blinds accessible by foot would be installed along the shore of the marsh.

Zone 6 presently has no specific functions. It is traversed by the main park road and bicycle trail.
CLIMATE

The climate in this portion of the state is modified by Lake Michigan, yielding cooler summers and warmer winters due to winds which carry unusual temperatures into this area. The average annual precipitation for this area is 35.70 inches. The highest precipitation occurs in May with 3.62 inches and is lowest in February with 1.88 inches. Extremes in monthly precipitation have ranged from a minimum of 0.02 inches in July to a maximum of 9.75 inches in October. Average annual temperatures range from 25 degrees in January and February to 72 degrees in July and August. Extremes of 108 degrees and -22 degrees have been recorded. The average date of the last freezing temperature in the spring is in the first week of May. The average first freezing temperature in the fall is in the second week of October. The reservoir is usually covered by ice about 90 days from December 15 to March 15 each year.

In such a temperate zone, during the winter the goals are to keep the heat inside and cold outside, offer protection from winds and allow all available sun to penetrate the buildings. During the summer the goals are to keep heat outside, offer shade from sun and open up living areas to cooling breezes.
affecting the quality and quantity of the watershed. The areas best suited for development, taking surface drainage into consideration, would be those devoid of surface water, natural drainage ways and areas of constricted drainage.
**SOUTH BEND**

**Elevation 773 Ft.**

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<th>Month</th>
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<th>Degree Days (Base 65°)</th>
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<th>Precipitation</th>
<th>Wind Speed (MPH)</th>
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**Average Number of Days of Sunup/Sundown**

- **Spring:** Jan-Mar
- **Summer:** Apr-Jun
- **Fall:** Jul-Sep
- **Winter:** Oct-Dec

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**CLIMATIC INFORMATION**
TOPOGRAPHY

Having been subjected to glaciers and meltwaters, the northern portion of Indiana has taken on a level to gently rolling type of topography. The Potato Creek area is an example of this landscape with slopes ranging between 0% and 25%. The most common slope is 5%, although there are much steeper slopes in the Vargo Hill area.

The criteria for analysis of slopes was set up by assigning a general gradient range which would tolerate a specific amount of activity or development. The 0%-6% slopes have slight limitations and are acceptable for intensive recreation, the 7%-17% slopes have moderate limitations and qualify these areas for moderate recreational use, while the 18% and above slopes have severe limitations and limit recreation to a lower intensity.
VEGETATION

Due to the previous agricultural land use, less than 15% of the site is covered with woodland vegetation. Although the percentage of woodland is small compared to the open space, it is very significant. There are two areas which contain most of the plant varieties found at Potato Creek, plus significant varieties not commonly found in the region. These two areas are the Clingenspell Woods and the Leatherleaf Bog. Alton A. Lindsey surveyed the vegetation of these two areas in Natural Areas of Indiana and their Preservation.

The Clingenspell Woods is dominated by Beach-Maple climax forest. The Leatherleaf Bog is densely covered by the shrub Chamaedaphne calyculata (leatherleaf). Leatherleaf is a woody plant typically found in the boreal bogs of Canada and is usually absent in Indiana. The bog illustrates the natural process of the disappearance of northern lakes by the natural filling in of their basins through the growth of plants and the deposition of their remains (eutrophication). Because of their high quality, these areas should be preserved for hiking, nature trails and educational study areas.
In selecting developable areas, all forests and marshes were evaluated by their quality, quantity and their capacity to withstand different types of recreation. Areas having no significant vegetation posed slight or no limitations concerning development. Moderate limitation lands include scrub forest and marsh areas. The high quality marsh lands and forest are too valuable for types of development such as roads and high-intensity recreation.
The analysis of water resources deals with ground water (water table height) and surface drainage. A high water table is very limiting when any type of development concerning foundations or high activity use is involved. Each soil has a different type of water capacity. Thus, water tables differ in height according to soil type, and therefore the suitability study concerning the water table and soil types correspond directly with each other, so water table limitations are combined with the soil analysis map.

Areas where water tables are located four feet or more below the soil surface are considered to have slight limitations. Areas where the water tables are located between one and four feet below the surface are considered to have moderate limitations. Water tables located between zero and one foot below the surface have severe limitations.

The second part of the water resources study consists of the surface drainage areas. Surface drainage encompasses lakes, streams, channels, and any other areas where water is likely to be, or flow, on the surface of the ground.

Development in or near natural drainage channels must be avoided if possible in order to maintain drainage patterns
SOILS

The soil formations of northern Indiana are the result of extensive glaciation and stream action over a period of thousands of years. It is this type of activity which forms the soil and gives it identifying characteristics. Generally, the soils of Potato Creek may be classified into five major soil groups according to their formations. These groups are Flood Plain Alluvium, Organic Muck, Outwash Plain or Terrace, Glacial Moraine, and Glacial Till.

For the purpose of this site analysis study, the soils were divided into three categories according to their suitability for recreational use and development.

Soils with slight limitations are made up of loams, sandy loams and fine sand. These soils have rapid permeability and are well to moderately well drained. Because of their structure and drainage characteristics, these soils pose little or no problem for development and intensive use.

Soils of moderate limitations consist of loams, sandy loams, and loamy sands. The limitations are in the form of slow permeability, somewhat poor drainage, and a seasonal high water table. In view of these characteristics, the soils would not permit high use development, but would support
limited activities if precautionary measures were taken. Some of the soils under this classification (represented by a dotted pattern) are Crosby Loam, Whitaker Loam, Tyner Loamy Sand, and Aubbeenaubbee Sandy Loam.

Soils with severe limitations include some loams, silt loams, silty clay loams, marsh, muck, and mixed alluvial lands. Characteristically, the limitations are very slow permeability, very poor drainage, and a high water table which is subject to ponding. These areas have limitations which cannot be easily overcome and would not support intensive or moderate use. Some of the soils which are characteristic of this category are Wallkill Silt Loam, Washtenaw Silt Loam, Carlisle and Edwards Muck, and Milford Silty Clay Loam.
The composite map of the natural physical characteristics, including vegetation, water, topography and soils, combines all of the desirable and undesirable ecological features to be evaluated in the development and siting of facilities in the recreation area.
The composite map of physical characteristics indicates a slight limitation on development for the site. This is due to the existence of a dense scrub forest which covers the site. With conscientious development, the slight limitation poses no ecological threat. Therefore, the 40 acre site in Zone 4 will be used.
SITE SELECTION

After reviewing the information acquired through the site analysis, a location for the Environmental Awareness Center within the park could be chosen. Since consolidation of park facilities is desirable, I looked for a site within Zone 4 of the park which contains the most intense park activity.

One of the problems with the present location of the existing Nature Center, as explained to me by Peggy Dorsey, is the fact that it is located a great distance from the concentration of park visitors, which is at the beach and campground areas. Therefore, large numbers of people are left unaware of the presence of the Nature Center and consequently never visit it. Periodically the naturalist will bring programs and demonstrations to the beach to take advantage of the large audience there.

An optimum site for the Environmental Awareness Center would be the 40 acre site on the north shore of the reservoir in Zone 4. It is bounded on two sides by the main park road and is between the campsites and beach area. The beach is approximately 1300 yards to the east and the campgrounds are located to the north.
By combining an ecological attitude for park management, educational activities and exhibits, plus environmentally integrated structures, a greater environmental awareness can be realized by all who visit the park. The concept for promoting such a thorough degree of environmental awareness within a state park is new. I feel it has full potential of becoming a prototype for future park designs.
CIRCULATION

In analyzing the circulation paths in the park, I developed several proposals which are designed to provide additional access to the site of the Environmental Awareness Center and limit the amount of automobile traffic in the park. These proposals include:

- Creating a second entrance into the park on the north side in Zone 4. This would have the positive effect of decreasing all of the automobile traffic through the park whose destination is the campgrounds or beach. However, this would require the creation of another control gate and the re-organization of the access roads and check point into the campgrounds. A second entrance on the north will also increase traffic on the perimeter country roads.

- Another possible proposal is to provide a shuttle service from the main gate to the Environmental Awareness Center. Visitors could then enter the recreation area in their automobiles, park them near the gate house, then board the shuttle service to various destinations in the park. This may cause some inconvenience to those who bring
excessive amounts of belongings to the park, for they would have to carry them on the shuttle bus.

- A third proposal includes the construction of a pedestrian bridge across the narrow portion of the reservoir. This would connect the majority of the picnic sites on the south side of the reservoir to the Environmental Awareness Center. However, it would create an intrusion on the natural vista across the lake.
CIRCULATION PROPOSALS

CREATE SECOND ENTRANCE
REMOVE PORTION OF ROAD TO CAMPSITES
NEW GATE HOUSE
NEW ROAD TO CAMPSITES
RELOCATE CAMPING OFFICE
NEW PEDESTRIAN BRIDGE
CREATE SHUTTLE SERVICE
NEW ADDITIONAL PARKING
CONCEPT DEVELOPMENT
In general, my prevailing philosophy concerning architectural design is one of contextual fit. To design for the context, I identify as many of the influencing forces as possible which might have an effect on various aspects of the design. These forces may be derived from the physical environment, the historical past, or current philosophical ideas and might influence the feasibility, program requirements, planning or image of the design. The forces are analyzed and placed in a hierarchy of importance and responded to accordingly. My response to these issues is inevitably influenced by my personal perception and knowledge of the context. I feel this approach insures that the project is appropriate to its context and will not only respond to the functional issues, but most importantly, will respond to the social issues of the project.

The architectural forms must not only accommodate the issues of the project, but they must also seek to further promote and dignify the major issues of the project. The architectural forms must create an "experience" for the user.

More specifically, in dealing with the design of the Environmental Awareness Center, the physical and aesthetic qualities of the site are the most dominating issues which
must be respected by the built forms. I set out to accentuate the natural features of the landscape such as the wooded areas contrasting with the open spaces, the rolling contours of the land, and the dynamic features of climate. I want nature to be the dominant component in the design of the built form. In dealing with the functional and social issues of the project, it is necessary to respond to the attitudes and requirements of the general public in an effort to promote the natural environment through various activities and social interaction.

A compromise must exist when building any structure in a wilderness setting. With the intrusion of man made structures, the innocent aesthetic qualities of a natural site can be lost. However, the functional dynamics of environmental systems are never affected by aesthetic issues, only man's perception of the natural environment is affected by the aesthetic qualities of man's built forms. The Center's design must not adversely affect the environmental systems of the site, nor man's perception of the site's aesthetic qualities.
After the site selection was made, I developed three possible conceptual plans for the organization of the Center. They are:

1. Linear Organization—the organization of facilities in relation to one major circulation axis. This scheme provides for large atrium-type spaces, allows for southern sun exposure, and utilizes the slopes on the site. However, it may lose the desired overall community effect.

1. ORGANIZE IN RELATION TO ONE MAJOR CIRCULATION AXIS
2. Central Focus—the organization of the facilities around one central point. This scheme lends itself to the creation of a feeling of community, allows for southern exposure, may utilize the existing contours on the site, and fits well with existing circulation patterns.

2. ORGANIZE FACILITIES AROUND ONE CENTRAL POINT
3. Bridge Plan—the construction of facilities on a bridge over the lake. This scheme lends itself to a very dynamic form, has minimal intrusions on land forms and ecological systems, and will have optimal views of the lake. However, it would be greatly exposed to all climatic conditions, it is visually imposing on the wilderness setting, it provides minimal opportunities for direct integration with the site, and the architectural prototype is foreign to the region.

3. FACILITIES CONSTRUCTED ON BRIDGE OVER LAKE

Scheme 2, The Central Focus plan, was chosen for further development because of its solid positive attributes and minimal negative attributes.
MACRO PLANNING CONCEPTS

There are four overall concepts incorporated in the planning of the Environmental Awareness Center. They are:

1. consolidation of services
2. accentuation of natural features of the site
3. development of a central open space
4. axial organization

The key concept behind the theory of the Center is the idea of consolidation. By bringing together most all of the park services and their architectural components which supplement the activities of the recreation and wilderness area, a third dimension of the park experience can be achieved, an identifiable image for the park can be created, and wilderness land can be conserved.
To emphasize the gentle roll of the topography, the woods and the desirable characteristics of the sun, the plan for the Center conforms to the existing contours of the site, is oriented to the southern sky, and allows for pockets of the natural wooded surroundings to penetrate the realm of the Center.
There are basically four micro-concepts incorporated into the design of the built forms at the Center. They are:

1. strong spatial definition
2. use of the colonnade as a unifying element
3. building form and vocabulary
4. response to the climate

The Nature Center utilizes a different scheme of spatial definition than the other spaces of the Center due to their respective functional differences. In designing the Nature Center, I wanted the external wilderness qualities to merge directly with the exhibit areas, thus adding the character of the natural environment to the constructed nature exhibits. This was achieved by extending each exhibit room out into the woods from the connecting corridor. The exhibit rooms are defined by lateral walls which project into the woods, directing one’s views to the end wall which is glazed from ground to ceiling, providing a full view into the woods.

The other spaces of the Environmental Awareness Center are defined in a different way. All the spaces focus onto the open central space rather than on the natural woods. They
All of the individual spaces are organized and oriented onto a central space. The building form defines the space on the north, east and west, and also separates the domain of the Center from the wilderness lands. The south edge of the central space is defined by the edge of the woods. The central space provides a common area for various types of public activities.

The three dominant elements of the Center—the Information Center, Amphitheatre and Observation Tower—are all aligned on a central axis. The simultaneous view of the three elements from the point of entry unifies the Center.
are all linked together by an exterior circulation colonnade which acts as a filter or transitional zone between the exterior and interior spaces.

In dealing with a plan of such a finite order, it was necessary to maintain a consistent building vocabulary throughout the project. The basic building form is derived from the traditional "salt box" house. Semi-circular forms provide the terminating elements to the linear building forms.
The "salt box" form responds well to the climatic conditions of the area. The pitched roofs shed water and snow, and also allow the north and west winter winds to flow over the structures rather than against them. The predominant southern exposure of the buildings is generously glazed to allow desirable winter sun to penetrate into the spaces. The colonnade roof, overhangs and deciduous trees filter the hot summer sun. Cross ventilation and venting is easily achieved with operable windows opposite each other and high ceiling planes.
BUILDING TYPE STUDY

Most environmental centers merely accomodate the functional requirements for nature study and make no attempt to address a third dimension of environmental awareness inherent in their built forms.

Most nature centers and park facilities are constructed of rough wood and stone and utilize primitive construction techniques and forms to achieve a "rustic" appearance, and thereby a contextual fit.
asked to retain the substance of comfort while sitting loose from the evidence of sophistication; nevertheless, that probably analyzes the accomplishment in the illustrated park lodges that readers will most admire.

When the weather turns cold, the guest in the park lodge in the most primitive area will demand well-circulated heat. Even while he is warmed in the comfort of a central heating system, he will be rather warmed by the wish-fathered thought that miles away from such things as radiators. He will revel in the glow of generously scaled fireplaces, these must be generously provided in the lodge. He will enjoy originating the thesis that the primitive fireplace was tops in comfort—as long as radiators are at his back, and are not too conspicuous.

In a cold climate some auxiliary means of really heating the atmosphere that fireplaces psychologically create cannot be omitted from a lodge that is other than a summer season affair.

The matter of heating is but one item among many. In other details guests will expect the park lodge to be a photograph of all that is primitive—touched up, however, so that all the harsh discomforts that accompany the truly primitive anywhere are somehow obliterated. In the designing of a lodge the stressing of primitive aspect and the disguising of the more major modern comforts combine to produce a problem difficult indeed. The many gadgety conveniences common to urban and pseudo-urban hotels, if incorporated in the wilderness lodge, will only complicate the problem and so have no place in such a development.

In most localities porches and terraces in connection with lodges will be much used. Guests are in the park presumably to enjoy the out-of-doors, and porches and terraces are a means to that end. To function to the best advantage, they should look out on any distant views and points of interest offered.

The two attractive minor structures pictured directly below are accessories of a lodge-with-cabins development. One is a telephone booth, the other a transformer building that includes a telephone booth. The telephones supply communication between the outlying cabins and the lodge proper.
CAMPERS' CABINS IN THE SOUTHEAST

Another group of camp cabins assembled on a geographic basis and not because of any structural or other close kinship. The plans opposite show the cabins at the top of the page to have end porches and entrance doors and the others to have side porches and entrances. The timbers of the upper cabins are "logs in the round;" those of the lower three are "square." Alternative locations for the closets will be noticed; all four may be banked opposite the entrance door, or two may be spotted on each side between the cots.
The essentials of a winter use shelter are incorporated in this building—large warming room, food concession, and toilet facilities. In a shelter projected for skaters’ use, a runway or ramp from the shelter level to the ice surface is usually preferred to the steps provided in this instance. Simple form and low cost materials have produced results altogether pleasing. The raw cut in the rear of the structure to be seen in the photograph cries out for remodeling and a naturalizing treatment.
Apology for the presence in a natural park of a structure so appealing as this need not be profuse. Possibly the building, as here presented, is a triumph that the designer must share with the photographer. If aesthetic shortcomings exist, the quality of the photograph blinds us to them. Complete harmony with surroundings and a primitive informality are noteworthy. Steep slope makes both shelter above and bathhouse facilities beneath accessible from grade levels.
Outdoor Theater - Copague - New York

While this agreeable example is on the grounds of a school, it has conservative and yet definite park character to win it a place here. Its semi-circular plan of seats, surrounding turf stage in front of platform stage, makes it more truly an amphitheater than an outdoor-theater. The construction of the seats and the suggestion of foyer achieved by the drinking fountain and two facing log benches should be noted.
Observation Tower - Moran State Park - Washington

Of dual purpose, this tower sensibly isolates the fire lookout's station well above the platform given over to public observation. In consequence there is not conflict of function.
Lookout Tower - Mt Nebo State Park - Michigan

More picturesque than most braced timber towers, this ample is not thereby any less vulnerable to the deterioration that time brings. The overhanging landings make 2 Plank floor do not entirely eliminate the oil derrick implication of structures of this general type.

GROUND PLAN

TOP PLAN

Scale 1/10" x 1/10"

6'4 Hip Pole

Top of plate

Wood shingles

12'4 Logs

6'4 Rafters

2 Planks

Reinforced Concrete Foundation

SIDE ELEVATION - FRONT ELEVATION - SIDE ELEVATION - REAR ELEVATION
Plan A. A modest but effective layout for a small, one-story interpretive education building. Total floor space is 1,600 square feet, which is adequate as an initial building for a small program.
Plan C. A floor plan for an optimum type of interpretive education building with allowances for future expansion to include a planetarium. Note that toilets and utility workshops have doors leading to the interior and outside. This floor plan embodies the better type of interpretive building found in the $75,000 to $100,000 price range.
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