



# ***RIVER LOFTS***

A vision for live/work environments on Pittsburgh's rivers

*Executive Summary*

## BACKGROUND

This proposal for river-based live-work development was inspired by a number of convergent interests including: analysis of existing real estate for small business and housing in the downtown Pittsburgh area, assessment of the existing building stock in downtown Pittsburgh for lofts and an interest in the rivers driven by the close-up observation of the river edges from kayaks and canoes .



Building code, taxes, parking and other issues have been challenges effecting the rate of loft conversions for either living or working. As we undertook our own review of office space, we attempted to acquire a small narrow “Sliver” building in the downtown area to accommodate our growth as an architectural firm. We noticed there were a number of river front sites that were landlocked by industry or other underutilized properties.

The growing river front trails systems inspired us to walk the rivers looking for places that might appropriately sustain a small business or live/work presence. Noticing the large old steel barges used for hauling coal and gravel we decided to investigate the possibility of creating small live/work environments in selected locations along the rivers. The precedent for this in Pittsburgh is limited and certainly not one we would consider worthy of emulation. Often barges have been liabilities because they are abandoned, poorly maintained, or just not visually compatible with the vision of a new waterfront that is less industrially oriented.

Our proposal is similar in nature to live/work lofts. Often as the economy becomes more information and service oriented, flexible, adaptable space and zoning is preferred. Likewise some of the most innovative waterfront housing and business combinations exist in working waterfronts in cities such as Portland, Maine or Seattle, Washington. The most famous, of course is Seattle’s house boat communities. The liabilities of waterfront gentrification are felt most in cities like Portland, Maine where the businesses that depend on the waterfront for their livelihood are struggling with increased land values and gentrification conflicts (the nature of working waterfronts: odors, dust, and noise).

Our proposal recognizes that there needs to be a balance. That balance must address a variety of situations of use. We should promote integrated, diverse uses that have low environmental impact. Using the unofficial motto of the new Urban Zoning Code, “Impact over use” we believe that we can anticipate the conflicts and avoid them. We have proposed low impact green technologies such as Trombe walls; river water thermal heat pumps and recycled materials. Careful planning approvals and site selection for the location of River Lofts is critical to avoid placing undue development stress on our river fronts.

Our proposal should be integrated into the overall river front strategy that is still evolving, but like Pittsburgh’s loft development trends, it can be an important alternative that changes the perceptions about the rebirth of Pittsburgh’s river fronts. The following pages provide an overview of our concept, which we hope to develop as a prototype in the near future.

The River Loft is an adaptation of a traditional working waterfront icon: the steel barge. The typical barge of the Pittsburgh region is fairly narrow in order to travel through the narrow locks of the Mon and Allegheny Rivers. Groups of barges known as tows are lashed together for towboats to push through each pool (the section of river between each lock and dam).



The adapted use of barges is not unusual. Barges are used in Pittsburgh for marina facilities (gas, repairs and support offices). The Gateway Clipper Fleet (offices and ticketing) is the most noticeable. In the past, a restaurant existed on the Mon Wharf (the pilothouse). Today the Boardwalk in the Strip District is a combination of four barges that houses two restaurants and a function room.

None of these barges is architecturally distinguished; they are often prefabricated structures that are built at absolute minimum cost, with little regard for the beauty of the river as a whole.



Our proposal is founded on the idea that river front rebirth must be managed carefully to balance the impacts of use with the natural beauty and environmental qualities we are attracted to in the first place. As with land based development, we do not want to kill the proverbial goose that laid the golden egg.

After surveying sites and barge types, we have determined that single small barges in the range of 25-35 feet wide and 125 to 175 feet long are best. These barges have enough space to be usable but do not overwhelm the riverside. They are, ironically, almost identical to a typical downtown loft "Sliver Building" footprint.

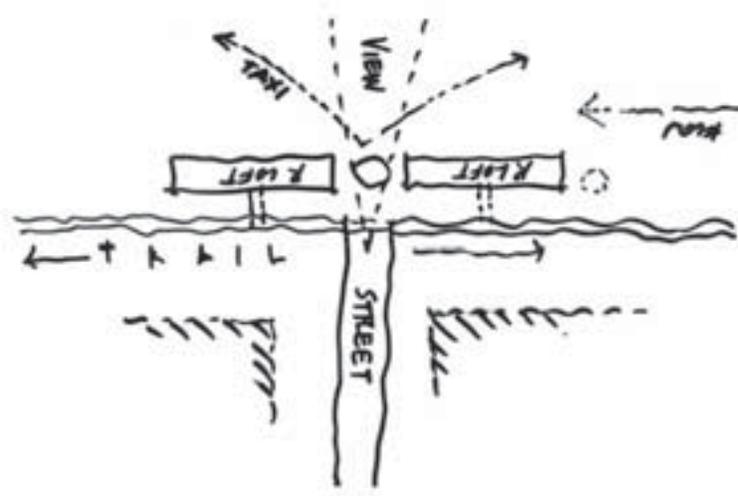


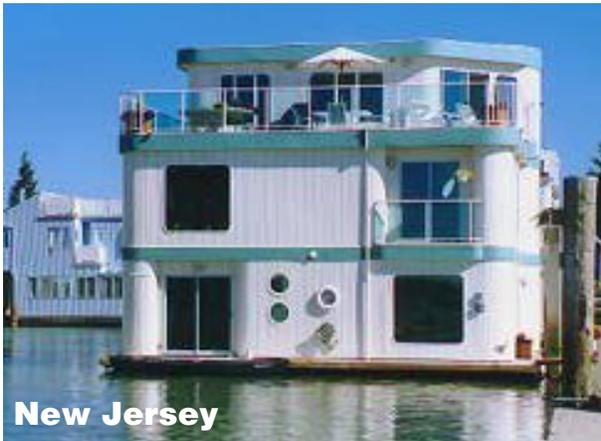
In researching the concept of acquiring a barge, brokers indicate that the best barge for this purpose is a former gravel barge that is well built and easily adapted to a structure on top. A barge should not have been in brackish or saltwater conditions and should be of recent vintage (1970-80's or later). Inspection using ultrasound determines how much thickness is left in these often-unpainted vessels.

Two steel piling assemblies that are driven into the river's edge best anchor a barge that is to be located in one place. The barge rides up and down with the river on the two pilings that are strong enough to both resist the lateral forces of the river and objects in it. Location is important both to the value of the idea as well as to the protection of other river assets. The barges cannot project into the navigable channel nor present a damming hazard during flood conditions.



Location and groupings should be limited to areas that do not interfere with landside residential use, industrial anchorages and public venues. We recommend a careful survey to prevent future conflicts. Zoning of the river edge is controlled by the City of Pittsburgh Planning Department, Army Corp. of Engineers and the State of Pennsylvania's Department of Conservation and Natural Resources (DCNR). Building Codes control the construction if determined to be a structure and not a vessel.

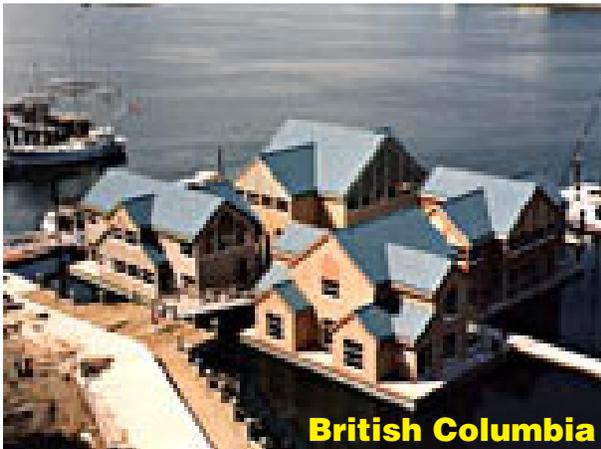




**New Jersey**



**Seattle**



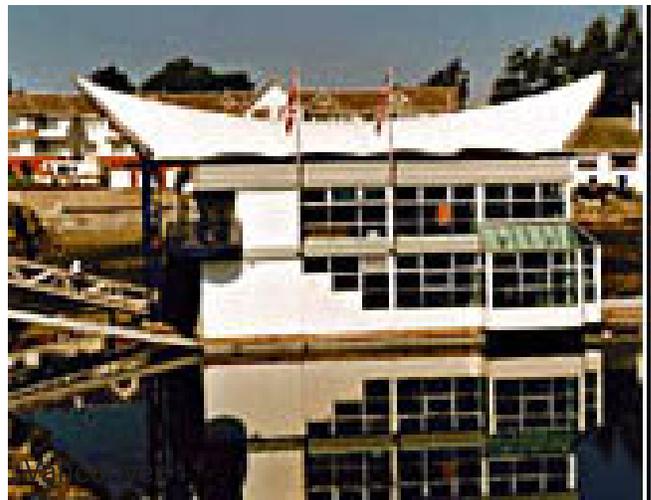
**British Columbia**



**San Francisco Bay**

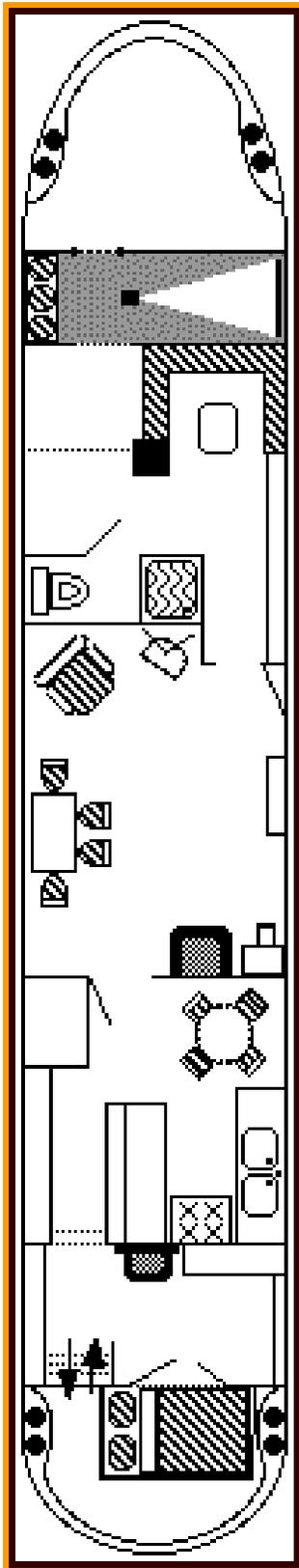


**Adaptive Reuse**



## **PRECEDENCE**

Many waterfronts across the globe have developed their own culture of waterfront communities, either planned or unplanned. The best have a character that summarizes the roots and attitudes of that region. Often the results speak much about the desirability of the waterfront. Seattle's waterfront living while highly sought after today, was considered a commune-like alternate life style, much like artists loft housing in Lower Manhattan in the 50's and 60's.



European Models:  
Amsterdam "Live/Work"

## RIVER LOFT PROGRAM: Live/Work Flexibility and Sustainable Design

The attraction to water oriented life and work is common throughout the world. How we make that experience in Pittsburgh unique and appropriate to our circumstance is the challenge. The adaptation of the barge should follow the following design guidelines:

- Program Flexibility: The project should be easily convertible fit to multiple uses (residential, office or combinations of the two).
- Minimum impact on the river bank and landscape
- Efficient, high cutoff, lighting that is artful and minimal
- Noise suppression (fans, pumps, etc.)
- Minimum impact on views up and down river
- Integration of design of superstructure and barge "foundation"
- Color should be muted to avoid distraction from vegetation and water
- Massing of superstructure should have a low visual and physical "center of gravity"
- Use of Green/Sustainable technologies such as:
  - Water based Heat pumps
  - Gray water systems
  - Passive solar or fuel cell technologies
  - Vegetation both on and off the vessel

### The River Loft Design

Like an old marine or industrial loft our design proposal is organized to be flexible and changeable. The initial program might be as follows:

Architectural Studio	2250 S.F.
Archaeologist Office	2250 S.F.
Lease (Canoe & Kayak Livery)	4500 S.F.

Within the areas above shared/common area facilities will include:

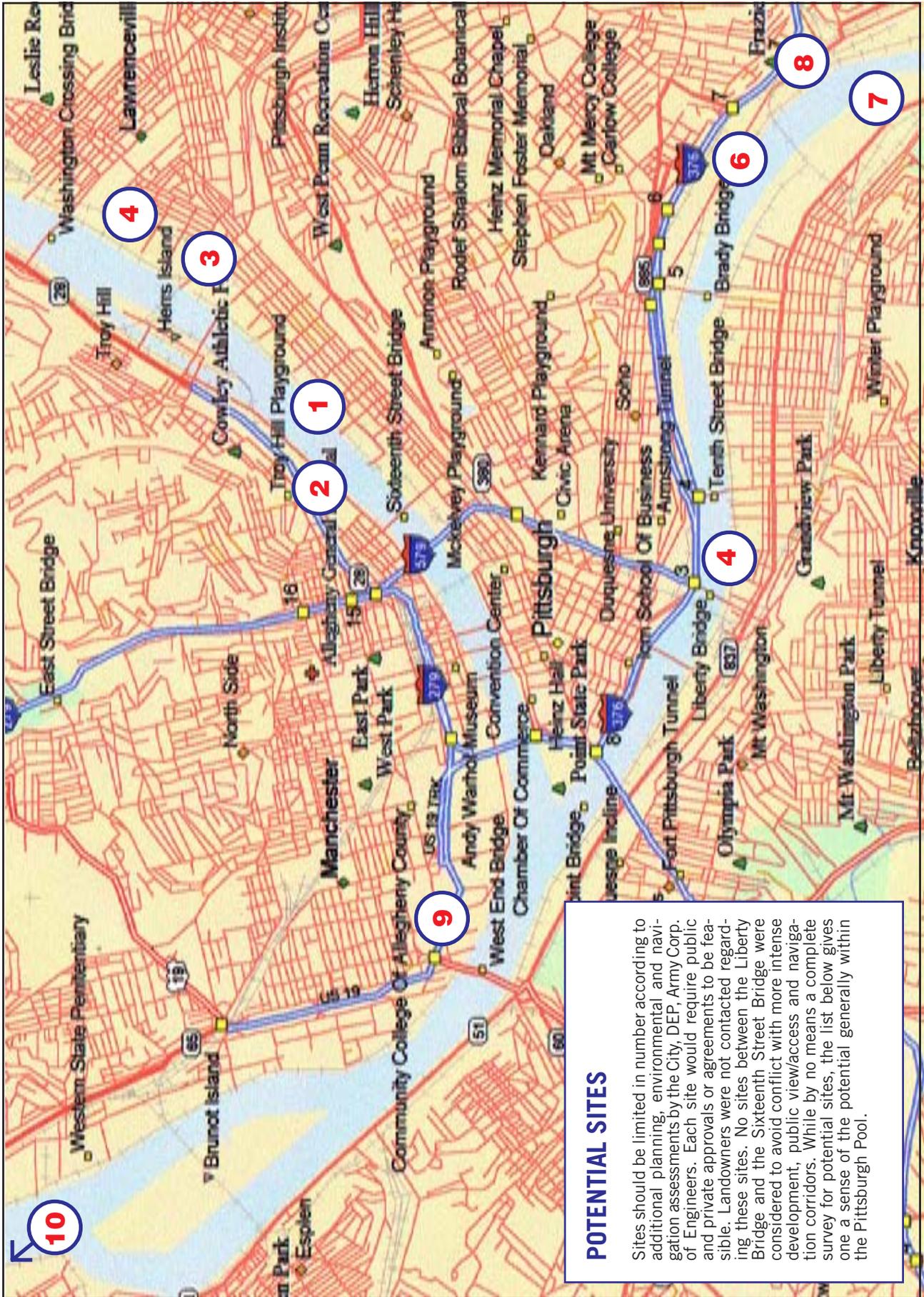
- Reception area
- Multipurpose conference/library
- Kitchenette
- Unisex lavatory
- Exercise changing area and shower
- Each level will have a small outdoor garden/deck area at the ends of the structure.

The simple live/work shell is imbued with heating/cooling, power, data and waste systems run from the substantial below deck area. Design concepts are adapted from intelligent building technologies tested at the Intelligent Workplace at Carnegie Mellon University and other sustainable building research.

The land side and the riverside edges of the loft reflect river orientation as well as climatic orientation. For the site we have chosen on the Allegheny river in the Strip, southern solar orientation is also the land side, setting up opportunities for the northern lighting qualities of a traditional loft studio so valued by artists and craftsmen. As you approach the site, river sycamores screen the structure with a small clearing for the gangway ramp that leads to the second level of the structure in this case.

To keep the interiors naturally cool in the summer season and warm in the winter, a hybrid use of solar and river water in a Trombe wall is proposed. Constructed to maximize mass utilizing circulated water, it will rely on river water to cool the wall and insulate. In the winter the process is reversed to provide radiant heating in the winter. In Pittsburgh's climate we expect a small supplemental system will be required. We propose to work with the locally based Center for Building Performance, IBACOS and the Green Building Alliance to develop and test these and other ideas.

The northern side of the structure will be glazed with high performance low



**POTENTIAL SITES**

Sites should be limited in number according to additional planning, environmental and navigation assessments by the City, DEP, Army Corp. of Engineers. Each site would require public and private approvals or agreements to be feasible. Landowners were not contacted regarding these sites. No sites between the Liberty Bridge and the Sixteenth Street Bridge were considered to avoid conflict with more intense development, public view/access and navigation corridors. While by no means a complete survey for potential sites, the list below gives one a sense of the potential generally within the Pittsburgh Pool.



## ALLEGHENY RIVER

### 1. Strip District/Armstrong Cork/Crane Building

The 24th to 25th street areas hold high potential due to a number of factors including location, accessibility and river edge conditions. The edge is stabilized, parking appears to be obtainable and views to and from the site are not impacted.

### 2. North Side River Avenue/Heinz Plant

Located across from the site above at the edge of the warehouse of the Heinz plant, this site is currently in poor repair, with a sunken barge and other abandon craft occupying the site. The river edge is slightly lower than the opposite bank, requiring more care in siting. Limited parking is available.

### 3. Lawrenceville Exxon Terminal

### 4. Lawrenceville NASA/CMU Robotics Center

Located between the 31st and 40th street bridges, these sites abut underutilized industrial properties. All are heavily vegetated with limited access at this time. Future development could incorporate both public and private access using the river front trail and dead end streets. The possibility of future use of the AVVR railroad corridor nearby would further enhance the development potential for River Lofts. While not as close to downtown, they are close to Lawrenceville's Business District by foot or bike.



## MONONGHELA RIVER



### 5. South Side Terminal Warehouse Buildings

Just upstream from the Liberty Bridge is a concrete plant and the great terminal building complex. Parts of the site appear to be no longer used by barge operations for the concrete plant. The site is limited by railroad crossings, lack of parking, and potential conflicts with barge operations. If in the long term, use of the site resulted in relocation of the concrete operation, River Lofts could be tied in with the redevelopment of the land side. A unique feature is a stepped bulkhead wall configuration allowing an amphitheater type landing to be developed.



### 6. Technology Center

Due to the previous use as a rolling mill, the Technology Center site consists of vertically layered strata of slag, concrete and brick. The landscape has overgrown it and presents a great opportunity for a series of sites possibly related to the allays or "hedgerows" of trees every couple of hundred feet. With increasing demands to be near the the technology center and nearby Oakland and South Side, this a prime site.



### 7. South Side Works

Across from the Technology Center is the South Side River Front Park. Behind and upstream extends the new South Side Works development (formerly J&L). The "tail" end of the site at the far upstream end presents additional opportunity. The site is currently unoccupied except for a houseboat encampment and a filled barge that could be a wonderful riverside garden for the landside and riverside trail systems, as well as "wharf" for a pair of River Lofts.



### 8. Hazelwood (Former Coke Works)

Until recently the Coke Works was the most industrially active sections of the Pittsburgh Pool. For many thousands of feet, an extensive steel barge terminal was built to handle a constant shipping and receiving operation. With the operation permanently shut down, work is underway to determine the future of this site. The sheer magnitude of the steel barge dockage presents great opportunities to reinvent the waterfront as an River Loft community. The structures are in very good condition and could possibly be adapted to any number of combinations of River Lofts, marina and public access walkways.



## OHIO RIVER

### West End Bridge

Just downstream of the Science Center sits an industrial site and marina. A few River Lofts could be carefully sited to take advantage of the great views upriver to the Point and be reasonably close to new Northshore development.

### Neville Island Back Channel

Although not in the Pittsburgh Pool, our survey identified a number of sites extending below the heavily industrialized areas of Bruno's and Neville Island. A number of residential and industrial areas just below the back channel present good opportunities, albeit somewhat isolated. With the success of Neville Island's Sports facilities, River Lofts might be attractive to those wanting to be near it as well as the airport.



## RIVER EDGE CONDITIONS

### General

One of the prime considerations for the location of a barge is the location of existing structures that once serviced barges or other river vessels. These structures vary in condition, construction type, and usefulness in adaptation to new uses serving a River Loft.

### Bulkheads

Bulkheads are constructed of concrete or steel. Older walls or piers, especially former bridge foundations, were made of stone. The bulkheads at the Pittsburgh Technology Center are not even visible to the casual observer and are in poor condition. In contrast, the old Hazelwood Coke works barge terminal is in very good condition. The condition of these structures is an important determinant of the viability of the site for new uses. Protection from ice and other barges is often available at these sites.



### Landscape

The landscape of the river edges is constantly changing. The remains of industrial activity is fast being overrun by nature. The results of recent botanical and environmental surveys by CMU's Studio for Creative Inquiry should be consulted in the responsible development of any site. A minimal amount of clearing should occur to gain access to the river edge. Some sections of the river edge are overgrown while others would benefit from new landscape development. Each site must be judged on its own merits.



## URBAN DESIGN CONSIDERATIONS

### Zoning Issues

The zoning of the sites is primarily industrial. However, with increased demand for river front activities, it is important to avoid conflicts with future landside uses. The preservation of some sites as industrial "sanctuaries" is important to consider. Although not an issue today, at some point in the future, a lack of docking facilities for river commerce could cause conflicts between working and living/recreational uses, as has happened in places like Portland, Maine.



### Public Access

Serious consideration should be given to public access in exchange for the right to develop a River Loft. The positioning of a barge should not conflict with public rights of ways and trail systems but rather support and expand them. Each barge/loft site could also be a potential river taxi or fishing opportunity. Access for boats at the identified sites is less likely due to the extreme river bank heights. When reconstruction occurs, prime opportunities for low level use by fisherman and canoes/kayaks is possible.



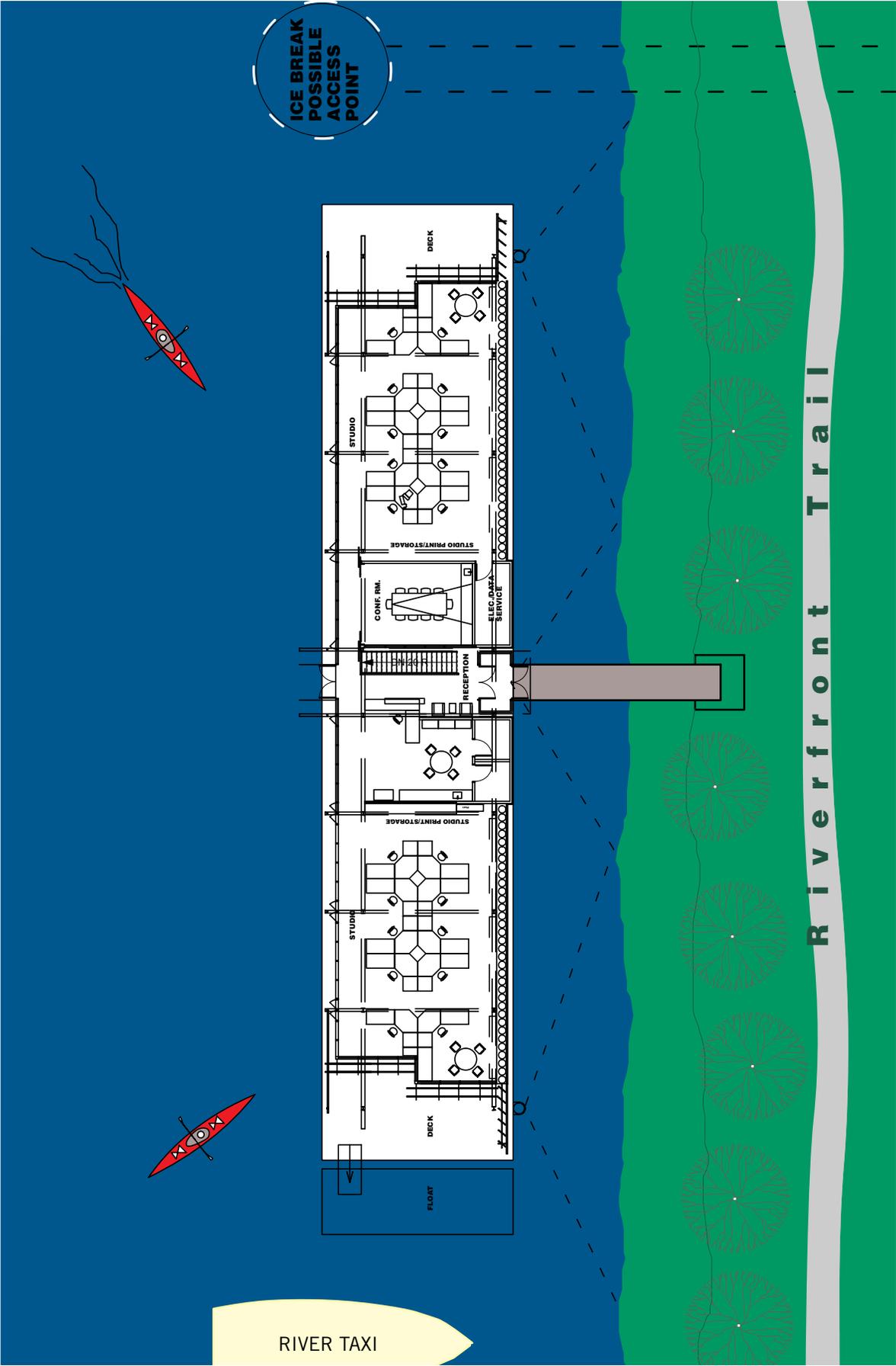
### **View Corridors**

Another advantage of high river banks at bulkhead walls is that it allows a River Loft structure to be almost completely hidden from the land side view. Any sites that block view corridors from possible new development or public ways should be strongly discouraged.

### **Design Standards**

Waterfront development has historically been a haphazard affair throughout many areas of the country. Sometimes this creates “rustic” or aesthetically rich expressions of the working waterfront legacy of the area. Rockport’s “Motif Number One” is an example of such an aesthetic. Decaying docks, wharfs and old boats is a double edged sword when it comes to redevelopment. Although not imbued with the same aesthetic viability as coastal areas, Pittsburgh’s river fronts should be respected for their industrial character. Many decayed edges have become beautiful in their own right and provide clues to the industrial heritage of the region. The potential for a natural collage of new and old, man-made and natural creates the most powerful of urban landscapes. The River Loft designed with this issue in mind, could provide a unique image of Pittsburgh’s river renewal that is like no other.





**RIVER LOFTS**

Gangway Foundation

Gangway

Roof water collection system

Solar Trombe Wall System

Structural Steel Frame

Modular floor system

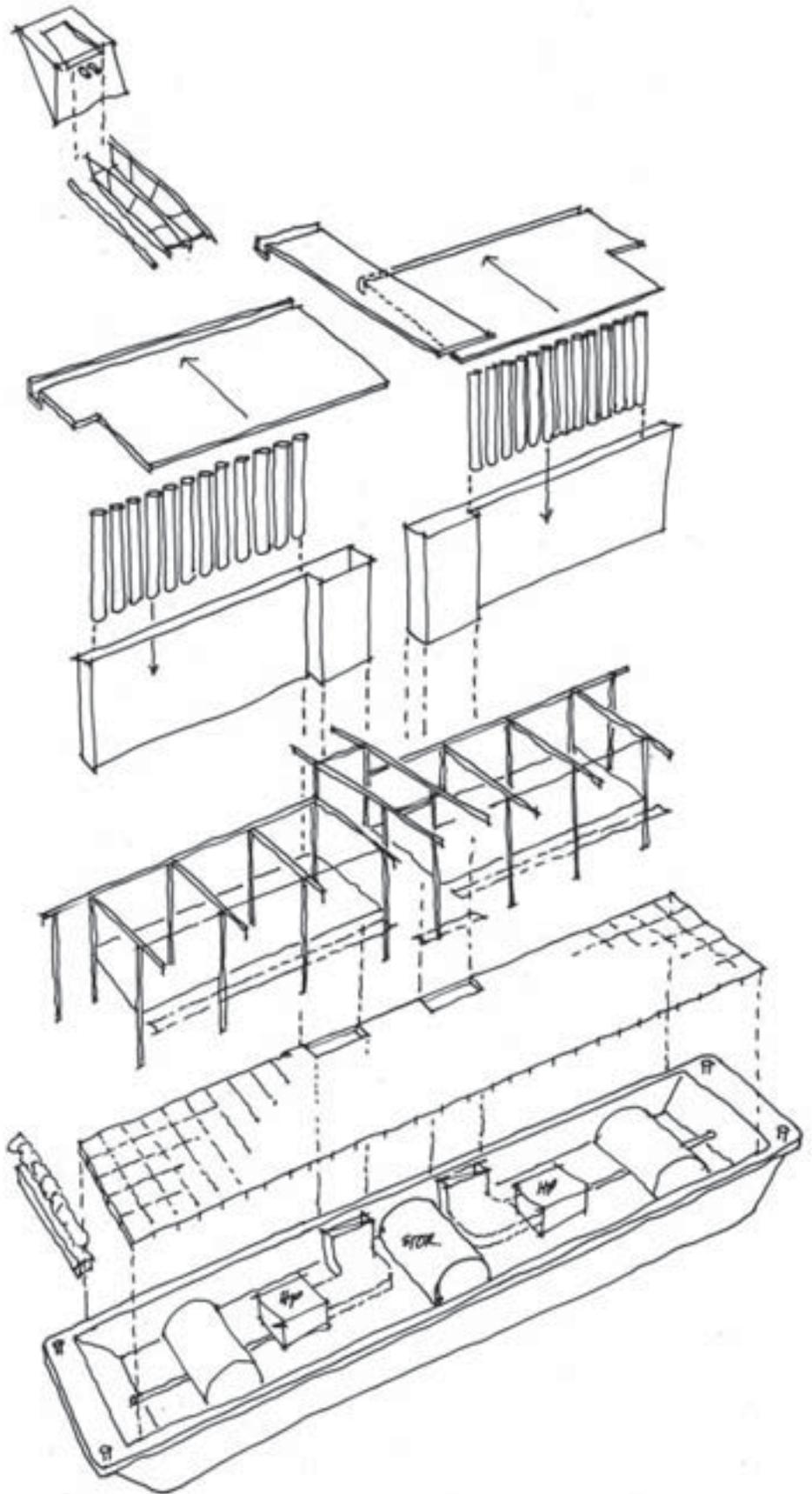
Service/Systems:

Riverwater Heat Pump

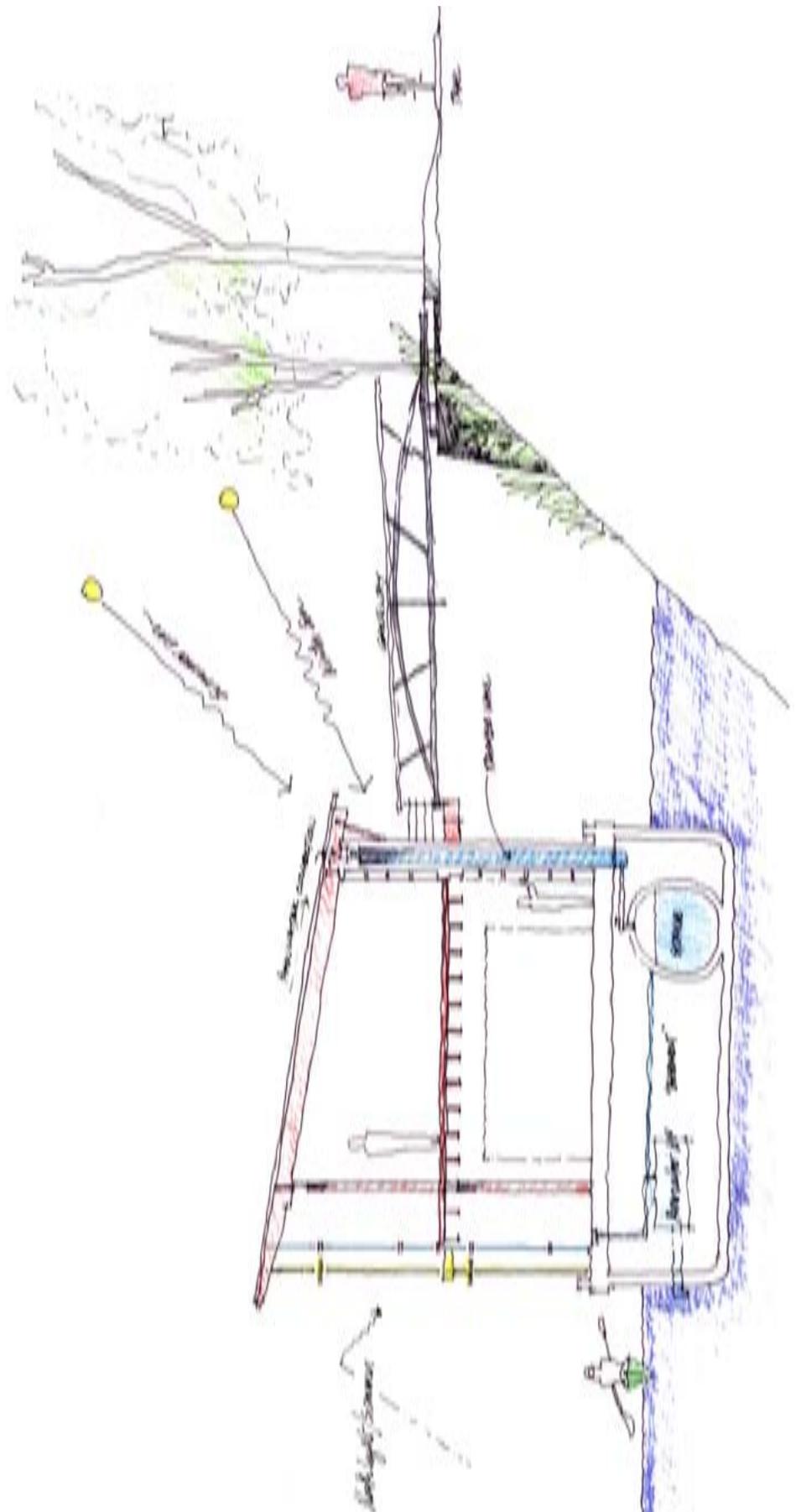
Thermal Storage

Distribution Equipment

Barge Hull



**ASSEMBLY SKETCH**



# RIVER LOFTS



View from shore above showing entry gangway, Trombe wall and core elements



View from above showing fenestration and structural elements.  
(barge is in black)

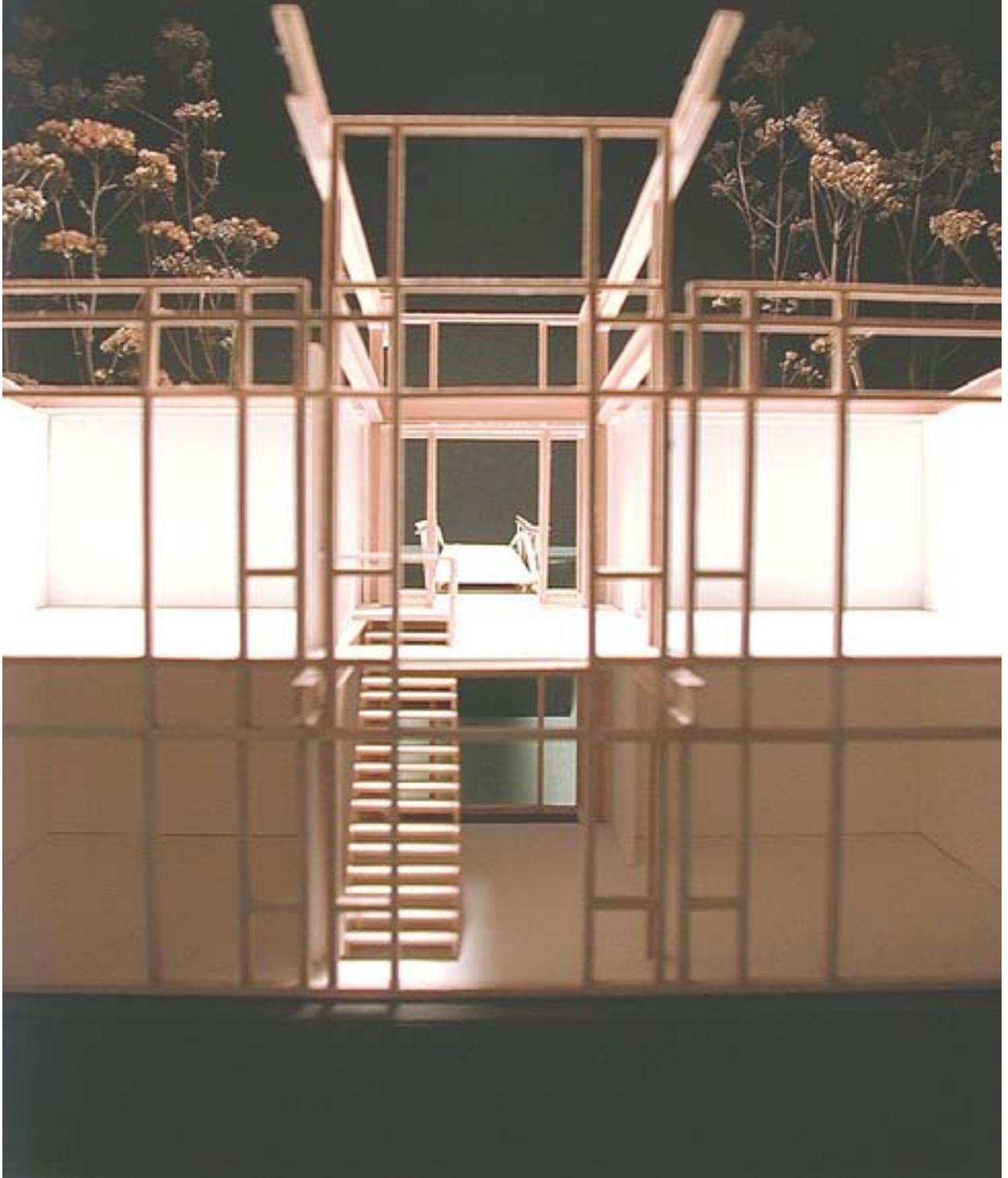


View from riverfront of solar trombe wall and gangway

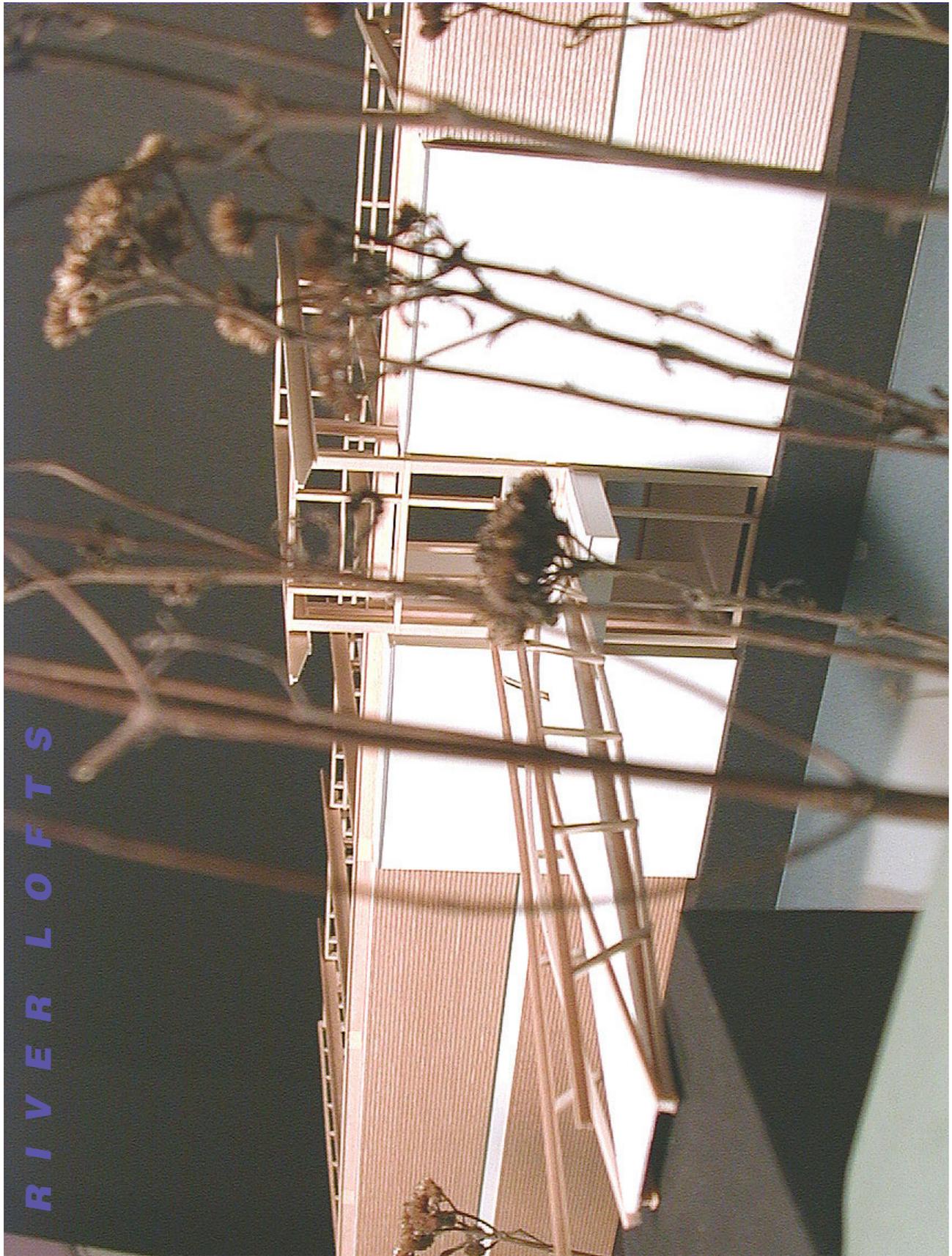


View between shore & barge.

# RIVER LOFTS



View of stair hall at night from water.



View of gangway from river front.



View of entry from landside.