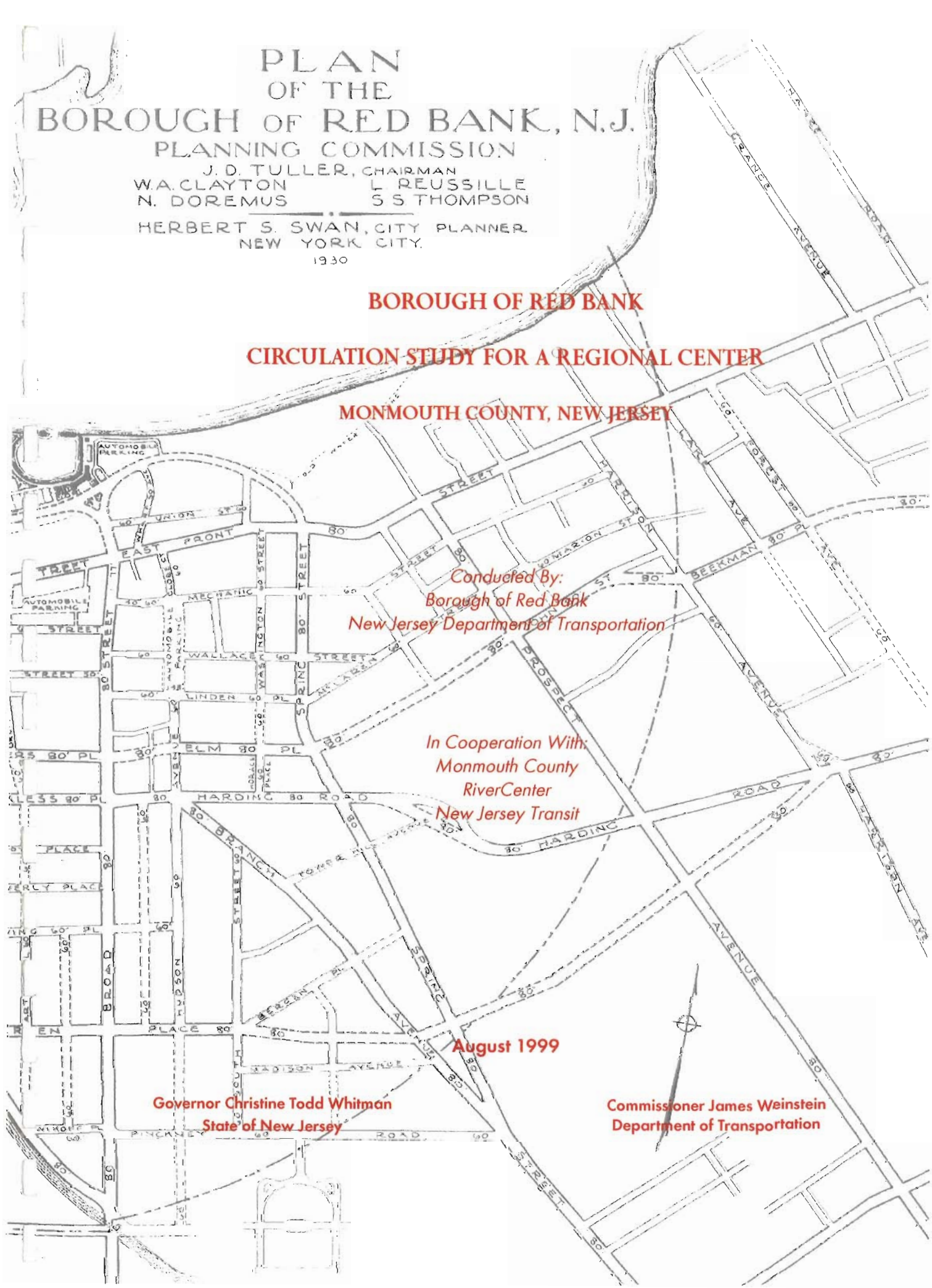


BOROUGH OF RED BANK

CIRCULATION STUDY FOR A REGIONAL CENTER

MONMOUTH COUNTY, NEW JERSEY

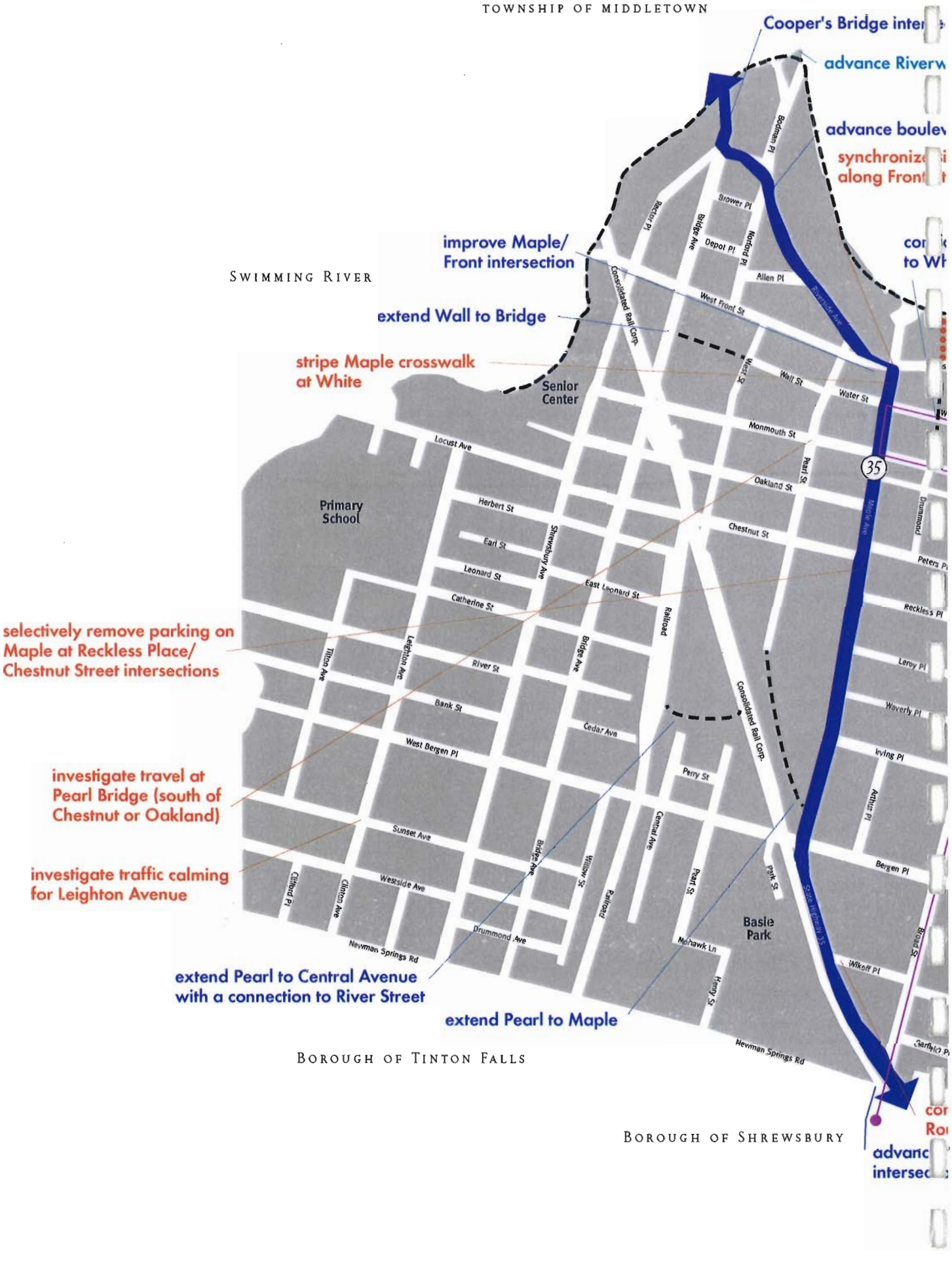
Conducted By:
Borough of Red Bank
New Jersey Department of Transportation

In Cooperation With:
Monmouth County
RiverCenter
New Jersey Transit

August 1999

Governor Christine Todd Whitman
State of New Jersey

Commissioner James Weinstein
Department of Transportation


TOWNSHIP OF MIDDLETOWN
Cooper's Bridge inter
advance Riverw
advance boulev
synchronize si
along Front t
improve Maple/
Front intersection
SWIMMING RIVER
extend Wall to Bridge
stripe Maple crosswalk
at White
Senior
Center
selectively remove parking on
Maple at Reckless Place/
Chestnut Street intersections
investigate travel at
Pearl Bridge (south of
Chestnut or Oakland)
investigate traffic calming
for Leighton Avenue
extend Pearl to Central Avenue
with a connection to River Street
extend Pearl to Maple
Primary
School
Basie
Park
Bodman Pl
Brower Pl
Depot Pl
Kenford Pl
Allen Pl
West Front St
Wall St
Water St
Monmouth St
Locust Ave
Oakland St
Chestnut St
Herbert St
Earl St
Leonard St
East Leonard St
Catherine St
River St
Bank St
Cedar Ave
West Bergen Pl
Perry St
Sunset Ave
Westside Ave
Drummond Ave
Newman Springs Rd
Mohawk Ln
Wikoff Pl
Bergen Pl
Leroy Pl
Waverly Pl
Irving Pl
Arthur Pl
Reckless Pl
Peters Pl
Garfield Pl
Tilton Ave
Leighton Ave
Clifford Pl
Clinton Ave
Shrewsbury Ave
Bridge Ave
Railroad
Consolidated Rail Corp.
Pearl St
Park St
Central Ave
Willow St
Henry St
Brook St
Middle Ave
Drummond
Riverside Ave
35
BOROUGH OF TINTON FALLS
BOROUGH OF SHREWSBURY

Red Bank Circulation Study in Support of Regional Center

Page

Introduction i
- Red Bank Today
- Red Bank in the Future

I. Overview of the Planning Process 1

II. The Public Involvement Process 17

III. Local Goals for this Study 21

IV. The Transportation Network 27
- Existing Network Conditions
- The Role of Route 35 in Red Bank

V. Red Bank Route 35 Corridor: Summary of Core Areas and Circulation Elements 43
- Northern Gateway
- Red Bank Downtown District Area
- Route 35/Maple/Front Street Area
- Crosstown Front Street and Related East-West Connections
- Southern Gateway
- Pedestrian Circulation

VI. Action Plan 99

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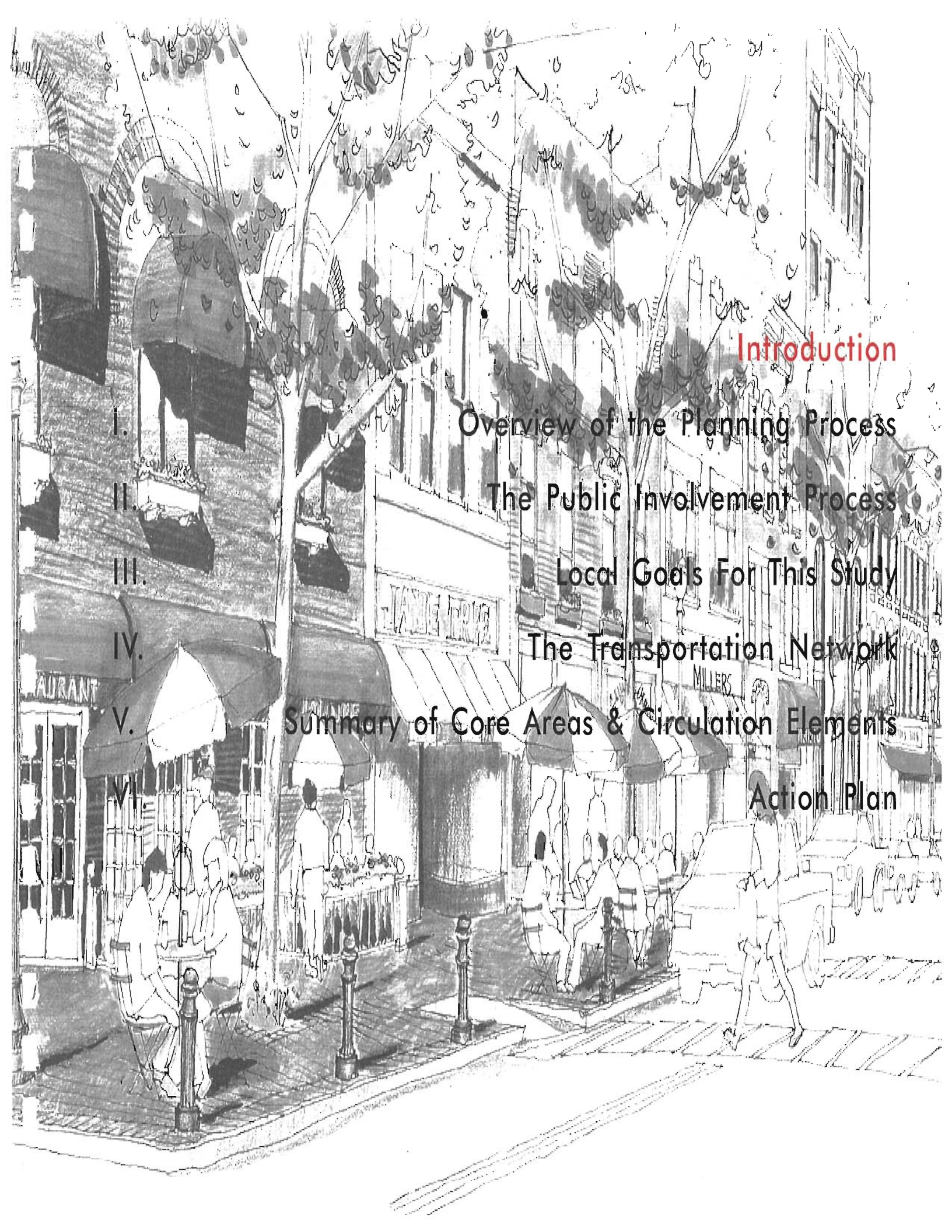


Introduction

I. Overview of the Planning Process

II. The Public Involvement Process

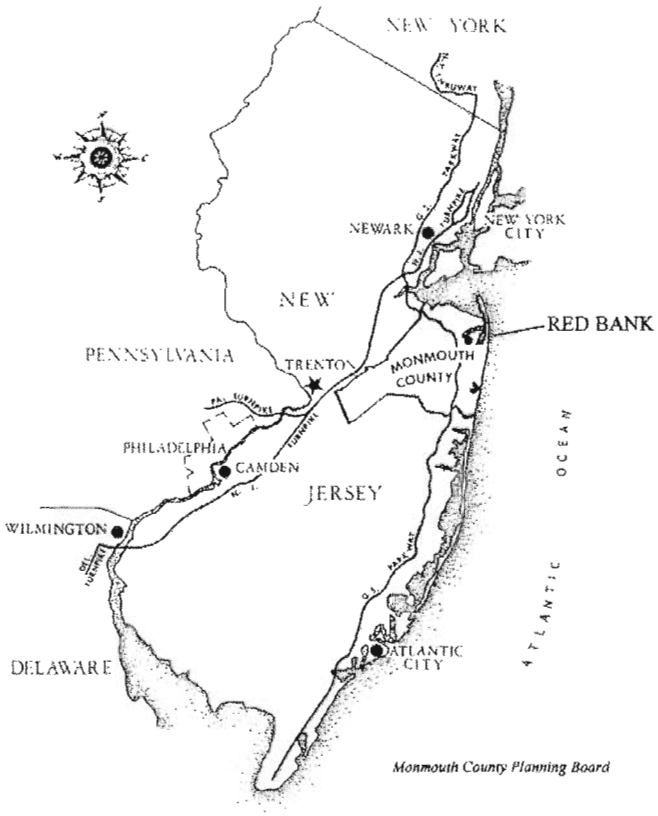
III. Local Goals For This Study

IV. The Transportation Network

V. Summary of Core Areas & Circulation Elements

VI. Action Plan

This circulation study is a direct result of several recent planning activities that Red Bank initiated to define its vision, articulate its goals, identify its problems and constraints and plan for its future. Red Bank's circulation problems were identified and analyzed in its Vision and Master Plan. The importance of addressing these circulation issues became apparent during the Centers Designation process, where local actions to address circulation problems were identified. The Borough understood that every aspect of realizing Red Bank's Centers Designation agenda - from stabilizing its downtown economy, to providing recreational opportunities along the waterfront - was dependent on addressing the circulation issues identified in the Master Plan. As a result, Red Bank petitioned the New Jersey Department of Transportation (NJDOT) for local assistance based on its designation as a Regional Center. Through participation in the state planning process, NJDOT was supportive and agreed to help fund this study through the Local Technical Assistance Program.



This final report has been written to assist both Red Bank and NJDOT with future transportation planning in the Borough. For Red Bank, this report documents the circulation study's development and action plan, and its relationship to recent planning efforts. For NJDOT, this final report will serve three purposes:

(1) to establish a clear definition of the Route 35 corridor and its problems, issues, and needs to guide the advancement of projects;

(2) to provide NJDOT with a clear understanding why the projects identified have beenidentified, what the basis of public/partner input has been relative to the recommended alternatives, and recommended items for further study, and

(3) to identify operational improvements that may be implemented in a timely and well-coordinated manner.

Fig. 1: Road Jurisdiction/Classification

Coopers Bridge, 1919

Riverside Avenue at Front Street between Maple and Pearl Streets, 1995

Red Bank Today

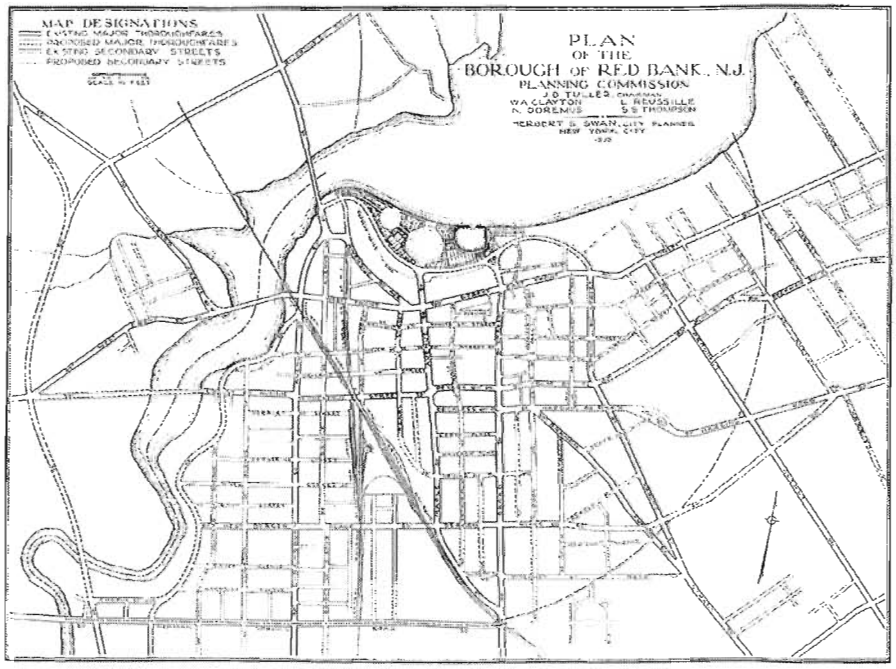
The Borough of Red Bank is located in northeastern Monmouth County, New Jersey, bounded on the north and west by the Navesink River and to the east by the Borough of Fair Haven. To the south, the Boroughs of Little Silver, Shrewsbury and Tinton Falls border it. Red Bank is a small, compact, dense, urban community. Just over ten thousand people live within Red Bank's 1.7 square miles.

Red Bank serves as a transportation, institutional, cultural and recreational hub for the surrounding region. Four county roads form the outline of the transportation network: on the west, Shrewsbury Avenue (CR 13); to the north, Front Street (CR 10), which runs parallel to the waterfront; on the east, Broad Street (CR 11); and to the south, Newman Springs Road (CR 520), which also forms the boundary with the Boroughs of Little Silver, Shrewsbury and Tinton Falls. (*Fig. 1*)

The New Jersey Transit Coast Line bisects this square from west to east. State Route 35 also bisects this square in a north-south fashion, and is the primary regional route into Red Bank from both the north and the south. Route 35 through Red Bank is a principal arterial roadway, entering Red Bank from the north as Coopers Bridge crossing the Navesink River, then called "Riverside Avenue" along the Navesink River, then "Maple Avenue" through town, where it becomes "Route 35" through the borough, and heads south through Shrewsbury Borough. Both regional visitors and local workers and residents therefore travel on Route 35. As both a regional and local travelway, its treatment has potential impacts on both the downtown business district, and residential areas.

Red Bank is also well served by NJTransit bus service locally and regionally. Bike paths are nonexistent, however, and while sidewalks are provided on virtually all streets, pedestrian conflicts at intersections are a common problem.

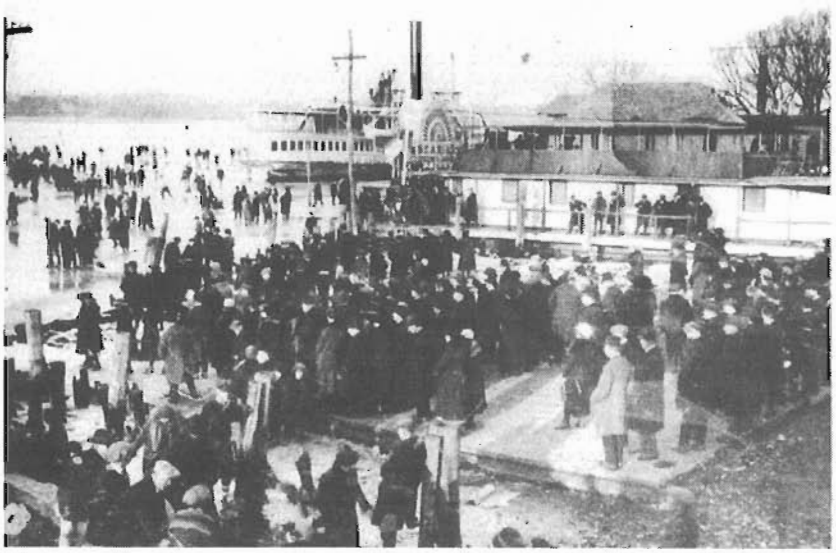
The strength of Red Bank's transportation network lies in the potential of its existing grid infrastructure, affording the Borough a chance to maximize efficiency in land use, and provide multi-modal transportation with reasonable cost-effectiveness. The weaknesses of Red Bank's present grid were realized as long ago as the 1931 Plan for Red Bank, where the Thoroughfare Plan noted that most traffic was confined to a few continuous streets, while the short, disconnected streets carried very light loads. Heavy traffic across Coopers Bridge circulating through the principal business streets demonstrated the necessity of another parallel independent route to bypass the business district. Also noted was the necessity of connecting and extending some of the east and west streets, so that traffic would be distributed more evenly.



Plan for the Borough of Red Bank, 1930

Several of these major network weaknesses still exist today, reducing the effectiveness the grid could have, and creating local and regional vehicular conflicts. The absence of numerous parallel east-west routes and discontinuous intersections create circuitous routes, elevating traveler frustration, increasing congestion and creating safety concerns.

Red Bank is a designated Regional Center in compliance with the State Development and Redevelopment Plan; it leads the County in service businesses and is second in retail sales, but its most significant growth has been in the service sector. The Borough's population base expands fivefold during the day, reflecting the successful growth of its service sector economy over the past eight years. Red Bank is an important urban center in the region — a significant number of properties in the Borough are devoted to institutional uses, which serve not just the town but the region as well.



Marine Park, 1900

The economic vitality currently evidenced in Red Bank has not always existed. Over the last several decades, Red Bank has suffered consistent population losses. During the 1980s, Red Bank's downtown experienced a severe economic downturn. As a result of these trends, reversing the decline in population and increasing its strength as an employment and cultural center became major goals in recent planning efforts. Economic stability became Red Bank's highest priority.

Over the past eight years, the Borough has worked vigorously to improve the economic climate through various actions. In 1991, the Borough created a Special Improvement District, RiverCenter, for the downtown area. In 1995, the Borough conducted a yearlong study with the Association of New Jersey Environmental Commissions [ANJEC] to evaluate redevelopment issues and their impact on the existing commercial sector. Red Bank's riverfront is considered to be a special resource, and has been the subject of concerted efforts to maximize both its economic and public benefits. Red Bank has acquired riverfront acreage for a new park downtown, has recently completed extensive streetscape renovations and is investigating development options for key sites along the waterfront.

Ice Carnival on the Navesink River, c. 1913

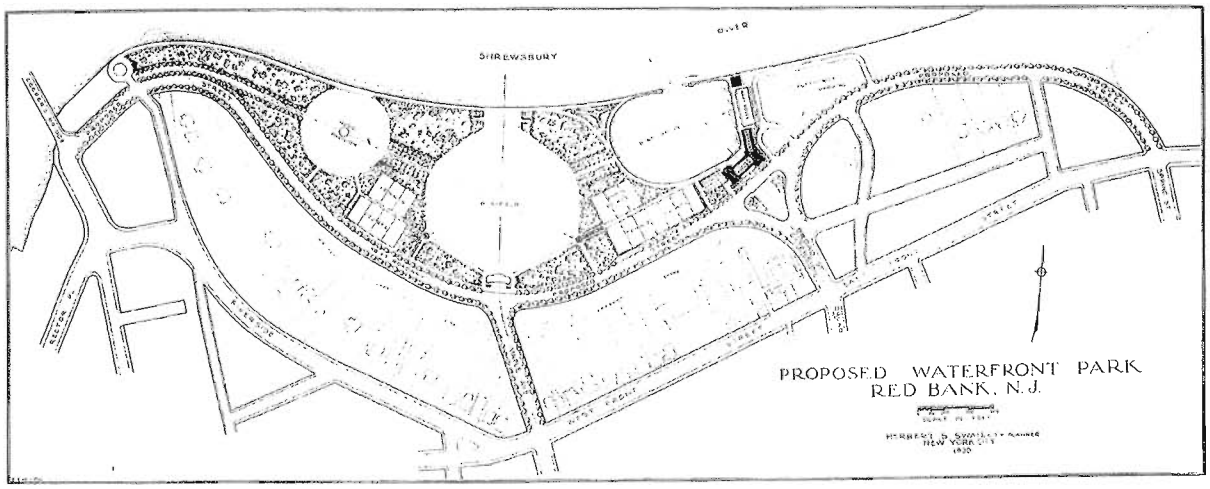
Red Bank in the Future

The character of Red Bank's future growth is closely related to issues identified in this circulation study. Since its earliest days, Red Bank's development patterns reflected the dominant transportation modes of their era. First the steamboat, then rail, streetcar and most recently autos formed the basis for development activity in the Borough. Red Bank's vision for its future draws upon this pattern, and extends it to include renewed modes of mobility as the foundation for sustainable community growth.

Red Bank came to understand the impact of its present transportation system during the course of conducting its visioning and master planning processes. The town's ability to combine automotive access and alternative modes emerged as a critical transportation issue. As the century closes, Red Bank still depends largely upon automotive access and mobility to serve customers, visitors and employees from the town's predominantly suburban environs. However, within Red Bank's borders, many trips may be better served by local transit and a rich network of pedestrian resources, as an alternative to auto-dependent travel.

Red Bank Station, c. 1975

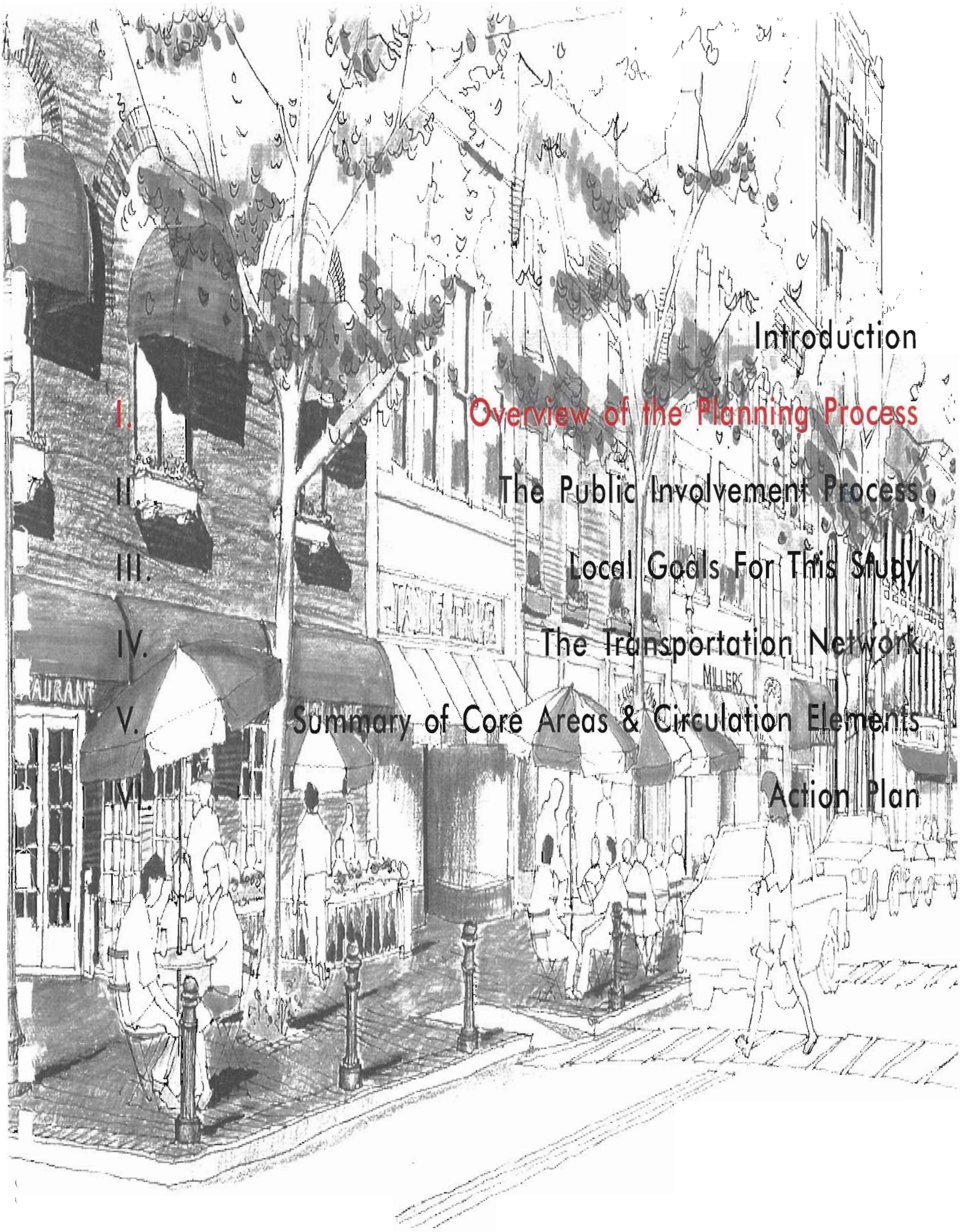
In its current phase, Red Bank's pedestrian network and its transit friendly scale of development emerge as keystones to its economic viability in the future. One of Red Bank's goals is to provide a multi-district downtown center that will be easily accessible by a variety of transportation modes. The interrelationship between land use, transportation and economic development decisions became particularly meaningful as Red Bank prepared its ANJEC model for riverfront development, to guide future growth and design decisions. As Red Bank rediscovered the riverfront's social and psychological value for recreation and as a place for cultural activities, the waterfront's economic value was realized at the



Proposed Waterfront Park from Red Bank's 1930 Thoroughfare Plan

same time. As recommendations were developed, it also became apparent that poor land use or transportation decisions, or the lack of coordinated planning decisions could easily harm this valuable resource.

Red Bank has realized that it is physically constrained by its natural features, and future solutions to its transportation problems that contribute positively to its economic development will require multiple points, such as the proposed Riverwalk, a 1.5-mile riverfront promenade.



Introduction

I. Overview of the Planning Process

II. The Public Involvement Process

III. Local Goals For This Study

IV. The Transportation Network

V. Summary of Core Areas & Circulation Elements

VI. Action Plan

Red Bank has taken an active role in planning its future, beginning with a visioning process and environmental inventory, followed by master plans and special studies to help bring Red Bank's vision to life.

1994 Vision Plan for Red Bank

In 1994 the Borough of Red Bank developed a vision for its future. In doing so, the Vision Plan established the fundamental objectives for the 1995 Master Plan:

- The extraordinary visual character of the buildings and open spaces of Red Bank must be preserved, even when new and larger development takes place.

- The commercial vitality of downtown must be maintained and improved, so that it pays a greater share of municipal taxes and enables Red Bank to accomplish the detailed proposals necessary to realize the Vision.

To build on these objectives, the Vision Plan called for a single, mixed-use downtown that includes a great variety of development areas, controlled by both development regulations and design guidelines. Design guidelines should recommend character and type of development downtown, and a new mixed-use neighborhood west of downtown should be created. On the whole, the residential neighborhood patterns should remain as they are, except that the western river edge (the "sunset" side of town) should permit more public access. The physical separations between the east and west sides of town must be reduced. *(Fig. 2)*

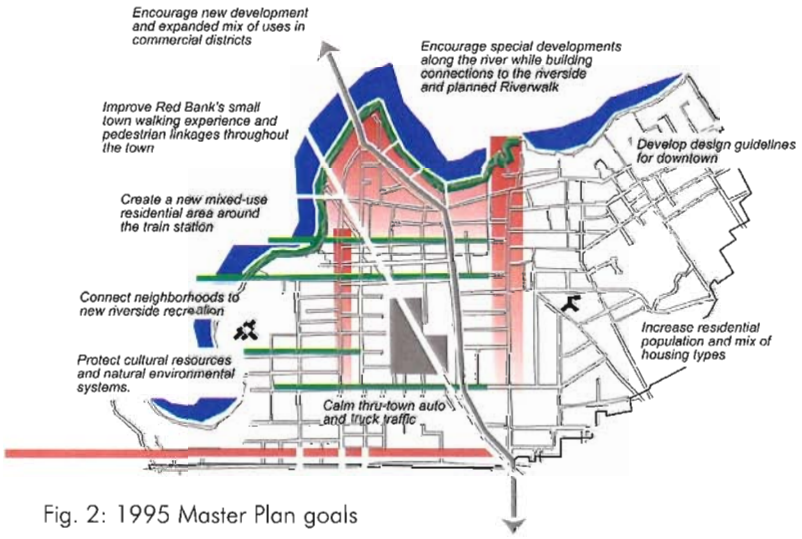


Fig. 2: 1995 Master Plan goals

1995 Master Plan for Red Bank

Building on the Vision Plan, the Master Plan noted that the Downtown should grow and thrive. Development should be encouraged, historic structures and areas should be protected, and true mixed-use, including a variety of residences,

should occur in the downtown area. To this end, the plan established several mixed-use districts throughout the downtown. The plan also proposed development and design guidelines through a Design District Overlay.

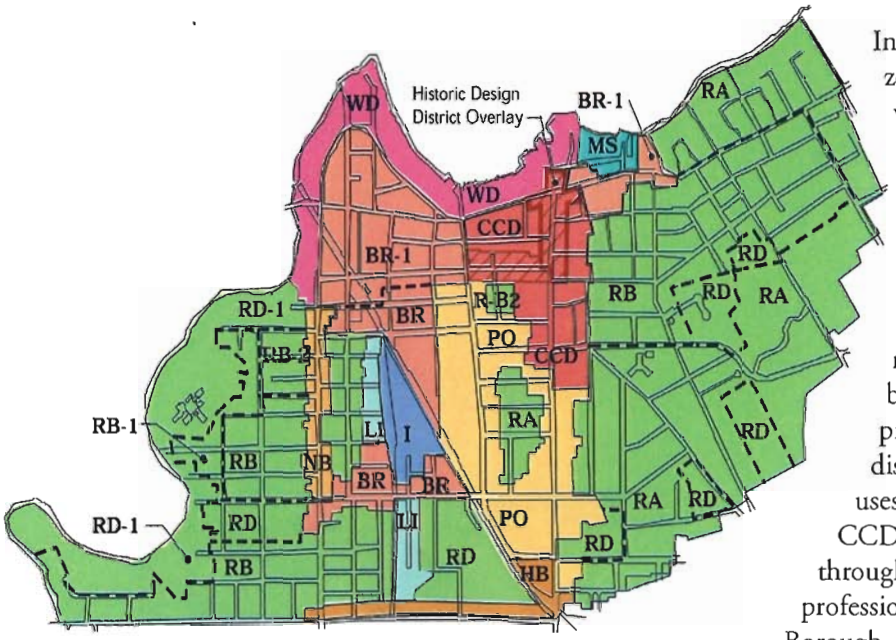


Fig. 3: Land Use Plan

In general terms, Red Bank's current zoning plan allows residential use on its west and east sides, and commercial, industrial and business in its center. *(Fig. 3)* Route 35/Riverside Avenue provides access to the commercial/ mixed use of the Waterfront Development (WD) District along the riverfront, and the west side business/ residential (BR-1) district. As Route 35 becomes Maple Avenue, it serves as the primary access to the central business district, which is zoned for a wide range of uses (Central Commercial District, or CCD). Route 35 continues as Maple Avenue through residential/mixed uses, including professional offices (PO), towards Shrewsbury Borough, where it passes through the Highway Business District (HB).

While preserving and protecting the character of Red Bank's buildings and streets is a high priority, so is protecting the special quality of its neighborhoods. Residential development is being encouraged in a variety of ways. Existing zoning categories for various neighborhoods are being preserved, as are buildings used in the 'Professional Office' area. Permitted residential uses in the 'Professional Office' area are being added, and a mixed-use area along Shrewsbury Avenue is being implemented that can include residential developments, and new residential development along the western river's edge.

The plan identified five critical intersection areas where further study and action were needed *(Fig. 4)*:

(1) Newman Springs Road/Maple Avenue/ Broad Street; (2) Newman Springs Road at Shrewsbury Avenue; (3) Broad at East Front Street; (4) Maple Avenue, Riverside Avenue, Pearl Street and Front Street; and (5) Riverside Avenue, Rector Place and Bridge Avenue (the Coopers Bridge area). These areas comprise most of the locations where east-west arterial streets cross major north-south arterial streets. At these locations, relative high flows of traffic must cross each other, resulting in increased levels of traffic delay. Relatively high turning volumes occurring between crossing arterials further complicate traffic flows. All of these critical intersections are essential to the borough's circulation.

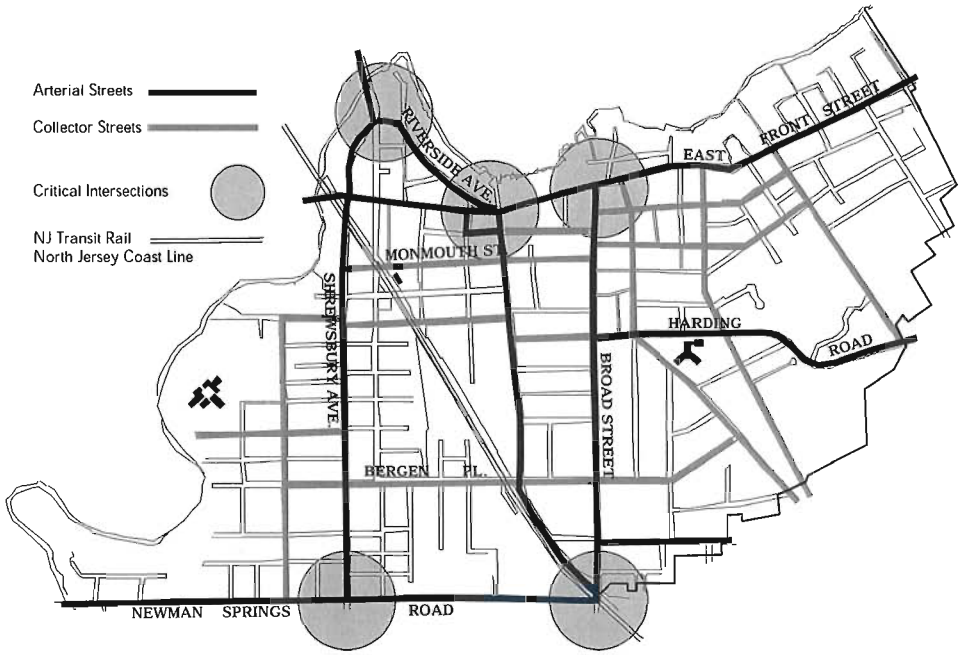


Fig. 4: Critical Intersection Areas

Parking was identified as an additional critical component to improving circulation in Red Bank. The main parking garage in town is located on Front Street at Globe Court and serves the hospital. Other underground parking is located within large apartment buildings facing the river, and one office complex within the downtown. Parking in residential neighborhoods is typically in private driveways or garages, while higher density residential, commercial or institutional developments use private lots, public lots or multi-story garages. While some developments provide their own parking facilities, shops and businesses in the CBD tend to share public lots, which are metered. On street parking in the area, however, is free.

Front Street parking lot, 1955

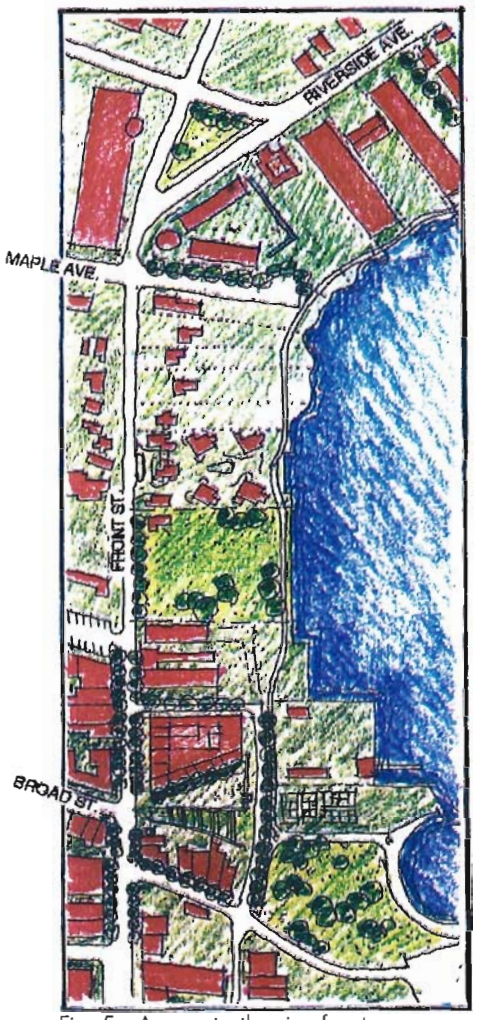


Fig. 5: Access to the riverfront

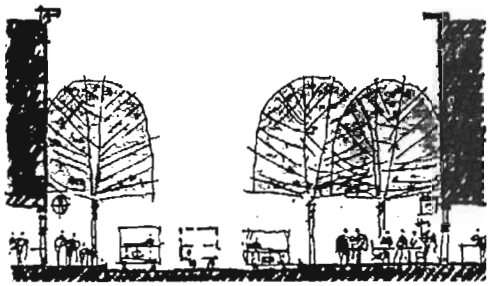


Fig. 6: Cross-section at Front Street

Environmental Resource Inventory 1994-1995

The Environmental Resource Inventory documented all natural, developed and cultural information in Red Bank for use by agencies, planners, developers, students and citizens. This information was prepared to reflect the belief that by taking inventory of their resources, Red Bank can better assess the impact of future development decisions.

The Inventory also addresses a number of traffic management proposals that are relevant to this study. Proposed changes to Route 35 are to be developed in support of Red Bank's development opportunities, and should encourage pedestrian usage. The study notes that there are many intersections along Route 35 that are confusing and disorienting for drivers. Traffic calming measures were recommended for Leighton and Shrewsbury Avenues, because of the residential area in which Leighton Avenue is a part, and Shrewsbury Avenue's role as the principal shopping street for Red Bank's west side.

Model for Riverfront Development 1995

Also known as the State Plan Implementation Project, Red Bank partnered with ANJEC to define infill considerations along Red Bank's riverfront. *(Figs. 5, 6)* Added traffic should not create congestion that hurts downtown business, but should permit easy pedestrian and vehicular access to the riverfront. Recommendations set forth urban design standards not only for the buildings and site development, but included recommendations for open space, and the transportation network. New development along Riverside Avenue and Front Street should add to pedestrian activity to increase Red Bank's appeal. Front Street should be designed with with one lane in each direc-

tion, and a center left turn lane. Union Street, along the river's edge, should be designed as a riverfront drive.

Monmouth County Transit Centers Station Neighborhood Vicinity Plan 1995

NJTransit selected Red Bank for a pilot study to apply the concepts of their Transit Friendly Land Use Guide to an urban community. This study proposed general recommendations for future development in those areas of Red Bank within walking distance of the station.

Project for Public Spaces (PPS) Study: A Station Area Concept Plan

Recently, NJTransit has carried this effort further, implementing the plan using NJDOT Local Aid for Centers of Place to develop the streetscape portion of the site plan. Also developed was a set of detailed design, use and site plan recommendations for NJTransit properties, and a proposal to integrate bus, train, taxi and pedestrian arrival spaces.

Petition for Center Designation 1996

The Borough of Red Bank was identified in the 1992 State Development and Redevelopment Plan as an existing regional center, with its compactly developed mixed-use core, and less dense neighborhoods as one progresses away from downtown. Red Bank is a transportation, institutional and cultural hub for the region. Like other centers, Red Bank contains a full range of infrastructure that, although somewhat aging, exists throughout the town.

Red Bank received Regional Center Designation based on meeting the following plan criteria:

- It functions as the focal point for employment,residential, transportation and cultural needs of the surrounding region.
- It meets urban or community level infrastructure and gross density criteria,

has identified its Community Development Boundary, has an employment base of more than 10,000 jobs, and is near a major public transportation terminal, arterial intersection or interstate interchange capable of serving as the hub for two or more modes of transportation.

Red Bank is also engaged in numerous projects that directly support the policies, goals and objectives of the State Development and Redevelopment Plan, of which this Circulation Study is an integral part.

Recent developments have illustrated to the Borough that there is a direct link between their Centers Petition and this circulation study. For example, while some recent developments have strengthened Red Bank's tax base, their site planning and design were not always integrated with transportation, missing an opportunity to provide a solution that addressed the needs of both.

Wayfinding Study 1998

While many local travelers are comfortable with the current though complex travel patterns, visitors from out of town frequently have trouble getting around. Recognizing that the local economy depends on convenient access for its customers, in 1997 Red Bank and RiverCenter, the downtown Business Improvement District, jointly undertook a Wayfinding Study in the Borough. The Wayfinding Study had two purposes: (1) to define how visitors and residents could get more easily into Red Bank and throughout the downtown, and (2) to create a sense of place through clear and consistent use of visual elements that imparted a feeling of purpose, efficiency and community. Environmental cues such as signs, landscape, and public art projects were identified as part of the Wayfinding Study, as well as the traffic, parking and pedestrian issues to be considered.

View of Red Bank arriving from the north, across the Coopers Bridge

Relationship of this Circulation Study to Other Studies

As a designated Regional Center, Red Bank serves as a regional transportation, cultural and employment hub for the region, thereby making housing and recreation key considerations. The 1995 Vision Plan articulated Red Bank's desire to strengthen its economy. The 1995 Master Plan focused on ways to strengthen and expand the downtown economy, while preserving the livability of its neighborhoods. The Model for Riverfront Development specifically focused on the impact of development on Red Bank's central business district. The study's finding defined both the nature and quality of in-fill riverfront development desirable, recognizing the key factors of scale and site access.

Aerial view of Red Bank, looking north and west

Circulation issues have been a part of each of these studies. The goals and objectives of this circulation study, and the alternatives and projects that flow from it, have been shaped by these previous studies. As a designated Regional Center in the State Development and Redevelopment Plan, Red Bank serves as a transportation hub. The 1995 Master Plan identified five problem intersection locations where solutions were critical to Red Bank's continued growing economy and livability. The Model for Riverfront Development concluded that piecemeal, large-scale developments would require Front Street to have greater capacity, thereby creating a barrier to the waterfront, and potentially strangling downtown. The model further outlined specific design qualities that Route 35/Riverside Avenue/Front Street should have.

The critical intersections identified in the Master Plan served as the basis for this Circulation Study. These intersection areas directly affect, and are directly affected by goals, objectives and decisions made in the Wayfinding Study. A visitor uses the transportation network to both get around and define Red Bank. Signs, landscape and public art often communicate that one has arrived at a new place. If pathways are not clearly defined, the

visitor, regardless of mode, will cover more territory than needed. If driving, the visitor becomes part of the circulation patterns, experiencing frustration from the lack of clarity and adds to the network's congestion problems. From an economic development perspective, traveling in Red Bank over time becomes associated with difficulty, and business is taken elsewhere if possible.

Current Projects and Studies

Several projects and studies (*Fig. 7, following page)* were incorporated into this circulation study, and should be included in future concept refinements.

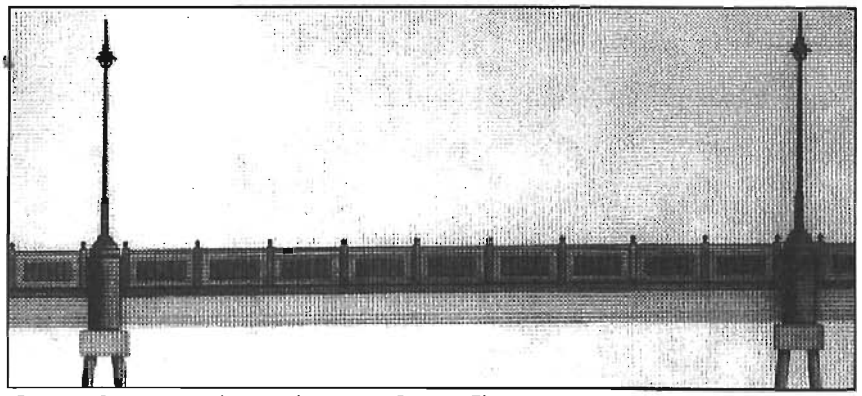


Fig. 8: Coopers Bridge Replacement Project Elevation

NJDOT Cooper's Bridge Replacement Project

NJDOT has begun construction on a new bridge to replace the existing Cooper's Bridge. (*Fig. 8)* The new bridge is approximately 1,200 feet long and will be replaced on essentially the same horizontal and vertical alignments. It will be widened to be consistent with Route 35, providing four 3.6 meter travel lanes, two 3 meter shoulders, two 1.8 meter sidewalks, and a non-traversable 2.6 meter median lane. The new bridge design features decorative lighting, sidewalks, parapet treatments, retaining walls and textured concrete. Interim improvements to the intersection will be incorporated into the bridge project.

Downtown Streetscape Projects

In keeping with its commitment to pedestrian safety and access, Red Bank initiated three streetscape projects for completion in 1998-99. Each of these projects addresses pedestrian needs in highly traveled commercial areas - downtown Broad Street, the Shrewsbury Avenue corridor, and the Red Bank Train Station area.

Broad Street Streetscape

The Borough of Red Bank partnered with local property owners and RiverCenter to completely

renovate downtown Broad Street. *(Figs. 9, 10)* This 1,800 linear foot project features brick sidewalks, sizable street trees, period benches and pedestrian-scaled light fixtures. Sidewalks were widened along the length of the project to increase the pedestrian travelway. Crosswalks are paved in granite block to increase motorist awareness. Corner bumpouts shorten the travel distance across numerous intersections.

Figs. 9, 10: Downtown Streetscape Projects

At a cost of approximately $1.7 million, the Broad Street Streetscape project reflects Red Bank's depth of community support for a safe and effective pedestrian environment. Both public and private sectors recognize pedestrian facilities as being integral to the community's economy.

Shrewsbury Avenue Streetscape

Red Bank received $162,000 (CDBG 1998) to install streetscape improvements along Shrewsbury Avenue between Monmouth Street and West Bergen Place. The enhancement of Shrewsbury Avenue includes ADA improvements along with street lighting, replacement of crosswalks and pedestrian signs, creation of a mini-park, and replacement of trees and grates. This project is in early planning stages, with installation expected in 1999. Work will be coordinated within two other projects, namely the Monmouth County Pedestrian Corridor Study and the Red Bank Neighborhood Preservation Program.

Train Station Area Beautification

NJTransit, NJDOT and the Borough of Red Bank are sponsoring major improvements to the Red Bank Train Station area. Pursuant to the PPS Plan, NJTransit is investing $1.4 million in train station improvements, and anticipates funding

close to $1 million to restore the historic train station building itself. NJDOT has awarded $240,000 Local Aid supplemented by Borough funding, for paving and site improvements on surrounding roadways (Monmouth, Bridge, West and Oakland). Streetscape improvements funded by NJDOT Centers of Place program will complement this work.

The train station streetscape improvements include pavers, curbs, sidewalks, lighting and trees along principal pedestrian approaches to the transportation center. Bike facilities will be maintained and expanded at the train station. In addition to enhancing transit use and improving pedestrian travel, this project advances the Borough's goal, as articulated in its Vision Plan, to create a unified downtown and reduce physical separations between the east and west sides of town.

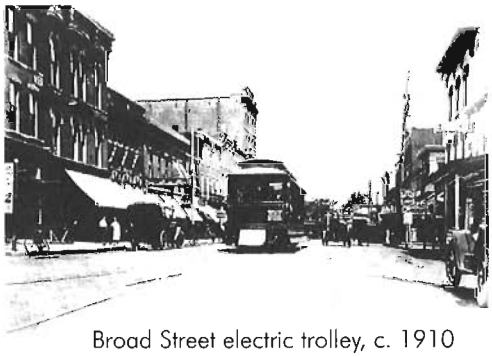
Trolley Study/Pilot Project

The Borough recently conducted a limited run trolley service to determine the level of consumer support and awareness of the trolley as an alternative mode of travel. During the five weeks preceding the Christmas holidays, the Red Bank trolley carried an average of 700 passengers per week along a limited route linking its core commercial areas. *(Figs. 11, 12)* Passenger response was very positive. The Borough received numerous requests for extended service from residents, businesses, adjoining commercial areas and another municipality.

The demonstration project concluded at year-end 1998. Based on the strong response, the Borough plans to continue efforts to provide trolley service to a broader audience and for longer periods, subject to available resources. To this end, the Borough has:

- submitted an application to FHWA for TEA-21 funding under its Transportation Community System Preservation Pilot program (FY 99) to provide a one-year trolley project, and is investigating other funding sources as well.

Trolleys began running in Red Bank in 1896



Broad Street electric trolley, c. 1910

Figs. 11,12
Red Bank Trolley Pilot, 1998

- begun to seek funding to conduct a survey to determine demand for trolley/ jitney service linking residents and local employment centers.

- concluded that an analysis of the local market for employee trolley ridership is directly relevant to downtown parking studies, and may affect projects for capacity and capital investments.

Future Studies

In addition to the above, the Borough is currently working on other studies and projects that have a bearing on this Circulation Study:

Green Acres/Green Trust Broad to the River

Through the state's Green Acres program, the Borough has recently received $750,000 for acquisition of properties at Broad and Front Streets to develop open space linking Red Bank's waterfront with the center of its downtown district.

Red Bank is notable among neighboring communities for its willingness to provide abundant public access to numerous waterfront sites. The majority of public greenways and open space sites in the County are, at a minimum, several miles distant from this densely populated center, so waterfront access is particularly significant.

The Broad to the River project will connect pedestrian improvements from the Broad Street Streetscape project with waterfront facilities at Marine Park. Acquisition of this site also provides a pivotal link for Red Bank's planned waterfront promenade. When completed, the Riverwalk will extend nearly 1.5 miles along the shore of the Navesink River to connect downtown destinations, recreational opportunities and related facilities via bike and pedestrian paths.

The White/Broad Street intersection, with the Navesink River in the background, 1936

Parking Studies

Several parking studies are underway in the Borough:

- Downtown Parking Contract

  Downtown Parking Contract, a Borough initiative in partnership with RiverCenter, will evaluate parking demand and potential strategies to meet parking needs within the downtown area. The consultant team is working with local interests to improve distribution, management and capacity of parking in support of development opportunities and commercial viability. This study is a component of the overall Red Bank Circulation Study. Recommendations will be coordinated between these efforts.

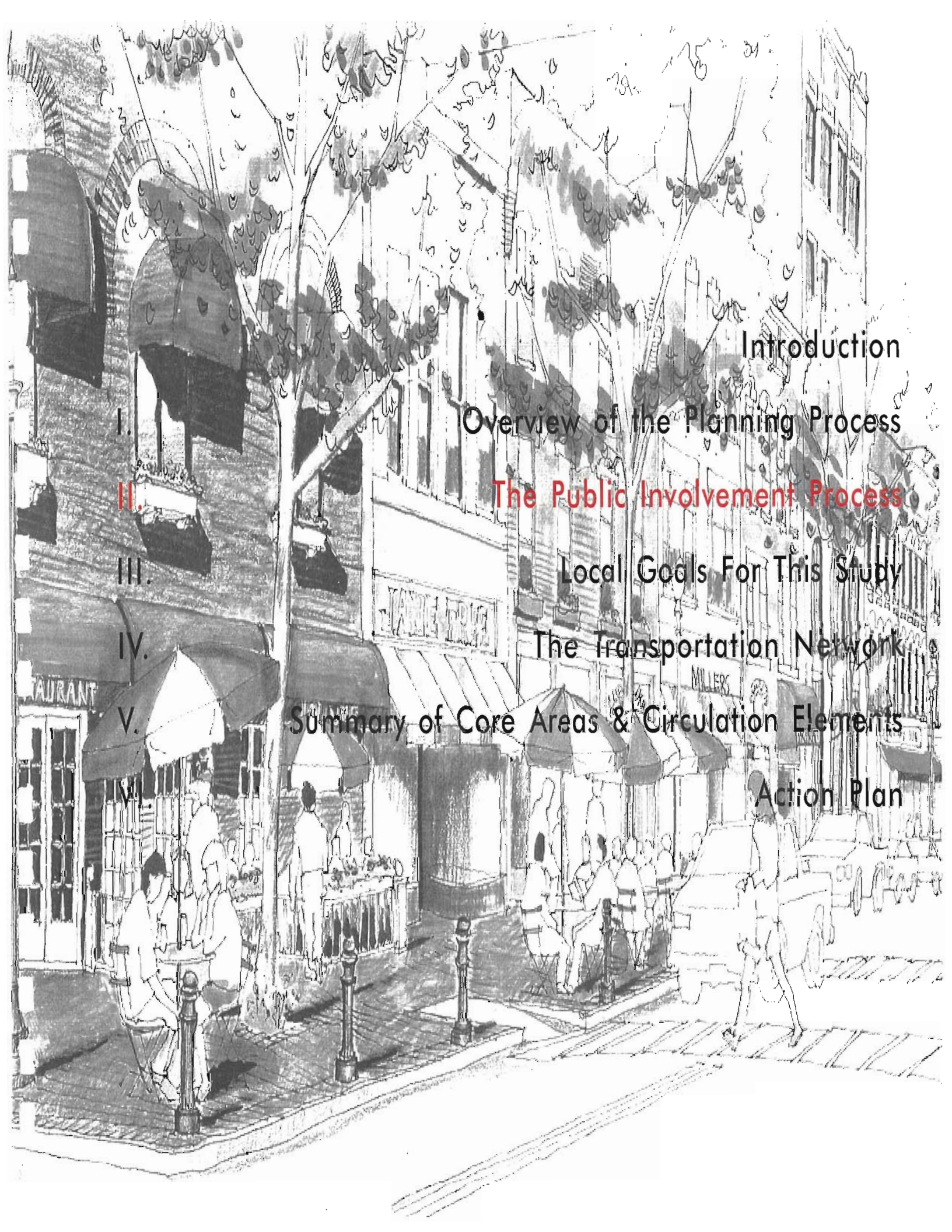
- NJTransit Parking Study

  NJTransit is evaluating parking issues related to the Red Bank Station, which serves both rail and bus commuter customers. Demand for parking facilities has far exceeded current capacity, reflecting increases on the North Coast Line throughout the county. The Borough recognizes that large amounts of surface lots devoted to commuter parking are injurious to Red Bank's density and the vitality of its commercial districts. At the same time, development interest in the vicinity of the train station may offer an opportunity for shared facilities. NJTransit is reviewing these issues with the Borough, and will evaluate structured parking as one alternative. The outcome of this parking study is directly relevant to the Circulation Plan, and results will be closely coordinated.

- Shuttle Survey

  NJTransit is currently examining demand for shuttle service during peak hour through a survey conducted in

November 1998. Results of this survey are expected in six months, and will complement related efforts to identify business and commuter needs.



Introduction

I. Overview of the Planning Process

II. The Public Involvement Process

III. Local Goals For This Study

IV. The Transportation Network

V. Summary of Core Areas & Circulation Elements

VI. Action Plan

The alternatives in this study were developed utilizing technical analysis within an open public process. The public process included a series of stakeholder meetings, and a series of public workshops to build consensus from initial problem identification, to analysis of alternatives, to selection of preferred alternatives. The stakeholder group consisted of study partners NJDOT, the Office of State Planning, the Borough of Red Bank, RiverCenter, Monmouth County and NJTransit. Their purpose was to direct the study, and provide input to decisions.

During concept development, the project team met with Monmouth County planners, engineers and traffic engineers. Progress on the circulation study was coordinated with the County's Shrewsbury Avenue pedestrian study, and with ongoing NJTransit and NJDOT projects. As concepts were developed, NJDOT contacted the Shrewsbury municipal engineer for input on preliminary planning for the southern gateway area.

Three public meetings — two workshops and a final presentation — were held to solicit public comment. Red Bank hosted a first public meeting in June 1998 in an open-house format to provide information on planning efforts to date, and confirm consultants' analysis of existing travel conditions. Instead of a formal presentation, meeting attendees walked through a series of displays that they could study at their own pace. Members of the project team were on hand to answer questions on an individual basis.

Workshop attendees consisted primarily of Red Bank residents and/or business people. Of the 66 attendees, there was roughly an even split between residents and businesspersons. Other participants included NJTransit, Monmouth County Planning, Borough Council and Zoning Board members, representatives of River Center and Red Bank Environmental Commission.

Six different questionnaires, one for each critical intersection, were used to get feedback from the

public on the problems identified by the project team, and to gauge the project team's understanding of the issues. The public was asked to provide feedback on the problems identified by the team, and offer any suggestions on what additional problems need to be addressed, and provide suggested solutions. Respondents were given the option of returning the questionnaires by June 30 to the Borough Administrator's Office. A total of 277 questionnaires were received. (bound in a separate document)

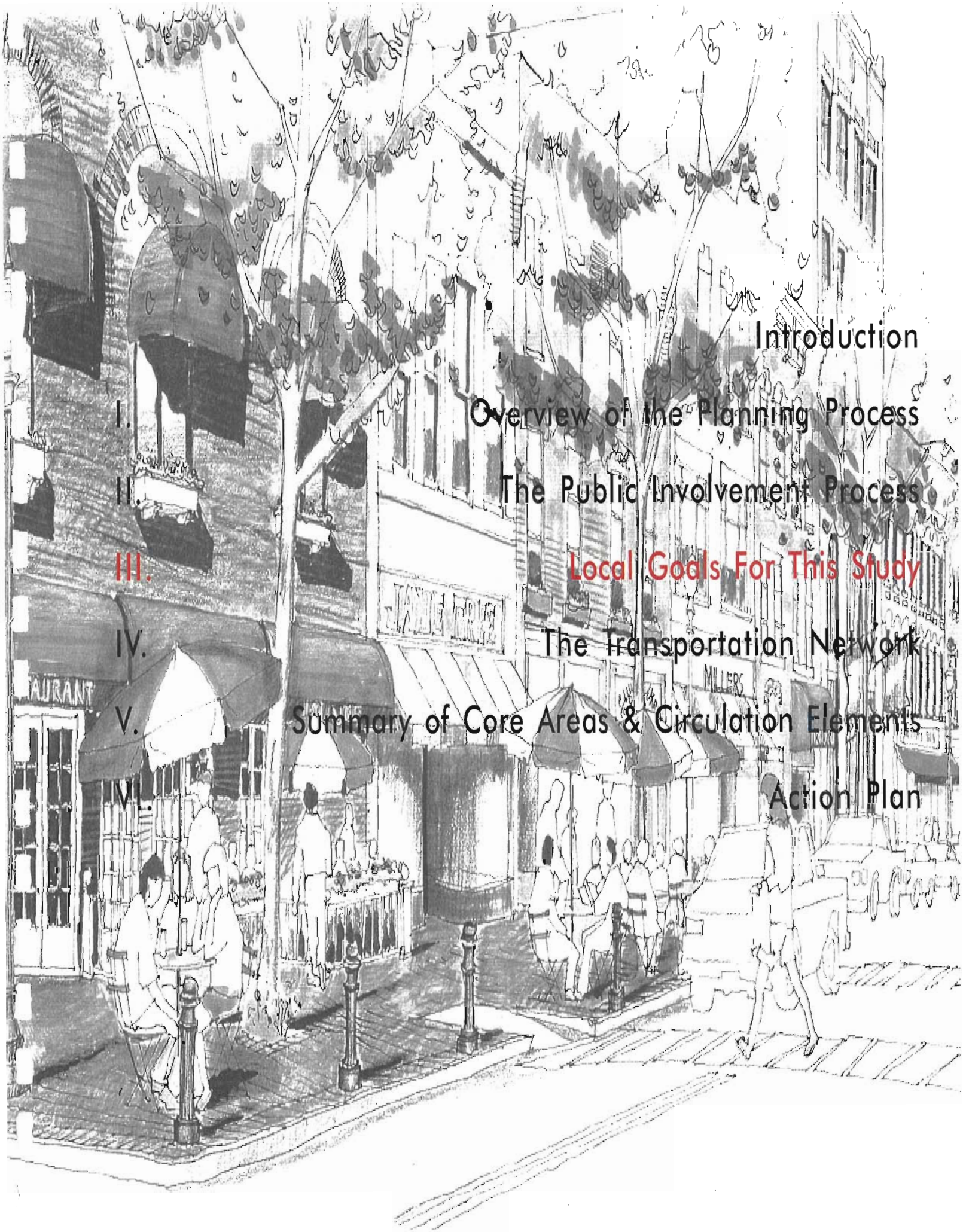
Over 40 questionnaires were filled out for each intersection, indicating that respondents did not highly favor any one particular location. The Front/Broad Street area received the most (50) followed by the Maple/Front Street area (49).

In the questionnaire most respondents "agreed" or "strongly agreed" with these identified problems:

- Most intersection areas are not pedestrian and bike friendly
- The more complicated intersections, and sometimes counterintuitive circulation patterns in town create driver frustration and make it difficult to access such areas as the downtown and parking lots
- Traffic congestion and delays are significant problems
- Parking is insufficient
- Concern about the potential impact of parking solutions on surrounding neighborhoods
- The southern gateway has a poor appearance and lacks sufficient signage

The purpose of the second workshop was to provide feedback to public response received from the first workshop on problem identification, and to present the range of alternatives. The public was asked again to assess whether and how well each alternative met the identified problems via discussion and questionnaires.

Recommendations were then made for short, intermediate and long-term alternatives, incorporating public comment where possible. The roles of responsible parties were identified as part of the process.



Introduction

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II. The Public Involvement Process

III. Local Goals For This Study

IV. The Transportation Network

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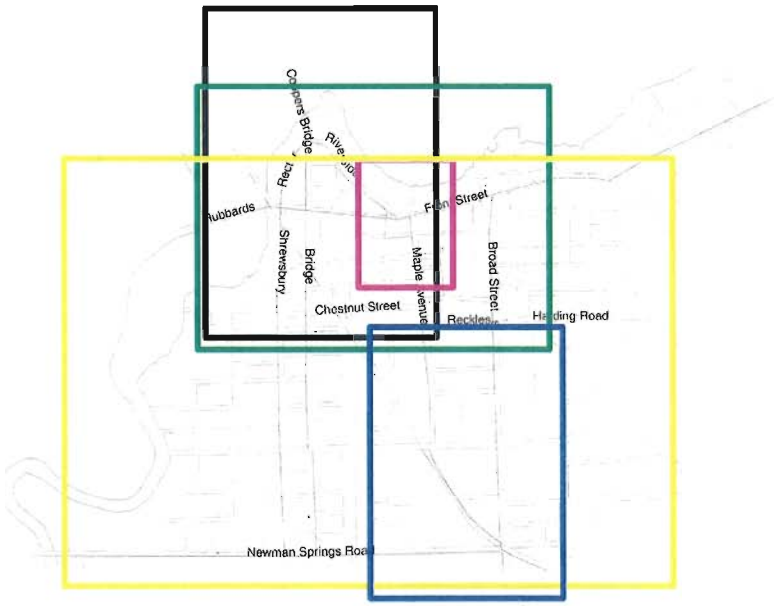
VI. Action Plan

The local goal for this Circulation Study is to provide a layered, multi-dimensional network of integrated transportation solutions that address regional and local needs.

Five objectives were identified to reach this goal:

(1) increase mobility into and through town,



(2) maintain efficient regional travel patterns,

(3) maintain local access needs,

(4) improve linkages between regional travel and local access points, and

(5) enhance multi-modal travel options. The pedestrian and bicycle networks were viewed as critical components to Red Bank's economic viability, and recommendations from the Wayfinding Study should be incorporated to maximize effective use of the network.

A sixth objective, (6) addressing parking needs as part of a balanced circulation solution, will be coordinated in supporting studies.

To increase mobility into and through town, four strategies were identified:

(1) maintain efficient regional travel patterns,

(2) maintain local access needs,

(3) improve linkages between regional travel and local access points, and,

(4) enhance multi-modal travel options, including specific measures for bicycle, pedestrian and trolley modes.

To maintain efficient regional travel patterns, three actions were identified:

(1) improve the quality of east-west travel on Riverside/Front Street,

(2) improve the quality of north- south travel on Riverside/Rte. 35/Maple, and

(3) reduce conflicts at intersections (east-west and north-south travel at Front and Maple)

To maintain local access needs, providing multiple parallel routes between regional travel and local access points was identified. This can be accomplished by three actions:

(1) establishing north-south links for vehicles; possibly using Bridge/Pearl/Hudson for local travel,

(2) developing pedestrian network/links, and

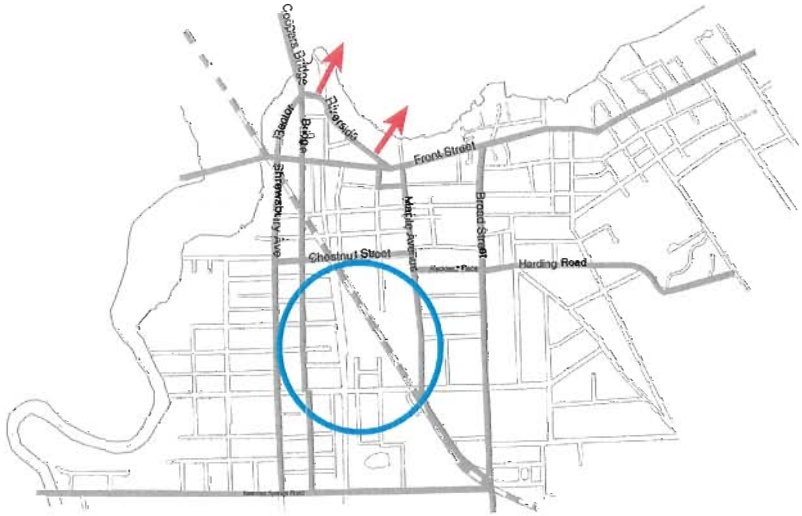
(3) developing Monmouth Street as a primary pedestrian route.

To improve linkages between regional travel and local access points, intersections should be designed to physically link regional, local and pedestrian travel patterns. This can be accomplished by:

(1) extending the grid in the center to link west and east sides of Red Bank,

(2) considering a future at-grade railroad crossing by the YMCA, and

(3) considering links across Riverside Avenue to the waterfront.

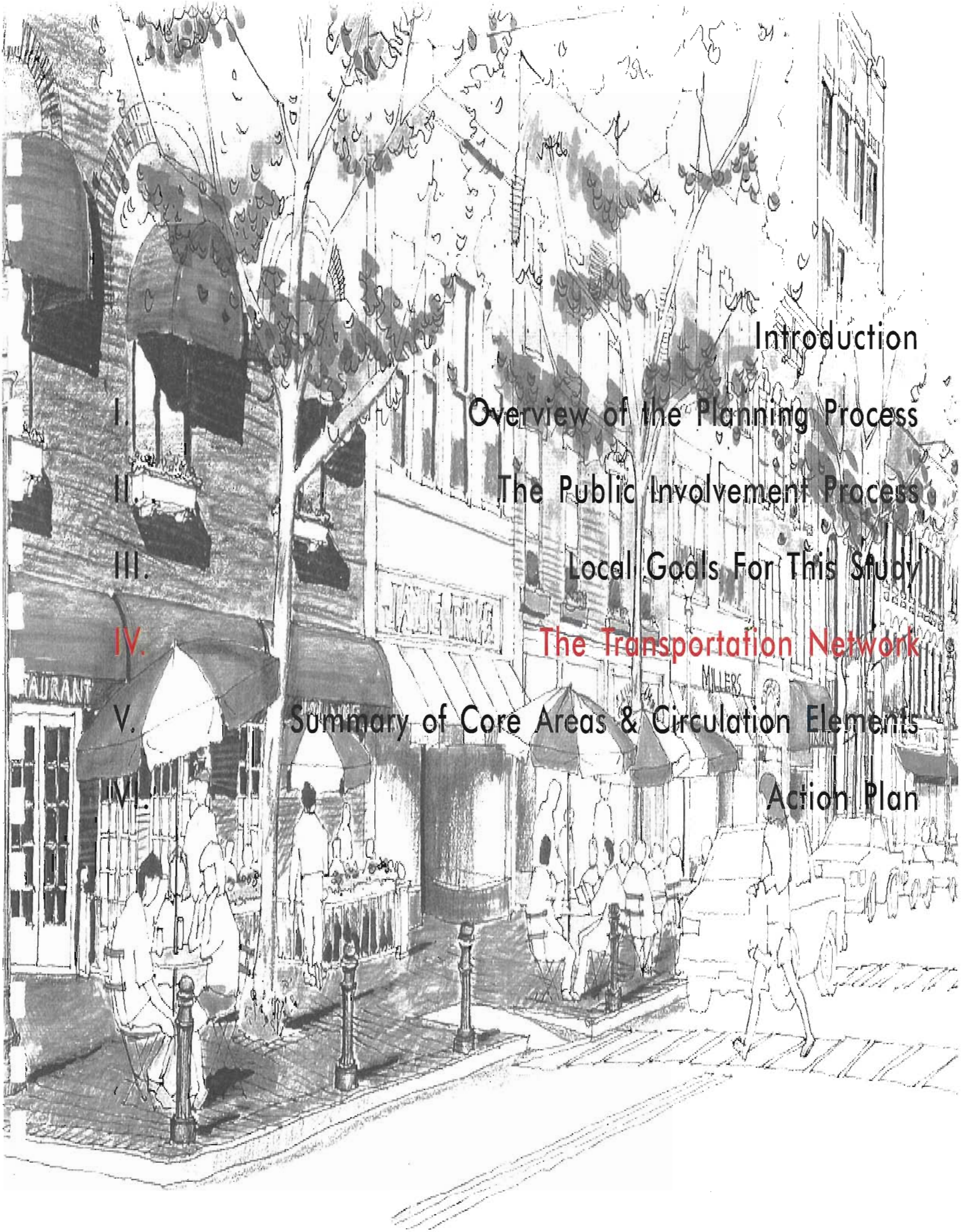


To enhance multi-modal travel options, actions to consider include providing new or improved bicycle routes, enhanced bus routes and additional alternative modes, such as a trolley. To enhance the viability of pedestrian and bicycle modes, a network of dedicated pedestrian linkages, particularly along the primary pedestrian corridors to the town, to the riverfront, and to the future Riverwalk should be established.

Monmouth Street is a primary pedestrian route. Developing a roadway system that is shared with bicycles and pedestrians was identified. Slowing traffic down at selected locations, reducing the impact of vehicular conflicts through pedestrian friendly facilities, (such as crosswalks) and traffic calming measures, such as bump outs or medians, were suggested.

Though parking is being addressed in separate studies, several factors relative to parking were identified as important for consideration in the circulation study: improving access to existing and planned parking facilities, reducing demand on circulation patterns, and providing convenient linkages between auto and pedestrian networks.

To maximize effective use of the network, this Circulation Study should incorporate recommendations from the Wayfinding Study. Intersection improvements should be designed to orient visitors to destinations. Environmental cues should be considered in the network design, and identity should be enhanced through materials selection.



Introduction

I. Overview of the Planning Process

II. The Public Involvement Process

III. Local Goals For This Study

IV. The Transportation Network

V. Summary of Core Areas & Circulation Elements

VI. Action Plan

Existing Network Conditions

The transportation network within Red Bank includes all modes of transportation. Local and regional travel is accommodated by local, county, and state roadways, by NJ Transit's North Jersey Coast Line and by a multitude of bus routes. Though Red Bank's existing grid transportation network is its strength, fragmentation in key places creates major problems. Several major weaknesses in the grid create local and regional vehicular conflicts: the absence of numerous parallel east-west routes and discontinuous intersections create circuitous routes, increasing congestion and safety concerns and elevating traveler frustration.

Red Bank is served in a north-south direction by three arterials: Shrewsbury Avenue, Maple Avenue, and Broad Street. Red Bank is served in an east-west direction by only one arterial — Front Street — with Newman Springs as an arterial along its southerly border. Red Bank is served by four collector streets in a north-south direction — one on the west side, Leighton Avenue, — and three on the east side — Branch, Spring and Prospect Avenues. Numerous east-west collector streets serve Red Bank, though the rail line that traverses Red Bank in a northwest to southeast direction prohibits many of these streets from being continuous. Two key areas – the Riverside/ Maple/Front/"W" Streets intersections, and the Newman Springs Road intersection - further complicate Red Bank's grid. These areas are actually several intersections that function within one larger one. *(Fig. 13)*

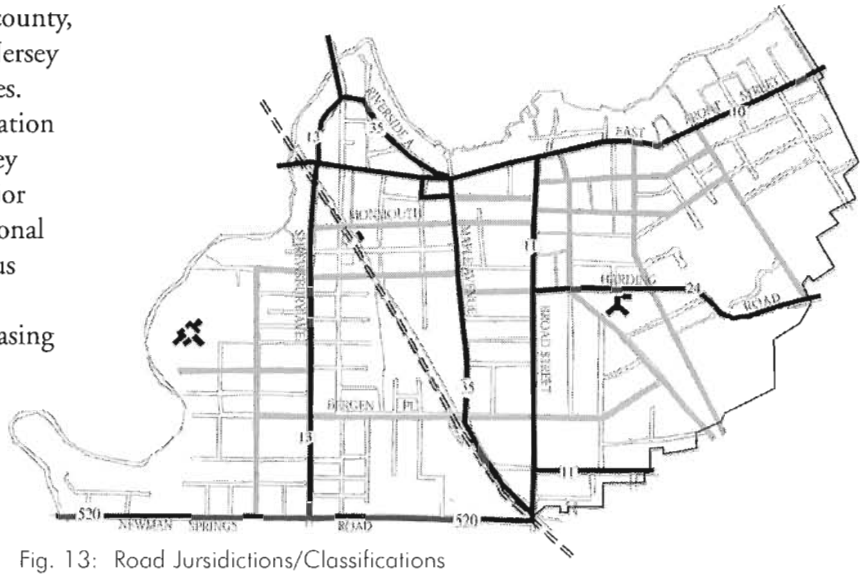


Fig. 13: Road Jursidictions/Classifications

As part of the Circulation Study, three elements of the transportation network have been examined. These include transportation corridors, key borough gateways, and roadway intersections, as further described below.

Transportation Corridors

As part of the Circulation Study, three elements of the transportation network have been examined. These include transportation corridors, borough gateways, and roadway intersections.

Red Bank's Train Station, c. 1875

Transit Network

The North Jersey Coast Line's Red Bank Train Station at Monmouth Street and Bridge Avenue serves over 1,200 passengers a day. The station provides parking for 539 vehicles with a usage rate of 86% occupied in 1996. Just over one-half of the ridership is local — in 1990, 53% from Red Bank, 12% from Middletown, 11% from Rumson, 8% from Tinton Falls, 2% each from Little Silver and Eatontown and 12% other. Access to the train station was primarily by car or by foot — 64% auto, 14% walk, 14% drop off, 6% taxi and 2% bus.

The train service functions as an origin during the AM hours for almost 1,000 northbound commuters. *(Table 1)* There are nine northbound trains leaving Red Bank between 6:34 AM and 8:30 AM arriving in New York City between 7:52 and 9:56 AM. Only two southbound trains arrive and leaving Red Bank in the morning peak hours. Only about 100 rail users commute to work in Red Bank with over two-thirds of them arriving from the south. In the afternoon, nine trains leave Red Bank between 4:52 PM and 6:23 PM. From New York City, seven trains head southbound between 5:06 PM and 6:12 PM.

Table 1: Red Bank Train Station Peak Period Ridership

Time of Day	Southbound	Northbound
AM On	20	951
AM Off	30	78
PM On	34	45
PM Off	684	13

Source: New Jersey Transit

1960s aerial view of Red Bank, looking west along Front Street

NJTransit bus service is provided throughout the day by five local bus routes serving about 2,000 passengers a day. Academy Bus provides long haul peak hour limited service for those commuting to the Port Authority Bus Terminal and the Wall Street area with the Red Bank route serving about 355 passengers a day. Many of these passengers board the bus at the Garden State Parkway Park & Ride at Exit 109.

Regional Roadway Network

To fully understand the functional system of the roadway network, Route 35 and the other major north-south corridors were investigated for local and regional significance in serving the transportation needs through the Borough.

Three major north-south roadways traverse Red Bank's downtown district: Shrewsbury Avenue on

the west, Broad Street on the east, and Maple Avenue through its center. All three are two-lane roads, have parking on both sides, and are intersected at regular intervals by Red Bank's street grid.

- Shrewsbury Avenue carries the heaviest volumes per lane of any road in Monmouth County, serves as the spine of Red Bank's west side neighborhood and a component of the Borough's antiques district. The road serves as a de-facto alternate route for Route 35, with linkages to the Garden State Parkway, County Road 520 and Route 18. Immediately south of Red Bank, Shrewsbury Avenue consists of a five-lane road which bypasses densely developed areas of Route 35, and is signed to direct motorists to Fort Monmouth and Monmouth Race Track. High pedestrian traffic competes with interrupted vehicular flow for much of the roadway.

- Broad Street is a northerly extension of Route 35 as it crosses Red Bank's southern boundary. Broad Street begins at the intersection with Route 35, CR 520 and NJTransit's North Coast Line, extends through the heart of Red Bank's Central Business District at the foot of the Navesink River and serves as the primary access to the borough's downtown, waterfront and cultural destinations. Pedestrian volumes are particularly high in the CBD; recent streetscape improvements have enhanced the pedestrian environment but safety concerns remain at numerous intersections.

- Maple Avenue carries the heaviest volumes the downtown district's roadways, and is classified as an urban low-speed principal arterial. The roadway serves a dual role, carrying

Broad Street looking south, 1909

Maple Avenue, south of Monmouth Street, c. 1910

regional traffic through and into Red Bank, and at the same time, provide comfortable connections between both sides of Red Bank's downtown district. Critical issues arise at its intersection with Front Street, where conflicting movements and high volumes provide serious problems for the transportation network. Additional issues at these locations include local access into the downtown's parking facilities and inhospitable conditions for pedestrian travel. Signage is poor and travel patterns confuse users at this intersection, while bicycle traffic resorts to unsafe behavior that threatens motorists and cyclists alike.

One east-west route, Front Street, provides access to both downtown Red Bank and adjoining regional destinations. East-west traffic within the downtown district is doubly constrained. Alternate east-west routes (CR 520, Chestnut/Reckless/ Harding) suffer from deficiencies that deflect normal use onto Front Street, and a pattern of discontinuous intersections within the district result in a fragmented grid system that also promotes Front Street as the road of choice for east-west travel. One-way streets compound this problem by inhibiting free east-west flow within the district.

Peripheral conditions also affect travel patterns within the downtown. Red Bank's southern gateway at Route 35, Broad Street and CR 520 is the most heavily-traveled grade crossing on the North Coast rail line; significant delays at this compound intersection motivate travelers to seek less direct routes into Red Bank, overload Front Street, and seek alternate routes through residential neighborhoods. Heavy volumes on Shrewsbury Avenue have the same effect.
Route 35 to the north and south of Red Bank provides four lanes of travel. This condition is reduced to two lanes through Red Bank. Similarly, Shrewsbury Avenue south of the Borough provides four through lanes of travel that are

reduced to two lanes through Red Bank. Both Route 35 and Shrewsbury Avenue provide a north-south link from Eatontown to Middletown and points north. Route 35 serves as the primary north-south connection, and is used as an alternate to the Garden State Parkway. Shrewsbury Avenue serves local destinations such as the west side of the Borough, and provides regional traffic an alternative to Route 35. The other north-south corridor within the Borough is Broad Street. Broad Street serves the highest number of motorists destined for Red Bank.


Broad and Monmouth Streets, c. 1905

These vehicular corridors were analyzed by quantifying traffic in, out and through the Borough. Additional elements of corridor analysis included volume, capacity, connectivity between districts, and compatibility with adjacent land use.

The investigation began with quantifying vehicular trips in, out and through the borough. To supplement this data, the NJDOT performed a "select link analysis". Copies of this analysis are included in a separate document. The analysis included the Coopers Bridge area, East Front Street, West Front Street, Maple Avenue, Broad Street and Shrewsbury Avenue.

The north-south roadway system allows traffic to distribute based on its final destination. The functionality of the three major north-south corridors, Route 35, Shrewsbury Avenue and Broad Street each provide balance to the intricate roadway system within Red Bank. Motorists originating south of Red Bank, going north on Route 35 are faced with a decision at the intersection of Newman Springs Road. Regional traffic may continue on Route 35 to points north of Red Bank and motorists having a destination in Red Bank are more likely to utilize the Broad Street corridor. This separation of local and regional traffic still provides for two northbound lanes through Red Bank. The separation of traffic is confirmed when examining the northbound traffic volumes at the intersection of Route 35 and Newman Springs Road. A distribution of approximately 50% to each of the respective roadways is found during the morning peak hour and

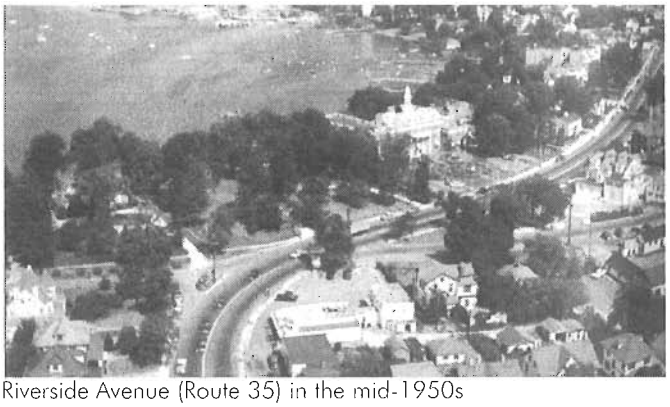
distribution of 60% to Route 35 to Broad Street is seen during the PM peak hour.

A similar condition is found for southbound traffic with origins north of Red Bank. Route 35 north of Red Bank provides two southbound travel lanes. After crossing Coopers Bridge, motorists must decide whether to continue along Route 35, use Shrewsbury Avenue as an alternate, or utilize Bridge Avenue for local destinations within Red Bank. During the AM and PM peak hour, the distribution of southbound traffic at the intersection of Route 35/Bridge Avenue/ Shrewsbury Avenue is approximately 46% that continue on Route 35, 29% on Bridge Avenue and 25% on Shrewsbury Avenue. Similar percentage distribution occurs during the PM peak hour. This allows for the two Route 35 southbound lanes north of Red Bank to be accommodated.

The condition of Shrewsbury Avenue as a four-lane travelway south of Red Bank is the other critical component of north-south travel through Red Bank. Southbound traffic through Red Bank is distributed through the roadway network at Coopers Bridge as discussed above and is not a problem. However, the northbound traffic originating south of Red Bank is provided with two northbound lanes on Shrewsbury Avenue. Traffic volumes along Shrewsbury Avenue indicate that the northbound volumes are approximately 40% higher than southbound volumes between Newman Springs Road and Bergen Place. When these numbers were compared to traffic volumes along Shrewsbury Avenue between Monmouth Street and Front Street, volumes were directionally balanced at this point. This indicated that a significant number of motorists are either destined for Red Bank, or are turning off Shrewsbury Avenue and choosing an alternate route. The traffic volumes along Bridge Avenue indicate that the northbound traffic volumes were found to be high in comparison to local traffic generators. A high number of vehicles are diverting off Shrewsbury Avenue onto Bridge Avenue.

Route 35

Route 35 is a north-south roadway that extends from Middlesex County in the north to Ocean County in the south. Through Red Bank, Route 35 is first experienced Coopers Bridge crossing the Navesink River, then as Riverside Avenue along the Navesink River, Maple Avenue through town, and then as Route 35 as it leaves Red Bank to the south through Shrewsbury Borough. Principal intersections along Route 35 are controlled by traffic signals.


Riverside Avenue (Route 35) in the mid-1950s

Route 35 is classified as a low speed urban principal arterial through the Borough of Red Bank. Route 35 provides four lanes of travel from Coopers Bridge to Front Street, two lanes of travel from Front Street to Broad Street. South of Red Bank in Shrewsbury Borough Route 35 resumes four travel lanes. The State Highway Access Management Code classifies the desirable typical section in Red Bank to require four lanes to handle future traffic needs in a safe and efficient manner.

Route 35 plays two critical roles in Red Bank's circulation network: it forms the center of the Borough's street system, and crosses the most important east-west and north-south roadways. The posted speed limit is 30 m.p.h. from Coopers Bridge to Front Street, 35 m.p.h. from Leroy Place to Newman Spring Road and 40 m.p.h. south of Newman Spring Road. Land use along Route 35 can be characterized as a mixture of residential, office, and commercial development.

Front Street (CR 10)

Front Street is a county arterial roadway oriented in an east-west direction parallel to the Navesink River, extending from Homdel to the west, to Rumson in the east. As Front Street caries large volumes of traffic downtown and serves as sole access to waterfront, recreational and development sites, it plays a pivotal role in the borough's economic development, cultural and recreational viability. Front Street also links the downtown area with the residential communities of the surrounding municipalities, and carries seasonal

traffic to nearby oceanfront beaches. Development along Front Street is primarily commercial. Front Street provides two lanes of travel with a posted speed limit of 30 m.p.h. through the Borough. The principal intersections are controlled by traffic signals.

Newman Springs Road (CR 520)

Newman Springs Road is a county arterial roadway oriented in an east-west direction along the southern portion of the Borough. County Road 520 extends from NJ Route 79 in Marlboro in the west, to Route 35 in Red Bank in the east. East of Route 35, CR 520 changes from Newman Springs Road to Pinckney Road, which continues to carry regional traffic through residential neighborhoods. Newman Springs Road provides two lanes of travel through the Borough. The principal intersections are controlled by traffic signals. Development along Newman Springs Road is primarily commercial and the posted speed limit is 35 m.p.h.

Bridge Avenue

Bridge Avenue is a collector roadway oriented in a north-south direction. It connects directly to two of Red Bank's major transportation facilities - Coopers Bridge and the train station. Bridge Avenue is a discontinuous alignment, which extends from Newman Springs Road in the south to Route 35 in the north. Development along Bridge Avenue is primarily residential along the southern half of the roadway and commercial in its northern section. The posted speed limit is 30 m.p.h.

Shrewsbury Avenue (CR 13)

Shrewsbury Avenue is a county arterial roadway oriented in a north-south direction extending from Front Street in the north to Eatontown in the south. This orientation allows Shrewsbury Avenue to provide some relief for Route 35. Shrewsbury Avenue is the main route for Red Bank's west side, and the area's commercial core. Development along Shrewsbury Avenue is a mix of residential and commercial properties.

Through the Borough of Red Bank Shrewsbury Avenue provides two lanes of travel with parking on both sides. South of Newman Springs Road, Shrewsbury Avenue is a five-lane roadway, two lanes in each direction and a continuous center turn lane. The posted speed limit is 30 m.p.h.

Broad Street (CR 11)

Broad Street is an arterial roadway oriented in a north-south direction, extending from Front Street in the north to Route 35 in the south. Commercial development on either side of Broad Street development is the heart of Red Bank's downtown. Red Bank has recently implemented significant streetscape improvements ($1.7 million) in this area to increase pedestrian safety, and support investments in the Central Business District. Broad Street provides two lanes of travel through Red Bank, with the principal intersections controlled by traffic signals with parking on both sides of the roadway. The posted speed limit along Broad Street is 30 m.p.h.

Key Intersections

Route 35/Riverside Avenue/Rector Street/Bridge Avenue

The Route 35/Riverside Avenue/Rector Place/ Bridge Avenue intersection is the northern gateway into Red Bank. The northern leg of this intersection is Coopers Bridge. The southbound Coopers Bridge approach has three lanes: one left turn lane, one through lane and one right turn lane. The eastbound approach at Riverside accommodates two 'right turn only' lanes. This approach does not permit left or through movements. The approach at Rector Place has one through lane and does not permit right turns. The Bridge Avenue approach has one through/ right lane and does not permit left turns onto Rector Place.

The traffic signal operates with a two - phase signal - Phase 1 accommodates southbound Coopers Bridge and westbound Riverside Avenue movements and Phase 2 accommodates northbound Bridge Avenue and eastbound Rector Place.

The signal operates on a 90-second cycle length.

Route 35/Riverside Avenue/Front Street/Pearl Street/Maple Avenue

These streets form several separate intersections that act as one. Travel patterns in this location form conditions at subsequent intersections, so the solution must address these intersections as well. The first intersection is formed at Maple Avenue-Riverside Avenue and Front Street. Maple - Riverside Avenue is a one-way northbound roadway through the intersection. This approach has two wide lanes: one for left turns only, and one for both left and right turns. Along Front Street no turns are permitted. Front Street provides one through lane in both the eastbound and westbound directions.

The second intersection is formed at Front Street and Riverside Avenue - Pearl Street. Through the intersection, Riverside Avenue and Pearl Street are one-way roadways southbound. The southbound approach has two lanes and no left turns are permitted at this approach. The eastbound approach along Front Street has one through/right lane and the westbound approach has one through/left lane.

The Front Street/Maple-Riverside Avenue intersection is a two-phase signal operation – the first phase is for east and westbound movements; the second phase is for northbound movements. The Front Street/Pearl Street intersection has a three phase signal operation – the first phase is for westbound traffic; the second phase is for both eastbound and westbound traffic; and the third phase is for southbound. The total cycle length is 90 seconds.

In this core area, current directional characteristics force a counterintuitive, circuitous traffic pattern. As one travels Maple Avenue from points south into Red Bank, Maple Avenue is two way. At White Street, however, for a distance of one block, Maple becomes one-way northbound. This change precludes traffic flow at that location. Pearl Street north of Wall/Water Street is one-way

southbound. Water Street is one-way eastbound. At Maple Avenue and White/Water Street, the northbound approach has one lane. The eastbound approach has three lanes: one for left turns, one for through movements, and one for right turns. White Street has one approach lane westbound and one receiving lane eastbound.

Route 35/Broad Street/Newman Springs Road

This intersection forms the southern gateway into Red Bank. The northbound approach along Route 35 has two through lanes. North of Newman Springs Road, the left lane becomes a through/left lane for access to Route 35 northbound. The right lane generally serves only Broad Street northbound traffic. The southbound approach from Broad Street has one through, and one through/right lane. The eastbound approach from Route 35 also has one through, and one through/right lane. This approach does not permit left turns from Route 35 onto Broad Street. At Route 35 and Newman Springs Road, the eastbound approach has one left and one right turn lane, and the westbound approach from the jughandle has one through and one left turn lane.

The intersection operates with a four-phase signal. The first phase allows northbound Rte. 35 and southbound Rte. 35; the second phase allows southbound Broad Street; the third phase allows eastbound Newman Springs Road; and the fourth phase allows east and westbound Newman Springs and the jughandle. The total cycle length is 90 seconds.

Front Street and Rector Place-Shrewsbury Avenue

This intersection has one lane on the eastbound approach from which all movements are permitted. The northbound, southbound and westbound approaches each provide a through/right lane and a left turn lane. The intersection is controlled by a traffic signal with a two-phase operation: Phase 1 for northbound and southbound movements, and Phase 2 for eastbound and westbound movements. The signal currently operates on a 70-second cycle length.

Front Street and Bridge Avenue

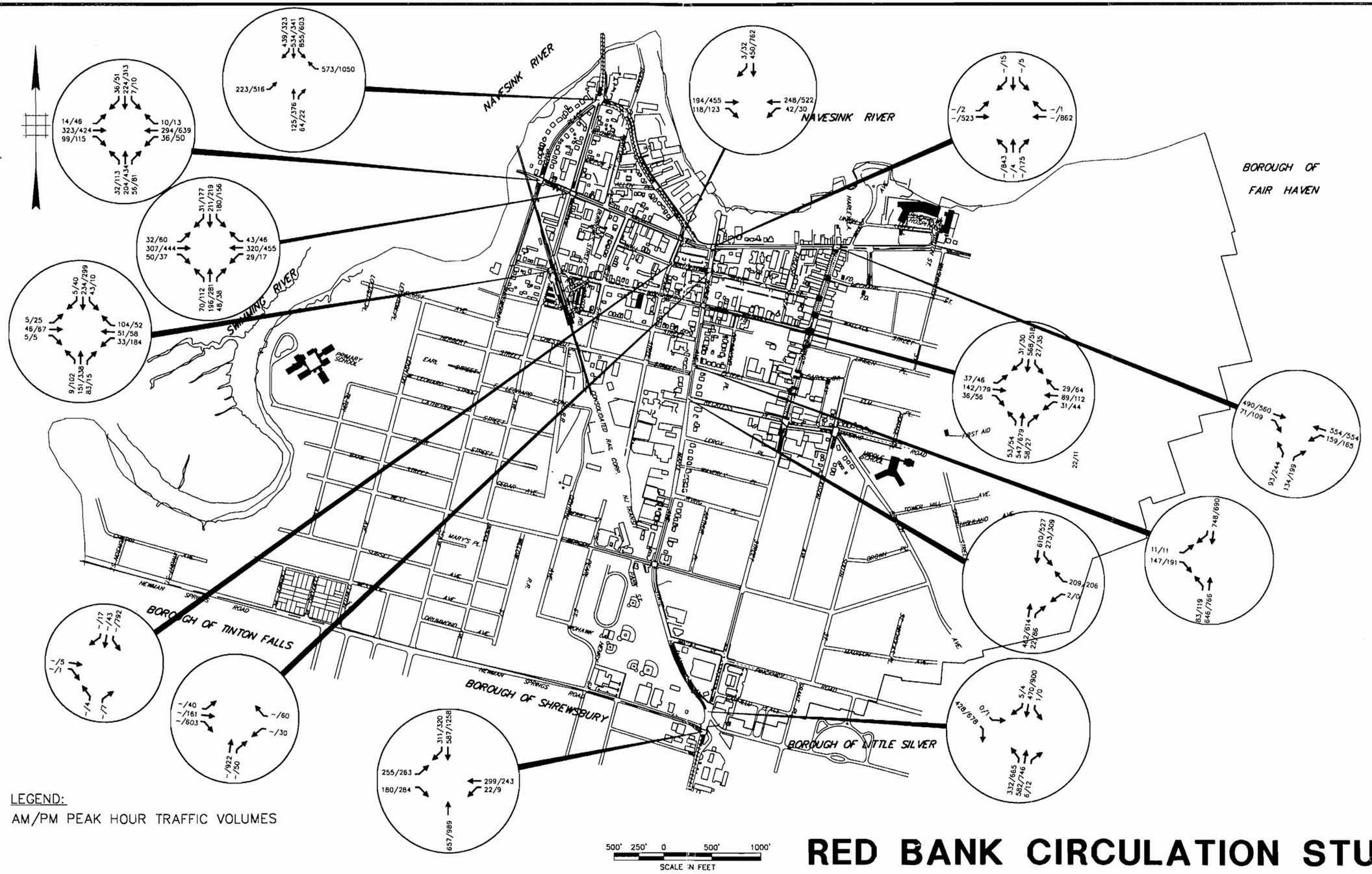
This intersection has one lane on the westbound approach from which all movements are permitted. The northbound, southbound and eastbound approaches each provide one through/right lane and one left turn lane. The intersection is controlled by a traffic signal with a 2-phase operation: Phase 1 for northbound and southbound movements, and Phase 2 for eastbound and westbound movements. The signal currently operates on a 70-second cycle length.

Front Street and Broad Street

This intersection is located at the critical juncture of Red Bank's downtown and its waterfront and recreation areas, making it an important pedestrian crossing. Currently, pedestrian travel is constrained by the nature of turning movements. This "T" intersection has one lane on the eastbound approach from which through and right turn movements are permitted. The northbound approach provides a right and left turn lane, and the westbound approach provides a left and a through lane. The intersection is controlled by a three-phase traffic signal: Phase 1, for northbound movements; Phase 2 for westbound movements, including a leading left turn phase; and Phase 3, for eastbound and westbound movements. The traffic signal operates on a 90-second cycle and is coordinated with the adjacent traffic signal at Globe Court.

Existing Traffic Volumes

To maximize the use of available resources for this study, Red Bank, NJDOT and the County formed a partnership to share existing data. NJDOT, Monmouth County, and local officials provided traffic count data to maximize the work effort. Traffic volume flow maps were developed using this data for the roadway peak hours. Analysis of this data indicated the morning peak hour to be 8:00 AM to 9:00 AM, and the evening peak hour from 5:00 PM to 6:00 PM. Traffic volumes used were taken from the data provided, and were not adjusted or balanced as part of the process. Existing traffic volumes are shown in *Figure 14*,



RED BANK CIRCULATION STUDY

EXISTING TRAFFIC VOLUMES

HARRIS & KSK

next page.

There are multiple peak hours on some roads, and summer recreation and special cultural events add another layer of complexity to Red Bank's congestion problems. Front Street, for example, serves the downtown, travel through Red Bank, and commuter traffic to the train station. In the summer, weekend travel to the shore, or trips to the waterfront jazz festival are added to this mix.

Traffic volumes in and out of Red Bank forming gateway conditions are summarized below. Traffic volumes are shown in terms of the AM and PM peak hour conditions. As *Table 2* indicates, traffic volumes are higher during the PM peak hour representing the critical study time. As *Table 3* indicates, four locations within the study area have had a high number of accidents, (1994-1997) making safety a major concern for drivers, pedestrians, and bicyclists.

Table 2: Gateway Volumes (Inbound/Outbound)

Gateway	AM Peak Hour	PM Peak Hour
Coopers Bridge	165/918	1290/1855
West Front	600/632	800/760
East Front Street	710/620	720/760
Newman Springs Road	910/760	1250/1540

Table 3: Summary of Accidents at Key Locations

Location	Number of Accidents
Bridge Avenue & Chestnut Street	23
Pinckney Road-Wykoff Place & Broad Street	30
Bridge Avenue & Monmouth Streets	41
WaterStreet-White Street & Maple Avenue	40

Existing Traffic Analysis

The existing roadways were analyzed with the traffic volumes using the methods of the 1994 Highway Capacity Manual (HCM). The micro-based Highway Capacity software version 2.1 was utilized to assist with the analyses. Signalized and unsignalized intersections were analyzed for level of service (LOS). The definition of LOS varies by facility.

The Role of Route 35 in Red Bank

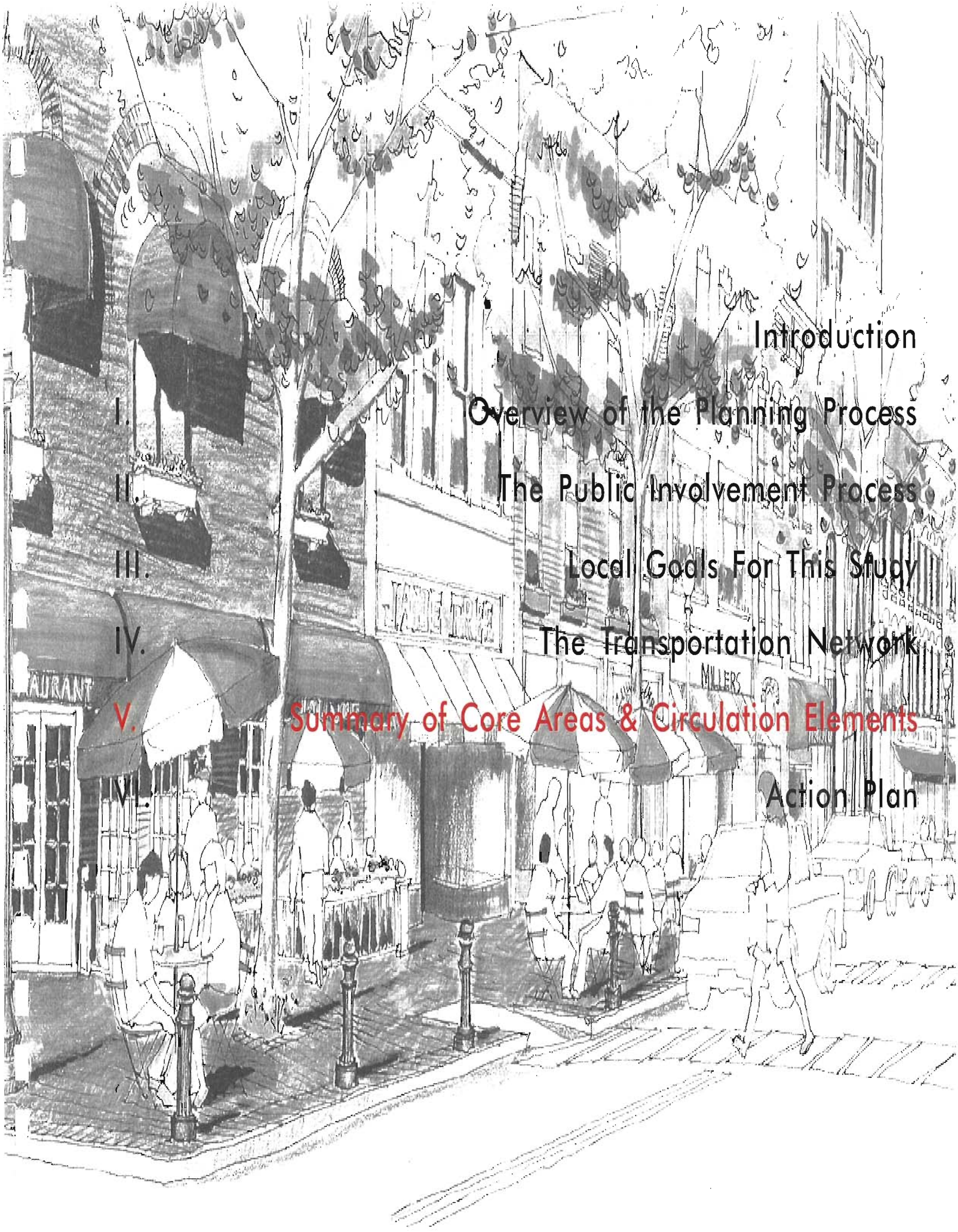
As a Designated Center, Red Bank is a major destination for local and regional travelers, and serves a network of local, county, and state roadways, NJ Transit's North Jersey Coast Line and a multitude of bus routes. Red Bank is positioned at the western end of the Rumson peninsula, and is a crossroad for east-west and north-south intra-county movement.

Route 35 plays four critical roles for Red Bank - it forms the center of the Borough's street system, it intersects all important east-west routes, it is a

major component of the Borough's urban fabric that serves the downtown area and its neighborhoods, and it is a vital part of the Borough's economic development goals.

The existing north-south roadway system within Red Bank allows traffic to distribute based on its final destination. The three major north-south corridors — Route 35, Shrewsbury Avenue and Broad Street — each contribute to travel needs. Route 35 is a four-lane road north and south of the Borough, but becomes a two-lane segment within the Borough. System balance is functionally maintained, however, with parallel travel corridors on Shrewsbury Avenue, and Broad Street, to a lesser extent. The Garden State Parkway serves as an alternate route to the Borough, and captures most of the longer distance travel. Separation of local and regional traffic is accommodated with two northbound lanes through Red Bank.

Improvements to Route 35 must be made to reduce congestion and address underserved travel needs. While growth within the Borough is limited, major capacity increases to the Route 35 corridor are inconsistent with the urban context Red Bank has defined. Circulation solutions that take into account Red Bank's urban character, the Borough's local goals and reflect Route 35's transition are needed. In this Circulation Study, solutions at an intersection level have been identified as appropriate.



Introduction

I. Overview of the Planning Process

II. The Public Involvement Process

III. Local Goals For This Study

IV. The Transportation Network

V. Summary of Core Areas & Circulation Elements

VI. Action Plan

Route 35 from Riverside Avenue to Maple Avenue to Newman Springs Road is an arterial under the jurisdiction of NJDOT. Route 35 plays two critical roles in Red Bank's circulation network: it serves as the gateway and entrance into Red Bank from north, and services both regional and local traffic.

The Route 35 corridor in Red Bank has five major intersection areas:

(1) The Northern Gateway, at Coopers Bridge;
(2) The Red Bank Downtown District;
(3) The Route 35/Maple Avenue/Front Street Area;
(4) The CBD East - West Corridors: Crosstown Front Street, the "W" Streets and Reckless Place/Chestnut Street; and
(5) The Southern Gateway: Route 35 at the Newman Springs Road/Broad Street intersection.

The first step to defining an approach to the Route 35 corridor was to understand the existing conditions for each core area within the corridor. A broad range of elements beyond transportation factors such as traffic volumes and demand, physical characteristics, and multi-modal characteristics were taken into account for each core area. To fully define existing conditions, other relevant objectives included the core area's relationship with previous and current planning studies; its land use issues, including its role in economic development policies and future development opportunities, historic preservation and special districts. Because of the compact nature of Red Bank, multi-modal/ efficient use of available capacity, an important part of the Route 35 corridor analysis was to define circulation problems in broad, multi-modal user terms.

Alternatives were developed for each of the core areas, using comments from the first workshop comments to refine the alternatives. The public was then presented with a range of alternatives that were actively being considered for each core area. Active options were those that addressed the identified objectives. Alternatives that were

discarded were also noted and why. Discarded options were those which were deemed technically inadequate in their ability to address the identified problems, by the County, Red Bank, or at the state level, or did not have local public support. Preferred alternatives addressed both publicly expressed issues and concerns, and the goals and objectives of previous planning efforts.

At the second workshop, the alternatives were shared with the public, presented in terms of the following:

- Do they support solving the problem?
- Do they address community issues identified in the first workshop, and if so, what issues?
- How were comments received incorporated?
- What comments were not incorporated, and why not?

Northern Gateway

The intersection of State Highway 35 (Riverside Avenue), Rector Place and Bridge Avenue at the Coopers Bridge crossing of the Navesink River forms the Northern Gateway into Red Bank.

The Northern Gateway area

Travelers use this intersection to enter Red Bank from points north in Middletown Township and beyond. Rector Place leads to Shrewsbury Avenue and connects travelers with Newman Springs Road, which provides access to the Garden State Parkway, Brookdale Community College, and Route 18. South of Newman Springs Road Shrewsbury Avenue converts to a five-lane roadway which serves as an effective bypass to Route 35 south of Red Bank. Rector Place is signed at this gateway intersection for Fort Monmouth in Eatontown and Monmouth Racetrack in Oceanport.

Riverside Avenue provides access to downtown Red Bank, carries eastbound traffic to Shore destinations and the hospital, and is a primary route into downtown Red Bank and waterfront destinations. Bridge Avenue links Coopers Bridge

with the Red Bank train station and serves as an alternate route into downtown Red Bank for motorists seeking to avoid the Maple/Front looped intersection.

Relationship with Previous Studies

This core area forms the northern gateway into Red Bank. At the intersection of Coopers Bridge, Rector Place and Riverside Avenue, travelers must make decisions needed to complete their journey. Rector Place/Shrewsbury Avenue and Riverside Avenues are major north-south and east-west routes forming a threshold at Coopers Bridge, where a traveler experiences a change in the environment. Residential neighborhoods are found as one heads south on Bridge Avenue or Rector Place. Bridge Avenue provides direct access to the train station a few blocks away.

The Vision noted that the Coopers Bridge area, as a northern gateway to Red Bank, does not present an appropriate image of the town to visitors. At this intersection, a gas station and small businesses are the predominant land uses. As one heads south on Riverside Avenue, a mix of land uses is encountered on both sides — office and institutional buildings; commercial developments, such as the Molly Pitcher Inn; a funeral home; restaurants, and medium and large scale residential developments. Riverside Avenue today is not pedestrian-friendly. While Riverside Avenue provides a link between the gateway and downtown, the Vision recommended that it be made more pedestrian friendly, allowing connections at appropriate points from adjacent streets and riverfront destinations, such as Riverwalk.

All of the core area along the waterfront is zoned WD, or Waterfront Development District; along Riverside Avenue south the area is zoned for business-residential (BR-1). Vacant parcels and development proposals just beyond this core area will play a central role in alternatives developed.

The Vision recommended installing appropriate wayfinding signage at this northern gateway. Rebuilding Coopers Bridge was highlighted in

Red Bank's Petition for Centers Designation as a means to improve multi-modal connections into Red Bank, along with accommodations for bicycle and pedestrian use. Alternatives developed for this core area should reflect these recommendations.

Transportation Characteristics

As the northern connection into Red Bank and points south, this core area provides for one of the heaviest movements into and out of Red Bank. Coopers Bridge terminates first at a traffic signal in the Borough of Red Bank. This connection provides the heaviest movements into and out of Red Bank.

While the intersection at Coopers Bridge operates at acceptable LOS conditions, it does not permit certain movements critical to circulation within Red Bank. Several turning movements are prohibited: no left or through movement from Riverside Avenue; no turn from Rector Place and no left turn from Bridge Avenue. These constraints on traffic movements force northbound Riverside Avenue traffic wishing to gain access to Red Bank to make a right and turn around in Middletown. This isolates the waterfront activity from downtown Red Bank. The additional vehicle miles traveled further complicate and congest the travel pattern into Red Bank.

At Route 35 and Bridge Ave/Rector Street, the northbound approach on Bridge has one through/right lane. The southbound approach at Coopers Bridge has three lanes: one left, one through and one right. The eastbound approach at Riverside has two lanes with right turn only. The intersection provides a two-phase signal operation that permits Bridge Avenue and Rector Place to have green indications simultaneously. The receiving lanes of the Coopers Bridge approach have two lanes, but no separation between these lanes is provided, leading to potential conflicts between movements.

The Riverside Avenue and Bridge Avenue/Rector Street signal has a 2 phase, 90-second signal operation - Phase 1 southbound (Coopers Bridge)

and westbound (Riverside) movements; Phase 2 northbound (Bridge) and eastbound (Rector Place). This traffic signal operates at acceptable conditions but does not permit certain movements critical to circulation within Red Bank. Prohibiting movements include: no left or through movement from Riverside Avenue westbound, no right turn from eastbound Rector Place and no left turn from Bridge Avenue. Prohibited traffic movements create driver frustration by forcing northbound Riverside Avenue traffic to make a right and turn around in Middletown to gain access into Red Bank. This is especially true for motorists exiting Bodman Place.

Motorists exiting Bodman Place to go into Red Bank are faced with two equally inconvenient options: (1) make a left turn out of Bodman Place onto Riverside Avenue by crossing three lanes of traffic, or (2) make a right turn out of Bodman Place and continue into Middletown to make a u-turn to get back into Red Bank. Neither of these options are ideal to motorists. Poor directional signing and faded pavement markings make this intersection difficult for pedestrians and bicyclists.

Summary of Public Feedback

The following problems were identified in this core area:

- The intersection is complicated to maneuver through, particularly if one is traveling east.
- It is difficult to turn into town when traveling north on Riverside Avenue, because no left turn is allowed onto Bridge Avenue or Rector Place. Instead you have to go to Middletown to turn around
- Cars move too fast through this intersection.
- There is too much traffic — including trucks — because Shrewsbury Avenue is used as a Route 35 bypass.
- The intersection is not friendly to pedestrians and bicyclists.

Objectives for the Northern Gateway Area

- Improve connection between approach roadways to allow east-west travel at this intersection
- Improve bicycle/pedestrian facilities throughout the intersection to enable access to train station and Riverwalk
- Design intersection to serve as positive visual gateway into Red Bank
- Incorporate signage to local destinations for regional visitors
- Provide connection with Riverwalk
- Intersection and its environs should signal a change from higher speed highway to lower speed urban conditions
- Maintain vehicle capacity and LOS through the intersection
- Explore landscaped median for Riverside Avenue corridor for aesthetic and pedestrian friendly purposes and signing opportunities

Alternatives

Alternative 1

In this alternative, *(Fig. 15)* the southbound approach (Route 35) to the intersection provides a left, a left/through and a right turn lane. Riverside Avenue (Route 35) northbound is restriped to provide a continuous right turn lane and a thru/left lane. This lane configuration is to be delineated by constructing a landscaped island on the northeast corner, to facilitate the Route 35 northbound right turns, and create a pedestrian landing. Northbound Rector Place should be restriped to provide a right turn and through lane. Bridge Avenue would be restriped to include a through lane and a right turn lane, the stop bar would be moved back and the concrete island separating Rector Place and Bridge Avenue would be removed.

With this intersection scheme, the traffic signal would require modifications to the timing, phasing and ROW. To accommodate east-west connections, the traffic signal would be modified to include a four phase signal operation as follows:

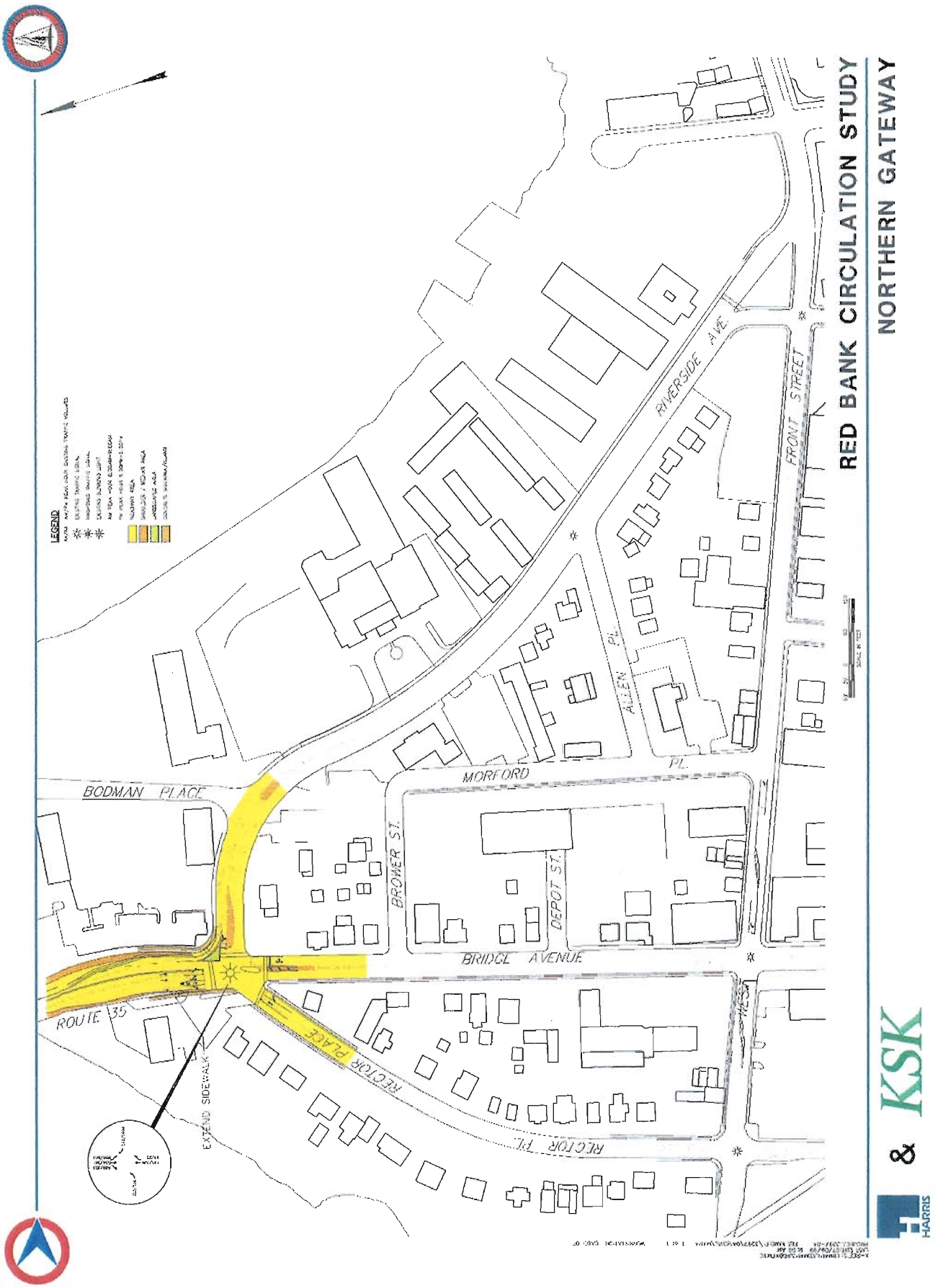


Fig. 15: Alternative 1, Northern Gateway

Phase 1 - southbound Route 35, Phase 2 - northbound Bridge Avenue, Phase 3 - northbound (eastbound) Rector Place and Phase 4 - northbound (westbound) Riverside Avenue. Implementing this type of phasing will degrade the existing signal operation from a LOS "C" to LOS "D".

In addition to providing necessary vehicle connections, the existing sidewalk along the west side of the intersection should be extended to the intersection. Together with the new landscaped island on the northeast corner, pedestrian facilities through the intersection all improved.

Discarded Alternatives

An alternative was developed with modifications to the same scheme discussed above, but allowed the southbound right turn to occur under a yield condition. This alternative did not improve the intersection for vehicles or pedestrians. The intersection operated at capacity and the pedestrian movements became complicated along the western side of the intersection. The alternative was therefore eliminated from further consideration.

An alternative was developed where Riverside Avenue provided three lanes on the northern approach; two right turn lanes, and a through/left lane. Intersection operations operated at capacity and storage requirements for the through/left competed with the left turn requirements at Bodman Place.

Red Bank Downtown District Area

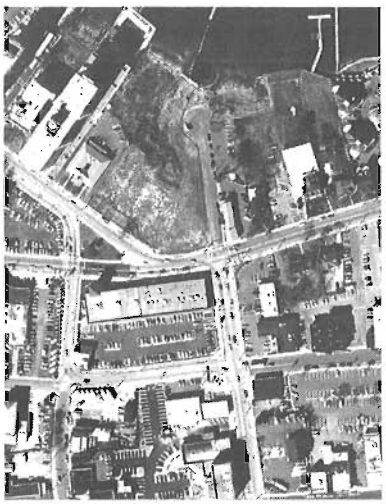
Red Bank's commercial district is bounded by the Navesink River on the north, Harding/Reckless/ Chestnut Streets on the south, extends from Shrewsbury Avenue on the west to Hudson Avenue on the east. Front Street and Riverside Avenue are the primary roads along its northern edge. NJ Transit's rail line crosses diagonally across the downtown district with a passenger station located on Monmouth Street.

Many of the elements that constitute Red Bank's role as a Regional Center are located within the commercial district. Roadways in downtown function as a destination and a corridor. In addition to delivering travelers to regional destinations within Red Bank, the transportation network also carries traffic bound for the Shore, the Garden State Parkway, Monmouth County College, Fort Monmouth, and suburban employment centers.

The borough's role as a regional medical center impacts Red Bank's road network. Emergency vehicles require access, particularly at river crossings and across Front Street, to reach hospital facilities on the eastern edge of downtown. There is also a significant amount of fire equipment movement in the downtown, due to numerous medical facilities and places of public assembly. Each of these vehicle types and uses places unique demands on the roadway system.

Parking facilities are a critical component of Red Bank's transportation network. Continued economic expansion depends upon adequate parking capacity and effective access to parking areas. There is an imbalance of utilization in surface lots in downtown, due in some part to poor signage and indirect access patterns. A series of one-way streets on the east side of Broad Street diminishes motorists' ability to locate parking on that side of downtown; access to major lots from White Street suffers from inadequacies described at the Maple Avenue intersection and from restrictions at its Broad Street junction.

The Riverside Ave./Maple/ Front Street intersection



Red Bank's train station area, just west of the CBD

Relationship with Previous Studies

The 1995 Master Plan promoted unification of several areas into a single downtown, advocated utilization of Red Bank's waterfront both for private development and public access, and proposed higher mixed-use densities near the train station. The downtown is zoned CCD (Central Commercial District) which allows a variety of uses, and has a Historic District Overlay along Broad Street. The Plan emphasized the role of pedestrian activity in the downtown's economy. Recommendations included improved parking access and transit service.

In 1995 the ANJEC Project for Riverfront Development examined the impact of waterfront development upon the remainder of the downtown. The study identified Front Street as a critical element for any development scenarios in this area, and emphasized that circulation responses along this corridor should function as a seam rather than as a barrier between the waterfront and the rest of downtown.

Downtown District circulation issues figured prominently in the 1996 Petition for Center Designation planning and implementation agenda. Key topics related to the downtown include: riverfront development, streetscape improvements, parking, access and mobility, train station area improvements, impact of Maple/Front/Riverside Avenue intersection, pedestrian linkages, wayfinding, and waterfront circulation.

Monmouth County proposed transit-friendly land use concepts in its 1996 study of the Red Bank Train Station area, which suggested combining regional bus and train facilities at a single site, and noted the impact of the high-level platform on commuter access to parking. NJ Transit expanded on that work in a follow-up study with Projects for Public Spaces to unify bus and train service in a redesigned plaza at the station, currently under construction.

The Borough recently completed several streetscape projects, on Broad Street, Shrewsbury Avenue, and in the train station area. The Broad

Street streetscape project installed street trees, pedestrian scaled lighting, wider sidewalks, textured crosswalks and bump-outs at selected intersections to increase pedestrian safety and amenities. Improvements on Shrewsbury Avenue include tree plantings and new lighting as part of a phased program. Red Bank has leveraged Local Aid and Centers of Place funding sources to complement investments by NJ Transit with streetscape improvements in the vicinity of the train station.

The Wayfinding Study will be implementing a downtown pilot project in fall 1999. Plans include signage and landscape improvements to direct motorists to central parking facilities. A dedicated pedestrian cut-through will link Riverside Gardens Park with regional arts attractions on Monmouth Street.

The Wayfinding Study also noted a negative visual image along state highways and rail rights-of way due to an absence of landscaping and an abundance of billboard advertising. Earlier surveys indicate that fully 50% of the billboards in Red Bank exist on property owned by NJ Transit. Although billboards are not a permitted use, current leases are to be phased out. Acceleration of this process will enhance visual impressions of Red Bank presented to out-of-town travelers.

The Borough's 1998 trolley pilot demonstrated a strong level of local support for service to destinations within the commercial district. By extending beyond normal walkable distances, the trolley provides a means for pedestrians to reach other districts within the downtown, and also enables transit users to conveniently reach the station. The trolley also serves as a viable alternative to redundant parking facilities and local congestion within the downtown district.

Transportation Characteristics

The Maple/Front/Riverside/Pearl/Water Streets intersection is pivotal to circulation issues in the downtown. This intersection provides access to multiple regional destinations, the downtown and

CBD parking. As currently designed, it forces circuitous routes on travelers as they approach the business district, functions as a barrier to safe pedestrian and bicycle travel, and impedes efficient east-west movement through the downtown.

East-west crosstown routes throughout the district are poor. Unreasonable delays occur frequently on Front Street. Monmouth Street works well for pedestrian traffic but has two problematic intersections at its western end. White Street's effectiveness as a connection to prime parking areas is undermined by ambiguous conditions at its intersection with Maple Avenue and by one-way traffic flow on Water Street. Prohibited left-turn movements from Reckless Place onto Maple Avenue reduce that road's utility as a cross-town route, and rush-hour delays along Maple Avenue due to east and west turning movements deflect traffic onto over-burdened alternate routes.

The development pattern of blocks and streets in the downtown district affect vehicular movement and potential alternatives. The area is fully developed in a pattern of tight streets, discontinuous intersections, some long blocks, and one-way road segments. Transportation recommendations will be constrained by the density of this development pattern. As an alternative to high volumes on north-south routes, local users favor secondary streets which function as diversionary parallel streets to Broad Street, Maple Avenue, and Shrewsbury Avenue. This system of internal alternate routes is an effective response to capacity problems, but carries a negative consequence for residential neighborhoods.

Despite numerous improvements to pedestrian facilities, several critical issues remain. Safety at intersections, mid-block crossings, and improved signal messages and timing require further attention in the downtown pedestrian network.

Summary of Public Feedback

Public feedback for the Downtown District encompasses remarks on three specific regions within the district, namely the pivotal Maple

Avenue and Front Street intersection, the east-west crosstown routes, and the train station area.

Numerous problems were identified in the Downtown District:

- It is difficult to travel from Front into town at Maple Avenue. Eastbound traffic must go to Broad, and westbound traffic has to circle City Centre.
- There are too few ways to travel east or west through town.
- Eastbound Front Street traffic encounters too much congestion and long delays.
- The bus layover obstructs right turns from Front to Broad Street.
- It is difficult to find the parking lots.
- There is not enough shopper-oriented parking in the east side lots.
- It is difficult for pedestrians to cross Front Street.
- Maintain a convenient, safe and attractive pedestrian network for transit users.
- Add a convenient locally based transit mode to offset parking demand, reduce the cost of commuting, and enhance transit users' ability to get downtown.

Objectives for the Red Bank Downtown District

- Improve access to destinations throughout Red Bank's greater downtown area: its waterfront, downtown, and arts districts.
- Provide wayfinding signage to clarify travel routes and destination locations
- Increase access, supply, and shared utilization of in-town parking
- Support utilization of the Red Bank train station
- Incorporate landscape and public art elements as wayfinding cues and identity elements
- Develop internal grid to get people quickly to their destinations
- Develop and maintain multi-modal facilities: pedestrian, bicycle, and trolley systems to offset impact of high auto-

motive demand on downtown development and circulation patterns

- Enhance pedestrian mobility and access throughout Red Bank's greater downtown area

Alternatives

Improvements to Red Bank's downtown road network should address several fundamental concepts.

Throughout the district there is a pattern of major north-south roadways that function as a pair with a parallel road: Shrewsbury Avenue with Bridge Street, Maple Avenue with Pearl Street, and Broad Street with Hudson. In each case it is important to maintain the primary road as the route of choice for regional travelers, and to also recognize the supplemental role that the parallel road plays for local access into the district. Parallel roadways need to provide adequate flow along their length, and residential areas must be protected from the potentially negative impact of spillover regional traffic. Traffic calming measures should be considered for residential neighborhoods that abut the regional corridors. Hudson Avenue south of Harding Road, and local roads bounded by Bergen and Newman Springs Road adjacent to Shrewsbury Avenue, are candidates for this investigation.

Crosstown circulation has a significant impact on mobility and access within the Downtown District. Separation of uses into a hierarchy of streets will reduce congestion on Front Street and improve access to destinations within the downtown district.

Front Street should be established as a through street for east-west vehicular traffic, the "W Streets" should be utilized as the preferred local access route to a series of public and private parking facilities, and Monmouth Street should serve as a pedestrian corridor linking the train station and downtown destinations. Entrances to all parking facilities serving new development on either Front Street or Monmouth should be placed

along White Street, to minimize turns on Front Street and to maintain a continuous and safe pedestrian realm on Monmouth Street. Plans for a future riverfront promenade should establish a bicycle trail linking regional routes.

Missing links in the local network created by larger regional patterns must be addressed. Infill of north-south roads at English Plaza and Drummond Place between Front and White will improve access and provide alternate routes into the district. A new grade crossing at River Street (to replace the crossing lost at Oakland Street along the North Jersey Coast rail line) could connect traffic between local schools, senior facilities, the YMCA and various community activities. In a similar vein, heavy volumes on Shrewsbury Avenue hamper through movements at Monmouth Street, where access to the train station and the arts corridor converges, and may require signalization.

Operational Improvements

Several operational adjustments will have an immediate and positive impact on the downtown commercial district. The signal at Monmouth and Broad should be modified to an actuated signal to favor heavier volumes on Broad Street. The signal at Broad and Front requires timing adjustment and improved messages for pedestrian crossing.

Wayfinding

Wayfinding signage at gateways and key entry points to the downtown district are critical to improving downtown access. Landscape cues should be incorporated into the transportation network at the design stage of all capital improvements. Pedestrian access should be maintained in all development approvals.

Parking

As both the Borough and NJ Transit develop plans to manage and increase parking capacity, network implications should be assessed. Improvements to the Maple/Front core area, the White Street and

Maple Avenue intersection, and the White/Water/Wall St. Extension all affect access to downtown parking (see sections to follow). Continued efforts by the Borough to identify opportunities for shared parking and pursue locally based transit opportunities will minimize demands for additional capacity. Parking for new waterfront development sites in core downtown areas should be located within the heart of the downtown to maintain overall health of the entire district. Future study of the district's road network should evaluate the impact of one-way street patterns on east-side lots.

Pedestrian Travel

Particular concerns in the downtown area are: installation of mid-block crosswalks along Front Street at the library, English Plaza, and the hospital; follow-up study of pedestrian safety issues on Shrewsbury Avenue; and adjustments to the signal at Broad and Front. Streetscape improvements should be extended from Broad Street to Shrewsbury Avenue with particular attention to Monmouth Street and to areas that connect destinations to parking, transit, and the waterfront. A system of pedestrian cut-throughs should be developed, using the Wayfinding prototype project as a beginning, to increase pedestrian safety and access within the downtown.

Bicycle Mobility

Multi-modal access is essential to a successful regional transit system. Commuter demand in Red Bank far exceeds parking capacity and threatens to overwhelm that part of the district. Alternate means of access to and from the train station are necessary to balance the system. Infrastructure improvements throughout the borough should incorporate bicycle and pedestrian facilities to meet this need.

The Route 35/Maple Avenue/Front Street Area

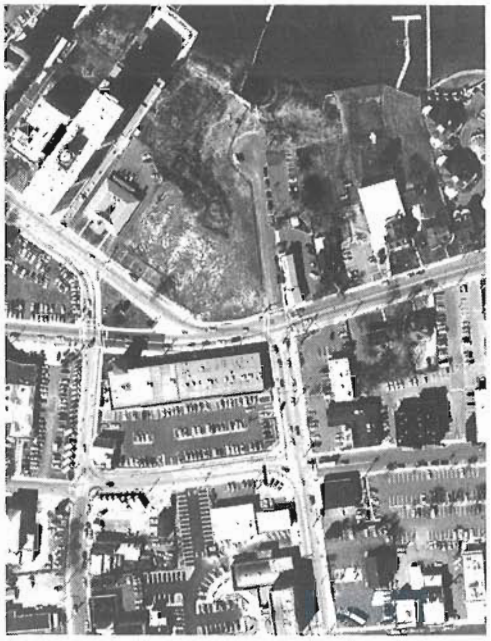
Maple Avenue and Front Street intersect in the heart of downtown Red Bank. State Highway 35 runs through Red Bank on Maple Avenue south of Front Street and on Riverside Avenue north of Front St. This core area intersection also encompasses two local streets, Pearl Street and Water Street, to function as a split intersection that flows around a city block.

Relationship with Previous Studies

The Vision identified Route 35 as one of the most important means of access and of traversing the town. The Master Plan identified this location as one of the key intersections in Red Bank.

The Riverside Avenue/Route 35/Front Street corridor serves as a boundary for three major zoning categories. Land along the waterfront on Riverside Avenue, from Cooper's Bridge to the hospital past Broad Street, is zoned WD, Waterfront District. Along the other side of Riverside Avenue from Coopers Bridge to Maple is zoned BR-1 (Business Residential). As Route 35 continues south as Maple, the CCD or Central Commercial District begins on the east side. Three sites along the waterfront, and two along the west side of Pearl Street have potential for development and will play a central role in the viability of alternatives developed for this core area.

The Model for Riverfront Development stated that the Route 35/Maple/Front area has major economic development ramifications for Red Bank. The Model concluded that new development should support the economic vitality of nearby downtown businesses, should add to the pedestrian activity of both Riverside Avenue and Front Street, and should propose public access to the river from the street. Size and design requirements of future developments were suggested to control the impact of traffic and to respect the scale and architectural character of the town.



The Route 35/Maple Avenue/Front Street area

Directional signing in this area is poor, and pavement markings are faded. There is no landscape treatment along the Route 35 corridor. Safety issues are also a concern at this intersection. The Maple/Water/Wall Street intersection is a high accident location. Between 1994-1997, there were 40 accidents at this intersection. Pedestrian/ bicycle traffic is significant due to the proximity of City Centre and Borough Hall. Many pedestrians have been observed crossing Maple Avenue between intersections where potential conflicts are perceived to be are minimized. Bicyclists travel south on this northbound block and continue down two-way Maple Avenue.

Summary of Public Feedback

The following problems were identified:

- Too much congestion results from a circuitous traffic pattern
- Traveling south, it is difficult to get downtown or go east from Riverside Avenue as there is no left allowed on Front Street
- There is a long delay traveling east on Front Street, often requiring waiting through two traffic signal cycles to get through the Maple/Pearl intersection.
- It takes too long to go east through the Pearl/Maple Avenue traffic lights — it frequently takes two traffic signal cycles to get through.
- Traffic heading north on Maple Avenue speeds up after passing Monmouth Street.
- Vehicles and bicycles have difficulty entering or crossing Maple Avenue at White or Water Streets.
- It is difficult for pedestrians to cross at the Maple/White/Water Street intersection.
- Walking across Pearl and Water Streets is difficult particularly for seniors heading for the seniors residence.
- Bike travel in general is difficult in this area.

Objectives for the Route 35/MapleAvenue/Front Street Area

- Eliminate the circuitous traffic pattern through this area
- Provide a direct connection between Riverside Avenue and Front Street at Maple Avenue
- Improve access into the downtown district
- Design the intersection to serve as a visual as well as a functional gateway into the core commercial area
- Install wayfinding signage to direct regional travelers to local destinations
- Improve access to parking facilities
- Provide pedestrian linkages necessary to connect destinations within adjacent waterfront and downtown areas

Alternatives

Alternative 1

Alternative 1 *(Fig 16)* was developed to minimize impacts to the community while satisfying as many of the objectives as possible. Alternative 1 retains the one-way pairs of Maple and Pearl Street. A left and a left/through/right lane on northbound Maple Avenue at Front Street is provided. On northbound Maple Avenue at Water Street/White Street a through and through/right turn lane is provided.

Implementing this type of lane configuration will maximize capacity along Front Street, requiring less green time at the Front Street intersection. The additional green time can then be transferred to Front Street.

This lane configuration will require westbound Front Street to be widened between Maple and Riverside Avenues to accommodate the additional turning lane. Westbound Front Street is restriped to include a right turn lane at Maple Avenue and a left turn lane at Pearl Street. Pearl Street would better delineate the turning movement at Wall/Water Street by requiring the left lane to turn left and the right lane to allow all turn movements. Signing is to be provided to indicate these move-

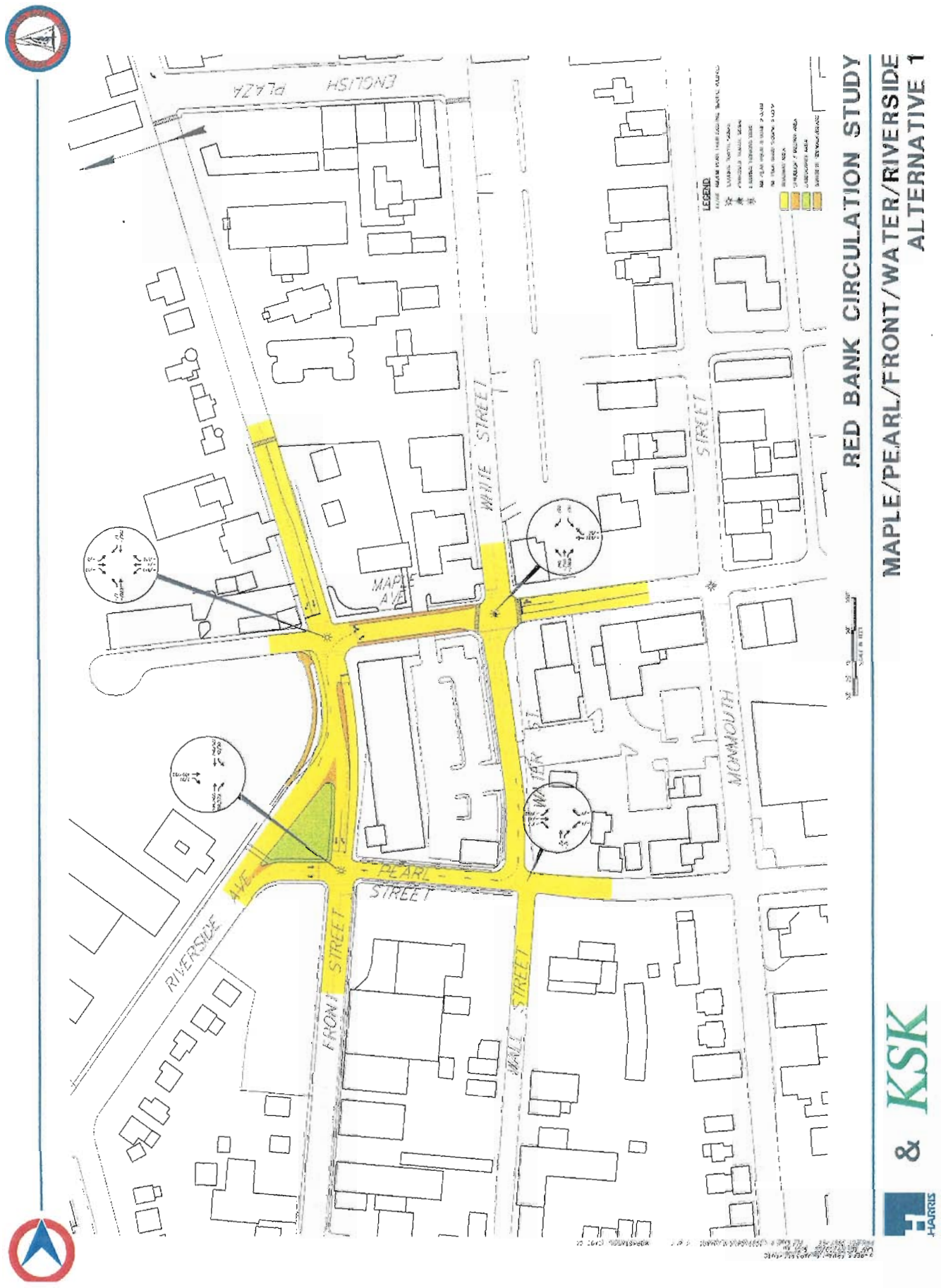


Fig. 16: Alternative 1, Route 35/Maple Avenue/Front Street Area

ments and indicate Route 35. A traffic signal at the intersection of Water/White Street and Maple Avenue should be considered to better accommodate eastbound through traffic and pedestrians.

Alternative 2

In the development of Alternative 2, *(Fig. 17)* concepts developed under Alternative 1 were further refined to meet each of the goals and objectives outlined. To meet the objective of improving the traffic patterns through the area, Maple Avenue, Pearl Street and Water Street have been restriped to accommodate two-way traffic. Once these roadways are modified to accommodate two-way traffic, changes to southbound Riverside Avenue traffic pattern must be employed. To do this one lane of southbound Riverside Avenue traffic was aligned with Maple Avenue. This lane of traffic would be for through movements only, no turns would be permitted from this approach. All turns from southbound Riverside Avenue would be from the intersection at Pearl Street.

To fully accommodate the southbound through traffic a new local access option would need to be created. This can be done by extending Pearl Street to Maple Avenue between Bergen and Irving Place. This extension of Pearl Street would be designed as a low speed two-lane road sensitive to community concerns. Traffic calming measures would be employed to limit unnecessary regional use.

Lane configurations for westbound Front Street would include a left, a through and a right turn lane at Maple Avenue. At Pearl Street, westbound Front Street would be restriped to accommodate a left and a through lane. A traffic signal may require installation at intersection of Water/White Street & Maple Avenue.

Alternative 2 - Future Considerations

In Alternative 2, *(Fig. 18)* one of the key objectives was to ensure any proposed improvements at the intersection do not preclude future growth and development in the Borough. As previously discussed the Borough is considering

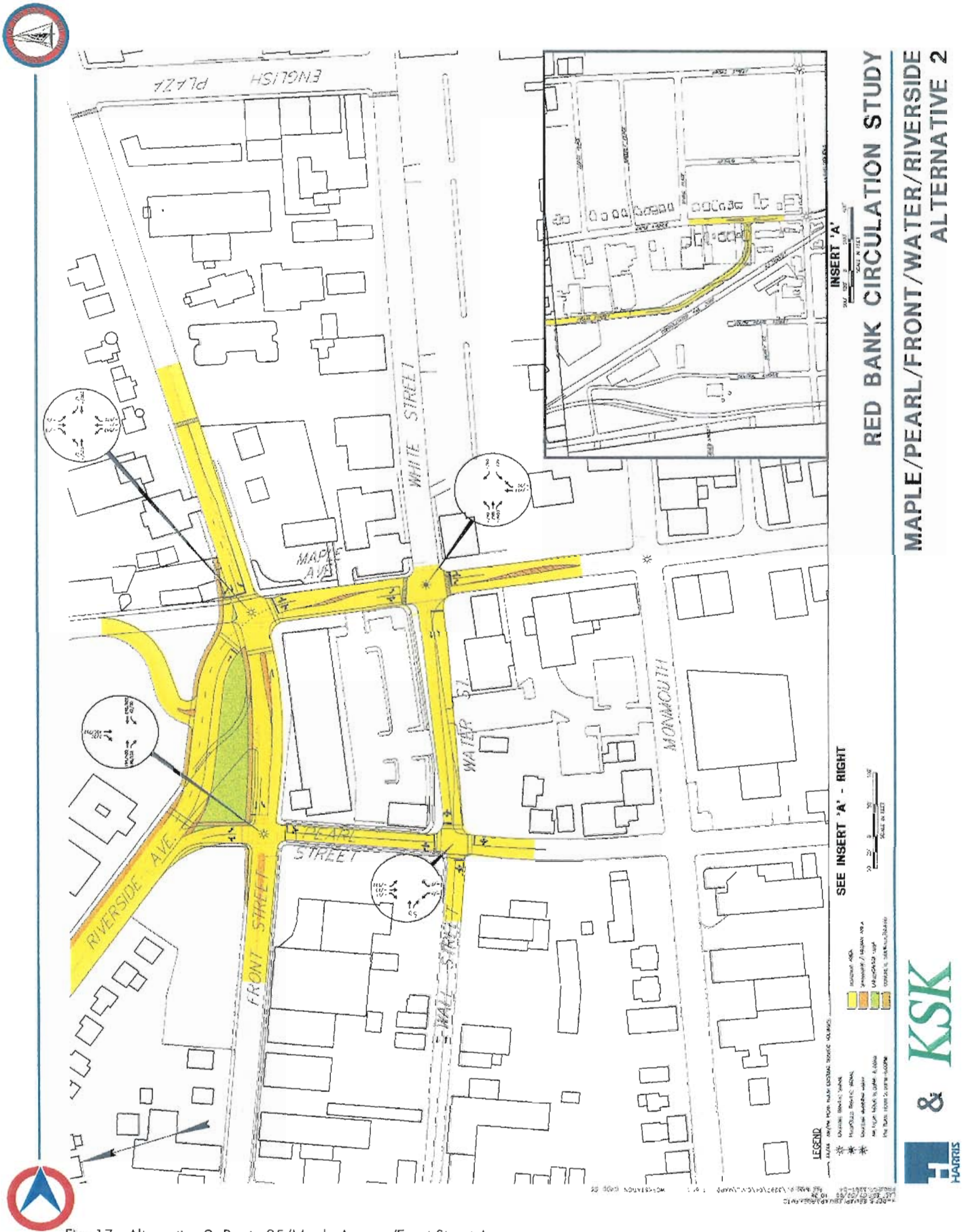


Fig. 17: Alternative 2, Route 35/Maple Avenue/Front Street Area

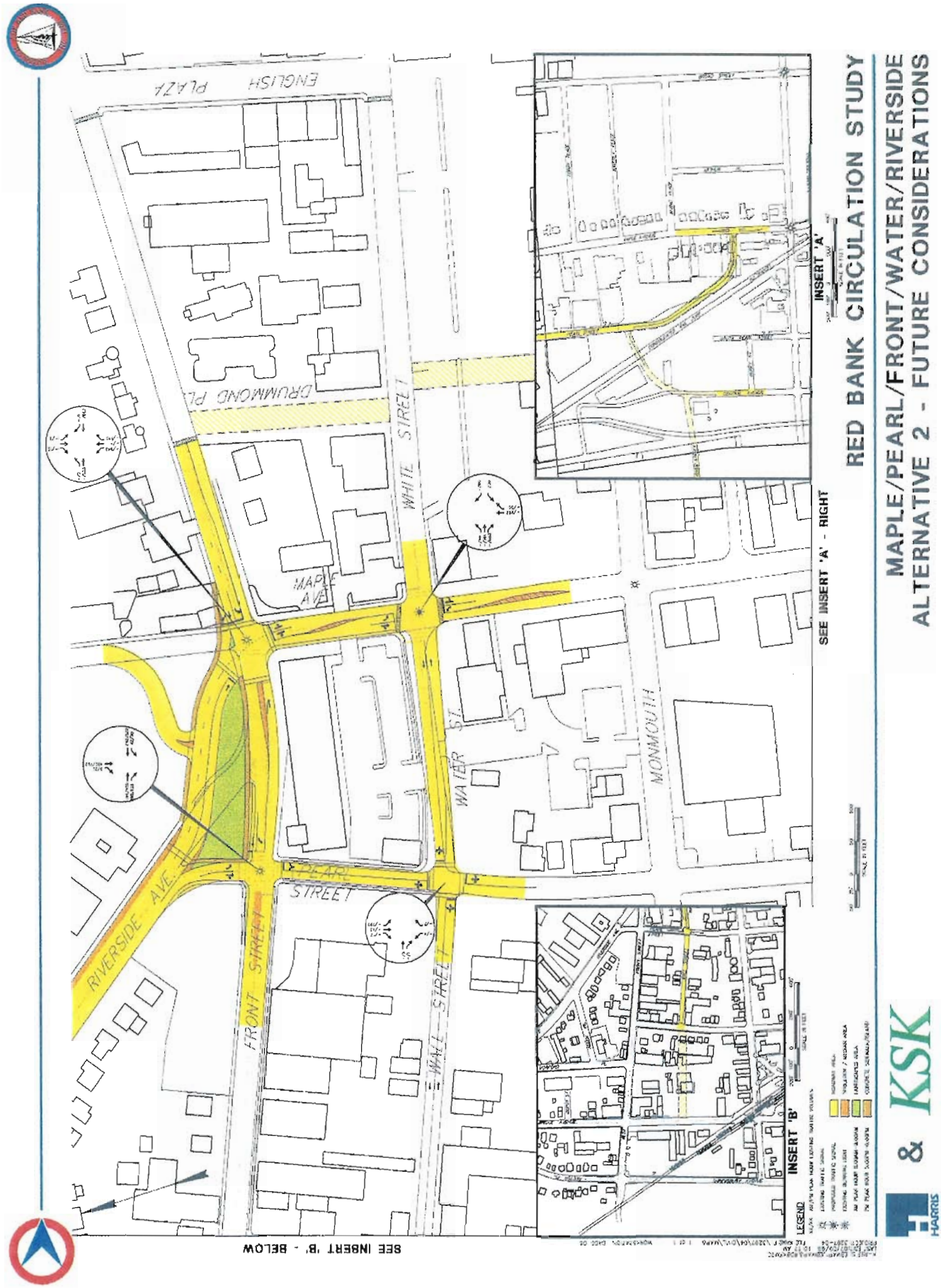


Fig. 18: Alternative 2, Future Considerations; Route 35/Maple Avenue/Front Street Area

reconfiguration of the parking facilities along White Street. If the number of parking spaces were to be increased, under the existing conditions those parking to and from the north will impact traffic along Front Street. This alternative has reviewed the possibility of extending Wall Street to Bridge Avenue which will then act as a parallel route to Front Street. For this parallel route to be employed, Water Street must be able to accommodate two-way traffic. For Water Street to function as a two-way roadway, Pearl Street will also become two-way between Front and Water Streets. This can be accomplished by relocating southbound Riverside Avenue through traffic directly to Maple Avenue. With the construction of the Pearl Street extension, localized through traffic can utilize Pearl Street thereby minimizing the delay for southbound traffic using Maple Avenue.

The Pearl Street Extension presents an opportunity to connect the western portion of the Borough with the downtown area. This alternative reviewed the possibility of extending Central Avenue north, to intersection with the Pearl Street extension. If this were completed River Street could also be extended to intersect with Central Avenue, thus providing direct access to the western portion of Red Bank.

An additional opportunity exists in the area east of Maple Avenue. The alternative access driveway to the White Street parking facility can provide an additional access point to parking facilities similar to English Plaza.

Discarded Alternatives

1. An alternative was developed similar to Alternative 1, but with a left turn lane included for southbound Riverside Avenue traffic wanting to gain access to eastbound Front Street. In performing the analysis for this configuration operating condition were at acceptable levels. This alternative however, did not provide substantial benefit to that discussed under Alternative 1, and was therefore eliminated from further

consideration.

2. An alternative was developed similar to that discussed under Alternative 2. This alternative restriped Maple Avenue as a two-way roadway with no right-of-way acquisition. Restriping Maple Avenue as a two-way roadway without acquiring right-of-way limits lane configurations, causing the intersection to operate at over capacity conditions. This alternative was therefore eliminated from further consideration.

3. An alternative was developed which realigned Riverside Avenue southbound at the intersection with Maple Avenue. One through lane and one left turn lane was provided. Northbound Maple Avenue was restriped to accommodate one left turn lane and one through/right lane. Capacity analysis performed for this intersection indicated that the intersection would operate at over capacity conditions. This alternative was therefore eliminated from further consideration.

4. An alternative was developed which realigned Riverside Avenue southbound at the intersection with Maple Avenue. Two through lanes were provided with all turns being permitted at the Pearl Street intersection. Northbound Maple Avenue was restriped to accommodate one left/through lane and one through/right lane. Capacity analysis performed for this intersection indicated that the intersection would operate at acceptable conditions. However, this configuration requires that two southbound through lanes be provided through Monmouth Street. Impacts to the community were deemed excessive and was therefore eliminated from further consideration.

5. To address the capacity problems at the subject intersection a system of one-way pairs adjacent to the Route 35 corridor was investigated. Bridge Avenue and Shrewsbury Avenue are two north-south arterials paralleling Route 35. These roadways could be converted into a one-way pair system which would reduce vehicle conflicts and increase capacity. This concept is not endorsed by the community and public officials and was therefore eliminated from further consideration.


Maple Avenue heading south

Central Business District East-West Corridors: Crosstown Front Street, the "W" Streets and Reckless Place/Chestnut Street

Three sets of roads carry east-west traffic through Red Bank: Front Street on the north, Chestnut, Reckless, and Harding at mid-town, and Newman Springs Road on the south. Newman Springs Road (CR 520) terminates at State Highway 35 in the southeastern portion of Red Bank. Chestnut, Reckless and Harding form a segmented link with offset intersections along its length; this mid-town route splits on its eastern end to two county roads (CR 10 and CR 24) heading east along the peninsula to the Shore. Front Street maintains a constant alignment from Middletown Township through to Rumson, connects with four river crossings along its length, and in general carries the heaviest volumes.

Relationship with Previous Studies

The east-west corridors and Route 35 form the crossroads for through and local traffic. As the Wayfinding Study points out, in this core area several east-west thresholds (Front, White and Chestnut Streets, and Reckless Place) cross Maple Avenue, a major north-south threshold. Water Street is part of this north-south threshold, linking Riverside Avenue to Maple. Within very short distances, visitors must make decisions to complete their journey at three consecutive crossroads - Front at Maple, Maple at White/Wall and Maple at Monmouth. These thresholds provide critical direct

links to locations such as the Galleria/Antique Center, Borough Hall, the Count Basie Theater and KidsBridge Cultural Center, and the downtown retail.

Front Street to Maple Avenue (Route 35), and Chestnut Street are within the borough's BR, or Business Residential district. White Street is within the CCD, or Central Commercial District. Water and Wall Streets are within the BR-1. Reckless Place is zoned in part PO, or Professional Office; near Broad Street it is zoned CCD. While none of the intersections areas are within an historic district, there is an historic district adjacent to the core area. Monmouth Street east of Maple Avenue between White Street and Peters Place is within an Historic Design District Overlay. The Vision Plan recommended that Red Bank pursue actions that reinforce Monmouth Street as the focus of culture, and as a connector between Broad Street retail and the Galleria.

The proposed trolley route will play an important role in easing congestion in this core area. The pilot trolley travels up Broad Street, making a loop around the Monmouth/Maple/White Street block before returning down Broad Street. The Borough is also considering alternatives at this time to provide more parking, such as a structured facility or shared parking regulations. Two potential locations have been identified for a parking structure, one near the train station, and one on the White Street parking lot. Block layouts currently being considered include parking in the middle with retail on either end, or parking on either end with retail in the middle.

Transportation Characteristics

Red Bank's roadway connections in the north-south direction are well defined and are a strength of its grid. The east-west connections however, do not provide the same level of connectivity through the Borough and are the grid's weak point. The east-west "W" Streets - White, Water and Wall - do not provide a continuous connection between the eastern and western portions of the Borough. This series of disconnected roadways leads to driver frustration, additional delay and oversatu-

rates those east-west roadways that currently provide a continuous connection. The circulation study examined three east-west connections: Front Street, Wall Street-Water Street-White Street ("W" Streets) and Reckless Place/Chestnut Street.

Front Street (CR 10)

Front Street is a county arterial, and is Red Bank's primary east-west connection. Principal intersections are controlled by traffic signals. The heavy north-south traffic and the lack of coordination between adjacent traffic signals cause delays along Front Street. Both the Front/Rector Place intersection and the Front Street/Bridge Avenue intersection have a two-phase 70-second cycle signal operation. At both, the first phase allows eastbound and westbound movements; the second phase allows northbound movements. Both the Front/Broad Street intersection, and the Front Street/Globe Court intersection have a three phase, 90-second signal operation. At both intersections, the first phase allows westbound movements; the second phase allows westbound and eastbound movements, and the third phase allows northbound movements.

Along the Front Street Corridor, major intersections operate as follows:

- At the Rector Place-Shrewsbury Avenue intersection, the traffic signal currently operates on a 70-second cycle and provides railroad pre-emption from the grade crossing just south of the intersection. Monmouth County is currently in the process of developing design plans to modify this traffic signal. During the PM peak hour this intersection operates at over capacity conditions.

- At Bridge Avenue, the traffic signal currently operates on a 70-second cycle. The County proposes to modify this traffic signal also. The eastbound approach to the intersection currently provides one approach lane for all movements. Field reconnaissance noted

that if a westbound vehicle makes a left turn onto northbound Bridge Avenue, a queue forms if the turning vehicle does not keep to the left, allowing vehicles to pass on the right. The intersection is in close proximity to the intersection at Rector Place-Shrewsbury Avenue. During the railroad pre-emption of that traffic signal the intersection at Bridge Avenue experiences additional delays and long queues form in the eastbound direction.

- Improvements at Pearl Street and Maple Avenue intersections were discussed as part of the Route 35/Maple Avenue/ Pearl Street/Front Street/Water Street/ Riverside Avenue Alternatives.

- The Broad Street intersection presently operates within an acceptable range for vehicle capacity (LOS C or better) in both the AM and PM peak hour. The intersection has some of the highest pedestrian conflicts within Red Bank. The northbound Broad Street vehicles are unopposed, and in many cases proceed through the intersection inattentive of pedestrians crossing Front Street.

Wall, Water and White Streets ("W" Streets)

This roadway system serves as the primary connection to downtown business and parking. These streets could provide an additional east-west component of the grid, but their effectiveness is weakened by the poorly aligned connection between Wall Street and Water Street, and the lack of a continuous east-west connection, as Wall Street does not go through to Bridge Street.

Front Street has one eastbound lane, and one westbound lane, with parking on both sides. Wall Street has one eastbound lane and one westbound lane with parking on both sides. Water Street is one way eastbound with three travel lanes, with no parking allowed. White Street has one eastbound

and one westbound lane, with parking allowed on both sides of the street.

This area was identified as a high accident location with 40 accidents occurring over a three-year period. Field reconnaissance indicated that pavement markings and signage along Pearl Street and Water Street are poor. Water Street is an Arterial under NJDOT jurisdiction. Reckless Place and White, Wall and Chestnut Streets are classified as Local Collector streets.

Reckless Place and Chestnut Street

The Reckless Place/Chestnut Street intersection area serves as a secondary crosstown connection. As part of NJTransit's proposed train station improvements, Oakland Street will be closed to through traffic in the station vicinity. This closing will put additional traffic demands on the Reckless/Chestnut connection, which is disjointed by the separation of the two intersections as currently configured. Permitted parking opposite each of the streets further complicates the separation.

Vehicles northbound on Maple Avenue wanting to turn left onto Chestnut Street must stop in the only lane of traffic, causing through vehicles to queue until the turning vehicle is able to negotiate its movement. Similarly in the southbound direction, vehicles wanting to turn left onto Reckless Place cause the same problem. On Reckless Place, no left turn onto Maple Avenue southbound is allowed.

Summary of Public Feedback

The following problems were identified:

- Traffic backs up on Maple Avenue when vehicles make left turns onto either Chestnut Street or Reckless Place.
- No left turn from Reckless Place onto Maple Avenue is a problem.
- There are too few ways to travel east-west through town. These are important intersections because they serve east-west travel.
- On street parking further complicates this intersection.

- Eastbound Front Street traffic encounters too much congestion and long delays.
- The traffic light gives too much green time to Broad Street travelers, and delays the green light for Front Street traffic heading east.
- At the Broad and Monmouth intersection, Broad Street back up because too much time is given to Monmouth Street
- The bus layover obstructs right turns from Front to Broad Street.
- It is difficult to find the parking lots.
- There is not enough shopper-oriented parking in the east-side lots.
- It is difficult for pedestrians to cross Front Street.

Objectives for the Central Business District East-West Corridors: Crosstown Front Street, the "W" Streets and Reckless Place/Chestnut Street Area

- Decrease levels of delay and congestion on Front Street
- Re-distribute regional demands on Front Street
- Separate local from regional traffic demands on Front Street with additional east-west connections within downtown district
- Expand east-west efficiency throughout entire system, to include parallel county roads
- Reduce conflict and congestion on Maple Avenue at Chestnut/Reckless paired cross-town connection
- Address delays at CR 520 as part of southern Gateway core area
- Increase access into downtown district with intermediate intersections
- Restore southbound access into downtown district at Maple Avenue
- Create pedestrian access at regular intervals between downtown district and Red Bank's adjacent residential areas.

Pavement markings and signage along Pearl Street and Water Street are poor. Safety improvements are recommended for this high accident location

area. Pearl Street southbound between Front Street and Water Street should be restriped to indicate that the left lane must turn left and all movements may be made from the right lane. Striping along Water Street should clearly delineate three travel lanes marked to indicate lane usage. Additional signing should be employed to support markings and clearly indicate Route 35 southbound.

The connection between Wall Street and Water Street should be better aligned, to improve the east-west grid system through Red Bank. *(Fig. 19)* As part of the Route 35/MapleAvenue/Pearl Street/Front Street/Water Street/Riverside Avenue intersection improvements, Red Bank could extend Wall Street to Bridge Avenue in the future. *(Fig. 20)* This extension will provide a parallel route to Front Street, helping to complete the east-west grid system and relieve congestion along Front Street.

Reckless Place and Chestnut Street

The Reckless Place/Chestnut Street intersection area serves as secondary crosstown connection. Closing a portion of Oakland Street will put an additional vehicles on the Reckless Place/Chestnut Street connection, which currently has operational problems. Street connections are disjointed due to the separation of the two intersections. Permitted parking opposite each of the streets further complicates separation. Vehicles northbound on Maple Avenue turning left onto Chestnut Street must stop in the only lane of traffic, causing through vehicles to queue until the turning vehicle is able to negotiate its movement. Similarly in the southbound direction, vehicles turning left onto Reckless Place cause the same problem.

An interim solution to this problem would be to eliminate the on-street parking directly across from Reckless Place and Chestnut Street. Once this is implemented, traffic conditions may be reevaluated for its effectiveness. If the problem persists, a delineated left turn lane should be considered. This lane would require the elimination of some on-street parking from Reckless Street to just north of Peters Place. In the interim

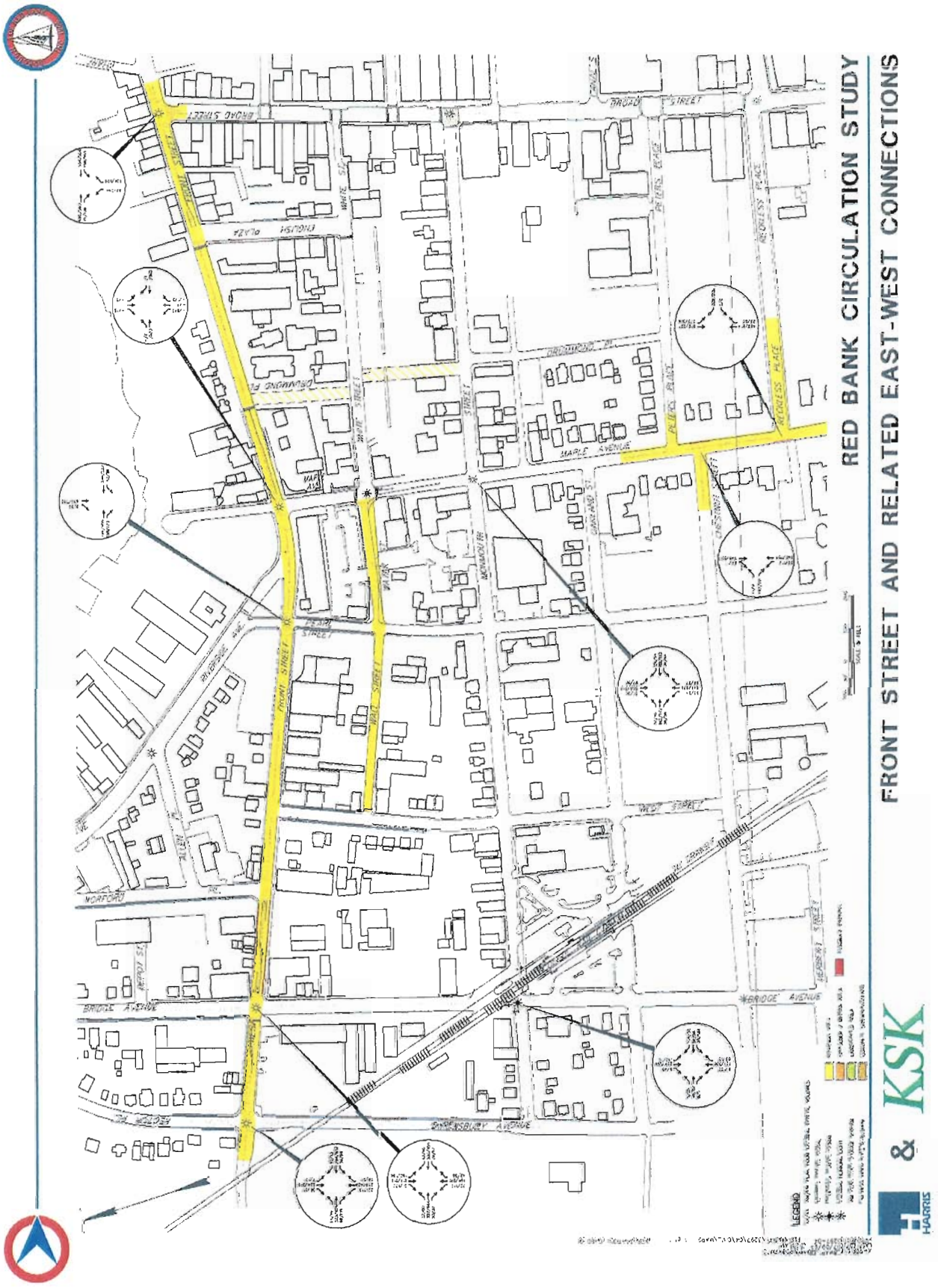


Fig. 19: Wall/Water Street Connection

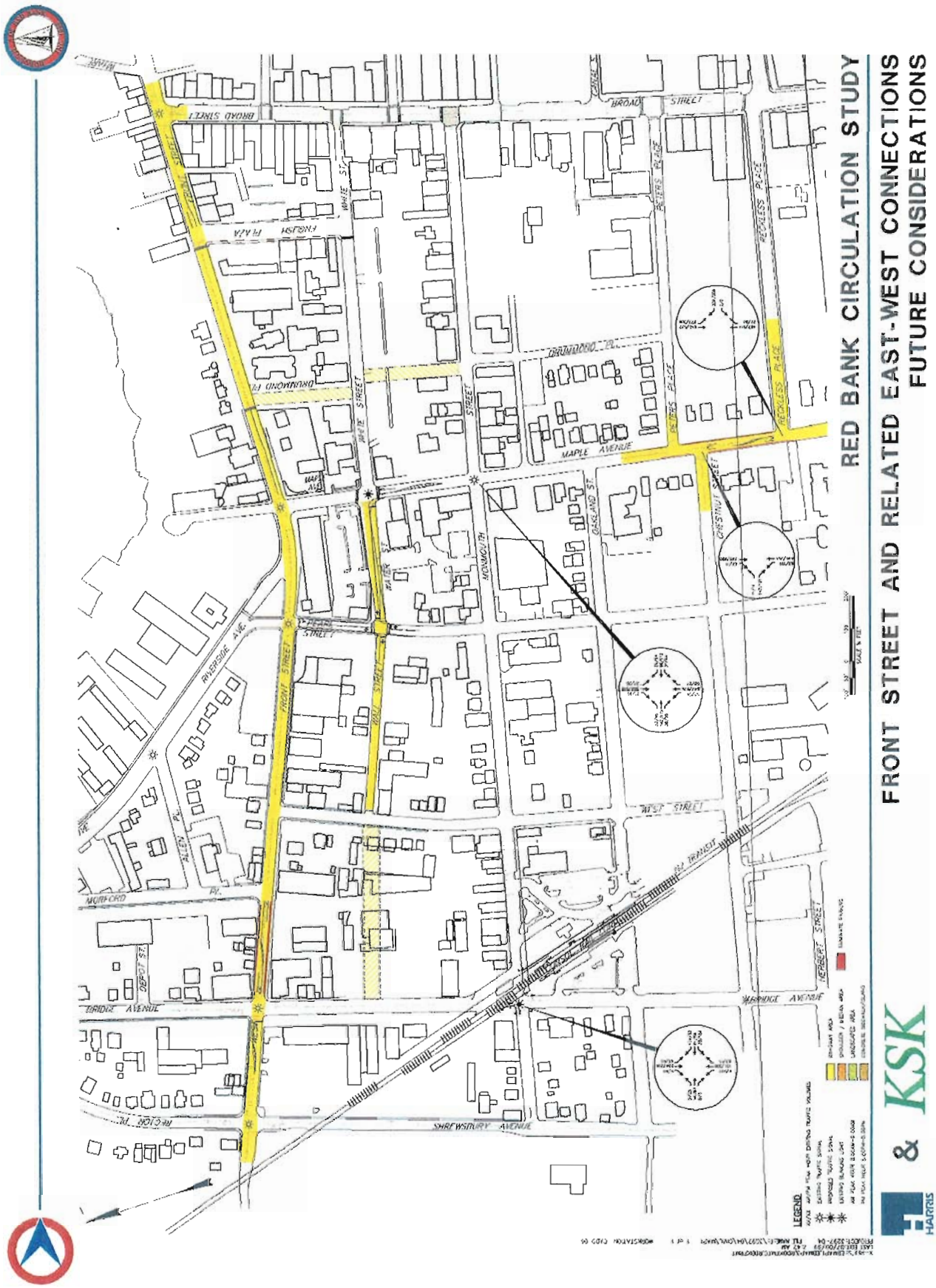


Fig. 20: Future Consideration: Extension of Wall Street to Bridge Avenue

solution, this would be equal to about six spaces (three at each intersection). In the ultimate solution, this would equal about 25 spaces. Proper channelization with additional storage for tuning vehicles may then be provided.

Front Street

Rector Place-Shrewsbury Avenue

Intersection timing and phasing can be adjusted to provide an overall cycle length of 90 seconds with advanced green phases on the eastbound and northbound phases. Providing these adjustments improves the operating condition of the intersection to LOS "C". If the cycle length is increased to 90 seconds, adjacent traffic signals may be coordinated.

Bridge Street

While operating conditions at this intersection were found to function well, with a few simple adjustments the intersection operation can be improved. This intersection approach has sufficient pavement to provide a left turn lane, enabling left turns to be separated from the through/right movements. This intersection could be tied into the railroad pre-emption phase of the Rector Place-Shrewsbury Avenue intersection. By increasing the cycle length to 90 seconds, adjacent traffic signals will be coordinated.

Broad Street

During public meetings, a large number of respondents expressed the view that pedestrian crossing times are inadequate. Many were concerned that one could only partially cross Front Street before a flashing 'DON'T WALK' indication is displayed on the pedestrian signal. This condition may be addressed by providing informational pedestrian signs at the intersection, indicating the correct interpretation of each phase of the pedestrian signal. Driver education also plays a role.

Other responses indicated that Broad Street has a green indication for vehicle movement, at the same time that pedestrians are signaled to cross Front Street. This condition can be improved by providing a pedestrian-only phase within the

signal operation. However, in doing so, vehicle congestion at the intersection will worsen. By providing this additional phase, the traffic signal was found to operate at over capacity conditions. To minimize the impacts to vehicle capacity, this pedestrian only phase should only be upon pedestrian actuation.

Front Street

Providing progression among the Front Street traffic signals will improve traffic flow and minimize delay along the corridor. Pedestrians cross Front Street midblock today to go to the Library and the park on the north side of Front Street. At key unsignalized intersections, such as Morford Place, West Street and English Plaza, turning lanes should be provided to separate turning movements and through traffic.

Wall, Water and White Streets ("W" Streets)

Improvements to this system must be closely coordinated with any improvements to the Route 35/Maple Avenue/Pearl/Front/Water/Riverside Avenue area. There are improvement opportunities that can occur along the "W" Streets independent of any improvements made as part of adjacent areas. Pearl Street southbound between Front Street and Water Street should be restriped to indicate that the left lane must turn left and all movements may be made from the right lane. Striping along Water Street should clearly delineate three travel lanes marked to indicate lane usage. Signing should be employed to support markings and clearly indicate the Route 35 southbound route.

The connection between Wall Street and Water Street should be better aligned, and Wall Street should be extended to Bridge Avenue. The combined effect of these actions will provide a parallel route to Front Street, help complete the east-west grid system and relieve congestion along Front Street.

Reckless Place and Chestnut Street

An interim solution to this problem would be to temporarily eliminate on-street parking directly across from Reckless Place and Chestnut Street.

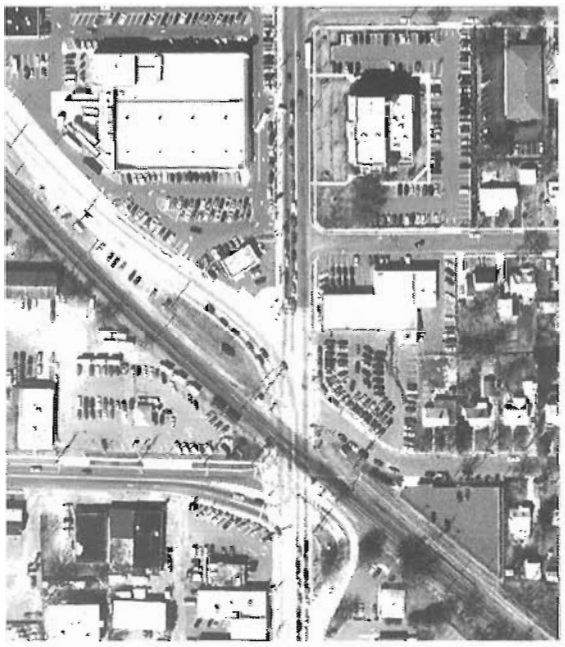
Once this is completed, it may be reviewed again for effectiveness. If the number of turning vehicles has increased from the closure of Oakland Street, a delineated left turn lane could be provided. This lane would require eliminating on-street parking from Reckless Street to just north of Peters Place. Proper channelization with additional storage for turning vehicles may then be provided.

Broad Street

Implementation of a semi-actuated signal could be included at this intersection. This should provide vehicle detection on the Monmouth Street approach. Providing such detection will minimize delay to Broad Street traffic without compromising the overall signal operation.

Southern Gateway

The intersection of Newman Springs Road, Maple Avenue, Broad Street, State Highway 35, and NJ Transit's North Coast rail line form a major gateway into Red Bank on its southern boundary. This intersection carries the most traffic of any grade crossing along the entire North Coast line. Adjacent land uses such as utility substations and discontinuous residential streets diminish alternate routes and funnel the majority of north-south traffic into this intersection.


Southern Gateway

Relationship with Previous Studies

This intersection forms the major southern gateway into Red Bank. As the Wayfinding Study noted, three thresholds converge at this location. Newman Springs Road is a major east-west threshold, while Broad Street and Maple Avenue form major north-south thresholds. This intersection thus becomes a crossroad, where travelers may adjust their route to complete their journey. Both the Vision and the Centers Designation process recommended opportunities to enhance the image of this gateway, including landscaping along the railroad tracks.

The intersection is primarily zoned HB, or Highway Business. Current land uses at this

intersection include the Foodtown Shopping Center on the triangular parcel bordered by Maple and Broad, and a car dealership on the east-side of Broad. Professional offices line Broad Street to the north, and residential neighborhoods are found to the east. Directly across the railroad tracks are high volume fast food restaurants, such as Dunkin' Doughnuts.

Transportation Characteristics

The intersection of Route 35/Newman Springs Road/Maple Avenue/Broad Street represents one of the most congested areas in Red Bank. Most through and local traffic at the southern end of the Borough go through this intersection. Newman Springs Road, Broad Street and Maple Avenue are all classified as Arterials. Both Newman Springs Road and Broad Street are county highways; Maple Avenue/Route 35 is under the jurisdiction of NJDOT.

This intersection is actually two intersections acting as one. At Route 35 and Newman Springs Road, the northbound approach has two lanes: one through/right turn lane, and one through lane. The southbound approach on Broad Street has two through lanes. The eastbound approach on Newman Springs Road has one left turn, and one right turn lane. The Route 35 southbound approach has a through right turn lane and a through lane. The westbound approach from the jughandle has one through and one left turn lane.

One traffic signal controls five points of entry. The at-grade railroad crossing running between the two intersections further complicates the intersection. The signal currently operates with four phases: Phase 1 allows northbound Rte. 35 and southbound Rte. 35; Phase 2 allows south-bound Broad Street; Phase 3 allows eastbound Newman Springs Road; and Phase 4 allows east and westbound Newman Springs and the jughandle. The total cycle length is 90 seconds.

With the separation of the two intersections and the railroad crossing, additional clearance time is required between the two signals. Additional

clearance time, combined with the heavy vehicular volume causes this intersection to operate at over capacity conditions. Route 35 and Broad Street/ Newman Springs operate at an a.m. LOS of F, and a p.m. LOS of F. The heaviest a.m. peak volumes are northbound at Route 35/Broad Street, and southbound at Route 35/Newman Springs Road. The heaviest p.m. peak volumes are northbound at Route 35/Broad Street and southbound at Route 35/Newman Springs Road. The Pinckney Road/ Wikoff Place intersection, just north of the core area, is a high accident location. A total of 30 accidents were reported during the 1994-1997 period.

Several other aspects of the intersection are deficient. This intersection forms a poor image for those entering Red Bank, with poor directional signage and no landscape or other environmental cues to signal arrival. Signage is insufficient for the number of decisions a motorist must make when approach this intersection. Motorists traveling northbound on Route 35 must choose the correct lane to gain access to Newman Springs Road or continue on Route 35.

Travel is difficult whether by car, bike or foot. Though the intersection area has many pedestrians generated by the surrounding land uses, pedestrian facilities at this intersection are inadequate, and the sidewalk system around the intersection is incomplete. The traffic signal timing plan provides acceptable crossing times for pedestrians.

Summary of Public Feedback

The following problems were identified:

- The intersection is difficult because of the five-point intersection, the volume of traffic and the NJTransit rail crossing.
- Traffic backs up on the Route 35 northbound jughandle, feeding into westbound Newman Springs Road.
- There is a long delay at the traffic signal.
- There is a longer delay when the train passes through.

- There is a long delay turning left onto Broad Street or Maple Avenue.
- The area is an unattractive entrance into Red Bank.
- The signage is inadequate; one does not know they are entering Red Bank.

Objectives for the Southern Gateway Area

- Improve vehicular capacity
- Improve gateway appearance
- Improve directional signage
- Improve pedestrian and bicycle connections
- Improve connections to regional eastbound routes
- Reduce impact of rail traffic
- Extend scenic improvements along State rights-of-way

Alternatives

The Route 35/Newman Springs Road/Maple Avenue/Broad Street intersection is one of Red Bank's most congested areas. This intersection is actually two intersections acting as one, further complicated by the at-grade railroad crossing running between the two intersections. The five-point intersection is controlled by one traffic signal. With the separation of the two intersections and the railroad crossing, additional time is required to clear the area between the two signals. This additional clearance time combined with the heavy vehicular volume causes this intersection to operate at over capacity conditions.

The incomplete sidewalk system around the intersection makes pedestrian movement difficult. The intersection has many pedestrians generated by the surrounding land uses.

Directional signing approaching the intersection was found to be insufficient for the number of decisions a motorist must make when approach this intersection.

Alternative 1

As a first initiative *(Fig. 21)* toward solving the difficult capacity problems at this intersection, at a minimum, objectives for this intersection that do

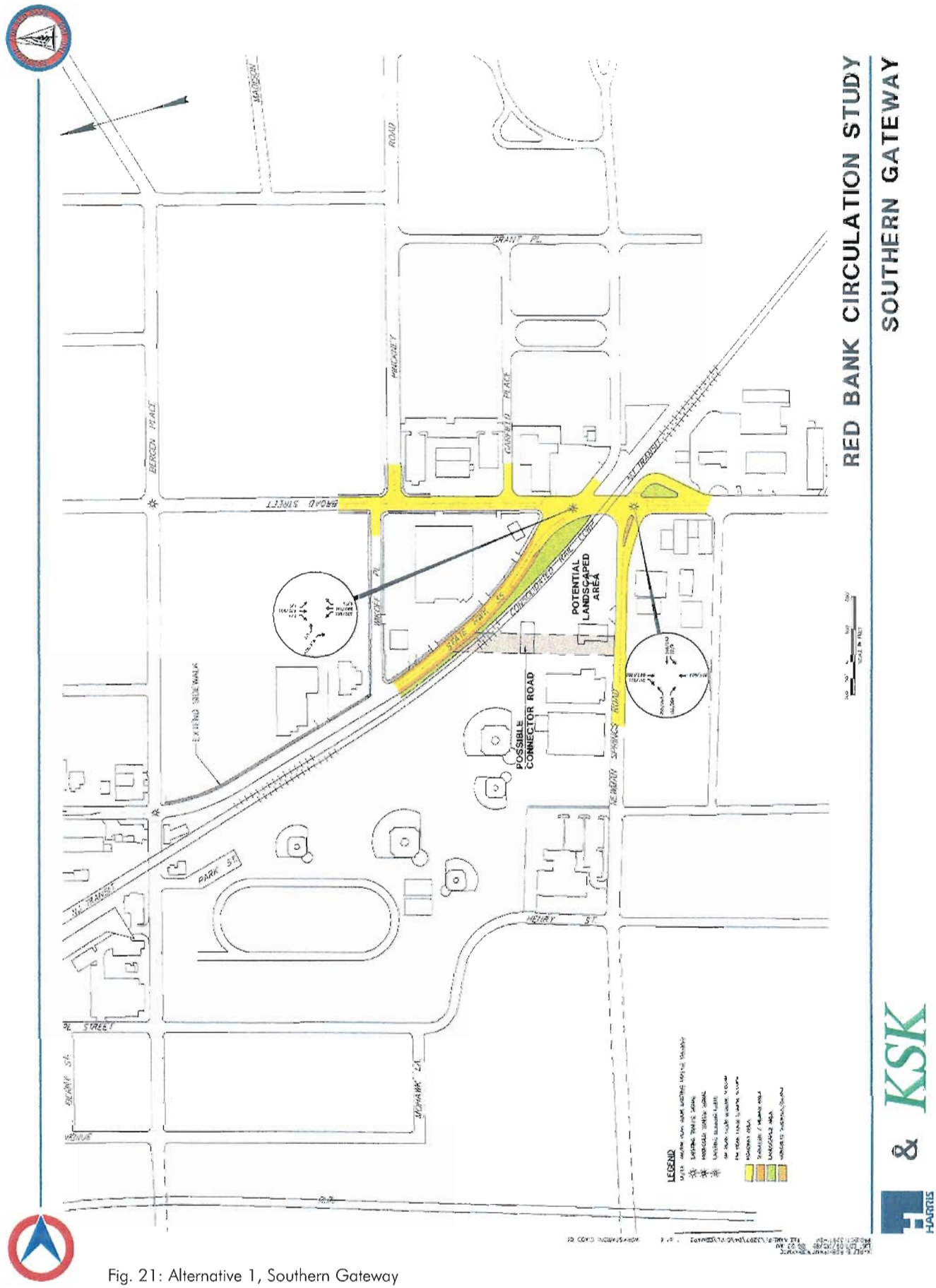


Fig. 21: Alternative 1, Southern Gateway

not involve vehicle capacity should be addressed. Based on public comment, the most requested improvement to the intersection was to provide pedestrian connections. Sidewalks along the eastern side of Route 35/Maple Avenue should be extended from just north of Wikoff Place to Bergen Place and along the western side of Route 35/Maple Avenue from Newman Springs Road to Bergen Place.

The second objective for this intersection was to improve the gateway appearance for one entering Red Bank. Along Route 35/Maple Avenue, the west side of the roadway has a large strip of vacant land which serves as interim ad hoc parking for the Foodtown supermarket, and a storage area for NJ Transit equipment. Landscaping should be provided in this area to enhance the gateway appearance as one enters Red Bank.

The third objective, which can be met, is to improve directional signage. Directional signs along northbound Route 35 should clearly delineate which travel lane serves which roadway. This can be accomplished with advanced overhead signing installed on something as elaborate as cantilever sign structures, or as simple as messenger wire supported by wood poles. Signing should be supplemented by ground mounted signing and pavement markings to reinforce movements, and should be implemented at each approach to the intersection.

Alternatives to Improve Capacity

In developing alternatives that address the capacity restraints at the intersection, some of the issues associated with the improvements were determined to be beyond the scope of this project. However, several alternatives were developed as initial studies. These alternatives were either discarded because they did not meet capacity needs of the intersection, the community did not consider the alternative worth pursuing or the alternative required further study. These alternatives are described below.

Change geometry on Broad Street to intersect Route 35 as a T-intersection north of the train tracks.
This alternative did not improve capacity through the intersection but did improve the gateway appearance into Red Bank and better define traffic movements to/from Broad Street and Route 35/ Maple Avenue.

Develop a system of one-way pairs north of Newman Springs Road
This system of one-way pairs would circulate around the Foodtown Shopping Center. Broad Street between Route 35 and Pinckney Road would be one-way northbound, Wykoff Place would be a one-way westbound and Route 35 would be a one-way southbound between Wikoff Place and Newman Springs. In providing this type of roadway system, the southbound Broad Street phase is eliminated. This green time may then be redistributed among the remaining phases. In doing so, the overall operation of this intersection will operate at acceptable conditions. However, westbound Pinckney Road traffic is forced to go to Bergen Place make a left, and use Route 35 to access points south of Pinckney Road. Community concerns about this detour, and the additional traffic that would use Wikoff Place caused this alternative to be discarded.

Widen Newman Springs Road eastbound to 3 lanes (2 left turns, 1 right turn), widen Route 35 northbound to include a left turn lane for Newman Springs Road, and eliminate the northbound jughandle to Newman Springs Road
This alternative provides benefits by eliminating the existing substandard jughandle and provides better delineation of turning movements. However, to allow this intersection to operate at acceptable conditions, a signal phase needs to be removed from the overall intersection cycle. In removing the northbound jughandle, capacity for the northbound to westbound movement is actually reduced by requiring this movement to make a left turn. The overall intersection operation was not improved and was therefore eliminated from further consideration.

Provide a connector road from Route 35, between Wykoff Place and Broad Street to Newman Springs Road

Two separate uses for this connector road were investigated. The first designated this connector road as Route 35. This would require all southbound Route 35 traffic to come to a signalized intersection at Newman Springs Road and make a left if wanting to continue on Route 35 and a right to access Newman Springs Road. This configuration eliminates the southbound Route 35 traffic from the intersection. The time associated with this phase may then be redistributed among the remain phases. Operating conditions were acceptable.

The second alternative associated with this connector road is to designate this roadway one-way southbound. All southbound Route 35 traffic would be required to use this connector road similar to the situation discussed above. However, northbound Route 35 traffic presently using the jughandle to access Newman Springs Road would eliminated. Traffic would be required to proceed to Route 35 and go south on the connector roadway to access Newman Springs Road. In providing this configuration the jughandle phase at the Newman Springs intersection is eliminated. Operating conditions were found to be acceptable.

This alternative does provide increased capacity through the intersection but creates additional an at-grade railroad crossing. Right-of-way acquisition associated with this connector road would require further investigation. This alternative does present merit but requires further study.

Pedestrian Circulation

The pedestrian network extends fully throughout Red Bank, and is expected to function effectively on all roadways and places of waterfront access.

Relation to Previous Studies

Pedestrian travel is fundamental to Red Bank's transportation network. Attention to this issue originated with the Vision Plan, and has contin-

ued in subsequent studies. The ANJEC Report noted that Front Street plays a critical role in connecting the downtown with potential waterfront development, and advised close attention to dimensions on Front Street and adequate pedestrian crossings.

The 1998 Wayfinding Study identified a series of pedestrian rights-of-way that offer relief from more congested roadways. The Wayfinding Study provides strategies to improve this network and increase linkages between key destinations. Red Bank's ultimate dedicated pedestrian path will be its waterfront promenade, Riverwalk, which is in early stages of concept development.

Pedestrian paths noted in the Wayfinding Study tend to exist at the edge of several parking areas, between some buildings in the downtown, and within waterfront parcels. There is no effective linkage for this system, although a demonstration project is scheduled for 1999 at the English Plaza and White Street locations.

Transportation Network

The Borough's network of pedestrian facilities is developed in a consistent pattern of largely rectangular blocks, with a typical section of sidewalk, planting strip (in residential areas), and curb. Most sidewalks are also abutted by parallel parking spaces, which serve to buffer pedestrians from moving vehicles. Street trees complete the sense of enclosure and visually define the pedestrian realm.

The road system itself accommodates pedestrian use in Red Bank with varying degrees of success. Despite the presence of painted intersections on many local roads in the commercial district, serious safety issues exist at major intersections along regional roadways. High traffic volumes, conflicting turning movements, and in many cases incomplete pedestrian facilities, all contribute to inadequate conditions for pedestrian travel.

Pedestrian safety concerns coincide with key intersections in this study's core areas. They are:

Coopers Bridge, Maple and Front, and the southern gateway at Newman Springs Road. Within the commercial district the intersections of Maple and White, Front and Broad, Broad and Harding, and Monmouth and Bridge also pose issues of pedestrian safety. Riverside Avenue, which is a four-lane segment of the Highway 35 corridor, and Shrewsbury Avenue, a county arterial, both carry high vehicular volumes through densely residential areas. Front Street, also a county roadway, widens significantly where it joins the regional hospital to nearby parking facilities; pedestrians cross throughout the day, usually against oncoming traffic flow.

Parking lots pose a significant opportunity to increase pedestrian connections. Lack of pedestrian facilities within parking lots themselves create safety issues for young children and the elderly. Most of these lots are centrally located within the downtown district and frequently function as primary connectors across entire blocks.

Public facilities along the waterfront, both existing and planned, are a major source of pedestrian activity. Segments of a waterfront path exist at Marine Park, and plans for Riverside Gardens Park incorporate the same. In addition to extending this walkway along the length of the riverfront, plans must also provide regular points of public access from nearby roadways and development sites. In addition to actual pedestrian facilities themselves, the scale and dimensions of city blocks are another determinant in pedestrian travel. Notably long blocks extend between Broad Street and Maple Avenue, with an average length of 1000'. This distance exceeds a comfortable walking distance for casual pedestrian trips, and diminishes the level of pedestrian activity and access to destinations within the downtown. There is a need to direct new construction in that area to accommodate mid-block travel at roughly 400' intervals, which reflect proportions elsewhere in the downtown.

The rail lines which diagonally cross Red Bank create a significant barrier for pedestrian mobility.

Limited grade crossings exist, and that number will be reduced when NJ Transit installs a 900' elevated platform at Oakland Street. South of Chestnut Street, there is only one crossing, at Bergen Place; pedestrians in adjacent residential neighborhoods are isolated by this barrier.

Objectives for Pedestrian Circulation

Develop a pedestrian circulation plan throughout Red Bank to provide:

- Increased safety along regional roadways
- Street grid of pedestrian scaled block sizes and linkages
- Secondary grid of dedicated pedestrian corridors and easements
- Extension of streetscape elements on existing and new roadways
- Riverwalk promenade
- Personal mobility to all segments of the population

Alternatives

A variety of initiatives have been identified to address pedestrian circulation needs in Red Bank. Many of these improvements can be achieved by coordination with work identified in this study's core areas.

Pedestrian facilities should be incorporated in all intersection improvements along the Route 35 corridor. The NJDOT Pedestrian Compatible Planning and Design Guidelines are applicable, especially with regard to provision of facilities in designated centers.

The intersection of Maple Avenue with White and Water Streets is integral to circulation improvements, specifically the Maple/Front intersection and improved east-west connections within the downtown. Pedestrian safety can be improved at Maple/Water/White while awaiting further design development in this area, by installing painted crosswalks at all four sides of the intersection.

Areas that border Red Bank's waterfront require particular attention with regard to pedestrian safety. Along Riverside Avenue (Route 35), a series

of landscaped pedestrian refuges should be installed. Further east on Front Street, mid-block crossings should be installed, aligned with English Plaza and with the footpath at Riverview Medical Center. At the intersection of Broad and Front, an all-pedestrian phase should be evaluated. Messages that control pedestrian movement should be revised to reduce confusion at that intersection, and ultimately applied elsewhere as well.

The Borough's plan to create a continuous promenade along the riverfront should be advanced. Clear and convenient pedestrian access the waterfront is crucial, and should be incorporated in all development approvals and publicly funded work.

Pedestrian access throughout the Borough can be enhanced as redevelopment occurs. Local planning authorities should encourage proposed street extensions, which provide walkable block sizes approximately 400' long. Development review should incorporate pedestrian considerations (e.g. location of primary entrances at the sidewalk, definition of the street wall with build-to lines, and appropriate landscaping and pedestrian rights-of-way).

Wayfinding recommendations established a hierarchy that emphasizes pedestrian mobility within Red Bank's Central Business District. Implementation of the wayfinding program will enhance pedestrian circulation. Specific areas include a network of pedestrian paths, walking tours with interpretive historic markers, and informational kiosks throughout the district. Streetscape improvements should be extended along key pedestrian corridors, namely Shrewsbury Avenue and east-west thoroughfares (e.g. Monmouth, the "W" Streets, and Front/ Riverside).

Beyond the Downtown District, several other areas require pedestrian improvements. Monmouth County conducted extensive community outreach in its Pedestrian Corridor Study on Shrewsbury Avenue; implementable recommendations are needed for issues identified in this area.

Consideration should also be given to creating a replacement grade crossing along the rail lines south of Chestnut Street; a potential connection at River Street has been identified for further study.

Pedestrian facilities are deficient throughout the southern segment of the Route 35 corridor. At the Southern Gateway, sidewalks should be installed where they are missing on Route 35 south of Bergen Place. Landscaping should be provided along that segment and at the Maple/Broad intersection.

As a final recommendation, it is suggested that the Borough develop a comprehensive pedestrian plan to formalize these alternatives.

Objectives for Pedestrian Circulation

Incorporate a pedestrian circulation plan throughout Red Bank:

- In Riverwalk
- With a secondary grid of dedicated pedestrian corridors and easements
- Through an extension of streetscape elements
- With a street grid of pedestrian-scaled block sizes and linkages

Summary of Route 35 Corridor Improvements

Along the Route 35 corridor, each of the core areas was reviewed and recommendations to improve its operational characteristics were formulated. Building on the system of improvements recommended throughout Red Bank, Route 35 was reevaluated to include segments of Route 35 located between the core areas. The Route 35 corridor was broken into three segments. These segments are: from Bridge Avenue to Front Street, from Front Street to north of Monmouth Street and from north of Monmouth Street to Newman Springs Road. These segments, and the recommendations for the corridor, are discussed below.

Bridge Avenue to Front Street

As part of the Northern Gateway recommendations, vehicular access through the intersection of River-

side Avenue/Route 35/Bridge Avenue/Rector Place has been improved, by providing lane configurations to allow movements that are presently prohibited. The pedestrian environment has been improved with the extension of sidewalks.

To build on these improvements and to incorporate Wayfinding recommendations, Riverside Avenue was reviewed to enhance its visual quality and improve pedestrian facilities. Existing conditions through this segment provide for 66 feet of right-of-way, which presently includes four lanes of travel and a parking lane through portions of the segment. Land use in the area has generated increased pedestrian movements with the Molly Pitcher Inn and the large apartment buildings that line Riverside Avenue. To develop a sense of arrival, increase pedestrian safety and provide "traffic calming", the concept of providing a "boulevard" should be explored. The boulevard concept would provide a center landscaped median from Bodman Place to just north of Front Street. Lane configuration would be modified to include four 11 foot travel lanes, a 6 foot landscaped median area, and parking would be eliminated for the length of this segment of Route 35. A typical section for this area was developed. *(Fig. 22)*

Providing a boulevard concept will increase pedestrian safety by reducing the walking distance across traffic and providing a refuge area for crossing pedestrians. By eliminating parking, sight distances for both the motorist and pedestrian are increased and the unexpected pedestrian darting out from behind a parked car is eliminated. This concept does, however, require further study. The effects of eliminating left turns off Riverside Avenue to and from surrounding land uses, the possible elimination of the Allen Place traffic signal and the installation of a pedestrian crossing in the vicinity of the Molly Pitcher Inn with a pedestrian actuated signal will all need to be studied further.

Front Street to North of Monmouth Street

To meet the objective of improving the traffic patterns through the area, Maple Avenue, Pearl

Street and Water Street are recommended to accommodate two-way traffic. The existing right-of-way through the area is 60 feet. This will accommodate a 12 foot turning lane and two 16 foot travel lanes. *Figure 23* shows a typical section through this area. Once these roadways are modified to accommodate two-way traffic, changes to the southbound Riverside Avenue traffic pattern must occur. One lane of southbound Riverside Avenue traffic is to be aligned with Maple Avenue. This traffic lane would be for through movements only, with no turns permitted from this approach. All turns from southbound Riverside Avenue would be from at the Pearl Street intersection. To fully accommodate the southbound through traffic, a new local access option would be needed. Extending Pearl Street to Maple Avenue between Bergen and Irving Place can serve this purpose.

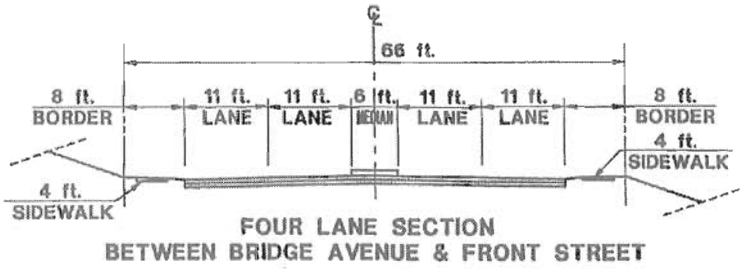


Fig. 22: Route 35, Typical Section, Boulevard Concept

The Pearl Street Extension presents an opportunity to connect Red Bank's west side with the downtown. This alternative reviewed the possibility of extending Central Avenue north, to intersection with the Pearl Street Extension. If this is completed, River Street could also be extended to intersect with Central Avenue, providing direct access to the western portion of Red Bank.

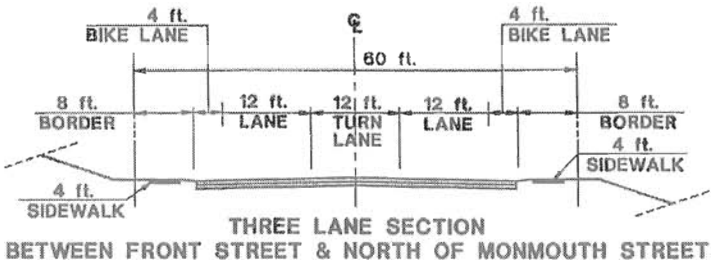


Fig. 23: Route 35 Front Street to North of Monmouth Street, Typical Section

Access to Maple Avenue north of Front Street will no longer be permitted from Front Street directly. Access will be moved approximately 100 feet north, providing access onto Riverside Avenue. The access point will permit only 'right ins and right outs' only. Motorists exiting the realigned roadway would be required to go north to Allen Place or Bridge Avenue to make the necessary turns to get back into Red Bank.

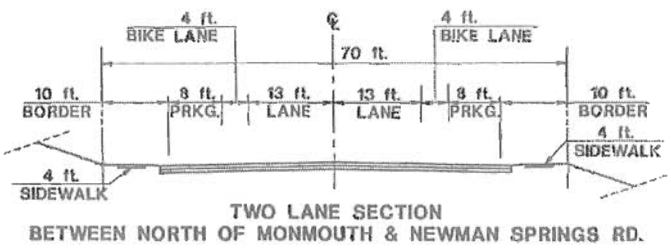


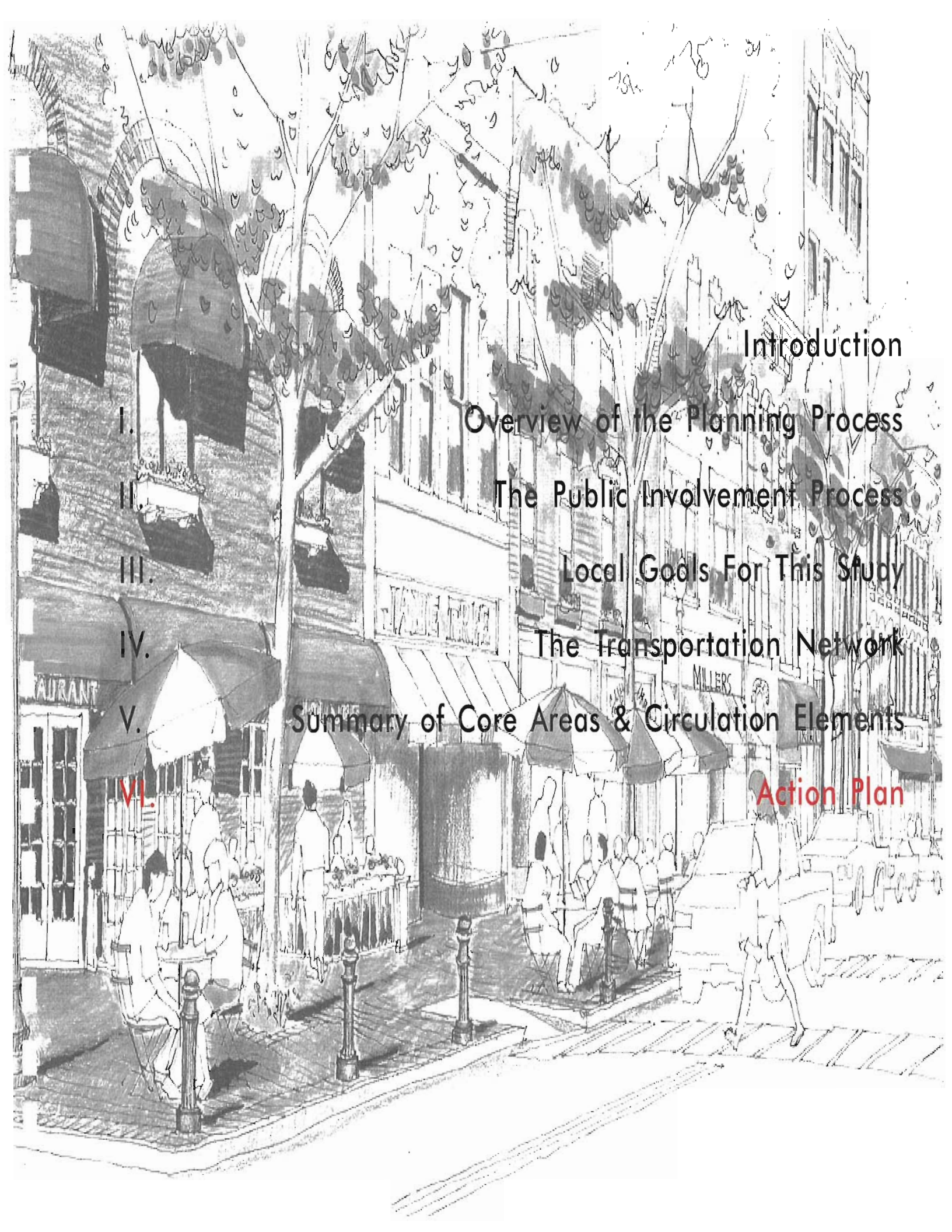
Fig. 24: Route 35 North of Monmouth Street to Newman Springs Road, Typical Section

North of Monmouth Street to Newman Springs Road

This segment of Route 35 presently has 70 feet of right-of-way, which includes two travel lanes and parking along both sides. Here, the this typical section should be retained. *(Fig. 24)* Two locations - Reckless Place/Chestnut Street and Route

35/Broad Street/Newman Springs Road may require modifications to this typical section. Reckless Place/Chestnut Street is a secondary east-west connection is disjointed by the separation of the two intersections. Permitted parking opposite each of the streets further complicates the separation. Vehicles northbound on Maple Avenue wanting to turn left onto Chestnut Street must stop in the only lane of traffic, causing through vehicles to queue until the turning vehicle is able to negotiate its movement. A similar condition exists in the southbound direction. An interim solution to this problem would be to eliminate on-street parking directly across from Reckless Place and Chestnut Street. Once this is completed it may be reevaluated for effectiveness. If it is found that turning vehicles have increased due to the closure of Oakland Street, a delineated left turn lane could be provided. This lane would require the elimination of on-street parking from Reckless Street to just north of Peters Place. Proper channelization with additional storage for tuning vehicle may then be provided.

The second area that may require modifications to the typical section is at the intersection of Route 35/Broad Street and Newman Springs Road. An action plan is recommended to address issues with the Newman Springs Corridor. One of the main components of this plan would be concept development for this area. Results from this plan may require modifications to the Route 35 typical section at this location.



Introduction

I. Overview of the Planning Process

II. The Public Involvement Process

III. Local Goals For This Study

IV. The Transportation Network

V. Summary of Core Areas & Circulation Elements

VI. Action Plan

Recommendations for Circulation Improvements in a Designated Regional Center

This circulation study has developed improvement concepts to address circulation issues within the Borough of Red Bank and to improve the mobility provided by different transportation modes. Recommendations were established using three main criteria: 1) if it supports a solution to the identified problem; 2) if it addresses Red Bank's needs; and 3) if it fits into the overall circulation system of Red Bank. The discussion below presents a brief overview of the problems identified, the recommended solutions, and how each solution relates to the circulation system within Red Bank.

Route 35/Maple/Pearl/Front/Water/Riverside Avenue Area Improvements

To improve mobility within Red Bank, the need to eliminate some of the circuitous traffic problems is evident. The Route 35/Maple Avenue/Pearl Street/Front Street/Water Street/Riverside Avenue core area is at the center of these circulation problems. This area acts as the main focal point for congestion and delay within Red Bank. Heavy north-south movements, combined with heavy east-west movements and the system of one-way road sections result in delays throughout the area. These delays cause a "spillover" of motorists onto the local street system who are seeking alternative routes.

To also improve mobility in this area, the Red Bank community has expressed a need for improved pedestrian/bicycle facilities. At the intersection of Maple Avenue and White Street-Water Street, pedestrian/bicycle traffic is significant due to the proximity of the City Centre and Borough Hall.

To meet the objective of improving the traffic patterns through the area, the preferred recommendation is for Maple Avenue, Pearl Street and Water Street to accommodate two-way traffic. Along with this recommendation, changes to southbound Riverside Avenue traffic pattern should be employed. One lane of the southbound

Riverside Avenue traffic is to be aligned with Maple Avenue. This lane of traffic would be for through traffic only; no turns would be permitted from this approach. Traffic turning onto Front Street would be accommodated from southbound Riverside Avenue at Pearl Street.

To fully accommodate the southbound through traffic, a long-range project would be to create a new local access option. Extending Pearl Street in a southerly direction and connecting it back to Maple Avenue between Bergen and Irving Place can achieve this. To be sensitive to community concerns, this extension of Pearl Street would be designed as a low speed, two-lane local road. These improvements will provide an additional access point into the downtown while maintaining existing capacity through the area. To realize this mid-range improvement, concept development and scoping need to be prioritized.

"W" Streets Improvements

With implementation of these improvements, the flexibility to accommodate future growth can be realized. The Borough has been considering reconfiguration of the White Street parking facilities. If the number of parking spaces were increased, under existing conditions those seeking to park to and from the north will degrade traffic conditions along Front Street. It is recommended that the possibility of extending Wall Street to Bridge Avenue be pursued. The "W" streets will then act as a parallel route to Front Street. For this parallel route to be employed, Water Street must be able to accommodate two-way traffic as discussed above. It is also recommended that Water Street be better aligned with White Street. This will improve the east-west grid system through the Borough.

With the completion of this extension, three east-west parallel routes are created: Front Street, the "W" Streets and Monmouth Street. Each of these routes can serve different functions. Front Street will see relief in its congestion levels and will better accommodate through traffic, the "W" Streets will accommodate those who park, then

leave their cars and travel as pedestrians, and Monmouth Street will accommodate train station uses and can be designated as a bikeway. The traffic signal at Monmouth and Broad Street should be modified to provide vehicle detection on the Monmouth Street approach. The intersection operation may then be actuated to provide a green signal indication to Monmouth Street only when a vehicle or pedestrian is present.

Pearl Street Improvements

The Pearl Street Extension presents an opportunity to connect the western portion of the Borough with the downtown area. This alternative reviewed the possibility of extending Central Avenue north, to intersection with the Pearl Street Extension. If this is completed, River Street could also be extended to intersect with Central Avenue, providing direct access to the west side of Red Bank.

Streets within the Borough of Red Bank are arranged in a grid system. The connections in the north-south direction are well defined and function as a traditional grid system should. The east-west connections however, do not provide the same level of connectivity through the Borough. As part of the circulation study, three east-west connections were examined. These connections included Front Street, "W" Streets, discussed above, and Reckless Place/Chestnut Street. Front Street currently serves as the primary east-west connection. Principal intersections are controlled by traffic signals. Front Street corridor improvement recommendations include: providing vehicle progression for the length of Front Street, interconnecting the Bridge Avenue traffic signal with the railroad pre-emption at Rector Place/ Shrewsbury Avenue and providing left turning lanes from Front Street onto some of the connecting roadways. Each of these improvements is independent of the roadway improvements discussed above, but still relate to the overall grid system improvement for the Borough.

Front and Broad Streets Improvements

The intersection of Front Street and Broad Street has some of the highest pedestrian volumes within the Borough. During the public meetings, a high number of survey responses indicated that the pedestrian facilities at this intersection need to be improved. Initially, informational pedestrian signs at the intersection should be provided to indicate the specific meanings of the pedestrian signals. An additional recommendation is to provide a pedestrian-only phase within the signal operation. When this additional phase was provided, the traffic signal was found to operate at over capacity conditions. To minimize impacts to vehicle capacity, this pedestrian-only phase should only be implemented upon a pedestrian actuating the phase by pushing the pedestrian push-button.

Reckless Place/Chestnut Street Improvements

The Reckless Place/Chestnut Street is an east-west corridor that serves as secondary crosstown connection. With NJ Transit's proposed improvements at the train station, Oakland Street will be closed to through traffic in the station area. This will put additional strain on the Reckless/Chestnut connection. The connection between Reckless Place and Chestnut Street is disjointed due to the separation of the two intersections. These problems are exacerbated by permitted parking opposite each of the streets. As an interim solution, on-street parking directly across from Reckless Place and Chestnut Street should be eliminated on a trial basis. Once this is implemented, it should be reviewed again for its effectiveness. If turning vehicles have increased due to the closure of Oakland Street and back-ups still exist, a delineated left turn lane can be provided. This lane would require the elimination of on-street parking from Reckless Street to just north of Peters Place. Proper channelization with additional storage for turning vehicles can then be provided.

Northern Gateway Improvements

The Coopers Bridge Area, Red Bank's northern gateway, was examined for measures to enhance mobility. This area provides for one of the heaviest movements into and out of Red Bank.

Coopers Bridge terminates at a traffic signal in the Borough of Red Bank. This traffic signal does not permit certain movements critical to circulation within Red Bank. Prohibiting movements include: no left or through movement from Riverside Avenue; no turn from Rector Place and no left turn from Bridge Avenue. Constrained traffic movements force all northbound Riverside Avenue traffic to make a right turn, and turn around in Middletown to go to Red Bank. Motorists exiting Bodman Place who want to go into Red Bank are faced with two options (1) make a left turn out of Bodman Place onto Riverside Avenue, crossing three lanes of traffic, or (2) make a right out of Bodman Place and continue into Middletown to make a u-turn to get back into Red Bank. Neither of these options are ideal nor safe.

As part of the Coopers Bridge project, the southbound approach (Route 35) to the intersection will provide a left, a left/through and a right-turn lane. This Circulation Study has built upon these improvements, recommending that Riverside Avenue (Route 35) northbound provide one continuous right turn lane and a through/left lane. Delineation of this lane configuration is to be done with the construction of a landscaped island on the northeast corner to facilitate the Route 35 northbound right turns and create a pedestrian refuge. Northbound Rector Place should be restriped to provide a right turn and a through lane. Bridge Avenue would remain as it exists today but the stop bar will be moved back, and the concrete island separating Rector Place and Bridge Avenue will be removed. With this lane configuration, the traffic signal will require modifications to the timing and phasing. Implementing this type of phasing will degrade the existing signal operation.

In addition to providing necessary vehicle connection, the existing sidewalk along the west side of the intersection should be extended to the intersection. Together with a landscaped island on the northeast corner, pedestrian traffic will be better accommodated through the intersection.

Southern Gateway Improvements

The Southern Gateway of Broad Street, Maple Avenue and Newman Springs Road (CR 520) requires more detailed analysis. With the long traffic island signal cycle and the clearance needed for train service, this intersection experiences a failing level of service. The Department proposes implementing landscaping and signing improvements at this gateway. More detailed concept development is recommended to determine the feasibility of other intersection improvements that will lessen traffic congestion and enhance traffic flow.

Planning Actions Needed

There are three categories of actions that should take place to advance the Red Bank Circulation Study. These actions fall within "Planning Actions", "Operational Improvements" and "Capital Improvements". These actions are summarized in tabular form *(Table 4)* and shown graphically in *Fig 25*.

Planning actions generally require local initiative, development and implementation. Their timely implementation is often critical, as they also may be necessary to "set the stage" for other improvements to occur. For example, a street extension must be proposed in a master plan for the State or County to consider action. Operational improvements may be relatively easy to accomplish in the short-term, such as striping, or longer-term, such as a change in street direction. In either case, partnership must occur with the appropriate jurisdictional parties for the operational improvement to be implemented. Capital improvements are generally longer term, are funded through a Capital Program, and involve engineering design. Though there is a longer time line for capital projects, there are actions that can and should be taken early in the process to insure that the project can be implemented when the time comes.

Update Master Plan

Red Bank's 1995 Master Plan should be updated to reflect planning decisions and address needs that have arisen since that time. The Plan identifies that the municipality and other levels of government have specific responsibilities to ensure that future development applications are coordinated with the objectives and recommended course of action that transpires as a result of future endeavors based on the endorsed Circulation Plan and Action Plan element. Many planning actions require a local lead and should begin immediately.

The Updated Master Plan should include:

- Land use and density requirements updated for sustainable development patterns

- This Circulation Element, which contains the Route 35 Corridor project and related extensions at Pearl to Maple, Pearl to River Street, and Wall/ Water/White to Bridge as endorsed policies

- A travel demand management plan that builds on current parking studies. A principal component of the travel demand management plan would be a locally based transit system, of which continuation of the trolley pilot is a part

- Support to change NJDOT's Desirable Typical Section for Maple Avenue (Route 35) through Red Bank. An approved Circulation Element can be used to support this change. With the agreement to create more redundancy in the traffic grid system, Maple Avenue can serve the Downtown area as a two-lane cross-section. A change to a Desirable Typical Section requires a change to the Highway Access Management Code (NJAC: 16:47). The Department's Planning Division is willing to support this change.

- A local bicycle plan that builds upon train station area improvements currently underway and other key projects such as Riverwalk. Recommended tools such as bicycle rack location should be included in the master plan update.

- A pedestrian plan, that builds upon Wayfinding Study findings, current train station area projects and Riverwalk, and identified all desirable locations for crosswalk striping.

Newman Springs Road Corridor Study

The study should be developed as an intermunicipal partnership and would address the Shrewsbury Anenue intersection, the Route 35/ Broad Street intersection and address relevant land use, design and access consideration in the corridor. As a first step, Red Bank should take the initiative immediately and approach partners to develop this plan. The County may desire the NJTPA to play a significant role in the study.

Regional Bicycle Plan

Red Bank should explore partnerships at a regional level that would participate in preparing a regional bike plan. At the local level, Red Bank should prepare a bike plan that would be responsive to multi-modal efforts underway, such as those around the train station area and Riverwalk. This is a local action that can begin immediately.

Operational Improvements

A number of operational improvements are relatively easy to accomplish in the short-term, but may require a partnership with the appropriate jurisidictional parties to be implemented. The following operational improvements are recommended:

- Consider installation of an all-pedestrian phase signal at Front and Broad Streets.
- Install international pedestrian crossing signs where pedestrian signals are present.
- Coordinate/synchronize signals along the Front Street corridor to reduce delay and decrease congestion.

- Actuate the signal at Broad and Monmouth Streets.

- Remove parking on Maple Avenue/ Route 35 in the vicinity of Reckless Place/Chestnut Street.

- Stripe crosswalks at heavily traveled pedestrian intersections, including Harding/Broad Street, Broad/Front Street, and Monmouth/Bridge Street. Consider striping midblock crossings: on Maple Avenue/Route 35 at the Water/White intersection, and on Front Street at the hospital. As part of the pedestrian plan, identify all desirable locations for crosswalk striping.

- Complete missing sidewalk on Route 35 between Wikoff and Bergen Place.

- Investigate the use of traffic calming on Leighton Avenue and Hudson Place.

Capital Improvements

Capital improvements are generally longer term, are funded through a Capital Program, and involve engineering design. Though there is a longer time line for capital projects, there are actions that can and should be taken early in the process to insure that the project can be developed when the time comes.

Recommended Improvements to the Route 35 Corridor

Actions related to this project include:

- Complete missing sidewalk at Coopers Bridge to Rector Place
- Provide Maple/Front St. intersection improvements
- Advance White/Water/Water Street Extension
- Advance Pearl Street Extension
- Provide Coopers Bridge intersection improvements
- Advance Riverside Boulevard concept
- Implement landscape and signing recommendations at Southern Gateway
- Advance Newman Springs Road reconfiguration concept at Southern Gateway
- Advance Pearl to River Street Extension
- Advance Drummond Place Extension

For concept development, the Riverside Boulevard concept, improvements to the Southern Gateway and implementing justification for the reclaiming of two-way traffic through Route 35 at Maple, Water and Pearl Streets are key areas for immediate attention. Concepts need to be sensitive to community need, including all modes of transportation and aesthetics identified as important to the Designated Center in the Wayfinding Study and the Vision.

Recommended improvements not specifically related to the Route 35 corridor actions suggested by the Wayfinding Study and for Riverwalk improvements are important to the success of the

Regional Center. Elements that are transportation related may be advanced under certain NJDOT Local Government Services Programs.

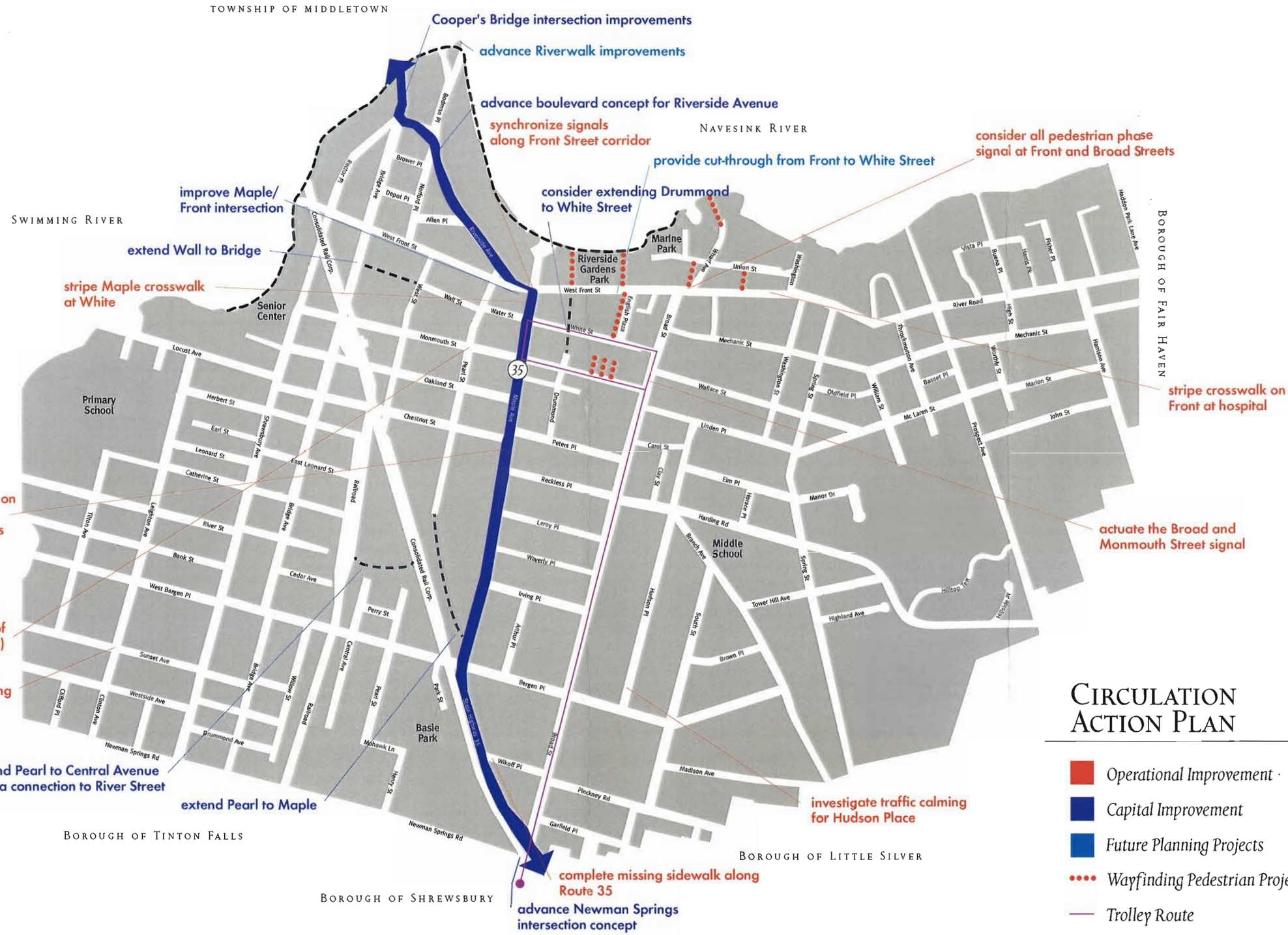
Conclusion

The Red Bank Action Plan for the Designated Regional Center provides a strategic course for agencies to develop transportation projects that serve the shared interests of Red Bank's residents, visitors and workers. The Action Plan provides many opportunities to meet the locally defined objectives to improve the Designated Regional Center, and regional needs for providing safe and efficient mobility for all modes of transportation that use the network to go to or through Red Bank.

The Circulation Plan defines actions as operational or capital improvements, and establishes whether they are of immediate, mid-range or long-range nature. The Plan also identifies what agency needs to establish the lead on the proposed recommendation.

Table 4: Red Bank Circulation Action Plan for a Designated Regional Center

ACTIONS	LEAD	SUPPORT	TIMEFRAME
PLANNING ACTIONS			
Update Master Plan	Local		Immediate
Land Use and Density Review for Sustainability	Local		Immediate
Adopt Circulation Element	Local		Immediate
Prepare Route 35 desirable typical section change	Local	State	Immediate
Prepare Local Bike Plan	Local		Immediate
Prepare Pedestrian Plan	Local		Immediate
Advance Parking Recommendations	Local		Immediate
Identify Local Transit System Service Plan	Local	State	Immediate
Prepare Newman Springs Road Corridor Study	County	Local/State	Immediate
Prepare Regional Bike Plan	County	State	Mid-range
OPERATIONAL IMPROVEMENTS			
Actuate the Broad/Monmouth St. signal	County	Local	Immediate
Install all-pedestrian phase signal at Front and Broad Streets	County		Immediate
Install informational pedestrian crossing signs where pedestrian signals exist	Local/State/County		Immediate
Synchronize signals along Front St. corridor	County		Mid-Range
Selectively remove parking on Maple Avenue near Reckless Place/Chestnut St.	Local		Immediate
Stripe crosswalks at intersections Maple/Front, Maple/Water/White, Pearl/Wall/Water	State		Immediate
Stripe crosswalks at intersections along Front St.	County		Immediate
Consider striping midblock crosswalks at identified locations along Front Street (including at hospital)	County		Mid-Range
Consider crosswalk striping at key intersections along Harding Road and Broad Street	Local		Immediate
Consider applying advanced signal technologies to improve pedestrian safety	Local	State	Mid-Range
Investigate traffic calming on Leighton and Bridge Aves., Hudson Place, Pearl St.	Local		Immediate
Stripe left turn lanes at Bridge and Front Street intersections	Local	County	Mid-range
CAPITAL IMPROVEMENTS			
Implement Route 35 Corridor Improvements			
Complete missing sidewalk at Cooper's Bridge to Rector Place	Local		Immediate
Provide Maple/Front St. intersection improvements	Local/State	County	Mid-Range
Complete missing sidewalk on Route 35 between Wykoff and Bergen Places	State		Immediate
Advance Wall Street Extension to Bridge Avenue	Local		Mid-Range
Advance Pearl Street Extension to Maple Avenue	State		Mid-Range
Provide Cooper's Bridge intersection improvements	Local/State		Mid-Range
Advance Riverside Boulevard concept	State	Local	Mid-Range
Implement landscape and signing recommendations at Southern Gateway	State	Local	Immediate
Advance Newman Springs Road reconfiguration concept at Southern Gateway	State	Local/County	Mid-Range
Advance Pearl to River Street Extension (including railroad crossing)	Local		Long-range
Advance Drummond Place Extension to Front Street	Local		Mid-Range
Advance Riverwalk Improvements	Local		Immediate
ADVANCE WAYFINDING RECOMMENDATIONS	Local		Immediate
ADVANCE DOWNTOWN LOCAL TRANSIT SYSTEM	Local		Immediate



CIRCULATION ACTION PLAN

- *Operational Improvement*
- *Capital Improvement*
- *Future Planning Projects*
- *Wayfinding Pedestrian Projects*
- *Trolley Route*

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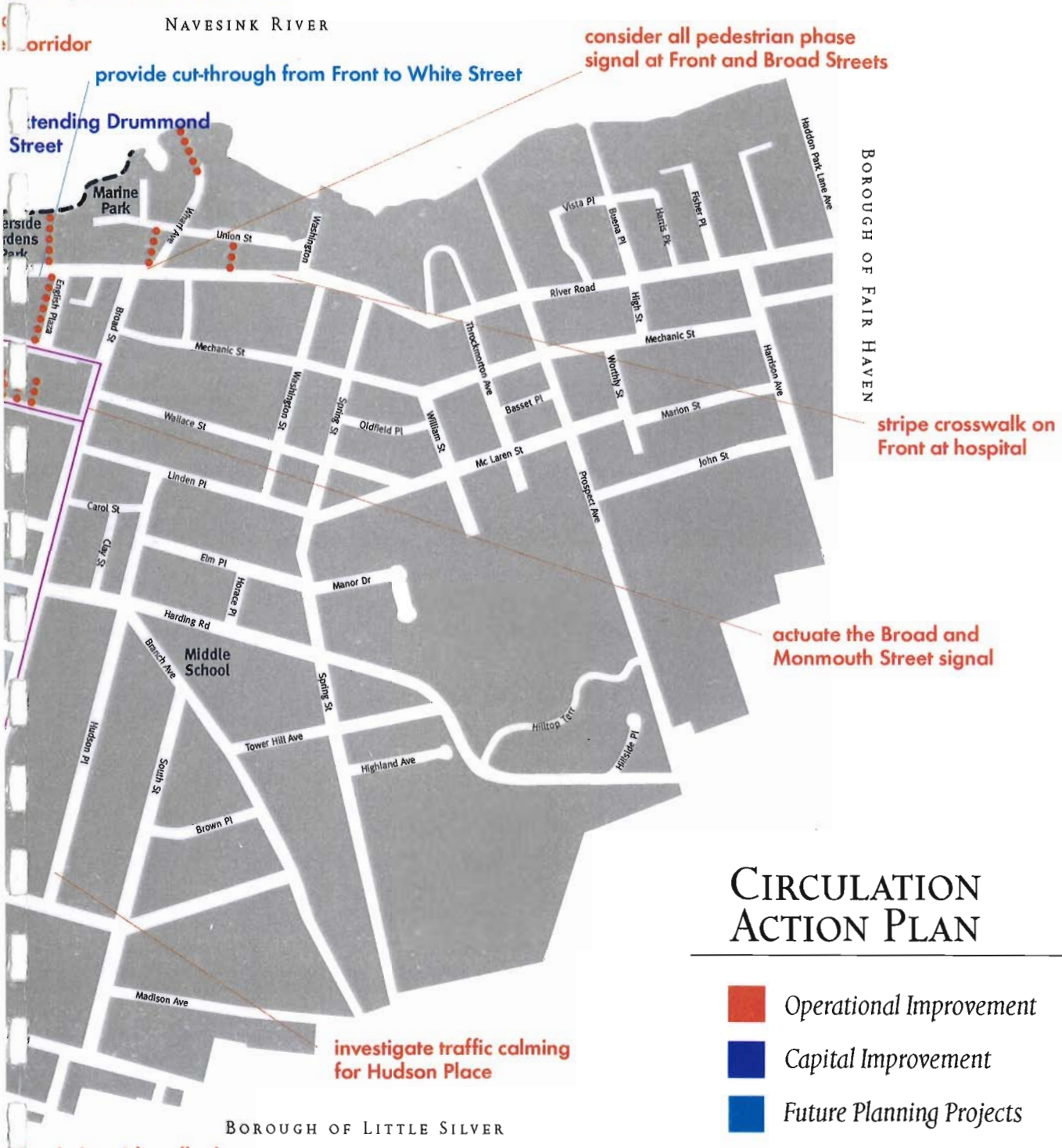
improvements

d concept for Riverside Avenue

orridor

provide cut-through from Front to White Street

tending Drummond Street



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CIRCULATION ACTION PLAN

- *Operational Improvement*
- *Capital Improvement*
- *Future Planning Projects*
- *Wayfinding Pedestrian Projects*
- *Trolley Route*


EXISTING MAJOR THOROUGHFARES
PROPOSED MAJOR THOROUGHFARES
EXISTING SECONDARY STREETS
PROPOSED SECONDARY STREETS
400 200 0 400
SCALE IN FEET
RIVERSIDE 80
HUBBARD AVENUE 80
WEST FRONT ST 80
LOCUST 80 AVENUE
CHAPIN 80 AVE
NEWMAN SPRINGS ROAD
RIVERSIDE 80 AVE
WEST FRONT STREET
WALL 60 STREET
MONMOUTH 60 STREET
OAKLAND 100' STREET
CHESTNUT 75' STREET
HERBERT 60 STREET
CATHERINE STREET 80'
RIVER 60 STREET
BANN 66 STREET
WEST BERGEN PLACE 80'
SUNSET AVENUE
WEST SIDE AVENUE
PEARL 75'
MAPLE 80'
AVENUE
BRIDGE
RAILROAD
CENTRAL R.R. OF N.J.
NEW JERSEY & NEW YORK RAILROAD
LIGHT
WATER