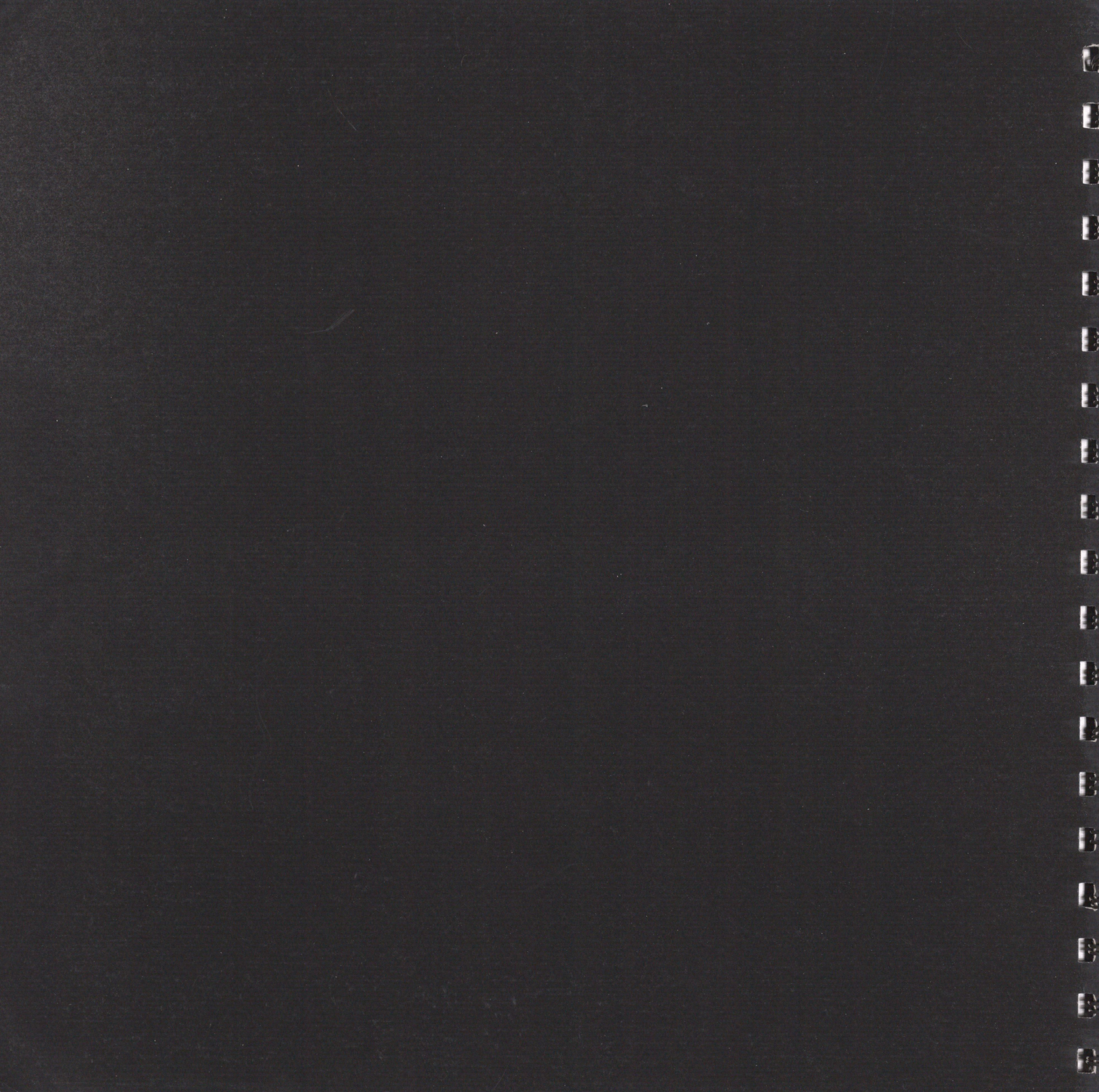


P378
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NEW ENGLAND
MARITIME
STUDIO CENTER

The revitalization of
FORT STARK
New Castle, New Hampshire

AN ARCHITECTURAL THESIS
presented by:

MATTHEW C. APPLEBY

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A professional paper submitted
in partial fulfillment of the
requirements for the degree
BACHELOR OF ARCHITECTURE

APPROVED:

Clark Llewellyn, Advisor

Ralph Johnson, Coordinator

Thomas Wood, Director

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MATTHEW C. APPLEBY

date

This one's for you Dad...

"We are tired of seeing Palladio
and other historic masks. . . We
want architecture to have more.
Architecture that bleeds, that
exhausts, that whirls, and even
breaks. Architecture that lights
up, that stings, that rips, and
under stress, tears. Architecture
should be cavernous, fiery,
smooth, hard, angular, brutal,
round, delicate, colorful, obscene,
voluptuous, dreamy, alluring,
repelling, wet, dry and
throbbing."

- COOP HIMMELBLAU

In life, awesome.
In ruin, romantic.
In legend, eternal.
In purpose, death.
Never forget that this
architecture is designed to kill
people - or at least, to keep
certain people alive long enough
for them to kill other people.

- MARTIN BRICE

**THIS space throughout the book
will show the evolution of the
design process through
conceptual sketches. These
sketches represent a brief
highlight of the steps taken to
achieve the final solution.**

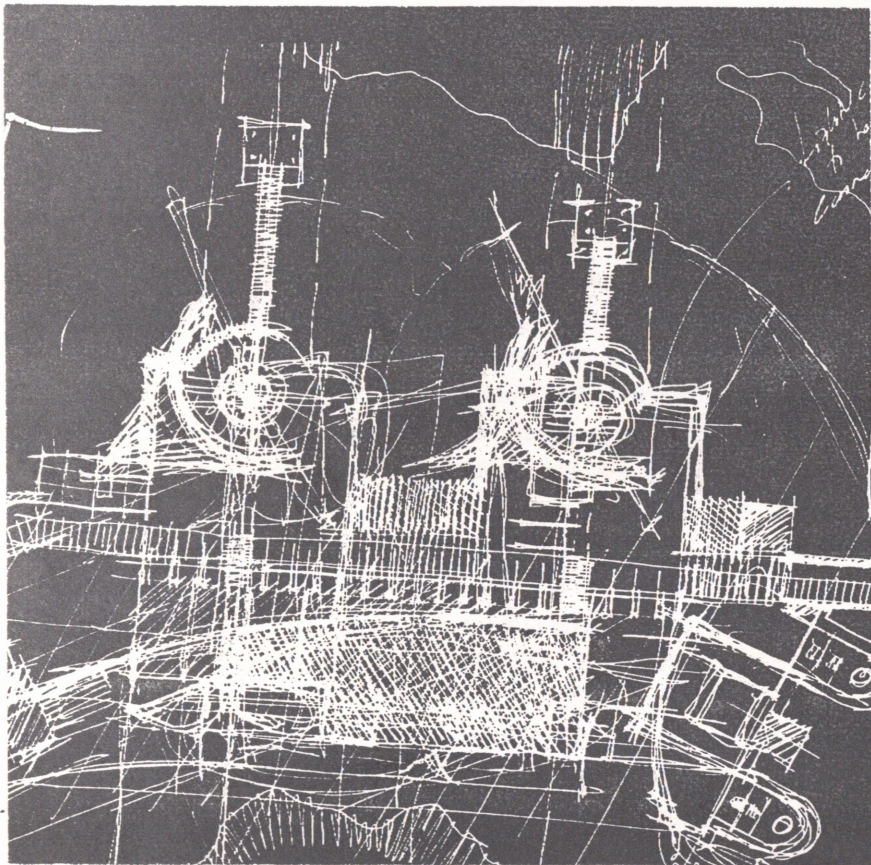
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THESIS INTENTIONS

A synopsis of the site history paints a picture of an evolution of coastal defense and its "architecture of war" that focuses the primary issue to be addressed in this thesis on the modern reconstruction and connection of existing elements through current technologies that would make this area once again a unified development. This is derived from the fact that when the existing structures were new, they were of the most advanced technologies of their time, which have now been transformed by time, into antiques that can once again be brought to life through the connection of a modern, evolved structure, and program of spaces. These current features are a sum of several expressions that consist of heavy, massive concrete and sloped earthworks separated by strong linear geometries, and contrasted by the endless horizontal of the North Atlantic. Concepts of new

spaces will be created simultaneously through development of both function and form to achieve the delicate balance of connection, movement, and purpose to that of the existing expressions displayed. A register of respect is to be in order in dealing with this balance to that of the matured forms of the site. This poses the question: Why use such controlling conditions to develop a design? The simple answer being the level of character produced by these forms provides a unique chance to develop a solution that can be once again, the controlling point of this area. This desired quality is by no means an original equation. Architects have always strived to incorporate existing architecture into new form and function successfully with mixed results. In this thesis I will attempt to create this quality through the theory and actuality of this balance.



S I T E H I S T O R Y

Fort Stark is located on a point that extends from the southeast corner of New Castle Island, New Hampshire. The island was originally called Great Island. Great Island was one of the first parts of the Portsmouth area to be settled by Europeans in the seventeenth century, so it is not surprising that the land now comprising Fort Stark has a long history of use. Much of this history is related to coastal harbor defense and lifesaving purposes.

The land was first settled in the mid 1600's and was used notably for farming and grazing up until the mid 1700's. In 1746, the site was first used for military purposes. This was the installation of nine 32-lb. guns. This was to increase the Portsmouth Harbor defense for the English military expedition against Louisbourg in Nova Scotia. These fortifications were not needed long, and the land reverted back to grazing fields.

During the Revolution, the site was again fortified. In 1775, the New Hampshire government began to build a fort on the point, constructing it of "substantial earthworks, and stone walls." These also consisted of platforms, barracks, and other miscellaneous buildings. After

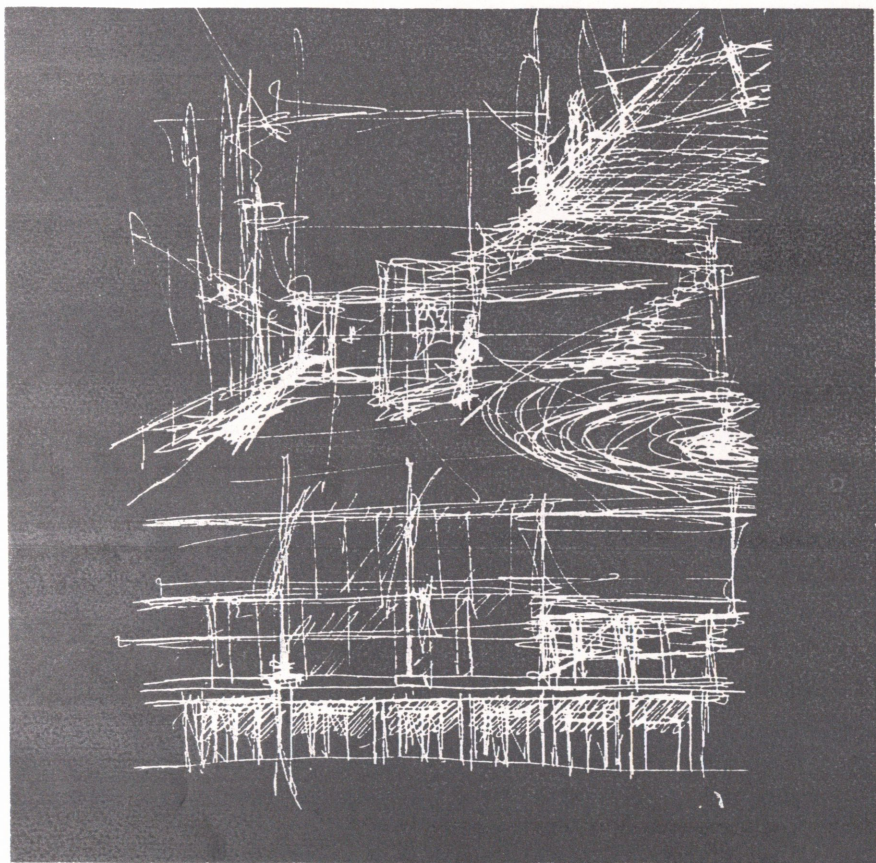
the Revolution, the fortification fell into disuse, but because of the substantial site modifications, the ground on the point was no longer useful for farming or grazing.

It didn't matter however, because the point was soon to be fortified again. In 1794, the defenses of Portsmouth Harbor were increased because war with England seemed imminent. A heavy battery was built on the point. This battery was what the Army Corps of Engineers designated later as a "First System" fort, meaning a rudimentary fort of earth, timber, and sod. These were built between 1794 and 1802.

During the War of 1812, the point was yet again the scene of military operations. The fort was garrisoned by a company of militia and was armed with nine guns, both 6 and 9-pounders. The company was discharged in 1813 but revived in 1814 when an attack on the coast again seemed imminent.

During the period after the War of 1812, the fortifications again fell into disuse. The site went through several modifications up to the Civil War. No more new construction was built.

Fort Stark, as it now exists, is primarily a creation of the years immediately following the

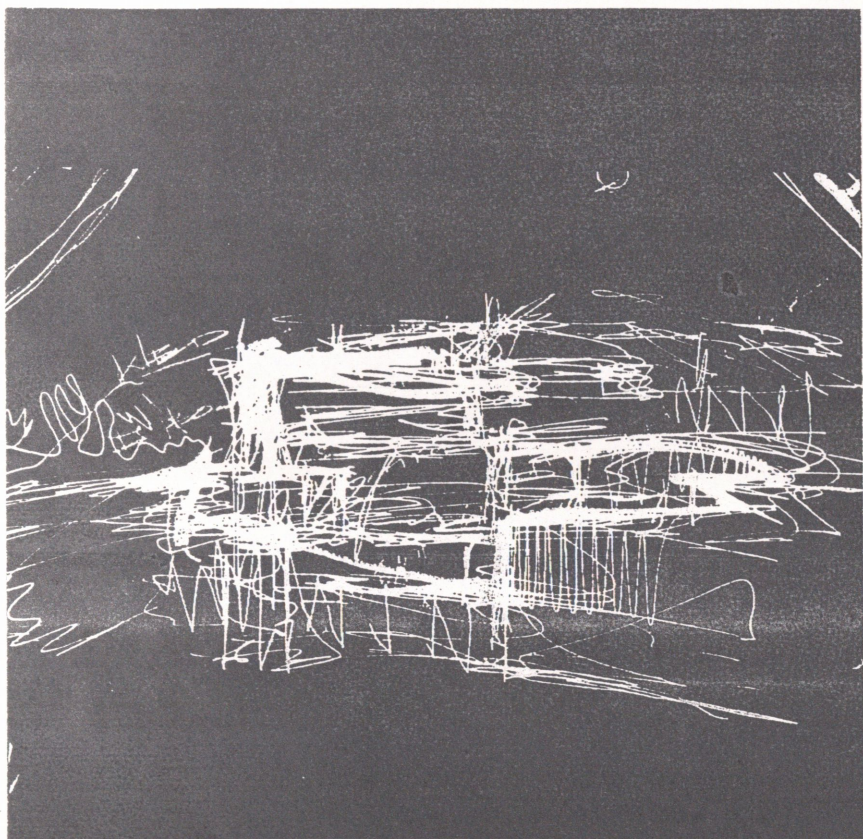


Spanish-American War(1898). This time frame, from 1870 to 1920, is known as the Endicott Period. The fort owes its existence to several factors: 1) an American awareness of the necessity for coastal defense which goes back to the earliest permanent European settlements on the Atlantic coast of North America; 2) strategic theories developed in the 1880s and 1890s in response to revolutionary naval and artillery developments in the latter half of the nineteenth century; 3) the Spanish-American War of 1898 which revealed to the American public the defenseless state of coastal cities; and 4) the Russo-Japanese War, 1904-1905, the events of which underlined the need for coastal defense of naval bases and major ports. Artillery had developed rapidly in firepower and accuracy beginning in the Civil War. The great granite forts of the Third System, including those under construction at adjacent Forts Constitution and McClary, became obsolete overnight. Suddenly, the granite walls became, "more dangerous to their defenders than to the enemy." A single contemporary Civil War shell could shatter them, sending stone fragments hurtling into the troops and instantly breaching a wall which

formerly required an extended, and fairly close-range, bombardment to break through. The immediate response to the obsolescence of the granite Third System forts was to protect coast artillery with thick earthworks, held up in the rear by brick, stone or timber, and sloping down in front. Eventually, it was found that gun emplacements could be separated for greater advantage in firepower and increased protection.

In 1872, new fortification plans were initially drawn by the Army Corps of Engineers for a barbette battery of twelve guns in double bays. Construction began in June, 1873, but by December 1874 the plan was changed to eight guns in single bays. The guns were to form a wide angle with the battery's two sides facing northeast and southeast. Construction was abruptly halted in 1876 due to the rapid pace of naval and artillery developments in this period, which made the fort's immediate obsolescence likely.

Brief as it was, the Spanish-American War of 1898 had given renewed impetus to carrying forward the Endicott Plan. The immediate result was the mounting, in 1898, of two 8-inch rifles on converted 15-inch carriages on the 1870s barbette



battery at Jerry's Point. At this point, the army began implementation of the Endicott Plan. The south arm of the 1870s barbette battery, platforms 5,6, and 7, was demolished in 1898 for the construction of Battery David Hunter. A massive concrete wall still exists to the east of the Oil Storage House on the south shore of the point and may be a fragment of platform 8 of the barbette battery. A comprehensive system of fortifications was constructed and put into service between 1901 and 1905. These fortifications on Jerry's Point were named Fort Stark on April 4, 1900 in honor of John Stark, Commander of New Hampshire forces at the Battle of Bennington. By 1905, Fort Stark had four batteries and became a subpost of Fort Constitution. Fort Stark was armed as follows:

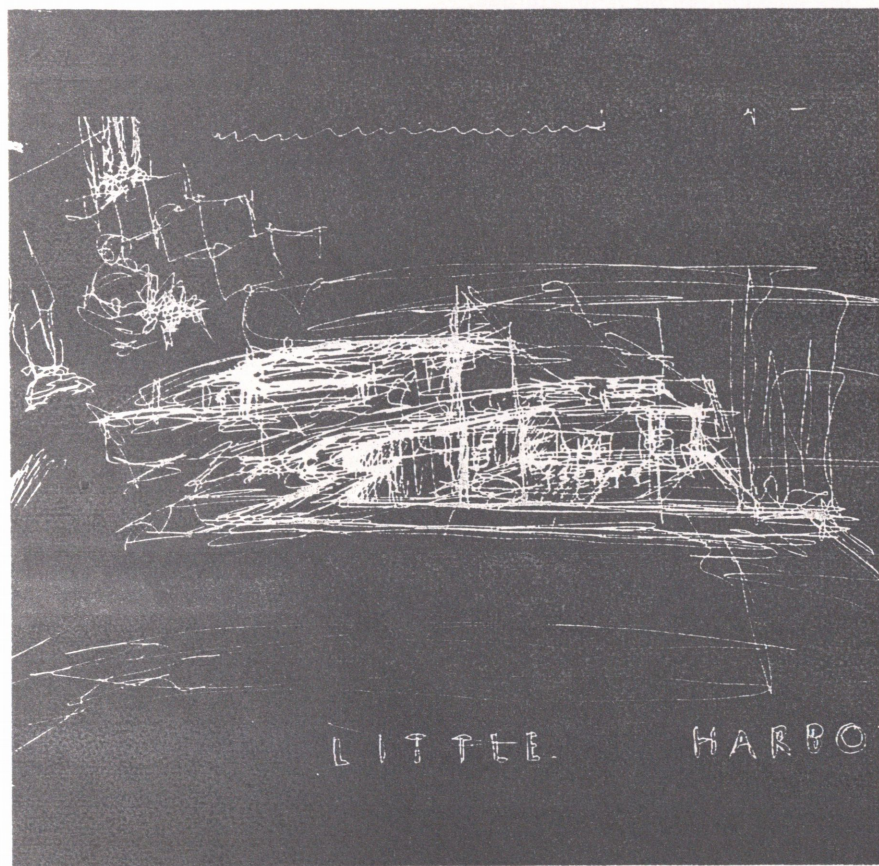
BATTERY DAVID HUNTER:
Battery consisted of two 12-inch B.L. rifles, model of 1895 M1, on

disappearing carriages, model of 1897. Two Taylor-Raymond back delivery projectile hoists carried the ammunition up from storage. There were no powder hoists. The battery was put into service on December 30, 1904.

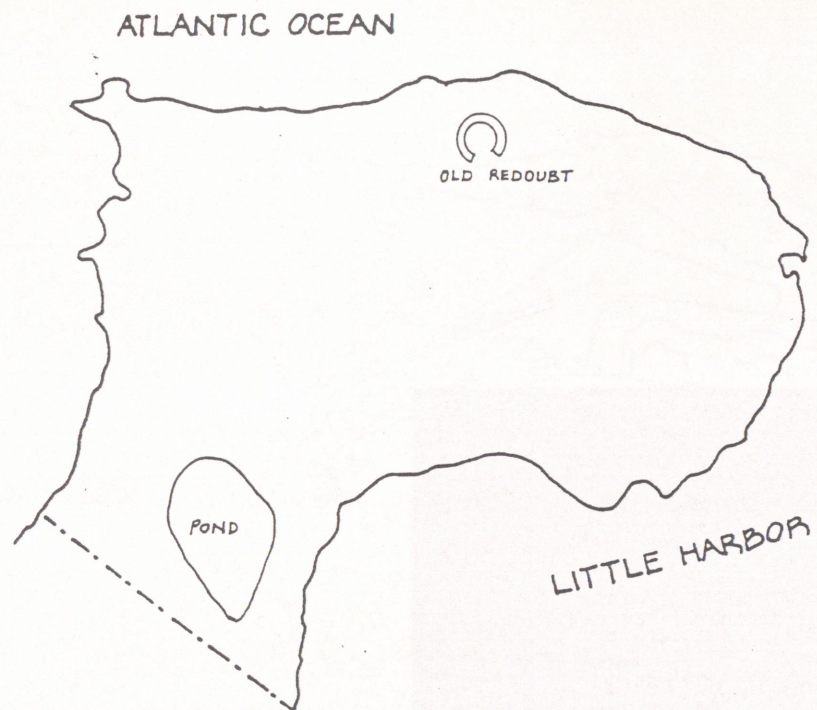
BATTERY EDWARD KIRK:
Battery consisted of two 6-inch rapid fire guns, model of 1903, on disappearing carriages, model of 1903. It had no projectile or powder hoists. It was put into service on December 31, 1904.

BATTERY ALEXANDER HAYS:
Battery consisted of two 3-inch rapid fire guns on pedestal mounts, model of 1902. It had no projectile or powder hoists. This battery was put into use on April 3, 1905.

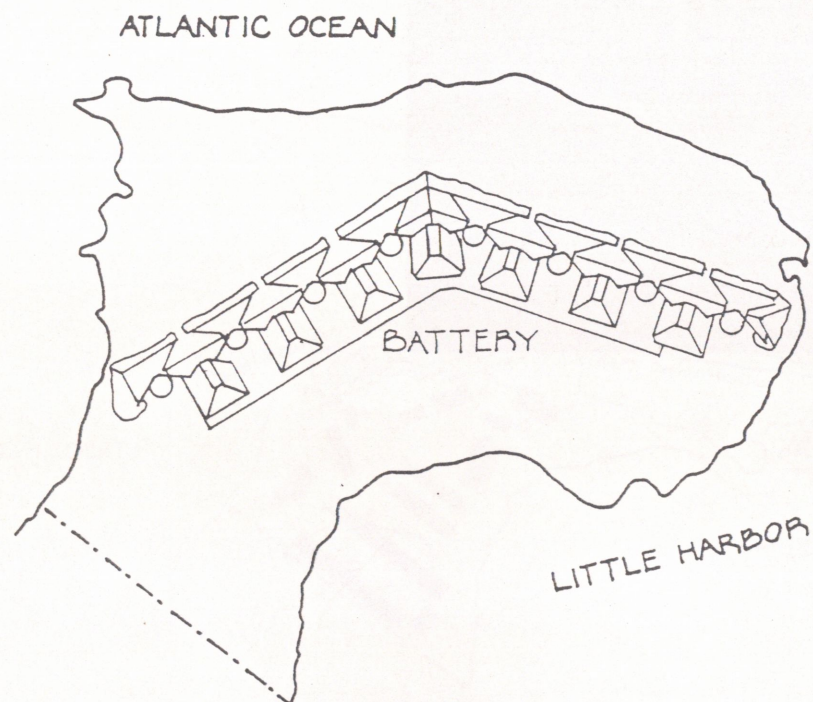
BATTERY WILLIAM LYTLE:
Battery consisted of two 3-inch rapid fire guns on pedestal mounts, model of 1902. It had no projectile or powder hoists. This battery was put into use on April 3, 1905.

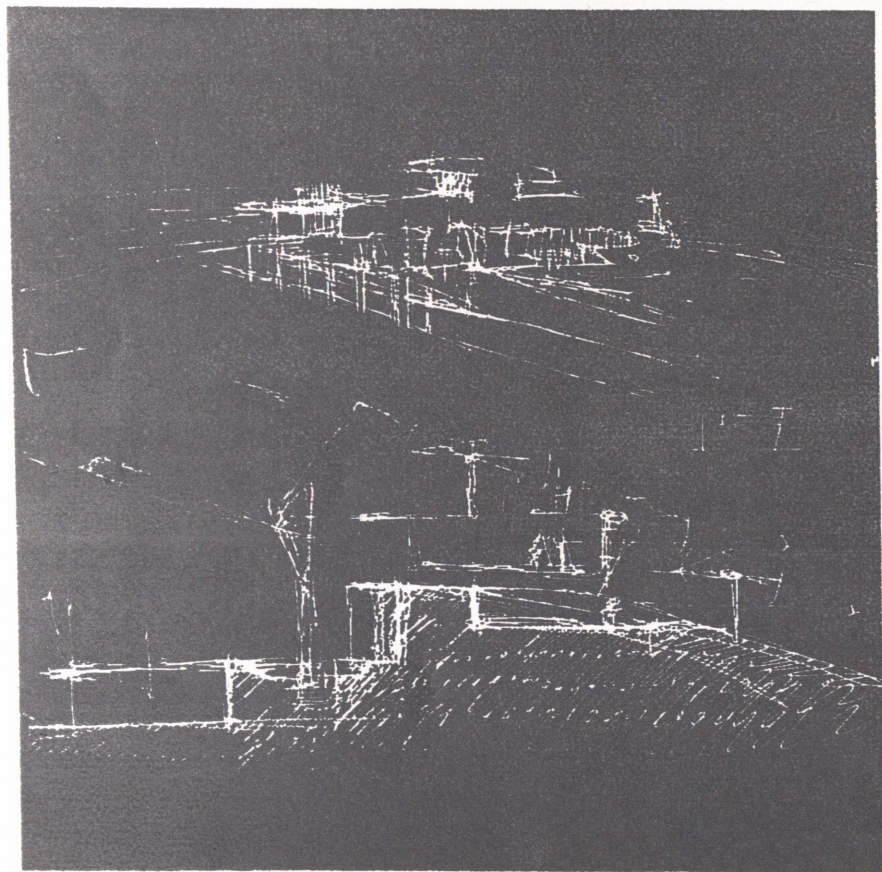


c. 1870



1873-74



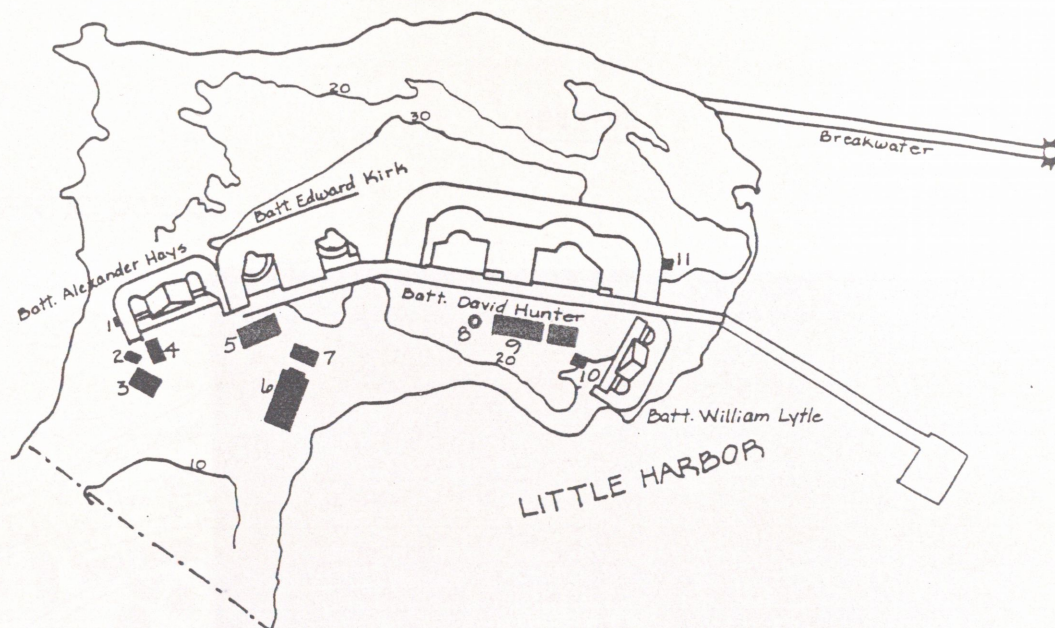


1910

ATLANTIC OCEAN

LEGEND

- 1 CABLE TERMINAL
- 2 SHED
- 3 ENGR. DEPT. OFFICE
- 4 FIRST MINE COMMAND
- 5 MINING CASEMATE
- 6 BARRACK
- 7 COAL SHED & LAVATORY
- 8 WATER TANK
- 9 CARPENTER SHOP, BLACKSMITH SHOP
STORE ROOM
- 10 SHED
- 11 BRICK OIL HOUSE (U.S.L.H. DEPT.)



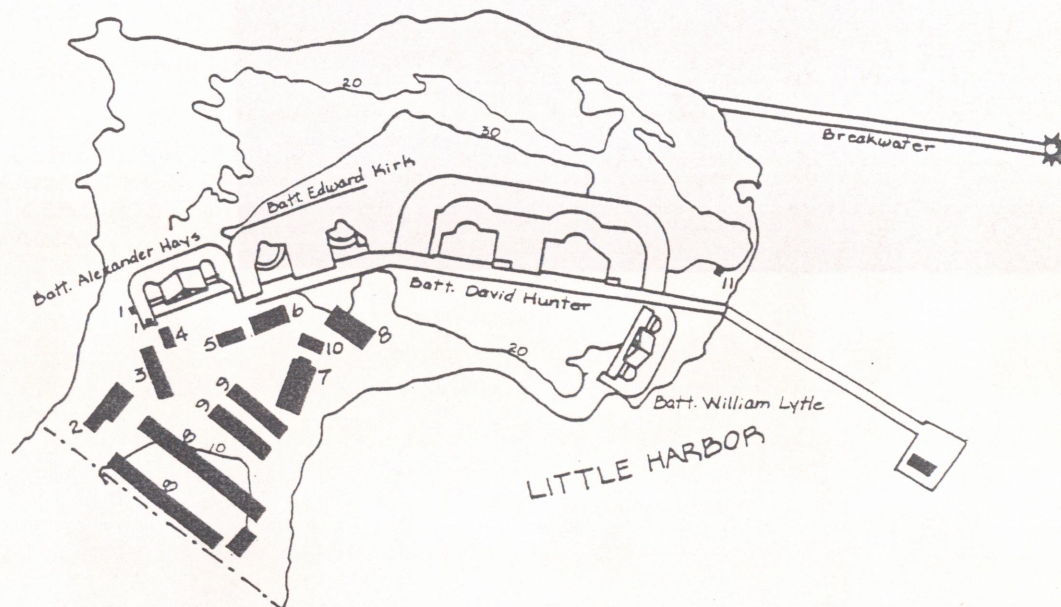
1921

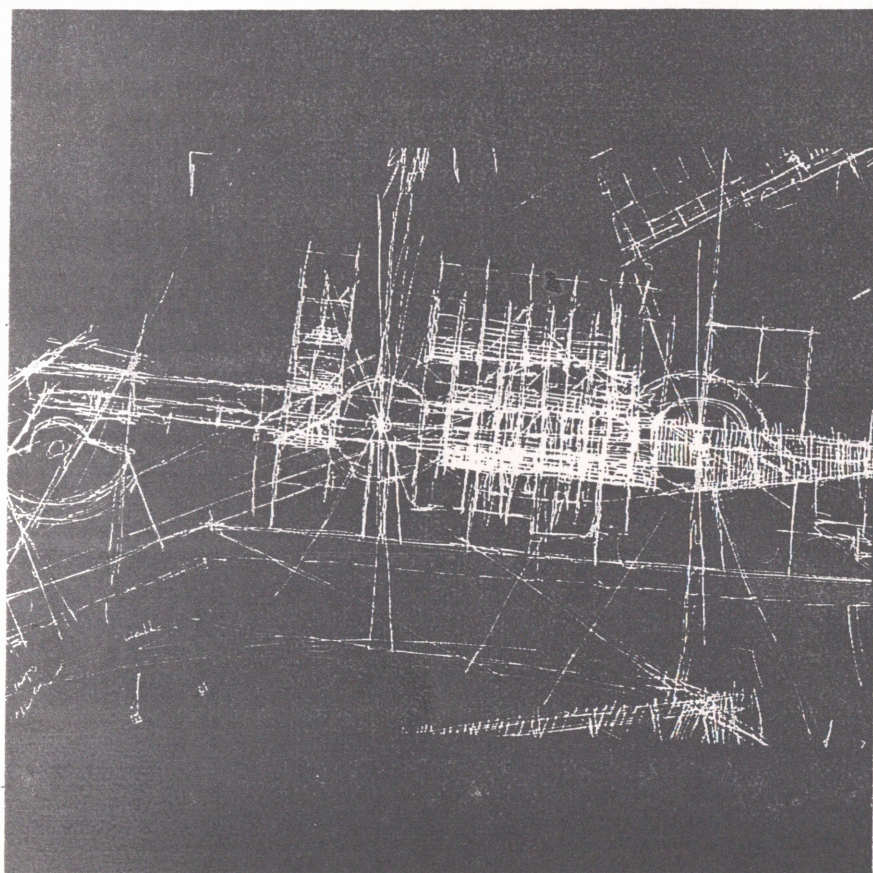
ATLANTIC OCEAN

6

LEGEND

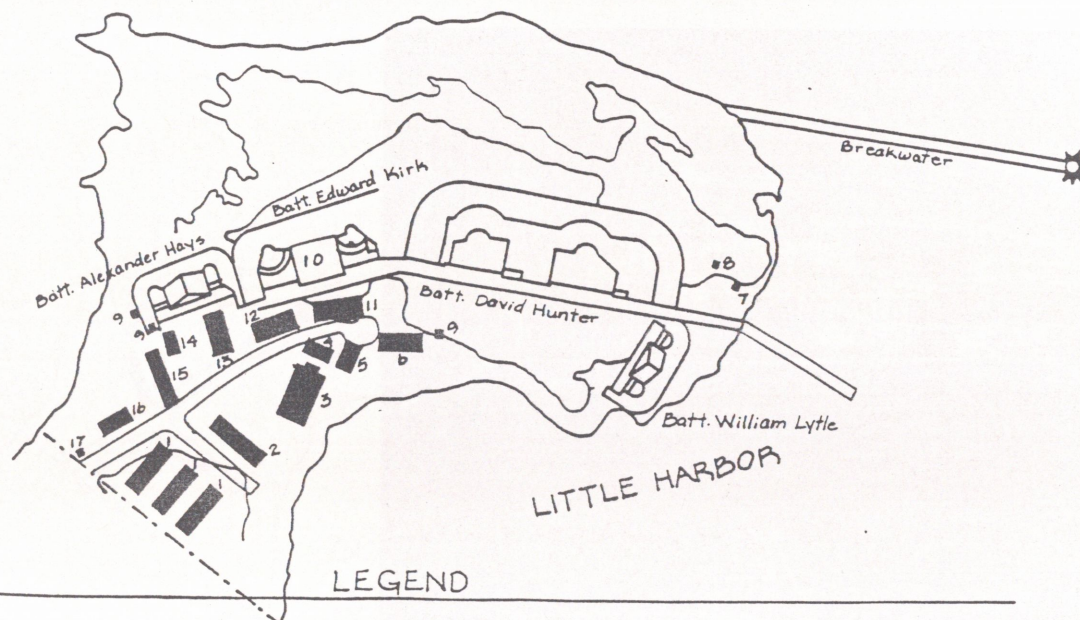
- 1 CABLE TERMINAL
- 2 RECREATION BLDG.
- 3 ORDNANCE MACHINE SHOP
- 4 FIRST MINE COMMAND
- 5 TEMP. POST EXCHANGE
- 6 MINING CASEMATE
- 7 BARRACKS
- 8 TEMP. BARRACKS
- 9 GARAGE
- 10 COAL SHED & ST. HO.
- 11 BRICK OIL HOUSE (U.S.L.H. DEPT.)





1942-43

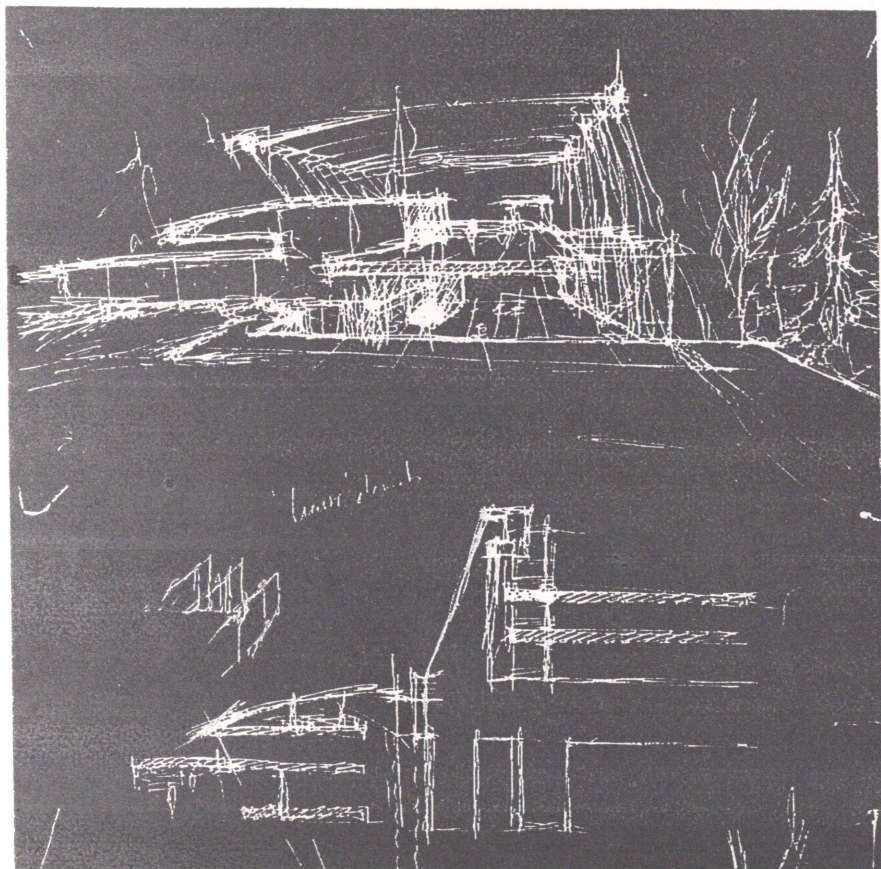
ATLANTIC OCEAN



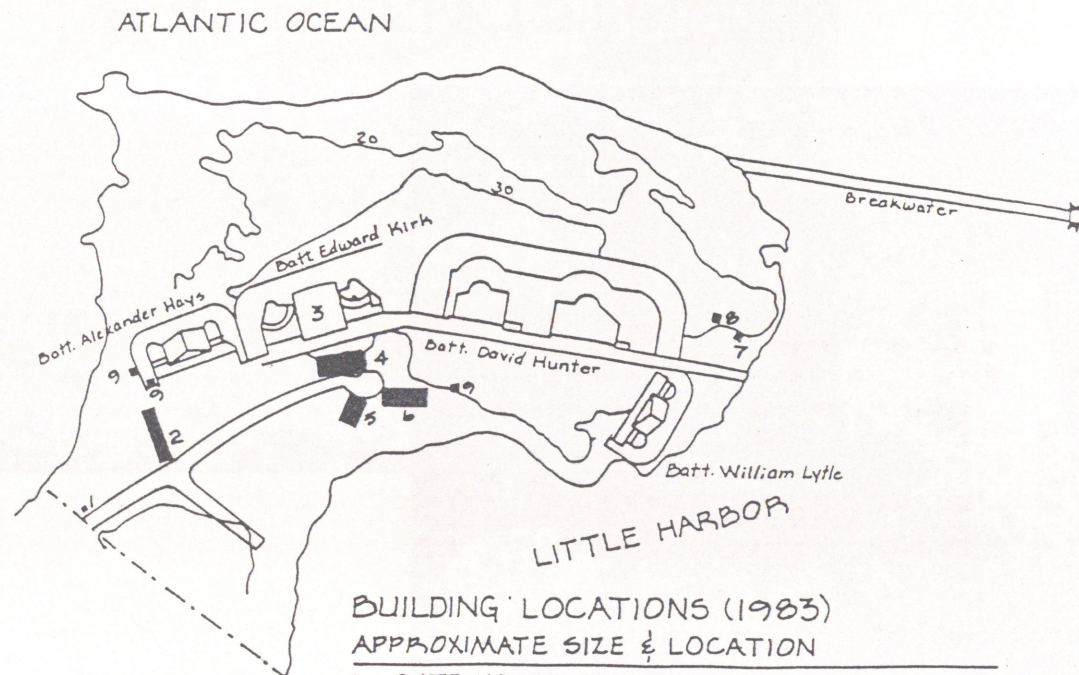
LITTLE HARBOR

LEGEND

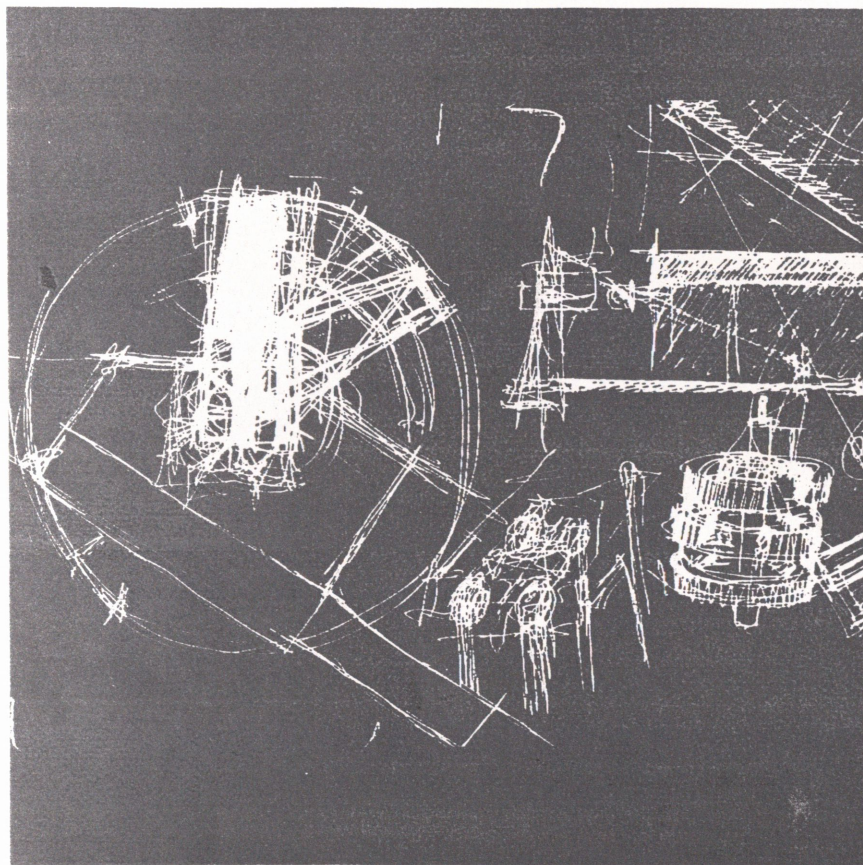
- | | |
|------------------------------------|---|
| 1 WWII BARRACKS | 10 H.E.C.P., HARBOR ENTRANCE CONTROL POST |
| 2 MESS HALL | 11 T-207, QUARTERMASTER SUPPLY BLDG. |
| 3 BARRACKS & SIGNAL TOWER | 12 B BATTERY SUPPLY |
| 4 COAL SHED | 13 B BATTERY OFFICE |
| 5 T-208, PX | 14 FIRST MINE COMMAND (OLD H.E.C.P.) |
| 6 T-200, OFFICERS QUARTERS | 15 B-203, ORDNANCE MACHINE SHOP (O.M.S.) |
| 7 BRICK OIL HOUSE (U.S.L.H. DEPT.) | 16 FIRE STATION |
| 8 SAFETY OFFICERS POST | 17 T-213, SENTRY BOOTH |
| 9 CABLE TERMINAL | |



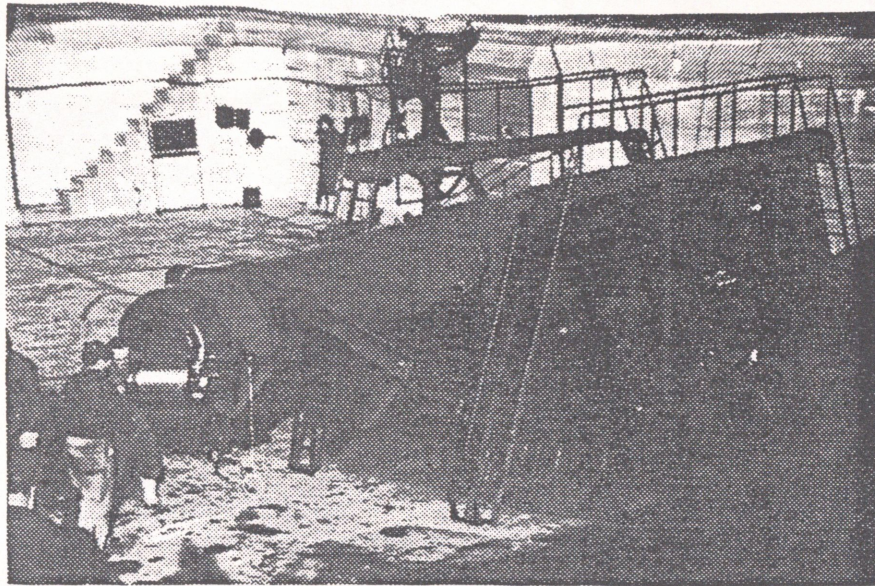
1983

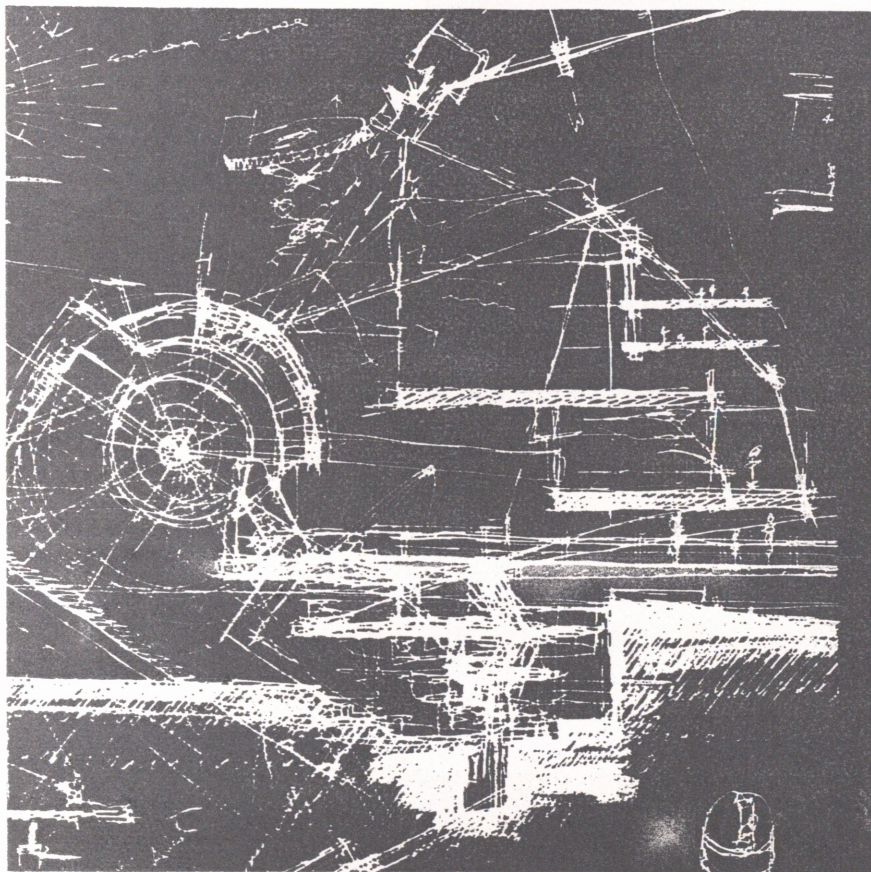


- 1 GATE HOUSE, T-213
- 2 B 203, ORDNANCE MACHINE SHOP
- 3 HECF, HARBOR ENTRANCE CONTROL POST
- 4 T-207, QUARTERMASTER SUPPLY BLDG.
- 5 T-208, SUPPLY & PX
- 6 T-200, 2ND BATTALION HDQTRS.
- 7 BRICK OIL HOUSE (U.S.L.H. DEPT.), B-214
- 8 SAFETY OFFICERS POST
- 9 CABLE TERMINALS



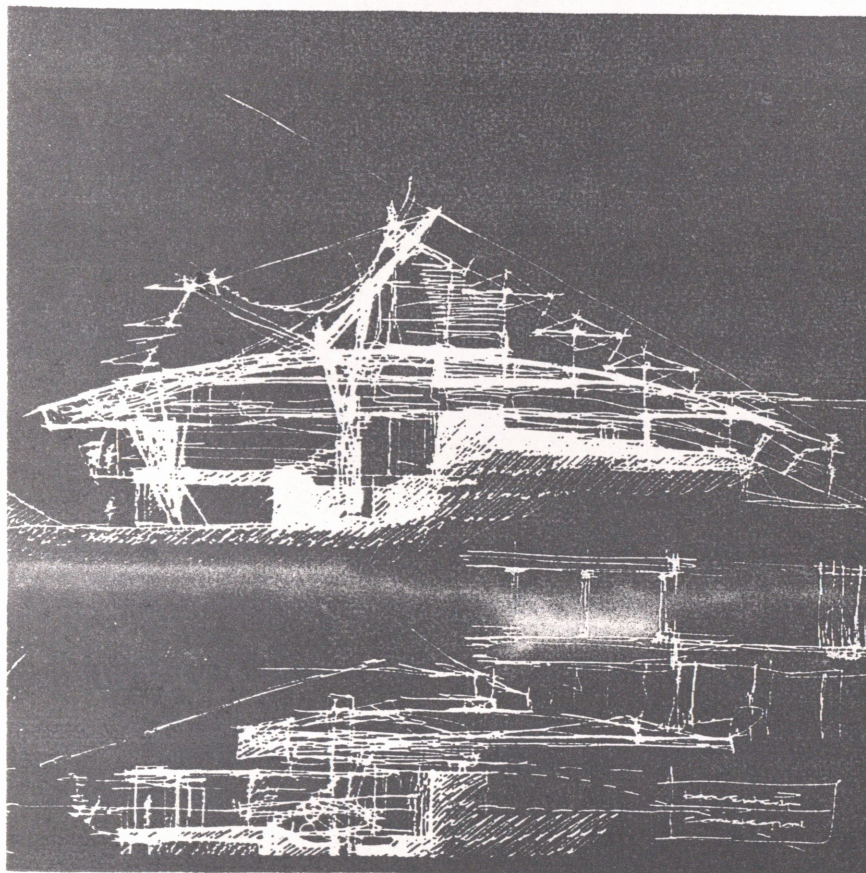
EXISTING SITE
C O N D I T I O N S



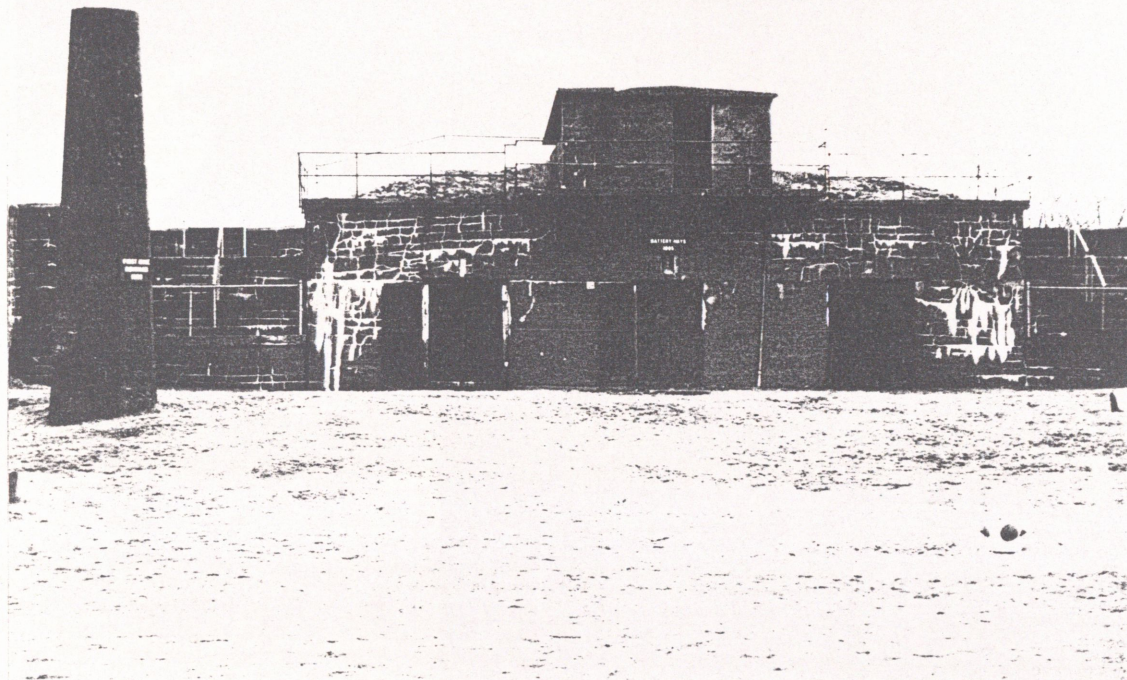


A P P R O A C H

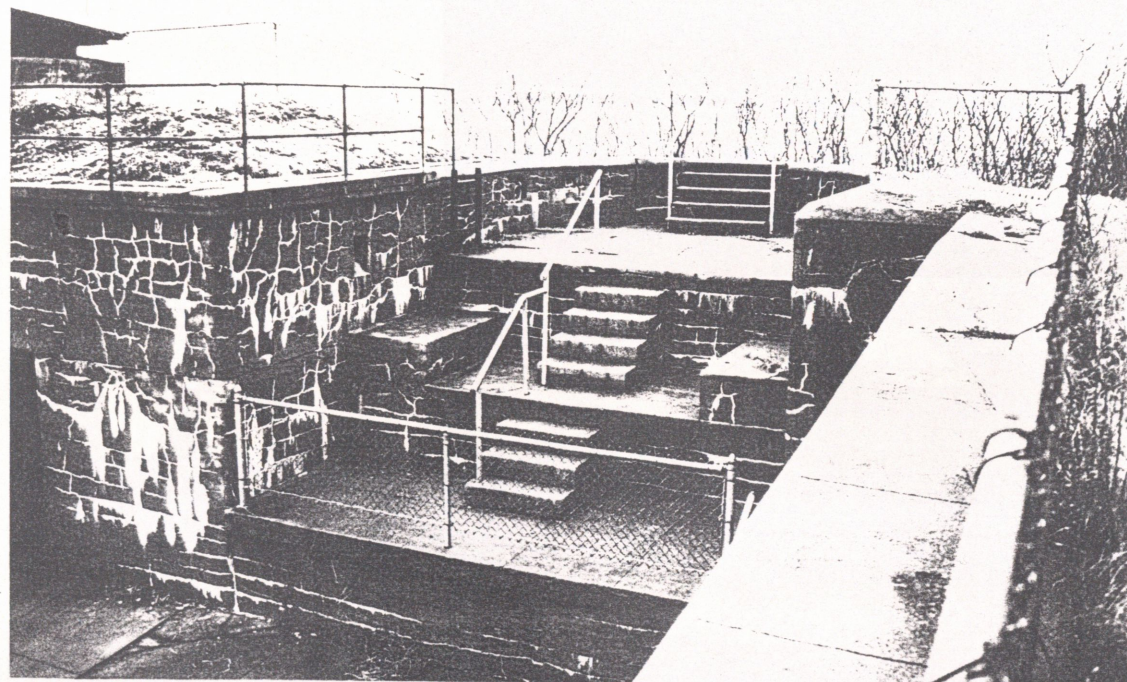


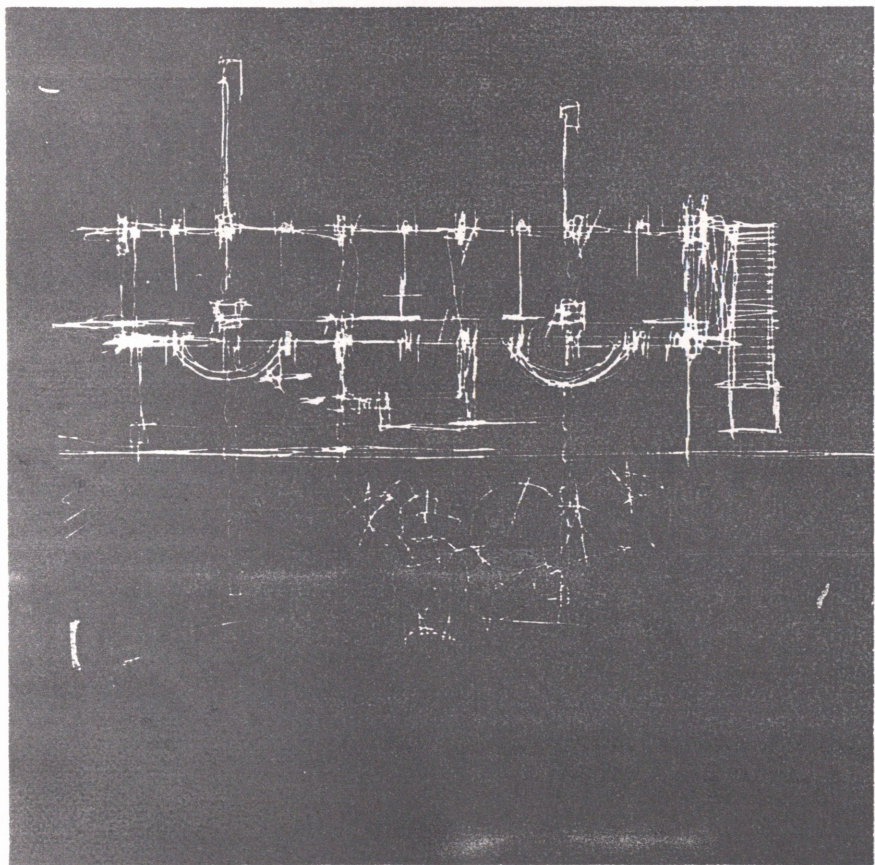


BATTERY
ALEXANDER HAYES

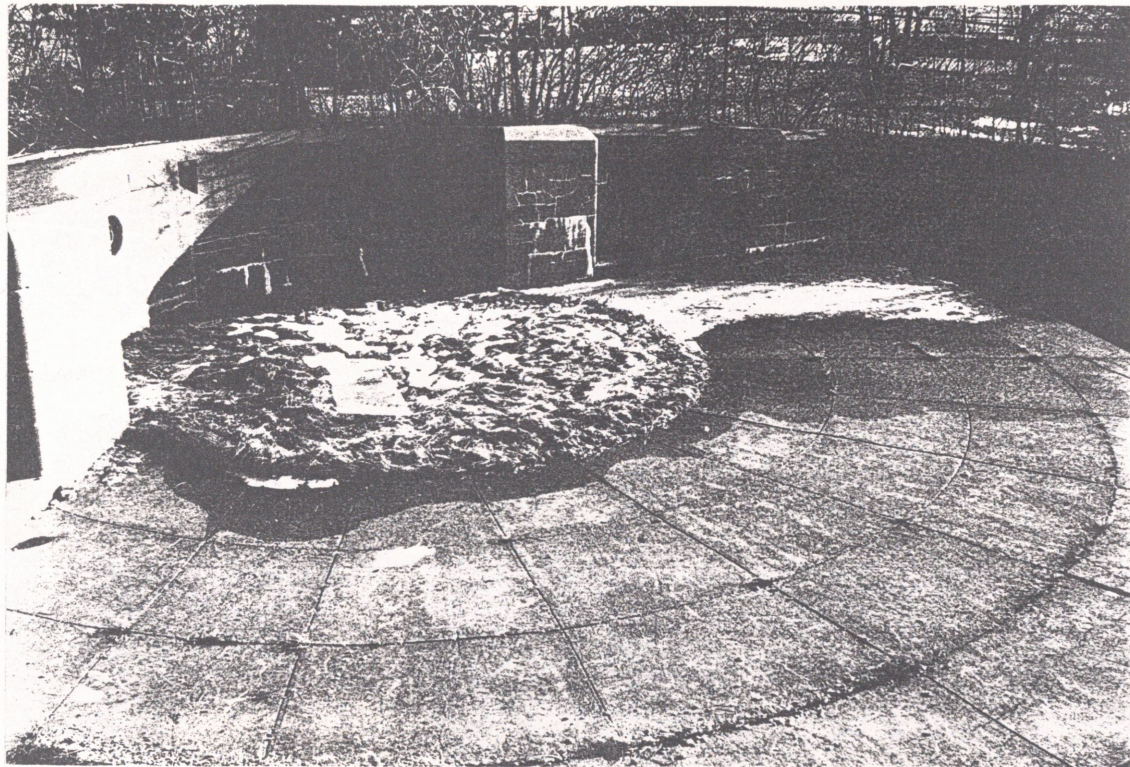


11

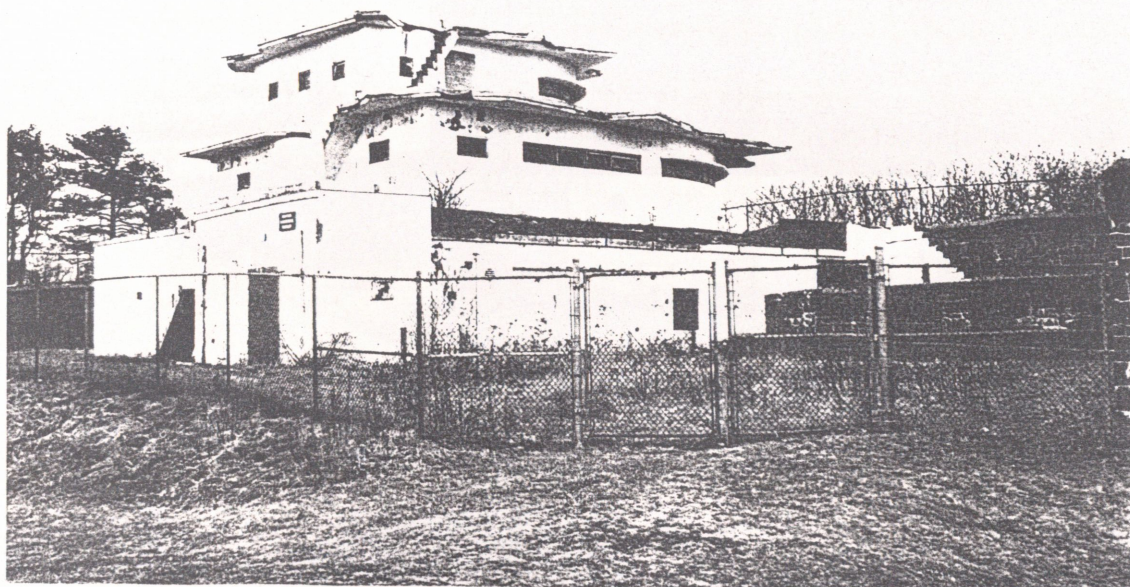


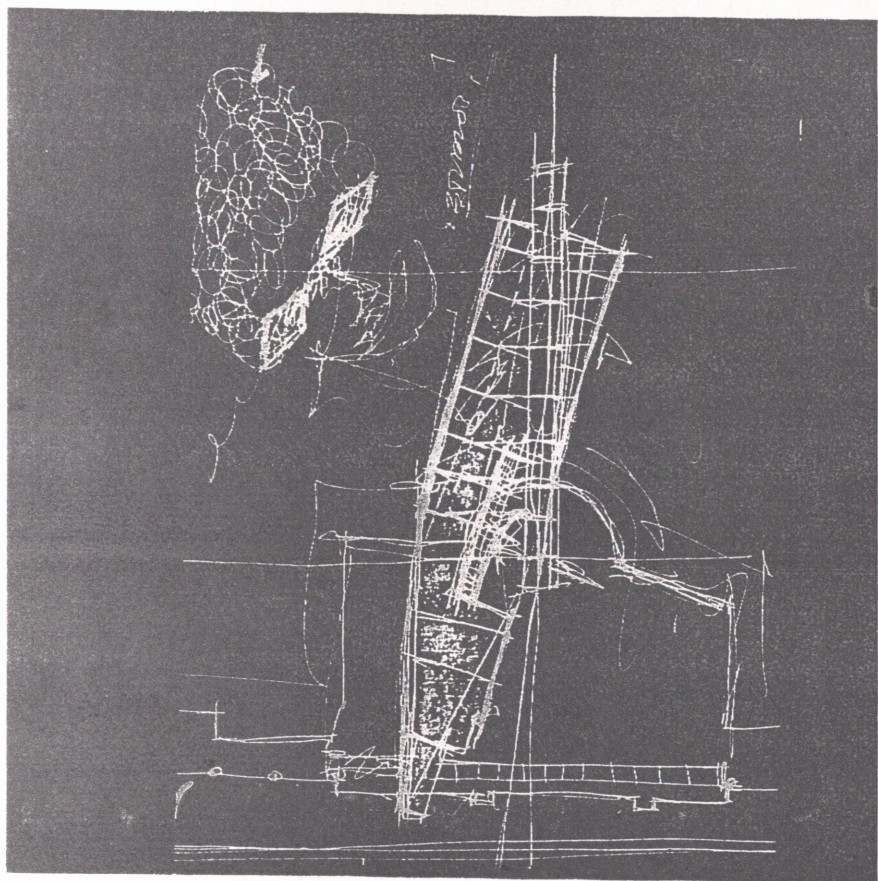


BATTERY
EDWARD KIRK



12

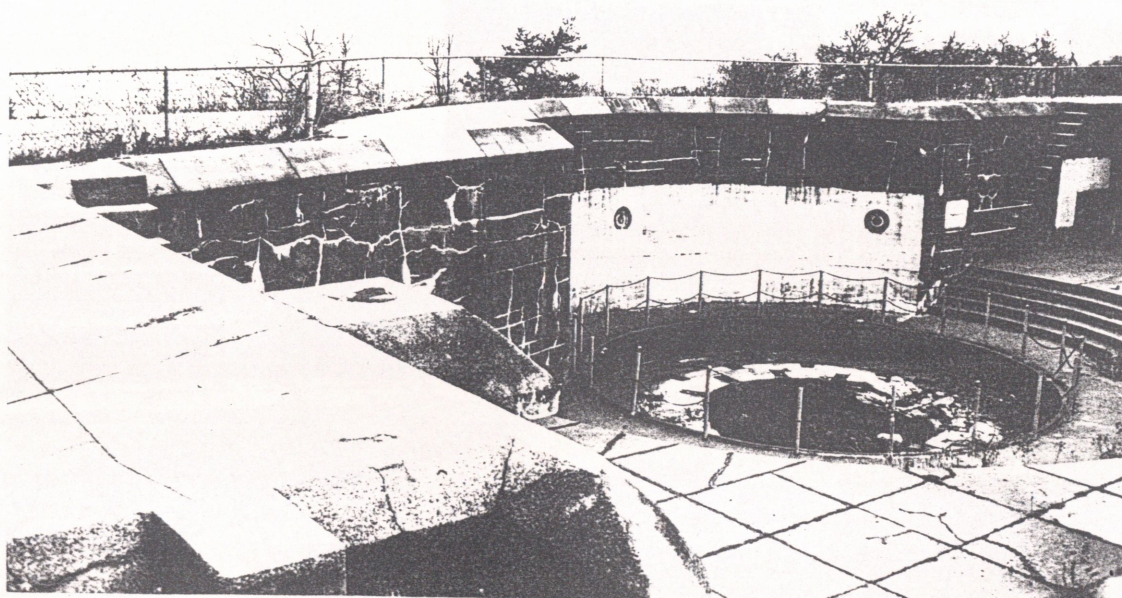


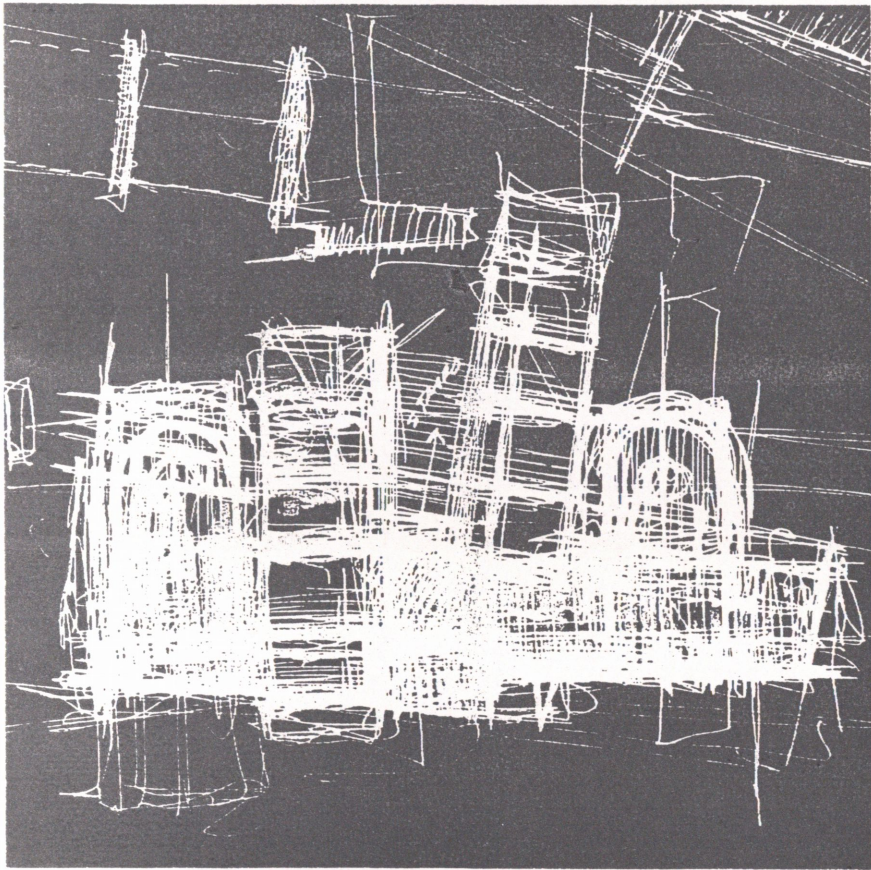


B A T T E R Y
D A V I D H U N T E R



13

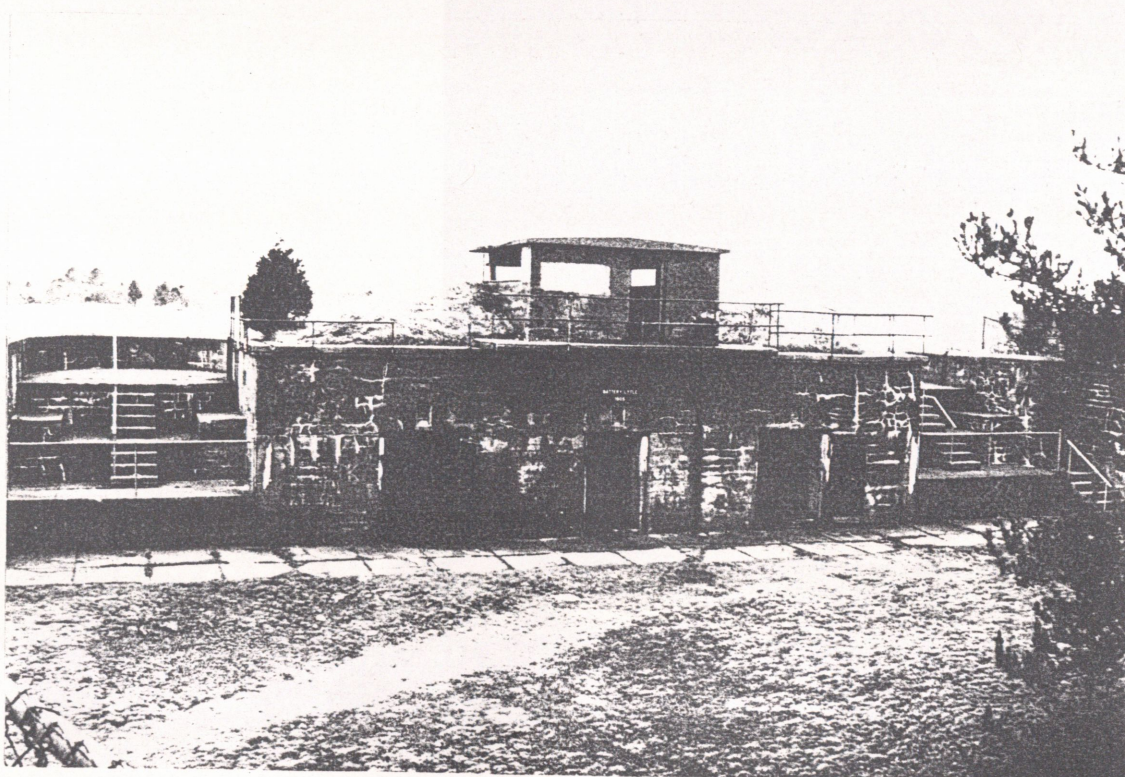


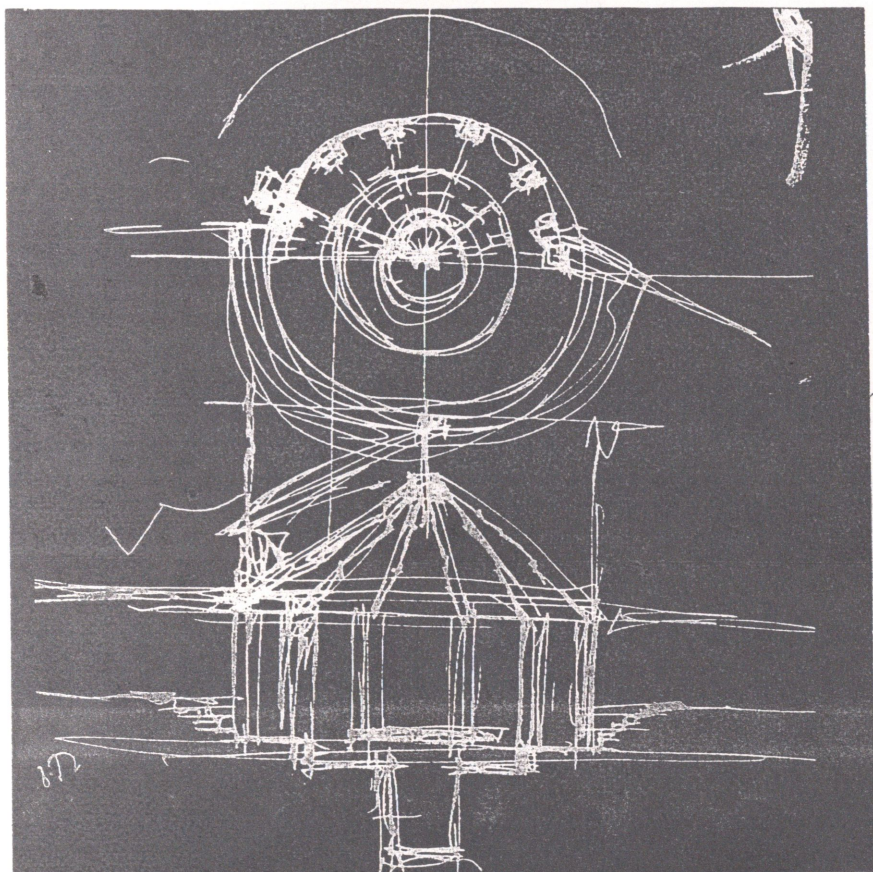


B A T T E R Y
W I L L I A M L Y T L E



14

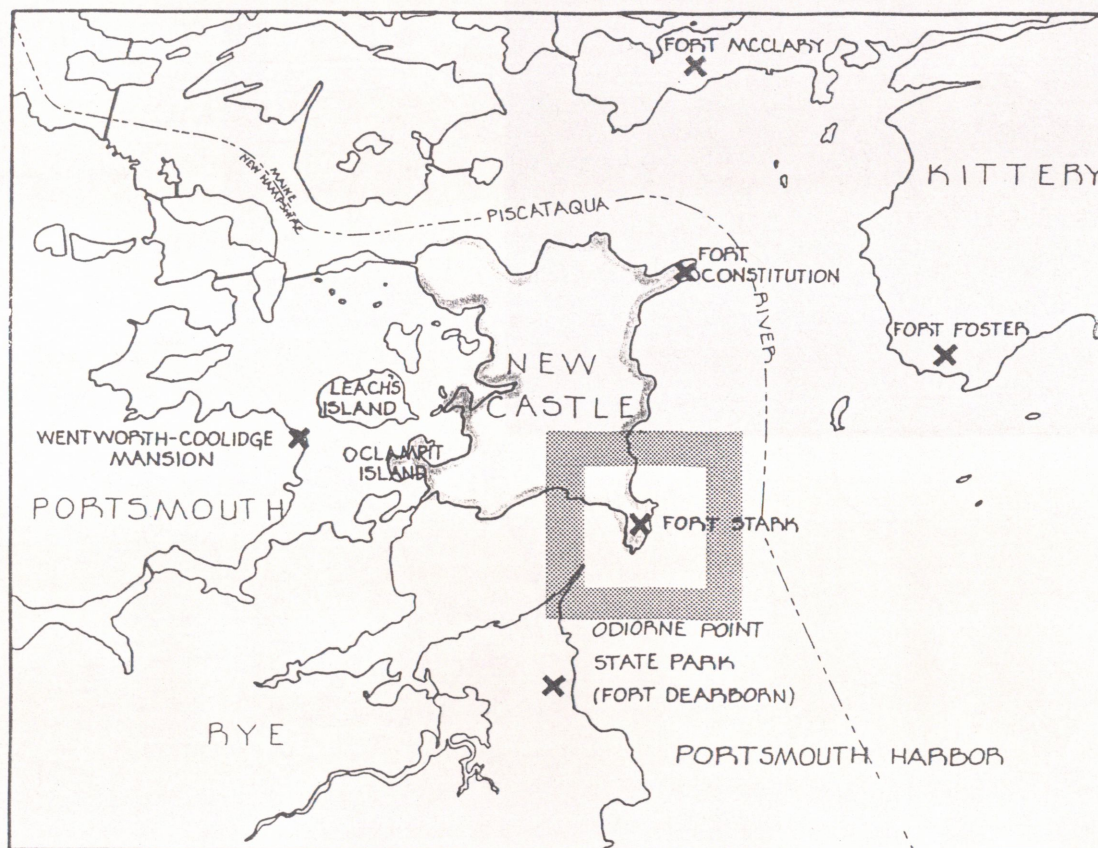
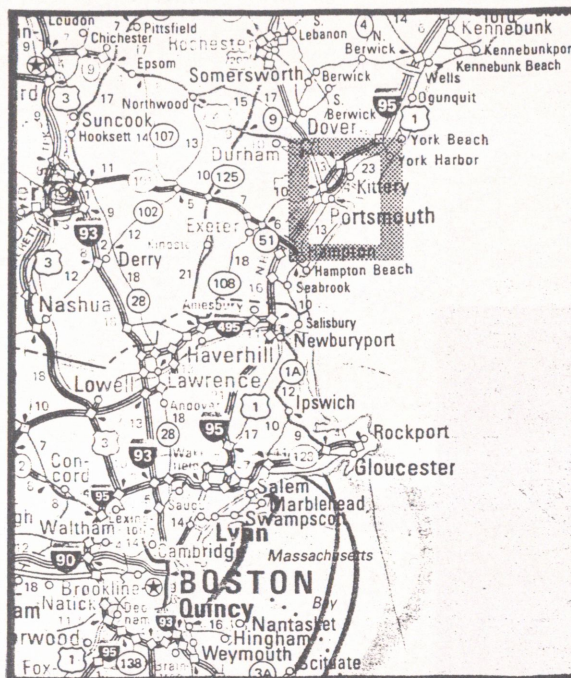


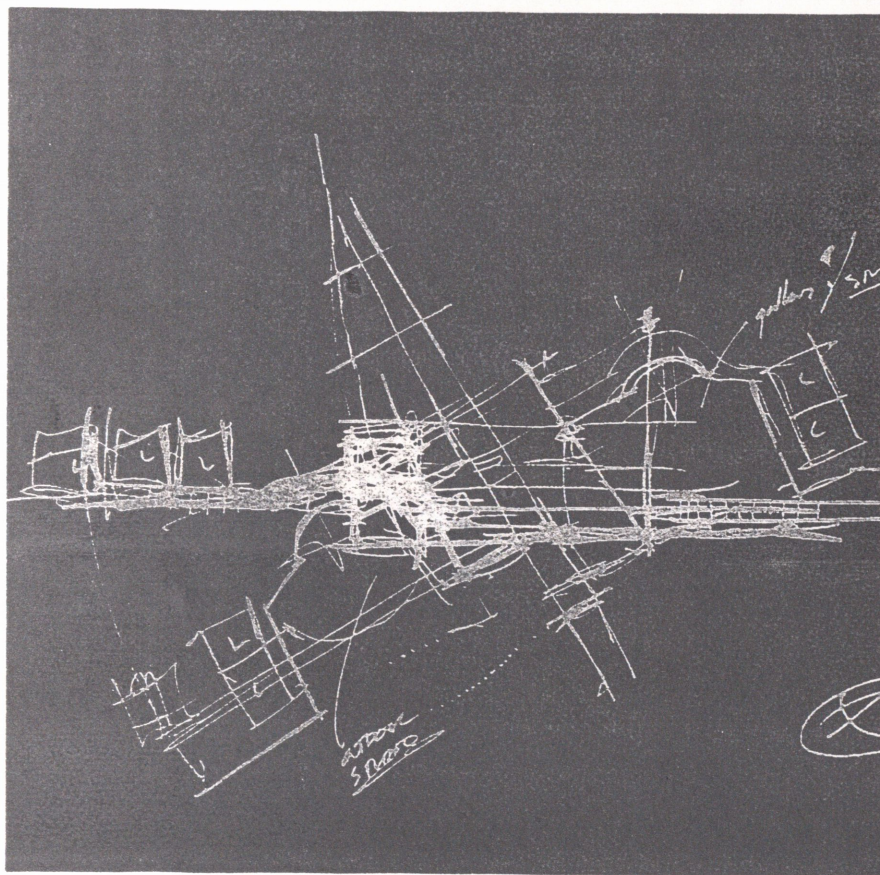




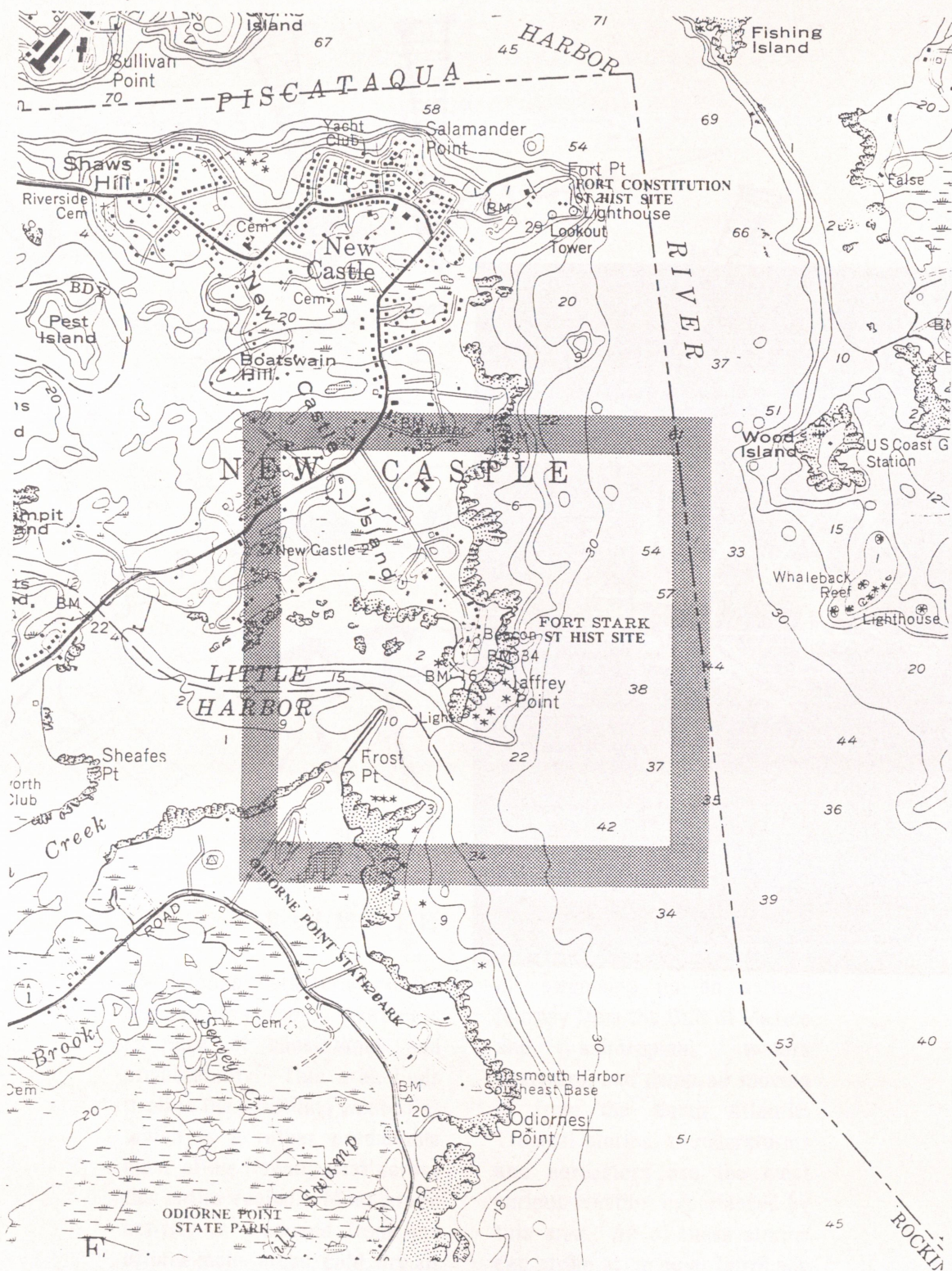


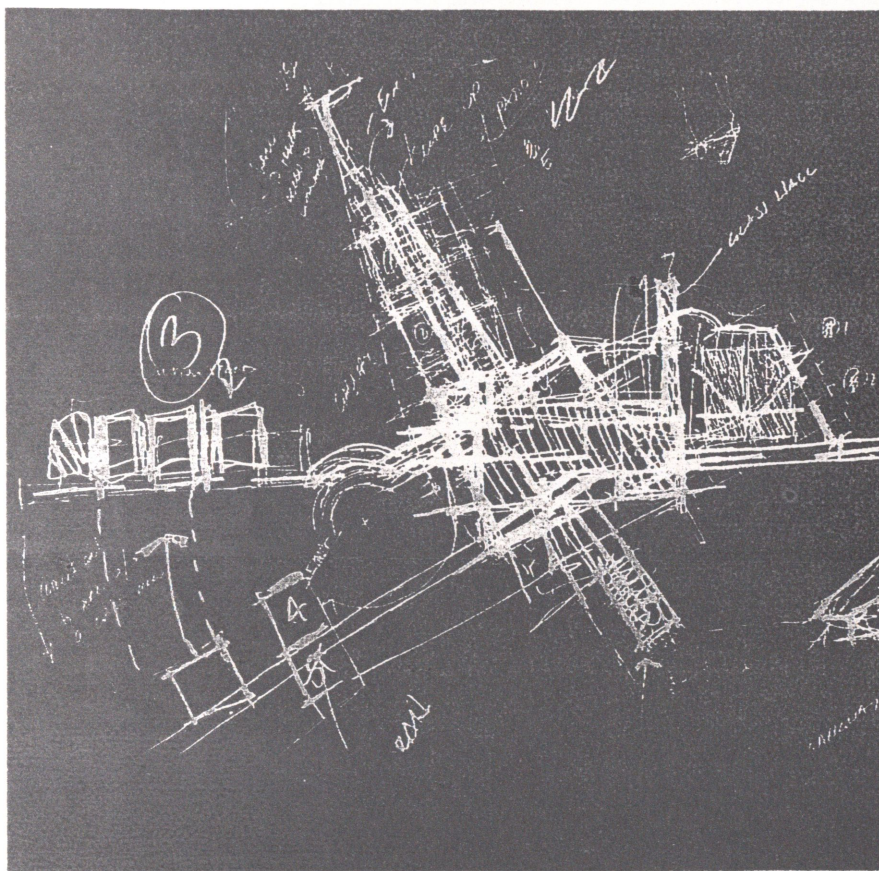
SITE ANALYSIS

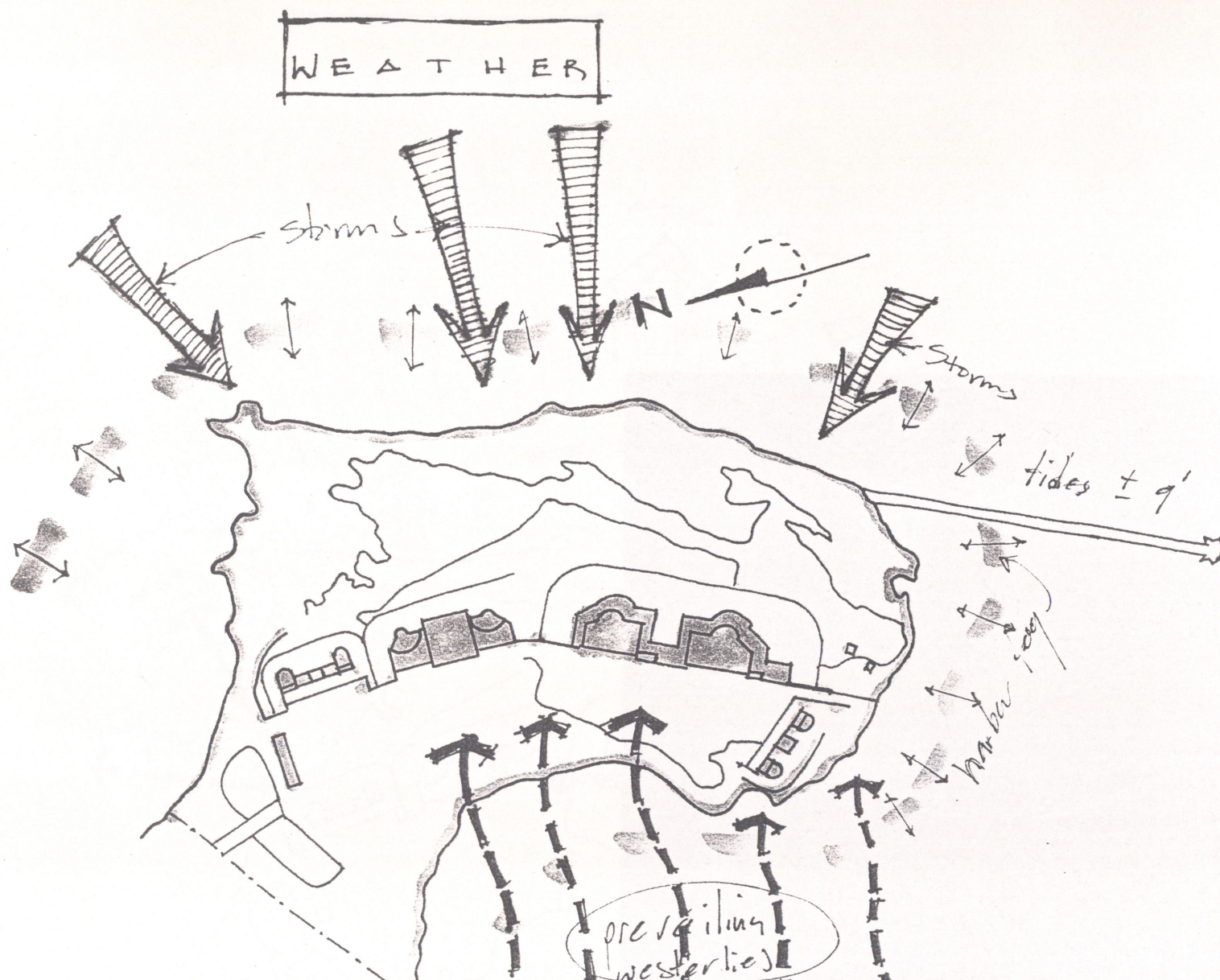




LOCATION



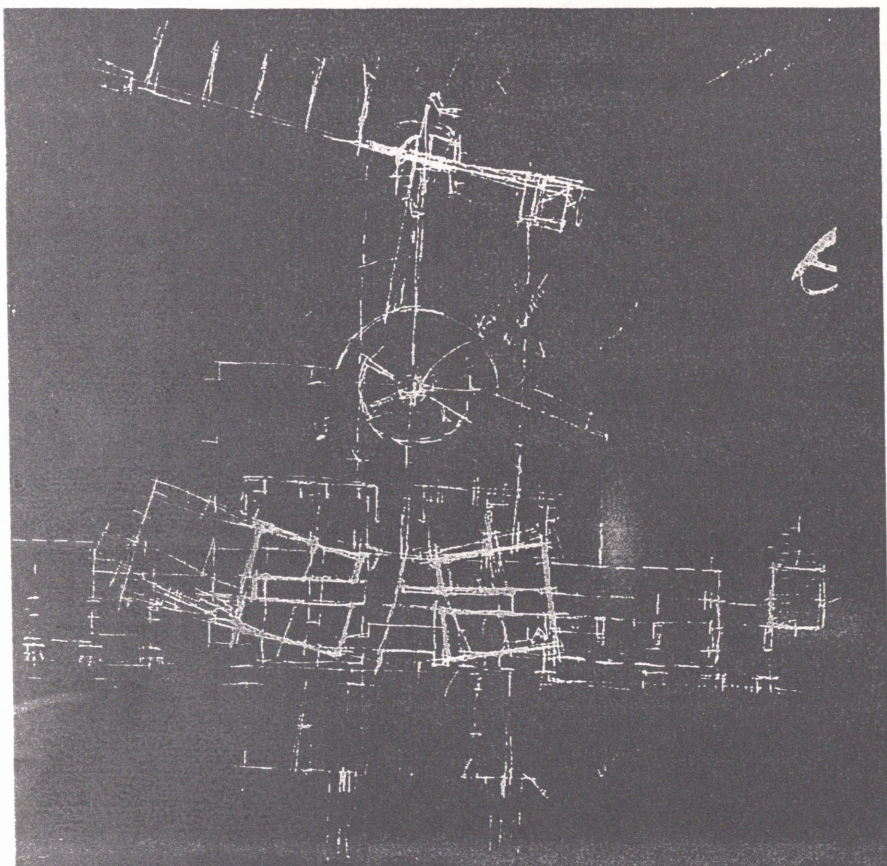




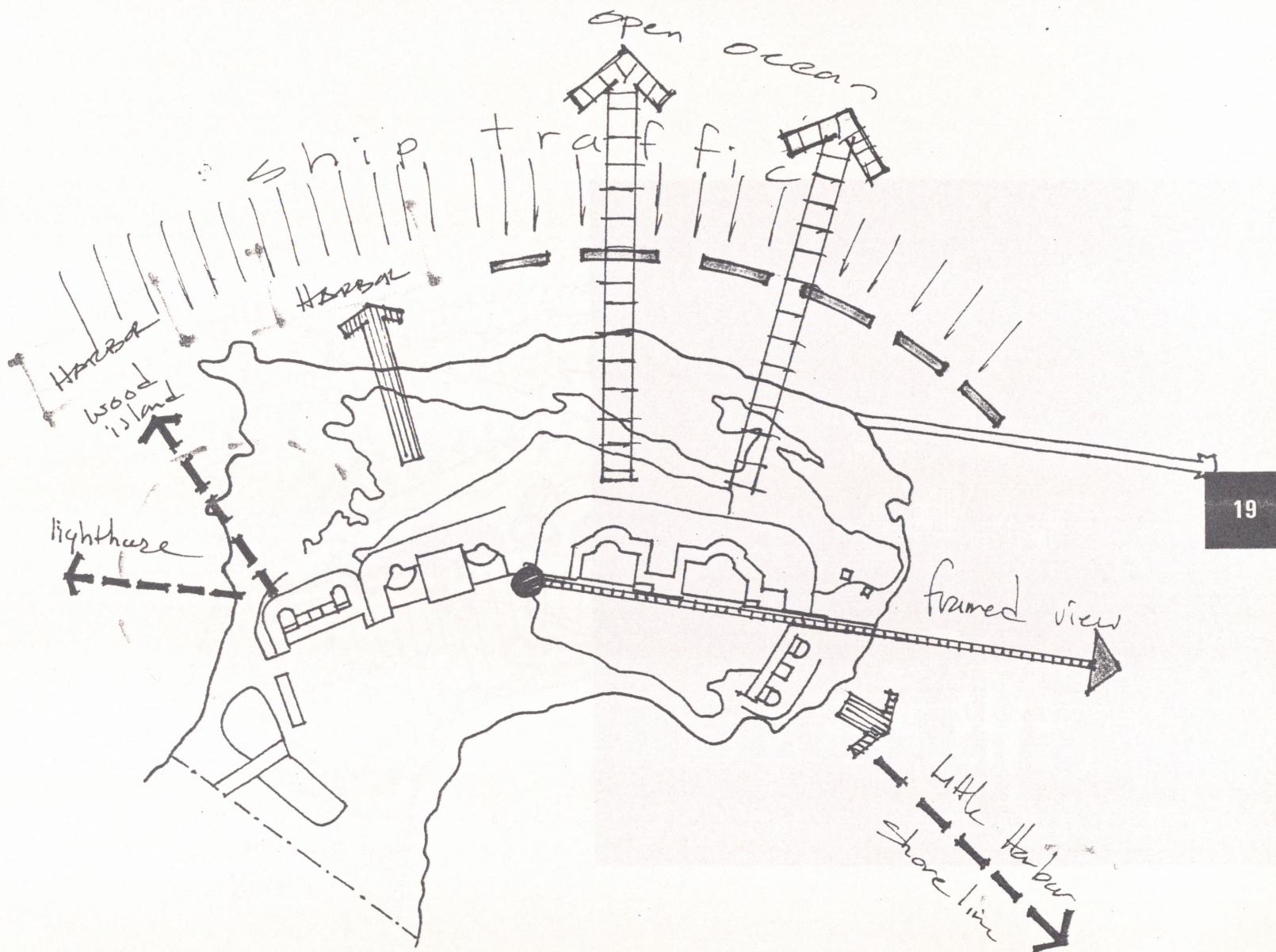
THE CLIMATE:

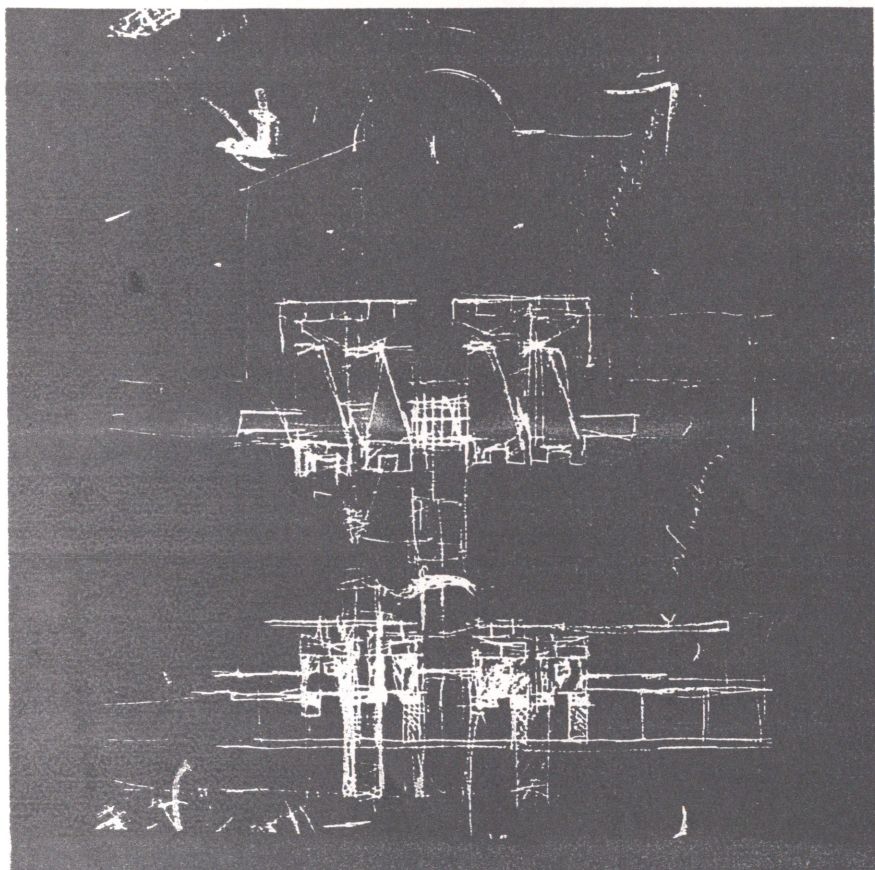
The defining characteristic of the Portsmouth seacoast weather is its lack of consistency and predictability. This area finds itself in the prevailing westerlies which is a rather predictable mass of air flowing east across the entire region. Most storm activity is produced from one of three major areas; cold, dry air passing down from sub-arctic North America; warm, moist

air streaming up on a long journey from the Gulf of Mexico and sub-tropical waters eastward; and damp air moving in from the North Atlantic. Tropical storms, thunderstorms and noreasters are the most serious weather experienced by this area. All of these storms can strike at, or near hurricane intensity, and their most common season is in the fall and winter.

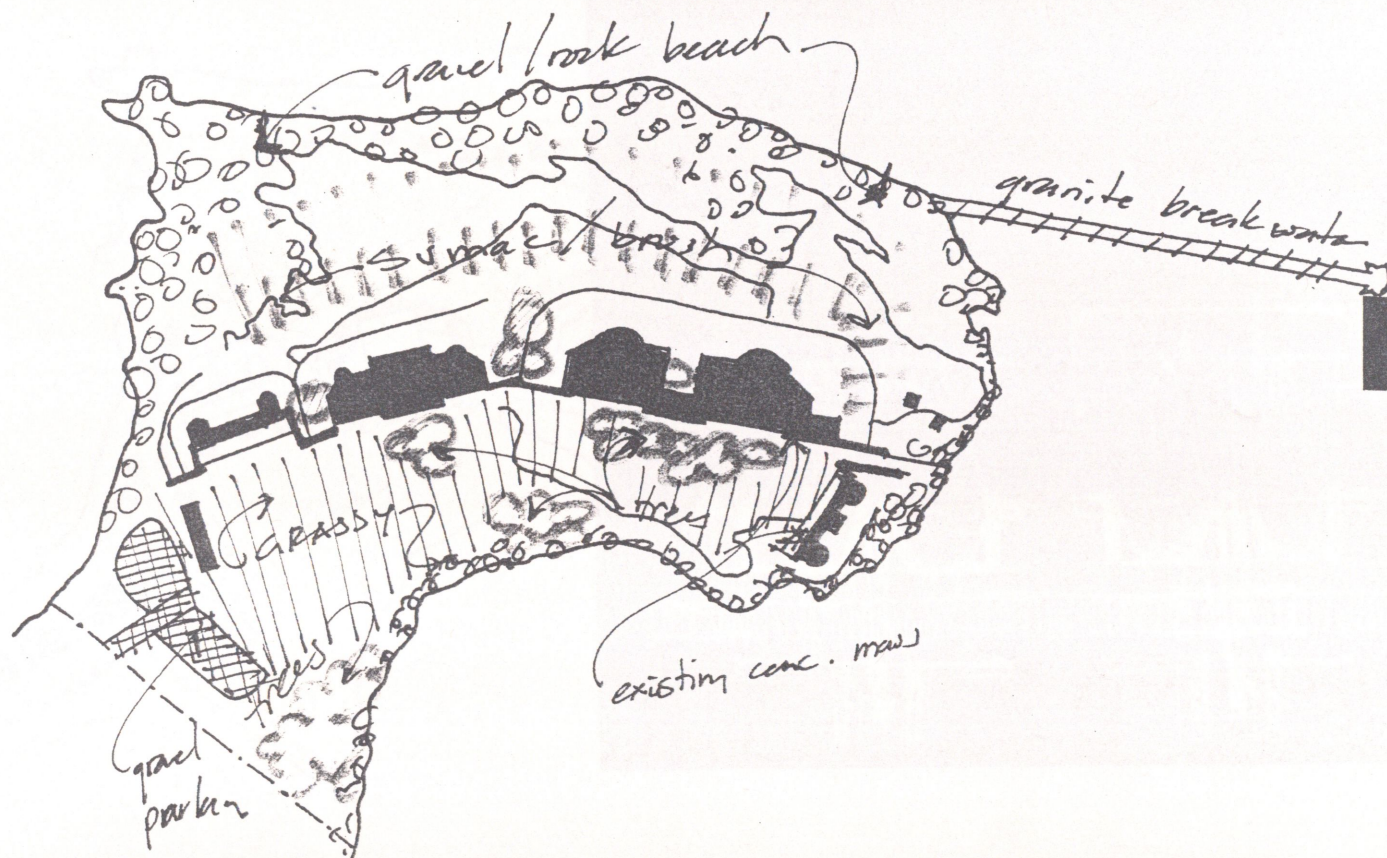


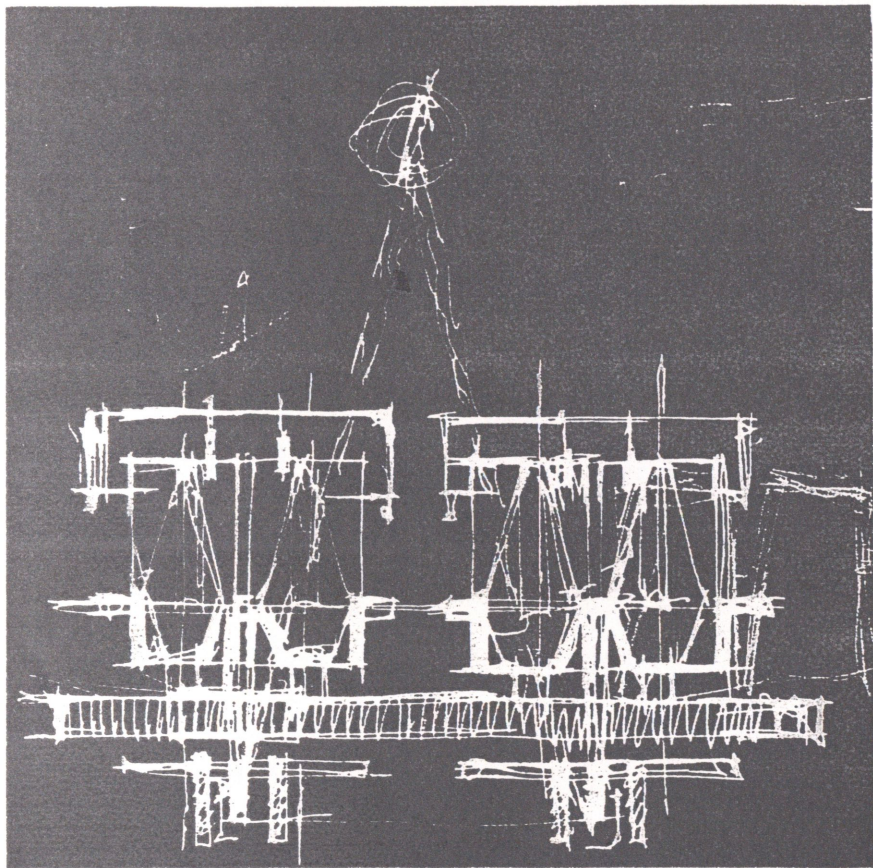
VIEWS



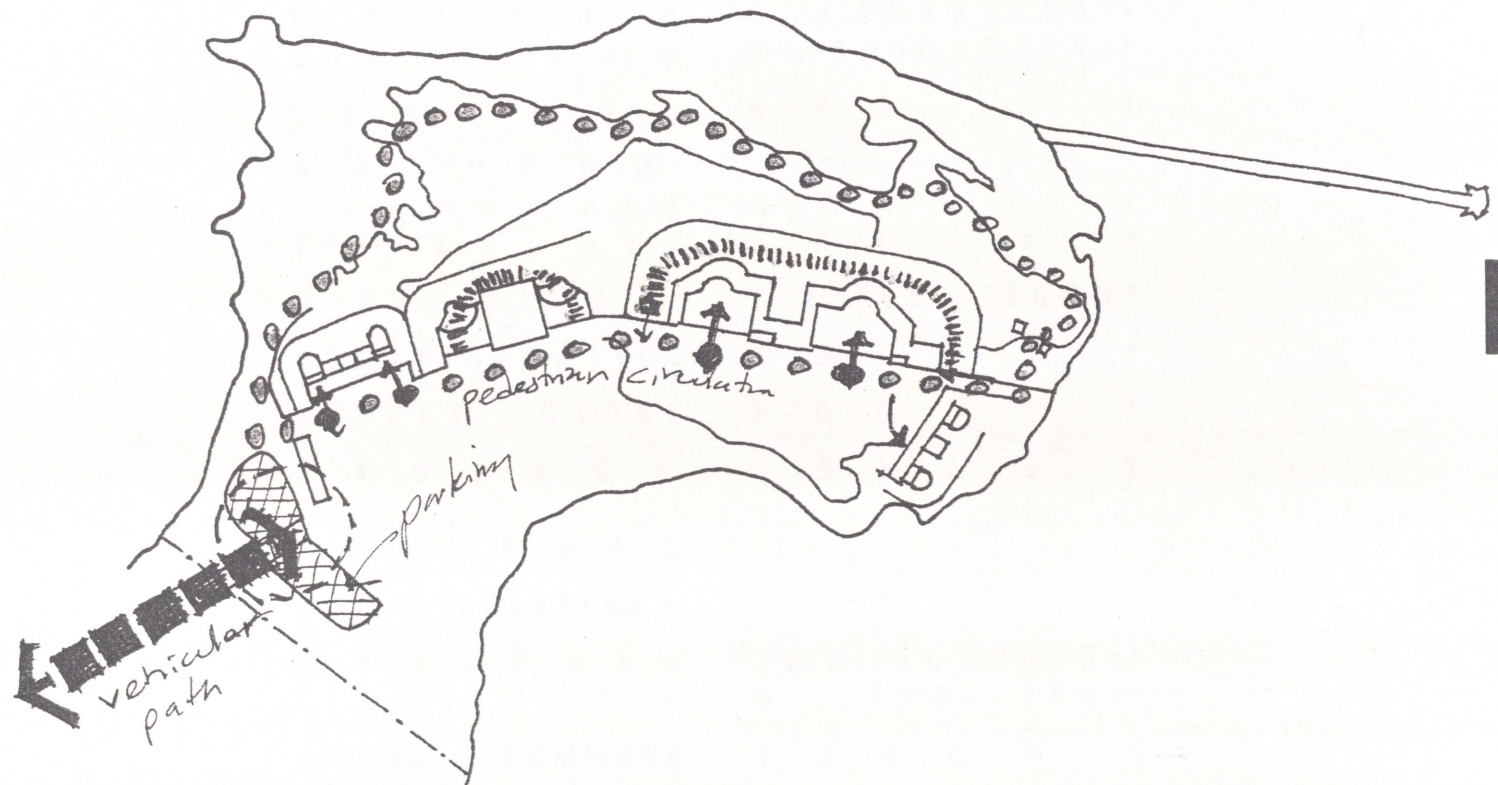


VEGETATION





CIRCULATION



PROGRAM

LAND AREA

Peninsula	size	10	acres
Developable	area	7	acres

INDOOR SPACE

ACADEMIC

STUDIOS :

Resident	15	x	280	=	4200	sf
Critical	6	x	200	=	1200	sf
Classroom	2	x	3200	=	6400	sf

Lecture	4	8	0	s	f
---------	---	---	---	---	---

GALLERY:

Permanent	8	0	0	s	f
Temporary	5	0	0	s	f

Offices	6	x	100	=	600	sf
---------	---	---	-----	---	-----	----

Administration	1	5	0	0	s	f
----------------	---	---	---	---	---	---

Supply Store	9	0	0	s	f
--------------	---	---	---	---	---

Storage	2	5	0	0	s	f
---------	---	---	---	---	---	---

PERSONAL

LIVING QUARTERS :

Resident	20	x	125	=	2500	sf
Critical	6	x	130	=	780	sf

Eating Commons	1	2	0	0	s	f
----------------	---	---	---	---	---	---

Social Gathering	1	2	0	0	s	f
------------------	---	---	---	---	---	---

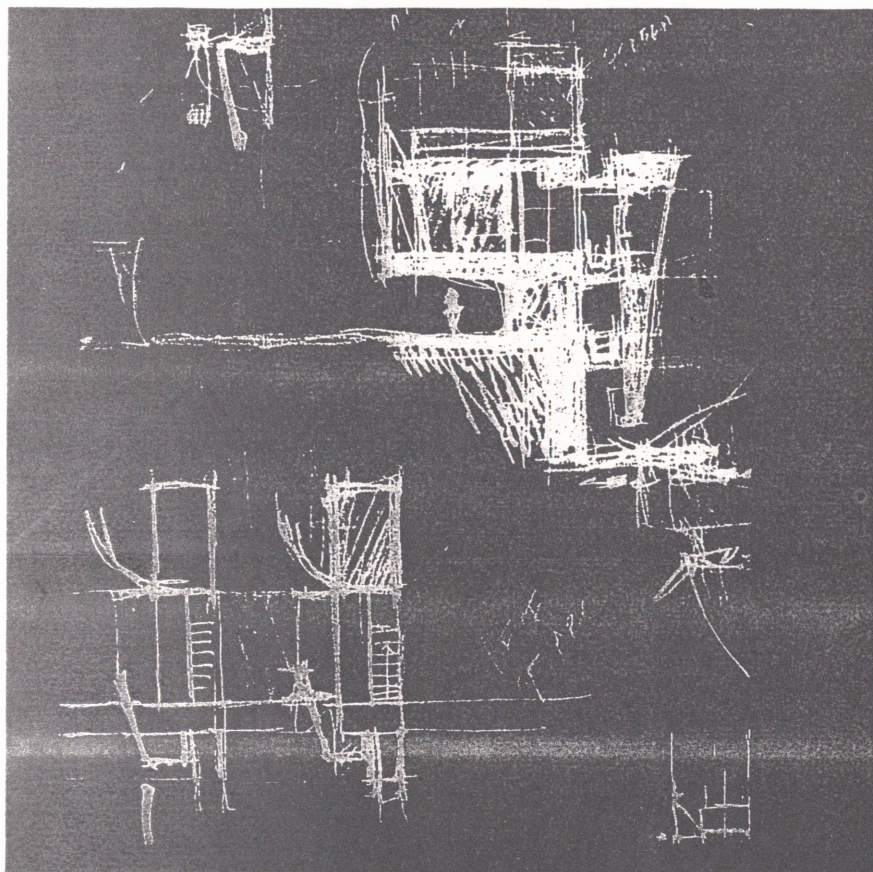
Services / Mechanical	a	s	n	e	e	d
-----------------------	---	---	---	---	---	---

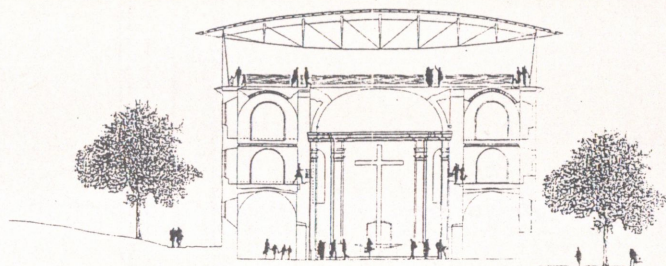
OUTDOOR SPACE

Plaza	a	s	i	n	d	i	c	a	t	e	d
-------	---	---	---	---	---	---	---	---	---	---	---

Boat Dock / Moorings	a	s	i	n	d	i	c	a	t	e	d
----------------------	---	---	---	---	---	---	---	---	---	---	---

Parking	70	s	p	a	c	e	s
---------	----	---	---	---	---	---	---





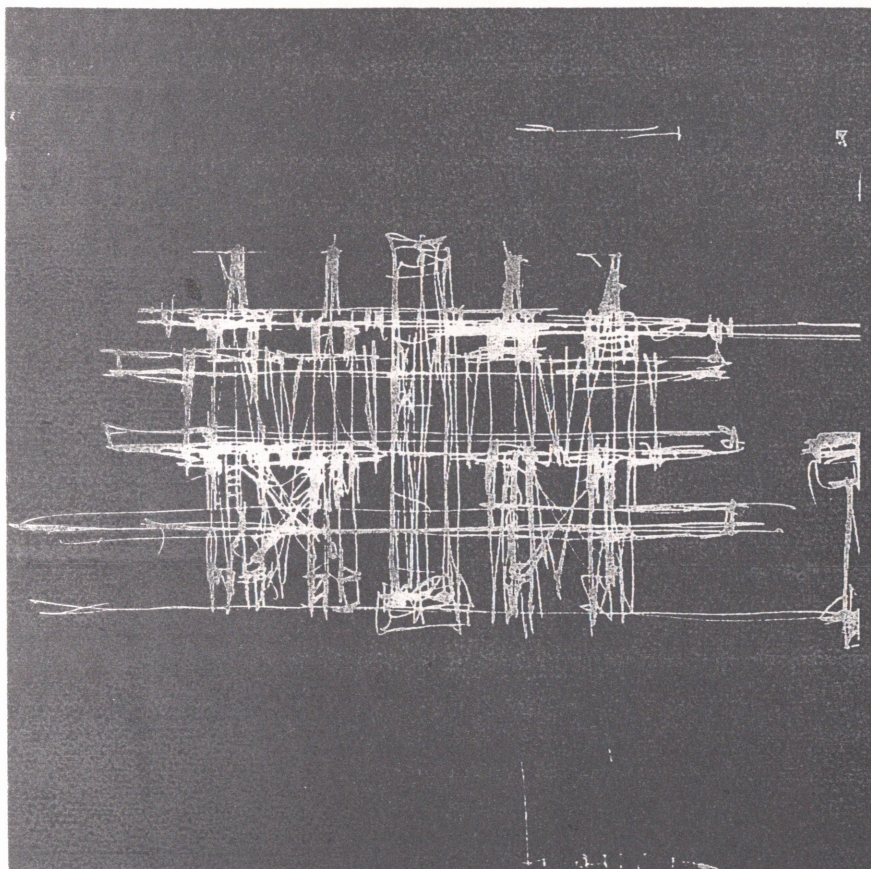
**COPERTURA DI
UN RUDERE NERATON
RADIM KOUSAL**

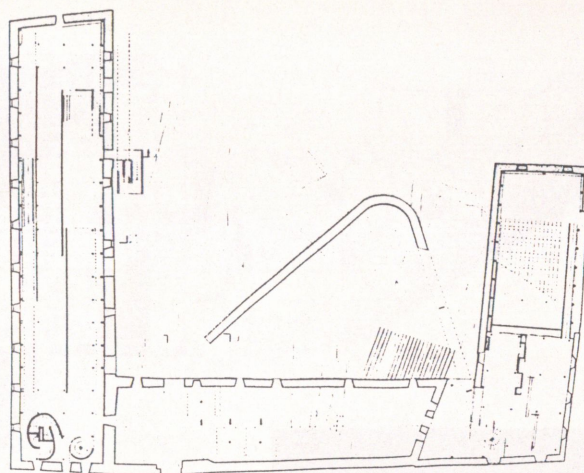
This is a modern reuse of an existing church relic consisting of a modern truss roof system held up by thinly connected members. The connection between the old and the new-modern is done as an example of contrast: the new steel and glass structure in no way attempts to mimic the existing conditions of weathered stone and mortar, but in turn provides

a tactile building envelope that demands your attention. This joining of the two styles is done in a bold enough manner to create respect for both the new and the old: a unique elegance that is truly original.

"I FARI FISSATI ALLA MAGLIA
S T R U T T U R A L E
D R A M M A T I Z Z A N O
U L T E Z I O R M E N T E L ' I L L U S I O N E
C H E Q U E S T O S I A U N C I E L O
S T E L L A T O ."





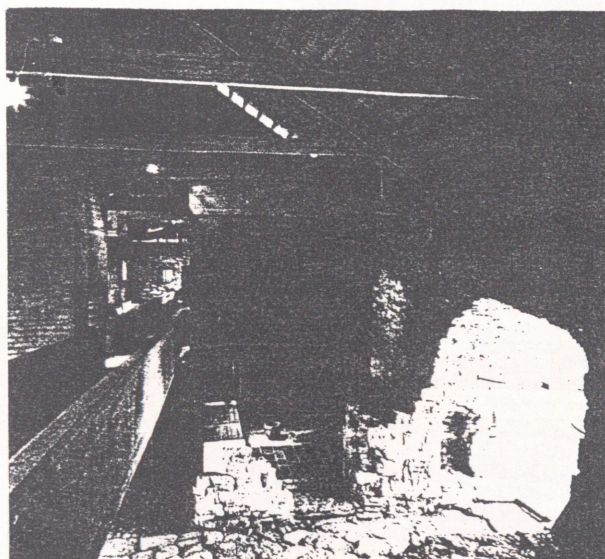


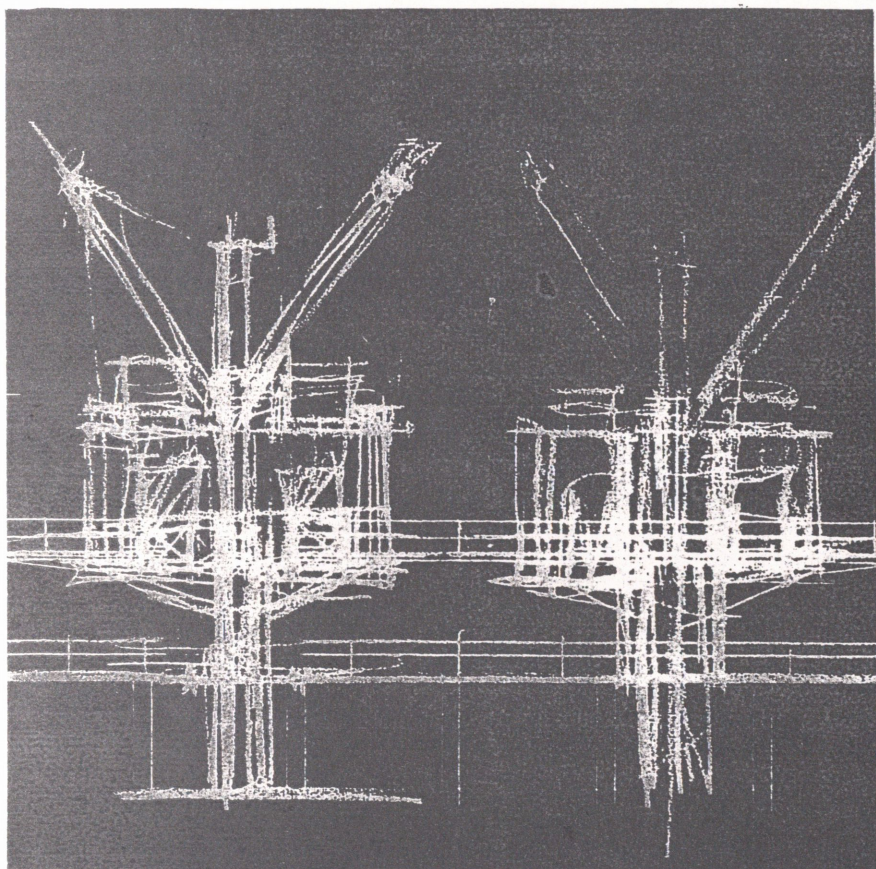
**HEDMARK MUSEUM
HAMAR, NORWAY
SVERRE FEHN**

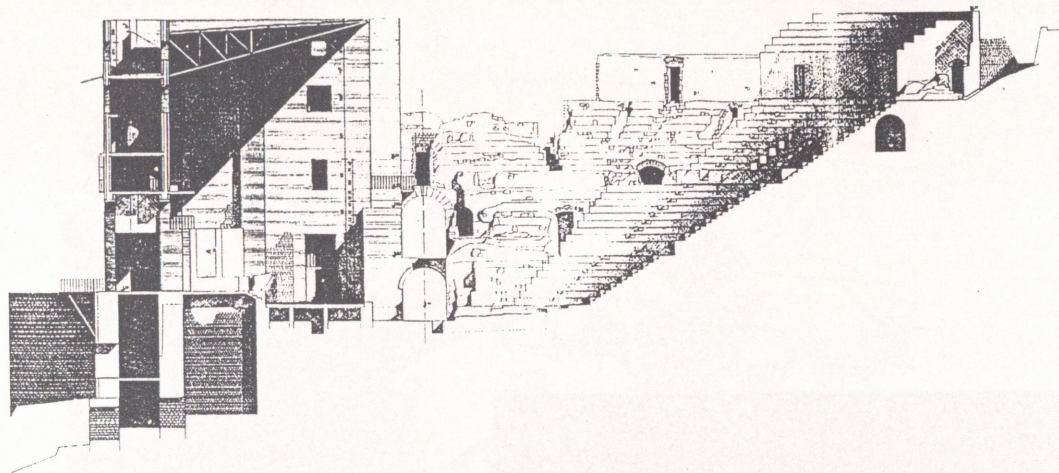
This museum is built on the ruins of a 12th century bishop's fortress. The structure consists of board formed concrete and laminated wood that stands free of the ancient stone walls. This allows for the continuing archaeological excavation. Its connection becomes a "suspended museum" with the major axis being an architectural walk: a procession through the

remains that spans the centuries. Confrontation with the ancient building and with archaeological objects establishes a dialog between old and new construction expressed best by the building envelope: an example being sheets of glass mounted directly over existing openings to contrast the worn masonry.

**"ONLY THE MANIFESTATION OF
THE PRESENT CAN BRING THE
PAST BACK TO LIFE."**





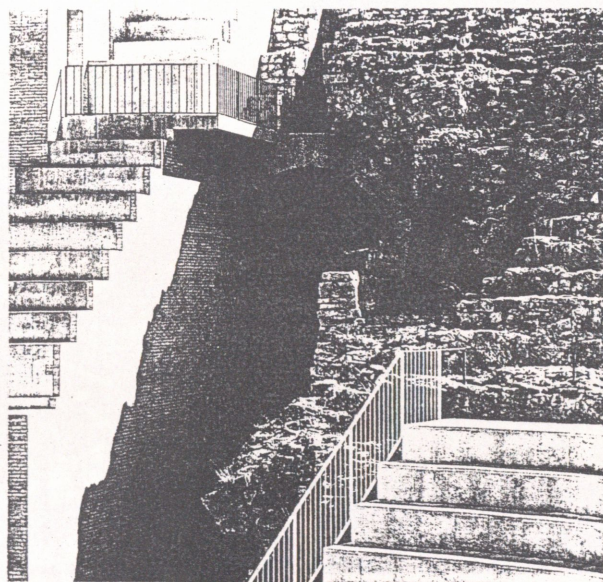


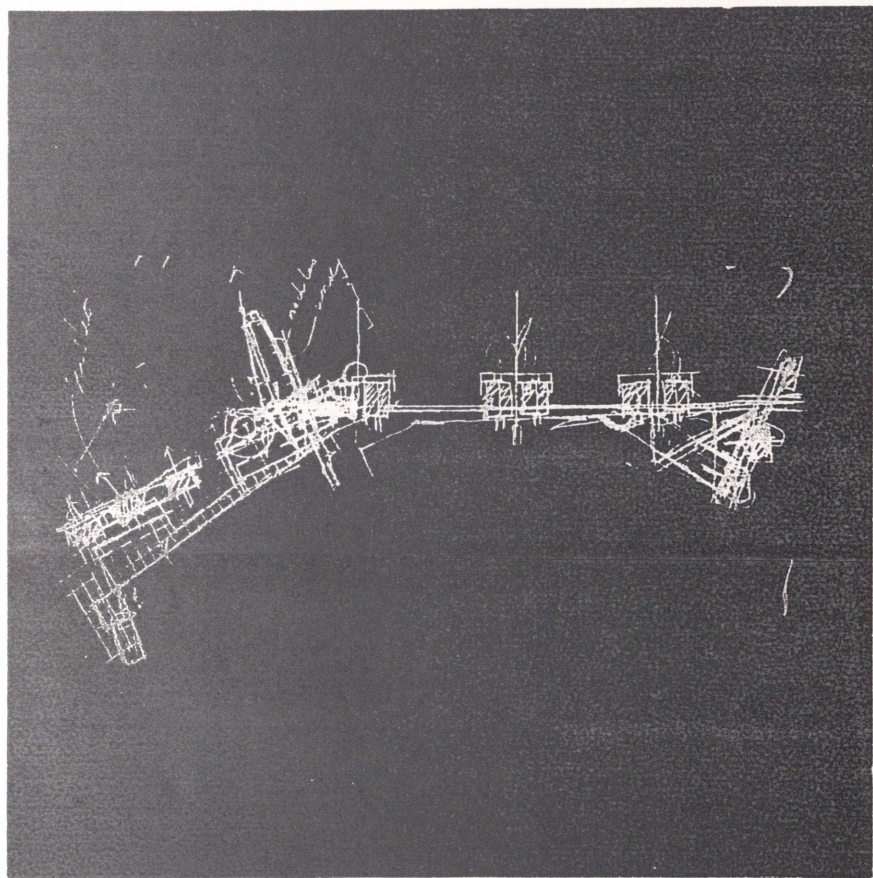
**RECONSTRUCTION
OF A ROMAN THEATRE
SAGUNTO, SPAIN
GIORGIO GRASSI**

This project deals with the relationship between modern and ancient architecture and how to connect them with respect to each other. The solution works well in that it competes with the old without succumbing to it, but

it also enhances it. Construction is done with a respect for the remains, but also violates them at the same time.

"THE ACT OF CONSTRUCTION IS THE BUILDING ART ITSELF AND WITHOUT THIS TACTILE DEMANDING PRESENCE, NOTHING OF LASTING QUALITY CAN BE ACHIEVED."





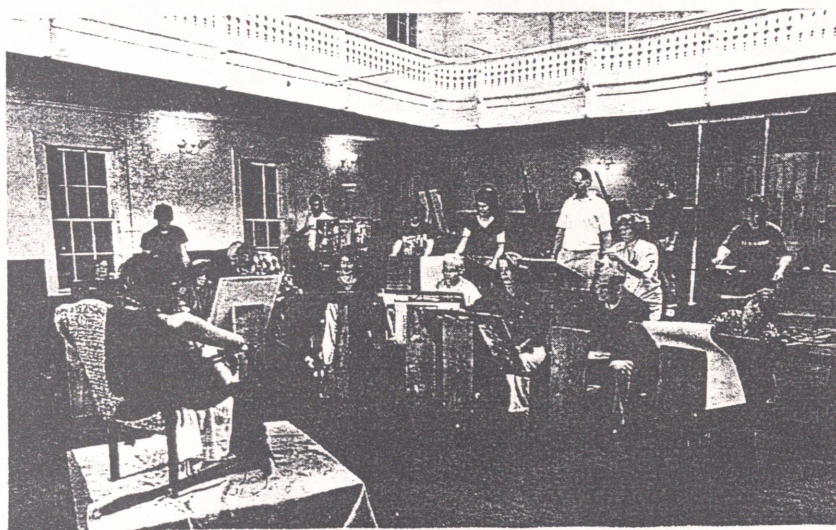


**VERMONT STUDIO CENTER
JOHNSON, VERMONT
JON GREGG, FOUNDER**

This center is not a school or a colony, but a totally different type of working experience, that provides a year-round haven for artists. It allows for uninterrupted working time and unpressured access to master contemporary artists. This marriage of artist and critic provides an intense environment filled with serious, talented artists, but also one that is

nurturing, supportive, and free of the counter-productive aspects of egoism and competitiveness.

"WE HOPE TO START A REVERENCE FOR THE BASIC PRINCIPLES THAT HAVE ALWAYS BEEN PART OF MAKING ART - AN OPENNESS TO QUESTION THAT COME FROM THE HEART AND FROM THE SPIRIT, QUESTIONS THAT ARTISTS NEED TO ASK AND EXPRESS."

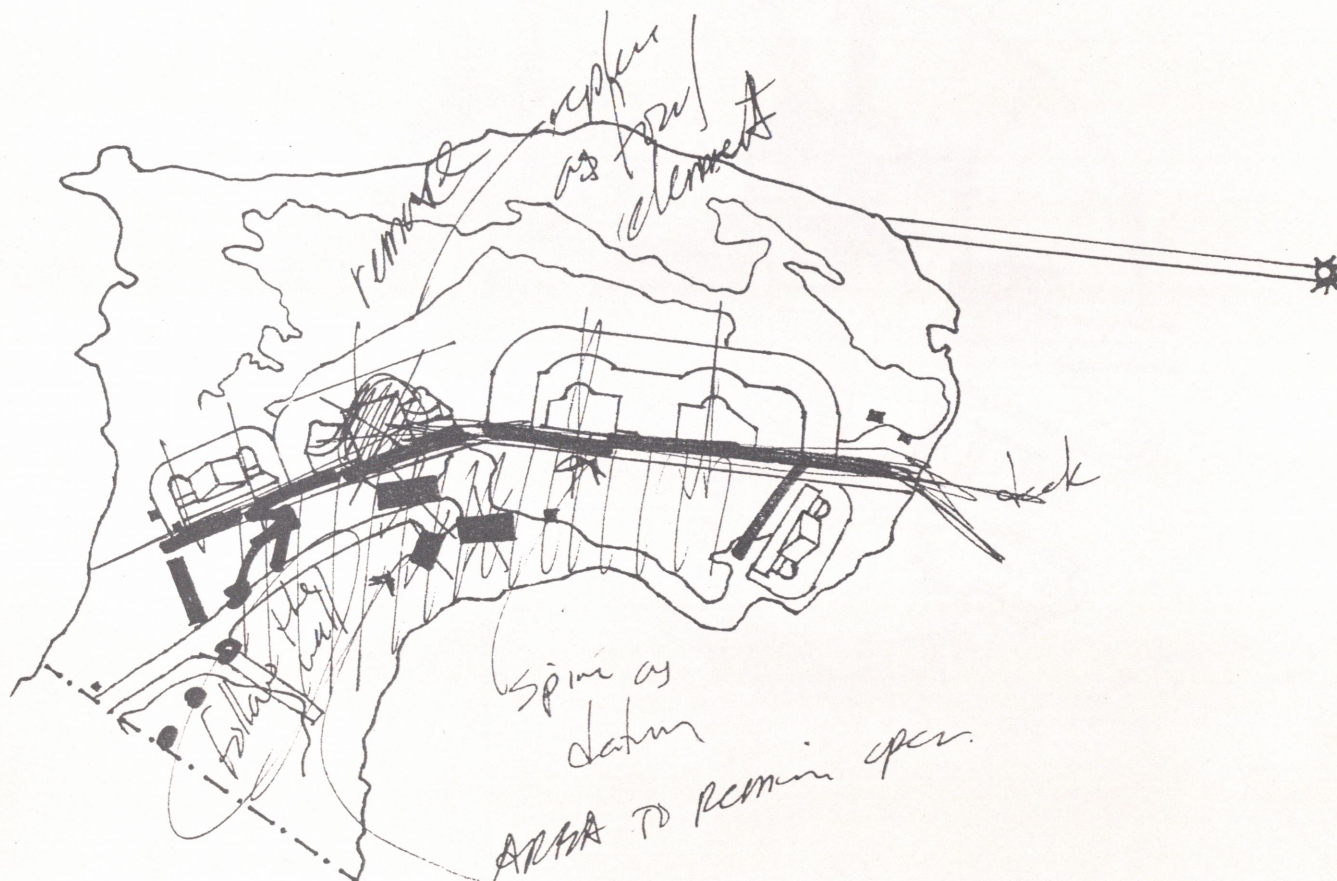


P R O C E S S

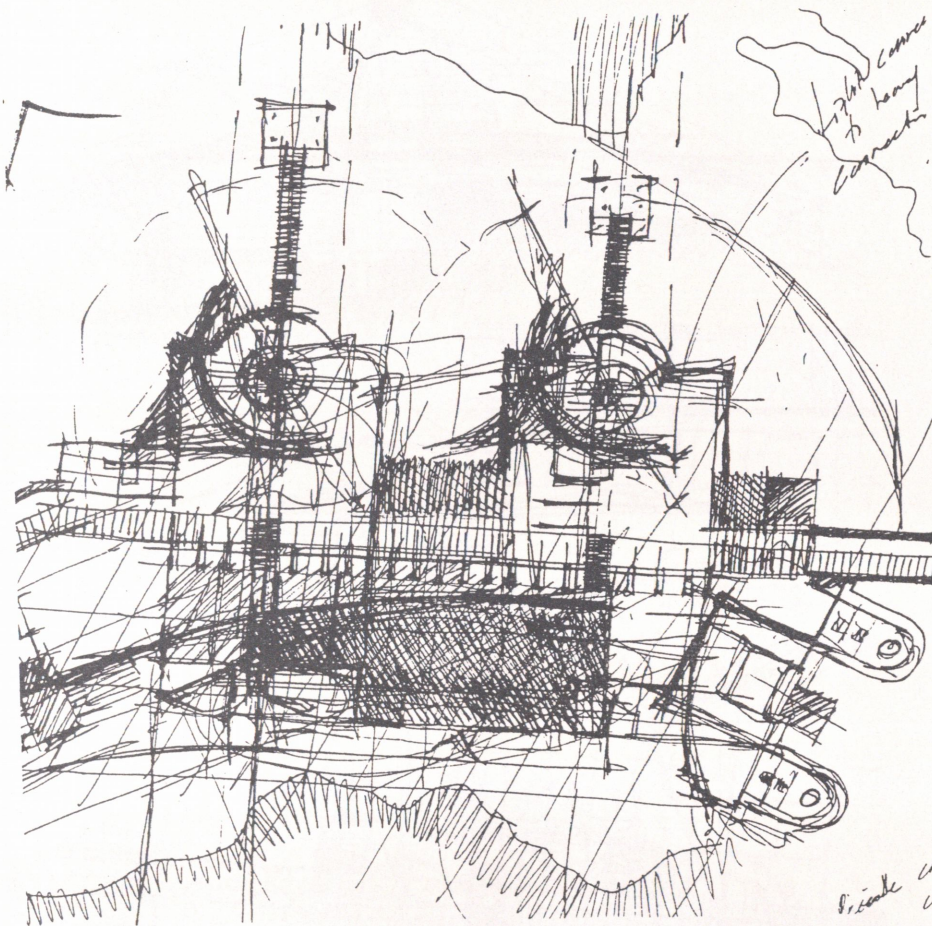
P A R T 1:

The process began as a basic summary diagram of the site. The existing conditions presented a strong datum in which to generate forms and limitations from. The primary vehicle thus became the strong linear axis along the back of the gun decks, that travels the length of the site.

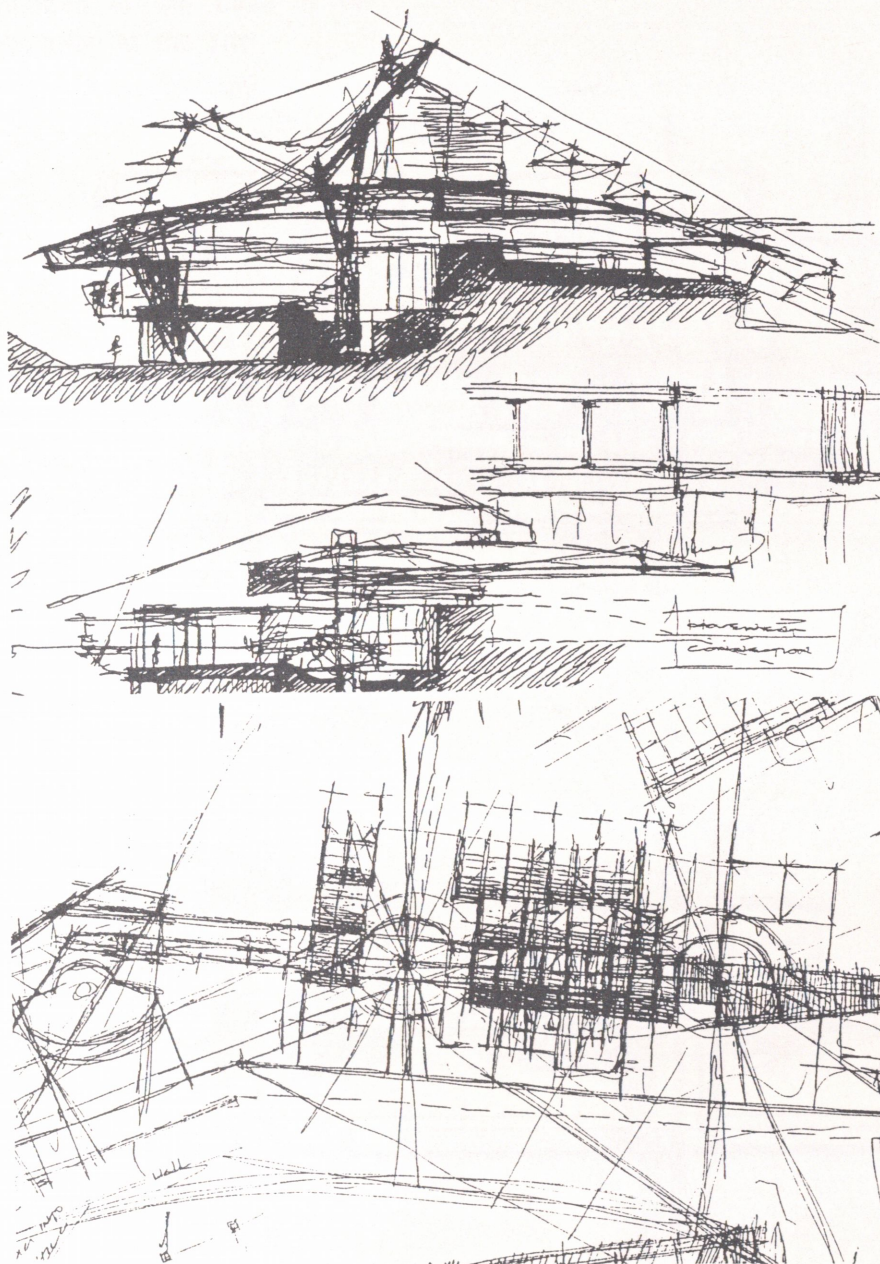
Such a form provides a spine to link the different modes of design together. Next I removed the existing 'Harbor Entrance Control Post' building in order to create a new focal point for the site that would become the signature of the area. With these limits, I then began the development of design.



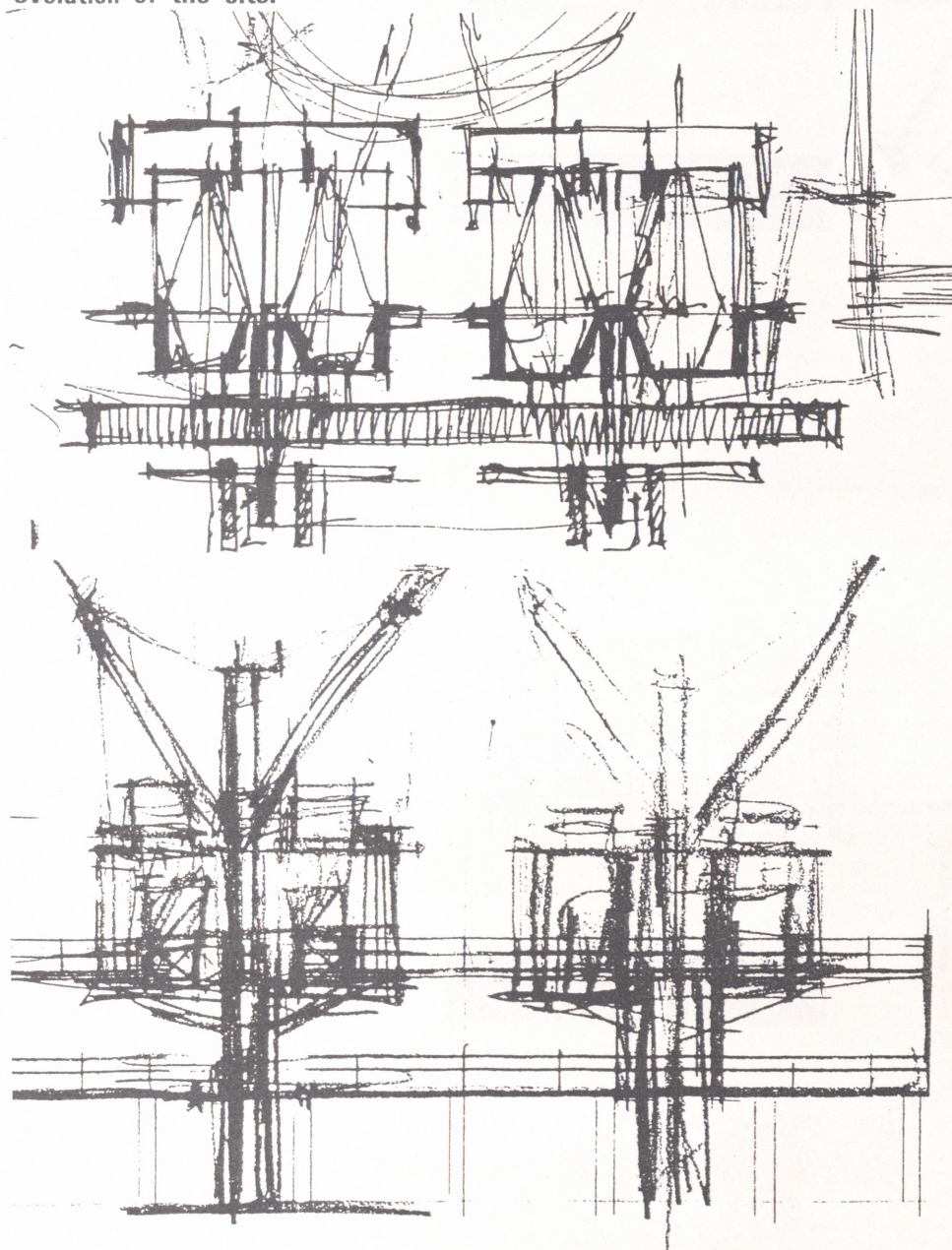
The first process looked at the development of the open site area, leaving unused, most of the existing structures. This was not appealing, for I wanted as much of the site as I could to remain natural landscape.

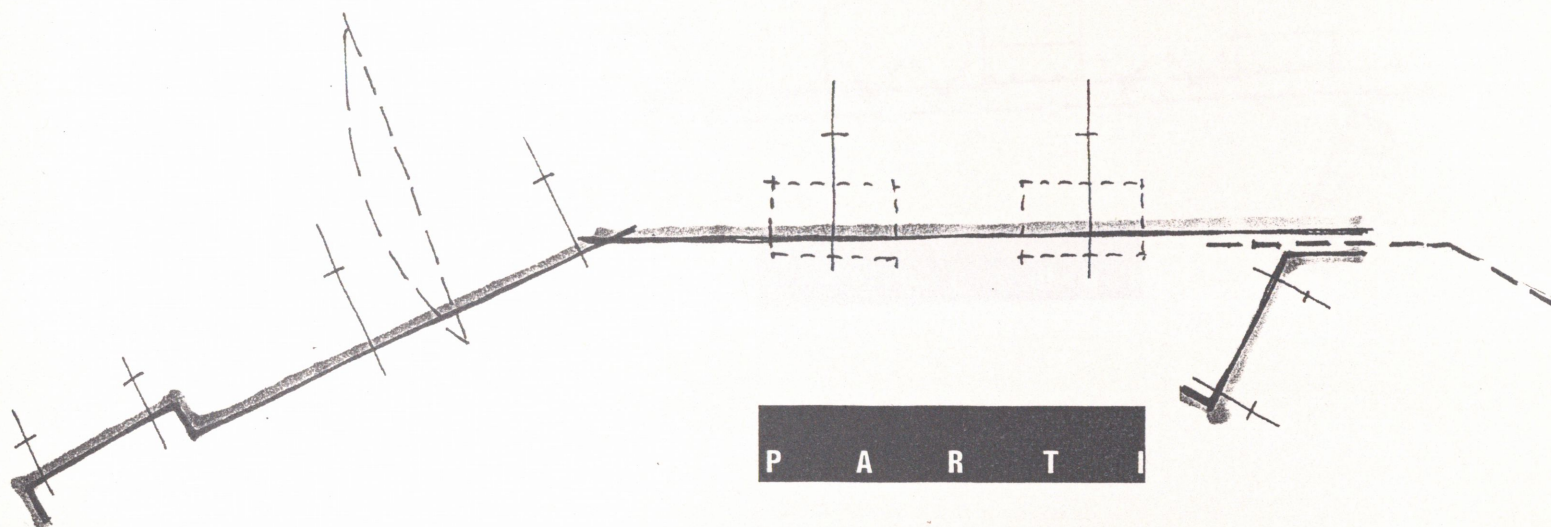


The second process explored the use of the area in front of the bunkers. This caused the design to spread out too much and created the problem of connection back to the original pathways.

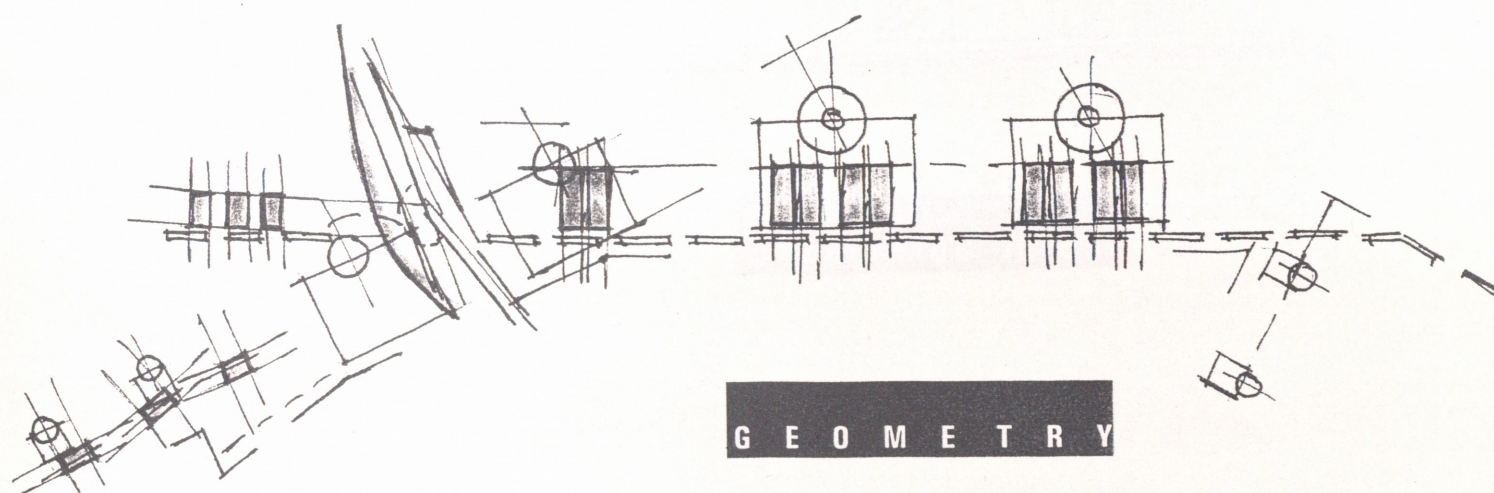


This third process was the consolidation of all buildings along the major axis created, with the only violation coming from the new focal building that connects all the axes in one hub. This provided the most sound solution of the three in the evolution of the site.

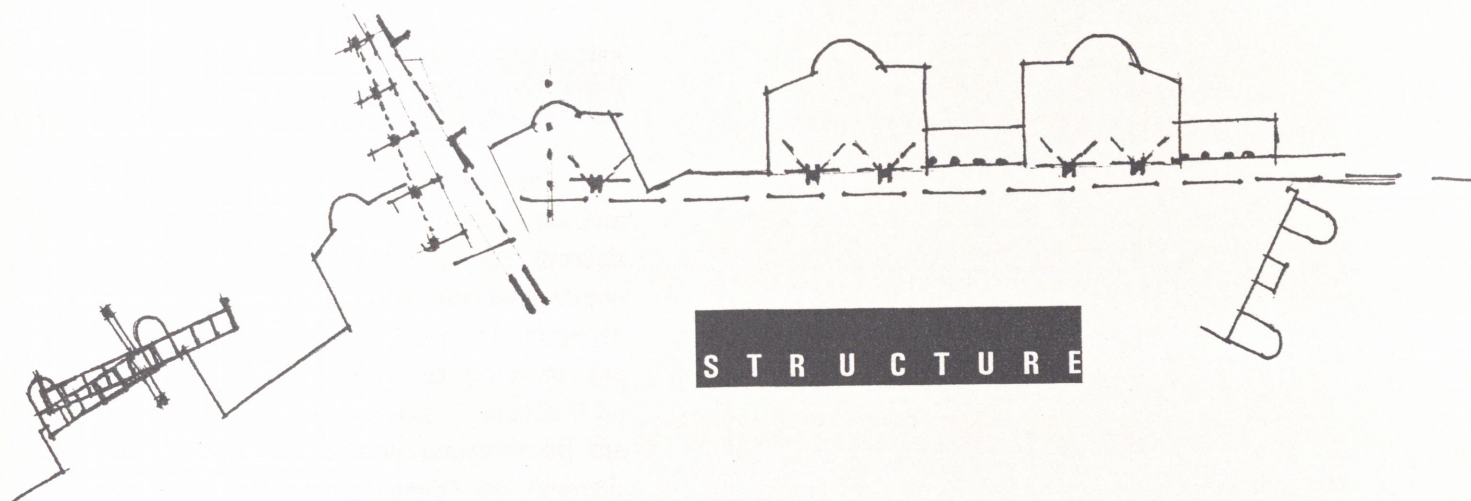




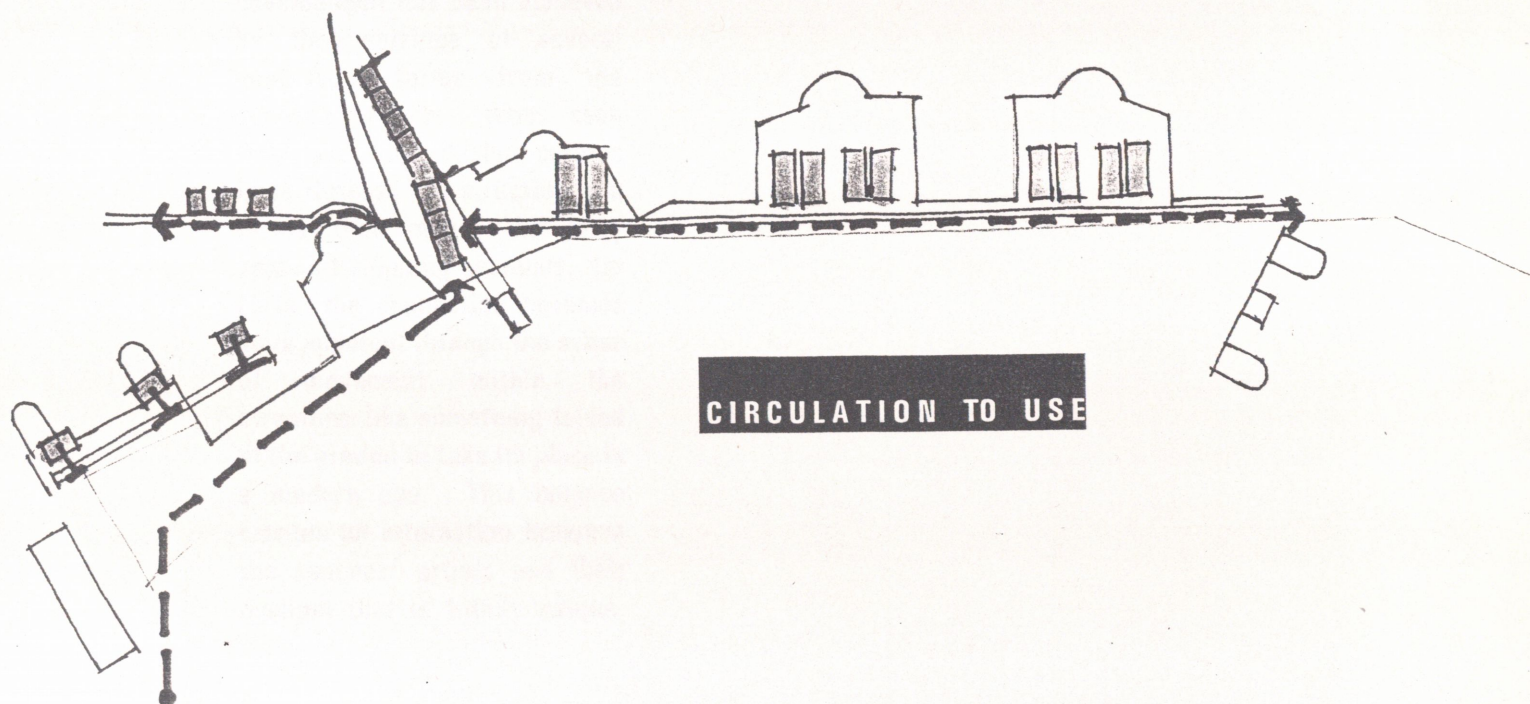
P A R T I



G E O M E T R Y



STRUCTURE



CIRCULATION TO USE

CONCLUSIONS

The conditions addressed in this thesis document: connection, movement and purpose through evolution, have provided a strong problem to resolve. The strength and unique character of the existing forms create an overpowering presence on the site that cannot be ignored.

Taking this into account, I feel that the new forms created provide an agreeable contrast with each other; light weight versus massive. This development has been achieved by the marriage of several contextual forms from the viewing horizon. When seen from afar, the design creates lines through the structure and forms that mimic the busy adjacent shipping channels. Up close, the connection becomes more apparent through the sense of movement within the structure, like something folded at the ground to take its place in a modern age. This balance creates an interaction between the seacoast artists and their medium that is totally unique.

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A R C H I T E C T S

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A a r o n B e t s k y
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A c a d e m y E d i t i o n
MODERN PLURALISM

T h o m M a y n e
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