

Submitted to the Department of Architecture in partial fullfilment of the degree Master of Architecture at the Massachusetts Institute of Technology--June1987

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by Heidi Johnson

Bachelor of Environmental Design University of Colorado--Boulder Boulder, Colorado 1983

\*\*\*\*\*\* Heidi Johnson Department of Architecture May 8, 1987

Imre Halasz Professor of Architecture Thesis Supervisor ~

..... Julian Beinart Chairman ittee for Graduate Students



### **MARKINGS:** Design Through Circumstances

by Heidi Johnson

Submitted to the Department of Architecture on May 8, 1987 in partial fullfilment of the requirements for the degree of Master of Architecture

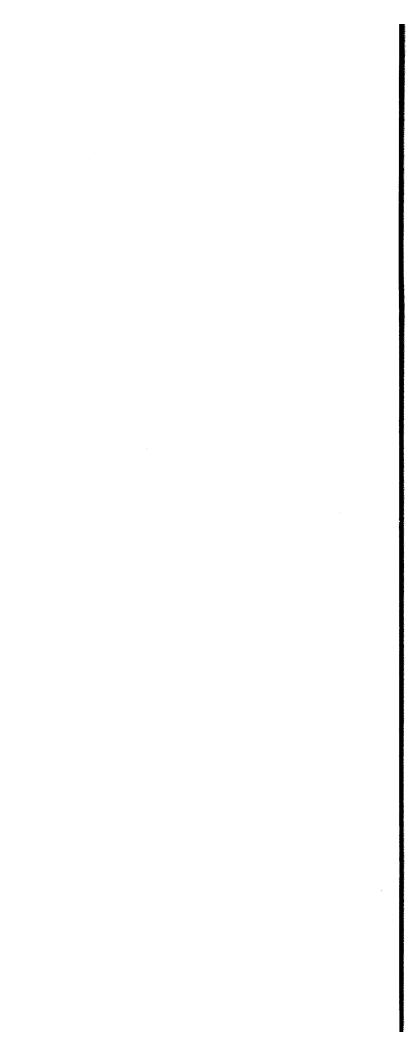
This thesis begins as a recording of existing "markings" found on the Massachusetts Cape Cod landscape. The term markings is used throughout to mean: a natural occurence to the landscape or in human behavior related to the landscape which records a moment in time and space. The design of a summer sheltered place in Truro, Cape Cod is based upon the process implied in my use of the term markings.

The second piece of this exploration is the journey from image to building. The creation of the sheltered place was designed to allow for inhabiting the land without destroying it. This thesis project is a physical and visual recording of that journey.

Thesis Supervisor: Imre Halasz Title: Professor of Architecture

# ABSTRACT

|||



# A C K N O W L E D G E M E N T S

To my parents for having the wisdom and courage to teach me about the layering of differences and encouraging me to search for my own understanding.

To my brother for sharing and teaching me about his own exciting discoveries.

To Carmen and Elin Corneil, Imre Halasz, Shun Kanda, Andrés Mignucci, Barbara Phenner, Michael Singer, Maurice Smith and others for broadening the scope of my sight. To Bernard for his critical and



sensitive eye.

V

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## ABSTRACT

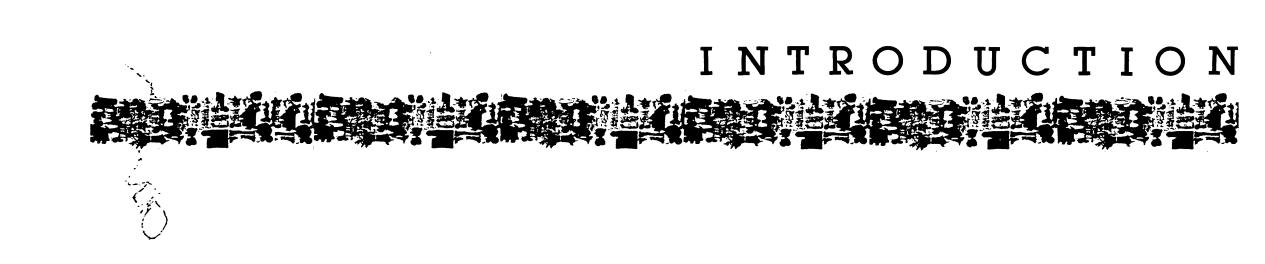
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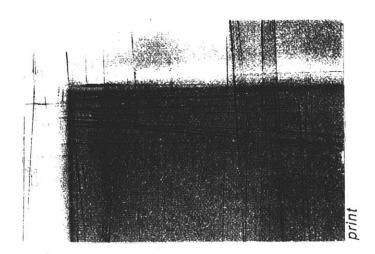
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**MARKINGS: Circumstances** 

This thesis demonstrates and explores a design process as it happened over the course of the semester. For this reason it is presented in chronological form.

Each chapter is divided into sections, and each section is divided into four areas: Sightings, Postcards, Conversations, and Markings. The following is a guide to the content and tone of each area:

Sightings--Visual written and accounts of existing forms and conditions.

Postcards--First thoughts. "Look at the simplest object. But think about 2



the whole universe that it contains. Look."--Antoni Tàpies. Literally postcards 'sent' to myself to highlight a particular issue of new exploration.

Conversations -- "Speaking here in the presence of my work, which should really express itself in its own language, I feel a little anxious as to whether I shall be able to find the right approach... But my words do not address themselves to you in isolation, <they> will complement and bring into focus the impressions which you have already received from my pictures ... "-- Paul Klee. Accounts from conversations and writings as well as paintings, collages, and other 'markings' done by myself,

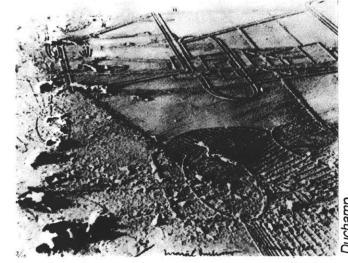


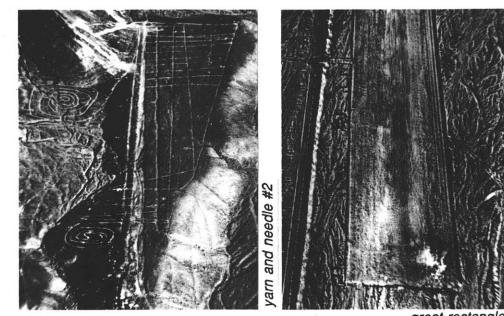
architects, artists, and others. (Note: HJ refers to myself)

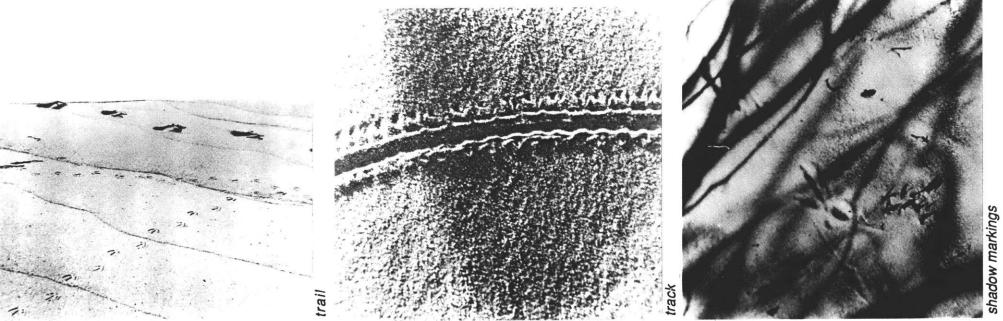
Markings--Drawings, paintings, etchings, collages, and models that I have produced as a sort of period at the end of a particular exploration.

None of these areas of presentation is meant to have more importance than another. The issue is that each kind of 'looking'/exploring adds up to create a more complete understanding.







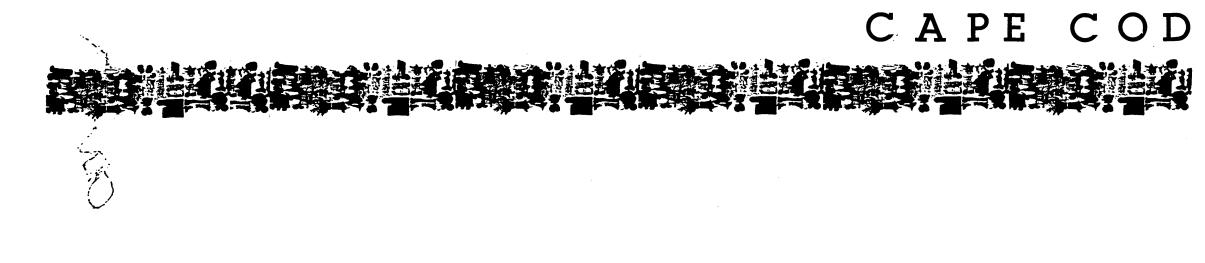


great rectangle

Antoni TÀPIES -- The Game of Looking, 1967:

What must we do in order to look at things clearly without trying to find in them whatever people have told us ought to be there, but rather simply what is there? Look. Look thoroughly. And let yourself be carried everywhere by whatever offers itself to your regard and echoes in you. I invite you to play, to look attentively. I invite you to think.

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LANDSCAPE: Sightings

The Cape of present day is the remnant of an ancient coastline, a landscape carved by glaciers and still changing daily because of wind and water. During the Ice Age, glaciers left piles of rocks and pebbles along the New England coast. These piles of once solid bedrock formed ridges hundreds of feet high known as moraines that formed Cape Cod's 'spine'. Slowmelting ice-chunks left rounded pockets, the kettle holes that now dot the Cape landscape with more than 400 ponds.

At the end of the Ice Age, the Cape was left barren, marked only by boulders and pocked with kettle holes. Then 6



seeds sprouted, reforesting the interior; and the sea began its work again. The waters of the ocean rose, fed by melting ice, filling bays and flooding low-lying plains. Waves ground over gravel banks, continually carrying away rocks and stone in the tide, then returning them to shore worn down to smooth pebbles and sand. The relentless ocean eventually created wide borders of sand beach, rearranged harbors and bays, turning sand bars into spits and spits into pennisulas. Finally glacial debris was rearranged to form the hooked arm of Provincetown.

Wind and water continue to carve new contours, reshaping shores, chipping

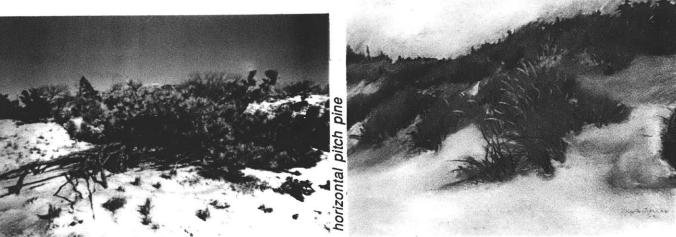
cliffs, building large sand dune piles that shift from moment to moment, constantly creating new hills and valleys in place of old. This landscape with its fragile composition is where this thesis begins.

A visible trace/impression on something as a spot, dent, line or visible indication of some quality or property; this is what the Cape landscape is all about. The movement of natural elements and the placement of built forms leave very distinct tracings on the environment. In order to preserve this uniqueness, one must recognize the consequences of moving through and placing objects within this landscape, if the Cape is to continue to exist in its natural course of reacting to its architects--wind and water.\*









grasses II--Myla Kellei



ocean surf



pitch pine branch



Henry BESTON -- The Outermost House: East and ahead of the coast of North America, some thirty miles and more from the inner shores of Massachusetts there stands in the open Atlantic the last fragment of an ancient and vanished land. For twenty miles this last and outer earth faces the ever hostile ocean in the form of a great eroded cliff of earth and clay, the undulations and levels of whose rim now stands a hundred, now a hundred Conversations and fifty feet above the tides. Worn by the breakers and the rains, disintegrated by the wind, it still stands bold. Many earths composed it, and many gravels and sands stratified and intermingled. It has many colours: old ivory here, peat here, and here old ivory darkened and enriched with rust. 'At twilight, its rim lifted to splendour in the west, the face of the wall becomes a substance of shadow and dark descending to the eternal unquiet of the sea; at dawn the sun rising out of the ocean gilds it with a level of silence of light which thins and rises and vanishess into day. Often spoken of as being entirely glacial, this bulwark is really an old land surfaced with a new. The seas broke upon these same ancient bounds long before the ice had gathered or the sun had fogged and cooled.

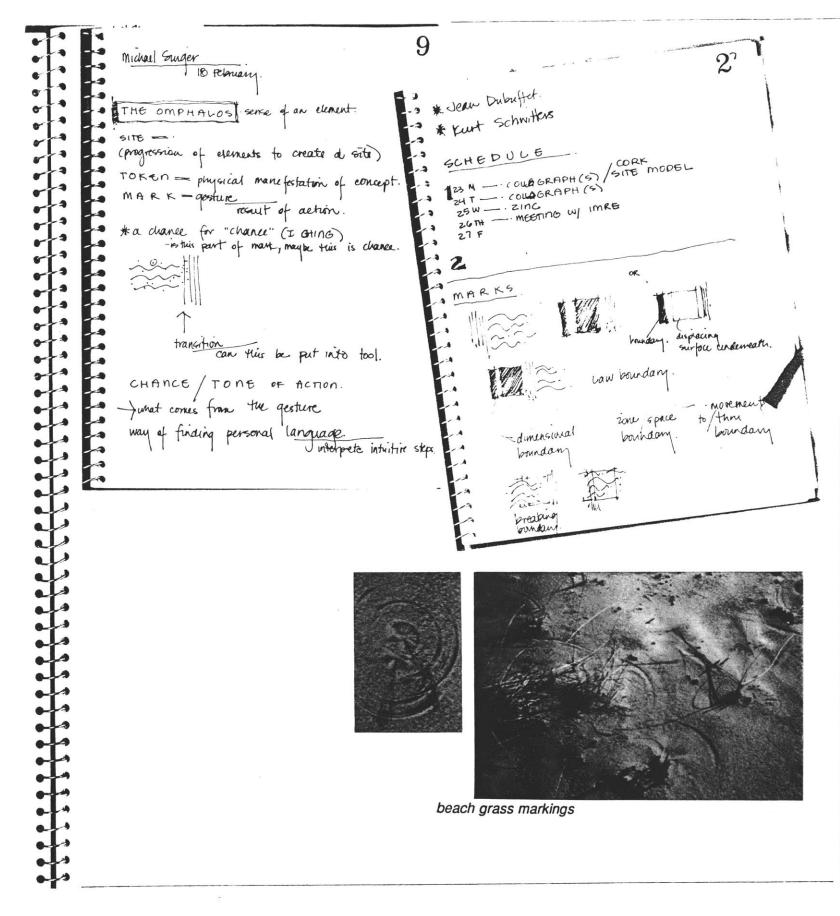


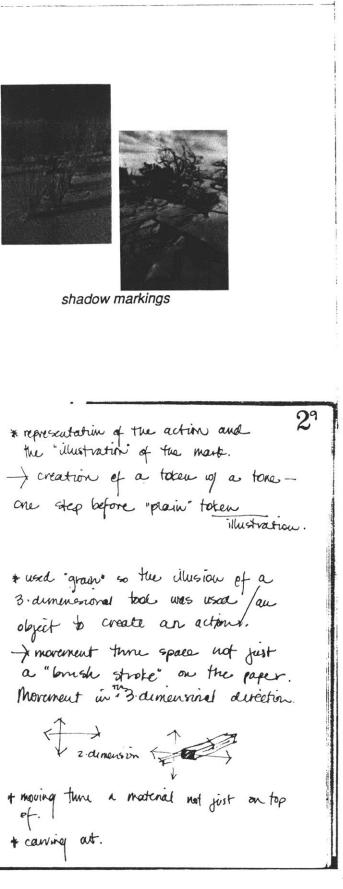


Mary Heaton VORSE--<u>Time and The</u> <u>Town</u>:

Like an onion, there is here a layer on layer, whorl on whorl...elements have met here and formed a unique place. ·

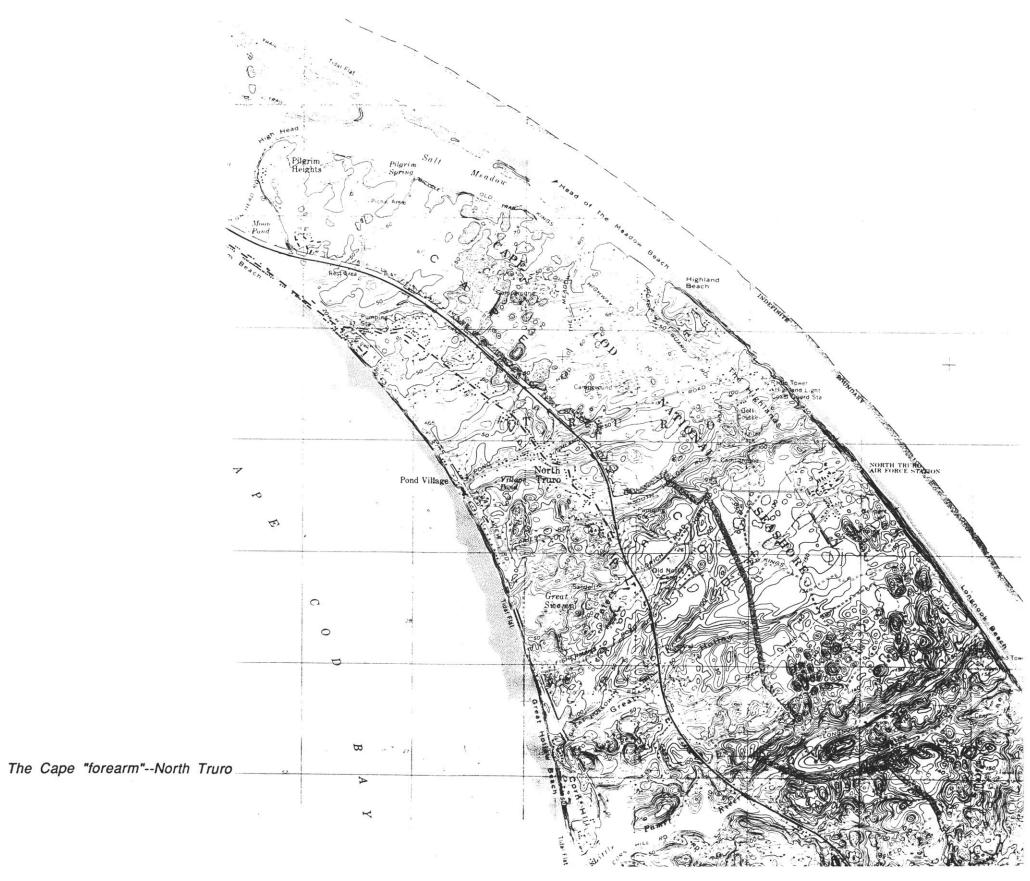
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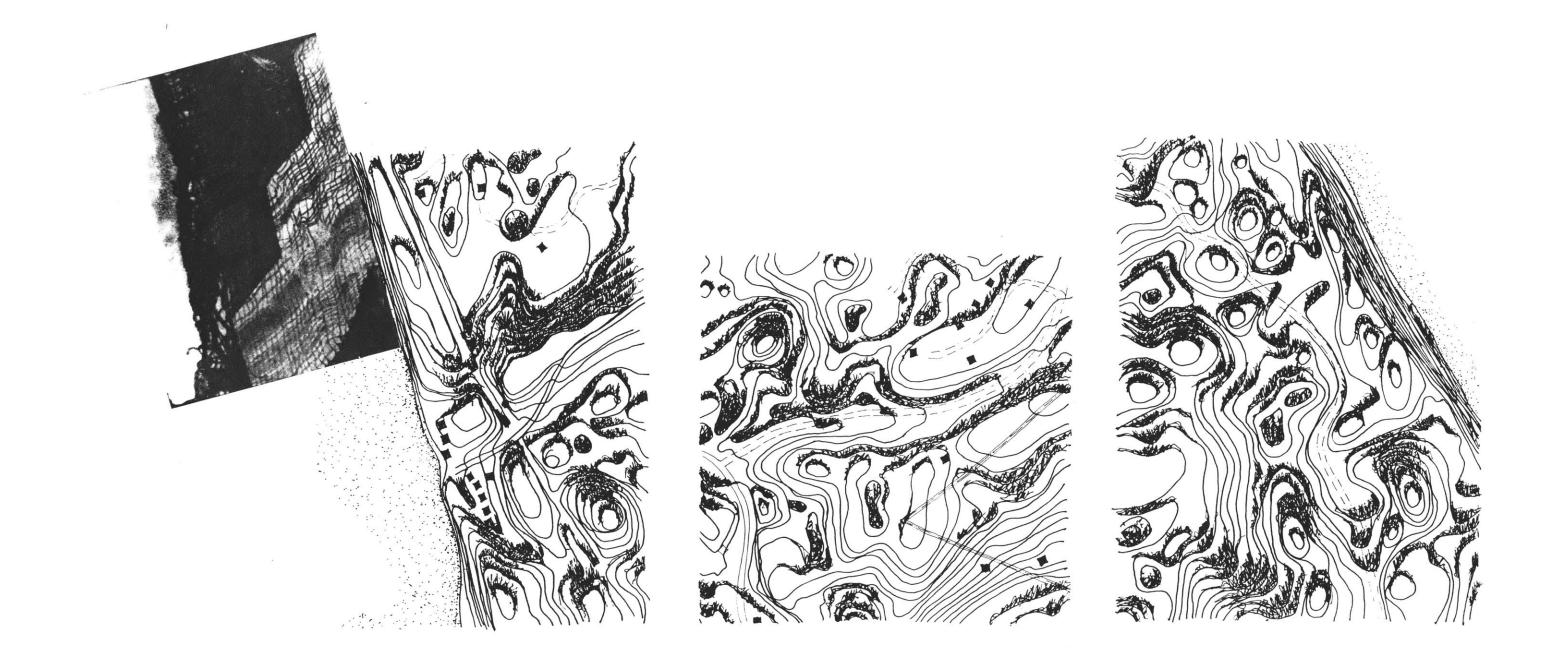
Markings

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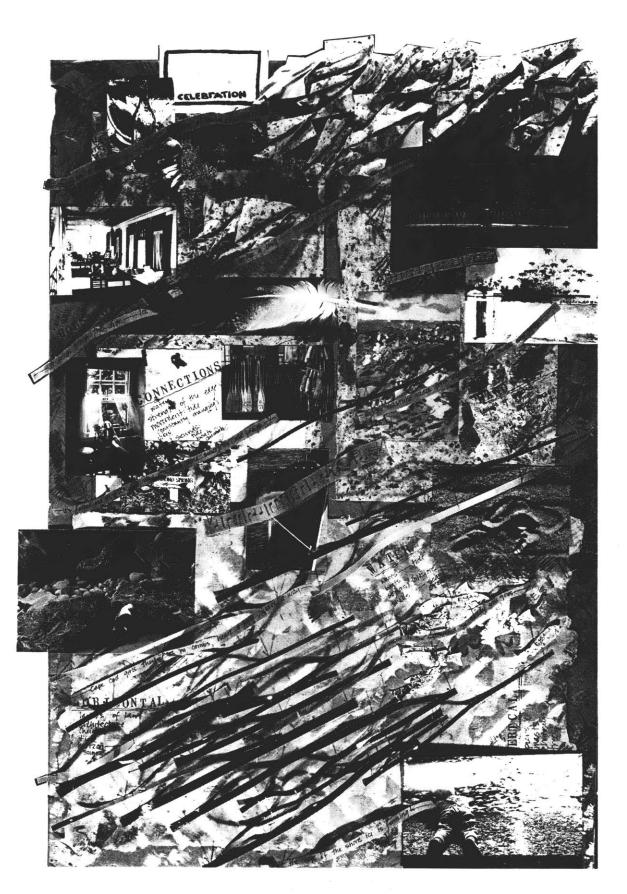
*Monoprint* original size: 5"x7"

**Contour Study** original size: 10"x30"



**Observations** original size: 20"x30"

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**BUILDING:** Sightings

The first recorded use of the term "Cape Cod house" is in the writings of Timothy Dwight. He traveled widely in New England in 1800, and recorded his impresssions in letters, which noted the houses of the less wealthy inhabitants "generally of the class which may be called, with propriety, Cape Cod houses."

The 'typical' Cape Cod house is one-and-a-half stories high with a steeply pitched roof. They were built low to the ground to ride out the winds and rains. "A short hoist and a long peak," was the builder's guiding motto.

The houses were firmly anchored to the 18

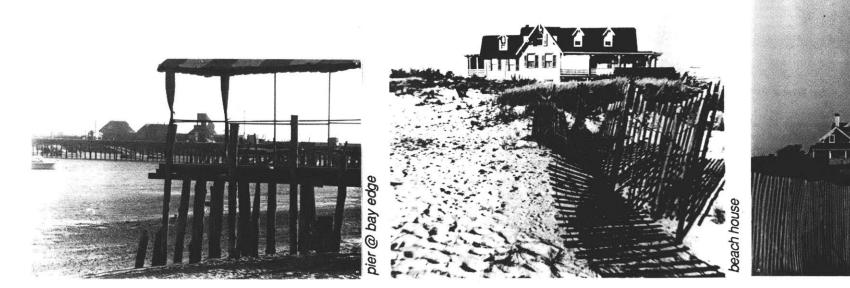


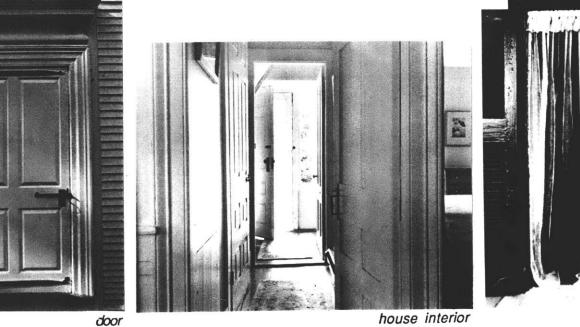
ground by a large chimney, which stood opposite the front door and rose through the ridge line of the roof. It was this placement of the chimney that gave the house its character; a central core that served several fireplaces and decided the location of the rooms and the placement and pitch of the stairs.

There are three basic types of houses that can still be seen on the Cape. The half-house with two windows on one side of the door, the three-quarter house with two windows to one side and one to the other, and the full Cape, sometimes called a "double house", with a door in the center and two windows on either side.



These houses were designed as aggregate forms, intended to be enlarged or made smaller, adapting to the inhabitant's needs.

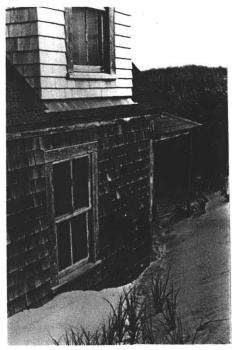






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door



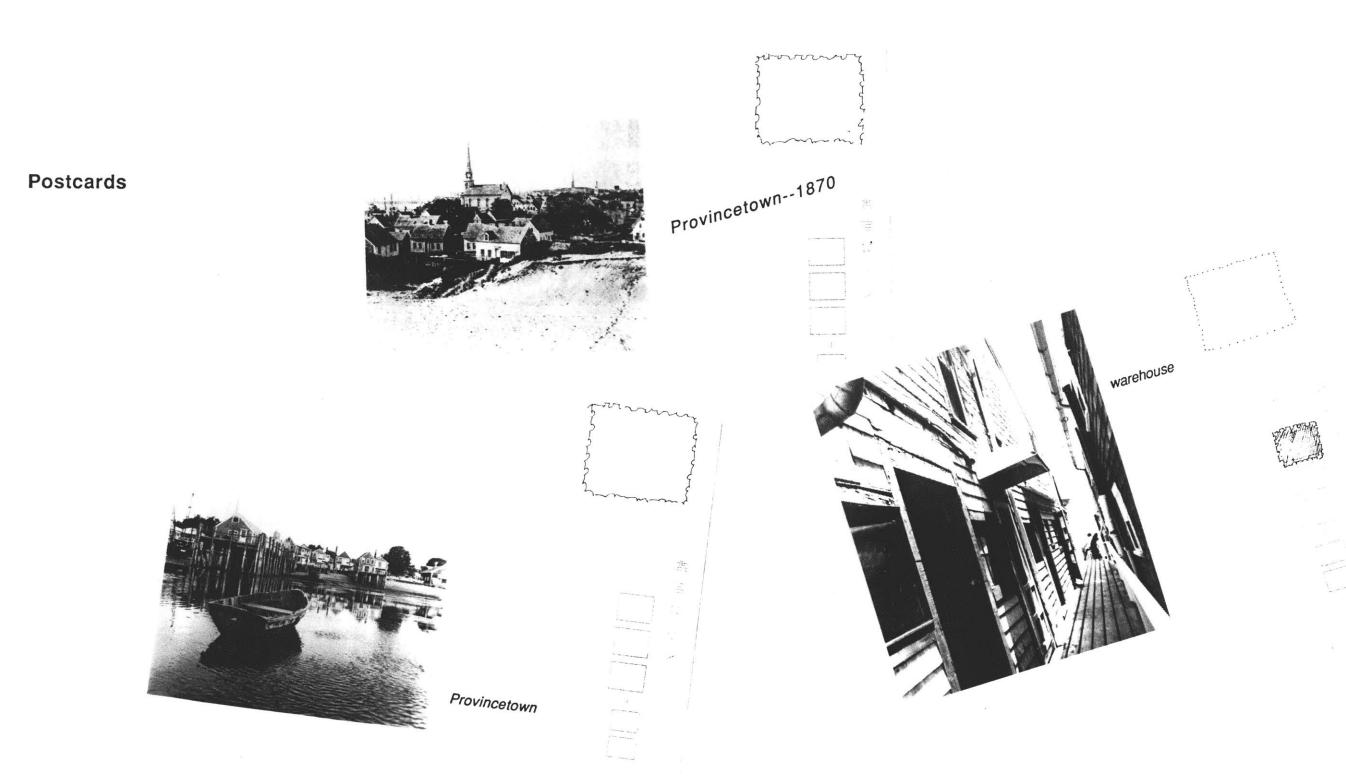
house @ Bolston beach





house interior

curtain



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Henry BESTON -- The Outermost House: The house showed, perhapes, a somewhat amateur enthusiasm for windows. I had ten. In my larger room I had seven; a pair to the east opening on the sea, a pair to the west commanding the marshes, a pair to the south. and a small "look-see" in the door. Seven windows in one room perched on a hill of sand under an ocean sun--the words suggest cross-lights and a glare; a fair misgiving, and one l countered by the use of wooden shutters originally meant for winter service but found necessary through the year. By arranging these I found I could have either the most sheltered and darkened rooms or something rather like an inside out-of-doors.



house

Lester WALKER--American Shelter: Early Cape Cods were built by ship's carpenters as though they were "land boats" made to ride shifting sands and withstand lashing wind and rain storms; they were low and broad. They were built on large hewn oak sills, which steadied the house on its shifting uneven sand site.

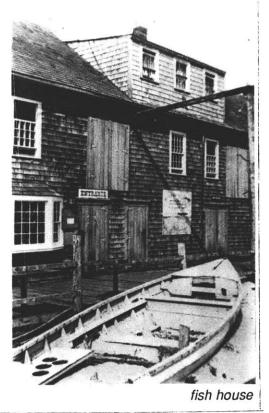


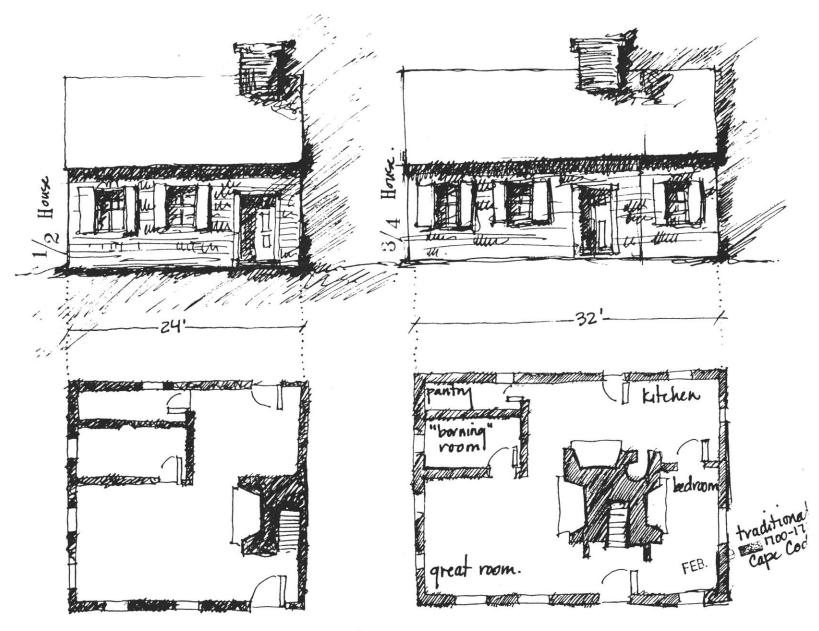
Truro house interior

THOREAU, after a walk on the beach 1849:

Their garrets were apparently so full of chambers that their roofs could hardly lie down straight and we did not doubt that there was room for us there...The great number of windows in the ends of the houses and their irregularity in size and position...struck us agreeably, as if each of the various occupants who had their cunabula behind had punched a hole where his necessities required it, and according to his size and stature, without regard to outside effect. There were windows for the grown folks and windows for the children--three or four apiece; as a certain man had a large hole cut in his barn door for the cat and another smaller hole cut for the kitten.

### Conversations





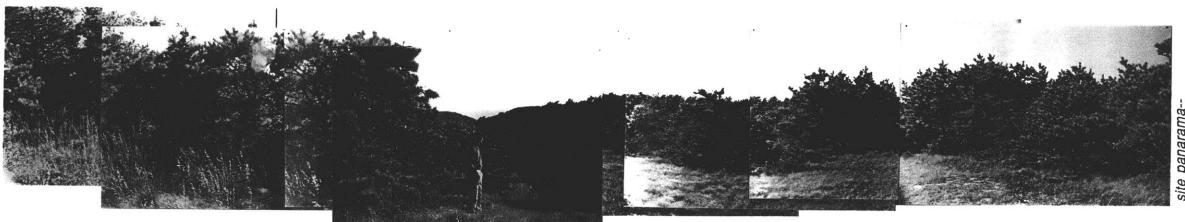
Markings

Traditional Cape Cod Houses--1700-1720

"Early Cape Cods were built by ship's carpenters as though they were 'land boatk' made to ride shuffing sands and withstand lashing wind and rain the storms) they were low and broad. They were built on large helm oak sills, which steadied the house wordi LESTER WOLKER American Shelter used for heating cooking, and light.

thank the rooms were clustered around a huge chimney that contained as many as four fireplaces four fireplaces,

# THE SITE



### FORM: Sightings

Places are defined in relation to other places. Here is relative to there. The project site is particularly highlighted by the there; the dramatic view of the bay as seen through two pitch pine covered hills.



Thus highlighted, the here has much more presence. The clearing's direction is west, toward the view of the bay, the tip of Cape Cod and Provincetown. It sits 120 feet above sea level then drop 20 feet off to the west, into a gully before it starts up again to a densly pine covered hill.

This building site is located on a two acre lot, a characteristic interior Cape Cod landscape made particularly lush by the forested National Seashore land which surrounds it. On its undulating hills, 12 foot high pitch pines, sweet bayberry with its grey-green berries, beach plum and blueberry bushes and crunchy lichen furnish a dimension that is screen-like against the wide sky...topmost branches of the pines end with wispy needles that filter the sun and wind.

panarama--ing west to bay king site Iook

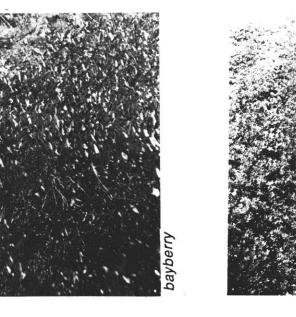


road to site





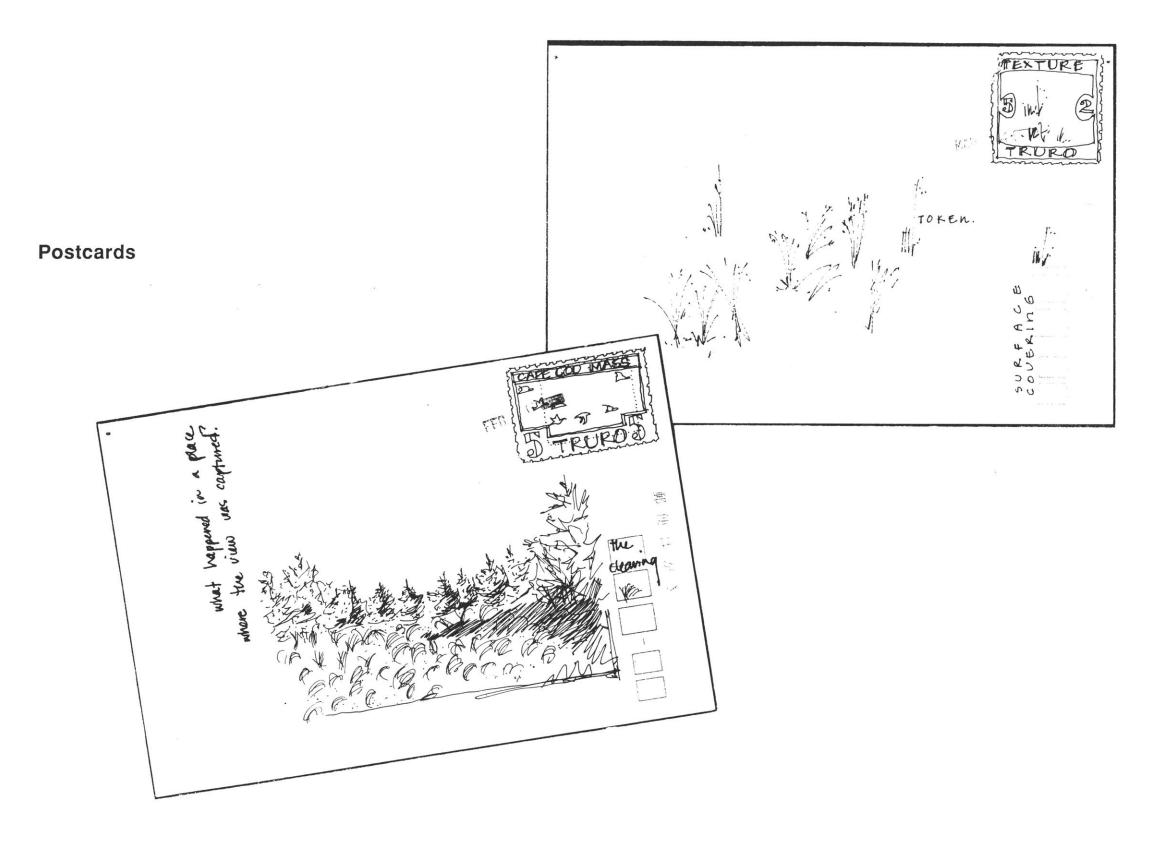


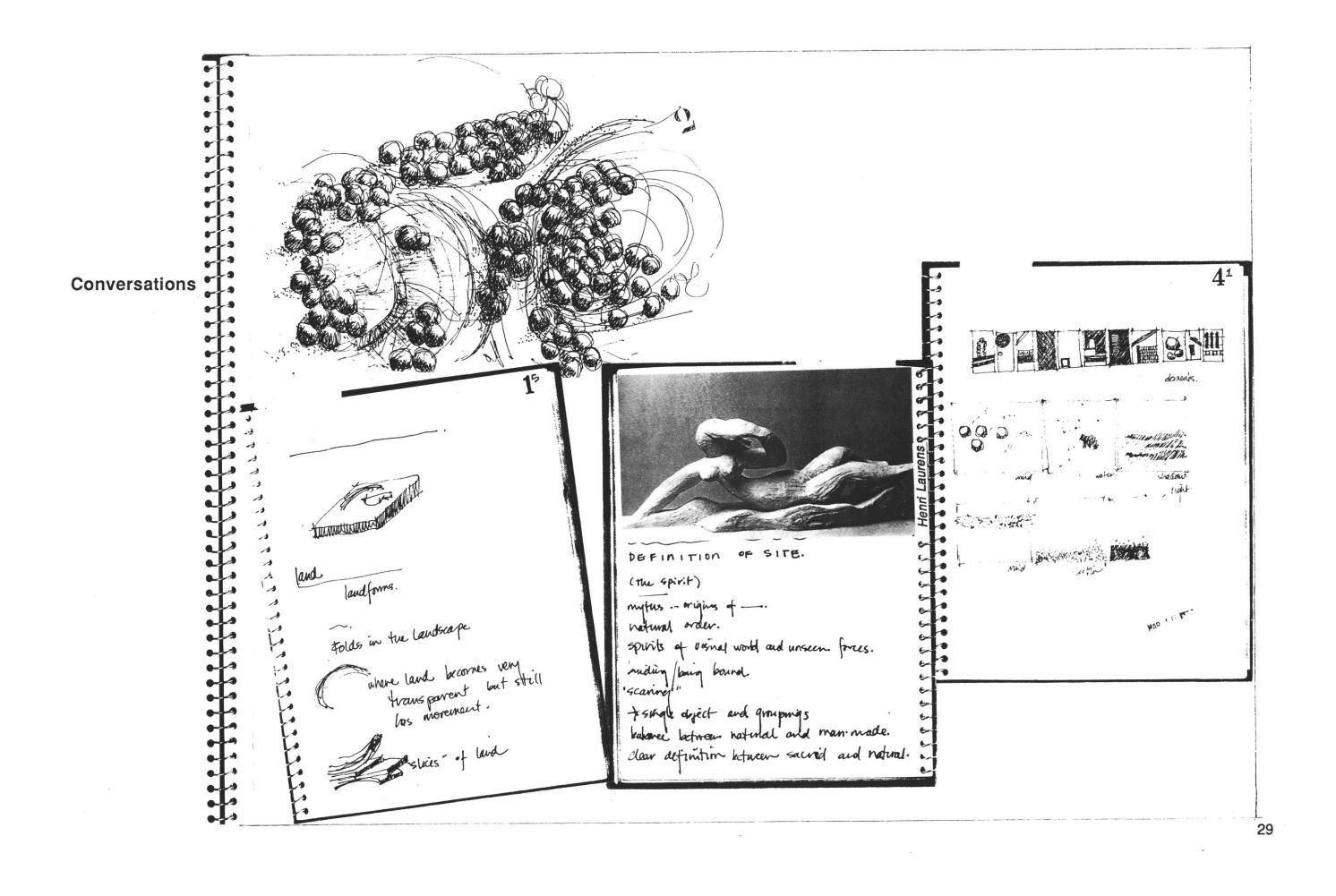




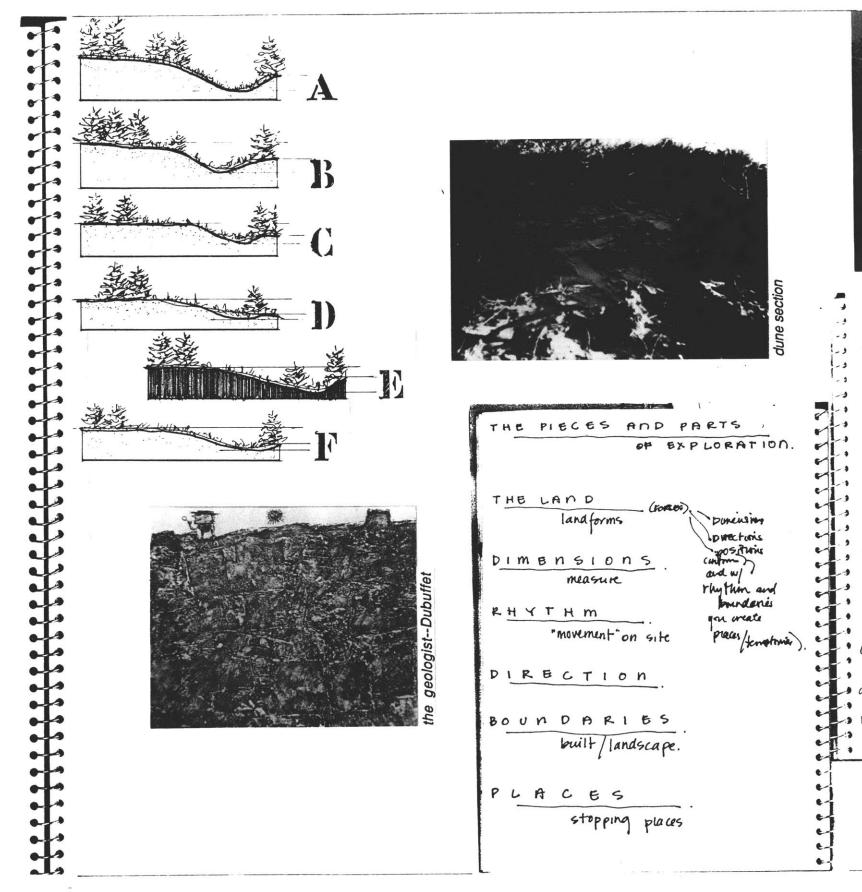




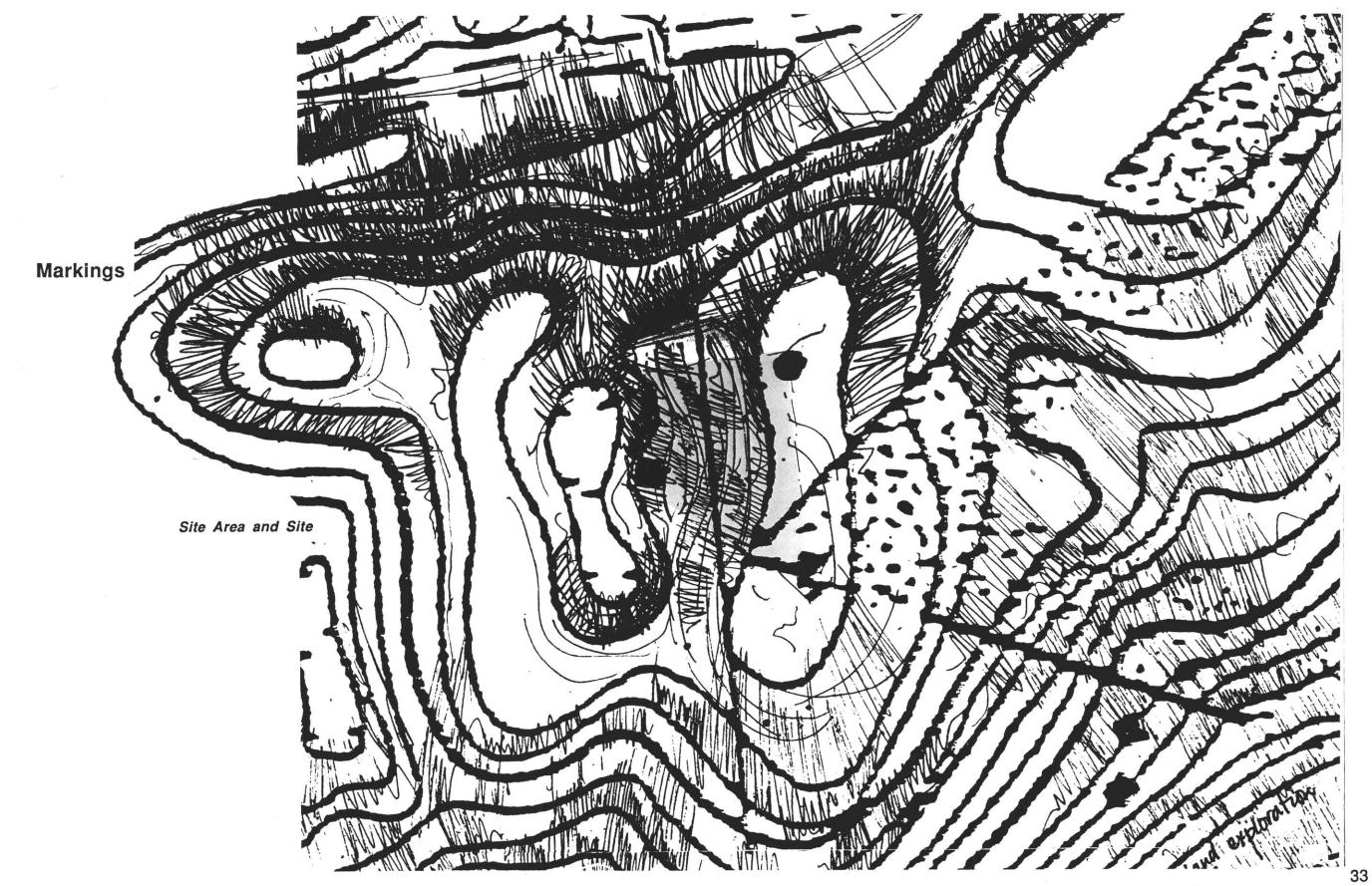




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*landscape in profile* original size: 3" x5" clay

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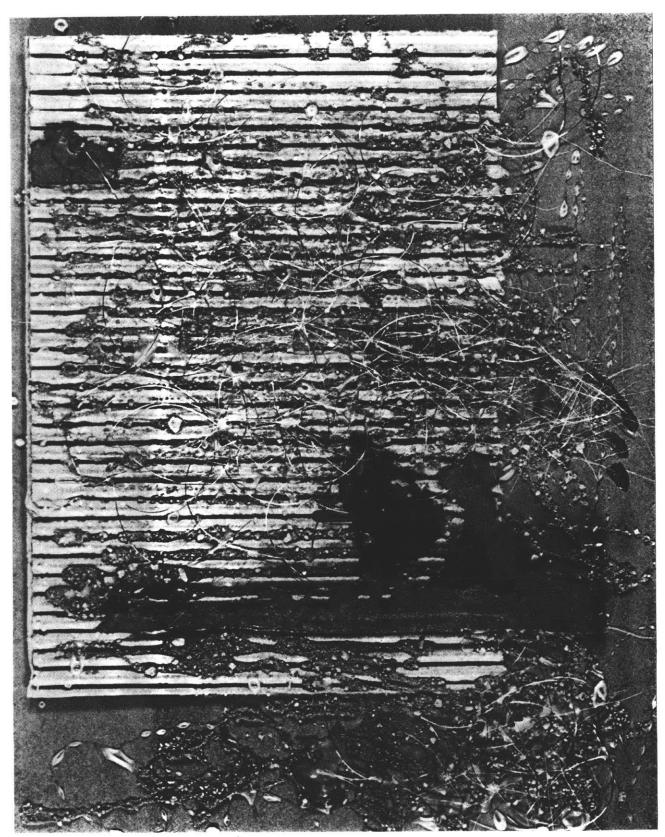
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**Landscape** original size: 8"x10" corregated cardboard, sand, wire, brush hairs, gesso and rust flakes

34

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site form original size: 5"X7" dry point needle and sand on zinc plate

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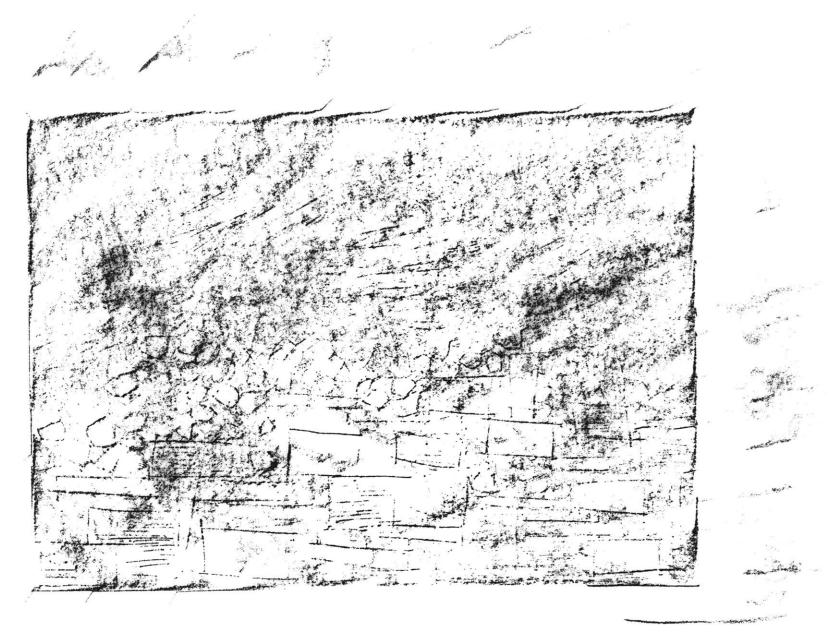
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plate rubbing



zinc plate

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# land etching

original size: 11"x17" dry point needle on wax mano paper

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1/8" scale

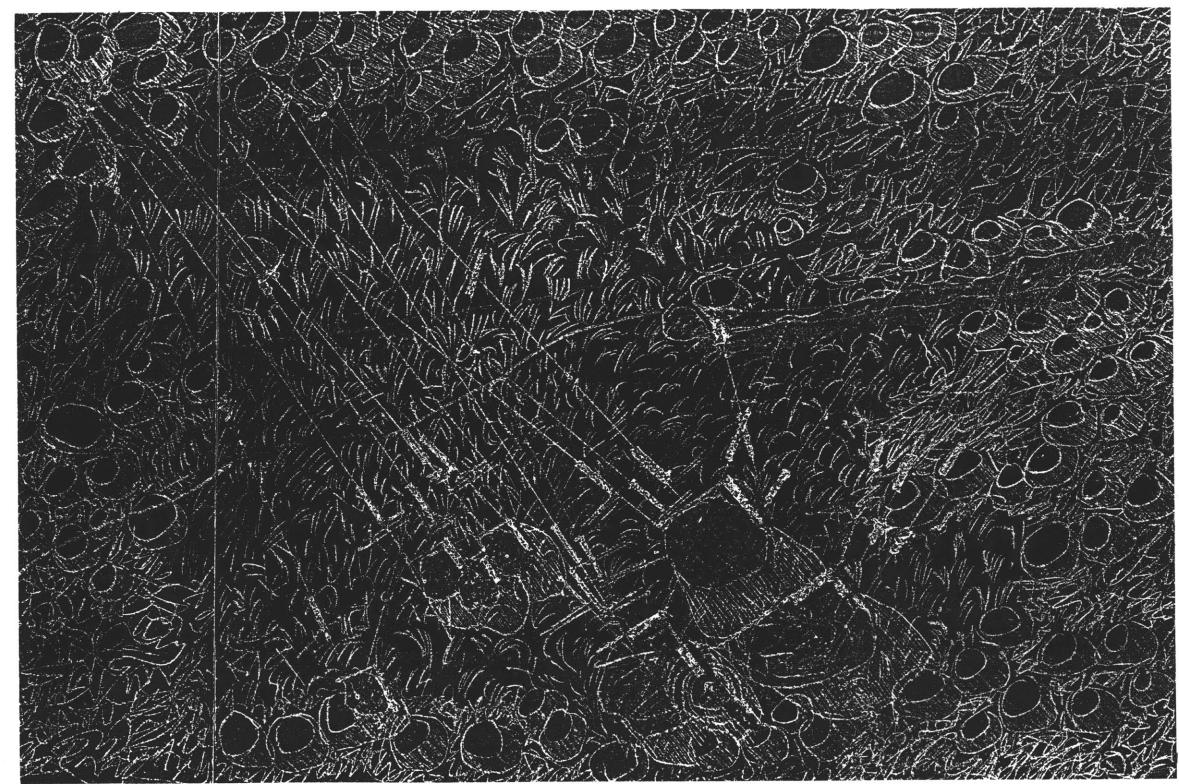
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HJ--Ideas on technique:

The idea of etching/drypoint is to bring one closer to the movement of the drawn line and decision made. Repeating the action creates a rhythm and a commitment to that action/direction.

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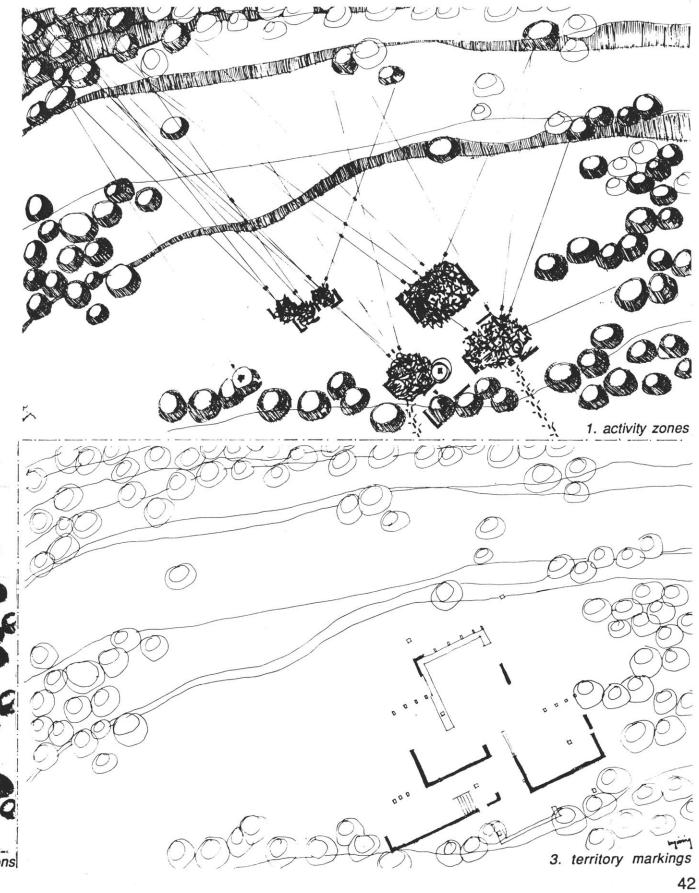
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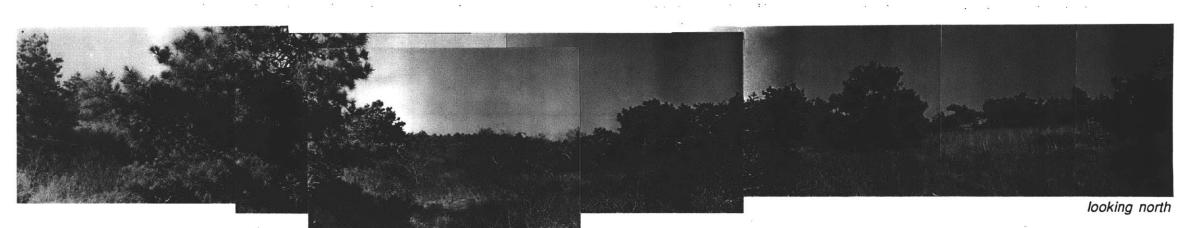
Site Activity Transformation

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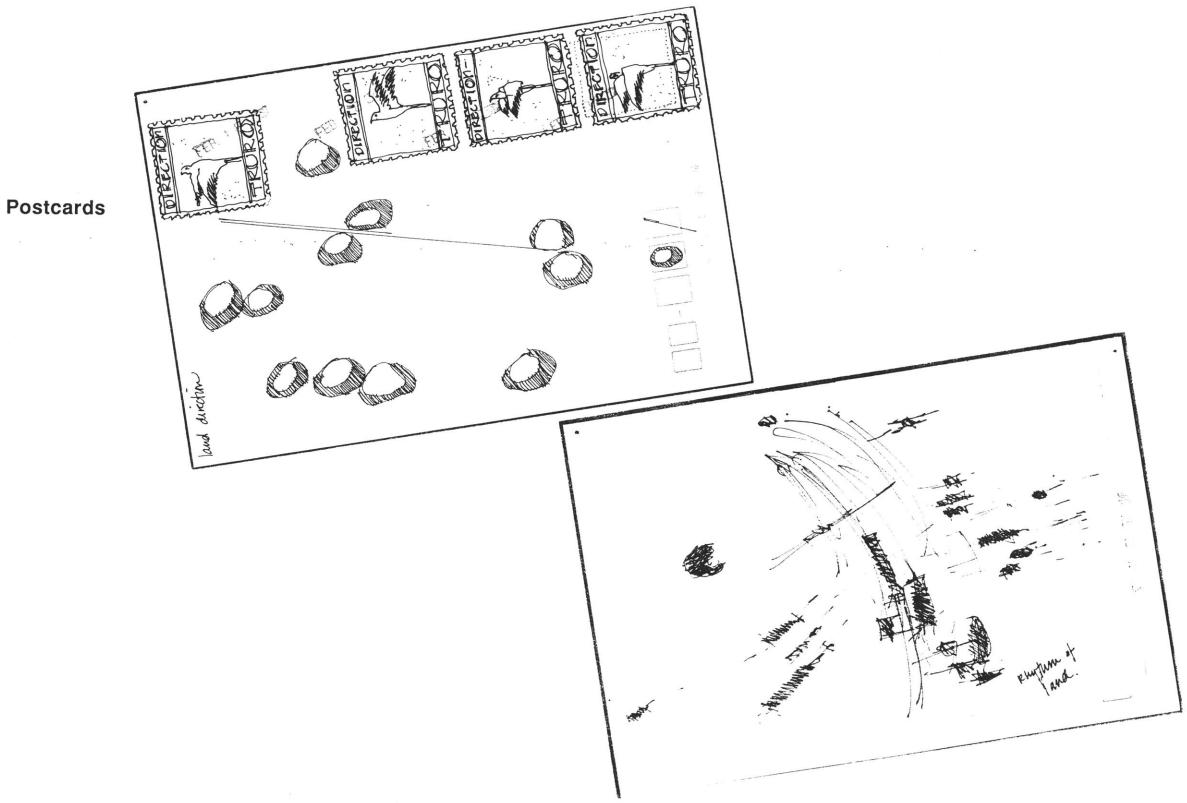


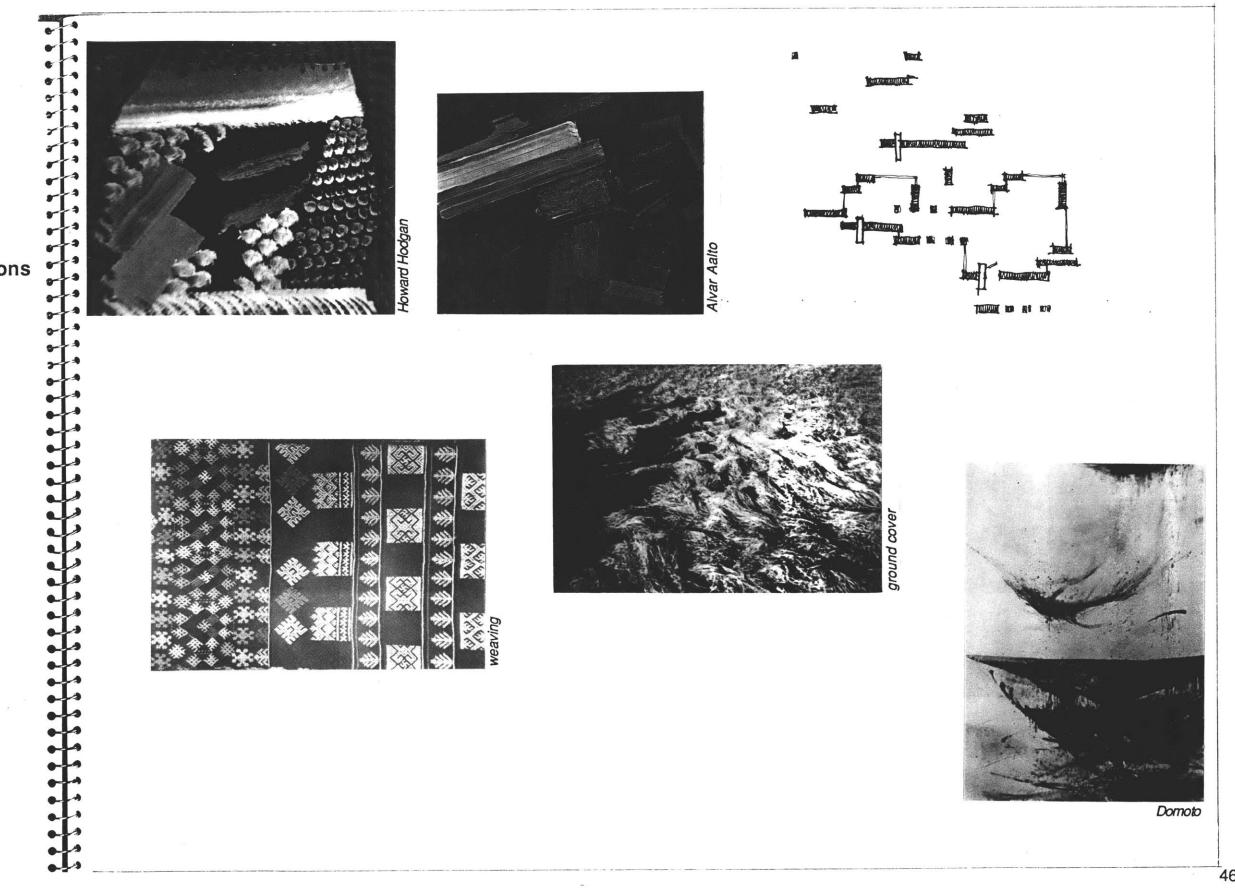


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## **DIRECTION:** Sightings





Conversations

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**wind 1** original size: 9"x12" gesso, oil and sand



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**wind 2** original size: 9"x12" gesso, oil and brass wire

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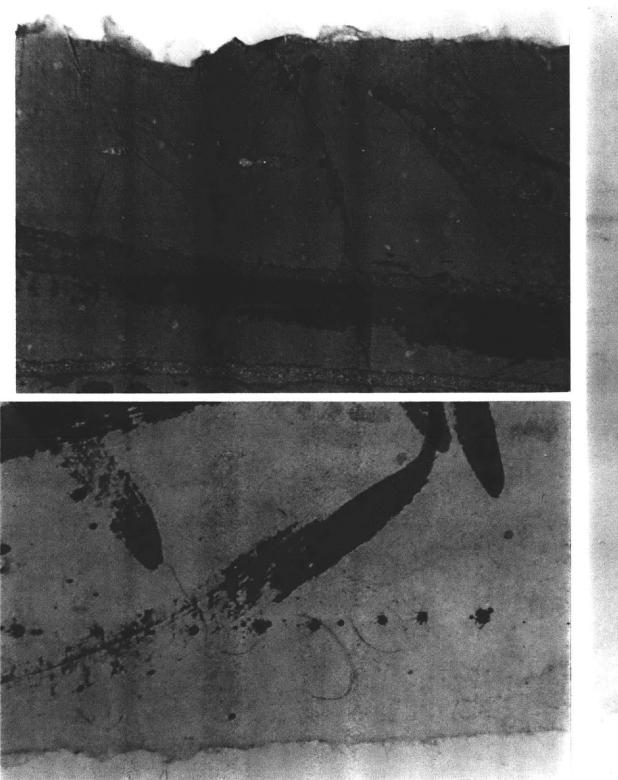
**Direction 1** original size: 5"x7" handmade paper and ink

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Direction Intensified original size: 12"x16"





**Terracing** original size: 3"x5" brass and wood

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*site directions* original size: 8"x10" handmade paper and brass

53

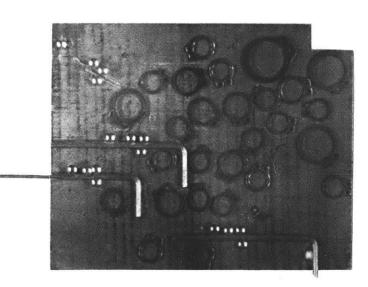
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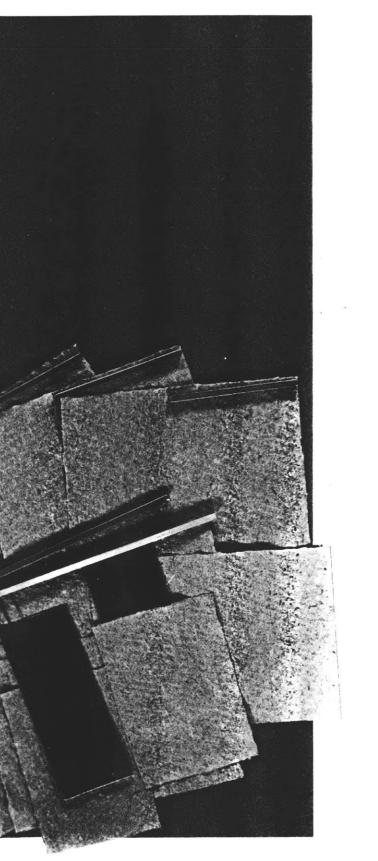
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*site direction* original size: 5"x7" dry point needle and clay tool on zinc plate

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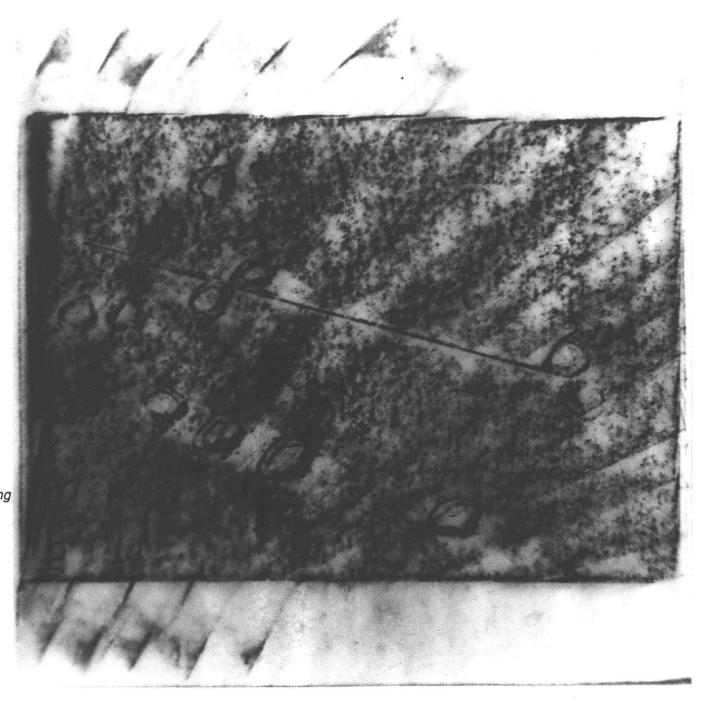
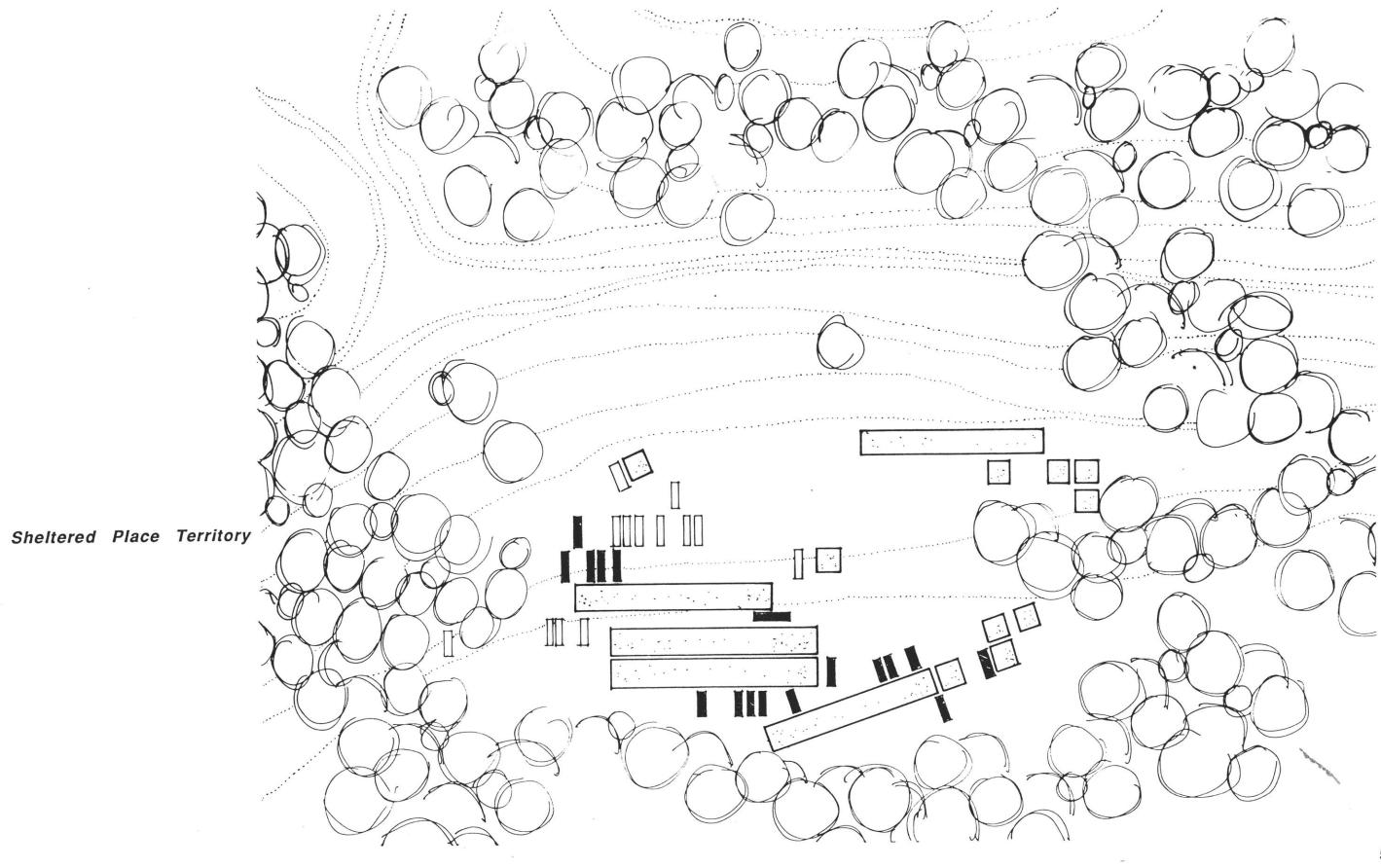


plate rubbing

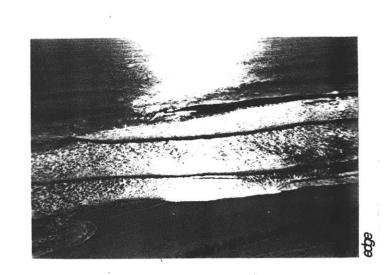


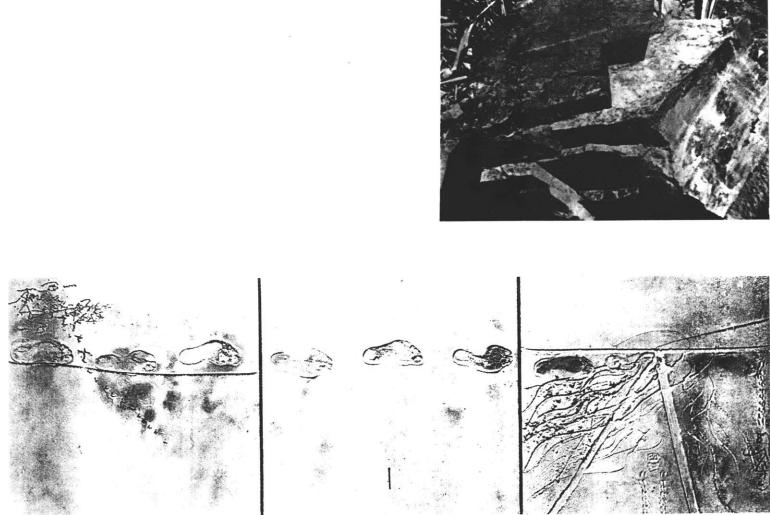
zinc plate

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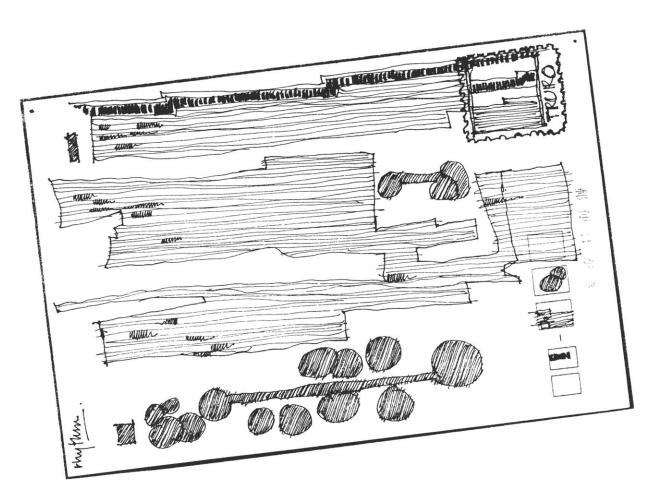


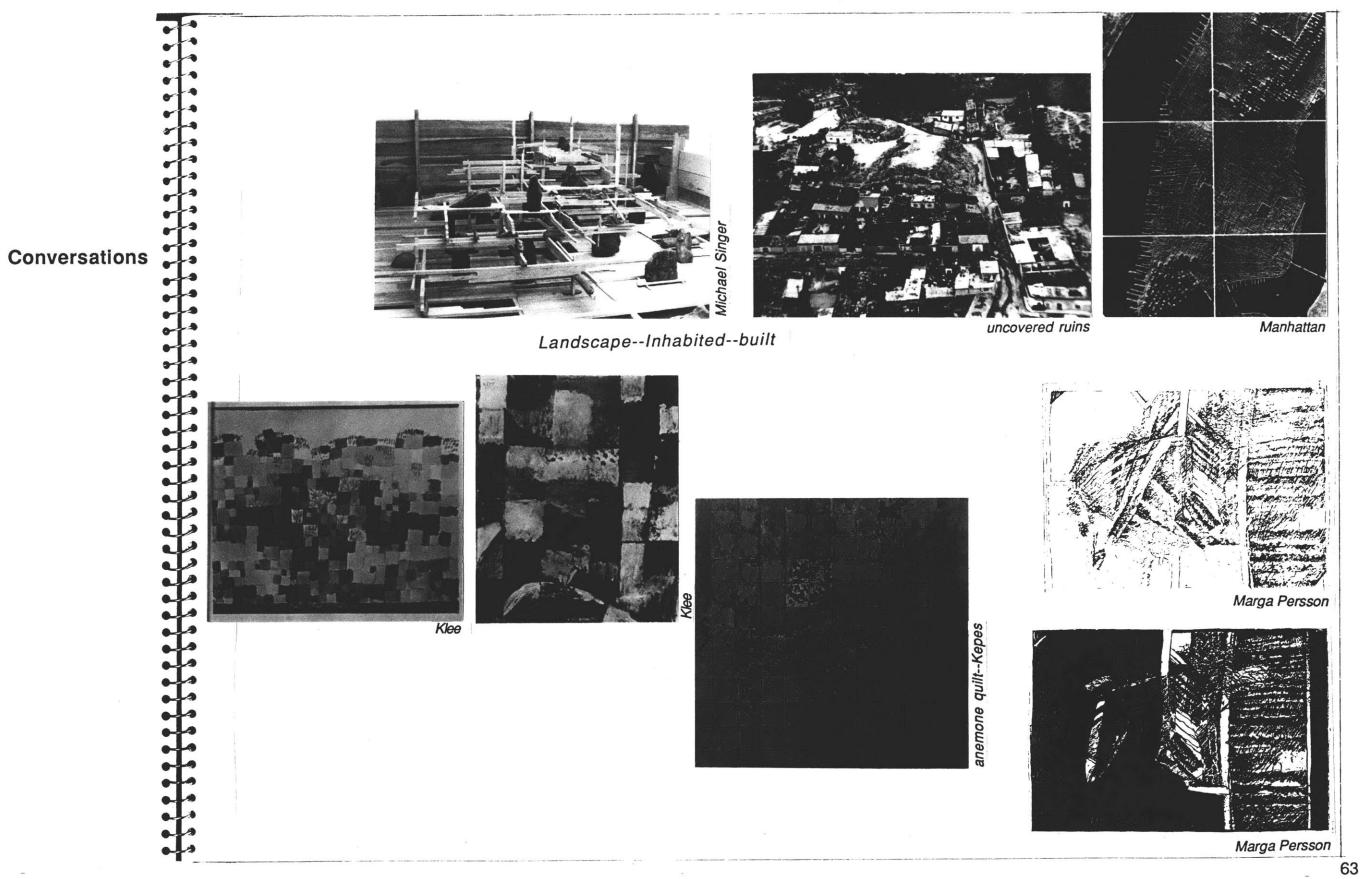
### **DIMENSION:** Sightings

footprint--Tàpies

### Postcards

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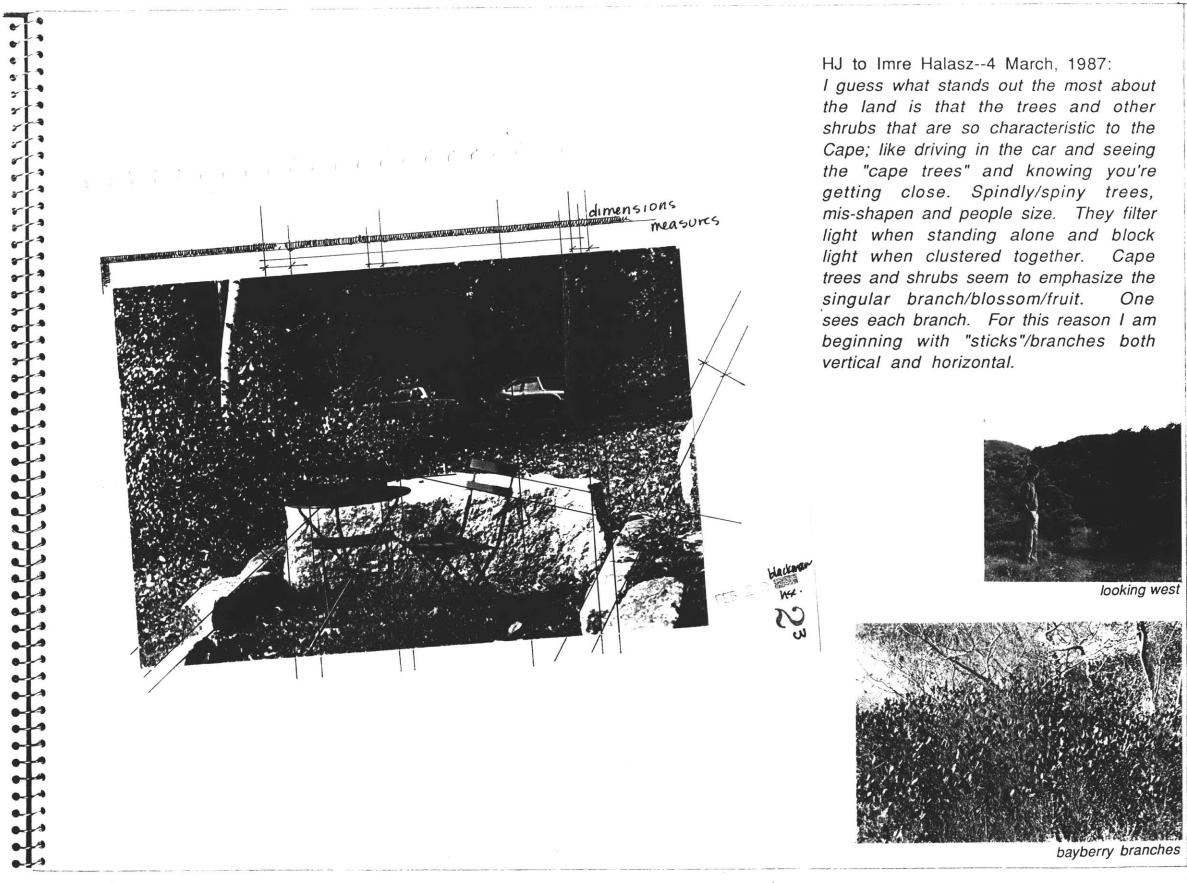




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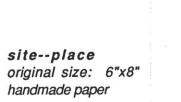
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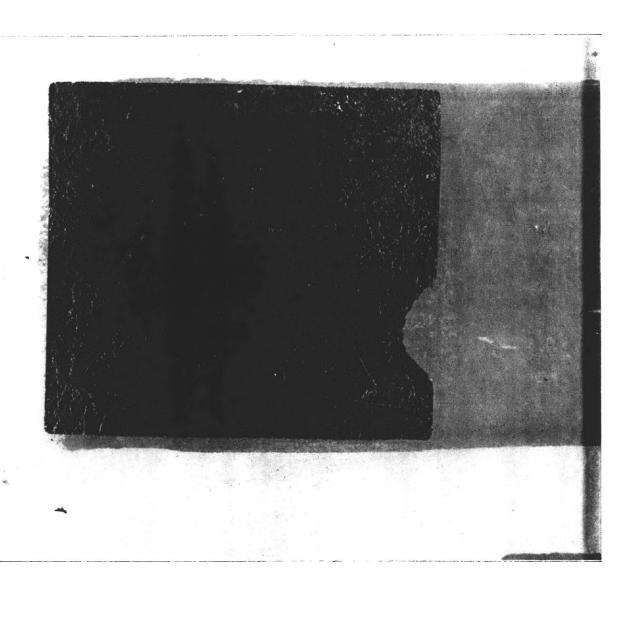




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Markings





*site dimensions* original size: 5"x7" dry point needle and clay tool on zinc plate

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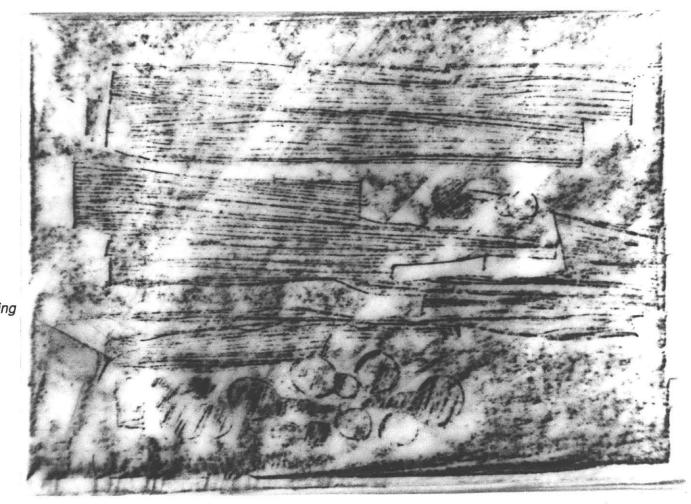
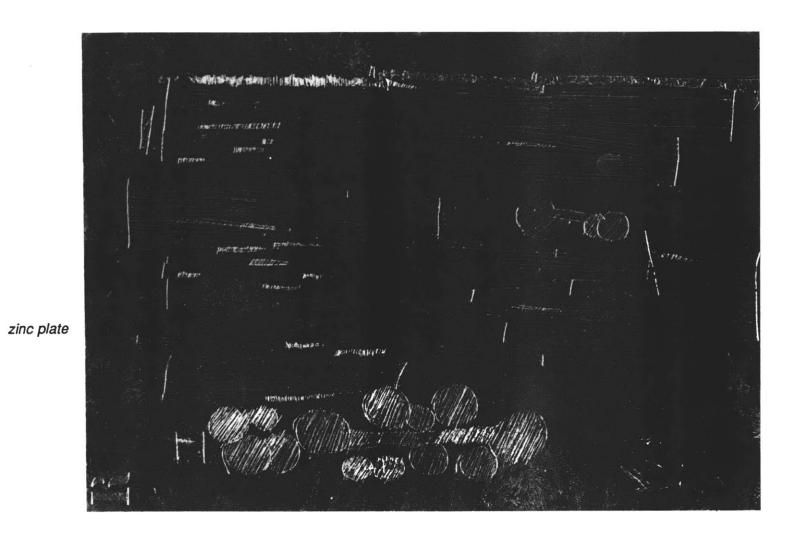
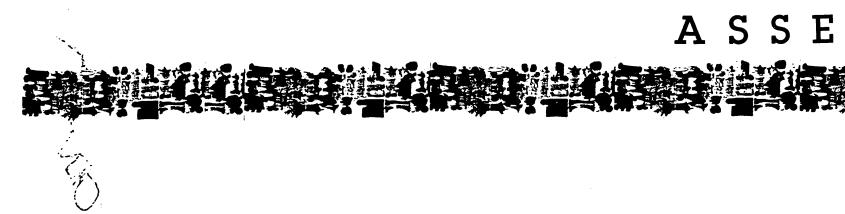


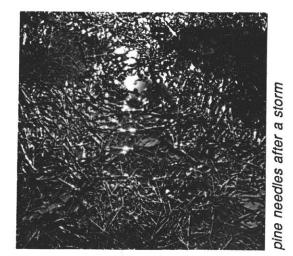
plate rubbing



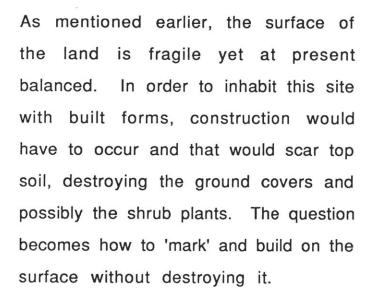


## ASSEMBLAGES

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SURFACE: Sightings

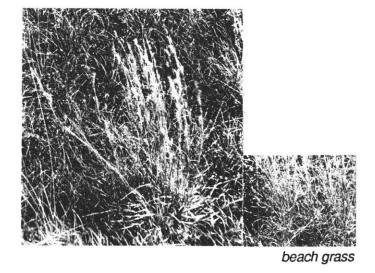


Beginning with the scenarios of going to the beach or camping in the woods, the first action would be to 'mark' a location. This is usually done with a vertical element such as an umbrella pole or tent stake. Next would be to 'prepare' the surface, either by smoothing the sand or placing a blanket

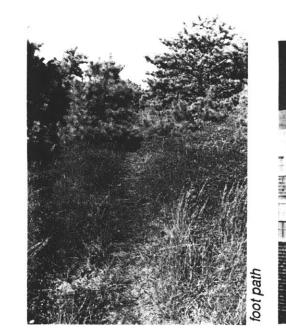


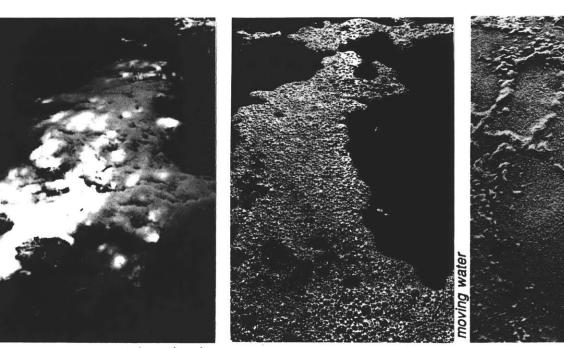
down. This series of actions I have observed to be most natural to humans--the marking of territory by vertical elements and then horizontal planes.

The decision was made to protect the existing surface from re-surfacing and instead build above it by creating an additional surface that would only 'touch down', marking territories with vertical elements and spanning with a deck system to create the 'prepared' horizontal surface from which to build up. This would then leave the natural surface to continue to move with its inherent behavior and the built surface to exist and respond to its own



behavior. Furthermore, by not placing this new surface directly onto the land one is able to understand the <u>natural</u> surface as the first layer of building and the <u>built</u> surface as the second, thus again being able to experience the *here* and the *there*.

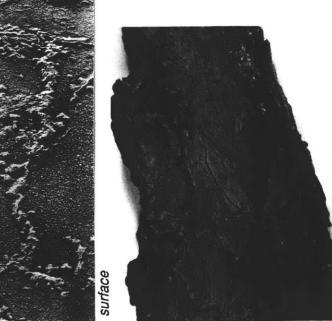




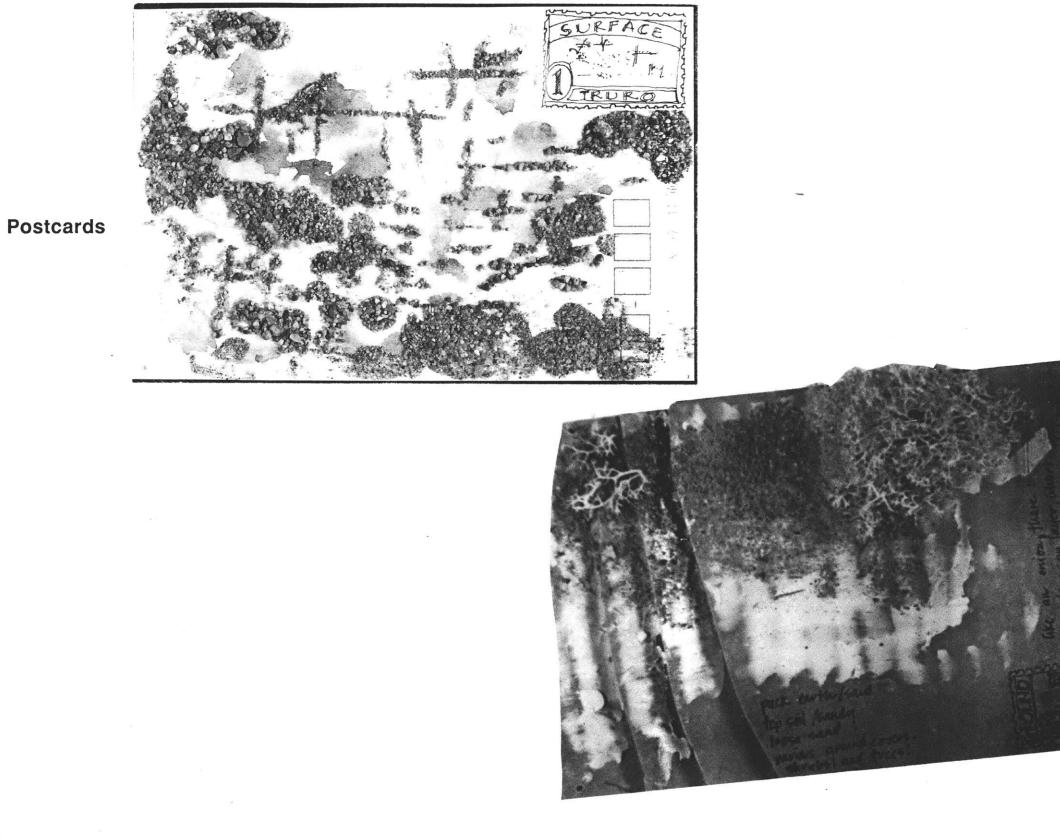
snow patch on the site



raised decking



pitch pine bark



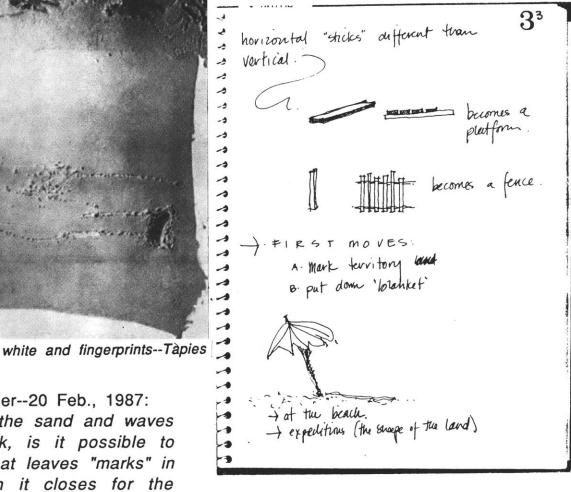




HJ to Michael Singer--20 Feb., 1987: Like footprints in the sand and waves leaving their mark, is it possible to create a house that leaves "marks" in the surface when it closes for the winter or when windows and doors are opened and closed?

This would take careful "preparation" of the surface/ground and thought as to the inherent or wanted behavior of building materials, forms and elements.

Expanding and receding, carving out space for itself(the built forms) in the landscape(natural or built). Deliberate movement and choice of placement.



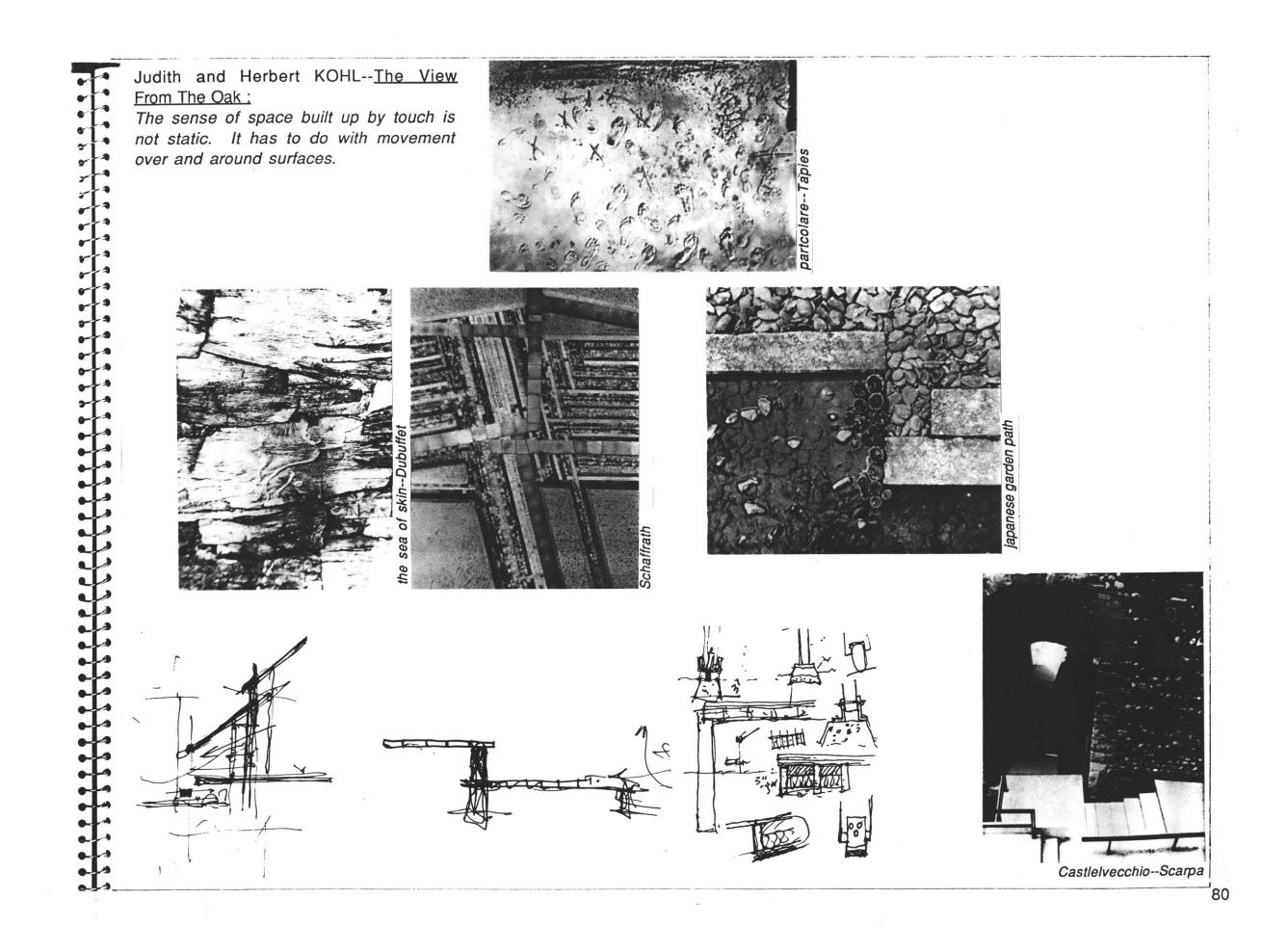


water jade--Kepes

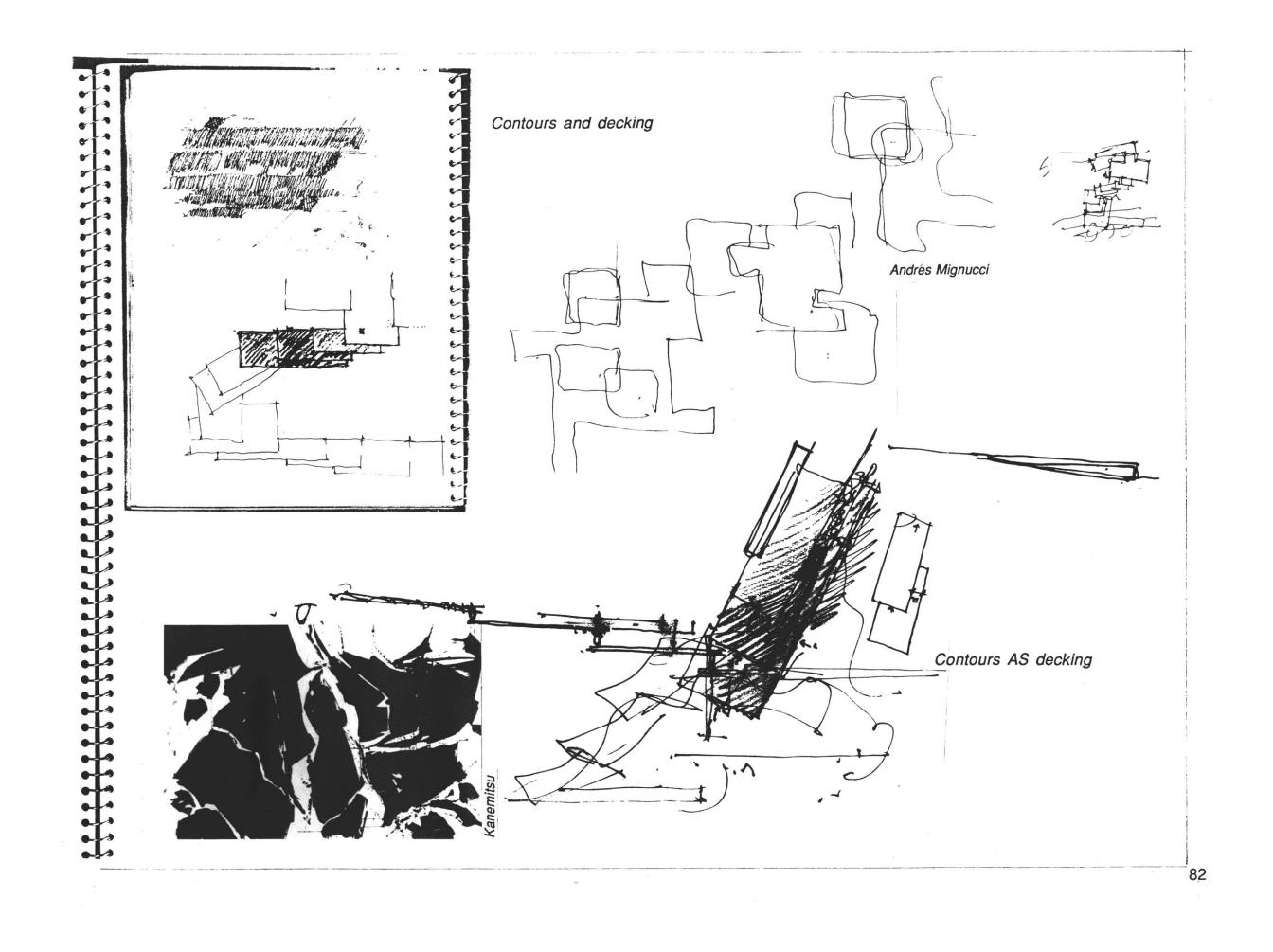
Differences between closed form (traditional Cape) and open forms (screens...) . What is the difference in their mark? Like the footprint--the base /heel of the foot is a "closed" form mark and the toes, as a group or repeating forms, are an "open" mark because they are letting some of the surface "through".

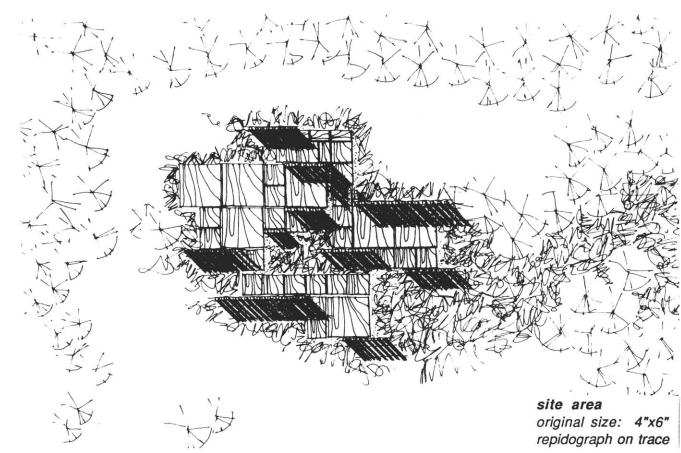


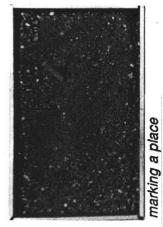
large ochre with footprints--Tapies



` .

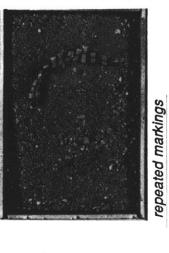






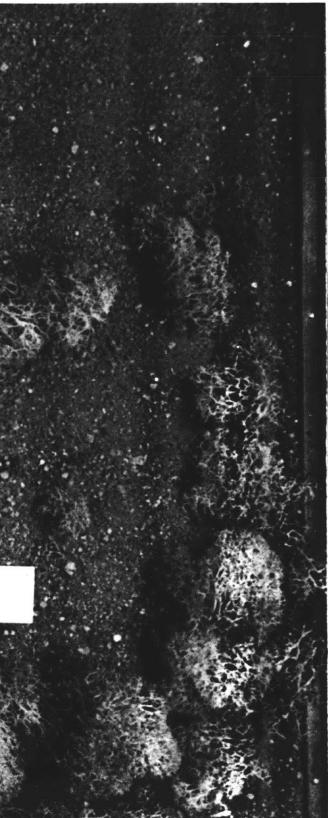
## Markings

direction and place--1/8"scale original size: 20"x20" printer's box, sand and wood



closed marking

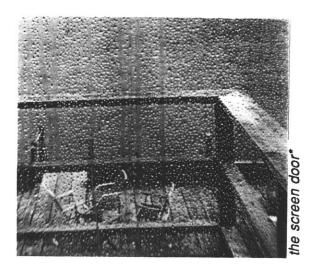
S. T. P : .....



First attempt at marking territory and direction of the site.



**SCREEN: Sightings** 



choose 'inside' or 'outside' space-always having the accompaniment of the unique features of Cape land.

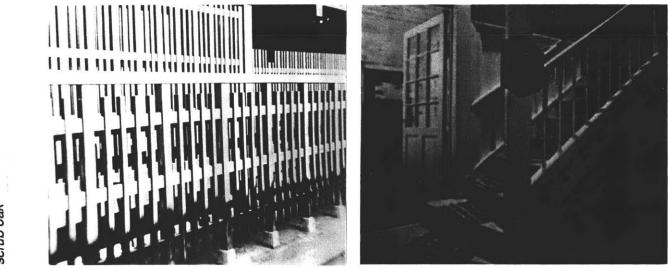
Traditional Cape Cod fencing set into dunes and other shifting land surfaces to mark territory and protect the land contours from blowing sand are vertical screens following similar design principles.

selected as a means of creating built form that allows for inhabiting the land, and at the same time having the vegetation and surface of the land continue to be a visual and physical part of one's experience even after going 'inside'. Exterior and interior vertical markings and horizontal planes now become screens.

Three-dimensional screens were

Slated deck surfaces are created which parallel the movement of the land surface as one approaches the shelter. These horizontal planes just above the original land surface enable one to walk toward the shelter without destroying the surface of the land and to freely 85

Provincetown'

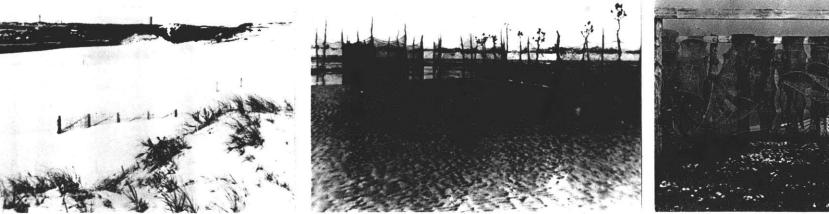


japanese fence





old pier--bay side



dune fence

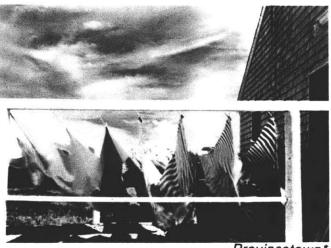
fishing nets--Provincetown

fishing nets--Norway

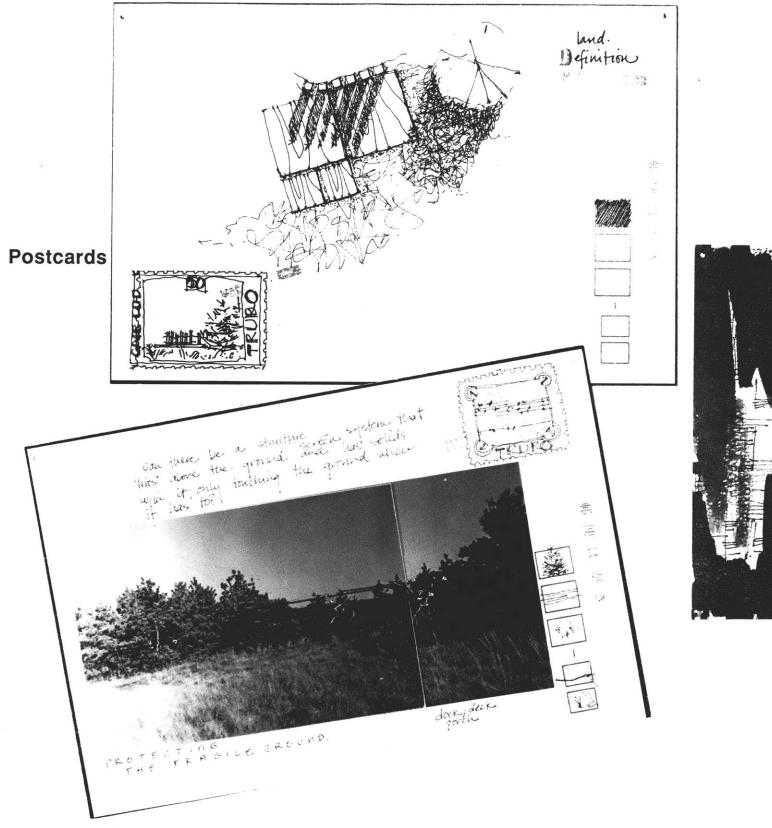
Carl Larsson's home

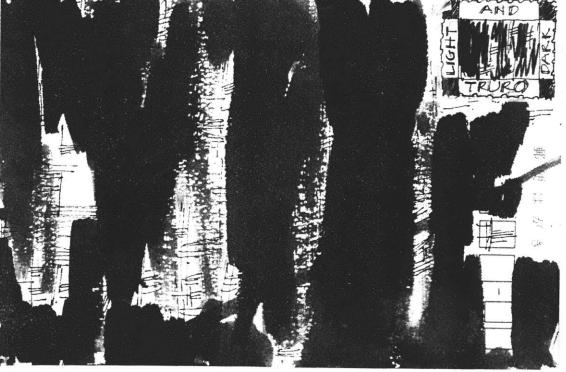


the hammock\*

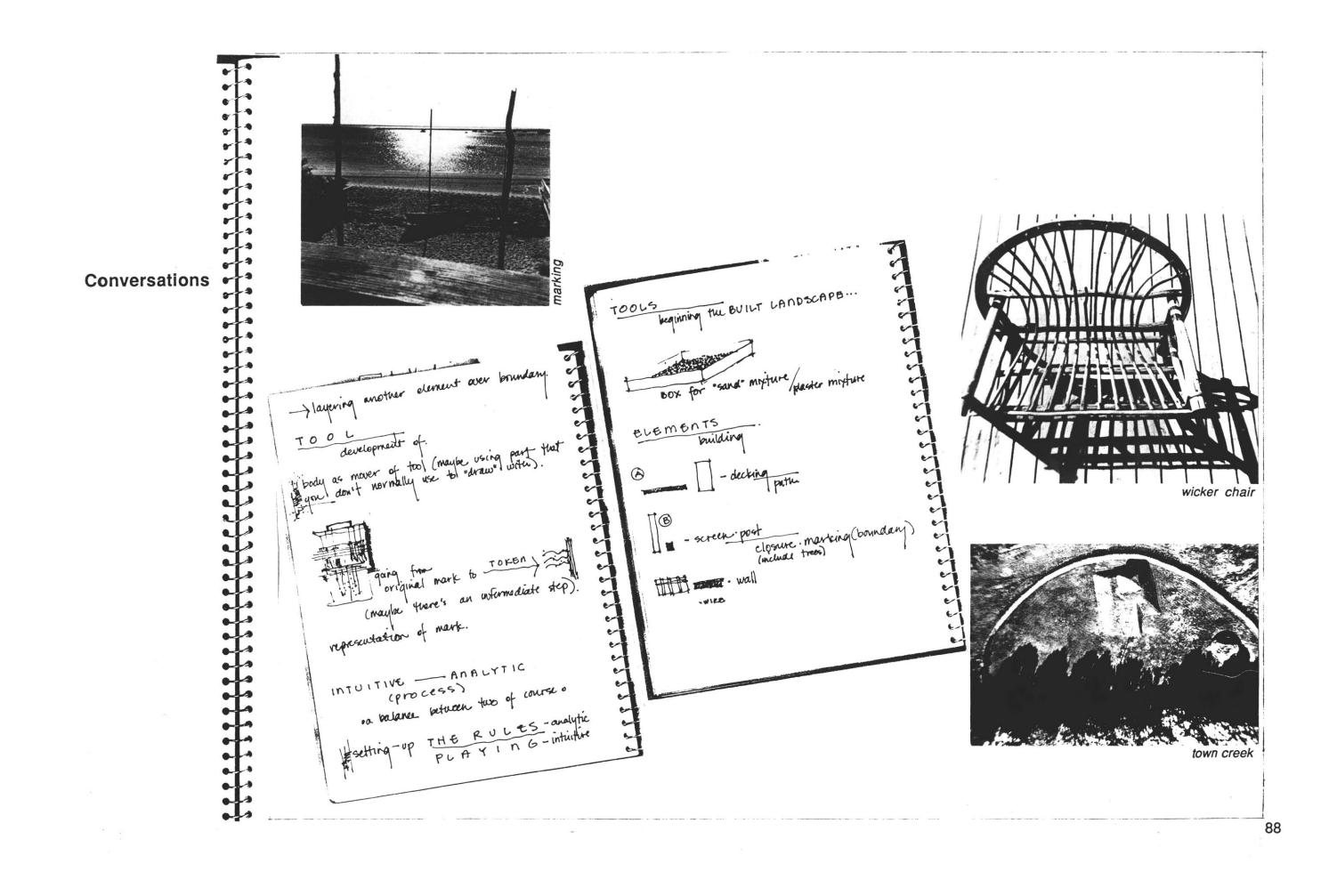


Provincetown\*





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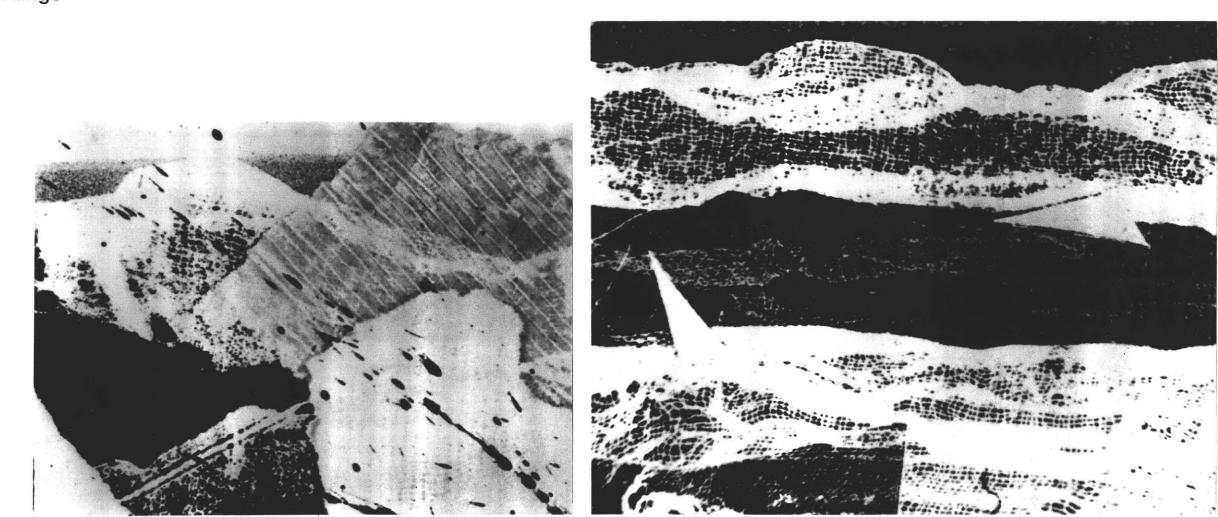
**screened layers** original size: 5"x7" monoprint

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The layering of marks over time/reflecting time--process and evolution.

89

-



Markings

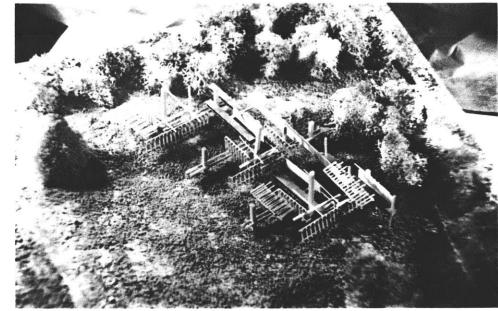
90

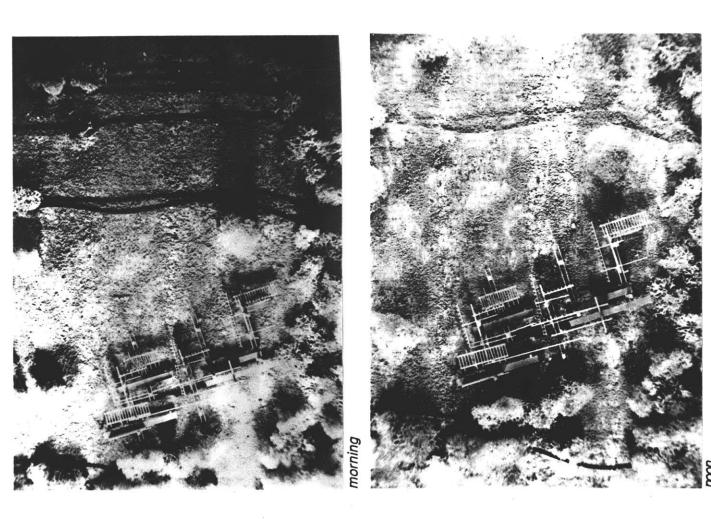
Screen Instillation on Site original size: 20"x30" 1/8" scale

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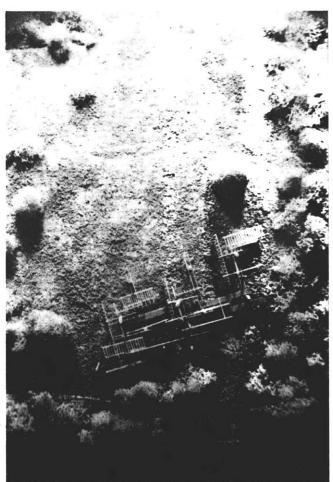
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91





looking north-east



evening

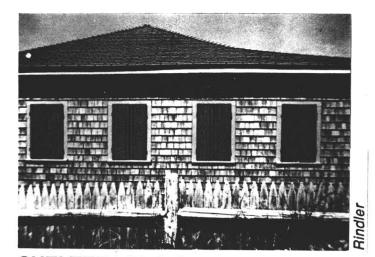
## Screens

original size: 20"x30" 1/4" scale

Layers of horizontal and vertical screens forming the built layer.

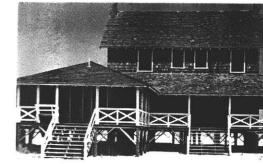






SHELTER: Sightings

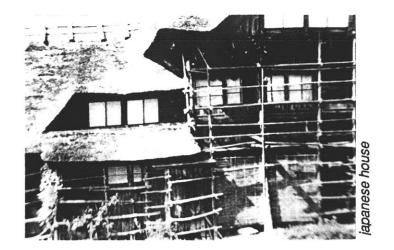




Vertical markings which earlier were used as territory boundaries are now transformed into a structural system of columns. Horizontal screens in places become solid planes for interior surfaces and the roof of an emerging shelter.

A primary vertical screen is developed from a set of dimensions that is deployed to create semi-closure, and in places solid vertical panels were inserted in the screen for complete closure. This 'play' of solid planes and screens--both vertical and horizontal --was designed to organize interior spaces. All interior spaces include a solid plane which receives the light and shadow that the screen plane conduits. The constant movement of light and shadow during the course of the day, captured by receiving planes throughout the interior space, enables inhabitants to understand the three-dimensionality of the space. One is able to be sheltered in the spaces <u>between</u> interior solid and screened planes, and at the same time experience the natural sheltering of the outside environment.







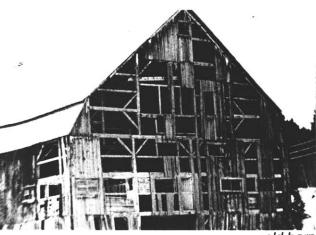


japanese house detail



Provincetown



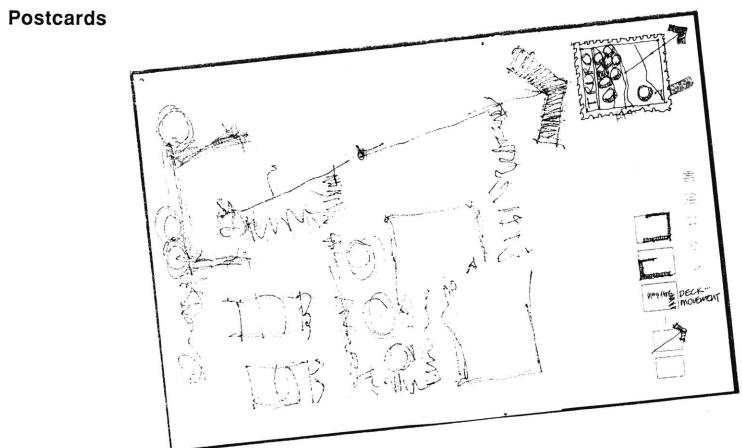


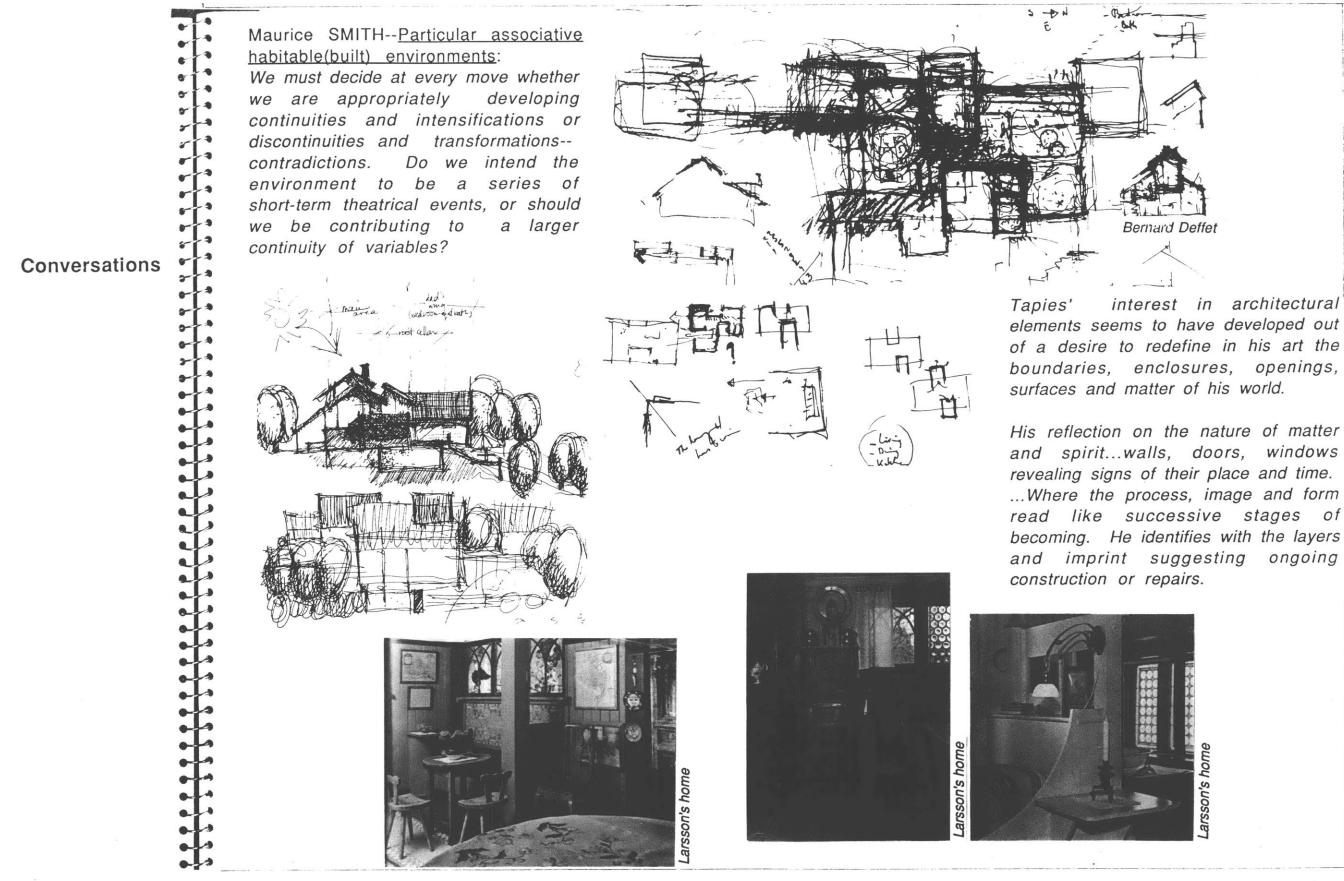
old barn



goose with gooslings





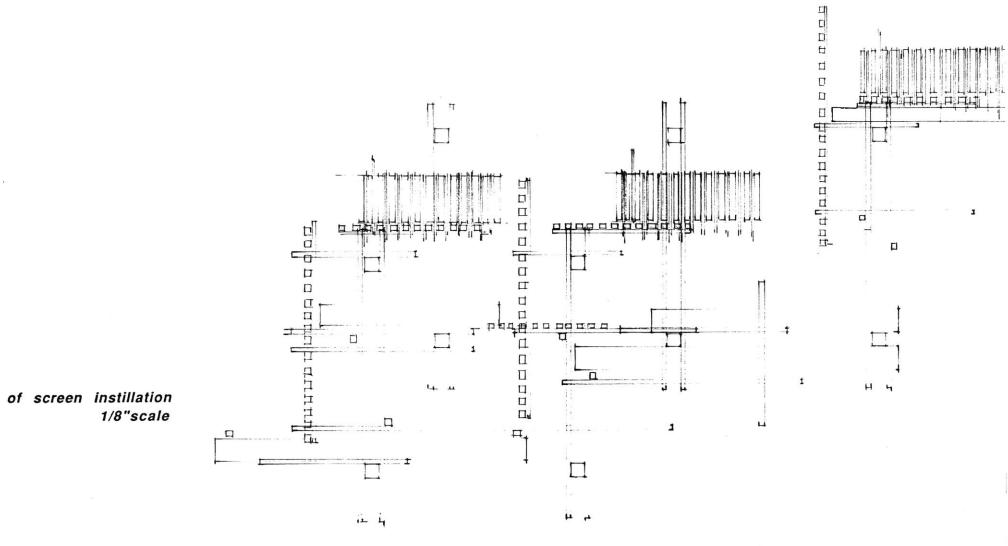


elements seems to have developed out of a desire to redefine in his art the boundaries, enclosures, openings,

and spirit...walls, doors, windows revealing signs of their place and time. ...Where the process, image and form read like successive stages of becoming. He identifies with the layers and imprint suggesting ongoing

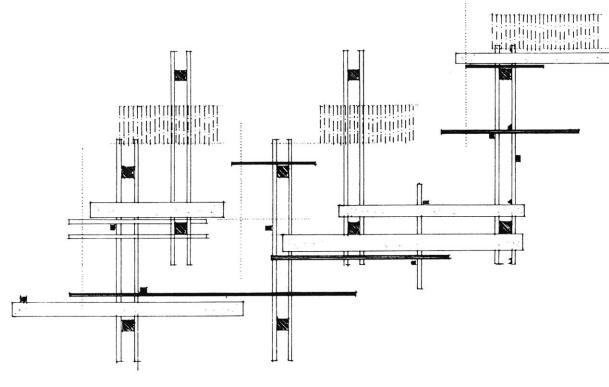
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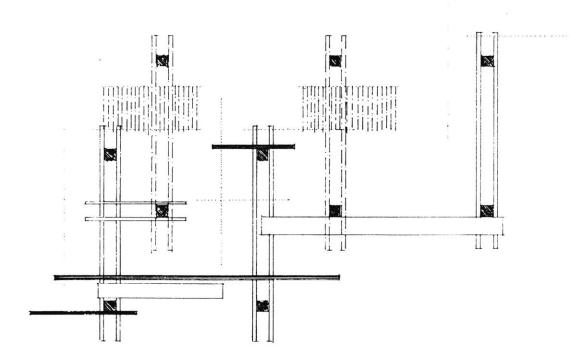
( . Markings

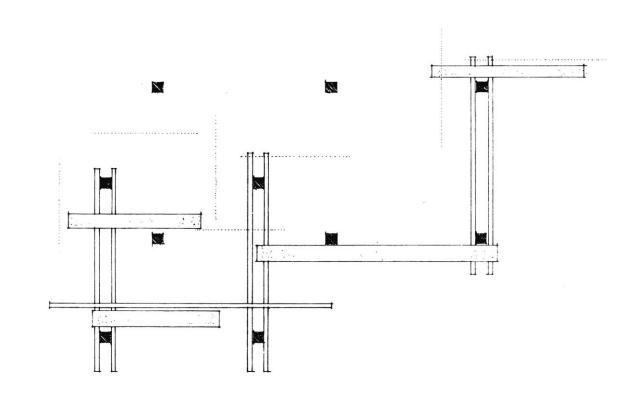


.....

Transformation of screen instillation 1/8"scale







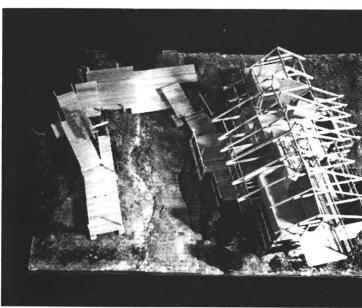
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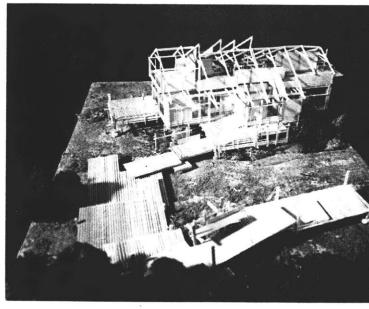
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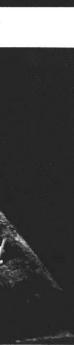
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Plan of Sheltered Place



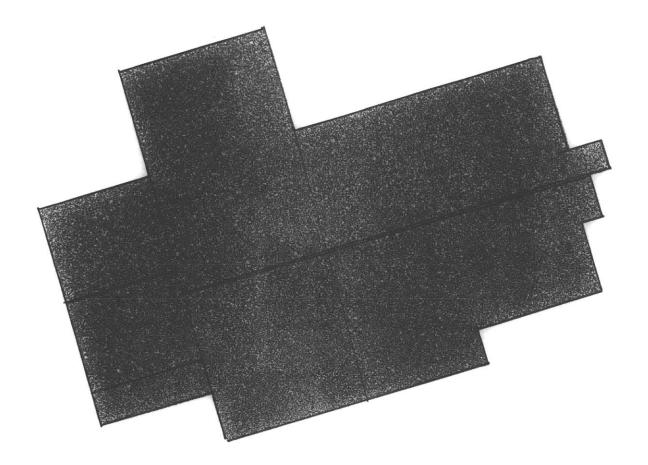




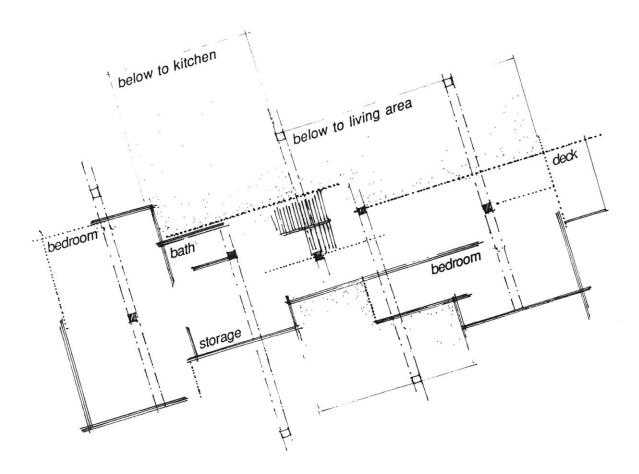
entry to site--east



looking south

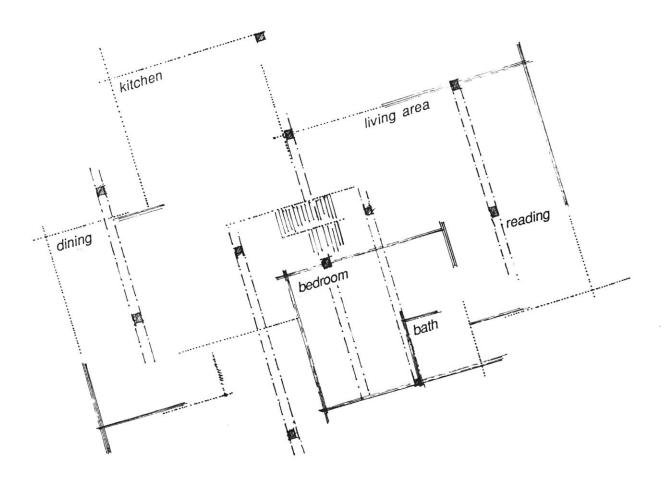


### ROOF MASS



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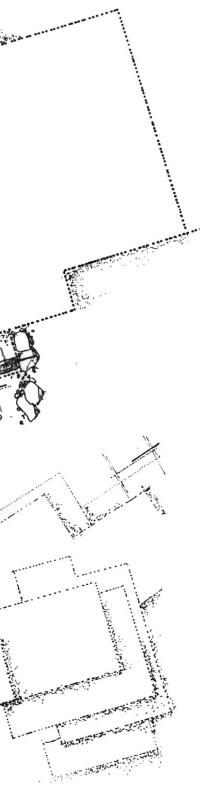
## SECOND FLOOR PLAN

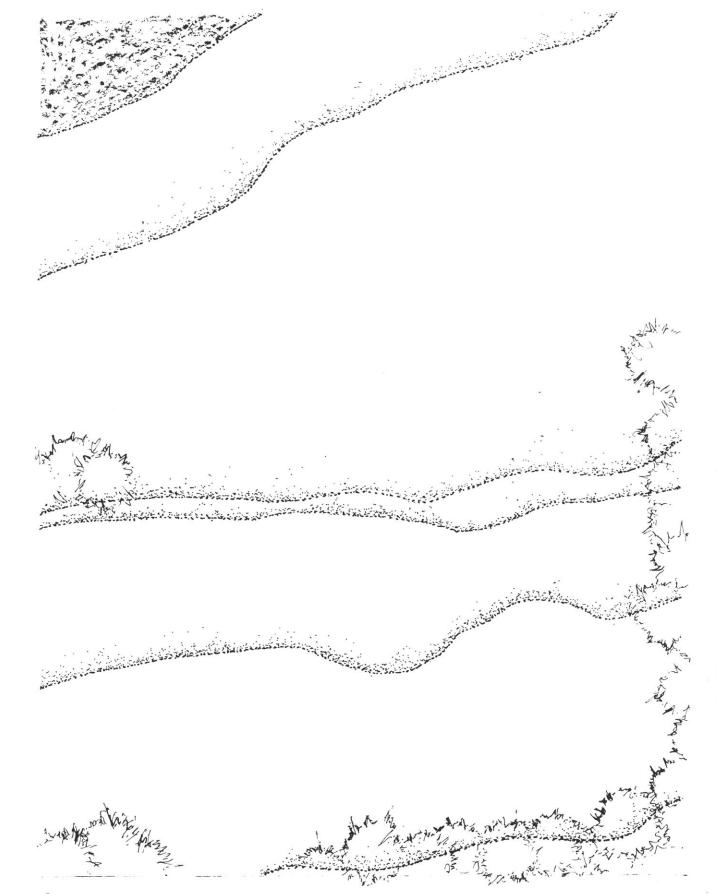


#### FIRST FLOOR PLAN

### BUILT SURFACE LEVEL





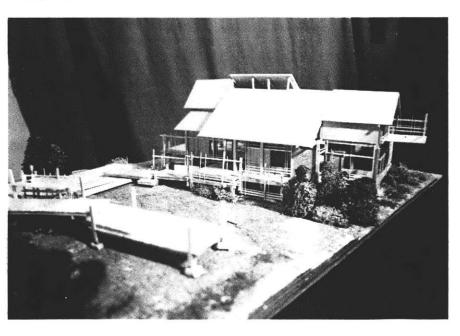


GROUND LEVEL

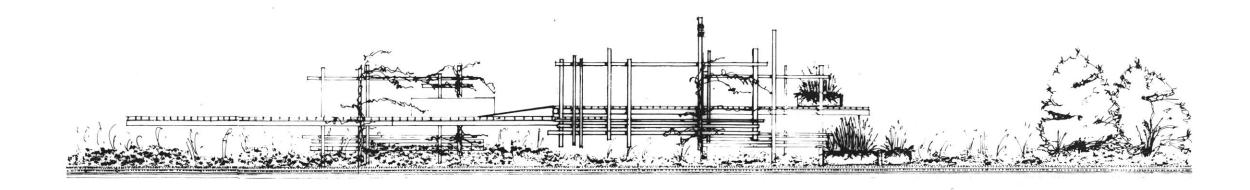
NORTH

1/8"scale

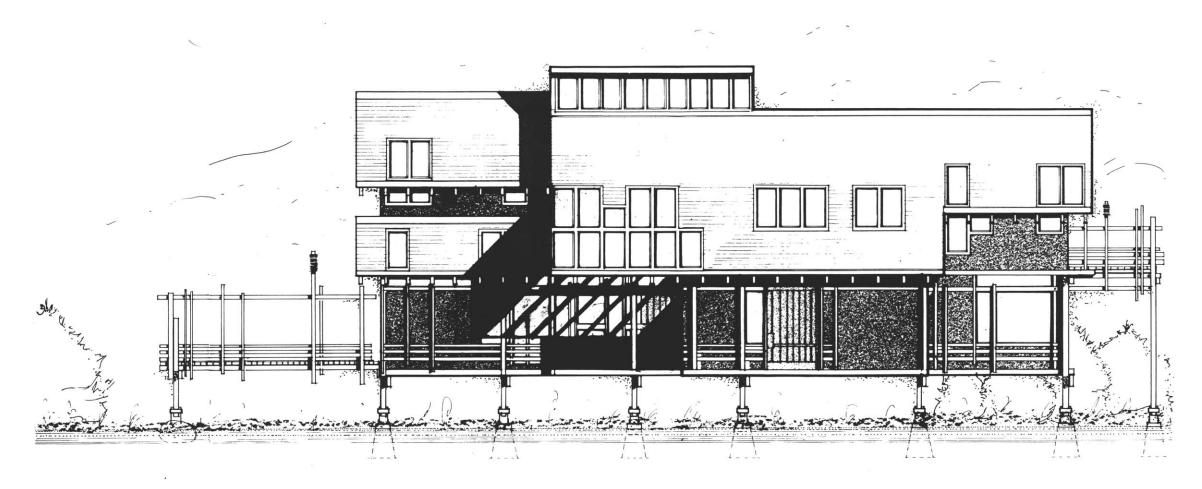
vertical screens moving from built landscape through house



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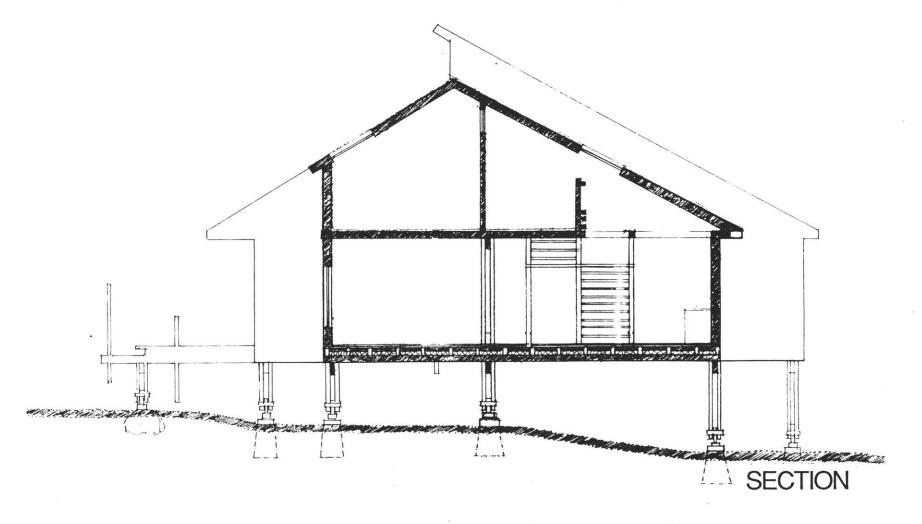
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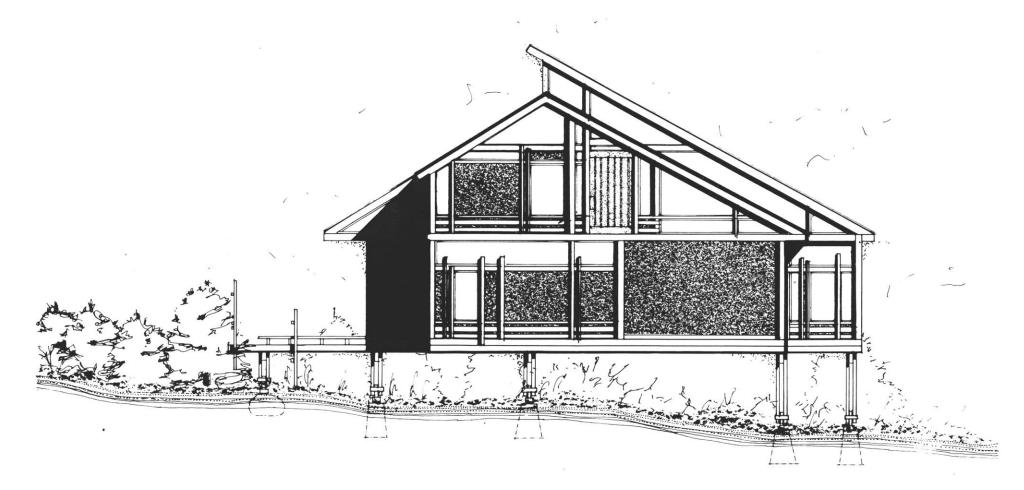


## EAST ELEVATION 1/8"scale

Surface and Shelter





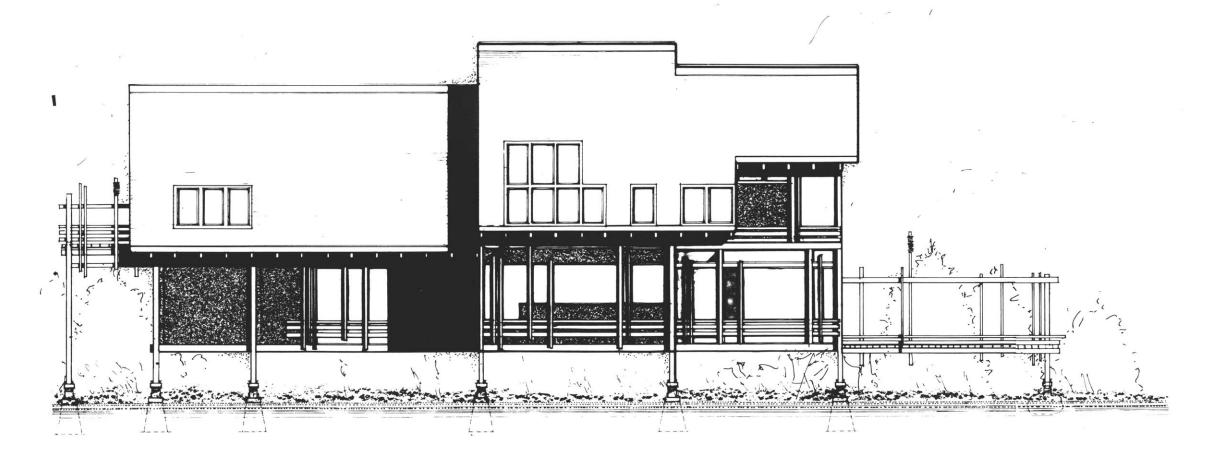


#### NORTH ELEVATION

1/8"scale

screens and soild planes moving through house and out again



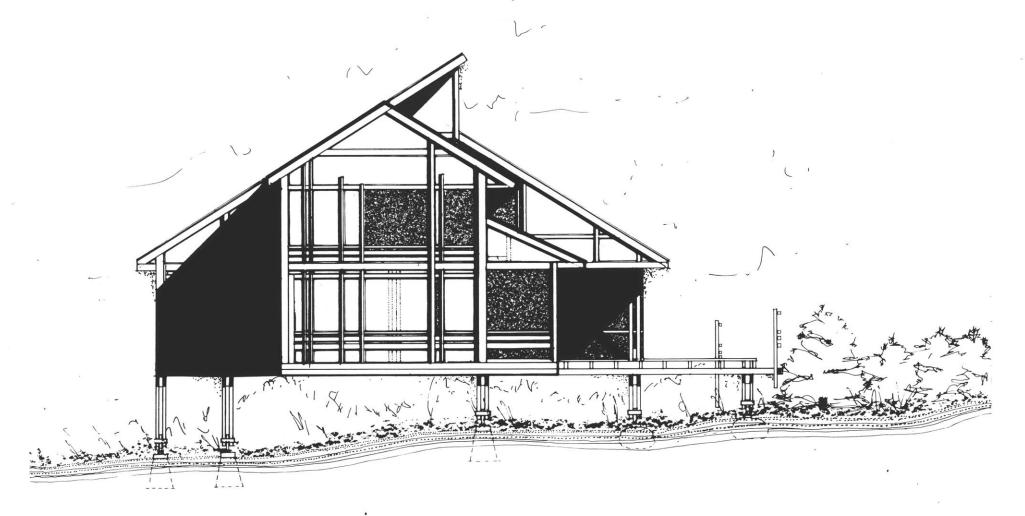


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## WEST ELEVATION 1/8"scale

direction of movement/access





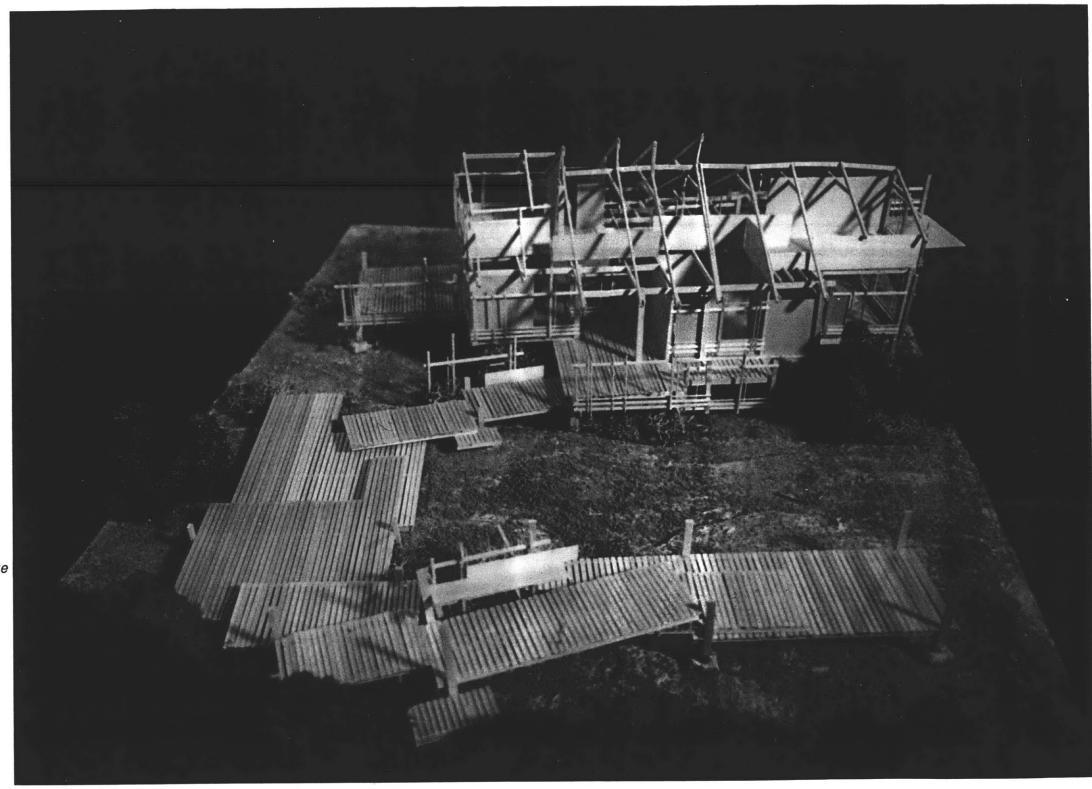
## SOUTH ELEVATION 1/8"scale

layering of screens

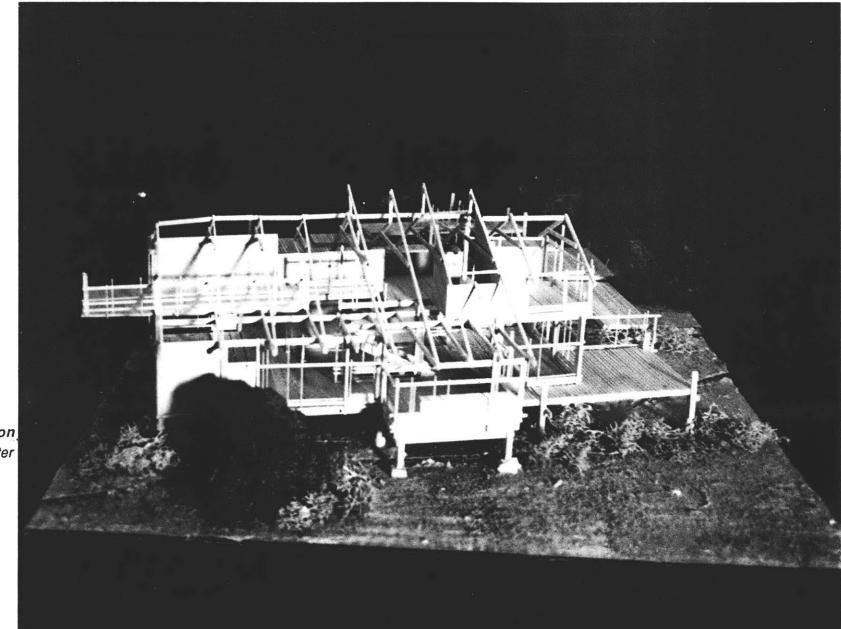


site and shelter entries





built and 'unbuilt' territory exchange



Building Direction screened shelter



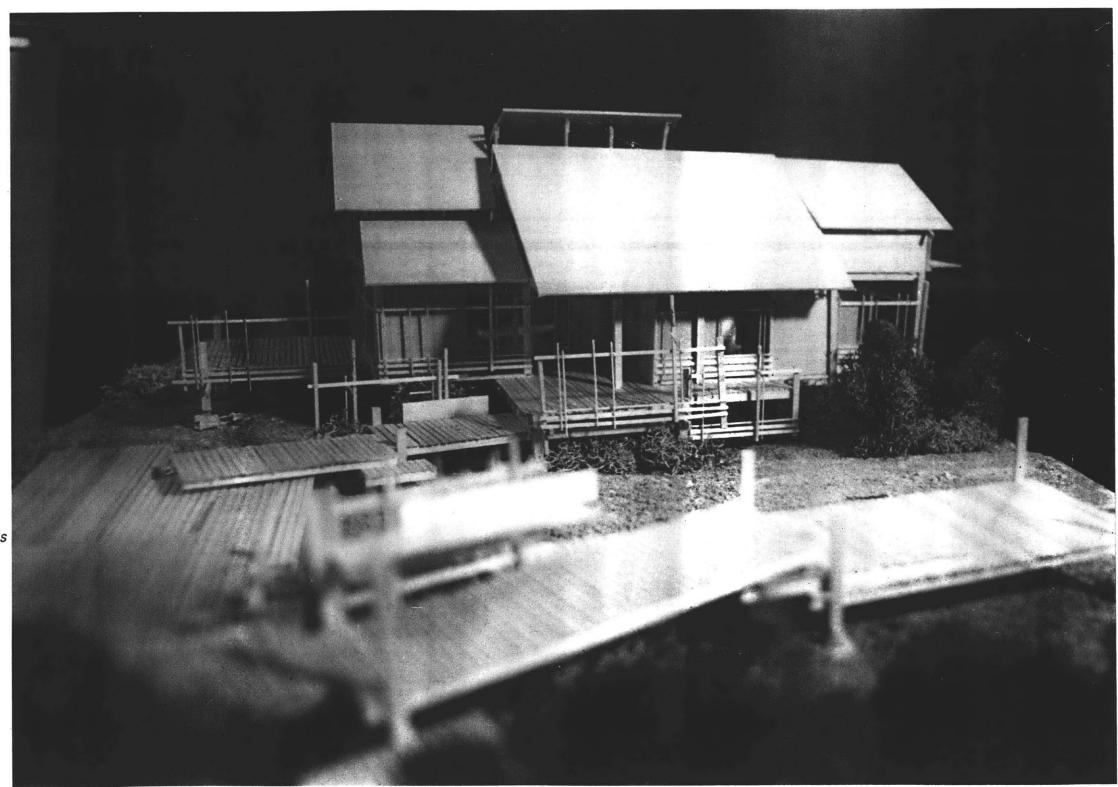
Sheltered Place Territory











shelter--solid and screened planes

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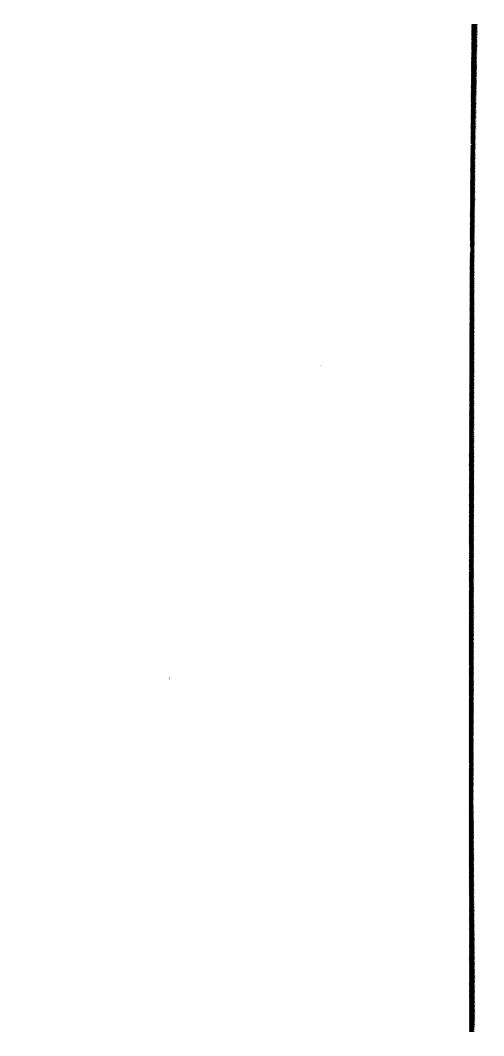
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David UPDIKE--The Little House:

...The function of the little house, I now realize, was less in its finished form than in the making, and its construction served as an agent of transformation...



Tàpies