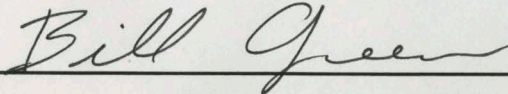


# IMAGINE A HOUSE

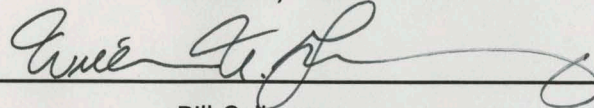
Thesis of Christopher H. Betjemann III submitted to the faculty  
of the Virginia Polytechnic Institute and State University in  
partial fulfillment of the requirements for the degree of

Master of Architecture

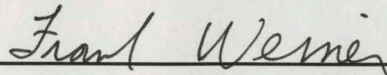
Approved by:



Bill Green, chair



Bill Galloway



Frank Weiner

August 1995

Blacksburg, Virginia

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IMAGINE A HOUSE

Thesis of Christopher H. Bergeman III submitted to the faculty of the Virginia Polytechnic Institute and State University in partial fulfillment of the requirements for the degree of

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Bill Green

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Tommy

Tommy

Paul Womack

Paul Womack

## Table of Contents

Abstract

Part 1 - the project

Part 2 - the way to the project

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Abstract

Part 1 - the project

Part 2 - the way to the project

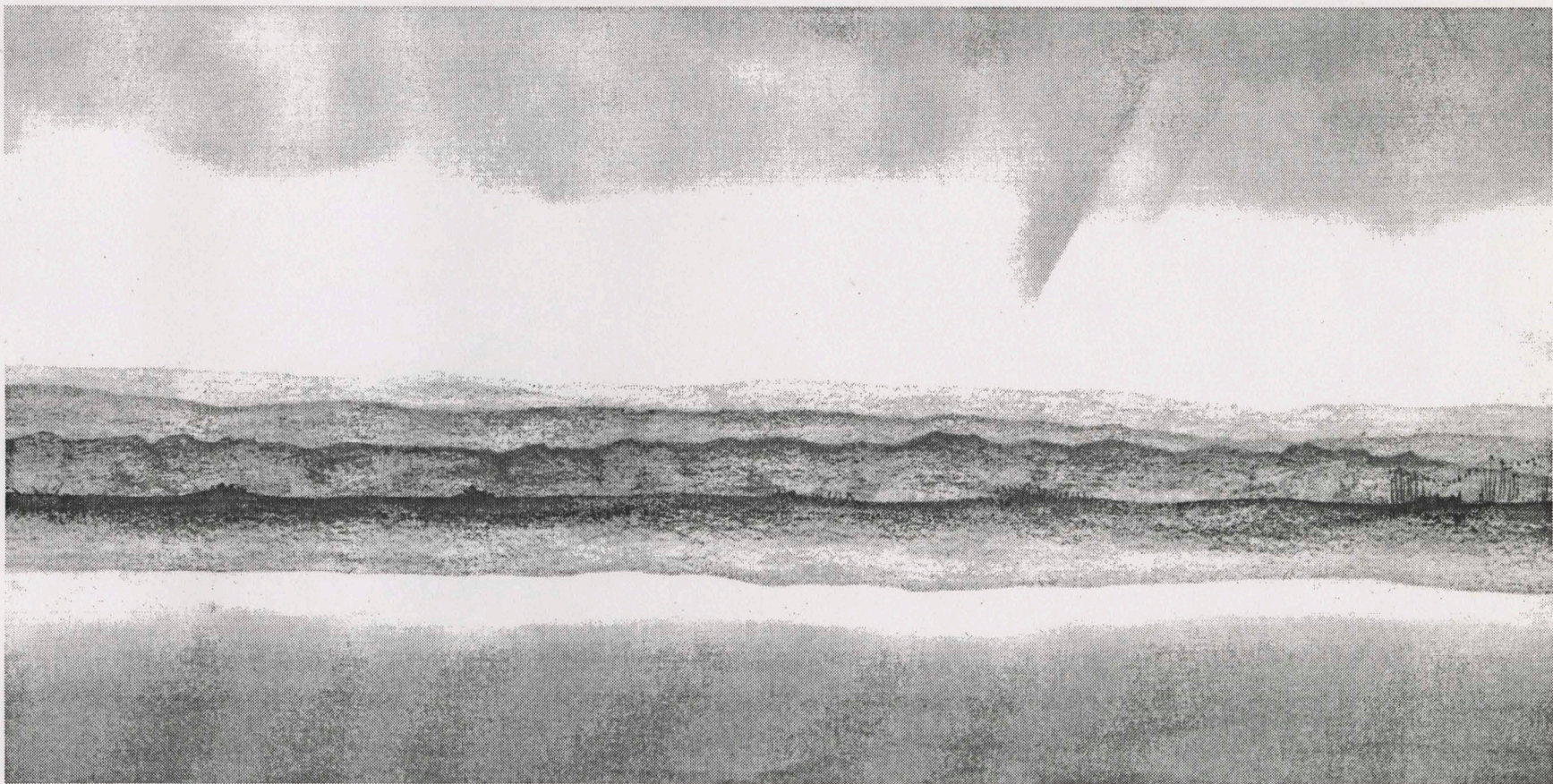
It is the proposal of this thesis, that house can be the embodiment and manifestation of three independently assertive elements; site, function, and of a hierarchy of ideas, pertaining to the design of home.

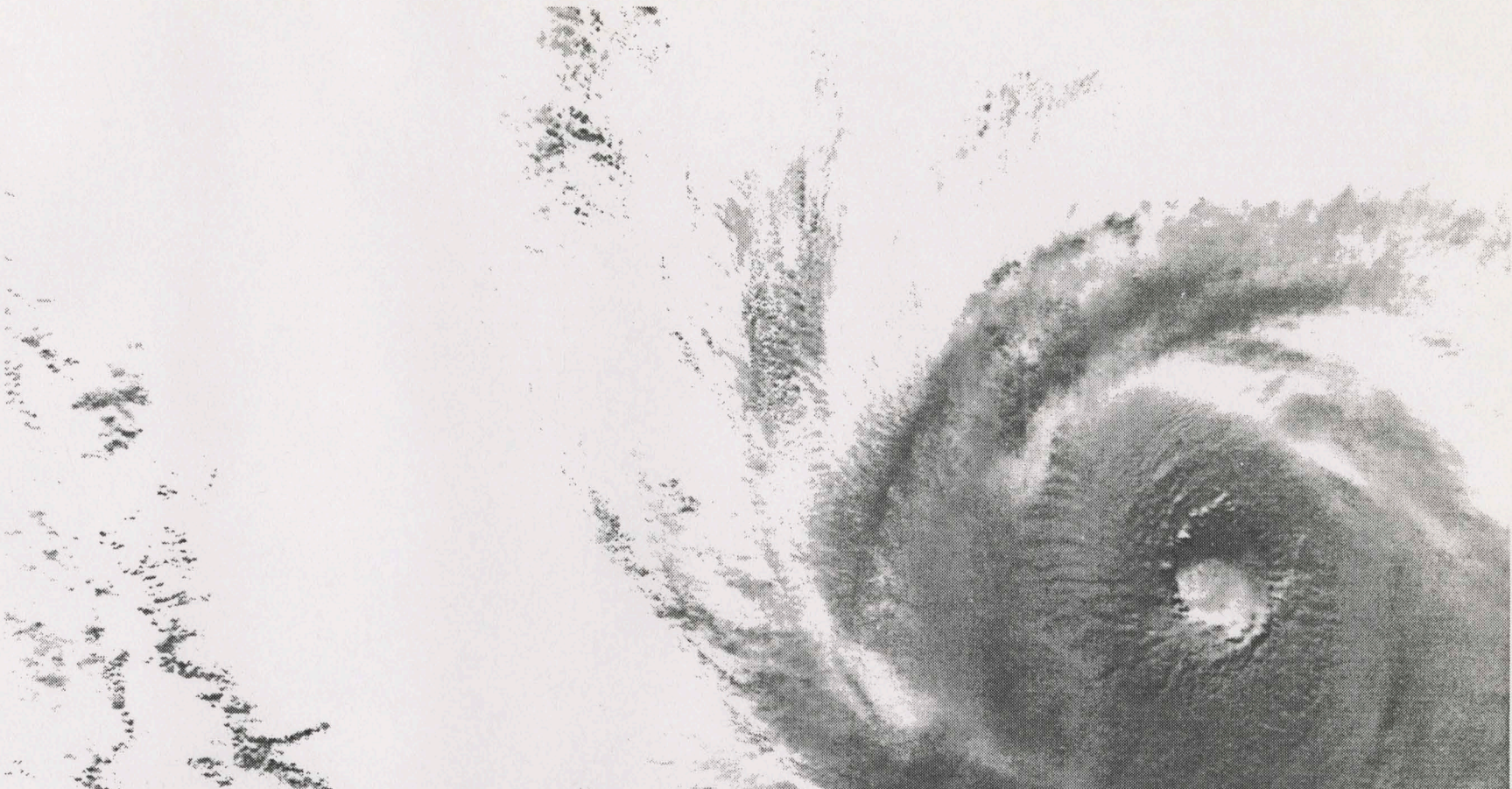


## Part I - the project

Hurricane Chris came with less warning than one would expect in the modern world of the 1990s. Its track had been quite typical, touching the eastern seaboard on two occasions before heading eastward out to sea. A large stationary high pressure zone centered just west of the Bay of Biscay had enough influence to send Chris back towards land, specifically the coast of southern New England. With its forward

motion measured at 47 mph and internal winds gusting past 140 mph, Chris was being compared with the last great New England Hurricane, the Hurricane of 1938. Its center was expected to hit between Woods Hole, Massachusetts and New London, Connecticut in mid afternoon. This gave Andy and CC just enough time to drive down to their new home on the coast in Green Hill, Rhode Island and make storm preparations.



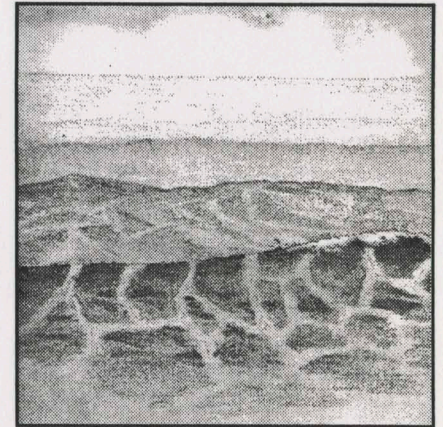
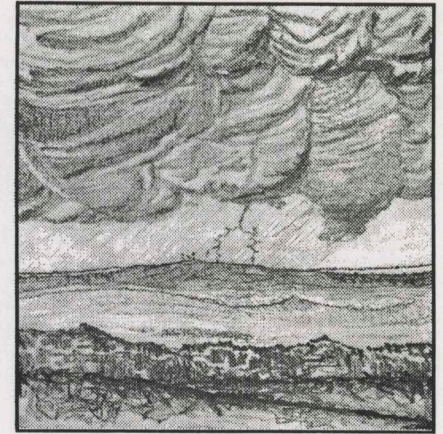


The clock read 1:15 when Andy's white 911 pulled onto the two rows of parallel pavers at GH9 (Green Hill #9). The two and one half hour drive had taken a scant one hour and five minutes. Andy seemed to have a look of enjoyed concentration and CC, a look of pale anxiety as they unbelted and the air cooled engine pinged and popped in thermal strain. The house looked good, to good to have the wispy high atmosphere spiral clouds of the hurricane's outer arms already visible. The storm was close and quickly getting closer..

CC was very concerned. GH9 had been a wedding anniversary present from Andy and was a "dream come true". CC had a strong connection with the shore ever

since coastal adventures with her grandfather. Andy reassured CC that the home owners insurance was enough to cover any losses but this was little comfort. Andy found some effect when he mentioned that the house was designed taking the coastal environment very much into account and that the architect had said that storms would be a part of their homes life. As she made preparations, CC did start to remember some of the points that the architect had stressed; transparency of decking surfaces, tight coursing of the cedar shingle cladding, double ties on the standing seam metal roof, cable bracing, metal fasteners on joint connections, shuttered windows, good drainage, .... a defense strategy for storms. CC realized



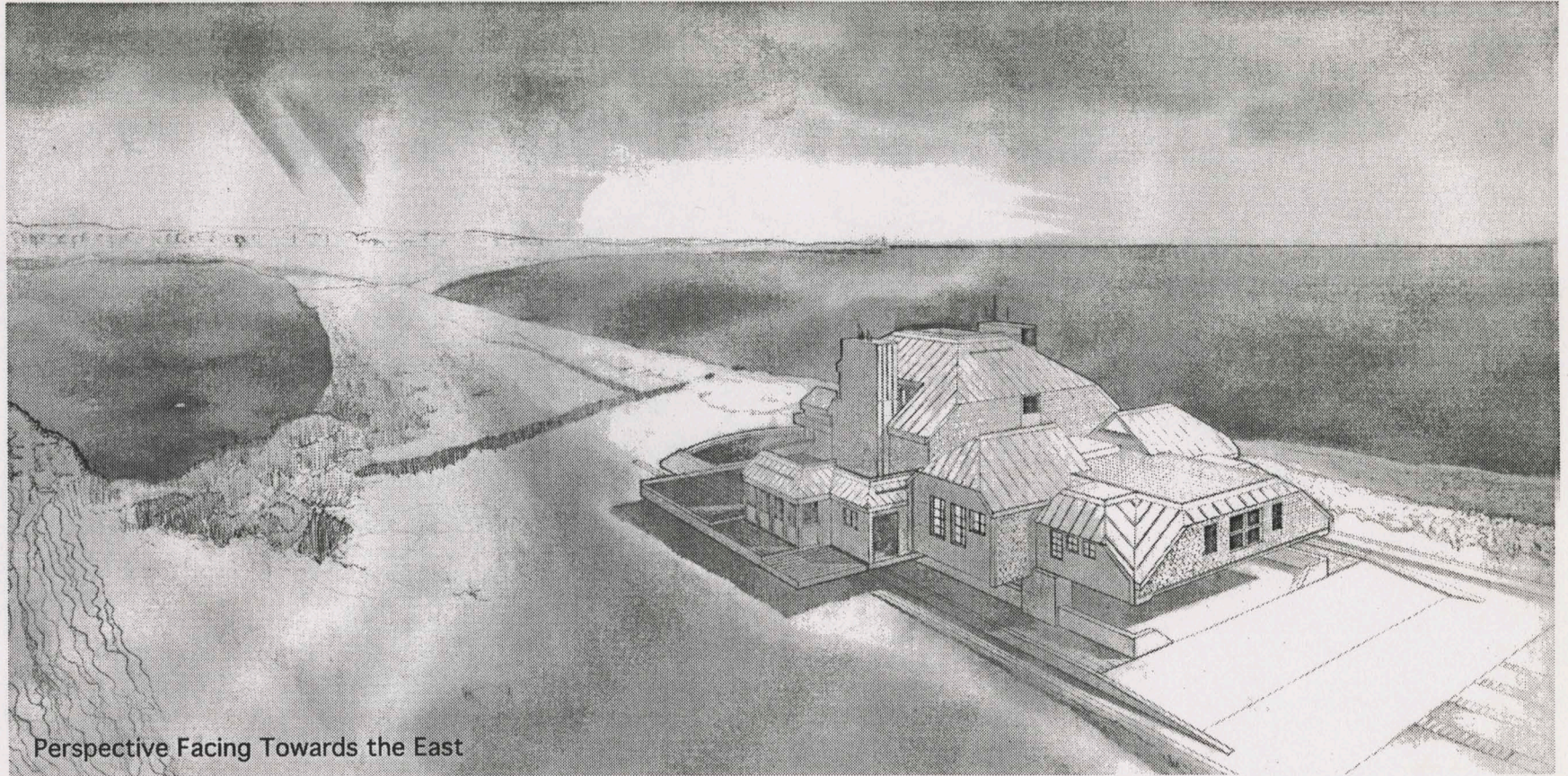


for the first time that all the clipped gables and corners on GH9 were not just aesthetically pleasing but also functionally pleasing with their rigidity producing corners and angles. CC felt a little more settled as she got to work.

The house was storm prepared in just over one hour. The plants and outdoor furniture were inside, shutters drawn and deck pieces stacked and secured. Certain windows were open on each side to equalized wind pressures and vacuums. Everything had functioned as expected and CC felt almost ready. The blaring police P.A. system jerked Andy and CC from their mental checks of things to do, with the announcement that everyone must evacuate the area. The storm's eye was under two

hours away and was expected to pass over the Rhode Island Coast. GH9 was about to encounter a 100 year hurricane less than one year after its completion.

Andy and CC looked into each others eyes for a long moment as a sense of exhilaration grew in them simultaneously. They would stay and experience the storm with their new home. Breaking the rules and going against the norm was not an alien concept for them. They felt protected and almost excited in the face of the coming confrontation. It was here that they felt most secure. The home that had fit them precisely in its normal operation also fit them now, in the face of extreme adversity. Their home had a character, one not unlike their own.

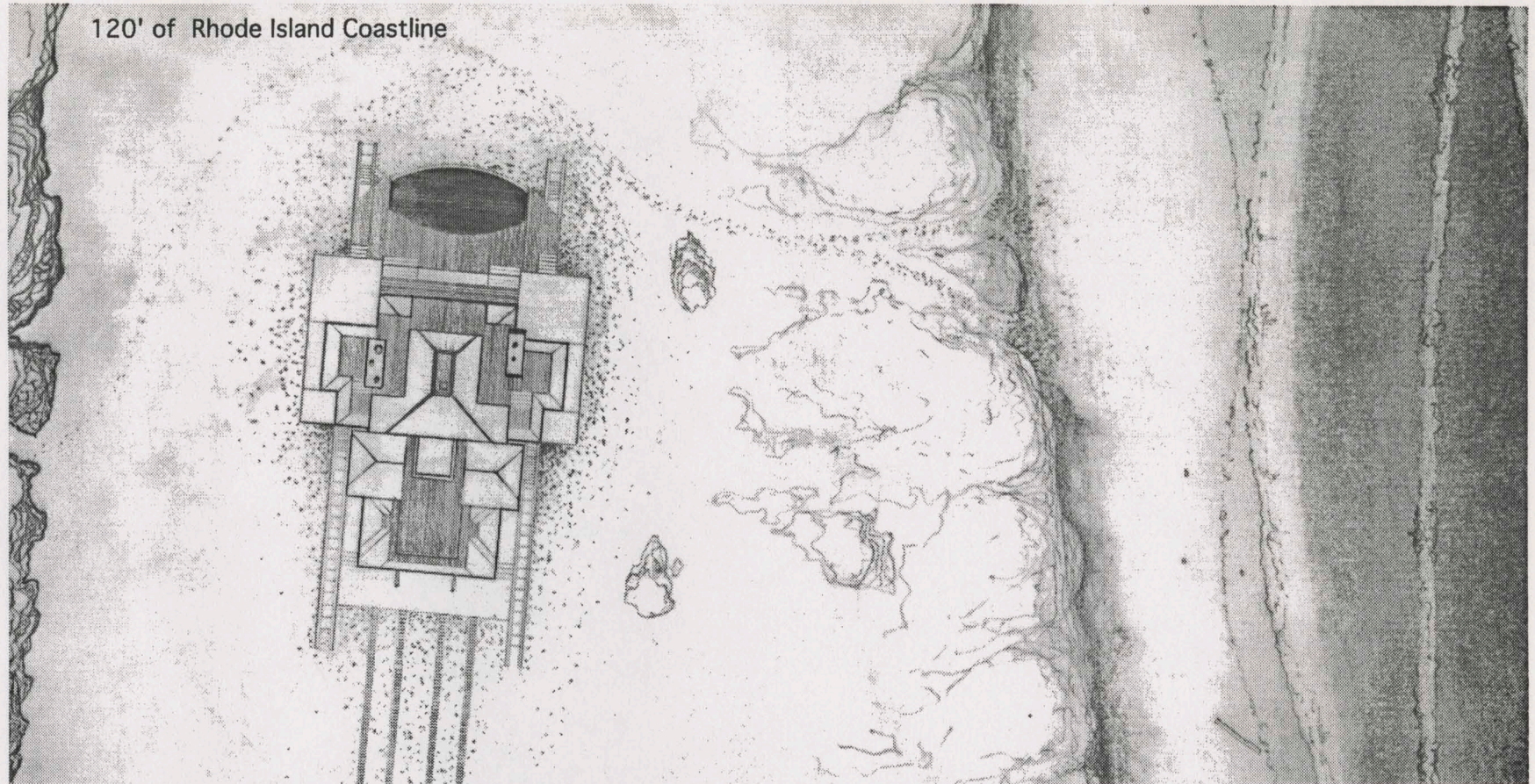


Perspective Facing Towards the East

The sky was getting very dark and the winds were growing. Andy suddenly remembered the anemometer and barometer over in the base of the concrete tower. He wished he had checked the barometric pressure when they had arrived but it had somehow slipped his mind. The anemometer's needle wildly swung up to 83 mph just before he turned his attention to the barometer which he gently tapped with his pointer finger. Oddly, it didn't jump as it normally did, indicating either rising or falling barometric pressure. Suddenly Andy realized that he could actually see the needle slowly and steadily moving downward. The hurricane is definitely here, exclaimed Andy.

It was starting to get noisy. Seals on the windows hummed, sand, small twigs, torrents of rain, and salt spray, driven by winds off the ocean, hit the windows horizontally, the shutters rattled and shook. CC now had the expression of enjoyed concentration while Andy looked a little white.

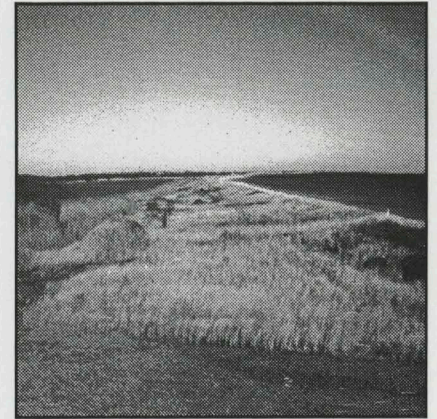
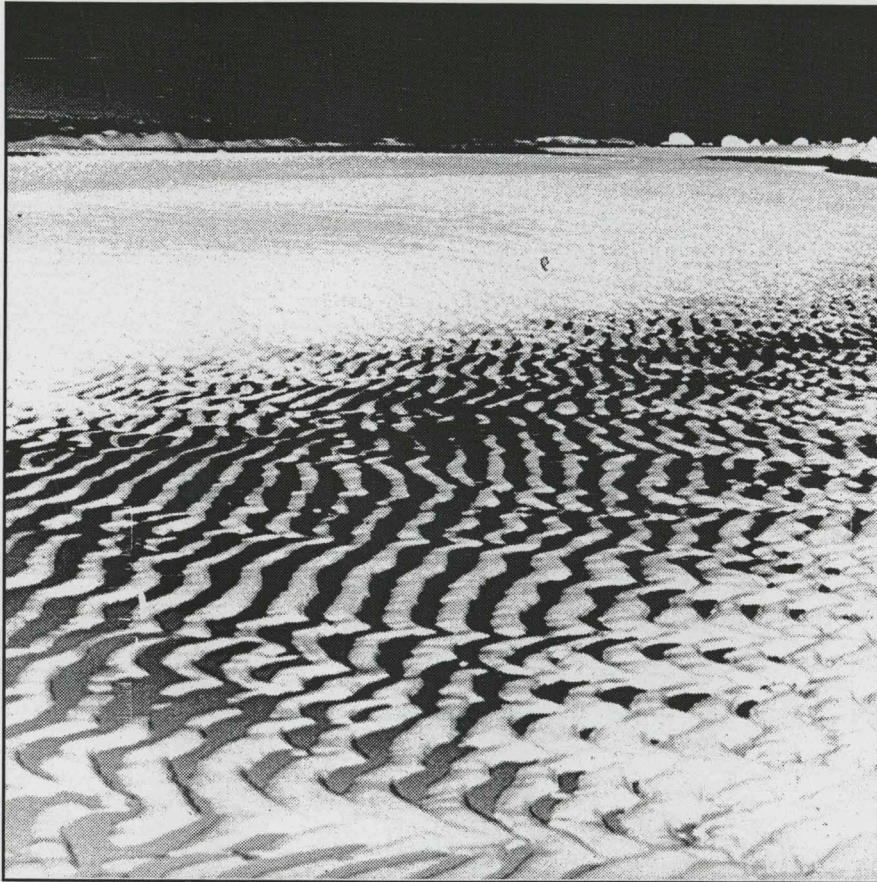
With a slight grin CC said, "let's go up in the tower, and see what things look like from there". The new challenge had a calming effect on Andy and both were happy as they finished the final section of ladder stairs and emerged in the tight little room at the top. One end of this 3' x 8' concrete room was completely glass while the opposite end was half glass. To each side there was



a long and narrow window running horizontally. Their eye level was only about 30 feet from the ground but it seemed significantly higher. A thick concentration of salt spray and water flew past at incredible speed. It was strange to have such a strong sensation of speed while the ground seemed so solid. CC teased Andy by commenting that her house had a smoother ride and might be faster than his Porsche.

Andy and CC stayed up in the tower for almost an hour transfixed by the swirling, churning, ripping, world around them. The ocean however, was calmer than they had expected. There were no big waves coming up onto the beach but instead white, disorganized surf for as far

as the one could see. Occasionally, it looked like there was a big wave far out but it was hard to see clearly. As they went down the tower, CC speculated that the wind was knocking the waves down since it was hitting them from the back side. Andy also noted that the tide had started to come in roughly two hours ago and could also have an added effect. As Andy emerged from the bottom of the tower he looked to the anemometer. The needle showed no wind velocity, but as he looked closer the tell-tale indicated that the wind had hit 157 mph. Unbeknownst to Andy, the black lexan anemometer cups he purchased last spring were careening high above the earth towards northern Rhode Island. Luckily they were

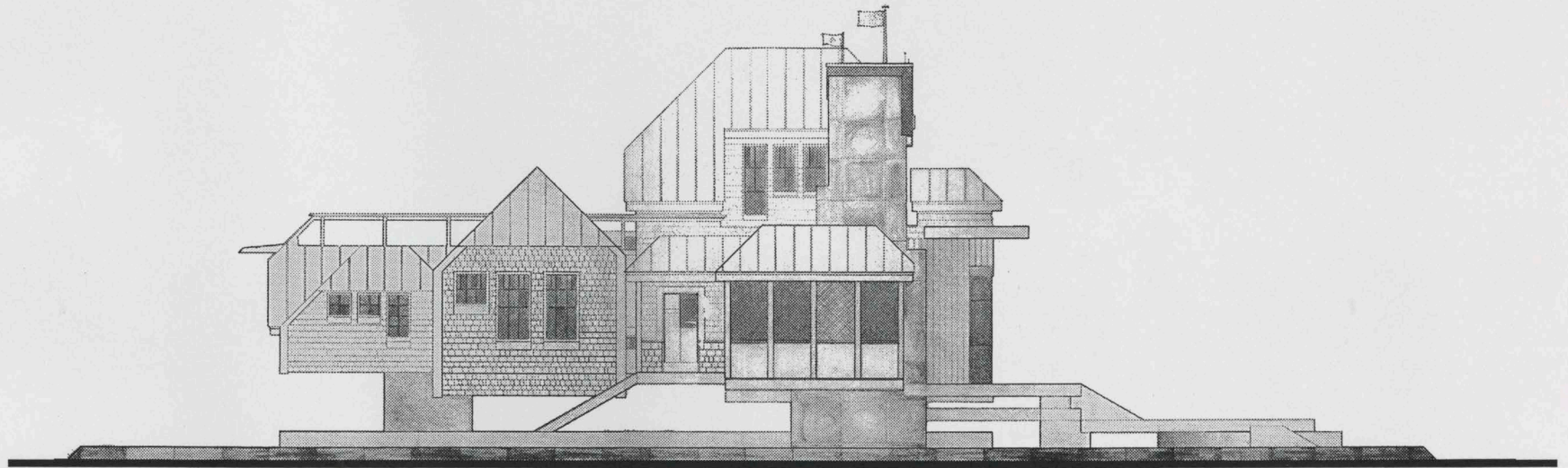


covered by a five year warranty.

Suddenly, it seemed as though the wind direction fluctuated radically and then diminished. Boom, there was a patch of blue sky and bright sunshine. Strips of yellow light ran along the floors and up the walls where the light went between the vertical slats of the window shutters. The winds stopped altogether. Going outside on the ocean side deck, Andy and CC were amazed by the tranquility. Not a leaf rustled although many had been ripped from their trees. The ocean however was ominous having a strange, almost luminous green glow. The waves also seemed to have found organization with large well defined sets starting to pound the beach.

Soon water thrown by the ten foot waves accumulated enough so that it began washing over the dunes. It was not all of water but it was the first salt water that had touched GH9's large flanking drainage troughs. Andy and CC turned and went back inside knowing that the worst was yet to come.

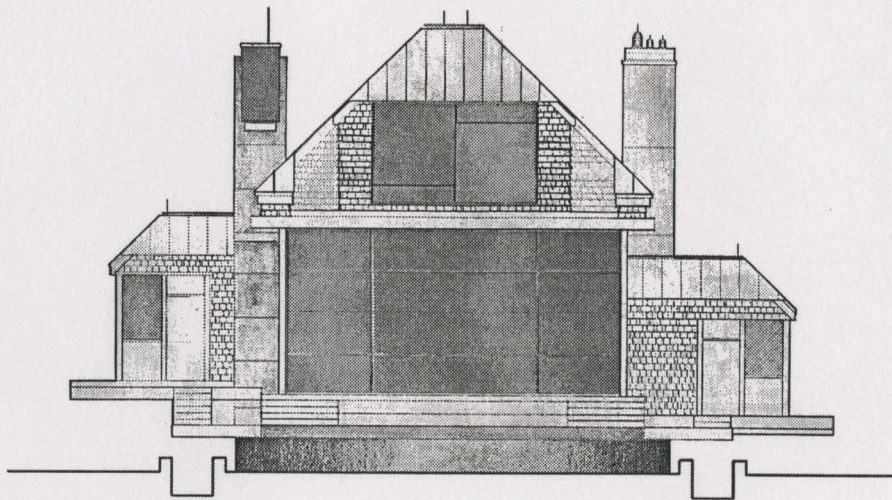
The tranquility was soon forgotten as the sun was blotted out and the winds clocked around to the north. The leaves from the trees now flew from the woods towards the house. They formed an organic mush which stuck to any of the wet surfaces in their path. Soon the north side of GH9 was green. This was no sort of problem in light of the new character exhibited by the ocean.



Southern Elevation

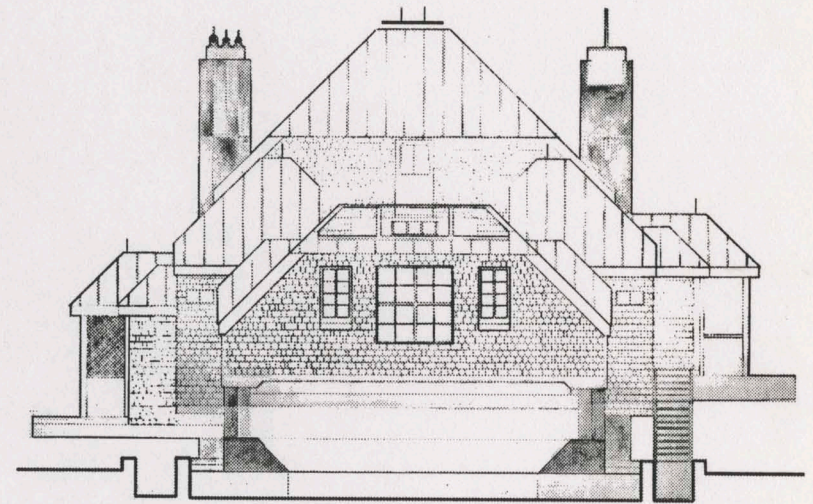
Long parallel rows of rolling swells now lined the ocean and approaching the shore at 20 mph. Wind direction was directly off shore and seemed to be even stronger than before. Unfortunately, CC was correct in her theory about a correlation between wind direction and waves. As the waves were lifted by the ground rising beneath, the wind grabbed the top portion of the wave standing it up vertically while opposing it and making it thicker and more powerful. They stood about 20 feet on the face, although one's normal sense of scale seemed to be lost. Each wave crashed with a thunder rearranging whatever stood in its path. Andy and CC were now thoroughly scared.

Nothing could stand up to the onslaught confronting the beach. Boulders were being tossed from deeper water onto the shore where they were moved around with ease at every crashing boom. Andy wished there were more of the rock on the beach that people were always complaining about fore they seemed to tie the beach together. It did not matter much fore the waves were now breaking over the dunes. Luckily the dunes knocked the force out of the bottom portion of the wave and only the truncated top continued past. Unlike before the passage of the eye, water was now in quantity around the house. There was no chance to accumulate as the huge troughs quickly contained and then whisked away the storm surge.



Eastern Elevation

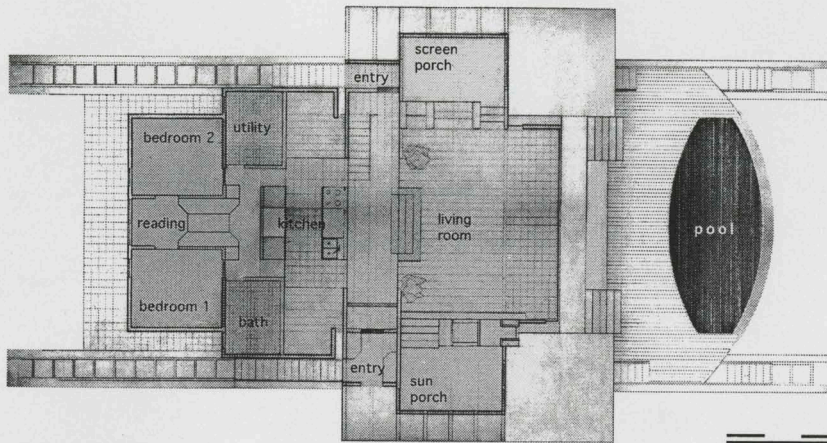
CC had her hand on Andy's shoulder and felt him tighten and stand a little straighter. Then she saw it too. They had heard about "the rogue wave of 38" but now they knew what it looked like. It distinguished itself from the other swells by being a third larger and travelling singularly. It was a confluence of many components within the storm, a child of the storm while the other waves were simply minutia. With wave power being exponentially proportional to their size, Andy and CC silently looked at each other for a long moment. Slight smiles formed as a sense of transcendental understanding calmly, seeped through their bodies. Andy was glad that they experienced this together while CC thought of what a good man



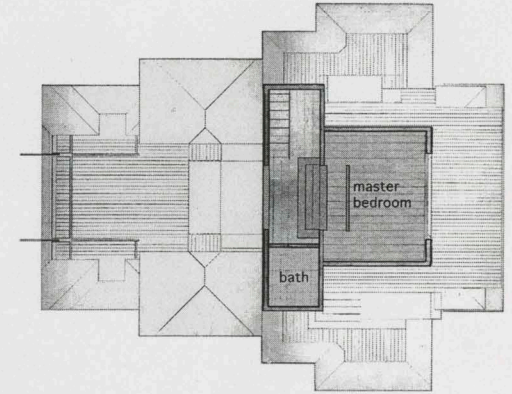
Western Elevation

Andy had been to her. Their home started to groan.

For the first time Andy and CC had a sense that they were not alone but that their house had not only a character but a being. It seemed to sense the coming wave also. The rogue wave of hurricane Chris stood taller than thirty feet as it met the coast of Rhode Island. Its formation was concise while its concave wave surface was whipped to a pocked, dimpled texture by the massive, unrelenting, opposing, winds. It hit the beach without slowing, riding the slippery surface of wave water not yet out of the way. Collision with the dunes slowed the bottom of the wave while the top continued. This made the wave break.



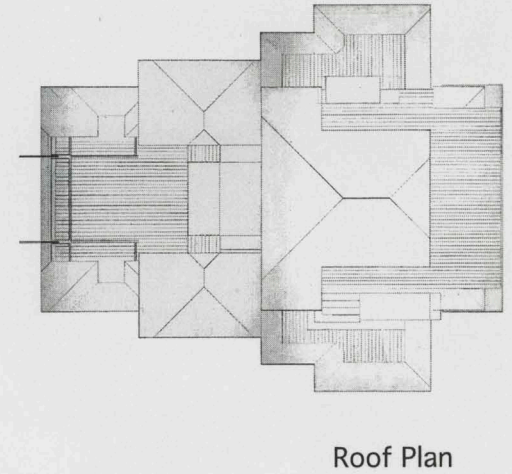
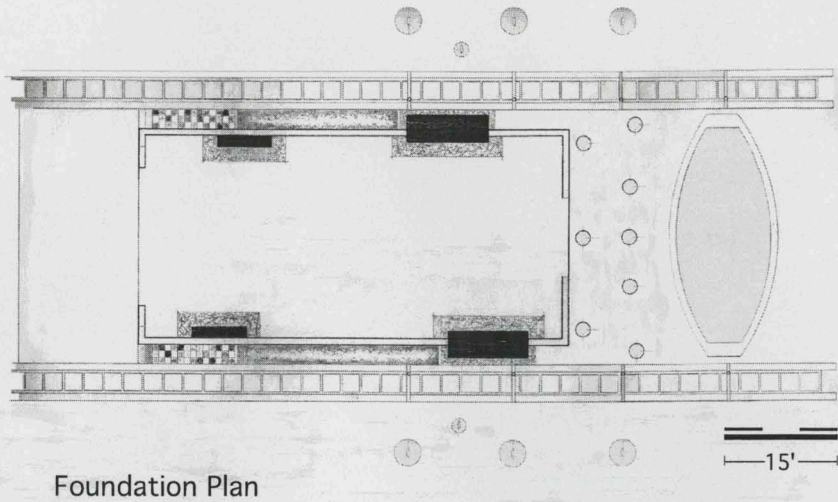
1st Floor Plan



2nd Floor Plan

The crest arched over forming a tube that made a hollow cavernous sound making the windows quiver beneath their shutters. Andy and CC ran and climbed into the fireplace figuring it to be the most secure place. The upper portion of the wave closed on the ocean side deck of the house while the rest of it hit horizontally. Incredibly very little of the vertical force of the wave was transmitted to the house fore it passed through the industrial grating of the deck's surfaces. The horizontal component of the wave was dealt its first blow by GH9 when the 4 foot diameter piers supporting the decks columns broke the waves organization and concentration. A large boulder within the lower wave however connected with one

such column snapping it and knocking out the corresponding deck support. GH9 shuddered and with a sharp crack a bolt somewhere in the houses structure snapped and flew across the living room. Luckily, the deck was designed to loose support but still remain structurally sound while the bolt fractured due to an internal imperfection. The boulder continued its forward motion until GH9's next line of defense, the outer wall of the ocean side trough, stood in its way. Here the boulder and wave encountered a standing wall of reinforced concrete. The wave was slowed further while the boulder rolled a half turn and continued past. They were however about to hit the houses last and most strategic barrier, air.



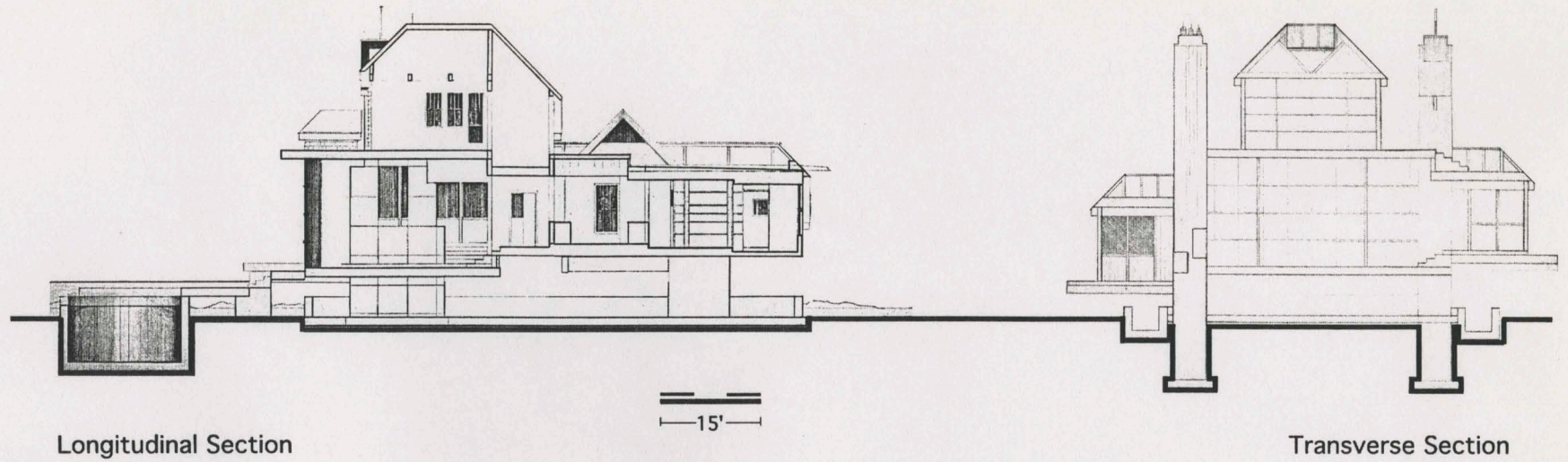
Instead of bearing upon its foundation as it had originally, GH9's architect had raised it up supporting it with massive but beautifully crafted concrete pillars. The weakened wave and boulder expended their last energy into nothing. The boulder fell onto the concrete floor of the former basement and rolled slightly to the side. It was next to Andy's car and only slightly smaller.

The storm raged for almost 2 more hours with diminishing intensity. There were more waves breaking at the dunes but no more rogues.

Andy and CC emerged from the chimney quite emotionally drained from their ordeal. CC walked up the steps

to the kitchen where she grabbed a saute pan from the wrought iron rack hanging from the ceiling. She placed it on the stove, and lit the burner as she looked out over Trustom Wildlife Refuge. CC got goose bumps and shivered, the view so intense. Defined by austere, white, planer elements of the two side walls and ceiling, compressed by the massive masonry elements of the tower and chimney, extended by the lines of the floor boards running parallel to the line of sight, the view was of fauna dark and deep, wet and green, of Trustom Pond, purple from a purple sky, of the still rough ocean, a vibrant, luminous, hue of green and of six Canadian geese flying from the pond westward toward GH9.



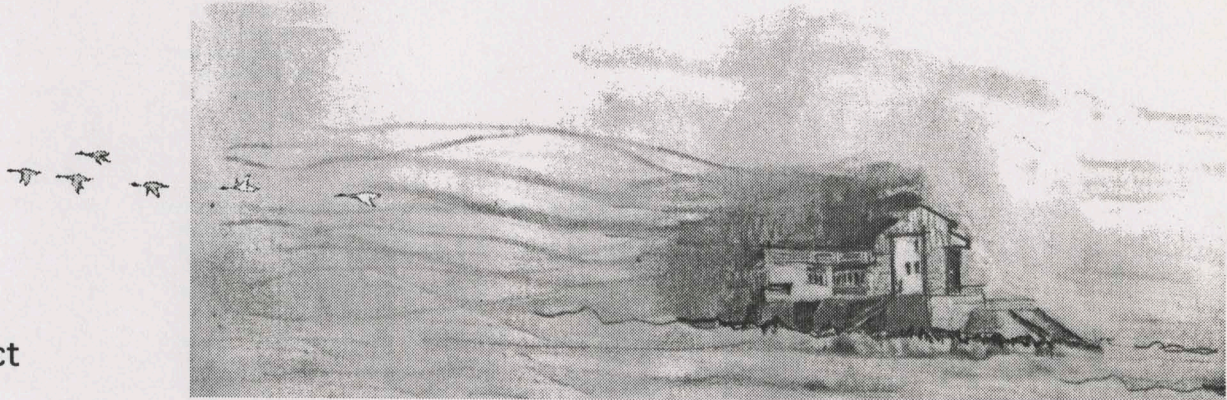


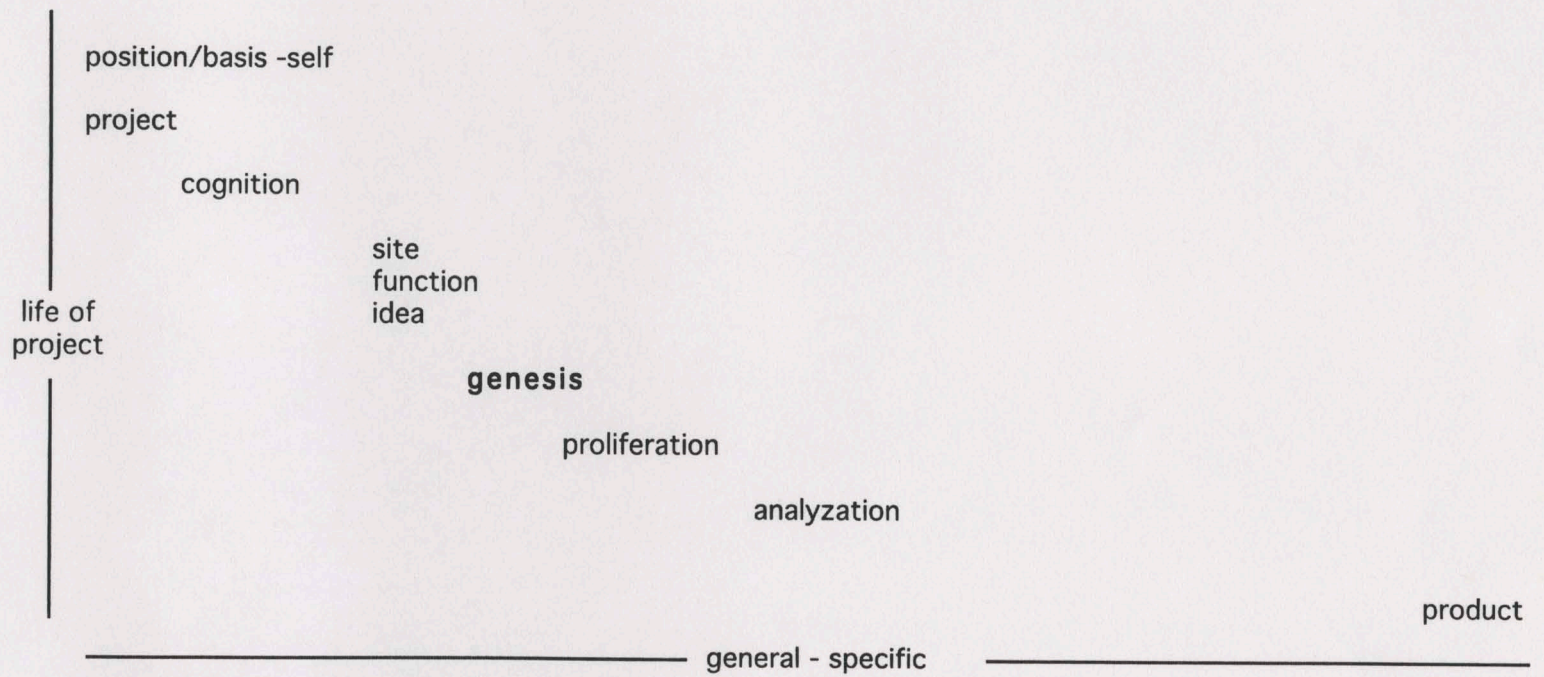
Longitudinal Section

Transverse Section

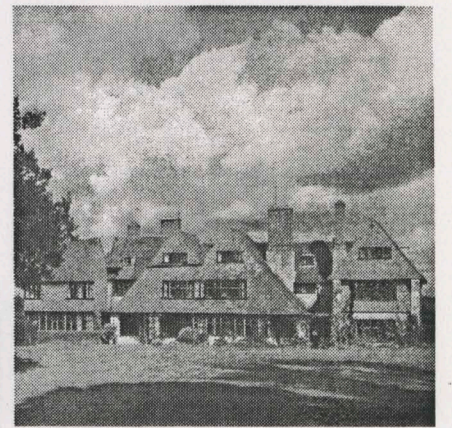
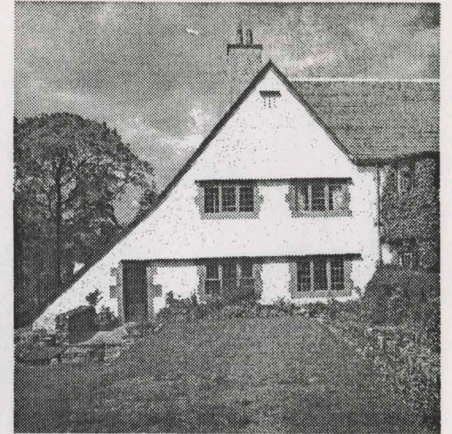
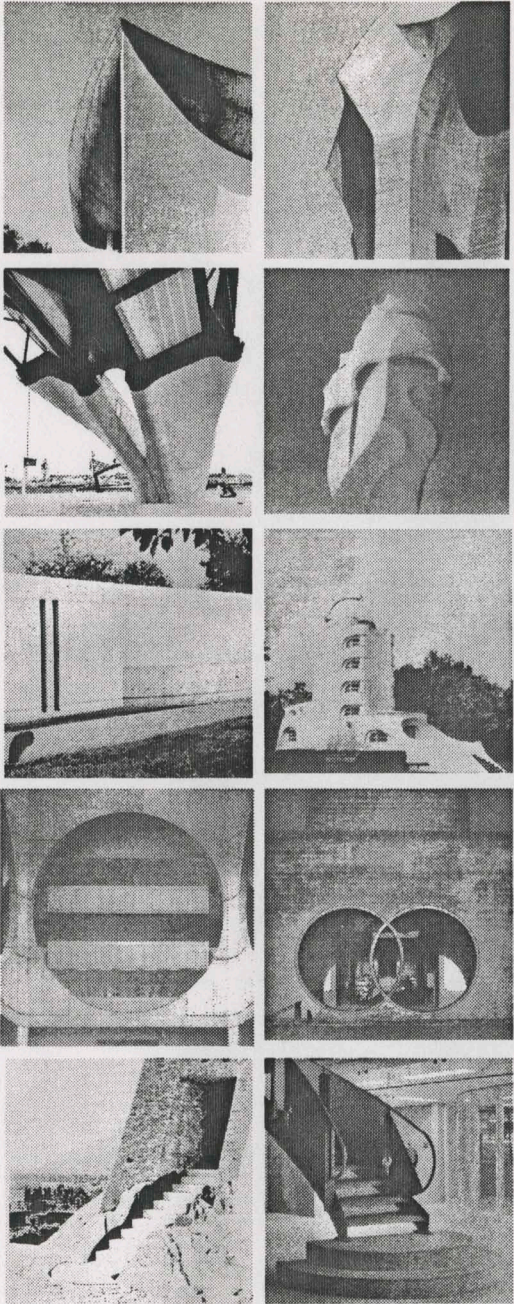
Andy, I'm going to cook you the best meal you have ever had.

Part II - the way to the project





Process of Design for Project

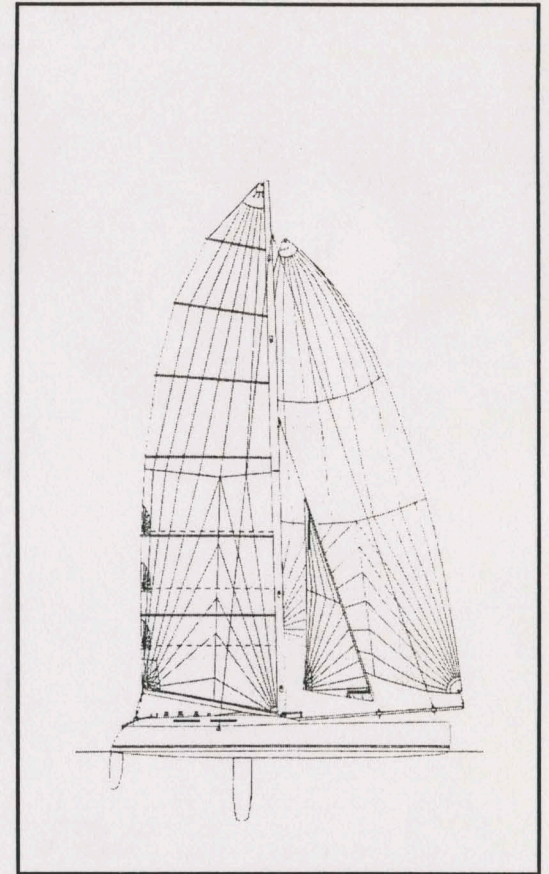


Corbusier -Notre-Dame du Haut Ronchamp, France	Steiner -The Goetheanum Dornach, Germany
Calatrava -TGV Station Lyon, France	Gaudi -Casa Mila Barcelona, Spain
Ando -Vitra Conference Hall Basel, Switzerland	Mendelsohn - Einstein's Tower Potsdam, Germany
Kahn -Phillips Exeter Library Exeter, N.H.	Scarpa -Brion Family Cemetery S. Vito d'Altivole, Italy
Galfetti-Castel Grande Bellinzona, Switzerland	Hertzberger - Stairs Amsterdam, the Netherlands

Emerson - Hemenway Bar Harbor, Me	Voysey - Cragmoor England
Lutyens - Berrycourt Down England	Wright - Fallingwater Bear Run, Pa
Unknown -Clingstone Narragansett Bay, RI	Burgin -private residence Jamestown, R.I.



Humanism: Hertzberger school stairs and column



Functionalism: 35' Catamaran

ocean



south

marsh



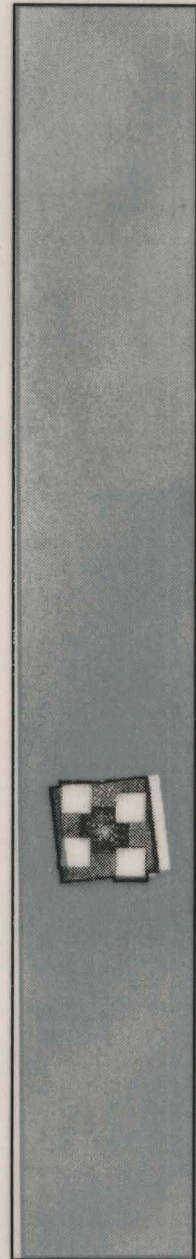
east

forest



north

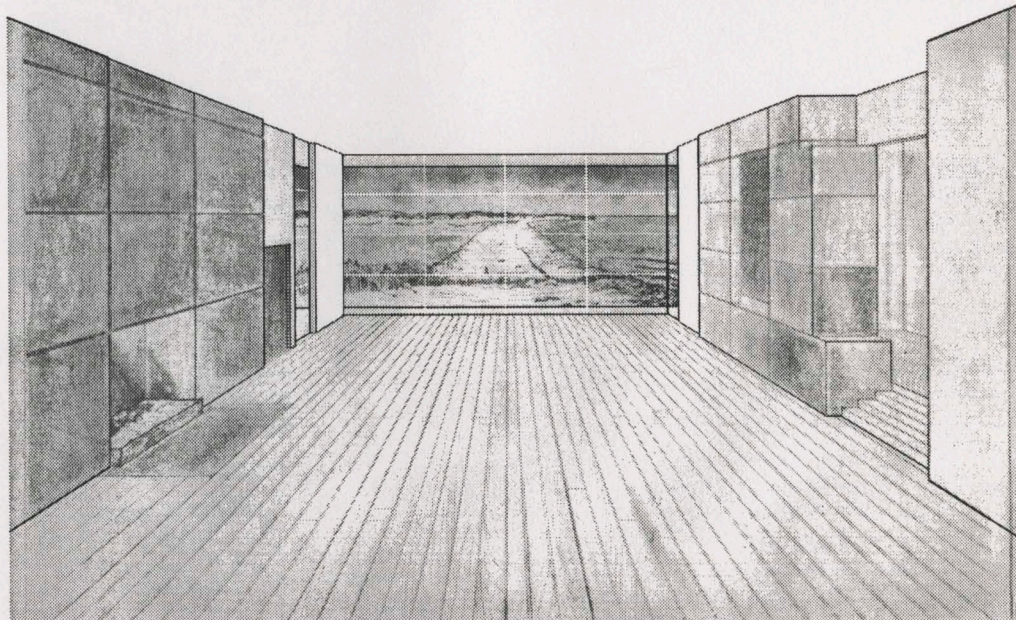
man



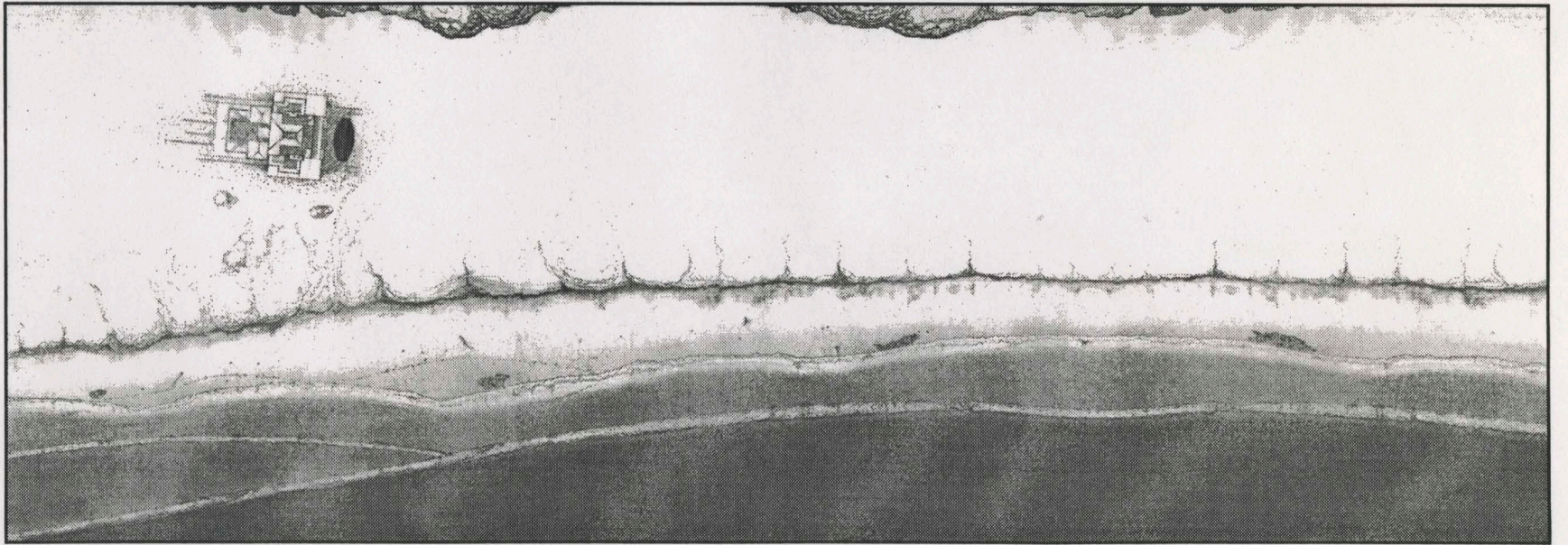
west







Internal Perspective of Living Room



## Photo Credits

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