AN EXPLOITATION OF
BOSTON'S CENTRAL ARTERY
THROUGH REDEVELOPMENT

by

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SUBMITTED IN PARTIAL FULFILLMENT
OF REQUIREMENTS FOR THE
DEGREE OF MASTER OF ARCHITECTURE
at the
Massachusetts Institute of Technology
September 1956

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Submitted in partial fulfillment of the requirements for
the degree of Master in Architecture in the Department of
Architecture on August 20, 1956.

ABSTRACT

In recent years many cities have developed elaborate expressways designed to accommodate large numbers of automobiles travelling into the heart of the city. The Central Artery in Boston is a typical example of just such a highway. Still in the final stages of construction, the Central Artery must serve two important functions. Not only must it serve the motorist as a direct thoroughfare for through traffic, but it must also provide an efficient and direct system of transferring cars from the artery to their destination in the city.

In Boston this latter requirement presents an extremely difficult problem due to the rather interesting, but confusing local street pattern. No sooner than the motorist leaves the Central Artery, he is confronted with the task of maneuvering through this narrow maze of overcrowded streets in search of a parking place. At present legal parking spaces in downtown Boston are at a premium.

To remedy this crucial need for more adequate parking facilities, the Boston City Planning Board has proposed a large number of 500 space garages to be erected throughout the downtown area, with parking rates adjusted to encourage short term parkers and discourage the all day parker.
The need for all day parking facilities has become more and more apparent within the last few years in order to revitalize interest in the downtown area. In conjunction with a limited number of existing and proposed short-term parking facilities strategically located in the center of the downtown business district, we propose investigating the placement of large capacity garages, directly accessible to the heavy flow of congestion caused by the existing narrow streets. In this way, it would be possible to concentrate the large scale facilities needed to accommodate the automobile. As a motorist would leave the artery and garage of vehicular scale, he would be greeted by a newly developed environment of his own scale.

In order to demonstrate the feasibility of our proposal, we have chosen a specific study area, bisected by the Central Artery, to be redeveloped, stressing the importance of adequate separation of rapid vehicular movement and scale from that of the pedestrian.
August 20, 1956

Pietro Belluschi, Dean
School of Architecture and Planning
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Cambridge 39, Massachusetts

Dear Dean Belluschi:

In partial fulfillment of the requirements for the degree, Master in Architecture, we herewith respectively submit a thesis entitled, "An Exploitation of Boston's Central Artery Through Redevelopment".

Respectfully submitted,

James W. Christopher

Claude P. de Forest
ACKNOWLEDGMENTS

We should like to particularly thank the following persons for their advice and criticism during the course of this study:

Dean Pietro Belluschi
Massachusetts Institute of Technology

Professor Lawrence B. Anderson
Massachusetts Institute of Technology

Professor Ernest N. Gelotte
Massachusetts Institute of Technology

Professor Ronald B. Greeley
Massachusetts Institute of Technology

Mr. Sidnor Hodges
Boston City Planning Board

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Boston Port Commission

Members of the Graduate Class in Architecture
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DEDICATION

TO THE HARRIED PEDESTRIAN AND THE FRUSTRATED MOTORIST, WE HUMBLY DEDICATE OUR THESIS.
DEVELOPMENT OF BOSTON'S STREET SYSTEM

To reach Boston from any direction except from the southwest, until 1661, one had to cross one or more tidal waters or to follow the ship channel. Thus, the early Boston pioneers were less concerned with land transportation than they were with water facilities. Consequently, the Great Cove became the principal transportation center, providing facilities for Boston's major water traffic.

In 1631, the Charlestown ferry was established to handle traffic to the north of Boston. In 1891, the Viaduct Bridge over the Charles River Basin was constructed and soon after several more important bridges spanning Fort Point Channel were erected, thus joining the city with her neighbors on the north, east, and west.

The early streets to the south, across land, followed the natural curves of the hill, winding around the bases in a very indirect fashion. These winding streets were the logical solution in their day, before the obstacles to major transportation were eliminated. However, these narrow streets, crooked ways and alleys, the curious twists and turns, the paths and lanes, no longer needed to dodge the great natural obstacles, remain today, unchanged and even cherished by posterity for their early association three centuries ago.

Instead of attempting to reorient the antiquated street pattern, the city undertook to widen them, aided by many of Boston's famous fires. During the year
1873 - 1874, the city spent over six and one half million dollars on street widening, neglecting the proposal of redesigning the entire existing street system.

In 1893, a Metropolitan Park System was proposed by the city to link some thirty-seven cities and towns by the construction of parks and parkways. Within the city limits of Boston, over 1,000 acres of land have been devoted toward this goal.

Even with the construction of parkways, and major highways, the street pattern in downtown Boston was unchanged. Of the 6,000 streets within the city limits in 1930, nearly fifty per cent were private ways or alleys, not accepted by the city. This per cent has decreased considerably by now, since the city has accepted many of these streets, paved them, repaved them, but has not yet untangled them.
DEVELOPMENT OF THE CENTRAL ARTERY

Over twenty-five years ago plans were first conceived for an expressway through central Boston. Even with the relatively small amount of traffic in those days, far sighted planners sensed the need for a rapid vehicular means to convey automobiles to and from downtown Boston. They recognized at that time that the antiquated street pattern was causing untold confusion within the heart of the city. Thus, in 1956 with relatively no change in the internal street pattern, the Central Artery is partially constructed.

The Central Artery was first proposed to handle some 60,000 vehicles a day over a six lane thoroughfare. Based on the 1927 traffic survey, the estimated number of vehicles to use this proposed artery in 1930 would be 30,000 daily. It was also estimated that by 1965 the artery would be used to its fullest capacity.

A surface roadway was proposed to follow under this elevated highway to serve local traffic. A system of entrance and exit ramps was designed to handle traffic from such places as Fort Hill Square, Market Street, Congress Street, Federal Street, and its expected termination at Beach Street. For access to the proposed East Boston Tunnel (Sumner Tunnel) and Hay market Square, upper level

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1 The City Planning Board, Boston, Mass., Report on a Thoroughfare Plan for Boston, Boston, Mass.: 1930
traffic circles were proposed. An accompanying drawing shows sketches of the proposed plan through the city and a typical cross-section over a heavily built-up street.

After studying the sketch of the proposed artery in 1930, it is quite obvious how close this proposal is to the actual Central Artery under construction at present. It is noted that the plan varies slightly from the proposal in that it cuts down to Atlantic Avenue, goes underground, then approaches again the proposal as it emerges from the ground. The upper level traffic circles were never built as proposed, but basically, the original scheme is amazingly close to the actual artery being constructed some twenty-five years later.
TYPICAL VIEW OF PROPOSED CENTRAL ARTERY - 1930

CENTRAL ARTERY; BIRDSEYE VIEW FROM THE NORTH - 1930
CENTRAL ARTERY

Aerial view looking toward Haymarket Square
TRANSPORTATION FACILITIES

Highways

The Central Artery, even in its uncompleted state, is responsible for conveying the majority of automobiles into downtown Boston. It will, upon completion, be the in-town link of the expressways leading north and south of town and may handle up to 100,000 cars daily. The other major artery feeding automobiles into town connects with the Sumner Tunnel in East Boston, depositing its traffic either onto the artery or directly into the Dock Square section in the heart of the city. On the western edge of town is Storrow Drive, a parkway following the Charles River, skirting the central district, and allowing access to the suburbs west of the city.

MTA

Both rapid transit subways and elevated routes are under the jurisdiction of the Metropolitan Transit Authority. They provide a number of stations and interchange points throughout the center of the city and extensions to approximately a five mile radius. In the past, elaborate proposals for improving and expanding the facilities in all directions were made. However, the only extension that was actually constructed was the line to Wonderland, Revere. This has proven quite successful. The MTA at present is not handling the volume to break even and can see no way in the immediate future that additional expansion could be attempted.
Rail

Boston has two main railroad terminals that handle both commuter and long distance traffic. The North Station serves the Boston & Maine Railroad while the Boston & Albany and New York, New Haven, & Hartford Railroads are accommodated by South Station. Even though South Station terminates many through trains to the South, nearly 80 per cent of ticket sales are bought by commuters, corresponding to 60 per cent at North Station.¹

Bus

Adequate bus terminal facilities are badly needed by the city. At present, long distance companies operate their terminals in the overcrowded Park Square area, while suburban busses must use the meager facilities at Haymarket Square.

The major transportation facilities are indicated on the following map of downtown Boston.

¹ Based on 1955 Railroad Ticket Sales.
EXISTING TRANSPORTATION FACILITIES

AUTO EXPRESSWAYS
MAIN ROADS
M.T.A. RAPID "HANSI"
RAILROADS

SOUTH BOSTON
TRANSPORTATION DISTRIBUTION

The Boston downtown business area contains at present approximately fifty million square feet of business accommodations. Nearly one half of this space is devoted to office use, and another thirty per cent to retail and consumer services. The remainder of the space accommodates wholesaling, manufacturing, institutional and utility facilities. These combined services attract nearly 350,000 people daily.

The major travel into town may be broken down into the following categories:

- Passenger car - 45%
- MTA - 40%
- Rail - 10%
- Bus - 5%

Studies conducted by the Boston City Planning Board in 1954 show that the retail and consumer services facilities draw more people to town than any of the other facilities. However, even though a larger number of people are attracted to the retail section, approximately seventy-five per cent of these arrive via mass transportation. The remainder, or approximately 27,000 use private automobiles as compared to 32,000 destined for office facilities.¹

¹ The Boston City Planning Board, A Parking Program for the Boston Central Business Area, Boston, Mass.: December, 1954
In ten years, an increase of 30,000 persons per day is expected to enter downtown Boston. With the proposed system of expressways now under construction, it is estimated that the automobile traffic will increase by about 50,000 cars, and the mass transportation facilities will handle about the same number of people that they are now.
DOWNTOWN PARKING FACILITIES

The parking facilities in downtown Boston are far from adequate to accommodate the present day traffic flow. A recent survey of the existing facilities, show 5,800 spaces for off-street parking in the central Boston area, and 15,700 on-street spaces. Of the on-street spaces, 6,000 are located in the business area. Over fifty percent of these seriously impair the movement of traffic.

With the expected increase of 50,000 vehicles flooding the downtown area with the completion of the expressway system, the situation will become even worse. Not only will the existing parking facilities fail to handle the load, but the overcrowded local streets will be filled far beyond capacity.

In order to free the local streets as much as possible, many of the existing on-street parking spaces must be eliminated, thus creating an even greater need for off-street facilities. Of the 6,000 on-street spaces mentioned above in the business area, many are illegal. A strict on-street parking reinforcement program would help the congestion to some degree, but would not solve the question of reparking these cars elsewhere.

It is estimated by the Boston City Planning Board that within the next ten years the total required number of parking spaces will total nearly 30,000. By eliminating all but 3,000 of the on-street parking spaces, 11,000 additional off-street spaces will be required.
Using the above calculations as a basis for a parking study, the Planning Board submitted a Parking Program in December, 1954. The aim of this program was to propose an overall basis for a ten-year building program.

To satisfy the need for the predicted deficit of over ten thousand parking spaces, they proposed the erection of twenty 500-space facilities, to be built at an average of 1,000 spaces per year. These garages were placed throughout the downtown area, with the major concentration being near the central business district as shown on the following plate.

In order to serve a large area and at the same time keep the walking distances down to a minimum, the system of many moderate size garages was proposed. Since most of these facilities were located in the heart of the local street pattern, the size had to be kept down in scale with the low capacity of these streets. They were intended to serve primarily the short term parker, with no attempt being made to satisfy the increasing demand for all day parking.
CITY PLANNING BOARD PROPOSAL FOR OFF-STREET PARKING

- EXISTING GARAGES
- PROPOSED 500 SPACE FACILITY

SOURCE: L.H. PLANNING BOARD BOSTON, MASS.
PROPOSED REDEVELOPMENTS FOR BOSTON

Within the last few years, numerous large scale redevelopment projects have been proposed for Boston. In the downtown area, the following are worthy of note:

North End Redevelopment

The residents of Italian descent that have been residing in the old North End for several generations now are gradually moving from this section. The area is in a serious state of decay, with the population rapidly decreasing, but it still maintains the highest density of families in town. To revitalize this area, studies are being conducted to redevelop it into a medium to high income residential area. Because of its strategic location close to the center of town, and conveniently served by transportation facilities, it has fine possibilities for redevelopment. In contrast to the dense, tight character that it has today, the redevelopment will probably be towards the high-rise type of apartments, designed to attract the single young people as well as the elderly couples, who enjoy the advantages of city living.

West End Redevelopment

Although not as densely populated as the North End, the West End represents a residential district of high density, low cost housing. This area also is ripe for redevelopment, as it is deteriorating rapidly. A redevelopment to provide low and medium priced housing is proposed for this area.
North End Waterfront Proposal

Boston's downtown waterfront, once the flood stream of the city, has been on the decline for many years. Due to the outdated and insufficient facilities offered to present day shipping, the waterfront is now being utilized for warehousing, light manufacturing; and other uses with little relation to the water. As shown on an accompanying plate, the planning board has proposed a sweeping redevelopment of this section. Nearly all of the present buildings would disappear, being replaced by modern facilities including a park, a museum, a small boar marina, ship service establishments, and new excursion piers. With the Central Artery bringing new life to the area, it is felt that the redevelopment potential would be extremely high.

Proposed Passenger and Cargo Water Terminal

The Port of Boston Commission has proposed a large terminal for water traffic to accommodate both passenger and cargo trade. This new facility would be located in the South Boston waterfront area, and would encompass 50 acres of new land between Fort Point Channel and Pier 5. To complete the terminal, warehouses, storage depots, and office space would be provided as well as a large trade center exhibition hall.
FIGURE B

NORTH END WATERFRONT STUDY
BOSTON CITY PLANNING BOARD
Government Center

An extension of the present office facilities to accommodate new state, county, and federal government offices as well as private offices is proposed for a 50 acre plot of land extending from the State House to the Central Artery. Accommodations for these needs are proposed by the Boston City Planning Board, are shown on the following plate.
AREA OF DETAILED STUDY

The area that we have chosen for our detailed study redevelopment contains approximately 43.6 acres in downtown Boston. It is in the Fort Hill Square - South Station area. The following streets form the exact boundaries and define the area: Summer Street, Federal Street, Milk Street, Oliver Street, Northern Avenue, and the Fort Point Channel. The Central Artery, although not a boundary street, severs the site along Atlantic Avenue, and finally passes underground between Congress and Summer Streets. This study area is shown on the following "Study Area" plate.
StudY AREA

- Existing First Class Structures
- Central Artery Entrances
- " " Exits
DOWNTOWN BOSTON

Aerial view looking north, showing Central Artery
HISTORY OF THE AREA

This area was at one time almost completely covered by Fort Hill, one of Boston's three old famous hills. From the earliest days of the city to the revolutionary days, this hill was predominantly used for military purposes. It was in 1632 that the first fort was built as a stronghold against enemy opposition and remained until 1822 when the last of the fortifications finally disappeared.

In the early days of Boston, the North End was the most fashionable residential district, being settled from the 1680's on. By 1740 some of these families began to move over to the Beacon Hill - Bowdoin Square area. About forty years later, the first homes were erected in the Fort Hill and Pearl Street districts, near present day South Station. This section became extremely popular and soon adjacent streets such as Pearl Street, High Street, Franklin Street, and Summer Street were lined with costly mansions. By 1780 all three of these districts, the North End, Beacon Hill, and Fort Hill, were very fashionable areas.

The Fort Hill was the closest to the expanding commercial section, growing to the South, and attracted merchants as well as well-to-do families. Even though Fort Hill had much to offer commercially, the general trend of upper class families after the Revolutionary War was towards Beacon Hill, one of the prime movers being the
construction of the State House. Nevertheless, all three of these residential areas continued to flourish until near mid-Nineteenth Century.

The North End was the first of these fashionable areas to vacate, and by 1840 nearly all the upper class families had moved, most of them to Beacon Hill. By ten years later, the same section was almost entirely filled with Irish Immigrants.

Fort Hill followed suit shortly after, and by 1850 the best of the families in this section had also moved. One of the prime reasons for this move from Fort Hill was the strangle hold that business had on the area, thus displacing the old mansions. With the new business came large warehouses for cotton and wool industries. The mansions that were still left soon became tenement dwellings for immigrant families. The textiles were soon joined by the shoe and leather establishments.

Between industry and the slum areas of the tenement houses, Fort Hill soon became a serious health menace, breeding the plague. The city fathers decided to take drastic action, and in 1866 they ordered the removal of Fort Hill. Buildings were destroyed and the work of digging out the hill began. Removing an eighty foot hill was no small task, and the work wasn't finally completely done until 1872.

With the removal of the Hill went the final trace of any residential character, with business and industry taking an even stronger hold on the area. With the turn of the
century, office buildings began to enter the area and gradually establish a foothold. Thus, it has remained until today, with the older buildings still housing industry, wholesaling, and warehousing, and the newer buildings replacing these with office space. At present, nearly all of the first class buildings are devoted to office use.
TOPOGRAPHY

The study area has gone through many topographical changes during the last century. From the majestic hill that once rose 80 feet above sea level, the land now is practically flat, with only a slight rise where Fort Hill once stood. The difference in level is only about ten feet at present, a very modest slope that is hardly noticed. The position of Atlantic Avenue, constructed in 1880 at the cost of two and one half million dollars,\(^1\) approximates the original shore line. The shore line was extended by filling in East Cove and Great Cove by 1874, to what today is Fort Point Channel. This fill east of Atlantic Avenue to Fort Point Channel is approximately 14.0 feet above mean low water.

The average differential between mean high tide and mean low tide is 9.5 feet. The records show that the highest tide ever recorded reached 15.0 feet above low tide datum of 0.66 in 1851. However, the average range of tide runs between 4.0 feet above mean high tide level and 3.0 feet below mean low tide level.

\(^1\)The City Planning Board, Boston, Mass., Report on a Thoroughfare Plan for Boston, p. 167, Boston, Mass: 1930
STUDY AREA

View of Site along Fort Point Channel from Summer Street Bridge
CHARACTER OF AREA

The physical unity of the area under study has been completely severed by the Central Artery, still in its final stages of construction. Because of this 280 foot scar, we shall describe the eastern and western sections separately.

The portion to the east of the Central Artery is in worse condition, architecturally speaking, than the western segment. With the exception of the Sheraton Building, even the first class buildings were erected before the turn of the century. They are not in the best of condition and present little visual interest.

Numerous tall buildings are found in the western section, many in excellent condition at present. The majority of them are built close against the lot lines, with little open space. A feeling of openness is found only in the vacant land where buildings have been torn down. Buildings of non-fireproof construction are predominately of lower height, in poor condition, and tend to blight the area. The street pattern is rather regular, with the exception of the streets converging at Post Office Square. Because of no building setbacks from the street, the visual aspect of the streets approaches that of a canyon, quite commonly found in large cities. In some cases, the vista is happily broken by lower structures.
STUDY AREA

View from Dewey Square looking North along Atlantic Avenue
STUDY AREA

Corner of Congress and Franklin Streets looking West
STUDY AREA

View of Oliver Street, near corner of Milk Street, looking West
EXISTING STRUCTURE OF SITE

The existing structure of our study area is extremely inefficient, both in street pattern and land use. Over 40% of the gross area is devoted to streets, many inefficient alleys and service roads that make blocks out of single buildings. The new Central Artery accounts for much of this total. Over 23% of the land that is now possible to be built upon is now vacant.¹

The exact breakdown of this structure is shown below:

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<th>Area in Sq. Ft.</th>
<th>Area in Acres</th>
<th>% of Gross Area</th>
</tr>
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<tr>
<td>Gross land area</td>
<td>1,893,000</td>
<td>43.5</td>
<td>100.</td>
</tr>
<tr>
<td>Land in buildings</td>
<td>899,000</td>
<td>20.7</td>
<td>47.5</td>
</tr>
<tr>
<td>Vacant land</td>
<td>208,400</td>
<td>4.8</td>
<td>11.0</td>
</tr>
<tr>
<td>Streets</td>
<td>785,600</td>
<td>18.0</td>
<td>41.5</td>
</tr>
</tbody>
</table>

¹Boston City Planning Board studies on existing land use.
EXISTING TRANSPORTATION FACILITIES

Rail

One of the most important factors in the general circulation plan for the area is the large number of pedestrians using the South Station passenger terminal. Weekday commuter traffic amounts to approximately 57,000 persons each day, \(^1\) representing almost 80% of the gross travel. This number may increase considerably in the future if the current overall increase in rail traffic continues. Many of these commuters enter the MTA subway station at Dewey Square directly from South Station, but the majority flood into the Square on their way to and from their places of business, thus contributing to the general confusion in that area. The present plans now being executed for the completion of the Central Artery seem to largely ignore this pedestrian, automobile separation. Any undertaking to redevelop this area should definitely take into consideration the safety and well being of the pedestrian.

At present there exists a rail line of the Union Freight Company along Atlantic Avenue, terminating at North Station. This line provides a tie between the Boston & Albany Railroad, the New York, New Haven, and Hartford Railroad, and the Boston and Maine Railroad. Approximately 80% of all traffic using this line is destined for warehouses and establishments between North and

\(^1\) Average Volume Passenger trips based on ticket sales - November, 1954 - December, 1955
South Stations. With the re-location of these warehouses, etc., the primary necessity of this line is eliminated. However, there will remain the problem of handling through freight. This could be accomplished by building a public owned belt line system connecting South Station and the yards of the Boston and Maine and East Boston area. A new classification yard on this perimeter loop would sort freight and distribute it as necessary. Assuming the present rate structure to remain in effect, the charges would need to be raised slightly to accommodate for this extra classification.

**Highway**

The majority of north - south automobile traffic will be handled by the Central Artery, now under construction in the area. The Artery and its connecting expressways will make this area more accessible and therefore be a positive factor in encouraging new development to take place there. If the Artery is used to its capacity, and it undoubtedly will be, the number of passenger cars and trucks entering and leaving the area will be increased by at least thirty-five per cent.

This increase in the amount of vehicular traffic will have to be dispersed into downtown. At present, the antiquated local street pattern is less than adequate, and could not possibly accommodate this great an increase. Without this efficient transfer of traffic from the Central Artery to the business district, the Artery cannot be expected to reach its peak operating capacity. According to
latest traffic surveys, the study area has some of the heaviest traffic volume in the city. The functioning of these local streets is hampered also by excessive on-street parking, and on-street truck loading. Efficient flow of local traffic calls for more efficient and direct street layout, better intersection design, the elimination of on-street parking and loading, and the provision for many more off-street parking spaces.

Shipping

Although the Port of Boston does not command the high ranking in water traffic it once had, it is still one of the nation's major ports. Present trends indicate that Boston is recovering her foreign trade and in recent years has risen well above pre-war levels. Petroleum and coal amount to the principal products handled, with lesser trade coming from such products as sugar, cocoa, coffee, and fish.

The old waterfront along Atlantic Avenue has decayed to such an extent that it is no longer involved in any major shipping. New developments and improvements are taking place along the large piers in South Boston. The Fort Point Channel, running adjacent to the study area, is almost void of water traffic, due to inaccessible wharves and dilapidated facilities lining its shores. Although much of the sewage that once was dumped into its waters has been diverted, it still remains a potential
health menace when the main sewerage system is overtaxed and sewage overflow eventually finds its way into the Channel. Because of the average depth of twelve feet, only very small boats may use it. The only boats currently going beyond Dorchester Avenue are refuse disposal scows and a few pleasure craft. Because of these shortcomings, the Port of Boston Authority has recommended the filling of the Channel for more useful purposes.¹

¹Port of Boston Authority, A Study for the Development of Fort Point Channel, South Bay and Adjacent Areas, Boston, Mass.: May 15, 1950
EXISTING PARKING FACILITIES

Only one parking garage exists today within the boundaries of the study area. Even though this facility is supplemented by vacant lots used for parking, it is far from adequate to serve the demands. Adjacent to this area there is another parking garage located on Devonshire Street serving the immediate area. The use of both of these facilities is hampered by poor access due to their unfortunate location with respect to the local street pattern.

The existing parking garage in the study area is the First Franklin Parking Garage bounded by Milk Street, Congress Street, Pearl Street, and Franklin Street. It occupies 67,890 sq. ft. of land, is three stories high, and accommodates approximately 750 cars.

The 1954 Parking Program for Boston recommends the construction of two additional facilities to serve this area. They would be located in Fort Hill Square and near the intersection of High and Congress Streets. Both of these facilities would accommodate a total of 1,000 parking spaces. The need for these accommodations was based upon calculations projected ten years in the future, assuming the same land use without substantial growth in the area. Considering the fact that the area will certainly undergo rapid growth in the next decade, the need for more than this number of parking spaces seems evident.

1The Boston City Planning Board, A Parking Program for the Boston Central Business Area, Boston, Mass.: December, 1954
EXISTING LAND USE

Land use in the study area represents many different uses. The majority of space is devoted to office use, but other uses such as wholesaling and manufacturing infiltrate the area. Many of these other facilities are housed in second class buildings, and will eventually be replaced. The total floor area represents an area of 5,144,400 square feet. Of this total, 3,428,000 square feet is located in first class buildings and 1,716,400 square feet or approximately one third of the total is in second class structures. The land use is divided into the following categories for closer observation: office, retail, consumer service, wholesale trade, manufacturing, and public utilities.

Office Space - (banking, insurance, government, etc.)

a. Floor area - 2,688,500 sq.ft. or 52.5% of total area
b. First class - 2,142,000 sq.ft. or 90.8% of office area
c. Second class - 546,000 sq.ft. or 9.2% of office area

Retail Trade - (general merchandise, apparel, furniture, etc.)

a. Floor area - 118,400 sq.ft. or 2.3% of total area
b. First class - 96,000 sq.ft. or 81. % of retail trade
c. Second class - 22,400 sq.ft. or 19. % of retail trade

1Boston City Planning Board Inventory, 1953
Consumer Service - (amusements, garages, etc.)
a. Floor area - 237,000 sq.ft. or 4.6% of total area
b. First class - 218,000 sq.ft. or 92% of consumer service
c. Second class - 19,000 sq.ft. or 8% of consumer service

Wholesale Trade - (textiles, etc.)
a. Floor area - 932,000 sq.ft. or 18% of total area
b. First class - 120,000 sq.ft. or 13% of wholesaling
c. Second class - 612,000 sq.ft. or 87% of wholesaling

Manufacturing
a. Floor area - 825,500 sq.ft. or 16% of total area
b. First class - 260,000 sq.ft. or 32% of manufacturing
c. Second class - 565,500 sq.ft. or 68% of manufacturing

Public Utilities
a. Floor area - 343,000 sq.ft. or 6.6% of total area
b. First class - 292,000 sq.ft. or 85% of utilities
c. Second class - 51,000 sq.ft. or 15% of utilities

From the above statistics some very important observations may be made. Of the 3,428,000 sq.ft. of first class floor space in the area, over 73 per cent of it is used as office and retail space. With few exceptions, the first class office and retail space is located in the same buildings. Of the total office space available, only 9.2 per cent is located in second class buildings, thus making very obvious the strength of this element in the overall
land use. It is interesting to note that of the 218,000 square feet of first class consumer services, 201,000 square feet is located in one building, the First Franklin Parking Garage.

Many of the second class structures house primarily wholesaling and manufacturing. Over 80 per cent of the floor area devoted to these two uses is located in second class buildings. Practically all of the first class space can easily be converted to new office use.
LAND EVALUATION

For many years now the area that is under study has been decreasing steadily in value. Only the prime location of this area has been holding the value up to where it is today. Because of its strategic location, close to transportation, retail, and the heart of the office section, the land has been slowly gaining in value to help offset what is lost in the lowering of the building values.

The 1994 assessment values for the area are as follows:

- Land evaluation - $14,604,800
- Building evaluation - $35,68,400
- Land plus building - $50,213,200

As was stated above under Land Use, of the 5.1 millions sq. ft. of floor space, 1.7 millions sq. ft., or approximately one third, was located in second class buildings.

First class and second class accomodations are defined as follows: "first class" accomodations occupy buildings designated in the Sanborn Atlas as having "fire-proof construction."

All other surveyed structures are included as "second class." Existing first class structures are shown on preceding "Study Area" plate. The following is a list of all first class buildings in the study area compiled from the 1994 assessment values and the Sanborn Atlas.
FIRST CLASS STRUCTURES

1. New England Telephone and Telegraph Building
   (corner Congress and Franklin Streets)
   
   date built - 1948
   height - 20 stories
   area - 76,600 sq. ft.
   land value - $1,532,100
   bldg. value - $14,267,900
   total value - $15,800,000
   FAR - 6.5

2. United Shoe Machinery Building
   (corner Federal and High Streets)
   
   date built - 1929
   height - 24 stories
   land area - 29,163 sq. ft.
   land value - $800,000
   bldg. value - $3,200,000
   total value - $4,000,000
   FAR - 13.0

3. Chamber of Commerce Building
   (corner Franklin and Federal Streets)
   
   date built - 1923
   height - 1½ stories
   land area - 26,603 sq. ft.
   land value - $1,600,000
   bldg. value - $2,000,000
   total value - $3,600,000
   FAR - 12.8

4. Federal Reserve Bank of Boston
   (corner Franklin and Pearl Streets)
   
   date built - 1920
   height - 9 stories
   land area - 40,330 sq. ft.
   land value - $806,000
   bldg. value - $2,613,400
   total value - $3,459,000
   FAR - 8.5
5. **Converse Building**

(corned of Milk and Pearl Streets)

- date built: 1952
- height: 7 stories
- area: 13,900 sq. ft.
- land value: $406,000
- bldg. value: $2,594,000
- total value: $3,000,000
- FAR: 6.1

6. **New England Bell Telephone Building**

(corned Milk and Oliver Streets)

- date built: 1948
- height: 20 stories
- area: 15,960 sq. ft.
- land value: $763,700
- bldg. value: $1,776,300
- total value: $2,540,000
- FAR: 11.5

7. **First Franklin Parking Garage**

(Milk Street at Post Office Square)

- date built: 1954
- height: 3 stories
- area: 67,890 sq. ft.
- land value: $1,833,300
- bldg. value: $706,700
- total value: $2,540,000
- FAR: 3.0

8. **Sheraton Building**

(466-474 Atlantic Avenue)

- date built: 1926
- height: 13 stories
- area: 35,576 sq. ft.
- land value: $266,000
- bldg. value: $1,234,000
- total value: $1,500,000
- FAR: 12.5
9. **Western Union Telegraph Building**
   (corner Congress and High Streets)
   - date built: 1931
   - height: 14 stories
   - area: 13,960 sq. ft.
   - land value: $209,300
   - bldg. value: $1,040,700
   - total value: $1,250,000
   - FAR: 9.0

10. **Harris Forbes Building**
    (24 Federal Street)
    - date built: 1922
    - height: 11 stories
    - area: 5,616 sq. ft.
    - land value: $224,600
    - bldg. value: $525,400
    - total value: $750,000
    - FAR: 11.0

11. **South Terminal Trust Building**
    (corner Summer and Dorchester Streets)
    - date built: 1924
    - height: 8 stories
    - area: 31,730 sq. ft.
    - land value: $362,000
    - bldg. value: $253,000
    - total value: $615,000
    - FAR: 5.5

12. **Post Office Square Building**
    (Corner Milk and Federal Streets)
    - date built: 1907
    - height: 11 stories
    - area: 5,800 sq. ft.
    - land value: $177,000
    - bldg. value: $223,000
    - total value: $400,000
    - FAR: 10.3
13. **50 Federal Street Building**

(50, 60 Federal Street)

date built - 1930  
height - 10 stories  
area - 8,216 sq. ft.  
land value - $291,300  
bldg. value - $258,700  
total value - $550,000  
FAR - 8.5

14. **Boston Federal Savings Bank Building**

(30-36 Federal Street)

date built - 1924  
height - 7 stories  
area - 6,488 sq. ft.  
land value - $194,600  
bldg. value - $305,400  
total value - $500,000  
FAR - 7.0

15. **Fort Hill Fire Station**

(Fort Hill Square at Oliver Street)

date built - 1953  
height - 2 stories  
area - 16,266 sq. ft.  
land value - $ 81,300  
bldg. value - $388,700  
total value - $470,000  
FAR - 3.0

16. **Tufts Building**

(282-300 Congress Street)

date built - 1898  
height - 7 stories  
area - 46,910 sq. ft.  
land value - $174,700  
bldg. value - $250,300  
total value - $425,000  
FAR - 5.4
17. **Congress Building**  
(corner Congress and High Streets)  
- date built: 1922  
- height: 11 stories  
- area: 7,192 sq. ft.  
- land value: $110,000  
- bldg. value: $315,000  
- total value: $425,000  
- FAR: 10.5

18. **Russia Building**  
(corner Atlantic and Congress Streets)  
- date built: 1898  
- height: 7 stories  
- area: 18,150 sq. ft.  
- land value: $92,000  
- bldg. value: $168,000  
- total value: $260,000  
- FAR: 7.0

19. **Graphic Arts Building**  
(270-272 Congress Street)  
- date built: 1898  
- height: 7 stories  
- area: 17,600 sq. ft.  
- land value: $70,400  
- bldg. value: $104,600  
- total value: $175,000  
- FAR: 7.0
PARKING CONCEPT

During the next fifty years, the Boston Metropolitan Area is expected to increase in population by 50 per cent of the 1950 census figure. As the population increases, so will the need for additional office facilities. To accommodate this need in the downtown area, much expansion is required. Not only must new buildings be erected, but they must be made attractive to prospective tenants who will occupy these buildings. One of the most important demands being made by tenants in the downtown area is the provision of adequate parking spaces for their employees. The inability to supply these needed spaces is one of the reasons why downtown tenants seek suburban locations.

A complete parking program must take into consideration not only the required number of spaces, but even more important, the efficient means of access to these spaces.

In order to meet the increasing demand for the all-day parker in the downtown area, we propose, in conjunction with the Boston City Planning Board's 1954 Parking Program, large scale parking facilities which are directly accessible to the Central Artery. These facilities, easily accessible, and located near the heart of the office section primarily would attract the all-day parker, while the smaller garages, located at various
points closer to the retail section could serve this area from a more immediate vantage point. The association of these large scale facilities with the Central Artery would allow the concentration of vehicular scale. In this way the present intimate scale of downtown Boston, more suited to the pedestrian, would be emphasized.

Thus, by restricting the majority of vehicular movement to the Central Artery and its adjacent large capacity garages, the overcrowded local streets would be less congested and would free them for the improved circulation of service trucks, taxis, and necessary amount of local vehicular traffic.

Even with the large volume of traffic handled on the Central Artery, there is a limit to the number of cars that may use it each day. These conditions being as they are make it impossible to provide complete accommodations for all those desiring parking spaces. Mass transportation facilities must continue to play an important role in conveying these people into town daily.
OVERALL REDEVELOPMENT PROPOSALS

As shown on the following plate, the Boston City Planning Board has projected future zoning proposals for the city. These are not necessarily final conclusions, but rather what would be assumed to be dictated by gradual growth downtown. As an example, the land use along Atlantic Avenue has been re-zoned to eliminate the present warehousing and manufacturing. These facilities would be moved elsewhere to a more desirable location, in keeping with their proposal for new uses of the waterfront as outlined and illustrated in this report. In general, however, the downtown area will remain primarily in its present use.

To help us envision Boston as it might be in the next decade, we assume that the following proposed projects will become realities:

   a. North End Redevelopment
   b. West End Redevelopment
   c. North End Waterfront Proposal
   d. Proposed Passenger and Cargo Water Terminal

These projects have been discussed under a previous chapter entitled "Proposed Redevelopments for Boston".

In conjunction with the above proposals, we would like to offer the following suggestions towards a unified redevelopment program:

1. An extension of the present office area to land east of the Central Artery to accommodate expected future needs.
PROJECTED LAND USE

- OFFICES
- RETAIL
- OFFICES & RETAIL
- RESIDENTIAL
- DOWNTOWN BUSINESS
- MANUFACTURING
- MANUFACTURING & WHOLESALE
- INSTITUTIONAL

SOURCE: CITY PLANNING BOARD, BOSTON, MASS.
2. The creation of a cultural center in conjunction with the proposed park in the Atlantic Avenue Waterfront Redevelopment project linked with the Boston Common by a pleasant setting for the many historic buildings located within this area.

With respect to these redevelopment projects proposed for the city, we have placed the large scale garages as shown on the plate "Suggested Overall Redevelopment". They are so located to handle the vehicular traffic that will be serving these areas.

No attempt will be made in this thesis to determine the specific location of all of these proposed garages. Instead, we shall concentrate our study on one of these facilities. This study will determine the recommended location with respect not only to the Central Artery, but to adjacent facilities. We intend to show how an area could be redeveloped, incorporating a large scale garage into the cityscape, stressing adequate circulation of pedestrians as well as vehicles.
PROPOSED LAND USE

A 50 per cent increase in the population of Metropolitan Boston is expected with the next half-century. This will certainly call for a vast amount of redevelopment as well as expansion in all areas. Due to the physical limitations of downtown Boston, redevelopment rather than expansion would be needed in this area. As previously discussed in this report, the chosen study area is ripe for redevelopment. This is reinforced not only by the deteriorated condition of the area, but by its fine redevelopment potential. It is served by rail, MTA, and the Central Artery, making it one of the most easily accessible districts in town.

Studies conducted in 1953 by the Boston City Planning Board\(^1\) show nearly twenty million square feet of office space in Back Bay and downtown with the latter having over fifteen million. In order to accommodate the expected increase in population, a demand increase of seven million square feet of office space is anticipated within the downtown area. The study area is considered a desirable location for an addition of up to two million square feet of new office space, particularly since it is adjacent to the heart of the present office center at Post Office Square.

\(^1\)Boston City Planning Board. *Boston's Downtown-Back Bay Business District*. Boston, Mass.: September, 1953
Professionals in the field believe that insurance companies, merchandising agencies, and records-processing firms would be most likely to locate on the site. Accessory retail activities serving the office workers (cafeterias, drug stores, tobacco shops, etc.) would occupy parts of the new development as well.

This will be a pilot redevelopment project with the hope that the new and well serviced buildings will stimulate other such projects within the downtown area.
TRAFFIC PROPOSALS

The major traffic problems to be solved in the study area may be broken down into three major categories:

1. Motorists (private and commercial)
2. Pedestrians
3. Service vehicles

The efficient planning for these three traffic patterns is quite important since the success of this pilot redevelopment will rely heavily upon the adequate separation of them. To convey people safely and pleasantly from the various transportation terminals to their destination is one of the main goals of this thesis.

Motorists

The large majority of motorists will enter the study area via the Central Artery. Access and egress is possible at the following points:

Southbound traffic - exits: High Street
Dewey Square

entrances: Oliver Street
Congress Street

Northbound Traffic - exits: Lincoln Street
Northern Avenue

entrances: Congress Street
Northern Avenue

To accommodate the all-day parker, a large number of off-street spaces is needed, with direct access to the Central Artery. It is not proposed to attempt to handle all the employees in the area. That would not be at all feasible, particularly with the convenient mass transportation facilities nearby. It is of prime importance
that the proposed garages be directly tied in with access and egress ramps to eliminate traffic congestion. If possible, separation between pedestrian and vehicular traffic patterns in the garage should be accomplished. Upon once leaving his car, the commuter should be led on a safe and pleasant journey to his place of business.

Facilities must also be provided to accommodate the people who have business in the area of a short duration. They will desire convenient parking spaces near to their destination. At present, one short-term garage is located in the area which may be used if none are available within the building itself.

People arriving by taxi cab must be able to reach the main entrance of each building. Efficient taxi service in a downtown business area is of utmost importance.

Pedestrians

The principal pedestrian traffic originates not only from the mass transportation terminals in Dewey Square, but also from the proposed garages. An efficient means of conveying these pedestrians to their destinations is essential. At present, no such means exists. We feel in this redevelopment proposal, an adequate grade separation between major vehicular and pedestrian traffic patterns is essential.
**Service Vehicles**

A very efficient circulation pattern will be necessary to service the buildings due to the minimum number of streets. Besides serving offices, small and large trucks will supply a number of small shops to serve the people in the area.
PROPOSED REDEVELOPMENT CONTROLS

1. Building Coverage

In order to control the density of the redevelopment and still meet the required office and other related facilities, we recommend a gross floor area ratio of no more than 6.0 and 8.0 for the areas to the East and West of the Artery respectively.

2. Maximum Height

In keeping with the existing surrounding buildings, we propose a maximum building of 250 height.

3. Off-Street Loading

In order to facilitate easy loading and unloading of service vehicles, without excess interference with local traffic or pedestrians, all new buildings should provide a minimum of two berths for this purpose.
STAGING

A redevelopment project the magnitude of the one proposed would be undertaken over a considerable number of years. This might be accomplished in several stages, covering a span of up to forty years. A detailed staging analysis is not offered here, due to the many external factors that would certainly affect it over the long period of time. Instead, a few general comments on the anticipated growth, we feel would be more in order.

A list of the first class buildings has been presented in a preceding chapter. With the exception of these buildings, all of the structures in the area are considered to be subject to removal. As was discussed earlier, nearly all of the second-class buildings accommodate services other than office use that will gradually be relocated in a more desirable area. The removal of most of these structures will undoubtedly be included in the first stage of redevelopment.

Due to the many foreign uses of the area to the east of the Central Artery, and its generally deteriorated condition, we assume that this section would undergo an almost complete redevelopment at the second stage level, including removal of the older first class structures.

The area to the west of the Central Artery, composed of more stable office space would be redeveloped gradually where and when space would be made available. For the final stage of our proposal, we do not anticipate the
removal of such sturdy landmarks as the New England Telephone & Telegraph Building, the Chamber of Commerce Buildings, the United Shoe Machinery Building, or other buildings of like magnitude.
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AN EXPLOITATION OF BOSTON'S CENTRAL ARTERY THROUGH REDEVELOPMENT
REDEVELOPMENT STAGE ONE
SCALE 1" = 50'