

REVEALING NATURAL CYCLES THROUGH ARCHITECTURE: An AIDS Hospice in Provincetown, Massachusetts

by Paul H. Groh
B.S.A.S. University of Illinois at Urbana -
Champaign, 1989

Submitted to the Department of Architecture
in partial fulfillment of the requirements of the
Degree Master of Architecture at the
Massachusetts Institute of Technology

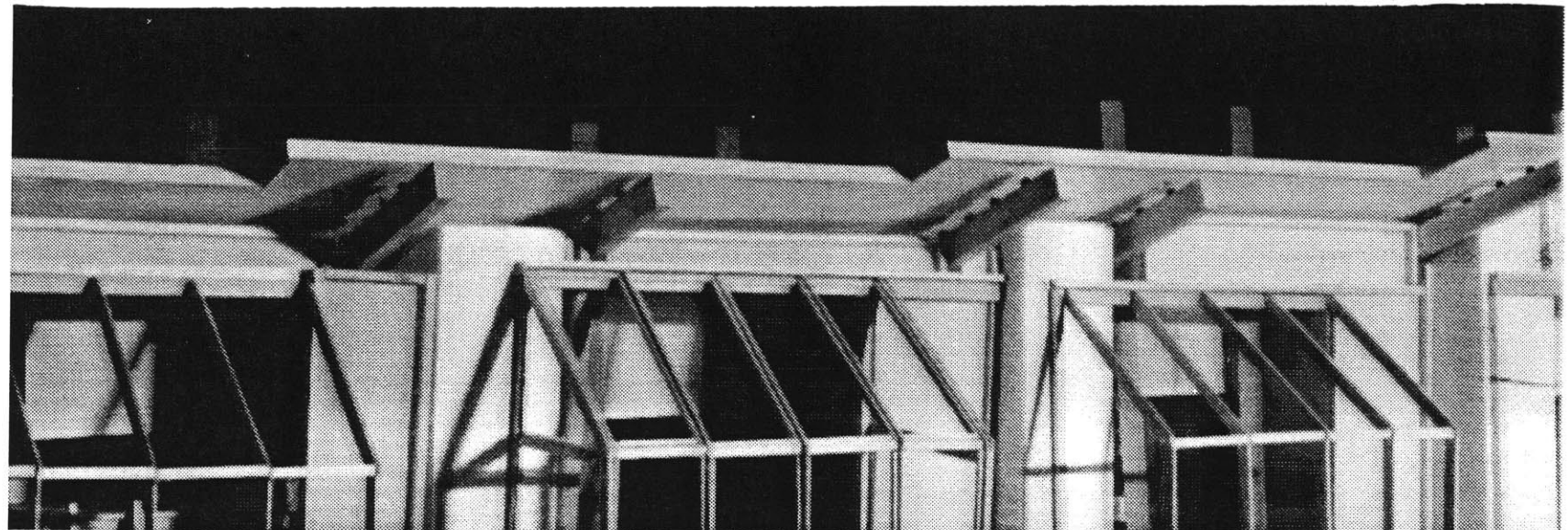
June 10, 1991

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ABSTRACT We spend a majority of our
lives in and around architecture; it is through
architecture that we know our world.

Architecture has the ability to orient us in our
environment by telling us where we are in place
as well as in time. Architecture informs us about
and helps us interpret our natural, social, and
technological environments; it is through
architecture that these environments can and
should be revealed to us.

Today, especially in the density of our urban
landscape, architecture does little to orient us in
the natural environment. The cycles and
rhythms in the natural environment such as the
movements of the heavens, or the seasonal
changes in the wind and rain are rarely
experienced through our architecture.

Understanding these cycles gives us the ability
to gage where we are in both time and place.
These rhythms give us an understanding of time
not abstracted and dictated by the clock. They
deal with the reality of things we can observe
and understand phenomenally through changes,
transformations and the passing of events.
They give us an understanding of place by being
highly specific to where we live.

My thesis is an exploration of how architecture
can become a vehicle for understanding and
revealing these processes and cycles in the
natural environment. In my thesis, I am taking
the attitude that architecture should not be
merely a window to these natural cycles but
rather a filter that selectively reveals them to
us. The vehicle for this exploration is an AIDS
hospice in Provincetown, Massachusetts. It is in
such a context of the chronically ill that I believe
an understanding of natural cycles would be
especially beneficial to a persons well being.

Thesis Supervisor
Bill Hubbard Jr.
Associate Professor of Architecture

A HOSPICE - SOME OBSERVATIONS

The project is an AIDS hospice for 8 patients. It is the last step for the patients who have been given 6-8 months prognosis. The patients have decided to come here to live out the end of their lives. They have decided to forgo the heavy disabling medications or intensive treatment and live their lives in a peaceful supportive environment.

The disease AIDS is not completely disabling. Most patients, even in the late stages of the disease, are able to move around freely and think clearly. But, this varies daily. On some days, the patients feel quite healthy; on other days they are confined to their beds. Many leave the hospice to have lunch with friends and family. The patients should be free to come and go as they please.

The patients can live as independently as they wish. They are free to personalize their living quarters and have guests. Patients can choose to live by themselves or have a roommate depending on how social they want to be. Communal space is provided for those that desire such an atmosphere. Many prefer to eat together and, at times, the residents arrange

small dinner parties. Meals are also provided for those that desire it. Most all the patients make it a point to go to dinner; the mealtimes often provide structure to their days.

There is no need to participate for those that want these days to be a very individual contemplative experience. One should be able to move through the entire complex quickly without feeling the need to participate.



Provincetown Harbor

Care is provided by the staff at the hospice for those who desire it. Two nurses will be on duty during the day and one at night. These nurses will help the residents live as independently as possible.

A patient remains in one apartment for his entire stay and is not moved regardless of his state of health. Empty apartments are ceremonially left vacant for a day and a night after a patient's death. The room is then rededicated.

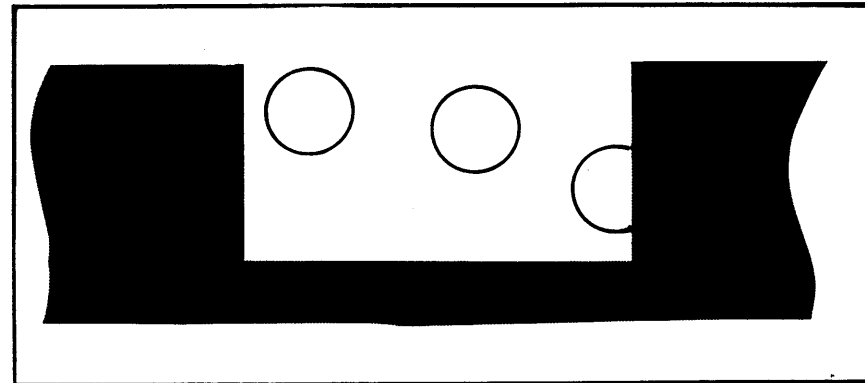
A hospice is part of a larger community. The hospice should be a facility well integrated into a community diminishing the sense of separateness.

CYCLES I believe that it would be a good thing in hospice to allow a heightened awareness of natural cycles. I believe that this would sustain a patient's sense of well being and also be a way of identifying with the natural world and its cycles that we are all part of. All cycles have inherent in them beginnings, ends, and renewal - that is, birth and death and rebirth. In a hospice, the patients can identify with the changes, transformations and the passing of events that are part of their life, death, and regeneration cycles. Death can make available a new potential for life and is for some the beginning of a new spiritual existence.

Understanding these cycles gives us the ability to gage where we are in both time and place and provide a way for the residents to finally orient themselves in the natural world.

There is an intimate relationship between cycles and time. Time is often measured in repetitions of events such as the rising and setting of the sun which is the basis for our measurement of the day. The revolution of the earth around the sun is the cycle on which we base our measurement of the year. Another way in which time is measured is in terms of

duration which is irreversible. An example of this type of time would be erosion or ageing. These processes are not cyclical directly . Indirectly, the erosion or decay of something often brings about new life in something else. For example, decayed fruit or fish are often used for fertilizer to promote plant growth. Durational time can be measured by reference to something

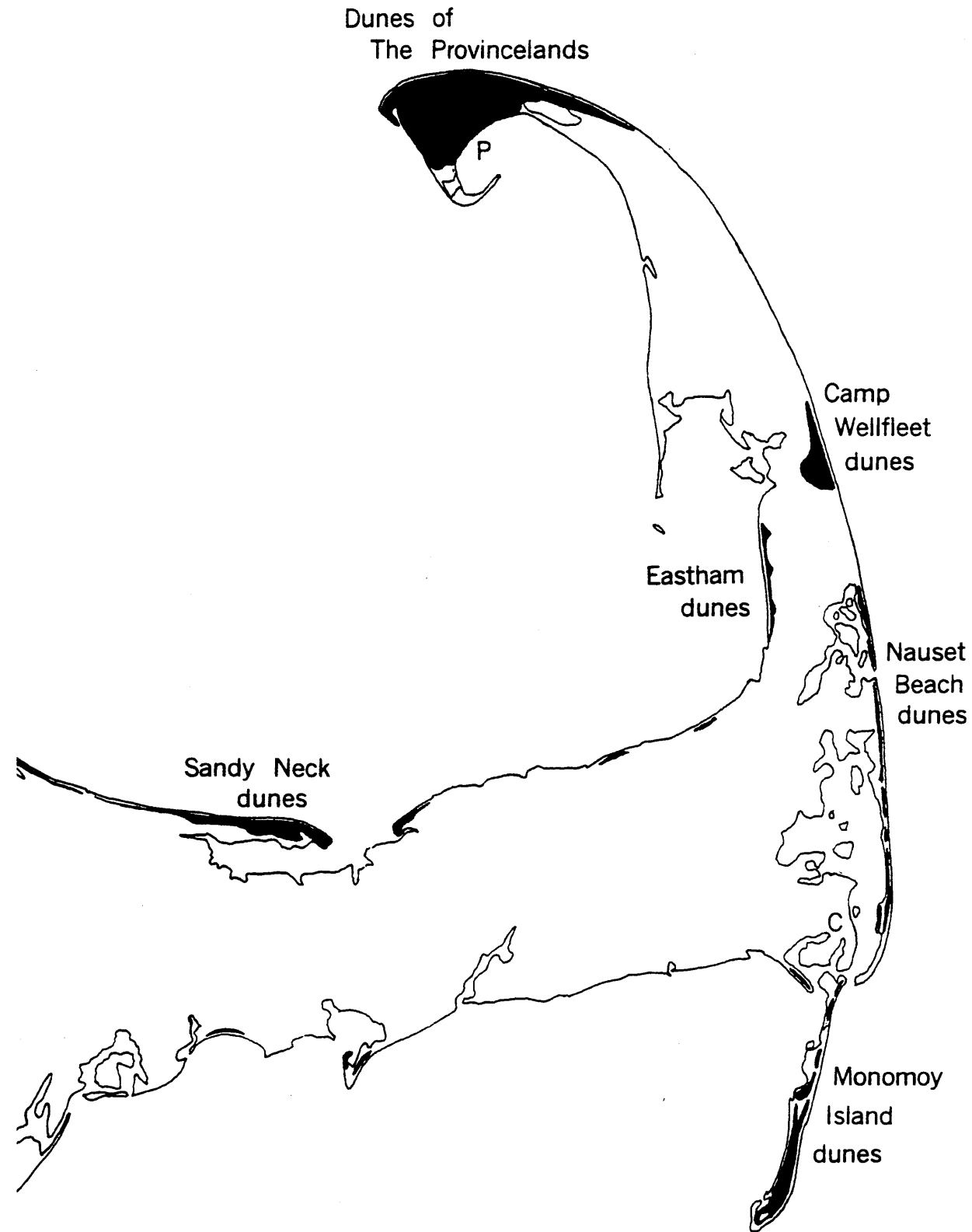


frame referencing the movement of an object

that doesn't change. The erosion of metals such as the greening of copper is one way we can measure how long it has been exposed to weather.

There are two ways to understand cycles: by bracketing and opposition. Bracketing is a framing of a cycle or part of it and allow changes to be referenced relative to the frame. An instance of this would be framing part of the sky so as to understand the movement of something (such as the sun or moon) relative to this frame. By opposition, a cycle is measured by allowing the opposite to be understood. An example of this would be to provide an unchanging dark space as a way to oppose and heighten our understanding of the changing levels of light during the day.

In my project both ways of referencing cycles are used.

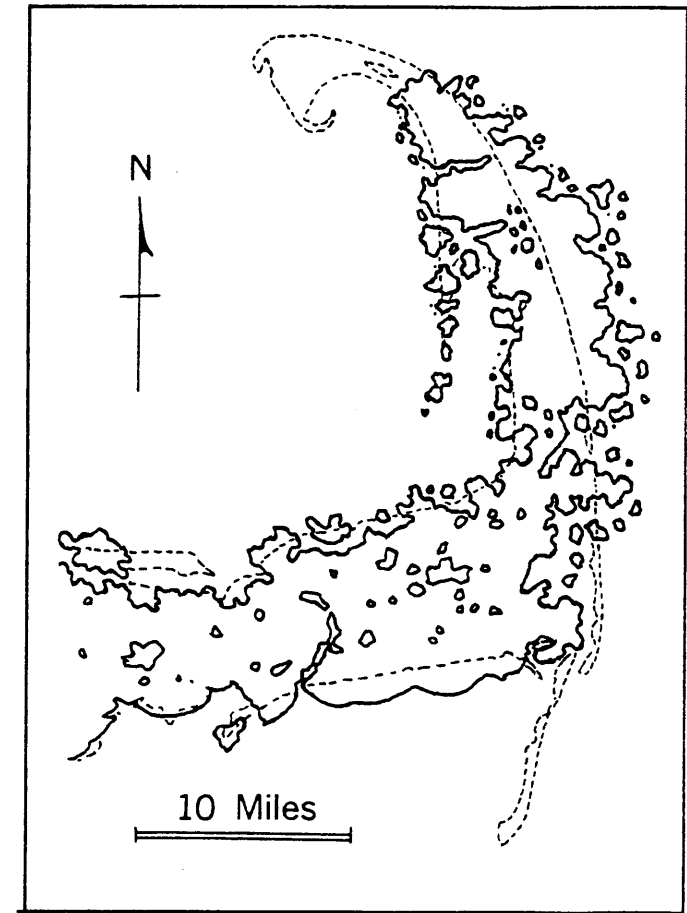


REGION I was first introduced to Cape Cod just over a year ago. Coming from the Midwest, I found Cape Cod to be a place of strange and alluring beauty. The second time I ever saw the ocean and the first time I ever saw a sand dune was from Cape Cod. The cape has an incredible variety of beaches, dunes, forests, marshes, and ponds. Its natural beauty make it one of the most touristed places on the east coast. After spending two days there in the spring of 1990, I decided to make it my summer home.

Cape Cod was formed by glacial deposits in the last Ice Age and is a most unusual land form. It extends out 50 miles into the Atlantic ocean from the Massachusetts coastline and then extends north another 50 miles. At its widest, it is only 10 miles across. Its close proximity to the ocean on two or three sides gives the cape and island-like climate being cool in the summer and warmer in the winter relative to inland.

Cape Cod has not always been its present shape but is the result of constant carving by wind and waves. The side facing the east,

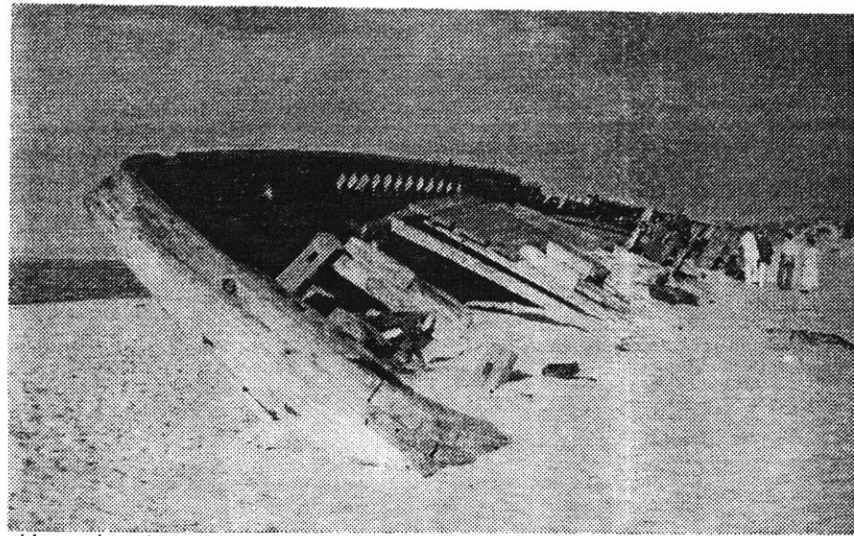
known as the outer cape, is the most exposed, weathered side and is eroding away by three feet a year. The result is the smooth curve and steep shorelines of the outer cape. The inner cape is relatively protected by Cape Cod Bay and has a more irregular coastline consisting of numerous inlets, marshes, and tidal flats.



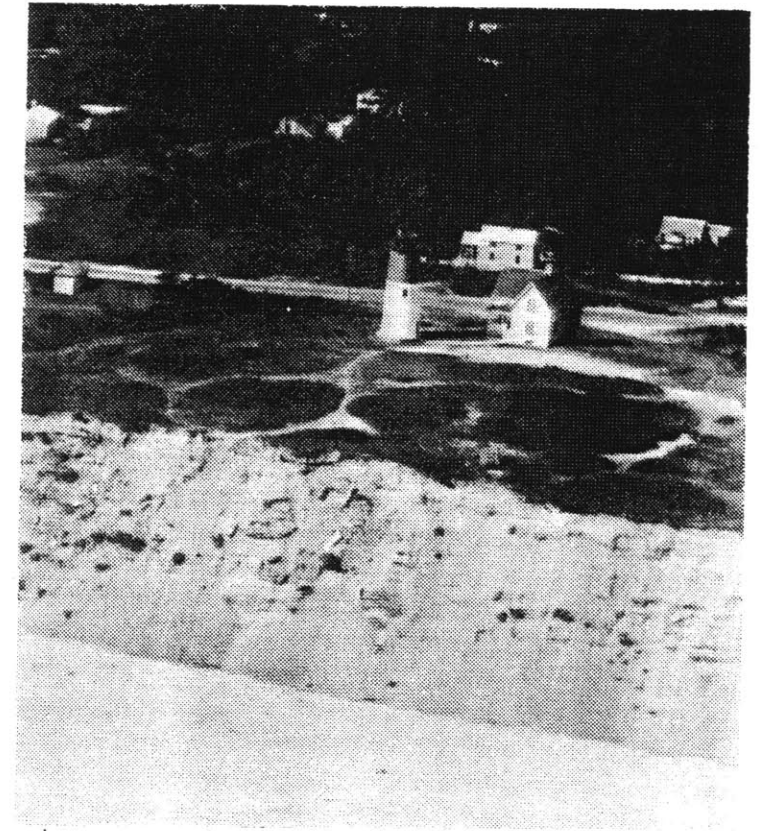
Cape Cod after Ice Age, and today (dotted)



typical dunes, Cape Cod



shipwreck, outer cape



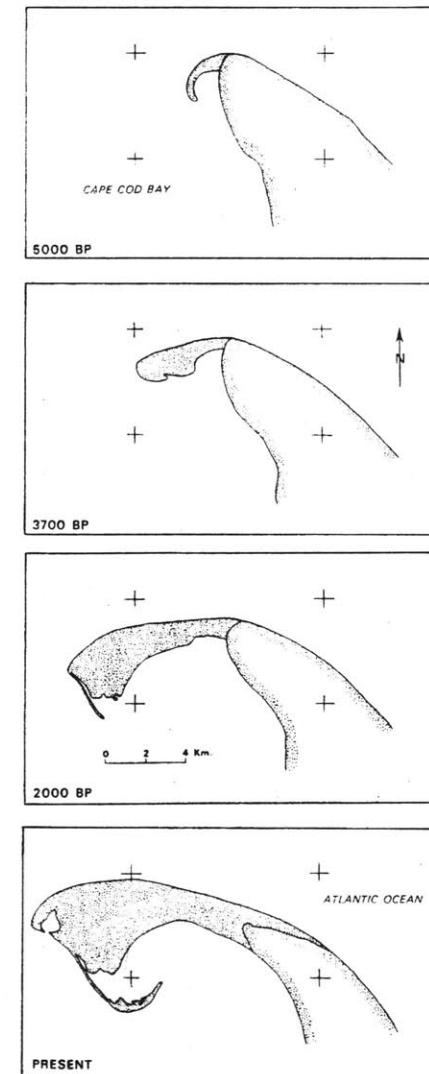
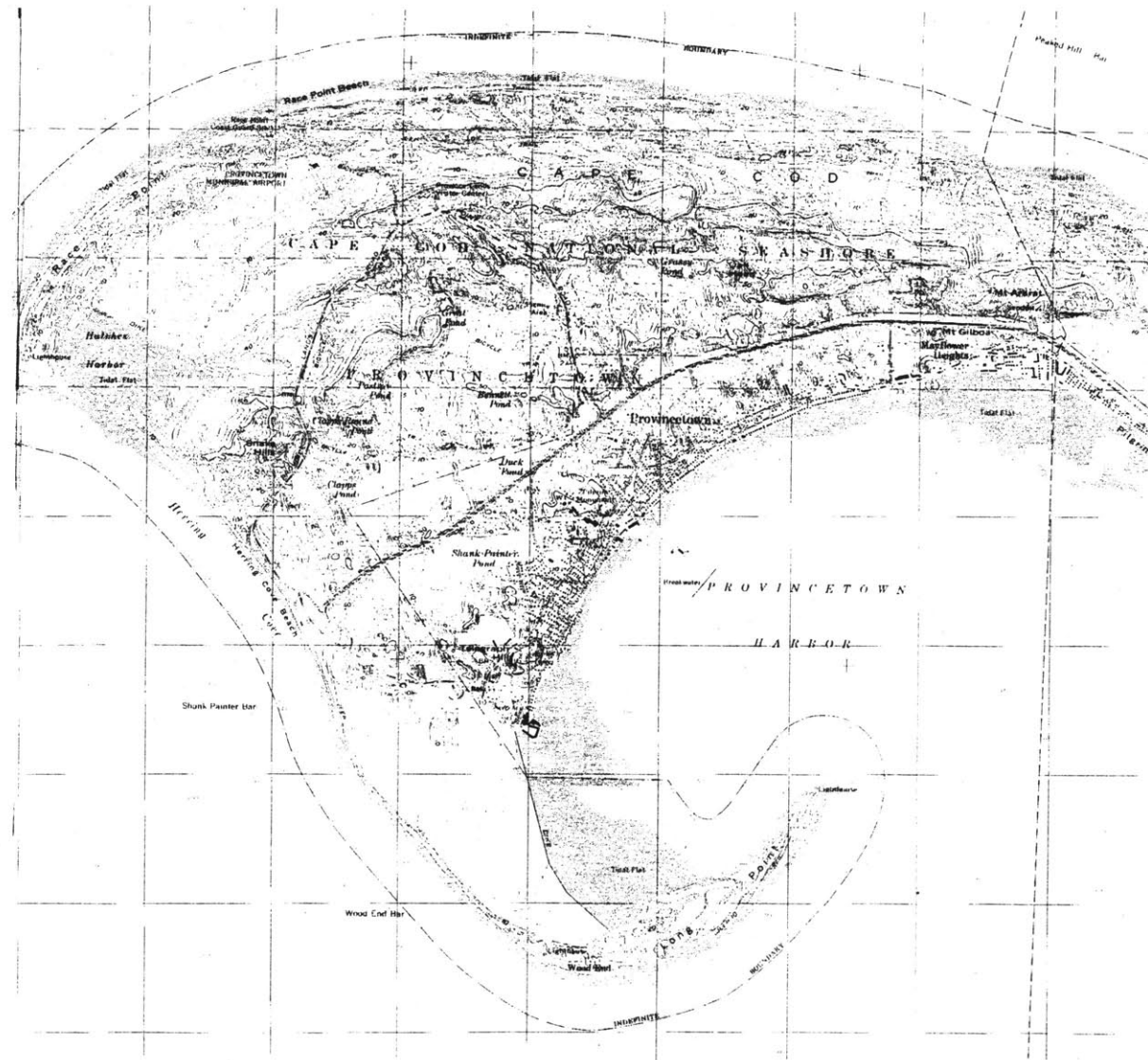
shoreline, outer cape

PROVINCELANDS At the northernmost end of Cape Cod are some of the most interesting lands (geologically) on the cape - the Provincelands. These lands were not part of the original cape and have been formed by 8000 years of wind and wave action which has transported tons of sand. The result is that the Provincelands are flat and sandy with constantly changing dunes. The Provincelands

may become an island soon. The neck which connects it to the main cape is narrowing. 3000 years ago it was 3 miles across. Today it is only 1 1/2 miles across and this includes 3/4 mile of water - Pilgrim Lake.

Living in the Provincelands last summer, I became fascinated with changes especially along the beaches. Most my evenings were spent surf-fishing at Race Point beach which is on the

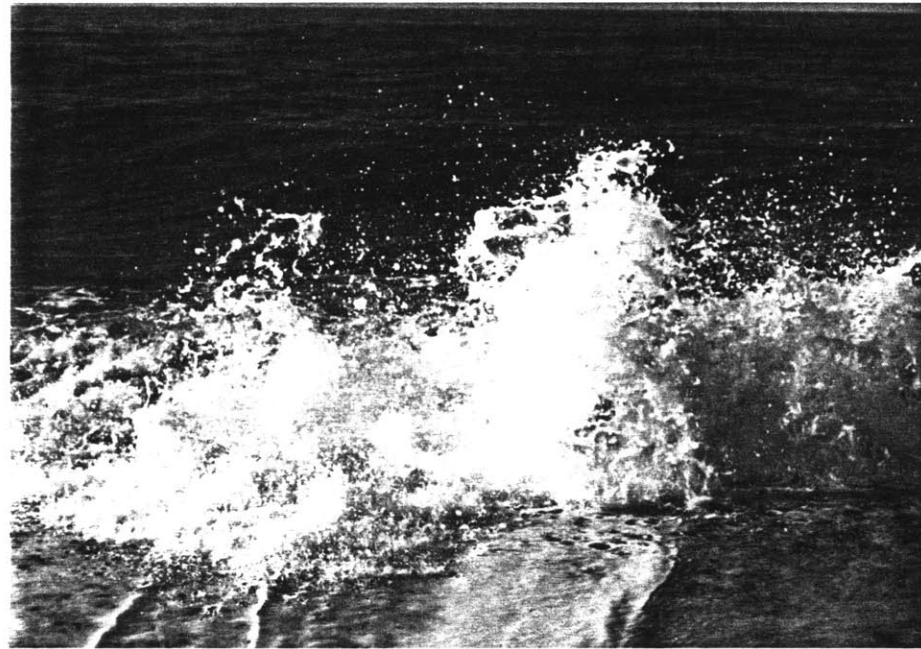
outer cape of the Provincelands. It was here that I became acquainted with the the changing shape of the beach. During the summer, the beach changed slowly but noticeably with the fluctuations in tides, and especially after storms. In general, it was one smooth sweeping curve all summer long. When I went back in the early autumn, the beach had a series of inlets and looked completely different. I felt that the intimacy I had attained with this beach was now lost. Returning again in the spring I noticed that the beach had begun to smooth out again. I realized that the beaches here are always slowly changing and that an occasional 'noreaster' - sometimes as strong as a hurricane - can dramatically change the shape of a beach overnight.



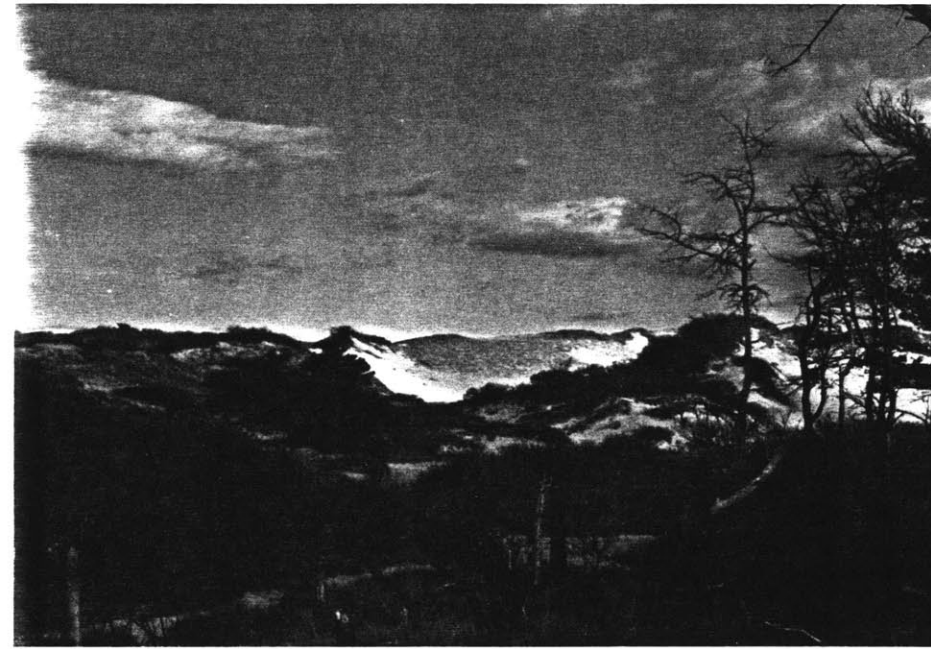
The growth of the Provincelands

*“such beaches as are fashionable are here
made and unmade in a day, I may almost say,
by the shifting of the sands”*

Thoreau, on the Provincelands.



Race-point Beach, Provincelands



sand dunes, Provincelands

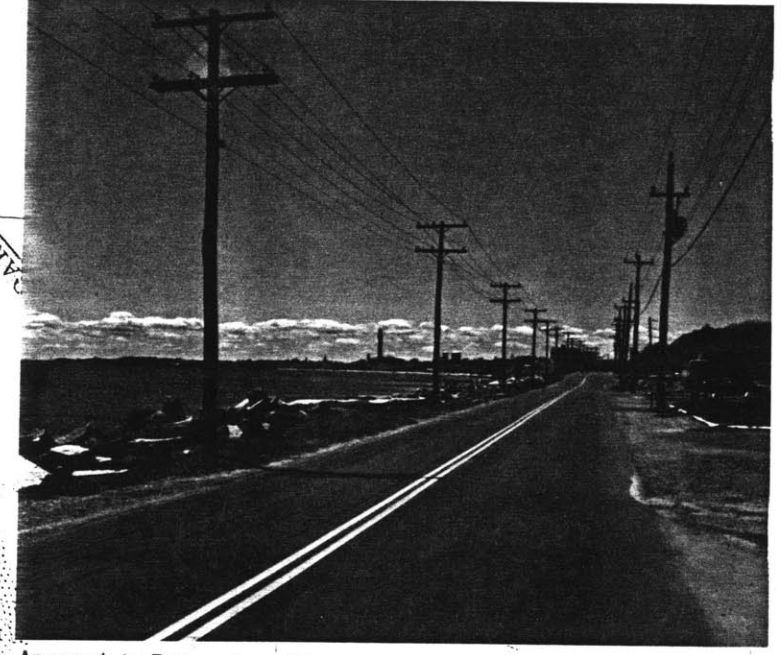


sand erosion fence, Provincelands



PROVINCETOWN On the inner side (bay-side) of the Provincelands sits the town of Provincetown. It was once a major Whaling/ fishing village but is now mainly a vacation resort.

I still vividly remember my first drive into Provincetown. After catching glimpses of the ocean on both sides, a large set of dunes and a lake appeared to the right. The road curved and then ran parallel to the water. Small vacation cottages were strung along between the road and the ocean. In the distance, a large stone tower marked our destination. It was a cold gray overcast day, but this seemed fitting for this small seaside village. Knowing this to be the furthest point of Cape Cod made our sense of arrival even stronger. Although we were to end in a town, to me this was the frontier.



Approach to P-town from Rt. 6A

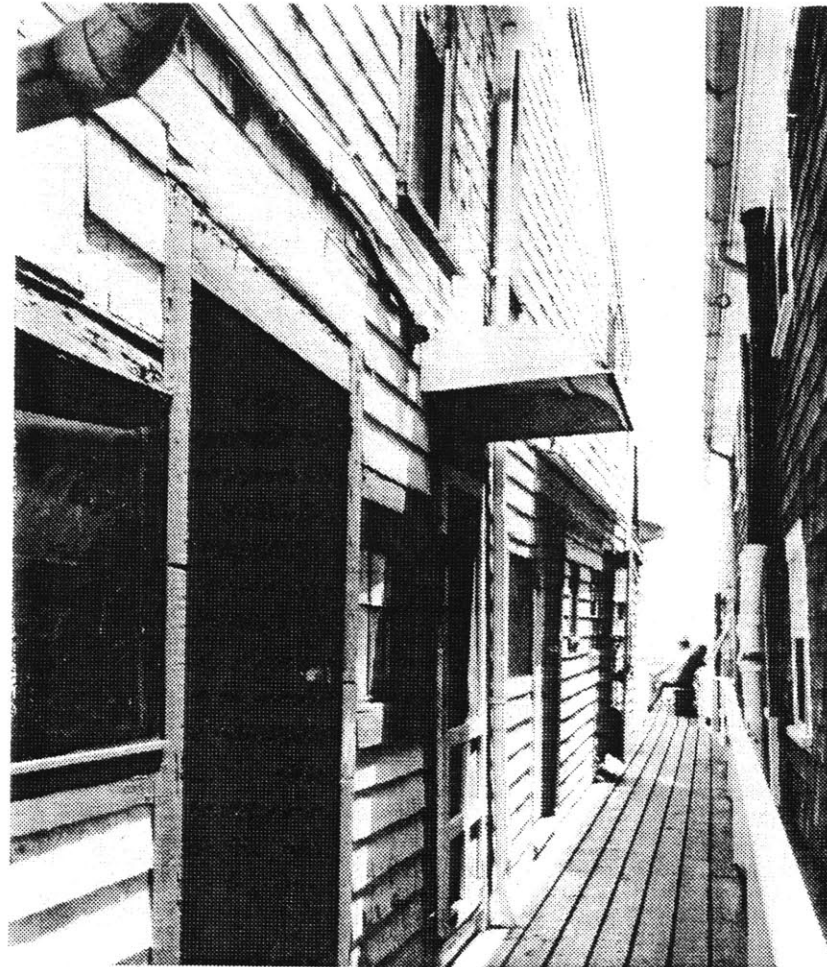
After arriving in the city, our first task was to find a hotel. Starting in the center of the town we drove down the length of commercial street which is the main street in the town. Between the narrowly spaced buildings on the left, we occasionally caught glimpses of the harbor. The further we drove, the less commercial the street became. The street curved at a coastguard

station and became very residential. (This is the area I would later choose for my thesis project.). The town progressively became less built and ended at a turnabout overlooking vast marshlands. Coming from the constriction of the narrow street, the marshes seemed even more open. Beyond the marshes and harbor was a large finger of land with two small lighthouses.

Beyond this was the expanse of Cape Cod Bay and then land again, then the ocean. We realized that this was the land we had traversed during our drive.



Provincetown from harbor



Narrowly spaced buildings, P-town



Marshes, P-town

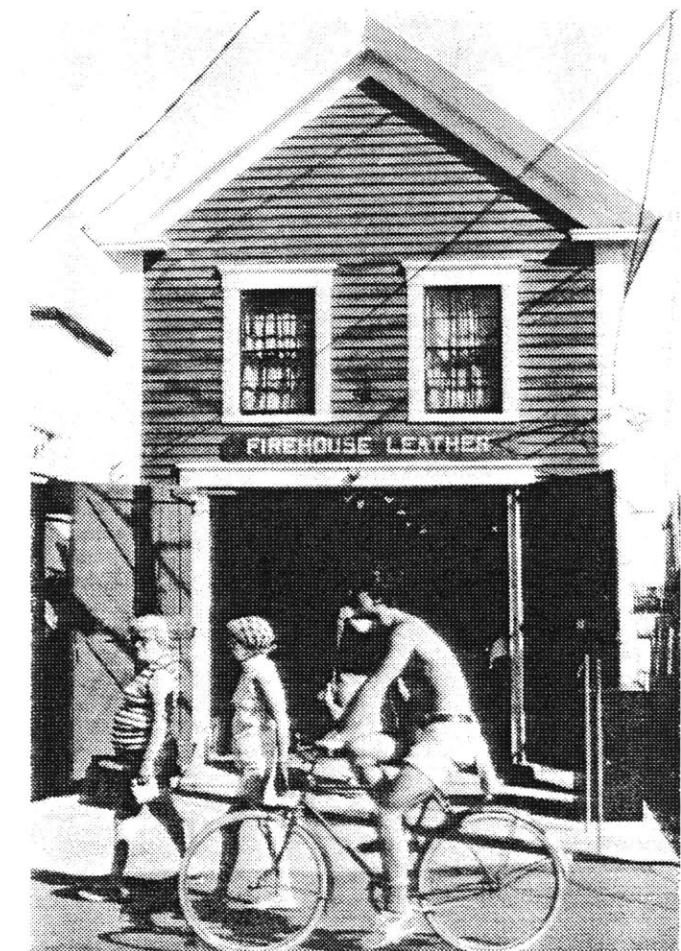
Hunger had killed our urgency to find a place to stay so we returned back to the center of the town to find food. We parked easily(not knowing this to be a winter luxury) and strolled down the very quiet main street. Friends had told us about the 'craziness' of Provincetown in the summer and that even walking down Commercial street was difficult. This was hard to believe; the town



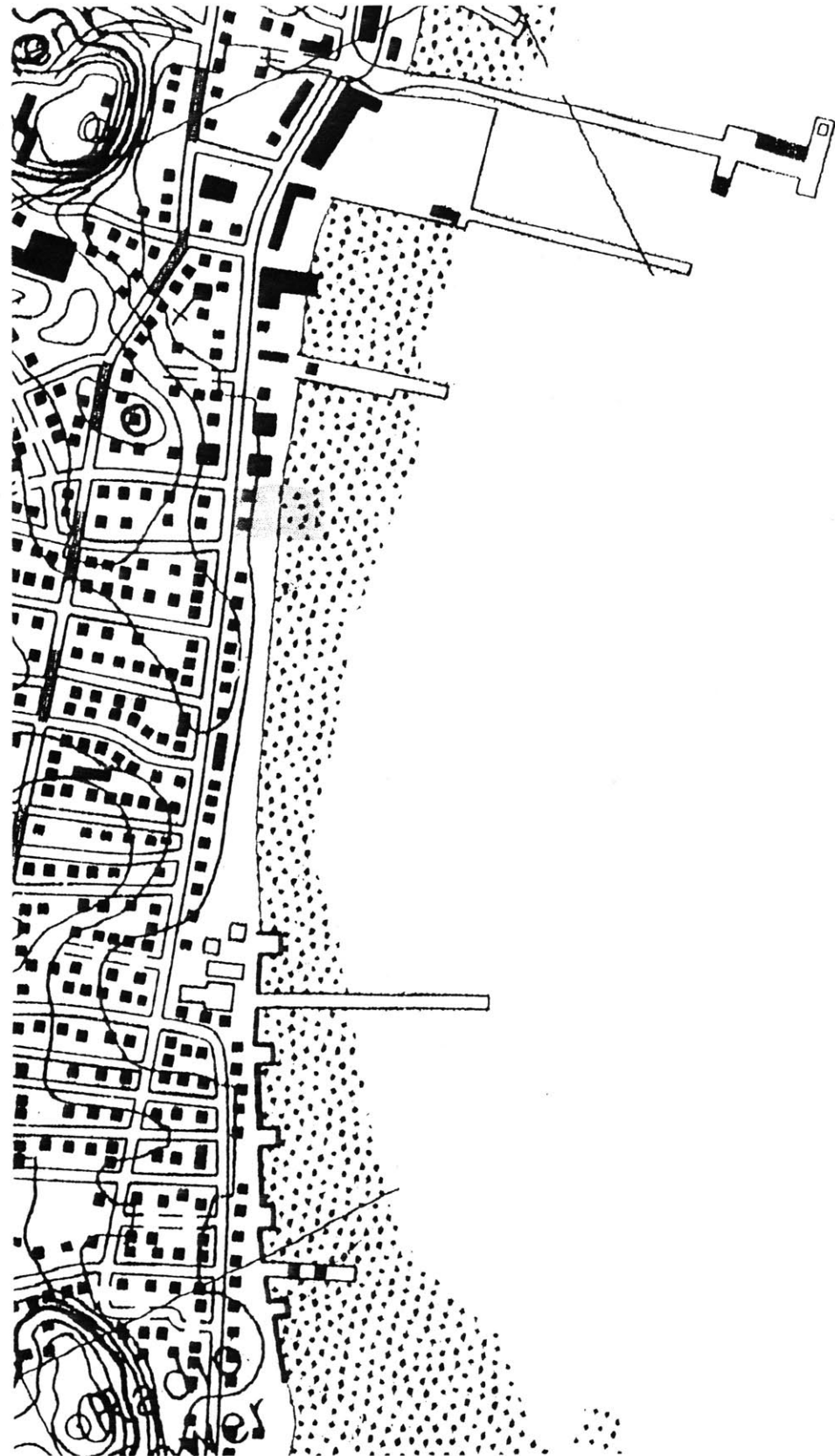
Commercial St., beginning of summer season

was completely quiet. While looking for a place to eat, we began to notice that much of the town was boarded up. The town was full of restaurants but most all had a sign in the window saying "opening June 1" or "open weekends only." Unfortunately for us it was a Tuesday in early April; June first was too far away; we were hungry and needed food.

I returned to Provincetown in the summer to work and immediately noticed a difference. The streets were constantly crowded with people shopping, eating or walking around just to be seen. The town slowed down during the prime sunbathing hours when everyone headed for the beaches. I later found out that the winter population (or 'year-rounders') is only 4000. In the height of summer the town can swell to as much as 75,000 people.



Commercial St.



SITE The site I chose for my project is beyond the coast guard station at the west end of Commercial street- away from the heavy peopled downtown area. It is in a residential built-up area. The front of the site faces Commercial street which is lined with fairly typical cape homes. The back of the site faces onto the harbor and enjoys a view over many layers of land and water. The harbor at this point is the beginning of a large tidal flat that culminates in

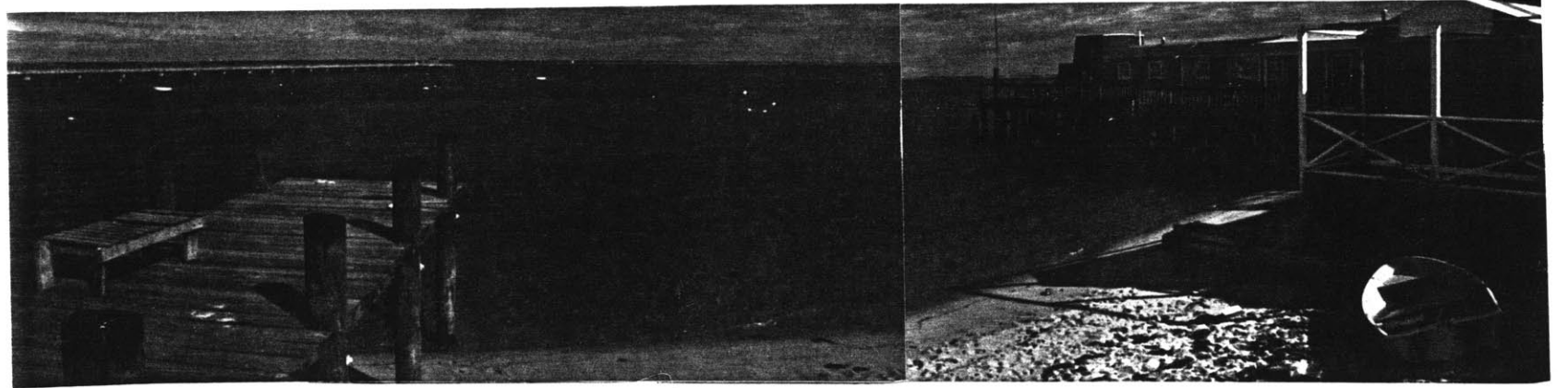


tidal flat at site, view towards marshes

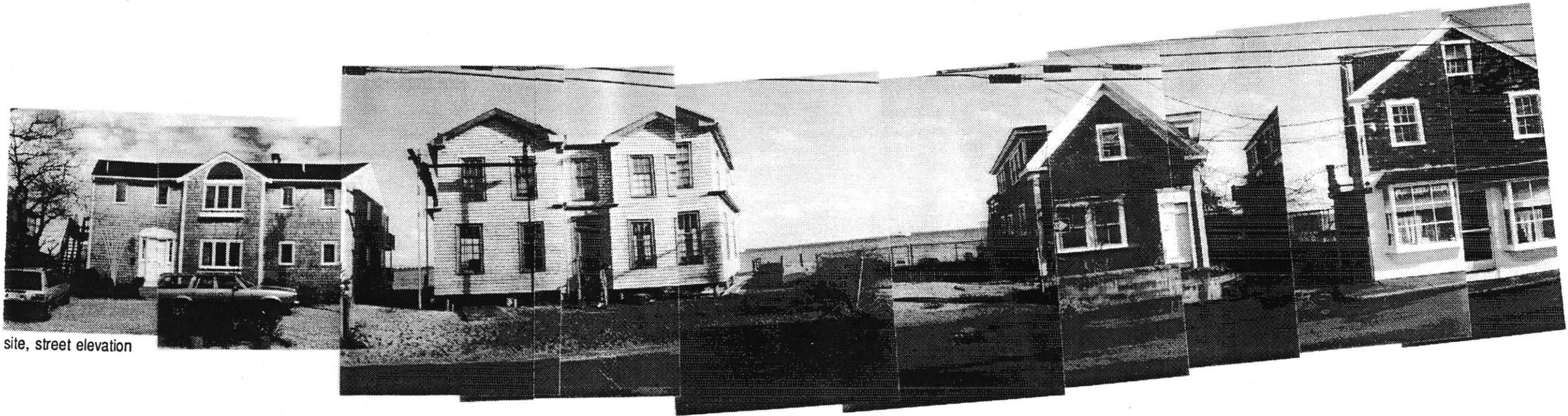
marshes to the west. Here the tide fluctuates over 12 feet vertically and over 500 feet horizontally in a cycle of 12 1/2 hours. At high tide, the ocean comes right up to the seawalls rendering the tidal flats/ beaches unwalkable. The low tide goes out over 500 feet here and makes strolling easy; a little further west one can walk out to Long Point at low tide which is over 2 km away. This tidal zone is very rich biologically; the high tides bring in nutrients and then recede allowing air and sun to promote growth. The tidal flats in this area are rich in shellfish, worms, and seaweed. Seagulls take advantage of the receding tides as a chance to feed.

Many people build over the tidal flats with piers or small projections. As one moves closer to the marshes, both the tidal flat becomes larger and more piers are built. These piers are built on wood piles which erode over time and need replacement. New piles are placed next to the decaying ones; the result is a forest of columns under most of the piers. Many of the piers have small buildings on them. Being out over the water, these buildings are fully exposed to the cycle of the day's sun.

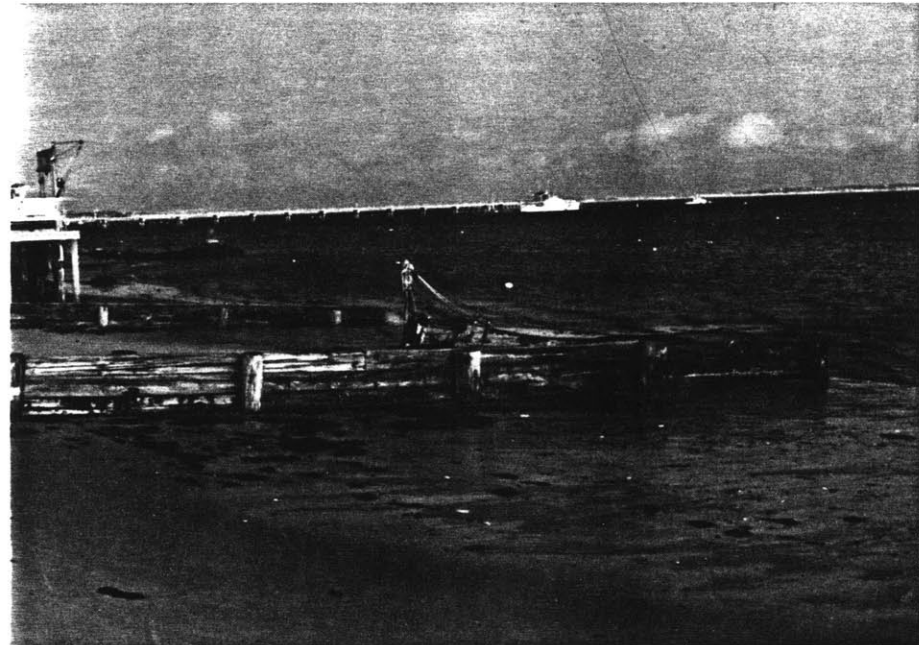
Although this area is relatively protected by Long Point, the sands still shift considerable. To slow this erosion, many residents construct stone or wood jetties - usually at property lines. These walls catch sand as it moves along the beaches. This direction of sand movement changes seasonally, piling up on one side of the jetty during the winter and then the other side in the summer.



harbor view at site, low and high tides



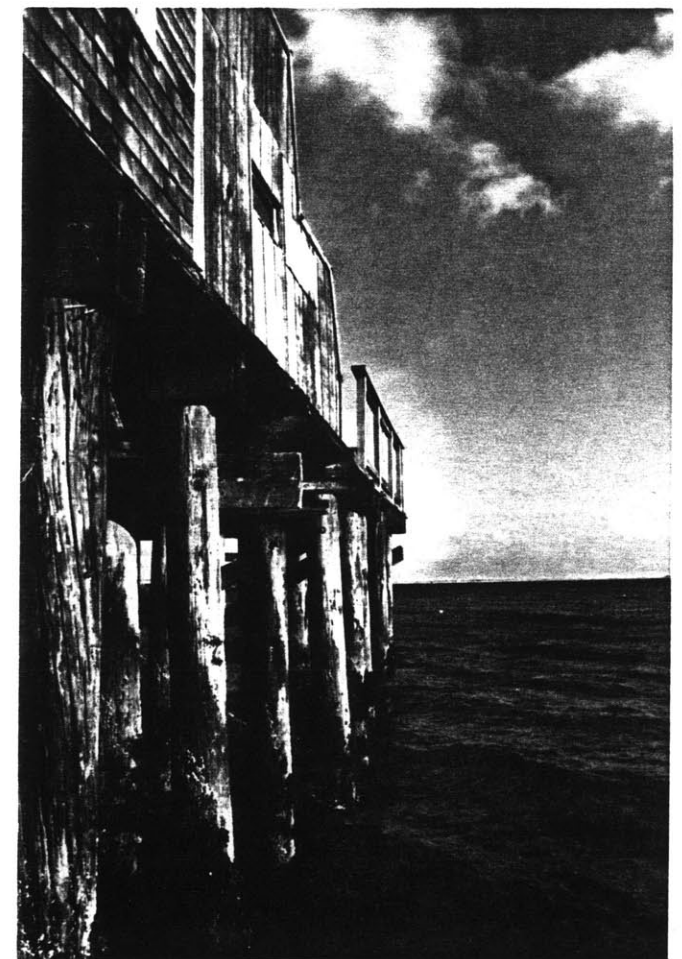
site, street elevation



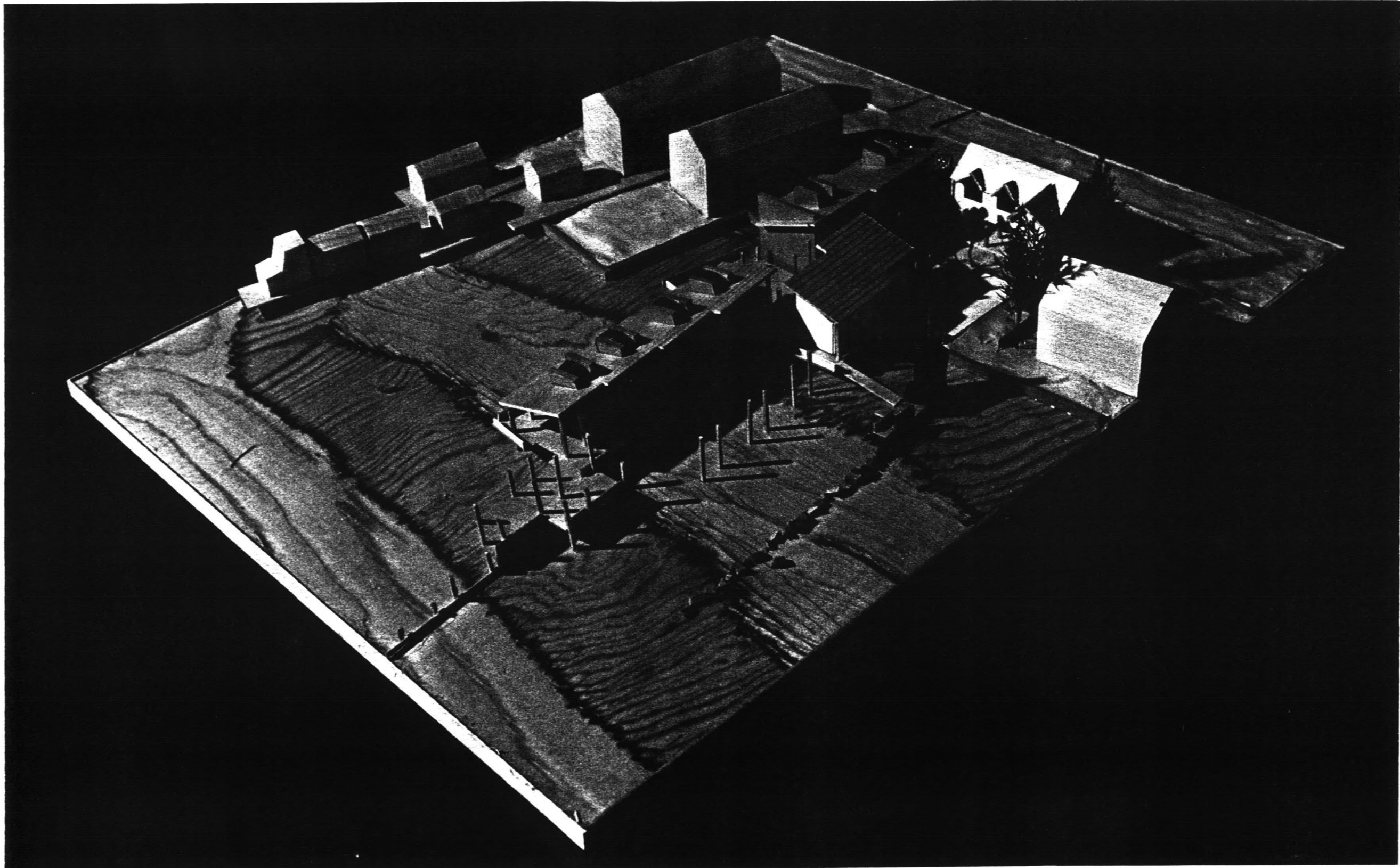
wood jetties to slow sand erosion



piers and small buidings

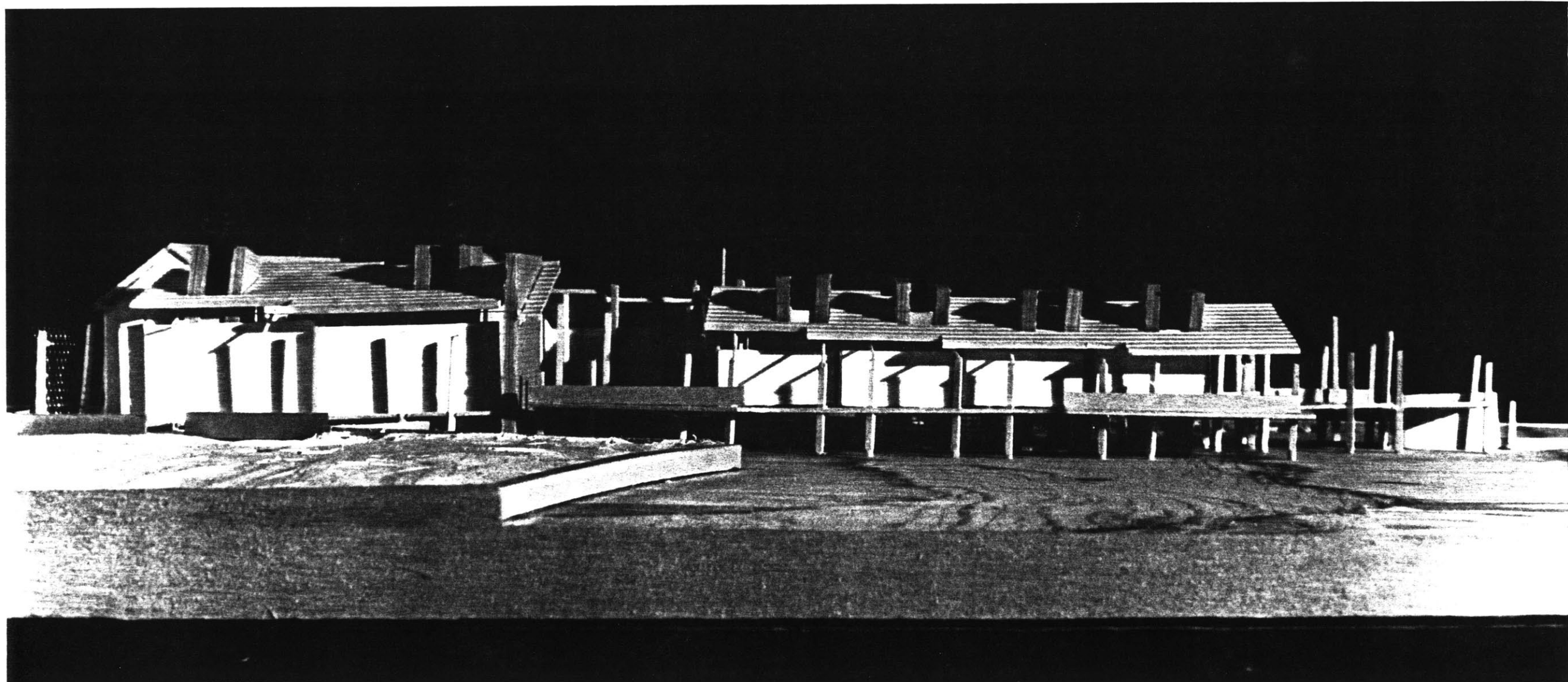


pier

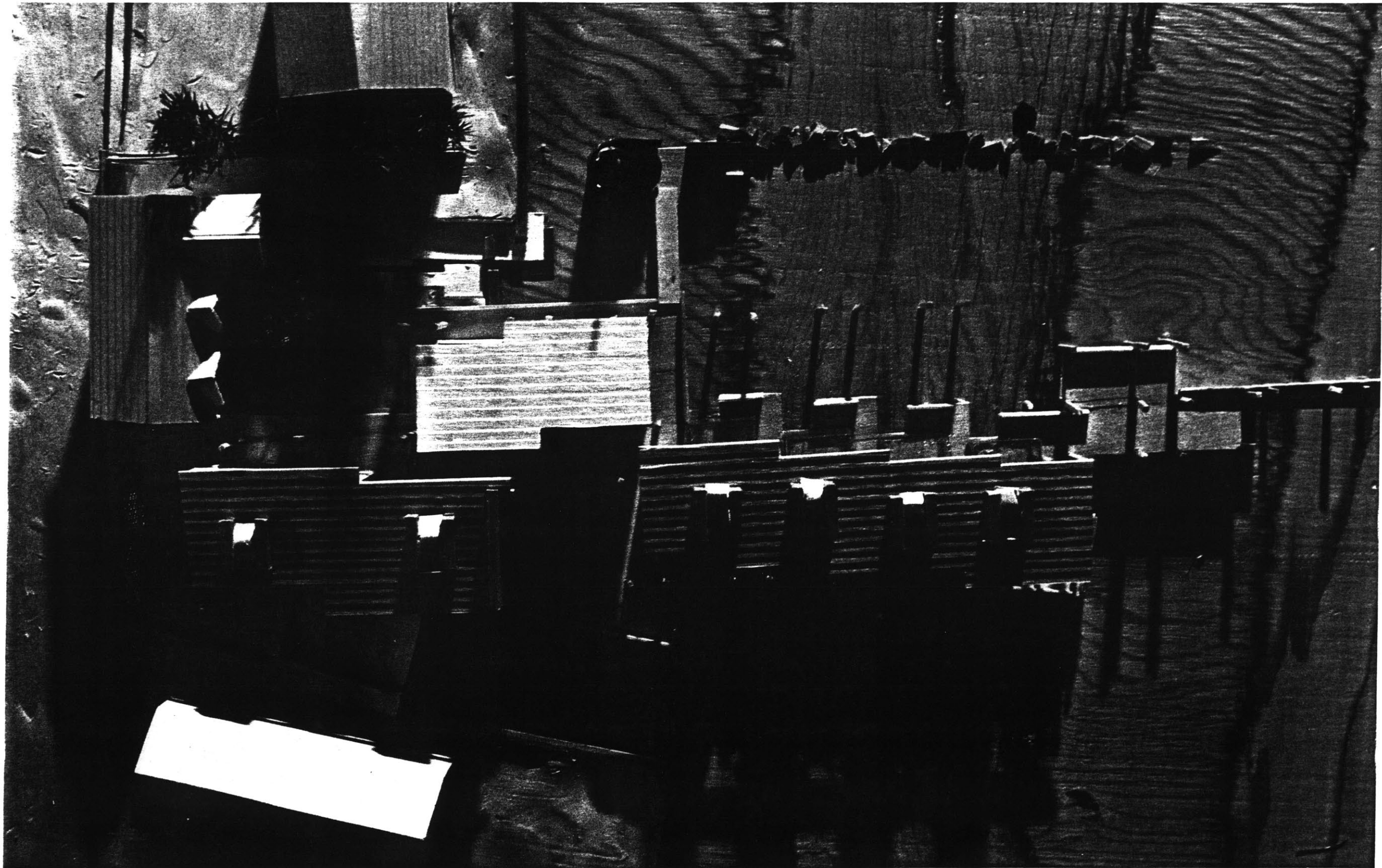


model-plywood, basswood, clay

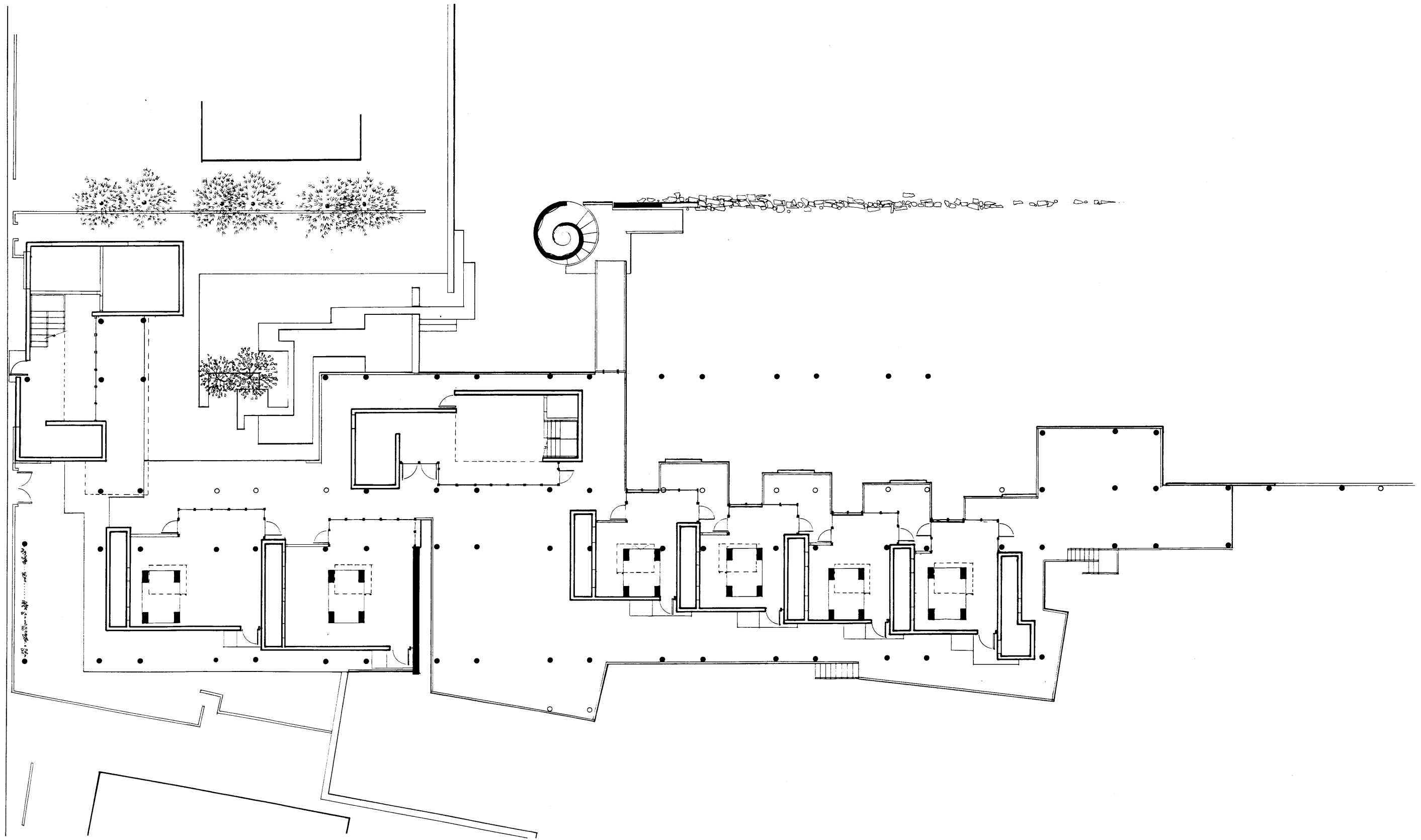
THE DESIGN



Elevation from beach

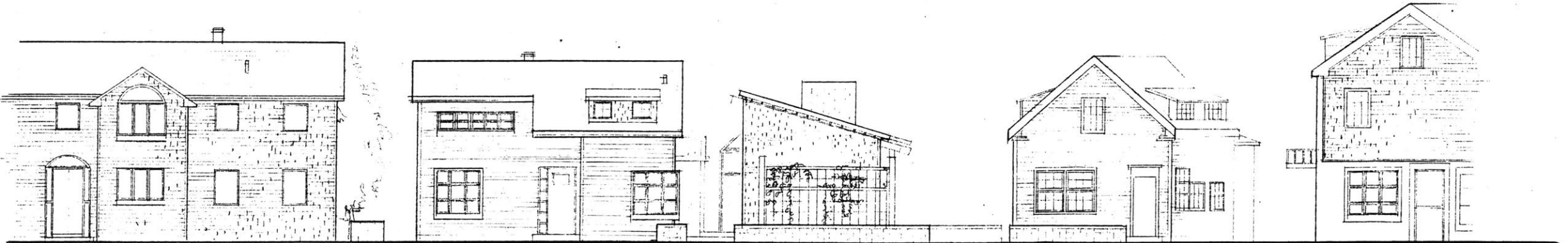


Model from above



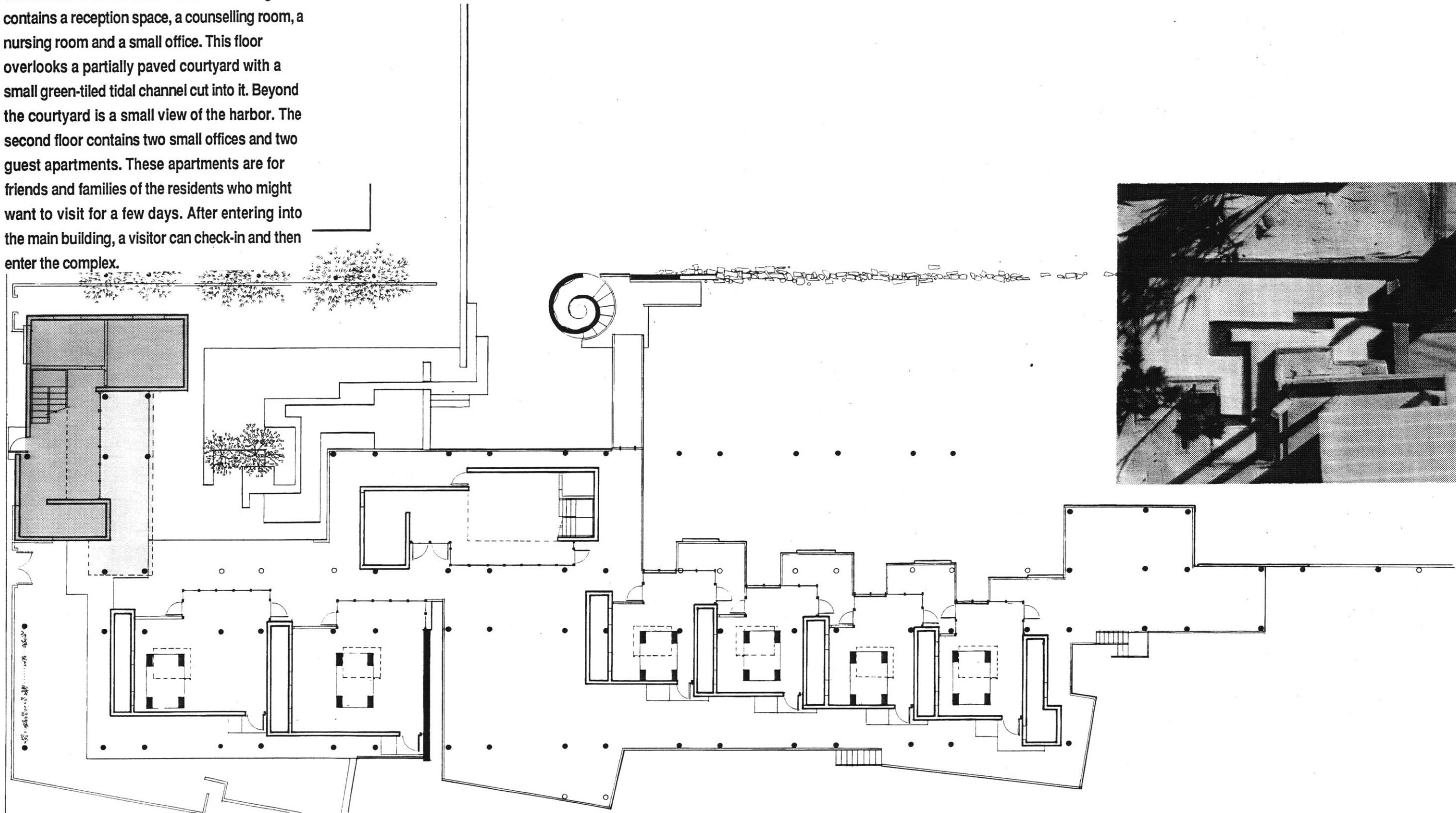
CONTEXT It is important for the hospice to fit into the streetscape and not appear as something out of context. In my hospice design, I want the people to feel part of a larger community and not be separate from it. The face to the street attempts to fit into the existing scale, vocabulary, and use of materials used in the architecture in this area. In this part of town, the public buildings come up to and define the street edge. Private buildings are set back off the street and have a low wall that defines the public street edge as well as a small

semi-private front yard. In my project, the entry administrative building uses this vocabulary and comes up to the street edge. A visitor would enter here. The more private residents quarters step back from the street and use a low wall to define a small semi-private front yard. The residents would enter here - easily passing the main administrative building.



ADMINISTRATIVE BUILDING

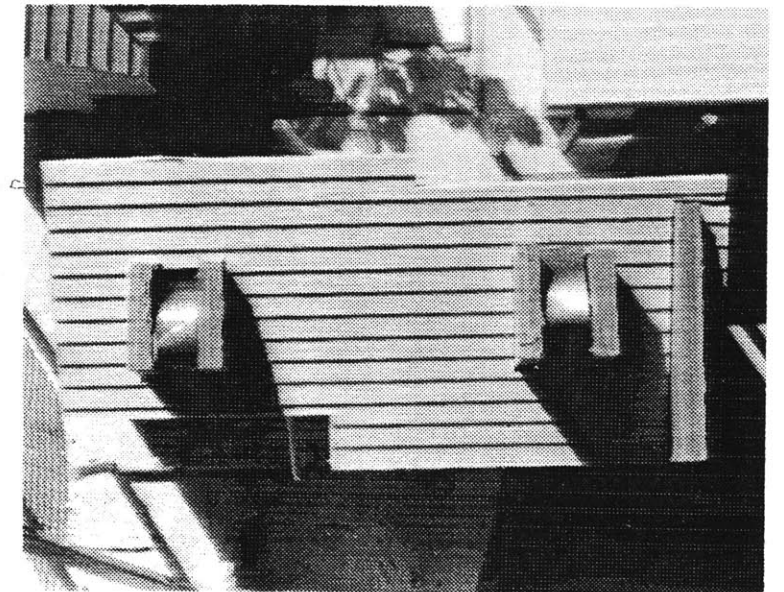
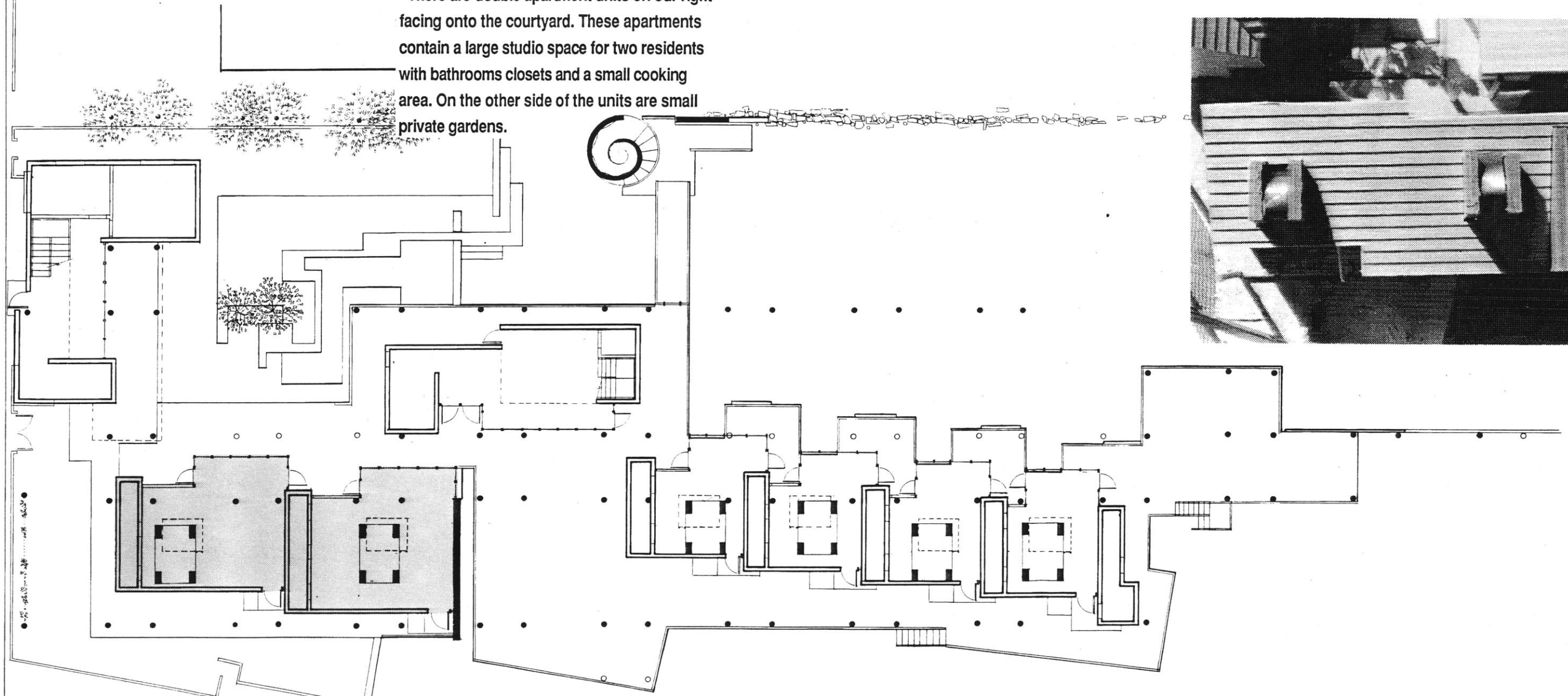
The first floor of the administrative building contains a reception space, a counselling room, a nursing room and a small office. This floor overlooks a partially paved courtyard with a small green-tiled tidal channel cut into it. Beyond the courtyard is a small view of the harbor. The second floor contains two small offices and two guest apartments. These apartments are for friends and families of the residents who might want to visit for a few days. After entering into the main building, a visitor can check-in and then enter the complex.



COURTYARD/ DOUBLES

Leaving the main building, we exit out onto a wood deck surrounding a partially paved courtyard. This deck steps up on to a main boardwalk. This boardwalk borders a side of the courtyard. As we step up and turn left we feel as if we have entered a small private community.

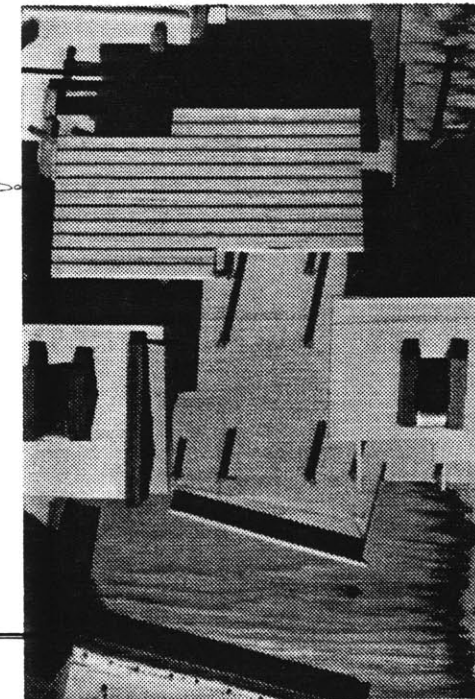
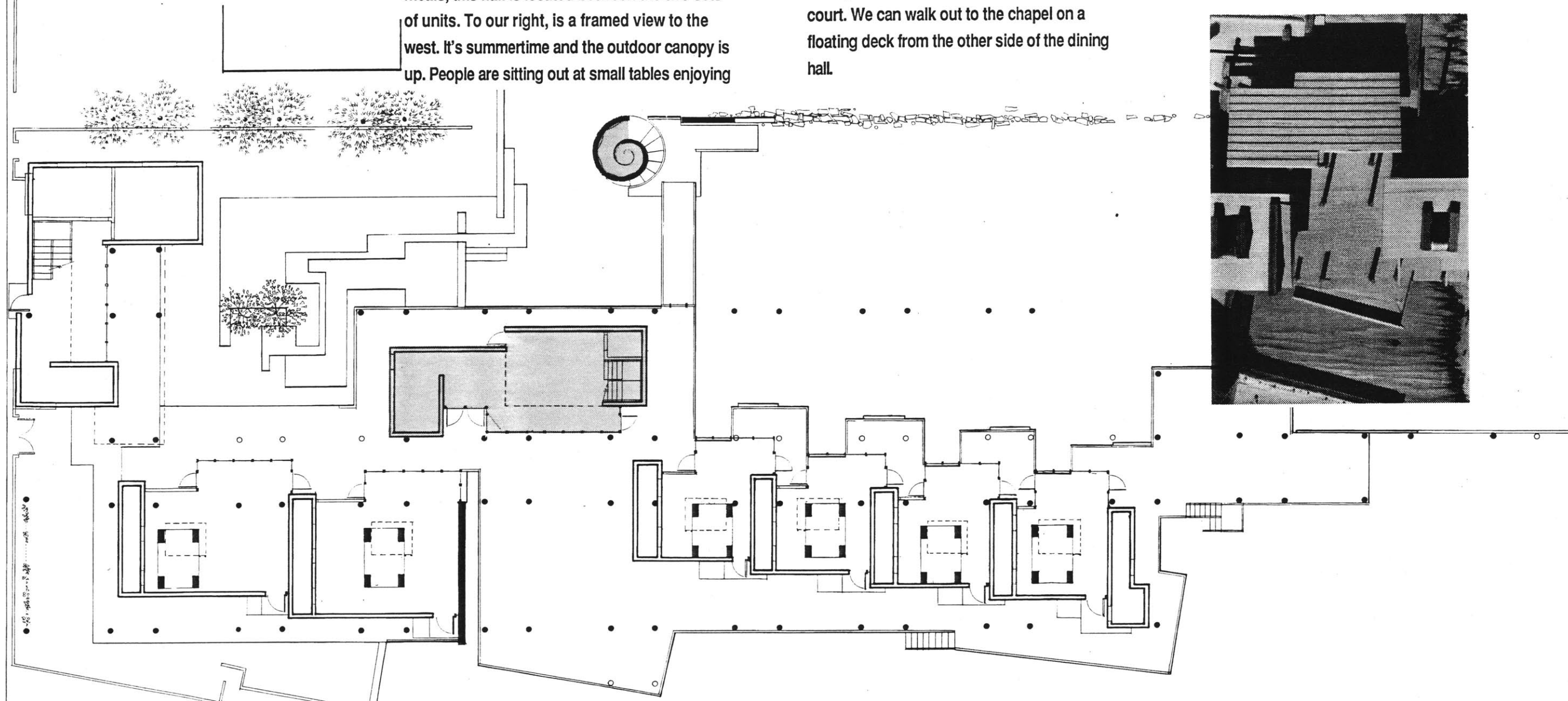
There are double apartment units on our right facing onto the courtyard. These apartments contain a large studio space for two residents with bathrooms closets and a small cooking area. On the other side of the units are small private gardens.

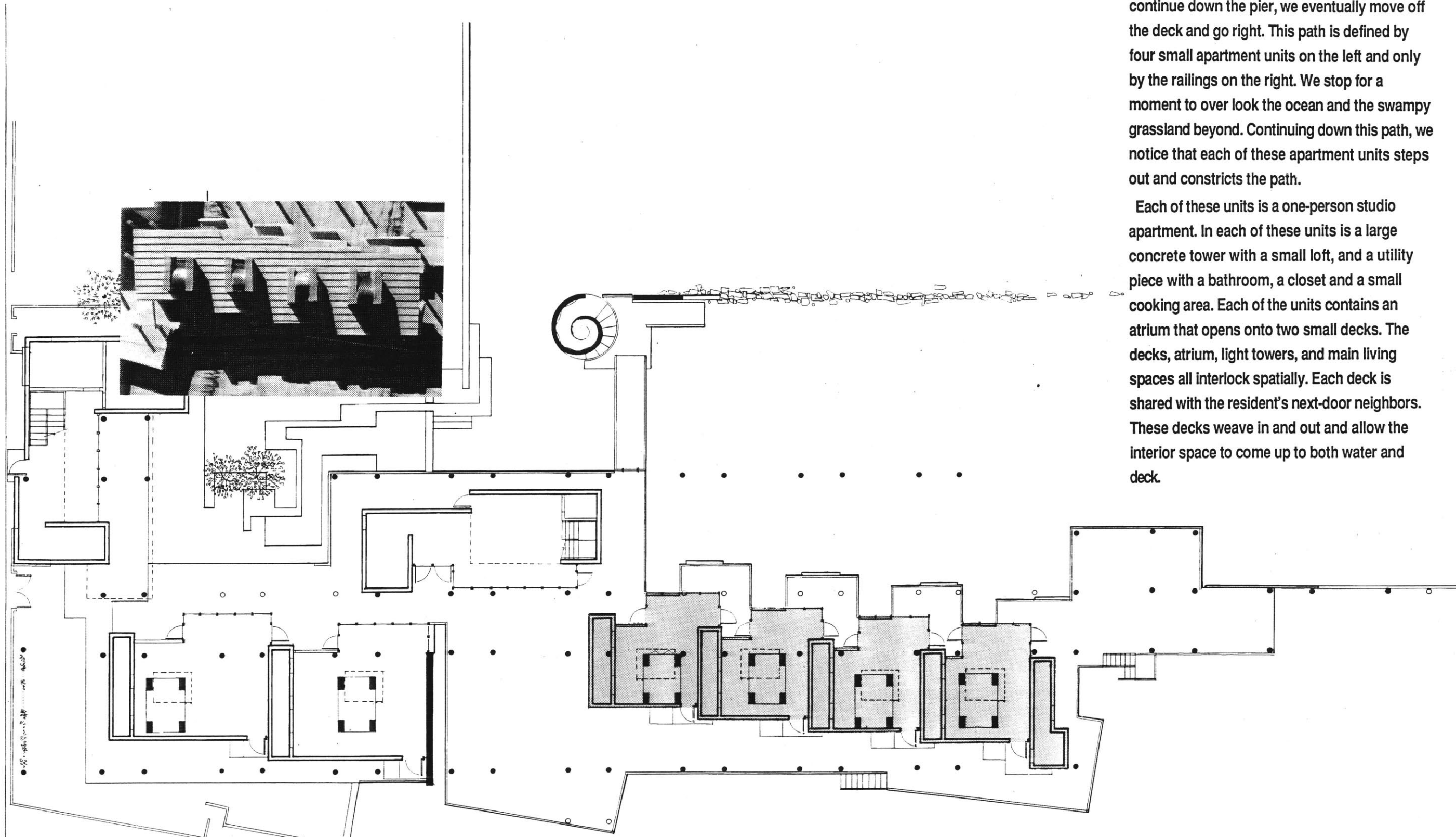


DINING HALL Continuing down the path from the doubles, we notice the small narrow view out to the ocean defined by staggered buildings on either side. We continue down this path, and then move onto a large deck with a dining hall to the left. The dining hall is also used as a living/ congregation space. Since many of the residents days revolve around meals, this hall is located between the two sets of units. To our right, is a framed view to the west. It's summertime and the outdoor canopy is up. People are sitting out at small tables enjoying

dinner in the long shadows cast by the trellis and canopy above. For the first time we realize that we are over water. The deck pulls away from the sea wall and heightens our sense of being over water. Today the tide is high and comes right up to this seawall.

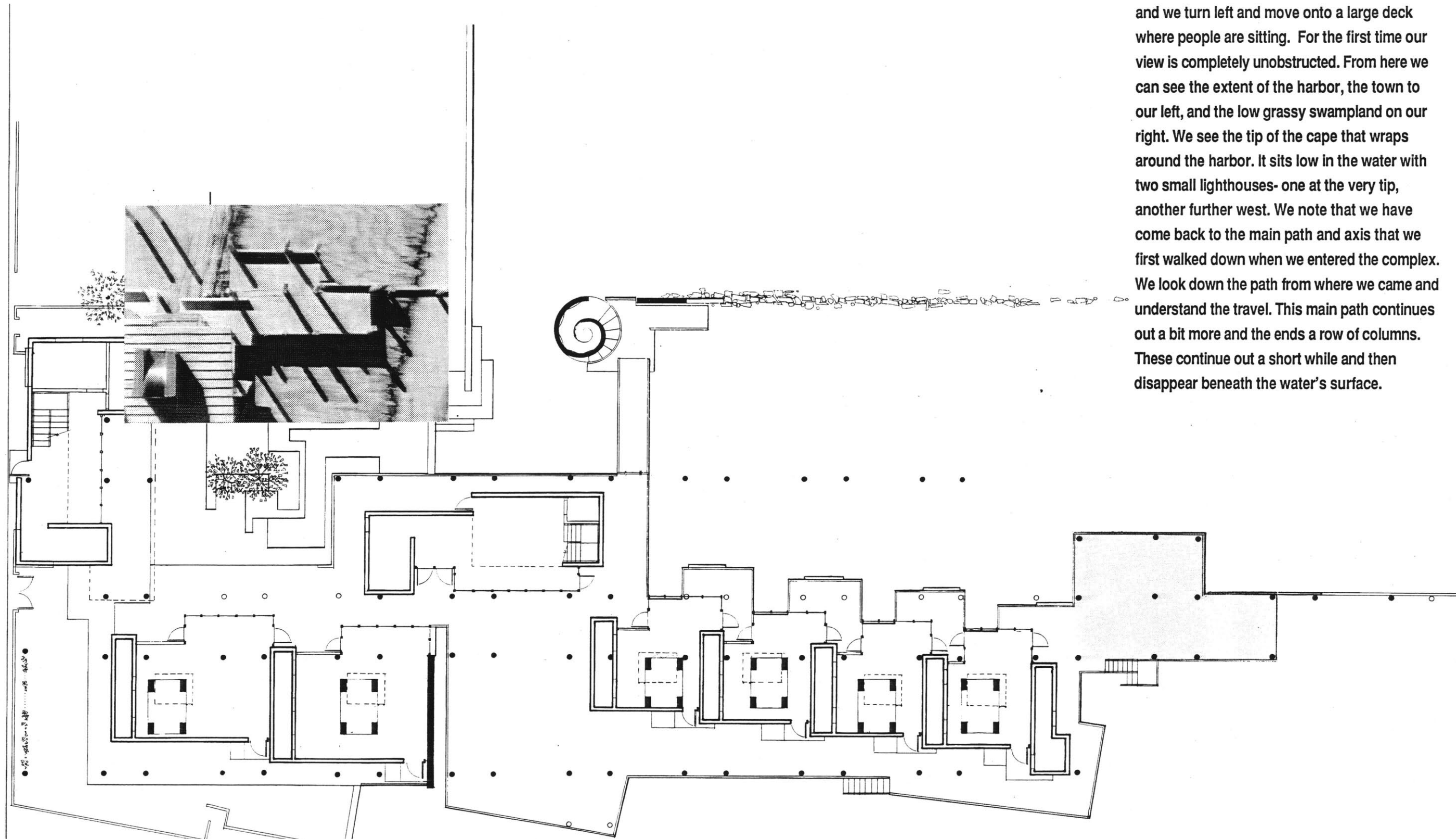
Beyond the dining hall is a small concrete chapel. This helps to define the space of the two courtyards - the earth court and the water court. We can walk out to the chapel on a floating deck from the other side of the dining hall.





ONE-RESIDENT UNITS As we continue down the pier, we eventually move off the deck and go right. This path is defined by four small apartment units on the left and only by the railings on the right. We stop for a moment to over look the ocean and the swampy grassland beyond. Continuing down this path, we notice that each of these apartment units steps out and constricts the path.

Each of these units is a one-person studio apartment. In each of these units is a large concrete tower with a small loft, and a utility piece with a bathroom, a closet and a small cooking area. Each of the units contains an atrium that opens onto two small decks. The decks, atrium, light towers, and main living spaces all interlock spatially. Each deck is shared with the resident's next-door neighbors. These decks weave in and out and allow the interior space to come up to both water and deck.

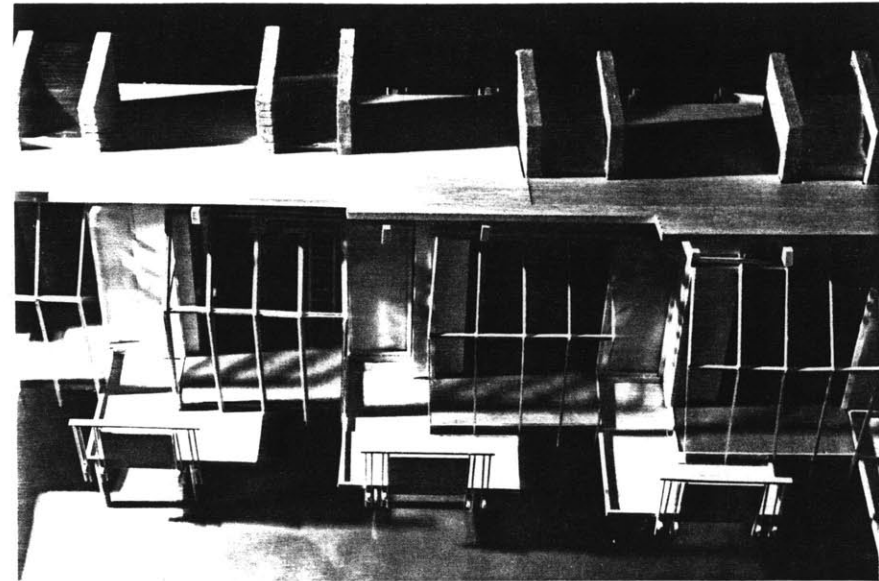


SUN DECK At the end of the last unit and we turn left and move onto a large deck where people are sitting. For the first time our view is completely unobstructed. From here we can see the extent of the harbor, the town to our left, and the low grassy swampland on our right. We see the tip of the cape that wraps around the harbor. It sits low in the water with two small lighthouses- one at the very tip, another further west. We note that we have come back to the main path and axis that we first walked down when we entered the complex. We look down the path from where we came and understand the travel. This main path continues out a bit more and then ends a row of columns. These continue out a short while and then disappear beneath the water's surface.

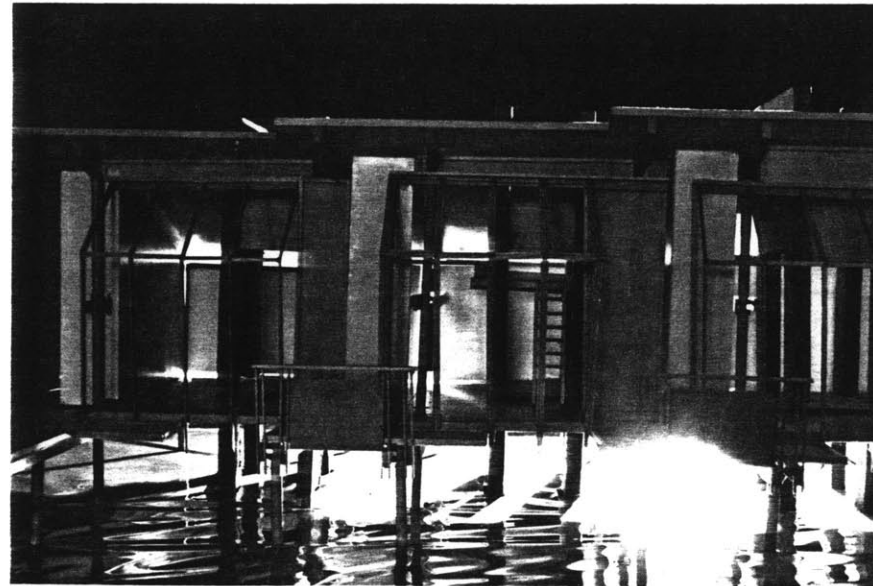
Design Ideas



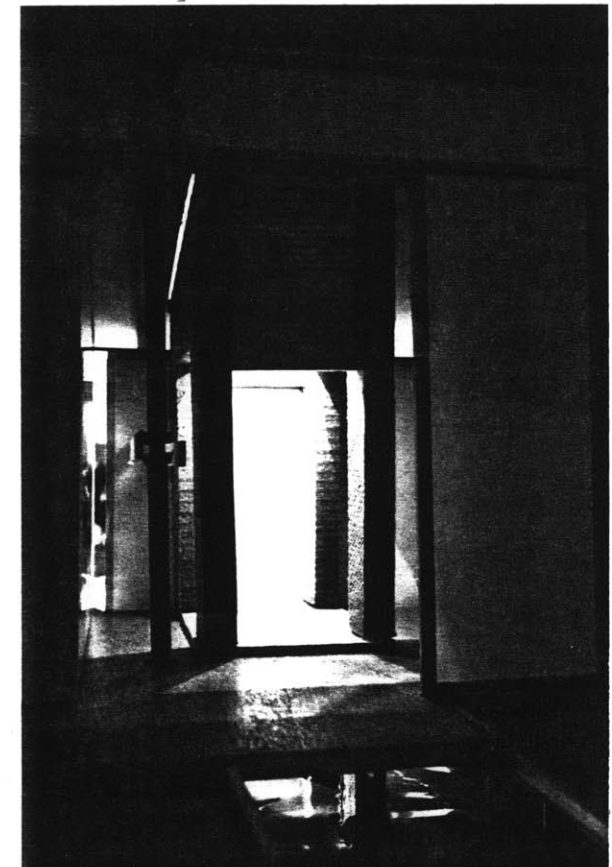
model - basswood, foamcor, acetate, vellum



resident's units

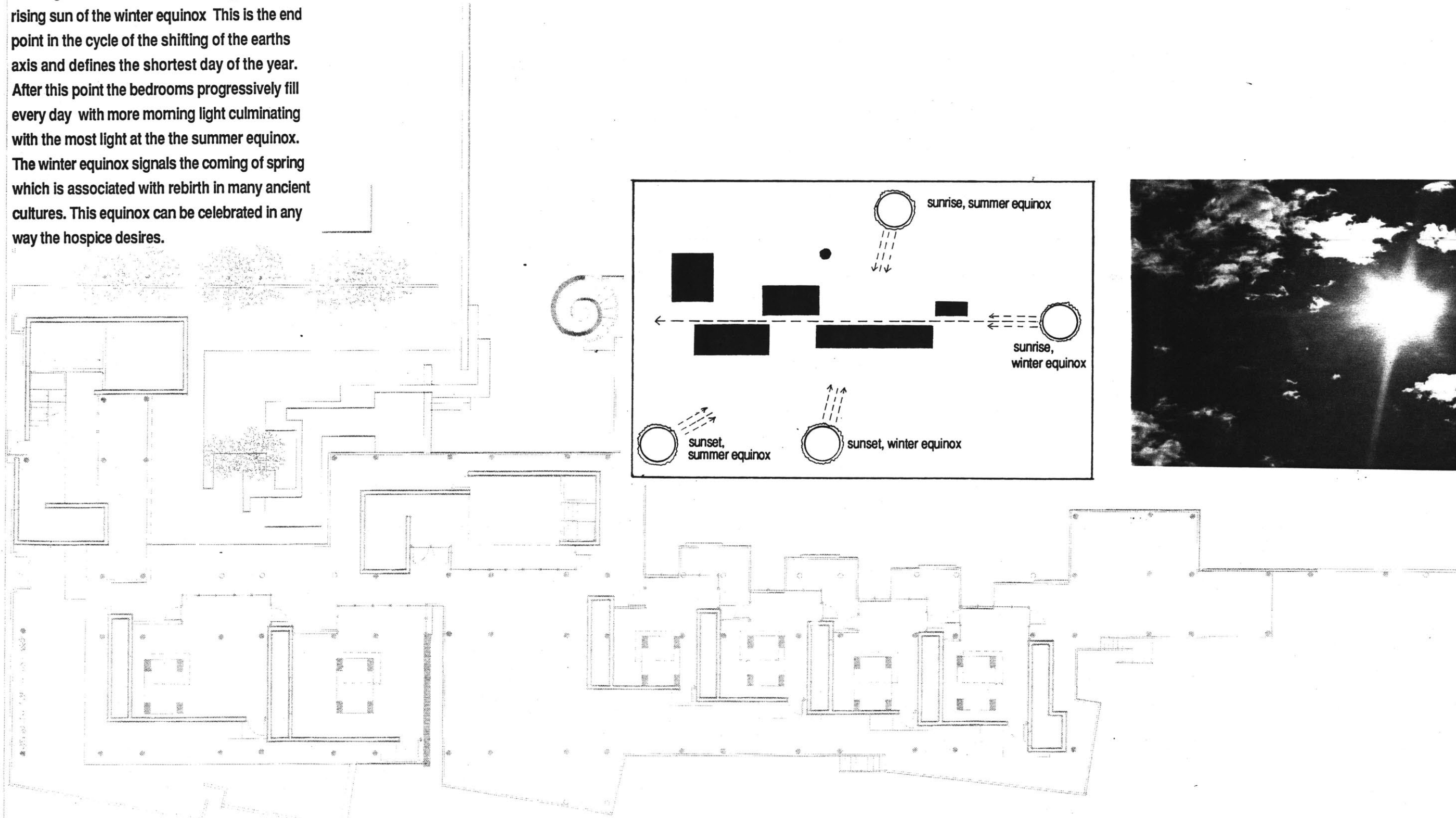
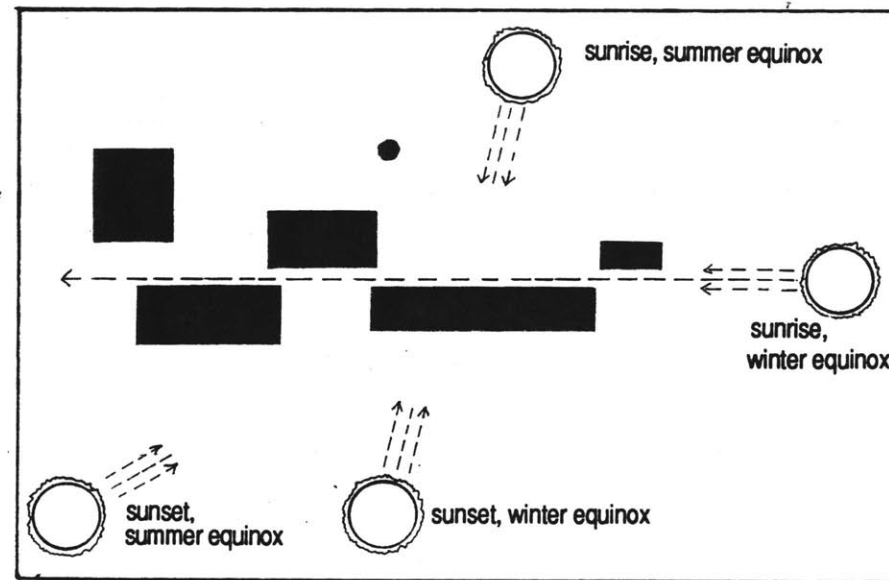


resident's units at sunset



interior of residents units at sunset

WINTER EQUINOX The staggered buildings also define a slit that is aligned with the rising sun of the winter equinox. This is the end point in the cycle of the shifting of the earth's axis and defines the shortest day of the year. After this point the bedrooms progressively fill every day with more morning light culminating with the most light at the summer equinox. The winter equinox signals the coming of spring which is associated with rebirth in many ancient cultures. This equinox can be celebrated in any way the hospice desires.

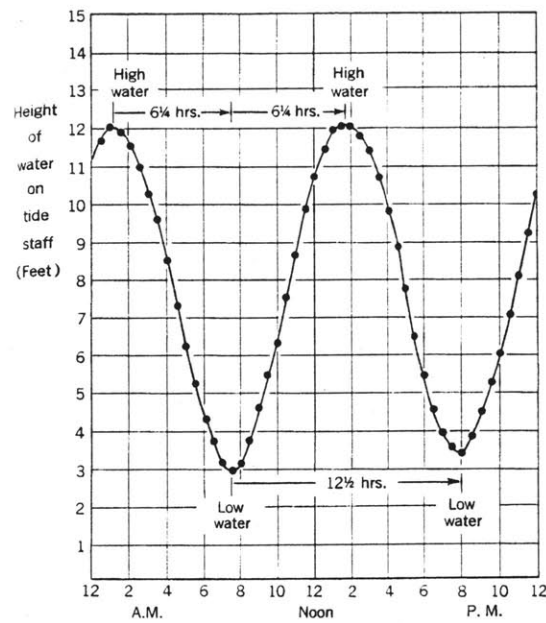


RHYTHM OF PIECES There are three rhythms in the project: towers, wood piles in pairs, and dividing walls. Each of these elements repeat at their own rate and syncopate with each other. These are an analogy to the repetition inherent to cycles as well as the overlapping of cycles that can create new patterns and cycles. The complex

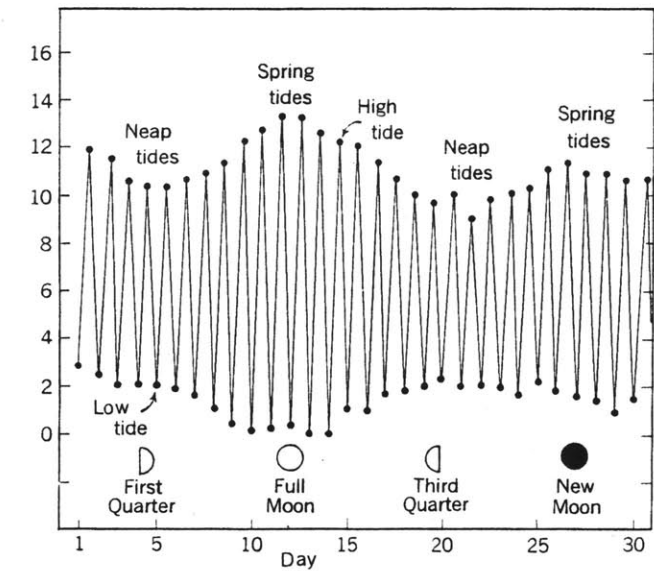
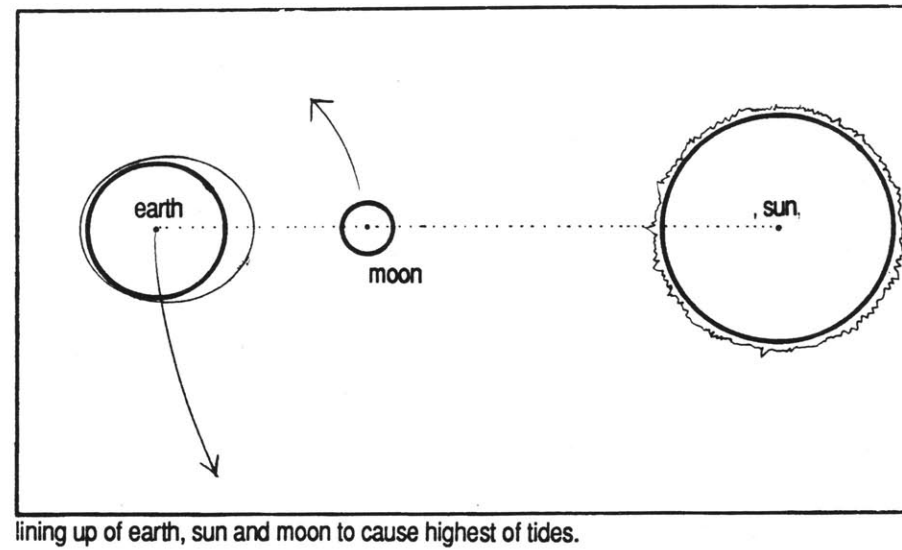
interworkings of singular cycles gives our world a richness by bringing about new cycles. These new cycles can then react with other cycles bringing about even more complex new cycles. For instance, the rotation of the earth relative to the sun gives the simple cycle of day and night, while the changing lengths of the day from 7 to 13 hours repeat annually and are due to 2

cycles - the rotation of the earth and the shifting of the earth's axis. Another result of overlapping cycles are the high and low tides which happen every 12 1/2 hours. These are the result of two overlapping cycles: the rotation of the earth; and the orbit of the moon around the earth. Like the length of the day, the level of these tides is not always the

same; they progressively get higher and lower. This occurs in a third cycle (on top of the cycle of high and low tides.) This increasing and decreasing heights in the tides result from the interplay of not two but three cycles: the rotation of the earth; the orbit of the earth around the sun; and the orbit of the moon around the earth. The coincidental lining up of the moon,



35. A tide curve for a typical day at a harbor on Cape Cod Bay. Each black dot represents a reading of the height of water. Readings are taken every half hour. (Based on data of Captain H. A. Marmer and the U. S. Coast and Geodetic Survey.)



36. Dots on this graph represent successive high and low waters over a one-month period. Note how the range varies from spring tides to neap tides. The graph is a typical example for a harbor on Cape Cod Bay. (Based on data of Captain H. A. Marmer and the U. S. Coast and Geodetic Survey.)



pattern of double piles and joists

sun and earth result in the greatest pull on the tides. This highest tide happens in a predictable third cycle of approximately 15 days. This third cycle correlates with the phases of the moon which are the result of the same three overlapping cycles. For this reason, the highest tides coincide with the new and full moons while the lowest tides occur at the first and third quarters of the moon.

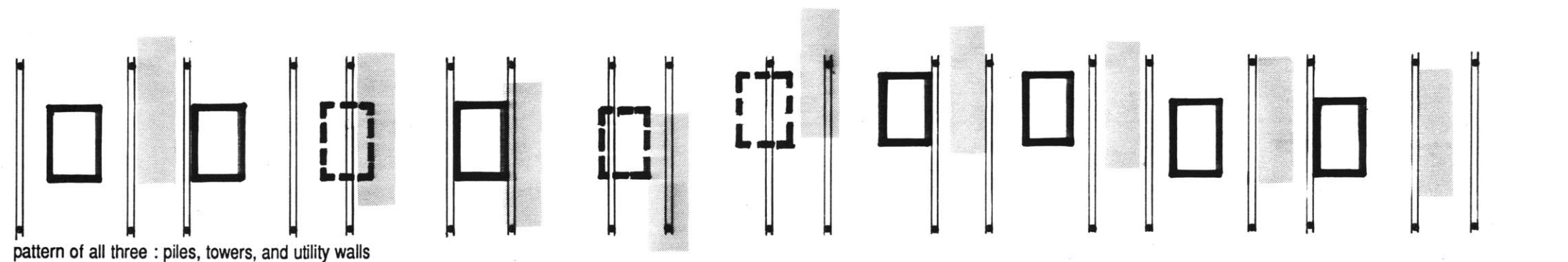
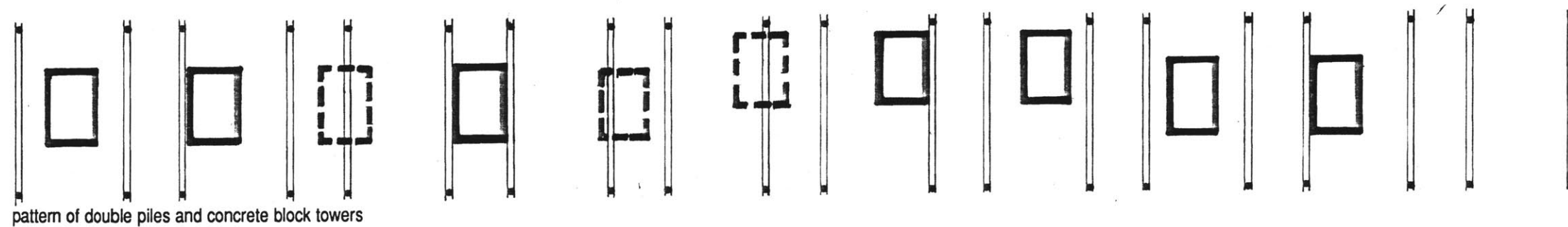
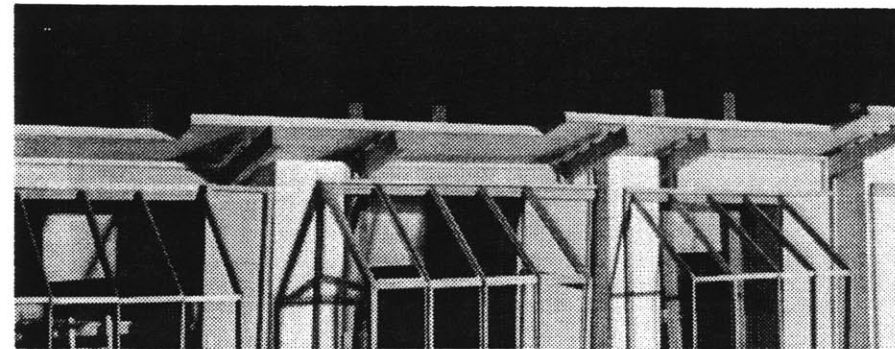
In my project the three patterns (piles, concrete towers, and partition walls) happen at different rates. This causes them to come together and move apart again and new cycles to be formed. The first pattern of wood piles repeat in pairs. The second pattern of concrete towers repeat at there own constant rhythm. These two patterns come together and syncopate every 8 towers or every 7 double

piles and constitute one measure. Where the towers overlap the piles and beams, they are dropped out. The partition/utility walls are the third cycle and overlap the piles every 8 and the towers every 12. The result(although not perceptible) is that a cycle of all three patterns converging happens every 96 sets of columns. These patterns do not start or end at any fixed

point and therefore suggest infinite continuation in both directions.

This idea of continuity relates to the pattern of land and water that is noticed as one looks out over the harbor, the point, Cape Cod Bay, and then the Atlantic Ocean. These continuities in the patterns allow the patients to mentally project themselves out to other places that

they may not be physically able to reach; the mind is able to inhabit the next piece of land and then from there the next.

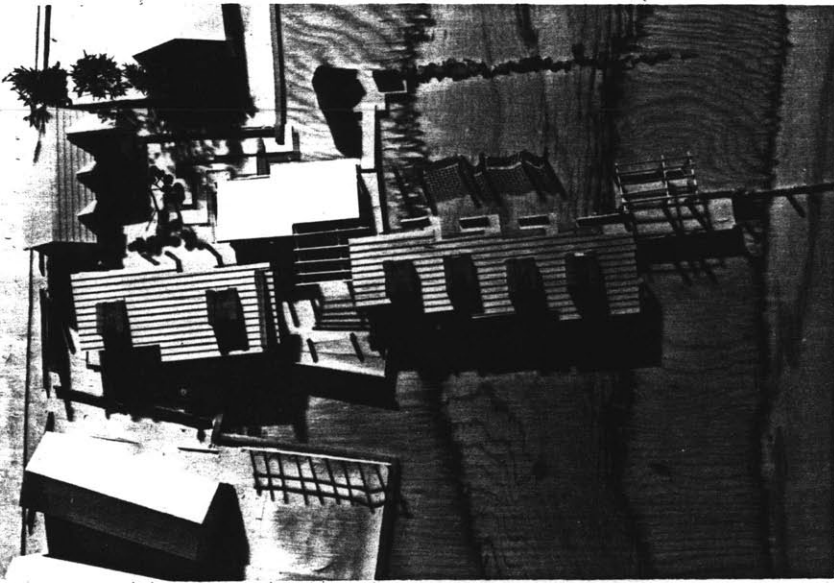


DAILY CYCLE OF THE SUN

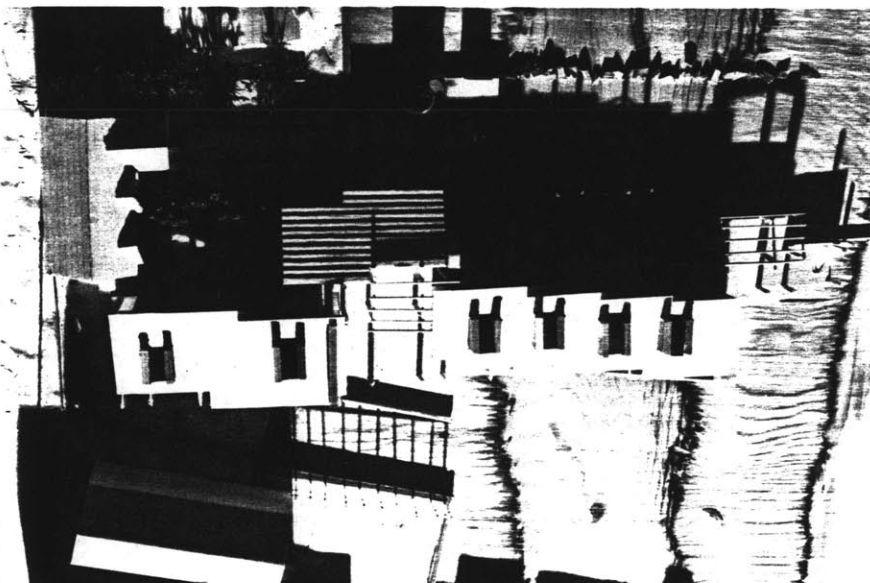
The daily cycle of functional activities in my project relate to the cycle of the day and night and more specifically to the sun's daily movement (relative to the earth) This is reflected in the two sided-ness of project emphasizing the beginning and the end of the cycle of the sun's movement. The orientation of

the pieces emphasizes the qualities and direction of either evening or morning light and the activities that relate to these types of light.

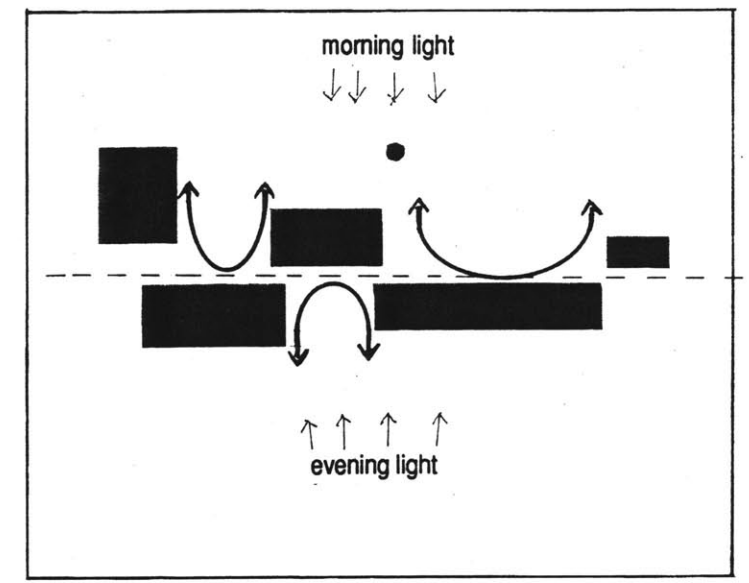
The project has two main orientations; Generally, the orientation of the residents apartments is towards the east (morning light) while the main orientation of the dining space is towards the west (evening light).



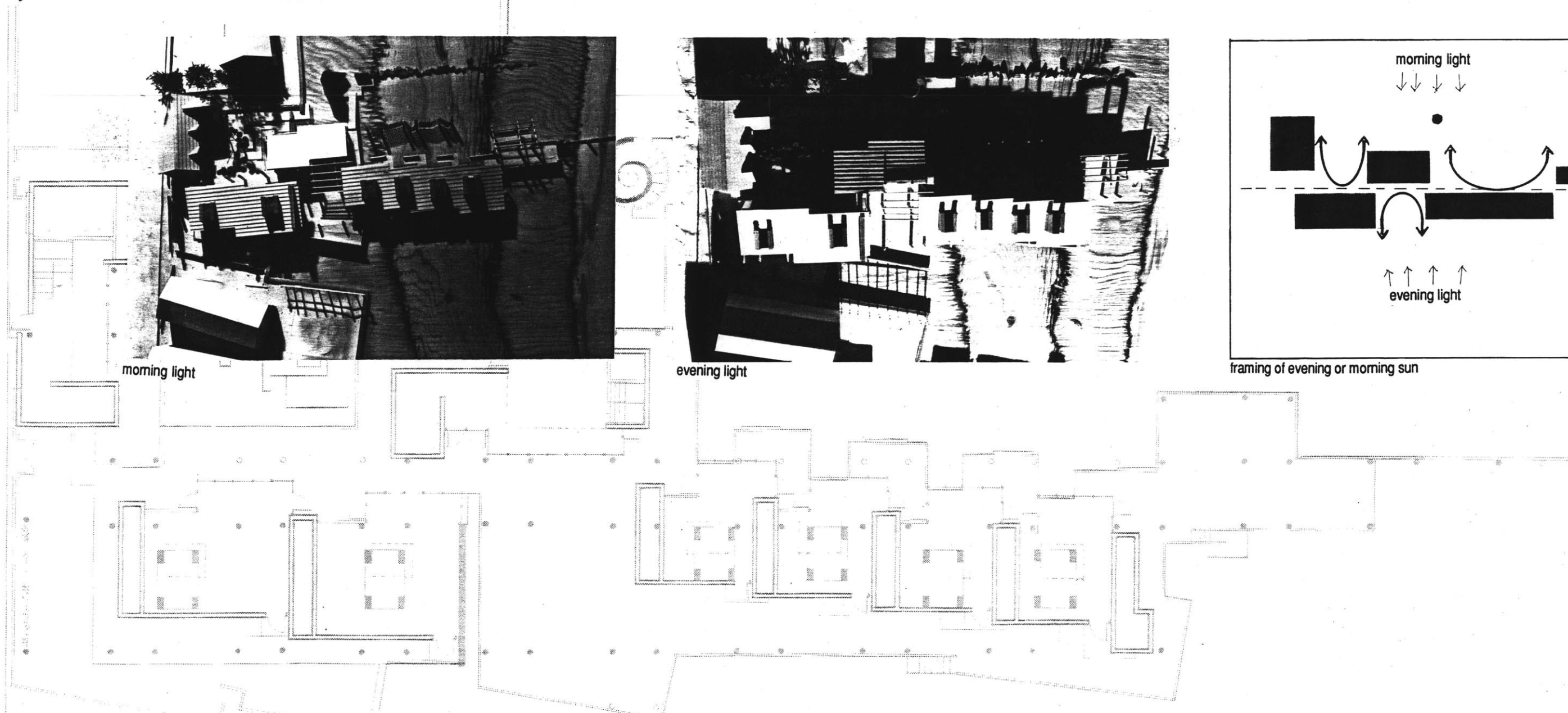
morning light



evening light



framing of evening or morning sun

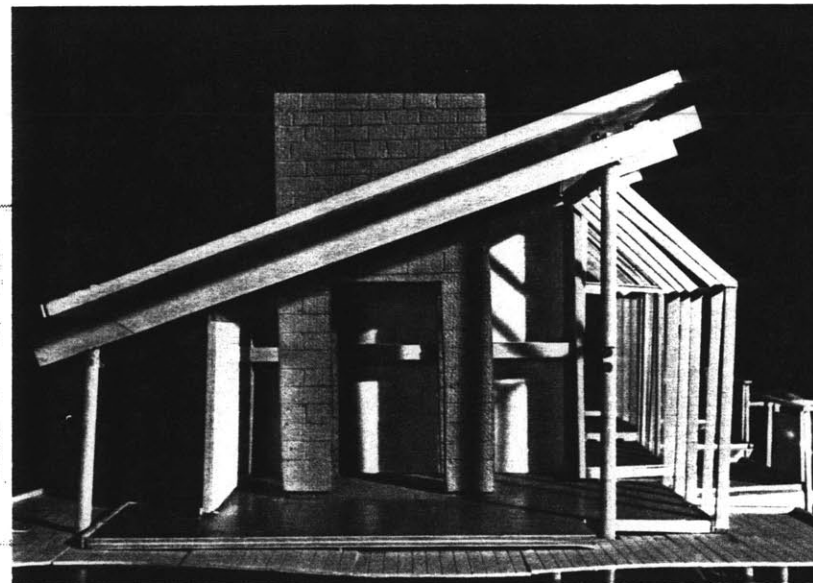


The east-facing residents apartments receive the morning light and treat it as a celebration of making it through another night - since night tends to be the time when a death would occur. These units frame the east with buildings on either side.

The morning light changes from yellow-orange and quickly becomes a cool white/yellow light. This quality is emphasized and celebrated by the sharp shadow play due to the overlapping patterns of the columns, the mullions, the towers, the walls, and the light screens. As the day progresses fewer of these pieces will create shadows; the shadows from certain pieces will drop out depending on their nearness to the light and relationship to the spaces. The white plaster ceiling stresses the crispness and coolness of the morning light and can also receive morning light by reflection off the water when the tide is in.

The dining space faces to the west allowing its function to align itself with the end of the sun's cycle - its setting. The western view is framed by the two apartment units on either side. As in the resident's apartments, there is some shadow play but considerably less (due to

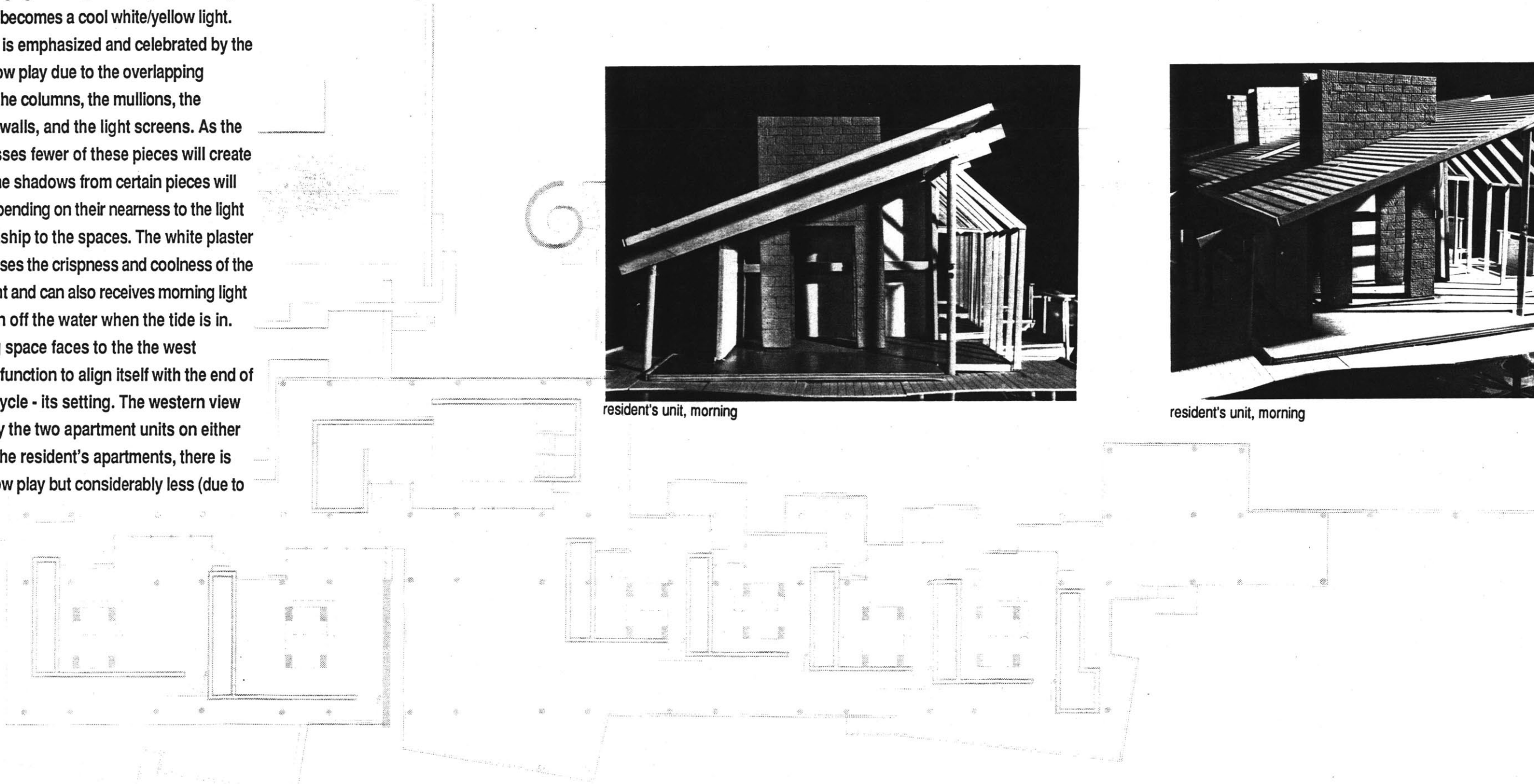
a lack of towers, screens, and light reflected light from the water). The evening light is warmer in color than the morning light due to the particles in the air (pollen, pollution etc.) The roof of the dining hall is a warm wood emphasizing the saturated red and orange color of the setting sun.



resident's unit, morning



resident's unit, morning



The resident's apartments also bring in evening light, but only indirectly by reflection. The evening light in the apartments is emphasized as somber and melancholy and is brought in to the units by the westward facing light scoops. The warm wood of the light scoops emphasizes the deep saturated color of the setting sun. The spatial interlocking of the fully lighted sunroom

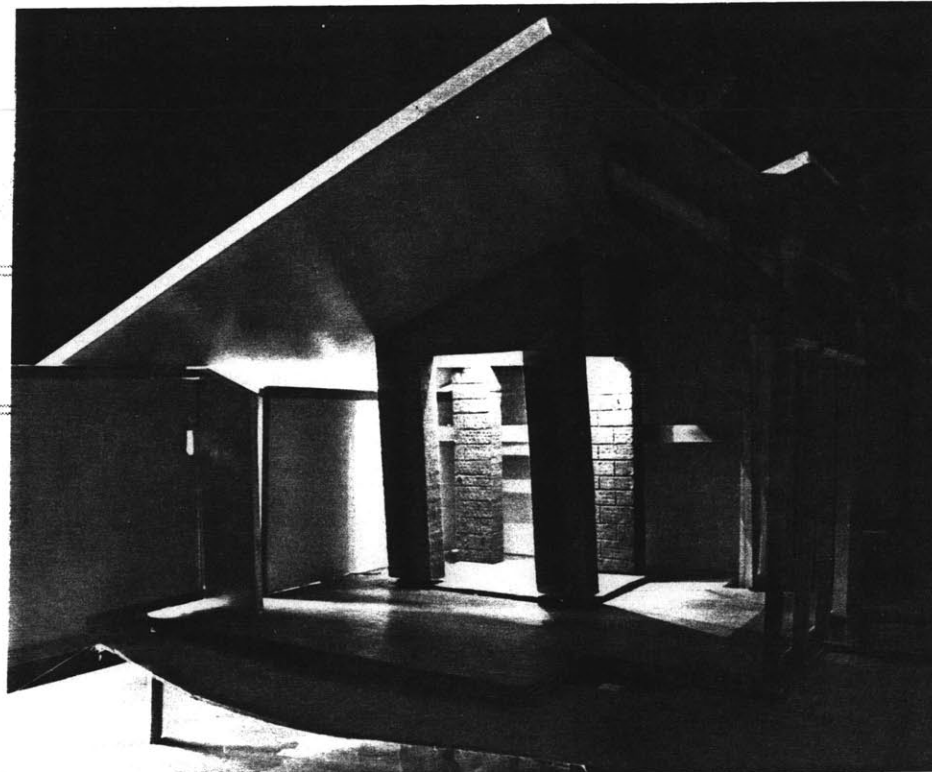
and the darker living space at the evening light tower along with the completely dark utility pieces gives the understanding of the full range of light direction, quality, and intensity.

In the early morning, these shadows are cast into the resident's apartments. By the evening, these shadows have revolved around and are cast away from the resident's

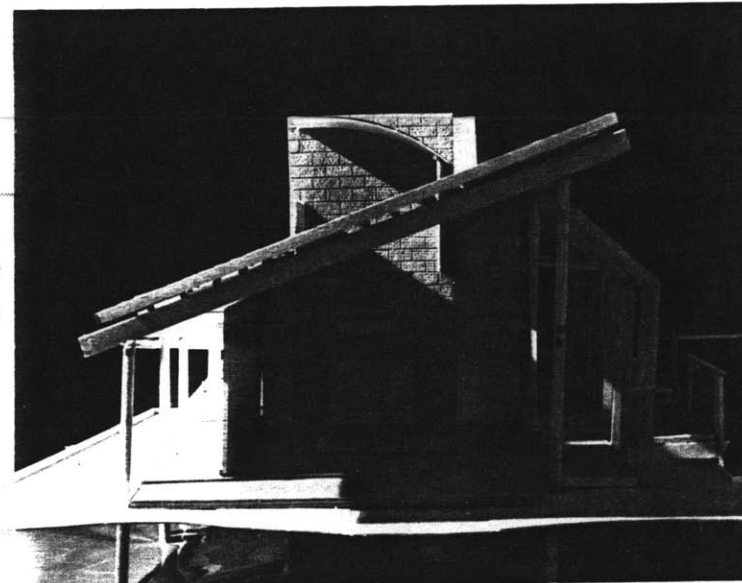
apartments. These screens also give added privacy to the apartments and the water court.

The roof is a single plane lifted off the beams by small connectors with panes of glass in-between. These connectors streak the ceiling when the light grazes the ceiling plane at a certain angle. This will happen only once a day and at a slightly different time each day. The

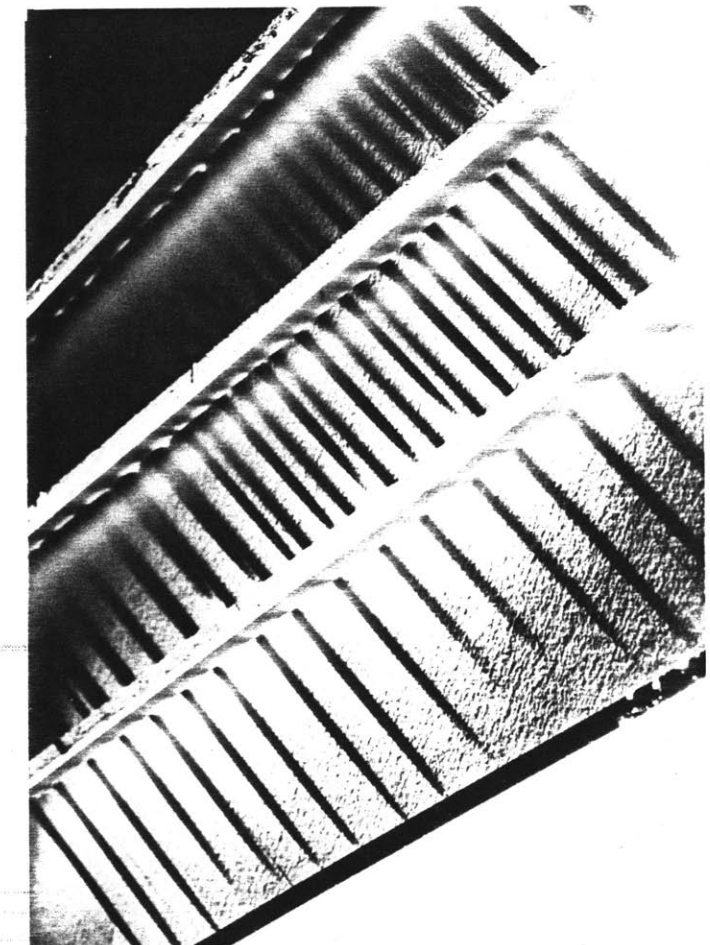
daily change in the time this occurs is the result of two overlapping cycles: the earth's rotation; and the seasonal change in its axis.



resident's unit, evening

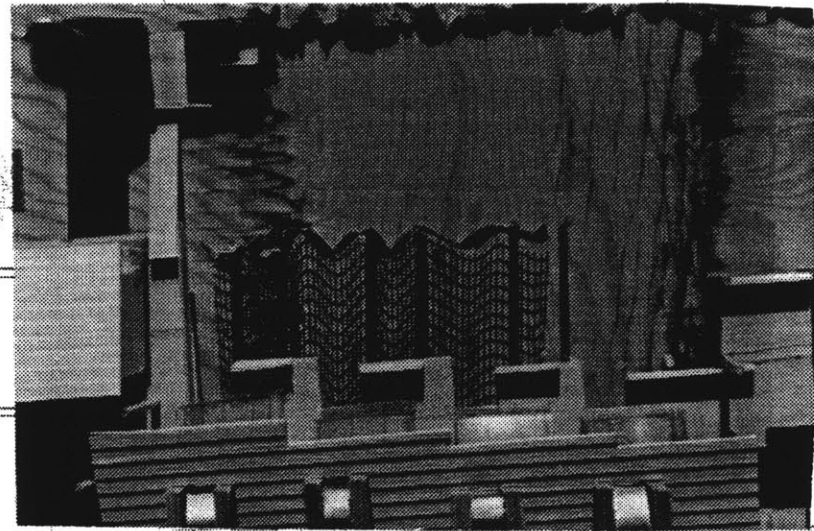


resident's unit, evening



view up at ceiling shadows

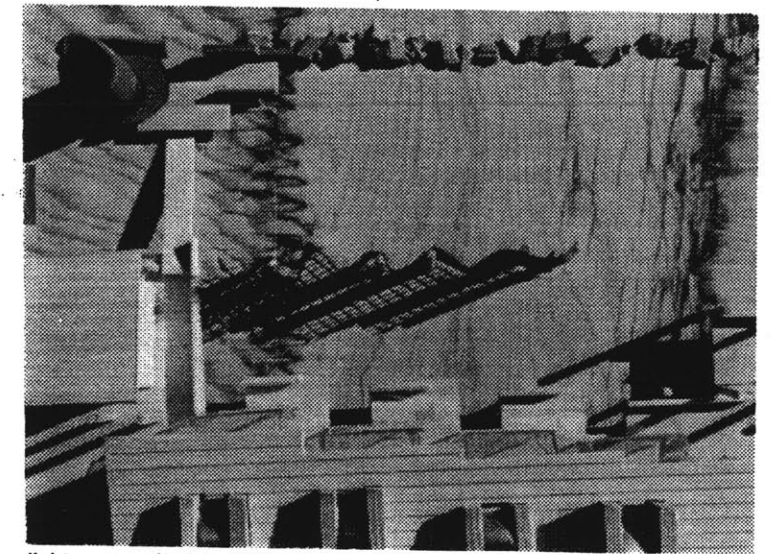
Light screens made of fabric woven on wood lattices is another way my project reveals the daily movement of the sun. These screens cast patterns on the sand in constantly changing positions and densities as pieces of these screens overlap relative to the sun's position. This movement of shadows happens in the water/sand court outside the single apartment



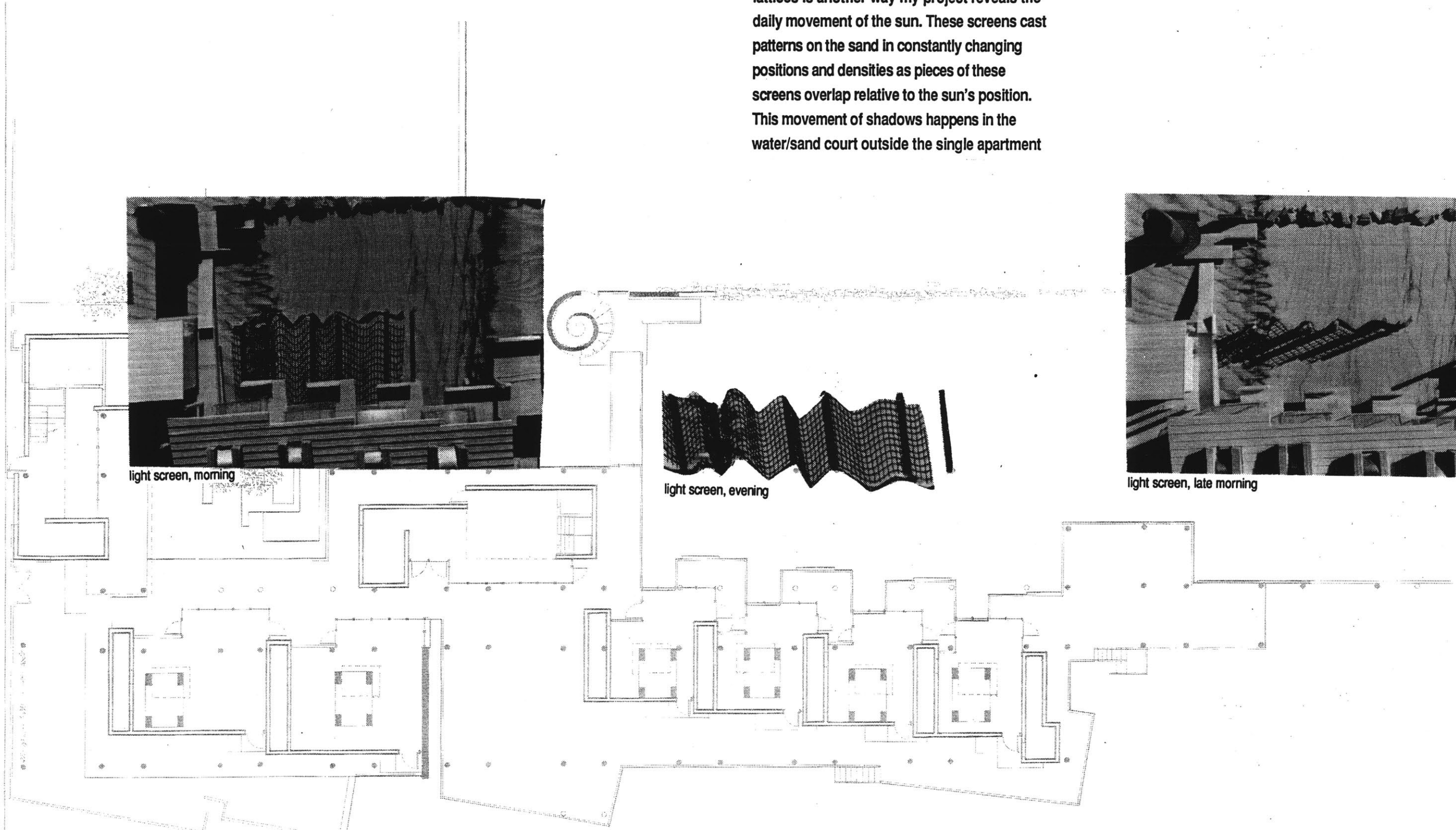
light screen, morning

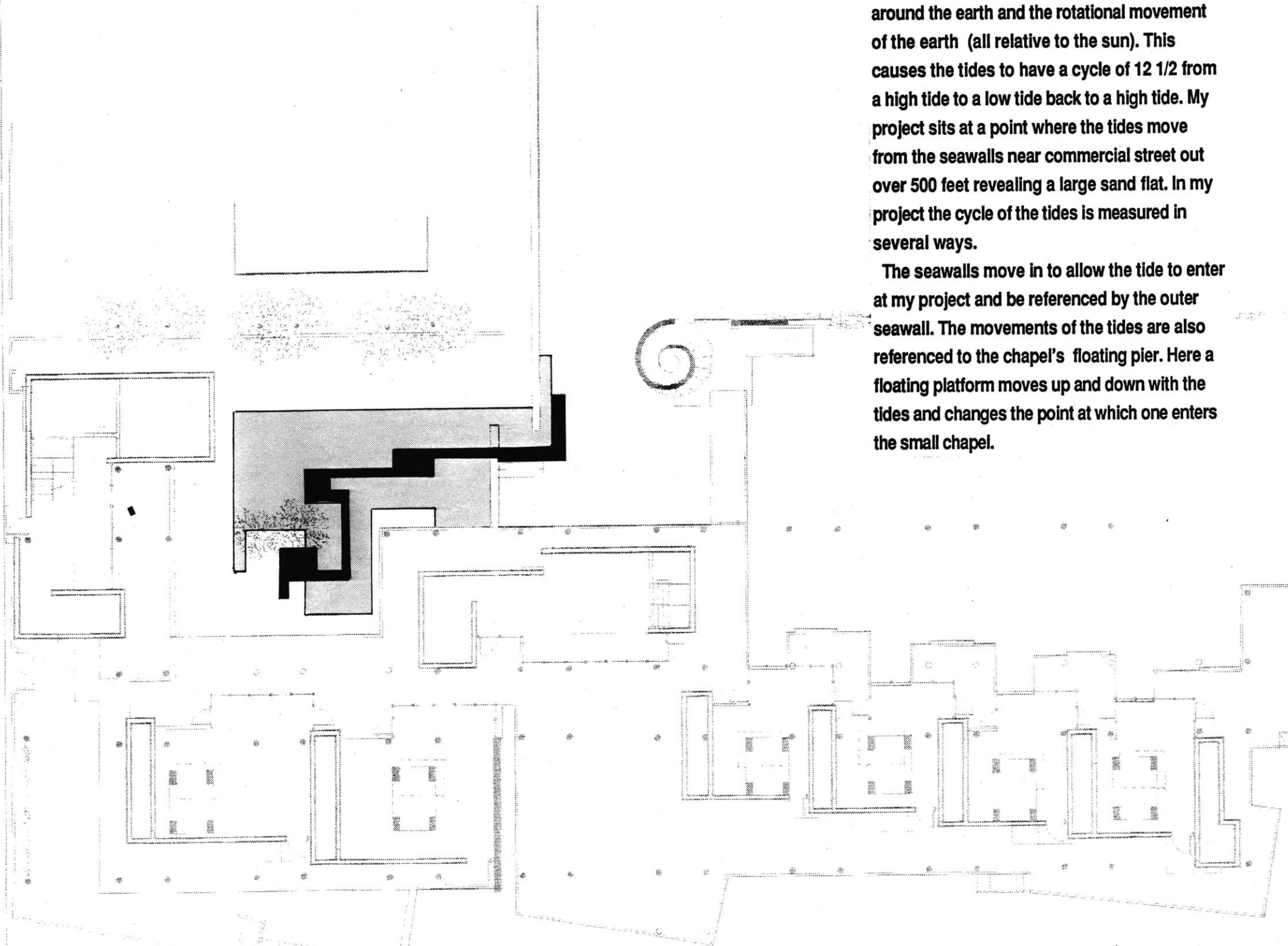


light screen, evening



light screen, late morning

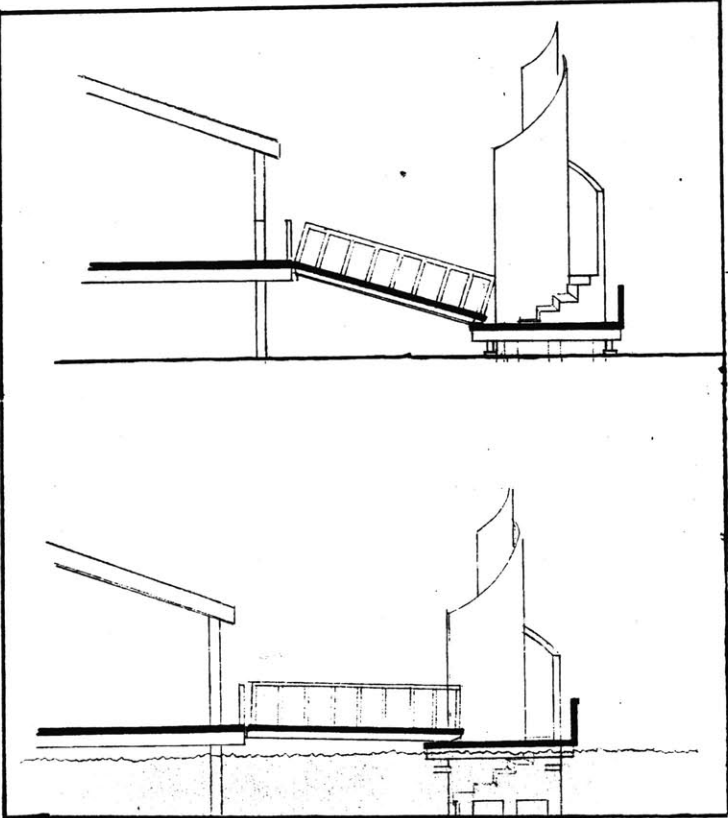




TIDAL CYCLES The tides are reflections of two cycles: the orbit of the moon around the earth and the rotational movement of the earth (all relative to the sun). This causes the tides to have a cycle of 12 1/2 from a high tide to a low tide back to a high tide. My project sits at a point where the tides move from the seawalls near commercial street out over 500 feet revealing a large sand flat. In my project the cycle of the tides is measured in several ways.

The seawalls move in to allow the tide to enter at my project and be referenced by the outer seawall. The movements of the tides are also referenced to the chapel's floating pier. Here a floating platform moves up and down with the tides and changes the point at which one enters the small chapel.

The tidal cycle changes not only between high and low but in a cycle of of the changing heights. This cycle is revealed in the courtyard where the highest of the high tides (spring and neap tides) are allowed to enter into the court in a cut channel. This happens only when the earth, moon, and sun line up - approximately every 15 days.



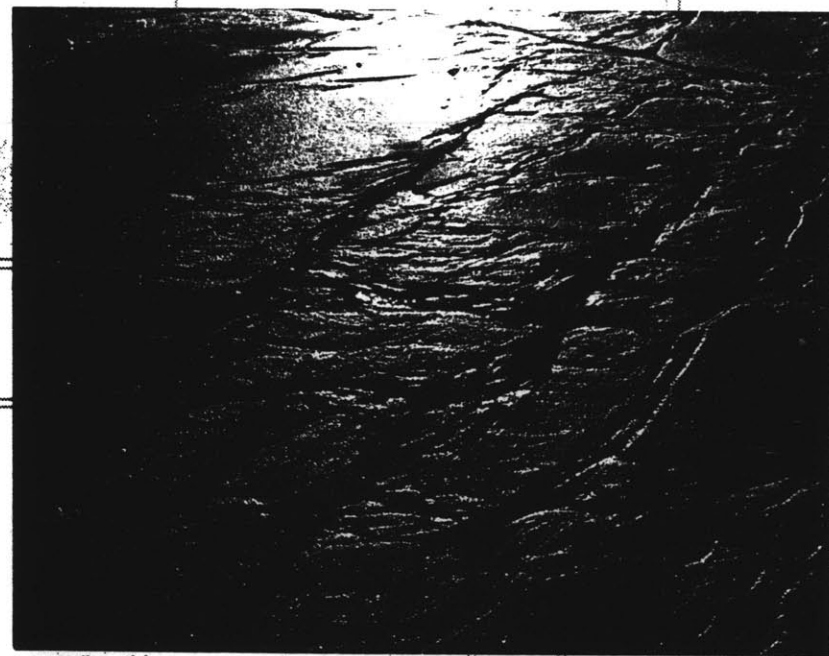
chapel and floating pier at low and high tides

SUN CYCLE AND TIDAL CYCLE

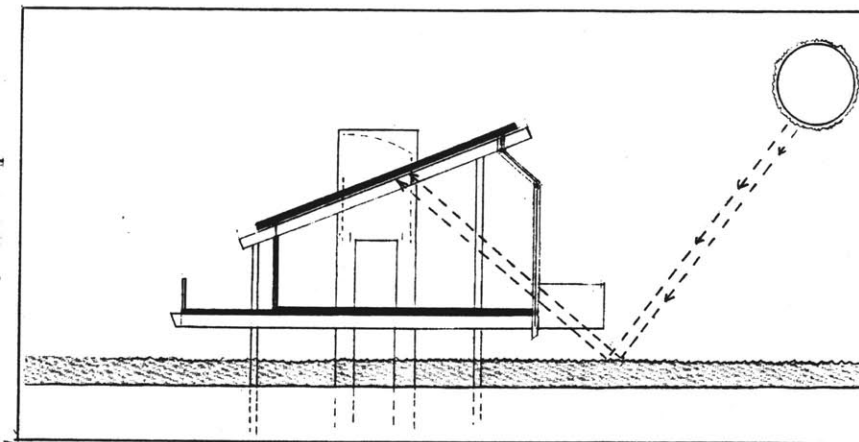
The over-lapping of cycles can cause new cycles to occur. One way in which this happens in my project is by reflecting light off the waters surface into the spaces onto the ceilings. This happens at the outer residents apartments and at the dining hall. This would occur only when the tide is in and the sun is at a certain angle in the

sky. In the residents apartments, the syncopation of 12 1/2 hour high to high tides with changing lengths of days from 7-13 hours would allow this reflection to happen every few days for a period of a few days in decreasing and increasing amounts. In the dining room, the narrow slit of water along the sea wall would allow this reflection only for a small period every year and would repeat slightly later or earlier annually. The chapel is lifted off the sand with concrete piles. Small cuts in the floor of the chapel allow light to be reflected in when the tide is in.

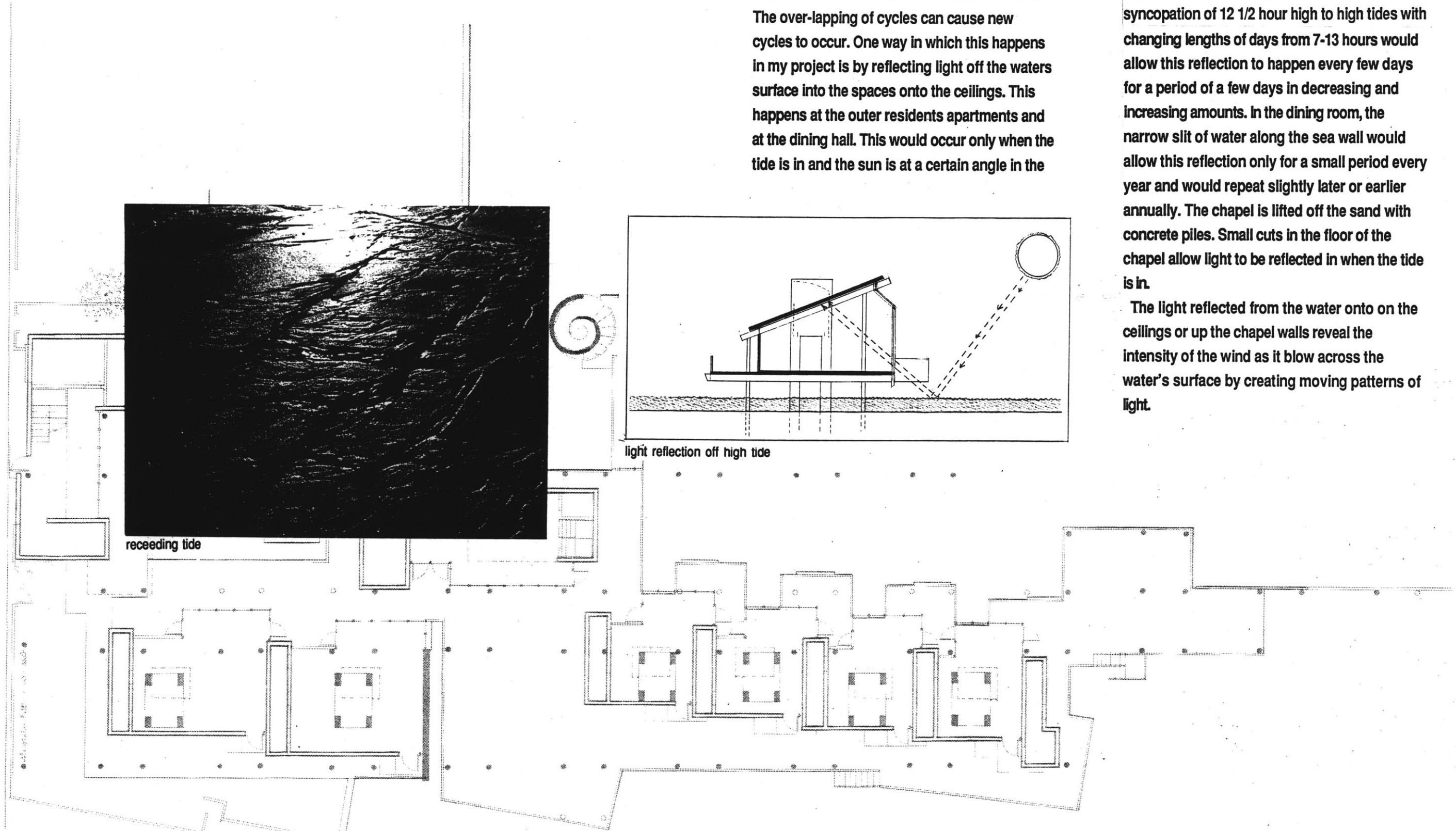
The light reflected from the water onto on the ceilings or up the chapel walls reveal the intensity of the wind as it blow across the water's surface by creating moving patterns of light.



receding tide

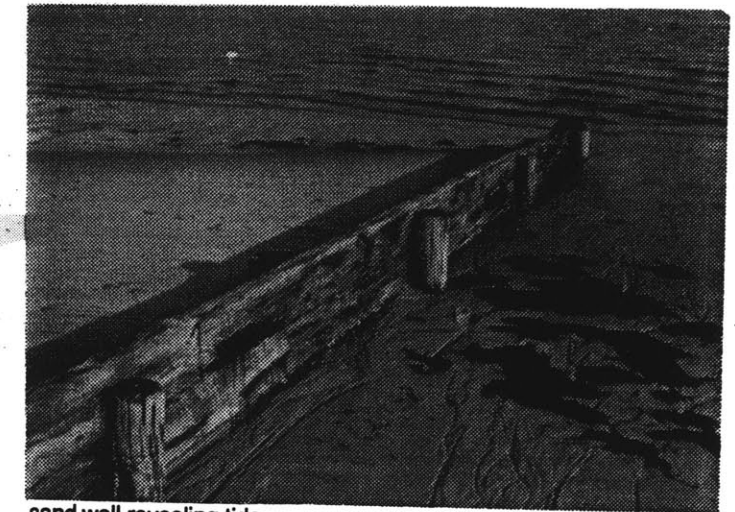


light reflection off high tide



WIND DIRECTIONS Along the beach, the sand movement changes seasonally due to the seasonal change in the wind direction. In the summer the predominating winds are from the south-west. In the winter, this wind direction changes to strong cold northwest winds. In my project, low walls catch the sand and form a step in the beach thereby revealing the cycle of the in the seasonal wind direction and intensity. In the summer the sand will pile up on the west face of the walls. In the winter the sands pile on the east side of the walls.

The light screens also act as sand catchers. Here the sand is only caught west side since the stone jetty at the chapel catches the sand movement on the east. The tides help reveal these steps in the beach by moving in first along the side of the wall the sand hasn't piled up on. The shadows from the light screen curves over this hump of sand and also reveal it.

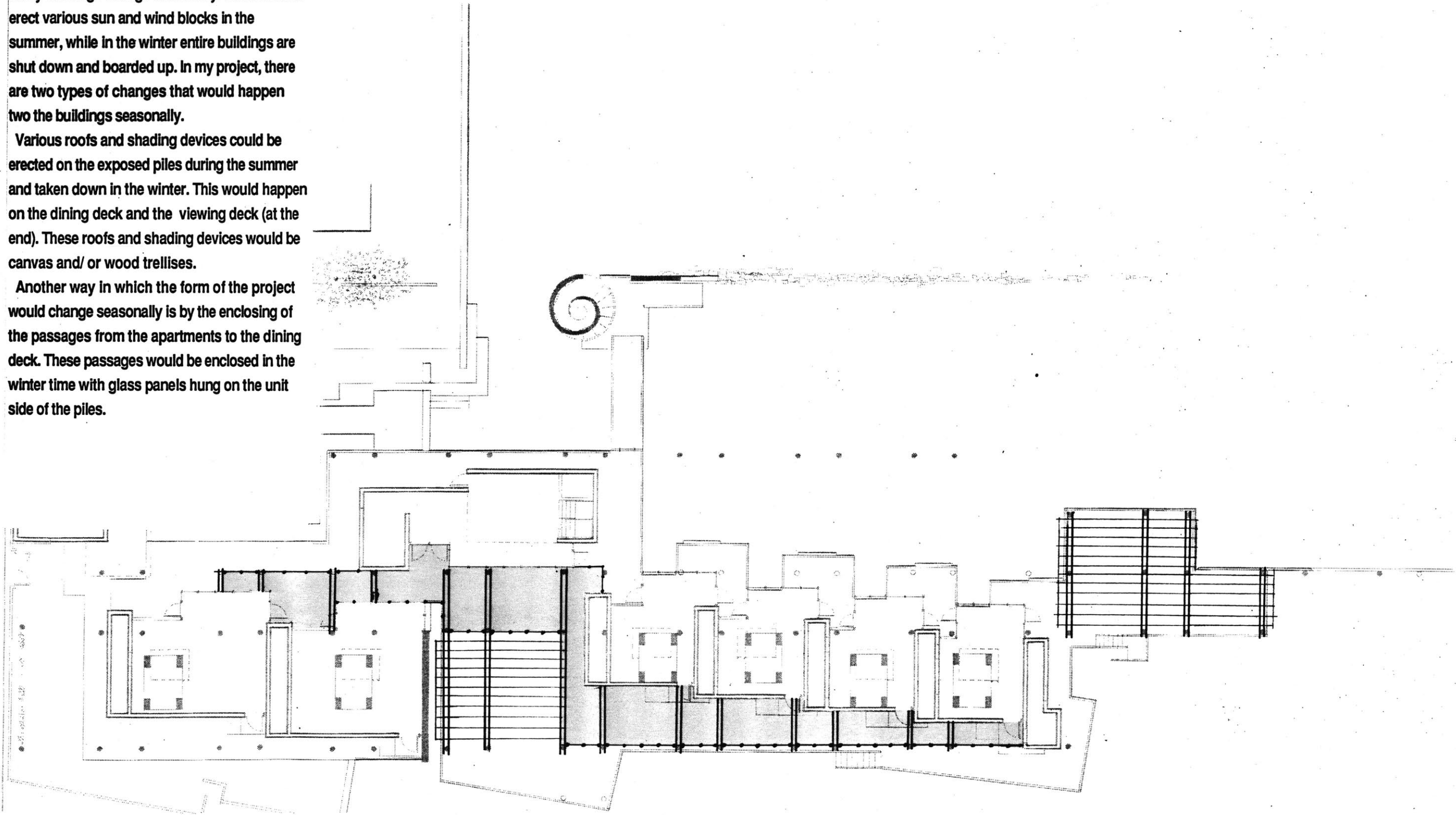


sand wall revealing tide

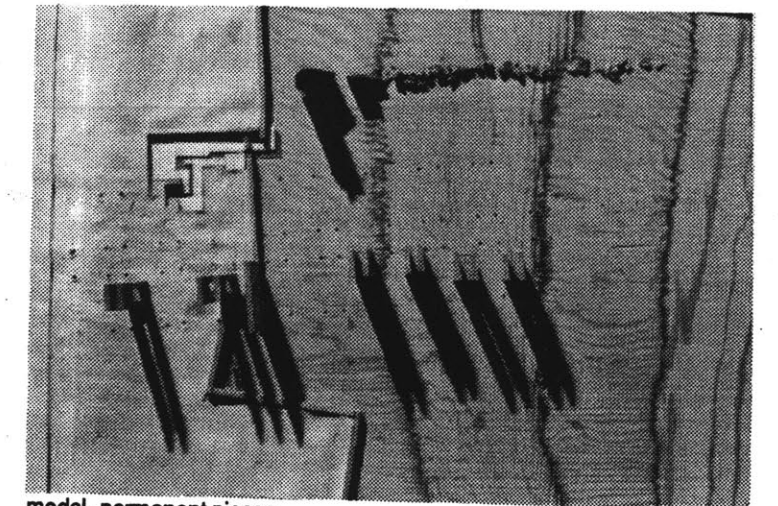
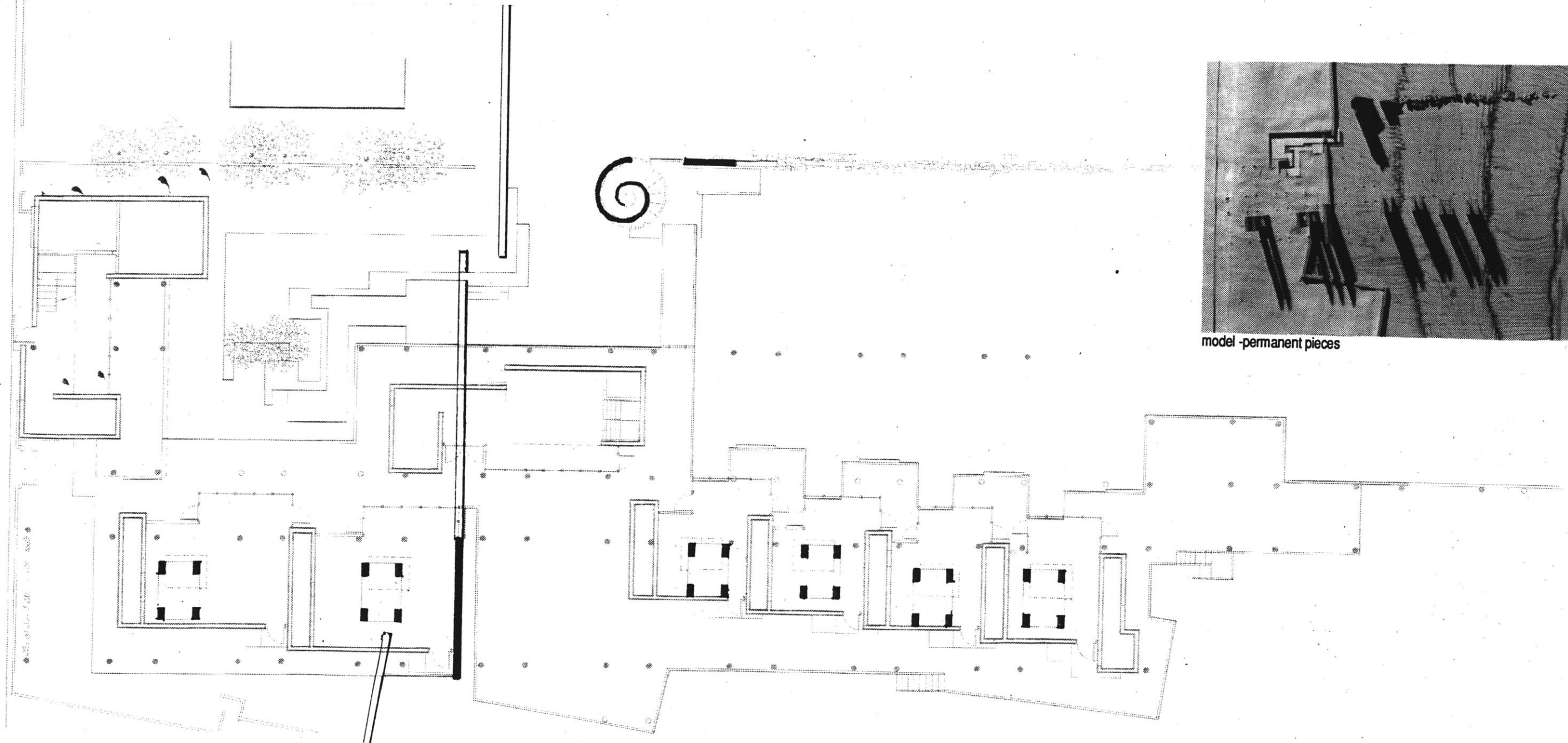
EXPANDABILITY In Provincetown, many buildings change seasonally. Some owners erect various sun and wind blocks in the summer, while in the winter entire buildings are shut down and boarded up. In my project, there are two types of changes that would happen two the buildings seasonally.

Various roofs and shading devices could be erected on the exposed piles during the summer and taken down in the winter. This would happen on the dining deck and the viewing deck (at the end). These roofs and shading devices would be canvas and/ or wood trellises.

Another way in which the form of the project would change seasonally is by the enclosing of the passages from the apartments to the dining deck. These passages would be enclosed in the winter time with glass panels hung on the unit side of the piles.



||
HEAVY AND LIGHT Solid concrete light towers play against the light wood construction. This contrast of permanence and temporality in such a volatile environment allows one to imagine a storm washing away the more delicate web of wood leaving the concrete towers and walls untouched.



model -permanent pieces

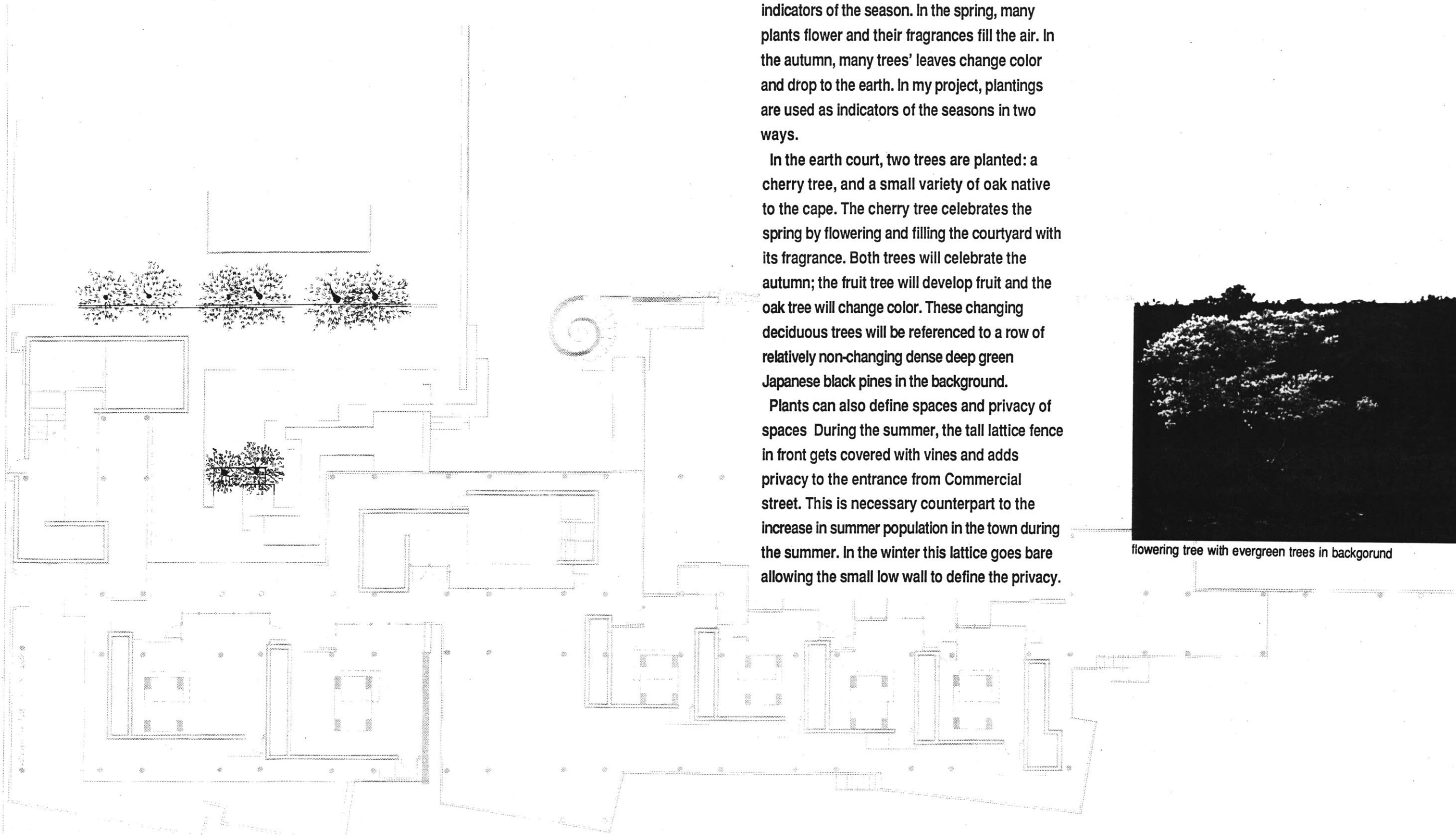
PLANTINGS Plants are direct indicators of the season. In the spring, many plants flower and their fragrances fill the air. In the autumn, many trees' leaves change color and drop to the earth. In my project, plantings are used as indicators of the seasons in two ways.

In the earth court, two trees are planted: a cherry tree, and a small variety of oak native to the cape. The cherry tree celebrates the spring by flowering and filling the courtyard with its fragrance. Both trees will celebrate the autumn; the fruit tree will develop fruit and the oak tree will change color. These changing deciduous trees will be referenced to a row of relatively non-changing dense deep green Japanese black pines in the background.

Plants can also define spaces and privacy of spaces. During the summer, the tall lattice fence in front gets covered with vines and adds privacy to the entrance from Commercial street. This is necessary counterpart to the increase in summer population in the town during the summer. In the winter this lattice goes bare allowing the small low wall to define the privacy.



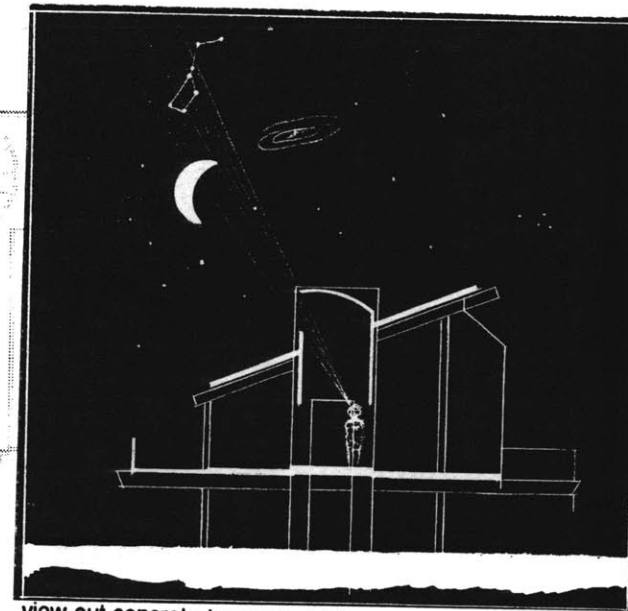
flowering tree with evergreen trees in background



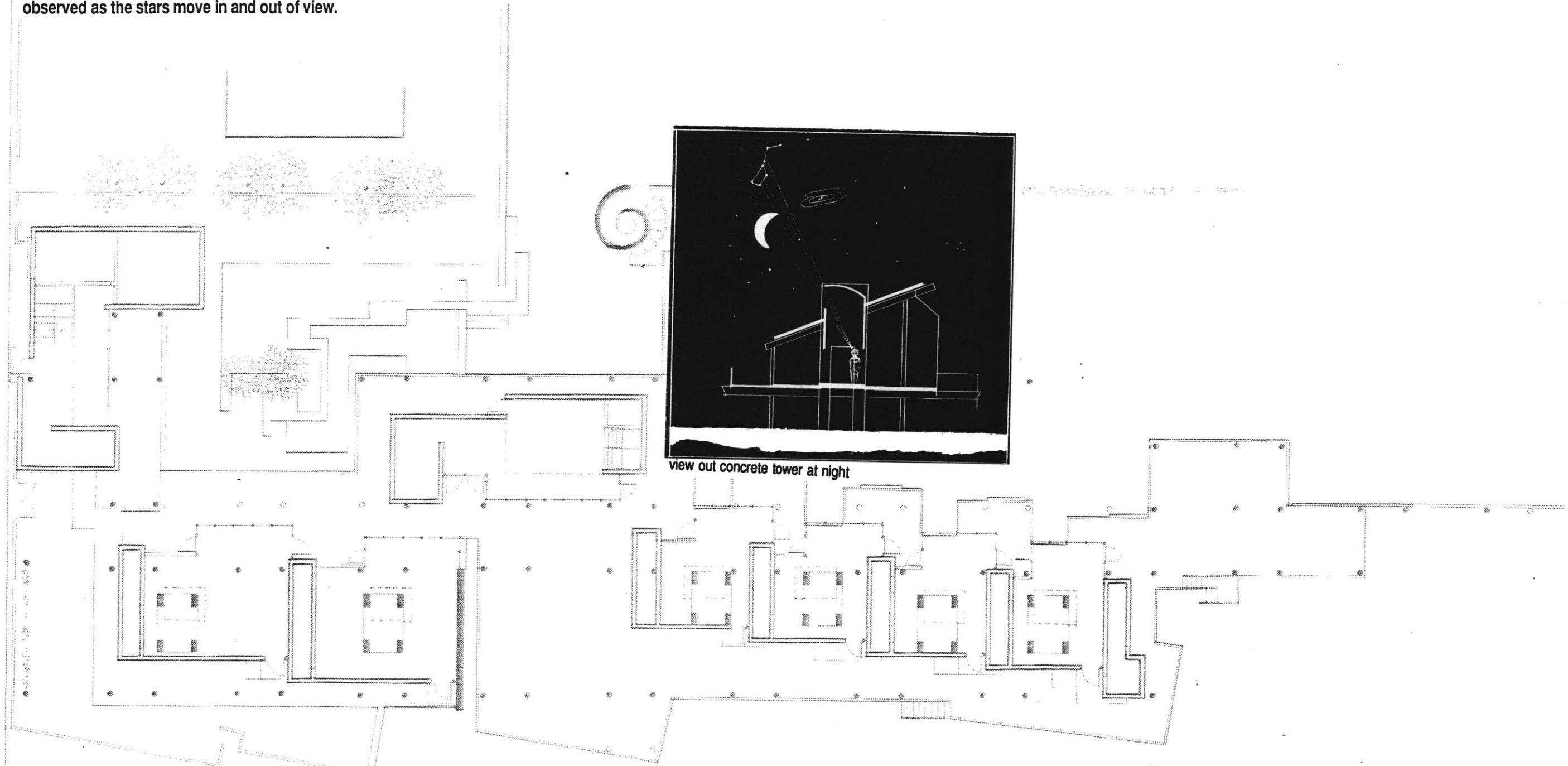
MOVEMENTS OF THE HEAVENS

The movements of stars, planets and the moon can be referenced by the opening in the concrete towers. Here, a small slice of the heavens can be viewed and the east to west direction of the heavens can be observed as the stars move in and out of view.

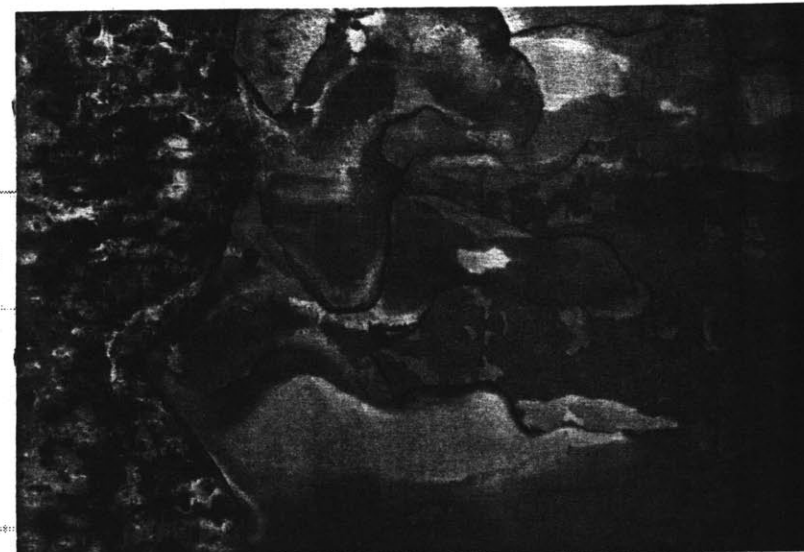
RAIN CYCLES The light towers have copper roofs that act as drums when the rain strikes them. Here the sound and intensity of rain is brought into the residents spaces. This quantity of rain changes seasonally, being the heaviest in the spring.



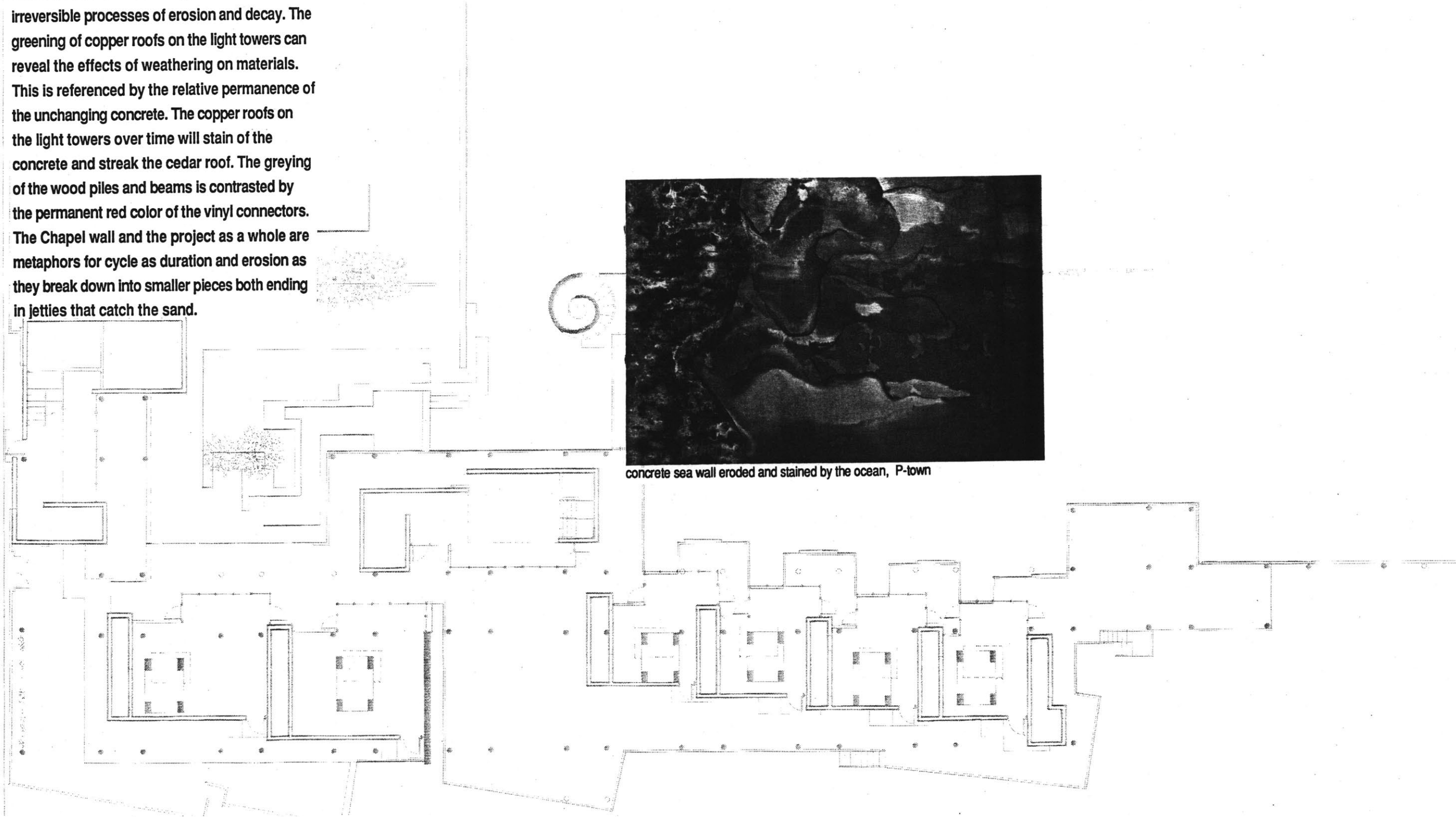
view out concrete tower at night



EROSION The transformations in materials due to weathering reveal the irreversible processes of erosion and decay. The greening of copper roofs on the light towers can reveal the effects of weathering on materials. This is referenced by the relative permanence of the unchanging concrete. The copper roofs on the light towers over time will stain of the concrete and streak the cedar roof. The greying of the wood piles and beams is contrasted by the permanent red color of the vinyl connectors. The Chapel wall and the project as a whole are metaphors for cycle as duration and erosion as they break down into smaller pieces both ending in jetties that catch the sand.



concrete sea wall eroded and stained by the ocean, P-town



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