A place of prostration

A PLACE OF PROSTRATION

A Masjid complex in Bloemfontein by Amirah Patel
2015025741

Figure 2: Photograph of the touchstone indicating the 5 pillars of Islam in Arabic (Author, 2021).

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Declaration

This dissertation is submitted in partial fulfilment of the requirements for the degree M. Arch (Prof) at the University of the Free State, Bloemfontein, South Africa.

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Submitted - 15 October 2021

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Declaration of authorship:

The work contained in this document has not been previously submitted at this or any other institution of higher education for the requirements of any degree. To the best of my knowledge all work contained within this document are my own unless where due credit is given.

I hereby declare that 'A Place of Prostration' is my own work unless otherwise indicated

Acknowledgements

"In the name of God, the Most Gracious, the Most Merciful."

First and foremost I dedicate this dissertation to my parents for their unwavering support and encouragement throughout my studies especially over the past year. To my siblings for all the distractions that kept be sane over the years and made me push harder to finish my degree.

Thank you to all my supervisors, without whom this project would have not been possible and Martie for all the encouragement and enthusiasm that you showed for my thesis, it was truly appreciated.

God is Great! God is Great! God is Great! God is Great!

I bear witness that there is no god except the One God.

I bear witness that there is no god except the One God.

I bear witness that Muhammad is the messenger of God.

I bear witness that Muhammad is the messenger of God.

Hurry to the prayer. Hurry to the prayer.

Hurry to salvation. Hurry to salvation.

God is Great! God is Great!

There is no god except the One God

(Huda, 2019: online)

Figure 3: Collage depicting people praying on the intended site (Bacongco, 2020: online).

Abstract

Salah is one of the most important duties in the life of a Muslim which is centred around the Masjid.

Bloemfontein has a growing Muslim community consisting of a diverse demographic of people however, there is a lack of formal religious spaces. Salah is performed five times a day and so the Masjid is a significant space for praying, community engagement and learning. Aside from the diversity, the community is well dispersed across the city with many residents away from their extended family which means that the Masjid is an important gathering space and place of identity.

This thesis aims to identify the dynamics of the current population and praying spaces to design a Masjid and community centre. Due to the diverse nature of Muslims, a more universal approach will be explored in terms of ritual and traditional aesthetics to create a Masjid that is free from stereotypical forms. As a result, the history and functions of the Masjid will be explored to create a space that orientates the congregant within the context while remaining alien.

Ultimately the new design is inspired by abstract and contemporary interpretations of traditional elements to create a place of prostration.

Glossary

Adhan – Call to prayer

Allah – The Islamic name for God in the Arabic language. A singular word that has no plural, nor associated with any masculine, feminine or neuter characteristics

Allahu Akbar – Allah is the most great

Asr - Mid-afternoon salah, which may be performed from late afternoon till just before sunset

As-Salamu-Alykum –Peace be upon you – greeting

Bismillah – In the name of Allah

Bismillah-ur-Rahman-ir-Rahim –In the name of Allah, most gracious most merciful – Usually said before beginning any tasks

Dar-ul –Islam – House or abode in Islam

Dua - supplication

Esha – Evening prayer made after when the sky has darkened till midnight

Fajr – Salah prayed from dawn till just before sunrise

Fard – Obligatory duty

Ghusl – Greater ablution that includes the whole body performed after certain actions .This could also refer to bathing a dead body before burial

Hadith – Sayings, reports and accounts of the Prophet Muhammad (peace be upon him) which are recounted by his household, companions and progeny. This is a major source of Islamic Law

Hafiz – someone who has memorised the entire quraan

Hajj- Annual pilgrimage to Mecca which each Muslim needs to undertake once in their lifetime if they have the means to do so.

Halal – An action that is permitted or lawful

Haram – An action that is impermissible or unlawful

Ibadah - All acts of worship

Imam – A person who leads the Congregational prayers

Iman – Faith

Iqamah – Call to stand to pray made just before Salah starts

Jahannam – Hell

Jannah – Paradise

Jumaa/ Jummah- weekly Friday prayer and is seen as the blessed day of the week.

Kaaba- The centre of the Holy Mosque in Mecca(Makkah) where all Muslims face in prayer

Khutbah – Speech that is delivered on Fridays and on Eid

Madressah- An Islamic school

Magrib - Salah that is performed after sunset until daylight ends

Maidans- An informal public space that forms as a result of the city layout, typically in front of public and religious buildings. The shape is often irregular.

Maktab - An Islamic school set up near a Masjid

Makkah/Mecca- Holy city where the Kaaba is situated

Mashrabiya - A lattice screen used as a privacy and ventilation device in Arabian houses

Masjid – A place of prostration

Mihrab – Niche or alcove in the mosque indicating the direction of the Qibla in Makkah.

Mimbar- A podium compromised of an uneven number of steps used to deliver sermons by the Imam.

Minaret- A tower that was historically used to call out the Adhan

Mu'adhin- The person who calls out the Adhan or call to prayer

Musallah- An informal praying space that is not a formal Masjid

Qibla – Direction that Muslims face when they pray Salah

Quraan – The divine book which is recited or read

Rak'ah – A unit of Salah, made up of recitation, standing, bowing and 2 prostrations.

Sahn - A courtyard usually found in the front of a Mosque

Souk - Market place that was typically found in the Middle East

Zohr - Salah that is performed at midday.

Part 1 - Introduction




Part 1- Introduction

The Masjid plays a significant role in the Muslim community which means that one needs to understand the dynamics of the people firstly before engaging with the actual design. This chapter introduces the development of the Masjid and motivates the need for a suburban Mosque that responds to the needs of the community. A brief introduction into the theoretical approach and a precedent study of a Mosque situated on the outskirts of the city will also be evaluated.

1.1 Introduction

Islam is a religion that means peace, and is a way of life for 892 685 people in South Africa (Statistics South Africa, 2018: 15). Muslims lead a life in accordance with the Quraan and Sunnah as a means to achieve paradise. One of the most important acts of worship is the 5 daily Salah around which life is centred. As a result the Masjid is an important space in the city.

Masjid vs. Mosque
A place of worship for a person who practices Islam is called a Mosque in English and Masjid in Arabic. The preferred word is Masjid as it means 'a place of prostration' which portrays the purpose of the space (Huda, 2019: online).

The Masjid forms an integral part of a Muslim's life, not only to pray but incorporates educational, social, administrative and cultural functions to form a community centre. Islam is a diverse religion that is practiced globally, resulting in different styles and types of mosques that have evolved from the simple mosque that was used by the first Muslims in Medina (Spahic, 2020: online).
As a place of prostration, it's essential to understand the basic form and function of the spaces and how they can be reinterpreted through the study of typology and ritual. This is a move away from the stereotypical form that is automatically conjured when thinking of a mosque.

The project will focus on the traditional rituals that are deeply rooted in the religion to understand how it can be translated architecturally on the edge of the city.

Figure 4: People standing shoulder to shoulder while praying in congregation (Author, 2021).

THE KEY TO PARADISE IS SALAH

1.2 Document framework

The following framework was implemented to structure the dissertation in order to adequately address all avenues of the new design.

Composed of five parts which has religious significance, the document is broken down to allow for a proper introduction and background before engaging with the more architectural and design aspects of the project.

As the project deals with a specific religion, an in depth exploration was necessary to allow those not familiar with Islam to understand the approach that was taken. In part one and two the community, religion and context was introduced along with a brief background in religious theory. In part three the theory, design and technical development of the project was explored. This forms the bulk of the work and the three main aspects theory design and technical provide a holistic view of the entire project.

Part four introduces the final design and analysis and in the final chapter a reflection on the entire year is done as means to conclude the project.

1.3 Project Motivation

As someone that has always had a fascination with religious and sacred architecture, the idea of creating a Masjid within Bloemfontein started a long time prior to studying architecture. This was fuelled by the lack of a proper Masjid or one that appeared as such in the city. Growing up there was always a yearning to have a beautiful Masjid in Bloemfontein with a adequate madressah that was not just an afterthought in terms of design.

Lets first take a look at the development of Old Market or main Mosque in Bloemfontein.

One needs to understand that the Bloemfontein Muslim community struggled for years to purchase the Old Market building which a portion was already used as a prayer space since the early 1990's. This was a shopping centre aimed to attract Indian businesses during Apartheid.

In the early 2000's the municipality agreed to sell the building to the community as it was largely vacant and unprofitable but as the purchase relied on donations this took a few years interest free. Once in possession the community could not immediately begin construction due to a lack of funding, outstanding municipal fees and difficulty in finding tenants to help keep the building running.

Only once the building was fully transferred was there a renewed effort by the community to start with the construction of the new Masjid which is due to be completed this year (2021).

This is a proud moment for the community, however in these 21 years the dynamics and size of the Muslim population has changed so much and a Masjid in the CBD is not sufficient. Rather this will become the central Masjid in the city with many smaller ones being established in the more residential areas (Patel, M.H.A. 2021: personal communication).

My understanding of religious spaces changed drastically during my studies as I began to question the extravagance of contemporary prayer spaces especially as they are meant to devote oneself to God rather than being a place for people to marvel at the architecture. This thinking was specifically aimed at Mosques which was after all a place of prayer. However my perception of the Masjid recently shifted and I realised the importance of creating a Masjid that expresses the aspirations and identity of its congregation.

This realisation led to an investigation of Masjids, their function within the community, history and architecture which will be explored in this dissertation. I also came to the realisation that the Masjid is so much more than just a prayer space and that in a community like Bloemfontein, where most people are away from family, new connections are created based on religious affiliations and so the relationship that people have with the Mosque is a lot stronger. The Mosque becomes a dynamic space that caters to the public in accordance with Islam.

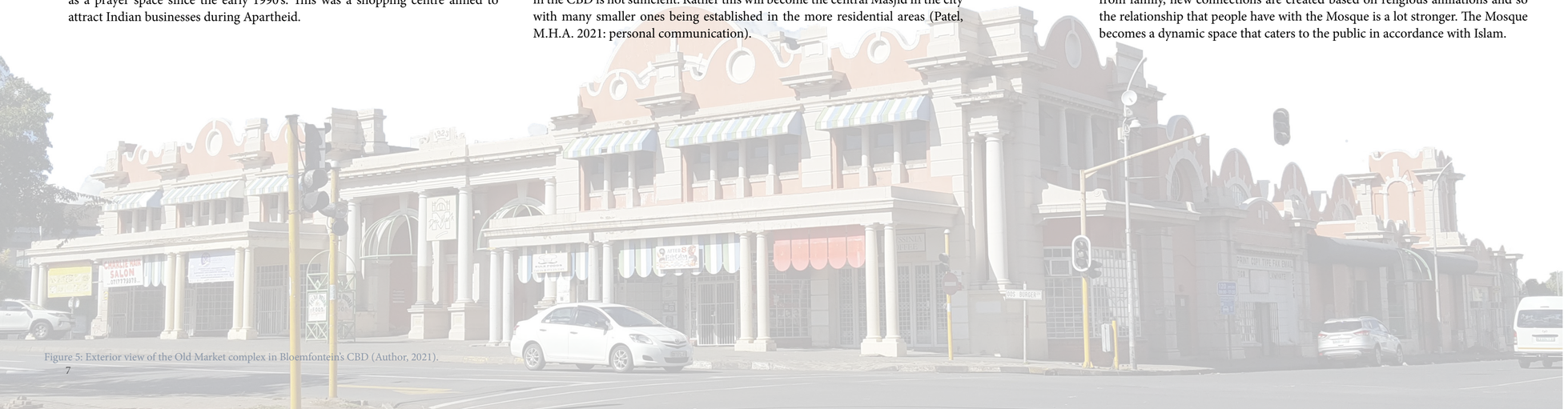


Figure 5: Exterior view of the Old Market complex in Bloemfontein's CBD (Author, 2021).

Figure 6: Entrance courtyard of the Old Market complex (Author, 2021).

1.4 Project Rationale

1.4.1 Client

Religious buildings are constructed with the aim of serving a group of people who practice a certain faith as well as the less fortunate and the Mosque is no different. The new Masjid will serve the Bloemfontein Muslim community especially those in the immediate surroundings and be used for prayer, madressah, social welfare and public gathering.

The Bloemfontein Woman's Forum play a vital role in providing welfare for the less fortunate locally and abroad. The project hopes to create a platform to assist these woman in their weekly feeding schemes and also to provide a place to host fundraising events. The burial facilities that will be catered for on the site will be overseen by the Bloemfontein Muslim burial Committee, who are responsible for all burial activities in the city.

Figure 7: (Bloems Women's Forum, 2020: online).

In order to understand the makeup of the Muslim population and client a survey was carried out and will be discussed later on in the chapters.

1.4.2 Theoretical approach

Designing a religious building opens up a few avenues with regards to theoretical research, the most obvious of which being ritual, identity and liminal spaces. As a Mosque there are many aspects that have to be taken into consideration especially when approaching this from within the religion. As a place for a diverse group of people, no single culture and their relationship with Mosques will be researched.

Rather the aim is to explore the common traditions and rituals pertaining to the Salah (Prayer) and the importance it holds within the daily life of a Muslim as a whole and how this can translate into a theoretical framework that can be applied to the design. The research will also explore some aspects of the history of mosques as a way to understand the evolving typology of such spaces.

1.4.3 Project Aim

The aim is to create a Masjid that comprises 3 parts namely the religious, educational and recreational to create a dynamic community space for the Muslims in Bloemfontein.

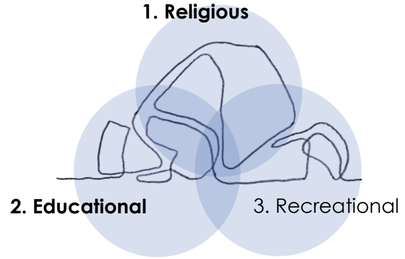


Figure 8: Diagram indicating the 3 stages of the design (Author, 2021).

1.5 Research Question

How can the ritual, gesture and choreography of Salah be used to inform a contemporary Masjid, for a diverse group of Muslims settled in Bloemfontein?

Sub-Question

How can new concepts be extracted from the ritual of Salah without fully resorting to stereotypical forms that are associated with Mosque architecture as a response to the diverse Muslim population?

1.6 Project Background

Before engaging further with the project, a small survey was conducted to shed light on the demographics of the Muslim population and to access the best place to locate the site. Personally, there has been a huge increase in Muslims in the city over the last few years which has created a very diverse mix of people as previously mentioned.
The survey was carried at random and included the following questions:

1. Ethnicity / race
2. Country of origin
3. Language/s used at home
4. Number of members in the household
5. Suburb that one resides in

A total of 108 people responded which accounted for 411 people as one person from each household was asked to fill in the form. Although this is a small portion of Muslims in the city, the data shows the diversity of the group and their spread around the city. The map on the right indicates the spread of Bloemfontein's population according to race and together with the survey data a pattern of Muslim settlement could be illustrated.

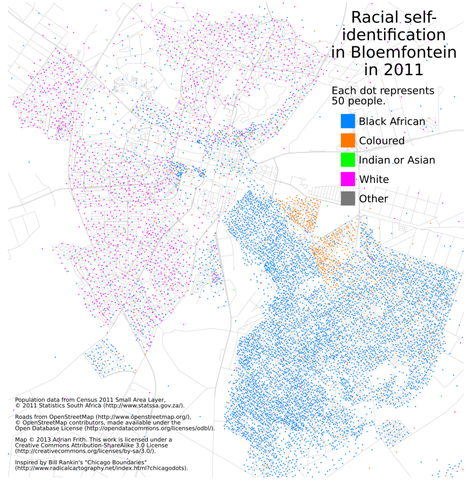


Figure 9: Racial profile of Bloemfontein's population 2011 (Frith, 2013: online).

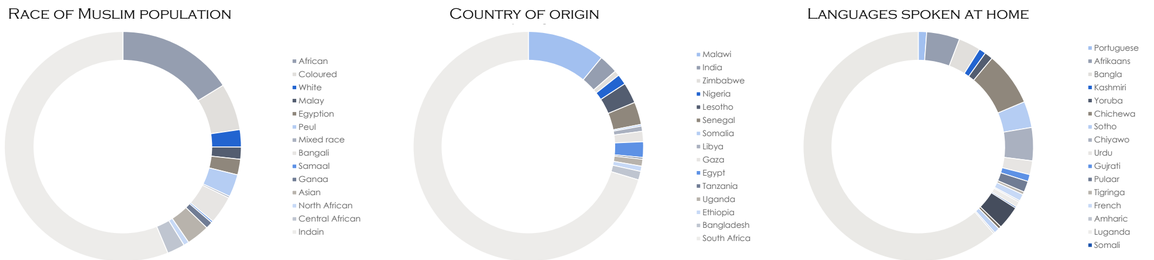


Figure 10: Pie charts depicting data collected from the survey that was carried out in the start of 2021 (Author, 2021).

Below is a graph that indicates the number of people residing in each area in the city and highlights the higher percentage of families in the north of the city.
This data was then overlaid onto a map of the city firstly to visualise the data and secondly to compare the growth pattern with existing prayer facilities in the city which is highlighted in dark blue. These are mostly small prayer spaces that will be analysed in Part 2 of the document. From the diagram one can clearly see the trend of these prayer spaces and their central location to allow easy access.

This is a great way to ensure maximum accessibility but it also means that the prayer spaces are a distance from peoples homes making it inconvenient especially for religious classes and prayers in the early morning and at night.

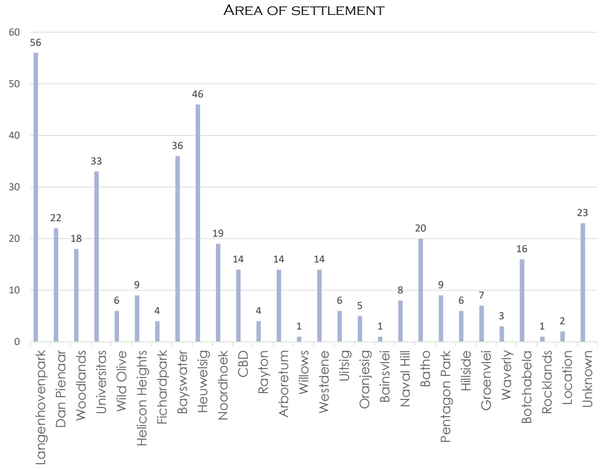


Figure 11: Area of settlement which indicates Langenhovenpark as the most populated area (Author, 2021).

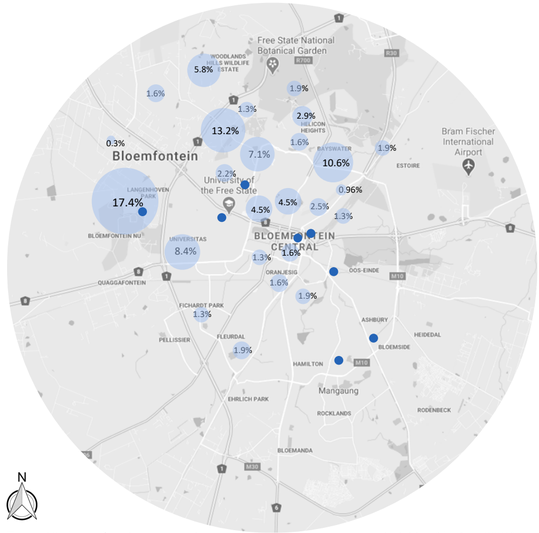


Figure 12: Area of settlement in relation to existing prayer spaces in dark blue (Author, 2021).

After careful consideration a site was chosen in Langenhovenpark not only because of the high percentage of Muslims residents that were recorded from the survey but also because of its location close to a main road (Nelson Mandela), the N1 and general large open space to allow for future development.
The site sits on a vacant erf in Spitskop which is an area that is planned to be fully developed by 2025 (Mangaung Metropolitan Municipality, 2020: 180). The site will be further analysed in Part 2 of the document.

1.7 Precedent

1.7.1 Sancaklar Mosque by Emre Arolat Architects (2012)

A place of worship that becomes one with the landscape. The mosque is a move away from contemporary mosque typologies and was inspired by focusing solely on the essence of what a religious space in an Islamic context could become (Archdaily,2014: online).

The mosque is situated in Istanbul, Turkey on the periphery of the city, on a hill that allows the new buildings to submerge and fuse with the landscape. The design allows the congregants to transition from the chaotic world to a more tranquil space that is emphasised by the choice of material and use of water and light.

The main prayer area is designed to resemble a cave that descends into the landscape that leads to a bare concrete wall that is engulfed in light.

The section below indicates the cave like mosque that is nestled into the landscape.

When approaching the mosque all that one sees is the stone clad minaret. The visitor then descends down steps to the courtyard that separates the different spaces .

The dominant materials are natural stone, reinforced concrete and wooden details. The natural finish allows the mosque to stand out while blending into the landscape.

The plan is made up of a variety of free standing stone clad walls that are united by two concrete roofs. This is indicated on the floor plan (figure 16 and 17) and can be seen in the section below.

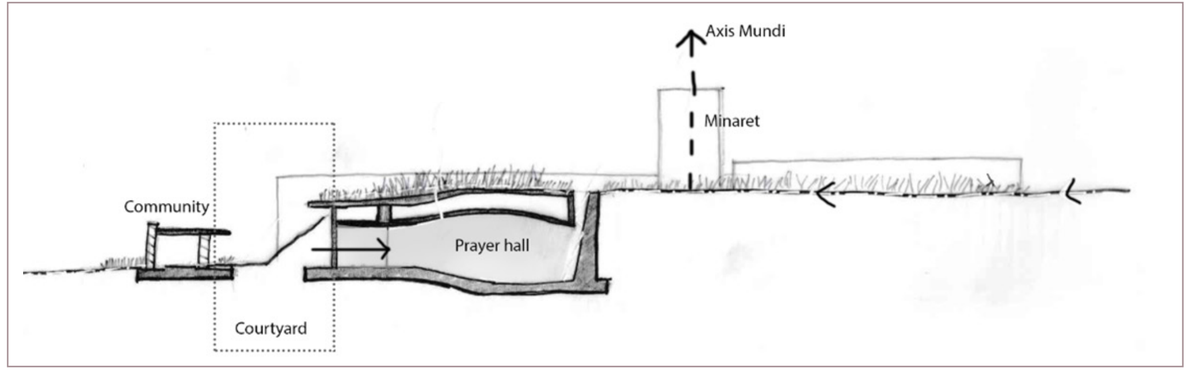


Figure 13: Short section through the site to show the transition from the city to the mosque and then to the community space (Archdaily, 2014: adapted by author).

Figure 14: View of the main entrance and the western side (Betsky,2019:online).

The mosque is a introverted space and the perspectives indicate concrete and cladded walls that are united by the roofs.

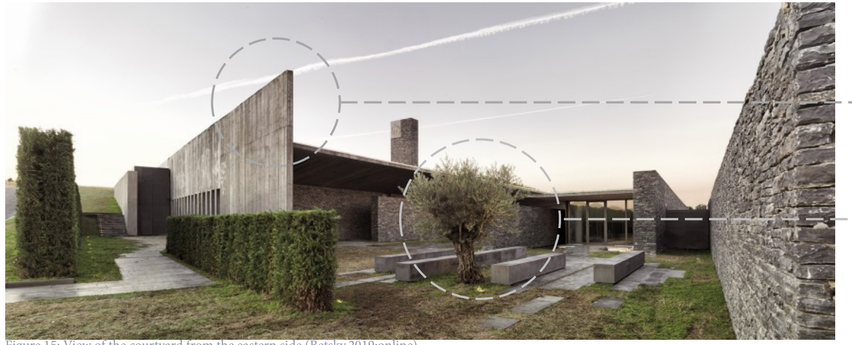


Figure 15: View of the courtyard from the eastern side (Betsky,2019:online).

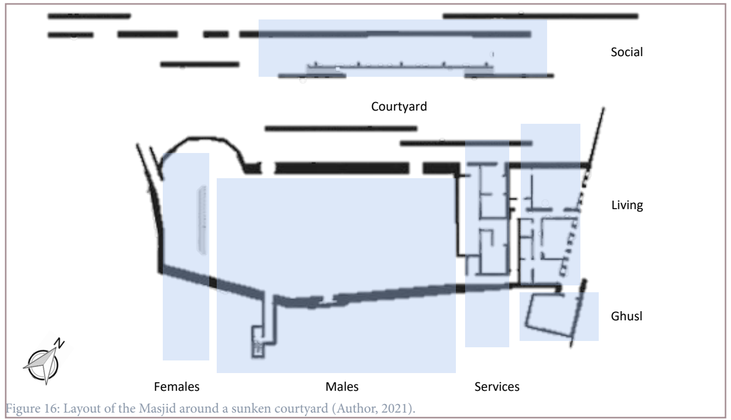


Figure 16: Layout of the Masjid around a sunken courtyard (Author, 2021).

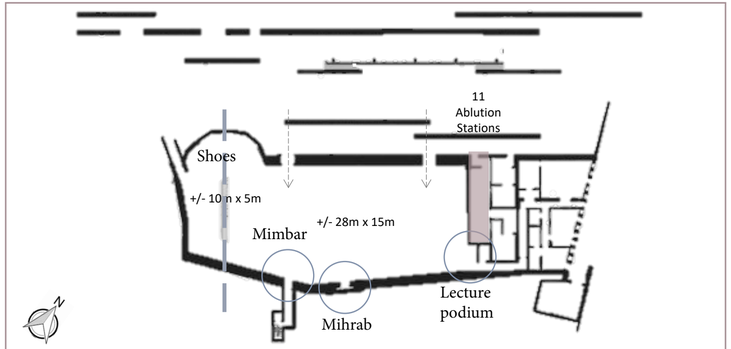


Figure 17: Size of the prayer hall in relation to ablution facilities and important religious elements found in a Masjid (Author, 2021).

The entire plan is arranged around a courtyard with private spaces on the eastern end and more social and communal areas on the north overlooking the landscape.

Some of the functions include:

- Male and female prayer halls
- Mortuary and funeral space
- Living quarters
- Library
- Two courtyards

The beauty of this Masjid lies in its simplicity as can be seen in figure 17 in which only the essential elements of a Mosque are present namely the Mihrab, the Mimbar and ablution stations. One interesting thing about the interior is the addition of a lecture podium which is usually given from the Mimbar.

Moving into the Masjid, one can see that it is very simple, with the main focus being places on the Qibla wall that is bathed in light as seen in figure 18, 19 and 20. Aside from the basic elements, a contoured concrete dome emphasise the more cave like interior space.

Figure 18: Interior of the mosque and cave like space (Betsky,2019:online).

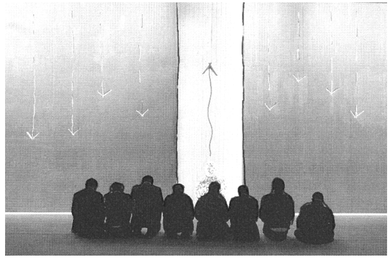


Figure 19: The Mihrab and Qibla wall indicating the direction of prayer (Archdaily, 2014: edited by author, 2021).

Figure 20: Mimbar or podium (Betsky,2019:online).

Figure 21: Material detail of the ablution facility (Archdaily,2014:online).

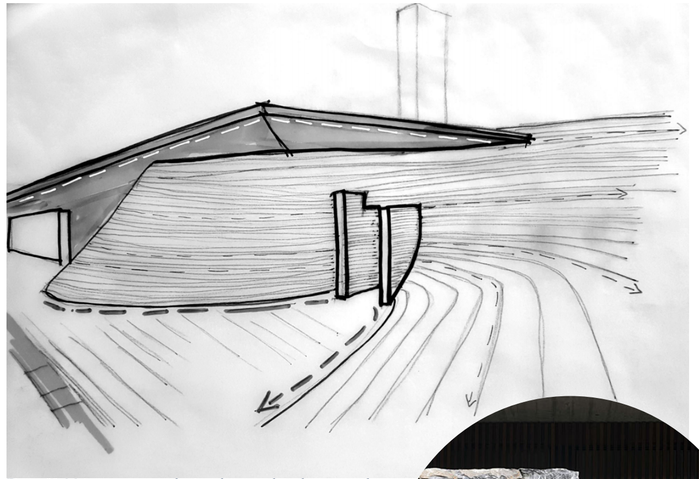


Figure 22: Main entrance emphasises the natural vs. the man made (organic vs. geometric) (Author, 2021).

The reinforced concrete roof forms a canopy protecting the congregants from the elements (wind, sun and rain). The use of concrete and natural stone emphasizes the natural vs. man-made which was an important part of the concept .

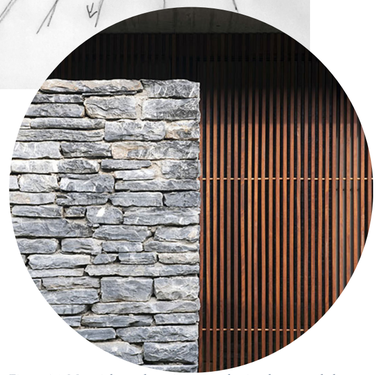


Figure 24: Materials used on site to emphasise the natural elements (Archdaily,2014:online).

Figure 23: Water features and pathway design (Betsky,2019: adapted by author).

The courtyard space includes water features and pathways that are used for personal reflection as well as group gatherings.

IDEAS EXTRACTED:

The Masjid is very simplistic in nature and allows for the visitor to engage in the act of salah without hindrance. By using natural materials and designing with the landscape, a perfect balance is created between natural and man-made.

As a precedent, this Mosque is an inspiration of what a non-stereotypical Masjid could be in a city that is full of historic religious spaces. The contemporary approach allows the site, materials and forms to create a sacred space that exudes an atmosphere of reflection and introspection.

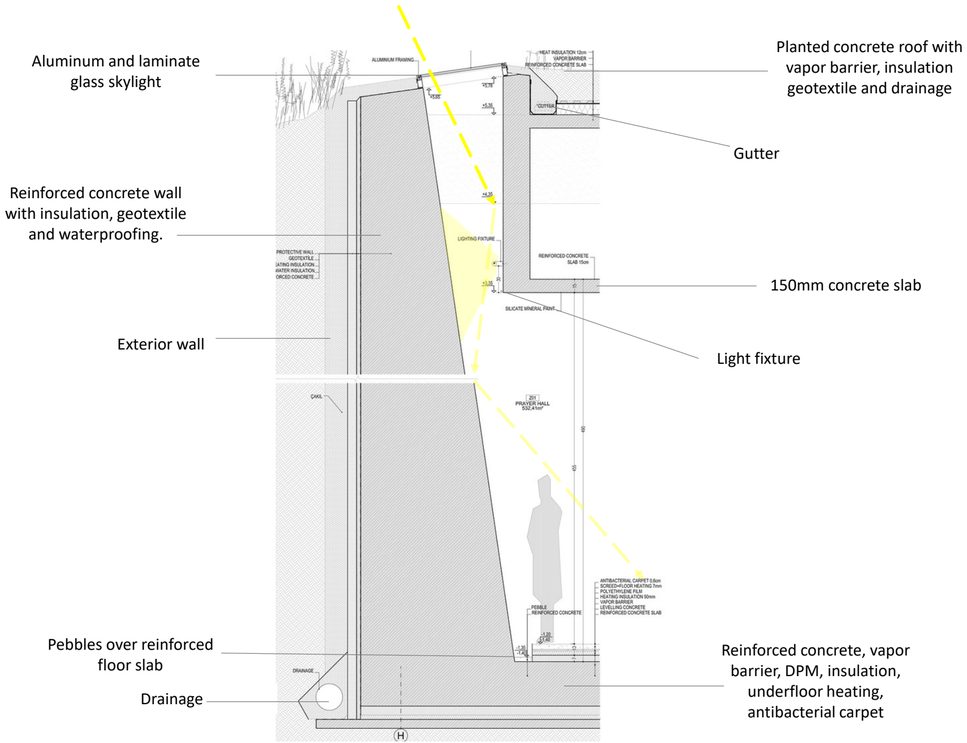


Figure 25: Detail of Mihrab and Qibla wall (Archdaily,2014: adapted by author).

Part 2 - Background





Part 2 - Background

In order to understand the fundamental principles that centre around the Masjid and its significance in the life of a Muslim, a more in-depth analysis of Islam is required. This chapter focuses on introducing basic Islamic concepts through the touchstone and concept models in order to familiarise the reader with the setting of the Masjid. Furthermore, the theory that was introduced in Part 1 will be explained to extract architectural ideas to use in the design.

2.1 Existing Mosques

Bloemfontein has a vibrant Muslim community that are well dispersed and as a result many small prayer facilities have been established as seen in figure 26. Although there are more than 8 prayer spaces, it would not seem so due to the appearance and architectural language of the buildings. Below is a brief analysis of the Mosques in Bloemfontein including the capacity and location.

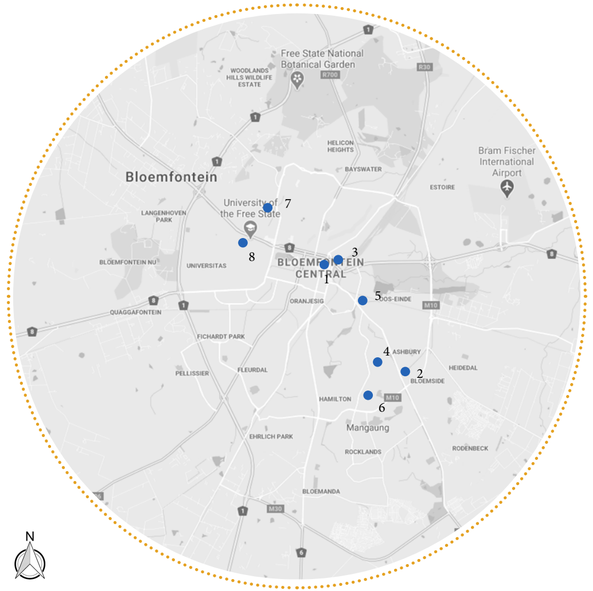


Figure 26: Location of Masjids, prayer rooms and Mosques in Bloemfontein (Google maps, 2021: adapted by author).

1. Old Market Masjid -CBD

Figure 27: Old Market (Author, 2021).

This is the main mosque in the city that is under renovation. Due to its historic nature the façades have not been altered. The total estimated area is 4158m²

Total males - 1000
Total females - 180
Jummah 600 M/ 60 F

2. Masjid Tayyiba - Heidedal

Figure 28: Masjid Tayyiba (Vumanse, 2016: online).

Located in Heidedal the mosque has a estimated floor area of 634m²

Total Males - 270
Total females -30
Jumaa 200M/ 20F
Madressah - 40 kids

3. Hilton Mosque Hilton

Figure 29: Hilton Masjid (Author, 2021).

Located in close proximity to the Old Market mosque the space caters for:

Males - 80
Females- 30
Jumaa: 60 M/ 5 F

4. Phameng Musallah

Figure 30: Phameng (Author, 2021).

Located in the Phameng the site is shared by other tenants which include a daycare within the same plot. The prayer facility caters for:

Males -35
Females -10
Madressah - 75 kids / 15 ladies
No Jumaa facilities

5. Checkout Musallah

Figure 31: Checkout Musallah (Author, 2021).

A prayer facility that has been established within a shopping complex and caters for the people in the area

6. Ipopeng Musallah

Figure 32: Ipopeng Musallah (Google Maps, 2021: online).

Located in Rocklands the prayer facility has an area of 60m²

7. Brandwag Islamic Centre

Figure 33: Brandwag Islamic Centre (Author, 2021).

Caters for both male and female congregants and children madressah classes.
The estimated area of the facility (not entire site) is 225m²

8. UFS Musallah

Figure 34: UFS Musallah (Author, 2021).

A small prayer space that serves the students on campus with a total floor area of 81m²
Caters for:

Males- 45
Females - 4
Jumaa 65M/ 4F

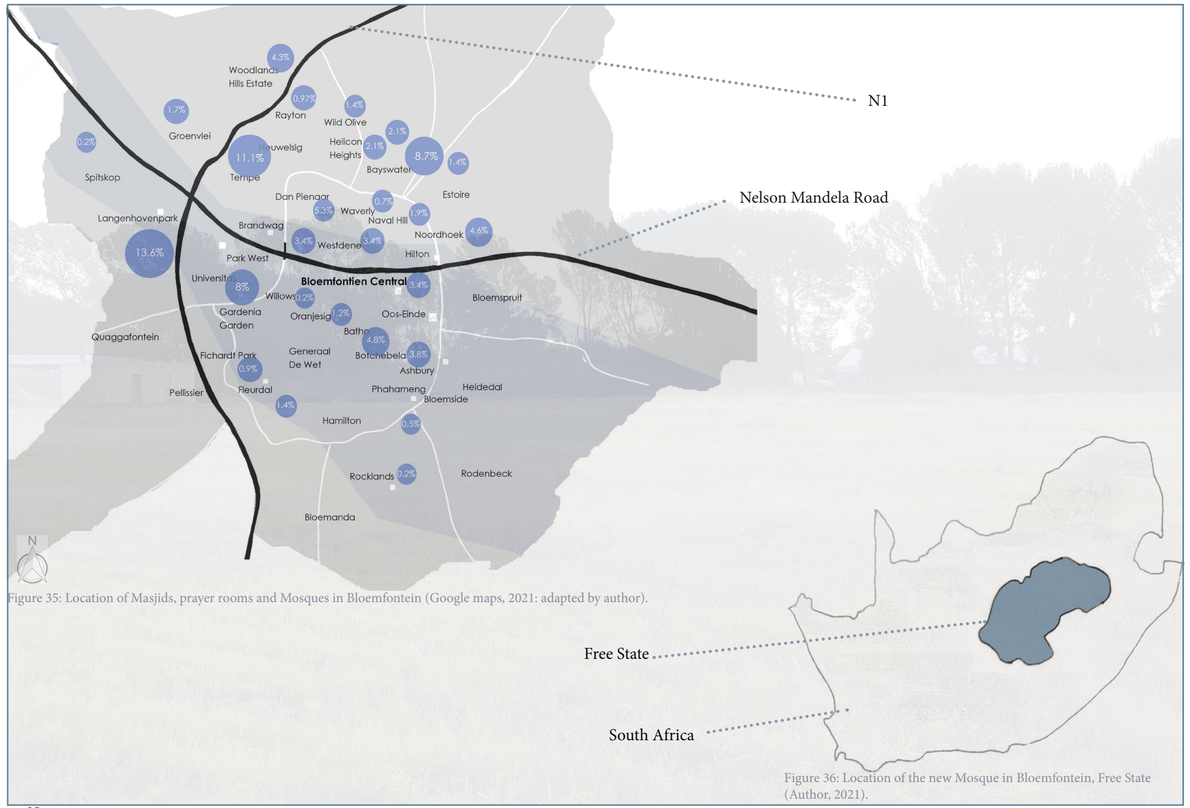


Figure 35: Location of Masjids, prayer rooms and Mosques in Bloemfontein (Google maps, 2021: adapted by author).

Figure 36: Location of the new Mosque in Bloemfontein, Free State (Author, 2021).

2.2 SITE ANALYSIS

2.2.1 Site Selection

After conducting the survey and analysing the location of the already established prayer spaces in the city, it became apparent that there was a need for a more suburban Masjid that was easily accessible and large enough to cater for all the intended functions. A pattern that was noticeable from all the other prayer facilities was their central location in the city close to the main access route as seen in figure 35. This was an important factor when choosing the new site as accessibility played a huge role. From the survey it was evident that a large group of Muslims resided in Langenhovenpark, and the need for a Mosque on the Western side of Bloemfontein made it an ideal location.

The final site in Langenhovenpark was chosen for its suburban location making it convenient for madressah and Salah. It is close to the main road, thus easily accessible, close to the N1 for travellers and close to the new Muslim cemetery. Aside from this, the large plot is ideal for recreational activities and future expansion. Situated in a mixed use area, the site comfortably integrate with the existing fabric and can add value to the public space around its edges.

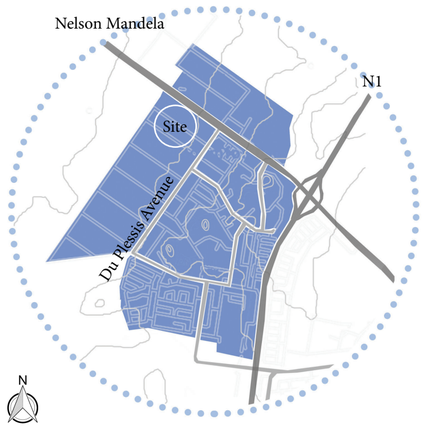


Figure 37: Map of Langenhovenpark indicating all primary, secondary and tertiary roads (Author, 2021).

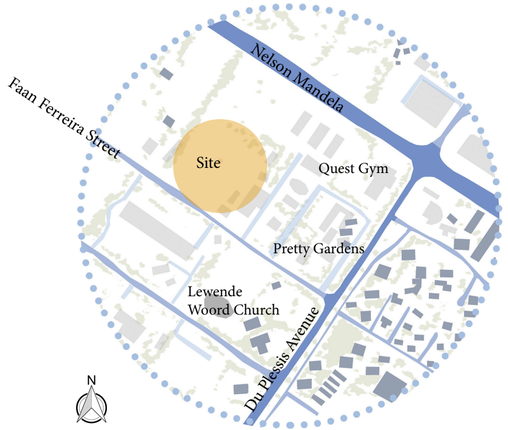


Figure 38: Site and its surroundings (Author, 2021).

Figure 39: Collage depicting people praying on the intended site (Baconco, 2020: adapted by author).

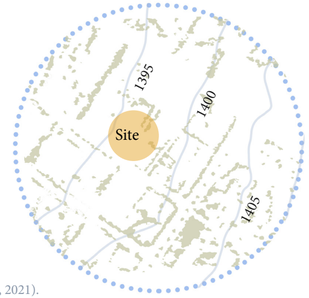


Figure 40: Natural topography in the area (Author , 2021).

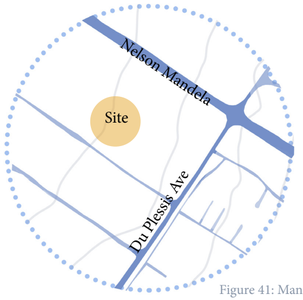


Figure 41: Man-made topography in the area (Author , 2021).

Figure 42: Activities in an around the site (Author , 2021).

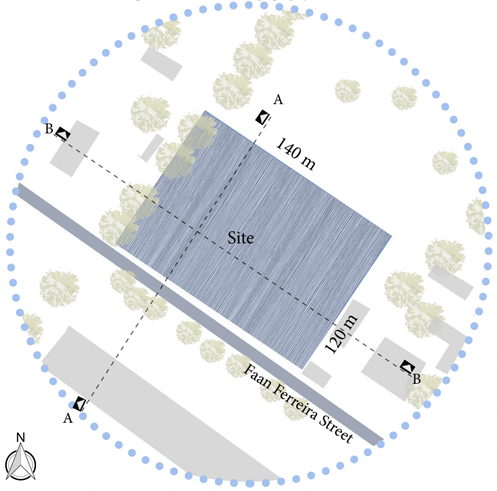


Figure 43: Site dimensions and immediate context (Author , 2021).

2.2.2 Street sections

Situated on the periphery of the city, the street is a long single-lane street that has been activated with the building of a new retail complex directly opposite the site as seen in figure 40. This activation has increased the vehicular traffic without much regard to the pedestrian. Although the area around the site is activated, if one moves further west the street is quite with large private erfs.

Below in figure 44 one can see that the site is dominated by large pine trees which also line the street in the southern side which provide a barrier against the large retail complex and parking space. In figure 45, one can see the relatively flat nature of the site that is surrounded by more retail and some residential spaces. Due to the width of the site, noise is not much of a problem as there are sufficient trees around the site that block out much of the noise pollution.

Coming back to the opening statement about the activation of the street, the sidewalks are overgrown, the road has many potholes and there is a lack of street lights. Aside from this the road is very long without any seating or spaces of pause which provides the perfect opportunity for the Mosque to open up parts of its public space to enhance the current street fabric.

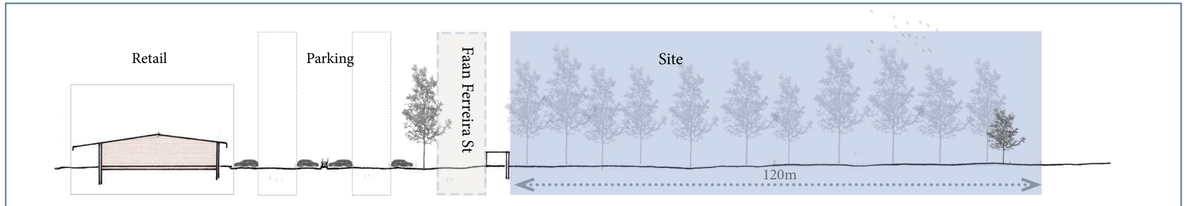


Figure 44: Short section A-A through site and context - not to scale (Author, 2021).

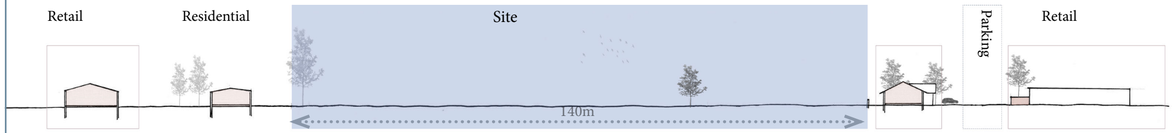
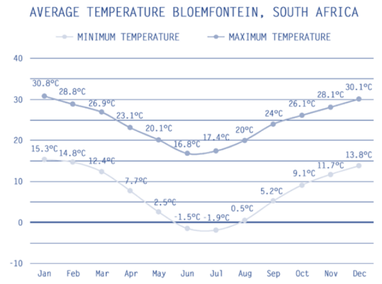


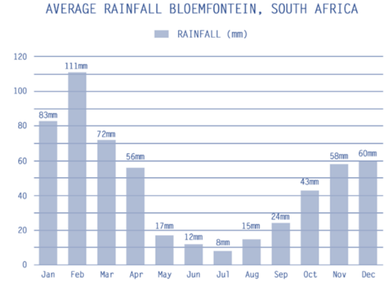
Figure 45: Long section B-B through site and context - not to scale (Author, 2021).

2.2.3 Climate

Bloemfontein is situated in central South Africa and is known for its semi-arid landscape. As a result Bloemfontein has cold winters that experience little rain with hot summers in which rain is frequent. This fluctuation in temperature can be problematic in buildings that need to be kept cool during the summer and warm during the winter.

The city tends to be dry and dusty in winter, with most of the rainfall coming in the summer months. This rainfall normally arrives in the form of dramatic and short-lived afternoon thunderstorms, often serving as a relief from the heat. In winter, snow is rare, but frost is very common (World Travels, 2021: online).





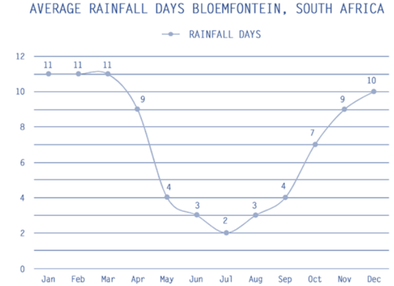


Figure 46- 48: Graph indicating Bloemfontein average temperature, average rainfall and rainfall days throughout the year (Kassimatis, 2020: 49).

2.2.4 Context

Figure 49: Map of the site and its surroundings (Google maps, 2021: online).

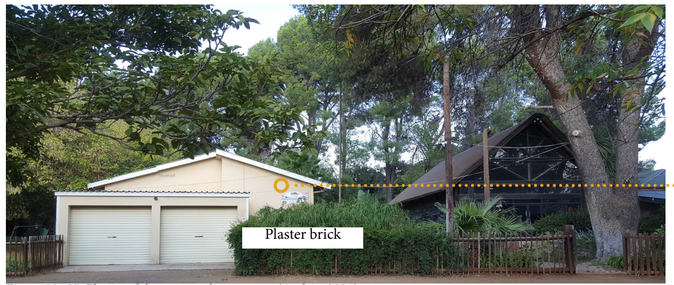
1. Gym

2. Pretty Gardens

3. Butchery

4. Equestrian Retail outlet

5. Recon Thatch



6. Retail complex

7. Lewende Woord Church

8. Turf-Ag Irrigation Specialist

Figure 50 -57: Photos of the surrounding context (Author, 2021).

Figure 58: Ariel image of the site (Google maps, 2021: online).

Figure 59 - 65: Current site conditions (Author, 2021).

2.3 Touchstone

Islam is one of the oldest religions dating back to the 7th century, and has over 1.8 billion followers today (History.com, 2018: online).

5 pillars form the foundation of the religion which is explained in the following Hadith:

> *On the authority of Abdullah, the son of Umar ibn al-Khattab (ra), who said: I heard the Messenger of Allah say, "Islam has been built on five [pillars]:*
>
> - *Testifying that there is no deity worthy of worship except Allah and that Muhammad is the Messenger of Allah,*
> - *Establishing the Salah (prayer),*
> - *Paying the zakat (obligatory charity),*
> - *Making the hajj (pilgrimage) to the House,*
> - *Fasting in Ramadan."* (Sahih Muslim, [n.d]:1, no 20)

In the touchstone this is portrayed by making use of 5 elements in multiple places, from the pieces of cloth that divide into five paths and the layers that were created by the different materials. The number five also suggest the daily prayers which daily life for a Muslim is centred around.

The touchstone begins from the top with a single piece of fabric that weaves itself through the installation emphasising the importance of the pillars in the life of a Muslim. Arabic might not be fully understood by most Muslims however, it is the universal language of Islam and the language in which Salah (prayers) are performed and the Quraan recited.

> The rhythm of the words is evident as they flow into each other… There is a melody, even without the qirah, that strikes at the chords of the heart
> (Sattar, 2019: online).

Moving beyond, three concrete squares deepen in colour to indicate the progression of time that symbolises the changes and new interpretations of the religion over the centuries. A single strand of cloth starts to bisect as it passes through each square to indicate the spreading of Islam to different nations and tribes.

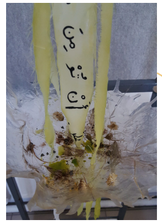
Furthermore one finds a translucent bowl that depicts human hands being held up in supplication, an informal activity that contrasts the formality of the five prayers as depicted by figure 69. On the one hand, the object is reaching for the sky while simultaneously touching the ground in a manner of prostration. This tension is further emphasised by the Arabic hadith that contains Allah's name, which should not be placed on the ground out of respect. Natural elements are visible in the bowl which signifies the diverse Muslim population that has converged within the city- a city foreign to Islam.

Green is often used to represent Islam both traditionally and today as it is the colour of Jannah (paradise) and was used on many occasions by the Prophet (saw). Scientifically the colour is at the centre of the visible spectrum, making it ideal to represent a religion that advocates for moderation (Beam, 2009: online). The final element of the touchstone is a layer of sand placed beneath to represent the Free State landscape upon which droplets of green ink will soak after water is poured from above to signify the ritual of wudhu or the physical cleansing before praying.

As result the project strives to become a Free State Mosque that is inspired by both traditional religious teachings as well as universal Islamic culture that has evolved over the centuries to embrace the Muslim within Bloemfontein.

Religious principles represented by concrete cubes

Resin bowl depicting hands held in supplication



Green ink solidified in the 'context'

Figure 66-68: Photographs of the elements of the touchstone (Author, 2021).

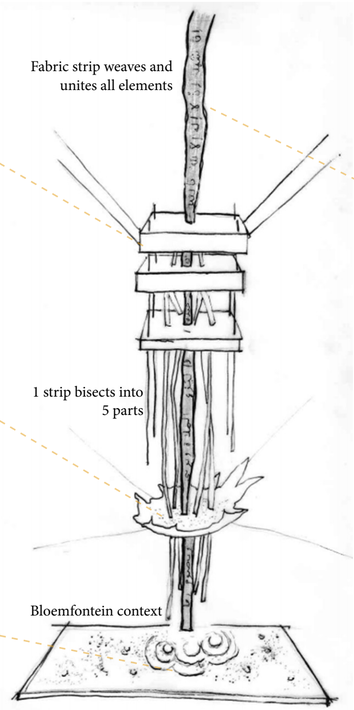


Figure 69: Diagram of final touchstone (Author, 2021).

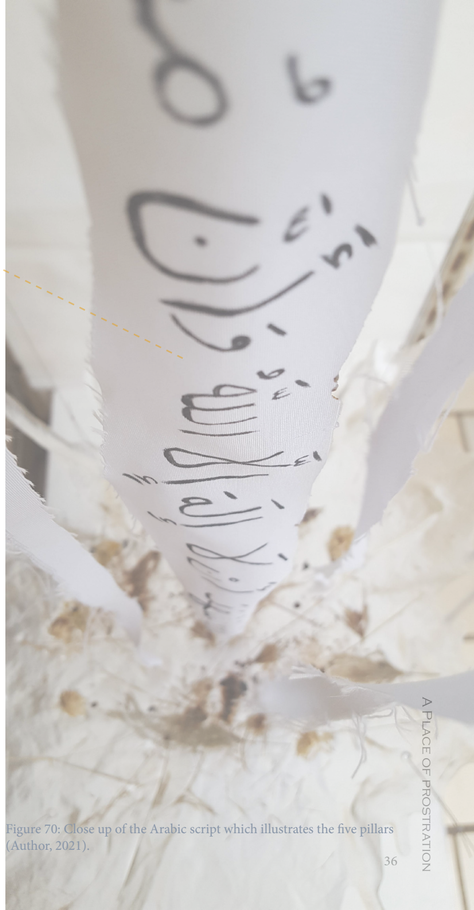


Figure 70: Close up of the Arabic script which illustrates the five pillars (Author, 2021).

Figure 71: Tensions created by the formal actions of prostration and the informal action of supplication (Author, 2021).

2.4 Concepts

In Arabic the word for Mosque is Masjid, which means a place of prostration (Lexico, 2021: online). Salah is a compulsory (Fardh) act that is mentioned over 67 times in the Quraan (Abdulla, 2020: online).

> The mosques of Allah are only to be maintained by those who believe in Allah and the Last Day and establish prayer and give zakat and do not fear except Allah, for it is expected that those will be of the [rightly] guided (Quraan, 9: 18).

As a Muslim, God has ordained that prayers can be performed anywhere on earth provided that it is clean, however the mosque naturally is the one space that is elevated above others.

> Jabir b'Abdullah al-Ansari reported: The Prophet (may peace be upon him) said: and the earth has been made sacred and pure and mosque for me, so whenever the time of prayer comes for any one of you, he should pray whenever he is
> (Sahih Muslim, [n.d]: 4, no 1058).

What is Sajdah (prostration)?

It is an act of complete submission in which the head is placed on the ground and the words glory be to god are repeated 3 times. This is the climax of the prayer which is repeated twice within a set of movements (Rak'ah). On average a person will perform this action a minimum of 40 times a day.

Sajdah forms the foundation of the conceptual approach with the posture demonstrating the interconnected role of the concepts shown in the figure below. The head, body and feet are used to represent typology, the divine stage and context respectively.

In a similar way that the human body in prostration was used to formulate the concepts, the models were designed to fit into one another around the 'central stage'. The square and circle are strong geometric forms that relate to Islamic traditional patterns that rely on accurate geometrical proportions to create motifs that could be multiplied endlessly.

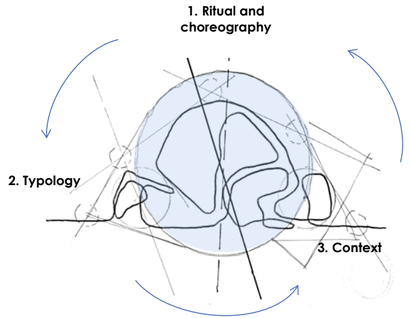


Figure 72 : The prostrating figure inspired the concept models and the overall design (Author, 2021).

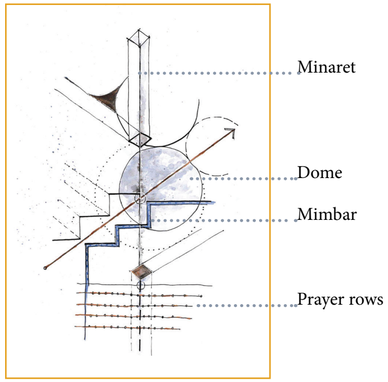


Figure 73: Typological purification (Author, 2021).

Elements such as the Mimbar, Minaret, and domes are rotated and tessellated to create new forms

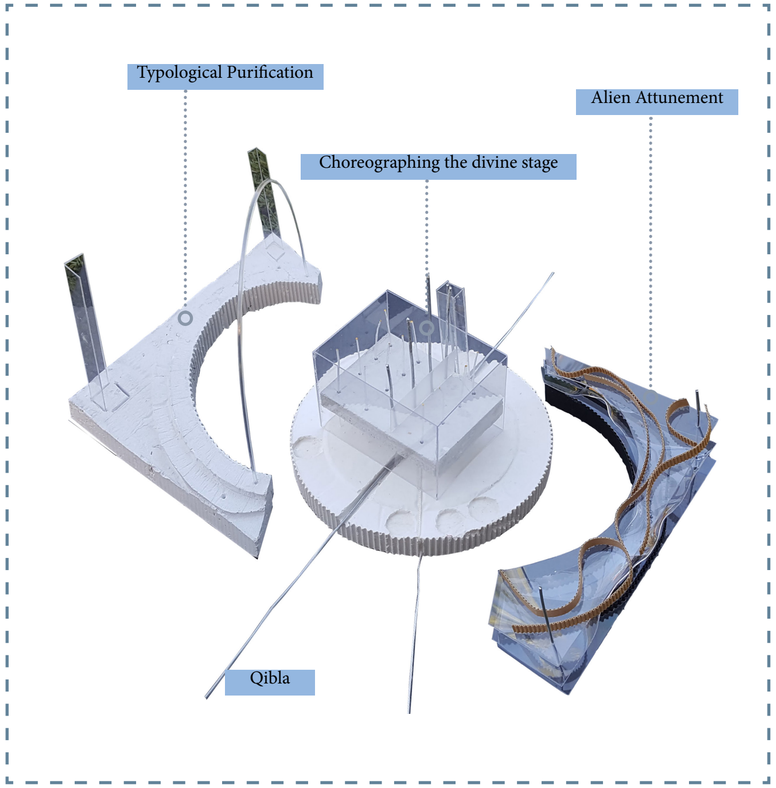
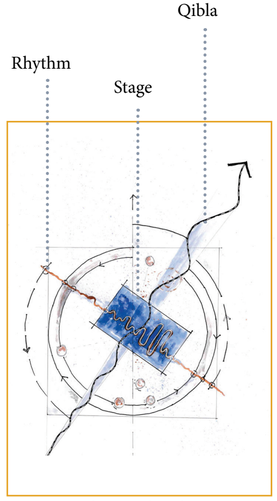


Figure 74 : Photo of the final concept model indicating the way the different elements fit together and pull apart (Author, 2021).

The divine stage is characterised by a circular podium that is visible from all sides with the Qibla direction being the main orientating device. The circular stage represents the repetitive nature of the ritual in contrast to the linear axis created by the Qibla direction.

As a whole the model demonstrates the harmonious balance that is achieved when all the parts come together from the typology, ritual and context.



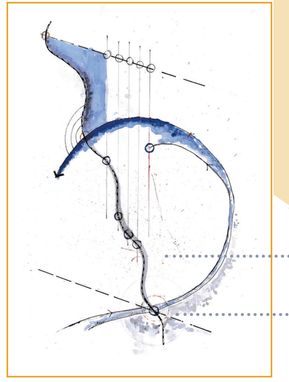


Figure 75-76: Choreographing the Divine stage and Alien attunement (Author, 2021).

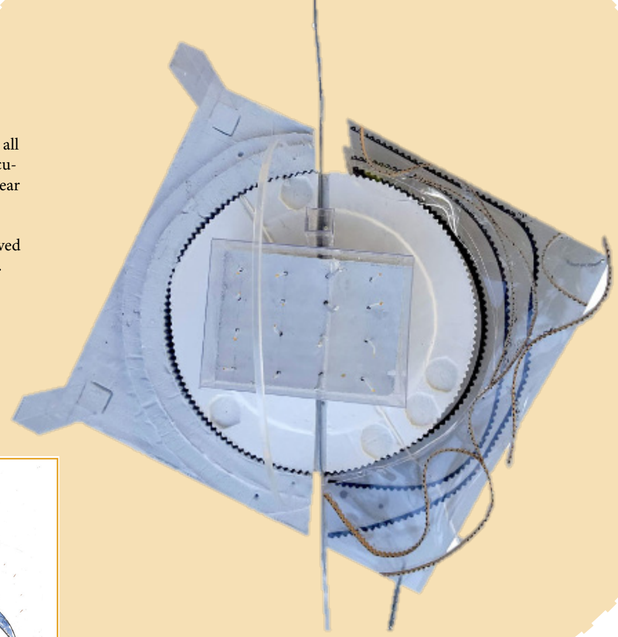


Figure 77 : Top view of the model interlocking (Author, 2021).

2.4.1 Choreographing the divine stage

The central concept compares the ritual nature of salah (prayer) to a routine that consists of various body movements, that rise and fall following a rhythm. Comparing a Mosque to a divine stage highlights the significance of the ritual of Salah as God becomes the sole audience of the performance.

A circular platform depicts the stage and is indented to create a single step to remind one to perform Wudu and cleanse before stepping passed the threshold of the Masjid. The circle refers to the earth or universe and certain indentations can be seen and axis's that refer to the north and the direction of Mecca (not only a horizontal axis but a vertical one as well). Furthermore a glass box with a floating slab can be seen with small piercings through which thin Perspex strands are lined up uniformly. Creating a transparent box alludes to the omnipresent nature of God who watches the performance. A vertical axis is also visible within the box to segregate males and females in prayer while also emphasising the Imam.

Architecturally this hints at the secluded nature of the mosque within the greater complex, the preferred layout and also the importance of orientation while also taking into consideration the ritual and habitual patterns of the user to cultivate a choreographed layout in terms of planning.

Figure 78: The central concept focuses on the body while in prostration (Author,2021).

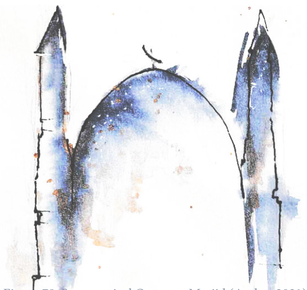


Figure 79: Stereotypical Ottoman Masjid (Author,2021).

2.4.2 Typological purification

Typological purification refers to types of buildings that have similarities in their functions and form. When describing a mosque, a certain image is conjured up with a central dome, flanked by two or more towers and ornate interiors as seen in the figure 79 . This is a stereotypical mosque that was adopted from Ottoman temples.
The driving force of this concept is to understand what is obligatory and what has been added over the centuries and how this can be purified to fit the contemporary architectural language. Purification is seen more as extracting ideas from the traditional elements indicated by the models with the concrete indicating necessary elements from the 3 steps or podium, the elongated prayer hall and the importance of the Qibla.

Looking back at Islamic geometric patterns, simple designs were reflected, rotated and tessellated to create endless patterns. In a similar way, elements such as the dome, arch and tower are reinterpreted so that they can be used not only in section but on plan as well. How can the memory of such elements be utilised to allow the visitor to recognise and orientate within the new complex? In the model I made use of concrete and wire to indicate these fixed elements.

2.4.3 Alien attunement

Islam in the Free State was not a very common religion during apartheid due to political obstacles that forbade certain races from settling in the area and as a result it took many years for a Muslim community to settle in the city. Over the last decade there has been a steady influx in the Muslim community mainly for economic and educational purposes which has resulted in a few Mosques and prayer facilities being established. However, the Muslim community still makes up a small portion of the population ranging from anywhere between 8000 -11 000 people, many of whom are from outside the country.

The word alien is used to describe the new design that will ultimately stand out in Bloemfontein as there are no other mosques within the city that appear to be such. The new design will ultimately be an alien within the context; however, the aim is to create balance and harmony between the Masjid complex and its surroundings through the use of materials while still maintaining some traditional aspects that signify that it is indeed a mosque and a religious building.

Figure 80: The feet represent the context (Author,2021).

2.4.4 reflection

Conceptually the three aspects that will be explored cannot be done in isolation, rather they provide motivation for the final design which aims to integrate with the city on a suburban level. In doing so a more balanced and well rounded project can be established that not only benefits the Muslim community but also the public life around the site.

Figure 81: Perspective of the concept model indicating the main prayer space (Author,2021).

2.5 THEORETICAL BACKGROUND - A

2.5.1 THE SECOND PILLAR - SALAH

Islam is centred around five dominant pillars that were mentioned in the touchstone with Salah being the second most important. This is an obligatory act that forms an essential part of the daily life of a Muslim which is only a transitional stage and Jannah is the ultimate goal of the believer. Salah is seen as a key to entering paradise as mentioned in the following hadith.

> Sayyiduna Jabir ibn 'Abdillah (may Allah be pleased with him) reports that Muhammed (peace be upon him) said: "The key to Jannah is Salah and the key to Salah is wudu." (Sunan Tirmidhi, [n.d.]: 1, no 4)

Salah is an act that is performed 5 times a day and is a set of body movements that are accompanied by Arabic supplication. Islam is a religion that promotes unity and brotherhood and performing prayer in congregation is more virtuous, but can also be done individually. The 5 main prayers, their times and units are mentioned in the following table:

Salah	Times	Units	Prostrations
Fajr	Dawn till before sunrise	2+2	8
Zuhr	After midday till late afternoon	4+4+2+2	24
Asr	Late afternoon till before sunset	4+4	16
Magrib	After sunset till the sky gets dark	3+2+2	14
Esha	1.5 hours after Magrib till midnight	4+4+2+2+3+2	34

Figure 82: Table indicating names, times, units and amount of prostrations in Salah (Author, 2021).

The table indicates the structured nature of salah from the number of units or rak'ah to the times they must be performed. A further distinction is made with regards to the units that have to be performed for the prayer to be valid which is highlighted in red. Each unit is made up of a combination of standing, bowing, prostrating and sitting which is repeated two, three or four times.

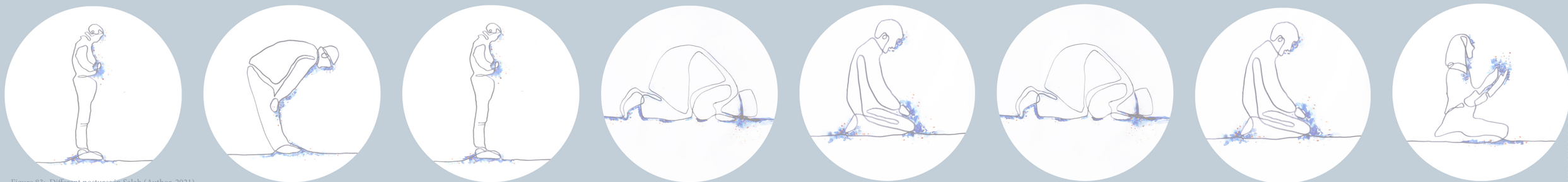


Figure 83: Different postures in Salah (Author, 2021).

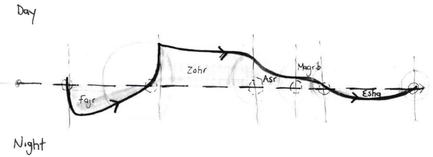


Figure 84: Times of prayer in relation to the duration of the prayer time (Author, 2021).

2.5.2 THE RITUAL OF PRAYER

A ritual can be described as a religious or solemn ceremony consisting of a series of actions performed according to a prescribed order (Cambridge Dictionary, 2021: online). This can be accompanied by gestures, supplications and objects within a sacred space.

Salah is made up of a series of movements that form a unit which will be visually demonstrated below.
As a formal ritual Salah has a distinct start and end making it a linear process however, it is also a cyclical process that gets repeated day in and day out from the time a child reaches maturity till the end of one's life. Salah provides a break from the monotonous nature of life in which spiritual recharging can occur and forgiveness sought.

> Messenger of Allah (peace be upon him) asked:
> "What do you think if there was a river by the door of any one of you and he bathed in it five times a day, would there be any trace of dirt left on him?"
> They (his companions) (may Allah be pleased with them) said, "No trace of dirt would be left on him."
> The Prophet (peace be upon him) said, "This is like the five daily prayers, through which Allah erases sin." (Sahih Muslim, [n.d]: 4, no 1410)

This hadith demonstrates how praying 5 times a day washes away one's sins as a means to enter paradise (Ahmed, 2021: online).

1. **Takbeer**

A person stands facing the qibla raising their hands to their ears. A supplication is recited which lasts between 3-5 seconds.

2. **Qiyaam**

The hands are then placed one over the other either on the abdomen(males) or chest (females). A person will remain standing with their head lowered and recite from the Quraan and as a result the duration depends on the number of verses read.

3. **Ruku**

A person bows while placing their hands onto or above the knees. A supplication is recited which can take up to 10 seconds.

4. **Sajdah**

A persons now lowers their body to the floor, placing the forehead and palm flat on the floor. This is the climax of the prayer which lasts up to 10 seconds.

5. **Qiyaam**

The body is then straightened while the hands hang on the side of the body.





Figure 85-94: Photos demonstrating how a single unit of salah is performed (Author,2021).

7. **Sajdah**

Step 5 is repeated

6. **Jalsa**

The body is then lifted into a seated position with the palms on the knees. No supplication is made in this first sitting

9. **Salam**

This is the final step performed at the end of the 2, 3 or 4 units. The head is turned 90 degrees to the right and then to the left to signify the end.
It's important to note that in all these steps the eyes should be focused on the ground and no talking or interacting with others can occur while the Salah is being performed. A person is encouraged to raise their hands to supplicate before standing up.

8. **Tashahud**

This occurs every 2 units in which one sits in the same position as step 6 but for a longer duration while certain supplications and verses are read. The hands remain stationary till the words, 'I bear witness that there is no god but Allah…' in which the index finger of the right hand is lifted and placed down again. At the same time, the three other fingers are curled so that only the thumb and index finger remain visible and pointing the qibla after the supplication





2.5.3 The ritual of ablution

The previous section described the performance of Salah and compared it to cleansing oneself in a river five times a day. Ablution or Wudhu can be seen as a physical cleansing of the body while salah is seen as spiritual cleansing of one's transgressions.
Ablution is referred to as Wudhu, which means purity in Arabic and is a compulsory ritual that has to be performed before performing salah and most other religious actions. It involves the washing of the face, arms, head and feet. The figure on the right indicates the sequence of ablution with the highlighted elements indicating the parts of the body that must be washed for the wudhu to be accepted.

> The Messenger of Allah (may peace be upon him) said: The prayer of none amongst you would be accepted in a state of impurity till he performs ablution (Sahih Muslim, [n.d]: 2, no 0435).

As a ritual, the process of wudhu not only acts as a way to purify one's body but can also serve as a transitions before entering the mosque. In this way, it serves as a reminder that one is entering into a spiritual space that requires a specific behaviour to which the rest of the mosque complex does not adhere. For this reason the prayer and wudhu area are placed in close proximity .

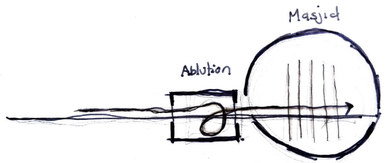


Figure 95 : The role of ablution in the ritual of Salah (Author, 2021).

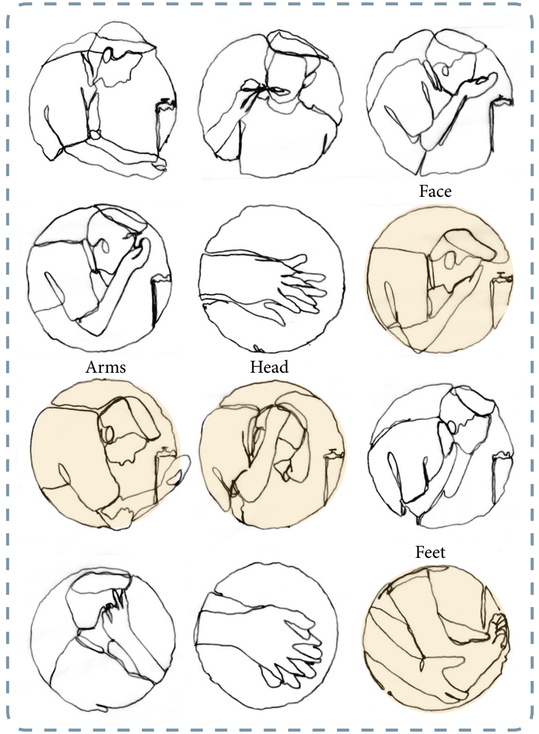


Figure 96: Sequence of ablution from left to right (Author, 2021).

2.5.4 Physical benefits drawn from salah postures

Many spiritual benefits are often emphasized in Salah however, as a physical activity there are certain physical benefits that are often overlooked. A person performs a minimum of 20 units a day which is equivalent to 180 postures which results in a minimum of 60 000 postures that would be performed in a year.

Ghazal Kamran, a physiotherapist, wrote an article describing each posture and how the movements and gestures can be used as a foundation for an exercise routine. He further went and compared each position to specific yoga positions as demonstrated in the figure on the right to show the similarities and how aside from the spiritual aspect, if done correctly, the performance of salah can help a person be more active.

> *Salah involves continuous gentle muscle contraction and relaxation with perfect harmony and balance. It involves different types of stretching and isometric contraction exercises* (2018: 47).

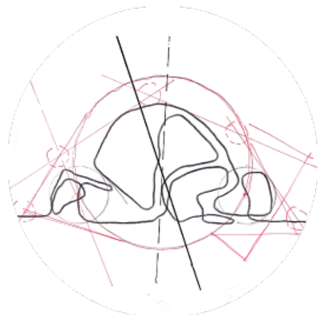


Figure 97: The climax of Salah lies in prostration (Author, 2021).

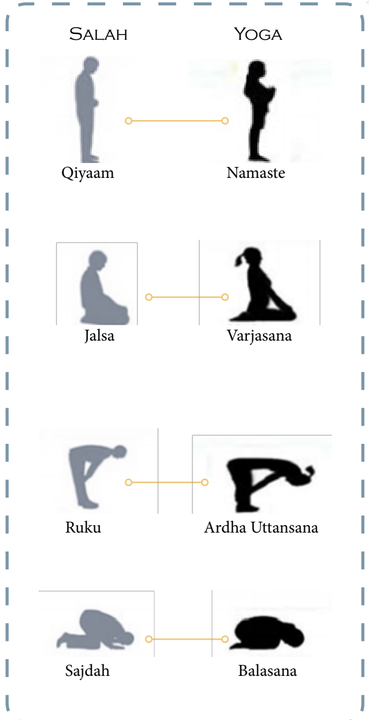


Figure 98: Comparison of Salah postures to Yoga postures which are used for stretching the body (Kamran, 2018: 50).

2.6 History of the Mosque

The Masjid is the cornerstone of a Muslim community not only because of its religious, social, cultural and educational functions but also for its role in strengthening the Muslim identity and community (Abdel-Hady, 2010: 1). A Masjid in Arabic refers to a place for prostration which is the climax of Salah and is not the house of Allah in the physical sense, but where the remembrance and glorification of God take place. Muhammed (May peace be upon him) first mission after migration was to establish a Masjid for the new Muslims in Medina to indicate the role of the Mosque in daily life and society (Spahic, 2020: online). Building a Mosque or donating towards one is seen as continuous charity, meaning that you will be rewarded for everyone that enters the mosque even after death. Furthermore, building a mosque is a way to guarantee a house for oneself in paradise.

> Uthman ibn Affan reported: The Messenger of Allah, peace and blessings be upon him, said, "Whoever builds a mosque for Allah, Allah will build for him a house like it in Paradise"(Sahih Muslim, [n.d]: 4, no 1084).

Participating and donating towards Masjid projects and maintenance is a duty that is undertaken by many.

The numerous roles of the Masjid

2.6.1 Religious space

Congregational Salah is the most significant function of the Masjid which takes place 5 times a day. Prayer performed in congregation is 25 – 27 times more virtuous than praying alone (Al- Bukhari and Muslim, [n.d]: 1064). Brotherhood and unity is central to Islamic teachings and the Mosque is a place that promotes this sense of community. Today unfortunately mosques are not fully occupied daily especially where the Muslim population is spread out in a city, however one can guarantee a full mosque on Friday for the Jumaa prayer.

2.6.2 Learning Institution

Seeking knowledge is important in Islam and can be understood from the first word revealed of the Quraan, meaning read.

> Read (O Muhammad)! In the name of your Lord,
> Who has created (all that exists)
> Has created man from a clot
> (a piece of thick coagulated blood).
> Read! And your Lord is the most Generous,
> Who has taught (the writing) by the pen.
> Has taught man that which he knew not (Quraan, 96: 1-5).

From a young age, Muslims are encouraged to educate themselves in both secular and religious avenues and as a result, the Masjid has always been a place for collective learning. Even in the time of the Prophet, the mosque was a pivotal space for the companions to learn the Quraan, Islamic principles and laws directly from the messenger.

2.6.2.1 The maktab and madressah

Life-long learning starts at a young age with the maktab and madressah playing a critical role to bridge the need for Islamic education among the youth (Maktabs Australia, 2013:online) especially in non-Islamic and non-Arabic-speaking countries. From a young age kids attend religious classes after school to learn:

- Quraan
- Quranic science
- Arabic
- Islamic etiquettes and character
- Law
- Islamic Principles etc.

From personal experience, the Madressah is a very informal system when compared to secular schools. Kids are grouped based on their knowledge rather than age and sit on the floor around a teacher who starts every lesson teaching the Quraan. The classrooms are similar to the Masjid and are usually covered in carpet with shoe racks placed outside. A Madressah's ultimate goal is to introduce children to Islam and to help them build a strong relationship with Allah that can guide them in life while also preserving the religion (Maktabs Australia, 2013: online).

2.6.2.2 Adult classes

As a space for lifelong learning, the mosque also caters for adult classes that focus on higher religious education from Quranic interpretations, Islamic principles that pertain to everyday life and other subjects that go beyond the Madressah education. This is also a way for people to gather and share their knowledge and engage on a spiritual level with the community while also helping reverts and new Muslims.
Islamic scholars both locally and abroad also host workshops, answer questions and share their Quranic recitation

2.6.2.3 Library

Sharing of knowledge has always been stressed in Islam, so it is no surprise that the public library formed an important part of historic mosques and housed not only religious books but also books about science, maths and medicine etc. Aside from this, the Mosque was the ideal platform for writers to share their work through oral dictations for the gathered public (Abdel-Hady, 2010: 8).

Today the library might not play such an important role in the mosque because of the internet however a small public library with specialized religious books could positively impact the community.

2.6.3 Social Institution

The mosque is central to Muslim life and provides a platform for gathering and exchanging ideas, broadcasting news to the community, nuptials to be taken and where kids can gather in a safe environment. It also creates a place for various community-based projects to work from, not only for the less fortunate (soup kitchen, clothes drive and hamper distribution) but also a place for professionals to address issues such as mental health, bullying and teach self -defence classes. These activities have all been introduced to the community at some point however, due to a lack of professional help and proper facilities they have become scarce.

2.6.4 Administrative institution

In the past, the Mosque served as a place were political decisions and announcements were made. It was a space that the ruler would first lead the community in prayer before addressing any administrative issues that were facing the community. Today it would be used to discuss issues pertaining to the Muslim community, social welfare for the poor and also the distribution of Zakat (obligatory charity)

This shows the multi purpose function of the mosque and the central role it played in the wider Muslim community. There is a general move towards creating community centres especially within a non-Muslim context today (Abdel-Hady, 2010: 4).

> 'The first city component introduced by the Prophet to the city of Medina was the mosque institution, the Prophet's Mosque. Since its inception, the Mosque functioned as a community development center. Different types of activities were conducted within its realm. In addition to serving as a place for congregational prayers, as well as for other collective worship ('ibadah) practices, the Mosque, likewise, furnished the Muslims with some other crucial social amenities and services. It was the seat of the Prophet's government, a learning centre, a place for some medical treatments and nursing, a detention and rehabilitation center, a welfare and charity center, and a place for some legitimate leisure and recreational activities' (Spahic, 2020:online).

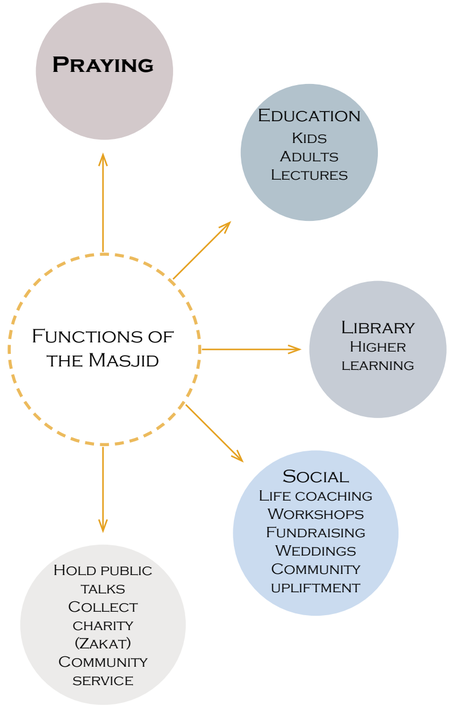


Figure 99: Diagram summarising the role of Masjid in Islam (Author, 2021).

2.6.5 Females in the Masjid

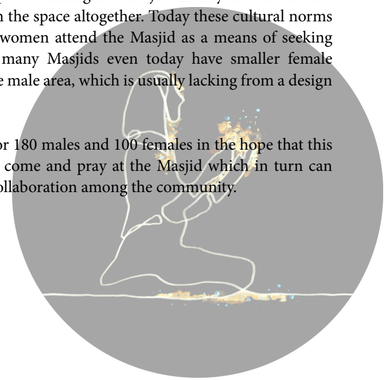
> The Messenger of Allah (may peace be upon him) said: When women ask permission for going to the mosque, do not prevent them (Sahih Muslim, [n.d]: 4 no 0884).

The objective of the Masjid is to provide religious respite for all Muslims and in a world that is centered around secularism and filled with many distractions, it hardly seems fair to exclude women from praying in the Mosque. Salah is a gift bestowed upon Muslims as a means of entering paradise, however, it is also a sacrifice as praying 5 times a day is compulsory.

In the past, many women were occupied by other activities making it hard to attend all the prayers and so they were permitted to pray at home while earning the same reward as praying in the Mosque. This is a privilege that women in Islam have and it does not extend to men.

Over time many females stopped attending the Masjid entirely and in extreme cases, they were excluded from the space altogether. Today these cultural norms are changing slowly as many women attend the Masjid as a means of seeking spiritual solace. As a result, many Masjids even today have smaller female praying areas as opposed to the male area, which is usually lacking from a design perspective as well.

The proposal provides space for 180 males and 100 females in the hope that this will encourage more ladies to come and pray at the Masjid which in turn can boost Islamic education and collaboration among the community.



2.7 Theoretical background - B

2.7.1 Traditional elements that form part of the mosque

The mosque has a rich history that spans over fourteen centuries and as an architectural symbol of Islamic cities, it has undergone various changes and adaptations. Islam spread from a small area in Saudi Arabia and grew to include many cultures, races and architectural styles which have become the face of what Islam is today.
The Prophets Mosque in Medina developed as an extension of his home, which was such a simple structure that no roof was present at the beginning. It was an enclosure that was built of vernacular materials such as mud bricks, palm leaves and stone foundations. It consisted of a large open space that was enclosed on four sides with a central courtyard that responded to the cosmic climate of Arabia (Spahic, 2020: online). The figure below is a model of what the Prophets mosque looked like in the beginning.

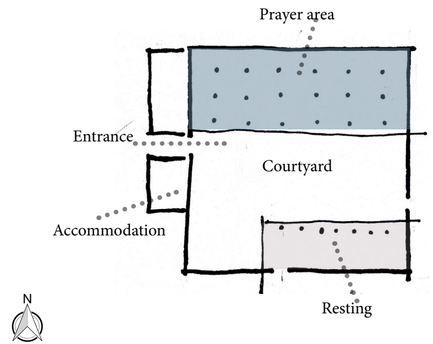


Figure100 : Layout and programme of the Prophets Mosque (Author, 2021).

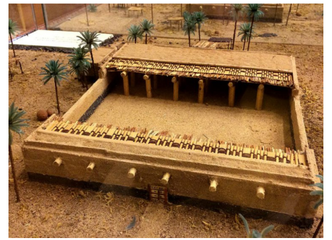


Figure 101: Model of the Prophet's Mosque indicating vernacular building materials (Spahic, 2020: online).

Figure 102 : Ariel picture of the Prophets Mosque today (Abdullah, 2019: online).

Today the Prophets mosque is one of the most visited sites in the Islamic world yet it looks completely different with its multiple domes, minarets and detailing however, there are certain elements and spatial qualities that can still be identified (Abdullah, 2019: online). Below is a list of common elements that can be seen in most mosques globally

2.7.1.1 The Sahn – Courtyard

A feature that is often found in historic mosques, which allowed for a transition between the entrance of the complex and the entrance of the main prayer hall.

Traditionally the space had a central fountain and outdoor ablution facilities and could accommodate a larger crowd if the masjid became to full.

Figure 103: Sahn of Ibn Tulun Mosque, Egypt (Al Badawy, 2010: online).

2.7.1.2 The Dome

A Muslims ultimate goal is paradise which is one of the reasons for the five daily salah. Paradise is thus represented in many Mosques in the form of a dome.

Although the dome is not compulsory in any sense, its symbolic reference to the universe and the perfection of paradise means that it is still used within many Mosques today. It can be found in many sizes, shapes and patterns.

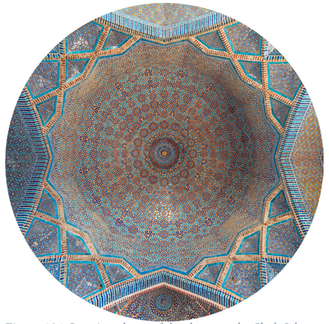


Figure 104: Interior photo of the dome at the Shah Jahan Mosque, Pakistan (Savin, 2020: online).

2.7.1.3 The Minaret

A tower that is typically attached to a mosque for purpose of calling out the adhan by the muezzin. This element has become a distinctive feature of mosque architecture, evolving from a functional element to an orientation device. The word minaret translates as a 'beacon of light' which references the tower being illuminated at night by the muezzin with a lamp (Gottheil, 1910: 132).

> 'It is generally conceded that the earliest mosque in Islam had no minarets at all' (1910: 133).

Today almost all mosques incorporate some form of a minaret if permitted, however, the minaret was not always such an iconic feature of mosque rather it can be traced back to Syria during the Umayyad period (Bloom, 1991: 55) (Gottheil, 1910: 138).

As Islam began to spread, new mosques were erected and churches converted. Many of which had tower spaces from which the Adhan could be called out from, thus the influence of the church tower on the minaret cannot be denied (Gottheil, 1910:138). This feature has become synonymous with the form and profile of mosques today and it serves as a visual reminder of Salah (Weisbin, 2015: online).

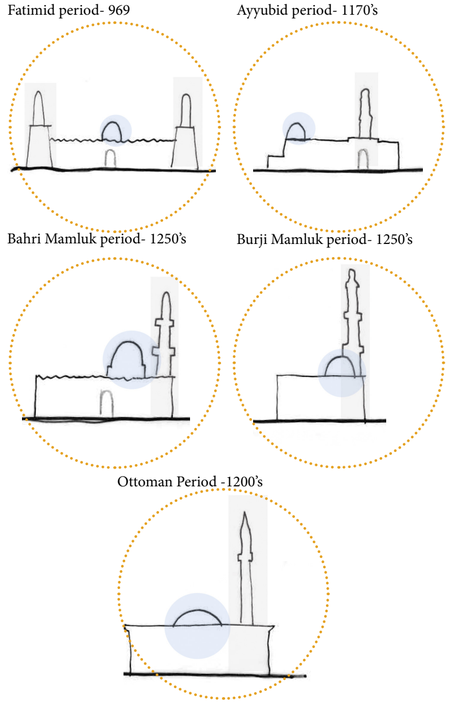


Figure 105: Development of minarets and domes in Egypt during different Islamic periods (AlSayyad, 1987: 114).

2.7.1.4 Mihrab

A small alcove or niche in the main prayer hall that indicated the direction of prayer towards the Qibla in Makkah. The Imam stands in front of this space when leading the congregation in prayer.

Today this has evolved into an elaborate and ornamented space in the front of the Mosque that is often covered in Islamic patterns and calligraphy.

2.7.1.5 Mimbar - pulpit

This is a platform upon which Friday sermons are given and constitute an uneven number of steps for the Imam or guest speaker to address the congregation.

2.7.1.6 Ablution facilities

Anyone who wishes to enter the mosque needs to be clean and in Wudhu and for this reason ablution facilities are provided outside the mosque. In many historic mosques, the ablution was accommodated outside in the courtyard or sahn.

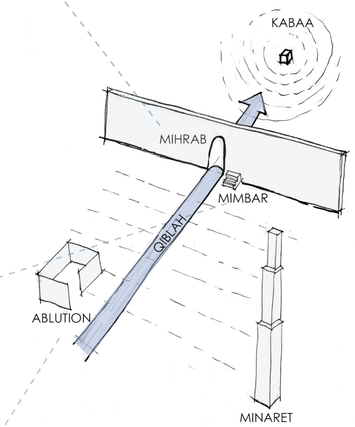


Figure 106: Important elements of a Mosque (Author, 2021).

2.8 Theoretical background - C

2.8.1 Beauty in Islam

"God is beautiful and loves beauty"
(Sahih Muslim, [n.d]: 1, no 0164).

An ambiguous statement that might be understood in many ways but there is undoubtedly a connection that can be drawn from this to the development of the arts in the Muslim world. Islam is an iconoclastic religion which means that any figurative depictions are forbidden (Schimmel, 1987: online). This prohibition led Islamic scholars to develop and invest in alternate art forms that derived their roots from nature and science and were also influenced by pre-Islamic Arab culture. Poetry was one such avenue of Arabian aesthetic expression that was carried over from pre-Islamic culture and might have also grown to include the recitation of the Quraan (Scollay, 2016: 152).

The Quraan essentially retained pre-Islamic notions of beauty while offering a new vision of the world; it marked the birth of a new culture that would re-frame and redefine beauty in accordance with evolving philosophical thought in Islam (Vílchez, 2017: 480).

In Ilm and the 'architecture of happiness,' the author talks about the concept of beauty which can be equated to aesthetics today and the independent field of science that was established called Ilm al Jamal or the science of beauty. This field was developed much later in Arabian philosophy as a means to define and theorise aesthetic expression and its role in post – Islamic Arabia (Scollay, 2016: 152) (Vílchez, 2017: 480).
Figure 107 depicts one avenue of Islamic art that developed which has a rich history in Masjids.

Figure 107: Arabic calligraphy (Author,2021).

As mentioned above the idea of beauty was always rooted in traditional Islamic teachings but also assimilated ideas from other cultures such as the ancient Greeks through the use of proportion, harmony and balance but without strict rules and concepts(Vílchez, 2017: 97). When referring to arts in this context it does not mean fine arts rather it encompasses a variety of art forms that developed independently but were all considered to be born from the human hand and required specific skills and techniques to complete (Vílchez, 2017: 98).

Reflecting on the hadith mentioned at the beginning and development of the science of beauty, it's easy to understand how new cultures, arts and architecture were assimilated into Islamic culture as it spread across the Arabian Peninsula and beyond. Today Islam is a multicultural religion but, the influence of Arab aesthetic expression remains and is seen in various art forms such as calligraphy, geometric patterns and architecture which will be explored in Part 3a of the document.

Part 3a - Theoretical development




Part 3 -Development

Part three is divided into 3 main sections: theory, technical and design. The theoretical development will explore ritual and its influence on the orientation, liminality and thresholds as well as aspects of beauty with practical examples that relate to the boundary beyond the Masjid. In the second phase the role of materials and acoustics will be explored while the third phase will unpack the design development which was influenced by both the theory and technical aspects.

3.1 Theoretical development - A

In Part 2 theoretical background A, the technical details of the Islamic rituals associated with the Mosque were discussed. Moving beyond one can finally delve into more architectural concepts derived from the rituals and look at orientation and liminal spaces in sacred architecture and how this all impacts the context and the design.

Sacred architecture is referenced quite frequently in the theoretical approach, but what does it mean?
In The sacred in-between by Thomas Barrie, sacred architecture is defined as places built to symbolise the religious axioms and beliefs, communicate socio-political content, and accommodate the rituals of a particular culture (2010: 6).

3.1.1 Ritual

Life is a continuous cycle, an arrangement of order and chaos that is kept in equilibrium by daily habits. Rituals are often associated with strict religious practices that span over time and, provide order and balance that complement spaces and make them specific to a group or individual in architecture.

When designing a religious space there is a definite relationship between the way people act and the spaces around them that are both complex and ever-changing. Sacred sites have a certain atmosphere that is 'thick with religion' (Jones, 2000: xi), which draws people towards them. Contemporary religious spaces such as churches, mosques and synagogues don't necessarily have the same atmosphere but rely on certain building arrangements, symbols and ritual participation to evoke certain feelings that strengthen one's spirituality (Barrie, 2010: 4).

Designing a religious building for a diverse group means that one could replicate existing sacred sites, making it easy for the participant to navigate as it relies on anticipation and memory (Jones, 2016: 5). Alternatively, focusing on various areas within the religion i.e., specific rituals, symbols, or icons offer abstract interpretations that allow new memories that still commemorate the divine.

The second approach allows a deep exploration into the physical act of praying which is central to the religion and can be seen in the precedent below. A competition for the Dubai Creek Mosque by Hamed Bn Hamri Architects in 2018. Inspired by the postures of salah, the architects utilised this to shape the building as can be seen in the figures below.

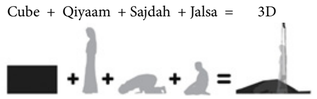


Figure 108: Elements that inspired the form giving (Hamri, 2018:online).

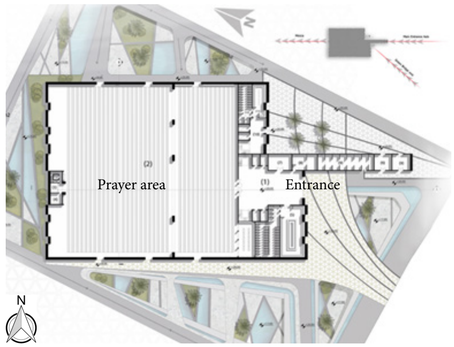


Figure 109: Floor plan of the Dubai Creek Mosque (Hamri, 2018:online).

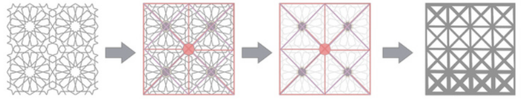


Figure 110: Geometric pattern development of the façades (Hamri, 2018:online).

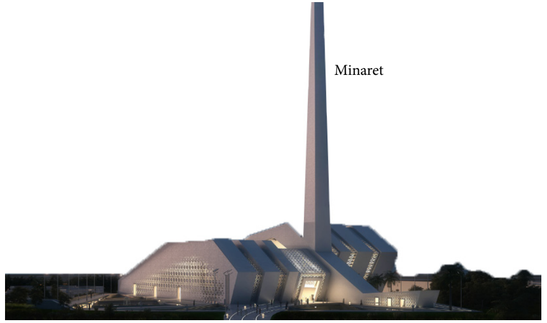


Figure 111: Perspective of the Masjid seen from the entrance (Hamri, 2018:online).

As a precedent this showcases one of the ways in which the ritual of salah can inspire the form-giving of the Masjid.

In the case of the new design, the second approach will be taken which focuses firstly on the linear ritual of Salah and then on the ritual journey that one would embark on when approaching a religious space. This ultimately forms a linear axis along which the rest of the complex is arranged and which provides a clear distinction between religious and non-religious, public and semi-public and reflective and recreational spaces.

3.1.1.1 Hand gestures in Salah

From the beginning, the second approach was taken which resulted in an abstract interpretation of specific hand gestures and movements within the salah.

Gestures refer to intentional movements of parts of the body which conveys a certain meaning or an idea. Such actions play an important role in religious conduct to form a spiritual connection with a higher power. As a universal form of communication, this is not reserved for a single religion (Markey, 2002: online).

Specific meaning can often be attributed to gestures that are linked to a religious ceremony or prayer. Moving one's hand in a Cross across the chest or the raising of one's hands towards the sky as an act of reaching God demonstrates this principle (Britannica, 1999: online). In Catholicism, a person kneels on one knee as a show of humility whereas in Yoga, the body is used for spiritual communication and in Islam, the hands are raised in supplication. All of these actions are temporal, lasting for a few seconds in which a heightened sense of spirituality might be achieved.

In Islam specifically, salah is made up of various actions one of which is hand gestures. While the feet are rooted in place, the hands form various gestures which differ slightly between men and women. Some prominent gestures include the raising of the hands up to the ears, placing the hands flat onto the ground in Sajdah and the raising of the Index finger while sitting down. In each instance that the hand is moved, a supplication is read which, usually indicates the changing of positions. Almost all gestures do not have a specific or symbolic significance in Islam however, they are utilised in conjunction with the postures to provide a full engagement of the body in prayer.

Every action in Salah is accounted for, from the supplications to the movement of the body to create a well-choreographed ensemble that when performed in congregation the central idea of unity and harmony in Islam is expressed. The diagram maps the movement of the hands in prayer to the duration of each posture to highlight the dynamic rhythm created by all the parts. Unfolding on a linear grid the gestures transition from one state to another quickly which reveals significant moments in between that build up anticipation for the action to take place. These pre-gestural moments are what make the movements and actions more impactful (Markey, 2002:online).

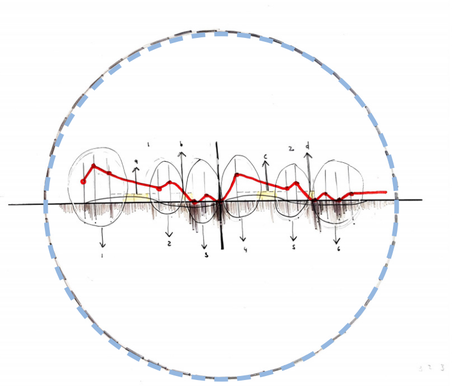


Figure 112: Hand gestures depicted as a graph (Author. 2021).

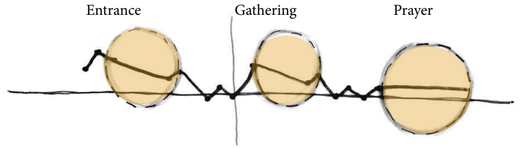


Figure 113: Three important spaces of pause can be identified from the diagram (Author, 2021).

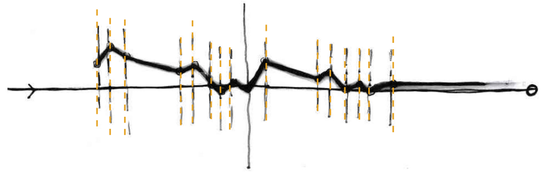


Figure 114: Diagram indicating moments of movement (Author, 2021).

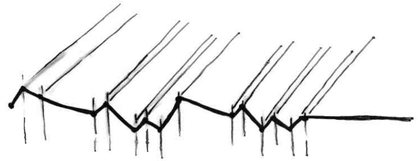


Figure 115: Imagining the diagram as a roof (Author, 2021).

3.1.2 Orientation

In architecture, there are unwritten rules that direct people as they navigate the built environment which either limits possibilities or guides them towards a certain outcome (Jones, 2016: 3). For example, the role of orientation in architectural design is fundamental and there are obvious orientation devices such as the sun and context, yet sacred spaces rely on more profound methods of orientation that are linked to rituals and traditional practices.

3.1.2.1 Religious

> Orientation involves finding, both literally and metaphorically, one's place in the world- or, in the case of sacred architecture, actually constructing one's place in the world. (Jones, 2000 b: 26).

The ultimate objective of religion is to position man in this world and provide a tool for navigation that serves a purpose beyond the mundane. Professor Charles Long, known for his research in religious studies explains that religion means orientation as it describes the significance of one's place in the world (cited in Jones, 2000 b: 27). Orientation provides an ordering system that pertains to sacred architecture in a literal sense, and although one might question the validity of religious orientation today, it forms a fundamental part of the relationship that Muslims have with the space around them. They orient themselves towards the Kaaba in Makkah (figure 119) which is a single direction that unifies Muslims around the world and emphasises the idea of one God, one scripture and one Prophet.

In terms of the design, the Qibla as it is referred to is 16.17^{0} east off true north on site and was utilised as a strong datum that guided the visitor towards the Masjid. In figure 116 one can see the direction of the Qibla in relation to the street orientation.

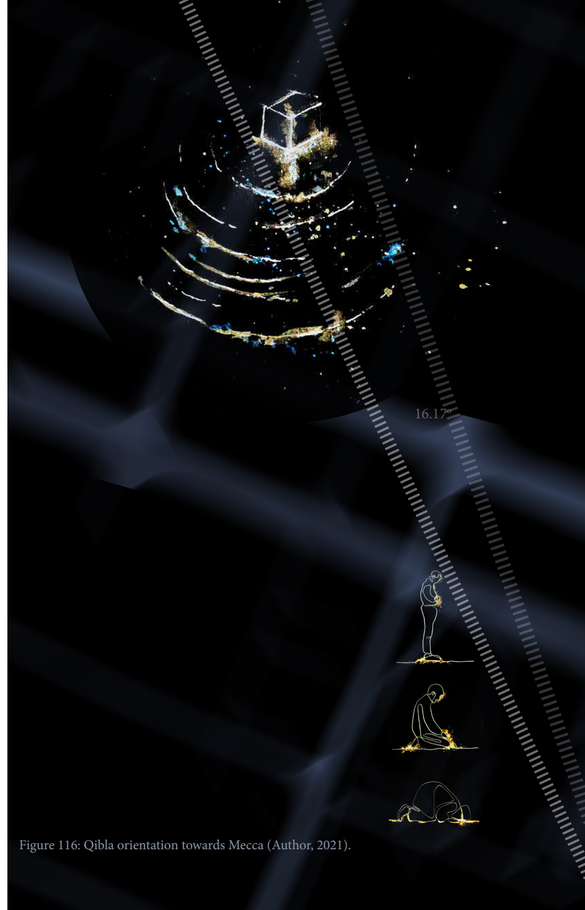


Figure 116: Qibla orientation towards Mecca (Author, 2021).

3.1.2.2 Sacred

Mircea Eliade, a historian of religion, created a model for sacred space that revolved around the idea of existing spiritual spaces, Imago and Axis Mundi (cited in Jones, 2000b: 35-36). His model placed great importance on the recreation of the universe within the world and of sacred spaces that already exist beyond the profane (figure 117). While the latter might be true in most religious buildings, the idea of finding an otherworldly place is rather outdated as there are no criteria for what constitutes a celestial space. In Islam the relationship between the Masjid and Divine is complex and although one might refer to the Mosque as the 'house of Allah', there are no Godly manifestations as Allah is omnipresent.

Looking back at Eliade's model, the notion of Imago Mundi or the celebration of the image of the world was visible in the Masjid and revealed through the use of domes, light, patterns and calligraphy historically. Axis Mundi or a vertical axis on the other-hand is used to highlight the sacred space as the centre of the universe and to amplify the connection between the earth and sky or man and the divine (Jones, 2000b: 36).

The two points complement one another and in the case of the Masjid, the use of the Minaret although adapted for functional reasons, conveys the idea of axis Mundi perfectly. As a result, the tower becomes a point of hierarchy, and a physical manifestation of the vertical connection between the mundane and the sacred is achieved.

Together the Qibla, axis Mundi and imago Mundi demonstrate the importance of orientation within sacred architecture as both a guide and as a visual tool to orientate and help visitors identify with a certain space in a way that is alluring yet familiar.

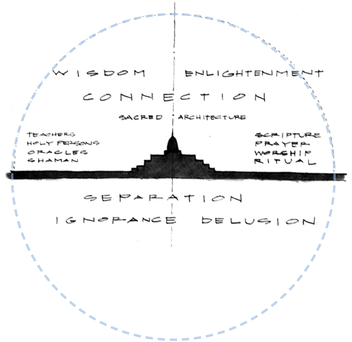


Figure 117: Model of the world in terms of sacred architecture and profane (Barrie, 2010: 4).

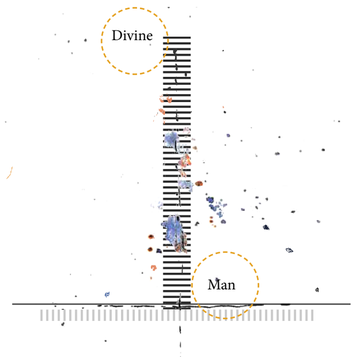


Figure 118: Axis Mundi creates a connection between man and the Divine (Author, 2021).

3.1.2.3 Hierarchy

Hierarchy has been briefly introduced in terms of vertical orientation, yet it also provides a tool to understand how the building relates to the context and existing forms. Religious spaces as a whole often become assertive over the urban landscape which is justified as a sacred space. In some instances, the opposite is true and a balance is achieved through dialogue between the scale and materiality of the space and its surrounding (Barrie, 2010: 56). However sacred architecture is often influenced by politics and so naturally they become monuments that can impose certain social hierarchies through their inherent nature (Jones, 2000 b: 136). This political influence plays a small part in the overall design but it's an important factor to address when designing a religious space that has a short history in Bloemfontein.

> Sacred places are typically viewed as peaceful settings for the cultivation of devotion… architecture was also put into the service of reinforcing the social structures and political hierarchies of their time (Barrie, 2010: 45).

In this context, hierarchy is emphasised by the scale of the building and there is a fine balance that one needs to achieve for the building to be welcoming. Traditionally in Islamic architecture and Mosques, the horizontal plane has always been preserved for example the holy Mosque in Makkah towards which all Muslims pray which can be seen in figure 119 (Jones, 2000 b: 138). This preservation aims to strip the notion of social hierarchy from the Mosque which is a space in which everyone is equal.

A prevalent and recurring theme is balance and harmony which not only relates to Islamic architecture and urban design but, links to the political environment as well. For example, the Mosque imposes a certain orientation and grid onto the site that contrasts the current Cartesian grid of the city. Figure 120 indicates the different grids on-site that influenced the final design. Taking all of the above into consideration proved to be a bit challenging in terms of layout as each of the different components needed to work harmoniously together.

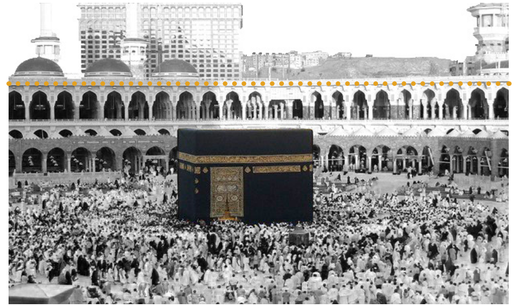


Figure 119: Kaaba in Mecca and the horizontal plane (Egypt Today, 2017: online).

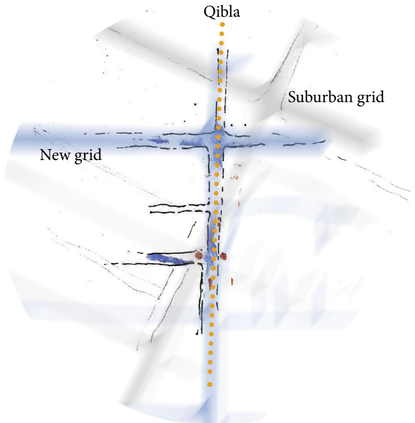


Figure 120: Different grids found on site (Author, 2021).

A precedent study was done on St Marks Square to better understand the way that contrasting forms fit together around a public Square.

3.1.2.3.1 Relationship between objects

Professor Pierre von Meiss, known for analysing the elements in architectural design demonstrates the significance of spatial layouts and geometric volumes as a way to guide people within a space by playing with the objects' fields of radiance (1990: 96). Architectural elements are never isolated and depending on the shape, different fields are projected to aid in creating thresholds and articulate a space such as the St Marks Square in Venice, Italy. The diagram below indicates the fields of radiance created by linear and circular objects that complement one another and in isolation.

St Marks Square is an important landmark assembled of independent spaces that are unified by an L-shaped Square which consist of a church, a palace, tower and bordered by a lagoon (Meiss, 1990: 96-98). In the figure the arrangement showcases the narrow entrance of the Square that is marked by two free-standing columns. A threshold that demarcates the entrance and draws one's vision towards the large tower placed at the inner corner of the L is thus created. Placing a vertical axis in a form of a tower at the intersection of the Squares allows for a transition in orientation that reveals St Mark's Church on the right. Lastly, the Palace does not play much of a significant role in the arrangement as it borders on the edges of the Square however, the simple façade treatment allows the smooth transition towards the Church without being distracting.

As a precedent, this example highlights the complex relationship and role that each space plays in guiding the visitor within the Square from the columns to the tower and finally the Church. Previously the idea of orientation was explained in an Islamic context and introduced in the design as a linear datum wall and roof which can be further motivated by the placement of the different objects to create favourable fields of radiance in the overall design.

In conclusion, working with the existing suburban grid in conjunction with the religious grid highlights the sacred and emphasises the different zones that would be seen in the later design development.

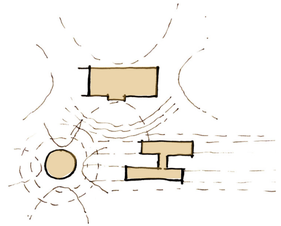


Figure 121: Field of radiance created by different geometric forms (Meiss,1990: 96).

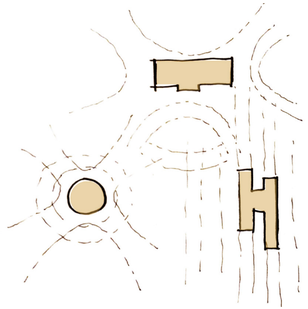


Figure 122: Field of radiance better arranged than previous image (Meiss,1990: 96).

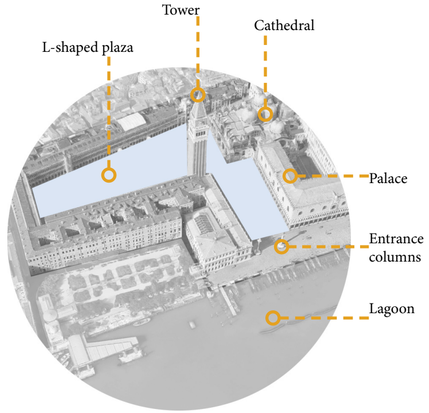


Figure 123: Ariel view of St Marks square (Google maps,2021: adapted by author).

3.1.3 Liminal space and thresholds

In the Sacred model by Mircea Eliade, he distinguishes between sacred and profane spaces which automatically creates a barrier between the existing and the spiritual. Religion aims to bridge this gap by providing a reason for being and so sacred architecture ultimately exists in this intermediary or liminal zone (Barrie, 2010: 4). As a physical and symbolic mediator, sacred spaces employ various tools and narratives to increase this connection and the Masjid is no different. Salah is the ultimate mediator that connects man to the divine.

A liminal zone can be described as a place of transition and is linked to the architectural concept of threshold and boundaries. It is only because of these in-between spaces that a connection can be formed between the different orders on the site (Hertzberger cited in Barrie, 2010: 50).

As a result of these diverse zones, the pre-liminal and post-liminal stages can be seen in a new light as they are significant in transforming a person's state of mind before entering and performing a religious ritual and then emerging back into the profane world. These different stages unfold along a path, or in this case a path that is created by the religious orientation or Qibla with minimal barriers.

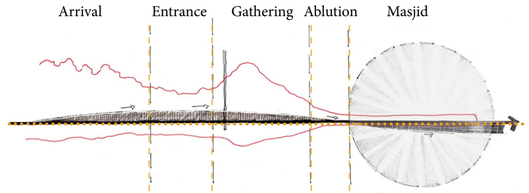


Figure 124: Stages that unfold along the linear path towards the Masjid (Author,2021).

Although no barriers are present on the path, the site is divided into semi-religious, secular and religious zones that together form a coherent and balanced whole. This conceptual approach was done deliberately to allow for easy access and to create a visual connection from the street as a way to invite the public to make use of the urban space in front of the Masjid.

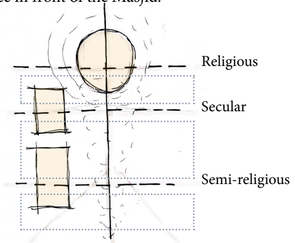


Figure 125: Different zones that were used to order the site (Author,2021).

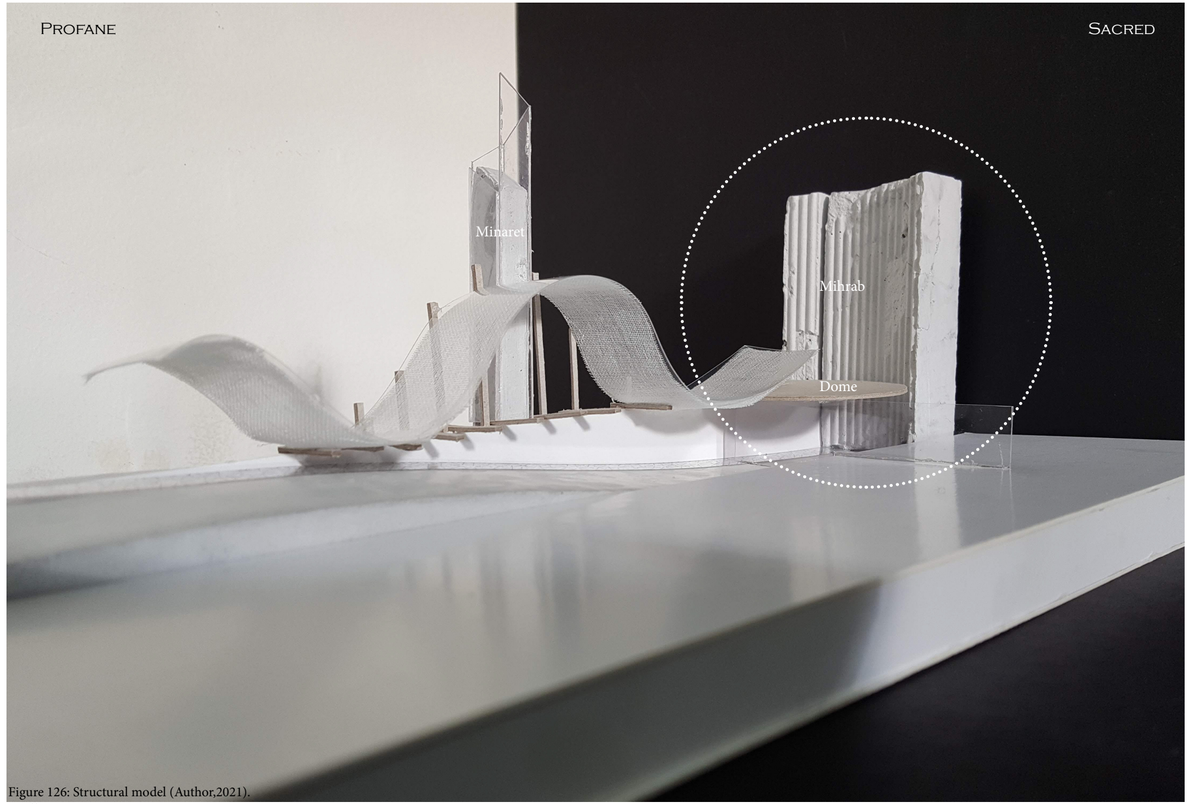


Figure 126: Structural model (Author,2021).

3.2 THEORETICAL DEVELOPMENT - B

3.2.1 APPLICATION

In Part 2 theoretical background B, a breakdown was given of the function and elements of the Masjid. This basic introduction aimed to show that Islamic teachings do not dictate how mosques should look or be built which has resulted in various types and forms. The only indication about congregational prayer that one might find is that it needs to be facing the qibla and that Salah performed in the first row is more meritorious which has resulted in many mosques opting for a wider prayer hall rather than a narrow one. If one looks at the Prophets mosque it's easy to see that hardly any of the elements formed part of the Mosque and that most were added later. This does not mean that these elements are not important, rather they serve as a reminder of Islamic identity and reference points for the visitor to relate with the built form.

As a result, elements that were favoured included the Mihrab which anchored the design both internally and externally. The Mimbar which demarcates the space of the Imam and provide a platform for preaching was used in a way that also indicated the Qibla direction for those inside the Masjid. Although the Minaret is quite prominent on the model in figure 126, it was used more as an orientating device for those around the area and as a way to signify the entrance of the woman's prayer hall. As a result it moved from its original location to a more private space which ultimately helped to balance the design and a provide focal points for both males and females.

Figure 127: Details of the model (Author, 2021).

Figure 128: Front view or entrance (Author,2021).

3.3.1 Calligraphy

Derived from the Greek word kalligraphía meaning beautiful writing, Arabic calligraphy is one of the most distinct art forms in Islamic culture. Due to the prohibition of any figurative imagery in Islam, artists explored different ways to express their devotion by beautifying the very words of the Quraan thereby elevating the written word into spiritual images (Hayward, 1942: 154). Arabic is read from right to left and consists of 28 letters of varying pronunciation and the written script has evolved over the centuries to include many styles and adornments (Novin, 2016: online). This is further enhanced by the use of colour and vegetal patterns (Hayward, 1942:157).

> Islamic calligraphy as the most important representation of Islam's cultural heritage relies on the aesthetic expression of spiritual-imagery that transcends the word form, rendering it a highly cherished art object (Novin, 2016: online).

Harmony and balance created through proportion are a fundamental aspect of calligraphy and part of the allure of this art form is the varying proportions created by different styles not only in Quranic text but also in decorative spiritual pieces. The essence of calligraphy is expressed below

> In a profound sense of its poetical quality, Quranic inspiration is deeply rooted in the humanistic spirituality, it bridges between the enigma of human existence and the pathos with which Deity looks at humanity. The aesthetic value associated with Islamic calligraphy's spiritual quality is clearly on the side of artistic creativity. Its script is applied on all kinds of objects to remind the observer of the mystical power of divine (Novin, 2016: online).

Beauty is associated with God and calligraphy is an attempt to embody this connection between man and his creator by adorning the very words of Allah (Hayward, 1942: 154).

It is easy to take for granted this artistic devotion especially when one encounters the Quraan daily, however as a means to reignite interest among the public many calligraphers are conducting workshops to enlighten people about this spiritual art. Apart from the use in the Quraan and decorative art, calligraphy is used to adorn the Masjid through murals, tiles, screen walls and to inspire contemporary religious architecture and design.

Figure 129: Arabic calligraphy engraved onto a wooden plaque (Novin, 2016: online).

Figure 130: Arabic calligraphy depicting the word Muhammed (Author, 2021).

3.3.2 Islamic geometric patterns

Another avenue that artists pursued to express their devotion to the divine was geometric patterns, which relied on the proportional harmony of mathematics to create patterns that could be replicated infinitely (Dabbour, 2012: 381)

> The amazing amount of intricate geometrical tracery is almost beyond belief, It is a symbol of the Arabian bent for mathematics, and has been responsible no doubt for considerable Influence upon western art and architecture (Hayward, 1942: 156).

According to Richard Henry, a teacher in the field, these patterns provided a bridge between formal geometric principles and creative arts in an attempt to illustrate the harmony of the universe and nature for human understanding (n.d: online). This fusion of the mind and matter exposes the finite nature of man's understanding vs. the infinite knowledge of God as an omnipresent being (Watson, 2016: online). And central to Islamic teachings is the idea of unity which is revealed through this balance created by the art (Dabbour, 2012: 381). The circle is the base form for any design and is often referred to as the circle of unity (Dabbour, 2012: 386) which has various connotations associated with Islamic tradition and will be explored within the new design.

Similar to calligraphy, geometric patterns were assimilated into Islamic culture from classical and late antiquity (Grabar, 1976: 85), yet the transformation remained constant throughout the Islamic world despite the variations that emerged over time (Wade, 2006: online). One of the reasons why this art was adopted was the absence of symbolic representation of geometric forms, which was ideal for an iconoclastic religion and, today there are many different styles making it so much more intriguing to decipher by the viewer. The beauty of these patterns lies in the simplicity of the original forms which are replicated so seamlessly that one perceives the overall design as a whole (Lawrence, 2021:online). This meditative effect is part of the reason why designers continue to adorn Islamic architecture with these geometric patterns.

Although there has always been a connection between geometry and the sacred for example, the use of symbolic geometric forms in Cathedrals and Hindu Temples, Islamic patterns however, differ as they are more than just symbolic representations (Dabbour, 2012: 381). Rather they are an assemblage of identical parts made up of circles and polygons that are tessellated in such a way that the voids take on a new meaning to create a multi-focal whole that veils and unveils itself at different instances.

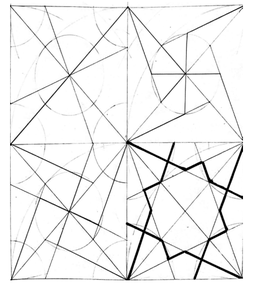


Figure 131: Constructing an Islamic geometric pattern (Author, 2020).

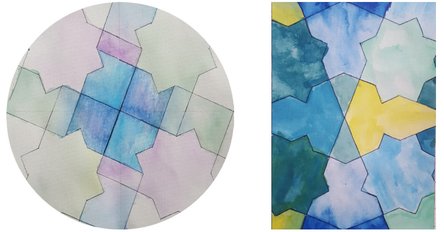


Figure 132: A base pattern showing two different results based on the negative space around the shape (Author, 2020).

3.3.3 Architecture

Architecture has always been considered as an art form in the Islamic world which can be seen from the rich history and tradition of Islamic architecture and Mosques however, there is a lack of documentation in terms of construction and architectural design. This might be attributed to the fact that the arts relied on a guild system that passed on knowledge from master to apprentice and sometimes even kept the crafts within the family (Scollay, 2016: 141,142).

Similar to calligraphy and geometric patterns, Islamic architecture has a rich history that has been influenced by different cultures, as a response to the climate and the shifting political environment. In architecture this evolution is prominent and when studying the Masjid, one would assume uniformity, which is not the case at all. Section 3.2 of this document focused specifically on the typology of the Masjid, its components and touched on its transformation as the religion grew. This section will look at examples of how the crafts are reinterpreted in contemporary architecture and also try to understand Islamic architecture beyond the Masjid.

3.3.3.1 Jumaa Mosque by John McAslan and Partners ,Qatar - (2016)

Located in a historic part of the city that recently underwent a rapid redevelopment, the Mosque reflects this historic nature while accommodating to the contemporary. The architects took inspiration from the Prophets Mosque which was analysed previously and religious and cultural references within Qatar.

The white stone façades embody a sanctuary within the dense urban fabric which conveys an image of purity. Qatar has a desert climate with mild winters and hot summers and so the overall layout was designed as a response to the cosmic climate (Climatestotravel, [n.d]: online).

Figure 133: Ariel view of the Jumaa Mosque (Archello,2016: online).

Every aspect of the design was generated by using the size of a prayer rug (0.6m x 1.8m) from the height of the minaret, the wall thickness and the overall form which can be seen in figure 134.

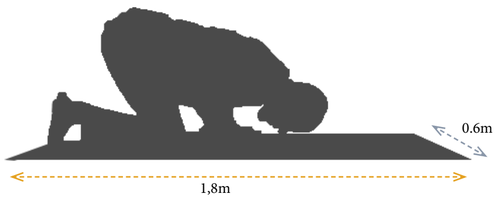


Figure 134: Size of a prayer rug used to calculate volume of the Mosque (Author, 2021).

Therefore 3.6 multiplied by 7- a holy number that has multiple religious connotations, to create a square of 25.2m. As a result of this strict geometric influence a well-proportioned space that honours Islamic art and architecture was created.

On plan two squares are visible which house the prayer space, the courtyard (2. sahn), entrance foyer (3.liwan) and ablution facilities (1). The plan is simple, yet it's the arrangement of the forms that adhere to a strict order that gives the Mosque character. In the figure below the main elements of the Mosque are highlighted such as the Mihrab, minaret and Mimbar.

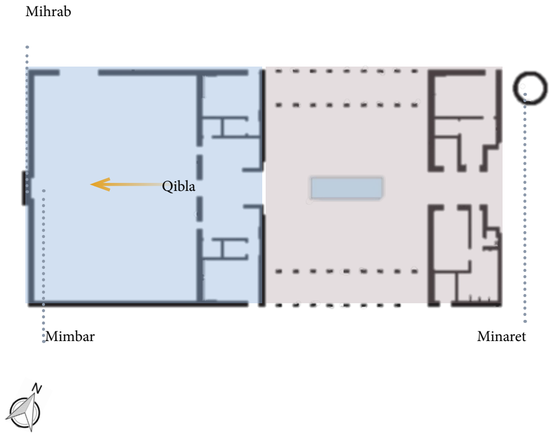


Figure 135: Layout of the Jumaa Mosque and important Islamic elements (Author, 2021).

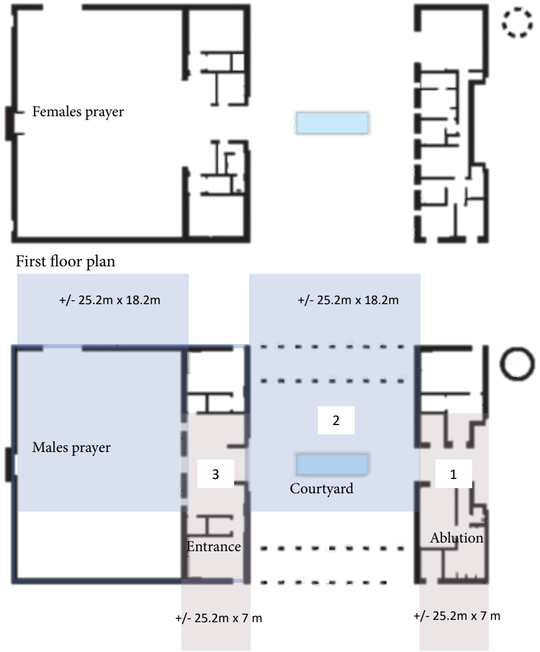
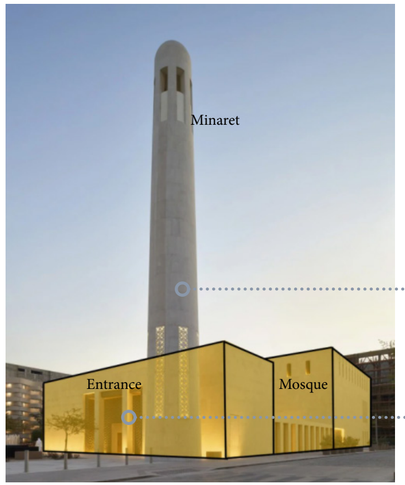


Figure 136: Plan layout on ground and first floor (Author, 2021).

Looking at the overall design, the spaces might be seen as two solid forms however, the architects created the space with multiple vertical layers that lead up to the Qibla wall at the end of the Mosque as seen in the figure on the right. These layers create multiple thresholds, starting at the minaret and create a strong visual axis from the street towards the Mosque. This visual connection prepares the visitor from the start and it is further emphasized by the open courtyard placed before the Mosque.



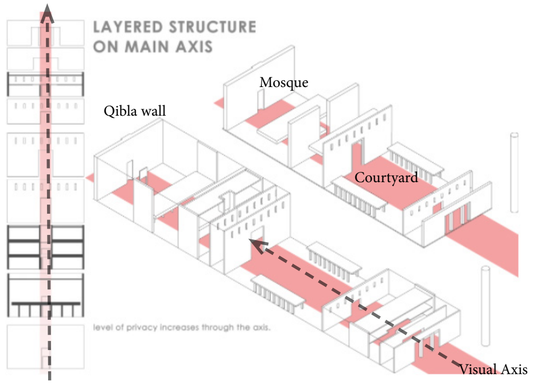


Figure 138: Vertical layers that create multiple thresholds encompass the design (Irmak, 2021: online).

The minaret is 7 times the base diameter of 3.6m in accordance with the geometric proportions used in the design.

In terms of height, the entrance doors were made higher to accommodate the large volume.
Also the first volume is relatively lower than the Mosque volume even though both are double story, which places importance on the Masjid.

Figure 137: The complex is composed of two solid forms (Irmak, 2021: online).

Figure 139-142: Material and facade treatment (Archello, 2016: online).

Structurally the Mosque is constructed of an in-situ concrete frame with block work infill (Archello, 2016: online). Various patterned screens and ceilings panels were used to filter light and articulate spaces such as the entrances and prayer area. The materials chosen are specific to the region to allow for a more sustainable design.

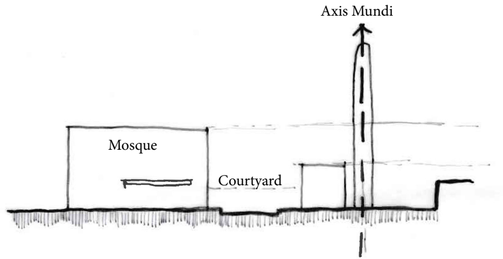


Figure 143: A street section indicating the composition of the forms (Author, 2021).

In the figures above, one can see the way in which different colour screen panels were incorporated to offset the white facade, which also created a dappled light effect in the Masjid. In the courtyard, which is predominantly composed of hard surfaces, the addition of water allows for reflection and contemplation.

IDEAS EXTRACTED

As a precedent, the complex showcases the way that geometry can aid in the overall design to create a simple, functional and spiritual space. The use of various patterned screens to filter light and help with ventilation is not something new, but the way in which it was utilised in the Mosque is something that will be explored in the design.

Finally the way in which the volumes were arranged to create multiple thresholds from the street so that a strong visual axis could be preserved will be utilised in the final design.

3.3.3.2 The Louvre by Ateliers Jean Nouvel in Abu Dhabi (2017)

A prominent Islamic architectural feature is the window screen or Mashrabiya that was used on street level to provide privacy and allow ventilation. It is characterised by intricate latticework and patterns that have been used as inspiration in many contemporary buildings (Schielke, 2014: online).

Figure 144: Wooden mashrabiya panel (Schielke,2014: online).

The Louvre in Abu Dhabi is a museum complex on the ocean that is characterised by a large geometric dome roof that was inspired by the vertical mashrabiya panels in Arabian homes. In the figure below, one can see the way in which the dome appears to be floating over the buildings which is seen externally, while internally the space is shrouded in rays of light that pass through the layers of the dome.

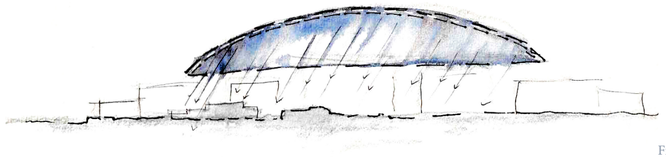


Figure 145: Composition of the Louvre in Abu Dhabi (Author, 2021).

Figure 146: Internal view of the dome (ARCHITECTS, 2017: adapted by author).

Described as a 'parasol creating a rain of light' (ARCHITECTS,2017: ONLINE), the entire structure had to be engineered to create the intended effect as seen in the figure below. As the space houses valuable artworks, the architects had to make sure that the light would not distract from the pieces.

Figure 147: Render of the light effect that was intended to shroud the space (Schielke,2014: online).

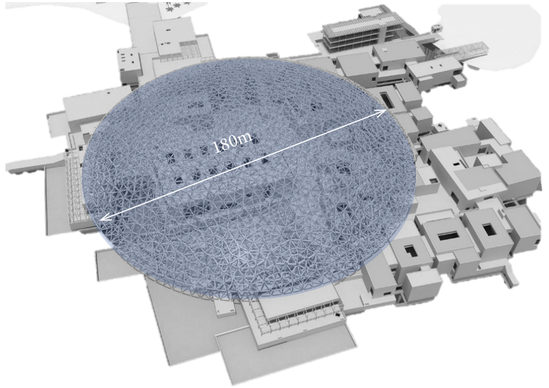


Figure 148: Diagram of the dome and museum (ARCHITECTS, 2017: adapted by author).

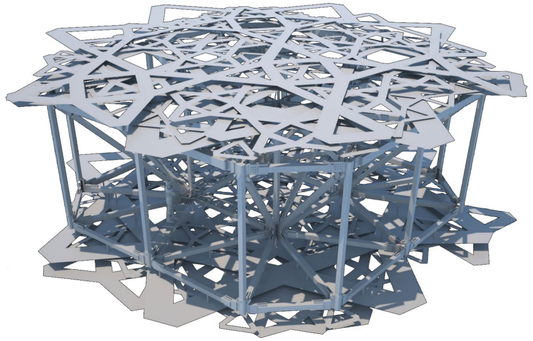


Figure 149: Dome structure that consist of 8 layers of cladding (Abourezk, 2017: online).

Structurally the dome is supported by 4 piers that are placed in a square in such a way that they are not visible, hence a floating dome. The double roof system allows the artworks to be protected while the circulation areas are flooded with light that changes as the day progresses.

The dome consists of eight layers of cladding made up of squares and triangles which are rotated to achieve the present light quality as seen in the figures above. Each layer is spaced accordingly with four top layers and four layers underneath to accommodate light to enter the deep structure. This steel structure was partially pre-esembled and is actually symmetrical along one axis and as a result the architects conclude that the entire dome consist of 10 layers that weigh over 7000 tons (Abourezk, 2017: online).

Ideas extracted

As a precedent, the design highlights the way in which historic Islamic architectural elements can be modified and re-imagined in a contemporary setting. While this design is highly technical and needed engineers input from its inception, the ideas that are used will be useful in the new design which aims to incorporate a roof that provides a similar light quality as people make their way to the Mosque.

The intricate nature of the patterns allowed for a more abstract light quality which is different to the approach taken in the Jumaa Mosque mentioned above. In terms of the new design, this will be explored as there is something beautiful that can be achieved from both existing patterns as well as new interpretations.

3.3.3.3 Urban space development – the Souk

Souks or marketplaces have always formed an important part of Islamic cities especially among the Arabs who were skilled merchants and frequent travellers due to their nomadic lifestyle. After the advent of Islam, the souk shifted to more permanent spaces that still exist today (Tewfik, 1992: 230).

This study aims to understand how commercial activity influenced the city fabric and how this could be used to respond to both the context in terms of the new design but also the relationship between the overall complex that will incorporate some social and retail functions.

The souk was a well-organised network that integrated itself within the existing urban fabric while uniting a diverse range of merchants. Architecturally it responded to the functional needs of the merchant while still maintaining a human scale. There are two common types of souks :

- An enclosure with a courtyard – typically with a colonnade
- A linear semi-enclosed space with a central spine and stalls on both sides

Figure 150: A linear Souk unfolding within the urban fabric, Aleppo, Syria (Tewfik, 1992: 231).

Looking at the linear souk, the roofs were well articulated and were a point of hierarchy that guided visitors from stall to stall. A spatially rich environment was created that consisted of Islamic architectural features such as domes, arches and patterns that were further articulated by clerestory windows (Tewfik, 1992: 231,232).

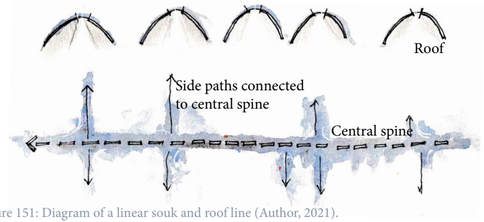


Figure 151: Diagram of a linear souk and roof line (Author, 2021).

Below is an example of a linear souk in Aleppo, Syria which shows its development within the city as well as the interior space.

Figure 152: Photo of the Aleppo souk which has a linear layout (Fincham, 2012: online).

Ideas extracted

In Islamic countries, the Masjid formed part of the Souk and thus played a role in activating public life within the greater urban landscape (Neufert, E. Neufert, P. 2000: 585). As a religious space, this should be a priority as it touches on the aspect of community upliftment and public welfare. For the new design to work as a community centre, other functions were incorporated which include recreation, retail and education facilities and so understanding the role of the Souk in the greater city fabric was necessary to connect all the elements.

This connection between earth and sky can be translated into the new design which also unfolds along a linear axis with a strong roof silhouette. People are thus drawn in by articulating the pathway both above and below in a similar manner to that of the Souk. Although this occurs in an open space unlike the enclosed market, it provides a means to blur the edges and create porous thresholds so that one can enjoy the large public gathering space.

3.3.3.4 Relationship between the Masjid and the city

In the section above, the role of the Masjid in the wider urban fabric was touched upon while in this section a brief understanding of public space in Islamic cities will be discussed.

Two main types of public spaces encompass the historic Islamic city, firstly circulation spaces in the form of narrow labyrinths and paths and secondly Maidans or open public space.

Unlike Squares and Plazas that are planned gathering areas, the public space of Islamic cities tended to be more irregular, unplanned and was not for the purpose of gathering. Rather they were public distribution nodes and served to balance the built fabric in the city. Essentially they acted as voids that served to articulate the buildings and balance the overall scale of the city (AlSayyad, 1987: 109). This can be seen in figure 155.

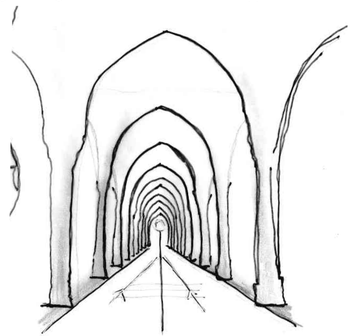


Figure 153: A linear axis created by multiple arches and columns within a Mosque (Author, 2021).

Today when one thinks of urban public space, the first impression would be a place of gathering in the form of a large plaza or square which is quite the opposite of what was intended by open spaces in historic Islamic cities. During the early design development, the rectangular courtyard became a prominent feature outside the Masjid as a point of gathering and break between the sacred and profane. This evolved into a more irregular public gathering space that responded to the existing suburban grid and the new orientation (figure 154).

Below is an example of public spaces in front of the Mosque during different Islamic periods in Egypt, which firstly highlights the irregular shape of the maidan and secondly the relationship of the street to the orientation of the Mosque itself.

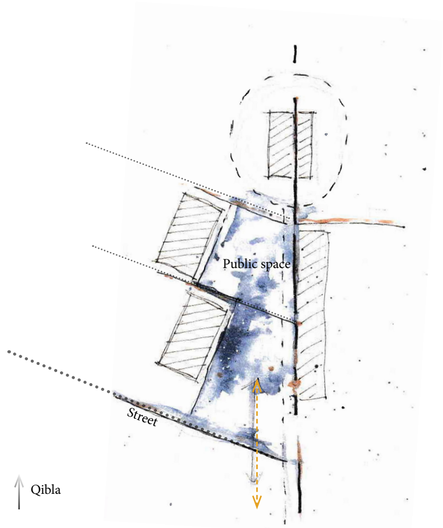


Figure 154: Irregular public space created by layout in the final design (Author, 2021).

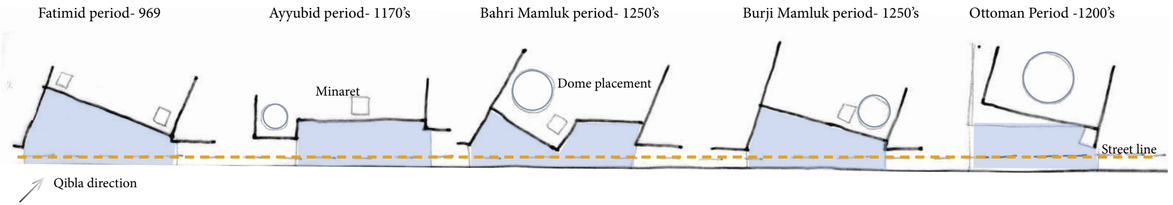


Figure 155: Relationship of the boundary of the Masjid with the street line (red) to create a public space highlighted in blue (AlSayyad, 1987: 112).

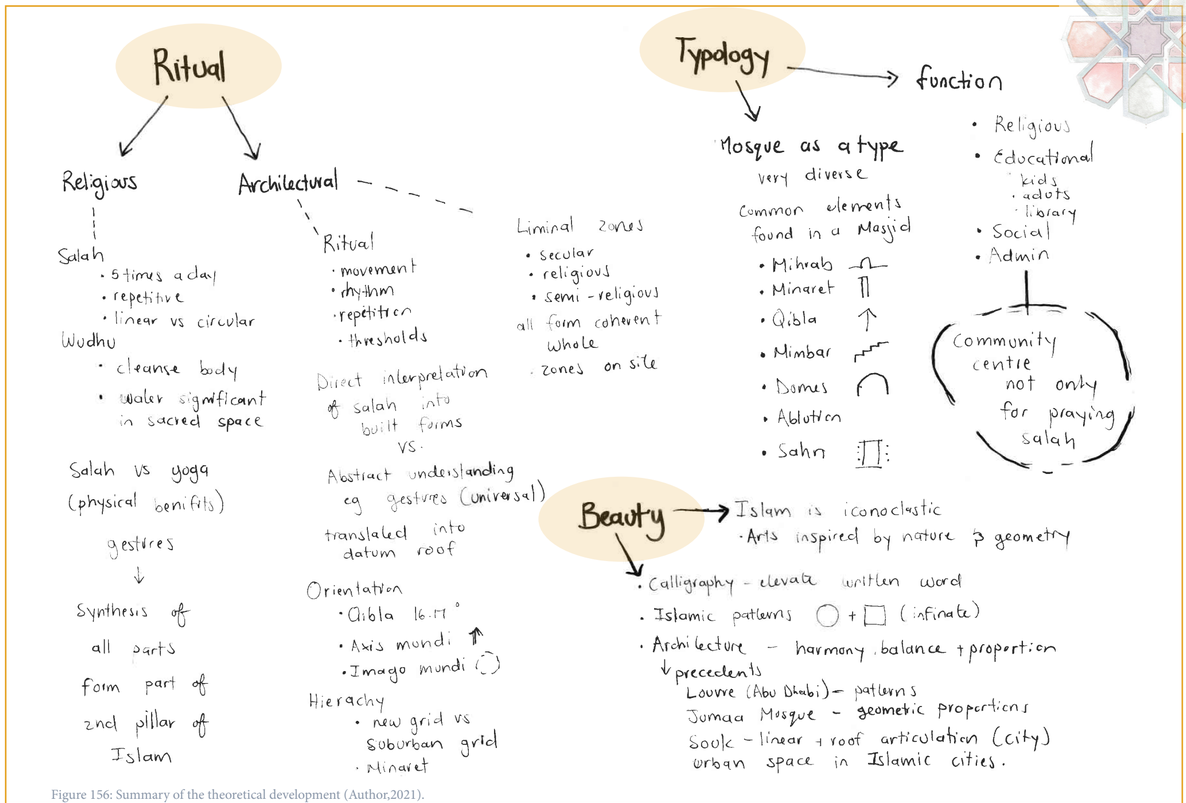
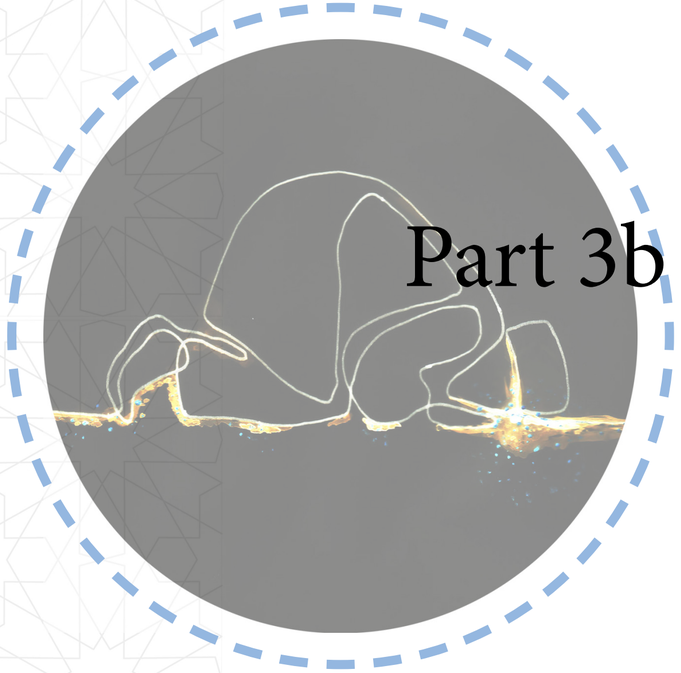


Figure 156: Summary of the theoretical development (Author,2021).



Part 3b - Technical development




3.4 Technical development

3.4.1 Structural touchstone

The model below was introduced in theoretical development B however, it was constructed as a structural touchstone to aid in the development of the materiality of the project. From the inception of the project certain materials were incorporated into the design touchstone and concept models which were incorporated in the final design. For example the use of concrete, steel structural elements and aluminium geometric screens.

Concrete is a versatile material that can be moulded to achieve various forms with different finishes and colours however, there are certain drawbacks in terms of waterproofing, acoustics and maintenance in certain climates.

As an alien building in its context, the choice of materials were important in allowing the final design to integrate with its surroundings while still maintaining its uniqueness as a religious building. Concrete was the first material that was chosen not only because of its versatility and precision but, also because of its austere quality that is enhanced by all the imperfections in the casting.
Islam is an ancient religion with many rules pertaining to salah and so concrete was used to emphasise certain points in the design that have religious significance.

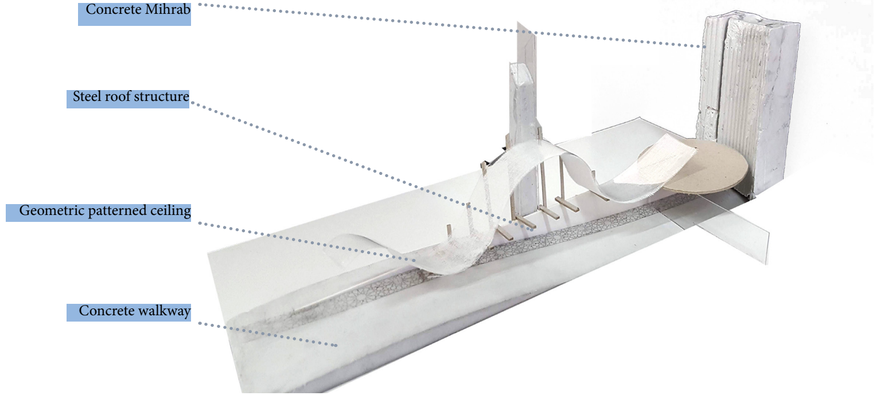


Figure 157: Structural touchstone (Author, 2021).

> decoration was not required to create a hallowed space. Through the use of reinforced concrete, a raw material believed by many architects to have evocative properties, a sense of sanctity could be created without the need for excessive ornamentation (Bartolacci, [n.d]: online).

While constructing the touchstone, different textures and tones were explored as seen in the figures on the right. Other materials that were explored include glass, brick, steel sections, fibre cement boards, aluminium sheeting, polycarbonate sheeting and acoustic panels.

Figure 158: Material inspiration from Crematorium in Switzerland (González, 2017: online).

The final design is a combination of a load bearing masonry structure with various cavity walls and a column and beam structure that articulates the main walkway. In figure 158 the façades are a combination of different bricks with a flush white mortar. This was used as inspiration for the final design which aims to be more muted and toned down to give off a pure ambiance. This would contrast with the existing context that is composed of a dark reddish face brick.

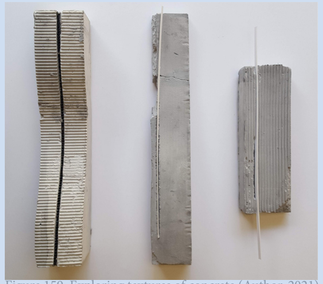


Figure 159: Exploring textures of concrete (Author, 2021).

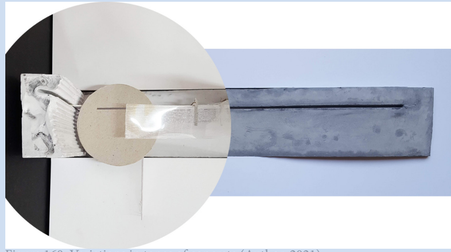


Figure 160: Variations in tones of concrete (Author, 2021).

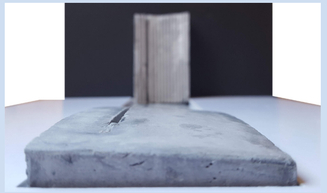


Figure 161: Smooth finish achieved with concrete (Author, 2021).

3.5.1 Australian Islamic Centre by Glenn Murcutt and Elevli Plus (2019)

Murcutt's design takes inspiration from traditional Mosques in the Islamic world and reinterprets them to fit the contemporary Muslim living in Australia. Traditionally many Mosques were enclosed by four walls with a central courtyard, this was fragmented to allow a more porous engagement with the context and public. The aim was to demonstrate the beauty of Islam and dispel any negative connotations associated with the religion. A continuous in-situ concrete wall wraps around three sides of the design which opens up towards a public Square.

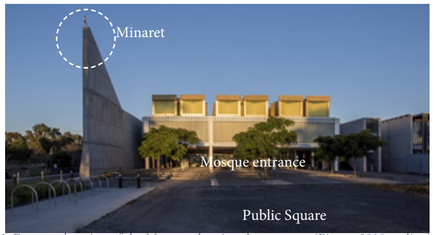


Figure 162: Eastern elevation of the Mosque showing the entrance (Pintos, 2019: online).

Figure 163: Western elevation showing the lanterns used above the Mosque (wocomoCULTURE, 2021: online).

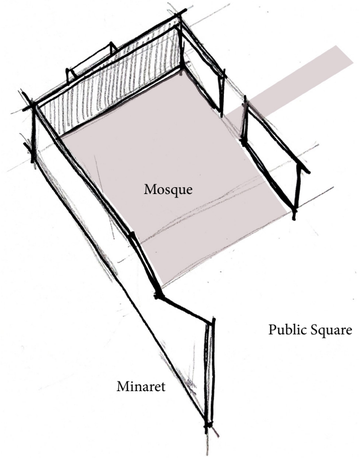


Figure 164: Concrete arms stretch around the Masjid (Author, 2021).

Minarets are a common feature of many Mosques, however, their functional purpose is not very relevant which has resulted in it becoming a controversial issue. As a result, it was re-imagined as a wall that extended from the prayer space towards the Square with a small crescent placed at the top as seen in the figures on the left.

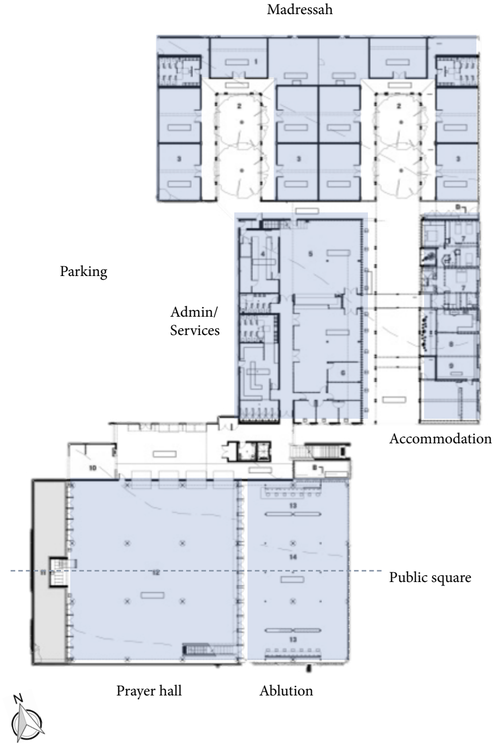


Figure 165: Layout of ground floor plan (Pintos, 2019: adapted by author).

Figure 166: Mosque layout and elements (Pintos, 2019: adapted by author).

In terms of programme and function, the Mosque is better described as a community centre and includes a madressah, canteen, and accommodation for the Imam and Mu'adhin. The Mosque is entered through a deep verandah that is framed by two parallel ablution stations that open up to a double volume praying area which can be seen in the figure above.

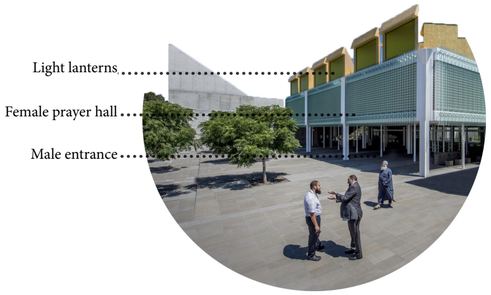


Figure 167: Entrance of the Mosque (Pintos, 2019: online).

Immediately upon entering the observer's eyes are drawn upwards towards multiple coloured skylights. These were inspired by Islamic geometric patterns which are seen as gold lanterns from the exterior of the building.

Each skylight is orientated in a different direction with a corresponding colour of green (north), blue (south), gold (east) and red (west) which was inspired by the colourful domes of traditional Mosques.

Below is an image of the proposed interior space with the lanterns.

Figure 167:Interior render of the Mosque (Pintos, 2019: online).

Structurally the design is a combination of load-bearing walls and a column and beam structure. The materials include off shutter concrete, laminate glass and steel elements.

The concrete anchors the building and creates a pristine finish. Custom steel columns support the roof structure in the mosque which is pierced by filtered light to break the heavy atmosphere.

On the right various images show the different stages of construction including Arabic calligraphy that was cast in the concrete in-situ wall in the Mosque.

Figure 168: Completed service block (wocomoCULTURE, 2021: online).

Figure 169: Superstructure of the accommodation and service block (wocomo-CULTURE, 2021: online).

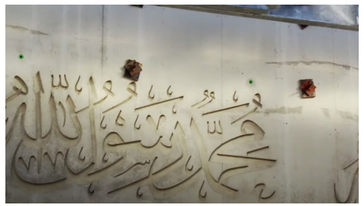


Figure 170: Arabic calligraphy cast in concrete (wocomoCUL-TURE, 2021: online).

Figure 171: Columns used in Mosque (wocomoCULTURE, 2021: online).

Ideas extracted

Similar to the Sancaklar Mosque in Turkey, Murcutt chose to look at sacred architecture as a whole and combined this with his understanding of Islamic architecture to create a vibrant space. Murcutt spent time with the congregation who mostly immigrated from Algeria before starting with the design. This engagement allowed him to understand what the community and the religion is about.

Initially this was utilised as a theory precedent however, after watching a documentary on the Mosque I realised the similarities in my design proposal with the construction and programme of this precedent. Murcutt is known for his residential architecture and traces of this can be seen in the construction and overall design. It is this simplicity that really makes the masjid unique.

Figure 173:Water feature in front of prayer hall (wocomoCULTURE, 2021: online).

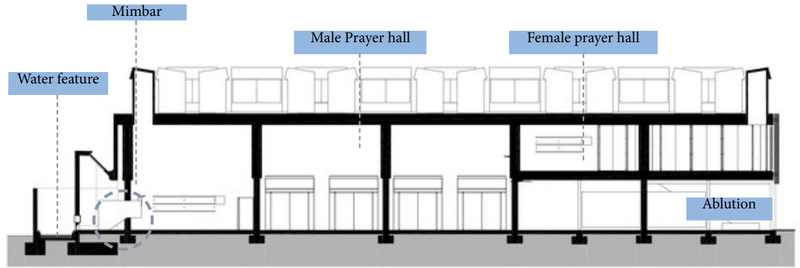


Figure 172: Section through the Mosque (Pintos, 2019: online).

3.6 Acoustics

3.6.1 Mosque Acoustics

A Masjid is a space for communal praying and preaching which relies on the clear speech intelligibility of the Imam. As a result, the acoustics of the space is an important factor to consider when designing the Masjid.

Acoustics in architecture can be described as the way a structure or room affects the quality of speech or music (Cambridge Dictionary, 2021: online).

Initially, this was not taken into consideration but after comments about acoustics and the choice of materials in the design, a small investigation was conducted to better understand the influence that reverberation, echo and background noise would have on the prayer hall.

Firstly one needs to understand exactly what transpires in the Mosque:

- The Masjid is an empty hall free of any furniture that allows for people to line up in rows and perform salah behind an Imam. This is referred to as the congregational prayer
- People can also offer salah individually and would be performed in the same way as congregational prayers.
- The Imam also preaches to the crowd from the Mimbar after or before the salah. On special occasions and religious days, guest speakers would give lectures as well.

It is important to remember that during each activity people would be in a different position- sitting, prostrating, standing, or bowing. In the diagrams on the right are images to show the relationship between the Imam and the congregation during different activities.

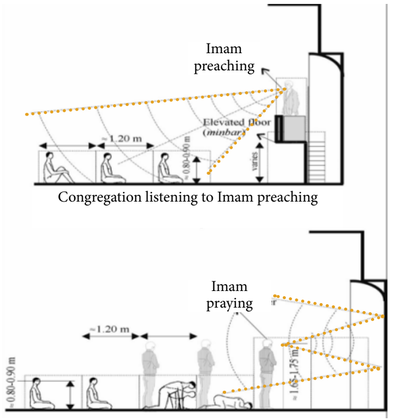


Figure 174: Activities in the mosque seen in section (Orfali,2007: 24).

Figure 175: Activities in the mosque seen on plan (Orfali,2007: 24).

The only elements of the Mosque that have been developed to improve sound quality include the Minaret to call out the Adhan, the Mimbar which allows the Imams voice to be heard throughout the congregation and the Mihrab which reflects the Imams voice while praying. Aside from this not a lot of research has been conducted in the field of Mosque acoustics in the last century and as a result, many contemporary mosques suffer from poor sound quality. This is due to the fact that acoustics are only addressed towards the end of construction when only small changes can be made structurally and electric sounds systems are used (Orfali, 2007: 26).

3.6.2 Acoustics in the current design

What affects the sound quality of the Masjid:

- Column sizing, spacing and shape
- Parallel walls, shapes and finishes
- Domes
- Hard surfaces
- Courtyards
- External noise

How can this be addressed with regards to the current design?

3.6.2.1 Floor treatments

One of the easiest ways to improve the sound legibility in the Mosque is with regards to floor finish. Over 70% of the Masjid is covered in carpet for comfort while praying, this can also be used to improve the acoustic quality thus reducing the need for dramatic wall treatment (Orfali,2007: 75). This will further be improved by making use of a thicker carpet with underlying padding.

In the final design proposal, a hydronic water heating system will be incorporated in the floor slab of the Masjid which has a layer of rigid board insulation on top of which a 6.5mm ACOUSTIC UNDERLAY – ECOLAY rubber mat and a 10mm wool carpet will be installed.

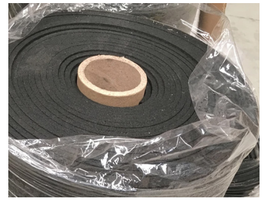


Figure 176: Acoustic underlay rubber mat (VanDyck, 2021: online).

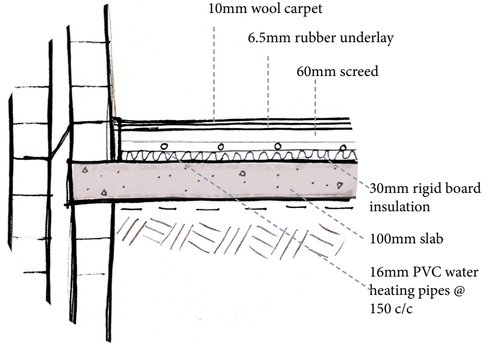


Figure 177: Detail through Mosque floor (Author,2021).

3.6.2.2 Columns

Initially in the design, no columns were placed in the Masjid to allow for ease while praying. This changed once the final roof was designed which needed additional support columns. As a result, a row of 300 x 400 mm reinforced concrete columns were placed outside the demarcated prayer area that would be used daily. The columns are spaced at 3200mm centre to centre which was calculated using the dimension of two prayer rugs measuring at 600 x 1600mm. When the Mosque reaches full capacity an electric sound system will be used to allow for better speech intelligibility.

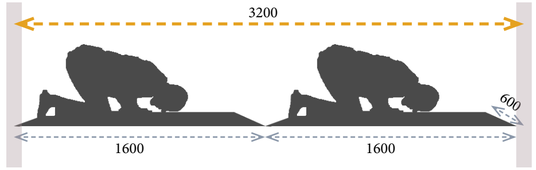


Figure 178: Column spacing used in the design (Author,2021).

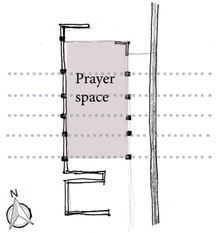


Figure 179: Column spacing on plan (Author,2021).

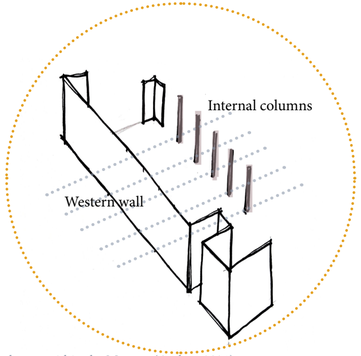


Figure 180: Internal columns within the Mosque (Author, 2021).

3.6.2.3 Wall finishes

Due to the Qibla orientation, the long side of the males' prayer space faces west. As a result, a cavity wall system with narrow windows was used. On the interior, the walls were plastered and painted and 1200mm mineral wool panels were fixed to the walls as well as suspended from the roof in intervals to help with the acoustics. The panels have a white finish which fits in with overall aesthetics.

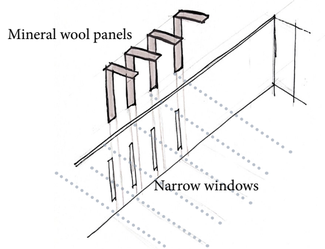


Figure 181: Interior perspective of mosque (Author, 2021).

Large glass surfaces are present in the front of the Mosque and within the madressah which causes problems with external noise. To reduce the external noise 25mm double glazed glass was used in these areas.

3.6.2.4 External noise

A prominent feature of the design is the courtyard outside the Masjid which could be a source of background noise in the Masjid. On special occasions and religious holidays, the courtyard is used for praying once the mosque reaches capacity. Typically a movable roof covering or dome would be implemented in this case such as the datum roof which will be explored in the design development section of the document. With the design, the ablution block was placed before the praying hall to help block out external noise from the courtyard and the street.

Figure 182: Mechanical umbrellas used in the courtyard at the Prophet's Mosque in Medina (Abdullatif Al Fouzan Award, 2011: online).

3.6.2 Reflection

From this investigation its easy to see that the sound quality in a Mosque is important for the comfort of the congregation who would use that space multiple times a day. Unlike other religious buildings the Masjid has specific sound requirements depending on the activity taking place and as such investing energy and money on acoustics from an early stage in the design is a vital step, irrespective of the size of the place.

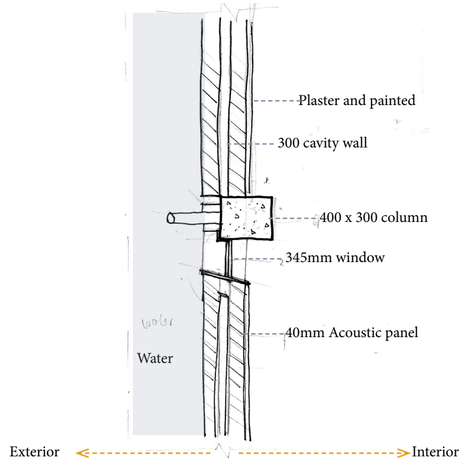


Figure 183: Cavity wall detail seen on plan(Author,2021).

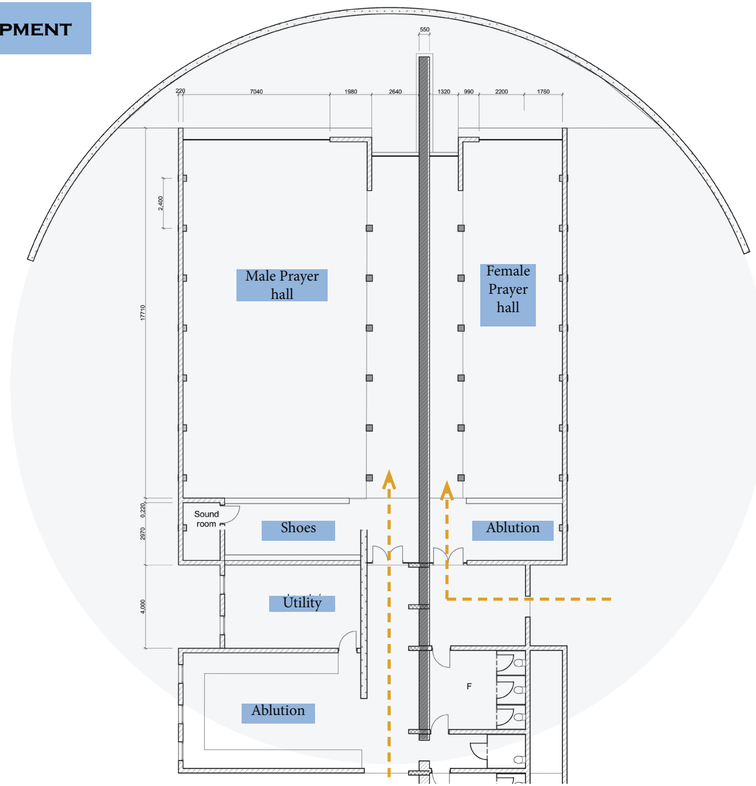


Figure 184: Initial floor plan of mosque -not to scale (Author,2021).

Figure 185: Render of initial Masjid space from the Imam's perspective (Author,2021).

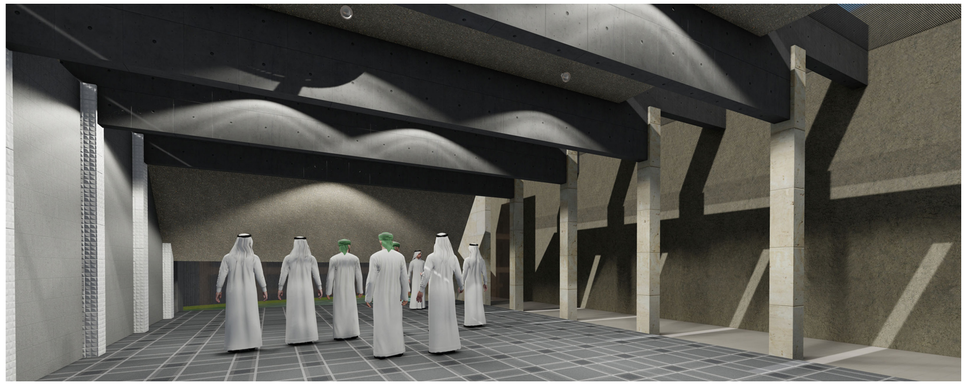
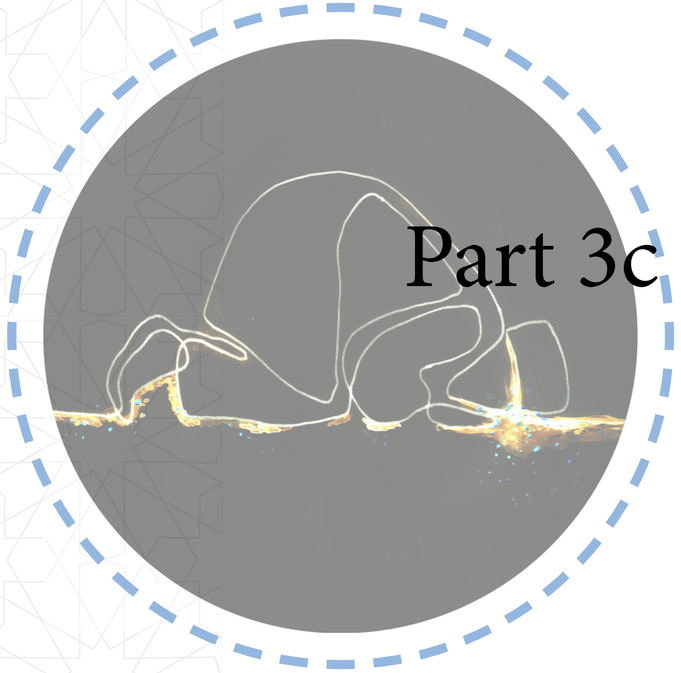


Figure 186: Render of Mosque seen from congregations perspective (Author,2021).



Part 3c - Design development




3.8 Programme

3.8.1 Intended usage times of new design

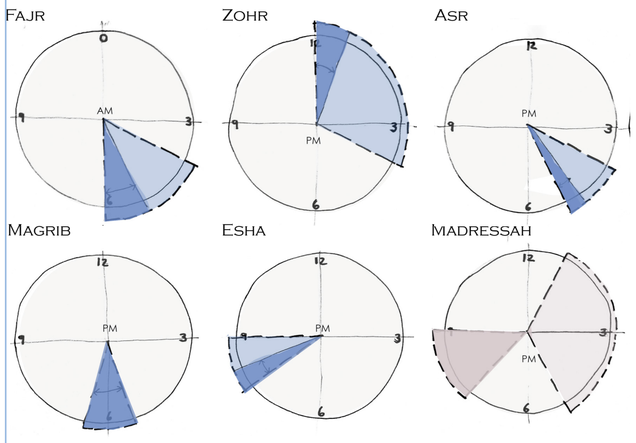


Figure 187: Diagrams indicating times when the site will be utilised (Author, 2021).

3.8.2 Accommodation list

Service core

Male rest room	25m²
Female rest room	20m²
U/A rest room	3m²
Laundry/ storage	9m²
Boiler	7m²
Retail	90m²
Storage	
Maintenance Staffroom	27m²
Bathroom	
Security office	14m²
Circulation	25m²
Service yard	41m²

Educational (A3)

Classroom x2	128m²
Bathroom	17m²
Teachers Office x2	15m²
Teachers Staffroom	35m²
Storage	5m²
Circulation	152m²
Boardroom	22m²
Imam Office	11m²
Library	28m²

Recreational (A1)

Circulation	90m²
Storage	18m²
Multi-functional hall	142m²
Kitchen	45m²
Outdoor walkway	60m²

Sacred (A4)

Males prayer area	215m²
Females prayer area	135m²
Ablution Males	30m²
Ablution Females	21m²
Storage/ technical room	13m²
Circulation / shoe area	74m²
Ghusl	24m²

External (A5)

Courtyard	280m²
Public plaza	308m²
Parking	3630m²
Sports field	1125m²
Minaret	12m²
Kids play area	295m²

3.9 Development 1

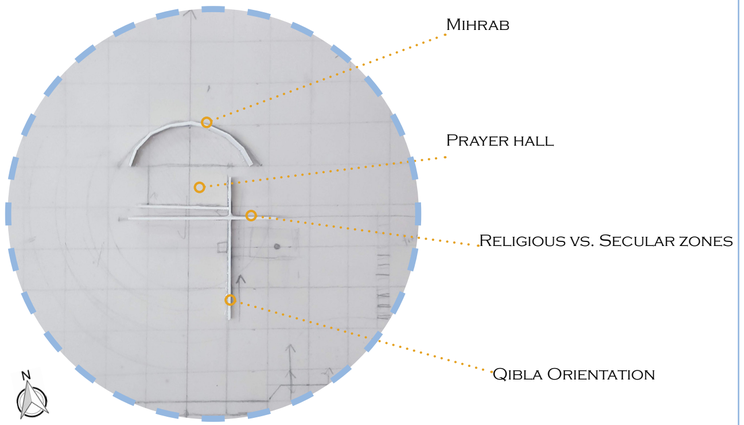


Figure 188:First exploration of Mosque elements on site (Author, 2021).

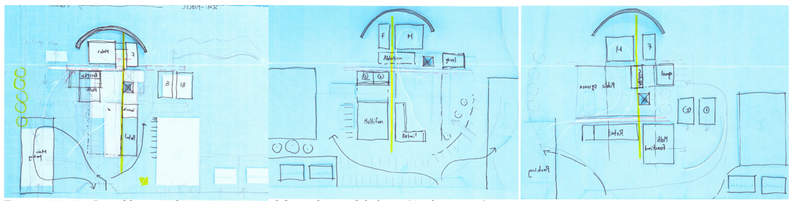


Figure 189-191: Initial layouts that were generated from the model above (Author, 2021).

3.9.1 Conceptual Layout

From the inception of the design, the touchstone and concepts played a large part in creating a space that reinterpreted the typological elements of the mosque. The first conceptual approach was inspired by the construction touchstone and included a linear datum towards the Qibla that culminated in a semi-circular wall. A circular element was introduced as it has strong ties to the mosque in the form of a dome and the Mihrab or prayer niche, it also refers to the universe and is a common element found in Islamic geometry.

From the first concept, various layouts were experimented with on the site to identify where to best to place the served, service and sacred space. In the figures, the various layouts can be seen of which the linear axis and the circular apse are present.

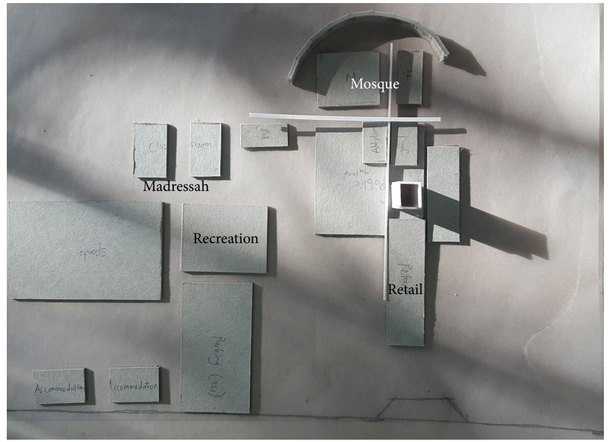


Figure 192: Second layout that was explored - not to scale (Author, 2021).

3.9.2 Layout

Four different variations of the layout were explored with the final layout segmented into service spaces on the right and served spaces on the left. This was deliberately done to create a noise barrier between the Mosque and the retail space on the right. The layout is placed around a central courtyard and a development of the multi-functional, school and Masjid from the street. In this way, three distinct zones are created namely secular, semi-religious and religious. The ablution space was placed in front of the Mosque as it is the first step when participating in the ritual of Salah. The figures show a 3D exploration of the first concept and the minaret in relation to the rest of the site which sat on a secondary pathway that demarcated the different zones.
Masjids do not have many specifications, but they are meant to be simple spaces that allow one to focus on praying thus a more introverted approach was initially taken. This resulted in a prayer space that sat at 1.5 meters below ground level which was accessed by a long ramp from the entrance of the site. The entire design had a very low profile.

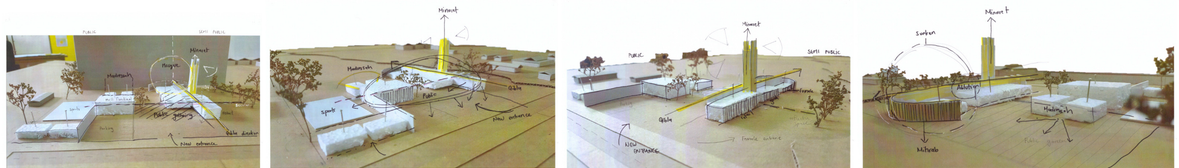


Figure 193-196: 3D exploration of the second layout in relation to context (Author, 2021).

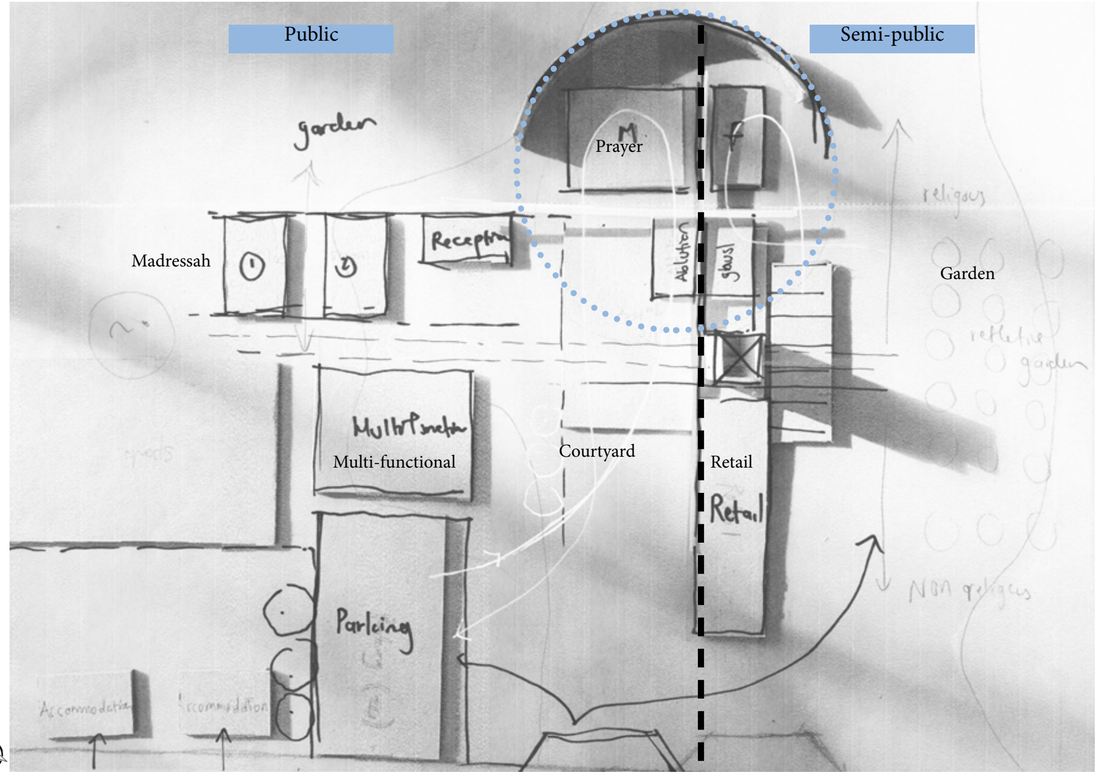


Figure 197: Second layout analysis showing religious and secular space development - not to scale (Author, 2021).

3.9.3 Orientation

In the second development, the orientation was experimented with to see if a better layout would be achieved if the entire design would look better if it run parallel to the street as opposed to perpendicular. The images show the different orientations, which proved to be problematic as the Mosque has to be orientated towards the Qibla and by rotating the entire layout, the datum wall loses its significance.

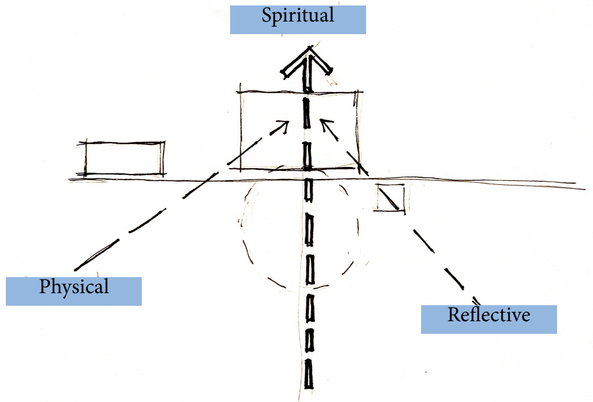


Figure 198: Diagrams indicating times when the site will be utilised (Author, 2021).

Figure 199: Alternative orientations and placement of the Minaret explored (Author, 2021).

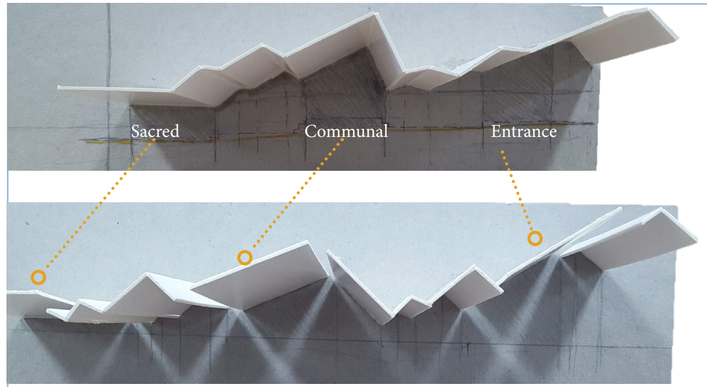


Figure 200-201: Articulated vs. continuous roof structure (Author, 2021).

Figure 202: The new roof element unites the secular and religious (Author, 2021).

3.9.4 Datum roof

On the previous models, a roof can be seen which was inspired by the diagram that was drawn of the gestures of Salah. The abstracted diagram was extrapolated to create a datum roof that guides the visitor to the Mosque and in doing so a new grid was created that was used to design the other components.

The figures show the development of this roof element from a single continuous roof, to a more articulated version and finally to a shading device that filters light through geometric patterns along the linear axis.

Looking at the sectional model, three distinct spaces are highlighted namely the entrance, communal and finally the Masjid.

Figure 203: Entrance emphasised by roof structure (Author, 2021).

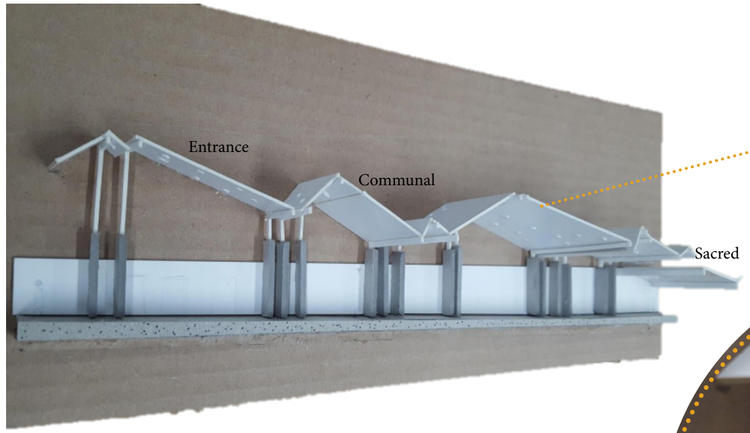


Figure 204: Section model of the roof showing the addition of perforations to allow light to penetrate and enhance the spacial quality (Author, 2021).

The entire structure is supported by a series of steel columns with concrete footings and due to the span, a much deeper roof profile developed. Due to the height of the roof this enhanced the overall appearance. In the above roof section, the slope decreases as it reaches the Mosque to allow for a more introverted space of introspection.

The figures on the right show a few details of the roof including the way that the columns create a strong rhythm that was generated from the gestures of prayer.

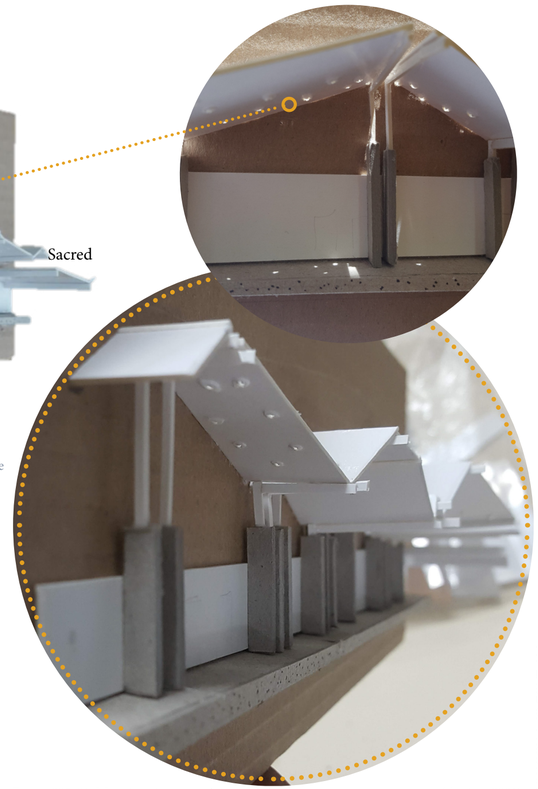


Figure 205-06: Model exploration of the roof element and the way light enters (Author, 2021).

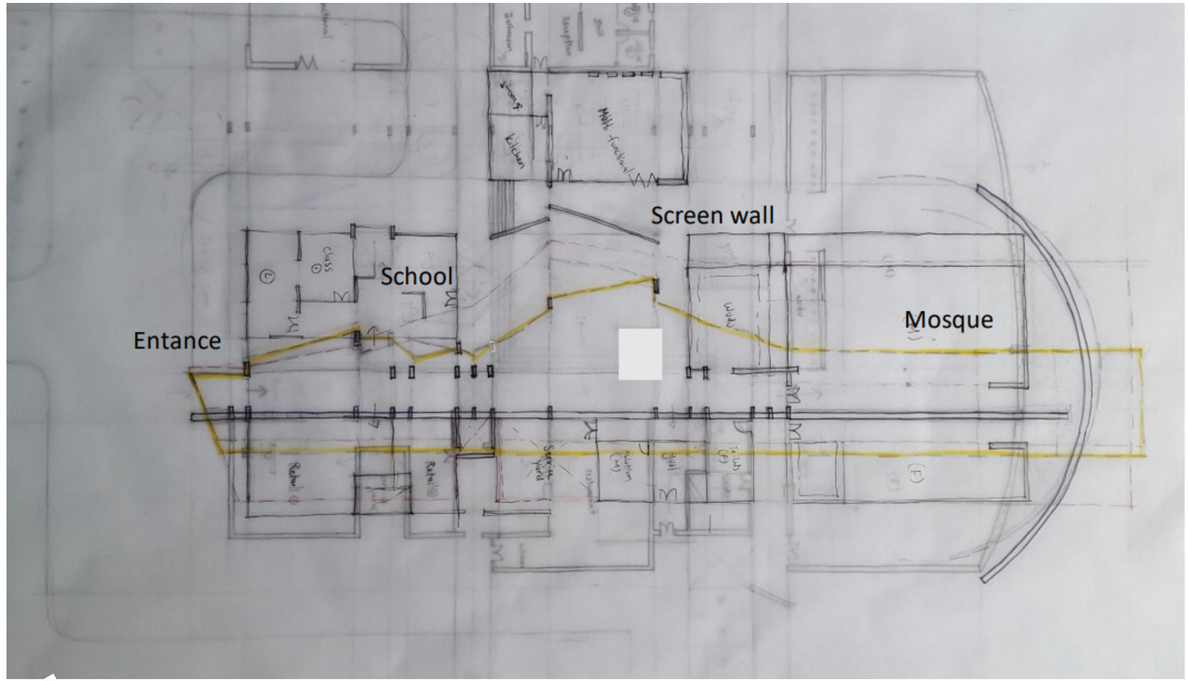


Figure 207: Placement of the datum roof on the site indicated in yellow (Author, 2021).

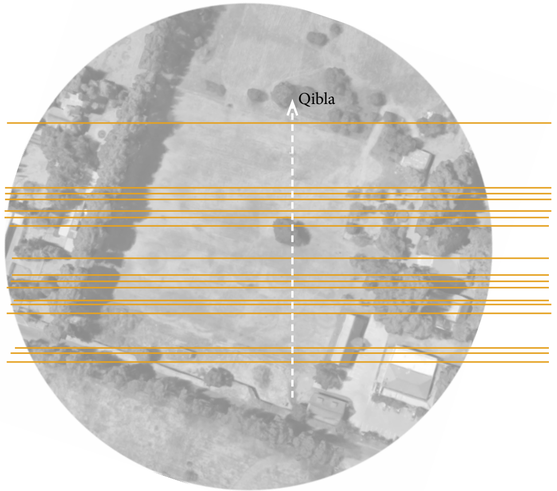


Figure 208: New grid created on site (Author, 2021).

In order to fully incorporate the datum roof on ground floor the roof was used to generate a new grid that was used to plan the entire layout of the design.

This adapted and changed as the project developed and was increased in size to accommodate for a larger praying area. As the site was mostly bare this grid helped to plan the layout however, in some instances this restricted the design as I tried hard to keep everything within the grid.

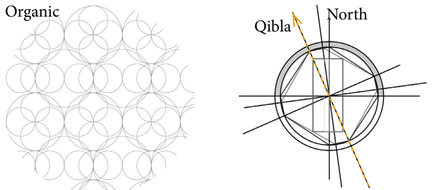


Figure 209-210: Pattern 1 & 2 development for screen and ceilings (Author, 2021).

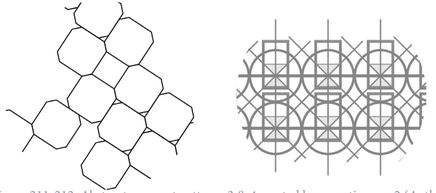


Figure 211-212: Abstract vs. exact patterns 3 & 4 created by repeating no. 2 (Author, 2021).

The final design will be an existing pattern as there is beauty in the complexity of the design as well as the in between spaces. The patterns explored above seem to lack this complexity and beauty that many Islamic geometric patterns have.
By using an existing pattern visitors have one component that relates to Islamic architecture that has not been distorted or abstracted which adds a layer of richness to the design.

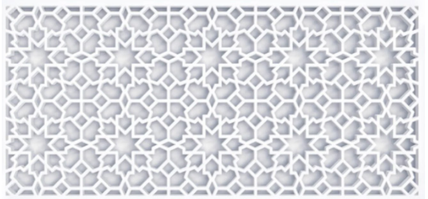


Figure 213: Existing screen (Tilt screens, [n.d.]: Online).

3.9.5 Screen walls

The addition of the datum roof created a strong roof-line on elevation and section however, it lacked any presence on floor level. This resulted in a series of screen walls that mimicked and contrasted the roof and helped to create a porous barrier between the courtyard and the other functions. It also contrasted the datum wall and created a more scenic pathway when exiting the Mosque as seen in the figure on the right, highlighted in brown.

This evolved constantly on the plan as a means to accommodate both the courtyard and the other functions without it becoming a barrier and restricting movement.

In terms of materials, fibre cement boards that are cut with a water jet were considered as opposed to the aluminium panels used in the ceiling. This creates a thicker wall that relates to the datum wall. However, the walls will be porous with patterns on and range in height with some seating in between.

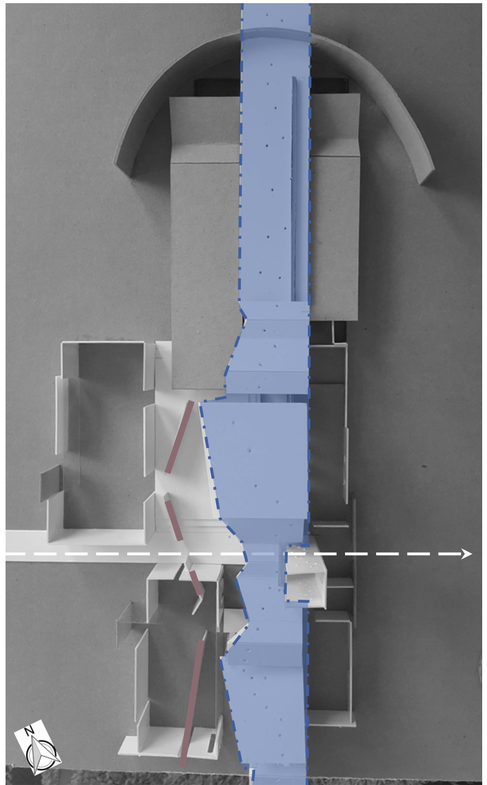


Figure 214: Datum roof (blue) in relation to screen walls indicated in brown (Author, 2021).

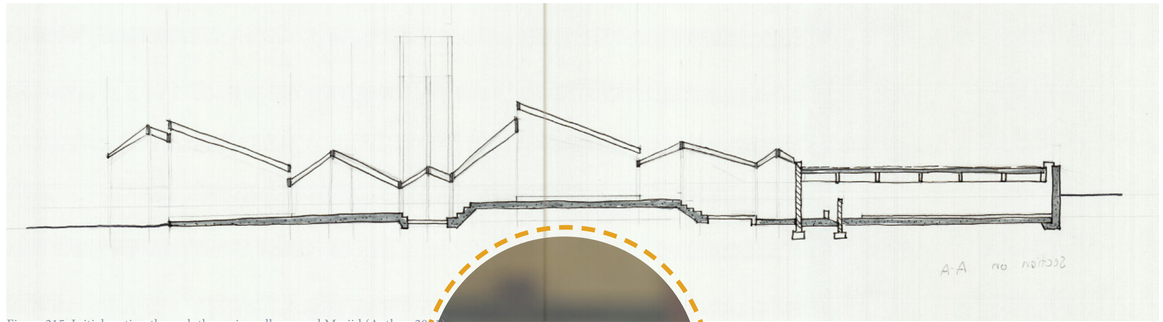


Figure 215: Initial section through the main walkway and Masjid (Author, 2021).

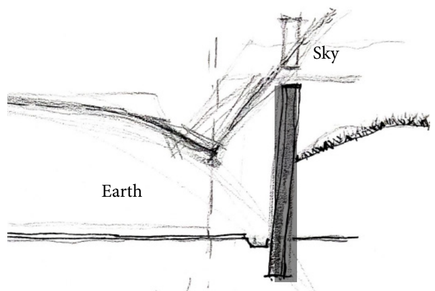


Figure 216: Roof development sketch (Author, 2021).

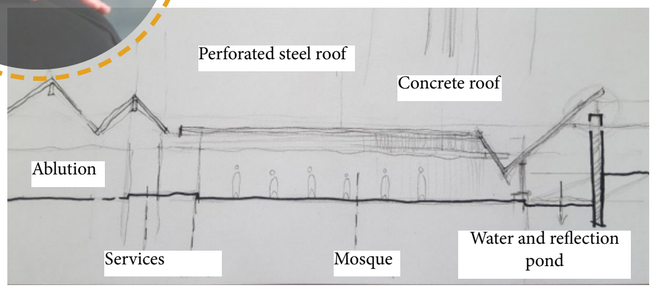


Figure 217: Roof development section (Author, 2021).

3.9.6 Mosque roof

As the culmination of the linear axis, the Mosque roof is an important feature of the project and needed to be articulated on both the interior and exterior of the building.

In terms of the datum roof, this continued through the Masjid and formed a corridor space, however, the main section over the prayer space still needed a roof. Inspiration for this was drawn from the final gesture of salah and the form of a person in prostration.

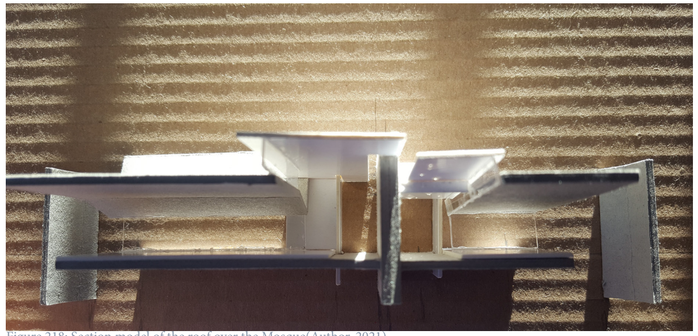


Figure 218: Section model of the roof over the Mosque(Author, 2021).

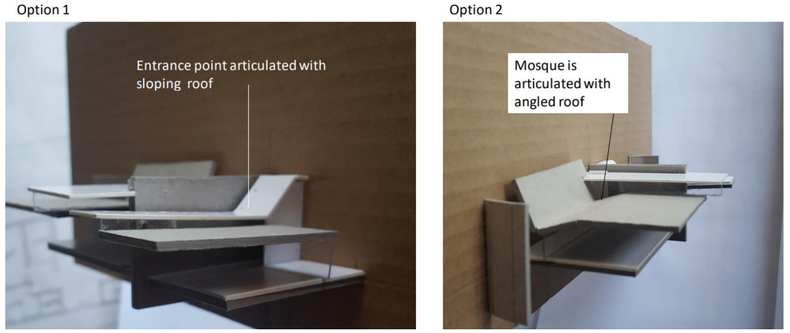


Figure 219: Model from above indicating the two options explored(Author, 2021).

3.9.7 Implementation on site

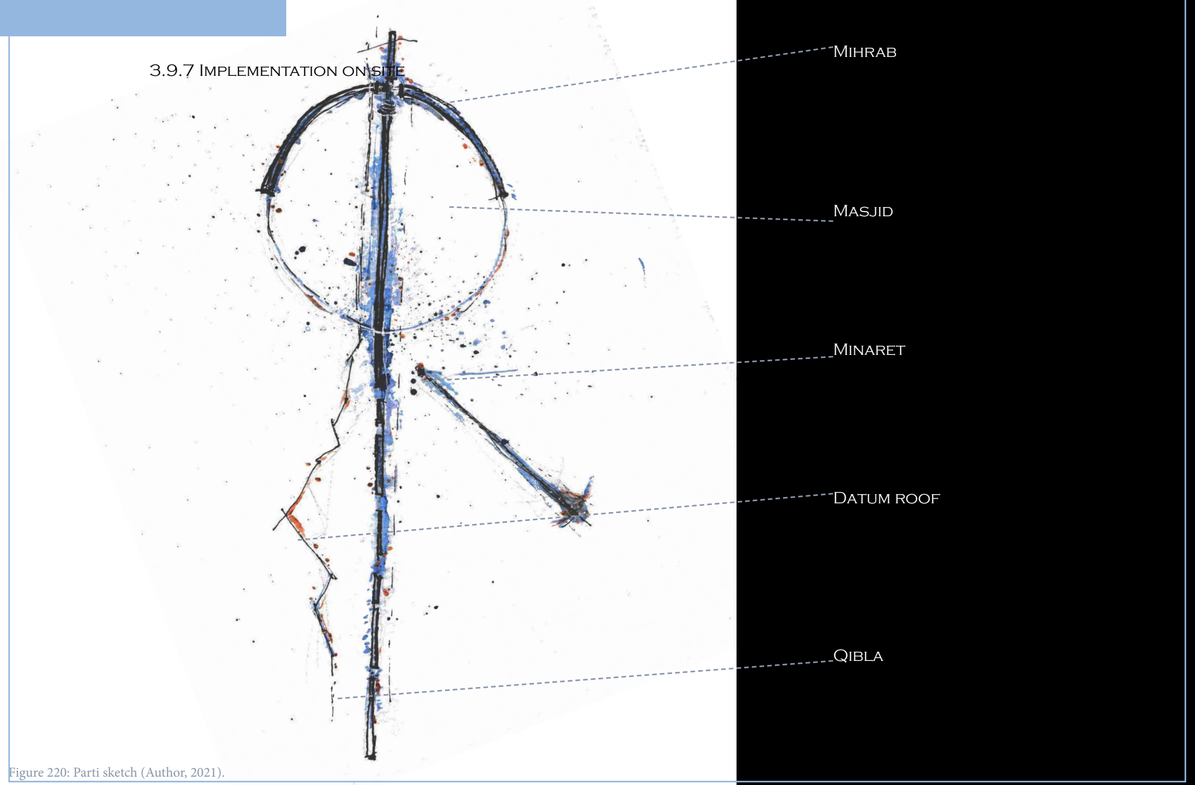


Figure 220: Parti sketch (Author, 2021).

3.10 Development 2

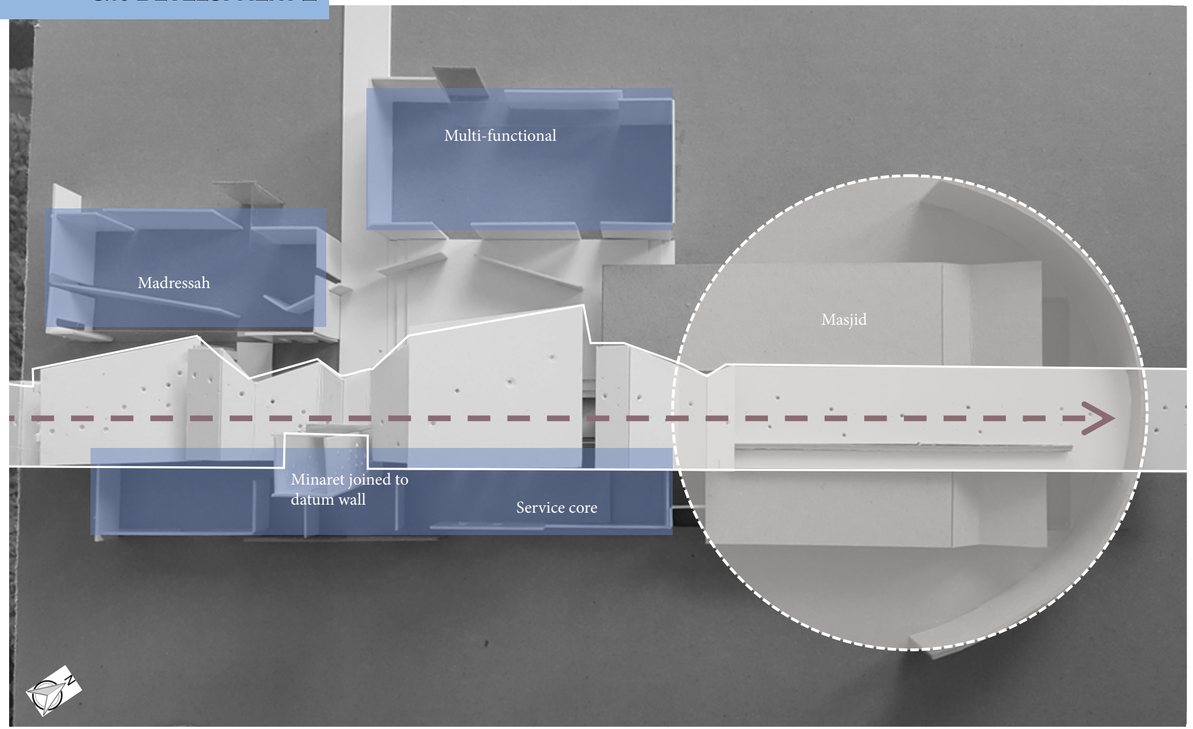


Figure 221: 1st model of design development on site indicating the sunken mosque (Author, 2021).

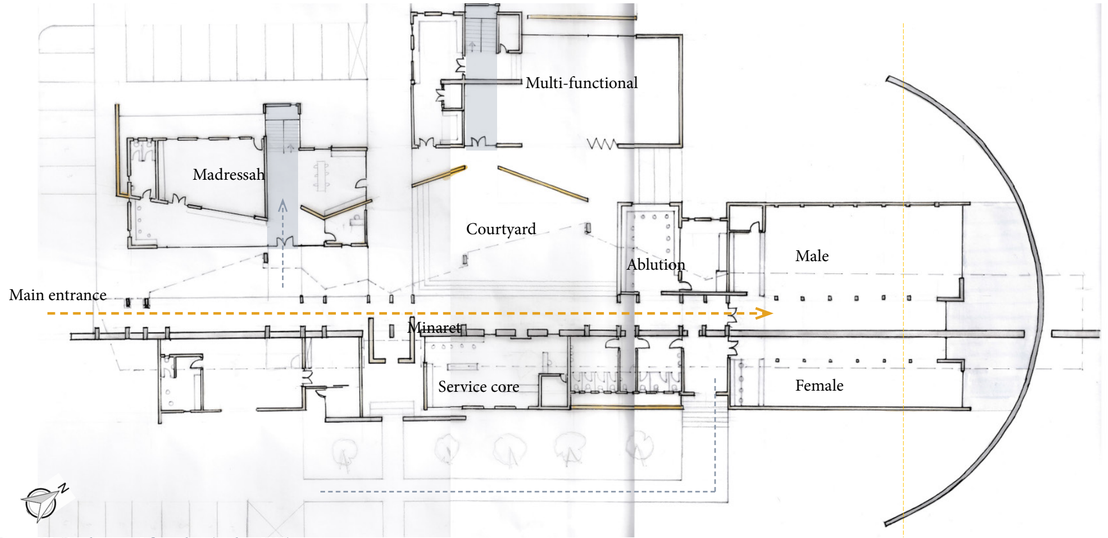


Figure 222: Development 2 floor plans (Author, 2021).

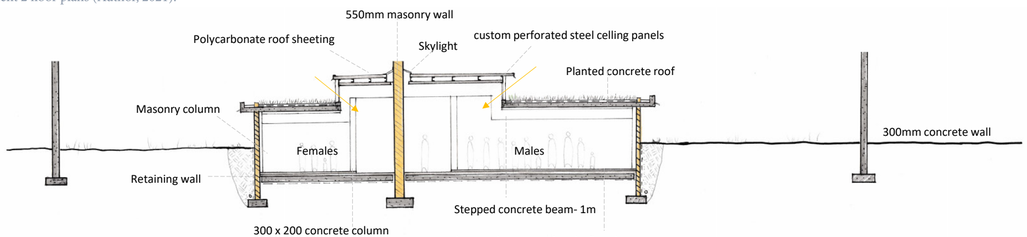


Figure 223: Development 2 section through the Mosque (Author, 2021).

3.11 Development 3

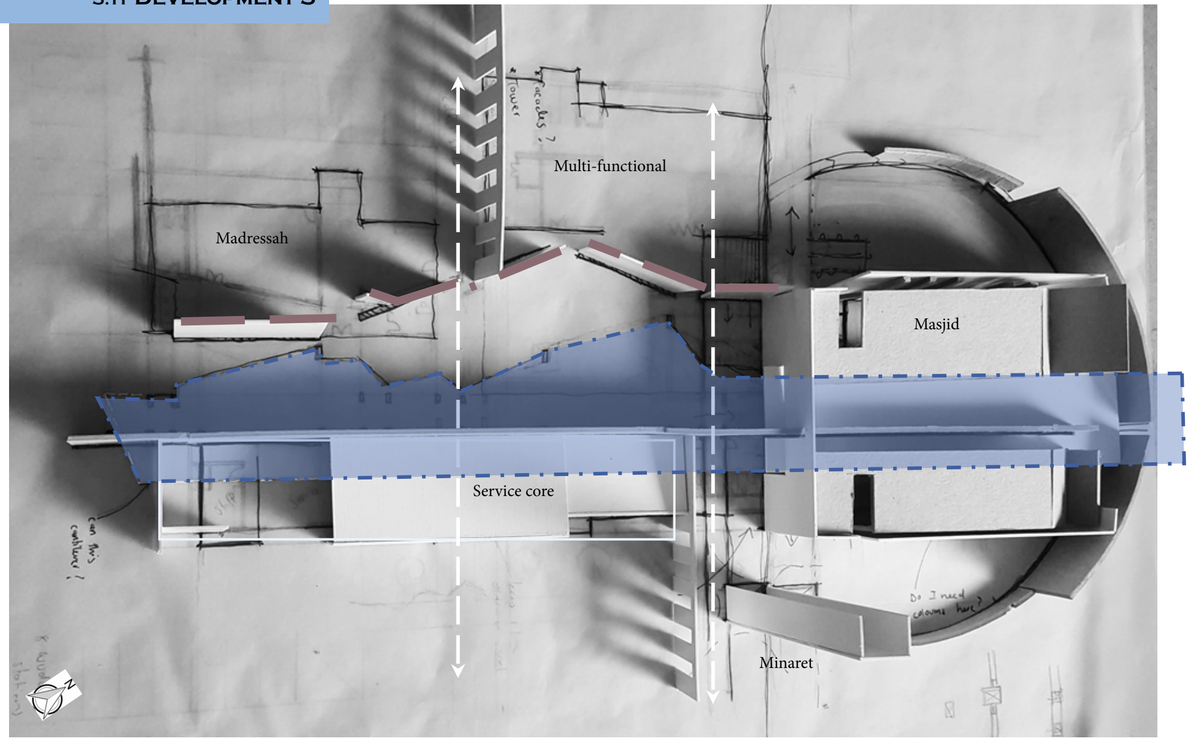


Figure 224: Development 3 model showing the way in which the mosque is separated from the rest of the design and the new minaret placement (Author, 2021).

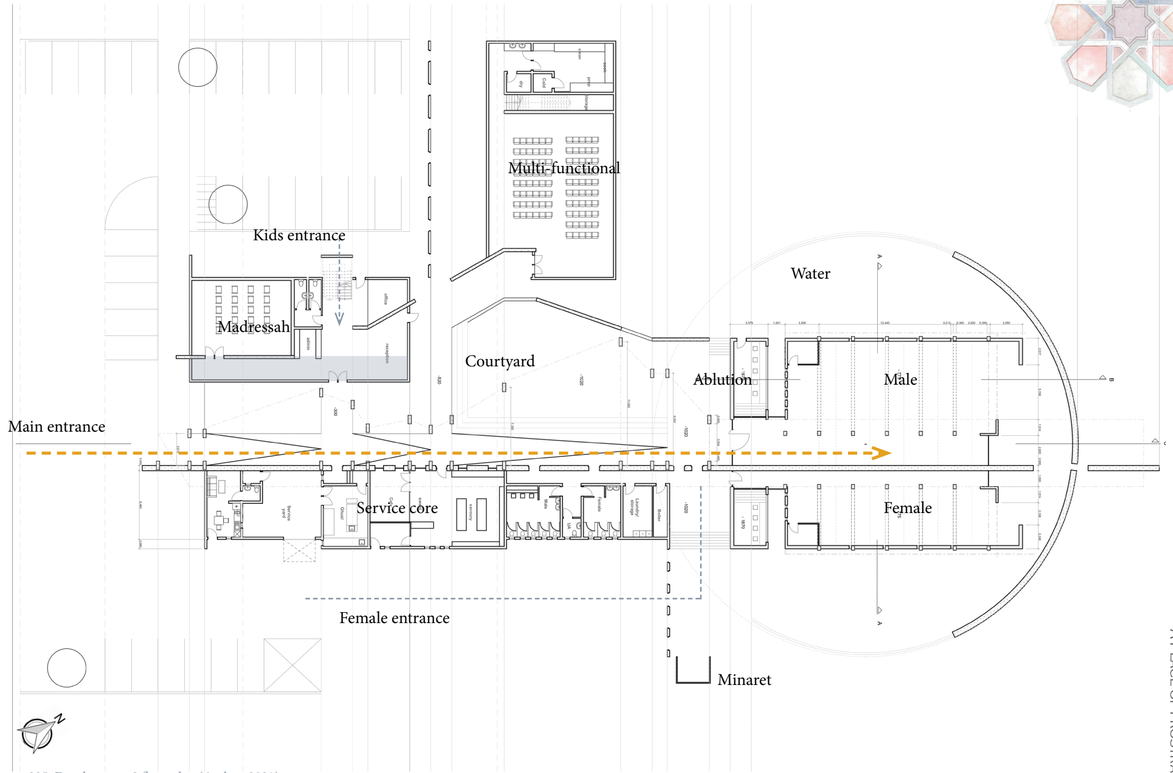


Figure 225: Development 3 floor plan (Author, 2021).

Figure 226: Development 2 model (Author, 2021).

3.10 Development 2

Due to the sunken nature of the Masjid, it loses its significance as the focal point of the project. The placement of the minaret also gets over powered in its current location. Overall the entire design is very introverted and the Masjid is kind of hidden due to the placement of the ablution facilities right in front of the religious space.

3.11 Development 3

The most significant change was the separating of the masjid from the rest of the complex and the placing of the minaret to act as a vertical threshold between the sacred and the profane. Secondly the entire space around the Mosque will be surrounded by water.

Aside from this, the multi-functional space was rotated to see alternative layouts.

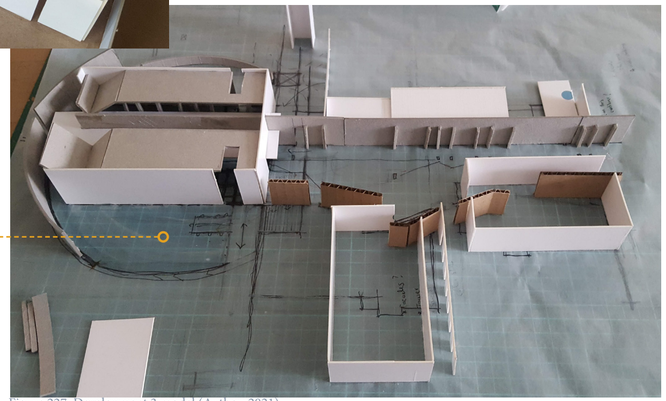


Figure 227: Development 3 model (Author, 2021).

Figure 228: Development 3 long section through the site showing the datum roof (Author, 2021).

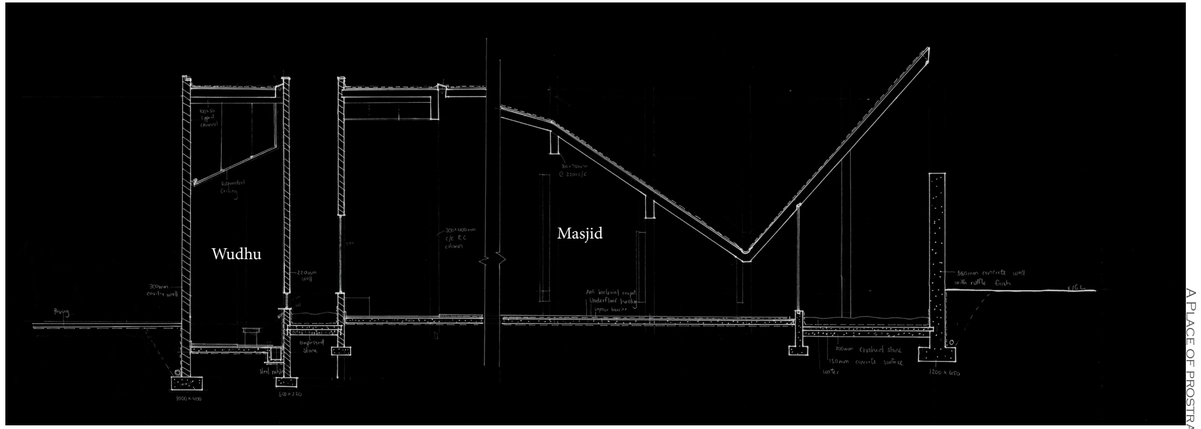


Figure 229: Development 3 section through Mosque (Author, 2021).

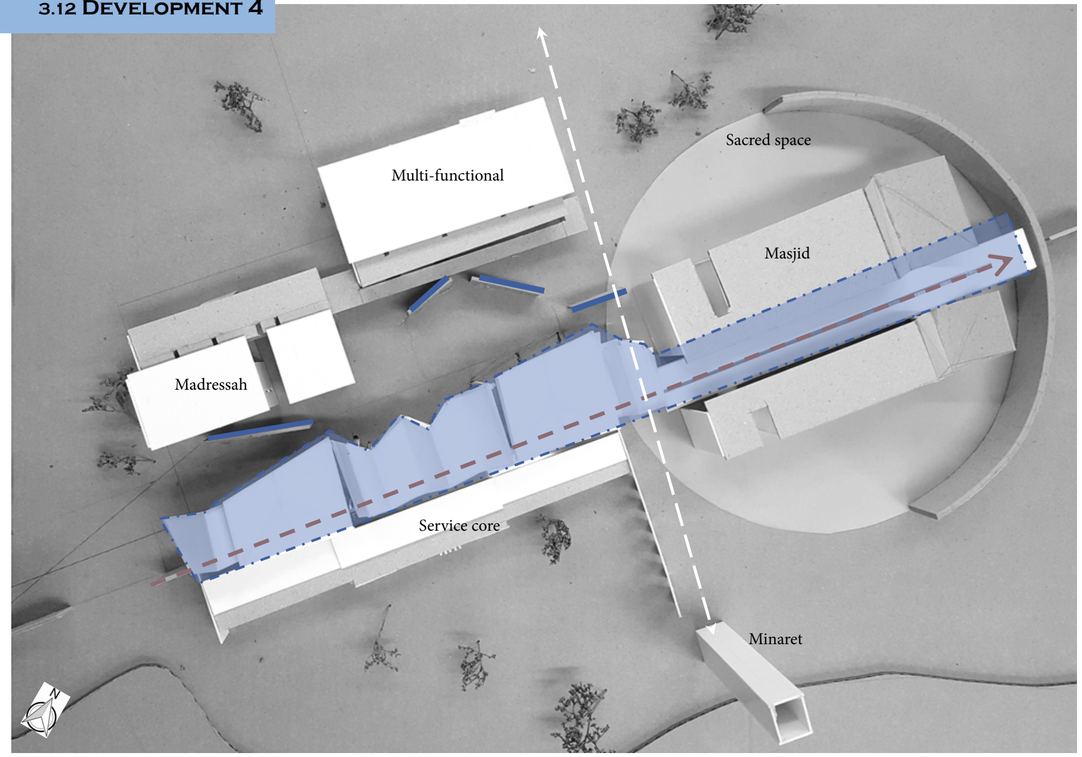


Figure 230: Development 4 model showing a larger Mosque and development of the madressah and multi-functional (Author, 2021).

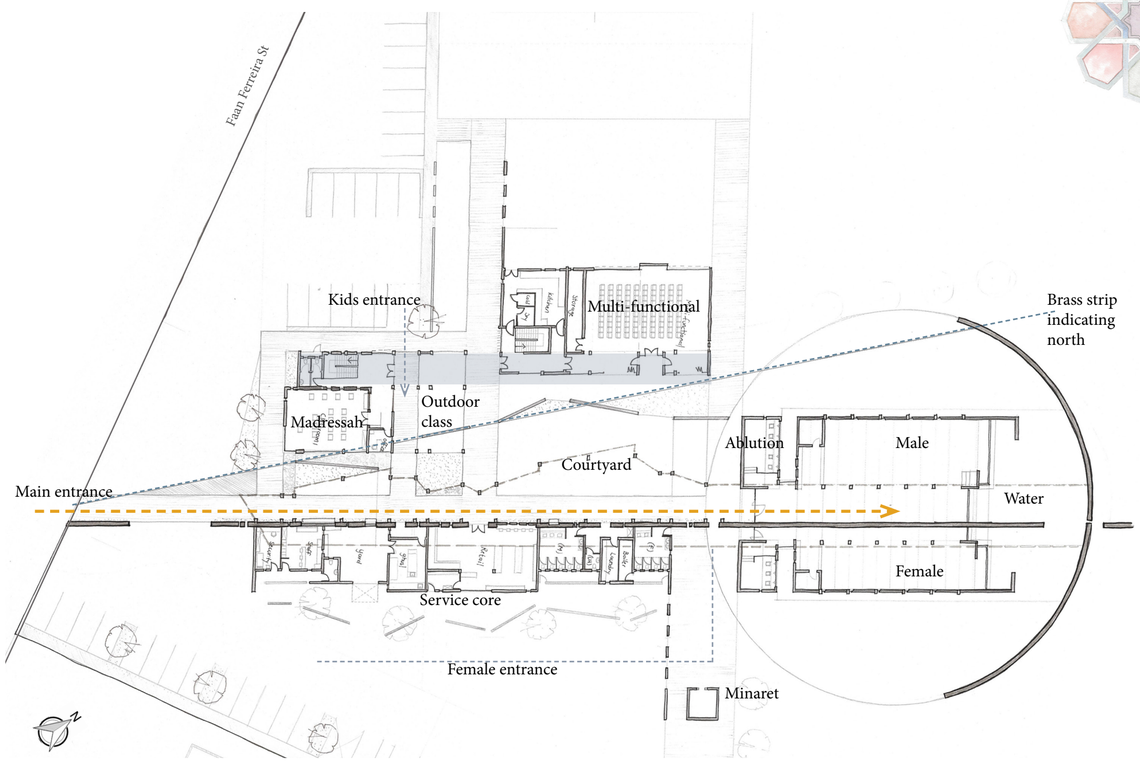


Figure 231: Development 4 floor plan (Author, 2021).

3.13 Development 5

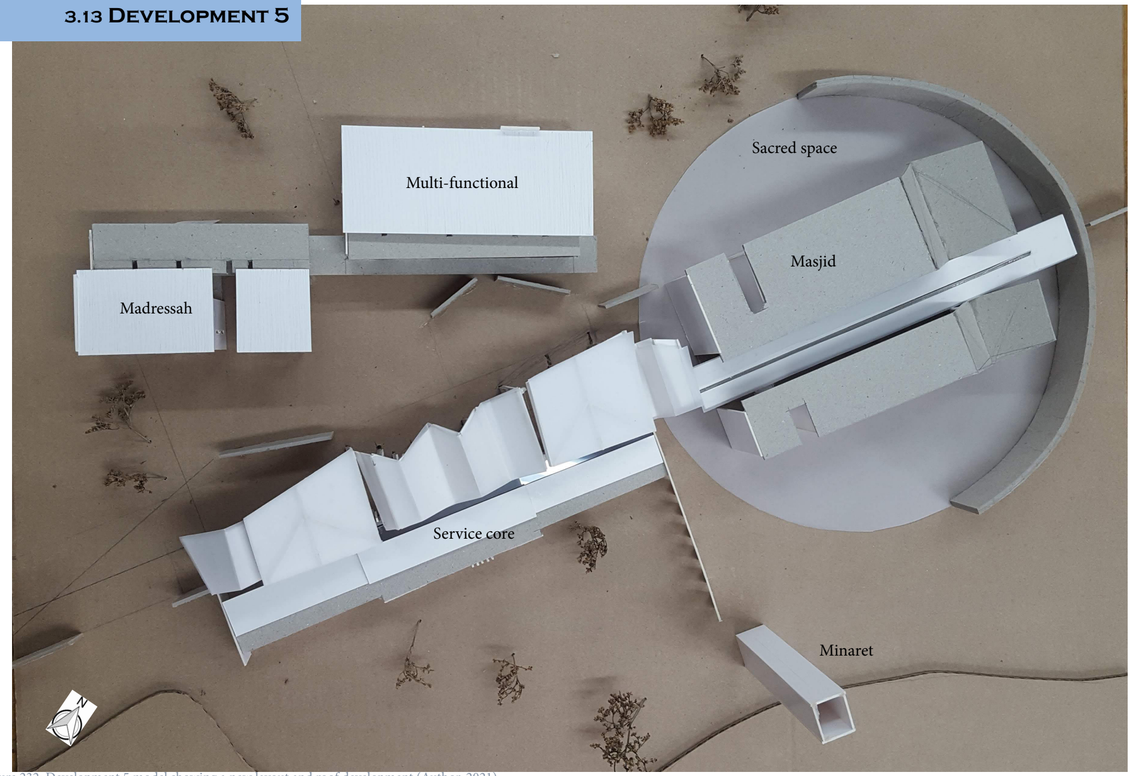


Figure 232: Development 5 model showing a new layout and roof development (Author, 2021).

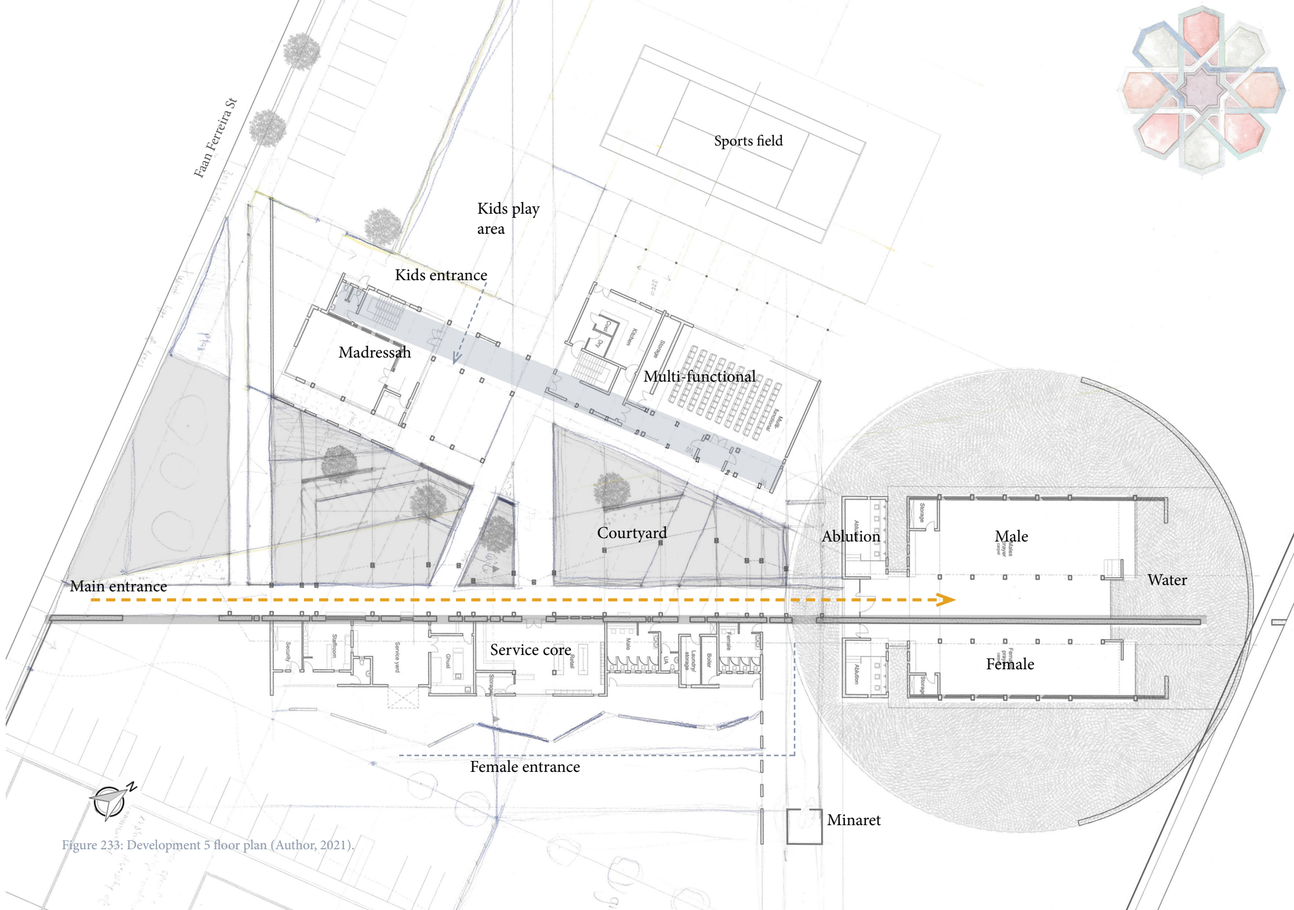
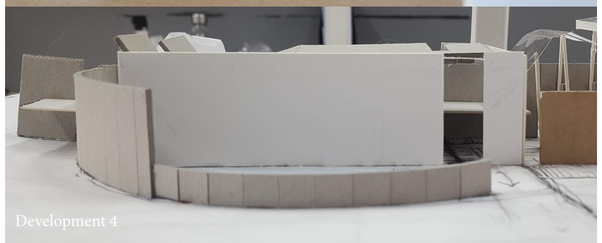


Figure 233: Development 5 floor plan (Author, 2021).



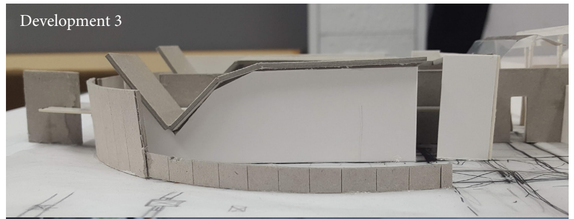


Figure 234-237: Roof development of the Masjid which expanded significantly in development 5 (Author, 2021).

3.12 Development 4

Looking at the model, all the buildings are orientated parallel to the Qibla direction once again. The madressah has developed to include an open classroom on ground floor with a raised first floor to house the office and staffroom. Due to the extreme western orientation the circulation in the school has been moved to the western side which lines up with the multi-functional circulation space. In doing so an external walkway was created that overlooks the courtyard.

The water surrounding the Mosque has also been removed due to climatic reasons and has been replaced with paving pattern and water feature that would be used on special occasions

3.13 Development 5

The main concern during the year was the lack of relation with the greater sub-urban context. As a result the madressah and multi-functional blocks were orientated parallel to the street which created a much larger public gathering space. This is ideal as there is a relationship between the Mosque that is orientated towards Mecca and the rest of the design that is orientated to fit within the existing grid.

The Mosque also expanded both in height and depth to create a more proportionate western facade.

3.14 Conclusion

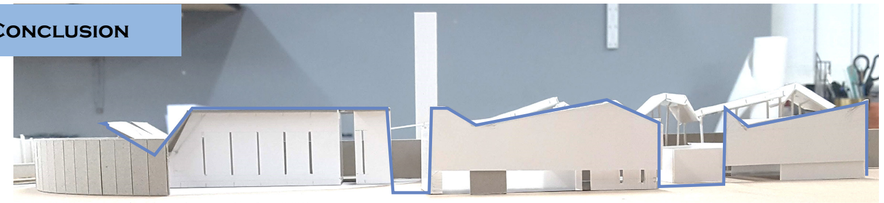


Figure 238: Western facade exploration (Author, 2021).

One of the challenges of the design was the façades development. Due to the western orientation special consideration had to be taken as well as the overall proportions in comparison to the Mosque. The figure above shows one of the options for façades that followed the pitch of the datum roof.
In the final design a more toned down facade that emphasises the vertical can be seen. This was done to enhance the long narrow strip windows in the Masjid. Overall the façades on both the eastern and western side were designed in a way so as not to distract from the Masjid.

Even though the eastern facade is considered as the service core it was treated as a main public space as most females will enter the Masjid from that side.

Figure 239: Development 5 section through the main circulation walkway (Author, 2021).

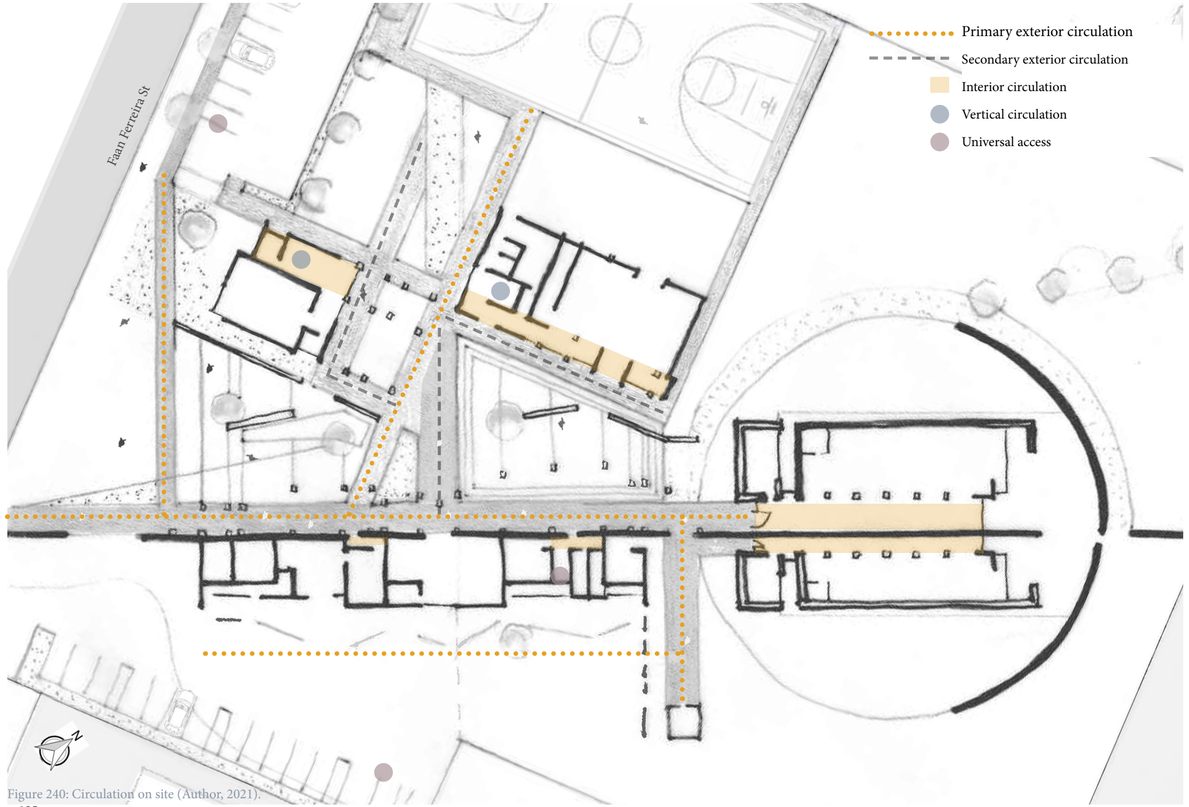


Figure 240: Circulation on site (Author, 2021).

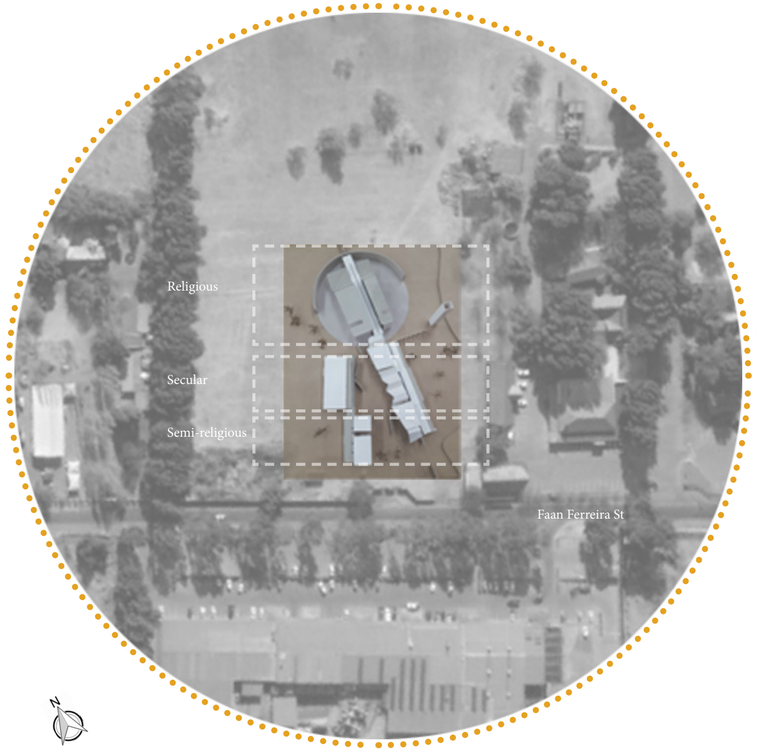


Figure 241: Development 5 - model on site as seen from above (Google maps, 2021: adapted by author).

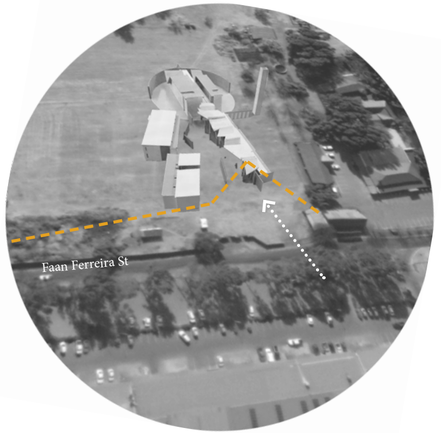


Figure 242: Development 5- model on site showing entrance and public space (Google maps, 2021: adapted by author).

Both of the models indicate the way that the new design intervention relates to the context. As a response to the neglected pedestrian and public space on the street, the design opens up with a public plaza that funnels people into the main gathering space close to the retail and community hall.

The retail space caters for the Muslim community in terms of halal meat, groceries and a small deli that adds economic value to the Masjid. In terms of community retail opportunities, markets and outreach activities will be held in the courtyard and public space monthly.

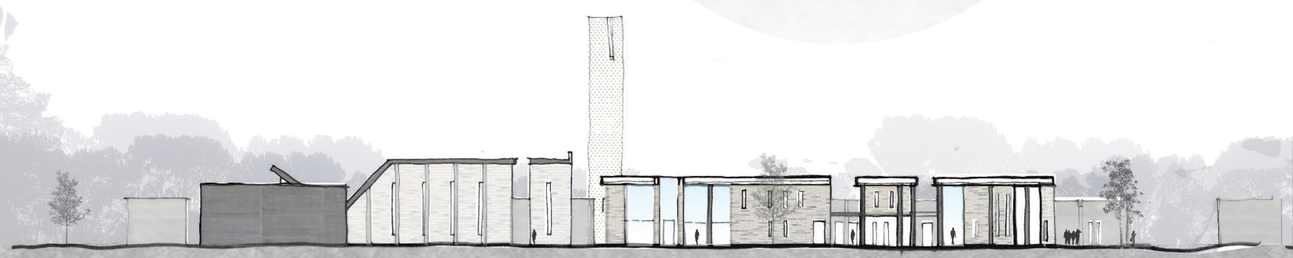


Figure 243: Western Elevation (Author, 2021).

0 3 5 10 15 25

Figure 244: Eastern Elevation (Author, 2021).

0 3 5 10 15 25

Figure 245: Ariel view of the model from the western side (Author, 2021).

Figure 246: Ariel view of the model and the entrance (Author,2021).

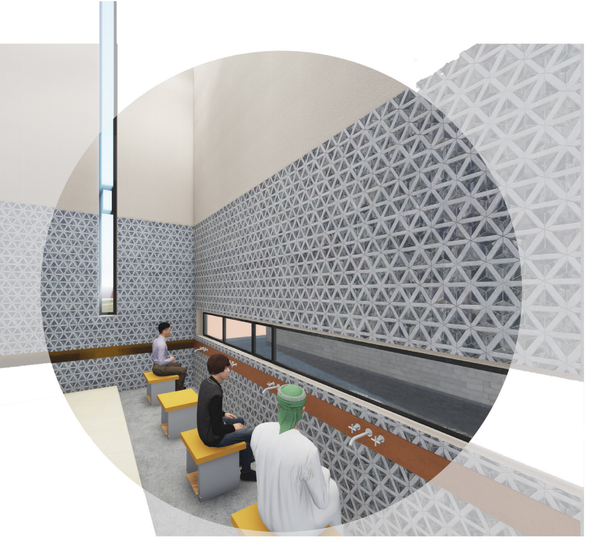


Figure 247: Render of wudhu and ablution space (Author, 2021).

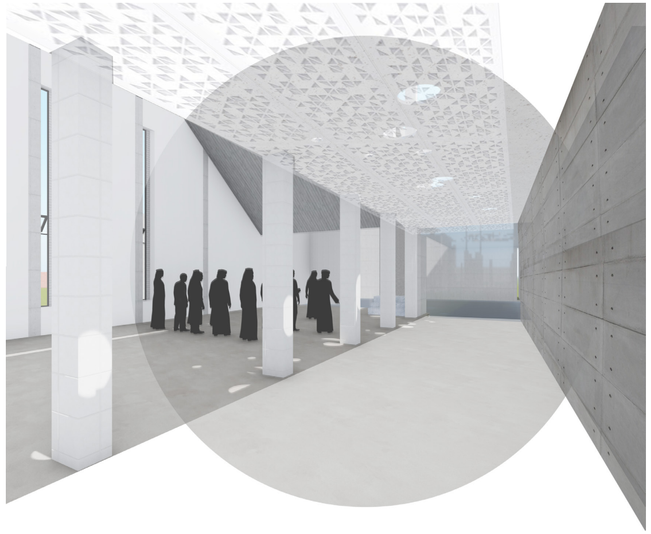


Figure 248: Render of the Mosque as seen from entrance (Author, 2021).

Figure 249: Interior render of the Masjid as seen from the front (Author,2021).

Figure 250: Kids play area and entrance to madressah (Author, 2021).

Figure 251: Main circulation and public space (Author, 2021).

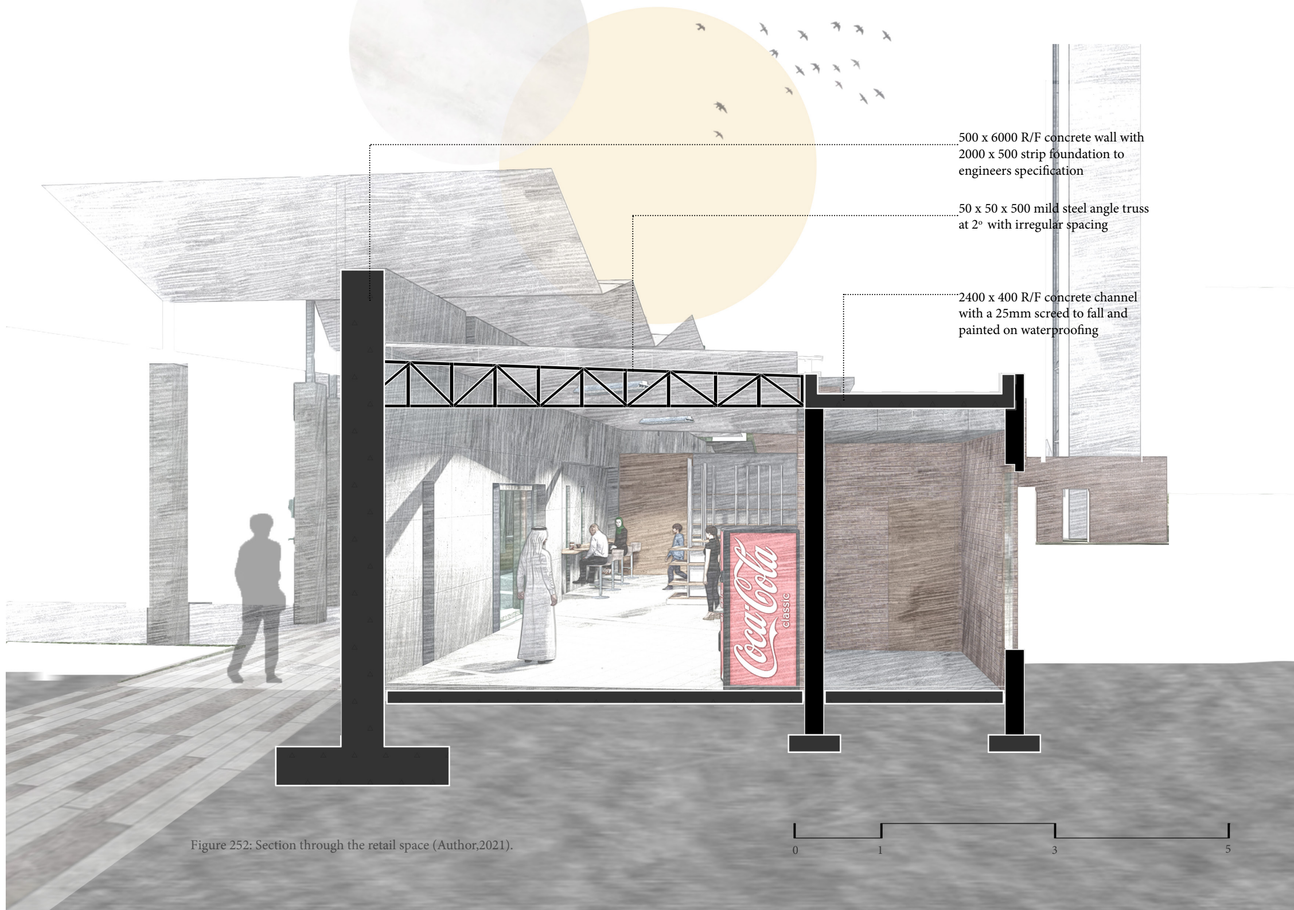


Figure 252: Section through the retail space (Author,2021).

Part 4 - Synthesis




Part 4 - Synthesis

4.1 Final Design
4.2. Final Model

The Masjid plays a significant role in the Muslim community and this intervention aims to show how the space is a synthesis of religious, recreational and educational facilities. In the final design these three elements will be explored within the complex which aims to uplift the community and provide a platform for religious and secular activities.

4.1 Final design

Education

Salah

Community

1. Pretty Gardens Lifestyle Centre
2. Quest Gym
3. Real beds Bloemfontein
4. Staffordshire
5. Recon Thatchers
6. Turf-Ag Irrigation
7. Western Shop Bloemfontein
8. Grinter Butcher

9.Bloempark Nursery
10. The Park Wheels
11. Awerbuchs
12. Welcome supermarket
13. Bloem Caravan

Nelson Mandela Drive

Faan Ferreira St

Qibla

Location plan

Figure 253: Perspective render of the entrance and public plaza (Author, 2021).

1. Males prayer area
2. Females prayer area
3. Ablution

4. Bathroom
5. Retail
6. Ghusl
7. Maintenance
8. Security office

9. Courtyard
10. Classroom
11. Multi-functional hall
12. Kitchen
13. Office
14. Multi-functional sports field
15. Kids play area
16. Parking
17. Public square
18. Minaret
19. Service yard
20. Water

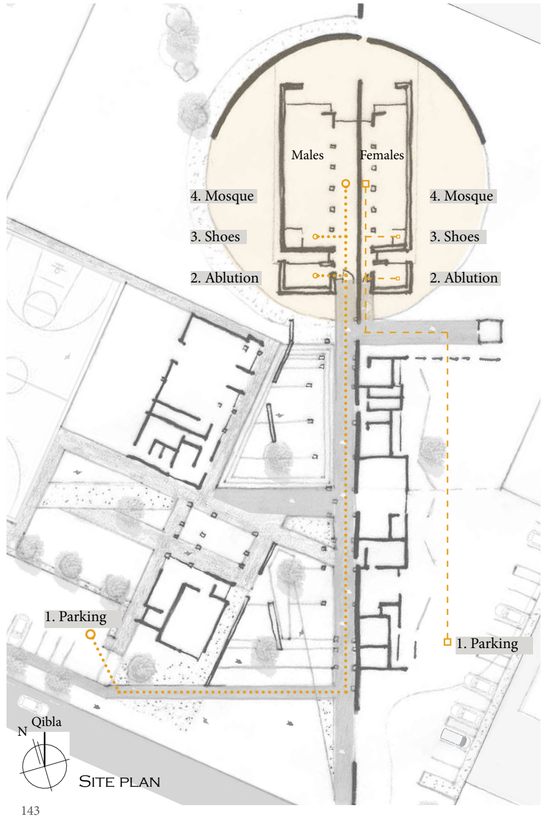
Faan Ferreira St

Qibla

N

SITE PLAN

0 3 5 10 20 25



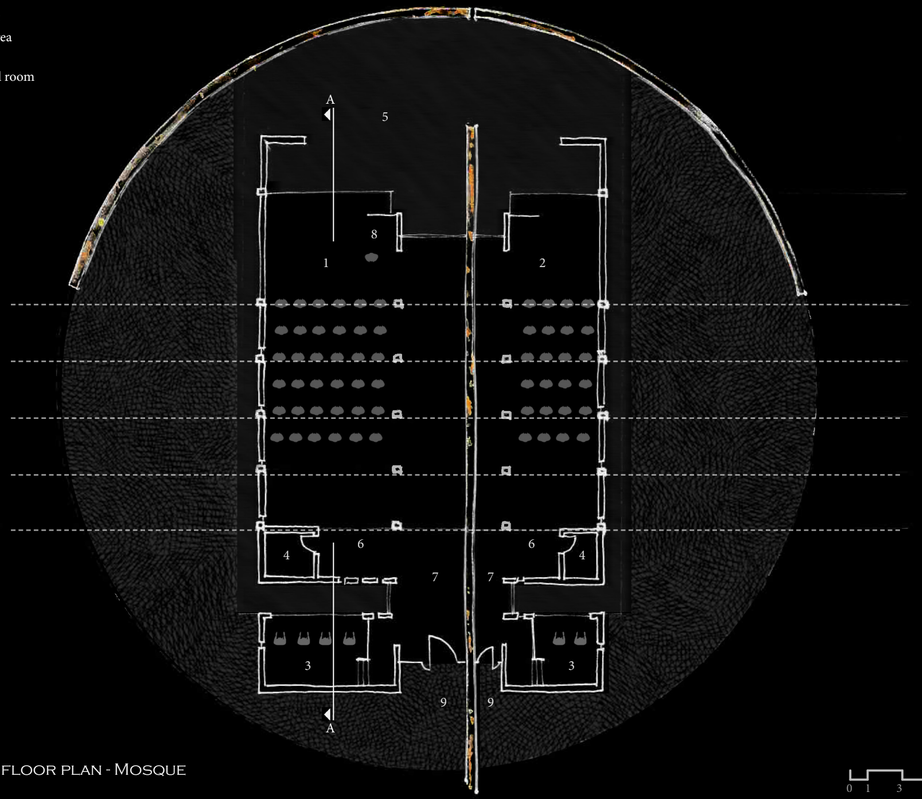
SITE PLAN

Figure 254: seating along the Mihrab wall (Author, 2021).

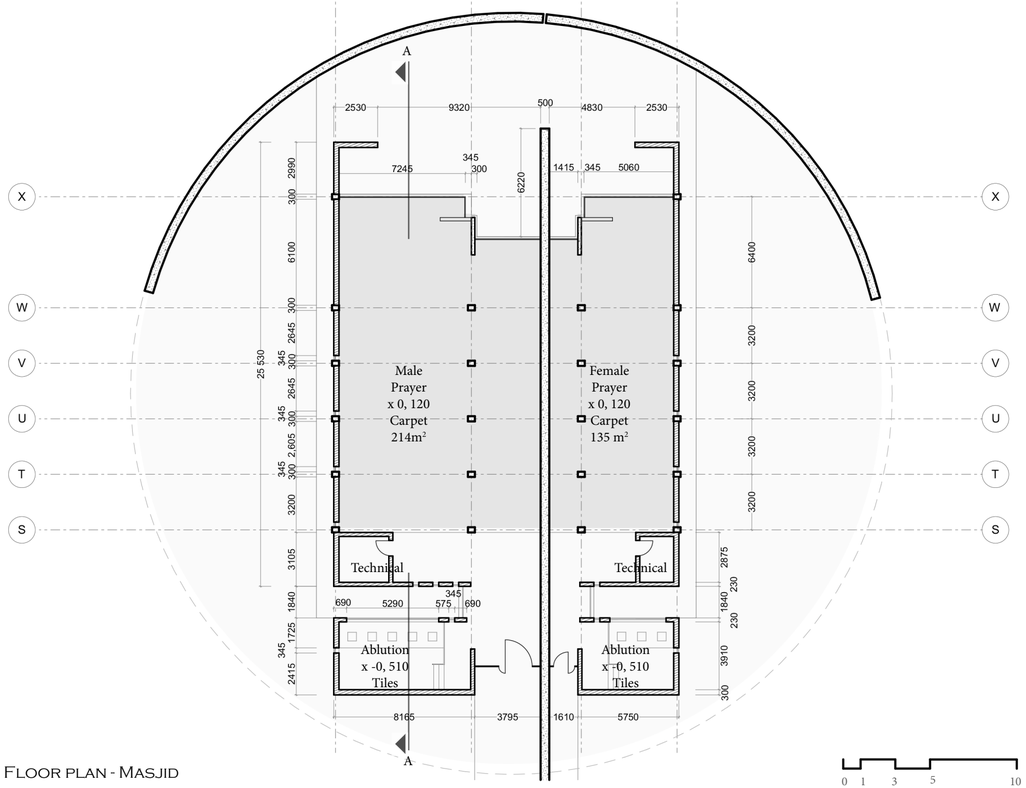
Route - females

Route - males

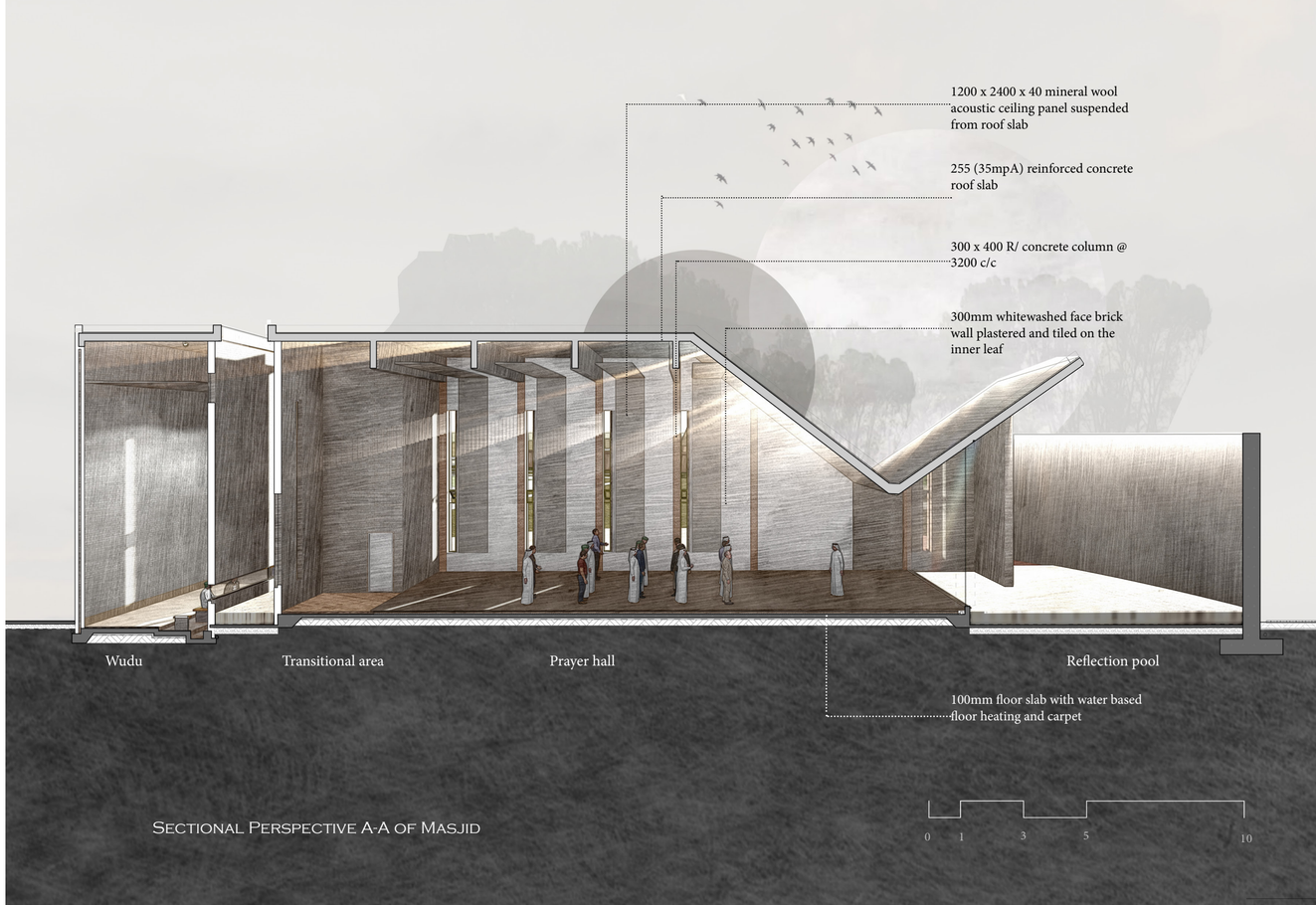
1. Males prayer area
2. Females prayer area
3. Ablution
4. Storage/ technical room
5. Water
6. Shoe racks
7. Circulation
8. Mimbar
9. Entrance



GROUND FLOOR PLAN - MOSQUE



Floor plan - Masjid



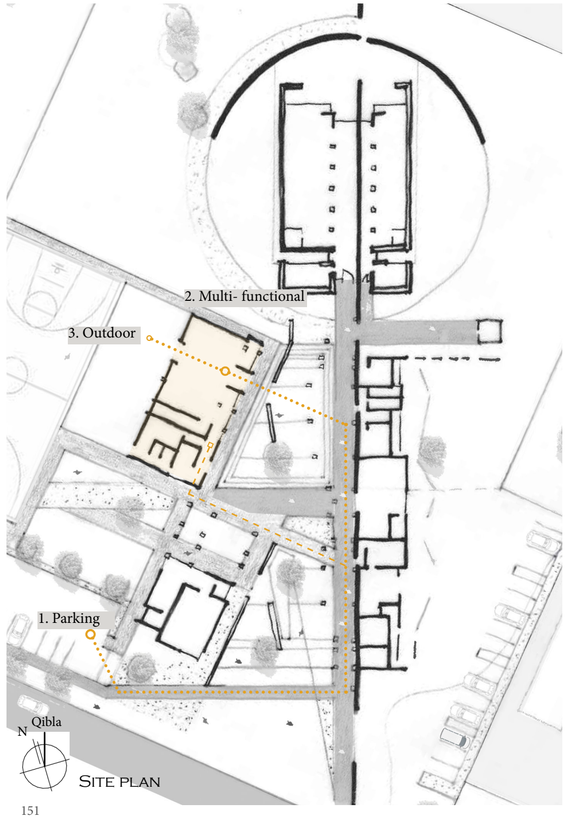
Sectional Perspective A-A of Masjid

Figure 255: Render of wudu area and transitional space before entering the main prayer area (Author, 2021).

Figure 256: Render of the interior of the Masjid and roof (Author, 2021).

Figure 257: Perspective of the Masjid facade and reflection pond as seen from the male prayer area(Author, 2021).

Figure 258: Render of the courtyard and datum roof (Author, 2021).



SITE PLAN

Figure 259: View of the Madressah from the parking (Author, 2021).

Route - Community service kitchen & staff office

Route - Community hall

1. Multi-functional hall
2. Storage
3. Kitchen
4. Cold storage
5. Dry storage
6. Service yard
7. Courtyard
8. Library
9. Gallery
10. Boardroom
11. Imam office
12. Breakaway
13. Double volume
14. Vertical circulation

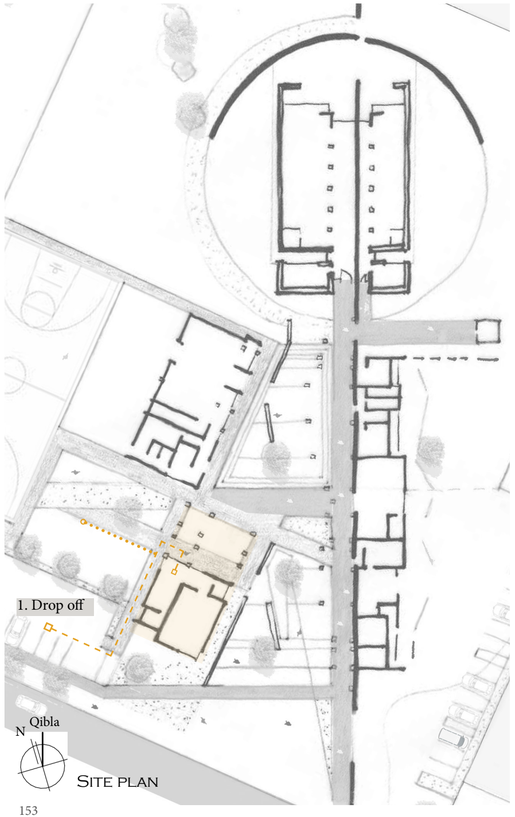
Madressah

N
Qibla

GROUND FLOOR PLAN - MULTI-FUNCTIONAL

FIRST FLOOR PLAN

0 1 3 5 10



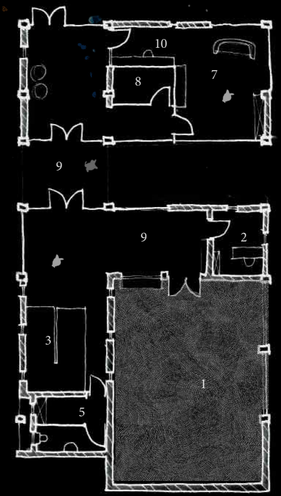
SITE PLAN

Figure 260: Main entrance and datum roof (Author, 2021).

Route - Madressah kids

Route - Play area and waiting space

1. Classroom
2. Office
3.Vertical Circulation
4. Bathroom- Students
5. Bathroom- Staff
6. Outdoor classroom
7. Staffroom
8. Storage
9. Circulation
10. Printing
11. Entrance
12. Kids play area

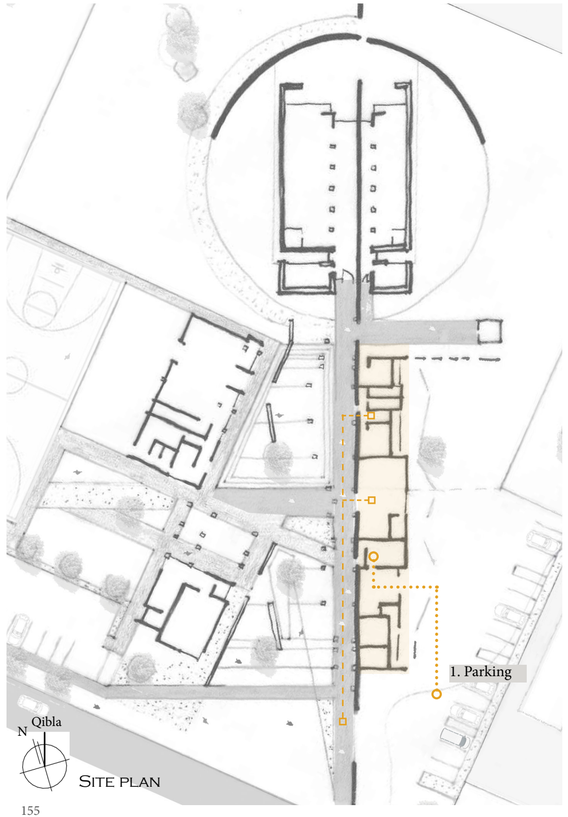


N Qibla

GROUND FLOOR PLAN - MADRESSAH

FIRST FLOOR PLAN

0 1 3 5 10



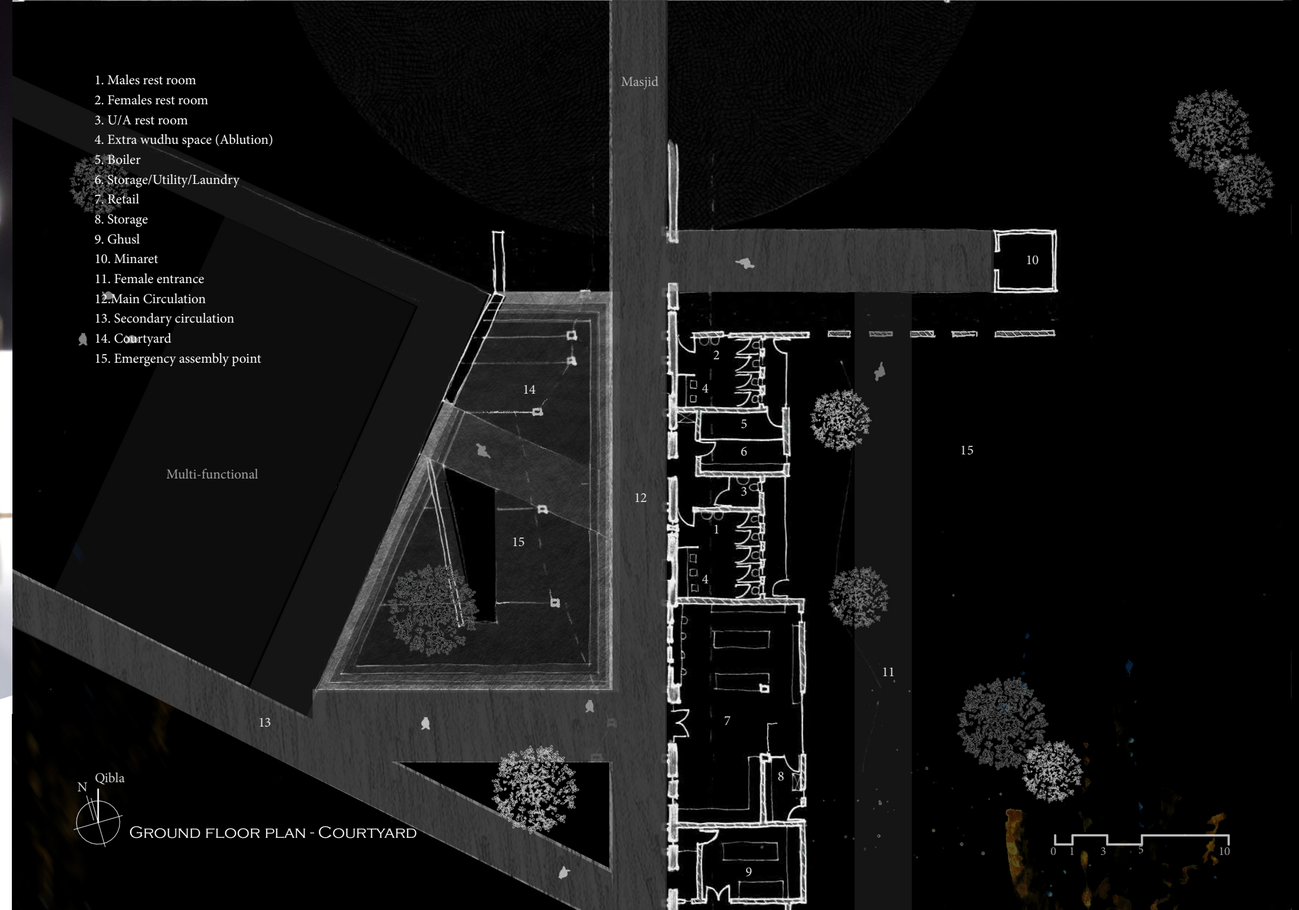
SITE PLAN

Figure 261: Direct visual axis created by new walkway (Author, 2021).

Route - Retail and bathrooms

Route - Body preparation

1. Males rest room
2. Females rest room
3. U/A rest room
4. Extra wudhu space (Ablution)
5. Boiler
6. Storage/Utility/Laundry
7. Retail
8. Storage
9. Ghusl
10. Minaret
11. Female entrance
12. Main Circulation
13. Secondary circulation
14. Courtyard
15. Emergency assembly point



GROUND FLOOR PLAN - COURTYARD

Figure 262: Perspective of the female entrance and minaret (Author, 2021).

1. Males rest room
2. Extra wudhu space (Ablution)
3. Retail
4. Storage
5. Ghusl
6. Service yard
7. Female entrance
8. Maintenance staffroom
9.Security office
10. Parking
11. U/A parking
12.Main Circulation
13. Secondary circulation
14. Public Square
15. Courtyard
16. Emergency assembly point

Madressah

Qibla

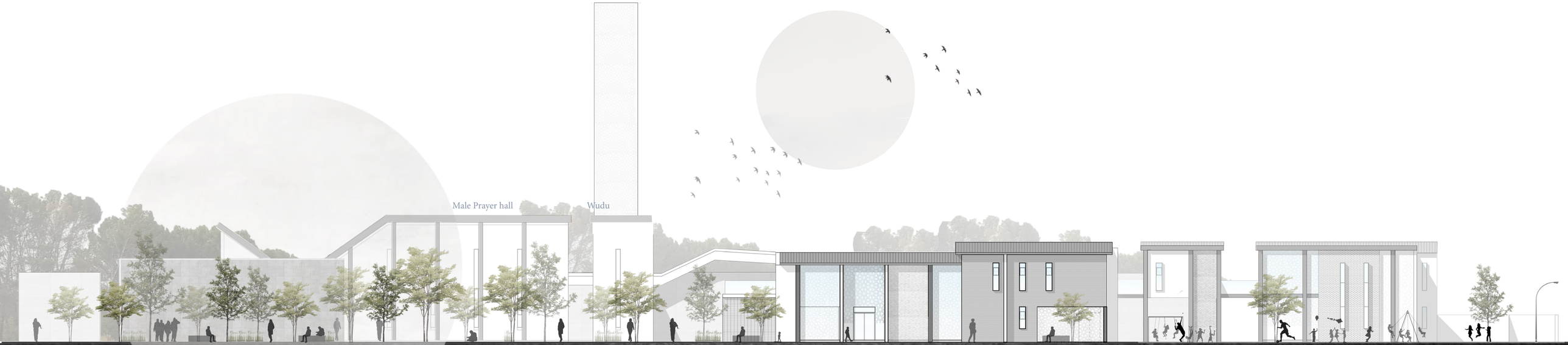
N

GROUND FLOOR PLAN - PUBLIC PLAZA

0 1 3 5 10

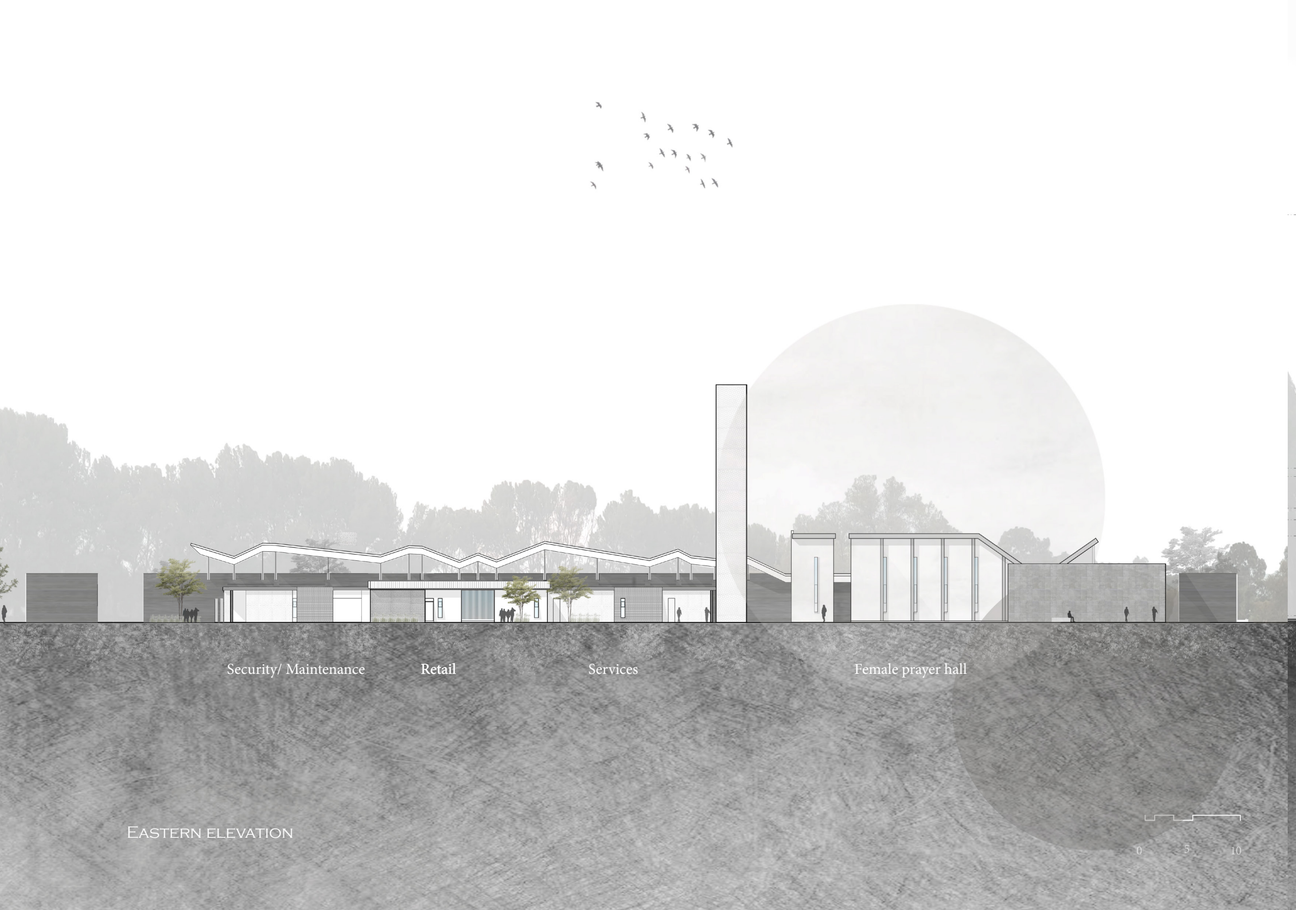
Section B-B of main walkway

0 1 3 5 10

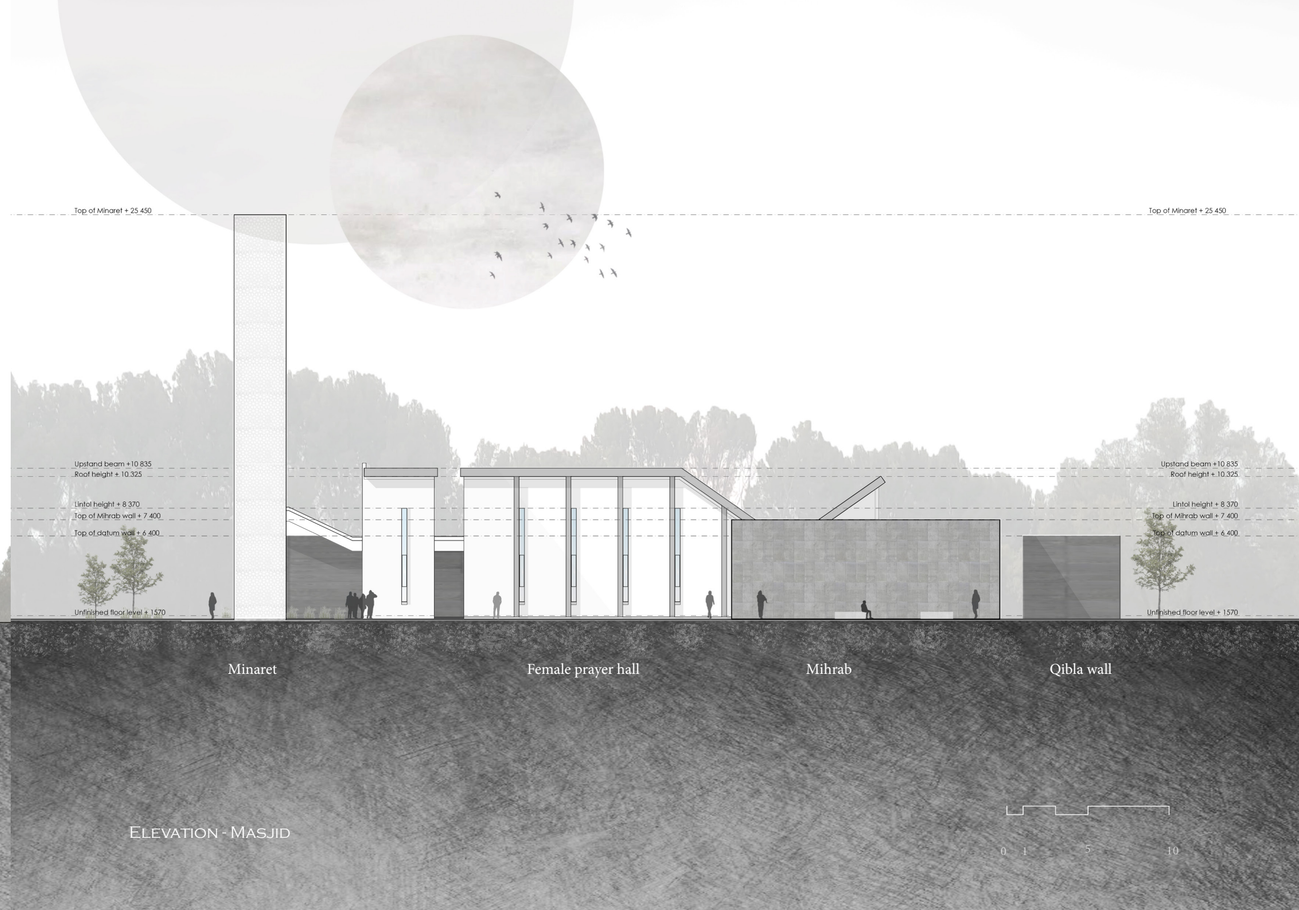


Western elevation

0 1 3 5 10



Eastern elevation



Elevation - Masjid

4.2 Final Model

Figure 263: Ariel view of the model from the western edge of the site (Author, 2021).

Part 5 -Reflection




Part 5 - Reflection

5.1 Conclusion

With the words As-Salaam-Alaikum the Salah comes to an end and we are brought back to the present reality of the world. This transition has a lasting impact that allows us to focus on the spiritual world and reflect on our lives.

From the inception of the project, the idea was to create a Masjid that combined a variety of functions specifically for the city, so that the complex ultimately becomes an Islamic Centre. As a result, the site that was chosen was ideal not only for its location in a suburban area but also for its accessibility and open space.

Traditional elements and rituals were interpreted in an abstract manner which resulted in a non-stereotypical Masjid. From afar the design appears as an interesting addition to the context due to its strong from giving but, upon closer inspection it integrates with the surroundings and enriches the public space in the area.

Even though many principles from the first development are present in the final design, many changes were made and experimented on to achieve the final design that managed to harmoniously bring together the religious and the context. This fusion is united by the datum roof which evolved over the course of the year and which ultimately defines the project.

5.2 Project Summary

Islam is an ancient religion that is centred upon 5 pillars, of which praying is the second most important. Muslims are instructed to pray 5 daily salah as a means of entering paradise making the Mosque a significant religious space in any Muslim community. The word Masjid translates to a place of prostration in Arabic which perfectly captures the climax of the ritual and the basic functional needs of the space.

The Muslim community has grown significantly over the years and is composed of a diverse demographic of people who are settled throughout the city. As a result, a small survey was conducted to assess the ethnicity, area of settlement and country of origin of the community . This data was cross-referenced with the existing prayer spaces in Bloemfontein to choose an appropriate site.

Currently, there are 8 prayer facilities in the city of which 2 are fully functioning Masjids located in the central CBD and Heidedal, however, these are not enough to serve the whole community, a distance from where many people reside. The architectural language of the spaces is rather disappointing and doesn't offer much contextual value to the new design. Consequently, a site on the periphery of LangenhovenPark park was chosen for its large open space, proximity to the main road or Nelson Mandela drive, the N1 and the new Muslim cemetery in Bainsvlei. The site is surrounded by open land in the north, 2 retail complexes on the west and south and large pine trees that border the western edge. The area is a mix of commercial and residential development that is to be fully developed by 2024.

From the inception of the design, the focus was placed on universal traditions and values deeply rooted in Islam as a means of unifying the cosmopolitan community. Similarly, the touchstone engaged with the idea of tradition vs. context with the various components that culminated in this green ink that solidified in the metaphorical context. This solidification revealed how the new design will be incorporated into the context while still keeping its distinct religious identity. Alien attunement best describe this and forms part of one of the three concepts of the design.

The other concepts include typological purification and choreographing the divine stage which was portrayed as an interlocking model inspired by Islamic geometric patterns.

Islam does not dictate the style of the Masjid and as a result, the Mosque has evolved from the simple structure of the Prophets Mosque to a monument influenced by centuries of religious integration worldwide. However, certain elements are necessary within the Masjid such as the Mihrab, Mimbar, Qibla and wudu space which have been reinterpreted in the design. Historically the role of the Masjid formed a vital part of the city fabric and was a point of gathering, politics and administration for the community, thus numerous functions were incorporated. This proposal aims to incorporate religious, educational and recreational functions to create a dynamic Islamic centre for Bloemfontein.

Rituals lie at the core of any religion and the Masjid is centred around the ritual of salah and wudu. Salah is a choreographed ensemble of movements, gestures and supplications that is performed at certain intervals in a congregation or individually. Wudu on the other hand refers to the purification and cleansing required to perform salah. Conceptually these rituals convey the central themes of purification, unity and harmony prevalent in Islam.

The question that can then be asked is
How can the ritual, gesture and choreography of salah be used to inform a contemporary Masjid, for a diverse group of Muslims settled in Bloemfontein?

How can new concepts be extracted from the ritual of salah without fully resorting to stereotypical forms that are associated with Mosque architecture as a response to the diverse Muslim population?

There is a tangible link between religion and orientation in Islam created by the Qibla. This manifests itself as a strong linear axis and datum that anchors and orientates the design on site. Typically, the qibla is also emphasised by the use of the Mihrab which is a small semi-circular niche in the front wall of the praying area in the Masjid.

Figure 264: Ariel view of model at night showing the light emanating from the Minaret (Author, 2021).

Figure 265: Perspective of complex as seen from across the street (Author, 2021).

In the design proposal, this was amplified on the outside of the Masjid by a in situ concrete wall that encircled both the male and female praying areas and created a circular stage atop which the Mosque sits.

Looking back at the research question what does the ritual of salah offer to further develop this place of prostration. Hand gestures form a significant part of many religious rituals and in the case of salah these movements don't have a specific meaning, but they form an integral part of the overall ritual experience. These rhythmic and repetitive motions were conceptually interpreted creating a two-dimensional image. This was extruded to create a series of connected pitched roofs that unfolded along the linear axis mentioned above. The graph also inspired the structural grid that informed a large portion of the design.

To integrate both the alien and context the new grid weaved itself within the existing suburban grid which draws the visitor into the complex while also enriching the public life on street level which is currently non-existent. The overall site is divided into three zones from semi-religious, secular to religious and while the thresholds are blurred by the gathering spaces, the threshold to the mosque is amplified by its blank entrance façade. In turn, this secludes the space and creates a sanctuary for praying and introspection.
Approaching the site from the parking, the visitor is welcomed by the continuous datum roof and central walkway which is framed by a 5m high reinforced concrete wall and irregularly space columns. This is reminiscent of historic hypostyle Mosques and creates a direct visual axis to the Masjid.

Souks and markets were a vital feature of historic Islamic cities and were often characterised by central spines and strong roof silhouettes that guided shoppers from stall to stall. A similar approach was incorporated on the central walkway that branches of towards the Madressah, multi-functional hall and recreational outdoor spaces on the right and the service core and retail area which is accessed through the datum wall. From above the edge of the datum roof protrudes to emphasise the main gathering spaces. As a result, a series of 5 free-standing fibre cement screen walls of varying heights mimics this pattern on ground level which contrast the linearity of the datum wall.

Proceeding back to the central walkway, the path is flooded by light that filters through the geometrically patterned ceiling panels and guides the visitor into the Masjid.
Upon entering, the prayer area is set back allowing space for a detached ablution block that is concealed from view and for people to take off their shoes. This separation allows one to mentally prepare themselves for salah and is articulated by two walls parallel to the entrance façade that gives one a glimpse of the outside and water features surrounding the Masjid.

Moving into the carpeted prayer space, one's eyes are drawn to the exposed concrete roof that mimics the final hand gesture in salah and the act of prostration which is supported by 5 columns uniformly spaced at 3,2 meters, the length of two prayer rugs. Aside from this grand gesture, the spatial quality is introverted with minimal ornamentation to allow one to fully focus on the ritual. Narrow windows and acoustic panels line the side walls with a pool of water that reflects natural light during the day.

Female congregants have a similar experience within the Masjid; however, they have an alternate entrance on the on the right of the datum wall. The Minaret was strategically placed to articulate this entrance and acted as a threshold between the service core and the Masjid. Although a common feature in Mosques, the minaret is seldomly used today, rather it creates a strong vertical axis and becomes a point of hierarchy in the landscape.

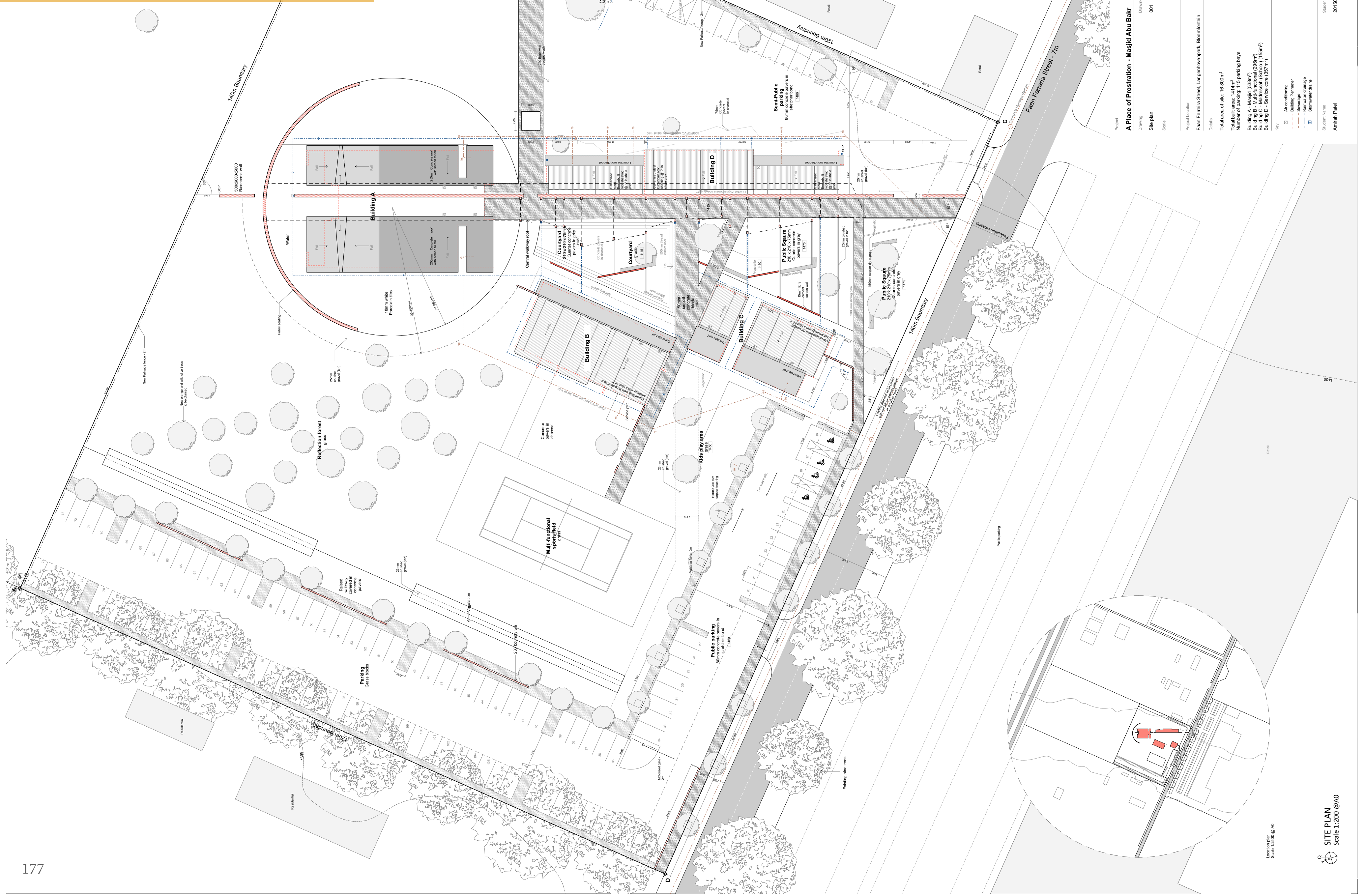
The Madressah and multi-functional hall follow the suburban grid, and create a porous threshold between the outdoor recreational actives and the public gathering space. To integrate all the zones on-site, the vertical rhythm of the masjid extends to the rest of the façades which also incorporates geometric screens to address the western orientation.

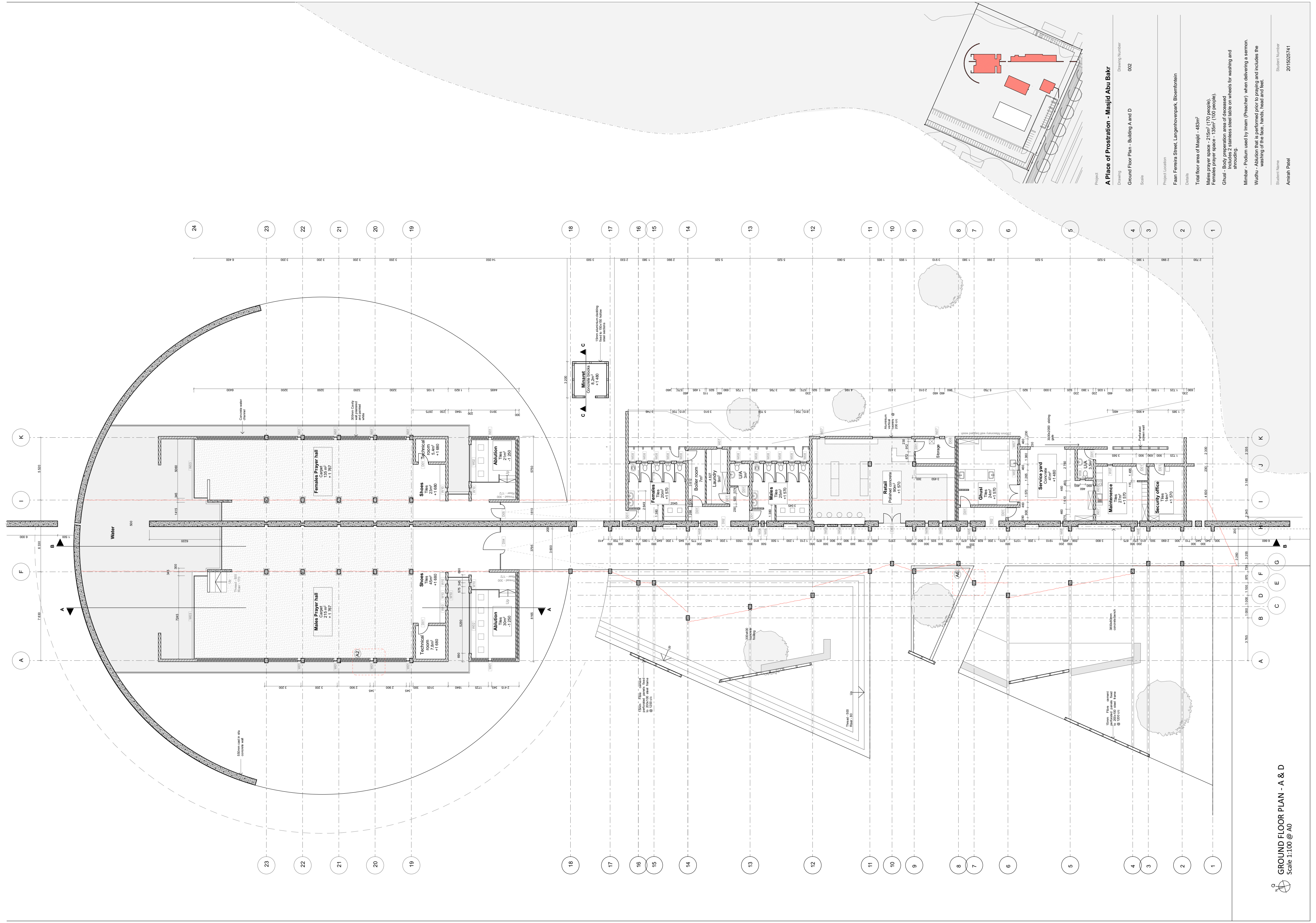
Overall, the design is a combination of the various materials and structures found in the area which has been enhanced by the white rendering that characterises the complex. In this way, a harmonious balance between the alien and context is achieved.

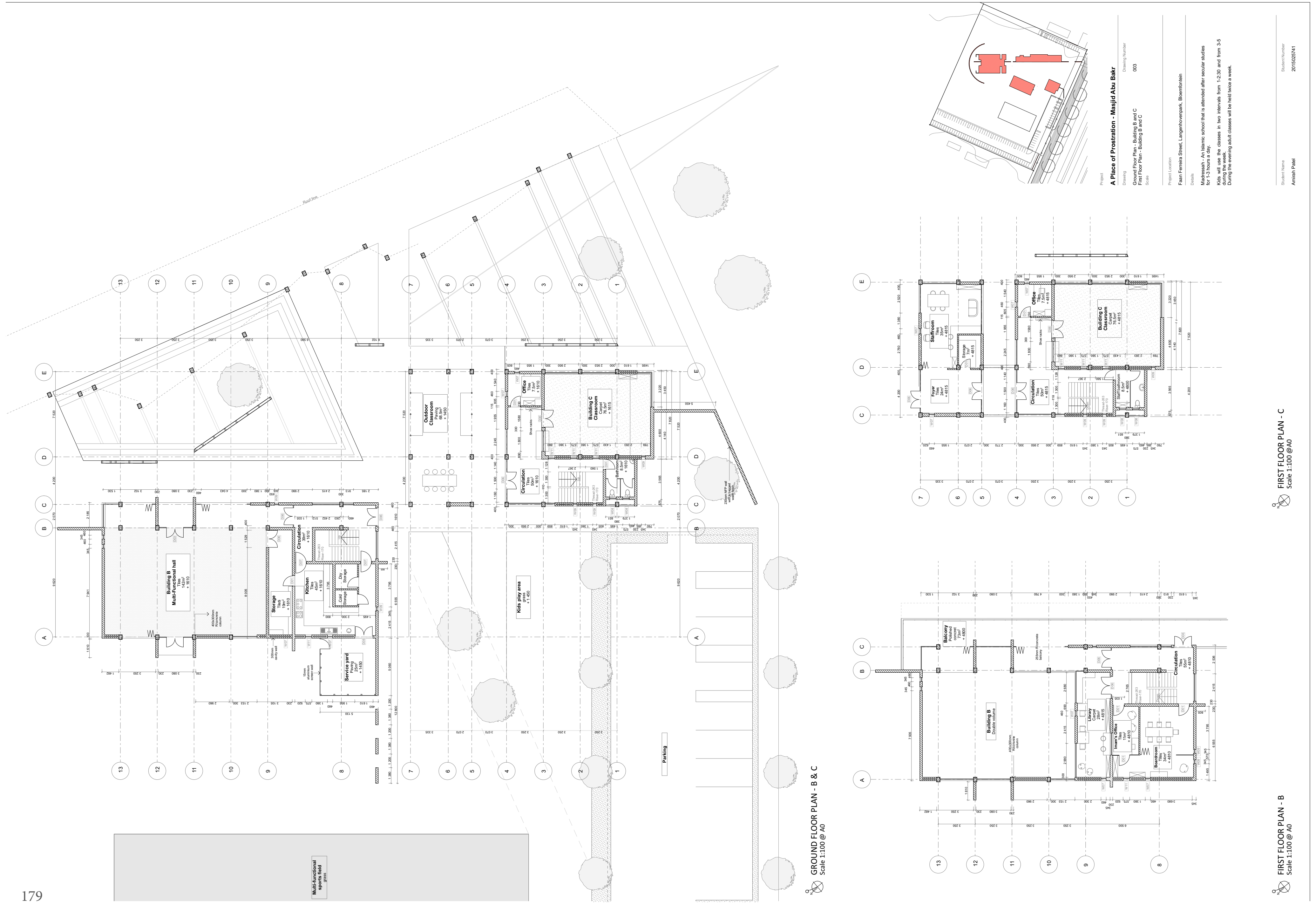
Appendix



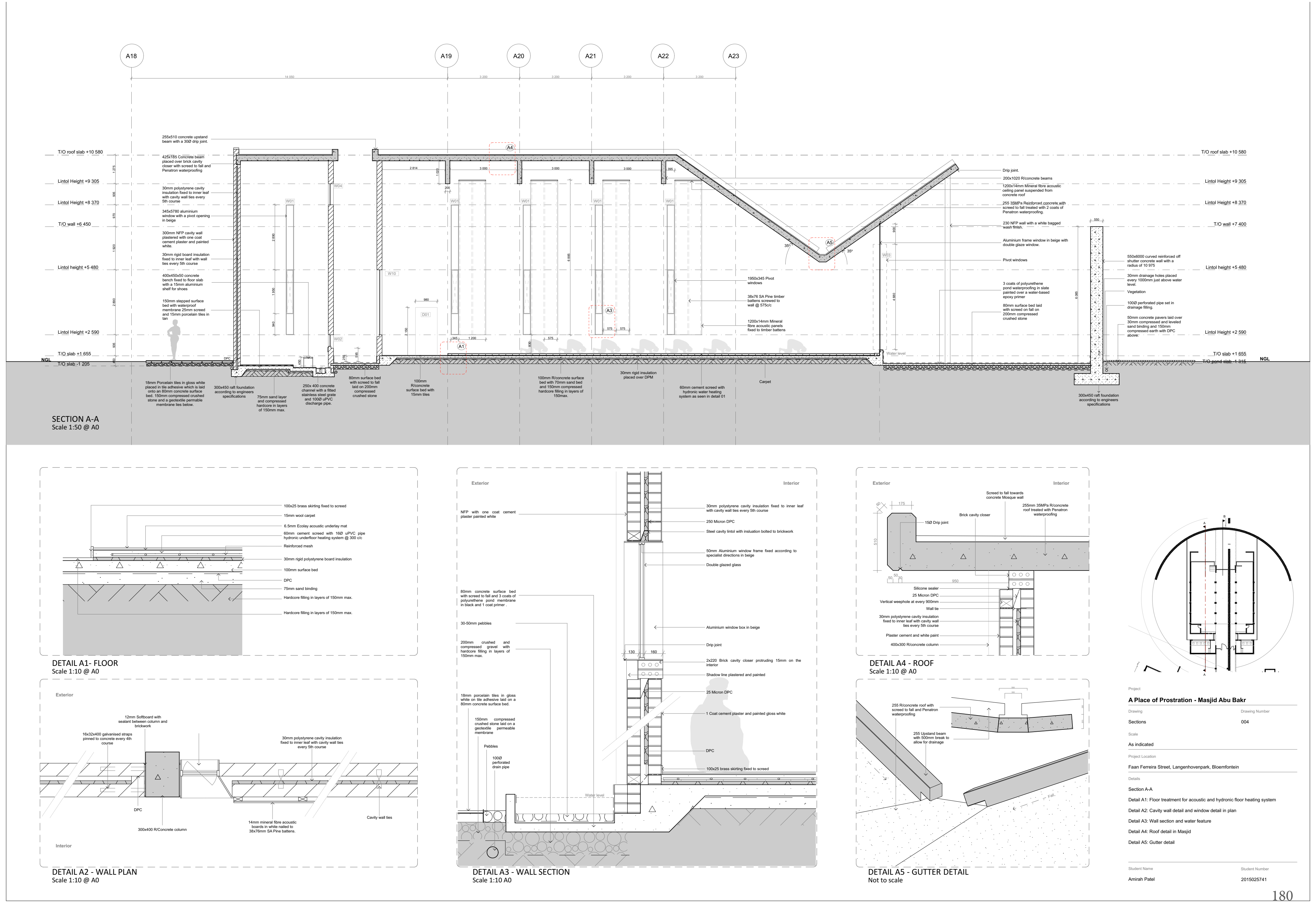

Appendix A



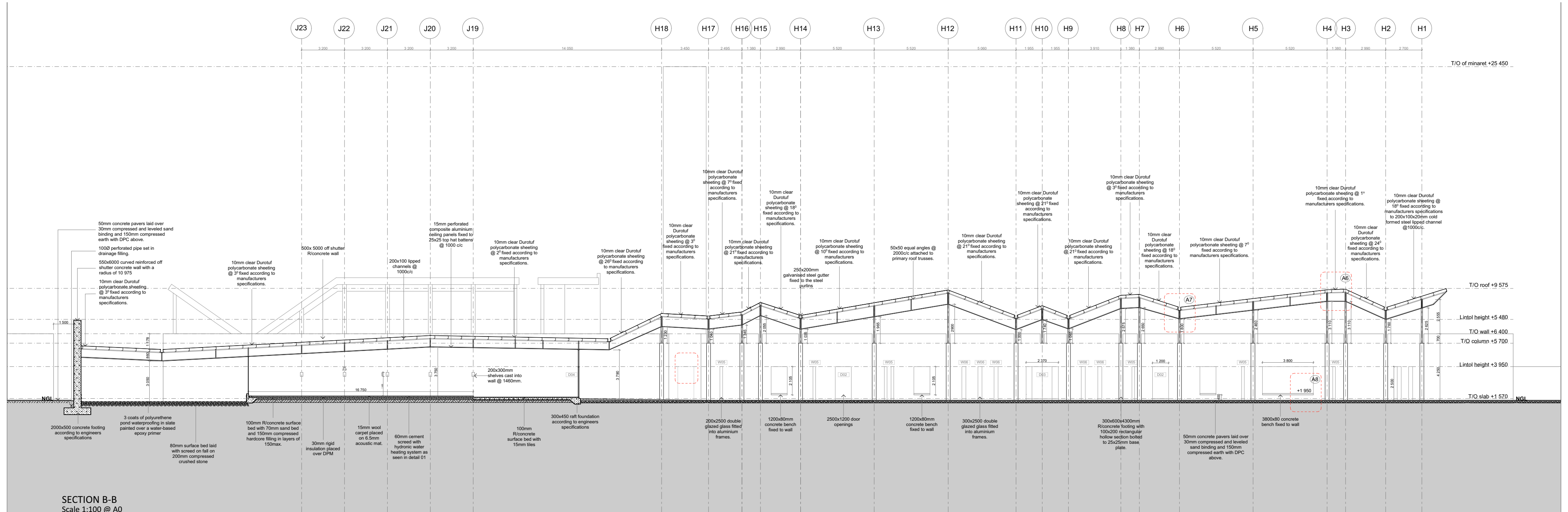




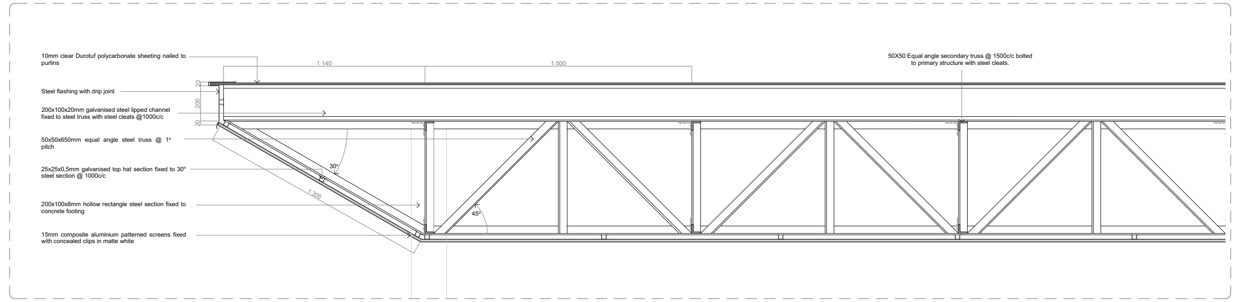
A Place of Prostration - Masjid Abu Bakr
GROUND FLOOR PLAN - B & C
Scale 1:100 @ A0
FIRST FLOOR PLAN - C
Scale 1:100 @ A0
FIRST FLOOR PLAN - B
Scale 1:100 @ A0



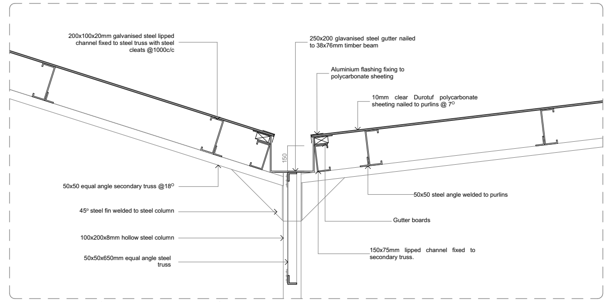
A18
A19
A20
A21
A22
A23
SECTION A-A
Scale 1:50 @ A0
DETAIL A1- FLOOR
Scale 1:10 @ A0
DETAIL A2 - WALL PLAN
Scale 1:10 @ A0
DETAIL A3 - WALL SECTION
Scale 1:10 @ A0
DETAIL A4 - ROOF
Scale 1:10 @ A0
DETAIL A5 - GUTTER DETAIL
Not to scale
A Place of Prostration - Masjid Abu Bakr
Sections
004
As indicated
Faan Ferreira Street, Langenhovenpark, Bloemfontein
Section A-A
Detail A1: Floor treatment for acoustic and hydronic floor heating system
Detail A2: Cavity wall detail and window detail in plan
Detail A3: Wall section and water feature
Detail A4: Roof detail in Masjid
Detail A5: Gutter detail
Aminah Patel
2015025741



SECTION B-B
Scale 1:100 @ A0



DETAIL A6- CENTRAL WALKWAY ROOF
Scale 1:10 @ A0



DETAIL A7 - CENTRAL WALKWAY GUTTER
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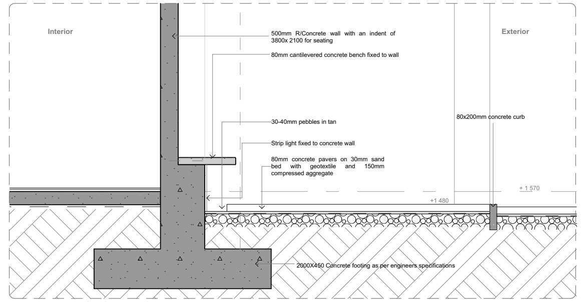
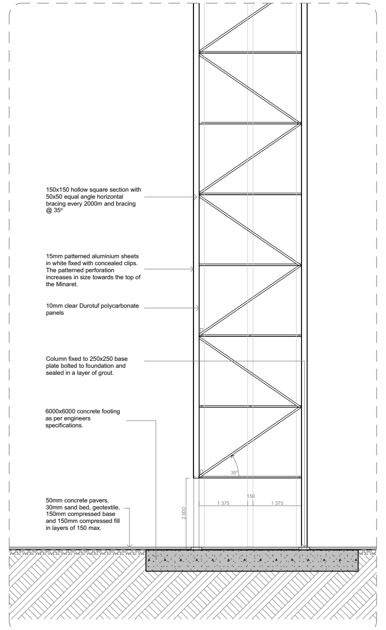
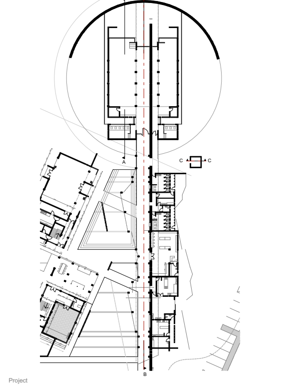


DETAIL A8 - SEATING
Scale 1:10 @ A0



SECTION C-C
Scale 1:50 @ A0



Project

A Place of Prostration - Masjid Abu Bakr

Drawing	Drawing Number
Sections	005

Scale

As indicated

Project Location

Faan Ferreira Street, Langenhovenpark, Bloemfontein

Details

Section B-B

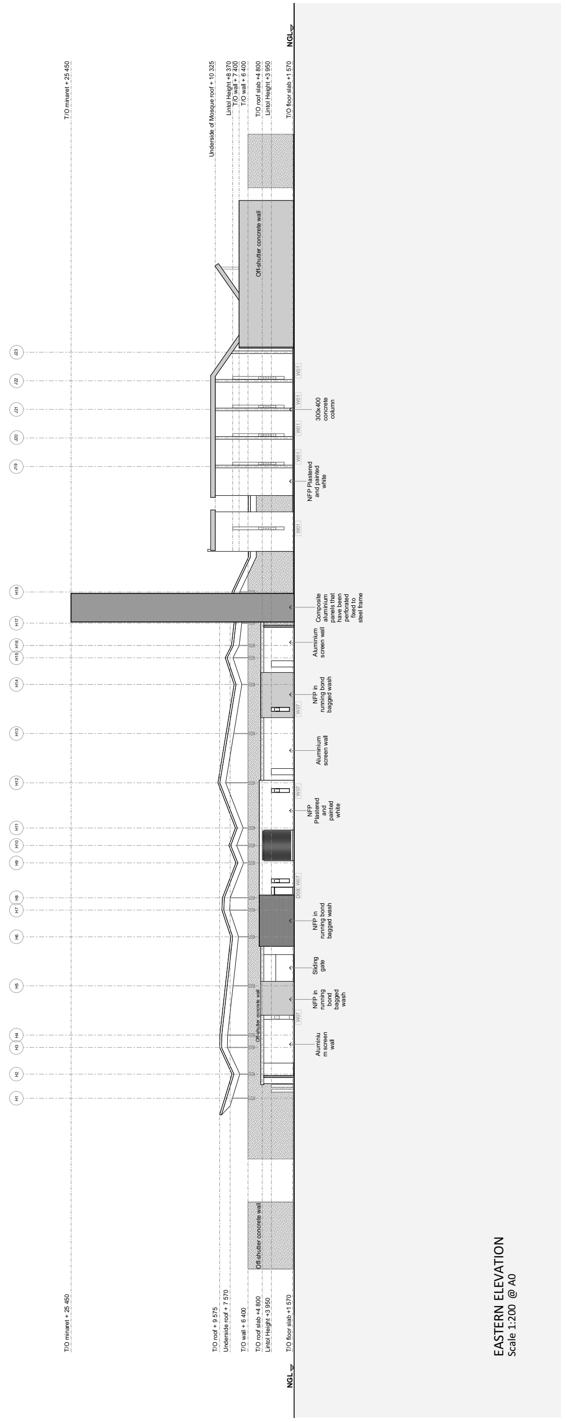
Detail A6: Central walkway roof

Detail A7: Central walkway gutter

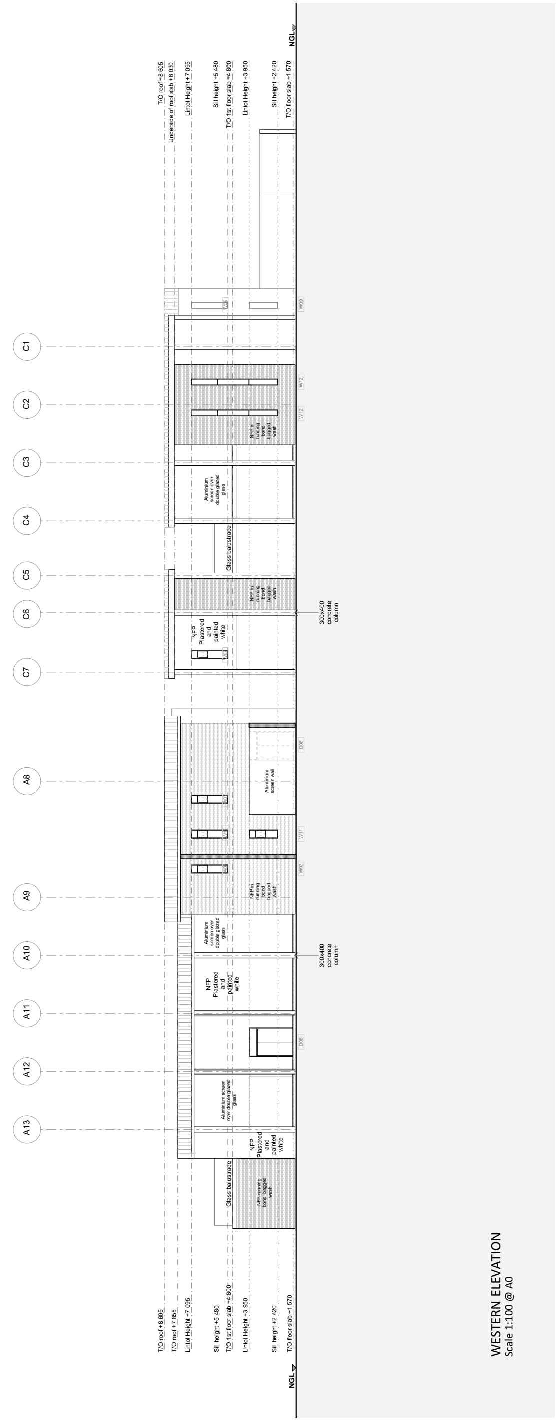
Detail A8: Seating

Section C-C

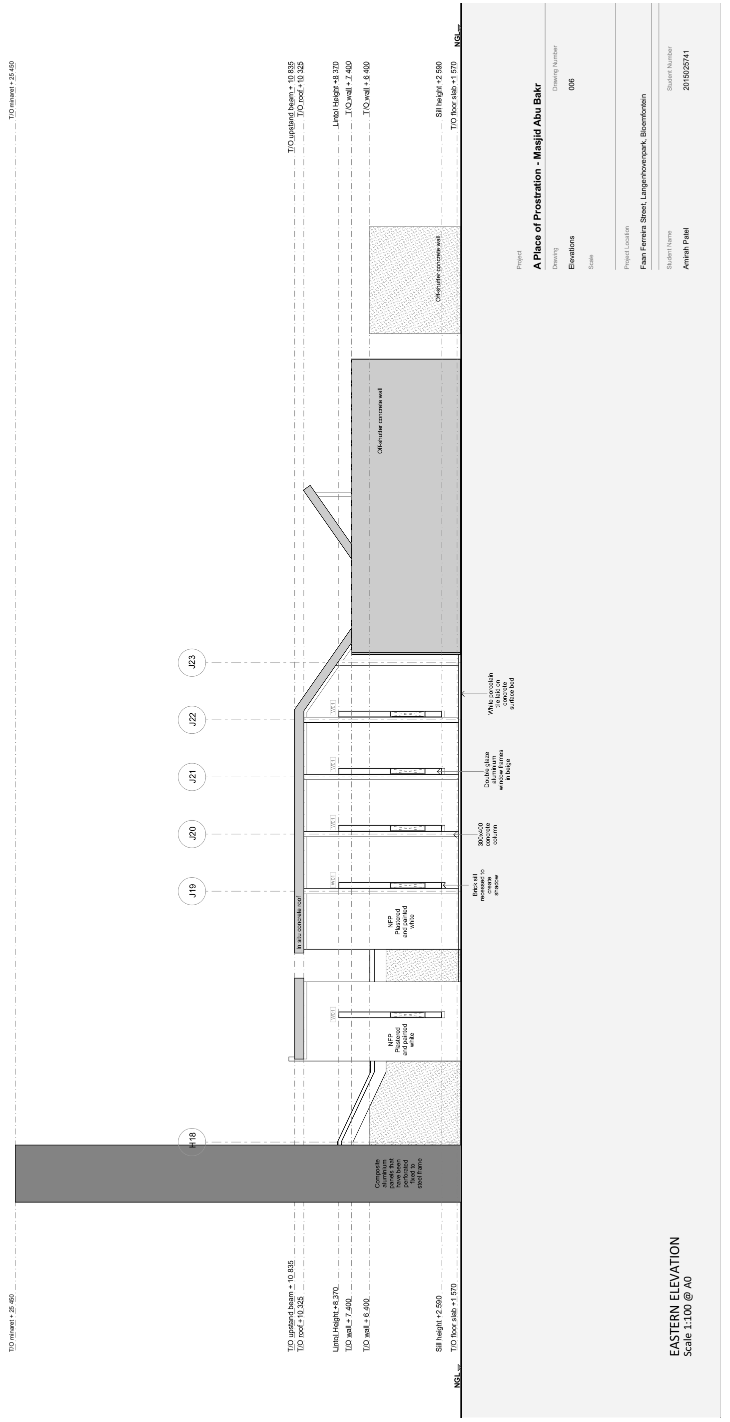
Student Name	Student Number
Amirah Patel	2015025741



EASTERN ELEVATION
Scale 1:200 @ A0



WESTERN ELEVATION
Scale 1:100 @ A0



EASTERN ELEVATION
Scale 1:100 @ A0

List of Figures

Part 1

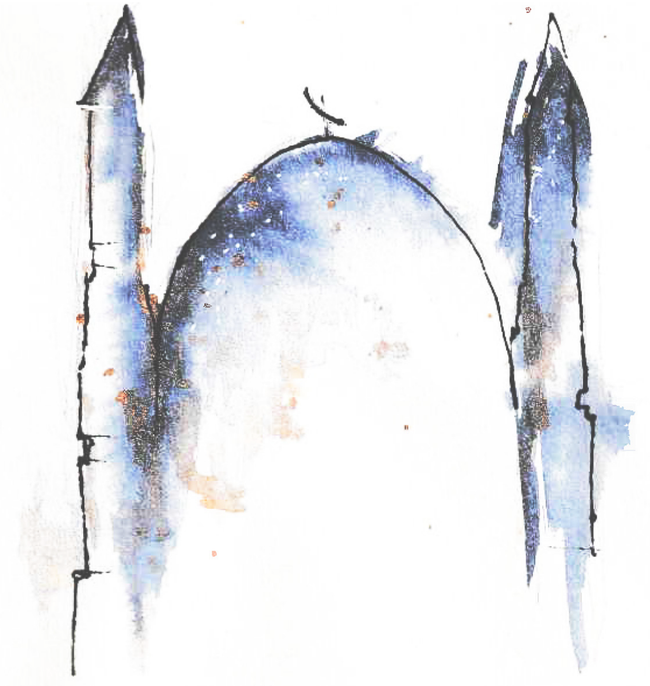
Part 2

Part 3a

Part 3b

Part 3c

Part 4



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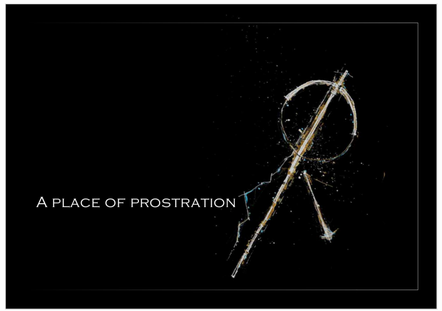


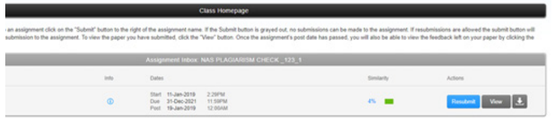
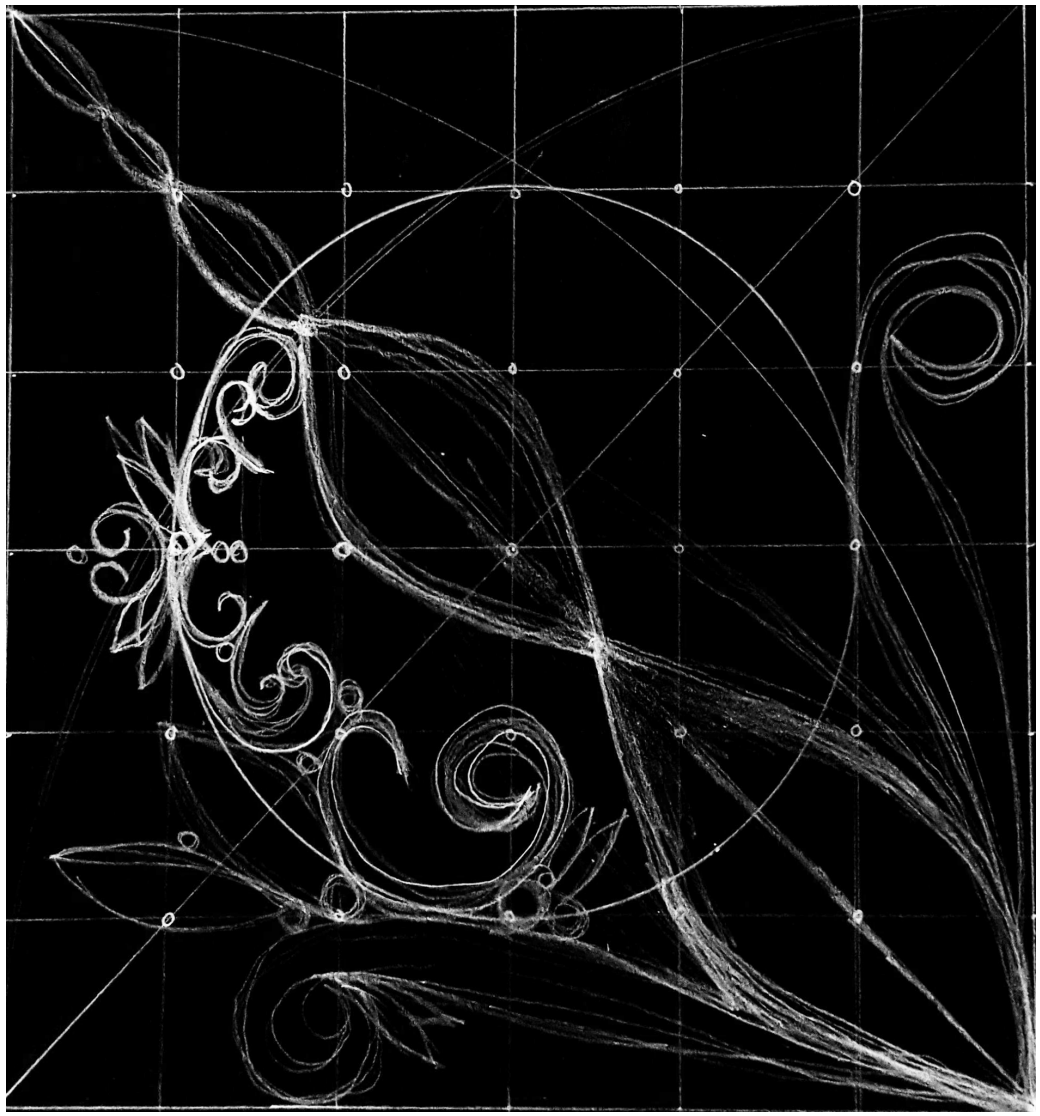


Figure 266: Plagiarism report (Author, 2021).



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