REHABILITATION OF NAVY PIER
as a city market
chicago, illinois

neal harper
may 1981
prof. a.e. palmer
The following project is an accumulation of the work done in the final thesis year at the College of Architecture and Planning at Ball State University.

The chronological order is as follows: fall quarter, site analysis, building program, and schematic design; winter quarter, design development; spring quarter, final design and thesis book.

This book is a documentation of the complete design process.

Acknowledgements

Professor A.E. (Sonny) Palmer
Professor Paul Laseau
Professor Bob Koester
Professor Dean Rundell
Lolain Dobbs (Manager, Navy Pier)
William Fagan (Chicago City Architect)
1. Abstract
2. Acknowledgments
3. Table of Contents
4. History/Introduction
5. Site Analysis
6. Building Program
7. Building Type Analysis
8. Master Planning
9. Conceptual Design
10. Design Development
11. Design Solution
12. Bibliography
Navy Pier

Grand Avenue at Lake Michigan
Charles Sumner Frost, architect
1916

Designated a Chicago Landmark on November 14, 1977

Daniel Hudson Burnham's visionary Chicago Plan of 1909 called for two large piers projecting into Lake Michigan to serve both shipping and recreational needs. Only one of these piers was eventually built. Originally called Municipal Pier No. 2, it was built between 1913 and 1916 immediately north of the Chicago River.

During the next decade, Chicago thrived as a major inland port and the pier was an important shipping facility. During this same period, it served Chicagoans as a public recreational facility with plays, art shows, trade fairs, and picnics taking place there regularly. In 1927, the City Council adopted a resolution to change the name to Navy Pier as a memorial to the Midwesterners who served in the U.S. Navy during WW I.

In the 1930's, shipping became less important to Chicago's economy and the recreational use of the pier declined as well. In 1941, recreational use ceased entirely when the city turned the pier over to the Navy in the interest of national defense. During WW II, the pier was used for military training.

After the war, the University of Illinois used the pier as its Chicago campus. Then in 1965, the university left the pier and moved to a new structure. Navy Pier was then largely unused until the
city undertook a major renovation program in 1976. The renovation of the pier was limited to the east end complex, which included the auditorium, the shelter building and the terminal building. After the renovation of the east end, Navy Pier was declared a Chicago Landmark and hence has received much publicity. This designated landmark once again gave Chicago an asset it had lost for many years. Chicago now uses the pier for city festivals and celebrations; however, these are very limited occasions. It is open on week-ends for the public but there is no magnet beside the observation location to draw crowds. My goal is to change this attitude to one which will provide activity and once again take advantage of one of the greatest possible assets Chicago has.
Navy Pier could possibly be one of downtown Chicago's largest assets, an asset which presently isn't being taken advantage of. The pier now receives limited use; city festivities and occasional company banquets are the only real use of the pier. The pier's location and size are such that lend themselves easily to high public activity. The pier's historical background and location make it a site in which image and surroundings become very important. Chicago parks stretch for eight miles to the north of Navy Pier and eight miles to the south, but there is no real link to tie the entire lake shore. The revitalization of this pier could provide the missing link that the Chicago lakeshore needs. While tying the shoreline is of major importance, there is a question of how to do this successfully while bringing new revenue and life to the city. Since the pier is presently abandoned for the most part, any type activity would generate new life. However, there are forms of activity which would generate a more exciting and lively atmosphere. From this point, I feel that a market atmosphere is appropriate. This generates activity and excitement which ties cities together and gives people common ground in which to feel this excitement.

PROJECT INTRODUCTION
In order to turn this pier into a market environment, many things must be considered. Feasibility is one of the first things which must be given attention. Being only eight blocks from the heart of Chicago gives the pier the advantage of the masses of people in the downtown area. A quick transportation system might be needed for noon time shuttles to and from the heart of the city. There is also a high proportion of housing in the area. This would give these high rise residences a break from the traffic congested streets of the downtown area. Another consideration is one of competition—the question could be raised, is there any other environment in the area which would tend to take away from the market atmosphere. The question also arises, what would fit in with this market area which would benefit the market yet keep its own identity. This comes from the feasible size of the actual market as compared to the size of the pier. From these thoughts my proposal was derived.

The existing shed buildings were originally warehouses for the shipping facility. These are the items which will house the mass of the market. The shed buildings are 2300 feet long and are separated by an eighty foot central circulation area which stretches the total length of the sheds. There are
two-story structures which are 100 feet wide on the first floor and 70 feet wide on the top floor. These buildings are the central portion of the site. They are started by a head entrance house and ended by the east end complex which I will leave intact.

With the shed buildings housing some 775,000 sq. ft., it would not be feasible to attempt to develop the whole portion in question. With this in mind, my path is to do a detailed master plan of the entire site, giving attention to what type of activities work well together, then come back and develop the market area in greater detail.
The site is one of great historic background. It has served many purposes through its many years of existence. When analyzing a site with an existing building, the first step is to take an inventory of the site's facilities.

- Existing east-end complex was declared a historic landmark in 1977.
- Head House at west end of site acts as entry point to the pier.
- Existing shed warehouses stretch for 2300 ft. They are 100 ft. wide on first level, 70 ft. on upper level with 80 ft. central space. The first floor is concrete slab with concrete columns spaced at 20'x16'6" on a straight grid. The second floor is slab with steel truss covering. There is a five foot clearstory the entire length of the pier. The building to the south of the sheds is a brick one-story structure which acts as storage. These structures sit on a 400'x3500' concrete pier.
- Railroad access to site from downtown yards. Tracks extend the entire length of the shed buildings. There is also a spur at the head of the site which goes to the filtration plant.
- Existing water system and electrical hook-up capabilities. Possibility of extending the existing active solar equipment housed at the east end of the shed buildings.
- Access and docking capabilities of small and large water crafts. Chicago River Locks directly to south of pier.

- Property includes existing gymnasium and locker facilities at west end of site.
- Island pier just to south of pier.
- Surrounded by Lake Michigan on three sides. Excellent lake view as well as view to Chicago skyline.
1. To retain the image and historical significance of the existing pier while taking advantage of all existing structures. While not being afraid to alter the image positively.
2. Try to build onto and into the existing structures not demolish to build.
3. Try to do a public tie between the pier and the city. Reach out towards the city and not block it away.
4. Keep in coordination with the scale of the existing buildings. Also try to let set patterns flow readily.
5. Provide new green spaces and respect all existing ones.
In creating a program for a marketplace, the main problem came in defining exactly what type of activities would appropriately fit into the atmosphere. In doing this I felt I should take it one step further and not only define the activities, but organize them in a design which would satisfy all area needs and provide synthesis of all spaces. Many possibilities were researched and the feasibility of many solutions were very good; the master plan will contain:

1. Head House (existing) - open through center for access to central space. Ramps to second level on interior spaces. Information station located in this area. Naval remnants would be the decor. This would act as the first image upon arrival. The house makes a very definite statement.

2. Monorail Pick-up - domed area on second level directly behind Head House. Ramps from Head House give circulation. Observation decks on both sides of the monorail area.

3. Marina - boat slips on north side of pier would be rented. Marina would be used by members who rented space. Also by hotel guests. Sailing club could possibly be housed as a part of the marina.

4. Naval Museum - historically accent the image of navy pier by bringing in naval artifacts. Also, has outside relation to old vessels docked on the south edge of the pier. An exhibition court would attach the Museum with the vessel area.

5. Hotel and Convention Area - a pier hotel with small convention potential. Convention area could possibly tie with east end complex and possibly exhibition space.

6. Office Area - leasable space for small professional offices. No large corporate type offices.

7. Exhibition Space - open to public with ability to secure if valuable exhibitions are contained. Should have close relation to convention area and to museum for exhibition overflow.

8. Market Area - combination of different shop types. From fast food to retail and commercial spaces, meat and produce areas, craft related shops and activity centers. Large storage capabilities must also be considered.

These are the chosen components of the total site. The planning of all are done on a master plan level. The market will then be further broken down to specialty areas. The market area will be the main concentration of developed design. The other spaces in the master plan level would be done in later phases.

Other spaces in the market area include the commercial and retail spaces. A division would be necessary to property zone and allow for necessary
standards to be met between retail and food related areas. In the retail areas, less emphasis is put upon the sanitation end and more security would be needed.

Storage for the pier shops would be divided up upon a proportional basis. A dock area for storage would accommodate the entire market. The dock area would take deliveries for all spaces and then put it into the respective storage areas.

Eating spaces must be provided in large quantities, having a large food related proportion calls for a large eating space proportion. These spaces should be concentrated into clusters to provide common areas for the same activity. The views from these areas are also of great importance. Activity nodes could provide entertainment for people to watch while eating.

Food Related Spaces - numerous people would occupy these spaces. Rented spaces would be available by the square foot. The space would then be turned over to the new occupant. That occupant could decorate his area in any fashionable way. Guidelines and standards on acceptable solutions would be given and authorized by the pier management. Food types would also have to be monitored and regulated to keep a greater diversification of styles. These areas could range anywhere from fast food counter types to cafes to expensive dining to the common meat and produce area. In these ranges, many different requirements would arise. Equipment would vary from space to space, therefore high voltage hook-ups would be necessary in all areas. Refrigeration units would need to be allowed for as well as clean up space. In more unsanitary areas such as the meat and produce area, things such as clean up and odor are very important.
<table>
<thead>
<tr>
<th>Space Description</th>
<th>Square Feet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Market:</td>
<td></td>
</tr>
<tr>
<td>produce</td>
<td>21,900</td>
</tr>
<tr>
<td>meat</td>
<td>6,100</td>
</tr>
<tr>
<td>storage</td>
<td>23,000</td>
</tr>
<tr>
<td>food related shops</td>
<td>90,000</td>
</tr>
<tr>
<td>craft related shops</td>
<td>20,000</td>
</tr>
<tr>
<td>retail space</td>
<td>85,000</td>
</tr>
<tr>
<td>circulation</td>
<td>95,000</td>
</tr>
<tr>
<td>designated eating</td>
<td>30,000</td>
</tr>
<tr>
<td>skating facility</td>
<td>15,000</td>
</tr>
<tr>
<td>general offices</td>
<td>15,000</td>
</tr>
<tr>
<td><strong>MARKET TOTAL</strong></td>
<td><strong>401,000 sq. ft.</strong></td>
</tr>
<tr>
<td>Museum</td>
<td>75,000</td>
</tr>
<tr>
<td>Exhibition</td>
<td>70,000</td>
</tr>
<tr>
<td>Office Complex</td>
<td>125,000</td>
</tr>
<tr>
<td>Hotel Complex</td>
<td>200,000</td>
</tr>
<tr>
<td>Marina</td>
<td>29,000</td>
</tr>
<tr>
<td>Mechanical</td>
<td>55,000</td>
</tr>
<tr>
<td>Central Outdoor Circulation</td>
<td>165,000</td>
</tr>
<tr>
<td><strong>TOTAL SHED AREA</strong></td>
<td><strong>1,120,000 sq. ft.</strong></td>
</tr>
</tbody>
</table>
The Quincy Market Building is based on a linear arrangement of stands. Colonnaded porticos on each end defined the public entry to an interior corridor. During fairs, a temporary covered pedestrian bridge connected the second stories of Faneuil Hall and the Quincy Market Building. The Quincy Market Building with its saucer-shaped dome is the focus of the composition of market buildings. The flanking warehouses were built on a unified plan to correspond to the architectural style of the central edifice.

Present plans for renovation include: 1) providing shops for the food retailers that exist now, boutiques and other shops in the north and south market buildings, 2) providing retail space for entertainment functions and 3) closing off the streets between the buildings to traffic and providing area for public gatherings.
The ground plan of the Covent Hall Market in London showed three parallel buildings each surrounded by an open colonnade and with space between for the general maneuvering of carts and horses. The blocks comprised principally shops with apartments over, and trade took place under the colonnades and in the spaces between. The three parallel units were linked at the east end by a quadruple colonnade and provided with two story lodges at the outer angles. This colonnade formed the principle elevation to the market and had over it a terrace with fountain and conservatories for the display of garden plants. The rest of the accommodation consisted of 64 shops, two pubs, extensive cellargage, and a glass-roofed hall for the wholesale fruit market. Running the length of the east-west axis of the central block there was an interior shopping arcade where the more exotic fruit and flowers could be displayed together with eating rooms for fruit and ices and the seed and herb shops of the corner lodges, all indicate the designers aim not only to provide a center for wholesale distribution, but also to satisfy the needs of a fashionable and well established retail trade. Plans for reuse of the market call for a mixture of small shops, offices or studios to occupy former shop spaces.
Located on San Francisco's North Waterfront, Ghirardelli Square covers a full city block. Along the south and west boundaries are the older buildings once belonging to the Ghirardelli Chocolate Company. These were constructed from 1893 to 1915 when the Clock Tower was completed housing offices. The old buildings are a loose interpretation of late French Gothic.

The new project includes reuse of these buildings with development of open space to enhance, even to make possible a commercial development. It takes people out of their cars and places them in the middle of the block surrounded by attractive shops and restaurants. It is a place to come at one's leisure. The north boundary is marked by a new building, the New Box Factory, which replaces an old wooden box factory. Along the east side is what was once an apartment building for the chocolate company's maintenance superintendents, with some recent additions. Entering the center of the block one finds oneself on a large terrace or series of terraces in three main levels stepping up from north to south, as the land slopes, enhancing the view of the bay. Also included in the project is the International Child Art Center. Reuse of the abnormally large "Ghirardelli" sign at the top of the site is unique and enhances the identity of the square.
1. shuttle drop off
2. interior trolley
3. marina
4. market
5. office complex
6. naval museum
7. exhibition
8. hotel complex
9. mechanical

MASTER PLAN
Master Plan Concepts -

From programmatic issues there were three main areas: 1. Market
2. Museum/Office
3. Hotel Convention

When these areas are adopted to the plan of the site, a public, semi-public, semi-private relationship starts to form.

The market area obviously takes on the most public use of the pier. This includes all food areas and commercial and retail shops. The semi-public areas become the museum, office spaces and exhibition area. The hotel area was given the least public because of its convention type function. It also needs to be in close proximity to the east end complex for extended convention use.

The circulation is one of a straight shot down the pier; however, with the size of the project some type of people moving system was needed.

The pier originally was equipped with an interior trolley system which ran the length of the shed buildings. To successfully bring the image back to the pier, a trolley system seemed very appropriate. The trolley starts at the dome by the Head House and runs the entire length of the sheds. A single trolley would not adequately supply the need of the new site; therefore, a pier trolley would take a total site path while the market trolley would make its turn inside the market and back to the pick up area. Three stops would adequately serve to quickly move people down the linear site of the market; for the pier trolley more stops would be required.

The trolley solved the problem of moving people once they arrived at the site, however, a problem of quickly moving people to and from the site from the downtown area was still present. As the existing tracks aren't presently being used,
A shuttle would adequately solve the problem. The tracks extend from the pier directly to the downtown area. The shuttle would start in the downtown area, then go to the pier, make its drop then return back to the downtown area. An entry plaza was developed to give the people arriving from the shuttle a different sense of entry from that of vehicular arrival. It also gives a formal gathering place for waiting.

The exact placement of the elements of the site came mainly from the programmatic issues. The museum and exhibition were placed on the southern side of the pier to have larger display courts and have close proximity to large docking area for museum vessels. Exhibition was needed to have large open spaces for festivities or for needed overflow of museum exhibits. This exhibition area would also serve as recreational area for hotel guests. Tennis and racquetball courts would be housed in this area.

The marina fell to the more public end, although being semi-public in nature because of the need of drop off and parking. By having limited auto circulation on the pier marina and guest parking had to be provided.
Market Place -

The main issue of the market area was to maintain clear circulation paths. With the arrangement of the two linear shed buildings, a natural central circulation occurs. This would give a clear knowledge of how the pier is most easily accessed. Having a length of over 1000 feet, the path became to clear; there seemed to be no variety of space or randomness on the exterior. By introducing a central element circulation was forced into the interior of the shed structures. A clear circulation path was still evident by providing a transparent see-through feeling to the obstruction. By forcing people to the interior space, they would explore new areas. Circulation spines were also marked on the exterior by the use of common elements.

The same basic concept was used on the interior of the shed buildings. The linear plan called for the "shotgun circulation" path of a clear orientation. Again, this needed to have some randomness applied. The application of elements in the circulation paths began to break up the tunnel effect and brought a sense of place to individual areas. Differing shapes and arrangements of spaces also aided in breaking up the linear nation. With the variety of shops and variety of people, a market tends to make its own spaces. However, a certain
randomness gives a variety which can't be obtained by different detailing or materials. With each path taking on its own image or identification a central element of activity was needed to tie all of these areas together. The element needed to be one which could be observed as well as participated in.

Having visited Chicago on many occasions, I felt confident that skating was the element needed to tie the market together as well as provide entertainment and exercise. Skating in Chicago has become more than a pasttime. It has become a form of quick transportation for many. The rink would be a multi-use rink. Ice skating would carry through the winter months while the glass to the central area is closed and roller skating would occur during the summer months as the whole central area becomes open. This would be the focus of the eating areas in the central space. Other eating spaces would have their own particular focus or feeling. A variation of these eating areas was done to keep with the randomness.
Site -

The evolution of the site came very late in the design process. The public court concept had carried through the design but the emphasis was on the arrival from all areas at the same point. I felt some identity differences had to be felt between arrival by car and arrival by the city shuttle. The evolution theory was one to give the shuttle arrival the path of the court; this then gave the parking arrivals a lakeside walk to reach entry. Car circulation was allowed in this public court for drop off use, however, the pedestrian is given priority.
Plan

The plan was taken on two levels when first approached. The plan for the market was the point of the design yet the other site facilities had to form a synthesis with the market plan. Schematic design was carried out on all levels, however, development was only done on the market plan. The process was mainly concerned with creating a great variety of space, yet at all times having clear knowledge of circulation spines. This was further emphasized by the placement of skylights over all circulation cross points.
Elevation and Section -

The evolution of elevations and section were very closely related. The basic concept of keeping the rhythm and patterns of the existing structures carried throughout was handled with high priority. The problem came in getting variety in such a rhythmic situation. The variety of shop types and decor would offer the variety but the respect still must be held for the existing patterns. The HVAC system was one derived from mainly one section. The existing section provides an easy zoning pattern, the plan also provides easy division for zoning.
covering over market area

new glass skylights over circulation
new glass panels
3m truss over greenhouse area

glass garage doors open in warm months

BUILDING SECTION

cnc. panels

skylights over circulation

RECESSED WALKWAY
EXISTING STIPEFICE
NEW CONCRETE PANELS
Interior

The interior of a project such as a market place is one which cannot be determined upon design of the spaces. Each individual who leased space would determine their own interior design. However, image and common elements are of great importance when making recommendations for keeping a total unity. Although each shop would take on its own image, it would be reflective of the area. This reinforces the theory of new life and image within an existing image.
view to Chicago

view into rink area
market

market level
TYPICAL RETAIL


*New Interiors for Old Buildings*, (Trolley Square), Salt Lake City Utah, Environmental Design Instruction Module, Environmental Design Press.

**BIBLIOGRAPHY**