PROGRAM FOR DEVELOPMENT OF HARVEST BAPTIST CHURCH

WATAUGA, TEXAS

by

RANDALL L. MAYNE

THE UNIVERSITY OF TEXAS AT ARLINGTON

FALL, 1983

TABLE OF CONTENTS

INTRODUCTION

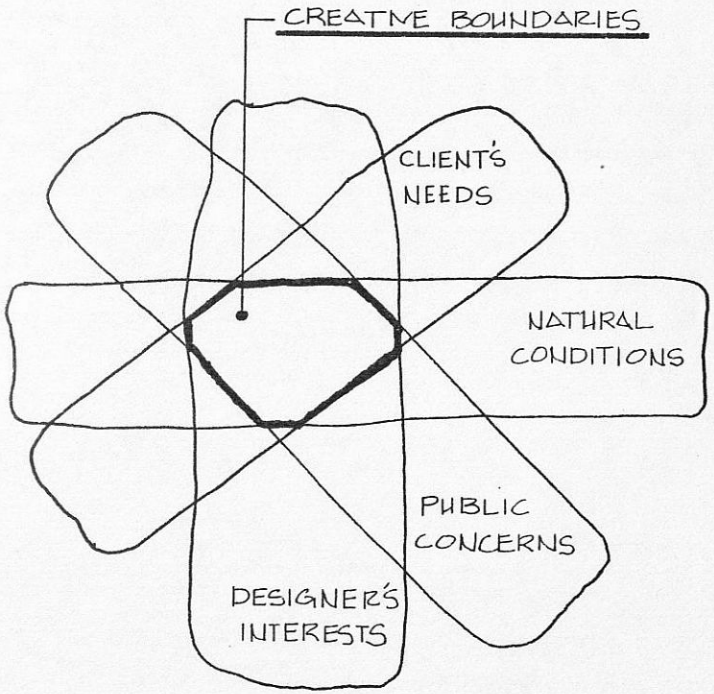
This text represents the comprehensive planning efforts for the development of twenty acres of land owned by the Harvest Baptist Church, located in the City of Watauga, Texas. Synthesis of the available data will take the form of the Master Plan. The Master Plan is a plan for the development of a parcel of land.

Based on a detailed analysis of all factors which impact a site, the Master Plan is not an end in itself, merely the first step of a long process in developing a segment of the landscape. The Master Plan is based on conditions and information at the time of its inception. The Master Plan should be subject to review periodically as new information is made available. The synthesis of the initial and current information will serve as the base from which decisions can be made during the development process. The formulation of a Master Plan helps to increase the chances that all of the elements developed on the site will work together.

As a member of the Harvest Baptist Church and having taken part in the construction of their first building, I realized the need for comprehensive and long-range planning. My hope is that this approach will eliminate the possibility of the Church constructing a series of buildings and imposing activities on the site that would not meet their needs, function well, or relate to the land. With the spirit of the Biblical principle that God's people should be wise stewards of the things God has given them, my feeling is that the Master Plan process is a suitable approach for the Church to maximize the the potential of their land.

The content of this project represents the synthesis of the needs of the client, the natural conditions, concerns of the public, and the interests of the designer. Within the areas that these interests overlap, the "creative boundaries"[1] is where the design can be most useful. Design must address the area of compromise between the interests of all the parties involved in the development process.

The client has expressed specific needs that should be considered in the development efforts. These needs, along with others identified throughout the analysis process, are documented herewith to support the decisions made in the overall master planning report.



CLIENT PROFILE

CLIENT PROFILE

The client for this project is the Congregation of Harvest Baptist Church in Watauga, Texas. Pastor Olin Collins is the leader of the congregation and will hereafter be referred to as the client.

Harvest Baptist Church was founded in 1962 and at that time was called Browning Heights because of the location. Pastor Collins became the minister in 1978 and preached to a small group of about 15 people. During the year of 1981-82, there was a congregational split between those Church members who wanted to relocate and those that wanted to move to Watauga. Since January of 1982, they have grown from a congregation of about 75 people to more than 200.

With the increasing growth came the need for new facilities. The neighborhood they were located in in Haltom City had a slow growth rate. The need of the Church to grow, both in membership and facilities, lead them to move to a new location. They had purchased ten acres in Watauga and later were given another ten acres.

The City of Watauga is a relatively young and growing community, located in northeast Tarrant County. The community supplies the elements favorable for the growth of the Church, but more importantly, it gives the Church the opportunity to minister to the needs of the people in the community.

Their first building was completed on the site in April of 1983. The structured included a 300-seat auditorium and an educational wing. The structured was planned and under construction before the concept of a Master Plan was adopted. As a result, the building is now a given that will have to be considered in the planning process.

The Church's approach to operation is to follow the path of a typical New Testament Church, in that the pastor has been called upon by the Lord to minister, teach, and lead the people. The attitude is that the pastor is the shepherd and the people of the congregation are the sheep. The congregation has placed their trust with the pastor that he will lead them in the right direction. When there is an important decision to be made in the Church, the pastor will call the men of the Church together, or council with the ones that have knowledge in that area, and seek advice. Based on the advice from these men, he will make the decision and then propose it to the congregation for final confirmation. The Church does not depend upon committees to handle the affairs of the Church. The Deacons, when they are elected, will not act as a governing body, but will be there to take care of the needs of families in the Church. All of the above operational procedures are outlined in the Bible and are thus the guidelines adopted by Harvest Baptist.

The congregation is predominantly young to middle-aged people in the range 20-40 years old. There are few senior citizens. The future facilities will have to address the increasing number of senior citizens with an attempt to satisfy their needs.

The pastor's approach to the worship service is to teach the Biblical principles so that the congregation can apply them to their lives. The pastor is not an evangelical, nor does he preach convicting messages to the congregation. He leaves the convicting up to the Holy Spirit and concentrates on teaching the Word of God.

The staff is viewed by the Church as the stage hands that keep things organized and the congregation are the actors, while the Lord is the audience.

Their overall intent in Harvest's ministry as reflected in their name, is to harvest the people's souls within the community by telling them about God, and then if they desire membership, they will have an opportunity to grow and mature under the teachings of the Word of God.

The pastor has a vision of what the character of the site should be. He sees a garden-like concept for the development of the property that stands in contrast to its surroundings. A person entering the property should feel like he is entering the Lord's place and leaving the world behind, and gain a peaceful and friendly image that will set the mood for worship. This concept is the major element that will make the project unique.

By making man's environment more obvious to him, it will increase his awareness of nature and his relationship within it. If the site offers opportunities to discover nature, people will become more aware of the mysteries and processes within nature. When they begin to have a better understanding of nature, they may come closer to realizing that there had to be a supreme god that created the natural processes. When a person becomes more aware of the process in nature, he is one step closer to God and has a better understanding of himself and his relationship to God.

GOALS

GOALS

The following goals have been formulated to encompass both immediate and long-range policies for development of the twenty-acre parcel owned by Harvest Baptist Church. The overall goal of the comprehensive planning process is to identify, evaluate, and organize both the resources of the site and the needs of the client to be more effective with development efforts. Formulation of the overall goal has been based upon the following client requests:

1 Development of a spiritual image and experience that will set the mood for worship and accent man's awareness of God through nature.

2 Development of a physical context that will contrast the surroundings to reinforce the idea that as a person enters the property, they are leaving the secular world behind and entering the Lord's place of worship, with an image reminiscent of the Garden of Eden.

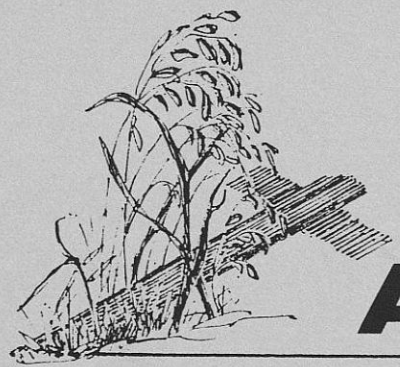
3 Development of uses that will increase the congregation's opportunities to minister to the needs of the community by offering a wide range of opportunities for people with different interests to have a chance to hear about God and his teachings.

4 Establishment of a connection, either implied or physically, with the City Hall, thereby reinforcing the role of the Church within the community.

5 Identification and accommodation of user needs relative to worship education and recreation.

6 Development of the creek system and its floodplain for visual and physical purposes.

7 Establishment of design and site planning criteria for architecture and landscape architecture developments.



ANALYSIS METHOD

ANALYSIS METHOD

The initial step in the analysis of the project was to become familiar with the client. This was achieved by meeting the congregation and having several sessions with the pastor to identify the philosophy of the Church and its goals for the future. Once the philosophy and goals were identified, a model search was undertaken to gain an understanding of the historical context of physical and spiritual church development. Identification of client and church needs was the next phase of the planning process.

The items identified include philosophical, psychological and physical needs. Each of the needs were analyzed and identified by more specific issues and their relationships to one another. Analysis of the existing character of the site dealing with physical and natural elements was the following step. This investigation included analysis in areas such as: existing conditions, circulation, zoning, utilities, topography, vegetation, drainage, climate and energy conservation.

The final step involved a synthesis of the data information considered and its transformation into a program that satisfies the needs of the client and works within the given constraints. The goal of the analysis has been to preserve, protect and enhance the intrinsic values of the land and see that the man-made elements are developed in harmony with the resources of the site.

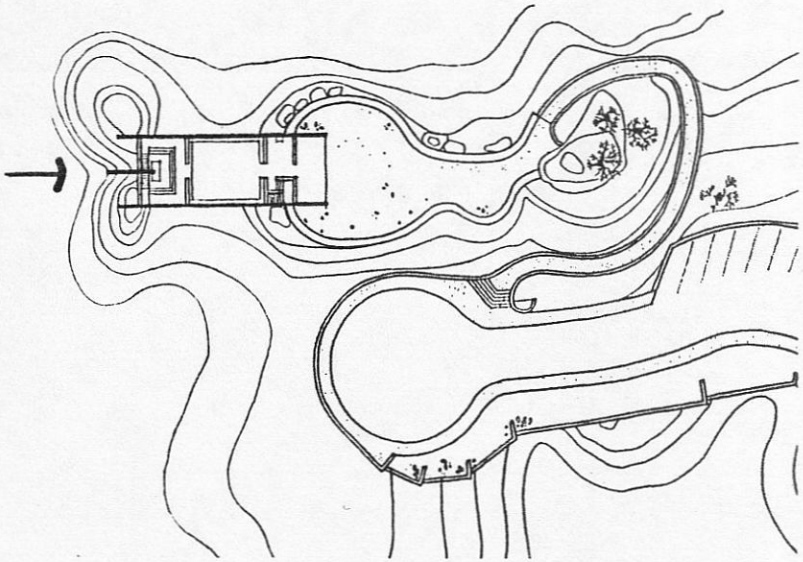
CASE STUDIES

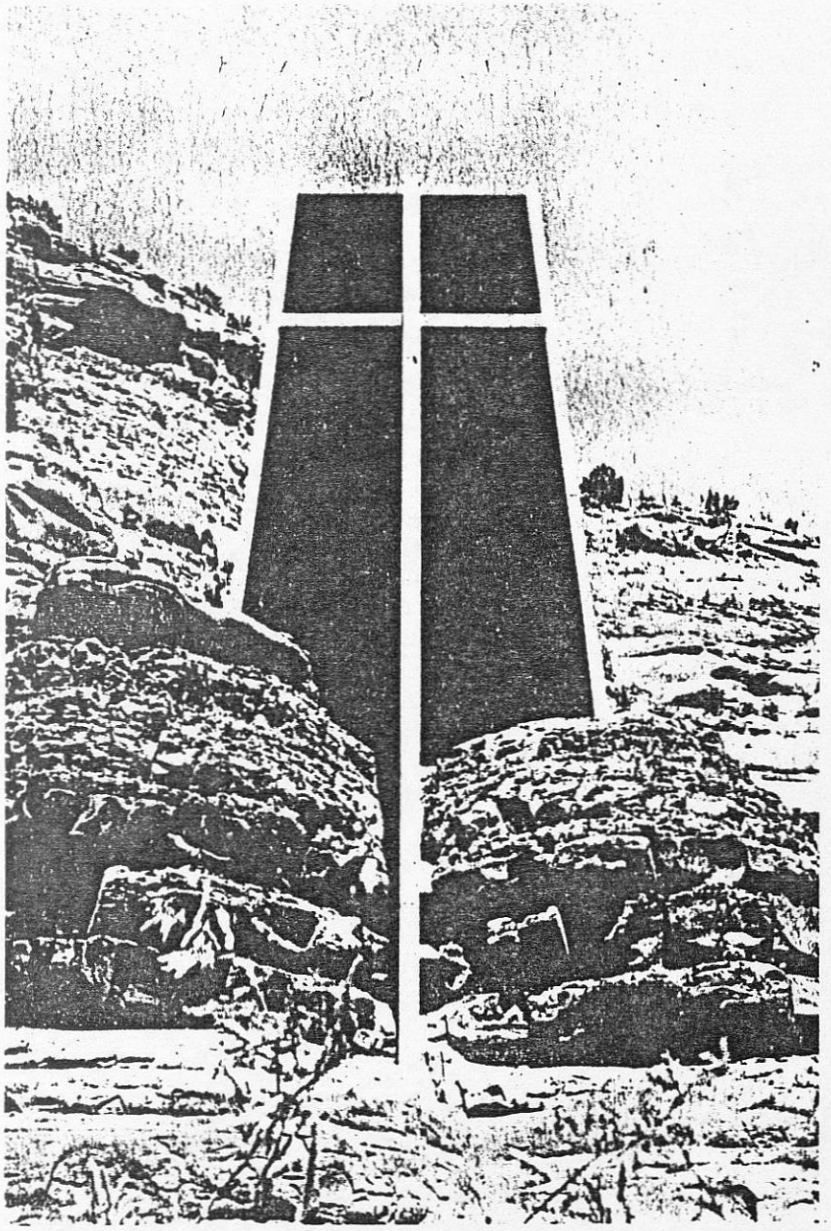
CASE STUDIES

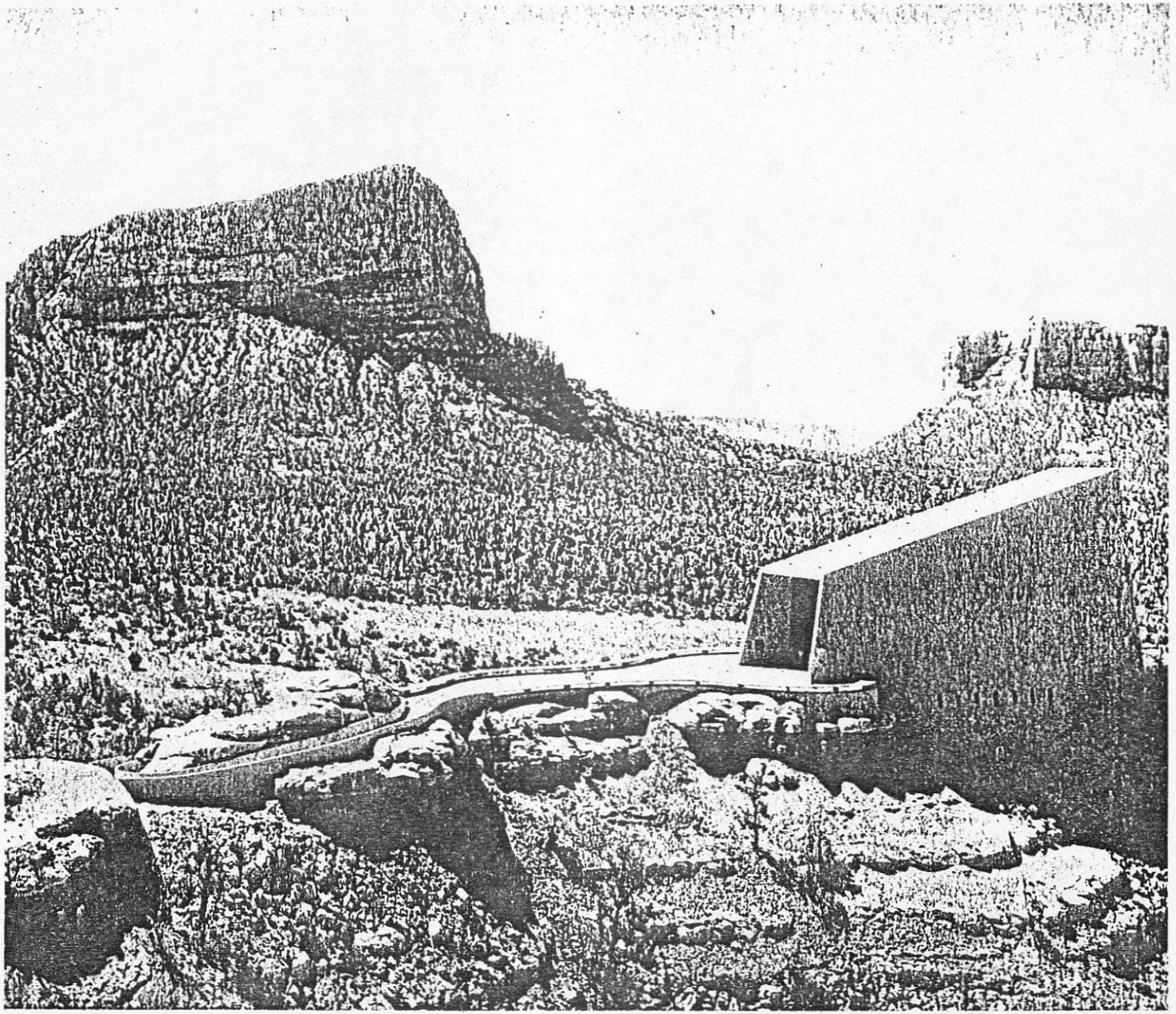
The investigation of case studies is an attempt to understand and analyze projects and issues that have been addressed in the past and that relate to the development of Harvest Baptist. A historical understanding will provide a strong base and a point of departure for further development of the design process and decisions that will be made. The examples that have been chosen deal with issues that will be central to the design process for Harvest Baptist. Those issues which are of primary concern, identified through a review of exemplary projects, include: site character, image, relationship within the community, form, symbolism, psychological and inspirational concepts.

CHAPEL OF THE HOLY CROSS

The Chapel was built at Sedona, Arizona. The architects were Ashen & Allen.[2] This was reviewed on the basis of integrating the architecture with its environment. In Arizona, the unique site character offered the appropriate and inspirational environment that the building drew its strength from. Harvest's site does not have such a dynamic location and philosophic concepts will have to draw its strength from the developed environment around the architecture. However, the concept of the landscape and the buildings having a strong relation to each other is a valid concept that could apply to Harvest. The form of the building should serve as an inspirational model, relating to or based on its form or symbolic implications.



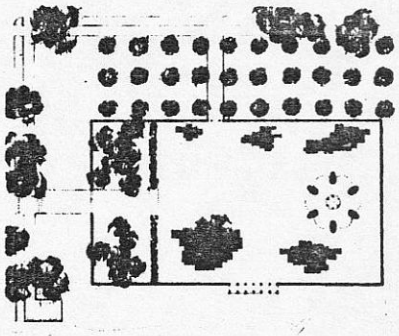


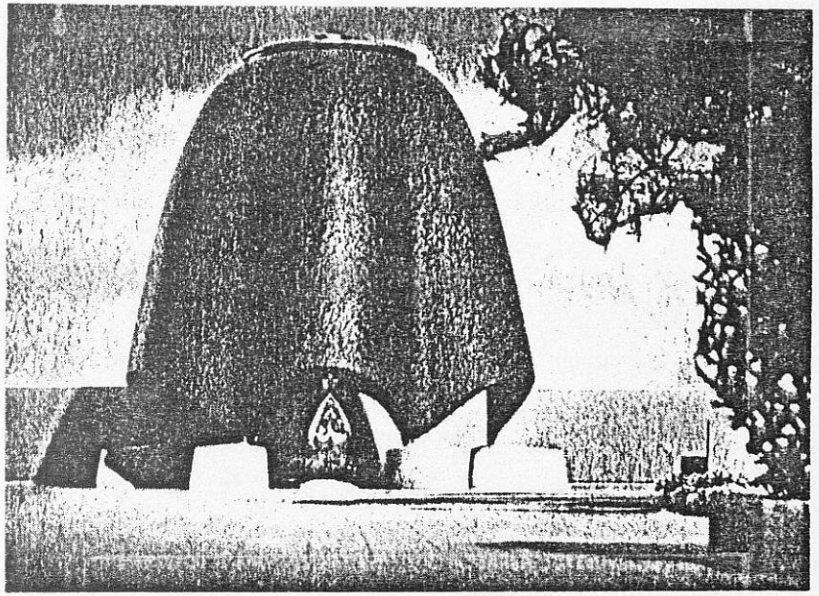


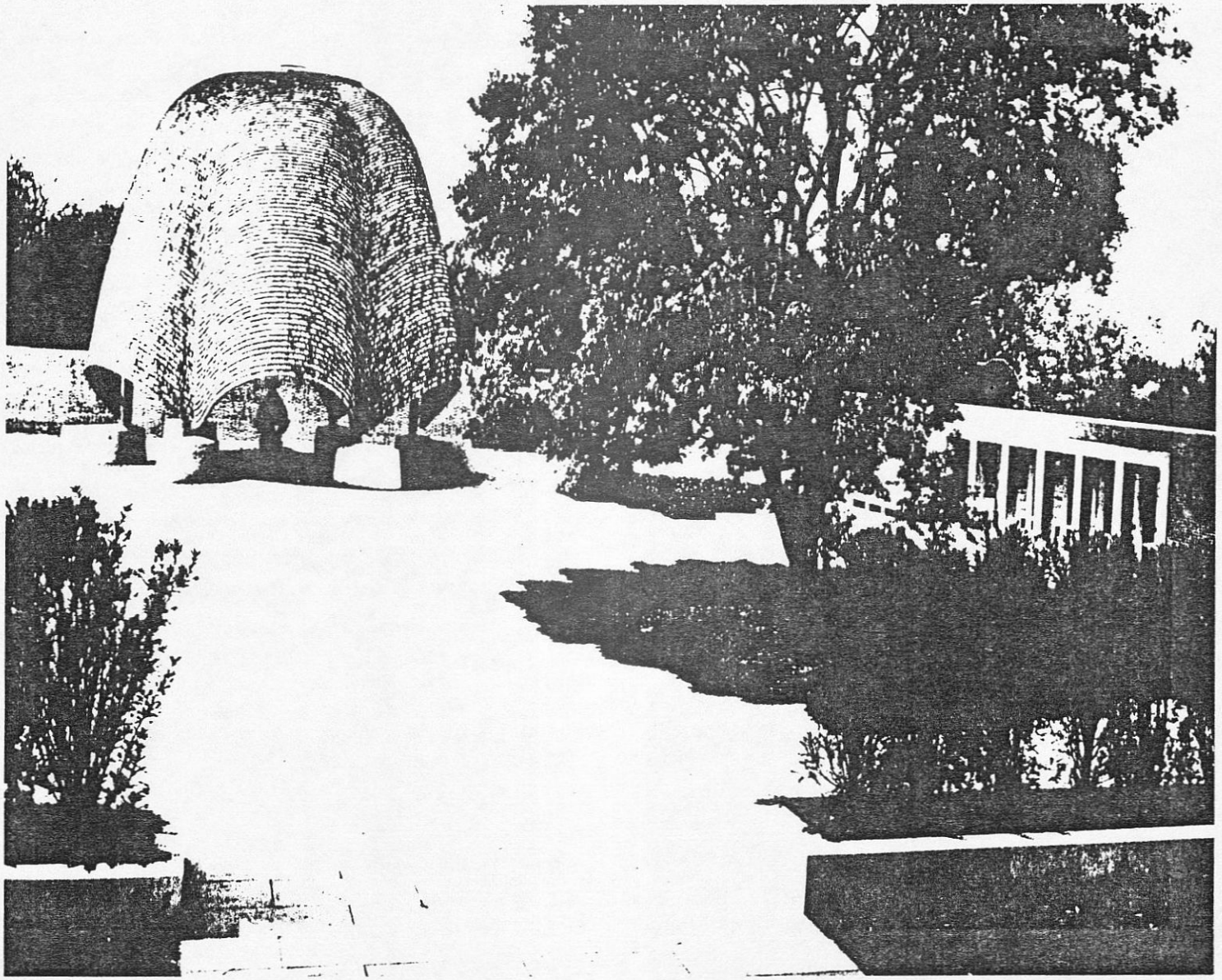
ROOFLESS CHURCH

The Roofless Church in New Harmony, Indiana was designed by Philip Johnson in 1960.[3] This project was a walled garden for non-denominational services. The entry is through a formal vestibule defined by clipped hedges. The shape of the canopy is reminiscent of the descent of the Holy Spirit, with a bronze sculpture underneath. A symmetrical planting plan would have been a typical solution, but instead, a more casual planting design, utilizing Golden Raintree, Burford Holly, Crape Myrtle and red geraniums was employed. The contrast of formal entry and hardscape emphasizes the experience of viewing the natural landscape of the Wabash Rivr from the open balcony.

The significance of this project is its relationship to the prayer garden program element of Harvest. I feel the significance of this project is that of a spiritual model and a catalyst for creative ideas of what should be included in a prayer garden.



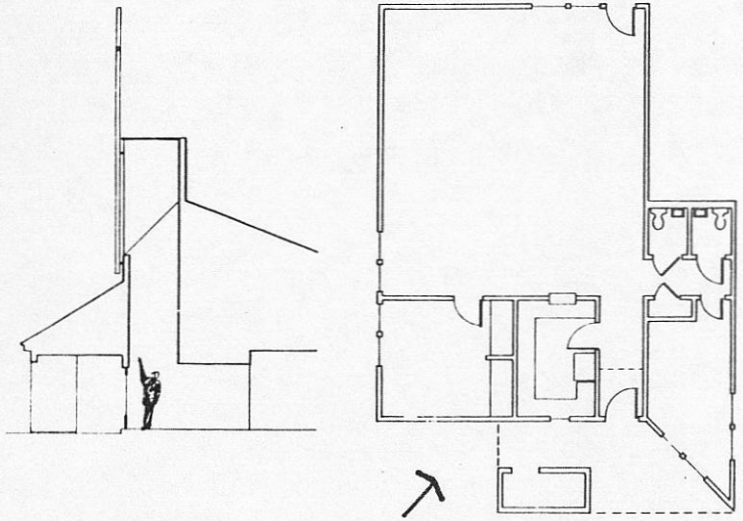


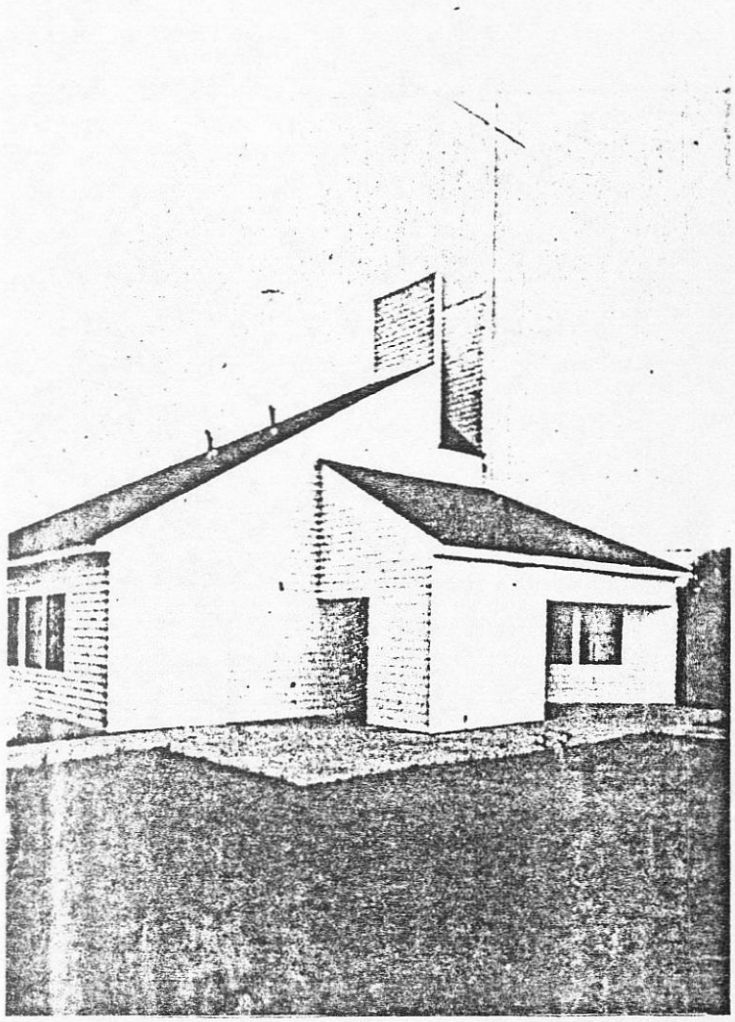


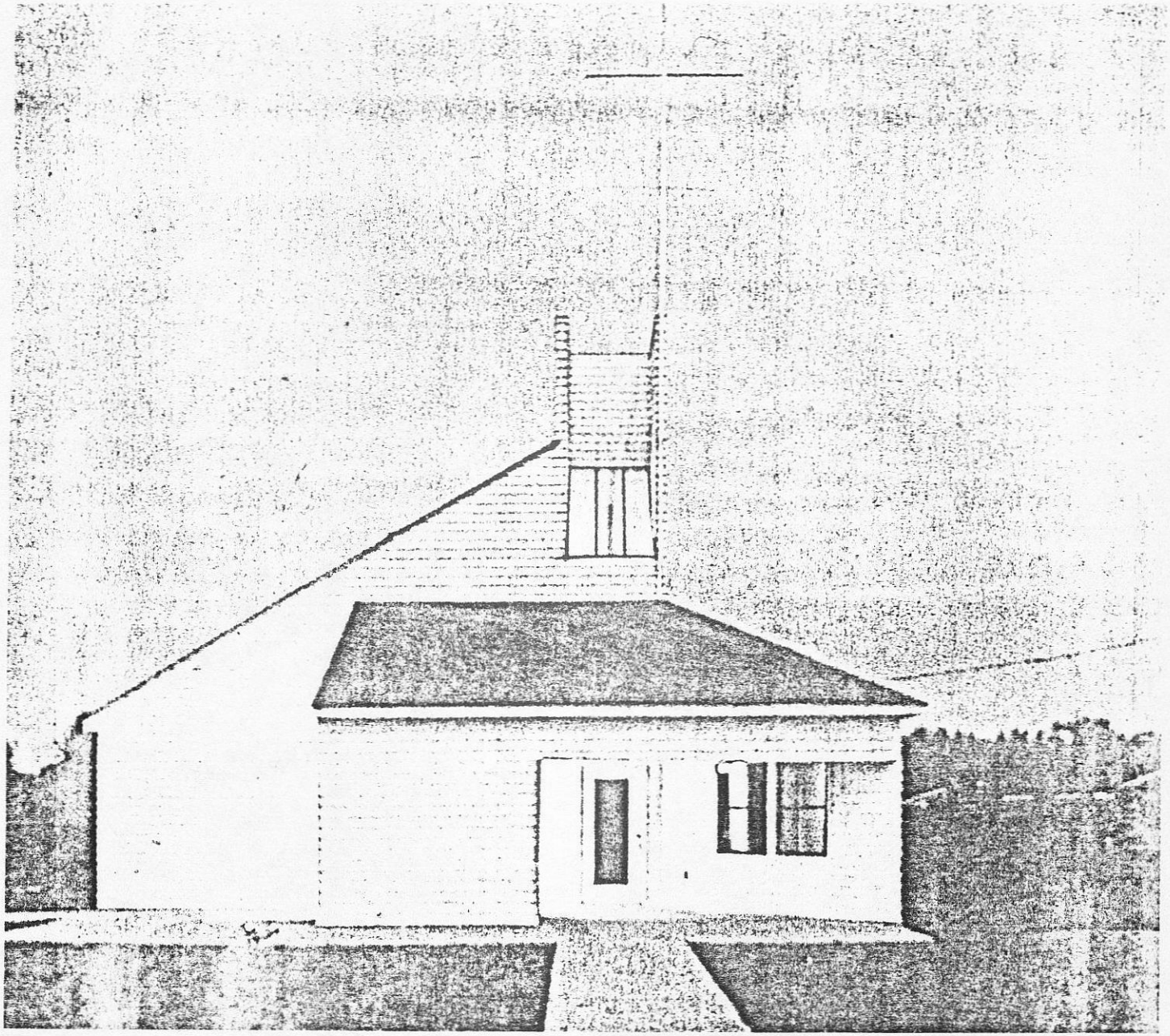
PRESIDENTIAL HILLS PRESBYTERIAN CHURCH

Located in Jackson, Mississippi, the design by architect Samuel Mockbee has derived a powerful architectural profile and an elegant massing of structure, all within a $41,000 budget.[4] The church is an abstraction of a modest country house with a total area of 1,500 square feet for 150 people. The architect used angular geometry with a skylight that implies a bell tower to recall a typical Mississippi country church. Materials of the church are in keeping with those commonly used in that region of the country.

The simple elegance of the solution, while meeting the needs of the client and the budget, stands as an example that it does not have to be big or expensive to be good. The important thing to be gained from this example is that the strength in the simplicity of form, portrayal of regional character and use of indigenous materials are concepts that can be exercised in the development of Harvest Baptist.



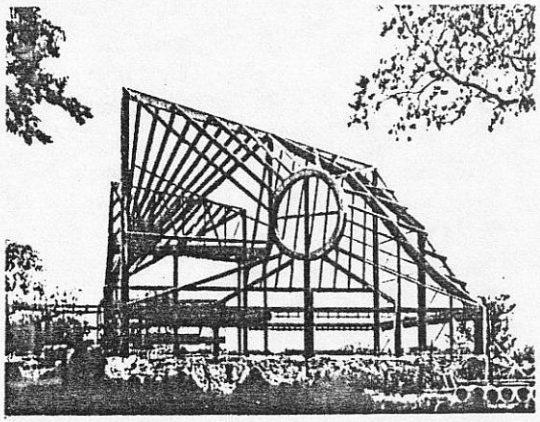


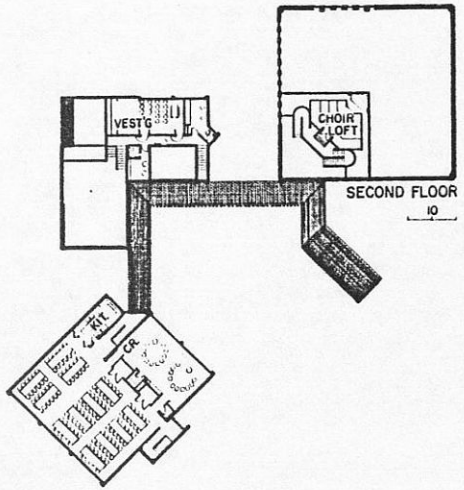


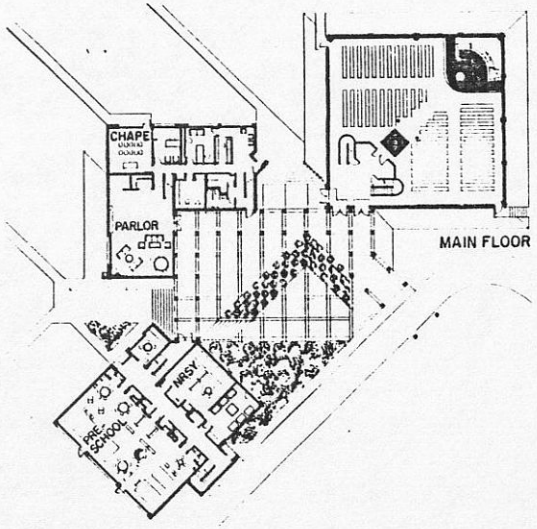
EPISCOPAL CHURCH OF THE EPIPHANY

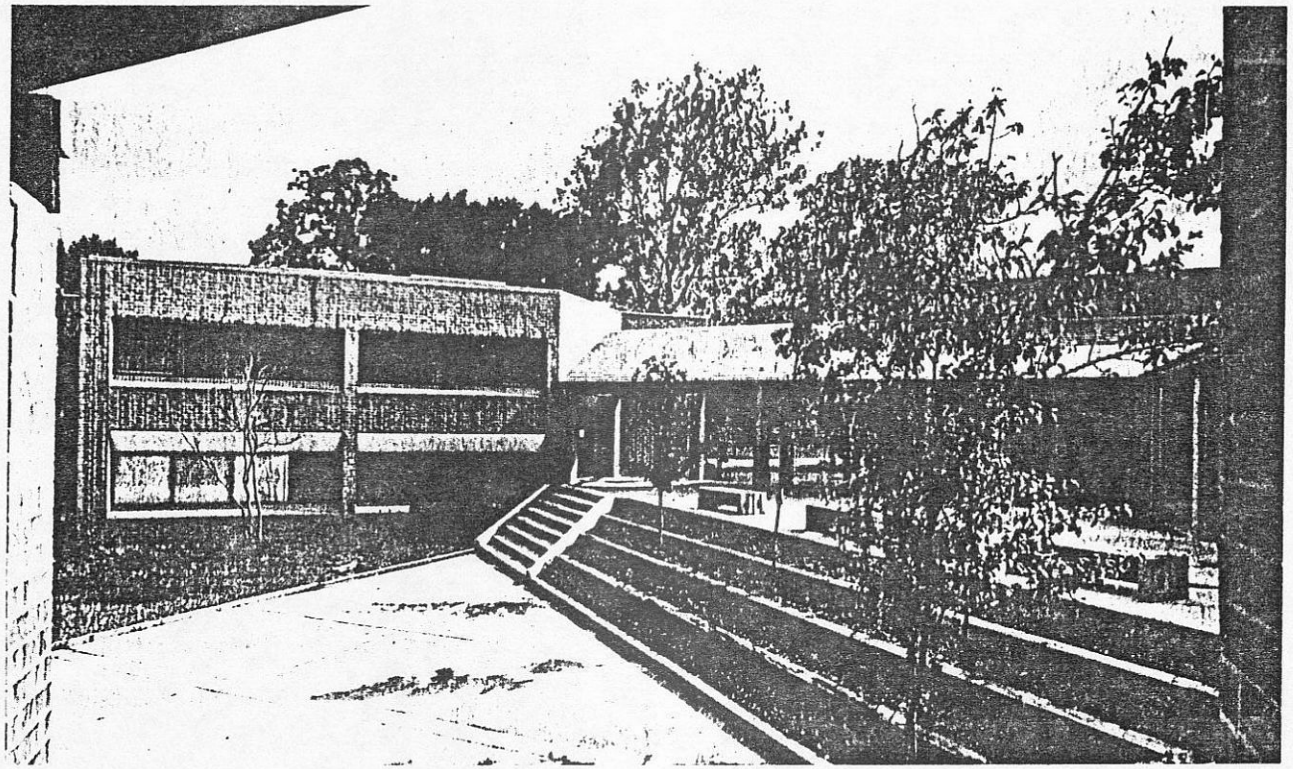
This church, located in Houston, Texas, was designed by Clovis Heimsath Associates, Inc.[5] The roof form is the dominant element of the church, playing a major role in utilization of the structure and site with simple and efficient circulation. The simplicity of the buildings establishes a scale of importance between the sanctuary and education building, and by raising the entry plaza by 5½ feet, the psychological and physical importance of the sanctuary has been enhanced. Raising of the entry plaza creates a split level plan for subsidiary spaces.

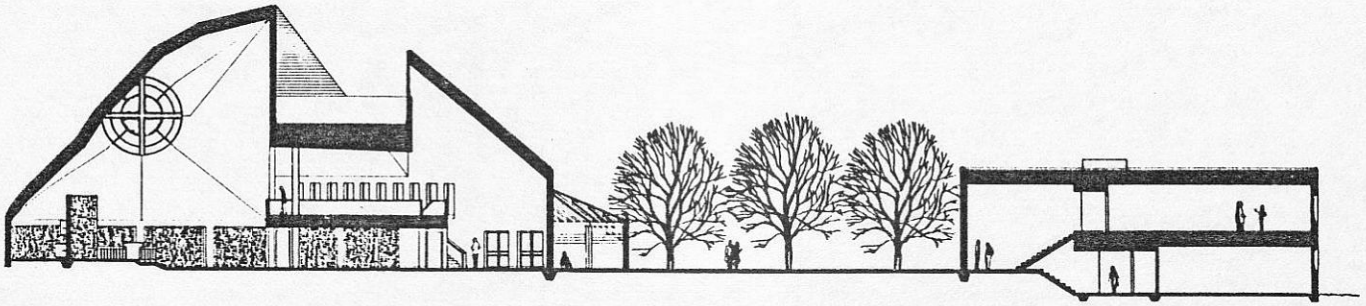
The issues that are important from the study of this example are the use of a bold form for the roof, highlighting the importance of the sanctuary. This was a good example showing how the exterior shape can be a strong element that ties the buildings together. The exterior space provides an appropriate space for fellowshipping before and after services, while at the same time providing a connection between the worship space and the educational space. These are strong concepts that could play a major role in developing concepts for Harvest Baptist.









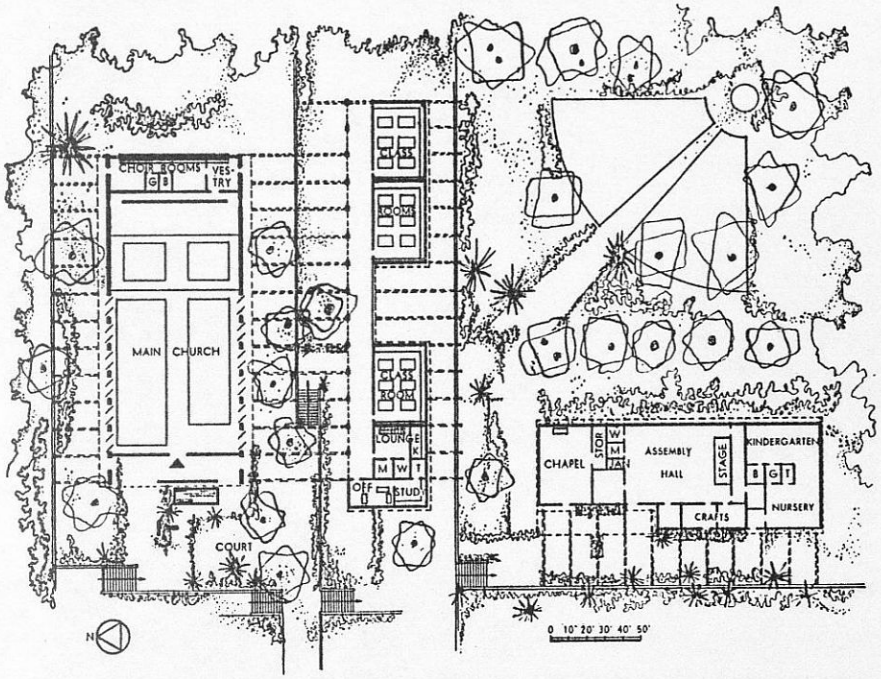


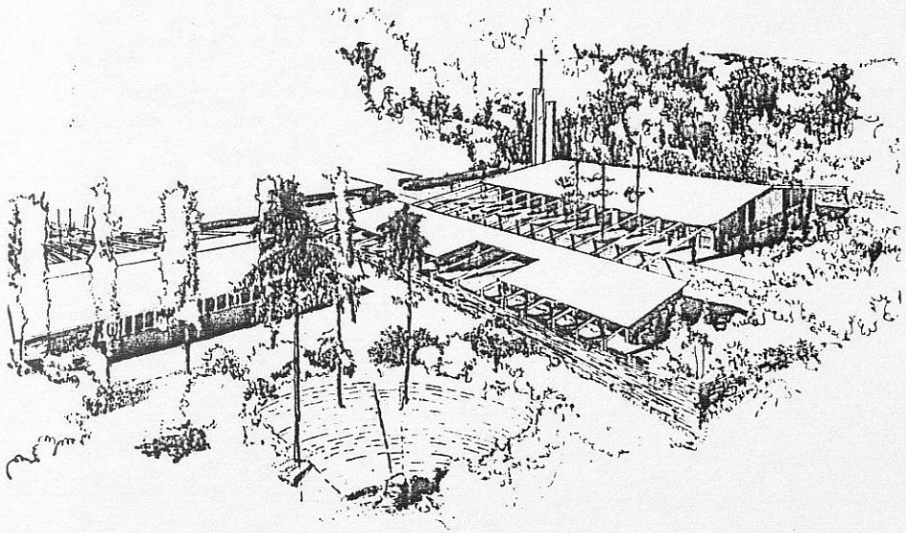
COMMUNITY CHURCH FOR ST. MICHAEL'S PARISH IN RALEIGH, NORTH CAROLINA

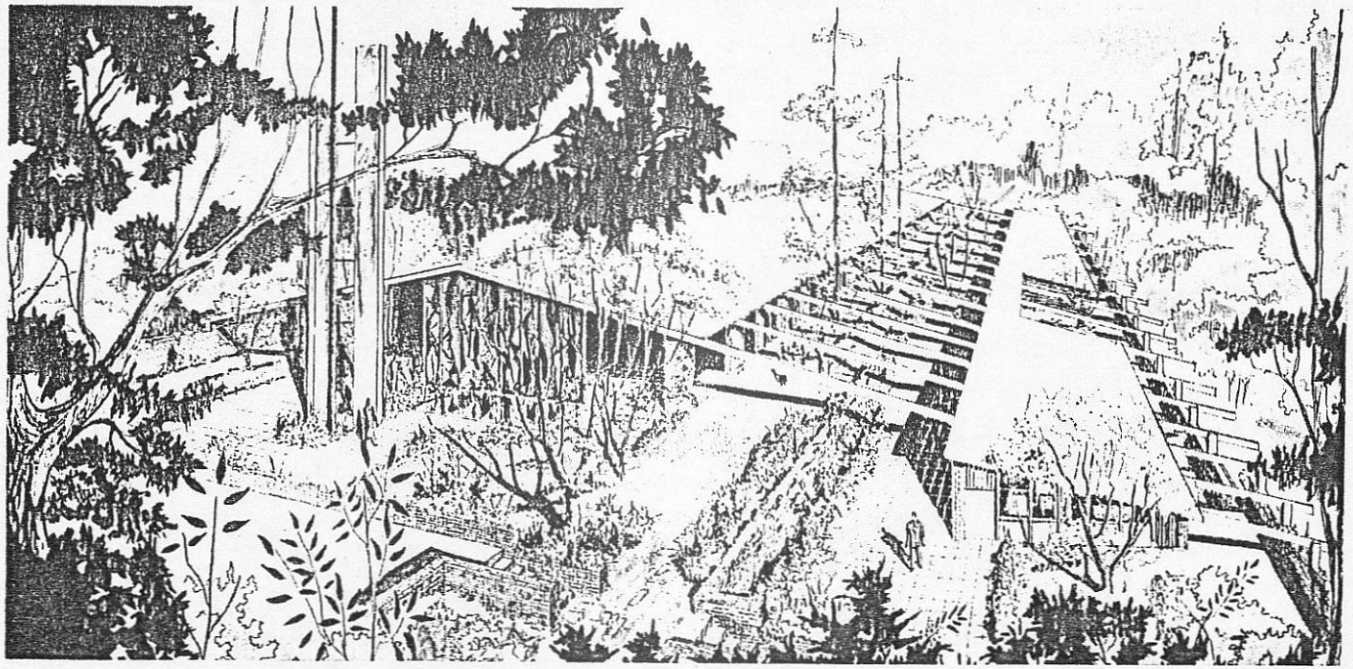
This church was not built, but was a study conducted by a group of students at the North Carolina State College School of Design. For a number of years, the Christ Church Cathedral has been a center of the Raleigh Parish. The community was growing and needed a new church in the north part of town. One of the distinct characteristics of the church was the youthfulness of the congregation. The church was located within a young and growing community and surrounded by new neighborhoods.

To reflect this character of youthfulness, a massive form for the building was ruled out. There was an attempt to combine tradition with the vitality of youth. They developed a 300-400 seat auditorium. They utilized outdoor space for activities, such as an amphitheatre. The church also functioned as a community center. The building was tucked into a hillside with tall pines growing through the beams, casting shadows on the building and emphasizing the unity of the church, site, God and nature. An interesting feature in the auditorium is the stained glass panels along the nave that can be opened to take advantage of existing breezes.

Of all the case studies, this is the one that has more direct meaning to Harvest, in that it is a youthful congregation in a young growing community. The strong interior/exterior relationship is a goal for Harvest and as such, the method in which the building and landscape are interwoven can be very helpful in development efforts.

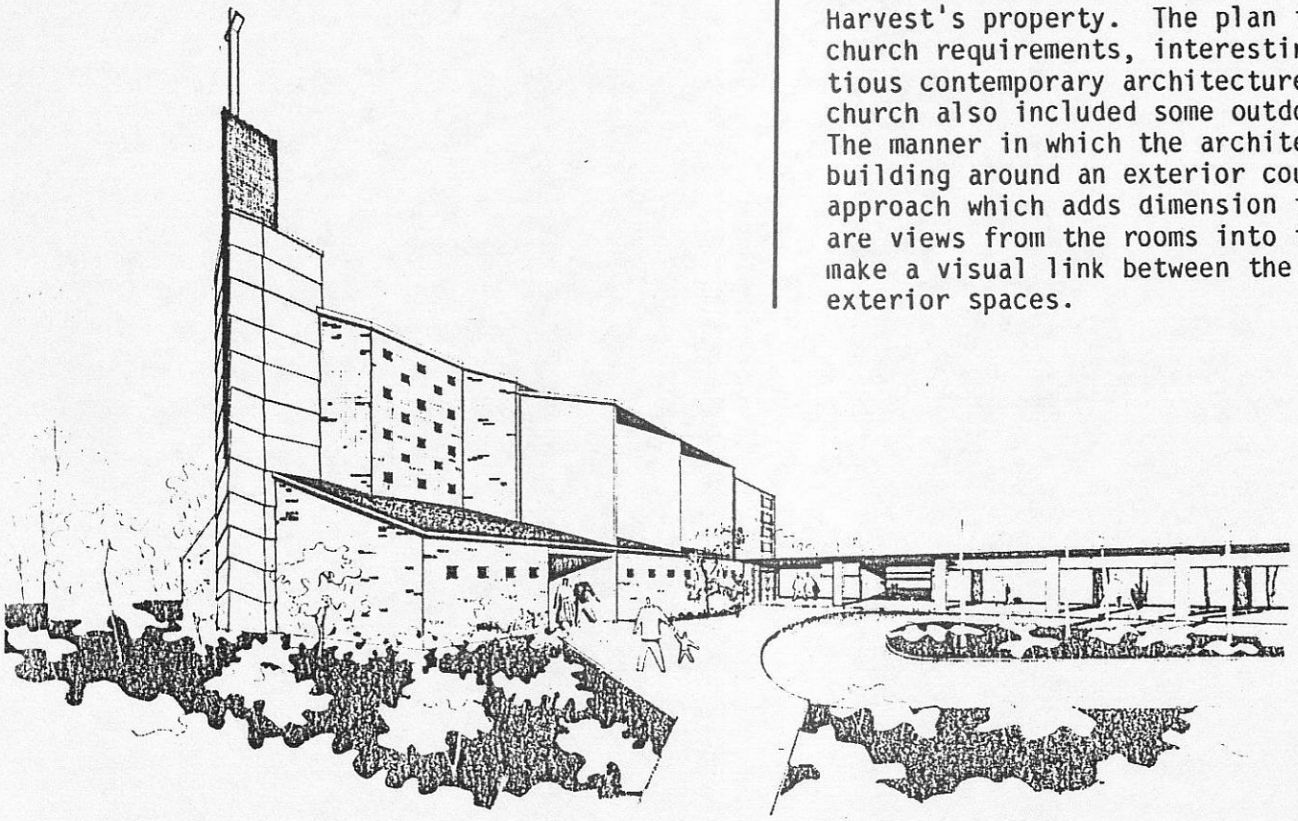


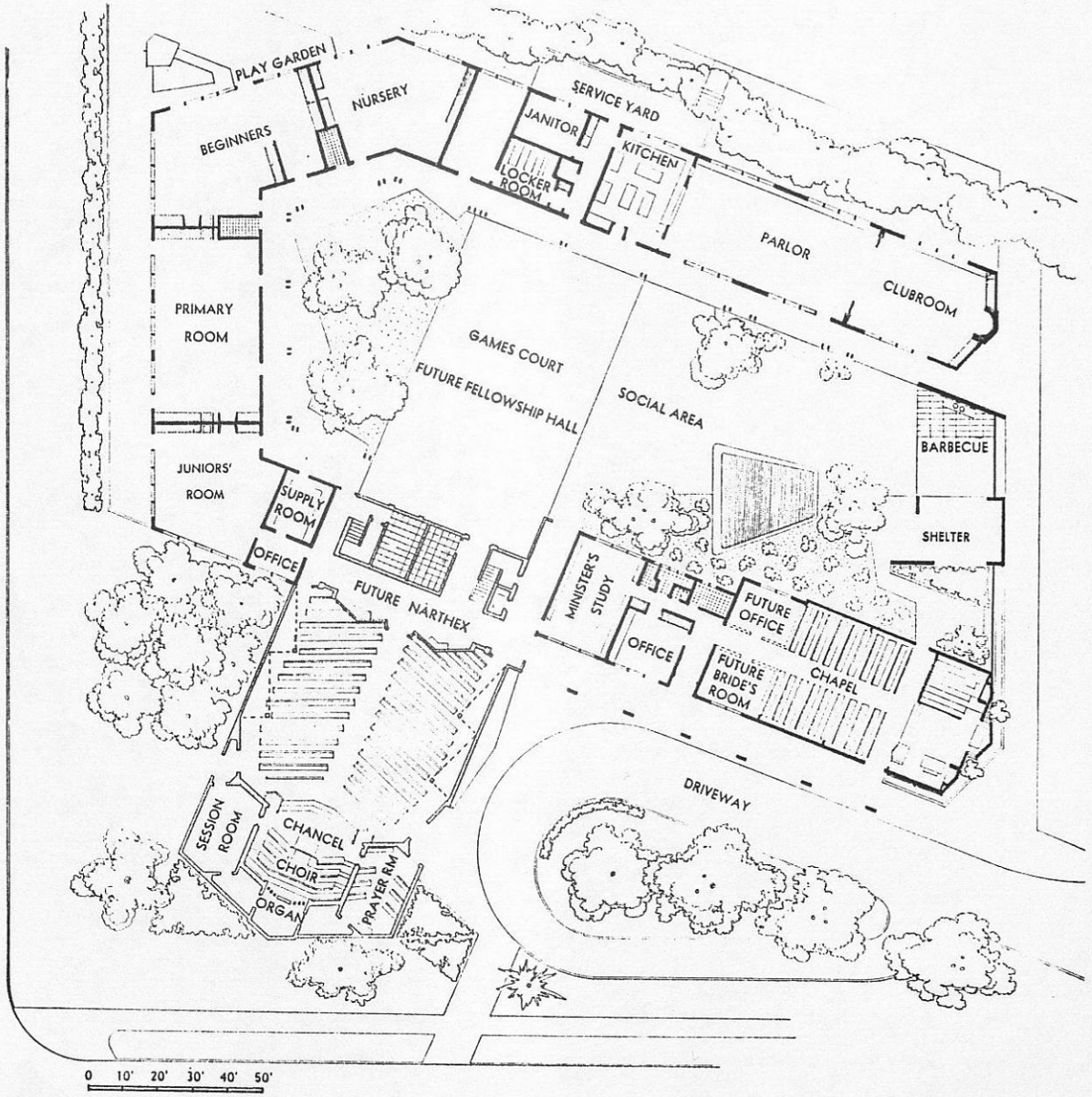




ST. PAUL'S PRESBYTERIAN CHURCH

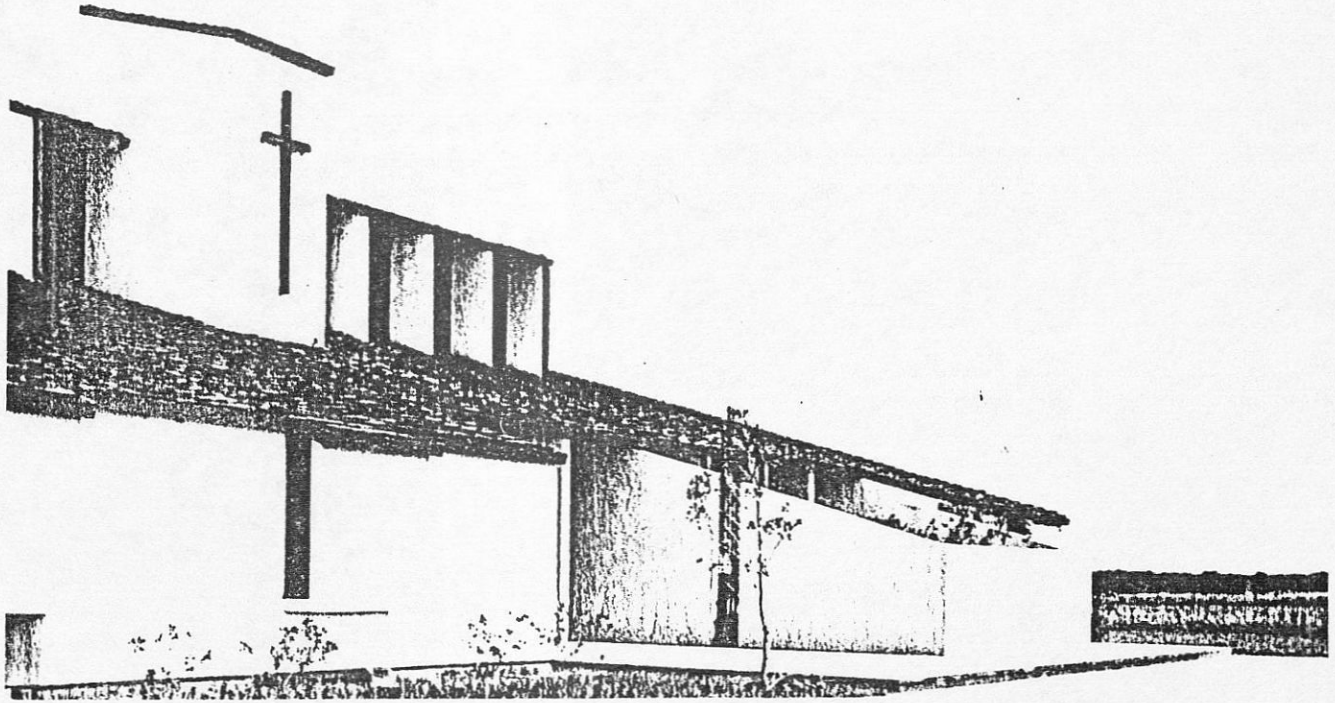
Located in Los Angeles, California, and designed by Robert E. Alexander, this project relates in several ways to Harvest Baptist Church. The client profile is very similar to Harvest Baptist in that the church consists of a small congregation located in an expanding community. Their desire was to increase their membership and the facilities to accommodate the growth. The church hired a landscape architect at the outset to work with the architect. There was a strong relationship developed between the architecture and the landscape, which is a desirable feature in developing Harvest's property. The plan is a result of modest church requirements, interesting site and unpretentious contemporary architecture. The plan for the church also included some outdoor activity areas. The manner in which the architecture wraps the building around an exterior court is an interesting approach which adds dimension to the space. There are views from the rooms into the courtyard which make a visual link between the interior and exterior spaces.




PLAY GARDEN
NURSERY
BEGINNERS
SERVICE YARD
JANITOR
KITCHEN
LOCKER ROOM
PARLOR
CLUBROOM
PRIMARY ROOM
GAMES COURT
FUTURE FELLOWSHIP HALL
SOCIAL AREA
BARBECUE
JUNIORS' ROOM
SUPPLY ROOM
OFFICE
SHELTER
FUTURE NARTHEX
MINISTER'S STUDY
OFFICE
FUTURE OFFICE
FUTURE BRIDE'S ROOM
CHAPEL
DRIVEWAY
SESSION ROOM
CHANCEL
CHOIR
ORGAN
PRAYER RM
0 10' 20' 30' 40' 50'

CLEAR LAKE PRESBYTERIAN CHURCH

This church is located in Clear Lake, Texas and was designed by McKittrick, Drennan and Richardson Architects.[6] The goal of the project was to design a facility for a current membership of 150, but with a maximum of 800 in five to ten years. There was a desire to create a facility that would fit within the context of typical residential subdivision. The designers utilized simple geometrical forms, strong value contrasts and angular thrusts to develop a feeling of prominence and dynamic character. This is a good example for the study of architectural form and developing a relationship of the building to the community. The fact that the church is about the same size as Harvest, and both desire a phased growth plan, is another parallel.



CHURCH OF THE BRETHREN

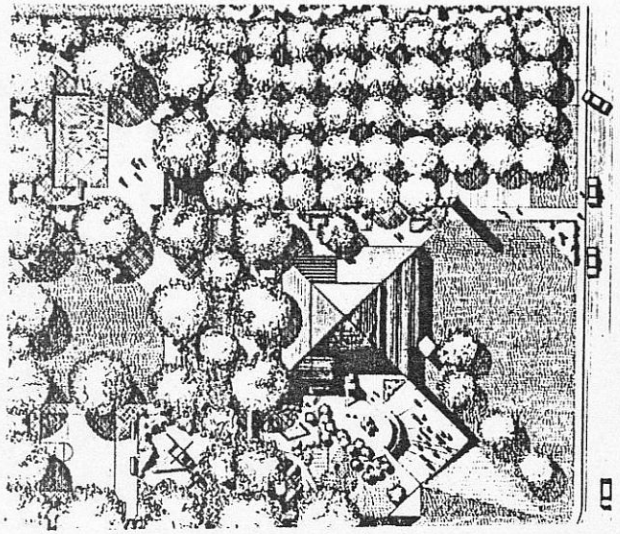
Located in Live Oak, California, the Church of the Brethren was designed by the architectural and landscape architectural firm of Dutcher, George and Hanf.[1]

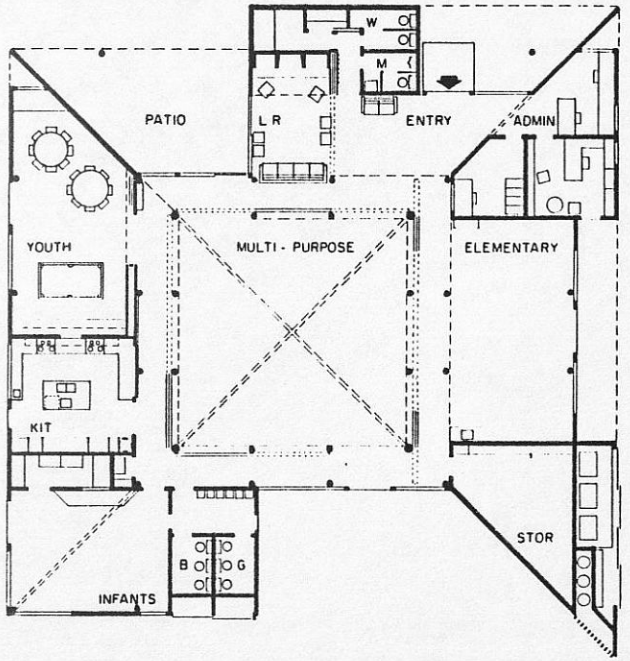
The plan shows a conscience concern for the exterior to interior relationship. The church was designed for full-time use during the week for such activities as a child-care center and meetings.

Spaces inside the building were designed by for a multiple of uses within a major central space. The result was a simple place of beauty and an emphasis on durability. The main space utilizes natural lighting and provides vistas to an exterior patio and play space. A number of exterior activities were also developed, including a swimming pool, playground and basketball court.

Aspects of this study relate to Harvest Baptist by the inclusion of outdoor activities which complement the interior activities. The concept of using the church buildings for a day care center is also a need of Harvest.

Other similarities of the two churches is the idea of growth and taking an active part in the activities of the community. The juxtaposition of Harvest, being located next to City Hall, could be an opportunity for the church to have a strong dialogue with the City government. Harvest's relationship to the community may be only implied or physically connected, in which case a more active role within the city government can be promoted on an individual basis.





PROGRAM FOR DEVELOPMENT

PROGRAM FOR DEVELOPMENT

The program for development consists of a detailed analysis of the elements that were identified in the introduction: client needs, concerns of the public, the natural conditions of the site and the interests of the designer. Beyond these broad categories, the analysis of the program will deal with the spiritual, symbolic and psychological implications of the design. The program will address the activities that will need to be included in the future buildings to the extent of establishing the appropriate amount of square footage, the shape and orientation.

The primary emphasis of the program will be a detailed analysis of the landscape elements, along with the major architectural elements. All of the elements of the program will be synthesized and analyzed with respect to the details of each area, how they relate to one another and to the land. The end result of a program analysis will be reflected in a land-use plan. A land-use plan is a graphic representation of the relationship the program elements have to one another and to the site. This is where the actual physical design phase of the process begins. Design concepts are then formulated to solve the goals and issues that had been outlined in the program. Upon completion of the land-use plan, the master plan is then developed. Upon completion of the master plan, the program objectives and the solutions are reevaluated for consistency.

IMAGE

Throughout the course of history, the presence of the church within the community has been a dominant element. The church's image within today's society has been reduced somewhat due to the establishment of many churches within one community and the concept of the separation of church and state. Historically, the church was viewed as the central facility for social and political, as well as religious, functions.

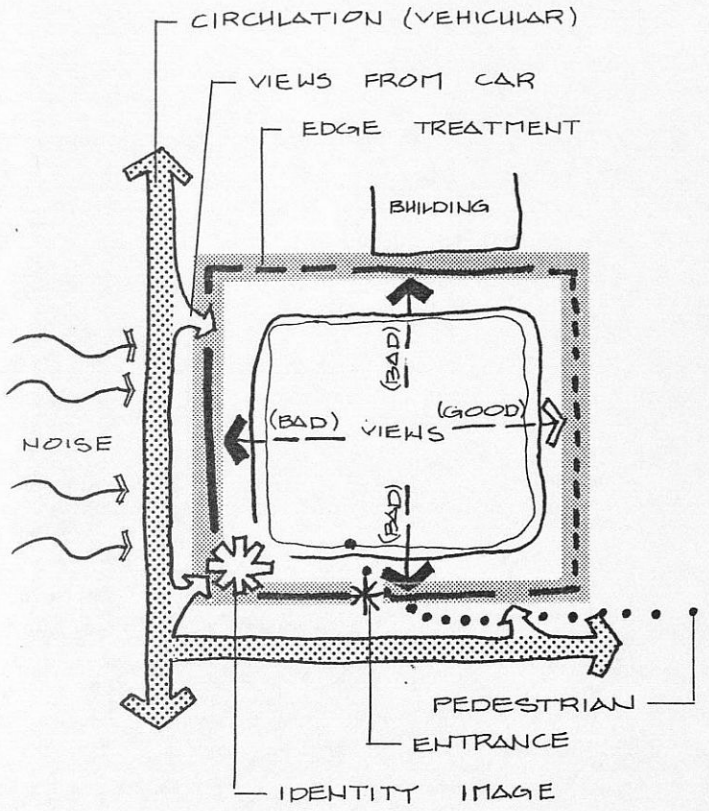
The selection of a style for the church has not been simply a matter of taste or eduction but the need of a church to be a symbol, both to itself and the community.

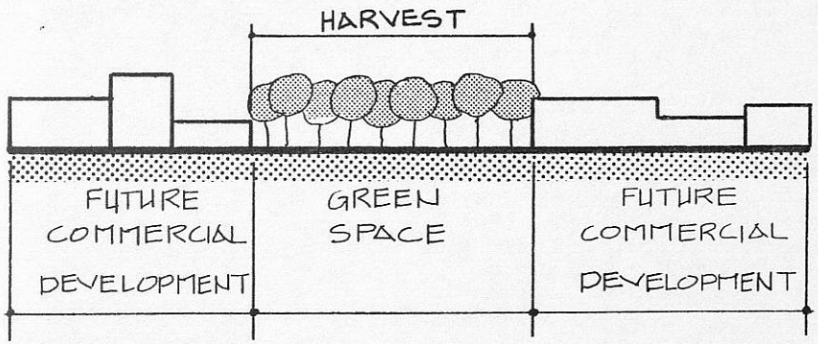
Harvest views their mission within the community and beyond as one of harvesting those people who do not know about God and his teachings. This implies a strong emphasis on winning people to Christ and going out into the community and telling people about God. This also implies portraying a visual image that contrasts to its surroundings and reflecting on the alternative to the secular way of life. The desired image of the church, as described by the pastor, is to set the mood and feeling of a place of worship as a person approaches the property. As a means to give the person entering the idea of leaving the secular world behind, two important elements must be addressed. First is the edge treatment, or that portion of the property which fronts the neighborhood. Second is the need to recognize the role Harvest plays in the community context, both physically and spiritually.

EDGE TREATMENTS

At present, the boundaries, other then street sides, of the site are unrecognizable. To achieve the goal of developing an image on the site that is in contrast to its surroundings, the treatment of the edge is an important design consideration. The edge treatment can portray the garden-like image desired and serve as the major identity element for the property within the community. There are other aspects to be considered as follows:

- Objectionable views from the site should be refined, such as the back of future commercial buildings, roads and utility lines.
- The edge treatment should respond to important views into the site from key locations off of the site. An example would be a view into the property from the road or City Hall to better portray the image of the property.
- Both of the roads which form the west and south borders of the property are to be widened, therefore demanding a response from the edge treatment such as more buffering of views, noise or grade changes of the existing road.
- Ease of entrance for pedestrian and vehicular traffic through identification of the entrances and design that will reduce congestion.
- Signage within the edge treatment can take on a variety of forms ranging from signs, graphics, physical or implied symbols, architectural style, or the edge treatment as a whole may be the sign for the property.
- Buffer noise from the road and train tracks.



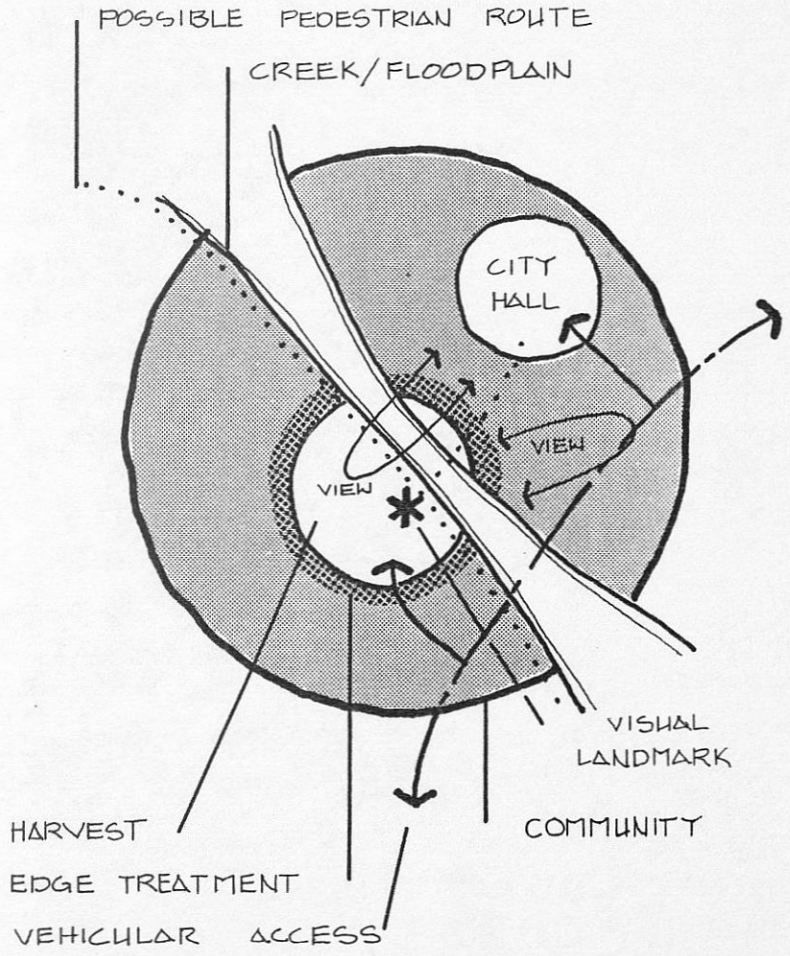


IDENTITY WITHIN NEIGHBORHOOD CONTEXT

COMMUNITY RESPONSE AND INTERFACE

Due to its close proximity to the new Watauga Municipal Center, Harvest Baptist Church could have an impact upon residents and visitors to the area. This relationship could take the form of a physical link or an implied connection with the City Hall. The site is located in a position that has the potential of becoming the landmark feature denoting the approach to the Municipal Center from the west. The relationship of the church and the community can be addressed as follows:

- There must be a close relationship with the city government to work out an approach to solving the drainage and runoff that will be flowing into the creek between the church's property and City Hall.
- The floodplain zone could become a physical pedestrian link with the City Hall and the surrounding community.
- A view from the church property to City Hall can be good, signifying the need for the church to reach out into the community to address its spiritual needs.
- Harvest Baptist's philosophy is to attract people to the activities of the church through a variety of methods. Some people may become involved because the church has a recreation program, others because they would not have to go into the building, but may rather come to an outdoor amphitheatre.
- Symbolism is an important element that has the potential of making a statement about the philosophy of the church.
- Screen out poor views from the site into the community and accent the good ones.
- The view onto the property from the surrounding community is important because the visual image begins to reflect on the attitude of the church.
- Interfacing of the edge treatment with the plans of the community for widening the roads is also a possibility.



SYMBOLISM

Man has always used symbols and signs to communicate an idea, attitude, feeling or image. The use of symbolism and signage in the development of Harvest Baptist symbolism offers a method of portraying the concepts of the church through its visual image to the community, and the reinforcement of these concepts upon experiencing the property. God has given man the ability to enjoy a continuous awareness of the realities of life. These realities are the never-ending experiences of truth and beauty that man has during his life.

Signs and symbolism are the language for these experiences, for they are the outward and visible form through which the inward and invisible realities that move and direct the soul of man are revealed. A good example of this communication is the attempt to express love with words. There are many words which express it, but nothing says it better than a touch of a hand, the light of the eyes, or the radiance of a face. There is nothing more expressive of an inner feeling than a tear. Life's deepest realities are revealed through experiences of man's soul, therefore, it can be said that they are truly the universal language.

A sign and a symbol are interchangeable. A sign represents and points to something from which it takes its character. The cross represents Christian faith and points to Christ's crucifixion. A symbol resembles, and has a deeper meaning, because it is more completely identified with what it represents. A symbol's character is derived from what is known about it. The cross symbolizes God's love for man in the sacrifice of his son for the sins of man. One of the highest forms of this language is Christian symbolism. Christian man has over the ages adopted well-known words, actions, or things, labeling them with physical or spiritual meaning. The use of the language of symbolism has helped man to recognize divine truth and to enable man to understand God's presence in all creation. In the church's quest to redeem the world, the Christian church has borrowed from every source to further their effort, therefore, there is the use of the sign and the symbol.

The method of using symbolism at Harvest Baptist is the selection and utilization of various materials, forms and plants which will play a major role in development. There are many plants which are referred to in the Bible that have a potential for conveying a message thrugh their symbolic application, while experiencing the property.

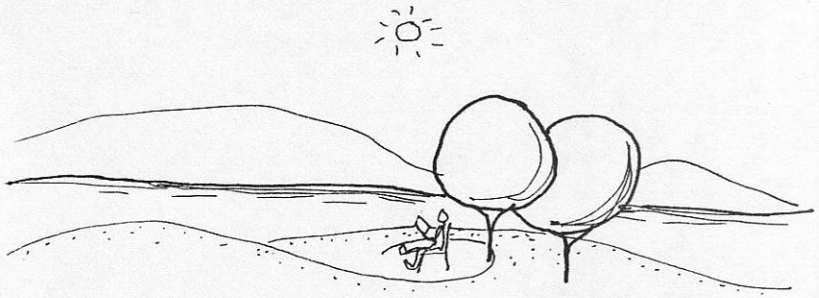
The opportunity to introduce a Biblical analogy or legend exists through use of a small sign that outlines the idea. This method would help people view the plants with a different appreciation by explaining their religious implications. For reference during the design phase of this project, a list of Biblical analogies or legends has been included in the appendix.

The physical form that the structures have can be a powerful statement and symbolize religious implications. As an example, the use of a high roof ascending up to the sky may portray the idea of ascension into Heaven. The use of the source could be implied to portray the meaning behind a square, the emblem of the earth and earthly existence.

PSYCHOLOGICAL RESPONSES

Much of the art and science of planning is when the planner realizes that he is not dealing with areas, but with volumes or spaces. The planning of this project is an organization of volumes created to meet the demands of a particular activity that is to take place within that volume. The relationship of the elements within the space play an important role in the character of the space. Lines, forms, colors, textures, sounds, and odors all have a predictable impact on people's emotional and psychological responses. Any given line has an abstract expression that is important to realize when designing. (See figure) The elements within the space must reinforce the planned intentions or character of the space. Through the manipulation of the elements that form and occupy the space, a psychological or emotional response can be predetermined. The following is an explanation of how to achieve some specific responses.

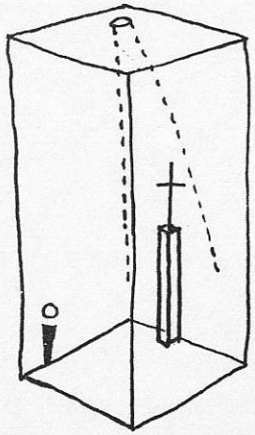
Relaxation - Simplicity, familiar objects and materials, flowing lines, curvilinear forms and spaces, evident structural stability, horizontality, agreeable textures, pleasant and comfortable shapes, soft light, soothing sound, and quiet colors, such as whites, grays, blues and greens.



Contemplation - Scale is not important because contemplation implies that the person will draw into himself. Space may be mild and unpretentious or immense and ornate, but no distractions or sharp contrasts should be introduced. A space must provide a person with a sense of place, isolation, privacy detachment, security and peace. Use of soft diffused light, tranquil and recessive colors and low muted sound will encourage contemplative activities.

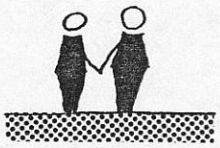
Inspiring or Spiritual Awe - is usually achieved through exposure to an overpowering scale after a person has experienced a tight, human space. An example might be a volume of space with a broad base plane, with a vertical element which lifts the eyes and mind upward along a vertical, thus implying the infinite.

There is a need for complete compositional order and possibly the use of symmetry, developed sequences, costly and permanent materials, cool colors, such as bluegreens, greens, violet and diffused light.

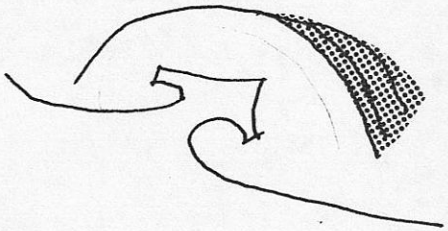


Pleasure - in a general sense is when all the elements, the space, form, texture, color, symbols, sound, light quality and odors are placed in a suitable relationship for the use of the space, create a unity with variety, sequences fulfilled and harmonious relationships.

Some other psychological responses included in the development of the project include openness, friendliness and a loving spirit.



FRIENDLINESS



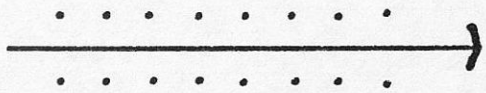
OPENNESS

OPPOSING

CONFLICTING CROSSING

DYNAMIC

FLOWING, ROLLING



FORMAL

Figure 1

EXTERIOR

Harvest's goal is to minister to the needs of the congregation by providing a variety of worship experiences, promote Christian fellowship and recreation, while maintaining a unique character within the context of the community.

One of the primary concerns for the project is development of the exterior activities and spaces on the site. This has been found to be a unique approach to the development of church property. There are not many churches that have identified their needs for ministry beyond the activities customarily addressed in a worship service. Harvest Baptist's concept is to offer a wide range of possibilities for people of the community to become involved with the church. There exists an opportunity for Harvest to utilize the total site. Therefore, the list of exterior activities is extensive.

AMPHITHEATRE

During the spring and fall months in this part of Texas, the weather is very favorable for outdoor activities. As a means to take advantage of this climate, an amphitheatre has been included in the program. To enhance the participants' awareness of nature, while at the same time providing an opportunity for spiritual nourishment, or entertainment, from the program being held in the amphitheatre, one of the main elements in the amphitheatre will include a baptistry suitable for performing outdoor baptisms.

Several other functions to be accommodated are preaching, concerts, plays and skits. All of these activities demand similar spacial needs, such as a flat area that will function as a stage. Of primary concern in all functions is the sight lines from the audience to the stage area. A defined space with a backdrop is helpful to captivate a person's interest by screening out views. Audio considerations of the space will need to be reinforced by vertical elements that will contain the sound waves within the space for a longer length of time. In addition to the major activities, there are more issues that will be addressed as follows:

- Utilization of the steep slopes as a backdrop to a stage or as outdoor seating (Figure 2).

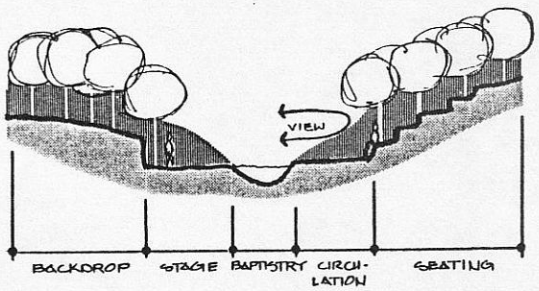
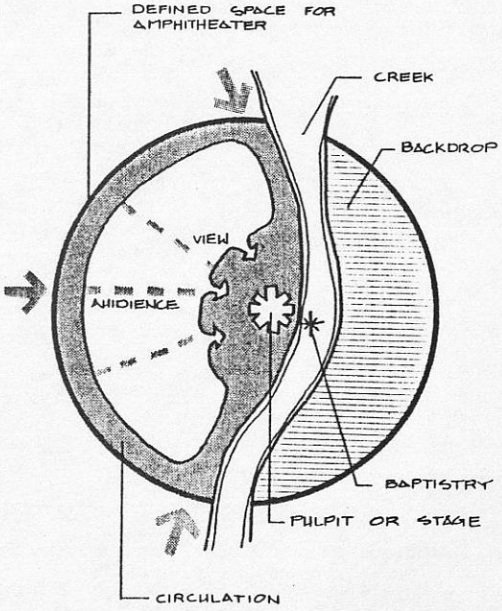


Figure 2

- Inclusion of the amphitheatre location site in the floodplain in a manner that would withstand inundation by flood waters.
- Seating for 1,500-3,000 people.
- Circulation space within the seating area.
- Psychological mood of the space should be inspirational and set the mood for worship, possibly through the use of plant materials, the articulation of the space, the spacial sequence approaching the space, or development of views. An example would be to view the sunset or a bold character of trees forming a contrast against the sky.
- Handicapped access.



- The existing creek, or a nearby fresh water source, becoming the water source for the baptistry.

- Edge treatment of the water must allow access into and out of water.

- A dressing and preparation area will be needed for baptisms. This space may be portable or a permanent structure.

- Maximum depth of water in the baptistry should be 3'-6" with a platform for children to stand on.

- Shade area.

ORGANIZED SPORTS AREAS

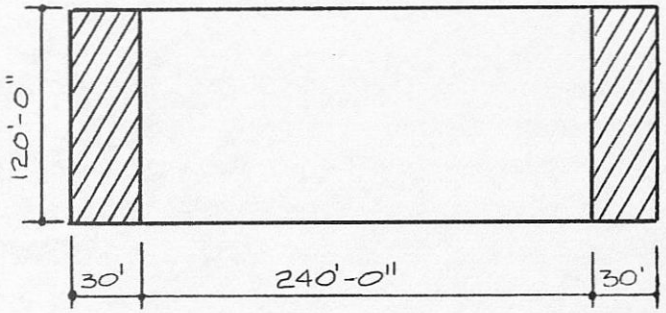
As a method to provide opportunities for people in the community and church to become involved in the activities at Harvest Baptist, recreational activities have been included in the program. Through the development of a recreational program, they will have an opportunity to have people that may not otherwise have become involved participate in a church activity. This involvement will provide them with Christian fellowship and a chance to grow in spirit and knowledge of the word of God through the ministries of the church.

The floodplain portion of the property provides an excellent location for such activities since buildings cannot be built there. There are several sports that the church has been involved in or would like to participate in, such as slowpitch softball, basketball, soccer and football. These sports would also accommodate the needs that a Christian school would have for recreation.

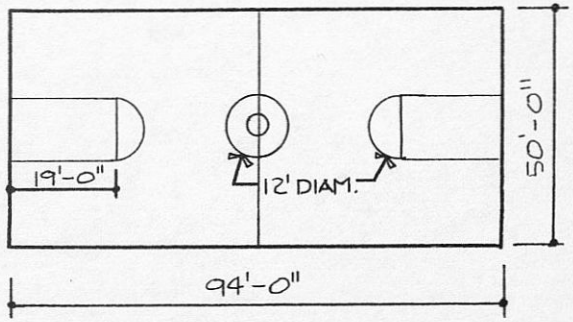
The use of the fields would be utilized for church league activities within the community. The sporting activities also have specific requirements in support elements and technical issues as outlined below:

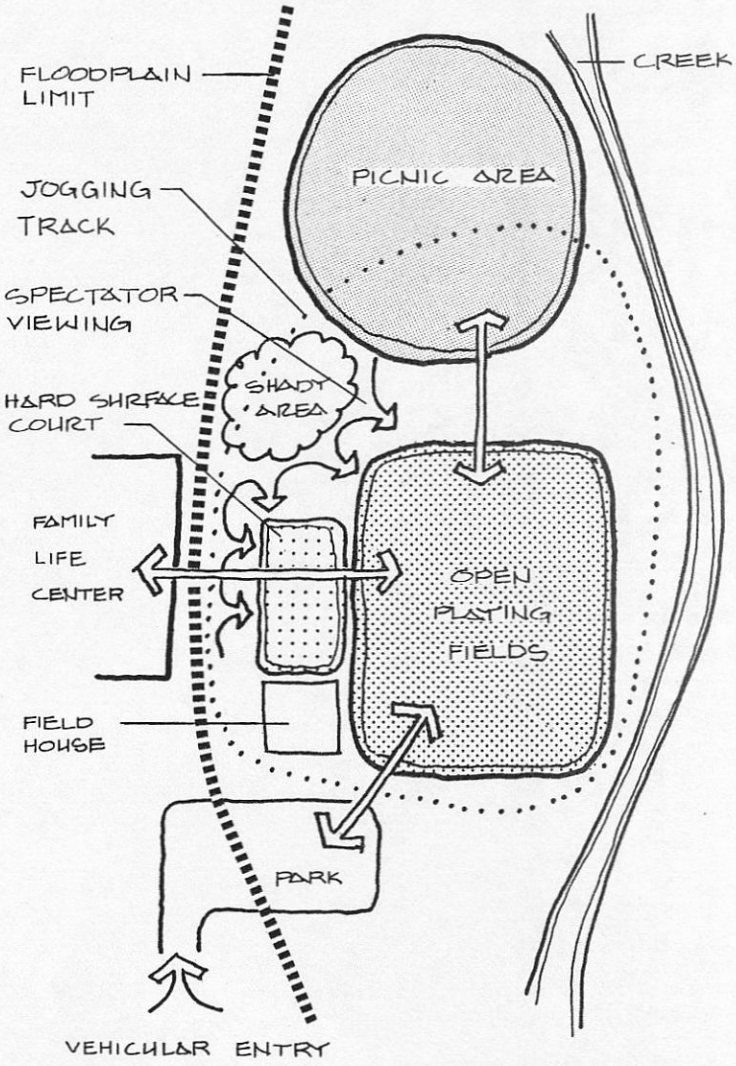
- To maximize the use of the facilities, several of the sports can share space. A hard surface area for basketball may also be used for spontaneous court games such as jacks, hopscotch, dodgeball, etc. Open field sports can share space, such as football, baseball and soccer.
- There is a close relationship to be developed with recreational activities outdoors.
- The picnic areas should have a strong tie to the sport areas.
- Spectators will need areas for viewing, with shade for summer activities.
- The potential exists for a jogging track to be utilized as a circulation path that can begin to tie the outdoor activities together.
- There will be a need for a field house for equipment and a concession area.
- A parking area should be in close proximity to the recreation fields.
- The need for lighting is important so that the activities can take place at night.

SIX MAN FOOTBALL

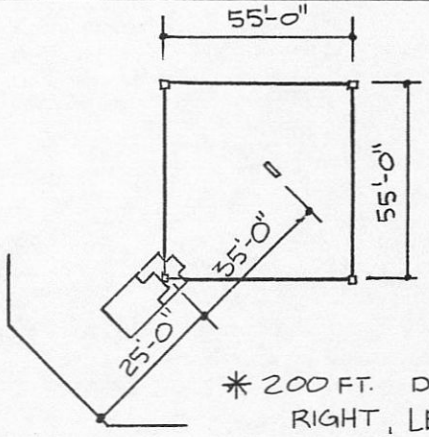


BASKETBALL



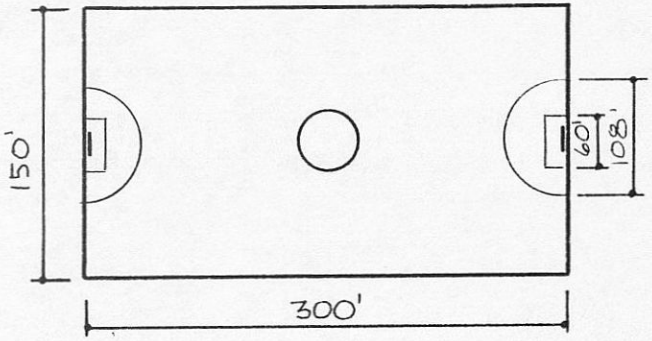


SLOW PITCH BASEBALL

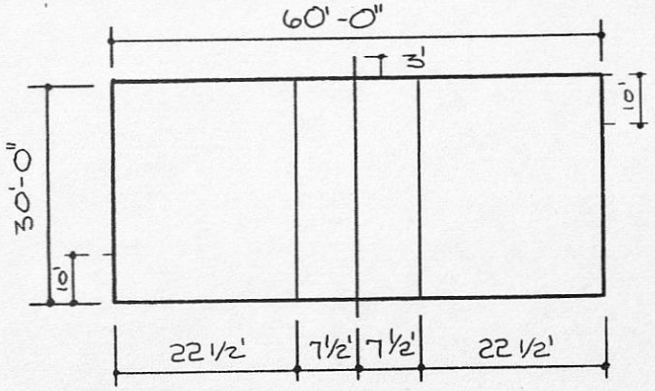


* 200 FT. DISTANCE TO RIGHT, LEFT & CENTER FIELD

SOCCER



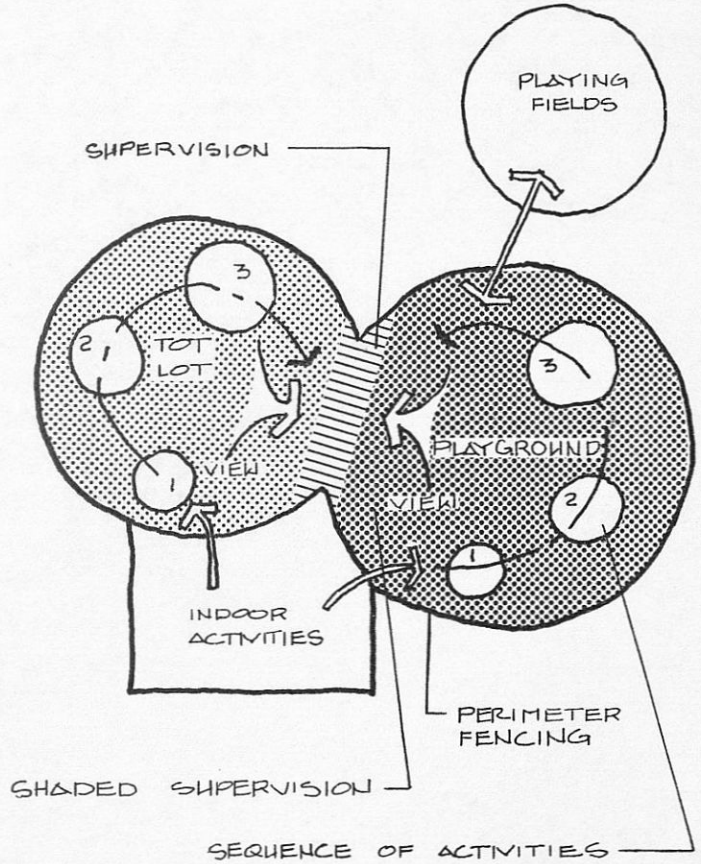
VOLLEY BALL



PLAYGROUNDS

Harvest is a young church with a large number of children, thus requiring that provisions be made not only to address thse members' spiritual development but also their social and physical development. To accommodate these needs, the program includes play areas for several age groups, ranging from a tot lot for two-year-olds through first graders, and something for second graders through teenagers. The playgrounds should also be developed in such a way that they may be utilized in the future, when a day care service will be provided by the church. The following is an outline for issues that will need to be dealt with in developing the playgrounds.

- The playground should be divided into two areas: a tot lot and an area for older children.
- The tot lot will need closer supervision.
- Both of the playgrounds' play elements should be arranged according to the degree of expertise needed to experience each element.
- The activities included should provide opportunities for muscular development, adventure, and opportunities that will encourage imagination in the children.
- Views from the tot lot into the older children's playground is important to demonstrate to the young children how the older children play.
- A close relationship to the indoor play space will be desired.
- There should be facilities and designated areas for the supervisory personnel.
- A separate entrance to each play space is to be established.
- Containment of the playground will be needed for security reasons.



- The older children's play area should provide an area for them to shape and mold their environment.

- Some of the elements to be considered include slides, ropes, swings, bollards, play partitions, tree trunks, mazes, graphite walls, and earth mounds.

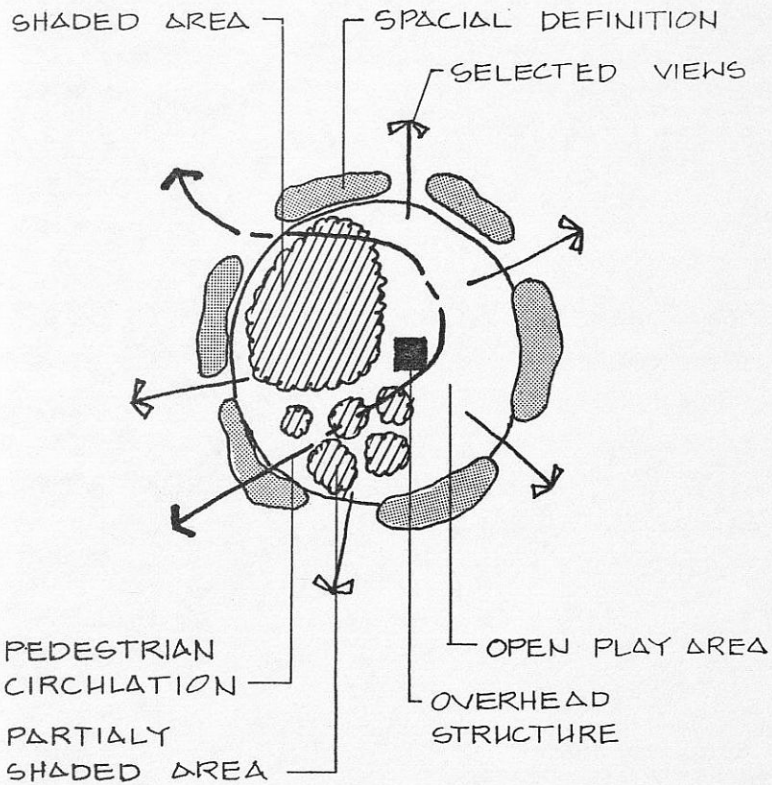
- The materials will have to be durable enough to withstand weather, vandalism and normal wear by children.

- A soft material such as sand or pea gravel should be used for the floor to absorb the impact a child experiences if he falls down.

PICNIC AREAS

A picnic area has been included in the program to encourage and provide space for the congregation to have outdoor activities and fellowships. A picnic area is a compatible land use to be developed within a floodplain zone, of which a portion of the site is designated. A picnic area implies a casual family atmosphere that has a strong relationship to more active and organized recreational facilities. To avoid a static image, the picnic area shall be developed in such a way as to provide a variety of picnic facilities. Included in the program for picnic areas are the following items:

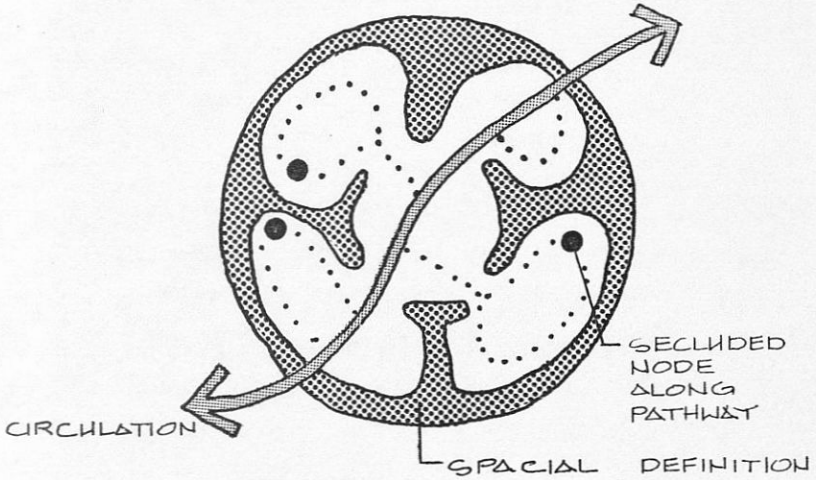
- Initiated by the types of activities, a variety of spaces should be provided, sunny, shady, small and large spaces.
- Access will be pedestrian and should provide room for a large lawn mower.
- Flat surface areas are needed for volleyball and other lawn games.
- Approximately five to seven picnic tables.
- One overhead shelter for group activities, with seating.
- Activities that will take place will include eating, cooking, grills, games, relaxing, reading, fellowship and walking.
- Good views within and out of the site will need to be developed due to the openness of the site.
- The materials used for the construction of the picnic tables and structure will need to withstand the elements of the weather.
- There will not be a need for a defined circulation space. An open concept for circulation is more appropriate.

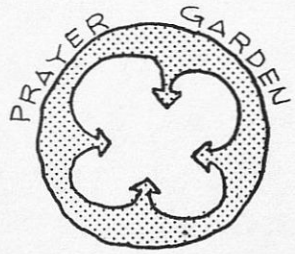


PRAYER GARDEN

The development of a prayer garden is included in the program as a suggestion from myself as a means of encouraging a person to take time out to pray and become more aware of the things God has given him through nature, and thereby increasing this awareness of the relationship between God, man and nature. There are no existing areas on the site that are suitable, therefore, it would have to be a created experience. Within the gardens, there would be space provided for a person to contemplate, pray, and be alone within a garden atmosphere. Some of the spaces would accommodate small groups of people, ranging in numbers from two to ten. There are specific elements which will become important issues:

- The prayer garden's strength in relation to other activities is in close association with the activity areas of the chapel or the amphitheatre, or it could deny a close relationship from any of the other activities, thereby increasing the intimacy of the space.
- The garden will need to have a variety of spaces due to the desired impact within each area. One space may have an inspirational element that is looked upon, and the next may be an important view to promote serenity and contemplation.
- Some areas will provide intimacy and seclusion while other areas will promote interaction between people.
- Definition of spaces from one area to the next.
- Use of plant material that will have Biblical symbolism, therefore encouraging a different viewpoint toward plant materials. An idea might be a parable garden that reflects a Bible story.
- Signage could be important in outlining a Biblical story or plant symbolism. This may take the form of a small plaque.
- Buffered from adjacent uses is important to ensure the intimacy of the garden.
- The garden image should be strengthened to ensure an inward orientation, thereby reinforcing the concept of man's contemplation of himself and his relationship with God.



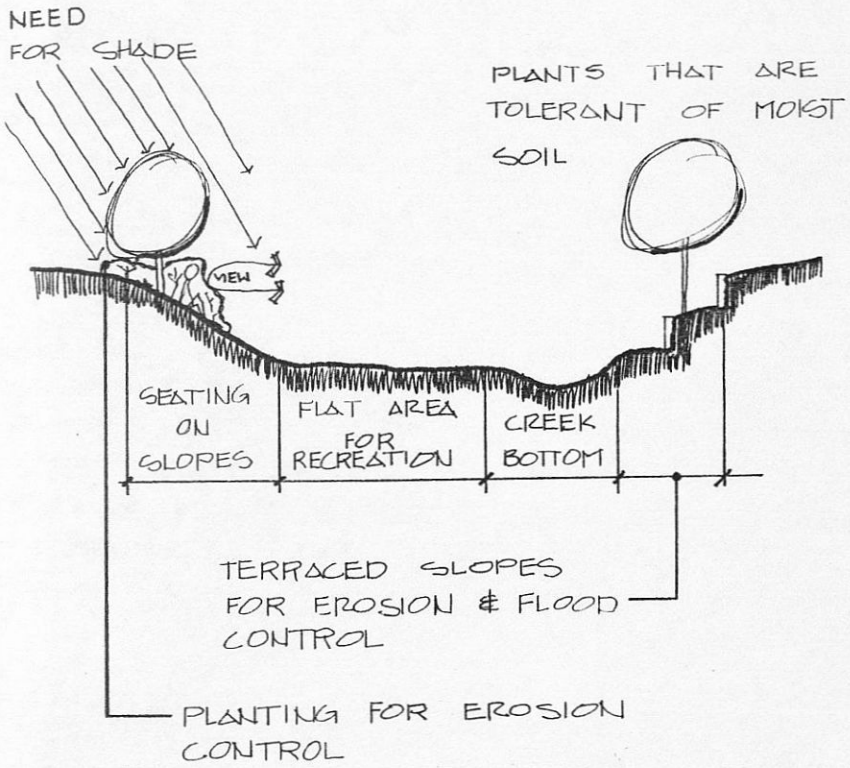


INWARD ORIENTATION

CREEKSIDE DEVELOPMENT AND FLOOD CONTROL

One of the major assets of the site is the Bunker Hill Creek which cuts through the eastern part of the site. A sensitive approach to the development of the drainageway and floodplain of the creek is essential to accommodate future drainage from the north and developing an aesthetically pleasing response. Activities such as recreation can be located in the floodplain. The following issues and criteria are a guide to the development of this area:

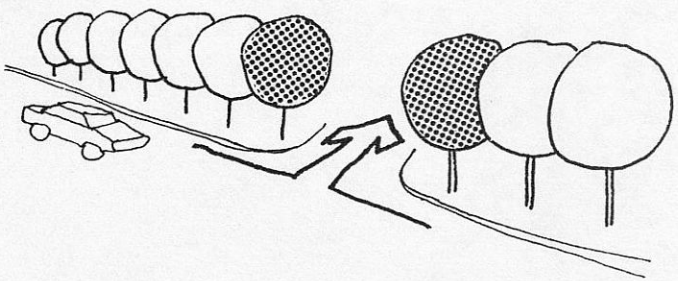
- The flat areas of the floodplain are appropriate areas to establish playing fields.
- The topography offers potential in the development of seating areas for viewing of the sports activities.
- Erosion control is crucial. The steep slopes will have to be planted or changed through a method of retaining walls, gabions, rocks, or some other retention method.
- The creek offers the opportunity to accommodate the desire for an outdoor baptistry.
- The formation of a pond can provide a source of water for irrigation.
- The floodplain will be enlarged with the development to the north and will need to be controlled through some form of construction of walls, retention ponds, and/or surface treatment of the channel of the creek.
- Planting will have to be adaptable to moist conditions.



CIRCULATION

One of the most important aspects of any development is the method by which it is experienced. Each mode of circulation presents certain requirements to be dealt with. The development of the church property encompasses two types of circulation: vehicular and pedestrian. One of the objectives in the area of circulation is the reduction of conflicts between the vehicle and the pedestrian. Detailed issues to be encountered are:

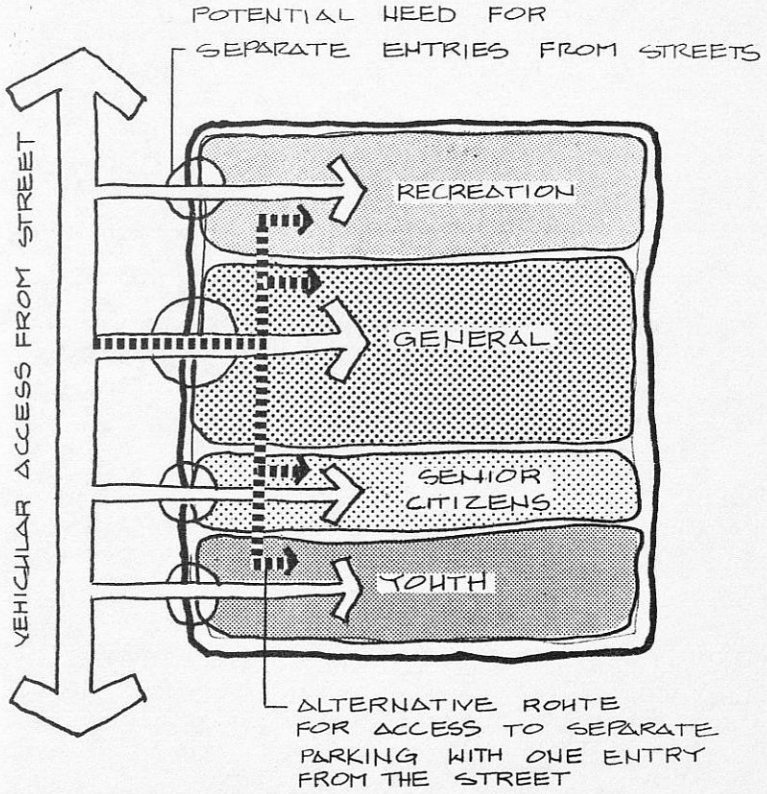
- The visual image a person receives from the car should serve as an identity element for the property with respect to its juxtaposition within the community.
- A visual element that identifies the entry should be provided.
- The distant view from a car should include a visual landmark or character that identifies the property.
- The parking lot and roads should be screened from views whenever possible.
- Reduce conflicts between the pedestrian and the automobile.



IDENTITY OF THE ENTRY FROM THE AUTOMOBILE

Parking:

- Parking should be conveniently located in relation to the use areas.
- There is a need to accommodate van parking and temporary parking for larger buses.
- Utilization of plant material to break up the impact of a large parking lot.



PARKING

- Reduce reflectivity of paving surfaces through the choice of paving materials, or shield the reflection off of the parking lot by the use of planting.

- Signage will be needed to give direction within the parking lot.

- Square footage requirements are needed based on the type of parking:

  - 30° parking = 12 cars/100 linear feet or 425 square feet per car
  - 60° parking (double bay) = 20 cars/100 linear feet or 330 square feet per car
  - 45° parking = 16 cars/100 linear feet or 388 square feet per car
  - 90° parking (double bay) = 25 cars/linear feet or 268 square feet per car

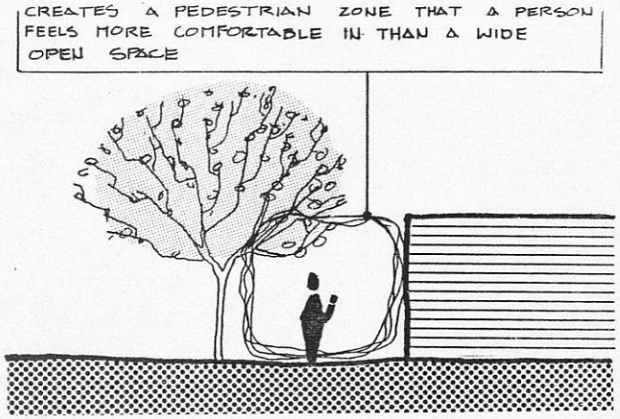
- The capacity of the parking is based on the number of seats in an auditorium. There should be one space for every three seats.

- Service access will need to be provided for but trash dumpsters will need to be screened from view.

Pedestrian:

- The entry route toward the auditorium should be an important role in preparing a person psychologically for worship.

- The spacial experience along the pedestrian routes should maintain a pedestrian scale, provide interest, and give a personal sense of orientation while experiencing the property.

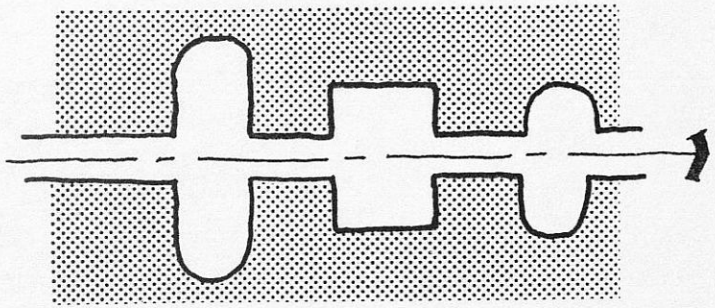


PEDESTRIAN SCALE

- Along the pathways there will be the need to develop pedestrian nodes that will offer opportunities for people to stop and rest by sitting and conversing with people or partaking in a special view.

- All areas will need to be accessible to the handicapped.

- Some of the pedestrian paths will have to accommodate maintenance vehicles.

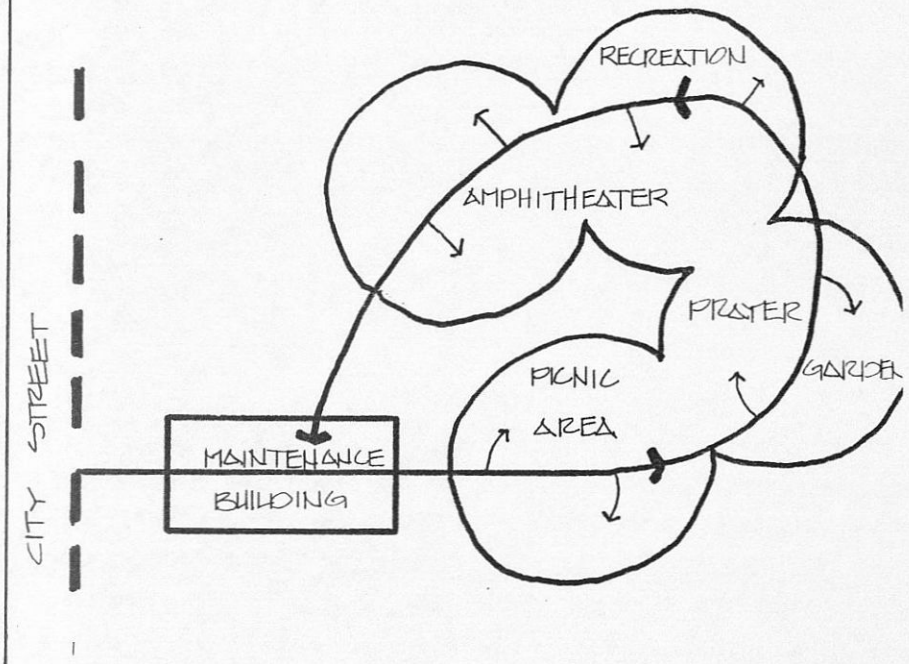


SEQUENCE AND VARIETY OF THE PEDESTRIAN EXPERIENCE

MAINTENANCE

The development of the Master Plan must address the problem of maintaining the facilities after completion. The cost of maintaining the facilities can be more than their installation. Over the life of the project, a specific set of criteria to adhere by will be critical to follow if a minimum maintenance facility is to exist after completion.

- Plant materials chosen should not require large amounts of water, or cultivation of their beds.
- Plants that require a minimum amount of water should be used in areas without irrigation.
- An irrigation system should be installed in as many areas as possible to reduce hand watering and to use the water wisely.
- Native grass should be used when possible to reduce the number of mowings.
- Width of lawn areas needs to be able to accommodate a four-gang mower.
- All areas will need to have a close proximity to vehicle access large enough to accommodate a truck. This will require lawn access or walks of eight feet or more.
- The materials chosen for the landscape elements should be durable and weather-resistant.
- There is a need to store the maintenance equipment within a structure on-site.



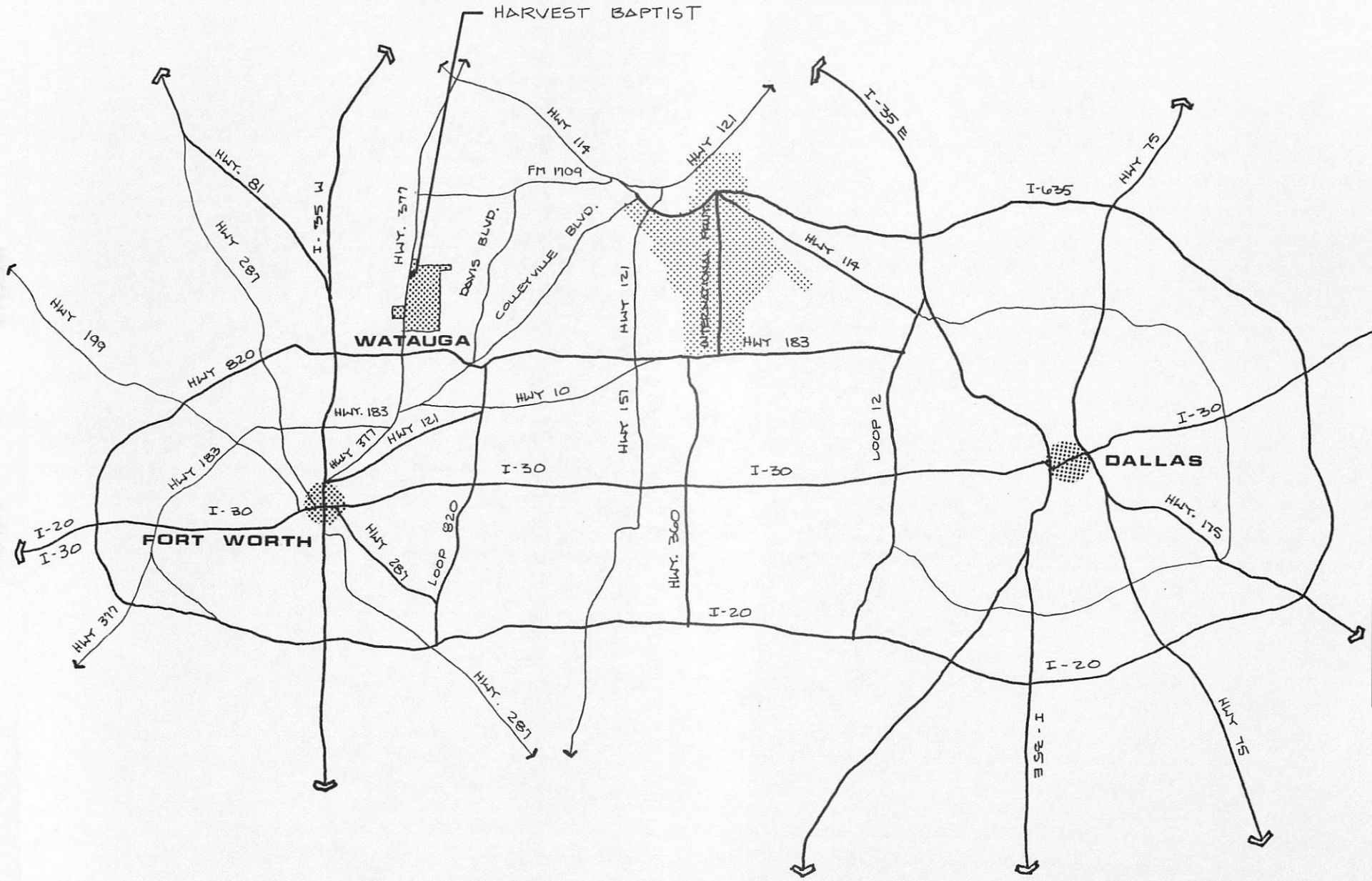
MAINTENANCE ACCESS

PHYSICAL PARAMETERS

SITE LOCATION

The site is located in the northeastern part of Tarrant County. This location is approximately 20 minutes from Fort Worth's Central Business District and the Dallas/Fort Worth Airport, and about one hour from Dallas' Central Business District.

The property is located in the City of Watauga. The community is bordered by Keller to the north, North Richland Hills to the east, Haltom City to the south and unincorporated land within Tarrant County to the west. The property consists of 20 acres north of Prewitt Road and east of State Highway 377. The major artery that feeds onto Highway 377 to the north is Highway 114 and Loop 820 to the south. The location provides easy access and visibility within the community.



REGIONAL LOCATION

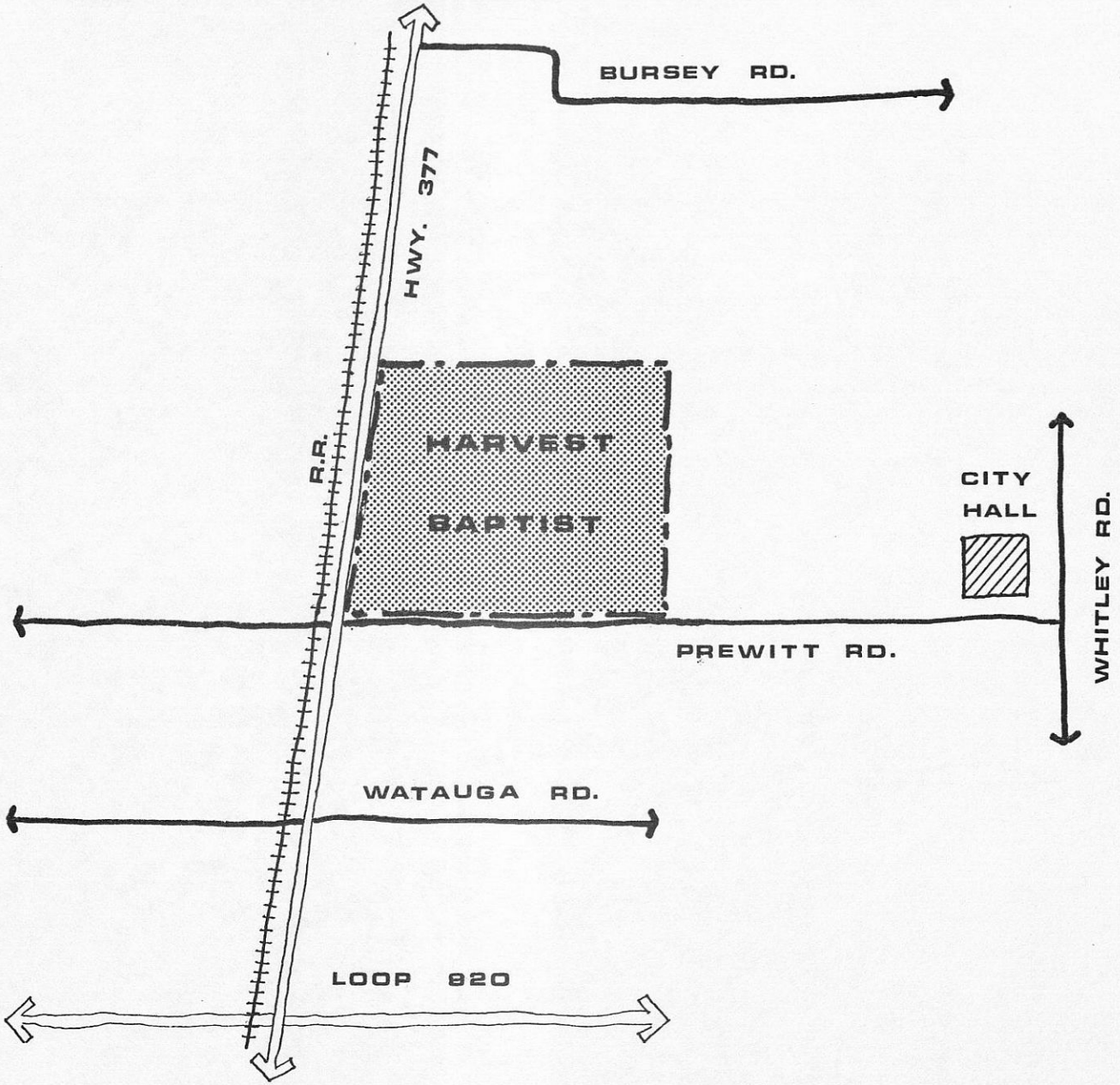
NEIGHBORHOOD CONTEXT

The location of the property is a short distance from the City Municipal Center. This location increases the visibility of the Church to the people of the community. Prewitt Road is a major route to the Municipal Center from Highway 377 and for people traveling to the northern part of Watauga.

Located in the Municipal Center is the Police Station, Volunteer Fire Department, and City Hall. Northeast of the Municipal Center is a proposed location for a school site. There is a proposed park to the north of the Municipal Center. With the floodplain along the eastern part of the site and running north/south, the opportunity for a greenbelt, with pedestrian circulation, is provided. The greenbelt could be linked to the Municipal complex, the school site, the proposed park, and the local neighborhoods to provide safer pedestrian circulation and enhance the character of the community.

To the north and east, the property is bounded by open fields which are for sale and could provide the opportunity to acquire more land, if the need arises. To the south, across Prewitt Road, is a small home with some acreage. The impact of this home is the residential scale that it begins to establish. The southeastern corner of the property is single-family housing. The west side of the property is bounded by Highway 377 and the Texas and Pacific Railroad. Beyond the railroad are open fields used for grazing cattle.

Highway 377 provides visibility for the Church since the highway is the closest route from Watauga to Denton, and several smaller cities along the route. Through proper development, the Church could become a landmark along this circulation corridor.



NEIGHBORHOOD LOCATION

ZONING

The site is located within the largest tract of undeveloped land in the community of Watauga. Along the northern property line, the projected zoning is C-1, local business. Some of the uses permitted in this area range from bakeries, barber shops, professional clinic, service stations, laundries, restaurants, shops for retail sales and drive-in restaurants. There are no height restrictuion in the C-1 zoning category.

Along the eastern border, R-1A, single-family attached, has been designated. Housing in this area will be attached units separated by a fire wall of at least a two-hour rating. Possible uses include other churches, schools, museums, libraries, parks, playgrounds or R-1 single-family units, or those which comply with single-family district regulations. The maximum allowable height is two stories.

To the south is a R-1 single-family district. This area will include single-dwelling units with one family. Other uses possible are parks, golf courses and some home occupations (such as architects and engineers). The height restriction on this area is 35 feet.

Beyond the adjacent zoning, along the north property line, the zoning is C-2, a general business district. Uses in this zone are the same as in C-1 and include more possibilities, such as assembly halls, automobile dealerships, bowling alleys, and warehouses. There are no height restrictions.

The area north of the Church, along the city limit line, is designated M-1, light industrial. This zoning includes bakeries, flour mills, canning factories, grain processing, lumber yards, warehouses and other industrial uses. On this type of zoning, there are no height limitations.

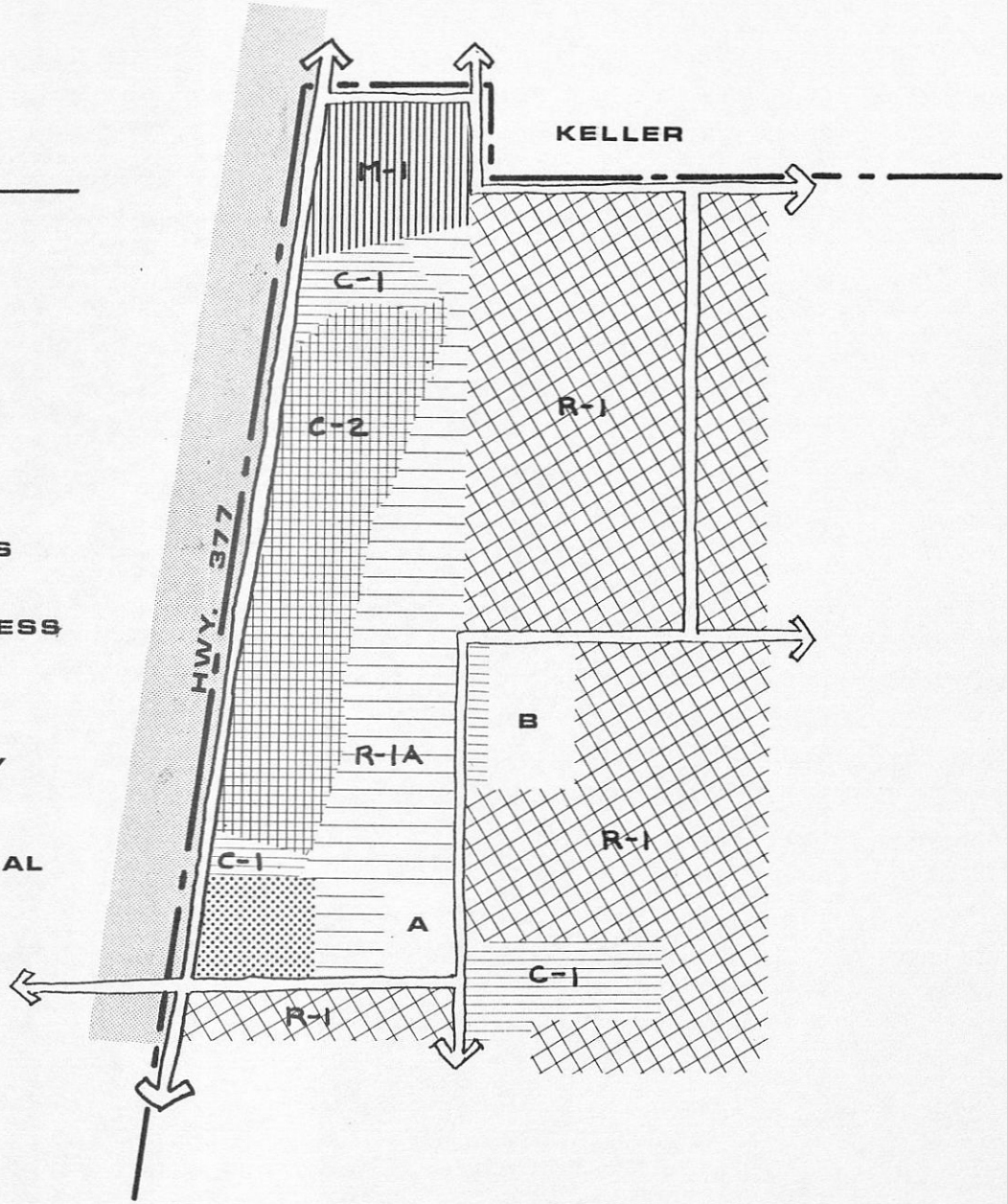
Upon entering the site, there are two major parking areas, adjacent to the existing structure. Parking to the west of the building services the porte cochere as a one-way system with a dropoff and 60° parking on the loop.

South of the building is a double loaded 90° parking area. At this time, there is only one outlet. Therefore, future plans should include another outlet to Prewitt Road. Pedestrian circulation from the parkway areas is provided in the form of concrete walks. These walks for the most part are accented with plantings.

Adjacent to the creek is a small meandering pathway that has been created by children exploring the creek bottoms.

KEY

- CITY LIMITS
- HARVEST BAPTIST
- A CITY HALL
- B SCHOOL
- C-1 LOCAL BUSINESS
- C-2 GENERAL BUSINESS
- R-1 SINGLE FAMILY
- R-1A SINGLE FAMILY ATTACHED
- M-1 LIGHT INDUSTRIAL
- UNINCORPORATED

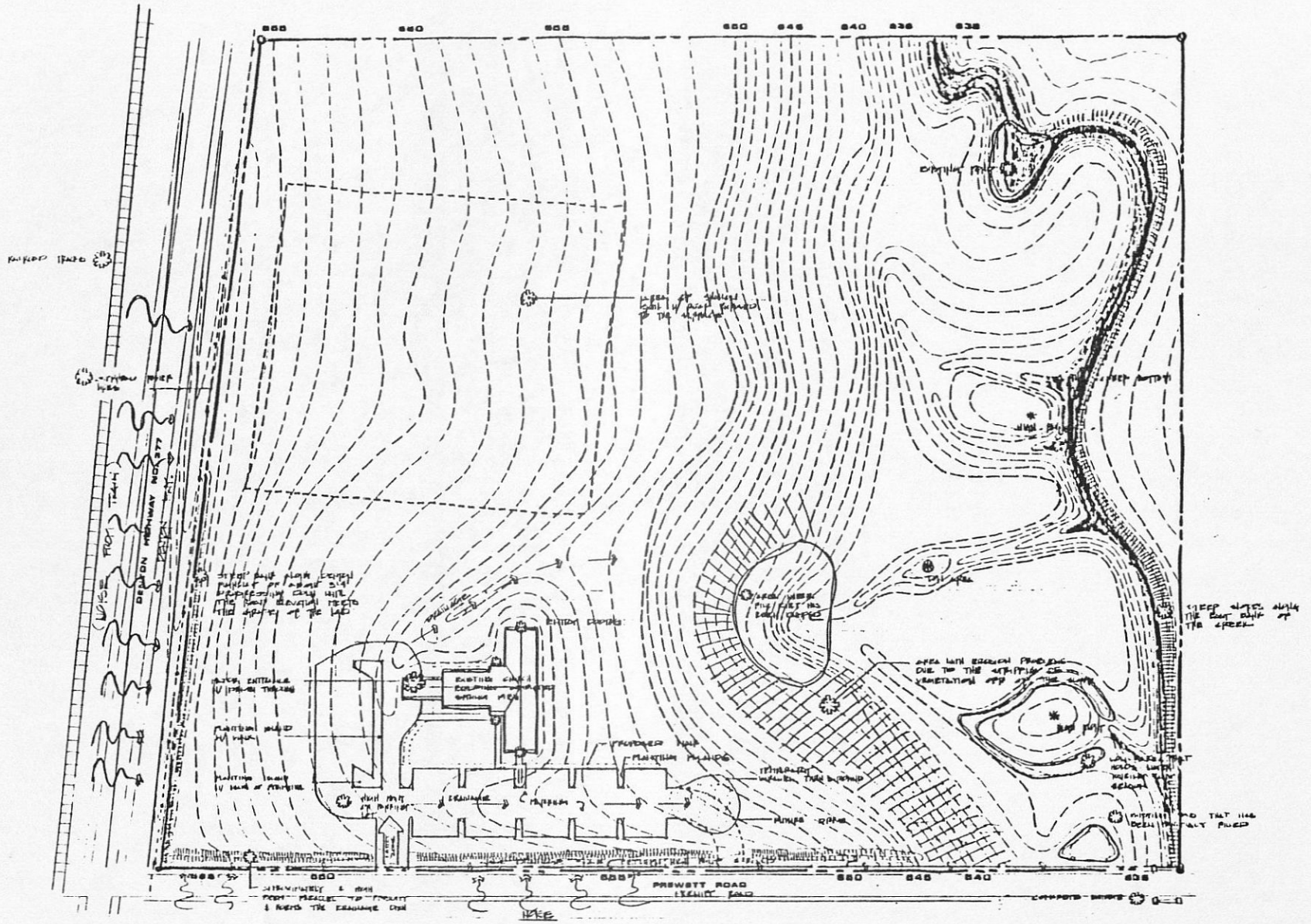


ZONING

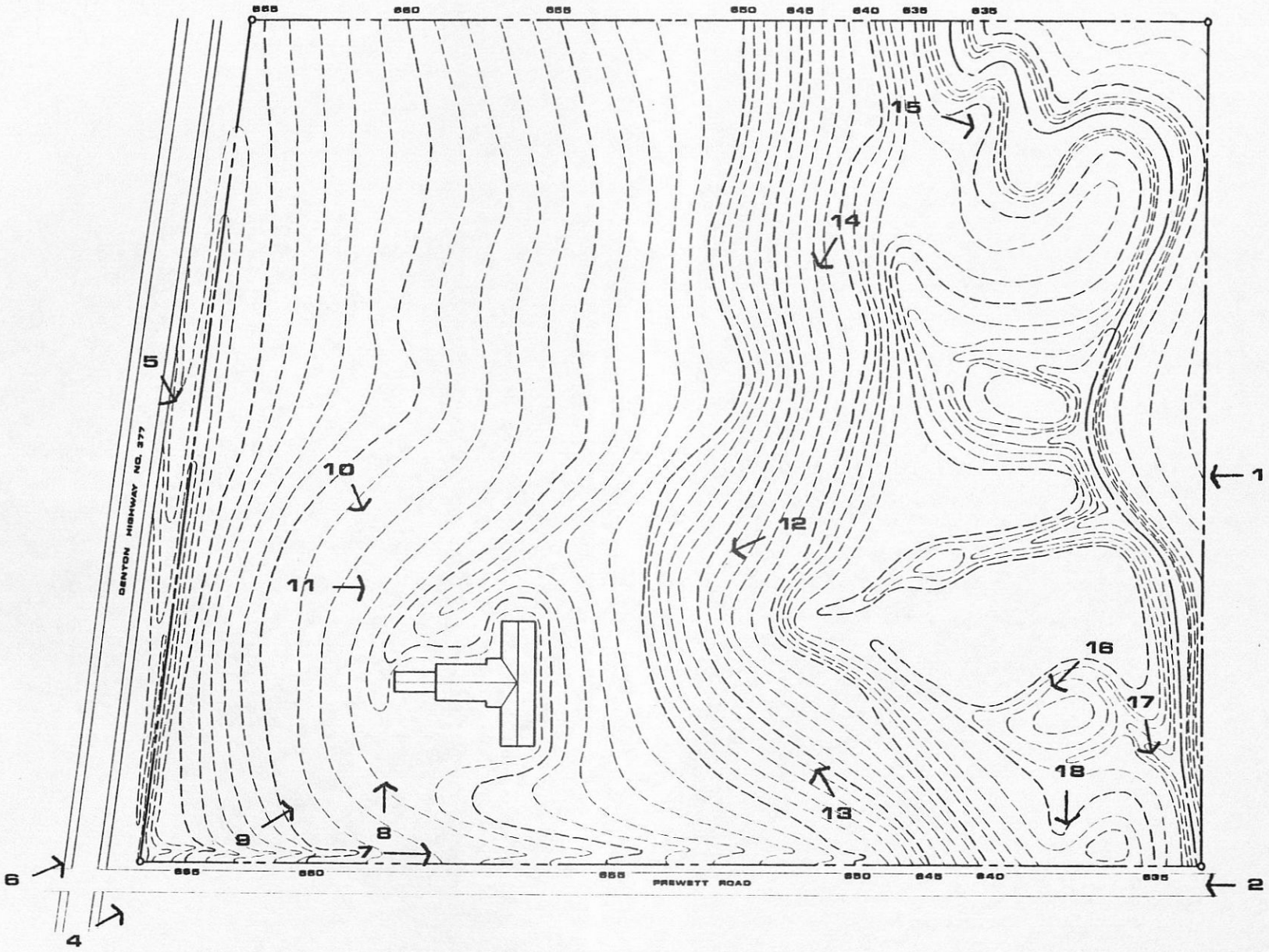
EXISTING SITE CONDITIONS

Analysis of the existing physical conditions represents documentation of the major physical and environmental characterics of the site which may have an impact upon development efforts. Such issues to be considered are views, spacial character, sounds and smells, existing structures and major land features.

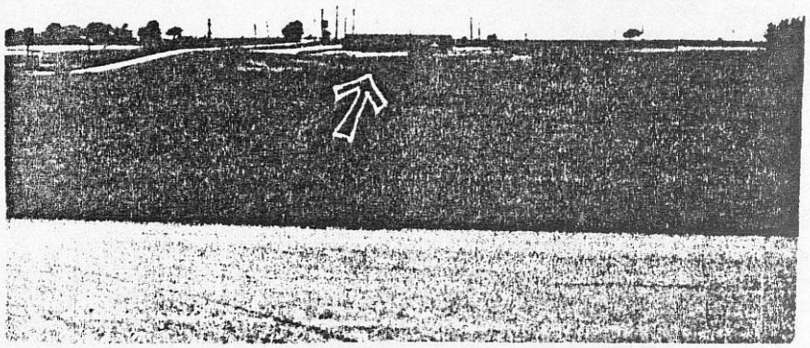
Another step in analyzing the site conditions is to identify some of the more important views into and from the site. The views diagram designates the location of the views analyzed.



EXISTING CONDITIONS



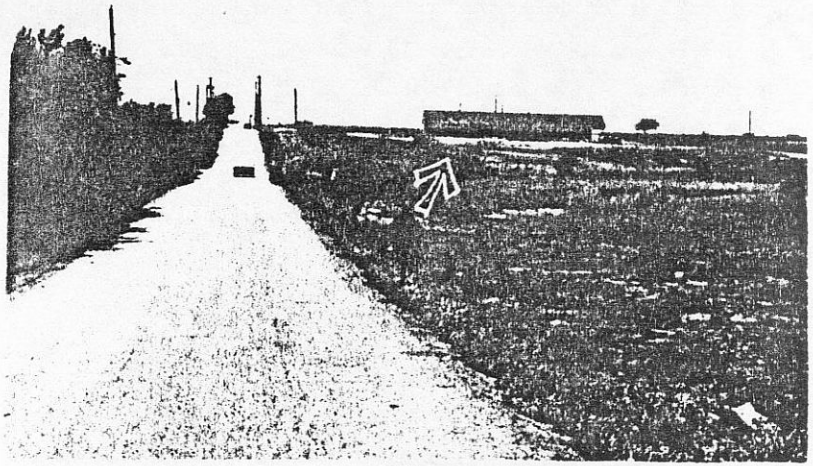
VISUAL ANALYSIS



1

Photograph #1:

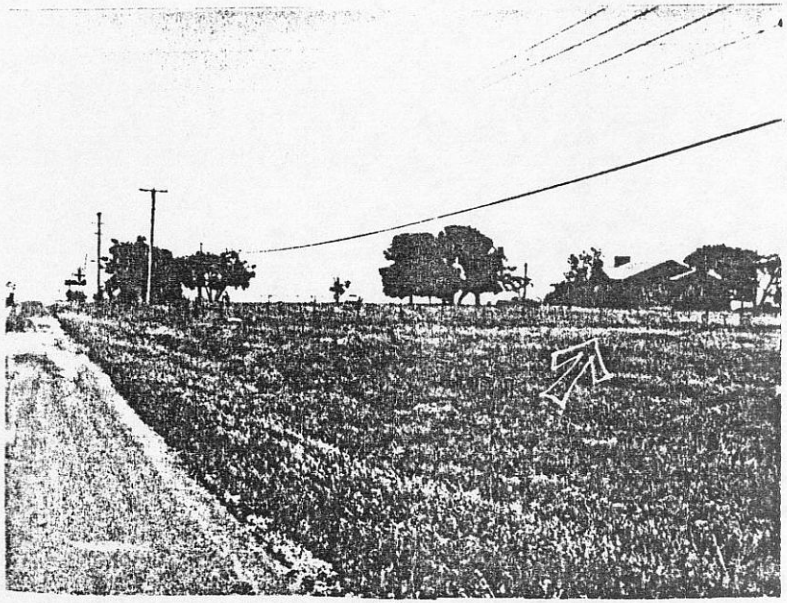
View of the site from the corner of Whitley Road and Kory Lynn Prine, looking west. This view may be blocked after development of the land to the east of the site.



2

Photograph #2:

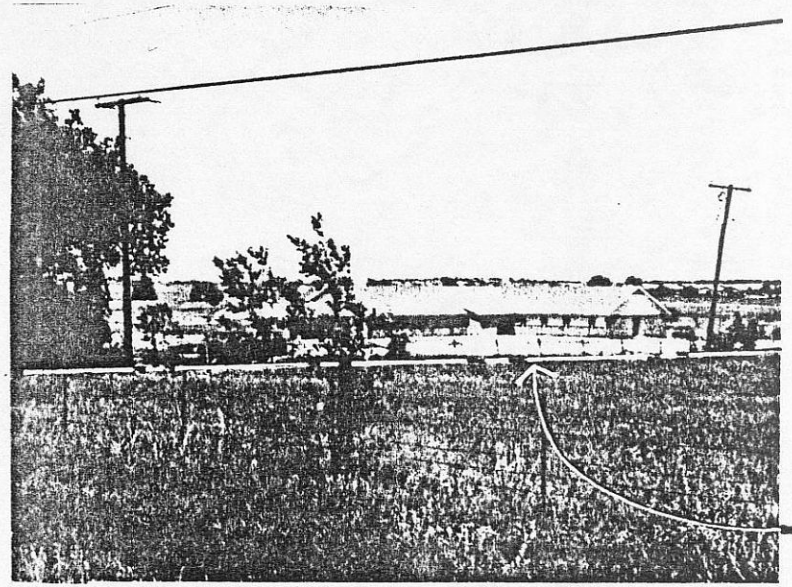
View of the site traveling west on Prewitt Road after passing the City Hall.



3

Photograph #3:

Traveling north on Highway 377, a small house block the view of the church, as well as the topography.

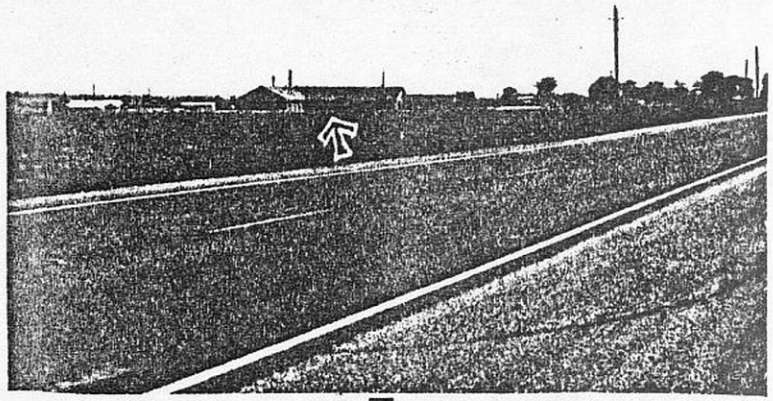


4

Photograph #4:

This is the first glimpse of the church, traveling north on Highway 377, looking across the residential property of the home in the previous photo.

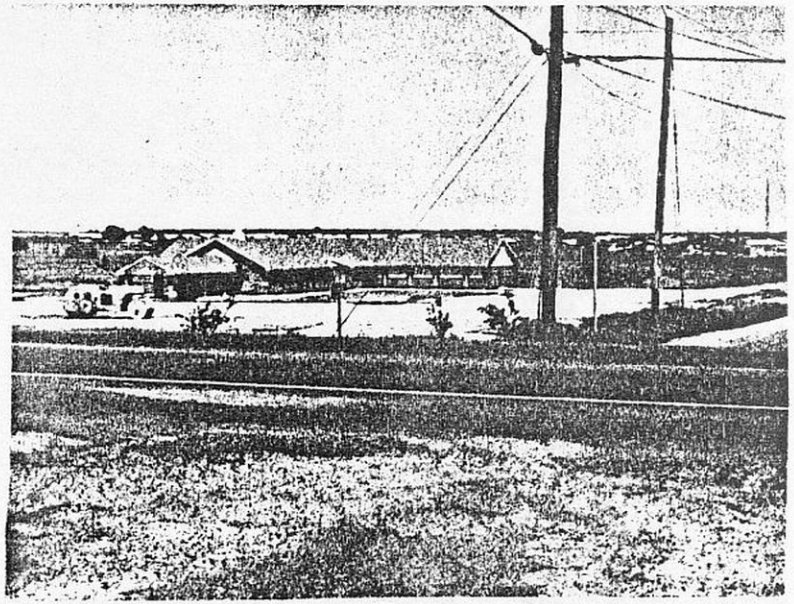
Prewitt Road



5

Photograph #5:

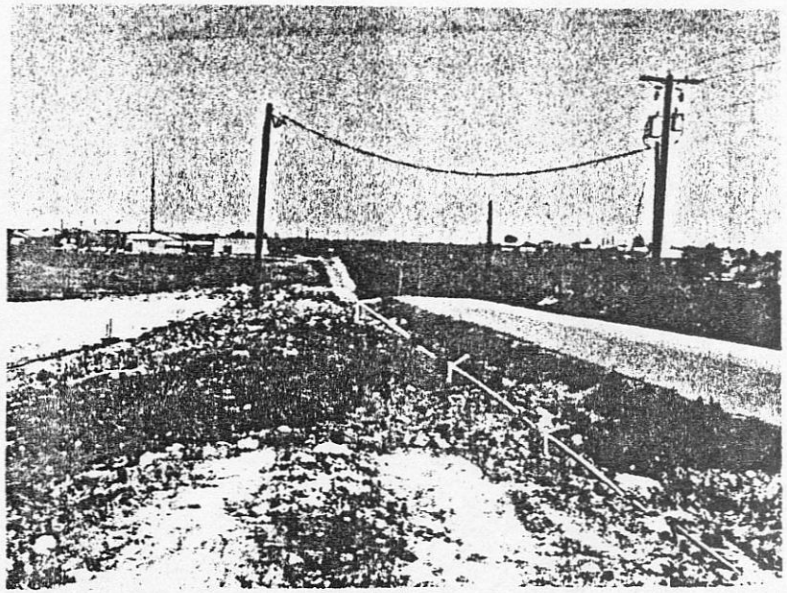
View from an auto traveling south on Highway 377.



6

Photograph #6:

View from the intersection of Prewitt Road and Highway 377, looking east.

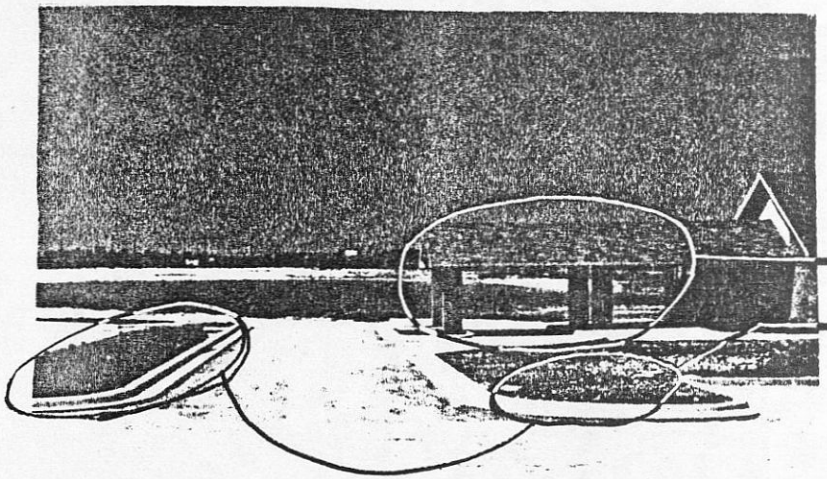


7

Photograph #7:

Drainage swale parallel to Prewitt Road.

This is the area where the road will be widened.



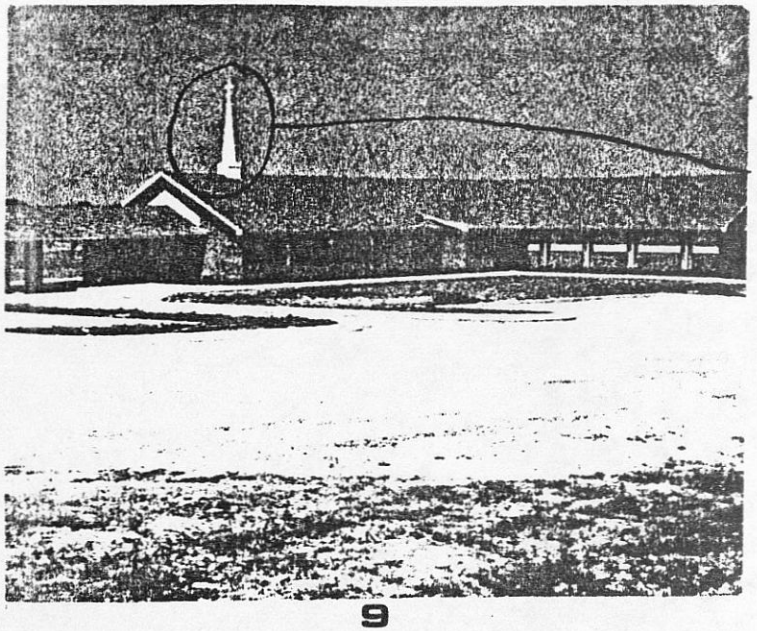
8

Photograph #8:

Entry onto the property.

Porte cochere.

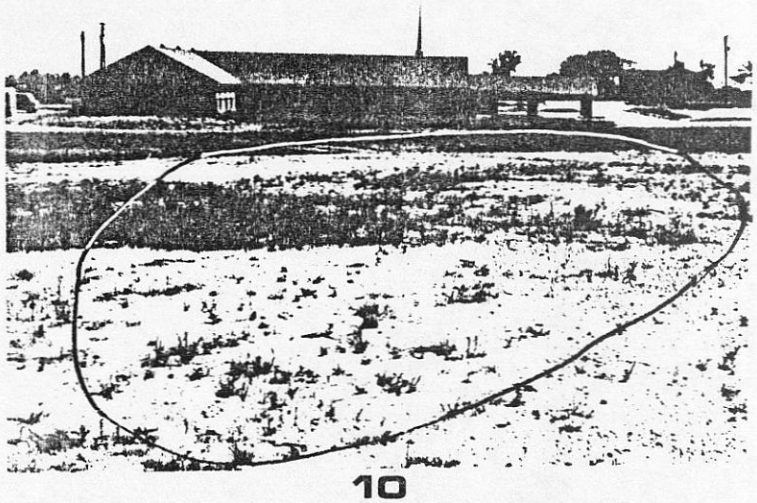
Planting islands.



9

Photograph #9:

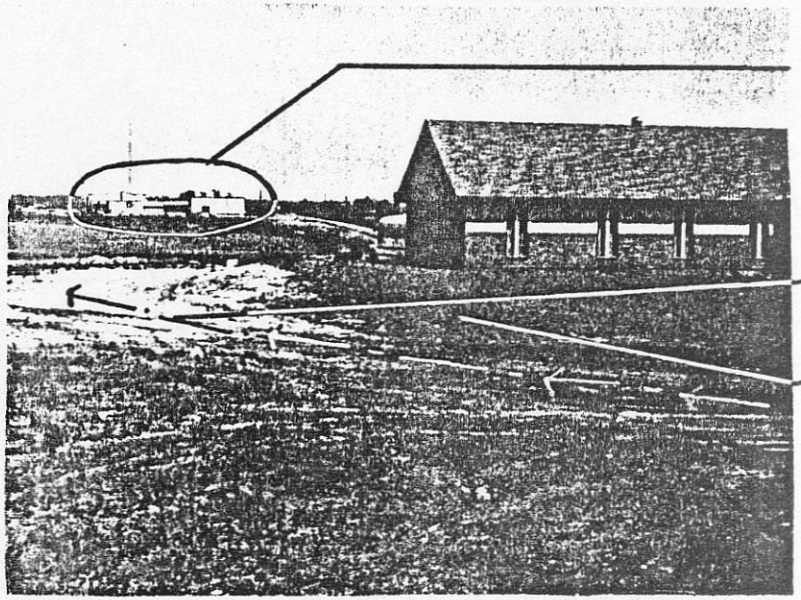
Existing symbolism.



10

Photograph #10:

An area of the property where the rock is exposed to the surface and the vegetation is sparse.



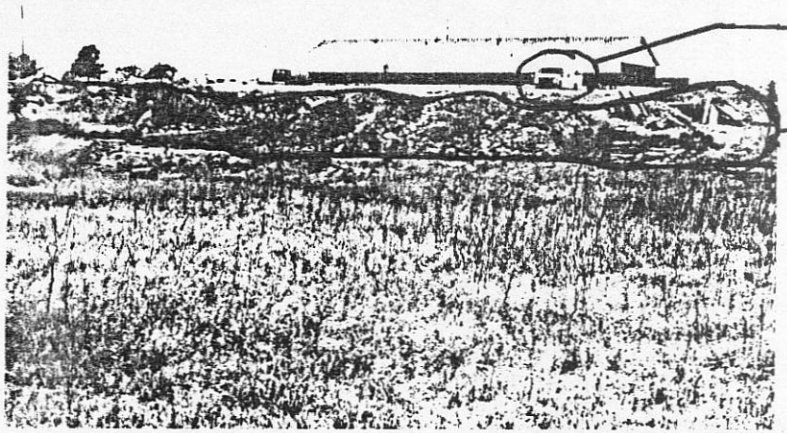
11

Photograph #11:

Visual awareness of City Hall.

Drainage swale, north of the building, from the parking lot in front.

The building is raised 3-4 feet above the surrounding contours and creates a steep slope.

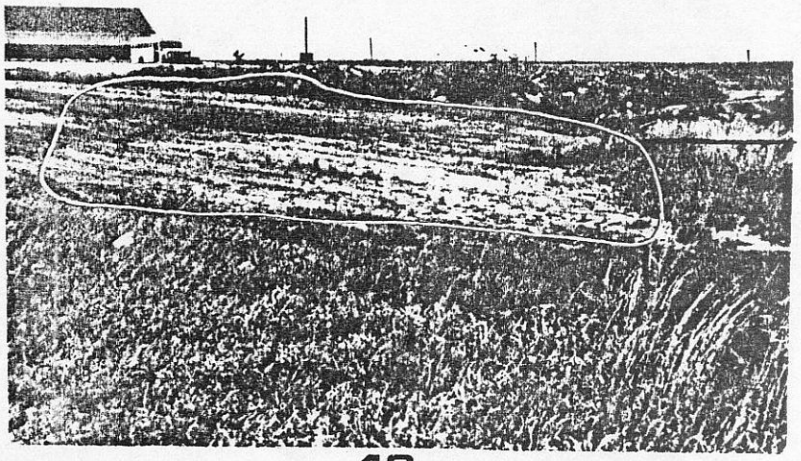


12

Photograph #12:

Bus parking area needs to be screened from view.

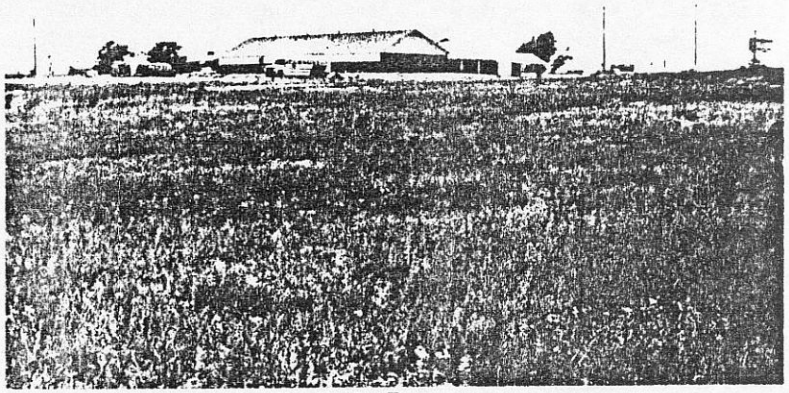
Trash, dirt and rubble have been dumped on the site for future fill. Will need to be regraded and cleaned up.



13

Photograph #13:

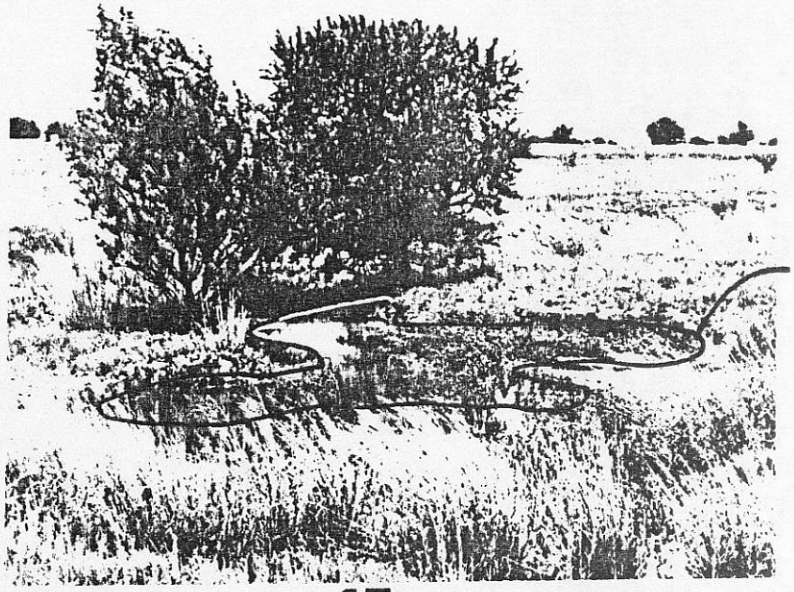
Erosion problem due to regrading without revegetation.



14

Photograph #14:

View from the northeast section of the site. The building visually diminishes as you approach the creek.

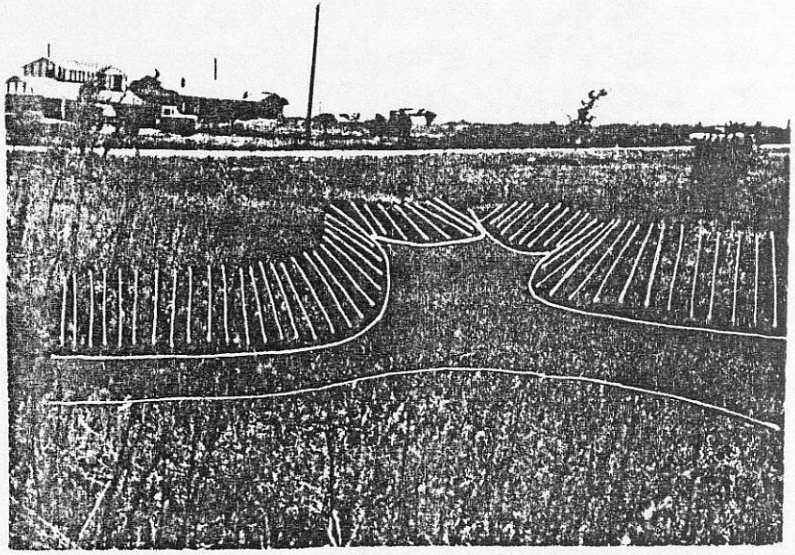


15

Photograph #15:

Small pond located on the northeast section of the property.

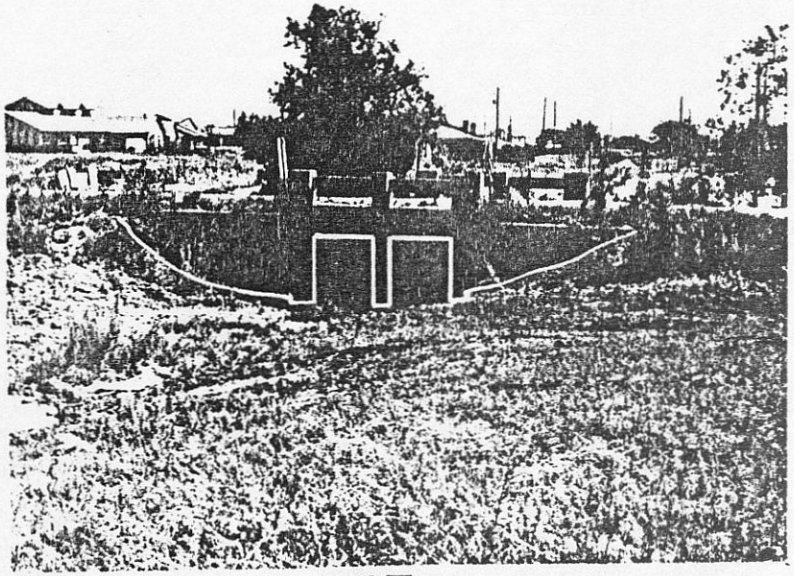
Black Willow and Prickly Ash are the trees.



16

Photograph #16:

Drainage patterns cut into the floodplain.



17

Photograph #17:

Drainage culvert under Prewitt Road which is critical for flood control on the property. This is the point to which several hundred acres drain.

18

Photograph #18:

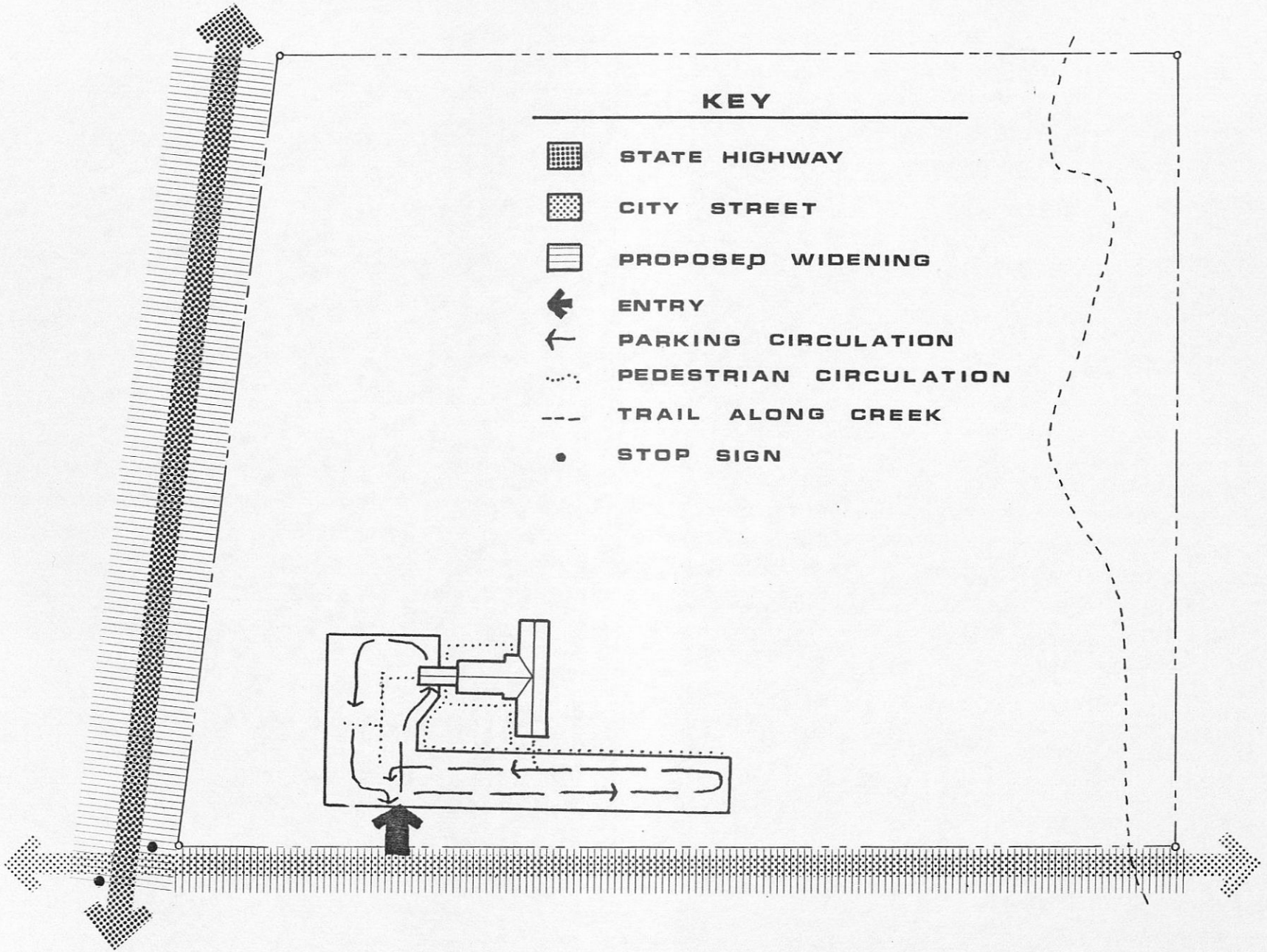
View of the housing development along Prewitt Road to the south. This may require screening.

EXISTING CIRCULATION

One of the major influences on development of the site are the roads that form the west and south borders of the property. Prewitt Road to the south is under the jurisdiction of the City of Watauga. At the present, the road is approximately 22 feet wide, has very little shoulder, and there is a drainage swale parallel to the road on each side. The future width of the road will be expanded to 30 feet. After expansion, the roadway will have a $.02 per foot right-of-way.

The recommended speed on Prewitt Road is 30 m.p.h. At present, the intersection of Prewitt and State Highway 377 is controlled by a stop sign. With the increased growth of the community, this intersection will become more dangerous and will require a more substantial control system.

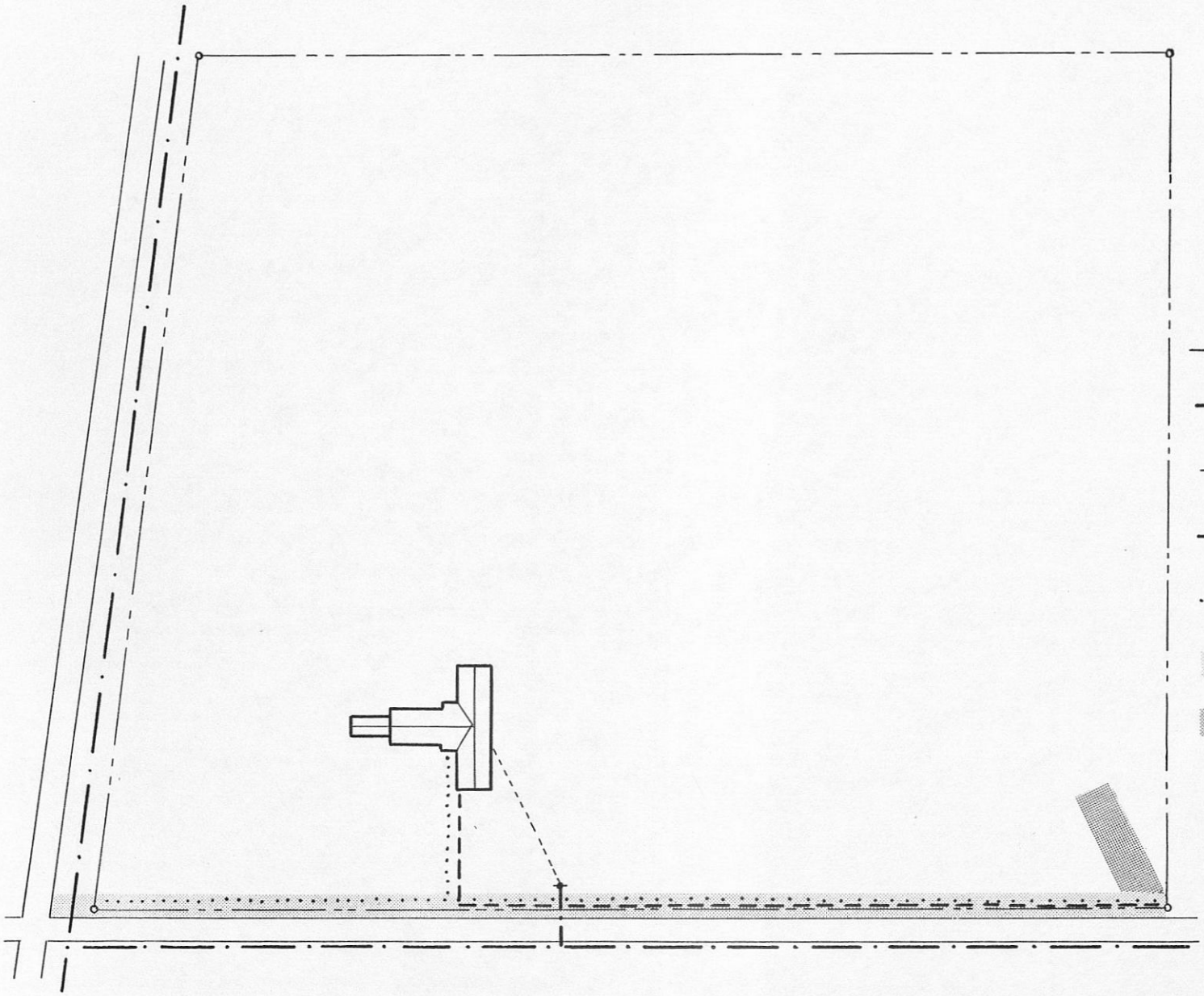
State Highway 377 is scheduled to be widened under the five-seven year plan of the State. At this time, there are no specific plans that designate the new layout, but highway officials indicate that there would likely be five 12-foot lanes of traffic with a ten-foot shoulder. The fifth lane would be a turn lane.[8] The elevation of the road is three to four feet above the adjacent property. The possibility exists for the highway to be lowered but the probability is low since the City would have to pay for the installation of curbs and gutters.



EXISTING CIRCULATION

UTILITIES

The major utilities servicing the building (water, sewer and electricity) are located along an easement 20 feet from the property line, on the southern border of the property. The power line crosses above Prewitt Road to a single post and then travels underground to the building. At the southeast corner, along the creek, there is a 40-foot wide drainage easement which extends approximately 200 feet into the property from the road. There are major and minor overhead power lines along Highway 377 and Prewitt Road which, due to the open visual character of the area, will require design consideration.


KEY
OVERHEAD POWER
UNDERGROUND POWER
SEWER
WATER
20' UTILITY EASEMENT
DRAINAGE EASEMENT
N

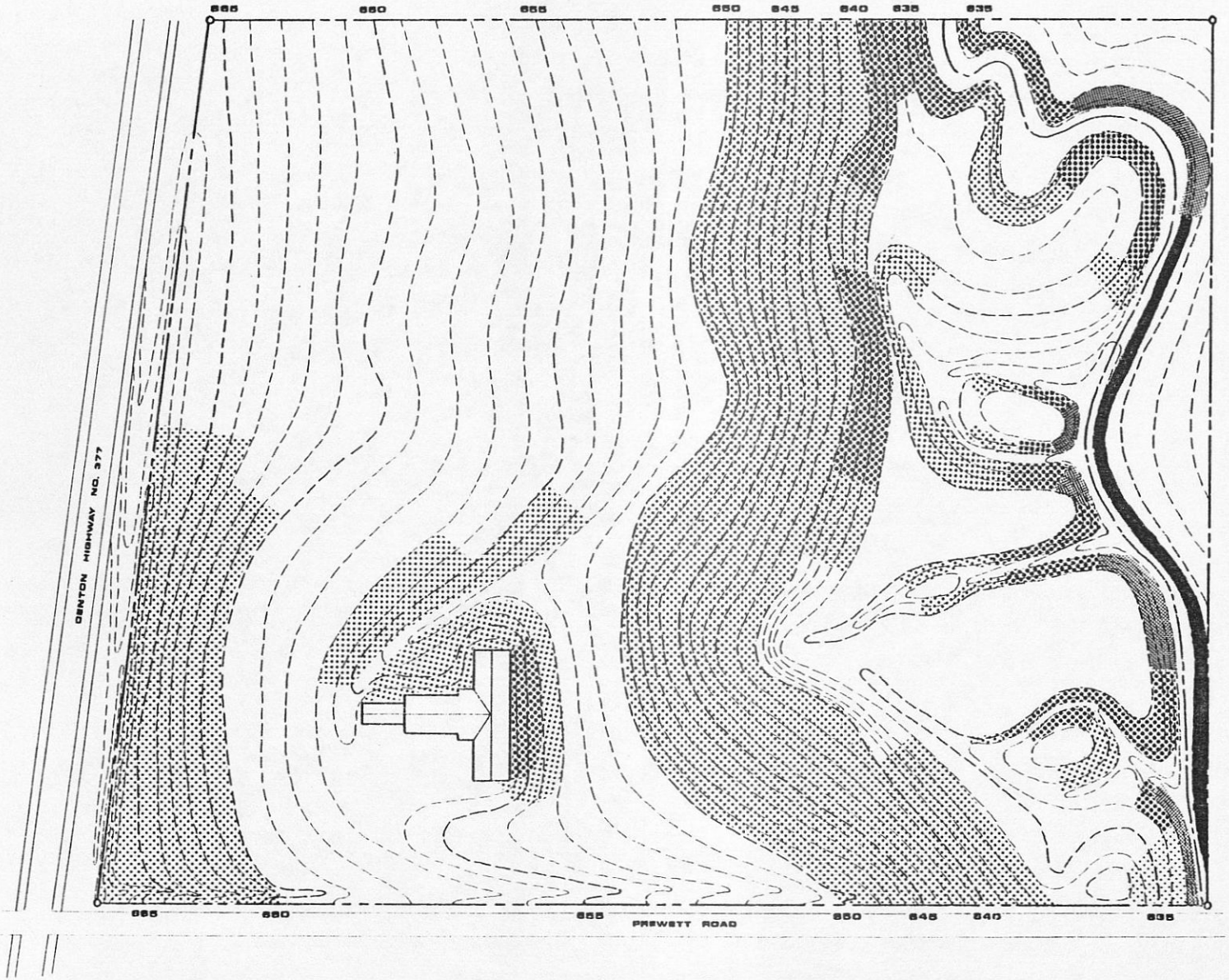
UTILITIES

TOPOGRAPHY

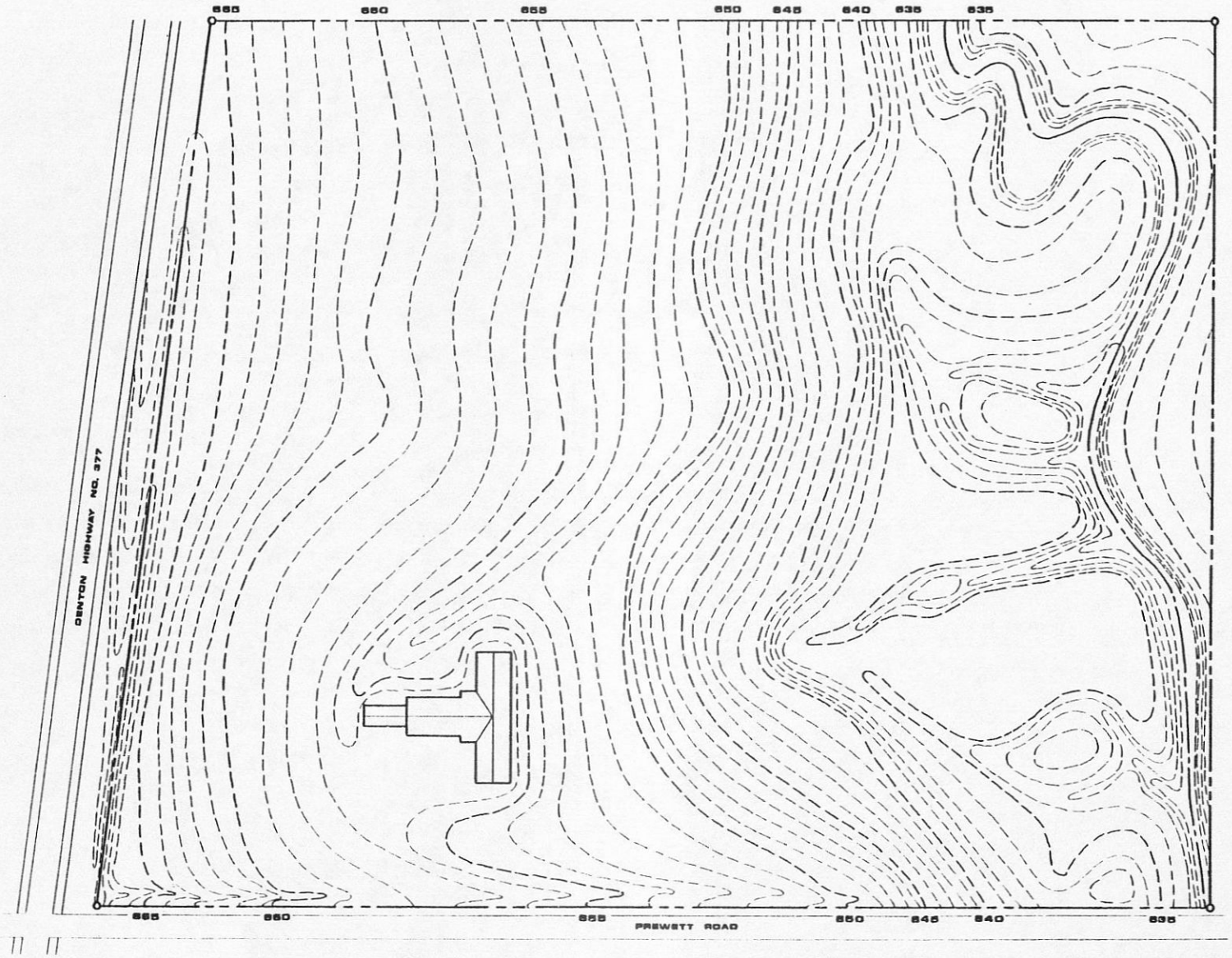
The topography of the property is a very important aspect of the site and has a significant impact upon development. With the absence of any major vegetation, the change in relief provides an undulating character to an otherwise open site. The total change in elevation from the lowest point to the highest on the site is approximately forty feet. The majority of the site has a slope of five percent or less. (See Page 64). Slopes above five percent have the potential of developing an erosion problem if the area is not properly maintained with vegetation or some method of soil stabilization. There are several areas that exist on the site where the vegetation has been stripped away, permitting erosion to occur. Along the creek bed and within the floodplain, the drainage patterns have created some interesting forms.

Suitable topography for building sites is within the zero to five percent range. Steeper slopes require extensive regrading. There are some topographic features on the site that must be given special consideration for development to occur efficiently. Most important is the existing grade of Highway 377 at the southwest corner of the property. The grade there is approximately three to four feet higher than the site, and tapers down to match the grade of the site at the northwest corner. This could pose an awkward situation for the entry and egress onto the site.

There is a drainage swale located to the north of the building and between the major promontories of the site. This drainageway will be a consideration if a structure or activity is to occur directly adjacent to the building. East of the building is a slope that forms the edge of an area where fill dirt has been placed to provide the grade of the building. The most severe slopes and potential erosion areas are located along the east bank of the creek. Future development of the property to the north will result in an increase of runoff, therefore some method of soil retention will have to be applied to control further erosion.


665
660
655
650
645
640
635
635
DENTON HIGHWAY NO. 377
665
660
655
PREWETT ROAD
650
645
640
635
KEY
0-5%
6-8%
9-12%
13-15%
15% +
0
25
50
100
200
N

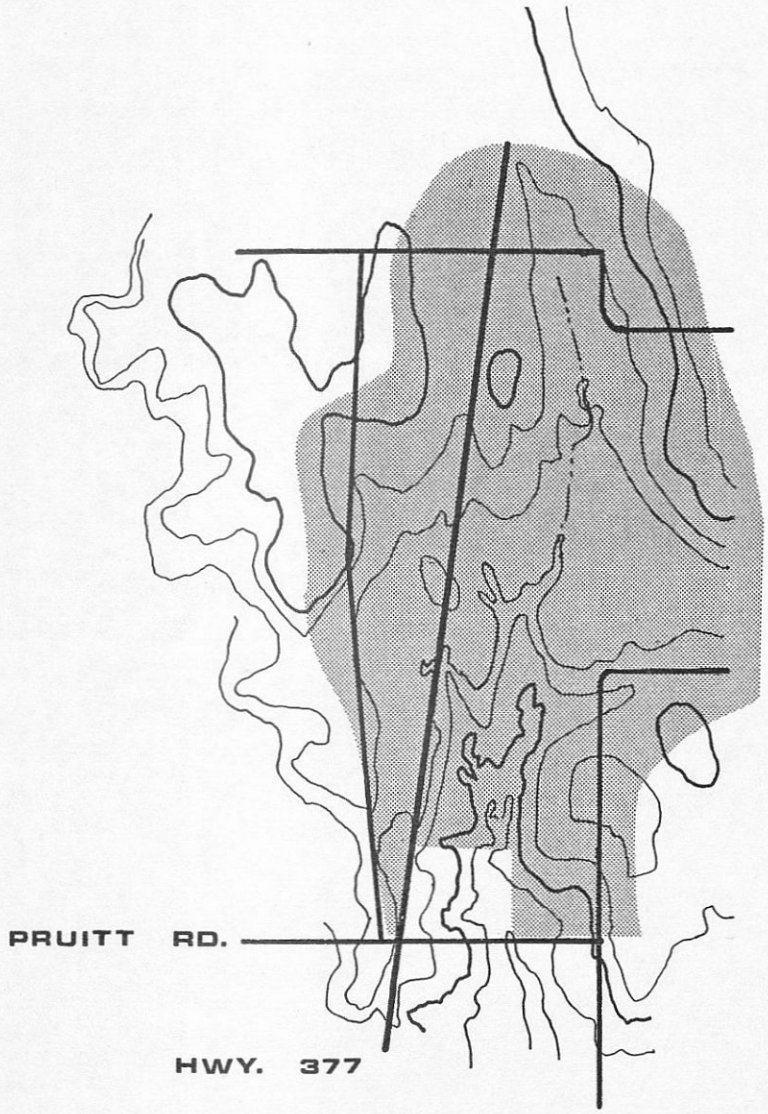
SLOPES


665
660
655
650
645
640
635
DENTON HIGHWAY NO. 377
PRESCOTT ROAD
0
25
50
100
200
N

TOPOGRAPHY

AREA WATERSHED ANALYSIS

The site receives runoff from approximately 450-500 acres of undeveloped land to the north, northeast and northwest. Presently, only a portion of the eastern side of the watershed is developed. The small culvert at the southeast portion of the site under Prewitt Road will not be able to handle the increased runoff when the land in the watershed has been developed. The creek development will be an important part of the Master Plan. Hopefully, it will initiate a more aesthetic treatment of the creek system that could be adopted for the remaining portions of the creek within Watauga.



WATERSHED AREA

N

SOILS

The soil will be analyzed in terms of its potential for development, as well as for supporting vegetation. Aledo Gravely clay loam and Sanger clay are the two major soil types found within the property limits.

Aledo Gravely Clay - Very shallow loamy soil, with the surface layer moderately alkaline to a depth of about seven inches. There are some large areas where the limestone rock has been exposed.

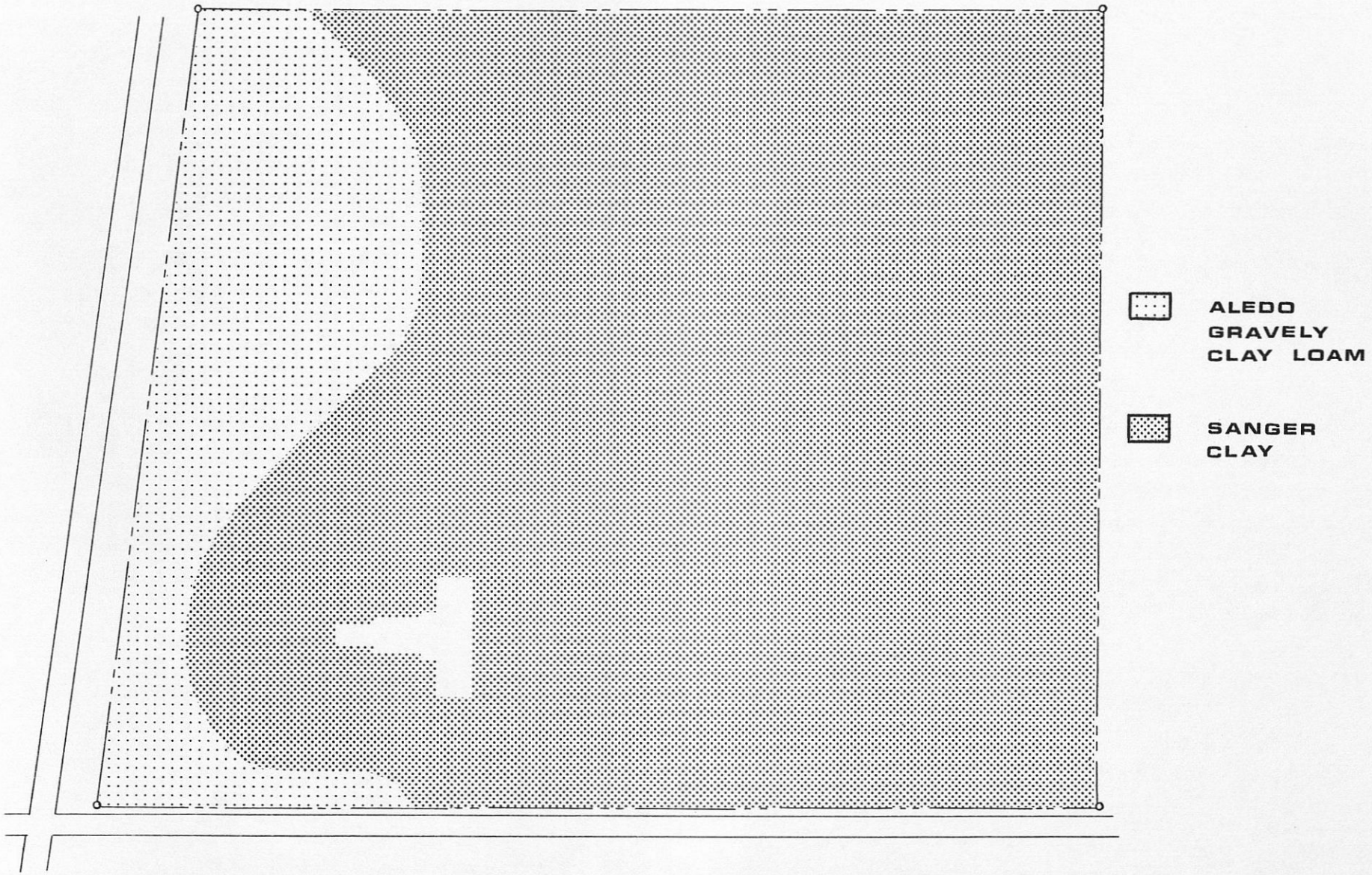
Drainage - sloped to drain
Permeability - moderate
Available water capacity - low
Runoff - medium
Erosion - moderate
Root zone - restricted
Recreation - slight depth to rocks and small stones
Suitable plants - Arizona Cypress, Cedar Elm, Chinese Tallow, Deodar Cedar, Junipers, Live Oak, Mexican Plum, Redbud, Red Cedar, Texas Oak, Texas Persimmon
Construction potential - severe due to depth to rock, low to moderate shrink-swell
pH - 7.9 to 8.4

Summary: Building structures on this soil will be difficult. Planting will require special considerations to prepare a suitable planting medium.

Sanger Clay - Deep, gently sloping clayey soil in valley-filled areas. The soil is moderately alkaline to a depth of 46 inches.

Drainage - sloped to drain
Permeability - very slow
Available water capacity -
Runoff - medium
Erosion - moderate
Root zone - deep, but roots penetrate the clayey soil slowly
Recreation - moderate due to slow percolation and clayey soil
Suitable plants - American Elm, Chinese Pistachio, Crabapple, Ginkgo, Hackberry, Japanese Black Pine, Oaks, Peach, Pecan, Plum, Redbud, Sweetgum
Construction potential - severe due to shrink-swell and low strength, poor for embankments, levees and dikes
pH - 7.4 to 8.4

Summary: When this soil becomes wet, water enters the soil very slowly. Thre is a high content of calcium carbohate which will cause chlorosis in some plants. If levees or terraces were built, new soil would have to be brought in and mixed with the existing. The tight soil will increase the amount of runoff. Recreational uses may be accommodated if additional soil is brought in.

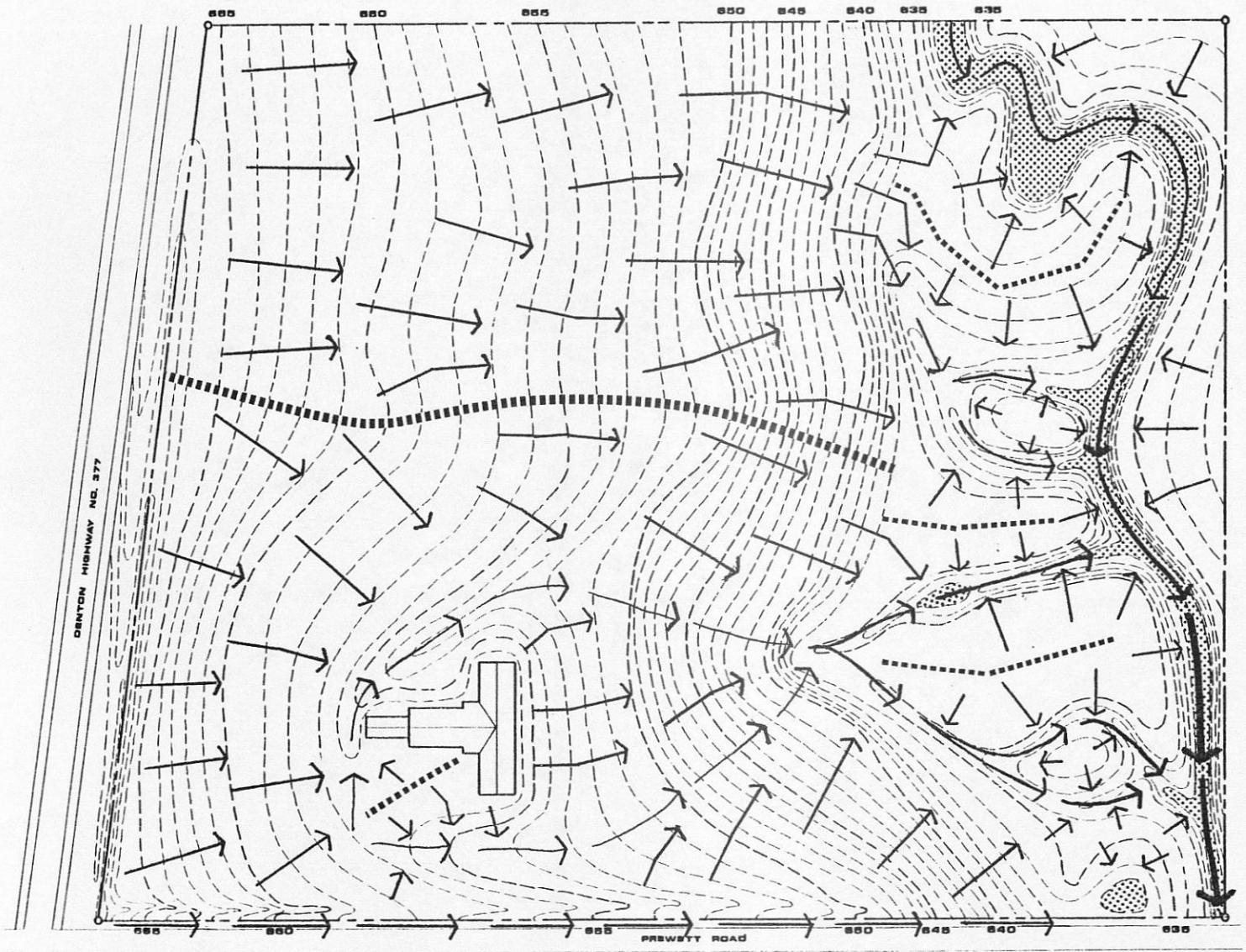


SOILS

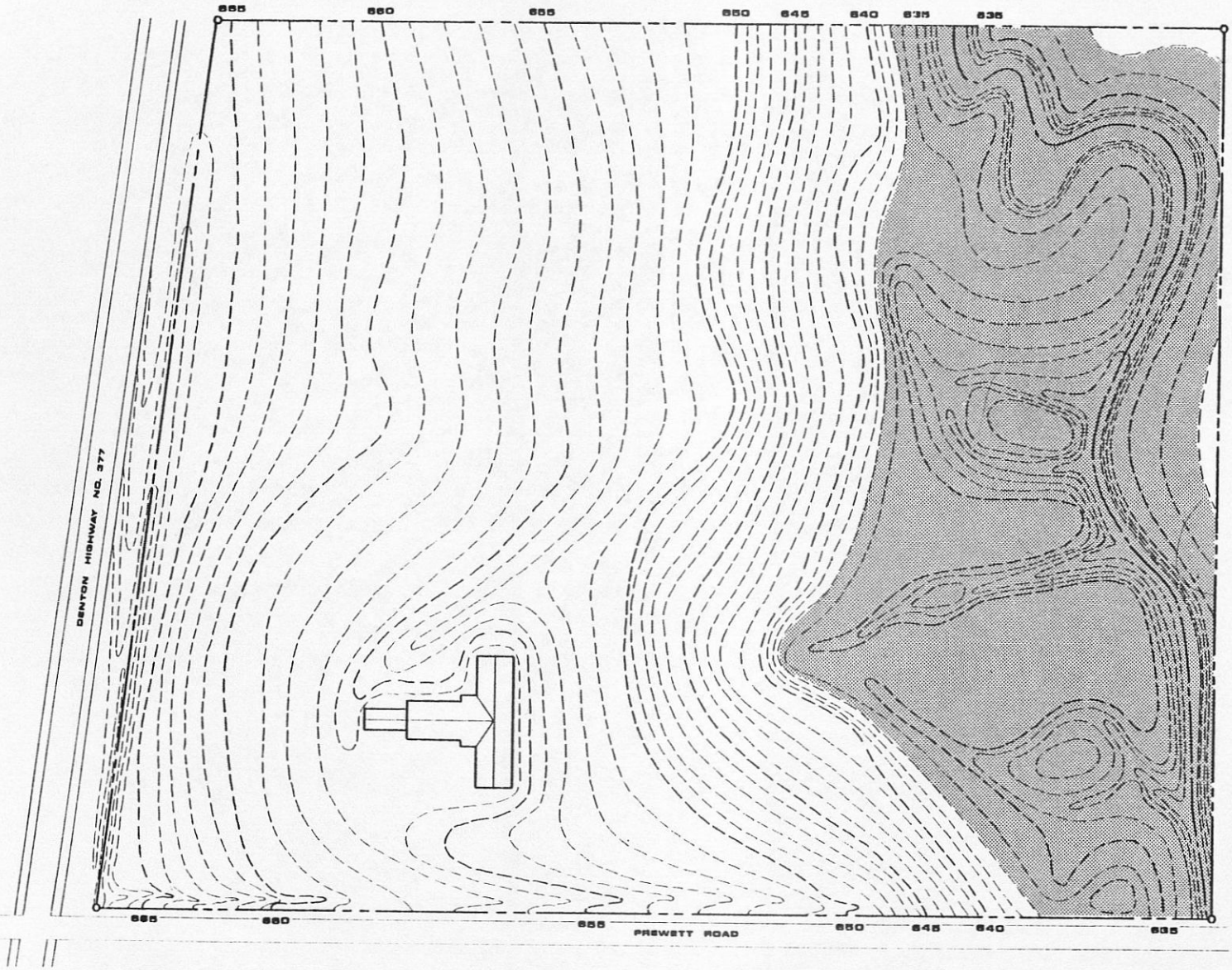
DRAINAGE

The major drainageway on the site is Bunker Hill Creek. There is a primary ridge, running from east to west, which is located north of the building. The ridge is subtle, due to the gentle slope of the land. The major drainage swale on the site begins to the west of the building and continues north of the building toward the creek. There is an existing drainage ditch which runs parallel to Prewitt Road.

Within the floodplain, the creek system has carved several interesting patterns on the land. In the northeast corner, there is an area that holds water, lending itself to the development of a pond. In several areas, the surface drainage is causing erosion, as indicated on the site analysis sheet.


665
660
655
650
645
640
635
DENTON HIGHWAY NO. 377
PRESWITT ROAD
KEY
WATER FLOW
BODY OF WATER
MAJOR RIDGE
MINOR RIDGE
N

DRAINAGE



100 YEAR FLOODPLAIN [9]

FLOODPLAIN

N

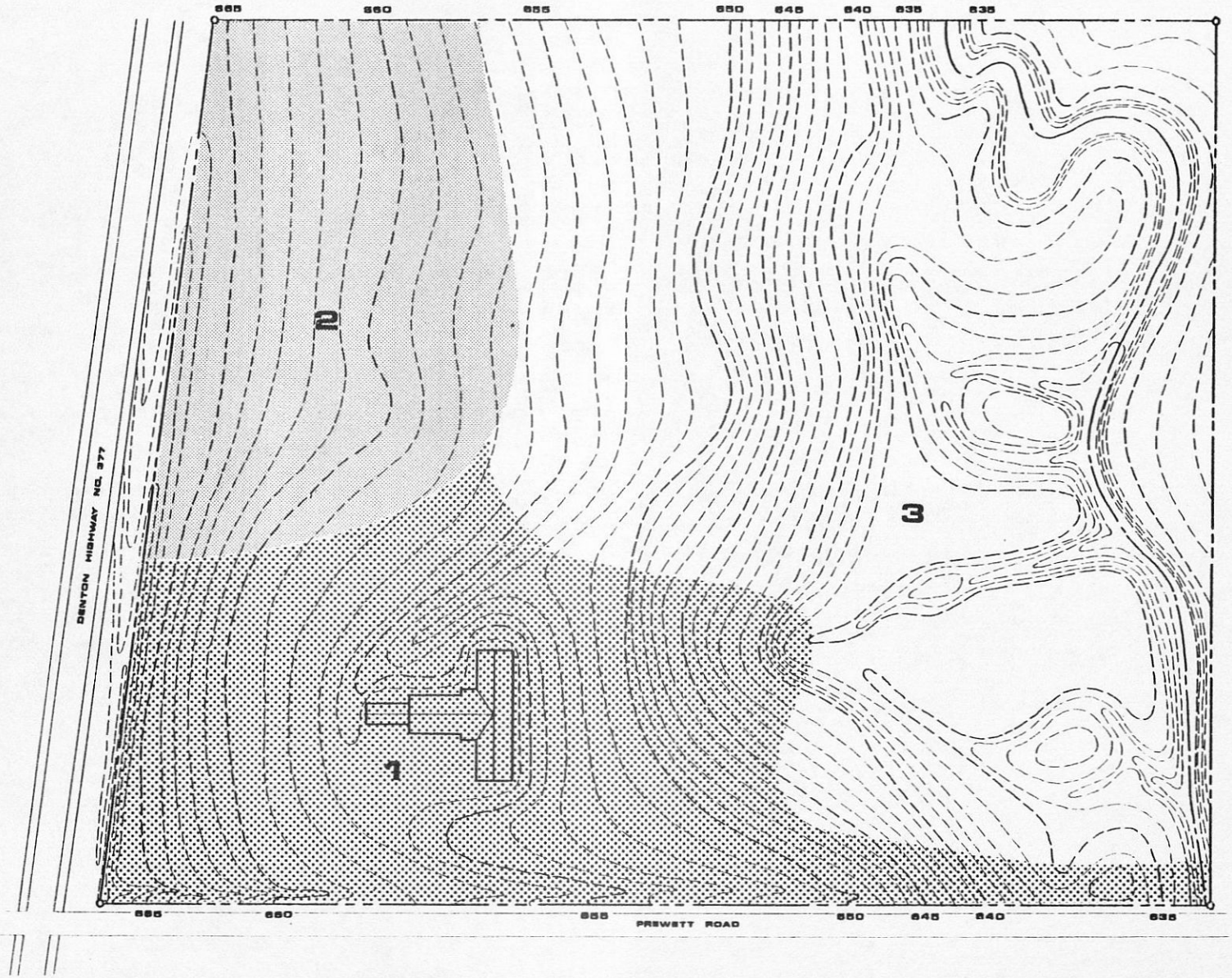
VEGETATION

The site has a limited amount and variety of plants. Native grasses cover about three-fourths of the site, therefore I have categorized the vegetation based on the density of the grasses. There are three zones, characterized as 1) areas that have been disturbed by man; 2) areas where vegetation has a difficult time of growing due to shallow soil structure; and 3) areas that have a healthy grass cover.

Category #1 - Most of the area around the building, for construction purposes, has been stripped of all vegetation. At this time, there have been no revegetation attempts.

Category #2 - This area is where the native limestone is exposed to the surface, making it difficult for plants to survive. There are some scattered grasses and wildflowers in the area. Introduction of plants will be difficult since the area is located on the broad flat promontory and has been subject to wind erosion of the topsoil.

Category #3 - These areas occur where the topography slopes sharply toward the creek. The most dense area of grass is along the west side of the creek and generally toward the northeastern part of the property. Along the creek, there are a few scattered Black Willows, while on the steeper slopes of the zone, there are some small trees, Southern Prickly Ash (Zanthoxylum clava - Hercules) and Mesquite (Prosopis glandulosa). The increase in vegetation corresponds very closely with the soil that has been deposited along the floodplain.



VEGETATION

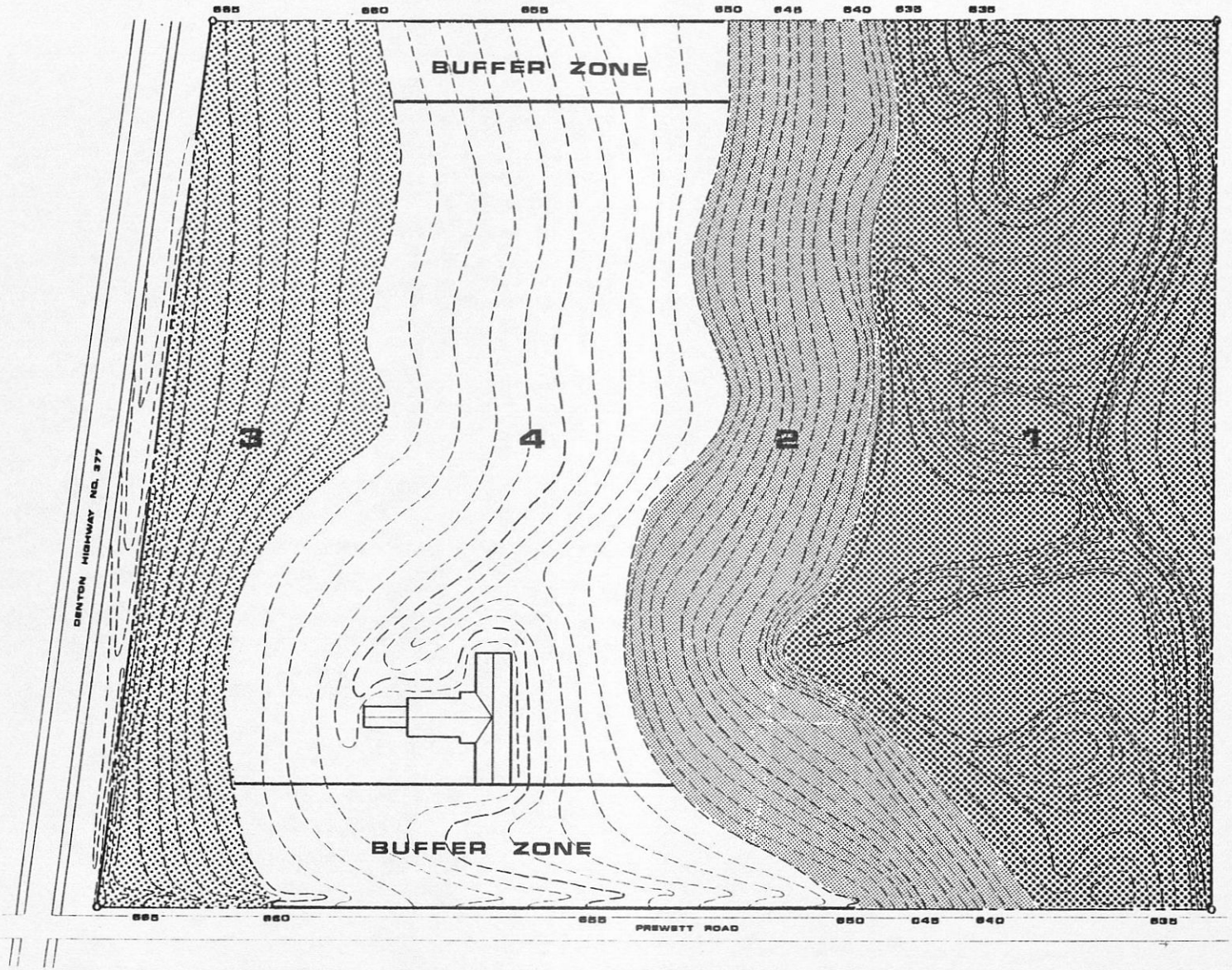
N

CLIMATE

The climate conditions that apply to this region will apply to the site as well. The prevailing winds during the summer are from the south-southeast. In winter, they prevail from the north-northwest. The average yearly rainfall is approximately 32 inches, with April and May being the months with the heaviest rainfall, averaging 4.27 inches. January and December are the lightest with 1.87 inches. The average yearly temperature is 65.7 degrees, with an average of the highs and lows. The wind is a dominant element on the site due to the high elevation in relation to the adjacent land. The majority of outdoor activity will take place in the Spring or Fall, due to the hot temperatures in the Summer and cold temperatures in the Winter. The sun is very intense on clear days, affecting the plant selections.

LAND USE

The synthesis of the site analysis identified four major areas of the site based on their suitability as buildable land. Area #1 is a non-buildable area because it represents the floodplain. However, it is a good area for recreational activities. Area #2 is out of the floodplain but the slopes are the most severe; therefore, the siting of buildings would require major regrading. Area #3 is buildable from the standpoint of the physical elements; however, it is so close to the road that the noise would be undesirable. Area #4 represents the most desirable buildable land excluding the buffer zones which are needed provide a buffer between the adjacent land uses.


BUFFER ZONE
3
4
2
1
BUFFER ZONE
DENTON HIGHWAY NO. 377
PREWETT ROAD
N

LAND USE

GROWTH PROJECTIONS

GROWTH PROJECTIONS

For a church to continue to grow, they must be located within a growing community. Watauga, along with the surrounding communities, meets this requirement for Harvest. Watauga has the fourth largest compounded annual growth rate of thirty-one communities in Tarrant County.[10] The pastor has designated the area he foresses we can expect to attract the majority of our membership. (See Figure 2). Within this area, there are the following communities or portions of them: North Richland Hills, Richland Hills, Keller, Haltom City, and some unincorporated areas of Fort Worth. There is a projected population increase of approximately 43% by the year 2000 (see Figure 2). Twenty-six percent of the families of the church live in Watauga and the next 40% is equally distributed between Haltom City and North Richland Hills. This leaves the door open for the church to draw people from areas that they have only slightly had an impact on. On the north side of Loop 820, at the intersection of IH-35W, there is a planned development called Fossil Creek which will house approximately 13,000 people. There are other Baptist churches in the area, but the population will be large enough to support all of them. The most basic prerequisite for growth of a church is to have the physical building space to expand into. The churches in the area that will continue to grow are the ones with adequate space, along with a strong ministry. Harvest Baptist possesses both of these qualities; therefore, Harvest's growth should continue.

Northeast Tarrant County is becoming one of the wealthiest sections in the Fort Worth-Dallas area. Only one of the northeastern Tarrant counties' 11 cities has an average household income of less than $30,000 per year. (See Figure .) This reflects on Harvest in the fact that they can expect to increase their income per member.

PROJECTED POPULATION - Year 2000

	Tract	1980	2000	% Inc.
WATAUGA:	1138.02(P)	10,274	26,701	160%
	1139.00(P)	0	833	833%
	City Total	10,274	27,534	167%
RICHLAND HILLS:	1133.01	4,251	5,046	19%
	1133.02	4,190	5,032	20%
	City Total	8,441	10,078	19%
KELLER:	1138.01(P)	1,350	4,631	243%
	1139.00(P)	3,135	4,956	58%
	City Total	4,485	9,587	113.7%

	Tract	1980	2000	% Inc.
NORTH RICHLAND HILLS:	1132.03	11,196	16,693	49%
	1132.04	7,755	10,991	42%
	1132.05	6,560	7,597	16%
	1132.06	4,441	4,971	12%
	1138.01(P)	467	1,453	211%
	1138.02(P)	9	0	0%
	City Total	30,428	41,705	37%
HALTOM CITY:	1101.01	3,700	4,005	8%
	1101.02	3,859	3,704	
	1102.01	6,462	7,682	
	1102.02	3,630	3,677	1%
	1103.00	8,397	8,622	
	1138.02(P)	2,307	3,064	33%
	City Total	9,637	10,746	11.5%
	1050.04	1,161	4,864	319%

FORT WORTH:

[ ] These census tracts are not included in the population areas that Harvest will focus its ministry on.

(P) These numbers represent a portion of the population in that census tract.

FIG. 2

AVERAGE HOUSEHOLD INCOMES
IN NORTHEAST TARRANT COUNTY CITIES

City	1980	1983
Bedford	$28,712	$42,040
Colleyville	$33,581	$49,170
Euless	$23,505	$34,420
Grapevine	$22,537	$33,000
Haltom City	$18,025	$26,390
Hurst	$26,780	$39,200
Keller	$23,491	$34,390
North Richland Hills	$23,452	$34,340
Richland Hills	$22,848	$33,450
Southlake	$25,802	$37,780
Watauga	$21,591	$31,610
Arlington	$24,188	$35,400
Fort Worth	$16,242	$23,780

FIG. 3

Harvest will grow and increase their giving per capita. However, to predict more specifically how much that may be in the future, the past history of Harvest must be examined. As expressed previously, the reason Harvest moved from Haltom City is to have room to grow. When this happened, they had a split within the Church. Some people wanted to move and others did not. Harvest's past records are deceiving because they actually started over in December of 1981, with a total of 49 members. The Church has grown at a rate of over 300% in seventeen months (see Diagram 4). From here, there is a need to project the future growth of the Church so the building square footage can be built accordingly.

Because of the lack of church history, I have studied the histories of other Baptist churches in the area. From the churches' pasts, it can be determined which ones have a situation similar to Harvest. The ones which are similar will be the models used to predict what Harvest can expect in terms of growth. The following church histories were studied: First Baptist Church of Grapevine (1869-1982), Glenview Baptist Church (1963-1982), First Baptist Church of Euless 1904-1982), First Baptist Church of Keller (1882-1982) and North Richland Hills (1956-1982).

The analysis method used was a combination of the graphic and a numerical method. A five-year base was determined from the period when the church was at the same size that Harvest is today, and then studied for the next five years. The second time frame studied was the past 17 years. After examination, it was determined that North Richland Hills, Glenview and First Baptist Church of Euless were selected as models based on similarities to Harvest.

Church Membership as of August 21, 1983:

1982			
January - 53	January - 135		
February - 63	February - 161		
March - 73	March - 169		
April - 79	April - 189		
May - 87	May - 200		
June - 92	June - 219		
July - 102	July - 232		
August - 109			
September - 110			
October - 125	232	total members	
November - 127	- 183	new members since January, 1982	
December - 133	49	December, 1981 membership	
	363%	increase since December, 1981	

9.6 average new members per month
$16.94 average offering/capita for 1982 (12 months)
$19.84 average offering/capita for 1983 (7 months)
17.9% average increase/capita since December, 1981

FIG. 4

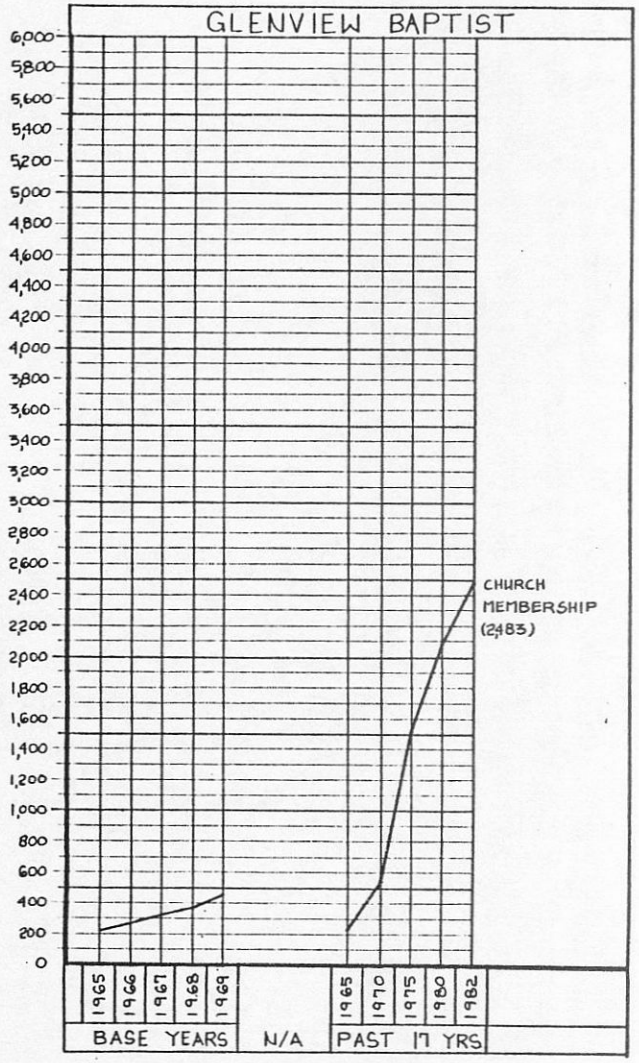
The model churches have a similar environment with respect to their location, residential ccharacter and land uses. Grapevine and Keller are both older churches and are located in a more rural setting. The models chosen are young churches that have been growing in a residential area similar to Harvest's. The strong programs at these churches in the past are also a reason they were chosen.

The graphic difference in growth between the base years and the past 17 years are dramatically different. This difference can be traced to the growth rate at the two periods of time. In the past 17 years, the area has experienced an increase in the amount of economic and population growth. To arrive at an average annual percentage rate for each church,, take the average between two years, then add the total of the percentages and find their average. (See Figure 5.) This percentage represents average yearly increases for that church over the past 17 years. These percentages then become the basis for the low, medium and high projection of total members for Harvst in the year 2000. From these numbers, the appropriate square footage can be determined.

ESTIMATED MEMBERSHIP FOR HARVEST BAPTIST CHURCH

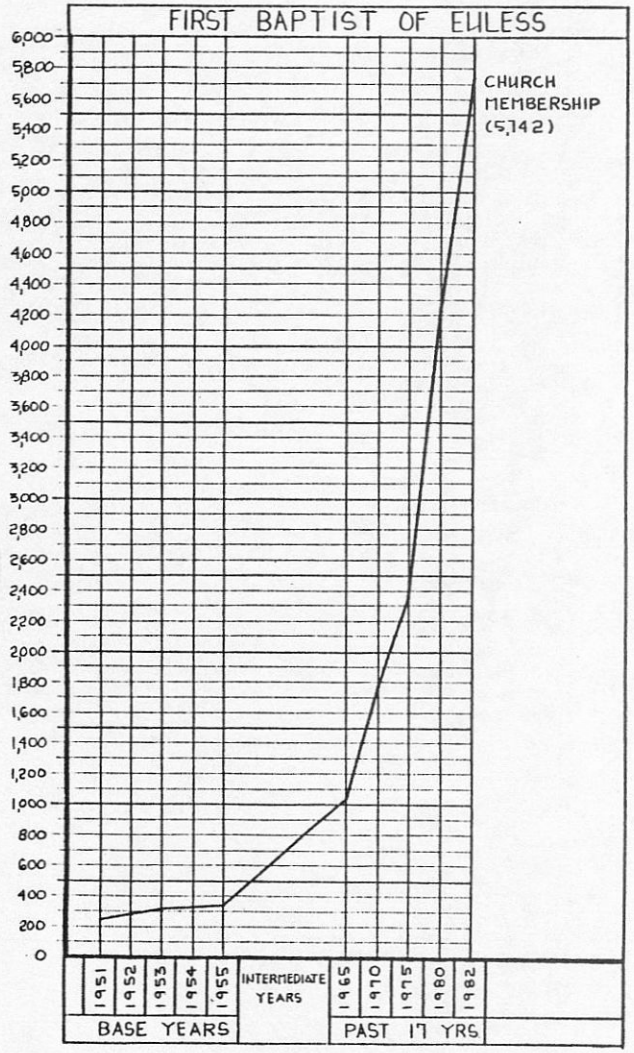
	Low	Medium	High
Average Annual Percent of Increase/Year:	8.147%	13.088%	22.75%
Membership as of July 31, 1983:	232	232	232
Year:			
1984	251	262	285
1985	271	296	349
1986	293	336	429
1987	317	379	527
1988	343	429	646
1989	371	485	794
1990	401	549	974
1991	434	621	1,196
1992	469	702	1,468
1993	508	794	1,802
1994	549	898	2,212
1995	594	1,015	2,715
1996	642	1,148	3,332
1997	694	1,298	4,091
1998	751	1,468	5,021
1999	812	1,660	6,164
2000	878	1,877	7,566

FIG. 5



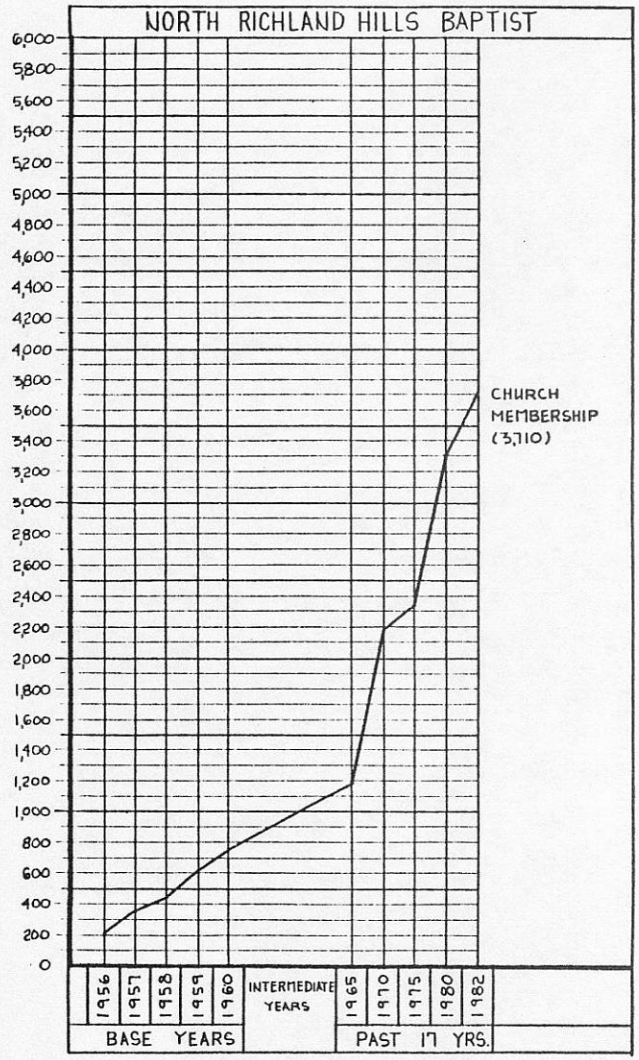
GLENVIEW BAPTIST CHURCH

	Year	Church Members	Average Percent Increase/Year
Base Years (1965-70) 5 years	1965	221	
			17.6
	1966	260	
			20.0
	1967	312	
			17.3
	1968	366	
			23.8
	1969	453	
			17.9
	1970	534	
			19.32 total average percent increase per year
Past 17 Years (1965-82)	1965	221	
			141.63
	1970	534	
			183.89
	1975	1,516	
			36.81
	1980	2,074	
			19.72
	1982	2,483	
			4.70
	1983	2,600	
			22.75 total average percent increase per year



FIRST BAPTIST CHURCH OF EULESS

	Year	Church Members	Average Percent Increase/Year
Base Years (1951-55) 5 years	1951	251	
	1952	279	11.2
	1953	309	10.8
	1954	312	1.0
	1955	328	5.1
			5.62 total average percent increase per year
Intermediate Years (10 years)	1955	328	
	1965	1044	3.18 total average percent increase per year
Past 17 Years (1965-82)	1965	1044	
	1970	1779	70.4
	1975	2351	32.1
	1980	4218	79.4
	1982	5742	36.1
	1983	6000	4.5
			13.088 total average percent increase per year



NORTH RICHLAND HILLS BAPTIST CHURCH

	Year	Church Members	Average Percent Increase/Year
Base Years (1956-60) 5 years	1956	201	
	1957	348	73.1
	1958	440	26.4
	1959	603	37.0
	1960	747	23.9
			40.1 total average percent increase per year
Intermediate Years (1960-65)	1960	747	
	1965	1,190	31.9 total average percent increase per year
Past 17 years (1965-82)	1965	1,190	
	1970	2,192	84.2
	1975	2,339	6.7
	1980	3,304	41.3
	1982	3,710	12.3
	1983	3,500	60.0
			8.147 total average percent increase per year

ARCHITECTURAL SQUARE FOOTAGE REQUIREMENTS

SQUARE FOOTAGE PROJECTIONS

Upon completion of the growth projections, I was faced with determining which number of members would be the most appropriate to design towards. The medium number was chosen as a good number to project for. However, after conferring with the pastor, he wanted a 4,000-seat auditorium at some time in the church's future. Therefore, the auditorium has the capacity of expanding to 4,000 seats by adding a balcony. This is an area where being a member of the church helped me to understand the projection. The church has far exceeded most traditional growth records for Baptist churches that were studied and an understanding of the spirit of the church was helpful. All things considered, I am basing the master plan on the high membership number of 2,000 and keeping in the back of my mind, the idea that there may be a need to expand the facilities even further. This number is an approximate membership number and not all of them would be active, so a 2,000-seat auditorium would be appropriate. The 2,000 seats do not represent the number of people that would consistently attend, but a maximum to accommodate maximum attendance of services, Christmas, Easter, etc.

RECAP OF SQUARE FOOTAGE REQUIREMENTS

Auditorium	
• Includes auditorium seating, pulpit platform, choir performance area, baptistry, dressing rooms, balcony, entrance vestibule.	31,050
Audio-Visual Accommodations	
• Includes main projection room and storage.	550*
Choir Rehearsal Area	
• Includes the following:	
- main rehearsal room	2,900
- 2 small rehearsal rooms	300
- 2 robing rooms	800
- 2 restrooms	300
- music library room	250
- music equipment room	300
	4,850
Prayer Tower	
• Entry area	200
• Communal prayer area	400
• Individual meditation spaces	300
	900
Administration	
• Reception area	250
• Washroom	80
• Pastor's office	325*
• Study	150
• Pastor's dressing room	50
• Music director's office	250
• Asst. Music director's office	200
• Music secretary's office	300
• 3 assistant minister's suites with secretaries	1,050*
• Church office workroom	350*
• Storeroom	200
• Conference room	300
	3,505

Business Offices	
• Reception	250
• Washroom	80
• Business manager's office with secretary space	480
• Data processing	200
• Payroll office	150*
• Storage	400
• Print shop	400
	1,960
Educational Offices	
• Director's office	250*
• 2 assistants' offices	400*
• Secretary/reception area	300*
• Storage	500
	1,450
Media Center	
• Library	3,805
• Office	150*
• Audio visual storage	300
• Conference room	260
	4,515
Restrooms	720
Classrooms	
• Children	14,084
• Youth	8,556
• Adult	9,842
	32,482
Circulation	
• 25% of 8,425 (see *)	2,106

*Areas that require circulation space.

Administration (cont'd.)

- A second exit should be provided for through his study/library. 150
- Pastor's dressing room with shower and sink 50
- Provide an office with closet, small library and bookshelves for music director (should be adjacent to the choir rehearsal rooms and convenient to educational facilities) 250
- Assistant music director's office 200
- Secretary/reception area 300
- Provide 3 assistant ministers' offices (250 square feet each) with secretary space (150 square feet each). 1,050

Church office workroom is a space for routine church business. Two secretary spaces should be provided for. 350

Storeroom provides shelves, cabinets and a small sink and a space for a refrigerator. 200

Conference room for staff meetings up to 15 people. 300

Business Offices

- Reception area with a switchboard, operated be a receptionist 250
- Provide a small washroom with a sink and toilet 80
- Business manager's office with control by receptionist and his secretary space 300
- Data processing houses the computer and requires its own office with the operator 200
- Provide small office for payroll 150
- Provide walk-in storage for files and supplies 400
- Provide small print shop for brochure printing 400

Educational Facilities (estimated 1,800 members)
The educational facility provides space for all Sunday School activities, church training, daycare, and special hobby classes. It includes classrooms, offices, media center and support facilities.

- The director's office should be provided with bookshelves, a small closet and accommodations for two other chairs 250
- 2 assistants' offices nearby 400
- secretarial/reception area with closet 300
- storage room(s) for educational materials: supplies, books, toys 500

Media Center

- The library part for the storage of books 3,805
- Small office space should be included 150
- Provide a separate audio-visual storage room for equipment and film storage 300
- Provide a small conference workroom for 15 people 260

Restrooms

- Restrooms for each sex should be provided for each floor or wing, as deemed necessary. Special provisions should be made for the age group. 720

Classrooms (1,800 members with same mix of age groups)

	Age	%	Projected Enrollment	s.f./ Child	Total
	0-1 years	6.0	105	25	2,625
	2 years	4.5	79	25	1,975
	3 years	4.0	70	25	1,750
Children	4-5 years	6.5	114	25	2,850
	6-7 years	2.0	35	25	875
	8-9 years	5.5	97	25	2,425
	10-11 years	5.0	88	18	1,584
	12-15 years	11.0	202	18	3,636
Youth	16-18 years	6.0	105	18	1,890
	19-24 years	11.0	202	15	3,030
	25-29 years	4.5	79	14	1,106
Adults	30-35 years	7.0	132	14	1,848
	36-50 years	15.0	273	14	3,822
	51 years +	12.0	219	14	3,066
			Classroom subtotal:		32,482

Family Life Center	
• Fellowship Hall	5,406
• Stage	755
• Small room off stage	160
• Kitchen	1,325
• Gymnasium	7,200
• Lounge	750
• Group meeting rooms	240
• Game room	2,400
• Office	150*
• Arts and crafts	300
• Kitchenette	140
• Men's and Women's locker rooms	779
• Racketball court (24' x 40')	960
	20,565
Maintenance	
• Janitor's closets	250
• Office	200
• Storage	1,500
	1,950
Mechanical	
• 2% of 106,603	2,132
TOTAL SQUARE FOOTAGE	108,735
Existing Education Space	(4,500)
New Construction	104,235
Parking	7.65 acres

FUNCTIONAL PROGRAM/SQUARE FOOTAGE REQUIREMENTS

Auditorium

The Auditorium is to be used for worship services as well as for special dramatic and media presentations. Included in the center is the main seating area, a pulpit platform with choir, and support facilities.

25,000

- Provide seating for 2,500 people, including balcony (10 sq. ft./person) (balcony not to exceed 50%; no balcony at this time)
- Flexible plan for expansion up to 4,000 as a maximum
- Baptistry is to be included
- Pulpit platform is focal point
- Must be suitable for media productions
- Combination of natural and artificial lighting
- Provide area for sound equipment

Choir Performance Area

- Provide seating for approximately 325 members (8 sq. ft./person) 2,600

Baptistry 50

- Dressing rooms, Men's and Women's with toilets and individual dressing cubicles 260
- Private dressing room and preparation room for pastor 240

Entrance Vestibule

- Provide a generous vestibule of not less than 1 sq. ft. per maximum number of seating capacity 2,500
- Provide public toilets 400

Audio-visual accommodations

- Main projection booth/control room. Should be used for TV and radio control rooms and camera room 150
- Storage for equipment nearby 400

Choir Rehearsal Room

- Provide a rehearsal room to be used by all choirs and orchestra (10% more room than area in auditorium; 15 sq. ft./person for instrumental performing group rehearsal area) 2,900

Support Rooms

- Provides 2 rehearsal rooms for 10-15 people 300
- Provides 2 robing rooms 400
- Provides 2 restrooms nearby, one for each sex 300
- Music library room 250
- Music equipment room 300

Prayer Tower

The prayer tower will be a place where members can come to pray 24 hours a day. Private and small group prayer areas will be provided for.

- Provide a communal prayer chamber for small groups 400
- Provide 6 individual meditation cubicles at 50 square feet each 300
- Entry area with listings of prayers 200

Administration

Administration consists of offices and necessary support facilities for the ministerial staff and business office.

- Reception area should be centrally located for control 250
- Provide a washroom with a toilet nearby the reception area 80
- Pastor's office should be entered from his secretary's space. Seating for a small group should be provided. 325

Family Life Center

The Family Life Center should be a multi-purpose space for use of all large social events, dinners, art fairs, large fellowship groups, youth activities and possibly some Sunday School classes.

- Fellowship Hall should accommodate seating at tables for about 600 people, with 11 square feet per person 5,406
- Provide a small stage area adequate for small dramatic productions and programs 755
- Provide a small room adjacent to the stage and accessible to the outside 160
- Provide a commercial-type kitchen of adequate size with cafeteria capabilities to serve 600 people (1/5 to 1/4 size of dining area) 1,325
- Provide a gymnasium approximately 60x100, 50x80 court and (3 ft./row of seats; 4 rowx100) 7,200
- Provide a lounge with table and chairs and snack area 750
- Provide a group meeting room 240
- Provide a game room 2,400
- Provide an equipment office for checking out equipment 150
- Provide a kitchenette 140
- Provide Men's and Women's locker rooms 779
- Handball court with 20' ceiling 960

Circulation

- Calculated for areas which require extra circulation: offices, classrooms, choir rehearsal areas and audio-visual studios
- Estimate 25% of 8,425 square feet. 2,106

Mechanical and Equipment Space

- Estimate at 2% of 106,603 square feet. 2,132

Maintenance

- Provide janitor closets on all floors at 50 sq. ft. each (est. 5 at 50 s.f. each) 250
- Provide an office for maintenance supervisor 200 supervisor
- Provide a workshop and garage for one large bus and 3 vans and storage area for tractor and lawn equipment 1,500

Parking

2,100 people/3 people per car x approximately 400 sq. ft. per car = 700 spaces = 6.42 acres

ENERGY AND ENVIRONMENTAL CONSIDERATIONS

The energy shortage of the seventies brought on an increased awareness that we are steadily depleting our natural energy resources. The majority of activities that a human participates in uses up energy either through a direct or indirect method. An indirect use of energy would be through the use of a certain object. Energy was used in the manufacturing of this object, therefore it would be an indirect use of energy by the person using the item. A direct use of energy is the consumption of energy for the heating and cooling of buildings. For the conservation of current and future energy demands, the design professionals, architects, landscape architects, planners, and engineers have had an increased responsibility for designing of site plans or buildings for the reduction of energy consumption.

Energy conscience site planning is an approach which should be applied to the master plan development of Harvest Baptist Church. Energy conscience site planning involves "directing the design decisions toward the concept of energy conservation and greater utilization of the site's natural resources." Or, in other words, the greatest net effect with the least amount of cost.[12]

Temperature, solar radiation, wind, building configuration and topography are elements which need to be analyzed in the formulation of an energy efficient site plan.

Temperature - The temperature, the degree of hotness or coolness of an environment, on a site or in the interior space of a building is affected by several elements in varying proportions. Solar exposure, wind patterns, construction materials, moisture and vegetation all act together to determine the temperature of an environment. The orientation of buildings on a site and the location of rooms within the building can affect the temperature of the space and in turn the heating and cooling costs. "A space that does not directly utilize sunlight for heating during the winter months will use proportionally more conventional energy than one that does.[13] In the Dallas-Fort Worth area, if a building is designed to admit light through south-facing windows, there must be some form of shading device during the summer. A recessed window exposed to the sun in the winter and shaded in the summer, an overhanging roof structure, a deciduous tree which will have leaves in the summer and block out the sun, and let it penetrate through in the winter for energy gain, are some methods of taking advantage of the sun. Therefore, if rooms within a building are oriented to the south, a portion of their heating and lighting requirements could be supplied by capturing the sun's energy. Areas that have modest heating and lighting requirements such as corridors, closets, mechanical rooms and restrooms can be placed along the north face of a building to serve as a buffer between spaces heated in the winter by the sun and the colder north face.

If the concept of placing the interior activity spaces to the south and buffering spaces to the north is used, then the maximum depth of the building should be 25-30 feet wide.[13] (See Figure 3). There are many situations when admitting direct sunlight through south-facing windows may not be feasible or desirable. If this is the case, the use of skylights or clerestories may be used to distribute sunlight over a space or to direct it to a particular interior space.

"The north face of a building is the coldest, darkest, and usually the least used side because it receives no direct sunlight."[13] As a result, the exterior space of buildings to the north side are less desirable spaces for outdoor use. A method for reducing the effects of a long shadow on the north side is the slope the ground up around the building, thereby reducing the length of the shadow and insulating the building from the north winds.

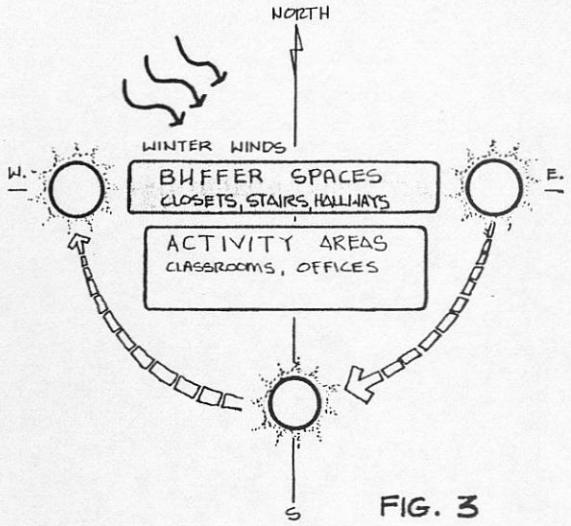


FIG. 3

(See Diagram 4.) Figure 4 represents the increase in temperature within a building in the winter months and the reduction of the north shadow due to the placement of soil on the north side of the building.

The site design should also take advantage of prevailing winds for cooling the buildings and outdoor spaces. Winds have a direct impact on the temperature of an environment. The location of the building and its windows can be positioned to take advantage of prevailing summer breezes. If a ventilation system is to be developed, the side of the building which faces the prevailing winds should have operable windows or vents, and the side opposite the wind, or low pressure area, should contain the outlets. [13]

The materials utilized in construction of a building will influence the temperature and energy consumption of that building. The Dallas-Fort Worth area traditionally has long hot summers, and mild winters requiring the use of reflective and light colored materials for the skin whereby the heat gain is not transmitted into the interior.

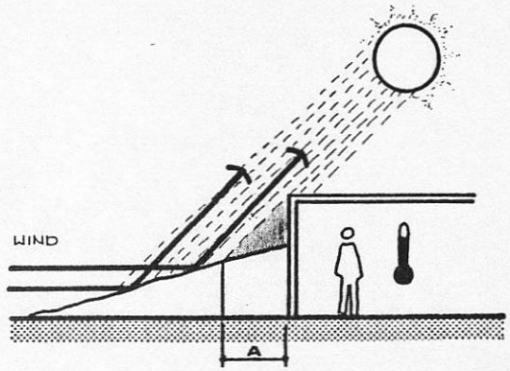
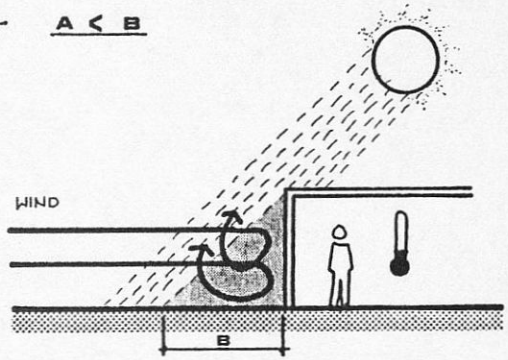


FIG.4 A < B



Shading, in simple terms, is the act of keeping the sun screened out in the high heat gain season, typically May through September. Trees help to lower temperatures near the ground by intercepting solar radiation before it reaches the east and west walls or windows. If a building is well shaded, the primary heat gain will be due to the conduction of heat through the skin of the building.

Topography influences energy requirements and temperature. Cold air tends to collect and flow to low areas, while the warmer air is concentrated at the higher elevations. (See Diagram 5.) The wind direction velocities and pressure zones can be altered by the use of land forms such as a hill, valley, channel, and their relationship to the structures and outdoor spaces on the site.[11] Sinking a structure can also influence the temper-

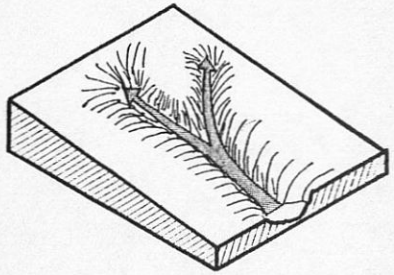


FIG. 5

ature of a indoor or outdoor space. (See Diagram 6.)

Building Shape - Buildings shaped and oriented without regard for the sun's impact require large amounts of energy to heat and cool. "A rectangular building with a 2½ length per width ration absorbs considerably less solar heat than if the long axis is aligned east-west instead of in a north-south direction."[13] (See Diagram 7.) The sun bakes the east and west walls more intensely than a south wall; since the angle at which the sun's rays strike the structure is less than in the winter, there is a reduction in heat gain. During the winter months, the south side of a building receives nearly three times as much solar radiation as in the winter, than the east and west sides of the building.

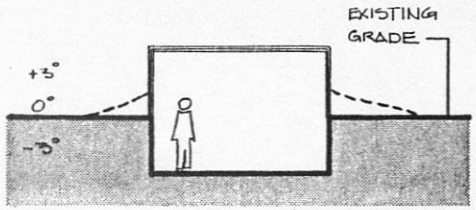
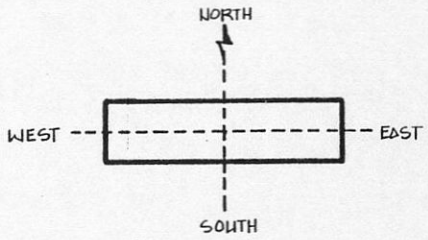


FIG. 6

FIG. 7



Materials - The Dallas-Fort Worth area, on the average, has a modest temperature fluctuation during the day. As a result, design emphasis should be placed on the construction materials. For thermal mass, appropriate materials would be adobe, soil-cement, brick, stone, concrete. For finish materials use wood, plywood, particle board, and gypsum board. Materials such as steel, aluminum and plastics should be limited due to their ability to transmit hot or cold air. Light colored materials on the exterior will reflect more heat than it absorbs, reducing the temperature of the interior spaces. This same concept applies to the materials in the landscape, paving or vertical surfaces, affecting the temperature of an outdoor space. The color and texture of paving materials can be used to either absorb or reflect light. Light paving to the north side of a building can reflect warming winter sun into the building. Paving on the south side may be more effective if it is a darker material with a more coarse texture, thereby reducing the amount of solar radiation or reflection into the south part of the building.

Solar Radiation and Wind - Solar radiation and wind are the two factors which have the most influence

on human comfort. These two factors determine how hot or cold a person feels, therefore determining how much energy they will need to alter their climate.[12] A shaded area will be cooler than a sunny area without controlling the wind. If the wind is blocked off from a sunny space, a warmer space can be created. By manipulating these two factors, it is possible to impact the heating and cooling demand of a building, or the comfort zone of a person in an outdoor space.

During the winter, as cold air penetrates a building, the loss of heat gain can account for over 10% of the total heat loss for a building.[9] If an air lock, such as a double entry, is used, a decrease in heat loss due to the infiltration and conduction can be realized. (See Diagram 8.) During the summer months, the double entry works in reverse, by keeping cooled air from escaping and prohibiting hot air from entering. Orientation of the potential loss or gain openings should be located away from prevailing winds, or a form of wind break should be provided to reduce the wind's velocity in such areas. Window location is important with respect to solar radiation, and relates to the size, number, and location.

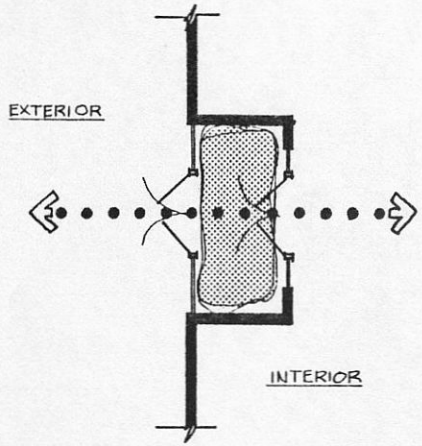


FIG. 8

The south side of a building receives a greater amount of solar radiation in the winter than any other side and a less amount in the summer. During the summer, the radiation is concentrated more directly on the roof and the east or west sides than the south face of a building. There are two reasons for this. The first is that there are more hours of sunshine directly striking the south face of a building in winter than in summer. Second, the sun is lower in the sky during the winter. The rays of the sun strike the south face closer to a perpendicular in the winter than in the summer months. The following graph will illustrate the solar radiation values expressed in BTUs/day per square foot of glass, given the designated orientations. (See Figure 9.)

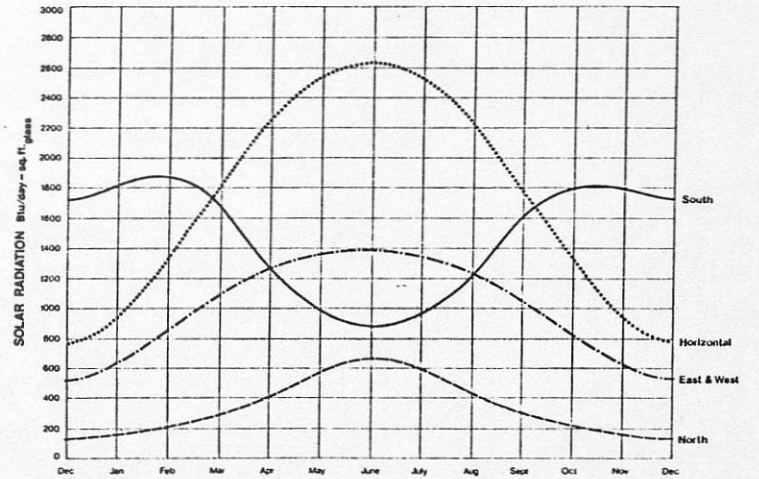


Fig. IV-6b: Comparison of window orientations.

Note: This graph represents clear-day solar radiation values, on the surfaces indicated, for 40°NL.

FIG. 9

Design considerations utilizing existing as well as proposed plant materials can play a significant role in energy conservation. Plants can be utilized in such a way as to control noise and usual pollution, glare and reflection, wind, and temperature. Indiscriminant grading practices without regard to revegetation can create erosion problems. After topsoil is stripped from a site, there needs to be a plan for controlling the erosion. There are several methods. Included in them are planting grass with fibrous root systems, adding soil saver material (jute mesh), or regarding and the construction of retaining walls to reduce the severity of the slope.

The site, located in Watauga, is exposed to the prevailing winds. Plants placed in the proper location could provide a wind break which would reduce the amount of wind erosion on areas without grass. There are several types of wind breaks. Some are made to totally block out the wind, some redirect or channel the wind away from a particular location, some just filter the wind to reduce the velocity. A wind break may be made with evergreen plants, deciduous, or a combination, to achieve a desired result. [14]

Plants have been found to be an effective noise buffer. The Watauga site is bounded on two sides by major traffic arteries, and on one side by a railroad track, factors which ontribute an increased noise level at the site.

The study of sound takes into consideration not only the physical but psychological effects on site users. The physical aspect deals with radiation and transmission of sound in the air while the psychological treats subject response of humans to sound. The attenuation of sound is the reduction of sound after it leaves the source. Plants are effective attenuators of sound, accomplished through absorption by leaves, branches, and twigs of the plants. Trees are effective in scattering or diffusing sound and add to the effectiveness of grass in absorbing sound. A study in the effectivenes of plants in reducing noise, conducted by the School of Engineering at the University of Nebraska and the Rocky Mountain Forest Station yielded the following conclusions. Different species of trees do not differ much, but evergreens are the best for year-round buffering of noise. Buffering of sound is more effective with tall and wide belts of trees. The absorption or reflective quality of the plants greatly affects the noise levels. If a plant has a porous surface, then a greater amount of sound will be absorbed, than if the plant is mostly made up of harder reflective surfaces, such as trunks, limbs, and twigs. Other findings were:

> "Distances of 75 feet or more should be available for planting between the noise sources and the area to be protected. Dense barriers formed by planting several rows of trees closely together are most effective. Noise screens should be placed as close as possible to the noise source, consistent with safety." [15]

Psychological effects of sound can also be an important factor. One method of reducing the effect of an undesirable sound, noise, is to mask the sound by the introduction of a pleasant sound. Some examples of this would be the noise created by a person as he walks on leaves, or gravel. If the sound became more obvious tothe person, it may captivate his attention and he may not notice a more undesirable noise. The sound of trickling water can psychologically affect a person by reinforcing the idea that the water is cooler, therefore, he feels cooler while he is within the space with the running water.

Glare and Reflection - Glare and reflection is another factor in which plants can play an important role. An open field, such as at Harvest Baptist Church, will have a higher glare and reflection than sites with trees and more pronounced topography. As development occurs, introducing building and paving surfaces along with the reduction of grass areas, there will be an increase in reflective surfaces.

Choosing the correct size, shape and foliage density is essential for stopping or reducing glare and reflection. The following diagram represents methods by which plants can be used to control glare or reflection. (See Diagram 10.)

Wind Control - Wind control is an area of site planning that plants are able to impact. (See Diagram 11.) They are capable of controlling wind in four ways: obstruction, guidance, deflection and filtration. A site that receives unobstructed winds may require the application of some of these methods. As obstructions, plants reduce the speed of the wind by directly resisting the wind flow. Guidance of wind is the proper placing of plants to enhance air flow. Plants can affect air movement by directing air through an outdoor or indoor space. The accompanying figures graphically illustrate these concepts.
Deflection is the changing of direction of the wind. Filtration is the reduction of the velocity of the wind. A barrier is set up which lets part of the wind through but deflects other portions, thereby letting some of the breeze through.

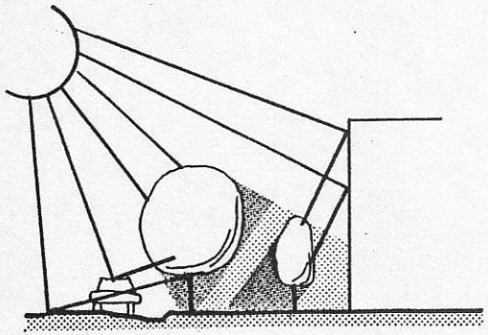


FIG. 10

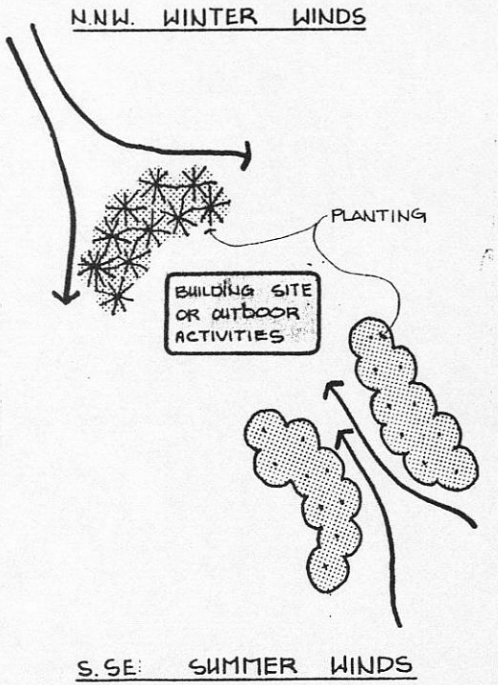


FIG. 11

Recommendations

The following energy and environmental conservation criteria has been adopted for design consideration of the property owned by Harvest Baptist Church. This criteria will serve as a guide for the physical development of the property and the facilities thereon. Not all of the concepts may appear in the final design due to compromises that may occur during the design process. Each of the concepts will be attempted and tested for inclusion in the Master Plan.

Temperature

- The interior and exterior spaces should be located to take advantage of natural heating and lighting.
- The north walls of buildings should be reduced in height for maximizing the insulative qualities of the building and reducing the north shadow if there is to be an activity space to the north of the building.
- If a south exposure should be used for heat gain, the maximum width of the building should be 25-30 feet wide.
- Design of the interior or exterior spaces should be developed in such a way as to block north winds and take advantage of the summer breezes.
- Architectural and landscape construction materials should be analyzed on their ability to reflect or absorb light, availability, cost, insulating value and appropriateness is based on the overall development concept of unifying the structures, through the use of materials.
- Exterior and interior shading techniques should be developed for screening the sun rays during the summer.
- The following chart is a sun chart for 32° north latitude, which is within ½ a degree of Fort Worth (32.5°) and will be used as a reference for the study of the sun angles.

Building Shape

- The long axis of a building should be aligned in such a way as to minimize the heat gain.
- Exterior materials should reflect more radiation than they absorb. The following is a list of colors and their percentage of solar radiation that they absorb.

reflective surfaces.....	0.20
for white, smooth surfaces.....	0.25-0.40
for grey to dark grey.....	0.40-0.50
for green, red and brown.....	0.50-0.70
for dark brown to blue.....	0.70-0.80
for dark blue to black.....	0.80-0.90

(Figures are expressed as the percentage of the intensity of solar radiation striking the surface. [13])

Solar Radiation and Wind

- Major entries into interior or exterior spaces should have a method of a controlled entry to reduce heating and cooling losses, due to the prevailing winds at the site.
- The placement of windows should be a response to solar orientation. The following is a chart which shows the radiation values expressed in BTUs per day per square foot of glass, given the designated orientations. (See Diagram 10.)

Landscaping

- Control erosion-prone areas by introduction of

DESIGN CONCEPTS

DESIGN CONCEPTS

The following diagrams are a documentation of the design process. I have analyzed the major psychological existing conditions and architectural considerations, and have begun developing concepts that will address the issues that have been identified in the program. The design concepts will become a springboard for direct application in the design development phase.

Inspirational Concept

"The wheat grows in the shadow of the cross, as if springing up from the very roots of the cross itself. So the Word being completed in the cross supplies its bountiful harvest in the world, again defying death by providing new life."

The Spirit of the Place

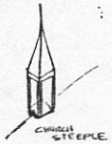
Portrayal of a spirituall image and experience that will set the mood for worshipping God and accent the need of the Church to reach out into a world which is ripe for harvest.

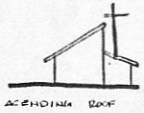
Methods for achieving the Spirit of the Place

- increasing the interdependence of interior and exterior spaces
- develop a visual contrast between the Lord's place of worship and the surrounding secular world
- increase man's awareness of nature, increasing the possibility that a person may more fully understand himself and his place within God's kingdom
- reinforce the concept of the prayer tower, symbolic of the cross and the completion of God's word, towering over the wheat of the community.

SYMBOLISM

PHYSICAL FORM





- THE FORMS OF THE ARCHITECTURE CAN BECOME A SYMBOL WHEN IT IS APPROPRIATE. THE PRAYER TOWER'S FORM WILL BE A VERY IMPORTANT FORM BECAUSE OF ITS DIRECT INFLUENCE AND VISIBILITY WITHIN THE COMMUNITY. THE MANIPULATION OF THE ROOF LINE CAN INFLUENCE A PERSONS EYE MOVEMENT AS IT MOVES ACROSS THE BUILDING. AN EXAMPLE WOULD BE A SLANTED ROOF WHICH DRAWS A PERSONS EYES UPWARD OR TO SPECIFIC ELEMENT.

PLANTS

- PLANT MATERIALS IN SPECIFIC AREAS WILL HAVE A PLACHE STATING THE BIBLICAL MEANING OF THE PLANT.
- PLANTS MAY ALSO BE DEDICATED TO THE CHURCH IN MEMORY OF SPECIAL OCCASIONS. THEREFORE THEY WILL TAKE ON A PERSONAL SYMBOLISM TO THAT SPECIFIC PERSON.

- PLANTS SHOULD BE USED TO CREATE THE MOOD OR FEELING FOR DIFFERENT AREAS OF THE SITE. AN EXAMPLE WOULD BE THE USE OF FINE TEXTURED AND GRACEFUL TREES FOR AN AREA DESIGNATED AS A SPACE FOR RELAXING IN A DIFFERENT AREA THERE MAY BE THE NEED TO ACCENTUATE A ENTRANCE PATH THEN A TALL STATELY TREE SHOULD BE CHOSEN.

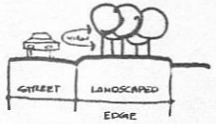
IMAGE

FRIENDLINESS

SYMBOLISM

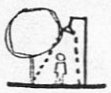
✿ THE BEST PARKING SPACES SHOULD BE RESERVED FOR VISITORS AS A GESTURE OF WELCOMING THEM, AND MAKING IT CONVIENIENT.

✿ HARVEST'S IMAGE IS TO BE A PARK-LIKE OR GARDEN SETTING AS A PERSON VIEWS INTO THE PROPERTY. THE LANDSCAPED BORDERS WILL BE A SYMBOL OF CONTRAST TO THE ADJACENT LAND USES.



* SEE SYMBOLISM FOR OTHER WAYS THE DEVELOPMENT WILL USE SYMBOLISM

✿ USE OF SIGNAGE WILL BE HELPFUL TO GIVE DIRECTION AND REDUCE CONFUSION. THE SIGNAGE DOES NOT HAVE TO BE A SIGN IT CAN BE AN ARCHITECTURAL OR LAND SCAPE ELEMENT

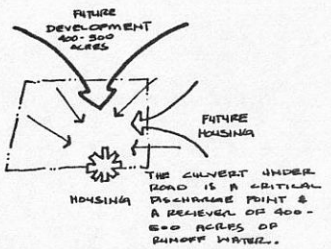


✿ THE CIRCULATION PATHS FOR PEOPLE SHOULD BE RECOGNIZABLE.

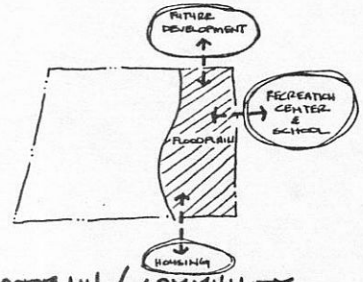
✿ LIGHTING SHOULD BE USED TO PROVIDE CONFIDENCE AT NIGHT AND TO ADD A WELCOMING & FRIENDLY CHARACTER.

✿ THE SCALE OF THE BUILDINGS MUST RELATE TO A PERSON SO THAT THEIR SIZE IS NOT OVER-POWERING. A PERSON SHOULD FEEL COMFORTABLE IN THE SPACE NEXT TO A BUILDING.

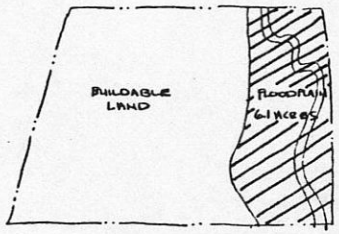
DRAINAGE



AREA WATERSHED

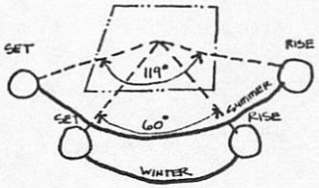


FLOODPLAIN / COMMUNITY

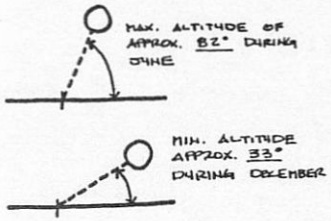


FLOODPLAIN

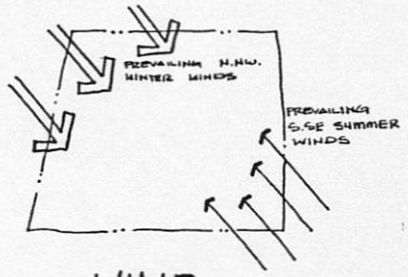
CLIMATE



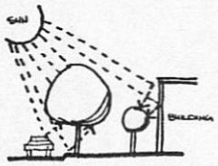
MAX./MIN. SUN BEARING



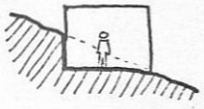
MAX./MIN. SUN ALTITUDE



WIND



✿ USE PLANT MATERIALS TO BLOCK REFLECTION OFF OF BUILDINGS AND PAVING SURFACES.

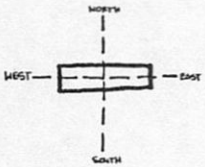


✿ TUCK THE BUILDING INTO THE SITE WHEN APPROPRIATE TO HELP INSULATE THE BUILDING AND PROTECTION FROM THE NORTH WIND.

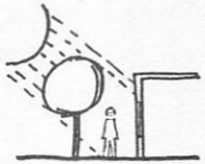
✿ MATERIALS

- PAVING SURFACES TO THE NORTH SHOULD BE A LIGHT COLOR TO REFLECT LIGHT INTO THE BUILDING. PAVING TO THE SOUTH SHOULD BE A DARKER MATERIAL TO ABSORB THE LIGHT AND REDUCE REFLECTION.
- ARCHITECTURAL MATERIALS WILL CONSIST OF LIGHT COLORED CONCRETE WALLS WITH OR WITHOUT BRICK, OR SOME COMBINATION THERE OF.

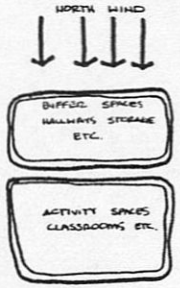
✿ USE PLANTING TO BLOCK THE NORTH WINDS FROM THE ENTRANCES AND TO CHANNEL SUMMER BREEZES THROUGH THE SITE.



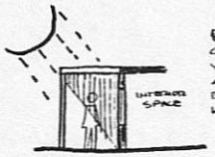
✿ LONG AXIS OF BUILDINGS SHOULD BE ORIENTED WITH THE LONG PORTION IN AN EAST/WEST DIRECTION TO REDUCE THE SOLAR RADIATION THAT IS ABSORBED BY THE BUILDING



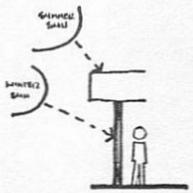
✿ TAKE ADVANTAGE OF THE USE OF DECIDUOUS TREES FOR BLOCKING THE SUN FROM THE WINDOWS IN THE SUMMER AND THEN LETTING THE SUN THROUGH DURING THE WINTER.



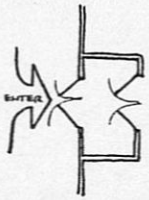
✿ ARRANGE BUFFER SPACES TO THE NORTH WHEN POSSIBLE TO BUFFER THE ACTIVITY AREAS FROM THE NORTH WINDS.



✿ WHEN APPROPRIATE A COVERED ARCADE CAN PROVIDE A CIRCULATION ROUTE AND AT THE SAME TIME BLOCK THE SUN FROM THE WINDOWS.



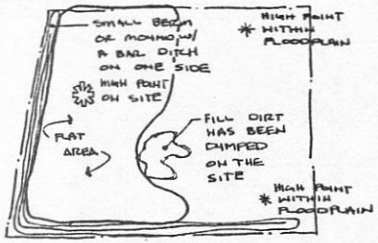
✿ USE SHADING DEVICES TO BLOCK OUT SUMMER SUN AND THEN PLACED SO THAT THE WINTER SUN HITS THE WINDOWS ON SOUTH OR WEST FACING WINDOWS



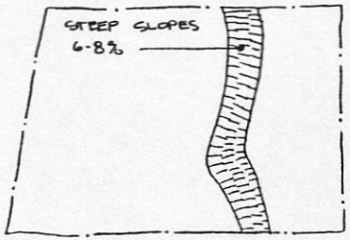
✿ THE MAJOR ENTRANCES INTO THE BUILDING SHOULD HAVE A DOUBLE ENTRY TO HELP PREVENT THE INTERIOR AIR FROM ESCAPING AND THE EXTERIOR AIR FROM COMING IN.

NATURAL FEATURES

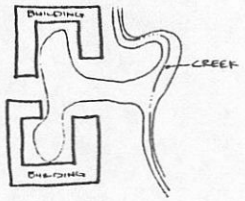
CREEK



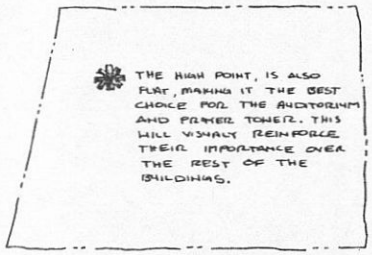
MAJOR TOPOGRAPHIC FEATURES



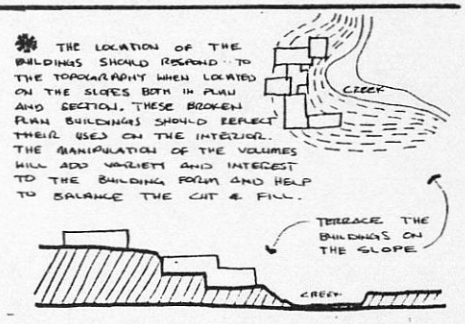
SLOPES



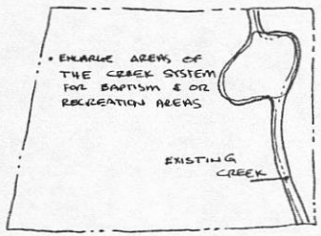
BRINGS THE NATURAL LANDSCAPE OF THE CREEK AREA UP INTO THE AREA OF THE BUILDINGS AS A CONTRASTING ELEMENT.

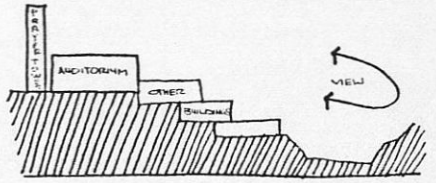


THE HIGH POINT, IS ALSO FLAT, MAKING IT THE BEST CHOICE FOR THE AUDITORIUM AND PRAYER TOWER. THIS WILL VISUALY REINFORCE THEIR IMPORTANCE OVER THE REST OF THE BUILDINGS.

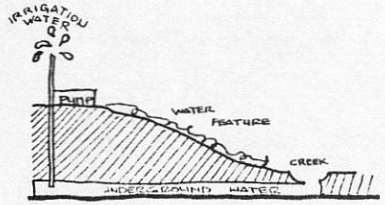


THE LOCATION OF THE BUILDINGS SHOULD RESPOND TO THE TOPOGRAPHY WHEN LOCATED ON THE SLOPES BOTH IN PLAN AND SECTION. THESE BROKEN PLAN BUILDINGS SHOULD REFLECT THEIR USES ON THE INTERIOR. THE MANIPULATION OF THE VOLUMES WILL ADD VARIETY AND INTEREST TO THE BUILDING FORM AND HELP TO BALANCE THE CUT & FILL.





BY TIERING THE BUILDINGS INTO THE LAND IT WILL EMPHASIZE THE IMPORTANCE OF THE PRAYER TOWER AND AUDITORIUM AND LESSEN THE IMPACT OF THE BUILDING UPON THE SITE.



THE FLAT AREA IS WHERE MOST ALL OF THE BUILDINGS WILL HAVE TO BE LOCATED.

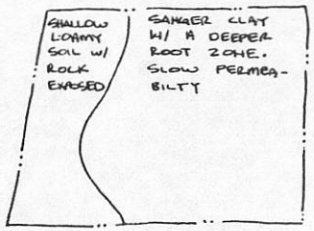
THE SLOPES ARE A NATURAL SEPARATION BETWEEN THE BUILDING LAND & THE FLOODPLAIN.

BUILDINGS SHOULD TAKE ADVANTAGE OF THE SLOPES

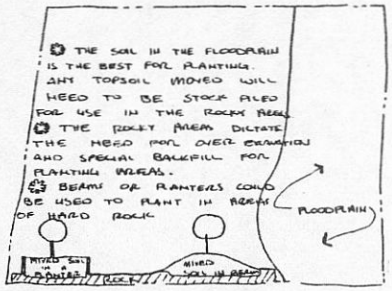
THE FLOODPLAIN PROVIDES THE BEST PLACE FOR PARKING AND RECREATION AREAS

NATURAL

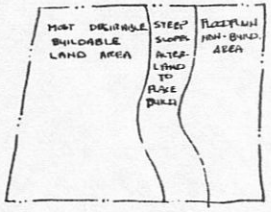
FEATURES
(CONT'D.)



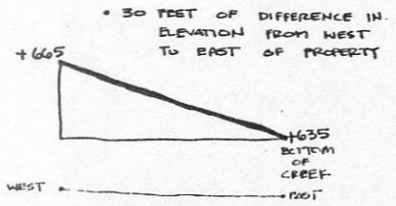
SOIL



TOPOGRAPHY

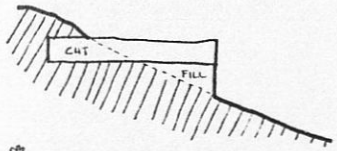


SLOPES



SITE SECTION

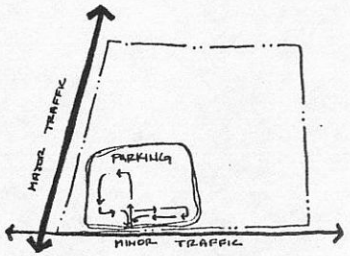
THE SLOPE OF THE LAND PROVIDES THE OPPORTUNITY TO MANIPULATE THE VISITOR BY LEVEL CHANGES. THIS CONCEPT SHOULD PLACE THE IMPORTANT BUILDINGS AT THE TOP OF THE SLOPE AND PROVIDE AN INSPIRING VIEW FROM THE BOTTOM OF THE SLOPE. THE VIEW DOWN THE SLOPE SHOULD ALSO BE USED AS DEVELOPED CONCEPT.



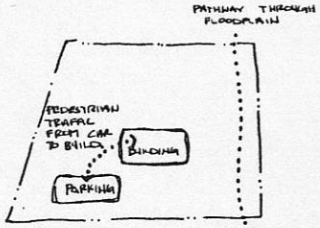
THE CUT & FILL SHOULD BE BALANCED.

THE SLOPE PROVIDES THE OPPORTUNITY FOR INSULATING THE BUILDING WITH SOIL

CIRCULATION

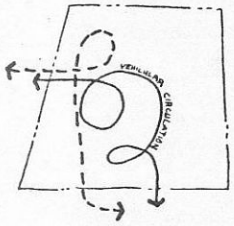


VEHICULAR CIRCULATION

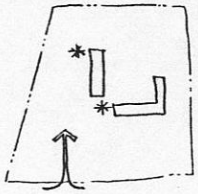


PEDESTRIAN CIRCULATION

- THE IMPACT OF PARKING AREAS SHOULD BE REDUCED BY INTRODUCTION OF PLANTING AREAS.
- THE PLANTS IN THE PARKING LOT SHOULD BE USED TO SCREEN OUT THE VIEW OF THE CARS

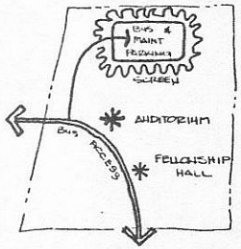


- HAVE AS FEW AS POSSIBLE ENTRANCES AND EXITS ONTO THE SITE. THE CIRCULATION SHOULD BE WITHIN THE BOUNDS OF THE PROPERTY LINES.
- SEPARATE THE PEDESTRIAN AND VEHICULAR PATHS TO REDUCE CONFLICTS

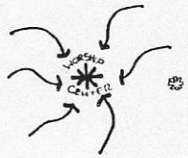


- UPON ENTERING THE SITE THE ENTRANCES OF OF THE BUILDINGS, THE MAJOR ONES, SHOULD BE RECOGNIZABLE.
- THIS MAY BE ACHIEVED BY THE FORMS OF THE ARCHITECTURE WHICH SUGGEST ENTRY, PAVING PATTERNS THAT GIVE DIRECTION OR PLANTS THAT ACCENT THE ENTRANCES.

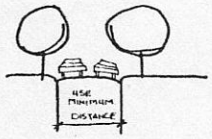
- THE ENTRANCES ONTO THE PROPERTY SHOULD BE IDENTIFIED BY A CHANGE IN THE CHARACTER OF THE EDGE TREATMENT, BY MANIPULATING THE PLANTING SKETHEMIE AND THE INTRODUCTION OF A VERTICALE ELEMENT OR SIGN. THE PLANTING SCHEME SHOULD BE SOME PROLIFIC PLANTS THAT CATCHES A PERSONS EYES. THE VERTICALE ELEMENT CAN BE A PLANTER BED OR RELIEF IN A WALL, OR SOME SYMBOL OR SIGN.



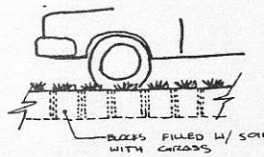
- A BUS ROUTE THROUGH THE PARKING LOT NEEDS TO PROVIDE FOR ACCESS TO PERFORMANCE AREAS SUCH AS THE AUDITORIUM AND FELLOWSHIP HALL.
- THERE NEEDS TO BE A PARKING AREA THAT IS FOR THE CHURCH BUS AND VANS. THIS AREA SHOULD BE SCREENED FROM VIEW



- THE DIRECTIONAL EMPHASIS OF ALL THE PEDESTRIAN CIRCULATION PATHS SHOULD BE DIRECTED TOWARD THE WORSHIP CENTER.



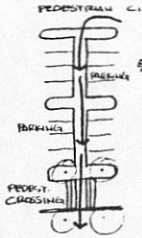
- USE MINIMUM WIDTHS FOR DRIVES TO MAKE THE CAR FEEL LIKE THE INTRUDER INTO A PEDESTRIAN SPACE. CHANGE THE TEXTURE OF THE PAVING AT A CROSS WALK TO MAKE A VISUAL IDENTIFICATION OF THEIR LOCATIONS.



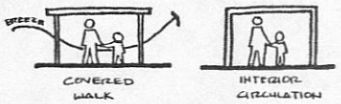
- SOME OF THE PARKING AREAS CAN BE DESIGNATED AS OVERFLOW PARKING AND CAN BE PAVED IN A MATERIAL SUCH AS TIRE BLOCK.

- THE CHARACTER OF THE CIRCULATION ROUTES SHOULD RELATE TO A PERSON'S SCALE. THE BUILDINGS SHOULD BE DESIGNED SO THAT THEY DO NOT OVERPOWER THE PERSON AS HE EXPERIENCES THE SPACE.
- FORMS, COLORS, TEXTURES AND SHAPES SHOULD BE CHOSEN AS A RESPONSE TO A PERSON'S SENSES.

PEDESTRIAN CIRCULATION (CONT'D,)

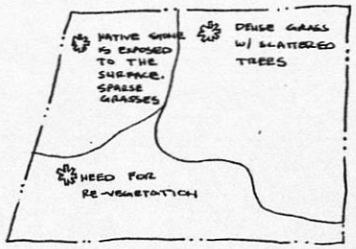


- PROVIDE A WALK-WAY SYSTEM THROUGH THE PARKING LOT UP TO THE BUILDINGS. IN THE PLACES THAT THE PEDESTRIAN MUST CROSS THE VEHICULAR PATH DENOTE THE CROSSING VISUALLY WITH A CHANGE IN PAVING OR PLANT MATERIALS



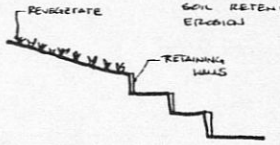
- ALL OF THE MAJOR CIRCULATION ROUTES SHOULD PROVIDE FOR FOUL WEATHER ACCESS EITHER A COVERED WALK OR THROUGH A BUILDING.

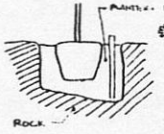
VEGETATION



VEGETATIVE AREAS

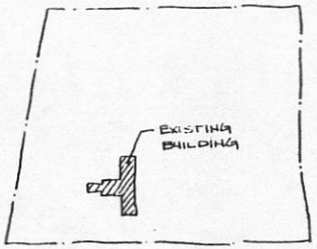
- AREAS THAT HAVE BEEN STRIPPED OF VEGETATION WILL HAVE TO BE REPLANTED OR CONSTRUCT A FORM OF SOIL RETENTION TO STOP EROSION



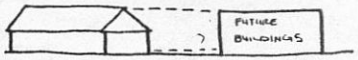


- DUE TO THE SHALLOW ROCK THE TREE PITS MAY NEED TO BE OVER-EXCAVATED AND THEN BACKFILLED WITH PREPARED SOIL FOR TREES. THEY NEED TO BE PLANTED IN A BERM OR A PLANTER TO HAVE A SOIL THAT THE TREE CAN GROW IN.

MAN-MADE FEATURES

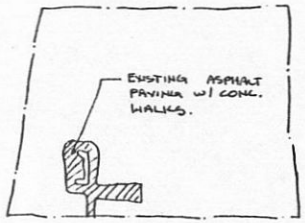


BUILDINGS



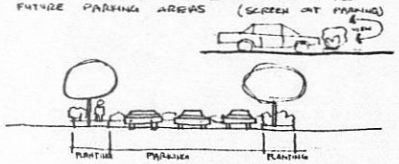
- FUTURE BUILDINGS SHOULD RELATE IN SCALE AND MATERIALS TO THE EXISTING BUILDING.
- THE CHARACTER AND FACADE CAN BE CHANGED IN THE FUTURE FOR THE PURPOSE OF MAKING ALL OF THE BUILDINGS BLEND TOGETHER

- FUTURE BUILDINGS NEED TO BE CONNECTED IN SOME FORM THAT PROVIDES FOR PROTECTION FROM THE RAIN AS PEOPLE MOVE FROM ONE BUILDING TO ANOTHER.

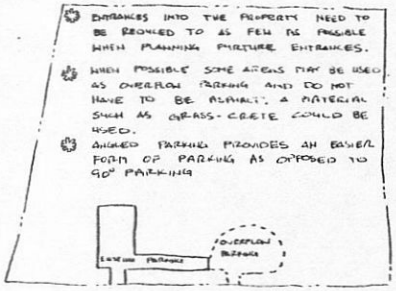


EXISTING PAVING

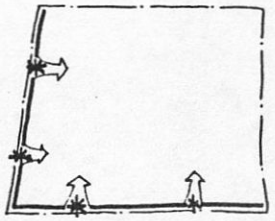
- THERE IS AN IDENTIFIABLE PLANTING SCHEME WITH-IN THE PARKING LOT TO BREAK UP THE MASSIVENESS OF THE PARKING THIS SCHEME OR ATTITUDE SHOULD BE CONTINUED IN FUTURE PARKING AREAS (SCREEN AT PARKING)



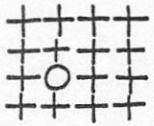
- ENTRANCES INTO THE PROPERTY NEED TO BE REVIEWED TO AS FEW AS POSSIBLE WHEN PLANNING FUTURE ENTRANCES.
- WHEN POSSIBLE SOME AREAS MAY BE USED AS OVERFLOW PARKING AND DO NOT HAVE TO BE ASPHALT. A MATERIAL SUCH AS GRASS-CRETE COULD BE USED.
- ANGLED PARKING PROVIDES AN EASIER FORM OF PARKING AS OPPOSED TO 90° PARKING



EDGE TREATMENT

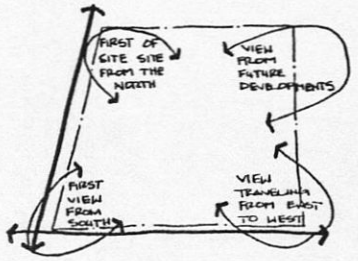


IDENTITY OF ENTRANCE



* IDENTITY WITHIN COMMUNITY

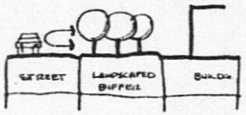
CONTRAST



VIEWS

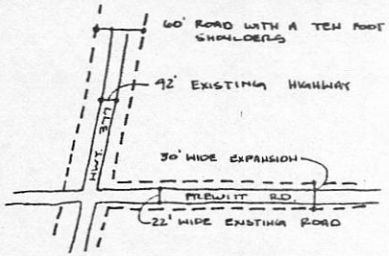
ENTRANCES WILL BE IDENTIFIED BY DOMINATE PLANTING AND A VERTICLE ELEMENT SUCH AS A WALL OR SIGN

THE CONTRAST DESIRED IN RELATION TO THE ADJACENT DEVELOPMENTS WILL BE ACHIEVED BY THE LANDSCAPING OF THE EDGE OF THE PROPERTY. MOST COMMERCIAL OR RESIDENTIAL DEVELOPMENTS DO NOT INCORPORATE STRONG PLANTING CONCEPTS. THEREFORE, IF A STRONG CONCEPT IS DEVELOPED THEN IT WILL STAND OUT IN THE COMMUNITY.

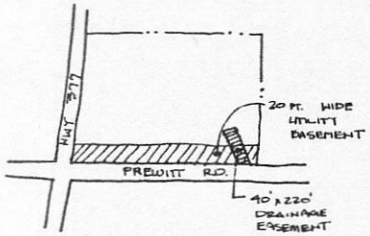


THE VIEWS INTO THE SITE SHOULD BE DIMINISED BY A LANDSCAPED BUFFER ZONE WITH THE BUILDINGS AS A BACKDROP.

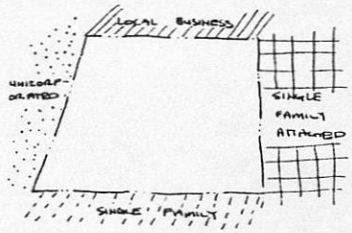
ZONING



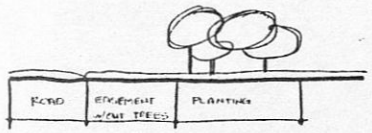
PROPOSED ROAD EXPANSION



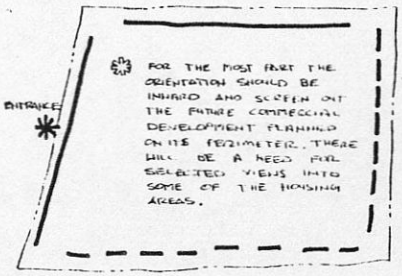
EASEMENTS



FUTURE DEVELOPMENT

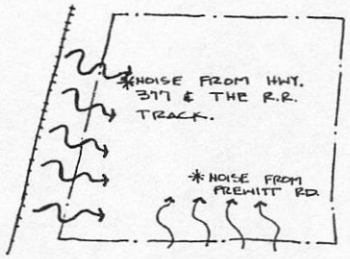


EASEMENTS SHOULD BE RESPECTED BY NOT PLANTING ANY MAJOR TREES IN THE EASEMENT

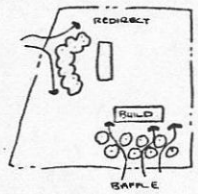


FOR THE MOST PART THE ORIENTATION SHOULD BE INWARD AND SCREEN OUT THE FUTURE COMMERCIAL DEVELOPMENT PLANNED ON ITS PERIMETER. THERE WILL BE A NEED FOR SELECTED VIEWS INTO SOME OF THE HOUSING AREAS.

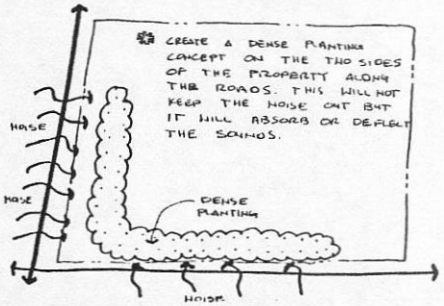
SENSORY (CONT'D.)



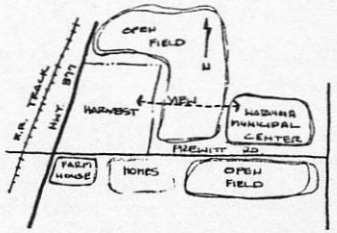
NOISE

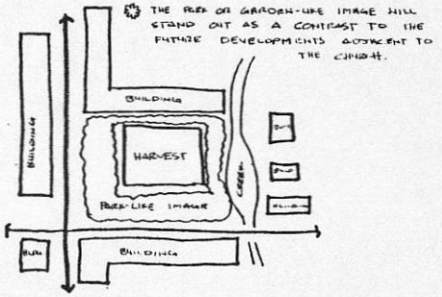


THE NOISE IS TO BE RE-DIRECT OR BAFFLED BY PLANTING AND THEN THE BUILDINGS WILL PROTECT THE INTERIOR SPACES.

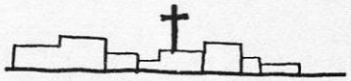


NEIGBORHOOD CONTEXT & LOCATION



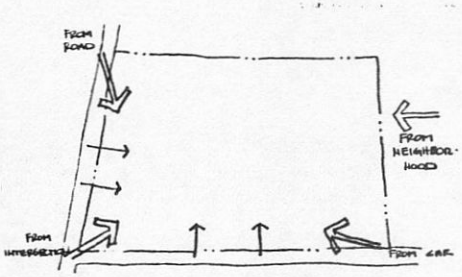


THE RED OR GARDEN-LIKE IMAGE WILL STAND OUT AS A CONTRAST TO THE FUTURE DEVELOPMENTS ADJACENT TO THE CINDA.

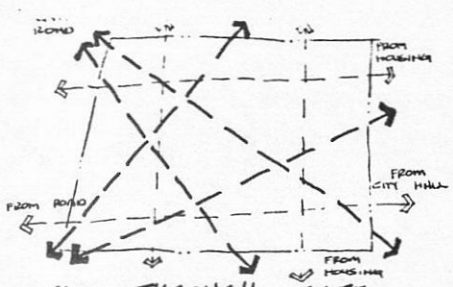


THE PRIMER TOWER SHOULD BE LOCATED AND BUILT TALL ENOUGH TO BE SEEN FROM DIFFERENT AREAS WITHIN THE COMMUNITY. THIS WILL BECOME A LANDMARK WITHIN THE COMMUNITY, DUE TO ITS CLOSE ASSOCIATION WITH THE CITY HALL.

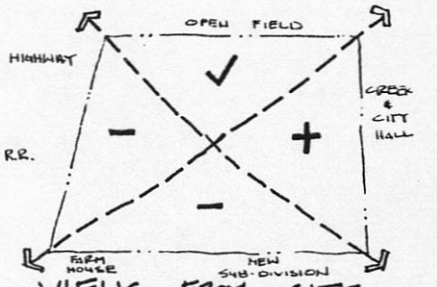
SENSORY



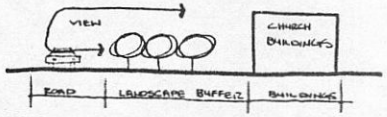
VIEWS TO SITE



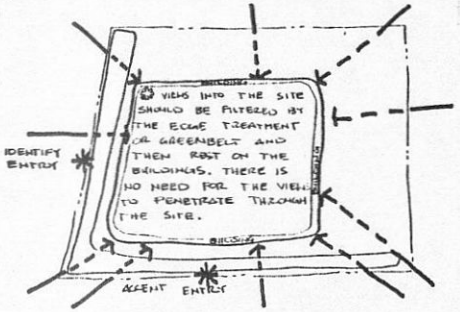
VIEWS THROUGH SITE

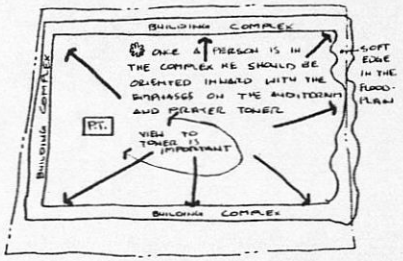


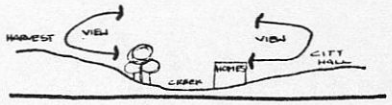
VIEWS FROM SITE



- VIEWS TOWARD THE BUILDING FACILITIES SHOULD BE DIFFUSED BY A LANDSCAPE BUFFER WHICH SETS IT APART FROM ADJACENT LAND.
- VIEW OF THE PRAYER TOWER SHOULD BE POSSIBLE FROM A DISTANCE, SERVING AS A SYMBOLIC SYMBOL TO THE COMMUNITY
- THE OUTDOOR ACTIVITY AREAS SHOULD BE ABLE TO BE SEEN FROM THE ROAD AS A MEANS OF INVITING PEOPLE INTO THE FELLOWSHIP AND CREATING AN INTEREST IN THE COMMUNITY IN THE CHURCH.

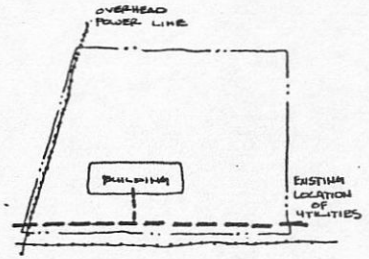






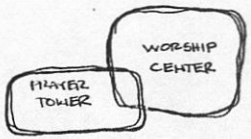
- A VISUAL CONNECTION SHOULD BE MAINTAINED BETWEEN THE CHURCH AND THE CITY HALL REINFORCING THE ROLE OF THE CHURCH MINISTRY IN THE COMMUNITY. THERE MAY BE A NEED TO BLOCK OUT FUTURE HOMES BETWEEN THE CHURCH AND THE CITY HALL.

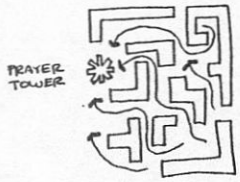
UTILITIES



- CONSTRUCTION OF BUILDINGS SHOULD BEGIN NEAR THE EXISTING UTILITIES AND GROW TOWARD THE INTERIOR OF THE SITE.
- RESPECT THE 20ft UTILITY EASEMENT ALONG THE SOUTH PROPERTY LINE.

PRAYER TOWER

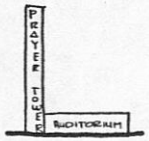




- VISUAL GUIDE WITHIN CONTEXT OF THE SITE FROM THE SPACES ON THE SITE

LOCATE NEAR WORSHIP

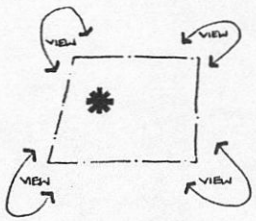
GUIDENCE



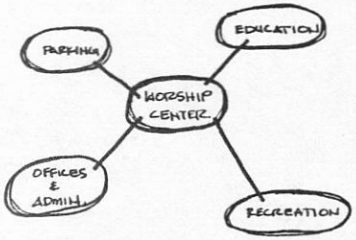
THE MAJOR VISUAL EMPHASES IS TO BE TOWARD THE PRAYER TOWER, SYMBOLIC OF THE CROSS OVER THE WHEAT.

THE PRAYER TOWER SHOULD BE SEEN FROM ALL OF THE MAJOR EXTERIOR SPACES, AND SERVE AS A VISUAL GUIDE TO LEAD PEOPLE TO THE ADDITIONAL.

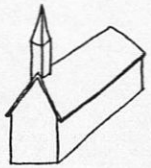
AUDITORIUM



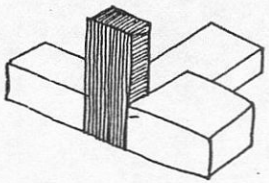
LANDMARK IN COMMUNITY



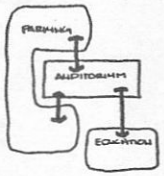
CENTRALIZED



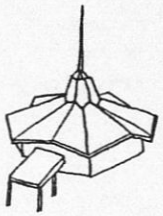
SYMBOLIC



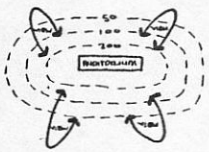
SHOULD EXIST AS THE DOMINANTE BUILDING



- THE AUDITORIUM MUST HAVE EASY ACCESS FROM PARKING AND THE EDUCATIONAL AREAS PARKING MAY HAVE TO WRAP AROUND THE AUDITORIUM.

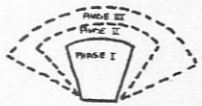


- THE FORM OF THE AUDITORIUM SHOULD EMPHASIZE THE IDEA OF A GATHERING PLACE. THE ENTRANCE SHOULD BE INVITING.
- THE PRAYER TOWER COULD POSSIBLY BE ATTACHED TO THE AUDITORIUM.
- THE LOCATION OF THE AUDITORIUM SHOULD BE VISIBLE AS A PERSON DRIVES BY THE PROPERTY



- PLACE THE AUDITORIUM ON THE HIGHEST FLAT AREA ON THE SITE TO EMPHASIZE ITS IMPORTANCE.

PHASED CONSTRUCTION



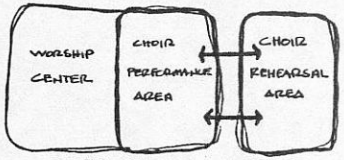
- THE AUDITORIUM SHOULD BE CONSTRUCTED IN A FASHION TO PROVIDE FOR EXPANSION UP TO A MAXIMUM OF 1000 SEATS

YOUTH HOME

• SHOULD BE ABLE TO ACCOMODATE 6 PEOPLE AND NEEDS SEPARATE PARKING

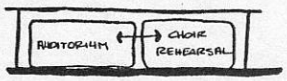
ACTIVITIES

CHOIR REHEARSAL



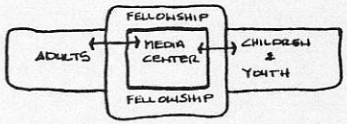
• THE REHEARSAL AREA NEEDS TO BE NEAR THE PERFORMANCE AREA

ADJACENCY



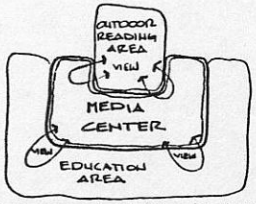
THE CHOIR REHEARSAL SHOULD BE LOCATED INSIDE OF THE SAME BUILDING AS THE AUDITORIUM.

MEDIA CENTER



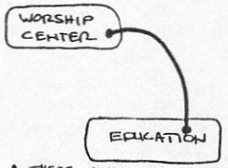
• THE MEDIA CENTER SHOULD BE ACCESSIBLE BY ALL AGES AND CAN SERVE AS THE COMMON GROUND BETWEEN AGE GROUPS.

CENTRALIZED



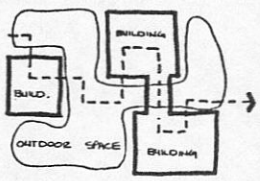
• MEDIA CENTER SHOULD BE LOCATED IN THE EDUCATION AREA WITH VISUAL CONNECTION TO PROMOTE MORE PARTICIPANTS

EDUCATIONAL FACILITIES

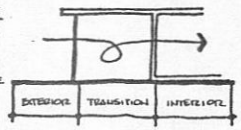


- THERE MUST BE COVERED PEDESTRIAN ROUTES TO THE WORSHIP AREA

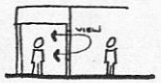
CIRCULATION

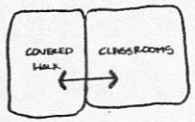


✿ THE CIRCULATION ROUTES FROM ONE BUILDING TO ANOTHER SHOULD INCLUDE A VARIETY OF INTERIOR AND EXTERIOR EXPERIENCES. A VARIETY OF SPACIAL EXPERIENCES THROUGH CHANGING THE DEGREE OF INTERIOR VS. EXTERIOR SPACE RELATIONSHIPS.



✿ DEVELOPE TRANSITION ZONES BETWEEN INTERIOR AND EXTERIOR SPACES AT THE MAJOR ENTRANCES

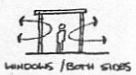




✿ THE CLASSROOMS SHOULD OPEN UP TO THE EXTERIOR TO REINFORCE THE GOAL OF A STRONG INTERIOR EXTERIOR RELATIONSHIP AND AN EMPHASIS ON THE PARK-LIKE CONCEPT

✿ ANOTHER METHOD TO ACHIEVE THESE CONCEPT IS TO PROVIDE ACCESS ALONG THE COVERED WALK.

✿ THE PEDESTRIAN CONNECTIONS BETWEEN BUILDINGS OR THROUGH BUILDINGS OFFER A WIDE RANGE OF CHOICES TO CAPITALIZE ON DEVELOPING AN INTERIOR EXTERIOR RELATIONSHIP



CHILDREN

SENIOR ADULTS

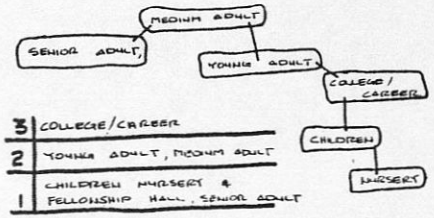
COLLEGE & CAREER

NURSERY

YOUNG ADULTS

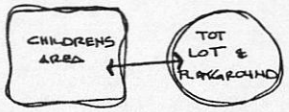
MEDIUM ADULTS

DEPARTMENTS



✿ THE AGE GROUPS SHOULD BE PLACED ON LEVELS BASED ON THEIR ABILITY TO CLIMB STAIRS.

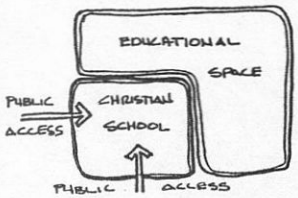
✿ THERE SHOULD BE IDENTIFIABLE ZONES HORIZONTALLY ALSO.



✿ CHILDRENS AREA SHOULD BE LOCATED NEAR THE PLAY AREAS OUTDOORS

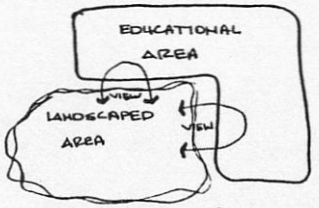
EDUCATIONAL FACILITIES (CONT'D)

FELLOWSHIP HALL



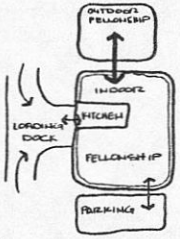
- EDUCATION SPACE SHOULD BE PLANNED FOR FUTURE DUAL USE AS A CHRISTIAN SCHOOL

SCHOOL

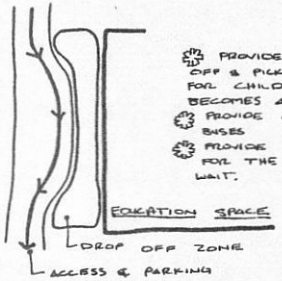


- OPEN UP CLASSROOMS TO THE OUTDOORS

ORIENTATION



- PROVIDE VEHICLE ACCESS FOR THE KITCHEN AREA.
- DEVELOPE AN OUT-DOOR FELLOWSHIP AREA ADJACENT TO THE FELLOWSHIP HALL.
- MUST HAVE ADJACENT PARKING AREAS.

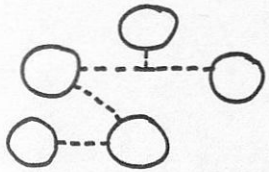


- PROVIDE FOR A DROP OFF & PICK UP AREA FOR CHILDREN IF IT BECOMES A SCHOOL.
- PROVIDE ACCESS FOR BUSES
- PROVIDE A SHADY AREA FOR THE CHILDREN TO WAIT.

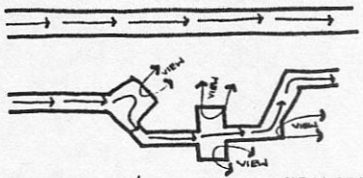
- THE VIEW FROM THE CLASSROOMS SHOULD BE INWARD NOT OUTWARD REINFORCING THE EMPHASIS OF GOD'S KINGDOM NOT THE SECULAR WORLD.

CLASSROOMS

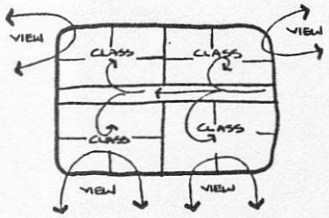
CIRCULATION



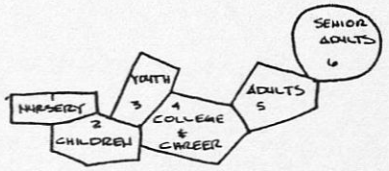
ROOM ARRANGMENT



- INTERIOR AND/OR EXTERIOR CIRCULATION SHOULD NOT BE A STRAIGHT PATH BUT SHOULD INCORPORATE VARIETY IN THE SPACIAL EXPERIENCE

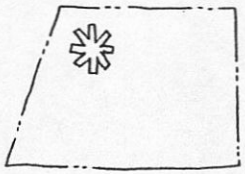


- ALL CLASSROOM WILL NEED A VIEW OUTDOORS
- MAJORITY OF CLASSES WILL BE AN OPEN PLAN CONCEPT



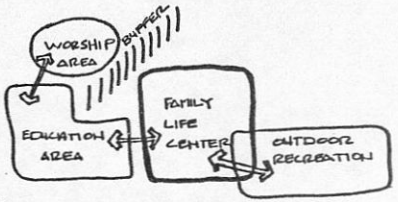
- HIEARCHY OF AGE GROUPS WITH AREAS THAT ARE VISUALLY IDENTIFIED FROM THE EXTERIOR

FAMILY LIFE CENTER

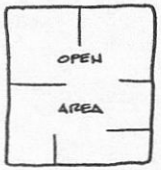


LOCATION

SPACIAL REQUIREMENTS

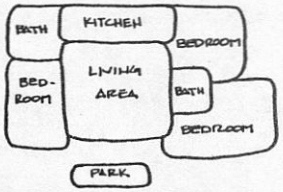


- FAMILY LIFE CENTER SHOULD BE SEPARATED FROM WORSHIP AREA. A STRONG RELATIONSHIP SHOULD BE DEVELOPED WITH THE OUTDOOR RECREATION.



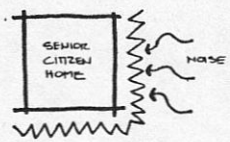
- OPEN AREAS NEEDED FOR FELLOWSHIP
- SOME SPACES CAN DOUBLE FOR EDUCATION SPACE

SENIOR CITIZEN HOME



- SHOULD BE ABLE TO ACCOMODATE 6 PEOPLE WITH A SEPARATE PARKING AREA
- SEPARATE FROM RECREATION AND YOUTH AREAS

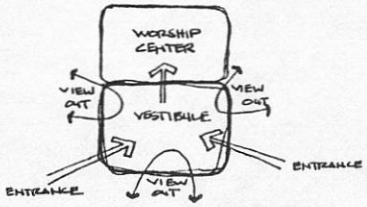
ACTIVITIES

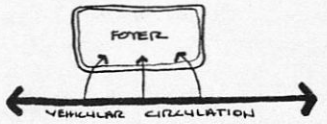


- THE SENIOR'S HOME SHOULD BE SCREENED OR LOCATED AWAY FROM NOISE AREAS AND HIGH ACTIVITY AREAS

DAILY ACTIVITY AREAS AND RECREATION

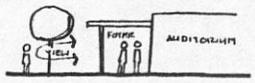
VESTIBULE





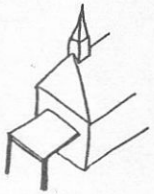
- SHOULD HAVE A CLOSE ACCESS POINT FROM A CAR

FOYER TO WORSHIP



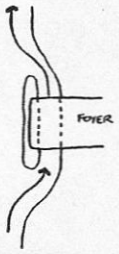
- THE FOYER SHALL PROMOTE THE CONCEPT OF FELLOWSHIP BY HAVING ENOUGH GLASS TO LET PEOPLE SEE THE PEOPLE ON THE INSIDE.
- THE INTERIOR SPACE SHOULD FLOW OUTDOORS INTO AN OUTDOOR FELLOWSHIP AREA, FURTHER VISUALLY EMPHASIZING THE IDEA OF FELLOWSHIP.

FELLOWSHIP/CONVERSATION



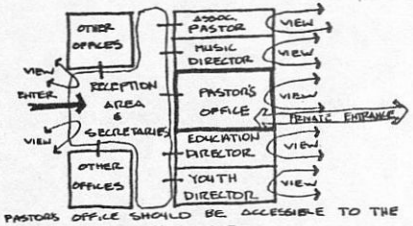
- THE VESTIBULE SHOULD REACH OUT AND INVITE PEOPLE IN. THE PEOPLE ON THE INSIDE SHOULD BE SEEN FROM THE OUTSIDE TO LET PEOPLE SEE THE FELLOWSHIP ON THE INSIDE.

ACCESS



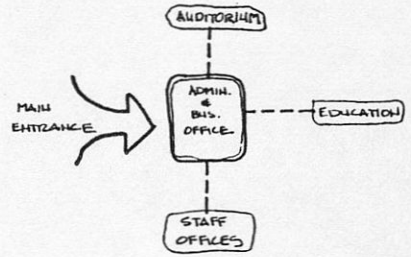
- THERE SHOULD BE A COVERED DROP OFF FROM THE AUTOMOBILE INTO THE FOYER.
- THE FOYER SHOULD BE A PART OF THE AUDITORIUM STRUCTURE.

ADMINISTRATION & BUSINESS OFFICES



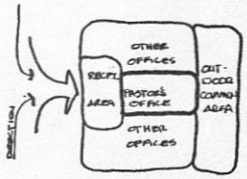
- PASTORS OFFICE SHOULD BE ACCESSIBLE TO THE PUBLIC & CENTRALY LOCATED.
- PROMOTE INTERACTION BETWEEN STAFF.

OFFICE ARRANGEMENT

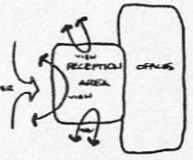


RECEPTION AREA

- THE OFFICES SHOULD HAVE A WINDOW OR A SKYLIGHT, SOME FORM OF NATURAL LIGHTING TO REDUCE THE CLOSED IN FEELING OF AN OFFICE WITHOUT NATURAL LIGHTING



- A COMMON OUTDOOR AREA COULD BE A METHOD FOR INCREASING INTERACTION BETWEEN THE STAFF. IT COULD INCLUDE SEATING, FOR READING, CONVERSING, BREAKING & OUTDOOR STAFF MEETINGS.



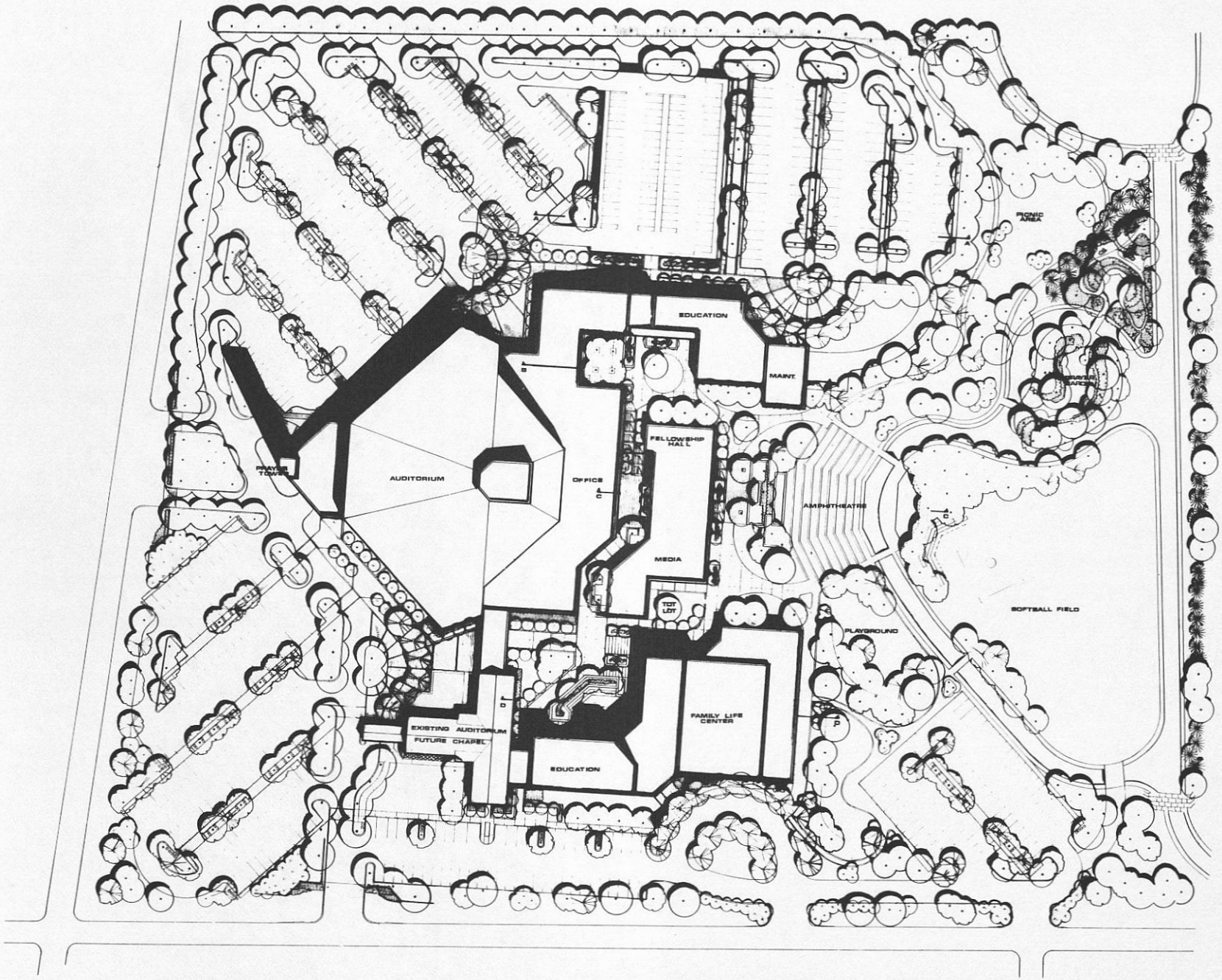
- THE RECEPTION AREA SHOULD BE RECOGNIZABLE AS A PERSON APPROACHES. AN APPROPRIATE METHOD OF ACHIEVING THIS IS TO HAVE VIEWS INTO THE AREA FROM THE OUTSIDE AND A VIEW FROM THE RECEPTION AREA TO THE OUTSIDE

MASTER PLAN

THE MASTER PLAN

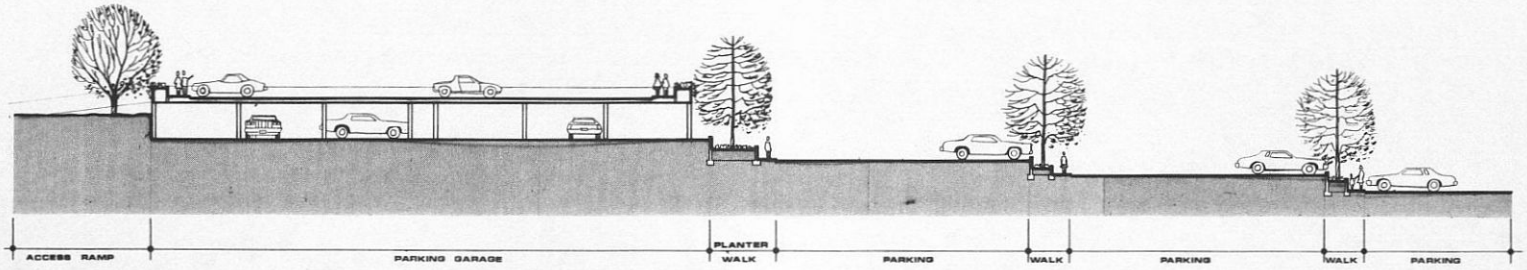
The following drawings represent the interpretation of the analysis in the form of a master plan. As mentioned before, the master plan is not an end product in itself but an ongoing process. The plan represents an interpretation of the program today. As time passes, and when new phases of construction are planned, the program should be reviewed to see if any of the issues have changed that would affect the physical development of the plan. The program provides a resource for making decisions for future development that otherwise would not have a sound basis.

It is my hope that the concepts, ideas and attitudes toward the future development of Harvest Baptist Church would be adopted by the congregation as outlined in this document, therefoby maximizing Harvest's ability to spread the gospel in a unique way throughout the community.

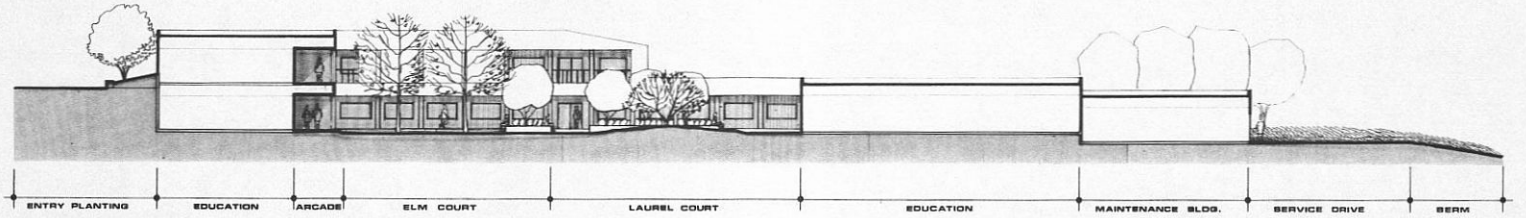


MASTER PLAN

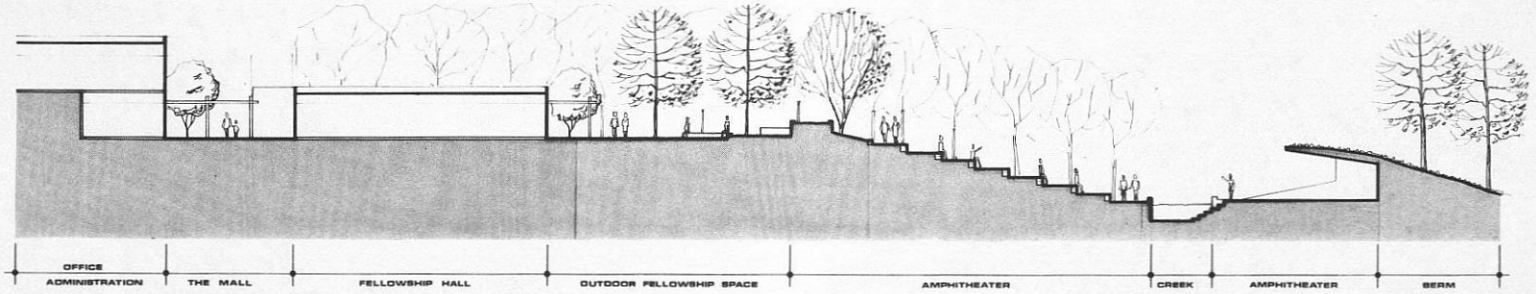
HARVEST BAPTIST CHURCH
WATAUGA, TEXAS - RANDALL L. MAYNE
UTA - LANDSCAPE ARCHITECTURE - DEC. 93



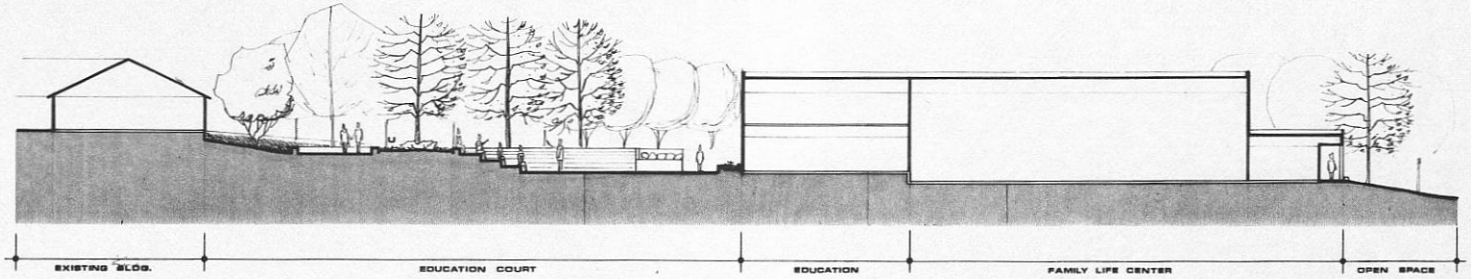
SECTION AA SCALE: 1" =10'-0"



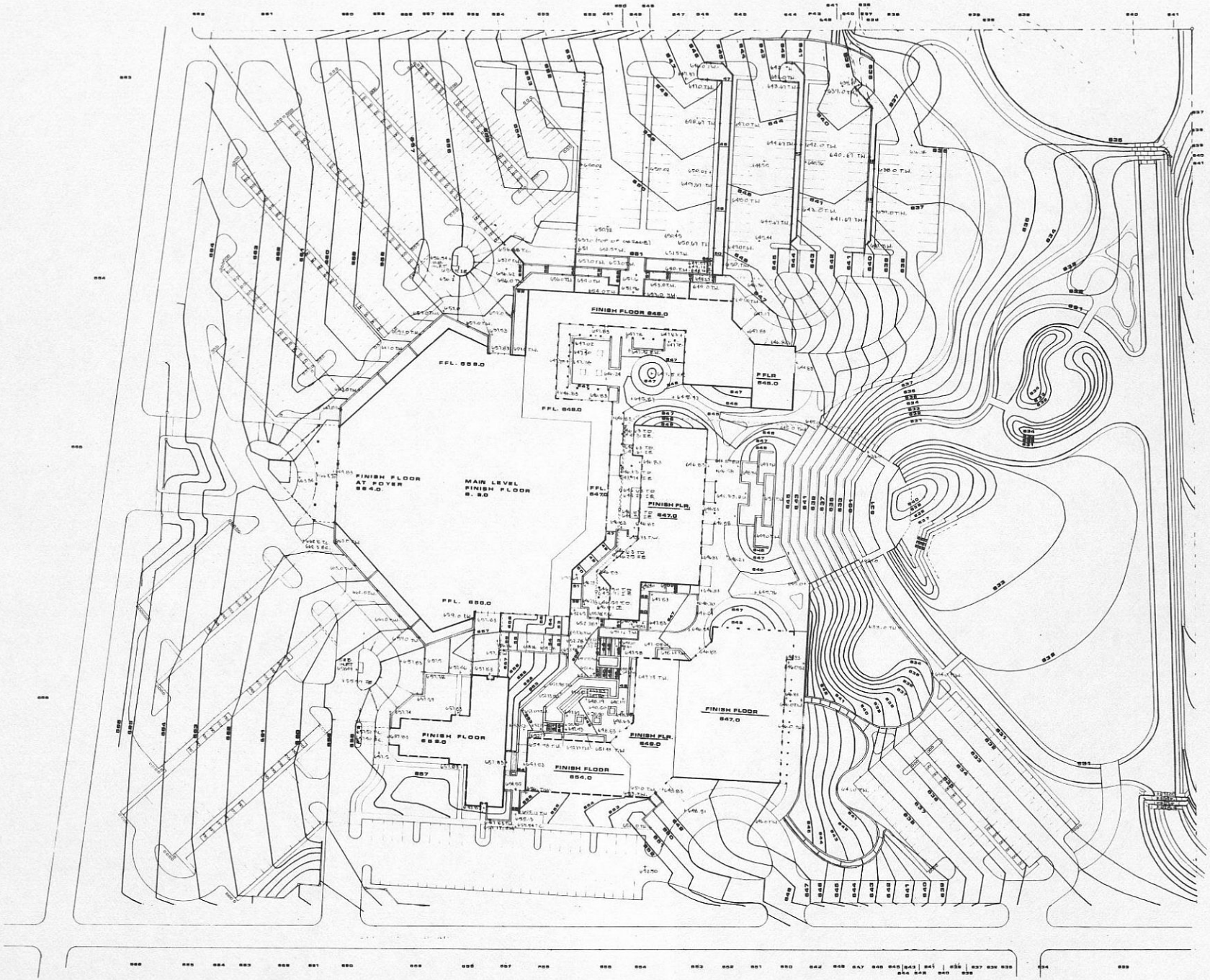
SECTION BB SCALE: 1" =10'-0"



SECTION CC SCALE: 1" =10'-0"



SECTION DD SCALE: 1" =10'-0"

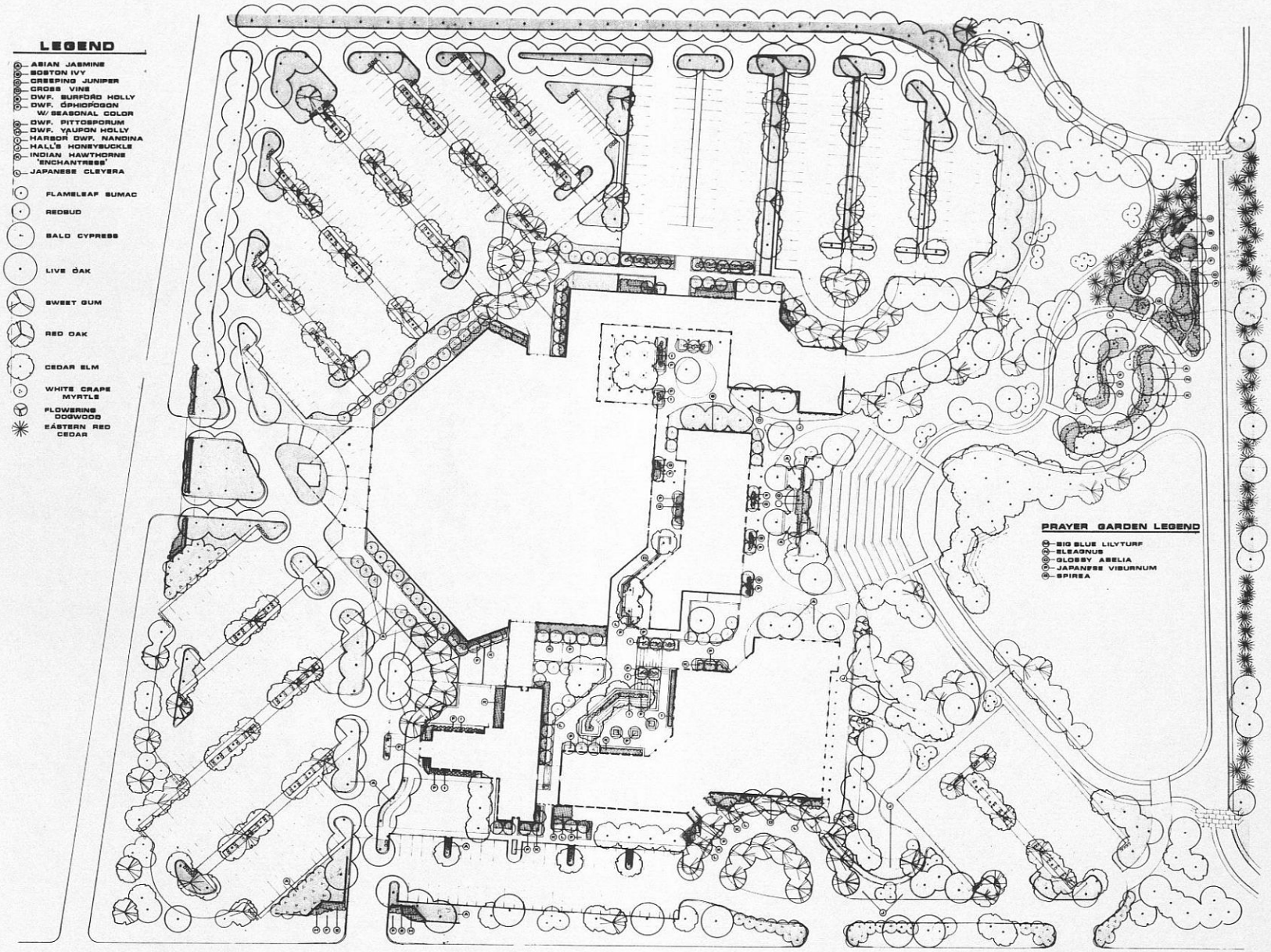


GRADING PLAN

HARVEST BAPTIST CHURCH

WATAUGA TEXAS - RANDALL L MAYNE
UTA - LANDSCAPE ARCHITECTURE - DEC 83

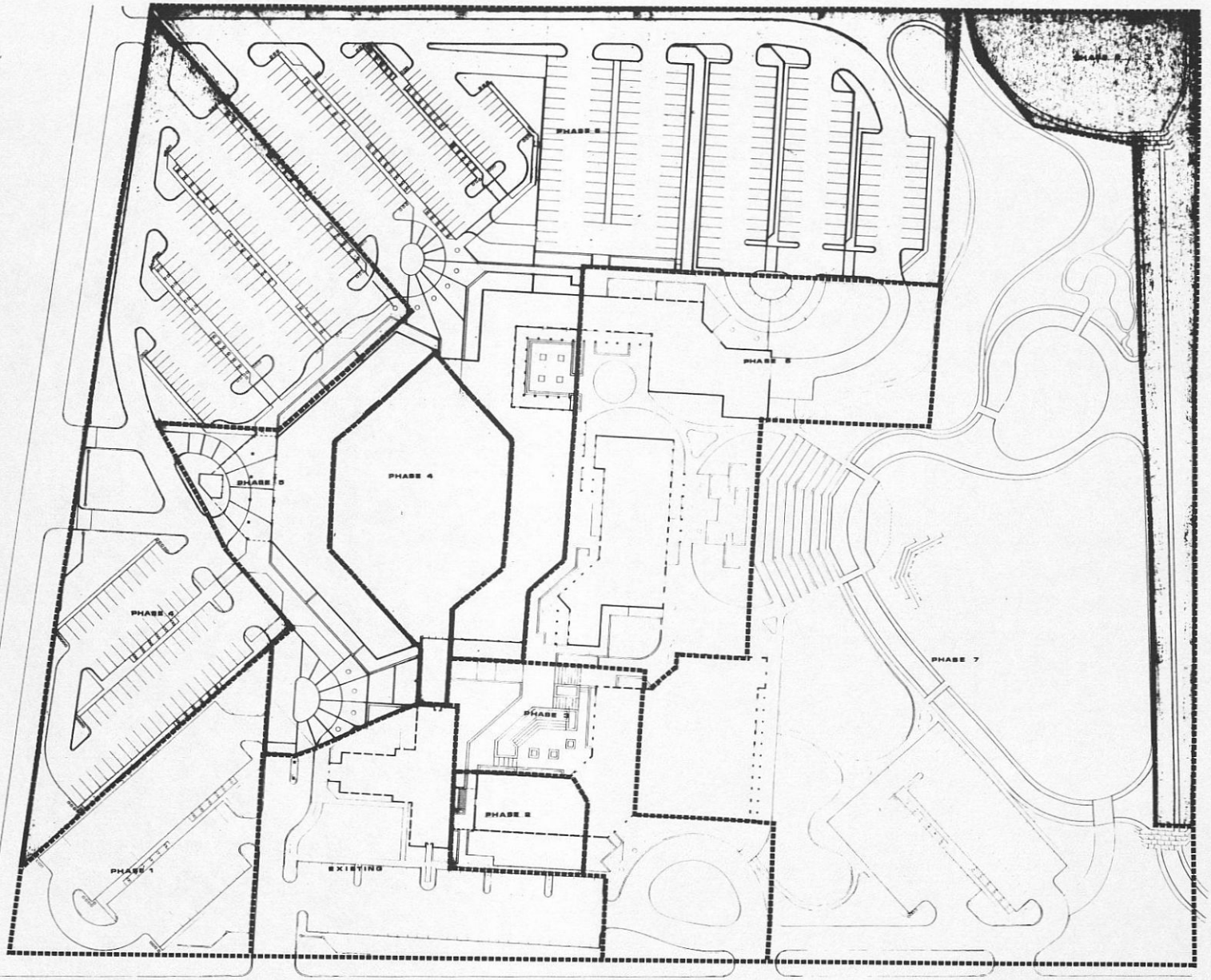
0 25 50 100 200
N



PLANTING PLAN

HARVEST BAPTIST CHURCH

WATAUGA, TEXAS - RANDALL L. MAYNE
UTA - LANDSCAPE ARCHITECTURE - DEC. 89



PHASING PLAN

HARVEST BAPTIST CHURCH
WATAUGA, TEXAS - RANDALL L. MAYNE
UTA - LANDSCAPE ARCHITECTURE - DEC. 83

0 25 50 100 200
N

BOOKS

16 Ferguson, George. Signs and Symbols in Christian Art. Oxford University Press, New York, 1958.

13 Erley, Duncan and Jaffe, Martin, with the assistance of Living System, Winter, California. Site Planning for Solar Access, A Guide Book for Residential Developers and Site Planners. American Planning Association, 1313 E. 6th St., Chicago, IL 60637.

Robinette, Gary O., Executive Director. Plants/People/and Environmental Quality. A study of plants and their environmental functions published by the U.S. Dept. of the Interior, National Park Service, Washington, D.C. in collaboration with the American Society of Landscape Architects Foundation.

Simonds, John Ormsbee. Landscape Architecture, An Ecological Approach to Environmental Planning. McGraw Hill Book Company, Inc., New York, Toronto, London, 1961.

Thiry, Bennett and Kamphoefher. Churches and Temples. Reinhold Publications Corp. New York, 1953.

Mazria, Bernard. The Passive Solar Energy Book. Library of Congress Cataloging in Publication Data

PERIODICALS

Turner, James, Landscape Architect, Fall 1982.

2 "Chapel of the Holy Cross". Architecture Record, 1956 (October 1956:173-181).

4 "The Outdoor Room", Philip Johnson. The Roofless Church, New Harmony, Indiana 1960.

3 "An Abstraction of a Country Church and a Modest House". AIA Journal.

PERIODICALS (continued)

5 "Episcopal Church of the Epiphany: Symbolic Boldness in Contrast to Systems Simplicity". Architectural Record 158 (September 1975:104-105).

6 "Clear Lake Presbyterian Church". Texas Architecture (1968) 4-7.

7 Dutcher, George and Hanf, "Church of the Brethren, Live Oak, California". "Flexible Space in Religious Buildings". Architectural Record 154 (July 1973:127).

"The First Concrete Monolith in the World". Architectural Record (October, 1961).

REPORTS

9 Flood Insurance Study, City of Watauga, Texas, Tarrant County. Federal Emergency Management Agency, December 1, 1981.

12 Climate: Resource and Nemesis. Gene Brooks and Mike Ostick.

15 Cook, David I. and van Haverbeke, David F. Trees and Shrubs for Noise Abatement. Paper prepared for Trees and Forests in Urbanizing Environment Symposium. University of Massachusetts, 1970, II page 4.

10 Current Population Estimates, 1983, North Texas Council of Governments, May 1983.

11 Area Household Income Near Top in County, Reed, Dan. Fort Worth Star Telegram, August 1983.

Farmer, Aaron Lee. Modern Religious Design: An Analysis of the Advent and Development of the Modern Idiom in Protestant Church Design with Special Reference to Texas. University of Texas at Arlington, December, 1980.

INTERVIEWS

8 Norwood, Mr. State Highway Department, Ft. Worth, Texas. March 1983.

Sanders, John. Architect, Bedford, Texas. February 1983.

Bee, Mr. Public Works Director, City of Watauga. March 1983.

Sale, Lynn. Architect, North Richland Hills. February 1983.

APPENDIX A

The following is a reference list of Biblical analogies or legends that will be utilized during the design phase to develop a philosophical basis for the design.

PLANTS:

Aspen - (The Aspen tree cannot be grown in Texas, but the Chinese Tallow or the Cottonwood can, and their leaves have a similar character.) One legend is that the cross was made of Aspen and when it realized its purpose, its leaves began to tremble with horror and have never ceased trembling. Another legend is that when Christ died, all the trees bowed except the Aspen. Because of its pride and arrogance, the leaves were doomed to continual trembling.

Elm - Alludes to the dignity of life. The all-encompassing growth and spreading of its great branches in every direction symbolizes the strength which is derived by the devout from their faith in the Scriptures.

Fruit - Used to suggest the 12 fruits of the Spirit: love, joy, peace, long-suffering gentleness, goodness, faith, meekness, patience, modesty, temperance and chastity.

Ilex - (Holly Oak) Thorny leaves are regarded as a symbol of Christ's crown of thorns, said to have been the tree of the cross and therefore is the symbol of the passion of Christ.

A legend is told that when the trees heard Christ was to be crucified, they all agreeded to splinter into fragments when the ax touched them. The Ilex remained whole and allowed itself to be used as the instrument of the passion.

Ivy - The ivy has always been closely identified with death and immortality because it is forever green. It is also a symbol of fidelity and eternal life. The ivy which clings to its support is also a symbol of attachment and undying affection.

Jasmine - The white color and sweet scent make it a symbol of the Virgin Mary. A secondary meaning is that of grace, elegance and amiability.

Laurel - Triumph, eternity and chastity. The victor in ancient contest was crowned with a laurel wreath.

Oak - One of several trees thought of as being the tree that the cross was made from. Because of its solidity and endurance, the Oak is also a symbol of the strength of faith and virtue and of the endurance of the Christian against adversity.

Vine - One of the most vivid symbols in the Bible to express the relationship between God and His people, the vine sometimes refers to the vineyard as being the protected place where the children of God (the vines) flourish under the tender care of God (the Keeper of the Vines). The vineyard of the Lord of Hosts is the House of Israel, and the men of Judah his pleasant plant (Isaiah 5:7). The vine was used as the symbol of the Church of God, in which this relationship exists. The vine is the emblem of Christ, following from his words and expressing the new relation between God and man through Him (John 15:1,5,8).

DIRECTIONS:

East - Is symbolic of Christ, the Sun of the Universe.

North - Region of cold and night. The reading of the Gospel symbolizes the Christian desire to convert the barbarians that lived to the North.

South - Seat of light and warmth, associated with the New Testament.

West - Seat of darkness and abode of demons. High windows on the west side of the church was said to make the light of the Gospel visible.

NATURE:

Light - Symbolic of Christ, in reference to his Word (John 8:12).

Garden - The enclosed garden is a symbol of the Immaculate Conception of the Virgin Mary (Song of Solomon 4:12).

Rocks - A symbol of the Lord. Based on the story of Moses, who smote the rock, from which a spring burst forth to refresh his people. Christ is often referred to as a rock from which flows the pure rivers of the Gospel, the cornerstone of the Church. (Matthew 16:18, Upon this rock I will build my church.)

Rivers - Four sacred rivers: the Pison, the Gihon, the Tigris and the Euphrates. Believed to be the four rivers of paradise, flowing from a single rock, and as such were used as the symbols of the four Gospels, flowing from Christ.

Stones - Symbols of firmness.

Water - The symbol of cleansing and purifying used in baptism, symbolizing the washing away of sin and rising to a newness of life. It also denotes innocence as when Pilate publicly washed his hands (Matthew 27:24). It sometimes suggests trouble and/or tribulations (Psalm 69:1,2).

Three windows signify the Trinity.

A gate can represent the entrances into heavenly paradise (Psalm 24:7). The gate carries both of these meanings in scenes of the expulsion of Adam and Eve from the Garden of Eden. It also appears as the dividing barrier between the righteous and the damned in scenes of the Last Judgment.

Church - House of God, Body of Christ.

COLORS:

Green - The color of vegetation, of Spring, the triumph of Spring over Winter, or life over death. Being a mixture of yellow and blue, it also suggests charity and the regeneration of the soul through good works.

White - Innocence of the soul, purity and holiness of life (Psalms 51:7 and Matthew 28:3).

Blue - Heaven and Heavenly Love, color of truth.

Red - Color of blood, associated with emotions, symbolic of love and hate.

SHAPES:

Circle - Eternity and never-ending existence monogram of God. Represents the perfection of God and the everlasting quality of God.

Triangle - The symbol of the Trinity, three equal parts, joined into one triangle with three circles representative of three persons in one God: the Father, the Son, and the Holy Ghost.

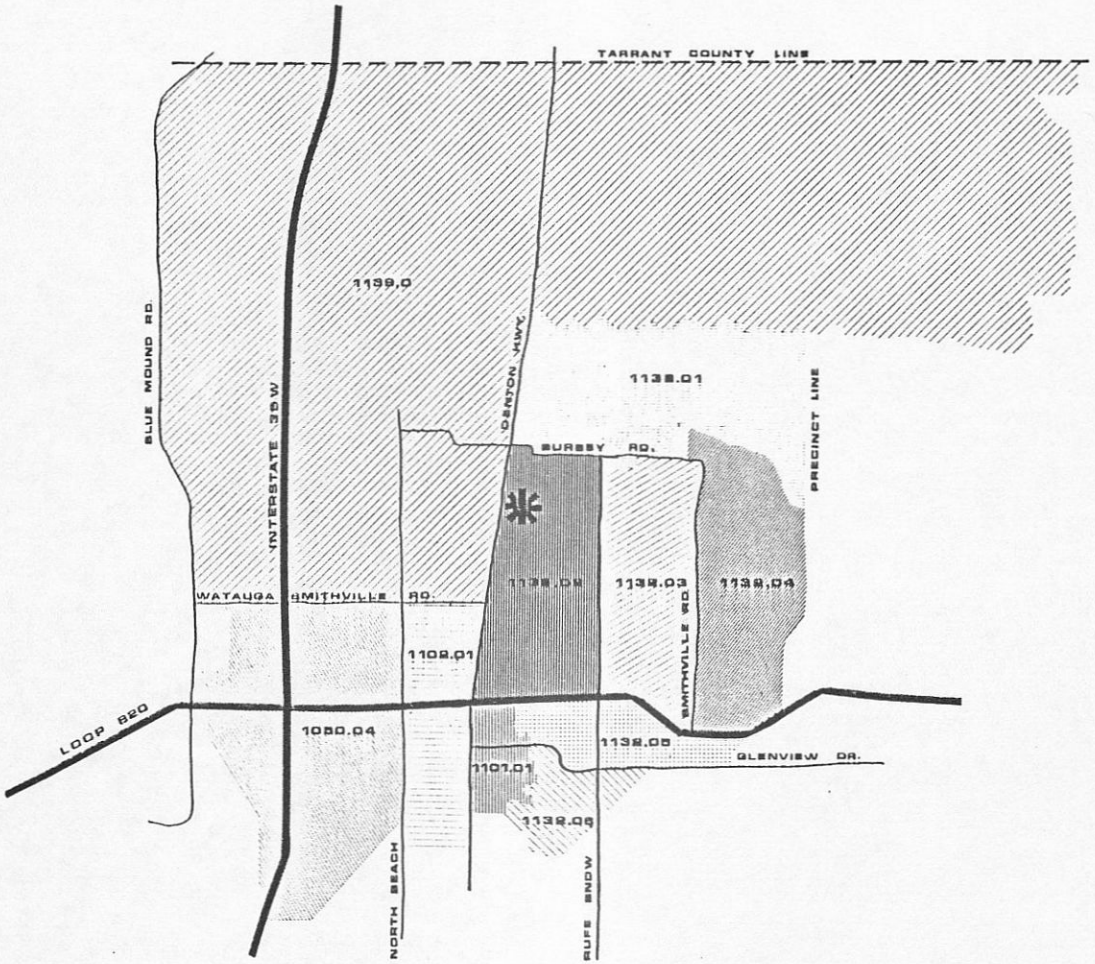
Square - Emblem of the earth and earthly existence.

Pentagon - Suggests the five wounds of Christ.

APPENDIX B

AGE/SEX BY CITY

CITY:	Watauga	Keller	North Richland Hills	Fort Worth	Haltom City*	Richland Hills	unincorporated	Total Population (1980)
Preschool (1-5)	1,410	411	2,857	132	880	581	926	7,197
Children (6-13)	1,911	674	4,228	155	1,340	913	1,477	10,698
Youth (14-17)	708	376	2,166	78	725	572	744	5,369
Adult (18-29)	2,589	818	6,895	327	1,920	1,659	1,653	15,861
Adult (30-59)	3,363	1,856	11,778	341	3,716	3,175	3,697	27,926
Adult (60+)	293	350	2,504	128	1,056	1,541	704	6,576
Totals (1980)	10,274	4,485	30,428	1,161	9,637	8,441	9,201	73,627
Totals (1983)	13,000	4,600	33,100	1,215	10,111	8,518	9,773	80,317
Totals (2000)	27,534	9,587	41,705	4,864	10,746	19,078	10,380	114,894



POPULATION CENSUS TRACTS

AGE/SEX BY CENSUS TRACT

HALTOM CITY Tract	1101.01		1101.02		1102.01		1102.02		1103.00		1138.02(P)		Total
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	
Preschool (1-5)	122	96	137	123	316	289	173	172	429	371	168	149	880
Children (6-13)	214	245	184	178	453	420	234	218	570	522	223	206	1,340
Youth (14-17)	163	144	137	106	243	241	112	147	247	223	75	84	725
Adult (18-29)	314	294	412	364	694	725	358	372	879	892	276	306	1,920
Adult (30-59)	769	872	589	715	1,199	1,382	626	695	1,193	1,334	394	360	3,716
Adult (60+)	213	254	344	570	288	294	225	298	699	1,028	29	37	1,056
TOTALS	3,700		3,859		6,462		3,630		8,397		2,307		9,637

NOTE: The totals on this sheet do not represent the total population of Haltom City. The totals only include census tracts that Harvest anticipates drawing people from.

These census tracts are not included in the population areas that Harvest will focus its ministry on.

NORTH RICHLAND HILLS Tract	1132.03		1132.04		1132.05		1132.06		1138.01(P)		*1138.02(P)		Total
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	
Preschool (1-5)	680	651	403	370	190	198	185	147	16	17	0	0	2,857
Children (6-13)	852	866	547	453	429	416	286	318	33	26	1	1	4,228
Youth (14-17)	394	397	258	238	244	260	164	168	25	18	0	0	2,166
Adult (18-29)	1,280	1,450	1,085	1,079	480	467	496	468	44	43	1	2	6,895
dult (30-59)	2,125	2,035	1,423	1,369	1,398	1,544	796	878	102	104	2	2	11,778
Adult (60+)	205	261	237	293	428	506	221	314	20	19	0	0	2,504
TOTALS	11,196		7,755		6,560		4,441		467		9		30,428

*Information was not available so the numbers were interpolated.

WATAUGA Tract	1138.02		1139.00(P)		Total
	Male	Female	Male	Female	
Preschool (1-5)	748	662	0	0	1,410
Children (6-13)	995	916	0	0	1,911
Youth (14-17)	335	373	0	0	708
Adult (18-29)	1,228	1,361	0	0	2,589
Adult (30-59)	1,755	1,608	0	0	3,363
Adult (60+)	129	164	0	0	293
TOTALS	10,274		0		10,274

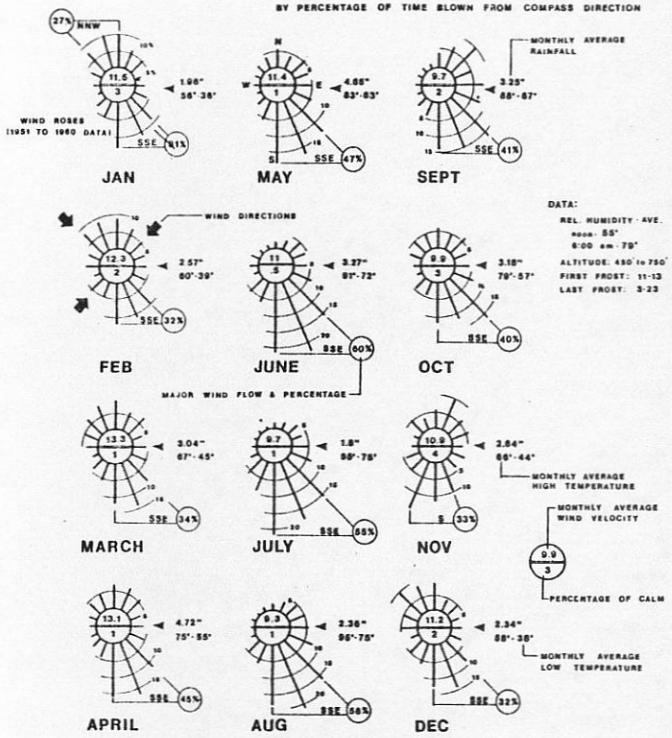
FORT WORTH Tract	1050.04		Total
	Male	Female	
Preschool (1-5)	67	65	132
Children (6-13)	74	81	155
Youth (14-17)	44	34	78
Adult (18-29)	169	158	327
Adult (30-59)	180	161	341
Adult (60+)	56	72	128
TOTALS	1,161		1,161

KELLER Tract	1138.01 (P)		1139.00 (P)		Total
	Male	Female	Male	Female	
Preschool (1-5)	47	49	152	163	411
Children (6-13)	95	76	255	248	674
Youth (14-17)	71	52	131	122	376
Adult (18-29)	129	125	269	295	818
Adult (30-59)	296	300	643	617	1,856
Adult (60+)	56	54	100	140	350
TOTALS	1,350		3,135		4,485

RICHLAND HILLS Tract	1133.01		1133.02		Total
	Male	Female	Male	Female	
Preschool (1-5)	123	115	157	186	581
Children (6-13)	196	214	250	253	913
Youth (14-17)	161	153	121	137	512
Adult (18-29)	330	316	504	509	1,659
Adult (30-59)	812	913	677	773	3,175
Adult (60+)	421	497	254	369	1,541
TOTALS	4,251		4,190		8,441

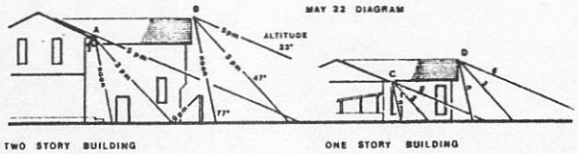
SURFACE WINDS

BY PERCENTAGE OF TIME BLOWN FROM COMPASS DIRECTION



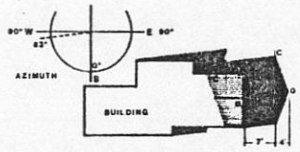
TOTAL YEARLY AVERAGE RAINFALL - DALLAS COUNTY - 36.84" (1978 DATA)

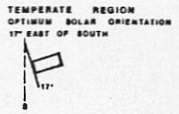
SUN-SHADE ANALYSIS

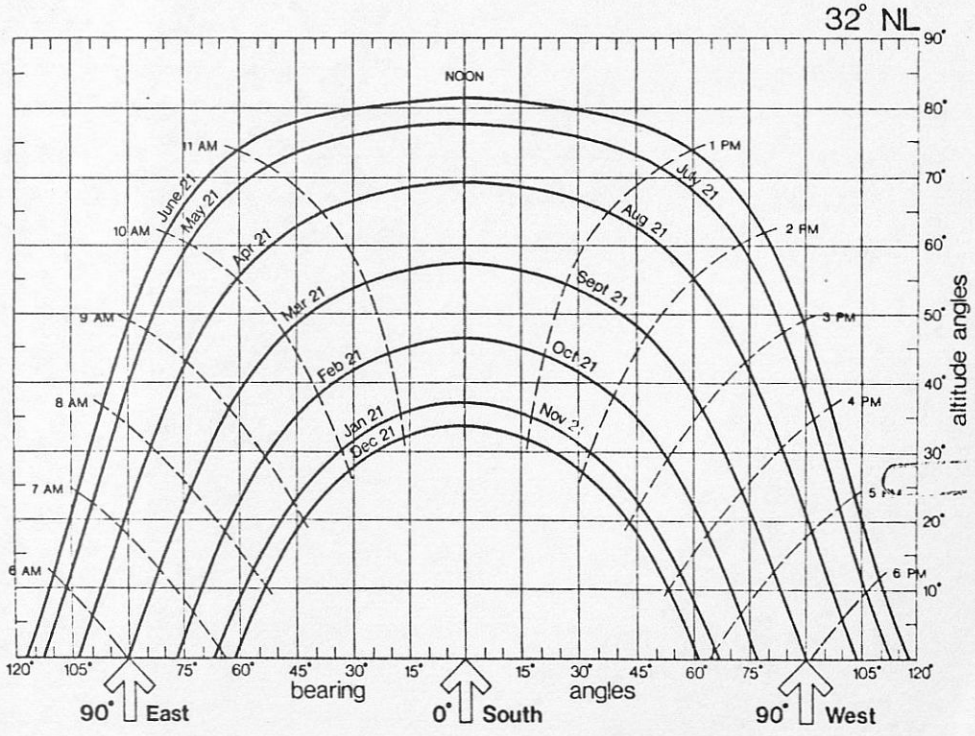


DATE - TIME	AZIMUTH	ALTITUDE	HOR. SHADE DISTANCE - 1st 9' (C)	HOR. SHADE DISTANCE - 1st 14' (D)	HOR. SHADE DISTANCE - 2nd 18' (A)	HOR. SHADE DISTANCE - 2nd 23' (B)	HOR. SHADE DISTANCE - 6 ft	SUNRISE & SUNSET 1978
MAR. 21 & SEPT. 22								3-21
8:00 am	61° E of S	27°	11'	18'	25'	30'	8'	8:34
noon	0°	56°	6'	9'	13'	16'	4'	8:44
3:00 pm	61° W of S	27°	11'	18'	25'	30'	8'	9-22
5:00 pm	83° W of S	14°	35'	54'	74'	91'	22'	7:18
								7:38
MAY 22 & JULY 23								5-22
8:00 am	83° E of S	47°	3'	11'	16'	19'	6'	6:30
noon	0°	77°	3'	3'	4'	6'	1.5'	8:36
3:00 pm	83° W of S	47°	3'	11'	16'	19'	6'	7-23
5:00 pm	80° W of S	23°	21'	31'	45'	54'	14'	6:40
								8:38
NOV. 23 & JAN. 20								11-23
8:00 am	46° E of S	20°	24'	37'	51'	64'	16'	7:07
noon	0°	37°	11'	18'	25'	30'	6'	4:18
3:00 pm	46° W of S	20°	24'	37'	51'	64'	16'	1-20
5:00 pm	88° W of S	8°	96'	160'	198'	220'	78'	7:31
								5:54

ABOVE DATA APPROXIMATE CALCULATIONS

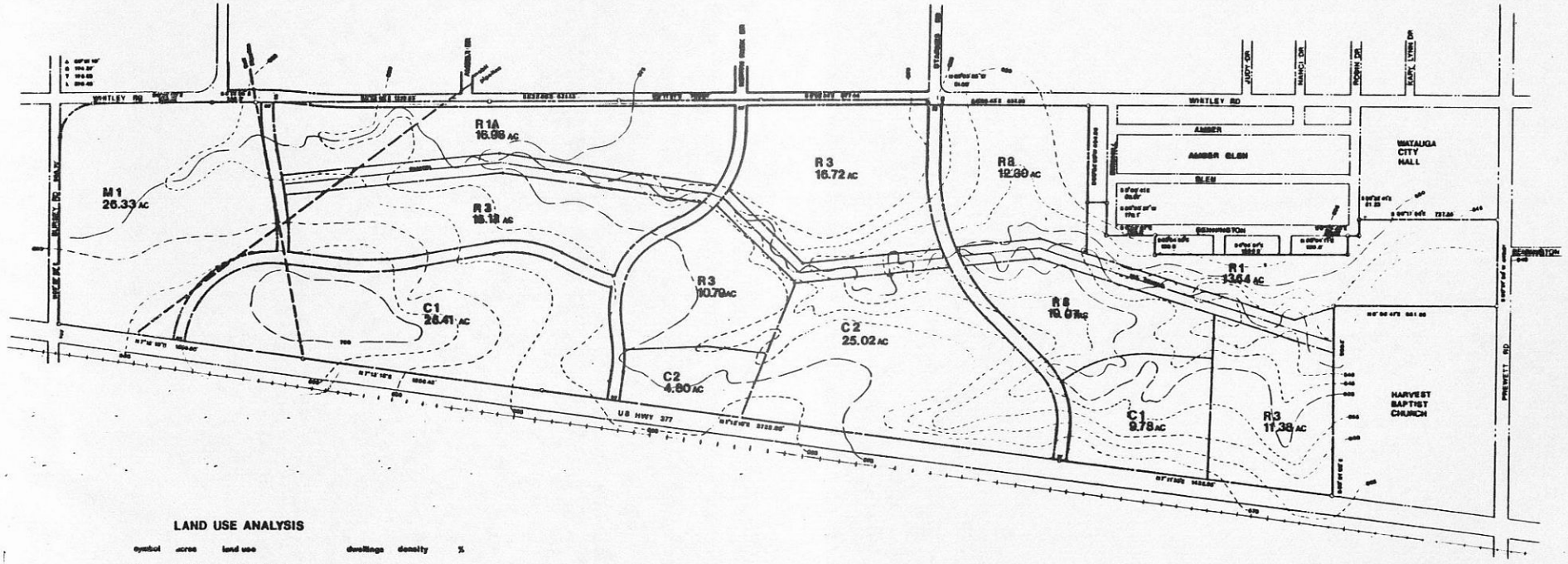






APPENDIX C.

APPENDIX D



LAND USE ANALYSIS

symbol	acres	land use	dwellings	density	%
R 1	13.64	SINGLE FAMILY	68	5	6
R 1A	16.96	SINGLE FAMILY ATTACHED	169	10	7
R 3	77.38	MULTI FAMILY	1934	25	34
C 1	36.19	LOCAL BUSINESS			16
C 2	29.62	GENERAL BUSINESS			13
M 1	26.33	LIGHT INDUSTRIAL			12
	13.89	RIGHT OF WAY			6
	13.13	CHANNEL			6
	227.34		2171	9.54/ac	100
	107.98	RESIDENTIAL			47
	66.01	COMMERCIAL			29
	26.33	INDUSTRIAL			12
	200.32				88
	27.02	STREET CHANNEL			2
	227.34				100

CONCEPT PLAN
PHEASANT RUN

LAND USE
227.34 ACRES
WATAUGA TEXAS

SWINNEY/TEBO INTERESTS