

# **CHURCH COMPLEX: THE PRESBYTERIAN CHURCH OF INDIA, MIZORAM**

*Thesis submitted in partial fulfilment of the requirements for*

*The award of the degree of*

**BACHELOR OF ARCHITECTURE**

By

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## Declaration

I **C.Lalrinzuali**, Scholar No. **2015BARC021** hereby declare that, the thesis titled **Church Complex: The Presbyterian Church of India, Mizoram** submitted by me in partial fulfilment for the award of degree of Bachelor of Architecture at School of Planning and Architecture, Bhopal, India, is a record of bonafide work carried out by me. The design work presented and submitted herewith is my original work and I take sole responsibility for its authenticity. The matter/result embodied in this thesis has not been submitted to any other University or Institute for the award of any degree or diploma.

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Date: 20.07.2020

# Certificate

This is to certify that the student Ms C.Lalrinzuali Scholar No. **2015BARC021** has worked under my guidance in preparing this thesis titled **Church Complex: The Presbyterian Church of India, Mizoram.**

RECOMMENDED

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ACCEPTED

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Head, Department of Architecture

July, 2020, Bhopal

## **Acknowledgement**

I wish to express my sincere gratitude to all the people who generously shared information with me and who gave permission to reproduce in this project. Their help was essential and without them I would not have completed this project.

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There were others, who gave me important support, I truly am grateful for their assistance and generosity of different kinds.

## Abstract

This project **CHURCH COMPLEX** aims at creating a Complex which accommodates members of Presbyterian denomination for the use of Church related activities. As most of the Churches in Aizawl aren't big enough to accommodate more people, especially when it comes to meets and Conferences, the idea of proposing a church, big enough to accommodate more people than most churches today can, came into picture.

The word "church" is a Greek term for *ekklesia* and it literally means "congregation", "meeting" or "assembly". The term is often used by Christians to refer to the physical buildings where they worship. In today's world, especially in Protestantism (Presbyterian), not only is Church a place of worship but is used for all the other Church related activities like Christian marriage, Sunday school and meets.

Ever since Christianity was introduced in the late 1890's to the people of Mizoram, the culture and its social structure has undergone tremendous change. The old tribal customs and practices have been replaced by Christmas, Easter and other Christian celebrations. Churches in Mizoram play a very important role in the society and vice-versa.

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<b>Proposed Project</b>	CHURCH COMPLEX
<b>Site Area</b>	12902 sq.m
<b>Site Location</b>	BAWNGKAWN, AIZAWL, MIZORAM

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Main Functions: Place for all the Christian celebrations like Christmas and New Year's feasts, all church related programmes and functions like Mizoram Synod, Yearly meetings, Conferences, committees and marriage ceremonies.

Main Spatial features:

1. Main church for main services
2. Hall for fellowships and receptions
3. Committee rooms
4. Library
5. Music room (Jam room)
6. Kitchen cum dining

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# 1. INTRODUCTION

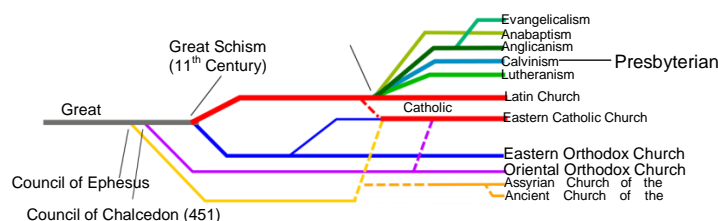
## 1.1 PROJECT BACKGROUND

The word “church” is a Greek term for *ekklesia* and it literally means “congregation”, “meeting” or “assembly”. The term is often used by Christians to refer to the physical buildings where they worship. In today’s world, especially in Protestantism, not only is Church a place of worship but is used for all the other Church related activities like Christian marriage, Sunday school or Church school where members of the Church, from kids to adults, get religious education.

According to the New Testament of the Bible, the earliest Christians did not build church buildings. Instead, they gathered in homes (Acts 17:5, 20:20, 1 Corinthians 16:19) or in Jewish worship places like the Second Temple or synagogues (Acts 2:46, 19:8). The earliest archeologically identified Christian church is a house church (*domus ecclesiae*), the Dura-Europos church, founded between 233 and 256. In the second half of the 3rd century AD, the first purpose-built halls for Christian worship (*aula ecclesiae*) began to be constructed. Although many of these were destroyed early in the next century during the Diocletianic Persecution, even larger and more elaborate church buildings began to appear during the reign of the Emperor Constantine the Great.

The genesis of Church architecture has evolved over the two thousand years of Christian religion, partly by imitating other architectural styles as well as responding to changing beliefs, practices and local traditions. From the birth of Christianity to present, the major transformations for Christian architecture were the great Byzantium, Romanesque Churches, Gothic cathedrals and Renaissance basilica.

Different denominations have emerged out of early Christianity, the Great Church. The reasons were because of the differences in Christology, theology and ecclesiological disputes, issue of justification and papal primacy. The four main divisions of denominations are Catholic Church, Protestantism, Oriental Orthodoxy and Eastern Orthodox Church.



*Figure 1.1: Major denominational families in Christianity  
(Source: Christianity and its branches)*

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The Protestant Reformation came into existence in the 16<sup>th</sup> Century as a new denomination as a result to reform the Church. According to the Protestants, the Church is not a building where God resides, instead a building where we encounter with God. The church is a congregation shelter, a closed place of concealment, built close to the members of the congregation, but surrounded by an open space. In addition to these principles, the praise and worship and other liturgies like Baptism and Sacrament should be done in the eyes of the whole congregation. This means that the pastor should always be visible and can be heard, and the congregation can get closer to the pulpit and the altar or around the Lord's Table, thus being involved in the liturgy. The liturgical centre was designated by Pulpit and Altar for sermon and Communion, where the pulpit and the altar are for the Lutherans or the Lord's Table for the Calvinists, and the congregation was grouped around these elements. In the design of Protestant buildings it is essential to position more seats near the pulpit, and this can be best solved with a combined arrangement of the longitudinal and cross naves. In order to fulfil the requirements, the interior design has to be reinterpreted; a demand emerged to remove the columns and pillars from the church that would obstruct vision and affect the acoustics. These expectations inevitably transformed the church interiors, because from that time on the main architectural task was to solve the centralization of the space. This main trend has not changed in the 20<sup>th</sup> Century Church architecture either. We can see right from the start that characteristic of a church building doesn't depend much on the theological aspects as the belief suggested so. But instead, most of the Churches were influenced by significant characteristics of each epochal period. But at the same time, we should also keep in mind that there are many other features like the tradition and different use of spaces which influenced the ground plans which further affected the form of the building.

Every design of the church relied on the previous style for improvement and expansion. Church architecture's major transformations are the result of changing the art of the preceding period it inherited in the effort to express the period's outlook. And thus the style developed with gradual changes. One of the other reasons can be the fragmentations of the Church into different denominations. Each denomination has its own style which shows distinct characteristics and factors of determinants. And these features of each style are mirrored in the building forms, plans, decorations and interior design. But in the case of Protestants and Catholic in modern times, this is no longer relevant.

The image that we have in mind of Churches is slowly drifting away. But there is one thing in common that these churches follow. The internal arrangement has been maintained almost in all of the churches of Protestant denomination, of keeping the central area column free so as to improve the vision and for acoustic purpose. Cathedrals in some part of the world may

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still maintain the culture of demonstrating the religion through paintings on the internal walls of the churches, but is not always the case. As liturgy and practice of the period began to shift so is the architecture. Modernism being in the picture in today's world, the approach towards the design of Churches has shifted too. And with newer technologies, the demand from members of the church has increased in terms of functions, spaces, etc. Thus, forms of Modern churches are designed simple and to blend with newer technologies yet serving the need of the congregation.

In Mizoram Church Architecture, there has been and still is a lot of renewal potential. The architects tend to follow the traditional architecture over modern architecture. There have been a lot of times over the century when aesthetically appealing designs arose. Like that of what we observed in the Byzantium architecture of pillars and dome, arches and vaults in Gothic architecture, and so on. Over the past century, steeples have evolved numerous times; plans have been evolving from rectangles to cruciform or vice versa and used of new materials. However, all of these were of the same style, the ones that were first introduced to the people of Mizoram have not been replaced but evolved over a period of time, not of modern architecture but that of the European from the olden days. Though the Presbyterian denomination in particular do not have fixed standards when it comes to the design of the church, why is it always that the church followed the same pattern of designs till date even after century has gone? The fixed idea of how a church should look like (meaning the borrowed architecture from Wales) has been fixed into the minds of the people and mostly in the minds of the elders of the Church. When it comes to the structure of the sacred building, even though it was the architect who was in charge of designing, at the end of the day, it was always built according to the ministers and elders opinion. This can also be a result of failing to express the relationship between the depth of Christianity and the rituals that revolve round the Church with the lasted technologies. And so, the result has always been imitative works. And because of this, we can say all the churches in Aizawl and the whole of Mizoram look similar to each other. Pretty much of the changes that we see over the past century are the scale of the church and used of new materials.

In today's church architecture, similar to the ones that have been practiced many years ago, we see the same picture of the attempts to reproduce the same kind of architecture from the whole variety of diverse heritage without getting into the spirit of the whole design, which architects most of the times fail to relate. The gap between the progress in material and the spiritual side of development can be fulfilled only by getting into the core.

As mentioned earlier, it the Welsh who brought this Church architecture to Mizoram. Almost all the Churches were influenced by the art and architecture that the missionaries brought from foreign land. Introduction to technologies and ideas, the Mizos have slightly changed

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their Church Architecture in terms of plan but mostly materials from time to time. Though improvements in terms of materials and techniques happen to occur, not much of the architecture has been changed.

Nowadays, what churches in Mizoram need is a revival- an artistic concept that goes hand in hand with development of the past and breakthrough to the latest technologies, ideas and materials. The only solution that can be given to this is by deeply understanding the structures interpreting with degree of professionalism.

## 1.2 PROJECT BRIEF

This project CHURCH COMPLEX aims at creating a Complex which accommodates members of Presbyterian denomination for the use of Church related activities. As most of the Churches in Aizawl aren't big enough to accommodate more people, especially when it comes to meets and Conferences, the idea of proposing a church, big enough to accommodate more people than most churches today can, came into picture.

Ever since Christianity was introduced in the late 1890's to the people of Mizoram, the culture and its social structure has undergone tremendous change. The old tribal customs and practices have been replaced by Christmas, Easter and other Christian celebrations. Churches in Mizoram play a very important role in the society and vice-versa. Much of the social life revolves around the church.

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Proposed Project	CHURCH COMPLEX
Site Area	12902 sq.m
Site Location	BAWNGKAWN, AIZAWL, MIZORAM
Proposing Authority	<i>(Hypothetical Project)</i>

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Main Functions: Place for all the Christian celebrations like Christmas and New Year's feasts, all church related programmes and functions like Mizoram Synod, Yearly meetings, Conferences, committees and marriage ceremonies.

Main Spatial features:

1. Main church for main services
2. Hall for fellowships and receptions
3. Committee rooms
4. Library
5. Music room (Jam room)
6. Kitchen cum dining

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## 1.3 RATIONALE

With more than 87% Christians out of the total population, where Presbyterian is the largest denomination, Churches play a very important role in the society. Not only churches are place of worship, but much of the social life revolves around the church too.

With respect to the number of Churches erected, there is none that is built as a complex. This topic was chosen in the hope of bringing in a complex type Churches for the first time in the state, providing spaces that have always been required which were not yet introduced with the hope of attracting people, living a more secular lifestyle, to the church. This church will be something more than a place of worship, it is hoped to accommodate more people for the use of members of the church on special occasions where more people are involved like meets and conferences.

## 1.4 AIM

This project Church Complex aims at creating a church bigger than the usual churches in Mizoram to accommodate more people on special occasions of any church related activities.

## 1.5 OBJECTIVES

- To study the religion Christianity. Protestantism- Calvinism in particular as this Church Complex is meant for Presbyterians, i.e. one of Protestantism denomination.
- To study and explore the history and evolution of Churches of the world and of Mizoram
- To study and understand the role of Churches in Mizoram
- To understand the tradition and culture of Christianity and how these have impact on Churches of Mizoram
- To incorporate the tradition and culture of Christianity in the design
- To achieve a design solution reflecting Christians yet bringing in Modern styles keeping in mind the best standards of accessibility, hospitality, etc.

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## 2. LITERATURE STUDY

### 2.1 CHARACTERISTICS OF EVOLUTION OF CHURCHES

The modern Church Architecture is influenced or we can say came into existence after modern architecture. "It has been observed by many authors that the quest for modern architecture was a result of a number of disposing causes and strands of ideas" - Curtis, 1987; Mallgrave; 2005; Benevolo, 1972. And because of these new ideas and inventions, there was a demand for new methods of construction as the previous theories and practice are in a way no longer relevant. Seeing the present scenario, with the fast changing world of technology, paintings on the walls are replaced by projector screens, different kinds of musical instruments have been brought into the church. And all these modern facilities demand for modern forms.

From the birth of Christianity to present, the major transformations for Christian architecture were the great Byzantium, Romanesque Churches, Gothic cathedrals and Renaissance basilica.

#### a) Hagia Sophia, Istanbul

The first Hagia Sophia in Constantinople (now Istanbul, Turkey) was built as a basilica for the Greek Orthodox Christian Church. After 200 years, it was renovated to a Mosque. And since 1935, the structure functions as a museum. The structure measures around 269 ft. in length and 240 ft. in width and the highest point of the dome measures around 180 ft.

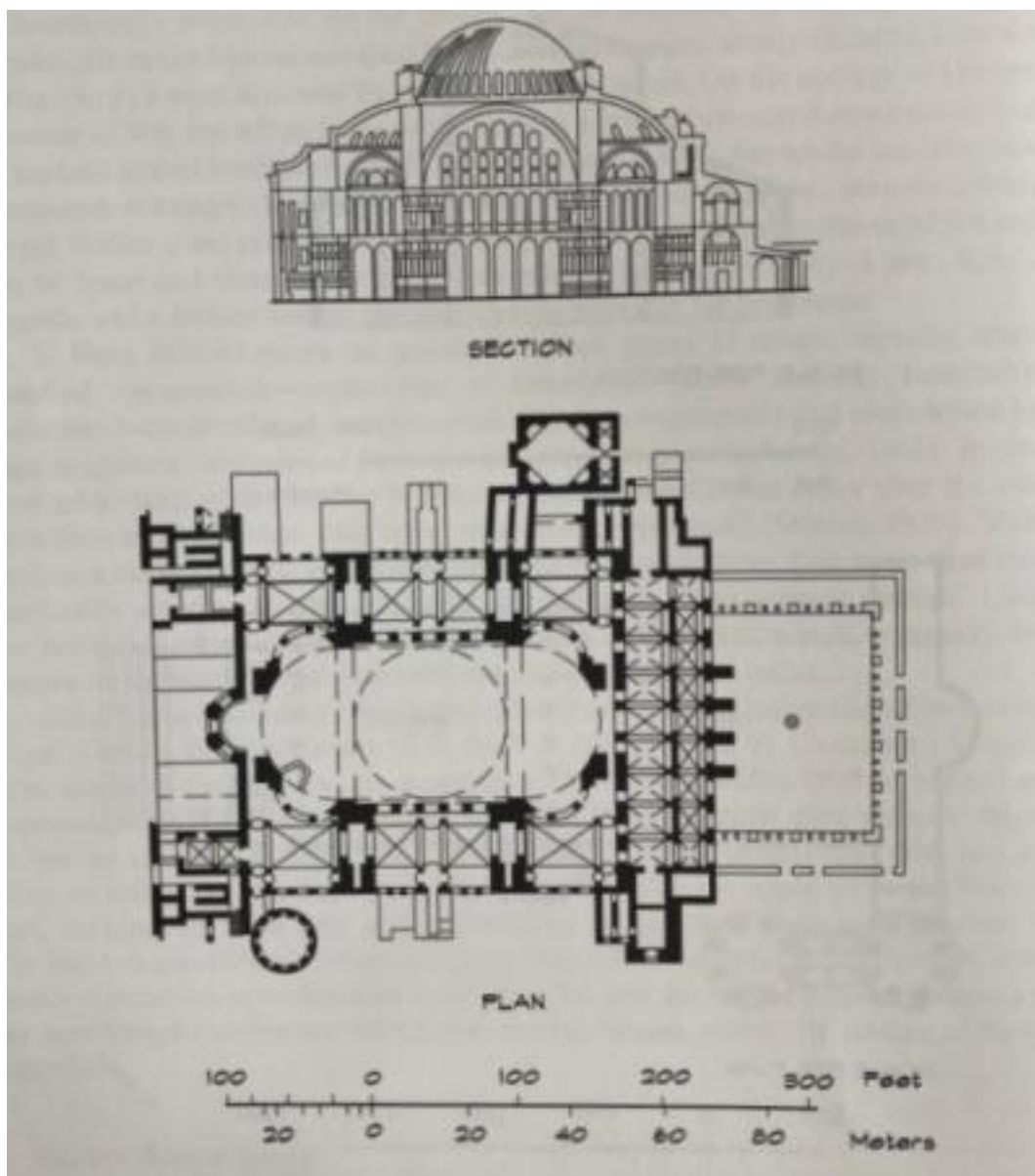
In 360 AD, Emperor Constantius built the first ever Hagia Sophia. It used wood as roofing material. In 404 AD, the structure was completely burnt because of the riots that occurred in the place due to some conflicts in politics. The structure was reconstructed and it was completed in 415 AD. The second Hagia Sophia has five naves and a monumental entrance with wooden roofing. And in between the years 527 and 565 for the second time, the structure was burned. The structure was pretty damaged by the fire up to a point where repairing won't work. The emperor then Justinian ordered to demolish the structure and build a new one. The third Hagia Sophia was newly constructed and was completed in 537. This third Hagia Sophia is the one that is still standing today.

Design: The main feature of this structure is the large domed roof and the semi domed roof right on top of the Alter and two narthex or porches. The central dome is supported by the semi domes which are supported by arches which were ornamented with mosaics of six winged angels which are called "hexapterygon". These arched openings created a large nave. There are three aisles which are separated by columns with galleries on top. There

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are windows between the walls above these galleries and the base of the dome which during daytime obscure the supports and give the effect that the canopy floats in the air. Not only are the arches ornamented with mosaics but the walls too; which are made from gold, silver, glass and colourful stones portraying different scenes and different characters from the Christian Gospels. The rest of the interior is ornamented with enormous marbles which, in some parts, is believed to imitate moving water. The building is almost square when seen in plan.

Back in the days, Greek Orthodox was the official religion of the Byzantines. The Hagia Sophia was the main and central Church and thus was the place where new emperors were crowned.



*Figure 2.1: Hagia Sophia in Constantinople  
(Source: Encyclopaedia of Church Architecture, Francis Bond))*



## b) Saint Sernin Basilica

Saint Sernin, a basilica in Toulouse, France was built between the years 1080 and 1120. It is cruciform in plan. The materials used are stones and bricks. It measures 104m in length.

The main features are the barrel vaults, thick walls and the arcades. The introduction of the arcades replaced the individual columns for the ease of flow and movement of the people. Unlike earlier churches, the ceilings are vaulted and it has addition of an ambulatory. Both exterior and interior are old carvings and sculptures with religious themes. This basilica houses the first fully realized Romanesque monumental piece which was the stone carved relief above the entrance. It was carved out of white marble. Each of the elements from the tympanum, the lintel, the consoles spandrels to the four capitals that surmounted the columns on either side of the doorways are combined to create a complex but coherent visual discourse on the Ascension theme. All of the reliefs and sculptures of St. Sernin Basilica – the Port Comtes and Port Miegerville, the angels, King David, the two shepherds, Adam and eve, relief of Christ were ways of interpreting characters in the Bible telling story of the Bible. Reliefs and frescos covered the interior walls. One of the sculptures was done on the image of Saint Sernin, who was killed when tied to a bull and being dragged, surrounded by lions, to reveal two contrasting themes of deliverance and punishment. The octagonal bell tower over the transept crossing is the most visible feature which is made up of five tiers. Of the many sacred values of St. Sernin Basilica, relics are one of the most important ones; out of which the two most important relics that this basilica holds are the relics of Saint Sernin himself and relics of the True Cross. The 11

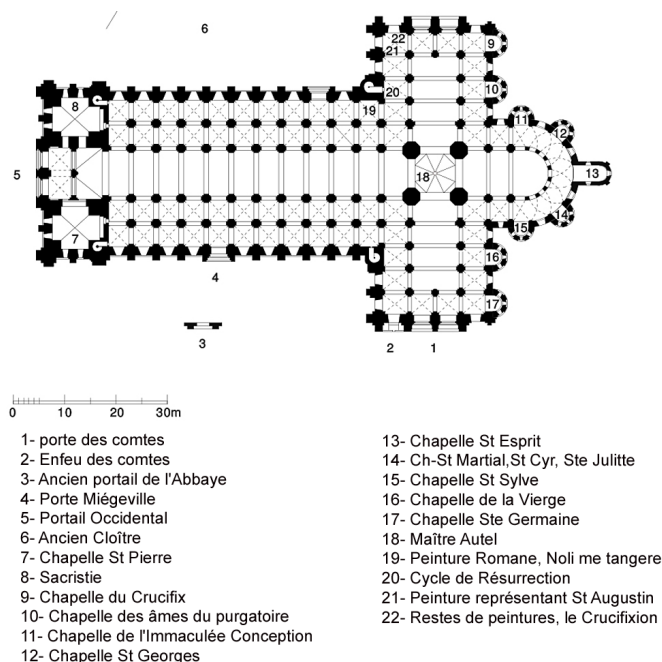


Figure 2.2: Saint Sernin Basilica  
(Source: Encyclopaedia of Church Architecture, Francis Bond)

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### **c) Notre-Dame Cathedral**

The Notre Dame Cathedral in Paris was built over two centuries from 1163 to 1345. It measures about 128 metres in length and 12 metres wide in the nave. It is a cruciform in plan. Its cruciform plan was taken from the previous era's architecture along with the elevated nave, transept and tower.

The features of this cathedral are its gothic, Biblical sculptures and the stained glass art, representing the improvements made over the previous period of Romanesque art and architecture. It was the first Gothic Cathedrals to have flying buttresses and pointed arched exterior supports. It also features external statues assembled so as to serve as extra supports like that of columns. They are fabulous and as well frightening sculptures, like the gargoyles, chimera and mythical creatures. These sculptures depict teachings of the church and act as a visual message for the people who are blindly following the church, symbols, and signs of the evil spirit that threatened the people who did not follow the church's teachings. Gargoyles were added more for practical purpose, they were added as rain spouts. As additional reinforcements were provided by the piers, stone statues and flying buttresses, the walls become non- structural which allow more area for windows and stained glasses. These stained glasses were introduced to inspire people and to light up the interior. This Cathedral illustrates the main contributions of Gothic art to Christian architecture: more and more inspiring churches rose; more sunlight is brought into and Biblical art is added by the astained glass windows. A series of stein paintings representing the Last Judgement decorates Notre-Dames's façade. The transept portals of the cathedral are richly decorated with reliefs featuring scenes from the Bible such as the lives of Saint Stephen and other local saints, the infancy of Christ and the tales of Theophilus in the tympanum with a highly influential sculpture of Virgin Mary and her child in the trumeau. Amid all the religious sculptures, some of these were devoted to illustrating science and philosophy.

During the French Revolution (1790's), the cathedral suffered significant damage, followed by substantial renovations in the mid 1840's. And on april 2019, fire engulfed the cathedral which destroyed an estimated 5 to 10 percent of the artwork.

The building is structurally sound, fortunately, and the stone vaulted ceiling limited the interior damage.

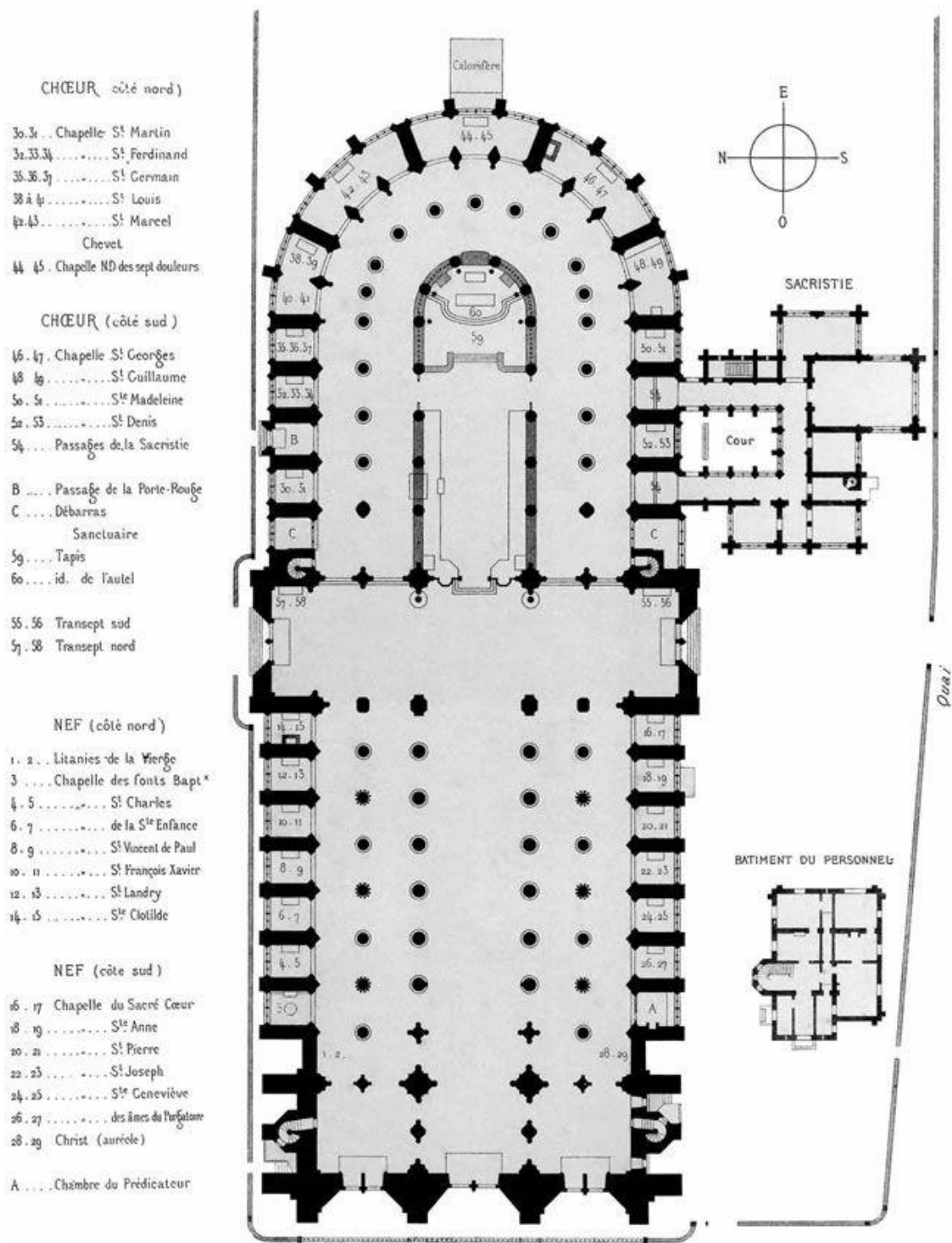


PLATE 1a  
*Plan de Notre Dame de Paris*  
 Plan of Notre Dame of Paris

Figure 2.3: Notre dame Cathedral  
 (Source: Researchgate.net)

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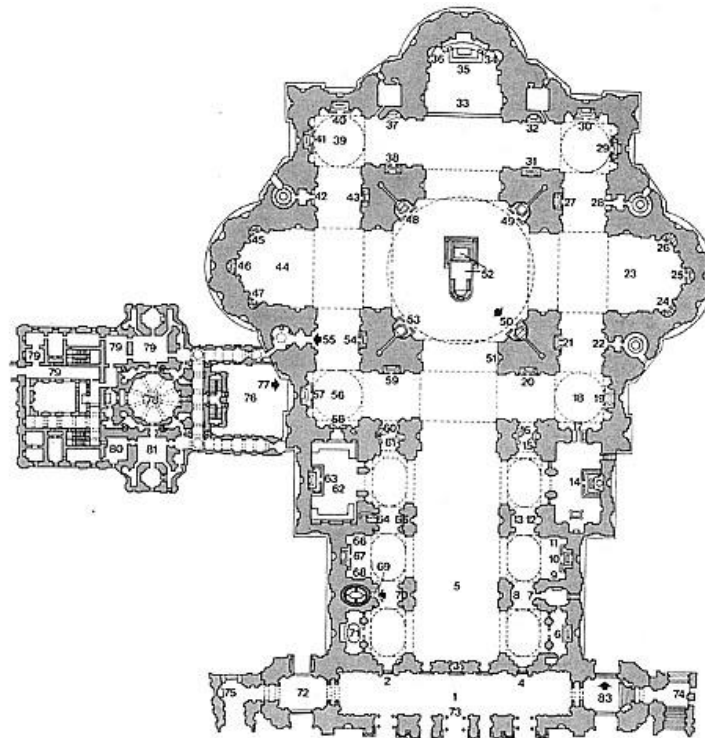
#### **d) Basilica of St. Peter**

The Vatican City's Papal Basilica of St. Peter, commonly known as St. Peter's Basilica, is historically established at Saint Peter's burial site, one of Jesus' twelve apostles. It measures about 452 ft. in height, 730 ft. in length and 500 ft. in width. It can accommodate around 60,000 people. Popes are now buried in the basilica in order to maintain the tradition. Around 100 tombs are present within this Basilica. The tomb of St. Peter's himself is immediately underneath the dome and the altar. It was built out of travertine stone during 1506 and 1626. The first construction began in 1506 under the guidance of the architect Donato Bramante.

Like the other Churches from the past, St. Peter Cathedral has reliefs, statues and paintings depicting different characters of the Bible. All these artworks were installed to convey Christian message. But unlike the previous Churches, the sculptors and painters were instructed to give importance on the precision on features of characters from the Bible's New Testament.

The floor layout has been changed several times from Greek cross to Latin cross layout and ended up with the Latin cross plan which allows more space inside the structure. It has an elongated Latin cross-shaped nave. The nave is surrounded by wide aisles that give access to a several chapels. It contains number of priceless treasures by the greatest sculptors and painters of the period like Michelangelo, Bernini, Antonio Canova and Alessandro Algardi. It also includes ornamented papal tombs with marble statues and reliefs.

The major feature of this basilica is the dome and barrel vaults. The dome stands on four huge pendentives and piers, each of 60 ft. thick, fully ornamented with paintings and sculptures. The façade statues are also parts of the major features of this basilica which has a giant order of Corinthian columns and is surmounted by 13 statues- Christ himself along with 11 of the Apostles excluding Peter, and John the Baptist.



MAP OF ST PETER'S

1 Atrium	31 Altar of St Peter and the Resuscitation of Tabitha	56 Clementine Chapel
2 Door of Death (Porta della Morte)	32 Monument to Clement X	57 Altar of St Gregory
3 Central Door (by Filarete)	33 Nave of St Peter's "Cattedra"	58 Monument to Pius VII
4 Holy Door (Porta Santa)	34 Monument to Urban VIII	59 Altar of the Transfiguration
5 Nave	35 Throne of St Peter in Glory or "Cattedra"	60 Monument to Leo XI
6 Chapel of the "Pietà"	36 Monument to Paul III	61 Monument to Innocent XI
7 Monument to Leo XII	37 Monument to Alexander VIII	62 Chapel of the Choir
8 Monument to Christine of Sweden	38 Altar of St Peter and the Healing of the Cripple	63 Altar of the Immaculate Conception
9 Monument to Pius XI	39 Chapel of Our Lady of the Column	64 Monument to Pius X
10 Chapel of St Sebastian	40 Altar of St Leo the Great	65 Monument to Innocent VIII
11 Monument to Pius XII	41 Altar of Our Lady of the Column	66 Monument to John XXIII
12 Monument to Innocent XII	42 Monument to Alexander VII	67 Chapel of the Presentation of the Virgin
13 Monument to Mathilda of Canossa	43 Altar of the Sacred Heart	68 Monument to Benedict XV
14 Chapel of the Blessed Sacrament	44 Left Transept	69 Monument to Maria Clementina Sobieski (exit from the Dome)
15 Monument to Gregory XIII	45 Altar of St Thomas	70 Monument to the Stuarts
16 Monument to Gregory XIV	46 Altar of St Joseph	71 Baptistery
17 Monument to Gregory XVI	47 Altar of the Crucifixion of St Peter	72 Arch of the Bells (Arco delle Campanie)
18 Gregorian Chapel	48 Statue of St Veronica	73 Giotto's mosaic of the "Navicella"
19 Altar of Our Lady of Succour	49 Statue of St Helena	74 Equestrian Statue of Constantine
20 Altar of St Jerome	50 Statue of St Longinus (entrance to the Vatican Grottoes)	75 Equestrian Statue of Charlemagne
21 Altar of St Basil	51 Statue of St Peter	76 Piazza Square
22 Monument to Benedict XIV	52 Confession and Papal Altar	77 Entrance to the Pre-Constantinian Necropolis
23 Right Transept	53 Statue of St Andrew	78 Sacristy
24 Altar of St Wenceslas	54 Altar of Falsehood	79 Historical-Artistic Museum (Treasury)
25 Altar of Saints Processus and Martinian	55 Monument to Pius VIII (entrance to Sacristy and Historical-Artistic Museum)	80 Chapter Hall
26 Altar of St Erasmus		81 Chapel of the Canon
27 Altar of the "Navicella"		82 Chapel of the Beneficed
28 Monument to Clement XIII		83 Entrance to the Dome
29 Altar of the Archangel Michael		
30 Altar of St Petronilla		

Figure 2.4: Basilica of St. Peter's  
(Source: Researchgate.net)

### e) Modern Churches:

In most of the places, the architectural styles of the Church were initially influenced by architectural style introduced by the missionaries. The missionaries who came from a particular area built churches that looked similar to the churches they have back at home. Usually at the beginning, there was always less of local input. But later on as time passed by, the characteristics of the early church buildings blend with the current trends and thus result into different styles. Using Nigeria as an example, the church architecture was dominated by Gothic style architecture which was imported from Europe which later on get

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transformed by the result of political transition from colony to sovereignty, dependence to independence.

It is also observed that the early Catholic Churches attached their theological and liturgical meanings to their architecture, for example, the used of carvings to announce the holiness of the place. But that is no longer the case for modern Church architecture. Today's Church architecture, irrespective of their denominations, is oriented to auditorium and theatre types of plan layout with visual connection and acoustic comfort. Modern churches vary so much in forms. The Church architectural style shifted from a grand and ornamented to less ornamented style. There are many churches in today's world which has no physical representation of the churches that we see back in the days (e.g., Sungyuk Presbyterian Church, UijeongBu. See figure). Even then, there are still, mostly Cathedrals, constructed in Gothic style in this 21<sup>st</sup> Century. Many times we have mentioned how Protestant churches are more oriented towards the fulfilment of the congregation and how the theology has little effect on the architecture. But that is not only the case for Protestants; it is too for the Catholics. For dances and other liturgy, more spaces are needed. Such modern churches are slowly moving away from the old architectural style evolving into new forms and styles. The cruciform and round plans have been replaced by more modular shapes. New spaces are created so as to accommodate and satisfy the demands.



*Figure 2.5: Presbyterian Church, UijeongBu, South Korea  
(Source: Modern Churches)*

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The research we are looking today has characteristics of a universal approach to religion. The buildings are embodiments of ideals shared across a wide range of religious beliefs, but can also be embraced by secular, non-religious people. The iconography is often maintained, but less empathetic compared to, for example, the altar of the Catholic Church in Rome [8].

### **Church of Light**

The Church of Light in Ibaraki, Osaka, Japan was built on the theme of dual nature of existence – solid and light. It measures roughly 113 square metres in area. It contains Sunday school hall and main worship hall. The design shows basic elements such as boxes of rectangles and planes that converge. The main church measures 6mX6mX18m, crossed laterally by a wall turning 15 degrees from the nave's main axis. This feature, which adds dynamism to the serene orthogonal space of the vessel, is not merely to insert it obliquely but to distinguish it from the roof a few feet enabling the light to stream horizontally, giving the impression that the ceiling floats. As a traditional Japanese shoji, the diagonal wall also includes a 1.6mX5.35m glass sliding screen and the gateway to the room. A cruciform is cut behind the altar in the concrete wall that illuminates the interior during the day, turning the darkness into a well-lighted box. While the room is mainly specified by the amount of concrete, wood is used for all the elements involved, such as seating and flooring. The cold concrete reinforced blocks compliment the wood's warmth. The concrete construction has given up any ornament in favour of the spirituality which gives light, enhancing its sacredness but focusing on simplicity and aesthetic minimalism.

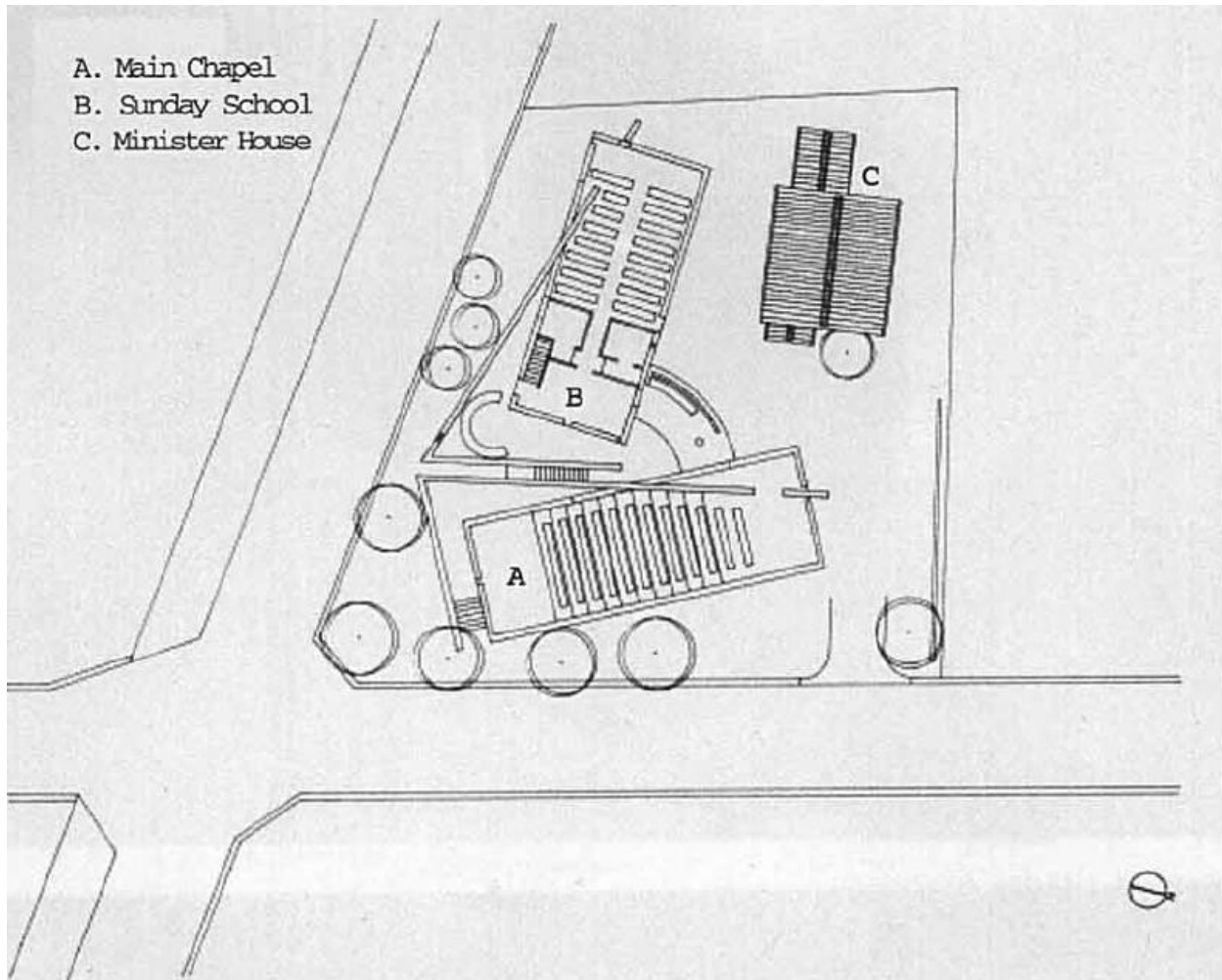


*Figure 2.6: Cruciform cut-out on wall of Church of light  
(Source: Researchgate.net)*

Although this building serves as a place to worship one of the world's most common rituals, it continues to uphold Japanese culture, where nature is always a guide. A long window at the entrance of the chapel shows a straightforward allegory to the cross, sitting on greenery and water. The remainder of the site's open space is packed with greenery that gives it natural look. The meticulous attention to detail and the celebration of shape purity are

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apparent in this church, just as they are in other buildings, but do not compromise the religion's functional purpose [9].

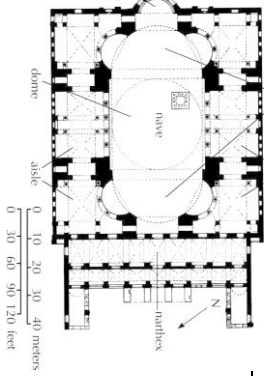
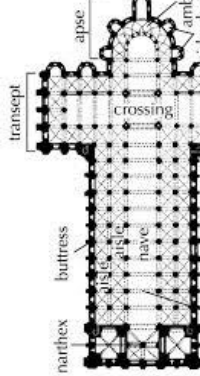
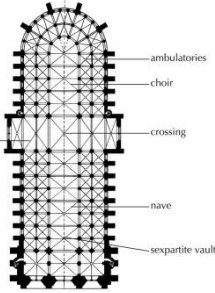
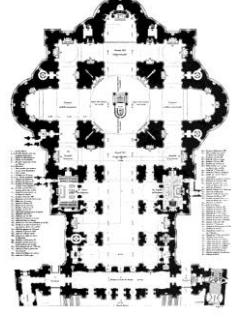
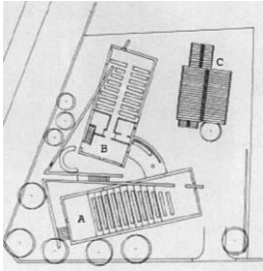


*Figure 2.7: Plan of Church of Light  
(Source: Researchgate.net)*



## DATA ANALYSIS:

### CHANGING CHARACTERISTICS OF CHURCHES OF EACH EPOCHAL PERIOD

<p>HAGIA SOPHIA, Istanbul, Turkey</p> <p>(Byzantium)</p>	<p>SAINT SERNIN BASILICA, Toulouse, France</p> <p>(Romanesque)</p>	<p>NOTRE-DAME CATHEDRAL, Paris, France</p> <p>(Gothic)</p>	<p>BASILICA OF ST. PETER, Vatican City, Rome</p> <p>(Renaissance)</p>	<p>THE CHURCH OF LIGHT, Ibaraki, Japan</p> <p>(Modern)</p>
				 <p>A- Chapel B- Sunday School C- Minister's House</p>
<p>Features:</p> <ul style="list-style-type: none"> <li>- Square plan</li> <li>- Domed and half dome roofs</li> <li>- Nave</li> <li>- Apse</li> <li>- Aisle</li> <li>- narthex</li> <li>-</li> </ul>	<p>Features:</p> <ul style="list-style-type: none"> <li>- Cruciform plan</li> <li>- Barrel vaults</li> <li>- Thick walls</li> <li>- Arcades</li> <li>- Vaulted ceilings</li> <li>- Narthex</li> <li>- Nave</li> <li>- Crossing</li> <li>- Choir</li> <li>- Apse</li> <li>- Side chapels</li> <li>- Transept</li> <li>- Addition of ambulatory</li> <li>- Addition of aisle</li> </ul>	<p>Features:</p> <ul style="list-style-type: none"> <li>- Cruciform plan</li> <li>- Pointed arch</li> <li>- Rib vaults</li> <li>- buttresses</li> <li>- Stained glass</li> <li>- Rose windows</li> <li>- Nave</li> <li>- Crossing</li> <li>- Choir</li> <li>- Apse</li> <li>- Transept</li> <li>- Ambulatories</li> </ul>	<p>Features:</p> <ul style="list-style-type: none"> <li>- Cruciform plan</li> <li>- Elongated nave</li> <li>- Wide aisles</li> <li>- Chapels</li> <li>- Domed roof</li> </ul>	<p>Features:</p> <ul style="list-style-type: none"> <li>- The church has one main worship hall and one Sunday school hall.</li> <li>- Rectangular plan</li> <li>-</li> </ul>

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<p>Mosaics which are made from gold, silver, glass and colourful stones portraying different scenes and different characters from the Christian Gospels.</p>	<p>Reliefs and sculptures depicting series of the Bible. From the scene of Adam and Eve to Judgement Day</p>	<p>Sculptures, reliefs, frescos and paintings enormously done. These artworks not only depict the story of Bible; some are mythical creatures, gargoyles and chimera.</p>	<p>Like the previous churches, it has reliefs, sculptures and paintings. But unlike the previous churches, sculptors and painters were instructed to give more importance on features of new testament</p>	<p>Minimalistic approach- no ornamentation</p>
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Within the period of Byzantium, the Eastern Church generally acquires a simple narthex layout, three naves and apses, four pillars with a dome, and five cupolas on high drums. As compared to earlier churches, there is more concern for the exterior.

Towards Gothic period, the Western copied the architectural type of the basilica the architects focused more on how to fit more people into the nave. And for these side aisles were created and to improve the lighting they created clerestory, replacing the Romanesque walls with window screens. These developments give rise to the start of Gothic forms – the Gothic arch, piers, barrel vaults, flying buttress and portals with towers. Piers replaced heavy columns and make the building lighter. Enormous sculptures were done on the walls and columns so as to illustrate stories of the Bible for illiterate people to understand the religion.

The architecture of the Renaissance had some distinct features that were quite common to the plans of major construction- symmetrical façade, either square or rectangle. Overall, the ceilings were flat. The use of new materials, such as steel and concrete had an impact on the design of churches in the 20<sup>th</sup> century. The Church tradition of having relics, paintings, sculptures and other physical remnants have been practiced until modernism came into existence. In some of the Cathedrals were paintings, sculptures, frescos and other art forms representing the life of Jesus Christ- from the birth of to His crucifixion and many other Stories from the Bible.

Every design of the church relied on the previous style for improvement and expansion. Church architecture's major transformations are the result of changing the art of the preceding period it inherited in the effort to express the period's outlook. And thus the style developed with gradual changes. One of the other reasons can be the fragmentations of the Church into different denominations. Each denomination has its own style which shows

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distinct characteristics and factors of determinants. And these features of each style are mirrored in the building forms, plans, decorations and interior design. But in the case of Protestants and Catholic in modern times, this is no longer relevant.

The image that we have in mind of Churches is slowly drifting away. But there is one thing in common that these churches follow. The internal arrangement has been maintained almost in all of the churches of Protestant denomination, of keeping the central area column free so as to improve the vision and for acoustic purpose. Cathedrals in some part of the world may still maintain the culture of demonstrating the religion through paintings on the internal walls of the churches, but is not always the case. As liturgy and practice of the period began to shift so is the architecture.

## **2.2 BIRTH OF CHRISTIANITY IN MIZORAM**

### **2.2.1 Birth of Christianity and Presbyterian denomination**

The various sub-groups of the hills shared many views on earthly life and after death. This togetherness of shared notions, which do not require a single term, can be called as the hill people religion. Before the colonial rule, the people had very little visual information to explore and study in depth different religions, let alone to explain the willingness of the people of the hill to fresh ideas and practices. Their ready acceptance of Christian ideas represented the great cultural changes of the colonial era (1891-1947).

The early Europeans who came in contact with the people were amazed by the religion that they follow and even concluded and doubted whether they actually have one or not. At that time, they have neither writing nor they actually belief in the existence of God.

During the British rule between the 1860s and 1890s, missionaries began to arrive. British missionary societies were eager to work in this region as soon as the military settled in the region. The first two settled missionaries J. H. Lorrain and F. W. Savidge came to Mizoram in 1894 and put up a Church right away. As is commonly done when a new religion seeks to establish itself in new surroundings, the church was constructed on hallowed ground. Various Christian missionary societies in Britain were in competition with each other to proselytize in Mizoram, resulting in the establishment of three major churches: the Calvinist Presbyterians in northern Mizoram, the Baptists in the south and the 'Lakher Pioneer Mission' in the southeast.

After J. H. Lorrain and F. W. Savidge were transferred from Mizoram in 1897, their successor David E. Jones established the Presbyterian Church. Before Christianity was introduced to the people of Mizoram, they have their own deity to which they sacrifice offerings like gayal.

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### 2.2.2 Fitting Christianity into Mizo Sensibilities

The material signs of Christianity were easy to detect. But how did Mizos integrate Christian notions into their life world? Visualizations are very rare. There is a figure which presents a drawing of around 1910, in which an unnamed Mizo depicted the journey that souls take after death. This particular drawing combines traditional and Christian notions. We see the trajectory of the souls from the village of the living to the village of the dead. They had to get past the dreadful pellet-shooting Pu Pawla to get there; and only some particularly deserving souls managed to move on to paradise. Added to this traditional imagery of the Christian elaborations: the drawing also shows a byway leading from the village of the Christians to Christian heaven, watched over by Jesus, while Seitana watches the roads to the village of the dead. In this portrayal of afterlife, hill religion and Christianity are compatible rather than opposed, fused in a harmonious manner rather than presenting a clear break. Christianity had become domesticated; it had developed a vernacular form.

Such combinations of traditional and Christian notions occurred all the time, making Christianity compatible with local concepts. Such principles, central to self-identification, had always rested on shared ideas, for example, about the need to conciliate the spirit world. In pre-Christian times, one way of conciliation was to make sacrificial offerings, followed by a feast. Sacrificial feasting was essential to cope with illness, misfortune and lifecycle events, especially death.

Missionaries strongly discouraged Christian Mizos from such rituals because these were linked with the spirit world. But Mizos resisted and did not entirely abandon them. Instead they incorporated them into their new religious practices. The missionaries supported this domestication of Christian beliefs saying that they are trying to teach them how to be Christians and still be thorough Mizos. So, the Mizos proceeded to incorporate gayal sacrifice and feasting into their Christian moral code. Those who could afford it slayed a gayal for the main Christian feast, Christmas or at weddings. They also killed gayals to celebrate when missionaries returned from furlough in Britain.

Fifty years after the missionaries had arrived to win souls for their faith, most Mizos had taken on Christian identities. Not only did they construct churches all over the region, the missionaries told them that a church should always be self-supporting. On top of all of these, they also had become evangelists and lay preachers themselves. They accompanied the British missionaries on their tours around Mizoram, and from 1900 they also struck out on their own. While women were mostly short range evangelists, men took the longer trips. Those Mizos who felt the evangelizing urge started a tradition of preaching the gospel, not just in Mizoram but also increasingly in other parts of India.

By the early twenty-first century, Mizo Presbyterian missionaries had fanned across the globe. They could be found in China, Taiwan, Samoa, American Samoa, Tuvalu, Solomon

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Islands, Madagascar, Wales and Canada. The Mizos mass adoption of a new religion can be explained partly by the radically changed circumstances in which they found themselves after the colonial annexation and territorial divisions that resulted from it.

The original caption of Figure 2.7 reads: 'The first Christian Church in Lushai. It is erected on the spot that was once the place where the priest used to offer sacrifices to evil spirits – taken about the year 1894'. This conscious attempt to superimpose the new religion on the old one is shown in Figure 2.9, captioned 'Mr Lorrain and the Evangelist Thanga preaching the Gospel in a Lushai village, and using the late chief's memorial platform decorated with skulls as a pulpit'- Mission Veng, Aizawl.



Figure 2.8: Hut serving as the first Church in Mizoram  
(Sources: Camera as a witness)

Figure 2.9: Mr.Lorrain preaching gospel

(Sources: Camera as a witness)



Figure 2.10: A traditional drum hangs in front of the Pulpit (Source: Camera as a witness)

The grafting of new concepts onto familiar ones took place in many other ways as well and often because Mizos rejected European forms. The missionaries needed to contextualize their message to make it relevant to Mizos. They soon dropped the use of the word Jihova for the God of Christianity and began to refer to him as Pathian, the name of the most exalted deity in the hill religion's pantheon. They tried to equate the Mizo ethic of self-sacrifice for the good of the community (tlawmngaihna) with the Christian concept of charity.

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### 2.2.3 Their responses

At first, Mizos reacted to the evangelists with indifference. They showed considerable scepticism and many rejected the new faith. Puzzled by the early missionaries' apparent lack of power or purpose, they coined a name for them 'the white vagabonds'.

For years nobody showed sufficient interest to get themselves baptized. The missionaries' luck changed, however, and in 1899, the first few baptisms took place. Today, Khuma and Khara are known as the first Mizos to have allowed themselves to be baptized- but they may actually have been merely the first to live on after their conversion.

The number of Christians began to grow when missionary strategies broadened beyond mere preaching. The missionaries were successful in providing educational and health services, to which people responded positively, and they integrated local leadership into the church hierarchy. The first Mizo ministers were ordained in 1913 and 1914: in 1913 the first Mizo minister of the Presbyterian mission, Chhuahkhama, was ordained and in 1914 Chautera followed as the first Mizo ordained minister in the Baptist mission.

Christians also published in the first printed monthly news bulletin, Mizo leh vai, started by the Government in 1902 to spread new ideas. It was a bulletin that dealt with a wide variety of topics: from local news to information about world affairs, tips about hygiene, and suggestions on how to earn money, proper religious practices, the blessings bestowed by the new government and much more. The main thrust was to induce the readers to look critically at their own society and to improve it. Both the Presbyterians in Aizawl and Baptists in Serkawn set up a printing press, and printing press became one of Mizoram/s first industries. Before presses were established in Mizoram in 1910s, printing in Mizo is mostly done in Chennai, Sylhet, Allahabad and Kolkata. Printing was a mission monopoly in Mizoram, the missionary presses produced religious tracts and they were of great importance in spreading literacy and the Gospel.

Though the missionaries were not always on good terms with the local authorities, they were backed up the power of the state. After the first few years, however, the missionaries felt safe in their surroundings. The number of Christians expanded slowly. Sunday schools were introduced in 1896. The children who attended the first one did like the translated Bible stories but they refused to accompany the missionaries to nearby villages. Soon Sunday Schools became more popular. They spread to numerous villages, becoming an effective tool to acquaint many with Christian stories. It was the first Mizo pastors and teachers, under the supervision of the missionaries, who ran these schools. The new Christians were made aware of their links with the world community of Christians by other means as well. Those who learned English had access to selected magazines from Britain such as The Children's Newspaper.

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Knowledge of Christian narratives did not necessarily lead to lasting acceptance of faith, however. What missionaries called ‘backsliding’, or people returning to the hill region, was a real concern. Others were excommunicated for unorthodox interpretations of the faith. There were also cases what could be called ‘forward sliding’: new Christians moving on to other church congregations, and beyond. Thus, one of the earliest evangelists, Phaisama, later joined the Salvation Army, Then the Roman Catholics, before becoming a Hindu priest in Manipur State (Sailo, 1909). Despite such setbacks, the missionaries could consider their endeavours to be spectacularly successful: by the 1940s, resistance against Christianity had been overcome and most Mizos thought of themselves as Christians.

Nearly all villages boasted a church or chapel (see Figure 2.3) that was easily recognizable, often on a commanding location. Earlier the largest structure in a village had often been the bachelors’ dormitory (zawlbuk). Here youths over 15 years lived together and got training in hunting, warfare and Mizo-style wrestling. Before colonial rule, they formed, in effect, the village’s standing army, at the beck and call of the village headman. Now the village church was the largest structure, and in most villages, the dormitory had been discontinued (Figure 2.11). On Sundays, church attendance was invariably high.

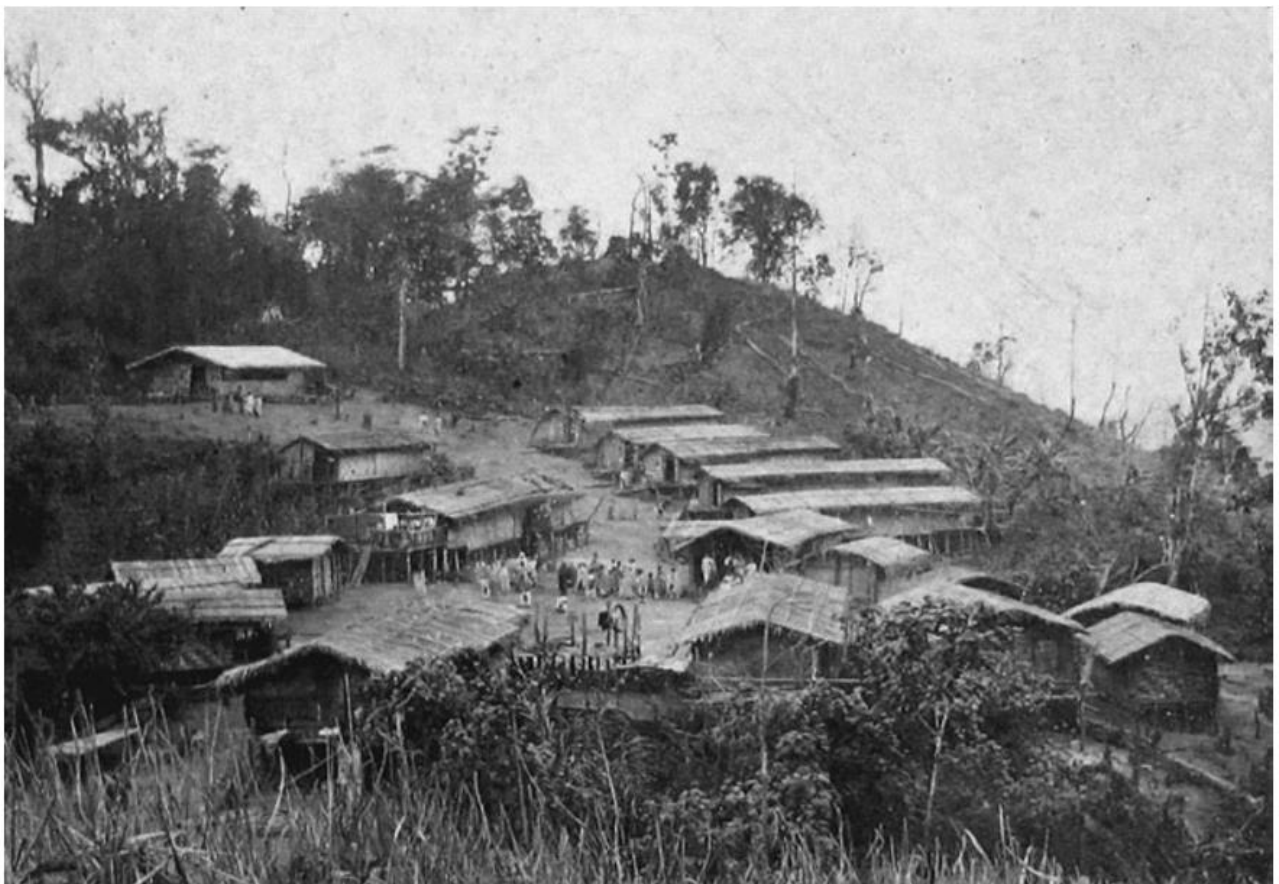


Figure 2.11: A Christian village with the Church on the hill to the left, 1930s  
(Source: Camera as a witness)

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## 3. SITE STUDY

### 3.1 LOCATION

The site chosen was proposed as a *Recreational Compound* by the Presbyterian Church of India (PCI), Mizoram Synod which can be used for different purposes like Gospel Camping and any other Church related activities. The site currently accommodates Synod Book room and Parking, which serves both- employees of Synod Book room and public.

It is located at Bawngkawn, Aizawl, Mizoram.

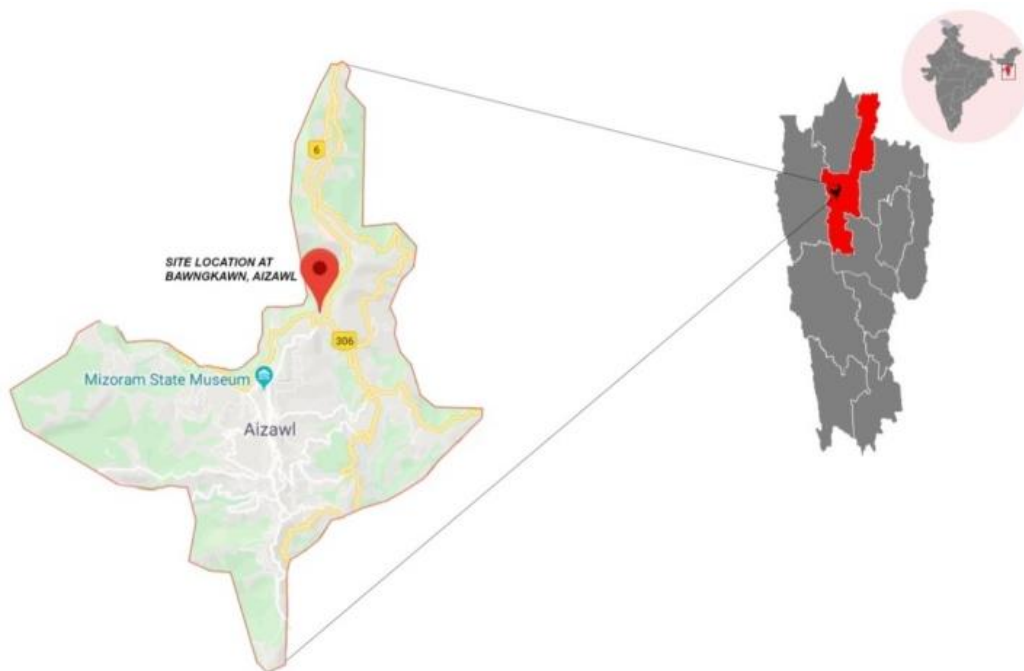


Figure 3.1: Location Map

### 3.2 SITE SURROUNDINGS

The main road that stretches across Bawngkawn is divided into North and South points. The site is situated at the nodal of the North point. The site is surrounded mostly by residences. Most of the buildings alongside the main road are mixed used, with shops on the ground floors and residences the rest of the floors. There is a local church opposite to the site. The site used to accommodate a Cinema theatre back in the 1970s that is why there is a huge cut off patch of land. Currently the site is used as Rent parking and Synod book room.



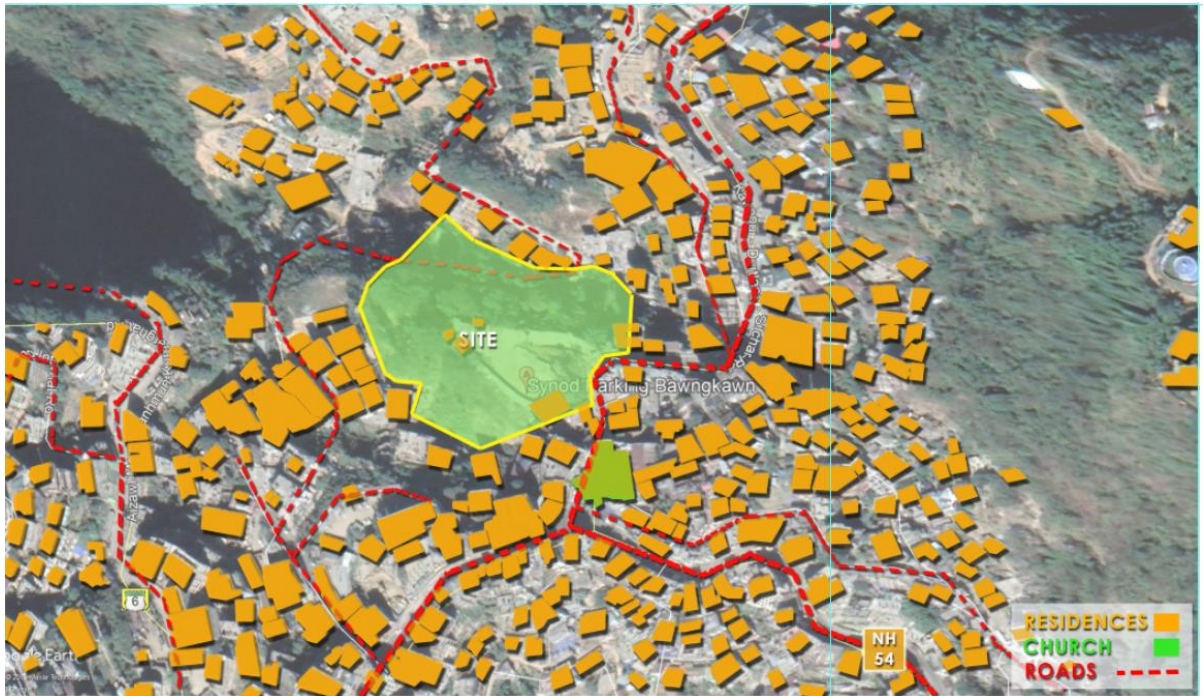


Figure 3.2: Site Context

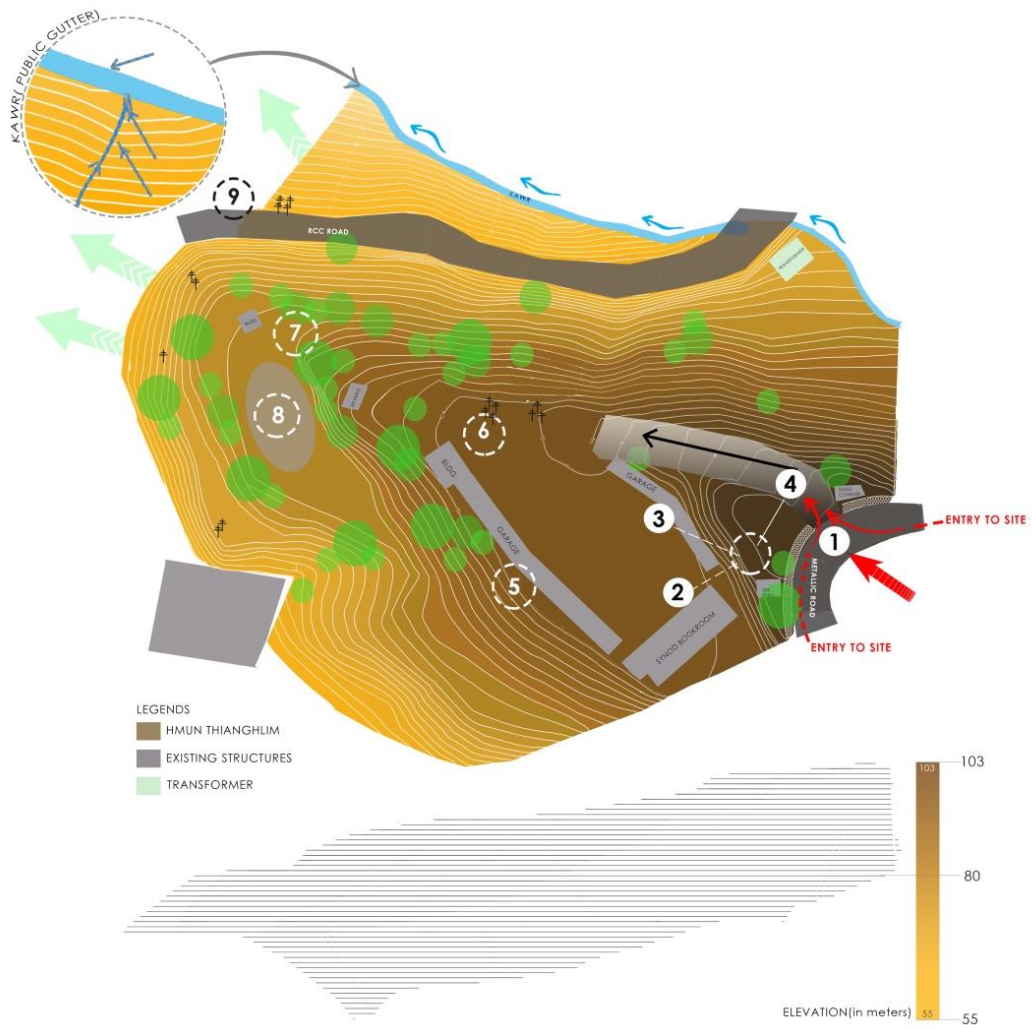




Figure 3.3: Pictures of site

### 3.3 CONNECTIVITY AND ACCESSIBILITY

The site can be accessed by two roads- main road, national highway 54 and secondary road that runs through the site. The main road measures a width of 9 meters which is proposed as the main accessible road and the secondary road measures 6 meters. The main road which is the national highway is chosen for the main access to the site. The reason is because of the easily accessible and availability of daily requirements. Alongside the main road, there are mixed used buildings with shops on the ground floor and residences on the rest of the floors.

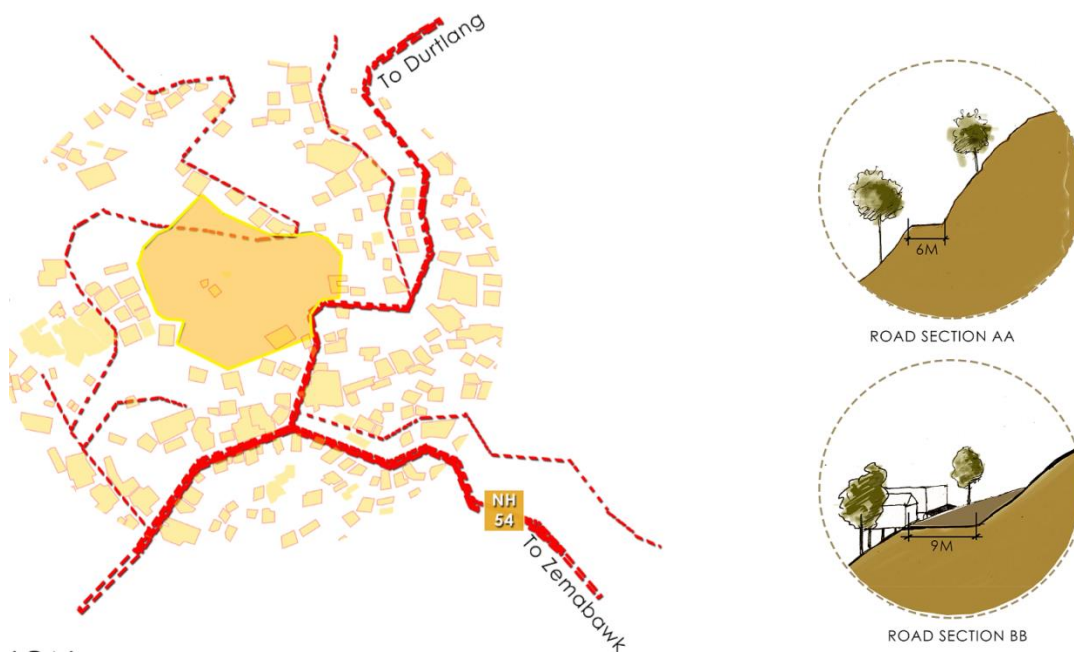


Figure 3.4: Connectivity map with road sections

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## 3.4 CONTEXT STUDY

### 3.4.1 BUILDING MATERIALS

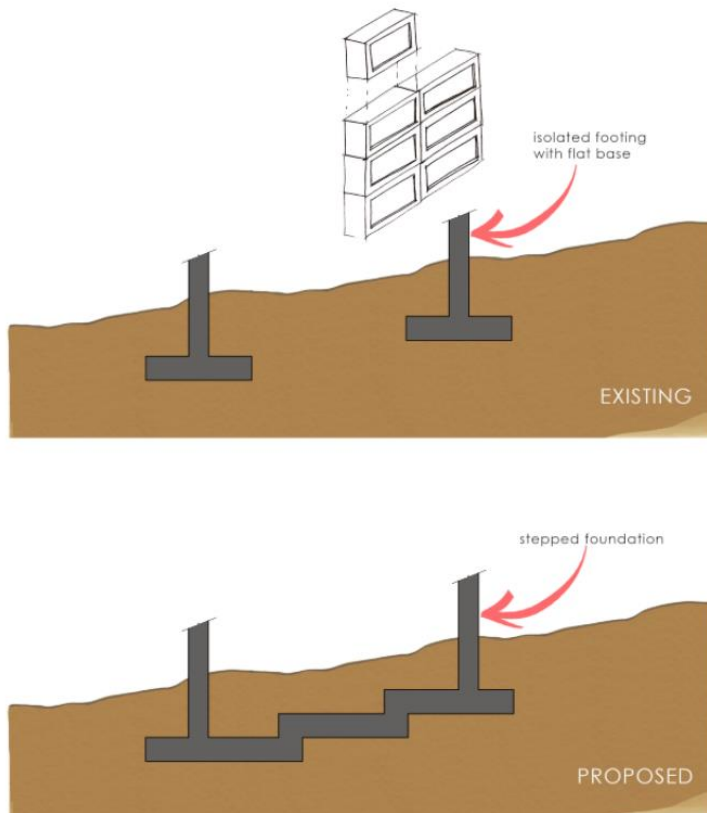


Figure 3.5: existing and proposed footings

Aizawl have weaker infill walls, often constructed only a single brick wide or with the “brick-on-edge” technique.

Aizawl’s steep slopes require most buildings to be constructed with stepped foundations, where individual footings rest on a flat surface, but “step” up the hillside like a staircase at every or every other column line.

### 3.4.2 BYE LAWS

1. SETBACKS: For Plot area above 130 sq.m

- FRONT SETBACK = 2 m
- SIDE SETBACK = 1.2 m
- REAR SETBACK = 1.2 m

2. MAXIMUM PERMISSIBLE F.A.R = 1.5

3. HEIGHT LIMITATION = 19m, provided if entire floor is used for parking, there can be an extension upto 22m.

4. MAXIMUM PERMISSIBLE COVERAGE for above 1000 sq.m plot = 50%

## 3.5 SITE CHARACTER

### 3.5.1 VEGETATION ON SITE

There are five types of trees found in the site. Deciduous tree - Mayflower tree

Evergreen Trees- Eucalyptus, Betel, Jackfruit, Mayflower, Guava.

They provide color and character year round, they can provide excellent wind-break, provide home for birds, low maintenance and they are great for the environment.

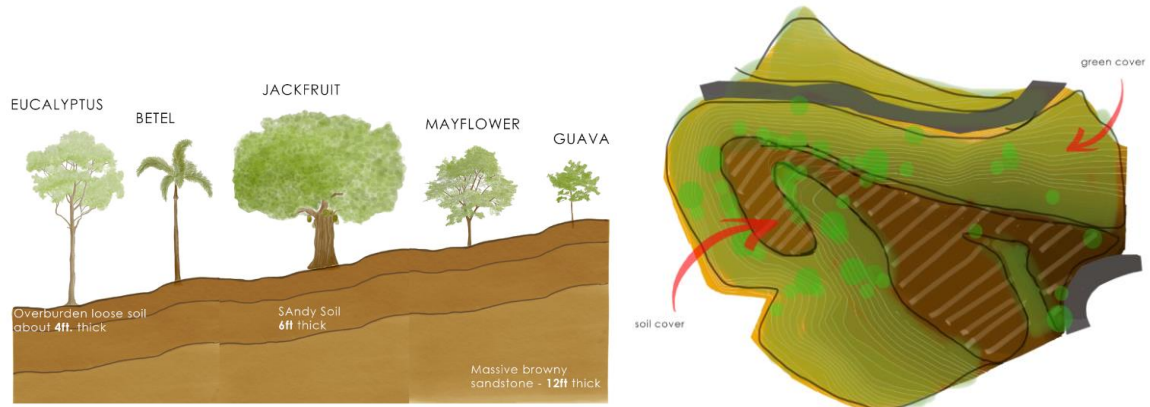


Figure 3.6: Vegetation on Site

### 3.5.2 SOIL

Average bearing capacities determined from field tests range between 36 and 51 psi (250-350 kN/m<sup>2</sup>)

**SANDY SOIL:** Drains easily, when compacted and moist, it holds together fairly well, make for good soils to support foundation because of their non-water-retaining properties. However when moist, the particles will lose their friction and can be washed away, which can leave gaps beneath the foundation.

**SANDSTONE:** High bearing capacity, they are very strong and good for supporting foundations because of their stability and depth.

SOIL TYPE	BEARING VALUE (kPa)	N- Value
OVERBURDEN LOOSE SOIL	100	4-10
SANDY SOIL	200-600	10-30
SANDSTONE	1620	30-50

Figure 3.7: Types of soil

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### 3.5.3 RELIEF MAP

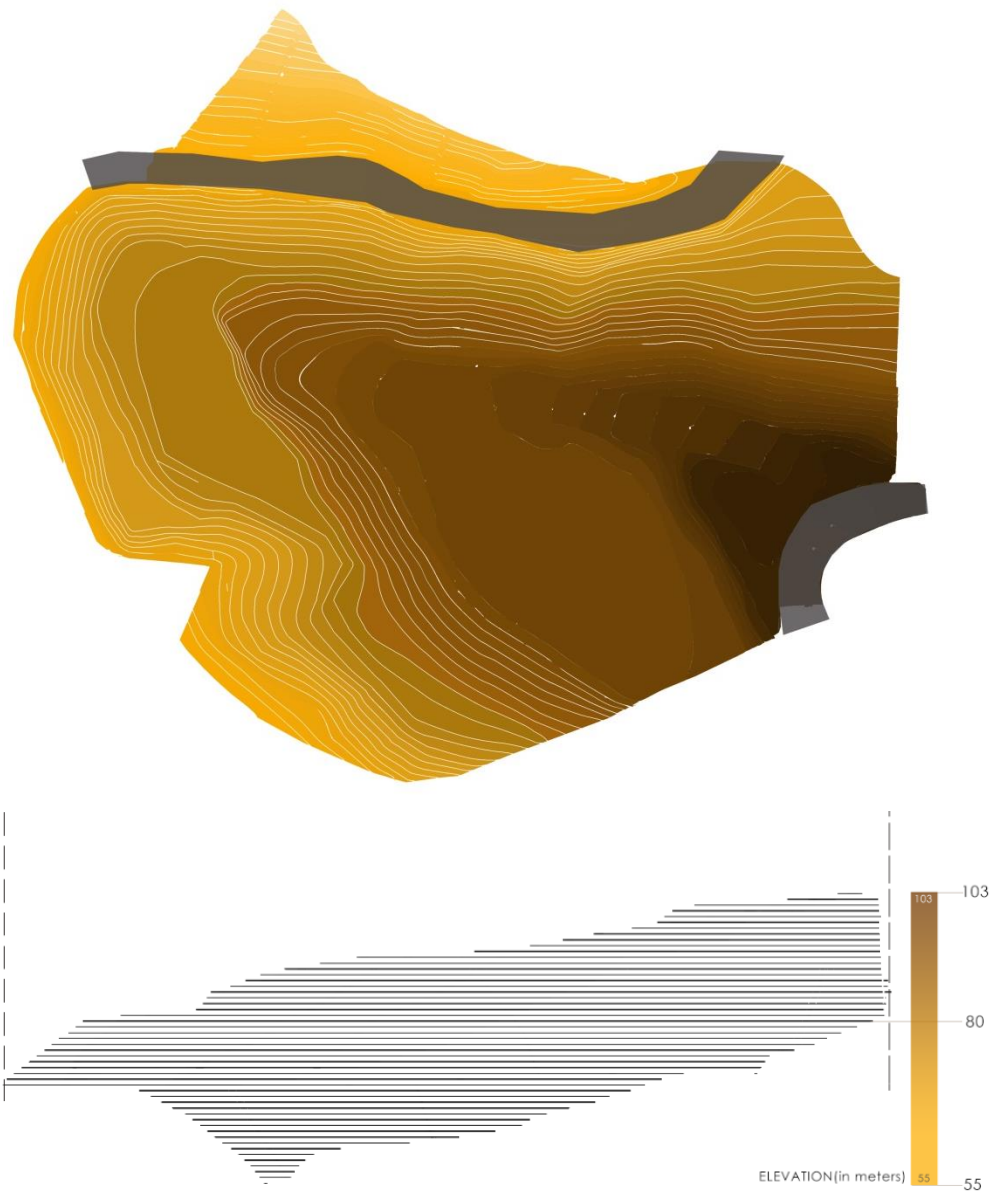


Figure 3.8: Relief map of Site

## 3.6 CLIMATIC DATA AND INTERPRETATION

### 3.6.1 CLIMATE

#### TEMPERATURE:

The mean daily maximum temperature is 28 degree C in summer in the month of April.

The mean daily minimum temperature is 7 degree C in winter in the month of January.

**PRECIPITATION:**

The maximum precipitation is 410 mm precipitation during monsoon in the month of August.

The minimum precipitation is 10-20 mm precipitation during winter season in the month of January.

**WIND VELOCITY:**

The maximum wind comes from the west at a speed of minimum 28km/hr and this is the highest speed experienced.

The minimum wind blows from NE with a speed between 1-5 km/hr.

**HUMIDITY:**

Maximum Humidity of 280% during monsoon and minimum humidity of 180% during winter season

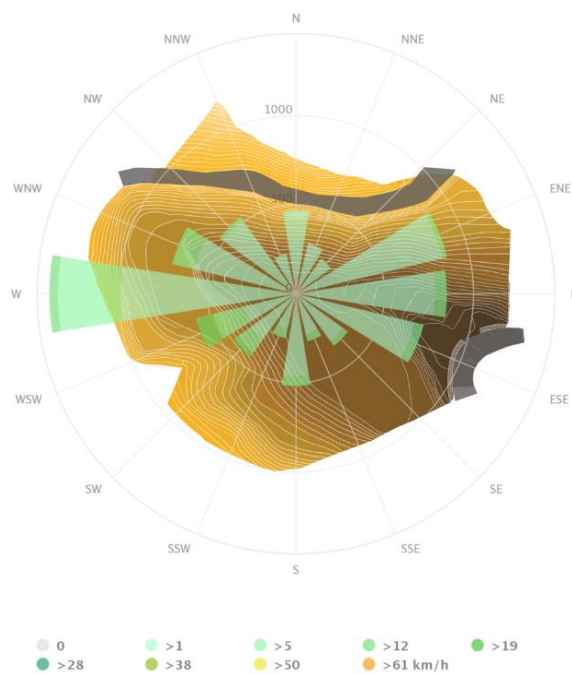
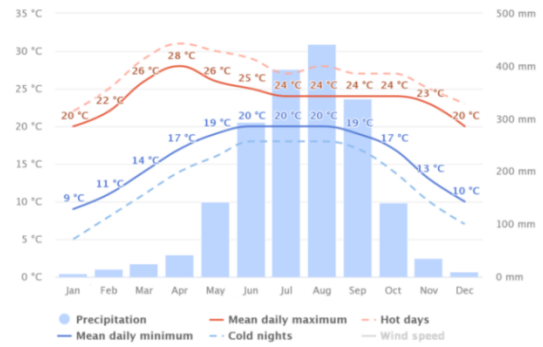


Figure 3.9: Temperature, humidity, wind graphs

**3.6.2 SUNPATH**

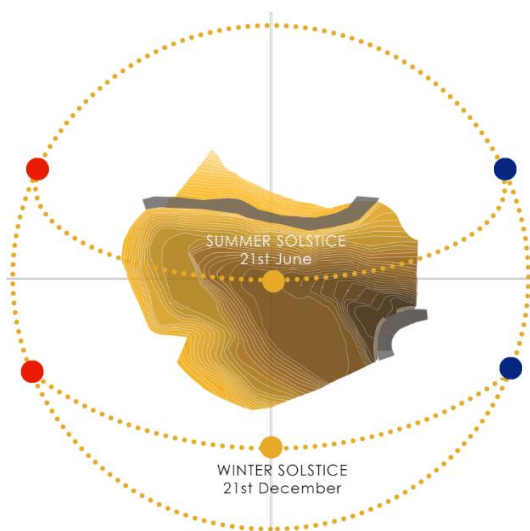
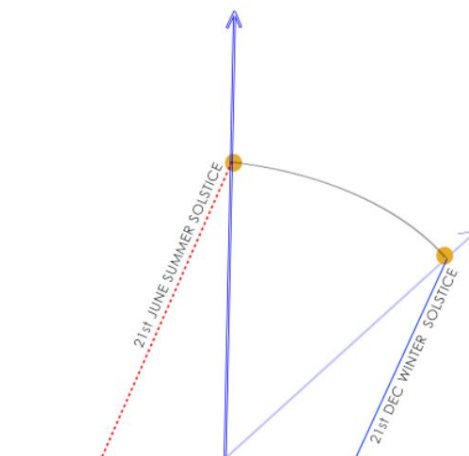


Figure 3.10: Sunpath diagram



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## 4. CASE STUDY

### 4.1 LIVE CASE STUDIES

#### 4.1.1 THE PRESBYTERIAN CHURCH OF INDIA, DAWRPUI, AIZAWL

##### ABOUT THE PROJECT

LOCATION - Dawrpui Veng, Aizawl, Mizoram

ARCHITECT - Puia

BUILDING TYPE - Christian Church

YEAR OF CONSTRUCTION - 2014 till date

##### FLOOR AREA:

1. PLOT AREA = 2832.71 SQ.M
2. GALLERY LVL = 289.55 SQ.M
3. CHURCH LVL = 920.92 SQ.M
4. HALL LVL = 1302.47 SQ.M
5. HOSTEL LVL = 932.97 SQ.M
6. SCHOOL LVL = 917.00 SQ.M
7. LOWER GROUND LVL = 184.14 SQ.M
8. TOTAL FLOOR AREA = 4691.12 SQ.M

OLD CHURCH BUILDING = 144.27 SQ.M

PARKING AREA = 481.71 SQ.M

PLINTH AREA = 1302.47 SQ.M

COVERAGE = 48.31%

F.A.R = 1.62

##### BRIEF SPECIFICATIONS

1. FOUNDATION - RCC Isolated/ Combined footing
2. SUPPER STRUCTURE - RCC Frame Structure
3. FLOORING - Neat Cement Finish over RCC Slab/Concrete Floor - Marble flooring over RCC Slab/ Cement Concrete Flooring / Vinyl Tiles / Terrazzo Floor
4. WALLS - Half Brick thick external and Partition walls
5. CEILING - Gypsum Board on Galvanized Steel Section frame work
6. ROOFS - Pre-coated Roofing Sheets on Structural Steel Trusses
7. PATHWAYS - Local Stone Paving laid on Sand bed

RETAINING WALLS - Stone Masonry Revetment/ breast walls with V-Drain at Base

This Church is used not only for religious purposes but it also accommodates educational institution within its building. It accommodates middle and primary English medium schools. It is designed so as to serve both the church functions and school. It is designed so as to

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accommodate hostels too. The Church compound is used by the students during the day during week days and by the church during night time and at the weekends. It's a tradition that the Church followed ever since Welsh missionaries put up the first Church. Education was one of the most important tools for the missionaries to win over the Mizos interest. Before the missionaries came to the State, the people of Mizoram did not have scriptures of their own. It is through these volunteers who sacrifice everything that Mizo learn how to read and write. It is because of their hard work and dedication of promoting education, constructing schools that the state stands where they are today, the 2nd most literate state in the whole country.

It is a modified cruciform in plan (see Figure 4.1). The materials used are bricks, stones and steel. The main members are a combination of Howe and Scissors truss systems. The rest are drawn according to observations. Trusses enable large clear spans, giving flexibility for the use of interior space. The truss system is usually the only truly custom designed engineered and fabricated structural component of any structure. The same thing happens here in this church. The trusses are designed and fabricated also keeping in mind the HVAC ducts. Trusses are widely used to serve two main functions: To carry the roof load and to provide horizontal stability. The design so far has no relation to the theology of Christianity. It was customized so as to serve the structure at its best. Being in seismic zone 5, the engineer also concerned about the arrangement and connections in the roof trusses. They are all fabricated and placed together on site. They were designed and engineered to resist earthquake at its best. Its serves few purposes like holding the roof covering, holding the hvac system and on top of that are resistant during earthquake.

The main architectural features include:

- a) THE CROSS, a main symbol of the religion of Christianity, a reminder of the Crucifixion and the redemptive advantaged of his passion and death. Therefore, the Cross is a sign of both of Christ and of Christian faith. A cruciform is cut behind the gallery in the glass facade that illuminates the interior during the day, letting in the natural light. Not only do we find it at this wall, but also behind the altar on the wall, the doors, window glasses, at the tip of the Church. One of the prominent features is The Cross at the tip of a spire. The Cross does play an important role for Christians around the world. (Fig.4.2)
- b) THE DOORS made of Malaysian Oak. Carved are the Presbyterian Church of Indian Emblem, made in China.  
Red border =The blood of Jesus Christ  
Dove =Holy Ghost



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Wave of sea =sinful world

Blue colours =Spiritual Life

Gold colour =Love of God

Light ray = Light from God

It says THE PRESBYTERIAN CHURCH OF INDIA, THE LIGHT OF LIFE.

Though simple designs are usually preferred, we see elaboration on each of the doors. The idea of ornamentation back from the renaissance period has been brought into the designs of detailed carvings on the doors. (Fig. 4.3)

- c) STAINED GLASS WINDOWS, their objective in a church was, by means of story or symbolism, to enhance the beauty of their environment and inform the viewer. Stained glass is not just beautiful: it was one way to decorate significant structures for several years and also teaches archaeologists more about the past of the structure. This particular stained glass has a portrait of a dove, representing the Holy Spirit, The Cross and The Holy Bible. Not much examples of used of stained glass in Mizoram Churches have been noticed. This church is one of the very few. (Fig. 4.4)
- d) Materials: Bricks and stone masonry for walls. And for the main structural system, concrete is used. The roofing is steel truss system with corrugated metal covering. Most of the churches in Aizawl used these types of materials. When it comes to colour, Churches normally follow white or tints of grey and brown. This church is painted in tints of brown. There is no symbolism as such when it comes to colour. But colourless colours and faded shades are usually preferred, can be because the entire spiritual related are portrayed in white in the Bible.



Figure 4.2: Cross cut-out



Figure 4.3: Door details



Figure 4.4: Stained glass

It also accommodates a chapel which was constructed back in the year 1930 with capacity of 100 people. This chapel is the first structure that stood as a Church. Due to reconstruction and extension, parts of the structure have been replaced. The structure that stands today holds around 60% of the original materials including the roof trusses, the Pulpit, covering

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material, columns, windows and glasses. The rest of the structures are replication of the original one, e.g., the walls has been replaced by another stones to look like the old one. (See Fig. 4.5) It was used as the main Church back in the days, but today it is used as one of the department rooms on Sundays by Senior Department. The chapel that stands today is the only living example of traditional architecture that the Mizos have.

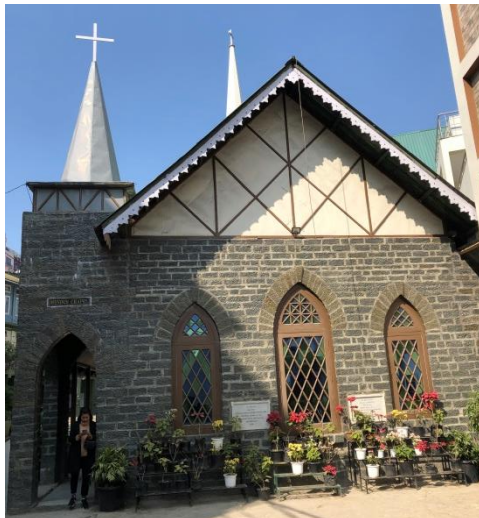


Figure 4.5: Stone walls of old Church



Figure 4.6: Steeple and spire of church

The steeple and spire (See Fig. 4.6): One idea is that the walls of the steeple served to strengthen the image of the Church physically, to transform its head of the audience upwards towards the heavens and God and therefore to hold them in the spiritual structure of adoration. Many architects assume that the higher the structure becomes the more majestic and stylish it is. Even with stained- glass windows, few could read and write because of the early church, so pictures on stained-glass windows tell stories in the Biblical language without using words. Some steeple may have the purpose of housing the church clock and the higher the sky, the farther the clock is heard. The sound of the church bells must have been listened to, so that not to obscure the echo, the steeple must raise over any other building in the area. Through these church towers, the local people who are near the Church could see and hear the sound of the bell. It is also a sign for people to locate where the church is. They are also used to call the members of the church for services.

Even though the origins of church steeples are very different, a church from a relatively long distance is still easily found nowadays. Their emphasis is always on the distinct church steeple, so ideally the end result would be to be called to Christ so as Jesus said “And I, when I am lifted up from the earth, will draw all people to myself” (John 12:32, 1789). All of us still lead men to Christ at the peak of the cross.

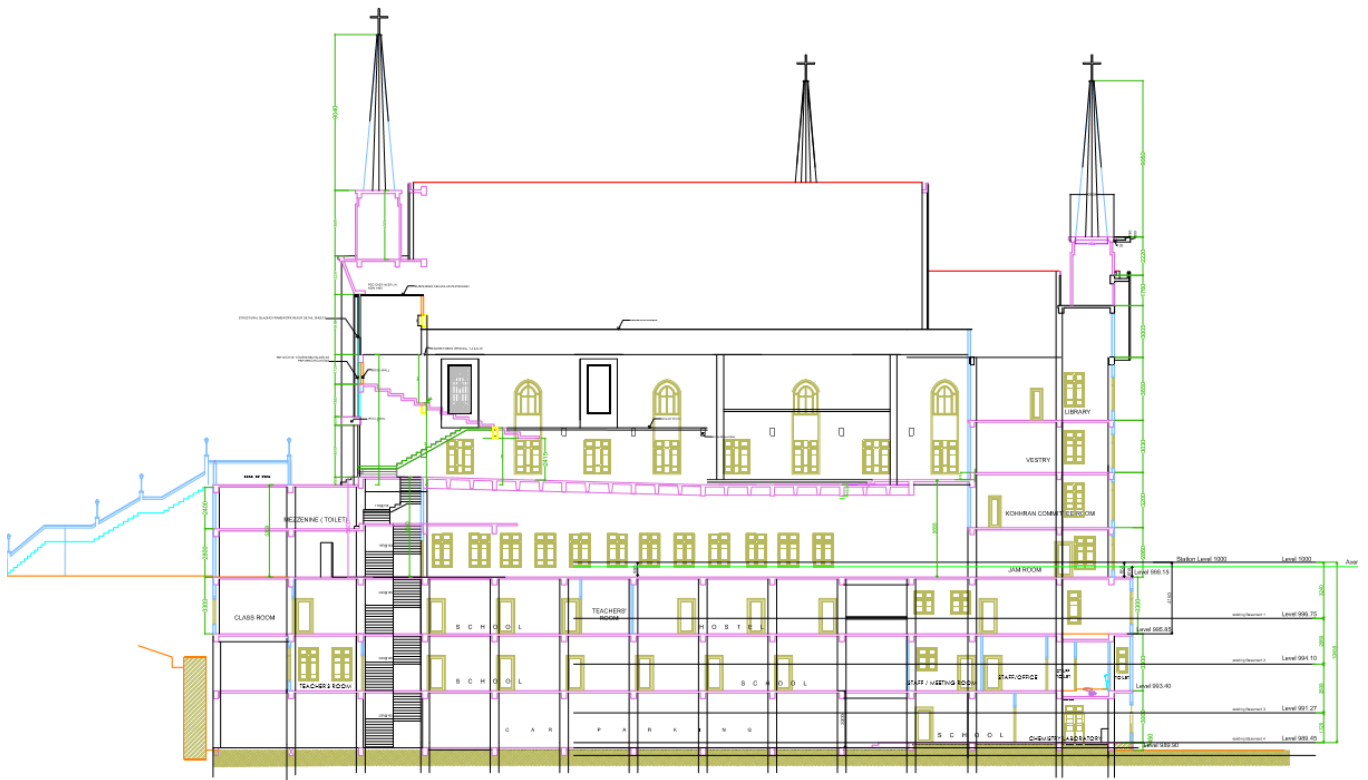
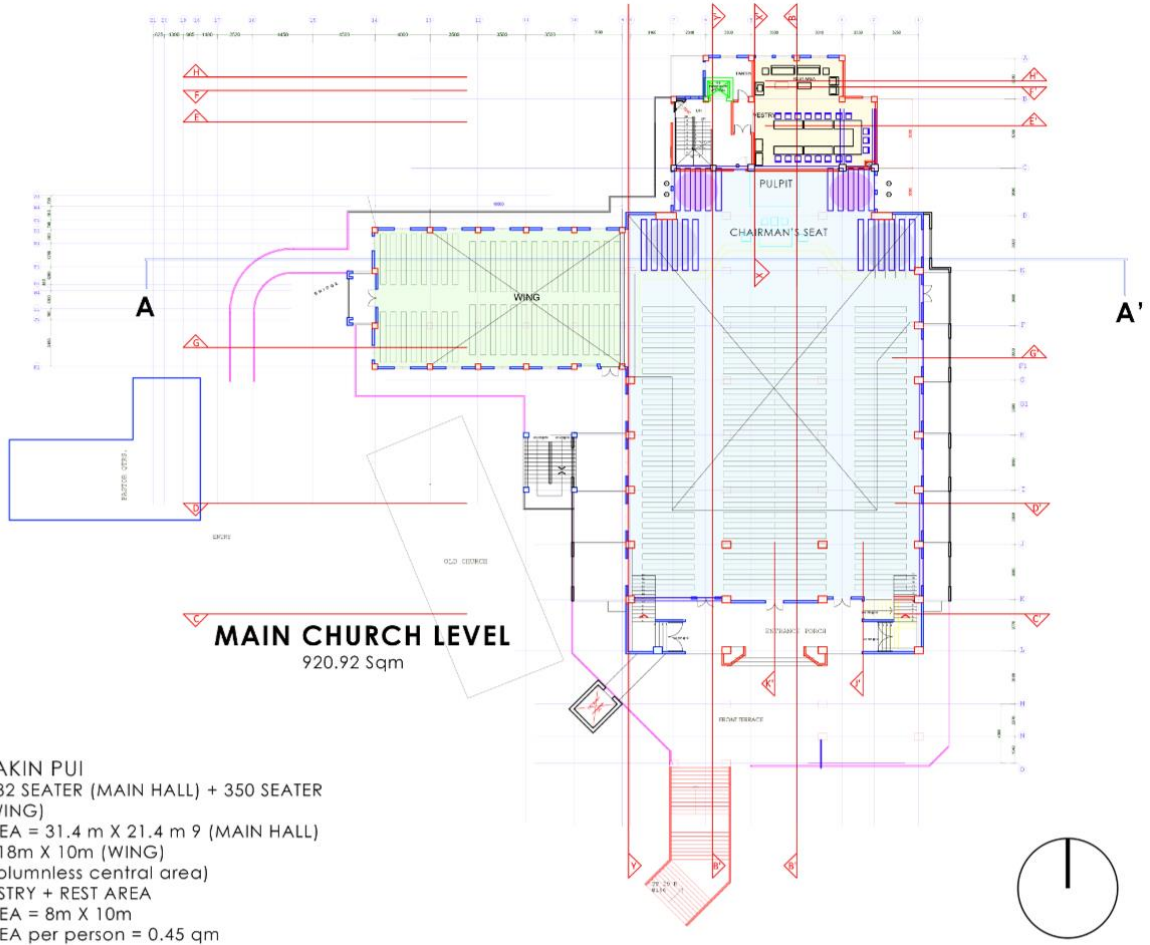


Figure 4.1: Plan and section of church, Dawrpui Veng

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## 4.1.2 THE PRESBYTERIAN CHURCH OF INDIA, MISSION VENG, AIZAWL

### ABOUT THE PROJECT

LOCATION - Mission Veng, Aizawl, Mizoram

ARCHITECT – Landmark architects

BUILDING TYPE - Christian Church

CAPACITY = 1080 people

### BRIEF SPECIFICATIONS

1. FOUNDATION - RCC Isolated footing (with square and rectangle columns)
2. SUPER STRUCTURE - RCC Frame Structure
3. FLOORING - Cement Finish over RCC Slab/Concrete Floor - Marble flooring over RCC Slab/ Cement Concrete Flooring / Vinyl Tiles
4. WALLS - Half Brick thick external and Partition walls
5. CEILING - Gypsum Board on Galvanized Steel Section frame work
6. ROOFS - Pre-coated Roofing Sheets on Structural Steel Trusses
7. PATHWAYS - Marble stone
8. RETAINING WALLS - Stone Masonry Revetment

COVERAGE 5 = 48.31%

F.A.R = 1.5

It is the place where one of the first Churches in Mizoram was built back in the 1890s. It is the most important Church to Mizoram Synod and its compound holds Synod headquarters. It is the Church where Synod Moderator, the highest rank and the official board member's reside. The evolution of this particular Church holds most of the Mizoram Presbyterian Church history. The functionality can and may differ from the rest of the Churches in Aizawl. This Synod compound also holds one of the earliest buildings erected by the missionaries. Over the years, it has been renovated but without changing the architectural elements. Since there are no written or visual documentation on anything (architecture in particular) before the missionaries arrived in the place, this is one of the few living examples of history of Mizoram Architecture that too borrowed from another country.

With increase in church population and with introduction to technologies and fresh ideas, the churches have increased a lot in terms of size. But the architectural style that was brought by the Welsh that have been followed ever since the existence of Christianity in Mizoram is still continuing. Elders and ministers governed Church, where all the decisions of the church including the architecture are decided by them. It wouldn't be wrong to say they have full control over the administration and functions of the church. This is one of the sole reasons

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why the traditional church architecture has been followed. The materials used are bricks, stones and steel. The main members are a combination of Howe and Scissors truss systems. The rest are drawn according to observations. Trusses enable large clear spans, giving flexibility for the use of interior space. The truss system is usually the only truly custom designed engineered and fabricated structural component of any structure. The same thing happens here in this church. The trusses are designed and fabricated also keeping in mind the heating ducts. Trusses are widely used to serve two main functions: To carry the roof load and to provide horizontal stability. The design so far has no relation to the theology of Christianity. . It was customized so as to serve the structure at its best. These structures are almost similar as compared with the ones that have been used in Dawrpui Church.

Architectural features:

- a) The cross (see Figure 4.8), a main symbol of the religion of Christianity, a reminder of the Crucifixion and the redemptive advantaged of his passion and death. Therefore, the Cross is a sign of both of Christ and of Christian faith. Cross has been used in many of the architectural elements such as in the window glasses, door carvings and at the top of the steeple as a symbol of Christianity. This makes it easier to locate the church even from far distance as it stands at the highest point of the church. Not only it is a symbol for Christians but has many other uses too.
- b) Gothic style windows and doors, borrowed art from Gothic architecture. Though there is no standard as to how a Presbyterian church should look like, it has been implanted in the people of Mizoram that a church must always contain these kinds of elements. Though there are simpler, easier, innovative inventions and ideas, the thought of gothic arches still overpower when it comes to elements of the church. Most of the windows and doors, including the carvings at the altar have gothic arches designs.
- c) The Altar, from elaborated and fully decorated with colours to a simpler way with a unicolor. For Presbyterians, the altar is one of the most important elements in a church. The praise and worship and other liturgies like Baptism and Sacrament should be done in the eyes of the whole congregation. This means that the pastor should always be visible and can be heard, and the congregation can get closer to the pulpit and the altar or around the Lord's Table, thus being involved in the liturgy. The liturgical centre was designated by Pulpit and Altar for sermon and Communion, where the pulpit and the altar are for the Lutherans or the Lord's Table for the Calvinists, and the congregation was grouped around these elements.

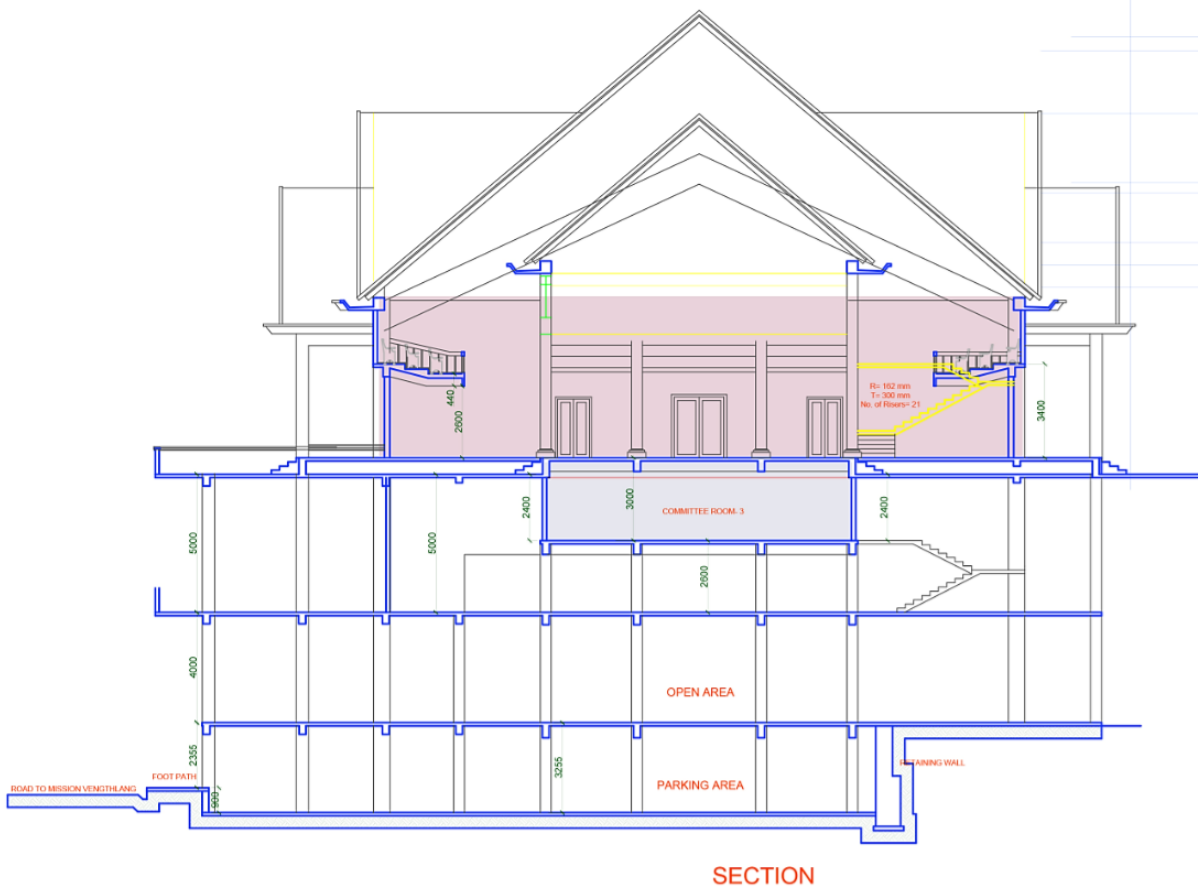
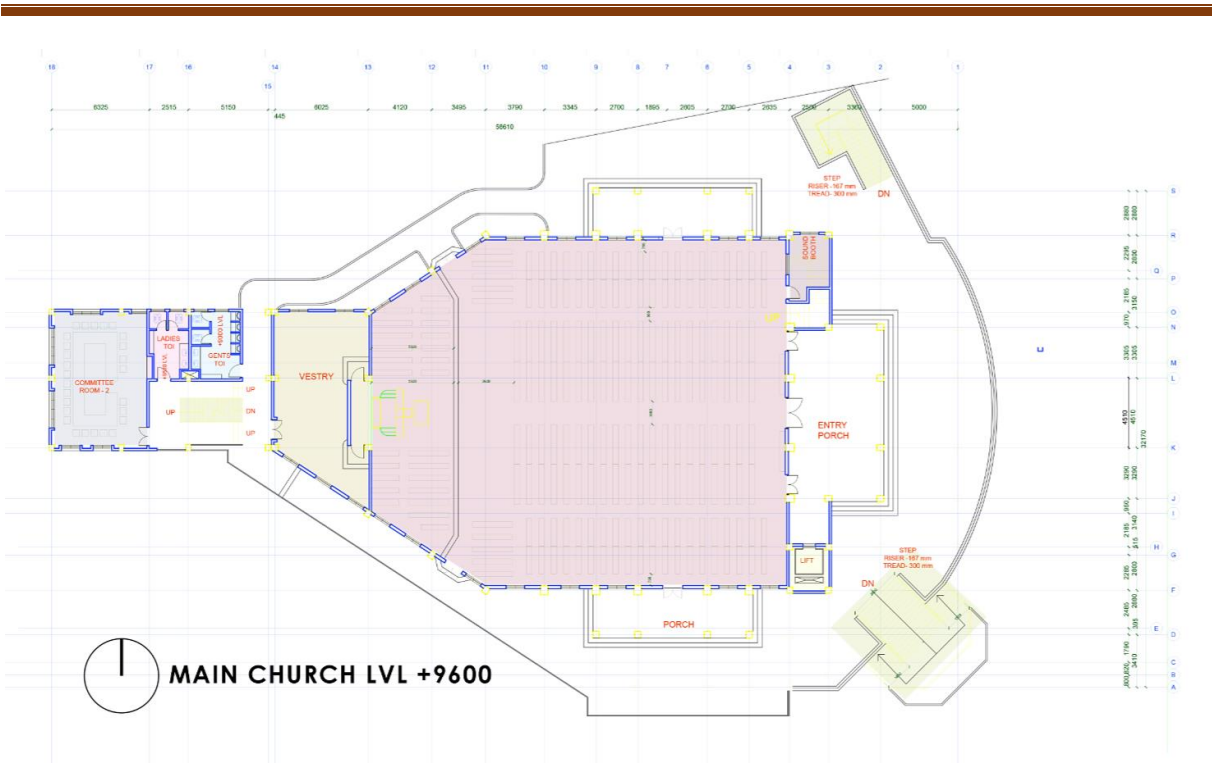


Figure 4.7: Plan and section of church Mission Veng

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## 4.2 LITERATURE CASE STUDY

### 4.2.1 SUMI BAPTIST CHURCH, ZUNHEBOTO, NAGALAND

PROJECT: Sumi Baptist Church

LOCATION: Zunheboto District, Nagaland, India

DIMENSIONS: 61.8 m in length, 46.5 m in breadth and 50.5 m in height

PLINTH AREA: 220503 Sqm.

CAPACITY: 8,500 Members

NUMBER OF FLOORS: 8

ARCHITECT: Honoholi K Chishi-Zhimomi

CONSTRUCTION PERIOD: 2007 - 2017

INAUGURATED ON: 22nd April 2018

Built in a shape of an egg and other than its striking blue turrets that can be seen from more than twenty nearby villages, the Asia's largest church also features a 500-kilogram bell that has been imported from Poland. Other facilities that the church encompasses are.

- A conference hall
- A seminar hall
- A meeting hall
- 14 office rooms
- A sick room
- A dressing room (for brides and grooms)
- A cafeteria
- A children's playroom

Usually we have bell tower as a part of the church structure, located near the gallery, but this church has its bell placed in front of the main church. This is one of the features that define this church. At the entrance, there is an atrium that opens up till the roof. All the rooms project from this entrance foyer.

The architecture is kept simple and with not much of decorations and carvings done. Simple circular columns are used throughout the entire structure. There is not much of detailing elements like carvings, use of stained glasses, etc. other than the Cross at the tip of a steeple and on top of the choir at the rear end inside the Church, and the Gothic arch shaped windows.

Unlike the Presbyterian churches in Mizoram, spatial arrangement and location are a bit different. One of the differences is that there is no pulpit and the Altar in the Church, which is one of the most important elements in Presbyterian churches.

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**DOME:**

Though not frequently done on reformed churches, this church introduces use of dome at the central portion. And another new thing about this church is use of primary colours.

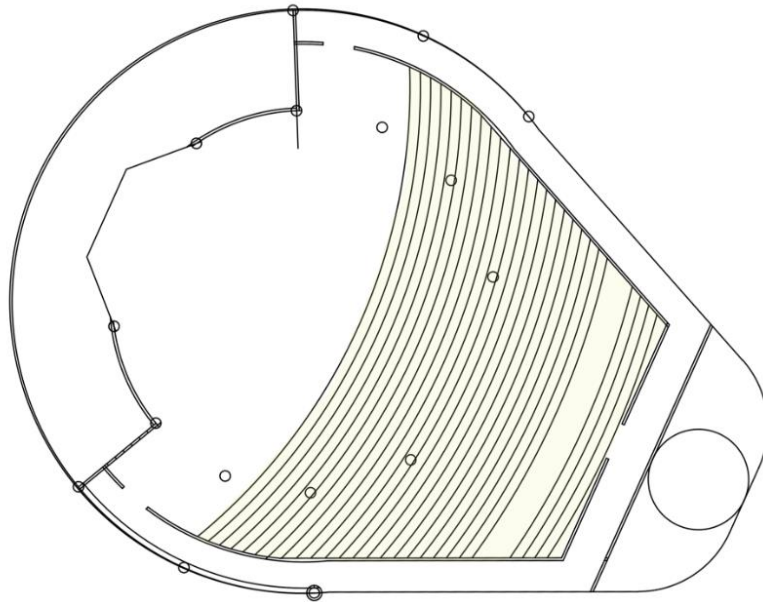


Figure 4.8: Ground floor plan of Sumi Church

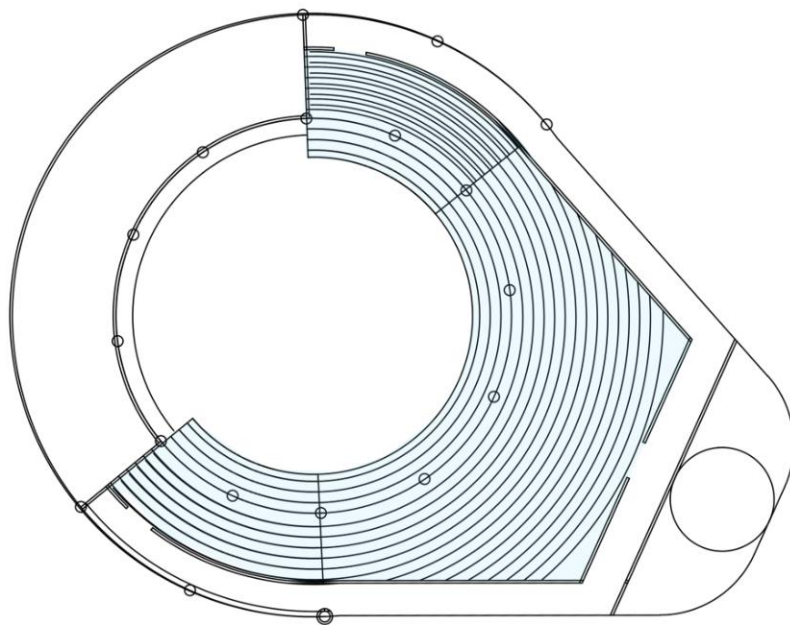


Figure 4.9: First floor plan of Sumi Church



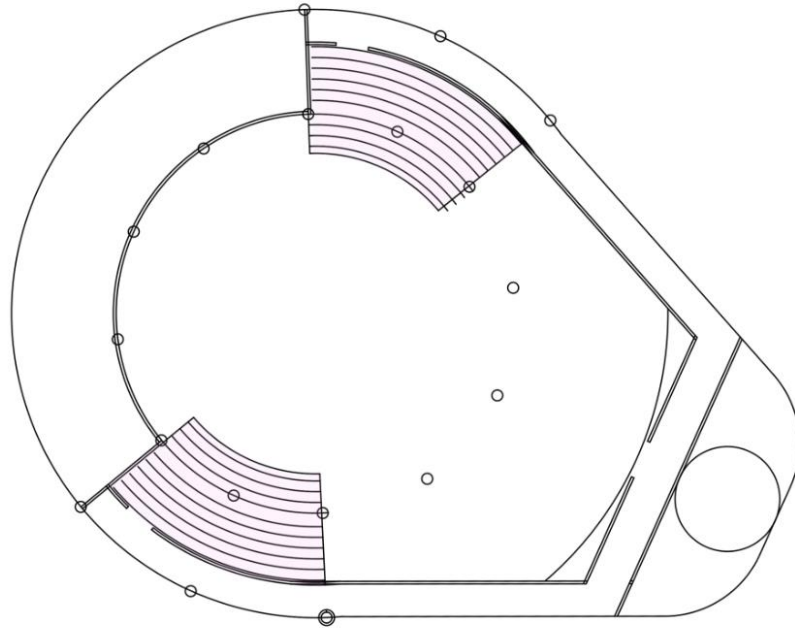


Figure 4.10: Second floor plan of Sumi Church

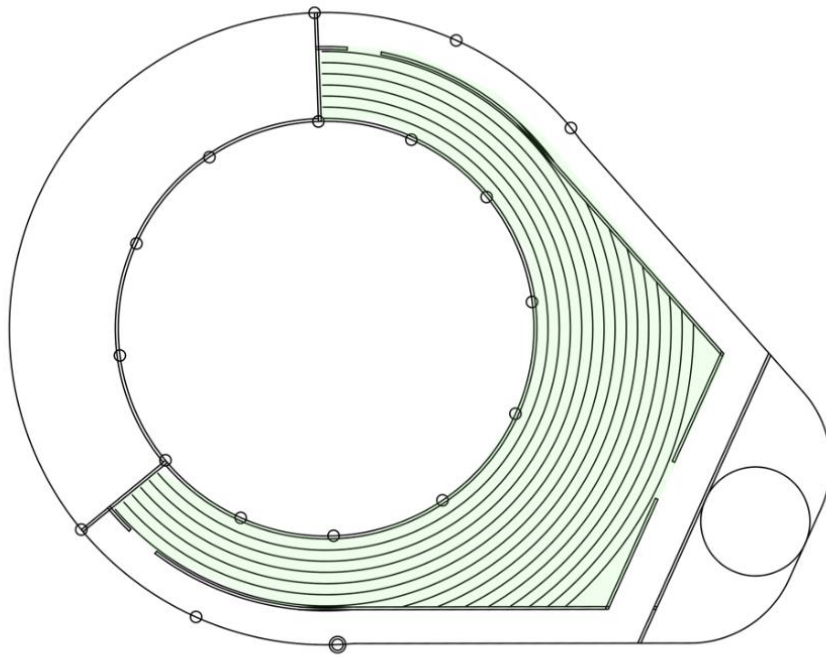
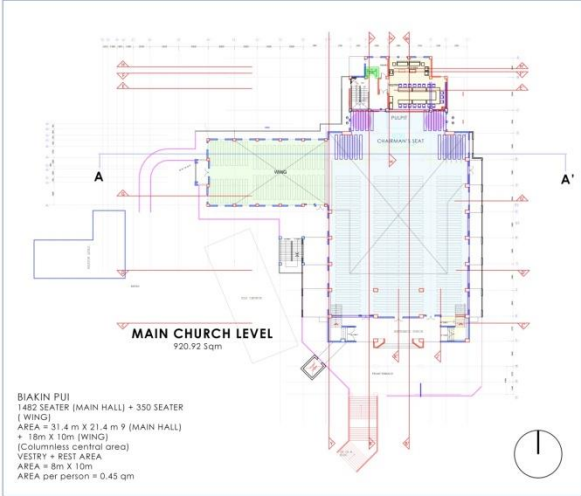
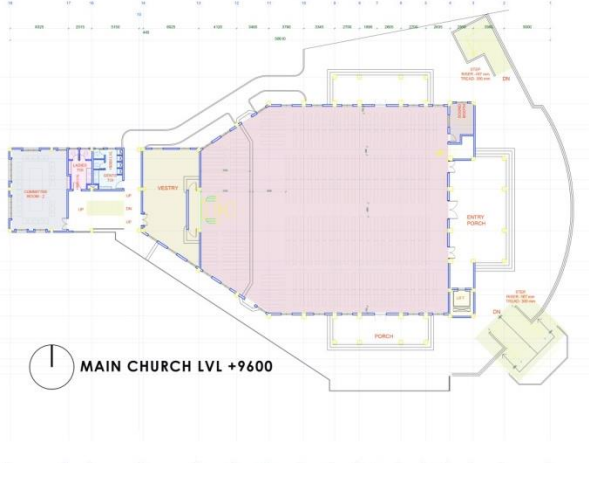


Figure 4.11: Third floor plan of Sumi Church

### 4.3 COMPARATIVE ANALYSIS

AIZAWL PRESBYTERIAN CHURCH, DAWRPUI, AIZAWL, MIZORAM	AIZAWL PRESBYTERIAN CHURCH, MISSION VENG, AIZAWL, MIZORAM
 <p>BIAKIN PUJI 1492 SEATER (MAIN HALL) + 350 SEATER (WING) AREA = 31.4 m X 21.4 m 9 (MAIN HALL) + 18m X 10m (WING) (Columnless central area) VESTRY + REST AREA AREA = 8m X 10m AREA per person = 0.45 sqm</p>	 <p>MAIN CHURCH LVL +9600</p>
<p>Features:</p> <ul style="list-style-type: none"> <li>• Modified cruciform plan</li> <li>• Pulpit and congregation area</li> <li>• Wings like gallery</li> <li>• Gallery</li> <li>• Cross at spire, pulpit, entrance wall, stained glass</li> <li>• Stained glasses</li> <li>• Sloped roof</li> <li>• Localised version of multiple steeples</li> </ul>	<p>Features:</p> <ul style="list-style-type: none"> <li>• Square plan</li> <li>• Pulpit and congregation area</li> <li>• Gallery</li> <li>• Cross at spire, pulpit, doors and windows</li> <li>• Sloped roof</li> <li>• Localised version of steeple</li> </ul>
<p>Materials:</p> <ul style="list-style-type: none"> <li>• Concrete masonry</li> <li>• Stone</li> <li>• Aluminium railings</li> <li>• RCC flooring with woollen carpet- indoor</li> <li>• Marble flooring- outdoor</li> <li>• Steel roof trusses with corrugated roof</li> </ul>	<p>Materials:</p> <ul style="list-style-type: none"> <li>• Concrete masonry</li> <li>• Stone</li> <li>• Concrete railings</li> <li>• RCC flooring with woollen carpet- indoor</li> </ul>

<p>covering</p> <ul style="list-style-type: none"> <li>• Timber and aluminium doors and windows</li> <li>• Waffle slab for main hall and small hall</li> <li>• Colour- tint of light brown</li> </ul>	<ul style="list-style-type: none"> <li>• Stone flooring- outdoor</li> <li>• Steel roof trusses with corrugated roof covering</li> <li>• Timber doors and windows</li> <li>• Waffle slab for main hall</li> <li>• Colour- tint of brown</li> </ul>
<p>Symbolism:</p> <ul style="list-style-type: none"> <li>• THE CROSS, a main symbol of the religion of Christianity, a reminder of the Crucifixion and the redemptive advantaged of his passion and death. Therefore, the Cross is a sign of both of Christ and of Christian faith. A cruciform is cut behind the gallery in the glass facade that illuminates the interior during the day, letting in the natural light. Not only do we find it at this wall, but also behind the altar on the wall, the doors, window glasses, at the tip of the Church. One of the prominent features is The Cross at the tip of a spire. The Cross does play an important role for Christians around the world.</li> <li>• THE DOORS, made of Malaysian Oak. Carved are the Presbyterian Church of Indian Emblem, made in China. Red border =The blood of Jesus Christ Dove =Holy Ghost Wave of sea =sinful world Blue colours =Spiritual Life Gold colour =Love of God Light ray = Light from God It says THE PRESBYTERIAN CHURCH OF INDIA, THE LIGHT OF LIFE. Though simple designs are usually</li> </ul>	<p>Symbolism:</p> <ul style="list-style-type: none"> <li>• THE CROSS</li> <li>• Gothic style windows and doors, borrowed art from Gothic architecture. Though there is no standard as to how a Presbyterian church should look like, it has been implanted in the people of Mizoram that a church must always contain these kinds of elements. Though there are simpler, easier, innovative inventions and ideas, the thought of gothic arches still overpower when it comes to elements of the church. Most of the windows and doors, including the carvings at the altar have gothic arches designs.</li> <li>• The Altar, from elaborated and fully decorated with colours to a simpler way with a unicolor. For Presbyterians, the altar is one of the most important elements in a church. The praise and worship and other liturgies like Baptism and Sacrament should be done in the eyes of the whole congregation. This means that the pastor should always be visible and can be heard, and the congregation can get closer to the pulpit</li> </ul>

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preferred, we see elaboration on each of the doors. The idea of ornamentation back from the renaissance period has been brought into the designs of detailed carvings on the doors.

- **STAINED GLASS WINDOWS**, their objective in a church was, by means of story or symbolism, to enhance the beauty of their environment and inform the viewer. Stained glass is not just beautiful: it was one way to decorate significant structures for several years and also teaches archaeologists more about the past of the structure. This particular stained glass has a portrait of a dove, representing the Holy Spirit, The Cross and The Holy Bible. Not much examples of used of stained glass in Mizoram Churches have been noticed. This church is one of the very few.
- **Materials**: Bricks and stone masonry for walls. And for the main structural system, concrete is used. The roofing is steel truss system with corrugated metal covering. Most of the churches in Aizawl used these types of materials. When it comes to colour, Churches normally follow white or tints of grey and brown. This church is painted in tints of brown. There is no symbolism as such when it comes to colour. But colourless colours and faded shades are usually preferred, can be because the entire spiritual related are portrayed in white in the Bible.
- **THE STEEPLES**, One idea that the

and the altar or around the Lord's Table, thus being involved in the liturgy. The liturgical centre was designated by Pulpit and Altar for sermon and Communion, where the pulpit and the altar are for the Lutherans or the Lord's Table for the Calvinists, and the congregation was grouped around these elements. In the design of Protestant buildings it is essential to position more seats near the pulpit, and this can be best solved with a combined arrangement of the longitudinal and cross naves

- **STEEPLE AND SPIRE**
- **CHURCH BELL**, this church have its bell located at its steeple. There is no signification as church. They were raised at a higher place just so that the whole local can see and hear the bell ringing.

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vertical arms of the steeple served to strengthen the lines of the Church physically, to transform the heads of the audience upwards towards the heavens and God and therefore to hold them in the spiritual structure of adoration. Many architects assume that the higher the structure becomes the more majestic and stylish it is. . Some steeple may have the purpose of housing the church clock and the higher the sky, the farther the clock is heard. The tone of the bells of the church must have been listened to, so that not to obscure the echo, the steeple must raise over any other building in the area. Through these church clocks, it was possible to find a church and the height of the steeple allowed people to see where the church was, even if it were new town, and also served as town halls for the community to meet.

- CHURCH BELL TOWER, with no uniform designs, it is used to house a church bell. They were and till today are used to call the congregation to service and keep time. In this church, the church tower is separately constructed in front of the church building. Unlike the bell towers that we have seen before, it was designed in a simple and modernised version.

## 5. AREA PROGRAMMING

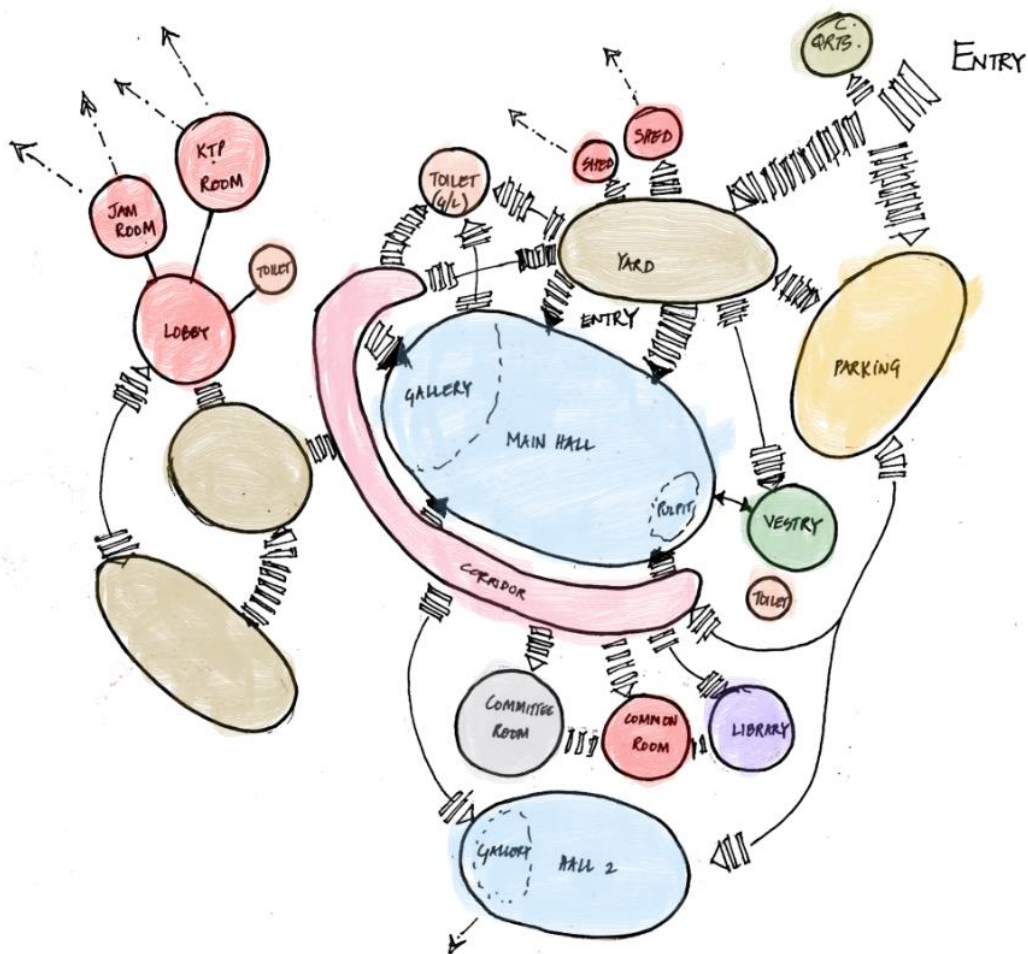


Figure 5.1: Space relationship diagram

SITE AREA = 12902 Sqm

SETBACKS: For Plot area above 130 sq.m

- FRONT SETBACK = 2m

- SIDE SETBACK = 1.2m

- REAR SETBACK = 1.2m

MAXIMUM PERMISSIBLE F.A.R = 1.5

MAXIMUM PERMISSIBLE COVERAGE = 50% = 6451 Sqm

PERMISSIBLE BUILT UP = 1.5 X 12902 = 19353 Sqm

Sl.No	SPACE/ACTIVITY	CAPACITY	AREA/P ( Sqm)	AREA (Sqm)
1	MAIN HALL + GALLERY	4000	0.63 - 1.5	6000
2	VESTRY	50	0.5	28
3	HALL + GALLERY	2000	0.5 - 1	2000
4	COMMON ROOM	310	2.5	775
5	COMMITTEE ROOM	155	2.5	387.5
6	KTP COMMITTEE ROOM	22 ( 6 OFFICE BEARES AND 16 MEMBERS)	2.5	55
7	LIBRARY	20	2.7	54
8	JAM ROOM			72
9	LOBBY			20
10	WAITING SHED			20
11	CHOWKIDAR'S QTRS.			63
12	KITCHEN			60
13	DINING	310	0.9	279
14	PARKING car vehicle	160	35	2000
15	PARKING two wheelers	160	1.5	240
				<b>12205.5</b>

Figure 5.2: Area programming

TOTAL BUILT UP = 12205.5

(WHICH IS LESS THAN THE PERMISSIBLE BUILT UP AREA)

F.A.R =  $12205.5 / 12902 = 0.94$

GROUND COVERAGE =  $3000 + 1500 + 28 + 55 + 72 + 20 + 60 + 279 + 20 + 63 = 5097$

Sqm

= 39.5%

## 6. CONCEPT DEVELOPMENT

The form development through inspiration of the holy TRINITY

*The Holy trinity* – The Father, The Son and the Holy spirit. According to the Presbyterians doctrine, Trinity holds that God is one\_\_\_God, but three coeternal consubstantial persons, where all the three of them are equal in power and greatness.

*The Dove or Holy Spirit* – a symbol of both peace and hope, a sign of life.

(Peace, hope and equality are what inspire the design)

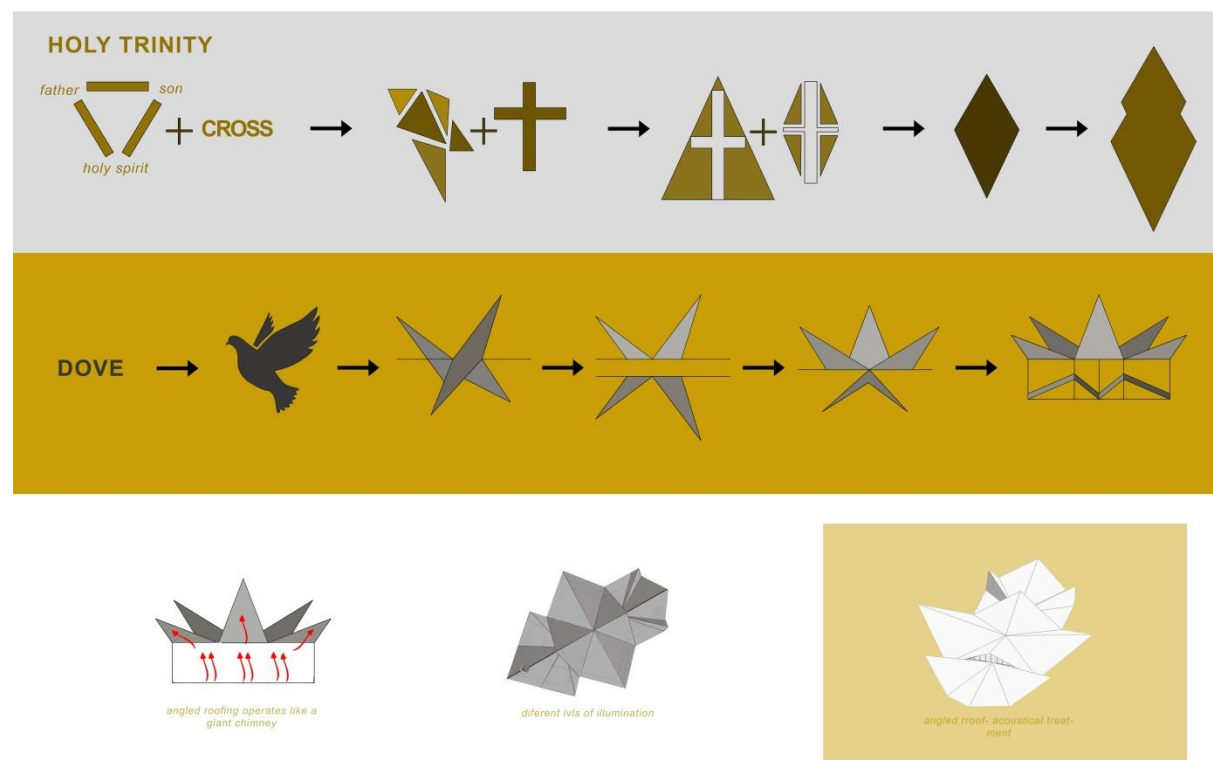


Figure 6.1: Concept



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## 7. DESIGN PROPOSAL

In today's world, especially in **Protestantism (Presbyterian)**, *not only is Church a place of worship but is used for all the other Church related activities like Christian marriage, Sunday school and meets.*

As liturgy of each period and of each denomination began to shift so is the architecture.

As the Presbyterians have no fixed guidelines as to how to design a church, the approach towards the design of Churches has shifted from traditional to modern architecture.

Ever since Christianity was introduced in the late 1890's to the people of Mizoram, the culture and its social structure has undergone tremendous change. The old tribal customs and practices have been replaced by Christmas, Easter and other Christian celebrations.

According to 2014 statistics the Presbyterian Church of India had a total strength of 1,405,781 members, out of which 600,000 members belong to the Mizoram Presbyterian church. Today, every local area has its own Church where local level church services are conducted. According to research that has been done recently, it is found out that, taking average, there is a Church after every 400 m.

This shows how prominent and important Churches are in the society.

This project **CHURCH COMPLEX** aims at creating a Complex which accommodates members of Presbyterian denomination for the use of Church related activities on special occasions like meets and conferences. As most of the Churches in Aizawl aren't big enough to accommodate more people, especially when it comes to these meets and Conferences, the idea of proposing a church, big enough to accommodate more people than most churches today can, came into picture.

## 7.1 SITE PLANNING



## 7.2 MAIN CHURCH

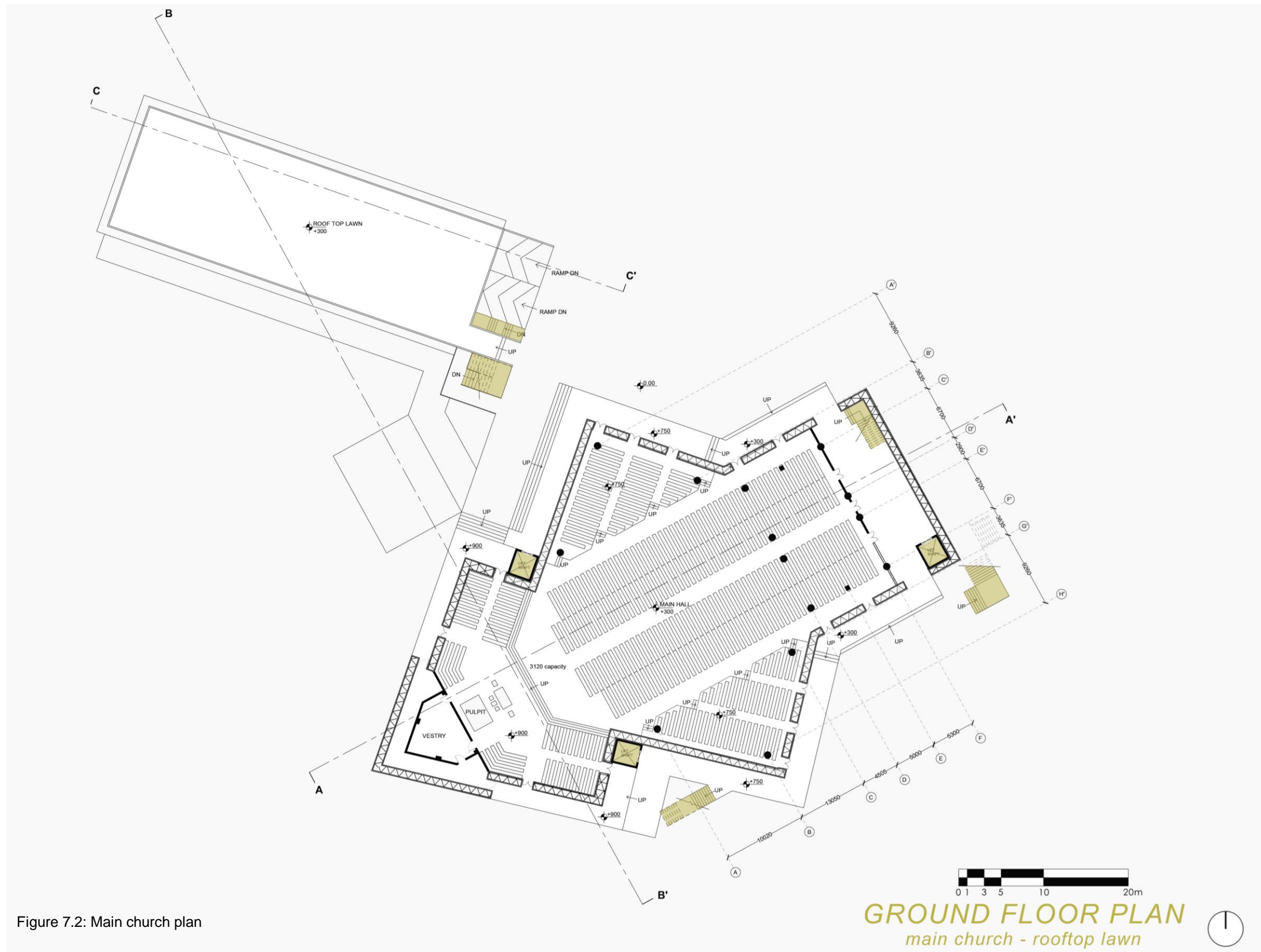


Figure 7.2: Main church plan

### 7.3 GALLERY

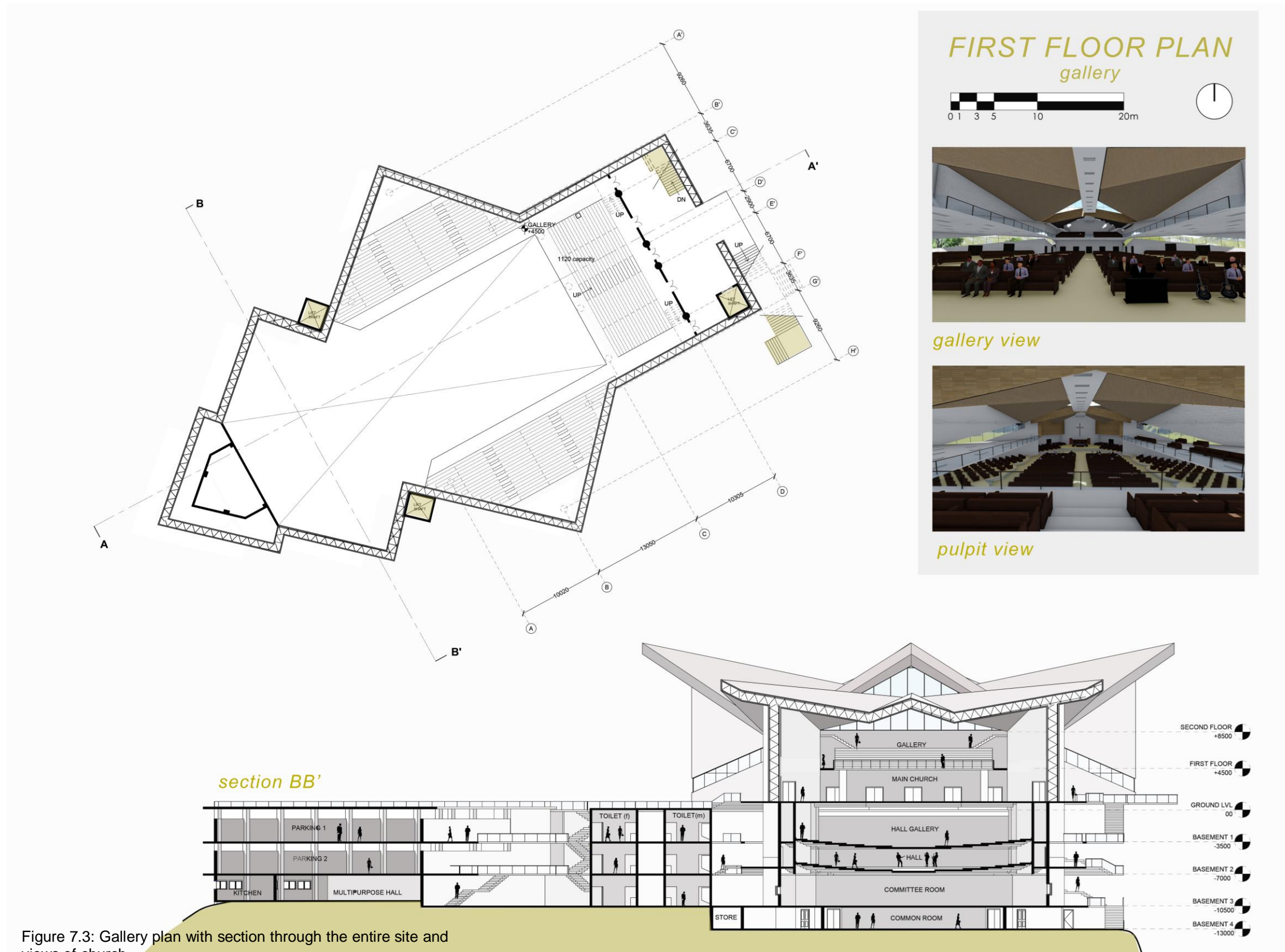


Figure 7.3: Gallery plan with section through the entire site and views of church

## 7.4 GALLERY ENTRANCE

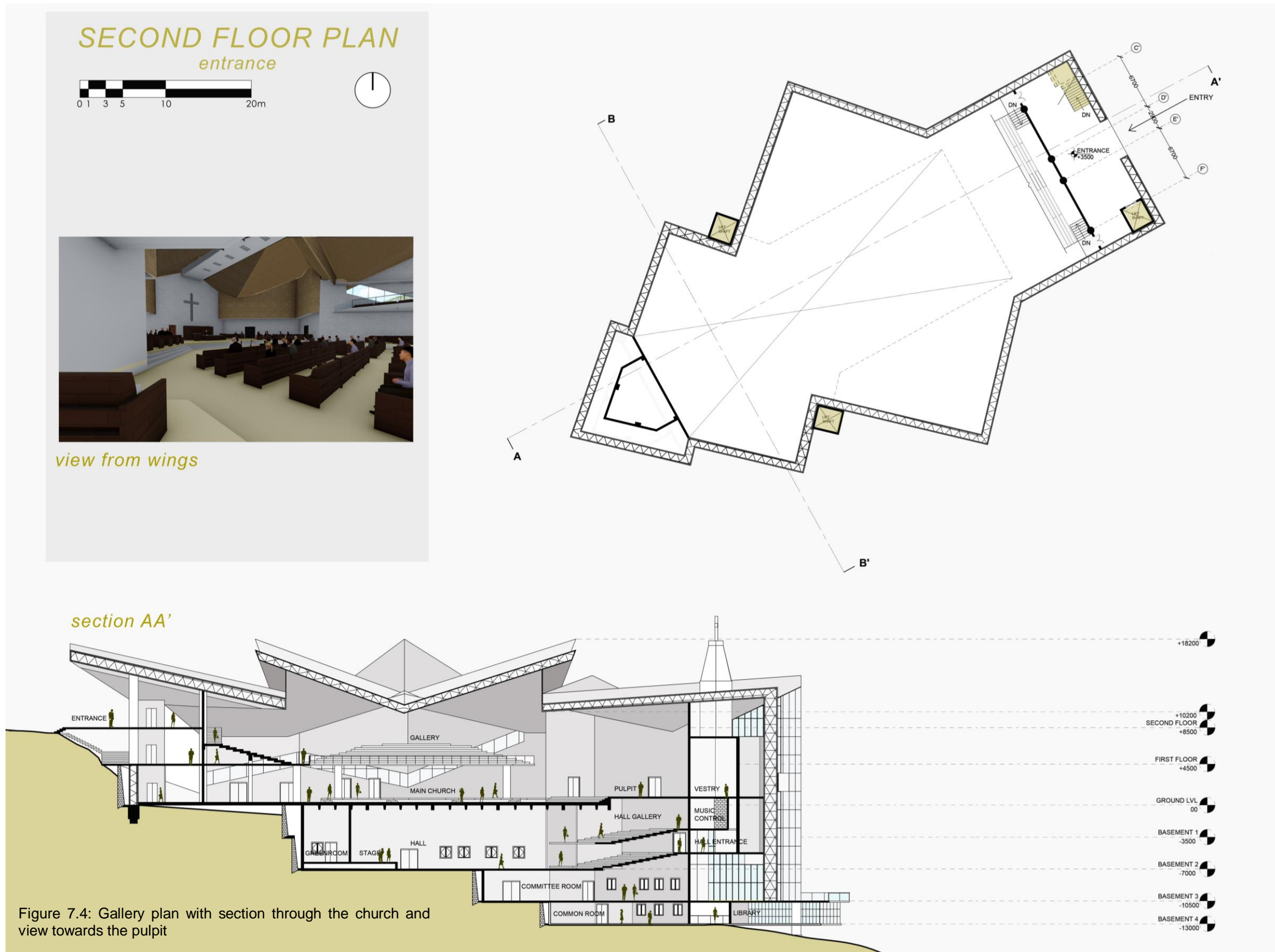


Figure 7.4: Gallery plan with section through the church and view towards the pulpit

## 7.5 HALL ENTRANCE LVL- PARKING 1

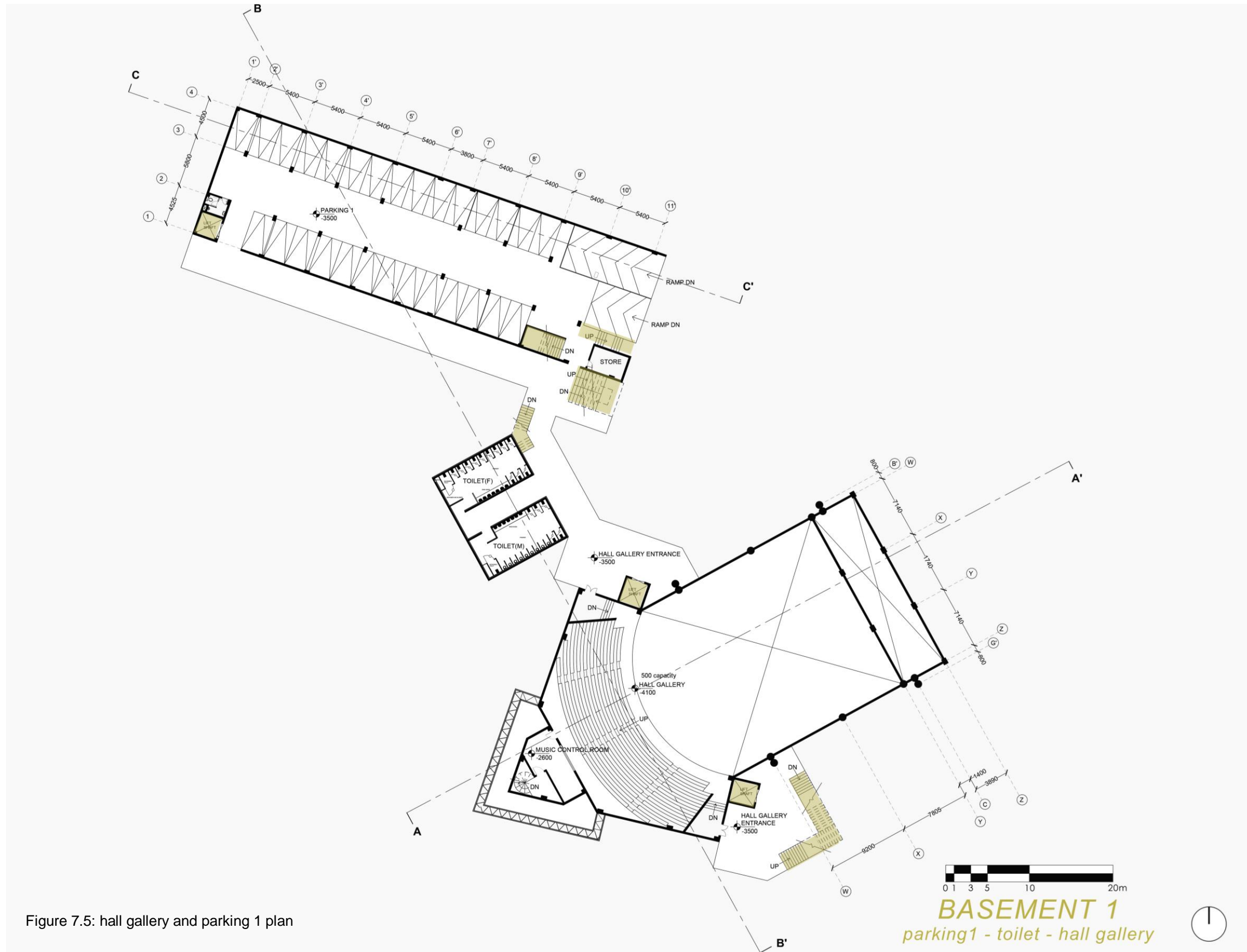


Figure 7.5: hall gallery and parking 1 plan

## 7.6 HALL LVL- PARKING 2

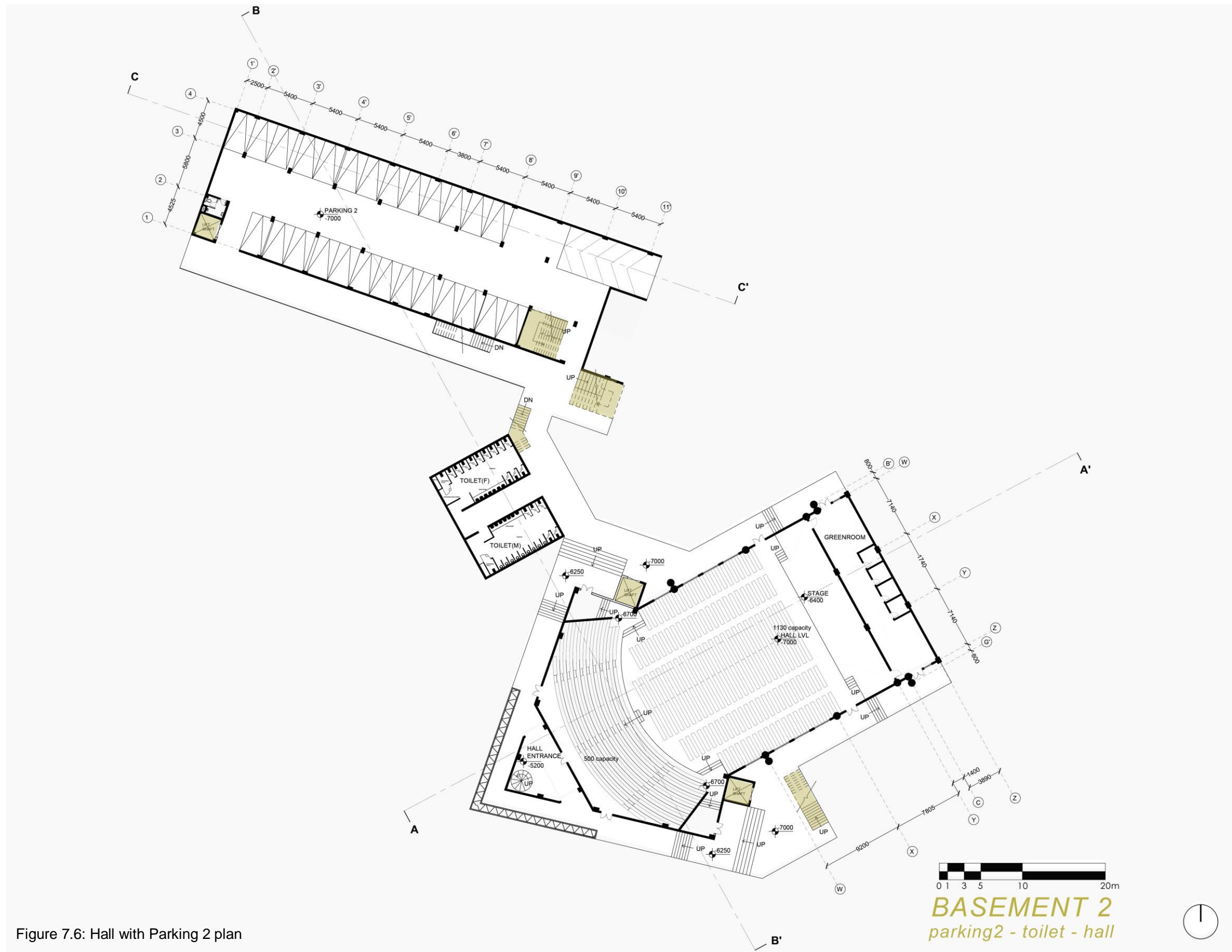
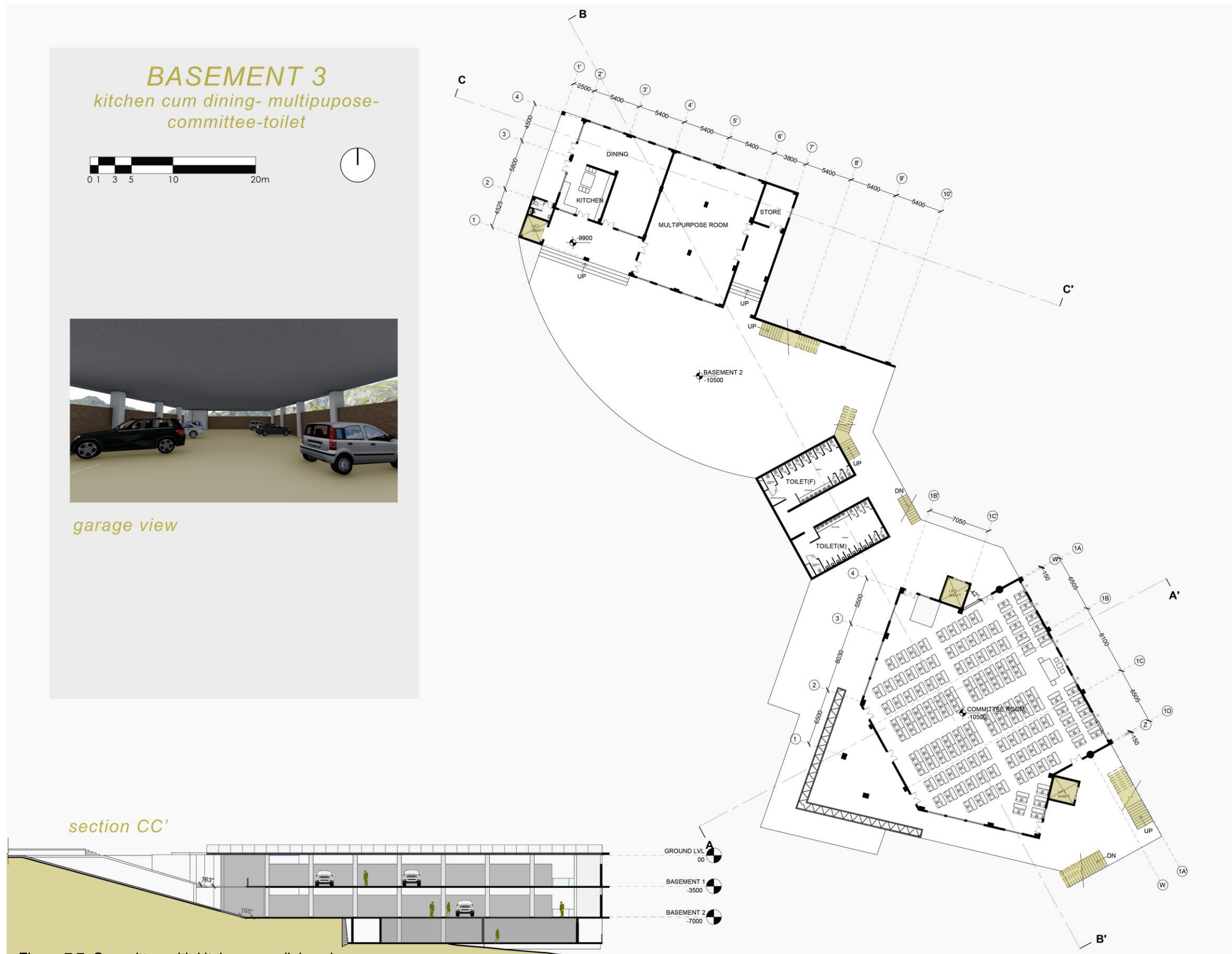


Figure 7.6: Hall with Parking 2 plan

## 7.7 KITCHEN CUM DINING- COMMITTEE ROOM





## 7.8 LIBRARY- COMMON ROOM- YOUTH COMMITTEE ROOM

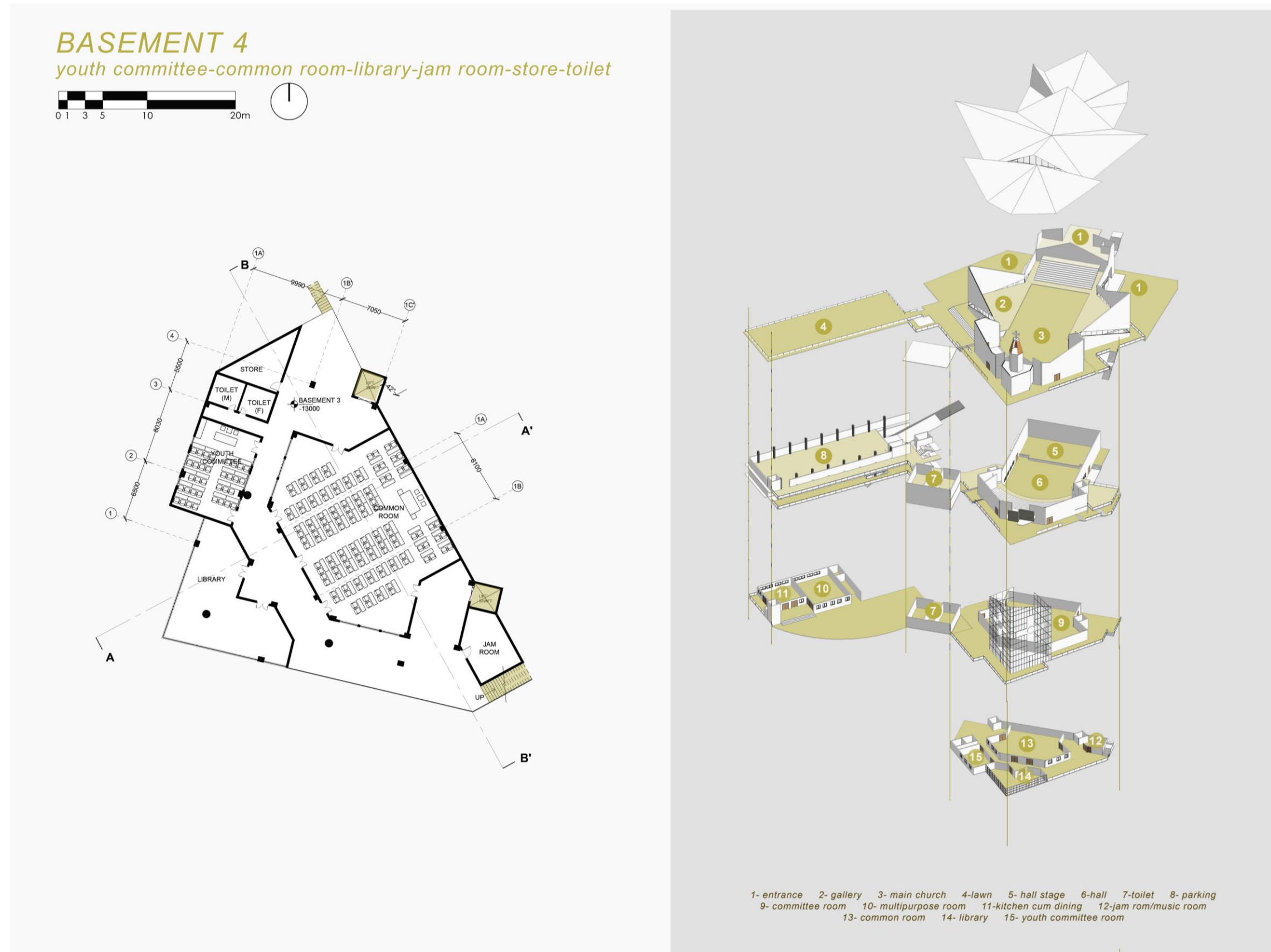


Figure 7.8: common room, library and youth committee room plan

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# ANNEXURE I

## CHURCH COMPLEX



*The Presbyterian Church of India at Bawngkawn Aizawl Mizoram*  
C.Lalrinzuali 2015barc021 semester X

**MIZORAM PRESBYTERIAN CHURCH**

**CHURCH?** It is anyone who believes in the Holy Trinity and who accepts salvation, those who gather in the name of Jesus Christ. Church, the building is a place of worship for those believers.

**PRESBYTERIAN CHURCH?** It is one of the branch of denominations that born out of Church reformation. It is a church organised and governed by Presbyters- Pastors (Ministers), Probationary Pastors and nominated Upate (Elders).

**BIRTH OF CHRISTIANITY AND PRESBYTERIAN DENOMINATION** Before Christianity was introduced to the people of Mizoram, they have their own deity to which they sacrifice offerings like goyal. During the British rule between the 1860s and 1890s, missionaries began to arrive. The first two settled missionaries J. H. Lorrain and F. W. Savidge came to Mizoram in 1894 and put up a Church right away. As is commonly done when a new religion seeks to establish itself in new surroundings, the church was constructed on hallowed ground. Various Christian missionary societies in Britain were in competition with each other to proselytize in Mizoram, resulting in the establishment of three major churches: the Calvinist Presbyterians in northern Mizoram, the Baptists in the south and the 'Lakher Pioneer Mission' in the southeast.

**WHY?** With increase in members, the fast changing world with power technologies and not to mention lack of space, Churches today are experiencing the need to accommodate more people at a time. Keeping that in mind, the idea of "CHURCH COMPLEX" came into picture. This project is believed to give Churches what they've always needed and hoped to simplify the complexity that Churches are facing today.

**WHAT?** This project aims at creating a Complex which accommodates members of Presbyterian denomination for the use of Church related activities. As most of the Churches in Aizawl aren't big enough to accommodate more people, especially when it comes to Youth meet and Conferences, the idea of proposing a church, big enough to accommodate more people than most churches today can, came into picture. Even though each local area has its own Church, this particular project will be open to all for the use of any church related activities.

### SITE ANALYSIS CONTEXT

LOCATION - Bawngkawn Aizawl Mizoram  
SITE AREA - 12902 sq.m.

**BYE-LAWS**

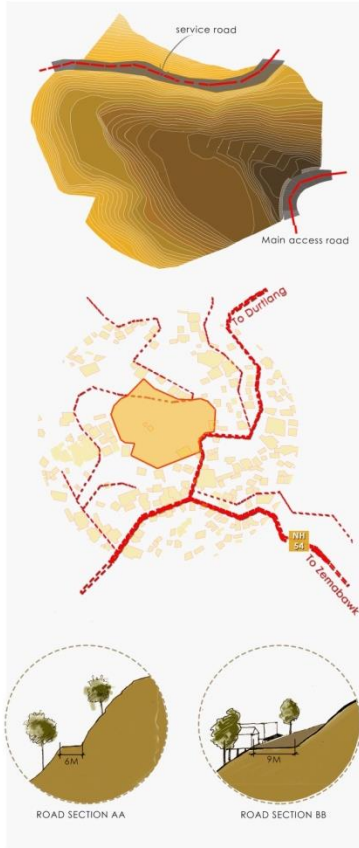
1. **SETBACKS:** For Plot area above 130 sq.m  
 - FRONT SETBACK = 2m  
 - SIDE SETBACK = 1.2m  
 - REAR SETBACK = 1.2m
2. **MAXIMUM PERMISSIBLE F.A.R = 1.5**
3. **HEIGHT LIMITATION = 19m,** provided if entire floor is used for parking, there can be an extension upto 22m.
4. **MAXIMUM PERMISSIBLE COVERAGE** for above 1000 sq.m plot = 50%

**LEGENDS**

- HUMAN THANGHEIM
- EXISTING STRUCTURES
- TRANSFORMER

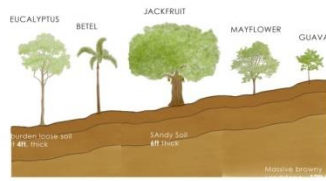
ELEVATION (in meters)

### CONNECTIVITY



### VEGETATION

There are five types of trees found in the site, Deciduous tree - Mayflower tree  
Evergreen Trees- Eucalyptus, Betel, Jackfruit, Mayflower, Guava.  
They provide color and character year round, they can provide excellent wind-break, provide home for birds, low maintenance and they are great for the environment.



SOIL TYPE	BEARING VALUE (kPa)	N- Value
OVERBURDEN LOOSE SOIL	100	4-10
SANDY SOIL	200-600	10-30
SANDSTONE	1620	30-50

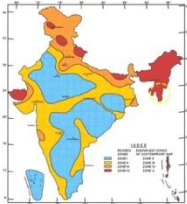
### SOIL

Average bearing capacities determined from field tests range between 36 and 51 psi (250-350 kN/m<sup>2</sup>)  
**SANDY SOIL:** Drains easily, when compacted and moist, it holds together fairly well, make for good soils to support foundation because of their **non-water-retaining** properties. However when moist, the particles will lose their friction and can be washed away, which can leave gaps beneath the foundation.  
**SANDSTONE:** High bearing capacity, they are very strong and good for supporting foundations because of their stability and depth.

### SURFACE FEATURES

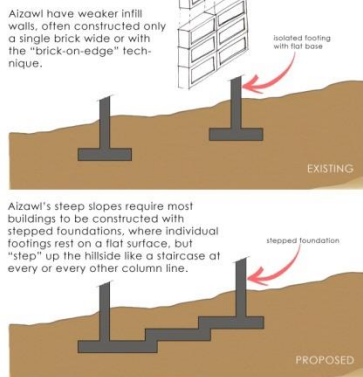


### SEISMIC ANALYSIS



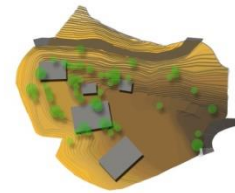
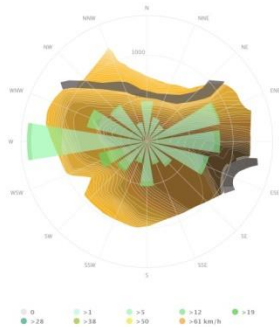
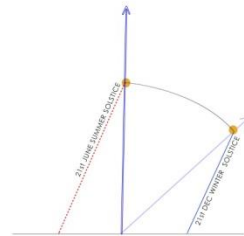
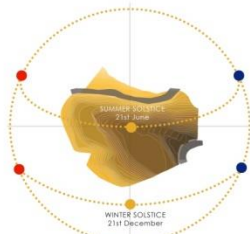
IS1893[3] has assigned an acceleration of 0.35g for the entire area of Aizawl City. But from an analysis done by two scholars on "Site specific Seismic Input for structures on Hill Slopes, 2016", it is found out that the PGA (Peak Ground Acceleration) will have a huge range and could even go upto **0.48g** at some location and much lesser **0.25g** on some other locations.  
Over-designing of structures will not be economical, whereas under -design may result in catastrophic disaster if an earthquake does occur in the region.

Generally speaking,  
**0.001 g (0.01 m/s<sup>2</sup>)** – perceptible by people  
**0.02 g (0.2 m/s<sup>2</sup>)** – people lose their balance  
**0.18 to 0.34g** - severe, potential damage can be moderate to heavy  
**0.50 g** – very high; well-designed buildings can survive if the duration is short.

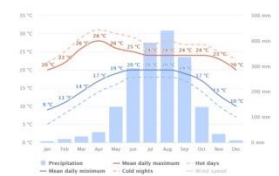


Aizawl's steep slopes require most buildings to be constructed with stepped foundations, where individual footings rest on a flat surface, but "step" up the hillside like a staircase at every or every other column line.

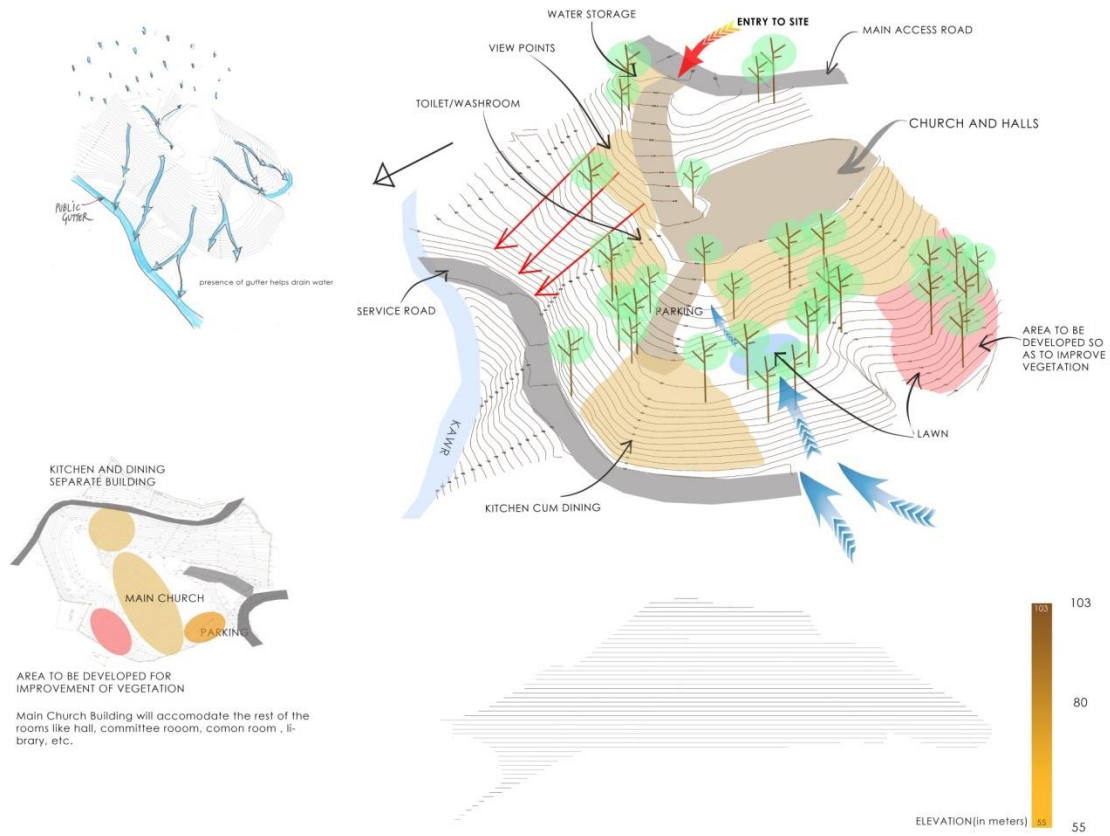
### CLIMATE



**TEMPERATURE :**  
The mean daily maximum temperature is **28 degree C** in summer in the month of April.  
The mean daily minimum temperature is **7 degree C** in winter in the month of January.  
**PRECIPITATION :**  
Maximum 410 mm precipitation during monsoon in the month of August.  
Minimum 10-20 mm precipitation during winter season in the month of January.  
**WIND VELOCITY :**  
The maximum wind comes from the west at a speed of minimum 28km/hr and this is the highest speed experienced.  
The minimum wind blows from NE with a speed between 1-5 km/hr.  
**HUMIDITY:**  
Maximum Humidity of 280% during monsoon and minimum humidity of 180% during winter season.



## INFERENCES



## CASE STUDY 1

### PRESBYTERIAN CHURCH OF INDIA Dawrupi Veng Aizawl Mizoram

#### architectural elements



**THE CROSS**, the principal symbol of the Christian religion, recalling the Crucifixion of Jesus Christ and the redeeming benefits of his Passion and death. The cross is thus a sign both of Christ himself and of the faith of Christians. A cruciform is cut behind the gallery in the glass facade that illuminates the interior during the day, letting in the natural light. Not only do we find it at this wall, but also behind the altar on the wall, the doors, window glasses, at the tip of the Church.

**THE ALTAR** is a raised area in a house of worship where people can honor God with offerings. It is prominent in the Bible as "God's table," a sacred place for sacrifices and gifts offered up to God. The Presbyterians do not follow the tradition of rich decorations and ornamentations, hence the altar in unicolor. Though carvings are done, they are done so as to match with the interior of the Church as the interior is quite simple. The Altar for Presbyterian denomination usually located at the centre end of the wall and consists of the LORD'S Table and The Pulpit.



**STAINED GLASS WINDOWS**, the purpose of them in a Church was both to enhance the beauty of their setting and to inform the viewer through narrative or symbolism. Stained glass is not only beautiful; for many centuries it has been one way of embellishing important buildings, and as such it often tells historians a great deal about the building's history. This particular stained glass has a portrait of a dove, representing the Holy Spirit, The Cross and the Holy Bible.



**THE DOORS**, made of Malaysian Oak. Carved are the Presbyterian Church of India Emblem, made in China. Red border-The blood of Jesus Christ Dove-Holy Ghost Wave of sea= sinful world Blue color= Spiritual Life Gold color= Love of God Light ray= Light from God It says THE PRESBYTERIAN CHURCH OF INDIA, THE LIGHT OF LIFE.



#### inferences

**Aesthetic and Lighting**: Stained glasses not only give aesthetic looks but also gives a lighting effect. A seemingly endless spectrum of changes in the appearance of stained glass is a result of the changes in the intensity, disposition, atmospheric diffusion, and colour of natural daylight. The luminous life of stained glass, therefore, can best be observed by watching the organic effect of light on the window through the course of a day for people to observe inside the Church, and at night for the people who sees it from outside will experience the same.

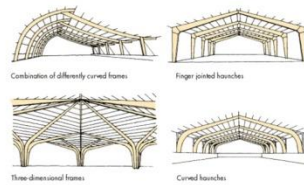
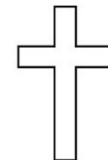


the Presbyterian Church of India Emblem at the spire and cross at the tip



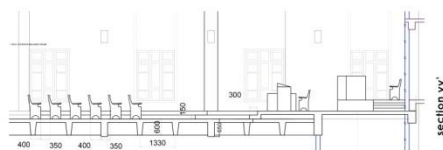
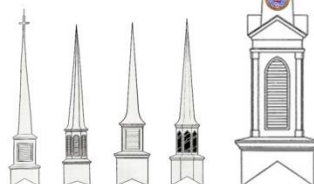
#### Plan Form :

The typical plan form that has been followed is mostly square and rectangle, and in very few cases we may find a polygonal plans. For this project, a typical rectangular form with more than two tiered galleries is proposed. The idea of extending through wings can be considered too. Can even go for a cruciform



**Structural adaptation**: As no guidelines are given for Church buildings in Aizawl, and as the project being proposing the biggest Church, the recommended would be portal frames with the consideration of Aizawl being one of the states situated in Seismic Zone V, the highest prone zone in India.

**Steeple**: simplicity of steeple forms, considering the seismic state.



## CASE STUDY 2

### PRESBYTERIAN CHURCH OF INDIA Mission Veng Aizawl Mizoram

#### architectural elements



**THE CROSS**, the principal symbol of the Christian religion, recalling the Crucifixion of Jesus Christ and the redeeming benefits of his Passion and death. The cross is thus a sign both of Christ himself and of the faith of Christians. It is depicted as a Symbol in many of the elements like at the tip of a bell tower, hence is the most prominent, easy to recognize from a far. Not only do we find it at a bell tower, but also behind the altar on the wall, doors, window glasses, at the tip of the Church. One of the tradition that the Mizos have as a part of their Church is placing the Cross at the tip of the Church.

**Timber** has been widely used for doors and window panes, the convenience and flexibility being the reason. Almost all Churches in Aizawl have wooden doors with carvings on it, varnished.



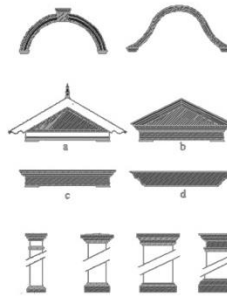
**THE ALTAR** is a raised area in a house of worship where people can honor God with offerings. It is prominent in the Bible as "God's table," a sacred place for sacrifices and gifts offered up to God. The Presbyterians do not follow the tradition of rich decorations and ornamentations, hence the altar in unicolor. Though carvings are done, they are done so as to match with the interior of the Church as the interior is quite simple. The Altar for Presbyterian denomination usually located at the centre end of the wall and consists of the LORD'S Table and The Pulpit.

#### Inferences

**Characteristics :**  
Grand scale of the building, Dramatic columns, Separation of elements, Simplicity of geometric forms, projections and recessions and effects of light and scale.

**Architectural elements :**

**Arches :** Arches are designed to be used with columns in entry features and arcades .  
**Pediments and lintels :** Pediments and lintels are designed to be used with columns in entry features and arcades .  
**Columns :** The classical orders described by the labels Doric, Ionic and Corinthian do not merely serve as descriptors for the remains of ancient building, but as an index to the architectural and aesthetic development of Greek architecture.



#### Lighting and ventilation :

There are no fixed guidelines for Orientation of Churches in Aizawl, no fixed North south, East west orientation. Most of the Churches have proper ventilation and lighting. Height and openings play very important role. for that purpose, Aizawl having maximum 30 deg. celcius. Sunlight is welcomed inside the church. With consideration of seismic condition, clerestories can be proposed.

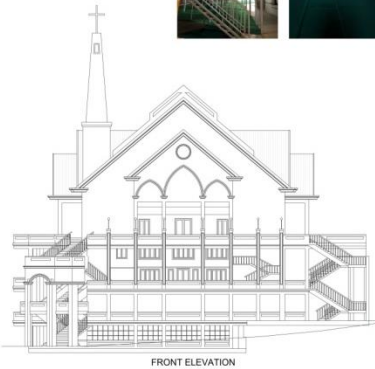


**Temporary roof extension :**  
Tin Roof covering with steel structural systems



#### Acoustics and flooring :

A combination of Vinyl and wool flooring with perforated Gypsum acoustic panels at the rear wall of gallery are used in this church. Quality vinyl flooring that is backed with foam and has a cushioned, flexible surface, makes it a good choice for a sound reduction. This is one of the best choices of flooring for Churches.  
Acoustics for church music requires sufficient reverberant sound to be produced for instruments and congregational singing, but speech sound requires only about half of the reverberation time for church music, as it must be clearly heard to be understood. Therefore, the acoustic requirements for these two environments are not easy to satisfy at the same time. Acoustic panels can be installed for any RT correction.



## COMPARATIVE ANALYSIS

	STANDARD	DAWRPUI PRESBYTERIAN CHURCH	MISSION VENG PRESBYTERIAN CHURCH	INFERENCES
<b>GENERAL ARRANGEMENT (MAIN HALL)</b>				Dawrpui Church - Wing extension accommodates more people. Feel of place = Rectangular plan preferred. The fact that we enter into a darker chamber and into the main area walking the long aisle, the scale/distance from front door till the altar. In a squared plan church, the distance feels scaled down, even though the reformed church is all about the preacher being closely located, better interaction.
<b>PLAN</b>				
<b>SEATING (without knee rail)</b>				
<b>aisle :</b> Central aisle useful for processional entry and exit in larger churches. Width of exit doors and stairs should comply with regular for places of assembly.				In both the churches, aisles are longer in width than standards.
<b>GALLERY :</b> Increase seating capacity for same area; improve acoustics if suitable distance from pulpit. Have tiered seating so that congregation at back may see and hear better. Height of gallery determined by necessary free sight of congregation beneath it in relation to the Altar.				
<b>HALL SEATING :</b> Usually tiered seating for better view				Though function seems similar and with that of auditorium in terms of visibility, in the case of church halls, that is not always preferred.
	REQUIREMENT per person = <b>0.7 to 1.0 Sqm</b> (inclusive of gangways)	AREA per person = <b>0.61 Sqm</b> (inclusive of gangways)	AREA per person = <b>0.55 Sqm</b> (inclusive of gangways)	



## AREA PROGRAMMING

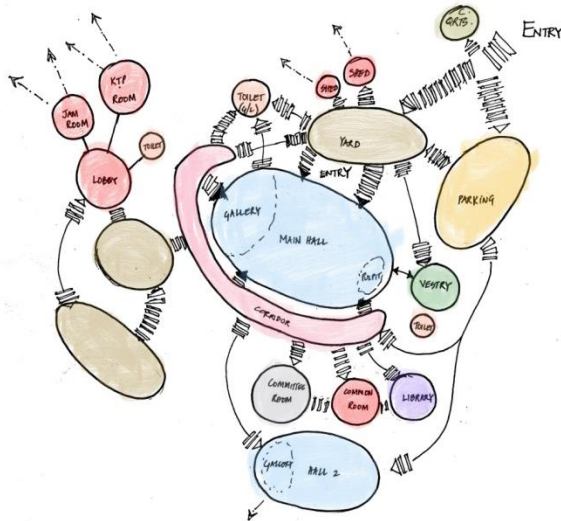
### BYE-LAWS:

- SETBACKS:** For Plot area above 130 sq.m  
 - FRONT SETBACK = 2m  
 - SIDE SETBACK = 1.2m  
 - REAR SETBACK = 1.2m
  - MAXIMUM PERMISSIBLE F.A.R = 1.5**
  - HEIGHT LIMITATION = 19m**, provided if entire floor is used for parking, there can be an extension upto 22m.
  - MAXIMUM PERMISSIBLE COVERAGE** for above 1000 sq.m plot = 50%
- SITE AREA = 12902 Sqm**

**SITE AREA = 12902 Sqm**

- SETBACKS:** For Plot area above 130 sq.m  
 - FRONT SETBACK = 2m  
 - SIDE SETBACK = 1.2m  
 - REAR SETBACK = 1.2m
- MAXIMUM PERMISSIBLE F.A.R = 1.5**

**MAXIMUM PERMISSIBLE COVERAGE = 50% = 6451 Sqm**  
**PERMISSIBLE BUILT UP = 1.5 X 12902 = 19353 Sqm**

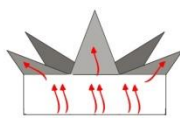
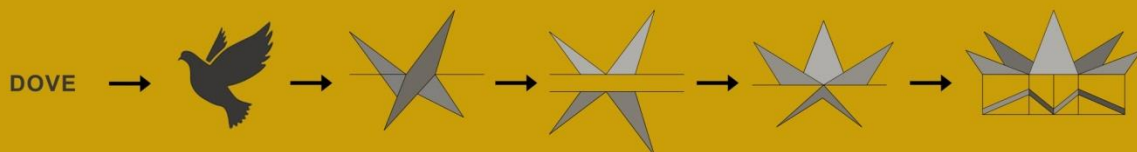
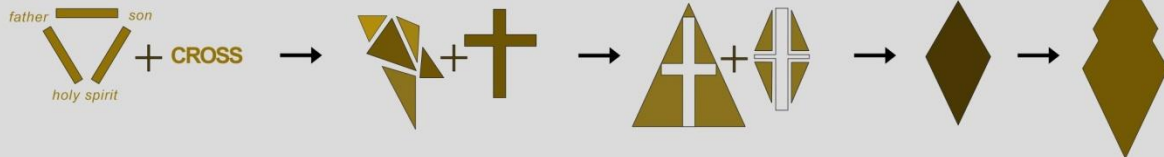


Sl.No	SPACE/ACTIVITY	CAPACITY	AREA/P ( Sqm)	AREA (Sqm)
1	MAIN HALL + GALLERY	4000	0.63 - 1.5	6000
2	VESTRY	50	0.5	28
3	HALL + GALLERY	2000	0.5 - 1	2000
4	COMMON ROOM	310	2.5	775
5	COMMITTEE ROOM	155	2.5	387.5
6	KTP COMMITTEE ROOM	22 ( 6 OFFICE BEARES AND 16 MEMBERS)	2.5	55
7	LIBRARY	20	2.7	54
8	JAM ROOM			72
9	LOBBY			20
10	WAITING SHED			20
11	CHOWKIDAR'S QTRS.			63
12	KITCHEN			60
13	DINING	310	0.9	279
14	PARKING car vehicle	160	35	2000
15	PARKING two wheelers	160	1.5	240
				<b>12205.5</b>

**TOTAL BUILT UP = 12205.5 WHICH IS LESS THAN THE PERMISSIBLE BUILT UP AREA.**  
**F.A.R = 12205.5 / 12902 = 0.94**  
**GROUND COVERAGE = 3000 + 1500 + 28 + 55 + 72 + 20 + 60 + 279 + 20 + 63 = 5097 Sqm = 39.5%**

## CONCEPT

### HOLY TRINITY



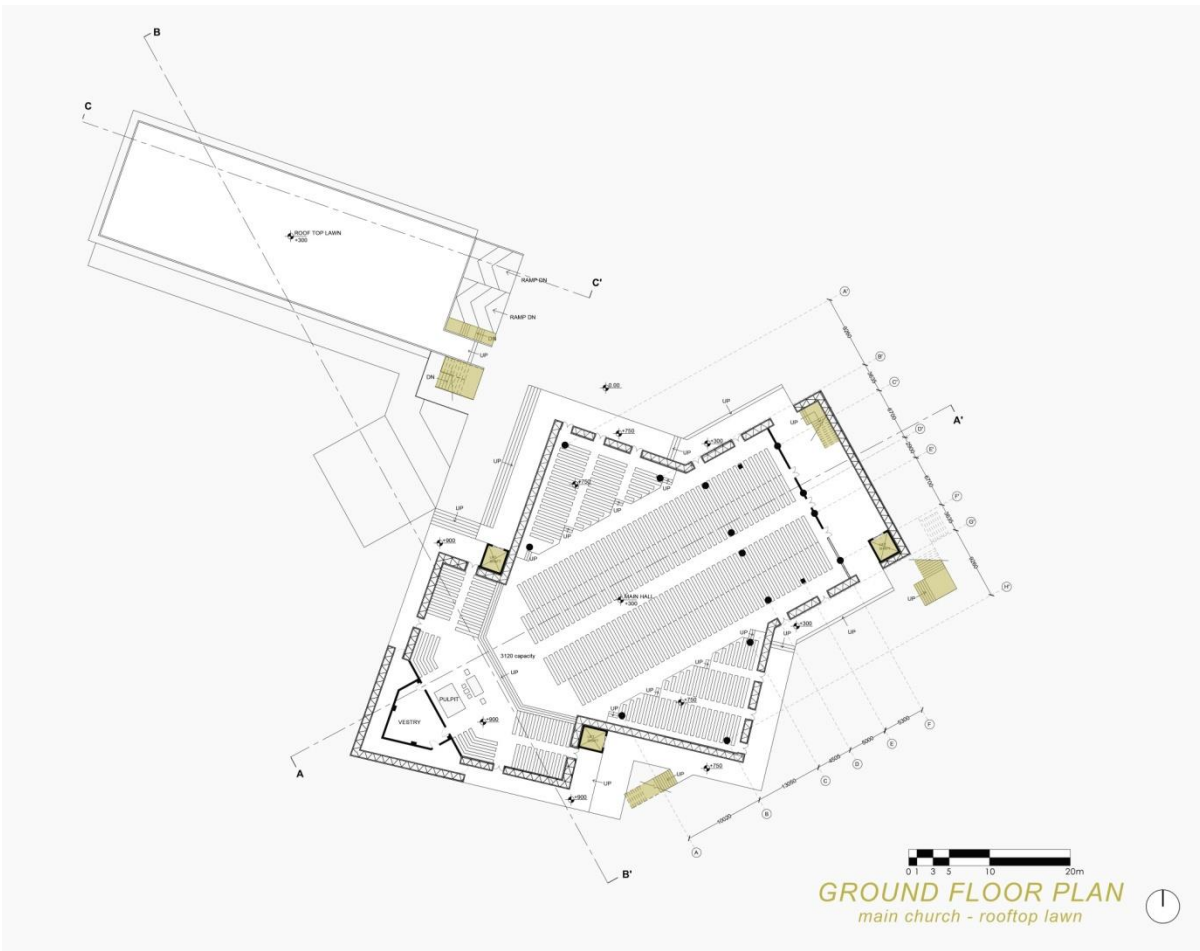
angled roofing operates like a giant chimney

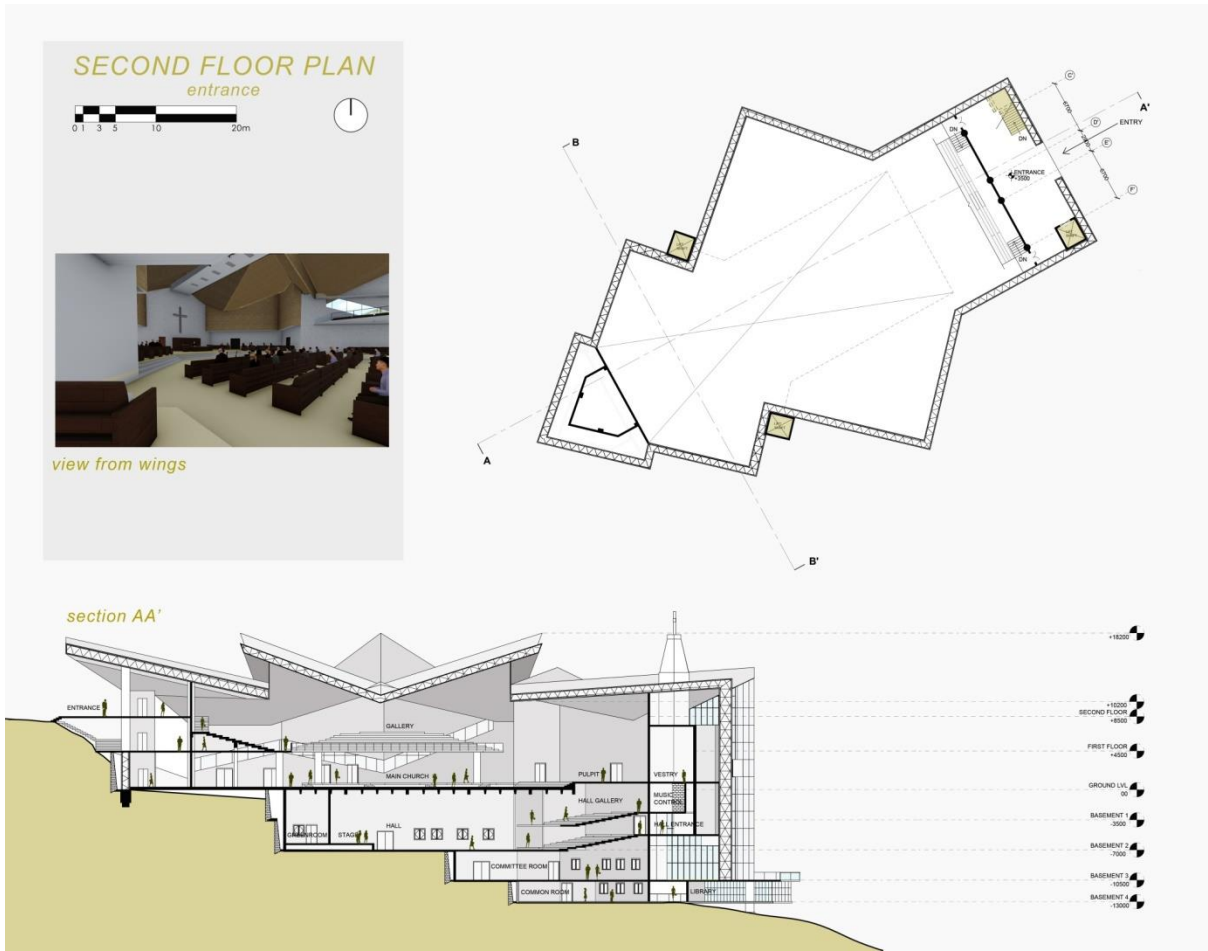
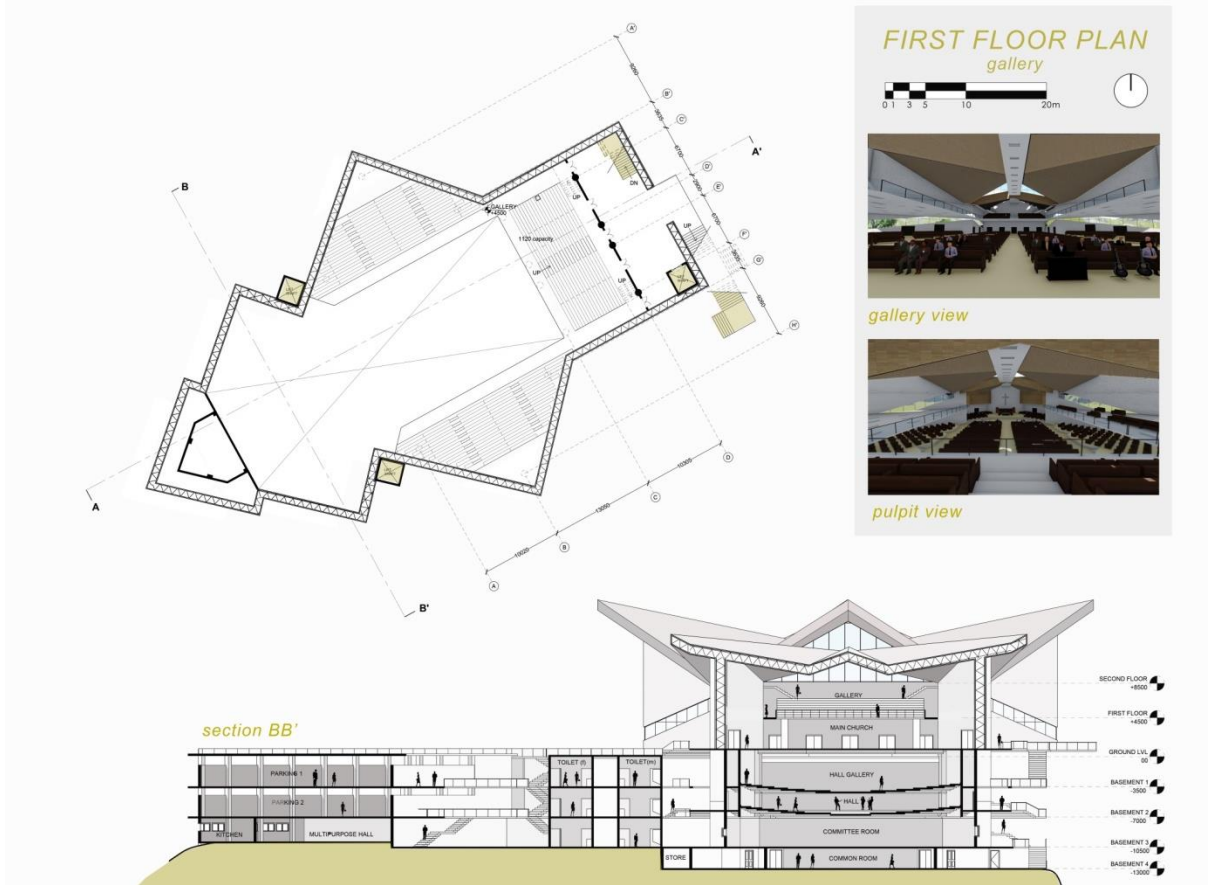


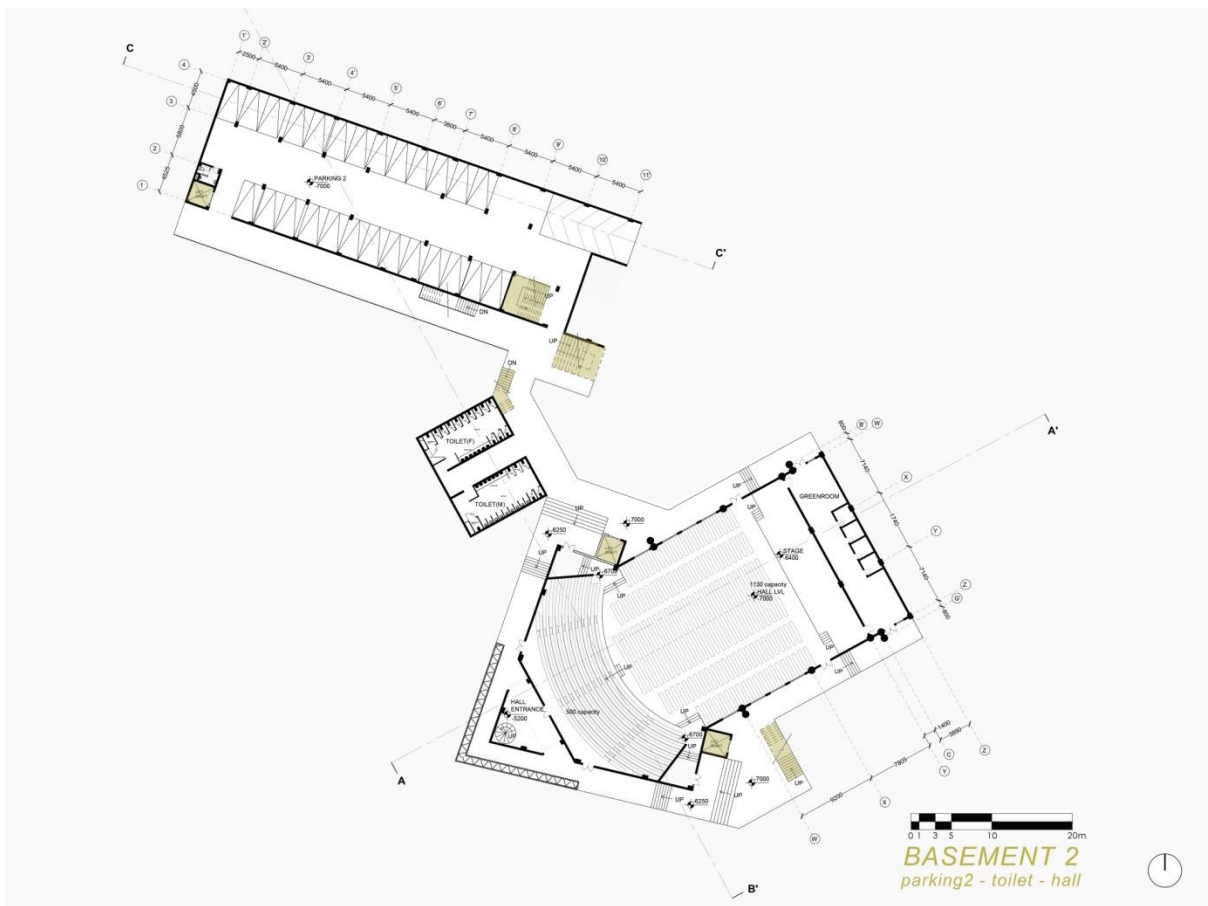
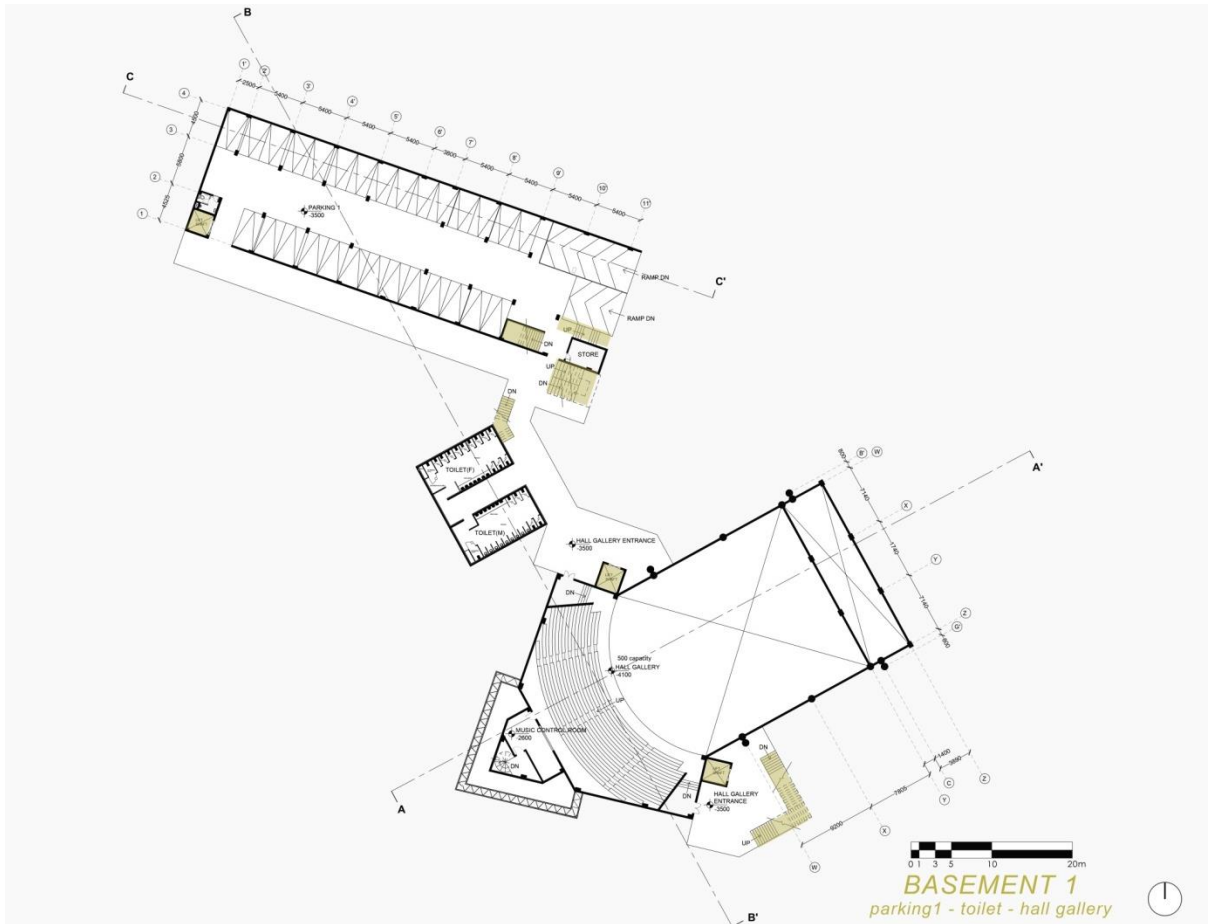
different lvls of illumination



angled roof-acoustical treatment

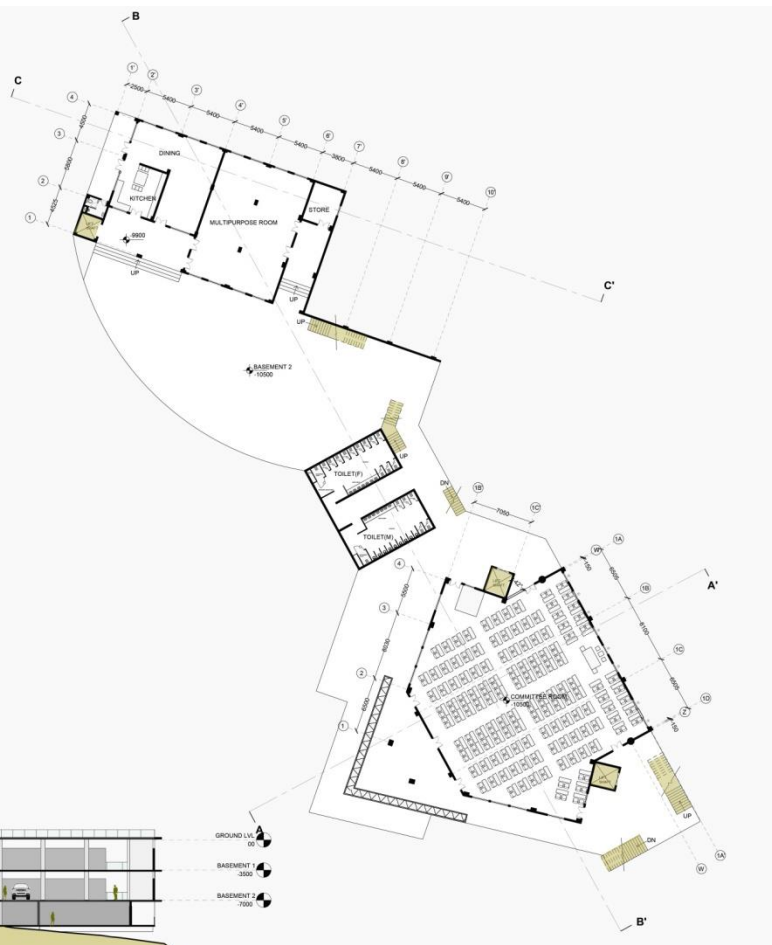




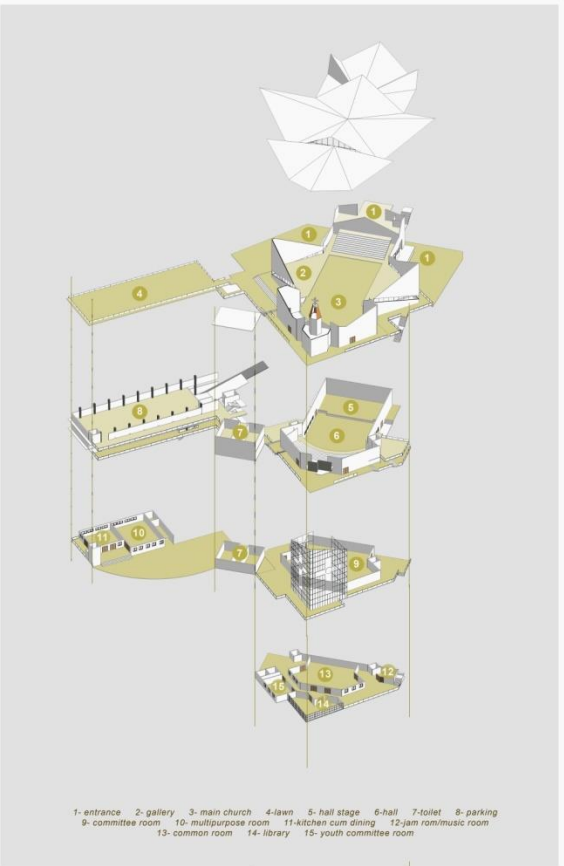
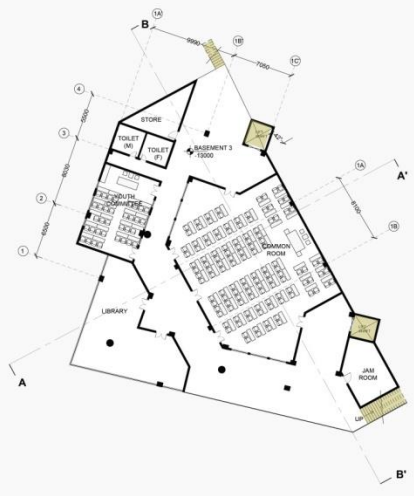


**BASEMENT 3**  
kitchen cum dining- multipurpose- committee-toilet

garage view



**BASEMENT 4**  
youth committee-common room-library-jam room-store-toilet

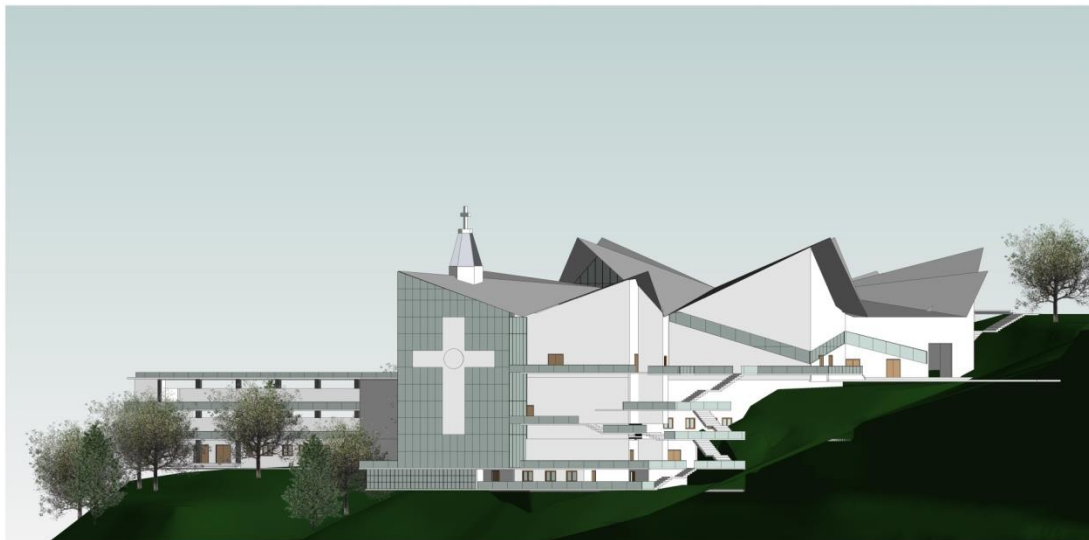




*NORTH ELEVATION*



*WEST ELEVATION*



*SOUTH ELEVATION*



## VIEWS



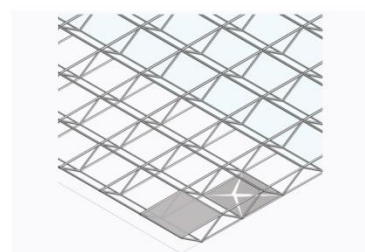
**THE ALTAR** is a raised area in a house of worship where people can honor God with offerings. It is prominent in the Bible as "God's table," a sacred place for sacrifices and gifts offered up to God.



**THE CROSS**, the principal symbol of the Christian religion, recalling the Crucifixion of Jesus Christ and the redeeming benefits of his Passion and death.



the Presbyterian Church of India  
Emblem at the spire and cross at the tip



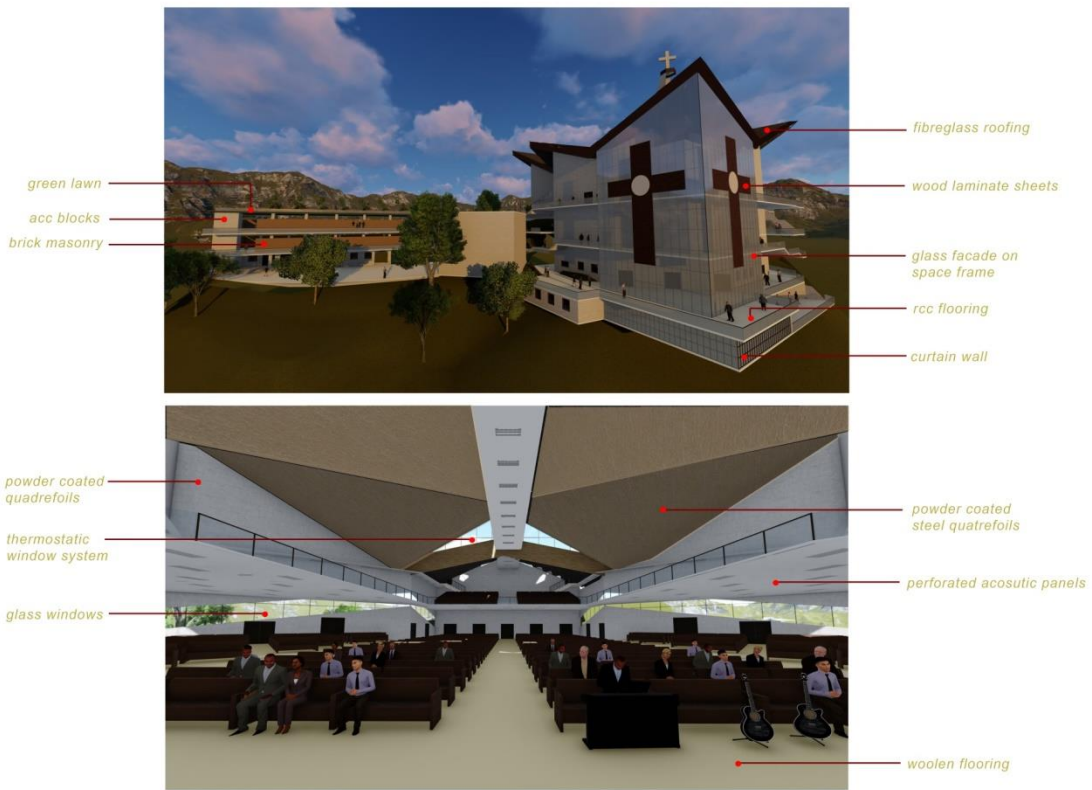
**SUNSHADE SYSTEM**  
powder-coated steel quatrefoils of  
varying opacities



windows with opening  
thermostatic system  
and closing.

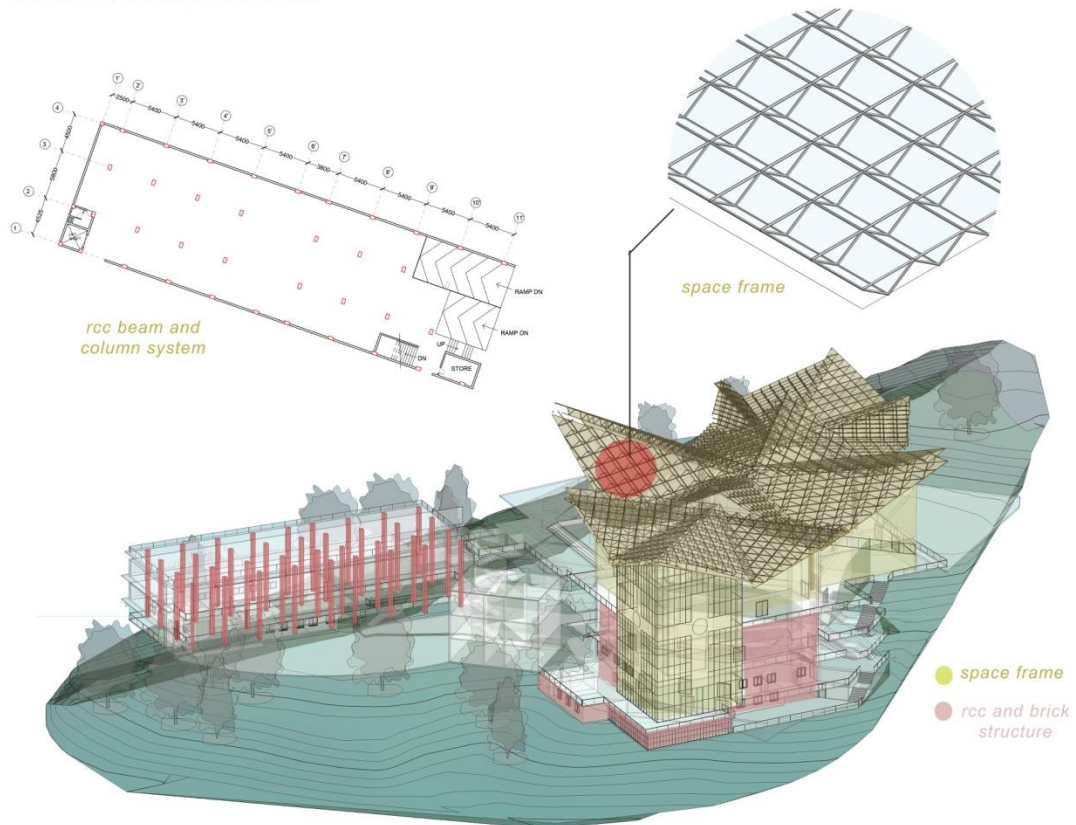
## ELEMENTS

## VENTILATION AND SUNSHADE



## MATERIALS

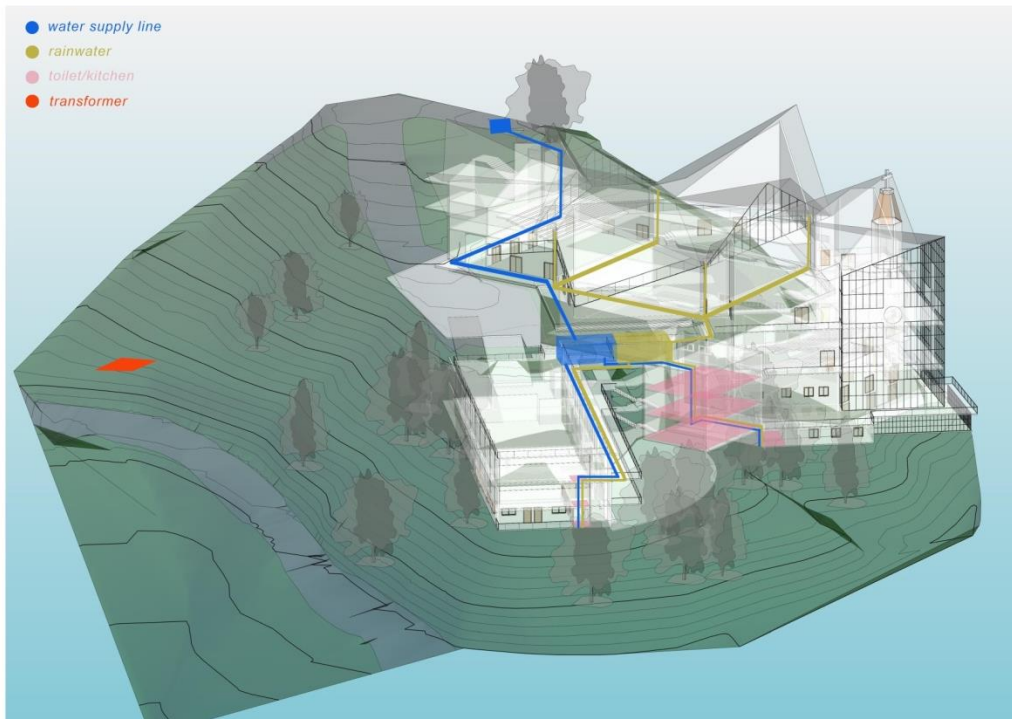
## STRUCTURAL SYSTEM





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## SERVICE DISTRIBUTION



THANK YOU

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## ANNEXURE II

Comments given:

- Contour site: Contours are used at its best, the way the buildings are placed on the contour and how spaces are spread across the site despite the contours is appreciated.
- Design : Approach towards modern over traditional is praised, in a way bringing change to the typical church architecture for a good cause, creating a landmark not only for the location of the site but for the whole of Mizoram.
- Use of Materials: Use of locally available materials like bamboo would make the design more authentic. But in defence, there are no structural bamboos available in the state and for a huge structure like this project; use of bamboos is not opted.
- Roofing: Appreciated the complexity but at the same time suggested that it can be played with the form to give more design ideas, in the sense if the edge of the roofs rested on the grounds and not on the walls.
- Symbolism: The use of symbols of Christianity like cross on the walls and the steeple marks very well that the building which religion it belongs to.
- Others: As it is located where the local people can see the church, it would be better if created vistas. At the same time how the roofing and outline of the church blends with the mountains are very natural and much appreciated. Apart from the small size of site, well use of site and rooftop green lawn is appreciated too.