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By Tom Jordan

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INTRODUCTION

How to design? That is a very big question for consisting of only three words. It is a question that most mystifies and bewilders the person who is first introduced to the profession of providing sheltered environments for man, Architecture. It is not easily answered and for that matter probably has no definite answer. For every designer there is a subsequent and unique method or style of approaching a design problem. How one derives this style is a very personal and distinct educational experience.

At the outset of this educational experience it is the goal of most students to achieve a level of design that rivals that of the great designers of the past and present. How can one achieve this goal? The answer to this is quite simple. One must study those great designers and sort out their strengths and weaknesses. Then it can be possible to determine which styles of design best satisfy their own ideals, goals and morality. This may mean that one starts out with several styles as models that best suit their particular needs. Then one can add his own touches to create a distinct and personal style.

There is one common element in all good designers. That is instinct. All great designers have relied upon their instincts and intuition along with their style or system to create near perfect designs. The reason the term near perfect is used is because it is impossible to create a perfect design. There is always that imperfection of not quite attaining the point of total or final design.

It is important to understand that no design is totally comprehensible at any one point in time. It may be constantly changing to fulfill the needs of new situations and problems that arise. For this reason it is important to periodically stop and analyze one's design process. This is the major emphasis of my thesis. This book is the accumulated knowledge of five years of formal architectural schooling and twenty-three years of experiencing life's lessons. This book is intended to be scrutinized, criticized and either accepted or adapted. From this point I can again move on, discarding what does not work, and keeping what does. My thesis represents a symbolic end to one chapter of my education and the beginning of a new one. The new chapter is the extension of the search for a level of design which comes as close as humanly possible to a perfect and total design.
I will begin with the major concept or rule that is the overall premise of my design process. That is to always design with nature in mind. Nature has a very broad definition according to Webster's New World Dictionary. What I am referring to by nature is the following. The essential quality of a thing; its essence, the power, force, etc. that seems to regulate this (this, meaning essential quality).

So what are these other elements besides man? The list could be endless. For the sake of brevity I will discuss those elements that have the greatest impact upon the nature of my design process. These elements by their very nature lend themselves to man to be interacted with so as to determine the best solution for a design problem. I look at them as criteria setters to aid me in designing. These elements are as follows: the sun, site contours and drainage, soil conditions, wildlife habitats and vegetation, climate and finally natural treasures and views.

The latter could be manmade or natural.

It is now time to stop for a moment in order to understand a very important concept. That is, Man is an element of nature, Equal to the rest of the elements. Man completes the set of elements as a caretaker of all the elements. Man is an important part but no more important than any other part. If any part is missing, no matter how tiny or big, there will be discord in nature.
The Sun

If one could label any single element as being the most important, it would probably be the sun. The designer would greatly compromise his design if he ignored the sun because it gives life, warmth and character to the earth's environments.

The overall scheme of a design should include sheltered, sunny spaces, especially if the climate is cool or cold. These sunny outdoor spaces can be protected by vegetation and buildings or both. There should be access between the elements of shelter, buildings and vegetation, and open spaces. Circulation should constantly move in and out of these elements to create a sense of variety. The materials used to pave and create these spaces should absorb the sun's energy and store it to be used to make these spaces warm when it is evening or cold.
Contours and Drainage

Site contours and drainage are other elements that can be of great assistance to the designer. These two elements can help in determining placement and density of buildings, roads and outdoor environments. If contours and drainage are ignored there is the chance of risking future problems such as water damage from improper site drainage.

An example of ignoring these elements would be the case in which the designer arbitrarily imposes a grid on grid on the site. On a relativity level site this may not impose any problems. However, on a highly articulated site it most likely would. In the latter case there would be major site alterations required in order for the site to accommodate this imposed grid. This could prove to be quite costly economically as well as physically damaging to the site.
If the designer works with the contours and drainage of the site there will be two major benefits. First, the design will reap economic benefits. This is because costly land moving will be prevented and the need for costly drainage systems will not be required. Secondly, the design will feel right. That is, it will co-exist with the land. This will make the design appropriate only for its particular site. This second benefit should be the goal of all designers.

Now, one may ask, is it a sin to alter the land, even to provide required site repair? The answer to this question is no. It will be a rare situation indeed when the site will totally accommodate a design without some site repair. It is important to remember that man is part of nature and not alien to it. Man is the only element in nature that can totally alter its state permanently. Man has this power
for a reason and that is to be a custodian over the other elements in nature. So, it is the duty of man to use this power accordingly and properly. This means to assist nature in running efficiently and repairing it if needed.

If nature does need to be repaired it will set the guidelines on how to do it. To the designer this means making alterations that respect the contour fabric that already exists on the site. This also means that dramatic changes can occur for the sake of repair. These changes should be worked out to coincide and be harmonious with the design and the surrounding context.

There must be some give and take in order for man made elements and natural elements to co-exist. Nature should guide this give and take and over-rule the outcome. If man attempts to over-rule nature he will soon find out that he is in a never ending and costly battle that he can not win.
Soil Condition

The condition of the soil upon which buildings, roads and other paved areas are placed is another important element to analyze. An accurate soil test is a very important first step that should be taken in any design process. From this soil test, one can determine where it makes the most sense to build. One can also determine what alterations must be done in order to prepare the site to accommodate a particular design.

If the proper conditions can be found to build upon with the least amount of alteration, costs of a project can be dramatically reduced. Basically speaking, the more stable the soil condition is the less elaborate the foundation system must be. This equates into lower costs. The same can be said of roads and other paved areas.

As a designer I would much rather spend the budget of a project on the seen elements of a building than the unseen.
Proper drainage of water away from buildings and roads is important to understand. Man made elements placed on a site create impervious surfaces that concentrate run-off from snow and rain to specific locations. Therefore a location should be selected that is easily adaptable to these conditions. Soil conditions with high percolation rates, along with proper drainage systems can be very cost beneficial.

Vegetation can also play an important role in controlling site run-off. It is important to keep the existing vegetation intact on slopes to prevent erosion. Where there is not adequate ground cover to prevent this the design should incorporate those needed repairs. Again, man must play the role of the custodian and assist nature in correcting any problems that may exist in its fabric.
Wildlife Habitats

One of the major debates that often arises when a new building project is begun is whether or not it will alter or damage existing wildlife habitats. This is a topic that is often overlooked by designers until it is too late. Once again, man is on this earth to be subservient to nature and co-exist with its elements. Unfortunately man has a very poor track record in this area. There should always be a very thorough and exacting attempt to not only co-exist but to reinforce and repair the existing wildlife habitats where they occur.

The alteration and movement of vegetation is one of the single most causes of habitat damage. Therefore one should attempt to work within the given fabric of vegetation already present. The question now arises as with the manipulation of site contours. Is it a sin to alter vegetation? The answer here is again no.
One should not fear the manipulation of vegetation as long as the end result creates a better situation than what previously existed. If a tree is in absolutely the wrong place it can be moved as a last resort. It is important to remember that any vegetation that must be moved should be relocated elsewhere. The vegetation should benefit its new location and not act as a detriment. It should reinforce its new habitat that it is moved to.

Vegetation can be viewed in another sense. It can be used as a natural protective device. Vegetation can protect against climatic conditions such as winter winds and summer sun. It can also be used to create barriers for privacy and directing views.

Deciduous trees with high canopies can be used to create natural ceilings overhead. Conifers can create walls. Low shrubs and bushes can create partial physical barriers but still allow views.
Climate

The climate of the site should also be analyzed and understood to aid in the proper resolution of a design. How much sun is present and at what times? What angles do the rays emitted from the sun hit the site and how do these angles vary during the course of one year? How cold or hot does it get? How much does it rain or snow and is it humid or dry?

From where and at what speeds do the prevailing winds travel? These are all important questions that must be dealt with in order to make the right design decisions. A miscalculation or avoidance of climatic data could mean a costly mistake in the long run. These mistakes could severely threaten the efficiency and function of a building or outdoor space.
This is an area where certain elements of nature can be used to combat other elements. One can use the contours and vegetation present to protect against cold winter winds. On the other hand, the summer winds can be used to help cool things off, especially if it comes in to land over a body of water. The sun's radiation can be used to heat with during the winter and in the summer when the sun is hot trees can be used to shade. In dry climates vegetation will put moisture into the air to make it more comfortable.
Dramatic Views and Treasures

Finally, where are the dramatic views or vistas on or to be seen from the site? Is there sacred or historic objects in view that can make the site a special place to be? Finding an object or view that seems ritualistic or causes feelings of awe can make the site a place to be remembered.

The designer should personally visit the site and search for these treasured objects and views. They could be as small as a clearing in a dense woods where shafts of brilliant sunlight eliminate a carpet of violets on the ground. Maybe it could be as large as a breath taking view of the Grand Canyon clothed in orange, yellow and red at sunset.

There are those views that seem common at first glance, however a closer look will reveal many intriguing and faceted distinctions. A sunset could be one of these common views but
it is not. Maybe in one location there is a wide, expansive view of a sunset over a lake or ocean with its brilliant colors reflecting off of the glassy surface of the water. Then, not far away the same sunset can be viewed through a small portal framed by a stand of tall pine trees and a craggy rock outcropping. In the first case the view may last ten or fifteen minutes but in the second case for only a fleeting moment. The sun rises and sets all over the world but it is not always the same in terms of its colors and splendor. Each new location has its own personality and character that makes the common place somehow quite different.
Once the considerations of the site scale are complete one must turn to the building scale. The building must respond to the site and work with it accordingly. How a building responds to its site and context is how it will receive its character and personality. Once again, if the building is designed with nature in mind, the final product will benefit greatly.

Some benefits that will be evident are the design will be appropriate, economical, efficient and possess a feeling of oneness with its surroundings. The building will respond to its climate, surrounding site vegetation and contours and its contextual elements. These contextual elements would be vernacular architecture, social traditions and morals, land marks and sacred views or objects. This is an area where some architects fail. These failures end up being self serving, personal statements, that do not exhibit a responsible or even respectable solution.

At the building scale there are several concepts that must be evaluated in order to have a complete design. These concepts are as follows; the relation to the sun, connection to the earth, sense of shelter, sense of entry, sense of protection, natural lighting, inside to outside relationships, organization of structure, efficient material use, space definition, details and contextual relationships. These are all important concepts to consider, but by no means not all of them.

If all the above concepts are studied and a plausible solution is derived to fulfill each one, a complete and cohesive design will ensue. All of these concepts are interrelated so it is difficult to isolate one from the rest. Each solution for any one part is partially based on the previous solutions. By the end of the design period one can have a very intricate weave of elements, based on just a few simple concepts.
The Sun

The sun is a wonderful tool that can assist the designer in creating a virtually self-sustaining and beautiful architectural statement. So often it is looked upon as a nuisance or even totally ignored. This is difficult to understand since the sun naturally lends itself to incorporation into design decision making. The sun can assist in creating attractive and dramatic forms and spaces. This can only occur when its characteristics are properly applied and utilized.

The sun can also assist in producing economic benefits. Solar orientation and proper placement of glazing of a building can have a dramatic effect upon the efficiency of that building. In some cases a well designed solar environment can heat itself without the need for conventional heating. The sun can truly become beneficial to the designer when he or she understands how best to work with it.
Connection To The Ground

A building must be anchored to the earth it stands upon. It should never appear to be alien or not in contact with its context at this crucial point of connection. This is an important detail that deals with understanding the nature, character and quality of the context one is working in.

The type of material used to create the base should be compatible with or even from the site itself. The base should evoke feelings of strength and stability. An example of this would be a Greek temple. Such a structure has a base which seems to evolve out of the very stone it is made of and stands on.

Strong horizontal lines can help create the transition from the man made to the natural. This would indicate a sensitivity to the predominant horizontality established by the horizon.
Sense Of Shelter

The design of a building should not only have a solid attachment to the earth but also an appropriate point of termination at its summit. The roof is often something just tacked on top that is not a natural extension of the design. The roof line of a building is an element that stands out as it is silhouetted by the bright sky behind it. For this reason it is very important to deal with the roof with care and creativity.

The roof should also exhibit a sense of shelter. Not only for the interior spaces but also for exterior spaces adjacent to the building. These extensions of the roof to shelter exterior spaces help to break up the volume of the building. They act as a link between the building and its surrounding context like fingers that reach out to embrace the site and its vegetation. These extensions can also help to denote points of entry. The roof should be a sculptured element that helps to relate what exists on the inside.
Sense Of Entry

A building should have a definite point of entry. This entry should act as a preparation for what lies ahead inside a building. The entry will set the mood or atmosphere that will make the rest of the building a success or failure. It is one's first impression of the building so it should be dealt with, with great importance.

This sense of entry can be dealt with in several ways. The entry can be denoted by a change of scale or rhythm in the facade. It can also be a depression or extension of the normal plane that makes up the facade. Changes in glazing style or size like the juxtaposition of mass and void can also help to denote entry.

The entry space itself, can be dictated by the desire to create either a public or private entry. It would be intimate and isolated if one wanted to create a private entry. A change in scale to a larger more open space would denote a public entry.
A sense of protection from the harsh elements of nature and collection of the positive ones should be evident in the organization of the design. Harsh elements such as cold, strong winds, rain and snow should be obstructed from penetrating the interior by heavy barriers. Positive elements such as the sun and cool breezes should be allowed to penetrate a building. In this way a definite front and back can be created.

The dull, homogeneous facades of many totally glazed buildings, such as office buildings, should be avoided. Instead, a sensitive solution that creates an intriguing and insightful facade should prevail. A facade which gives hints as to what the function and nature of the interior spaces are. Each facade may be totally different from the rest accept for an overall ordering element that ties the many parts into a cohesive statement.
Natural Lighting

It is important to analyze natural lighting schemes in order to provide appropriate and humane lighting as well as to cut down on energy costs. Natural lighting can be achieved in basically three ways. These ways are direct, indirect and filtered lighting.

The direct lighting approach can be achieved through clear glazing in windows, skylights and clear stories. The sun’s rays are allowed to penetrate the space unobstructed. This creates bright, cheerful spaces with strong contrasts.

Indirect lighting creates a more even distribution of light that is not harsh like direct sunlight is. This can be achieved by bouncing direct sunlight rays off of a light colored surface and into the space. This type of lighting is good to read and work by. Filtered lighting is an attempt to combine the good aspects of direct and indirect lighting into one. It can be achieved through screens or translucent glazing.
Inside To Outside Relationships

The relationship between interior and exterior spaces created by a building and its surrounding context is critical. There should be places of total separation as well as blending. The function and atmosphere of interior and exterior spaces will dictate this.

Separation will occur in the case of one or a combination of the following; public verses private, limiting visibility of unpleasant elements in the surrounding environment (a factory belching out black smoke) and the desire to protect against harsh natural elements.

A continuation of function from interior to exterior or visa versa will indicate a desire to blend the two elements. Points of entry can be used as blending points as well. Perhaps orientation toward a stunning view such as city skyline or a picturesque landscape would provide the opportunity to blend. A playroom for children calls for interior, exterior interaction.
Structure

A building should have a solid and sound structural organization. This organization should be pure, simple and honest in character. One should be able to look at a building and be able to understand this overall organization. Revealing the structure on the interior and exterior helps to add character, depth and texture to a building.

Looking at a plan or elevation, the structure should be clearly outlined. The pattern or rhythm that it takes could be related to an efficient material use rhythm and/or the surrounding contextual rhythms. The type of material used and its function should be compatible elements. For example, steel for long spans, wood for short spans and concrete or masonry for its bearing capabilities.

Connection points between structural elements can be used to create interesting and inventive details.
Efficient Material Use

It is important to understand the nature and character of the materials one uses to build a building. The reason for this is to utilize the material to its highest potential and to use it efficiently. It is also important to understand how the materials are put together. A question that should be answered at the beginning of a new project would be as follows: What systems are possible in order to build a building efficiently or should a new one be invented?

There are certain dimensioning systems that are applied to different types of materials. A modularization of design can be developed that is based on these systems in order to use the material efficiently and with as little waste as possible. For instance, with wood construction, a module of two or four feet and increments thereof, would be desirable. Connectors such as nails, bolts, nuts and screws must also be used efficiently to avoid waste.
Space Definition

The definition of spaces inside and adjacent to a building is another issue to tackle. There should be clearly defined spaces for various functions in a particular building type. For instance, in a home, there should be a common gathering space as well as private, personal spaces. There should be services in a distinct location and not spread out so the mechanical and plumbing elements can work efficiently. In public buildings there should be an entry and reception space, gathering or common spaces and private spaces again. Services should again be designed efficiently.

A good ordering system that clearly defines these types of spaces should be evident. Zones for each type of function should be visible. These zones can be delineated in several ways such as the following: level changes, scale changes, semi-private or private barriers, paving or floor cover changes, mosaics or color. These are just a few ways.
Details

It is very exciting and rewarding to evolve a design through all the concepts already mentioned. The detail is where the designer can add a very personal touch to the building. The detail could be anything from a special, structural connection to a door knob.

Many of the great designers of the past and present have felt it crucial to have a total design, from the most general concepts to the preciseness of details. Furniture, carpeting, paintings, blinds, etc. and even clothes have been details that the great designers have included in the overall schemes of their designs.

The detail should be something that evolves from all the previous decisions. It should be the signature that makes a particular building different from others. The detail is an entity that is the finishing touch on a design like icing on a cake.
Context

A design should always reflect the context in which it is exercised. This reflection includes proper responses to climate, vegetation, availability of materials and the vernacular architecture present. A building must be able to be plugged into its surrounding environment smoothly and be a positive entity, not a detriment. A building should not be viewed as an island that relies upon nothing but itself. This is why some types of structures such as butler buildings and mobile homes can not be labeled as real architecture.

In order for a building to be labeled as real architecture, all of the concepts previously stated must apply. How a building relates to its context is very important. If this is ignored by the designer then he or she is showing an insensitivity that must not occur. A true designer or architect takes this last point seriously and takes pride in fulfilling it.
Now that the basic theory of my design process has been laid out, it would be interesting to see if it really works. It would be interesting to test this theory on a hypothetical project that will best exemplify how it fulfills my desires and goals. What are these desires and goals? They are as follows; to be able to design a project that interacts with its natural and man made environment, to see if my process can deliver an economical solution, to create a unique and appropriate solution that is intriguing and interesting. In essence, to provide sheltering environments for man that stimulate his mind and body and create a bond between himself and his surroundings. At the same time I am interested in seeing if this design process can provide a solution that is affordable to a wide range of income groups.

I have selected a recreational retreat facility as a project to test my process. The reasons for this are many fold. First, the facility will be located in a relatively remote landscape, one that is still almost literally wilderness. I feel that this will test how well my process actually interacts with nature at its extremes.

Secondly, this type of facility is one that has traditionally been open to only a select portion of our society that can afford it. In this respect I will be able to see if my final solution can be affordable to a wide range of income groups from low to high.

Third, the climate of the site I have selected is harsh in terms of cold, strong winds and snow. This will allow me to see how efficient of a design I can create in terms of energy savings.

Finally, this project by its very nature, calls for the user, man, to interact and work or play with his natural surroundings. I would like to see how close of a bond can be created between man and nature by the elements of my design process. I feel that above all, if one designs with nature in mind and how man interacts with nature, a viable, affordable, appropriate and intriguing solution will surely follow.

The following pages will include a project statement, program and site analysis. The program is based on research of existing recreational facilities as well as concepts that stem from my own desires and thoughts of what a recreational facility should be. The site itself, helps to establish the program by the nature and types of recreational activities that it will accomodate. These activities will be discussed as well.
This project works under the concept or goal of providing recreation at hopefully a low cost. The forms of recreation that will be provided may seem conventional at first glance. These forms are as follows: fishing, boating, hiking, cross-country skiing and swimming as well as good old-fashioned rest.

The very nature of such an endeavor to make these forms of recreation affordable constitutes a new look at them to see where the cost can be cut. Fishing and boating for example can have embedded costs in terms of equipment required as well as its remote nature. More often than not, good fishing areas are in remote locations, therefore constituting transportation costs. There are boats required either through rental or purchase as well as rods, reels, lures and baits.

The first step to reducing these costs could be to bring the fish to those who are fishing. This can help to reduce the transportation costs. This can be accomplished by creating a man-made basin which can be designed to attract fish. Secondly, at this basin do away with the need for boats, create piers that are integrated into the total scheme so as to create pedestrian ties that also function as a place to fish from.

The same can be done in terms of the other forms of recreation stated. Each can be analyzed for cost breakdown and then adaptations can be made to reduce the costs.

Hiking is a relatively inexpensive form of recreation. In terms of equipment required all one needs is himself and a good pair of shoes or boots. The question arises of whether the hiker should be restricted or allowed to roam freely? If the hiker
is to be restricted to definite trails, then initial cost as well as maintenance of these trails must be dealt with. On the other hand, it may not be desirable to have people allowed to go anywhere they wished due to conflicts of privacy.

There must be thought given to the relationship between public and private spaces. For this reason as well as for cost reduction reasons it may be desirable to combine both types of hiking. A possible solution could be to direct hikers via restricted trails to hiking areas that are open and free to roam as one wishes. In this manner there could be three or four hiking areas, each with its own character and level of difficulty. There could be the wooded, open field, wetlands and beach hiking areas on this particular site. All of these areas have their own character but are tied together by the overall contextual elements.

Cross-country skiing can occur on the same trails and areas as hiking during the winter months. These trails can also be incorporated into a larger system of trails that already exist in the region the site is located.

Swimming is another activity like hiking that can be relatively inexpensive. The major costs arise in the provision of the activity itself. If a pool is provided there are costs of maintenance and upkeep as well as supplying a life-gaurd that could be high. These costs go beyond the fact that a pool is expensive to build. For these reasons one should look toward the possibility of natural swimming areas. The man made basin could have this element designed into it and interact with the fishing and boating piers. If designed properly, this type of swimming facility can be relatively maintenance free.
In terms of the physical facilities such as those to accommodate campers and those wishing to rent a cabin, the following provisions will be made. There will be several types of rentable spaces relating to the ability of the renter to pay. In this way a wide range of income groups can be accommodated. There will be individual cabins, clusters of four cabins, clusters of six cabins, camper facilities, primitive shelters and finally primitive tent camp sites. These rank from most expensive to least, appropriately.

There will also be a need for community or public facilities. These needs are as follows; public gathering spaces both indoors and out, a restaurant and lounge, a small grocery for provisions, equipment rental and storage, a marina with retail shop for equipment, supplies and souvenirs. The public gathering space will include a snack bar and eating areas indoors and out.

There will also be various indoor activities housed in this structure as well. These will be billiards, table tennis and video arcade.

All the public facilities will be situated in relationship to each other so as to create a pedestrian, retail center for the project. This retail center will be referred to as the village from here on in this book. The village will be for the use of the campers and rentals as well as to the general public and tourists. For the last two groups mentioned, parking will have to be provided, along with a definite entry entity.

The village will be directly linked to the man made basin and piers. Also to be incorporated into this waterfront scheme will be an observation tower and light house. From the tower and village there will be a magnificent view of sunsets and the Mackinac bridge (a five mile suspension bridge that connects the upper and lower peninsulas of Michigan).

Finally there will be an administrative check point for rental and composite information. There will also be a maintenance facility with a sewage treatment plant for the entire project. Other utilities present would be water via wells, electricity and propane gas. There is no natural gas available to this region.
COMPONENTS AND RENTALS, one of each type:

Primitive tent camping:
- Tent platform -------------- 288
- parking in single location ------------------- 1500

Primitive shelters:
- Primitive shelter platform ------------------- 288
- Individual parking with ea. ------------ 200
  TOTAL ----------------------- 488

Camper trailer sites:
- Platform ----------------------- 560
- Individual parking with ea. -------- 200
  TOTAL ---------------------- 760

Cluster of six cabins:
- Six cabins @ 288 ea. -------- 1728
- Mechanical unit ------------- 288
- Parking ---------------------- 1600
  Total ----------------------- 2616

Cluster of four cabins:
- Four cabins @ 432 ea. -------- 1728
- Parking ---------------------- 1000
  TOTAL ---------------------- 2728

Individual cabin:
- One cabin @ 624 -------------- 624
- Parking --------------------- 200
  TOTAL --------------------- 824

VILLAGE:

Community activity building:
- Snack bar and indoor
  and out eating areas --------- 2000
- Billiards, table tennis
  and video arcade ------------ 2000
- Locker rooms with
  showers ----------------- 2 @ 400 ea. --- 800
- Public bathrooms 2 @ 200 ea. --- 400
- Equipment rental ----------------- 1500
  TOTAL ---------------------- 6700

Marina:
- Showroom (retail) ------------ 3600
- Storage --------------------- 400
- Office ---------------------- 200
- Bath ------------------------ 100
- Maintenance shop ----------- 1500
- Storage --------------------- 400
- Shop bath ------------------ 100
  TOTAL ---------------------- 6300

Man made basin:
- Piers, ramp and gas pumps
- Beach
- Tower

Restaurant:
- Dining ---------------------- 1500
- lounge --------------------- 1000
- Kitchen --------------------- 500
- Storage --------------------- 400
- Bathrooms -------- 2 @ 100 ea. --- 200
- Office --------------------- 200
  TOTAL ---------------------- 3600

Grocery:
- Retail area ----------------- 1500
- Storage --------------------- 400
- Office --------------------- 200
- Bathroom ------------------- 100
  TOTAL ---------------------- 2200

Parking and Entry:
- Parking for 200 cars
  and 20 trailers -------------- 60000
- Entry

ADMINISTRATIVE CHECK POINT:
- Office ---------------------- 200
- Bathroom ------------------- 100
- Storage --------------------- 300
  TOTAL --------------------- 600
I have picked a site that is located in northern Michigan for the spot to build my recreational retreat. It is in the Upper Peninsula and located on a point of land that extends out into Lake Huron. The site is approximately a twenty mile drive to St. Ignace which is the county seat. The site is also about ten miles across water from Mackinaw Island, a popular tourist attraction.

The nearest town is Hessel, Michigan which is a small tourist and fishing related community. A group of islands known as the Les Cheneaux Islands, is just off the mainland from Hessel. These islands have many small family owned summer cottages on them.

The climate of the area is as follows. The winters are long with heavy snow fall and cold temperatures. The summers are relatively comfortable with daily temperatures in the seventies, and then dropping off at night.

Due to the extremely clean air and wind patterns the sun is intense. The water is very clean and cold. There are both deciduous and conifer types of trees present.

The site is strategically located in regard to major population centers such as Minneapolis, Detroit and Chicago. At the same time the site is removed enough from these urban areas to allow it to be a real escape from city life.

Following are some site feature maps that help in understanding the site better. After these maps are data tables that quantify some of the elements described in the text above.
### Climatic Data

#### Temperatures:
- Jan. ---- 15 degrees
- April ---- 35 degrees
- July ---- 68 degrees
- Oct. ---- 45 degrees

#### Precipitation:
- Mean annual ---- 24-32 inches
- Mean max./hr. ---- .75-1 inches
- Mean max./day ---- 2-2.5 inches
- Monthly average:
  - Jan. ---- 2-5 inches
  - April ---- 2-5 inches
  - July ---- 3-6 inches
  - Oct. ---- 3-5 inches

#### Snowfall:
- Mean annual ---- 100 inches

#### Population Density:
- People/square mile ---- 10-25

#### Soils:
- Cool soil with mean annual temp. less than 47 degrees.
- Moist, Spodosols, Orthods
- Uplorthods plus Glossoborafs
- Gently sloping.

#### Vegetation:
- Northern hardwoods and fir forests.

#### Solar Radiation:
- Incoming radiation in langleys:
  - Jan. ---- 150
  - April ---- 400
  - July ---- 550
  - Oct. ---- 200

#### Average Hours of Sunshine per Month:
- Jan. ---- 100-275
- April ---- 240-425
- July ---- 300-490
- Oct. ---- 150-350

#### Heating and Cooling Degree Days:
- Heating ---- 8000
- Cooling ---- 500

#### Winds, Speed and Direction:
- Jan. ---- 2 mph from North
- April ---- 2 mph from North West
- July ---- 4 mph from West
- Oct. ---- 2 mph from West
MAJOR CONCEPTS

Besides the concepts stated previously there are some additional ones that relate to this particular project and site. These are major concepts dealing with the site and buildings at their respective scales. These major concepts are as follows: man made to primitive, density of construction, circulation, public and semi public nodes, open and south facing outdoor spaces, views and goals.

Man made to primitive deals with the desire to create a transition between natural and man made elements. As one enters the site one will notice a progression from organized and ordered man made elements to more natural, untouched surroundings. This will be evident in the paving of automobile routes as they will go from smoothly paved surfaces to gravel and finally, dirt.

This concept will also be evident in the buildings on the site. They will gradually break down from totally enclosed, regulated volumes to only platforms upon which one can pitch a tent. Vegetation will be used as an ordered boundary delineator at first and then gradually break down as one moves through the site until it is in its raw state.

Density of construction is related to the above concept. The density of man made elements will become less and less as one moves through the site. This density will be greatest at the village and then taper off until there are only scattered, individual tent camping spots.

Circulation will be a two sided concept. Automobile traffic will move onto the site and wind along the higher contours of the site.

From this major circulation spine the automobile will then go down into the site at designated locations where they will be parked. From then on circulation is by walking only. The locations selected to break off from the major automobile spine will correlate with natural drainage swails on the site. The concept behind this is that symbolically man will proceed to the water (major goal) along the same paths as the run-off water does.

There will be a major public node at the terminus of each of these paths to the water. There will be a major public node at the waterfront of the village and lessor, semi public nodes at each rental type terminus.

Both types of nodes will act as goals to be reached by the inhabitants of the facility. There will be glimpses of these nodes along the circulation paths to give one a
foretaste of things to come and lure them into the site.

Finally there will be open, southerly exposed outdoor spaces. These outdoor spaces will be protected from cold, winter winds on their northern boundaries by buildings and vegetation. These spaces will be areas for outdoor activities for the village as well as the rental units.

At the building scale there will be a few major concepts as well. These are as follows; solar orientation, protection from harsh elements, zoning to create openness on the interior, efficient construction techniques and the use of native materials.

Solar orientation will deal with receiving the sun's energy and putting it to efficient use. This means the building must take in the sun's heat, store it and radiate it into the spaces that need it.

The interior will be organized so as to create a barrier between the inside and the harsh elements on the exterior. The zoning of each building will assist in accomplishing this. Service areas will be placed on the north side of a plan. These spaces will act as barriers and allow the south faces to be open for solar penetration and views.

An efficient construction system will be used along with materials that are native to the site or region. This will help in cutting down costs. A modular system will be utilized so as to avoid waste of materials. Trees that must be removed and cannot be relocated will be sold to local lumber mills to help pay for some material costs. Earth and stone which will be excavated from the man made basin will be used elsewhere on the site or sold. A major portion of the exterior material used to build the buildings will be of this excavated stone.
Cabin Concepts

South facing outdoors

Protected outdoor spaces

Wealthy of outdoor space

Main entrance to log 4
Sheltered parking

Light from both sides

Private spaces
Restaurant
Cluster Of Six
BIBLIOGRAPHY

ENERGY DESIGN BIBLIOGRAPHY


3. Haynes, Charles; Self Help Housing Centre for Continuing Education, Univ. of British Columbia; Vancouver, Canada; 1979.


8. Schuerr, R. F.; Davis, J. J.; Solar Heating; Rand McNally; Chicago; 1974.

9. Lade, Herb; Cook, Jeffer; Leds, Ken; Selvage, Steve; Passive Solar:-institutional; Portland, Oregon; Solar Energy Society; Kansas City, Mo.; 1983.


COMMUNITY DEVELOPMENT AND ENERGY CONSERVATION

1. Muller, Thomas; Economic Incentives for Land Development; Erasmia, Illinois; 1980.


PEER GROUP BIBLIOGRAPHY: LOW-INCOME FAMILY


LEISURE AND RECREATION BIBLIOGRAPHY


2. Kondo, Thomas K.; Leisure In Popular Culture; In Transition; C.V. Mosby Co.; St. Louis; 1975.


INTERVIEWS


