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PROGRAMMED RENEWAL FOR THE NORTH STATION AREA
OF CENTRAL BOSTON

by

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Signature of Author

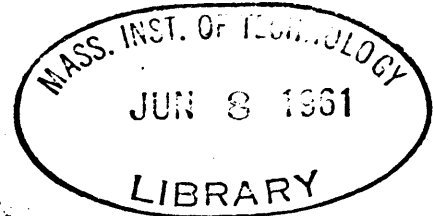
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OF CENTRAL BOSTON

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Crawford C. Westbrook

Submitted to the Department of City & Regional Planning,
on May 20, 1961 in partial fulfillment of the require-
ments for the degree of Master in City Planning.

This thesis represents an interrelationship of five subjects dealing with the past, present, and possible future of a particular central city sector, with major emphasis placed on an approach to long-range urban renewal programming within a coordinated organization of inner metropolitan developments. The component parts comprising the full range of investigation-analysis-planning-programming include:

1. formulation of a programmed renewal technique based upon external determining factors of surrounding central city and inner metropolitan area developments and internal criteria of existing physical composition and business concentrations.
2. full investigation of the physical and economic status of a particular Central Boston sector, with illumination, support, and contradiction of previously accepted authoritative studies, particularly of the misleading and misrepresentative nature of state employment security data utilized for city planning purposes.
3. outline of a development concept for Central Boston emphasizing a pedestrian world as the city center, and integrating the principal forms of urban movement; and indication

John ...

of a design plan for current site restructuring which creates a continuity for the Shawmut Peninsula and establishes a clarity to the structure of the city.

4. organization of a coordinated sequence of projects, changes, and developments in the northern sector of the Boston inner metropolitan area with direct influence upon the particular central city site concerned.
5. application of programmed renewal to the North Station Area sector of Central Boston coordinated with the organization of surrounding inner metropolitan changes and establishing a clear priority and scheduling sequence for extended transition and new form evolution.

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I

INTRODUCTION

A. Introduction to Programmed Renewal

Although the existence of the Central City has been a physical response of extended time scale and a visible evidence of largely unseen forces which have led to continual transition of physical structure and to progressive intensification of land utilization, suburbanization-decentralization of recent decades has become of increasing influence in metropolitan structure and the emergence of new investment, the initiation of new construction, and the creation of new functional forms in the Central City have been decreasingly rapid.

In response to the slower physical transition which the Central City has been, and appears likely to continue, experiencing and as an accorded reaction to the functional inadequacies and visible age of temporarily existing configurations, there has been advanced and is being initiated a process of governmental superimposition and artificial subsidy. The inherent political entrenchment of such a process either may infer modification of economic evolution under a particular level of overall municipal regulatory guidance and control or could act, in implementation if not conception, not merely to temporarily accelerate or revelocity the physical transition of city structure but to actually replace it, to become its permanent substitute in the precipitation and substantiation of

urban center development, and thus result in governmental planning, initiation, and, in effect, reconstruction of those physical facilities within which may be housed the larger, more economically organized business activities.

Heretofore, this process of governmental action in most Central Cities has been narrowly envisioned and generally characterized by immediate, one-shot, and total project clearance, a procedure which undoubtedly has been clear, simple, and comprehensible but which has not always achieved early or complete re-establishment of new facilities. The crux of this "redevelopment" has not been, and is not now, the act of clearance but the uncertainty of immediate reconstruction, and whereas erection of new buildings in a public reuse project may be more or less predeterminably assured, redevelopment for private purposes enjoys no such completion security under the present financing and organizational system.¹ Thus, the threat of prolonged desolation and extended tax-loss periods are not only real and sometimes insurmountable deterrents to needed action, but fear and danger of insufficient funds and initiative to rebuild a Federally cleared site may be the defeating element of further total clearance in the Central City for private development, except under those circumstances where a large financial organization with proven ability and large resources is able to guarantee immediate reconstruction.

Moreover, since project clearance as the most rapid and easy solution (political and otherwise) to pressing, difficult problems of city structure, has taken a heavy toll in displaced families, destroyed

¹A situation exemplified by the New Yorks Streets project in Boston, by the Church Street project in New Haven, and, but for the Travelers Insurance Company salvage of the entire reconstruction responsibility, the East Side project in Hartford.

businesses, and long-delayed reconstruction tax losses in the past, the problems of Central Cities have been clearly demonstrated to be insoluble in the future through redevelopment by the square mile, and the days of crude mass clearance and demolition must and will pass. Yet, on the other hand, isolated "urban renewal" by indistinguishable city sections and without conjunctive action in adjacent areas may result in an equal squandering of time, money, and effort on a patchwork of unrelated construction of not dissimilar functional form to the one which preceded it.

If, therefore, Federal assistance is accepted as given in overriding the physical, economic, and legal difficulties of transition from structural deterioration and functional obsolescence and in the provision of new development opportunities and new physical facilities, and if urban restructuring is to be successfully achieved with proper preservation of non-governmental property ownership and of minimum subsidization in new construction, then action can be undertaken neither as an instantaneous, massive event nor as an arbitrary piecemeal process, and the process of urban reconstruction must now be re-evaluated. There is thus necessitated not only the establishment of a clear basis for urban renewal use and priority of action, the investigatory isolation, measurement, and evaluation of contributing factors of obsolescence, decline, and deterioration, and the delineation of specific areas and effective unit boundaries, but the formulation of an approach to essentially constant urban obsolescence and the derivation of more satisfactory techniques which allow both a broader base of private reinvestment and a choice of extent and speed of action appropriate to a variety of compositional situations as a scheduled program for necessary long-term and continuous

Central City transition.

What is needed is not only the development of more sophisticated legal and administrative tools, but the recognition of inherency of site development potential, broader scope of city structure, and moment and timeliness of renewal action, the preparation of reasonably flexible long-range schedules of priorities for the necessary "conservation," "rehabilitation," or "redevelopment" of component Central City parts according to an overall concept for the eventually to-be-evolved physical-economic form, and the refinement of techniques for long-term, progressive, staged renewal scheduling and for predetermined, coordinated physical programming.

The Logic and Organization of Programmed Renewal

The objective of programmed renewal is the progressive rebuilding of a city or of a section thereof over an extended period of time in accordance with a predetermined but flexible design framework and schedule of action which allows a more diverse and, thus, more sizeable total investment response to market and building space demands than now possible under instantaneous public clearance and prolonged private reconstruction of large areas by a single redeveloper. Since the intent is to designate a long-term renewal project area and schedule public action more closely in accordance with the ability of a broader base of private investors to gradually rebuild, the strength of such a programmed renewal derives from both respect for the existing framework of property rights and enlargement of necessary city rebuilding. It is, therefore, not a new innovation but merely a logical refinement of an already existend and steadily evolving urban planning concept.

Programmed renewal:

1. Would delay action upon and preserve those parts of the existing physical and especially economic fabric which still serve as sound, functional assets to the city and its metropolitan area.
2. Would encourage a more natural process of investment in new structures under circumstances where the scheduled allocation of public funds could be made conducive to eliciting substantial private action taken on informed initiative and private organization cultivated by proper official public relations.
3. Would encourage, in adjacent and nearby city sections capable of conservation or rehabilitation, a process of distillation of operations and firms and of private investment in building improvements, both directed toward a publicly known city rebuilding plan and schedule.
4. Would preserve a measure of individual property rights and exercise reasonable restraints on free-wheeling government action in the taking of land for uncoordinated and conflicting purposes.
5. Would avoid situations where residual areas are left to linger on indefinitely and seriously affect the value of adjacent city sections redeveloped and rehabilitated.
6. Would establish a coordination order of renewal for the entire city as a series of phases in an extended but continuous operation.

The use of programmed urban renewal and reconstruction staging as a technique might be criticized on several grounds: that such scheduling would be arbitrary and thus illegal, that programmed reconstruction would be an impossibly and unachieveably artificial situation, that demolition and construction operations would severely interfere with the local area, that constant turmoil would lead to disruption of business or residential atmosphere and environment, and that a tendency of people to avoid such areas would be inevitable. Most of these arguments are not entirely valid. Building construction projects are now self-contained operations of common occurrence in the heart of many

cities and do not unduly interfere with even adjacent properties.

The scheduling of a renewal project over a particular series of city blocks according to a predetermined order is no more arbitrary than the action of urban renewal itself, a now well established power. The danger of speculative inflation of adjacent properties has been met through early public acquisition and is a technique which requires only modification and breadth of application to renewal programming over longer time periods. The element of timid demolition and reconstruction, though perhaps unconventional, is defensibly sound and could lead to city rebuilding on a unitized basis by a larger number of private investor groups in response to a general publicly established reconstruction design rather than the uncertain, one-shot, single, speculative procedure which is presently so popular, as for example in Boston's West End or New Haven's Church Street project.

Redevelopment is just too large an operation requiring too great an outlay of investment funds to continue to be undertaken by a single organization. In the future, more and more dependence will have to be placed upon a broader base of reconstruction financing, and refinement of urban renewal procedures must create and encourage the opportunity for many smaller groups of property owners, tenants, and investors to participate while at the same time requiring adherence to and coordination toward a particular development goal, one that must, by necessity, be predesigned and established by the responsible supervisory local municipal agency in the best interests of the city for which it is designated. This does not imply need for acquisition of excessive legal powers from state legislatures but involves merely an extension of already existent authority embodied in current planning and renewal legislation and

interpretation.

It is the programmed approach to the rebuilding of U.S. cities with which this thesis is concerned and toward which renewal action for the specific North Station Area of Central Boston will be directed. As a means to the solicitation and coordination of extensive private reconstruction, such a course of action is required if an increasingly megalopian country is to succeed in the gradual but total rebuilding of its central cities as the various older physical areas become obsolete, deteriorated, and dangerous.

Foundation of a Basis for Programmed Renewal Application

The application of a programmed method of urban renewal necessarily requires the prior establishment of a foundation of thorough investigation, determination, and evaluation of a long list of related and interdependent elements whose summary composition provides a basis for priority scheduling. The two collective combinations of factors for a first approximation of technique development are:

1. External determinations upon priority scheduling of surrounding changes, alterations, and developments in the central city and inner metropolitan vicinity and their coordinated organization for implementation.
2. Internal considerations of physical and economic compositional values.

Under the programmed approach to Central City transition and restructuring, the particular sequence and initial location of renewal chosen would represent synthesis of the limitations both of external determination and of internal consideration. For example, the replacement of a rapid transit line, the extension of an intracity circulation element, or the construction of a major metropolitan facility are external factors which would

have a direct bearing upon renewal scheduling, and the presence of significant business activity concentrations and of effective interim renewal boundaries would greatly influence the internal staging and sequence of the program.

1. External Determinations

Establishment of the external determinations of programmed renewal necessitates knowledge of all proceeding, impending, and proposed projects and changes in the nearby Downtown, Central City, and inner metropolitan area, of their interrelationships, conflicts, coordinates, and required timing sequence, and of their impact upon and significance for central city component sections and inherent locational and/or timely created development potential. Moreover, the formulation of central city renewal scheduling necessitates that coordination between these external factors be pre-established and that component section renewal be fully integrated with their coordinated organization.

2. Internal Considerations

The internal considerations of programmed renewal comprise the combination of two separate but interrelated factorial bases:

a. The Primary Value - Physical Composition

Programmed renewal must be founded essentially on physical factors, on the existence, state, and future of all transportation elements, of buildings and structures, of configuration-organization, of various economic-functional facilities and services, of environmental factors and features, and of physical facility flexibility - all in light of Central City section locational significance and accessibility and of long-term historical physical transition. Knowledge of these

physical elements is required both to establish a clear and broad framework for future physical planning and need, extent, and duration of renewal and to determine that combination of two criteria upon which actual internal scheduling of programmed renewal is based, of (a) major sub-units and effective interim boundaries, and of (b) clustering of suitable and appropriate structures for continued, short-term, or interim utilization.

One of the tenets upon which programmed renewal is founded is the preservation of those elements of the physical framework which may continue to serve as significant assets to the Central City and specific section in which they are located, over whatever extended period of time is feasibly related to transition and evolving development of both the city and the section as a whole. In order to determine the physical feasibility of continued use of perhaps the most important physical elements, the existing buildings, the derivation of a "compositional building summary" provides a relative evaluation of individual structures which can then be correlated into the aggregate clustering pattern required for renewal programming purposes.

b. Secondary Value - Economic Composition

Of less locational fixity and thus of still significant but of less dominant future planning and renewal determinance is the economic composition of a central city section. Since a second tenet of programmed renewal is the locational preservation of stable, long-standing, contributory, and advantageously located business activities, implementation of renewal dictated by physical factor values is required to permit the interim continuance of these operations until such time as proper new relocation facilities within the site can be provided.

Utilization of Programmed Renewal within a Specific Central City Section

The utilization of programmed renewal within a specific section of a central city necessitates consideration of past, present, and future of both city and section in light of renewal and new development possibilities. The specific procedural steps of such a process, therefore, include:

- a. establishment of the background history, sequence of development, and historical trends of the particular central city section.
- b. investigation and evaluation of the detailed physical composition of the existing configuration, particularly of the building units, their structural adequacy, and their functional suitability for continued utilization.
- c. determination of the past and present business composition of the section, its recent trends, its significance in the central city and metropolitan economies, and its future tendencies; of the existing floor space utilization, distribution, costs, and physical quality for continued utilization; of the ownership and value composition, distributional patterns, individual dominants, conflicts, diffusion, decline or speculative increase, recent sales, and recent investment or re-investment; and of the direct interrelationships between economic and physical elements and their mutual impacts.
- d. investigation of the larger framework factors of public and private changes proceeding, impending, and proposed in the immediate central city and inner metropolitan vicinity.
- e. evaluation of the expansion and contraction of general Central City economic functions and of the future economic utilization possibilities and development potentials of the particular site.
- f. creation of a foundation for the formulation of specific section planning and renewal policy.
- g. suggestion of an overall development concept for future central city form which recognizes factors of broad, sweeping structure.
- h. synthesization and presentation of a design plan for the section site which fully utilizes the locational development potential, which creates a close interrelationship with adjacent city components, and which ensures full integration with the city center.

- i. outline of a coordinated sequence for inner metropolitan area changes, alterations, and developments which minimizes conflict-interference between projects, upon which section planning may be based, and within which extended section renewal may be undertaken.
- j. formulation and presentation of programmed renewal and gradual evolution for the site toward general central city conceptual development and sector design plan which allows evolution of a new form without prematurely disrupting the present economic values and which provides a careful sequence scheduling that maximizes development coordination.

B. Introduction to Central Boston and the North Station Area

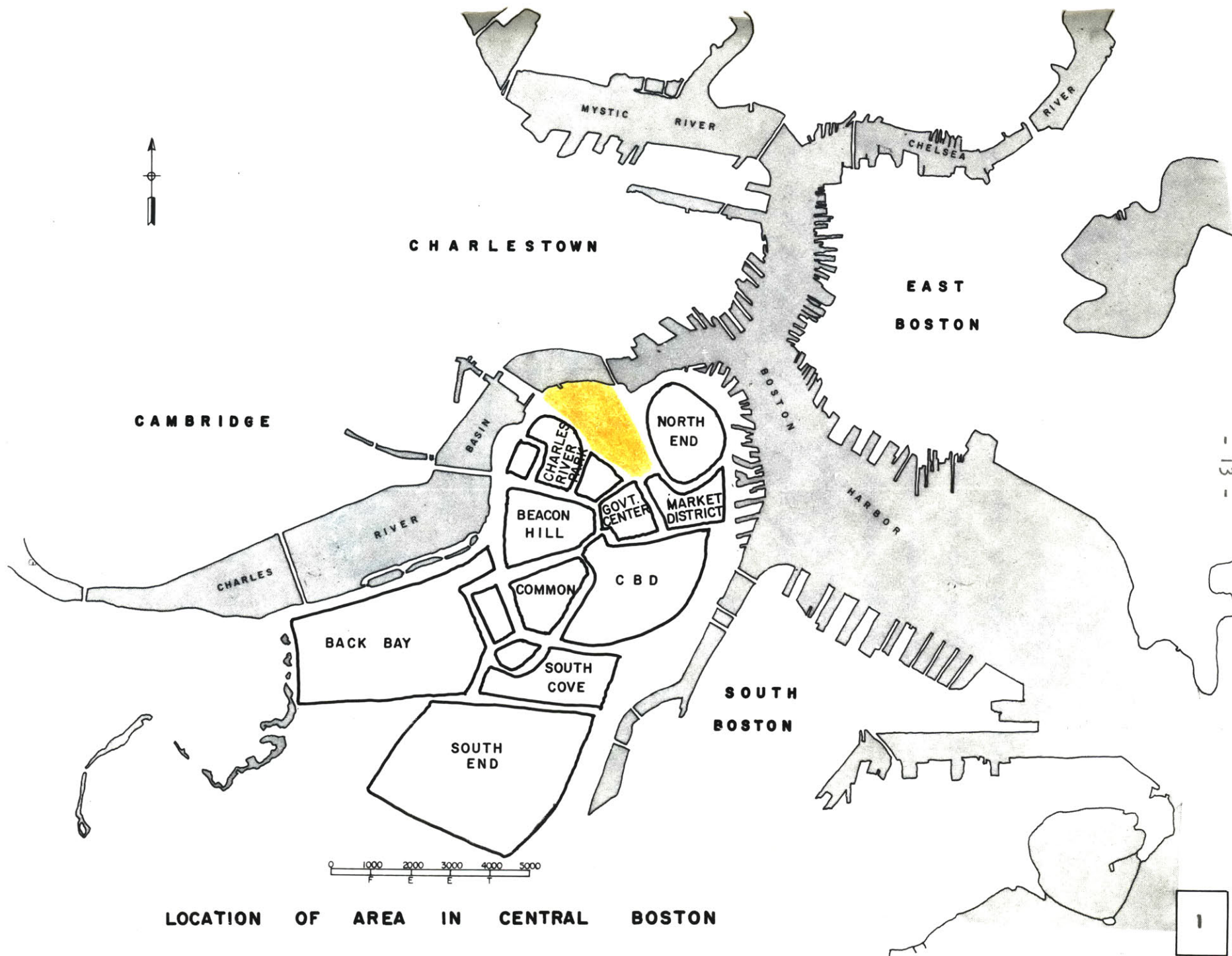
Central Boston, although strongly influenced by the existence of surrounding city sub-centers and experiencing the population redistribution, economic adjustments, and transportation inadequacies of metropolitan decentralization-suburbanization, is a regional center faced with a long overdue major reformation. Whereas other large Central Cities may experience a general turnover in physical structure every century, Boston remains comprised of an extreme disorder, an old age unmodified by extensive new construction, a long declining port vitality, an unrecognized and unexploited shifting economic orientation, an increasingly insolvent and rapidly declining regionally-converging passenger railroad network, a retarded and archaic rapid transit system, and an extremely high level of physical dilapidation and environmental deterioration. Moreover, there appears to be an absence of positive public action, a chronic administrative inertia, a general civic complacency, and a lack of responsible leadership either to create the framework necessary for broad local investment-reinvestment or to initiate the organizational advance to a Twentieth Century technology.

Yet, precedent for contemporary transition is strongly established

in the history of the city and in its continual physical development, for Boston, from its founding at harborside, through its expansion up the slopes of the Tramont, extension down the neck of the peninsula, and creation of filled land into East, South, and North Coves and Back Bay, to its enhancement by the created Charles River Basin, has undergone a positive and progressive alteration of physical form. And though the forces of physical creation in prior periods of restricted accessibility and regional economic concentration and domination no longer exist in the same strength and though there is little expectation that extensive further expansion of the peninsula will occur, the central city is sharply limited in physical size and development sites, the possibility of extensive restructuring and reutilization is undeniably present, and the moment for new form evolution is becoming imminent.

A small but significantly located sector of Central Boston known as the North Station Area forms a level elongation of land at the end of the Shawmut Peninsula, partially within the Downtown, north of the retail core, between two historically residential hills, and on the edge of the Charles River. (Illustration 1.) As one of the ubiquitous commercial and passenger railroad terminal areas to be found on the fringes of Central Business Districts in large cities throughout the nation, the North Station Area is another of the characteristically run-down, non-intensively developed, vacancy-pockmarked collections of blocks that are no longer dominated by railroad-oriented crowds and activity, that are physically deteriorating at an increasingly rapid rate, and that have become major development liabilities.

As the northern entrance to the central city, the North Station Area is bounded on the north by a principal river, on the east by a



LOCATION OF AREA IN CENTRAL BOSTON

definite expressway barrier, and on the west and south by proceeding and impending redevelopment projects and is a composition of sixteen city blocks, traversed by twelve streets, containing 133 private and public buildings, and comprising more than one-tenth of the total land area of the Downtown, almost three per cent of the total Downtown employment, more than 300 of the total Downtown business firms, and more than five per cent of the total Downtown floor space.

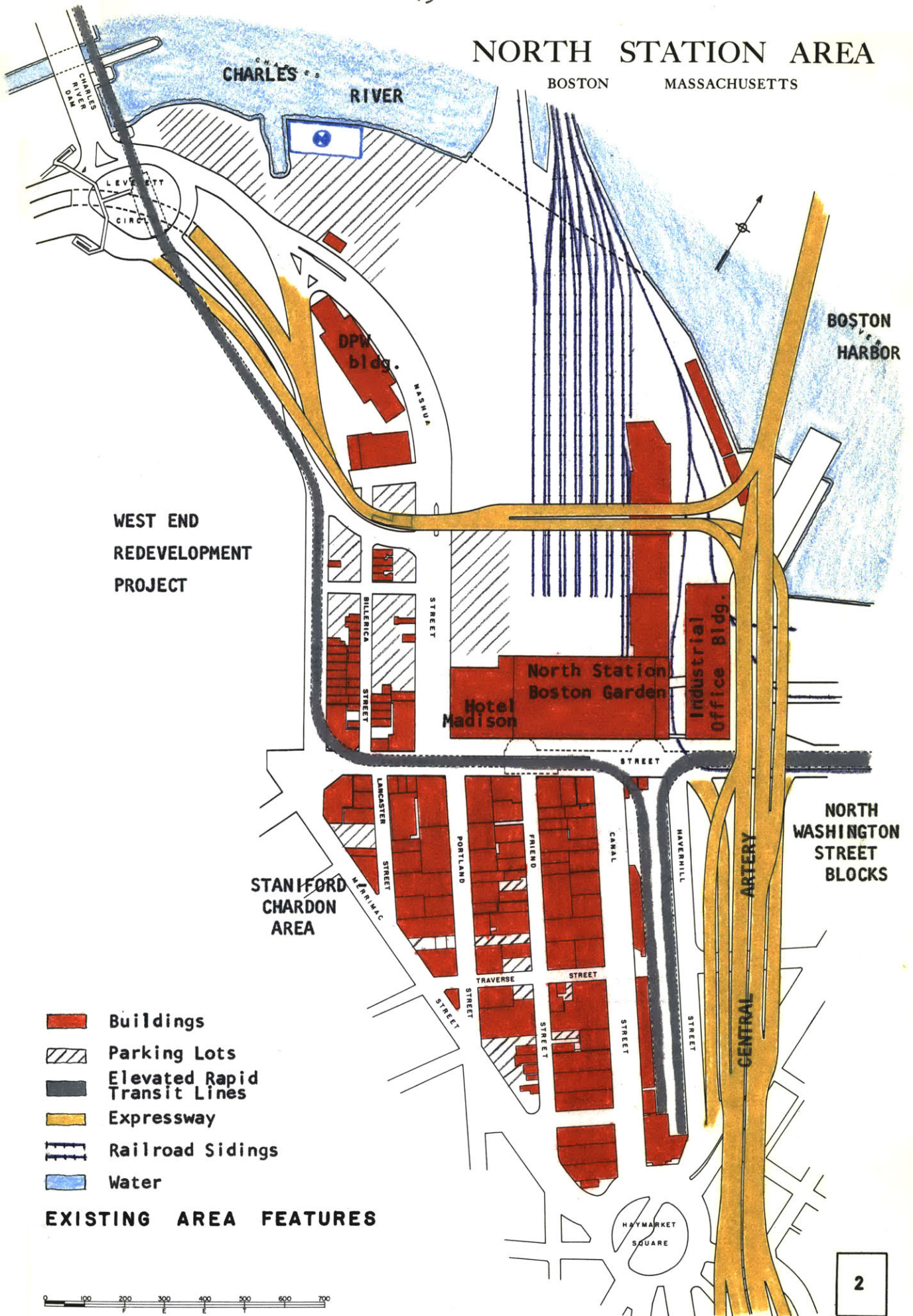
This area so defined contains the following significant elements:

- a. concentrations of office, wholesaling, retailing, and manufacturing activities.
- b. a small, mixed commercial-residential block.
- c. a railroad passenger terminal and siding yard.
- d. a large expanse of vacant riverfront land fronting on a major metropolitan river.
- e. a 13,000-capacity entertainment auditorium.
- f. a 500-room hotel.
- g. a 13-story industrial office building.
- h. the headquarters building of the state Department of Public Works.
- i. two elevated lines of the metropolitan rapid transit system.
- j. the new intown elevated section of the future inner metropolitan circumferential expressway. (Illustration 2.)

Since recent completion of the intown expressway and initiation of immediately adjacent redevelopment will leave the little-known but clearly definable and only superficially studied North Station Area intact and ignored as an "odd slice" of the northern peninsula untouched by proceeding or impending central city reorganization between new development and the most definite of nearby physical and planning boundaries -- the Charles River and the Central Artery -- and will

NORTH STATION AREA

BOSTON MASSACHUSETTS



WEST END
REDEVELOPMENT
PROJECT

BOSTON
HARBOR

DPW
bldg.

Hotel
Madison

North Station
Boston Garden

Industrial
Office Bldg.

STANFORD
CHARDON
AREA

NORTH
WASHINGTON
STREET
BLOCKS

- Buildings
- Parking Lots
- Elevated Rapid Transit Lines
- Expressway
- Railroad Sidings
- Water

EXISTING AREA FEATURES



create a new dimension of development potential, renewal consideration of the North Station Area site becomes both appropriate and timely.

C. History of the Area²

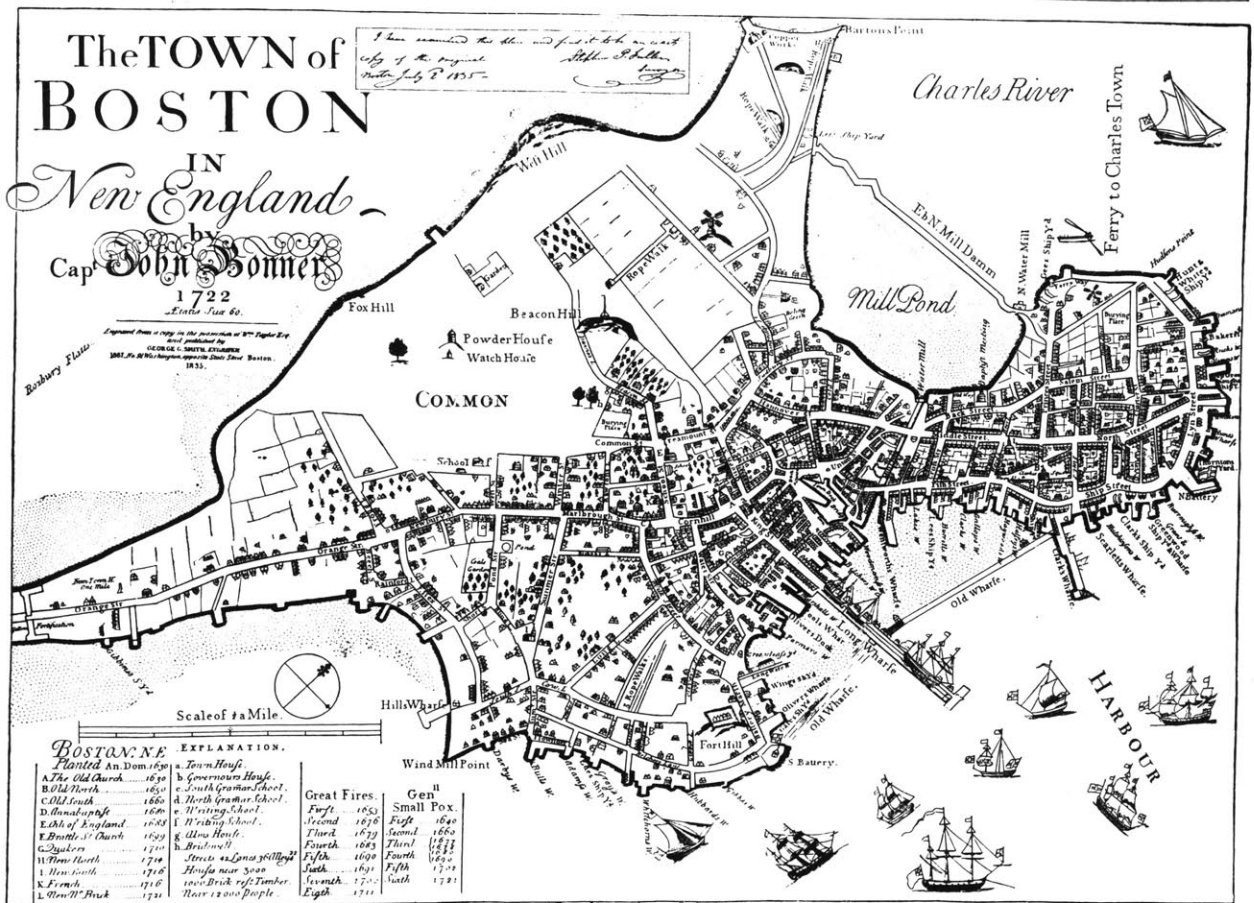
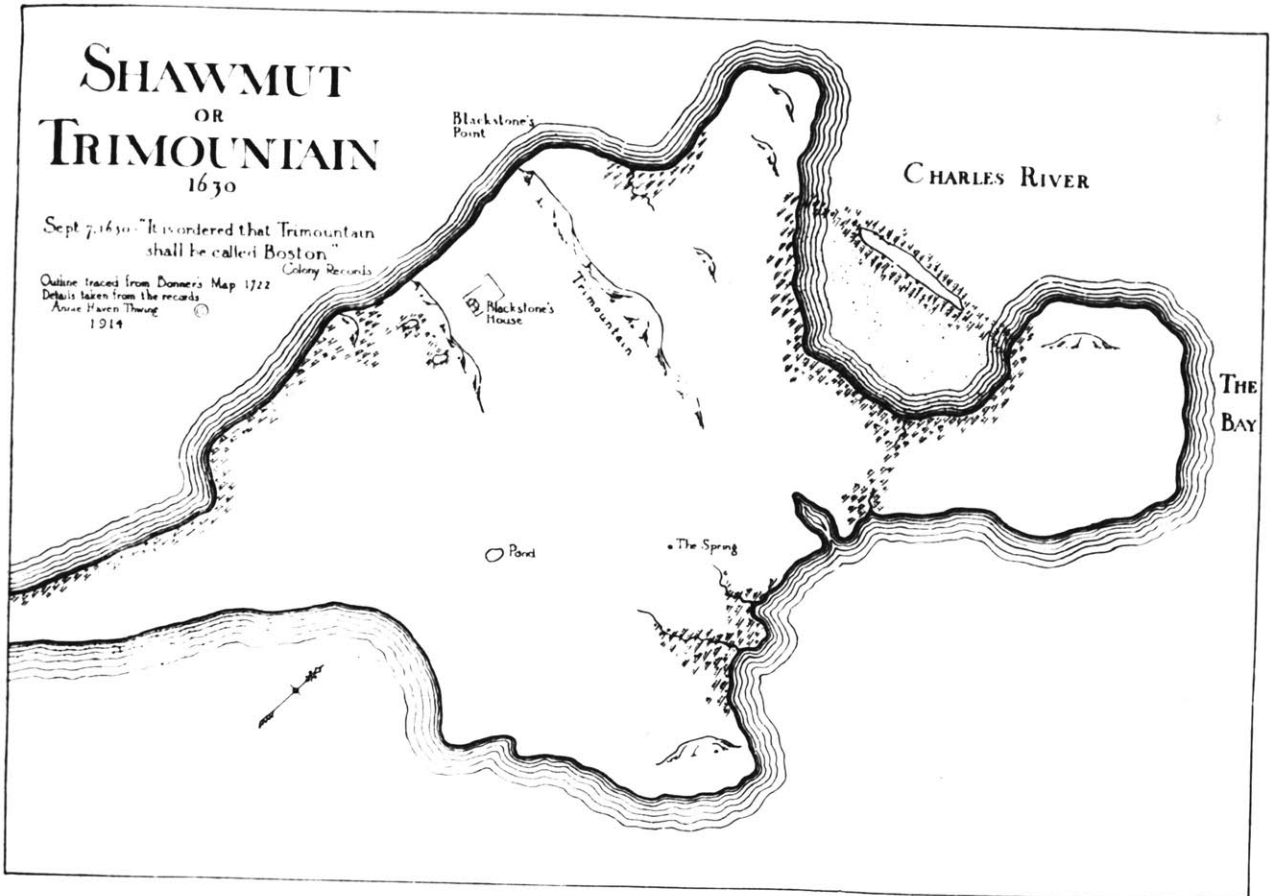
The City of Boston at the time of its settlement consisted of a hill-covered peninsula projecting northward from the mainland into a series of large, shallow bays and junctioning rivers on whose northern edge, between Bowdoin Hill and Copp's Hill, lay a large indentation in the shore originally known as North Cove. Between 1630 and 1645, early in the economic development of the city, the value of natural tidal action around an elongated island at the entrance to this cove became apparent and a scheme was devised by local businessmen to create a dam or causeway over the island, to dig a sluiceway from this impounded basin to East Cove near Dock Square, to install tidal gates on this sluiceway, and thus to utilize the 6 to 10 foot rise and fall of the harbor tides to move water into and out of the basin and generate waterpower for shoreline grist and lumber mills. So was created on the northern edge of the growing community, the Mill Dam, Mill Pond, Mill Creek, and Boston's first resident industry.

This impounded Mill Pond extending southward to what is now Haymarket Square and its sluiceway to the harbor were dominant features in the Boston landscape and consciousness and were the direct cause of one

²The source material for this section consisted of a large number of isolated statements collected from reports, histories, and general books on Boston in which reference was made to the Mill Pond, the railroads, and the business development of the city, as supplemented and modified by public records available in city departments on public works construction, building inventories and residential street locations, and by maps, photographs and drawings from private and institutional collections.

of the major development patterns in the city - the effective separation and individual stamp of the mercantile-business-civic center of State Street, the market-manufacturing strip along the Mill Creek, and the growing residential North and West Ends. (Illustration 3.)

As part of a long historical sequence of topographical change in Boston, there came a time when the Mill Pond was the next logical candidate for the land filling operation which has so characterized the city's development, and by 1800, a double-edged speculative proposal for the creation of buildable sites on Beacon Hill and the filling of the Mill Pond had been officially sanctioned. In the so-called "Triangle Plan" subsequently developed, the architect Charles Bulfinch produced a street layout which utilized the principal features of the Pond's edges and the long sluiceway and which projected forward between the opposite edges of the pond (North Margin and South Margin Streets) the continuity of east-west and north-south streets: Union Street was extended as Charlestown Street (now Washington Street North) to the Charles River at the foot of Copp's Hill; Causeway Street was created over the top of the Mill Dam from Leverett Street to Lynn Street (now Commercial Street); Friend Street and Cold Lane (now Portland Street) were extended paralleling Mill Creek to Causeway Street in order to transform the old sluiceway (a means of swift and convenient disposal for the slaughter houses and fish merchants of the Market District) into a stone-faced canal and to create an active commercial wharf along its edge; a Merrimac Street was placed parallel to South Margin Street from Market Square (Haymarket Square) to Causeway Street; and the resulting triangle enclosed between Charlestown Street (Washington Street North) and Merrimac Street was broken up into a pattern of narrow, awkward blocks



dictated by the parallel lines of the Mill Creek and extended Friend and Portland Streets. (Illustration 4.)

Although by 1824, the slow filling of the Mill Pond had created about thirty new acres in the city, the immediate economic motive of this operation is unclear, because once filled, the area remained an undeveloped "dreary waste"³ for many years. It seems, moreover, to have been another one of those speculative undertakings which apparently have always been the root of most new development in Boston.

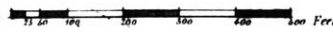
The first signs of utilization of the area appear to have been a patchwork of commercial buildings facing the canal and probably of some residential structures oriented toward the developing West End, but due to creation of the Charles River Bridge and the then new Warren Avenue Bridge to Charlestown, the area partially developed as a linear strip toward the city center. As the growing city's bounding low-level wedge of land, however, the area was a natural terminus for transportation lines from the north and northwest, and in 1835, a singularly critical event occurred to inevitably determine the future of the area, for across the Charles River from Cambridge to Barton's Point (near the present Leverett Circle) was constructed the trestle of the Boston & Lowell Railroad. During the next twenty years, this change was reinforced four-fold, with an additional twenty acres of fill from Pemberton Hill and Copp's Hill being dumped into the Charles River in its anticipation and a strong "secondary commercial expansion to the North"⁴ occurring. By the

³Walter M. Whitehill, Boston, A Topographical History (Cambridge, Mass.: Belnap Press, 1959), p. 84.

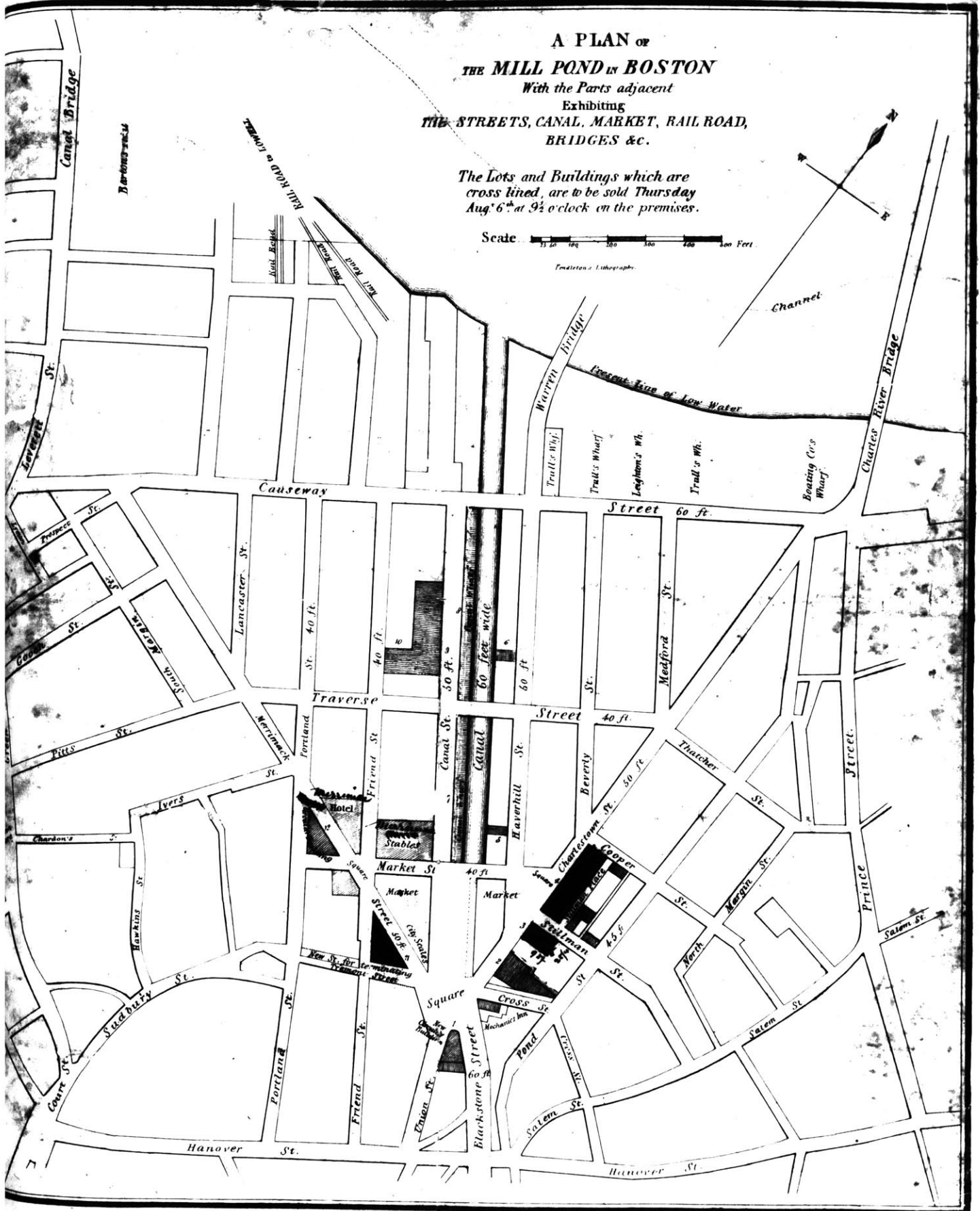
⁴Walter Firey, Land Use in Central Boston (Cambridge, Mass.: Harvard University Press, 1947), pp. 58-59.

A PLAN OF
THE MILL POND IN BOSTON
 With the Parts adjacent
 Exhibiting
**THE STREETS, CANAL, MARKET, RAIL ROAD,
 BRIDGES &c.**

The Lots and Buildings which are
 cross lined, are to be sold Thursday
 Aug^r 6th at 9^o 1/2 o'clock on the premises.

Scale  0 20 40 60 80 100 120 140 160 180 200 Feet

Embleton's Lithography.



1850's, four northern and western railroads had constructed stations in the area - the Boston & Lowell Railroad on Lowell Street near Nashua Street (1835), the Boston & Maine Railroad in Haymarket Square (1845), the Fitchburg Railroad between Haverhill and Beverly Streets (1845), and the Eastern Railroad on Causeway Street (1854) - the canal through the area had been filled to form a road bed for the Boston & Maine Railroad lines to Haymarket Square, the West End residential area had expanded to Nashua Street, a church and two theaters had been erected near Lowell Square, large mercantile buildings had been constructed along Canal Street, manufacturing operations were filling in the Merrimac, Lancaster, and Portland Street blocks, and a major horse and carriage center was developing along Friend Street.⁵

At the same time, however, there was a gradual differentiation occurring between the various business areas in the city. Whereas "in 1805 the segregation of different kinds of enterprises into district areas was rudimentary and consisted primarily in a wholesale-retail separation with some differentiation of inns, markets, and exchanges from the other businesses,"⁶ by mid-century this specialization of function had established a strong pattern: "Upper Washington Street and the area surrounding its juncture with Hanover Street was a predominantly dry goods district . . . "⁷ the wholesale markets of Dock

⁵From photographs of Lowell and Billerica Streets of the Boston Atheneum collection and from early city maps in the files of the Boston City Building Department.

⁶Firey, op. cit., pp. 58-59.

⁷Ibid., pp. 58-59.

Square were continuing as strong features, and the Causeway-Canal Street business area had become strongly oriented toward the railroad, toward goods movement and sale, and toward heavy pedestrian and vehicular intra-movements with the rest of the city, and had become "one of the busiest and most valuable sections of Boston."⁸

Thus was given to the area in the mid-nineteenth century that mixed railroad-mercantile physical character which has persisted up to the present time and which has been subject to modification and resurgence only slowly by such changes as the laying of the Union Freight Railroad line along Causeway Street and the erection of a Boston & Lowell Railroad freight depot on Minot Street at the end of Nashua and Billerica Streets (by 1884);⁹ the construction of Union Station at the corner of Nashua and Causeway Streets, the discontinuance of the Boston & Maine's Haymarket Square terminal and the replacement of the railroad lines by trolley tracks and turnaround between Canal and Haverhill Streets by 1898;¹⁰ the opening of the Charlestown High Bridge, 1898;¹¹ the extension of the trolley line over the Charlestown High Bridge to City Square;¹² the gradual reconstruction of the residential West and North Ends, (around 1900);¹³ the placement of the trolley lines in subways near Haymarket

⁸George F. Weston, Jr., Boston Ways - High, By and Folk (Boston: Beacon Press, 1957), p. 17.

⁹Comparison of the 1873 and 1884 Bromley Atlases.

¹⁰Comparison of the 1884 and 1898 Bromley Atlases.

¹¹Metropolitan Transity Authority, Report - Proposed Washington Street Subway Extension from Haymarket Square to Sullivan Square (Boston, Mass.: January 29, 1951), Jackson & Moreland, engrs.

¹²Comparison of the 1884 and 1898 Bromley Atlases.

¹³Observed from Bromley Atlases of 1873, 1884, 1898, and 1902. The Billerica, Street blocks appear to have been rebuilt between 1898 and 1902.

Square,¹⁴ the erection of the Boston City Relief Station over the tracks at Haymarket Square,¹⁵ and the construction of the elevated from Haymarket Square to Sullivan Square¹⁶ and from North Station to South Station by 1900;¹⁷ the creation of the Charles River Dam and Basin, in 1910;¹⁸ the construction of the Lechmere line of the Boston Elevated Railway Company from Haymarket Square over Causeway and Lowell Streets and the Charles River to Cambridge, 1912;¹⁹ the consolidation of the various railroads and the creation of the North Station Complex (Hotel Manger, North Station-Boston Garden, and Industrial Building), 1928;²⁰ the arrival of motorized transport in the 1920's; the reconstruction of Haymarket Square, 1933;²¹ the additional filling of the northern edge of the Charles River below the Dam (by 1940);²² the demolition of the elevated transit line to South Station, 1942;²³ the abandonment of the Warren Avenue Bridge,

¹⁴ Comparison of the 1884 and 1898 Bromley Atlases.

¹⁵ Comparison of the 1898 and 1902 Bromley Atlases.

¹⁶ Metropolitan Transit Authority Recess Commission, Arthur W. Coolidge, Chairman, Report of the Legislative Commission on Rapid Transit, 1945 (Commonwealth of Massachusetts).

¹⁷ Boston Chamber of Commerce & Boston Bureau of Commercial and Industrial Affairs, Boston, An Old City with New Opportunities (Boston: 1922), p. 21.

¹⁸ Metropolitan District Commission, Charles River Dam lockhouse.

¹⁹ Comparison of the 1902 and 1912 Bromley Atlases.

²⁰ Building and property records at City Hall Annex.

²¹ Demolition records for affected addresses from the Boston City Building Department.

²² Cram's Street Map of Greater Boston (Indianapolis, Indiana: George F. Cram Co.).

²³ Metropolitan Transit Authority, Engineering Department.

1950;²⁴ the development of the Charles River Basin; the construction of Science Park on the Charles River Dam, 1951;²⁵ the conversion of the Industrial Building to office uses in the 1950's;²⁶ the slicing through of the elevated Central Artery expressway, 1952-1956;²⁷ the curtailment of Boston & Maine Railroad operations and consolidation of trackage, 1959; and the redevelopment of the West End residential area, 1960.

The history of the North Station Area has been one of continual physical change and of progressively more intensive economic utilization. Having grown as a strong but diverse economic concentration with heavy overtones of transportation orientation and an unbroken thread of residential use, its strength, nevertheless, is as a business area. Economic change and physical alteration in response to technological innovation and environmental surroundings has always been the most significant element of the Area's existence.

²⁴Records of the Boston City Traffic Department.

²⁵Metropolitan District Commission, Charles River Dam lockhouse.

²⁶Building manager, North Station Office Building.

²⁷Massachusetts Department of Public Works.

II

PHYSICAL COMPOSITION OF THE EXISTING AREA

A. Physical Framework

The physical composition of the existing North Station Area represents that combination of structural, transportation, utility, jurisdictional, and environmental elements which are the decendent components of 150 years of commercial history at the northern end of the Shawmut Peninsula. This chapter on the physical composition of the North Station Area investigates subjects ranging from the history of building construction to the anticipatory municipal regulations upon future development and is undertaken in order to measure the existence, effect, adequacy, and future of major physical elements both within and adjacent to the Area, to present the sense of necessary compositional-organizational transition, to evaluate the direction of evolution, to indicate the need for anticipation of a now environmentally accelerated process, and to establish a foundation for physical planning and renewal programming.

1. Description by Component Units

The existing North Station Area may be considered to consist of five major parts, each of which is a recognizable element and each of which represents a different physical-economic function:

a. Central Artery-Causeway Street-Merrimac Street triangle

A dense commercial concentration of simple brick construction averaging about four stories in height, with clusters of higher, more substantial buildings isolated among low, deteriorated structures.

b. Billerica Street blocks

A mixed residential-commercial remnant of the now redeveloped-cleared West End consisting of old wood-brick buildings within a small area almost entirely surrounded by elevated transportation structures, devoid of residential facilities and amenities, and interspersed with encroaching parking lots.

c. Nashua Street block

A small, isolated sub-area consisting of two principal structures: a dominant ten-story office building of the Massachusetts Department of Public Works, and an old brick secondary steam generation plant of the Boston Edison Company.

d. North Station Complex

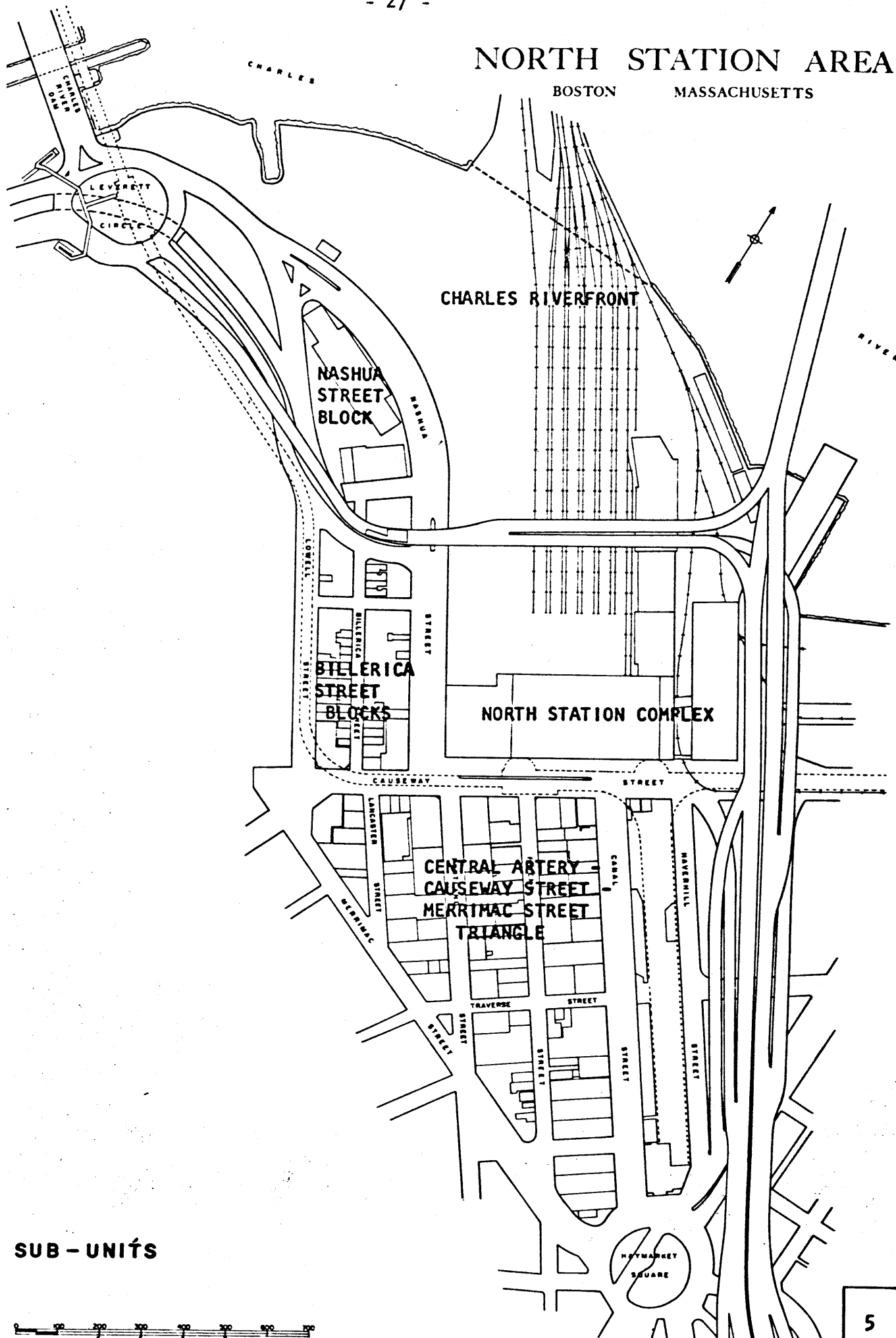
A three-structure unit consisting of the 16-story Hotel Madison, the Boston Garden-North Station, and the 13-story Industrial Office Building and representing the most significant building group in the northern Downtown.

e. Charles Riverfront

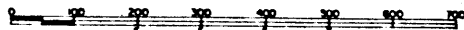
A large, open, unstructured area extending from Leverett Circle to the abandoned Warren Avenue bridge and from the North Station Complex to the Charles River, partially occupied by trackage of the Boston & Maine Railroad, and approximately 50 per cent vacant.

NORTH STATION AREA

BOSTON MASSACHUSETTS



SUB - UNITS



5

These five sub-units together comprise the fifty-three total acres of the North Station Area. Though distinct, they are not separate. And because the future of all are strongly interrelated, it is the North Station Area, bounded by redevelopment projects, by the Central Artery, and by the Charles River, which is the necessary single sector for planning consideration.

2. Utilization of the Land Area

The measure of general land utilization in the North Station Area indicates the nature of the physical fact, form, and composition and places perspective on past and present physical development. In addition, the process clearly reveals that while parts of the Area are densely built-up at almost 100% of available square footage, there are other sections of vast open and/or underutilized land and that a large total land area is occupied by streets, alleys, and parking lots not beneficially contributing to pedestrian or public open space. (Illustration 6.)

As shown in Table II-1, the investigation indicated several important and striking points:

First, the North Station Area as a whole is less than one-third fully and intensively developed.

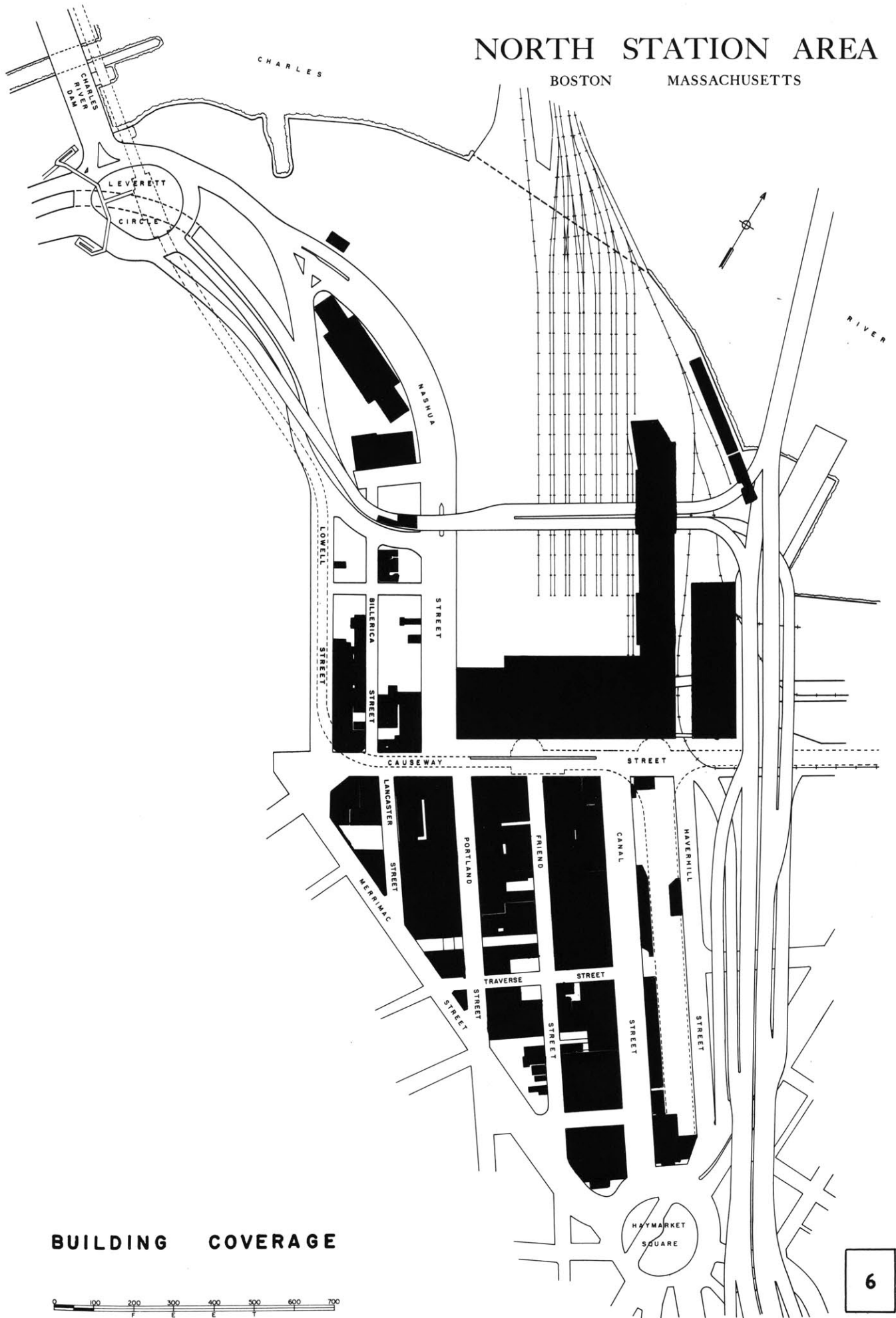
Second, the North Station Area in size represents fully one-tenth of the total land area of Downtown Boston.

Third, the North Station Area is approximately as large as the adjacent proposed Government Center redevelopment project area.

Fourth, the North Station Area contains a more or less single unit of 23 acres of vacant or underutilized land between the North Station

NORTH STATION AREA

BOSTON MASSACHUSETTS



BUILDING COVERAGE



Source: Sanborn Atlas

TABLE II-1

COMPONENTS OF LAND UTILIZATION, NORTH STATION AREA, 1960

	Land Area	
	Square Feet (acres)	Percent of TOTAL LAND AREA
TOTAL LAND AREA	2,318,600 (53.2 acres)	
DEVELOPED (occupied by buildings)	631,600 (14.5 acres)	27.2
UNDERDEVELOPED (occupied by streets, alleys, railroad yards, parking lots, open riverfront, vacant land)	1,687,000 (38.7 acres)	72.8
<u>Selections by Use</u>		
Land occupied by streets and alleys	462,100 (10.6 acres)	19.8
Land occupied by parking lots (all types)	395,299 (9.1 acres)	17.0
Land occupied by public or pedestrian open space ^a	0	0
<u>Selections by Sub-Unit</u>		
Land occupied by Billerica Street blocks (including parking lots and internal streets)	117,000 (2.7 acres)	5.0
Land occupied by Nashua Street block	300,200 (6.9 acres)	13.0
Land occupied by North Station Complex (Hotel Madison, North Station-Boston Garden, and Industrial Office Building)	141,700 (3.2 acres)	6.1
Land occupied by triangle (between Causeway Street, Haverhill Street, Haymarket Square, and Merrimac Street)	662,700 (15.2 acres)	28.6
<u>Selections by Major Underdeveloped Area</u>		
Underdeveloped land within Block 187 (between the Charles River, Beverly Street, North Station Complex, Nashua Street, and the Charles River Dam)	1,004,400 (22.9 acres)	43.1

^aDoes not include street rights-of-way

Source: 1959 property parcel cards, Assessing Department, City of Boston.

Complex and the Charles River that represents the largest unstructured and uncommitted potential development site in all of Central Boston.

3. Concentrated Entrance to the Central City and Downtown Boston

Elementally considered, all forms of surface transportation - railroad, rapid transit, and motor vehicle - from the northern sector of the metropolitan area, the state, and the New England region must enter Downtown Boston directly through or immediately adjacent to the North Station Area. Moreover, in terms of volume of vehicles experienced and number of passengers handled, the North Station Area functions as a key, and perhaps the most concentrated, entrance to the central city. (Illustration 7.)

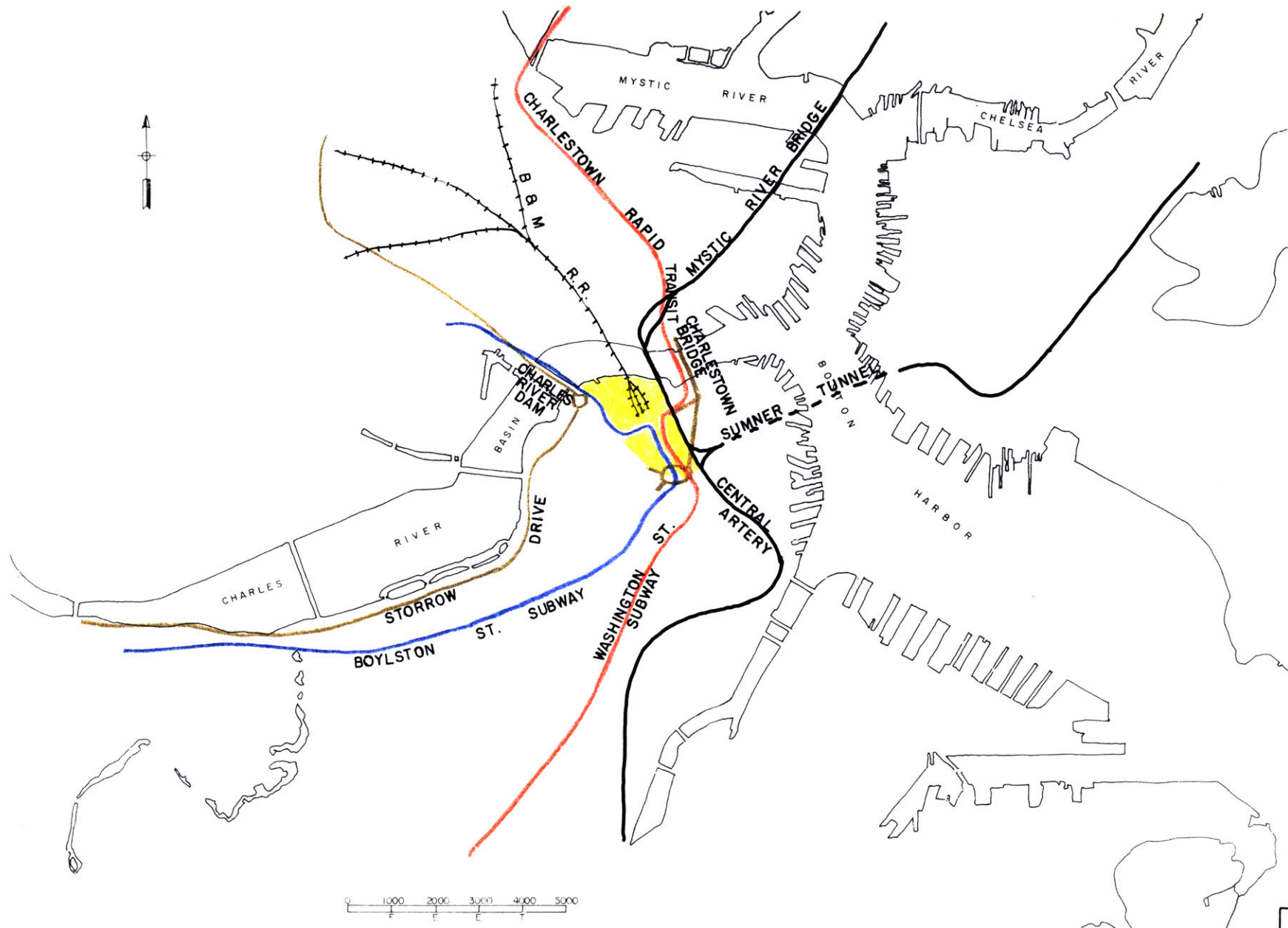
As shown in Table II-2, the volume of movement through or adjacent to the North Station Area thus appears to range from 300,000¹ to over 500,000² persons per day, and places a scale of major importance upon the Area in terms of both physical transportation accessibility and locational economic potential.

4. Daily Population

The present daily population of the North Station Area and its pattern of fluctuation not only illuminates the present consumer market and economic-physical composition of the Area but places a significant evaluation upon the future function of this sector of the central city and upon the future development potential of the site.

¹300,000, consisting of 200,000 vehicles at one person per vehicle plus 100,000 mass transportation passengers.

²500,000, consisting of 200,000 vehicles at two persons per vehicle plus 100,000 mass transportation passengers.



TRANSPORTATION FACILITIES

TABLE II-2

DAILY VOLUME OF MOVEMENT INTO CENTRAL BOSTON THROUGH OR
ADJACENT TO THE NORTH STATION AREA

Method of Movement	Date of Survey	Facility	Daily Volume of Movement	
			Entering	Leaving
Motor Vehicles	1959 ^a	Central Artery	35,180	35,640
	1959 ^b	Charles River Dam	16,602	14,282
	1959 ^b	Storrow Drive (Charles Street)	30,230	36,305
	1954 ^c	Charlestown Bridge	10,349	18,784
	1954 ^c	Sumner Tunnel	14,341	15,447
			Vehicles	106,000
Transit Passengers ^d	1960 ^e	Lechmere P.C.C. Line	18,486	14,699
	1960 ^f	Forest Hills-Everett rapid transit rail line	21,940	18,722
Railroad Passengers	1959 ^g	North Station terminal	13,000	13,000
		Passengers	53,000	46,000

^aAverage daily vehicular traffic (ADT) at the high-level Charles River bridge, as determined from one-week count, December, 1959. Source: Mass. D.P.W.

^b11-hour 7AM-6PM vehicular count taken January, 1959. Source: M.D.C.

^cJune, 1954, 17-hour 7AM-12 midnight Central Boston cordon count. Source: Mass. D.P.W.

^dNo statistics available on the number of passengers carried by either MTA bus lines or the Eastern Massachusetts Street Railway Company buses to and from Haymarket Square.

^ePassenger count, April, 1960, 6:30AM-11:00PM. Source: M.T.A.

^fPassenger count, May, 1960, 6:45AM-10:00AM entering; 1:30PM-6:30PM leaving. Source: M.T.A.

^gB & M Railroad carried some 8 million passengers into and out of Boston in 1959, or roughly 26,000 per weekday. Source: B & M R.R.

Magnitude of Daily Population

The composition of four sources are utilized to construct a daily population for the existing North Station Area:³

- a. The number of passengers of the Boston & Main Railroad entering and leaving the Area and Boston through North Station.
- b. The number of persons employed by businesses within the North Station Area.
- c. The number of persons attending scheduled entertainment events at the Boston Garden.
- d. The estimated present residential population living in the four-block Billerica Street sub-area.

TABLE II-3

DAILY POPULATION, NORTH STATION AREA

Source	Nature	Contribution to Daily Population of Area (persons)
Passengers, Boston & Maine Railroad (1959) ^a	Passage into and through the Area	13,000
Employment total of Firms in Area (1960) ^b	Working in the Area	7,200
Patrons of the Boston Garden (1959) ^c	Present in afternoons and/or evenings	8,600
Residential Population of Billerica Street blocks (1950) ^d	Resident in the Area	500
Total		29,300

a. A figure approximated from a 1959 total of 8,000,000 passengers carried by the B & M Railroad into and out of Boston.

b. Employment total revealed by 1960 survey and investigation conducted as part of "Economic Composition" chapter.

c. An average calculated directly from 1959 records of the Boston Garden Arena Corporation indicating a total patronage of 1,511,000 persons for 175 days of scheduled events.

d. An estimate of residential population of these four blocks based upon the latest data source, Housing Block Statistics, Boston, Massachusetts, U.S. Census' of 1950.

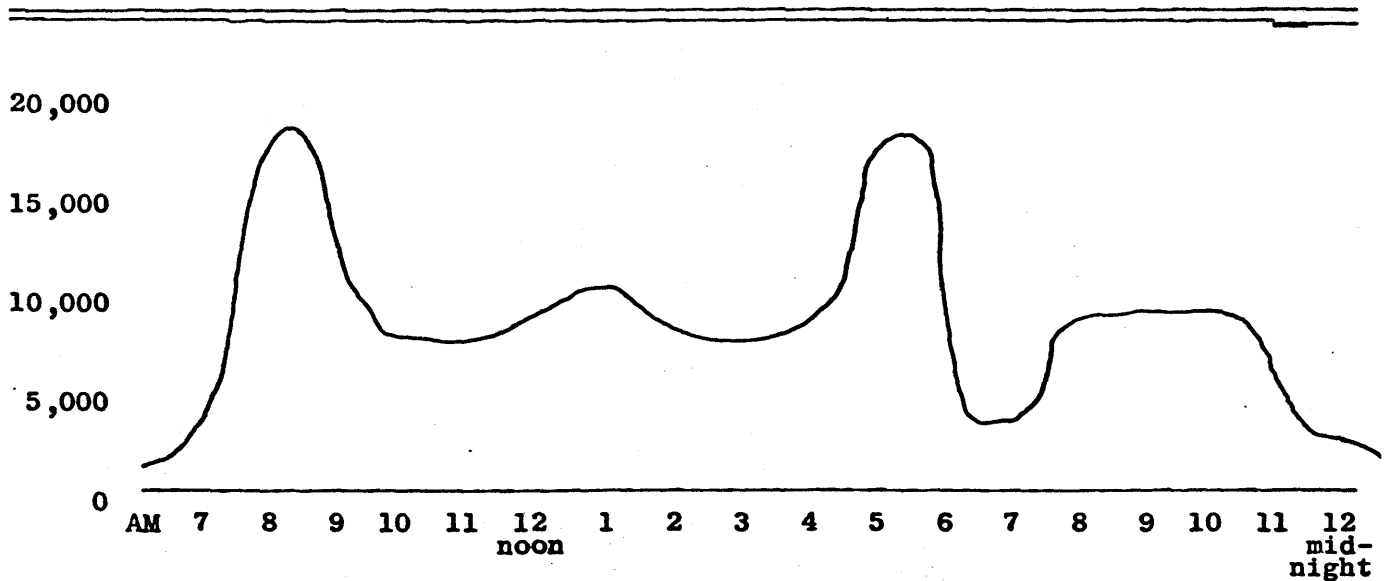
³Data on the number of shoppers, salesmen, and business visitors in

Fluctuation of Daily Population

The probable general pattern of daily population fluctuation in the North Station Area represents morning and evening commuter rush hour peaks that more than double the population of the Area for short periods, entrance of noon-time workers from adjacent blocks on North Washington and Staniford-Chardon for Area retail and consumer service facilities, and sizeable crowds drawn into an otherwise deserted evening Area by Boston Garden events.

CHART 1

DAYTIME POPULATION FLUCTUATION, NORTH STATION AREA



Future Daily Population of the Sector

The essential population character of the North Station Area sector of Central Boston is daytime concentration, and its existence, consequently, represents a significant consumer market for daytime-oriented

the Area, on the degree to which the Area serves as a parking terminus for other sections of Downtown Boston, and on the number of hotel and lodging houses and their transient population is not available.

economic services and facilities. In the future, elements of the daily population, such as the extent of railroad commutation and the operations-patronage of the Boston Garden, may extensively change, and with creation of an estimated concentration of 25,000 workers in the forthcoming Government Center, with construction of some 2,400 dwelling units in the redeveloped West End, and with placement of a large but as yet unspecified office employment in a redeveloped Staniford-Chardon area, the economy of the northern section of the central city may be considerably altered. The type of functions which this greatly expanded future daily population may support, therefore, significantly influences decisions of planning and renewal for the North Station Area site.

5. Pedestrian Movement

In order to establish a relative magnitude of existing pedestrian movement in this sector of the city, to better judge the nature and directions of that movement and the physical and economic factors, such as MTA operations, railroad commuter service, and Area employment, related to, influencing, and determining that movement, the daily population of the Area is measured in terms of volume character, time periods, lines, and locational concentrations.

Pedestrian Counts

Two rough pedestrian counts taken in the Causeway Street section of the Area during morning rush hours of two widely separated and physically different weekdays⁴ confirmed the dominance of relatively heavy lines of pedestrian movement along Causeway and Canal Streets and of the still-

⁴See Appendix 1, Pedestrian Counts, North Station Area, Spring 1960.

existent commuter surge (despite the declining level of B & M railroad commutation) between North Station and the other sections of Central Boston. In addition, the process of conducting the counts strongly indicated that non-railroad commuter movements are oriented primarily to (a) the MTA rapid transit stations utilized by the daytime employment population of the general area, and (b) the availability and location of retail and consumer service businesses on the ground floor of Area buildings.

Future Pedestrian Movement Patterns

Although with continuation of Boston & Maine Railroad passenger service the present patterns of pedestrian movement in the North Station Area may remain essentially the same and a dominating line of movement between North Station and the CBD may continue, termination of the major force of railroad commutation may result in the pattern's rapid disappearance, and pedestrian movement may then internally revert to the Area's existing economic functions. If and when renewal action is undertaken, however, movement between the site and the adjacent sections of the northern Downtown may become of significant necessity and require the future pedestrian circulation pattern of the Area to be directly related to the city center and mutually interdependent with the temporarily existing North End and Market District and with the rising and forthcoming adjacent West End, Scollay-Bowdoin Square and Staniford-Chardon redevelopments.

B. Transportation System

The transportation system of the North Station Area presently consists of a major interstate expressway (the Central Artery), the

terminus of a regional railroad network (the Boston & Maine's North Station), one of the principal navigable rivers of the metropolitan area (the Charles River), two lines of the metropolitan rapid transit system (the Forest Hills-Everett and Lechmere MTA lines), four intercity highway connections (the Charles River Dam, the Charlestown Bridge, the Sumner Tunnel, and Storrow Drive), the local intracity rail connection between north and south terminals (the Union Freight Railroad), and several primary Downtown streets (Causeway Street, Nashua Street, and Haymarket Square). This combination of transportation elements and facilities is the most extensive of any location in Central Boston and is both an historical determinant of the Area's present configuration and an outstanding factor of the site's future development potential.

1. Rapid Transit

Because of the extreme importance which decisions concerning the rapid transit system will have upon the future form of the central city and the development of the Charles Riverfront-Boston Harborfront, investigation of the function and future of rapid transit in the North Station Area has been undertaken beyond the point of mere superficiality.

The Metropolitan Rapid Transit System

The Boston metropolitan rapid transit system is presently comprised of three rail lines and three high-speed trolley lines with a radius of service extending three miles north, ten miles west, and five miles south and with the focus of the system in Downtown Boston consisting of major intersections at Park Street, Summer-Washington-Winter Streets, State-Milk Streets, Scollay Square, Haymarket Square, and North Station. Though the system is radial in nature, it now provides only a limited

degree of accessibility to the Central City due to the restricted length of its routes.

Description of the Rapid Transit System in the Area

The existing MTA rapid transit system in the North Station Area consists of the following components: (1) a P.C.C. line serving the Boston College-Lechmere, Cleveland Circle-Lechmere, and Lenox Street-North Station routes, and (2) a rapid transit rail line serving the Forest Hills-Sullivan Square-Everett route. Both of these lines proceed through Boston's central business district in subways, emerging at Haymarket Square as incline ramps between Canal and Haverhill Streets, the Lenox Street-North Station route to a ground-level turnaround and the Lechmere and Everett lines to two elevated structures at the corner of Canal and Causeway Streets. In the vicinity of this juncture of routes, there is a complex of three MTA stations: two at the corner of Canal and Causeway Streets and one on the elevated over Causeway Street directly in front of and connected to North Station. From these respective points: the elevated Everett line passes eastward over Causeway Street and under the Central Artery, bends sharply northward at Keaney Square, and proceeds over the Charlestown Bridge into City Square; and the Lechmere elevated passes westward over Causeway Street, turns northward along Lowell Street, passes over part of the West End and Leverett Circle to the Science Park Station, then continues across the Charles River parallel to the Charles River Dam on a separate viaduct.

Measurement of Elevated Transit Operations through the Area

In order to better judge the scope of the problem of future alterations and changes to the elevated transit lines and the metropolitan

rapid transit system as a whole, investigations were conducted (1) to determine the volumes of passengers carried by the elevated transit lines through the North Station Area, (2) to place some measurement on the relative importance of the Area's transit stations and their significance to the site's future development potential, and (3) to observe the trends in rapid transit passenger volumes over recent years.

a. Volumes Carried on the Forest Hills-Everett Rapid Transit Rail Line

Table II-4 indicates the volume of passengers carried into and out of Central Boston on particular, but generally representative, working weekdays in 1959 and 1960.

TABLE II-4

PASSENGERS CARRIED THROUGH THE NORTH STATION AREA,
SELECTED PERIODS ON A SPRING WEEKDAY,
FOREST HILLS-EVERETT RAPID TRANSIT
RAIL LINE, 1959 and 1960

Direction	Day	Year	Weather	Day	Year	Weather
	Tues.	4/7/59	Fair	Tues.	5/3/60	Fair
	Cars	Passengers		Cars	Passengers	
<u>Into Central Boston</u>						
6:46 AM - 10:00 AM	204	14,998		196	18,722	
<u>Out of Central Boston</u>						
1:31 PM - 6:30 PM	276	18,617		248	21,940	

Source: Passenger Counts, Operations Department, Metropolitan Transit Authority.

The implications for the North Station Area are that the Forest Hills-Everett rapid transit line, in carrying well over 20,000 persons

per working day into and out of Central Boston through the Area: (1) is one of the principal means of transportation into the city, (2) rivals each one of the other four principal metropolitan rapid transit lines in volumes of passengers carried, (3) is a vital transportation link which can not be summarily eliminated, (4) would present a major problem in interim scheduling should any replacement of the elevated be undertaken, (5) could become the core link in extension of rapid transit to the northern suburbs, and (6) represents an immeasurable but extremely important element of the development potential of the North Station Area site.⁵

b. Volumes Carried on the Lechmere P.C.C. Line

Table II-5 reveals the previously underestimated large volume of passengers carried by all routes of the Lechmere line through the North

TABLE II-5

TOTAL PASSENGERS CARRIED THROUGH THE NORTH STATION AREA,
ON A SPRING WEEKDAY, LECHMERE-BOSTON COLLEGE AND
CLEVELAND CIRCLE P.C.C. LINES, 1960

Friday April 29, 1960

Time	<u>Into Central Boston</u>		<u>Out of Central Boston</u>	
	<u>cars</u>	<u>passengers</u>	<u>cars</u>	<u>passengers</u>
6:31 AM - 11:00 PM	738	18,494	738	14,688

Source: Passenger Counts, Operations Department, Metropolitan Transit Authority.

⁵This Forest Hills-Everett line operates the most modern equipment and most attractive cars of the entire MTA system; whether this fact has had a bearing on its patronage has not been determined.

Station Area. Although this is also a spot check and with no 1959 comparative statistics, a complete day's volume is given.⁶

The implications for the North Station Area of this flow of passengers and cars over the Causeway and Lowell Street elevateds of the Lechmere Line are significant:

1. The Lechmere elevated line cannot be as easily and as quickly discounted in terms of future planning for the North Station Area as some proposals have suggested.
2. The Lechmere line serves an important function (a) of transporting large volumes of MTA passengers from and to the Lechmere Square bus and trackless trolley terminal and (b) of providing means of transportation for those residents of the Lechmere Point section of Cambridge otherwise isolated.
3. If any action is to be taken toward removal of the Lowell Street elevated along the edge of the West End redevelopment project (as has been repeatedly proposed), then reorganization of MTA surface routes feeding into Lechmere Terminal would seem to be the necessary first step.
4. Even if all of the feeders to Lechmere could be rerouted, there would appear to be need for some form of MTA service from East Cambridge either directly to Central Boston or to connecting transit facilities elsewhere in Charlestown or Cambridge.

Comparison of Area Rapid Transit Operations with Other Locations in the Metropolitan System

A complete spot check annually conducted by the Metropolitan Transit Authority of passengers entering the many stations of the rapid transit system presents a comparative illustration of passenger volumes

⁶These indicated passenger volumes cover total movements between North Station and the Science Park stations. Although no statistics are available on the number of passengers boarding or leaving cars at the Science Park stop, evaluations made by MTA personnel indicate that the construction of the Science Park station (primarily in response to pressure from the Boston Museum of Science itself) was not a wise investment in view of the lack of service demand at that point. Add to this the local knowledge that upwards of 70-90% of all visitors to Science Park arrive by motor vehicle, and the necessity of continued MTA service to this particular station becomes a relatively meaningless (but hotly-to-be-contested) issue.

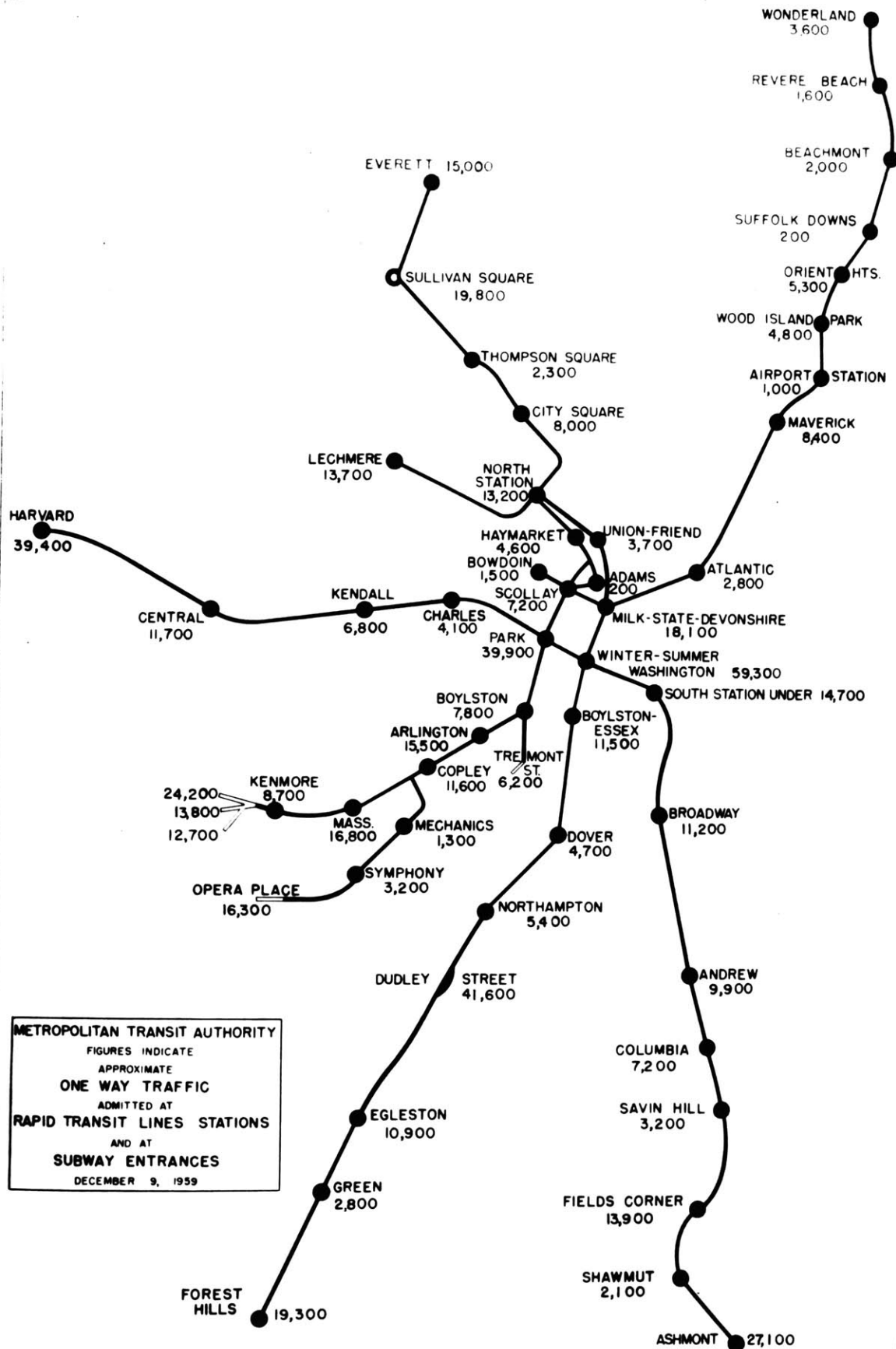
handled by each of the stations and provides a basis for future transit (and city) planning. The December 1959 MTA "spider" illustrated below indicates several facts about the North Station Area. In terms of total boarding passengers, the North Station Area transit entrance:

1. is one of the 15 most heavily traveled stations in the entire metropolitan rapid transit system,
2. is about twice the size of the Scollay Square station - one of the recognized major transit intersections,
3. carries almost one-third the total volume of the Park Street station, and
4. is the principal MTA station in the city north of the Central Business District.

Trend in Area Rapid Transit Usage Compared to Other Downtown Locations

Review of MTA "spiders" from previous years indicates a general trend of declining rapid transit usage, with almost all MTA stations involved and with decreases over the last decade ranging from 30 per cent for the larger stations to over 70 per cent for the smaller stations. A sample of this trend is presented in Table II-6.

With respect to the North Station Area and the function of rapid transit therein, a striking implication can be drawn from this table: Since Boston & Maine Railroad commutation declined during this same 1947-1958 period by almost 60 per cent, associated decrease in rapid transit usage out of North Station might have been expected. Yet these MTA records indicate that the decline in admissions at North Station was no greater than 60 per cent. In light of the general and substantial decline in rapid transit usage elsewhere in both the central city and the inner ring (Cambridge, Charlestown, Everett, etc.), this implies that the North Station Area has experienced some form of stability during this period.



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TABLE II-6

TREND IN PASSENGERS ADMITTED TO RAPID TRANSIT STATIONS,
CENTRAL BOSTON, 1947-1958

Year	Station			
	Park Street	North Station	Union-Friend	Haymarket Square
Mon. Jan. 6, 1947	50,600	39,200	9,100	13,900
Wed. Dec. 8, 1948	58,805	28,400	8,900	11,000
Wed. Dec. 6, 1950	52,800	26,300	7,000	7,100
Wed. Dec. 5, 1951	46,200	23,000	6,600	6,300
Tue. Dec. 2, 1952	45,800	24,300	5,800	5,500
Thu. Dec. 3, 1953	45,400	20,100	5,200	7,000
Thu. Dec. 8, 1954	43,900	21,500	4,600	6,300
Thu. Dec. 14, 1955	38,400	17,600	3,900	5,500
Wed. Dec. 5, 1956	35,100	17,100	4,200	5,700
Wed. Dec. 11, 1957	40,000	15,200	3,800	5,500
Wed. Dec. 10, 1958	35,200	15,200	3,600	4,400

Source: quoted from M.T.A. records by Robert H. Murphy, The Disappearance of Railroad Commutation in Boston, Mass., Masters Thesis, Department of City & Regional Planning, M.I.T., 1959.

Compare this circumstance to the findings in the next chapter concerning the economic composition and changes of the Area over this decade, and there seems to be created a cross-substantiation of economic site value.

Area Site Development Potential Created by Rapid Transit

The Washington and Boylston-Tremont Street rapid transit lines thus not only comprise a combined rough total operation⁷ of more than 2,000 transit vehicles and 74,000 passengers per day and reveal the present physical importance of the North Station Area, but create a vital, convergent, and central locational accessibility which represents a significant economic potential. And when the adjacent West End, Scollay-Bowdoin Square, and Staniford-Chardon redevelopment projects are completed and the long-talked-of replacement of the Causeway Street elevated is undertaken,⁸ the North Station Area may become a most valuable new development site in Central Boston.

2. Bus Operations

There are two bus lines presently operating out of or through the Haymarket Square open-air terminal circle in the North Station Area: the Eastern Massachusetts Street Railway Company serving intercity routes north of Boston to Lynn, Marblehead, and Salem, operating by way of the Sumner Tunnel, and comprising an operational level in 1960 of 257 vehicle

⁷Less two off-peak volumes missing on the major Forest Hills-Everett line.

⁸Future replacement alternatives to the Causeway Street elevated MTA rapid transit lines have been proposed for many years, but particularly since the formation of the Metropolitan Transit Authority and absorption of the old Boston Elevated Railway Company, and will be considered in Chapter IV.

trips per weekday;⁹ and the Metropolitan Transit Authority serving intra-city routes to Sullivan Square, to Charlestown,¹⁰ and to South Station,¹¹ operating by way of the Charlestown Bridge and Washington, Union, and Canal Streets, and comprising an operational level in 1960 of 407 vehicle trips per weekday. These two companies comprise a total volume of over 660 vehicle movements per weekday and are one of the obvious major contributors to vehicular traffic flow interference near the North Station Area and within much of the northern Downtown. Notwithstanding recent intown union bus terminal proposals for the Sumner Tunnel-Central Artery vicinity,¹² this factor raises the question of whether such bus operations should enter the Downtown or whether they should be connected to rapid transit lines outside of the peninsula as a more effective transportation medium into and within the city center, an arrangement under which the Sullivan Square routes of the MTA would not cross the Charles River but would connect to the existing Forest Hills-Everett rapid transit rail line within Charlestown, and the operations of the Eastern Massachusetts would be organized with respect to both the existing East Boston-Revere rapid transit line and the proposed Rapid Transit extension to Lynn.

⁹Lynn Division, Timetable, Eastern Massachusetts Street Railway Company, September 4, 1960.

¹⁰Surface Lines Schedules, South of Boston, MTA, March 12, 1960.

¹¹Surface Lines Schedules, North of Boston, MTA, March 12, 1960.

¹²Under the 1959 Government Center Plan, a union bus terminal was proposed for a site between Washington Street, Hanover Street, and the Central Artery at the confluence of heavy incoming vehicular traffic movement from lanes of the Central Artery ramps and the Sumner Tunnel to absorb the station functions of the Eastern Massachusetts and the Metropolitan Transit Authority at Haymarket Square. Government Center - Boston, Adams, Howard & Greeley and associated consultants for the Boston City Planning Board, Boston, Mass., 1959.

3. Railroads

a. The Boston & Maine Railroad

The Boston & Maine Railroad is one of the three trunk line railroads operating out of Boston and serves cities and towns west to Worcester, north into the States of Maine and New Hampshire, and northwest into the States of Vermont and New York. Converging toward and terminating at the northern end of the Central Boston peninsula, the B & M is a major physical and economic element of the existing North Station Area, comprising 33 per cent of the land acreage, accounting for an employment of some 730 persons, and creating a daily pedestrian flow of some 13,000 passengers.¹³ The railroad not only supports extensive retail commuter-oriented business but contributes substantially to the accessibility and relative locational advantages of the Area, has directly influenced the decisions of many office functions to move into the Area,¹⁴ and plays no small part in supporting property values and in reinforcing some phases of the Area's development potential. The Boston & Maine Railroad is the largest single influence upon the end of the Shawmut Peninsula and is a principal determinate of the future of the northern sector of the inner metropolitan area.

Current Status. The Boston & Maine Railroad presently operates RDC Budd Car and single "Talgo" train passenger service only out of its Boston North Station yards according to the schedule given in Table II-7.

¹³See later discussion of passenger operational level.

¹⁴According to interviews with firms in the Area, particularly in the Industrial Office Building.

TABLE II-7

THROUGH AND COMMUTER PASSENGER TRAIN SERVICE IN AND OUT OF
NORTH STATION, MONDAY THROUGH FRIDAY,
BOSTON & MAINE RAILROAD, 1960

Type of Service	Route	Direction	
		Out	In
<u>Through</u>			
Concord, N.H.	(White River Junction, N.H. (Laconia, N.H.)	7	7
Bradford, Mass.	(North Conway, N.H. (Portland, Me.)	4	4
		<u>11</u>	<u>11</u>
<u>Commuter (only)</u>			
	Portsmouth, N.H. (Including Beverly and Rockport, Mass.)	27	24
	Concord, N.H.	15	17
	Bedford, Mass.	1	1
	Bradford	12	14
	Fitchburg	11	11
	Hudson	1	1
	Reading	29	26
	Woburn	29	27
		<u>125</u>	<u>121</u>
		<u>136</u>	<u>131</u>

Source: Through trains - Schedules of Through Trains, October 30, 1960, B & M Railroad.

Commuter trains - Suburban Train Schedules, reissued July 10, 1960, B & M Railroad.

Recent Changes in Railroad Operations on the Central Boston Penin-

sula. In 1959, there was a sharp curtailment of passenger service and a termination of freight handling by the B & M in the North Station Area.¹⁵

This reduction of operations was accompanied by important changes in the railyards behind the station - elimination along Nashua Street of ten out of the former 23 sidings and retraction of the remaining sidings by some 150 feet from the station building - apparently undertaken (1) to eliminate passenger siding space no longer needed due to the decline in railroad through and commuter passenger operations, (2) to provide a large area of parking for the railroad, the Hotel Madison, the Industrial Office Building, and the Boston Garden, and (3) to prepare for new construction on and more intensive utilization of the land behind the station.

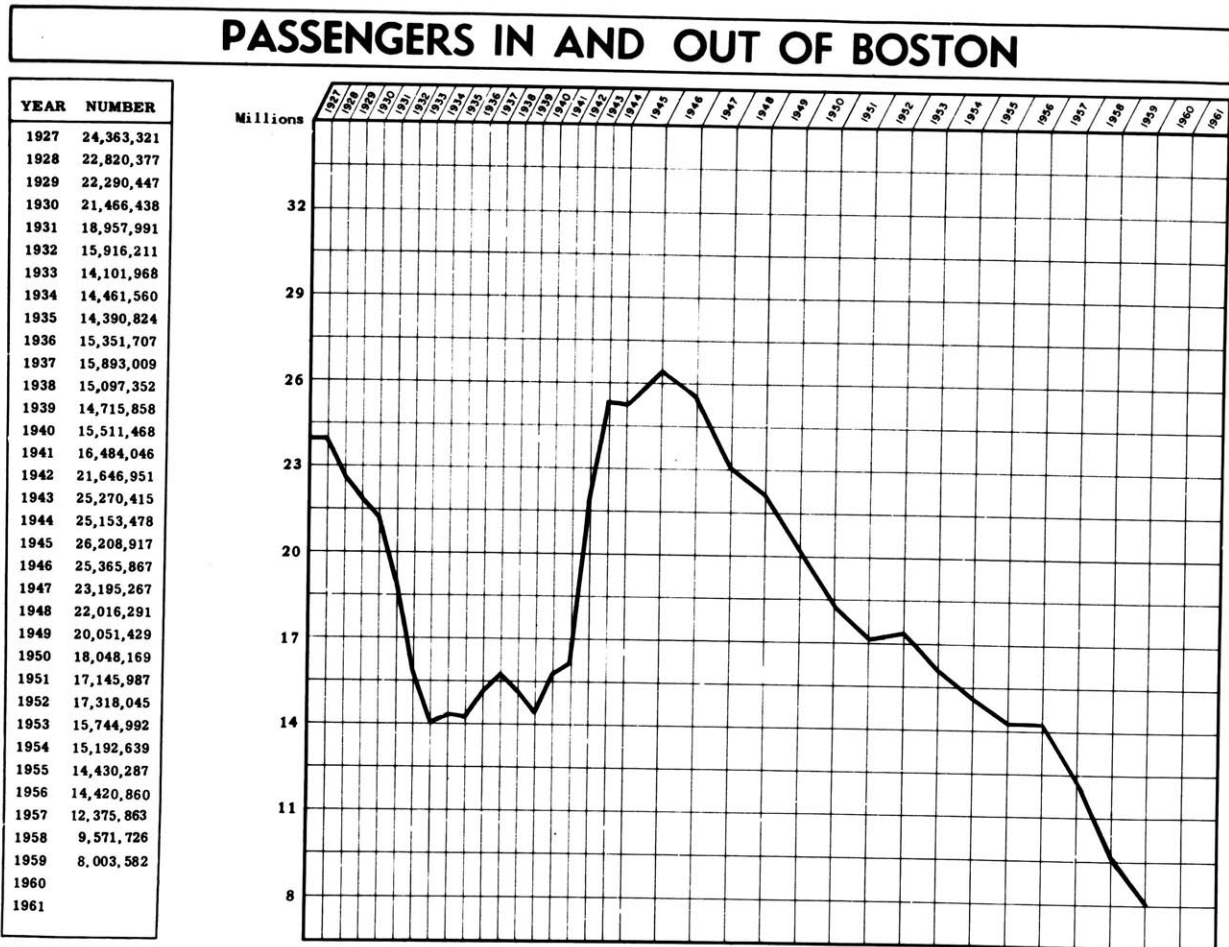
The effects of these changes in the operations of the B & M have been multifold, varied, and in some cases contradictory:

- a. Reduction in commuter service predicted on a decrease in passenger volume seems to have actually accelerated the decline.
- b. Removal of some of the sidings and provision of parking facilities seems to have encouraged further automobile commutation to the central city as a whole and to the North Station Area in particular.
- c. Curtailment of passenger service and further declines in commuter volumes has markedly cut into Area retail and personal service businesses.
- d. Termination of freight operations on the Central Boston side of the Charles River resulted in conversion of all Railway Express operations to truck transport, released that firm from direct railroad connection at North Station, and reduced the fixity of its Area location.

¹⁵"The Boston and Maine Railroad Statistical Department estimates a total loss of about 33% from March 1959 to March 1959. . ." from Robert H. Murphy, The Disappearance of Railroad Commutation in Boston, Massachusetts (unpublished Masters Thesis, Department of City & Regional Planning, M.I.T., 1959), pp. 22-23.

- e. Reductions in schedules and removal of sidings has enabled the B & M to discontinue operation of Drawspan #1 over the Charles River, thus reducing another factor in the difficulty of navigation on the river.
- f. Removal of the sidings along Nashua Street is one more step toward reclamation of the North Station Area section of the Charles Riverfront.

The Future of B & M Passenger Operations. Similar to most other railroads operating commuter service in metropolitan areas, the Boston & Maine has experienced since 1930, and particularly since World War II, a rapid decline in passenger business,¹⁶ with a long-term decrease of



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¹⁶ A 40-year old guide to the City of Boston revealed that as of 1922, "nearly 100,000 passengers a day go through North Station." Boston Chamber of Commerce and Boston Bureau of Commercial and Industrial Affairs, Boston, An Old City with New Opportunities (Boston: 1922), p. 22.

about 1,500,000 passengers per year to total 1959 volume at North Station of little more than 8 million passengers. If this pace were to continue, the Boston & Maine Railroad would seem likely to be out of the passenger business in Boston by 1965.

There are several factors, however, which could substantially influence the operations of the B & M:

1. Government support of passenger service. Some states and several cities along the Eastern Seaboard have already undertaken steps to insure that commuter rail service will not cease and have embarked upon programs of tax relief and subsidy. Although such a move on the part of either Massachusetts or the City of Boston is currently being popularly discussed, it is possible that action may not occur before the B & M service has effectually disappeared and passengers have transferred to other forms of transportation.

2. Rapid transit extensions to the northern suburbs. Rapid Transit extensions to the suburbs generally and to the northern suburbs in particular have been officially proposed for almost 20 years and are yet to be intensively implemented. Should, however, the decision of rapid transit extension be reached, the likelihood is that railroad rights-of-way would be taken over for rapid transit purposes, consequently that passenger operations of the Boston & Maine would be functionally replaced, and that the use of the B & M's North Station would be terminated.

3. Direct connection between rail passenger and metropolitan rapid transit service. Although with joint authorization and financial support of the MTA and the B & M from the State Legislature, a functional connection between rail and rapid transit facilities might become possible and could be undertaken in a wide range of locations from intown to outer suburbs, such a unification does not seem to be a probability.

In view of the rapid decline of B & M passenger operations, continued utilization of the North Station as a terminal for railroad activities is becoming increasingly questionable. And as the nearby redevelopments (Charles River Park, the Government Center, and the State Office Campus) and proposed downstream Charles River improvements (new dam) become realities, it seems likely that significant economic advantage will press for development of the large underutilized lands along the Charles Riverfront of the North Station Area. Since continued use of North Station for railroad operations, for rapid transit extensions, or as a rail-rapid transit connecting point would necessarily prevent development of this potentially valuable riverfront site, the future of railroad operations at the northern end of Central Boston would appear to be necessarily dependent upon either or both (1) the time at which rapid transit lines are extended to the suburbs, thus replacing railroad passenger operations, and (2) the timeliness of intensive development of the Charles Riverfront.

b. The Union Freight Railroad

The Union Freight Railroad, a subsidiary of the New York, New Haven & Hartford, is a single track intracity line in Central Boston which operates at grade along Atlantic Avenue, Commercial Street, and part of Causeway Street, which functions as the connecting freight link between the B & M yards and the New Haven yards, and which provides freight service to piers, industries, and warehouses along the Boston Harborfront. In the vicinity of the North Station Area, the Union Railroad passes from the Somerville B & M yards on Bridge #4 over the Charles River, between the Industrial Office Building and the

Boston Garden, and out onto Causeway Street toward Keaney Square and Commercial Street. Although the line hauls a volume of some 10 to 12 freight cars per day through the area,¹⁷ its route around the harborfront passes through such a heavy trucking and traffic district that most of the freight movement must be done between the hours of midnight and 5 AM.

The Union Freight Railroad is at present an advantageous operation for the economic activities along Atlantic Avenue and in the short-run will probably continue to provide service to these firms. Nevertheless, should extensive development become timely in the North Station Area, it would be possible to utilize the existing Boston & Maine - Boston & Albany connections through Cambridge and centralize this railroad's operations out of the New Haven yards at South Station and thereby permit elimination of grade trackage along Causeway Street. In terms of the future development of the central city and its harborfront, however, eventual replacement of this street railroad by highway carriers may be necessitated.

4. Vehicular Circulation and Facilities

Sources and Volumes

There are seven major external elements of vehicular circulation in the vicinity of the North Station Area: the Central Artery, Storrow Drive, the Charles River Dam, the Charlestown Bridge, the Sumner Tunnel, Commercial Street-Atlantic Avenue, and the Downtown feeders into

¹⁷According to the Operations Department of the Boston & Maine Railroad.

Haymarket Square. (See Table II-8.)

Lines of Movement

Although annual average daily volumes for all component movements are not measured, the spot check counts available clearly indicate the nature of vehicular circulation at the northern end of Central Boston and the Shawmut Peninsula:

1. The absence of movement and desire line on the Central Artery ramp behind North Station between the Mystic River Bridge-Charlestown and Storrow Drive.
2. The absence of movement and desire line on the Central Artery ramp behind North Station between Storrow Drive and the Mystic River Bridge-Charlestown.
3. The absence of traffic southwest of the Area, appearing to indicate non-existence of a desire line east-west between the Cambridge Street area and the northern end of the peninsula.
4. The heavy movement on the Central Artery between Charlestown and Central Boston.
5. The large movement, at present, to and from Central Artery south and Storrow Drive.
6. The important east-west movement on Causeway Street to and from Central Artery ramps and the Downtown.
7. The line of movement on Nashua Street between Leverett Circle and the Central Business District.

The pattern reflected seems to derive from external desire lines of: Leverett Circle to the North End (east-west), Charlestown to Downtown Boston (north-south), and Leverett Circle to Downtown Boston (north-south).

TABLE II-8

DAILY VEHICULAR TRAFFIC IN AND NEAR THE
NORTH STATION AREA

Route	Year of Count Agency Source	ADT	Peak Flow	
<u>Central Artery</u>				
A. at City Square, Charlestown	1959 D.P.W. ^a			
southbound		20,940	3410	AM
northbound		20,180	2830	PM
B. at high-level Charles River Bridge	1959 D.P.W.			
southbound		35,180	4550	AM
northbound		35,640	4190	PM
C. over Causeway Street	1959 D.P.W.			
southbound		49,640	5340	AM
northbound		54,980	5360	AM
D. over North Street	1959 D.P.W.			
southbound		43,120	4100	AM
northbound		45,150	4560	PM
E. ramp behind North Station	1959 D.P.W.			
eastbound to: Charlestown		12,730	1570	PM
C.A. south		26,370	2390	AM
westbound from: Charlestown		11,910	1600	PM
C.A. north		32,070	2740	PM
F. downramp from southbound C.A. to Haymarket Square	1959 D.P.W.	4,130	480	AM
<u>Corrow Drive (at Leverett Circle)</u>	1959 M.D.C.			
eastbound	(11-hour count)	30,230	3713	PM
westbound		36,295	4049	PM
<u>Charles River Dam (at Leverett Circle)</u>	1959 M.D.C.			
northbound	(11-hour count)	14,282	2149	PM
southbound		16,602	2281	AM
<u>Charlestown Bridge</u>	1954 D.P.W. ^b			
northbound	(17-hour cordon count)	18,784	n.a.	
southbound		10,349		

TABLE II-8--Continued

Route	Year of Count Agency Source	ADT	Peak Flow	
<u>Summer Tunnel</u>	1954 D.P.W. (17-hour cordon count)	15,447	n.a.	
eastbound		14,341		
westbound				
<u>Massway Street-Central Artery ramps^c</u>	1959 D.P.W.			
into Area		6,420	510	PM
out of Area		4,800	510	PM
<u>Severett Circle^d</u>	1959 M.D.C. (11-hour count)			
into Area		6,020	653	AM
out of Area		7,848	1185	PM
<u>Massway Street (at North Station)^e</u>	1960 D.P.W.			
eastbound		10,127	n.a.	
westbound		10,842		
<u>Dowell Street (at Cotting Street)^e</u>	1960 D.P.W.			
one-way southbound		2,659	n.a.	
<u>Portland Street (at Traverse Street)^e</u>	1960 D.P.W.			
one-way northbound		4,415	n.a.	
<u>Herrimac Street (at Lancaster Street)^e</u>	1960 D.P.W.			
two-way		4,194	n.a.	
<u>Cashua Street (at Hotel Madison)^e</u>		15,760	n.a.	
two-way				

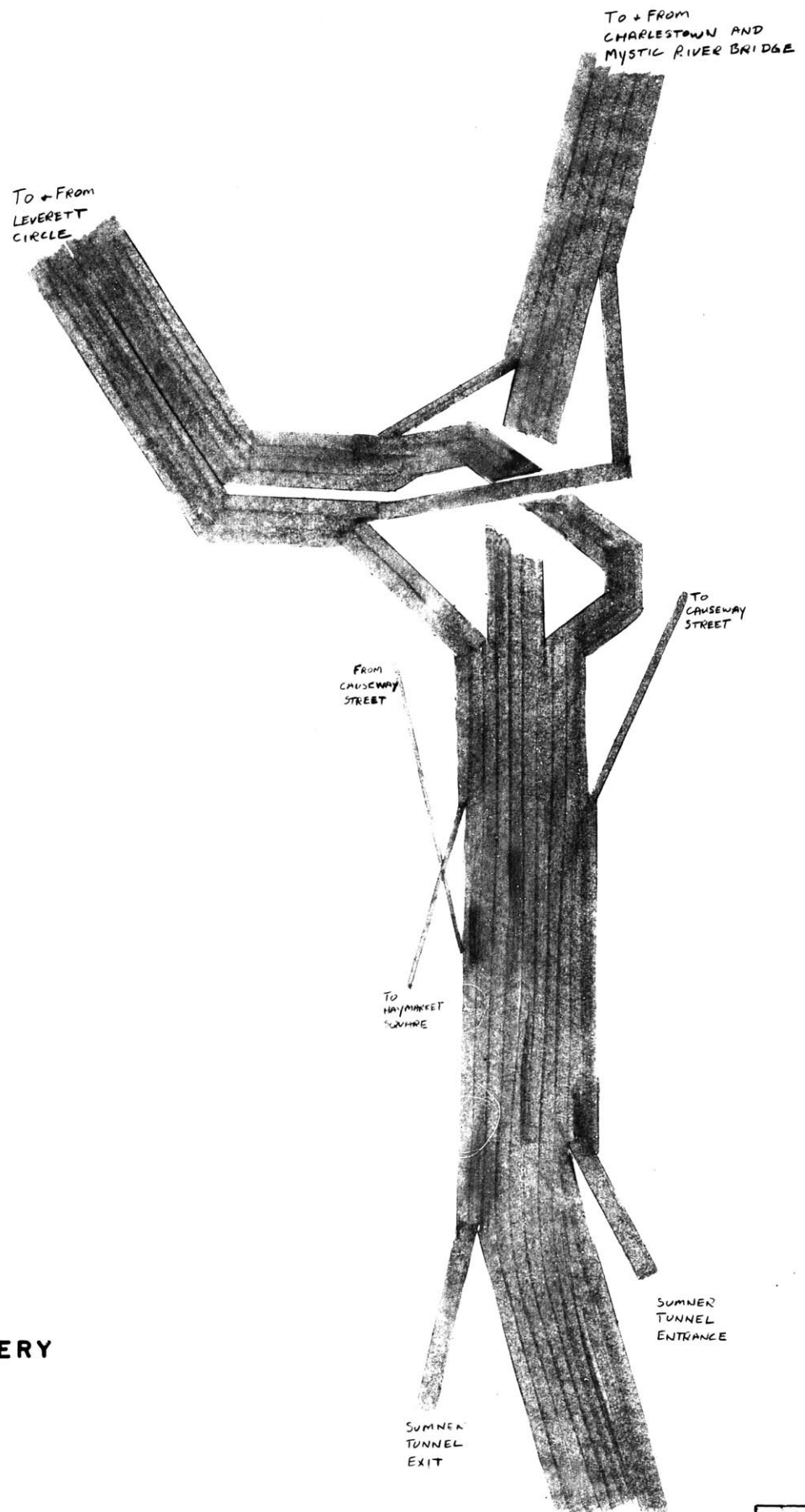
^aAverage daily traffic determined from one-week count, December, 1959.

^bJune, 1954, 17-hour 7AM-12 midnight Central Boston cordon count.

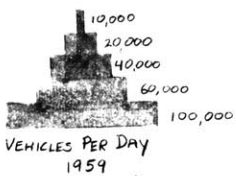
^cThree-day 24-hour counts taken during December, 1959.

^dPartial daily counts taken during January, 1959.

^eAverage three-day counts during two weeks in July and August.

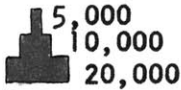
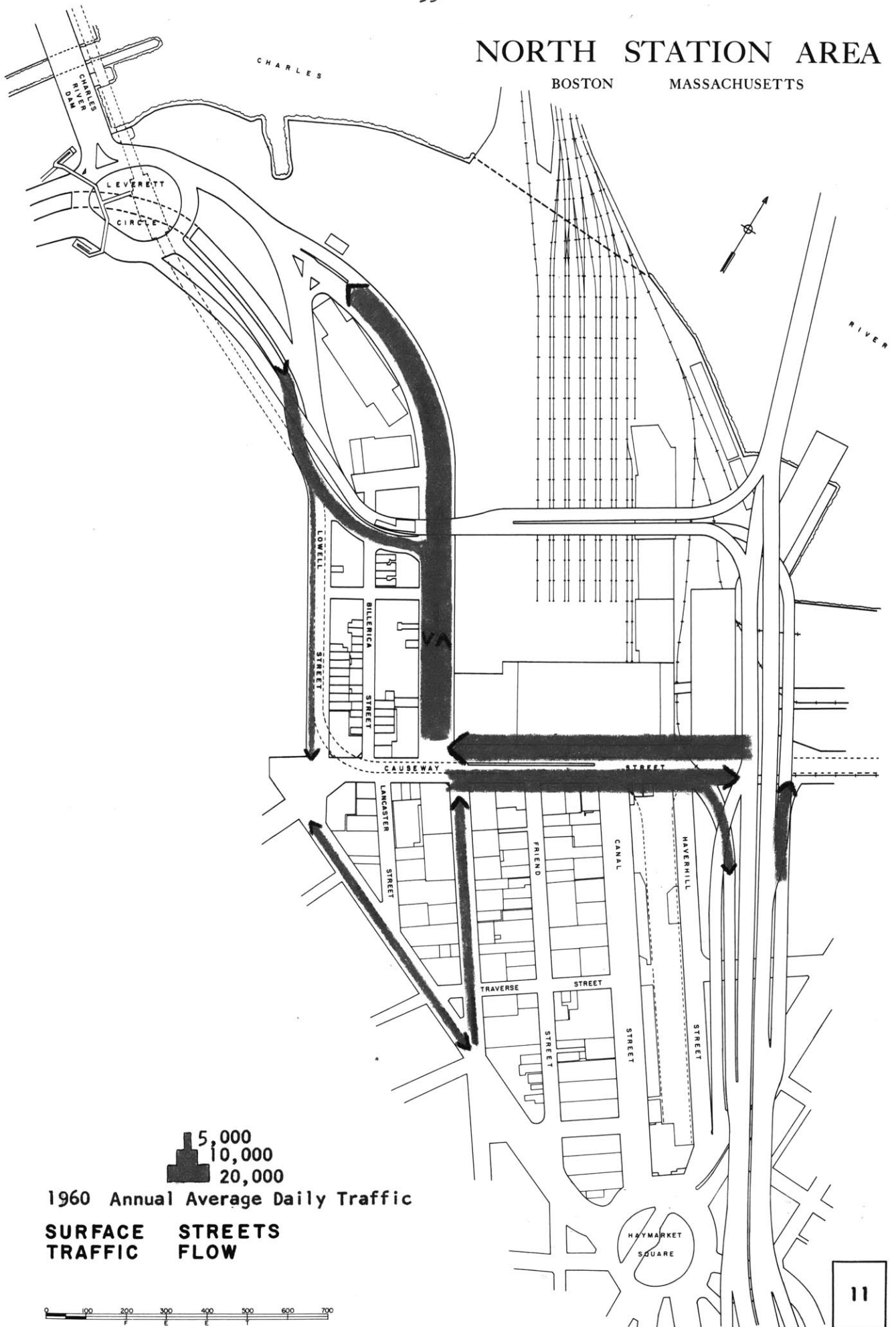


**CENTRAL ARTERY
TRAFFIC FLOW**



NORTH STATION AREA

BOSTON MASSACHUSETTS



1960 Annual Average Daily Traffic

SURFACE STREETS
TRAFFIC FLOW



Nature and Future of Truck and Taxi Movements

In the convergence point at the northern end of the central city peninsula, the North Station Area experiences a sizeable volume of truck traffic, externally following lines to and from the Charles River Dam, to and from the Charlestown Bridge, and to and from the Causeway Street ramps of the Central Artery, and internally serving the Railway Express distribution center behind North Station, the U.S. Post Office on Portland Street, retail businesses along Canal and Causeway Streets, and wholesalers and manufacturers on Friend and Portland Streets.¹⁸ Although internal truck traffic seems to cause the principal interference with overall vehicular movements and on narrow service streets poorly equipped with off-street loading space sometimes locally clogs entire rights-of-way, the construction of the "Inner Belt" circumferential expressway completion of the Central Artery and the possible relocation of Railway Express operations and U.S. Post Office facilities are likely to effect extensive reorganizations of truck traffic between and among the various cities of the inner metropolitan area and substantially reduce surface movements at the northern end of the central city peninsula.

Taxi companies continuously operating with the North Station Area and competing for intra-city business at the Hotel Madison and the North Station railroad passenger terminal appear to provide service into and out of the Area and throughout the city center which is competitively supplementary to rapid transit facilities and are by far the greatest contributors to traffic congestion and pedestrian interference. Continuing curtailments and declines in railroad passenger volumes, however,

¹⁸See Appendix 2.

are likely to eliminate the dominance of their existence.

Existence of Vehicular Movement Impediments

A significant degree of relative vehicular movement difficulty appears to occur in and around the northern end of the central city, particularly at peak hour periods, as a result of a number of separate factors:

1. Inadequate capacity of the high-level Charles River bridge of the Central Artery and of its northern approaches.
2. Existence and particular configuration of the Central Artery ramps at Leverett Circle.
3. Essentially unlimited access to Storrow Drive (Charles Street) between the Longfellow Bridge and Leverett Circle.
4. The existence of drawbridge operations on the Charles River Dam roadway at the navigational lock.
5. The inadequacy of the entire Leverett Circle traffic configuration and facilities.
6. The absence of clear, direct vehicular connections between Leverett Circle and the Central Business District.
7. The presence of structural columns of the MTA elevated railways at Leverett Circle and along both Causeway and Lowell Streets.
8. The disorganized and unrestricted cross-movements of vehicles along Causeway Street, particularly at the Central Artery ramps.
9. The completely uncontrolled and disorganized movement of taxicabs on Causeway Street in front of North Station.
10. The volume of pedestrians crossing major streets.
11. Both uncontrolled and unorganized vehicular parking.

The consequence of these vehicular movement impediments in and around both the North Station Area and the northern peninsula is sharp reduction of the number of effective moving lanes and curtailment of the city's circulation system efficiency, a reaction of motorists to avoid

Downtown surface streets by utilizing the Central Artery as a short cut, and a strong inhibiting force upon pedestrian movement.

5. Specific Components of the Vehicular Circulation System

a. Central Artery

Location, Construction, and Impact. In the early 1950's,¹⁹ construction of the elevated John F. Fitzgerald Expressway (Central Artery) was undertaken through the middle of Central Boston along the low-lying route of the 18th Century Mill Creek between the hills of the residential North End and the slopes of the Central Business District and both cut off free communication between the various parts of the central city and complicated vehicular circulation not only at the mouth of the Sumner Tunnel but throughout the lower Downtown.

With respect to the North Station Area, the construction of the Central Artery has had an extensive impact. Positively, creation of the expressway increased the accessibility of the Area, apparently relieved a great deal of surface traffic in the Area sector of the northern peninsula, coincidentally created an important framework for future Downtown physical planning through permitting the sectionalization of the Shawmut Peninsula into clearly definable land use and planning areas, and, most significantly, established a clear northeastern boundary to the North Station Area and has set the stage for the renewal of all that section of the City of Boston north of the Central Business

¹⁹The North Station Area section of the Central Artery "from the start of condemnation to the final completion of demolition ran from November 1950 to June 1954." A Study of Business Dislocation Caused by the Boston Central Artery, James Saalberg (unpublished master's thesis, Department of City & Regional Planning, M.I.T., 1959), p. 28.

District and Beacon Hill to the Charles River.

Negatively, the Central Artery resulted in the dislocation and failure of many businesses and the placement of a strong physical barrier between the Area and the North End, and created a most difficult long-range planning problem in the form of a two-deck, high-level ramp structure sprouting from the Artery proper and cutting at an angle through that section of the Area between the North Station Complex and the Charles River, a connection which not only fails to provide efficient vehicular access to and from Storrow Drive and the Charles River Dam but creates a strong deterrent to clarification and intensive development of the Charles Riverfront and the northern end of the Shawmut Peninsula.

Present and Future Function. At present, the Central Artery functions both as the distributor-collector for elements of the metropolitan highway network and as a local short-cut for intown Boston motorists and truckers. Although this latter use is a purpose for which the Artery was supposedly not designed and a load, in addition to its normal metropolitan volumes which its absolute capacity peak and frequent off-peak operations²⁰ can no longer efficiently continue to bear, the Artery is yet to be fully completed as the metropolitan circumferential "Inner Belt."

b. Leverett Circle

The Leverett Circle traffic complex is the knot which presently ties together the intercity arteries from Cambridge and Somerville (the

²⁰According to both the Engineering Department of the Metropolitan District Commission and the Traffic Division of the Massachusetts Department of Public Works.

Charles River Dam), from Charlestown and the North Shore (the Central Artery's high-level bridge and ramp), and from the suburban town of the west (Storrow Drive). Although of particular effect upon the North Station Area site in terms of traffic circulation and Charles River-front development potential, its problems of distributional movement and intra-circulation system relationship go far beyond the boundaries of the Area.

True to the history of traffic circles as engineering "solutions" at points of heavy vehicular movement, and notwithstanding construction of the connecting ramps of the Central Artery in the mid-1950's, Leverett Circle has long been functionally obsolete. And though installation of traffic signals around the Circle has measurably assisted in controlling the sequence of traffic flow, the sheer volume of vehicles continues to overwhelm any efforts which are made to expedite what is basically an irreconcilable and impossible situation.

Nature of Traffic Movements. Because traffic counts at Leverett Circle are regularly undertaken by the Metropolitan District Commission, there is a rather complete picture available of vehicular movements over the last few years. Comparison of the studies made in 1958 and 1959 indicate that the four component inflows of vehicular traffic directly into Leverett Circle-Charles River Dam (Craigie Bridge) from Cambridge and Somerville, Nashua Street from the North Station Area and Downtown Boston, a Central Artery ramp from both north and south metropolitan directions, and Storrow Drive from a western metropolitan direction and from much of the City of Boston - comprise an average volume of traffic well over 70,000 vehicles per day.

Distribution of Traffic Flow Among Contributory Arteries.²¹ The distribution of entering flow (on the basis of 1958 and 1959 counts) indicates a pattern of 50% - 25% - 14% - 9% Storrow Drive - Charles River Dam - Nashua Street - Central Artery ramp, and the outmoving traffic pattern consists of a distribution of 40% - 25% - 25% - 10% Central Artery ramp - Storrow Drive - Charles River Dam - surface road (into the North Station Area). In addition to these movements, there is an average daily flow of over 25,000 vehicles from the Central Artery onto Storrow Drive through the tunnel under Leverett Circle.

Recent Trends in Usage Volumes. Traffic volumes in and around Leverett Circle have been steadily increasing. Between 1958 and 1959, for example, the MDC studies indicated changes of from 3 per cent for off-peak hour counts to 8 per cent for peak-hour counts.

Complicating Factors of Traffic Movement. The traffic movement around Leverett Circle is impeded by several factors:

1. The facilities of Storrow Drive (Charles Street) as it enters Leverett Circle are far too disorganized and un-channelled for efficient traffic flow.
2. Although signalization of the Circle has more clearly ordered the various flows of vehicles than under random movement, the basic inadequacy of urban traffic circle design still results in extreme bottleneck congestion on all entering components.
3. The presence and configuration of the Central Artery entrance ramp results in weaving movements and direct lane crossings of additional complication to traffic circle design. (Part of this difficulty might be eliminated, however, now that all adjacent West End streets have been closed, and direct, smooth connection between Storrow Drive and the Downtown could be made possible without the crossing of the Central

²¹ See Appendix 3.

4. Foundations of various overpass structures in the Circle area both constrict the present configuration and impede future reorganization.
5. The existence of the MTA elevated Lechmere line effectually prevents any possible solution of the Leverett Circle problem through critically needed clarification and reconstruction.

Effect of the Inner Belt and Other Future Highways upon the Existing Complex. The future traffic patterns in the Leverett Circle area may resemble the present movement only slightly when the Inner Belt is fully completed. Any one or combination of the following movement changes is possible: (a) much of the traffic now passing from the Central Artery through Leverett Circle toward Somerville and Cambridge may take the Inner Belt, (b) much of the traffic now proceeding from Cambridge to southern sections of the metropolitan area will no longer be tempted to circumnavigate the Central Boston peninsula by way of Leverett Circle and Storrow Drive but will be able to move across the city on the Inner Belt (and vice versa), (3) traffic now moving from the Mystic River Bridge to Cambridge by way of Leverett Circle and either the Charles River Dam or Storrow Drive and one of the other bridges will be able to pass either directly over the Inner Belt or to an interchange with a proposed new Prison Point highway.

The completion of the Inner Belt, consequently, may not only result in a complete reorientation of traffic flow within the inner metropolitan area but, in contributing to the relief of intercity surface traffic on the Charles River Dam and Storrow Drive, may permit these facilities to assume a more intra-city function than they now serve and encourage their full integration with the other major components of the Central Boston circulation system along the waterfront edge of the

peninsula.

c. Charlestown Bridge

Past, Present, and Future Function and Relationship to the Area.

The Charlestown Bridge, since the discontinuance of Warren Avenue in 1950 and the opening of the Central Artery in 1956, has substantially changed its relationship to the North Station Area and no longer exerts as great a traffic influence on the Area streets. And though it still appears to function as a necessary part of the overall highway network and in this sense can not be completely discounted, it is, nevertheless, an old swing bridge that demands expensive annual maintenance, that interferes with navigability of the Charles River, that is of constant annoyance to the MTA and its Everett-Forest Hills rapid transit operations, that is not at all advantageously located with respect to the future Downtown Boston circulation system whose roots are being formulated in the Government Center and general redevelopment plans, and that may ultimately have to be functionally replaced.

6. Parking Facilities

Extent and Composition

Automotive parking facilities in the existing North Station Area comprise some 1900 vehicle spaces, occupy approximately 13 acres of land, and consist of two components:

1. 420 limited, highly restricted, on-street spaces representing a half dozen different degrees of "availability" from unlimited use to night parking only.²²

²²See Appendix 4.

2. three broad classifications of off-street space. (Illustration 12.)

a. private business areas, for such Area organizations and employment centers as the Industrial Office Building, Railway Express Agency, Boston & Maine Railroad, plus those off-street facilities on MDC and Commonwealth of Massachusetts land along the Charles Riverfront reserved for employees of the Department of Public Works Building,

b. commercial parking lots, distributed throughout the southern and western sections of the Area, with a strong concentration along Nashua Street, and

c. public metered lots, under the elevated Central Artery between Causeway Street and Cross Street at Haymarket Square, which are owned and operated by the City of Boston and are open to the public at nominal rates.

TABLE II-9

COMPOSITION OF OFF-STREET PARKING FACILITIES,
IN AND NEAR THE NORTH STATION AREA, 1960

Type	Number of Facilities (lots or areas)	Range of Size (spaces)	Number of Spaces	Per Cent of AREA TOTAL
Private Business Areas	13	1 - 300	570	38
Commercial Lots ^a	14	16 - 200+	679 ^b	46
Public Metered Lots	3	50 - 135	236	16
AREA TOTAL	29		1,485	

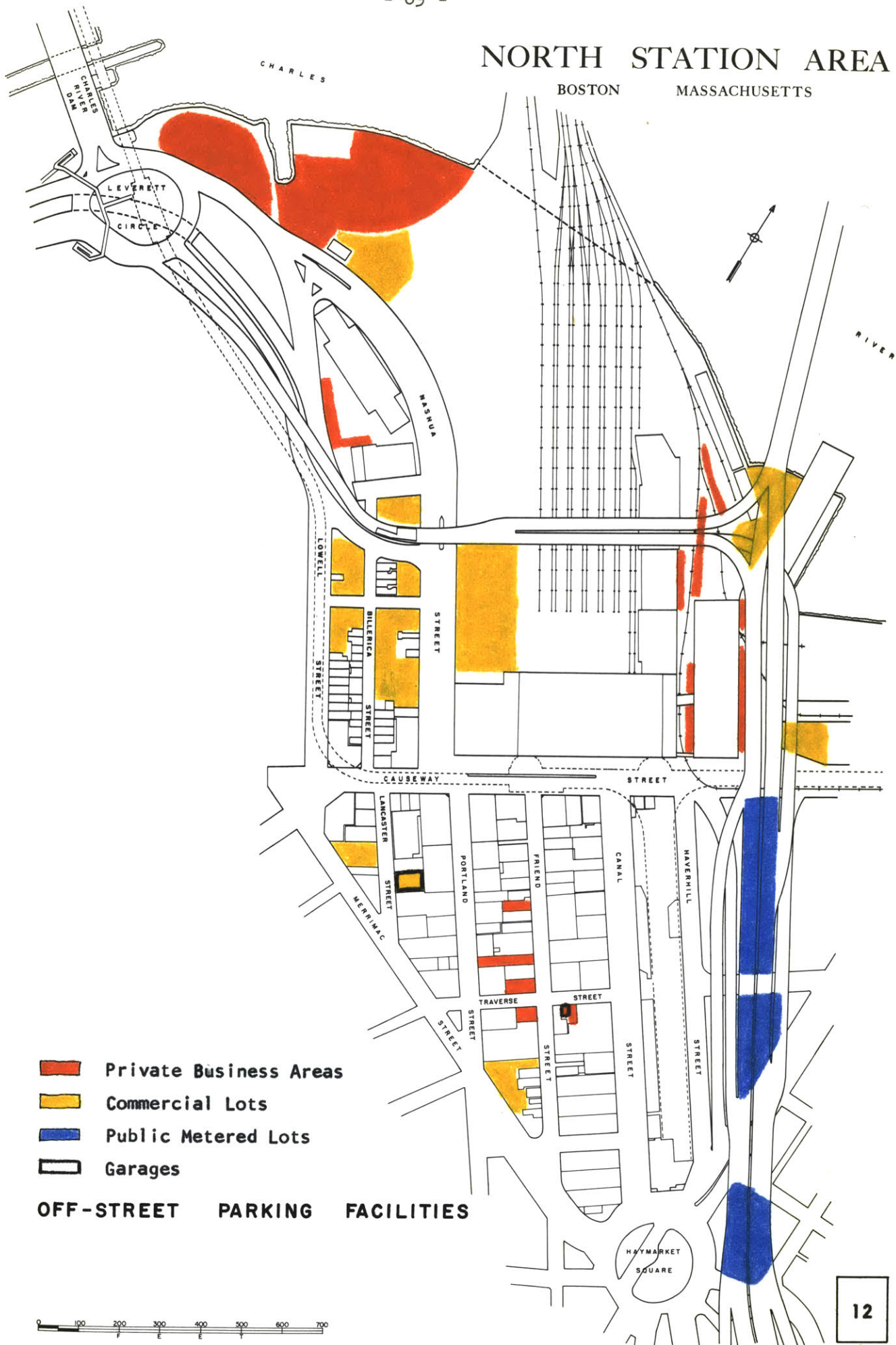
a. Also included in this category is land owned by the City of Boston and leased to commercial operators.

b. Of the total commercial lot spaces, only 16 spaces represent garage facilities.

Source. Field survey.

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Recent Increases in the Amount of Off-Street Parking Space

In recent years there have been substantial increases in the amount of off-street parking space in the North Station Area sector of the central city. In 1959, two large metered parking lots paved on land under the elevated Central Artery supplemented the equally significant additions which had long been occurring in the Area, particularly in immediacy to the West End redevelopment project and the proposed Government Center redevelopment project, through the demolition of both residential and commercial buildings for more profitable commercial and for convenient private business parking purposes.²³ This is a reflection of the recent acceleration in the creation of parking space in the Downtown Area as a whole which is apparently keyed not only to the decline in MTA passenger volumes and the curtailment of B & M Railroad commuter operations but also to the completion of new elements of the metropolitan highway network, especially the Central Artery and Southeast Expressway. The concomitant rising demand for all-day parking space within walking distance of the Central Business District of the city has apparently been a significant influence on land use throughout Central Boston but in the highly accessible North Station Area has become a strong economic and physical force, with no lapse of pressure on marginal buildings foreseen and continued demolitions seemingly inevitable. The circumstance is not without benefits for the city and for the North Station Area, however, for essentially it is performing the function of private commercial and residential slum clearance and so creating cleared sites for new construction under changing economic and

²³ See Chapter III, Economic Composition, section on Building Demolitions.

development conditions.

Adequacy of Parking Facilities at the Northern End of the Central City

The controversial issue of parking provision in the central city is of such proportion and seems to have such an influence upon current public actions as to deserve dispassionate and objective measurement. Thus, in order to place a scale of magnitude upon parking "adequacy" in the North Station Area sector of Downtown Boston on the edge of the Central Business District, previous research findings are presented and the current situation is illuminated through evaluation of existing space utilization.

Parking adequacy in Downtown Boston and the effect upon that condition from the possible disappearance of railroad commutation into the city has been investigated by an M.I.T. city planning thesis²⁴ which divided the Downtown into a number of study zones and indicated three components of parking space demand and adequacy based upon commuting traffic, shopping traffic, and garage requirements. Conclusions drawn from that study about the general North Station Area of the central city indicate that in 1959:

1. The maximum total parking deficit, including increase without railroad commutation, would have been approximately 1440 spaces.
2. The requirement for space was weighted toward shoppers rather than toward commuters.
3. The effect of termination of railroad commuter operations:
 - a. would have been far greater on daily commuters to Boston than on shoppers.
 - b. would have only slightly increased the need for parking spaces in the northern part of the central city.

²⁴Robert H. Murphy, "The Disappearance of Railroad Commutation in Boston, Massachusetts," (unpublished master's thesis, Department of City & Regional Planning, M.I.T., 1959).

In terms of present and future supplies of and attitudes toward parking in the city center, it will be noted that the proposed Government Center Plan²⁵ and the development plan prepared for the North Station Merchants Association²⁶ both recommended substantial additions to the parking inventory of the northern Downtown: almost 3100 spaces for the Government Center and the equivalent of almost 800 new spaces around the Causeway Street area.

Wisdom of Creating Extensive Parking Facilities Throughout a Downtown Area

The parking facilities of the North Station Area, as with other sections of Downtown Boston, have not only been continually depicted as "inadequate" but merchants, property owners, and highway engineers have portrayed the present situation in the city as critical and demanding of immediate publicly-financed provision of parking facilities, both to defend the economic vitality of the Central City and to absorb the influx of automobiles which have been induced by the creation of extensive highway networks. There are a number of reasons why considerable doubt exists over the wisdom of providing additional off-street parking facilities on the periphery of the Central Business District within Downtown Boston. First, it appears that the reputed "parking problem" is related more to the cost of space for short-term use than to either its location or its absolute supply. Second, it appears that "inadequate" parking, at least in the North Station Area sector of Boston, is vastly

²⁵Government Center-Boston, Adams, Howard & Greeley and associated consultants, prepared for the Boston City Planning Board, September 1959.

²⁶A Planning Study of the North Station Area, Boston, Massachusetts, Advance Planning Associates, prepared for the North Station Merchants Association, August 1960.

overrated as a cause of business transition in the city and that far more important influences have been the run-down nature of the shopping environment, the movement-search of residential populations for more attractive surroundings, the lack of transit accessibility outward from the central city, and the development of suburban shopping centers. Third, experience in other cities as well as in Boston has illustrated that the creation of greater amounts of parking in the Downtown Area has not led to increases in total retail sales volumes as hoped for, but, to the contrary, has resulted in greater congestion of city entrances and has been accompanied by continued loss in sales. Fourth, experience in other cities as well as in Boston has indicated that the construction of bigger Downtown expressways in conjunction with more parking space has not reduced overall congestion in the city and has not resulted in a revitalized retail economy, but through the "phenomenon" of inducted traffic has had its temporary benefits soon offset by transfer of those already working and shopping in the city from public transportation to private automobiles, thus creating an even greater problem than existed previously.

If the capacities of railroad and rapid transit facilities continue to be ignored, however, and more and more automobiles attempt to penetrate the central city, then undoubtedly the pressure for additional parking space throughout the city, but especially within the Downtown adjacent to the Central Business District, will steadily increase. The essence of this issue of parking facilities, therefore, appears to be not a separate and self-contained cause and effect process, but another segment of the general urban transportation problem.

7. Urban Transportation and the North Station Area

Because there is an intensive inter-relationship between all modes of transportation, decisions with respect to the support of one quickly affect all others. And though in the Boston area during the 1950's and 1960's, the allocation of tax revenues to highways has had a direct and profound effect upon the existence and operation of rail and rapid transit lines, the question of a point of diminishing returns heretofore has been quietly avoided or has been politically inexpedient. Yet, study of transportation elements in the North Station Area indicates not only that a decision must ultimately be faced by Greater Boston and the Massachusetts Legislature (and by other metropolitan areas and their state governments as well) concerning the allocation of priorities and financial support among various facilities, but that before any reasonable future plans for the City can be justifiably proposed, there critically needs to be undertaken a thorough analysis of the entire urban transportation system, concerned with more than merely highway circulation and specifically evaluating technological acceleration, decentralization, goods-distribution methods, locational patterns in economic activity, and the future and function of surface, water, and airborne transportation facilities.

C. Buildings

Since existing buildings comprise the most important single part of the physical composition of an area, measurement and evaluation of identifiably structural elements, of present physical soundness, and of continued future usefulness, is a basic determination of the area's current and future value to the city in which it lies.

Within the defined boundaries of the North Station Area, the 16 entirely residential structures and the 117 structures utilized for public and private business purposes generally are half-century old and non-fireproof in construction, unaltered by modern renovation, exemplary of a former economic age, and obsolete for long-term utilization. Thoroughly considered, the composition of buildings in the North Station Area is most clearly and briefly presented according to the structural attributes of construction type, building height, building age, maintenance-structural condition, construction quality, and building services.²⁷

Building Age

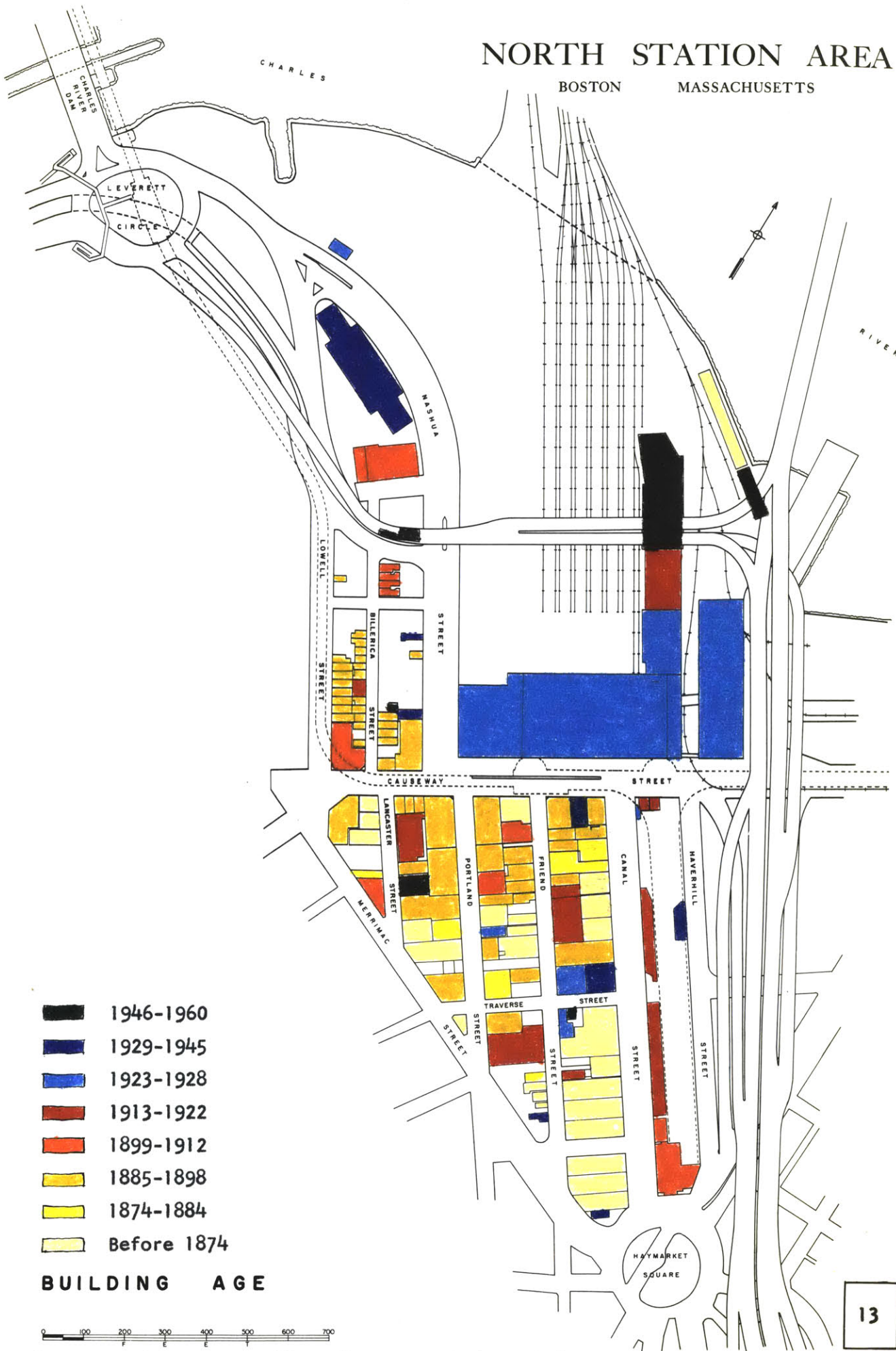
The buildings in the North Station Area are representatively old, with a median age of more than 60 years and with only 6 structures in the entire Area having been erected since World War II. Twenty-six of the buildings were existent in 1873, the earliest year of traceable record, several of the structures are former stables, carriage barns, or haylofts, and some of the buildings appear to be of the first construction on the filled Mill Pond (1830).²⁸ The age of buildings is tabulated by

²⁷ Detailed tabulations of all building information is contained in Appendix 6.

²⁸ Information on these building ages in the North Station Area was compiled from a number of sources. Intensive investigation of the voluminous records of the Boston City Building Department provided exact construction dates as far back as 1884 for 35 of the structures; the Sanborn Atlas contained the date of construction of most buildings erected since 1900; and detailed comparison of Bromley Atlases for 1873, 1884, 1898, 1902, 1912, 1922, 1928, 1938, and 1960 indicated the period in which the other structures appeared. In addition to these sources, there was a general background of development available in local church archives, company vaults, historical records and city deed registries.

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Source : Bldg. Dept., City of Boston; Sanborn Atlas

TABLE II-10
AGE OF BUILDINGS, NORTH STATION AREA, 1960

Sub-Unit	Number of Buildings Constructed								Total
	Before 1874	1874- 1884	1885- 1898	1899- 1912	1913- 1922	1923- 1928	1929- 1945	1946- 1960	
Triangle	25	7	26	5	9	4	5	2	83
Billerica blocks			27	5	1		2	2	37
Nashua block				2			1		3
North Station Complex					1	5			6
Charles Riverfront	1					1		2	4
TOTAL	26	7	53	12	11	10	8	6	133
Percent of Area TOTAL	20	5	40	9	8	7	6	5	

Source: Building Department, City of Boston; Sanborn Atlas; Bromley Atlases.

period of construction according to a series of years of Bromley Atlases, and specific construction dates, where available, are given in Illustration 13.

Building Construction Types

The type of construction of existing buildings in an area is an important feasibility determinate of future structural convertability and utilization. Though there are other measurements of structural composition which are equally significant, the type of building construction is the basic element from which all other qualities derive and upon which all decisions of area planning must be founded.

The North Station Area, as part of older commercial Boston, consists primarily of minimal brick loft buildings of far outdated construction standards, with a sparse scattering among these low quality construction types of a few long-term utilizable and spatically flexible steel and concrete-framed structures. (Illustration 14.)

Statistical tabulation by construction type clearly illustrates the dominance of older forms of construction (see Table II-11).

Building Condition

The existing condition of structures in an area is a vital planning consideration which not only indicates present area state but is the strongest influence upon future status and the primary determinate of renewal necessity.

The structures of the North Station Area have been investigated through extensive interior and exterior surveys and have been evaluated by assigned structural-maintenance condition according to the following generalized definitions:

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Source : Sanborn Atlas

TABLE II-11

BUILDING CONSTRUCTION TYPES,
NORTH STATION AREA, 1960

Sub-unit	Wood	Brick & Wood	Brick	Brick, C floors & roof	Metal	Steel Frame B walls Expsd Steel roof	Steel Frame C floors walls roof	Con- crete Frame	Total
Triangle	3	.5	63	7	1	1		3	83
Billerica blocks		3	31	1	1			1	37
Nashua block			1	1			1		3
North Station Complex	1					1	1	3	6
Charles River- front	1			2		1			
TOTAL	5	8	95	11	2	3	2	7	133
Percent of Area TOTAL	4	6	71	8	2	2	2	5	

Source: Sandborn Atlas.

TABLE II-12

CLASSIFICATION DEFINITIONS OF BUILDING CONDITION,
NORTH STATION AREA, 1960

Condition	Description of Definition
Very Good	structurally sound; well maintained
Good	structurally sound; minor repairs needed
Fair-Good	general maintenance and improvement program warranted
Fair	substantial modernization of service systems, repairs to facades, and interior spaces necessary
Fair-Poor	substantial repairs, reflooring, replastering, new ceilings, new building services required
Poor	structural deterioration and inadequacy apparent; replacement of major building elements and complete internal reconstruction required
Bad	structural elements unsound; walls out of plumb, floors and ceilings sagging; high fire hazard and danger to surrounding area; beyond repair

Building conditions in the North Station Area so defined are indicated in Illustration 15 and summarized by sub-unit in Table II-13.

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-  Very Good
-  Good
-  Fair-Good
-  Fair
-  Fair-Poor
-  Poor
-  Bad

BUILDING CONDITION



TABLE II-13
BUILDING CONDITION, NORTH STATION AREA, 1960

Sub-unit	Very Good	Good	Fair-Good	Fair-Fair	Fair-Poor	Poor	Bad	Total
Triangle	1	7	4	24	19	20	8	83
Billerica blocks	2		1	1		31	2	37
Nashua block	1			2				3
North Station Complex	2	2	1				1	6
Charles River-front	1		1	1			1	4
TOTAL	7	9	7	28	19	51	12	133
Percent of Area TOTAL	5	7	5	21	15	38	9	

Source: Internal and external field surveys.

The North Station Area is thus revealed as a conditional composition of minimally satisfactory building clusters surrounded by a general level of deterioration, pockmarked by dilapidated and in several cases dangerous structures, and generally representative of major Downtown degeneracy. Only two sections of the Area stand out as exceptions to this rule: the North Station Complex and the Massachusetts Department of Public Works Building.

Construction Quality and Building Services

The combination of the two elements construction quality and

building services indicates a summary of essential building adequacy and represents an evaluation of the factorial existence and extent of: fire protection devices, such as automatic sprinkler systems and fire alarms; building equipment, such as freight and passenger elevators; and construction properties, in terms of fireproof and/or non-combustible construction. Although their determination is particularly significant in a red line fire insurance district such as the North Station Area,²⁹ the existence of basic construction quality and the presence of building services is essentially a measure of, at best, short-term utilization feasibility, primarily of an area's buildings but ultimately of the area itself. Moreover, installation of building services is such a costly investment and would in many cases so disproportionately outweigh the value of the existing buildings that their absence may be regarded as an important restriction of both the buildings and area's economic functions. For example, such economic activities as temporary warehousing, wholesaling-with-stock, and retailing are impossible in upper-story floor space of buildings without adequate freight and passenger elevators.³⁰

The existence and extent of quality construction and building services in the North Station Area is indicated by Illustration 16 and Table II-14 and an additional appendix map³¹ indicates those structures within the Area which are and are not connected to the commercial steam

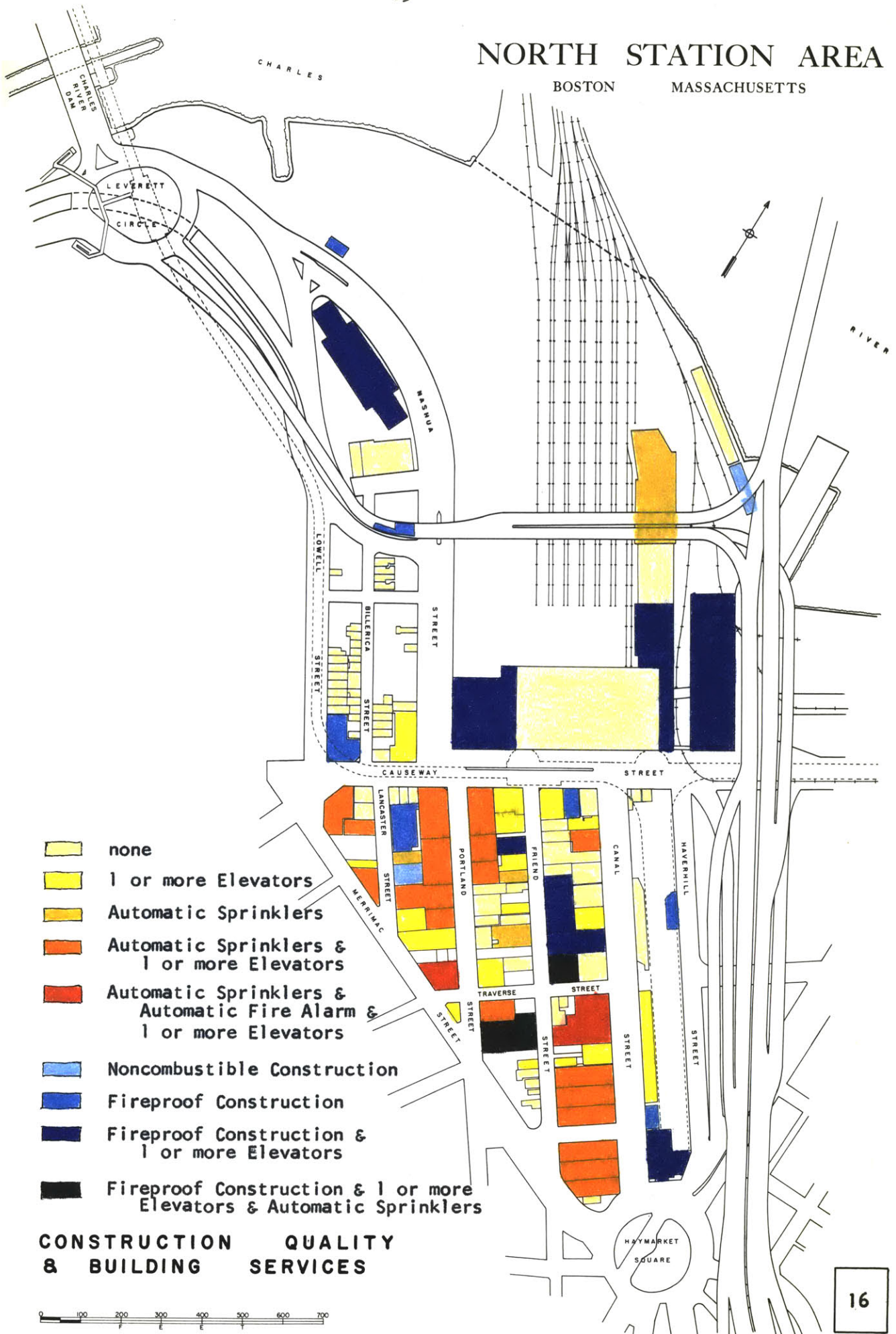
²⁹Because of the combination of its "condition" and the construction quality of its buildings, the North Station Area is classified by fire insurance companies as a "red line district" and considered to be of extreme fire hazard within which standard fire insurance coverage will not be given (except in most unusual cases) to any building.

³⁰This subject of economic use determination is to be more fully discussed in the next section.

³¹See Appendix 7.

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CONSTRUCTION QUALITY & BUILDING SERVICES



Source : Sanborn Atlas

TABLE II-14

CONSTRUCTION QUALITY - BUILDING SERVICES, NORTH STATION AREA, 1960

Sub-Unit	Completely Lacking in Fireproof Construction and/or Building Services	One or More Elevators only	Automatic Sprinklers only	Automatic Sprinklers + One or More Elevators only	Automatic Sprinklers + Automatic Fire Alarm + One or More Elevators	Noncombustible Const. only	Fireproof Const. only	Fireproof Const. + One or More Elevators only	Fireproof Construction + Automatic Sprinklers + One or More Elevators	Total
Triangle	32	16	3	18	2	1	4	5	2	83
Billerica blocks	34	1					2			37
Nashua block	1						1	1		3
North Station Complex	2							4		6
Charles River-front	2		1			1				4
TOTAL	71	17	4	18	2	2	7	10	2	133
Percent of Area TOTAL	53	13	3	13	2	2	5	7	2	

Source: Sanborn Atlas.

line of Boston Edison.

That the North Station Area is overwhelmingly represented by buildings of low quality construction and minimal building services appears to be the unavoidable fact. None of the buildings in the Area are equipped with centralized air conditioning systems, only two have partially installed room air conditioning units, and apparently few possess efficient, "modern" heating systems. And in most cases this equipment appears to be far outdated and is probably entirely inadequate, even though many buildings do boast the presence of certain services. For example, only five structures in the entire Area are equipped with what might be termed "modern" passenger elevators and all other structures are either walk-up or appear to have equipment circa 1900.³²

Building Height

The intensity of construction and development represented by the physical element, building height, provides several insights into the nature of an area: it illuminates the function of an area within the city, it demonstrates the past and present economic demand for floor space within that section, and, in conjunction with information on the existence and modernization of building services, it provides another basis for evaluating the usefulness of an area's structures for future utilization.

The present pattern of development intensity in the North Station Area is demonstrated by sub-unit tabulation and illustrative

³²Although this investigation did not attempt to evaluate the "adequacy" of such building services only to indicate their existence, more intensive determination might indicate, perhaps, that most if not all of the buildings in the North Station Area should be represented as inferior in 1960 terms of quality and services.

comparison.

TABLE II-15
BUILDING HEIGHT, NORTH STATION AREA, 1960

Sub-unit	Number of Stories									Total
	1	2	3	4	5	6	7	8	9+	
Triangle	17	11	14	7	15	16	1	1	1	83
Billerica blocks	6	5	4	21	1					37
Nashua block	1	1						1		3
North Station Complex		1	1	1			1		2	6
Charles River-front	2	2								4
TOTAL	26	20	19	29	16	16	2	2	3	133
Percent of Area TOTAL	19	15	14	22	12	12	2	2	2	

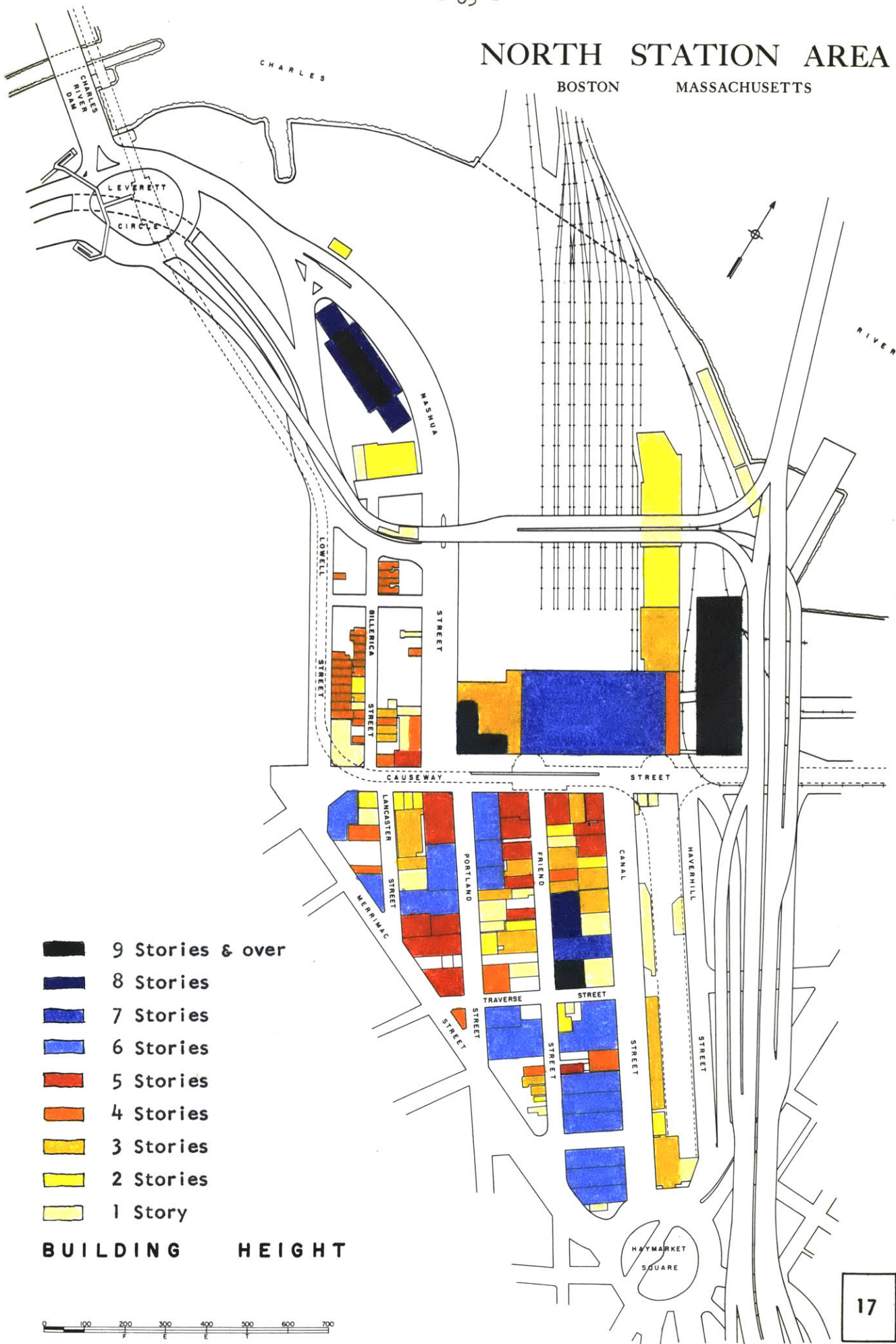
Source: Field survey.

That the North Station Area thus represents an "average" construction intensity of about four stories in height within which occur four significant and major structures indicates both the general non-City Business District nature of the Area and the past existence of strong economic pressures and of a definite tendency toward and potential for intensive commercial development within Downtown Boston.³³

³³ Prior to the Government Center and Charles River Park redevelopment projects, circumstances were most favorable during that period of the late 1920's when the North Station Complex was constructed, when railroad business was at a peak, and when the Warren Avenue Bridge was a major northern entrance directly through the Area to the CBD.

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With respect to the influence of building height in conjunction with building services upon economic space utilization, the following relationships are apparent:

- a. That buildings greater than 4 stories in height and not equipped with passenger elevators may generally be considered not to have an intensive utilization potential.
- b. That buildings greater than 2 stories in height and not equipped with either passenger or freight elevators may be considered not to have upper-story usefulness except for long-term storage purposes.
- c. That the future of Area structures more than about 3 stories in height and without freight and/or passenger elevators may continue to represent vacant or predominately under-utilized space.

Interrelationships of the Various Building Elements

These five building elements - age, type, condition, height, quality and services - are directly and obviously interrelated. Construction type is generally dependent upon date of construction; building condition can be strongly influenced by age and type; building services are necessitated both by height and construction quality. The following tables present in summarized form the significant interrelationships between the various building elements of existing North Station Area structures. (See Tables II-16, II-17 and II-18.)

Building Compositional Summary

The semi-combination of the various building elements might be considered to form a physical building pyramid within which construction type and construction quality are the basic physical determinates; building age and building condition are the evaluation modifiers, and building services and building height are the utilization influences. Together they determine the feasibility of continued individual building use; the

TABLE II-16

RELATIONSHIP BETWEEN BUILDING CONDITION AND TYPE
OF CONSTRUCTION, NORTH STATION AREA, 1960

Condition	Number of Structures							Total
	Very Good	Good	Fair-Good	Fair	Fair-Poor	Poor	Bad	
<u>Construction Type</u>								
Wood						1	4	5
Brick and Wood				1		3	4	8
Brick	1	5	3	20	18	44	4	95
Brick (C floors, roof)			2	7	1	1		11
Metal						2		
Steel Frame (B walls, exposed steel roof)	1	2						3
Steel Frame (C floors, roof, walls)	2							2
Concrete Frame	3	2	2					7
	7	9	7	28	19	51	12	133

Source: Comparison of Illustrations 14 and 15.

TABLE II-17

RELATIONSHIP BETWEEN BUILDING CONDITION AND BUILDING AGE,
NORTH STATION AREA, 1960

Condition	Number of Buildings							Total
	Very Good	Good	Fair-Good	Fair	Fair-Poor	Poor	Bad	
AGE								
Before 1874			2	7	6	8	3	26
1874-1884				1		5	1	7
1885-1898		1		8	11	28	5	53
1899-1912			1	5	1	5		12
1913-1922	1			4	1	2	3	11
1923-1928	2	2	1	3		2		10
1929-1945	1	4	2			1		8
1946-1960	3	2	1					6
	7	9	7	28	19	51	12	133

Source: Comparison of Illustrations 13 and 15.

TABLE II-18

RELATIONSHIP BETWEEN BUILDING CONDITION AND CONSTRUCTION
QUALITY-BUILDING SERVICES, NORTH STATION AREA, 1960

Condition	Number of Structures							Total
	Very Good	Good	Fair-Good	Fair	Fair-Poor	Poor	Bad	
CONSTRUCTION QUALITY- BUILDING SERVICES								
Lacking Properties of Quality Construction and Building Services	1	5	1	7	6	42	9	71
1 or more Elevators only				5	6	4	2	17
Automatic Sprinklers only	1			1	1	1		4
Automatic Sprinklers + 1 or more Elevators only			1	8	5	3	1	18
Automatic Sprinklers + Automatic Fire Alarm + 1 or more Elevators only		1	1					2
Noncombustible Construction only		1	1					2
Fireproof Construction only	1	1	1	3		1		7
Fireproof Construction + 1 or more Elevators only	3	1	2	3	1			10
Fireproof Construction + Automatic Sprinklers + 1 or more Elevators	1			1				2
	7	9	7	28	19	51	12	133

Source: Comparison of Illustrations 15 and 16.

collective application of their combined summary determines the necessity for Area renewal; and the specific focusing of application by sub-unit establishes a basis for priority designation.

Though formulation of the compositional summary of physical building elements must be undertaken on a weight assignment basis that provides the most representative evaluation of the North Station Area, the respective weights of the five physical elements cannot necessarily be considered indistinguishably equal, for the condition of a building far outweighs the influence of age or even services, and the basic quality and type of construction may support the feasibility of relatively longer continued utilization. The procedure adopted, therefore, is assignment of varying ranges of point values to each of the building element groups.³⁴ Thus the compositional summary represents a relative numerical distribution of physical evaluation totals by individual structure, and to particular levels within this distribution are attached phrase evaluations of present and future building utilization potential. (Illustration 18.)

Tabulation of this compositional summary indicates the following statistical pattern. (See Table II-19.)

Revealed Structural Composition

The extended investigation of existing structures has thus revealed:

1. That the North Station Area is much older than has generally

³⁴ Under this procedure, one to ten points were assigned within each of the five building element groups. Building structural-maintenance condition, because of its particular significance, was given twice the normal weight, thus being assigned from one to twenty points. See Appendix 8.

NORTH STATION AREA

BOSTON

MASSACHUSETTS

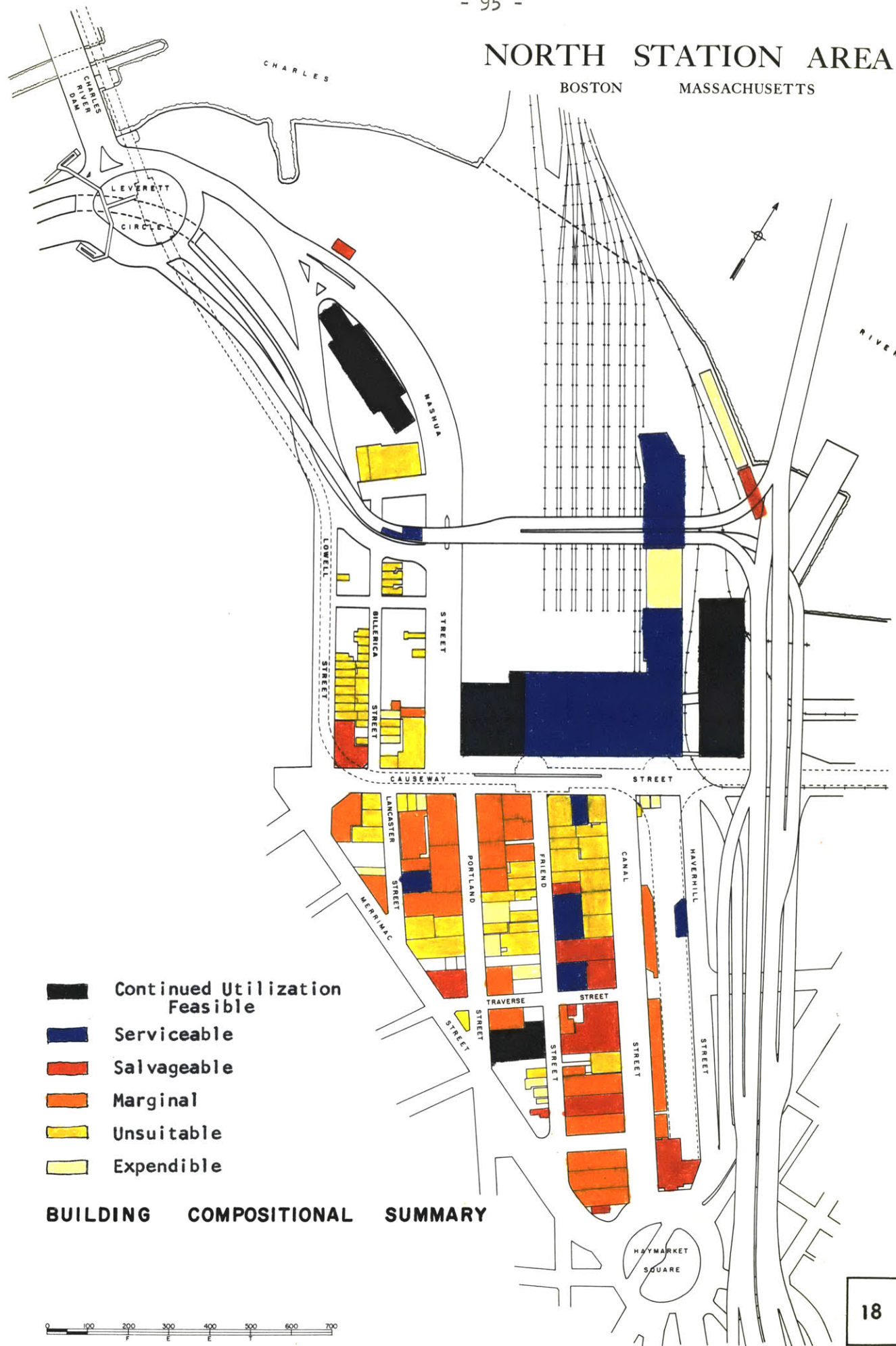


TABLE II-19
 BUILDING COMPOSITIONAL SUMMARY,
 NORTH STATION AREA, 1960

Sub-Unit	Compositional Summary Score						Total
	0 - 10 points Expendible	11 - 20 points Unsuitable	21 - 30 points Marginal	31 - 39 points Salvageable	40 - 50 points Serviceable	50 + points Continued Utilization Feasible	
Triangle	10	32	25	10	5	1	83
Illerica blocks	2	31	2	1	1		37
Cashua block		2				1	3
North Station Complex	1				3	2	6
Charles River- front	1			2	1		4
TOTAL	14	65	27	13	10	4	133
Percent of Area TOTAL	10	49	20	10	8	3	

been assumed by those contemplating the feasibility of rehabilitation.

2. That the North Station Area is comprised of a collection of structures which represent basic limitations of design and convertibility.
3. That the building pattern and composition with respect to the most basic physical element - construction type - is so spotty in the amount of adequate construction represented that little support is given to long-term utilization feasibility.
4. That with only 19 fireproof structures and with questionably adequate building services in only 45 out of an Area total of 133 buildings, the future of existing Area structures appears to be of short-term continued utilization at best.

These findings not only greatly modify the prospects for future long-term utilization of the North Station Area but substantially undercut the optimism of claims for improvement of the existing configuration and clearly indicate that accelerated maintenance as more than a mere stopgap alleviation of basically-rooted Area problems may be miscalculated and unsound. Moreover, relative to adjacent sections of the city now designated for redevelopment, the North Station Area appears to show striking similarity, and the same general deterioration which prompted the Government Center project and its extension through Staniford-Chardon to the West End Project exists and is characteristic of the North Station Area. Since a differentiation from one area to the other is practically nonexistent, it becomes most apparent that no significant physical line or barrier exists between the two sections of the city at which a termination of progressive, high priority renewal seems appropriate, practical or possible.

The general conclusion to be drawn from these facts, these elemental interrelationships and this building compositional summary is that no basis justifiably exists for expecting superficial improvement to begin to

solve the inherent physical problems of the North Station Area, that much of the Area should be considered for timely reorganization, but that a number of concentrations of feasibly utilizable buildings exist around which some extended program of renewal action might be formulated.

D. The Charles River and Riverfront

The Charles Riverfront is one of the most important components and the greatest potential development factor of the North Station Area. Forming the northern boundary of both the Area and Central Boston, this section of the peninsula edge has long suffered the ignominy of utilization discard and has been a forgotten yet valuable asset.

History and Development

From the settlement of Boston in 1630, the Charles River has played an important role in the structure and development of the city and in the growth and extension of the nearby peninsulas. Although the river has always been a fairly deep channel supporting extensive navigation, the riverfront has undergone continual change. Since the filling of the river northward from Causeway Street (1835), through construction (in the mid-1800's) of railroad trestles into Boston from Cambridge and Charlestown, the construction of Craigie Bridge to Cambridge, Warren Bridge to Charlestown, and the Charlestown Bridge to City Square to set the dominant transportation character, and even after the first major improvement - creation of the Dam and Basin (1910) - the Charles Riverfront in the vicinity of the North Station Area has been used most expediently and without full realization of its intensive development potential. The railroad consolidations which removed several of the trestle and bridge

crossings have been offset by creation of the high-level Central Artery; the closing of the Warren Avenue bridge was followed by the renovation for continued use of the Charlestown Bridge (1957); a large area of riverfront was first improved for recreation, then turned over to parking lots and a DPW heliport.

As of 1960, the Charles River below the Dam is a mere appendage of Boston Inner Harbor, pollution (with a twelve-foot sewer emptying out at the Dam) is on no decline, and the principal function of the river is to allow a bit of commercial cargo hauling and a large number of pleasure boats to pass between Boston Harbor and the Charles River Basin, a volume of movement which amounts to about seven oil barges a winter week to the oil depot and Cambridge Electric plant near the Longfellow Bridge, three oil and gasoline barges a winter week to the Chevron storage tanks near Lechmere Square, a couple of scows a week to the Boston Sand & Gravel Company off Cambridge Parkway, and several thousand small pleasure craft a weekend during the summer season.³⁵

In depth, the Charles River between Boston Inner Harbor and the Charles River Dam ranges from 33 to 13 feet, with an overall width between 1,000 feet and 400 feet, and with minimum channel widths of from 250 feet at the Central Artery bridge to 36 feet at the abandoned Warren Avenue bridge. Pertinent detailed dimensions of that section of the Charles River affected by and influencing the future of the North Station Area are presented in Table II-20. In addition and in order to more closely evaluate the influences and restrictions upon alterations and changes along this section of the Charles Riverfront, a determination of the

³⁵This information was obtained from the bridge-opening logs of both the Boston & Maine Railroad and the MTA and from the Dam lock records of the Metropolitan District Commission.

TABLE II-20
 DIMENSIONS OF THE CHARLES RIVER,
 NORTH STATION AREA, 1960

Location	Width of River at Location ^a	Horizontal Clearance of Structures ^b	Depth of River ^c (at MHW)	Minimum Vertical Clearance ^d
Mouth of River	1000 ft.	-	33 ft.	-
Charlestown Bridge (swing bridge)	800	50 ft.	20	23.4 ft.
Abandoned Warren Avenue Bridge	600	36	18	-
Central Artery (fixed bridge)	600	250	18	50.0
B&M Railroad 4 drawspans (Bascule bridges)	400	65	18	3.5
MTA Viaduct drawbridge	1000	45	16	33.0
Charles River Dam roadway drawbridge	1000	45	14	3.5
lock		45	13	-
Charles River Basin	1000	-	16	-

^aScaled from U.S. Coast & Geodetic Survey map of Boston Inner Harbor.

^bScaled from M.D.C. section maps of the Charles River supplied by Charles A. Maguire Associates, engineering consultants to the M.D.C.

^cCalculated from hydrographic contours of the Charles River bottom contained on M.D.C. section maps (see footnote b); elevations for Mean Low Water and Mean High Water obtained from U.S. Coast & Geodetic Survey map of Boston Inner Harbor.

^dCalculated from cross-sectional drawings of various structures contained on M.D.C. section maps (see footnote b).

river's operational data was obtained.

TABLE II-21

EXTENT OF BRIDGE OPERATIONS, CHARLES RIVER,
NORTH STATION AREA, 1960

Facility	Number of Openings 1959	Passage of Craft	Hours Closed to River Traffic ^a
Charlestown Bridge	7	-	6:00AM - 12:00 mid- night
B & M drawspans ^b	2000 ^c	-	7:00AM - 9:00AM 4:00PM - 6:00PM
MTA viaduct bridge	28	-	6:15AM - 10:00AM 4:15PM - 7:40PM
Charles River Dam roadway bridge lock	1000 ^c 5000	12,000 pleasure boats	4:00PM - 7:00 PM

a. Under permission granted by the U.S. Army Corps of Engineers, the agency with jurisdiction over all navigable inland waterways, including the Charles River.

b. Of the four spans, only three are in use. Span #1 remains open at all times.

c. (B & M drawspans figure approximated.) At low tide, there is sufficient clearance for small craft. Consequently, the number of draw-bridge openings is not comparable to the number of lock openings at the Dam.

As indicated by the figures above, there not only exists an impeded navigability of the Charles River in the vicinity of the North Station Area, but a basic dimensional-functional complication with the schedules of the Boston & Maine Railroad and the operations of the Metropolitan Transit Authority. Thus, the present structural configuration

places very definite restrictions and limitations upon both the extent of river utilization and the flexibility of transportation movement at the northern end of the Shawmut Peninsula.

Future Use and Development

On the basis of the information available concerning vertical clearance, channel width, river traffic, and navigational interference, the following conclusions are drawn concerning the future use and development of the Charles River and Riverfront.

1. Until two of the five structural spans over the Charles River in the vicinity of the North Station Area - the Charles River Dam drawbridge and the Boston & Maine drawspans - now operating for practically every craft moving on the river are structurally altered or removed, considerable transportation congestion and interference will continue to occur at the northern end of Central Boston.
2. Unless the extreme level of pollution in the river downstream from the Charles River Dam is eliminated, intensive, high-value utilization of the Charles Riverfront, particularly within the central city, will not be possible.
3. The use of Boston & Maine Railroad trackage and drawspans across the Charles River as an alternative route for possible future rapid transit operations (under the circumstance of elimination of Causeway Street elevateds) is made essentially impossible by the critical vertical clearance of the structures and by the high volume of river traffic.
4. Since, according to the records of the City of Boston, the Boston & Maine Railroad, the Metropolitan Transit Authority, and the Metropolitan District Commission, the use of the Charles River for large vessel operations has substantially declined, there would seem to be necessitated a re-evaluation of the unwarranted justification given by the small amount of continuing commercial river traffic to the existing and unnecessary 30 foot fixed bridge vertical clearance regulations.³⁶

³⁶As interpreted from dealings with the regulatory U.S. Army Corps of Engineers by the City of Boston Department of Public Works Bridge Division and the Metropolitan Transit Authority concerning the use and status of the Charlestown Bridge, by the Massachusetts Department of Public Works concerning the construction of the Central Artery bridge, and by the Metropolitan District Commission and their consultants.

Moreover, unless height restrictions are reduced comparable to the 12-foot minimum clearance of other upstream fixed bridges between Cambridge and Boston (Harvard Bridge, 13 feet; Boston & Albany Railroad bridge, 12 feet; River street bridge, 15 feet; Western Avenue bridge, 15 feet; and Anderson Bridge, 16 feet), then reasonable clarification and improvement to the North Station Area section of the Charles River, the riverfront, and its facilities between the present Dam and Boston Inner Harbor will be excessively complicated and unnecessarily difficult.

5. Since the river now handles a significant volume of seasonal pleasure boat traffic which is expected to almost triple within the near future,³⁷ since the predominant use function and structural orientation of the Charles River Basin is toward recreational use, and since there has been a long downward trend in commercial river traffic, the eventual and natural full utilization of the Charles River and Basin for strictly recreational purposes appears to be a decision whose timely consideration must be undertaken in conjunction with changes now and in the near future with respect to the North Station Area section of the Charles River.

E. Billerica Street Residential Blocks

The small section of the North Station Area along Billerica Street between Lowell and Nashua Streets is of special consideration as a residential remnant of the former West End. This four-block sub-area generally represents pre-1900 deteriorated structures in mixed residential-commercial use, with inadequate building services, few installations of central heat, and poor lighting and sanitary facilities and suffering from overcrowding (due in part to relocations from the West End Re-development Project), and total lack of area facilities and amenities (no schools, churches, playgrounds, or trees). "The ties which were present when the West End was a living entity have now disappeared," and "the existing conditions of the area indicate a poor environment for

³⁷ According to Mr. Paul Crandall Jr. of Crandall Dry Dock Engineers, consultants to the Metropolitan District Commission on the Charles River Dam.

continued residential use."³⁸

Present Composition

The Billerica Street sub-area may be characterized in terms of several component evaluatory elements:³⁹

a. Nature of Buildings

Most of the structures appear to represent the first rebuilding of this historically residential filled-in portion of the old Mill Pond, with comparison of Bromley Atlases indicating that replacements or extensive modifications of the former structures were undertaken during the period 1884-1902. Most of the buildings are of conventional brick construction with wooden rear porches, and several are apparently of brick-modified wood frame. Although the proportion of dwelling unit dilapidation, according to the 1950 U.S. Census, was only 21 out of 141, the generally poor condition represented in 1960 indicates a vast increase in deterioration over the decade, with the buildings immediately adjacent to the noisy, blighting Lechmere MTA elevated representing the extreme of these conditions.

b. Population and Density

With a total of 145 dwelling units in use as of 1950 and with an average of, say, 3.5 persons per family per dwelling unit, the more or less permanent residential population of this Billerica section of the North Station Area would total approximately 500 persons. At a rough gross land area of 2.7 acres (including parking lots), the resultant 1950 residential density would have been 53 dwelling units per acre.⁴⁰

³⁸Sheldon P. Gans, "Implications of Residential Redevelopment, Staniford-Chardon Area, Boston, Mass.," (unpublished master's thesis, Department of City & Regional Planning, M.I.T., 1960), p. 20. These two statements, actually made about the adjacent Staniford-Chardon area, apply equally well to the Billerica Street blocks.

³⁹The statistics presented in this section were obtained from the Housing Block Statistics, Boston, Massachusetts, U.S. Census of 1950, the latest source information available. Detailed 1960 Census data will not be published until late in 1961. Field survey might have obtained reasonably accurate, more up-to-date information, except the natural reluctance of these West End frightened residents prevented the undertaking of any such survey. See Appendix 9.

⁴⁰Although several of the buildings have been demolished since 1950, there has been practically a disappearance in residential vacancies

c. Environment

The environment of this surrounded, isolated, mixed commercial-residential area consists of an elevated transit structure at third floor level along two of the four sides, the cleared land of the old West End facing Lowell Street, the elevated ramps of the Central Artery expressway on the north, and a sawtooth pattern of interlacing commercial parking lots to the east.

Future Changes

Major future changes appear to be possible in the residential Billerica Street section of the North Station Area. Not only occasional building demolitions may occur to make way for more profitable commercial parking lots and progressive deterioration continue of the existing structures, but upon completion of the adjacent Government Center, West End, and Staniford-Chardon redevelopment projects, considerable economic pressure may be impressed for sub-area redevelopment, a process that would be considerably accelerated if the MTA Lechmere elevated were to be removed. Although these adjacent changes could conceivably stimulate private initiative, the varied, multiple, and confused ownership pattern which presently exists indicates the unlikelihood of such an occurrence. It is therefore probable that whatever "renewal" is to be achieved must be undertaken through direct public action.

F. Utility Services

Major utilities in the North Station Area have been investigated

- (a) to measure an important component of the existing physical composition,
- (b) to assess another factor of the future development of the site, and

due to relocations from the now-destroyed West End. Consequently, the general density and population figures as of 1960 are probably quite similar.

(c) to provide an additional basis for establishment of a priority schedule for possible renewal action.

Water Supply System

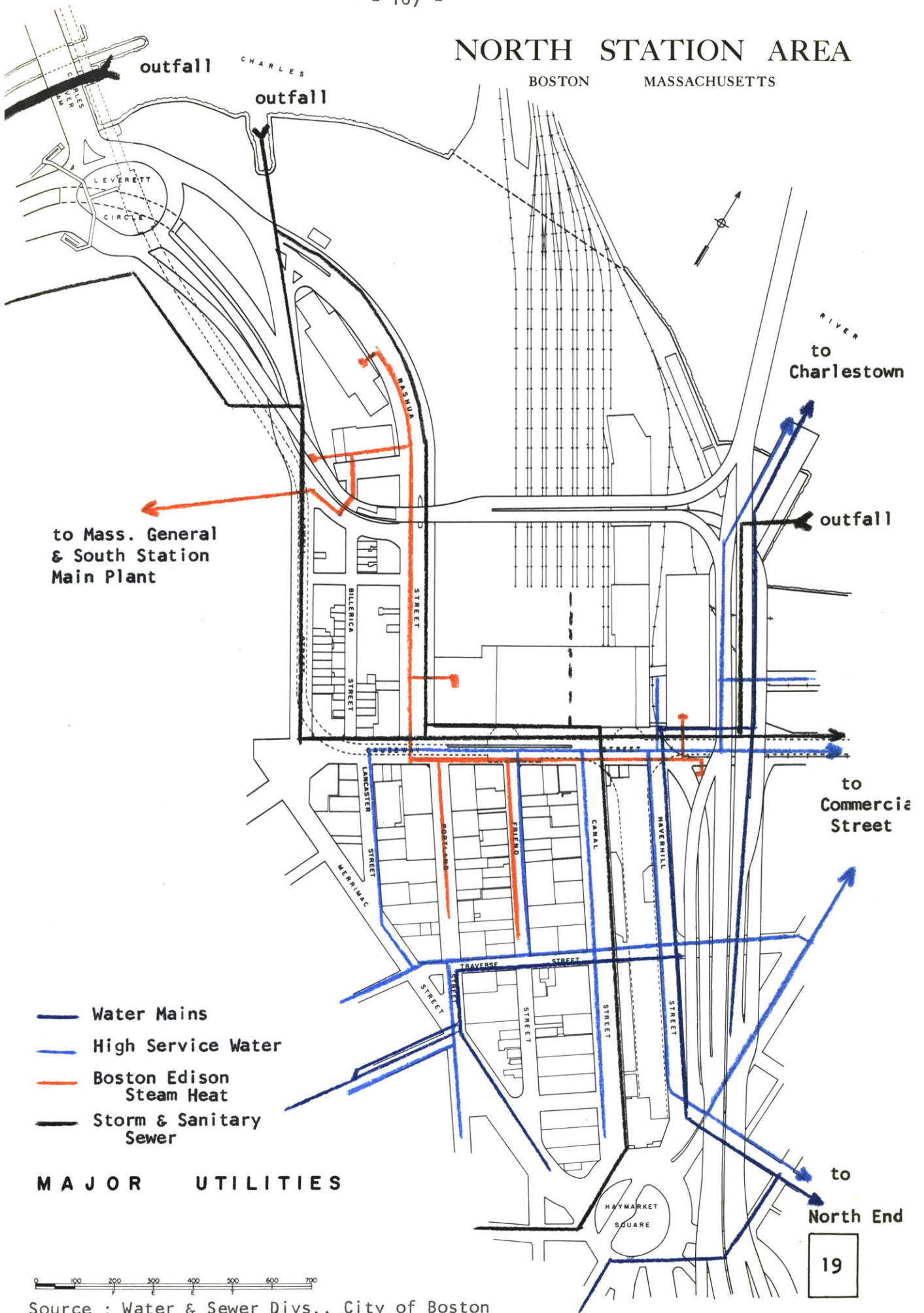
The water supply system of the North Station Area consists of four separate components: high service fire lines (installed as a separate system for fire-fighting purposes only, connected to 20 hydrants within the Area, and servicing essentially the central business area of the city); high service water lines (providing water pressure to buildings over 100 feet and up to 20 stories high); low service water lines (both providing general fire protection and servicing most city structures); and mains (distributing large volumes of water to various parts of the other three systems). Principal elements of this public water supply system pass from Beacon Hill and the Central Business District through the North Station Area to Charlestown and to the North End and provide full service to virtually all of the Area south of Causeway Street and limited service toward the Charles Riverfront.

Steam Heat

Located within the Nashua Street block of the North Station Area is a secondary steam generating plant which ties into the high-pressure supply loops that surround the Downtown and that connect to the main Kneeland Street plant near South Station. Shown as part of the Major Utilities map are both the trunk lines which pass outward toward the Massachusetts General Hospital and the local feeder lines which serve buildings and expressway ramps within the North Station Area.

NORTH STATION AREA

BOSTON MASSACHUSETTS



to Mass. General & South Station Main Plant

RIVER to Charlestown

outfall

to Commercial Street

to North End

- Water Mains
- High Service Water
- Boston Edison Steam Heat
- Storm & Sanitary Sewer

MAJOR UTILITIES



Source: Water & Sewer Divs., City of Boston

Sanitary-Storm Sewer System

The combined sanitary-storm sewer system of the City of Boston and of the Metropolitan District Commission is comprised of major elements which pass through the North Station Area and which discharge untreated into the Area section of the Charles River. Contained in the historical east-west Causeway Street connection across the filled Mill Pond from the West End to the North End is a portion of the 3' x 5' interceptor sewer which partially encircles the Central Boston peninsula and off of which sewer discharges lead northward along Nashua, Lowell, and Beverly Streets to the lower Charles River outfalls. And passing under Embankment Park and Charlesbank Playground from Charles Circle to Leverett Circle is the so-called "Boston Marginal Conduit," a 120-square foot metropolitan sewer which empties into the Charles River just below the Charles River Dam. (See illustration 19.)

Anticipated Extension of Major Utility Lines

A number of changes and alterations in major utility lines in the vicinity of the North Station Area may occur in the near future. The Boston Edison steam plant may soon be called upon (if the contract is successfully negotiated) to service the new residential and commercial units of the redeveloped West End; the City's high service water line is now being extended for connection to the future high-rise apartment towers of Charles River Park; and if a proposed new downstream Charles River dam is constructed and/or before intensive utilization of the Charles Riverfront will be possible, an extension of the Boston Marginal Conduit now terminating at Leverett Circle and cessation of present sewer discharges must be undertaken along the Charles River edge of the Area and connections made to metropolitan treatment plants.

G. Jurisdictional and Regulatory Influences

Overlapping and Conflicting Public and Quasi-Public Jurisdictions

The existing physical composition of the North Station Area is divided in jurisdictional control and regulation among an overlapping complex of public and quasi-public agencies, each of which seems to jealously guard its "individual rights." There is the Metropolitan District Commission which controls the Charles River Dam, the Charles River, both riverbanks above the dam, Leverett Circle and Storrow Drive; the Massachusetts Department of Public Works which owns a section of the Charles Riverfront and operates the Central Artery and its North Station Area approaches; the U.S. Army Corps of Engineers which enforces navigability regulations on all the Charles River and must grant specific authorization on all matters concerning structures over the river or alteration of its banks; the City of Boston which governs the use of Area streets and properties; the Metropolitan Transit Authority which owns and maintains the two elevated rapid transit lines through the Area; the Massachusetts Port Authority which controls both vehicular tunnels to East Boston and all surface streets east of the Central Artery from Cross Street to Fulton Street near the entrance to the tunnels; and the Boston Redevelopment Authority which now owns and is in the process of demolishing the former West End and under whose supervision any public renewal or redevelopment action in the Area must be taken.

Of the quasi-public organizations involved in this confusion of interests, rights, responsibilities, and ownerships, the most important is the Boston & Maine Railroad. Controlling, through consolidation, purchase, easement, and tax-exemption statute, most of the Area north of

Causeway Street to the Charles River, the B & M is in a position to contribute substantially to the creation of that vital conceptual link between the Central Business District and the river and simultaneously to the continuity of development of the Charles Riverfront from Storrow Drive and Charles River Park to the North End and the future redeveloped harborfront.

One of the major problems involved in the full utilization of development potential in the North Station Area appears to be the resolution of this overlapping complex of jurisdictions and interests.

Present and Proposed Zoning Regulations over Future Development

Zoning, although theoretically no determinate of future planning flexibility, indicates municipal attitudes toward both the potential and the "correctness" of an area's future development and may substantially influence the receptiveness for new ideas. This appears to be a factor of some significance in the North Station Area.

Both the existing 1924 Boston Zoning Ordinance and the proposed (but not yet approved) 1958 comprehensive zoning regulations reflect the not-uncommon equivocal commercial-industrial attitude toward the North Station Area. The existing ordinance delimits a "General Business Zone" (in which any retail or wholesale operation and practically any non-dangerous or non-obnoxious industry is allowed) to the western and southern edges of the Area and assigns an essentially unrestricted "Industrial Zone" to the large remainder. The 1958 proposal suggests four different districts within the Area, ranging from business zones between Lowell-Nashua Streets and Canal-Haverhill Streets and light manufacturing zones over the southern half of the Area, a large section of the future Government Center, and the

North Washington Street-Charles River corner of the North End, to a general manufacturing zone for the railyards and all the Charles River-front.

Where the 1924 zoning ordinance was inappropriate for the impendency of the development boom of the late 1920's (the period of North Station Complex construction), the 1958 zoning proposals are equally non-cognizant of the development potentials of the North Station Area as intensified by Central Artery construction, West End (Charles River Park) redevelopment, Government Center creation, harborfront redevelopment, and possible Charles River Basin extension, in the 1950's, 1960's and 1960's. Such development and redevelopment changes now seem to necessitate a complete re-evaluation of both general plans and proposed zoning, and a formulation of new functional and structural designs for this northern end of the Shawmut Peninsula.

H. Physical Composition Summary

Generally considered, the existing North Station Area is characterized by drab, undistinguished, run-down buildings lining narrow, dirty, dimly-lighted streets, with the noise of elevated rapid transit lines constantly in the background and strong impressions created of elevated structures, railroad yards, congested traffic circles, and non-transitional deterioration. Not only is this existing physical environment repelling to both pedestrians and motorists, depreciative of the possible locational sales market, and disuasive of prospective Area firms and investors, but it deters realization of the Area's intensive development potentials. And though the Area has been a crossroads of

communication and transportation and has been one of the more highly accessible points in the central city, the present structural-functional configuration represents that deterioration and obsolescence typical of the whole section of the city lying north of the Central Business District which has already precipitated three major redevelopment projects immediately adjacent to the site.

The existing physical composition of the North Station Area has been determined to be comprised of a number of both basic and structurally inherent problems:

1. The buildings are representatively old, generally deteriorated, poorly maintained and equipped, inadequately fire-protected, of low in-town land utilization intensity, in many respects obsolete, and very definite fire, safety, and health hazards to the city.

2. Within this general structural composition exist several definitive groups of larger, more substantial buildings of moderate age and of high maintenance level which may be considered for at least short-term continued utilization and around which a sequence of programmed renewal may be formulated.

3. The configuration of the Charles River adjacent to the Area continues to be dominated by the unattractive character and nonintensive use of the railroad and superimposes extensive problems of pollution devaluation, river navigation obstructions, metropolitan transportation interferences, and strong environmental degeneration for which full river-front utilization and valuable development potential realization will require extensive reorganization.

4. The effect of MTA rapid transit facilities in the Area is multifold. Though the location of rapid transit stations has contributed

directly to the volume and direction of pedestrians in the Area and though there appears to be a definite and important dependence of the existing business composition for both customers and employees upon the high accessibility given to the Area by the MTA rapid transit lines, the particular form of the existing elevated transit structures has had a serious depressent effect not only on the physical character but upon the economic attractiveness and development of the Area. Yet, from the volumes of passengers carried over both the Lechmere and Everett transit lines, it is clear that mere suggestion of elimination of the elevated structures is not a fully adequate approach to the problem and that an acceptable alternative must be found.

5. The existing "condition" of buildings, the extent of physical development conflicts and problems, the incompatibility of sub-unit railroad-residential-commercial use juxtaposition, the incision, isolation, and internal disorganization created by both the elevated transit structures and the divisionary riverfront expressway ramps, the lack of effective vehicular circulation organization to meet the impending changes of immediately adjacent redevelopment projects, the inadequate and even dangerous pedestrian movement facilities, the uncontrolled and unchannelled vehicular movements, the unintensive land utilization, and the general unfeasibility of future building utilization -- all indicate the physical necessity of reconstruction of the northern end of Central Boston and the Shawmut Peninsula.

III

ECONOMIC COMPOSITION OF THE AREA

The economic composition of the North Station Area has been rather generally ignored, superficially discounted, incompletely evaluated, and incorrectly analyzed.¹ Moreover, superficial attitudes have developed, generalized conclusions have been drawn, and significant planning decisions have been reached on the basis of these inadequacies, with serious implications not only for the North Station Area but also for Central Boston.

This chapter is intended to summarize the full investigation of just what activities exist in the Area, what the trends in business functions have been, what the present economic utilization of the Area is, how the Area economically compares to Downtown Boston, and what conclusions on this more up-to-date and nearly correct information can be drawn concerning the past and the present North Station Area and its relationship to the city center. Such a study is undertaken to provide a basis for policy with respect to the future of the North Station Area sector of Central Boston, in terms of (a) impending business relocations from the adjacent redevelopment projects, (b) implications of possible inclusive redevelopment of the Area, and (c) formulation of a criteria

¹See Section B, Recent Economic Studies of Downtown Boston and the North Station Area.

base for Area renewal.²

A. Business Activities and Employment

Business Composition: 1960

The North Station Area, as of 1960, supported a total of 312 firms and agencies representing a total employment of 7200 persons. By major category, these firms and employment totals were distributed as shown in Table III-1.³ (See illustrations 20 and 21.)

TABLE III-1
BUSINESS COMPOSITION, BY MAJOR CATEGORY,
NORTH STATION AREA, 1960

SIC Major Category ⁴	Per Cent of		Per Cent of	
	Firms	Total Firms	Employment	Total Employment
1. Contract Construction	1	1	11	0
2. Manufacturing	16	5	462	6
3. Manufacturing	5	2	491	7
4. Transportation, Communication, Utilities	22	7	890	12
5. Retail & Wholesale Trade	181	58	1849	26
6. Finance & Real Estate	6	2	60	1
7. Services	51	16	542	8
8. Services	20	6	322	4
9. Government	10	3	2572	36
TOTAL	312	100	7198	100

²The basic procedure utilized is indicated in Appendix 10.

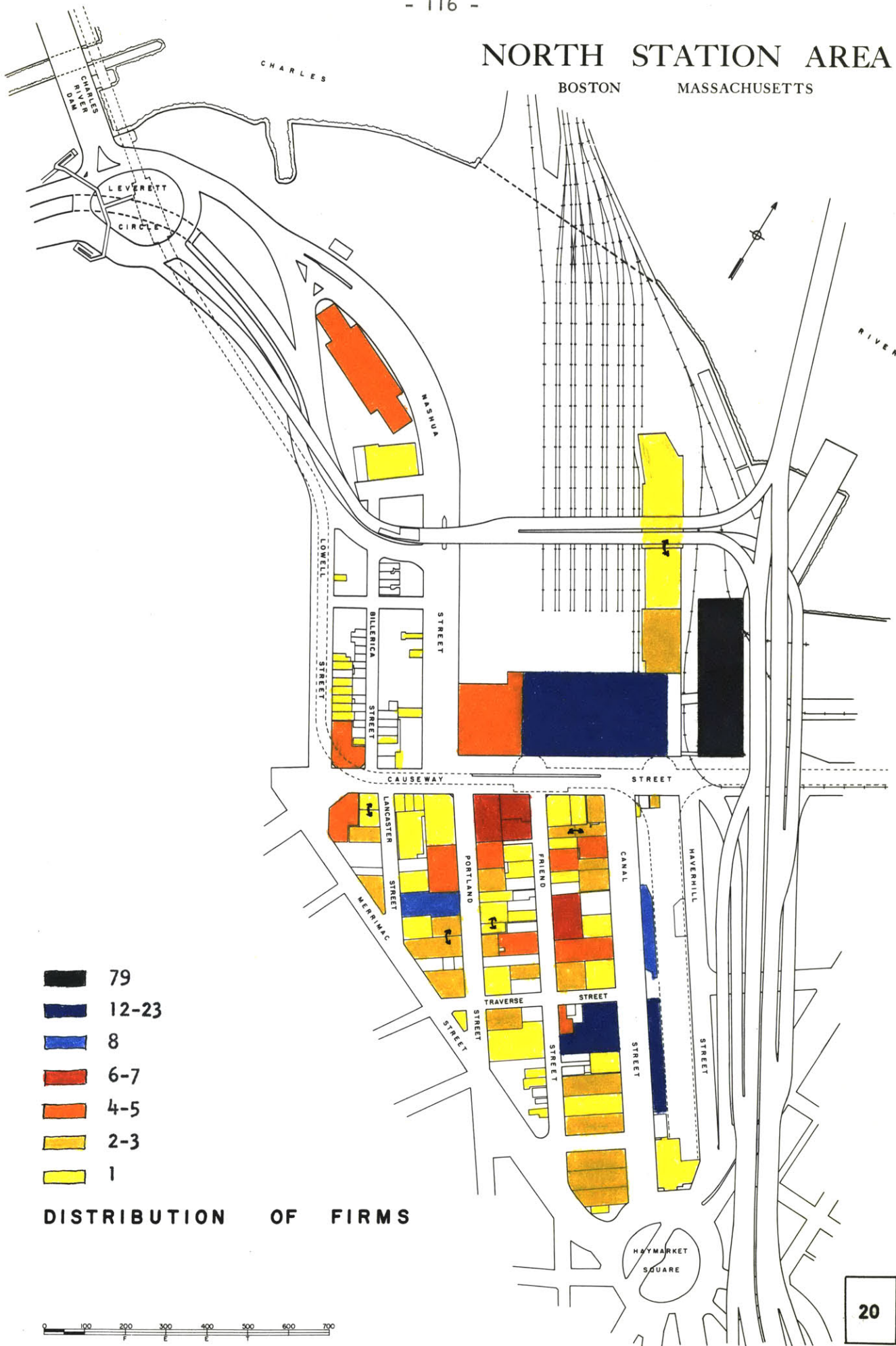
³The complete statistical distribution of firms and employment is presented in Appendix 13.

⁴For full description of Major Categories, see the Standard Industrial Classification Manual, 1957, Executive Office of the President,

NORTH STATION AREA

BOSTON

MASSACHUSETTS

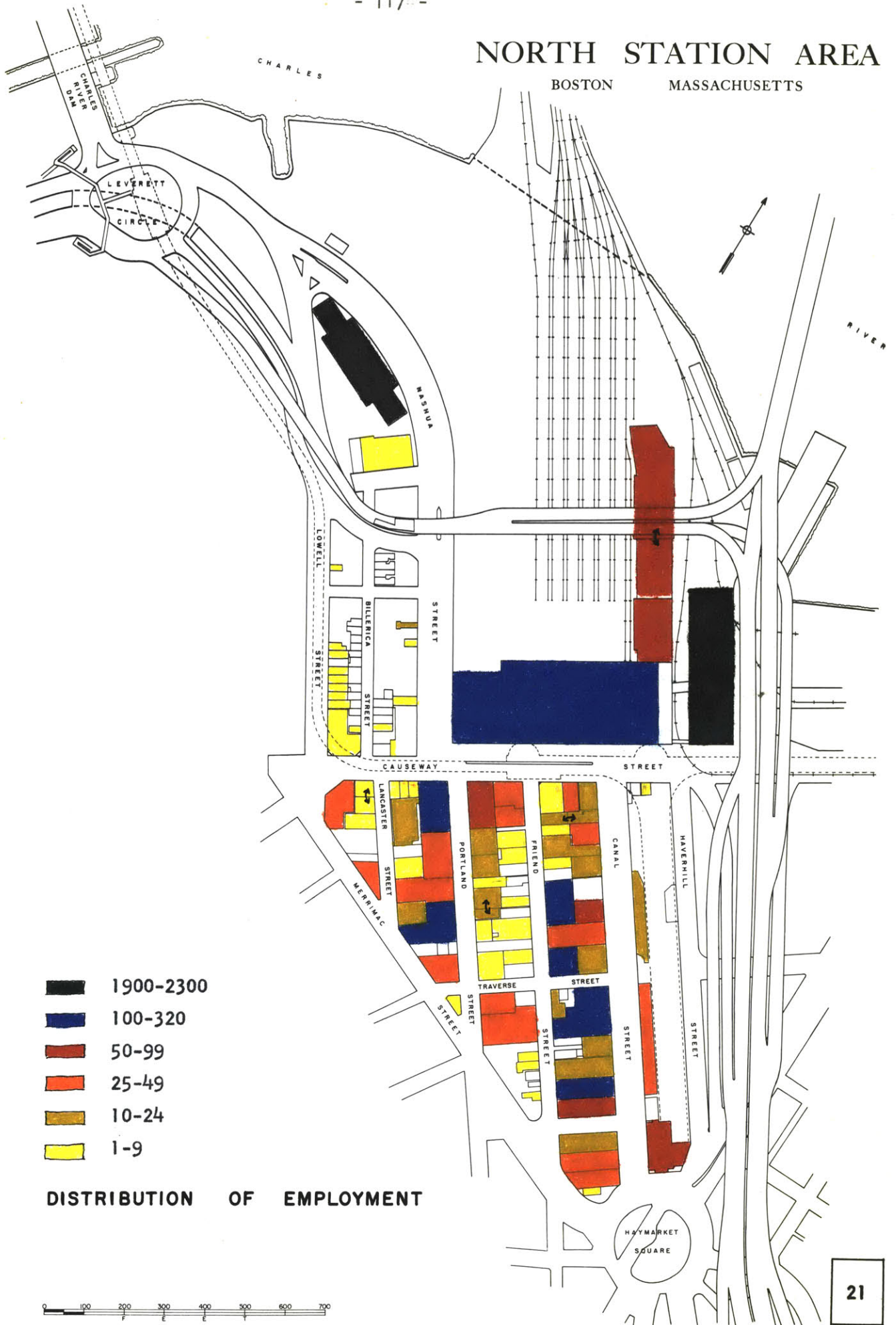


DISTRIBUTION OF FIRMS



NORTH STATION AREA

BOSTON MASSACHUSETTS



- 1900-2300
- 100-320
- 50-99
- 25-49
- 10-24
- 1-9

DISTRIBUTION OF EMPLOYMENT



Considered by specific activities, the principal concentrations, in terms of numbers of firms, were wholesale furniture and home furnishings (41), retail furniture (32), restaurants (18), and railroads (15). The principal concentrations, in terms of total employment, are illustrated in Table III-2 and clearly indicate the previously under-rated fact that state government is the largest single employment concentration in the North Station Area, representing fully one-third of the total Area employment and three times the size of the next largest activity.

Locational Pattern of Business Activities: 1960

The distribution of business activities in the North Station Area as of 1960 has been categorized by individual buildings through summarization of 4-digit SIC classification assignments representative of predominant employment type. The accompanying illustration reveals a pattern of personal service concentration along Causeway and Canal Streets, retailing and wholesaling along Portland and lower Canal Streets, business services and office activities in the North Station Complex, manufacturing on Portland and Friend Streets and in the Industrial Office Building, and government offices in the isolated Nashua Street sub-unit.

Comparison of the North Station Area to Downtown Boston

In terms of covered employment,⁵ the North Station Area comprises a sizeable proportion and represents an important segment of many of the

Bureau of the Budget, U.S. Government Printing Office, Washington, D.C., 1957.

⁵DES-defined "covered" employment indicated for comparability.

TABLE III-2

CONCENTRATIONS OF BUSINESS ACTIVITY,
NORTH STATION AREA, 1960

Activity	1960 Employment (activities greater than 100 employment)	% of SIC Major Category <u>Employment</u> % Major Category		% of Total Area Employment
State Govt. offices	2407	94	(9)	33.5
Railroad offices and operation	816	92	(4)	11.4
Wholesale furniture and home furnishings	389	21	(5)	5.4
Computer manufacturing	331	67	(3)	4.6
Engineering and archit. services	291	91	(8)	4.0
Retail womens' ready-to-wear stores	285	16	(5)	9.0
Restaurants	220	12	(5)	3.1
Commercial entertainment operations	203	37	(7)	2.8
Mens' clothing manufacturing	196	42	(2)	2.7
Hotels	165	31	(7)	2.3
Wholesale textiles and fabrics	147	8	(5)	2.0
Retail furniture	140	8	(5)	1.9
Coating and plating manufacturing	126	26	(3)	1.7
	5717			79.4

NORTH STATION AREA

BOSTON MASSACHUSETTS

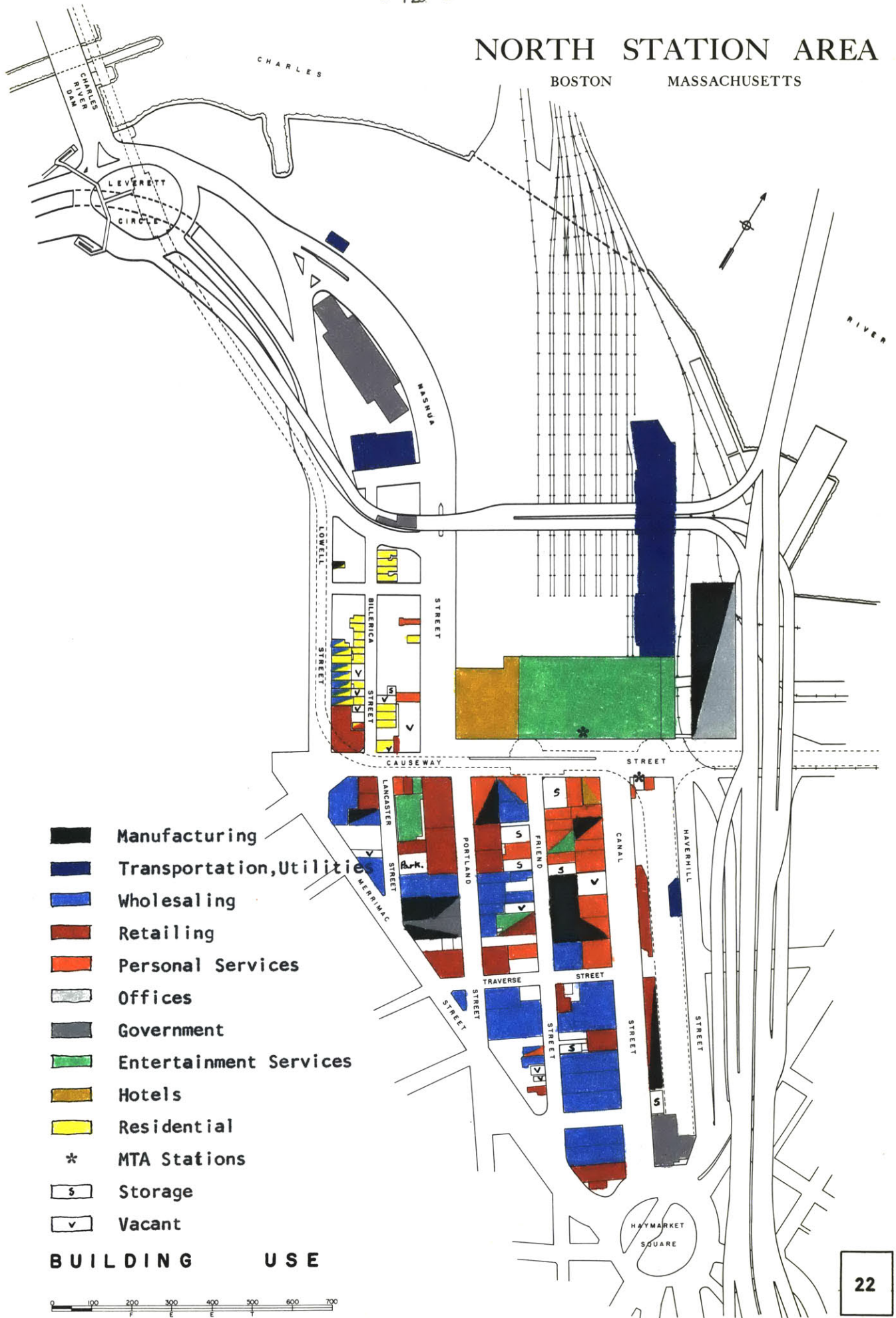


TABLE III-3

COMPARISON BETWEEN THE NORTH STATION AREA AND DOWNTOWN BOSTON,
COVERED EMPLOYMENT, SELECTED CATEGORIES, 1947 and 1957

SIC Category	1947			1957		
	Downtown Boston ^a	North Station Area	%	Downtown Boston ^a	North Station Area	%
23 Apparel Mfg.	13,961	253	1.8	10,872	203	1.9
25 Furniture Mfg.	627	141	22.5	304	131	43.1
34 Fabricated Metal Mfg.	198	76	38.4	506	101	20.0
35 Machinery Mfg. (except electrical)	999	186	18.6	327	56	17.1
4 Transportation	6,235	1,439	23.1	6,317	1,172	18.6
50 Full-Service & Limited Function Wholesalers	15,376	489	3.2	12,647	619	4.9
503 Dry Goods Wholesalers	2,272	123	5.4	2,088	143	6.8
5097 Wholesale Furniture & Home Furnishings	606	204	33.6	908	324	35.8
56 Retail Apparel & Accessories	8,352	206	2.5	5,709	259	4.5
562 & Retail Womens 563 Apparel	7,098	203	2.9	6,356	255	4.0
58 Retail Eating & Drinking Places	9,044	335	3.7	7,502	331	4.4
70 Hotels, Rooming Houses & other Lodging Places	4,233	230	5.4	3,421	210	6.1
73 Business Services	6,077	22	0.4	8,672	197	2.3
79 Amusement & Recrea- tion Services	1,077	314	29.2	781	252	32.2
891 Architect. & Engr. Services	2,157	18	0.8	4,220	276	6.1

^aSource: Greater Boston Economic Study Committee, A Report on Downtown Boston, Boston, Mass., 1959.

business activities of Downtown Boston.

Comparison of the North Station Area with Metropolitan Boston

The North Station Area in the field of furniture and home furnishings wholesaling is of major importance even on a metropolitan scale, and more significantly, has been increasing in proportionate size.

TABLE III-4

COMPARISON BETWEEN THE NORTH STATION AREA AND METROPOLITAN BOSTON,
COVERED EMPLOYMENT, FURNITURE AND HOME FURNISHINGS WHOLESALING
(SIC 5097), 1947 and 1957

Year	North Station Area	Downtown Boston ^a	Total Boston Metropolitan Area ^a
1947	204	606	1,261
1957	324	908	1,735

North Station Area as an Inclusive Percentage of Larger Areas:			
1947	-	33.6	15.1
1957	-	35.8	18.7

a. Source: A Report on Downtown Boston, Greater Boston Economic Study Committee, Boston, Mass., 1959.

Business Trends in the Area: 1947-1957-1960

1. Area Totals

On the basis of "corrected" statistics for 1947 and 1957,⁶ the North Station Area has been experiencing a misinterpretable form of

⁶ See chapter section on revision of GBESC tabulated-DES statistics.

composite employment change, with the nature of employment transition of far more significance than the extent of fluctuation. Although there has been a steady increase in number of firms from 1947 through 1957 to 1960, there was first an employment increase of 1200 between 1947 and 1957 followed by a decrease of more than 800 in the short period from 1957 to 1960, a pattern which may be partially explained by the arrivals and departures at the Industrial Office Building over the 1957 tabulation date of several large firms and several government agencies, including the U.S. Army Corps of Engineers and the Chance-Vought Division of United Aircraft, and by the curtailment of Boston & Maine Railroad operations. The steady rise in the number of firms in the Area, however, reflects a complex change and general activity character transition involving the replacement of older forms of manufacturing operations by numerous firms in the fields of retailing, wholesaling-without-stock, and business services.

2. Category Totals

Within the overall Area pattern, the changes which have been occurring in the various component categories represent an admixture of increases and declines, with the changes in employment and in the number of firms between 1957 and 1960 representing important reinforcements of most previous 1947-1957 trends but with several non-representative, statistically-weighted alterations in others.

a. Manufacturing employment decreased to 1957 then sharply increased to 1960, as a result in the first period of steady departures of older forms of industry from the Area and in the second of the arrival and growth of new firms in the Industrial Office Building.

b. Transportation total employment, under the dominance of the

TABLE III-5

FIRMS AND EMPLOYMENT, NORTH STATION AREA,
1947, 1957, 1960⁷

SIC Major Category Groups	1947		1957		1960	
	firms	employ.	firms	employ.	firms	employ.
2, 3. Manufacturing	38	870	24	666	21	953
4. Transportation, Communication, Utilities	16	1444	23	1176	22	890
5. Wholesale & Retail Trade	141	1549	165	1785	181	1849
6. Finance, Real Estate	7	59	7	63	6	60
7, 8, 1. Services	44	731	59	1079	72	874
9. Government	5	2165	8	3327	10	2572

Boston & Maine Railroad, declined at an increasingly rapid pace.

c. Wholesale and retail trade experienced accelerating growth in both employment and number of firms, primarily as a result of increases in the furniture, home furnishings, and related activities concentration.

d. The finance and real estate category remained essentially stable.

e. The services followed a pattern of large increase in total employment between 1947 and 1957 and sharp decline by 1960, an unrepresentative change caused principally by the temporary location, over

⁷ See Appendices 11 through 13 for complete statistical distribution of firms and covered employment.

the date of tabulation, of several large businesses, including the United Aircraft development group, from other Downtown locations.

g. Government, the largest single total employment category in all the years investigated, experienced considerable growth in most agencies in the Area between 1947 and 1960, but was statistically weighted by the arrival and departure over the 1957 tabulation date of the U.S. Army Corps of Engineers.

3. Specific Activity: Furniture and Home Furnishings⁸

Distillation of statistical trends for the Area for the major category groups, and for the various tabulatory blocks reveals that there is one activity in the North Station Area which has demonstrated and experienced substantial growth. The field of furniture, home furnishings, and related activities, although not the statistical dominant in absolute size, indicated a 1947-1960 increase in total employment of more than 27 per cent⁹ as a result of steady growth in a few relatively large firms and arrival of a considerable number of small and medium-sized establishments, and in number of firms, locational stability, occupied floor space, and business growth, is and has been one of the Area's most important activities.¹⁰

⁸See Appendix 14, designation of furniture and home furnishings activities.

⁹This is a much greater rate of growth for this field than even the naturally optimistic consultant's study for the North Station Merchants Association indicated. See Section B, Recent Studies of Downtown Boston and the North Station Area.

¹⁰Detailed tabulation of 1947-1960 growth contained in Appendix 15.

Trends in the Area Vs. Trends in Downtown Boston

Thorough investigation has provided a number of important facts about the North Station Area and its economic status in Downtown and Metropolitan Boston. Considered in terms of decade trend, the effects of decentralization and changing urban economic functions, which have so influenced Downtown Boston, add even more significance to the North Station Area. Whereas the employment¹¹ base of Downtown Boston has been rapidly shrinking, the economy of the North Station Area has basically been progressively expanding. Even more revealing are the trend comparisons by major activity category, as shown in Table III-6.

This table reveals a wealth of information about the relation of the North Station Area to the rest of Downtown Boston. It indicates not only that the effect of general manufacturing decline has been less severe in the Area and that the decrease in transportation employment expectedly has been greater, but also that where the remainder of Downtown Boston has experienced a substantial decrease in retailing and wholesaling, the North Station Area has demonstrated growths of 8 and 23 per cent, respectively.

The Nature of Recent Area Trends and Changes

These recent changes in the business composition of the North Station Area indicate a basic alteration of character. And though it is always dangerous, on the basis of a small statistical universe, to draw long-range implications from recent changes, there are circumstances in the trends of the Area which observation imports to be vital.

¹¹ Covered employment.

TABLE III-6
 COMPARISON OF COVERED EMPLOYMENT, BY CATEGORY
 NORTH STATION AREA AND DOWNTOWN BOSTON,
 1947 and 1957

Area	1947	1957	Net Change	% Change
<u>DOWNTOWN BOSTON^a</u>				
1 Primary Prod.	10,194	6,836	- 3,358	- 32.9
2 & 3 Mfg.	35,589	26,540	- 9,049	- 25.4
4 Trans., Comm., Util.	17,468	18,508	1,040	6.0
5 Wholesaling	26,029	21,064	- 4,965	- 19.1
5 Retailing	40,832	35,766	- 5,066	- 12.4
6 Finance, Real Est.	36,505	41,613	5,108	14.0
7 & 8 Services	23,471	26,166	2,695	11.5
TOTAL	190,448	176,644	- 13,804	- 7.2
<u>NORTH STATION AREA</u>				
1 Primary Prod.	10	4	- 6	- 60.0
2 & 3 Mfg.	832	642	- 190	- 22.8
4 Trans., Comm., Util.	1,420	1,172	- 248	- 17.4
5 Wholesaling	793	861	68	8.5
5 Retailing	54	59	5	9.3
6 Finance, Real Est.	627	773	143	22.8
7 & 8 Services	678	1,018	340	50.1
TOTAL	4,433	4,529	96	2.2

^aSource: Downtown Boston figures from Greater Boston Economic Study Committee, A Report on Downtown Boston, Boston, Mass., 1959.

First, the increases in overall retail activity which the 1947-1957 decade produced have been sharply reversed on the more recent 1957-1960 period by the local effects upon general retailing of the curtailment of rail service by the Boston & Maine and by the demolition of the adjacent residential West End - a trend that may continue in non-furniture and home furnishings retailing until either stabilization is reached at the end of the redevelopment time gap or acceleration is produced by the construction of competitive facilities within nearby redevelopment project sites.

Second, the nature of manufacturing operations in the Area has been undergoing an important shift - from older, low-wage, textile, leather, and clothing processing to electronics and electrical equipment production of nationwide market and to commercial printing of Downtown business service.

Third, the growth in finance and real estate which occurred in the city as a whole, located in parts of Downtown with more direct relationships to existing concentrations than the North Station Area had up to that time comprised.

Fourth, internal category shift in the form of replacement of large, government contract companies in this historically war-oriented business location in Boston, by other service firms in civilian-directed engineering was embodied in the pattern for services.

Fifth, the substantial increases in wholesale trade in the Area demonstrated primarily a growth in wholesale showroom and office activity in the furniture and home furnishings field but also represented the arrival of several New England regional sales offices of national corporations.

Locational Ages of Firms

The extensive 1960 economic investigation established an important fact about the present business composition of the North Station Area: that this sector of Downtown Boston is not a collection point for residual activities, incubator industries, or fly-by-night operations, but contains old, well-established firms which have been doing business at their present sites in the city and in the Area for many years. The average length of operation in the Area is not only a representative 18 years, with a category locational age in no case falling below an average of 7.5 years, but, individually, nine firms reported their residence at present sites in the North Station Area as 50 years or over. (See Table III-7.)

From the background of history presented in the Introduction, the recent trends in composition over the last decade, and the illustration of business locational age indicated in Table III-7, the significant long-term economic activity sequence of the North Station Area is clearly apparent:

Originating as a goods-handling part of the port and railroad terminal of Boston, the North Station Area developed early and strong orientation toward transportation, warehousing, and wholesaling. Manufacturing expanded in response to general regional industrial growth in both relative proportion and absolute importance through the late 19th Century along with the continuing growth of wholesale activities. The force of daily long-distance railroad commuting from northwest communities and North Shore towns into Central Boston plus construction of the two subway-elevated transit lines during the early decades of the new century gave rise to a significant amount of retail and personal service

TABLE III-7

LOCATIONAL AGES OF FIRMS, BY MAJOR CATEGORY,
NORTH STATION AREA, 1960

SIC Category	Average Number of Years Located at Present Site	Number of Firms Reported	Per Cent of Total Category Firms in Area
1. Contract Construction	1.0	1	100
2. Manufacturing	16.7	11	69
3. Manufacturing	31.8	4	80
4. Transportation, Communication, Utilities	21.4	13	59
5W. Wholesaling	19.9	68	88
5R. Retailing	18.3	74	71
6. Finance, Real Estate	20.2	5	83
7. Services	18.4	29	57
8. Services	7.5	6	60
9. Government	12.5	6	60
Area Average	18.2	(227)	73

The distribution-tabulation of locational ages for the various business activities in the Area indicates:

- a. The most recent arrivals to the Area, and a clear representation of the changing economic character of the Area over the last decade, are the business services and government agencies - the primarily CBD-type of activities.
- b. The oldest business category in the Area, and the one indicating the former nature of the Area in decades past, is manufacturing, although individually considered, the oldest firms consist of several of the large wholesalers of furniture and textiles.

development in the Area in the vicinity of the various railroad terminals and transit stations near Causeway and Canal Streets. During the expansion and prosperity of the late 1920's and at the time of North Station-Boston Garden, Hotel Manger, and Industrial Building construction, other forms of personal services, retail firms, and new financial organizations and business services entered or started in the Area. Rise of the automobile and decline of the leather goods, carriage manufacturing industries plus the addition of the state Department of Public Works headquarters began the shift in Area composition away from manufacturing and pure wholesaling. As manufacturers shrank, declined, failed, or departed through the 1940's and 1950's, a large amount of floor space was vacated and has been only partially refilled by various office activities and by a collection of wholesalers, retailers, and wholesale-retail operations in the field of furniture and home furnishings. Rapid growth of automotive use and expressway highways, consequent decline in railroad commutation, and conversion of the Industrial Building to office space started the surge of new forms of growth in regional offices, national corporate branch offices, and high-value components manufacture and marked the transition of the Area toward predominately office-oriented, white-collar employment.

Functional Transition of Business Composition

The conclusion to be drawn from the changes and shifts in the business composition of the North Station Area is that a long-term transition away from railroad-industrial orientation has been marked by the progressive disappearance of low-grade, low-density manufacturing and processing and warehousing-wholesale distribution operations toward

retail-overtone wholesaling-without-stock, business services, high-value component manufacturing, and straight office functions, that a change has been occurring from goods-movement to essentially information commerce, and that the North Station Area is beginning to assume what might be termed a more truly Downtown functional character as a stable specialty retail-oriented sales area, as an office district, and as a supportive business service center. Slowly disappearing are the symbols of the Area's railroad-industrial past - the marginal manufacturers, the tiny retail stores, the transient rooming and lodging houses, the throngs of blue-collar workers, and the large nearby residual and ethnic populations. And though many of the unattractive elements, the bars, the cafeterias, and the junkshops, cling tenaciously to their floor space, the changing nature of the employment population of the Area appears to be a strong enough market force to encourage competition by new and more satisfactory local office-oriented restaurants, shops, and daytime services.

In place of the old character, the North Station Area is filling with white-collar workers in both government and private business. Offices are growing and may soon become the Area's primary characteristic. And though time and continuing deterioration of the physical composition - the elevated, the dark, dingy streets, and the many run-down buildings - have not modified the impression of the Area as the residual railroad terminal end of the Central Boston peninsula and have hidden the new economic character and prevented its recognition, the basic change is nevertheless occurring.

B. Recent Economic Studies of Downtown Boston and the North Station Area

Invalidation of GBESC Tabulated-DES Data as a Basis for Economic Conclusions in Downtown Boston

Any attempt to determine the business composition and trends in the North Station Area, and perhaps even in Boston as a whole, is impeded by the lack of complete and reliable information. Several studies have been undertaken and many conclusions have been reached, however, on the basis of what now appears to be entirely inadequate data, and it is only the absence of a full "check" which has permitted this data and these misleading conclusions to continually influence planning decisions.

One of the most recent economic investigations in Boston was undertaken in 1959 by the Greater Boston Economic Study Committee, a privately financed research organization conducting basic economic studies with the objectives of "advancing an understanding of the forces and trends operating in the Boston Metropolitan Area" and "formulating policy recommendations which may both stimulate and advise leaders in metropolitan affairs."¹² This investigation, A Report on Downtown Boston, consisted of a detailed study made of the changes in employment in the Boston area between 1947 and 1957 as based upon data supplied by the Massachusetts Division of Employment Security, under whose jurisdiction every employer with one or more employees (excluding railroads, non-profit organizations, and the self-employed) is required to submit monthly employment reports to the Commonwealth.

Although determination of the business composition of the North Station Area herein was undertaken initially upon the foundation of the

¹² A Report on Downtown Boston, Greater Boston Economic Study Committee, Boston, Mass., 1959, introduction.

GBESC report, the process of spot checking individual statistical block compositions revealed that the processed data upon which the report was based represented a mixture of incomplete, inaccurate, misclassified, and misleading statistics. And upon these statistics, it then appeared that necessarily unfounded conclusions have been drawn by several subsequent individual and separate organizational studies. This unfortunate and serious circumstance necessitated a completely new and lengthy investigation of all existing firms and employment in the North Station Area.

The detailed economic investigation subsequently conducted in the Area during the Spring of 1960 revealed a vital fact about DES basic data:

GBESC tabulated-DES data is by nature so incomplete and applicably inconsistent as to be unsuitable as a basis for conclusions on economic composition and trends.

Moreover, the investigation revealed that since the DES raw data frequently includes supposedly non-applicable self-employed persons, there is no clear basis for calculating the additional and necessary element of non-covered employment; that the absence in GBESC tabulations of several large firms in particular activities (such as the Hotel Madison in the North Station Area and the New England Telephone and Telegraph Company in the Government Center area) is large enough to alter economic composition and trends even in the aggregate; that assignment of GBESC statistics to particular blocks may have resulted in significant changes in the composition and trend totals for the delineated Downtown Area; and that the absence of concern by the GBESC report for the magnitude and changes of one of the increasingly important activities - government employment - does not allow the formulation of a comprehensive view of

the total economy and prohibits the presentation of conclusions with respect to the economic vitality of the City of Boston and of any area therein.¹³

The Effect of Government and Self-Employment on Area Statistics and Conclusions

The effect of government and self-employment totals determined and estimated, respectively, from the complete Area survey, significantly increase the figure for North Station Area employment. The importance of these figures, however, is more than as just additions to Area and category totals and in some instances can completely reverse both individual and collective trends over the decade and can thereby lead to completely different economic conclusions and even future economic policy. Consequently, what might have seemed to be a stable category in terms of employment may actually have been one of considerable growth, as in furniture and home furnishings. In addition, the information obtained on the level of self-employment in the North Station Area lends no insignificant light to comprehension of the number of small businesses which might be affected by later planning decisions.

The procedure undertaken to arrive at a figure for self-employment in the North Station Area was assignment of one person per local unincorporated firm where the known corporations consisted of national railroad offices and manufacturers' sales offices in the Industrial Office Building, governmental agencies, utility company operations, and miscellaneous others.¹⁴ On this basis, plus the determined category 9 values,

¹³See Appendix 16, misrepresentations of GBESC-DES statistics.

¹⁴See Appendix 17, Derivation of Self-Employment, North Station Area.

the effect of government and self-employment additions upon the Area and category totals may be summarized as follows:

TABLE III-8
THE LEVEL OF GOVERNMENT AND SELF-EMPLOYMENT,
NORTH STATION AREA, 1947, 1957, 1960

	1947	1957	1960
Covered Employment	4433	4529	4364
Self-Employment	220	240	262
	4653	4769	4626
Government Employment	2165	3327	2572
TOTAL EMPLOYMENT	6818	8096	7198

Differences Between GBESC Tabulated-DES Data and Corrected Statistics

The economic trends for the large North Station Area sector of Downtown Boston as indicated by the 1947-1957 GBESC tabulated-DES data, and those apparent from the close investigation of activity composition differ significantly, as shown in Table III-9.¹⁵

When the future of city sections may depend upon the conclusions

¹⁵The reason for all these differences is not known. In spite of the fact that GBESC assignment of DES data according to available street addresses would superficially seem to be a valid statistical procedure, the investigations and interviews conducted in the Area indicated a substantially different composition. The only conclusion which can be reached, therefore, is that somewhere between the filing of the employment security reports with DES by individual firms and the tabulation of block data by the GBESC, firm addresses, actual business locations, years, and figures became entangled.

TABLE III-9

COMPARISON OF GBESC-DES TRENDS AND "CORRECTED" TRENDS,
COVERED EMPLOYMENT FOR COMPARABLE BLOCKS
NORTH STATION AREA, 1947-1957

SIC Category	GBESC-DES Figures						"Corrected" Statistics					
	1947		1957		Change		1947		1957		Change	
	Firms	Empl.	Firms	Empl.	Firms	Empl.	Firms	Empl.	Firms	Empl.	Firms	Empl.
1 Contract Construc- tion	2	15	1	4	-	+	1	10	1	4	0	-
2 Mfg.	33	700	23	702	-	+	29	497	18	470	-	-
3 Mfg.	9	485	7	311	-	-	9	335	6	171	-	-
4 Transp. Commun. Utilities	6	1030	8	1463	+	+	16	1439	23	1172	+	-
5 Wholesale	42	691	37	892	-	+	60	627	77	773	+	+
5 Retail	84	1154	76	845	-	-	81	793	88	861	+	+
6 Finance Real Estate	10	61	14	75	+	+	7	54	7	59	0	+
7 Services	28	422	27	839	-	+	35	630	44	724	+	+
8 Services	5	44	7	92	+	+	8	48	14	294	+	+
TOTAL	219	4602	200	5223	-	+	246	4433	278	4529	+	+

^aDerived from block group tabulation sheets supplied by the Greater Boston Economic Study Committee.

drawn from such "authoritative" studies, the implications of these omissions and discrepancies can not be easily discounted. With respect to business compositional trends in the North Station Area upon which planning and renewal decisions have been and are being based:

1. Manufacturing covered employment actually fell off much more rapidly than indicated by GBESC-DES statistics.
2. Transportation employment, rather than substantially increasing, has rapidly declined, the GBESC-DES pattern being almost exact reverse of the indicated trend.
3. The number of wholesaling firms in the Area increased by almost 30% between 1947 and 1957 along with a moderate gain in employment, as opposed to the GBESC indication that there were fewer but much larger wholesaling firms in 1957.
4. The decline shown in retailing by the GBESC-DES statistics for 1947-1957 is just the opposite of the survey's growth indications.
5. The finance and real estate category in the Area was almost stable over the period.
6. Both the number of and covered employment in business services and personal services increased far more rapidly than indicated in GBESC-DES figures, to become the largest covered category group in the Area.

Although the true nature of the North Station Area is as a growing concentration of office, business service, and special furniture and home furnishings activities, the GBESC implication is that the Area is a manufacturing-transportation-wholesale scattering of non-CBD and non-Downtown character and is thus of relatively less significance when placed under consideration for total, one-shot, public redevelopment clearance. Such conclusions to be drawn from DES-based quantitative-statistical economic studies are unfounded and misinformed, ignore both obvious qualitative knowledge and accurate justifiable thoroughness, misrepresent the function of particular city sections and the relationship

between sections, and can lead to incorrect, damaging, and physically serious decisions with respect to city structure.

Misleading Conclusions of Previous Studies Concerning the Business Structure of the North Station Area

Subsequent to the Greater Boston Economic Study Committee report on Downtown Boston, several independent studies were undertaken in or around North Station on the basis of the GBESC tabulated-DES statistics: an M.I.T. thesis by James Saalberg on business displacement impact from construction of the Central Artery, a report on the proposed Government Center redevelopment project, a private consultant's development planning study for a local merchants association, and a Central Business District report of the Boston City Planning Board. The findings of detailed investigation in the North Station Area are in direct opposition to or significantly deviant from many of the conclusions reached by these five studies. Specifically:

1. GBESC Report on Downtown Boston

The Greater Boston Economic Study Committee stated with respect to Downtown Boston as a whole:

- a. "Technological changes in transportation, manufacturing, and goods-handling along with a shift of population to the suburbs, have caused a major decline of downtown employment in manufacturing, wholesaling, retailing, and construction."¹⁶

Based upon research in the North Station Area, the former and the present construction, manufacturing, wholesaling, and retailing composition of this section of Downtown Boston appears to have been affected far more by individual companies' natural growth, by regional market

¹⁶ A Report on Downtown Boston, Greater Boston Economic Study Committee, Boston, Mass., 1959 (this report is unnumbered).

failure, only moderate to low rental requirements than from technological changes in transportation, manufacturing, or goods-handling. For example, manufacturing firms which have moved out of the Area in the last decade appear to have migrated because: (a) their operations were becoming too large for their existing building quarters, (b) national changes were occurring in consumer goods preferences and in an industry's regional location, (c) the cost of renovation of present structures was (and is) prohibitive for the benefits obtained, and (d) other quarters elsewhere were or could be made advantageously available.

With respect to the general section of the Central Boston area known as the North Station Area, the GBESC stated:

- b. "Originally there was a cluster of decorative arts wholesalers [fine fabrics, rugs, quality furniture] in the vicinity of the North Station. Over the years many dealers have migrated from this area and . . . this trade is now concentrated in Back Bay."¹⁷

Although the GBESC intention was to limit the applicability of the phrase to strictly the "fine" furniture and furnishings field, the implication widely drawn was that the North Station Area no longer functioned as a furniture and home furnishings center in the city. This clearly is not correct.

- c. Because "the need for new downtown space [for decorative arts dealers] still exists" a decorative arts center "containing about 168,000 square feet of floor space, seventy-five percent of which would be allocated to wholesaling, the rest to house individual retailers and decorators" was suggested "adjacent to the present Newbury Street retail district" in Back Bay.¹⁸

This GBESC statement demonstrates great confidence in the future of the furniture and home furnishings fields in Downtown Boston, but

¹⁷ Ibid.

¹⁸ Ibid.

again the implication is given that the concentration of related firms in the North Station Area can be discounted.¹⁹

d. The GBESC statement that a womens' apparel center (manufacturing, wholesaling, trade service functions, material suppliers, etc.) at the North Station Area site between Causeway-Market-Merrimac-Portland Streets would "retain and revitalize the womens' apparel industry"²⁰ seems to take little recognition of the locational proximity of the North Station Area to the adjacent (Government Center and Charles River Park) redevelopment projects, of the economic changes in the Area which have already occurred and which such redevelopment will necessarily accelerate, and of the significance of these adjacent new city sections upon the development potential of the Area site.

2. Saalberg Study of Central Artery Displacement

As an M.I.T. master's thesis presented to the Department of City and Regional Planning and subsequently rewritten as a summary report for the Greater Boston Economic Study Committee, James Saalberg undertook A Study of Business Dislocation Caused by the Central Artery on a one and a half mile strip of the new expressway which runs through Downtown Boston from North Station to South Station. This study sought to investigate both the number and nature of business survivals and of circumstances and experiences in relocation.

In both his city planning thesis and the GBESC publication on the effects of the Central Artery, Saalberg makes several critically important

¹⁹This relationship between a new decorative arts center and the North Station Area is more fully discussed in Chapter VI on Area site renewal reuse potentials.

²⁰GBESC, op. cit.

statements concerning the location and relocation of firms in Boston's most recent experience that are not borne out by study of the North Station Area. For example, Saalberg concluded from his studies of DES data (1) that congestion is a major cause of movement of firms out of the city, (2) that much of employment decline experienced between 1947 and 1957 would have occurred even if the Artery had not been built, and (3) that the locational stability of retail and personal service businesses is dependent upon rental levels.²¹

The first contention about congestion, an oft-heard, "well established," justification for new urban expressway construction, is superficially defensible in a Boston famous for narrow and winding streets. From analysis of recent changes in the economic structures of the directly Artery-affected North Station Area, however, congestion appears to have far less to do with the outmigration of firms than the attitudes of management toward rentals, the general appearance of the location to customers, and the convenience of satisfactory noontime employee services.

The second statement about the economic effect of the Central Artery (which was given great emphasis in the GBESC report) appears as a strange justification of DPW actions, in light of the fact that the 573 businesses with 7,160 persons displaced by the Artery comprised fully 5% of all downtown business activity. In fact, an admission of this is buried in Saalberg's thesis: "When the Artery figures are compared with the totals for Boston and the downtown, it becomes apparent that the displacement did affect a significant, and in several cases a very

²¹ Saalberg, op. cit.

significant, segment of establishments and employment in the city. Compared to the downtown, it displaced five per cent of the establishments and four per cent of the employment."²²

Locational stability is a complex quality. For pedestrian-oriented firms, such as bars, restaurants, and personal services, there seems to be more dependence on trade volume than on rental level, and if something happens to reduce the working population or the volume of passing pedestrians in their area, then some change in the existence of such businesses can be forecast. On the other hand, for the non-affluent, non-pedestrian oriented firm, space at the right price, not necessarily "centrality," "accessibility," congestion, or ancillary services seem to be the reason for location and consequently, any rise in the cost of space appears likely to result in a significant degree of movement.²³

The limitations of the conclusions drawn by the thesis and the report may be attributable to the foundation of statistics. "Since DES data form such a basic part of the study, the firms studied had to be limited to those covered by the State Unemployment Insurance Act."²⁴ In light of the incomplete nature of DES statistics and the size of non-covered employment, a serious question arises concerning the complete and total effect of the Central Artery upon the North Station Area and the economic trends and changes attributed to the creation of extensive intown expressway systems.

²² Ibid., p. 34.

²³ Ibid., p. 20.

²⁴ Based on interviews with all business firms in the North Station Area as of 1960.

3. Advance Planning Associates - North Station Merchants Association
Study

In October of 1959, soon after the GBESC Downtown report had been publically released, the private consulting firm of Advance Planning Associates was engaged by the North Station Merchants Association to undertake an analysis and master planning study of that section of Boston included between Lowell, Staniford, Cambridge, Washington, and North Washington Streets and the Charles River. One of the initial steps in this study was compilation of block statistics on 1947 and 1957 employment tabulated by the Greater Boston Economic Study Committee from DES data.²⁵ The findings of this analysis were released in January 1960, and presented the following conclusions:²⁶

1. That the North Station Area performs three major roles: manufacturing, transportation, and wholesaling.
2. That the triangle section between the Central Artery, Causeway Street, and Merrimac Street constitutes a wholesale area.
3. That trends in the Area between 1947 and 1957 indicate no growth in wholesaling activities.
4. That "employment declines have occurred particularly in retailing . . . linked to the decrease in North Station commuting volume."²⁷
5. That "Furniture and Furnishings operations provided over half of all jobs"²⁸ in the Central Artery-Causeway-Merrimac triangle.

²⁵Progress Report, North Station Area, Advance Planning Associates, for the North Station Merchants Association, Boston, Mass., January 1960.

²⁶These conclusions represent that part of the Advance Planning Study area between Lowell Street, Merrimac Street, Haymarket Square, the Central Artery, and the Charles River.

²⁷Progress Report, North Station Area, p. 2.

²⁸Ibid., p. 10.

6. That between 1947 and 1957 Furniture and Furnishings experienced a sizeable gain.

Whereas the largest employment group in the North Station Area as a whole is government, with retailing, services, and wholesaling about equal, and with transportation and manufacturing as the second largest groups, the Central Artery-Causeway-Merrimac triangle experiences the highest pedestrian volume in the Area and is equally split in function between wholesaling and retailing. Moreover, total Area employment in all forms of wholesaling not only doubled between 1947 and 1957 but in that part of the consultant's study area for which pedestrian commuter traffic would seem to have the most direct relation - near Canal and Causeway Streets - there was actually demonstrated a 14% increase in retail employment over the period. Finally, though the field of furniture and home furnishings is an important component of the business composition of the North Station Area, the field, as defined by the consultant, represented nowhere one-half of the 2200 covered employment for the triangle sub-unit. Moreover, the statement of furniture and home furnishings growth is only coincidentally correct, for the analysis behind it was faulty.²⁹

The basic reasons for inavilidity of many of the Advance Planning conclusions are:

- a. unawareness of the fact that the DES-GBESC raw data was classified on the old, pre-1957 Standard Industrial Classification system and formulation of conclusions on this data

²⁹The data for wholesale furniture sales in both 1947 and 1957 DES statistics available was actually included under the old SIC code number 507 (the new code number for wholesale hardware). If the consultant's survey, undertaken on the basis of the new SIC classification book, had not included this "wholesale hardware" category in the catch-all definition for Furniture and Furnishings, the statement could not have been made. It was an entirely accidental circumstance.

analyzed according to the new code.

- b. lack of familiarity with the area concerned and lack of spot-check precautions against the assumed validity of GBESC tabulated-DES data.³⁰

4. Government Center Report

The investigations, tabulations, and findings in the North Station Area also both illuminate and contradict some of the assumptions of the Government Center report:³¹

- a. "Most probably, while the purely wholesaling activities will continue to shift away from the center, a substantial number of firms will wish to remain."³²

On the basis of the 1947-1960 trend, most of the wholesale activities of the North Station Area, particularly the furniture and home furnishings concentration, the manufacturers' representatives, agents, and wholesalers in the Industrial Office Building and the electrical goods and hardware wholesalers - or actually, more than 90% of the existing Area wholesale activities - appear likely to demonstrate a definite locational stability.

- b. The firms which will wish to remain "are the firms which do a mixed retail and wholesale business and are thus dependent on large numbers of people visiting or working in the center."³³

The findings in the North Station Area not only seem to substantiate that the mixed retail and wholesale furniture and home furnishings concentration depend on an accessible central location but revealed that

³⁰A table presented to illustrate the extent and nature of differences in even the gross statistical summaries derived by the consultants and determined here is included as Appendix 18.

³¹Government Center - Boston, Adams, Howard & Greeley and associated consultants for the Boston City Planning Board, Boston, Mass., 1959.

³²Ibid., p. 8.

³³Ibid., p. 8.

practically all the non-pedestrian oriented manufacturers' representatives, branch offices, and agents chose to locate in such a site as the Industrial Office Building for this same reason.

c. On the other hand, the opinions that "those activities which handle large quantities of bulky goods such as manufacturers and wholesalers-with-stocks, will tend to leave the congested areas close to the metropolitan center" and "should be encouraged to do so"³⁴ are two statements which, for the northern Downtown area referred to, seem to contradict the demonstrated value of area centrality, high accessibility, large working and visiting populations, and group economies and linkages. The location of such firms, at least in the North Station Area, seems rather to be dependent on existing space and annual rental levels, not on "congestion" per se, and in this light, their continued presence (in general) may be anticipated until such time as external economic pressures (such as a large relocation of firms from adjacent redevelopment project areas and consequent competition for space) force them to leave.

d. A serious omission is apparent concerning the future and effect of railroad commutation, the factor which, to a significant degree, will determine the course of the North Station Area. With continued commuter operations of the Boston & Maine Railroad, many of the activities of the North Station Area - its "bars, barber shops, restaurants, and small retail outlets"³⁵ - will probably continue to remain. As the B & M ceases to operate or rearranges its operations, however, the Area will probably undergo a necessary reorientation toward the adjacent Government Center, the redeveloped Staniford-Chardon

³⁴Ibid., p. 8.

³⁵Ibid., p. 9.

area, and Charles River Park. The Government Center report makes no mention or even inference of this.

5. The CBD Report

The just-released CBD report of the Boston City Planning Board³⁶ is another of the documents with implications for and influences upon planning for the North Station Area which draws its conclusions concerning the economic composition and trends of the city and of the Area from GBESC-DES based statements. An example, in addition, of incomplete and unsatisfactory investigation of existing physical composition upon which public policies will be formulated, the CBD report contains the following misrepresentations of the North Station area:

a. It considers the Area to be of general wholesaling and manufacturing with a small concentration of home furnishings,³⁷ whereas government, equal retailing and wholesaling, services, manufacturing, and transportation are the actual dominents.

b. It reports that the second-class (non-fireproof) buildings which predominate around North Station, which provide cheap space, and which are partly vacant and poorly maintained are "unsuitable for activities which could profit from downtown locations"³⁸ yet fails to recognize that Downtown activities have been and are becoming increasingly dominant in this area in spite of the physical conditions - a circumstance which is a stimulating justification in itself for new development and

³⁶A General Plan for the Central Business District, Boston City Planning Board, Boston, Mass., 1961.

³⁷Ibid., figures 5 and 6.

³⁸Ibid., p. 14.

the creation of new space in this location the lack of which is criticized, and demands the consideration of public policy with respect to renewal.

c. It summarily considers that very few structures are worth preserving in such a section as the North Station Area,³⁹ but then specifically avoids the question of the feasibility of continued utilization and the necessity of renewal.

d. It contains throughout a series of statistical tables, illustrations, and specific designations concerning such factors as space availability, substantial structures, and economic composition which are substantially in error with respect to the North Station Area and which serve to propagate the misconceptions and incorrect evaluations of previous studies.

The CBD report, as with its predecessors, once again fails to detect the basic economic composition of the North Station Area and the fact that the Area is developing a downtown office function; the report discounts the future potential of such a site adjacent to the major (Government Center, Staniford-Chardon, and Charles River Park) redevelopment projects; tends to slip into the old stereotype of the North Station Area as a residual business area; and quietly avoids any consideration of future renewal and reuse.⁴⁰

³⁹ Ibid., p. 16.

⁴⁰ The collection of design proposals and planning recommendations contained in the report are considered in Chapter IV.

Implications of Previous Incorrect Conclusions About the Area

Previous conclusions reached about the North Station Area by recent studies in Boston are revealed to range from misleading to totally incorrect. The Government Center report implication that the North Station Area is a static, residual, not too attractive but somewhat necessary service section of the city underestimated the Area's importance as a center of growing government employment, architectural and engineering offices, and furniture and home furnishings. The Greater Boston Economic Study Committee's Report on Downtown Boston seemed to consider the North Station Area as an old and declining furniture center. And the Advance Planning Associates study not only misjudged the major functions of the Area, underestimated the significance of government and private office activities, and incorrectly analyzed the growth of the important furniture and home furnishings concentration, but both based conclusions on processed data of the GBESC now found to be misleading and incomplete and erroneously attempted evaluation of this 1942-form data according to significantly revised 1957 codes.

The result of all this confusion is that no clear picture of the North Station Area was formed. Quite simply, no one apparently really knew what the Area is and what changes have been occurring and, consequently, a variety of attitudes and even planning decisions toward the Area which have been grounded not in knowledge but in general "impression." The most serious implication has been that the present economic composition of the North Station Area is essentially unrelated to the proposed Government Center - an attitude strongly reflected in the just-released CBD report. On the basis of both actual composition and recent trends, however (quite apart from physical environment), the economic

structure of the Area has been developing strong segments of office activities in business services, wholesaling-without-stock, and government, with noteworthy increasing concentration in the field of furniture and home furnishings. Moreover, this trend toward more CBD-type activities indicates the emergence of an Area business composition more related in information-processing office function and economically supportive service to a forthcoming new Government Center and State Office Campus than either to the present Scollay Square area, Market District, or North End or to the former West End. In fact, the government, office, and service linkages which this site can form with the adjacent Downtown redevelopments is a most important factor to future planning and designation of physical renewal within Central Boston.

C. Floor Space Utilization, Distribution, and Cost

The utilization of floor space in any area is a directly inter-relating element between the physical and economic compositions and has been investigated in and is presented for the North Station Area:

- a. to measure the size and intensity of existing business activities,
- b. to identify the changes and trend in the detree of utilization,
- c. to establish a relationship between the amount of "compressible" Area floor space available and the size of business displacement in the adjacent redevelopment projects,
- d. to provide another basis for planning policy with respect to the future of the existing Area configuration, and
- e. to create a detailed inventory of present space utilization as a foundation for programmed Area renewal.⁴¹

⁴¹ See Appendix 19 for floor space inventory investigatory procedure.

Floor Space Utilization; 1960

There are four component measures of non-residential floor space utilization which are established for the North Station Area: "fully utilized floor space," gross building area in direct sales, office, showroom, manufacturing, and service use; "nonintensively utilized floor space," gross building area ancillary to primary use but not of productive utilization; "storage space," all gross building area not available for rental but occupied by Area firms and others strictly for bulk storage; and "vacant space," gross building area presently unoccupied and listed for rental. The 1960 distribution of gross floor space in the North Station Area between these components was as follows:

TABLE III-10

FLOOR SPACE UTILIZATION,
NORTH STATION AREA, 1960
(1000 sq. ft.)

	Amount	Per Cent of Area TOTAL
Total gross floor space	2983.1	100
Fully utilized floor space	2101.7	70.4
Nonintensively utilized floor space	204.4	6.9
Storage space	403.9	13.5
Vacant space	273.1	9.2

This summary tabulation of floor space utilization sharply clarifies the economic-physical significance of the North Station Area by demonstrating:

1. That the North Station Area is indeed physically large, representing almost 3 million square feet of available floor space, and
2. That the existing non-residential vacancy rate for the North Station Area at over 9% is well above a so-called "normal" 5% level.

Extent of Floor Space Underutilization

Underutilization comprises almost one-third of the total existing non-residential floor space.

TABLE III-11
UNDERUTILIZED FLOOR SPACE,
NORTH STATION AREA, 1960
(1000 sq. ft.)

	Amount	Per Cent of Area TOTAL
Total gross floor space	2983.1	100
Fully utilized floor space	2101.7	70.4
Under utilized floor space	808.3	20.4
Vacant floor space	273.1	9.2

This degree of underutilization emphasizes the physical "state" of the existing North Station Area and indicates the clear need for consideration of the Area in Downtown renewal planning.

Recent Changes in the Degree of Floor Space Utilization: Vacancy Levels, 1953-1960

Measures of non-residential vacancy level for a major section of the North Station Area are available for three points in time: a 1953 Boston City Planning Board survey, a Fall 1959 consultant's survey for

the North Station Merchants Association, and a Summer 1960 inventory undertaken for this chapter.⁴²

TABLE III-12
VACANCY LEVELS, TRIANGLE SUB-UNIT,
NORTH STATION AREA,
1953, 1959, 1960

Date	Total Gross Floor Space (1000 sq.ft.)	Vacant Floor Space (1000 sq.ft.)	Vacancy Rate
1953 ^a	1496.8	80.5	5.4%
1959 ^b	1496.8	116.4	7.1%
1960	1594.0	155.5	9.8%

Source: a. Boston City Planning Board, 1953 Floor Space Inventory.
b. Detailed tabulation sheets of Advance Planning Associates.

The trend of increasing vacancy rate in the triangle section of the North Station Area south of Causeway Street reflects a complex inter-relationship of economic compositional transition:

- a. The trend of increasing vacant space in the Area is not due to a lack of basic stability and business vitality of most existing Area concentrations but rather results primarily from the out-migration of old-style, large space consuming manufacturers and the arrival of man, smaller, less area-demanding firms of other types, as indicated earlier in the discussion of the nature of business composition change.
- b. The trend also seems to represent a slight decrease in the

⁴²Although comparable blocks are utilized as a basis of tabulation, the Area TOTAL floor space between the 1953 survey and the present 1960 inventory varies somewhat for the reasons outlined in Appendix 19. In addition, recognition should be taken of possible variation in the definition of "vacancy."

amount of floor space in the Area which is being used for storage purposes.

- c. There is evidence, nevertheless, that some retail business failures or departures from first floor pedestrian-oriented space have been occurring.

The vacancy level for the North Station Area as a whole is illustrated in Table III-10, presented earlier, where 273,100 square feet of floor space was determined to be vacant out of an Area TOTAL floor space of 2,983,100 square feet. This figure of something over 9 per cent compares to a 1953 non-residential vacancy rate for the Staniford-Chardon area of about 15% and a 1953 non-residential vacancy rate for that section of the proposed Government Center project between Scollay Square, Hanover Street, Washington Street, Merrimac Street and Chardon Street of about 17%.⁴³ Such a comparison between adjacent sections of Downtown Boston indicates that if both the Government Center project area and the Staniford-Chardon area, as the two sections of the Downtown closer to the Central Business District, represent a degree of vacancy almost twice that of the farther-removed North Station Area, either the Area is a comparatively healthy business concentration or the Scollay Square section has been wisely chosen as a first priority for renewal. That the North Station Area's vacancy rate is as high as 9% does not justify lack of renewal consideration, however.

Amount of Storage Space

The high proportion of existing floor space utilized for storage purposes is a factor important to the immediate economic and physical

⁴³Progress Report, North Station Area, Advance Planning Associates for the North Station Merchants Association, Boston, Mass., January 1960, p. 13.

future of the North Station Area. First, it indicates that many of the Area's buildings have been considered suitable only for storage purposes. Second, it implies that business displaced from the adjacent Government Center and Staniford-Chardon redevelopment project areas will find nearby a sizeable reservoir of low rental, underutilized floor space which could, to a limited extent, provide immediate relocation quarters. Most important, it reveals the basic inadequacies of the physical plant of the North Station Area and throws additional focus on the pressing need for renewal action in the Area next to the Government Center and Staniford-Chardon in this northern end of Downtown Boston.

Pattern of Floor Space Distribution

Detailed inventory of floor space utilization indicates the nature of distribution, designates the location and proportion of occupied vs. vacant floor space, and is a necessary component of the planning basis for a renewal program in the North Station Area.

As a summarization of the appendix space inventory,⁴⁴ Table III-13 presents the distribution of existing non-residential Area floor space by sub-unit over the four utilization components and Illustration 23 provides an indication of floor space utilization by individual structure.

Clearly indicated are these facts:

1. Over one-third of the nearly 3 million total square feet of non-residential Area floor space exists in the North Station Complex.
2. The six-building North Station Complex represents as much fully utilized floor space as the entire Central Artery-Causeway Street-Merrimac Street triangle.

⁴⁴Appendix 6.

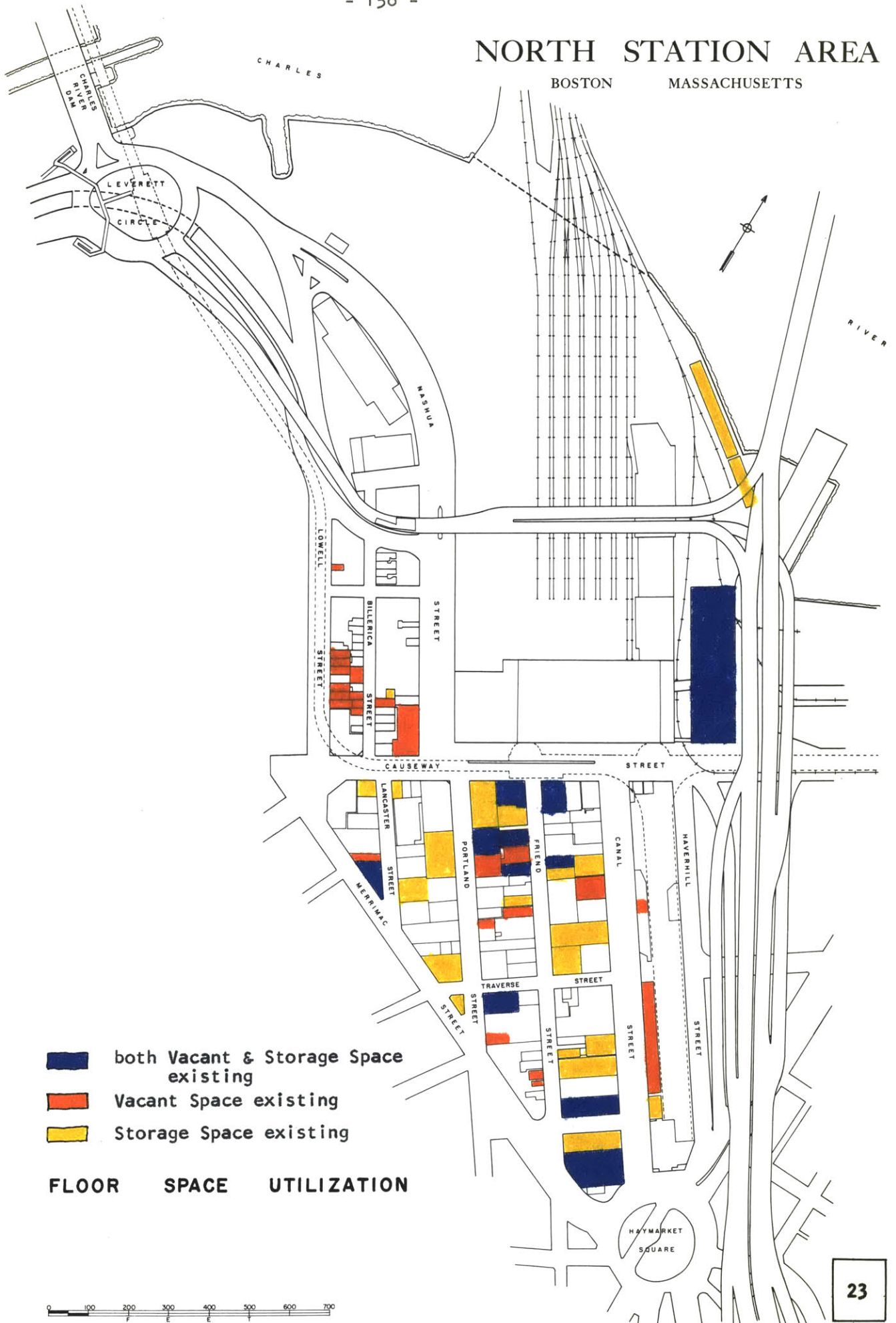
TABLE III-13
SUB-UNIT FLOOR SPACE UTILIZATION,
NORTH STATION AREA, 1960
(1000 sq. ft.)

Sub-Unit	Vacant	Storage	Nonintensive Utilization	Fully Utilized	Total
Billerica Street blocks	52.0	0.4	9.9	11.0	73.3
Nashua Street block				242.8	242.8
Triangle	155.5	350.8	183.3	904.4	1594.0
North Station Complex	65.6	43.3	11.2	904.7	1024.8
Charles Riverfront		9.4		38.8	48.2
TOTAL	273.1	403.9	204.4	2101.7	2983.1

NORTH STATION AREA

BOSTON

MASSACHUSETTS



- both Vacant & Storage Space existing
- Vacant Space existing
- Storage Space existing

FLOOR SPACE UTILIZATION



3. The largest proportion of vacant floor space, over four-fifths of the total storage space, and 90 per cent of the Area's nonintensively utilized space exists in the triangle sub-unit.

In terms of existing non-residential floor space, the most fully utilized section of the North Station Area is the Nashua Street sub-unit consisting principally of the Massachusetts Department of Public Works headquarters building. The sections which represent the most inefficient utilization of existing floor space are the triangle and the Billerica Street sub-units of the Area.

TABLE III-14

DEGREE OF SUB-UNIT FLOOR SPACE UTILIZATION,
NORTH STATION AREA, 1960
(%)

Sub-unit	Fully Utilized	Nonintens'y Utilized	Storage	Vacant	
Billerica St. blocks	13.5	15.0	0.5	71.0	100
Nashua St. block	100				100
Triangle	56.7	11.5	22.0	9.8	100
No. Station Complex	88.3	1.1	4.2	6.4	100
Charles Riverfront	80.5		19.5		100

Distribution of Floor Space by Business Activity

The distribution of the 3 million square feet of existing non-residential gross floor space among the various business activities in the North Station Area indicates fully as meaningful a representation of the economic function of the Area as does the activity distribution of firms and employment.

Table III-15 indicates that:

- a. The greatest amount of fully utilized floor space in the North Station Area (discounting the disproportionate effect of the Boston Garden upon the total for category 7) is occupied respectively by wholesaling, retailing, transportation, and government.
- b. The largest proportions of nonintensively utilized floor space occur in retailing and wholesaling.
- c. Most of the existing storage space in the Area is occupied by wholesale operations.

These findings concerning the large proportion of physical space occupied by wholesaling compare to a dominance of the Area (indicated earlier) by retailing in terms of numbers of firms and by government as the largest employment group.

Average and Range of Occupied Floor Space for Business Activities

The average occupied floor space for the nine business activity categories and the range of space among firms within those categories offers a measure of the physical size of particular operations in the Area and provides a rule of thumb scale to whatever level of planning action in the Area may be decided as appropriate.

The economic-physical tabulation for firms operating in the North Station Area as of 1960, as shown in Table III-16, illustrates that:

- a. The largest average activity is unmistakably the office facilities of state, municipal, and federal governments.
- b. Retail and service businesses are representatively small operations in the Area.
- c. The average wholesale firm in the Area is a surprisingly small occupier of floor space.
- d. The Boston & Maine Railroad, the Hotel Madison, and the Massachusetts Department of Public Works, dominate over all firms in the Area in terms of occupied floor space.
- e. Implementation of any program of physical change in the

TABLE III-15
 DISTRIBUTION OF FLOOR SPACE BY BUSINESS ACTIVITY
 NORTH STATION AREA, 1960
 (1,000 sq. ft.)

SIC Category	Fully Utilized Floor Space	Nonintensively Utilized Floor Space	Storage Space	Total Occupied Gross Floor Space	% of Area Total Occupied Floor Space
1	2.6			2.6	0.1
2	139.2	32.1	14.2	185.5	6.9
3	103.1	3.0		106.1	3.9
4	302.4	11.2	9.4	323.0	11.9
5W	396.1	73.1	202.4	671.6	24.8
5R	288.4	85.0	130.0	503.4	18.5
6	100.2			100.2	3.7
7	425.0		44.6	469.6	17.3
8	49.8		3.3	53.1	2.0
9	294.9			294.9	10.9
Area Total				2,710.0	100

TABLE III-16

AVERAGE AND RANGE OF OCCUPIED FLOOR SPACE, BY BUSINESS ACTIVITIES,
NORTH STATION AREA, 1960

SIC Category	Total Occupied Gross Floor Space (sq. ft.)	Number of Firms in Category	Average Occupied Space Per Firm	Range of Space Occupancy (sq. ft.)
1	2,600	1	2,600	2,600
2	185,500	16	11,600	400- 31,200
3	106,100	5	21,200	4000- 50,400
4	323,000	22	14,700	400-248,100 ^a
5W	671,600	77	8,700	300- 49,000
5R	503,400	104	4,800	100- 68,300
6	100,200	6	16,700	600- 94,500 ^b
7	469,600	51	9,200	200-250,000 ^c
8	53,100	20	2,700	100- 28,800
9	294,900	10	29,500	12,600-229,500 ^d
Total	2,710,000	312	8,700	

^aRepresents the total occupied floor space in the Area of the Boston & Maine R.R.

^bRepresents 94,500 square feet of other wise unassignable floor space in the Industrial Office Building to real estate category 6.

^cRepresents the 250,000 square feet of hotel floor space in the Hotel Madison.

^dRepresents the headquarters building of the Massachusetts Department of Public Works.

North Station Area must necessarily deal with the problem of coordinating the actions or transitions of a very large number of relatively small business firms rather than one simply providing for a few large individual floor space concentrations.⁴⁵

Relationship Between Existing Floor Space and Condition of Buildings

The quality of existing floor space is a measure of feasibility for continued use of an area's physical plant and is knowledge essential to the formulation of planning policies.⁴⁶ In addition, the correlation drawn between occupied floor space and the condition of the structures in which it is contained indicates the nature of business operations in the Area and provides a clue to local attitudes toward future investment and reinvestment.

Economic Survey Questionnaire

In order to obtain additional information on the general prevailing cost of existing Area floor space, to establish a framework for possible alternative courses of action, and to enable evaluation of impact and implications of alternatives, a survey questionnaire was sent to all firms in and around the North Station Area.⁴⁷ Of the number distributed, a total of 75 forms were returned, of which 43 were from firms located within the Area and 22 were from firms located in the Government Center and Staniford-Chardon redevelopment project area sites.⁴⁸ The

⁴⁵See Appendix 20 for average occupied floor space per person employed.

⁴⁶A second equally significant measure, of existing floor space by construction quality of structure (fireproof vs. non-fireproof), is presented in Appendix 21.

⁴⁷The data and tabulations presented here represent selections and summaries of the mail form survey undertaken as part of the North Station Merchants Association study by Advance Planning Associates in 1959-1960.

⁴⁸Although only 43 returns were received out of approximately 300

questionnaire responses obtained supplemented economic information gained from the detailed investigation and interview program conducted in 1960 and provided knowledge on the following subjects for both the Area and the adjacent redevelopment sites:

- a. Current rental levels for occupied floor space.
- b. Additional floor space needs anticipated for the near future.⁴⁹
- c. Relocation expectations, space needs, and rental requirements.
- d. Local tenant and owner attitudes toward current business conditions, extent of area problems, solutions of area problems, and willingness to contribute support toward their solution.
- e. A basis of attitude evaluation toward the feasibility of alternative forms of public and private improvement and/or renewal action.

Table III-17 clearly indicates the overwhelming proportion of existing non-residential space, after excluding the North Station Complex and the Massachusetts Department of Public Works building, in structures which have been determined to fall into classifications of fair or poorer condition and illustrates the state of the Area physical deterioration and decline that even a process of competitive upgrading under relocation pressures may not be able to overcome and that, in the long-run, may necessitate complete replacement.

Moreover, in terms of the indicated quality of "compressible" and absorbable storage and vacant space in the Area, it appears probable that

firms in the Area, those firms answering were among the larger establishments (in terms of employment). Unfortunately, not all of the 43 chose to answer the more significant questions on rental levels, business volumes, and relocation needs. In spite of the limited statistical sample obtained, however, the questionnaire answers do provide information of importance to the formulation of planning policies for the future of the Area.

⁴⁹See Appendix 22.

TABLE III-17

DISTRIBUTION OF EXISTING FLOOR SPACE BY CONDITION
OF STRUCTURES, NORTH STATION AREA, 1960

	Very Good	Good	Fair-Good	Fair	Fair-Poor	Poor	Bad	Total
Storage	43.7		11.8	185.0	109.1	45.9	8.4	403.9
Vacant	67.7		5.4	27.3	95.7	21.9	55.6	273.1
Nonintensive Utilized	35.4	24.0	44.0	49.7	33.5	17.8		204.4
Fully Utilized	1207.8 ^a	23.4	130.0	391.5	181.4	142.1	25.5	2101.7
Total Gross Floor Space	1354.5 ^b	47.4	191.2	653.5	419.7	227.3	89.5	2983.1

^a1159.1 thousand square feet of this fully utilized floor space is contained in the four major Area structures: the Industrial Office Building, the North Station-Boston Garden, the Hotel Madison, and the Massachusetts Department of Public Works Building.

^b1268.0 thousand square feet of this total space is contained in the above named four major Area structures.

there will be far less willingness and/or long-range desirability of adjacent redevelopment displacees to relocate in the North Station Area than the large amount of "available" floor space would otherwise imply.

1. Current Rental Levels for Occupied Floor Space

The annual average cost of floor space indicated in the Area is tabulated by SIC category in Table III-18 and ranges from less than \$.50 per square foot for manufacturing operations up to several dollars per square foot for office space and illustrates the particularly and significantly low average floor space costs generally represented and warranted by the existing physical facilities of the North Station Area.⁵⁰

TABLE III-18
ANNUAL FLOOR SPACE RENTAL LEVELS, SURVEY QUESTIONNAIRE,
NORTH STATION AREA, December 1959

SIC Category	Floor Space Answering (sq.ft.)	Annual Gross Rental Total (\$)	Annual Average Floor Space Rental	Rental Range (\$ per sq.ft.)
2. Manufacturing	27,000	15,500	\$.57/ft.	.42 - 1.00
3. Manufacturing	51,000	15,000	.29	.29
4. Transportation	200	1,000	5.00	5.00
5W Wholesale	62,100	61,200	.98	.51 - 2.63
5R Retailing	19,400	26,180	1.35	.64 - 3.43
7. Services	800	3,000	3.75	3.75
8. Services	85,800	202,800	2.36	1.40 - 2.40
9. Government	15,560	40,470	2.60	2.60
TOTAL	261,865sq.ft.	\$365,150	1.39/ft.	

⁵⁰ These annual space rental levels in the Area compare to space costs for other commercial buildings in the city, as indicated by the

2. Relocation Expectations and Requirements

The responses of Area firms to the question of probable relocation within the next five to ten years reveal an essential and basic feasibility of various Area action alternatives. For example, a demonstrated ability or willingness to afford an annual rental level of over \$2 per square foot might be considered a minimum measure of firms' capability of affording new building space. On the other hand, indication of required rental levels less than \$1 per square foot would not only infer the inability to afford new floor space but even a probable inability to afford necessarily-increased-rental rehabilitated space.

Observation of Table III-19 is an indication of the attitudes of both relocation-anticipating and other firms toward bearable annual rental levels.

TABLE III-19

ANNUAL RENTAL REQUIREMENTS, SURVEY QUESTIONNAIRE,
NORTH STATION AREA, December 1959

SIC Category	Number of Firms Desiring or Requiring Rents of		
	Less than \$1/sq.ft.	\$1-\$2/sq.ft.	Over \$2/sq.ft.
2. Manufacturing	1		
3. Manufacturing	1		
4. Transportation	1		
5W Wholesaling	2	1	1
5R Retailing	2	2	
8. Business services			1
	7	3	2

Boston Equalization Survey, of \$.50 to \$6 per square foot for the Scollay Square area and common Downtown rentals of from \$10 per square foot for first floor space to \$.75 per square foot in upper story space.

The firms anticipating relocation and others answering thus predominantly indicated that they can not afford or are not willing to pay annual rentals in excess of \$1 per square foot. This response is an argument against the probability not only of the vocally-supported merchants association program and consequent expense of Area rehabilitation but even against individual upgrading of existing floor space. Under such circumstances as these, solution of the widespread and basically physical Area problems with simultaneous retention of the entire present business composition of the Area would appear to be contradictorily impossible.

D. Property Value and Ownership

A study of property value and ownership, as another means of commercial area investigation, reveals the recent degrees of land utilization, provides a clue to the nature of an area and the attitudes of local investors and property owners toward the economic value and development potential of that area, and thus is a factor of some significance to economic and physical trends in the near future. In addition, such a study provides a framework of reference on the magnitude of a possible range of alternative planning and renewal policy decisions.

The study of property value and ownership in the North Station Area is comprised of five parts: present assessed valuations of land, and buildings, assessment ratio of buildings to land, recent changes in assessed valuations, recent property sales, and the nature of property holdings.⁵¹

⁵¹The process of property value and ownership investigation consisted

Present Assessed Valuation of Property

1. Assessed Valuation of Land

Assessed valuations of land in the North Station Area, as calculated by square foot average, comprise a range from \$1.35 per square foot for general commercial parking lots to \$11.10 per square foot for old wholesale-warehouse sites. In terms of location, the highest land valuation averages appear in the Causeway Street vicinity.

TABLE III-20

AVERAGE ASSESSED VALUATIONS OF LAND,
NORTH STATION AREA, 1959

Sub-unit	Total Land Area (sq. feet)	Total Assessed Valuation of Land (dollars)	Average Assessed Valuation of Land (\$/sq.ft.)
Triangle	445,712	3,441,600	7.74
Billerica blocks	122,170	414,700	2.62
Nashua block	79,709	300,200	3.77
North Station Complex ^a	57,876	732,300	12.65
Charles Riverfront ^b	1,160,230	2,967,500	1.85
Totals and Average for Area	1,865,697sq.ft.	\$7,856,300	\$4.22/sq.ft.

- a. Breakdown for North Station Complex only partially available. Included in this sub-unit are the Industrial Office Building and Hotel Madison.
- b. Includes all of Assessors Block 187 (between the Charles River

Source: 1959 property parcel cards, Assessing Department, City of Boston.

of tabulation of current property assessments, recent assessment changes, and recent property sales for the North Station Area, undertaken from publicly available 1959 parcel assessment cards of the City of Boston Assessing Department. Identification and location of the particular parcels referred to by the card system was facilitated by the generous support and cooperation of the City of Boston Equalization Survey.

A more detailed tabulation⁵² indicates that no rhyme or reason exists in the pattern of average assessed valuations of land in the Area and, consequently, that no correlation is derivable between specific land uses and average land assessments. Moreover, without extensive additional research, direct comparison of figures is apparently not possible with the nearby Government Center project area, "where most of the property . . . is valued at less than \$30 a square foot and a large portion is assessed at less than \$10 a square foot."⁵³

2. Assessed Valuations of Buildings

Although there are a number of ways in which the assessed valuation of buildings may be reduced to a common denominator, a gross square footage for existing Area buildings is available and utilized from the preceding section of this chapter. (See Table III-21.)

In detail,⁵⁴ the average assessed valuations for buildings in the North Station Area are, if possible, even less logical and meaningful than average land assessments. Not only are there no apparent correlations with such physical building elements as condition, age, quality, or services, there appears to be no relationship with either the location within the Area or the particular uses of the structures.

In light of these two investigations of assessed valuation, it is apparent that neither private nor public development actions are possible in the North Station Area on a predictable cost basis or at a predeterminable

⁵²See Appendix 23, 24 and 25.

⁵³Charting the Future of Urban Renewal, Boston Municipal Research Bureau, Boston, Mass., July 1959, p. 19.

⁵⁴See Appendix 25.

TABLE III-21

AVERAGE ASSESSED VALUATIONS OF NON-RESIDENTIAL BUILDINGS,
NORTH STATION AREA, 1959

Sub-Unit	Total Building Gross Square Footage	Total Assessed Valuations of Buildings (dollars)	Average Assessed Valuations of Buildings (\$ per sq. ft.)
Triangle	1,594,000	1,689,600	1.06
Billerica blocks ^a	52,400 (non-res.)	45,600 (mixed res. & non-res.) (95,500 res. only)	.87 ^b
Nashua block	242,800	1,236,200	5.08
North Station ^c Complex	809,340	3,254,000	4.02 ^d
Charles Riverfront ^e	263,660	4,095,800	15.55
Totals and Average for Area	2,962,200 sq. ft.	\$10,321,200	\$3.48 per sq.ft.

^aInseparable mixture of commercial-residential structure use prevents clear calculations for these blocks.

^bThis figure is low and not entirely representative, since buildings contain upper-story residential floor space.

^cBreakdown for North Station Complex only partially available. Included in this sub-unit are the Industrial Office Building and the Hotel Madison.

^dIncluded the Hotel Madison @ \$6.12 per sq. ft. and the Industrial Office Building @ \$3.02 per sq. ft.

^eIncludes all of Assessors Block 187 (between the Charles River and Nashua, Causeway and Beverly Streets except the Industrial Office Building and the Hotel Madison.

Source: Building valuations, 1959 property parcel cards, Assessing Dept., City of Boston.

magnitude level, that each possible future action, as with each fire insurance rating in the Area, must proceed building-by-building and parcel-by-parcel. As a guide, however, the assessed valuations for land and buildings on an Area-wide "average" may prove to be somewhat useful in determining the general scope of the policy or action contemplated.

Assessment Ratios: Buildings to Land

The relationship between the assessment placed on parcels of land and the assessment placed on the value of improvements upon those parcels indicates a measure of the present degree of land utilization as well as providing a clue to the broader locational-functional nature of an area. The prevailing assessment ratio is also a factor of some significance to the future trend of an area in a context of "natural" economic determinism, and at the same time, may provide insight into the nature of acquisition costs under any possible program of renewal action.

In the North Station Area, the range of assessment ratios between buildings and land provides substantiation to many of the physical and economic determinations of previous chapter sections concerning the relative "values" of the particular sub-units and the overall status of the Area as a whole. (See Table III-22.)

This determination of assessment ratios for the North Station Area reflects more closely than the illogical individual assessment elements (land and buildings) the characteristic intensity of land utilization of the particular sub-units.⁵⁵ Moreover, in comparison to known assessment

⁵⁵ See Appendix 26 for revealing assessment ratios by individual blocks.

TABLE III-22

ASSESSMENT RATIOS: BUILDINGS TO LAND,
NORTH STATION AREA, 1959

Sub-unit	Assessment of Buildings (dollars)	Assessment of Land (dollars)	Assessment Ratio: Buildings to Land
Triangle	1,689,800	3,441,600	0.49
Billerica blocks	141,100	414,700	0.35
Nashua block	1,236,200	300,200	4.12
North Station Complex	3,254,000	732,300	4.44
Charles Riverfront	4,095,800 ^a	2,967,500 ^a	1.38 ^a
Totals and Average for Area	10,416,700	7,856,300	1.33

^aIncludes North Station-Boston Garden building. Breakdown not available.

Source: 1959 property parcel cards, Assessing Department, City of Boston.

ratios elsewhere in Downtown Boston, the figures for the existing Area configuration are significantly lower than for several rather similar sectors of approximately the same distance from the heart of the Central Boston District, thus indicating both the potential for new development on such an inner center site and the appropriate timeliness of Area renewal and restructuring.

Recent Changes in Assessed Valuations

Recent changes in the assessed valuations of land and buildings in the North Station Area are summarized in Table III-23.

This general decline in Area value reflects several factors important to planning considerations: (1) the extent of building

TABLE III-23

DECLINE IN LAND AND BUILDING ASSESSED VALUATIONS,
NORTH STATION AREA, 1955-1959

	Assessed Valuation of Land	Assessed Valuation of Buildings	Total Assessed Valuation
1955	\$8,540,000	\$11,590,100	\$20,130,100
1959	7,856,300	10,416,700	18,273,000
Numerical Difference	-683,700	-1,173,400	-1,857,100
Per Cent Change	-8.0%	-10.1%	-9.2%

Source: 1959 property parcel cards, Assessing Department, City of Boston.

demolitions, (2) current investment attitudes toward the Area as reflected in the lack of new construction or building modernizations, and (3) the nature and existence of forces at work in current abatement proceedings in the Area.

1. Building Demolitions for Parking Lot Purposes

As indicated in the previous chapter, one of the most noticeable changes which has been occurring in the North Station Area is the demolition of buildings for open-air commercial and private parking lot purposes, a circumstance apparently encouraged by at least two interrelated factors: (a) a large increase in the last decade of parking space throughout the central city, and (b) the profit per tax dollar becoming greater for commercial parking lots than for the existing economic rentals of the old buildings.

The accompanying map indicates the extent of these recent changes

and the concentrations in the Friend Street and Lowell-Nashua Street sections of the Area.⁵⁶

2. Investment in Building Improvements

Investigation of past building assessments indicates neither new construction nor substantial investments in the North Station Area within at least the last five years.

TABLE III-24

INVESTMENTS IN BUILDING IMPROVEMENTS,
NORTH STATION AREA, 1955-1959⁵⁷

	Number of Parcels	Value of Investment (as reflected in in- creased assessment)
Area Total	10	\$24,000

Source: 1959 property parcel cards, Assessing Department, City of Boston.

Moreover, though some scattered improvement might be expected both in response to floor space competition created by adjacent redevelopment project business relocations and in speculative expenditure anticipation of more profitable public resale in the event of eventual Area condemnation,⁵³

⁵⁶Tabulatory summary of these building demolitions is contained in Appendix 27.

⁵⁷For detailed tabulation, see Appendix 28.

⁵⁸There are now underway, however, three improvements: one of internal redecoration to the Hotel Madison; one of new bar and cocktail lounge construction on Billerica Street; and one of demolition of the old Lucerne Hotel to one story and reconstruction as a restaurant.

the reinvestment record and attitude reflected would seem to justify neither optimism in the long-run future support of the Area's existing physical plant nor official decisions not to directly face the problem of North Station Area renewal.

3. Assessment Reductions

The primary attitude and effort seemingly represented by most present property owners in the North Station Area is derivation of the greatest income or space returns for the least investment and maintenance, a practice known in some circles as "milking property." Not dissimilar from this tendency are the associated practices of constant legal tax-abatement pressure and of real estate speculation for possible windfall gains should adjacent redevelopment projects be extended into the Area.⁵⁹

An indication of the first of these elements, abatement pressure, is provided by review of assessment reductions over the past five-year period and is shown in Table III-25.⁶⁰

Recent Property Sales

1. Extent and Location of Property Sales

Of the 194 total parcels of property in the North Station Area, twenty-six or 13 per cent, were involved in one or more sales transactions between 1955 and 1959. This relatively high property turnover is an indication of the transitional stage and temporal uncertainty which the Area is undergoing. The internal distribution of these property sales, with a large concentration along Friend and Billerica Streets and some degree

⁵⁹To be investigated momentarily in a section on the nature of property ownership in the Area.

⁶⁰For detailed tabulation, see Appendix 29.

TABLE III-25
ASSESSMENT REDUCTIONS,^a NORTH STATION AREA, 1955-1959

Sub-unit	Parcels	Land Assessment Reductions (\$)	Building Assessment Reductions (\$)	Total Property Assessment Reductions (\$)
Triangle	24	118,200	181,400	299,600
Billerica blocks	4		24,600	24,600
Nashua block	1	100		100
North Station Complex	3	555,700	977,900	1,533,600
Charles Riverfront	-			-

^aDoes not include buildings razed for parking lot purposes.

Source: 1959 property parcel cards, Assessing Department, City of Boston.

of relationship with Merrimac Street frontage, further indicates a strong association with the period of West End redevelopment acquisitions and Government Center project announcements.

2. Nature of Property Sales

Within the framework of the twenty-six property sales during this recent period, fourteen appear to have represented the substantial investment of Area firms expanding or acquiring their own presently occupied space and facilities and twelve appear to have been basically of a speculative nature. Within the last decade as a whole, however, there have been a considerable number of properties knit together in interlocking ownership, particularly in the Nashua-Billerica Street area and apparently in response to hoped-for redevelopment as part of the West End project.

It is not inconceivable, once Government Center Project negotiations begin, that a similar rash of real estate speculation will occur throughout the North Station Area.

3. Sales Price

The going price for land in the North Station Area, based upon these recent sales, has been approximately \$2 per square foot for vacant property and \$9.50 for property with structures. There is considerable variation, of course, between various parcels, and though the universe represented is not large, such a measure does provide some basis for estimate of future land costs, whether for public facilities construction or for renewal acquisition.

Sales price investigation of these recent transactions is statistically summarized in Table III-26.⁶¹ The most important determinations of this tabulation are the three unit calculation columns of sales price per square foot of building floor space (a figure that may indicate the inherent value of existing Area structures as reflected in the public [or agent's] eye; sales price per square foot of land [which may be interpreted as a measure of the potential value of land within the Area]; and the ratio of sales price to current assessed valuation [which both passes judgment on the representativeness of general Area assessment practice and provides a clue to Area potential and/or possible redevelopment speculation]).

With a detailed range of sales price per square foot of land from \$.69 to \$20.95 for the individual parcels and a range of sales price per square foot of building gross floor space from \$.29 to \$18.75

⁶¹A detailed tabulation appears in Appendix 30.

RECENT PROPERTY SALES, NORTH STATION AREA, 1955-1959

Sub-Unit	Number of Parcels	Years of Sale	Land Area of Parcels (sq. ft.)	Floor Area of Existing Buildings (sq. ft.)	Sales Price		Total (\$)	Assessed Valuation of Parcels at Time of Sale (\$)	Ratio of Sales Price to Assessed Valuation of Parcel
					Per Square Foot of Land	Per Square Ft. of Bldg. Floor Space			
Triangle	17	1955-1959	50,417	224,500	9.10	2.06 ^a	459,100	478,700	.96
Billerica blocks	8	1955-1959	7,279	11,810	10.75	5.36 ^b	78,255	56,000	1.40
Nashua block	-								
North Station Complex	1	1959	27,600	-	1.00	-	27,700	-	-
Charles Riverfront	-								
	26		85,296sq. ft.	236,310sq. ft.	\$6.62sq. ft./	\$2.23 ^c sq. ft./	\$565,055	\$534,700	\$1.06 ^d

^aCalculated from a sales price total of \$464,000 compiled for just those parcels with existing buildings.

^bCalculated from a sales price total of \$63,300 compiled for just those parcels with existing buildings.

^cCalculated from a sales price total of \$527,300 compiled for just those parcels with existing buildings.

^dCalculated on the basis of a total of \$537,000 dollar sales (excluding block 187 parcel 1928 for which no assessment is available).

Source: Parcel, year of sale, land area of parcel, and assessed valuation of parcel at time of sale tabulated directly from 1959 property parcel cards, Assessing Department, City of Boston;

Total sales price was calculated from value of sales stamps indicated on the parcel cards, at a rate of \$1.10 of stamps per \$1000 of dollar sales;

Floor space of existing buildings obtained from the detailed inventory of a previous section herein and its associated appendix.

the significance of recent property sales in the North Station Area is somewhat clouded.⁶² Nevertheless, on the basis of averages, first for all the parcels, and second for all the "improved" parcels, the determination can be stated that Area properties have recently been selling for approximately \$6.62 per square foot of land and/or for \$2.23 per square foot of building floor space. These scales of magnitude together with the average Area ratio of sales price to assessed valuation of 1.06 indicates three measures of market value of Area properties.

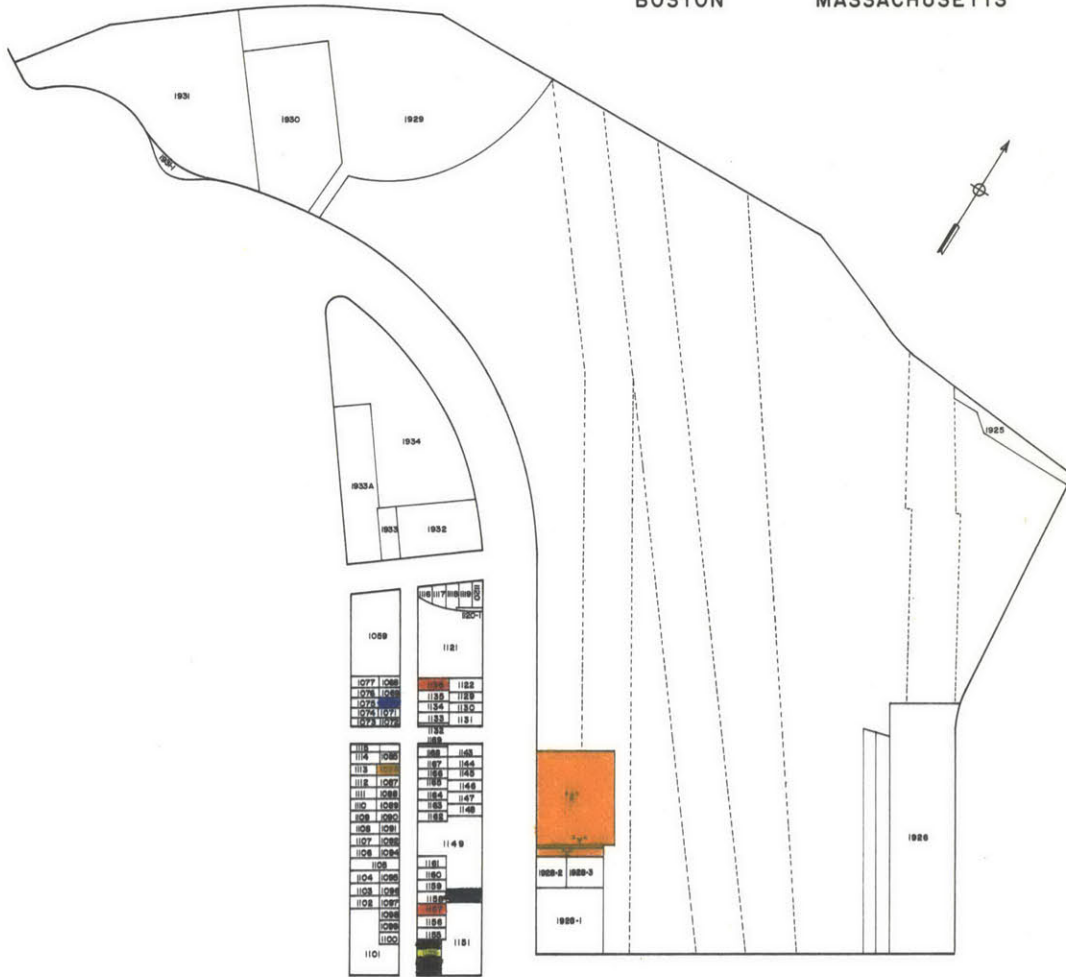
It may be concluded from this presentation of recent property sales experience in the North Station Area that:

1. Land in the Area is currently being oversold (\$6.62 per square foot sales price against \$4.22 per square foot assessed valuation), a circumstance that may indicate an anticipated Area development potential which could be realized upon completion of the adjacent redevelopment projects.
2. Buildings in the Area are currently being far undersold (\$2.23 per square foot sales price against \$3.48 per square foot floor space assessed valuation), thus indicating either that the future land development potential is of such dominant concern that the existing buildings are being discounted or that the buildings themselves are in such condition that they do not possess a very great long-term utilization value.
3. Several sections of the Area, but particularly the Billerica Street blocks, appear to be either experiencing real estate speculation or have not yet been fully assessed with respect to the profitable commercial parking lot operations for which parcels are being purchased and buildings are being demolished.

⁶²(See Illustrations 25 and 26 and Appendix 31) It is necessary to point out two important influences: (a) In many cases the existing buildings on particular parcels are so small in size that the "value" of the land far outweighs that of the structure thus resulting in a sales price per square of building floor space unusually high; (b) In a similar sense, parcels with very large buildings thereon have an equally unrepresentative sales price per square foot of land.

NORTH STATION AREA

BOSTON MASSACHUSETTS



- \$ 11.00 +
- \$ 7.00 - 11.00
- \$ 4.00 - 7.00
- \$ 1.00 - 4.00
- \$.69 - 1.00

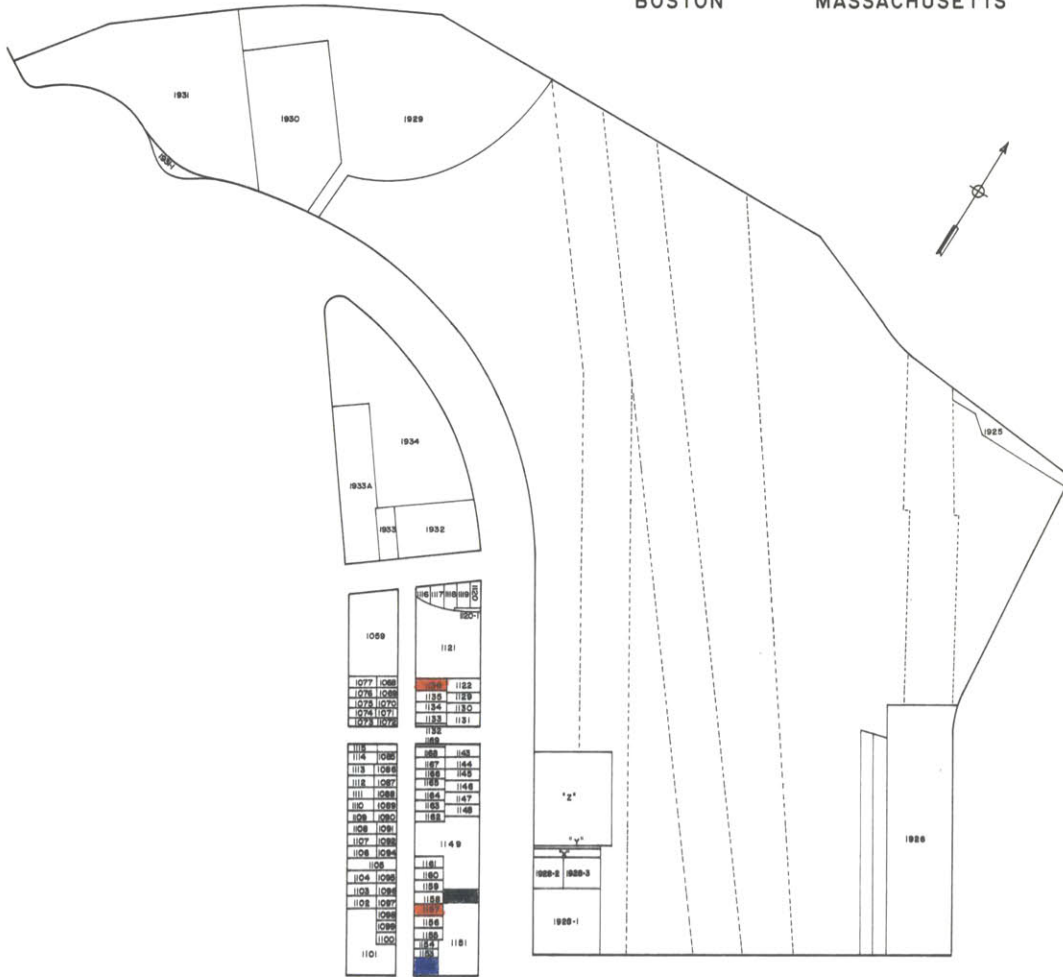
**RECENT SALES PRICE
per SQUARE FOOT OF LAND**



Source : 1959 Property Parcel Cards,
Assessing Dept., City of Boston

NORTH STATION AREA

BOSTON MASSACHUSETTS



- \$ 10.00 +
- \$ 4.00 - 10.00
- \$ 2.00 - 4.00
- \$ 1.00 - 2.00
- \$.29 - 1.00

**RECENT SALES PRICE per
SQUARE FOOT of BUILDING
FLOOR SPACE**



Source : based on 1959 Property Parcel Cards,
Assessing Dept., City of Boston

Nature of Property Ownership

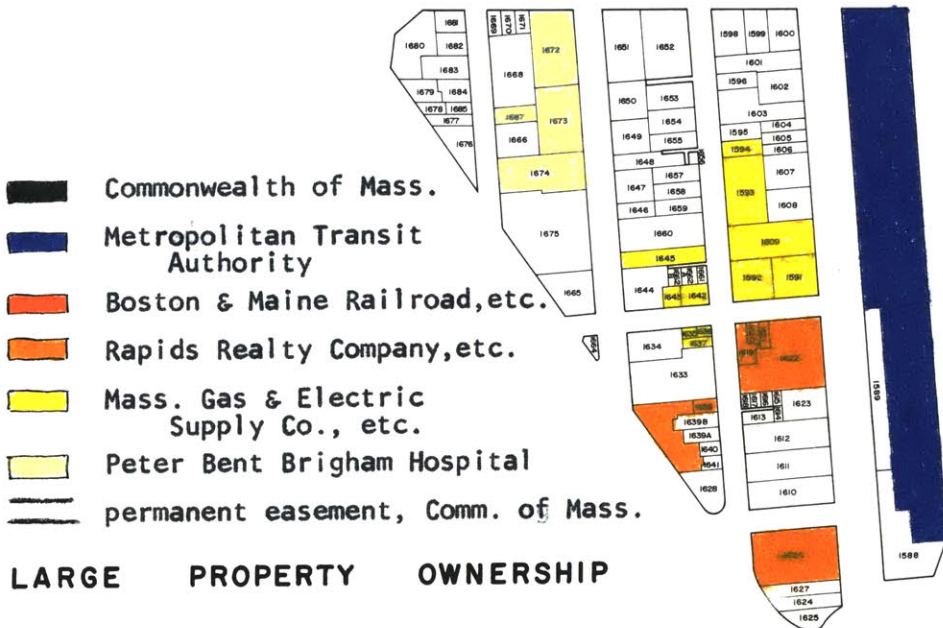
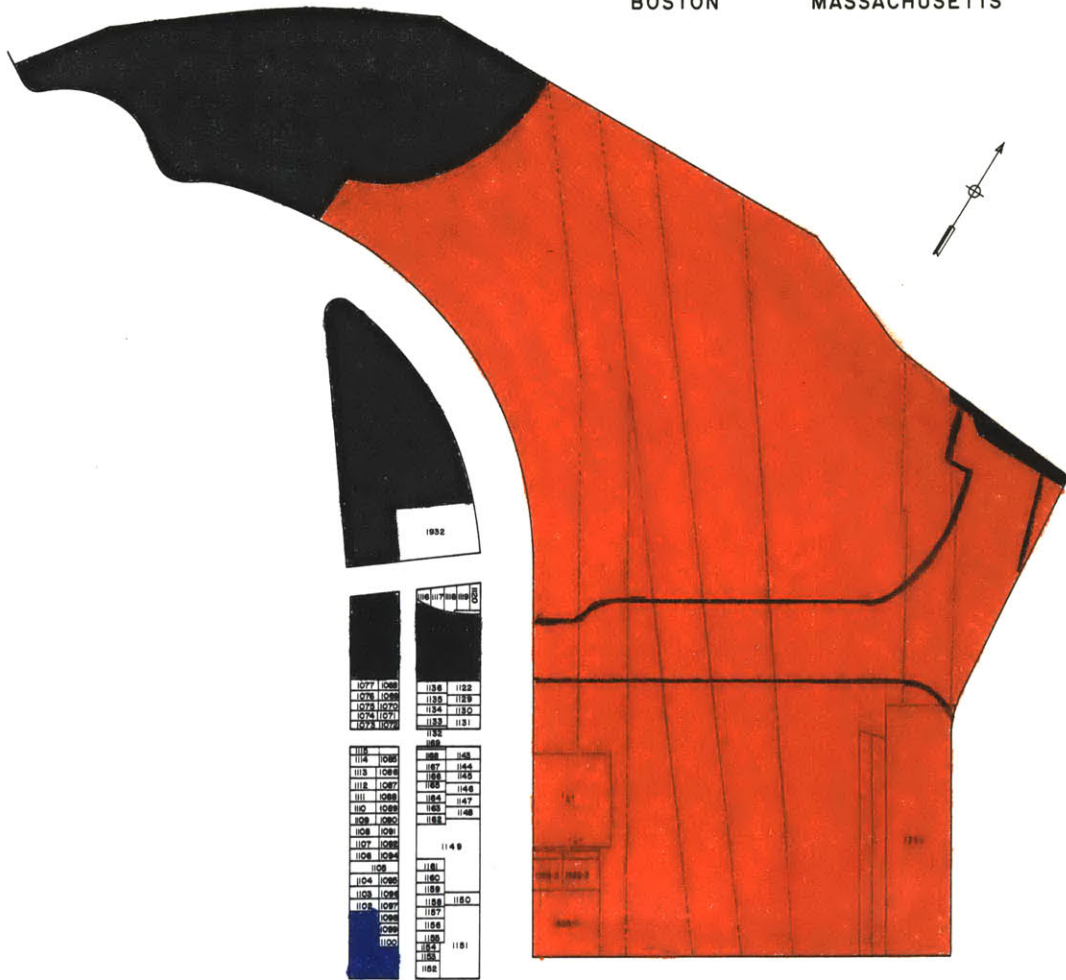
Property owners controlling large amounts of land in any location necessarily exert a strong influence on the surrounding area. In the North Station Area, there are a half dozen such known large property owners who together hold 1,081,885 square feet or 58 per cent of the total 42.8 acres.⁶³ This concentration is divided between both public and private ownership, with several of the large private property owners, through real estate techniques of trusts and separate corporations, appearing to control even larger proportions of the Area than indicated by Table III-27. (See also Illustration 27.)

The nature of large individual property ownership indicates the predominant floor space tenancy of existing business firms in the Area and represents a variation in acquisition from long-term accumulation to recent redevelopment-conscious speculation. The largest single property owner, the Boston & Maine Railroad, controls fully one-third of the entire Area and almost all the land north of Causeway Street as a result of historical consolidation of the several original northern railroads. The Massachusetts Gas and Electric Supply Company (Charles Weintreb or Clements Realty Trust) and Rapids Furniture Company (Fox family or Merrimac Park Trust), and several other smaller property owners, on the other hand, have been picking up parcels here and there ostensibly for parking lot and warehouse space but with a certain realization of the additional Area development potential which adjacent redevelopment projects will create.

⁶³Presently buildable land only; not including streets.

NORTH STATION AREA

BOSTON MASSACHUSETTS



Source : 1959 Property Parcel Cards,
Assessing Dept., City of Boston

TABLE III-27

LARGE PROPERTY OWNERS (greater than 1% of the Area)
NORTH STATION AREA, 1959

Organization or Agency	Square Feet of Land	Per Cent of Total
<u>PUBLIC</u>		
Metropolitan Transit Authority	93,141	5.0
Metropolitan District Comm.	66,951	3.6
Comm. of Mass. (D.P.W.)	194,304	10.4
	354,396	19.0
<u>PRIVATE</u>		
Rapids Realty Company (Fox) (Merrimac Park Trust)	40,198	2.1
Clements Realty Trust (Weintrab) (Mass. Gas)	36,715	2.0
Peter Bent Brigham Hospital	28,387	1.5
Boston & Maine Railroad (No. Station Industrial Bldg.) (No. Station Hotel Bldg.)	622,189	33.4
	727,489	39.0
	1,081,885	58.0

Source: 1959 property parcel cards, Assessing Department, City of Boston.

Nineteen per cent of the Area is owned either directly or indirectly by the Commonwealth of Massachusetts in six large but awkwardly-shaped parcels, with an additional 11 per cent of B & M Railroad land controlled in the form of temporary and permanent easements. Consisting of highway, riverfront, and transit holdings, this large segment of ownership is one of the primary influencing factors over the future of the North Station Area in general and over the future development of the Charles Riverfront in particular.

The nature of property ownership in the North Station Area thus represents not only a few large parcel holders that may exert a strong influence over Area response to adjacent redevelopment projects in the West End, Scollay-Bowdoin Square, and Staniford-Chardon, but a multitude of small parcels scattered throughout the Area with no available means of coordination of future development either between government agencies or between public and private land holders. Moreover, the status of the concentration of tax-exempt properties north of the Causeway Street line, which is descendent from the physical growth, taxation-legislation, and consolidations of railroad history, is so clouded by lack of definitive title that the confused pattern of real ownership is a significant deterrent to utilization of the Charles Riverfront. Both of these are circumstances which only condemnation through urban renewal proceedings may be capable of overcoming if full realization of the Area's intensive development potential is to be achieved and not be impossibly and wastefully disperse.

E. Relationship between the Economic and Physical Compositions of the Area

Locational Clustering of Existing Activities

The economic composition of the North Station Area may be viewed in qualitative terms as a collection of particular activity groups which represent definite patterns of business clustering due to both external factors of Area accessibility and Downtown location and internal factors of historical derivation and of current decisions based on building suitability, available floor space, annual rental costs, economic linkages, pedestrian lines of movement, and environmental conditions. The tendency for firms in the same general line of business to locate in

groups or clusters is apparent not only in the face-to-face activities of goods marketing but also in the provision of various types of business services. Moreover, there appears to be a disposition for new or migrating firms to join the cluster wherever it may exist.

This definite clustering of business activities occurs in the following North Station Area locations: (See Illustration 28.)

1. A dense group of wholesalers, retailers and indistinguishably mixed wholesale-retail businesses in furniture, home furnishings, and textiles existing in the lower section of the Area along Canal and Friend Streets.

2. A second group of furniture dealers and home furnishings firms occupying the Portland Street frontage.

3. Manufacturing operations composed of smaller groups of firms on lower Portland Street, in a large structure on Friend Street, and within the Industrial Office Building.

4. A large women's clothing business dominating the corner of Causeway and Portland Streets as the major retail operation in the Area.

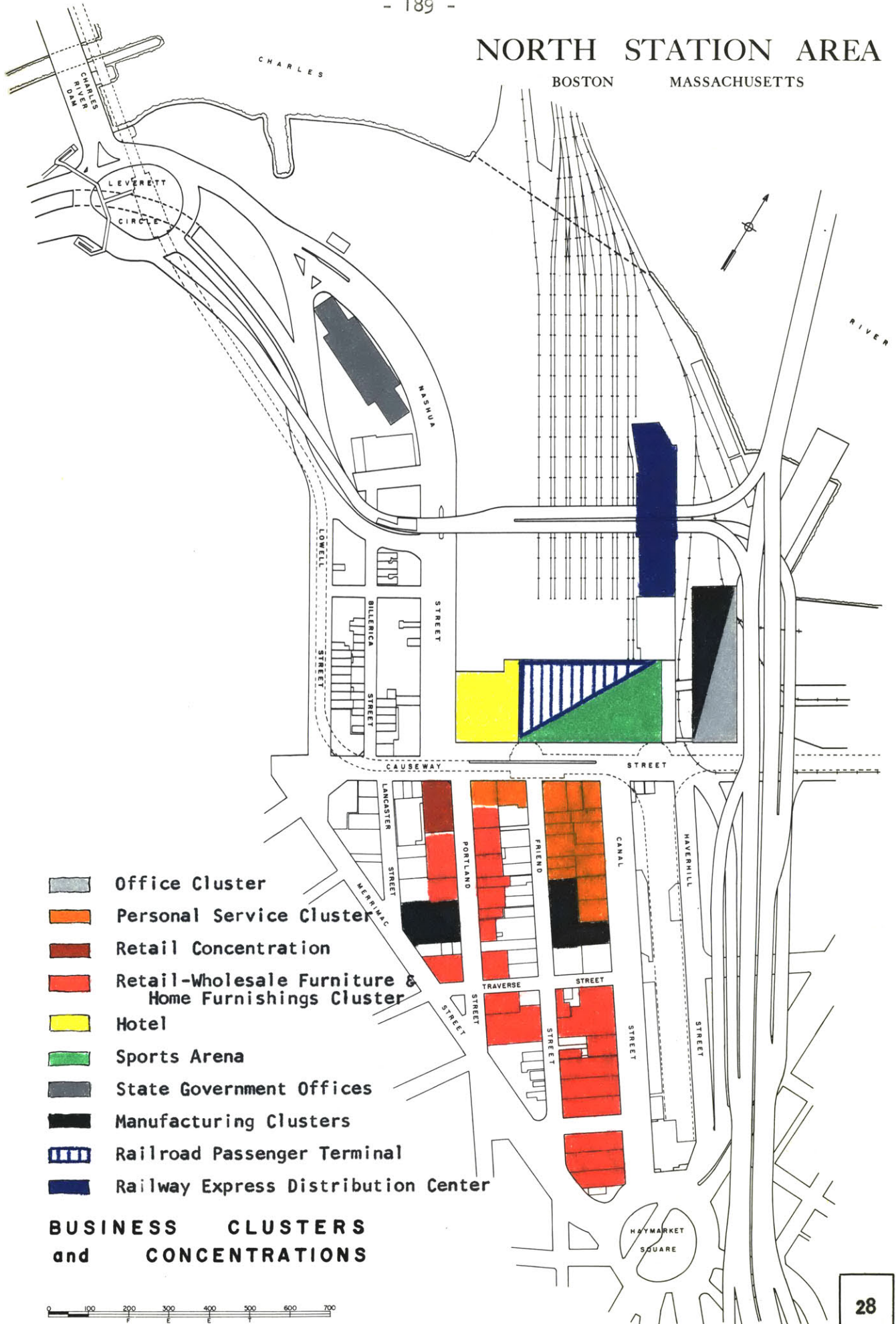
5. Strip occupancy of ground floor frontage along Causeway Street and on upper Canal and Friend Streets comprising a string of small retail stores, cafeterias, bars, and personal service outlets related primarily to former patterns of relatively heavier commuter pedestrian movement.

6. The Area's largest employment concentration located in the DPW Building on Nashua Street and comprising the headquarters offices of several state government agencies.

7. Numerous office activities in the Industrial Office Building representing wholesalers-without-stock, transportation companies, real estate organizations, business services, national and regional corporation

NORTH STATION AREA

BOSTON MASSACHUSETTS



-  Office Cluster
-  Personal Service Cluster
-  Retail Concentration
-  Retail-Wholesale Furniture & Home Furnishings Cluster
-  Hotel
-  Sports Arena
-  State Government Offices
-  Manufacturing Clusters
-  Railroad Passenger Terminal
-  Railway Express Distribution Center

BUSINESS CLUSTERS and CONCENTRATIONS



branches, and state government agencies.

Other significant concentrations within the Area consist of the Hotel Madison, the U.S. Post Office branch, the Railway Express Agency, and the North Station's primary function as the Boston Garden entertainment service.

Business Activities and Condition of Buildings

The particular locational clustering of business activities in the North Station Area appears to be directly influenced by the existing physical composition, and comparison of the distribution of firms with the pattern of building conditions indicates the following relationships:

- a. The buildings in poorest physical conditions provide space for: manufacturers of probable marginal operation; bars, lodging houses, and restaurants catering to elements of the Area's historical railroad terminal past; and vast amounts of storage space, particularly for wholesalers-with-stock.
- b. The buildings of better construction and maintenance contain the offices and showrooms of firms of some reputation and of more than local significance - the furniture and home furnishings wholesalers and retailers, the business services, the transportation companies, the representatives and agents of national manufacturers.
- c. The buildings with physical conditions between these two extremes tend to house a mixture of operations, ranging from small wholesalers, retailers, and personal services to medium-sized manufacturing concerns.

Business Activities and Area Physical Features

There are, in addition, a number of direct interrelationships between existing business activity concentrations and physical compositional features of the North Station Area. For example:

- a. The Industrial Office Building is economically attractive for office activities and high-value manufacturing operations because of location within the central city next to the North Station passenger

terminus and two rapid transit lines, sound physical condition, high level of maintenance, and accessibility to buyers and salesmen from within and without the metropolitan area.

b. The historical concentration of furniture and home furnishings business has benefitted by the Area's transit and highway accessibility, the existence of structures worth reasonable improvement and maintenance, and favorable rental levels and/or non-prohibitive purchase costs.

c. Retail and personal service activities in the past have been strongly related to daily pedestrian peaks of rail commuters arriving and departing from North Station, and because passenger volumes have declined and rail service has been curtailed, that locational relationship has in great part disappeared and a widespread sawtooth pattern of vacant first-floor stores has been left. Moreover, the attempt by remaining retail and personal service firms to reorient their operations toward the growing daytime office population of the Area has not been entirely successful and such establishments continue to linger on not because of the market which they "satisfy" but because there is a lack of competition from the existence of more satisfactory facilities.

d. Although wholesalers-without-stock generally seem to be among those businesses which occupy and support the better maintained space accommodations in the Area, wholesale-with-stock operations in the Area presently utilize (more correctly, underutilize) large amounts of low-rental, upper-story floor space, lack of off-street loading facilities, contribute as much to truck traffic congestion as does manufacturing, and seem to have a neutral-negative, non-deteriorative but depressent effect upon the physical-economic environment of the Area.

e. There appears to be a close correlation between the location of manufacturing activities and the physical environment of the Area, a relationship which appears to be double-ended in that poorly maintained and marginal old loft space offers low annual space rentals which many manufacturing operations need for continued existence, and many manufacturing operations by their physical effects make structures less valuable for other businesses, discourage building reinvestment and maintenance, and thereby result in further deterioration.

f. Government office activity, as the dominant employment category in the Area, comprises both the largest single non-commutation source of pedestrian movement and a major component of the noontime business consumer market in the Area.

Although redevelopment and business displacement in the two directly adjacent (Government Center and Staniford-Chardon) projects can be expected to effect changes in the existing intensity of locational activity concentrations, the inherent relationships between the economic and the physical compositions of the North Station Area are of stable, long-term derivation and appear to be essentially unalterable except through reformation and reconstruction.

F. Future of Economic-Physical Functions

The future trends of particular economic activities now existent in the North Station Area under a process of natural determination (no renewal or redevelopment) may be interpreted from value-judged projections of past and present economic movements within the Area and within the central city as a whole.

1. Major Activities

Manufacturing

In view of their very low average annual costs for large areas of floor space occupied and in expectation of the increasing space demands and consequent rising general rental level which undoubtedly will be experienced as clearance occurs in the two directly adjacent redevelopment projects, most of the existing manufacturing tenants in the North Station Area are likely to be the first to feel the economic pressure of space competition. Notwithstanding the fact that several larger firms have been growing at a rapid rate and may be forced to migrate merely because of the non-existence of adjacent, appropriate, or satisfactory additional floor space within the Area and that a few small operations are likely to terminate due to national and regional changes in locational production, many of the manufacturers now operating in the existing Area have already indicated a desire to relocate. Moreover, the recent Central Artery impact study indicated that most evicted manufacturing operations either moved to outlying areas or ceased to operate.⁶⁴ Therefore, on the basis of these five elements - business growth with unsuitable expansion space available, regional productive changes, desired relocation, direct influence of adjacent redevelopment on increased space competition, higher Area rental levels, and distillation of more affluent firms and operations, and precedented effects of displacement - it seems likely that most forms of manufacturing operations, other than those firms performing essentially business service functions and engaged in high-value components

⁶⁴Saalberg, op. cit.

production, will more rapidly disappear from the North Station Area.

Wholesaling

A significant change may also occur in Area wholesaling, with all firms forced to concentrate their activities and more efficiently utilize available floor space and with the more marginal operations probably displaced by rising general rental levels. Since the vast amount of "compressible" underutilized space occupied by Area wholesalers-with-stock represents the largest single source of accommodations for firms to be displaced by adjacent redevelopment projects, space competition may either require existing wholesalers to find storage room elsewhere or force the entire wholesale-with-stock operation to move into other sections of the city or nearby metropolitan area. Moreover, though most of the firms engaged in the field of wholesale and wholesale-retail furniture and home furnishings seem likely to remain in the Area in the near future, only a few appear to represent substantial growth organizations, with the majority seemingly carried along by their strength and consumer drawing power, and should one or two of the dominating larger businesses decide to relocate, many of the existing smaller firms would probably be forced to move elsewhere or would linger on and decline.

Within a time period not dissimilar to manufacturing outmigration, therefore, an accelerating transition in Area wholesale functions may find:

- a. unalterable with-stock collection and distribution operations moving out of the Area.
- b. retail-evolving businesses more likely to remain in the area (subject to the outmigration effects of larger firms).

- c. administrative-functioning wholesale-without-stock offices becoming more numerous in this Downtown and Central Boston location.

Transportation

Although the North Station Area offers a convenient location for transportation office activities, the present Area category is comprised almost entirely of railroad and railroad-oriented companies and is subject to the general downward trend in railroad vitality. Moreover, continued curtailment of passenger operations at North Station will necessarily result in further reductions of the work force of the dominating Boston & Maine Railroad. Therefore, transportation in the Area, of existing railroad branch offices as well as the headquarters of the B & M, seems destined at best to a condition of stability and most probably to a gradual employment decline.

Retail and Personal Service Businesses

The existing general retail and personal service establishments of the Area are weighted heavily toward the days of extensive rail commutation and are becoming less locationally appropriate to the changing patterns of pedestrian movement. And though the more attractive facilities of the North Station Complex may experience continued pedestrian centrality and business profitability, retailing of general consumer goods and the operations of small personal service shops in the existing North Station Area must inevitably decline. New or different retail firms may be attracted to the Area due to the locational nature of the site, however, as a non-competitive space for capturing the nearby markets to be represented by the adjacent (Government Center and State Office Campus) redevelopments, but any such

occurrence is likely to be specifically unpredictable and economically insignificant under existing Area physical conditions.

The trend in non-pedestrian-oriented specialty retail sales and furniture and home furnishings will be subject to the forces indicated above for such similar and associated wholesale operations, and though some businesses may transfer to other Downtown and inner metropolitan locations, most of the furniture-furnishings firms and many of the specialty shops may be expected to remain.

Finance-Real Estate

Since the category of finance-insurance-real estate comprises a very small part of the existing Area composition, the provision of local banking services may experience some stimulus from creation of the Government Center and the Area's better office floor space may be occupied by more numerous firms in the general field of real estate management, development, and sales. Yet without a physical character change of the Area necessarily dependent upon public or unforeseen private renewal, this form of business activity is not likely to demonstrate a rapid increase in the absolute size of either establishments or employment in the near future.

Business Services

The substantial Area employment in business services as essentially office activities has economically and functionally changed the character of the North Station Area and, coincidentally, is preparing the Area for Government Center reorientation. In addition, recent national and Area trends indicate that a certain degree of refilling or replacement of

other operations by essentially office functions, primarily in business services, may result. Nevertheless, it should not be expected that these high-density, high-rental activities will find acceptable many of the existing Area building accommodations.

Government

Although government agencies are now the dominant employment factor in the existing North Station Area, as the adjacent Government Center and State Office Campus become completed, their transfer to the new buildings seems probable. Moreover, even the permanence of entire state departments is somewhat dubious, and eventually these offices may also relocate to the new, larger, less isolated, more adequate facilities.

2. Specific Functions

Within the total physical and economic framework of the North Station Area, several building elements and particular economic functions tend to dominate various phases of the Area's existence and are especially important to future planning considerations.

a. Hotel Madison

The 500-room Hotel Madison, built as part of the original North Station Complex, is the youngest hotel in Boston, contains several restaurants and a supper club, and boasts of parking facilities for over 200 automobiles, but is seriously handicapped and experiences a reputed high vacancy rate due to its site location in a physical environment of MTA elevateds, rail yards, and deteriorated nearby buildings. And though the structure is currently undergoing a half-million dollar program of entire repainting, redecorating, and unit air conditioner installation, there appears to be a definite limit to the flexibility of internal

structural arrangements and some point beyond which renovation can no further proceed. Moreover, by 1970, the building will be forty years old and may be attempting to compete with the new Prudential Center hotel and with many new motels and motor hotels both within the central city and throughout the metropolitan area. Consequently, though one of the more substantial structures in the existing North Station Area, the hotel may be expected to experience a gradual but marked decline due to outside competition with new facilities, elimination of the Area's terminal significance from curtailment and possible cessation of Boston & Maine Railroad operations, and the structure's own limitations and inflexibility of internal alteration and modernization.

b. Boston Garden

The Boston Garden entertainment auditorium presently draws an annual volume of one and one-half million people (or about eight to nine thousand per operating day)⁶⁵ into the North Station Area and to many local businesses brings a welcome if not essential "additional" consumer market. In physical terms, however, this operation creates heavy traffic movements on narrow, constricted streets, overflow pressure on off-and-on-street parking facilities, and localized traffic congestion throughout the Area. The structure is an old (1928), outdated facility specifically designed for sports events (boxing, wrestling, hockey) and represents readily acknowledged poor acoustical qualities and not particularly good seating arrangements for 13,909 people.⁶⁶ However, it is

⁶⁵ In 1959, the Boston Garden totalled 1,511,000 admissions for 220 performances. Average number of operating days is 175 to 180 per year.

⁶⁶ According to Mr. Edward J. Powers, Treasurer, Boston Garden Arena Corporation.

now the only facility of its kind in the Boston metropolitan area. In the past, the Garden scheduled a wide range of exhibitions, presentations, and performances, including various food and furniture shows, but demand for and support of this type of attraction has, in general conformance with nationwide changes in entertainment-recreation, disappeared, and other than sports events, the Garden continues to support only the larger and more popular ice and circus type attractions.

There are two circumstances which have a direct bearing upon the continued profitability of the Garden and in turn exert considerable influence on its future in the North Station Area. One is the impending construction, as part of the Prudential development in Back Bay, of a municipal auditorium which is designed to function for convention use, will probably become a major center for many types of activities, will assume several of the non-sports functions of the Garden, and may substantially reinforce the popular image of the older facility as strictly an "arena." The second development is proposed construction of a dome-covered sports stadium, among other places, at the junction of the Central Artery and the Southeast Expressway in South Boston, and would thus create an up-to-date sports facility that would replace in effect, most if not all of the remaining functions of the Boston Garden and lead to probable termination of the Garden's operation.

c. Industrial Office Building

On the basis of continuing conversion for office purposes and locational accessibility within Central Boston, the Industrial Office Building seems likely to continue to represent a desirable site for office activities at the northern end of the Downtown and, with Government Center and State Office Campus creation, may initially form the core

of an expanding private office center in this section of the city. However, though the existing economic activities which the building contains and represents may continue to find this site suitable for operational location in the near future and may even experience some employment growth, the facilities and accommodations of the structure itself are disadvantageously subject to and devalued by a high noise level from the adjacent four-story elevated Central Artery expressway and may soon be attempting to compete against nearby new office space offering greater building services. In the long run, therefore, this structure, as with the hotel, may be influenced by an increasingly competitive market and cannot necessarily be regarded as a permanent physical element. Moreover, as surrounding central city reconstruction increases the development potential of the general area site and in turn increases the pressure for programmed obsolescence and the demand for new, quality floor space, even this building may be determined to be functionally replaceable.

d. Railway Express Agency

Since the series of Boston & Maine Railroad reorganizations and curtailments in the 1950's, Railway Express operations have significantly changed. All freight now enters Boston at South Station and is hauled by truck to this central, but confined, sorting, routing, and distribution point for further truck dispatch to destinations around Greater Boston.

Because its activities are no longer dependent upon direct rail service in the North Station Area but do require single-story goods-handling facilities with clear, wide truck yards, Railway Express operations are currently under consideration to be transferred and recentered

to some new railhead location in South Boston.

e. Massachusetts Department of Public Works Building

The state DPW building at 100 Nashua Street represents the largest single employment concentration and is one of the more sizeable structures in the existing North Station Area. Its age belies its structural and organizational inadequacies, however, but its position with respect to both the present center of state government and the future State Office Campus sharply emphasizes its locational isolation. On the basis of the existing building's not entirely fireproof construction and inherent functional deficiencies, replacement of this facility by more suitably located and efficiently organized office space can be foreseen in the not-too-distant future.

f. U.S. Post Office Branch

The U.S. Post Office's North Station branch, located at its present Portland Street quarters since transfer from Nashua Street in 1942, now services the whole northern tip of the peninsula and is both functionally and regulatorily required in or near the North Station Area as the only service facility of the "North Postal District" of the central city. The expectation in the near future, however, is that floor space will be provided for this branch office within the proposed new Federal Office Building in the Government Center.

g. Secondary Boston Edison Steam Plant

The secondary Boston Edison facility on Nashua Street, which is tied to and functions as a pressure booster to the main commercial steam generating plant at South Station, possibly could be expected to handle a

contract demand created by the adjacent Charles River Park apartment buildings, but in its present location is a significant deterrent to the future development of the general North Station Area site. Since, in terms of physical factors of generation and distribution, there is a large measure of flexibility in the location of such a secondary facility, there are no apparent reasons why this particular booster could not be placed within the central city at a more suitable location. With respect to future development and in accordance with clear units of land use areas, therefore, its eventual relocation may be dictated.

G. Economic Composition Summary

The North Station Area has been indicated to comprise not only a sizeable and significant component of the economy of Central Boston, but in one field, furniture and home furnishings wholesaling, to represent a major activity in the metropolitan area. Moreover, in relation to economic trend, the North Station Area has demonstrated both a striking stability and a positive and progressive basic expansion over the significant last decade and has experienced both new forms of economic growth in regional offices, national corporate branch offices, high-value components manufacture, and architectural and engineering services and an extended trend of a steady and rapid increase in the field of retail-oriented furniture and home furnishings sales-showrooms.

As reflected in both observed types of activities and statistical employment density, the extended sequence and trend in the economic-physical nature of the North Station Area has been away from railroad-manufacturing-warehousing unmistakably toward more compact, increasingly dense functions, toward greater intensification of use, and toward broader

generalization of economic function, and the Area is now beginning to assume a more truly Central Business functional character as a stable retail and wholesale showroom sales area, as an expanding office district, and as a supportive service center. In the future, there appears to be justifiable promise that the little relatively good space available in the North Station Area will continue to attract sound, modest-size business operations in high-value manufacturing, all kinds of business services, wholesaling-without-stock (including manufacturers' representatives, agents and brokers), New England regional company offices, and small research and development laboratories and that the economic composition of the Area will continue in transition toward entirely white-collar employment and more CBD functions and in representation of growing concentrations of individual strength due to its Downtown location and site accessibility.

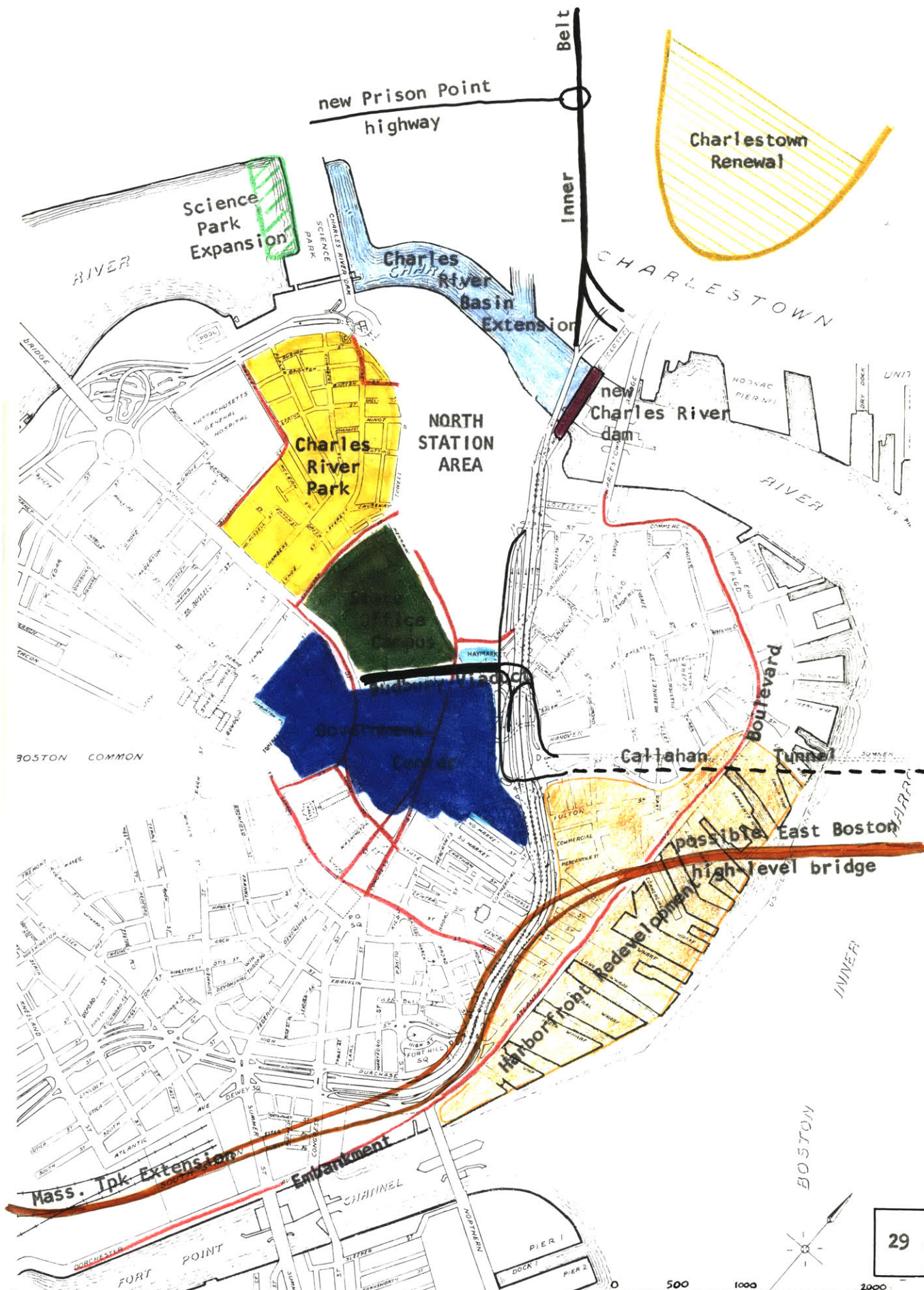
That the North Station Area has been and is undergoing the recent economic compositional shift superimposed upon and in spite of the physical condition and physical environment, however, is a demonstration both of significant spatial pressures for expansion and of economic pressures for physical restructuring.

IV

PROCEEDING, IMPENDING, AND PROPOSED CHANGES

IN THE IMMEDIATE VICINITY

There are a number of changes affecting the configuration, facilities, and status of the North Station Area which are officially proposed, unofficially suggested, and developmentally possible, including replacement of the elevated transit lines, expansion of the Science Park site and/or facilities, curtailment of B & M Railroad operations and further reduction of Charles River drawspan use, replacement of the Charlestown Bridge, construction of a new Charles River Dam with locks and pumping station, redevelopment of the Somerville rail yards, construction of a Massachusetts Port Authority bridge from Leverett Circle to the Mystic Bridge approaches at City Square, and redevelopment of Charlestown. Each of these possible and/or impending changes and developments is a determinating influence upon the direction, speed, and timing of planning and renewal for the North Station Area and for the northern end of the Central Boston peninsula. (See Illustration 29.)



IMPENDING DEVELOPMENTS

A. Redevelopment Projects

1. West End Redevelopment - Charles River Park

Background

Initially studied in the early 1950's but with physical action not occurring until 1959, the major proceeding physical change near the North Station Area is the adjacent West End Redevelopment Project. Conceived, correctly or incorrectly, as slum clearance, the destruction of the old West End not only forced the movement of hundreds of families, it resulted in both an overwhelming demand for space accommodations in the adjacent residential areas, including the Billerica Street blocks of the North Station Area, the Staniford-Chardon area, and the north side of Beacon Hill,¹ and a sharp business decline for the nearby retail merchants on Cambridge Street, Staniford Street, and in the North Station Area.²

At the moment (1961), most of the West End has been destroyed, demolitions are continuing near Cambridge Street, and construction has begun on two of the new high-rise luxury apartment buildings of "Charles River Park." The project site is an area of approximately 47 acres on the northwest side of the Downtown adjacent to Beacon Hill, the Staniford-Chardon residential neighborhood, and the North Station business area and is bordered by a (now) minor service facility (Staniford Street), the major connection to the Longfellow Bridge (Cambridge Street), the

¹Relocation - Goals, Implementation, and Evaluation (West End, Boston, Mass.), Gordon N. Gottsche, unpublished master's thesis, Department of City & Regional Planning, M.I.T., 1960.

²Local area estimates place the loss in retail business due to this removal of a nearby consumer market at up to 25% of annual volume.

Massachusetts General Hospital complex, the Charles Riveredge extension of Storrow Drive (Charles Street), and one of the three northern entrances to Central Boston (Leverett Circle) over which is the elevated structure of the MTA Lechmere line.

According to the contract with the Boston Redevelopment Authority approved by the H.H.F.A. in June 1959, this site will be reconstructed within seven years and will consist of approximately 2400 dwelling units in the form of five 16-story slabs, five 23-story towers, and eight 3-story "town houses," with a 2-story convenience store in the middle of the project, a 100,000 square foot "shopping center" on Cambridge Street, a research laboratory for the Retina Foundation on Staniford Street, and sites for a new city elementary school near Lowell Street, a city library on Cambridge Street, two churches, and a synagogue.³

Statistics on the proposed land uses and on the number, allocation, locations, and scheduled timings of delivery parcels are tabulated in Table IV-1 in order to provide a basis for a later evaluation of residential and commercial development potential in the North Station Area. (See Illustration 30.)

The first of the component project parcels, 1A, a seven-acre site on the corner of Charles and Allen Streets, was acquired by the developer in March of 1960 and construction of one tower apartment and one high-rise slab apartment building, together comprising some 477 dwelling units, is now proceeding under the \$11,000,000 mortgage financing of the John Hancock Mutual Life Insurance Company.

³ West End Assembly and Redevelopment Plan, revised, June 1959, Boston Redevelopment Authority, Boston, Mass.

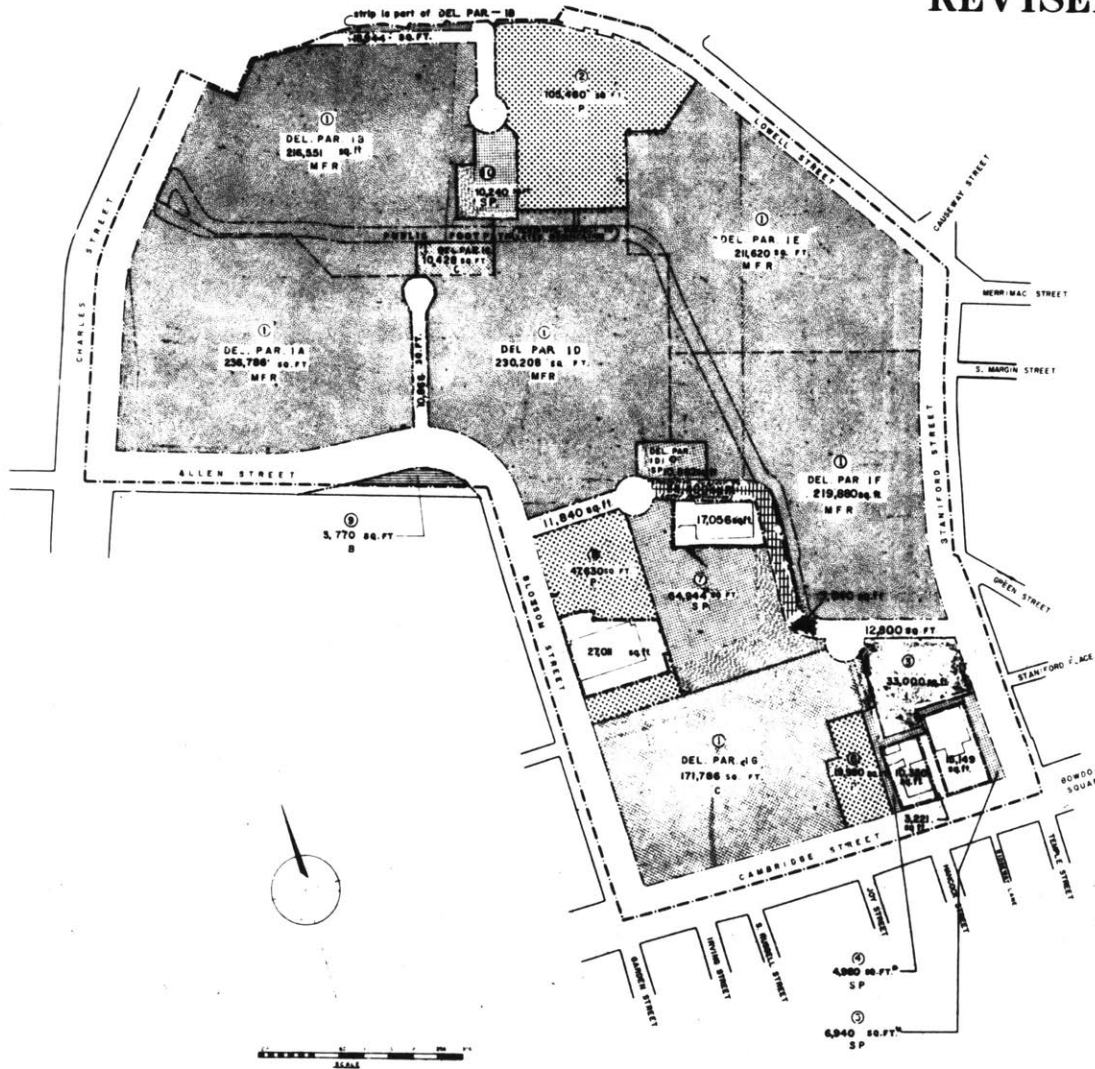
TABLE IV-1

PROPOSED LAND USE AREAS, CHARLES RIVER PARK

<u>Residential</u> (5 parcels) including parking for 1600 cars	25.5	acres
<u>Commercial</u>		
Cambridge Street	3.9	
middle of project	0.2	
<u>Public</u>		
Blackstone School (total)	1.7	
new elementary school	2.4	
new library	0.5	
<u>Semi-Public</u>		
West End Church	0.5	
Otis House Museum	0.4	
St. Joseph's Catholic Church and reservation of land for future parochial schools	1.9	
probable church sites (2 parcels)	0.5	
<u>Institutional</u>		
Retina Foundation	0.7	
"buffer zone" at Massachusetts General Hospital	0.1	
streets	8.3	
	<hr/>	
	46.6	acres

Source: Sheldon P. Gans, Implications of Residential Redevelopment, Staniford-Chardon Area, Boston, Massachusetts, Masters Thesis, Dept. of City Planning, MIT, 1960.

CODE NO. R-307A
 REVISED FINAL PROJECT REPORT
 PART I
 APPLICATION FOR
 LOAN AND GRANT
 WEST END PROJECT
 U R MASS 2-3



KEY

- PROJECT BOUNDARY LINE
- PROPERTY LINE
- - - DISPOSITION PARCEL LINE
- EXCLUDED PROPERTY
- C [Pattern] COMMERCIAL USE
- P [Pattern] PUBLIC USE
- SP [Pattern] SEMI PUBLIC USE
- I [Pattern] INSTITUTIONAL USE
- MFR [Pattern] MULTI FAMILY RESIDENTIAL USE
- DEL PAR. DELIVERY PARCEL
- B [Pattern] BUFFER ZONE
- R [Pattern] FUTURE REPLENTS AREA LESS PROPERTY NOT TO BE ACQUIRED WITHIN DISPOSITION PARCEL
- DELIVERY PARCEL 1D IS INCLUDED WITH DELIVERY PARCEL 1D
- ⊕ THE AREA OF A DELIVERY PARCEL INCLUDES THE AREA OF THAT PORTION OF THE PUBLIC FOOTPATH WITHIN THE DELIVERY PARCEL
- [Pattern] EXISTING RIGHT OF WAY TO REMAIN
- [Pattern] NEW RIGHT OF WAY TO BE ESTABLISHED

- 209 -

VICTOR GREEN ASSOCIATES
 ARCHITECTS

LAND DISPOSITION PLAN

3409

5

Elements of the Proposed Plan

Features of the proposed Charles River Park lauded by the developers are its "integrated plan" with no intersecting streets, its parking provision for more than 1600 cars, and its own community facilities. More important from the standpoint of future adjacent planning is this development's five-building groups interconnected by a landscaped walk, its isolation from surrounding areas by new 80-foot streets, its new Staniford Street boulevard connection to Causeway Street and the Central Artery ramps, and the dangerous business competition which its "shopping center" will create.

This shopping center on Cambridge Street included in the approved redevelopment plan and envisioned as more than a mere service facility for the new Charles River Park residential units, is not only intended to capitalize on something of an "intown regional market" consisting of the residential population of Charles River Park and Beacon Hill and the daytime working population of the Government Center and the redeveloped Staniford-Chardon area, but is an inaccurate phrase used by the developer and by the Boston Redevelopment Authority which serves to mislead and pacify the public. The site is actually a major commercial complex which a change in zoning now allows to include any type of retail store, specialty shop, service activity, restaurant, hotel, motel, theater, and even private office buildings, with the only real restriction a 16-story height limitation. Such a circumstance not only seems unjustified as a reuse which destroys much of the reconstruction potential of nearby areas of the city (such as the North Station business area), but appears to be completely untenable as an official decision which, in a very real and dangerous sense, creates a new commercial center significantly detached

TABLE IV-2
PARCEL DELIVERY, CHARLES RIVER PARK

Delivery Parcel	Land Use Proposed	No. of D.U.'s to be Built	Time Schedule of Delivery (Leasehold Agreement)
1 A	Residential	477	March 7, 1960 (\$18,240 for first year)
1 B	Residential	477	March 7, 1962
1 C	Commercial		
1 D	Residential	498	March 7, 1963
1 D 1	Residential or school		
1 E	Residential	455	March 7, 1965
1 F	Residential	488	March 7, 1964
1 G	Commercial		March 7, 1961
2	Public		
3	Institutional (Retina Foundation)		March, 1960
4	Semi-Public		
5	Semi-Public		
6	Public or Commercial		
7	Semi-Public		
8	Public		
9	Landscape Buffer Zone		
10	Semi-Public or Residential		
11	Public (MDC overpass)		

Source: Delivery dates supplied by Mr. William Johnson, Assistant Executive Director, Boston Redevelopment Authority; other information from West End Assembly and Redevelopment Plan, revised, June 1959, Boston Redevelopment Authority, Boston, Mass.

from the Core in direct competition with the Downtown and the Central Business District.

There are several elements of the plan proposed for Charles River Park that appear to be serious and unnecessary errors of judgment and design and that forcefully demonstrate the requirement for broader and more comprehensive long-range planning and renewal formulation than has heretofore been undertaken.

- a. That two of the tower apartments in the project (those in Delivery Parcel 1 E) are sited within 80 feet and a proposed new public elementary school is placed in the shadow of and within 30 feet of an MTA Lechmere P.C.C. viaduct hidden on the developer's site plan by 3-story high trees clearly indicates that West End redevelopment planning has not squarely faced the problem of a major, obsolete physical element without whose removal both the redevelopment value of the Charles River Park site and the inherent objective of Central Boston renewal is seriously negated.
- b. The existence on the plan of a small access road into the project directly from Leverett Circle with accompanying exit to Lowell Street both avoids consideration of future clarification of the inadequate traffic complex and encourages the passage of congestion-avoiding through-traffic from the Circle toward the Central Business District.
- c. Although the development is founded on strong elements of pedestrian circulation, no pedestrian facilities are provided to connect Charles River Park with adjacent city sections, a provision important in light of the existing Boston Garden entertainment center and the business area near the North Station, the future importance of both Causeway Street and the Merrimac-New Congress Street line of the Government Center, and the redevelopment of the Staniford-Chardon area.
- d. From both a broad architectural-civic design and a functional-engineering standpoint, the future significance of Causeway and Merrimac-New Congress Streets will make their intersection adjacent to Charles River Park an important visual termination and circulation crossroads, yet the proposed site plan for development indicates that this valuable corner: (1) will be utilized by a low one-story parking garage, and (2) will be expected to provide access and egress from the parking structure directly into the future heavy flow of traffic.

Although many of these circumstances could be corrected if alterations

were to be made in the final development to relocate or eliminate the parking garage, to alter the location of either the two apartment towers of Delivery Parcel 1 F northeastward or the two apartment towers of Delivery Parcel 1 E southward toward the Staniford Street-New Contress Street corner, to re-evaluate the function and extent of commercial facilities, and to establish definite pedestrian interrelationships with adjacent city sections, the essential issue is not one of retroactive design manipulation but of necessary comprehensiveness of renewal planning.

The Relationship of Charles River Park to the North Station Area Site

As redevelopment becomes completed, the new Charles River Park will juxtapose luxury high-rise apartment towers and a well-landscaped superblock against the existing configuration represented by the North Station Area, with the almost inevitable reaction likely to be economic and political pressure upon the city and its agencies for the renewal of this adjacent section of the Downtown. So strong is this force that even before the old West End had been cleared, redevelopment pressure had been successfully placed upon the project's other adjacent area, the Staniford-Chardon blocks.

The element of the existing North Station Area most likely to precipitate pressure from Charles River Park and result in action by public authorities is the severe physical, visual, and psychological liability which the redevelopment project site design has so painstakingly attempted to hide - the elevated structure of the Lechmere P.C.C. line forming the entire northeastern boundary of the project. In a not-dissimilar sequence, Charles River Park may place redevelopment pressure upon the Billerica Street blocks of deteriorated housing and, in conjunction

with the Government Center project, could conceivably force action in the North Station Area as a whole.

The redevelopment of the West End and the creation of Charles River Park in addition to possibly inducing redevelopment of the North Station Area, will produce several major impacts on this general section of Central Boston:

- a. The design of the project as a single superblock sets the stage for major circulation changes and clarifications at the northern end of the peninsula, including creation of a vehicular element and a major land-use boundary along the line of new Staniford Street, extension of the Government Center's New Congress Street along the line of a reconstructed Lowell Street to the Charles River Dam and Storow Drive, and even a redesign and reconstruction of Leverett Circle.
- b. The creation of a new high-rise residential concentration will exert a strong influence upon the use and reuse of nearby Downtown property, the existence of Charles River Park already having been a determinate of reuse considerations in the Staniford-Chardon area, and an equally important effect entirely likely to be induced upon official attitudes toward land in the North Station Area.
- c. In terms of site value, the mere existence of Charles River Park will create a significant development potential for the large adjacent land unit now occupied by the North Station Area.
- d. The creation of Charles River Park, in addition to predipating renewal of its neighboring areas, may encourage a substantially freer money market for investment in their renewal and reconstruction.

2. Government Center

Background

In response to the growing need for additional government office space and as an opportunity to replace the run-down Scollay Square section of Central Boston, the creation of an intown Government Center was suggested and officially proposed in the middle 1950's, and in 1958 a group of planning consultants and associated architects was engaged

to prepare a plan which would serve "as an effective guide to public and private development within the area concerned."⁴ The ensuing general plan for creation of the Government Center submitted to the Boston City Planning Board in September, 1959, considered an area of some 56 acres extending from the Central Business District to the residential fringe of the West End and from the State House to the North Station Area and included parts of Beacon Hill, Dock Square and the Faneuil Hall area, the Market District, Haymarket Square, and Bowdoin Scollay Square.

Major Proposals of the Government Center Plan

A summary of the major proposals of the 1959 plan are reviewed below:

a. The Vehicular Circulation System

The plan recommended a circulation pattern consisting of three major channels to sweep in great arcs from northwest to southwest: the newly created Central Artery with its associated ground-level surface streets; a new four-lane extension of Congress and Devonshire Streets to meet Portland and Merrimac Streets; and a clarification of the present Tremont-Cambridge Street connection.⁵ "These major circumferentials are connected to one another by radial streets, of which the most important is a new four-lane road connecting Cambridge Street with the Central Artery and Sumner Tunnel and crossing the new Congress Street extension on a viaduct. Other radials include the existing Hanover, Court, State and School Streets."⁶ Of these circulation elements, "Congress-Devonshire,

⁴Government Center - Boston, prepared for the Boston City Planning Board by Adams, Howard & Greeley; Anderson, Beckwith & Haible; Sasaki, Walker & Associates; Kevin Lynch; John R. Myer; and Paul A. Speiregan, Boston, Mass., 1959, p. 2.

⁵Ibid., p. 13.

⁶Ibid., p. 4.

as well as Portland-Merrimac will be one-way pairs feeding into the new Congress Street"⁷ designed to carry "traffic to and from the office district and North Station."⁸

b. Parking Facilities

The proposed plan provided for a total of 3080 automobile parking spaces, of which 2780 would be off-street in parking structures or open lots.⁹

c. Public Transit

The plan suggested no action with respect to the elevated transit lines in the North Station Area which emerge from subways at Haymarket Square, but did incorporate the recommendations of the 1947 Coolidge Commission to provide for eventual construction of the subway tunnel extension under Beacon Hill from the end of Hanover Street to Park Station.

d. Pedestrian Circulation

Considerable emphasis was placed on pedestrian circulation, with provision of (a) a new major pedestrian axis from Pemberton Square to Faneuil Hall, (b) access along Washington Street from the CBD to the Government Center, (c) a sheltered arcade along Congress and Portland Streets from the CBD to the North Station, and (d) "a linked system of small open spaces and footways leading downhill from the west of Beacon Hill toward the harbor, and connecting laterally with the surrounding

⁷ Ibid., p. 13.

⁸ Ibid., p. 13.

⁹ Ibid., p. 4.

open spaces, walkways, and historic points."¹⁰

e. Land Use

(a) "The general development plan provides for a concentration of governmental uses at the foot of Beacon Hill"¹¹ including a new city hall, a new federal office building, and a new building housing the Massachusetts Division of Employment Security.

(b) The Union-Blackstone-Dock Square section was designated as a conservation area and was recommended for establishment as an historic district.

(c) the area northwest of the governmental concentration to the boundary of the project at Chardon Street was expected "to provide locations for new private development, primarily for wholesaling, light manufacturing business and consumer services, and parking."¹²

(d) the so-called Staniford-Chardon area was recommended for study as a possible redevelopment project under Federal Title I assistance.

f. Effectuation

One of the important recommendations of the plan was concerned with the serious problem of the relocation of both residents and business firms in the proposed project area. "Careful study of the needs of these displaced activities is recommended as well as a positive plan for possible cooperative action."¹³

¹⁰ Ibid., p. 5.

¹¹ Ibid., p. 4.

¹² Ibid., p. 5.

¹³ Ibid., p. 5.

General Overall Effect of the Proposed Project

The undertaking of a Government Center redevelopment project will be an influential determinant of great magnitude for the northern half of the Shawmut Peninsula. It will not only create a larger area of new construction, a strong focus of civic function, and a clarified circulation system, but will place an enlarged consumer market on the north side of the Central Business District and is likely to result in a process of substantial reorientation of surrounding private development areas.

Effect of Specific Design Details

a. Vehicular Circulation

The circulation system proposed by the Government Center Plan establishes clearly-defined lines of vehicular movement. There are, however, several specific points in the circulation plan which would have a most serious effect upon the present North Station Area and upon the future of the site, including the use of Portland Street as major thru-street, the relocation of North Washington Street across the end of Canal Street, and the creation of the Sudbury Street Viaduct.

The use of Portland Street and the consequent congestion at Causeway Street around the column footings of the MTA elevated, however, could be avoided by extension of the new Congress Street boulevard along a widened Merrimac Street-Lowell Street directly to and from Leverett Circle.¹⁴ Second, creation of another of the "radials" envisioned by the Government Center Plan on the line of the West End Redevelopment Project's new Staniford Street and the North Station Area's Causeway Street could

¹⁴This extension would be made possible by redevelopment of the Staniford-Chardon area.

eliminate the need for North Washington Street. Third, in light of the absence of comprehensive traffic studies in and around this whole northern section of Central Boston and the Government Center report's own admission that one of the objectives was "to provide traffic capacities throughout the project area which will be adequate to handle the flows that can be delivered by the EXISTING incoming demands and absorbed by the central streets,"¹⁵ there is considerable doubt of a defensible basis for the recommendation of the Sudbury Street Viaduct. Not only is there no small chance that the future traffic demands will so clog this facility that it will become altogether inefficient, but in fact, there is uncertainty that any facility can be workable. And even if such a new elevated highway could be "proven" feasible, there is a serious question as to whether the construction of another elevated expressway in the heart of a city should be undertaken. All this is in addition to the entirely probable effect of the viaduct in inhibiting pedestrian movement into the North Station Area from the Government Center and in isolating the Area from the rest of Downtown Boston. Because it seems probable, therefore, that whatever facility constructed will be immediately and constantly overtaxed, then in the interest of preservation of the city center there must be a consideration of alternative Downtown traffic systems.

b. Land Use

Perhaps the most important element of the Government Center Plan with respect to the North Station Area is the implication of proposed

¹⁵Op. cit., p. 10. Capitalization of the word "existing" added.

new private development upon the future of the Area site. Since the report recognized the existence of "healthy and deeply-rooted activities"¹⁶ and suggested provision of new locations for business and consumer services and for additional wholesaling space, a considerable confidence is indicated in these functions (of which the North Station Area supports a large number) as necessary parts of the future city structure and considerable growth in these activities appears to be anticipated. The question arises, however, particularly in light of the subsequent State Office Campus proposal and the extension of the Government Center project to Staniford Street (to be considered momentarily), concerning the allocation of such activities as both ancillary to and separate from the function of the Government Center proper.¹⁷

c. Pedestrian Circulation

The opportunity is created within the framework of interesting pedestrian ways and open spaces envisioned by the Government Center Plan to consider possible extension and integration of this system into and as part of the future planning of the North Station Area. Such pedestrian connections would seem to be most important from the open spaces of the Union Street historic area and from both the Government Center proper and the redeveloped Staniford-Chardon blocks.

Elements of the North Station Area which Affect the Government Center Design

The Government Center design is based to no small extent upon certain elements of the existing North Station Area. It assumes, for

¹⁶ Ibid., p. 10.

¹⁷ It is one of the intentions of a later chapter to argue the case for the feasibility of such new private development in the North Station Area site.

example, that railroad commutation will continue into Boston from the North and thus undertakes to suggest creation of a covered pedestrian arcade along New Congress Street and Portland Street from the CBD to North Station. In addition, the vehicular circulation plan appears to depend heavily upon continued access onto the proposed Sudbury Street line from northbound Central Artery traffic exiting at the Causeway Street ramp and proceeding into the Center along North Washington Street. A third element was assumed ease of vehicular movement on Portland Street for heavy outbound traffic, a decision which does not appear to have taken full account of the Causeway Street-Portland Street junction.

Legal and Financial Basis for the Government Center Project

The circumstances surrounding the legal and financial basis for the Government Center project have direct relevance for any planned action within the North Station Area.

Throughout the design stages of the plan, it was understood that "due to its non-residential character, [the Government Center] does not qualify for Federal redevelopment assistance . . . "18 and therefore would be undertaken through powers of condemnation jointly by the City of Boston and the Commonwealth of Massachusetts "under the provisions of Chapter 121 of General Laws as amended by Chapter 613 of the Acts of 1957."¹⁹ Since September 23, 1959, when the Federal Urban Renewal Law was amended, it is intended that the Government Center project will be undertaken through the new 20% clause of Title 1.

¹⁸Government Center-Boston, Adams, Howard & Greeley and associated consultants for the Boston City Planning Board, Boston, Mass., 1959, p. 6.

¹⁹Ibid., p. 6.

As of October 1960, the status of the legal and financial basis for the redevelopment plans in the general area of Scollay Square was as follows:

State Office Building (Bowdoin to Somerset Streets): To be taken through State powers of condemnation and financed by State funds.

Government Center proper (Pemberton Square to Dock Square): To be taken under Title 1 Urban Renewal with financing of 2/3 Federal and 1/3 City.

Since the completion of the consultants' plan for the Government Center, however, and perhaps as a decision-tempering eligibility element of the pre-September 1959 Federal Urban Renewal Law, the following project change was made in the Spring of 1960:

Recent Changes in the Government Center Project: Inclusion of the Staniford-Chardon Area

During creation of the Government Center Plan, there developed a controversy between the U.S. General Services Administration and the City of Boston over the location of the proposed new Federal Office Building, with the GSA extremely reluctant to accept a site on new Sudbury Street for fear that it would be surrounded by heavy volumes of traffic and would be faced on the north by the deteriorated Staniford-Chardon area.

In the Spring of 1960, the Commonwealth of Massachusetts announced a plan which resolved one part of the conflict by proposing to create a new state campus development in the Staniford-Chardon Area selling for the construction of a cluster of at least five new buildings, in addition to the already authorized State Office Building on Cambridge Street.

From the point of view of the North Station Area, inclusion of the Staniford-Chardon blocks appears to be a mixed blessing. On one hand, it

will allow creation of the New Congress-Merrimac-Lowell Street traffic facility. On the other, it exposes the North Station Area as the only slice of Central Boston between Beacon Hill, the CBD, the Central Artery, and the Charles River untouched by proposed or impending improvement. Consequently, though the immediate danger of one-shot, total clearance is increased, if renewal of the North Station Area is not considered in the near future, an enormous complex of physical development problems will remain which may detrimentally affect the welfare of Central Boston.

Current Status of the Government Center Project

With agreement of the General Services Administration on the Sudbury Street site for the Federal Office Building and with the State committed to a new campus development in the Staniford-Chardon area, the Boston Redevelopment Authority has taken steps to expand the original boundaries of the Government Center project by some 10 mixed residential-commercial acres to include everything between the Central Business District and the future Charles River Park and between Beacon Hill and the North Station Area. Expansion of the Government Center project to include the Staniford-Chardon area, however, will necessitate extensive changes in both policy and plan, with the original vehicular and pedestrian circulation facilities having to be substantially re-evaluated.

In spite of the fact that some modification of the consultants' 1959 plan will be required and though no definite plan for the expanded area has yet been prepared, there are a number of elements of the Government Center design which appear to be "fixed" items: the basic circulation pattern, the new City Hall, the proposed Federal Office Building between Hanover and Sudbury Streets, the curved buildings along Cambridge and

Tremont Streets, and the proposed historic area between Hanover and State Streets. All the rest, including the proposed bus terminal and fire station, the Congress Street offices, the reuses in the Sudbory-Chardon blocks, the North Washington-New Congress Street area, and the vehicular connection between the Central Artery-Summer Tunnel and Cambridge Street, has been stated to be quite fluid.²⁰ The specific highway designs of the Government Center, particularly the different connections between the two East Boston Tunnels and the Downtown, are apparently still subject to considerable change, and since the U.S. General Services Administration has been opposed to the use of Hanover Street for large volumes of vehicular movement and the North Station Merchants Association through their consultants have objected strenuously to the creation of the Sudbury Street Viaduct, the formulation of both an efficient and feasible plan for this connection may yet be influenced.

Relocation Space Demands upon the North Station Area from Government Center Displacements

The initiation of the expanded Government Center project will not only result in the demolition of 66 acres of existing buildings between the Central Artery-Beacon Hill and the CBD-Charles River Park, but will necessitate the eviction of some 508 businesses. Based upon the indications and implications concerning relocation of both businesses²¹ and

²⁰From an interview with Mr. Donald Graham, Planning Administrator of the Boston City Planning Board, September, 1960.

²¹The conclusions reached by James Saalberg, op. cit., and the GBESC report based upon that thesis concerning the displacement effects of Central Artery construction may be summarized as follows: "It appears that a major portion of the surviving Artery establishments, approximately two-thirds, remained in the downtown area. Ninety per cent of those staying in the downtown remained clustered in a tight band running

families²² in the path of recent projects in Boston, the effects of such a displacement of businesses in the Government Center project area may quite probably follow similar patterns to those observed in construction of the Central Artery and demolition of the West End, with the areas immediately adjacent to the project being subject to considerable relocation pressure. Since the North Station Area and the Market District are the only two business sections of the city bordering the Government Center project, it seems more than probable that these two areas will feel the strongest effects. The North Station Area as the more similar section of the two, however,²³ appears likely to experience the major relocation pressure from firms displaced by the Government Center and Staniford-Chardon projects.

one-quarter of a mile along either side of the former Artery sites." This clearly indicates that displaced firms tend to relocate in areas that are familiar to them and as close to their former sites as possible. A Study of Business Dislocations Caused by the Boston Central Artery, James A. Saalberg, unpublished master's thesis, Department of City & Regional Planning, M.I.T., 1959, p. 95.

²² Such a conclusion of business relocations is reinforced by the findings of a study of relocation of families from the West End Redevelopment Project that, to the extent space was available, large numbers of families moved onto the North side of Beacon Hill, into the Staniford-Chardon area, and into the Billerica Street blocks of the North Station Area - again as close to their former homes as possible. Relocation - Goals, Implementation and Evaluation (West End, Boston, Mass.), Gordon N. Gottsche, unpublished mater's thesis, Department of City & Regional Planning, M.I.T., 1960.

²³ In the North Station Area, there are obvious functional linkages between existing Area firms and many of the businesses to be displaced by the Government Center. (Wholesaling, manufacturing, furniture and home furnishings.) The Market District, on the other hand, consists of a predominance of wholesale and retail food distributors and merchants with scatterings of retail consumer services (Union Street), storage (Fulton Street), offices (State Street), and light manufacturing. The Boston Produce Market and Environs: An Analysis of Form and Activity with a Proposed Synthesis, Harry E. Moul, unpublished mater's thesis, Department of City & Regional Planning, M.I.T., 1960.

The impact of Government Center displacements upon the North Station Area can be estimated by placing a scale on the absorptive capacity of the Area in terms of available floor space and the existing distribution of that floor space between first class and second class structures. Thus, since statistics of the GBESC-DES and the City Planning Board indicate that 508 firms with 4940 employees (in 1957) were occupying approximately 3.2 million square feet of floor space (1953) in the path of the Government Center project,²⁴ and since as of 1960 there were about 273,100 square feet of vacant and 608,300 square feet of underutilized floor space in a total of 62 separate structures in the North Station Area, there appears to be far more potential demand for relocation space than the North Station Area could possibly absorb. (See Table IV-3.)

In response to the inevitable space demands which will be placed upon the North Station Area by displaced business in the path of the Government Center project, a number of effects may be experienced. First and most obvious, the present vacancy rate of the Area may sharply drop (although because of the condition of the physical facilities available probably not disappear), and there may also result a more intense utilization of existing floor space. Second, because the aggregate size of relocating firms is more than 3.6 times greater than the floor space available, the competition for space will tend to encourage rental levels to be pushed up, possibly from the present average of below \$1 per square foot to well over \$1 per square foot. These two changes may not only reduce the pressure of demand but may force some of the more marginal existing operations to be displaced for the Area, thus resulting

²⁴
See Appendix

TABLE IV-3

GOVERNMENT CENTER BUSINESS RELOCATIONS - AVAILABLE & UNDERUTILIZED
FLOOR SPACE, NORTH STATION AREA

Type of Firm SIC Category	Government Center Project Area ^a		North Station Area ^b	
	Number of Firms to be Relocated	Total Occupied Floor Space of Firms (sq.ft.)	Available Vacant Floor Space	Available Under- utilized Floor Space
2,3 Manufacturing	129	716,000		
4 Utilities, Trans- portation, Communication	3	185,000		
5W Wholesale	85	715,000		
5R Retail	139	739,000		
7,8 Services	101	676,000		
1,6 Offices	51	158,000		
			273,000sq.ft	608,300sq.ft.
Total	508	3,189,000 sq. ft.	881,400 sq. ft.	

^aNumber of firms as of 1957 according to statistics compiled by the GBESC from DES data; amount of floor space according to 1953 floor space inventory of the Boston City Planning Board.

^bAs of 1960 field survey of the Area.

in a process-selection of more affluent business activities. Third, the combination of space pressure, rising rentals, and precipitation of more financially capable and locational appropriate firms conceivably might create demand for new floor space accommodations and thus act to stimulate

renewal consideration of the Area for new private investment and construction.

An important conclusion is reached from this comparative investigation:

If an adjacent area were to be deliberately called upon to provide the ancillary services which a redevelopment site needs, then the planned placement of a project's service demands could be an important tool to either encourage private reinvestment for adjacent area rehabilitation (if such were feasible) or to create a definitive and measurable reuse for that area's renewal.

Since construction of the Government Center (not inclusive of the State Office Campus) will substitute an estimated future working population of 25,000²⁵ for a 1957 employment of 4940²⁶ and have a substantial effect upon the business potential in the northern sector of the central city, if the decision is not made to undertake extensive private development within the public project, then the demand for nearby services created could act as one of the major factors in the successful renewal of at least part of the North Station Area site as a private business center.

The Need for Integration of Areas within Central Boston

Integration of the Government Center Project, Staniford-Chardon redevelopment, and the North Station Area site, or between any central city component and its surroundings, is essential. It is required not only to facilitate movement within the city center but to insure that the individual component areas are allowed to strengthen the economic life of the city center as a whole. When completed, the Government Center will be significantly interdependent with the existing (and future) North

²⁵Government Center - Boston, p. 14.

²⁶According to GBESC tabulated-DES statistics.

Station Area. Both will be business areas - one essentially public business, the other private. The North Station Area site will not be able to prosper without intercommunication with the Government Center. The Government Center, on the other hand, can not afford to turn its back on and be cut off from the ancillary services to be offered and support to be given by the North Station Area. And if the new development is to fully benefit from the concepts envisioned and if the North Station Area is to remain active until such time as its renewal becomes possible, then both the designs of and policy for implementation of the expanded Government Center must recognize and plan for the close integration of future physical, economic, and visual elements.

Alternative Choices of Public Policy - The Need for Coordination of Renewal

Assuming that no action will have been proposed with respect to the North Station Area, many of the effects indicated above seem more than possible. If, however, misinterpreted rumors of North Station Area redevelopment begin to circulate, then one might expect many of the space-seeking displacees from the Government Center, especially the more locationally appropriate and stable of them, to avoid the North Station Area and relocate elsewhere. Thus, the city government may not be able to afford the Government Center Project without also taking some form of direct public action in the North Station Area, for unless steps are taken toward the Area's renewal, there would seem to be a danger both that the existing environment might seriously depress the economic value and development attractiveness of newly created public and private sites in the Government Center, the State Office Campus, and Charles River Park and that the valuable economic compositional stability of the Area itself might

unnecessarily dissipate. There would appear to be, therefore, several possible alternative courses of action for the public agencies concerned:

- a. to encompass the North Station Area from the outset within the Government Center Project Area, and thereby bring about the renewal of that whole section of the City of Boston north of the CBD and between Beacon Hill, the Central Artery, and the Charles River,
- b. to hold off announcement of action in the North Station Area until after the relocation from the Government Center project is complete, the pain eased, and the Government Center is well underway - a choice calculated to both lose votes and discourage future investors in Boston, or
- c. to initiate from the beginning a coordinated comprehensive renewal program and proposed new development distribution for both the Government Center project site and the North Station Area which will establish a fixed priority schedule for progressive replacement, provide adequate new space for the adsorption of firms to be displaced from old, to-be-redeveloped structures, and elicit the active support of various business groups and of the firms themselves.

3. Redevelopment of the Boston Harborfront

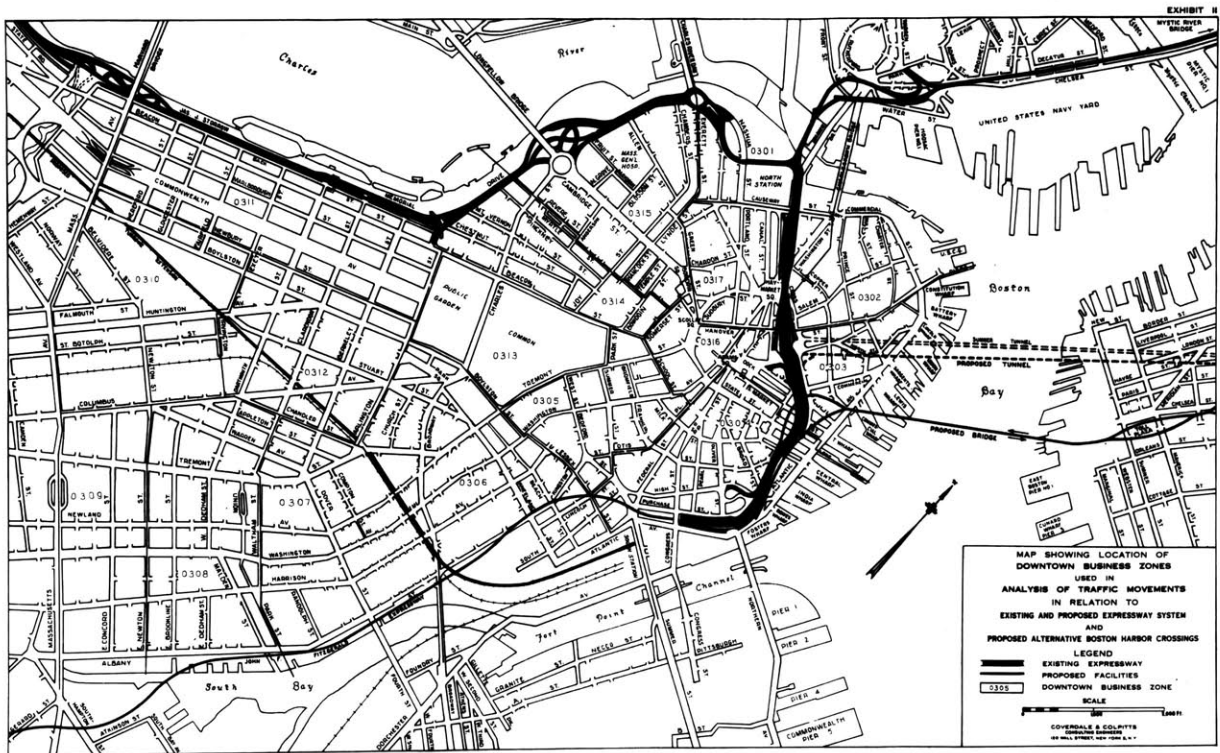
Proposals and Designs

Redevelopment proposals for that section of Central Boston along the Atlantic Avenue harborfront have been both officially and unofficially considered for several years: the Boston City Planning Board prepared a general design sketch for that section of the harborfront from Hanover Street to Fort Point Channel in 1956; the 1959 Government Center report of Adams, Howard & Greeley mentioned the feasibility of this harborfront redevelopment as a possible extension of the to-be-created pedestrian world of descending terraces from Beacon Hill; and the most intensive investigation and most complete design proposals to date were suggested in an M.I.T. city planning thesis in 1960.²⁷ The design concept generally

²⁷The Boston Produce Market and Environs: An Analysis of Form and Activity with a Proposed Synthesis, Harry E. Moul, unpublished master's thesis, Department of City & Regional Planning, M.I.T., 1960.

envisioned for this redeveloped harborfront seems to be summarized in the recently-released CBD report of the Boston City Planning Board and includes a new embankment boulevard along the line of the existing Atlantic Avenue with new office buildings, residential structures, entertainment facilities, a marina, a motel-hotel, and a park.²⁸

Although there appears to be no immediacy of this project's undertaking, it nevertheless necessitates the design considerations for all of the central city's waterfront and stimulates thought on the possible form of future Boston.²⁹



²⁸Such a general development proposal is included as part of Illustration 29, showing Boston's impending developments (p. 205, supra).

²⁹A recent development which increases further the possibility and acceleration of such a program is the announcement by the American Sugar Refining Company of initial operation of their new Domino refinery on the Mystic River in Charlestown and their intention to terminate operations

Impact upon Harborfront Redevelopment and Future City Circulation from the Massachusetts Turnpike Extension

On factor of vital concern to the future of the harborfront, to its proposed embankment boulevard, to the North Station Area, and to all of the peninsula's waterfront involves the feasibility and eventuality of extension of the Massachusetts Turnpike into Downtown Boston. (See Illustration 31, page 231.)

Since the wording of the present legal authorization allowing the Massachusetts Turnpike Authority to build the much-debated³⁰ extension states that the toll highway shall be constructed to any point or points in the City, and since the 1957 Coverdale & Colpitts traffic study³¹ not only rationalized justification for the extension but recommended the additional two-lane tube parallel to the Sumner Tunnel now being constructed as well as a high-level bridge from Downtown Boston to East Boston, the point or points so chosen by the Turnpike Authority supposedly centering on the South Station terminal yards may have a direct impact upon the peripheral circulation system of the Shawmut Peninsula. Not only has the question of the obviously desired direct connection between such an extended Massachusetts Turnpike and the same Authority's Sumner toll tunnels away from the competitive facility of the Mystic River Bridge never been fully and satisfactorily answered, but the most current proposal

at the present plant on Fort Point Channel. This would appear to bring closer the day when all of Roxbury Channel and a good part of Fort Point Channel may be filled, redeveloped, and interrelated with the future harborfront area.

³⁰ And Boston City Planning Board officially disapproved.

³¹ Report on Traffic Studies for the Boston Metropolitan Area, Coverdale & Colpitts, for the Massachusetts Department of Public Works, Boston, Mass., 1957.

indicates both that a full connection between the Turnpike and the Central Artery will be constructed and that the possibility of a direct connection between the Turnpike Extension and the Boston City Planning Board's proposed redevelopment harborfront embankment boulevard has been expressly considered and might very well be made a secondary turnpike interchange.³² Such a circumstance would thus result in the function of the future harborfront semi-circumferential, envisioned as a Downtown and strictly Boston City distributor, being sacrificed to the creation of another intown regional expressway and, in terms of future planning and renewal of the central city (and the North Station Area), create a flow of regional traffic that would seriously complicate necessary clarification and consolidation of the present circulation pattern at the northern end of the peninsula.

B. Rapid Transit Reconstruction and Extensions

Historical Development of Rapid Transit in Boston

Between the years 1890 and 1914 the need of rapid transit in the City of Boston, like other cities, was met by extensions to approximately five miles from the center. Boston met its original transit needs by the construction of the first subway in America, the original Tremont Street Subway from North Station to the Public Gardens, and Pleasant Street, in 1898. The elevated structures were erected in 1900 as extensions of the Washington Street Subway to Sullivan Square. . . . Then

³² Unlicensed investigations of Boston City Planning Board material has revealed, however, not only that incorporation of the Massachusetts Turnpike Extension with a future waterfront boulevard is possible, but also that construction of the Turnpike Extension beyond South Station and erection of the Coverdale & Colpitts East Boston bridge is seriously being considered, a project which would create yet another elevated expressway through and over the city and result in the surrounding of the residential North End by superhighways, and the almost total destruction of Boston Harborfront development potential.

followed the Washington Street Tunnel from North Station to Castle Street in 1908.³³

Since 1945, there have been a number of additional changes proposed to the metropolitan rapid transit system which directly affect the North Station Area. None of the changes, however, have yet been undertaken.

Coolidge Commission Report of 1945

In the Report of the Legislative Commission on Rapid Transit, 1945,³⁴ extensions of the Boston rapid transit systems were proposed near the North Station Area outward (a) from Lechmere Terminal to Woburn and (b) from Sullivan Square to Reading. The report recommended that "the proposed lines take into consideration such matters as . . . the fullest use of existing right-of-ways and rail lines; suitable connections with the present limited rapid transit system as the nucleus of the proposed system; elimination of duplicate and conflicting services; costs of construction . . . and modern, comfortable and attractive equipment."³⁵ It pointed out that commutation or short haul service by the railroads is costly and that the construction of a rapid transit system would relieve the railroads of an unprofitable operation,³⁵ yet recognized the need for continuation of freight service and for continuation of long distance railroad passenger service.

In terms of transportation planning for the future of the Boston

³³Report of the Legislative Commission on Rapid Transit, 1945, Metropolitan Transit Recess Commission, Arthur W. Coolidge, Chairman, Boston, Mass., 1945, p. 163.

³⁴Idem.

³⁵Ibid., p. 12.

Metropolitan Area and with great significance for the future of the North Station Area, this 1945 report forcefully stated that "Rapid transit service can and should be operated within the entire metropolitan as a unified system,"³⁶ and recommended that "Rapid transit trains . . . not terminate at a station . . . but continue through and beyond the center."³⁷ (See Illustration 32.)

Implementation of the specific routes envisioned particular changes affecting the Boston & Maine Railroad and the possible utilization of a certain definite extension jumping-off point. Not only would all commuter service of the B & M along the New Hampshire Division and Reading Highland Division be discontinued, but a number of the existing rail lines along these branches would be taken for rapid transit purposes and thus be unavailable for freight operations. In addition, the Commission recognized that "the elevated railway structures [of the existing rapid transit lines] are . . . from the very nature of their existence a deterrent to the development of the communities [and areas] in which they have stood for practically half a century . . . and should be removed as soon as it is at all feasible to do so,"³⁸ and considered the "possible extension of rapid transit facilities from Haymarket Square passing under Causeway Street . . . across the Charles River on the easterly existing drawbridge of the Boston & Maine Railroad and by surface and elevated structure through the freight yards of the Boston & Maine to Sullivan Square."^{39, 40}

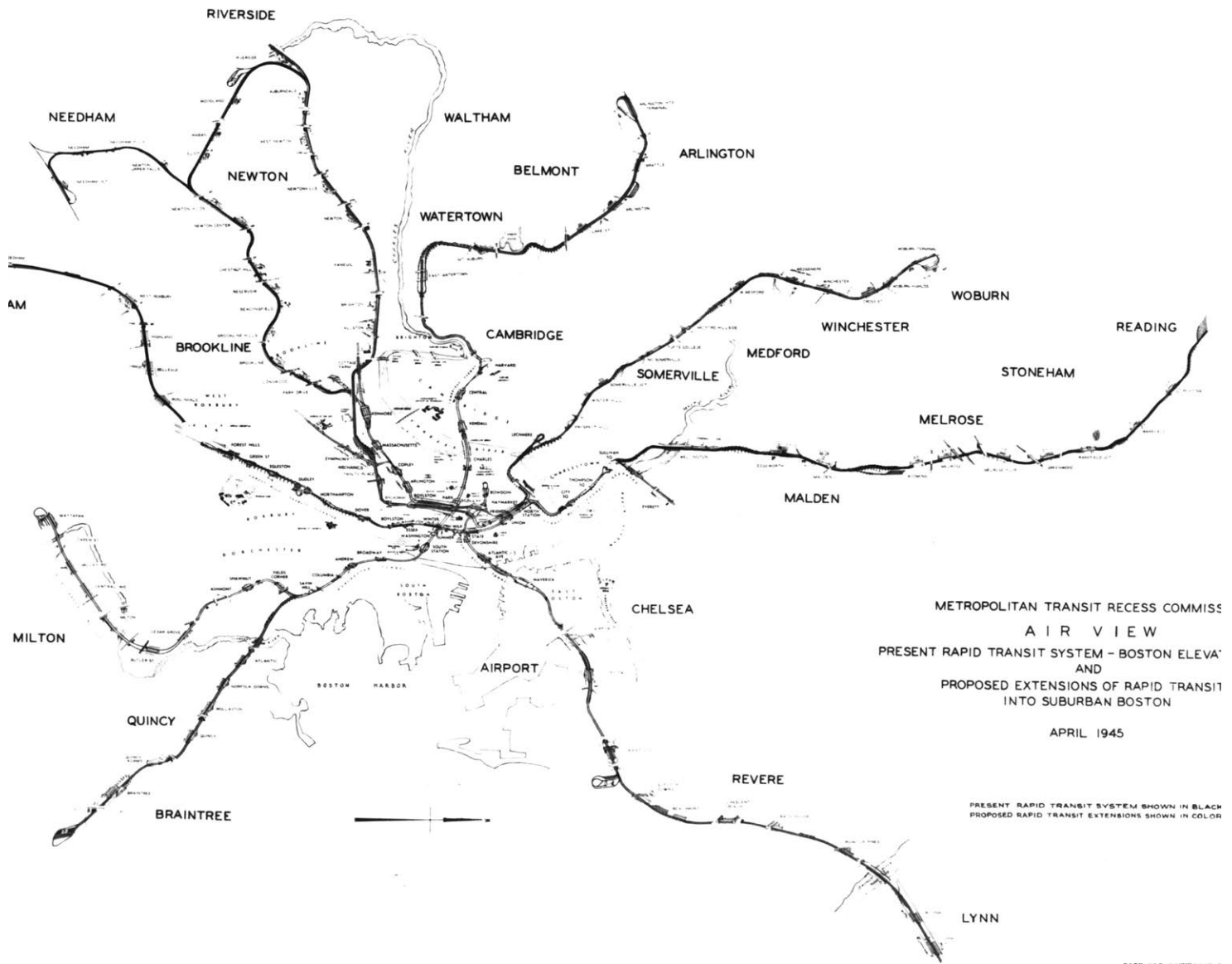
³⁶Ibid., p. 93.

³⁷Ibid., p. 93.

³⁸Ibid., pp. 97-98.

³⁹Ibid., p. 98.

⁴⁰This latter proposal of the 1945 Coolidge Commission, as was



METROPOLITAN TRANSIT RECESS COMMISS
 AIR VIEW
 PRESENT RAPID TRANSIT SYSTEM - BOSTON ELEVA'
 AND
 PROPOSED EXTENSIONS OF RAPID TRANSIT
 INTO SUBURBAN BOSTON

APRIL 1945

PRESENT RAPID TRANSIT SYSTEM SHOWN IN BLACK
 PROPOSED RAPID TRANSIT EXTENSIONS SHOWN IN COLOR

After an interim period of fifteen inactive, indecisive years, the need for immediate implementation of such rapid transit extensions is critical. And though Boston cannot wait until such extensions are complete before renewal in its Downtown is undertaken, the opportunity is created now in the North Station Area for renewal and rapid transit extension to be a joint process, with the timing of extensions, the construction of more adequate facilities, the removal of development barriers, and the provision of new non-transfer long-distance equipment as one continuous series of phases in the creation of a truly metropolitan rapid transit system and the staging of renewal and redevelopment in the central city.

Coolidge Commission Report of 1947

The second report of the so-called Coolidge Commission⁴¹ was published in 1947 as a reaffirmation of the need for metropolitan rapid transit planning and presented a number of alternative proposals, additional recommendations, and public statements important to the North Station Area.

The most strongly worded and the least politically attractive recommendation concerned the controversial Central Artery: ". . . as an exclusive means of moving large numbers of people to and from congested business areas for daily commuter travel or as a substitute for rapid transit, the express highways have almost fatal limitations. Super

indicated by the extent of bridge openings in the physical composition chapter, is not feasible now in 1960 and undoubtedly was equally invalid as a sound recommendation in 1945.

⁴¹Report of the Metropolitan Transit Recess Commission, Commonwealth of Massachusetts, Boston, Mass., 1947.

highways into the center of the city succeed only in depositing increasing numbers of vehicles at the center of the city with consequent congestion."⁴² Though this statement was made well in advance of the Central Artery slash through Downtown Boston and before contemplation of either a Massachusetts Turnpike Extension or a Sudbury Street Viaduct, the impact of its meaning, its wisdom, and its foresight has not yet been recognized.

Extension of rapid transit lines to Woburn and Reading was again recommended, but in the search for alternative connections to the existing rapid transit system, the second report proposed a highly criticized route between Haymarket Square and Sullivan Square that would have created "from the present elevated structure at North Station, a trestle . . . between the Boston Garden and the Industrial Building, continuing over the Charles River and Prison Point Viaduct, thence . . . to the present terminal at Sullivan Square."⁴³ Substitution of one elevated structure for another, of course, would facilitate none of the primary objectives of modification or replacement of the North Station Area's existing physical barriers and development deterrents.

Improvements to the Rapid Transit System Recommended by the MTA, 1948⁴⁴

The Metropolitan Transit Authority, soon after its creation as a public agency, reported to the Massachusetts Legislature in certain construction improvements to the rapid transit system. One proposal,

⁴² Ibid., p. 9.

⁴³ Ibid., p. 47.

⁴⁴ Report of the Trustees of the Metropolitan Transit Authority Concerning Certain Extensions and Improvements to the Existing Rapid Transit System, Metropolitan Transit Authority, Boston, Mass., 1948.

extension of the Cleveland Circle-Lechmere subway from Scollay Square to Park Street under Beacon Hill, would improve the rapid transit connections between the Central Business District and the 1959-proposed Government Center (and the North Station Area) by establishing full four-track operation. A second project suggested removal of the "undesirable" elevated structures between Haymarket Square and Sullivan Square in order "to assist in the rehabilitation of much of the property through which they traverse"⁴⁵ and construction of subways as functional replacements. In specific terms, this proposal included new subway construction from the end of the Union Station platform northward (1) under Haverhill Street, (2) between the North Station and the Industrial Building, (3) under the Charles River parallel to the Warren Avenue Bridge, and (4) under Main Street, Charlestown to Sullivan Square. A suggested alternative essentially repeated the proposal of the 1945 Coolidge Commission report and included: new subway construction from Union Street along the line indicated above with emergence into the terminal yards behind North Station and utilization of B & M tracks across the easterly drawbridge onto the line of the former Eastern Railroad parallel to Rutherford Avenue as far as Sullivan Square. The report pointed out, however, that (a) the surface route over B & M trackage would greatly reduce the cost for subway construction, (b) the feasibility of the surface route would depend entirely on the B & M abandoning a portion of their yard and track facilities, and (c) neither route should be constructed until such time as rapid transit extensions were made to Woburn or Reading.

⁴⁵ Ibid., p. 22.

Jackson & Moreland Engineering Study, 1951⁴⁶

The engineering firm of Jackson & Moreland prepared, at the request of the Metropolitan Transit Authority, a thorough investigation of the Haymarket Square-Sullivan Square subway alternative and presented to the Massachusetts Legislature in 1951 a report on the construction of a Charles River Tunnel to replace the elevated rapid transit structures on the Forest Hills-Everett line through Charlestown and the North Station Area. This proposed project envisioned "an addition to the existing Washington Street tunnel in the City of Boston consisting of a tunnel extending underground from Haymarket Square northward past the North Station railroad terminal building . . . "⁴⁷ once again between the terminal and the Industrial Building, under the Charles River and thence into Charlestown in one of three directions: on the so-called Legislative Route, on the Rutherford Avenue Route, or on the Lawrence Street Route.

The Legislative Route chose a line under the Charles River between the piers of the then proposed Central Artery high-level bridge⁴⁸ to City Square, "thence under Main Street in a northwesterly direction to a point near Baldwin Street emerging there by way of an incline to the surface, and continuing by a ramp to its connection with the elevated structure at Sullivan Square."⁴⁹

⁴⁶Report - Proposed Washington Street Subway Extension from Haymarket Square to Sullivan Square, Metropolitan Transit Authority, Jackson & Moreland, Engrs., Jan. 29, 1951.

⁴⁷Ibid., p. 6.

⁴⁸In anticipation of this possibility subsequent to the construction of the Central Artery, the DPW designed the piers of this bridge to withstand the decrease in horizontal stability which such a tunnel would necessitate. Ibid., p. 52.

⁴⁹Ibid., p. 6.

The two other routes in Charlestown were identical to the Legislative Route from Haymarket Square to the beginning of the Charles River Tunnel (approximately 600 feet north of Causeway Street). "The Lawrence Street Route at the tunnel follows a more northerly course passing under Rutherford Avenue opposite Harvard Square, along Lawrence Street, and rejoining the Legislative Route at Baldwin Street."⁵⁰ "The Rutherford Avenue Route follows the Lawrence Street Route to a point opposite Harvard Square, then swings left on Rutherford Avenue remaining underground until it enters Sullivan Square Station."⁵¹

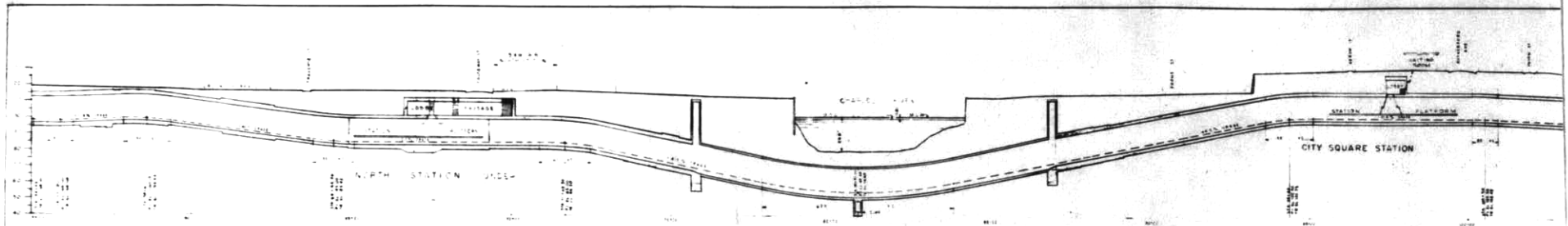
All three of these routes would use the same new subway station at Causeway Street, "North Station Under," with pedestrian connections created to North Station and to Canal Street, "but provide separate single stations in Charlestown - that on the Legislative Route being located at Thompson Square and that of the Lawrence Street at Rutherford Avenue opposite Harvard Square."⁵² No mention was made of either the existence or the future of the Lechmere line. (See Illustration 33.)

Of the three locational lines investigated, Jackson & Moreland recommended the Lawrence Street Route. The advantages listed for this location were as follows: (a) less initial cost, (b) shorter alignment, (c) concomitant faster service, lower operating costs, less maintenance, (d) avoidance of hazards inherent in underpinning the present elevated railway structure columns on Main Street, and (e) minimization of disruption in Charlestown. In terms of 1951 costs, Jackson & Moreland estimated the Legislative Route at \$28.1 million and the Lawrence Street

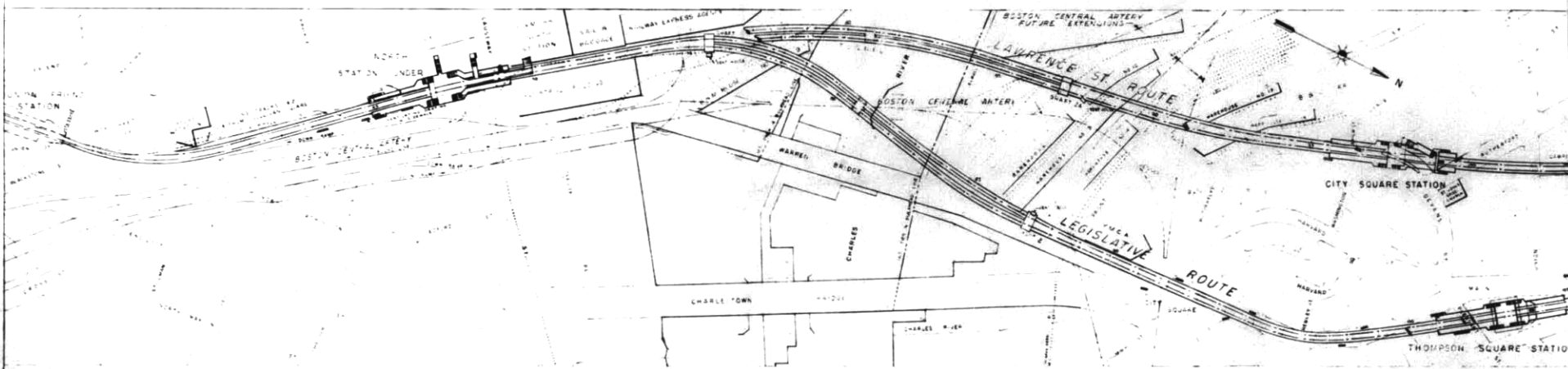
⁵⁰ Ibid., p. 9.

⁵¹ Ibid., p. 10.

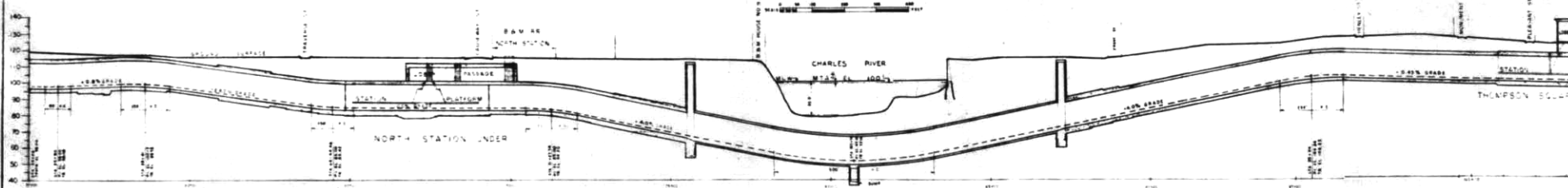
⁵² Ibid., pp. 9-10.



PROFILE - LAWRENCE ST. ROUTE



PLAN



PROFILE - LEGISLATIVE ROUTE

SOURCE : JACKSON AND MORELAND , ENGRS . BOSTON , MASS.

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Route at \$25.6 million, not including allowances for operating equipment, for relocation of utilities, or for removal of the existing elevated structures. The estimated construction time was three years for the Legislative Route and two and one-half years for the Lawrence Street Route.

Implications of the MTA Charles River Tunnel for the Area⁵³

The undertaking of this 1951 proposed project vitally affects the future of the North Station Area.

- a. The tunnel would replace at least one or the two elevated structures which presently blight the Area and might, with certain design changes, be utilized to replace the Lechmere line also.
- b. The concomitant removal of the elevated structures would rid the Area of probably its most significant development deterrent and would set the stage for beginning renewal in this section of Central Boston.
- c. The specific choice of alternative routes, although not of major importance in terms of service to the North Station Area from Charlestown, does nevertheless, directly determine the extent of design flexibility with respect to Charles River improvements, specifically, the locational possibilities of a proposed new Charles River Dam.
- d. The very fact of such an extensive and expensive modification to this northern section of the MTA rapid transit system would lend substance to recommendation of extension of rapid transit service to the northern suburbs, specifically of implementation of service to both Reading and Woburn from Sullivan Square.

Report on the Availability of Funds for Removal of the Elevated MTA Structures, 1958⁵⁴

The Massachusetts Legislature authorized in 1958 a joint investigation

⁵³This subject will be discussed in a later section. It should be noted here, however, that one shaft of the Legislative Route would be "of necessity so located that it partially obstructs the Charlestown approach to the Warren Avenue Bridge." Ibid., p. 22.

⁵⁴Special Report Relative to the Availability of Federal Funds for Removal of Elevated Structures and Construction of New Rapid Transit Facilities, Comm. of Massachusetts, Boston, Mass., 1958.

by the Metropolitan Transit Authority and the State Department of Public Works on the availability of Federal funds for removal of the elevated MTA structures between Forest Hills and Everett and the construction of substitute subway and rapid transit facilities and construction of a new highway along the routes of the former elevated structures. The basic objective of the study was to determine whether Federal financial aid would be available under the Federal Highway Act or any other act for a project to be made part of the highway program in Massachusetts, and to determine what extent of aid was available.

The findings of that study as they might apply to the North Station Area can be summarized as follows:

Federal Aid Highway funds can be used to relocate public utilities only when such relocation is absolutely necessary for the construction of a highway program. However, improvements or betterments made solely for the convenience of a utility company and not necessary by the highway project are not eligible for federal participation.

This determination rules out, therefore, the use of Federal Inner Belt highway funds for the relocation of the Lechmere elevated line in conjunction with the creation of any approach facilities to the Inner Belt near Rutherford Avenue in Charlestown, i.e., the proposed new Prison Point Bridge, and for the relocation of the Charlestown line in conjunction with the creation of any new surface highway facilities across the Charles River in the vicinity of the present Charlestown or Warren Avenue bridges.

The Availability of Urban Renewal Funds for Removal of the Elevated
MTA Structures

With urban renewal projects soon to be undertaken in several sections of the City of Boston, the question has arisen as to whether Federal renewal project funds can be utilized to remove existing elevated railway or rapid transit structures and/or replace them with subway facilities. Up to the present time (1961), no official investigation of this matter has yet been initiated. Nevertheless, determination of such a possibility with respect to the elevated transit structures running through the North Station Area is absolutely necessary as a foundation for any degree of planning policy.

Interviews with both public agencies and private organizations,⁵⁵ indicate the following conclusions:

Elevated railway or transit structures are recognized as definite blighting elements in a community or an area; urban renewal funds, therefore, may be used within a designated project area to remove such structures. However, federal renewal funds can not specifically be utilized to pay for or assist in the replacement of such structures by other facilities.

The general statement applies to both the North Station Area and to the proposed Charlestown redevelopment project. The implications for these two areas are clear:

- a. that federal urban renewal funds cannot be used in the construction of any alternative rapid transit facilities between Haymarket Square and City Square, Lechmere Square, and/or Sullivan Square, i.e., the proposed Charles River MTA Tunnel.
- b. that federal urban renewal funds will not be available in either Charlestown or the North Station Area unless specific

⁵⁵Boston City Planning Board, Mr. Donald M. Graham, Planning Administrator; Charles A. Maguire & Assoc., consultants to the MDC on Charles River improvements, Mr. Peter Devenis, Project Engr.; Boston Redevelopment Authority, Mr. Lloyd Sinclair.

federal urban renewal projects are undertaken and unless the affected parts of these areas are included within such project boundaries.

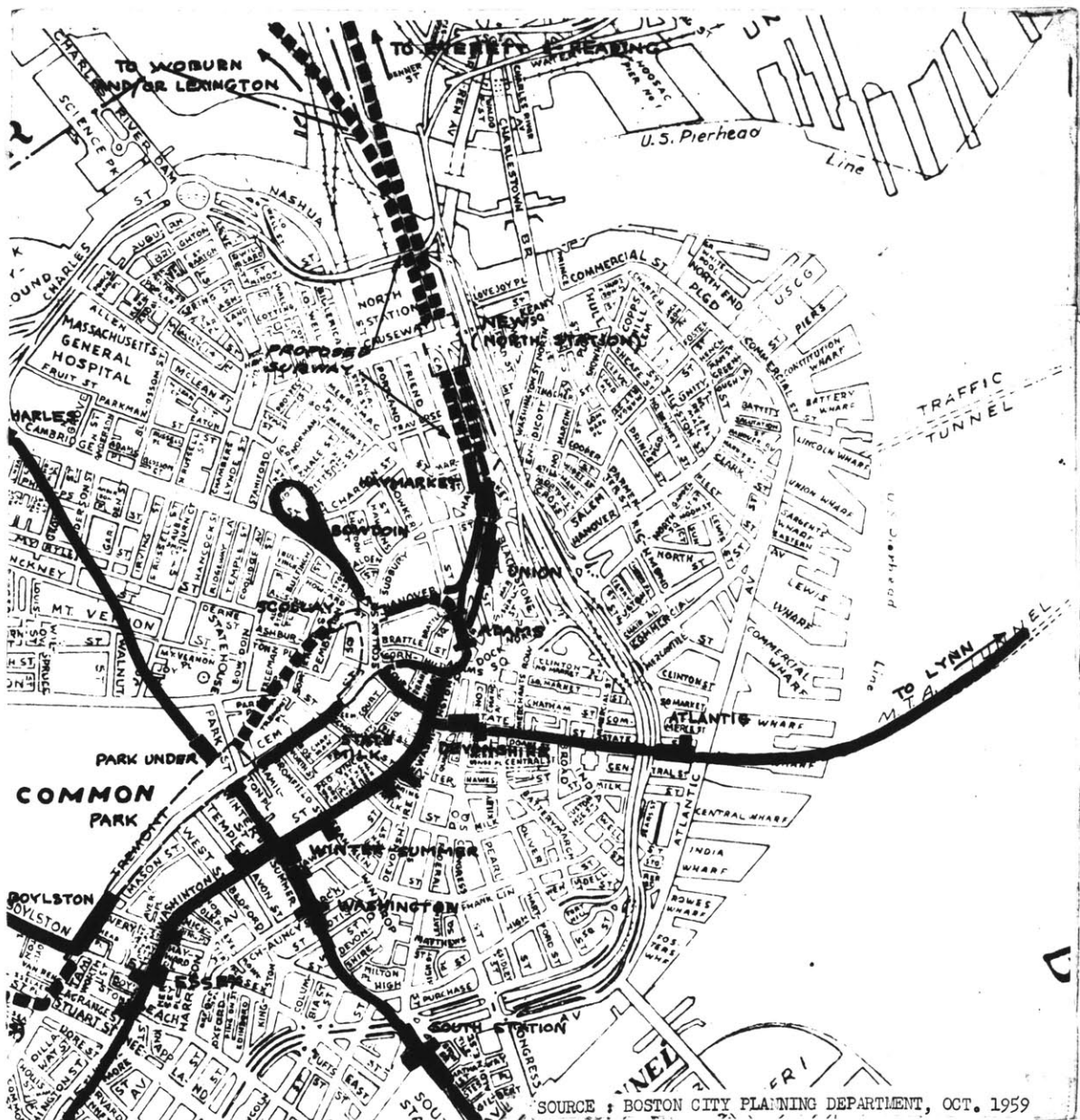
- c. therefore, that either the whole North Station Area, in effect, is established as a Federal urban renewal project and the Massachusetts Legislature is induced to take appropriation action for construction of replacement facilities or the elevated structures will remain.

Changes Proposed by the Boston City Planning Board, 1959

An unpublished study by the Boston City Planning Board proposed that several changes in the Downtown MTA system be undertaken in conjunction with the Government Center project which are of direct influence upon the future of the North Station Area. They included:

- a. implementation of the Charles River tunnel concept from Haymarket Square into Charlestown.
- b. creation of a branch tunnel from the main Charles River Tunnel that would pass under the B & M Somerville yards, emerge near Lechmere Terminal, and proceed, apparently, over B & M trackage, as part of the rapid transit extension to Woburn and/or Lexington.
- c. restructuring of the Adams-Scollay track loop of the existing P.C.G. line to serve as an intown turnaround at the Government Center for the cars of the Cleveland Circle and Boston College lines.
- d. removal of both elevated structures in and near the North Station Area. (See Illustration 34.)

In terms of service to the forthcoming Government Center and facilitation of renewal of the North Station Area and with respect to the previous recommendations and proposals of other agencies and bodies, these suggestions appear to provide an achievable interim but not entirely adequate long-range solution to required rapid transit reconstruction in Central Boston.



SOURCE : BOSTON CITY PLANNING DEPARTMENT, OCT. 1959

Study of the Redistribution of Feeder Lines to and Subsequent Discontinuance of the Lechmere MTA Terminal, 1961

A report presently being compiled for the Metropolitan Transit Authority⁵⁶ and leading to the feasibility of eventual discontinuance of the North Station-Lechmere section of the P.C.C. line investigates the following factors: (a) present level of feeder service from Somerville and Cambridge into the Lechmere Terminal, (b) the possible redistribution of these long-distance feeder lines to other terminals, such as Sullivan Square and Kendall Square, (c) the subsequent requirement of providing bus service to the local area near Lechmere (including Science Park), (d) the long-term feasibility of using the Lechmere Terminal as a jumping-off point for a rapid transit extension to the suburbs (Woburn and/or Lexington), (e) the effect of recent highway proposals and designs (Inner Belt, Leverett Circle, Prison Point Bridge) upon both the present terminal and service and any future surface extension from this point, (f) the possible alternative central points from which the Woburn suburban extension might originate, and (g) the possible termination of the P.C.C. line at the North Station lower loop.

Although this study is not yet complete, there appear to be a number of conclusions already apparent:

1. That the long-distance trackless trolley and bus feeder lines into Lechmere from deep in Cambridge and Somerville is not logical and can, and perhaps should, best be re-directed to other terminals, specifically to Kendall and Central Squares in Cambridge and to Sullivan Square in Charlestown.
2. That the local service area around Lechmere, including Boston

⁵⁶Mr. Deane Folsom, transportation consultant.

Museum of Science on the Charles River Dam (which is reached almost exclusively by chartered bus and automobile and makes minimum use of the Science Park Station), could be serviced by buses running either between Kendall and Sullivan Squares or between the area and Charles Circle or North Station.

3. That in future creation of suburban rapid transit to Arlington, Woburn, and/or Lexington, Lechmere would not be the appropriate extension point.
4. That the Arlington extension would probably jump off from Harvard Square, Cambridge, and that the Woburn extension could be undertaken through utilization of a new Charles River Tunnel and Sullivan Square modifications investigated by Jackson & Moreland.
5. That the P.C.C. line from Cleveland Circle, Boston College, and Lenox Street could appropriately be terminated at North Station, the Government Center, or as most recently proposed in the CBD report of the Boston City Planning Board, at Park Station in Downtown Boston.

Summary of Proposed Changes in the Rapid Transit System of Metropolitan Boston

The multitude of rapid transit proposals and recommendations which have been made in the past fifteen years clearly presents an entangled web of alternative forms of action and development with respect to the North Station Area. Although no one of these proposals or recommendations is independently exclusive, and all are necessarily intertwined, creation of a design framework for future central city structure must be selective in the proposals and recommendations considered and, even more important, must clearly formulate the particular development order or schedule called for in their implementation.

C. Influences of Various Nearby Changes Upon the Area

Boston & Maine Railroad Proposals and Changes

In anticipation of beneficial effects from the West End Re-development Project (Charles River Park) and as a consequence of passenger declines and passenger service curtailments, the Boston & Maine railroad has recently undertaken a number of physical changes and economic investments. In 1958, the B & M took action to acquire full 100% interest in the Hotel Madison and through consolidation of trackage along Nashua Street, concentration of railroad activities onto three of the four drawbridges over the Charles River, and retraction of 44,000 square feet of trackage behind North Station, a large land area has been made available for possible new development. Although none of the reuse proposals, ranging from possible chain store supermarket construction to creation of a single-story 80-lane bowling alley to investment in a 200-room riverfront motel, seem likely to become reality, their proposition represents an awareness of the impendency of intensive development timing in the North Station Area. And though, in the not-too-distant future, further reductions in B & M passenger operations and further reductions in Charles River drawspan use seem probable, it is entirely clear that before the Charles Riverfront section of the North Station Area could ever be fully and intensively developed, it would be absolutely necessary for all railroad operations on the Central Boston shore to cease or be transferred elsewhere and for the four drawspans and associated trestle structures to be completely removed.

Notwithstanding either the possibility of integration between rail and rapid transit in the vicinity of Sullivan Square or curtailment of the extent of passenger service by rapid transit extensions to the

northern suburbs, the major and emphasized point is that Central Boston's Charles Riverfront is far too valuable for continued railroad transportation use.

Redevelopment of the Somerville Railyards

Redevelopment of the large Boston & Maine railyard area between Cambridge, Charlestown, and Somerville is a general, long-range proposal supported unofficially by many directly interested public agencies and is one of the greatest single changes which could occur in the inner metropolitan area. At the present time, freight operations in the Somerville railyards are essentially comprised of three parts subject to extensive change. An existing "piggyback" terminal is one of the railroad's most important elements and, according to one source, could expand to twice its present size; a wholesale farm produce-handling area may eventually relocate to the new market terminal in South Boston; and a freight assembly yard has been proposed replaced by a new electronic classification center near Greenfield, Massachusetts.⁵⁷

Although the key element of railyard redevelopment action would be transfer of Boston & Maine freight classifications to the long-planned electronic center and relocation of present riverfront rail-truck terminal operations to a more northerly site, these are two moves which an apparent lack of capital may significantly delay. Nevertheless, the process of consolidation and of developable land organization continues, with a most recent announcement by the Railroad president that an additional 100 acres of buildable land has been prepared and is now available

⁵⁷The New York Central Railroad in September 1960 officially opened an \$11 million automatic freight yard at Indianapolis, Indiana, which "should pay for itself in less than three years, the road said." "New York Central Yard Opens," Wall Street Journal, September 16, 1960.

for sale, and in view of the fact that reorganizations of freight operations are possible, it is not inconceivable that growing pressures for new development sites will force reclamation of this vast Somerville railyard area in the not-too-distant future as a large inner development center and thus not only provide the necessary distant background for new construction on the Charles Riverfront of the North Station Area but enable the solution of major transportation problems for Central Boston and the northern sector of the inner metropolitan area.

Expansion of Science Park

The Boston Museum of Science, growing rapidly at its present location on the Charles River Dam, has currently accumulated some \$12 million under a \$21 million fund-raising program for the improvement and expansion of facilities. Although one of its most pressing problems appears to be the provision of additional off-street parking, the near-future may bring an equally critical need for building sites. Since the area now occupied is severely limited in size and is already almost fully occupied, it is therefore apparent that either additional land must be reclaimed from the Charles River Basin or space must be acquired on either the Boston or Cambridge riverfronts.

Nearby available land on the Boston shore consists essentially of either the Metropolitan District Commission's Charlesbank Playground along Charles Street (Storrow Drive) opposite the rising Charles River Park apartments or the North Station Area's riverfront owned by the MDC and the Massachusetts Department of Public Works and presently utilized for DPW parking. However, because of the position, pedestrian inaccessibility, existing site conditions, and absence of possible development continuities of the latter parcel relative to the present museum location,

it would appear that future connection to and development of a portion of the present recreation area may be the logical non-reclamation alternative.

Redevelopment of Charlestown

Program plans of the Boston Redevelopment Authority announced in the Fall of 1960 call for the immediate initiation of redevelopment project planning for the totality of the Charlestown section of the City of Boston. This Federally supported project is envisioned to encompass all land from Sullivan Square to City Square and from the Somerville rail yards to the Mystic Docks and may not only imply complete redesign and relocation of land uses and circulation elements and removal of the existing MTA elevated rapid transit structures, but in stimulating the development potential of the vicinity may also provide as great an incentive to development of the Charles Riverfront on the north as the undertaking of the West End Redevelopment Project and the proposed Government Center have on the south.

Construction of the Inner Belt

Within the next ten years, or, more specifically, before the 1970 deadline of the Federal Interstate Highway Program, there will be created in the metropolitan area of Boston the so-called "Inner Belt," Interstate 695. Conceived as a solution to the problem of rapid urban vehicular circulation but placed under the guise of interregional connection, this eight- to ten-lane expressway is intended to tie together the various major regional highways from the southeast, southwest, northwest, north, northeast, and, possibly, the toll turnpike from the west. In concrete terms,

information released indicates that the Inner Belt will displace by its construction upwards of 500 separate businesses and some 4,000 households (of which about 20% represent minority groups), will carry upwards of 1,500,000 vehicles per day (or 60,000 to 90,000 vehicles per lane per day in the more "heavily traveled sections"), and will cost (depending on the combination of alternative routes chosen) between \$17 and \$24 million per mile for a total of between 125 and 159 million dollars.⁵⁸

Observation of transportation experience in other metropolitan areas of larger, comparable, and smaller size clearly indicates not only that completion of the circumferential expressway may attract greater automotive commutation to the central city and thereby result both in further railroad passenger declines and in substantial demand for increased Downtown parking space, but that the Inner Belt will reach its so-called "design load" within a short time after its dedication and may quickly become a hopeless tangle not only at the morning and evening peak hours but at other times during the day as well.

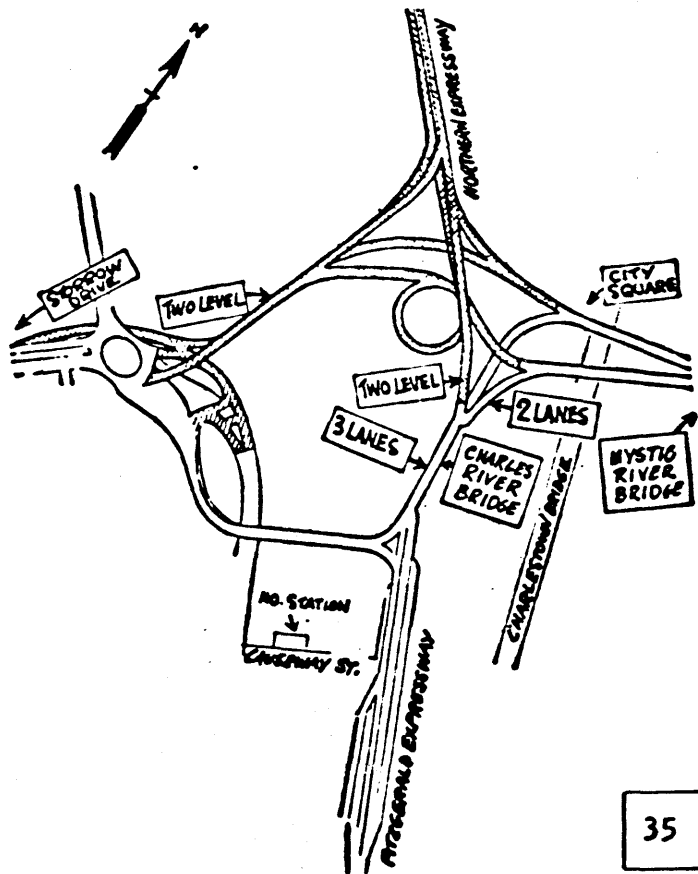
In specific relevance to the vicinity of the North Station Area, connections of the Inner Belt to the Charlestown stub ends of the existing Central Artery and Mystic River Bridge approaches will undoubtedly result in the creation of the most critical traffic bottleneck in the metropolitan area. So great is the fear of this probability that the Massachusetts Port Authority (with a "vital interest" in the Mystic River Bridge), and the

⁵⁸ Data Summary Sheet, Inner Belt Study Lines, Mass. Department of Public Works, Boston, Mass., 1960, and official statements made at the April 1960 meeting of the American Institute of Planners, Faculty Club, M.I.T., by representatives of the Mass. Department of Public Works.

Metropolitan District Commission (with logical concern for its existing Leverett Circle and Storrow Drive) have induced over twenty other public agencies and local governments to form the so-called North Terminal Area Study Committee and have recommended that all projects proceeding or proposed in this section of the metropolitan area - including the Inner Belt - come to a halt until a comprehensive plan for development is prepared.⁵⁹ Acting independently and individually, however, these two agencies have developed proposals of their own to meet the situation.

Leverett Circle-City Square High-Level Bridge Proposal of the Massachusetts Port Authority

In 1959, the Massachusetts Port Authority, with an eye on the profitability of the Mystic River Bridge and the Massachusetts Turnpike Authority's construction of a second Sumner Tunnel tube, proposed that "the severe congestion between the Mystic River Bridge and the Fitzgerald Expressway"



⁵⁹ This committee, its objectives, and its organization will be considered in more detail momentarily.

(Central Artery)⁶⁰ be remedied by construction of a new high-level, two-deck bridge across the Charles River between Leverett Circle-Storrow Drive and the Central Artery-Mystic River Bridge approaches future Inner Belt skyway complex over City Square in Charlestown. This proposal envisioned a huge elevated interchange supported over Boston & Maine Railroad yards complete with two-lane loop connection between the southbound barrel of the Inner Belt and the eastbound approach to the Mystic River Bridge. (Illustration 35.)

Although the engineering merits of this proposal are supported by MPA consultant J. C. Greiner & Company, such a structural mass would appear to:

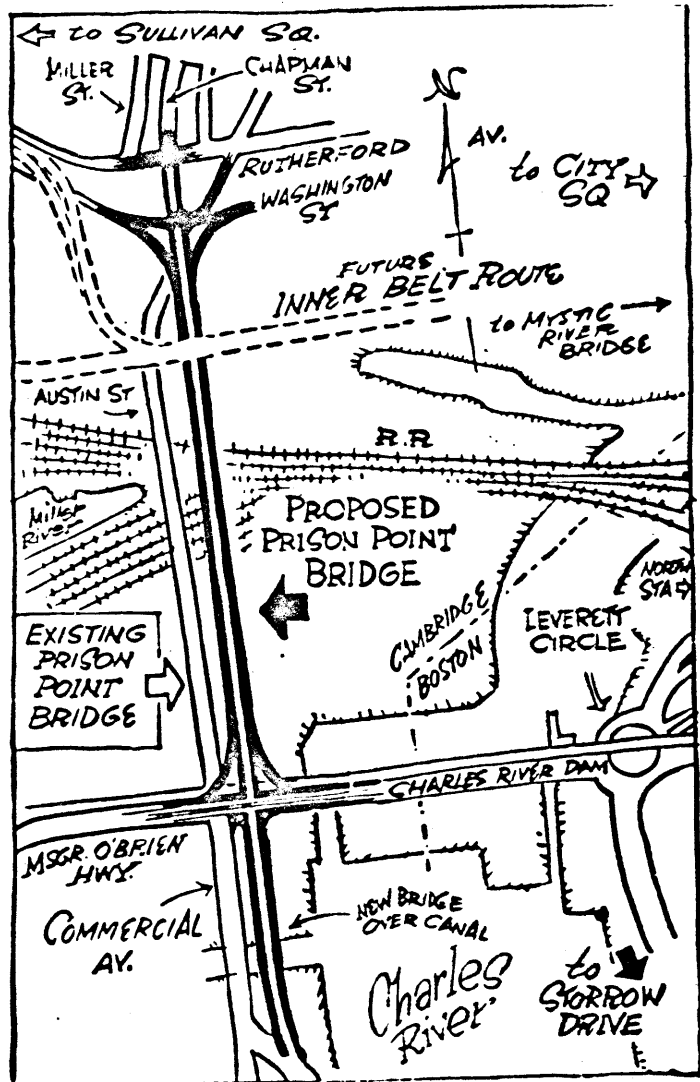
- a. extensively complicate the already critically tangled Leverett Circle,
- b. clutter up with high-level expressway structures what might possibly be a future extended Charles River Basin,
- c. immeasurably interfere with clear future planning for a valuable section of Central Boston waterfront,
- d. be a permanent detriment to eventual redevelopment of the Cambridge-Charlestown railyards,
- e. eliminate the possibility of future clarification, definition, and development continuity around the northern end of the Shawmut Peninsula, and
- f. effectively destroy whatever attractive, intensive development potential is inherently possessed by the Charles Riverfront section of the North Station Area.

Moreover, since designs are being prepared for a new Prison Point Bridge just to the north to connect the Inner Belt and Charlestown with Memorial Drive in Cambridge, formulation and development of a more satisfactory substitute for this expressway bridge and associated skyway interchange appears to be forthcoming.

⁶⁰"Port Authority Has Plan To Ease Hub Artery Jam," Boston Globe September 20, 1959.

New Prison Point Bridge of the Metropolitan District Commission

Another plan to alleviate the existing and future bottleneck on the Inner Belt is the new Prison Point Bridge proposal of the Metropolitan District Commission.⁶¹ This extended bridge structure over the Somerville rail yards is scheduled to form a strictly one-way ramp interchange with the future Inner Belt and would not only serve as a connection from the Inner Belt to Cambridge Parkway and Memorial Drive and from the Inner Belt to Rutherford Avenue in Charlestown, but would function as a facilitation of traffic flow around and away from Central Boston. Such a proposal, although inferring a heavier



use of the facilities on the Cambridge side of the Charles River, will therefore effect a reorientation of vehicular movements around the northern end of the Shawmut peninsula in general and on the Central

⁶¹ Report on Prison Point Bridge and Approaches, prepared for the Metropolitan District Commission by J. L. Hayden Associates, Inc., consulting engineers, Boston Mass., 1960.

Artery-Leverett Circle ramps behind North Station in particular. Actual construction, however, is a decision which should be postponed until retraction of Boston & Maine Railroad operations between the proposed bridge and the Charles Riverfront is completed, for there would be substantial advantage achieved if this highway connection could be undertaken as a surface road rather than as a long, expensive, over-railyard bridge.

Replacement of the Charlestown Bridge

The present vehicular and rapid transit demands upon the Charlestown Bridge seem to predetermine the continued existence of this structure for the near future. Notwithstanding recent expensive repairs and upon creation of alternative rapid transit connections, replacement of the Charlestown Bridge can probably be anticipated. The location of its eventual replacement, however, must be planned with great care, for the success with which this nearby Central Boston shoreline can be redesigned and redeveloped will depend on the locational placement of the new facility and the particular configuration of its interconnection with the intracity circulation system of the northern peninsula.

In anticipation of such an eventuality, it would seem feasible that any new structures across the Charles River be located either all together in one concentration or at such a distance apart that "workable" planning spaces are left between them. In the North Station Area, this would mean either a grouping around the existing Central Artery bridge or an even distribution from the North End to the existing Charles River Dam, which could then be connected to the future Central Boston circulation elements.

D. Proposed New Charles River Dam

Two separate proposals of clearing the Charles River Basin of flood waters from damaging spring freshets and hurricane runoffs when the high tides of Boston Harbor prevent sluicing by normal gravity flow⁶² are currently being investigated by the Metropolitan District Commission. One involves the partial reconstruction of the existing Charles River Dam with installation of pumping facilities in the North Station Area at the corner of Leverett Circle and Nashua Street; the other calls for construction of an entirely new dam and pumping station downstream in the vicinity of the abandoned Warren Avenue Bridge.

Reasons Given for the Necessity of a New Dam

The arguments put forward by proponents of the new dam are these:

- a. The present Charles River Basin flooding must be prevented.
- b. The installation of a pumping station is needed to lift flood waters up out of the Basin into high-tided Boston Harbor.
- c. An increase in the sluicing capacity of the present Charles River Dam for faster drainage during non-high tide periods would be of inconsequential benefit.
- d. The installation of such a pumping station at the present Charles River Dam is not feasible (for details listed positively as locational advantages of a new dam).

Location and Details of the Proposed Dam

The new dam which may be officially proposed would be located

⁶²With a range of tides in Boston Harbor of from 110.4 feet mean high to 100.6 feet mean low (based on U.S. Coast & Geodetic Survey datum) and with the elevation of the Charles River Basin at 108 feet, there are significant periods of time when the Basin cannot be emptied.

somewhere along that section of the Charles River between the high-level Central Artery bridge and the existing Charlestown Bridge and would include and would represent the following functional and structural features and project considerations:

- a. The dam would incorporate a pumping station to handle the Basin flood waters.
- b. The dam would be equipped with two locks, each 36' x 250', claimed to provide twice the small boat capacity of the present Charles River Dam (whose lock dimensions are 45' x 350').
- c. The design might also include provision for a future roadway over the top of the dam that would function as a highway from Charlestown into Central Boston.
- d. The cost (of the dam only) would be in the neighborhood of \$10 million and would be borne entirely by the Metropolitan District Commission.
- e. Construction time for such a structure would be upwards of three years, not including at least one year required for the preparation of working drawings (which are not presently scheduled).

Reasons Given for Tentative Location

The reasons given for the choice of a site in the vicinity of the abandoned Warren Avenue bridge rather than some other location farther up or downstream have been given as these:⁶³

1. Soil conditions are more favorable - (a) a rise in the underlying bedrock exists at this particular location on the Charles River, (b) there is less hardpan to cut through in order to place foundations on that bedrock, and (c) the existence of considerable depths of clay (up to 80 feet) at the present Charles River Dam and other locations along the river would necessitate considerable excavation.
2. Hydraulic conditions are better - Warren Avenue site is

⁶³From an extensive interview with Mr. Peter Devenis, project engineer, Charles A. Maguire & Associates, consulting engineers to the MDC on the proposed new Charles River dam project.

preferable to any other including the present Charles River Dam, because of smooth flow of water, according to tests conducted at the M.I.T. Hydraulics Laboratory. (Note: no great inference claimed from piers of the high-level Central Artery bridge.)

3. Construction procedures would be better - (a) less interference with navigation, (b) passage of river flood flows easier to handle.
4. Expansion of existing locking facilities at the present dam would be difficult.
5. There are benefits to be derived from extension of the Charles River Basin - (a) creation of a constant-level body of water would eliminate a long stretch of mud flats, (b) protection would be afforded adjacent areas, including B & M trackage behind North Station, from extreme high-tide flooding, (c) improvements to the downstream (from the existing dam) pollution problem would be possible.
6. "Good" future highway connection would be possible from Charlestown to Central Boston sides of the river over a new structure at this point.

Although several of these locational criteria cannot be challenged adequately here, it would seem that with this project, as with many others in Massachusetts, justifications always seem to be found for choices substantially predetermined. In this particular case, the consideration of a "surface" four-lane highway connection to essentially by-pass the present bottleneck and impending chaos on the skyway system over City Square would seem to be the primary motivating factor for the "necessity" of a new dam on the Charles River at this location. Since, in terms of comparative cost, the needed Charles River pumping facilities would run about \$6 million at the present dam as opposed to a stated figure of \$10 million for construction of a new dam and pumping station, a definite challenge might be raised to the feasibility of new dam construction.

Influencing Factors Upon the Decision and Location of the Proposed Dam

The proposal for a new dam project was supposedly initiated by the MDC as a strictly flood control measure, with the possibility of utilizing the structure for highway purposes suggested at a later date by Bruce Campbell & Associates, consultants to the MDC on traffic approaches to the proposed new Prison Point Bridge. It was (and is) officially envisioned that such a highway over a new dam might be undertaken with Federal aid (program not specified) and would act as a by-pass of City Square from the Prison Point Bridge, thus, it is said, diverting a major source of congestion from City Square.⁶⁴

Official announcements state that this dam highway would be under the control of the Metropolitan District Commission, yet one information source indicates that the highway might very well be a toll facility, and it has been admitted that this dam highway might be considered to be somewhat of a multi-agency ruse to avoid proper and adequate solution of the overhead expressway problem.

The Contemplated Design of the Dam Highway

The present design concept of such a highway over a new dam would provide two to four traffic lanes and would function as a connection from Causeway Street in the North Station Area (with possible direct connection to the Central Artery ramps), along Beverly Street, over the dam, onto a new right-of-way along the edge of the rail yards skirting Charlestown, and at least as far as the new Prison Point Bridge-Inner Belt one-way interchange, and possibly as far north as Sullivan Square.

⁶⁴ Traffic on the Prison Point Bridge from Cambridge is bound to Boston via City Square rather than on the more direct line over the present Charles River Dam?

The crossing at the proposed channel locks is being studied in two possible forms: either as a fixed span or as a drawbridge. The difficulties involved in constructing the highway as a fixed span are two-fold - of adequate vertical clearance for river navigation and of design approved by the U.S. Army Corp of Engineers. Investigation of the site conditions, however, indicates that inadequate tangent distance exists between the river channel (site of the new locks) and the Boston shore clutter of Central Artery structural supports for such a highway to be a fixed span at the Warren Avenue location under the presently excessive thirty-foot vertical clearance regulations. Moreover, even if a new roadway-over-dam were to be contemplated across the Charles River as a drawspan structure on the exact line of Warren Avenue-Beverly Street, the presence of the Central Artery-Leverett Circle ramp would substantially prevent the efficient connection of the highway to the Central Boston shore.

Impact of a New Dam and Highway Upon the Area

The construction of this proposed dam and roadway project, by eliminating tidal and possible flooding action for about 2400 feet downstream from the present dam and in effect extending the constant level Charles River Basin (at its present elevation) along the entire edge of the North Station Area, would enormously increase the development potential of the Charles Riverfront and would be a major stimulus of new investment and future building construction. The inevitable utilization of the dam for highway connections, however, would appear to require a complete reassessment and redesign of the vehicular circulation system at the northern end of Central Boston and within the North Station Area.⁶⁵

⁶⁵ Possible alternatives to a new dam are discussed in Appendix 32.

E. Reports and Proposals

North Terminal Area Study Committee

The North Terminal Area Study Committee, a recently organized informal group of local governments and public agencies, is a product of the impendency of major construction projects within a section of the Boston metropolitan area centered on the physical unit, Charlestown, and its eastern and western tangencialities. Suggested and initiated primarily by the Massachusetts Port Authority and the Metropolitan District Commission, this committee is theoretically a first step toward coordination of construction projects and physical planning among an overlapping complex of responsibilities, interests, and major ownerships. At present, this North Terminal Area Study Committee is composed of the following cities and agencies with interests in the vicinity: the City of Boston, the Cities of Cambridge, Somerville, and Chelsea, the Massachusetts Department of Public Works, the Massachusetts Turnpike Authority, the Metropolitan District Commission, the Metropolitan Transit Authority, the U.S. Bureau of Public Roads, the Boston & Maine Railroad, and the North Station Merchants Association.

In August of 1960, an unpublished preliminary report was prepared by the Boston College Seminar Research Bureau at the request of the Massachusetts Port Authority to brief the first meeting of the new study committee on the 27 separate projects planned or underway in the general area centered on the port facilities and major northern railyards, comprised of the northern tip of the Boston peninsula and parts of Cambridge, Somerville, Charlestown and Chelsea, and designated as the North Terminal Area. This report not only provides specific additional information on several of the projects and changes directly affecting the North Station

Are but reveals the motivations behind the level upon which planning at the northern end of Central Boston is being undertaken:

a. Forest Hills-Everett rapid transit line

Removal and relocation of the Haymarket Square-Sullivan Square elevated line, although stated to be considered mandatory to successful redevelopment of Charlestown, is indicated to currently necessitate a cost of "over 35 million dollars."⁶⁶

b. Proposed new Charles River Dam

A new Charles River dam is claimed to be under consideration because "the present dam site is not deemed satisfactory," because a new dam will provide "lock facilities that are superior to the present installations," and because "the advantages of this new construction would be to allow use of the enlarged locks at all tides." Moreover, the principal feature of the proposed new dam is indicated to be a possible toll roadway over the structure at "little additional cost," the dam itself representing a \$9 million project with "another \$1,000,000 for the highway and drawbridge."

c. Government Center

The North Station Area and vicinity is stated to suffer from "severe congestion" which necessitates the Government Center Plan proposal of "major changes in streets including a new 0.3 mile access road from the Central Artery [the so-called Sudbury Street Viaduct] at an estimated cost of \$6.5 million... ."

d. Prison Point Bridge-Inner Belt connection

The MDC proposed new Prison Point Bridge interchange with the Inner Belt is revealed to be planned in such a fashion that there will be no access to the Inner Belt, only egress off of it.⁶⁷

⁶⁶ These items are selected and transcribed quotations from the unnumbered Summary Report of 27 Projects in the North Terminal Area, Massachusetts Port Authority, Boston, Mass., Summer 1960.

⁶⁷ By elaborating on the inadequacy of the Massachusetts Department of Public Works' design of the high-level Charles River Bridge of the Central Artery, the report provides excellent criticism for the shortcomings and unfeasibility of intown expressway construction in general, including the forthcoming Inner Belt and the Port Authority's City

Although containing numerous physical planning misconceptions and misleading interpretations of diverse facts, the Boston College Seminar Research Bureau report to the Massachusetts Port Authority and the North Terminal Study Committee presented an important summary statement which is quoted here:

All of the plans and projects mentioned above are closely related to one another and land development proposals in the immediate area. Together they represent many millions of dollars of investment in public facilities. Yet, in many instances, the plans for one project are inconsistent and sometimes in direct conflict with plans for another project. Frequently, the plans for one project ignore the plans or problems under the jurisdiction of different agencies or levels of government. More often than not, the lack of coordinated planning serves only to shift a problem from one area to another and not adequately solve any.

As a concluding series of recommendations, this report generally proposed:

1. That the guiding light and master objective of coordinated efforts be "a grand design for a completely renewed region" to: (a) "broaden the scope and objectives of individual projects by opening new opportunities," and (b) "attract by its comprehensiveness the kind of interest and capital that might not otherwise be possible."
2. That, for reasons of "greater benefits for given costs," communities "badly in need of tax revenues," "maximum return from the investment of public funds" and provision of "new opportunities to solve such problems as relocation of displaced families," an improvement district - the North Terminal Area - be established "for the purposes of obtaining a general plan for the area" and that "a policy committee be formed with one member from each agency affected and that this committee meet regularly and with the assistance of technicians from their agency develop a program for the area."
3. That all highway construction in the North Terminal Area cease "until a comprehensive consistent program of highway and transit construction can be prepared that is integrated with development, redevelopment, and transport policy and timing."

Square-Leverett Circle bridge proposal, both based upon Coverdale & Colpitts traffic assignments originally made in 1948 and updated to 1955.

The North Terminal Area, "at best . . . is a difficult area to deal with, cut up as it is by arterial highways, rail lines, and bodies of water." Heretofore, "its divisions among several municipalities has prevented it from being viewed as a unit." Yet, with a dozen public agencies involved in many different projects in and around this area, "perhaps never before [in Boston] have so many things been happening simultaneously in one area." In a circumstance like this, such a Study Committee is "an opportunity . . . to explore ways of maximizing the benefits to all." "Rarely does such an opportunity arise to coordinate and invest construction dollars that can return to the entire regional community as many important development and transportation improvements." "But rarely, if ever, has the situation arisen before where coordination of the activities of so many agencies is vital to the achievement of long-needed projects."

Subsequent to its formation and its receipt of the report, the North Terminal Area Study Committee proposed that a \$50,000 study be undertaken by a director and special staff to develop a total plan for the so-called North Terminal Area, with the assistance of some nationally or internationally known consulting firm which could bring to the study a wealth of background knowledge and fresh, bold ideas. The cost of such a study would be borne proportionately by those agencies represented on the Committee, with the hope that additional financial support might be obtained from the Federal Government.

Plan Prepared for the North Station Merchants Association

The final nine-month study report presented by the consulting firm of Advance Planning Associates to the North Station Merchants Association in August 1960 consisted of (a) a review of previous economic and physical findings,⁶⁸ (b) a review of nearby development factors, and (c) a Plan of Development, and drew the following conclusions concerning the North Station Area:

1. That the Area is a healthy, stable economic section of the city.
2. That the physical plant of the Area is in fair to good condition and might encourage at most rehabilitation and some slight degree of expedient clearance.
3. That the railroad and home furnishings functions will remain in the Area over the long term.
4. That the Area will be able to attract the new residents of Charles River Park into its existing retail and service stores.
5. That the creation of the Government Center will create space demands within the Area of an extent and nature to upgrade the Area yet not displace the present firms.
6. That an extensive private rehabilitation of building space appears certain to occur in the Area.
7. That the Boston & Maine Railroad will develop land behind North Station for a large bowling alley.
8. That the Staniford-Chardon area will be redeveloped for new private use.
9. That the State campus development will be undertaken in the Sudbury-Chardon blocks.
10. That the Boston Garden is something of a permanent fixture in the Area.

⁶⁸These findings were a summary of the earlier Progress Report, the analysis and conclusions of which have been discussed previously.

This report fails to mention to its client, however, a significant number of facts and implications concerning the present and future North Station Area:

- a. That while several strong, stable and growing economic elements do exist in the Area, there are also large groups of firms whose very existence depends upon low rental of the marginal physical space which this old part of Boston contains and of business activities whose existence, though probably not a destructive force in the strictest sense of the word, is certainly of no benefit to the Area.
- b. That the designs of Charles River Park, the immediately adjacent redevelopment West End redevelopment project, include specific plans for a large retail shopping center near the corner of Cambridge and Staniford Streets (in addition to a centrally-located convenience goods complex) which are of vast competitive significance to the North Station Area.
- c. That many of the Area's existing retail and service facilities are not really likely to attract the new residents of the high-rise Charles River Park luxury apartments.
- d. That the long-term continuance of passenger operations by the Boston & Maine Railroad out of North Station and the existence of the railroad as a permanent feature in the Area, in light of the rapid rate of its decline over the last 30 years, is highly questionable.
- e. That the Boston Garden may quite probably be competitively and functionally displaced by construction of the proposed new Boston domed sports stadium and the forthcoming new Municipal Auditorium.
- f. That the large space demands which may be placed upon the Area by Government Center and Staniford-Chardon redevelopment project relocatees may competitively displace many of the Area's present marginal-space, low-rental dependent firms including some of the so-called furniture and furnishings businesses.
- g. That "upgrading" of individual business quarters in the Area which does occur will essentially be spatterdash, uncoordinated, and disperse.
- h. That "upgrading" actions on the part of local business and property owners in the Area are likely to be severely dampened and depressed by the continued and perhaps justifiable fear of the Area's redevelopment.

- i. That little investment has been or is being placed into the physical plant of the Area to reflect either optimism or confidence in the future of the existing Area.
- j. That nine-tenths of the Area's buildings are suffering from a combination of old age, extensive and prolonged deterioration, fire hazard construction, and absence of adequate basic building service and equipment, and that most of the Area's existing building space, in terms of sub-area concentrations, is essentially valueless for continued long-term utilization for other than the most marginal of economic activities.
- k. That long-term planning for the North Station Area demands at least the consideration of possible, not-too-distant physical restructuring.

The Recommended Plan

The development plan recommended by the report to the North Station Merchants Association seems to support, in effect, previously concluded Association ideals:

- a. It recommends the removal of both MTA elevateds, without having investigated the feasibility of alternatives.
- b. It recommends major alterations to the Government Center Plan of Adams, Howard & Greeley without considering the full implications of such changes.
- c. It recommends superficial alterations to Leverett Circle without investigating the broader framework of inter- and intra-city highway connections.
- d. It recommends extension of the entertainment complex based upon the Boston Garden as a fixed element.
- e. It recommends some vague form of Furniture and Furnishings Center, perhaps envisioned to substitute for a Decorative Arts Center on the modern, attractive Newbury Street.
- f. It recommends demolition of the Canal-Haverhill block and Billerica Street residential area, and, without investigation of reuse potentials, recommends construction in their place of parking garages with new retail stores on the ground floor.

Essentially, the recommendations of the report appear to have been derived as somewhat extreme compromises to a business client of strong vested interests without providing a sound basis for many of the economic,

physical, or design conclusions. Investigations have previously been revealed as superficial and incorrect, and there is nothing about the "Plan" which might be considered either comprehensive or far-reaching.

The Central Business District Plan of the Boston City Planning Board

The City Planning Board's just-published long-range plan for the Central Business District of Boston proposes an intensively developed Central Business District which will support several major functions, each of which is to some degree presently existent in the North Station Area, and all of which are potentially important as major reuse considerations for the Area site adjacent to Charles River Park, the State Office Campus, and the Government Center.

- a. Highly specialized activities, such as central government offices, unique shops.
- b. Activities requiring frequent face-to-face meetings for exchange of information and ideas; architectural offices, buyers, business services.
- c. Activities depending upon large volumes of people as customers, workers, or visitors: headquarters offices, exhibition halls.⁶⁹

In terms of specific development proposals in and around the North Station Area, the CBD plan of the Boston City Planning Board recommends:

1. Land Use

- a. Retail and consumer services for the North Station Complex and the area along Nashua Street toward the Massachusetts Department of Public Works Building.⁷⁰
- b. Wholesale and manufacturing for most of the Merrimac Street

⁶⁹A General Plan for the Central Business District, Boston City Planning Board, Boston, Massachusetts, 1960, p. 3.

⁷⁰Ibid., fig. 22.

- to North Washington Street triangle area.⁷¹
- c. Continued residential use of the Billerica Street blocks.⁷²
 - d. A major parking structure at the Bus Terminal proposed in the Government Center plan of Adams, Howard & Greeley.⁷³
 - e. Industrial use along the Charles Riverfront.⁷⁴
 - f. Continued existence of the railroad terminal at North Station.⁷⁵
 - g. Continued existence of the Massachusetts DPW Building on Nashua Street.⁷⁶
 - h. A large retail, consumer services and office complex in the redeveloped Staniford-Chardon area.⁷⁷
2. Transportation
- a. Creation of a new embankment boulevard along the Boston Harborfront connecting Dorchester Avenue in South Boston to an improved Atlantic Avenue-Commercial Street.⁷⁸
 - b. Improvement of the Commercial Street approach to the existing Charlestown Bridge.⁷⁹
 - c. Operation of new rapid transit cars over an extended Lechmere MTA line to Woburn.⁸⁰
 - d. Creation of a terminating loop for all P.C.C. car operations of the MTA from the west at Park Street.⁸¹

⁷¹Ibid., fig. 23.

⁷²Ibid., fig. 22.

⁷³Ibid., fig. 23.

⁷⁴Ibid., fig. 22.

⁷⁵Ibid., fig. 22.

⁷⁶Ibid., fig. 23.

⁷⁷Ibid., fig. 23.

⁷⁸Ibid., p. 37.

⁷⁹Ibid., p. 37.

⁸⁰Ibid., p. 35.

⁸¹Ibid., p. 36.

- e. Replacement of the elevated transit structure to Lechmere Square by a new tunnel from Haymarket Square to B & M tracks directly behind North Station.⁸²
- f. Replacement of the MTA Charlestown line onto B & M tracks and rapid transit extension from City Square to Reading.⁸³
- g. Creation of the "Sudbury Street Viaduct," a four-to-six lane expressway from the Central Artery into the Central Business District.⁸⁴

Many of these recommendations with respect to the North Station Area have already been discussed in sections of this and other chapters. None represents a measurable departure from previous proposals; a few fall into the historic conceptual stereotype toward North Station Area development; many do not appear to be based upon sound investigation and studies of feasibility; and only one - the redevelopment of the harborfront and the creation of an embankment boulevard - sets the stage for an exciting future development of Central Boston and the northern end of the Shawmut peninsula.

⁸²Ibid., p. 36.

⁸³Ibid., p. 35.

⁸⁴Ibid., figs. 31 and 32.

FORMULATION OF AN APPROACH TO AREA RENEWAL

The previous chapters have undertaken to answer what one particular sector of a central city is, has been, and appears to be naturally becoming. The next step in the process enters the realm of decision with respect to the extent and immediacy of renewal action required and possible and the method by which that action can best be taken. Specifically, this chapter formulates an approach to application of programmed renewal in the particular North Station Area sector of Central Boston by answering these questions:

1. What is the extent of renewal action necessary?
2. Who is able to undertake such action?
3. How rapidly or slowly should renewal be undertaken?
4. How may a programmed renewal procedure be applied to reconstruction of the northern end of the Shawmut Peninsula?

Extent of Action Necessary

The weight of the foregoing chapters concerning the present Area condition, the changing economic composition, and the effect and significance of nearby new developments leaves little doubt as to the need for and feasibility of some form of renewal action in the North Station Area of Downtown Boston.

Illustratively, the compository problems of the Area include these

specific items:

- a. The small residential area, a remnant of the former West End now in process of redevelopment, is encircled and isolated by heavily travelled streets, rusting and noisy elevated structures, and encroaching asphalt parking lots, is distant from schools, churches, and recreational areas, is completely lacking in shopping facilities, and is devoid of play space or landscaping.
- b. The triangular commercial area consists almost entirely of old, inflammable, and deteriorated wood and brick buildings containing partially or fully vacant and non-intensively utilized space.
- c. The section of unstructured riverfront land is cut up by railroad sidings, parking lots, storage sheds, and elevated expressway ramps, is bordered by a sewage-filled tidal river, and is distributed in ownership among overlapping public and unclear private holdings.
- d. The Area as a whole is characterized by dimly-lit and trash-strewn streets, sidewalks, and alleys, by the noise, dirt, darkness, and environmental oppression of the elevateds, and by the presence of run-down and dilapidated buildings.
- e. The narrow streets and sidewalks in the area are blocked by parked cars, sidewalk-loading and unloading trucks, uncontrolled traffic, and disordered operation of taxis.
- f. The circulation configuration is awkward, undifferentiated, inflexible, and inappropriate.
- g. Pedestrian movements are severely hampered and endangered by narrow, cluttered sidewalks, unprotected street crossings, heavy traffic; and illegal vehicle parking.

The North Station Area has long been a site of extensive physical decline, and represents dangerous fire hazard construction, increasing commercial vacancy, unintensive floor space utilization, residential inadequacy, sizeable unused land, highly diverse property ownership, and development paralysis. Moreover, not only does the Area's long upward trend in non-residential vacancy rate and present 30% floor space under-utilization measure the significant physical deterioration and economic unsuitability of the existing physical plant and does the lack of Area maintenance and absence of building reinvestment reveal the declining "state"

and value of the existing physical facilities, but little justifiable optimism is indicated of future Area self-improvement and the business activities of the Area are revealed to depend upon structures in a physical condition which even relocation pressures and competitive upgrading seems incapable of overcoming.

In economic terms, the timeliness of renewal is indicated by the long-term general decrease in the taxable value of the Area, the declining physical condition unbalanced by new construction, and the high turnover and progressively more inflated value of property within the Area as a result of redevelopment projects directly adjacent to the site. Not only may the effect of increasing space and rental pressures on the existing composition force many marginal and essentially non-Downtown functions to move out of the Area, but the Area appears to have become and be further becoming directly related in economic function and service to the forthcoming Government Center and State Office Campus, and the type of business changes and increasing office concentration indicate a demonstrative Downtown business potential for the site. Because of the quality and restricted extent of full and intensive utilization of the existing buildings, however, there appears to be a limit to the future economic shift possible, and the existing physical composition of old, obsolete and unsatisfactory floor space may restrict the Area from significantly responding to the unprecedented business and residential consumer markets of the adjacent redevelopments. There is, in fact, an indication that several large office activities have already been forced to move out of the Area in recent years because of the lack of new, well-equipped, "modern," and suitable office space, a trend which might have been reversed if new office construction in this site had existed

or were to have been forthcoming.

Thus, it is for the North Station Area as the northern entrance to Central Boston and the first impression of both city and peninsula that the existence and initiation of three directly adjacent redevelopment projects now signify a timeliness of renewal consideration.

Alternatives for Action

In order to conclude the extent of renewal required and possible, alternative actions and combinations thereof must be fairly considered in a range from "rehabilitation" to "redevelopment."

1. Rehabilitation

The key issues under this level of action are embodied in the question: Is rehabilitation possible? On the basis of the now-known physical composition of the Area and in particular of the Area's buildings, there appears to be little practical value in any form of patch-up, paint-up improvement, even on an extensive structure-by-structure basis. Since the physical problem characteristics of the Area do not appear to be subject to control, alleviation, or elimination but are inherent in the design and construction of both buildings and Area, rehabilitation definitely does not appear to be possible. The continued existence of the present configuration, therefore, appears likely to have strong depreciating and detrimental effects not only upon the directly adjacent redevelopments but upon restructuring of the entire northern section of Central Boston, and thus is clearly indicated the basic necessity for Area renewal and restructuring.

2. Spot Clearance

A level of action toward any area which is based upon spot clearance must satisfy the requirement of physical possibility. If there are a few economically or structurally unsalvageable buildings within a basically sound area and if the physical problems of the general area could be solved by removal of isolated elements, then spot clearance as a form of planned action could be considered. This is not the case with the North Station Area. Because most of the existing structures represent a deterioration of inflexible and fire-hazard construction which has become functionally obsolete for present and future Downtown economic activities, the problems of inflexibility and deterioration are Area-wide in scope, and the elimination of even sizeable clusters of buildings would leave a sawtooth pattern of many unrelated and painfully inadequate remaining detached elements. Moreover, within the near future and with completion of Charles River Park, the Government Center, and the State Office Campus, extension of urban rapid transit to the suburbs, reconstruction of rapid transit facilities on the Charles Riverfront, and construction of a new downstream Charles River dam and extension of the Charles River Basin, the development potential of the site will have ripened and pressure for renewal will have increased to the point where even the most sizeable activities can be feasibly relocated into new area facilities. Thus, spot clearance in the North Station Area would clearly be a stop-gap measure with benefits of merely short-term extent, and only if the technique were utilized as a means toward the end of eventual complete redevelopment would such a line of action within this type of area be acceptable.

Recent renewal experience provides strong justification for such a stand toward spot clearance. "Renewal officials [in Boston] learned several valuable lessons from the New York Streets experience. One was the inadvisability of leaving islands of buildings scattered within a redevelopment site requiring unity of development."¹ New Haven, Connecticut experience concluded that renewal areas must be ended on substantial long-term structural or physical boundaries in order to avoid the juxtaposition of old, run-down blocks against the long-sought new city construction.

Without change of the existing physical configuration of narrow streets and blocks and dense building coverage essentially inadequate and unsatisfactory for future Downtown business operations and pedestrian movement, therefore, spot clearance as a form of renewal action for the North Station Area would appear to be ill-advised, would only act to postpone consideration of the basic design problems from which this part of the Downtown suffers, and as a recommended form of action would be a weak compromise of the future of Boston.

3. Redevelopment

With detailed knowledge of the building-by-building composition and with broad consideration of surrounding developments, it becomes increasingly clear that continued existence of the present North Station Area configuration in the city center tends to undermine the general physical environment, prevent realization of the economic and development potentials of the site, and substantially reduce the essential value of

¹Charting the Future of Urban Renewal in Boston, Boston Municipal Research Bureau, July 1959, p. 10.

creating the adjacent redevelopment projects of Charles River Park and the impending Government Center and State Office Campus. And since "conservation" as an alternative of complete inapplicability, "rehabilitation" as a process which the physical composition no longer justifies, and spot clearance as inappropriate within a conditional framework generally area-wide in scope predetermine the necessity of more extensive action for the North Station Area, some type of redevelopment, therefore, appears to be the only logical and reasonable renewal approach conducive to integration with the adjacent projects and coordination with the impending and proposed land use, development, and transportation system changes in the nearby metropolitan area.

Whatever the reluctance of commitment to such an extensive form of action, the fact becomes unavoidably clear that no plan can be formulated for the long-range future of Central Boston on the basis of outdated structural groups and physical configurations such as those represented by the North Station Area. And though the more substantial elements of the existing composition necessitate an extended program timing, the end result can be no other than eventual complete redevelopment, total reconstruction, and reformation in response to the evolution of a new Downtown area for future Central Boston.

There are, moreover, numerous benefits to be derived from redevelopment-enabled planning and creation of new forms in this particular section of the Central City. Redevelopment:

1. could be tied in closely and directly with the adjacent redevelopment projects in the West End, Scollay Square, and Staniford-Chardon,
2. would enable a clear connection to be established from the CBD, the Government Center, and the redeveloped Staniford-Chardon area to the West End, the Charles River, and the North

End,

3. would capitalize upon the opportunity to completely reconstruct a large sector of the Boston peninsula, an opportunity which, if lost, could leave the central city with a pocket of blight that might linger indefinitely on and seriously affect the value of the adjacent areas redeveloped.

Responsibility for Action

In many situations and under many circumstances, there are sound and justifiable grounds for expecting private property owners, given direct impetus and local assistance, to undertake some measure of area self-improvement. Across the nation, both residential neighborhoods and local business areas have been "pulled up by their own bootstraps" through community "citizen participation," intensive newspaper support, and guidance and direction by strong local mayors and renewal agencies, and in many instances, such private action has been reasonably successful and has produced the desired result. The circumstances under which such private action has been possible, however, represent a unique set of factors: the area concerned must possess a physical organization flexibility, the level of action required must encompass at most "rehabilitation" or "spot clearance" but practically never "redevelopment," and there must be a proven willingness to take initiative.

The North Station Area of Central Boston neither possesses nor has demonstrated any of these qualities necessary to the feasibility of private renewal action. The Area has been revealed to be unsalvageably deteriorated to the point where "rehabilitation" or "spot clearance" are inapplicable and where only some form of eventual and complete site rebuilding appears to be appropriate and defensible. Under these conditions, the question of who should or could undertake area renewal is obvious. The problem is not only one of private firms carving out new sites or

greatly expanding old sites in the absence of some type of condemnation power where land is cut up into a multitude of small parcels, densely covered with structures, and subject to confused ownership and overlapping jurisdictional conflicts, but of coordinating the transition of a very large number of relatively small business firms and achieving cooperating action among several dominating property owners. In light of the circumstances represented, private redevelopment on a collective and organized basis is inconceivable and the only alternative for redevelopment of that sector of Central Boston now occupied by the North Station Area thus appears to be direct public action and acquisition through urban renewal.

Definition of Programmed Renewal Application to the North Station Area

Although restructuring of the North Station Area site must be eventually complete, total clearance with concomitant large scale private reconstruction appears to be neither financially possible nor economically feasible at the moment. Nevertheless, recognition must be given both to the rising Charles River Park and impending Government Center and State Office Campus and to the major changes and alterations in the general vicinity, some extent of action must be immediately undertaken, and the situation thus created represents an opportunity for the application of programmed renewal to the extended transition of a central city section in close coordination with both immediately adjacent developments and inner metropolitan projects.

The challenge to be faced in application of a programmed method of urban renewal to a given central city sector is the determination of an appropriate sequence of transition and development. And though there may be a limit as to how far empirical or theoretical research can be

used in this formulation and though the process may always be subject to a certain degree of arbitrary delineation, there is a combination of two criteria which may serve as a basis of internal area renewal priority scheduling.

1. The Primary Determinate - Physical Composition

A priority schedule for renewal in a particular central city section under a programmed procedure must be founded on the specific physical factors of (a) major sub-units and effective interim boundaries, and (b) clustering of suitable and appropriate structures for continued, short-term, or interim utilization.

a. Major physical sub-units and principal sub-unit boundaries

The North Station Area of Downtown Boston has been indicated to be composed of five clearly definable major physical sub-units - the Central Artery-Causeway Street-Merrimac Street "Triangle," the North Station Complex, the Billerica Street blocks, the Nashua Street block, and the Charles Riverfront - enclosed within several particular major component-establishing boundaries whose planning significance and renewal scheduling effectiveness derives from both definitive location and physical dominance:

- | | |
|------------------|--|
| Central Artery | as an elevated expressway, forms an effective physical barrier between the North Station Area and the residential-manufacturing complex of the North End. |
| Haymarket Square | is the focus of the northern Downtown's street system and is the designated limit of the impending Scollay Square (Government Center) redevelopment project. |
| Merrimac Street | separates the North Station Area from the forthcoming Staniford-Chardon redevelopment project blocks (the future State Office Campus). |

- Causeway Street as one of the widest streets in the Downtown, separates distinct levels of structural density which represent two historical periods of construction, two different qualities of physical condition, and two different feasibilities of continued functional utilization.
- Nashua Street separates the North Station Complex from the residual Billerica Street mixed residential-commercial blocks and separates the extensive Charles Riverfront from the isolated DPW building group.
- Lowell Street as the line of the Lechmere elevated, separates the North Station Area from the West End redevelopment project (Charles River Park).
- Central Artery-Leverett Circle ramp forms the limit of the intensively developed part of the northern Downtown, divides the North Station structural complex from the vacant and underutilized expanse of riverfront flatland, and functions as a wall between Billerica Street blocks and the major street-enclosed DPW group.
- Leverett Circle is the corner terminus of the vacant riverfront land and of the North Station Area.
- Charles River is the natural physical boundary of the Area and of the Shawmut peninsula.

b. Clustering of appropriate structures for continued, short-term, or interim use

The North Station Area comprises a clearly definitive clustering of both unsuitable and utilizable structures² within which each of the five component physical sub-units coincidentally tend to represent particular levels of utilization feasibility, with the Central Artery-Causeway-Merrimac triangle and the Billerica Street blocks characteristically deteriorated and unsalvageable, the Nashua Street block and the North Station Complex of decidedly more substantial quality, and the Charles Riverfront of primarily unstructured and initially developable land.

Of the two sub-units requiring more immediate treatment, the Billerica

²See Chapter II, "Building Compositional Summary."

Street blocks represent compositional building summaries which reflect advanced age, extensive deterioration, and minimal physical construction and in which only one out of thirty-four structures has been statistically rated as "salvageable" for even short-term continued utilization and seem particularly marked for renewal action of high priority and of fullest extreme. The Central Artery-Causeway-Merrimac triangle, though generally characterized by the typical old Boston commercial construction and condition of unadaptable and unutilizeable building elements, contains several small clusters of structures which have demonstrated a certain short-run utilizeable worth for interim relocation purposes and which, if possible under renewal procedures, might feasibly be delayed in schedule.

Thus, two of the five sub-units may be considered as tentatively designated for immediate priority within an overall Downtown renewal program, and though the remaining sub-units must also be assigned eventual scheduling positions in the transition and general development of the evolving new central city form, their appropriate priorities must be based upon evaluation of other factors of economic consideration.

2. The Secondary Modifier - Economic Composition

Superimposed upon the primary physical determinates of sub-utilization, definitive unit boundaries, and compositional structure clustering, is the economic composition of a central city section - the specific major business concentrations in tentatively selected sub-units, their breadth of service in the downtown and metropolitan economies, and the demonstrative ability or desirability of such activity groups to occupy new floor space accommodations in continued site location as integral parts of the evolving new functional and economic form. If one of the prerequisites for an urban renewal program in a Central City is

to be the preservation, whenever possible, of stable, long-standing, contributory, and advantageously located business activities, then creation of an internal scheduling procedure must take their existence into full consideration and designation of renewal priorities must permit the continuance of these operations until such time as proper relocation space, either as new facilities within the area site or in older buildings outside the area, can be provided.

The influence of the various activity concentrations upon priority scheduling within the various sub-units may be evaluated in terms of the following factors:

a. Firms of larger size and of greater financial resilience

Under the Downtown renewal circumstance of necessarily more expensive new floor space accommodations, renewal survival of firms may depend to no small degree on an ability to meet higher annual rentals which is significantly influenced by both the size and the type of business operation. For example, service businesses and wholesalers-without-stock are characteristically able to afford higher rentals than other operations, whereas wholesalers needing large amounts of storage space and most manufacturers have clearly demonstrated the ability or preference to occupy older, low-rental, peripheral area building space. And though there is no just cause for showing renewal schedule favoritism toward existing businesses on the basis of size alone, it is nevertheless apparent from previous studies³ that larger firms tend to be more able to

³Including A Study of Business Dislocation Caused by the Boston Central Artery, James A. Saalberg, unpublished master's thesis, Department of City & Regional Planning, Mass. Institute of Technology, 1959, pp. 39-41. See Appendix 33.

meet both the demands of relocation experience and the pressures of higher annual rental cost.

b. Firms of probable outmigration, of probable competitive elimination, and of only local significance

In light of the changes in Downtown economic structure and orientation which have been slowly transpiring, which are accelerating in response to nearby redevelopment projects, and which may be strikingly precipitated by direct renewal experience, many firms may undergo a natural outmigration before or with knowledge of impending renewal, many firms may suffer prior natural competitive elimination through demand in the vicinity for new, more satisfactory retail and personal service activities, and small firms of only local significance in a given area may have little chance or reason for surviving direct renewal even with the most painstaking and generous of relocation assistance.

Although labeled by "primary" and "secondary" titles, therefore, the two criteria of physical and economic values carry varying weights in the determination of internal renewal priorities. In most cases, physical deterioration, and the physical and economic dangers which it represents, far outweigh the value of continuity of economic composition. Occasionally, however, preservation of specific business activities may justify delayed renewal action toward and short-run continuance of the containing physical structures. In other circumstances, the value to the Central City of a particular area's renewal as part of a larger goal or development pattern, may overrule both scattered non-aged construction and demonstrated economic stability. Generally, therefore, if a choice must be made between these two criteria in formulating a priority schedule for renewal, then the fixed physical element must dominate over

relatively mobile economic operations. Neither factor, however, even though subject to a degree of statistical measurement, can enable establishment of the scheduling procedure on a strictly empirical basis, for this decision, as with many others inherent in the planning process, must be reached through a certain interaction with broad perspective.

Problems of Renewal Programming

There are a number of problems involved with the application of a procedure of programmed renewal:

a. Provision of Relocation Space

The overriding problem involved in formulating renewal programs, and particularly redevelopment priority schedules, within a central city is the provision of temporary relocation for existing economic activities both desirable as elements of the post-renewal site and able to occupy new floor space in the buildings to be erected. While renewal programming of a central city section by its clearly definable component units is desirable from the point of view of effective interim renewal boundaries, efficient project administration, logical sequence scheduling, balanced reconstruction timing, and progressive evolution of new functional forms, there must be provided an opportunity to create new space for firms in the area prior to their displacement.

b. Feasibility of Delayed Action for the Short-Term Preservation and Amortization of Utilizable Structures

One of the tenets upon which the concept of programmed renewal is founded is the preservation of those elements of the physical framework which may continue to serve in the short term as significant assets to the city and specific area in which they are located. However, if the

case arises where the existence of such desirable structures does not present a pattern around or within which a workable and effective renewal program may be developed, then it becomes clear that their sacrifice may be required.

c. Delineation of Effective Interim Renewal Boundaries

Decisions of programmed renewal action with central city sections of general characteristics and undifferentiable existing configuration pose a problem in the delineation of suitable and effective interim scheduling boundaries. If there is an absence of definitive natural barriers, topographical features, or man-made elements (such as major existing or proposed circulation elements, parklands, or public facilities), then the task of interim boundary choice may warrant a refinement of the programming principle to the next level of detail, internal sub-unit scheduling, where clusters of suitably utilizable structures present within the sub-unit may serve as a temporary stopping point until realization of new construction and relocation of existing area economic concentrations and/or absorption of newly created space, before initiation of ensuing renewal steps. If, however, logical redevelopment staging boundaries do not exist within an area or portion thereof, or if the design concept demands a unity of development which can not be achieved within the interim boundaries available, then, obviously, the reconstruction integrity must predominate and redevelopment action must be undertaken to the point where an effective termination can be found.

d. Maintenance of Area Condition until Time of Scheduled Renewal

One of the principal problems of programmed renewal procedure use is the guarantee of continued area maintenance until the predetermined moment at which scheduled action is to occur. This necessarily involves an interlocking chain of administrative techniques, among which both code enforcement and early acquisition must play dominant roles. Thus, the application of programmed renewal to a given area must not only be undertaken in conjunction with rigid code enforcement of regulations over the use and maintenance of existing structures until scheduled project action, but must also establish a basis, under maximum renewal action, redevelopment, for the early public acquisition of properties within some time period prior to project initiation.

Conditions Necessary for Application of Renewal Programming to Extended Area Redevelopment

The application of the programming technique to the maximum urban renewal form, redevelopment, appears possible and feasible only according to two general principles: (1) action by major sub-units and definitive, effective interim boundaries, and (2) conformance with overall developments.

The triangle section of the North Station Area represents a situation where the first of these conditions is not fully achievable. Although four of the five existing major physical sub-units form a compositional pattern upon which a redevelopment schedule can be founded, the triangle section presents a scheduling situation where the absence of effective internal interim boundaries must seemingly be overcome by use of extended sub-unit action for the sake of the economic benefits to be derived from staged transition and prereplacement of relocation space for

those significant economic concentrations able and desirable to remain as integral parts of the Downtown composition. Thus, if both redevelopment and relocation are to be successfully achieved and if space and opportunities for continued site location are to be provided for these existing economic activities, then redevelopment in this sub-unit must proceed at a pace which enables one or two new structures to be erected as soon as sufficient land has been cleared and allows several existing structures to remain until new relocation space for appropriate firms can be provided.

Moreover, in the North Station Complex sub-unit of the Area, the second principle becomes critical. Although the existing significant structural cluster has been evaluated to be of continued utilization value, the several buildings are so located that progressive renewal can only be worked around them on a relatively short-term basis, and long-range central city development may require their sacrifice as part of a larger action of entire Triangle scope if the unit of development and integration with future central city sections of Government Center, State Office Campus, and Charles River Park believed absolutely essential is to be preserved.

For the North Station Area as a whole and in general, however, there is a sufficiently clear physical and economic pattern existent to justify the application of programmed renewal to redevelopment by component sub-units. And though a more detailed procedure may be required within the particular triangle and an extended time period may be required for the North Station Complex, the dominating individual character of each of the five components and the existence of their definitive physical boundaries make entirely feasible the designation of renewal priorities by entire sub-units within an overall scheduling

program. The North Station Area, therefore, might be considered as a suitable proving ground for the technique of programmed urban renewal and the action necessary might thus be appropriately undertaken through a sequence schedule coordinated with proposed city and metropolitan projects toward the gradual evolution of a new form for this northern entrance to Downtown and Central Boston.

VI

DESIGN CONSIDERATIONS AND FUTURE DEVELOPMENT POTENTIAL

A. Reuse Considerations

The Changing Economic Function of the Central City

The city as market place and center of manufacturing has historically been the hub of the economic universe. Technological followed by physical and social changes have brought significant alterations, however, and increasing mobility has replaced the locational need for many of the functions which in the past were cause for the city to exist.

In the second half of the Twentieth Century, population rapidly increased and the momentum of spatial redistribution indicates a continued decentralization and urbanization. Yet, the expanding urban solar system appears inexorably to revolve about the point mass of gravitational attraction - the Central City. What is this vectoral force of centrality and what accounts for the concentrated degree of activity at that center? - perhaps basically, the human quality of gregariousness as tempered by the psychological and economic need for face-to-face communication. The Central City's tenacious capacity for continued existence in the face of an overwhelming technological-communication revolution is striking evidence of this intangible, immeasurable force.

What, in terms of the American city and of Boston in particular, does this continued core-concentrated, expanding spatial system infer?

It suggests an acceleration in the already clearly visible pattern of increasing urbanization and of successive periods of readjustment and readaptation. It suggests a constantly shifting urban system seeking equilibrium between a mass center and an apogee of flight. With respect to economic functions, it infers a process of locational attraction to those orbital positions which seem to best suit the needs of that particular function. And if that activity requires macrocosmic mobility to world, national, and regional markets, then its megalopian site will be tempered by the dictates of continental location. If that activity is essentially geared to a pattern of metropolitan service, then its relation to the urban mass will respond to a formula complex of time, rate, distance, service, and amenity factors. If that activity is internally located within the Central City, its position will be dependent upon "apparent" accessibility and motivational attractiveness as modified by the advantages of clustering economics.

What happens to those vast areas outward from the core and between the multitude of interrelated nodes? This is the domestic planning problem for governmental solution. It seems likely that, uncontrolled, these areas will develop as progressively expanding bands doomed to ultimate and irreversible long-run decline and decay. And only time is needed before the original city may be distinguishable as a core surrounded by an immediate ring of ever-widening deterioration, the expansion velocity of which will be dependent upon the means available to residential populations to relocate to new facilities in the urban edge or to move beyond. Whatever growth of existing activity centers occurs can scarcely be expected to fill more than a miniscule per cent of this desolate void. Moreover, perhaps nothing short of destruction of all

personalized transportation vehicles or absolute control over the diameter of megalopolitan expansion and forced intensive utilization of the inner bands first, seems capable of turning the direction of a rapidly moving and technologically accelerating process.

What will become of the Central Business District within this process? Unless controls are placed on the location of new, essentially core functions to restrict the sprawl of the existing city center, the CBD may become so physically dispersed as to lose the quality which makes it a compact pedestrian space. Yet if the CBD is to remain as a vital urban mass center, it may be forced to undergo a total reconstruction and evolution into a new form completely unressembling to the present awkward configuration.

General Background: Experience in Other Central Business Districts

General and detailed surveys of the changing economic composition of cities throughout the United States¹ provide a rich background for present planning decisions in Boston and in the North Station Area. Since many of the changes observed over this cross-section of central cities and their central business districts seem to represent national characteristics, discussion of the future of the North Station Area in Boston can be illuminated by their findings.

Statistical and graphic illustrations presented in Raymond Vernon's

¹ Based upon summary reports and studies of Baltimore, Buffalo, Chicago, Cincinnati, Cleveland, Denver, Detroit, Grand Rapids, Hartford, Los Angeles, Mobile, New Orleans, New York Metropolitan Region, Philadelphia, Phoenix, Pittsburgh, Providence, Roanoke, Sacramento, St. Louis, Salt Lake City, San Francisco, Tacoma, Trenton, Tulsa, Washington, Wilmington, and Worcester.

The Changing Economic Function of the Central City² indicate:

1. that for eight particular metropolitan areas in 1956:³
 - a. over 80% of total category employment in each of the classifications business services, finance-real estate-insurance, and wholesale trade was located in the central city,
 - b. that over 65% of metropolitan retail employment was located therein,
 - c. that less than 60% of manufacturing employment remained in the central city⁴, and
2. that in 1948, "13 central cities⁵ accounted for 94 per cent of the employment in their metropolitan areas' business services."⁶

This compares to a 1957 Boston S.M.A. employment distribution, according to the Greater Boston Economic Study Committee,⁷ of:

- a. not quite 80% of metropolitan service employment yet in Boston City,
- b. less than 50% of total retail employment in the city, and
- c. only about 30% of metropolitan manufacturing employment in the city.

The implications of these differences between Boston experience and the average of eight other principal cities might be that manufacturing has

²The Changing Economic Function of the Central City, Raymond Vernon, Area Development Committee of the Committee for Economic Development, New York, 1959.

³Baltimore, Denver, New Orleans, New York City, Philadelphia, St. Louis, San Francisco, and Washington, DC.

⁴Op. cit., p. 16.

⁵Baltimore, Cleveland, Cincinnati, Chicago, New York City-Newark-Jersey City, Buffalo, San Francisco-Oakland, Detroit, St. Louis, Philadelphia, Boston-Lowell-Lawrence, Los Angeles, Pittsburgh.

⁶Op. cit., p. 57.

⁷A Report on Downtown Boston, GBESC, Boston, Mass., 1959.

found available or has created extensive space outside the central city, that the nodes of retail concentration in a close ring of smaller inner cities has limited the size of the retail core, and that the services have not yet experienced their fullest potential growth and expansion in Boston.

In analyzing the change in Philadelphia's Central Business District for the 15-year period between 1934 and 1949,⁸ Alderson and Sessions considered both number of establishments and occupied floor space and found that the central city experienced a variety of functional changes:

- a. All goods handling activities - in retailing, manufacturing, and wholesaling-with-stock - declined by about 6 per cent, while establishments not handling goods increased in number by over 50%.
- b. Within this latter classification, the number of establishments engaged in wholesaling-without-stock nearly doubled, while both business and consumer services increased by almost 50%.
- c. During this period and in conjunction with these business classification changes, there was an overall decline in the amount of occupied floor space, with increases registered of about 15% in wholesaling-with-stock to over 100% for wholesaling-without-stock.
- d. "Retailers and manufacturers became fewer but larger on the average; business and consumer services became more numerous on the average; and only wholesaling increased in both directions; but within wholesaling nearly all the increase in numbers was in wholesaling-without-stocks."⁹

For the future of Philadelphia's CBD, Alderson and Sessions forecasted an increase in floor space requirements during the period 1960 to 1980 of between 15 and 20 per cent for service functions and stated that "business services constitute one of the major factors of expansion in the future of

⁸Philadelphia Central District Study, Volume I (red. ed.) Alderson and Sessions, Philadelphia City Planning Commission, 1951, p. 24.

⁹Ibid., p. 24.

Philadelphia as well as the national economy."¹⁰

In the North Station Area of Central Boston, a not dissimilar tendency occurred between 1947-1957-1960, where goods-handling activities in manufacturing sharply declined while establishments not handling goods rapidly increased in number, where there was an overall decline in occupied floor space, where there was a substantial increase in both employment and number of firms engaged in business services, and where wholesaling both with and without stock increased in number of firms, total employment, and occupied space.

Comparative analysis by Murphy, Vance, and Epstein of the Central Business Districts of Grand Rapids, Mobile, Phoenix, Roanoke, Sacramento, Salt Lake City, Tacoma, Tulsa, and Worcester revealed that the following subclasses of economic activities were "present and apparently typical" of Central Business District land uses:¹¹

Retail Business Uses:

restaurants*, women's clothing*, men's clothing*, furniture*, hardware and appliances*, department stores, "5 and 10" stores, drug stores*, jewelry and gifts, and amusement (entertainment) establishments*.

Service-Financial-Offices

banks*, insurance, real estate*, personal services*, clothing services*, general offices*, commercial parking*, hotel and other transient lodging*.

It is significant to note that of these 18 different CBD functions, 14 starred items are functions which now exist within the North Station Area.

¹⁰ Ibid., p. 59.

¹¹ Central Business District Studies, Raymond E. Murphy, J. E. Vance, Jr., and Bert J. Epstein, Clark University, Worcester, 1955, p. 334, table 4.

Market Areas in the United States reports that "outlets for shopping lines tend to be concentrated in market centers. Here people living in the centers and those from the surrounding areas come and compare style, price, and value of larger stocks and wider selections than are available in smaller communities."¹² Author C. T. Johnson points out, however, that economic changes are taking place in the Central City which "seem to involve a general redistribution of functions . . . and Downtown facilities may increasingly serve specialized needs."¹³

The accumulated weight of economic research in these large urban areas indicates that functional transition is taking place within the City, its Downtown, and its CBD away from a disperse accumulation of goods-handling activities and commerce toward a dominance of information exchange and administrative organization. In terms of the foreseeable future, these national characteristics indicate a continuing trend toward both an increasing number of firms and greater relative employment in specialized retail activities, wholesaling-without-stock, and business services.

The implications of these various economic studies, in terms of the central city within which the North Station Area lies, is that activities which have not only demonstrated stability in the face of other functional declines but can actually boast a remarkable growth, expansion, and vigor in this section of Downtown Boston indicate the

¹²Market Areas in the United States (3rd ed.), Research Department, The Curtis Publishing Company, Philadelphia, 1956, p. 11.

¹³The Shopping Center Versus Downtown, C. T. Johnson, Bureau of Business Research, The Ohio State University, Columbus, Ohio, 1955, pp. 95-97.

more probable growth in the future of the changing Central Business District. Moreover, since Boston is the center of New England business activity and is one of the principal concentrations of the national economy, a site within its Downtown immediately adjacent to the forthcoming Government Center represents a potential of which cognizance must be taken and for which such future Central Business District functions can be considered.

Locational Framework for Reuse Evaluation

In terms of the six-state New England region, Boston is the largest city, the largest port, the rail, air, bus, and truck terminal, the center of manufacturing, wholesale trade, retailing, finance, engineering, law, medicine, and sports, and the headquarters for many national corporations, associations, and foundations.

Evaluation of potential reuses for the North Station Area site within the Downtown of this major city on the edge of its Central Business District and creation of a design for an eventual new function and form to be evolved, therefore, not only must respect the presence of existing activity concentrations and their economic determinism upon nearby properties and the overall framework of new Downtown development, but is influenced by many sets of locational factors and features: of the area within the metropolitan framework; within the central city; at the head of the Shawmut Peninsula; within the Downtown on the edge of the Central Business District; bordered by the Central Artery-Inner Belt and Charles River; and adjacent to the forthcoming Charles River Park residential superblock, the future Government Center, and the still-fluid State Office Campus.

1. Location within the metropolitan area

As the intersection of the major metropolitan recreational river and its impounded fresh water basin with the harbor, the port, and the ocean, as the terminus of the northwestern transportation lines, as the concurrence of the major north-south regional movements, as the convergence of two lines of the metropolitan rapid transit system, and as the only intown junction of a regional radial expressway with the inner metropolitan circumferential, the site now occupied by the North Station Area possesses a rather particular metropolitan centrality of accessibility and is in a significant sense the focus of movement for the northern quadrant of the state's largest metropolitan area.

2. Location at the tip of the peninsula

Forming a major wedge at the head of the Shawmut Peninsula and providing the jumping-off point to the inner ring of cities across the various harbor arms and junctioning rivers, to the cities and towns in the northern metropolitan area, and toward the northern states of the New England Region, the area site represents a confluence of topographical prominences, visual approaches, transportation lines, and functional-economic utilizations and concentrations, is a hub of movement on the peninsula, and is a doubly significant entrance to the central city.

3. Location within the Central City

The position of the area site within the Central City is halfway between the residential bands along the Charles River "west shore" and the business areas of the Downtown facing the harborfront "east shore" and is the point at which the several segments of the city as a whole meet through man-made connections across the Charles River and Boston Harbor.

4. Location within the Downtown on the edge of the CBD

As the direction of the city's early commercial expansion and the point at which physical transfer has always been made between regional movement and intown transportation, the area site is an historical center of business and activity within Downtown Boston. Of direct bearing upon reuse of the site, however, are the particular economic concentrations within the nearby Central Business District, their physical relationships to the rest of Downtown, and their effect of their economic determinism upon expansion and new development. The existence of the financial district of State Street just down the future New Congress Street from the Area, the retail core connected to the Area by the interlocking pedestrian lines and spaces of the forthcoming Government Center, the office district on the symmetrical side of the retail core to the Area site, the shifting retail concentration toward Back Bay and its suspected future stimulus from the impending Prudential Center - all these factors can be juxtaposed against the decision of Government Center creation and Charles River Park development on the north side of the CBD and are essential considerations of locational potential.

5. Location to adjacent city sections

To both the east and west of the area, the land represents a history of residential use. One of these, the West End, is now re-evolving into its highest residential form. That section to the east is presently suited for a re-evolution but appears unlikely to experience such in the immediate future. Nevertheless, between these two wateredge concentrations of residential development lies a combined vacant-underutilized site of some 23 acres whose future form and future function must respect and in large measure be determined by its immediate tangentialities.

6. Location adjacent to major redevelopment projects

The immediate adjacency to three of the city's major redevelopment projects, with the high-rise, more-or-less luxury apartment giant superblock of Charles River Park displacing the former West End neighborhood and the creation of the federal-state-municipal Government Center and State Office Campus on the site of the honkytonk Scollay Square and deteriorated Staniford-Chardon blocks, brings a new dimension of business and development potential to this section of the city. And certain it is that if the West End project and the Government Center had not been initiated, there would have been little defense for undertaking renewal of the Area under consideration here. But the impendency of these economic and physical factors is at hand and the Area's containment of the largest expanse of uncommitted vacant and underutilized land in the central city is a fact, and recognition of the potential created is the real issue herein.

Regional Accessibility and Site Centrality

If there is any location that may be referred to as "The Hub," it is this northern entrance to Downtown Boston, for nowhere else in either the central city or the metropolitan area do so many transportation elements converge as here: from the west--Storrow Drive and a double branch of the rapid transit system; from the northwest--Charles River Dam (Craigie Bridge) and the future rapid transit extension to Woburn; from the north--the Charlestown Bridge, confluence of the Mystic River Bridge (Northeast Expressway), Inner Belt, Central Artery, the present rapid transit line to Everett, and the future extension to Reading, and the Boston & Maine Railroad; from the northeast--the Sumner and Callahan Tunnels; from the southeast--the Central Artery (Southeast Expressway);

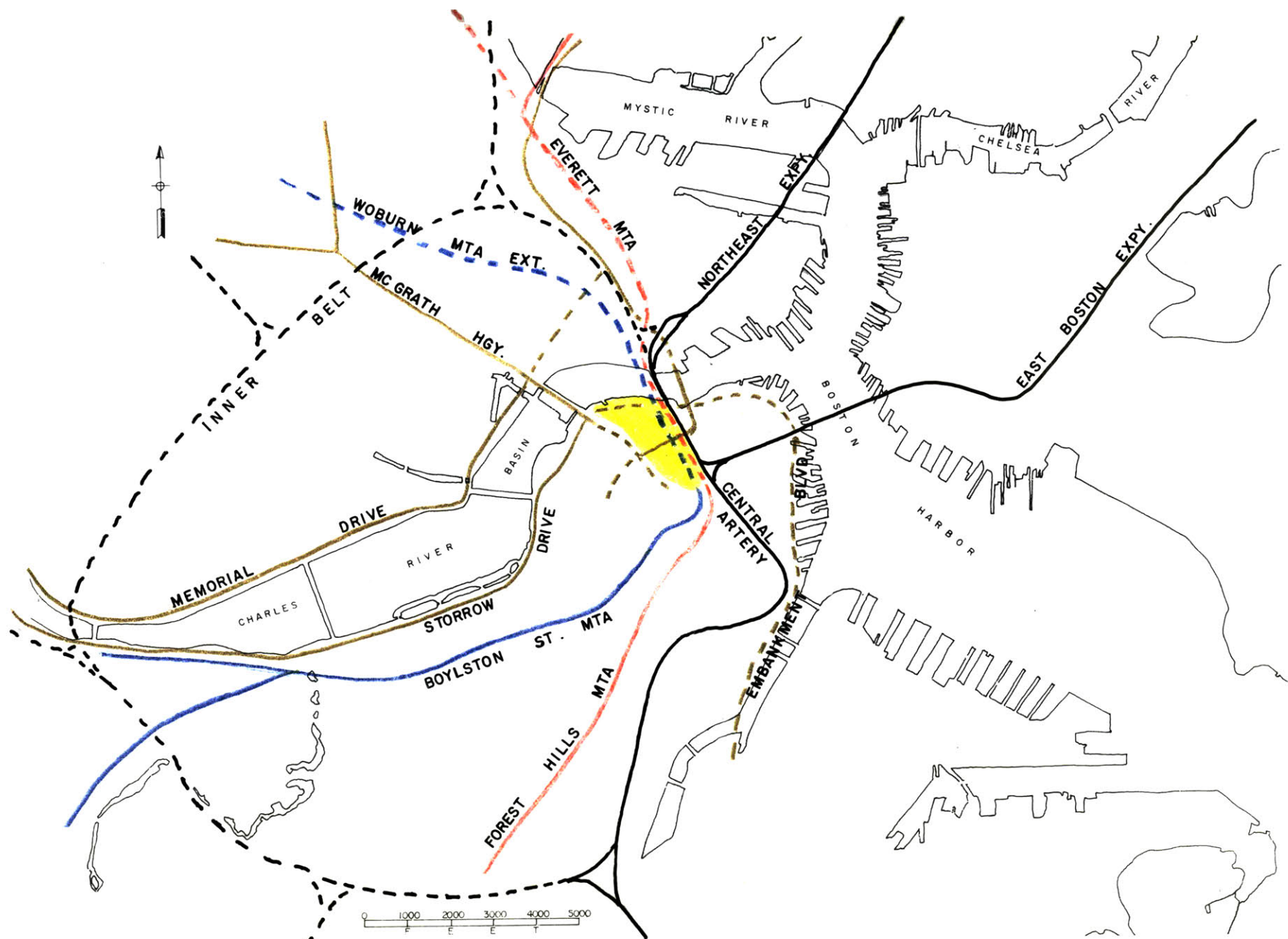
from the south--the Forest Hills (Washington Street) rapid transit line. And though the well-worn phrase accessibility may more correctly be considered a flow rather than a point, the area site nevertheless represents one of the most locationally central and quickly reached within the regional core and Boston metropolitan area. (See Illustration 37.)

Summarization of Reuse Influences

As a measure of the specific reuse potentials for what is now known as the North Station Area, investigations, analyses, and evaluations of previous sections and chapters indicate significant factors of physical determinism, locational influence, and economic foundation.

1. Physical and Locational Factors

- a. Construction of the Central Artery has brought a significant vehicular accessibility to the site from the metropolitan area which will be increased by completion of the Inner Belt and its associated regional radials.
- b. The area contains the only large, vacant and nonintensively utilized uncommitted development site in Central Boston.
- c. The possibility of a new Charles River dam near Boston Harbor may create extension of the Charles River Basin along the edge of the area.
- d. The framework of intracity surface circulation elements emanating from Government Center plans lends itself to creation of the area as a two-part simplified development unit.
- e. The creation of the Government Center will enable establishment of clear and direct pedestrian connections to the area from other parts of the Downtown.
- f. Elements of the Charles River Park plan will create direct boulevard vehicular circulation connection between the inner metropolitan circumferential and the city center.
- g. The physical expansion of the Museum of Science facilities may have a direct bearing on the configuration and utilization of Charlesbank Playground and possible extension of riveredge parkland.



METROPOLITAN SITE ACCESSIBILITY

- h. The redistribution of traffic flow effected by construction of an expressway link north of the Charles River between the Inner Belt-Mystic River Bridge and Memorial Drive in Cambridge will allow reorganization of highway facilities at the northern end of the Central Boston peninsula.
- i. Redevelopment of the Boston harborfront and creation of an embankment boulevard, together with the presence of Charles River Park, sets the stage for intercommunication between the two sections of the city and necessitates a decision of appropriate reuse to "bridge the gap."
- j. Extension of rapid transit lines to the suburbs will substantially increase the central city's accessibility from metropolitan towns and cities and, vice versa, will substantially increase the "market area" of Downtown business.

2. Economic Factors

- a. The economic trend of activities in the North Station Area has been rapid growth of various office activities, with business services, regional manufacturers' offices, regional wholesaling-without-stock headquarters, professional services, and several different levels of government demonstrating a definite growth in this Downtown and Central Boston location.
- b. Creation of a 2400-family superblock in the adjacent Charles River Park, notwithstanding the planned shopping center, will represent a sizeable market of both daytime and nighttime significance for many forms of business activity.
- c. Creation of the proposed Government Center will establish a whole new atmosphere for development in the Downtown north of the retail core, will locate a 25,000 employment concentration equidistant between the Central Business District and the Area as a major available daytime consumer market, and significantly influence renewal reuse and new functional-form considerations.
- d. Redevelopment of the Staniford-Chardon area between the new Charles River Park and the proposed Government Center increases the probable success of both projects and removes the last remaining argument against both the appropriateness and timeliness of action in the area under consideration here, will create an additional consumer market for a wide range of services, will tend to raise the value of land in the immediate environment, and may give the necessary impetus to restructuring and new development of the area site.
- e. The North Station Area location is the logical new development site of supportive activities for the Government Center and the State Office Campus, could capitalize upon the large adjacent market for specialized non-CBD-competitive facilities, contains an existing composition of several active economic elements

which may be able to undertake some measure of new building construction through joint organizational and financial powers, is positioned as an expansion area for the long-term future growth of "services" in this metropolitan and regional city center, and possesses an economic and physical significance as the northern gateway to the Central City and Downtown Boston.

Reuse Potentials by Economic Function

Probably the most difficult task in renewal planning is to answer fully, reasonably, and justifiably the question of reuse. Whereas in the past, some arguments for and against possible reuses have been based on a variety of defense mechanisms and rationalizations, ranging from "depth" studies concerning prevailing and anticipated markets to simple matters of opinion and foresight, the relation between "official" reuse recommendations and the success of the reconstruction seem not to be directly proportional. Thus, not only must the value of market analysis be tempered by judgment of the existing period and framework within which it is conducted and take recognition of both the macrocosm and microcosm of the area with which it is concerned, but reuse considerations must recognize the history of development proposals which have embodied a concept or an idea, whether of the Charles River Basin, the Fenway, or an integrated metropolitan transportation system.

One approach to the formulation of reuse goals for the North Station Area site is listing of general functions and progressive and selective evaluation of the merits, strengths, weaknesses, feasibilities, impracticalities, possibilities, and probabilities of each category, all within an environmental context of riverfront, high-rise residential superblock, concentrated government offices, linear parkland, and central city entrance.

1. Industrial Operations

Industry is a use which has long been officially considered appropriate for much of the area site, apparently under the assumption of being directly related to the historical existence of rail yards, terminals, and waterfront goods transfer. The last twenty years, however, have seen a decline of such elements in both the area and its immediate environment, and such an assumption does not appear to be valid. Insofar as new industrial construction is concerned, the present and foreseeable nationwide trends in plant location toward the suburbs, the climbing city tax rate, and the relatively greater land costs of intown single-story construction would seem to eliminate industrial space from reuse consideration for this Downtown Boston site. Moreover, the institution of such a use now would appear to be least in keeping with the area's recent economic character trends, grossly wasteful of the economic potential of the site for intensive utilization which adjacent redevelopment has made timely, and entirely incompatible with the new adjacent reuses of residential apartments and government offices.

2. Manufacturing Space

Although there are many different forms of manufacturing still present in the central city, the amount of floor space of recent manufacturing use which is now totally vacant and apparently unavoidably permanent not only appears to be rapidly increasing, but the typical rental structure which has characterized such intown manufacturing does not indicate either demand for or feasibility of such new intown construction. There are, nevertheless, some high-margin industries which might be able to afford new expensive floor space, and thus the effort is not made to rule these out but only to indicate that there are few

precedents or evidences of new location of such uses in the city center and that the reuse of this Downtown site for new manufacturing purposes would not appear to be defensible in terms of either demand or rental economics.

3. Research Facilities

Industrial research functions are not inconceivable as a component activity reuse for the area site, but since the current trend in their location appears to be generally either along the metropolitan semi-circumferential (Route 128) or in the immediate vicinity of M.I.T., the Cambridge-Charlestown side of the Charles River next to and in continuation of the already existent cluster of research-development facilities would appear to have more attraction and be more appropriately considered for these activities than the essentially Downtown area site.

4. Wholesaling Operations

Old-line wholesaling-with-stock is characteristically a bulk-handling operation found in near-core but periphery locations with concomitant requirements of extensive low-rental floor space, provision of off-street loading, movement facilities for a heavy volume of goods, and a large number of daily truck deliveries. These operational factors not only indicate that new multi-story wholesaling and warehousing space could not hope to compete with the existing surplus of vacant and underutilized old loft space within the inner metropolitan area but combine to essentially eliminate this function from reuse consideration for redeveloped, necessarily expensive, new floor space construction in a Downtown location next to high-rise apartments and a concentrated government office center.

Wholesaling-without-stock, similar to elements of the existing Area composition, or in effect office activities of brokers, agents, and dealers and certain showroom or display facilities for wholesale firms with operating facilities elsewhere, are a definite consideration, however.

5. Showroom Space

There are a few businesses in the line of wholesale activity which tend toward a more retail and/or showroom nature than with-stock operations, which, coincidentally, also have demonstrated an ability and willingness to pay for more expensive floor space accommodations, and which might find appropriate a location in such a site as the area concerned. Since the field of furniture and home furnishings has demonstrated significant concentration in the North Station Area, has been a strong element in the Central Boston economy, and has shown nationwide tendencies of Downtown stability, capitalization of an existing Area feature and hence inclusion of some degree of retail or wholesale-retail furniture and home furnishings showroom space would appear to be most appropriate as a special site feature.¹⁴ In addition, recognition of the dominance of future central city office functions indicates that sales or display space next to the Government Center and State Office Campus and near the State Street financial district might also be considered for national manufacturers of various forms of business equipment.

¹⁴Following this thought one step further, it is possible that enough interest might prevail in the area and in Boston for the creation of a reuse form along the lines of a New England Furniture Center with ground-floor, single-level facilities, either as part of or separate from other structures, as revolving central displays of national manufacturers, manufacturers' representatives, and local wholesale houses.

Although provision for showroom facilities on less than an organized basis would appear to be impractical, inclusion of a specific concentration might provide an economic advantage of contrast, variation, and highlight for this restructured northern section of the central city, and formulation of an overall design for the area site might justifiably undertake to incorporate such showroom facilities into the development concept and within the framework of other activities and other structures.

6. Transportation Use

The reuse of the site as a major transportation center might envision the railroad station functioning as an integrated transfer point for railroad-rapid transit operations, the riverfront as a Downtown commuter heliport, and other parts of the site for a regional bus terminal and extensive open or structural vehicular parking facilities. However, in light of the future extension of urban rapid transit deep into the suburbs, the effect of transit extension upon local bus operations, the physically limited volume of automobiles which any expressway network can bring into the central city in a short period of time, and location of more safely approachable vertical aircraft sites on the proposed redeveloped harborfront, the development of a transportation complex concept for this particular site seems unwarranted.

7. Parking Lots and/or Structures

A natural "advantage" quickly to be pointed out about the area site is its proximity to elements of the existing and proposed expressway network and the potential of part of such an area for parking facility reuse, and the argument might be advanced that the North Station Area adjacent to both the forthcoming Government Center and State Office Campus

would lend itself as a site for parking facilities for use by all-day and long-term parkers. Although such an "apparent" advantage cannot be denied, excited speculation and detailed parking facility reuse consideration, with concern over such items as the number of vehicles which can be handled by adjacent streets, the rush-hour load which can be carried by nearby expressways, walking distances from parking to stores, the micro-metric adjustment of parking rates to encourage or discourage particular time periods of parking users, and operating and construction costs, avoid the real issue to be faced - that is, the necessary creation and extension of new non-individual transportation facilities out from the core to a radius which encompasses, serves, and carries the vast majority of suburban commuters and shoppers to the central city, a readily achievable mass movement which expressways and individual automobiles will never be able to attain. If, moreover, the objective of public policy in the distant future should call for discouragement of vehicular traffic in the city, then perhaps there would be no better way to accomplish this end than by not providing "adequate" parking near the Central Business District and not constructing additional expressways into the heart of the city, but rather to place more emphasis and allocate more funds to the development of mass transportation systems.

8. Retail Stores

The creation of new retail space in any area outside the Central Business District cannot help but be at the expense of the retail core. This applies equally to the contemplated Charles River Park shopping center and the Newbury Street district as to the area under consideration here. And though the existence of both the Charles River Park apartments and the Government Center employment concentration might give the

speculator adequate "justification" for the creation of general retail facilities in the area site, such action would not appear to be in the interest of the city center.

The inclusion of certain retail facilities within the design for the new area, nevertheless, would be desirable in terms of nearby Downtown employment for direct noontime or after-work service. Moreover, an area such as this adjacent to large government offices and containing its own major activities, would be able to support a limited number of retail shops of a specialty character, which, if contrasted or complemented by a retail activity of a theme nature, such as the aforementioned retail-oriented showroom space for home furnishings, could give to the area site a ground floor usage of variation and interest to the daytime non-CBD shopping pedestrian.

9. Office Space

On the basis of activities which have been rapidly growing in the North Station Area for the last decade, the site concerned would seem to demonstrate considerable potential and promise as a center for private offices over a range of regional, state, metropolitan, and local levels:

a. In terms of the highest level of centrality, this area is now supporting and can continue to support offices along functional lines of branches of national corporations, headquarters of New England industries, manufacturers' representatives, and regional wholesaling offices.

b. The second level might represent the Boston offices of manufacturers with plants in other cities and towns in the state.

c. With construction of the Government Center and given the opportunity to locate above the CBD close to the intown transportation junction, some locational response might be forthcoming not only from

Boston-based or originating companies characteristically located in the past east or south of the core, but possibly even from producers in the metropolitan area that desire to maintain a Downtown or central city office.

d. Provision of replacement space for the numerous small offices of food, furniture, chemical, machinery, and electrical goods brokers and agents now present in the area might be expected to provide a predictable base demand for new office facilities.

One of the strongest arguments voiced against the reuse of the North Station Area site for office purposes, and in fact against the advisability of further commercial redevelopment for office purposes in Boston in general, is the expected double impact upon the next five to ten years' demand for office space due to creation of the Prudential Center and the Government Center. From the standpoint of the city as a whole and the renewal of the Downtown in particular, the first of these impacting developments is a most unfortunate decision to have been reached in Central Boston and will not only concentrate a vast block of private office space in an unnecessary configuration of towering skyscrapers, at an unrelatable distance from the city core and the cross-roads of the rapid transit system, and at the expense of even distribution of new facilities to replace obsolete structures in the city center where pedestrian movement and transfer can be most easily handled, but may eventually destroy the vitality of Boston's present core as it now exists. Whether in recognition of this circumstance or as the result of individual determination, the creation of the Government Center respects many of the locational and distributional virtues which the Prudential Center ignores. Placed on the site of a badly deteriorated section of the city

adjacent to the retail core and proposed as a functional integration of the Central Business District and Beacon Hill with Charles River Park, with the Market District, and with the Massachusetts General Hospital complex, the Government Center would seem to represent a positive step toward solidifying and strengthening the existing center of Central Boston. Moreover, the relocation of the various government agencies from many widely distributed existing structures and locations would seem to encourage a more probable gradual replacement from a broad market of small business organizations and office functions.

Although redevelopment for office reuse anywhere in the Downtown would superficially appear to be difficult to justify, the factors of the location of new office space and the availability of a central area site are counterbalancing considerations and new private office development for the North Station Area site, therefore, may reasonably be considered as a justifiable reuse.

The determinate of feasible and appropriate office functions for such a site, however, is and must necessarily be rather arbitrary, for in essence the nature of office facilities depends on an extent of factors quite beyond the scope of this chapter. Nevertheless, the following is a list of those particular forms of office activity which seem to have successfully located in this area up to the present time, which might find such a location both attractive and profitable, and which would seem to be most compatible with and most beneficial to the adjacent Central Business District and the future Government Center:

Branch Offices, manufacturers' representatives, sales headquarters, agents and brokers.

Consulting Offices in law, taxation, engineering, architecture, advertising, business organization, private and public business research, and office equipment automation.

Business Services in data processing, specialty high quality printing and photocopying, accounting-auditing-bookkeeping, employment services, news syndication, mercantile reporting agencies, stenographic-mailing services, etc.

Real Estate agents, brokers, and developers, financial investment houses, convenience banking.

10. Entertainment Facilities

Proposals recently made for part of the area concern further development of land north of Causeway Street for entertainment purposes or the creation of something on an intown entertainment complex extending to the Charles River. Although it could perhaps be "proven" that the market represented by nearby present and future residential areas justified expansion of the entertainment function of the present Boston Garden arena and the addition of such facilities as a bowling alley¹⁵ or a new theater, and though a small-sized Disneyland would undoubtedly create quite a stir in Boston and would draw large crowds into this section of the central city, how far into the realm of real estate speculation can Downtown planning proceed and how reasonable would be the renewal of part of Central Boston for such a purpose? Since the previously discussed proposed new dome-covered sports stadium construction elsewhere in the metropolitan area would seem to discourage even the possibility of renovation of the present entertainment facility, such an entertainment complex reuse of so significantly located a Downtown site appears indefensible and ill-advised.

¹⁵ In the Spring of 1960, the president of the largest private land owner in the existing North Station Area indicated that use of land behind the railroad terminal was being contemplated for construction of large bowling alley facilities of the following approximate statistics: 80 alleys occupying a site of 60,000 sq. ft. with parking space of 50,000 sq. ft for 350 cars (200 sq. ft. per car) to draw an expected patronage volume of 5,000 persons per day (or about 3 persons per alley around the clock).

11. Motel or Hotel Facilities

Another renewal reuse which has been proposed for part of the area envisioned erection of a new motel structure near, adjacent to, or in conjunction with the existing hotel and has been defended as a "logical" facility for a site with access to the metropolitan highway system yet within the Downtown and within walking distance of the Central Business District. However, in light of the vacancy trend of the existing hotel and saturation of the transient lodging market by forthcoming complete hotel facilities as part of the Prudential Center and many new motels and motor lodges in various locations throughout the metropolitan area, the development of such a reuse in the area site would have to be defended by more detailed analysis and more weighty arguments than can be brought to bear here. And though, as general reconstruction of this entire section of the Downtown progresses, the development atmosphere may become strongly conducive to the creation of such facilities adjacent to the Government Center, more dramatic sites may soon be made available along the nearby redeveloped harborfront.

12. Public Buildings

The creation of an adjacent Government Center and State Office Campus with adequate reserve land for expansion, the impending construction of a municipal auditorium in Back Bay, and the proposed construction of a domed regional sports stadium close to the central city would appear to indicate little reuse potential for public buildings or public places of assembly within the area site. And though the U.S. Post Office facilities existent within the present configuration might not relocate to space directly within the forthcoming Federal Office Building, where access and egress of the necessarily heavy volume of trucks may severely

interfere with vehicular movement on adjacent city streets, the area site is unlikely to be required to provide either land for new public buildings or new floor space for government activities.

13. Institutional Buildings.

Quasi-public space in the form of headquarters offices of foundations, associations, and other non-profit organizations might find this new development site directly adjacent to the Government Center, close to the Central Business District, and highly accessible by both individual and mass transportation very suitable for central city location and can be considered a strong possibility as an area reuse. Though location of such institutional functions as hospitals, churches, libraries, schools, or colleges is improbable, and though laboratories, clinics, etc., would tend to move near the Massachusetts General Hospital complex (such as the Retina Foundation Eye Research center now being constructed within the West End Redevelopment Project), this new development site could compatibly and most suitably serve as a concentrated location for one or more buildings to house, for example, a Foundation Center composed of national fund and charity organizations and/or a Boston Engineering and Technical Center for professional group offices.

14. Residential Buildings

There are several arguments supporting residential reuse for part of the North Station Area site. First, the riveredge section of the area is adjacent to and immediately downstream from the new high-rise residential Charles River Park whose presence will have effects upon housing potential far beyond the neighboring Charles Riverbank. Second, the riverfront section is the only remaining undeveloped intown site along the Central Boston shore of the Charles River. Third, the proposed new

downstream Charles River dam, in extending the Basin, will considerably increase the attractiveness and value of this section of riverfront. Fourth, once railroad operations on the Central Boston peninsula have terminated and the Lechmere elevated has been eliminated, this 23-acre riverfront site will be prepared to support new construction as an entirely integrated unit. Fifth, residential construction of the riverfront site would extend the continuity of land use which already exists along the Boston side of the Charles River Basin.

Of the several factors which would tend to discourage residential reuse in the area concerned, all of them easily recognized but none of them finally determining in the long-run: the flat topography of the site is only a problem of landscape architecture solution, the presence of the Central Artery high-level Charles River Bridge necessitates a careful siting of structures, and the existence of a Charles River Dam-Central Business District vehicular connection might require some special pedestrian integration with Charles River Park. And though it is argued that the development of Charles River Park and the creation of proposed Prudential Center apartments will absorb the entire market for higher rental residential units in Central Boston for several years to come, the prevailing situation is not permanent, the development of the entire area under consideration here is not envisioned as a short-term affair, and by the time that those sections of the site most desirable for residential purposes can be made available, the market for new residential space might reasonably be expected to once again have rearisen.

In summary, the locational and economic potentials for future residential reuse of part of the North Station Area site, in particular the Charles Riverfront, seem to far outweigh the microscopic disadvantages,

and as a not-too-long-range possibility, upon completion and successful operation of Charles River Park, regeneration of the higher rental housing market, evolution of an improved riverfront, reclamation of the nearby section of the Somerville railyards, and termination of Central Boston peninsula railroad operations, would seem to be not only a most natural but perhaps a most functionally and conceptually feasible continuity of development.

15. Recreational - Public Open Space

Of the estimated 24 miles of shoreline in the Port of Boston, only an infinitesimal part is presently used for recreation or public open space and most of this most valuable natural resource is occupied by merely deserted, rotting, and forgotten commercial wharfs of the historic past. Such a circumstance would seem to indicate a timely opportunity to undertake reclamation of the miles of waterfront desolation for more full and appropriate use and for new development and a generous provision of recreation facilities. Although the current official proposal for redevelopment of Central Boston Harborfront from Fort Point Channel to the North End will fulfill only one small piece of the total achievement, it represents a first step in such a program and may be the initial force for gradual total port reclamation in the years to come.

The area and potential development site under consideration herein is an important component of the future waterfront redevelopment and recreation system which is suggested. Located in the key slot between the existing Charles River Basin-Dam and Boston Inner Harbor and with the presence of the Boston Museum of Science, Charlesbank Playground, the extending band of riverfront park, and the proposed redevelopment of

Atlantic Avenue, the area site represents the opportunity to forge a connecting link in the development of the Boston waterfront, the Shawmut Peninsula, and the continuity of metropolitan parklands. In such a situation and under the sequence of area riverfront transition - of railroad operational relocation and river reclamation - a Charles River-front development program might be conceived which proposed a number of striking features, including simplification and reduction of cross-river structures, dredging and re-widening of the newly extended Charles River Basin, and development and utilization of this section of the Charles River which today does not seem visibly possible. Thus, the 23-acre area riverfront site might be developed in conjunction with residential reuse into a mating recreational-residential superblock to Charles River Park, a major intra-city circulation link might be extended between Storrow Drive and the future embankment boulevard, and the park band along the edge of the Charles River might be connected to the existing North End Park and the newly redeveloped Atlantic Avenue harborfront.

B. Design Considerations

Development of a conceptual form for that section of Central Boston between the Tramont, the CBD, the Fitzgerald Expressway, and the Charles River is an evolutionary process of combination, interpolation, and digestion of locational elements, economic potentials, physical foundations, circulatory connections, environmental factors, visual features, and image associations. It is the synthesis of the historical past, the obvious present, and the nebulous future into a flexible entity of functional and structural components upon which a program of organization and implementation may be founded. Though not strictly an act of

successive approximation, the creation is a procedure of multiple re-examinations composing the sequence of formulation, appropriate aging, and redefined review.

The objective of this section is to evaluate what appear to be those factors and/or features of importance to the formulation of a development concept for the northern entrance to Central Boston. In the sense that the evolution of a new area will be a transitional process in which some existing factors and features are of a more long-term nature than others, the design must be cognizant of the function and physical presence of the more permanent elements. This is not to infer that any physical element of the existing North Station Area should necessarily determine the new structural and functional form, but obviously any development process over an extended period of time must at least take recognition of the existence of such items.

1. Circulation Elements

In terms of future circulation, the creation of an embankment boulevard in connection with redevelopment of the city's harborfront and the completed Inner Belt's anticipated relief of Storrow Drive are two changes that enhance the value of completing the now missing West End-North End link in the peninsula's waterfront semi-circumferential. This possible intracity waterfront parkway extension would not only establish a vehicular continuity around the Central Boston peninsula but would provide the necessary impetus for the full development of the Charles Riverfront, and, in conjunction with the contemplated Government Center (Downtown)-Charles River Dam connection, could establish a definite but workable circulation framework within which the area could be most integratively developed.

One note of discord in this clarification and consolidation of vehicular movement, unless resolved immediately, may cut off and isolate the area site from many of the very changes and public investments which have brought its timely development potential to begin with. But assuming that acceptable compromises can be concluded with respect to the interconnection of the regional expressway with the Downtown and Central Business District, then the necessary, complementary, and interrelated circulation boundaries will be established about and near the area that will provide accessibility without damage and service without interference.

Pedestrian circulation elements in the city center are even more significant design considerations than streets and expressways. For the area concerned, perhaps the long-range future pedestrian lines of strongest influence are:

- a. the generally north-south connection through the Government Center from the CBD to the State Office Campus, Charles River Park, and the area site, and
- b. the east-west connection through the State Office Campus from the Tramont to the area site and to the North End (and its eventually redeveloped housing).

The transition from the predominate existing North Station-CBD pedestrian movement to orientation toward the Government Center, the State Office Campus, and Charles River Park is a factor which must temper the design timing and the final configuration of the area's evolving future pedestrian circulation pattern.

2. Visual Factors

The number of visual factors to influence the formulation of a new area form are inexhaustable. The following represent a selected, significant few.

Elementary to the redesign of this area is its topographical position with respect to the Tramont to the south, Copp's Hill to the east, Bowdoin Hill to the west, the Mill Creek valley to the southeast, and the Charles River along the northern boundary. The area is thus located in a semi-basin open to the north and surrounded on almost all sides by building-covered hills. On this basis alone, a design might either deliberately violate the basin by rising above it or might over-emphasize it and remain close to the ground. Modification of these two extremes consequently can be derived from consideration of the other, the man-made factors.

Chief among these will be the particular forms decided upon for the two adjacent redevelopment projects to the west and south - the apartment towers of Charles River Park and the office buildings of the Government Center. Of these, the designs of the former are rather more fully known and consist of a blend of 2- to 3-story luxury apartments set among 16-story slabs and 23-story towers aligned perpendicularly to the northwest and the Charles River. Undoubtedly, one of the outstanding features of the Government Center design will be the new Federal Office Building. This structure mated with the new City Hall and juxtaposed against a variety of six- to ten-story office buildings in the State Campus would seem to place a certain pressure upon the design of the area to at least equal the lowest of the larger buildings and perhaps to include one element that approached the height of the tallest.

To the northeast hovers the elevated line of the Central Artery, moving across the Charles River about four stories in height and disappearing and descending down the Mill Creek valley toward the southeast at a two-story level. To the southeast, the section of most likely future changes, the Customs House Tower rises unmistakable in its prominence and

might be appropriately retained in deliberate, punctuating view. And though the immediate foreground to the southeast threatens to be composed of some form of major elevated highway passing from the regional expressway into the Central Business District, if alterations in the Central City circulation system can be undertaken which avoid such a highway connection at this point, then the vista open to the Customs House Tower and to the downward slope of Central Business District structures from the Tramont to the harborfront could be handled most handsomely in conjunction with the descending terraces of the Government Center.

Two surface elements of visual significance to the design of the area site are the major street lines contained as part of the adjacent redevelopment project plans. New Congress Street, in addition to functioning as an important circulation element from the Central Business District to the area and as a vehicular circulation connection to the Charles River Dam and Storrow Drive, will create a curving visual perspective along the lower edge of the Downtown and along the area site with a particularly strong focus on future Charles River Park structures at the Staniford-Causeway Street intersection. It is for this reason, as was indicated in the West End investigatory section, that adjustment of the tower and slab apartment building locations presently envisioned by the Charles River Park plan is particularly appropriate.

The other surface line of visual significance to the area is Charles River Park's new Staniford Street, a wide boulevard to descend from Cambridge Street and Bowdoin Hill and to connect to existing Causeway Street, forming a line of sight which necessitates both circulation and structural considerations in the future form and configuration of the area.

3. Environmental Features

In order to consider the environmental features near the area, it is necessary to differentiate between those elements which are now present and likely to disappear or be extensively altered and those which are more or less permanent to the extent of summary value judgment.

Among those features of less-fixed presence are the whole Scollay Square area upon which the Government Center will rise; the cluttered Charles Riverfront trackage, trestles, and railyards; the disorder of the North Washington Street triangle and the Charlestown Bridge at the foot of Copp's Hill; and much of the undistinguished, to-be-selectively-pruned Market District southeast to Faneuil Hall.

Those environmental features which will be treated as significant here are: the Charles River, the residential North End hills, the apartment-sprouting Charles River Park, the future State Office Campus, the Government Center proper, the Central Business District, the eventually-redeveloped Somerville railyards, the residentially redeveloped North Washington Street wedge, the Charles River Dam-Museum of Science-Charlesbank Playground, the Central Artery, Boston Harbor, and the various future circulation elements around the area site as previously considered.

Whatever new design is evolved for the area site appears required to resolve a situation of two-directional environmental orientation: either centering on and radiating outward from the water body (as has Charles River Park from the river and, to some extent, the Government Center from the harbor) or backing upon this natural environment and facing inward toward the city core. Yet because of the size and particular configuration of the area site, a feasible compromise of these two forces may possibly be achieved.

4. Image Association

The existence and fact of the area as the northern gateway to the central city necessitates a design consideration and conceptual formulation which not only recognizes the locational significance of such a site but the importance of entrance association. And the high-level approach over the Charles River from the north with the Government Center and Beacon Hill in the distance, the surface approach over the Charles River Dam with skyline impression of the new West End, and the intown transition from the intensity of the CBD to the rise and fall of punctuating new Government Center forms and to organization of and stimulus preparation for outbound metropolitan connection are factors which necessitate a structural prominence at this point definite enough to form a strong image and landmark as the entrance to the peninsula and the central city and yet be complementary to and in scale with the immediately adjacent Government Center, State Office Campus, and Charles River Park.

5. Summary

The process of formulating a conceptual plan for that section of land now occupied by the North Station Area is thus to be influenced by a complex of interrelated, cumulative, and complementary factors and features within which economic functions are basically derived from site location and design configuration is extensively determined by adjacent circulation elements, nearby visual promontories, and surrounding environmental forces, the whole conceived and executed as the northern gateway to the central city and Downtown Boston.

VII

DEVELOPMENT CONCEPT AND SITE DESIGN

A. Policy, Design, and Program Objectives

Review of Area Research

The content of the foregoing six chapters has been necessary to establish the broad base of detailed knowledge important to planning for a given unit of the physical world and essential to the Downtown sector of a regional city center. With this information, the full extent of relationships between the multitude of influencing factors can be realized and thus the coordinated organization necessary to direction of future city forms can justifiably be prepared.

The previous chapters have dwelt in considerable detail on a large and interrelated variety of subjects:

On an historical background in order to show how and why a particular section of the New England regional center has developed as a dense, confined, and disorganized commercial area.

On the physical composition in order to establish the no longer feasible utilization of most existing structures and the high priority and extreme level of area reorganization-reconstruction clearly necessary; on the large daily pedestrian and vehicular movements through the area and the significance of the site as the northern entrance to the central city; on the destructive configuration and unbalanced capacity of the various existing transportation elements - of the archaic facilities and underutilized potential of rapid transit, of the sharply declining passenger railroad operations, and of the excessively emphasized vehicular expressways; on the physical and developmental limitations imposed by existing adjacent riverfront conditions and dimensions - of major sewer pollution upon use of the riverfront, of low-clearance structural interferences with river navigation, of high-volume river traffic bridge

openings and consequent interruption to vehicular, rail, and rapid transit movement.

On the mixed and complex economic composition of the area and the nature of significant concentrations in business services, high-value manufacturing, regional wholesale offices, government activities, entertainment services, hotel services, and furniture and home furnishings sales; on the relative importance in the Downtown and metropolitan economies of several area components, particularly furniture and home furnishings showroom wholesaling; on the recent trends of composition away from loft manufacturing orientation toward dominantly white-collar office activities; on the critically non-intensive floor space utilization of most individual buildings and on the long-term increasing vacancy trend of the area as a whole; on the absence of wide-spread property reinvestment clearly demonstrative of area self-renewal capability; and on the highly diverse ownership pattern of the multitude of tiny low-value parcels indicative of private redevelopment impossibility.

On the proceeding and impending redevelopment projects directly adjacent to the area and on the large number of proposed and likely vehicular circulation, rapid transit, passenger railroad, and river reclamation changes in the nearby metropolitan environment which substantially increase the development potential of the site and accelerate the timeliness of the area's renewal.

On the general economic transition of Central Cities toward greater office and service functions and the coincidental tendency and promise of the area in a similar direction; on the economic and functional reuse potentials of the site, close to the Central Business District, for residential development adjacent to a rising apartment superblock fronting the recreation-oriented metropolitan river and future basin extension, and for office-business service-specialty retail-institutional development next to a forthcoming regional government center.

And on the design considerations of the site topographically situated at the northern head of the peninsula between the city's trimountain center, west hill, north hill, and tangent major riverfront.

All these elements, factors, influences, trends, implications, potentials, and considerations have been collected in order that specific planning objectives might be formulated, development designs might be drawn, and a programmed renewal might be evolved for a particular Downtown sector and the northern entrance to Central Boston.

General Development Goals

The supereminent purpose of these chapters is the organization of specific programmed renewal application to a given Downtown sector in transition toward a future central city evolutionary form. Necessarily general overall development goals thus pursued are:

1. A broad future development for Central Boston and the northern end of the Shawmut Peninsula within which the formulation of sectoral designs and renewal programs may be influenced and modified by long-range considerations.

2. A general connective structure between the west and east "shores" of Charles River Basin and Boston Harborfront, in relationship to present and future redevelopment, to waterfront parklands, to peninsular continuities, and to significant institutional complexes.

3. An appropriate, significant entrance for Central Boston which interrelates and takes full advantage of natural and man-made values: of the Charles River, of the river-harbor junction, of the level northern sector of the Downtown, of the slopes of the Tramont, of the hills of the North and West Ends, and of the essential compactness of the peninsular city center.

4. A flexibility of design in both physical and economic terms which recognizes and expands upon already formulated re-structuring concepts insofar as seems reasonable for the future development of both the northern Downtown and the central city.

5. An emphasized ease and accessibility of movement throughout the city center, with strong connections among the various component sections and with improved communication throughout the northern peninsula.

6. An integration of the various means of movement with the new structural forms into an urban atmosphere of controlled intensity.

7. A balanced transportation system in which component parts are utilized to the fullest of their inherent assets, are not necessarily inter-competitive, and do not interfere with the integrity of the city center.

Specific Area Objectives

For Boston's specific North Station Area site, the objectives are to foresee and suggest a full site role in the future development of the central city which is the economic center of the six-state New England region; to lend the already evolving new Downtown form additional economic strength and physical significance; to provide new business development opportunities close to the Central Business District as well as an attractive environment for new intown residence along the defining waterfront edge of the peninsula; to encourage fullest utilization of the site's locational potential as the northern entrance to the central city and junction of topographically and historically distinct sections of the Shawmut peninsula; and thus to sketch out a general design for site restructuring, organize an orderly sequence for the programmed renewal of the existing area coordinated with inner metropolitan changes, adjacent and nearby redevelopment project progress, and general Downtown development, and provide a flexibility of schedule timing between necessary immediate action and delayed structural amortization enabling an appropriately long-term transition from the present configuration to the eventually evolved new urban form under which disruptive and displacement effects may be conscientiously modified through pre-creation of displacement space for and/or through orderly relocation of existing activity

concentrations.

B. Development Concept for Central Boston

One of the major development problems and the unacknowledged determining factor of recent urban design has been vehicular circulation - what to do with the automobile, where to move it through the city, how to provide facilities for its movement and storage, and how to plan economic functions within its framework and accessible to its essence of individual directional travel. This conflict between a technological device and the core of economic existence, The City, has heretofore resulted in an extreme compromise of the larger, the infinitely more important economic entity, for the smaller, the single piece of that economy's equipment.

The development concept for Central Boston presented herein does not choose to attach itself to such a compromise, but rather intends to provide a foundation for the evolution of a Downtown form appropriate to the intensity which is the compact core, through creation of a non-vehicularly-penetrated pedestrian world as the city center, with controlled intensity of development in conjunctive relationship to historical and functional topography. And though the ensuing design for a particular area site can not spontaneously create the envisioned structure, it can establish a starting point toward which transition may progressively be made and from which that structure may gradually be evolved.

Elements of the Concept

The evolutionary concept suggested as a modifying influence upon current and progressive renewal of Central Boston is composed of the following elements:

1. Creation of broad continuities with the metropolitan pattern of junctioning peninsulas and four-sectioned arm of the sea, emphasizing the waterfront orientation deeply instilled in the structure, nature, and consciousness of Boston.

2. Organization of the central city in form and function by successive and interflowing bands, beginning at the semi-circumferential waterfront as an outermost residential and recreational border along the Charles River Basin and the Harbor, continuing as institutional, governmental, and business clusters, and focusing into the heart of the city and retail core.

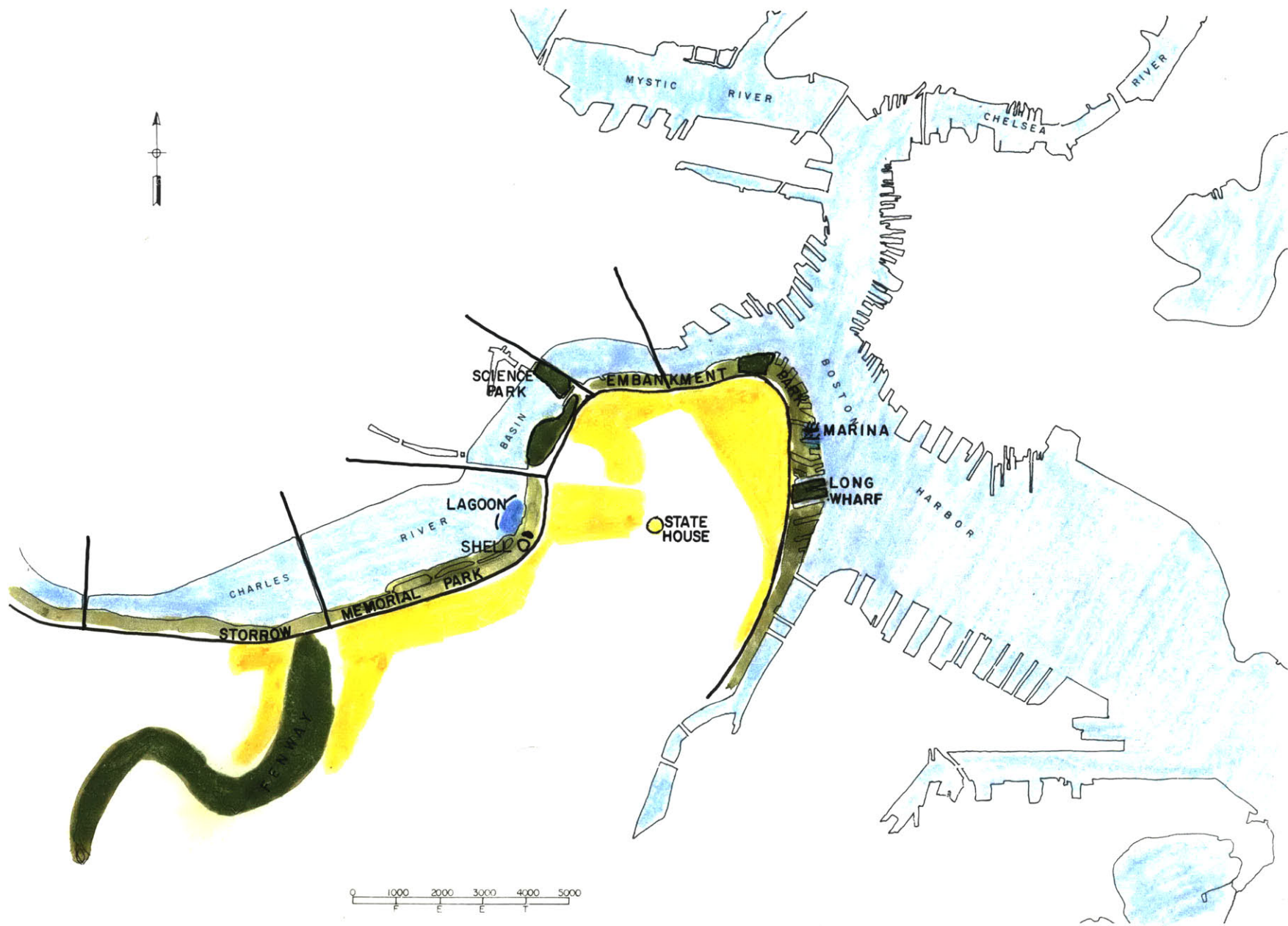
3. Establishment of an organizational composition of clear, definite, and logical internal boundaries according to peninsula topography, with utilization of particular sites and environmental and visual features as distinct, individual components, and with retainment of historical symbols of Boston structure - of the State House as the center of government, of Beacon Hill, the West End, the North End, and Back Bay as the intown residential concentrations, of Massachusetts General Hospital and New England Medical Center as the institutional complexes, of Boston Common and the Public Garden as the major open spaces, of Congress Street as the Office District, of Winter-Summer-Washington Streets as the retail core, of State Street as the financial district, of Long Wharf as the threshold of the Port, and of the Charles River Basin and embankment park as the recreational playground.

4. Establishment of a close integration of the various functional elements, structural parts, and distinctive component areas of the peninsula into a compact entity of controlled intensity which is conceptually conceived as the business and residential core of the New England regional

center.

5. Creation of a sweeping continuity of development around and along the defining semi-circumferential waterfront edge of the peninsula, providing a variety of visual experience from the wealth of presently existing landscape lineally fronting the Charles River Basin, from those urban forms eventually to appear - a redeveloped Atlantic Avenue harbor-front, renewed residential North End hills, a completely reconstructed, widened, and clarified Charles River Basin extension downstream from the existing Dam, a redeveloped North Station Area, and a completed Charles River Park high-rise residential superblock - all highlighted and punctuated by such occasional points of intensity and interest as the Fenway, the Hatch Music Shell and Oval, the Community Boating Lagoon, Charlesbank Playground, the Museum of Science, a new "Embankment Park" extending along the edge of the North End, a new "Boston Harbor Marina," and a new "Long Wharf Historical Park." (See Illustration 38.)

6. Alteration of the outdated and non-functional traditional street-sidewalk relationship where automobiles and the streets and highways to carry them are damaging, isolating, disrupting, and, in terms of Downtown transportation, inefficient, and creation of a truly pedestrian world as the city center, with provision of an intercommunication throughout the Downtown of interrelated lines and spaces - of squares and courts, plazas and greens, and of alternatively strong and less intense tree-lined walks and ways - established in sympathy with dominant topographical features and free from incision by vehicular arteries, radiating outward from the crest of Beacon Hill, sweeping longitudinally around and terracing down the slopes of the Tramont from the State House and the Central Business District toward the residential apartment bands of Charles River Basin



WATERFRONT CONTINUITY

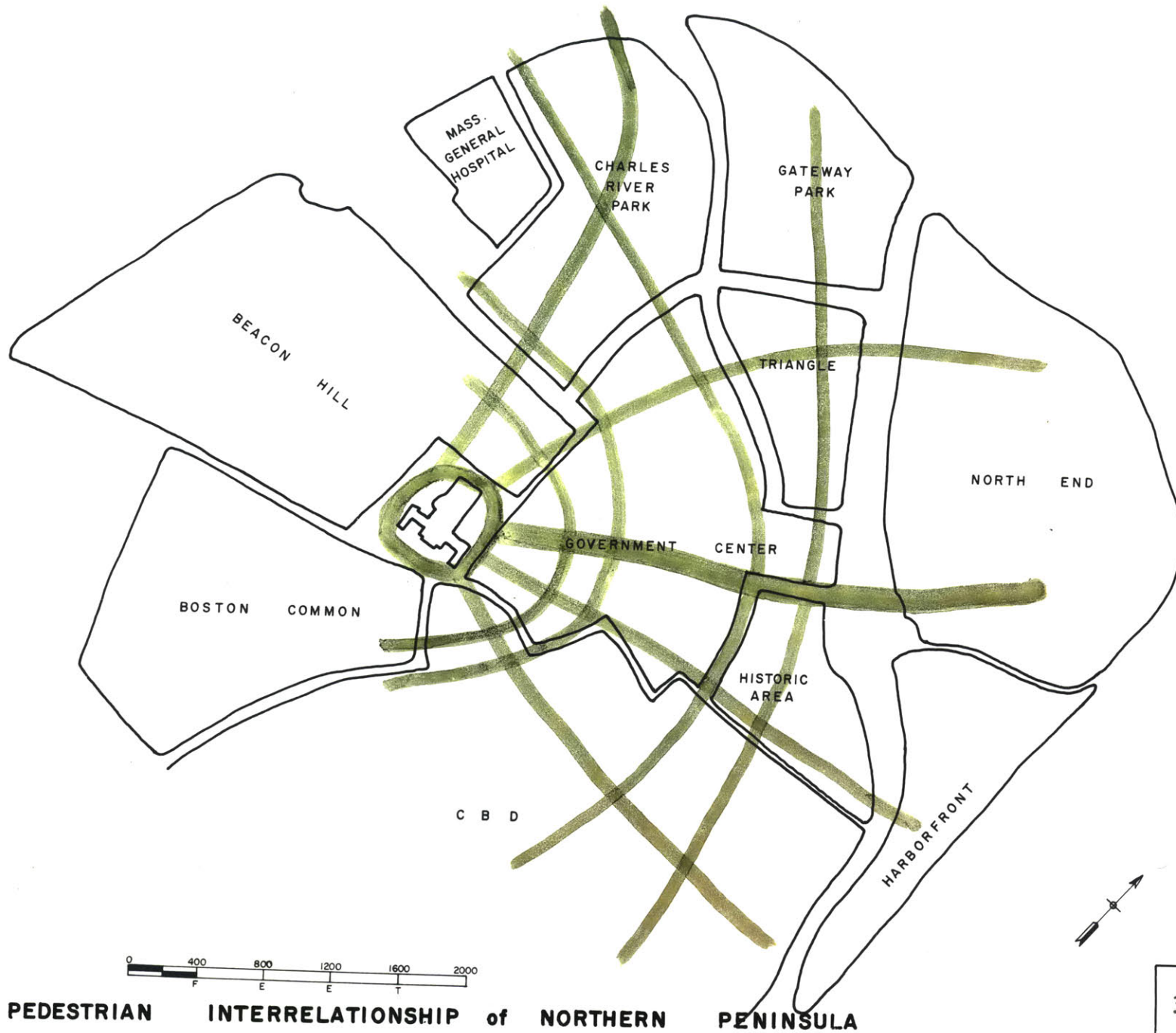
and Harborfront, and all emphasizing the high intra-accessibility of the compact peninsula. (See Illustration 39.)

7. Establishment of a balance in metropolitan transportation, not uncompromisingly supporting any single element but discriminately interrelating all elements according to those inherent functional factors which are the assets of each: to utilize the high-volume, rapid-movement subway system for its efficient distribution within the dense core of the metropolitan area and to restrict the use of the low-capacity automobile to those circumstances where its flexibility can be appropriately used from collection points of the high-volume, rapid-movement system to the outer fringe of less intensively developed and more scattered population and structural distribution.

8. Creation of a new form of metropolitan urban rapid transit, with extension of lines deep into suburban population bands, with necessarily complete reconstruction of Downtown facilities, and with intensification of the city center network in conjunction with and in relationship to the new pedestrian circulation.

A Pedestrian World as the City Center

The envisioned Central City development concept discounts entirely the 19th century skeletal street system and goes beyond the vehicularly-surrounded superblock pattern put forward by most recent Downtown designs and proposals. The issue at stake is the essence of city structure, whether the compact core is to be utilized by thousands of individually drive, space-consuming, air-polluting motor vehicles, whether the Downtown can be shared, as is continually suggested, by automobile and pedestrian, or whether a given organizational composition is to be assigned



PEDESTRIAN INTERRELATIONSHIP of NORTHERN PENINSULA

the most appropriate physical facilities and the most efficient equipment, and whether the foundation for the future is to be established and provided now with the ease of pedestrian circulation essential to the life and the vitality of the urban core.

The theme of the development concept is unity of movement within the city center, an interrelated series of subway facilities comprising the Downtown segment of the all-encompassing metropolitan urban rapid transit system and a highly integrative pedestrian world of ways and spaces uniting the city's historical components and unusual and dramatic topographical elements. The concept thus suggests a Central Boston pedestrian circulation system of concentric loops circumferentially girding the broad slope of the Tramont and perpendicular terrace lines radiating outward and downward from the crest to the peninsula edge. (See Illustration 40.)

1. Generally Concentric Circumferentials and Arcs

The northern portion of this circular-radial pedestrian system is described by seven movement lines concentrically circumferentiating the end of the peninsula successively outward from the Tramont to the waterfront and passing through the various component areas of the city center.

The circle of smallest diameter would occur at the crest of the Tramont, would terminate the various radial slope lines, and would enclose the State House complex of buildings and spaces.

A second circle would eventually enclose the top third of the Tramont and would interconnect the specific elements of uphill Government Center, two residential sides of Beacon Hill, Boston Common, and Pemberton Square.

A third circle would enclose the top two-thirds of the Tramont, would pass from the upper Central Business District to the new City Hall plaza, past the new Federal Office Building, past the State Office Campus, through part of the residential Charles River Park, bend close to the Massachusetts General Hospital complex, then rise up Beacon Hill through Louisberg Square, to the

PEDESTRIAN WORLD as the CITY CENTER



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Common, and to the Tremont Street frontage of the Central Business District.

A fourth arc would flow through the Washington Street retail core, past the new City Hall and new Federal Office Building, through the middle of the State Office Campus, through the middle of Charles River Park, to Charlesbank Playground.

A fifth arc would generally follow the downhill side of the Government Center from the State Street financial district, to the Faneuil Hall plaza, through the Union Street Historic Area, through two individual sections of a redeveloped North Station Area, to the Charles Riverfront.

A sixth circle would pass along the peninsular residential band from a redeveloped Atlantic Avenue Harborfront, through the North End, through a redeveloped North Washington Street, through a redeveloped North Station Area section, through Charles River Park, through the Massachusetts General Hospital complex, along the Charles Street foot of Beacon Hill, to the Public Garden.

An outermost sweeping circumferential would interconnect the ends of all the various radials and would be created around the edge of the peninsula waterfront within continuous embankment parklands, past a "Long Wharf Historic Park," a "Boston Harbor Marina," North End Playground, the Museum of Science, and Charlesbank Playground, to Storrow Memorial Park.

2. Radial Lines Outward and Downward from Tramont to Waterfront

Laterally interconnecting these sweeping arcs would be numerous lines radiating outward into various parts of the Downtown, harborfront, and riverfront:

Several lines from Beacon Hill through the Central Business District, including (a) a line from the State House along Park Street, Winter and Summer Streets to Dewey Square, and (b) a line from the Tramont to Post Office Square to Fort Hill Square generally along Beacon, School, Water, and Oliver Streets.

A line from the State House along the new City Hall terraced walkway past Faneuil Hall and through Quincy Market to a redeveloped Atlantic Avenue harborfront, and a new "Long Wharf Historic Park."

The major radial line outward and downward from Beacon Hill past the County Court House through Pemberton Square and between the new Federal Office Building and new City Hall along a strong physical and visual element of "Hanover Mall," past the Union Street Historic Area into the heart of the North End to Revere Mall.

A line from State House to new State Office Building, through the State Office Campus, through a redeveloped North Station Area section, through a redeveloped North Washington Street sector, to the upper side of the North End, Copp's Hill, and the harborfront.

A radial outward from Beacon Hill through the Charles River Park to the Museum of Science.

Two or three lines from Tramont crest along the ridge of residential Beacon Hill toward Storrow Park and Charles River Basin.

3. Punctuating Open Spaces

Highlighting this duodirectional pedestrian system would be created a series of open spaces, plazas, greens, and courts, all worked into the dominating theme of terraces staggering down the slopes of the Tramont from the business center of the city to the semi-circumferential band of waterfront apartments. These major foci would form several intersection points of the pedestrian radial-arc system and terminal objectives of network lines and would include spaces at:

the County Court House plaza (Pemberton Square), the new City Hall Plaza, an "Old State House Court," the heart of the State Office Campus, the middle of the Triangle section of a redeveloped North Station Area, the Faneuil Hall plaza, the middle of Charles River Park, the pedestrian courts of the Union Street Historic Area, the middle of the Charles Riverfront section of a redeveloped North Station Area, a "Long Wharf Historic Park," Revere Mall, Copp's Hill Playground, North End Park, Charlesbank Playground, and Boston Museum of Science.

C. Design for the North Station Area

Preparation of a design for the specific sector of the Shawmut Peninsula between the forthcoming Government Center and State Office Campus, the Charles River Park high-rise apartment superblock, the Central Artery, and the Charles River, is undertaken not as a detailed site plan or architectural exercise but as a broad sketch of the first step in transition toward a new urban form for the central city. In recognizing that

intermediacies must be traversed toward achievement of an evolutionary development concept, the design thus initiates primary action by consolidating the present city structural tangle into a compositional clarity enabling a pedestrian interconnection of sites for new development, by providing fewer but more organized lines of intra-city vehicular movement, by modifying the destructive impact of regional vehicular facilities and thereby simplifying the future task of Downtown evolution, and by creating a strong image and landmark as the entrance to Central Boston.

General Design for the Site

The general design for the North Station Area site suggests the following elements:

- a. Construction of a new "Charlestown Dam" across the Charles River at the Warren Avenue location, with fixed highway-span connection to a new sub-Artery roadway in Boston and to a new "Charlestown (Rutherford Avenue-Front Street) By-Pass."
- b. Complete reclamation of the Charles River between the new and old dams, with dredging of the channel, re-widening of the river to the north, early termination of commercial river traffic, and redevelopment of adjacent river edges as a major improvement to and full development of the Charles River Basin for recreational use.
- c. Redevelopment of the Downtown section of the North Station Area site as a new "Triangle Center" of office, business service, specialty retail, and showroom sales activities, with continued concentration of furniture and home furnishings supplemented by possible institutional structures and by such employee service facilities as can be justified by the site' own development and by the immediate adjacency of the

Government Center and the State Office Campus.

d. Redevelopment of the Charles Riverfront section of the North Station Area site as a new "Gateway Park" residential and parkland development facing the newly-extended Charles River Basin, as a continuation of the adjacent Charles River Park apartment area, and as another segment in the semi-circumferential continuity of residential use along the riverfront and harborfront of the central city and the Shawmut Peninsula.

e. Creation in this general sector between the Tramont and the clearly defined edge of the peninsula of two new urban forms oriented toward (1) the Downtown and (2) the Charles River, strongly interrelated with nearby and adjacent central retail, governmental, and residential clusters, and both created as entirely pedestrian complexes that extend and reinforce those concepts of human movement envisioned for future central city evolution, that represent a scale in keeping with the new physical surroundings and the traditional symbolism of Boston, and that extend a continuity of peninsular expression yet form a clear termination statement for the central city.

f. Implementation of a first step toward the unviolated city center through creation of pedestrian circulation as a complete system in and of itself and entirely apart from the vehicular network, where each may perform its own particular and special function without competitive interference and where the three necessary movement facilities of the peninsula (urban rapid transit, intra-city roadways, and pedestrian terraces) are organized into a relationship of levels which integrates the major form of Downtown access (subways) with the surface pedestrian world of ways and spaces, where pedestrian lines cross compromised depressed vehicular circulation elements over half-level pedestrian shells,

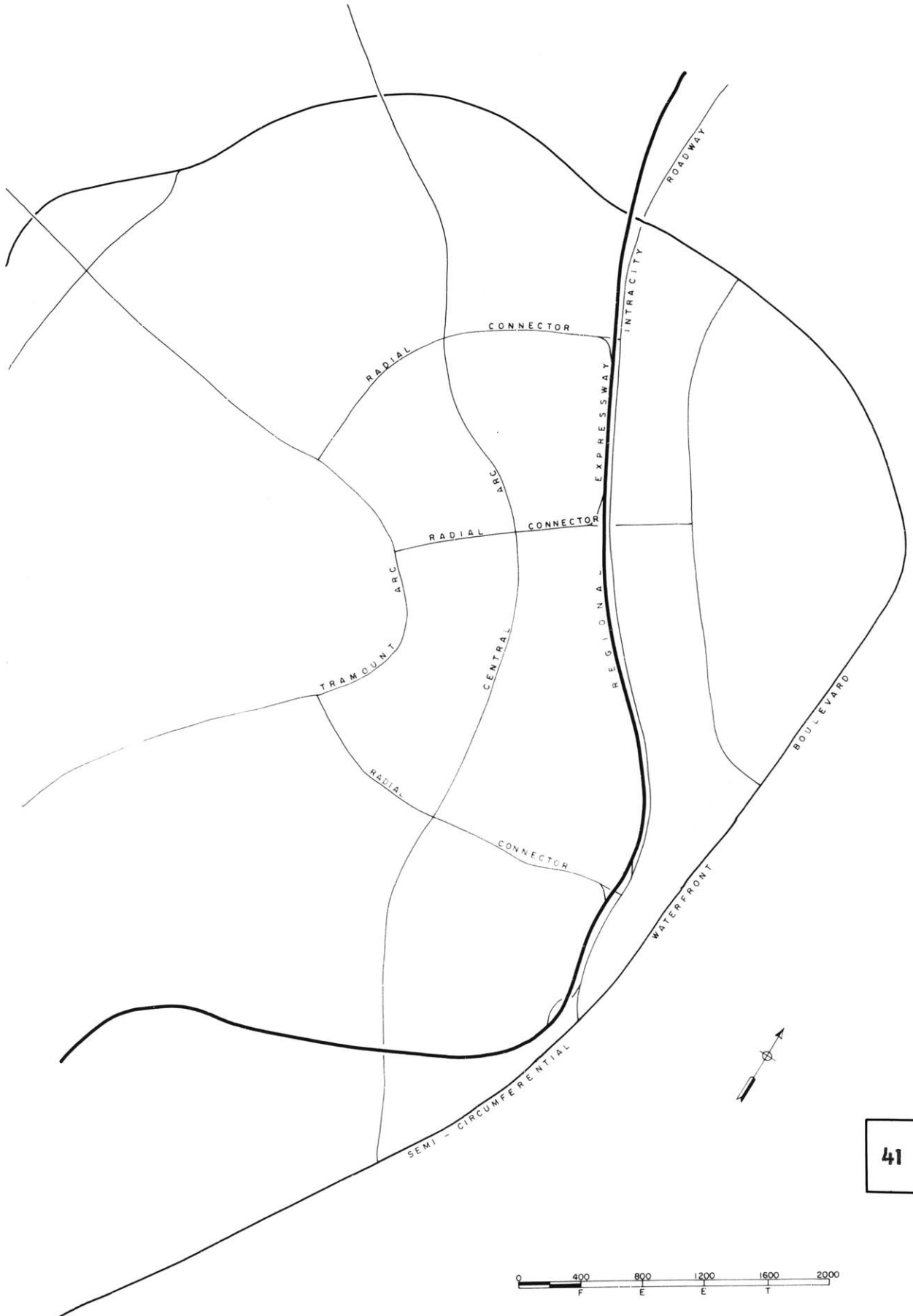
and where both vehicular and pedestrian circulation elements are semi-circumferentially and radially established in relationship to the dominant topographical features of the peninsula.

g. Coordination of vehicular circulation with the functional utilization of the northern peninsula and provision of a consolidated vehicular pattern of (1) a strong semi-circumferential intra-city surface line around and along the edge of the peninsula which serves to collect and distribute vehicles from outside the city center and feed facilities along the periphery of the center for transfer of movement to pedestrian or rapid transit circulation, (2) the Downtown segment of the inner metropolitan circumferential and associated regional expressway system, and (3) interconnections between the city center and these two separate functional systems in a non-excessive fashion and in conformance with the more important element of proper and undisrupted city structure.

h. Reduction of destructive vehicular impact upon the city center by substitution of several well-spaced and carefully-placed radial line connectors to and from the regional and major intra-city semi-circumferential vehicular circulation systems as a functional alternative to such highly destructive proposed features as the Sudbury Street Viaduct. (See Illustration 41.)

i. Contemporary utilization of the specific New Congress Street and Tremont-Cambridge Street semi-circumferential elements of the Government Center Plan as city service streets.

j. Adoption of the West End Project's new Staniford Street as part of one of the major radials between the wide semi-circumferential arcs of Tremont-Cambridge Street, New Congress Street, Central Artery,



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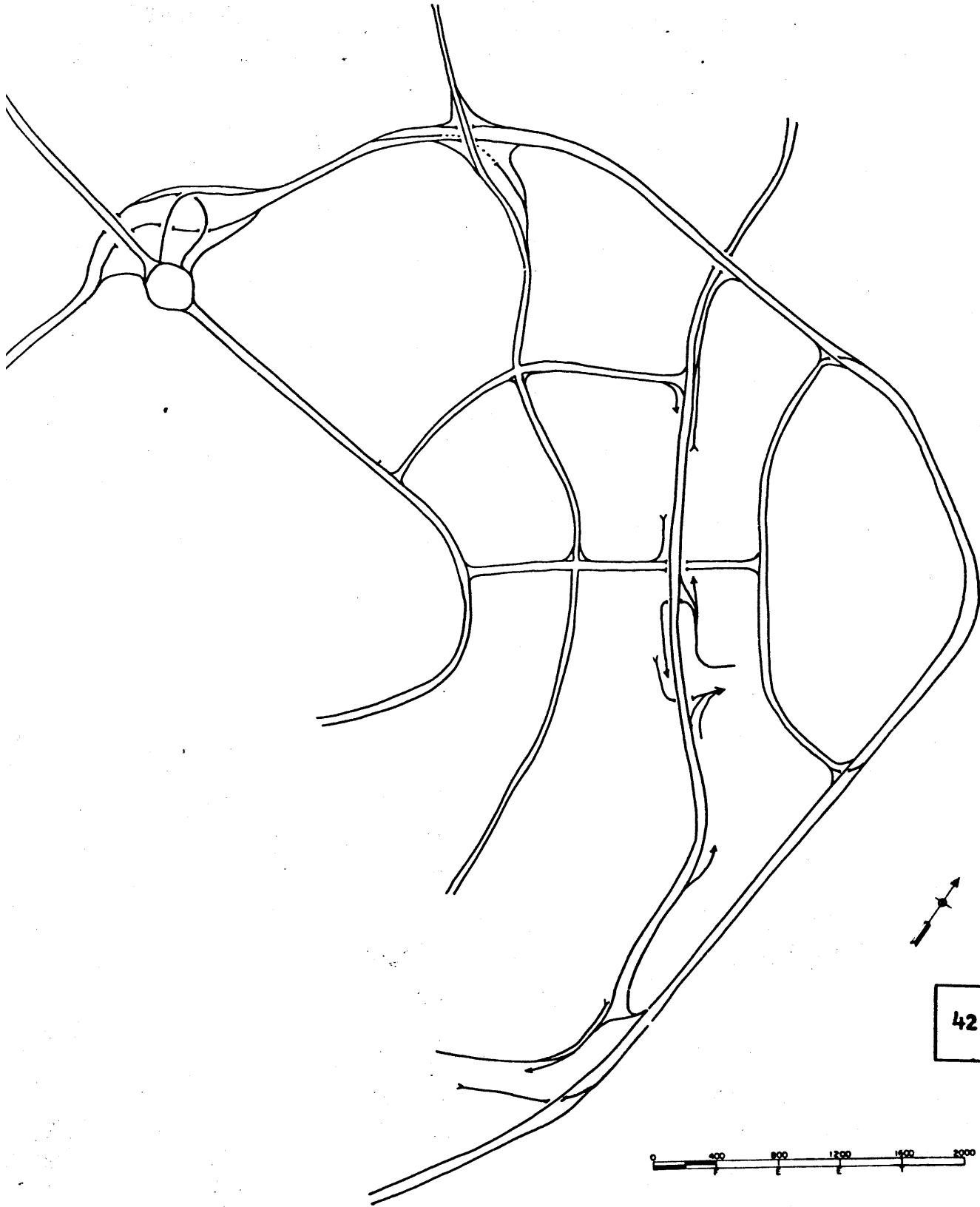
SCHEMATIC CENTRAL BOSTON CIRCULATION

sub-Artery surface roadway and as the defining boundary between land use and functional elements of residential Charles Riverfront and business Downtown.

k. Continuation of the already formulated New Congress Street beyond the proposed Portland-Traverse termination along the edge and forming the boundary between the new "Triangle" business area and the government office area in a gentle sweep around the bottom of the Tramont slope outward toward the Charles River Dam between the initial residential unit, Charles River Park, and the redeveloped North Station Area section extension.

l. Creation of a continuous "Embankment Boulevard" along the peninsula waterfront, through completion of the connecting link between the drive along the Charles River Basin and the forthcoming new harbor-front boulevard along or near Atlantic Avenue, to function as the major semi-circumferential element about the head of the Shawmut Peninsula generally connecting the ends of the Tremont-Cambridge Street line, the New Congress Street line, and a new North End roadway and thus provide a waterfront drive backing on the city center along which new residential and parkland development and redevelopment would face the Charles River Basin and Boston Harbor.

m. Extension of the already existent North Street-Fort Hill Square surface roadway under the Central Artery northward toward Causeway Street over depressed cross streets and connected, through clarification and reconstruction of Central Artery structural supports at the riveredge, to the "Charlestown Dam" and highway span to the new "Charlestown Bypass," thus providing an important surface circulation element without further destruction of the city and with full realization of utilizable



DETAILED

NORTHERN

PENINSULA

CIRCULATION

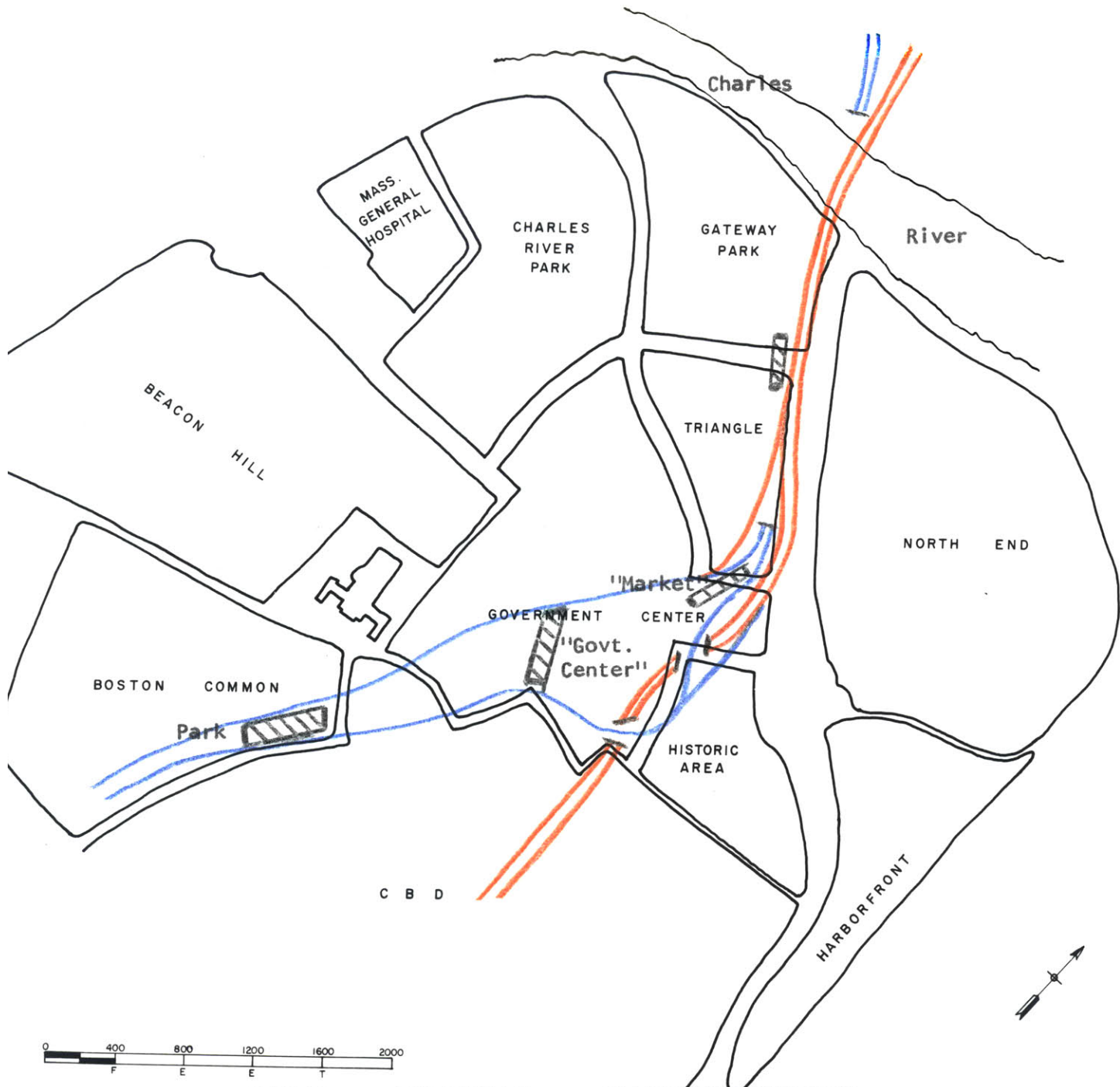
circulation opportunities.

n. Creation of a new city service street from Cambridge-Tremont to a new road around the foot of the residential North End hills. (See Illustration 42.)

o. Design, construction, and utilization of a new Charles River rapid transit tunnel on the 1951 proposed Lawrence Street route, for two-level, four-track operation between Central Boston and Charlestown shores, as the major northern radial of the future metropolitan urban transit system, with convergence of Reading and Woburn extensions north of the river toward or at Sullivan Square, and respective divergence of these lines in the central city to the Washington Street subway and to a completely new Government Center-Park Street subway, thus providing high-volume accessibility to both this new development site within the central city and to the suggested "Charles River Industrial-Research Center" on the redeveloped north terminal freight yards.

p. Reconstruction of the Downtown subway system for a new form of entirely rapid transit train operation, in conjunction with construction of the Charles River rapid transit tunnel and extension of lines to the suburbs, under which the following changes would be undertaken:

1. extension of a new lightweight, high-speed rapid transit line from Sullivan Square, Charlestown to Reading on Boston & Maine Railroad right-of-way,
2. functional replacement of all P.C.C. lines by new lightweight, high-speed urban rapid transit equipment, with subsequent alterations to Downtown subway structures and roadbed,
3. initiation of a new lightweight, high-speed urban rapid transit line operation from the central city to Woburn and the northwestern suburbs on Boston & Maine Railroad right-of-way, and
4. complete reconstruction of that part of the subway system from Park Station to the new Charles River rapid transit tunnel, with utilization of the Tremont Street right-of-way,



RAPID TRANSIT RECONSTRUCTION

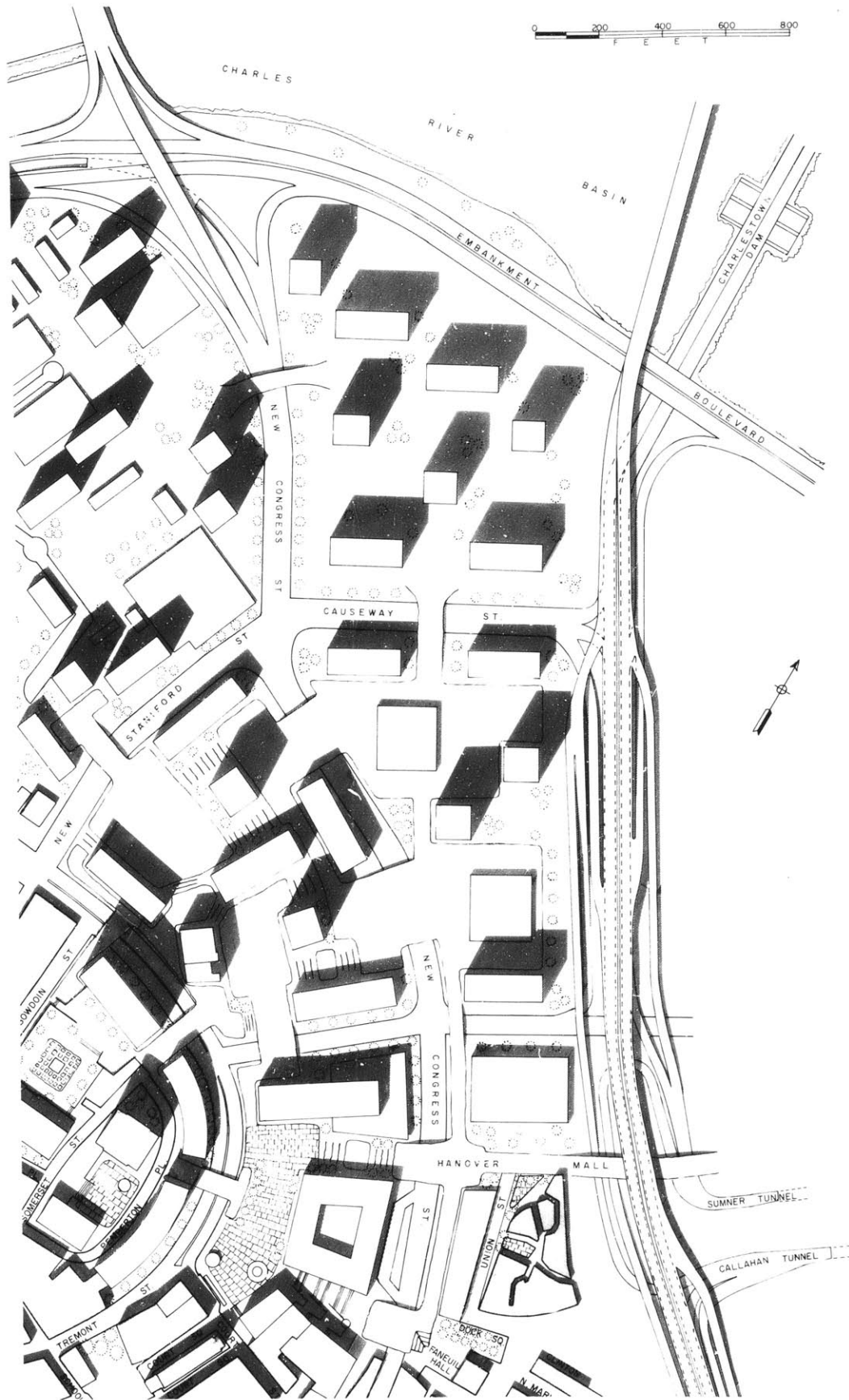
with construction of the 1945 proposed Beacon Hill (Park Street-Scollay Square) tunnel and Park Station expansion, with construction of interconnection between the Boylston line and the Washington Street line near old Dock Square at the time of Government Center redevelopment, and with creation of completely new station facilities at "Government Center" (old Scollay Square), "Market" (Union Street Historic Area - Faneuil Hall plaza), and redeveloped North Station Area "Triangle Center." (See Illustration 43.)

Design of the Triangle

At this level of consideration, design of a new "Triangle Center" may be suggested by the accompanying illustration as a group of fairly high, significant building masses interspersed with one- and two-story exhibition-display-sales showroom structures, all interrelated by the pedestrian lines of the larger Downtown system, punctuated by several open spaces and plazas, and strongly oriented in the direction of the nearby Central Business District and the immediately adjacent Government Center and State Office Campus.

Primarily, the design of this re-created business unit of the Downtown is dictated by the functions located therein. Office and office-oriented activities would thus be appropriately housed in tall structures rising well above the adjacent elevated expressway yet not so high as to either obscure the building elements of the Government Center or destroy the topographical prominence of Beacon Hill and State House. Moreover, the internal structuring and locational placement of buildings would not falsely ignore the environmental problem of the bounding elevated expressway but would make its presence a definite statement in the design.

The specialty retail shops, service facilities, and retail-oriented showrooms would demand appropriate low-level, broad floor-spaced structures carefully placed with respect to dominant lines of pedestrian movement, balancing the towering masses of offices, and molding the openness of



SITE DESIGN

the site into a pedestrian circulation of ways and spaces.

The pedestrian elements would center about and lead off of the area's major Downtown pedestrian radial from Beacon Hill, State Office Campus, to North End and off of the area's major semi-circumferential arc from the Central Business District to the riverfront residential development and would require an artificial topographical terracing in order to overcome disadvantages of an otherwise flat and unvarying site.

Design of the Charles Riverfront

Design of the residential "Gateway Park" along the Charles Riverfront is determined by the nature of the surrounding environmental features of high-level expressway bridge, adjacent riverfront boulevard and parklands, and initially-existent Charles River Park high-rise apartment superblock, by the high value of riverfront location, and by the structural height demands for direct river overview. These primary determinates thus dictate a design of a more or less high-rise apartment area which would overlook the newly-extended Charles River Basin toward a new Cambridge-Charlestown "Charles River Industrial-Research Center" beyond, would function as another segment of the peninsula's waterfront residential continuity and would realize a necessary close pedestrian relationship with Charles River Park, the assumed-to-be residentially redeveloped North End, and North Washington Street sector, and the Downtown proper. (See Illustration 44.)

VIII

APPLICATION OF PROGRAMMED RENEWAL TO THE NORTH STATION AREA OF "CENTRAL" BOSTON

A. Framework for Application of the Programming Principle

Application Phases

In order to set up the North Station Area for application of programmed renewal, it is necessary to establish and arrange the variables which bear upon preparation of a sequence schedule. The purpose of this chapter, therefore, may be stated as follows:

- a. to indicate what factors in the northern sector of the inner metropolitan area must be recognized as "givens,"
- b. to outline detailed prerequisite determinates of and resultant effects of the proceeding, impending, and proposed changes and developments in the nearby metropolitan area,
- c. to derive a possible coordination schedule for those inner metropolitan area developments with direct bearing upon the northern end of the Shawmut peninsula,
- d. to establish the necessary internal criteria for staging and scheduling renewal within a particular part of the Downtown, and
- e. to determine where North Station Area renewal can begin and how it can proceed.

Development Assumptions

The numerous proceeding, impending, and proposed changes in the northern sector of the inner metropolitan area establish the planning

framework for the whole northern end of the Shawmut peninsula and form the base upon which renewal programming in Central Boston must be constructed. Consequently, these reasonably certain projects might justifiably be recognized as a series of "givens" and so presented as a list of basic development assumptions:

1. That the Inner Belt metropolitan circumferential will be completed.
2. That a new vehicular connection will be built between Cambridge and Charlestown along the line of the Prison Point highway with interchange to the Inner Belt.
3. That a new Charles River dam will be constructed near Boston Harbor downstream from the existing dam.
4. That the Charles River Park, Government Center, and State Office Campus redevelopment projects will be completed substantially as presently planned.
5. That an Atlantic Avenue harborfront redevelopment project will be undertaken and an intracity embankment boulevard will be constructed.
6. That a Charles River rapid transit tunnel will be constructed and that urban rapid transit lines will be extended to the northern suburbs.
7. That a vehicular connection between the Central Business District and Leverett Circle will be undertaken along the line of "New Congress Street"-Merrimac Street-Lowell Street.
8. That railroad operations on the northern end of the peninsula will eventually be terminated.

B. Organization and Coordination of Nearby Metropolitan Area Developments

The formulation of general urban renewal schedules under a programming procedure requires the integration of two levels of factorial influences:

1. a maximized schedule for major developments in the nearby metropolitan area, and
2. the specific area internal renewal criteria dictated by existing physical composition and economic concentrations.

Since the larger development pattern of the nearby metropolitan area is the superimposed conditional framework which must predetermine project schedules and physical changes within individual component sectors, organization and coordination between the pertinent known elements of the larger system must constitute the first step in the application of the programming principle. The succeeding factorial level is increasingly more detailed in the final determination of an appropriate development program. This critical planning organization of the multitude of developments, projects, and changes in a Central City's inner metropolitan area is the coordination through which the least possible duplication and conflict of public expenditures may result and by which the Central and surrounding cities and may be rapidly provided with necessary physical facilities and economic development opportunities.

The many proceeding, impending, and proposed projects, changes, and developments in the northern sector of Boston's inner metropolitan area discussed in previous chapters are re-presented in the following form for three specific purposes: to indicate the extent and complexity of the interrelationships between the numerous elements known to be under consideration, to prepare a digested summary of essential and basic scheduling prerequisites upon which the projects or changes are dependent, and to evaluate the resulting effects, necessitations, and allowances which, in turn, their undertaking and their completion will permit. Reflection upon the extent and significance of these numerous factors should clearly indicate that the 100-200 million dollars worth of public investments represented may be subject to careless, contradictory, and unnecessary duplications, interferences, and conflicts which additional millions may be needed to correct if overall supervision and coordination is not guaranteed by a predetermined organization schedule.

Prerequisite Determinates and Resultant Effects of Proceeding, Impending, and Proposed Projects

Project and Prerequisite Determinates

Resultant Effects

Construction of the Inner Belt

Self-determinate (will be undertaken whenever location approval and intercity agreement is reached and Federal Interstate Highway Program funds are made available).

Will effect a complete reorientation and redistribution of vehicular movement patterns of the entire metropolitan area, including probable reduction of annual traffic volumes on Memorial Drive, Storrow Drive, the Charlestown Bridge, the Charles River Dam, and the Leverett Circle-Central Artery ramps.

Will call for connection to the proposed new Prison Point highway.

Will reduce surface vehicular movements at the northern end of the peninsula.

Will ease the difficulties of Leverett Circle reconstruction.

Redevelopment of Staniford-Chardon

Requires coordination with the Government Center project but is generally self-determining.

Will accept the new Staniford Street line of the West End project.

Will call for appropriation of land along Merrimac Street for the extension of the Government Center's proposed surface circulation element, New Congress Street.

Will encourage the extension of New Congress Street along the line of Lowell Street and will place pressure on the removal of the Lechmere elevated and redevelopment of the Billerica Street blocks.

Creation of both the Government Center and the State Office Campus

Will provide new quarters for and will enable the relocation of numerous large and small government offices from individual structures scattered throughout the inner metropolitan area, including most, if not all, of those state government offices now present in the North Station Area.

Construction of a new Charles River Dam

Generally self-determining.

Presupposes the eventual creation of a highway-bridge over its structure.

If undertaken at the Warren Avenue site, will infer a locational placement at the Boston shore in line with the stub end of Beverly Street in order to enable later highway connection.

Will extend the Charles River Basin downstream toward Boston Harbor.

Will necessitate elimination of river pollution between the old and the new dams.

Will encourage the redevelopment and intensive utilization of the North Station Area's Charles Riverfront and of the Somerville rail yards.

Will encourage extension of MDC parklands along the edge of the extended Basin.

Could precipitate relocation or termination of rail operations on the Boston peninsula to enable development along the newly extended Basin.

Elimination of pollution in the Charles River

Requires construction of major sewer extensions from the vicinity of Leverett Circle to connect with trunk lines to MDC sewage treatment plants.

Will eradicate a major deterrent to adjacent riverfront area reuse and will make appropriate new construction along the extended Charles River Basin.

Construction of a highway bridge over a new Charles River dam

If the dam is placed at the Warren Avenue site, the vehicular connection to the Boston shore over the new mid-channel lock double boat lock will require reconstruction of the structural supports of the Central Artery in order to provide adequate vertical and horizontal clearance for free-flowing traffic lanes. In addition, such a highway would require extensive development of adequate connections to the central city's surface circulation system in order to avoid otherwise inevitable chaos at Causeway Street.

Location of the new dam at any other site would forego the opportunity of connection with and development of a roadway under the Central Artery (such as presently exists beyond North Street) and, except for a site downstream (east) of the Charlestown Bridge, would not easily enable connection to the peninsula circulation system.

Construction of a new Prison Point highway

Should depend upon retraction of rail operations south of proposed line in order to enable the highway to be built as a surface road rather than requiring a long over-railyard bridge.

Will require interchange to the Inner Belt.

Would almost necessitate termination of use of the Central Artery-Leverett Circle ramps.

Would encourage utilization and development of a sub-Artery surface road from North Street to Causeway Street.

Would require reorganization of the traffic system on and around Causeway Street.

Would permit eventual termination of Charlestown Bridge operation (if the MTA function were also replaced) and permit removal of that structure, thus encouraging redevelopment of the North Washington Street blocks at the foot of Copp's Hill.

Will provide connection between Memorial Drive in Cambridge and Rutherford Avenue in Charlestown.

Could be tied into a semi-circumferential by-pass around Charlestown and its connection to Central Boston via either the existing Charlestown Bridge or a new Charles River dam highway span.

If completed to the Inner Belt, will encourage redistribution of traffic flows at the northern end of the Boston peninsula.

Completion of Charles River Park

Will depend upon financing arrangements and short-term housing market conditions, the details of which are beyond the scope of this chapter.

Will effectively demand removal of the blighting and value-depressing Lechmere elevated.

Will place considerable redevelopment pressure upon the Billerica Street blocks (as has already been successfully placed on the Staniford-Chardon area).

Will create new Staniford Street and thus establish a clear land use and functional boundary between Charles Riverfront properties and the Downtown.

Redistribution of feeder lines to Lechmere Terminal

Depends on substitution of bus operations to Sullivan Square, Charlestown and Kendall Square, Cambridge, for the present trackless trolleys to and near Lechmere Terminal.

Will enable termination of the Lechmere P.C.C. line beyond North Station and removal of the existing viaduct and Lowell Street elevated.

Removal of MTA elevated and viaduct to Lechmere

Depends on either redistribution of feeder lines into Lechmere Terminal or substitution of a rapid transit tunnel under the Charles River.

Will necessitate use of the existing Canal Street P.C.C. turnaround until creation of a Charles River rapid transit tunnel and conversion of rolling stock.

Will permit reconstruction of Leverett Circle.

Will permit creation of a new Lowell Street vehicular connection from Leverett Circle to the Government Center and the Central Business District.

Will make appropriate redevelopment of sections of the North Station Area.

Construction of a Charles River rapid transit tunnel

Necessarily requires prior or conjunctive extension of urban rapid transit to the northern suburbs.

Depends on Federal and/or State funds made available (possibly in association with the forthcoming redevelopment of Charlestown).

Will require a tunnel from Haymarket Square under Haverhill Street and the Charles River to land on the east side of Millers River in Charlestown, from where transit routes may either remain together to Sullivan Square before division to respective northern suburbs or may split at northern Charles River edge, thus requiring either usurption of B & M surface trackage to the Woburn mainline or a continuation of the tunnel under the freight yards to that mainline.

Will eliminate all elevateds at the northern end of the Central Boston peninsula, in Charlestown, and over the Charlestown Bridge and Lechmere viaduct.

Will remove one of the two obstacles from eventual replacement of the Charlestown Bridge.

Will allow redevelopment of parts of the North Station Area.

Will encourage redevelopment of the North Washington Street segment between the Central Artery and the residential North End.

Extension of urban rapid transit to the northern suburbs

Can be undertaken either from present stub ends of MTA rapid transit or, more preferably, directly from a new Charles River rapid transit tunnel.

Can be undertaken immediately, depending upon use of Boston & Maine Railroad rights-of-way to (1) Reading and (2) Woburn.

Will replace the function of commuter passenger trains to both Reading and Woburn.

Will mean substantial curtailment of B & M operations out of North Station and on the Central Boston peninsula and thus seem to make increasingly inevitable the early termination of all B & M passenger service and the closing of North Station.

Will accentuate the North Station Area as the northern entrance to Boston and will considerably increase the development value of the site.

Termination of B & M passenger operations

Will be strongly related to short-run Federal, State, and municipal subsidies of operations and to decline of long distance passenger hauls.

Would be influenced by the ease of automotive access to Central Boston, as determined by construction of the Inner Belt and connection with regional radial expressways.

Should depend, functionally, upon extension of urban rapid transit to the northern suburbs.

Will mean major changes in the North Station Area and vicinity, including end of use of sidings between North Station and the Charles River.

Will permit removal of all rail trackage, trestles, and bridges on or next to the Central Boston peninsula.

Will permit new development on the Charles Riverfront.

Will encourage MDC parcel extension along the edge of the Charles River.

Will enable a surface extension of Storrow Drive to Atlantic Avenue.

Redevelopment of the Atlantic Avenue harborfront

Is not directly dependent upon the other projects listed herein. (Would assume, however, the preservation of a major intra-city vehicular circulation element along the general Atlantic Avenue line.)

Will call for construction of an "embankment boulevard" from Fort Point Channel to Commercial Street.

Will necessitate at least temporary connection to the existing Charlestown Bridge.

Will place redevelopment pressure upon the remainder of the North End waterfront.

* * * * *

In addition to the above-listed projects which have been officially announced, scheduled, or proposed, there are several other possible changes which necessitate consideration within the context of metropolitan development prerequisites and implicative effects.

Redevelopment of the rivoredge Somerville railyards

Would depend upon replacement of passenger service of the B & M by extension of urban rapid transit and thus termination of bridge use over the Charles River.

Might require relocation of both the piggyback terminal and the wholesale produce sheds of the B & M to other sites within the railyards.

Is not keyed but certainly would be encouraged by several factors, including discontinuance and removal of the Lechmere viaduct, creation of a new downstream Charles River dam and consequent extension of the Charles River Basin, extension of the Rutherford Avenue-Front Street highway to a new Charles River dam bridge, redevelopment of Charlestown, construction of a Charles River rapid transit tunnel, and impendency of a new Prison Point highway.

Extension of Storrow Drive to Atlantic Avenue

Would depend upon termination of B & M passenger operations, the particular configuration of a new Charles River dam highway-bridge, MTA use of the Charlestown Bridge, redevelopment of the Atlantic Avenue harborfront and its creation of an embankment boulevard, termination of use of the Lechmere line, and removal of the viaduct.

Would, if created first, encourage each of the projects and developments previously listed.

Would provide a large site close to the Central City for a variety of uses and purposes, the most likely of which would seem to be industrial park development along a widened river or basin of not dissimilar character to that which presently exists along Cambridge Parkway.

Would allow re-widening of the Charles River downstream from the existing dam and improvement of river navigation through dredging of the channel and use of the material so obtained to fill old Millers River.

Would encourage extension of MDC parklands eastward from the existing Charles River Basin to Charlestown and the Navy Yard.

Would enable, through retraction of B & M freight operations, construction of a new Prison Point highway as a surface road rather than as a railyard-crossing bridge of considerably greater cost.

Would provide a more attractive across-the-river or extended basin view than presently exists for new development on the North Station Area's Charles Riverfront.

Would complete the "missing link" in the semi-circumferential waterfront vehicular circulation pattern of the Boston peninsula.

Would encourage extension of MDC parklands to the North End and Atlantic Avenue harborfront.

Would be strongly influenced by reconstruction of Leverett Circle, raising of the Charles River Dam roadway over the lock, change in status of the Leverett Circle-Central Artery ramps, and creation of an important circulation element from Leverett Circle to the Government Center and the Central Business District.

Would be somewhat influenced by the extension of the Charles River Basin through construction of a new downstream dam.

Reconstruction of Leverett Circle

Would depend partially on termination of the P.C.C. line to Lechmere Square and removal of the viaduct.

Would be eased by vehicular connection from the Charles River Dam and Storrow Drive to the Government Center and the CBD along the Lowell Street line and New Congress Street.

Would depend partially on termination of Central Artery ramp use.

Would be simplified as a long-range proposition if planned in conjunction with both raising of the Charles River Dam roadway and extension of Storrow Drive to Atlantic Avenue.

Removal of Leverett Circle-Central Artery ramps

Would depend on completion of the Inner Belt and consequent redistribution of traffic away from Storrow Drive and the Charles River Dam.

Would encourage development of a residential continuity along the Boston shore of the Charles River and Basin.

(Would allow many of the items included under other element titles or projects.)

Would permit the creation of a new downstream Charles River dam highway-bridge at the Warren Avenue site through removal of low-hanging ramps.

Would enable clarification and reconstruction of

Leverett Circle, the creation of new Lowell Street connection to the raised Charles River Dam roadway, and extension of Storrow Drive.

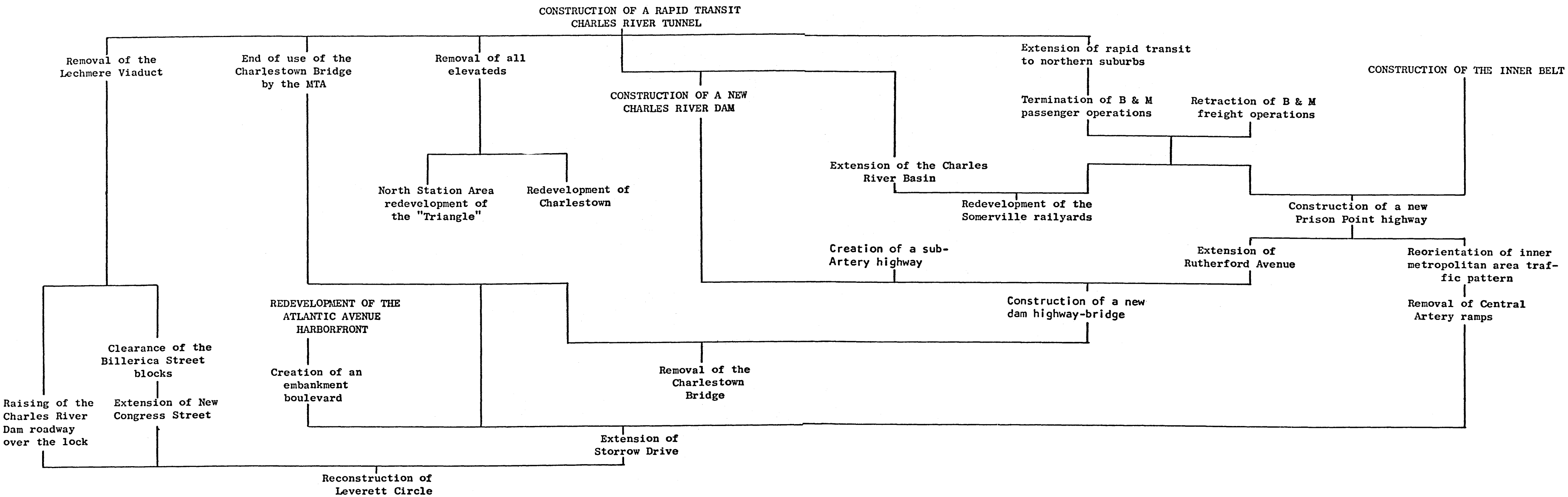
Would enable realization of valuable land use unitization and intensive development of the extended Charles River Basinfront and the significant northern entrance to Downtown and Central Boston.

A Suggested Coordination Schedule for Boston Inner Metropolitan Area Developments

The task of deriving a possible development schedule for the extensive number of proposed and interrelated projects in the northern sector of the Boston inner metropolitan area is a necessarily complex process. Changes in any one of the projects with respect to its undertaking or its location effects a long train of related adjustments and may considerably alter the overall development sequence. Thus, a flexibility of project schedule on one hand competes with a necessary programming firmness on the other. Recognizing this situation, the following organizational chart demonstrates one possible coordination schedule for the numerous public works projects in and around Central Boston and in particular for those with direct impact upon the North Station Area and the future development potential of its site.

Implications for Renewal Action in Downtown Boston

The foregoing presentation has outlined what is believed to be a generally consistent and logical maximized schedule for inner metropolitan area developments. It demonstrates that four major projects - the construction of the Inner Belt, the construction of a Charles River rapid transit tunnel, the construction of a new Charles River dam, and the re-development of the Atlantic Avenue harborfront - are essentially self-determining in character, but clearly indicates that for greatest coordination of secondary changes, the primary and critical project is immediate construction of the rapid transit tunnel combined with extension of urban rapid transit to the northern suburbs. It illustrates that renewal action in a central city must be dependent upon elements far beyond prospective project boundaries and emphasizes that renewal within the



particular North Station Area must fit into the larger development framework. If, therefore, such a coordinating organization can be established as a feasible scheduling guide for a given inner metropolitan sector, renewal programming techniques may then be applied to specific areas contained therein.

C. Renewal Program

1. Formulation of a Renewal Procedural Order

Effectuation through Programmed Renewal

Although evolution of a new urban form for Central Boston and restructuring of the particular North Station Area site would appear, at the scale of transition involved, to be impossible except through publicly-initiated action, the use of urban renewal requiring massive and instantaneous total clearance has been indicated to be appropriately substitutable by the technique of programmed renewal and associated establishment of overall development plan, predetermined sequence order, and flexible timing schedule. Progress toward central city reconstruction and toward implementation of designs for component sections, however, must clearly be initiated within the framework of a coordinated organization of inner metropolitan developments in response to direct external determinates of internal area action and with recognition of internal renewal sequence considerations.

The sequence and schedule for programmed renewal of the specific North Station Area, therefore, will depend not only upon the vital functional changes of removal of the rapid transit elevateds presently passing through the middle of the site, removal of the Central Artery-Leverett Circle ramps presently destroying the development integrity of the Charles

Riverfront, and substantial improvement of the adjoining Charles River in order to realize the inherent development potential of the riverfront for intensive use, but also upon the determinates of internal area action of the previously suggested inner Boston metropolitan development schedule:

of permission of renewal action in the Central Artery-Causeway-Merrimac "Triangle" by Charles River rapid transit tunnel construction; of necessitation of demolition of one "Triangle" block and of part of the Billerica Street sub-unit by extension of the Government Center's New Congress Street along the Lowell Street line to Leverett Circle; and of permission of Charles Riverfront reclamation by the impending natural termination and/or northern suburban rapid transit extension functional replacement of railroad passenger operations.

Internal Sub-Unit Renewal Sequence Considerations

Sequence considerations tempering the formulation of a renewal procedural order for the North Station Area are exercised by each of the five sub-units:

1. Internal Action within the Triangle

Renewal sequence within the Triangle sub-unit is dictated not only by the effect of elevated transit structure removal upon the Causeway Street frontage and Canal-Haverhill block, but also of interim relocation structure retention (based on the building compositional summary of Chapter II) of Traverse Street, Portland Street, and Merrimac Street clusters. Therefore, though the Triangle would become a prime target for immediate redevelopment with completion of the rapid transit tunnel from Haymarket Square to Charlestown, the problem of relocating a large number of economic activities desirable in the future site prevents procedural consideration as one program unit. However, since partial internal sub-unit action without broad strokes of entire Triangle scope would not create large and integrative new building sites and thus would not permit

immediate reconstruction, redevelopment of the Triangle must first await removal of the elevateds, then proceed in large areas at a pace which allows new construction to be made available as the required relocation space before clearance of interim structures.

2. Clearance of the Billerica Street blocks

Although the Billerica Street blocks would be directly subject to clearance in conjunction with extension of New Congress Street to the Charles River Dam and the West End Project's creation of the new Staniford Street radial, residential use of this sub-unit would appear to be unwarranted until residential construction occurs on the Charles Riverfront and until this smaller, isolated site can be functionally integrated with the riverfront through removal of Central Artery-Leverett Circle ramps.

3. Reclamation of the Charles Riverfront

Preparations may begin for reclamation of the Charles Riverfront and full utilization of that part of the North Station Area site whenever railroad passenger operations on the Central Boston side shore can be terminated, whether through (a) functional replacement by extension of urban rapid transit lines to the northern suburbs, (b) continuation of progressive decline to natural conclusion, and/or (c) terminal relocation to the north side of the Charles River near the confluence of the existing main division lines.

4. Consolidation of the Nashua Street block with the rest of the Charles Riverfront

Renewal action within the Nashua Street sub-unit of the area hinges on two non-immediate relocations: of the secondary steam generation plant function to a more appropriate and less valuable location and of the state

Department of Public Works office activities to new, larger, and more organized space and facilities, probably within the nearby future State Office Campus.

5. Final inclusion of the North Station Complex

As the concentration of more substantial structures, the North Station Complex would not appear to be subject to renewal until (a) termination of North Station railroad passenger use, (b) functional replacement of the Boston Garden by construction of the new Municipal Auditorium and creation of the new indoor sports stadium, (c) provision of new and more fully equipped office space in the Triangle site, and (d) gradual but marked decline of Hotel Madison operations due to outside competition, elimination of the area's terminal significance, and the structure's own limitations and inflexibility of internal modernization.

Considered by its five sub-units, the North Station Area site must undergo transition as an orderly progression of change and alterations, deletions and additions, demolitions and constructions. Each of the sub-units is not a development entity in itself, however, but is extensively interrelated with changes in the other sub-units. Thus, progression toward redevelopment of one component may depend upon the progress of changes in the other sub-units and the transition of the Area as a whole.

Sub-Unit Renewal Order

The five individual sub-units of the North Station Area would appear to be reasonably ordered for progressive renewal in the following manner:

1. That the Billerica Street block be totally cleared following removal of the Lechmere elevated and the relocation of the sub-unit residential population, in conjunction with both extension of the Government Center's New Congress Street and creation of the West End Project's major Staniford Street radial from Cambridge Street toward the Central Artery.
2. That internal Triangle renewal be undertaken in a continuous four-part operation, with (a) the three interim structural clusters being fully utilized for temporary relocation of sub-unit activities to remain and other firms being carefully relocated to available space in other central city or inner metropolitan locations, (b) clearance beginning inwardly from both ends of the Triangle - at Causeway Street along the most expendible Canal-Friend and Friend-Portland Street blocks and at the tangent point of the Government Center project from Haymarket Square toward Traverse Street, (c) the first new structures being immediately erected at the point of the triangle closest to the Central Business District and the Government Center, with provision of space for Area firms in general but of office space and sales showrooms for the specific furniture and home furnishings business and related sales agents, representatives, and wholesalers-without-stock, and (d) the remaining sub-unit buildings then being removed and reconstruction and design achievement being rapidly expedited and brought to completion.
3. That the Charles Riverfront be prepared for new residential development conjunctively with the creation of the new downstream "Charlestown Dam," extension of the Charles River Basin, and reclamation of the Charles River, through the following steps:
 - a. stripping of the trackage area between North Station and the river, structural scrapping of the four railroad bridges, and removal of the riveredge trestles,
 - b. construction of the new downstream dam at the Warren Avenue location and required extension of major sewers to be connected to metropolitan treatment plants,
 - c. extensive reclamation of the river between the new and old dams through a procedure including dredging of the channel and re-widening of the river (with use of the material in filling old Millers River in the Somerville railyards),
 - d. creation of the connecting link in the semi-circumferential waterfront vehicular circulation element between Leverett Circle and Atlantic Avenue through construction of a divided boulevard along the edge of the Charles River to the sharp bend in Commercial Street below the bluff of Copp's Hill, and

- e. construction of new residential units along the extended Charles River Basin.
4. That the Nashua Street block be redeveloped and consolidated with the adjoining sub-unit to form a fully unified, residentially developed Charles Riverfront.
5. That the North Station Complex be appropriately timed for renewal according to structural-functional amortization and in conjunction with removal of Central Artery-Leverett Circle ramps.

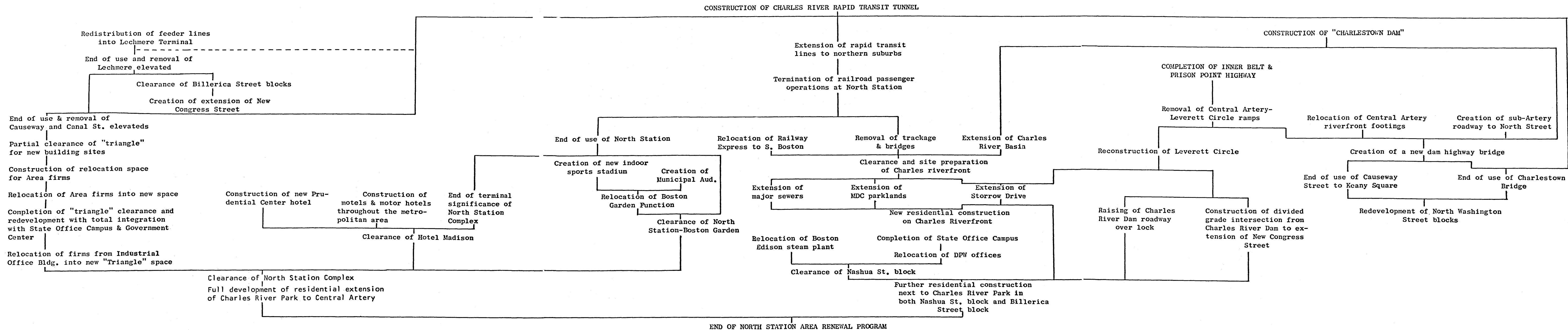
2. Coordinated Sequence of North Station Area Renewal

Within the framework of the previously outlined inner metropolitan developments schedule and based upon the direct determinates of internal area action, the particular distribution of physically evaluated structures and existing economic concentrations, and sub-unit scheduling considerations and procedures, the following coordinated sequence order is suggested for the programmed renewal of the North Station Area. (See chart on page 373.)

This organization for renewal and transition of the North Station Area sector of Central Boston is presented not to rigidly specify how rapidly restructuring must take place but only to indicate the orderly, reasonable, and almost necessitated particular development sequence, which in implementation may be either accelerated or decelerated in accordance with the economic and developmental circumstances that evolve as area renewal and general Downtown transition progress.

3. Suggested Schedule of Development Transition

Although transition of the North Station Area and evolution of a new Downtown form and function therein should progress rapidly enough to realize the timeliness of action in conjunction with Government Center and Staniford-Chardon redevelopment, completion of renewal in the Area is impeded by the substance of its larger existing structural-functional



elements, in particular the North Station Complex and the Massachusetts Department of Public Works Building. Thus, overall timing of programmed renewal for the North Station Area must be flexibly tempered between immediate and delayed action and thereby both encourage the benefits of coordination with changes in the surrounding Downtown and nearby metropolitan area and expedite the new forms and structures to be created as quickly behind the preparation of the site as is possible. A general progress and transition schedule suggested as a rough guideline for North Station Area renewal and new form evolution, therefore, is delineated in seven program units through the expected sequence order of the project, not affixed to specific yearly dates but indicating only a collective phasing for site transition. Preferably, a North Station Area Renewal Program should be initiated immediately in order to achieve maximum coordination and development continuity with already proceeding and momentarily impending changes in the adjacent West End and Government Center. Nevertheless, even if such a preferable timing can not be achieved, the suggested schedule indicates the general procedural clusters once the program is begun.

PROGRAM UNIT RENEWAL SCHEDULE

Inner Metropolitan Area Schedule prior to or in conjunction with program:

Construction of Charles River rapid transit tunnel

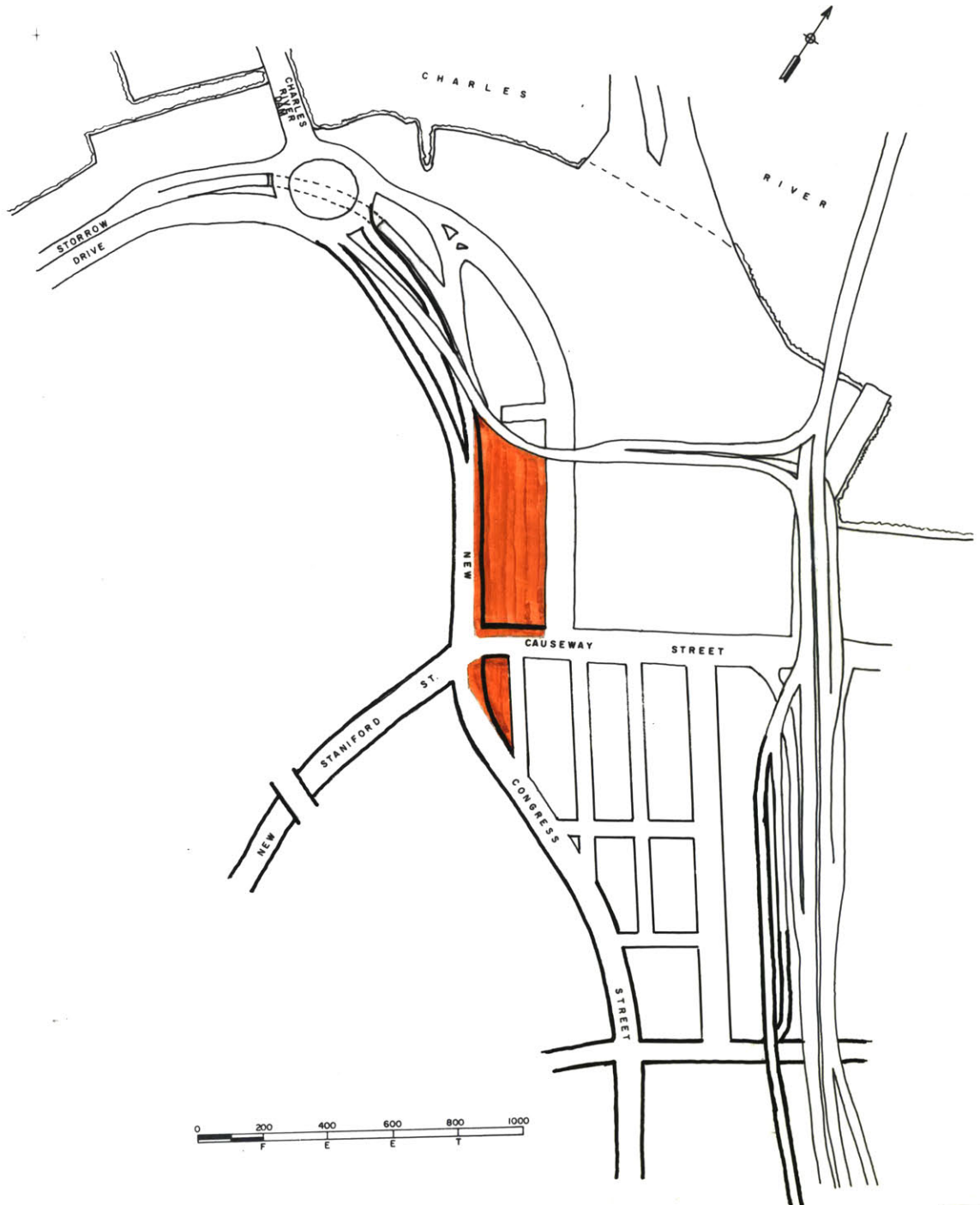
Redistribution of feeder lines to Lechmere Terminal

Extension of new urban rapid transit lines to northern suburbs

Construction of the Inner Belt

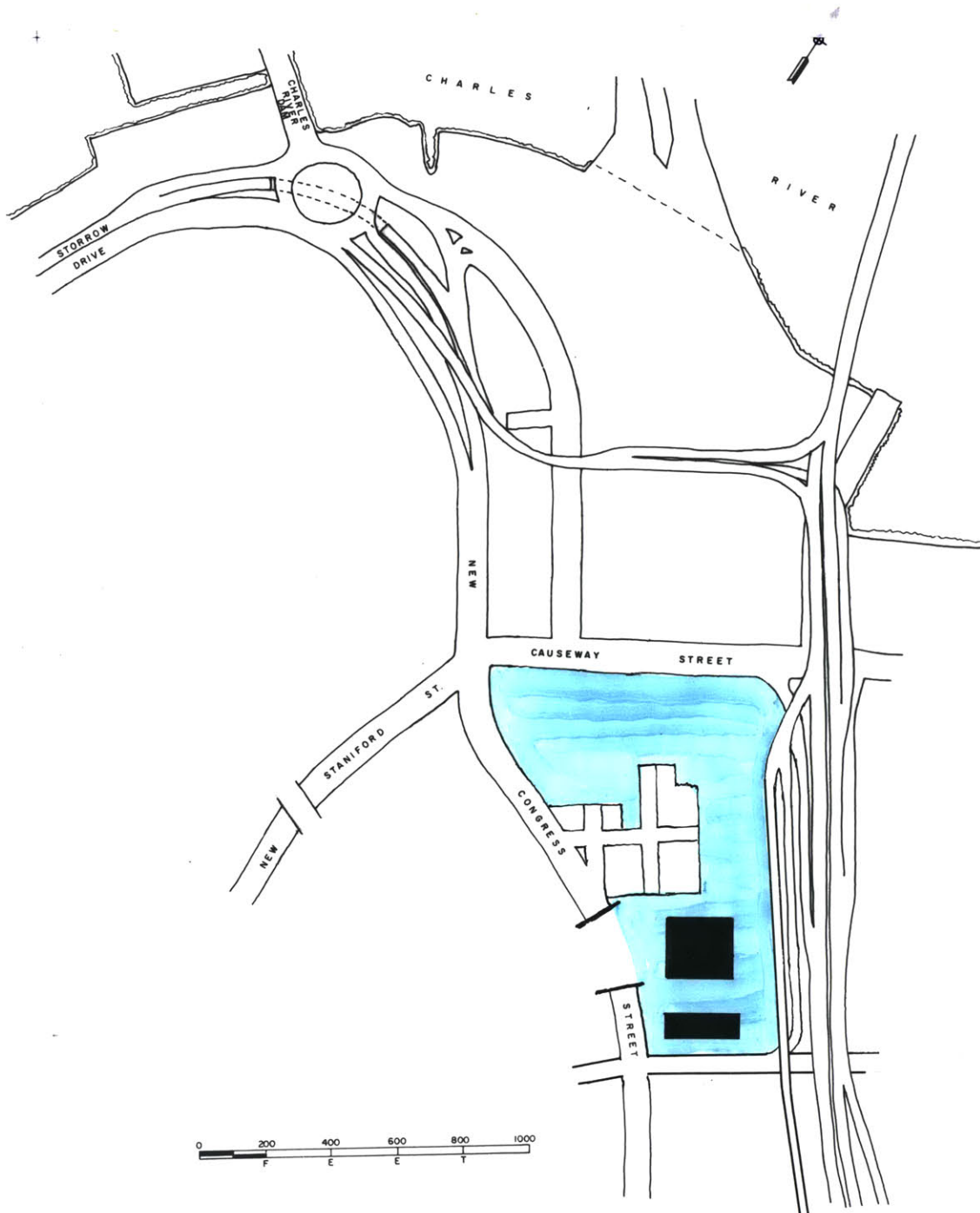
The seven phases of the North Station Area renewal program are shown on the following pages.

- FIRST PHASE:**
- Removal of all elevated transit structures
 - Clearance of Billerica Street blocks
 - Clearance of Lancaster-Merrimac block
 - Extension of New Congress Street along Merrimac and Lowell Street lines to Leverett Circle
 - Extension of new Staniford Street-Causeway Street radial to Central Artery



SECOND PHASE: Selective clearance of Causeway and Haymarket Square frontages of Triangle with retention of three temporary relocation structural clusters

Immediate reconstruction of office space and sales showroom facilities at tip of new "triangle" next to Government Center.

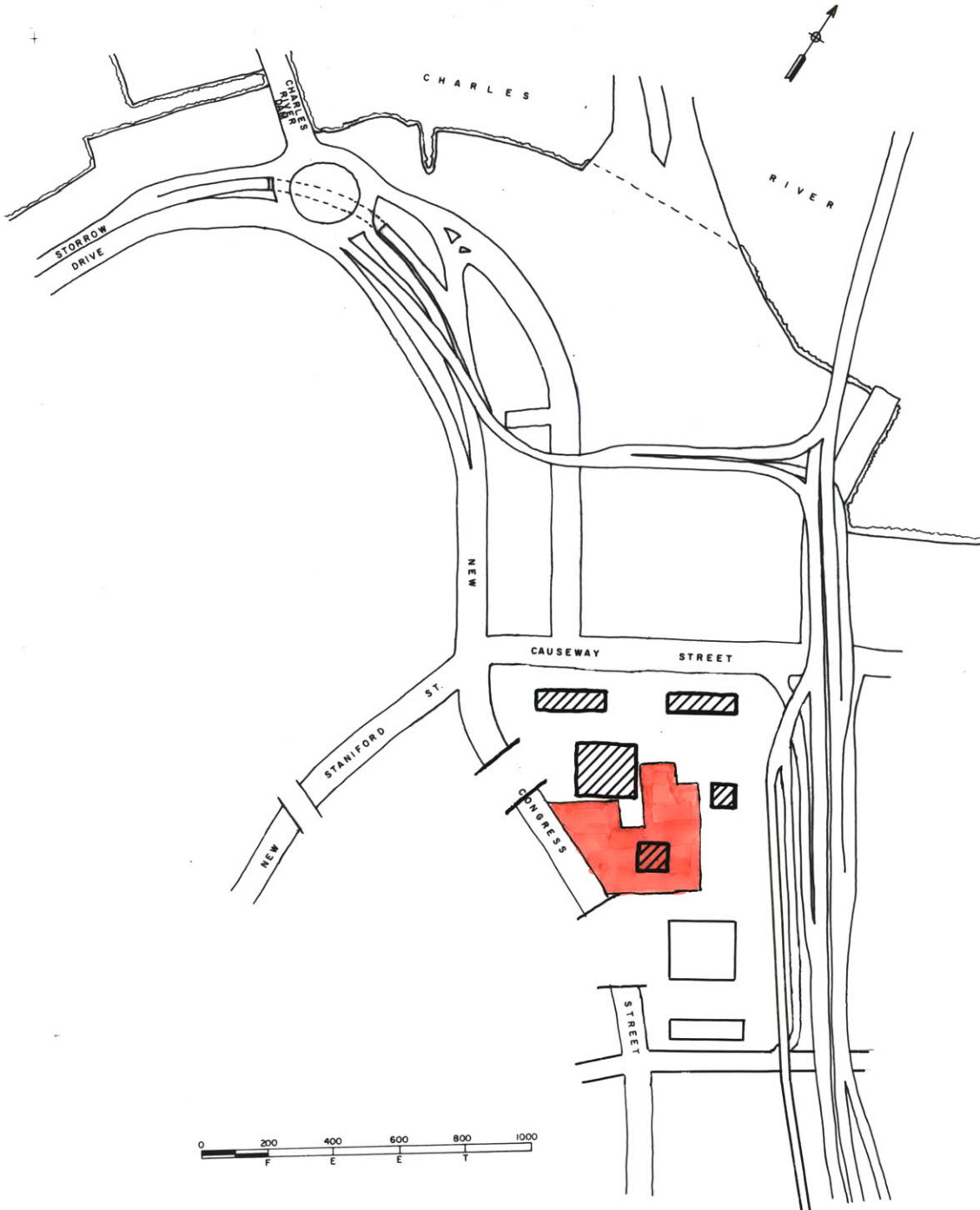


SELECTIVE CLEARANCE and RECONSTRUCTION

THIRD PHASE: Relocation of appropriate Triangle firms into new structures

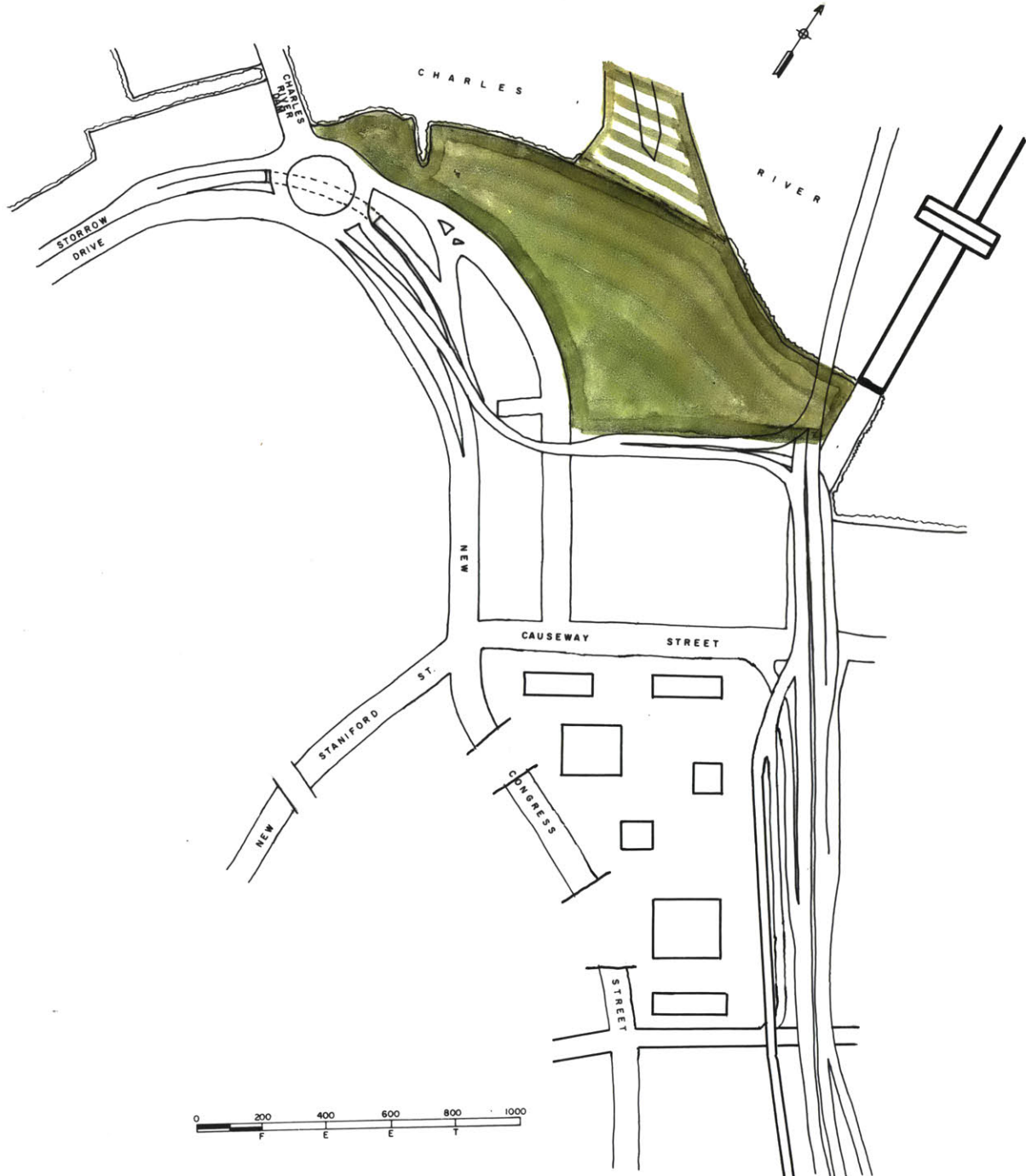
Clearance of remainder of Triangle site

Beginning of construction of new "Triangle" form with development of pedestrian plazas, etc.



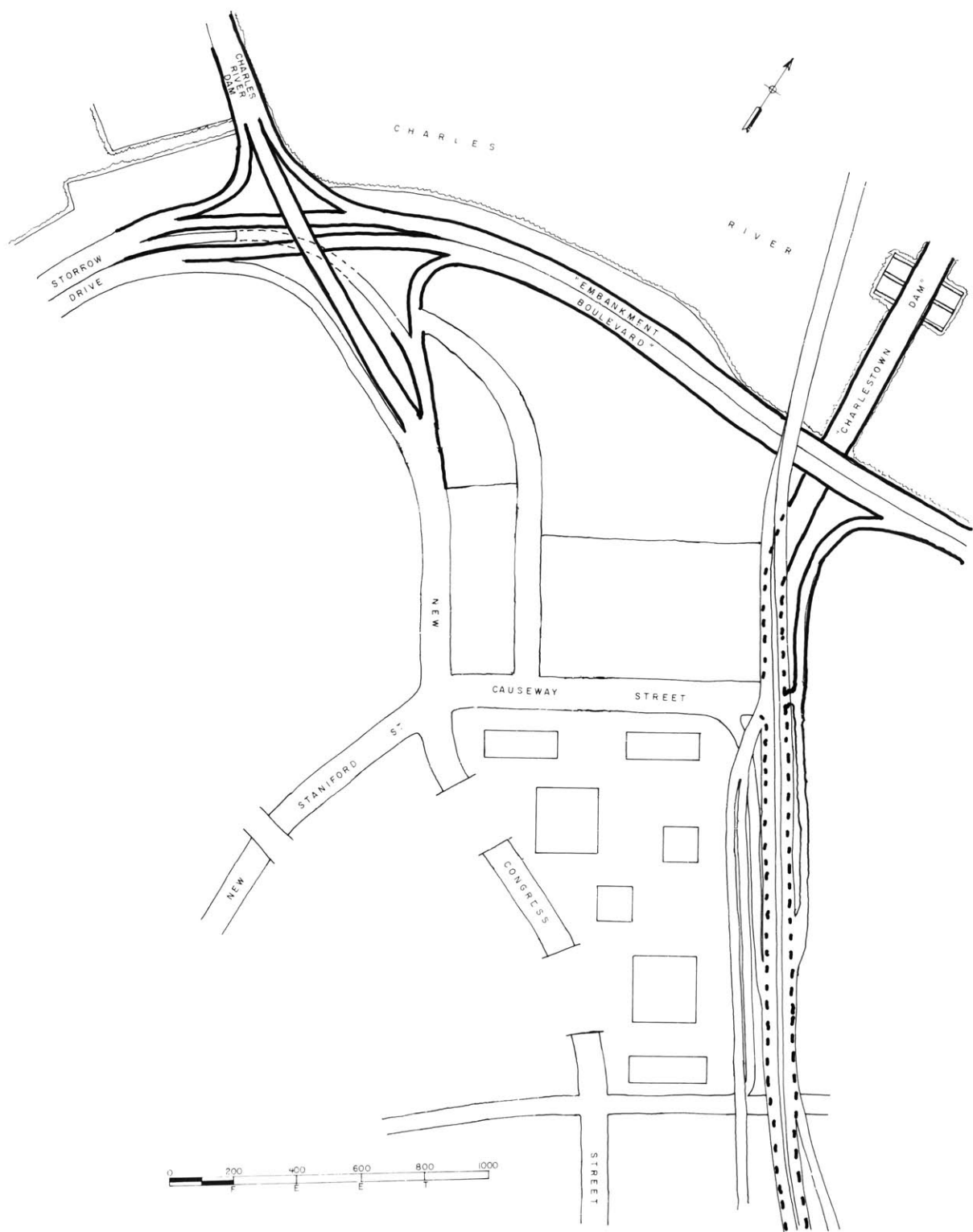
TRIANGLE REDEVELOPMENT

FOURTH PHASE: Termination of all passenger railroad operations on the Central Boston shore
Termination of Union Freight Railroad operations in area
Removal of all trackage, trestles, and railroad bridges on riverfront
Relocation of Railway Express operation to new facilities in South Boston freight yards
Reclamation of Charles River with new sewer extensions and construction of new downstream "Charlestown Dam"
Extension of riverfront parklands



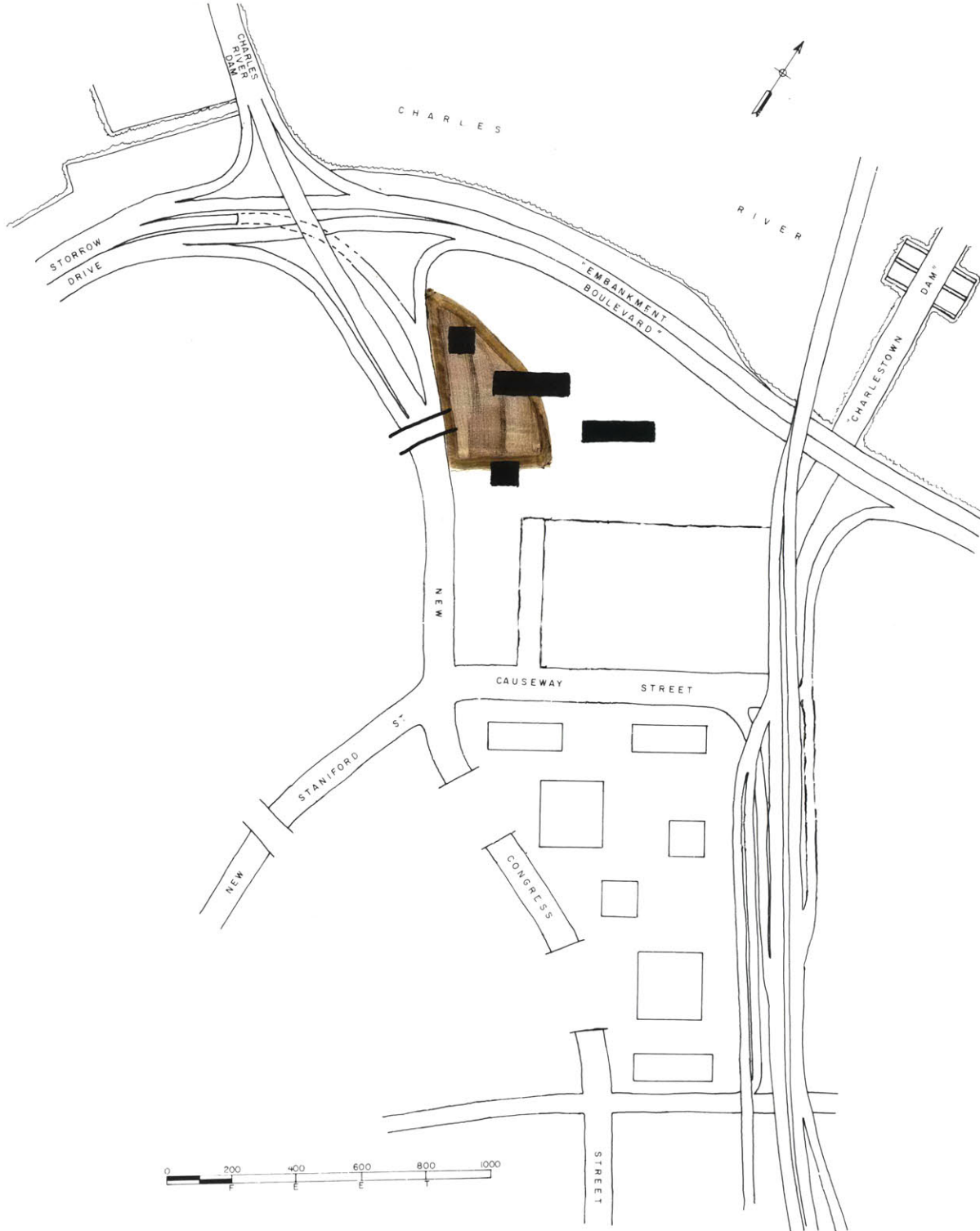
SITE PREPARATION of CHARLES RIVERFRONT

- FIFTH PHASE:** Reclamation of Cambridge-Charlestown side of the Charles River with retraction of rail lines northward
- Construction of new Prison Point surface highway with interchange to Inner Belt
- Reorientation of traffic movement at northern end of the central city peninsula
- Removal of Central Artery ramps - Leverett Circle ramps
- Construction of divided grade intersection from New Congress Street extension to raised Charles River Dam roadway
- Reconstruction of Leverett Circle
- Creation of sub-Artery roadway from Charles River to North Street
- Reconstruction of Central Artery riverfront structural supports
- Construction of new "Charlestown Dam" highway span and connection to sub-Artery roadway
- Extension of waterfront "Embankment Boulevard" from Charles River Dam to North End's Atlantic Avenue
- (See page 381.)



**RECONSTRUCTION and CONSOLIDATION
of VEHICULAR and CIRCULATION**

SIXTH PHASE: Relocation of government offices in DPW building to new structures in State Office Campus
Relocation of Boston Edison secondary steam plant function
Redevelopment of Nashua Street block and unification of Charles Riverfront site
New residential development next to and integration and unification with Charles River Park



**UNIFICATION and DEVELOPMENT
of CHARLES RIVERFRONT**

SEVENTH PHASE: Relocation of Boston Garden functions to Municipal Auditorium and new indoor stadium

Demolition of the North Station-Boston Garden

Relocation of all office activities of the Industrial Office Building to new "Triangle" structures

Relocation of all manufacturing activities of the Industrial Office Building to the new "Charles River Industrial-Research Center"

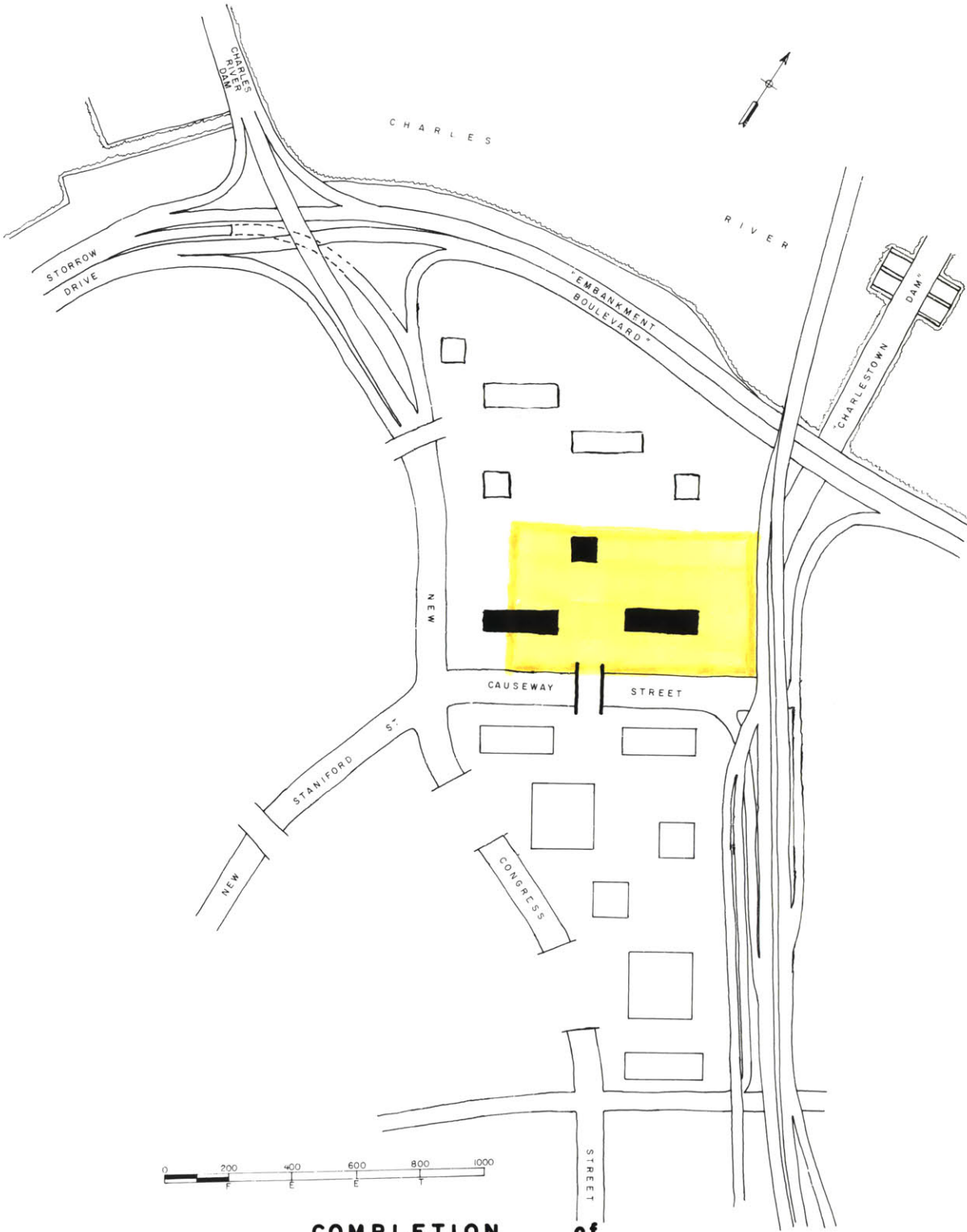
Termination of Hotel Madison use

Redevelopment of the North Station Complex

New residential development on the remainder of the Charles Riverfront residential site to the edge of the Downtown

Completion of North Station Area Renewal Program

(See page 384.)



**COMPLETION of
NORTH STATION AREA
RENEWAL PROGRAM**

Although this suggested development schedule indicates a seven-phase program representing in general the necessary sequence of consecutive physical changes, given appropriate circumstances, two or more phases could conceivably be combined and thus the project as a whole accelerated. Vice versa, if required, there could be a further division of organizational components into a greater breadth or diversification of transition. In terms of total program time, a large part of the site may be redeveloped within the time span of the adjacent Government Center project, whereas other sections may be greatly delayed. Thus, the renewal of this particular section of Central Boston might either begin immediately and reach completion as rapidly as the necessary physical changes could be made or, conversely, might be forceably delayed for several decades. The key factor is decision-making.

IX

IMPLEMENTATION

Developments within metropolitan areas have not only become increasingly interrelated to each other and necessitate a greater measure of coordination than has been characterized up to the present time, but a new element of urban renewal has been introduced into the web of interrelationships which may become, as programs for the central city and for the inner ring of smaller cities rapidly accelerates, the dominant factor to outweigh even massive highway projects in the determination of governmental appropriations and of metropolitan development scheduling. In light of this impending circumstance, the objective of programmed renewal is threefold: to establish a coordination sequence between projects, to enable the necessary restructuring of urban areas, yet to eliminate the time delay of reconstruction. And though at the present time, such a technique's utilization in a political atmosphere of interagency rivalry and duplicatory confusion can be handled only on an official cooperation and agreement basis between state, cities, and towns, the coordination of overall metropolitan area developments in the not-too-distant future clearly must be keyed to legislative enforcement.

Thus, above and beyond the act of city rebuilding is the process of that rebuilding, the provision not only of locational opportunities for economic and functional components and the creation of new physical forms

and environment, but the orderly and coordinated phasing of development and redevelopment.

Inner Metropolitan Area Coordinating Agency

In the study of merely one sector of one central city of one metropolitan area, the need has become critically clear for legislative decision to create an organizing agency for inner metropolitan area physical changes, for all those public capital improvements, projects, and alterations which are presently undertaken, authorized, or individually initiated by a multitude of existing federal, state, legislatively-created, municipal, and private agencies - for transportation constructions, the port developments, the public service schedule revisions, the physical erections of plants, structures, and facilities. And though the method by which such an administrative agency would be created at the organizational level necessarily required is not of concern here, the important point is that such a coordination be established and that such an agency be able to formulate a long-range plan and schedule of expected capital improvements for the inner metropolitan area and be able to exercise strong supervision over all those public agencies and departments responsible for actual design and implementation. Only then can the necessary and continuous process of urban transition and physical evolution avoid duplication, competition, and unwarranted excessiveness of public expenditures - immediate, as in the case of an unnecessary high-level bridge construction over Boston Harbor, or eventual, as in public urban renewal of disorganized and obsolete structural configurations, and only then can the conflicting situations be avoided which have historically arisen concerning changes to the physical environment.

Legislative Enactment of Programmed Renewal

A second step in the organization of development coordination would be the necessarily non-immediate process of establishment and implementation of enabling legislation for individual cities' use of the technique of programmed renewal. This authorization of a pre-determined overall development plan and a publicly-announced extended conservation-rehabilitation-redevelopment would be necessary not only to establish an assurance to prospective investors of the future sincerity and certainty of intent above and beyond particular existing administrative bodies and officials but to guarantee that the program as a whole, once initiated, would ultimately reach completion. Such a legal status might be achieved through a method involving extrapolation of zoning power technique, official map procedure, and predetermined early public property acquisition, but would appear to necessitate a framework which would not be subject to indiscriminate change, alteration, revision, or modification.

Inner Metropolitan Capital Improvements Plan and Schedule

A third step in the formulation of a framework for future development coordination might be preparation (possibly by the newly created coordinating agency) of an inner metropolitan capital improvements plan, with a derived sequence phasing and a predetermined flexible program schedule, which might be formed in part from tentative master and renewal plans of the various individual inner metropolitan cities and communities.

Central Boston Renewal Plan and Program

Within this four-part framework established for inner metropolitan transition and evolution, each of the component communities would then be able to prepare individual definitive urban renewal programming plans not only organized for programmed development within their own boundaries but coordinated with the changes of other metropolitan elements through the general overall inner metropolitan developments schedule.

For the City of Boston, such a circumstance would allow the establishment of a four-level organization of renewal programming plans and schedules: an overall program for the city as a whole within which interrelationships could be created between the several component titled areas (Charlestown, East Boston, Central Boston, Roxbury, etc.), between their numerous sub-areas (the central city's Beacon Hill, West End, North End, North Station Area, Harborfront, etc.), and in most detailed organization, between the multitude of specific sub-units - all organized and scheduled over an extended period of time in coordination with both individual city transition and with the larger framework of the inner metropolitan area.

Organization of Any Specific Area Renewal Program

At the focus of all this inner metropolitan coordinating organization could be the utilization of programmed renewal as applied to the various municipal components. Such an application leading to the gradual transition and coordinated development of city sectors toward the evolution of new urban forms and structural patterns might thus be comprised of a particular series of steps or procedures:

1. An area under consideration for renewal would be fully investigated, with determination of the existing physical and economic

composition and evaluation of impending or proposed changes and developments which might have a direct effect upon the area.

2. The development and renewal implications of these nearby factors would be related to the various parts of the area.
3. The area would be evaluated with respect to its reuse potentials in relation to itself, to its tangencialities, and to the city section of which it forms a part.
4. Initial design sketches would be prepared for the area site based upon the evaluated reuse possibilities, with a view to coordination with existing and future adjacent city sections.
5. The area would be examined in light of the components of which it is comprised in an effort to determine logical and effective boundaries of sub-units within which renewal action could take place in conjunction with the appropriate external changes and developments.
6. The tentative internal renewal priorities would then be tested against the initial schedule of external developments and the two would be modified in order to reach an effective coordinated compromise.
7. The public agency would prepare or have prepared in conjunction and in consultation with prospective investor-redevelopment groups a general overall site design for the project area which could be further refined, subject to approval of the public agency, into detailed construction plans by the individual developers.
8. A renewal program would be outlined in a particular schedule or order, the time period of which could flexibly be altered to meet whatever changes the external circumstances necessitated.
9. The next step would be undertaken by the action division of the local government agency in obtaining acquisition rights to the private and public properties within the area concerned, thus effectively freezing property values at some appropriate time.
10. The agency division would arrange for the sale of the particular sub-units to the prospective investor-redevelopers on a competitive negotiation basis.
11. In response to the preset organization schedule of external changes and developments, temporary or permanent relocation of present owners and tenants and clearance of sub-units within the project area would then begin.

12. As site preparation of the particular sub-units became completed, they would be delivered to their respective redeveloper-investors.
13. The "construction coordination" group within the public supervisory agency would thus take over close coordination of public and private development evolution and provide whatever project design modification and expediting assistance might be required.

X

CONCLUSION

This investigation, formulation, plan, and program for the North Station Area of Central Boston has been presented in order that necessary restructuring may be undertaken at the northern end of the Shawmut Peninsula, that the significant development potentials of the sector may be fully utilized at this timely moment of West End redevelopment, Government Center creation, and State Office Campus planning, that the central city may realize a successful connection between the Charles River Basin and the Boston Harborfront, that a start can be made toward coordinated action in one part of the inner metropolitan area, and that a sequence of changes may be clearly indicated as the reasonable method of organizing and undertaking the continuing and continuous change which The City has, does, and must always undergo - the process of gradually increasing intensity of use, of slowly occurring but unmistakably certain transition through economic periods, and of more and more highly specialized and thus more costly construction which each age necessarily brings.

One hundred and fifty years ago, the North Station Area site was a freshly filled Mill Pond. In turn, it became a transportation terminal, evolved as a diverse mixture of manufacturing, wholesaling, and railroading over which were superimposed highway and rapid transit connections to the closely projecting points of Cambridge and Charlestown, and both

took on a new intensity and new scale with the construction of a half dozen substantial buildings and clearly began to show the marks of age and the promise of widespread future deterioration. Today, it is a physical skeleton of vacancy pockmarked structures, narrow and dirty streets, and rusting and obsolete elevateds in spite of which the economic intensity of the city still finds utilizable by several large and significant concentrations of activities and employment but an area which portends to stand as an obsolete and even dangerous wedge in the path of long, long, overdue regular turnover of city structure and initial Twentieth Century Downtown reconstruction, which is one of the key segments in the success or failure of central city redevelopment, and which is the kingpin of balanced transportation achievement in the inner metropolitan area.

What happens in the North Station Area affects the existence, timing, and configuration of transportation connections to the northern sector of the metropolitan area and to the northern states of the New England region; the use, redevelopment, and reuse of the vast expanse of Somerville rail yards; the use, expansion, and function of the Charles River Basin and surrounding shoreline; and the future feasibility of creating similar residential and recreational-oriented impounded basins in other parts of the inner metropolitan area. What happens in the North Station Area will substantially determine the realization of successful, continuous restructuring of the semi-circumferential and peninsular form of Central Boston; will strongly influence the use and renewal of the surrounding peninsula projections of Cambridge, Charlestown, Chelsea, East Boston, and South Boston; will establish a new view to positive utilization of a long abandoned and reluctantly recognized uneconomic

port frontage; and will set a significant precedent for similar terminal areas in other parts of the nation.

Moreover, the method by which the North Station Area sector of Central Boston is guided through transition and brought from the obsolescence of first generation construction to a more intensive utilization is as significant as the forms and the functions which that reconstruction will take. The success or failure of its extended renewal and programmed sequence of capital improvements implementation may either accelerate or retard the achievement of ultimate coordination of all metropolitan area changes and developments and of efficient organization and administration of public expenditures.

This thesis has intended, explicitly and implicitly, to emphasize five particular points:

1. The interdependence of the factors, elements, areas, and changes in the physical world and their required careful manipulation only with complete and full knowledge of consequent impact.
2. The required investigation, evaluation, formulation, and application of urban renewal to Downtown areas not as a superficial, deadline process but as a long, involved, time-consuming procedure which must be based on concrete facts and broad knowledge rather than on summary value judgments and snap decisions.
3. The critical lack of available knowledge and information concerning the simplest of physical and economic elements of the urban environment and the absence of an attempt to fulfill this essential prerequisite to planning.
4. The long-postponed and heretofore avoided major decisions with respect to city structure, transportation systems, planned obsolescence, and programmed renewal which must responsibly be faced.
5. The seemingly radical changes and decisions which may sometimes

be required in order that larger ends can be realized and broader goals can be achieved.

The dominant theme of this thesis is progress through and toward coordination - constant striving toward organization of city development and of transition not just from year to year but from generation to generation.

APPENDICES

APPENDIX 1

PEDESTRIAN COUNTS, NORTH STATION AREA, SPRING 1960

Date	Time	Volume of Pedestrians near North Station			
		Canal Street	Friend Street	Causeway Street	MTA Station at Canal St.
Mar. 30, 1960 (Wed.)	8:15-9:00AM	410	380	340	80
Mar. 11, 1960 (Fri.)	7:55-8:35AM	785	390	275	95
	85 minutes	1195	770	615	175
Average per minute:		14	9	7	2
Converted Pedestrian Volume per Hour:		846	543	434	124
Average Peak Flow Observed: (per minute)		34	20	12	4

Source: Field Survey

APPENDIX 2

INTERNAL TRUCK TRAFFIC IN TERMS OF LOCAL DELIVERIES

Although no specific or complete survey was conducted, it is possible to place a scale on the extent and nature of local truck deliveries in the North Station Area. Investigation of this measure is based primarily on the results of the Providence Rhode Island, Downtown Report¹ presented in the following table:

STANDARDS FOR MEASUREMENT OF LOCAL TRUCK MOVEMENTS
(DELIVERIES) TO PARTICULAR ECONOMIC ACTIVITIES
IN A DOWNTOWN AREA

Type of Operation ^a	Number of Deliveries	
	Per Week	Per Working Day
Retailers	22	4
Personal Services	5	1
Offices	3	1
Government Offices	102	20
Warehouses	71	14
Wholesalers	29	6
Manufacturers	19	4
Hotels	60	12

Railway Express ^b	404	95
U.S. Post Office ^b	378	63

^aNo measure available for either large Boston Garden movements or small amount of baggage still handled by the B & M at North Station.

^bFrom interviews in the North Station Area with the particular operations concerned.

¹Downtown Providence, Downtown Providence Master Plan Project, Providence, R.I., 1958.

Utilizing these general averages from the Downtown Area of a not too dissimilar nearby city, a level of internal truck traffic in the North Station Area is constructed according to 1960 existing Area firms.

INTERNAL TRUCK TRAFFIC, NORTH STATION AREA, 1960
(based on local deliveries)

Economic Activity (SIC Category)	Number of Firms in Area ^a	Total Number of Daily Deliveries
1. Contract Construction (office)	1	1
2. Manufacturing	16	64
3. Manufacturing	5	20
4. Railway Express	1	95
4. Other Transportation, Utilities and Communication	21	21
5W. Wholesalers	77	462
5R. Retailers	104	416
6. Real Estate, Finance (offices)	6	6
7. Hotels	2	24
7. Other Services	48	48
8. Services	20	20
9. U.S. Post Office	1	63
9. Other Government (offices)	9	180
Total	311 firms	1420 daily deliveries

Source: Detailed 1960 Area investigation, see Appendix 13.

APPENDIX 3

VEHICULAR TRAFFIC FLOWS, LEVERETT CIRCLE^a, 1958 and 1959^b

	7:30-8:30 AM Peak Hour			4:30-5:30 PM Peak Hour			Average Off-Peak Hour			7AM-6PM, 11 Hours		
	1958	1959	% Change	1958	1959	% Change	1958	1959	% Change	1958	1959	% Change
ENTERING												
Storrow Drive	2643	2899	9.7	3465	3713	7.2	2435	2624	7.8	28,024	30,230	7.9
Charles River Dam	2205	2281	3.5	1572	1648	4.8	1352	1408	4.1	15,942	16,602	4.1
Nashua Street	497	480	-3.4	1123	1312	1.7	702	697	-0.7	7,933	8,070	1.3
Central Artery ramp	476	540	13.7	790	847	7.2	381	430	12.9	4,698	5,259	11.9
Total Entering	5821	6200	6.5	6950	7520	8.2	4870	5159	5.9	56,597	60,161	6.3
LEAVING												
Storrow Drive	1507	1746	1.6	1779	1829	2.8	1114	1315	18.1	13,307	15,409	15.8
Charles River Dam	1230	1289	4.8	1973	2149	8.9	1254	1205	3.9	14,490	14,282	-14.4
Surface road	960	653	-32.0	431	389	-9.7	607	553	-8.9	6,857	6,020	-12.2
Central Artery ramp	2131	2424	13.7	2851	3068	7.6	1928	1992	3.3	22,331	23,424	4.9
Total Leaving	5828	6112	4.9	7034	7435	5.7	4903	5065	3.3	56,985	59,135	3.8

Source: Engineering Department, Metropolitan District Commission.

^aEntering and Leaving traffic totals indicated here are not comparable due to the exclusion of data for now closed West End streets.

^b1958 statistics are for August 8th; 1959 statistics are for January 29th.

APPENDIX 4

DISTRIBUTION OF ON-STREET PARKING,
NORTH STATION AREA, 1960

Street	Total Spaces	Type of Space					
		No Limit No Meters No Parking	2 Hour Meters No Parking	No Limit No Meters No Parking	2 Hour Meters No Restriction	No Limit No Meters No Restriction	Unlim- ited Taxi Parking
		7AM-6PM	8-9:30AM	8-9:30AM			
Billerica	23	8				15	
Canal	54		54				
Causeway	60		13			7	40
Cotting	8					8	
Friend	40	40					
Haverhill	64					64	
Lancaster	15	8	7				
Lowell	41					41	
Market	0						
Merrimac ^a	19	19					
Minot	0						
Nashua	62				58		4
Portland	28		28				
Traverse	12			12			
AREA TOTAL	426	75	102	12	58	135	44

^aCovers North Station Area side only.

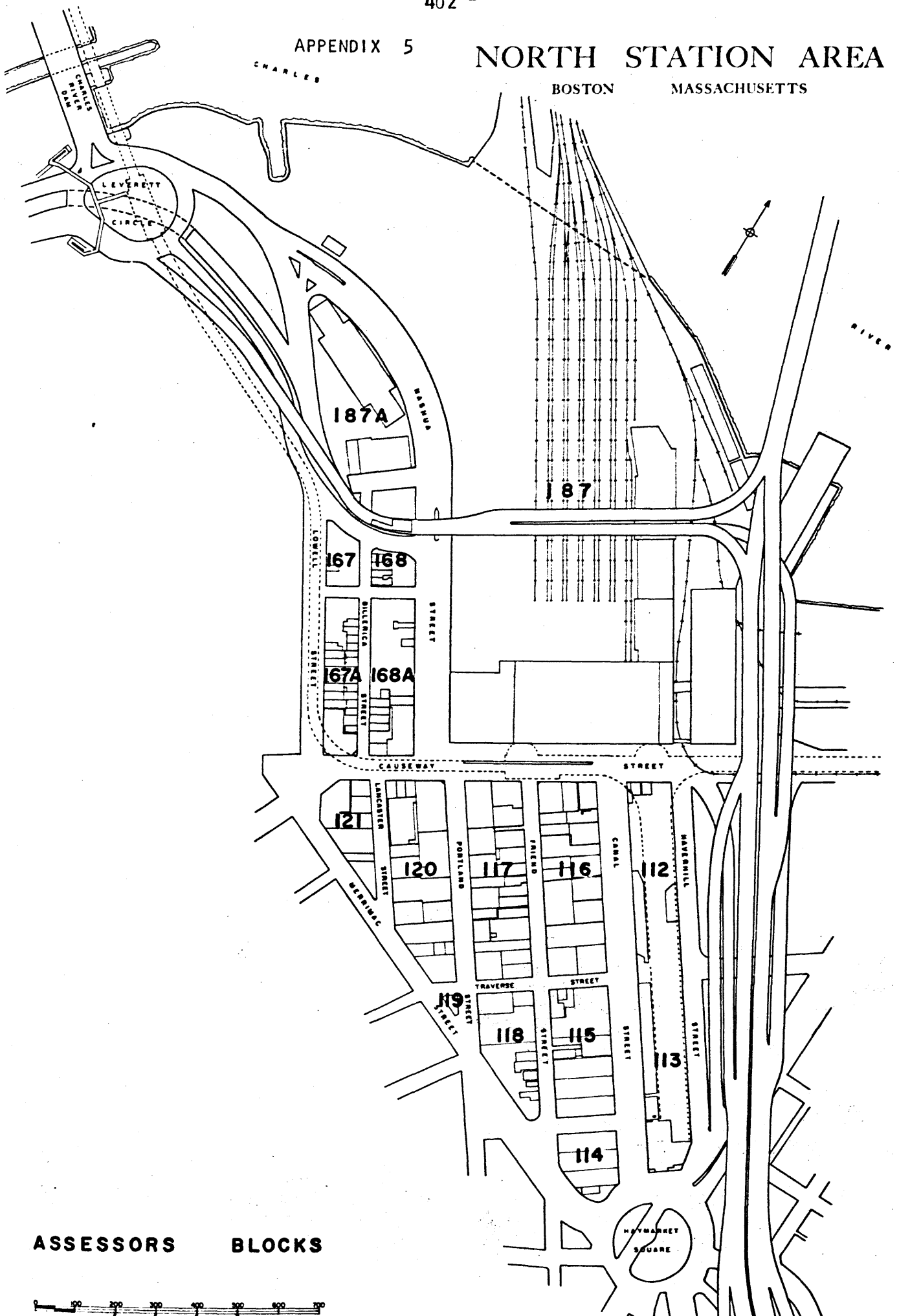
Source: Field Survey.

APPENDIX 5

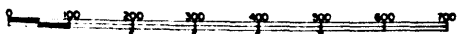
NORTH STATION AREA

BOSTON

MASSACHUSETTS



ASSESSORS BLOCKS



APPENDIX 6

DETAILED BUILDING DATA, NORTH STATION AREA, 1960

Legend

Construction Type

B brick
I iron
W wood
C concrete
CB concrete block

Building Equipment

E elevator
VP vertical pipe fire system
BE brick lined elevator shaft
TE tile lined elevator shaft
AS automatic sprinklers
AC air conditioned
FE steel frame elevator
G glazed tile

Age

1928 32 years
1922 38 years
1898 62 years
1884 76 years
1873 87 years

Height

reduction in number of stories
1 (3) 1 story cut from 3 stories

S former stable

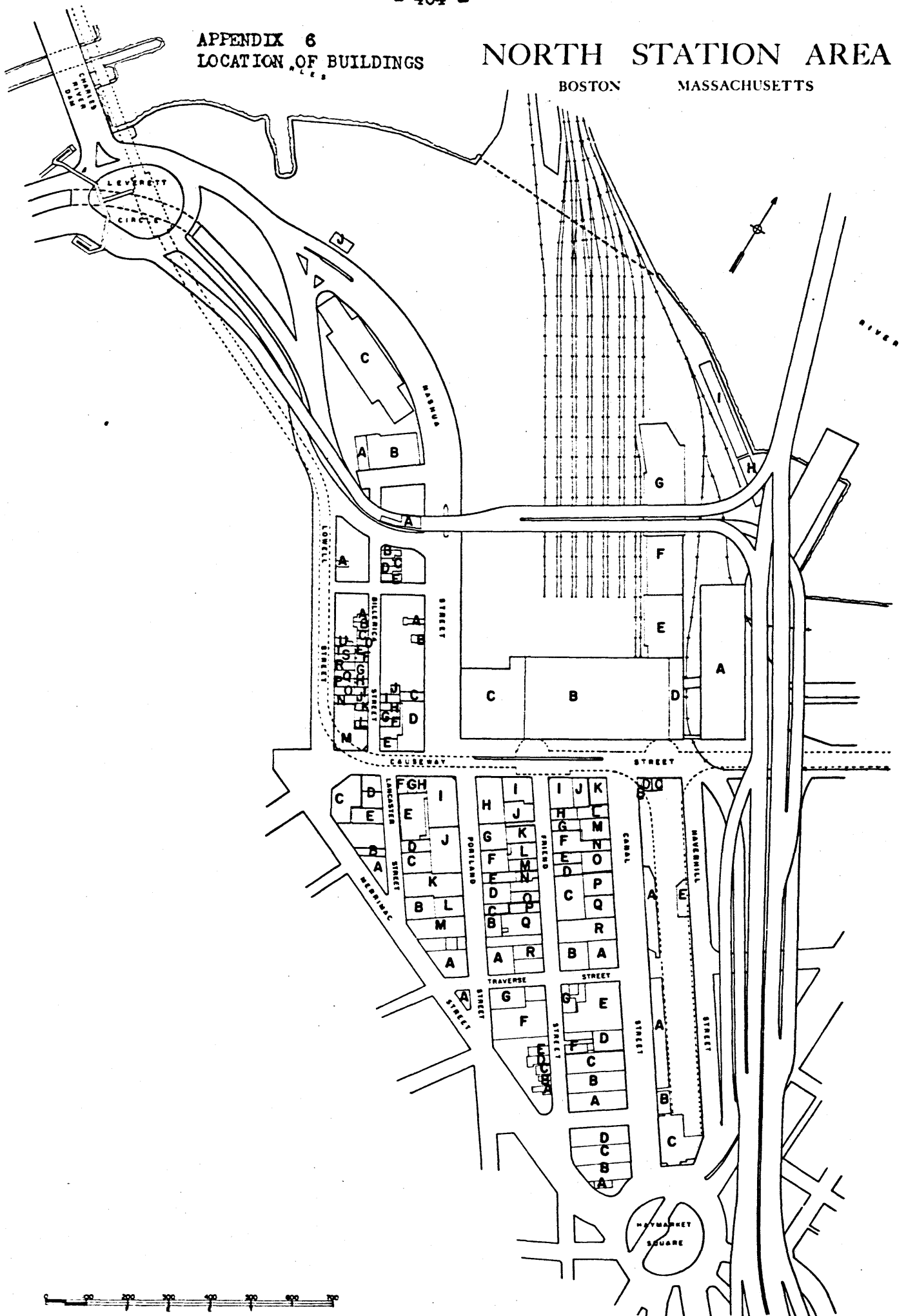
Floor Space Utilization

fully -- fully utilized
nonint. -- non-intensively utilized

APPENDIX 6
LOCATION OF BUILDINGS

NORTH STATION AREA

BOSTON MASSACHUSETTS



APPENDIX 6--Continued

Block Bldg. Address	Non-Residential Gross Floor Space Utilization				Building Data					1960	
	Fully	Nonint.	Storage Vacant	Total	Age	Floor Const.	Condition	Equipment	Employ.	Firms	
112											
A	89-119 Canal	5.2		0.4	5.6	1922	1 B	Fair	None	13	8
B	183 Canal	0.4			0.4	32+	1 I	Fair	None	3	1
C	141-143 Cswy.	0.8			0.8	38+	1 W	Poor	None	4	2
D	135-137 Cswy.				-	40+	1 W	Poor	None	-	-
E	84 Havr'l				-	1931	1 C	Good	FIREPROOF	-	-
113											
A	53-85 Canal	14.8		9.5	24.3	1915	3 B, S Frame	Poor		38	12
B	51 Canal		3.3		3.3	1901	2B B	Fair	FIREPROOF	-	-
C	Haymkt. Sq.	22.6			22.6	1901	3B B, C Floors & Roof	Fair- Poor	FIREPROOF, E, I VP & Hose	80	1
114											
A	20 Canal	0.4			0.4	1933	1 B	Fair	None	2	1
B	24-30 Canal	6.8	32.4		39.2	87+	6B B	Fair- Poor		37	2
C	32-38 Canal	11.0	18.7		29.7	87+	6B B	Fair	TE	30	2
D	40-46 Canal	9.1	54.1		63.2	87+	6B B	Fair	E	10	2

APPENDIX 6--Continued

Block Bldg. Address	Non-Residential Gross Floor Space Utilization				Building Data				1960			
	Fully	Nonint.	Storage	Vacant	Total	Age	Floor Const.	Condition	Equipment	Employ.	Firms	
115												
A	48-54 Canal	29.2		14.6	7.3	51.1	87+	6B B	Fair	2BE	57	3
B	56-62 Canal	16.2	32.8			49.0	87 +	6B B	Good- Fair	E, AS	101	1
C	66-72 Canal	22.8		30.4		53.2	87+	6B B	Fair	2E, AS	24	3
D	74-80 Canal	3.9		15.6		19.5	87+S	4B B	Poor	E	12	1
E	84-98 Canal	84.3		11.8	5.4	101.5	87+	6B B	Good- Fair	3BE, E, AFA, AS	112	12
F	165 Friend			5.5		5.5	1914	5 B	Fair	E	-	-
G	181-189 Friend	4.3				4.3	1925	2 B	Fair	None	13	4
116												
A	102-110 Canal	4.7				4.7	1937	1 B	Good	None	13	1
B	191-199 Friend	30.1		14.7		44.8	1924	9 B Walls, Cf&r	Fair	FIREPROOF, AS 2E	106	3
C	215-229 Friend	62.1				62.1	1913	8 B&Cw, Cf&r	Fair	FIREPROOF, AS 2E	312	6
D	233 Friend			6.1		6.1	1919	3 Bw, Cf&r	Fair	FIREPROOF	-	-
E	237-239 Friend	0.3			7.7	8.0	1886	4 B	Fair- Poor	None	1	1
F	241-249 Friend	11.0				11.0	1881s	3 B	Poor	None	12	4

APPENDIX 6--Continued

Block Bldg. Address	Non-Residential Gross Floor Space Utilization				Building Data				1960		
	Fully	Nonint.	Storage	Vacant Total	Age	Floor	Const.	Condition	Equipment	Employ.	Firms
116--Cont'd											
G 257 Friend	2.0			2.0	62+	1(3)	B	Fair	None	7	1
H 259 Friend	3.9			3.9	62+	2	B	Poor	None	-	-
I 113-117 Cswy.	4.5		4.5 13.5	22.5	1885	5	B	Fair- Poor	E	5	1
J 119-123 Cswy.	5.7			5.7	1932	2	T&Cw, Cf&r	Good- Fair	FIREPROOF	25	1
K 175-184 Canal	17.0		3.4	20.4	62+	5	B	Fair- Poor	None	16	2
L 168-172 Canal	10.5		2.1	12.6	62+	5B	B	Fair- Poor	Open E	20	3
M 160-166 Canal	10.8	9.2		20.0	1875	5	B	Fair- Poor	E, AS	37	4
N 154-156 Canal	4.6			4.6	76+	2	B	Poor- Fair	None	14	2
O 144-152 Canal	4.4		3.5	7.9	87+	3	B	Fair- Poor	None	11	3
P 130-138 Canal			11.6	11.6	1873	3B	B	Fair	None	-	-
Q 120-126 Canal	4.0			4.0	1873	1	W&B	Fair	E	56	1
R 112-118 Canal	20.0		12.0	32.0	1895	7B	Bw, Tf&r	Fair	FIREPROOF, E	40	5
117											
A 133-137 Portld.	4.5	13.5		18.0	76+	4	B	Fair	BE	8	1

APPENDIX 6—Continued

Block Bldg. Address	Non-Residential Gross Floor Space Utilization					Building Data					1960	
	Fully	Nonint.	Storage	Vacant	Total	Age	Floor	Const.	Condition	Equipment	Employ.	Firms
117—Cont'd												
B 141-147 Portld.	1.4		4.0	0.6	6.0	62+	2B	B&W	Bad	None	7	2
C 151-153 Portld.	1.5				1.5	1926	1	B	Poor	None	21	1
D 155-167 Portld.	3.5				3.5	87+s	1	W	Poor	None	See Bldg. C	
E 169-171 Portld.	2.4	2.3	2.3		7.0	62+s	3	B	Fair- Poor	None	6	1
F 173-179 Portld.	5.2		10.4	15.6	31.2	1907	6	B	Fair- Poor	2E, AS	22	2
G 197-201 Portld.	16.0		12.0		28.0	1895	6B	B	Fair- Poor	E, AS	19	4
H 203-209 Portld.	34.5	7.3	4.7		46.5	1895	6B	B	Fair- Poor	2E, AS	70	6
I 101-111 Cswy.	12.8	12.8		6.4	32.0	87+	5	B	Fair	BE	25	6
J 276-280 Friend	11.1	3.1		1.3	15.5	1911	5B	B	Fair	2E, VP & Hose	42	7
K 272-274 Friend		3.1	3.1	12.4	18.6	1898	5	Bw, Cf&r	Fair- Poor	FIREPROOF, BE	2	1
L 262-266 Friend		3.1	3.1	6.4	12.6	1889	3B	B	Fair- Poor	None	5	1
M 256 Friend	5.7		11.4	17.1	34.2	62+	5B	B	Fair- Poor	AS	-	-
N 252 Friend				0.3	0.3	1890	1	B	Fair	None	-	-
O 232-234 Friend	3.6		5.6		9.2	87+	5	B	Poor	None	4	1
P 228-230 Friend			3.7		3.7	87+	2	B	Poor	None	-	-

APPENDIX 6--Continued

Block Bldg. Address	Non-Residential Gross Floor Space Utilization				Total	Age	Building Data			1960		
	Fully	Nonint.	Storage	Vacant			Floor	Const.	Condition	Equipment	Employ.	Firms
117--Cont'd												
Q	222-226 Friend	14.0			14.0	87+	3	B	Poor	AS	7	4
R	212-218 Friend	1.6		1.5	3.7	1899	1B	B&W	Bad	None	5	2
118												
A	168 Friend	0.3			0.3	1929	1	B&CB, C Floor	Good	None	3	1
B	172 Friend			2.3	2.3	87+	3	B	Bad	None	-	-
C	174-176 Friend			2.8	2.8	87+	3½	B	Poor	None	-	-
D	180 Friend	1.6		3.2	4.8	87+	3	B&W	Poor	None	4	1
E	182-184 Friend	1.9		5.7	7.6	76+	4	B	Poor	E	5	1
F	190-198 Friend	47.2		35.4	84.6	1918	6B	C Frame, Very f&r, Good B&Tw	FIREPROOF, 3E, AS, AC, I VP		26	1
G	129-131 Portld.	9.0		18.0	31.5	1891	6B	B	Fair	E, AS	31	2
119												
A	130 Portld.	1.2		3.8	5.0	87+		B	Fair	E	5	1

APPENDIX 6--Continued

Block Bldg. Address	Non-Residential Gross Floor Space Utilization				Building Data					1960	
	Fully	Nonint.	Storage	Vacant Total	Age	Floor	Const.	Condition	Equipment	Employ.	Firms
120 A 134-142 Portld.	12.0	24.0		36.0	1896	5B	B	Good	E, AS, AFA	37	2
B 57 Lancstr.	17.4	11.6		29.0	87+	5	B	Fair- Poor	E, AS	15	1
C 19-21 Lancstr.	4.1			4.1	1951	1	Cf&r, S Beams	Good	None	3	1
D 25 Lancstr.	5.7			5.7	62+	3	B	Fair	AS	-	-
E Lancstr. St.	20.0			20.0	1916	2-3	B Walls, Cf&r	Poor	FIREPROOF, 4 VP & Hoses	12	1
F 65 Cswy.	1.0		1.0	2.0	62+	2(5)	B	Poor	None	4	1
G 69-71 Cswy.	1.0		1.0	2.0	62+	2(5)	B	Poor	None	1	1
H 73-75 Cswy.	1.0		1.0	2.0	62+	2(5)	B	Bad	None	6	1
I 81-89 Cswy.	38.0		9.5	47.5	62+	5	B	Fair	BE, E AS	276	1
J 176-182 Portld.	40.8		8.1	48.9	1897	6	B	Fair	2E, AS	40	4
K 166-174 Portld.	49.3		3.5	52.8	1897	6	B	Fair	2E, AS	47	8
L 160 Portld.	26.0			26.0	1883	5	B	Poor	BE, AS	(See Bldg. M)	
M 150-154 Portld.	36.0		9.0	45.0	87+	5	B	Poor	BE, E, AS	205	3

APPENDIX 6--Continued

Block Bldg. Address	Non-Residential Gross Floor Space Utilization						Building Data				1960		
	Fully	Nonint.	Storage	Vacant	Total	Age	Floor	Const.	Condition	Equipment	Employ.	Firms	
121													
A	105-121 Meramac.	5.0	7.0	8.0	8.0	28.0	1900	6B	B	Poor	E, AS	29	3
B	123-125 Meramac.				6.1	6.1	76+	4	B&W	Bad	None	-	-
C	137-143 Meramac.	24.8		13.2	1.5	39.5	1887	6	B	Fair- Poor	2 BE, AS	49	4
D	55-59 Cswy.	3.9		1.8		5.7	87+	2(5)	B	Fair	None	8	1
E	30-32 Lancstr.	8.9		2.9		11.8	87+	4	B	Bad	FE, AS	8	3
167													
A	42 Lowell	0.8				0.8		4B	B	Poor	None	1	1
167A													
A	33 Blrica.							4B	B	Poor	None		
B	31 Blrica.							4B	B	Poor	None		
C	29 Blrica.							4B	B	Poor	None		
D	27 Blrica.							4½	B	Poor	None		
E	25 Blrica.							3B	B	Poor	None		
F	23 Blrica.							4B	B	Poor	None		

APPENDIX 6--Continued

Block Bldg. Address	Non-Residential Gross Floor Space Utilization			Age	Building Data				Employ.	Firms	
	Fully	Nonint.	Storage Vacant Total		Floor	Const.	Condition	Equipment			
167A--Cont'd											
G	19-21 Blrica.		1.4	1.4		2	B	Poor	None		
F	17 Blrica.					3B	B	Poor	None		
H	15 Blrica.					1	B	Poor	None		
I	13 Blrica.					4	B	Poor	None		
J	11 Blrica.					4B	B	Poor	None		
K	7 Blrica.	0.6		0.6		4B	B	Poor	None	1	1
L	44-54 Cswy.	4.5	2.3	6.8	1911	1	B Walls, Cf&r	Fair	FIREPROOF	4	4
M	8 Lowell		1.0	2.0		4B	B	Poor	None	1	1
N	10 Lowell		1.0	1.0		4	B	Poor	None	1	1
O	12 Lowell		1.0	2.0		4	B	Poor	None	1	1
P	14 Lowell		1.7	1.7		4	B	Poor	None	1	1
Q	16 Lowell		1.0	1.0		4B	B	Poor	None	1	1
R	18 Lowell		1.0	1.0		4B	B	Poor	None	-	-
S	20 Lowell		1.0	1.0		4B	W&B	Poor	None	1	1
T	22 Lowell		0.9	0.9		4B	B	Poor	None	1	1

APPENDIX 6--Continued

Block	Bldg. Address	Non-Residential Gross Floor Space Utilization				Building Data				1960		
		Fully	Nonint.	Storage	Vacant Total	Age	Floor	Const.	Condition	Equipment	Employ.	Firms
168	A Nshua.	1.5			1.5	1	C	Very-Good	FIREPROOF	(DPW garage)		
	B 46 Blrica.					4B	B	Poor	None			
	C 48 Blrica.					4B	B	Poor	None			
	D 50 Blrica.					4B	B	Poor	None			
	E 52 Blrica.					4B	B	Poor	None			
168A	A 34 Nshua.	1.0			1.0	1938	1	I	Poor	None	13	1
	B 30 Nshua.	0.2			0.2	87+	5	B	Poor	None	1	1
	C 16 Nshua.	1.2			1.2	1938	1	B	Good- Fair	None	6	1
	D 2-4 Nshua.	0.6	42.0	42.6	62+	4 $\frac{1}{2}$	B	Bad	E		1	1
	E 2 Blrica.		2.6	2.6		4	B	Poor	None		-	-
	F 8 Blrica.	0.6		0.6		3B	B&W	Poor	None		1	1
	G 10 Blrica.					3B	B	Poor	None			
	H 12 Blrica.					4B	B	Poor	None			
	I 14 Blrica.		3.0	3.0		3B	B&W	Bad	None			
	J 16 Blrica.		0.4	0.4	1957	1	CB	Good	None			

APPENDIX 6—Continued

Block Bldg. Address	Non-Residential Gross Floor Space Utilization				Building Data			1960				
	Fully	Nonint.	Storage	Vacant Total	Age	Floor Const.	Condition	Equipment	Employ.	Firms		
187												
A 150 Cswy.	439.9		42.1	65.6	547.6	1928	13	C Frame, Very Good B&C Wls. Cf&r	FIREPROOF, 6pE, 5fE, 3 VPs	1902	79	
B 86-116 Cswy.	192.6	11.2	1.2		205.0	1928	7	S Frame, Good B&T Wls GB Roof on S Truss	5 VPs & Hoses	368	23	
C 74-84 Cswy.	261.7				261.7	1930	16	S Frame, Very Good Bw, Cf&r	FIREPROOF 4pE 2 VPs & Hoses	205	5	
D 118 Cswy.						1928	4	C Frame, Bw, Cf&r	FIREPROOF 1pE 1 VP & Hose			
E						1928	3	C Frame, Fair- Bw, Good Cf&r	FIREPROOF 3E 1 VP & Hose	60 (incl. in Bldg. A)		
F						90+	2	W	Bad	None	(included in Bldg. F)	
G						9	1&2	Sf, Sr. CB & Gw	Very Good	AS	50	1
H						1956	1	CBw, Cf, Cf	Fair- Good	Noncomb.		
I						90+	1	W	Bad	None		
J Nashua	1.2				1.2	1928	2	Bw, Cf&r	Fair	FIREPROOF		

APPENDIX 6--Continued

Block Bldg. Address	Non-Residential Gross Floor Space Utilization			Age	Building Data			1960		
	Fully	Nonint.	Storage Vacant Total		Floor Const.	Condition	Equipment	Employ.	Firms	
187A										
A	Minot	2.8		2.8	1	B	Fair	None		
B	Nashua	12.0		12.0	2	B, S Truss C Floor	Fair	None	5	1
C	Nashua	228.0		228.0	88	S Frame, Cf&r B&C Bw	Very Good	8E 3 VPs & Hoses- Partially FIREPROOF	2270	4

NORTH STATION AREA

BOSTON

MASSACHUSETTS



**BUILDINGS SERVED BY
BOSTON EDISON STEAM HEAT**



APPENDIX 8

POINT ASSIGNMENT, BUILDING COMPOSITIONAL SUMMARY,
NORTH STATION AREA, 1960

Building Element	Range	Points Assigned
AGE	before 1874	0
	1874-1884	1
	1885-1898	2
	1899-1912	4
	1913-1922	6
	1923-1928	8
	1929-1945	9
	1946-1960	10
CONSTRUCTION TYPE	wood	0
	wood & brick	1
	brick	4
	brick (concrete floors & roof)	6
	metal	4
	steel frame (B walls, exposed steel roof)	8
	steel frame (C walls, floors & roof)	9
	concrete frame	10
BUILDING CONDITION	very good	20
	good	18
	fair-good	16
	fair	12
	fair-poor	8
	poor	4
	bad	0
CONSTRUCTION QUALITY- BUILDING SERVICES	completely lacking	0
	one or more elevators only	1
	automatic sprinklers only	2
	automatic sprinklers & one or more elevators	4
	automatic sprinklers & automatic fire alarm & one or more elevators only	5
	noncombustible construction only	6
	fireproof construction only	8
	fireproof construction & one or more elevators only	9
	fireproof construction & automatic sprinklers & one or more elevators	10

APPENDIX 8—Continued

Building Element	Range	Points Assigned
BUILDING HEIGHT	one story	1
	two stories	2
	three stories	2
	four stories	4
	five stories	4
	six stories	7
	seven stories	8
	eight stories	9
	nine stories and over	10
BUILDING COMPOSI- TIONAL SUMMARY	dangerous	0 - 10
	unsuitable	11 - 20
	salvageable	21 - 30
	serviceable	31 - 39
	substantial	40 - 50
		50+

APPENDIX 9

POPULATION DENSITY AND CHARACTERISTICS, LOWELL-NASHUA RESIDENTIAL BLOCKS
NORTH STATION AREA,
U.S. CENSUS 1950

Census Tract H 4	All D.U.s by Occupancy			All D.U.s by Condition and Plumbing Facilities			Occupied D.U.s	Contract Monthly Rent		
	Total	Owner Occupied	Renter Occupied	Number Reporting	No Private Bath, or Dilapidated	No Running Water, or Dilapidated	1.51 + Persons	Number Reporting	Average Monthly Rent (\$)	
B1 12	55	5	48	52	3	1	52	2	47	20.21
13	45	2	41	45	3	0	43	1	42	18.92
14	16	3	13	16	0	0	16		13	23.07
15	29	1	20	28	7	7	21		20	18.15
TOTAL	145	11	122	141	13	8	132	3	122	

Source: Housing Block Statistics, Boston, Massachusetts, U.S. Census of 1950.

^aDelineation of census blocks as follows:

- Census Block 12 - bounded by Lowell, Cotting, Billerica, and Causeway Streets.
- Census Block 13 - bounded by Lowell, Minot, Billerica, and Cotting Streets.
- Census Block 14 - bounded by Nashua, Cotting, Billerica, and Minot Streets.
- Census Block 15 - bounded by Nashua, Causeway, Billerica, and Cotting Streets.

APPENDIX 10

INVESTIGATORY PROCEDURE, ECONOMIC COMPOSITION,
NORTH STATION AREA

- a. Detailed determination of business and employment composition as of Spring 1960.
- b. Establishment of activity and employment trends from Massachusetts Division of Employment Security data for 1947 and 1957 tabulated and made available by the Greater Boston Economic Study Committee as extensively modified and corrected by a complete interview of Area firms.
- c. Comparison of Area business activities and employment trends with 1947-1957 GBESC tabulated-DES statistics for Downtown Boston, the City of Boston, and the Boston Metropolitan Area, as a form of reference and a measure of scale.
- d. Determination of Area floor space utilization, as supplemented by a survey questionnaire on annual rentals, probable locational changes, and anticipated additional space demands.
- e. Summarization of current and recent changes in property assessed valuations, records of property sales, and the nature of property ownership, from information contained in the files of the Boston City Planning Board, Building Department, Assessing Department, and Equalization Survey.

APPENDIX 11

NORTH STATION AREA 1947 "CORRECTED" FIRMS & COVERED EMPLOYMENT

	Block 110	Block 111	Block 112	Block 113	Block 119	Assessors Blocks 167 & 168	Total
175			1	10			1 10
207		1	15				1 15
225	1	4					1 4
232	1	83					1 83
233	1	21	2	23			3 44
234			1	16			1 16
236	2	105	1	3			3 108
239	2	2					2 2
251	2	25	5	54	2	48	10 127
256				1	10		1 10
259		1	4				1 4
269		1	55				1 5
275	1	2		1	32		2 34
278			1	10			1 10
279						1 35	1 35
313	1	19					1 19
314	1	16	1	10			2 26
323		1	11				1 11
3431	1	24					1 24
3471	1	52					1 52
3559						1 184	1 184
359	1	2					1 2
3842				1	17		1 17
4011						7 1360	7 1360
4041						1 50	1 50
4212		1	0	1	3	2 11	4 14
4411						1 2	1 2
4743						1 4	1 4

Appendix 11 - continued

	Block 110		Block 111		Block 112		Block 113		Block 119		Assessors Blocks 167 & 168		Total	
602					2	19							2	19
651	1	3	2	1	1	3			1	28			5	35
7011					1	6			1	200	1	20	3	226
7021					1	4							1	4
7241			2	3	3	5	2	3	1	4	1	0	9	15
7251			1	0	1	0			1	7			3	7
7271			1	0									1	0
732					1	2			1	2			2	4
734					1	1							1	1
739					1	3			1	20			2	23
7521											2	2	2	2
7531							1	1					1	1
762							1	6					1	6
7631									1	1			1	1
7641	2	16											2	16
7699											1	0	1	0
7831	1	11											1	11
7931			1	12	1	1							2	13
7941														
7949					1	16			1	285			2	301
8611					1	0			1	1			2	1
863							3	25	2	4			5	29
8911									1	18			1	18
91	1	85											1	85
92											3	2000	3	2000
93							1	80					1	80
Total	43	829	45	272	69	798	22	167	53	2462	19	2070	251	6598

220 firms (less Govt., banks, br. offs., railroads & misc.) 6598
 1 self employed per firm 220

1947 EMPLOYMENT OF AREA: 6818

APPENDIX 12

NORTH STATION AREA 1957 "CORRECTED" FIRMS & COVERED EMPLOYMENT

	Block 110	Block 111	Block 112	Block 113	Block 119	Assessors Blocks 167 & 168	Total
171		1 4					1 4
225	1 1						1 1
229			1 14				1 14
2311			1 160				1 160
2339			1 41				1 41
2391				1 0			1 0
2342	2 2						2 2
2512	1 50	3 41	2 39				6 130
253		1 1					1 1
2751			1 33				1 33
2752					1 10		1 10
278			1 39				1 39
2793					1 39		1 39
3431	1 24						1 24
344			1 13				1 13
3471	1 63					1 1	2 64
3571					1 56		1 56
3842				1 15			1 15
4011					14 1100		14 1100
4041					1 50		1 50
4212			1 3	1 2			2 5
4411					1 2		1 2
454					1 0		1 0
4743					1 4		1 4
4821				1 2	1 4		2 6
4961						1 5	1 5
5032		1 18	3 125				4 143
5049	2 25						2 25
5062		2 10	1 60				3 70

Appendix 12 - continued

	Block		Block		Block		Block		Block		Assessors		Total	
	110	111	112	113	119	167 & 168	167 & 168	Total						
7011			1	6			1	180	1	20	3	206		
7021			1	4							1	4		
7231							1	4			1	4		
7241		2	4	2	4		3	9	1	0	8	17		
7251			1	0	1	0	1	7			3	7		
7271		1	6	1	0						2	6		
7272					1	1					1	1		
732							1	2			1	2		
7399			1	3			3	192			4	195		
7521									3	3	3	3		
7522	1	2									1	2		
7531					1	0					1	0		
7621			1	2	1	2					2	4		
7631							1	0			1	0		
7641	2	3	1	7							3	10		
7699									1	0	1	0		
7831	1	11									1	11		
7931		1	3	1	1						2	4		
7941							3	221			3	221		
7949			2	27							2	27		
8021					1	0					1	0		
861			1	0			1	1			2	1		
8631							2	4			2	4		
8671							1	2			1	2		
8699							1	2			1	2		
8911							6	276			6	276		
8931							1	9			1	9		
91	1	85					1	900			2	985		
92							2	62	3	2200	5	2262		
93					1	80					1	80		
Total	34	686	41	257	73	1026	24	119	88	3496	26	2272	286	7856

240 firms (less Govt., banks, br. offs., railroads & misc.) 7856
 1 self-employed per firm 240
 1957 EMPLOYMENT OF AREA: 8096

APPENDIX 13

NORTH STATION AREA 1960 FIRMS & EMPLOYMENT

	Block		Block		Block		Block		Block		Assessors		Total	
	110	111	112	113	112	113	119	167 & 168	167 & 168	167 & 168				
1746							1	10			1	10		
2253	1	0									1	0		
2311					1	195					1	195		
2339					1	50					1	50		
2391							1	0			1	0		
2392	1	0									1	0		
2512	1	14	1	15	3	47					6	76		
2515			1	23							1	23		
2519			1	1							1	1		
2751					1	32					1	32		
2752								2	34		2	34		
2793								1	35		1	35		
3161	1	0									1	0		
3431	1	18									1	18		
3471	1	125									1	125		
3571								1	330		1	330		
3842							1	13			1	13		
4011								15	816		15	816		
4041								1	50		1	50		
4212					1	3					1	3		
4411								1	2		1	2		
4742								1	3		1	3		
4743								1	4		1	4		
4821								1	4		1	4		
4961										1	5	5		
5029								5	65		5	65		
5032			1	19	3	124					4	143		
5042								1	22		1	22		
5049	1	26						3	15		4	41		
5062			2	10	1	75					3	85		

Appendix 13 - continued

	Block		Block		Block		Block		Block		Assessors		Total		
	110	111	112	113	119	167	168	167	168	167	168	167	168	167	168
5065	1	9												1	9
5072					2	44								2	44
5077									1	10				1	10
5082									5	27				5	27
5087									1	3				1	3
5096									3	28				3	28
5097	10	122	8	89	11	131			2	6	10	0	41	348	
5099	1	3	1	3					4	16				6	22
5212			1	1										1	1
5411											1	0		1	0
5431					1	0								1	0
5441			1	3										1	3
5499							1	0						1	0
5541			1	2	1	1								2	3
5612					1	3			1	3	1	0		3	6
5613			1	0										1	0
5621	4	282	1	0										5	282
5634									1	4	1	0		2	4
5712	5	28	8	36	11	44	8	0						32	108
5713			1	10	2	43								3	53
5714							1	10						1	10
5719			2	0	1	3								3	3
5722							1	4						1	4
5812	1	5	3	22	6	97	3	5	4	61	1	12	18	202	
5813	1	3	3	21	3	24			3	36	1	5	11	89	
5912									1	35				1	35
5921	1	0			2	12			1	4				4	16
5942									1	2				1	2
5952			1	1	1	0								2	1
5992					1	0			1	0				2	0
5993			2	0					2	4				4	4
5994									1	10				1	10
5996			1	0										1	0
5997					1	0			1	1				2	1
602					2	20								2	20
603									1	6				1	6

Appendix 13 - continued

	Block 110	Block 111	Block 112	Block 113	Block 119	Assessors Blocks 167 & 168	Total
92					4 137	4 2270	8 2407
93				1 80			1 80
Total	36 735	47 266	70 1006	24 115 108 2518		27 2296	312 6936

262 firms (less Govt., banks, br. off., railroads, misc.) 6936

1 self-employed per form 262

1960 EMPLOYMENT OF AREA 7198

APPENDIX 14

DESIGNATION OF FURNITURE, HOME FURNISHINGS,
AND RELATED ACTIVITIES

SIC Category	Description of Activity
2391	Manufacturer of curtains and draperies
2392	Manufacturer of other textile house furnishings
2512	Manufacturer of upholstered wooden household furniture
2515	Manufacturer of mattresses
2519	Manufacturer of plastic household furniture
253	Manufacturer of public building and related furniture
259	Manufacturer of shades or venetian blinds
4212	Trucking and delivery of household furniture(without storage)
5032	Wholesaler of textiles
5062	Wholesaler of household electrical goods
5072	Wholesaler of furniture hardware
5097	Wholesaler of furniture and home furnishings
5099	Wholesaler of rubber and plastic fabric
5712	Retailer of household furniture
5713	Retailer of floor coverings
5714	Retailer of draperies, curtains, and upholstery
5719	Retailer of miscellaneous home furnishings
5722	Retailer of household appliances
732	Furniture mercantile reporting agency
7399	Promoter and organizer of furniture shows
764	Reupholstery and furniture repair
861	Association of furniture agents

Source: Standard Industrial Classification Manual, Executive office of the President, Bureau of the Budget, 1957.

APPENDIX 15

FURNITURE, HOME FURNISHINGS, AND RELATED ACTIVITIES
NORTH STATION AREA, 1947, 1957, 1960

SIC Number	1947		1957		1960	
	Firms	Covered Employment	Firms	Covered Employment	Firms	Covered Employment
2391			1	0	1	0
2392	2	2	2	2	1	0
2512			6	130	5	76
2515	10	127			1	23
2519					1	1
253			1	1		
259	2	14				
4212	1	3	1	3	1	3
5032	4	123	4	143	4	143
5062	4	68	3	70	3	85
5072	1	14	1	16	1	14
5097	23	204	40	324	41	348
5099			1	2	2	6
5712	16	53	27	105	32	108
5713	4	58	4	48	3	53
5714	2	12	1	10	1	10
5719	1	3	3	3	3	3
5722	1	5	1	2	1	4
7321	1	2	1	2	1	3
7399	1	3	1	3	1	3
7641	2	16	3	10	5	7
8611	1	1	1	1	1	1
	76	708	102	875	109	891
		<u>76</u>		<u>102</u>		<u>109</u>
		784 total empl.		977 total empl.		1000 total empl.

% Increase 1947-1960	Firms	43.5%
	Covered Empl.	25.9%
	Total Employment	27.6%

APPENDIX 16

DERIVATION OF SELF-EMPLOYMENT, NORTH STATION AREA

Category and Area totals for self-employment were derived in the following manner:

- a. All known "corporations" - including government offices and agencies, banks, branch offices of national corporations, railroad company offices, railway express companies, steamship companies, telegraph companies, utility companies, major hotel companies, and traveler service agencies - were determined and were excluded (as a number) from the total number of firms for each category.
- b. To this remaining number of firms in each category, one self-employed person for each firm was added to the category figure for "covered" employment.

The resulting distribution and totals for self-employment in the North Station Area thus are fairly representative of the prevailing situation for the survey years covered to the extent that limited investigation time was available.

APPENDIX 17

GBESC BLOCK GROUPS, NORTH STATION AREA

APPENDIX 17

MISREPRESENTATIONS OF GBESC TABULATED-DES STATISTICS,
NORTH STATION AREA, 1947 and 1957

Year	Block Group	Indicated by GBESC but no record in Area		Missed by GBESC		Misclassified by GBESC-DES	
		Firms	Covered Employment	Firms	Covered Employment	Firms	Covered Employment
1947							
	110			4	11	2	76
	111	1	73	4	10		
	112	13	162	4	185	1	23
	113		24	1	2	3	34
	119	8	903	24	732	2	219
		22	1,162	37	940	8	352
			Overstatement	222	employment		
			Understatement	15	firms		
1957							
	110	1	3	9	74	2	63
	111	2	14	5	29		
	112	9	231	9	191	2	45
	113	1	1	14	5	2	10
	119	8	1,378	38	555		
		21	1,627	75	854	6	118
			Overstatement	773	employment		
			Understatement	54	firms		

^aStatistics shown for comparable blocks.

Source: GBESC-DES data from 1947 and 1957 master sheets of A Report on Downtown Boston, Greater Boston Economic Study Committee, Boston, Mass., 1959.

APPENDIX 18

COMPARISON OF DETAILED AREA INVESTIGATION WITH ADVANCE
PLANNING ASSOCIATES-NORTH STATION MERCHANTS
ASSOCIATION FINDINGS, NORTH STATION AREA,
1947, 1957, 1960^a

			1957		1960
	APA-KSMA ^b	Detailed Investig.	APA-NSMA ^b	Detailed Investig.	Detailed Investig.
Total Covered Employment	4600	4433	5220	4529	4354
Self-Employed	-	220	500	240	262
Government Employment	-	2165	2000	3327	2572
TOTAL EMPLOYMENT	-	6318	7720	8096	7198
Furniture, Home Furnishings, & Related Activities					
Covered Employment	573	708	808	875	811
Self-Employed	-	76	-	102	109
Total	-	784	-	977	1000

^aStatistics presented are for comparable areas, specifically:
blocks bounded by the Central Artery, Haymarket Square, Merrimac Street,
Lowell Street, and the Charles River.

^bSource: Advance Planning Associates statistics from Progress Report
North Station Area prepared for the North Station Merchants Association,
January 1960.

APPENDIX 19

THE INVESTIGATORY PROCEDURE: FLOOR SPACE INVENTORY, 1960

The procedure undertaken in determining the 1960 non-residential floor space inventory of the North Station Area utilized three elements:

- a. the 1953 gross floor space building inventory of the Boston City Planning Board, as scaled from Sanborn maps,
- b. interviews with building owners and managers, and
- c. scaling from Sanborn maps for those structures not covered by (a) or (b).

Although gross floor space totals could generally be based upon the Boston City Planning Board statistics, several exceptions were noted. Cross-checking of the 10 blocks tabulated in 1953 revealed that Blocks 112 and 113 were incorrectly scaled by a factor of 1/2, that several buildings have since been demolished, and that several buildings were inaccurately scaled. Correction was made to these outstanding elements and a workable set of statistics was thus provided.

Gross floor space by major Standard Industrial Classification category and by "full utilization," "nonintensive utilization," and "storage space" was obtained by reconnaissance of all space occupied in existing Area structures and by matching of firms with the type of occupied space.

Gross vacant space was obtained by interviews with building managers and owners, when possible. In other cases, rental notices and survey estimates were utilized.

Appendix 19
(continued)

The 1953 floor space inventory of the Boston City Planning Board comprised only part of the total North Station Area. Specifically, that survey included Assessors Blocks 112, 113, 114, 115, 116, 117, 118, 119, 120, and 121. All other sections of the Area - Blocks 167 & 167A (Lowell-Billerica Streets), Blocks 168 and 168A (Billerica-Nashua Streets), Block 187 (North Station Complex and accessory structures), and Block 187A (the Massachusetts Department of Public Works building and Boston Edison steam plant) - are original tabulations.

Because of the difficulties involved and the present irritated patience of recently relocated and fearful ex-West End residents, no survey of existing residential floor space was undertaken for the Lowell-Nashua Street blocks.

Note: Also not included in this 1960 floor space inventory are the following minor structures:

- a. two dilapidated soon-to-be-razed wooden repair shops of the Boston & Maine Railroad near the Charles River,
- b. several 2 by 4 parking lot shacks,
- c. a small overhead shelter between two structures, used as a roof for the U.S. Post Office loading platform,
- d. the overhead passageways between the Industrial Office Building and North Station,
- e. an MTA electric substation on Haverhill Street,
- f. an MTA change booth at the corner of Causeway and Canal Streets, and
- g. a small one-car garage on Traverse Street.

APPENDIX 20

OCCUPIED GROSS FLOOR SPACE PER ECONOMIC ACTIVITY EMPLOYMENT,
NORTH STATION AREA, 1960

Major SIC Category	Total Occupied Gross Floor Space (sq. ft.)	Total Category Employment (persons)	Occupied Floor Space Per Employment (sq. ft. per person)
1	2,600	11	236
2	185,500	462	402
3	106,100	491	216
4	323,000	890	363
5W	671,600	908	745
5R	503,400	929	542
6	100,200	60	1670 ^a (167)
7	469,600	548	857 ^b
8	53,100	320	166
9	294,900	2,512	118
Area Totals and Average	2,710,000	7,191	377

^aThis unusually high figure is due to the inclusion of otherwise unassignable non-rentable floor space in the Industrial Office Building to real estate operative category 6. If the 94,540 square feet of gross floor space and 26 employment of this factor were removed from these figures, then the "average" for category 6 (finance, real estate, and insurance) would be reduced to a more representative 167 square feet per person.

^bThis figure includes categorically unrepresentative floor space assigned to the Boston Garden entertainment service.

Source: 1960 floor space inventory, Appendix 6; and 1960 detailed business investigation, Appendix 13.

APPENDIX 21

DISTRIBUTION OF GROSS FLOOR SPACE BY CONSTRUCTION QUALITY,
NORTH STATION AREA, 1960

Type of Floor Space	Total	First Class Structures (Fireproof)		Second Class Structures (Non-fireproof)	
		Amount	% of Total	Amount	% of Total
Fully Utilized	2101.7	1190.9 ^a	56.6	910.8	43.4
Nonintensively Utilized	204.4	52.0	25.4	152.4	74.6
Storage	403.9	81.3	20.1	322.6	79.9
Vacant	273.1	80.0	29.3	193.1	70.7
Area Total Floor Space	2983.1	1404.2	47.0	1578.9	53.0

^aThis figure is heavily weighted by the large total of 702 thousand square feet of "fully utilized" floor space for the North Station Complex alone. The remainder of the Area thus possesses only 489 thousand square feet of first class "fully utilized" space.

Source: Sanborn Atlas, Construction quality; 1960 floor space inventory.

APPENDIX 22

MEASURE OF THE DEMAND FOR PROVISION OF ADDITIONAL FLOOR SPACE,
NORTH STATION AREA, QUESTIONNAIRE SURVEY, DECEMBER 1959

The questionnaire responses concerning the short-term future need of additional floor space as shown below, indicates a response of unexpected major expansion by answering firms in the Area except for the significant increase anticipated by the office-occupying business services.

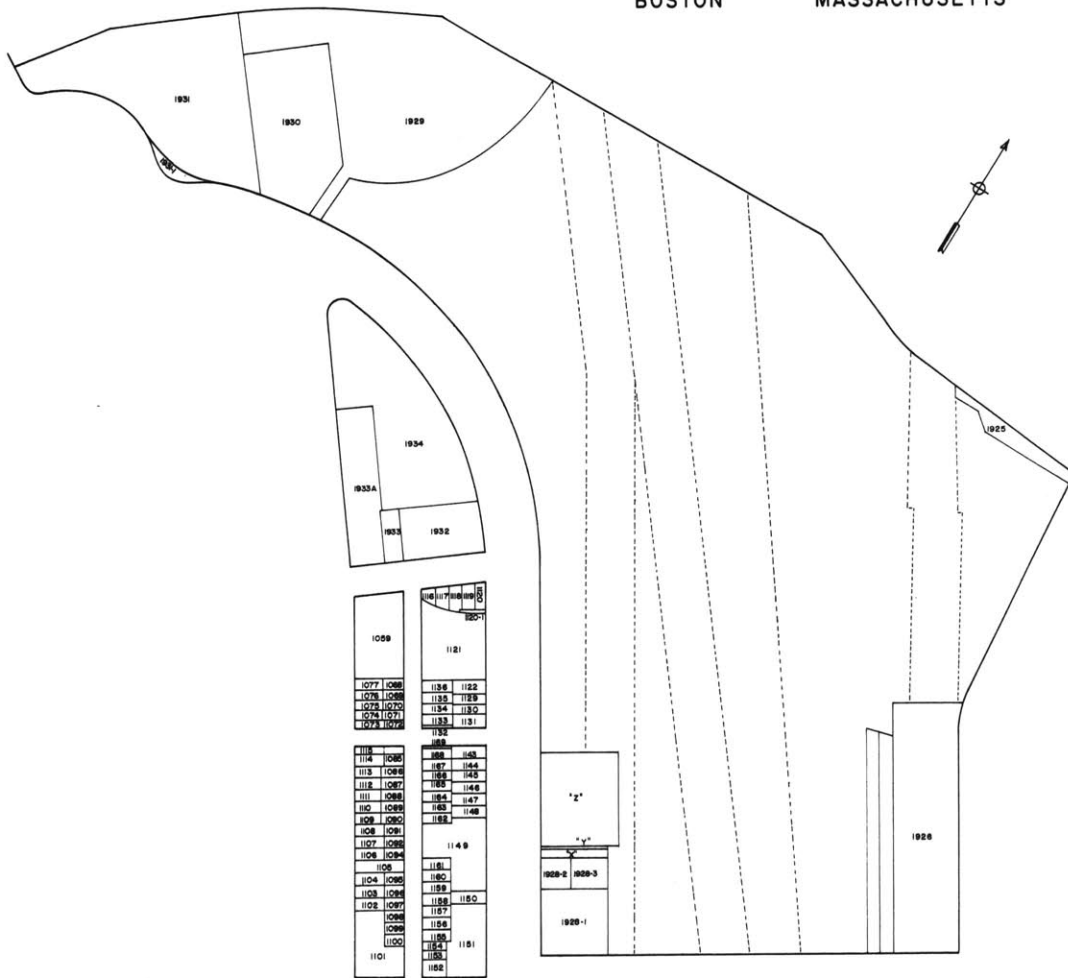
ADDITIONAL SPACE NEEDS IN THE NEAR FUTURE, SURVEY QUESTIONNAIRE,
NORTH STATION AREA, December 1959

SIC Category	Additional Space to be Needed (square feet)	Firms Answering
2 manufacturing	15,000	2
3 manufacturing	10,000	1
4 transportation	200	1
5W wholesaling	27,500	3
5R retailing	27,300	6
8 services	60,000	1
Total	140,000	14

APPENDIX 23

NORTH STATION AREA

BOSTON MASSACHUSETTS



PROPERTY PARCEL MAP



APPENDIX 23--Continued

PROPERTY PARCELS AND TABULATIONS

Block	Parcel	Land Area	Owner	Assessed Valuations			Latest Sale	Prior Assessments			
				Land	Bldg.	Total		Year of Chng.	Land	Bldgs.	Total
112	1586	45,649	MTA	228,400	4,600	233,000					
	1587	7,161	MTA	17,800	5,200	23,000					
113	1588	12,039	City of Boston	301,000	100,000	401,000					
	1589	8,858	Rose Andelman Evelyn Levine	53,200	46,800	100,000					
	1590	32,728	MTA	163,600		163,600					
114	1624	2,650	Dello Realty Co. Inc.	20,000	10,000	30,000	1957 \$24,000				
	1625	2,742	American Oil Co.	32,900	21,000	35,000		1957	38,400	1,600	40,000
	1626	13,281	Rapids Realty Co.	90,800	34,200	125,000					
	1627	2,987	Brooks, Gill & Co. Inc.	23,900	13,100	37,000					
115	1610	7,338	Myers Realty Inc.	74,400	35,600	110,000					
	1611	7,048	Andrew Dutton Co. Inc.	77,500	52,500	130,000	1956 \$90,000				
	1612	7,570	C.C. Bailey Co. Inc.	83,000	31,700	114,700					
	1613	1,142	Edw. D. Tullio John Fitzpatrick	8,000	4,000	12,000	1958 \$12,000	1959	8,000	4,500	12,500
	1614	492	Edw. D. Tullio	500		500					
	1615	380	Edw. D. Tullio	400		400					
	1616	400	Nathan Siegal	400		400					
	1617	400	Nathan Siegal	400		400					
	1618	400	Edwards Fine Furniture Inc.	2,000		2,000	1958 \$ 1,500	1957	2,000	1,000	3,000

APPENDIX 23—Continued

Block	Parcel	Land Area'	Owner	Assessed Valuations			Latest Sale	Prior Assessments			
				Land	Bldg.	Total		Year of Chng.	Land	Bldgs.	Total
115--Cont'd											
	1619	1,850	Rapids Realty Co.	11,100	5,900	17,000		1957	13,000	7,000	20,000
	1620	737	Rapids Realty Co.	2,200	1,100	3,300	1959 \$ 5,000	1958	2,900	1,100	4,000
	1621	747	Rapids Realty Co.	2,200		2,200	1959 \$ 3,000	1958	3,100	-	3,100
	1622	14,547	Minnie Fox	116,600	67,400	184,000					
	1623	3,915	Edward D. Tullio	27,300	12,700	40,000					
116											
	1591	5,075	Clements Realty Trust	76,100	23,900	100,000					
	1592	5,075	Clemts. Realty Trst	50,700	84,300	135,000		1956	60,700	114,300	175,000
	1593	8,120	Sadie Weintreb	65,000	70,000	135,000		1957	65,000	80,000	145,000
	1594	2,030	Mass. G.&E. Supply Co.	8,100	8,900	17,000	1959 \$22,000	1959	8,100	6,900	15,000
	1595	2,030	Jack Sharkey Ring-side Inc.	8,100	900	9,000					
	1596	2,030	Butler Real Estate Trust	8,100	1,900	10,000					
	1598	4,534	Helda Carr	70,700	19,300	90,000					
	1599	2,887	Abraham Kaplan Stanley Rosoff	78,000	42,000	120,000					
	1600	3,520	Hayes Bickford Inc.	112,700	42,300	155,000					
	1601	4,161	Emma Segal Bernard Berkman	42,600	17,400	60,000	1957 \$ 2,500	1957	41,600	18,400	60,000
	1602	3,964	Butler Real Est.Tr.	40,000	20,000	60,000					
	1603	6,090	Jack Sharkey Ring-side Inc.					1956	54,800	5,200	60,000
			Elizabeth Buckley, Joseph Galvin	24,800	15,200	40,000		1957	34,800	15,200	50,000

APPENDIX 23--Continued

Block	Parcel	Land Area	Owner	Assessed Valuations			Latest Sale	Prior Assessments			
				Land	Bldg.	Total		Year of Chng.	Land	Bldgs.	Total
116--Cont'd											
	1604	1,353	George Rittenberg & Jacob Kagan Trusts	13,500	4,000	17,500					
	1605	1,353	Geo. Rittenberg & Jacob Kagan Trsts.	13,500	4,000	17,500					
	1606	1,353	Geo. Rittenberg & Jacob Kagan Trsts.	13,500	4,000	17,500					
	1607	4,060	Butler Real Est.Tr.	36,500	8,500	45,000					
	1608	4,060	Butler Real Est.Tr.	36,500	8,500	45,000					
	1609	8,120	Clement Realty Tr.	73,800	41,200	115,000					
117											
	1642	1,620	Mass. G&E Sup. Co.	9,700	-	9,700	1957 \$21,500	1958	9,700	800	10,500
								1957	6,400	1,100	7,500
	1643	1,098	Mass. G&E Sup. Co.	4,400	-	4,400		1958	4,400	3,100	7,500
								1959	4,400	2,100	6,500
	1644	4,924	Biret Cohen	19,700	5,300	25,000		1958	24,600	5,400	30,000
	1645	3,829	Mass. G&E Sup. Co.	15,100	-	15,100		1958	19,100	3,900	23,000
								1960	15,100	3,900	19,000
	1646	1,730	Ben Elfman Carpet co.	6,800	1,500	8,300					
	1647	3,483	Ben Elfman Crpt.Co.	13,900	2,100	16,000					
	1648	3,051	Oscar Harvey	9,200	3,300	12,500					
	1649	3,708	Ida Gale	18,500	14,500	33,000					
	1650	3,911	Ray Johnson	19,600	15,400	35,000					
	1651	7,986	Kathryn Hope	143,700	41,300	185,000					

APPENDIX 23--Continued

Block	Parcel Area	Land	Owner	Assessed Valuations			Latest Sale	Prior Assessments			
				Land	Bldg.	Total		Year of Chng.	Land	Bldgs.	Total
117--Cont'd											
1652	9,424		Keystone Trust	141,400	103,600	245,000					
1653	3,095		Quinabequin Realty Trust	9,300	5,700	15,000	1959 \$10,200	1956	15,500	13,500	29,000
								1957	15,500	4,500	20,000
1654	3,095		Ida Gale	15,500	12,500	28,000					
1655	2,037		Ida Gale	10,200	4,800	15,000					
1656	315		Angelo Demarco	1,300	1,700	3,000					
1657	2,032		Oscar Harvey	5,000		5,000					
1658	2,038		Oscar Harvey	6,100	15,900	22,000		1959	6,100	17,900	24,000
1659	2,038		Butler Real Est.Tr.	6,100	5,900	12,000					
1660	7,627		Augustine A. Boxizagni Trust	30,500	19,500	50,000	1958 \$80,000	1958	30,500	19,500	50,000
								1959	30,500	14,500	45,000
1661	425		Jacob Sklar	2,100	900	3,000					
1662 ^a	800		Jacob Sklar	1,600	400	2,000					
1662 ^b	800		Jacob Sklar	1,600	400	2,000					
118											
1628	4,051		Socony Mobil Oil Co.	33,600	4,400	38,000		1956	48,600	4,400	53,000
1632	8,036		Merrimac Park Trust	30,200	-	30,200		1957	19,000	-	19,000
1633	11,848		Brims Realty Corp.	83,000	67,000	150,000		1956	83,000	117,000	200,000
1634	4,451		Abraham Cotten	22,300	27,700	50,000					
1635	453		Mass. G&E Sup. Co.	2,700	-	2,700					
1636	420		Mass. G&E Sup. Co.	2,500	-	4,400					
1637	875		Mass. G&E Sup. Co.	4,400	-	4,400					
1638	1,000		Merrimac Park Trust	6,000	-	6,000		1958	6,000	2,000	8,000
1639 ^a	1,430		Bessie Greenberg	7,700	1,000	8,700	1955 \$ 6,900				
1639 ^b	1,850		Bessie Greenberg	9,200	1,800	11,000	1955 \$ 9,000				
1640	838		Samuel Blotnick	4,200	2,300	6,500					
1641	770		Bessie Greenberg	3,100	400	3,500	1955 \$ 3,000				

APPENDIX 23--Continued

Block	Parcel	Land Area	Owner	Assessed Valuations			Latest Sale	Prior Assessments			
				Land	Bldg.	Total		Year of Chng.	Land	Bldgs.	Total
119	1664	1,000	Arthur Muskovitz	8,000	16,000	24,000		1958	10,000	20,000	30,000
								1959	8,000	19,000	27,000
120	1665	6,000	Merripoint Realty Tr.	60,000	40,000	100,000	1958 \$117,500				
	1666	4,086	Lancaster Auto Park Inc.	19,400	8,600	28,000	1956 \$ 36,000	1957	10,200	9,800	20,000
	1667	1,980	Peter Bent Brigham Hospital	10,000	11,800	21,800					
	1668	8,443	Sam Ar Holding Co.	33,800	20,200	54,000		1958	42,300	30,700	73,000
	1669	1,062	Edwards Construction Co.	10,600	8,400	19,000		1959	17,000	4,000	21,000
	1670	1,020	Madeline Ruthfield	9,200	4,800	14,000		1959	14,300	3,700	18,000
	1671	1,020	Sam Ar Holding Co.	8,200	3,800	12,000		1958	14,300	3,700	18,000
	1672	9,508	Peter Bent Brig.Hos.	114,000	81,000	195,000					
	1673	8,146	Peter Bent Brig.Hos.	65,100	74,900	140,000					
	1674	8,753	Peter Bent Brig.Hos.	61,300	108,700	170,000					
	1675	1,900	Charles Goldstein	113,000	37,000	150,000		1956	113,000	62,000	175,000
121	1676	3,960	Joseph DonGusenoff	15,800	24,200	40,000	1957 \$ 8,000				
	1677	1,532	Silqueen Co., Inc.	4,600	1,400	6,000					
	1678	1,040	Jacob Blank	3,100	-	3,100					
	1679	2,369	Jacob Blank	7,100	-	7,100					
	1680	6,853	Fannie Fleisher	54,800	25,200	80,000		1956	54,800	45,200	100,000
	1681	1,875	Frank Tracy	9,500	10,500	20,000		1956	22,500	10,500	33,000
	1682	1,975	Frank Tracy	6,000	1,000	7,000					
	1683	3,113	Louis Pollack	9,300	5,700	15,000					
	1684	2,086	Jacob Blank	6,300	-	6,300					
	1685	837		2,500	-	2,500					

APPENDIX 23--Continued

Block	Parcel	Land Area	Owner	Assessed Valuations			Latest Sale	Prior Assessments			
				Land	Bldg.	Total		Year of Chng.	Land	Bldgs.	Total
167	1059	12,253	Commonwealth of Mass.	18,000	-	18,000					
	1068	606	John I. Fitzgerald	400	-	400					
	1069	603	John I. Fitzgerald	400	-	400					
	1070	603	John I. Fitzgerald	600	-	600	1955 \$ 4,500	1957	600	3,400	4,000
	1071	659	John I. Fitzgerald	700	-	700		1957	700	3,300	4,000
	1072	528	John I. Fitzgerald	500	-	500					
	1073	849	John I. Fitzgerald	1,700	-	1,700					
	1074	801	John I. Fitzgerald	800	-	800		1956	1,200	2,300	3,500
								1957	1,200	1,000	2,200
	1075	896	Edw. H. Rogers Trust	1,300	2,400	3,700					
	1076	816	John I. Fitzgerald	800	-	800					
	1077	816	John I. Fitzgerald	800	-	800					
167A	1084	419	Joseph F. Watson	800	-	800					
	1085	649	Joseph F. Watson	700	-	700					
	1086	760	General Land Corp.	800	-	800	1956 \$ 2,500	1957	800	2,500	3,300
	1087	760	Leo Arria	800	3,000	3,800					
	1088	759	V. J. DiBari	800	3,000	3,800					
	1089	760	Domenick Gentile	800	3,000	3,800					
	1090	760	Domenick Gentile	800	3,000	3,800					
	1091	670	Mary E. Doherty	700	3,000	3,700					
	1092	700	Edw. H. Rogers Trust	700	3,500	4,200					
	1094	703	Morris Narefs	700	2,000	2,700					
	1095	703	Constantine Kuchun	700	2,500	3,200					
	1096	703	Ida Shane	700	1,000	1,700					
	1097	703	Nathan Hoffman	700	4,300	5,000	Dilapidated	1958	700	6,300	7,000
	1098	671	City of Boston, foreclosure 1958	700	3,000	3,700		1958	700	4,300	5,000

APPENDIX 23--Continued

Block	Parcel	Land Area	Owner	Assessed Valuations			Latest Sale	Prior Assessments		
				Land	Bldg.	Total		Year of Chng.	Land	Bldgs.
167A--Cont'd										
	1099	700	Carmelo Crisafulli	700	-	700				
	1100	670	Carmelo Crisafulli	700						
	1101	7603	MTA	53,200	17,800	71,000				
	1102	1050	Nathan Hoffman	2,100	4,900	7,000				
	1103	2100	Ida Shane	2,100	5,000	7,100				
	1104	1050	Gertrude Bernhardt	2,100	5,000	7,100				
	1105	1753	Morris Narefs	2,600	3,400	6,000				
	1106	1050	Morris Narefs	1,600	3,400	5,000				
	1107	1000	Thos. Levesque	1,500	500	2,000				
	1108	1000	Max Marcus	1,500	2,500	4,000				
	1109	910	Ida Freeman	1,400	4,100	5,500				
	1110	910	Mary Donnelly	900	-	900				
	1111	940	Fuel Constr. Co.	900	-	900				
	1112	910	Mary Donnelly	900	-	900				
	1113	900	Mary Donnelly	900	-	900				
	1114	970	General Land Corp.	900	0	900				
	1115	652	Joseph Watson	2,000	-	2,000				
168	1116	585	Marie Healy	1,000	-	1,000				
	1117	851	Alfred Scigliano	1,400	-	1,400				
	1118	968	John I. Fitzgerald	1,600	-	1,600				
	1119	978	John I. Fitzgerald	1,700	-	1,700				
	1120-1	287	John I. Fitzgerald	600	-	600				
	1120	1043	John I. Fitzgerald	2,100	-	2,100				
	1121	13,268	Comm. of Mass.	25,600	-	25,600				
	1122	1357	Gen'l Land Corp.	3,400	-	3,400				
	1129	990	Gen'l Land Corp.	2,500	-	2,500				
	1130	990	Gen'l Land Corp.	2,500	-	2,500				
	1131	1380	Gen'l Land Corp.	3,500	-	3,500				
	1132	234	Gen'l Land Corp.	700	-	700				
	1133	1010	Angeline Valentine	1,000	3,500	4,500				
	1134	938	John Auditore	900	4,100	5,000				

APPENDIX 23--Continued

Block	Parcel	Land Area	Owner	Assessed Valuations			Prior Assessments			
				Land	Bldg.	Total	Year of Latest Sale Chng.	Land	Blds.	Total
168 Contd.										
	1135	979	John Auditore	1,000	4,000	5,000				
	1136	1000	John I. Fitzgerald	1,500	3,500	5,000	1955	\$6,800		
168A										
	1143	1200	Gen'l Land Corp.	3,000	-	3,000				
	1144	1200	Margret O'Brien	3,000	-	3,000				
	1145	1200	Gen'l Trading Corp.	3,000	-	3,000				
	1146	1200	Garden Diner Inc.	3,000	3,000	6,000				
	1147	1200	Sarah Feeley	3,000	-	3,000				
	1148	1200	Edw. H. Rogers Trust	3,600	1,800	5,400				
	1149	10,470	Sixty Five Bedford Street Inc.	78,500	-	78,500				
	1150	1260	Lillian Fields	3,800	6,500	10,300	1959	\$22,500		
	1151	7905	Jos. O'Donnell	102,700	6,300	109,000			1956	102,700 26,300 129,000
	1152	1339	Stephen Sansone	13,400	8,800	22,200	1957	\$28,000		
	1153	660	Stephen Sansone	1,300	-	1,300	1955	\$455	1960	1,300 2,200 3,500
	1154	660	Anna Sarver	1,000	-	1,000	1958	\$7,500	1960	1,000 2,200 3,200
	1155	1000	Anna Sarver	1,500	2,200	3,700	1958			
	1156	1000	Massimine Luongo	1,000	3,200	4,200				
	1157	997	Jos. Kreslewicz	1,000	3,500	4,500	1959	\$6,000		
	1158	1000	Jos. O'Donnell	1,500	2,500	4,000				
	1159	1000	Lillian Fields	1,500	1,000	2,500	1959			
	1160	1000	Sixty Five Bedford Street Inc.	4,000	-	4,000				
	1161	1000	Sixty Five Bedford Street Inc.	4,000	-	4,000				
	1162	959	Sixty Five Bedford Street Inc.	3,800	-	3,800				
	1163	950	Sixty Five Bedford Street Inc.	3,800	-	3,800				
	1164	918	Sixty Five Bedford Street Inc.	3,700	-	3,700				

APPENDIX 23--Continued

Block	Parcel	Land Area	Owner	Assessed Valuations			Latest Sale	Year of Chng.	Prior Assessments		
				Land	Bldg.	Total			Land	Bldgs.	Total
168A Cont.											
	1165	917	James A. Freil Est. Mary Freil	900	-	900					
	1166	917	Loretta Welch	900	-	900					
	1167	917	Gen'l Land Corp.	1,800	-	1,800					
	1168	918	Jos. Watson	1,800	-	1,800					
	1169	159	Gen'l Trading Corp.	800	-	800					
187											
	1925	5900	Comm. of Mass.	5,900	-	5,900					
	1926	45492	No. Station Ind- Building	545,900		2,200,000		1957	1,954,100		
				1,654,100					545,900		2,500,000
	1927	536713	B & M Railroad Company	2,224,300		6,320,000		1957	4,540,000		
				4,095,700					2,780,000		7,320,000
	1928	12384	No. Station Hotel Bldg. Ind.	186,400		1,786,400		1957	1,833,600		
				1,600,000					186,400		2,020,000
	1929	89691	Comm. of Mass.	509,100	-	509,100					
	1930	36897	Comm. of Mass. Transferred to	124,200	-	124,200					
	1931	66951	Comm. of Mass. (M.D.C.)	101,200	-	101,200		1956	Former City of Boston Playground		
	1931-1	1856	Comm. of Mass.	2,800	-	2,800					
187A											
	1932	12440	Boston Edison Co.	49,800	121,000	170,800					
	1933B	2830	Boston Garden Arena Corp.	8,500	18,500	27,000		1956	8,600	18,400	27,000
	1933A1	12637	Comm. of Mass.	38,000	-	38,000					
	1933A2	3560	Comm. of Mass.	10,600	40,100	50,700					
	1934	48242	Comm. of Mass.	193,400		1,250,000					
				1,056,600							

APPENDIX 24

AVERAGE ASSESSED VALUATIONS OF LAND,
NORTH STATION AREA, 1959

Block	Total Land Area (square feet)	Total Assessed Valuation of Land (dollars)	Average Assessed Valuation of Land (\$ per sq. ft.)
112	52,810	264,200	4.67
113	53,625	517,800	9.46
114	21,660	167,600	7.73
115	46,966	406,000	8.65
116	69,815	772,200	11.10
117	69,066	491,300	7.10
118	35,122	208,900	5.79
119	1,000	8,000	8.00
120	69,018	504,600	7.30
121	25,640	119,000	4.64
167	19,301	26,000	1.35
167A	32,862	86,400	2.63
168	26,858	51,000	1.90
168A	43,149	251,300	5.83
187A	79,709	300,200	3.77
187 ^a	1,218,106	3,699,800	3.04
<hr/>			
Totals and Average for Area	1,865,707	7,856,300	4.22

^aBreakdown for actual North Station Complex is only partially available: land assessment average for North Station Industrial Office Building and Hotel Madison are \$12 and \$15 respectively.

Source: 1959 property parcel cards, Assessing Dept., City of Boston.

APPENDIX 25

AVERAGE ASSESSED VALUATIONS OF NON-RESIDENTIAL BUILDINGS,
NORTH STATION AREA, 1959

Block	Total Building Gross Square Footage	Total Assessed Valuations of Buildings (dollars)	Average Assessed Valuations of Buildings (\$ per sq. ft.)
112	6,800	9,800	1.44
113	50,200	146,800	2.92
114	132,500	59,400	.45
115	284,100	210,900	.74
116	283,900	416,300	1.47
117	285,500	258,600	.90
118	133,900	104,600	.78
119	5,000	16,000	3.20
120	321,000	399,200	1.24
121	91,100	68,000	.75
167	800	2,400	3.00 ^a
167A ^b		(80,400)	
168 ^b		(15,100)	
168A	51,600	43,200	.84 ^a
187A	242,800	1,236,200	5.08
187	1,073,000	7,349,800	6.84
Totals and Average for Area	2,962,200	10,321,200	3.48

^aThis figure is low and not entirely representative, since buildings contain upper-story residential floor space.

^bInseparable mixture of commercial-residential structure use prevents clear calculations for these blocks.

Source: 1959 property parcel cards, Assessing Dept., City of Boston.

APPENDIX 26

ASSESSMENT RATIOS: BUILDING TO LAND,
NORTH STATION AREA, 1959

Block	Assessment of Buildings ^a	Assessment of Land ^a	Assessment Ratio: Buildings to Land
112	9,800	246,200	.40
113	146,800	517,800	.28
114	59,400	167,600	.35
115	210,900	406,000	.52
116	416,300	772,200	.54
117	258,600	491,300	.53
118	104,600	208,900	.50
119	16,000	8,000	2.00
120	399,200	504,600	.79
121	668,000	119,000	.57
167	2,400	26,000	.09
167A	80,400	86,400	.93
168	15,100	51,000	.30
168A	43,200	251,300	.17
187A	1,236,200	300,200	4.12
187	7,349,800	3,699,800	1.99
Totals and Average for Area	10,416,700	7,854,300	1.33

^aSource: 1959 property parcel cards, Assessing Dept., City of Boston.

APPENDIX 27

BUILDING DEMOLITIONS FOR PARKING LOT PURPOSES,
NORTH STATION AREA, 1955-59

Block	Parcel	Year of Demolition	Value of Buildings Demolished (\$)	Area of Land Turned Over to Parking (sq. ft.)
115	1618	1957	1,000	400
117	1642	1959	1,100	1,620
	1643	1959	2,100	1,098
	1645	1960	3,900	3,829
118	1638	1958	2,000	1,000
167	1070	1957	3,400	603
	1071	1957	3,300	659
	1074	1957	1,000	801
167A	1086	1957	2,500	760
Area Total			\$ 20,300	10,770 sq.ft.

Source: 1959 property parcel cards, Assessing Dept., City of Boston.

APPENDIX 28

INVESTMENTS IN BUILDING IMPROVEMENTS,
NORTH STATION AREA, 1955-59

Block	Parcel	Year of Investment	Value of Investment (as reflected in increased assessment) (\$)
114	1625	1957	500
116	1594	1959	2,000
	1603	1956	10,000
117	1642	1958	300
	1653	1957	1,200
	1660	1959	5,000
120	1669	1959	4,000
	1670	1959	1,100
	1671	1958	100
187A	1933	1956	100
Area Total			\$ 24,700

Source: 1959 property parcel cards, Assessing Dept., City of Boston.

APPENDIX 29

ASSESSMENT REDUCTIONS^a, NORTH STATION AREA,
1955-1959

Block	Parcel	Land Assessment Reductions (\$)	Building Assessment Reductions (\$)	Total Property Assessment Reductions (\$)
114	1625	5,500		5,500
115	1613		500	500
	1619	1,900	1,100	3,000
	1620	700		700
	1621	900		900
116	1592	10,000	30,000	40,000
	1593		10,000	10,000
	1601		18,000	18,000
	1603	30,000		30,000
117	1644	4,900	100	5,000
	1645	4,000		4,000
	1653	6,200	9,000	15,200
	1658		2,000	2,000
118	1628	15,000		15,000
	1633		50,000	50,000
119	1664		4,000	4,000
120	1666		1,200	1,200
	1668	8,500	10,500	19,000
	1669	6,400		6,400
	1670	5,100		5,100
	1671	6,100		6,100
	1675		25,000	25,000
121	1680		20,000	20,000
	1681	13,000		13,000
167	1074		1,300	1,300
167A	1097		2,000	2,000
	1098		1,300	1,300
168A	1151		20,000	20,000
187	1926		300,000	300,000
	1927	555,700	444,300	1,000,000
	1928		233,600	233,000
187A	1933	100		100
Area Total		\$ 674,000	\$ 1,183,900	\$ 1,857,900

^aDoes not include razed buildings.

Source: 1959 property parcel cards, Assessing Dept., City of Boston.

APPENDIX 30. RECENT PROPERTY SALES, NORTH STATION AREA, 1955-1959

Block	Parcel	Year of Sale	Land Area of Parcel (sq.ft.)	Floor Area of Existing Building(s) (sq.ft.)	Sales Price		Total (\$)	Assessed Valuation of Parcel at Time of Sale (\$)	Ratio of Sale Price to Assessed Val. of Parcel
					Per Square Foot of Land	Per Square Foot of Building Floor Space			
114	1624	1957	2650	19,600	9.06	1.22	24,000	30,000	.80
115	1611	1956	7048	49,000	12.79	1.84	90,000	130,000	.69
	1613	1958	1142	5,500	10.50	2.18	12,000	12,500	.96
	1618	1958	400	-	3.75	-	1,500	2,000	.75
	1620	1959	737	400	6.78	12.50	5,000	3,300	1.52
	1621	1959	747	-	4.02	-	3,000	2,200	1.36
116	1594	1957	2030	6,100	10.84	3.61	22,000	15,000	1.47
	1601	1957	2030	3,900	1.23	.64	2,500	15,000	.17
117	1642	1957	1620	-	13.28	-	21,500	10,500	2.05
	1653	1958	3095	18,600	2.26	.38	7,000	15,000	.47
		1959	3095	18,600	3.30	.55	10,200	15,000	.68
	1660	1958	7627	20,000	10.50	4.00	80,000	45,000	1.78
118	1639A	1955	1530	4,800	4.51	1.44	6,900	8,700	.78
	1639B	1955	1850	7,600	4.86	1.18	9,000	11,000	.82
	1641	1955	770	2,300	3.90	1.30	3,000	3,500	.86 ^b
120	1665	1958	6000	36,000	19.59	3.26	117,500	100,000	1.18
	1666	1956	4086	4,100	8.80	8.78	36,000	20,000	1.80
121	1676	1957	3960	28,000	2.02	.29	8,000	40,000	.20
167	1070	1955	603	-	7.47	-	4,500	4,000	1.13
167A	1086	1956	760	-	3.29	-	2,500	3,300	.76
168	1136	1955	1000	2,710	6.80	2.51	6,800	5,000	1.36
168A	1150	1959	1260	1,200	17.85	18.75	22,500	10,300	2.18
	1152	1957	1339	5,200	20.95	5.38	28,000	22,200	1.26
	1153	1955	660	-	.69	-	455	3,500	.13
	1154	1958	660	-	11.36	-	7,500	3,200	2.34
	1157	1959	997	2,700	6.02	2.22	6,000	4,500	1.33
187	1929	1959	27600	-	1.00	-	27,700	-	-
			85,296	236,310	6.62	2.23 ^a	565,055	534,700	1.06 ^b

^aCalculated from a sales price total of \$527,300 compiled for just those parcels with existing buildings.

^bCalculated on basis of az total of \$537,355 dollar sales (excluding block 187 parcel 1928 for which no assessment is available.

Source: Parcel, year of sale, land area, & assessed valuation of parcel at time of sale tabulated directly from 1959 property parcel cards, Assessing Dept., City of Boston. Total sales price calculated from value of sales stamps on parcel cards (\$1.10 of stamps/\$1000 dollar sales); Floor area of existing buildings from detailed inventory of previous section herein and its associated appendix.

APPENDIX 31

BUSINESS DISPLACEMENT TO BE CAUSED BY GOVERNMENT CENTER
AND STANIFORD-CHARDON REDEVELOPMENT PROJECTS

Scope of Areas Covered

The statistics presented on the firms and employment to be displaced by the Government Center and Staniford-Chardon projects are based upon GBESC tabulations of DES data for 1957, the latest information indicated to be available. The GBESC block groups covered include the entire Staniford-Chardon area and practically all of the Government Center project as delineated by the Adams, Howard & Greeley plan of September 1959. The only significant omissions occur on the southern boundary of the project where statistics could not be broken down for blocks only partially to be taken. Not included in this tabulation are statistics for parcels to be retained - the New England Telephone and Telegraph Company building, the Boston Edison and the City of Boston Welfare Department buildings.

INCLUDED AREAS FOR GOVERNMENT CENTER AND STANIFORD-
CHARDON 1957 EMPLOYMENT STATISTICAL TABULATIONS

Project Area	GBESC Block Groups Included	GBESC Block Groups partially in pro- jects but not broken down in detail
Staniford-Chardon	102, 103, 104, 105	
Government Center	101, 106, 107, 108, 109, 114 115, 116, 117, 503, 505	406, 501, 504

The statistics presented on the amount of occupied non-residential floor space to be eliminated by the two redevelopment projects are based upon the 1953 inventory of the Boston City Planning Board in the case of the Government Center and upon a 1959 survey of the Board for the Staniford-Chardon area. Again, as with the employment statistics, the complete Staniford-Chardon area is covered and only a few blocks on the southern edge of the Government Center could not be broken down into detailed data.

Although there is no basis available for in any way equating 1957 GBESC-DES specific employment and firms with 1953 and 1959 BCPB floor space, a range of magnitude of the relocation problem is provided, and this scale plus the tabulation of larger firms to be displaced, when related to the amount of vacant and underutilized space in the

Appendix 31
(continued)

North Station Area as of 1960 enables a measure of both the relocation problem faced in the two redevelopment projects and of the absorptive capacity of the adjacent North Station Area.

Firms to be Displaced by Projects

On the basis of GBESC tabulated-DES data, there was a total of 508 firms with a covered employment of 4941 persons operating in 1957 in the Staniford-Chardon and Government Center project areas. The composition of these activities represents by employment: 299 primary production, 2107 manufacturers, 14 transportation, communication and utilities, 828 wholesaling, 1055 retailing, 138 finance-real estate-insurance, and 500 business and personal services.

Detailed inventory of the 1957 businesses indicates approximately 12 firms of reasonably large size distributed in the following manner:

LARGER FIRMS (GREATER THAN 50 EMPLOYMENT) TO BE DISPLACED BY
GOVERNMENT CENTER AND STATE OFFICE CAMPUS (STANIFORD-CHARDON)
REDEVELOPMENT PROJECTS, 1957 GBESC Tabulated-DES Statistics

SIC Category	Number of Firms	1957 Covered Emplmt.
232	1	137
233	2	191
239	1	72
278	1	97
361	1	508
394	1	81
511	1	108
514	1	93
562	1	97
605	1	58
755	1	51
	<u>12</u>	<u>1483</u>

Of the 1957 GBESC-DES totals for the Government Center and Staniford-Chardon projects, 39 firms with 445 employees were involved in the furniture, home furnishings, and related activities. At this scale, the North Station Area could probably absorb the demand for relocation accommodations if a policy decision for their collective relocation were to be reached by the public agencies concerned with implementation of the redevelopment projects and were to be supported by the local North Station Merchants Association.

APPENDIX 32

ALTERNATIVES TO THE CONSTRUCTION OF A NEW DOWNSTREAM CHARLES RIVER DAM

Notwithstanding the extensive benefits of a new downstream Charles River Dam upon the development of the Charles Riverfront and of the North Station Area, there would appear to be several possible alternatives toward which the \$10 million project involved could be otherwise directed. First, it is possible that the new dam might be designed in such a fashion that the MTA rapid transit lines might be reconstructed and pass across the Charles River either over or through the cross-section of this structure. The location of the new dam would thus be most advantageous directly in line with the open slot between the Boston Garden and the Industrial Office Building. Investigation of this alternative of rapid transit utilization met with substantial resistance on strictly local grounds. The argument against the shift in position of the proposed dam was the same essentially as that against improvement at the existing dam: soil conditions, hydraulics, etc. The possibility of utilizing such a structure for rapid transit purposes was substantiated, however, both for a transit bridge over the structure and for a double subway tube through the base of the structure. Total cost, of course, would be a consideration in the latter case, but an integrated combination of dam and rapid transit tunnel would clearly effect a cost saving over two separate projects.

As the seemingly required flood protection measure, a second alternative might be creation of a new dam and reservoir somewhere along the upper Charles River or Basin. The main argument voiced against creation of an upstream reservoir is that 80% to 90% of all runoff enters the lower Basin and would thus ineffectuate any created storage capacity upstream.

A third alternative, with respect to the flooding problem in the Charles River Basin, would appear to be worth most serious consideration from a metropolitan point of view. Rather than undertaking the construction of a new, duplicate dam and rather than attempting to pump the whole Charles River over the top of any dam into Boston Harbor, it has been suggested that the MDC allocate the project funds contemplated into two projects: (1) dredging of the more shallow portions of the existing Charles River Basin so that in anticipation of severe floods, the Basin could be lowered by about three feet without interfering with navigability, and thus provide sufficient storage capacity for the high expected runoff, and (2) direction of the funds which would have been expended on a duplicate Charles River Dam toward the development of a new Mystic River Basin. This comprehensive approach toward metropolitan public works, of course, would seem to be a definite possibility. The Basin level, even without channel dredging, can be lowered from 108 to 106.5 feet with no major problems. However, to lower below 106.5 feet, it is claimed, would begin to interfere with several shoreline water intakes, most notably, that of the Cambridge Electric Company plant. Nevertheless, with a certain degree of channel dredging and with the necessary relocation of water intakes and sewer discharges along the edge of the Basin combined with (a) increasing the capacity sluicing of the existing dam and/or installation of the pumping station at the present dam, it seems entirely probable that a sizeable amount of emergency storage capacity could be provided and that the problem of Charles River Basin flooding could be eliminated.

APPENDIX 33

SURVIVAL BY SIZE CLASS, CENTRAL ARTERY RELOCATIONS

Size Class	Establishments			Employment		
	Central Artery	Survival	%	Central Artery	Survival	%
0 - 4	264	193	73	518	432	75
55 - 9	136	111	82	884	726	82
10 - 19	91	76	84	1249	1050	84
20 - 49	54	49	91	1625	1487	92
50 - 99	20	18	90	1308	1158	89
100+	8	8	100	1516	1516	100

Source: A Study of Business Dislocation Caused by the Boston Central Artery, James A. Saalberg, Masters Thesis, Department of City & Regional Planning, M.I.T., 1959, p. 40.