A SUPPORT FACILITY ON THE STATEN ISLAND COAST FOR THE HARBOR PILOTS OF NEW YORK

Jeff von Breitenfeld
8 June 1981
ARCH 555-556 THESIS I-II

P378
.V8914

LIBRARY
MONTANA STATE UNIVERSITY
BOZEMAN

In presenting this paper in partial fulfillment of the requirements for an advanced degree at Montana State University, I agree that the Library shall make it freely available for inspection. I further agree that permission for extensive copying of this paper for scholarly purposes may be granted by my major professor, or, in his absence, by the Director of Libraries. It is understood that any copying or publication of this paper for financial gain shall not be allowed without my written permission.

Signature_____

Date_____

PERMISSION TO COPY

A SUPPORT FACILITY ON THE STATEN ISLAND COAST FOR THE HARBOR PILOTS OF NEW YORK

by

Jeff von Breitenfeld

A Professional Paper Submitted In Partial Fulfillment
Of The Requirements For The Degree

of

BACHELOR OF ARCHITECTURE

Approved:

David Matthews
Advisor

John N. McShane Jr.
Chairman, Thesis Committee

Director, School of Architecture

Montana State University
Bozeman, Montana

8 June 1981

TITLE PAGE

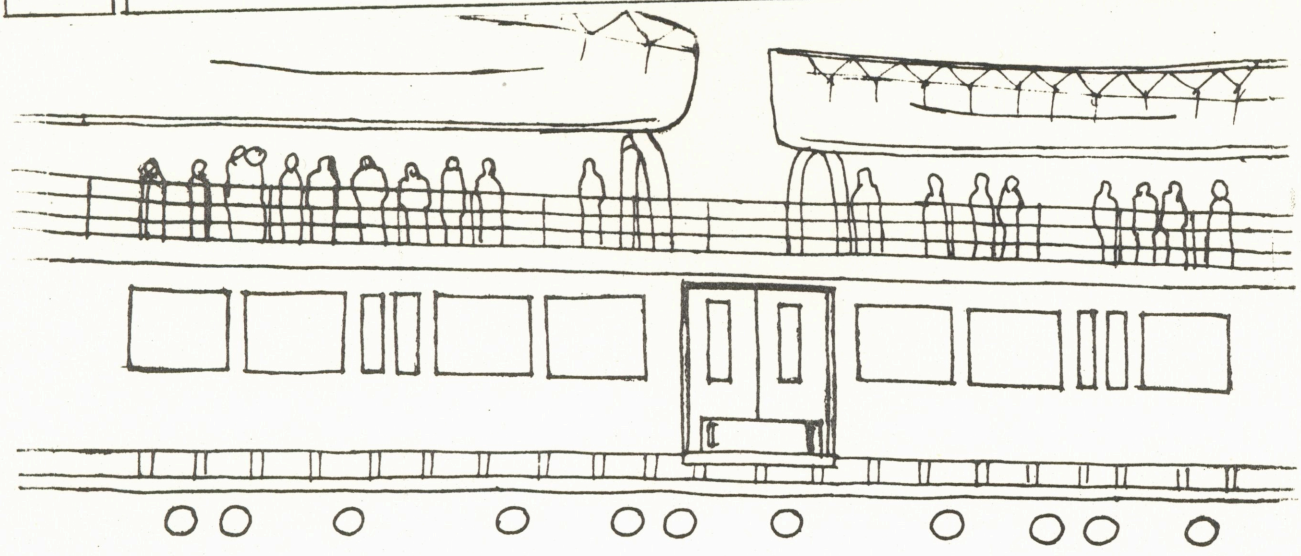
P378
.V8914

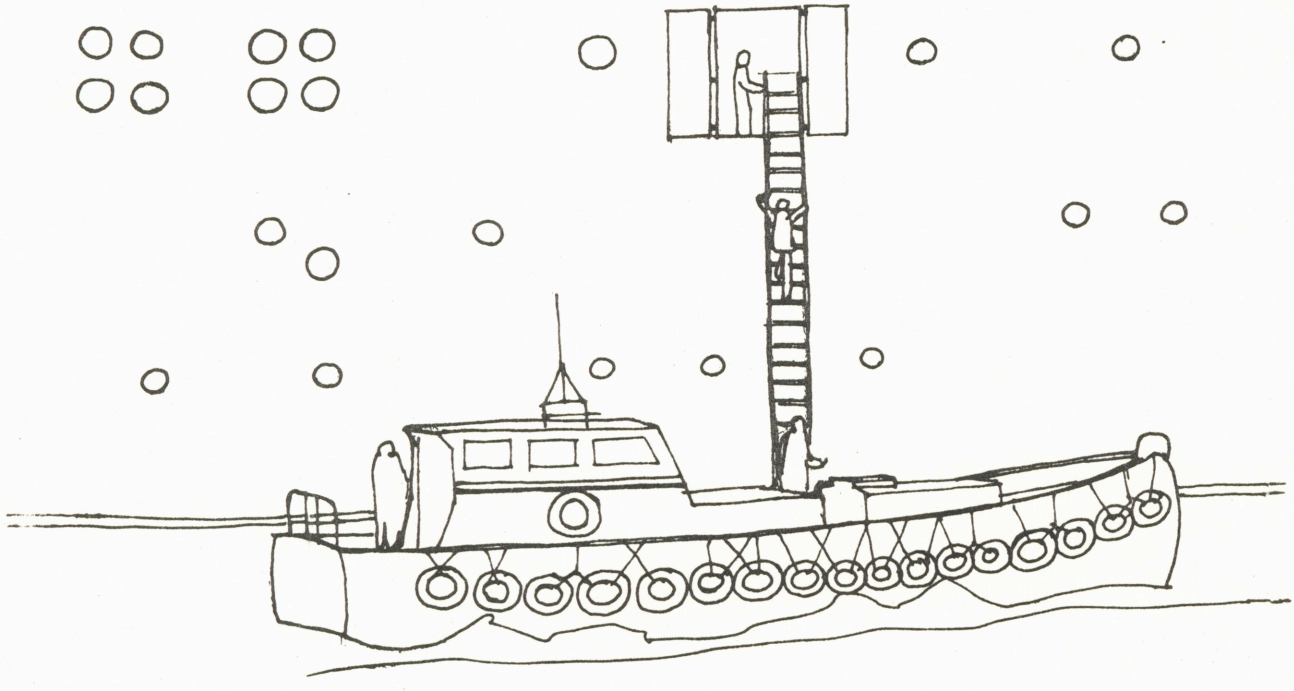
NA [redacted]
720.6
M76
V8[illegible]1

I dedicate this book to my parents.

ACKNOWLEDGEMENT

5





1	INTRODUCTION	p. 7
2	HISTORY OF PILOTAGE	9
3	TRAINING OF THE PILOT	13
4	PILOTING	17
5	FLOTILLA	21
6	INTRODUCTION TO THE TOPIC	24
7	EXPLANATION OF THE PROGRAM	26
8	GEOGRAPHY OF STATEN ISLAND AND THE SITE	57
9	HISTORY OF STATEN ISLAND	60
10	ENVIRONMENTAL ANALYSIS OF THE SITE	62
11	CONTEXT	80
12	CONCEPTUAL CONSIDERATIONS	111
13	THE DESIGN	116
14	SOURCES	129

TABLE OF CONTENTS

1 INTRODUCTION

In addition to the program requirements, a building should respond to its contextural environment.

In order that there be harmony in the environment, objects should be compatible with one another. The character of an area should be preserved. New construction in an area should be sympathetic to the existing fabric either visually or conceptually.

A building should respond to its physical climate. The building design and construction will work much better if climatic demands are met.

For a building to work functionally, it must respond to its users' needs. It should have an image of the type or portray the type of building that it is.

2 HISTORY OF PILOTAGE

New York has a very deep, colorful, maritime heritage. The city was started as a farming and trading settlement. The trading required transportation, or shipping. All of these ships have needed special guidance. This special guidance is given by a pilot, a person who has special knowledge of the harbor. A pilot knows of the characteristics of the harbor, such as the tides, currents, shoals, sand bars, and locations of docks and anchorages.

In 1694, the first laws regarding mandatory pilotage and fixed fees were passed.[1] There were eleven regular pilots in this era. There were many accidents and wrecks, thus the Governor and Legislature of the Colony of New York decided to act. In 1718, a further law was passed requiring licensing of all pilots. Zachory Rufler, the first pilot, received his license on April 14, 1718.[2]

These early pilots took on the name Sandy Hook Pilots, as they piloted the ships from the ocean through the Sandy Hook Channel into New York Harbor. The area between the ocean and the harbor is treacherous as it is filled with reefs and sand bars.

During this era, ranging from 1630 until 1895, there was no single organization. Two to four pilots would own a schooner and race to pick up a ship. They would board this ship and pilot it into and back out of the harbor. During the Revolution and the War of 1812, pilots acted as privateers interfering with British shipping.[3]

After the War of 1812, pilots' licenses were given as a political gift. Many pilots were incompetent and unreliable. In 1836, the state of New York formed the Board of Pilot Commissioners.[4] New Jersey formed their own board, resulting in two separate groups. Pilot service improved but it was still inadequate. In 1854, a third group of pilots was formed by the Board of Insurance Underwriters.[5] In the same year, the state of New York made the Board of Insurance Underwriters part of the Board of Pilot Commissioners. The Insurance Underwriters were given this power so they could cancel the insurance on any ship that did not carry a pilot approved by them. After 1854, pilotage service in New York Harbor was good.

The next 40 years were the age of fierce competition between small groups of qualified pilots. Pilots would race in their schooners as far as Sable Island, Nova Scotia to find a ship to pilot into New York habor. The first

pilot schooner along side the ship to be piloted would get the job. These pilot schooners were extremely fast and beautifully crafted. Some of the most famous schooners were the Mary Taylor and the America. The America Cup race is named after this pilot schooner.

In the 1870's, many commercial ships started to use very large steam powered ships. These vessels rammed many pilot schooners, usually in the fog. Forty pilot schooners were lost between 1870 and 1895.[6]

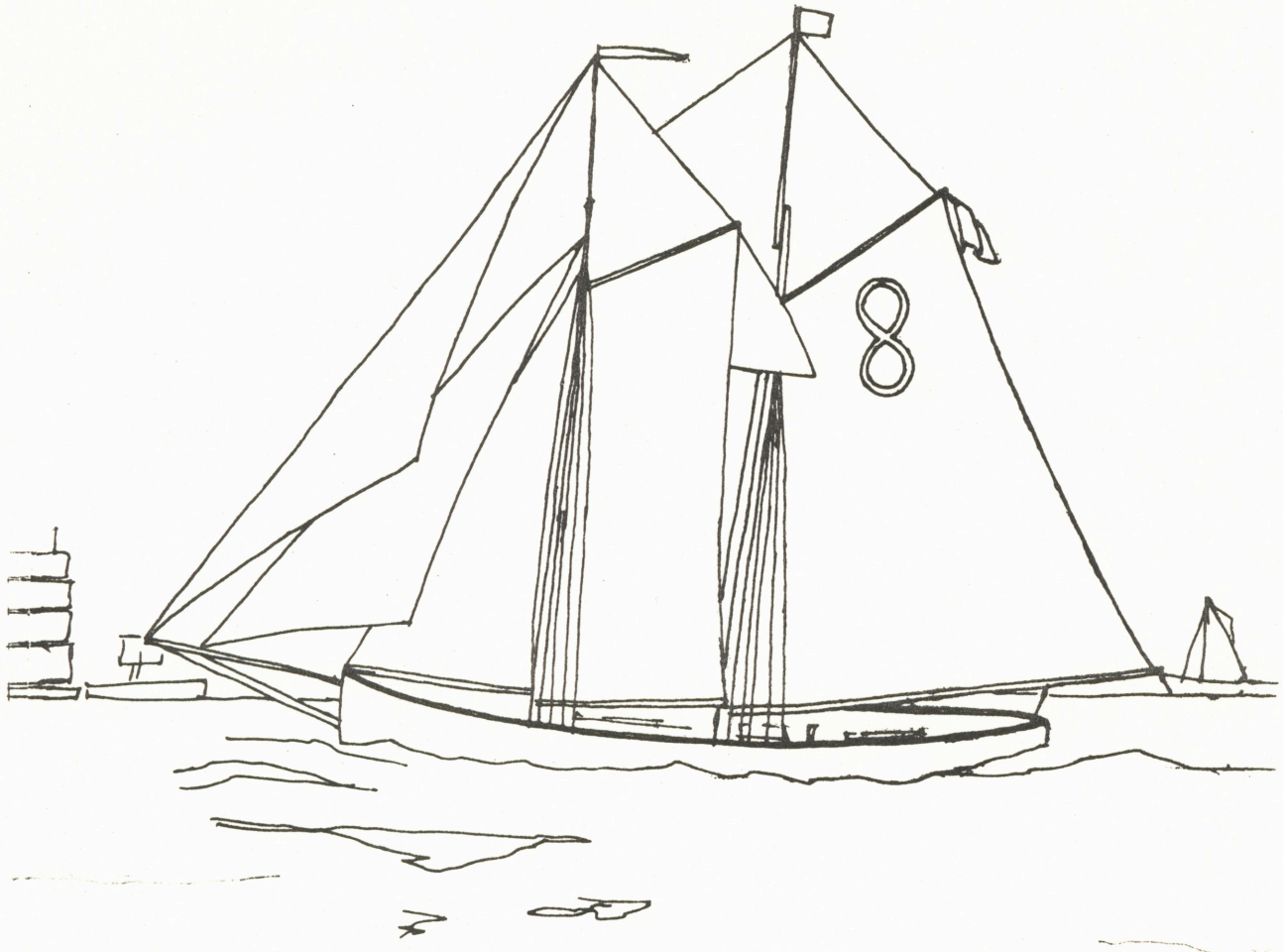
In 1895, all of the pilots from New York and New Jersey got together and formed two organizations, having one voice and acting as a whole.[7] It was named the Sandy Hook Pilot Association. They shared equipment and cooperatively took turns piloting. The twenty schooners were replaced with a single, steam powered station boat. This new boat was easier to maneuver and was much larger and safer. The pilots used a yawl to transfer from the pilot boat to the ship to be piloted.

During the 1930's, the pilot's fleet was converted to diesel powered boats. The pilots were members of the Coast Guard during World War II as their service was an integral part of the national defense.

Their organization handles all foreign flag ships, and all American ships engaged in international trade or any ship over 100 tons.

12

pilot schooner



3 TRAINING OF THE PILOT

The first step that one must take to be a harbor pilot in New York is to place his name on a list in the pilot office. This must be done by the time the candidate is 14 years old. The person must then finish high school and take two years of college courses related to technology and navigation.

If the pilots have room in their apprentice program, the candidate will be called and will start work as a manual laborer. For the first year, the pilot apprentice will do things like clean, paint, chip, and polish brass. Over the years, the apprentice will take classes from the education center at the pilot base to learn about maritime operations. The apprentices are taught navigation, piloting, lights, fog signals, charts, soundings, buoys, rules of the road, first aid, fixing positions, radar, tides, customs and immigration requirements, Morse and international codes, and maritime law.

The first license that a pilot apprentice achieves will qualify him as an "able bodied seaman." He will be able to handle lines, anchors, life boats, and do other deck related work. The next step will be to qualify for a motor boat operator's license, allowing one to operate a vessel up to 65 feet long. A further license is needed to operate radios and teletype equipment on the pilot boats.

As the apprentice earns more of these licenses and thereby acquires more experience, he is at the same time delegated more responsibility. After the fourth year, the apprentice will be able to take tests given by the Coast Guard and, upon passing them, he will be able to be an officer on a larger ship, like the pilot boat. The apprentice will be made a mate and finally the captain. This Coast Guard license allows the captain to pilot the pilot boat, dock it, and assume complete responsibility for it. The last nine months of the apprenticeship consists of riding ships with pilots. The apprentice must go on at least 225 trips with a licensed pilot on all types and size ships.[8]

After seven and a half years of apprenticeship, the candidate will have gone through all of the steps and be ready to go before the Board of Pilot Commissioners and take the examination which will allow him to be a deputy pilot. The exam has oral and written sections and takes three days to complete. The first two days consist of hypothetical situations which the apprentice will have to solve. The second part consists of charting. The applicant is given a

blank chart of a certain area and has to fill in the soundings and other characteristics.[9] Upon passing this test, the apprentice is a deputy pilot, which means he has a limited license. In the beginning, he takes smaller ships, and after seven years he becomes a "full branch pilot," allowing him to pilot any size ship.

Pilots must renew their licenses every year. This involves an eye test and a visit to the Board of Pilot Commissioners who review their record.

16

apprentices at signal lamp



4 PILOTING

The primary purpose of a harbor pilot, also called a bar pilot, is to guide a vessel from the open sea, through the harbor to the dock. This must be done in a safe manner in the quickest amount of time. When the ship reaches the dock, either the harbor pilot will dock the ship himself or a docking pilot assisted by tugs, will dock the ship.

A pilot will start his day at home wating for a telephone call from the dispatch office. He will be told the name of the ship he must pilot, where it is, and when it plans to sail. The pilot will leave his home in enough time to travel to the ship. He parks his car on the pier and boards the ship.

Sometimes, a ship may be at an anchorage. In this case, a launch would take the pilot to the ship. The launch is either a Sandy Hook Pilot launch or a tugboat.

Once the pilot is on the bridge and the ship is ready to sail, the pilot takes over. The pilot will give all of the orders, telling the quarter master a course and telling the telegraph operator a specific speed to set the engines. On the journey out to sea, the pilot is always looking out over the harbor, making sure that the ship is in the channel, and watching for oncoming vessels. Through his training, the pilot knows exactly where the channel is located by looking at landmarks on shore. The pilot is always thinking about what is going to happen five minutes, 15 minutes, or a half hour ahead so he can stop the ship when necessary.

In addition to keeping within the channel, the pilot must watch the harbor for oncoming vessels. The pilot is in radio contact with pilots of approaching ships, keeping track of their intentions.

When visibility is poor or nonexistent, a thorough knowledge of the use of radar is essential. When the ship is out of the harbor and in the vicinity of the station boat, it comes to a full stop. A launch from the station boat will come along side the ship and the pilot will climb down the ship on a rope ladder. He will board the launch which will take the pilot to the station boat. The station boat is always at the pilot station, a designated area located 20 miles south of the Battery.

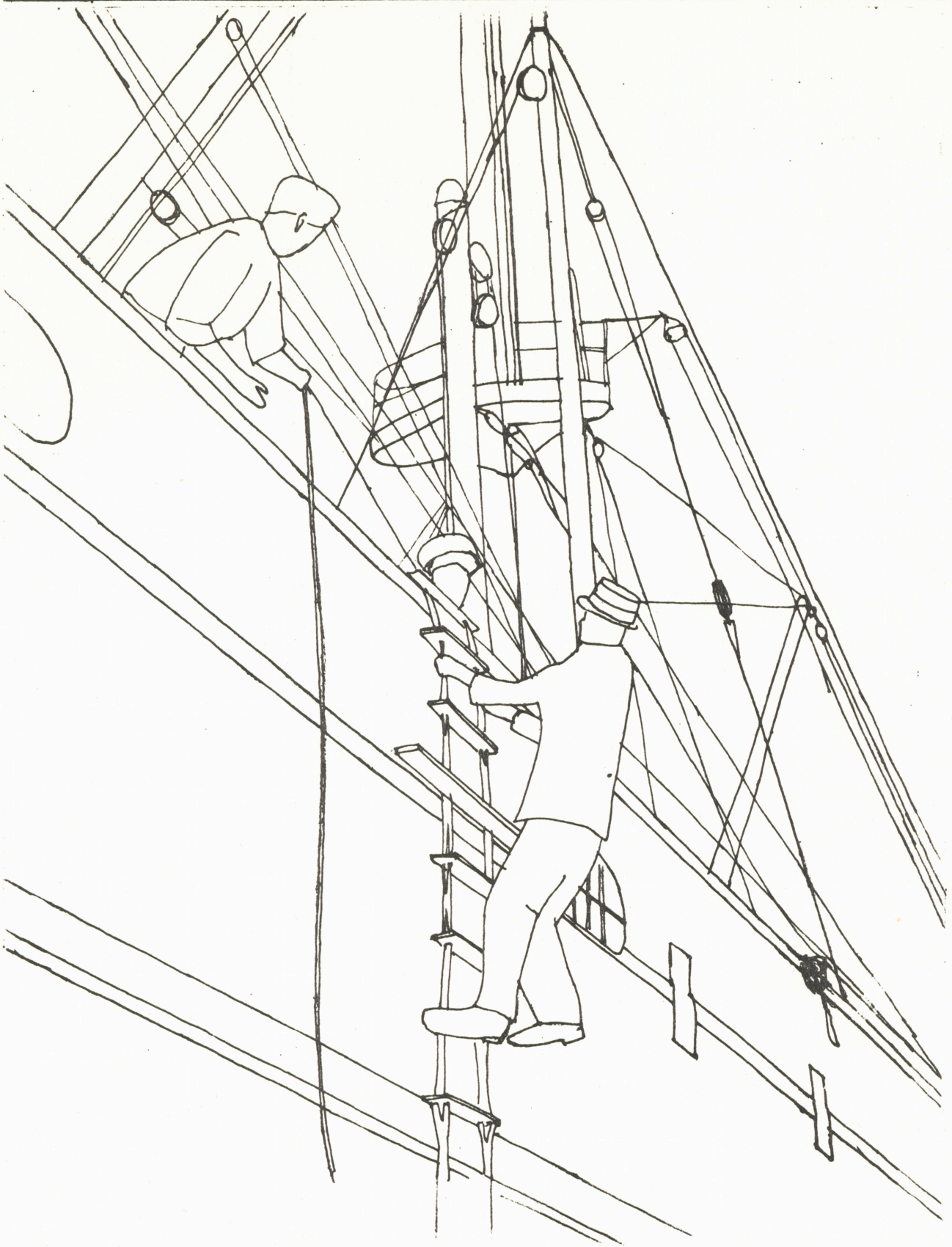
The pilot will wait on the station boat until his turn comes up to take a ship back into the harbor. When his ship arrives, a launch will take him to the ship and he will pilot it back into the harbor.

When most ships approach the dock, the tugs will be waiting and will dock the ship. A harbor pilot can dock small ships without the help of tugboats.

Sometimes, a pilot can be assigned to only bring a ship in from the ocean. In this case, the pilot would drive to the pilot base and a launch would take him out to the pilot station. Then, the pilot would guide the ship back into the harbor.

20

pilot boarding a ship



A wide variety of equipment is needed by the pilots because of their services.

Law requires that there is a pilot boat out at the pilot station 24 hours per day, 365 days per year.[10] The pilot station, in the vicinity of Ambrose Light, is 20 miles out at sea making a seagoing vessel necessary. Two large vessels are needed to do this as they have to relieve each other periodically.

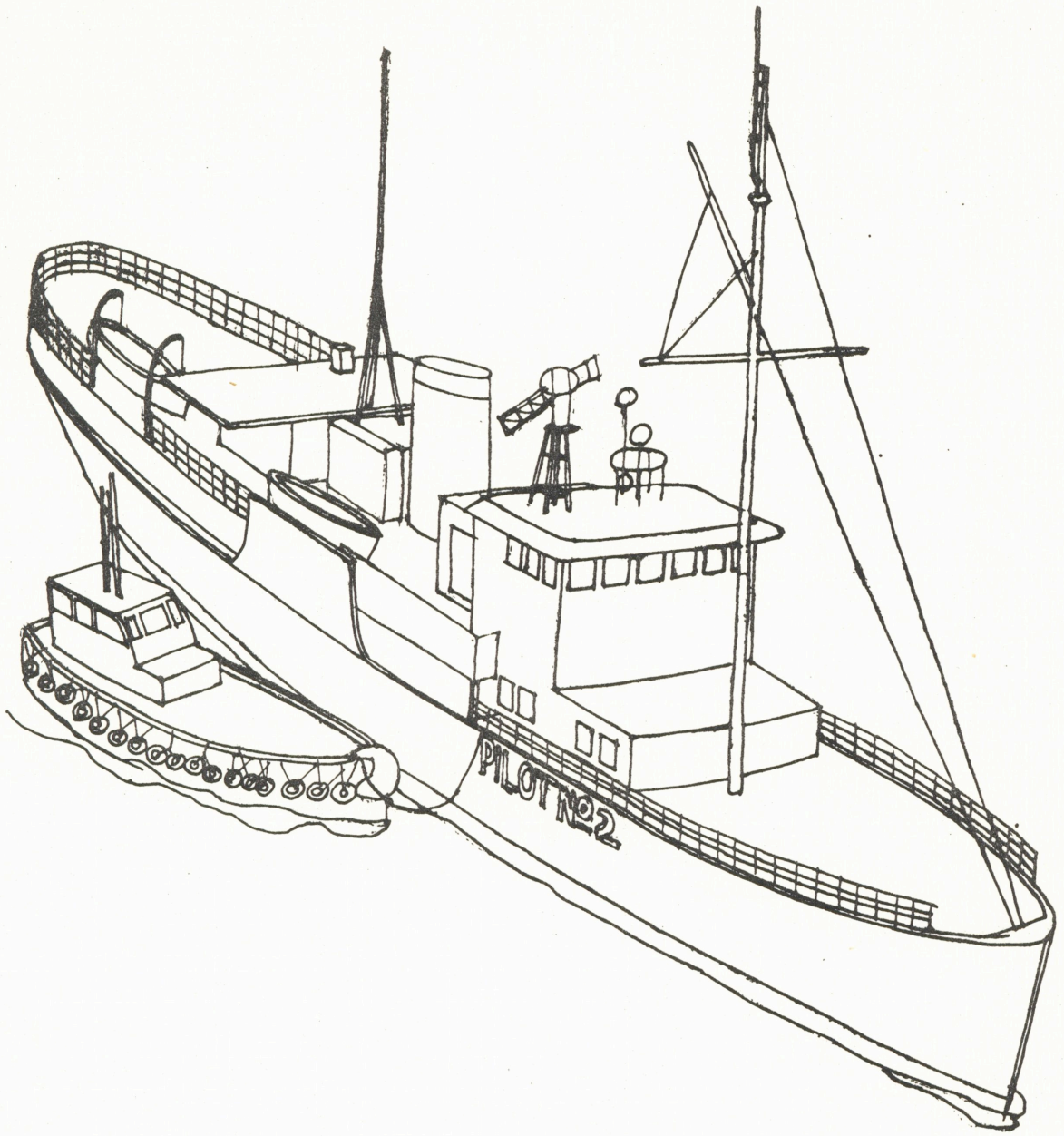
The two large pilot boats are the Pilot Boat "New York" (Pilot No. 1) and the Pilot Boat "New Jersey" (Pilot No. 2). The "New York" is a 183 foot, 779 ton vessel built specifically for the pilots in 1972." The "New Jersey" is a 195 foot vessel built as a yacht for the Johnson-Johnson Company and converted to a pilot vessel.[12] Both of these vessels carry all of the navigational and living equipment required for long durations at sea. There are living, eating, sleeping, and cooking areas for the pilots and crew.

The pilots have a small shuttle boat named the "Chapel Hill." This 65 foot vessel transports pilots from their base on Staten Island out to the pilot station.[13]

There are five, 50 foot motor launches which shuttle pilots from shore to a ship or from the pilot station to a ship. These launches have no living facilities; they merely serve as transportation.

23

pilot boat and launch



6 INTRODUCTION TO THE TOPIC

My thesis topic is an onshore support facility for the harbor pilots of the Port of New York-New Jersey. This project includes site planning for dock space, work space, parking, a building, and circulation. The building must be planned to accommodate work space, learning space, living space, and storage.

This facility, also called the "pilot base", is a terrestrial, support facility for the pilot organization. All of the functions that must be tended to and cannot be carried out on the water must be done at this facility.

The pilot base is a combination of a marine and a terrestrial environment. Its bounds contain both water and dry land. The boats at the dock and the dock itself are part of the base as well as the building and parking located further inland on the site.

The building contains all of the support facilities for the pilot organization. This includes an area where calls can be received from a shipping company that is ordering a pilot, offices, classrooms, shops, lounges and storage.

Through the years, the general public has never been very aware of the pilots. To remedy this situation, a sailing school has been introduced into this organization. The public relations aspect of the pilot base is very important. Here, to a limited extent, the general public can take sailing lessons along with the pilot apprentices. The pilot base becomes a symbol of the pilots on land.

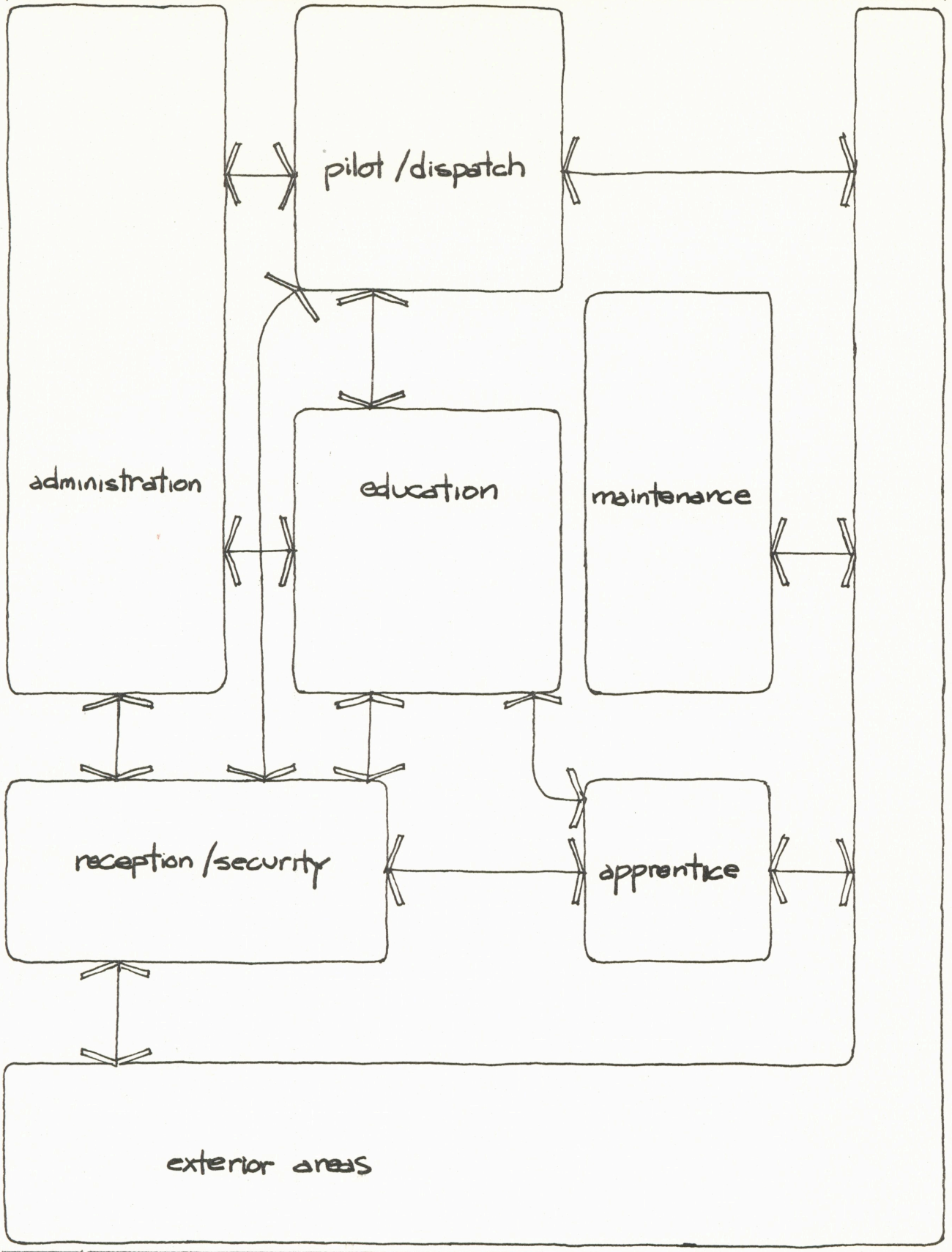
7 EXPLANATION OF THE PROGRAM

This pilot facility as programmed consists of eight major parts. Each of the major parts in the text will be described separately. The parts will be described first as a unit of spaces. Then the individual spaces within the major parts will be described diagrammatically. The major parts as programmed consist of the following:

Exterior areas
Reception - security
Pilot/dispatch
Education
Administration
Apprentice
Pilot boat maintenance
Sail boat maintenance

A summary of square footages for all components of the program follows the entire section.

area relationships



Exterior areas

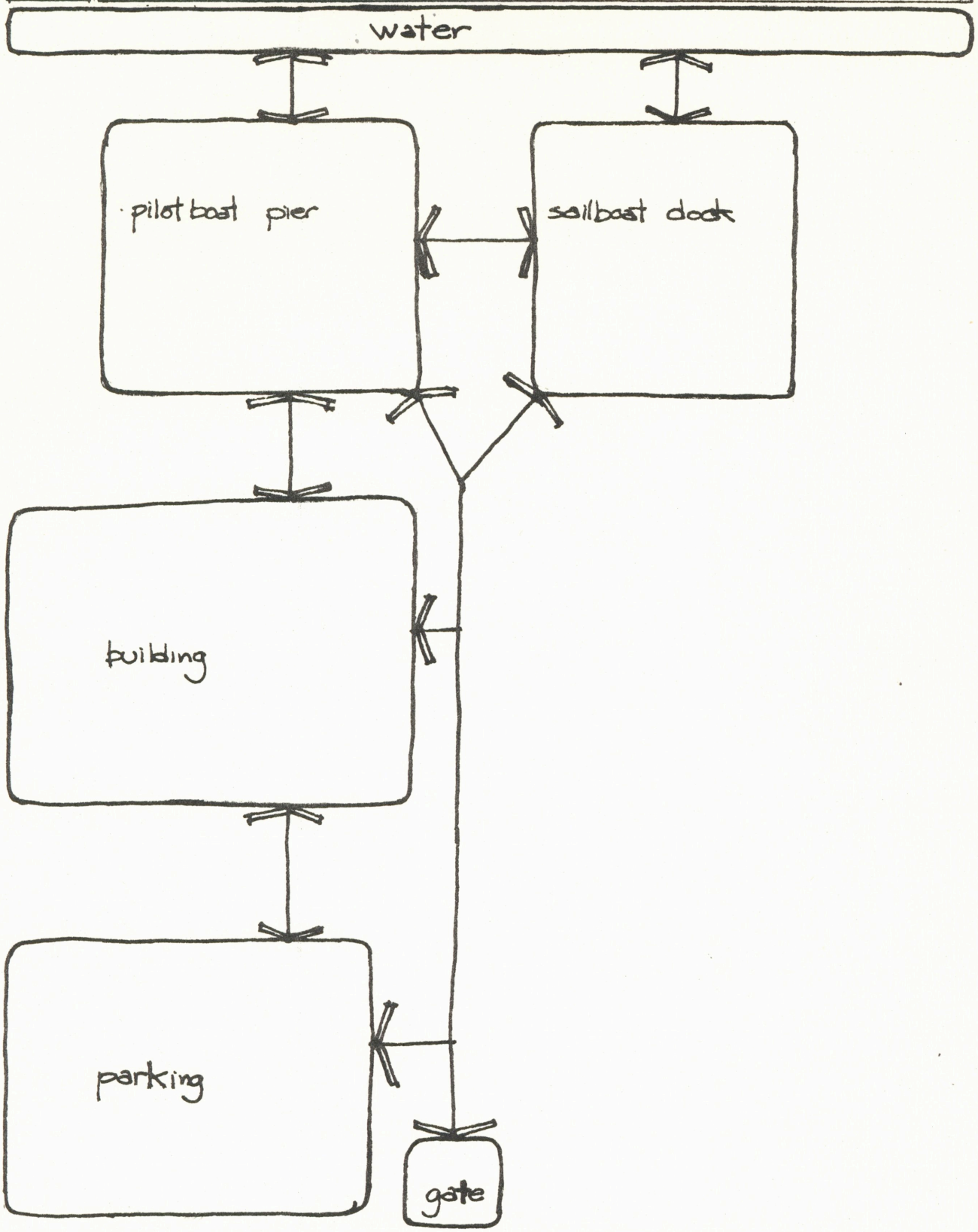
There must be a vehicular and pedestrian circulation path through the site connecting the street to the pier.

Parking for sixty cars needs to be located along this circulation path, as does the building.

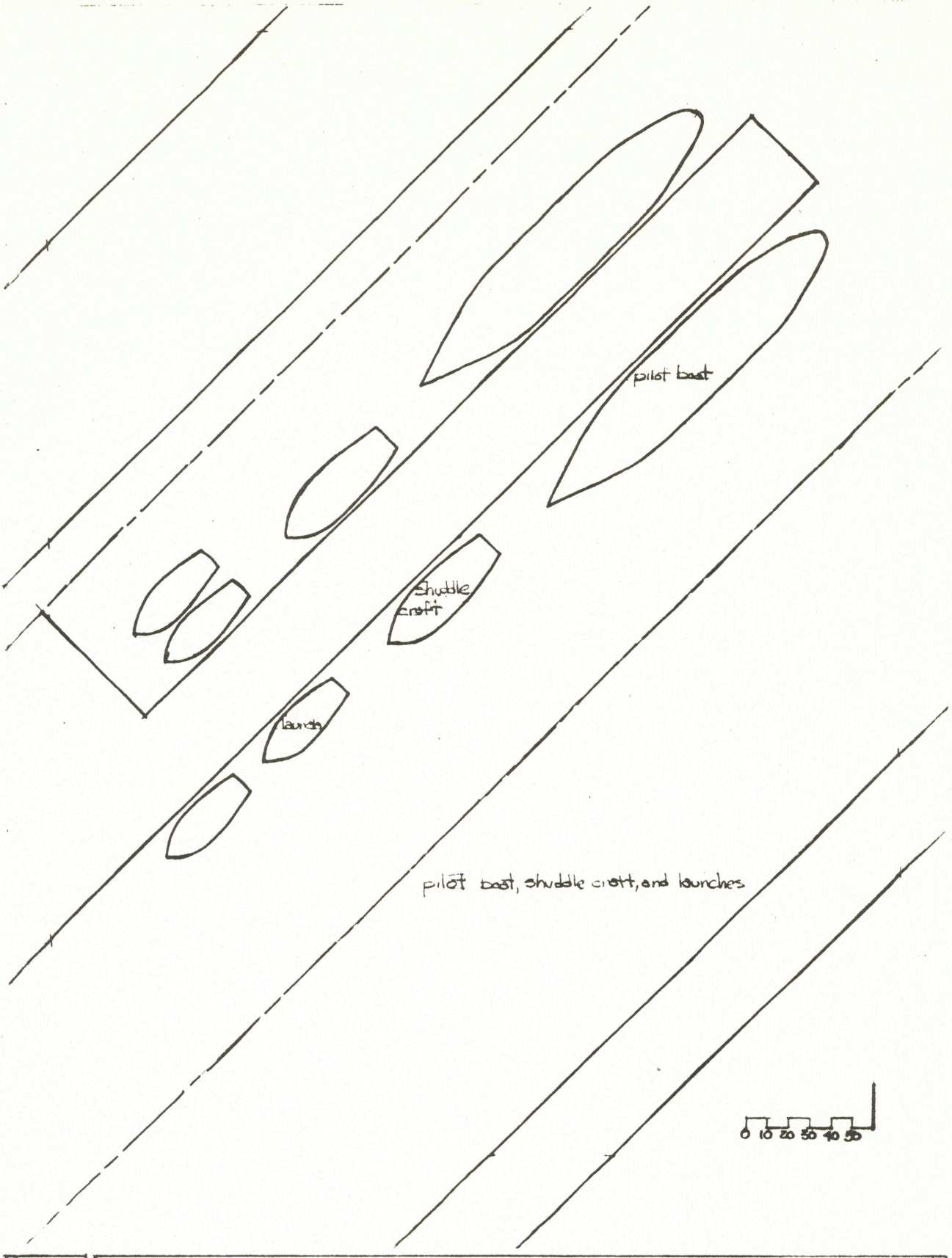
The pier must be able to handle one large station boat, a shuttle boat, and two small launches. They must be able to be docked on either side of the pier. The building should be in close proximity to the pier.

The sailing school requires eight small sail boats tied up along side a floating dock. A ramp to haul these dingies out of the water in the winter must be provided. There must be a protected place to store these sailboats somewhere within a close distance of the water.

exterior area relationships

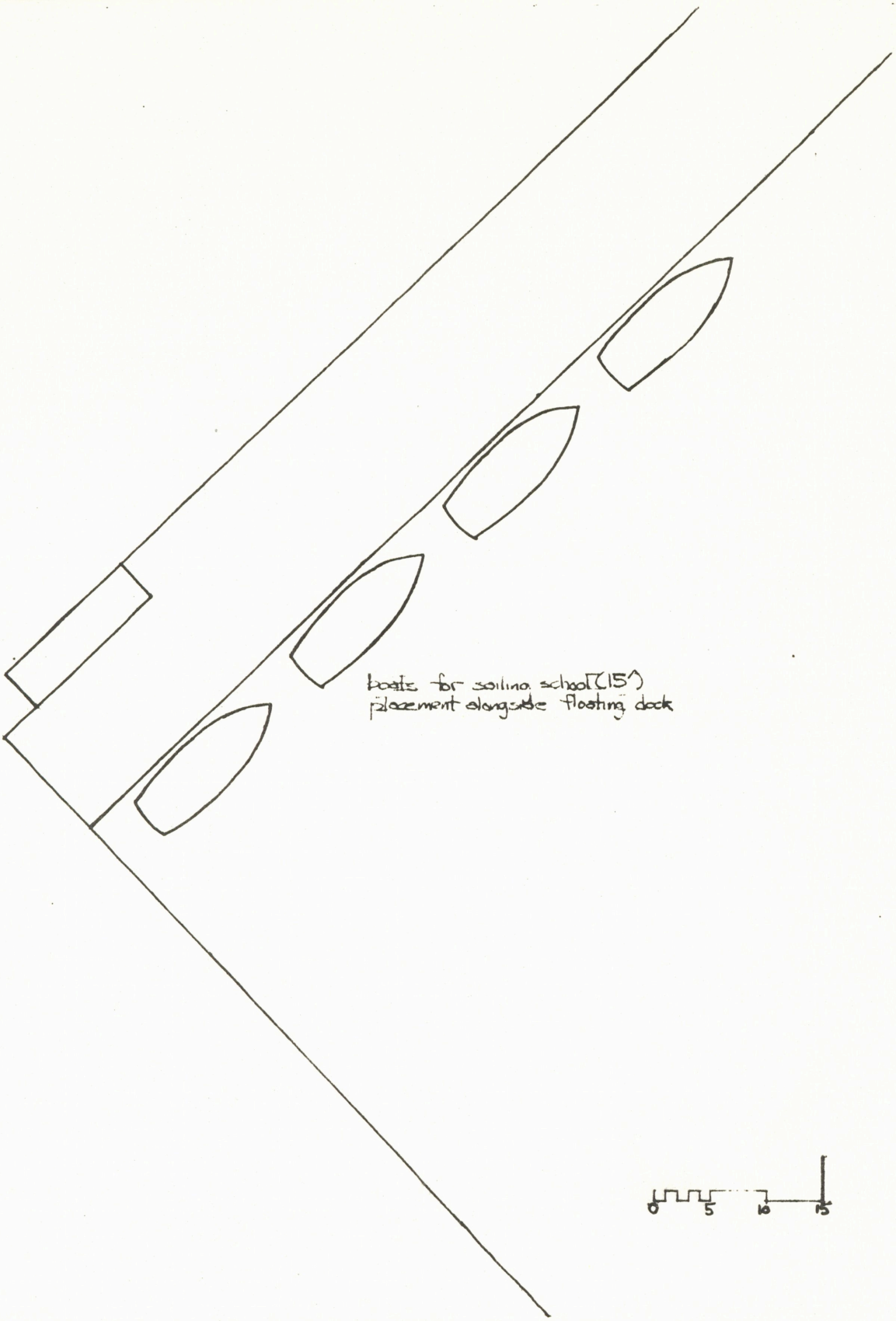


pilot boats at dock



pilot boat, shuttle craft, and launches

32 sail boats at dock



33 Reception-security

The valuable property owned by the pilots requires a great deal of protection. Both the interior protions of the building and the property must be watched and guarded very carefully.

Access from the street and adjoining property must be controlled. A gate must be provided at the automobile and pedestrian points of entry.

A security control station should be provided inside the building, which could double as a reception area. A single guard in the security area could watch the building entrance and the gate and grounds through television cameras.

The guard in the security area would have visual and voice communication with anybody approaching the gate wanting entrance. There would not be anyone stationed at the gate.

34 reception

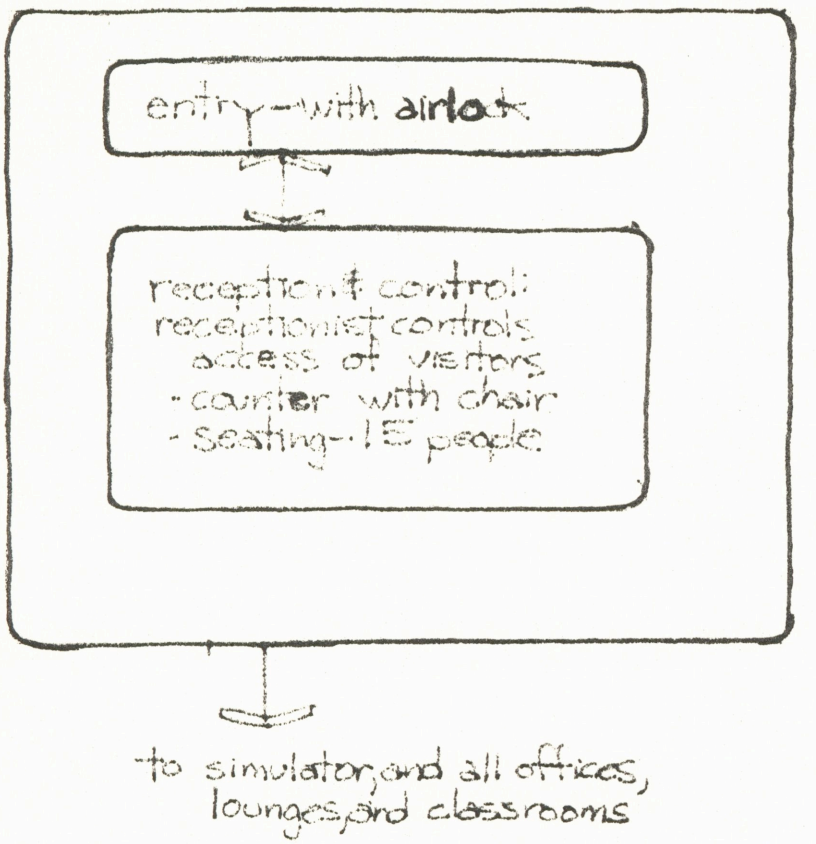
Circulation:
- to parking
- to simulator
- to all offices, lounges, & class rooms

daylight:
- necessary

Services:
- telephone-1
- lighting-general
  - task for receptionist
- HVAC- area should be heated/cooled (72°)

furniture:
- seating for 15 people
- counter for receptionist with chair

time of operation:
- 24 hours per day 365 days per week



35 Pilot/dispatch

The pilot area is in operation 24 hours per day, 365 days per year. It is an area where the pilots receive assignments and wait for a launch to take them to work.

The most important part of the area is the dispatch office. This is where steamship companies call to order a pilot. The information comes in over a teletype or sometimes the ship calls the pilot boat who then relays the information to the dispatch office via short wave radio. Also, information can be obtained through the U. S. Coast Guard's databank information system which gives names of arriving and departing ships.[14] There is a radar unit in the office so the pilots can get an exact fix of a ship's location if it is at an anchorage.

When the dispatch office gets all of the information about a ship, it assigns a pilot. The pilots work on a rotation basis. All of their names are kept on a board, which is the center of the dispatch office. When their name has rotated to the top of the list, it is their time to work. When they are finished with a job, their name goes to the bottom of the board, ready to start its trip to the top. There are three dispatchers who contact pilots at their home via telephone.

When a pilot arrives at the base, he is prepared to wait for transportation to his ship, he therefore must have a place to stay. The pilots usually want to be near the dispatch office so that they can watch the board and be ready to leave. Thus, their waiting areas are located adjacent to the dispatch office. The pilot waiting areas consist of a lounge seating five people, a sleeping area, a kitchenette, and a bathroom. The lounge should have a view of the dispatch room, particularly the board. The sleeping area should be able to accommodate two people and be acoustically isolated. This sleeping area would be used when a pilot arrives at the base at night having then to wait an unspecified amount of time for the launch that will transport him to his ship.

The pilot area should be located in an area with easy access to the pier and the parking area. The dispatch office and the lounge should have a view of the harbor.

dispatch

circulation:
- to pier/parking
- to administrative area
- to pilot lounge & kitchen
- to sleeping & w/c

view:
- harbor

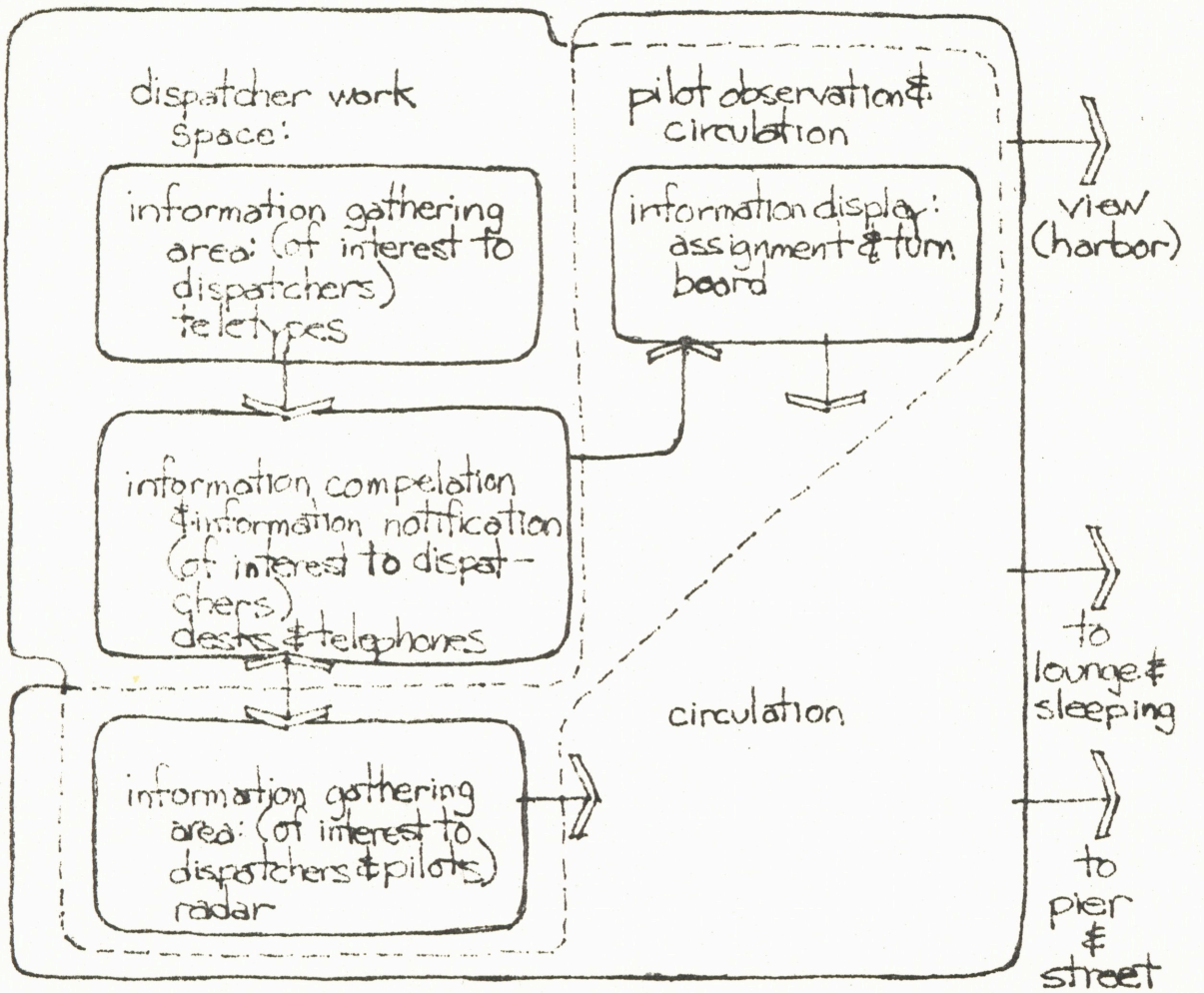
daylight:
- necessary

services:
- telephones-3
- teletypes-2
- lighting-general
  - task (for each desk)
- radar unit-1
- HVAC-area should be heated/cooled (72°)

zone:
- pilot area

furniture:
- desks-each with chair-3
- pilot turn display board-1
- screen for radar unit-1

time of operation:
- 24 hours per day, 365 days per year.



37 lounge

circulation:
- to dispatch
- to sleeping area
- to library

view:
- harbor

daylight:
- necessary

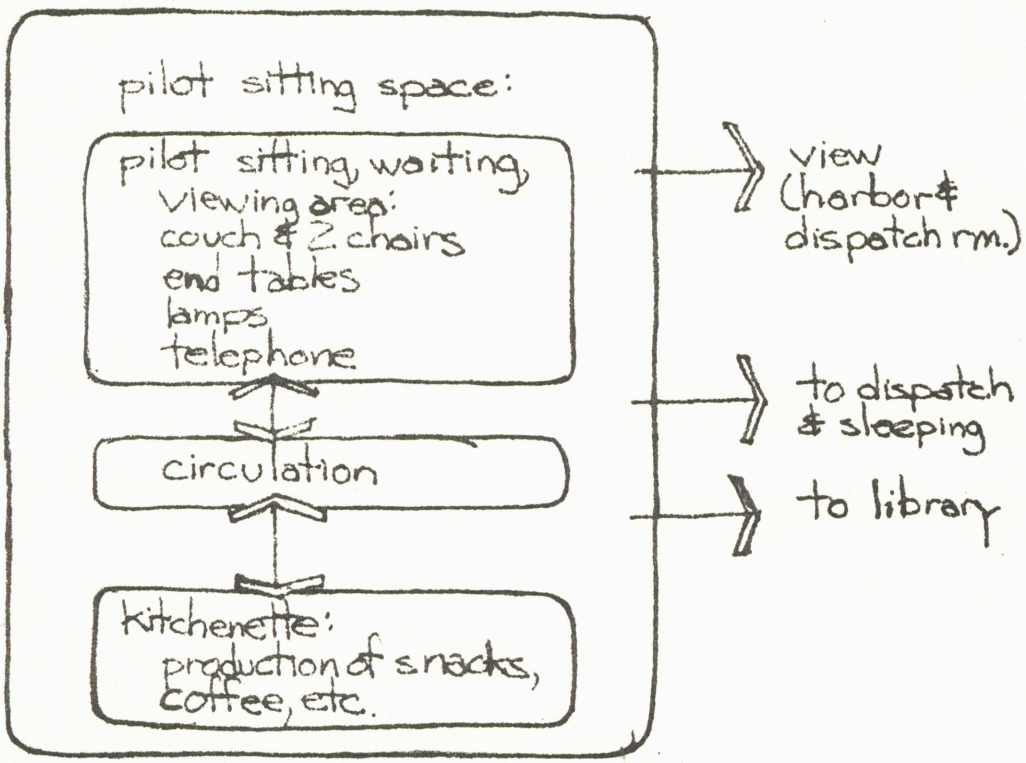
services:
- telephone-1
- lighting-general
  - task for reading
- HVAC-area should be heated/cooled (72°)

zone:
- pilot area

furniture:
- lounge seating for 5 people
- tables in proximity of seating-2

Kitchenette:
- counter space-8 linear feet
- sink
- storage
- small refrigerator

time of operation:
- 24 hours per day, 365 days per year



sleeping

circulation:
- to dispatch
- to lounge

services:
- lighting-general
- HVAC-area should be heated/cooled (72°)
- electric outlets-2

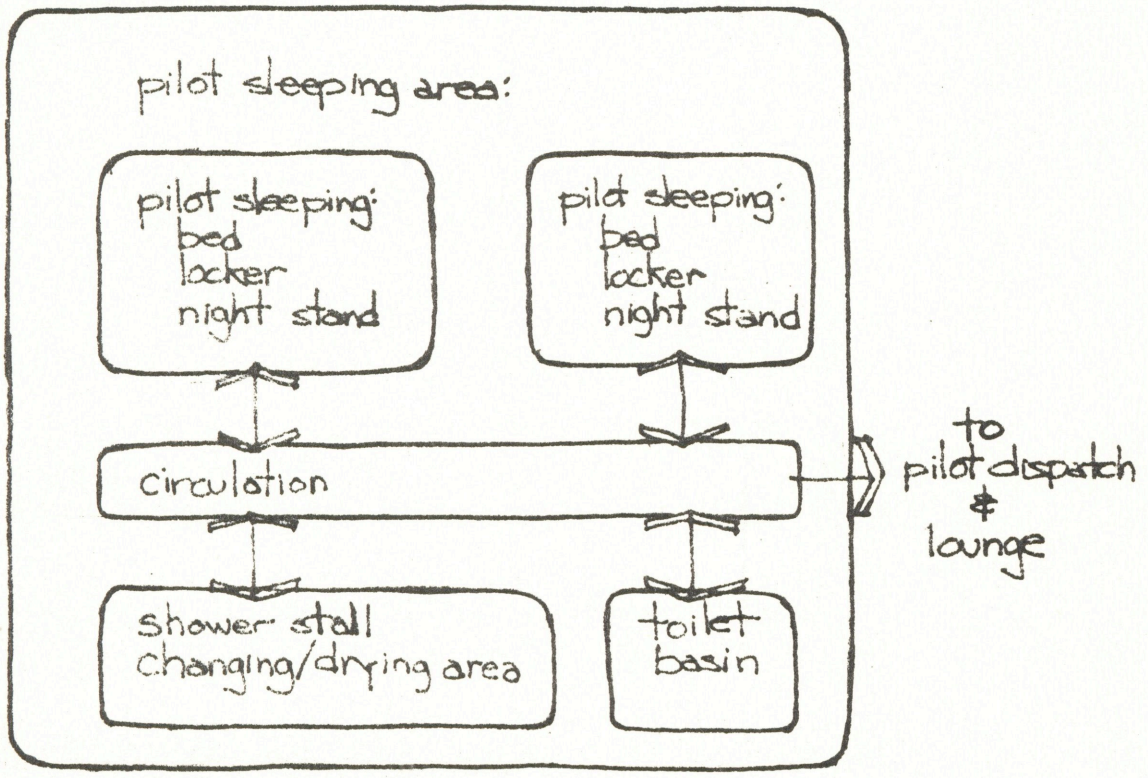
acoustics:
- noise level low enough for sleeping

zone:
- part of pilot area

furniture:
- beds-single-2
- lockers-2
- night stands-2
- partitions

toilet area
- toilet-1
- basin-1
- shower stall-1
- changing area

time of operation
- 24 hours per day, 365 days per year



Education

The education area is in operation about 50 hours per week. Pilot apprentices go to this area when they receive their instruction. This area also includes a sailing classroom, an instructor's office and a simulator.

Most of the training of pilot apprentices is practical and learned on the job while on pilot boats and launches. However, background theory in piloting is also needed. A classroom and instructor are provided so that this information can be taught. An area for general instruction, allowing an instructor to give information to a larger group of people, is needed. Much instruction is done on an individual basis, resulting in a need for an additional area. Finally, there is a need for an area allowing students to study alone. This includes counter space for three people to sit and study charts.

A library is located adjacent to the classroom. This should be a small room with books and a place to sit for quiet reading and studying. The library should also be adjacent to the pilot lounge and should have a view of the harbor.

An instructor's office is needed so that the apprentices can meet with the instructor if they have individual problems. This is also a place where the instructor organizes lessons and keeps files.

Simulators are new inventions which can simulate a harbor and ships travelling through it. Within the simulator, there is a mock-up of a bridge of a ship. An image is projected onto screens which can be viewed as one looks out the windows of the bridge mock-up. The simular simulates ships travelling through the harbor. These simulators are run by computers, which generate the image on the screen and on the radar screen, accepts commands from the bridge controls, and accepts commands from the controller. Simulators are used to allow navigators to practice maneuvering large ships in harbors, preventing accidents. The simulator should be accessible from the pilot's private area, the classroom, and the public entrance.

The sailing school also needs a classroom, which must be near a public entrance. The classroom should have a chalkboard and 15 chairs with writing arms.

simulator

circulation:
- to street/parking
- to reception
- to classroom
- to pilot/dispatch

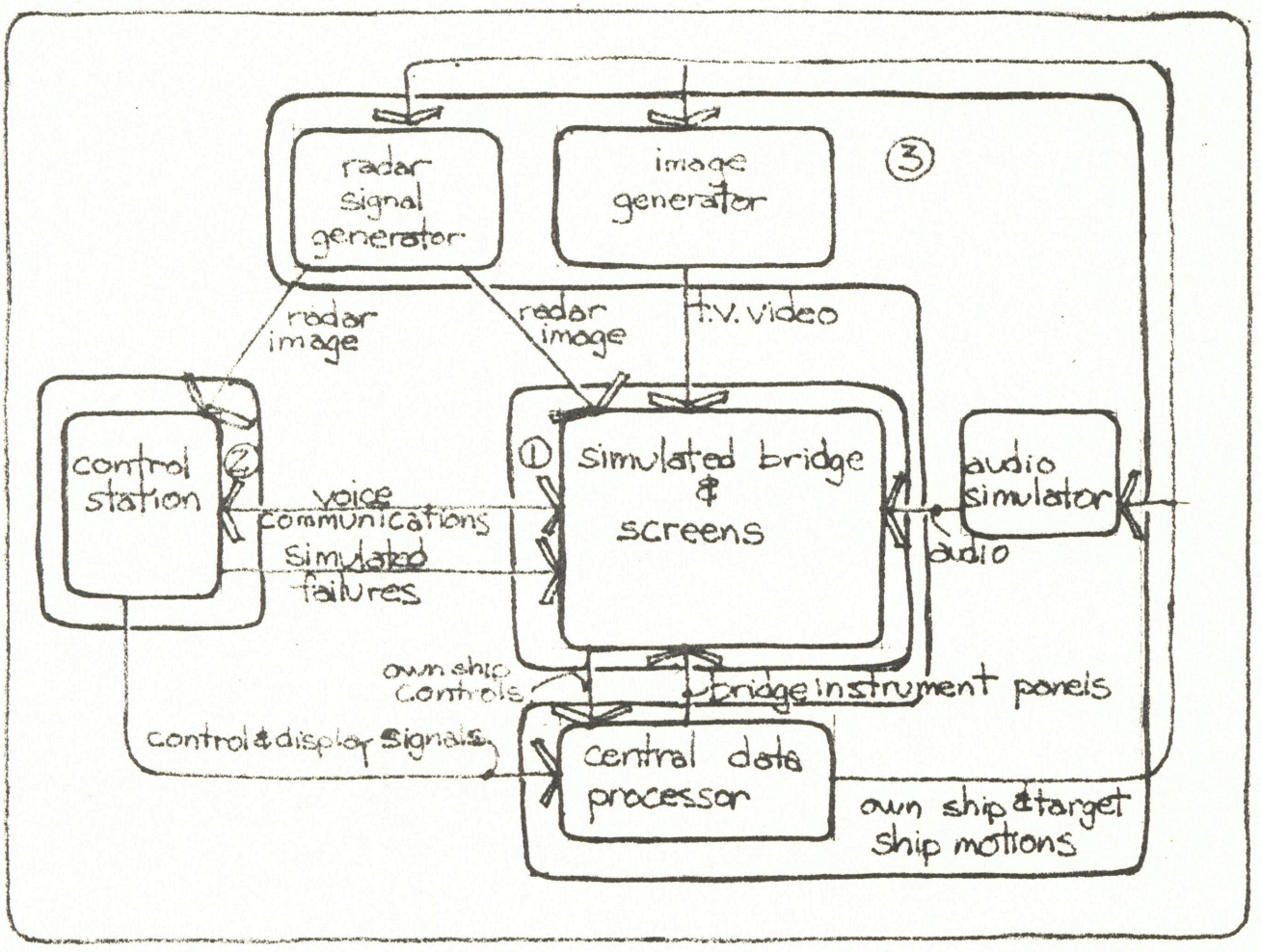
areas:
- ① bridge mock-up
- ② control station
- ③ computer area

services:
- telephone-1
- lighting-general (dimmers provided)
- HVAC-area should be heated/cooled (70°)

zone:
- education area

furniture:
- simulator unit: bridge mock-up & computers
- desk with chairs-2

time of operation:
- 40 hours per week



41 pilot classroom

circulation:
- to pier/parking
- to apprentice area
- to instructors' office
- to simulator
- to library

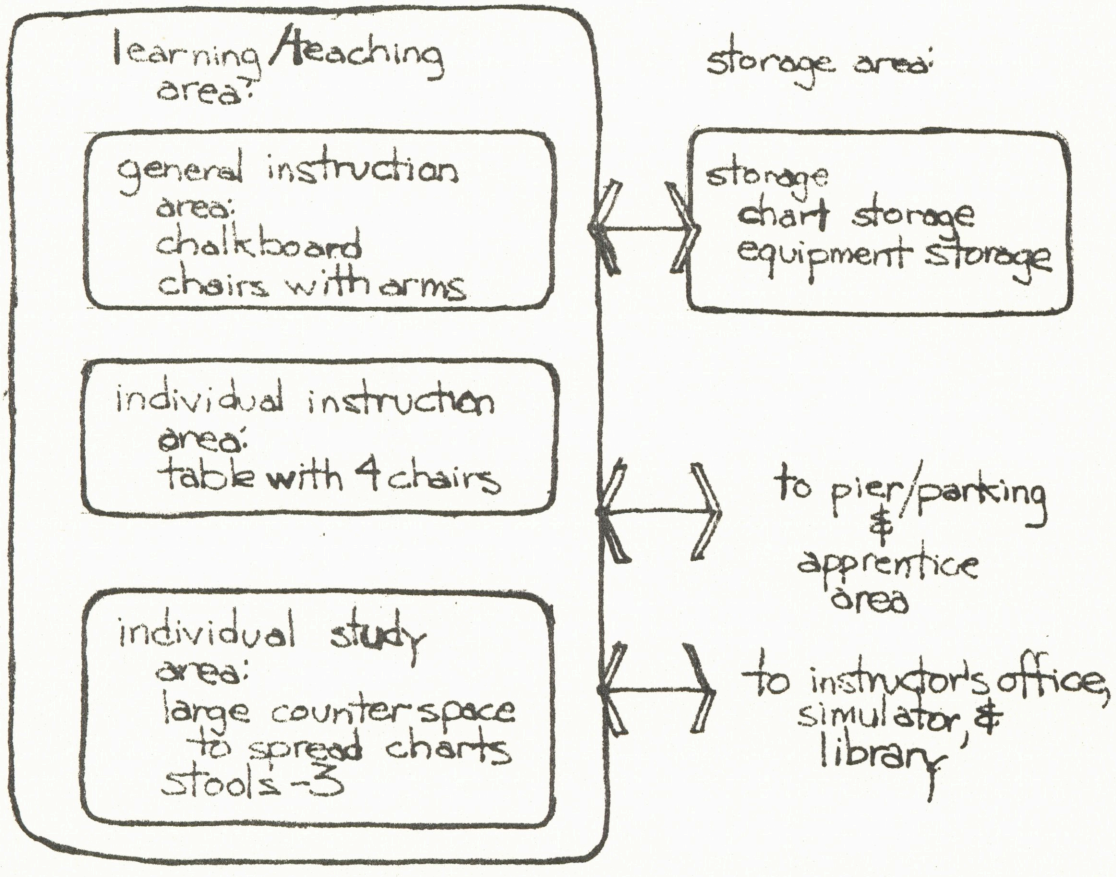
daylight:
- necessary

services:
- lighting-general
  - task lighting at each station
- HVAC-area should be heated/cooled (72°)
- electric outlets-4

zone:
- education area

furniture:
- table seating 4-with chairs
- chalkboard
- chart storage
- counter space (3' deep min.)
- stools-3
- chairs with writing arms-4

time of operation:
- 20 hours per week



42 instructor's office

circulation:
- to pier/parking
- to pilot school classroom
- to sailing school classroom
- to simulator

daylight:
- necessary

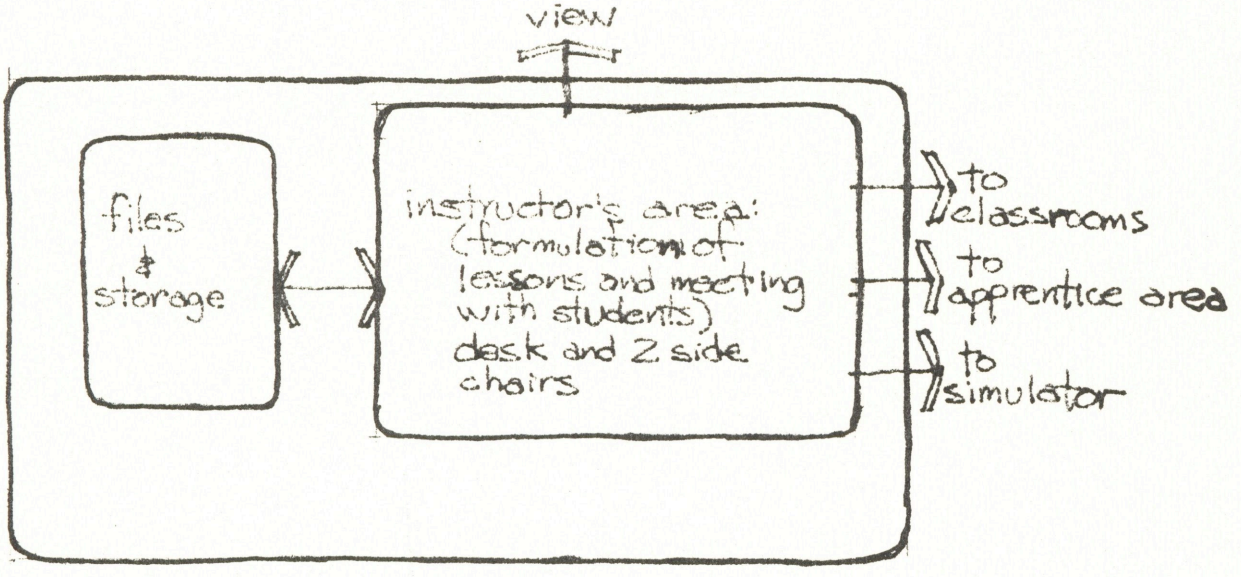
view:
- harbor

services:
- lighting-general
- telephone-1
- HVAC-area should be heated/cooled (72°)
- electric outlets-2

zone:
- education area

furniture:
- desks with chairs-4
- filing cabinets (4 drawer)-4
- side chairs-2

time of operation:
- 40 hours per week



43 library

circulation:
- to pilot lounge
- to pilot classroom

view:
- harbor

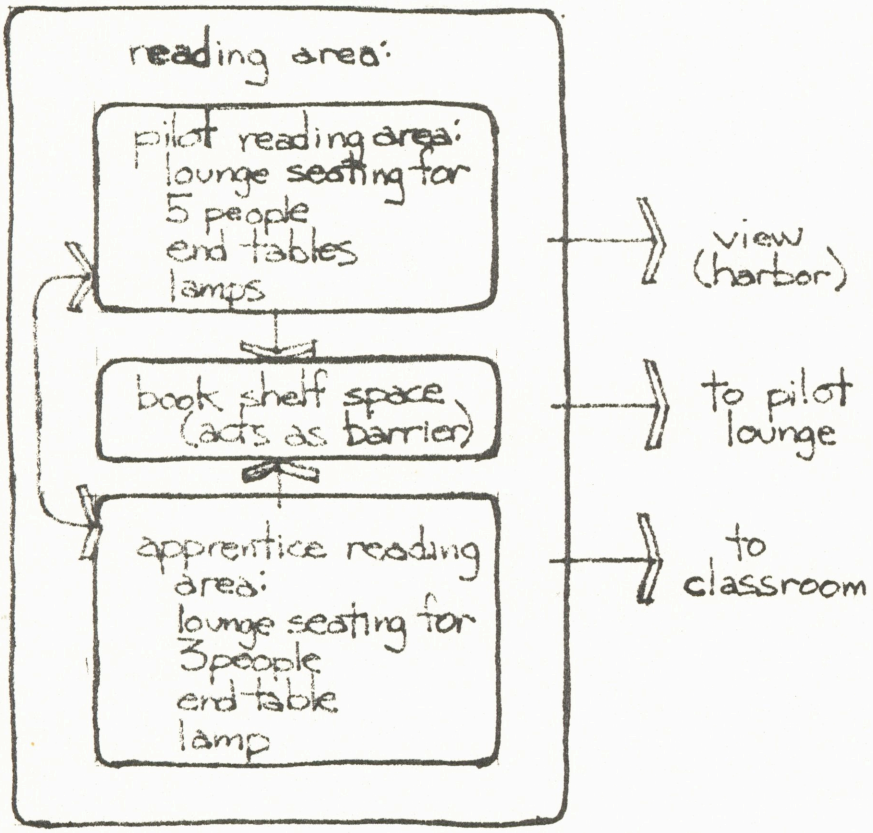
daylight:
- necessary

services:
- lighting-general
  - task lighting at each seat
- HVAC-area should be heated/cooled (72°)
- electric outlets-4

zone:
- education area

furniture:
- lounge seating for 8 people
- tables in proximity of seating-3
- shelf space for books

time of operation:
- 18 hours per day, 365 days per year



44 sailing classroom

circulation:
to reception/parking

view:
harbor

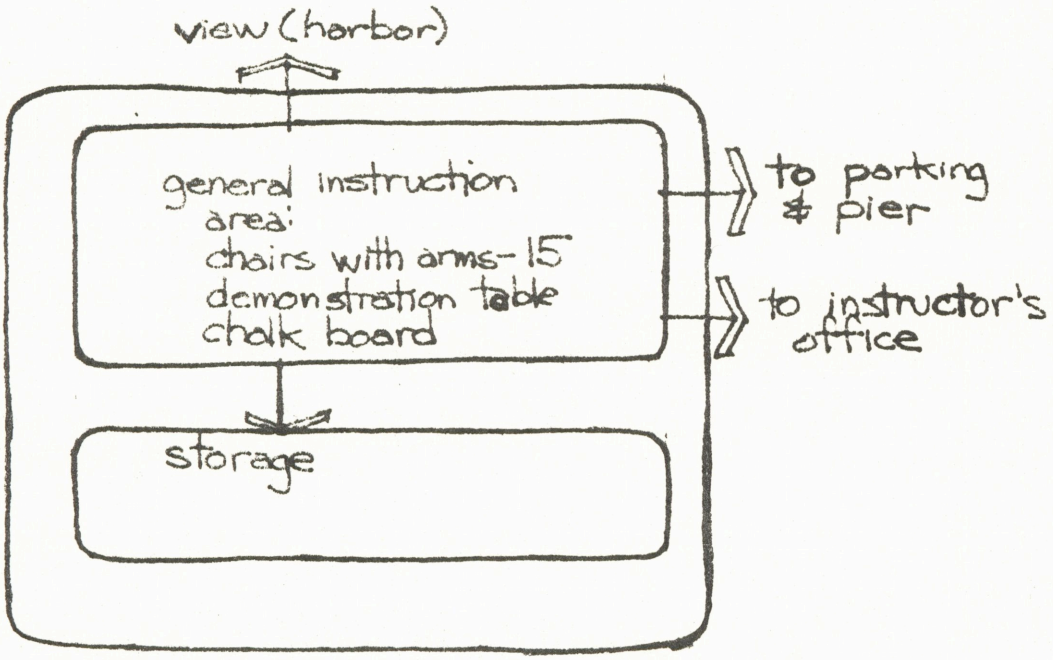
daylight:
necessary

services:
lighting-general
HVAC-area should be heated/cooled (72°)
electric outlets-2

zone:
education area

furniture:
chairs with arms--15
demonstration table
chalkboard

time of operation:
10 hours per week, 26 weeks per year



45 Administration

The administration area consists of an executive area and a business office. The administration area operates 40 hours per week. All of the bookkeeping, cashflow, bill collecting, payroll and executive decisions come from this area. The core of this area is the business office. Here, secretaries and accountants balance the books, keep records, order supplies and run the payroll. Five people work here, each needing a desk. There is also a need for a large amount of filing space. A computer, located in its own room, is adjacent to this space. There is also a staff adjacent to the business office. Here, the employees eat lunch and have their coffee breaks. This space needs seating at a table for five people and a counter space with a sink and a small refrigerator. A view should be provided from this area.

The executive area is also located next to the business office. This area consists of offices for two presidents, two agents, and a conference room. All of the offices are similar, each requiring a desk with a chair, two side chairs, and filing space. The presidents' offices should have a view of the harbor. The presidents make executive decisions and the agents collect the fees. There is also a conference room, large enough to hold ten people seated at a large table. This room is used for executive board meeting which are held the entire month of January and sporadically throughout the rest of the year. A view of the harbor is desirable.

business office

circulation:
- to dispatch
- to parking
- to computer
- to staff lounge

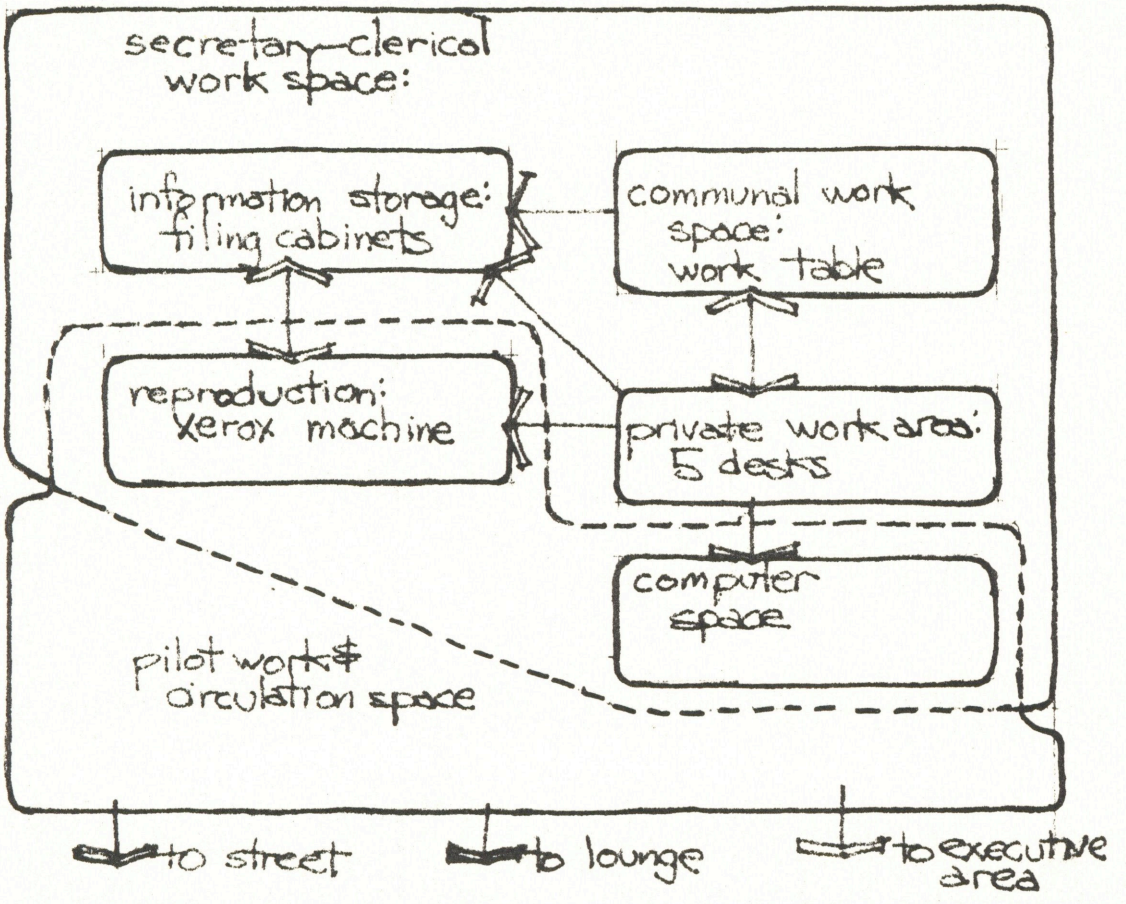
daylight:
- necessary

services:
- telephones-5
- lighting-general
- HVAC-area should be heated/cooled (72°)
- electric outlets-5
- telex

zone:
- part of administrative area

furniture:
- desks-each with chair-5
- filing cabinets (4 drawer)-6
- copying machine-1
- work table (24"x 60")-1

time of operation:
- 40 hours per week



47 executive suite

circulation:
- to dispatch
- to parking
- to pilot boat maintenance
- to business office

view:
- harbor

daylight:
- necessary

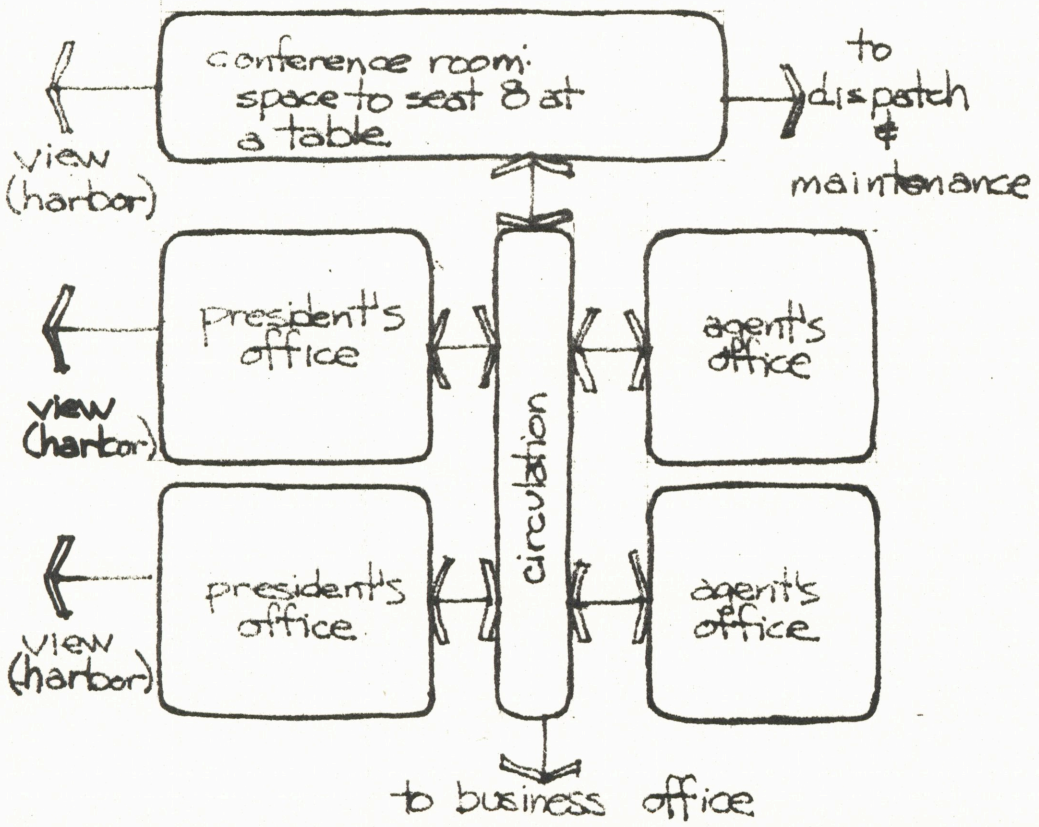
services:
- telephones-4-1 per office.
- lighting-general
- HVAC-area should be heated/cooled (72°)
- electric outlets-2 per office.

furniture:
- desks-each with chair-1 per office
- filing cabinets (4 drawer)-5 per office
- lounge chairs-2 per president's office
- conference room furniture-1 large table with 8 chairs

zone:
- administrative area

time of operation:
- 40 hours per week

executive working spaces:



48 Apprentice

The apprentice area is for the apprentices when they arrive at the base. They must wait for a pilot boat to arrive from or leave for sea. There should be a lounge area with seating for five people, a television set, and a pool table. There should be direct access to the pier and a telephone connection to the dispatch room. Adjacent to this lounge is a sleeping room with beds for two people and a bathroom with a basin, a toilet, and a shower.

49 lounge - sleeping

circulation:
to pier

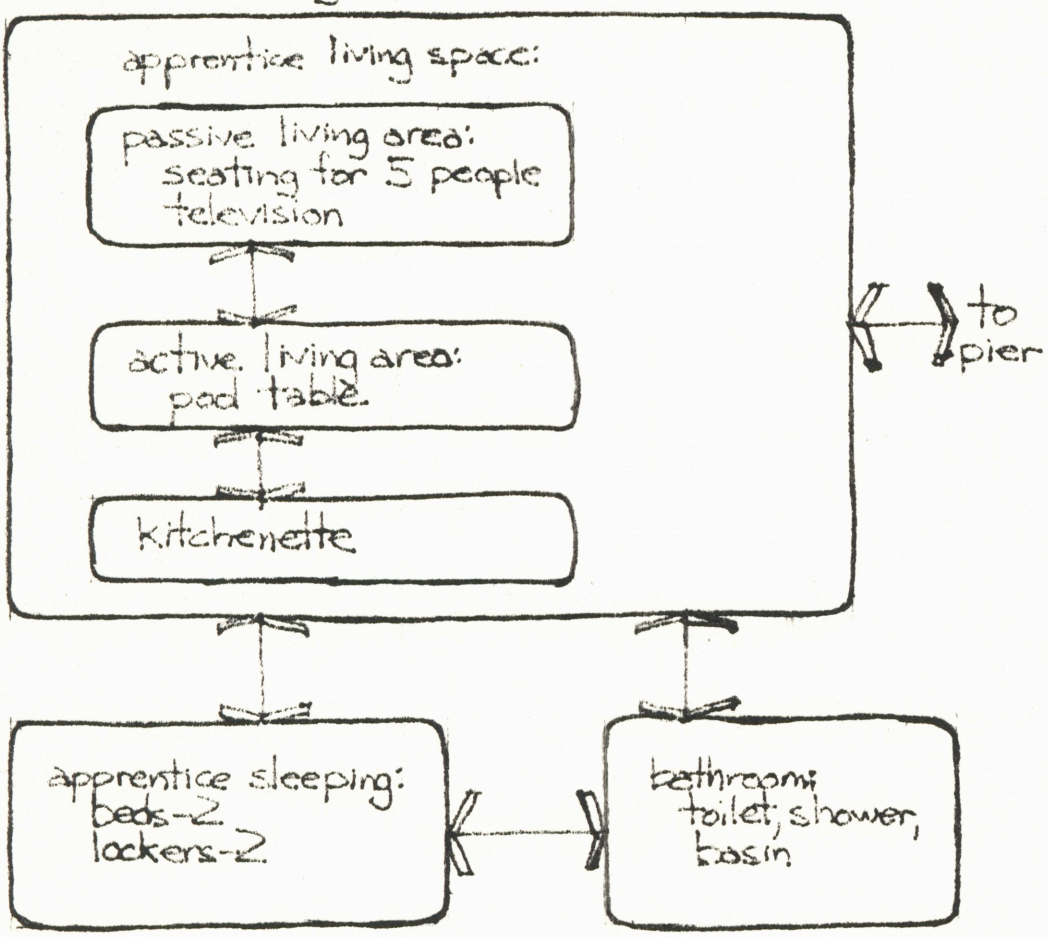
daylight:
necessary

services:
telephone-1
light-general
task for reading
HVAC-area should be heated/cooled (72°)
toilet facilities-toilet, basin, shower
kitchenette-sink

furniture:
lounge seating-5 people
tables in proximity of seating-2
television set
pool table
beds-2
lockers-2

time of operation:
24 hours per day, 365 days per year

zone:
apprentice living



50 Pilot boat maintenance

The pilot boat maintenance area is for the maintenance of the flotilla of boats, launches, and ships owned by the pilots. The maintenance operation is overseen by the superintendent who has his own office. He is responsible for keeping the flotilla operational, keeping it manned, maintained, stored, and fueled. There is a shop with machinery to fix equipment on the boats. This includes power equipment like drills, laths, saws, and a welding machine. There is a large storage room located just off the shop that contains spare parts for the boats, including pumps, motors, pipe, conduit, wire and paint.

51 pilot boat maintenance

circulation:
- to pier
- to storage
- to superintendent's office

daylight:
- necessary

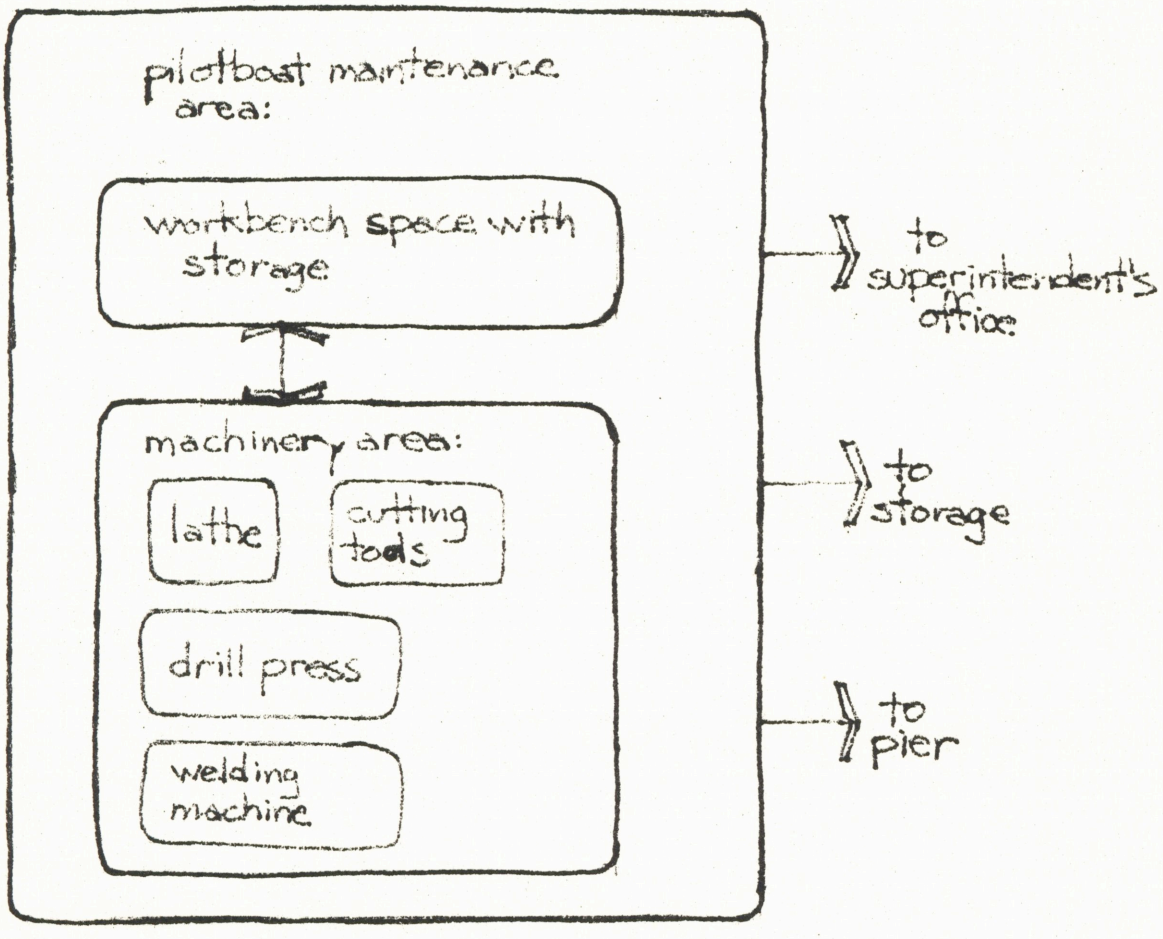
services:
- lighting-general
  - task at workbench
- HVAC-area should be heated/cooled (72°)
- electric outlets-1 every 6 feet
- slop sink (hot & cold water)

furniture:
- workbench space (2' deep-25' long)
- stools-4

machinery:
- drill press
- lathe
- welding machine
- saw

zone:
- pilot boat maintenance

time of operation:
- 30 hours per week



equipment storage

pilot boat

circulation:
- to pier
- to shop
- to superintendent's office

services:
- light-general
- HVAC-area should be heated (to 50°) & cooled (to 80°)
- electric outlets-2
- slop sink (hot & cold water)

zone:
- pilot boat maintenance

furniture:
- shelves

sailboat

circulation:
- to pier
- to sail boat maintenance

services:
- light-general
- HVAC-area should be heated (to 50°) & cooled (to 80°)
- electric outlets-2
- slop sink (hot & cold water)

zone:
- sail boat maintenance

furniture:
- shelves

53 Sailboat maintenance

The sailboat maintenance area should provide for the storage and maintenance of sailboats and sailboat equipment. The sailboats must be hauled out of the water and stored in a protected area for the winter. This area should also be used to fix the boats for use during the next season. The equipment that is taken off the boats—masts, cables, sails, rudders, and centerboards—must have an indoor storage place. This requires an indoor space. The sails need a maintenance room of their own which would require a large space so that the sails can be spread out on the floor and mended.

54 sailboat - sail maintenance

circulation:
- to pier
- to sailboat equipment storage

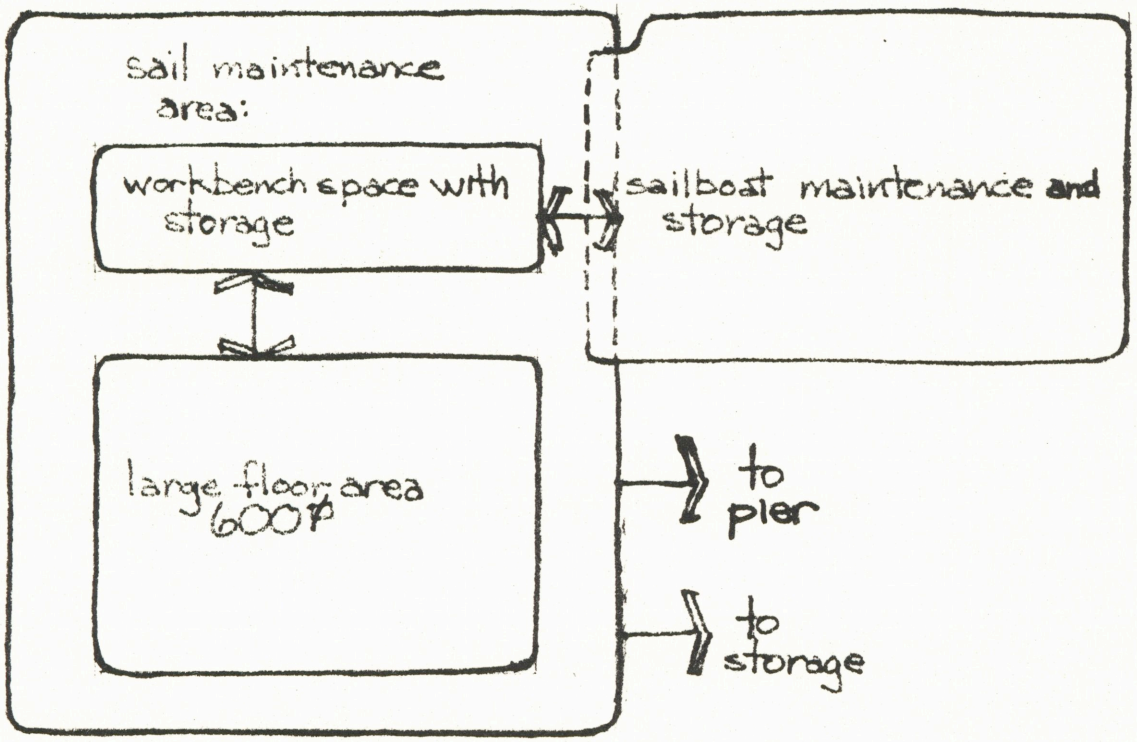
daylight:
- necessary

services:
- telephone-1
- lighting-general
  - task at workbench
- electric outlets-1 every 6 feet
- HVAC-heated/cooled (72°)

zone:
- sailboat maintenance

furniture:
- workbench space (2' deep - 25' long minimum)
- stools-4

time of operation:
- 20 hours per week



Programmatic totals

Reception-security	
reception	200 sf
public restrooms - 2 @ 125	250 sf
	450 sf
Pilot/dispatch	
dispatch	760 sf
lounge	300 sf
sleeping	250 sf
	1310 sf
Education	
simulator	2000 sf
pilot classroom	380 sf
instructor's office	110 sf
library	290 sf
sailing classroom	400 sf
	3180 sf
Administration	
business office	500 sf
computer room	140 sf
staff lounge	200 sf
executive suite	925 sf
president's office - 2 @ 175 sf	
agent's office - 2 @ 125 sf	
conference room - 325 sf	
	1765 sf
Apprentice	
lounge	250 sf
sleeping	250 sf
	500 sf
Pilot boat maintenance	
pilot boat maintenance	600 sf
pilot boat equipment storage	900 sf
superintendent's office	150 sf
	1650 sf

Sailboat maintenance	
sailboat - sail maintenance	1000 ♯
sailboat equipment storage	500 ♯
	1500 ♯
Total assignable building area	10355 ♯
Circulation and mechanical (15%)	1550 ♯
Total Building Area	11905 ♯

8 GEOGRAPHY OF STATEN ISLAND AND THE SITE

The site is located in New York City on Staten Island, the Borough of Richmond. Staten Island is in the southwestern corner of New York, surrounded by New Jersey to the north, west, and southwest, Lower Bay to the southeast, and Brooklyn across Upper Bay to the east.

Staten Island was originally made up of small communities which grew together over the years to form a single urban area. The northeastern part of the island is the most heavily populated. The site that I have chosen is in this area which is just north of the Narrows on Upper Bay. The shoreline runs north-northwest-south-southeast. There are many hills in north-eastern Staten Island, rising as much as 400 feet above sea level. There are lower hills to the west, northwest, and southwest. They protect the site from winds, which is mandatory for maritime activities.

Bay Street serves the northeastern shore of Staten Island, connecting the Staten Island ferry in St. George with the Verrazano-Narrows Bridge and I-278. On each side of Bay Street are two story commercial and residential structures. Also, there are some larger brick buildings, churches and commercial buildings.

The area that the site is located is called Rosebank. In the area, the streets located west of Bay Street are in a grid plan and the buildings are one to two story, wood frame dwellings. To the east of Bay Street, towards the water, is a mix of residential, commercial, and industrial. The many small service oriented, commercial buildings consist of telephone service, an auto repair shop, etc. The streets are organically planned. Edgewater Street, the street in which the site is located parallels Bay Street.

The site, to the east of Edgewater Street, is part of an old shipyard, called Reynold's Shipyard. It is the most southern point of the waterfront development on the east shore of Staten Island. On the waterfront to the south is natural beach and residential development. The site consists of one pier extending 400 feet into the bay and two buildings. One building, a two story brick structure with a flat roof, forms the western edge of the site. The other building is a two story corrugated steel building with a gable roof. Located on the northern edge of the site; it is a boat repair shed. This repair shed is dominated by a seven story, concrete warehouse located just on the northern edge of the site. The southern edge of the site is open and poorly designated. There is a large, corrugated steel building with a gable roof to

the south. This building backs up onto the street. A small, brick building is located to the south of the site on the water.

9 HISTORY OF STATEN ISLAND

Staten Island, the Borough of Richmond, is the least settled part of New York City. Ever since the beginning, Staten Island has been looked at as the backwaters of the city by other New Yorkers. At the same time, Staten Islanders have enjoyed a higher standard of living than the other four boroughs. Until the late 1960's, the island had hundreds of acres of forested land. Much of this has recently been developed.

Staten Island was first discovered by Henry Hudson on September 2, 1609 when his ships anchored in Lower Bay.[15] Nine days later, he sailed through the Narrows to Upper Bay.

The Dutch started settling New York in 1630, living on Manhattan Island, Long Island, Staten Island, and the coastal parts of New Jersey.[16] The Dutch bought Staten Island from the Indians five times, each time the Dutch were wiped out by the Indians. Finally, in 1661, the Dutch built Fort Wadsworth, which had a militia of nineteen soldiers.[17]

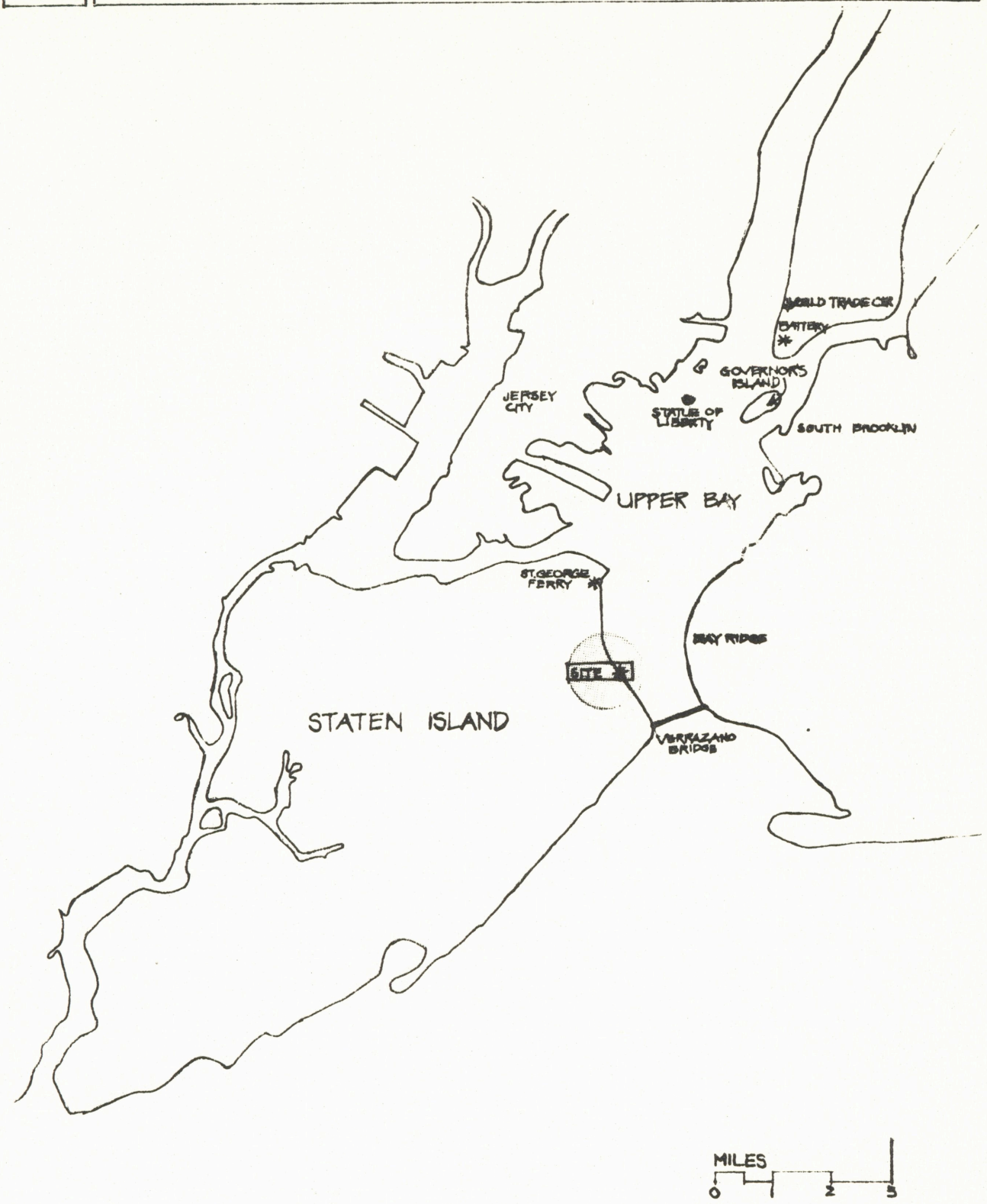
In 1666, the British took over New York and Staten Island. Staten Island became Richmond county.[18]

During the Revolutionary War, Staten Island was used as a staging ground to launch the attack on New York. In July of 1776, the British had 34,000 troops stationed at Rosebank with 52 warships anchored off shore.[19]

Through most of its history, Staten Island was a land of small towns and farms. Its commercial activity was limited to small stores. There were many large villas owned by rich New Yorkers at Tompkinsville, Clifton, and Fort Wadsworth. During the Civil War, many training camps were established on Staten Island.

The first, large scale commercial development came to Staten Island in the 1870's at St. George. This consisted of pier space and warehousing adjacent to the piers. All of the small towns began to expand and eventually blended into each other. By 1900, the east shore of Staten Island from St. George to Rosebank was developed with piers, warehouses, and small shipyards. By 1930, the area along the waterfront was fully developed with dwellings, shops, and other small businesses. These inland activities turned their back on the shoreline, leaving it completely for maritime acitivity.

10 ENVIRONMENTAL ANALYSIS OF THE SITE


WORLD TRADE CTR
BATTERY
GOVERNOR'S ISLAND
JERSEY CITY
STATUE OF LIBERTY
SOUTH BROOKLYN
UPPER BAY
ST. GEORGE FERRY
BAY RIDGE
SITE
STATEN ISLAND
VERRAZANO BRIDGE
MILES
0
2
5

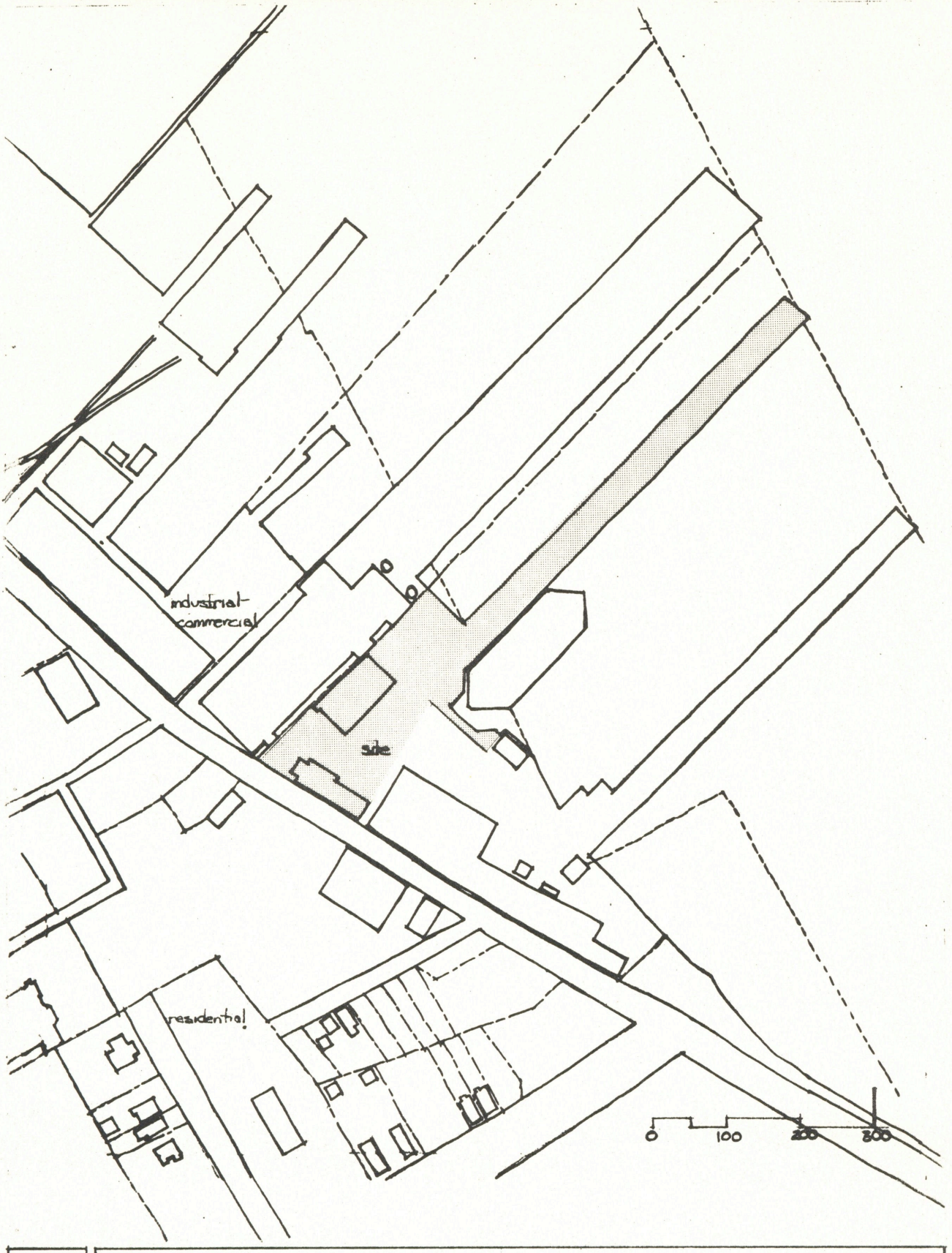
piers



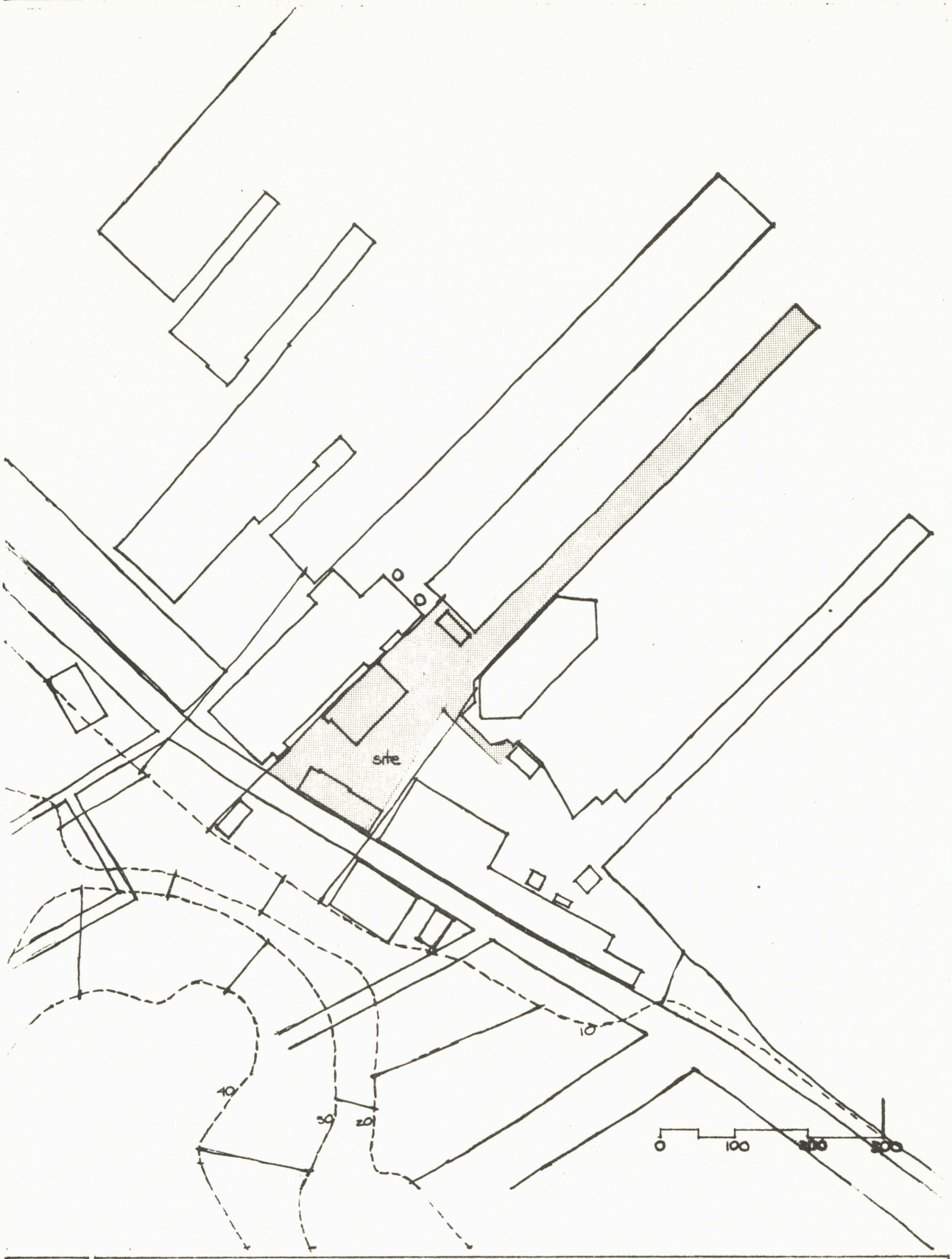
circulation and facilities



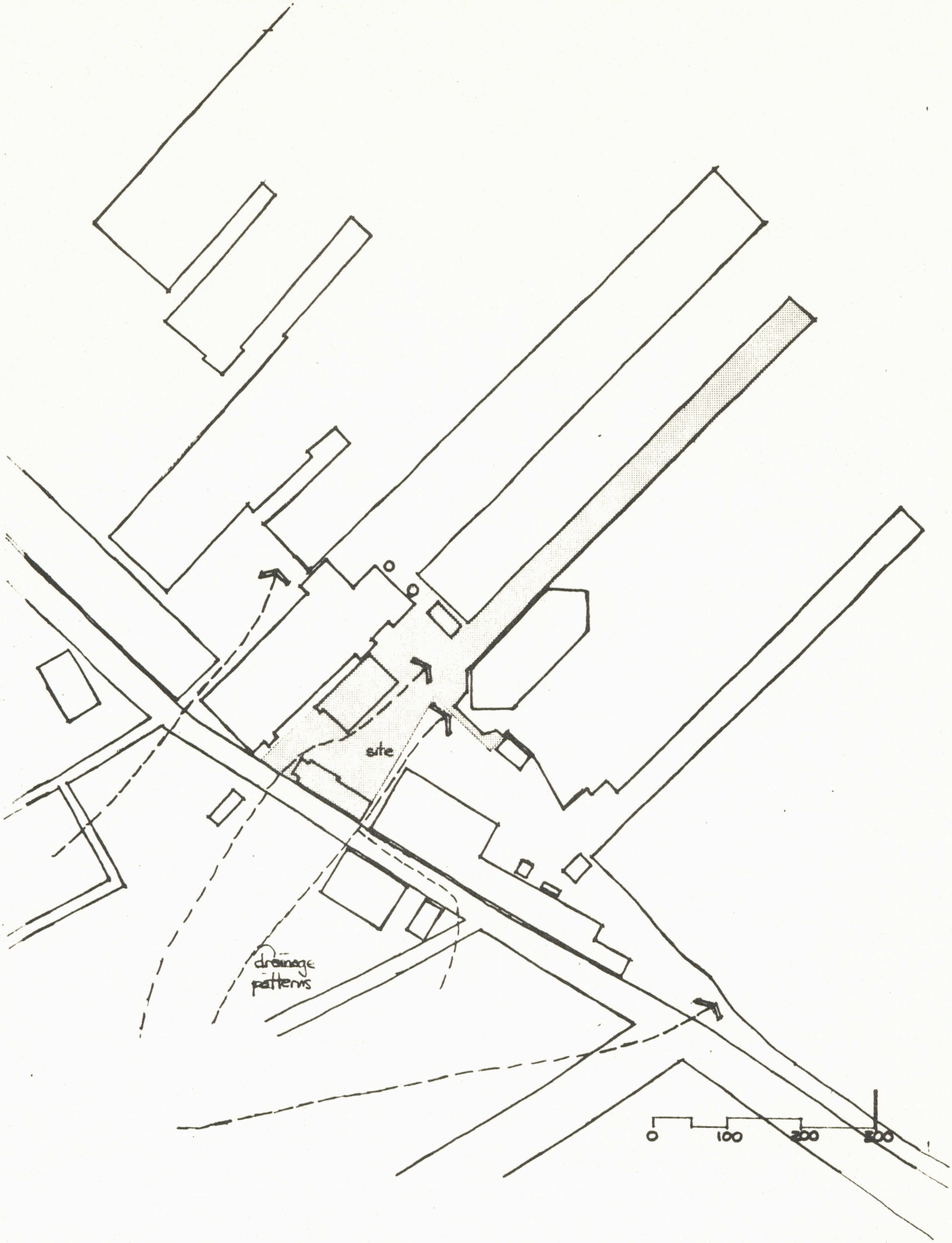
buildings and land use



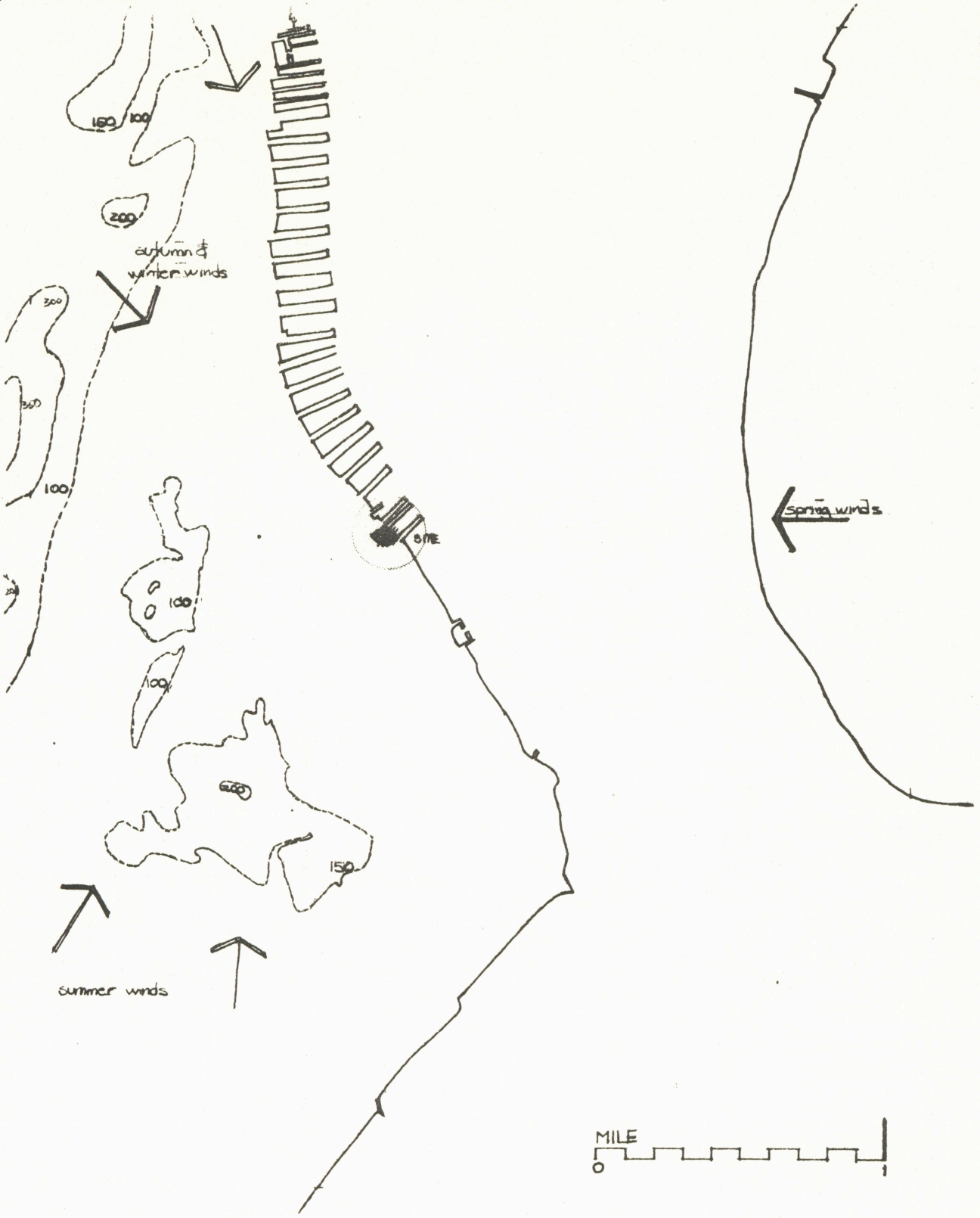
topography



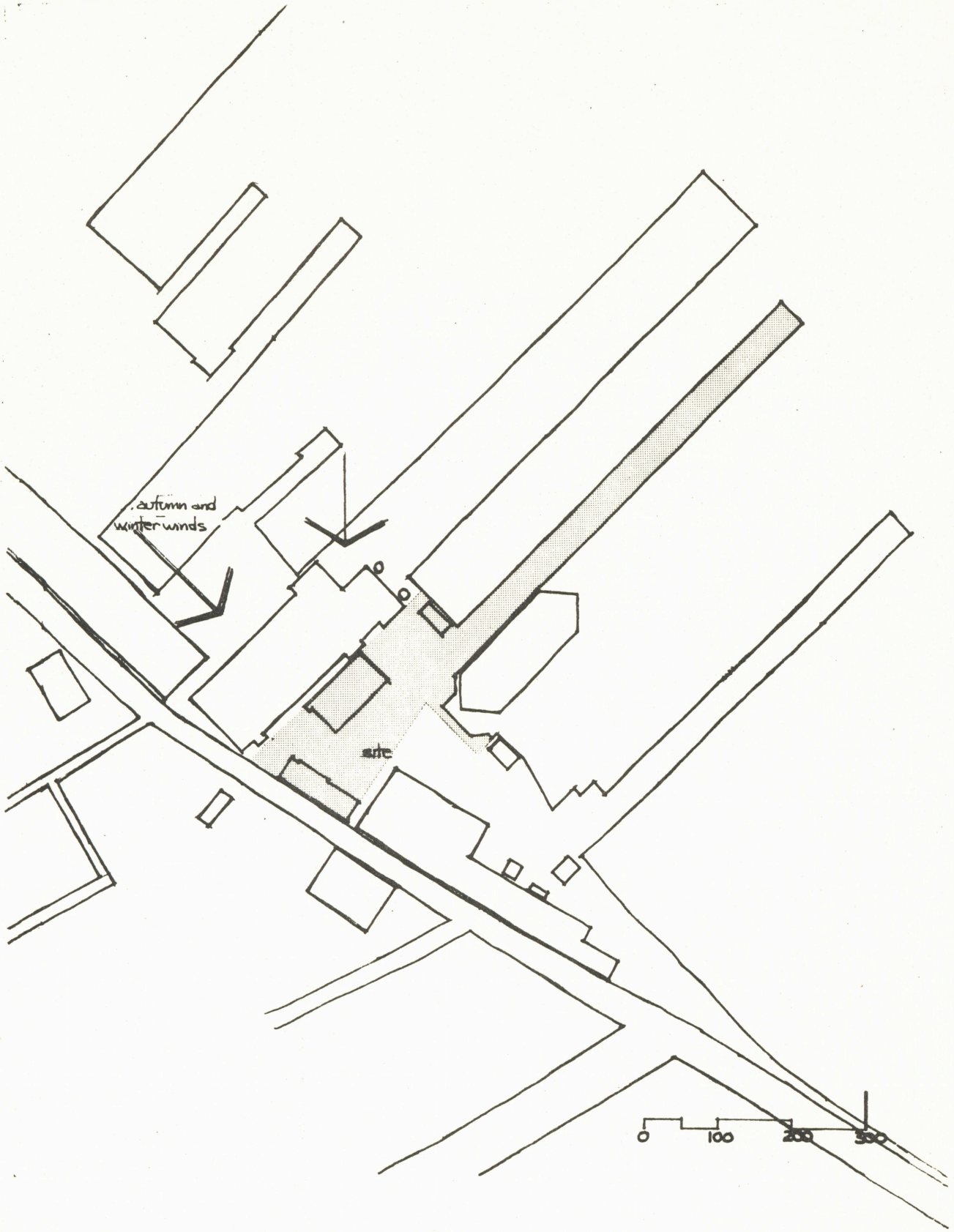
drainage



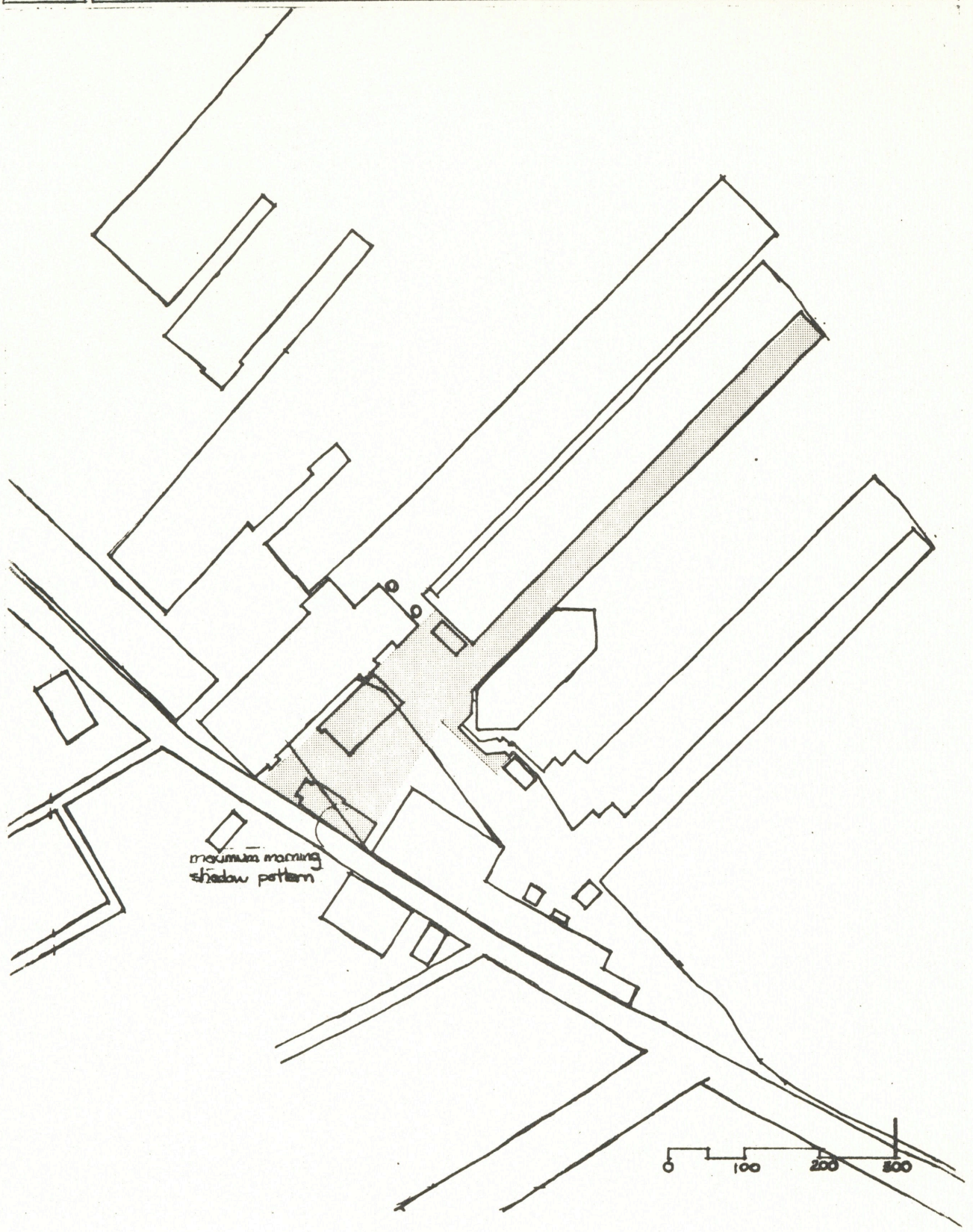
winds


150
100
200
autumn &
winter winds
300
350
100
100
100
600
150
SITE
summer winds
spring winds
MILE
0
1

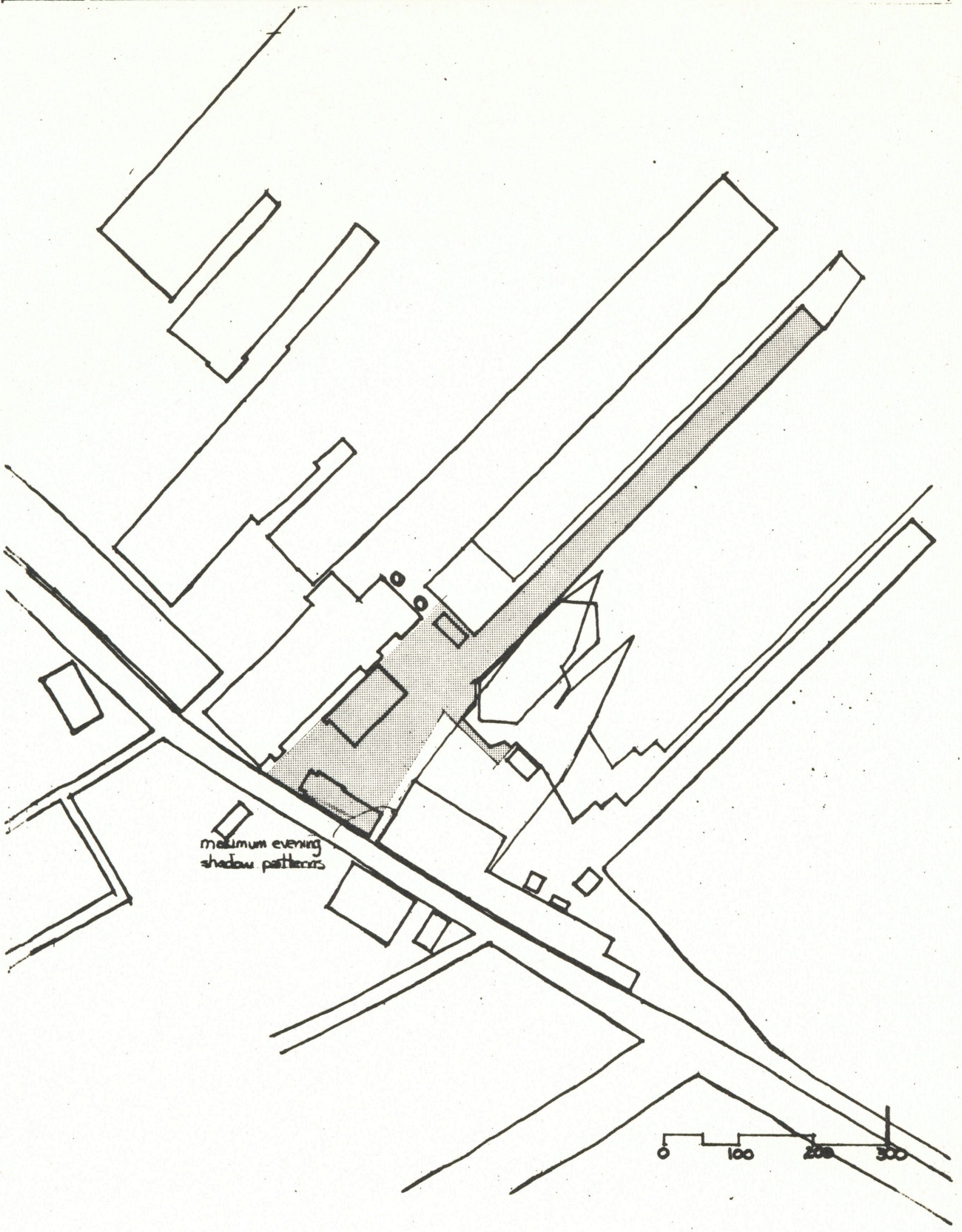
winds



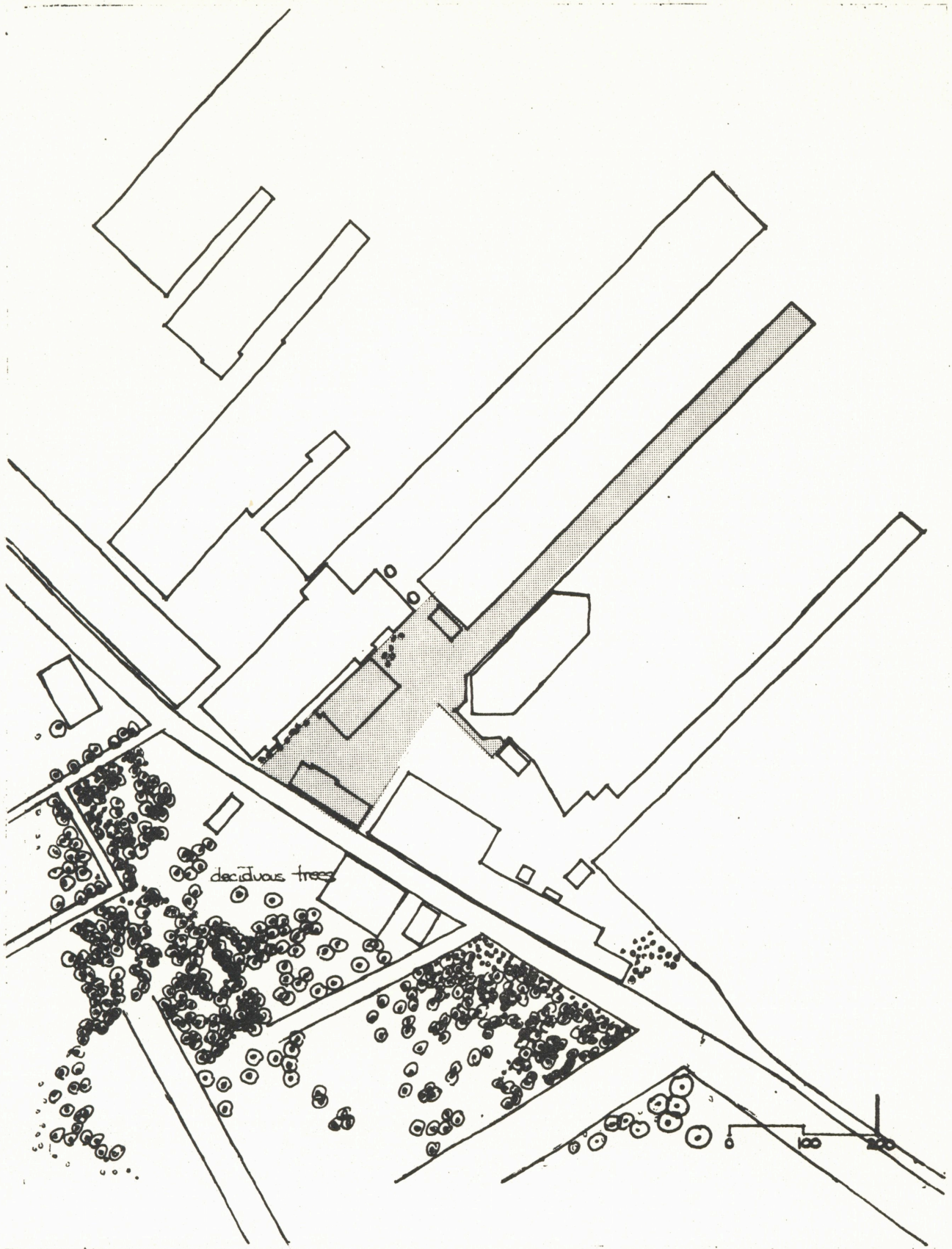
morning shadows



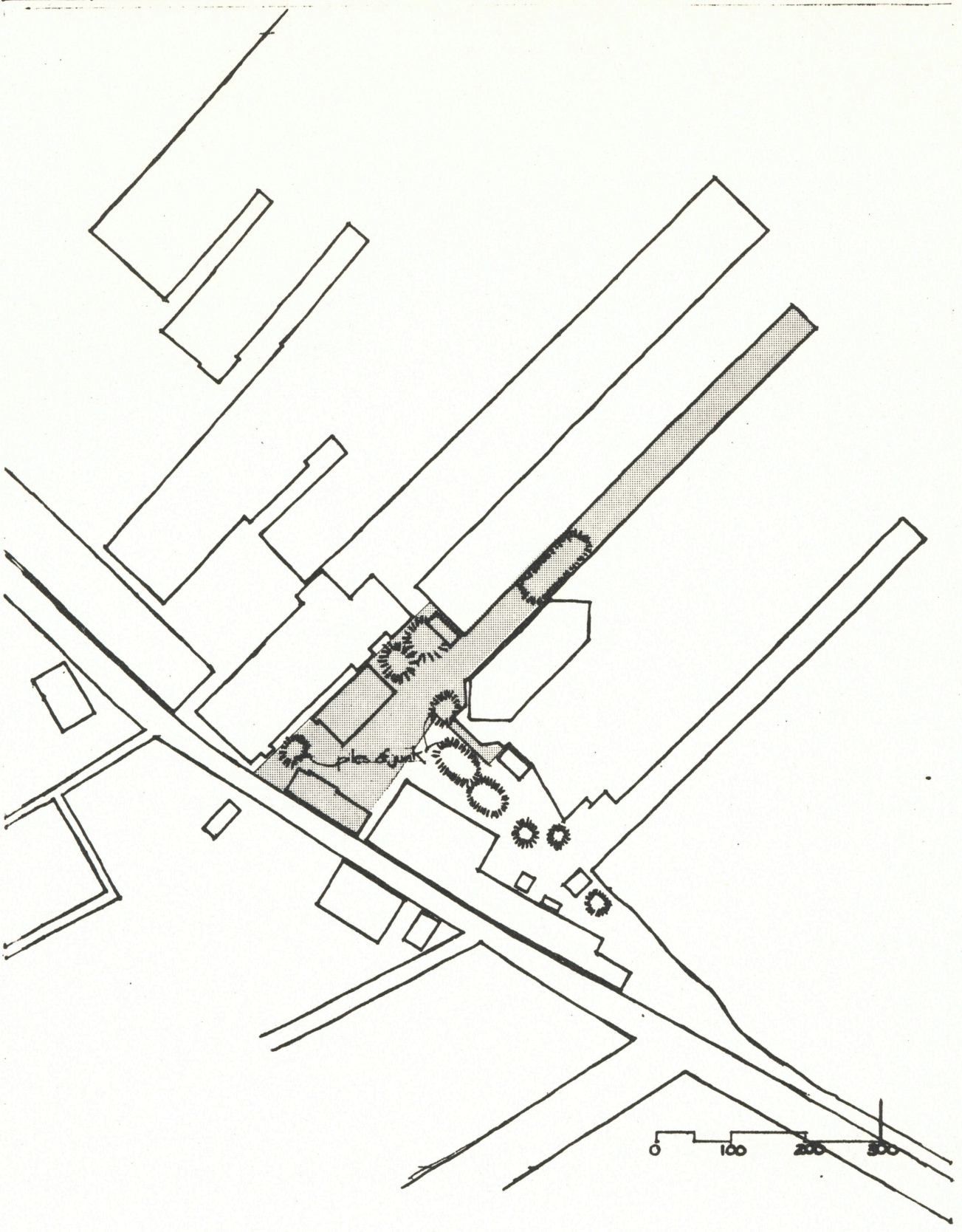
afternoon shadows



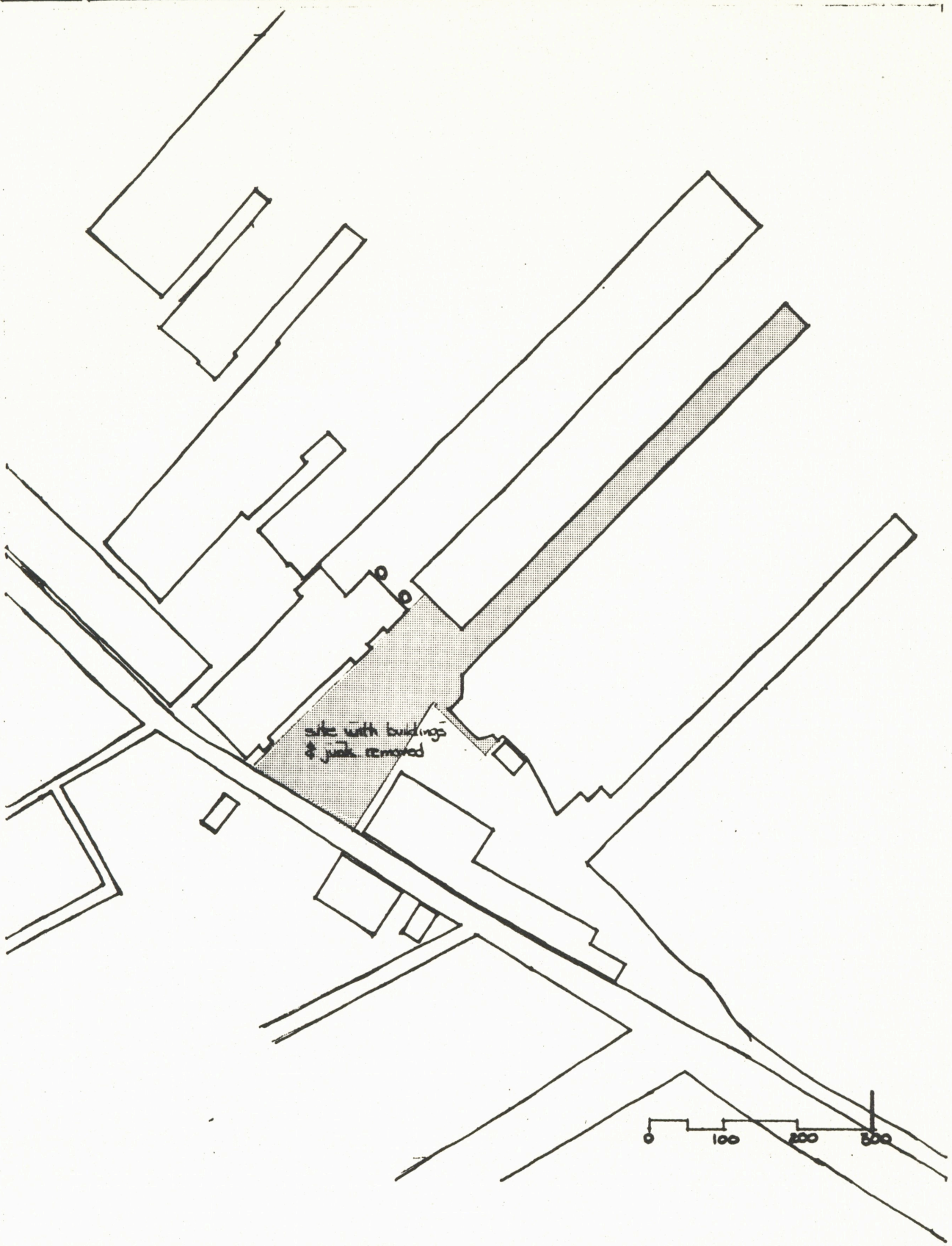
vegetation



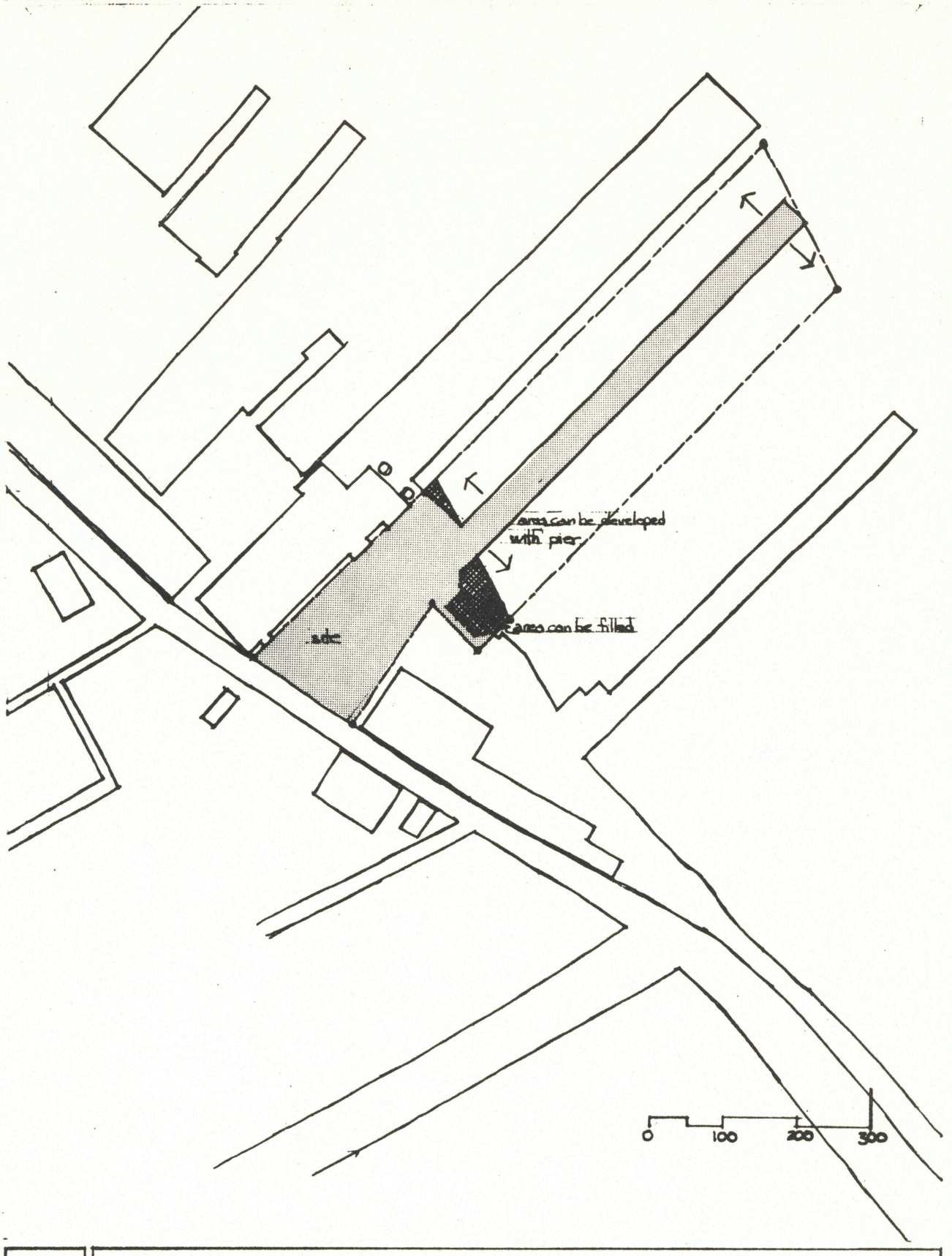
debris



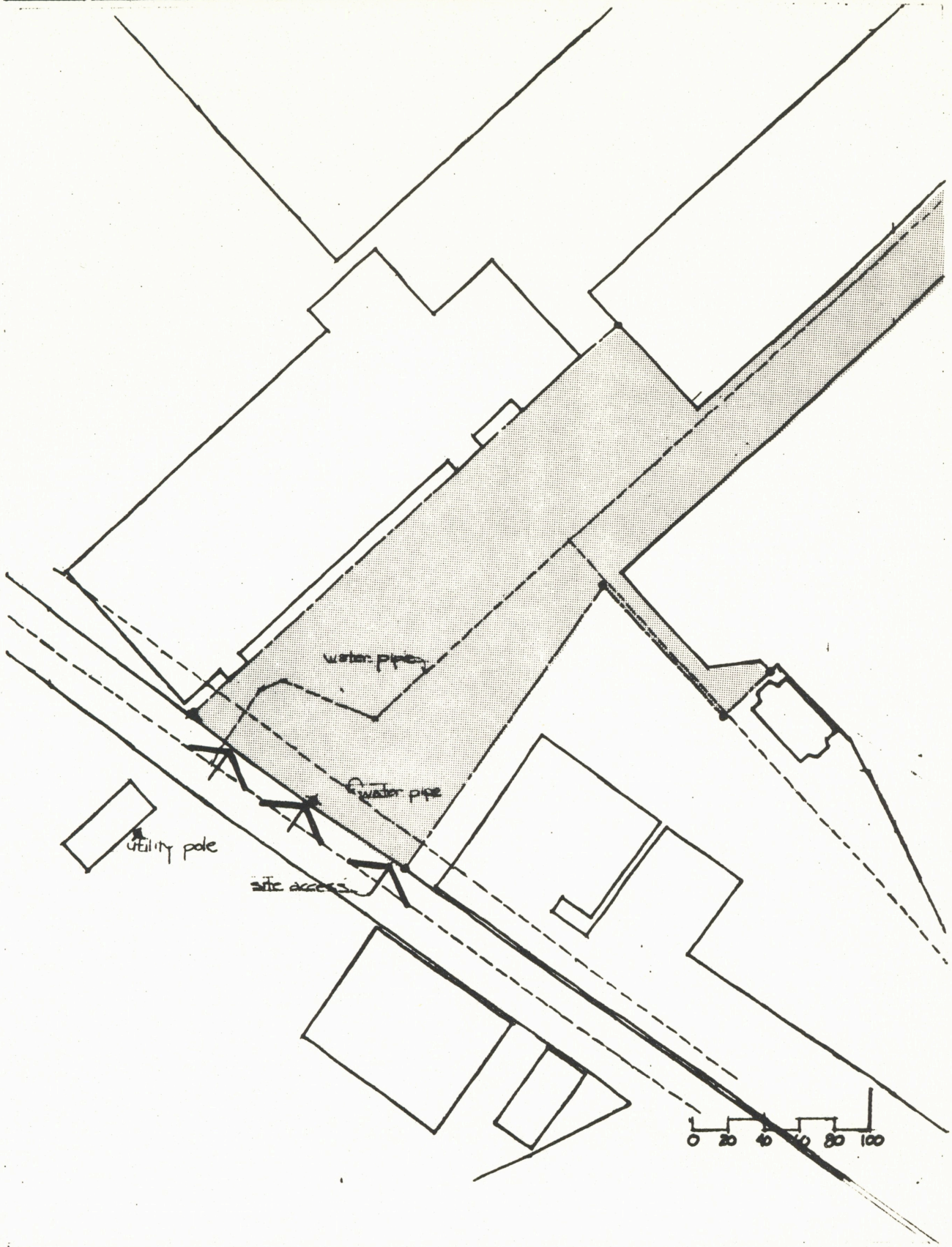
cleared site



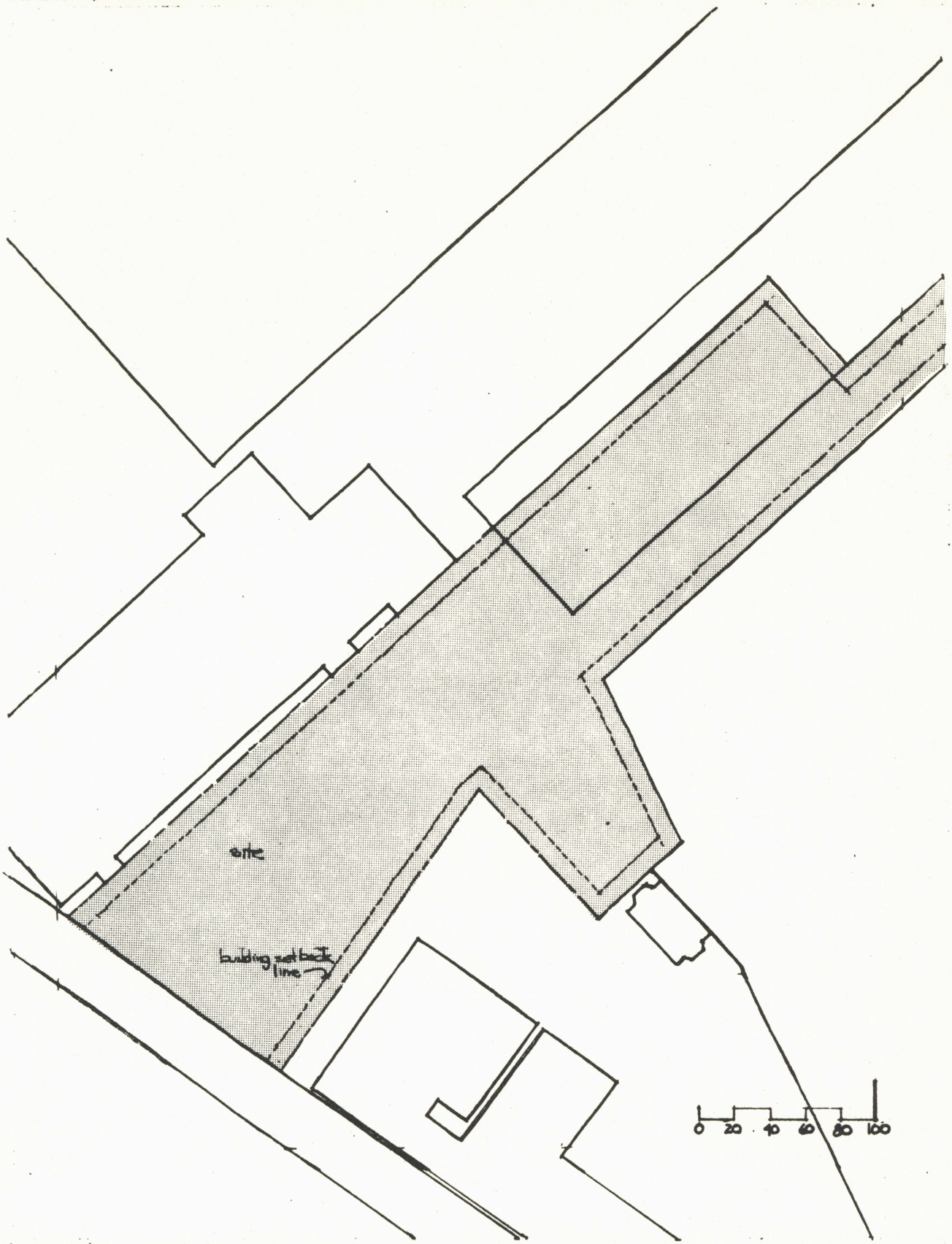
expansion potential



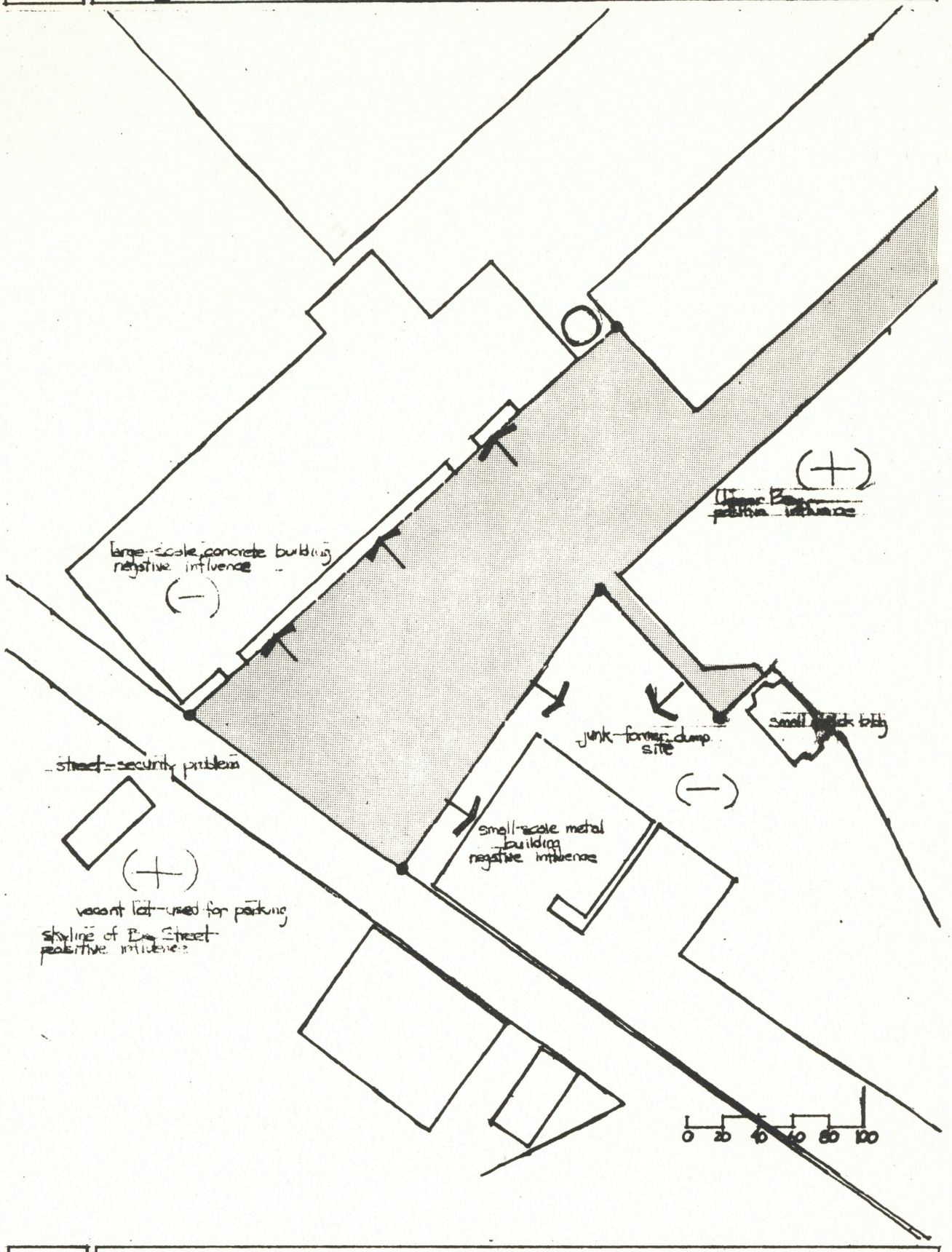
access and utilities



setback lines



edge conditions



11 CONTEXT

Aside from the contextural issues like the history and geography of the area and the activities and history of the pilots themselves there are many descriptive issues that must be dealt with to find answers to the total question of context. Many contextural issues apply to an infinite number of sites and some are more important than others.

Through research, a list of elements that pertain to context, a site, an area, or a certain lifestyle or profession was evolved. This list consisted of about thirty items, some being very important and others having almost no importance. I chose the contextural elements that were of maximum importance to research for the site area under consideration.

Each element will be first described in a broad sense and then in a very specific sense.

Some of these described elements will apply more to the site, some will apply more to the people who will occupy the site, and others will apply to the general area, the harbor, and the water.

These elements of context consist of the following:

scale
change of level
nostalgia
water
place
silhouette
infinity
exposure
view
texture
floating vessels
detail

Scale

"Scale is defined as being size relationships between two or more objects."[20] These objects could be buildings, people, cars or boats. The actual size is of less importance; of greater importance is how the size of the object appears to the eye.

Scale is important when one is designing a building in its context. A building should be sympathetic to the scale of the area in which the building is sited. Spaces should also have a sympathetic scale. A space should not overpower a person and a person should not overpower a space.

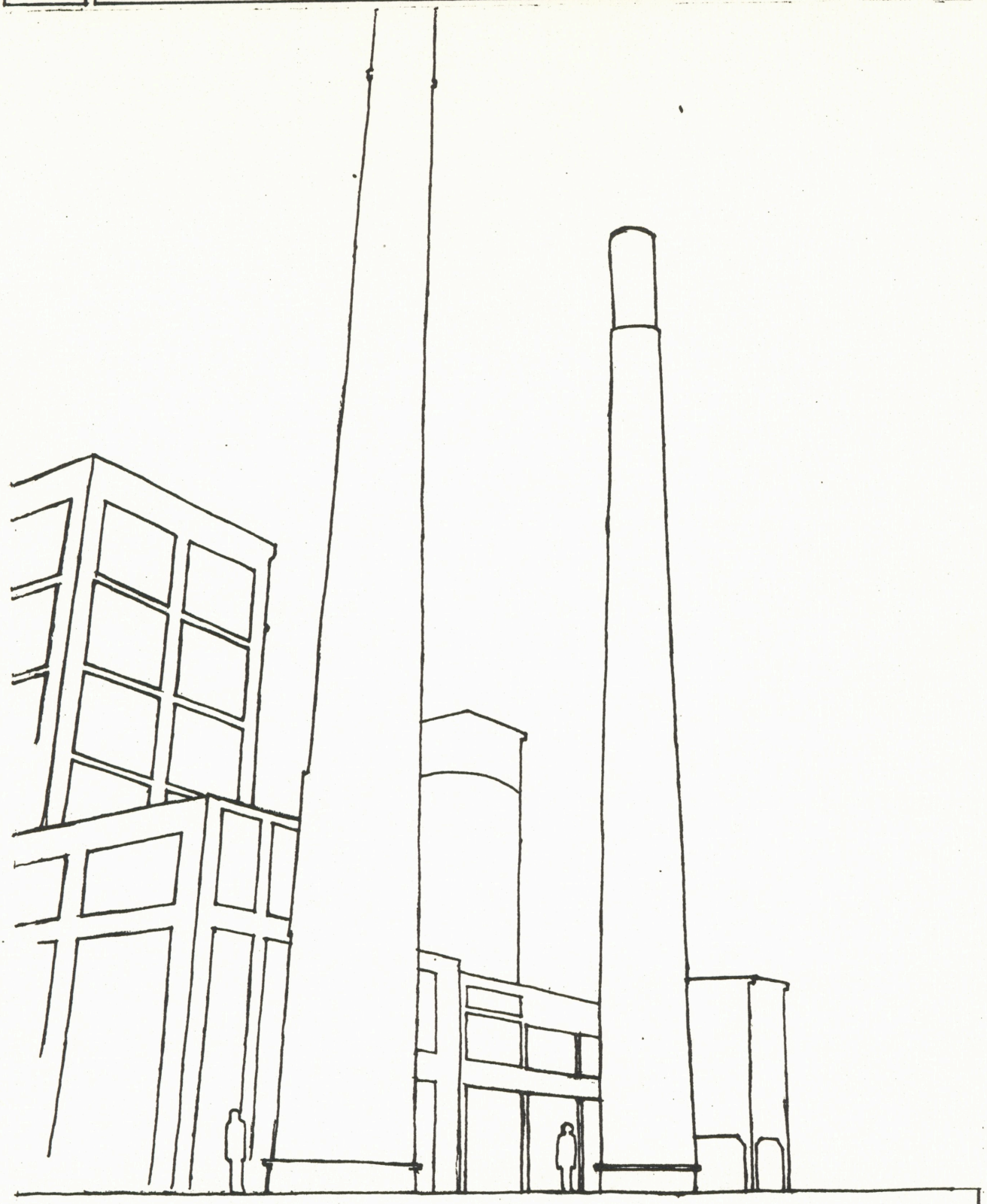
Scale is psychological and visual. One can feel quite uncomfortable in an environment with an insensitive scale.

There is a problem dealing with an uncomfortable scale on the site. There is a large, seven story building and two smoke stacks on the northwest border of the site. They do not introduce a shadow problem, but give the site the feeling of being overwhelmed. One must be careful when placing a smaller building on the site as this new construction should be sympathetic to the scale problem.

A possible answer to this scale problem may come to a building that helps lessen the impact of scale from the large warehouse.

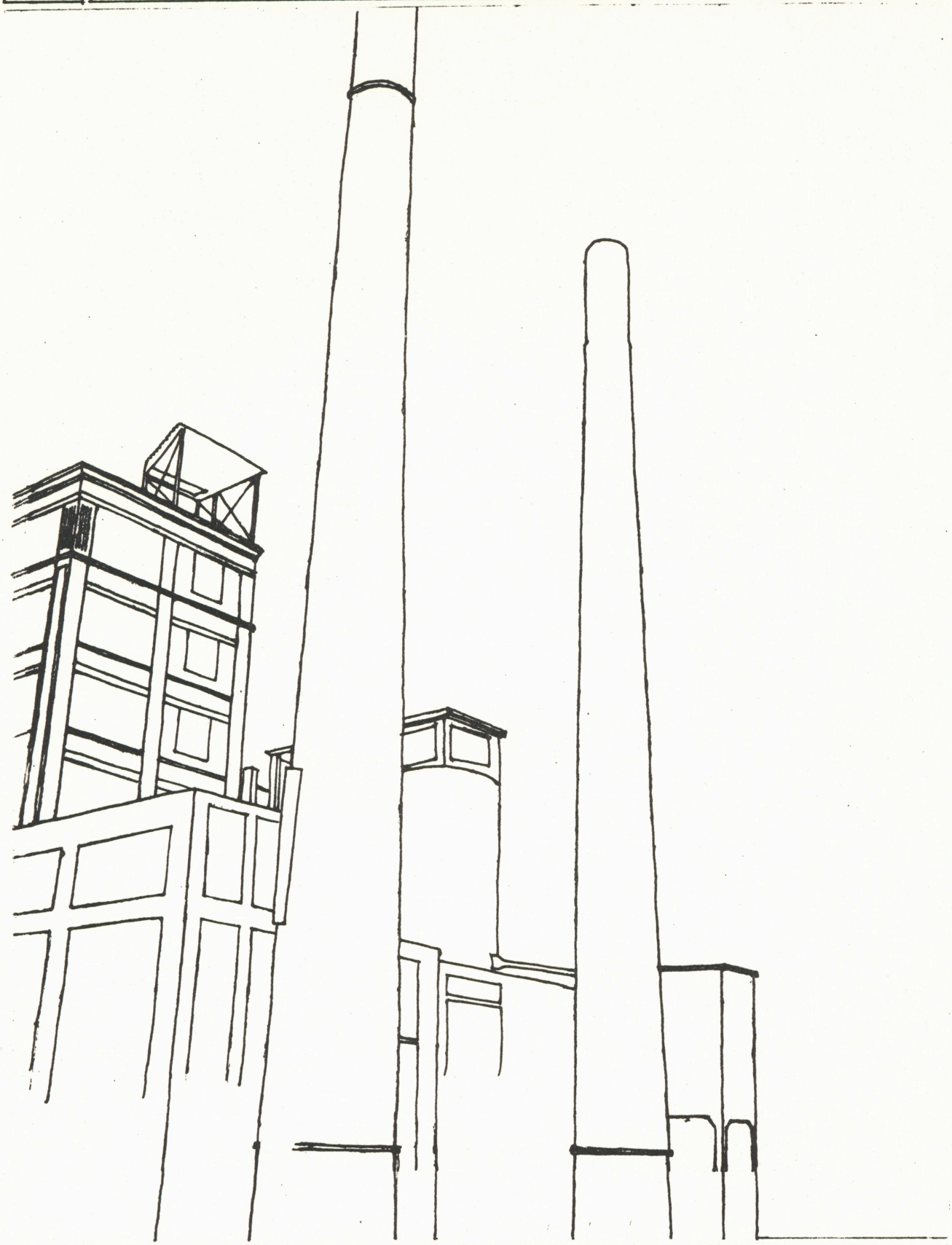
83

scale of building and human



84

warehouse and smoke stacks



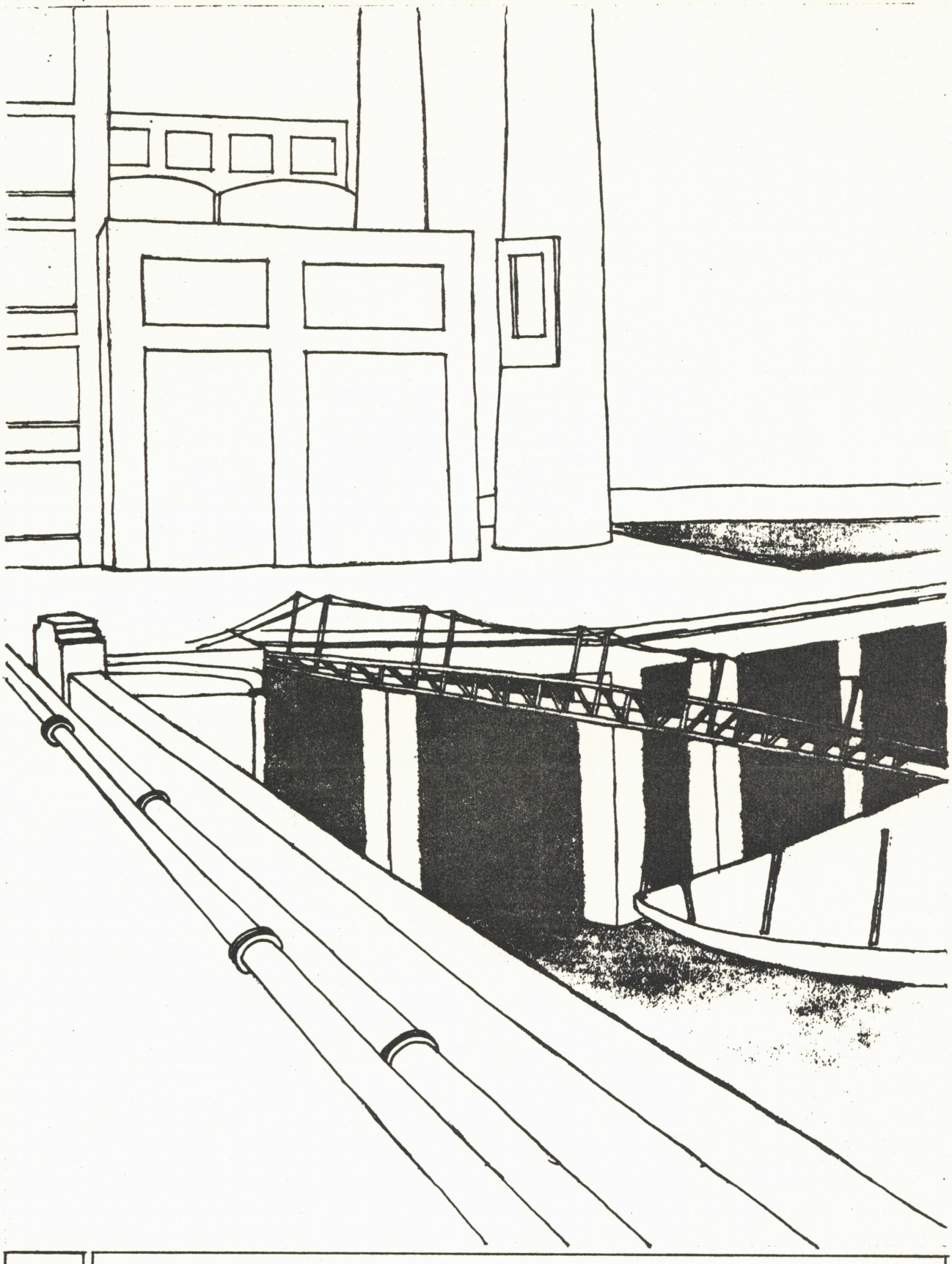
Change of level

Change of level could be defined as a vertical distance between two or more horizontal surfaces. These surfaces, or planes, could differ as little as an inch or more than many feet.

Level change can be used in a design many ways to bring interest. It can provide contrast and allow space to flow between levels. Level change can be interesting on a physical and visual standpoint. Even if one did not actually circulate from one level to another, the visual connection could provide an interesting interaction. The character of a space can be affected by level change and it can add an element of surprise. An otherwise bland space could become a rich space if it were oriented toward a level change.

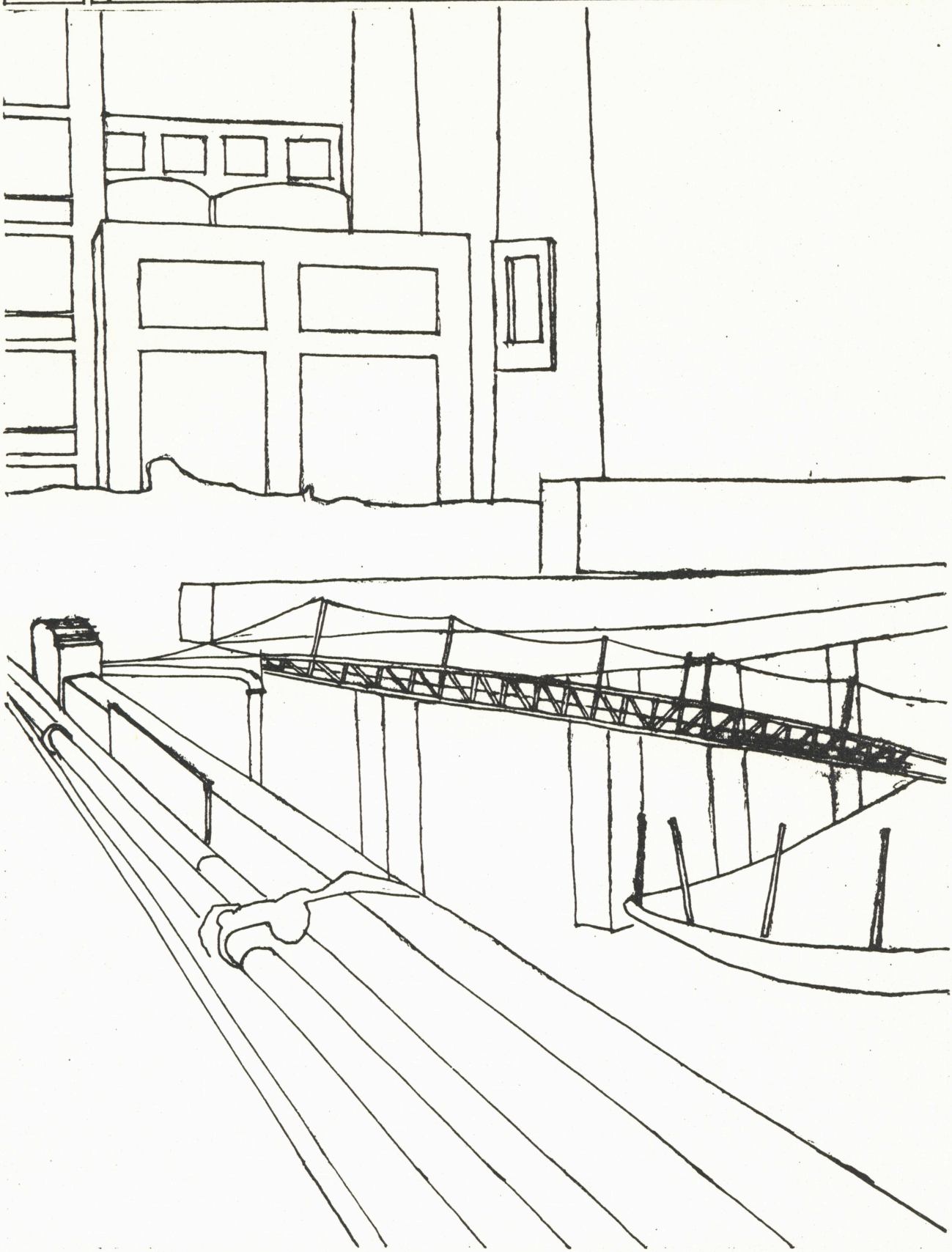
The interface between land and water provides an interesting level change on the site. This level change is always altering as the tides are constantly coming in and moving out. The level change between the dock and water moves from 4½ feet to 8½ feet. This change makes the environment very exciting and kinetic. One never knows exactly what the water level will look like. This level change defines the edge between the water and land quite well.

change of level at the water



87

pier and bulkhead



Nostalgia

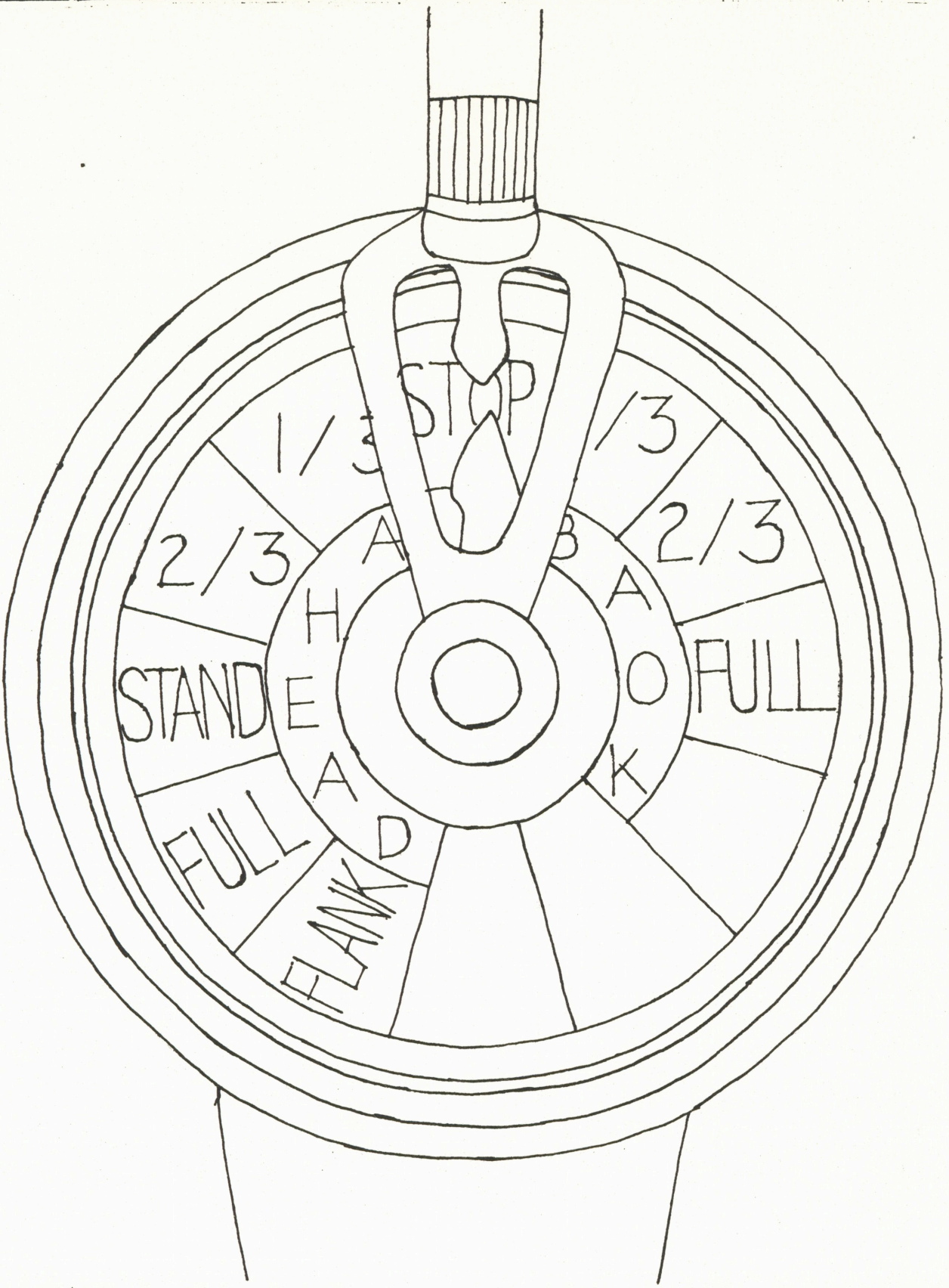
"Nostalgia is wistful or excessively sentimental and sometimes abnormal yearning for a return to or of some past period."[21] This could be expanded to become the desire to live in the lifestyle of a past period of taking part in activities and doing things in ways characterized by a past period. Sometimes, people are nostalgic for the styles and simpler technology of the past.

Nostalgia should be considered when planning for any group of people with a romantic past. Harbor pilots have a romantic, colorful past. Their history, including physical objects like schooners and events, like the pilots' participation in America Cupraces, is exciting. Their history could be illustrated by bringing part of it to the present. The recognition of the past could be made interesting by comparing and contrasting the new and the old.

The introduction of nostalgia in my project could occur near the water by introducing a type of vessel typical of the pre 1890's, such as a sailing boat or a yawl. If a sailing school were incorporated in the project, images of the past would be part of the present day.

Nostalgia and nostalgic experiences can be very emotional and exciting. These experiences can add to a site or building. A physical reminder - a sign or symbol - of the past could be introduced and fitted into the program. They could be functional or decorative.

ship's telegraph



Water

Water, a fluid substance that covers 70 per cent of the earth, is alone not very exciting. However, when water collects in large bodies, it takes on very romantic qualities. Large bodies of water are uninhabitable and hostile to man. Man must build his own environment on water to endure. Vessels are built to support man when he is on or under water, but life is still not easy. Occupations that take place on ships on or under water have always had very romantic associations.

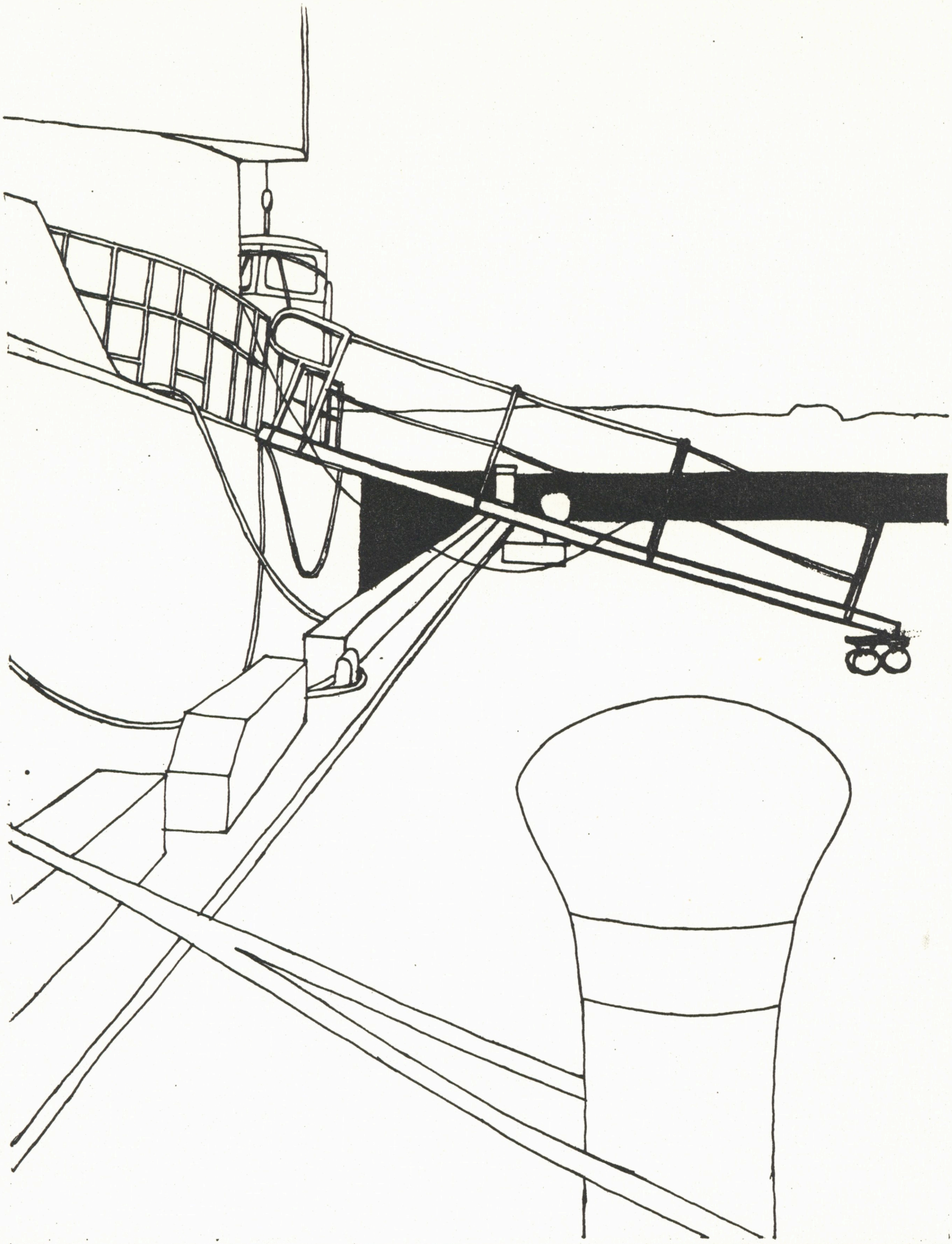
Water is an extremely important design consideration when one is designing an environment adjacent to the largest port in the world. Also, it is important when designing for a group of people who make their living on the water. One must consider the transition between water and land. This interface is quite important as water forms an edge to the site. "This edge, where water meets land is one of the largest psychological contrasts to man."[22]

The waterfront dominates the site. The eastern part of the site has a direct view of the water. The weather, generated by the water, dominates the site.

The edge between land and water should be very well defined, almost celebrated. The water should be able to be viewed, and should be taken advantage of by planning water related activities adjacent to it.

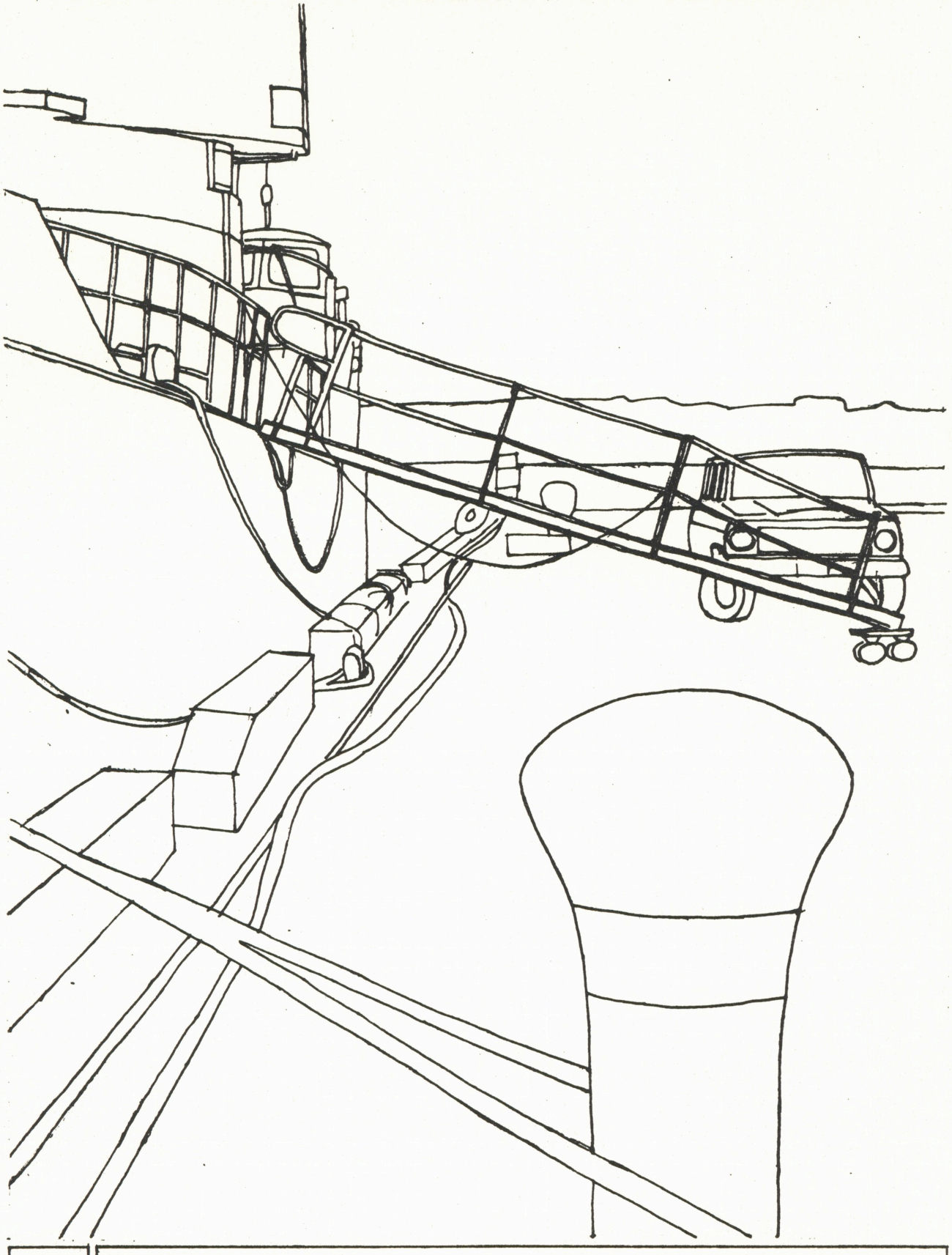
91

water



92

pilot boat at dock



Place

"Place is one's physical surroundings or atmosphere."[23] A place needs location. It could be any position or landmark. Place also needs a space. This space is a container, an area inwhich encloses place. The space could be strongly or loosely defined; it must be bounded by something, be it a wall or another type of space, such as water. Place needs a feeling or character. This feeling sets a space apart from other places and is the essence of a place. Feeling defines the quality of place and gives an idea of what type of function that a space has. All places have a function or use. The use may or may not be related to man.

The character and function of a place should reflect the user, and the location and space should reflect the site. Place would be the total of the site and its users.

The spatial and locational aspects of place are well defined on the site. The aspect of character of the site and the users must be dealt with in the design.

Silhouette

Silhouette is an outline or profile of a body which defines the shape of mass. No detail is shown within the outline of the body. Only the shape of the mass is involved in silhouette. All objects possess a silhouette.

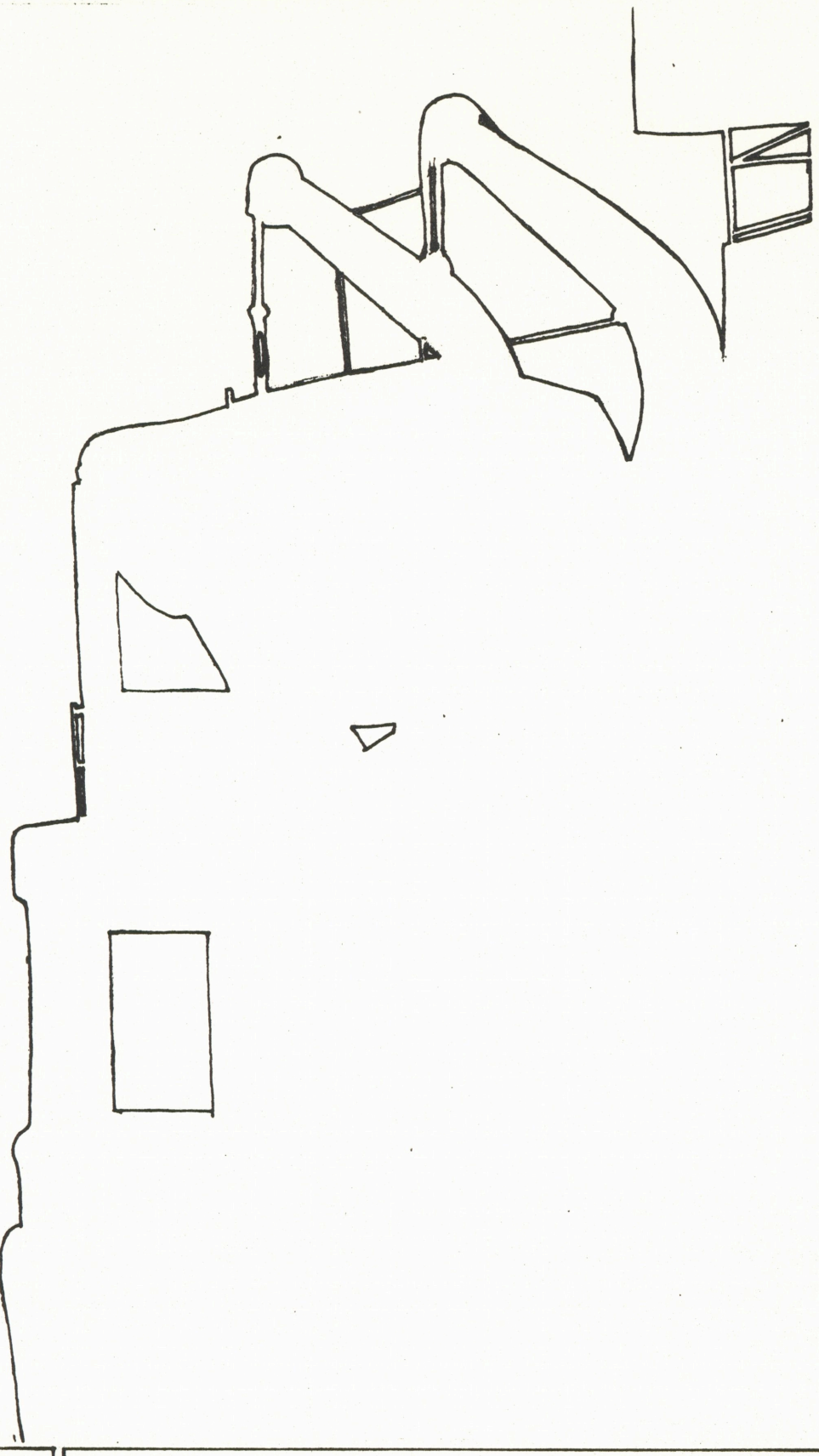
Silhouettes can be of anything. Skylines are very pronounced forms of silhouettes. The public is the most familiar with this type of silhouette. In many cases, a skyline can be quite dramatic, providing contrast of the dark buildings against the lighter sky at dawn and dusk. Ships have very pronounced silhouettes. Ship silhouettes and skylines are used by mariners to navigate in a harbor at night and along a coastline before the age of instruments.

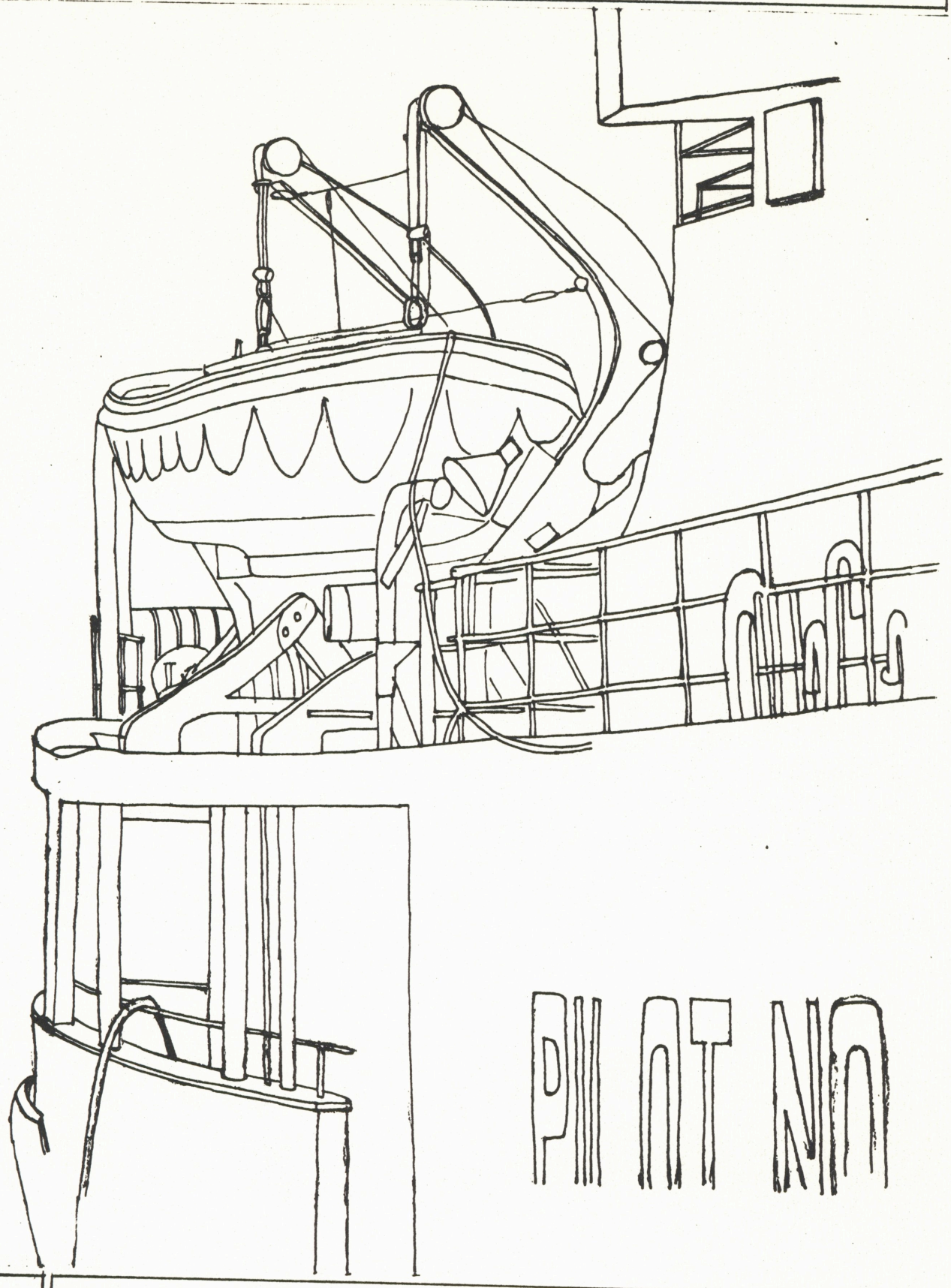
Many ships, especially sailing ships, have very interesting silhouettes. Interesting shapes are generated from the masts, booms, lines, sails, and rope ladders.

Silhouettes are everywhere on the site. As one looks out across the water, they can see a silhouette of the Verrazano - Narrows Bridge, the Brooklyn and Manhatten skylines, the Statue of Liberty, and the many ships that pass by. As one looks inland from the site, there is also an interesting silhouette of the skyline focusing on a church. All of these silhouettes should be focused upon. The new building, the sailaboats, and pilot boats will add to the site by their interesting silhouettes.

95

silhouette of boat

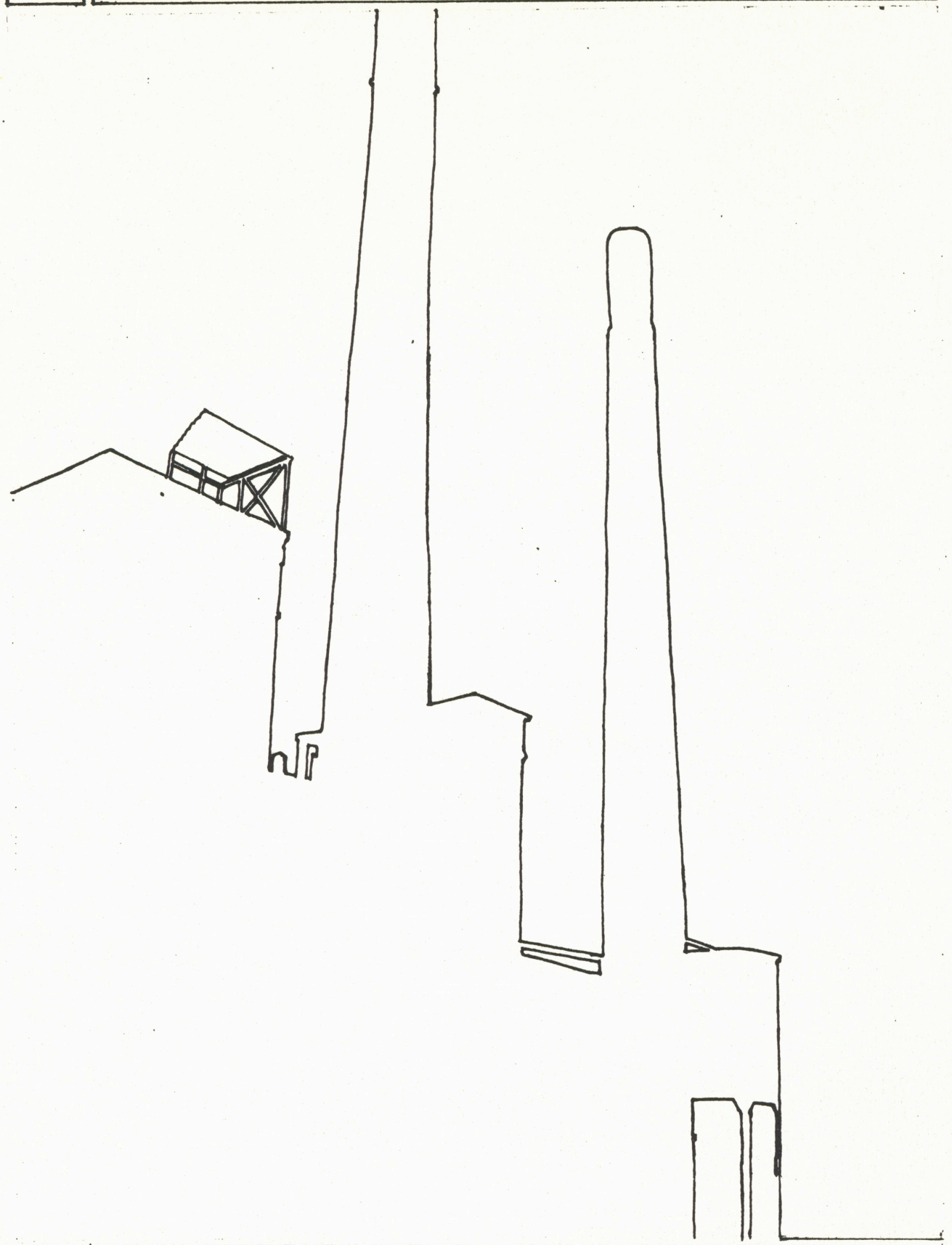




PILOT NO

97

silhouette of smoke stacks



Infinity

"Infinity is an unlimited amount of time, space or quantity."[24] It is boundless vast and never ending. A line or plane is infinite as it projects forever, without an end.

The ocean and the sky could be considered infinite. They are infinite as they are bigger than most people can conceive. The sky is an extension of the heavens. The finite harbor offers protection and safety from the harsh infinite ocean. The Verrazano-Narrows Bridge represents the beginning of the infinite ocean. The bridge could be called a "gateway to infinity."

Pilots bring ships into the harbor from the ocean. This is a transition from a bounless environment to a restricted environment. Pilots spend much of their time in a boundless, infinite environment at the pilot station, located 10 miles out at sea.

The harbor is not infinite. The sky is the only part of the site that is infinite. The Verrazano Bridge, noticeable from the site, is a symbol of the beginning of infinity.

The building should be a point of haven and protection. It should be a finite point.

infinity



View

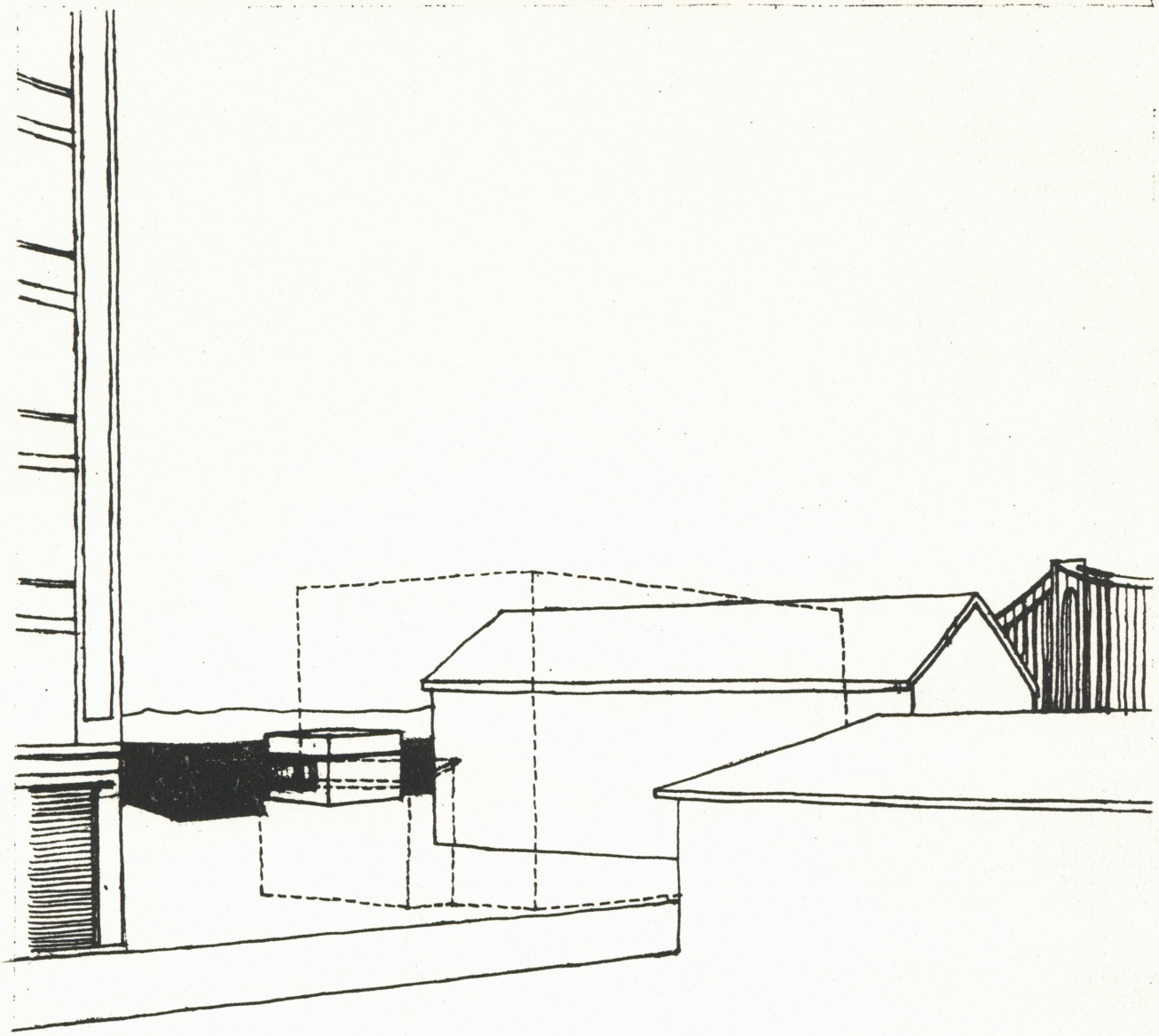
"View is a scene or perceiving a scene."[25] One looks at a view. A view can do many things. It creates a sense of locality, as one knows his location by the view. One can learn about his relationships to surrounding areas through views. A good view can provide an attractive backdrop. Water is a view that is usually sought after as it is usually a pleasant sight. View links man with his environment. Man then becomes more a part of his surroundings and learns about the world in which he is part.

A view of the harbor gives mariners a better link with their marine environment. The harbor is a very dynamic place in terms of view. The view is always changing as ships sail, weather changes, and the position of the sun changes. View dominates the site and is one of the more positive aspects of the site. There is a good view of the harbor well back into the site and should be capitalized upon to the maximum. The people should feel connected to the water, the port, and the ocean through view.

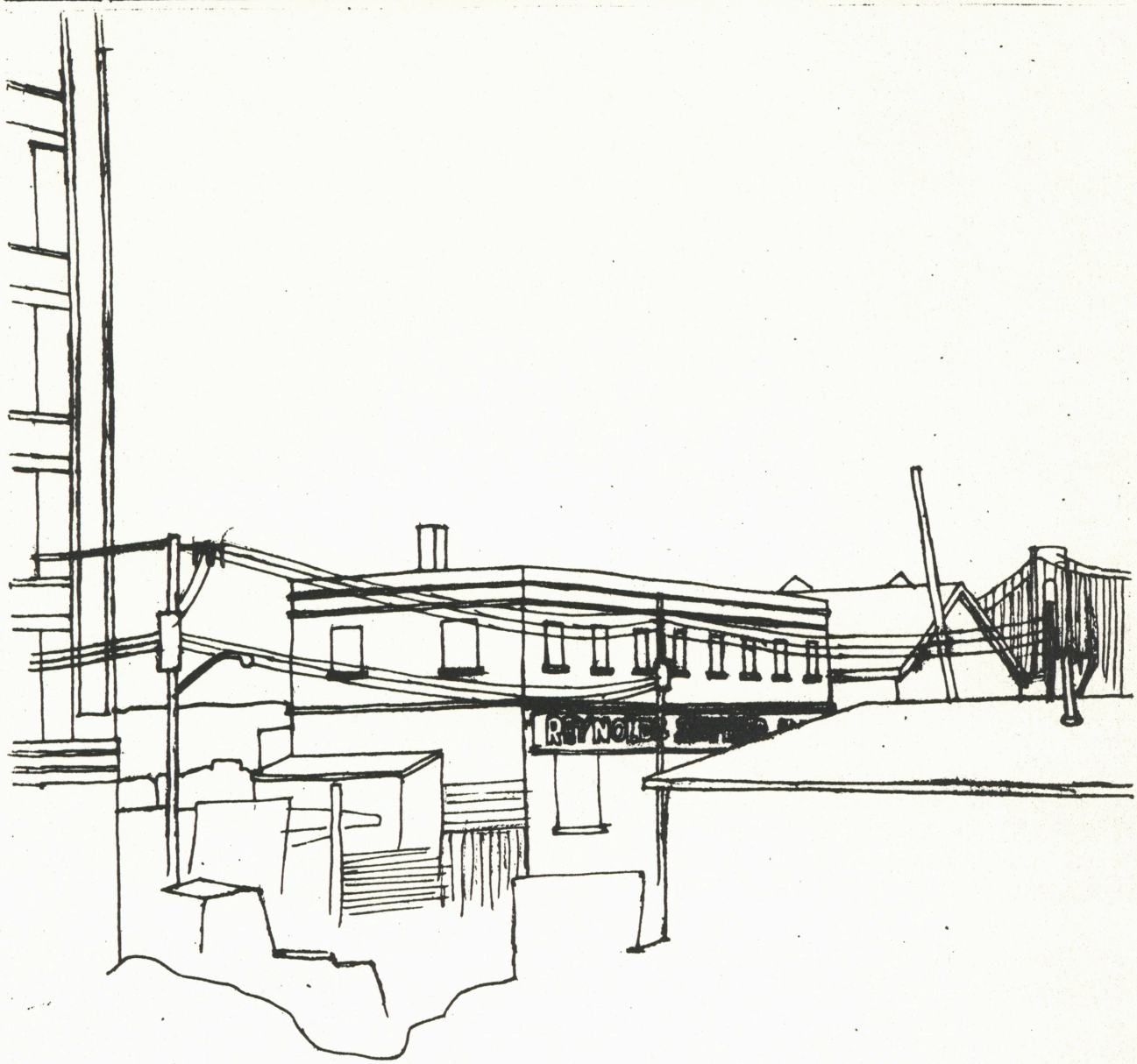
The building and site design should be oriented towards the good views.

101

view of water and bridge



site and bridge



103 Exposure

Exposure, a condition of being subjected to the elements, evokes a feeling for a need of protection. One is vulnerable to climate and weather when they are exposed. The sky and the sea can make one feel exposed. They are both large bodies over which people have no control. Exposure has certain psychological effects on people. It can make people feel intimidated, overwhelmed, and helpless. Exposure can have positive effects, making people feel more intimate with nature.

The sea generates the feeling of exposure quite well with the salt spray, waves, and wind. Any maritime environment has an aire of exposure. In this era of technology, exposure to the elements is more psychological than physical. Buildings protect people from the elements quite sufficiently.

Exposure is an important consideration in the design of a maritime facility on a shoreline. Once could feel extremely exposed when they are on the bay. A building should give a feeling of protection from the elements. It should also be a sign or symbol of protection.

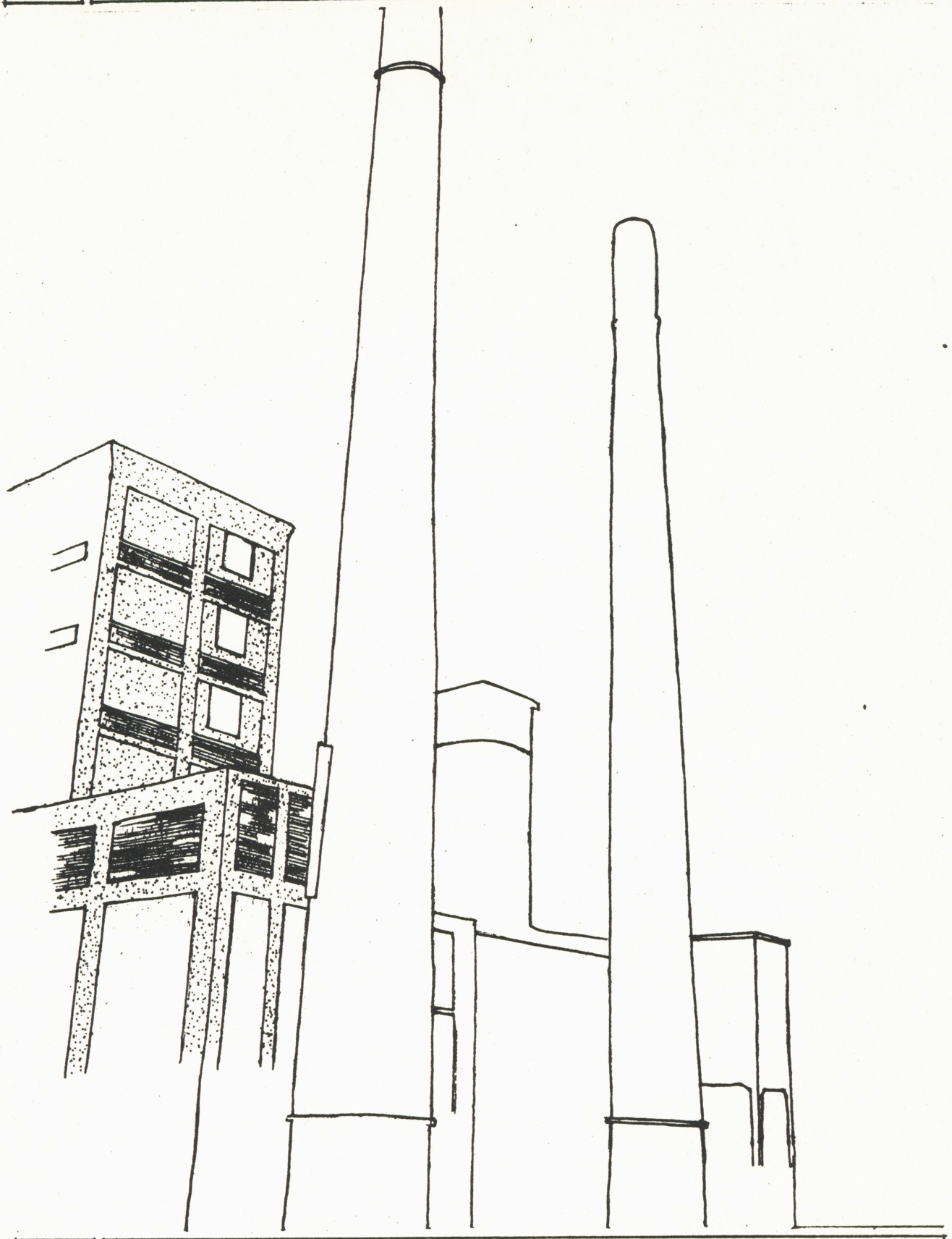
Texture

"Texture is a surface characteristic which can be tactile or visual."[26] Texture is experienced visually most of the time. It is generated by a material or combination of materials. Mood or character can be generated by texture. Texture can give space scale. A material like brick conveys scale better than concrete because a brick wall is made up of many small units, each of these units has a comprehendible size. Textures are everywhere giving spaces character. An exciting design has many different textures. Rougher textures or textures with relief generate warmer spaces. Materials with very slick surfaces result in cooler spaces. Contrast could be created by combining warm and cool textures. Wood and concrete are warm and cool textures respectively, their use together could generate an interesting contrast.

The site has many different textures, both warm and cold. The brick is a warmer texture, as are the trees and other vegetation. Cooler textures consist of the concrete and corrugated steel. The sum total of their character generates the character of the site. Some of the elements on the site have a very pronounced texture. The brick of the lower building and the smoke stacks have a very pronounced texture which gives some warmth to the site.

Much could be added to the area by introducing different textures, some warm and some cold. New textures could be added to the old and could result in some interesting contrasts. Using texture effectively has the potential to generate a rich environment.

105 texture of warehouse



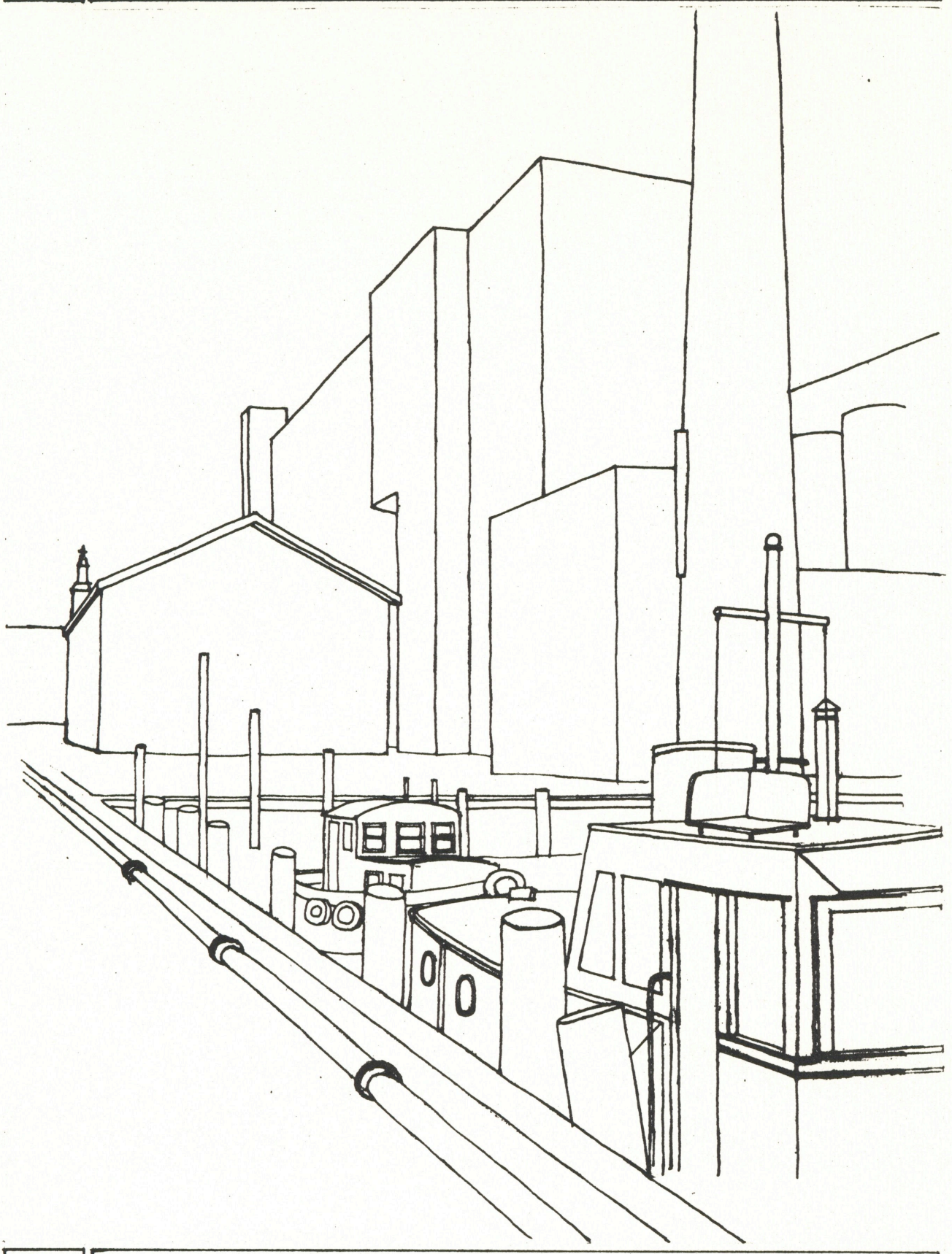
106 Floating vessels

Floating vessels, made up of launches, ships, and barges, dominate the waterfront both functionally and visually. The harbor has been commercially oriented to marine activities for 250 years, and the site has also been marine oriented for 70 years. The site is on the harbor, and a ship passes by the site every 15 minutes.

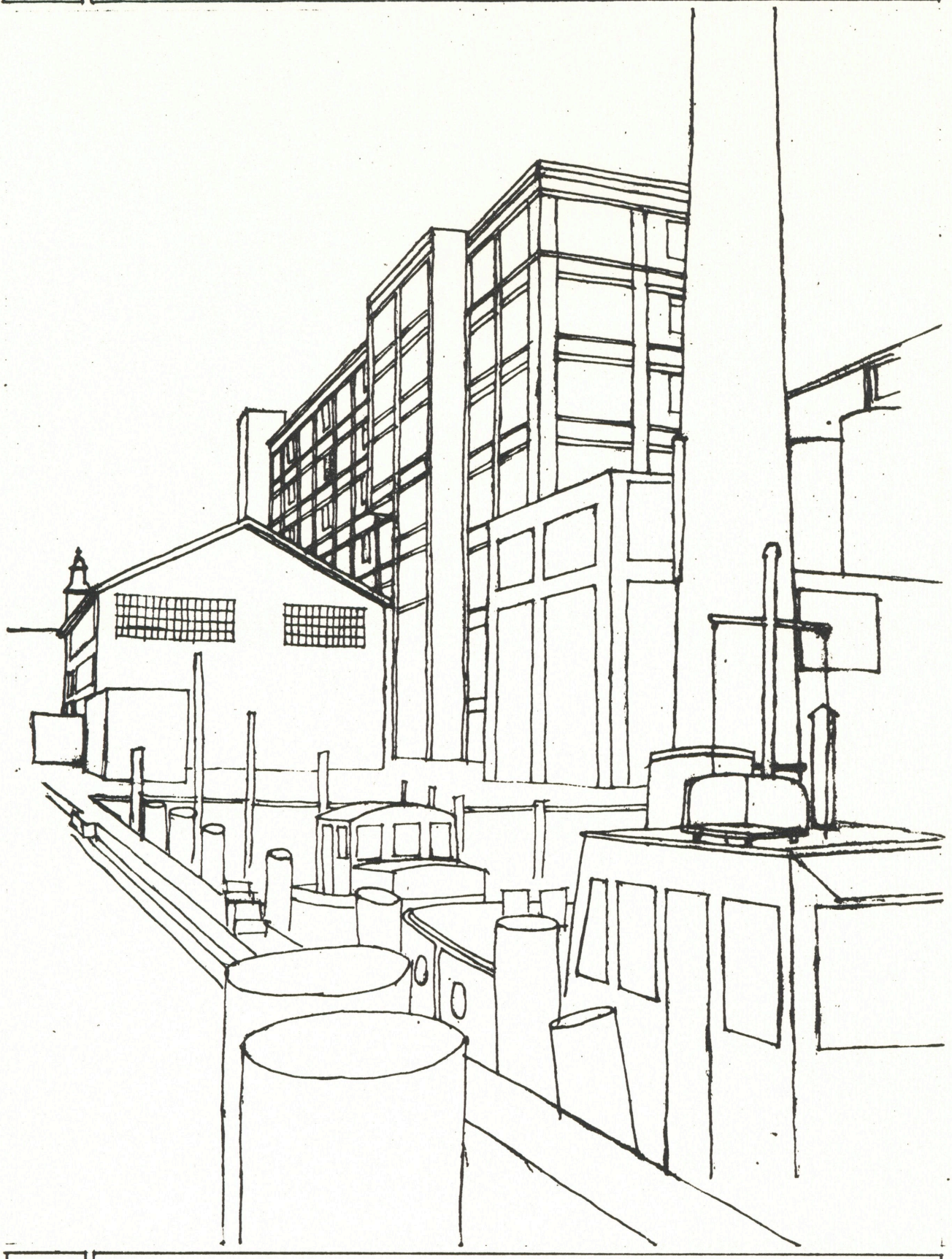
The site will be a support facility for the pilots on land. Pilots will depart from the site to meet ships and guide them in and out of port. The site will have facilities to dock ships and to house backup services.

107

floating vessels at dock



site and boats



Detail

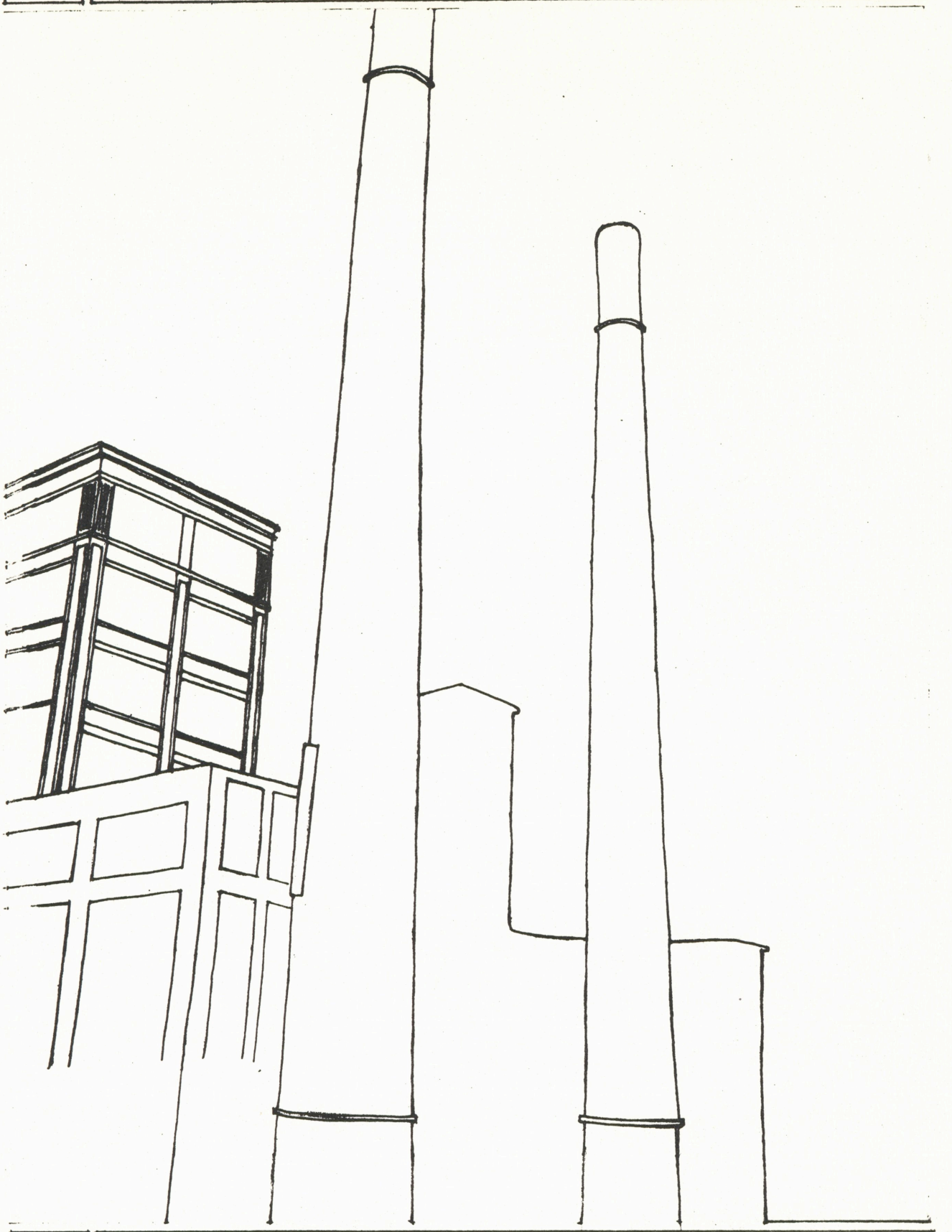
"Detail is the extended treatment or attention to particular items. It is a small part of the whole or a subordinate part."[27]

Detail, in the built environment, is the way small parts of buildings fit together to make entire buildings. Detail affects the quality of a building, its appearance, and its feeling. The type of building and its character should be partly set by detail. This can be done by material selection and the way materials fit together.

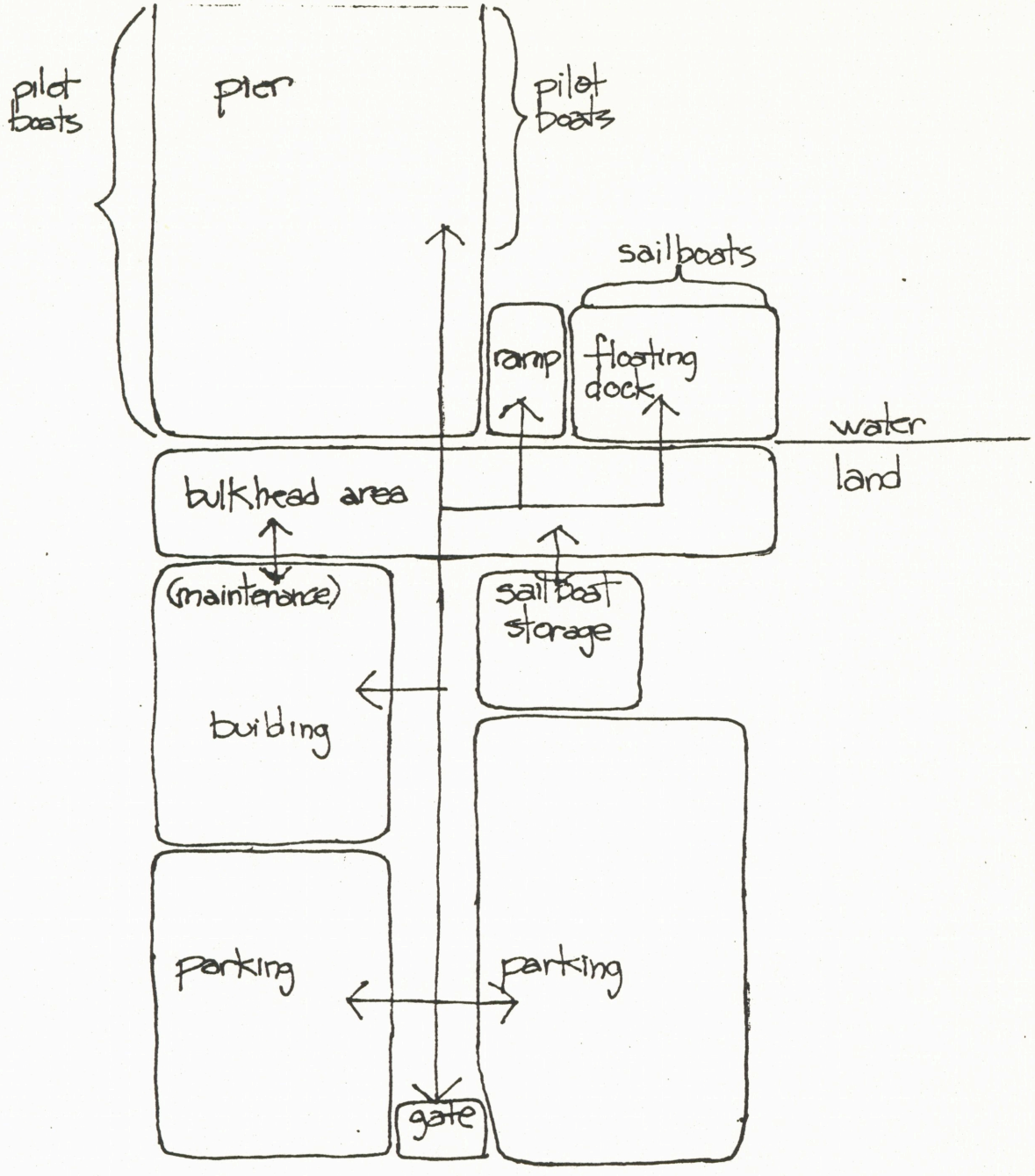
The building that I am going to design should reflect both marine and terrestrial environment. Details that typify these two areas could be used. Details of ships could be used to reflect the marine aspect of the complex. The terrestrial aspect would be shown by using detail from buildings. The two could be combined showing that the facility is a gateway to the water, or a transition point from land to water.

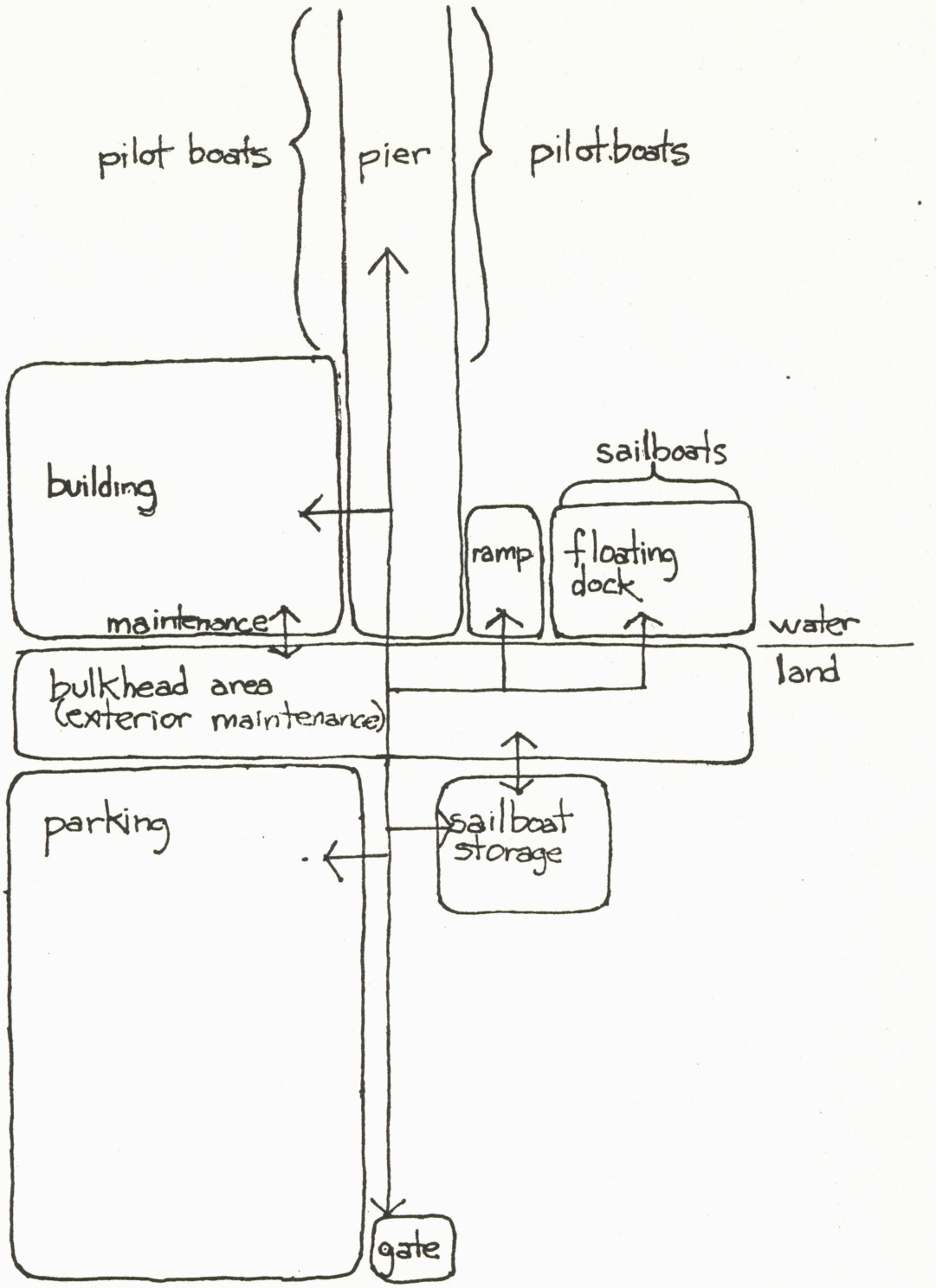
110

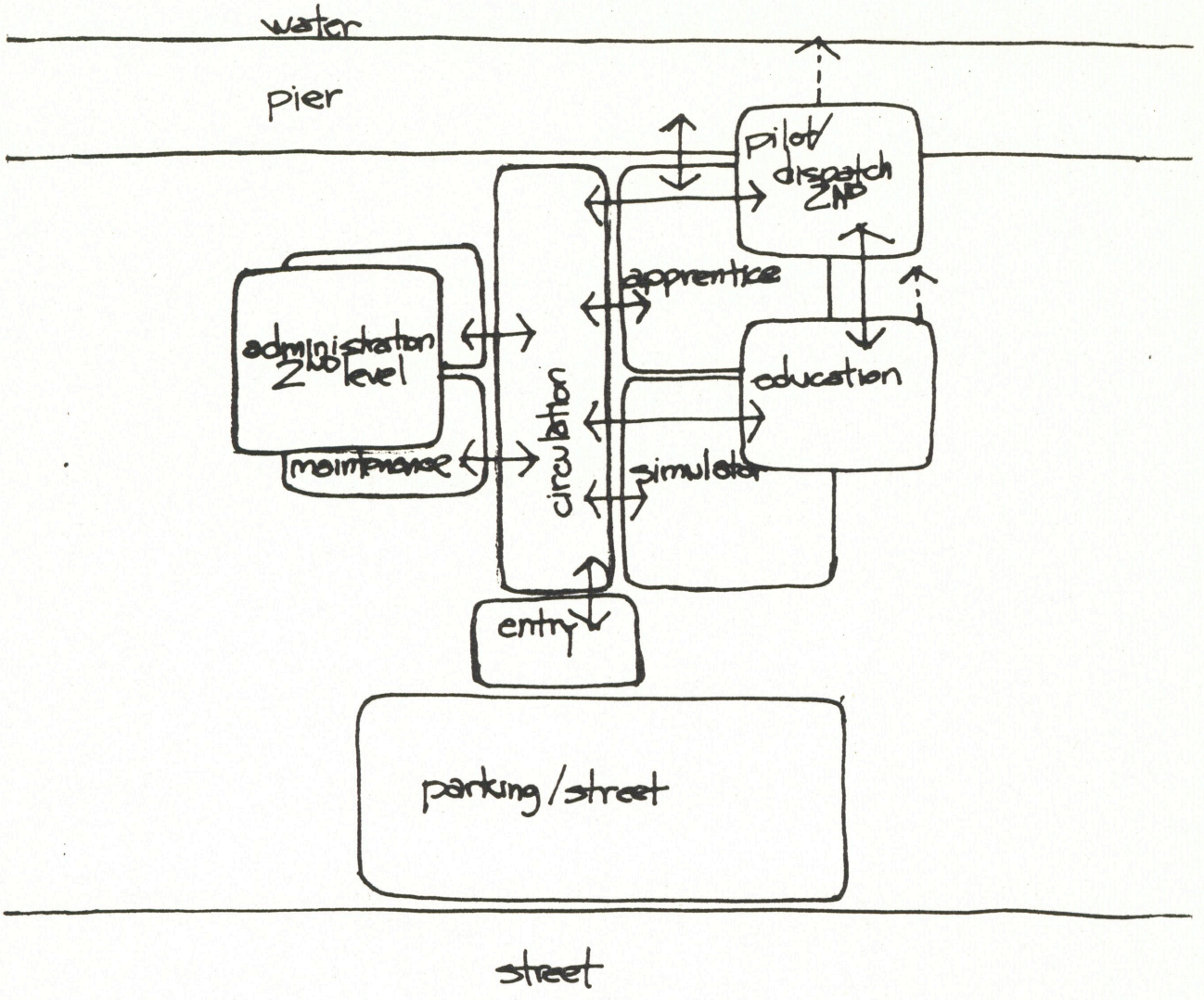
detail of warehouse



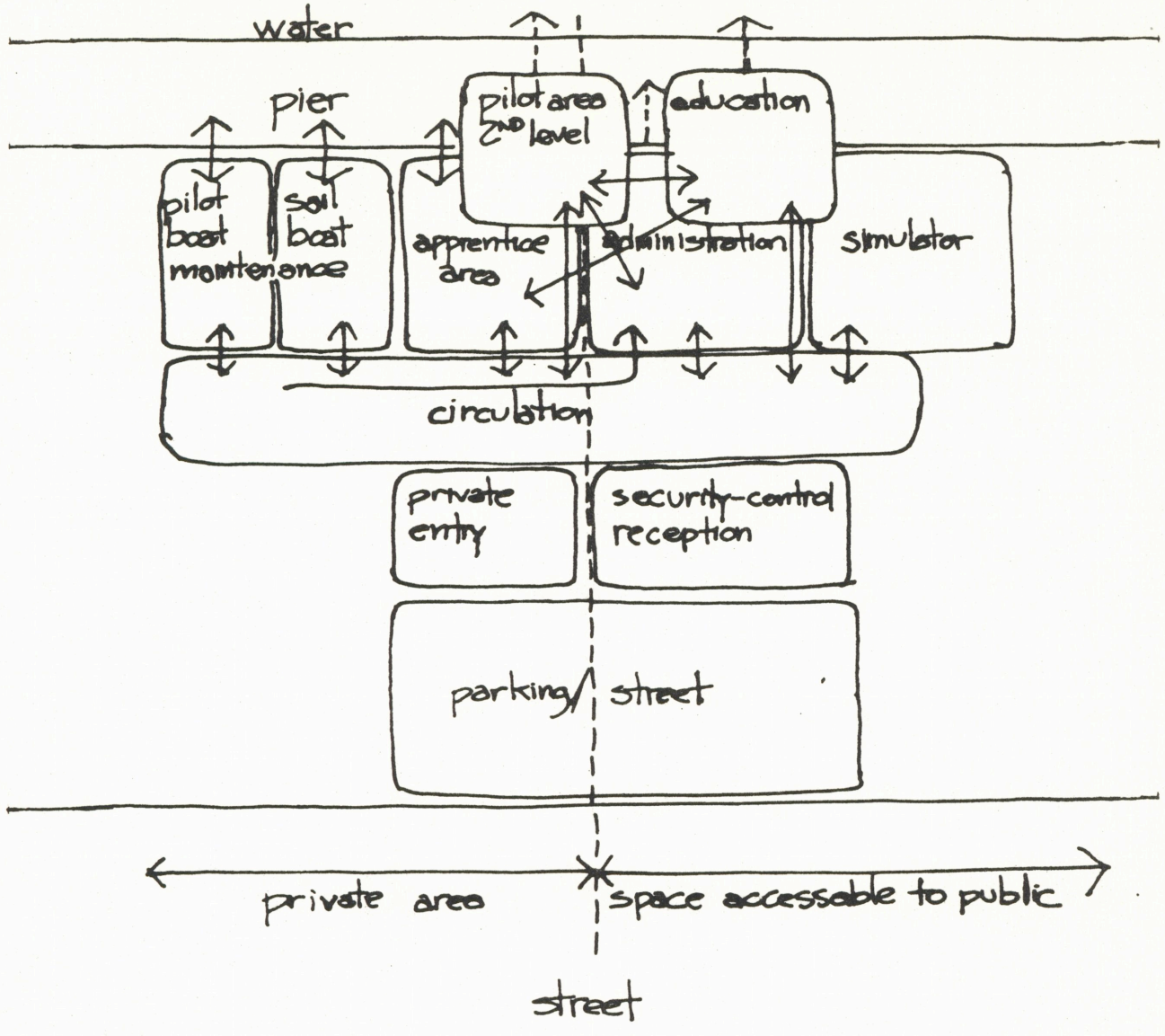
12 CONCEPTUAL CONSIDERATIONS


pilot boats
pier
pilot boats
sailboats
ramp
floating dock
water
land
bulkhead area
(maintenance)
sailboat storage
building
parking
parking
gate

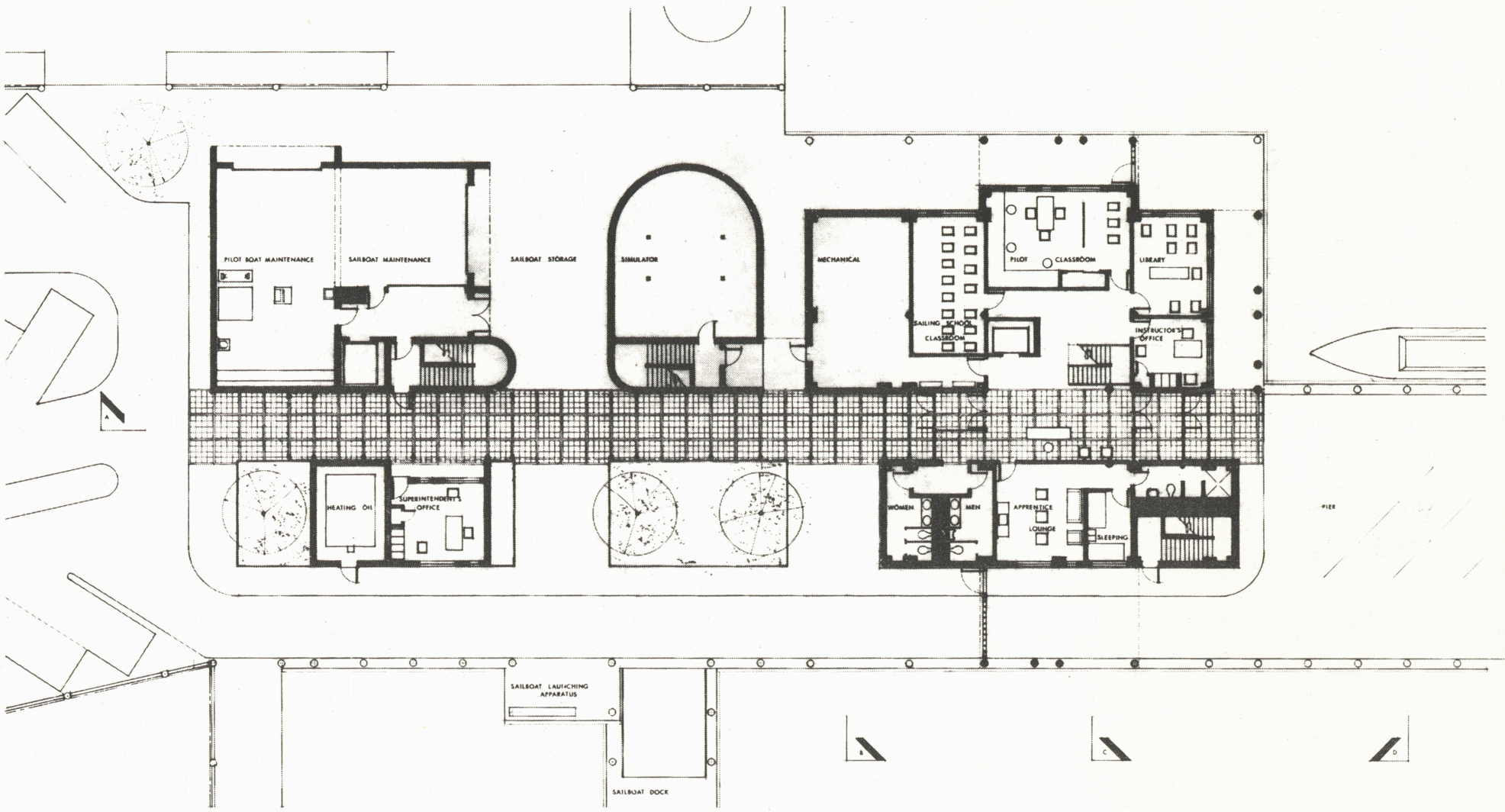

pilot boats
pier
pilot boats
building
sailboats
ramp
floating dock
maintenance
water
land
bulkhead area (exterior maintenance)
parking
sailboat storage
gate


water
pier
pilot/
dispatch
2ND
apprentice
administration
2ND level
education
circulation
maintenance
simulator
entry
parking/street
street

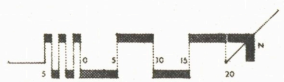
conceptual interior layout

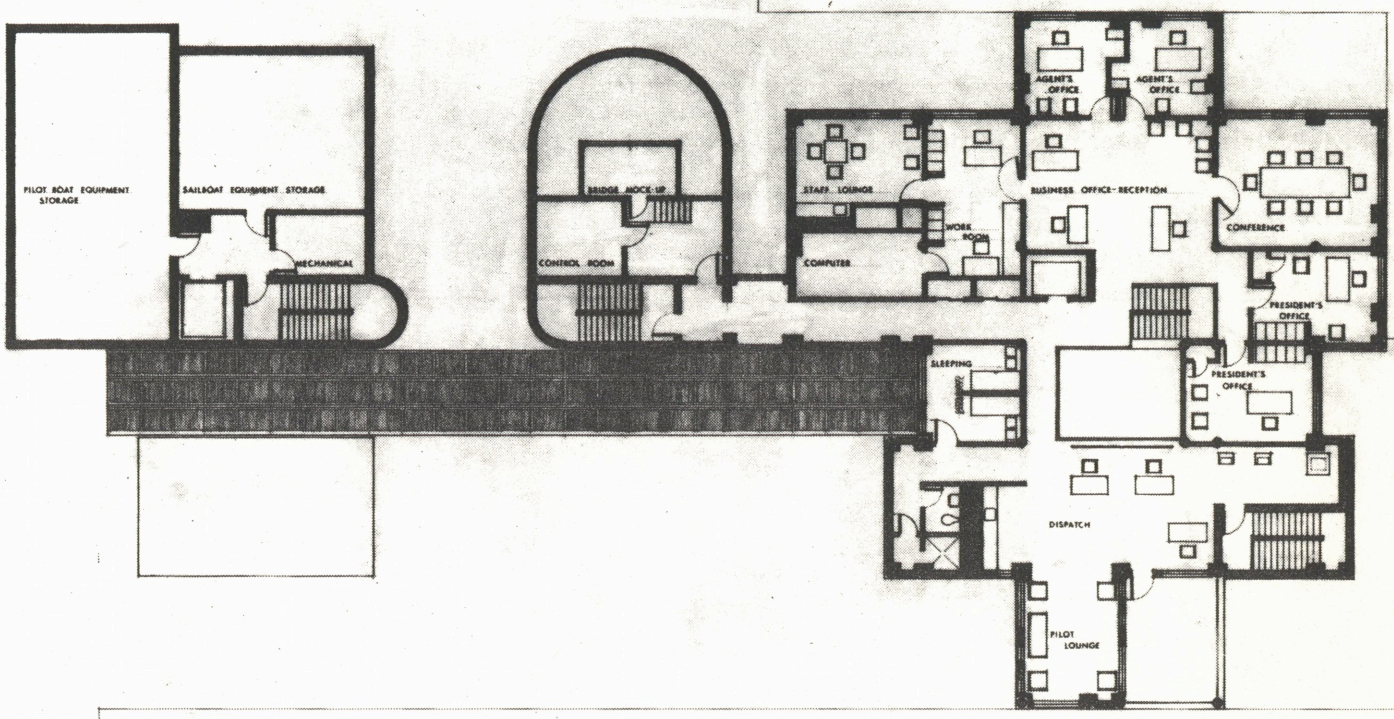


13 THE DESIGN

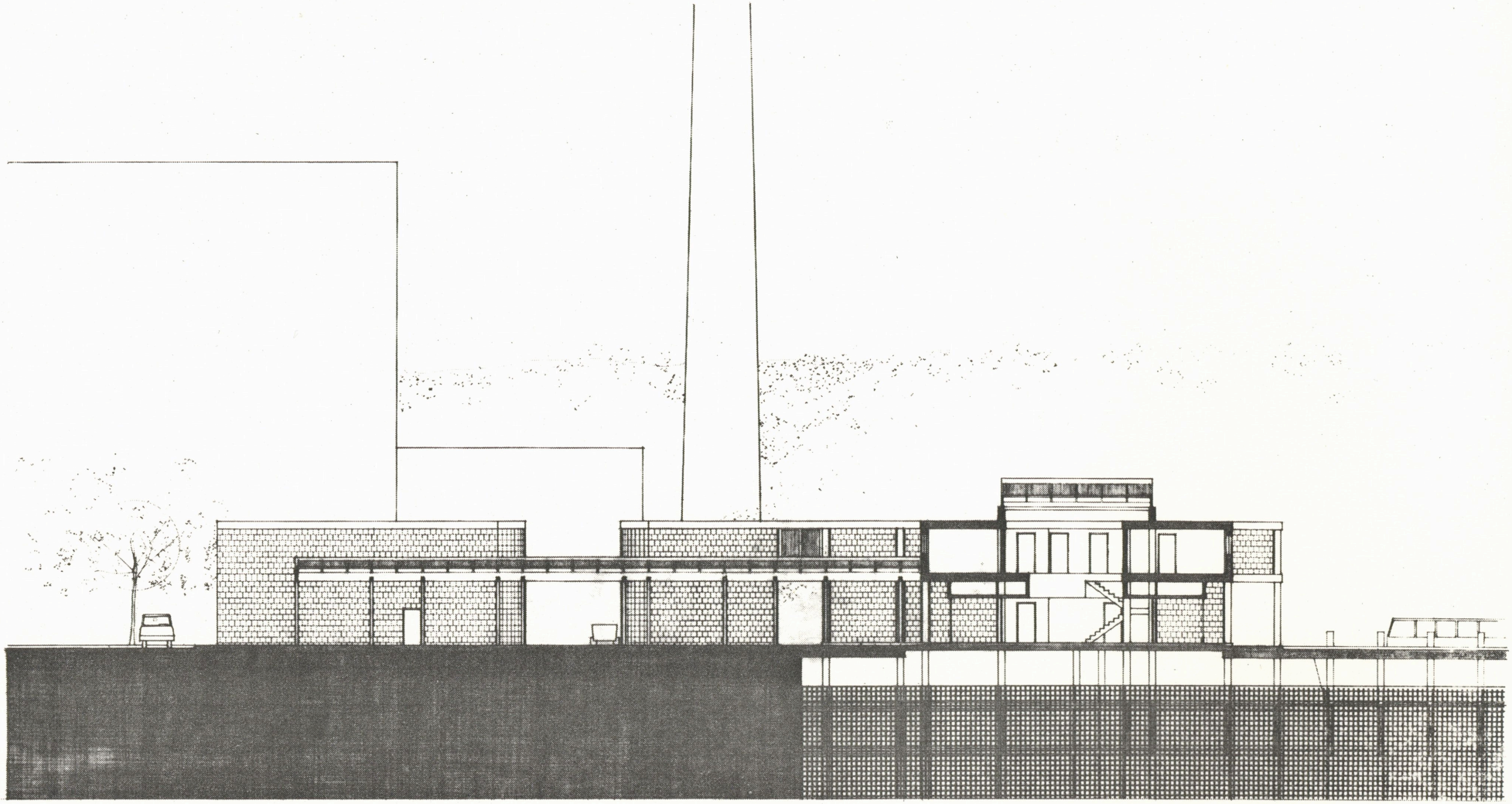


GROUND LEVEL

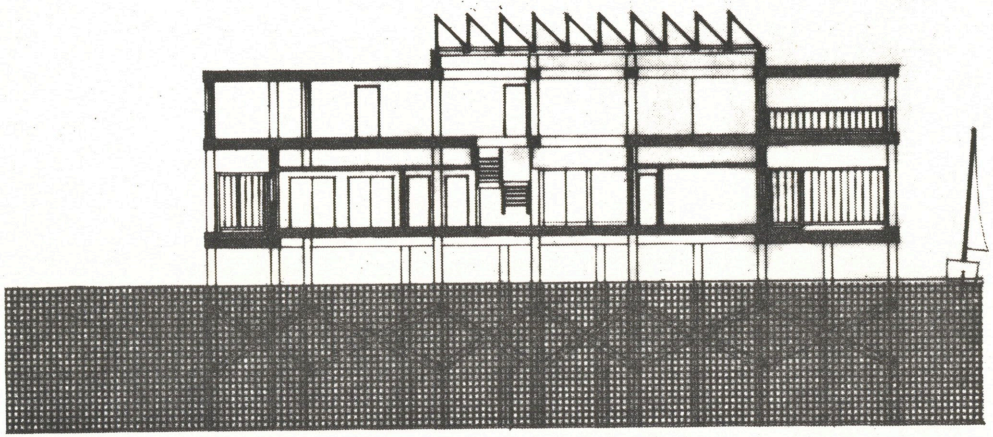



PILOT BOAT EQUIPMENT STORAGE
SAILBOAT EQUIPMENT STORAGE
MECHANICAL
BRIDGE MOCK-UP
CONTROL ROOM
STAFF LOUNGE
COMPUTER
WORK ROOM
AGENT'S OFFICE
AGENT'S OFFICE
BUSINESS OFFICE-RECEPTION
CONFERENCE
PRESIDENT'S OFFICE
PRESIDENT'S OFFICE
SLEEPING
DISPATCH
PILOT LOUNGE

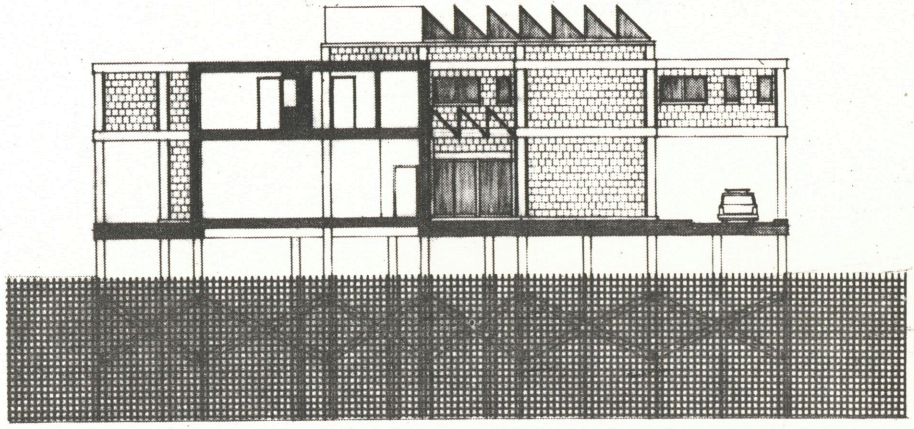
UPPER LEVEL



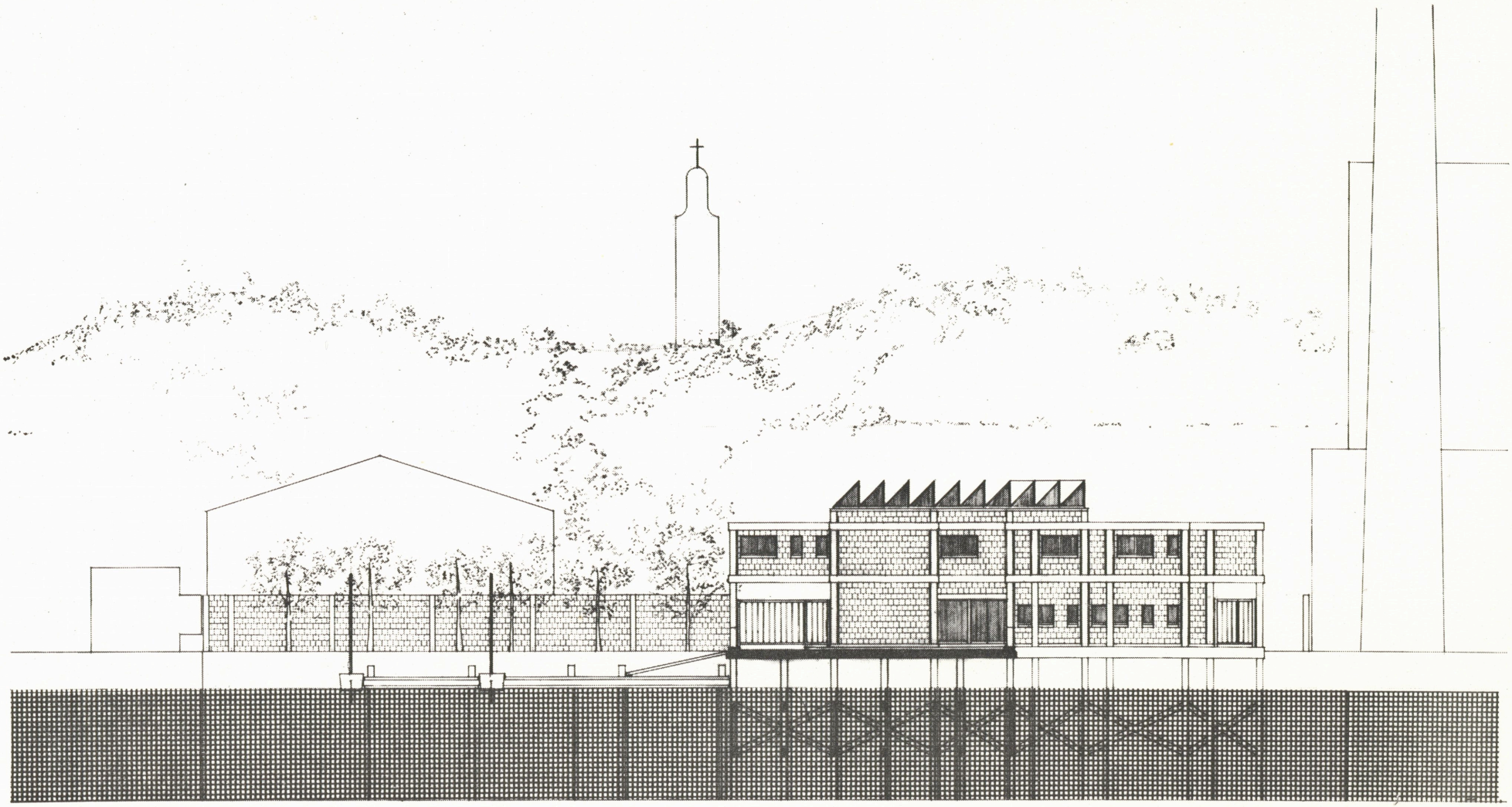
A-A southeast elevation



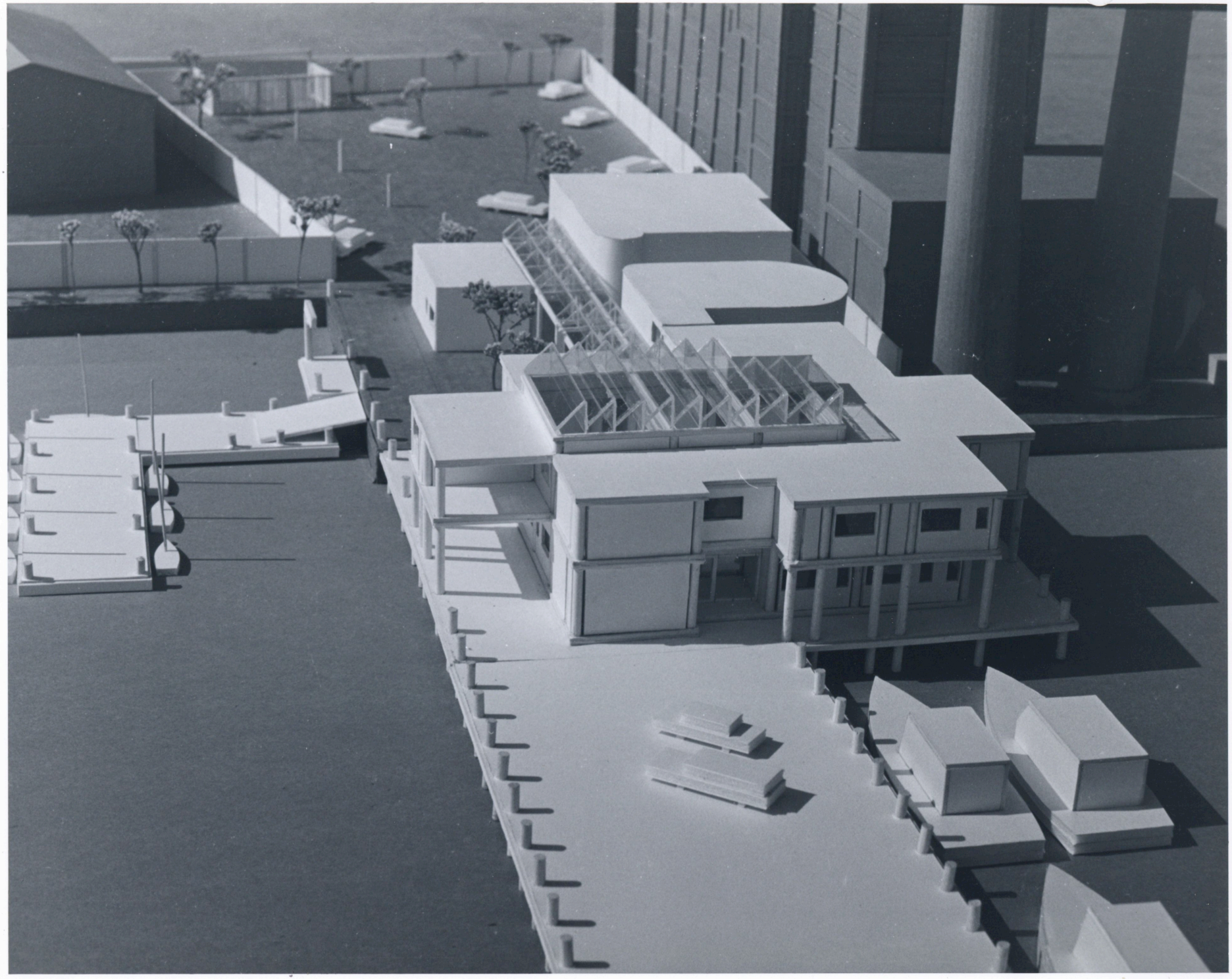
B-B



C-C southwest elevation



D-D northeast elevation



14 SOURCES

Footnotes

[1]William Wertenbaker, "A Reporter at Large - the Sandy Hook Pilots", The New Yorker, Sept. 14, 1969, p. 158.

[2]Ibid, p. 160.

[3]Ibid, p. 164.

[4]Ibid, p. 167.

[5]Ibid, p. 167.

[6]Paul Van Wicklen, editor, "Pitch and Roll off Sandy Hook", Via Port of New York, April 1962, p. 18.

[7]Paul Van Wicklen, editor, "Thirty to One", Via Port of New York, May 1962, p. 18.

[8]Henry Steven, editor, "The Sandy Hook Pilots", Via Port of New York, August 1956, p. 4.

[9]William Wertenbaker, "A Reporter at Large - the Sandy Hook Pilots", The New Yorker, Sept. 14, 1968, p. 154.

[10]Richard Lemon, "The Lords of the Harbor". New York News Magazine, June 1973, p. 15.

[11]Lester Rosenblatt, An Unusual Little Ship: The Pilot Boat, "New York" (NY: Society of Naval Architects and Marine Engineers, 1973), p. 3.

[12]T. F. Callaghan, editor, "Sandy Hook Pilots", Master, Mate, and Pilot, Spring 1971, p. 46.

[13]Ibid, p. 46.

[14]Ibid, p. 46.

[15]Edward R. Ellis, The Epic of New York City (NY: Coward McCann, Inc., 1966), p. 5.

[16]Ibid, p. 8.

[17]Ibid, p. 52.

[18]Ibid, p. 55.

[19]Ibid, p. 159.

[20]Henry Woolf, editor, Webster's New Collegiate Dictionary (Springfield, Ma.: G. & G. Meriam Co., 1976), p. 1029.

[21]Ibid, p. 784.

[22]Gordon Cullen, The Concise Townscape (N.Y.: Van Nostrand Reinhold Co., 1980), p. 68.

[23]Henry Woolf, editor, Webster's New Collegiate Dictionary (Springfield, Ma.: G. & G. Meriam Co., 1976), p. 876.

[24]Ibid, p. 591.

[25]Ibid, p. 1304.

[26]Ibid, p. 1207.

[27]Ibid, p. 309.

Bibliography

Cullen, Gordon. The Concise Townscape. NY: Van Nostrand Reinhold Co., 1980.

Ellis, Edward R. The Epic of New York City. N.Y.: Coward McCann, Inc., 1966.

Kouwenhaven, John A. The Columbia Historical Portrait of New York. Garden City: Doubleday and Company, Inc., 1953.

Lemon, Richard, editor. "The Lords of the Harbor". New York News Magazine, June 17, 1973, pp. 14-16.

Lynch, Kevin. Site Planning. Cambridge: M.I.T. Press, 1971.

McDermott, C. J. "A Simulated Approach to Shiphandling". Surveyor, February 1975, pp. -2-27.

McHarg, Ian L. Design with Nature. Garden City: Doubleday and Company, Inc., 1971.

Mitchell, John. "Sandy Hook Pilots". World, Summer 1975, pp. 9-23.

O'Callaghan, T. F., editor. "Sandy Hook Pilots". Master, Mate, and Pilot, Spring 1971, p. 46.

Ricker, John B. "Harbor Pilot". The Compass, Fall-Winter 1975, pp. 4-11.

Russell, Charles. From Sandy Hook to 62°. N.Y.: Sandy Hook Pilots Association, 1929.

Stephen, Henry, editor. "The Sandy Hook Pilots". Via Port of New York, August 1956, pp. 2-6.

Van Wicklen, Paul, editor. "Pitch and Roll of Sandy Hook". Via Port of New York, April 1962, pp. 18-19.

Van Wicklen, Paul, editor. "Thirty to One". Via Port of New York, May 1962, pp. 18-19.

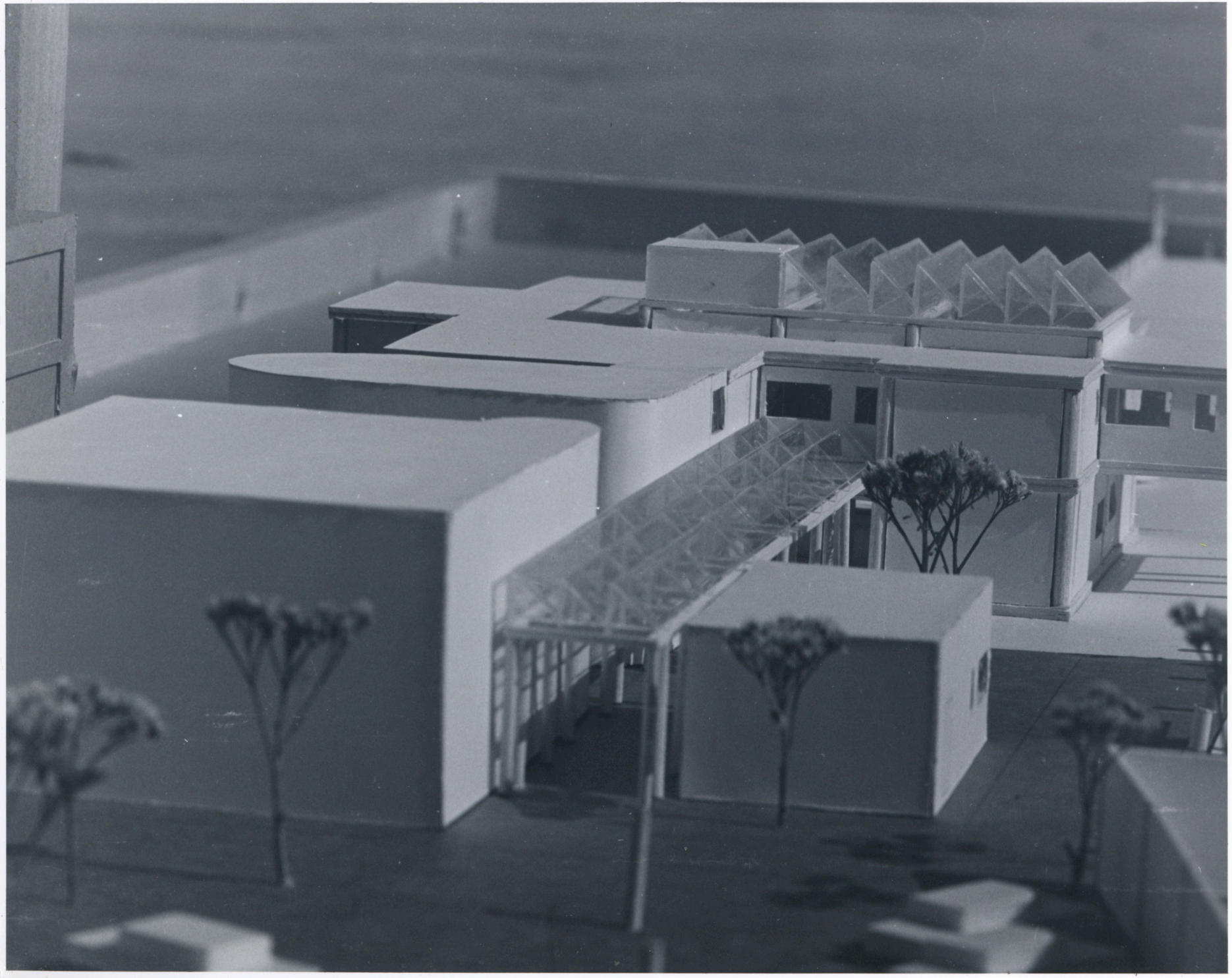
Wertenbaker, William. "A Reporter at Large - the Sandy Hook Pilots". The New Yorker, Sept. 14, 1968, pp. 135-193.

Woolf, Henry, editor. Webster's New Collegiate Dictionary. Springfield, Ma.: G. & G. Meriam Co., 1976.

Peters, Donald, architect. Edgewater, Staten Island, N.Y. Interview, March 30, 1980.

VonBreitenfeld, Harry. Sandy Hook Pilot Association, Staten Island, N.Y. Interview, December 30, 1980.

What is a Sandy Hook Pilot? New York: Sandy Hook Pilot Association.



MONTANA STATE UNIVERSITY LIBRARIES
stks 720.6.M76V891
A support facility on the Staten Island
CA
3 1762 00159176 5

[redacted]

[redacted]