

Rhythm and Structure

A Church for Old Town

Alexandria, Virginia


by

Nancy E. Hove Graul

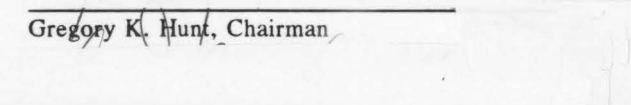
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approved:



Gregory K. Hunt, Chairman



Susan Piedmont-Palladino



James W. Ritter, FAIA

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ABSTRACT

The site is in Old Town Alexandria which lies outside of the metropolitan area of Washington DC in northern Virginia. The project is a church, and it sits looking over the Potomac River on Union and Queen Streets in the historic district of Alexandria. My initial idea was that a church can relate to nature because an individual's memory is commonly related to the elements of nature and is associated with familiar patterns. Building designs formed by patterns in nature are sensitive to what the users have previously experienced. The user can then understand the language created by the architect.

The means for achieving this idea was through a study of the structure for the church, the rhythm of the structure, and how it relates to Old Town. It is this order that now provides the church's relationship to nature and allows the users to feel as if they are within a garden.

To those of you who had confidence in me when I needed it most; both in my architectural education as well as in those difficult tests life gives us.

TITLE	i
ABSTRACT	ii
ACKNOWLEDGEMENT	iii
TABLE OF CONTENTS	iv
FORWARD	1
THESIS	2
THE PROJECT	3
The Site	4
Nature	6
Structure	8
Rhythm	14
The Church	19
CONCLUSION	30
BIBLIOGRAPHY	31
VITAE	32

defense of explaining the reason behind my design. It is not strong enough to be the focus of a design proposition maintained by argument.

Instead, the premise of the design, the proposition, should be an idea which deals with the congregation and minister and how they interact. It is my experience and research in the Christian religion and the Protestant Church which helps to dictate the architecture so that it is understood.

This project will not be my masterpiece but perhaps will be the only project I document in such a formalized way. It has been the most successful learning device by which I can become a more knowledgeable architect. Of greatest benefit, it has taught me the importance of designing for people and how they might feel in a space, instead of making a decision for the sake of a design idea.

With time and maturity, this research will expand and become more complete. Perhaps changing the bell tower height to be the same height as the altar wall displays a design decision for the sake of an idea rather than a reason for the people of Old Town. Conclusively, the height of the bell tower is most successful where it was throughout the design development: at a height that can be seen from a distance, and where the church is its own monument for the people.

Considering the many decisions I have made, my ideas for the church will constantly change and improve. Architecture has become for me a result of where I have been, who I have encountered and what I feel a space should be. This design criteria will constantly change as I further understand and experience more.

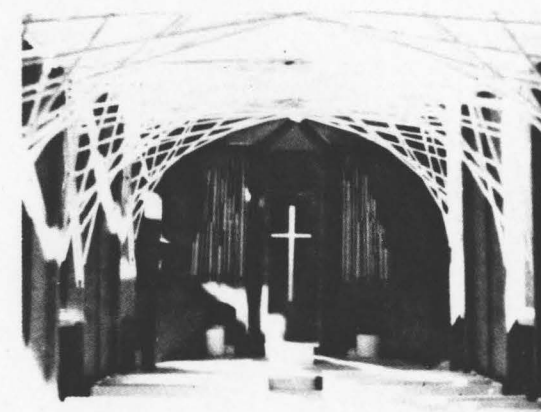
The thesis project is a culmination of my education. For prior projects, I have been given direction for what I would design, the professors I would work under, and when I would have critiques.

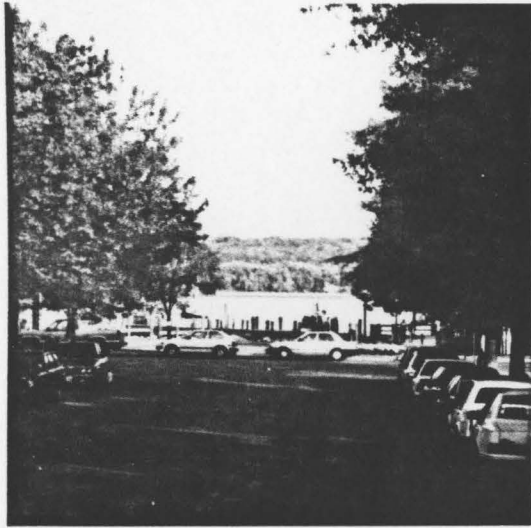
It has now been my turn to determine what I would research, propose, argue and successfully achieve. I now refer to my professors as colleagues and utilize what they have to say not for a grade, but because I am the architect and this is my building. I must be the master builder and fully understand the intricacies I have set forth to unfold in my thesis.

My initial idea, that the Church symbolizes the acceptance of Christ, is not tangible in the architecture. It can be represented and then later the design can emphasize this symbolism.

For instance, the twelve months of the year can relate to the twelve disciples of Christ. Light can be manipulated to represent a disciple incrementally throughout the year. However, this idea is only a detail for the church and not tangible in the

Structure and rhythm order the design of the church. It is through these two principles that the building reminds the user of elements of nature and a familiar pattern. Enhanced by light and historical interpretations, the building is sensitive to what the user has previously experienced. The user can then understand the language created by the architect.

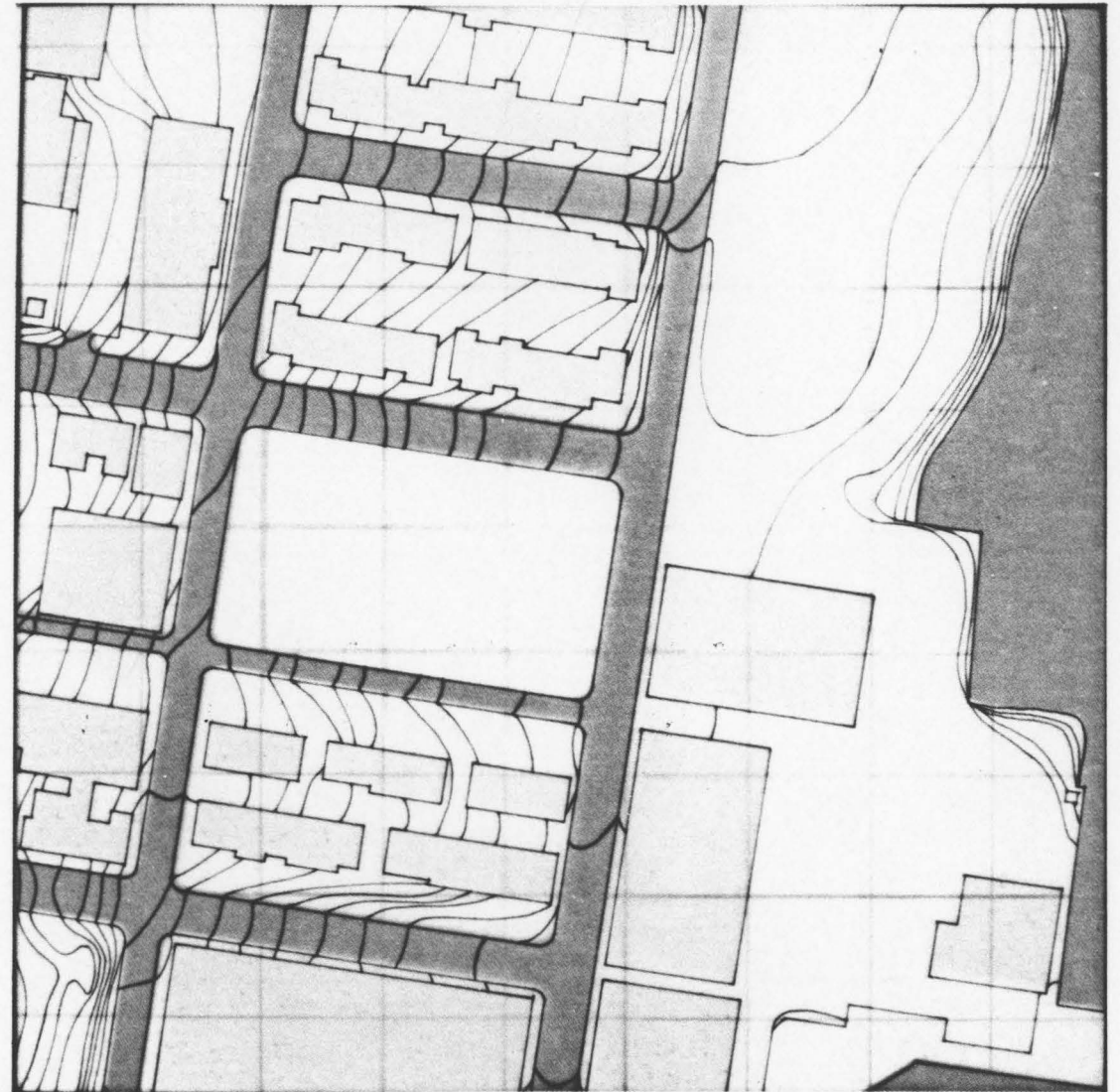




Alexandria, Virginia, first settled in the eighteenth century, is a historical district outside the metropolitan area of WashingtonDC. The urban specifications this site presents and the historic nature of the surrounding buildings sets up a requirement to design a sensitive civic building for patrons in the city.

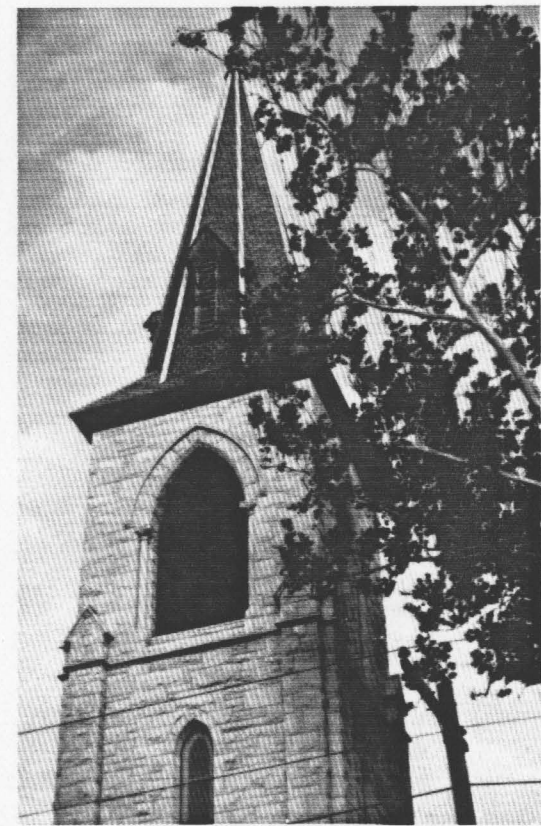
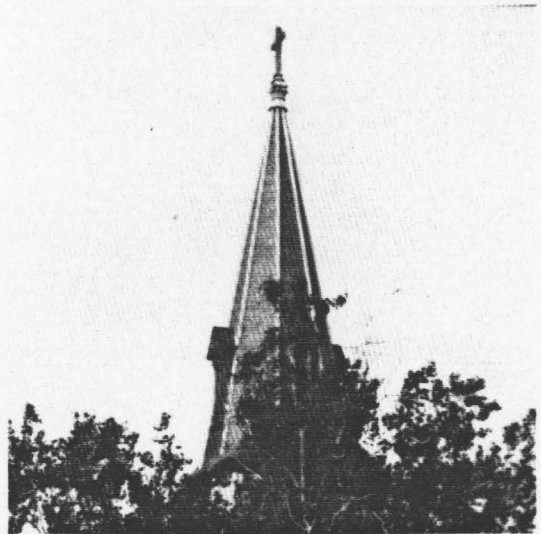
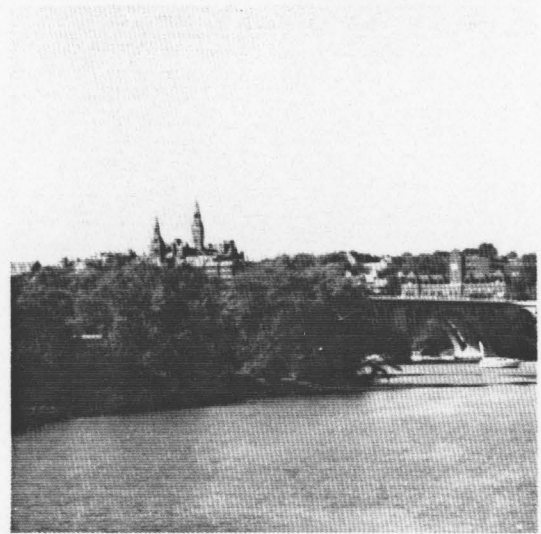
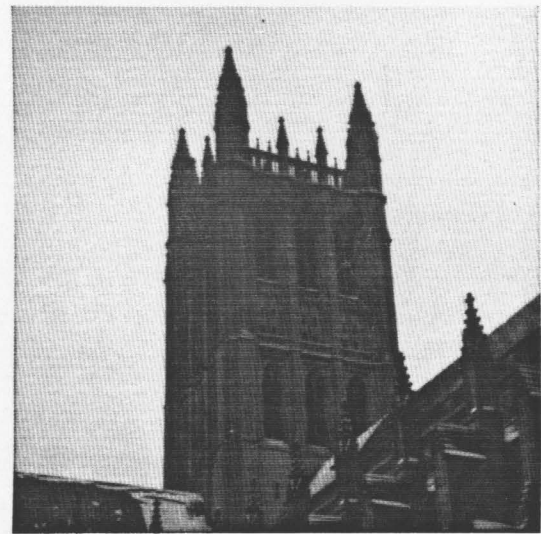
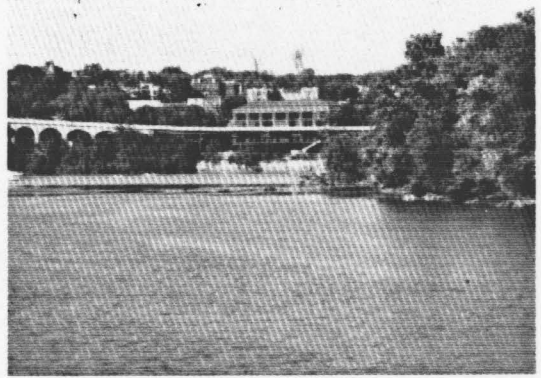
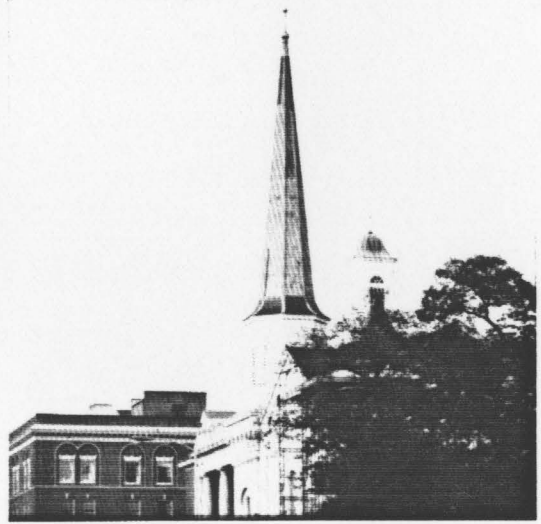
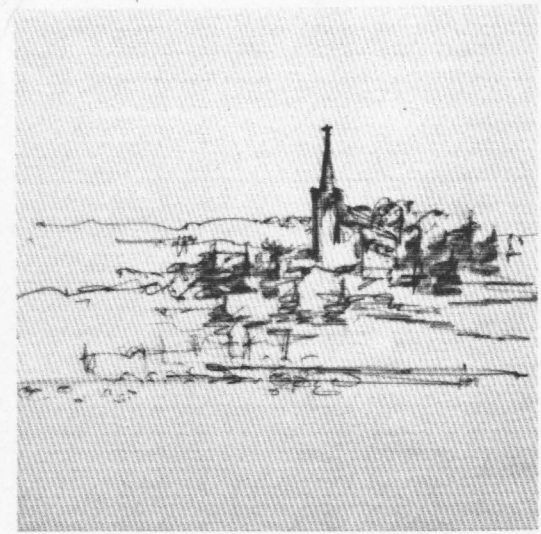
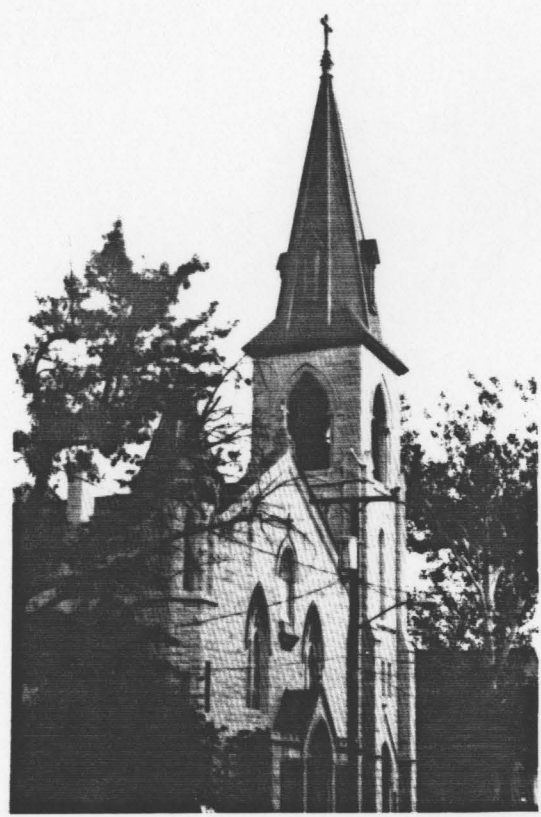
The traditional house in Alexandria is two or three stories high and about twenty feet wide. The width allows for an entrance hall and two chambers, readable in the facade as a door plus two windows. The twenty foot wide bay defines an eight foot plus twelve foot bay in the church design which respects the historic rhythm of the neighborhood.

In 1749 Alexandria established lots of two acres. On these lots townhouses were erected. Most of them form the street line or are set back a few feet, allowing for a flower garden. The buildings form a continuous line which is sometimes penetrated by a narrow walk connecting the street with the gardens. The church design follows the same rhythm along the street and gives north and south garden spaces back to the neighborhood.



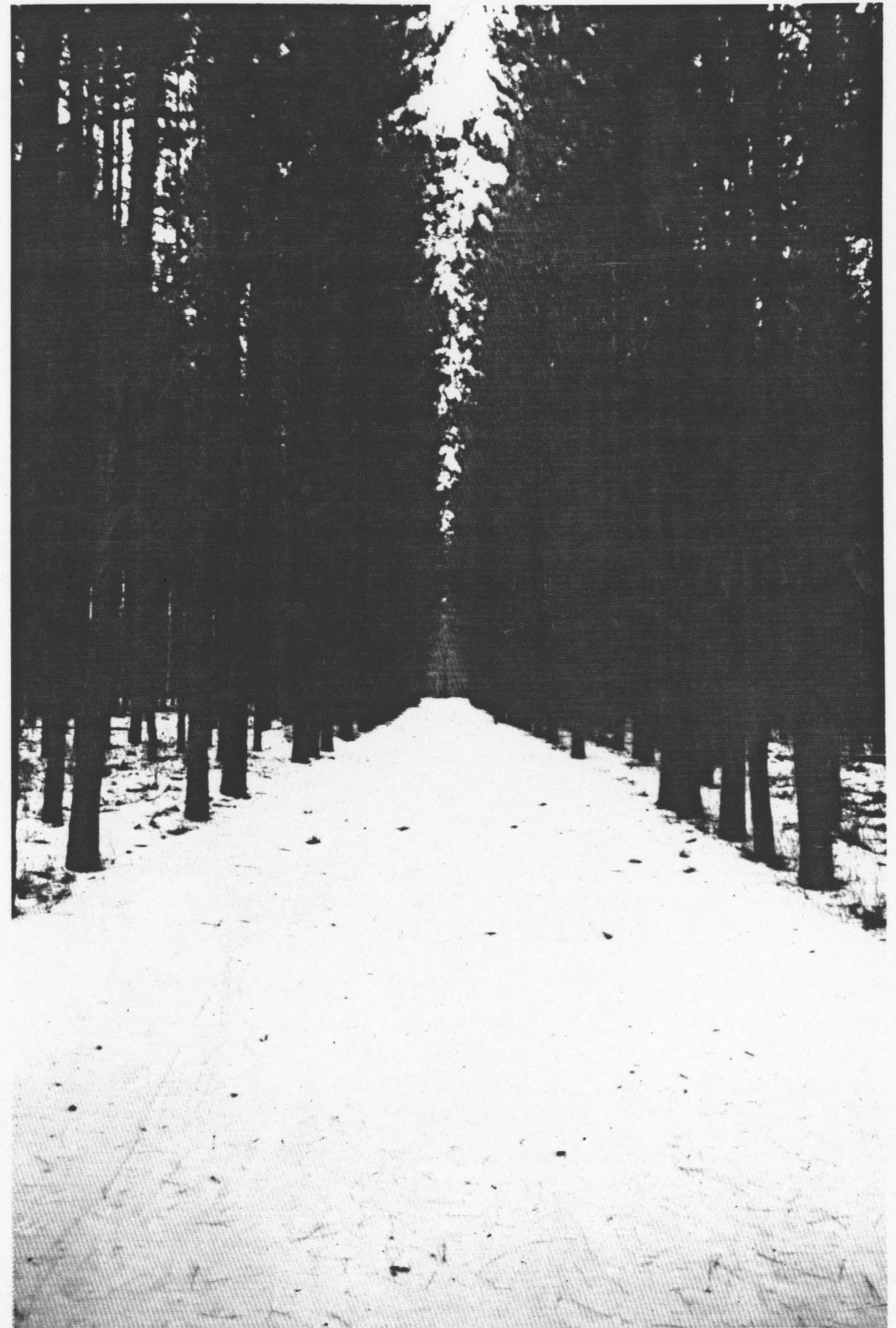
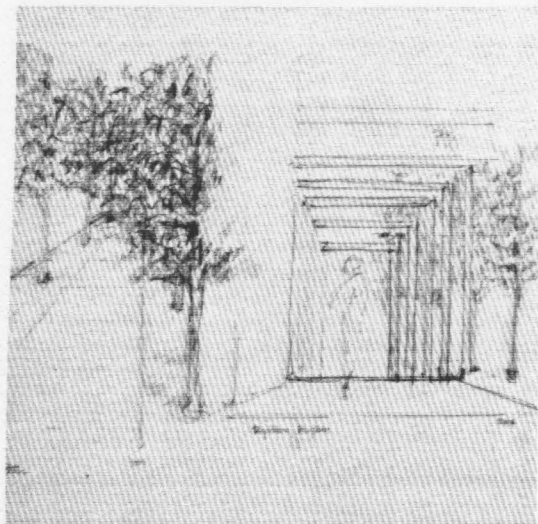
Alexandria and Washington DC offer many examples of successful church designs. These examples date back to when Virginia was first settled and include our National Cathedral.

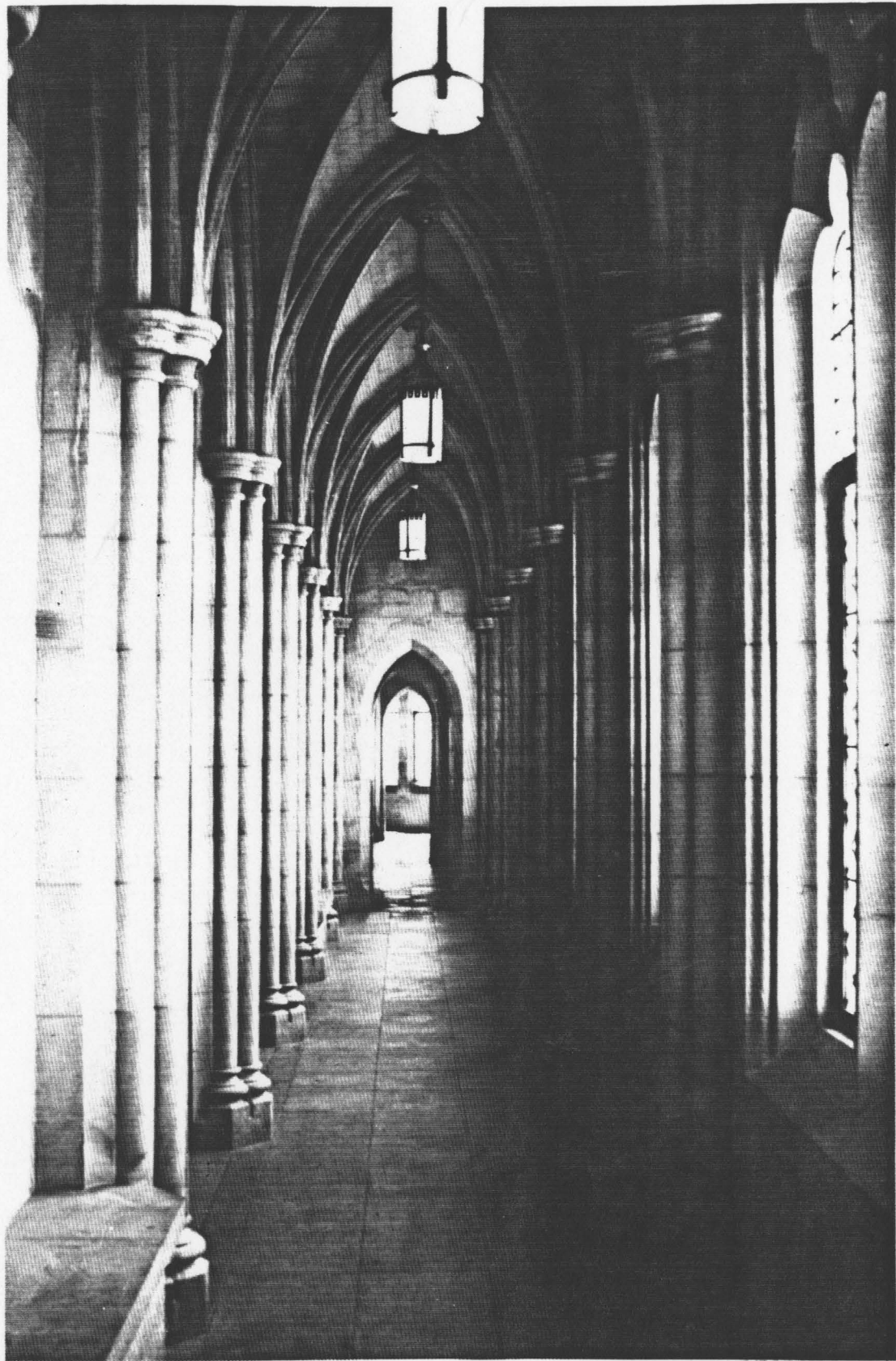
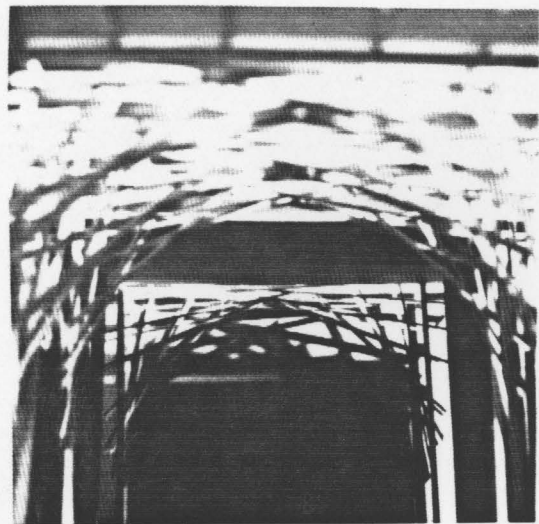
Vistas capture ones attention as one walks along the Potomac River, and it is from these views that I began to see the importance of the church in our communities. From a distance, with the bell tower rising above the horizon, people can recognize where the church, a civic gathering place, lies.

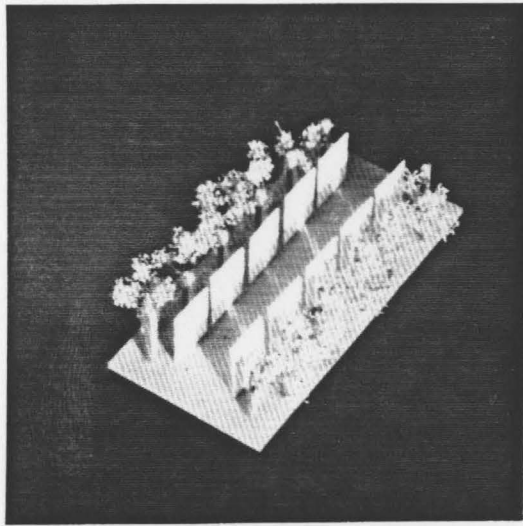


The church design must be sympathetic to the city and its neighborhood, but more importantly it must be understood by the users. It is the congregation which must understand the language created by the architect.

To achieve this idea, the building design must be formed by patterns in nature because these patterns are sensitive to what users have previously experienced. It is the elements of nature that an individual's memory is commonly related to and these elements can be associated with familiar patterns.



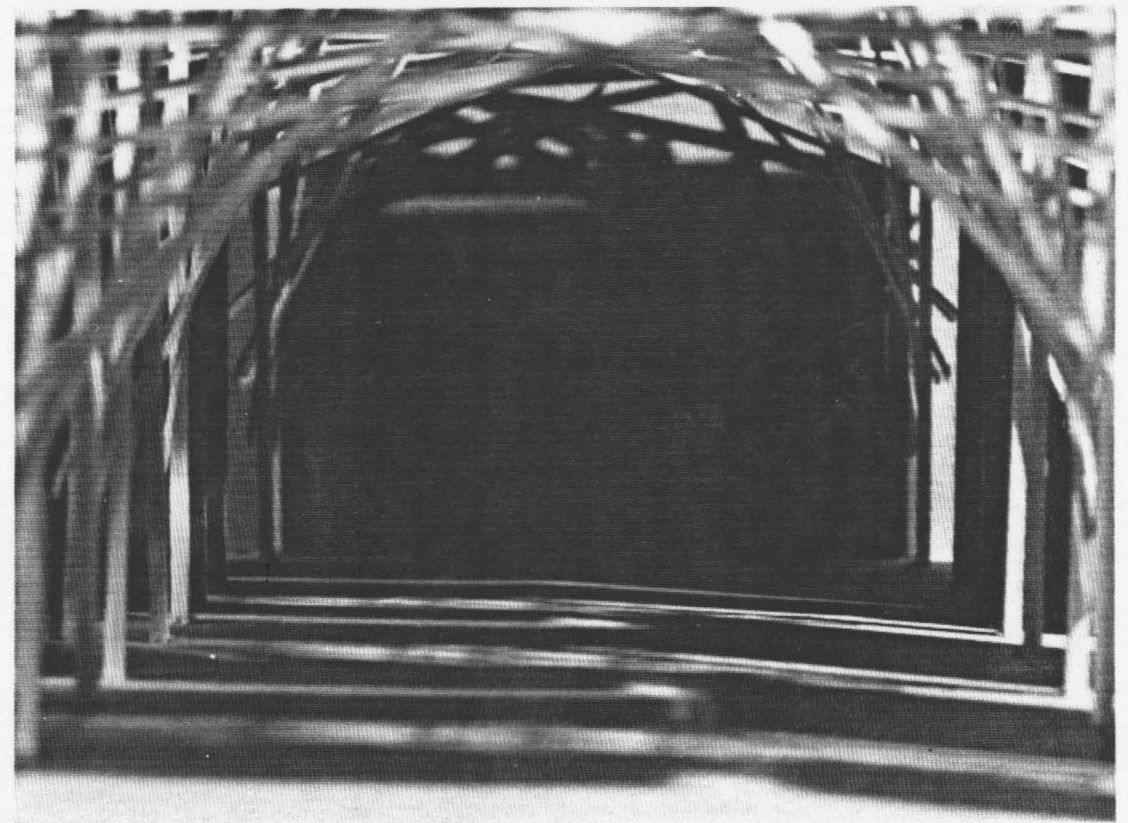
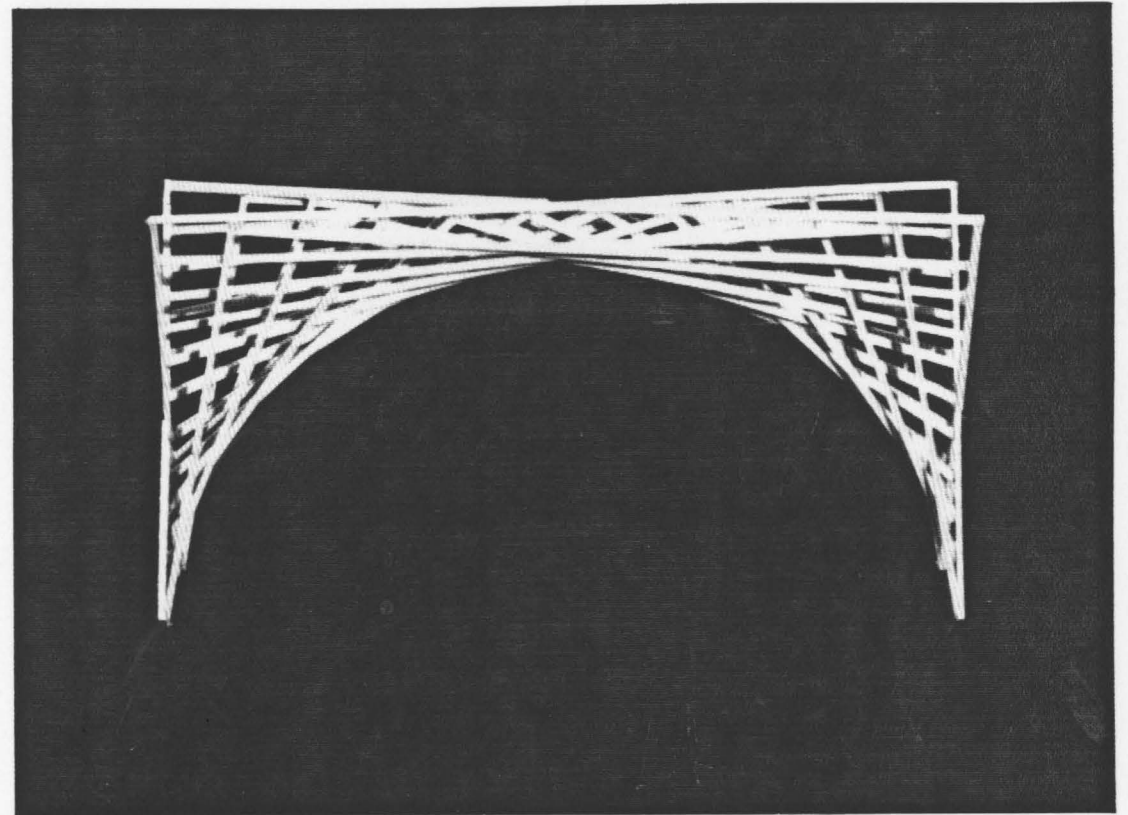
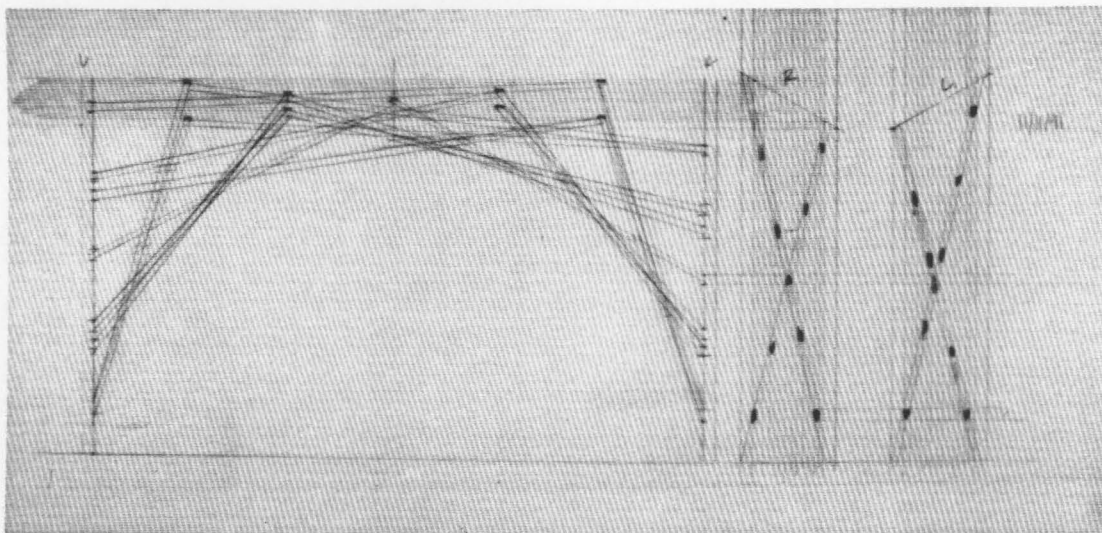
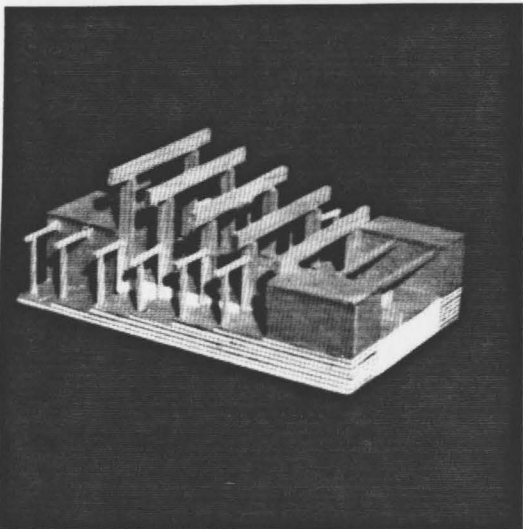


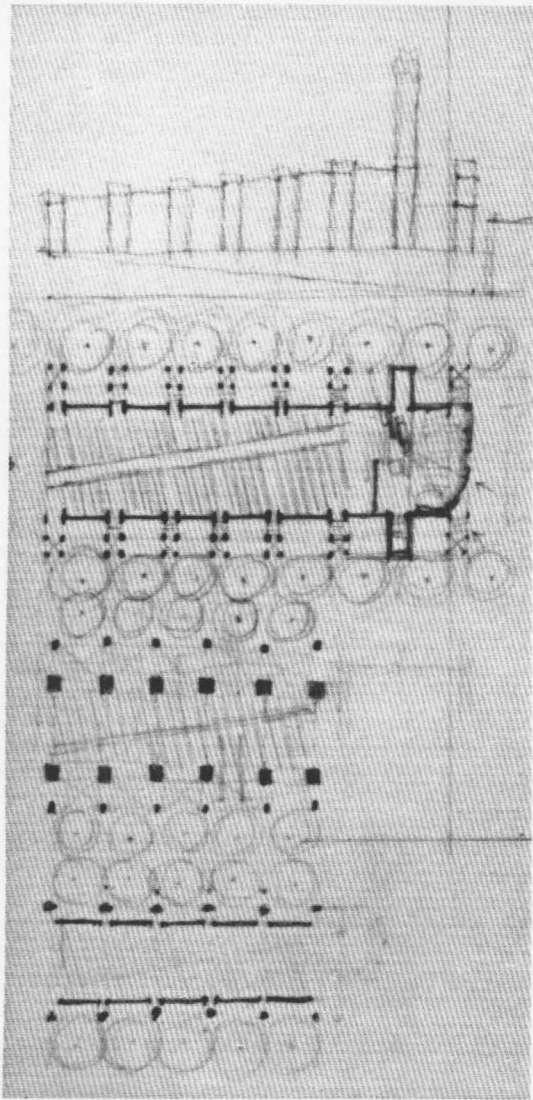


My first concept was the relationship between walls, columns and trees and how together they can form a space. I then looked at how the site provides an opportunity to separate the church from the secular spaces, where a plinth supports the chapel and sanctuary and the secular lies below.

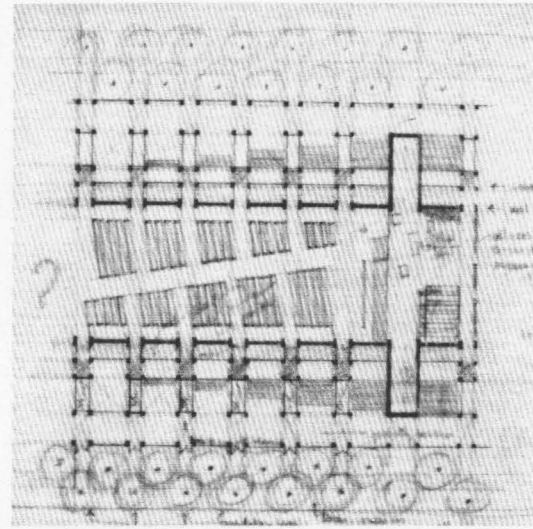
The first structural idea came from the simple solution of two columns and a beam spanning the space. However, to span a wide space, the depth of the beam was too great. I wanted to reduce this beam so in the sanctuary the structure of the span would be as light as possible.

Using the idea of a knee brace allows the horizontal member to be reduced. By adding more knee braces, the depth of the horizontal span is minimized. The continuous placement of the knee braces presents a structural pattern in an arched form. The reduction of the members allows light to enter in a way which resembles light coming through trees.

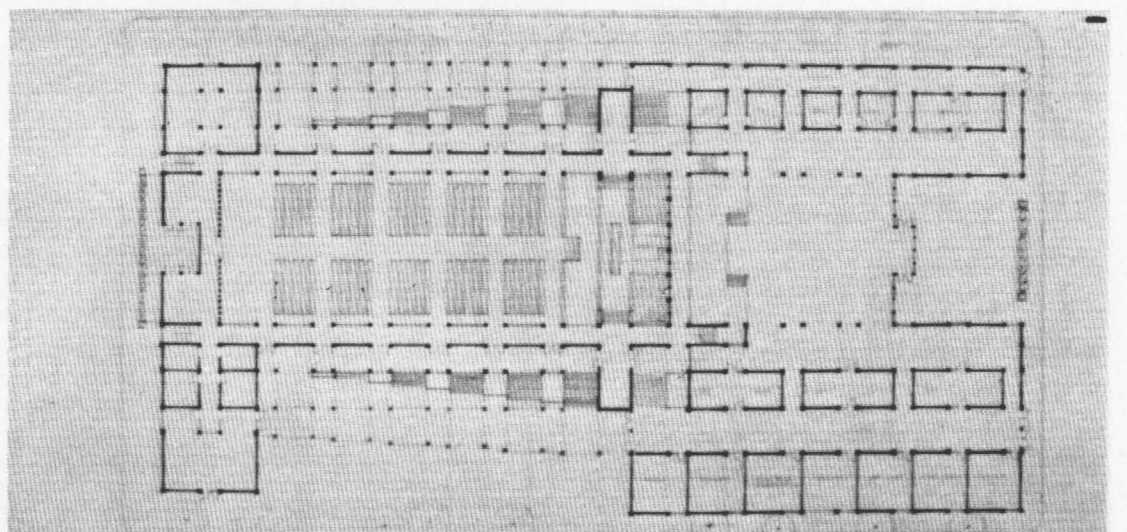
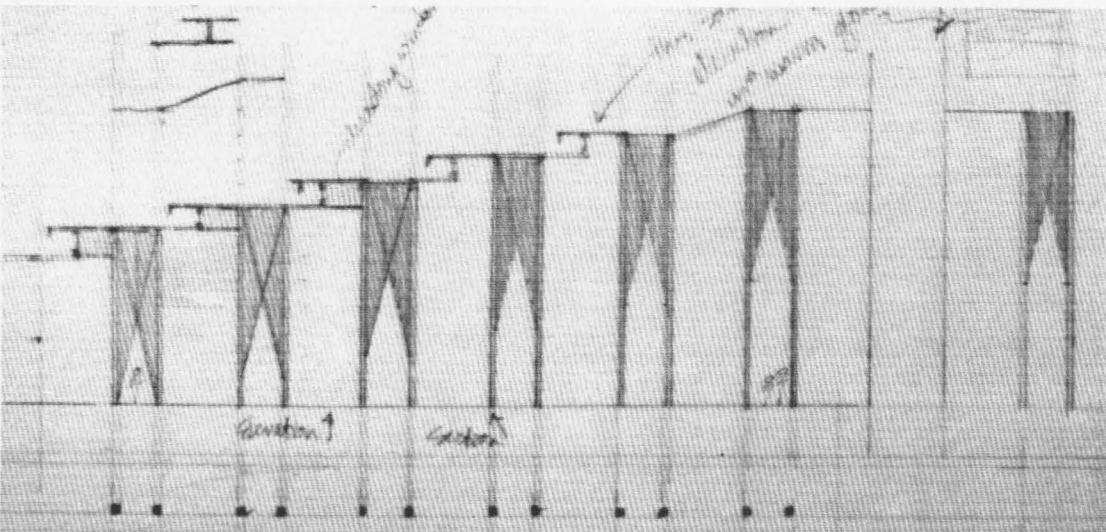
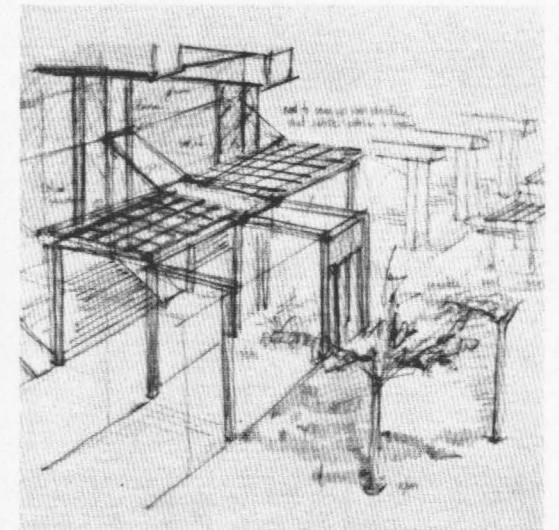
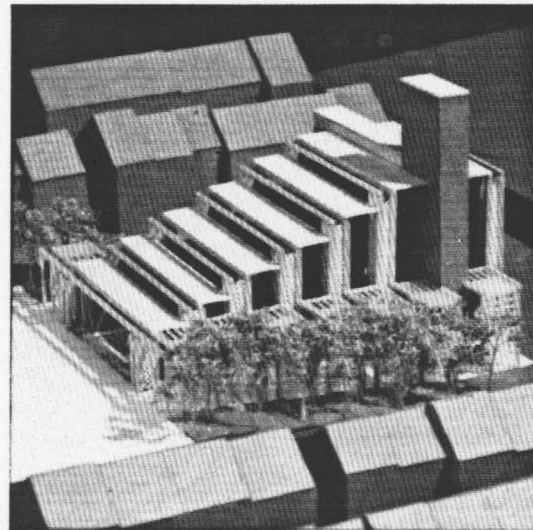
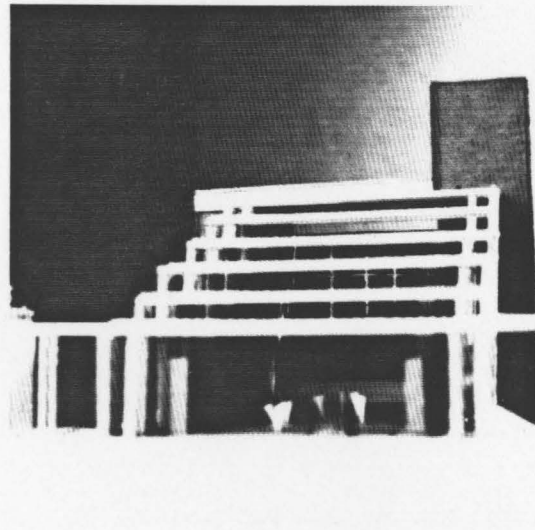


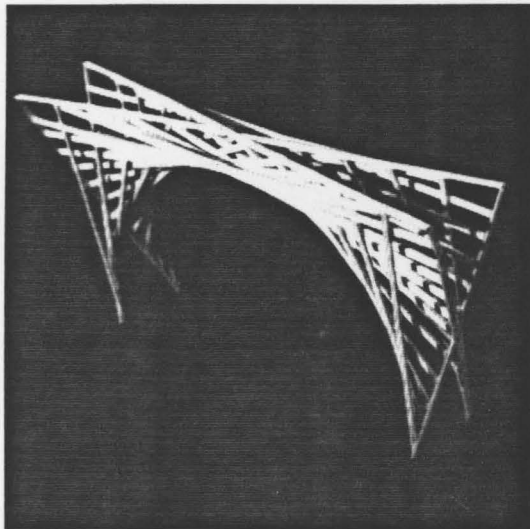
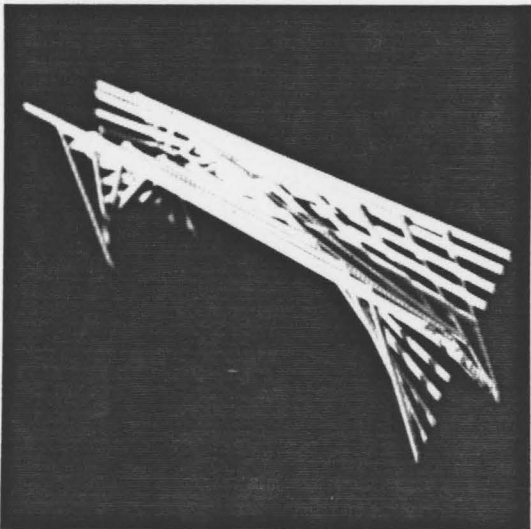
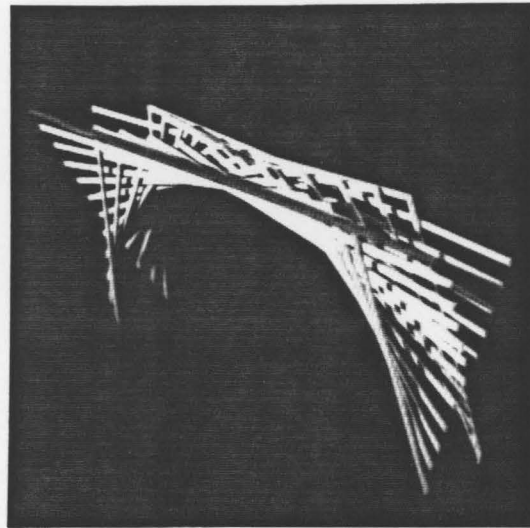
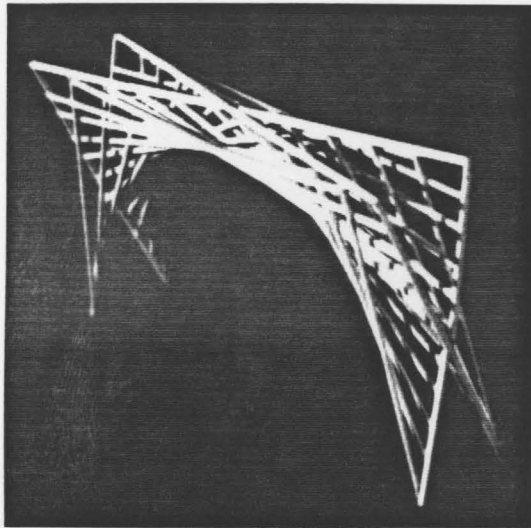


In the sketch, people circulate through the structure and wander out to the trees; the user feels like the sanctuary is nestled among a garden. In section, the structure becomes taller as one reaches the altar, and thus the altar is the tallest point on the site.



In the first plan, the altar is situated east and the secular is at the bottom of the site. Seen in the model, one exits out of the sanctuary and through the garden to approach the secular spaces. In a more clear plan, the entrance is on the left, the sanctuary is in the middle and the secular is on the right.

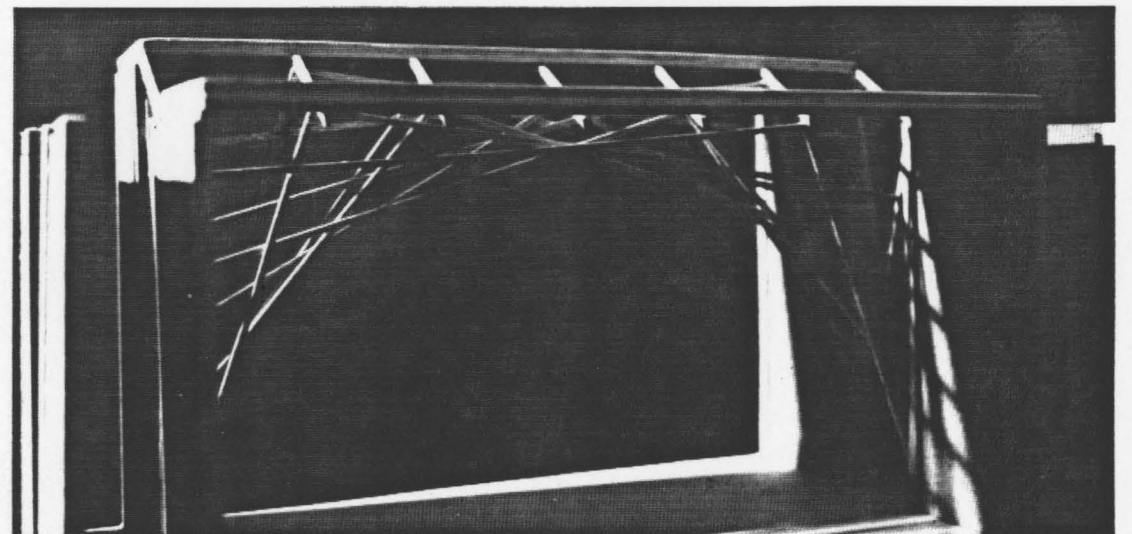
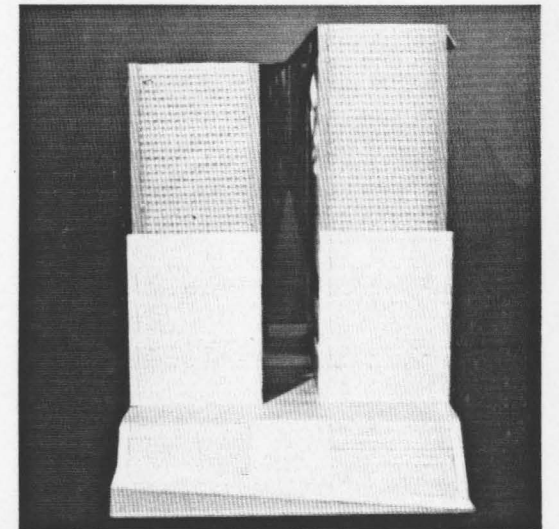
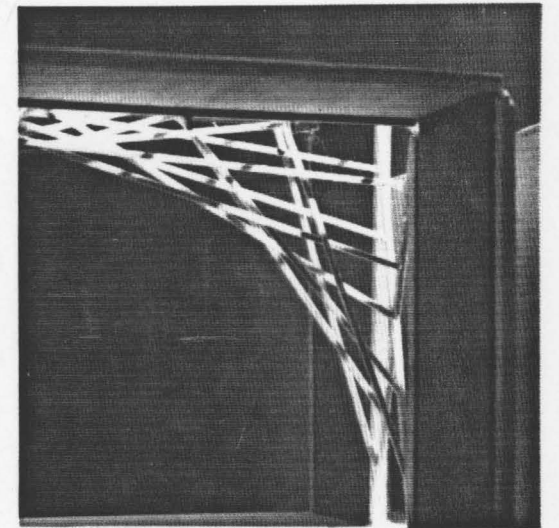


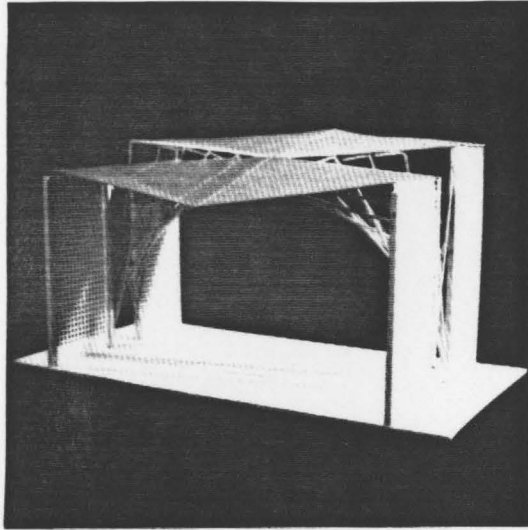


I looked at the opportunities of the structure and how the integrity of the initial arch could be retained. I then explored ways in which the arch could better serve as a structural piece for the sanctuary. This led me to model the structural piece: extending it, shortening it, or not completing the ends in the same way. However, each of these changed the arch too much and diminished the integrity of the initial design.

The design of the structure is a reinvention of the Gothic arch where the center apex is accented and an archway is formed. However, it is light and elegant with a hierarchy of members. It is through the structural piece that light enters the sanctuary, people circulate from the church, and the height increases as one approaches the altar.

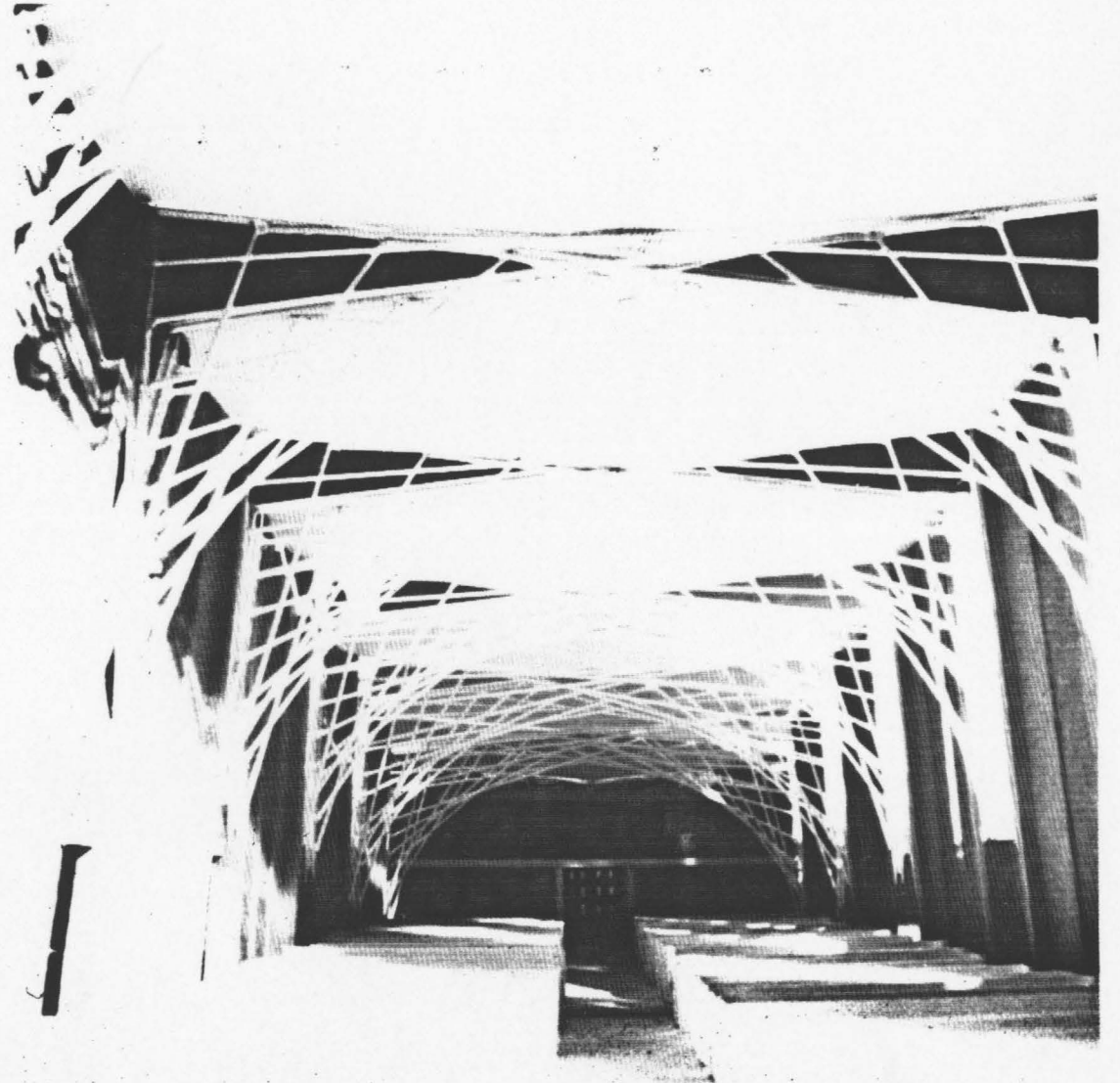
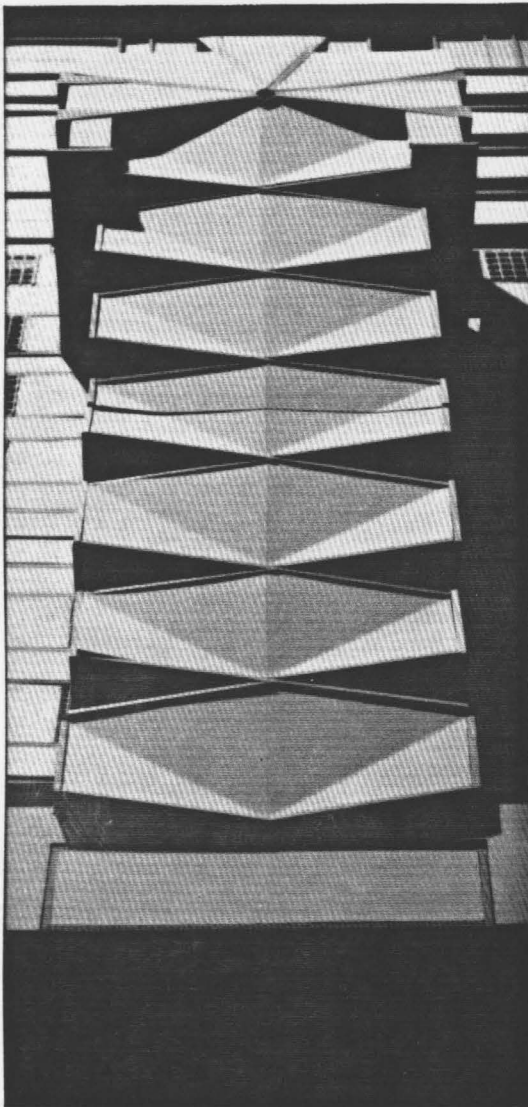
The structural piece is designed with seven points of support, but these points must fall directly on the meeting of the knee braces. The change in height now happens within the structure, along with circulation and light.

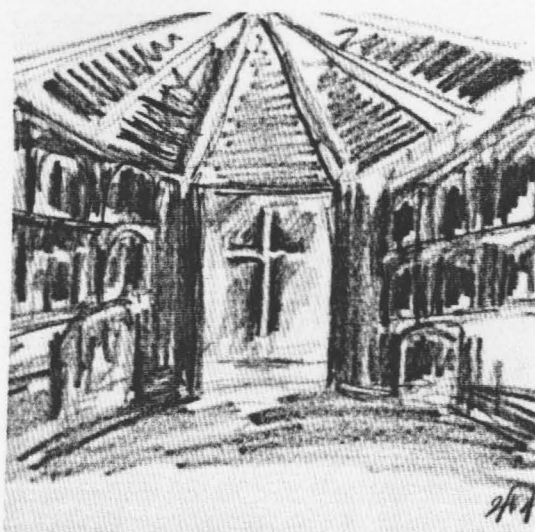
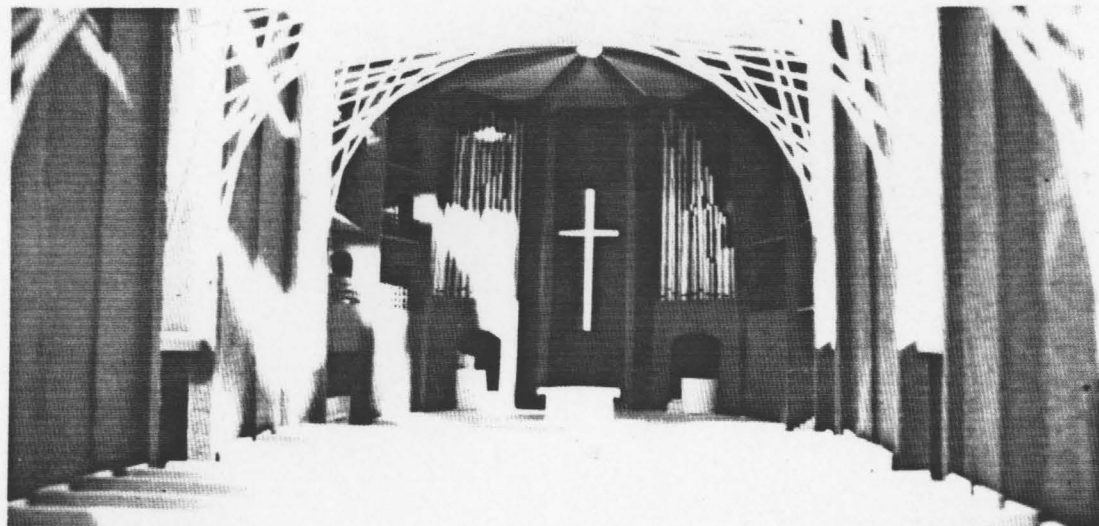




The essence of the sanctuary and the church is the structural arch. It works architecturally, structurally and aesthetically. The arch supports the roof, yet it is transparent in nature. The roof plane over the sanctuary must match the elegance and delicacy of the structural arch. Ultimately, the roof is governed and formulated by the arch.

The roof plane of the sanctuary has become a planar structure rather than a network structure. The small span between the main sanctuary structure allows for minimum depth in a sandwich panel. Small I-beams span from the panel points created by each structural arch to the next. Covering these small beams in a white panel allows for a simple, homogeneous separation between the structural arches.

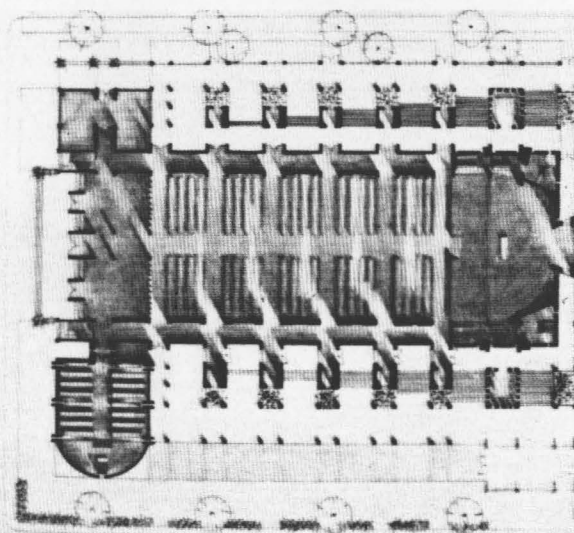


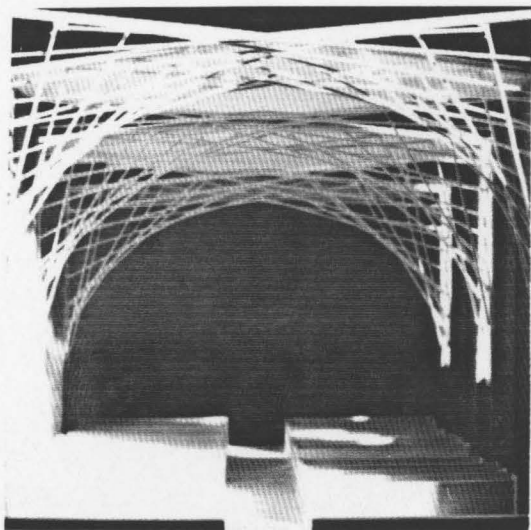


The delicacy and lightness in the roofing structure of the sanctuary brought difficulty when terminating the rhythm at the altar. The solution developed as I imagined kneeling at the altar and looking up at the cross. The cantilevered beams come together directly above the altar and meet at a boss. However, this boss is not supporting a force from the beams; it simply holds the beams laterally with a ring-like piece. Translucent glass placed delicately in this ring allows a glow of light to enter down on the altar.

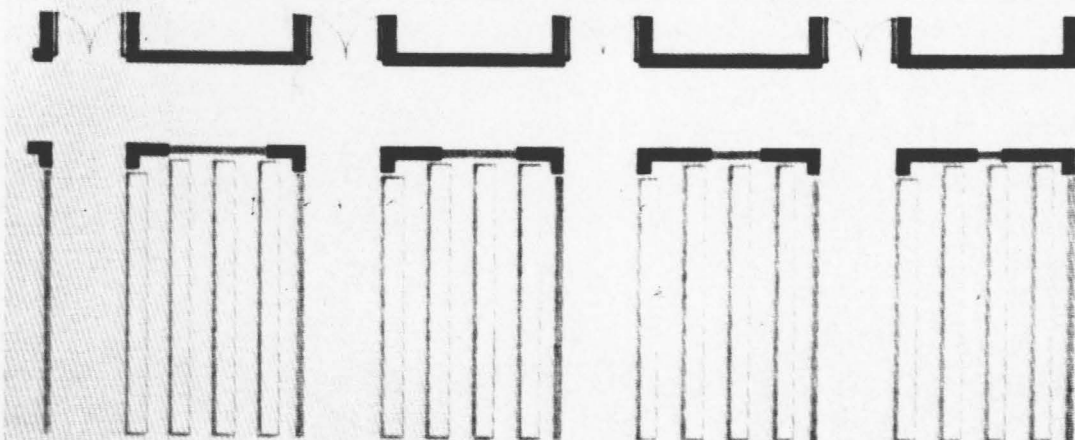
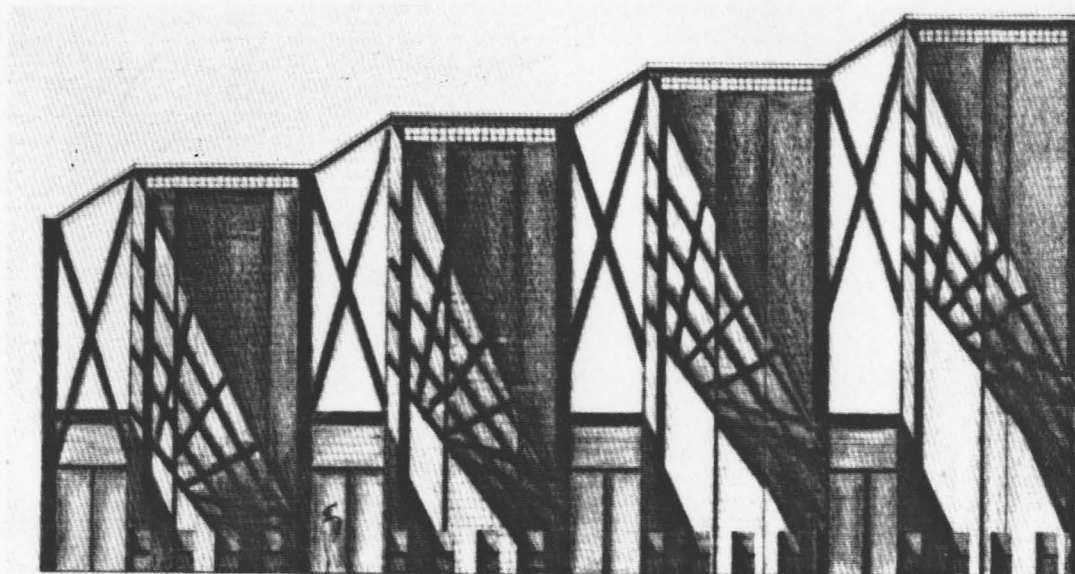
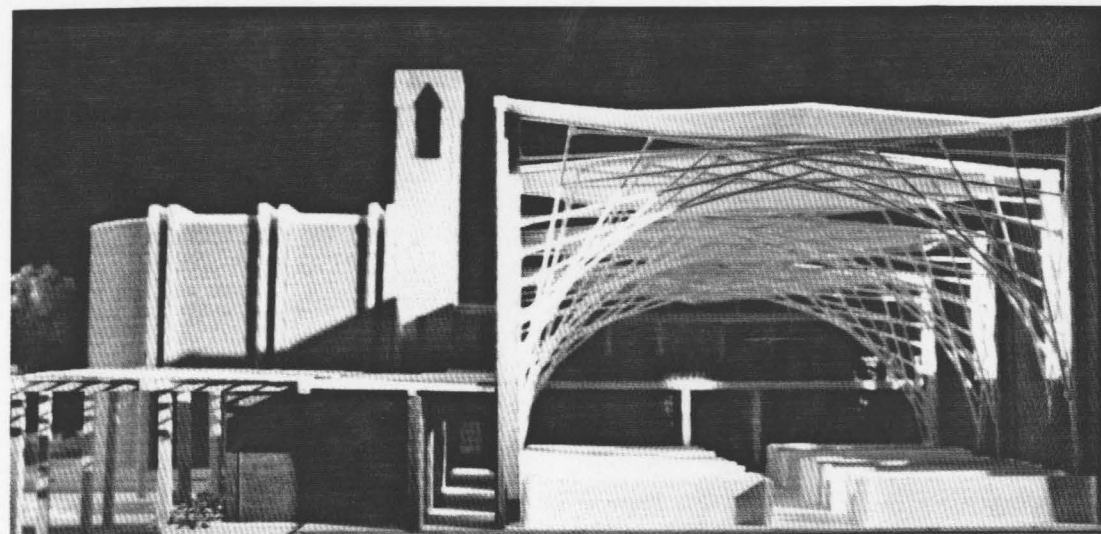
The darkness and focus created at the altar and the darkness in the entry resembles a Gothic entrance. A dark, closed-in feeling is present. The semicircle contained within the rectilinear altar space allows for a thick wall to house the lectern, baptismal font, organ and choir loft. This enables the floor to be free of any ornament and leaves the altar to stand alone.

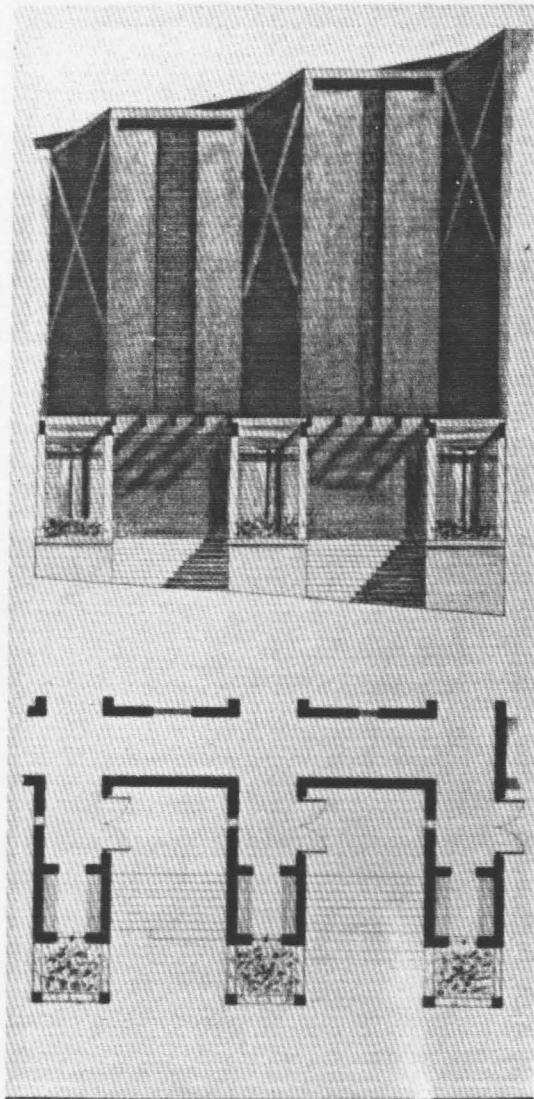
The altar, constructed of reinforced concrete piers and concrete block infill, is the most stable space. The beauty of this construction is that when the church is in ruins, the altar will remain intact and not forgotten.





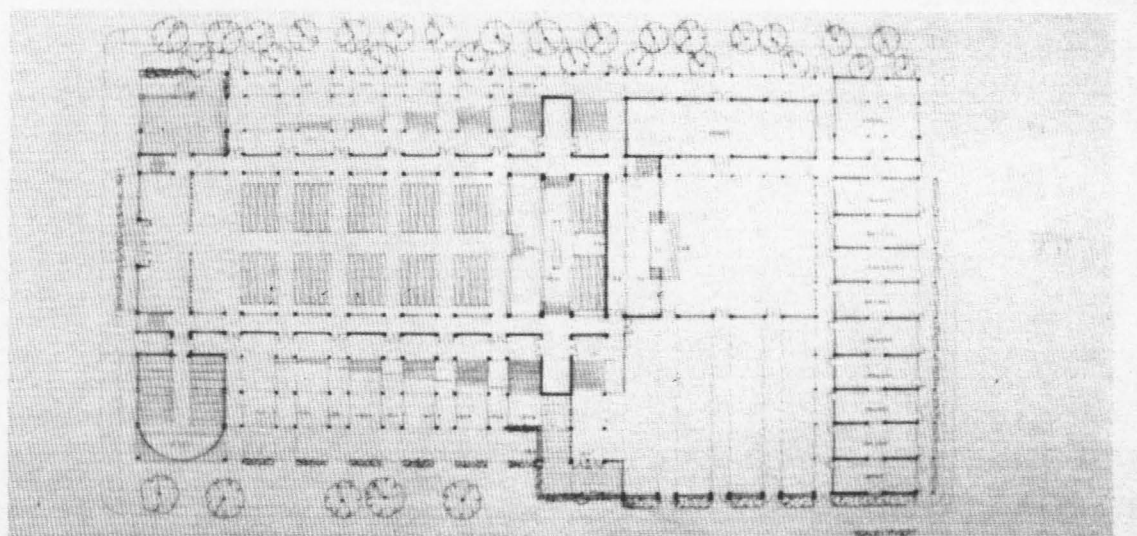
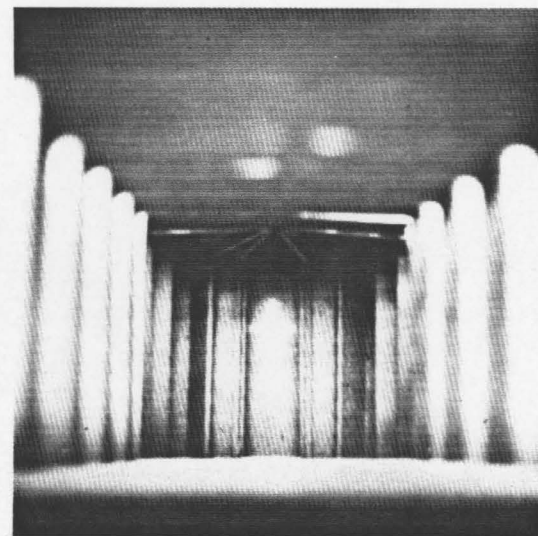
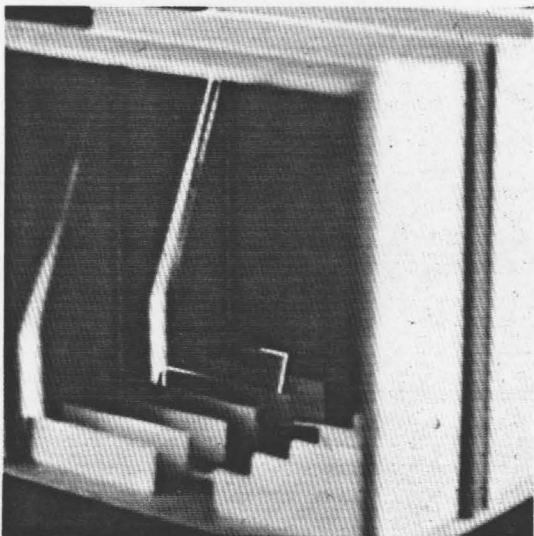
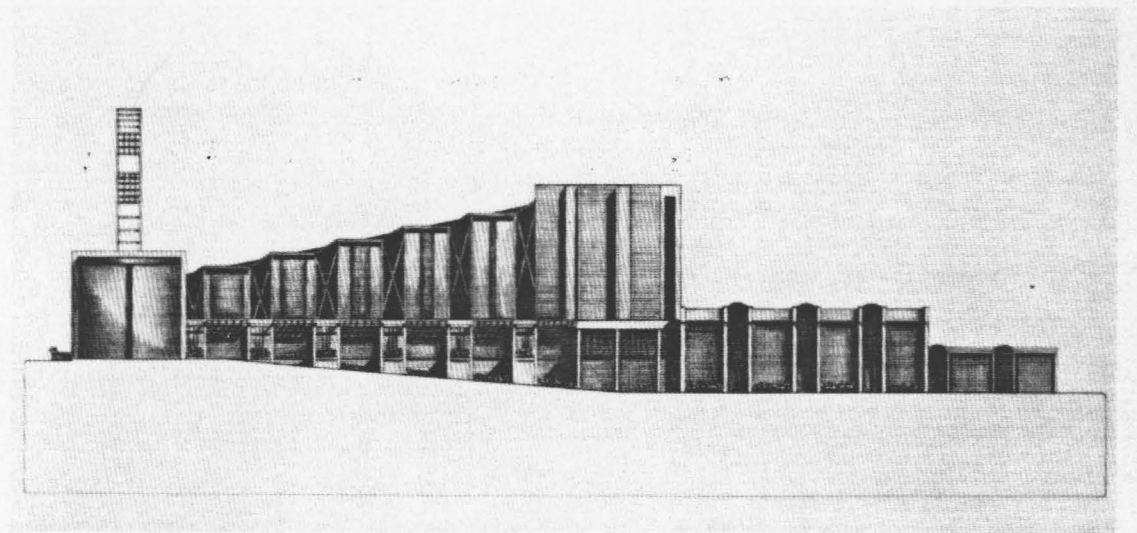
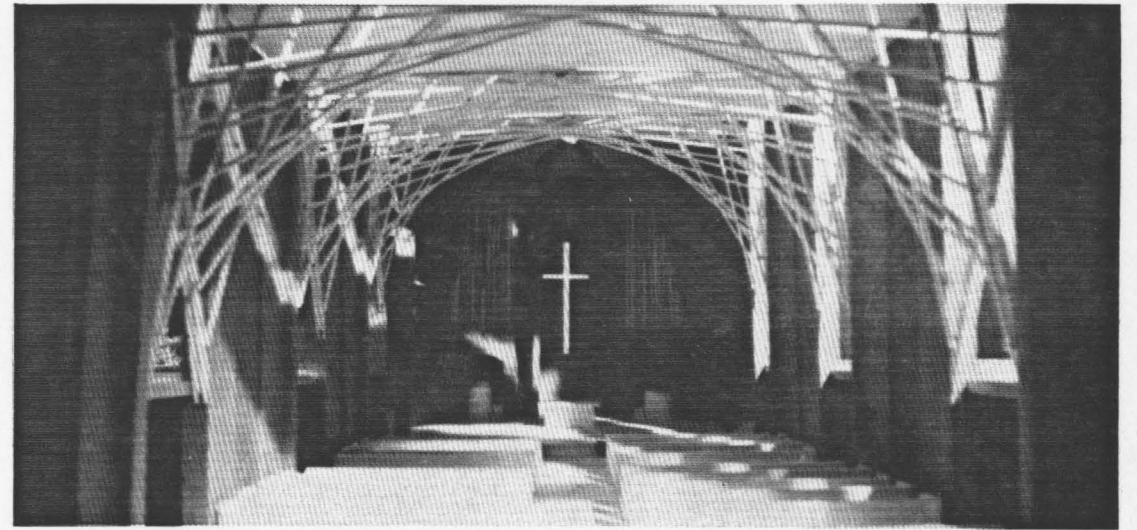
The spaces created by a language between dominant and subordinate elements express their function through the structure. Whether the structure is dark and heavy or if it allows light through and appears weightless, the particular structure forms the space. Most effectively, the structural arch defines the sanctuary space. The order within this space is determined by the rhythm of the repeated structural arches.

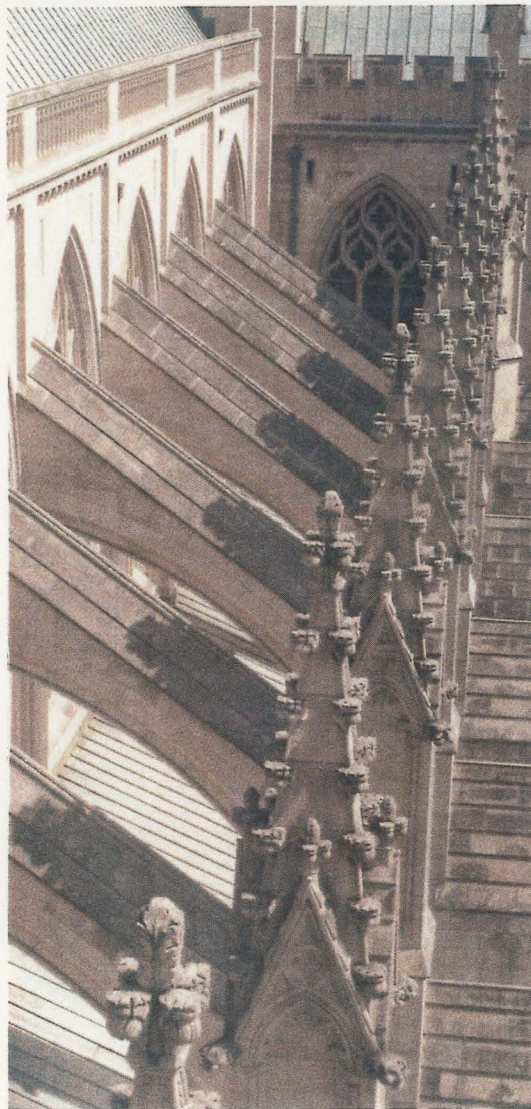
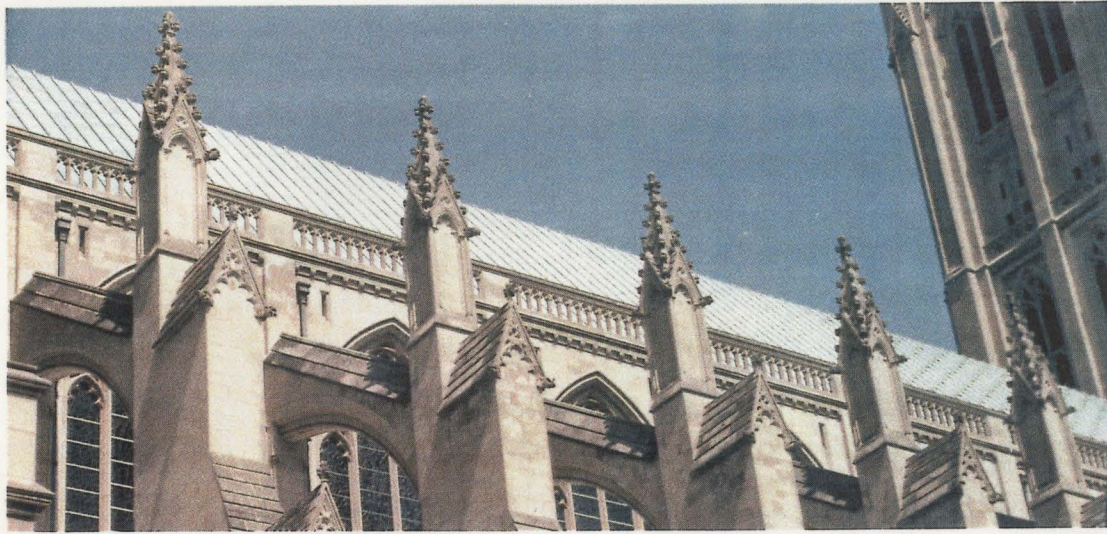




With a series of the structural pieces one begins to see the strength of the eight foot and twelve foot bays. The structure contributes to the order of the building by providing a rhythm. These eight foot bays are where the structural elements are placed. It is also at these smaller bays that light, circulation, and the change in height of the building can exist.

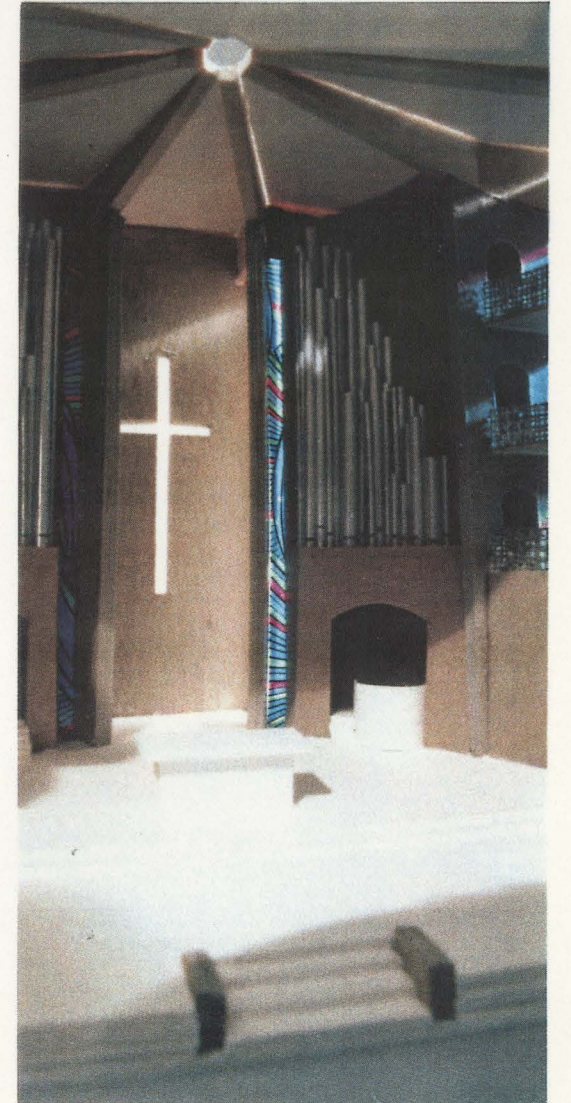
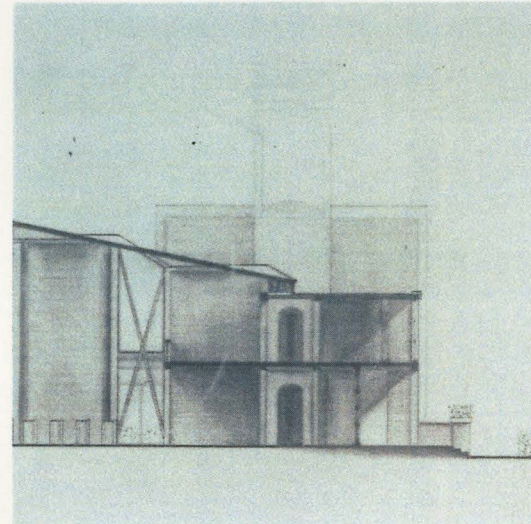
The structure shapes the sanctuary space and the rhythm dominates the order of the building. The rhythm of the structure is also seen in the chapel. Here the light enters, but with less adoration than in the sanctuary. The repetition of the structure is most clearly seen on the inside of the sanctuary and in the elevation. In the sanctuary, the twelve foot bays between the structure are solid so as not to diminish the elegance of the light coming through the structural webbing. These solid walls are formed by brick infill between the sanctuary columns. Clear glass at every structural bay emphasizes the rhythm as the light competes with the unglazed bay to produce an intricacy of shades and shadows.

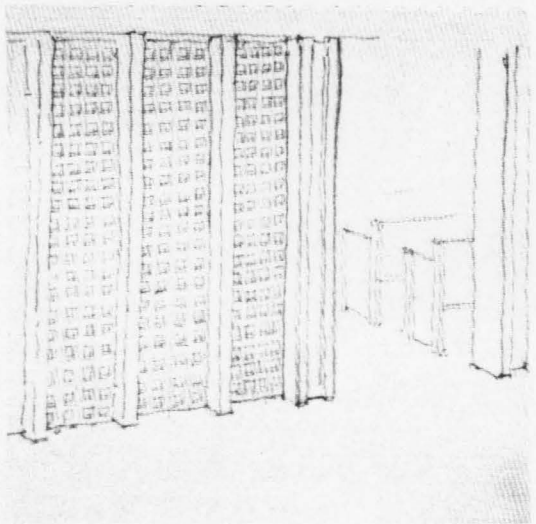
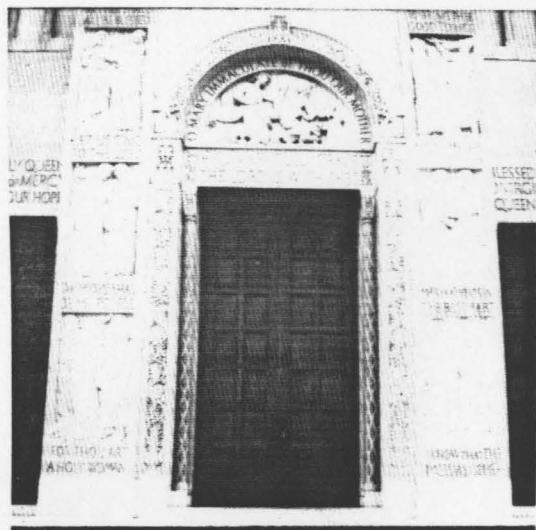




The National Cathedral in Washington, DC effectively shows the repetition and rhythm of its structure. The Cathedral also offers excellent examples of church stained glass and how it lets light in while keeping the space dark.

Light enters the church for Alexandria through the structure. It was my intention to keep the sanctuary light and delicate, and conversely, the altar dark and quiet. At the altar, light is needed and positioning colored glass along the thick structural piers enables the space to remain dark. Using colored glass instead of clear glass allows me to introduce light while the space remains dark. At the entry, colored glass is again used to keep the space dark to emphasize the bright light shining through the clear glass above the structural arch.

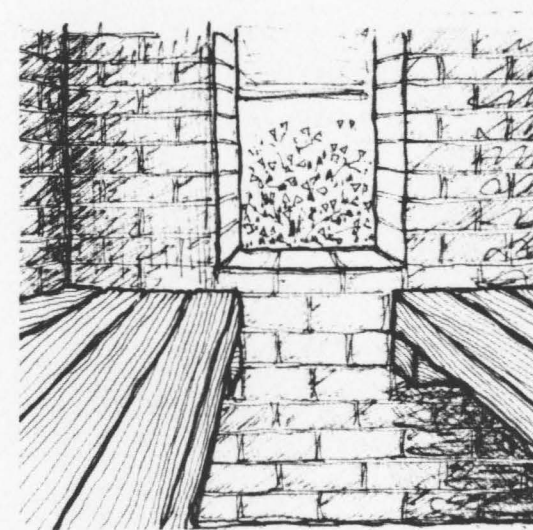
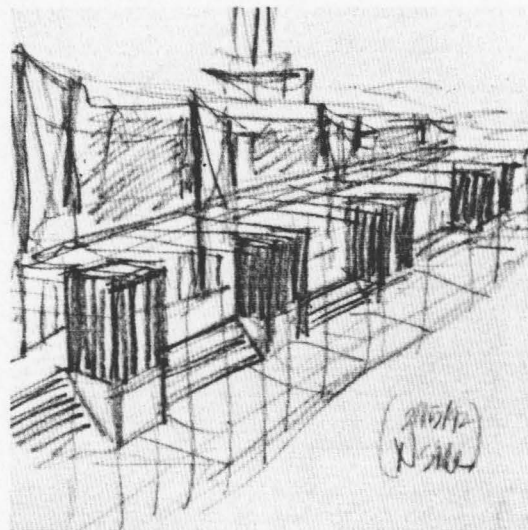
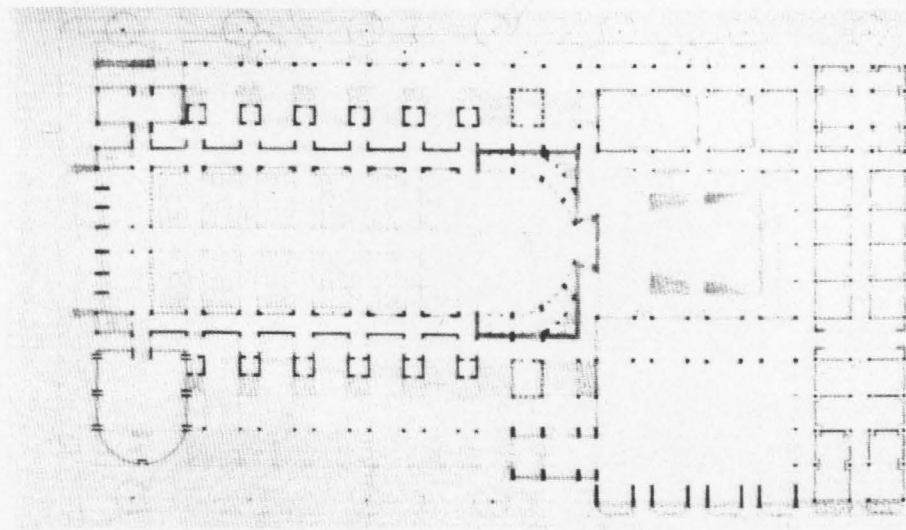




The physical distance of the entrance from the street must be appropriate for a proper processional quality. Although entering on axis with the altar is significant, once you are inside the view of the sanctuary is not yet clear. A screen made of wood, which lets light through, does not allow a full view of the sanctuary. Once you are inside the sanctuary, the rhythm of the structure is experienced. The seating of the sanctuary is coincident with the structure and the circulation.

Following the service, the sanctuary becomes a place for fellowship as the minister descends from the altar to meet with the congregation and proceeds into the gardens on either side of the sanctuary. As a result, it is not necessary for the congregation members to turn around and exit with their back to the altar.

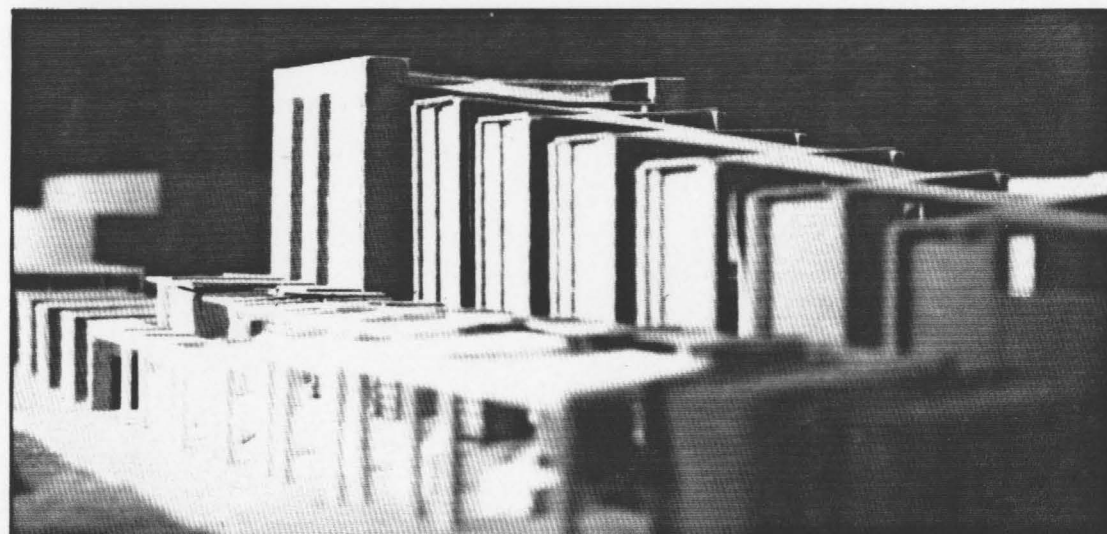
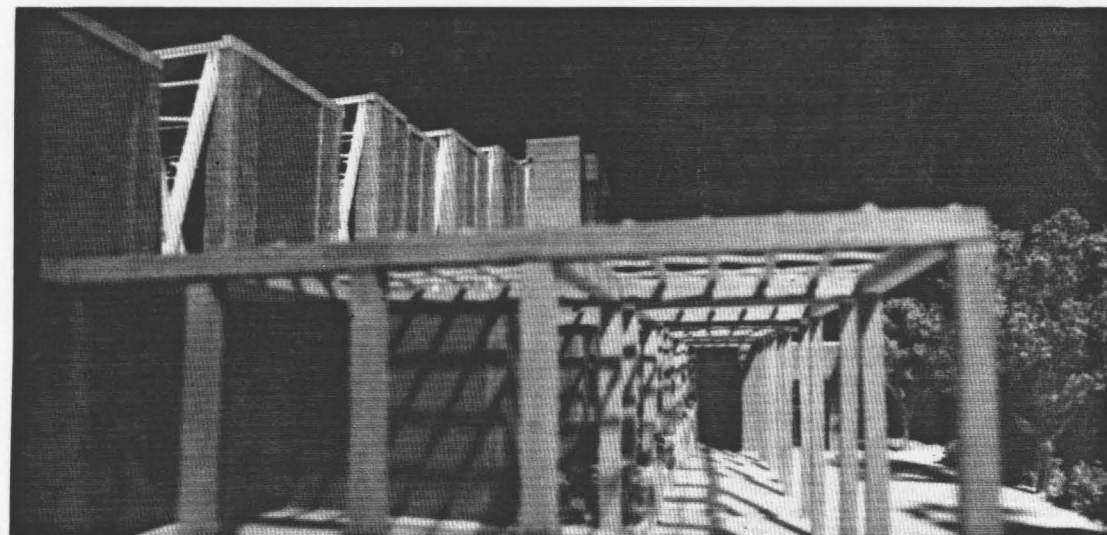
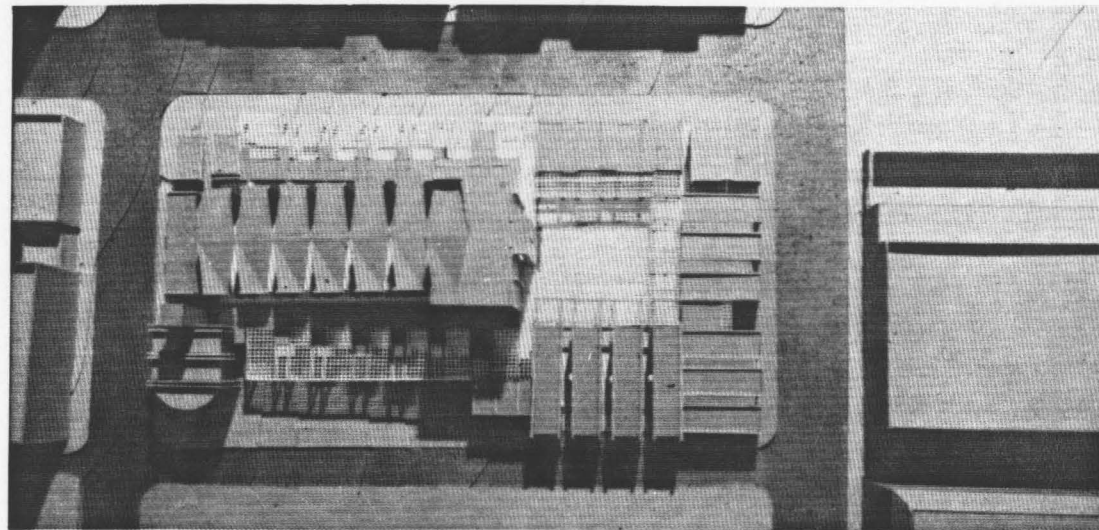
Emphasizing the rhythm of the structure, prayer vestibules created on the eight foot bays support the north and south trellis structure and provide personal spaces within a building. Circulation out of the sanctuary, under the structure, becomes more than just passing through two doors. The procession is incorporated with small prayer or meditation spaces. These small vestibules provide private rooms in a public garden and are made of thick, heavy brick walls. They structurally support the trellis and keep the user informed of the language between the light and darkness as well as the exits and circulation.





The north and south gardens are the spaces given back to the street and the neighborhood. They enhance the elevation and expand the use of the church.

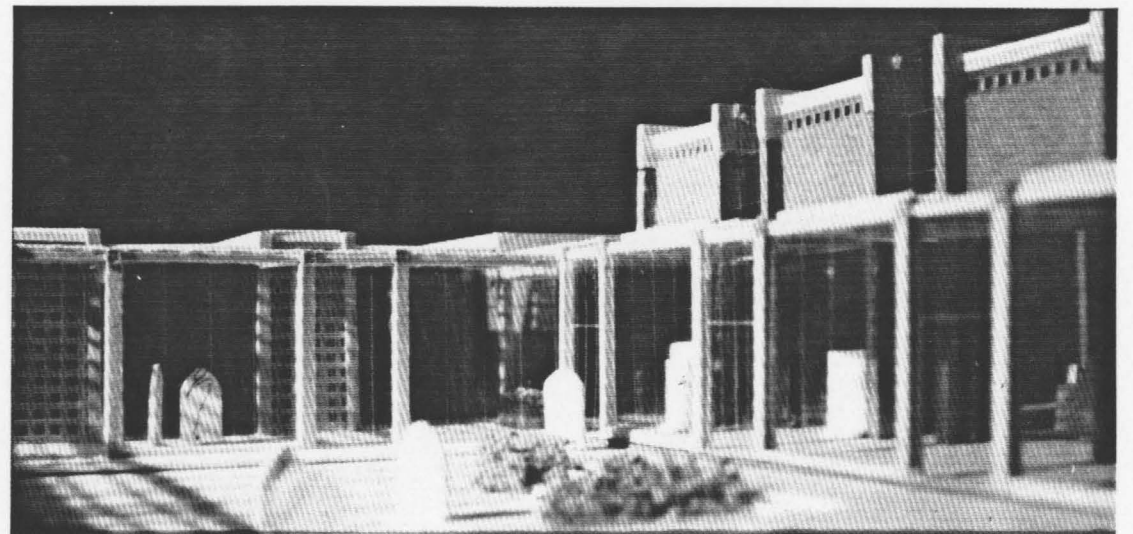
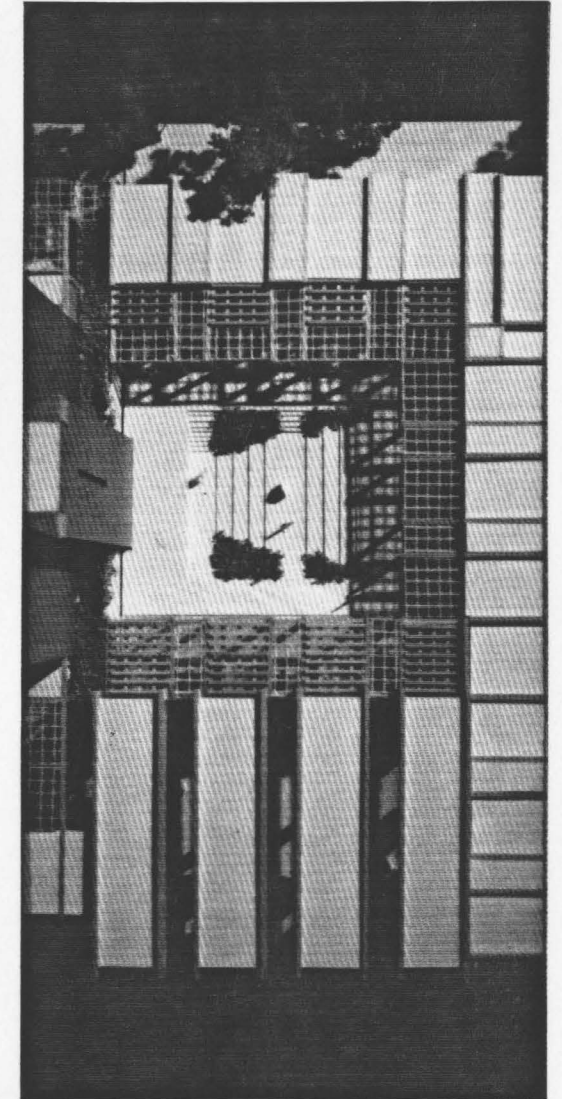
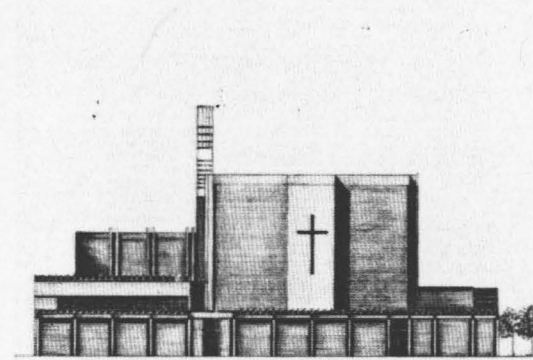
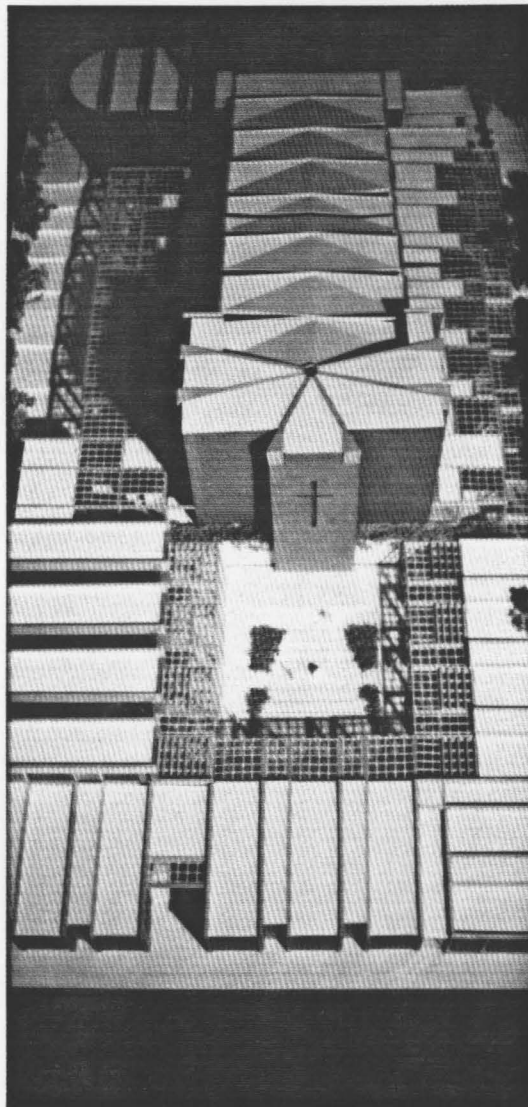
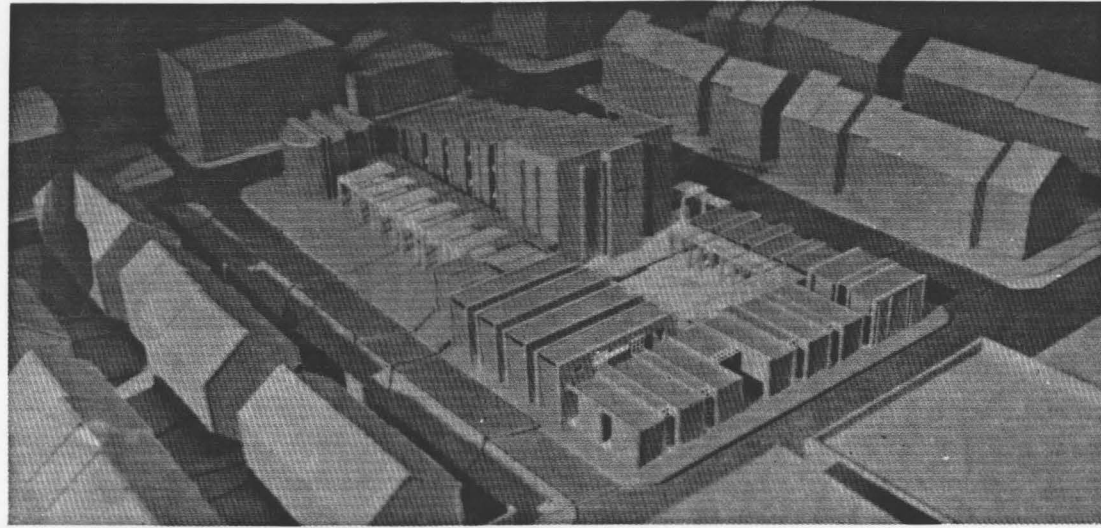
The gardens are formed by a trellis structure which carries the rhythm of the bays out to the site. At the end of this structure on the south, a path is introduced which leads to the east and the fellowship hall. This path is similar to the historic Christ Church example in Old Town. It invites the city to take part in the public garden of the site. The existing sidewalk on the north, like the path on the south, helps to place the church among a garden. The north public garden is enclosed and allows for a porch to be used by Sunday school classes or circulation in the winter.



The church is not symmetrical on the site but has been placed slightly off axis which allows for the outdoor garden on the south. The fellowship hall, library and Sunday school rooms extend from this garden. They are on the lower level and to the east end of the site. This allows for the entry, sanctuary and chapel to appear more important on the plinth above the secular functions of the church.

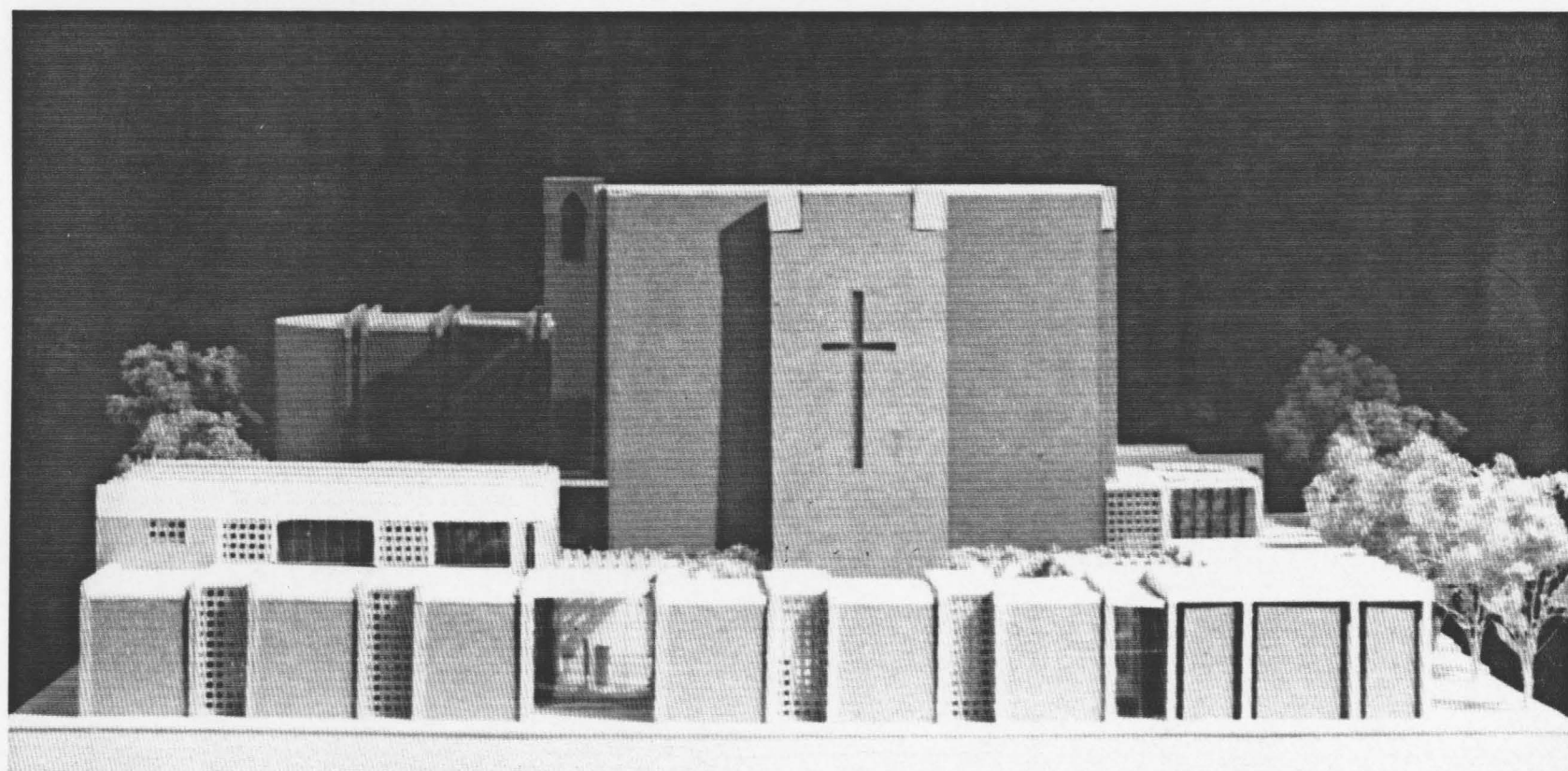
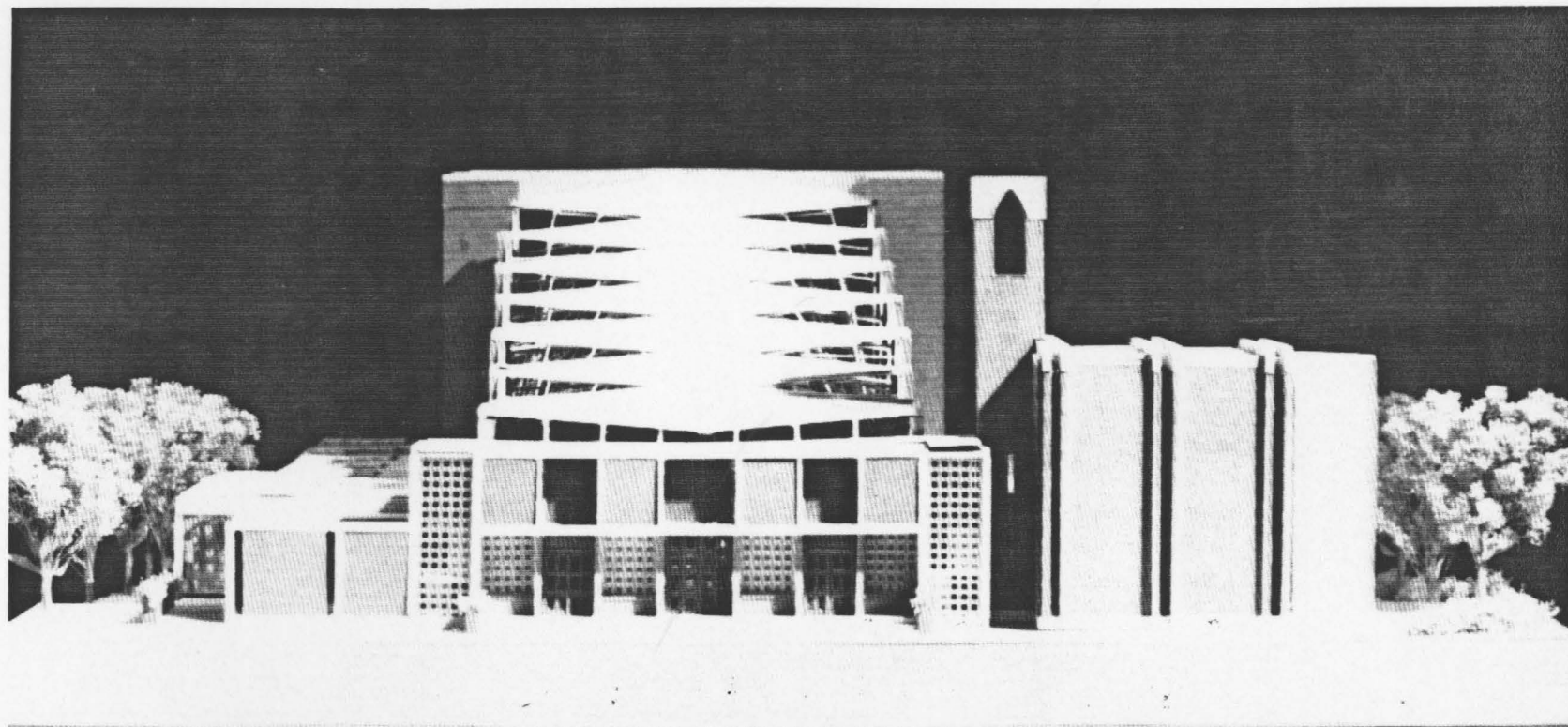
One walks along through the trellis and past the altar to reach the lowest grade of the site. The secular functions are wrapped around a courtyard, facing the west side of the altar cross. With the back of the altar facing the courtyard, the church is given an outdoor sanctuary space.

The courtyard, nestled inside the secular buildings, becomes a special space for church members as it is isolated from public circulation. The courtyard can be an outdoor sanctuary space, congregation space used by the Sunday school rooms, or a special reading place. The outdoor courtyard serves as an exterior room.



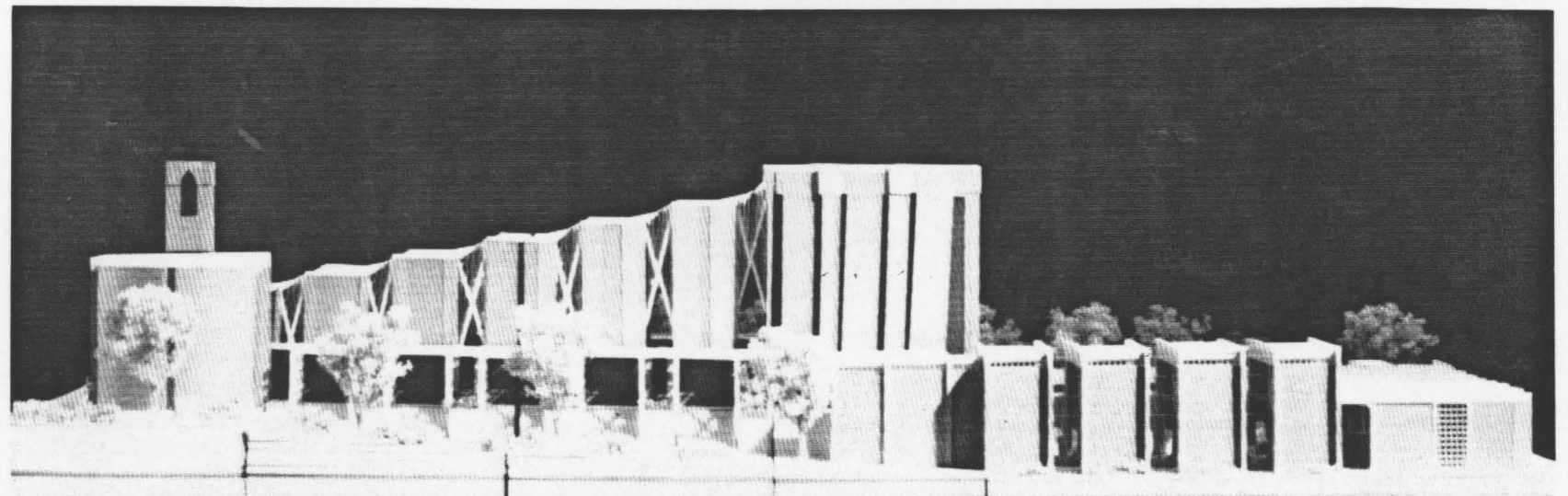
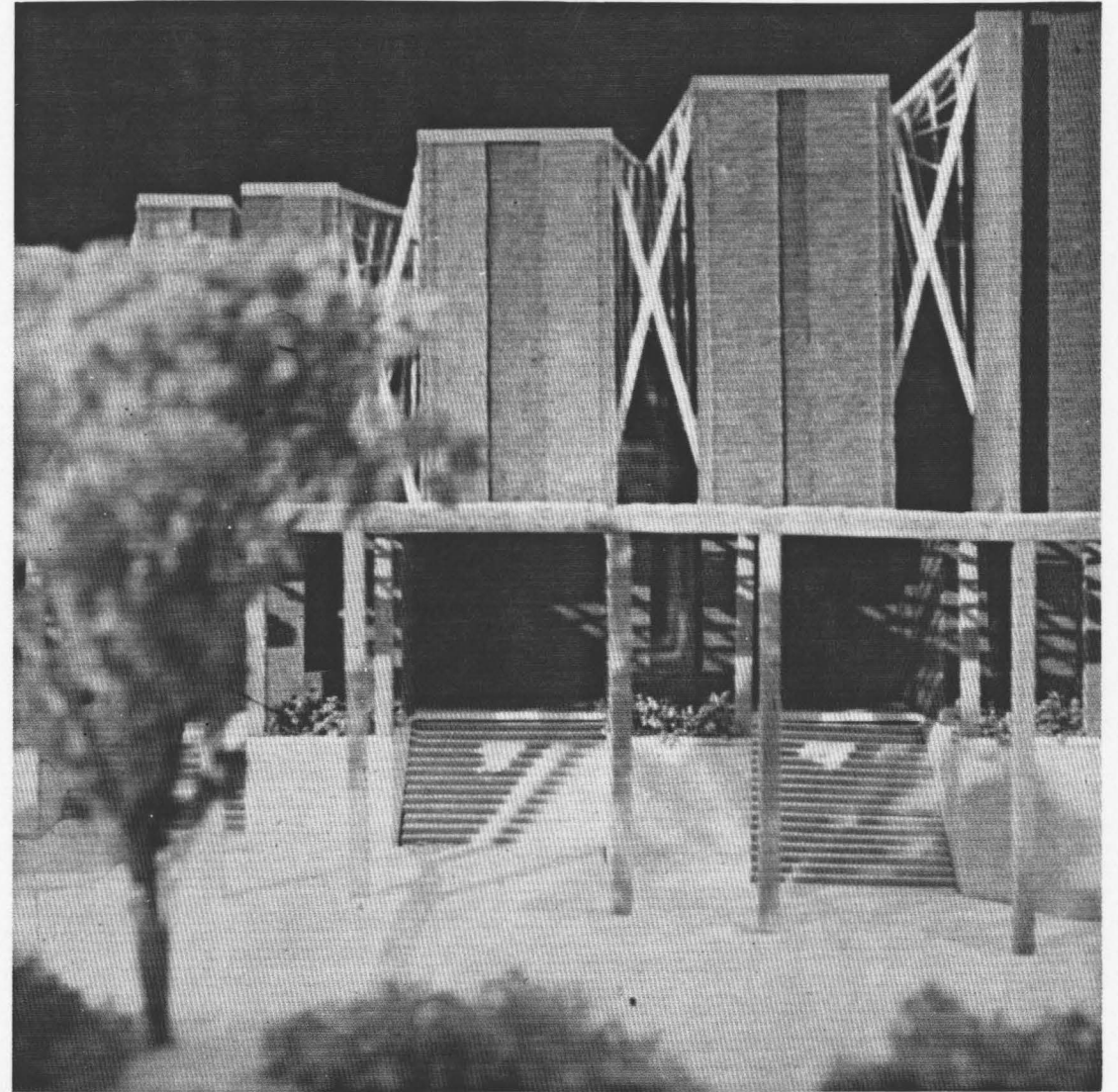


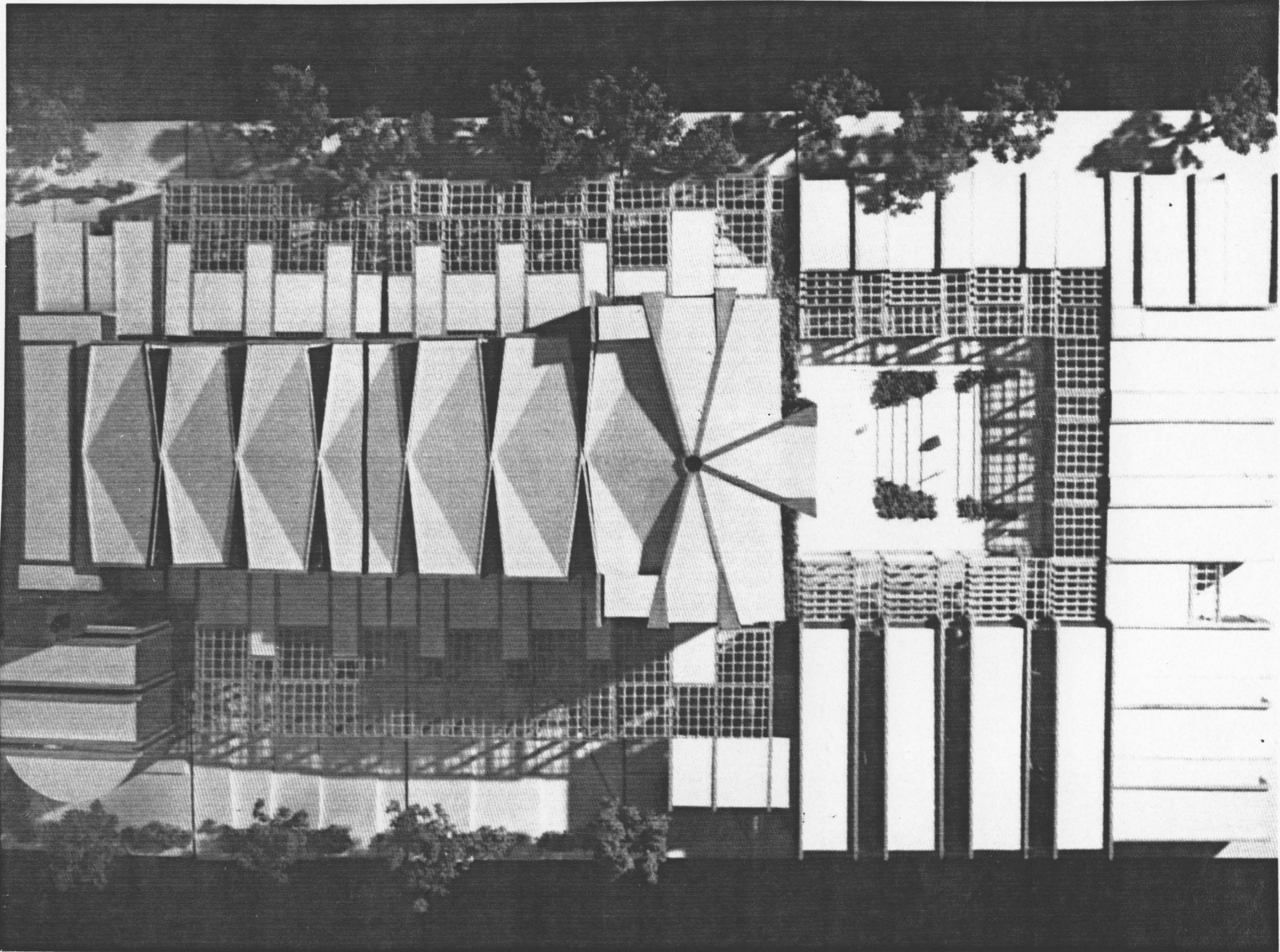
The chapel is a distinct entity on the site, with a bell tower signifying the entry. Thus, the two dominant elements in the elevation are the altar wall and the bell tower or chapel entry.

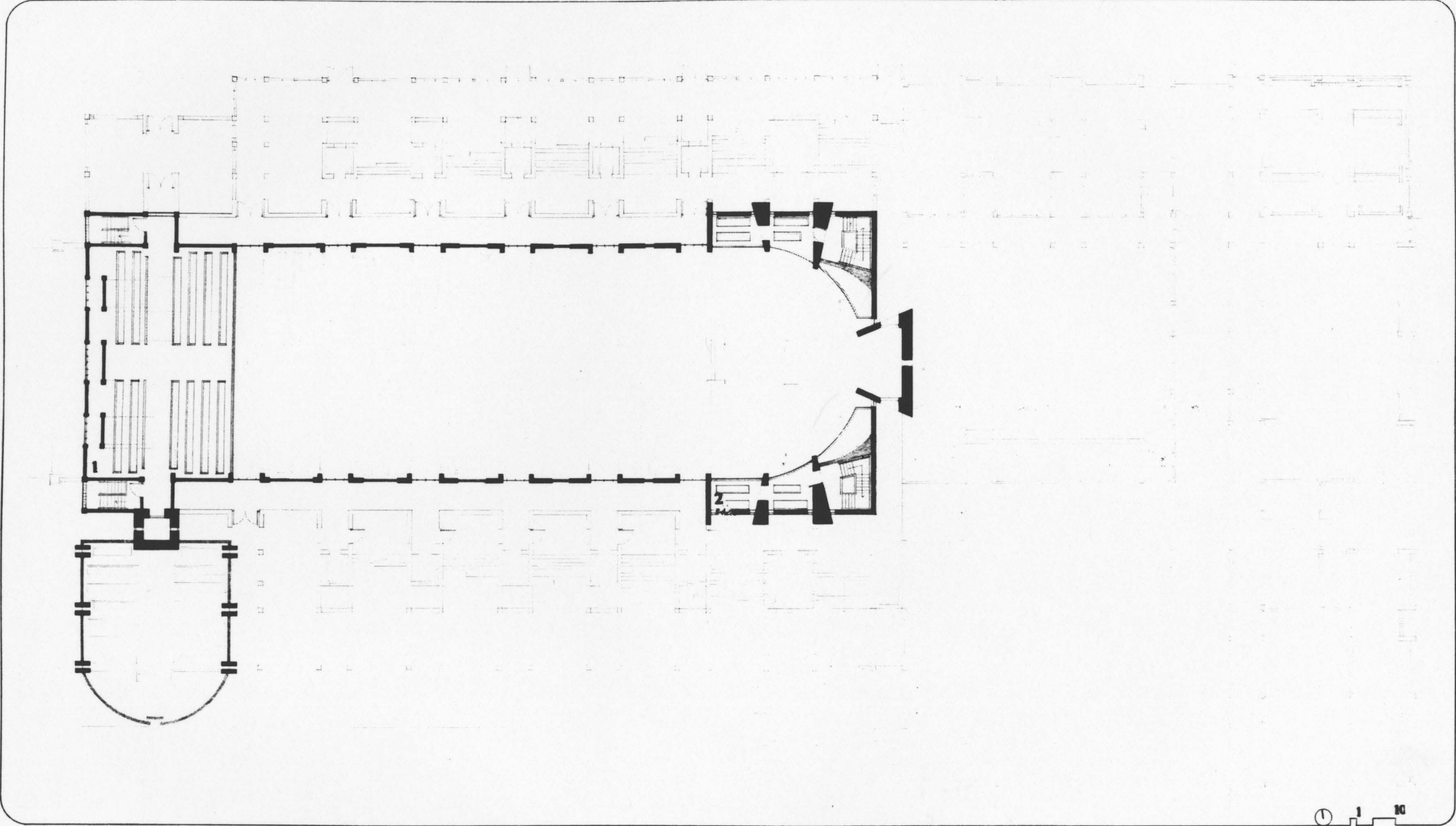


The philosophy of the sanctuary must extend to other buildings to create a site in which the church can exist interdependently. The rhythm needs to be the same as the sanctuary, although articulated differently elsewhere in the church.

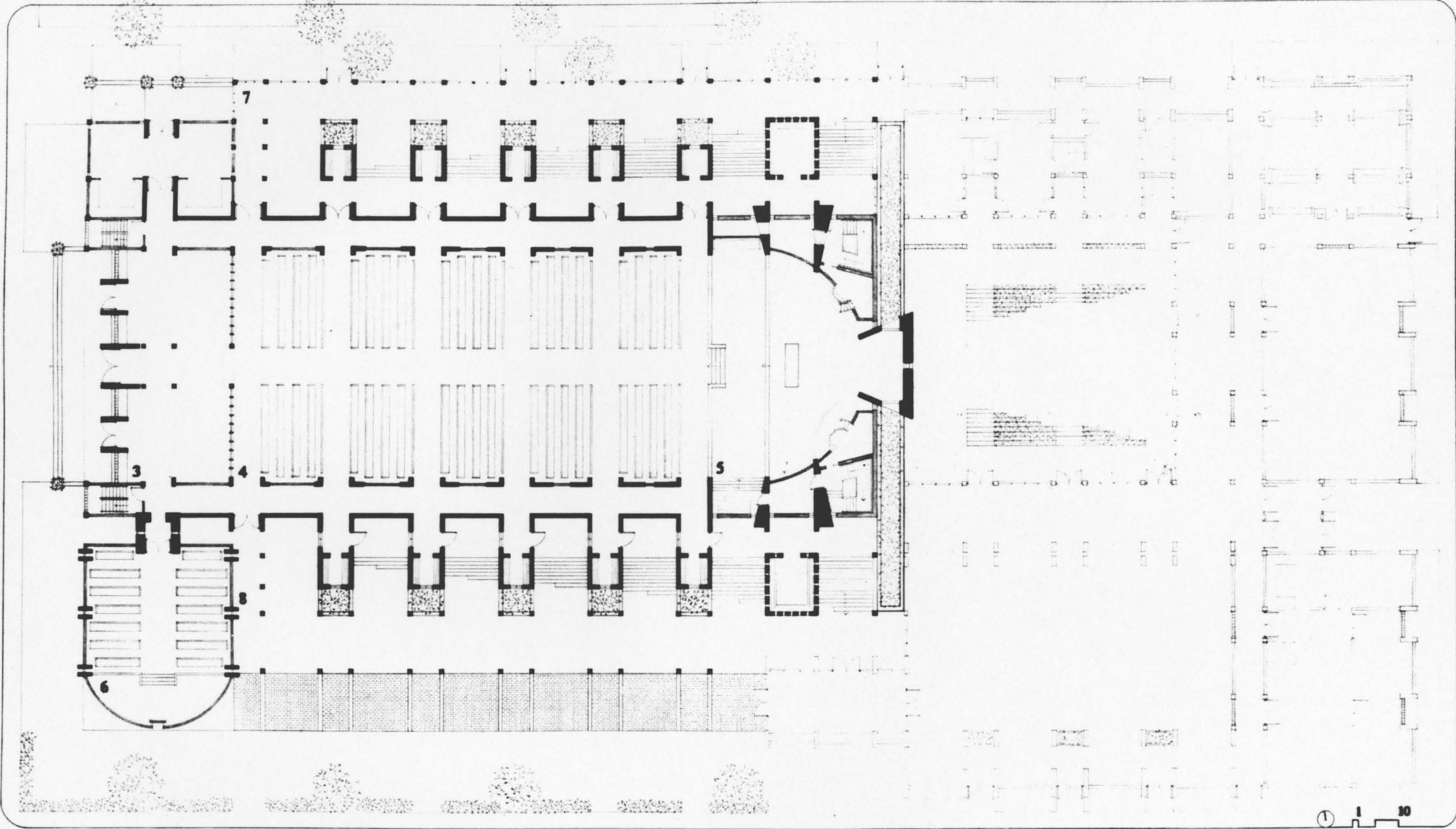
The structure in the fellowship hall and secular rooms needs to resemble the sanctuary structure in its function but in a more simplified way. Clearly, the small eight foot bays are to structurally support, allow for pedestrian circulation, allow light to enter and to be the place at which the height of the building can change.



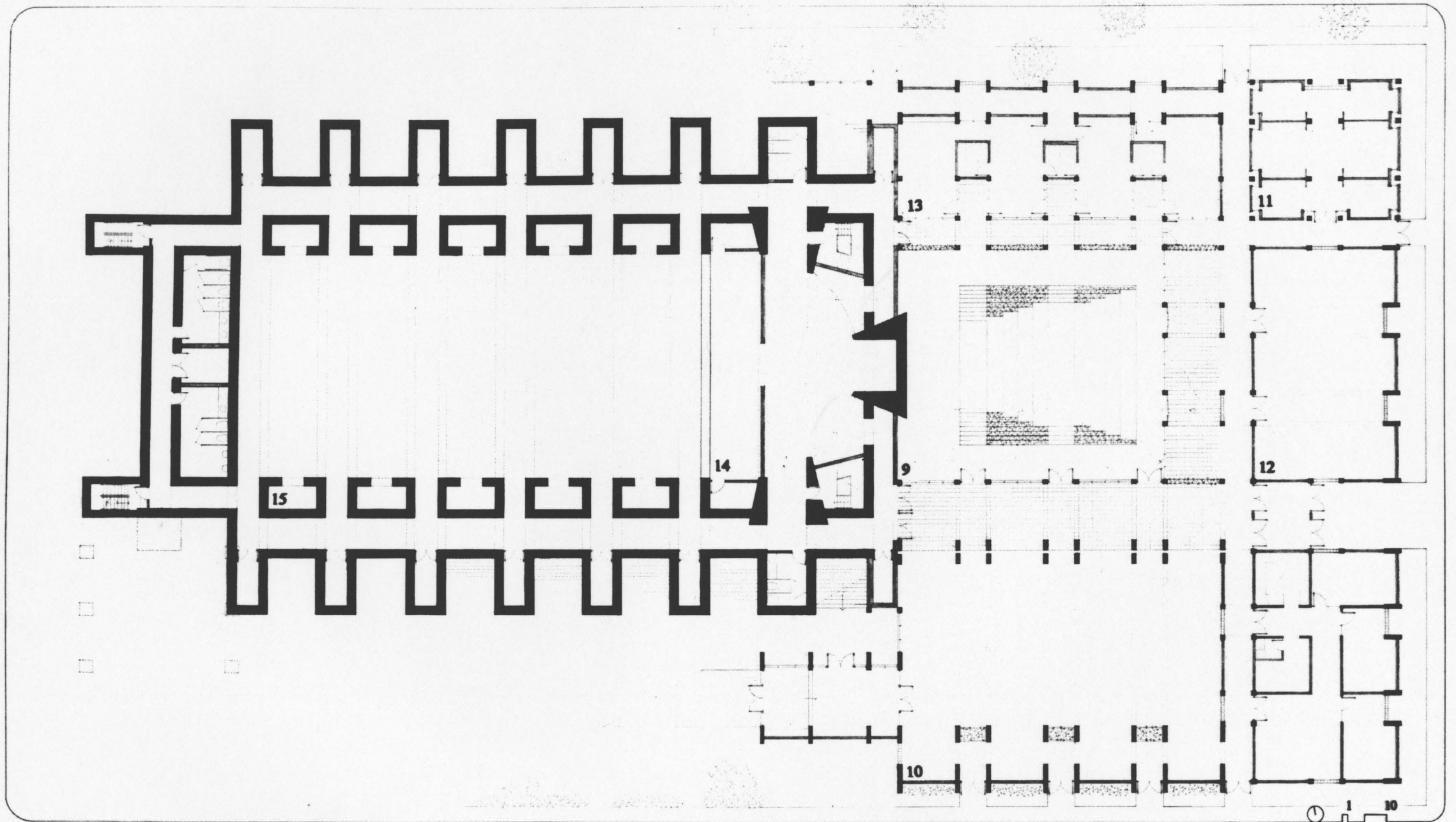




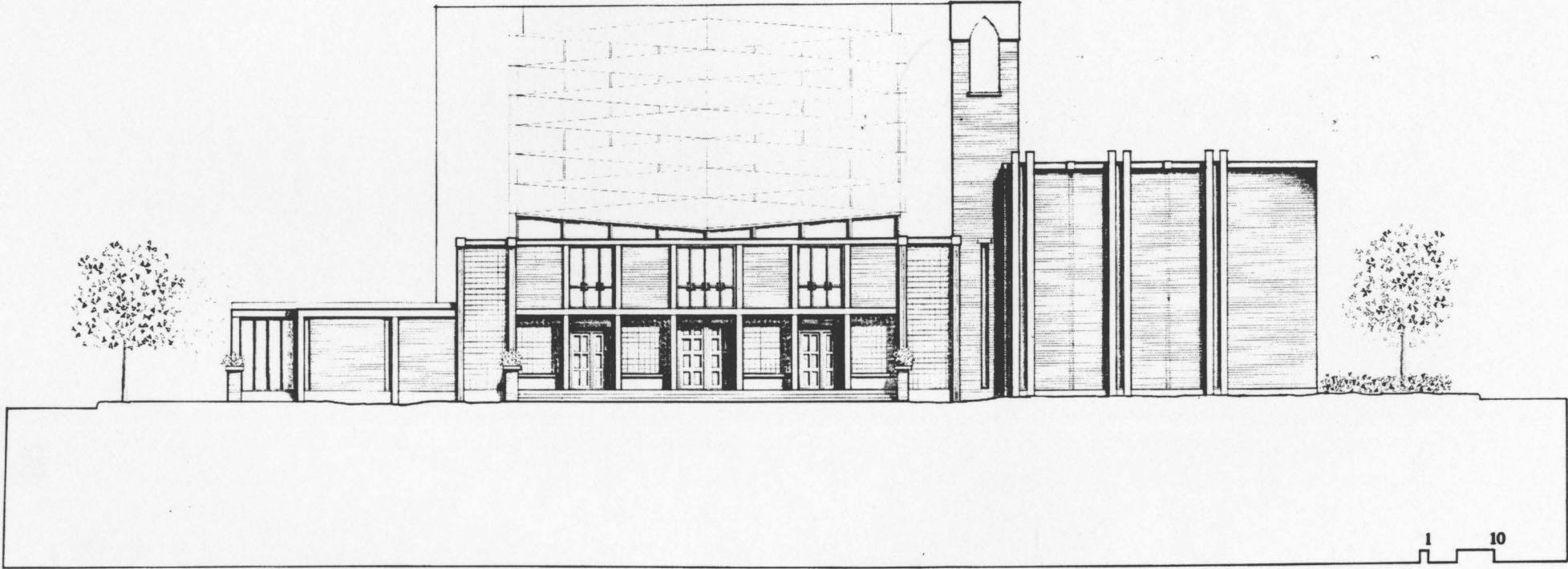
- 1. Balcony
- 2. Choir Balcony



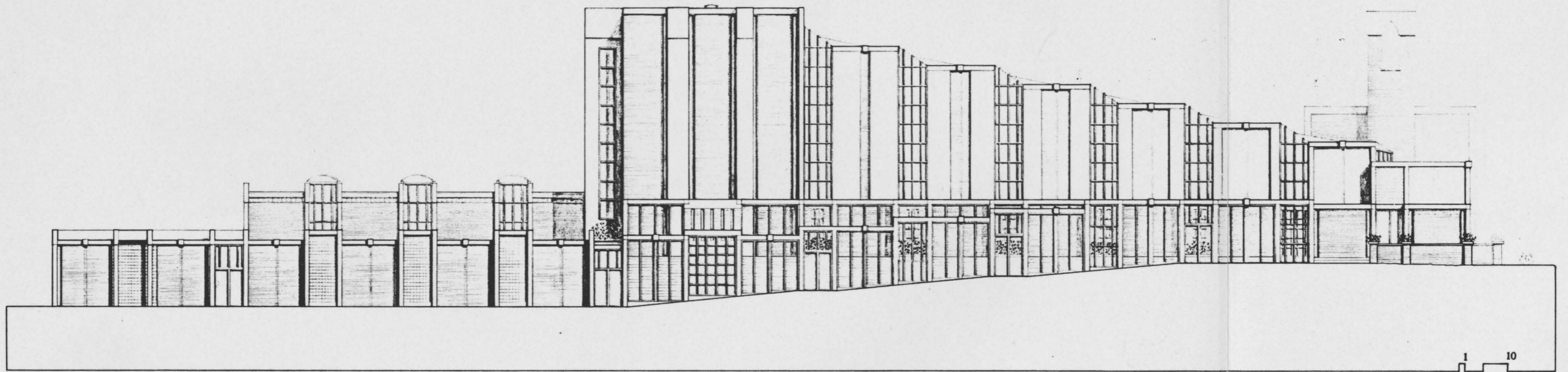
- 3. Entrance
- 4. Sanctuary
- 5. Altar
- 6. Chapel
- 7. North Garden
- 8. South Garden

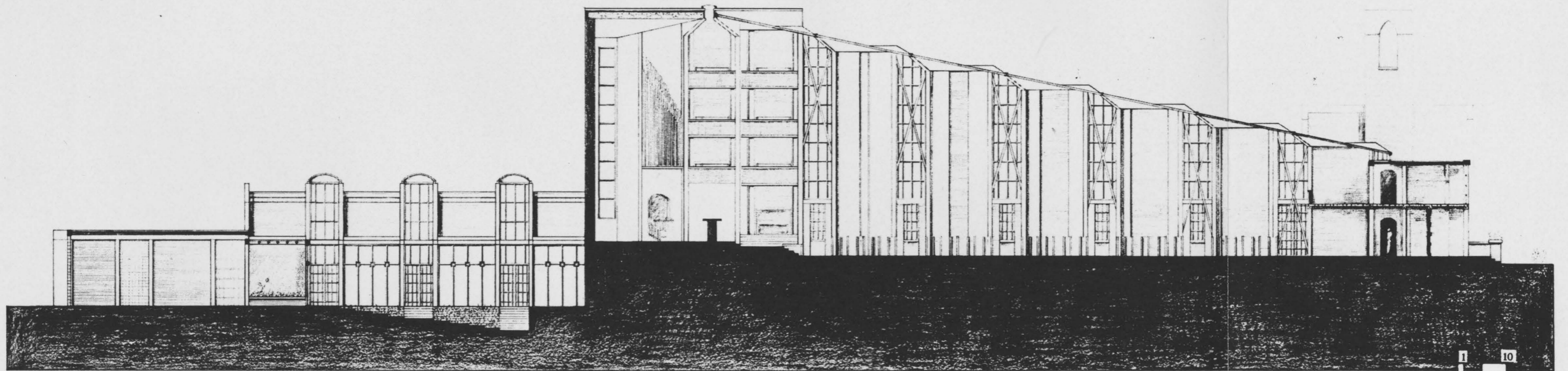


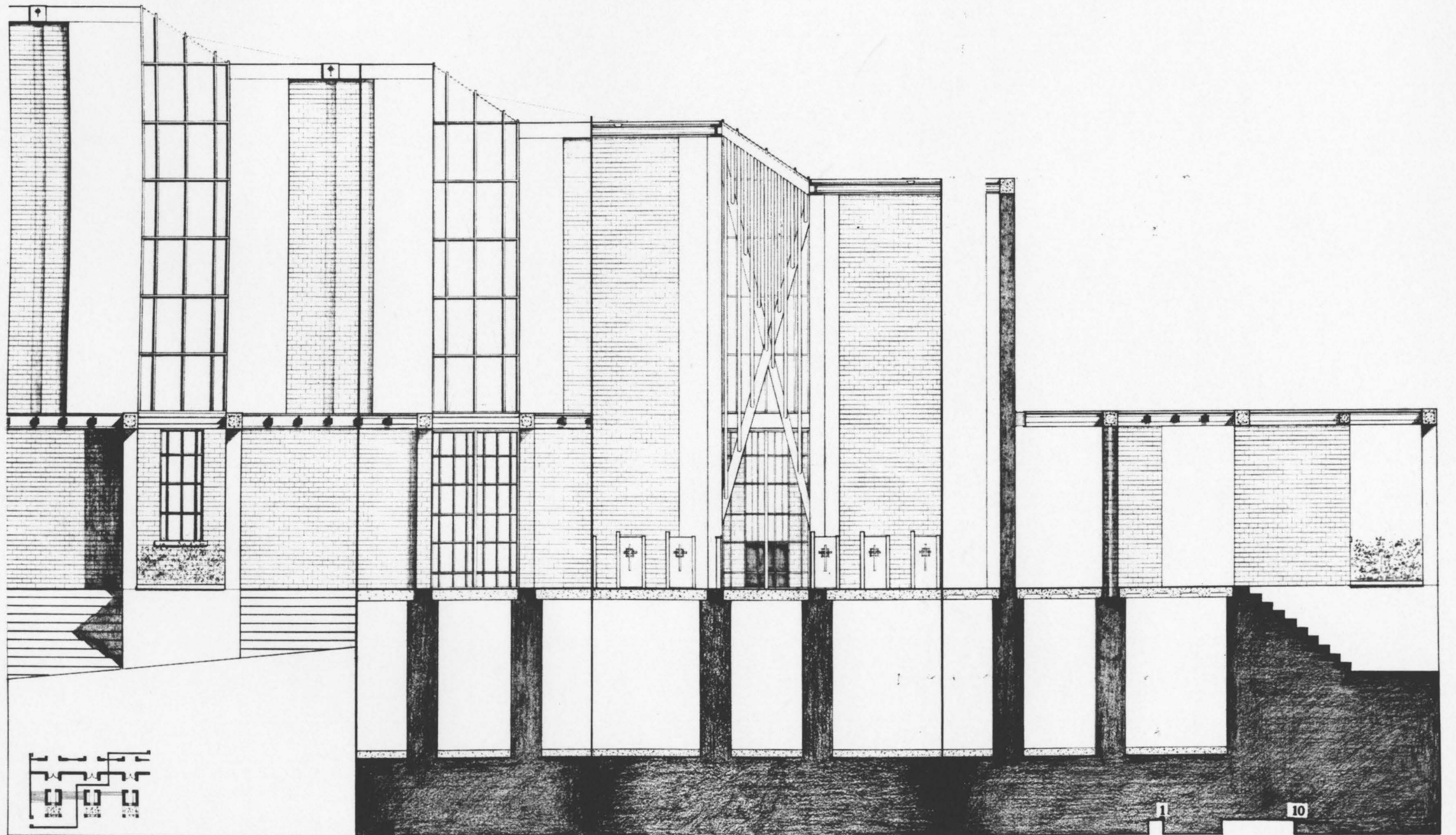
- 9. Courtyard
- 10. Fellowship Hall
- 11. Library
- 12. Sunday School Rooms
- 13. Sunday Pre-school Rooms
- 14. Choir Room
- 15. Crypts



1 10



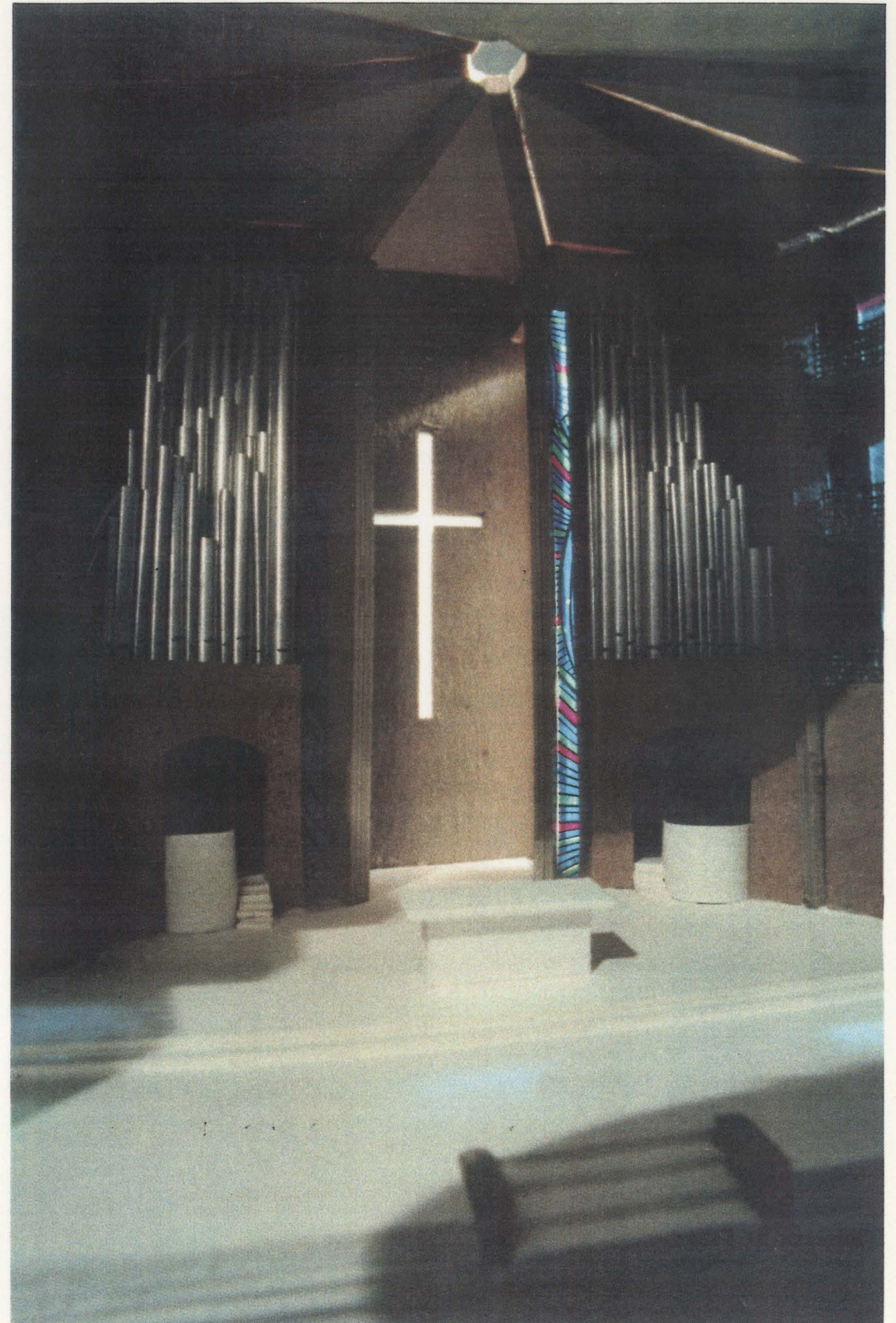




The builders of Lincoln Cathedral were no different: their primary purpose was not to create an aesthetic object but to build a church.... (It) invites itself to be read as a church; such a reading must include a reading of the significance of the contest between verticals and horizontals enacted by this church. K. Harries (p 21)

The architect must discover order that transcends historical styles, while keeping the primordial meanings of architecture in the continuum of human history. He must search for such an order implementing the power of abstraction demanded today by the generation of architectural ideas, but without creating an architecture that speaks only about meaningless technological processes..... Institutions, represented by the architecture, must reveal an order that transcends the present, and therefore must have roots in the past. ... It is fallacious to pretend that archetypal meaning of entry is recovered by placing a classical pediment over a door..... An exploration into the qualities of space, light, shadow and texture that respond to a particular situation in a figurative universe demands an objectification through a historically appropriate architectural order. A. Perez-Gomez (p 79)

History has solved many problems for architects. If historical solutions are ignored altogether, additional problems are created for the architect to solve. The church for Alexandria alludes to Gothic Architecture, but rethinks it in a contemporary way. The architecture should explain the present and past as well as compliment Old Town and its future.



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