

# PERMANENCE AMIDST CONTINUAL MOTION: A MARSH RETREAT

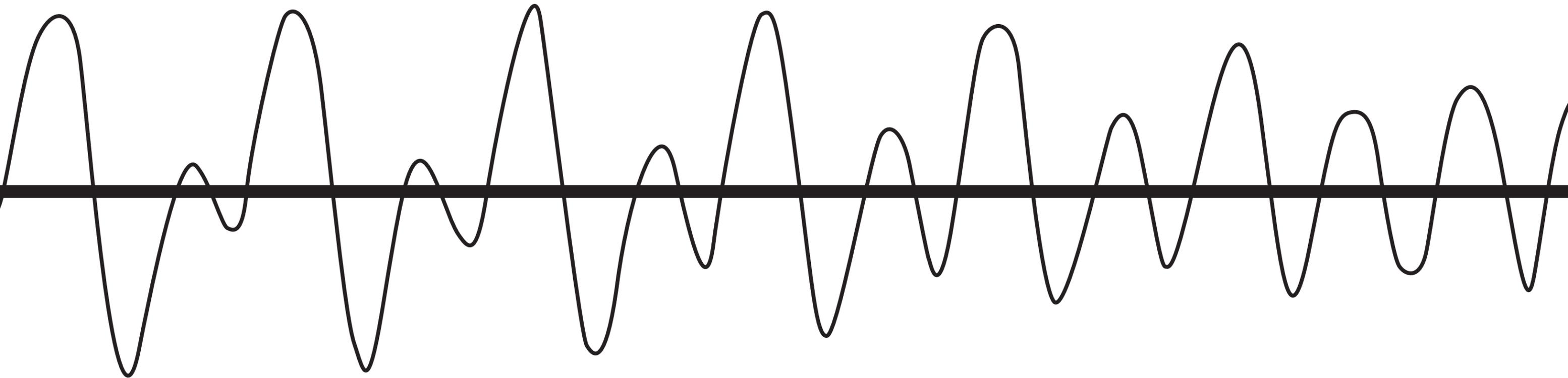
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## ABSTRACT

This thesis explores how a place can be made within a tidal marsh; a place where people can stay and experience being in the marsh. The experience should be able to be enjoyed at any time, day or night, good weather and bad. For this a shelter, a built form, is needed. This built form should have permanence. It is the constant that the ever-moving marsh registers against.

## ACKNOWLEDGEMENTS

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To my family, for your constant sup-  
port through all of my schooling.

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## INTRODUCTION

Architecture allows people to experience a site in a way that would not be possible without the built form. The built form should be a strong object, which enhances the site, but does not necessarily pull all strengths from direct correlations with the site. In other words, the built form should be strong without the site, and only be made better with it.

The proposed marsh retreat is that built form. It has strength of its own, but responds to its unique site in a tidal marsh along the Chesapeake Bay. Through its heavy concrete pilings and slabs visitors will feel its permanence, unshaken by tide or storm. Yet from a distance on approach it will be subtle in the landscape, hiding within the horizon.

It provides a place to stay for kayakers, boaters, hunters, and fishers. It is a place to bring in the day's catch. It is a place to eat, sleep, and rest in an otherwise inhospitable environment.



# SITE

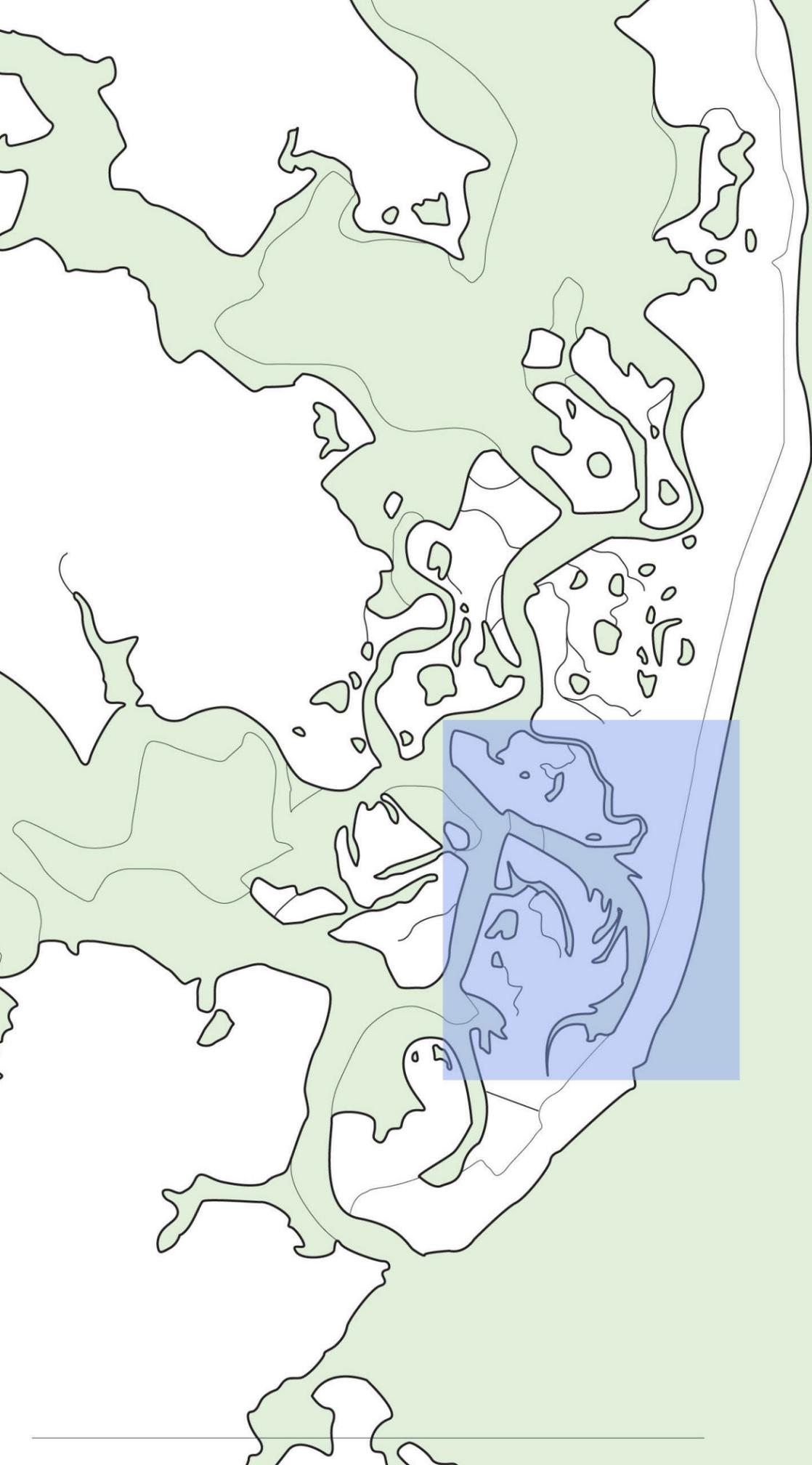
## THE CHESAPEAKE BAY MARSH:

Until recently, the marsh has been considered a wasteland, an undesirable place. The ground is too soft to build on directly, it is prone to flooding, and there is no shelter from wind or sun. The air is full of biting insects and the grass hides poisonous snakes. However, people today are willing to overlook these downsides in order to enjoy the beauty and incredible environment that is the marsh. The lush grass and muddy water are only the serene background to a place full of life. Below the water level, the marsh is a breeding ground for many varieties of fish, and blue crab populations are dense. At water level, oysters, mussels, and fiddler crabs can be found. Above the water, waterfowl find the marsh rich in food, and muskrats can be seen darting into the grass. With its connection to life, the water level itself is incredibly important to the marsh ecosystem. All life seems to happen within 5 feet above or below this horizon line, the first of several horizon lines that dominate the view across the marsh. The top of the marsh grass forms a second horizon line about 3 feet off median water level. A third horizon line lays 4 or 5 feet above the grass where the tops of sand dunes form a barrier beach, protecting the marsh from the open water of the Bay. Lastly, the tops of scrubby loblolly pines form a line about 60 feet above the sand. Of all the horizon lines, the horizon achieved by the water level is the least constant. It is controlled by the ever-changing tide. The moon



controls the tide, but water level is also at the mercy of local weather conditions. A strong westerly wind and a quarter moon could combine to leave the marsh almost dry at low tide as the wind pushes the water out of the marsh and out of the Bay, while a full moon with a strong northeasterly wind could combine to make high tides 4 feet above normal. These are "normal" conditions, not to mention extreme storm conditions where hurricanes can make tides surge 8 to 10 feet above normal. The changing water level not only controls the vertical dimensions of the marsh, it also controls the horizontal dimensions. When water level rises, shorelines shrink. When water level falls, shorelines grow. The elevation change of the actual ground, be it beneath the grass or water, is so shallow that even with normal tides, a 3 foot drop in the water level can expose acres of "dry" intertidal land. The marsh is a place of constant change; its most basic physical edges unable to be accurately defined for more than a moment at a time.



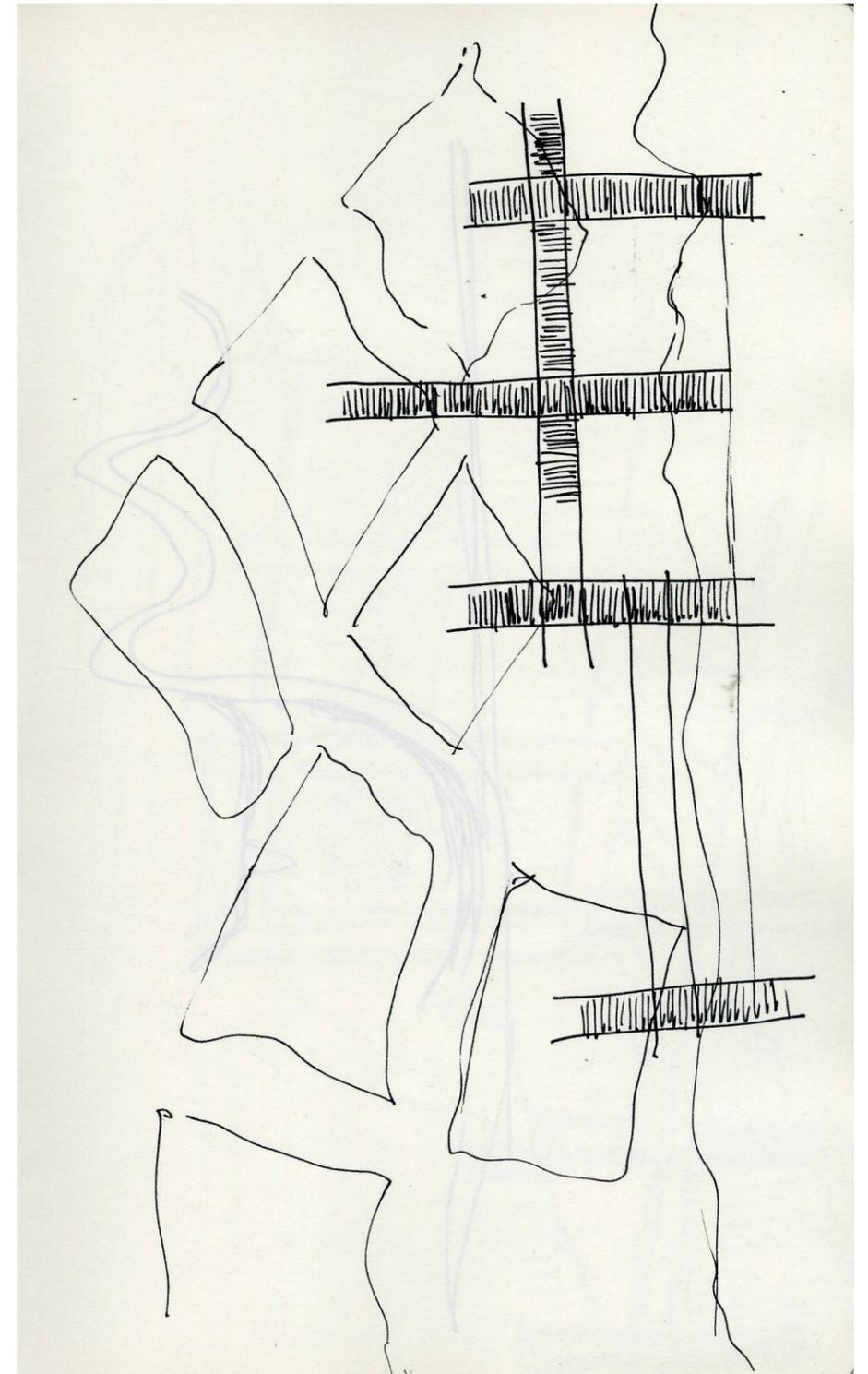
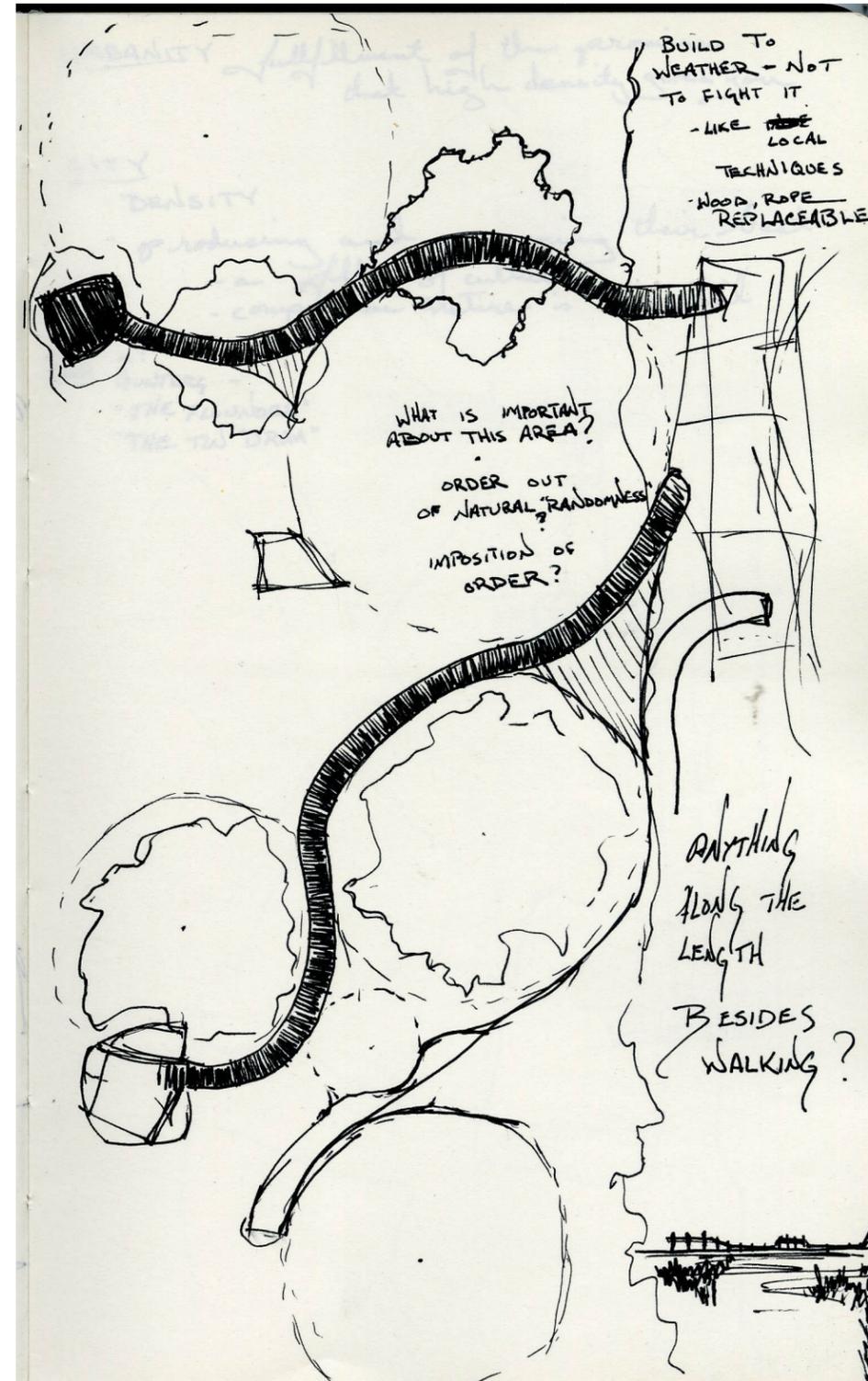


LOCATION:

Winter Harbor  
Chesapeake Bay  
Mathews, Virginia

## DESIGN APPROACH

With the marsh, there are two distinct possibilities of how to design. One is to find specific places in the marsh which act in certain ways, and make forms that are very dependant on these specific places. The other option is to design a single, strong form that does not disturb the places in the marsh, but provides a measure for them. It registers the movements of the marsh, and provide a person with a way of experiencing the organic nature of the marsh as a contrast to a rigid order. The retreat is designed in the latter manner.



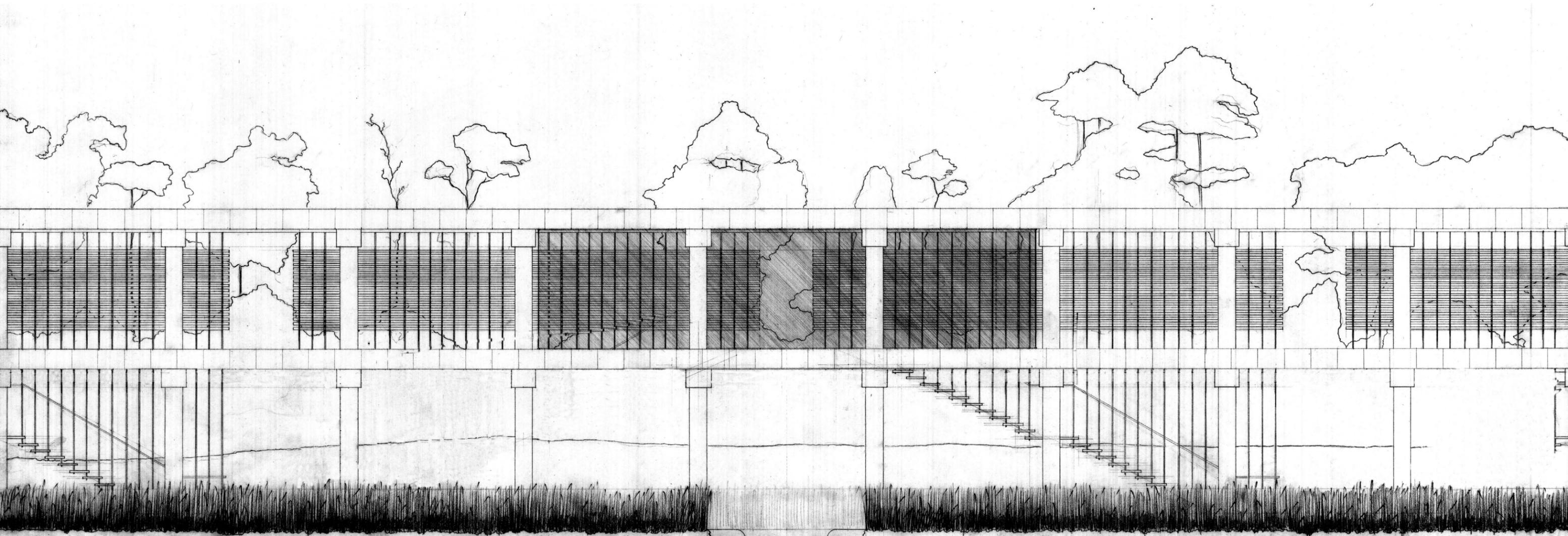
## REGISTERING THE SHORE:

The built form is a single line that cuts across the marsh, north to south. Canals intersect the line to form a grid with the intersection points becoming the places where habitable units occur.



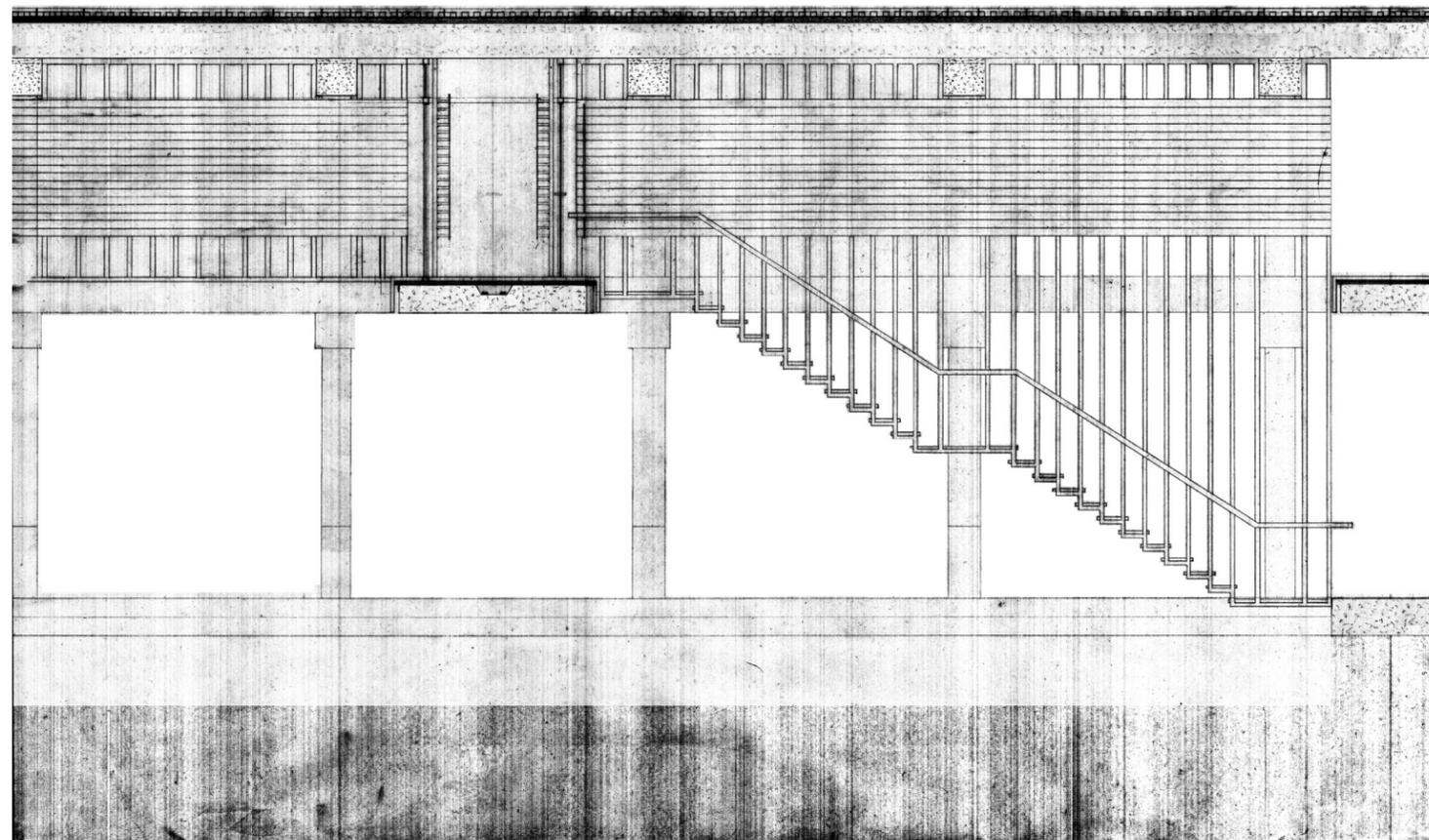
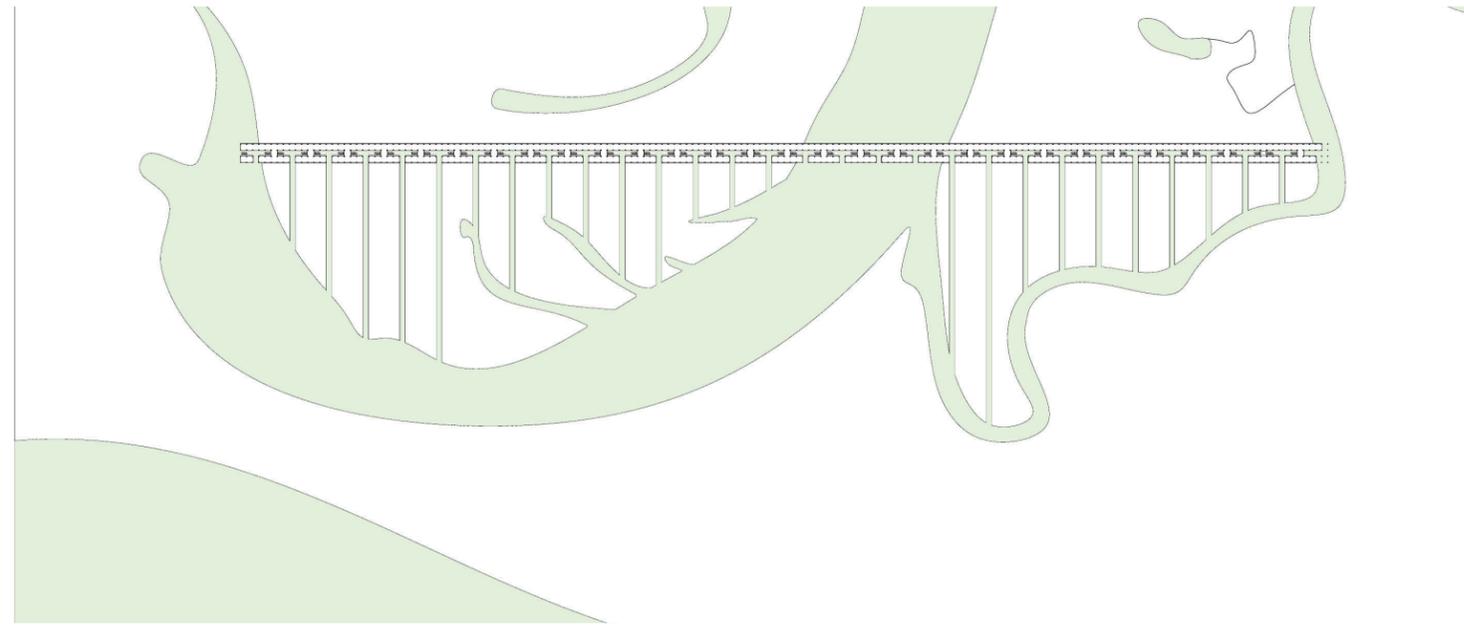
## REGISTERING THE HORIZONS:

The form is composed of three planes. The lowest plane is even with the ground height, and is thus exposed at lower tides, and submerged at higher tides. This is the "water level," and is where one enters the building. The next plane, the "living level," is above the dune line, while the third plane, the roof, is below the tree line. In this way, the built form will not interfere with the horizon from a distance.



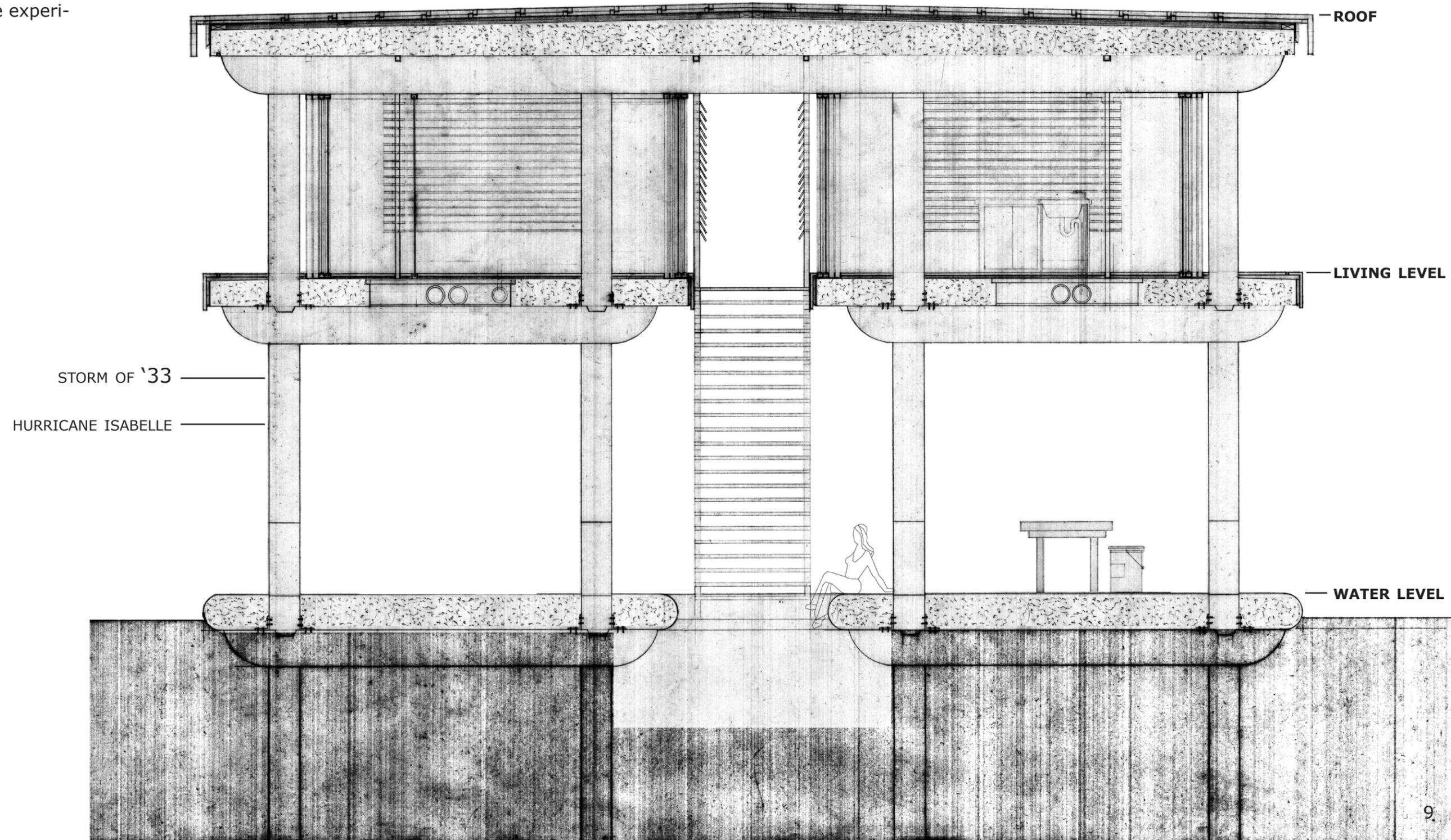
## REGISTERING THE VERTICAL ELEMENTS:

The stair is the only vertical element that crosses the horizontal planes, and so, it registers against the planes at a smaller scale the same way the canals register the marsh against the built line at the larger scale. This is the reason behind the vertical members from which the stairs hang.



# THE HUMAN EXPERIENCE

With the form of the superstructure established, response at a smaller scale, the human scale, is needed. What does it mean to be on the water level, to really be in the marsh? What type of different experience is it to be on the living level? Above all, how does this make the experience of the marsh better?

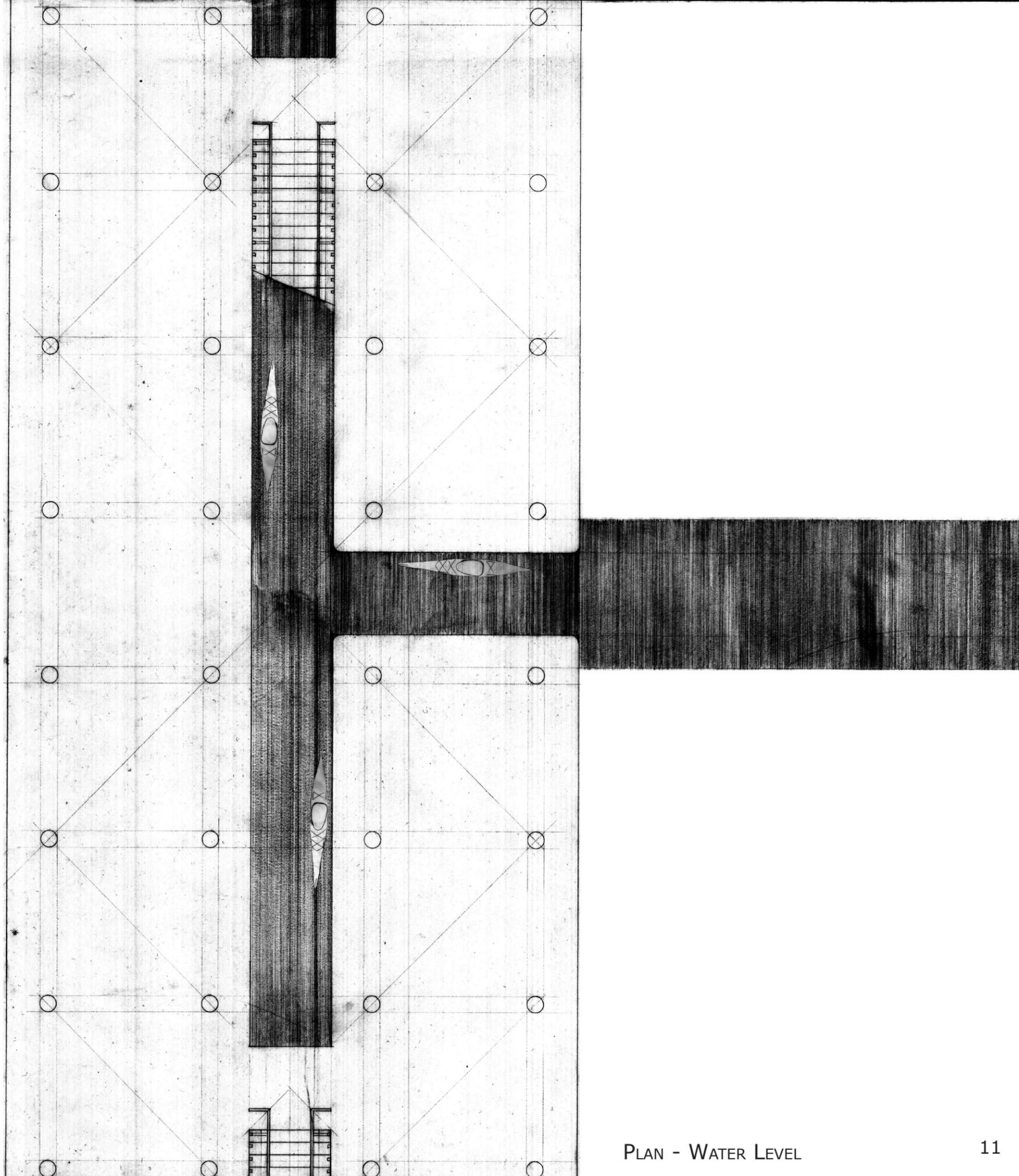


## THE WATER LEVEL:

The lowest level confronts the rising and falling of the water from tide and weather. Visitors approach via kayak, canoe, or skiff and dock in the central canal.



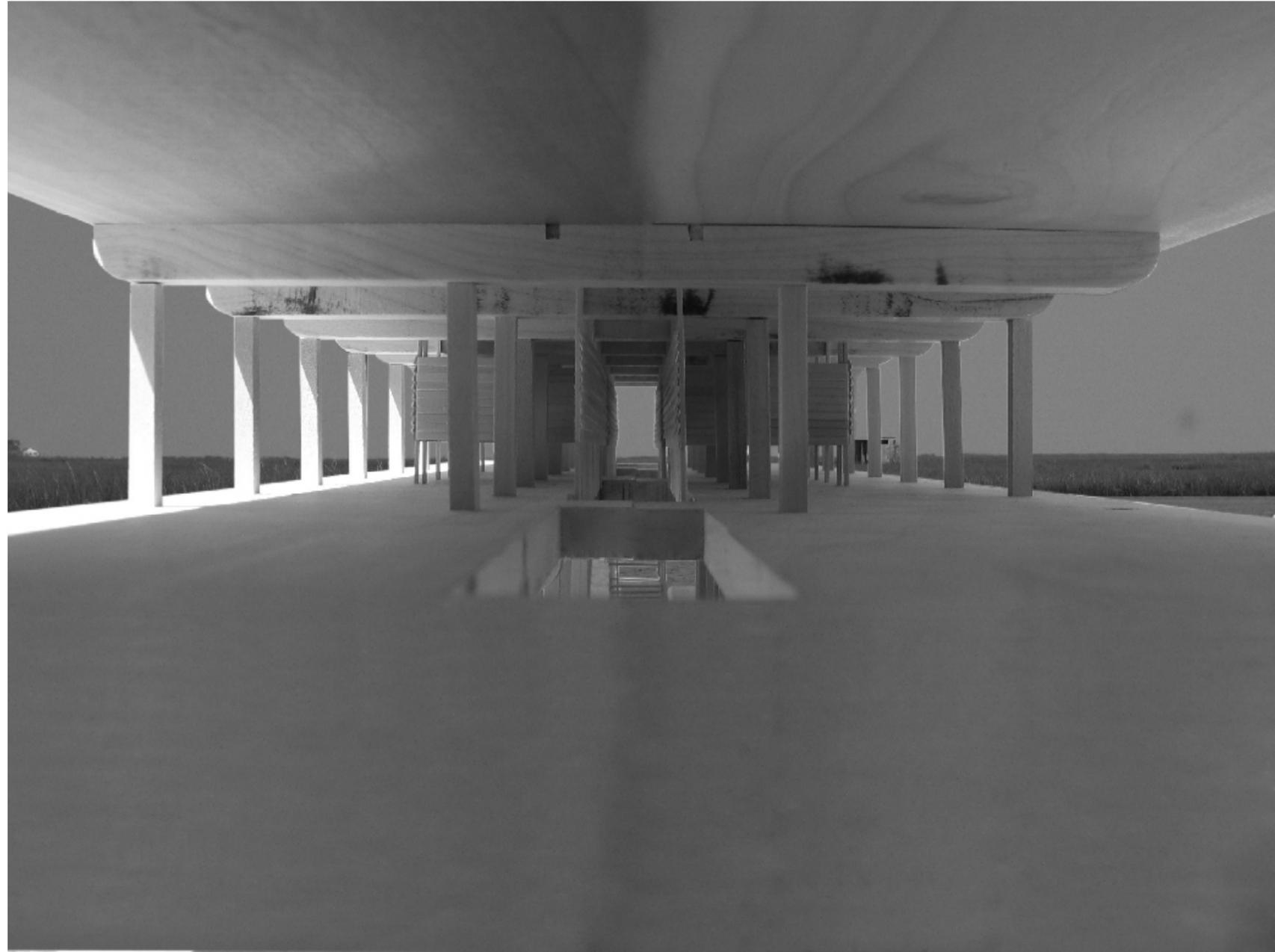
This solid concrete plane receives the canals and all water travel occurring on them. Rounded corners and edges soften the impact on docking boats. The canals end with T-intersections, providing more edge space for docking boats and loading/unloading. The western side of the plane, uninterrupted by the canals, provides a means of traveling by foot the entire length of the site at marsh level. Tidal pools are cast into the surface of the plane, catching aquatic organisms when tide falls from above to below the plane, and releasing them when tide rises. The eastern side of the plane, segmented by the canals, provides more private areas to unload and clean your catch, be it from hunting, fishing, crabbing, clamming, or oystering. As the tide rises above the plane level, the water will naturally wash away any scraps from the cleaning. Stairs leading to the living level rise above the central "canal" formed from the T-ends of the east-west canals.



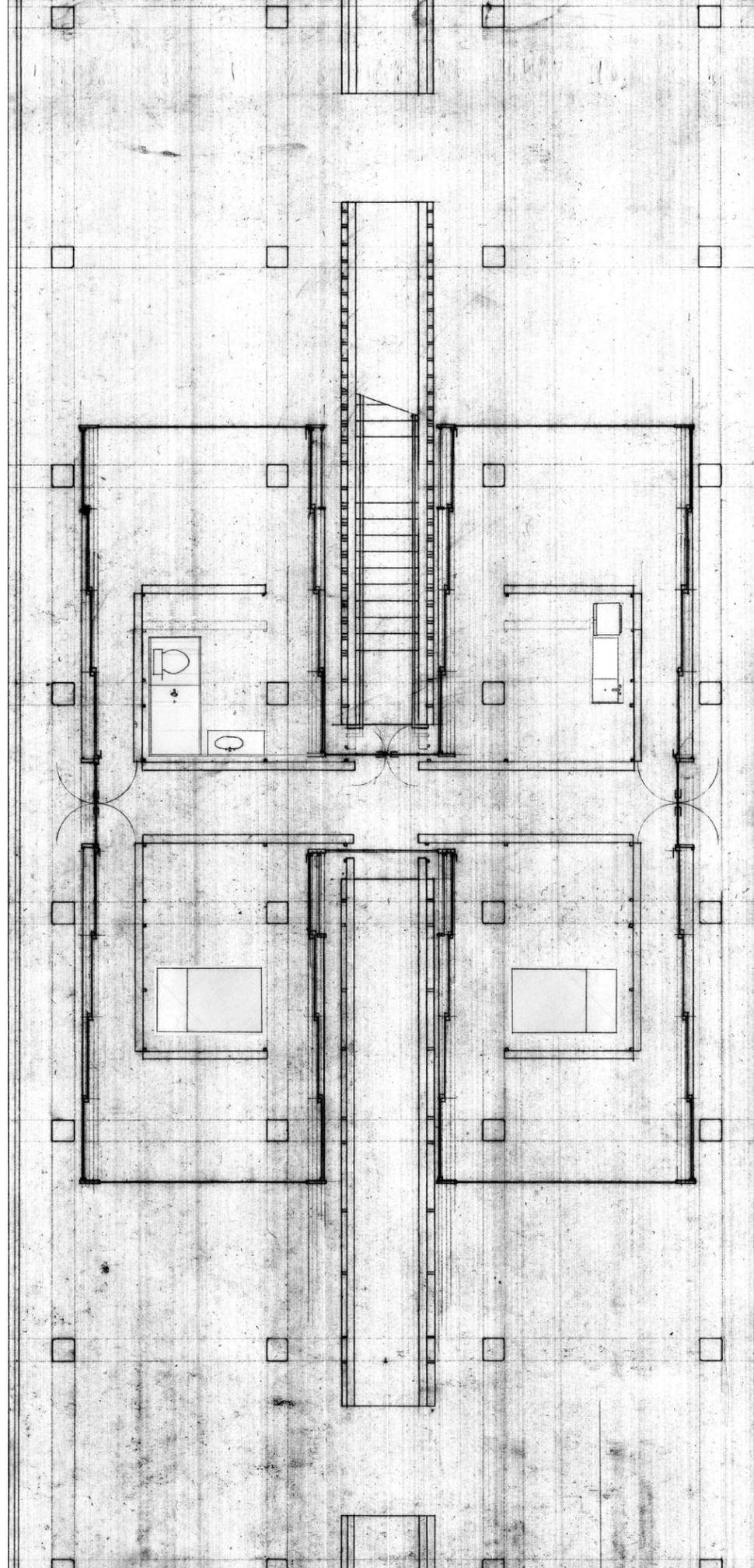
## LIVING LEVEL:

The habitable level is separated from the water; and thus, separated from the marsh.

This plane is raised 12 feet off ground level, above not only the water and marsh grass, but also above the dunes and scrub groundcover of the barrier island separating the marsh from the Bay. Without this important edge to the marsh, being at this height means one is more a part of the Bay than of the marsh, even though one is grounded in the marsh. This as an opportunity to create a situation where one could choose to be a part of the Bay, or a part of the marsh with a new perspective of height. By creating a screen wall in the middle of the plane, the western side of the plane is effectively given back to the marsh, while the eastern side belongs to the Bay. The vertical circulation corridor, formed from the repeated stairs and their vertical supports, serves as this screen wall.

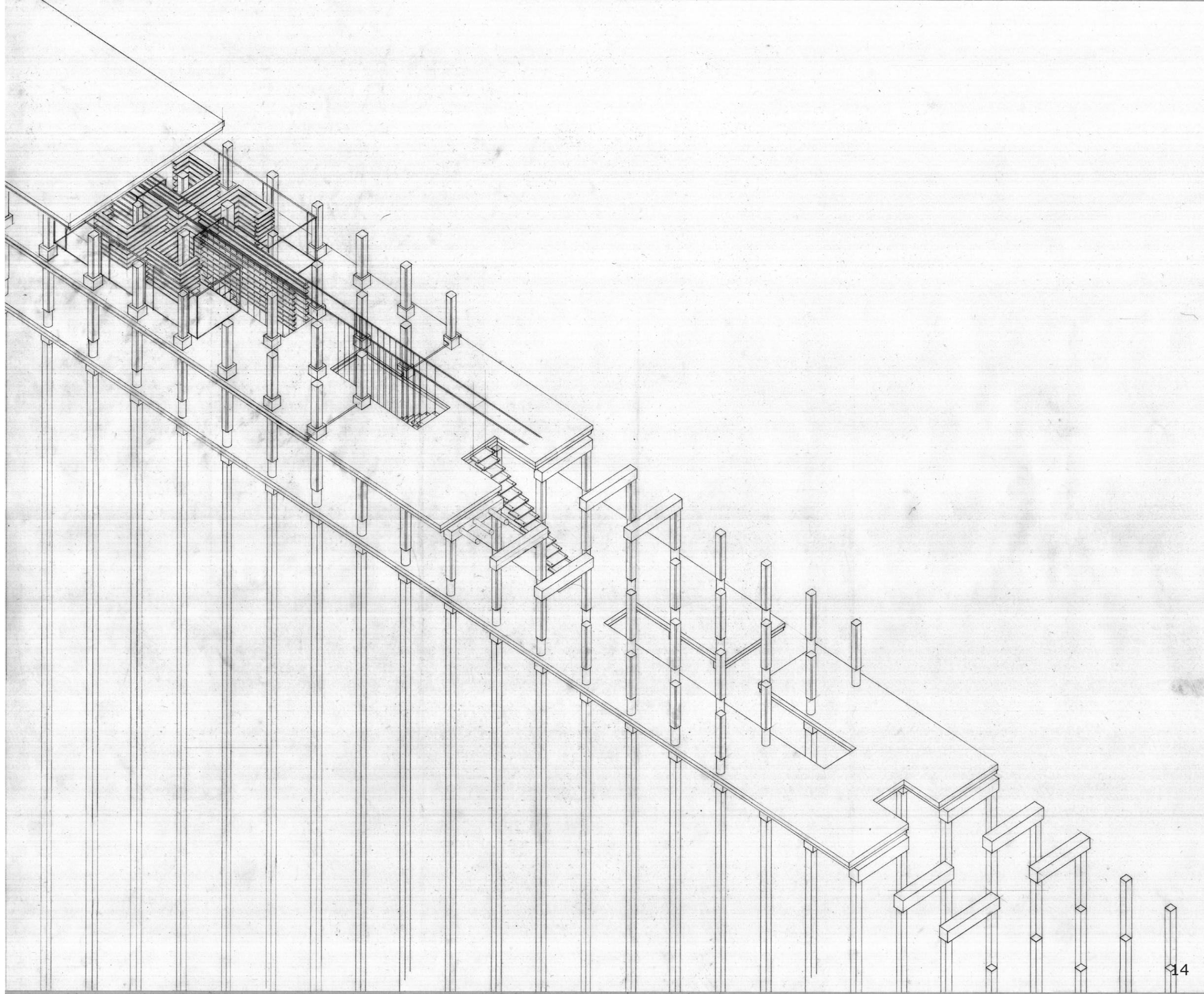


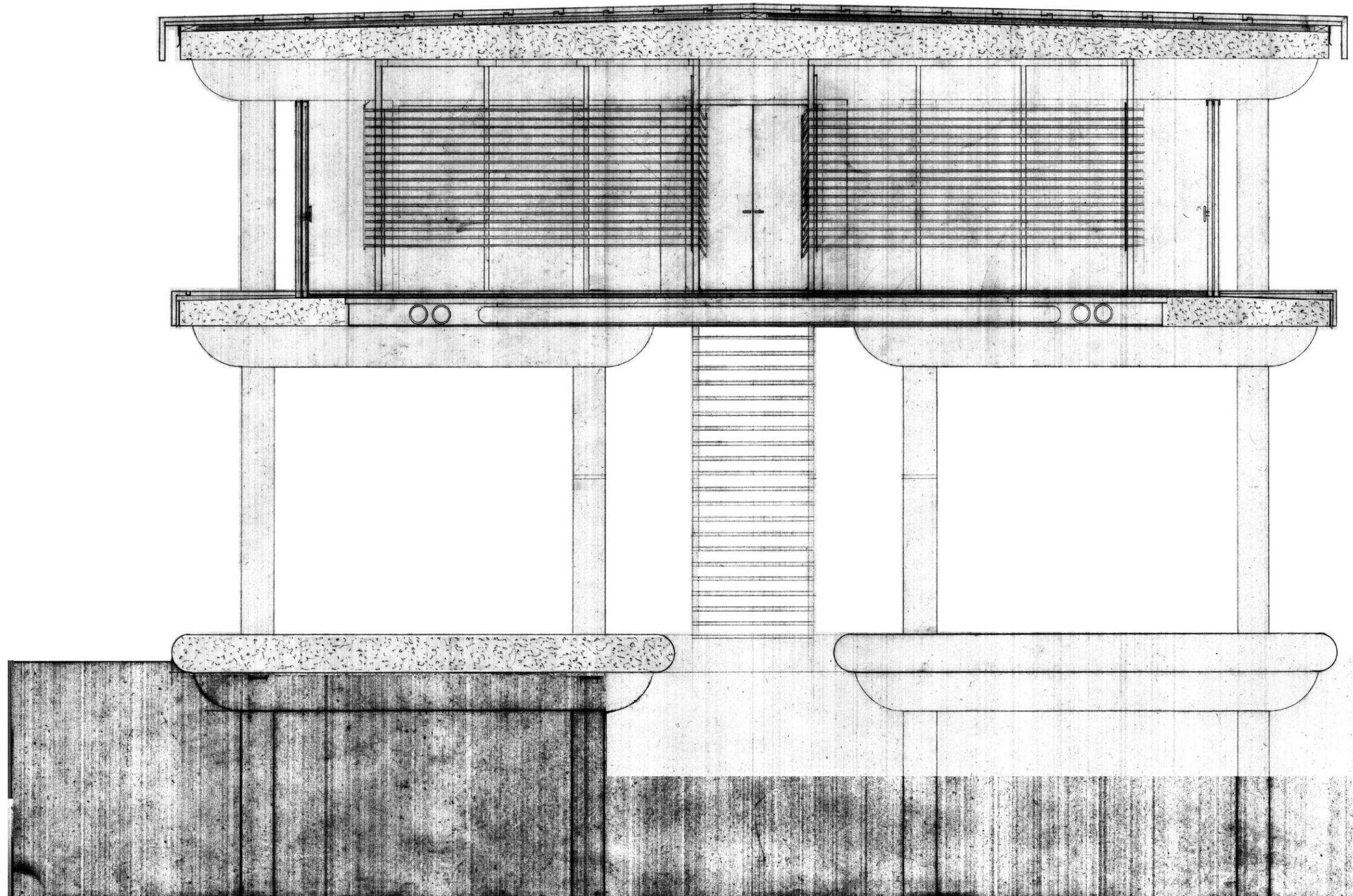
Instead of being completely sealed off from the outside, the ability to inhabit this place, to really be a part of it, has to do with being able to control the outside conditions to whatever degree is comfortable to the individual. This is the idea behind the nested screen layers, of which the plan for each unit is comprised. The ability to inhabit space in between the layers or to remove layers gives a person the protection he or she desires. The outermost layer is a wire mesh screen for insect protection and is in a roughly square shape centered around the intersection points of the canals and the built line. Just inside of this is a glazing layer composed almost completely of telescoping sliding panels so that when conditions are comfortable outside, this layer can almost vanish giving one the ability to catch every breeze. Forming the inner-most core layer are horizontal louvers in a continuation of the vertical circulation corridor. The louvers run along the corridor, on the same supports as the stairs, but when they reach the center point of each unit, the louver walls unwrap to make spaces of their own. The ability to control the louvers is the ability to control light and privacy and so these louver spaces are occupied by the bedrooms, bathroom, and kitchen.

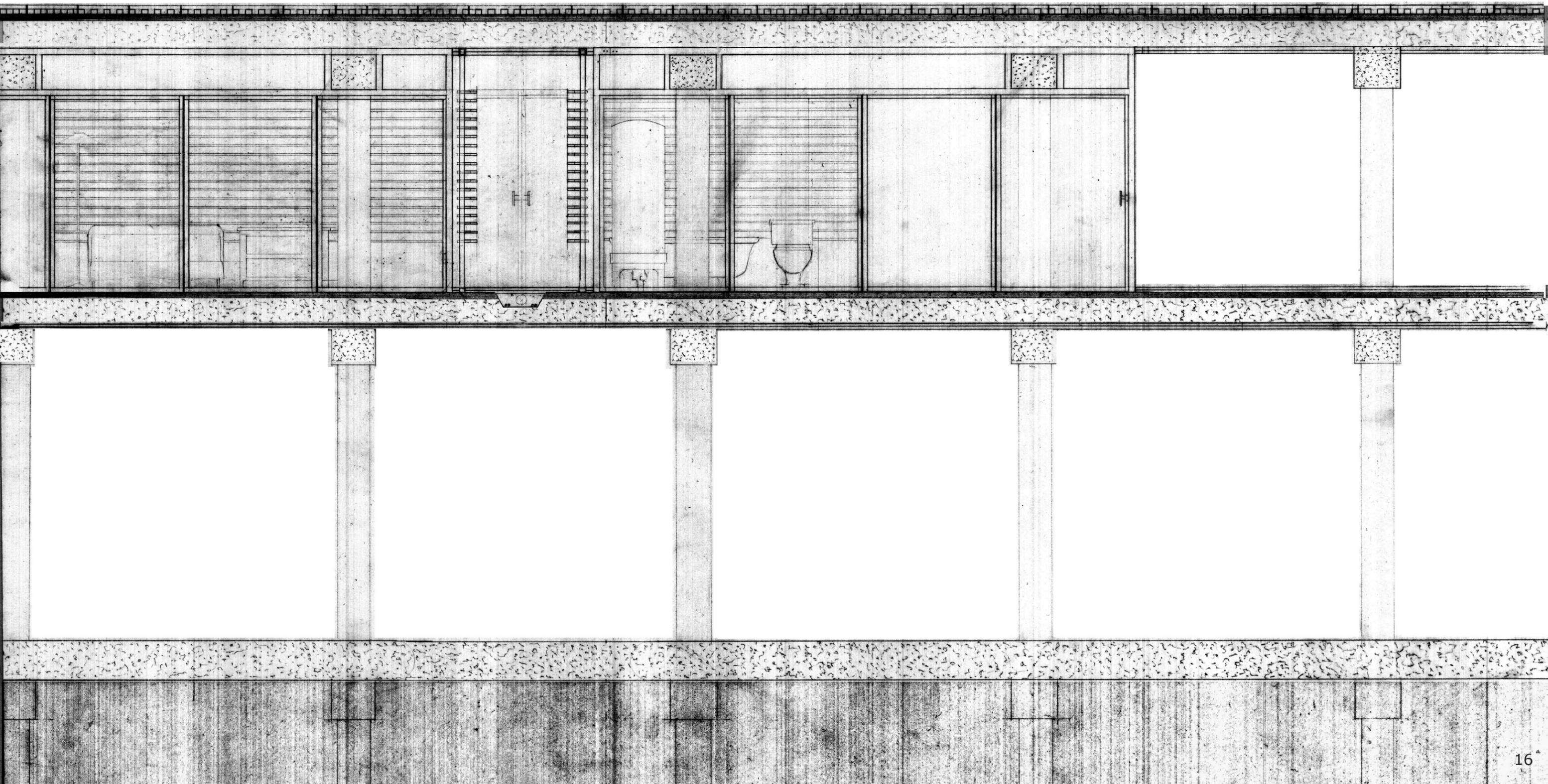


## CONSTRUCTION

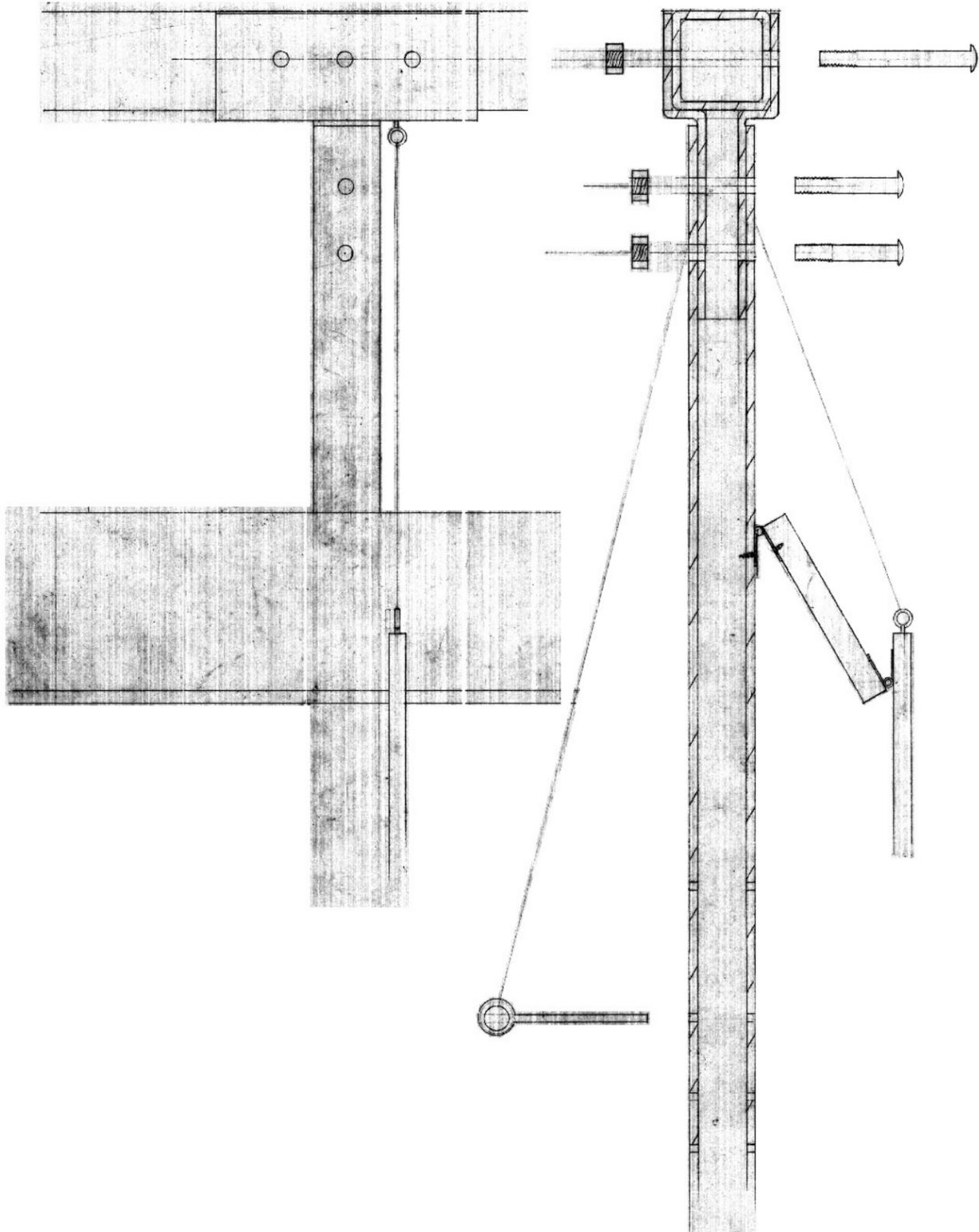
All three planes are made of precast concrete slabs in series that may be floated to the site on barges. The slabs include rigid foam insulation to both temper heat gain/loss and to lessen their weight. The water level slab rests on reinforced concrete girders atop concrete pilings driven deep into the marl of the marsh bottom. The living level slab and the roof are supported likewise on stacked concrete columns. Plumbing and electrical conduit run within precast channels.



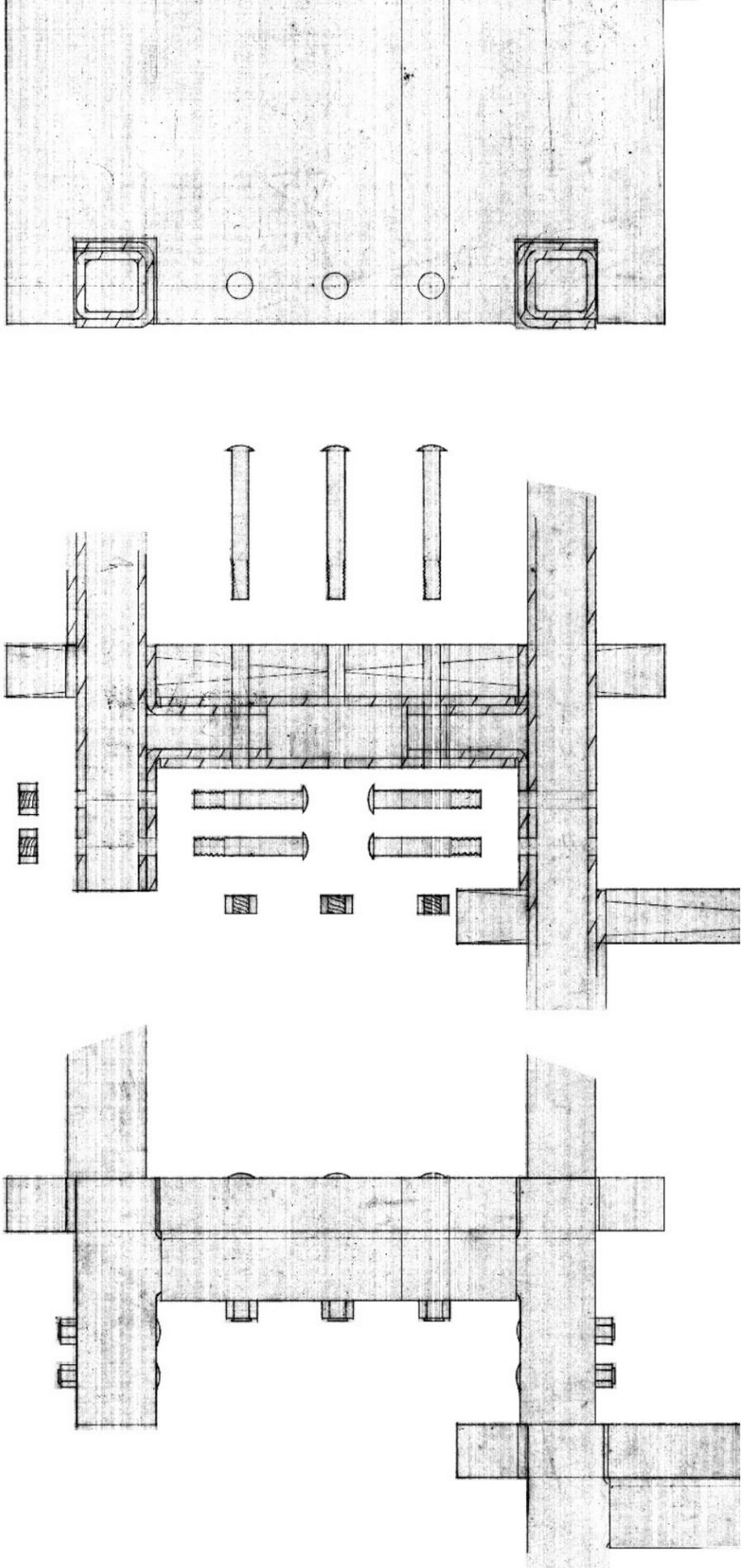




The horizontal louvers are supported by the same vertical steel elements that support the stairs. The vertical members work together as a single rigid frame.



LOUVER DETAIL



STAIR DETAIL

## CONCLUSION

This marsh retreat has shown how a place can be made within a tidal marsh. Visitors approach only by water, and will experience the unpredictability and wildness of the place, but also the permanence and safety of the built form. The retreat does this by both registering its surroundings and by responding to them.



## IMAGE CREDITS

All images by author.