THE REDEVELOPMENT OF BOSTON'S
ATLANTIC AVENUE WATERFRONT

by

Charles D. Peterson
B. Arch. University of Minnesota, 1952

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DEGREE OF MASTER IN ARCHITECTURE
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Signature of Author

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September 25, 1954

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Dear Dean Belluschi:

In partial fulfillment of the requirements for the degree, Master in Architecture, I herewith respectfully submit a thesis entitled "The Redevelopment of Boston's Atlantic Avenue Waterfront."

Respectfully submitted,

Charles D. Peterson
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### TABLE OF CONTENTS

**Abstract** .......................................................... 1  
**Introduction** ......................................................... 2  
**The Atlantic Avenue Waterfront Problem** ......................... 4  
  **Historical Background**                                  
    **Boston's Maritime History** ................................... 5  
    **History of the Old Waterfront** .............................. 11  
  **Present Conditions and Trends of the Waterfront**            
    **Relation of Adjacent Areas to the Planning Area** .......... 16  
    **Definition of the Site** ...................................... 20  
    **Topography** .................................................... 22  
    **Wholesaling and Manufacturing** ............................... 23  
    **Retail** ....................................................... 26  
    **Pier Facilities** ............................................... 27  
    **Economic Status** .............................................. 29  
    **Character of Buildings** ..................................... 32  
    **Transportation and Circulation** .............................. 35  
    **Visual Aspect** ................................................. 39  
  **Possible Ways for Waterfront to Serve Boston**               
    **Preface** ..................................................... 42  
    **U. S. Coast Guard** ........................................... 43  
    **Pier Facilities for Harbor Services** ....................... 44  
    **A Terminal for Excursion Steamers** .......................... 46  
    **Public Marina** ............................................... 47
Guinea Fleet ......................... 48
Commercial and Retail .................. 49
Fisheries Institute ..................... 50
Park and Recreation Area ............... 52
Marine Museum ........................ 54
Aquarium .............................. 55
Apartment Buildings .................... 56
Program ................................ 58
Bibliography ........................... 64
THE REDEVELOPMENT OF BOSTON'S

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by

CHARLES D. PETERSON

Submitted to the Department of Architecture in partial fulfillment of the requirements for the degree of Master in Architecture.

ABSTRACT

Boston's Atlantic Avenue Waterfront has been experiencing a commercial decline for the past 80 years. The arrival of larger steamships and improved railroad terminal facilities on Boston's periphery has gradually removed all sizable marine activities from the waterfront. Today this area is occupied by wholesaling and secondary manufacturing concerns which are attracted by the location and low rentals. Yet even these enterprises have established a definite trend of departure to outlying districts. Consequently, at some future date a comprehensive plan must be inaugurated to reclaim this area for more appropriate city-wide uses.

The Redevelopment of the Atlantic Avenue Waterfront was chosen as the design-study of my thesis. Studies and surveys of the functional, economic, social and physical aspects of the specific site and related areas preceded the crystallization of a conceptual design program. Only then was a visual and architectonic proposal made for the total development.

Thesis Supervisor: Lawrence B. Anderson

Title: Head of the Department of Architecture
INTRODUCTION

"I must go down to the seas again, for the call of the running tide
Is a wild call and a clear call that may not be denied."

John Masefield's "Sea-Fever"

Such a propelling influence should be Boston Harbor's. Here is a history full of significance and romance; a port rich in form, color, and variety; and a shoreline whose tranquil movement contrasts sharply with the accelerated pace of the city. Yet, the harbor's potentialities are not exploited. Instead those people living or working nearby recognize this area only as an impediment to their free movement to outlying urban areas.

Along Atlantic Avenue, in close proximity to Central Boston, there presently exist obsolete port facilities ripe for retirement. Here, yielding rationally to the economic and social needs of an urban population, is an opportunity for the redevelopment of an area which could give to Boston Harbor those very amenities so greviously lacking.

My original intention, on commencing this thesis study, was to center emphasis on the visual aspects of a waterfront architecture. The Atlantic Avenue Waterfront presented an excellent opportunity for redesign. I anticipated confining myself to a redevelopment of existing pier facilities.
This approach was not completely realistic as it would solve only one aspect of the total waterfront problem. Consideration must also be given to the social, economic, and functional factors of all Boston's port activity. The problem of this thesis has consequently progressed from study of one aspect of waterfront architecture to the analysis and study of the whole waterfront problem along Atlantic Avenue.

With sincere regard for the physical and mental well-being of Boston's citizens, this thesis will attempt to provide a conceptual planning and architectural solution to the Atlantic Avenue Waterfront.

Objectives will be to improve the commercial, municipal and recreational facilities of the community, and to accent the historical significance and natural beauty of the site and surrounding areas. In essence--to contribute toward the building of a better city--a city where people like to work, to play, and to live!
ATLANTIC AVENUE WATERFRONT PROBLEM

When the gateway to a fine estate falls into decay, rebuild it! That, in effect, is the manuscript for Boston's Atlantic Avenue Waterfront.

During the city's first 250 years (1630-1880) this area was Boston's threshold. Through this portal passed the commerce which transformed an early settlement into the great metropolis of today. But with the arrival of large steamships and improved railroad terminal facilities on the city's periphery, this area was gradually relegated to warehousing and secondary manufacturing. Waterfront activities moved away. Buildings deteriorated; property values dwindled. Consequently, this area's usefulness to the city has steadily declined until today it is merely another "back door" to central Boston.

Neither the Boston Planning Commission nor the Port Authority of Boston has definite plans for revitalizing this area. Important questions then arise. Of what use to the city is this area? Is it being used to the best possible advantage to the city? Are its possibilities such as to justify redevelopment? If so, toward what ends?

Finding the right answer to these questions will be difficult. This waterfront is an integral member of Boston's complex anatomy. Any development of this project area may be undertaken only after a careful survey has been made of Boston's entire physiological structure.
BOSTON'S MARITIME HISTORY

The maritime history of Boston Bay began in the sixteenth century when its sheltered coves gave protection to fishermen venturing to the Grand Banks from Portugal, Normandy and Brittany, and the Basque regions in Spain. In 1630 this port was first used as a trade center--Sam Maverick sailed into the harbor with 100 bushels of grain acquired from Cape Cod Indians and offered it for sale to the God-fearing burghers of the town. That same year Boston was established, and through the commerce afforded by the harbor ultimately became a great and important city.

To Europeans, this port was the gateway to rich furs and other products of early New England, while to the Colonists Boston was the supply depot for much needed goods of Europe. Trade flourished as Boston ships built up a reputation in the Western Hemisphere for shrewd trading and great enterprise. By 1700 her commerce was four times that of her rival, New York. Soon England's trading interests were being jeopardized by the colonists until taxes were levied detrimental to the trade of Boston. Immediately smuggling became prevalent in the Bay region. Finally in 1774, British officials closed the Boston port and placed British men-of-war in the harbor.
During the Revolution Boston was a town of despair. Every means of water communication was throttled, even ferry service to Dorchester and Charlestown. In 1776 when General Howe withdrew from the city, he took several hundred Tories and a large portion of Boston's wealth. Thereafter, the only efforts expended during the remainder of the war was on the outfitting of privateers who found few victims unprotected by the efficient Atlantic Patrol of the British.

After the Revolution, American tonnage did not increase until the new constitution was adopted, putting an end to a ruinous competition among states. Though most seriously hurt of all American ports by the Revolution, by 1807 Boston surpassed Philadelphia and ran second only to New York in tonnage owned.

During the nineteenth century national development progressed at a rapid pace and there appeared to be plenty of commerce for every port. Boston, however, did not exert enough pressure to counteract certain disadvantages that were bound to lower her maritime prestige. In 1824, the Erie Canal was completed and made cheap water transportation available for bulk cargo from the Great Lakes region all the way to New York via Buffalo, Albany and the Hudson River. The invention of the steam railroad presented untold opportunities, but Boston's capital failed to seize the initiative and
extend the early railroads beyond the Berkshires. By 1850, Boston commerce was wholly dependent for export goods on New York and Philadelphia-controlled railroads which had pushed into the heart of the country.

Boston's sailing families, proud of their famed "clipper ships," were reluctant to adopt steam to navigation and thus contributed to the decline of Massachusetts's shipping during the mid-nineteenth century. Not until after the Civil War did steam play a significant part in her maritime service. By this time competitive steamship lines had grown into formidable proportions.

Throughout these years of commercial strife, Boston's ocean-rate was lower than her competitors, thereby balancing their advantage of lower rail-rates. In 1877, however, the government equalized through-rail-ocean freight rates--to this day constituting a serious handicap which Boston shippers must overcome in bringing export goods to their wharves.

Nevertheless, with extraordinary consistency during the late 1800's, Boston had remained second only to New York in shipping volume. This was a result of her enterprise in coastwise shipping, her prominent dealings with the Mediterranean, and her position as one of the two leading entry ports for immigration.

Between 1900 and 1920 Boston lost ground along all the commercial shipping lanes of the world, only
retaining her position as center of New England trans-
portation and leading fish port in the western hemisphere. 
Since the 20's, Boston has yearly remained sixth or 
seventh in tonnage handled except for World War II when 
she was one of the two leading ports for trans-Atlantic 
shipping.

The present Port of Boston Authority was organized 
in 1946 and undertook an enterprising program for a 
broad future expansion of water-borne commerce. The 
program is meeting with success as Boston's peace-
time shipping is showing a steady increase from year 
to year.
The TOWN of BOSTON IN New England by Cap. John Bonner 1722

Scale of 1 mile

ENGLAND

Common

Great Fires
First 1655
Second 1676
Third 1690
Fourth 1692
Fifth 1694
Sixth 1696

Gen Small Fox
First 1655
Second 1665
Third 1676
Fourth 1690
Fifth 1692
Sixth 1696

Engraved and Printed by Geo. Brevig Boston N.E. 1798
Sold by Cap. John Bonner and Will Prissap opposite Town-hill where you may had this Map of Boston

Fort Hill

Hill Warder

Winds Mill Point

Old North St.

Old South St.

Bounded by

Charles River

Ferry to Charles Town

Artons Point

Martons Point
HISTORY OF THE OLD WATERFRONT

The North End was the earliest settled part of Boston. From Boston's founding until the Revolution it was the important residential district, with shipping along its eastern periphery. Today Paul Revere's house on North Square, the old North Church, and Copps Hill Burying Ground are the only remnants of those days of glory.

Official records of Boston do not tell when the first wharf was built, but many persons, even prior to 1650, received permits to construct wharves at points along the waterfront. In the vicinity of Dock Square, near the present Faneuil Hall, the first Town Dock was established in the early 1630's and was the focal point of all marketable produce. By 1669, Samuel Scarlett received land to build a wharf at the foot of Fleet Street and it served as an important disembarkation point for British troops.

Early fortifications were placed where Rowes Wharf now stands and also on the North Battery. In 1673 the celebrated sea wall, following the present line of Atlantic Avenue, was constructed partly for defense and partly as a wharf. The dimensions were 15' high, 20' wide and 1/2 mile long. Cannon emplacements were provided as well as openings for the passage of ships.
As early trade flourished, successive improvements enlarged the harbor and waterfront facilities. One of the most impressive of these improvements was Long Wharf, completed in 1710. This set a new standard for the Port, enabling boats of any draught to load and unload without lighterage. It extended from the bottom of King's Street 800 feet into the harbor. Thirty years later, the length was doubled. During the remaining 1700's the waterfront changed little except for the new insurance offices and exchange houses that were springing up on State Street.

The early 1800's brought tremendous changes to this area. In 1826 Quincy Market was erected where the town dock formerly stood. The steady increase in Boston's population, meanwhile, demanded new land at the expense of the harbor. Beacon Hill was partially leveled and the dirt deposited in Mill Pond, the shores of which had served as the "corn mill" district for the early Colonists. Commercial Street was built along the north side of the wharf heads. The Custom House, erected in 1848 on the site of the present building typifies the group of commercial buildings being constructed during this period of growth. Finally, the waterfront's noise and bustle forced wealthy merchants to seek the relative quiet of Beacon Hill.

Transportation along the wharves was becoming disorderly so in 1860 Atlantic Avenue was constructed as an aid to the terminal facilities. Soon, however, the rail-
roads commenced building their own wharves, warehouses and grain elevators to supplement the improved terminal facilities in East Boston, Charlestown, and South Boston, thus drawing much of the foreign trade from the old waterfront.

The late 1800's saw Atlantic Avenue host to coastwise steamers, towboats, excursion boats, and the famed "T Wharf Fishing Fleet." When the new Fish Pier was erected in 1913, T Wharf was left to the mercy of a few small Italian and Portuguese vessels, atmospheric tea-rooms, and literary rooms. During the 1920's endless chains of stevedores carrying huge bunches of green bananas from hulls of the United Fruit's "White Fleet" accounted for the only appreciable commerce. These old wharves and warehouses were being utilized for the manufacturing and handling of goods completely foreign to water-borne commerce. Along Atlantic Avenue the sailmakers, wharfingers, chandlers, marine hardware stores and several souvenir shops are all that preserve the memories of glorious seafaring days.
From an old print in the Collection of the Bostonian Society. This shows the harbor line reaching to the foot of Quincy Market, which is separated from the water by Commercial Street only.
The Atlantic Avenue waterfront may be isolated for study only after certain basic assumptions are made concerning related areas and functions. Specifically the suppositions in this report are as follows:

1. Fort Point Channel will be filled.
   In 1875, the first proposal was made for filling this channel and old South Bay. Portions of this plan have been carried out, but the channel itself still remains as a useless barrier between Central and South Boston. As recently as 1950 a thorough study was made for routing the Fitzgerald Expressway through new land to be created by filling the Channel. Unfortunately this proposal was not followed. On rare occasions, a ship bound for the American Sugar Refinery uses this Channel. Therefore it is simply a question of time before good sense on the part of city and state officials will effectuate the filling-in of Fort Point Channel. Excellent industrial sites near railroad terminal facilities will then be available.

2. The North End will remain residential.
   Industry, wholesaling, and warehousing will
never move into the North End residential area because the efficient freight handling afforded by railroad terminals is impossible in this area. Actually, the definite trend during the last 25 years has been the departure of all manufacturing or wholesaling activities previously housed in or nearby this district. The Fitzgerald Expressway presents a physical barrier limiting the northern expansion of the central business district. Moreover, more suitable land is available for retail expansion on the southern peripheral edges of the central business district.

3. A new ship terminal for passengers and cargo will be built on Northern Avenue in South Boston.

The Port of Boston Authority is presently carrying out a Master Plan, initiated in 1950, to modernize the shipping facilities of Boston Harbor. Five projects were undertaken, of which two have been executed. The third phase is nearing completion. The final step of this program will be terminal facilities on Northern Avenue for the handling of passengers and cargo. Allied facilities included in this
proposal are: a parking space for 800 cars, a foreign trade zone, an office building to house import and export concerns, steamship offices, a trade mart and sundry other related enterprises.

These three areas are denoted on Figure 6.
Figure 6 - Port of Boston, Massachusetts
1. Direct transfer between car and ship eliminates necessity of lighterage.

2. Every pier served by direct rail and motor vehicle connection.

3. No additional cost for handling LCL freight moving over piers served by the line haul carrier.

4. Safe and economical cargo handling.

5. Frequent sailings to all world ports.

6. Quick loading and unloading of highway vehicles.

7. Freight cars arriving at Boston prior to 4:00 a.m. are usually placed by 7:00 a.m.

8. Freight rates from any point in New England, except southwestern Connecticut and extreme western Massachusetts, are lower to Boston.

9. For freight originating in territory west of Syracuse and north of the Ohio River, rates are equal to those applicable to New York.

10. Westbound import rates through Canada are lower from Boston to western destinations.

11. Rates on ex-Lake export grain from Georgian Bay ports are lower to Boston than to New York, Baltimore or Philadelphia.

12. Unexcelled services to importers and exporters.

13. Conveniently located warehouses.

14. Open navigation throughout the year.

Ship via the Progressive PORT OF BOSTON
DEFINITION OF THE SITE

The obsolete port facilities along the seaward side of Atlantic Avenue and Commercial Street extend from the Northern Avenue Bridge to the North End Beach.

From the western side of Atlantic Avenue to North Avenue lies the food market district of Boston - being severed in half by the new crosstown expressway presently under construction. Slowly this market district is being relocated to the South Bay region of Boston; and once Fort Point Channel is filled in, the entire wholesale produce market will undoubtedly move to the South Bay where more efficient transportation facilities are available. (The U. S. Department of Agriculture and allied agencies have long advocated this change.) Therefore, the planning area in this project will also include the triangular piece of land bounded by North Avenue, Atlantic Avenue and Commercial Street, and the Fitzgerald Expressway.

The entire project area is denoted in Figure 7.
SCALE
0 200' 400'

FIGURE 7
- PLANNING AREA
- ROUTES OF HEAVY MOTOR TRAFFIC
- BUS LINE
- CONTOUR LINES (MEAN HIGH TIDE AT 15.5')
TOPOGRAPHY

The Atlantic Avenue waterfront and wholesale produce facilities to the west occupy the flat land created when the Great Cove was filled during the 1860's. Contour intervals of five feet are shown on Map 7. The North End residential zone to the west and offices to the south are almost coterminus with the original shoreline which approximates the 20' contour mark.

The average differential between mean high-tide and mean low-tide is 9.50 feet. The highest tide on record occurred in 1851 when it reached a level of 15.0 feet above low-tide datum of 0.00. Seldom, however, does the tide range over 4.0 feet above mean high-tide level or 3.0 feet below mean low-tide.

The existing wharf decks along Atlantic Avenue are approximately 14.0 feet above mean low-water, while the water depth below mean low-water varies from 11.0 feet at Rowes Wharf to 24.0 feet at Sargents Wharf.
WHOLESALING AND MANUFACTURING

The land and buildings in the planning area are principally used for wholesaling and storage, as shown in Figure 8. This heavy concentration may be explained by the close proximity of the central business district, low rentals and low taxes. Among the miscellaneous types of wholesaling, produce marketing stands out as the greatest concentration, though most of the firms thus engaged are small. Quincy Market is the largest wholesaling firm in the area. Manufacturing enterprises in the area are also small and predominantly of the types usually found in low-rent locations near a central business district---manufacturers of peanut butter, salad oil, fungicides; and printing, sheet metal and machine shops.

For transportation, the wholesalers and manufacturers rely almost wholly upon trucks. The North End is not convenient to the three principal shipping terminals and railheads, in South Boston, Charlestown, and East Boston. Therefore, use of the railroad is limited. (This fact is developed in a later section of this report.) Also, use of the nearby water is negligible.

Industries have been deserting these parts of Boston for outlying regions more convenient to the
railroads, trucking highways, and suburban labor sources. No change in this trend is foreseen.

With the filling-in of Fort Point Channel and its tributary tidelands, a complete marketing and wholesaling entity will be build in the South Bay region, closer to efficient transportation facilities and more centrally located for all Metropolitan Boston. The entire market and wholesale district will then vacate the North End. Redevelopment paralleling construction after the 1872 fire must then reclaim the area.
FIGURE 8 - LAND USE

- RETAIL
- WHOLESALE, STORAGE & MANUFACTURING
- OFFICES
- RESIDENTIAL
- OPEN SPACES (PARKS)
- MIXED
- PUBLIC UTILITIES & AGENCIES
- RAILROAD
The second important land use in the waterfront district is retailing. Once again low-rent locations account for the presence, deteriorated appearance and type of concerns thus engaged—"greasy spoon" restaurants, dingy bars, and stores selling marine equipment or cheap war surplus goods. Of greatest importance are those stores selling marine gear and hardware. Yet here also, unsightly appearance suggests no noteworthy prosperity.

One other retail activity should perhaps be mentioned—the open-air marketing and wholesaling of fish along Atlantic Avenue. This merchandising accounts for little revenue, but the activity is significant because of the romantic interest engendered for tourists. No other similar waterfront activity exists in Boston.

While warehousing remains as the predominant land use along this waterfront, no improvement in retail services is foreseen.
PIER FACILITIES

Commercially, the Atlantic Avenue Waterfront is not important to Boston shipping. As late as 1940 a few wharves were in active shipping use, namely, those given over to small coastwise freighters and banana boats from South America. At present, however, no equivalent commercial activity exists. Only an occasional small boat of shallow draft such as excursion steamers to Nantasket Beach or Provincetown, small boats of the "Guinea Fishing Fleet," fireboats, police launches, or tugs utilize these facilities.

Factors dissuading use of these piers for large cargo handling are: insufficient space to handle ships' cargo (an equivalent area on shore must be immediately available for cargo before a freighter will berth), inadequate transportation for quick removal of cargo from pier, insufficient length and width of ship berths and shallow water depth requiring costly dredging operations. Most of these difficulties may be surmounted but the assumption cannot be made that railroad yards will be laid out adjacent to this area for rapid cargo removal.

The only exception to this inactivity may be Harris Wharf and its adjacent two piers to the west. Here, the U. S. Coast Guard maintains its District
Administration Office for New England, and an Operations Base for Massachusetts Bay. A total of five ship berths is available, three of which are for vessels of 325' length. There is a constant movement of ships in and out of this base; and, in fact, quite often all available pier space is utilized, necessitating further ship accommodations at the Navy Yard in Charlestown. The Coast Guard could well utilize additional pier area in Boston Harbor.

In the future, with the exception of the Coast Guard, only small boats will be housed along this waterfront.
ECONOMIC STATUS

The present condition of the Atlantic Avenue Waterfront is sub-standard, bringing satisfactory returns to the city neither in tax revenues nor usefulness.

The entire project area covers 108.8 gross acres. (70 acres of land and 38.8 acres of water) Total assessed values of land are $5,910,500 and buildings $9,428,200, totaling $15,338,700, or $5.03 per square foot for land-plus-buildings. Along the Atlantic Avenue wharves, land-plus-building valuations vary from $1.21 to $9.51 per square foot with the average valuation at $4.17. Actually, the lowest range of values for the entire North End is along portions of these dilapidated wharves. In the warehouse district, land-plus-building valuations vary from $4.36 to $27.12 with the average valuation at $8.14.

In general these valuations vary with the distance of the property from the central business district where some valuations run over $200.00 per square foot! In this North End district, prices paid for the most recent land acquisition—the Crosstown Expressway—averaged 150 per cent of assessed values.

In the future, market values and assessed values will continue to decrease if warehousing remains pre-
dominant in the area. Only a major redevelopment can reverse this downward trend.

Graphically the land evaluation is shown in Figure 9.
FIGURE 9 - 1953 ASSESSED VALUES
(LAND PLUS BUILDINGS PER SQ. FT.)

- $15.00 AND OVER
- $5.00 - $15.00
- LESS THAN $5.00

SCALE
0 200' 400'
CHARACTER OF BUILDINGS

The majority of buildings on this waterfront are old and of varied significance. Long ago a large percentage of them ceased to be used for the purpose originally intended and now merit demolition, yet a few selected buildings are of architectural and historical moment. The granite warehouses along Commercial and Lewis Wharves, and the old brick accounting houses on Long Wharf are notable examples.

There are some substantial structures in this district given over entirely to warehousing use or, in a few cases, to public utility buildings. The most recently erected building of any magnitude is the Quincy Market Storage Warehouse on T Wharf. It dates from 1913 and is ten stories high. Aside from this structure, few buildings have been erected since 1900.

Piers along Atlantic Avenue have wood piles along the seaward edges backed up with masonry walls and fill. As no maritime activities flourish, these piers have fallen into disrepair and obsolesence.

Difficulty of assembling sizable sites because of diversified ownership of small tracts, isolation from good railroad terminals, seclusion from industrial services and shallow water-depth along the piers are unfavorable factors discouraging private enterprise from re-
placing obsolete buildings. This situation will continue until the mass exodus of warehousing to the South Bay region makes property and buildings available for large-scale development.

A visual survey of building conditions in the area is shown graphically in Figure 10.
FIGURE 10 - BUILDING CONDITION

- RECOMMENDED DEMOLITION
- BORDERLINE
- DEMOLITION UNFEASIBLE
- HISTORIC
TRANSPORTATION AND CIRCULATION

Motor Traffic...

The major trucking and automobile route for the waterfront and North End is Atlantic Avenue with feeders into the interior districts. Traffic volume is heavy since this street connects North and South Stations and their adjacent bridges leading to outlying districts such as Charlestown and South Boston respectively. Soon the overhead Fitzgerald Expressway will be completed and will remove all arterial traffic presently destined for Atlantic Avenue. On grade level of this new expressway will be another route to handle local traffic into the interior sectors.

The portion of Commercial Street leading into the North End's interior, and Hanover Street are the second most important routes in the waterfront district. They link the northernmost part of the waterfront with Sumner Tunnel (leading to East Boston) and the interior of Boston's central business district.

A circulation pattern for this area is shown in Figure 7.

Atlantic Avenue and Commercial Street, the peripheral route for the North End, will continue as the link between the interior North End and other sectors of the city. Heavy daily traffic to and from East Boston will
necessitate another motorway across the Harbor. Future plans of the State Traffic Engineering Bureau definitely call for another tunnel paralleling Sumner Tunnel and utilizing the same entrance and exit approaches.

Railroads...

The Union Freight Railroad serves the warehouses on the Atlantic Avenue waterfront. In addition, it is the important link between the separate railroads that operate from North and South Stations. Unfortunately, this spur line is located on Atlantic Avenue, and chaos reigns along this avenue during the workday when cars and trucks must often dodge in and out of important railroad switching operations, which in themselves are costly and time-consuming.

Table I gives the number and destination of railroad cars handled on this Atlantic Avenue spur rail during May, 1954. These figures are representative of average monthly traffic load over this line during the last three years.

The entire railway system serving Boston Harbor is shown in Figure 6.

At present a city ordinance exists limiting the number of cars per switch engine to 15 during the workday and 35 during the remaining time. However, this ordinance is infrequently enforced.
This rail spur will remain along Atlantic Avenue while warehousing activities continue in the North End but with their anticipated departure, this railway's usefulness grows doubtful. The small volume of freight handled will not justify the resultant traffic congestion.

There are two alternatives for removing this line at grade level. It could be elevated (or placed at sub-grade level) but the initial expense involved would far exceed the anticipated benefits. The more plausible alternative is to utilize or expand (if need be) the Boston and Albany line between South Station and Cottage Farm Station with its terminal. At this point, the separate railways serving Boston could make a speedy interchange onto a proposed publicly owned "belt-line railway" linking all the various railroad yards in Boston.

Public Transit...

Only one rapid transit station directly serves the Old Waterfront--the Atlantic Avenue Station. It is located on State Street as shown on Figure 7. The transit tunnel leading to East Boston passes below this station and is a permanent link in Boston's MTA system. It must remain. The station only might be altered slightly to accommodate new building construction.

Although this station is not within walking distance of the entire waterfront district, a feeder bus
easily links it with the northern extremities of the site. This bus route is also shown on Figure 7.

Table I

RAILROAD TRAFFIC ON ATLANTIC AVENUE DURING MAY, 1954

<table>
<thead>
<tr>
<th>Destinations</th>
<th>Number of Cars</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between South Station &amp; Warehouse</td>
<td>1041</td>
</tr>
<tr>
<td>Between North Station &amp; Warehouse</td>
<td>326</td>
</tr>
<tr>
<td>Between North &amp; South Stations</td>
<td>1700</td>
</tr>
<tr>
<td>Total handled per month</td>
<td>3067</td>
</tr>
<tr>
<td>Average number of cars handled per day</td>
<td>99</td>
</tr>
<tr>
<td>Average number of through-station cars handled per day</td>
<td>54.8</td>
</tr>
</tbody>
</table>
VISUAL ASPECT

The following is an excerpt from a Summary Report on the study of Atlantic Avenue between Rowe's and Sargent's Wharf conducted by a group of architectural and planning students in July 1949.

"Thrust into the midst of totally unfamiliar areas, the human mind immediately endeavors to reorient itself, to arrange or reorder the significance of the new surroundings, and to establish a cycle of activity,--the pole of which is the individual himself. Given any degree of similarity to things which have previously occurred within the ken of the individual (i.e., people, animals, vegetation, shelter, vehicles of transportation, etc.), the qualities of the new surroundings are measured and re-measured visually until a mental pattern has been established, a mental pattern which, though it establish like or dislike, love or fear, excitement or dreary routine, is nevertheless an integrated representation within the self-centered world of one individual, or group of individuals. Thus, first observations of the waterfront area between Rowe's wharf and Sargent's wharf tend to order themselves into experiences unusual or unique, or experiences involving some familiar association.

From the interweaving of these experiences comes the frame of reference against which evolves any real
evaluation. Certainly, here lies one of the significant elements in the composition of the area: the continual juxtaposition of the familiar with the unfamiliar, the brilliancy of color with the subtle-drab tones, the old with the new, the weather-worn back and shoulders of the sea-farer with the starched shirted individual. In resolving these contrasts into some semblance of order, integrating forces vary—perhaps another of the elements of juxtaposition evident.

Along Atlantic Avenue, a dominant force is the continual flow of traffic, both vehicular and pedestrian. (Undisputed evidence of this force may be found by a weekend or after-hours walk along Atlantic Avenue. Then the activity is gone, the moving sequence gives way to a void of pavement, along which organizes too frequently the bleak harshness of the unwieldy building mass amid the self-expressive scale of the granite or brick structure of an earlier day. The rhythmical and linear organization is unpleasantly interrupted.)

To the east, nautical forms dominate the view. The sea extends its fingers between the forms, welding these into the plane of the horizon.

To the west, the congestion of vehicular traffic, plus the almost constant overflow of meat, produce, and vegetables onto the sidewalk becomes the dominant force.
Ever obvious throughout the area is the contribution of human life, be it in the form of occupation or pastime, vehicular or pedestrian movement, noise or quietude. From the general to the particular, the frame of reference established, the mind is ready to study detail: from the surrounding forms derive activity; from material and texture determine not only current use or abuse, but also past service; into the physiognomy of the human face and form breath life and personality."
PREFACE

Potentially and logically the Atlantic Avenue Waterfront is Boston's "window to the port," using an oft-quoted phrase of planners interested in Metropolitan Boston. As such it must serve the area to the fullest extent possible.

Some of the functions outlined in this thesis study relate only to the nearby harbor. Other facilities, by their nature are related to the central business district. Still others are open land uses, metropolitan in scope.

The only effective way to reclaim this waterfront is for a public agency--logically the city of Boston--to formulate a Master Plan; to distinguish between those areas to be financed by public funds and those areas to be developed by private capital; to acquire the area involved; to sell or lease those areas for private development; and to work out a financial program for the development of the public projects.

It is not the intent here to justify the economic implications of these proposals. Rather, it is believed that for a great many of the problems involved, a solution must first be devised--an economic justification found later.
U. S. COAST GUARD

Of all the wharves along Atlantic Avenue only those of the U. S. Coast Guard on Harris Wharf present a neat and tidy appearance to people sailing in Boston's Inner Harbor. Its gaily painted buoys, concrete piers, and trim, and red, white and grey ships are a welcome sight midst these dull, drab, and unkempt surroundings.

As mentioned previously, the U. S. Coast Guard facilities on Fiske and Harris Wharves are becoming inadequate for its diverse functions in Boston Harbor. In general the shortcomings are simply a matter of insufficient space for its many activities. There must be additional room for the berthing of ships, more office space for the District Administration Staff, a large maintenance area both under-cover and outside, bigger shop facilities, and a more adequate parking area.

A redevelopment project on this waterfront should supply the Coast Guard with these needs. This provision could be in the form of enlarging present facilities or relocating them to an equally appropriate site on Atlantic Avenue. Such a marine facility will certainly constitute an asset to this waterfront's appearance!
PIER FACILITIES FOR HARBOR SERVICES

Within the limits of the Port of Boston are 500 docks, 140 miles of waterfront, and property worth millions of dollars. For safeguarding this property, the services of the Boston Fire and Police Departments are required.

The two fireboats operated by the Fire Department are moored at Battery Wharf, off Commercial Street. Quick dispatch of fire-fighting equipment to all parts of the Harbor is possible from this strategic location. Any redevelopment should retain this pier or provide similar facilities elsewhere on the Atlantic Avenue waterfront.

The Police Department's motor launches are housed next to the North End Beach on Commercial Street. Once again, these piers are appropriately located so equivalent facilities should be provided in the redevelopment plan. Possibly, these public protective departments could more efficiently function through use of common pier facilities.

Boston Harbor, like all other harbors in the world, employs tugboats to assist in the docking of large ships, or in the hauling of strings of barges loaded with bulk materials to various parts of the harbor.

At the present time Lewis and T Wharves are the mooring place for these boats. The wharves may be inad-
equate in size, but they are centrally located for its harbor activities. These pier facilities should be retained or similar dock areas provided elsewhere in the waterfront.
A TERMINAL FOR EXCURSION STEAMERS

A frequent sight during Boston Harbor's summer season in the years preceding World War II, was the excursion boat—its decks lined with city residents out for a few hours voyage to Nantasket Beach, Provincetown, or the nearby islands. With the notable exception of the Nantasket Steamboat Company, which has given continuous service for 138 years, the steamer companies offering excursion trips are of a transient nature. Number and types of excursion cruises vary from summer to summer.

Rowes Wharf is the existing terminal for embarkation. It is functionally inadequate, lacks parking facilities, is unsightly in appearance, and constitutes a fire hazard. These unfavorable conditions probably account, in part at least, for the dubious financial standing of these marine excursion companies.

In the redevelopment along Atlantic Avenue an advantageous site should provide wharves and terminal facilities for excursion boats. This location will be in close proximity to central Boston; will be immediately accessible to an expressway for expedient ingress and egress to outlying districts; and will have sufficient space for parking. No other waterfront sector in Boston Harbor can offer such favorable operating conditions.

Provision for such a facility might conceivably give that impetus which would establish this activity on an economically feasible basis.
PUBLIC MARINA

Boston Harbor would provide an ideal stopping place for yachtsmen traveling along the coast. Besides giving safe shelter against winds and rough waters, an ocean motel on the Atlantic Avenue waterfront would afford sojourners yachtsmen with the opportunity of taking on fresh stores, replenishing fuel and water, collecting mail, visiting friends, or going sight-seeing and shopping in a historical metropolis within walking distance of the mooring.

The existing pleasure-boat mooring facilities in Boston Harbor, as found around the Warren Bridge, are inadequate and should not be tolerated. They constitute a fire hazard and present a cluttered waterfront appearance.

A marina in an attractive location like Boston Harbor would bring many direct and indirect benefits to the Port area, such as work for boat repair yards; sale of fuel, supplies and marine gear; and patronage of sight-seeing or recreational facilities. This project would also be a worth-while promotional advertisement for both the Port and the City and place it with other coastal municipalities which have found it desirable and beneficial to have public marinas.
GUINEA FLEET

One of the most colorful areas in the entire harbor is between Commercial Wharf and T Wharf where Italian and Portuguese fishermen (better known as the "Guinea Fleet") moor their boats. Here the casual observer finds relief from the congested traffic of Atlantic Avenue. Stillness prevails, broken only by piercing cries of greedy sea gulls, or an occasional hammering coming from the many boats haphazardly moored together. To complete the picture, seemingly idle fishermen sit along the wharves quietly conversing in their native tongue while mending their nets and preparing their trawling lines.

Moorage facilities in Boston Harbor must always be available to these fishermen. No more appropriate location exists in the entire Harbor than on the Atlantic Avenue Waterfront; consequently, space for boat storage and the daily on-shore activities of these fishermen should be retained or equivalent facilities should be provided in any development.
COMMERCIAL AND RETAIL

A previous section of this report mentioned the present existence along Atlantic Avenue of a few shops dealing in sundry marine items, a few open-air fish markets, and "atmospheric" tea-rooms. A redevelopment master plan will include buildings for these same activities and will possibly enlarge the entire district into a complete "marine shopping center!" Sailmakers, chandlers, marine equipment and hardware stores, restaurants, seafood markets, marine novelty and souvenir shops could all be part of the same commercial community deriving mutual benefit from each other. Patronage will come from the central business district, visiting yachtsmen tying-in at the public marina, resident yachtsmen in the Boston area, excursionists, and tourists drawn to the area by the surrounding marine environment.
The Commonwealth of Massachusetts and the fishing industry have both exhibited an active, long-standing interest in the organization of a Fisheries Institute. Currently, a modest beginning is being made at the University of Massachusetts in Amherst where a four year curriculum in Fisheries Technology is proposed. A sound basic training in the sciences will be given whereupon the graduate will be more useful and effective in the applied phases of fisheries. These courses could be given at Amherst with only a small outlay of funds for additional staff or facilities.

To further insure success of this program, the Commonwealth intends, in the near future, to build a suitable Fisheries Institute on the seaboard, where laboratories and other facilities would be available for valuable on-the-spot training and research in the fisheries industry. Those students using these facilities will be advanced undergraduates or graduates of the four year curriculum at Amherst or those students interested in a proposed two-year non-degree vocational course.

To date, various sites in Gloucester have been suggested as appropriate locations for this Institute. In general, however, that locale has been unreceptive to
the entire idea and no action has been taken. Boston presents an equally fine location for such a school and if such a waterfront site were immediately available, there is reason to believe such a school would meet with considerable success here.

Boston port facilities are excellent and the large Massachusetts fishing industry is centered in the harbor area. Facilities of other fine educational institutes would be available for highly specialized research work. Boston would certainly welcome such a school to fortify its position as the cultural and educational center of New England.

The development of the Atlantic Avenue Waterfront could easily make land available for such a noteworthy activity.
PARK AND RECREATION AREA

Sun, air, water, plants and trees are of tantamount importance to the redevelopment of Boston's oldest waterfront.

At present, metropolitan Boston utilizes only 2 per cent of its ocean waterfront for park and recreational purposes. London, on the other hand, proposes to devote 30 per cent of its Thames' river frontage to open spaces. Boston need not necessarily follow this same standard, but it should realize from this brief comparison that greater regard must be placed on the amenities of living. In this respect, the Charles River Basin and sectors of the Old Harbor with their lagoons, drives, esplanades and beaches are excellent developments of which Boston can be proud. These areas do not serve the entire urban populace, however. The central business district, for instance, located within a few blocks of the waterfront does not have one opening to the ocean. (No wonder so few Bostonians recognize their city as a prominent and active port!) Residents of the North End are in a similar plight. They have but one meager piece of shore land devoted to recreation--the North End Beach--and its area and equipment are inadequate for that purpose. Furthermore, no other inland parks exist to relieve this
residential congestion.

A large open space on Atlantic Avenue will, therefore, serve two useful purposes. Central Boston will be provided with its "window to the port," and a much-needed breathing space will be afforded residents of the congested North End.

No material return, as such, will be evidenced by the creation of new parks. More important will be the healthy spirit and character that these open landscapes engender. Such sociological values far exceed mere monetary income.

Primarily, these open spaces will be places for members of the community to play—where children and adults alike may romp or relax on the grass, slowly amble along tree-lined walkways, watch over the harbor activities from ocean esplanades or escape the summer heat in the prevailing ocean breezes. Secondly, the mere presence of attractive landscaping will encourage the use of adjacent city functions and will add immeasurably to their efficiency. And thirdly, from the visual aspect, we may experience maximum visual impressions only if open delimited spaces exist side by side with architectural or sculptural elements.
MARINE MUSEUM

Thousands of visitors are yearly attracted to Boston by her historic memorials which are of inestimable cultural and commercial value. One of her choicest relics is the frigate U.S.F. "Constitution," moored in Charlestown, between the Navy Yard and Hoosac pier. Surprisingly, of the many memorials in the vicinity, only this attraction attests to Boston's noteworthy contributions to the early U.S. Navy and Merchant Marine.

Boston could easily enlarge the scope of her maritime recognition. With the "Constitution" as a focal point she could support a Marine Museum located on one of the many excellent shoreline sites made available by the redevelopment of the Old Waterfront.
AQUARIUM

Boston's present aquarium is located on Pleasure Bay. Its tanks are cracked, the facilities are inadequate, and the location is difficult to reach except by car. Consequently, marine life should be exhibited elsewhere in new facilities which can be more easily reached by Boston residents. Tentative aims place this aquarium next to the Science Museum on the Charles River.

In the Redevelopment of the Atlantic Avenue Waterfront site, provisions can be made for a marine museum and the Commonwealth's Fisheries School. An aquarium in this location would be an equally logical adjunct. In fact, the site may be even more appropriate than along the Charles River. Set in more pleasant open surroundings at the water's edge, and nearer public transportation, this ensemble would present a more forceful, comprehensive picture of marine life.
APARTMENT BUILDINGS

Living quarters in an attractive environment and within walking distance of the downtown business section have long been in demand by Boston's white-collar workers. To fill this need, certain portions of the Atlantic Avenue Waterfront may be utilized for high or medium rent apartments.

The advantages of this site are numerous. Plenty of sun, light, and air will be available; a clear, unobstructed view of the harbor and its activities will be possible; the areas will be within walking distance of downtown Boston; ocean breezes will cool residents during warm summer months; an extensive park and recreational area will be located nearby for the community's use; and an arterial overpass will be immediately available for ready access to outlying districts.

The program for erecting these new rental apartments may easily parallel the housing scheme of the West End Redevelopment--studied and planned by the Boston Housing Authority. Actual densities per acre and land coverage will be given in the later section of this report.

These apartments will undoubtedly be situated on the peripheral edge of the existing North End residential community. A core for the enlarged community must then be
provided which will house schools, commercial and community activities. In the North End most of these necessary components already exist in part, and because of their central location will simply be enlarged to serve the entire anticipated North End populace.

Financing this particular phase of the Atlantic Avenue redevelopment can be effectuated by the provisions of any plausible federal, state, or local housing act. Presently, Title I of the 1949 Federal Housing Act or the Massachusetts Urban Redevelopment Corporation Law--Chapter 121A of the Commonwealth--would guarantee the necessary financial backing to expedite such an undertaking.

The city, which must certainly provide the legal machinery and financial outlay for this sector of redevelopment will be repaid yearly by increased tax revenues.
PROGRAM

MARINE ACTIVITIES

Coast Guard

- Administration Facilities for First Coast Guard District (will house sections of Coast Guard such as finance, supply, engineering, personnel, Merchant Marine, Port Security) - a building of 60,000 square feet with easy access to well-traveled street

- Operations Base for Boston Harbor
  - Base administration facilities - 9000 square feet
  - Mess Facilities - 9000 square feet
  - Sleeping accommodations for enlisted men - 15,000 square feet plus small indoor and outdoor recreational area
  - Garage; and metal, machine, electrical, and paint shops - 60,000 square feet
  - Ammunition depot or armory - 25,000 square feet
  - Supply:
    Administration - 10,000 square feet
    Storage - 40,000 square feet
  - Piers - 3,000 linear feet, 75 feet minimum width
  - Parking - 150 cars
Pier Facilities for Harbor Services

- Fire Department
  - Pier space for 3 100' fireboats
  - Locker room for 40, Dormitory for 20, 2 offices, toilets, fueling and maintenance facilities

- Police Department
  - Pier frontage for:
    1 - 65' ocean-going craft
    2 - 38' boats
    1 - 30' boat
    2 - Small Chris-Crafts
  - Offices, cells, radio rooms, chart rooms, etc., 12,000 square feet
  - Boat maintenance - 11,000 square feet
  - Siren tower
  - Wharves for harbor tugboats
    - Pier space for 10 60' tugs and 2 100' tugs
    - 3 offices of 300 feet each

Wharves for excursion boats

- Pier space for 2 250' boats
- 250 foot pier for fishing parties, etc.
- Small terminal or terminals with ticket office, waiting space, and toilets

Public Marina

- Moorage facilities for 50-100 boats
- Boat ramp
. Fueling facilities
. Marina building for administration, lounge, small bar and restaurant, toilets

Mooring Facilities or basin for "Guinea Fishing Fleet"
. 250,000 square feet on water

Commercial and Retail
. Frontage minimum of 1800 linear feet

Fisheries Institute
. 11 offices for faculty and research assistants
. 3 classrooms
. Library and study hall
. Auditorium for 100 people
. Chemistry, bacteriology, products, engineering and radio laboratories
. Machine and woodworking shops
. Pier for 36' research boat
. Maintenance shop for boat

Parks and Recreation
. "Window to the Port" from Central Boston (to be utilized by entire city)
. Park and recreational area for North End residents

Maritime Museum
. Public space (lounge, lobby, toilets, etc.)
. Exhibitions (temporary exhibit, historical
collections, etc.) - 16,000 square feet

. Staff

. Services (locker rooms, closets, mechanical equipment)

. 210' pier for "Constitution"

Aquarium Program

. Public space (lounge, lobby, toilets, etc.)

. Exhibitions (various sizes of acquaria tanks, penguin tanks, display cases, etc.) - 17,000 square feet

. Staff

  . 1 director and secretary

  . Laboratory and workshop

. Services (locker rooms, closets, reservoirs, mechanical equipment)

Residential

. High rent and middle-income housing

  . Density - 75 families per acre

  . Assumed gross floor area

    . high-rent housing - 1000 square feet per family

    . middle-income housing - 950 square feet per family

. Net building coverage - 16% for multi-family dwellings of 1½ stories
Room distribution

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<tr>
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<td>4½</td>
</tr>
<tr>
<td>3 - bedroom</td>
<td>5 %</td>
<td>5½</td>
</tr>
</tbody>
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Family size

- High income - 2.5 persons
- Middle-income - 3.6 persons

Education

- Nurseries - provide for 31 nursery children per 1000 persons
- Kindergarten, elementary and high school (present facilities in North End to be utilized or expanded if need be)

Outdoor Recreation

- Neighborhood playground - 1.2 acres per 1000 persons (must also provide for existing North End community)
- Neighborhood park - 1.2 acres per 1000 persons

Indoor Social and Cultural Facilities

- Social Service (parent-teacher associations, Boy and Girl Scouts, vocational and employ-
ment guidance, etc.) in conjunction with school facilities

- Religion - 1 church per 700 families with minimum site area of 3/4 acres
- Recreational (dances and parties by neighborhood organizations) - in conjunction with neighborhood park facilities
- Literature and Arts - in conjunction with neighborhood schools and library in Community Center
- Neighborhood shopping
  - Shopping center - present facilities in North End to be utilized
  - Small groceries - may be conveniently located in apartment dwellings
  - Gas service stations - 24,000 square feet per 5,000 persons
- Parking - 1/2 to 2/3 car per family (assumed 240 square feet per car)
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