A Community Theater
BOOTH TARKINGTON
CIVIC THEATER
INDIANAPOLIS, INDIANA

THESIS 1973

College of Architecture
and Planning
Ball State University

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This is a thesis proposal for the development of a theater facility for the Booth Tarkington Civic Theater of Indianapolis. This Civic Theater is the oldest community theater in continuous existence in the United States and is maintained principally by memberships and individual box office sales.

There are several reasons which help to establish the need for a new theater. The present theater's stage house equipment is in need of repair and updating. They also need new stage equipment to allow for diversity in their productions. Another serious problem which they face is the location of the present facility. They have a high security problem at night, and those who attend the theater are fearful to enter the neighborhood after dark. This situation is beginning to have its affect on the numbers that attend performances and the new memberships being taken in each year. In order to increase their membership on which they rely heavily and to serve a greater percentage of the community needs, they must relocate or be forced out of existence.

The Civic Theater has received a donation of one million dollars from a relative of the Lilly family. This sum is to be used for the construction of a new theater. Along with this donation came the stipulation that the theater was to be built next
to the Indianapolis Art Museum which is located on a very inter-
esting site on West 38th Street. The site is the estate of the
late Josiah K. Lilly, Jr. On this site is an 18th Century chateau,
a Georgian pavillion, winding paths, matured gardens, a steep
ravine which leads to a canal, a lake, and a woods. This location
will allow the Art Museum to share the theater for its lectures
and art presentations. It is also expected to help increase
the Civic Theaters membership by 500 percent.

The architectural firm of Richardson, Severns and Scheeler
of Champaign-Urbana, Illinois has been assigned to develop a
design for the new Civic Theater. This is the same firm which
is responsible for the Art Museum's design. Their theater design
is another phase of a master plan which they have developed.
The Booth Tarkington Civic Theater's special needs are approx-
imately 46,000 square feet and a seating capacity of 700 people.
The theater also requires a proscenium stage opening and a con-
tinental seating arrangement. The remaining parts of the theater
are the basic functions needed to support the theater's activities.
These would include: rehearsal rooms, orchestra pit, offices,
rest rooms, storage, green room, kitchen, workshop, dressing rooms,
lobby, refreshment area, and circulation.

The complexity of theater design along with the excellent
site conditions should prove to be a very interesting and stim-
ulating thesis project.
Program
Program
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Introduction

This proposed project of a performing arts theater for legitimate drama is another step towards the completion of a total cultural center complex which will serve the city of Indianapolis, Indiana.

The theater, which is to be sited on the historic estate known as Oldfields, will replace a theater structure which has been troubled in recent years by outdated equipment and neighborhood security problems.

The theater is as important a civic advertisement as the Art Institute, the library, the hospitals, and any other civic institutions. It advances the cultural fame of the city in which it is successful.

The community theater offers to the people of Indianapolis an outlet for any persons who may be interested in the different phases of theater production from the front office to the technical department. It also creates social fellowship and community participation.

This is a real project which is under construction at this time and is scheduled to be completed for the 1973-74 season.
In 1914 a plea for a theater was made by professor W. E. Jenkins before the Indianapolis Center of the Drama League. In February of 1915 a group of citizens met to organize a dramatic association in response to Mr. Jenkins's challenge.

On October 30, 1915 a presentation of four plays were given. This marked the beginning of production for the theater organization that we know today.

During this year the "Little Theater" as it was known by then decided to build its own theater. Up to this time they had used homes, rears of stores, and barns to stage their productions.

This year saw the theater sponsor a junior theater for the first time. It has also been in continuous existence from its conception.

The name "Civic Theater" was adopted.

It is very notable that the theater was able to maintain operations during the entire extent of World War II.

The theater was renamed the "Booth Tarkington Civic Theater" in honor of Booth Tarkington who had great interest in this theater and who gave distinction to the American stage as a playwright.

The theater marks its 50th anniversary in October. At this time the theater is recognized as the oldest community theater in continuous existence in the United States.

Ground breaking is held for the new theater which will be located on West 38th Street.

Thousands of people have worked at the theater over its 58 years of existence and during this time it has enjoyed excellent management and success which has reached a high plane artistically and financially.
Statement of the Nature of the Project

Purpose of the Project

The main purpose of this project is to explore the principles that govern good theater design and to provide a performing arts theater that will meet the needs of the client.

Other purposes that are to be fulfilled are:

1. To give a new identity to the Booth Tarkington Civic Theater.
2. To replace an outdated theater with a new facility.
3. To investigate the different theater forms and to arrive at a sound conclusion as to which type or types best fulfill the needs of this particular community theater.
4. To use a design process of logical thinking and an organizing procedure from start to finish.

Validity

The Booth Tarkington Civic Theater has been in need of a new facility for several years. It is in desperate need of new stage equipment. The equipment they now use is in need of repair.

The physical character of the building is also suffering from the years of use. The interiors need attention if the dull appearance is to be corrected. They are also experiencing a need for more space for storage.

One of the most important problems that they face is the neighborhood security problem. It is costly to maintain guards 24 hours a day and it is also having a negative affect on attracting new audience participants.

This building has simply lived its life as a theater and the only sound economic solution to its problems is to replace it with a new facility.
Identification

The objectives of a community theater are:

1. To promote good social fellowship and create an interested and active working group of thinking people.

2. To create an appreciative and discriminating audience.

3. To take the tried and proven plays and present them to audiences who would otherwise never see them.

4. To serve as an excellent means for one to make his community a more interesting place to live.

5. To provide practical and gracious entertainment at little cost.

6. To provide a place for self expression and enjoyment.

7. To afford Indianapolis people a common meeting ground in which to develop their talents and to take part in all phases of theater production.

Justification

If this theater has any hope of expanding its influence within the city and surrounding areas and if it is to continue in its tradition, the theater must relocate to a new facility worthy of its needs and potentials.

The new facility will produce other positive factors such as improved quality of productions, an estimated increase of membership of 500%, an added attraction to the Oldfields site, and it will offer comfort and convenience to the theater public.

What is exciting is that people do go to this community theater to see their friends but more important than this is the fact that they treat it as part of their lives. It does not really matter if the performance is not top-notch. What is important is that something is happening—a spark is being generated.
1. To be able to define problems which relate to a performing arts theater for legitimate drama and to provide sound logical answers.

2. To show my architectural ability to cope with an incredible number of variables and to display the architect's speciality—thinking.

3. To design a facility that will satisfy the functional requirements and satisfy the aesthetic requirements at the same time.

4. To meet the client's needs and desires after careful evaluation of each.

5. To respond to the needs of the audience so that they receive the best "theater-going" experience possible.
Description of the Context

Region

Indianapolis is the capital and the largest city in Indiana. It is situated on the White River and is near the geographical center of the state. It also has the distinction of being one of the most populated cities in the world not located on navigable water. The city is built on a level plain surrounded by low gently sloping hills.

Indianapolis is the focal point of five interstate highways and six U. S. highways as well as a railroad center. The complete highway system provides easy access to all parts of the city from the surrounding communities. Interstate 465 surrounds the city and collects the traffic that approaches the city. Due to this fact the community theater can serve more people than just Indianapolis residents.

Community

The theater will provide one more positive community use in an area which is already heavily enriched with cultural facilities.

The site is completely encompassed by areas of culture, recreation, or memorials. There is no residential area contingent to the site boundaries. The Art Museum site, on which the theater is to be located, is totally committed to the fine arts.

Located to the northeast of the site is Butler University and the Christian Theology Seminary. Both of these institutions have theater facilities with Clowes Hall being located at Butler. To the southwest is Marion College. On the south, Riverside Park and Woodstock Country Club provide recreation facilities. The east edge is bordered by Crown Hill Cemetery.

This site is truly an ideal location for the advancement of the cultural arts in Indianapolis.
Site

The 45 acre triangular site is bounded by Northwestern Avenue, 38th Street, and the Indianapolis Water Company canal. Immediately west of the site is a man-made lake and a wildlife refuge which is owned by the Art Museum. This western portion of land is bounded by the White River.

Being located at the intersection of two major Indianapolis arteries and having Interstate 65 nearby makes this site easily accessible.

It is a superbly landscaped site with high bluffs, deep ravines, serene gardens and malls, and controlled wild growth of heavy foliage.

Utilities

Information pertaining to the exact location and size of utilities has not been made available due to museum security reasons. It is safe to assume that the master plan for this complex has made appropriate provisions for the proposed performing arts theater.

Traffic

The site is served by two adjacent primary arterials:

1. 38th Street—a six lane highway that is orientated east-west. The traffic count for the east bound lane is 20,000 cars per day and the west bound has 16,000 cars per day.

2. Northwestern Avenue—a six lane highway whose name indicates its direction. The traffic count for the portion that borders the site is 16,000 cars per day in both directions.

3. Only one bus line services this community. The Suburban Line Incorporated makes nine round trips only on weekdays on Northwestern Avenue. Taxi transportation is available but is very expensive in comparison with the bus.
Soils and Vegetation

There are two basic soils on the site. On the flat to moderate slopes you will find the Miami soils series and on the strong slopes and steep revines you will find the Hennepin soils series.

Miami soil consists of deep, well drained soils that have a medium or moderately fine textured subsoil. They have moderate permeability and runoff is slow to rapid.

Hennepin soil consists of deep, well drained soils that have a medium textured surface layer and subsoil. They have moderate permeability and runoff is rapid to very rapid.

The site still possesses the natural setting that it had when it was known as Woodstock. The area is heavily treed, superbly landscaped, and maintained daily.

Character of the Context

The Oldfields site is:

1. A visual and physical relief from the city and its activities.

2. A historical setting with emphasis on the natural beauty of the site.

3. Rapidly becoming recognized as the most significant cultural facility in the city.

4. Where the strength of this community is displayed by its cultural facilities.

5. Where many social classes are brought together and provided with a place to interact.
As it Affects Economics

The theater is a non-profit organization that is neither subsidized by the city government nor is it endowed. It is supported solely upon its membership and the box office receipts.

At this time there has been no official statement on the total funds available for the construction of this project. It is known that the theater has received a gift of over one million dollars that is to be used for the construction. There has also been other funds collected for the same purpose.

This estimated figure should be a comfortable sum to cover a large proportion of the building costs. If it is found that extra capital is needed, additional funds can be collected during the construction period.

It can be seen that time will have little effect on the economics of this project because the organization made sure that sufficient funds were available before going ahead.

The theater will have to pay $49 for a period of 49 years for the lease on the property. At this time the lease expires.

As it Affects Growth

The Art Museum has already been able to attract many visitors both from the city and those from surrounding areas. Every person who is interested in the arts is a potential user of this site. With the addition of the Civic Theater, the use of the facilities will grow. This addition could also help attract other organizations to participate in the center through exhibitions, performances or funds. The Art Museum and the Lilly Mansion will undoubtedly benefit from the theater's new location.
As it Affects Landmarks

The natural landmarks such as the canal, the trees, and the topography have remained much the same as they were when it was not a part of the city of Indianapolis and known as Woodstock in the early 1900's.

The manmade landmarks such as the Art museum and the Lilly Mansion will continue to be maintained at their highest level due to the public use and attention they receive.

The formal gardens that are part of the mansion have lost some of the quality they once knew due to today's high cost of maintenance but they will continue to add beauty through their configurations and the sequence of spaces they create.
Financing

The city of Indianapolis is fortunate in having many culturally minded citizens who have in the past shown their appreciation for the arts by large monetary gifts it has produced.

The first phase of the Art Museum was able to raise ten million dollars in private donations for planning and construction. These same citizens are also a potential source for the theater.

At this time there has been one substantial private donation. Mrs. Ralph J. Showalter has made a gift for over one million dollars. In return for her generosity the theater will also be known as Showalter Pavilion.

Other sources will be derived from theater subscriptions, box office sales, advertising in the programs, theater rentals to outside organizations, and from benefit performances when an outside group buys the house for one performance and makes money by selling tickets.

Land Costs

The Oldfields estate was given to the Art Association of Indianapolis in 1966 by the children of the late Mr. and Mrs. J. K. Lilly, Jr.

Earlier this year another 60 acres to the west of Oldfields was deeded to the museum by Huber, Hunt, and Nichols Incorporated, general contractors.

The history and charm of this site along with its developments cannot possibly be given a realistic value in dollars and cents. Its worth can not be measured.

The theater will pay a token $1 for 49 years to the Art Association of Indianapolis to lease the property on which the theater will be located.
Construction Implications

The only significant site implication is that the construction of the theater must not interfere with the daily routine of the Art Museum or can it present any unusual dangers to those who visit the site.
Influences

Historical Significance

The triangular site which is bounded by 38th Street, Northwestern Avenue, and the Water Company Canal was once the town of Woodstock.

In 1909 this area was projected as an addition to Indianapolis by C. C. Boyd and Hugh Landon, both officers in the Indianapolis Water Company.

A study was made of this site and a plan of roadways, border plantings, and the division of property was developed. The site was designed by the landscape architect Olmstead of New York Central Park fame. Both Boyd and Landon along with another family built homes at this site. Landon’s home was built on a bluff overlooking the canal. His home was called "Oldfields."

At a later date Landon sold his home to Mr. and Mrs. J. K. Lilly Jr. who had become very successful in the pharmaceutical industry.

This was to serve as Lilly's home until their deaths. In 1966 the Oldfields estate was given to the Art Association of Indianapolis by the Lilly's children. This new gift of land was an immediate answer to the problem of finding an appropriate site for the proposed art museum which opened in 1970.

Negative Factors

1. Due to the close proximity of the theater and the art museum, a close cooperation must be achieved so that scheduling of events and the sharing of parking facilities do not conflict with each other.

2. The theater has always been detached and recognized for its own individual merits. It must be careful to not allow the established museum to overshadow it as being known as the prime use of the site.
3. The Art Museum and this site have become synonymous for one another and, therefore, may overpower the identification of theater at this same location.

Contributions to be Made

The theater has for 58 consecutive years made contributions to the communities which it has served. It has given an outlet for any individual interested in theater production from administration to acting. It has also promoted good social fellowship and created an interested and active working group of thinking people as well as a more appreciative and discriminating audience.

With its new favorable location and adequate facilities, the theater will be able to continue its useful community work in a more sophisticated manner and capitalize on the potentials that are offered to them by this fact.
Zoning Limitations

This site has been designated as a special use district with its permitted use being charitable and philanthropic institutions and no other shall be permitted within this district.

The C-S District is intended to encourage greater creativity in land planning, to provide for a use of land with high functional and aesthetic values, and to assure compatibility of land uses.

Section 2.08 of the Commercial Zoning Ordinance of Marion County, Indiana also applies to this project under the subheading of Special Commercial District.
Building Functions

General Description of Building Functions

This environment is to provide for the production of the best plays new and old available from the standpoint of entertainment, education, and artistic achievement that will stimulate the minds and hearts of the audience to a better understanding of himself.

The architect is to create an environment for the producing of an atmosphere conducive to theatrical production.

Public and Private Functions

It is possible to divide this building into public and private spaces but due to time factors, the spaces eventually overlap in the community theater.

An example of this is that usually the audience and the backstage facilities never come into contact with one another in the professional theater. With community theater one can be part of the audience one night and be a member of the stage crew the next.

The greatest level of separation of public and private functions occurs in the office facilities. The directors office is definitely a private space. The main office is also private for security reasons, but the public can also be part of its operation.

It is part of the philosophy of community theater that all who participate should have some knowledge about all the phases of theater production.

Functions of Major Parts

This community theater can be divided into four main parts. These are the main entry space, the auditorium or house, the stage, and the specific support areas which apply to the various functions.
1. Main Entry—the purpose of this space is to prepare the patron mentally for the theatrical experience he is going to participate in.

2. Auditorium—the purpose of this space is to provide the patron with the best possible comfort and to create the feeling of participation. This is accomplished by correct sight lines, proper acoustics and ventilation, and by staging configurations.

3. Stage—the stage is where the acting will take place and where the audience will focus their attention. Therefore, the stage must work mechanically smooth, be properly lighted, and it must correspond to the sight lines of the audience.

4. Support—these facilities enable the major spaces to function properly. They add comfort, convenience, and support to the audience, actors, and crew.

Specific User Needs

In theater you have two distinct groups which have specific needs, the audience and the actors. Also in this case the needs of these two are dependent upon each other if the total is to be successful.

The audience relies on the auditorium and its design to provide for them the best theater experience possible. The actors rely on the stage design to allow them to give the audience the best possible performance.

Therefore, the most critical factor in theater design is this relationship of the performing area to the audience area. The two must be totally integrated at all times if both parties are to be satisfied.

Along with their consultants and after careful examination of their needs, desires, capabilities, and available funds the Booth Tarkington Civic theater concluded that a 750 seat auditorium with a proscenium stage opening would be the best design solution available to them.

This decision will be taken as a given and it will guide the theater design procedure of this project.
### Areas Required

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<th>Area</th>
<th>Required Area (sq. ft.)</th>
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<tr>
<td>Stage (with traps)</td>
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<tr>
<td>Side Stage(s)</td>
<td>1600</td>
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<tr>
<td>Forestage/Orchestra Pit</td>
<td>700</td>
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<tr>
<td>Seat Storage</td>
<td>700</td>
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<tr>
<td>Workshop</td>
<td>2000</td>
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<tr>
<td>Receiving &amp; Dock</td>
<td>250</td>
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<tr>
<td>Vestibule</td>
<td>150</td>
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<tr>
<td>Main Lobby &amp; Balcony Lobby</td>
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<tr>
<td>Side Lobby 2 x 1500</td>
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<tr>
<td>Coat Check</td>
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<tr>
<td>Ticket Booth</td>
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<tr>
<td>Administrative Office</td>
<td>600</td>
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<td>Private Office</td>
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<tr>
<td>Director's Office</td>
<td>200</td>
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<tr>
<td>Lounges (men &amp; women) 2 x 700</td>
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<tr>
<td>Toilets (men &amp; women) 4 x 600</td>
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<tr>
<td>Janitor Closet (main &amp; balcony)</td>
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<tr>
<td>Auditorium (750 seats)</td>
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<tr>
<td>Balcony</td>
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<tr>
<td>Men's Dressing Rooms</td>
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<tr>
<td>Men's Toilets</td>
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<td>Men's Showers</td>
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<td>Women's Dressing Rooms</td>
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<td>Women's Showers</td>
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<tr>
<td>Male Star Dressing Room (with toilet)</td>
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</tr>
<tr>
<td>Female Star Dressing Room (with toilet)</td>
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</tbody>
</table>
Greenroom ........................................ 1080 sq. ft.
Kitchen ............................................ 260 sq. ft.
Stage Office ...................................... 300 sq. ft.
Sound Control Room .............................. 200 sq. ft.
Light Control Room .............................. 200 sq. ft.
Projection Room .................................. 140 sq. ft.
Rehearsal Rooms 2 & 1600 ....................... 3200 sq. ft.
Prop Storage ...................................... 600 sq. ft.
Costume Storage .................................. 1200 sq. ft.
Mechanical Room .................................. 600 sq. ft.
Power Plant (optional) ......................... 2000 sq. ft.

35110 sq. ft.

Other Space Considerations

Elevators
Air Handling Equipment
Air Intake
Air Exhaust
Return Air Chamber
Fly Gallery
Light Bridge
Main Catwalk
Stage Rigging
Trap Room
Stairs & Circulation .............................. 5 %

(All sizes dependent upon demand)
Design Philosophy

Each different type of theater staging involves a different philosophy on how the audience and actor are to interact. The architect is responsible for the provision of a facility which will allow for interaction. To do this the architect must view himself not only as a member of the audience but as a performer as well.

Ideally the theater should be planned for one type of performance. This is the case for this project in which the design will be proscenium staging for legitimate drama. The opposite view to this would propose a multi-use staging situation so that many types of performances could be displayed. The answer to this challenge is that there has never been a type of drama so new that it could not be produced effectively in the proscenium theater. Playwrights write for actors, not theaters.

The design of the theater starts from the technical needs of the stage, the kind of seating, and the sight lines. When these things are established, you have the backbone of the theater, but if you postpone this problem, you will be in terrible trouble.

The architect is required to provide a space for another art form that has virtually nothing to do with his architecture because when the lights go down and the performance starts, the building practically disappears. You must also remember that it is is only a theater when the lights go out and it is nothing when it is empty. Thems is seldom realized in theater design.

Proscenium stage has been for centuries one of our most useful theater shapes. Today only after careful consideration, proper planning and design, will this form of theater regain its usefulness.
Resource Information

Books

Acoustics for the Architect  Burris-Meyer & Goodfriend
Music, Acoustics and Architecture  Leo L. Beranek
Sound, Noise, and Vibration Control  Lyle F. Yerges
The Ideal Theatre: Eight Concepts  Ford Foundation
The Shapes of Our Theatre  J. Kielziner
Theatres and Auditoriums  Burris-Meyer & Cole
Theater Check List  The American Theatre Planning Board, Incorporated

Magazines

Progressive Architecture  October 1965  p 166-79
Theatre Design and Technology  1966--1972

Pamphlets

Booth Tarkington Civic Theater Golden Anniversary Yearbook 196th
The Civic Theater of Indianapolis

Government Documents

Commercial Zoning Ordinance of Marion County, Indiana
Special Use Districts Zoning Ordinance of Marion County, Indiana
Butler Tarkington Summary
Site Selection
Site Selection

After a thorough analysis of the program and the establishment of a design philosophy, a site analysis was made to select a location for the new theater. As stated in the program, the 45 acre triangle is superbly landscaped, possesses high bluffs, and deep ravines and has historical values which must be considered. The theater will become the third major activity on this site. The art museum and the Lilly pavilion are already in use and draw large numbers of visitors.

There are many site characteristics which must be taken into consideration in the site analysis. Each of the following have a major impact on the site:

-- Art Museum and parking structure below
-- on grade parking lot for museum
-- ravine service drive
-- restaurant pavilion
-- Olmstead mall and water fountain
-- Lilly Pavilion
-- rose garden
-- two major entries to site
-- canal along western site boundary
-- a natural park atmosphere of the northern half of the site
The first step taken in the site analysis was to select and number all possible locations at which the theater could be constructed within the 45 acre estate. For each of the seven possible sites selected, an analysis was made for the positive and negative characteristics of each in relation to the construction of the theater. The major objection which eliminated the first three locations was that they would violate the natural park atmosphere that exists from the ravine service drive northward. A building in any one of these locations would also disrupt the historical context and would present definite scale problems with the existing buildings.

The remaining four site possibilities were played off against each other to determine the best location for the theater. Each had their positive points which would serve the new theater well but site possibility number 6 possessed more positives which would contribute to the overall development of the site as well as lend itself to the theater design.

The major factors which led to its selection were those which were most important in preserving the natural setting and taking advantage of the existing elements. A few of the existing site developments are two parking lots, available utility lines, a service drive and an oval drive for automobile drop off. This location will also allow for a visual identity due to the fact that it is on-axis with the main site entry. The oval fountain, pedestrian path and the ravine topography will also play important
roles in the design development.

After this site was selected a more in depth analysis was undertaken to investigate such things as drainage, environment, topography, vehicular and pedestrian circulation patterns and site aesthetics.
Schematic Design
Schematic Design

After the building site location for the theater was established, the schematic design phase was initiated. The purpose of this phase is to prepare studies which illustrate the scale and the relationships of the project components. It is also used to explore all major design concepts and possible alternatives. Special attention is given to site planning, architectural design, and the integration of all building systems.

In this particular project the two major requirements of proscenium stage opening and continental seating served as the basic relationship to which all other aspects of the schematics would respond. From this relationship three possible schemes were developed. In all three cases the community theater can be divided into four distinct parts: (1) main entry lobby space (2) auditorium (3) stage (4) their support areas.

Since the lobby--auditorium--stage relationship is sequentially fixed to a certain degree, it becomes a matter of handling the support functions in such a manner that they correctly serve the theater as well as being situated correctly in response to the site conditions. There is an infinite number of ways in which to handle the support functions but for this study only three are illustrated and investigated.

The plans and sections of the three schemes are self expla-
story but a short statement about the physical configurations would be beneficial. In Scheme I the major interior functions are expressed architecturally on the exterior; in Scheme II there is an attempt to express the pedestrian movement from entry to stage through a sculptural treatment to the exterior; and in Scheme III a shell is used to cover all functions to give a uniform and simple appearance.

Those factors which guide the schematic approach in all three examples are that the theater must not dominate the site, it must not overpower the museum architecturally, it must take advantage of all the existing site elements and developments, and it must use the ravine topography to its advantage in keeping the height of the stage house at a minimum.
ELEVATIONS

west

east

north

south
Design Development
Phase I
During this phase a refined and more thoroughly developed design is prepared without further alteration in the program or scope of the project. A more thorough understanding of the building components is required to complete the design of the building prior to the preparation of contract documents.

For this project there are two main areas of concentration which will be investigated in Design Development Phase I. One of the areas that will be reinvestigated is the entry--lobby situation along with the member's room and its interaction with it. The other major area of development which is essential to the success of the theater is the plaza which will link this function with the existing art museum. It is most important that a proper solution be found for the direct joint between the corners of the two structures at the point of pedestrian entry into the site.

Along with these major thrusts will be further development of the exterior forms, material selections, and those tangent developments which are pertinent to the development of design.
Acoustics Phase II

The following calculations are for the new interior auditorium space which was reworked during Design Development Phase II.

REVERBERATION TIME CALCULATIONS

1.0 seconds optimum reverberation time
house volume = 139,000 cubic feet

calculations with mineral wool in wall

250 Hz $RT = \frac{.05 \cdot (139000)}{6673} = 1.04 \text{ sec.}$

500 Hz $RT = \frac{.05 \cdot (139000)}{9195} = 0.76 \text{ sec.}$

1000 Hz $RT = \frac{.05 \cdot (139000)}{9771} = 0.72 \text{ sec.}$

2000 Hz $RT = \frac{.05 \cdot (139000)}{9301} = 0.75 \text{ sec.}$

(The mineral wall in the wall construction is giving too much absorption to the space.)

calculations without mineral wool in wall

250 Hz $RT = \frac{.05 \cdot (139000)}{4910} = 1.4 \text{ sec.}$

500 Hz $RT = \frac{.05 \cdot (139000)}{6330} = 1.1 \text{ sec.}$
1000 Hz \[ RT = \frac{0.05 (139000)}{6906} = 1.0 \text{ sec.} \]

2000 Hz \[ RT = \frac{0.05 (139000)}{6436} = 1.08 \text{ sec.} \]

From these calculations it can be seen that with the mineral wool in the wall construction the auditorium will be too absorptive. When the mineral wool is not included in the wall, the reverberation time for 1000 Hz is the desired time of one second. The times for 500 Hz and 2000 Hz are also very acceptable.

The major change in the auditorium design is the ceiling configuration. As stated before, in the original house space there was a definite sound reflection deficiency at the rear. A completely new ceiling design has been developed to correct this situation as well as allow for a more totally integrated interior.
<table>
<thead>
<tr>
<th>HOUSE MATERIALS</th>
<th>AREA SQ.FT.</th>
<th>125</th>
<th>250</th>
<th>500</th>
<th>1000</th>
<th>2000</th>
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<tbody>
<tr>
<td>CEILING</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plaster (suspended w/ air space)</td>
<td>4620</td>
<td>02</td>
<td>92</td>
<td>04</td>
<td>185</td>
<td>10</td>
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<td></td>
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<td>04</td>
<td>185</td>
<td>04</td>
<td>185</td>
<td>04</td>
</tr>
<tr>
<td>WALLS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>wood</td>
<td>4408</td>
<td>15</td>
<td>661</td>
<td>20</td>
<td>882</td>
<td>10</td>
</tr>
<tr>
<td>Mineral Wool 1&quot;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>250</td>
<td>1102</td>
<td>120</td>
<td>20</td>
<td>882</td>
<td>10</td>
</tr>
<tr>
<td>Fabric (against solid backing)</td>
<td>250</td>
<td>221</td>
<td>10</td>
<td>441</td>
<td>15</td>
<td>66</td>
</tr>
<tr>
<td>FLOOR</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Carpet (3 cm on felt)</td>
<td>4311</td>
<td>11</td>
<td>474</td>
<td>14</td>
<td>604</td>
<td>37</td>
</tr>
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<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SEATS</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>644 Seats</td>
<td>600</td>
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<td>75</td>
<td>2798</td>
<td>85</td>
<td>3171</td>
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<td></td>
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</tr>
<tr>
<td>ABSORPTION A=</td>
<td>13339</td>
<td>4773</td>
<td>6673</td>
<td>9195</td>
<td>9771</td>
<td>9301</td>
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<tr>
<td>w/o MINERAL WOOL</td>
<td>3686</td>
<td>4910</td>
<td>6330</td>
<td>6906</td>
<td>6436</td>
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</tr>
</tbody>
</table>
SOUND REFLECTION

Auditorium Section Phase I

Auditorium Section Phase II
Seating

Staggering of seats is highly desirable so that every spectator can see between the heads of those seated in the row directly in front of him. To facilitate the staggering of seats, it is appropriate to work with three different seat widths. The ideal seat width is 21 inches so the best selection of seat widths are 20, 21, and 22 inches.

In the continental seating layout the arc length of each row is determined and the combination of the various seat widths are used to fill the row. This method will allow for rows to be even at their ends where they meet the aisles. A perfect stagger is impossible to achieve with circular arc seating but the described method will provide the best possible solution.
<table>
<thead>
<tr>
<th>Seat Widths</th>
<th>20&quot;</th>
<th>21&quot;</th>
<th>22&quot;</th>
<th>Total/Row</th>
</tr>
</thead>
<tbody>
<tr>
<td>Row 1</td>
<td>6</td>
<td>24</td>
<td>12</td>
<td>30</td>
</tr>
<tr>
<td>2</td>
<td>14</td>
<td>5</td>
<td>12</td>
<td>31</td>
</tr>
<tr>
<td>3</td>
<td>28</td>
<td>7</td>
<td>4</td>
<td>32</td>
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<td>4</td>
<td>28</td>
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<td>4</td>
<td>35</td>
</tr>
<tr>
<td>5</td>
<td>26</td>
<td>4</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>27</td>
<td>4</td>
<td>31</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>24</td>
<td>8</td>
<td>32</td>
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<tr>
<td>8</td>
<td>17</td>
<td>16</td>
<td>33</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>18</td>
<td>12</td>
<td>30</td>
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</tr>
<tr>
<td>10</td>
<td>13</td>
<td>18</td>
<td>31</td>
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</tr>
<tr>
<td>11</td>
<td>14</td>
<td>18</td>
<td>32</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>15</td>
<td>18</td>
<td>33</td>
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</tr>
<tr>
<td>13</td>
<td>16</td>
<td>14</td>
<td>30</td>
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<td>17</td>
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<td>31</td>
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<td>18</td>
<td>34</td>
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<td>14</td>
<td>21</td>
<td>35</td>
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</tr>
<tr>
<td>17</td>
<td>12</td>
<td>20</td>
<td>32</td>
<td></td>
</tr>
<tr>
<td>18</td>
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<td></td>
</tr>
<tr>
<td>19</td>
<td>12</td>
<td>22</td>
<td>34</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>12</td>
<td>23</td>
<td>35</td>
<td></td>
</tr>
</tbody>
</table>

| Totals     | 126 | 376 | 142 | 644       |
The secondary area of consideration for Design Development Phase II is the development of a drainage system for the roof of the auditorium. This is a necessary area of investigation due to the importance which this roof has in the total character of the design. The run off water must be controlled so that it does not interfere with the patron's use of the front entry. This system must also be well integrated with the roof lines and materials so that it does not detract from the simple roof character.

**ROOF DRAIN DESIGN DATA**

**Vertical Leaders**

<table>
<thead>
<tr>
<th>diameter (in)</th>
<th>roof area (sq. ft.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>720</td>
</tr>
<tr>
<td>2 3/4</td>
<td>1300</td>
</tr>
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</table>

**Horizontal Storm Drains**

<table>
<thead>
<tr>
<th>diameter (in)</th>
<th>slope</th>
<th>1/8&quot;</th>
<th>1/4&quot;</th>
<th>1/2&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>sq. ft.</td>
<td>822</td>
<td>1160</td>
<td>164</td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>1880</td>
<td>2650</td>
<td>3760</td>
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<tr>
<td>5</td>
<td></td>
<td>3340</td>
<td>4720</td>
<td>6680</td>
</tr>
</tbody>
</table>

Theater Auditorium Roof Area = 3286 square feet

Indianapolis rainfall = 4 inches per hour
BOOTH TARKINGTON COMMUNITY THEATER
INDIANAPOLIS, INDIANA

STATEMENT OF PROFESSIONAL SERVICES

Date: November 3, 1972

Estimated Construction Cost:
$35 per sq. ft.
35,110 sq. ft.
Cost $1,228,850.00
AIA fee percentage 7.05%

<table>
<thead>
<tr>
<th>Professional Service</th>
<th>Fee Percentage</th>
<th>Fee Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schematic Design</td>
<td>15%</td>
<td>$12,995.09</td>
</tr>
<tr>
<td>Design Development</td>
<td>20%</td>
<td>17,326.78</td>
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<tr>
<td>Construction Documents</td>
<td>40%</td>
<td>34,653.57</td>
</tr>
<tr>
<td>Bidding/Negotiation</td>
<td>5%</td>
<td>4,331.70</td>
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<tr>
<td>Inspection</td>
<td>20%</td>
<td>17,326.78</td>
</tr>
<tr>
<td></td>
<td>100%</td>
<td>$86,633.92</td>
</tr>
</tbody>
</table>

SUBMITTED BY:

[Signature]