

EXPEDITING VEHICULAR CIRCULATION  
IN THE PROVIDENCE, RHODE ISLAND  
AREA THROUGH THE USE OF TRANSIT

by

Donald M. Graham

B. S. in C. E. Illinois Institute of Technology

1940

Submitted In Partial Fulfillment

Of The Requirements For The Degree

of MASTER OF CITY PLANNING

at the

Massachusetts Institute of Technology

1948

Signature of Author \_\_\_\_\_

Department of City and  
Regional Planning  
September 17, 1948

Certified By \_\_\_\_\_

Thesis Advisor

Providence, Rhode Island  
September 17, 1948

Professor F. J. Adams  
Department of City and Regional Planning  
School of Architecture  
Massachusetts Institute of Technology  
Cambridge, Massachusetts

Dear Professor Adams:

I hereby respectfully submit in partial fulfillment of the requirements for the degree of Master in City Planning my thesis, entitled "Expediting Vehicular Circulation in the Providence, Rhode Island Area Through the Use of Transit."

Yours very truly,

DONALD M. GRAHAM

298915

TABLE OF CONTENTS

|  | Page. |
|--|-------|
| PREFACE... ..  | vi    |
| I. PRESENT PHYSICAL PATTERN AND TRENDS ...                 | 1.    |
| A. Physical Setting ... ..                                 | 1.    |
| B. Land Use ... ..   | 3.    |
| C. Population Density ... ..                               | 4.    |
| D. Automotive Traffic ... ..                               | 6.    |
| E. The Transit System ... ..                               | 12.   |
| II. TREATMENT OF TRENDS TO ENCOURAGE TRANSIT USE.          | 34.   |
| III. DOWNTOWN PROPOSALS TO ENCOURAGE TRANSIT USE.          | 45.   |
| A. Provision of a Through Transit System.                  | 45.   |
| B. Segregation of Transit and Automotive<br>Traffic ... .. | 49.   |
| IV. BIBLIOGRAPHY ... ..                                    | 53.   |

LIST OF TABLES

| Table  | Page |
|--|------|
| I     Number of Vehicles Entering and Leaving the<br>Central Business District on a Weekday<br>Between 8:00 a.m. and 6:00 p.m. . . . . | 8.   |
| II    The United Electric Railways Transit System<br>in Providence and Pawtucket. . . . .  | 13.  |
| III   Average Daily AM and PM Transit Passenger<br>Counts for Three-Day Period July 22nd to<br>25th, 1948. . . . .                     | 27.  |
| IV    Headways and Number of Transit Vehicles<br>Making Turning Movements in Exchange<br>Place or Dorrance Street. . . . .             | 29.  |
| V     Residential Building Permits Issued in<br>Selected Rhode Island Towns. . . . .   | 35.  |
| VI    Proposed Consolidation of Transit Routes<br>in Downtown Area . . . . .   | 48.  |

LIST OF FIGURES

| Figure   | Following Page |
|--|----------------|
| 1. Topography . . . . .                          | 2.             |
| 2. Land Use . . . . .                            | 3.             |
| 3. Density . . . . .                             | 4.             |
| 4. Orientation . . . . .                         | 6.             |
| 5. Existing Transit Routes in Central Area . .   | 10.            |
| 6. Existing Transit Routes in Metropolitan Area. | 12.            |
| 7. Transit Time Zones . . . . .                  | 26.            |
| 8. Transit Desire Lines. . . . .                 | 32.            |
| 9. Proposed Transit Routes in Central Area . .   | 46.            |

## PREFACE

This thesis treats the essential phase of city planning dealing with vehicular circulation within the metropolitan area. It spotlights the central business district of Providence. To achieve the goal of lessened congestion, greater convenience for shoppers and commuters to the central business district, and more stable property values, the recommendations are made that some of the existing loop transit routes be changed to through routes and that each downtown street be designated as preferential for either transit or other vehicular traffic.

Acknowledgement is due Louis B. Wetmore and Miss Jane M. McManus of the Providence Redevelopment Agency, Frank H. Malley and the staff of the Providence City Plan Commission, John E. Vance of the Civic Planning and Traffic Board of the Providence Chamber of Commerce, Harold Bloomquist and Edward Butziger of the United Electric Railways, and Leslie Williams of the American Transit Association, as well as many others.

D. M. G.

I. PRESENT PHYSICAL PATTERN AND TRENDS

A. Physical Setting

The southern coast line of New England is a series of bays and inlets formed by the numerous rivers that flow south into the Atlantic Ocean. The largest of these is Narragansett Bay, almost due south of Boston and 130 miles east of New York. The Bay is navigatable throughout its length, so ocean-going vessels can enter it from the ocean and travel almost halfway to Boston before they are halted at the Providence and Seekonk rivers.

In the early days of settlement of the east coast, when water travel was the most popular form and when the population was spreading out from the nuclei of Boston and New York-Philadelphia, it was inevitable that this head of Narragansett Bay became a transfer point between land and sea travel and be nicknamed "The Southern Gateway to New England."

Roger Williams, when he left Massachusetts, landed at this point and started the settlement of Providence. The city grew as New England grew, remaining "The Southern Gateway to New England" and is today second only to Boston in size among New England cities.

The Narragansett Bay begins at the mouths of the Providence and Seekonk Rivers. Both of these rivers are short, the former splitting to become the Moshassuck and Woonasquatucket one mile from its mouth, and the latter becoming the Blackstone four miles to the north of its mouth. The Moshassuck and its tributary, the West, are short, long enough only to provide ponds of water for a few mills, while the Blackstone and Woonasquatucket reach back deep into the hinterlands through attractive valleys, bringing down streams of what was originally clean pure water.

Five miles to the south, on the west shore of the Bay, the Paw-

tuxet, and its tributary, the Pocasset, also reach back to carry down originally pure water from the backlands.

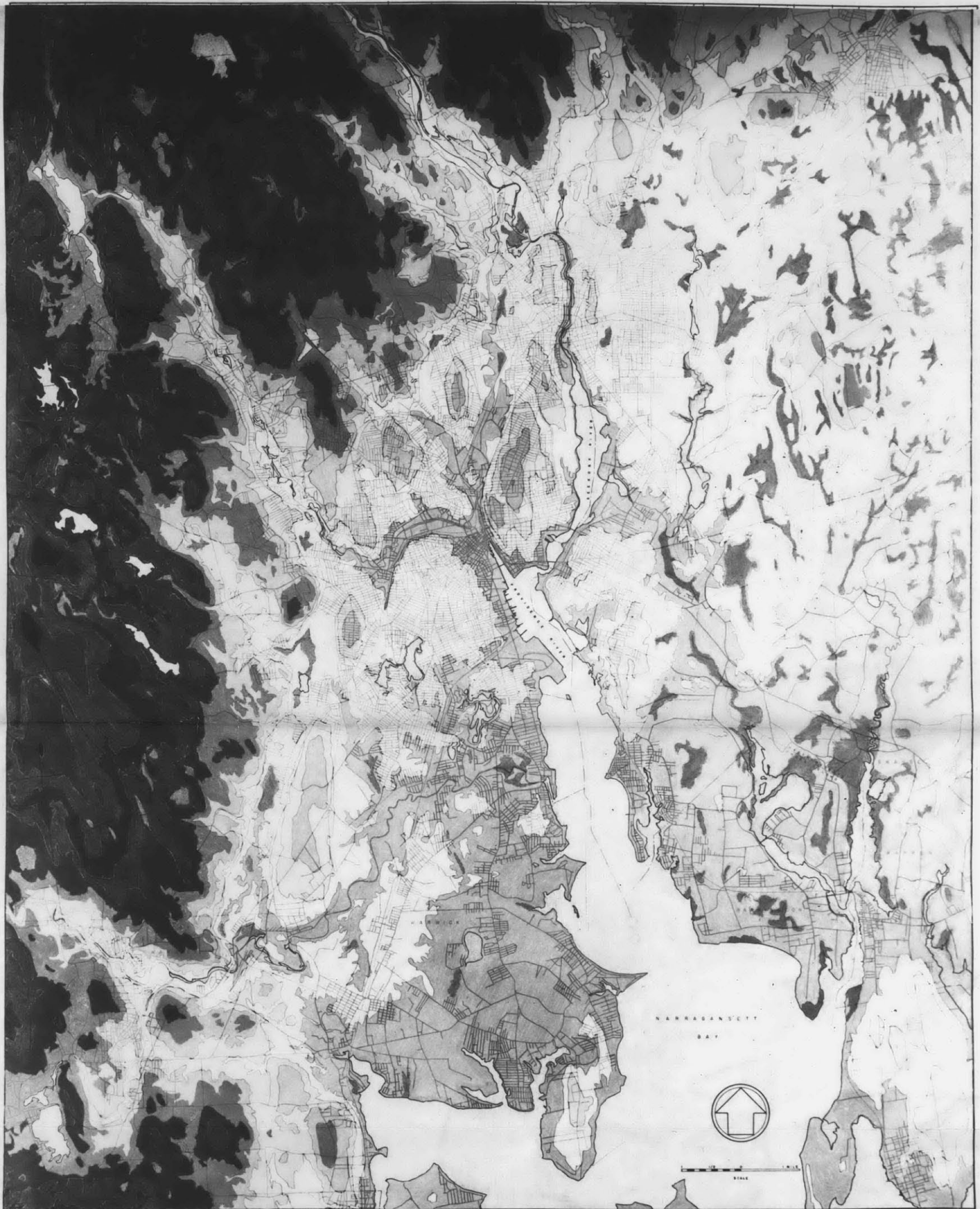
The land between the rivers rises quite sharply, with a change in elevation of 200 feet or more within a mile of the river not uncommon. The soil of the hills is poor and rocky, unsuited for extensive agriculture, covered largely by scrub oak, with a scattering of elm, birch, and pine. This land form changes to the east, in Massachusetts, where there are extensive areas of low and swampy land adjacent to the river mouths and courses. The most significant variance from this land form is a rectangular area immediately south of the center of Providence, ten miles long and from  $2\frac{1}{2}$  to  $5\frac{1}{2}$  miles deep which nowhere attains an elevation of more than 100 feet. (Figure 1)

The strategic location of the bay and the pure water of the rivers spell the reason for the growth of the Providence region. The City first became a point of coastal trade and trade with the Indies and other world ports served by the Yankee Clippers. This maritime prosperity centered around the points of land between the Providence and Seekonk rivers, called Fox Point and India Point. As the city grew, its commercial activity pushed up along the east side of the Providence River along South Main and then along North Main. The steep hill slope prevented it from expanding to the east so it wasn't long before the center of town crossed the river to the flatter land there.

As the Pawtucket-born New England textile industry grew, the five rivers in the region shared the fate of other New England rivers and became a series of dams and ponds to power and serve the mills as they were built. These mills became the nuclei of mill towns and housing for mill workers and shops to serve them grew up around the mills along the



# GREATER PROVIDENCE RHODE ISLAND



DONALD M. GRAHAM M. C. P. THESIS DEPARTMENT OF CITY AND REGIONAL PLANNING M. I. T. SEPT. 1948

## TOPOGRAPHY

SOURCE: U. S. G. S. MAPS

| FEET ABOVE SEA LEVEL |            |  |            |
|----------------------|------------|--|------------|
|                      | WATER      |  | 300 TO 350 |
|                      | SWAMP      |  | 350 TO 400 |
|                      | 0 TO 50    |  | 400 TO 450 |
|                      | 50 TO 100  |  | 450 TO 500 |
|                      | 100 TO 150 |  | ABOVE 500  |
|                      | 150 TO 200 |  |            |
|                      | 200 TO 250 |  |            |
|                      | 250 TO 300 |  |            |

river valleys and up the hillsides. The biggest of these were Pawtucket and Central Falls on the Blackstone, but back along the rivers there were many more. There were Valley Falls, Lonsdale, Saylesville, Ashton, Manville and Woonsocket along the Blackstone; Olneyville, Manton, Greystone, Esmond on the Woonasquatucket; Natick, Pontiac, West Warwick, Centerville, Anthony, Phenix and Hope on the Pawtuxet - to name but some of them.

#### B. Land Use

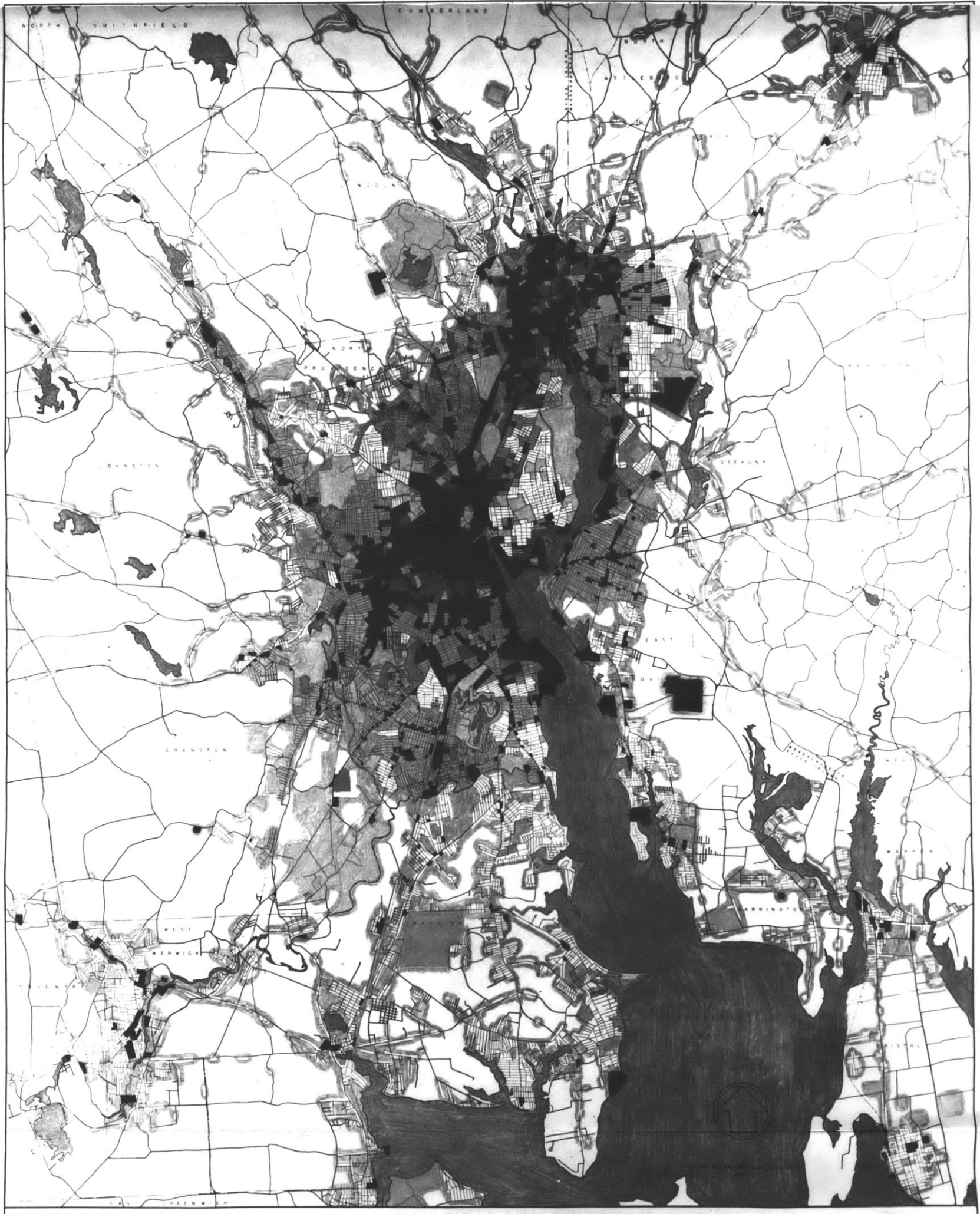
The river valleys, then, early established the industrial pattern of the Providence area. The city of Providence because of its central location and early start as a port remained the metropolitan center. The centripetal nature of industrial development in the 19th century meant that the valleys within Providence became intensively devoted to industrial use, with machine tool plants and other plants moving in with the textile mills.

The railroad, too, seeking easy grades wound along the rivers and so today many industries that are not dependent on a good water supply are in the valleys because of the railroad.

The hilly segments between the rivers filled up with housing for the mill workers and employees in secondary occupations. In the early years little open space was provided so the central sections of Providence - Federal Hill, Smith Hill, South Providence, and the East Side became solidly built up with frame structures. The same process occurred in Pawtucket and Central Falls.

The more wealthy early took advantage of the terrain and settled on the high ground on the East Side and Federal Hill, while the middle income groups moved south along Elmwood and Broad on more level terrain.

# GREATER PROVIDENCE RHODE ISLAND



DONALD M. GRAHAM      M. C. P. THESIS      DEPARTMENT OF CITY AND REGIONAL PLANNING      M. I. T.      SEPT. 1948

## GENERALIZED LAND USE

SOURCE: PROVIDENCE CITY PLAN COMMISSION  
CRANSTON CITY PLAN COMMISSION  
PROVIDENCE WASHINGTON INSURANCE CO.  
SANBORN ATLASES  
U. S. S. MAPS

### LEGEND

- |  |  |
|--|--|
| <p><b>PREDOMINANT RESIDENTIAL TYPES</b></p> <ul style="list-style-type: none"> <li><span style="display: inline-block; width: 15px; height: 10px; border: 1px solid black; margin-right: 5px;"></span> SINGLE FAMILY</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #cccccc; margin-right: 5px;"></span> ONE AND TWO FAMILY</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #808080; margin-right: 5px;"></span> TWO FAMILY</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #404040; margin-right: 5px;"></span> MULTIPLE FAMILY</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #202020; margin-right: 5px;"></span> VACANT</li> </ul> | <ul style="list-style-type: none"> <li><span style="display: inline-block; width: 15px; height: 10px; border: 1px solid black; margin-right: 5px;"></span> SUBURBAN DEVELOPMENT</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #000000; margin-right: 5px;"></span> COMMERCIAL</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #800000; margin-right: 5px;"></span> INDUSTRIAL</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #404040; margin-right: 5px;"></span> RAILROADS</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #808080; margin-right: 5px;"></span> PUBLIC AND SEMI-PUBLIC LANDS</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #000080; margin-right: 5px;"></span> WATER</li> </ul> |
|--|--|

The Federal Hill section could not withstand the pressures as the city grew and soon disintegrated as a wealthy area as it became covered with multiple family structures. The East Side has remained of good residential character to this day.

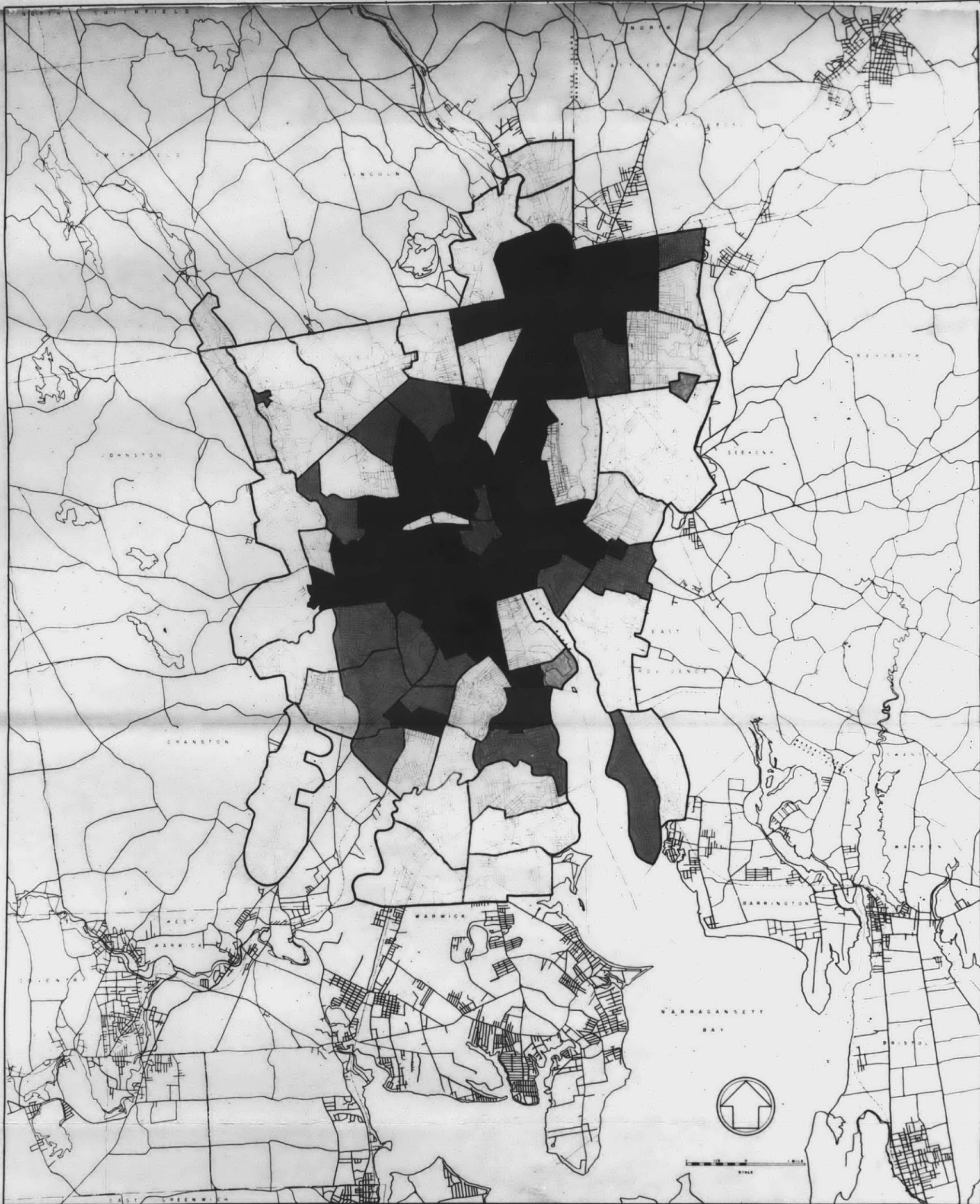
The immigrants that rushed to the area from Ireland, Italy, France, Great Britain, Canada, and other countries to answer the call for cheap labor by the mills required inexpensive accommodations, so the crowded two and three deck frame structure became the dominant form of residential structure. They cover the intown neighborhoods of South Providence, West Providence, Olneyville, and Smith Hill, built close to the street and often with a second structure on the rear of the lot. The central portion of Pawtucket and the major portion of Central Falls display a similar pattern. (Figure 2)

### C. Population Density

The present density pattern of the metropolitan area of persons per gross acre reveal the highest densities in these in-town areas. (Figure 3) Federal Hill, sections of South and West Providence, and the central section of Central Falls have densities of over 40 persons per gross acre. Other parts of South and West Providence, North Olneyville, Smith Hill, Fox Point, a section of the west slope of the East Side, and sections of Pawtucket have densities of from 30 to 40 persons per gross acre. The other in-town sections of these three municipalities that are unrelieved by open spaces or other uses have densities of 20 to 30 persons per gross acre. The tracts largely devoted to commercial or industrial use create fingers of low density along the rivers reaching into the center of Providence.

In the outlying sections, the old mill towns of Esmond and

# GREATER PROVIDENCE RHODE ISLAND



DONALD M. GRAHAM M. C. P. THESIS DEPARTMENT OF CITY AND REGIONAL PLANNING M. I. T. SEPT. 1948

## DENSITY

PERSONS PER GROSS ACRE

|              |               |
|--------------|---------------|
| □ 0 TO 4     | ■ 16.1 TO 20  |
| □ 4.1 TO 8   | ■ 20.1 TO 30  |
| ■ 8.1 TO 12  | ■ 30.1 TO 40  |
| ■ 12.1 TO 16 | ■ 40.1 AND UP |

SOURCE: 1945 TRAFFIC SURVEY BY R.I. DEPT. OF PUBLIC WORKS

Centerdale on the Woonasquatucket cause densities of 4 to 8 persons per gross acre, and the Crescent Park area in East Providence of small summer type cottages shows a density of 8 to 12 persons per gross acre. Aside from these, the suburban areas to the north, west and south are, of course, of lowest density, below 4 persons per gross acre.

The three municipalities of highest density in the metropolitan area are all under supplied with single family homes. In Providence, only in sections of the East Side, Mt. Pleasant, Elmhurst, Elmwood, and Washington Park, is the dominant type the single family home. In the balance of the outer neighborhoods there is a mixture of one and two family homes. In 1940 nearly 50% of the dwelling units in Providence were in structures containing three or more units and less than twenty per cent were single family homes. This is in spite of the fact that 78% of the dwelling units built in the period 1928-1943 were single family homes and in 1900 to 1910 the City of Providence had 75% of the structures built in metropolitan area built within its limits. From 1930 to 1940 only 30% of building done in the metropolitan area was done within Providence.<sup>1</sup>

The two or more unit type of structure is not confined to these three towns. Because of the ribbon industrial development along the river, the multiple family structure is visible in a number of suburban locations. The new trend toward single family homes is forcing builders to seek new land, good environment, unspoiled by the presence of the obsolete frame multiple-family structures. New building, then, has been seeking sites along the major arteries from the central towns on land

---

<sup>1</sup>Providence City Plan Commission, Master Plan For Land Use & Population Distribution. Providence: Publication No. 4, Aug., 1946, p. 6

flat enough to be developed economically. In Pawtucket this problem is a relatively simple one already platted on the flat eastern portion of the town. For Providence, Pawtucket blocks growth in that direction and the terrain effectively blocks extensive new construction to the west and north. Although there has been considerable building northwest along Smith Street and east across the Seekonk in sections in East Providence, the greatest building activity has been taking place to the southwest along Reservoir Avenue in Cranston, and south into the flat rectangle of land in Warwick.

Although this new trend to suburban single family homes may be classified as urban sprawl it can also be considered as a collective though unguided attempt by that part of the populace of the region which is able to bring the living conditions for themselves up to a modern standard of privacy, open space, and safety for their children.

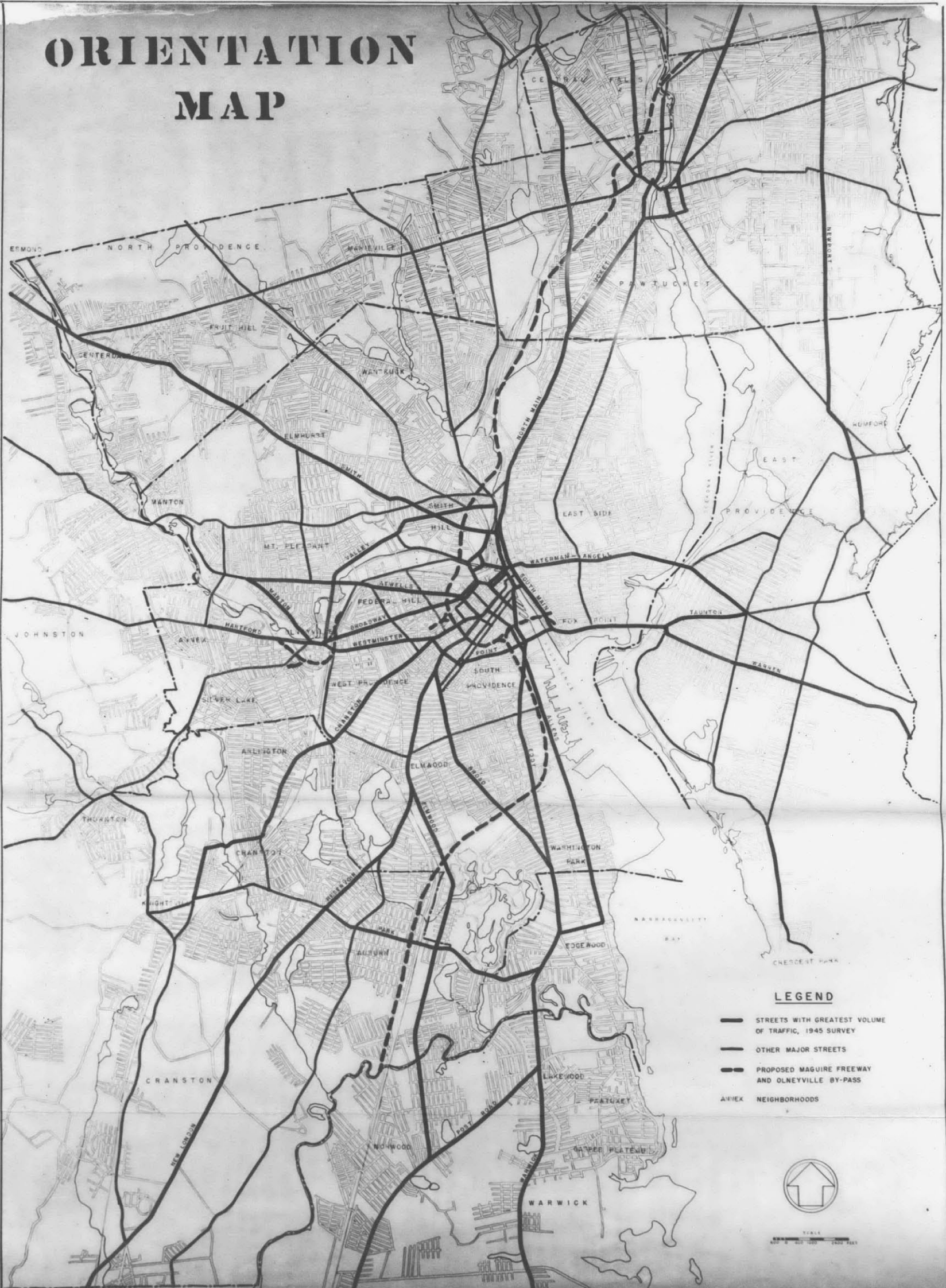
#### D. Automotive Traffic

On the interregional system of highways Providence is astride the shore line route between New York and Boston, United States 1, and between Cape Cod and the west, United States 6 and 44. Between New York and Boston there is a shorter alternate crossing diagonally through Connecticut, but for traffic between Cape Cod, New Bedford, Fall River and Newport to the east and Connecticut, New York, and beyond to the west, the only alternate route is the ferry at Jamestown. As a result there is heavy through traffic looping around the head of the bay along Fox Point Boulevard, as well as the through traffic along United States 1 moving north and south through town.

The 1945 origin and destination survey revealed that the heaviest volumes were on the major arterial streets - Fox Point Boulevard, North

# METROPOLITAN PROVIDENCE RHODE ISLAND

## ORIENTATION MAP





Main Street, Elmwood Avenue, Broad Street, Reservoir Avenue, Allens Avenue, and Broadway. (Figure 4) These flows north and south, and east and west across Fox Point Avenue are the major flows. Movement to the west from the central business district is significantly smaller, and up the hill on the East Side the smallest volumes of any neighborhood exist. One exception to the lower traffic flows to the west is at Olneyville Square where seven major streets converge into a single roadway which is flanked by the largest neighborhood shopping center in the city.

The flow along these arterial routes is handled quite adequately towards the periphery of the city to the south because of wider pavements. But as the arterials approach the city they consolidate on streets of narrower width. Cranston converges on Westminster; Reservoir converges on Elmwood, Elmwood converges on Broad, Broad converges on Weybosset; and Allens converges on Eddy.

The cordon count made in the 1945 parking survey of the Providence central business district revealed that there were 49,297 in bound passenger cars at the cordon between 8:00 a.m. and 5:00 p.m. Of the streets entering the cordon it was found that Gaspee Street which is used as a semi-by-pass had the heaviest volume, 7,081 and 7,039 out on a weekday between 8:00 a.m. and 6:00 p.m. Second in volume was Eddy Street, again a semi-by-pass, 5,745 in bound and 6,077 out bound. These streets were followed in volume by North and South Main, Canal, Promenade, Broadway, Broad, Westminster, Waterman, the pair of one-way streets, Pine and Friendship, and Washington. (TABLE I)

TABLE I

Number of Vehicles Entering and Leaving the Central Business District  
On A Weekday Between 8:00 a.m. and 6:00 p.m.

| <u>Street</u> | <u>Cross Street</u> | <u>Number Entering</u> | <u>Number Leaving</u> |
|---------------|---------------------|------------------------|-----------------------|
| Eddy-Dyer     | Ship                | 5,745                  | 6,077                 |
| Richmond      | Ship                | 2,159                  | 1,408                 |
| Elbow         | Ship                | 117                    | 185                   |
| Bassett       | Ship                | 736                    | 625                   |
| Chestnut      | Clifford            | 1,179                  | 1,336                 |
| Claverick     | Clifford            | 373                    | 436                   |
| Clifford      | Claverick           | 541                    | 617                   |
| Friendship    | Claverick           | 3,382                  | (one way)             |
| Pine          | Claverick           | (one way)              | 2,833                 |
| Foster        | Broad               | 80                     | 116                   |
| Byron         | Broad               | 45                     | 76                    |
| Beacon        | Broad               | 1,698                  | 1,288                 |
| Broad         | Beacon              | 3,956                  | 3,348                 |
| Hoyle         | Franklin            | 118                    | 120                   |
| Pond          | Franklin            | 690                    | 426                   |
| Westminster   | Franklin            | 2,967                  | 3,022                 |
| Franklin      | Westminster         | 1,529                  | 1,547                 |
| Garden        | Jackson             | 29                     | 45                    |
| Washington    | Jackson             | 3,100                  | 2,404                 |
| Fountain      | Jackson             | (one way)              | 1,945                 |
| Carpenter     | Jackson             | 995                    | 816                   |

TABLE I Continued

| <u>Street</u> | <u>Cross Street</u> | <u>Number Entering</u> | <u>Number Leaving</u> |
|---------------|---------------------|------------------------|-----------------------|
| Broadway      | Jackson             | 3,946                  | 4,205                 |
| Atwells       | San Souci           | 1,362                  | 1,595                 |
| Aborn         | Bourn               | 804                    | 1,315                 |
| West Exchange | Bourn               | 1,329                  | 1,562                 |
| Gaspee        | New Haven RR        | 7,081                  | 7,039                 |
| Francis       | New Haven RR        | 1,933                  | 1,157                 |
| Promenade     | New Haven RR        | 4,510                  | 4,332                 |
| Canal         | New Haven RR        | 4,289                  | 4,279                 |
| North Main    | New Haven RR        | 3,144                  | 4,081                 |
| Thomas        | North Main          | 800                    | 187                   |
| Waterman      | North Main          | 3,548                  | 3,129                 |
| College       | South Main          | 1,617                  | 2,282                 |
| Hopkins       | South Main          | 287                    | 49                    |
| South Main    | Crawford            | 4,479                  | 4,582                 |
| South Water   | Crawford            | 1,313                  | 1,519                 |

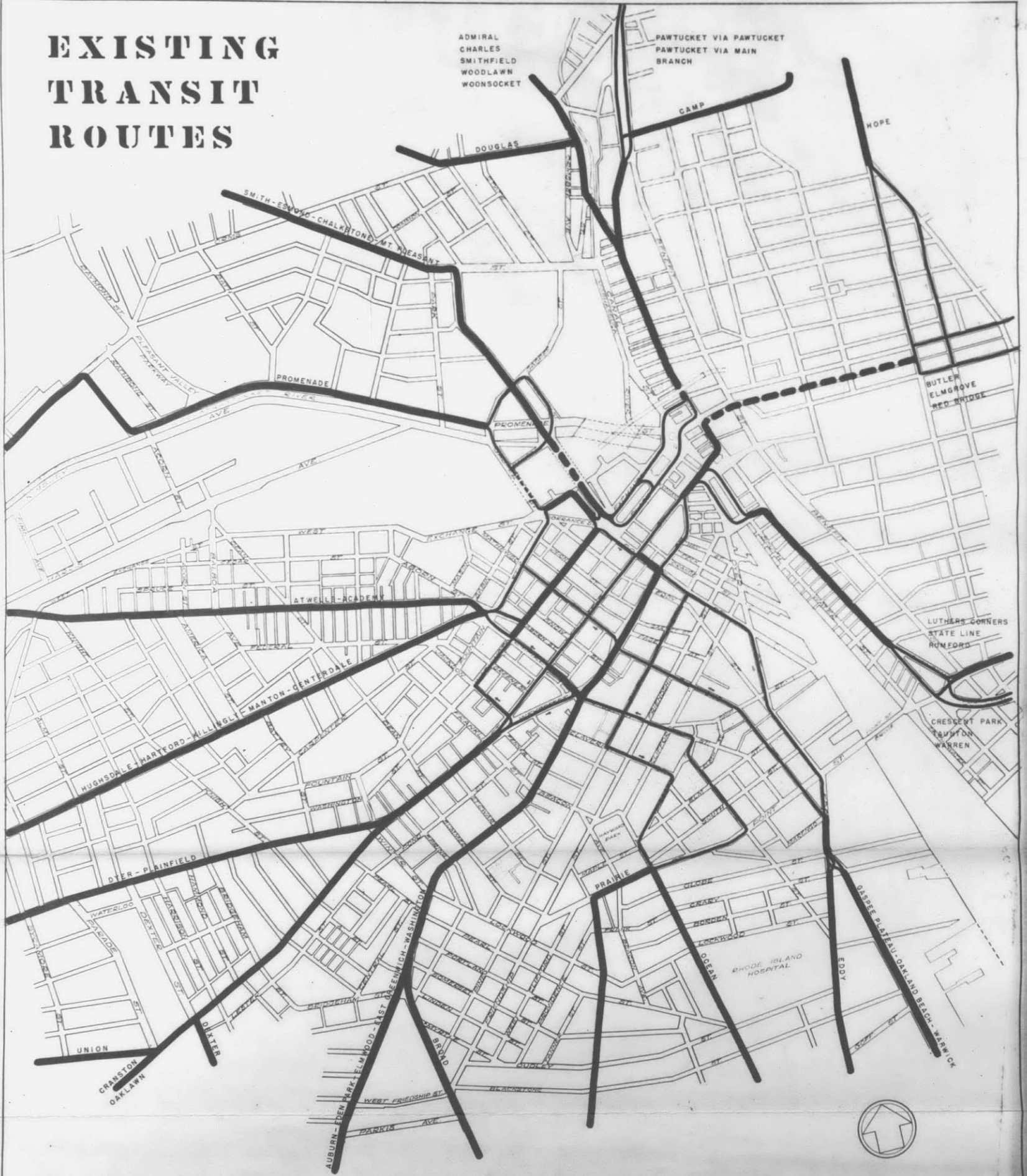
Source: Cordon count from a parking survey of the Providence Central Business District, 1945, by Rhode Island Department of Public Works in cooperation with the Public Roads Administration.

Within the cordon area there are a number of particularly troublesome intersections. Canal, Promenade, and Exchange Place traffic plus the bulk of North Main and Waterman traffic converge on Memorial Square. All the Gaspee Street traffic leaving the cordon collected from Railroad Terrace, Eddy, Fountain, and West Exchange at one intersection. The single street, Dorrance, must take the heaviest share of cross traffic within the heart of the city because the remainder of the cross streets east of Empire Street are narrow and one-way. Both within and beyond the cordon, of course, each set of converging arterials present a new case of congestion. (Figure 5) is a map of the Providence central area.

Automobile circulation in Providence has reached such a chaotic state that public and private groups alike have shown considerable interest in discovering remedies. The Rhode Island State Department of Public Works in cooperation with the Public Roads Administration made a traffic survey of the metropolitan area and a parking survey in the Providence central business district in 1945. The City Plan Commission issued a Master Plan For Thorofares in 1946 in which it recommended a north-south freeway with a downtown by-pass loop along with an improved system of major streets. The Plan Commission also recommended a one-way street system for the central area. The Governors Commission on Metropolitan Transportation began a transit study in 1947 which was never published, the Commission having expired before that was possible. The city Public Service Engineer published a one-way street plan for downtown Providence in 1946. The State Department of Public Works in cooperation with the Public Roads Administration engaged the engineering firm, Charles A. Maguire Associates,

CENTRAL AREA **PROVIDENCE** RHODE ISLAND

**EXISTING  
TRANSIT  
ROUTES**



to prepare plans for an expressway system for metropolitan Providence and plans for an Olneyville Square by-pass. The former was completed in 1947 and the latter in 1948. Each received the full support of the newspaper and the Chamber of Commerce and the qualified support of the Plan Commission. Cranston endorsed the freeway and Pawtucket opposed it. In conjunction with Maguire Study, De Leuw, Cather & Company prepared a parking report for Providence and Pawtucket in 1947. The United Electric Railways engaged De Leuw, Cather to make a separate study of traffic conditions in the Market-Memorial Square area. At the present time the City and the Public Roads Administration are engaging the firm of Andrews and Clark to make a fresh traffic study of the area between the Point Street bridge on the south and Randall Square on the north.

In the years session of the State Legislature a bill to enable towns to create a Parking Authority was introduced and defeated while enabling legislation that permitted Providence to create a Traffic Engineering Department was passed. This department is now in the process of being organized.

The Maguire freeway plan met with much public enthusiasm when it was published and since it is endorsed in principle by most public groups, with the exception of Pawtucket officials and Chamber of Commerce, who feel it will siphon all business from it into Providence and leave it a "ghost city", there is some real chance that it will become a reality in some form after more agitation has been carried on for it by the newspaper, Chamber of Commerce, and others. Its construction will have an important effect on the pattern of growth of the metropolitan area.

The plan calls for a north-south freeway that begins at the Paw-

tuxet River - the Cranston-Warwick line, and ends at the Massachusetts Border. (Figure 4) illustrates its route.

#### E. The Transit System

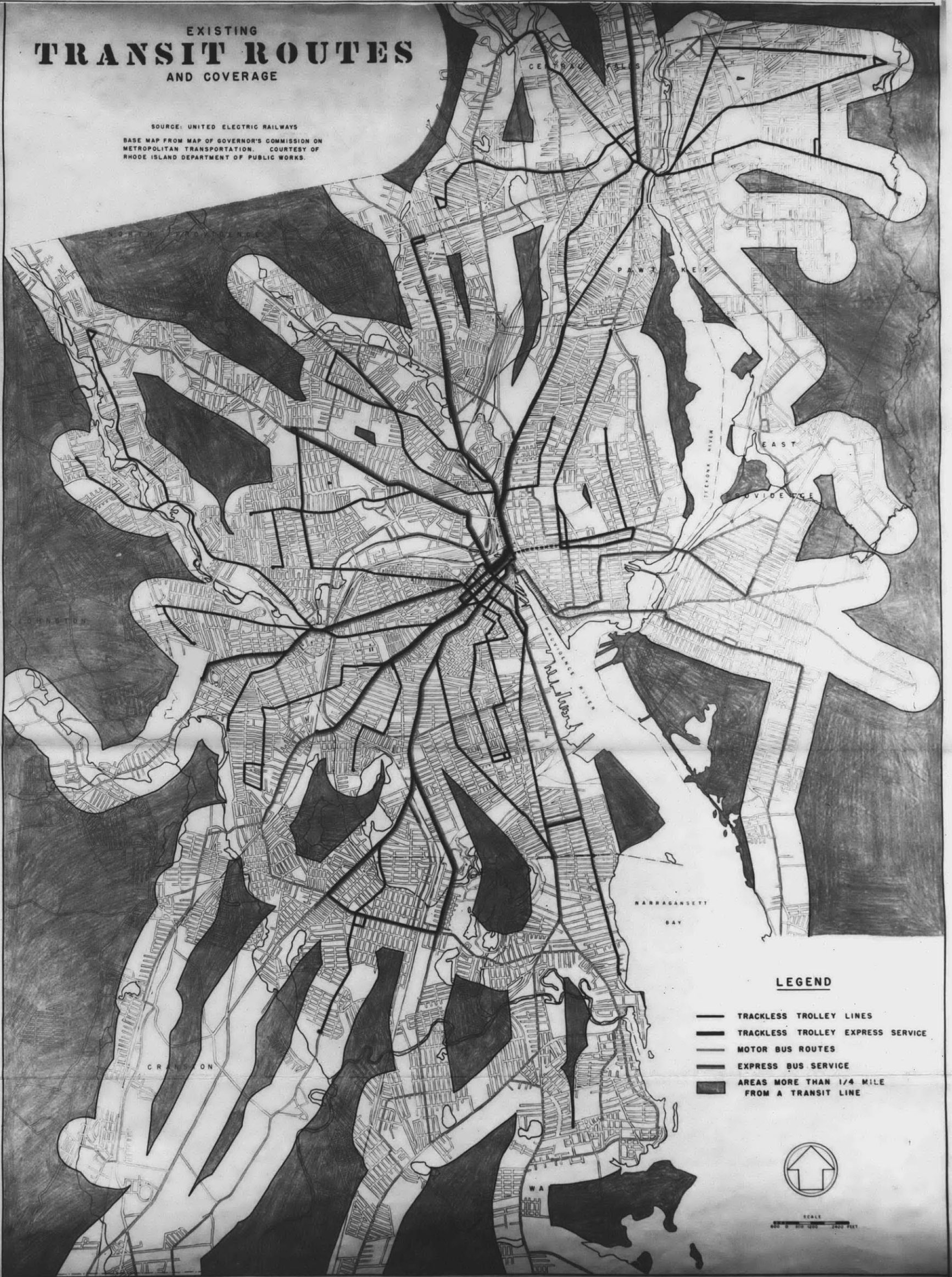
The transit system in Providence is operated by the United Electric Railways, Inc., a subsidiary of the Narragansett Electric Company. With its close tie-in to the production of electric power, the UER was one of the first systems to adopt the trackless trolley as a transit vehicle and today has one of the most extensive networks of trackless trolley lines in the United States. At the present time the company is in the process of converting the last of the street car lines to trackless trolley operation. The last street car run was made on May 15, 1948 and gasoline busses are being used on several lines pending delivery of trolley busses and completion of the installation of overhead lines. With the initiation of trackless trolleys on the last of the lines now being changed over, the UER will be operating 230 round trip route miles of trackless trolley lines. This represents 44% of the total round trip route miles operated by the UER, excluding the Woonsocket and West Warwick gas bus routes. Within the cities of Providence and Pawtucket, of course, the percentage is considerably higher because the bulk of the mileage as gas busses is made in suburban service. (Figure 6 and Table II).

The UER is broken into three divisions, each with a garage: Woonsocket, Pawtucket, and Elmwood. The Woonsocket local transit routes and the suburban routes to Providence and Pawtucket operate from Woonsocket.

# METROPOLITAN PROVIDENCE RHODE ISLAND

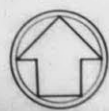
## EXISTING TRANSIT ROUTES AND COVERAGE

SOURCE: UNITED ELECTRIC RAILWAYS  
BASE MAP FROM MAP OF GOVERNOR'S COMMISSION ON  
METROPOLITAN TRANSPORTATION. COURTESY OF  
RHODE ISLAND DEPARTMENT OF PUBLIC WORKS.



### LEGEND

- TRACKLESS TROLLEY LINES
- TRACKLESS TROLLEY EXPRESS SERVICE
- - - MOTOR BUS ROUTES
- x - x - x EXPRESS BUS SERVICE
- AREAS MORE THAN 1/4 MILE FROM A TRANSIT LINE



SCALE  
0 500 1000 2000 FEET



TABLE II

## THE UNITED ELECTRIC RAILWAYS TRANSIT SYSTEM IN PROVIDENCE AND PAWTUCKET

| Route           | Classification <sup>a</sup> | Type Vehicle <sup>b</sup> | Intown Terminal                   | Outbound Terminal                | Round Trip Length of Route, Miles | Garage <sup>c</sup> | Scheduled Running Time Outbound PM Peak Minutes |
|-----------------|-----------------------------|---------------------------|-----------------------------------|----------------------------------|-----------------------------------|---------------------|---|
| Admiral         | PC                          | TT                        | Exchange Place                    | Seamans @ Admirals               | 5.74                              | P                   | 15  |
| Atwells-Academy | PC                          | TT                        | West Approach to Railroad Terrace | Academy @ Smith                  | 6.11                              | E                   | 20  |
| Broad           | PC                          | TT <sup>d</sup>           | Dorrance @ Westminster            | Broad @ City Line                | 6.71                              | E                   | 21  |
| Butler          | PC                          | MB <sup>e</sup>           | Westminster @ Dorrance            | Blackstone @ Swan Point Cemetery | 6.38                              | P                   | 17½   |
| Camp            | PC                          | TT                        | Exchange Place                    | Camp @ Evergreen                 | 3.53                              | P                   | 11  |
| Chalkstone      | PC                          | TT                        | Francis @ Exchange Place          | Chalkstone @ Aldine              | 5.50                              | E                   | 14  |

TABLE II Continued

| Route                | Classification <sup>a</sup> | Type Vehicle <sup>b</sup> | Intown Terminal           | Outbound Terminal            | Round Trip Length of Route, Miles | Garage <sup>c</sup> | Scheduled Running Time Outbound PM Peak Minutes |
|----------------------|-----------------------------|---------------------------|---------------------------|------------------------------|-----------------------------------|---------------------|---|
| Cranston             | PC                          | TT                        | Dorrance @ Westminster    | Cranston @ Coombs (Cranston) | 4.49                              | E                   | 14  |
| Dexter               | PC                          | TT                        | Dorrance @ Westminster    | Calhoun @ Barnaby            | 5.19                              | E                   | 15  |
| Douglas              | PC                          | TT                        | Exchange Place            | Douglas @ Admiral            | 3.68                              | P                   | 11  |
| Dyer                 | PC                          | TT                        | Dorrance @ Westminster    | Dyer @ Heater                | 6.52                              | E                   | 19  |
| Elmgrove             | PC                          | TT <sup>d</sup>           | Westminster @ Dorrance    | Elmgrove @ Savoy             | 5.07                              | P                   | 14½   |
| Hartford             | PC                          | TT                        | West Approach, RR Terrace | Hartford @ Ochee Springs     | 6.40                              | E                   | 19  |
| Hartford - Killingly | PC                          | TT                        | West Approach, RR Terrace | Killingly @ Sunset           | 7.08                              | E                   | 20  |

TABLE II Continued

| Route          | Classification <sup>a</sup> | Type Vehicle <sup>b</sup> | Intown Terminal          | Outbound Terminal     | Round Trip Length of Route, Miles | Garage <sup>c</sup> | Scheduled Running Time Outbound PM Peak Minutes |
|----------------|-----------------------------|---------------------------|--------------------------|-----------------------|-----------------------------------|---------------------|---|
| Hope           | PC                          | TT                        | Westminster @ Dorrance   | Hope @ Chace          | ----                              | P                   | 16½   |
| Mount Pleasant | PC                          | TT                        | Francis @ Exchange Place | Atwells @ Lavaughn    | 6.51                              | E                   | 16  |
| Ocean          | PC                          | TT                        | Weybosset @ Dorrance     | Ocean @ Thurbers      | 4.20                              | E                   | 13  |
| Plainfield     | PC                          | TT                        | Dorrance @ Westminster   | Plainfield @ Murray   | 6.18                              | E                   | 16  |
| Prairie        | PC                          | TT                        | Weybosset @ Dorrance     | Prairie @ Thurbers    | 4.34                              | E                   | 11  |
| Red Bridge     | PC                          | MB                        | Westminster @ Dorrance   | East River @ Waterman | ----                              | P                   | 10½   |
| Smith          | PC                          | TT                        | Francis @ Exchange       | Meridian @ Smith      | 4.98                              | E                   | 14  |

TABLE II Continued

| Route                | Classification <sup>a</sup> | Type Vehicle <sup>b</sup> | Intown Terminal        | Outbound Terminal         | Round Trip Length of Route, Miles | Garage <sup>c</sup> | Scheduled Running Time Outbound PM Peak Minutes |
|----------------------|-----------------------------|---------------------------|------------------------|---------------------------|-----------------------------------|---------------------|---|
| Union                | PC                          | TT                        | Dorrance @ Westminster | Chestnut Hill @ Princess  | 6.35                              | E                   | 21  |
| Auburn via Elmwood   | PS                          | TT                        | Dorrance @ Westminster | Auburn @ Rolfe (Cranston) | 9.18                              | E                   | 24 <sup>3</sup> / <sub>4</sub>                  |
| Auburn via Pontiac   | PS                          | TT                        | Dorrance @ Westminster | Pontiac @ Park (Cranston) | 7.46                              | E                   | ----  |
| Auburn via Reservoir | PS                          | TT                        | Dorrance @ Westminster | Park @ Pontiac (Cranston) | 7.46                              | E                   | ----  |

TABLE II Continued

| Route                         | Classification <sup>a</sup> | Type Vehicle <sup>b</sup> | Intown Terminal           | Outbound Terminal                           | Round Trip Length Route, Miles | Garage <sup>c</sup> | Scheduled Running Time Outbound PM Peak Minutes |
|-------------------------------|-----------------------------|---------------------------|---------------------------|---|--------------------------------|---------------------|---|
| Branch                        | PS                          | MB                        | Exchange Place            | Douglas @ Mineral Spring (North Providence) | 8.43                           | P                   | 18  |
| Centerdale                    | PS                          | TT                        | West Approach, RR Terrace | George St., Centerdale (North Providence)   | 10.97                          | E                   | 30  |
| Charles                       | PS                          | TT                        | Exchange Place            | Charles @ Mineral Spring (North Providence) | 6.83                           | P                   | 18  |
| Crescent Park                 | PS                          | MB                        | Westminster @ Dorrance    | Crescent Park (East Providence)             | 14.31                          | P                   | 27  |
| East Greenwich via Elmwood    | PS                          | MB                        | Fountain @ Mathewson      | Cliff @ 1st Ave. (East Greenwich)           | 27.03                          | E                   | 47  |
| East Greenwich via Wellington | PS                          | MB                        | Fountain @ Mathewson      | Cliff @ 1st Ave. (East Greenwich)           | 27.29                          | E                   | 47  |

TABLE II continued

| Route                   | Classification <sup>a</sup> | Type Vehicle <sup>b</sup> | Intown Terminal        | Outbound Terminal                             | Round Trip Length of Route, Miles | Garage <sup>c</sup> | Scheduled Running Time Outbound PM Peak Minutes |
|-------------------------|-----------------------------|---------------------------|------------------------|---|-----------------------------------|---------------------|---|
| Eden Park via Pontiac   | PS                          | TT                        | Dorrance @ Westminster | Pontiac @ Euston (Cranston)                   | 9.68                              | E                   | —   |
| Eden Park via Reservoir | PS                          | TT                        | Dorrance @ Westminster | Pontiac @ Euston (Cranston)                   | 10.20                             | E                   | 26½   |
| Eddy-Edgewood           | PS                          | TT                        | Dorrance @ Pine        | Narragansett Blvd @ Chiswick Road (Cranston)  | 8.52                              | E                   | 19  |
| Esmond                  | PS                          | MB                        | Francis @ Exchange     | Waterman @ Esmond (Smithfield)                | 13.28                             | P                   | 25½   |
| Gaspee Plateau          | PS                          | MB                        | Dorrance @ Pine        | Narragansett Pkwy @ Old Buttonwoods (Warwick) | 14.07                             | E                   | 26  |

TABLE II Continued

| Route                         | Classification <sup>a</sup> | Type Vehicle <sup>b</sup> | Intown Terminal           | Outbound Terminal                     | Round Trip Length of Route, Miles | Garage <sup>c</sup> | Scheduled Running Time Outbound PM Peak Minutes |
|-------------------------------|-----------------------------|---------------------------|---------------------------|---------------------------------------|-----------------------------------|---------------------|---|
| Hughesdale                    | PS                          | MB                        | West Approach, RR Terrace | Atwood @ Central (Johnston)           | 11.06                             | E                   | 25  |
| Luthers Corners               | PS                          | MB                        | Westminster @ Dorrance    | Waterman @ Warren (East Providence)   | 10.00                             | P                   | 20  |
| Manton                        | PS                          | TT                        | West Approach, RR Terrace | Greenville @ Geo. Waterman (Johnston) | 9.26                              | E                   | 26  |
| Oakland Beach                 | PS                          | MB                        | Dorrance @ Pine           | Suburban Pkwy @ Oakland Beach         | 24.71                             | E                   | 40  |
| Oaklawn                       | PS                          | MB                        | West Approach, RR Terrace | Wilbur @ Meshanticut (Cranston)       | 14.93                             | E                   | 35  |
| Providence-Pawtucket via Main | PS                          | TT                        | Exchange Place            | Main @ Dexter (Pawtucket)             | 8.43                              | P                   | 21  |

TABLE II Continued

| Route                              | Classification <sup>a</sup> | Type Vehicle <sup>b</sup> | Intown Terminal        | Outbound Terminal                           | Round Trip Length of Route, Miles | Garage <sup>c</sup> | Scheduled Running Time Outbound PM Peak Minutes |
|------------------------------------|-----------------------------|---------------------------|------------------------|---|-----------------------------------|---------------------|---|
| Providence-Pawtucket via Pawtucket | PS                          | TT                        | Exchange Place         | Main @ East (Pawtucket)                     | 8.43                              | P                   | 20½   |
| Providence-Woonsocket              | PS                          | MB                        | Exchange Place         | Flynn Square (Woonsocket)                   | 29.20                             | W                   | ---   |
| Rumford                            | PS                          | MB                        | Westminster @ Dorrance | Pleasant @ Ten Mile River (East Providence) | 12.67                             | P                   | 26  |
| Smithfield                         | PS                          | MB                        | Exchange Place         | Chapel @ Walker (Lincoln)                   | 10.59                             | P                   | ---   |
| State Line-Taunton                 | PS                          | MB                        | Westminster @ Dorrance | Taunton @ Dey (East Providence)             | 8.59                              | P                   | 17  |
| Taunton                            | PS                          | MB                        | Westminster @ Dorrance | Taunton @ Cora (East Providence)            | 5.66                              | P                   | 14  |



TABLE II Continued

| Route       | Classification <sup>a</sup> | Type Vehicle <sup>b</sup> | Intown Terminal        | Outbound Terminal                         | Round Trip Length of Route, Miles | Garage <sup>c</sup> | Scheduled Running Time Outbound PM Peak Minutes |
|-------------|-----------------------------|---------------------------|------------------------|---|-----------------------------------|---------------------|---|
| Warren      | PS                          | MB                        | Westminster @ Dorrance | Warren @ South Broadway (East Providence) | 5.36                              | P                   | 14  |
| Warwick     | PS                          | MB                        | Dorrance @ Pine        | Warwick Neck @ Barton (Warwick)           | 24.49                             | E                   | 40  |
| Washington  | PS                          | MB                        | Fountain @ Mathewson   | Biellers Lane, Washington (Coventry)      | 30.70                             | E.                  | 55  |
| Woodlawn    | PS                          | MB                        | Exchange Place         | Mineral Spring @ Lonsdale (Pawtucket)     | 10.19                             | P                   | 23  |
| Brook-Brown | PCT                         | MB                        | Brown @ Olney          | Brook @ Wickenden                         | 2.91                              | E                   | 8   |

TABLE II Continued

| Route              | Classification <sup>a</sup> | Type Vehicle <sup>b</sup> | Intown Terminal                                 | Outbound Terminal                       | Round Trip Length of Route, Miles | Garage <sup>c</sup> | Scheduled Running Time Outbound PM Peak Minutes |
|--------------------|-----------------------------|---------------------------|---|---|-----------------------------------|---------------------|---|
| Cranston-Branch    | PCT                         | MB                        | Branch @ Veazie                                 | Webster @ Cranston<br>(Cranston)        | 10.95                             | P                   | 26  |
| Promenade-Eddy     | PCT                         | MB                        | Francis @ Exchange                              | Eddy @ Public                           | 10.45                             | E                   | 16  |
| Park Avenue        | S                           | MB                        | Fair @ North<br>Country Club Drive<br>(Warwick) | Phenix @<br>Green<br>(Cranston)         | 12.84                             | E                   | 24  |
| Pontiac Connection | S                           | MB                        | Pontiac @ Euston<br>(Cranston)                  | Greenwich @<br>New London<br>(Cranston) | 7.66                              | E                   | 12  |
| Armistice          | Pawt                        | TT                        | Main @ Broad                                    | Armistice @<br>Alexander                | 5.30                              | P                   | 14  |

TABLE II Continued

| Route          | Classification <sup>a</sup> | Type Vehicle <sup>b</sup> | Intown Terminal | Outbound Terminal                        | Round Trip Length of Route, Miles | Garage <sup>c</sup> | Scheduled Running Time Outbound PM Peak Minutes |
|----------------|-----------------------------|---------------------------|-----------------|--|-----------------------------------|---------------------|---|
| Benefit        | Pawt                        | TT                        | Main @ Broad    | Benefit @ Thurber                        | 5.76                              | P                   | 14  |
| Broad          | Pawt                        | TT                        | Main @ Broad    | Broad @ Mill                             | 5.34                              | P                   | 15  |
| Central        | Pawt                        | TT                        | Main @ Broad    | Benefit @ Central                        | 5.38                              | P                   | 14  |
| Columbus       | Pawt                        | MB                        | Main @ Broad    | Courtney Street                          | 4.68                              | P                   | 14  |
| Dexter         | Pawt                        | TT                        | Main @ Broad    | Walker @ Chapel<br>(Lincoln)             | 3.68                              | P                   | 10  |
| East           | Pawt                        | MB                        | Main @ East     | East @ Providence<br>Line                | 3.16                              | P                   | 9   |
| John           | Pawt                        | TT                        | Main @ Broad    | Carrington @<br>Lonsdale<br>(Cumberland) | 5.68                              | P                   | 15  |
| Mineral Spring | Pawt                        | MB                        | Main @ Broad    | Mineral Spring @<br>Adams (North Prov.)  | 4.39                              | P                   | 12  |

TABLE II Continued

| Route                | Classification <sup>a</sup> | Type Vehicle <sup>b</sup> | Intown Terminal | Outbound Terminal                | Round Trip Length of Route, Miles | Garage <sup>c</sup> | Scheduled Running Time Outbound PM Peak Minutes |
|----------------------|-----------------------------|---------------------------|-----------------|----------------------------------|-----------------------------------|---------------------|---|
| Newport              | Pawt                        | TT                        | Main @ Broad    | Newport @ Armistice              | 5.32                              | P                   | 14  |
| Pawtucket-Red Bridge | Pawt                        | MB                        | Main @ Broad    | Pitman @ East River (Providence) | 10.55                             | P                   | 22  |
| Pawtucket-Woonsocket | Pawt                        | MB                        | Main @ Dexter   | Flynn Square (Woonsocket)        | 24.34                             | W                   | --  |
| Prospect Hill        | Pawt                        | MB                        | Main @ Broad    | Grove @ Arnold (Lincoln)         | 8.06                              | P                   | 18  |
| Roosevelt            | Pawt                        | MB                        | East @ Main     | Cole @ Roosevelt                 | 2.89                              | P                   | 8   |
| Weeden               | Pawt                        | TT                        | Main @ Broad    | Anderton @ Power Rd.             | 4.74                              | P                   | 13½   |

<sup>a</sup>Classifications:

PC - Providence City Line  
 PS - Providence Suburban Lines  
 PCT - Providence Cross-town  
 S - Suburban (Cranston)  
 Pawt - Pawtucket Lines

<sup>b</sup>Type Vehicles:

TT - Trackless Trolley  
 MB - Gas Motor Bus

<sup>c</sup>Garages:

E - Elmwood  
 P - Pawtucket W - Woonsocket

<sup>d</sup>Trackless trolley not yet in operation as of September, 1948.

<sup>e</sup>Permanent type of service undecided as of September, 1948

Source: United Electric Railways

All of the routes radiating from the Pawtucket central area, operate from the Pawtucket garage, as well as twenty-one of the forty-eight routes operating in Providence.

Or, of the forty-six routes serving the downtown Providence area nineteen operate from the Pawtucket garage. The remainder operate from the Elmwood garage.

Of the lines radiating from the Providence center, the heaviest traveled are those along the major arterial routes. (Figure 5). The 1945 traffic survey showed that North Main, South Main, Broadway, Westminster, Broad, and Eddy all have heavy concentrations of automobiles traffic. On these same streets, leaving the cordon area at the weekday PM peak hour, there are thirty-six transit routes with 339 transit vehicles outbound within an hour and about the same number inbound in the same hour. In the three hour afternoon peak from 3:30 to 6:30, these 36 routes handled 31,909 passengers on a weekday in July, 1948. (Table III)

In all the most troublesome intersections mentioned above, transit vehicles are involved. On the section of Dorrance between Washington and Weybosset, eleven routes make right turns into it, and 13 routes make left turns into it, so that if PM peak headways were maintained on all routes for a full hour, there would be 250 transit vehicles making 475 turns into or from this major two-way street in one hour. (Table IV)

Away from the central business district, the transit picture is a more sensible one. Only one built up area in the city, three half blocks in Elmwood, is not within one quarter of a mile of a transit line. Scattered dwellings behind Triggs Park and Canada Pond and Mashapaug Pond as well as part of Elmhurst, Roger Williams Park, Blackstone Park, and Fields Point are the only other areas in the City not within one

quarter of a mile of a transit route. Coverage is similarly extensive in Pawtucket and Central Falls and the major portions of the built up areas of East Providence, North Providence, Cranston and Warwick are also served.

Express bus service is offered on four trackless trolley lines during PM peak-hours and there are fifteen suburban routes out of downtown Providence offering express service.

The express service reduces considerably the time required to reach a destination from the downtown area. On Broad Street for example passengers on the Gaspee Plateau express bus can reach Glen Avenue in Cranston in the same length of time - fifteen minutes - that it requires to get to Early Street, a mile and one half closer to the city, on the local Broad Street line. Passengers on the Esmond express bus can reach Ardmore Avenue and Smith Street in ten minutes, the same time it requires passengers on the local Smith Street trackless trolley to reach Huxley Street, a mile closer to town. (Figure 7)

Comparing local service, outbound peak hour operating schedules reveal that some lines operating on streets carrying a smaller load of automobile traffic can carry passengers a greater distance quicker than some lines operating on heavily traveled streets. A further factor is significant here. That is the type of land use fronting the street in question. For example, Eddy Street shows a greater traffic volume than Atwells, but shows a faster schedule because it does not serve the same type of neighborhood. The Atwells line runs through the dense Federal Hill section flanked on each side by commercial establishments. The lines that operate on the slowest schedules are those running through

# METROPOLITAN PROVIDENCE RHODE ISLAND

## TRANSIT TIME ZONES

SCHEDULED WEEKDAY PM PEAK-HOUR RUNNING TIME OUTBOUND.

SOURCE: UNITED ELECTRIC RAILWAYS

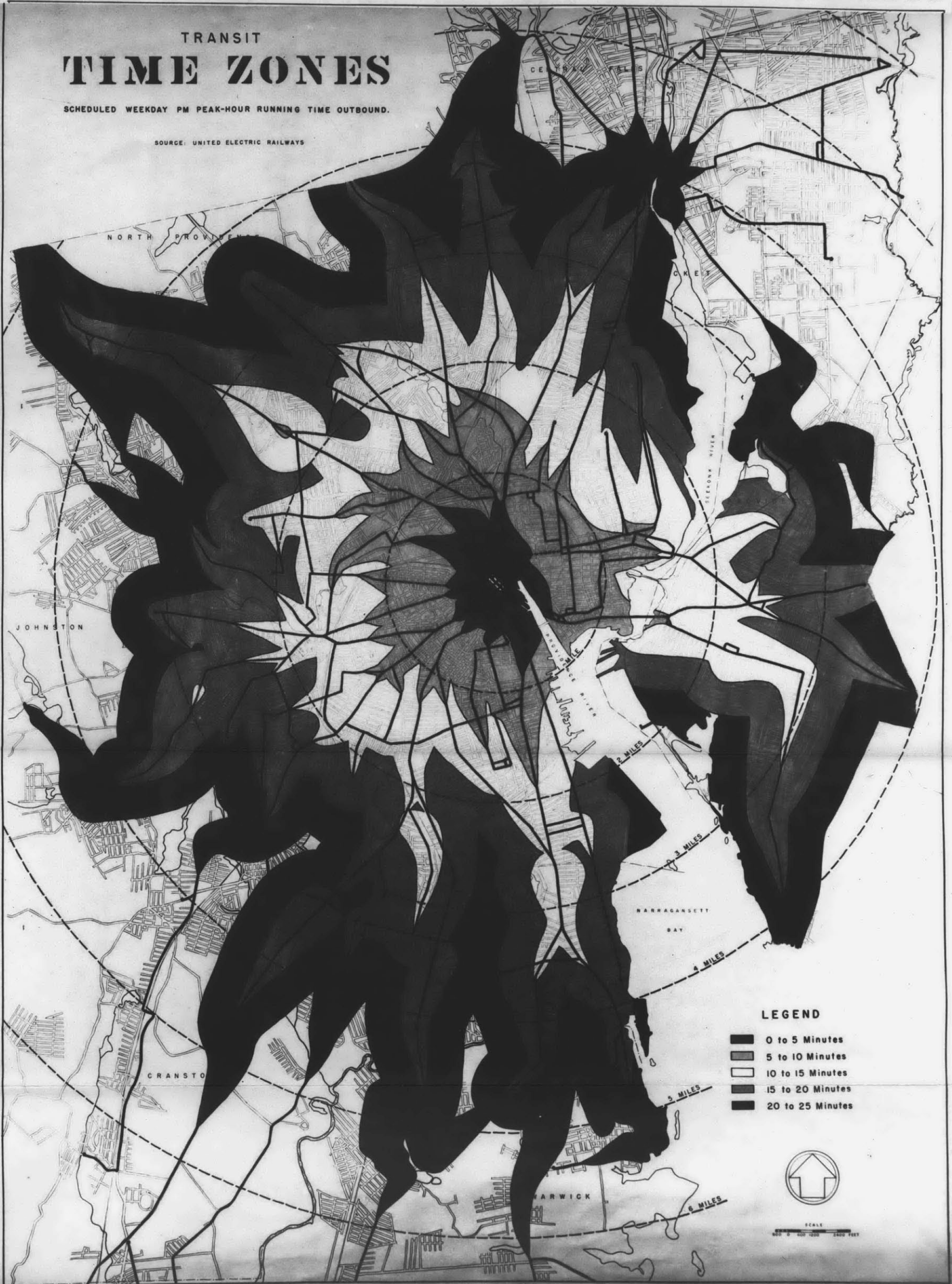


TABLE III

Average Daily AM and PM Transit Passenger Counts for Three-Day Period  
July 22nd to 25th, 1948

| Route                | Number Passengers |                 |
|----------------------|-------------------|-----------------|
|                      | 6:30 to 9:30 AM   | 3:30 to 6:30 PM |
| Broad                | 1,881             | 2,036           |
| Butler               | 259               | 383             |
| Elmgrove             | 556               | 723             |
| Red Bridge           | 242               | 279             |
| Hope                 | 1,127             | 1,580           |
| Admiral              | 999               | 1,221           |
| Camp                 | 629               | 839             |
| Douglas              | 826               | 993             |
| Charles              | 856               | 820             |
| Cranston             | 1,253             | 1,551           |
| Dyer-Plainfield      | 1,482             | 1,842           |
| Dexter               | 426               | 533             |
| Ocean                | 486               | 612             |
| Union                | 979               | 1,060           |
| Eddy                 | 1,329             | 1,650           |
| Elmwood              | 2,784             | 3,281           |
| Hartford             | 709               | 855             |
| Manton               | 1,297             | 1,483           |
| Prairie              | 872               | 1,175           |
| Providence-Pawtucket | 2,682             | 2,885           |



TABLE III Continued

| ROUTE                              | Number Passengers |                 |
|------------------------------------|-------------------|-----------------|
|                                    | 6:30 to 9:30 AM   | 3:30 to 6:30 PM |
| Atwells                            | 1,313             | 1,827           |
| Branch                             | 549               | 536             |
| Smithfield-Woodlawn                | 625               | 665             |
| Chalkstone                         | 1,662             | 2,039           |
| Smith                              | 1,109             | 1,458           |
| Crescent Park-Warren               | 1,721             | 1,949           |
| Taunton                            | 647               | 669             |
| Rumford-State Line-Luthers Corners | 1,545             | 2,174           |
| East Greenwich                     | 493               | 650             |
| Esmond                             | 682               | 907             |
| Gaspee Plateau                     | 691               | 786             |
| Hughesdale                         | 277               | 296             |
| Oaklawn                            | 684               | 839             |
| Oakland Beach-Warwick              | 1,184             | 1,344           |
| Promenade                          | 552               | 266             |
| Washington                         | 404               | 575             |
| Woonsocket-Providence              | 201               | 377             |

Source: United Electric Railways

TABLE IV

Headways and Number of Transit Vehicles Making Turning Movements in  
Exchange Place or Dorrance Street

| Route                             | H e a d w a y s               |                               |                               | Number of Vehicles in<br>One Hour at Maximum<br>Headways |    |     |
|-----------------------------------|-------------------------------|-------------------------------|-------------------------------|--|----|-----|
|                                   | AM                            | N                             | PM                            | AM   | N  | PM  |
| <u>Exchange Place</u>             |                               |                               |                               |  |    |     |
| Admiral                           | 7                             | 15                            | 4                             | 8  | 4  | 15  |
| Camp                              | 10                            | 15                            | 6 <sup>2</sup> / <sub>3</sub> | 6  | 4  | 9   |
| Douglas                           | 6 <sup>2</sup> / <sub>3</sub> | 15                            | 6                             | 9  | 4  | 10  |
| Charles                           | 7 <sup>1</sup> / <sub>2</sub> | 15                            | 8                             | 8  | 4  | 8   |
| Providence-Pawtucket              |                               |                               |                               |  |    |     |
| via Main                          | 4                             | 8                             | 3 <sup>1</sup> / <sub>3</sub> | 15   | 7  | 18  |
| via Pawtucket                     | 4                             | 8                             | 5                             | 15   | 7  | 12  |
| Branch                            | 12                            | 15                            | 8                             | 5  | 4  | 8   |
| Smithfield                        | 20                            | 30                            | 15                            | 3  | 2  | 4   |
| Woodlawn                          | 20                            | 30                            | 15                            | 3  | 2  | 4   |
| Chalkstone                        | 3                             | 7 <sup>1</sup> / <sub>2</sub> | 2 <sup>3</sup> / <sub>4</sub> | 20   | 8  | 22  |
| Smith                             | 5                             | 7 <sup>1</sup> / <sub>2</sub> | 4                             | 12   | 8  | 15  |
| Esmond                            | 12                            | 15                            | 10                            | 5  | 4  | 6   |
| to Homewood                       | 9                             | 15                            | 6                             | 7  | 4  | 10  |
| Woonsocket                        | 30                            | 30                            | 15                            | 2  | 2  | 4   |
| Total in Exchange Place per Hour: |                               |                               |                               | 118  | 64 | 145 |

TABLE IV Continued

| Route                                       | Headways |    |    | Number of Vehicles in<br>One Hour at Maximum<br>Headways |    |    |
|---|----------|----|----|--|----|----|
|   | AM       | N  | PM | AM   | N  | PM |
| <u>Westminster to Weybosset in Dorrance</u> |          |    |    |  |    |    |
| Butler                                      | 15       | 20 | 15 | 4  | 3  | 4  |
| Elmgrove                                    | 7½       | 10 | 6  | 8  | 6  | 10 |
| Red Bridge                                  | 15       | 20 | 15 | 4  | 3  | 4  |
| Hope  | 4        | 6  | 2½ | 15   | 10 | 24 |
| Crescent Park                               | 15       | 15 | 15 | 4  | 4  | 4  |
| Warren                                      | 7½       | 15 | 10 | 8  | 4  | 6  |
| Taunton                                     | 6        | 4  | 6  | 10   | 15 | 10 |
| Rumford                                     | 15       | 20 | 12 | 4  | 3  | 5  |
| Luthers Corners                             | 30       | 40 | 12 | 2  | 1  | 5  |
| State Line                                  | 30       | 40 | 12 | 2  | 1  | 5  |
|   |          |    |    | 61   | 50 | 77 |
| <u>Weybosset to Westminster in Dorrance</u> |          |    |    |  |    |    |
| Dexter                                      | 15       | 15 | 10 | 4  | 4  | 6  |
| Union                                       | 5        | 15 | 5  | 12   | 4  | 12 |
| Elmwood                                     |          |    |    |  |    |    |
| via Elmwood                                 | 4⅔       | 5  | 4⅔ | 13   | 12 | 13 |
| via Reservoir                               | 3⅓       | 10 | 2⅓ | 18   | 6  | 26 |
|   |          |    |    | 47   | 26 | 57 |

TABLE IV Continued

| Route  | H e a d w a y s               |    |                               | Number of Vehicles in<br>One Hour at Maximum<br>Headways |           |           |
|--|-------------------------------|----|-------------------------------|--|-----------|-----------|
|  | AM                            | N  | PM                            | AM   | N         | PM        |
| <u>Washington to Westminster in Dorrance</u> |                               |    |                               |  |           |           |
| Cranston                                     | 4                             | 7½ | 3½                            | 15   | 8         | 17        |
| Dyer   | 6                             | 15 | 5 <sup>1</sup> / <sub>3</sub> | 10   | 4         | 11        |
| Plainfield                                   | 7½                            | 15 | 5 <sup>1</sup> / <sub>3</sub> | 8  | 4         | 11        |
|  |                               |    |                               | <u>33</u>  | <u>16</u> | <u>39</u> |
| <u>Washington to Weybosset in Dorrance</u>   |                               |    |                               |  |           |           |
| Broad  | 3 <sup>3</sup> / <sub>4</sub> | 5  | 2 <sup>2</sup> / <sub>3</sub> | 16   | 12        | 22        |
|  |                               |    |                               | <u>16</u>  | <u>12</u> | <u>22</u> |
| <u>Weybosset to Pine or Dyer in Dorrance</u> |                               |    |                               |  |           |           |
| Eddy   | 4                             | 6  | 3 <sup>2</sup> / <sub>3</sub> | 15   | 10        | 16        |
| Ocean  | 10                            | 15 | 8                             | 6  | 4         | 8         |
| Prairie                                      | 5                             | 9  | 4                             | 12   | 7         | 15        |
| Gaspee Plateau                               | 10                            | 20 | 6 <sup>2</sup> / <sub>3</sub> | 6  | 3         | 9         |
| Oakland Beach                                | 20                            | 30 | 8                             | 3  | 2         | 8         |
| Warwick                                      | 20                            | 30 | 10                            | 3  | 2         | 6         |
|  |                               |    |                               | <u>45</u>  | <u>28</u> | <u>62</u> |
| Total in Dorrance per Hour:                  |                               |    |                               | 202  | 132       | 257       |

Source: United Electric Railways.

Headways are as of March 19, 1948.

multiple family residential areas on streets devoted to business use and used by a great number of passenger cars. Broad, Elmwood, Cranston, and Westminster are the best examples of this type. For contrast, North Main Street can be pointed out. For the first half mile, it is just such a street as mentioned above and the schedule is slow. Then it becomes a wide divided roadway with only scattered businesses and a cemetery along a good part of it, and the schedule speeds up considerably.

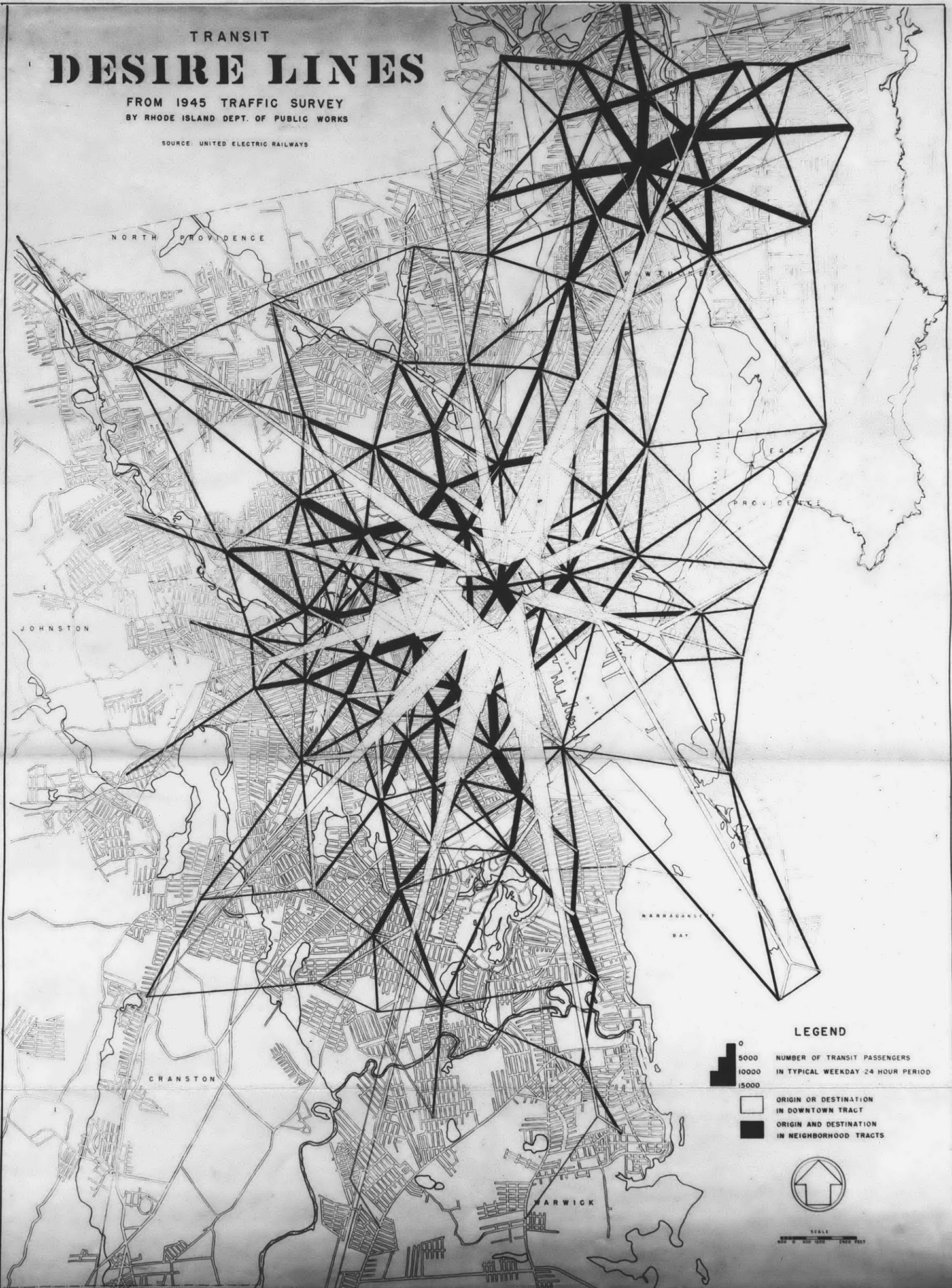
The desire lines of transit passengers (Figure 8) reveal the great influence the density of population has on transit passenger volume. It also shows the overwhelming preference of transit passengers for riding between the central business district and a neighborhood rather than between two neighborhoods. The heaviest cumulative volume of transit passengers want to ride between downtown and Federal Hill - more than 20,000 in a 24 hour period. This is reflected in the heavy traffic on the route along Broadway and Atwells. The next heaviest cumulative flow is from the northwest section of the East Side, reflected in the heavy traffic on the Pawtucket runs and the Hope Street lines. Other heavy cumulative volumes of transit passengers wanting to travel to and from downtown are from South Providence, Elmwood, and Cranston. To the northwest of the city center the volume of transit passengers wanting to get downtown is considerably less. One reason for this is the large expanse of park in this sector. Another reason is that the uneven terrain has limited growth in this direction. This does not alter the fact that well populated neighborhoods exist here, as indicated by the

# METROPOLITAN PROVIDENCE RHODE ISLAND

## TRANSIT DESIRE LINES

FROM 1945 TRAFFIC SURVEY  
BY RHODE ISLAND DEPT. OF PUBLIC WORKS

SOURCE: UNITED ELECTRIC RAILWAYS



number of passengers on the Smith and Chalkstone lines.

Reflecting the same pattern as that created by automobile traffic volume the number of transit passengers with an origin or destination west of Olneyville Square drops precipitously, while the desire is sustained to the northeast to Pawtucket and to the south to Cranston and Warwick. Also the settlement at Centerdale-Esmond and Crescent Park create a group of transit passengers with the downtown area as their destination.

The desire to travel from neighborhood to neighborhood is largely that of the trip between home and work. The largest cumulative volume of "neighborhood" travel is that toward the jewelry manufacturing center south of the city center, while the industries along the Woonasquatucket also generate "neighborhood" travel.

## II. TREATMENT OF TRENDS TO ENCOURAGE TRANSIT USE

In the first five months of 1948 only 5% of the residential building permits issued in metropolitan Rhode Island towns were issued for building in Providence. Warwick led with 22%, Pawtucket was second with 15%, and Cranston was third with 9%. East Providence was also above Providence in number issued with 7%. (Table V)

It is clear that the so called forces of decentralization are at work in Providence. But it is significant that in only three of the surrounding towns is the percentage of total building permits issued in selected Rhode Island towns much greater than in Providence.

Because of limiting influence of the topography and present land uses and the availability of good land for extensive single family home building in one direction from the city center, the Providence area has an unusually good opportunity to control and direct the trends in new land use. Given this control and direction, a new pattern can evolve that is acceptable to the family seeking good accommodations and establishes a more efficient metropolitan area.

The basic relationship that must be kept in mind in considering a revision in the metropolitan pattern is that between home and place of work. In Providence the industries have centered along the rivers and more recently, in the jewelry trade, in a cluster just south of the city center. Many of the present plants and new ones that might be attracted to the area are no longer dependent on either the water supply of an adjacent river or a railroad. Many of them, too, are at present located in obsolete buildings on grounds that do not permit expansion and leave no room for parking of workers cars. These plants are interested in new locations. If they cannot find them in the Providence area, they



TABLE V

## Residential Building Permits Issued In Selected Rhode Island Towns

|                  | 1947 | Percent of<br>Total | Jan.-May<br>1948 | Percent of<br>Total |
|------------------|------|---------------------|------------------|---------------------|
| Providence       | 159  | 5.2                 | 66               | 4.7                 |
| Barrington       | 71   | 2.3                 | 31               | 2.2                 |
| Bristol          | 65   | 2.1                 | 30               | 2.2                 |
| Central Falls    | 4    | 0.1                 | 8                | 0.6                 |
| Cranston         | 314  | 10.2                | 119              | 8.6                 |
| Cumberland       | 121  | 3.9                 | 48               | 3.4                 |
| East Greenwich   | 46   | 1.5                 | 3                | 0.2                 |
| East Providence  | 206  | 6.7                 | 92               | 6.6                 |
| Johnston         | 123  | 4.0                 | 56               | 4.5                 |
| Lincoln          | 109  | 3.5                 | 23               | 1.7                 |
| Narragansett     | 138  | 4.5                 | 75               | 5.4                 |
| Newport          | 32   | 1.0                 | 7                | 0.5                 |
| North Providence | 91   | 2.9                 | 30               | 2.2                 |
| North Smithfield | 67   | 2.2                 | 28               | 2.0                 |
| Pawtucket        | 439  | 14.2                | 216              | 15.5                |
| Smithfield       | 115  | 3.7                 | 46               | 3.3                 |
| South Kingston   | 169  | 5.5                 | 55               | 4.0                 |
| Warren           | 33   | 1.1                 | 11               | 0.8                 |
| Warwick          | 502  | 16.3                | 308              | 22.1                |

TABLE V Continued

## Residential Building Permits Issued In Selected Rhode Island Towns

|              | 1947  | Percent of<br>Total | Jan.-May<br>1948 | Percent of<br>Total |
|--------------|-------|---------------------|------------------|---------------------|
| West Warwick | 89    | 2.9                 | 51               | 3.7                 |
| Woonsocket   | 82    | 2.7                 | 48               | 3.4                 |
| Westerly     | 109   | 3.5                 | 42               | 3.0                 |
|              | <hr/> | <hr/>               | <hr/>            | <hr/>               |
| TOTALS       | 3,084 | 100.0               | 1,393            | 100.0               |

Source: PROVIDENCE SUNDAY JOURNAL REPORTS.

will move elsewhere, as some of them have done and are doing so now.

There are good reasons for an industry wishing to remain in Providence. The area has built up a labor pool of skilled workers particularly in the textile and jewelry trades. These workers often are reluctant to move, having established a home and a social life in the area. Further many workers have limited economic resources and must be able to reach a number of potential places of employment at low cost. To the industry that wants the services of these workers, and to the workers, the dream of a place in the country is an impractical one and in all probability will remain a dream. These workers and establishments must be satisfied to remain quite close to the metropolitan center, whatever might be the condition of it.

Many workers are financially unable to drive their own cars and must depend on public transportation. If public transportation is to be provided, potential passengers must live in close enough proximity to make the operation of a transit system economically feasible.

Another point of importance to be considered is the place of the business district. Continued abandonment of intown homes for suburban ones by those so able and maintenance of the central business district in its present form with congested streets and inadequate parking places would mean: a) the continuance of the present extensive inconvenience of automobile operators and transit passengers alike and b) the shifting of the shopping habit to more and more sub-centers.

This second result is not necessarily a bad one. But sub-centers cannot be expected to meet the full needs of their customers. The term central business implies that it is located to serve the entire area,

that there is some inherent feature of the business which requires that it receive the patronage of an area larger than a community or a neighborhood. It may be a department store that can offer a more complete line of goods with a larger market. It may be a specialty shop which serves just a vertical segment of a large market. Or it may be a cluster of competing shops each in a sense supporting the others because of the consumers desire to compare values.

This central business district includes more than retail shops. It also includes a variety of services that can be provided only if the market is a large one. Insurance companies, banks, engineering firms, attorneys, educational institutions, cultural centers, places of entertainment are examples. If these central businesses and institutions are to serve the market they must be accessible to the market. The logical location, of course, is the hub of the existing transportation network.

If the present central business district should be maintained, how then can the present transportation network be made to work, with more automobiles seeking to park downtown than can be accommodated in the space available?

The answer is an obvious one. Each private automobile operator and passenger must make a choice. If he insists on personal transportation, he must seek out a new place to do business - the peripheral regional center. If the present business center meets his requirements well enough that he is willing to sacrifice his personal transportation, he must accept a more efficient mode of transportation in closely built up areas - the public transit vehicle.

In Providence, the welfare of the region requires a thriving central area where the widest variety of goods, services, and ideas are available. This prosperity can only be achieved by making the decision now that the public transit vehicle has prior rights on existing downtown streets. This does not involve the erection of a fence around the business district with a policeman at each gate to keep private vehicles out. It does involve a change in attitude by public officials and the public generally toward the transit system and more aggressive public relations policy by the transit system.

As it exists today, the United Electric Railways shares with transit companies the country over a rather unhappy relationship with the general public. Because it is privately owned, there is widespread suspicion that it is making money for its stockholders, while each purchase of a new piece of equipment is done grudgingly, and absolutely no effort is made to keep a schedule or show any concern for passenger comfort. Even among well-informed public-spirited citizens there is a surprising lack of knowledge of the progressive accomplishments of the UER, and a ready willingness to denounce it as reactionary, devoid of any sense of civic duty, lacking any interest in civic improvement, devoted only to running busses when and where it pleases, especially where the bus can get in the way of the most number of automobiles and cause inconvenience to the most number of passengers.

This, of course, is a subjective attitude, is almost entirely unfounded. There is enough truth in it, however, to make a wholehearted endorsement of UER efforts impossible. By no stretch of the imagination can the loop system, which causes such intolerable congestion on Dorrance

Street be considered good transportation planning or done with much concern for the public interest.

On the other hand, the UER offers services that are entirely to the benefit of the public. Its fare is lower than most metropolitan systems, eight cents in the first fare zone, or five tokens for thirty-five cents. It sells weekly passes at \$1.00 for Providence or \$1.50 for "All-Cities" that are convenient to use and money savers to many people. It has one of the most extensive express bus systems in the country. Perhaps its most commendable achievement in the post-war period has been its abandonment of street cars and substitution of trolley coaches just as rapidly as materials, equipment, and official approval has become available.

But it is pitifully weak in public relations and spends little effort and less money to acquaint the public with its services and achievements.

So it is true that a new attitude and relationship between city, public, and the United Electric Railways is essential. Perhaps this mistrust is deep seated enough that the present transit organization cannot achieve its proper respected place. In that case, the public must be made aware of the importance of the transit system by agitation by civic groups and the newspaper for public ownership, following the Chicago example.

The attack on congestion does not end here. A progressive, aggressive attitude by the transit system and a cooperative attitude on the part of officials will not convince automobile users that transit riding is more convenient if it is not. There is a wide range of constant refinements in service that are within the powers of transit operating units to put into effect. But so much of the obstacles to fast, conven-

ient transit service is entirely beyond the authority of the transit organization to correct. Streets overtaxed by a combination of through auto traffic, local turning auto traffic, and parking cannot permit free transit flow.

Or on a larger scale a land use pattern that calls for transit service in far flung locations with long bands to the business district without additional payload at local fares will not allow the UER to provide the best service. The transit service can be at its best when it can serve a great number of people on short hauls, or by express busses on interrupted trips to outlying population concentrations at premium fares.

To reduce interference by automobiles on arterials, other streets must be made more attractive to private car users. South and north of the city center, the way they achieve this division is by the provision of the north-south freeway. This freeway will intercept the traffic moving down Broad and Elmwood and draw more from Reservoir and Allens to the south, and from North Main to the north. This will permit greater freedom for transit vehicles on the existing arterials.

The premium fare express busses can also use the freeways to advantage. While private auto traffic must be aimed beyond the city center or at peripheral parking areas, the express busses can drive into the heart of the business district.

However, the future of the metropolitan area does not appear to hold enough expansion to warrant the extension of freeways in all directions, nor does it appear that intensive suburban growth can be depended on at both ends of the proposed north-south freeway. The

Plan Commission estimates that the population of the City of Providence will decrease from the 1940 figure of 252,504 to from 207,000 to 224,000 in 1980.<sup>2</sup> Although the metropolitan area, in line with national trends is expected to fare better, the increase will not be sufficient to allow sprawl in all directions and still increase the efficiency of the urban pattern.

The only conclusion that can be reached then, is this:

a. The efficiency of the central business district must be maximized by maintaining and improving the circulation to and from it and rendering it convenient and attractive to as wide a range of regional inhabitants as possible.

b. For the segment of the population that is dependent on public transit and/or the availability of a selection of jobs, the central residential areas of Providence must be redeveloped to provide more attractive living and to discourage these people from moving to other cities.

c. For the more fortunate segment of the population that can afford to build homes in suburban locations, the accessibility to the downtown area and existing industrial areas must be enhanced. This can be done only by the encouragement of suburban growth in only one area - that area which present trends indicate is most popular - Warwick.

The intown areas that require redevelopment to make them more livable for that part of the labor force which prefers or is economically forced to remain close to the business district or to a number of factories includes South Providence, Federal Hill, Smith Hill, and Fox Point. Redevelopment must be directed with the idea in mind that

---

<sup>2</sup>Providence City Plan Commission, The Future Population of Providence. Providence: October 1945, Publication No. 1, p. 5.



these areas can most reasonably be served by transit, and transit routes segregated from promiscuous auto traffic must be included in the redevelopment plans. These can be largely existing thoroughfares with enough changes in street patterns to shift auto traffic to alternative streets. The existing major streets should remain the transit arteries because of the existing land use it would be difficult to change entirely and much of it generates transit traffic. Another important land use that must be provided for is parking areas adjacent to major transit routes as they near the central area. The only way that private auto users can be convinced that it is more convenient for them to complete their journey by transit is to provide them with fast, frequent, transit service from parking lot to destination. This frequent service cannot be provided if the transit vehicle serves the parking areas only.

Because the rapid development of Warwick is recognized and accepted in this study does not mean that the present largely uncontrolled building is sanctioned. The town is in urgent need of a planning body that will study its needs and develop a Master Plan. Its legislative body must recognize the need for controls if Warwick is to become the "Satellite Town" of the Providence region that by the accidents of geography and changing land use it is in such a wonderful position to become.

Essential to such a future for Warwick, one that offers such promise for itself as well as the area as a whole, is a circulation system that will tie in at convenient locations with the proposed freeway to downtown Providence and a centrally located shopping center that will fill the everyday shopping needs and keep the automobile trips to Providence to the minimum or only those that are essential.

This shopping center should be designed to serve consumers that are arriving by automobile, for it cannot be expected that public transit can be made so convenient and inexpensive enough in low density residential areas to compete with automobiles. A logical location for this center is the intersection of Warwick Avenue, Occupasstuxet Road, and West Shore Road, where existing major streets extend in all directions from the intersection.

### III. DOWNTOWN PROPOSALS TO ENCOURAGE TRANSIT USE

To expedite vehicular circulation, the street system within the central business district needs attention.

An immediate attack on congestion in the central area of Providence calls for two steps:

- 1) reduction of the number of turning movements by transit vehicles on the downtown streets, and
- 2) segregation of private automobile and transit traffic.

#### A. Provision Of A Through Transit System

None of the 46 lines entering the central business district pass through it. Thirteen of them make the loop at Exchange Place and seven terminate at the West Approach to the railroad station. Two make right turns in Mathewson Street. Of the remaining 24, 11 make right turns in Dorrance Street and 13 make left turns in Dorrance Street. Of these turns, four are at Washington and Dorrance Streets, while at the two intersections in the very heart of downtown, Westminster and Dorrance and Weybosset and Dorrance, the remainder occur. Thirteen routes make left turns at each of these intersections, three make right turns at Westminster, and eight make right turns at Weybosset. (TABLE IV)

A number of the loop lines should be changed to through lines. Because of the longer run with the resultant greater possibility of a disruption in scheduled time, the suburban runs have been left as loop lines. For the city trackless trolley runs, however, there is enough similarity in schedules and characteristics to permit considerable consolidation.

The layout of the central area is such that there are two major long shopping streets, Westminster and Weybosset, and one minor one, Washing-

ton, running northeast and southwest. The perpendicular streets are almost all narrow. The two exceptions are Dorrance at Empire Streets. (Figure 9) Changing transit lines so that through lines run along these perpendicular streets would be of no advantage because of the long waits for breaks in traffic at intersections and interruptions between intersections because of the narrow roadways. It follows then that any consolidation of lines must be those along Washington, Westminster, and Weybosset. Only two of the lines on these streets entering from the northeast are trackless trolley lines, Hope and Elmgrove, as against the seven entering from the west. To achieve a balance, several trackless trolley lines must be shifted from Exchange Place. Shifting the Pawtucket runs, and the Camp, Douglas, and Admiral threesome over to Westminster achieves this better balance. To compensate for this added load on Westminster, the gas bus lines entering from the northeast on Westminster should be shifted to Exchange Place.

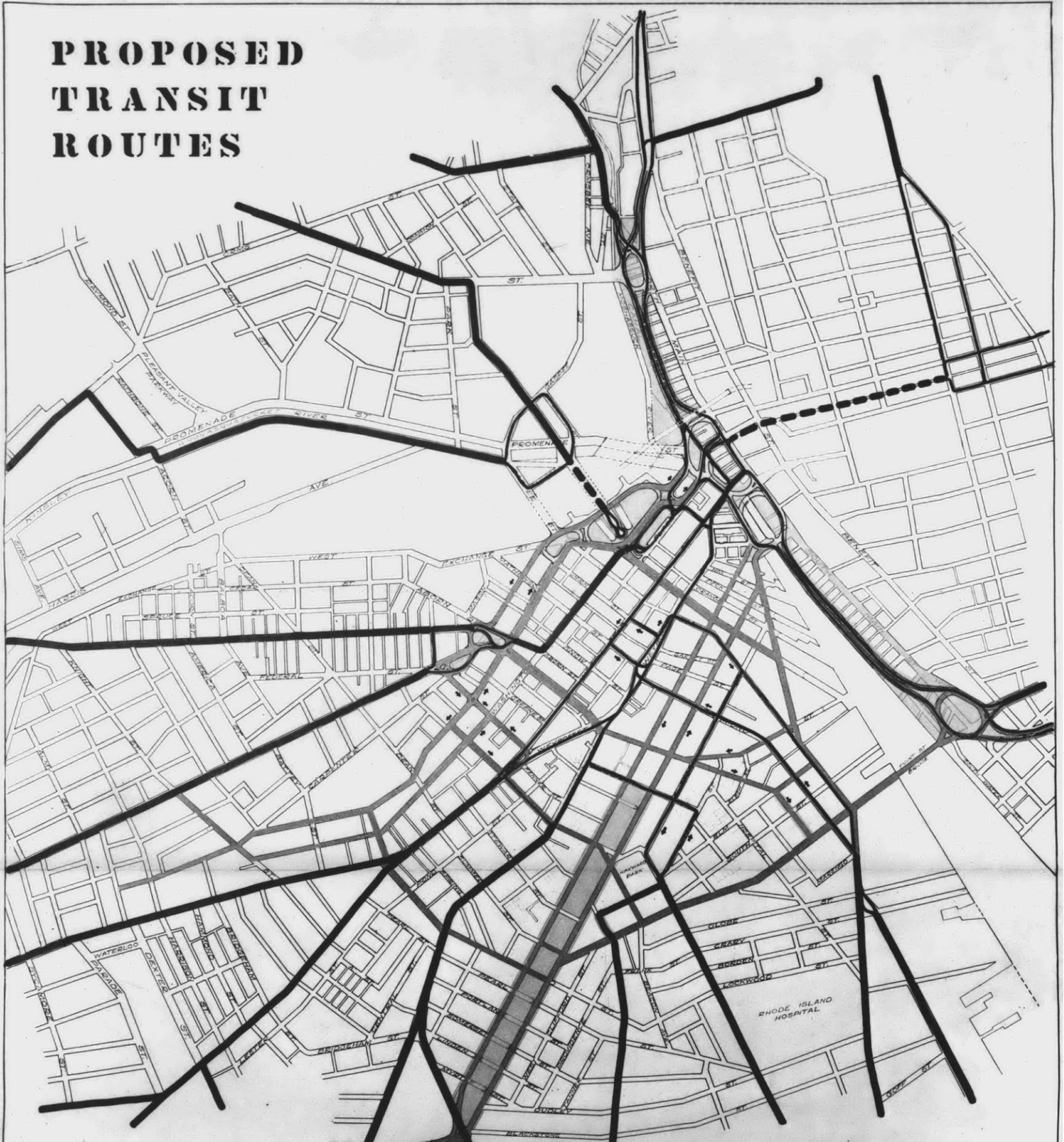
The Broad Street and Hope Street routes are both heavily traveled and have similar headways. (TABLE VI) These two are combined to operate southeast in Westminster and northwest in Weybosset.

A combination of the Charles and Admiral lines from the north and the Dexter and Union lines to the south have headways that agree through most of the day turnbacks will be required on some Charles or Admiral runs during the PM peak. This turnback is provided at Mathewson Street. The Camp and Douglas runs consolidated with the Dyer and Plainfield routes also produce a relatively good balance.

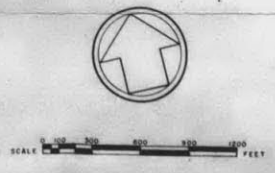
The Providence-Pawtucket lines and the Elmwood lines are both heavy, but are not sufficiently similar to warrant a direct consolidation. The

CENTRAL AREA **PROVIDENCE** RHODE ISLAND

**PROPOSED  
TRANSIT  
ROUTES**



- LEGEND**
- UNCHANGED LINES
  - PROPOSED REROUTED LINES ON PREFERENTIAL STREETS FOR TRANSIT
  - PROPOSED PREFERENTIAL STREETS FOR OTHER VEHICLES
  - ▨ PROPOSED STREET IMPROVEMENTS



Elmwood line consists of Auburn via Elmwood, Reservoir, or Pontiac and Eden Park via Reservoir or Pontiac. The solution offered here is to operate some of the Elmwood to Elmgrove, some to the Pawtucket via Pawtucket Avenue, and to loop the remainder back, not at Dorrance, but at the intersection of Westminster and Weybosset. In the event the Butler line is converted to trackless trolley, it can be added to the Elmwood run.

The Pawtucket via Main Street headways agree almost exactly with those of the Cranston Street line so these two routes are combined.

These consolidations permit the removal of trolley poles and wires from the Memorial Square rotaries and from the eastern entrances to the Mall.

The Chalkstone, Smith, Mt. Pleasant, Esmond, and Promenade routes are turned around at the head of Francis Street, thus closing this street to other traffic. An entry way should be provided, however, to permit these busses easy access to lines connecting eventually with the Elmwood garage.

The lines that formerly entered on Fountain Street have been moved to Washington and looped at Exchange Place in keeping with the policy of segregating transit vehicles and automobiles as much as possible.

The UER has opposed the through routing of lines because of their garage system. With the exception of the Woonsocket-Providence route, all lines entering the center of the city from east of the Providence river operate from the Pawtucket garage. All the remaining lines with the exception of the Esmond express bus, operate from the Elmwood garage. Through lines would require a new garage organization.

TABLE VI

## Proposed Consolidation of Transit Routes in Downtown Area

| Westbound                    |                 |    |                 | Eastbound  |                 |                 |                 |
|------------------------------|-----------------|----|-----------------|------------|-----------------|-----------------|-----------------|
| From                         | Headways        |    |                 | From       | Headways        |                 |                 |
|                              | AM              | N  | PM              |            | AM              | N               | PM              |
| Hope                         | 4               | 6  | 2 $\frac{1}{2}$ | Broad      | 3 $\frac{3}{4}$ | 5               | 2 $\frac{2}{3}$ |
| Admiral                      | 7               | 15 | 4               | Union      | 5               | 15              | 5               |
| Charles                      | 7 $\frac{1}{2}$ | 15 | 8               | Dexter     | 15              | 15              | 10              |
| Camp                         | 10              | 15 | 6 $\frac{2}{3}$ | Plainfield | 7 $\frac{1}{2}$ | 15              | 5 $\frac{1}{3}$ |
| Douglas                      | 6 $\frac{2}{3}$ | 15 | 6               | Dyer       | 6               | 15              | 5 $\frac{1}{3}$ |
| Elmgrove                     | 7 $\frac{1}{2}$ | 10 | 6               | Elmwood    | 4 $\frac{2}{3}$ | 5               | 4 $\frac{2}{3}$ |
| Pawtucket<br>(via Pawtucket) | 4               | 8  | 5               | Elmwood    | 3 $\frac{1}{3}$ | 10              | 2 $\frac{1}{3}$ |
| Pawtucket                    | 4               | 8  | 3 $\frac{1}{3}$ | Cranston   | 4               | 7 $\frac{1}{2}$ | 3 $\frac{1}{2}$ |

Note: Headways are as of March 19, 1948

### B. Segregation Of Transit and Automotive Traffic

Just changing from a loop system to a through system would not solve the transportation problem and in most of the problem's phases, the UER organization is helpless by itself. Chief among these phases is the present indiscriminate mixing of transit vehicles and other vehicles. Neither has a street to call its own. To relieve congestion, a segregation of the traffic types is necessary on downtown streets.

If the Maguire proposal is adopted and the freeway is built, a goodly amount of traffic will be removed from downtown streets. But the removal of automobile traffic with no restrictions on other autos coming in, new traffic will arrive to fill the gap. And since the freeway is designed primarily to accommodate automobiles, trucks, and express busses, the majority of transit riders must remain content to travel over existing streets. If automobile users are given special consideration by the construction of a freeway, transit passengers should be considered by giving them prior use on some existing streets. There is a pressing need for limited use access ways for transit vehicles from the south and west similar to Francis Street as proposed and to the existing East Side Tunnel.

Within the downtown area Westminster, Weybosset, Washington, Francis, Richmond, and Eddy should be streets on which transit vehicles have preferential treatment. This can be accomplished by closing a single block on Washington, Westminster, Eddy, and Richmond to auto traffic during rush hours to prevent their use as through streets, but permitting access to stores for local picking up or discharging of passengers. On Weybosset only a single lane should be left open to autos, with the remainder of the varying width of the street devoted to loading berths, a



second passing lane with separate wires for trackless trolleys, and at Mathewson Street a waiting station and loading berths for all express busses to the south. A second set of wires and definite loading berths for each route should also be established on Westminster.

The closing off of sections of streets during rush hours could be accomplished by placing policemen or wooden horses with signs to prevent automobiles from passing through, similar to the arrangement at Pershing Square and Francis Street. There a series of horses and signs stating "For Busses Only" are effectively used. As more and more drivers become aware of the road block on certain streets, they will choose other streets that do not have them - the streets designated for auto traffic. On the other hand, closing off a single block leaves the remainder of the street open to those private automobiles and commercial vehicles that are driven to essential destinations on these streets. The road block would serve only to reduce the through traffic and marginal users of the street. The block could be made permanent if off-peak traffic congestion warranted it.

On Westminster and Weybosset streets loading and unloading should be expedited by assigning certain clearly marked berths along the length of the street to each route. Two sets of overhead lines should extend the length of the street with sufficient turnouts to permit "leap-frog" action, with moving busses passing loading ones.

If private automobiles are to be discouraged from using some streets, other streets should be set aside for their exclusive use. No transit travel should be permitted on Dorrance or Empire-Clifford, or Fountain-Sabin or Friendship-Pine, and, further west, on Washington-Fountain.

One of the trouble spots for traffic congestion is Memorial Square.

No palliative could be of much help here, and a grade separation at this point is not feasible because the Square is built largely over the river. The New Haven railroad is adjacent to it on the north on another grade, and substantial new buildings front on it. A system of rotaries is recommended. Significant is the attempt to segregate the transit vehicles here by providing them with separate rights-of-way through the circles and having them cross the main traffic flow at right angles with signal light controls if necessary. This is favored because absence of a large number of busses will render the weaving procedure more effective, and stops by the transit vehicles within the circle would not interrupt the flow. Further, weaving by trackless trolley busses would be somewhat inflexible.

A sufficient number of busses will be entering and leaving Weybosset Street from the rotaries that it is recommended that this street at this point be open only to busses.

North and south along the river new sorely needed connections to North Main Street at Constitution Hill and to Fox Point Boulevard are recommended. These improvements are incorporated in plans for these areas by the Providence Redevelopment Agency.

Exchange Place under the present pattern is a chaotic congestion of busses, automobiles, taxis, and pedestrians. Since in this plan Dorrance and Fountain-Sabin have been designated as streets to be used by private autos, and Exchange Place, Francis, and Washington Streets by transit vehicles, a major alteration is recommended. It is suggested that Railroad Terrace serve the west bound traffic, so as to direct it to Sabin Street. New pavement would be required, with connecting loops for

turning traffic at each end. The overpass over Francis Street would need widening. A rotary at Gaspee Street would eliminate the present multi-directional congestion. West-bound traffic would continue west on Sabin Street, turning into specified streets in order to approach destinations in the central area.

East-bound traffic would use Fountain, Dorrance, and the north-half of the Mall. This traffic would be segregated from transit vehicles making a clockwise loop around the mall by an island. The south half of the Mall would then be an eddy for some parking and taxi stands.

To the west, the LaSalle Square rotary requires enlargement with a lane through the center with the double use for inbound Atwells trackless trolleys and the west-bound fire apparatus from the station fronting the Square on the west. Aborn, between Washington and Pine would be reserved for the use of transit vehicles and Empire Street for the use of private autos and trucks.

To the west of Jackson Street, Fountain and Washington would become a pair of one-way streets to draw traffic from Westminster and Broadway. Pine and Friendship, already one way, should be extended to Elmwood via West Friendship. The number of intersecting streets should be reduced by creating cul-de-sacs, and eventually they should become a parkway with buildings between them removed that could serve as an axis on which new housing developments in South Providence could front.

## IV BIBLIOGRAPHY

A. General

Bartholomew, Harland, "Modern Transit - Key To Community Planning." Passenger Transport, Volume 1, Number 22, October 15, 1943, pp 9-10+

\_\_\_\_\_ and Associates, Transit Facilities and Mass Transportation In The Oakland Metropolitan Area. Part of the Oakland Master Plan. Oakland: City Planning Commission, March, 1947.

Blucher, Walter H., "Stability and Orderly Development The Goals Of Community Planning." Passenger Transport, Volume, Number 22 October 15, 1943, pp. 13-15.

\_\_\_\_\_ "Order or Confusion in City Transportation Planning." Public Roads, July, 1944.

Domestic Transportation. Washington: Transportation Division, Bureau of Commerce. An Industry Report, June-July 1946.

Farrar, Larston D. "Perimeter Parking for Cities."

Public Utilities Fortnightly, Volume XXXVIII, Number 10, November 7, 1946.

Graham, Donald M. An Evaluation of Urban Centralization. An unpublished paper written for course 4.661 at M.I.T., February 1948.

Gordon, Charles, Community Transportation - A Collective Responsibility. An address before Greater New York Safety Council, March 23, 1943.

\_\_\_\_\_. Coordination of City Planning, Highway Development, and Urban Transit. An address before the Conference Committee on Urban Problems, United States Chamber of Commerce, Washington, D. C., January 11, 1945.

Hecker, Guy C., Proper Development of Transit: An Important Factor in City Planning. Address before Annual Convention of Canadian Transit Association, Winnipeg, Manitoba, June 11, 1946.

Liepman, Kate K., The Journey to Work. London: Kegan, Paul, Trench, Trubner, and Co., Ltd. 1944.

McCarter, Walter J., "A Transit Plan for Cleveland." Passenger Transport, Volume 1, Number 23, October 23, 1943, pp 11-13.

Miller, John Anderson. "Good Transit Is Worth A City's Planning." American City July, 1943.

\_\_\_\_\_. Fares, Please! New York: D. Appelton-Century Co., 1941.

Parking Manual How to Solve Community Parking Problems. Washington: American Automobile Association, 1946.

- Passenger Transport. New York: American Transit Association. A weekly newspaper of the transit industry.
- Postwar Patterns of City Growth. New York: American Transit Association, 1944. Four articles on city planning.
- Preliminary Local Transportation Report. Kansas City: City Plan Commission, 1945.
- Rapid Transit for Toronto. Toronto: Transportation Commission.
- Riemer, Svend. "Escape Into Decentralization?" Land Economics, Volume 24, Number 1, February 1948, pp 40-48.
- Riley, Russell H., "Better Transportation Means Better Business Downtown." Buildings and Building Management, August 1945, pp 35-37.
- Segoe, Ladislav. Report on Transit Facilities. Charleston, West Virginia: Municipal Planning Commission, June 1939.
- Spengler, Edwin H., Land Values in New York in Relation to Transit Facilities. New York: Columbia University Press, 1930.
- Urban Freeways. New York: American Transit Association, 1946. A collection of statements on transit on freeways.
- Urban Transportation. Washington: Transportation and Communications Department, United States Chamber of Commerce, 1945.
- Williams, Leslie., Traffic Congestion - What Can Be Done About It? Paper prepared for the Joint Session of the Highway and City Planning Divisions of the American Society of Civil Engineers, New York, January 18, 1946.

B. Providence

Future Population of Providence. Providence: City Plan Commission, Publication Number 1, October 1945.

Maguire, Charles A. and Associates; Expressway System for Metropolitan Providence. Providence: Rhode Island State Department of Public Works, 1947.

Master Plan for Land Use and Population Distribution. Providence: City Plan Commission, Publication Number 4, August 1946.

Master Plan for Redevelopment of Residential Areas. Providence: City Plan Commission, Publication Number 5, September 1946.

Master Plan for Thorofares. Providence: City Plan Commission, Publication Number Three, July 1946.

Parking Survey of the Providence Central Business District, Providence: Rhode Island State Department of Public Works, 1945.

Parking Report for Providence and Pawtucket, Rhode Island. Chicago: Deleuw, Cather and Company, May 1947.

Robinson, Phillip., Report on Origin and Destination Survey of Daily Transit Trips. Providence: United Electric Railways, September 26, 1947.

Traffic Improvements in the Market-Memorial Square Area. Chicago: Deleuw, Cather and Company, October 1947.

Traffic Survey of the Providence Metropolitan Area. Providence: Rhode Island State Department of Public Works, 1945.

Williams, Leslie and Phillip Robinson. Report on Public Transit in Providence, Rhode Island. Providence: Governors Commission on Metropolitan Transportation, June 1947. (Confidential)

Files and records of:

Providence City Plan Commission  
 Providence JOURNAL-BULLETIN  
 Providence Redevelopment Agency  
 United Electric Railways