Thesis
Thesis
Nevada Mills Estate
J immerson Lake
Angola, Indiana

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College of Architecture and Planning
Ball State University
Muncie, Indiana
1984
PREFACE

"In condominium housing, each occupant owns his dwelling unit. The occupants share only costs of the parts of the building that every occupant uses. If one occupant fails to meet his financial obligations toward his unit, the other occupants are not affected."

--World Book Encyclopedia
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Acknowledgement

This book is dedicated to all of my family for their love and support throughout these years of personal endeavor. Also to my thesis committee:

- Jack Wyman
- Jeff Culp
- Bruce Kieffer
- Bruce Meyer
- Omar Faroque
- George Young
- Dave Mackey

But special dedication goes to my wife, Tracy, and my daughter, Nicole, for all their understanding and strength they have given me. For without them this project would have little meaning.
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Introduction
This thesis project is a proposal for a 80-100 unit condominium development on Jimmerson Lake in Northern Indiana. The project involves the development of 98 acres into a residential community with a variety of recreational activities. The major thrust of this project dealt with the development of the master plan as a whole, rather than only the housing issues on the larger scale. The reason for deciding to go this route is twofold: first, housing makes up the majority of land use and becomes the foundation for the project; second, designing a housing project is a very complex and intricate process dealing with a variety of social and economic issues, thus creating a great challenge for the designer.

Since the project began at the start of the year, its program and elements have changed substantially. One of the major and key elements of the project is the large areas of water surrounding the site. So access to the water became a very important issue of the design and its process. With only a little over 1,000 lineal feet along the lake, access seemed to be very minimal for this size of a project. In order for this project to be fully justified, other means of getting to the lake had to be found. The only answer was to totally clean out 40 acres of a peat moss bog and connect it to an existing channel which already is connected to the lake. But this solution only created another problem, dealing with the environmental and ecological impact of the bog. Upon extensive research and discussion the only alternative was to use the bog as a natural amenity and gain access to the lake by the channel. This solution helped strengthen and develop the overall concepts of the master plan.

In the final design solution, the recreational node became the major focusing and organizational element. Major green spaces radiated from this central focus area to act as the organizer for the clustering of the housing units. This clustering of housing units on the site is based on hierarchical, climatic, circulatory, topographical, and functional patterns. The building's vocabulary of form, materials, rhythms, and patterns reinforce the idea of "variety in unity."
Program
SCOPE

The general scope of this project is to produce and develop the major functional and organizational requirements for a low-density condominium complex in a rural context. The development will include the planning of different phases of the project in a master plan format, the development of a community with various activities for social interaction and a building type that is not only functional, but responds aesthetically to its surroundings.

In order to fully detail a complete study of this architectural project some important issues of the design must be brought forward: energy efficiency both in site and building design, the development of the cluster concept in the master plan and how it relates to the other elements on the site, the development of two basic units with variable options, the image that is portrayed in the final design to the future user, the handling of very sensitive ecosystems that are prevalent on the site, the dynamic view of the lake from the hilltops and the detailing of the buildings so that they can be well constructed.

These issues, of course, only summarize the highlights of the project. All of these issues, ideas, and details will be molded together to form my final solution representing one full year of research and design. Although this is by no means the ultimate final solution, it instead portrays the major results from my thesis experience.
THE SITE

LOCATION

The site is an area of 98 acres of rolling hills, woodlands, and natural amenities in the northwest quarter of Steuben County in north-eastern Indiana. The entrance into the site is five miles northwest of Angola, the county seat. The site's southern boundary rests on the northern shore of beautiful Jimmerson Lake which is connected to the east by larger Lake James.

Forty-five miles to the south of the site is the city of Ft. Wayne, while Lansing, Michigan, is 100 miles to the north.

ACCESS

Interstate 69, linking Ft. Wayne to Lansing, passes just 3 miles to the southeast and is connected to the site by the scenic route of Nevada Mills Road, which winds around the lower basin of Lake James. This excellent location puts Lansing within less than two hours driving time to the site. Ft. Wayne, on the other hand, is less than one hour from the site.

SOIL

The soil on the site consists of coarse sand and gravel. This kind of soil consists of coarse particles, 1/4 in. or less in diameter, predominantly quartz with no binder, which have been compacted by the weight of overburden or weather. The grains are generally spherical or angular in shape, depending on the extent of weathering or decomposition. Coarse sand is little affected by water or frost, as the particles fit closely together.

MAJOR REGIONAL ACTIVITY NODES

On the macro-scale, Angola is the nearest town only fifteen minutes away. Angola provides all the necessities and goods on the large scale (shopping, gas, groceries, dining, theaters, schools, government functions, etc.).

Many of these functions or activities can be found on the micro-scale plus many more. These activities are included in the following map.

1. Par 3 golf course
2. Public beach
3. Boat ramp, bait/tackle store, gas station, donut shop, grocery store, and a Coney Island restaurant
4. Restaurant
5. Machine and tool shop
6. Campground
7. Gift shop
8. Marina
9. Restaurant/cocktail lounge
10. Golf course
11. Pokagon State Park (public and private beach, lodging, campground, horseback riding, snow toboggan slide, etc.)
12. Pizza restaurant
13. Miniature golf, go-cart rides, and fair rides
14. Gas
15. Locksmith
16. Burger dairy
17. Gas
18. County highway barn
The nearest town provides all large scale theaters, more. These following map.

stores, gas sta-

ing, horseback riding, etc.)

rides, and fair
CLIMATE

The climate in this region is humid, temperate, and continental. The temperature and rainfall vary from year to year and changes are often sudden — precipitation, degree days, prevailing winds.

Temperature

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TOPOGRAPHY

Jimmerson Lake on the south end of the site is 766 feet above sea level. The slope rises gradually toward the central portion of the site and then sharply on the north end to 1,024 feet above sea level—58 feet higher than the lake.

VEGETATION

Major deciduous trees are white oak and ash, thirty to fifty feet high with an eighteen to twenty foot spread. Some have a trunk three and one-half feet in diameter. There are a few conifers on the site: bluespruce and pine. The ground cover is mainly clover.
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DRAINAGE CHARACTERISTICS

The site has natural drainage, no ponding ever seen on site. The water also runs off into the bog and the lake.

SPECIAL FEATURES

An existing water channel extends twelve hundred feet into the central portion of the site, bringing access to the lake into the heart of the site. Natural peat moss bogs consisting of thirty-two acres gives the site a strong mature amenity.
VIEWS

The best view is toward the lake on the south, although the panoramic vista from east to west is excellent.

ORIENTATION

The site allows for excellent southern exposure and natural ventilation of summer breezes off the lake.
Utilities

Steuben County has received a government grant of $548,000 to install sewer lines around the Lake James and Jimmerson Lake region. These sewer lines will be .3 miles from the site. The location of these lines on the site, as well as all other utility lines, always will present a variety of problems. Each utility company has its own standards and requirements which rarely relate to other utilities. In any new housing development, the location and interrelationship of all utility lines must be carefully studied for efficiency. Gas lines are located .4 miles from the site while electricity lines are already on site. A study needs to be made to determine which source of power will be more cost effective.

Telephone lines are existing on site and will be located underground. Water will be accessible through underground wells.

The site is zoned R-2 which allows no more than a duplex unit on each lot. There are currently 93 lots on the eastern half (from the channel toward the east boundary) of the site, with a size of 105 feet by 148 feet. The setbacks are as follows:

- 25-foot building line in the front of the lot
- 6-foot and 12-foot utility easement in the rear
- 25-foot building line on corner lots

Some of these lots will be replanned to take better advantage of the natural characteristics of the site.

Site Planning Criteria

The site plan shapes a project and really sets the tone for the rest of the design process. Therefore, it is important to get it right. Site planning begins with the site. Be it good or bad, it will in large part determine what kind of housing can be built. For example, if the site slopes, the housing on it should be designed to take the grade. If the site is irregularly shaped, the building footprints probably will have to be smaller.

A good site plan works with the site's natural features, emphasizing the good points, playing down the bad ones. A great view or a water feature are big selling points and the site plan should take advantage of them. Roadways not only should provide an efficient path to the units, they should also be designed in conjunction with other open spaces. Parking is often an overbearing element that detracts from the unit design, so it should be unobtrusive.

These tasks become tougher as density increases, but also more important. What a good site plan does, finally, is to create the project's image, improve the unit's attractiveness, and enhance the quality of life within the development. Four major elements in site planning that should be addressed are entry impact, open space, streetscape, and parking.

Entry

The entry is the first approach, the face of the project, the way the house looks to people entering the site. It should be planned as follows:

- Place the entry at the most prominent point in the parcel, major roads and areas of development should have entrances.

- Local streets leading to the entry should be designed to enhance the project's image.

- By using plants and other landscaping elements, entry impact can be enhanced. Entry features are the common areas that property owners and their guests will use the most.
ENTRY

The entry into the site needs to reflect the excellent quality of the project. Some of the ways these high quality standards can be met are as follows:

- Placing the units away from the entry clears the way for a good view of the lake, so prospective buyers immediately see that the major amenity is a beautiful waterscaped area. The displaced units, however, still have their own view of the lake.

- Locating recreational amenities—in this project horses for horseback riding—near the entry helps put some of the pizazz up front where it makes a big impression. Not only a view of the lake but this recreational feature greet prospective buyers as they enter the project.

- By using landscaping, signs, and paving materials the entry into the project can be a memorable experience. Plantings can be arranged carefully to "funnel" people into the project but at the same time keep views clear. Entry and directional signs should use a common theme that reinforces the image of a waterscaped community. A generous boulevard adds to the elegant image. In case visitors are distracted, textured attractive paving at the entry will vibrate their cars and refocus their attention.

This project should have a single major entry, because a primary entry creates a sense of having arrived at a self-contained community. A second entry from the west will be planned for possible expansion.
OPEN SPACE

The open space should reflect a sense of community; a place for gathering and socializing, a space for fun and games, or for just plain relaxing. Moving the units to the back of the site can give them all views of not only the open space, but also views of the entire lake. The units should follow the contours of the site in an undulating pattern that will allow the green space to become the main organizing element of the site planning concept. By doing this the project will have a more pleasing character and the units more interesting views. Also, by placing the units towards the back of the site where the elevation changes are greater, the units will be able to exploit an already excellent view. One way this can be accomplished is by placing uphill units in a position so they can look over downhill units.

Placing (locating) the access road along the outside perimeter of the site will separate the units from vehicles allowing pedestrians access to the open space without crossing the road.

STREETSCAPE

One problem with streetscape in many housing projects is that the garage doors are lined up in a strict formation, which present an unpleasant picture to anyone driving through the project. The repetitious streetscape will make this type of project appear to be denser than it is. And the garages, one of the least expensive items in the project, blocks views of the residences, where the most money, time, and care has been spent.

Side-loaded garages, attached and/or free-standing, help soften the impact the garages on the streetscape. With this concept residents can see a lively rhythm of doors, windows, and landscaping. As a bonus, the side-load garages can provide privacy to unit entries. Attached garages provide direct access from the garages to the units, an important sales advantage.

Staggering units, that is, siting some units back from the road and others close to it, makes for a more interesting and open feeling. Instead of seeing garage door after garage door, someone driving through the development sees a rich mix of landscaping and different building views.

PARKING

How a project looks as people drive by is an important as how it looks once they are inside. Parking can present an uninviting scene. So parking should be screened from the street that fronts the project. Ferns, trees, and walls provide effective screening and make the project look like a special, protected place.
many housing is lined up in a an unpleasant the project. le this type of is. And the items in the res, where the spent. and/or free- the garages on residents can windows, and load garages es. Attached the garages to stage. ing some units to it, makes ging. Instead door, someone a rich mix of views.

I. USER AND USER ACTIVITIES

A. A range from young married couples (with or without children) to retired couples who enjoy recreational activities.

B. Social Class—People who have a yearly salary of more than $20,000.

C. Access to shopping and eating
   1. Grocery--1.5 miles from site
   2. Restaurant--1.6 miles from site

D. Access to major arteries of transportation
   1. Interstate Highway--2.5 miles
   2. Nearest town--10-15 minutes
   3. Large lake--.5 miles

E. Recreation
   1. Summer
      a. Fishing
      b. Skiing (water)
      c. Swimming
      d. Tennis
      e. Basketball and volleyball
   
   f. Horseshoes
   g. Boating
   h. Golf
   i. Bike or walking paths

2. Winter
   a. Snowmobiling
   b. Ice fishing
   c. Ice skating
   d. Hockey
   e. Cross-country skiing

F. Ecology
   1. Nature trails will be provided around the site.
   2. Preservation of 95% of the existing vegetation on the site.

Drive by is an are inside. looking scene. So the street that es, and walls the project.
BUILDING TYPE ANALYSIS #1

PROJECT: Diamond Head
LOCATION: Lake Keystone, Oklahoma
ARCHITECTS: Byron Salesman, Fell, Brussa, Knoles & Courtright
SITE AREA: 53 acres
NUMBER OF UNITS: 108 condominium townhouses
DENSITY: 3.5 units/acre
COST: $40,000-$140,000 (1975)

I. CONCEPT

The main concern for this project was how to handle the development of the site, without too much bulldozing. The characteristics of the site are: steep sandstone outcroppings and dense woods on top of the bedrock. The site slopes so that there is an unobstructed view of a 26,000-acre lake and hills beyond. The units are single detached townhouses in groups of two, three, and four.

II. CORRELATION DIAGRAM

The units are rectangular in shape with the public activity areas opposite the entry facing the view of the lake. The service areas annex the entry.

III. CIRCULATION

The circulation is 7% of the total gross area. It is linear in form, with a straight direct path from the entry to the indoor public activity space. The vertical circulation is designed in the center of the unit at a 90° angle from the major circulation and at its

IV. STRUCTURE

The lower level's structure is logical and in order with relationship to the functioning spaces. The structure relates well to the upper level. The structure is a basic 2 x 4 stud framing with wood siding on the exterior and asphalt shingle on the roof.

V. UNIQUE FEATURES

The unique feature to the project is the way the architects and engineers handled the problem of access roads and sewage and water lines (see Appendix).

VI. IMAGE

The units symbolizes the rustic cabin in the woods, which is a very appropriate solution because of the site's natural setting.
BUILDING TYPE ANALYSIS #2

PROJECT: Lake Barrington Shores
LOCATION: Barrington, Illinois
ARCHITECTS: Desmond Muirhead, Inc.
SITE AREA: 510 acres
NUMBER OF UNITS: 1,350 condominium townhouses and fourplexes
DENSITY: 2.7 units/acre
COST: $50,000-$100,000 plus (1975)

II. CORRELATION DIAGRAM

Simple geometric shape, rectangular with entrance on the side and in the middle of the unit. Living and dining area as one open space, with kitchen enclosed by partition walls, bedrooms and baths in the rear of unit.

III. CIRCULATION

The entry to teach cluster is entered on a middle level so that the people living on the second floor reach their units by walking up a few steps and the people living on the first floor by walking down a few steps. Since the entry to the unit is in the center edge of the plan, the circulation is centrally located, which distinguishes linear corridors, so that each space is reached with easy access. The circulation is 8% of the gross square foot area.
IV. STRUCTURE

Basic 2 x 4 framing with concrete foundation with wood panelling on exterior/asphalt shingles on the roof. The structure is broken up from the basic rectangular form with niches at corners and walls punching out. This gives variety to spaces but exposes more interface which could be either good or bad depending on the designer's intentions overall. The structure seems fairly logical in relationship to the functional spaces.

V. UNIQUE FEATURES

The unique features in this project is how the lofts are flexible. One loft can be expanded with an extra bath; another loft can be expanded to accommodate three full bedrooms.

VI. IMAGE

The image of this project reflects how the arrangement of the fourplexes and the attached townhouses live the impression of large, luxurious detached homes.

BUILDING TYPE ANALYSIS #3

PROJECT: Laurel Court
LOCATION: Vancouver, B.C.
ARCHITECTS: Rhone and Iredale
SITE AREA: 1.8 acres
NUMBER OF UNITS: 70 condominiums
DENSITY: 39 units/acre
COST: Inexpensive (unavailable)

I. CONCEPT

The units are placed in a series of wings which create courtyards facing the street which borders on the down-slope edge of the site. This optimizes the view from each unit and departs from the interior corridor arrangement typical of many apartment developments. Each front door opens to the fresh air and all units have a large outdoor space in the form of a courtyard, roofdeck, or balcony. The units along the south and west edges of the property take advantage of the sloping site by providing access at different floor levels to stacked interlocking units. The remaining units are townhouses, with the exception of several studios at ground level, adjacent to the parking structure.

II. CORRELATION DIAGRAM

The units are rectangular in shape with terraces, courts, and decks flanking each exposed end for the views of the city and the mountains beyond.
III. CIRCULATION

The circulation is minimal because of the compactness of the design. The circulation in the one-story unit is not very good because to get to the bedroom you have to go through the kitchen. The townhouse circulation is alot more efficient, with it forming along the party wall into the bedroom. The vertical circulation is perpendicular to the main circulation.
IV. STRUCTURE

The housing units will be wood-frame construction. Wall surfaces will be finished in light stucco. Windows are dark anodized aluminum with stained wood trim. Sloping roofs are finished in wood shingles. The structure is logical.

V. UNIQUE FEATURES

All of the parking is handled at the ground level underneath the units. In the stacked townhouses all of the living areas are off the ground floor to provide better views and you have to go up one floor from the main entry to get to the living area. This creates all the service area on a different level.

VI. IMAGE

A high density, but well organized, urban housing development.
BUILDING CRITERIA

HOUSE PLANS

Square feet:
Not too large (1,500-2,000)

Size:
- Great room
- Large eat-in kitchen (also serves as dining room)
- Library/den/studio
- Master bedroom with access to bath
- One or two additional bedrooms with indirect access to bath
- One-half bath
- Fireplaces
- Attached garage

Floor Plan

- Two stories
- Bedrooms private, away from living spaces
- Large two-story living area
- Well-defined entry space
- Fireplace to service more than one room
- Easy traffic flow

Space Utilization

- Extremely important to have generous work space (kitchen) and storage (closets, kitchen, and bath cabinets), plus closet in entry area

General Considerations

- Rooms should receive bright sun
- Sense of outdoors
- No violation of site, sense of belonging
- Year-round house with look and feel of vacation home, that is, informality and minimal maintenance
- Usable exterior spaces for outdoor activities—deck, covered porch, barbecue, etc.
- Steep pitched roofs
- Play of structural elements to give liveliness
- Energy efficiency—good insulation, double-glazed windows, passive and solar, etc.
- Large open spaces that still enable feeling of coziness, warmth—nothing overpowering
- Use of natural ventilation

GENERAL CHARACTER

- Comfortable informal house, wedded to site—two stories
- Low maintenance inside and out. Minimum of painting and upkeep
- Feeling of space important, well related to the outdoors, but sense of sheltered enclosure also important
- A natural wood house with a variety of spaces inside and out
- Garage as part of house used for buffer
- Country elegance, a retreat, informal, warm, gracious, but a traditional image
- Interior furnishings: comfortable sofas and chairs, contrast to traditional exterior. Contemporary look, interesting plants, pottery, paintings, prints, etc.
THE MAIN APPROACH

- Turning in at drive, house partially blocked from view to be seen toward end with front door conspicuous and conventionally located
- Road should make use of "birch drive" as much as possible
- Ample parking area
- Warm and inviting entrance at end of drive; visitors made to feel welcome

GREAT ROOM

- Spacious great room but comfortably secure when alone with a good book
- Large fireplace, maybe as focal point
- Roughly visualize three areas in this room: a seating area around fireplace, and two other areas (additional seating, gaming area, tv viewing, etc.)

DINING ROOM

- No need for one
- Expect kitchen area with living room to serve needs adequately

STUDY/DEN

- Area with desk, sofa, and comfortable reading chair
- Can be small but not confining
- A retreat

FIREPLACE

- Large
- Sconces
- Would be an attic
- Another

BEDROOMS

- Master
- Would do
- Bold
- Second
- Confident
- Maybe
- Maybe
- Or bias than

BATHS

- Need
- Function
- And same
- Full
- Close

ENTRANCES

- Inviting
- Path
- Coat
- Kitchen
- Room
- Kitchen
FIREPLACES
- Large fireplace in living room
- Since costs might prohibit from two chimneys, would like this fireplace to service another room
- If den/study is not practical, maybe dining area of kitchen might be nice

BEDROOMS
- Master: large with direct access to bath. Would like morning sun. Sitting area with table, phone, two closets.
- Secondary: rooms need not be large but comfortable sized with reading areas or maybe window seats. One room may have twin or bunk beds so should be a little larger than others.

BATHS
- Need not be large or fancy, but must be functional, convenient with good lighting and storage space for towels, linens, medicines extra
- Full bath zones so that bathing area can be closed off from dressing area

ENTRANCES
- Inviting front door at end of brick paved path through entry courtyard
- Comfortable entrance hall/greeting area with coat closet and half-bath convenient to kitchen, great room, and private areas (bedrooms upstairs)
- Kitchen door near garage for groceries

- Various doors to decks and porches as appropriate
- A "mud room" entrance through garage

KITCHEN
- Large kitchen with separate eating area
- Family social center
- Sunshine important
- Easy working layout with good refrigerator-stove-sink relationship (dishwasher, trash compactor, etc.--optional)
- Would like to be able to delegate dinner preparation so several (three) people should be able to work independently without crowding each other
- Space for dishwasher a must
- Entrance to living room through open doorway
- Access to deck (or possible enclosed outside eating area)
- Phone in kitchen--place to sit, take notes

DINING AREA OF KITCHEN
- Separated from kitchen work space; generous space for table (maybe large round table to seat six to eight)
- Good lighting from outdoors, more intimate indoor lighting at night
- Aside from breakfast and lunch, see kitchen table as place to read newspaper in morning, write shopping lists, enjoy conversation, etc., but in evening this will be our "formal dining area"
- Would like to be able to put very comfortable, upholstered dining chairs around table
OTHER CONSIDERATIONS

- If master bedroom on same floor as other bedrooms, need for enough hall area to separate
- Adjacent bedrooms should be separated by closet walls, bathrooms, or by other means to muffle sounds or ensure privacy
- Study/den could be used as a guest bedroom

STORAGE

- Very generous and as convenient as possible:
  - coat closets, utility closets, utility closets, kitchen/dining storage areas, liquor cabinet, bar, place for folding chairs, tables, games, etc.
  - Woodbox for fireplace (or part of)
  - Linen closet
  - Clothes closet (two in master; one in each additional)
  - Storage room (optional)
## SPACE SUMMARY

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<td><strong>460</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Unit B</th>
<th>SF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Great Room</td>
<td>380</td>
</tr>
<tr>
<td>Kitchen</td>
<td>130</td>
</tr>
<tr>
<td>Dining</td>
<td>90</td>
</tr>
<tr>
<td>Den</td>
<td>117</td>
</tr>
<tr>
<td>Master Bedroom</td>
<td>211</td>
</tr>
<tr>
<td>Bedroom</td>
<td>146</td>
</tr>
<tr>
<td>Full Bath</td>
<td>103</td>
</tr>
<tr>
<td>Half Bath</td>
<td>37</td>
</tr>
<tr>
<td>Foyer</td>
<td>90</td>
</tr>
<tr>
<td>Utility</td>
<td>42</td>
</tr>
<tr>
<td>Mechanical</td>
<td>48</td>
</tr>
<tr>
<td>Garage</td>
<td>400</td>
</tr>
<tr>
<td>Circulation</td>
<td>175</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>2,090</strong></td>
</tr>
<tr>
<td><strong>Exterior Decks and Walkways</strong></td>
<td><strong>730</strong></td>
</tr>
</tbody>
</table>
### Private Recreational Village

<table>
<thead>
<tr>
<th>Building</th>
<th>SF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community Building</td>
<td></td>
</tr>
<tr>
<td>Party/Reception/Banquet</td>
<td>1,500</td>
</tr>
<tr>
<td>- Room to have parties, receptions, dances, meetings, etc.</td>
<td></td>
</tr>
<tr>
<td>- Seating for approximately 100 people</td>
<td></td>
</tr>
<tr>
<td>- Movable partition to subdivide the room for smaller groups</td>
<td></td>
</tr>
<tr>
<td>- Small kitchenette</td>
<td></td>
</tr>
<tr>
<td>- Fireplace</td>
<td></td>
</tr>
<tr>
<td>Recreation Room</td>
<td>1,500</td>
</tr>
<tr>
<td>- Card tables</td>
<td></td>
</tr>
<tr>
<td>- Billiards</td>
<td></td>
</tr>
<tr>
<td>- Table tennis</td>
<td></td>
</tr>
<tr>
<td>- Video arcade</td>
<td></td>
</tr>
<tr>
<td>- Lounge seating</td>
<td>150</td>
</tr>
<tr>
<td>Restrooms</td>
<td>40</td>
</tr>
<tr>
<td>Janitor's closet</td>
<td>100</td>
</tr>
<tr>
<td>Mechanical</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>3,790</td>
</tr>
</tbody>
</table>

### Health Club Facility

<table>
<thead>
<tr>
<th>Facility</th>
<th>SF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exercise Room</td>
<td>2,500</td>
</tr>
<tr>
<td>- Weightlifting equipment</td>
<td></td>
</tr>
<tr>
<td>- Other exercise equipment</td>
<td></td>
</tr>
<tr>
<td>- Aerobic exercise</td>
<td></td>
</tr>
<tr>
<td>Racquetball Courts (2)</td>
<td>1,500</td>
</tr>
<tr>
<td>Lockers/Shower</td>
<td>1,800</td>
</tr>
<tr>
<td>- Close proximity to pool</td>
<td></td>
</tr>
<tr>
<td>- Whirlpool/Sauna/Steam room</td>
<td></td>
</tr>
<tr>
<td>Concession Stand</td>
<td>300</td>
</tr>
<tr>
<td>- Services Pool</td>
<td></td>
</tr>
<tr>
<td>Swimming Pool</td>
<td>4,000</td>
</tr>
<tr>
<td>Tennis Courts</td>
<td>14,400</td>
</tr>
<tr>
<td>Basketball Courts</td>
<td>3,000</td>
</tr>
<tr>
<td>Lookout Tower</td>
<td></td>
</tr>
<tr>
<td>Picnic Pavilions</td>
<td>200</td>
</tr>
</tbody>
</table>
PUBLIC VILLAGE AREA

Restaurant/Bar .............. 600
- Seating for 50 in restaurant
- Seating for 25 in bar
- Good view looking out over the lake
- Casual informal atmosphere
- Support facilities (kitchen, storage, loading, restrooms) 400

Marina .................. 7,000
- Place to get gas
- Boat storage in winter

General Store ............. 800
- Village Pantry type of store

Bait/Tackle Store .......... 600

Rental Store ............. 1,000
- Canoes
- Fishing equipment
- Other recreational equipment

Beach .................. 100,000
- Toboggan slide
- Diving boards
- Seating area
- Picnic area
- Volleyball

Concession Stand ........ 1,200
- Services beach
- Lockers/restrooms
- Lifeguard station

OFFICE .................. 1,500

HORSE STABLES ........... 3,000

MAINTENANCE BUILDING .... 2,000
Spring
Spring Quarter Design

Spring Quarter 1984 was the first quarter of my architectural thesis. Although this was the start of my studio experience, this project started a few months before. By having a completed program and the bulk of the site research done, I was able to start in on the site planning. The first part of the site planning was to develop a variety of strategies on how to position the units and recreational activities on the site. After analyzing these strategies in detail, some conclusions were made which produced an overall solution. These strategies and conclusions will be discussed in further detail later on in this section. With the site development at this level, it was now time to start searching for a building form.

The main issues that were addressed at this time were to establish a building form, define the building's placement, examine ordering processes, and develop the other site's activities. Circulation and parking immediately became a major problem that had to be resolved to a degree before the building placement could begin. The dynamic vista to the lake created parameters for the building form.

The design process for this quarter relied heavily on spatial concepts--site and building--which were compared and analyzed so as to develop a strong overall idea.

Each section of the remaining book ends--as each quarter does--with a graphic presentation of the project as it stood at that point in time and mind.
CRITERIA: Linear Concept in all units, the form of the built environment will coincide w/ existing land form. This will result in the land and the built environment coming together to create one unique design.

+ ADVANTAGES

1. Units have direct access to the lake
2. Private beach
3. Uninhibited views
4. Reduction of earth moving
5. Recreation area on the lake
6. Works well with the site
7. Room for expansion
8. Two entries

- DISADVANTAGES

1. Some units have no access to the lake
2. Min. unit. of green space bet. units
3. Beach area long distance from some units
4. Recreation area in poor location
5. Open areas do not relate to units
6. Vehicle circulation
Scheme #2

Criteria: Housing units are clustered with greenspaces in between each cluster. Greenspaces link the units to the pond. One major entry with a secondary entry.

+ ADVANTAGES
1. More units on site
2. Greenspace between clusters provide privacy and visual comfort
3. Angular views/sun exposure
4. Recreation Area
5. Utilities, Sewage
6. Room for Expansion

- DISADVANTAGES
1. Shared waterfront
2. Poor link from units to the north to the waterfront
3. Road System interferes with pedestrians.
SCHEME #3

CRITERIA: site would have a central entry. A channel would be dug to provide easier access to the lake. Centralized Recreation Area.
Some units directly on the lake.

- ADVANTAGES
  1. All units have direct access to the lake
  2. Double loaded channel
     - units along both sides
  3. Better flow of water
  4. Less road surface
  5. Higher % of greenspace
  6. Recreation Area is in close proximity to the units
  7. Variety of housing types
     Clusters - Garden Cottages
     Fourplexes, multi-story
     Non-Cluster - Duplexes, Detached, townhouses, earth sheltered

- DISADVANTAGES
  1. Lower % of units on the site
  2. High cost in putting the extra channel
  3. Units views are directly across from one another along the channel
  4. Units along lakefront turn their backs on rest of the project
  5. Entry to the site - not clearly defined (dead end) w/o proper signage
SCHEME #4

CRITERIA: Recreation Area, porch out into the pond. Alteration of existing channel and entry areas. Multi-story units with a maximum of 9 stories. Besides Recreation area, a beach area would be provided along the lake.

ADVANTAGES

1. Recreation Area is centralized which relates better to the units.
2. Multi/story units provide more open space, better views.
3. Large % of greenspace for outdoor activities.
4. Cost of units cheaper
   - Low % of land used
5. Entry location brings users into the site before actually entering into the project.
   - Stronger than entering right off the access road
   - Produces a sub-entry

DISADVANTAGES

1. Two areas for recreation produces a higher cost.
2. Multi/story units around the pond blocks views for other units.
3. Roads interfere with pedestrians.
SCHEME #5

CRITERIA: Only the east section of the bog will be cleaned out for accessibility to the lake. Entire lakefront used for recreation.
Higher density - more units/acre. Roads are intertwined with complexes.

+ ADVANTAGES
1. Higher density / more units / higher market
2. Pond less capable of becoming stagnant
   - keeps part of the natural environment
3. Large recreation area along the lake
4. Less effect on ecology
5. Road system integrated with the units
6. Units along pond (high density) creates a harder boundary between water and the land.

- DISADVANTAGES
1. Higher density ruins rural environment
   - blocks views, poor image
2. Less linear footage along the waterfront
3. Recreation area is in a bad location
   - for the northwest section of the site
4. Conflict of the boundary between the bog and pond
5. Less area for parks, nature areas
6. Lower % of peat moss investment
7. Cost for extra channel
SCHEME 8 & 6

CRITERIA: All units orientated for some gain. Besides a recreational area, there is also a commercial area. No pond, leave be natural.

- ADVANTAGES
  1. Direct South solar gain
  2. Bay
     - Use as a natural environment
     - Lower cost of project
     - No cleaning, dredging, etc.
  3. Commercial area supports the project and surrounding areas.
     - Jobs provided
     - Food, clothes, maintenance, gas, etc.
     - Returns # back into the community
     - Extra activity node
     - More of a self-sufficient community

- DISADVANTAGES
  1. Units/clusters work against site
  2. No direct access to lake from units
  3. Insect problem from bay
     - Poor view of bay
  4. Commercial area
     - May need higher density to support it.
     - Competes w/ regional commercial areas
     - Zoning ordinances
Conclusions on Site Study

As a result of my studies of the various schemes I have concluded that scheme #6 would be the best suitable concept for this project. This scheme will leave the bog in its natural state with some degree of cleanup and make the bog a natural habitat for wildlife. This natural amenity will be a bonus for the community, also this will alleviate the problems concerning the laws of the state of Indiana and the restriction of the DNR. The concepts 1-5, because of these laws have a high percentage of never being developed. Cleaning out the bog or connecting it to the lake would be extremely difficult and uneconomical.

- may take years to clean out bog which involves a high expense
- cleaning out the bog would have a significant negative impact on the
- laws restricting any connection to lake

The housing clusters will be located on the northern section of the site
- excellent views - best on site
- soil is more stable for buildings
- lower water table
- Zoning better for drainage, utilities, and sewage treatment
In their book, A PLACE OF FLOWERS, nurse, Lynn, and Cypyl explain five different ways to organize rooms in a house: five different ways to incorporate machines (by which they mean wet and scenic cores) into houses. This is a matrix containing these two lists of accessories to produce twenty-five alternative prototypes.

<table>
<thead>
<tr>
<th>ORDER OF MACHINES</th>
<th>Rooms—Round</th>
<th>Rooms—Laid</th>
<th>Within End</th>
<th>Outside End</th>
<th>Between Ends</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Laid</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>Laid</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>Laid</td>
<td>3</td>
<td>4</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

A. Building Foremost to Street

B. Buildings + Open Space

C. Buildings + Open Space Oriented Toward Rear

D. Buildings + Open Space Oriented Toward Street

6.4 Great Room with machines but Core

6.8 Great Room

D. Buildings Angled Toward Current Open Space

6.7 Great Room

D. Buildings Angled Toward Current Open Space
Summer
During Summer 1997, it was required to build the two smallest buildings. The first two were for the quartering and class housing. The second two were for the quartering and class housing. The quartering buildings were designed to be strong and durable, with a focus on the building's durability.

The design was chosen through the use of alternative technologies, producing the final design.

During the planning phase, the community setting was taken into consideration. The design incorporated the surrounding area, with the buildings being in harmony with the environment. It was quite an interesting process.
Summer Quarter Design

-Arch 405-

During Summer Quarter's design studio we were required to further develop the design. The first two weeks of the quarter was spent redefining and clarifying the spring quarter scheme. Strengths and weaknesses, as well as possible alternatives were then analyzed and discovered. The quarter's final presentation was to be a strong and detailed graphic presentation of what the building would ultimately become.

The design for my project matured gradually through the quarter, with the last three weeks producing the best results.

During this time the environment of a community setting began to appear on the site. The units on the site started to have order and more meaning in relationship to each other. As a whole it was quite evident that the site was designed as a community setting—outdoor spaces became a centralized element that give the order to the units themselves. By the quarter's end only finer details had to be worked out for the site design to be a success.

The design for the unit went through many changes before the end of the summer quarter. It was essential to go through this hard, long process of refining to search for the final solution. Identity produced from the image was the main issue, with other issues such as energy conservation, views, parking, entry, and cost efficiency being subordinate. By having a traditional style as the identity, and all the other issues working within the style, the end result would be an efficient but a quality piece of architectural design.
SUMMER

elevation studio
Fall
Fall in a program documentation.

First of completion.
After the writing the put together thesis presentation.

The encompass the basic elevation.

The functional elements well. The each other walkway is...
Fall Quarter Design

Fall Quarter is designed to finish the project in a programmatic fashion so as to have a detailed documentation of your thesis work.

First, the final design has to come to a level of completion so documentation can take place. After the documentation of the drawing is done writing the text is the next step. This is all put together in a book form in order that the thesis project can be well understood.

The final design of Nevada Mills Estate encompasses the master plan, site cluster plan, the basic unit floor plans, unit sections and elevations, and other related drawings.

The final master plan along with the recreational elements on the site work together very well. The recreational nodes are connected to each other by an elevated wooden walkway. This walkway is wide enough for both a pedestrian and a bicycle to provide ease of circulation. In between these recreational activities is the natural amenity of the bogs and also the commercial area. From these walkways natural paths provide access from the activity area to the other parts of the site, especially the units. These natural paths form an organic circulation mode that ties all the elements together, providing an easy but exciting form of transportation for the users.

The site cluster plan shows in greater detail this pathway and how it connects the units to the land. It also shows how the buildings, driveways, streets, playground areas, and other site furnishings relate to the common green area.

The unit concepts are broken down and analyzed on the following pages, which precede the final drawings for the Nevada Mills Estate project.
form studies
Elevation Study

73
BUILDING CONCEPTS

Entrance

- Generally defined by puncture in wall preceded by porch, stairs, and courtyard or green space

Circulation

- Pattern is direct and articulated through use of spaces and defined by columns.
Massing
-Traditional box form with gables and full length dormers to reinforce the structural grid on the exterior.

Structure
-Wood poles extending from below grade to the roof set up on a four-foot module. Large wood girders give the poles lateral support with the conventional floor resting on top of these girders. Since the poles are the support for the roof, the walls become non-load-bearing. This type of structural system gives the housing units greater structural stability.
Services

-The machines are sandwiched between rooms. The virtue of sandwiching is that it allows for a set of rooms of similar size, assembled in rather traditional ways, unbroken and unspoiled by the unwanted intrusion of machines and their domains.

Space Definition

-Large living space defined by the wood poles with a collection of separate spaces (interior and exterior) located around it.
Natural Light

-Generally through wall penetrations. Sometimes located in upper portions of space and used as a source of energy.

Inside to Outside

-Series of transition zones ranging from public outside spaces in relationship to private inside spaces and vice versa. The interior form is in unity with the exterior form.
Repetitive to Unique

- Repetitive elements are the square forms of the plan, the cantilevered bays, the garages, and the exterior decks.
- The unique element is the wood poles which define the spaces, support the structure, and give an overall warm feeling to the spaces.

Circulation to Use

- Circulation is deflected by the poles at the entry and then proceeds through major use spaces.
- Vertical circulation is in close proximity to the entry and major spaces.
Unit to Whole

Units are geometric plan forms representing different use spaces, including the garage and utility area, stairs, and decks.
Whole is an aggregate of these units.
Basic plan form is a square subdivided into a grid of four-foot modules. These modules give order to the interior organization of spaces.
The elevations are contained within the four-foot module forming the mass of each unit. This allows for flexibility of the elevational elements in order to produce a variety of images.
The module system also allows for an efficient process of construction. Since the walls are nonstructural and on a modular system they will be premanufactured as separate units and assembled on the site. This process will save time and labor costs.

Hierarchy

- Macro Scale: Site
- From the most private open space to the least
  1. Entry courtyard
  2. Adjacent rear private open space
  3. Large community open space
  4. Private recreation area
  5. Public commercial area

- Micro Scale: Unit
- From most important space to least
  1. Great room
  2. Spaces encompassing the great room that comprises the mass of the building
  3. Exterior decks and stairs leading to the green spaces
Conclusion
I first define my theme. This aspect of my thesis was the process involved in selecting and addressing. The design of existing landscapes for architectural purposes.

The preservation of landscapes involves understanding the landscape's role and reinforcing its natural beauty. This includes setting up the necessary infrastructure.
I feel it is important to, at this time, define my personal views on design with respect to this architectural thesis project.

The great value of this thesis project for me was the challenge to create and explore the processes and philosophies that I have learned during my architectural education. One important aspect of architecture that I have learned during my thesis year is the idea of taking a risk. By doing so, you will be able to go beyond the capabilities that you think you have. I have kept this idea in my head throughout the thesis year, and by taking certain risks have matured extremely as an architectural designer.

Before I even started the thesis, I knew by selecting a housing project there would be risks involved. A housing project is very complicated, and contains numerous issues that have to be addressed if the project is to be successful. I have taken these issues and addressed the most important ones that I felt were necessary in order to produce a quality design.

I have taken the site as it is and respected the environment it gave to me. I feel every design should incorporate this idea, for a piece of land is a beautiful element, and we as architects have the opportunity to enhance these existing conditions.

The condominiums respond to this idea of site preservation. Its challenge and task was to evolve a system for preserving the character of the landscape. My intent was that buildings reinforce and clarify the identity of each landscape element and through such territorial partnership create a validity for their own location. Through their location, a unique form evolved that set up the ordering of open communal spaces. This all came from taking what the site had to offer and adapting them into a system that became the overriding concept for the whole site.

Energy conservation was another issue that itself was important. It should, to at least some level, be required of every designer. The energy situation today is such that every small savings is a large gain, if this means only more concern placed on design; I feel there is absolutely no reason to ignore solar design. But some take energy to an extreme, that is, they tend to see and think only in terms of saving energy and forget what might be a more important issue. We need to look at energy design as a constraint or as a means to an end instead of as an end in itself. Energy design is possibly more important than certain other design constraints, but it must be willing to compromise some of its efficiency for the good of the whole.

I have successfully incorporated this philosophy into my design, and I have grown more knowledgeable on how to use energy and design as a whole, instead of separate items. By using a hybrid of energy conservation systems (super-insulation, active hot water system, passive solar sunspaces), there is an integration of two or more effective ways of saving energy which lead to a more suitable design. I ask the question, "Which energy-saving system is the best?" The answer is none. What is best is a combination of systems tailored to the house and its location.

Nevada Mills Estate is, at this point, many special places. It is memorable to the participant as a collection of experiences, a special geography, an evolution from the site and landscape of a previous rural generation. Both landscape and architecture represent ideas that illustrate community, for relaxation is the ongoing processes of growth, change, and fruition.
I have enjoyed this thesis project to the fullest that I can. I cannot help but be proud of the accomplishments that I have achieved. I am certain to say that this experience is going to help me immensely in my future endeavors. I humbly acknowledge the success of this project. Finally, I want to again extend my love and thanks to my family who have helped me out in the bad times and who taught me to believe in myself so that I could conquer this educational endeavor; and to Tracy for more love than I could ever repay.
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SOLAR TECHNOLOGY


-PAMPHLETS


