comprises a secondary structural system of steel columns and beams. Due to the experiential aspects of the building the chosen articulation for the circulation resulted in a morphology that can be described as a light filter.

Due to the directly northern location of the building it was important for the detached circulation network notto block light from the building interiors but allow the required sunlight and shade requirements within the building to filter through. The circulation route was designed in such a way that it drapes dramatic shadows onto the wall mass, creating a sensory experience as one moves along the linear arrangement.

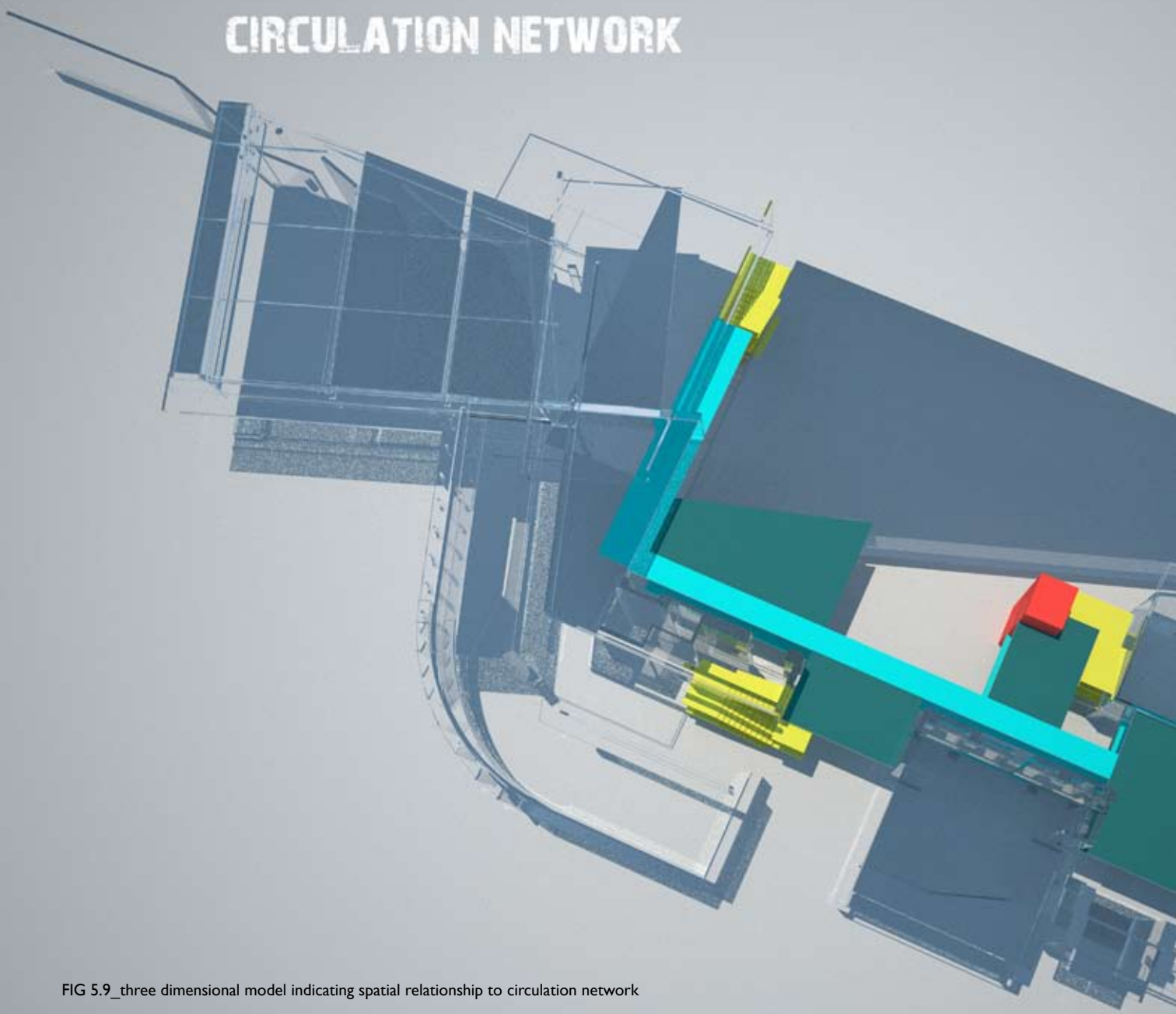


FIG 5.9_three dimensional model indicating spatial relationship to circulation network

OTIS GEN 2 LIFT

STAIRCASES

PRIMARY CIRCULATION SPINE

NETWORK OF SPACES ATTACHED TO PRIMARY CIRCULATION SPINE

The building is ordered around a linear organisational arrangement of circulation. The image illustrates the relationship of spaces along the route. The spatial directionality changes at point (A). This is the result of the programmatic layout of the studio control tower, which is visually connected across the internal courtyard. Resulting from this, the spatial order intersects the linear circulation and the orientation changes to accommodate the functional requirement situated at the back of the building.

For ease of public use the vertical circulation networks are situated at the end points of the circulation route, with the primary circulation located to the right of the internal courtyard. The externally detached circulation routes add to the safety of occupants in case of a fire.

Roof

The technical resolution of the primary roof has played a pivotal role in the chosen technology employed for the roof. As can be seen from the chosen process diagrams, a thorough investigation into the structural arrangement of the trusses has been undertaken so that they are only centrally supported. Initially the response was to follow the perpendicular angle to the circulation. Because the primary roof responds to both geometries, this approach resulted in an inefficient roof truss construction increasing in size to accommodate the two geometries.

As can be seen on the following pages, a simpler approach to the roof grid was adopted, allowing for the primary roof to respond only to the diagonal grid. This allowed for the standardisation of roof trusses, with each truss identical.

Spatially the roof responds to the conceptual approach and opens out towards the stage and film studios, which reflect the climax in the performing arts industry. The roof is separated from the wall element. This allows for the space to be connected from the two sides of the intervention, strengthening the presence of the wall as a separate element.

The underside of the truss spatially portrays trueness to the constructed form of the roof. This creates a spatial experience with efficient southern light within the spaces, but also allows winter sun to filter into the interior of the building while unwanted summer sun is excluded from the interior of the office space due to the correct amount of overhang provided by the designed gutter.

FIG 5.10_Projected truss sketch exploring roof orientating responding to perpendicular grid

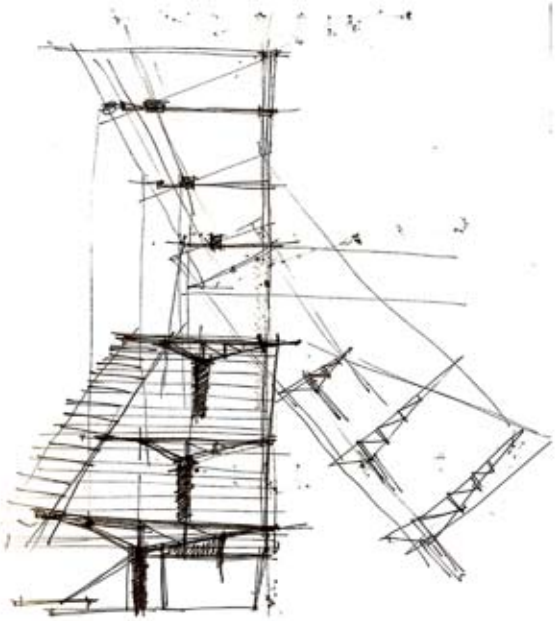


FIG 5.11_Roof development sketch

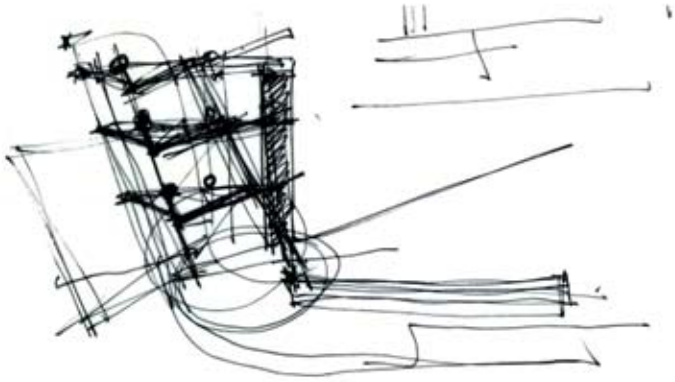


FIG 5.12_Roof plan diagram

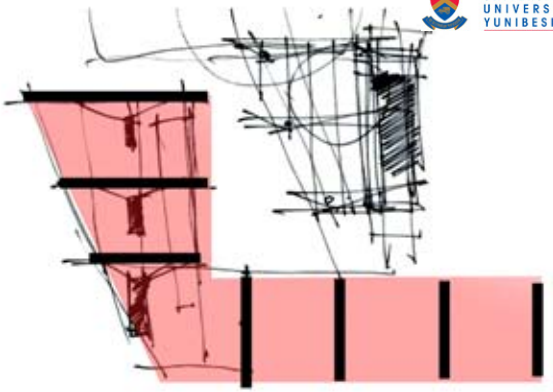


FIG 5.13_Roof plan diagram indicating initial roof shape responding to both grids

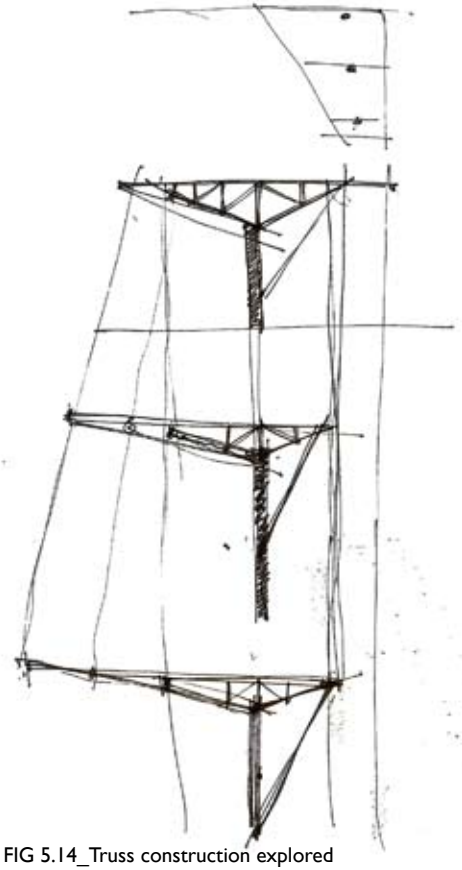


FIG 5.14_Truss construction explored

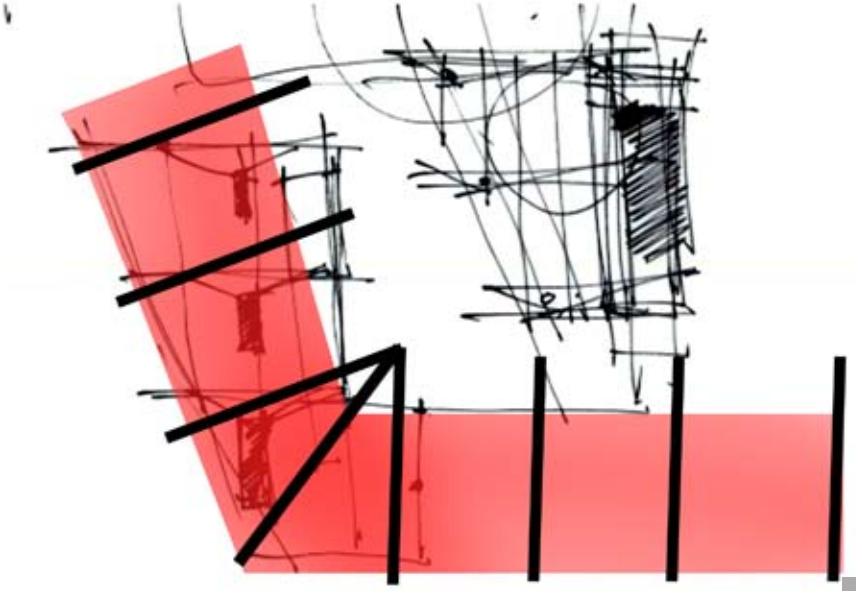


FIG 5.15_Diagramatic roof plan of intended truss spacing with resulting roof form

ROOF CONSTRUCTION

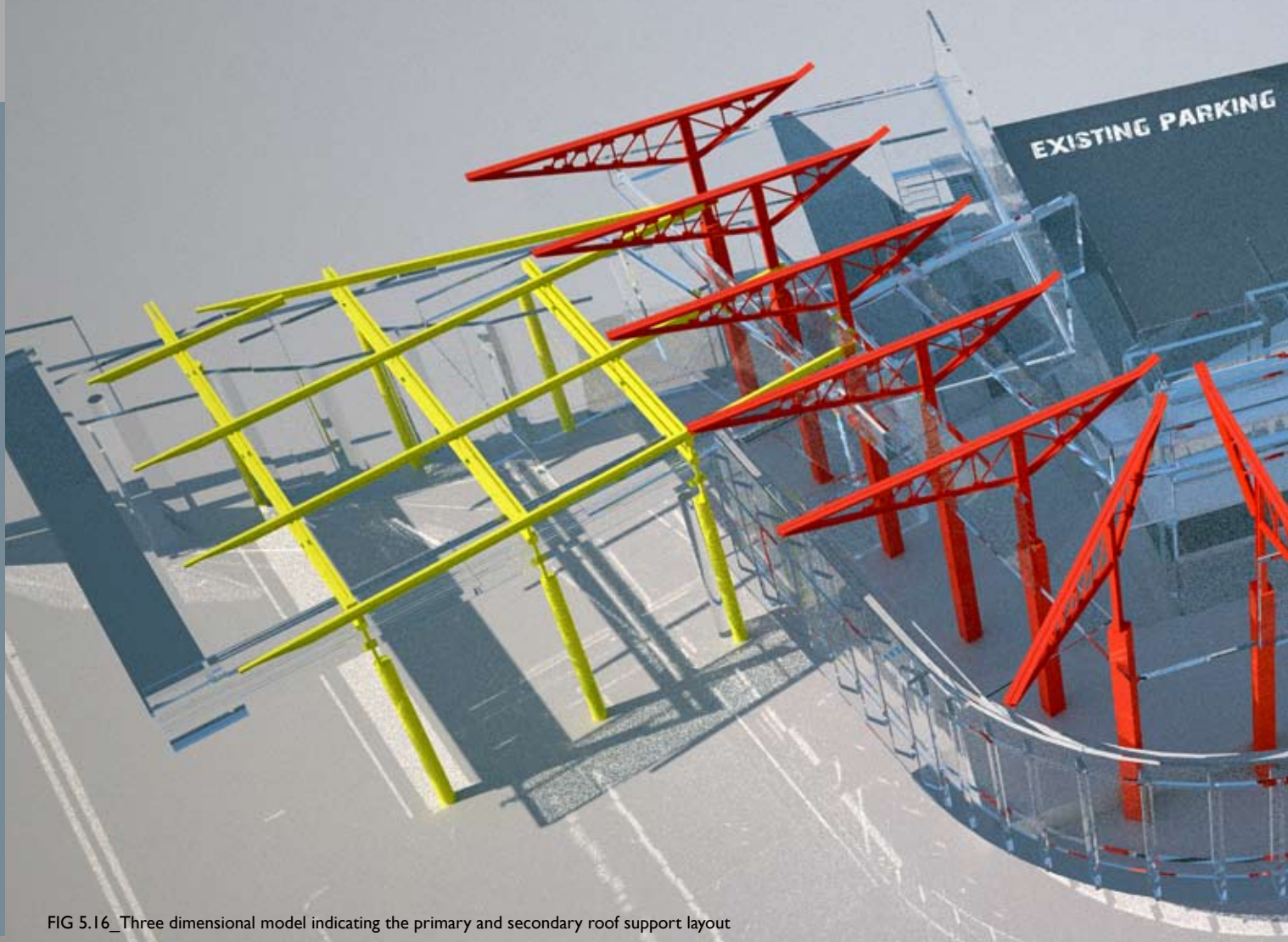
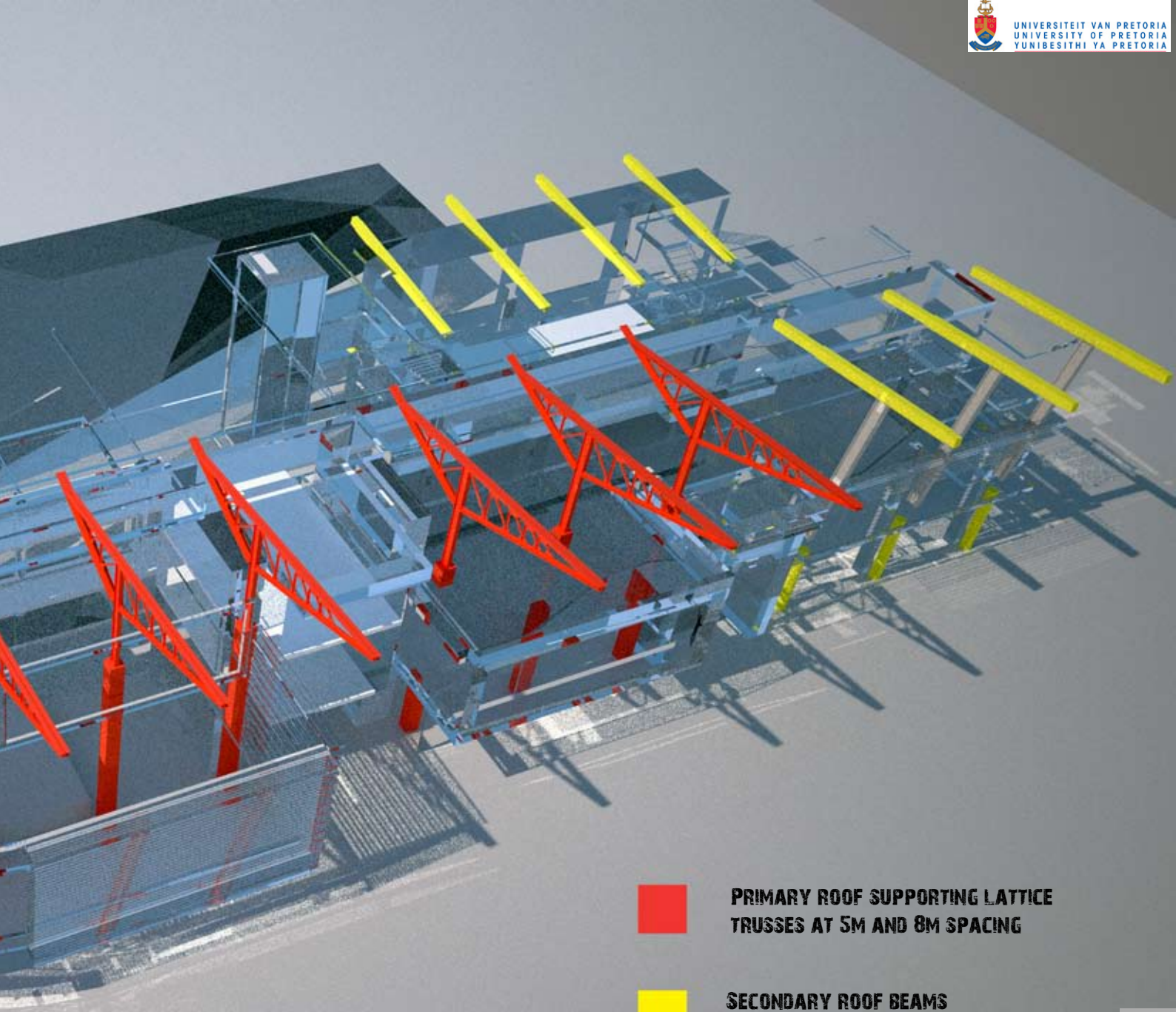


FIG 5.16_Three dimensional model indicating the primary and secondary roof support layout



PRIMARY ROOF SUPPORTING LATTICE TRUSSES AT 5M AND 8M SPACING

SECONDARY ROOF BEAMS

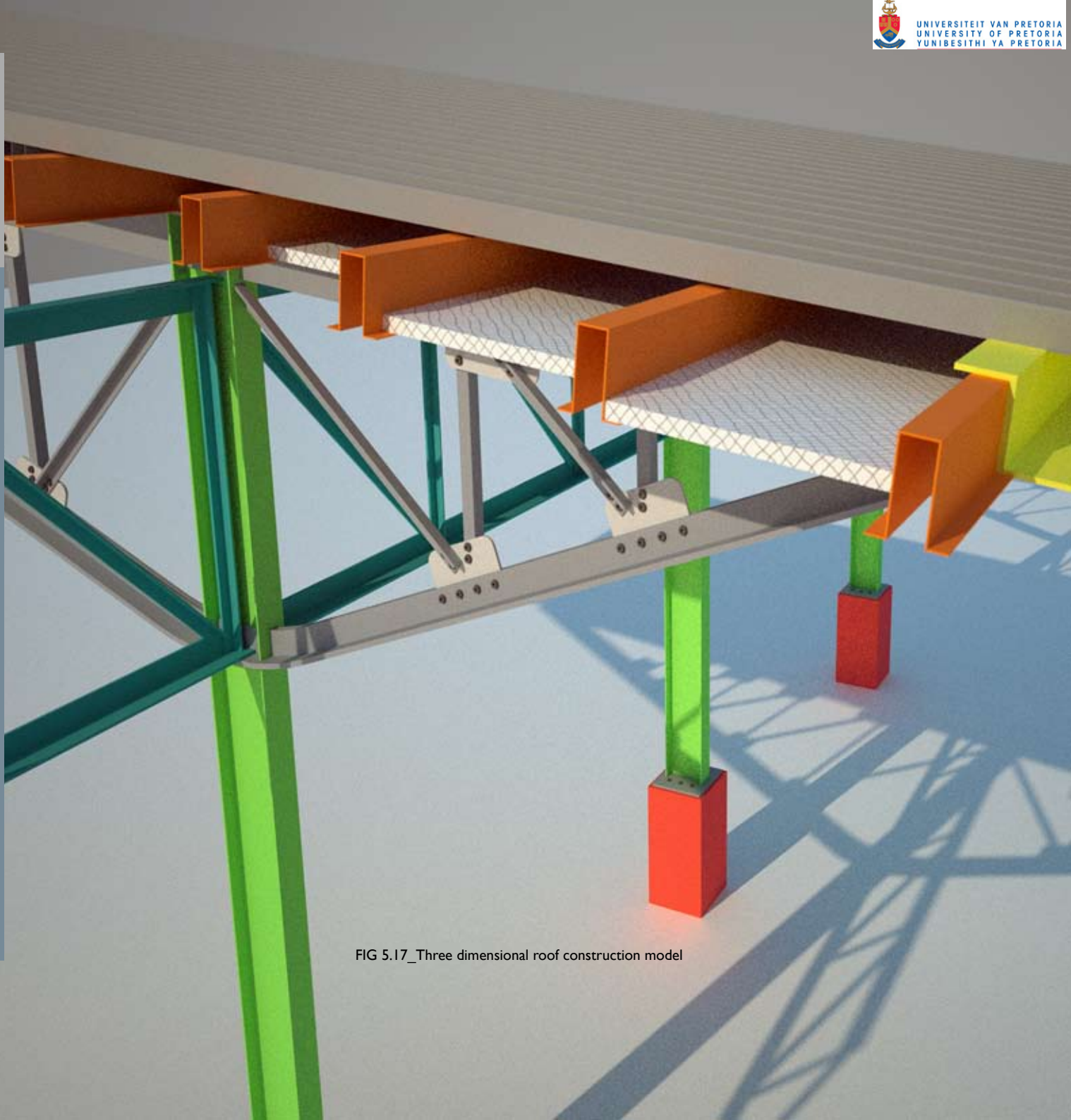


FIG 5.17_Three dimensional roof construction model

550MM X 550MM REINFORCED CONCRETE COLUMNS

356 X 171X 51MM GALVANIZED STEEL COLUMN WELDED ONTO 450 X 450 X 20MM BASE PLATE

228 X 100MM LIGHT GAUGE STEEL TOP HAT LIPPED CHANNELS AT 1100MM CENTERS

Purlin size: Max span 8000mm/slenderness ratio of 35 8000/35 = 228mmx100mmx4 purlin

PURPOSE MADE GALVANISED MILD STEEL STRUCTURAL GUTTER FLASHING SUPPORTED OVER TOP HAT SECTION

Gutter size: Roof 3 area Main roof: = 841,66m²
140mm²/1m² required by building regulations
Total Gutter required for roof3:
841,66m² x 140 = 117832,4 mm²
Current gutter area: 229243,88mm²

BROWNBUILT GALVANIZED MILD STEEL ROOF SHEETS WITH 1200 X 600MM SAGEX BOARDED ROOF INSULATION SUPPORTED BETWEEN TOP HAT SECTIONS

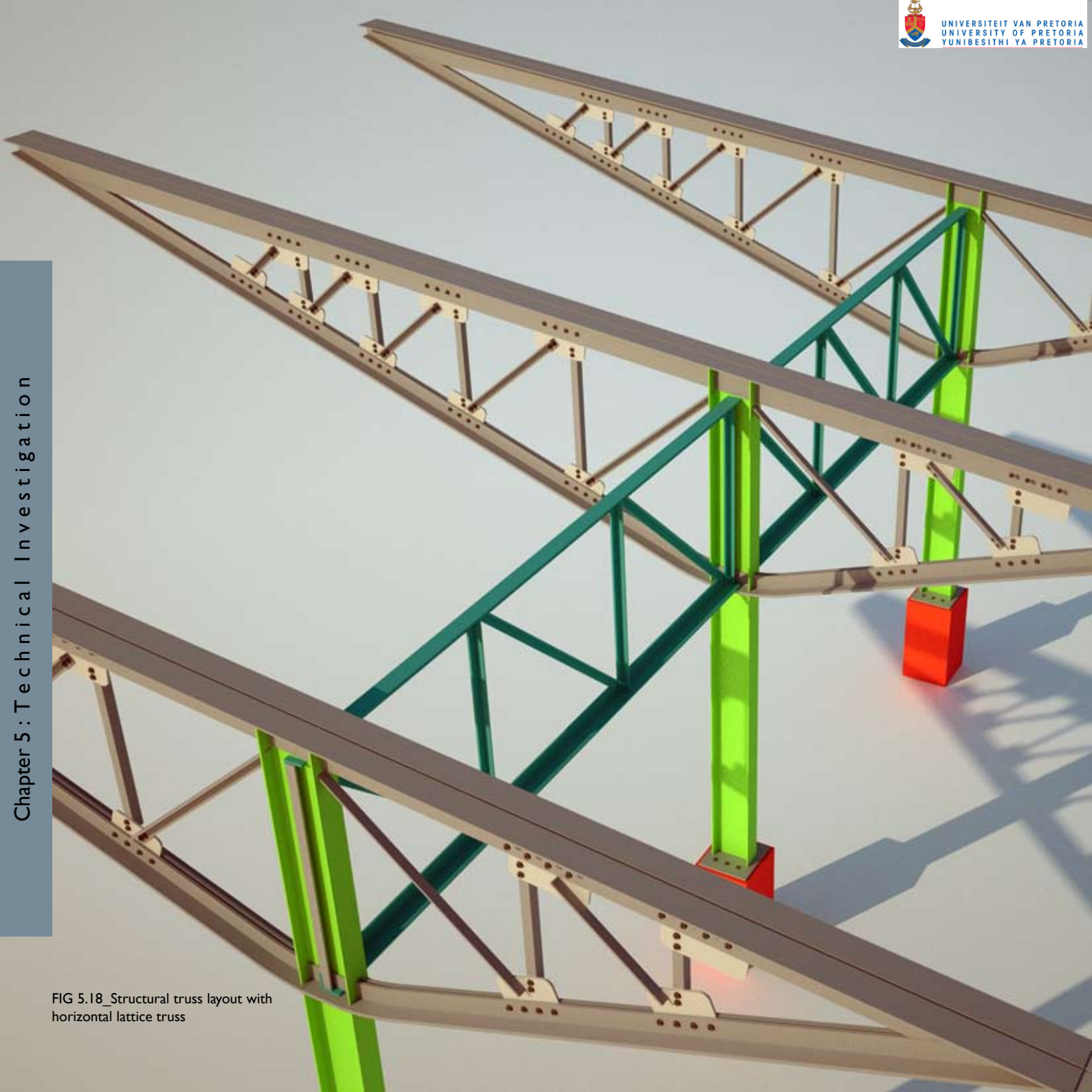


FIG 5.18_Structural truss layout with horizontal lattice truss

2X MILD STEEL ANGLES BOLTED TO FORM TOP SUPPORTING MEMBER WITH 2X STEEL ANGLES AS BOTTOM SUPPORTS WITH DIAGONAL AND VERTICAL STEEL ANGLE STRUTS BOLTED TO GUSSET PLATE TO COMPLETE PURPOSE MADE STEEL LATTICE TRUSS

HORISONTAL LATTICE TRUSS SUPPORTED AT TRUSS INTERVALS TO PROVIDE LATERAL BRACING TO ROOF CONSTRUCTION

356 X 171X 51MM GALVANIZED STEEL COLUMN WELDED ONTO 450 X 450 X 20MM BASE PLATE

550MM X 550MM REINFORCED CONCRETE COLUMNS

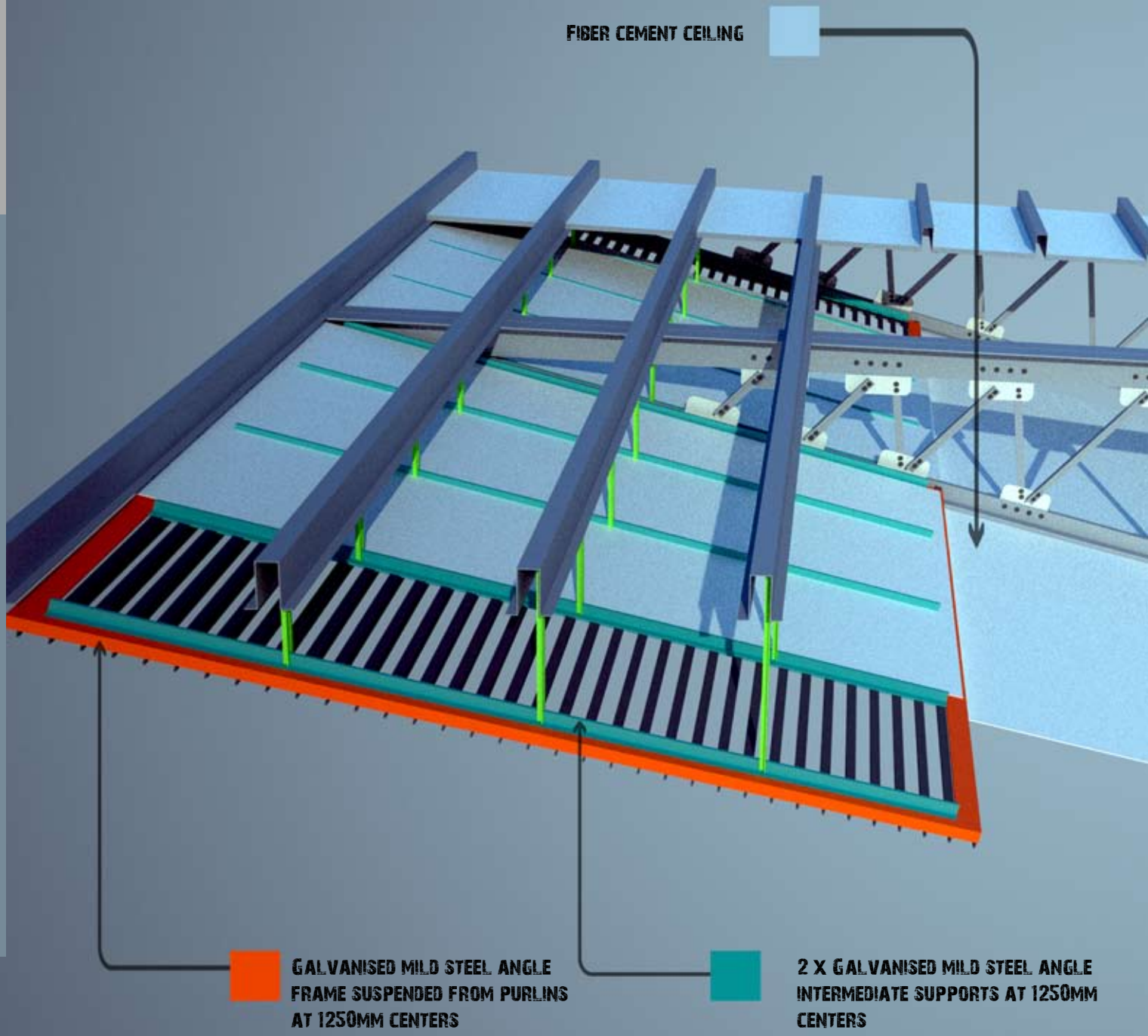
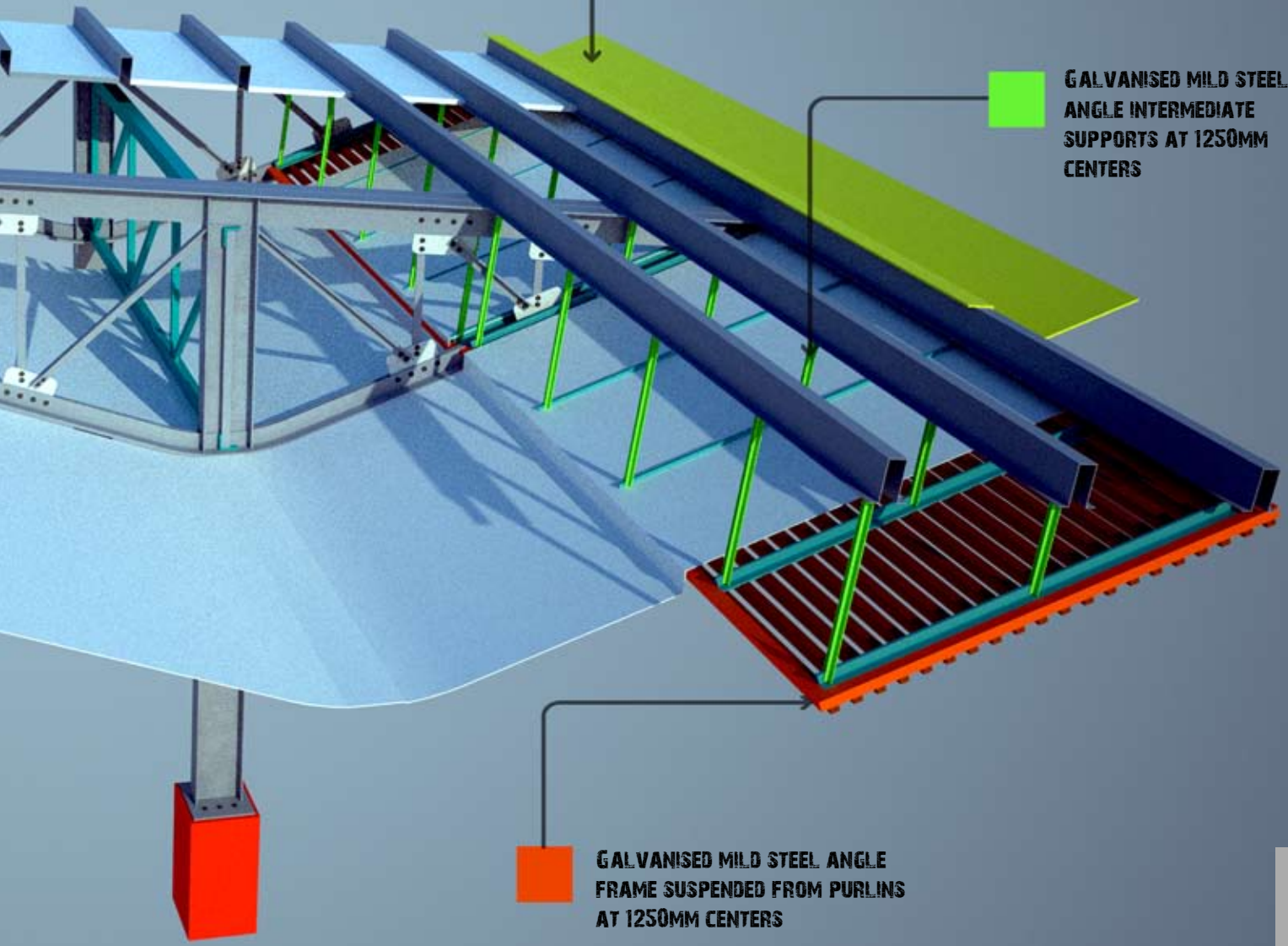


FIG 5.19_Three dimensional roof construction detail



PURPOSE MADE GALVANISED MILD STEEL STRUCTURAL GUTTER FLASHING SUPPORTED OVER TOP HAT SECTION

Gutter size: Roof 3 area Main roof: = 841,66m²
140mm²/1m² required by building regulations
Total Gutter required for roof3:
841,66m² x 140 = 117832,4 mm²
Current gutter area: 229243,88mm²
Gutter is adequately sized

GALVANISED MILD STEEL ANGLE INTERMEDIATE SUPPORTS AT 1250MM CENTERS

GALVANISED MILD STEEL ANGLE FRAME SUSPENDED FROM PURLINS AT 1250MM CENTERS

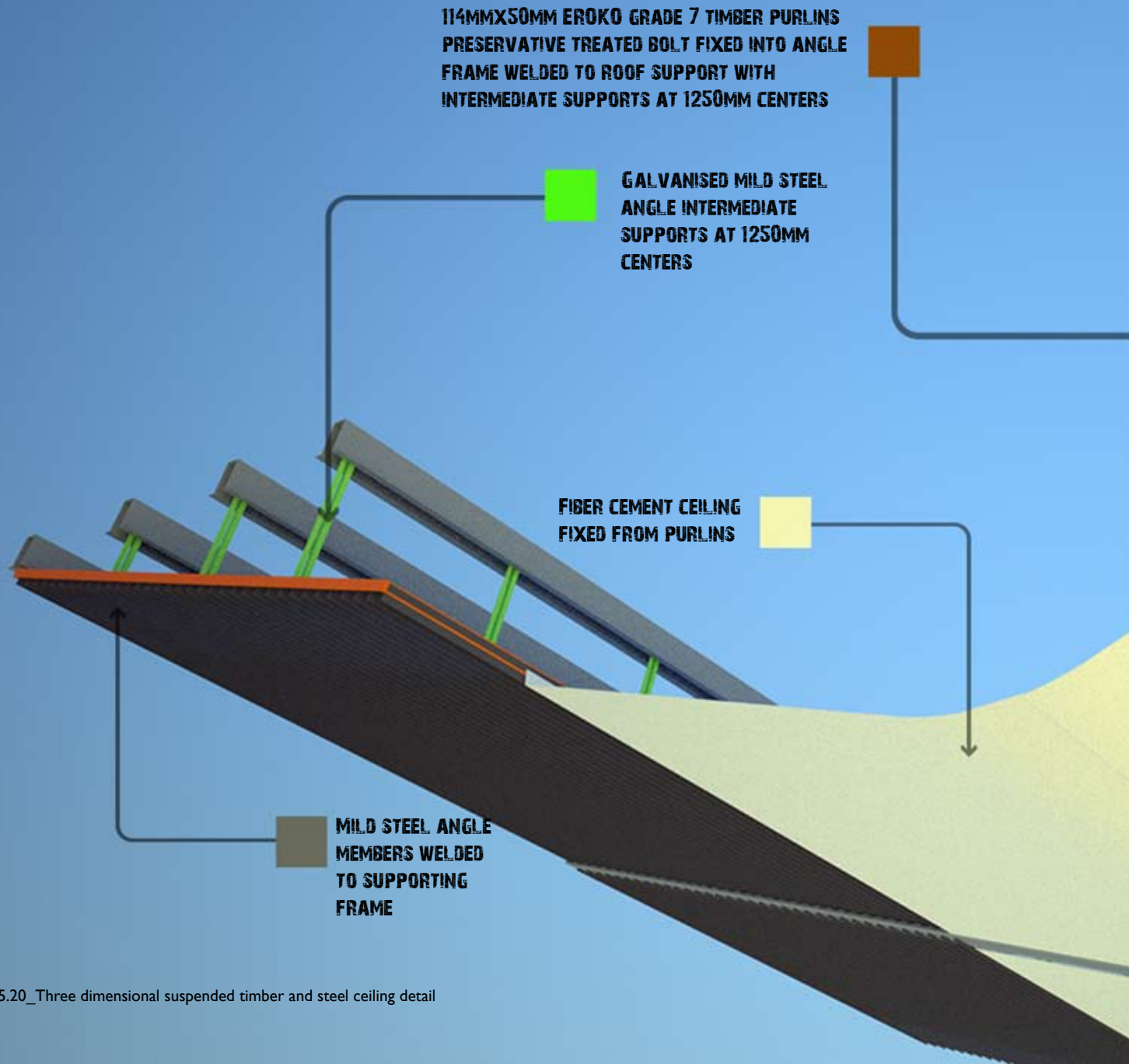
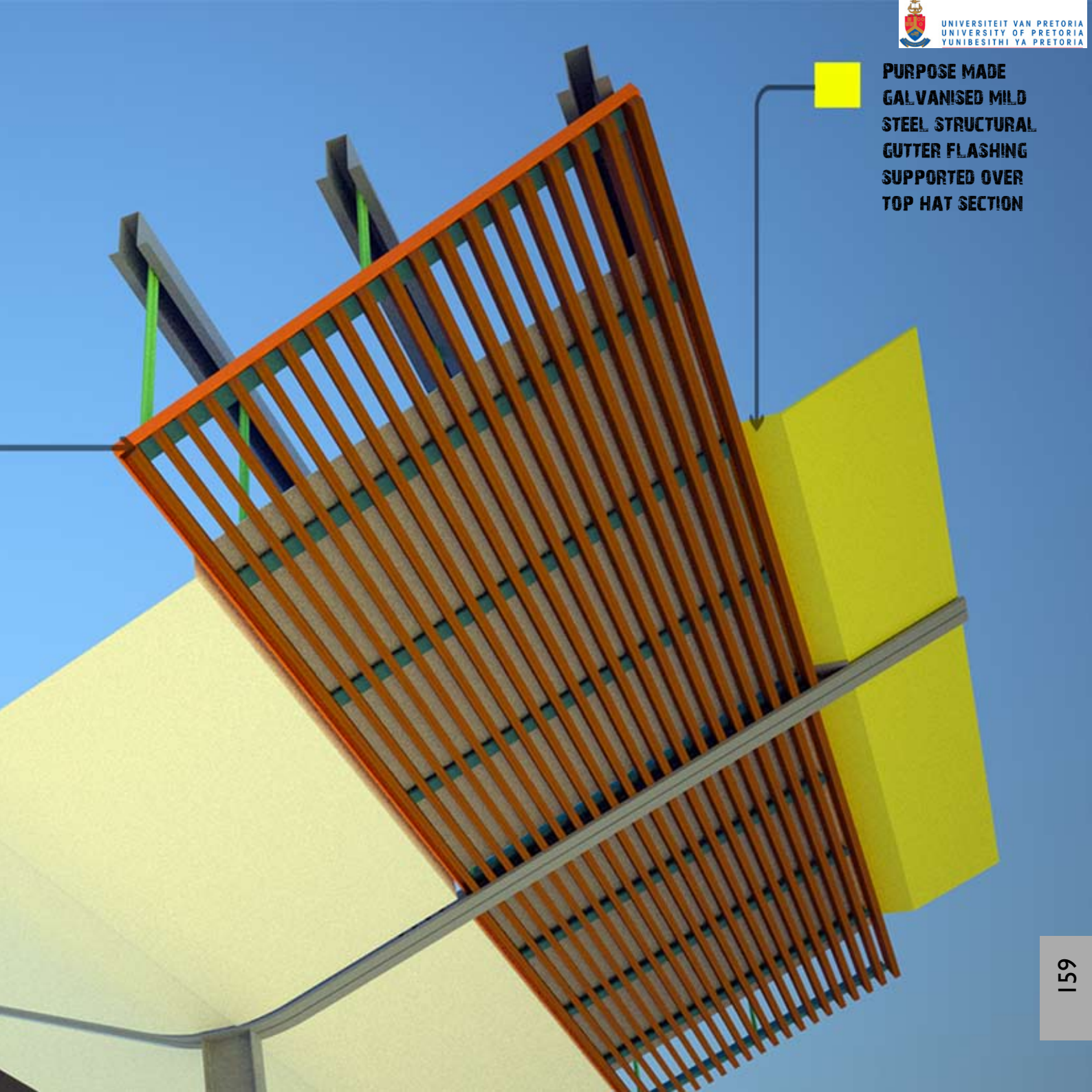


FIG 5.20_Three dimensional suspended timber and steel ceiling detail


PURPOSE MADE
GALVANISED MILD
STEEL STRUCTURAL
GUTTER FLASHING
SUPPORTED OVER
TOP HAT SECTION

Service cores

Due to the thickness and mass of the wall it was possible to adopt an integrated systems approach. The primary service cores are arranged within the wall, providing easy access to these cores via the external circulation. This allows for ease of maintenance.

The large amounts of rainwater collected from the roofs of the building were calculated and the downpipe requirements were satisfied by providing downpipes within the articulated brick columns.

Water catchment on the larger designed urban activity space, including roof runoff, was channelled to a central catchment tank. From this the water was stored in three separate tanks servicing each building's intermediate requirement.

Due to the slender section of the building, designed with a large internal courtyard, fresh air replenishment is provided by means of a mechanically regulated fresh air system. Fresh air intakes are situated behind the building and draw fresh air through a piped system located within the water tank, cooling down the fresh air to just below the natural air temperature before it is distributed within the building. This system does not provide air-conditioned air, but assists in the fresh air requirements for internal spaces. Due to the program of the building, care should be taken to ensure that all air handling units are fitted with a sound muffler to minimise unwanted noise that would disturb the recording processes.

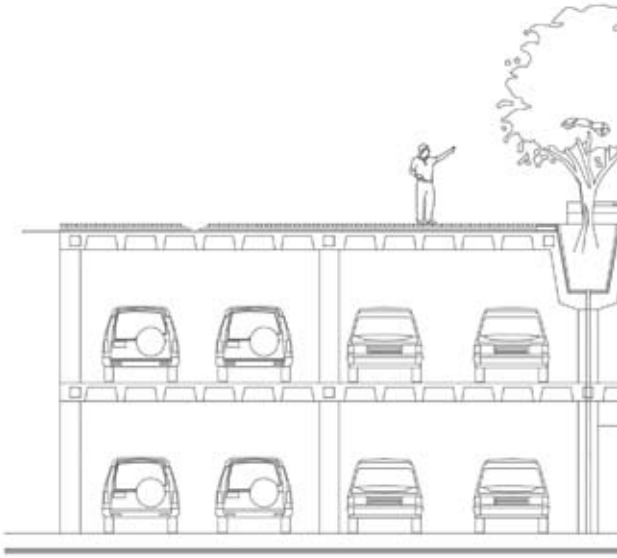
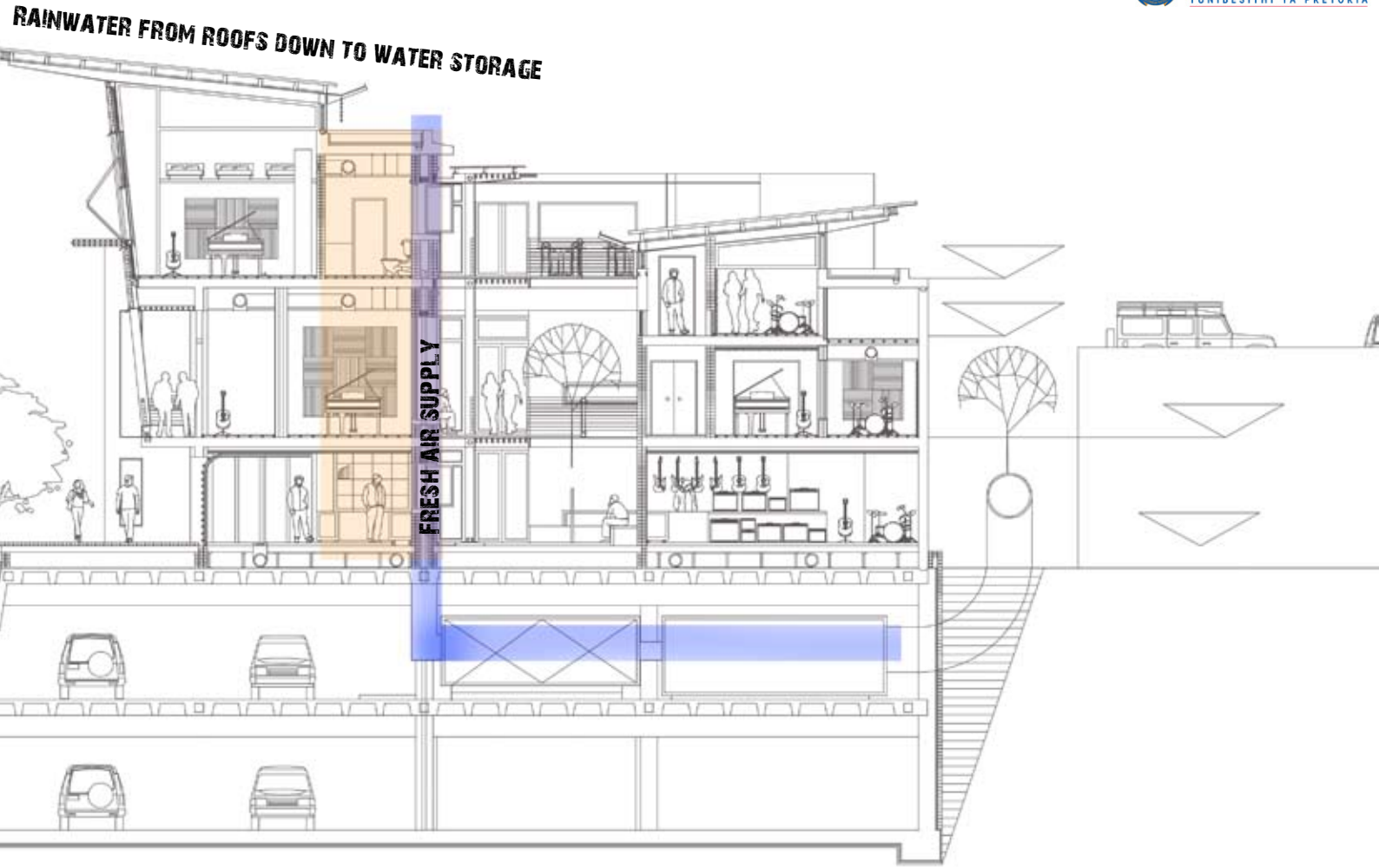
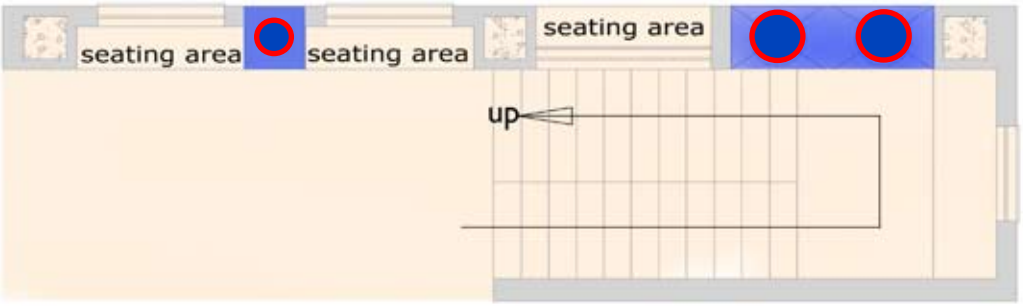


FIG 5.21_Integrated services illustration

DOWNPIPES IN BRICK CAVITY





VERTICAL SERVICE SHAFTS

FIG 5.22_Integrated services shown on plan

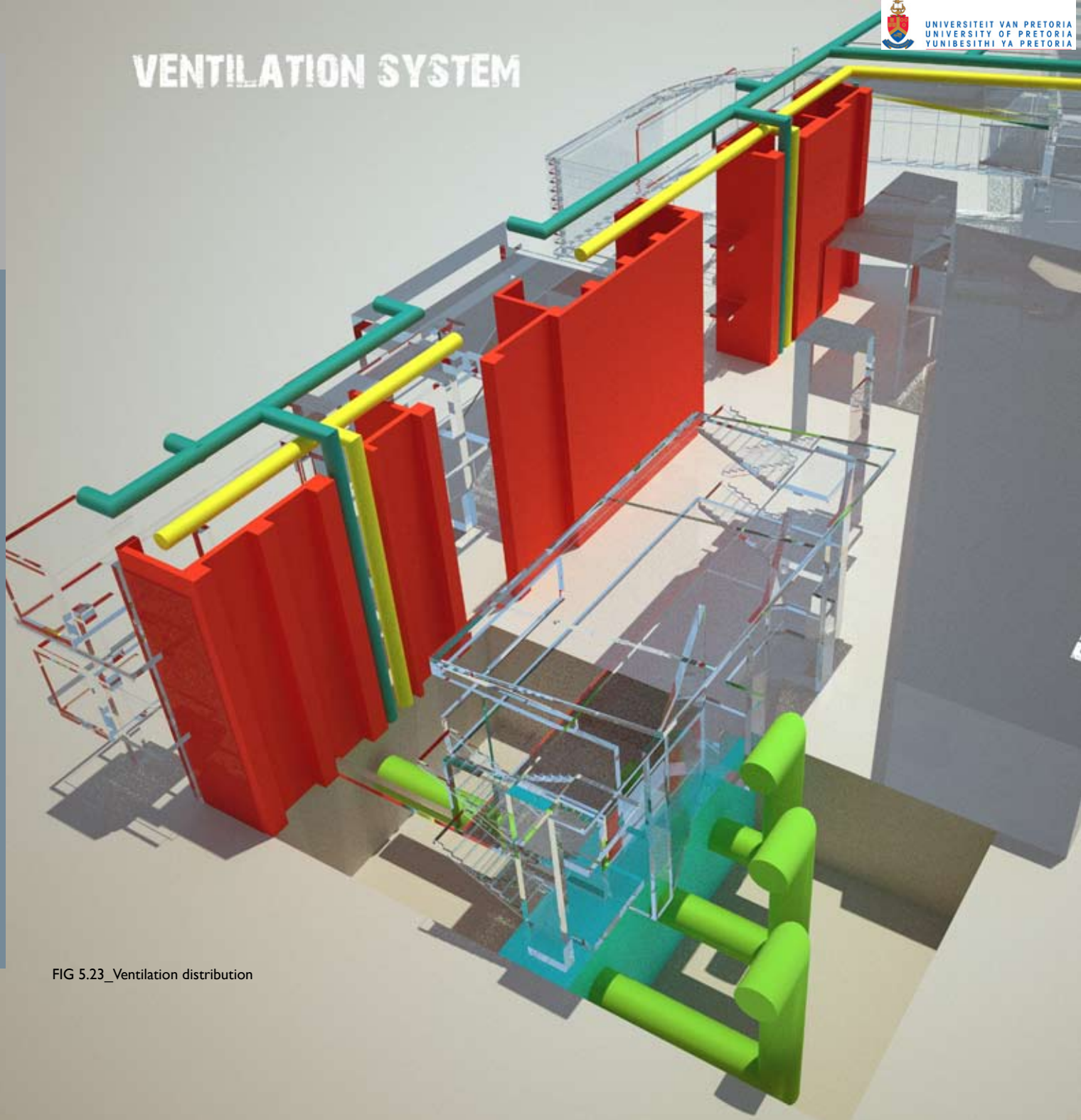


FIG 5.23_Ventilation distribution

BRICK INFILL TECTONICALLY AND SPATIALLY DEFINING THE WALL AS THE ORDERING SYSTEM CONNECTING THE VARIOUS PROGRAMMATIC REQUIREMENTS OF THE BUILDING INCLUDING THE INTEGRATED SERVICING SYSTEMS HOUSED WITHIN IT

DEPLETED AIR DRAWN IN THROUGH AIR INTAKES LOCATED WITHIN SUSPENDED CEILING AND FLOOR CAVITIES ENHANCING PASSIVE VENTILATION THROUGH BUILDING

FRESH AIR SUPPLY SYSTEM LOCATED WITHIN SUSPENDED CEILING AND FLOOR CAVITIES

FRESH AIR INTAKES LOCATED BEHIND BUILDING TO ENSURE THAT COOLER OXYGEN RICH AIR ARE DRAWN IN

DUE TO THE LARGE AMOUNT OF HARVESTED WATER ON SITE OXYGEN RICH ARE DRAWN THROUGH RADIATOR SYSTEM LOCATED WITHIN WATER TANK TO ALLOW FRESH AIR SUPPLY TO BE COLDER THAN AMBIENT AIR TEMPERATURE

Precedents

The precedent was chosen on the basis of the façade system, which addressed the same design problem of a curved glazed façade that requires a changeable shuttering system, as seen on the curved resource library façade on my building. The circular plan of the building faces directly west. This corresponds to the western orientation of the curved façade on my building. Due to the large amounts of glazing on the circular façade of the building, a mechanical moveable shutter system has been incorporated in front of the glazed wall.

The Pilkington four-point structural glazing system used allows for the glazing to articulate the curve by means of separate panels structurally joined by steel supporting frames, with spider clamp glazing supports attached to the steel posts and glazed panels. This sets up a readable structural rhythm extenuating the curve in a rectangular order. This allows for maximum visibility through the façade because there are no window mullions. The mechanically regulated shutter system allows for the internal light requirement to be altered to suit the specific spatial requirement at a certain time of day.

The shutter articulation adds to the layering effect of the curved façade, which gives the perception of planes sliding over each other around a curve.

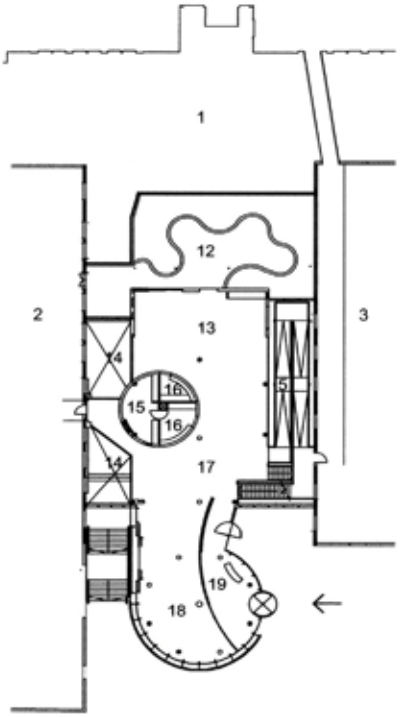


FIG 5.36_Ground floor plan

FIG 5.30_Pilkington structural glazing system with moveable shutters

FIG 5.31_Facade definition accentuates curved geometry

FIG 5.32_Glazing clamp detail

FIG 5.33_Mechanical movement system

FIG 5.34_Mechanical movement system on facade

FIG 5.35_External appearance

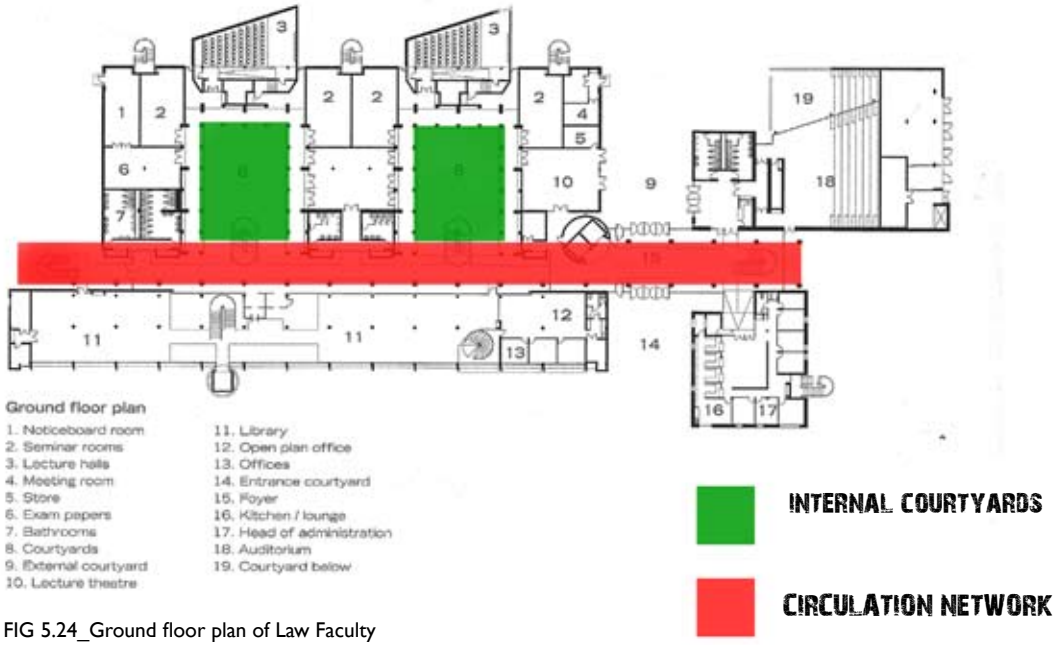


FIG 5.24_Ground floor plan of Law Faculty

The circulation within the building is arranged in a linear fashion. According to the analysis of the building in the book, Contemporary South African Architecture in a Landscape of Transition, the building is organised along a street with a series of courtyards arranged along a public walkway. This provides the ordering system to which the spatial arrangement relates. The articulation of this linear circulation route has had an important impact on the way that the circulation system has been designed within my building. The relationship between the internal and external spaces has effectively been articulated and creates an enticing experience as one progress along the linear route. This circulation is separated from the rest of the building. This allows the walkway to be used as a public space, allowing the internal functions to continue unhindered. The orientation of the building is the same as the orientation of our site a few hundred metres away. This allows the opportunity to experience the nature of the internal courtyards first hand. The part of the building that faces north is also the same height as the existing parking found behind my site. Thus the spatial experience within these courtyards bears strong similarities to the intended experience envisaged for my building. The construction method adopted for the walkways is concrete columns with steel beams with a q-deck floor construction. This allows for a concrete finish on the walkway. Within the scope of my building the functional programme situated along the walkway requires a good quality light to enter the building. Thus the circulation was designed in such a way that it would be durable, but allow light through as opposed to the solidity found within the Law faculty circulation construction. The entrance block to the right provides a good indication of the massing to opening ratio intended for the wall in my building. Although the materiality is different, the placement of the windows within the mass wall is an important architectural tectonic to allow the windows to read as punctures within the massing by placing them further back within the wall, as opposed to on the external facade. The relationship of wall to openings is arranged in such a way that more wall is read than opening.

FIG 5.25_Internal spatiality of courtyards

FIG 5.26_Detached construction detail of circulation network

FIG 5.27_Detached external circulation

FIG 5.28_Wall articulation

FIG 5.29 Wall massing show in relation to context

APARTHEID MUSEUM JOHANNESBURG GAPP ARCHITECTS DESIGNED BY MASHEBANE ROSE ARCHITECTS

The materiality envisaged for my project draws inspiration from the illustrated two projects. Due to the philosophical approach of an ageable building it was important to illustrate how the chosen material tectonic of exposed brickwork can provide a specific weathered character to the experience of such a wall. The combination off-shutter concrete, timber, galvanised steel and flush jointed face brick provides the architectural materiality employed within the design realisation of my project.

The first project illustrated is the Apartheid Museum in Johannesburg, designed by Mashebane Rose Architects. In this project the brickwork provides a uniform textured mass onto which dramatic shadows and textures can be draped.

The second example is located in Cape Town. It was designed by Norbert Rozendal and is called the Niehaus Gallery. It uses the same material tectonic as seen in the Apartheid Museum, but on a much smaller scale with more attention to detail and designed connections between materials. The brickwork has aged over time and it is this weathered materiality that exemplifies the materiality envisaged for the brickwork used in my design. In both examples the brickwork is read as a singular mass due to the fact that the bond is unified throughout without over-complex brick articulation, as is often the case with face brick buildings. This unified mass is strengthened by the flush jointing employed so that the bricks form a collective whole and not separate entities, as is the case with scraped joints.

FIG 5.37_Materiality used

NIEHAUS GALLERY CAPE TOWN NORBERT ROZENDAL

FIG 5.40_Weathered materiality of brickwork

FIG 5.38_Wall provides textured canvas for shadows to drape upon

FIG 5.39_Flush jointed brickwork used

FIG 5.41_Combination of materials provides a rich material palette

FIG 5.42_Concrete and brickwork provides stereo tonic language

ELPHICK STUDIO DURBAN ELPHICK PROOME ARCHITECTS INCORPORATED

The final three precedents were all chosen on the basis of the way that the various designers have addressed issues regarding the roof construction, gutter edge detailing and structural spans within the illustrated projects. The first project is a residential house designed by Elphick Proome Architects called Alpick Studio. This project was selected because of the way the designer addressed the gutter to sculpturally form part of the formal language of the roof. This approach allows for the roof edge to continue as a singular edge condition framing the gutter.

DIAMOND HILL TOLL PLAZE N4 HIGHWAY GAUTENG MATHEWS AND ASSOCIATES ARCHITECTS

The second project was designed by Daffonchio and Associates Architects and is called The Cradle Restaurant. This project reflects the same structural span achieved by a steel lattice truss, allowing the space to open out towards the view without structural supports hindering the spatial continuity.

The final project, designed by Matthews and Associates in conjunction with Karlien Thomashoff, reflects the same roof construction. The exposed underside of the lattice trusses provides an understanding of the formal language envisaged for the exposed trusses in my project. This tectonic creates an industrial but still sculptural feel to the roof as a freely supported canopy.

FIG 5.45_Industrial tectonic of exposed steel lattice trusses

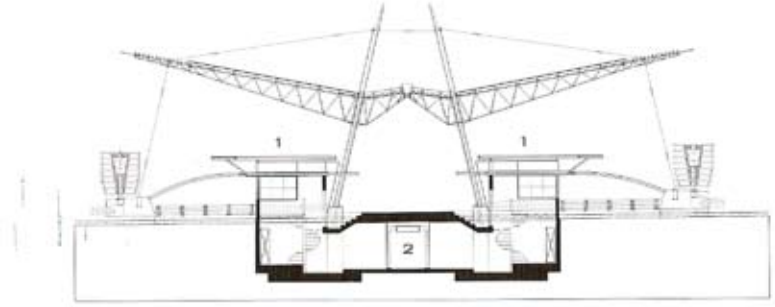


FIG 5.46_Cross section trough roof construction

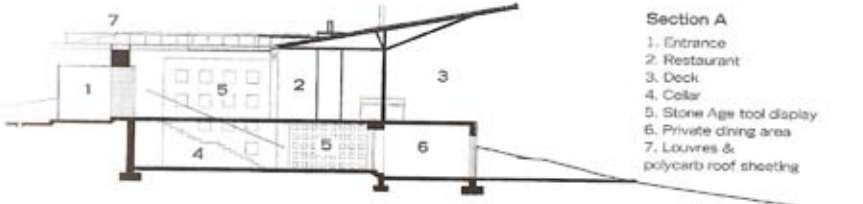
FIG 5.43_Gutter edge condition

FIG 5.44_Roof and gutter forms uniformly articulated roof edge condition

FIG 5.47_Unsupported span achieved by lattice truss construction

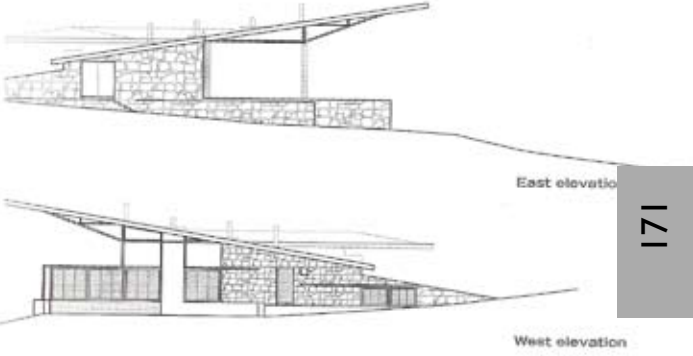
FIG 5.48_Roof underside

THE CRADLE RESTAURANT WORLD HERITAGE SITE GAUTENG
DAFFONCHIO AND ASSOCIATES ARCHITECTS

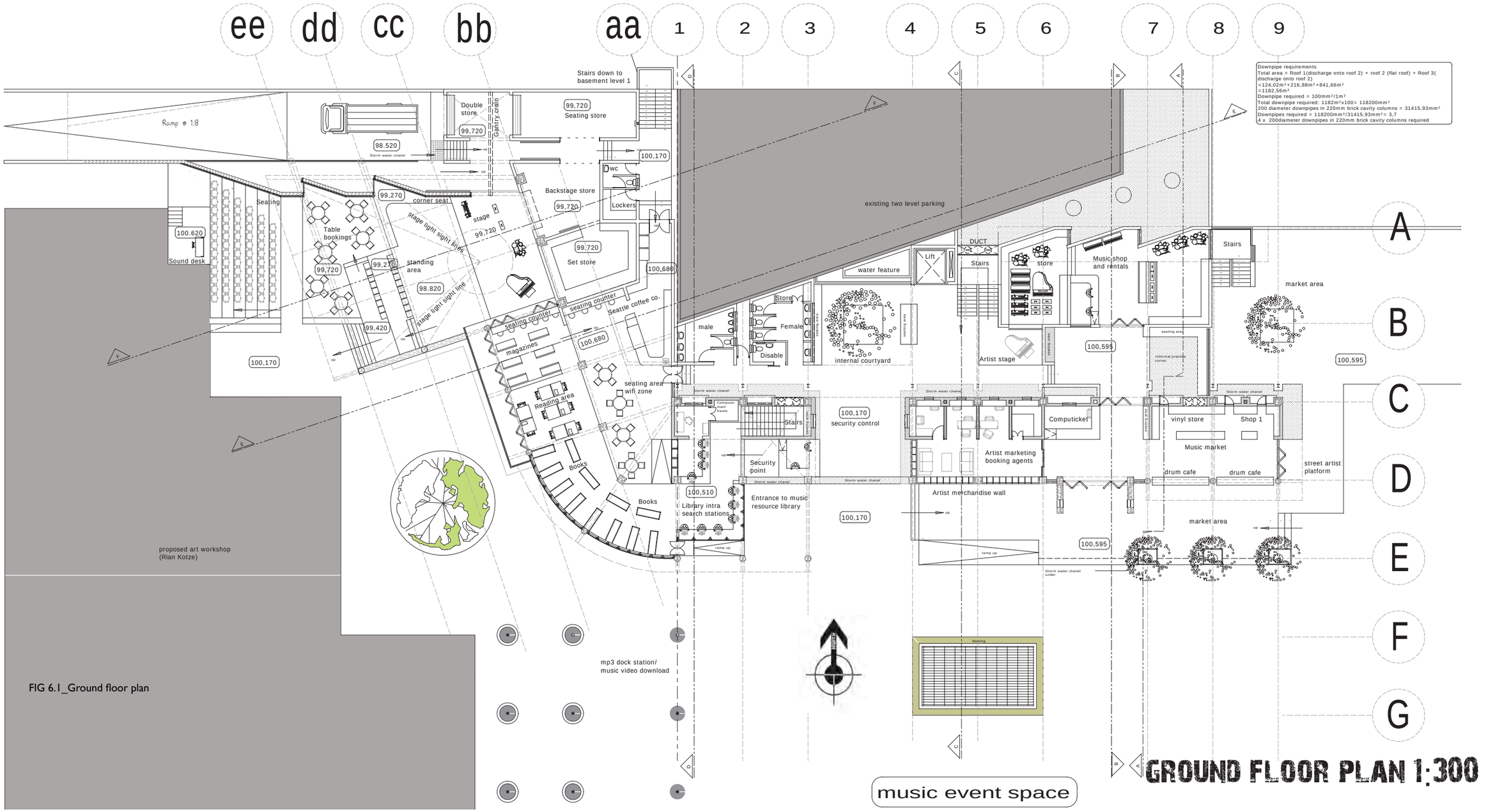


Section A
1. Entrance
2. Restaurant
3. Deck
4. Cellar
5. Stone Age tool display
6. Private dining area
7. Louvres & polycarb roof sheeting

FIG 5.49_Cross section through restaurant roof



Chapter 6



Downpipe requirements
Total area = Roof 1(discharge onto roof 2) + roof 2 (flat roof) + Roof 3(discharge onto roof 2)
=124,02m² +216,88m² +841,66m²
=1182,56m²
Downpipe required = 100mm²/1m²
Total downpipe required: 1182m²x100= 118200mm²
200 diameter downpipes in 220mm brick cavity columns = 31415,93mm²
Downpipes required = 118200mm²/31415,93mm²= 3,7
4 x 200diameter downpipes in 220mm brick cavity columns required

FIG 6.1_Ground floor plan

GROUND FLOOR PLAN 1:300

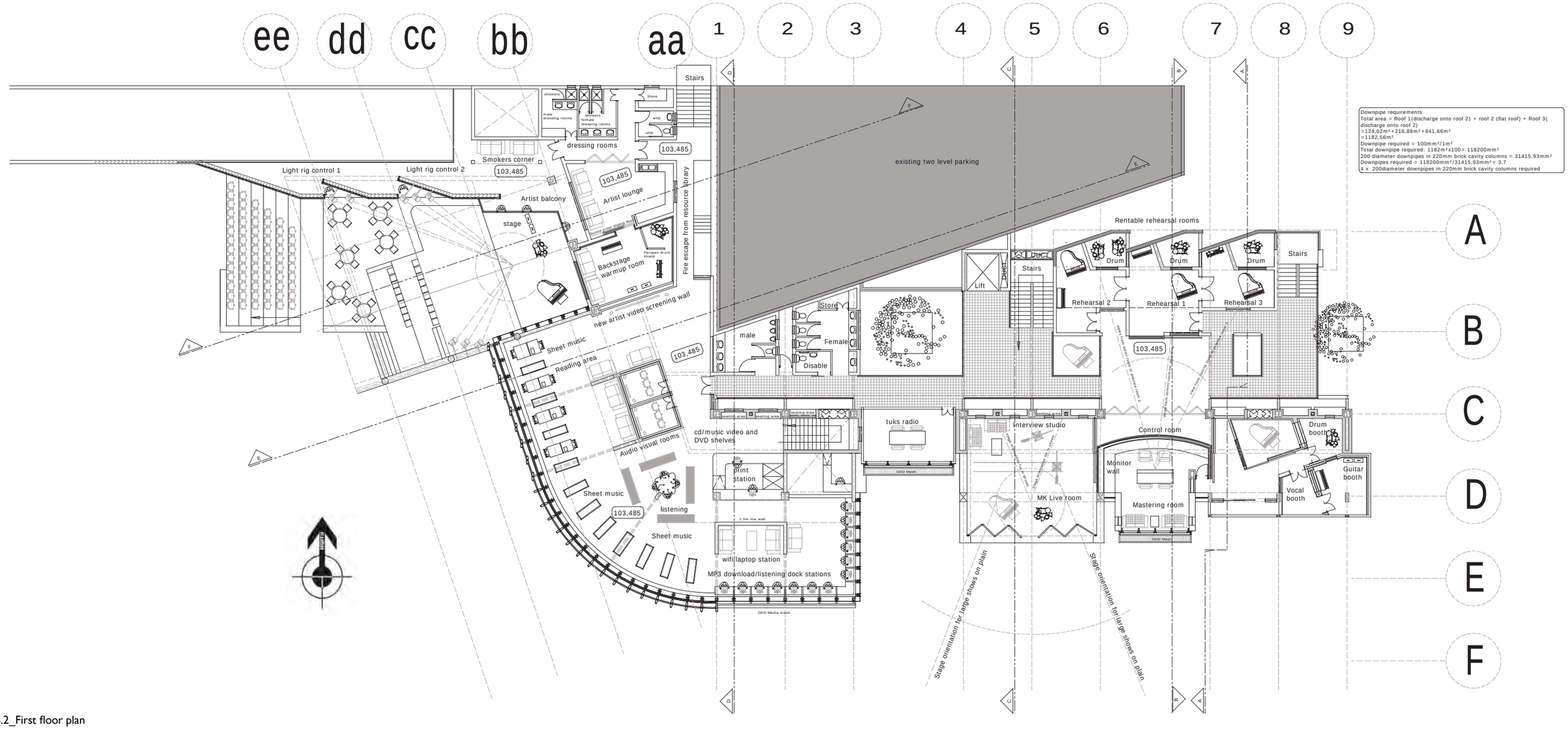
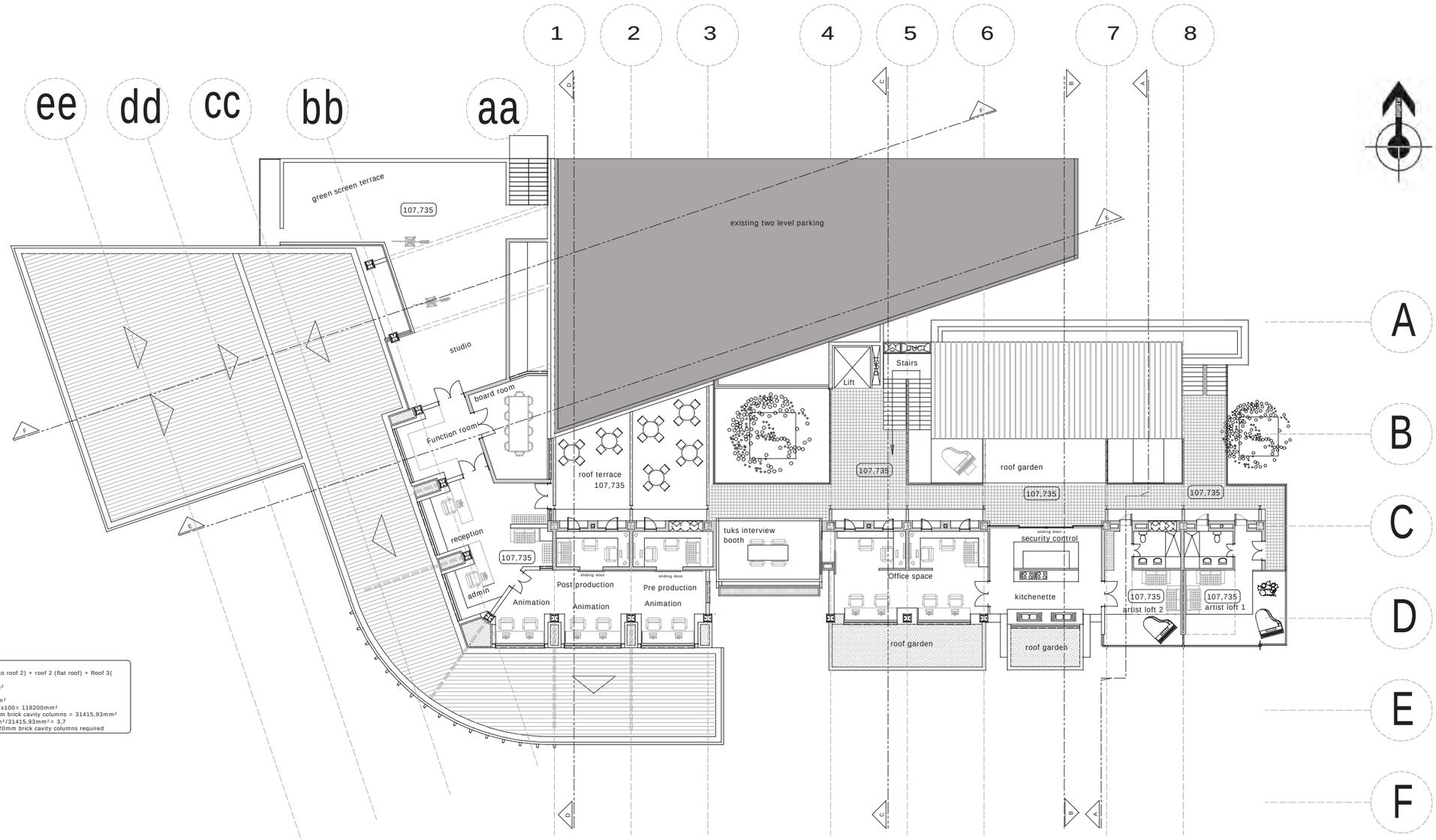


FIG 6.2_First floor plan

FIRST FLOOR PLAN 1:300



Downpipe requirements
Total area = Roof 1(discharge onto roof 2) + roof 2 (flat roof) + Roof 3(discharge onto roof 2)
=124,02m² +216,88m² +841,66m²
=1182,56m²
Downpipe required = 100mm²/1m²
Total downpipe required: 1182m² x100= 118200mm²
200 diameter downpipes in 220mm brick cavity columns = 31415,93mm²
Downpipes required = 118200mm²/31415,93mm²= 3,7
4 x 200diameter downpipes in 220mm brick cavity columns required

FIG 6.3_Second floor plan

SECOND FLOOR PLAN 1:300

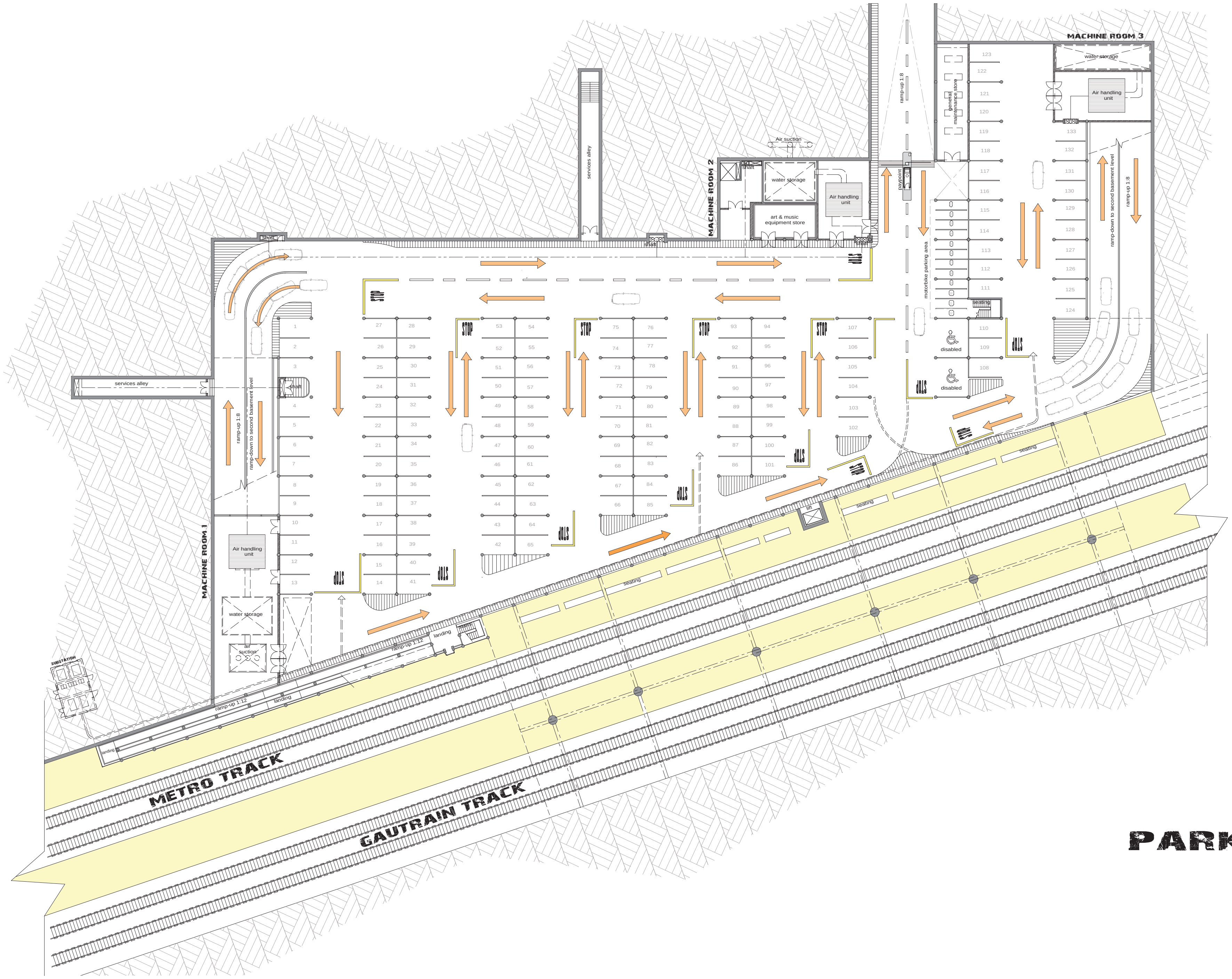


FIG 6.4_Basement parking layout plan

WATER CALCULATIONS

Water catchment

- ☐Highest monthly rainfall in December = 14mm~0.014m²
- ☐Total roof area= 13487m²
- ☐Volume water = 0.014x13487=188,818m³
- ☐Thus - 188,818L
- ☐Max. catchment storage tank required=6m x 32m x1m = 192m³ ~ 192 000L

Downpipe requiremnet

- ☐Roof area = 13487m²
- ☐100mm² downpipe / 1m²
- ☐Total downpipe required = 13487 x 100 = 1 348 700mm²
- ☐Downpipes used in columns = 80?mm / One 80?mm = 5024mm²
- ☐If all water collected with downpipes in columns,
  270 downpipes are needed
- ☐90 Columns available for cast-in-situ downpipes
- ☐Thus 90 x 5024 = 452160mm² -
- ☐Total downpipe area required- (90 x 80 ?mm downpipes) = 896540mm² required
- ☐Strategy : Catchment channel at centre of plane with 200?mm downpipes
- ☐29 Downpipes required over 100m
- ☐Total downpipe area = Channel + columns
  = 452160mm² + 910600mm²
  = 1362760mm² > 1348700mm²
  = O.K

6m x 32m x 1m Tank = 192 000 L

3 x (6m x 6m x 2m) Tank in each plantroom

PARKING

Basement level 1: 133 parking bays of which 2 is disabled parking
12 motorbike parking bays
Basement level 2 : 125 parking bays of which 2 disabled parking

Total parking bays = 270 bays of which 4 is disabled and 12 motorbike parking

PARKING LAYOUT

scale 1 :400

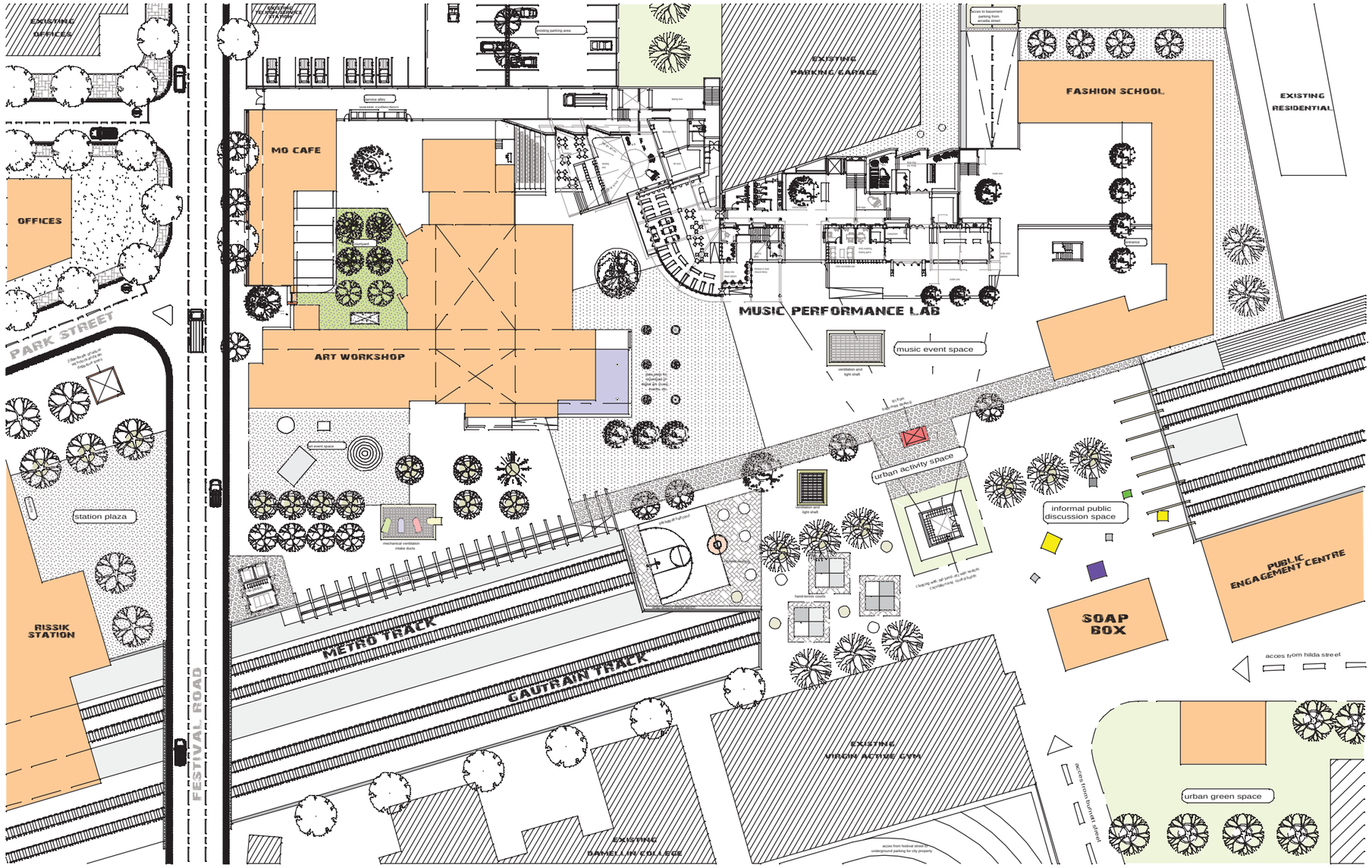
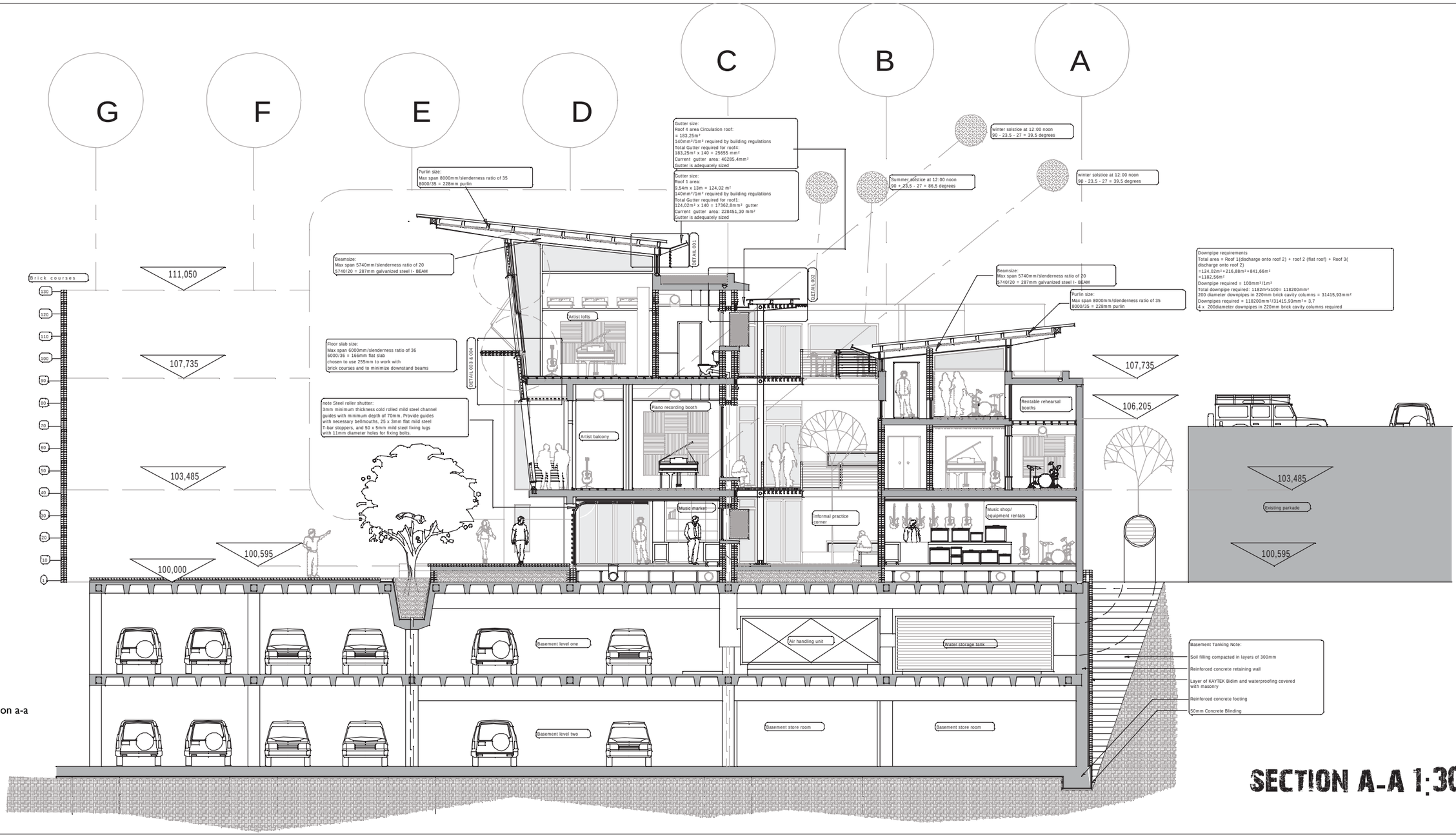


FIG 6.5_Site plan

SITE PLAN 1:800



SECTION A-A 1:300

FIG 6.6_Section a-a

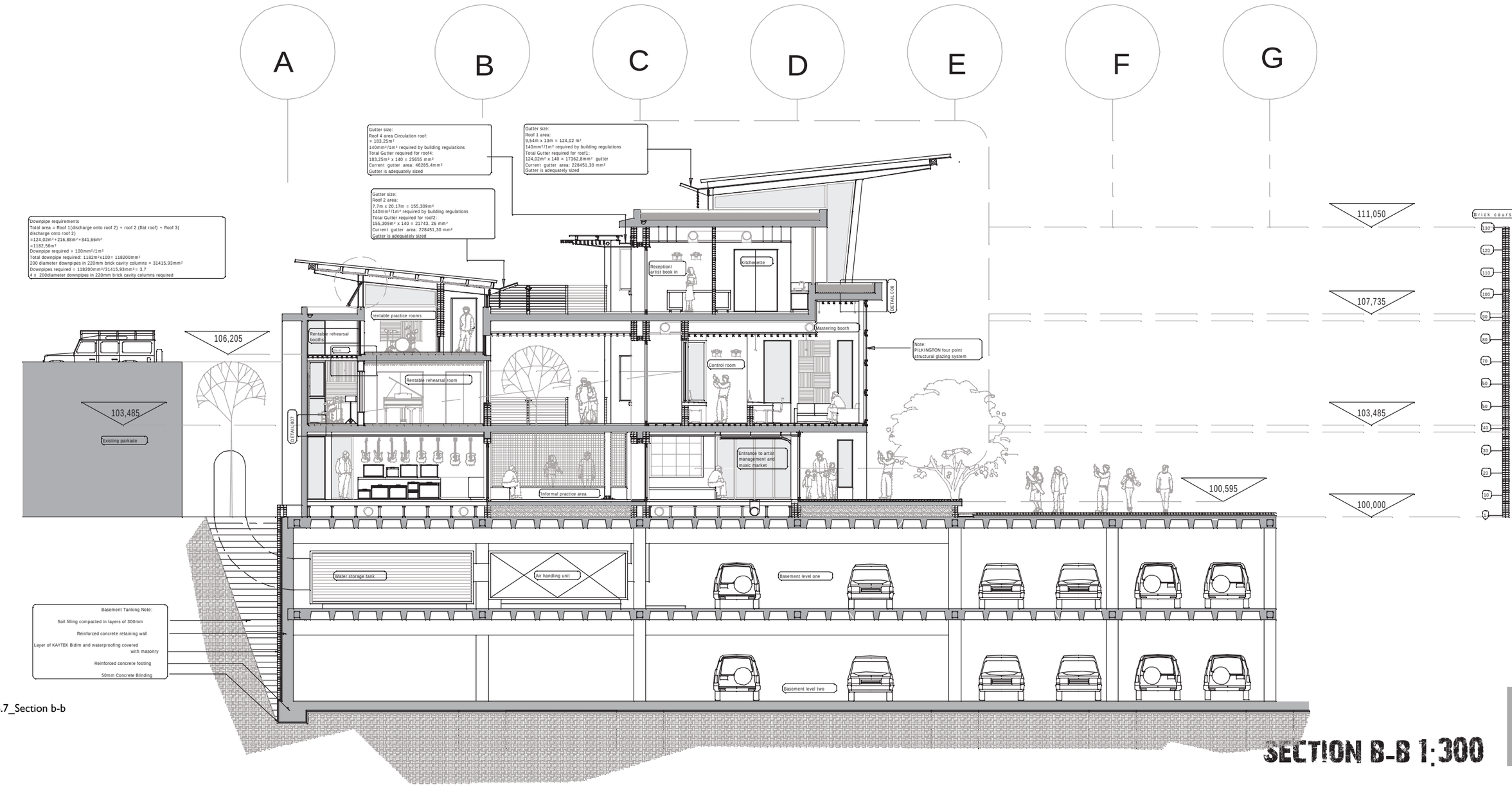


FIG 6.7_Section b-b

SECTION B-B 1:300

I H G F E D C B A

Downpipe requirements
Total area = Roof 1(discharge onto roof 2) + roof 2 (flat roof) + Roof 3(discharge onto roof 2)
=124,02m²+216,88m²+841,66m²
=1182,56m²
Downpipe required = 100mm²/1m²
Total downpipe required: 1182m²x100= 118200mm²
200 diameter downpipes in 220mm brick cavity columns = 31415,93mm²
Downpipes required = 118200mm²/31415,93mm²= 3,7
4 x 200diameter downpipes in 220mm brick cavity columns required

Purlin size:
Max span 8000mm/slenderness ratio of 35
8000/35 = 228mm purlin

Gutter size:
Roof 3 area Main roof:
= 841,66m²
140mm²/1m² required by building regulations
Total Gutter required for roof3:
841,66m² x 140 = 117832,4 mm²
Current gutter area: 229243,88mm²
Gutter is adequately sized

winter solstice at 12:00 noon
90 - 23,5 - 27 = 39,5 degrees

Summer solstice at 12:00 noon
90 + 23,5 - 27 = 86,5 degrees

Note:
Inverted Composite steel angle truss designed as per eng discussion with lattice truss forming horisontal bracing system

Note:
Downstand beams @ 2500mm centers to allow concrete structure to cantilever as per eng. discussion

Upstand size:
Max span 10000mm/slenderness ratio of 20
10000/20 = 500mm upstand

DETAIL 008

DETAIL 009

office space

office space

Roof terrace

Mk live stage

Mk life tv studio

Note:
PILKINGTON four point structural glazing system

Note:
NuKLIP FLUSH GLAZING system

Artist marketing/ booking agents

Existing parkade

Main starcase

Note:
Ventilation shaft and seating area with view onto MK Live stage. Mentis grid supported by 350mm castelated beam.

Brick courses
130 120 110 100 90 80 70 60 50 40 30 20 10 1

111,050
107,735
103,485
100,510
100,000

Basement level one

Basement level two

Equipment store room

Basement Tanking Note:
Soil filling compacted in layers of 300mm
Reinforced concrete retaining wall
Layer of KAYTEK Bidim and waterproofing covered with masonry
Reinforced concrete footing
50mm Concrete Blinding

SECTION C-C 1:300

FIG 6.8_Section c-c

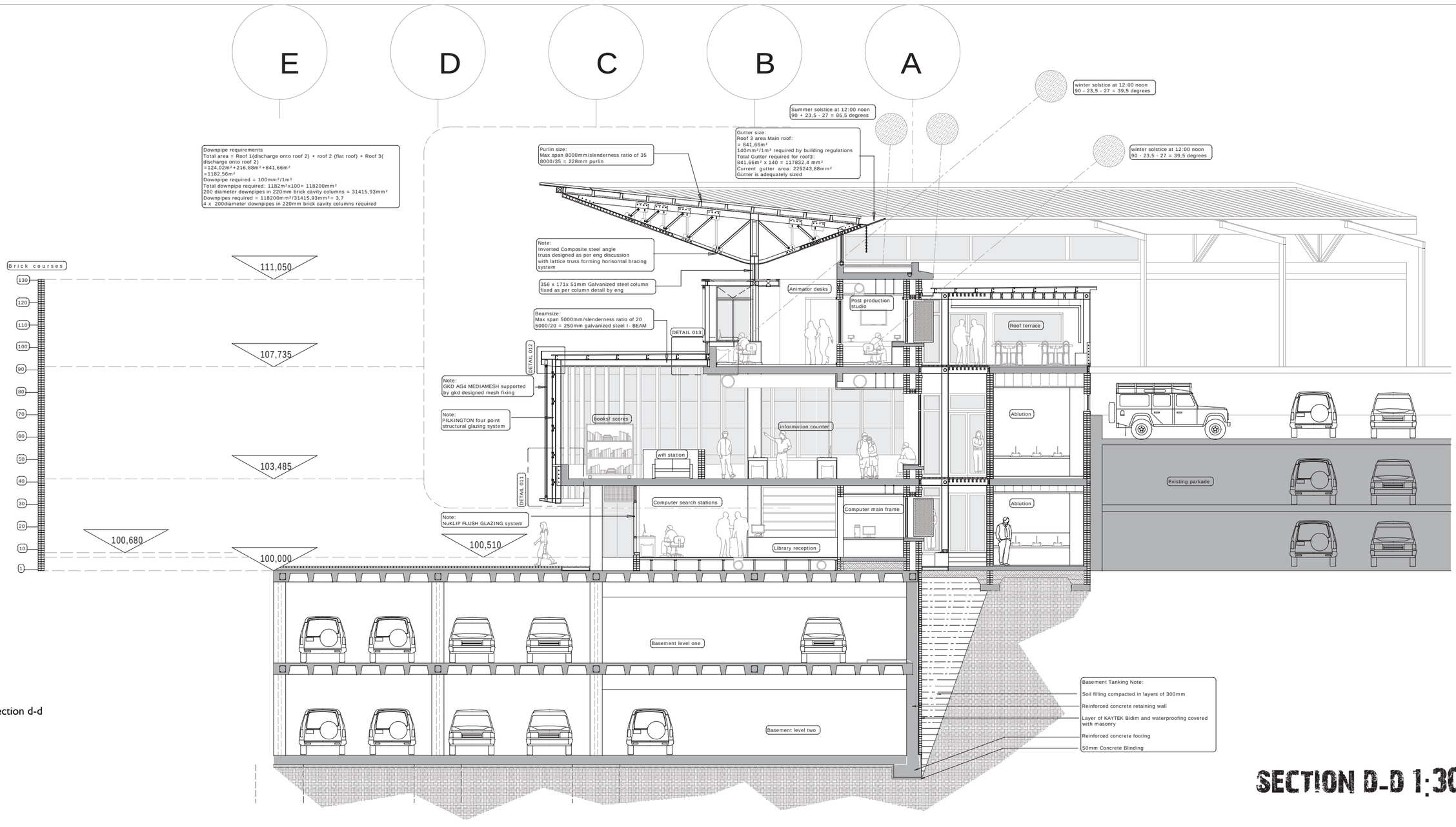


FIG 6.9_Section d-d

SECTION D-D 1:300

ee dd cc bb aa

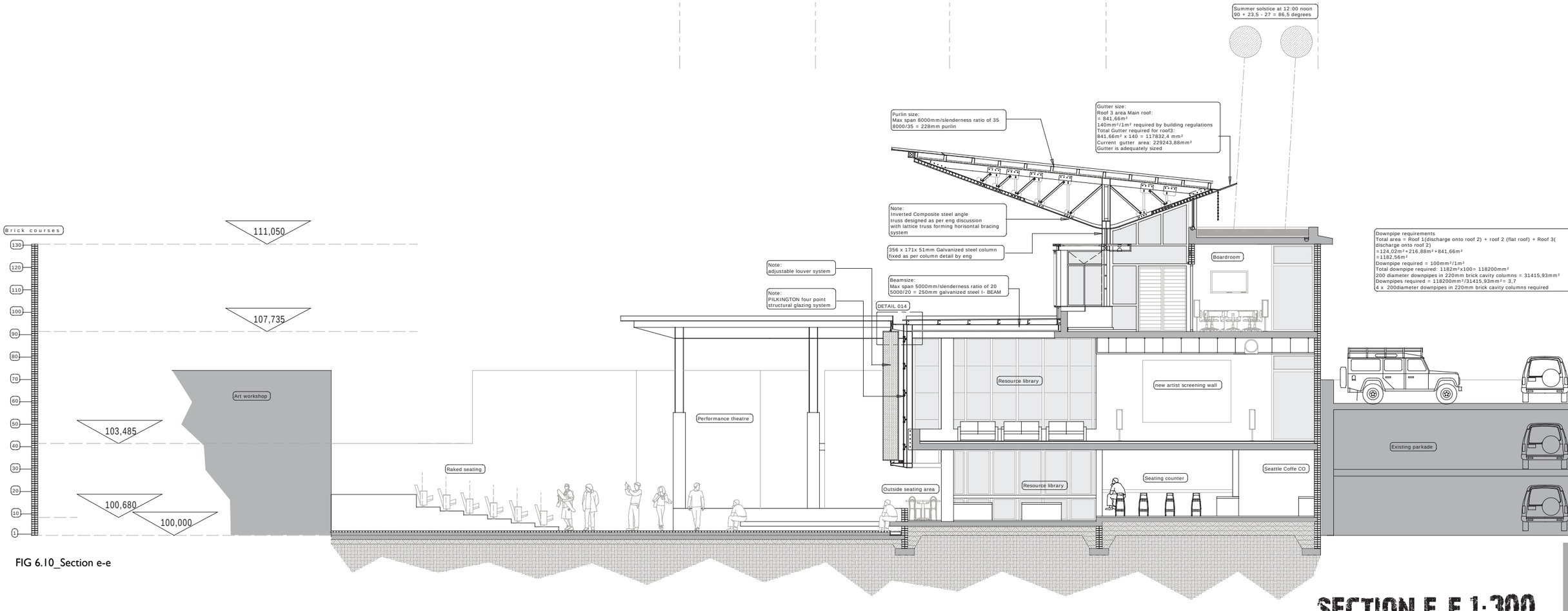


FIG 6.10_Section e-e

SECTION E-E 1:300

ee dd cc bb aa

Sight line diagram 1:50

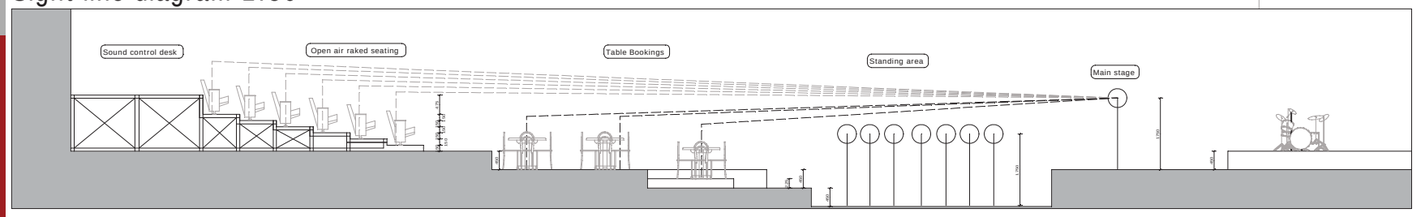
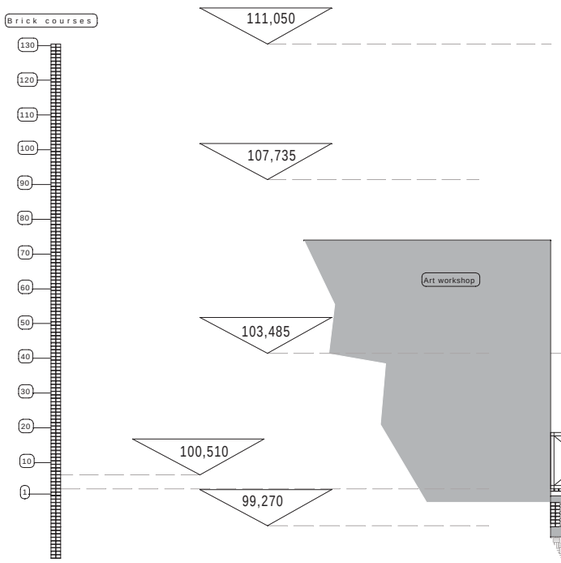


FIG 6.11_Sight line diagram



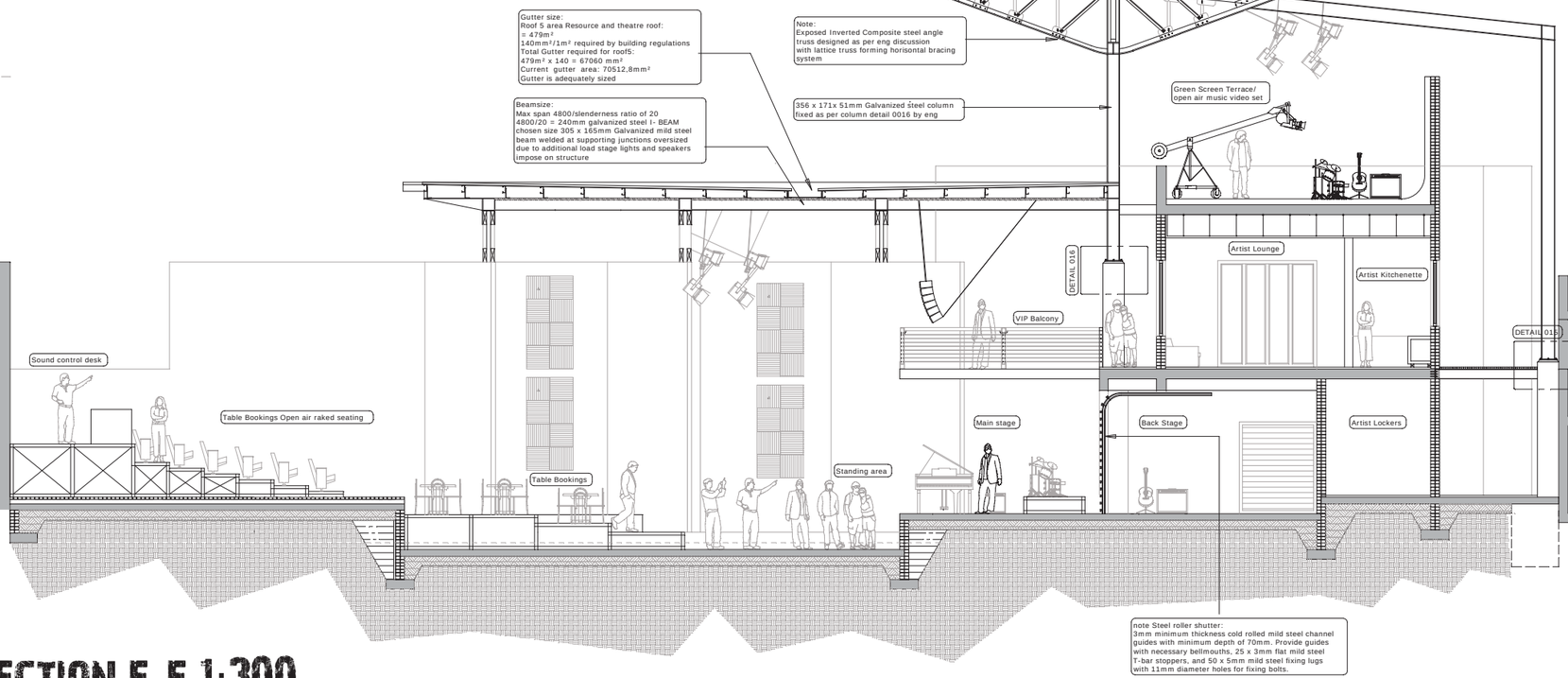


FIG 6.12_Section f-f

SECTION F-F 1:300

detail 001 scale 1 : 10

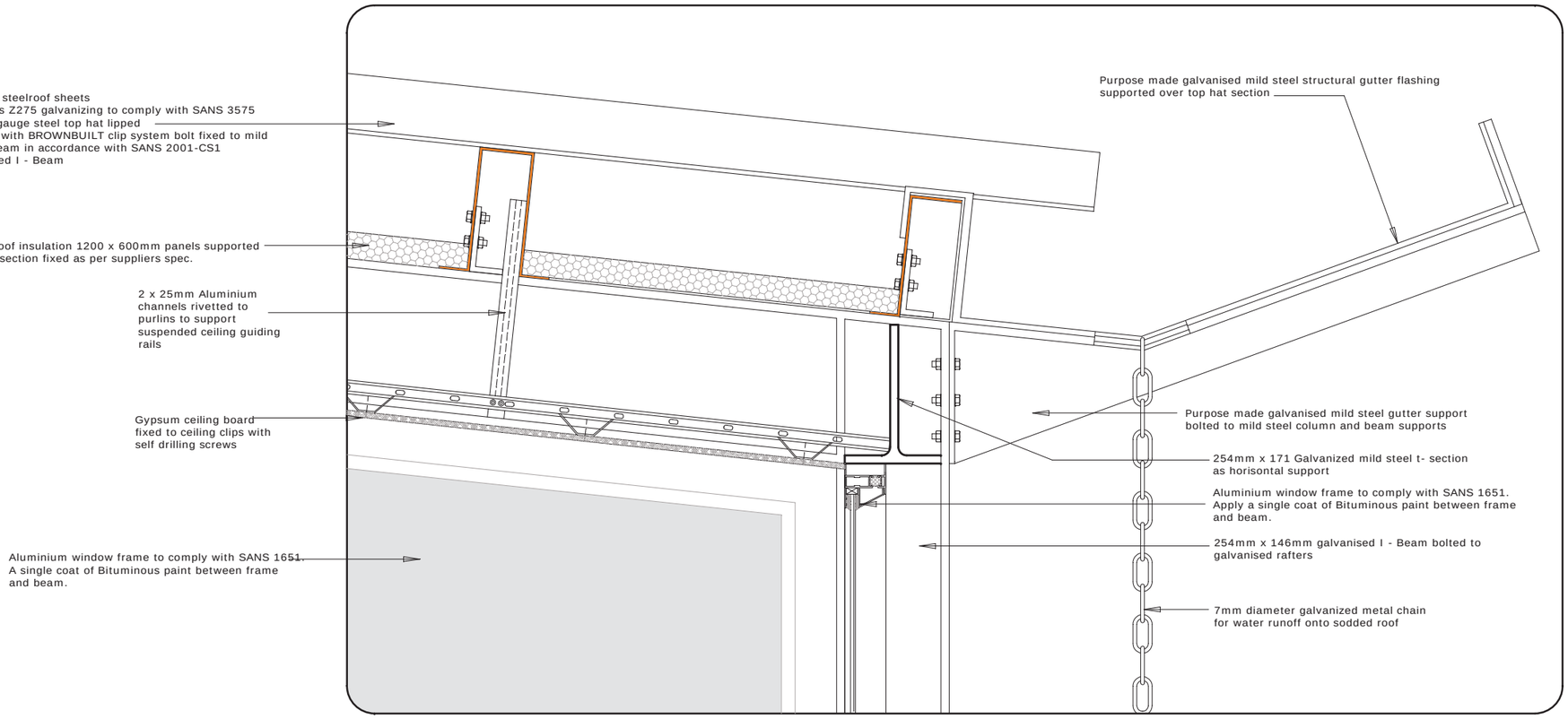


FIG 6.13_Roof detail

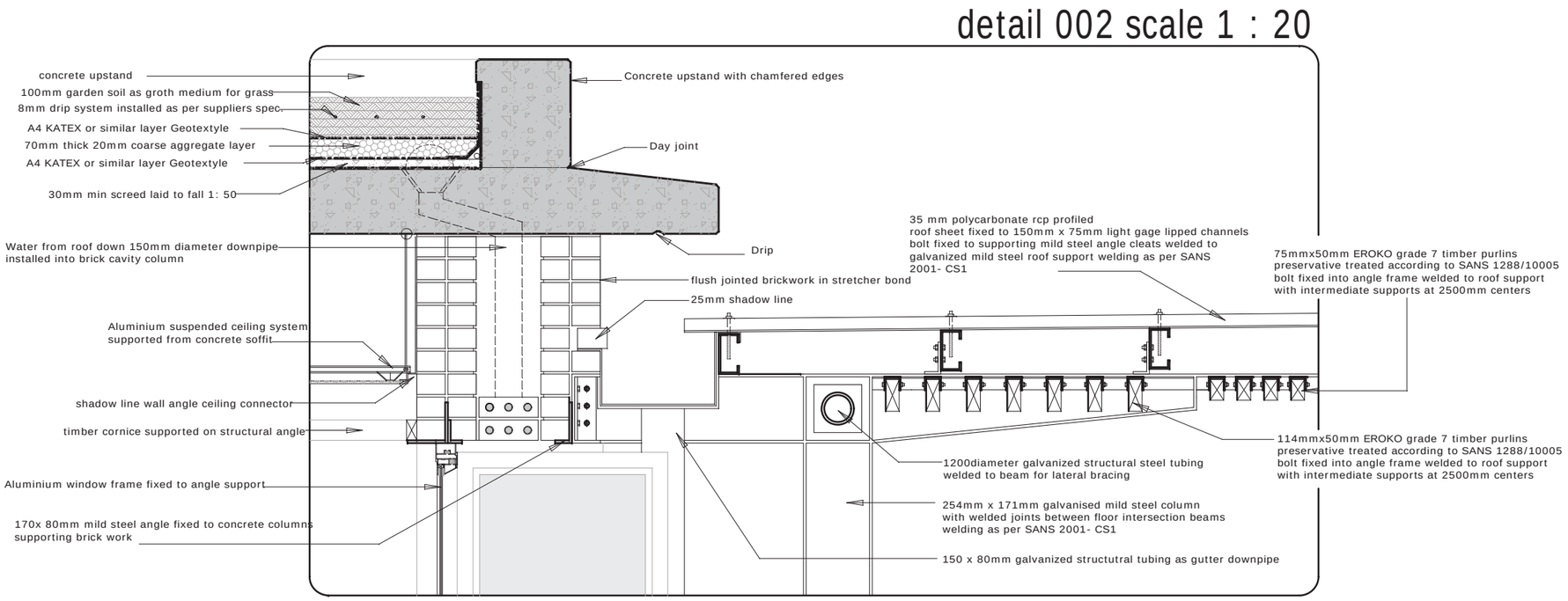


FIG 6.14_Flat Roof and circulation detail

detail 004 scale 1 : 10

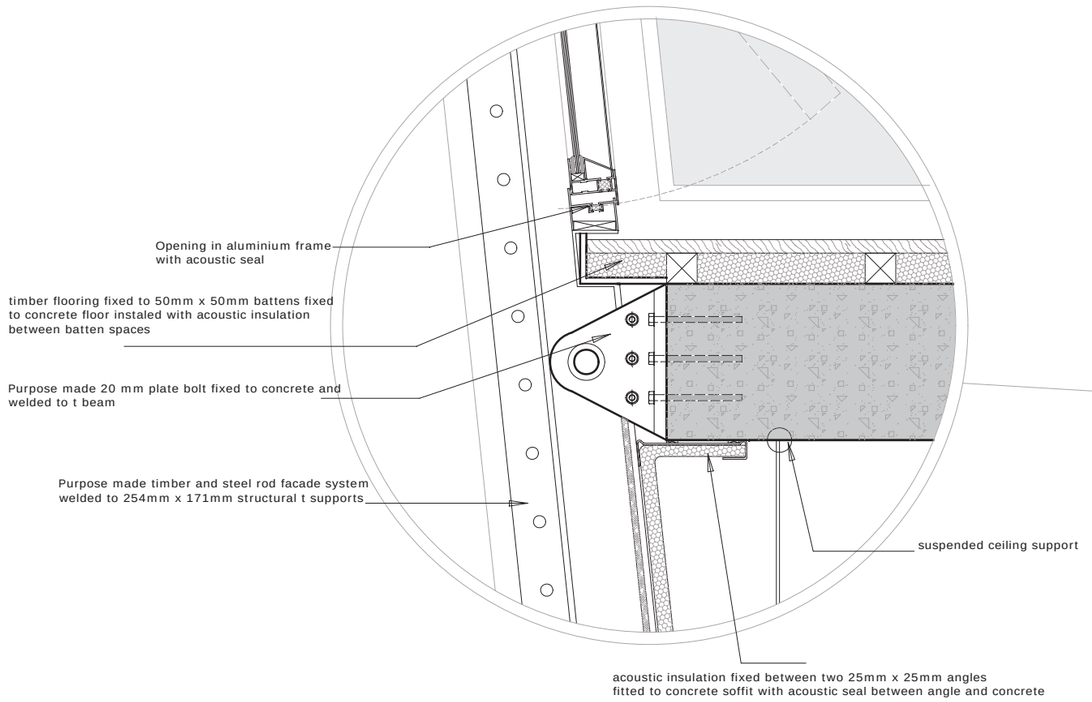


FIG 6.15_Foor slab and facade junction

detail 003 scale 1 : 20

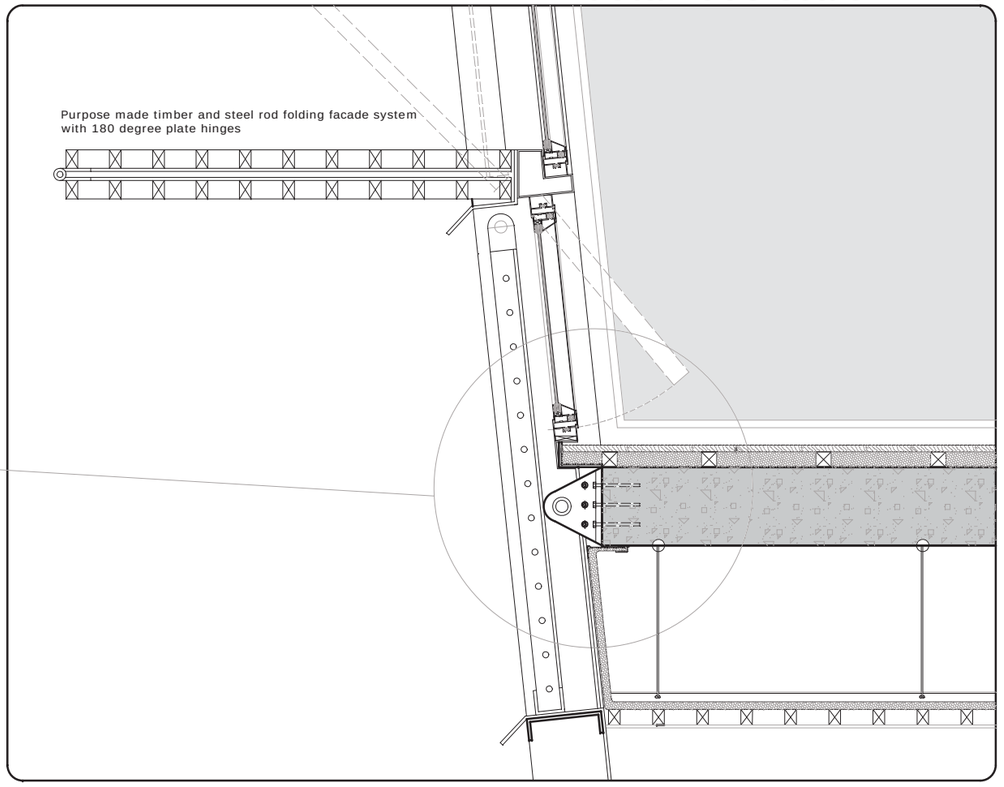


FIG 6.16_Foor slab and facade junction location drawing

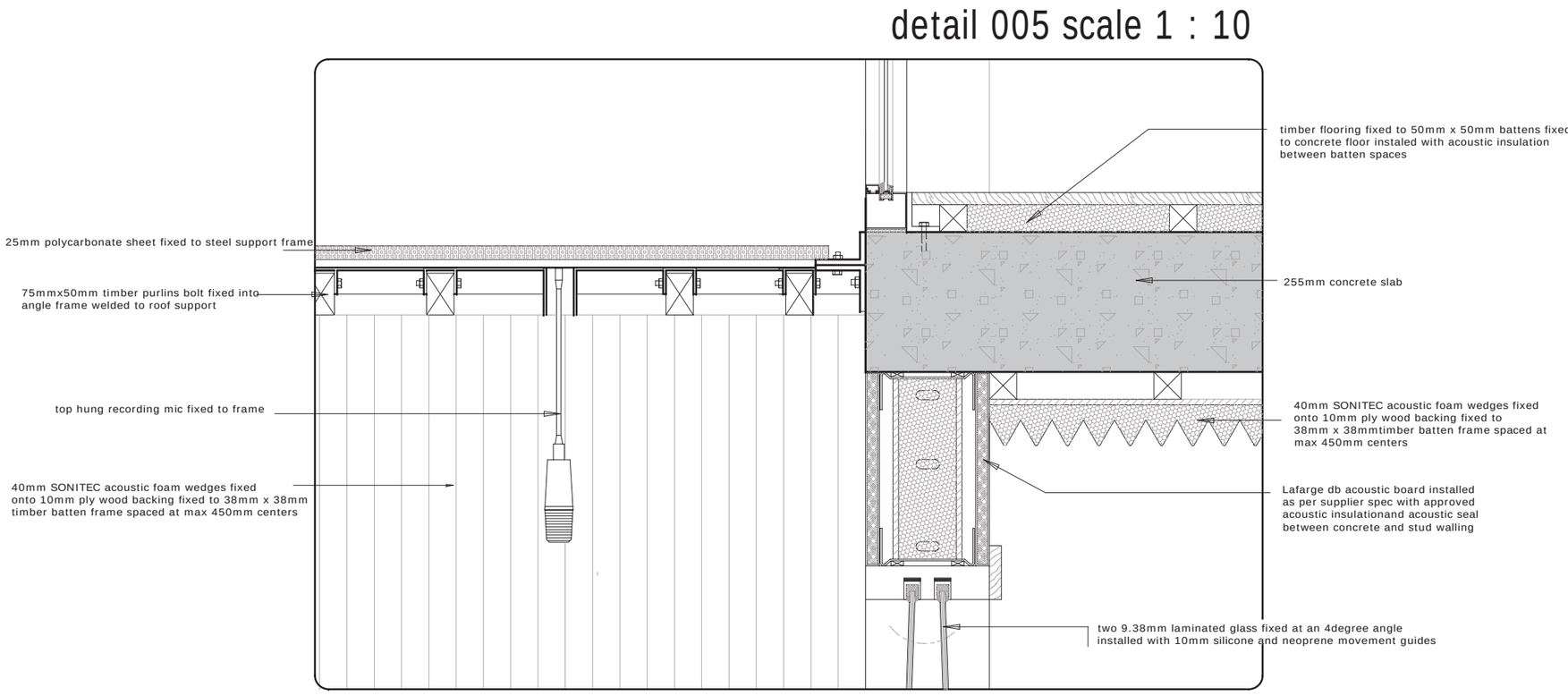


FIG 6.17_Drum booth acoustic detail

detail 006 scale 1 : 10

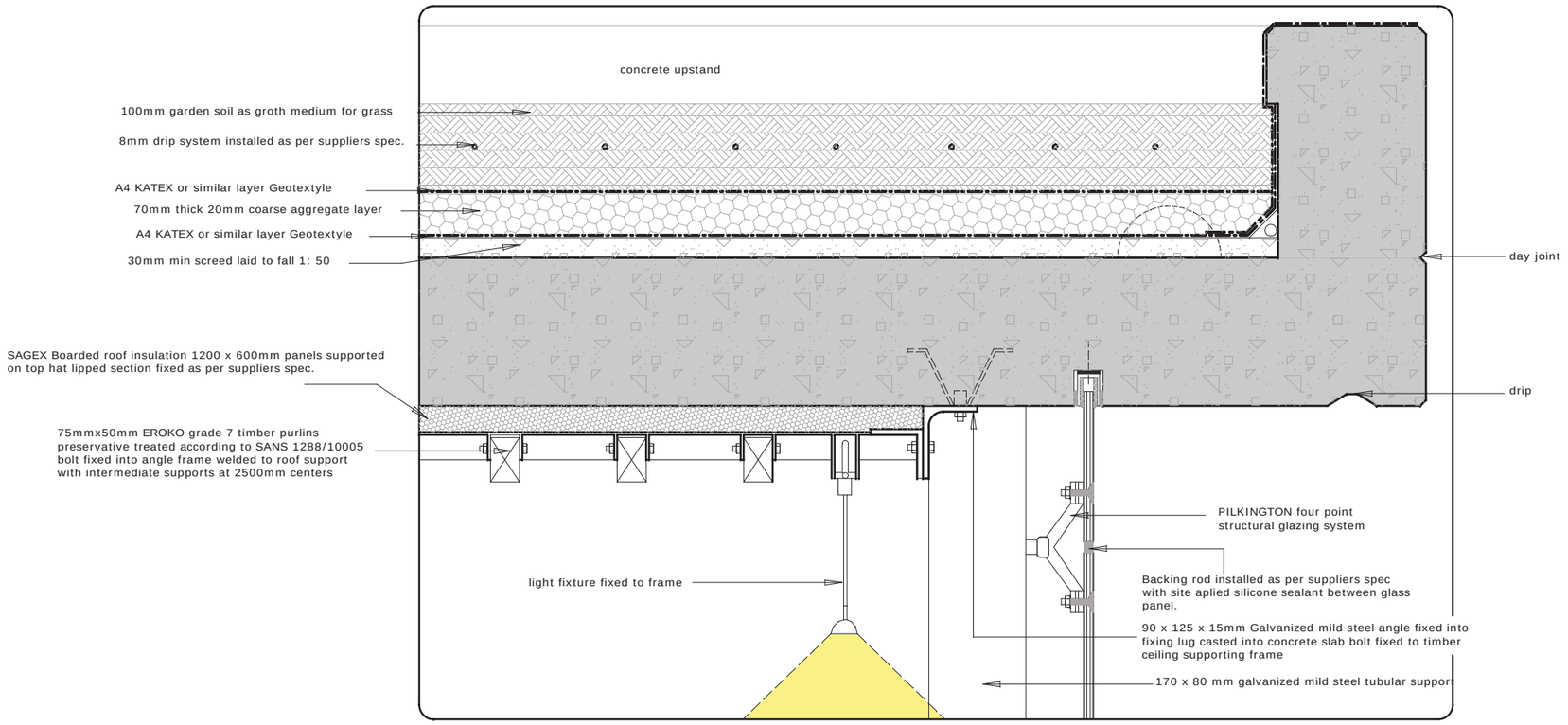


FIG 6.18_Sodded roof detail

detail 007 scale 1 : 15

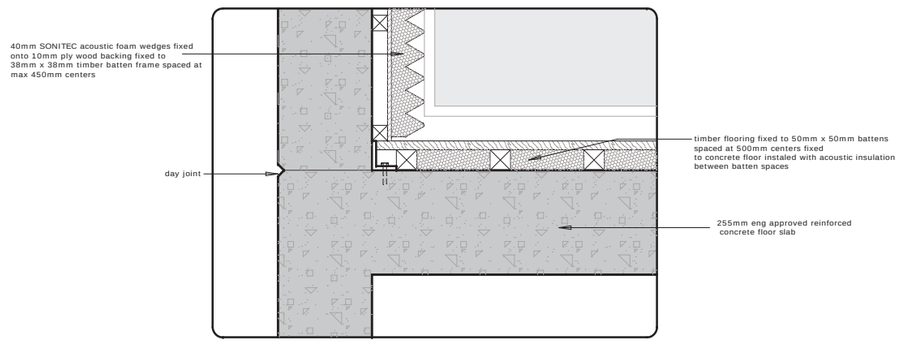


FIG 6.19_Drum booth acoustic floor and wall junction

detail 008 scale 1 : 10

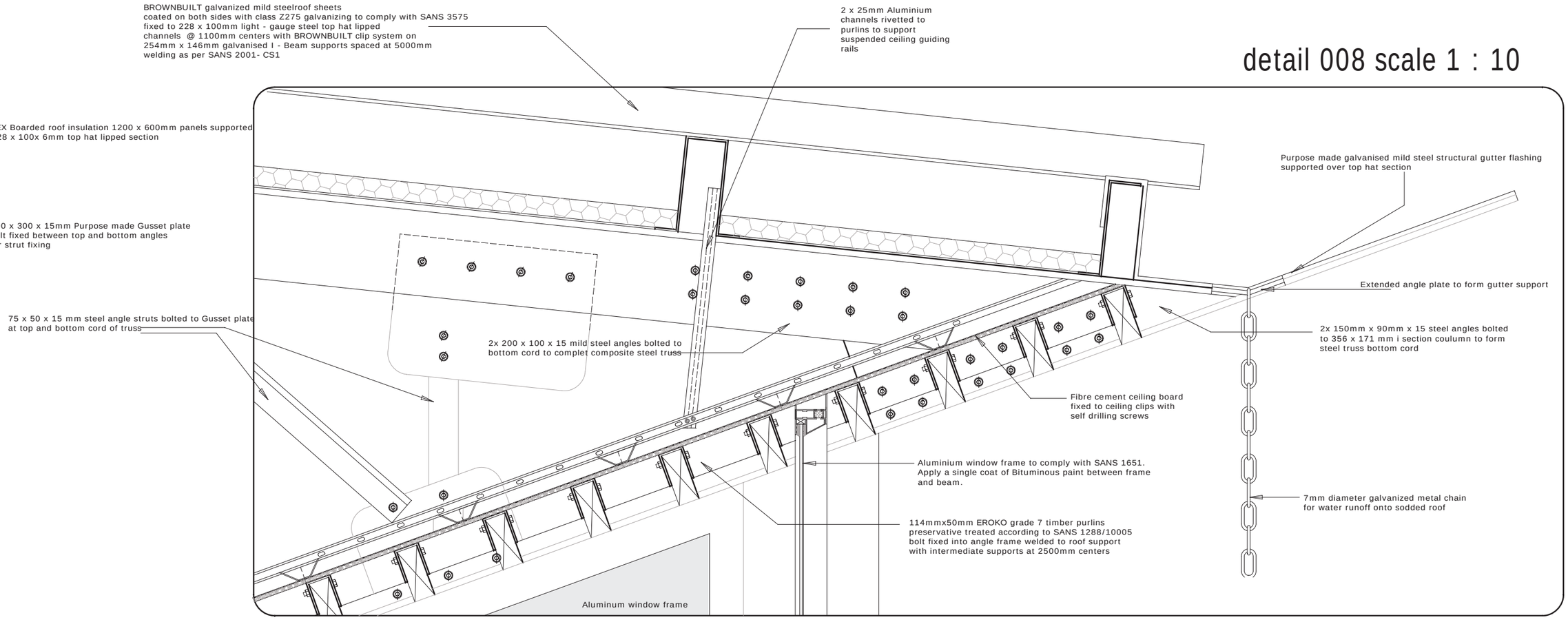


FIG 6.20_Main roof suspended timber roof underside detail

detail 0010 scale 1 : 20

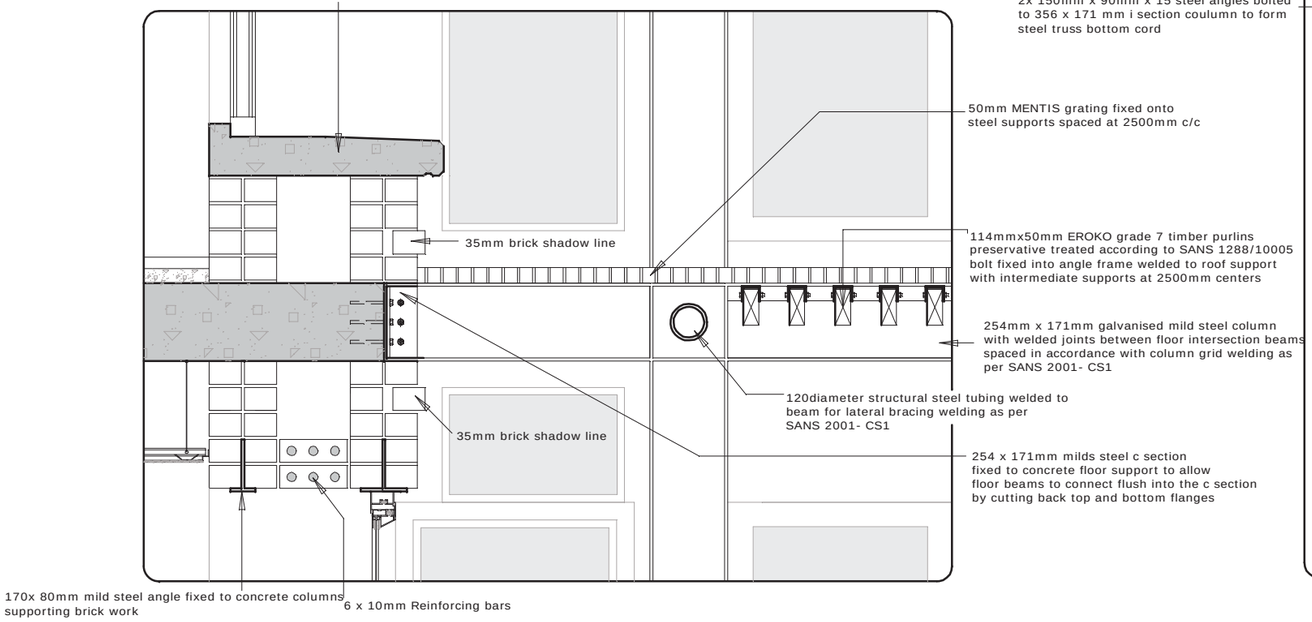


FIG 6.21_Circultion connection detail

detail 009 scale 1 : 20

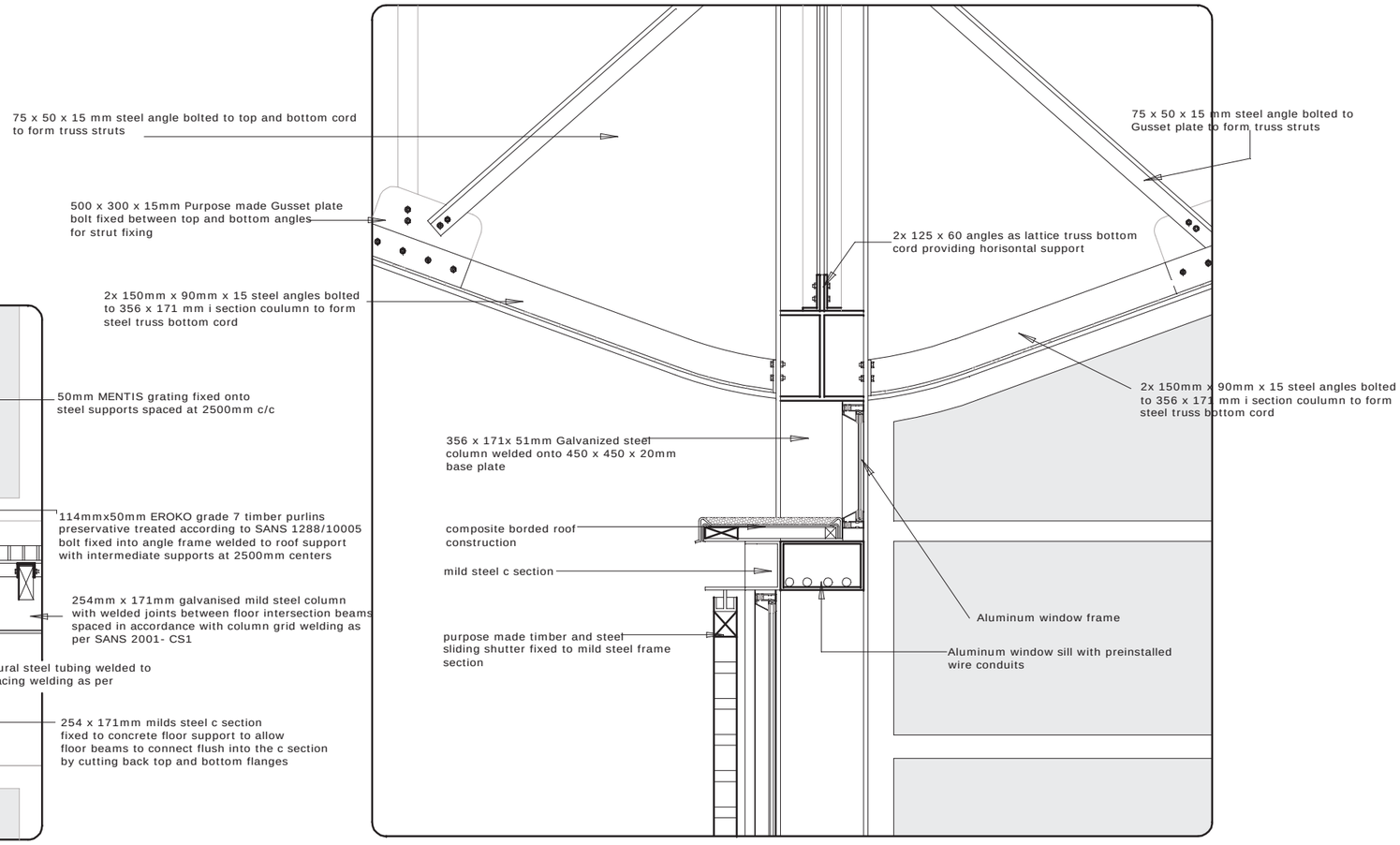


FIG 6.22_Main roof office facade detail

detail 0011 scale 1 : 20

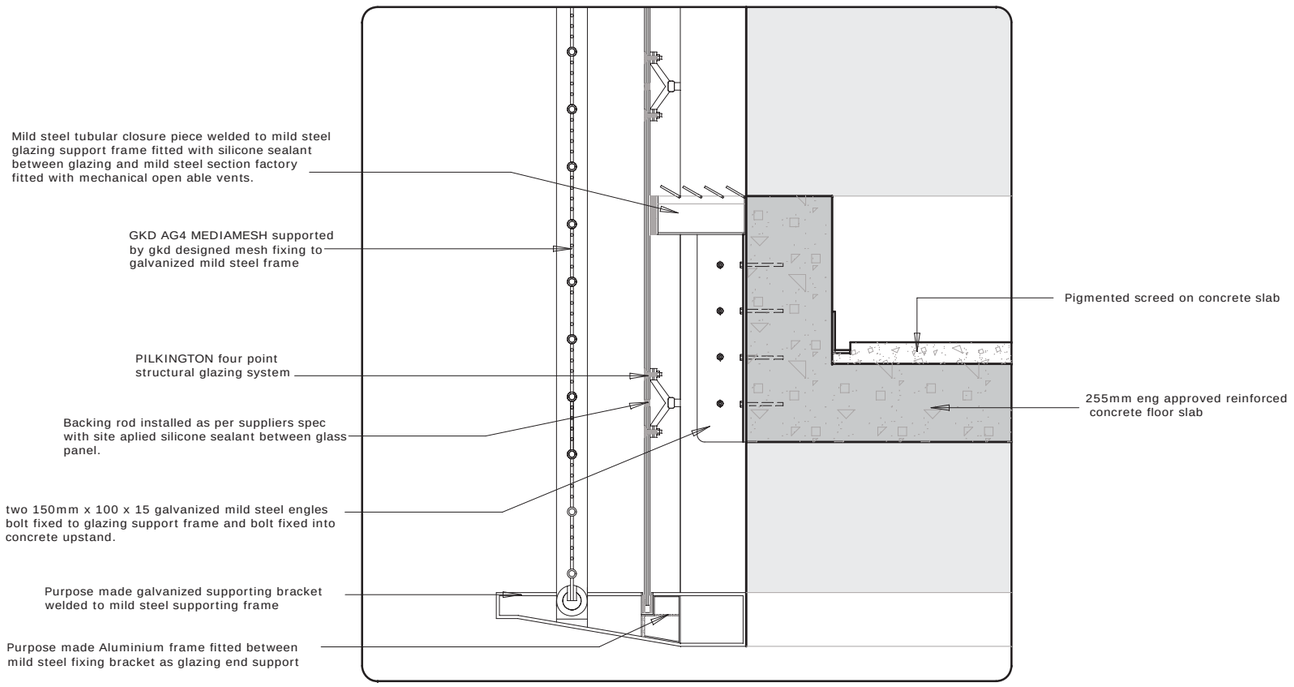


FIG 6.23_Resource library GKD Mesh detail

detail 0012 scale 1 : 10

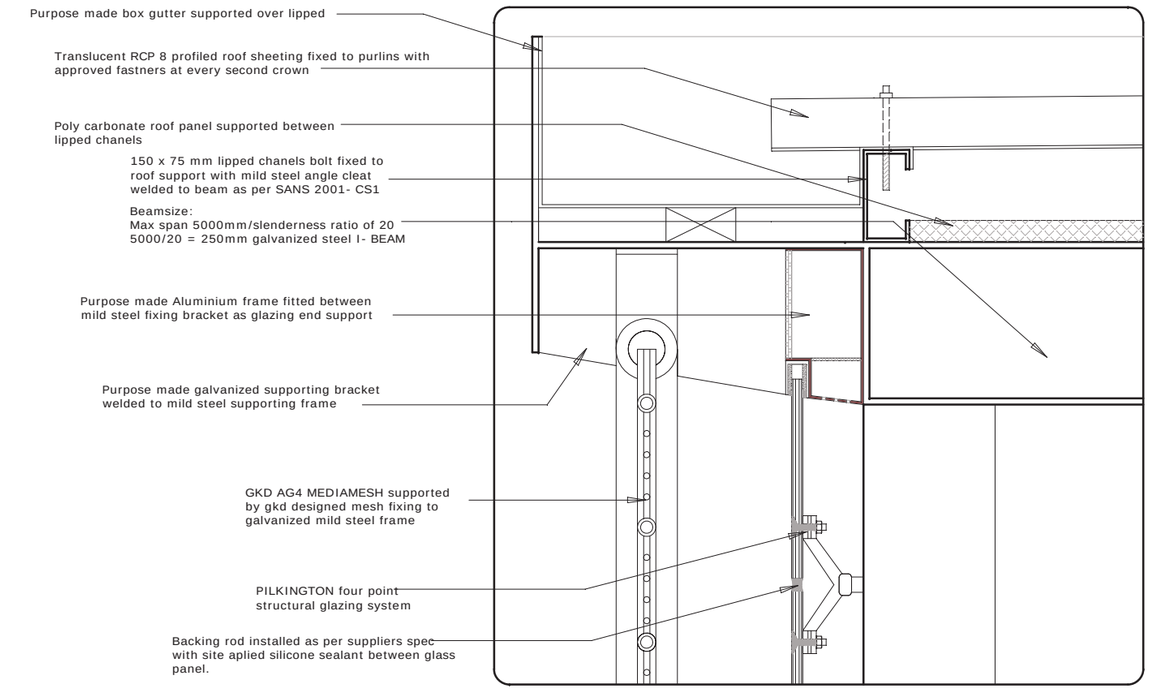


FIG 6.24_Resource library facade and gutter detail

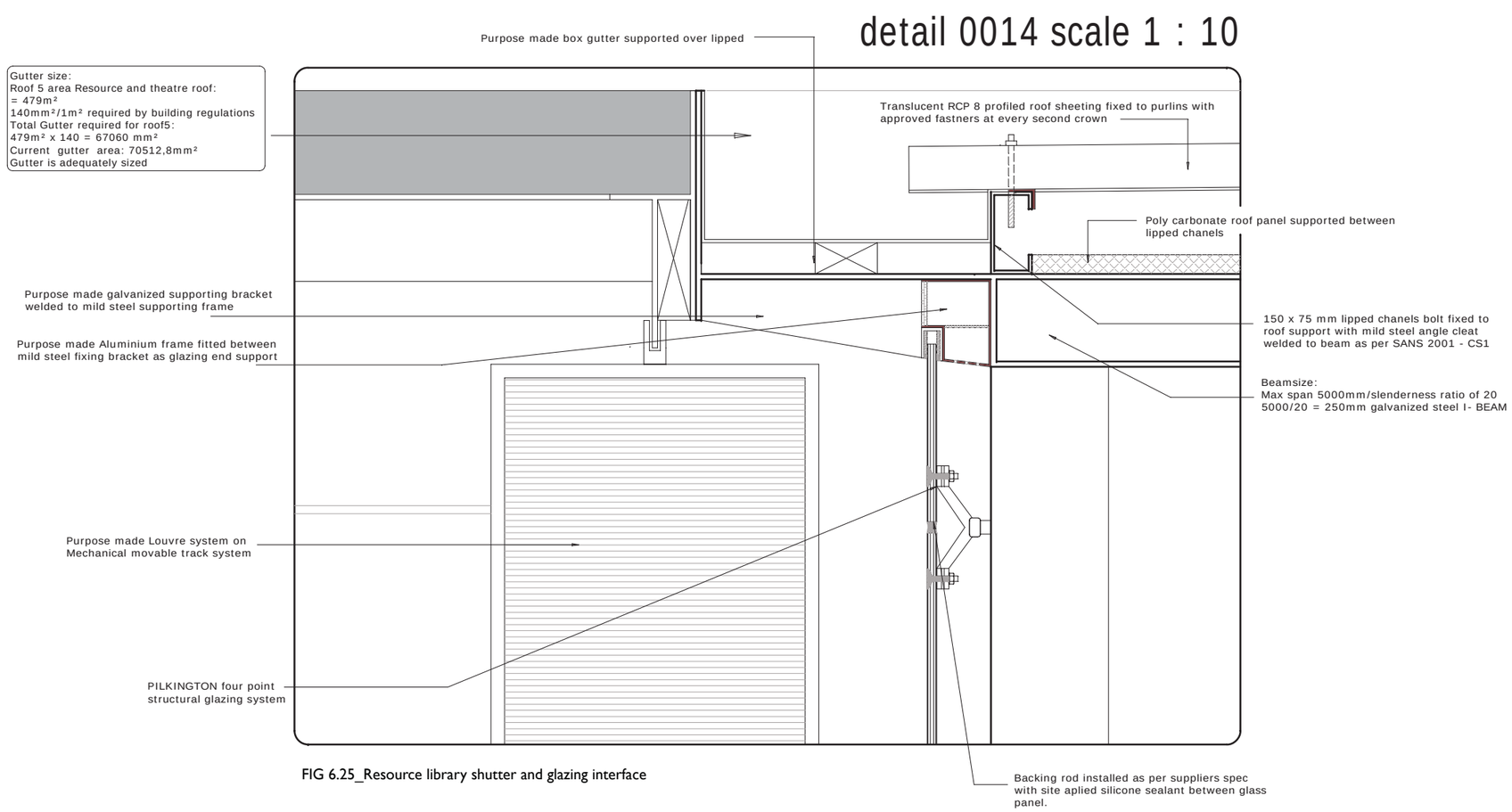


FIG 6.25_Resource library shutter and glazing interface

detail 0015 scale 1 : 20

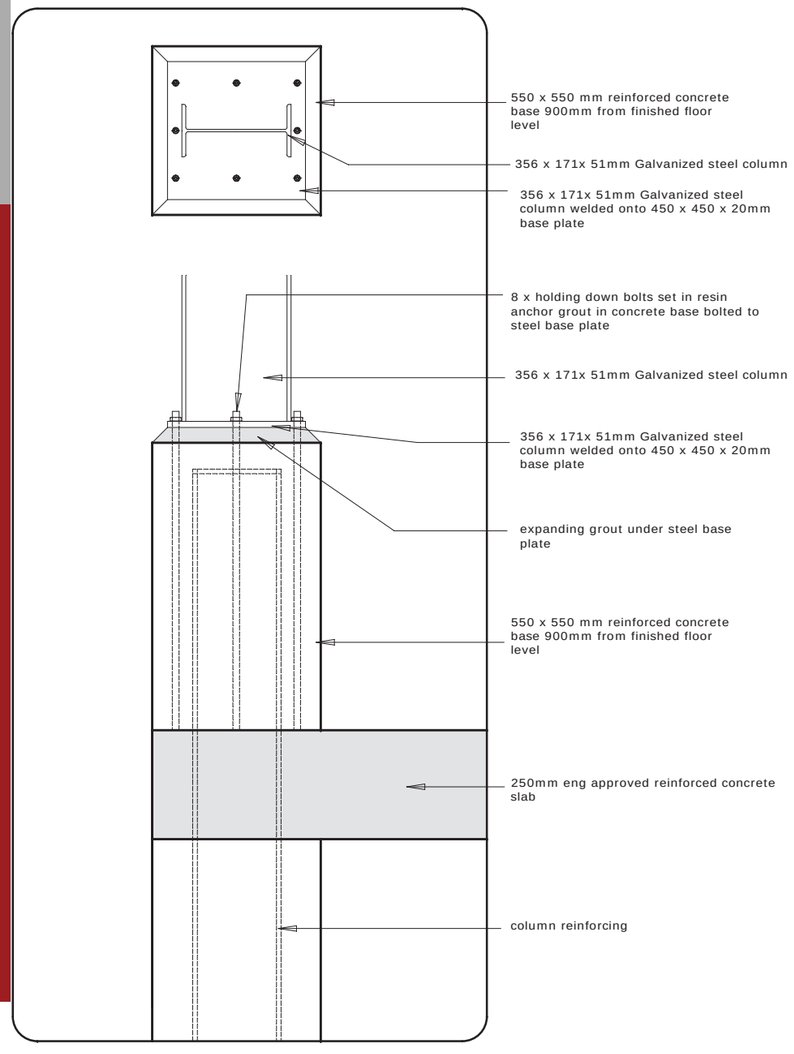


FIG 6.26_Roof support column detail

detail 0013 scale 1 : 20

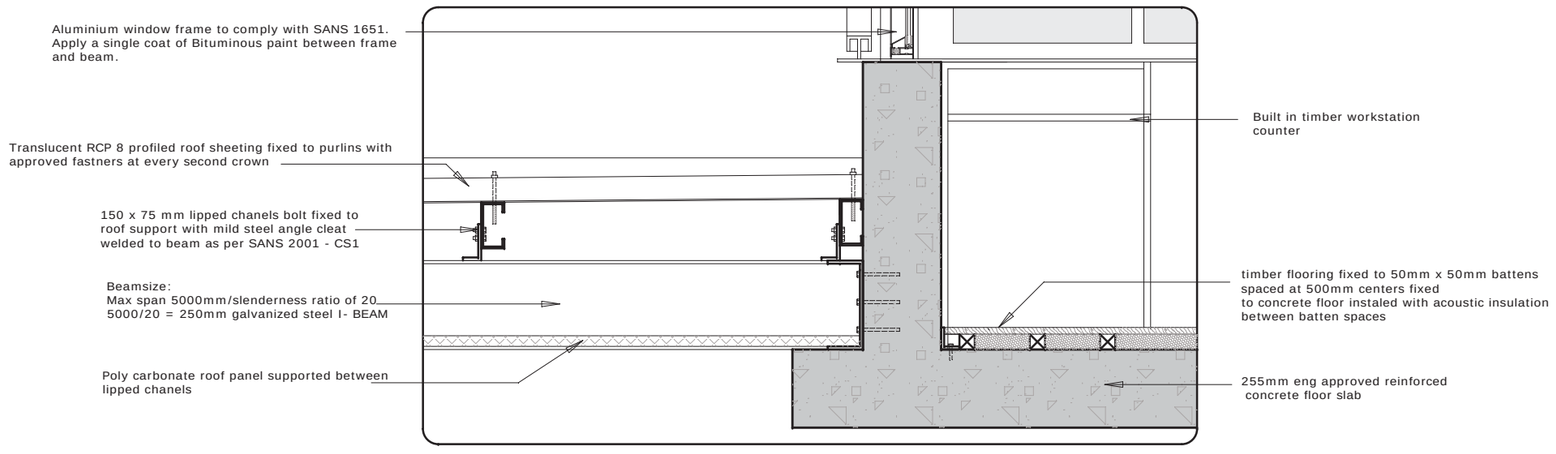


FIG 6.27_Resource library Polycarbonate roof support detail

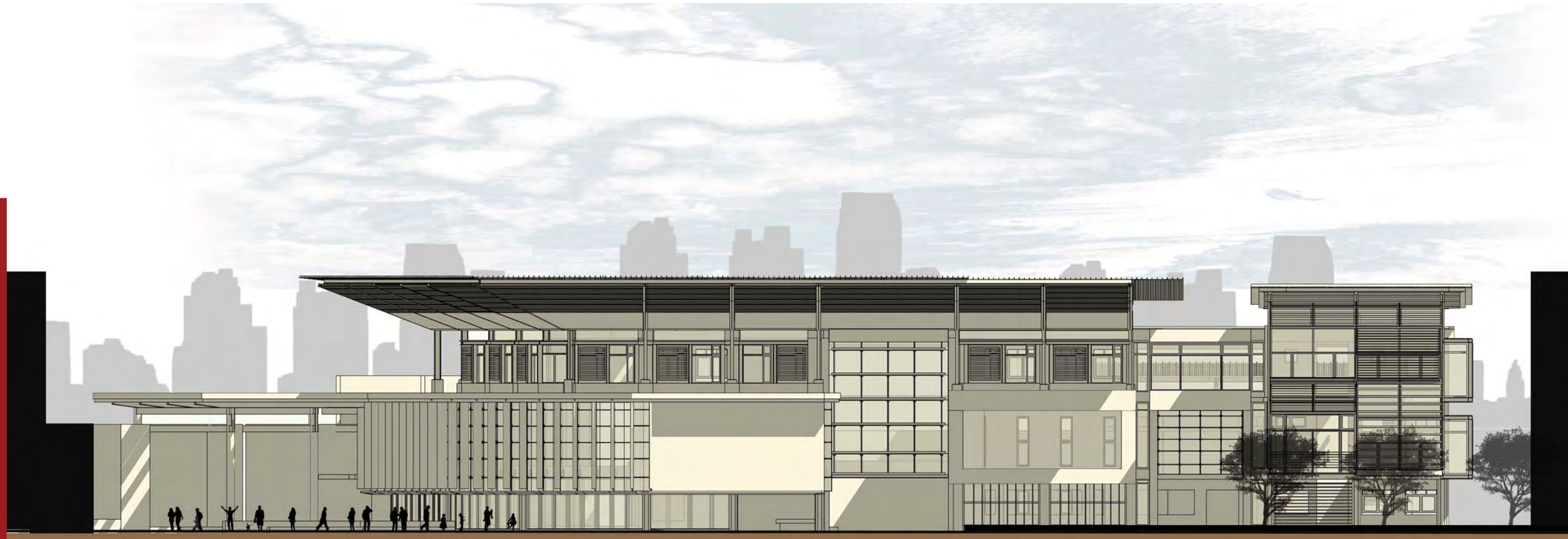


FIG 6.28_Proposed South Elevation

SOUTH ELEVATION

FIG 6.29_Proposed North Elevation

NORTH ELEVATION

FIG 6.30_Proposed East Elevation

EAST ELEVATION

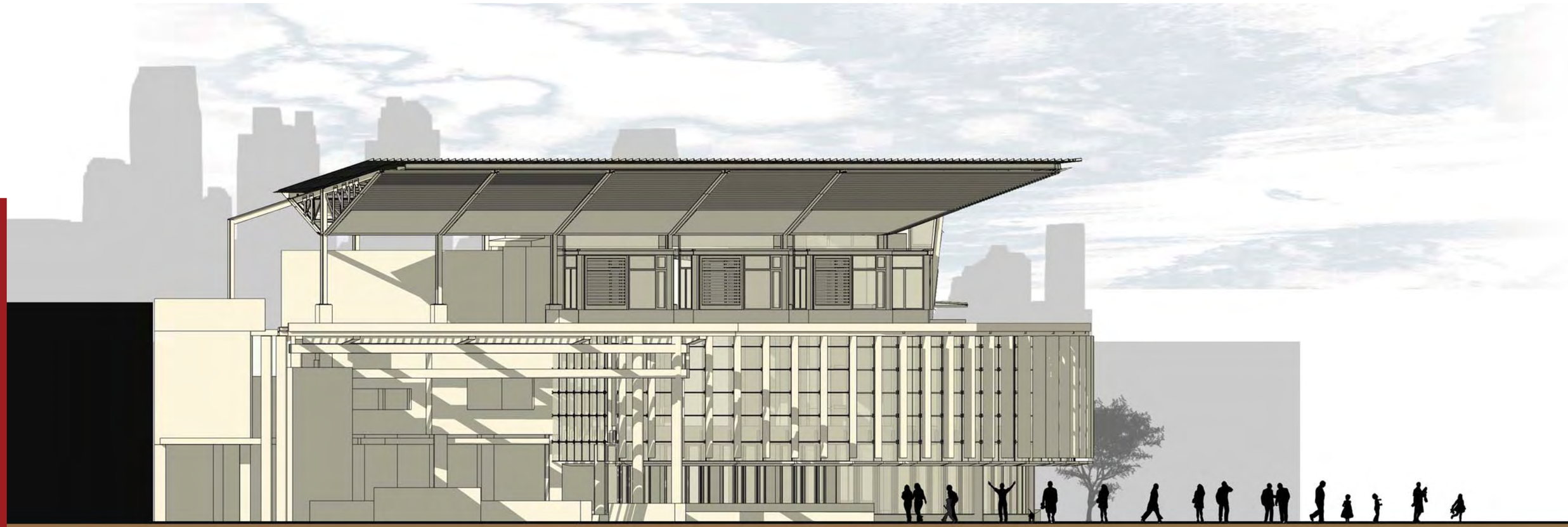


FIG 6.31_Proposed West Elevation

FIG 6.32_Perspective view of building as seen from urban activity space

FIG 6.33_Perspective view of building as seen from urban activity space

Conclusion

As this project draws to a close, I feel it is appropriate to reflect on the work done over the past year. The aim of the theoretical argument was to create a mindset about the sensory properties of architecture. As can be seen in the resultant design, I believe that these sensory aspects cannot be abstracted to a checklist format that will ensure a sensory experience, but should rather be embraced as a collective approach, allowing individuals to experience the created space for themselves with an enhanced awareness for sensory encounters that is created through the architectural definition. Thus the resultant architectural language embraces these aspects in a practical, executable approach and not as an artificially added formulation that stimulates each individual sense, but rather the complete spectrum of human existence.

The processes of music production have been used as the sensory conducting element, which allows for the sensory experiences to occur within the building. Central to any sensory architecture is the principle of place-making; this has formed the basis for the entire proposed framework. The role of the building on an urban scale has provided the parameters along which the design formulation has been developed, and I feel it has worked appropriately in conjunction with the other two projects to create a vibrant sense of place on this previously dilapidated site.

Resulting from this, my theoretical approach not only includes the experiences within my building, but also the experiences along the entire urban space network shared between projects. It is important that the appropriateness of the design should be reviewed in context with the larger designed framework, and not as a singular building on one site. It is within this collective urban realm that the true theoretical justification reveals itself, and it is the collective energy created through the other projects, allowing humans to interact with the place, that will stimulate the real sensory experience.

For sensory architecture to succeed, the quality of the urban realm within which the architecture is situated forms an integral part of any sensory approach to place-making. In conclusion, I believe that without the human dimension and the vibrant energy human beings bring to the sense of place, all attempts at sensory architecture would fail. I believe that a true account of the appropriateness of any of the proposed interventions will only be possible if and when the place is assessed in its entirety in its physical built form to establish if the intended outcomes have been achieved.

ARCHITECTURE IS NOT ALL ABOUT THE DESIGN OF THE BUILDING AND NOTHING ELSE, IT IS ALSO ABOUT THE CULTURAL SETTING AND THE AMBIENCE, THE WHOLE AFFAIR

MICHAEL GRAVES

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Special thanks to My Lord and savior Jesus Christ for the abundance in which I have been blessed_Ma en pa vir als wat julle vir my beteken_ Andrea my skat dankie vir jou "I am coming home" _Sus dankie vir al die liefdes_Oom Danie en tannie Desere_Jaco en Rian ek kon nie vir beter vriende gevra het nie, dankie vir die waarde wat jul tot my lewe bygevoeg het_oupa en oumaX2_Christian my mater_my hele familie_vriende in die kaap_vriende in melkstraat_Tanie Wilna Liebenberg_soos Elvis Presley sal se: "THANK YOU very much"