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NEW JERSEY TRANSIT

**FINAL REPORT  
NEWARK-ELIZABETH LOCAL  
BUS STUDY**



Prepared in cooperation with:  
URBAN MASS TRANSPORTATION ADMINISTRATION  
U.S. DEPARTMENT OF TRANSPORTATION  
TRI-STATE REGIONAL PLANNING COMMISSION

Chase, Rosen & Wallace, Inc.  
September 1981

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Prepared by:

CHASE, ROSEN & WALLACE, INC.  
901 North Washington Street  
Alexandria, Virginia 22314

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## EXECUTIVE SUMMARY

The Newark-Elizabeth Local Bus Study examined the existing local transit network and developed a comprehensive program of service improvements. Part 1 contains the recommended route and schedule changes, grouped into three phases for ease of implementation. Part 2 includes recommendations for improving other aspects of transit services such as fare structure and information aids.

### Part 1 - Route and Schedule Modifications

The route and schedule modifications are, of necessity, presented on a route by route basis. These changes are shown in the following synopsis. Carriers are identified by the following abbreviations.

<u>Abbreviation</u>	<u>Transit Company</u>
TNJ	Transport of New Jersey
TR	Trackless Transit, Inc.
IE	Elizabeth, Union, Hillside, Irvington Bus Line
NE	Newark/Elizabeth IBOA
CA	Clinton Avenue Bus Company
NN	North Newark IBOA
DC	DeCamp Bus Lines
ET	Elizabeth Transit Corporation
WM	Will Morris, Inc.
BL	Beviano Chartered Service
SO	South Orange Avenue IBOA
CB	Community Bus Lines

Routes operating through the Newark CBD are listed for each segment with the segments designated by the letters N and S or E and W depending upon the orientation of the route.

These improvements are listed in three stages. The system was developed based on an approach that optimized routing and scheduling without taking into account the existing multiplicity of operators. The stages are designed to take the multiple operators into account by postponing any change that affects the relationship among operators to the third stage. The first and second stages are defined by the potential implementation problems presented by the routes grouped in each.

The route and schedule modifications also include the provision of a timed transfer system for Downtown Newark during the late evening hours and on Sundays, as well as consideration of rail-bus coordination and a schematic definition of a system of bus centers on major transfer points.

Costs of the changes are defined in terms of peak bus requirements and platform hours. The full implementation of these recommendations results in savings of approximately 17½% based on both of these measures.

# Synopsis of Route Modifications - Phase 1

<u>Route</u>	<u>Routing Modification</u>	<u>Schedule Modification</u>
1E TNJ	Chapel Street trips will make the Chapel Street loop now made by Route 34.	Saturday and Sunday evening service restored to Jersey City. Weekday evening headway improved.
1W TNJ	Combine with Route 54 and operate via 16th Avenue.	Sunday, Saturday and Sunday evening service restored to Ivy Hill. Express service provided. Weekday evening service improved.
2 TNJ	Route combined with Route 34.	Service improved on retained sections.
2 CB	No change.	No change.
5 TR	Merged with Route 94.	Peak period service only.
6 TNJ	Route shortened to avoid duplication.	Base and evening service improved.
7 TNJ	No change.	No change.
8 TNJ/E	Route extended to Short Hills Mall via Magie Avenue and Green Lane	Base service provided on weekdays and Saturday.
9 TNJ	Move route to Bergen Street between Avon Avenue and Central Avenue.	Improved evening service
13N TNJ	Change branches in Nutley and Belleville.	No major changes except for improved service on Bloomfield Avenue in Nutley.
13S TNJ	No change.	No major change.
15 TNJ	Replaced by Route 74.	--
20 TNJ	Extend to Nutley via Bloomfield Avenue, Harrison Street and Franklin Avenue.	Provide a 20 minute base headway on weekdays and 30 minute headway on Saturday.
21 TNJ	Assign Airport and Port services to Route 34 and 40S.	No major changes.
22 TR	Discontinue - service redundant to other routes.	--
23 TNJ	See Route 24.	--

# Synopsis of Route Modifications - Phase 1 (continued)

<u>Route</u>	<u>Routing Modification</u>	<u>Schedule Modification</u>
24N TNJ	No major change. Route 23 becomes a branch service.	Reduce service to meet existing demand.
24S TNJ	No change.	No change
26 TNJ	Service discontinued due to extension of Route 8.	--
27N TNJ	Extend via Heller Parkway and Franklin Street to Bloomfield Center.	No major change; Franklin Street will be provided with 20 minute base service.
27S TNJ	Shift route to Runyon Street and extend loop to Clinton Avenue.	No major change.
28 TNJ	Extend to Union College.	Improve weekday and Saturday base headway to 30 minutes and 60 minutes respectively.
29 TNJ	No Change.	Reduce weekday base service west of Verona to allow increased service to Willowbrook Mall.
34 TNJ/E	Service between Elizabeth and Linden withdrawn. Service to lower Wood Street replaced by peak period trips on Route 44BC.	--
34W TNJ	Service extended over Routes 2 and 64 to Montclair and over Routes 2 and 82 to Bloomfield Center.	Service on trunk portion of route is unchanged. Service on Springdale Avenue and Orange Road improved.
34E TNJ	South Street formerly served by Routes 21 and 25 is transferred to this route. Service to Chapel Street transferred to Route 1.	No major changes.
38 TNJ/E	Service restored on Elizabeth Avenue.	Peak hour and shift change service only.
39 TNJ	No change.	Base period service reduced to a 20 minute headway.
40N TNJ	Service extended over exiting Routes 40 and 41 to Rutherford.	Headway improved and add Saturday service.
40S TNJ	New service Newark to Elizabeth via Port Newark and Elizabethport.	Full service provided.
41 TNJ	Passaic Avenue portion discontinued with the remainder transferred to Route 40.	Base service provided.

# Synopsis of Route Modifications - Phase 1 (continued)

<u>Route</u>	<u>Routing Modification</u>	<u>Schedule Modification</u>
42 TNJ	Route to operate express via Springfield Avenue.	No change.
43 TNJ	No change.	No change.
44 TNJ	Reroute via Valley Road.	No change in Phase 1.
44 BC	Extend service to Tremley Point on school days.	No change in Route 44 schedule.
49 TNJ	No change.	Reduce service to a 30 minute headway.
51N TNJ	Operate from Orange Bus Center and operate to the CBD replacing the inner end of Route 82.	Provide base service.
51S TNJ	Operate via Elizabeth Avenue and duplicate Route 49 to city line.	Provide a 30 minute headway during the base and on all evenings.
54 TNJ	Merged with Route 1W.	--
60 TNJ	Change route from Park Street to Valley Road.	No change.
61 TNJ	Franklin Street portion assigned to Route 27N.	Increase service provided on Franklin Street.
62/134 TNJ	Operate via Terminals A and B.	No change.
64 TR	Orange Avenue section transferred to Route 34. Route extended via Grove Street to Upper Montclair station.	No change.
74 TNJ	Extended to City Subway via Franklin Avenue.	Evening, Saturday and Sunday service improved.
82 TNJ	Route transferred to Routes 51, 34 and 20.	Service improved on sections retaining service.
90 TNJ	Extend to City Subway on the north end and merge with Route 6 on the south end.	Service improvement during the base period.
94 TR	Merge with Route 96; extend to the City Subway on the north end and to Linden Center on the south end.	Improve base period headway.
96 TR	Merged with Route 94.	

Synopsis of Route Modifications - Phase 1 (concluded)

<u>Route</u>	<u>Routing Modification</u>	<u>Schedule Modification</u>
107 TNJ	Remove Maplewood Loop service and shift Garden State Parkway trips to I-78.	Reduce service during the base period due to insufficient patronage.
112 TNJ	No change.	No change.
114/115 TNJ	No change.	Improve base period headway to Willowbrook Mall.
128 TNJ	No change.	Improve headways at all times and institute Saturday and Sunday night service.

## Synopsis of Route Modifications - Phase 2

<u>Route</u>	<u>Route Modifications</u>	<u>Schedule Modifications</u>
5 TNJ	Inner portion of route combined with Route 14 and outer portion discontinued.	Comparable service on proposed segment retained.
14 TNJ	Reroute via Bergen Street.	Provide Sunday evening service.
25 TNJ	Combine with Route 70 and assign Ironbound service to Route 34.	No major change.
48/8 TNJ	Route to operate via Avon Avenue, South 13th Street and Clinton Place and then same as present 8/48.	Saturday and Sunday evening service provided to Salem Road.
70 TNJ	Merged with Route 25.	Saturday early evening service improved.
102 TNJ	No change.	No major change.

# Synopsis of Route Modifications - Phase 3

<u>Route</u>	<u>Route Modifications</u>	<u>Schedule Modifications</u>
6 IE	Merged with Route 90.	Base service improved.
8 TNJ	Extend to service the north Elizabeth loop.	Base service reduced to 30 minutes due to low demand.
12 NE	Merged with Route 24S.	--
16 CA	Route merged with 13S	--
18 NN	Route merged with 13N	--
22 DC	Terminate the route in Bloomfield Center.	Provide a 30 minute headway between Bloomfield and Kearny.
24N TNJ	Combine 24 and 44 into one route. Present Route 24 shifted to Evergreen Place and terminates in Orange. Presently operated via Valley Road to Orange Bus Center.	Base service reduced due to underutilization. Express service provided.
24S TNJ	Change route to Elizabeth Avenue.	No major change.
30 TNJ/E	Elizabeth Avenue transferred to Route 24; north loop enlarged, service east of Routes 1 and 9 transferred to Route 40. Loop tied with Route 8.	Service on North Elizabeth loop reduced due to underutilization.
31 SO	Service added to Ridgewood Road.	No change except express service added.
38 WM	Merged with routes 39 and 40N.	--
44 BC	Service extended to Elizabethport via Jersey Street and to Lower Wood Street in Linden.	Base service reduced to 20 minutes.
90 TNJ	Merged with Route 6. Grove Street service transferred to Route 107.	Reduced headway on former Route 6 portion.
144 TR	Terminate at Orange Bus Center and extend to West Essex industrial area.	Improve headway.
145/146 DC	Terminate at Orange Bus Center.	Improve headway.

## Part 2 - Other Recommended Improvements

This section deals with improvements in areas such as fare structure, information aids, street traffic control and reliability and security for bus operations.

Principal recommendations include:

- Revision of fare zones to provide greater equity for trips of similar distance.
- Simplification of transfer rules to provide for easier enforcement and to aid in marketing.
- Provision of a free zone in Downtown Newark in order to improve downtown circulation, simplify bus routings by eliminating the need for a single route to serve multiple downtown destinations and improve downtown circulation.
- Improve the design and readability of public timetables.
- Update destination signs to accommodate the route changes and improve the clarity of destination information.
- Improve telephone information service on an interim basis by expanding the hours of operation and the type of information supplied.
- Identify areas for improved traffic enforcement to aid bus movement.
- Identify locations where traffic engineering improvements can improve bus movement. These improvements are most commonly parking restrictions required at intersections to provide adequate turning room for buses.
- Development of a program for increased service supervision which includes use of area supervisors and a central control point.
- The phased reduction in the number of garages used by the system.
- Institution of a transit police function.
- Identification of locations for shelters outside of the City of Newark.

Several of these recommendations are highly desirable to institute along with the initial route and schedule modifications. The items that are most crucial in improving service are:

The free fare zone in Downtown Newark.

An increase in the level of service supervision.

The institution of a transit police force.

Other recommendations are important, but do not require as immediate attention as do the three mentioned above.

## INTRODUCTION

The Newark-Elizabeth Local Bus Study included all local bus routes operating in the following communities:

### Essex County

Newark	West Orange
Irvington	Bloomfield
Maplewood	Glen Ridge
East Orange	Montclair
Orange	Verona
South Orange	Nutley

### Bergen County

Lyndhurst	North Arlington
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### Hudson County

Kearny	Harrison
East Newark	

### Union County

Elizabeth	Hillside
Linden	Rahway
Roselle	Roselle Park

Out of necessity, since many major routes operate outside of the study area, portions of other communities were also included, such as Union, Verona and Cedar Grove.

The principal work effort in this project was to rationalize a transit network that has not been subjected to a comprehensive planning effort in recent years. The first step was to catalog the various services provided in the study area. The various carriers were contacted to provide information relating to schedules, routes, fares, equipment, utilities and various other pertinent information.

The second step was to obtain data on existing riding patterns. Point load counts of cordon counts were obtained for all routes serving both Newark and Elizabeth. These counts were made at the location of maximum loading for the various routes and services to indicate the utilization made of existing service. Riding counts were also obtained on a sample basis to obtain a ridership profile for all routes. This data was obtained in October of 1978.

All information obtained during the inventory and data collection phase of this project was compiled and presented in a report "Newark-Elizabeth Local Bus Study - Inventory Report", dated December 1979.

The data collection phase of this report also allowed the project staff to re-acquaint itself with the various neighborhood communities which comprise the study area. Employing this knowledge together with the data collected, population projections, existing and planned land uses, special route and schedule processes were developed for the study area.

The study approach for service modification included two approaches. First a system approach was employed assuming that only one operator would provide service in the study area. A second and more pragmatic approach assumed that the existing independent operators would continue to provide transit service. The second approach involved developing a three phase implementation program which protects the operating rights of the independents until such time as they are assumed by NJ Transit. These recommendations are presented in Part 1 of this report.

The study also concerned itself with such areas as fare structure modification, information aids, street and highway characteristics and reliability. A complete discussion of these items is found in Part 2 of this report.

The routes included in the study generally were those with intrastate local rights. Specifically excluded were the DeCamp Interstate routes operating in northern Essex County, Somerset Bus Routes operating in Union County, and TNJ Routes 118-New York-Newark, 130 Newark-Asbury Park, 133-Newark-Red Bank and 135 New York-Rahway. TNJ 107 was included since it provides local service on Lyons Avenue and between Irvington and Ivy Hill and also South Orange. DeCamp routes 145 and 146 and Trackless (Mountain Coaches) Route 144 were initially excluded but subsequently added because of the service provided by those routes between the study area and Western Essex County. TNJ Route 74 (Main-Passaic) was added to the list of study area routes as it is proposed to be extended into the area.

The routes specifically included were:

Transport of New Jersey

- 1 Newark
- 2 Ampere
- 5 Kinney
- 6 18th Street Crosstown
- 7 City Subway
- 8/48 Lyons/Maple
- 8 Springfield-Elizabeth
- 9 Clifton
- 13 Broad
- 14 Clinton Place
- 15 Nutley
- 20 Orange Crosstown
- 21 Orange
- 23/44 Central/Fremont
- 24 West Orange-Elizabeth
- 25 Springfield Avenue
- 26 Elmora
- 27 Mt. Prospect-Hawthorne
- 28 Roselle Park
- 29 Caldwell
- 30 First Street
- 34 Market
- 34 Elizabeth-Linden
- 39 Harrison
- 40 Davis
- 41 River Road
- 42 18th Avenue
- 43 Jersey City
- 49 Union
- 51 Park Avenue
- 54 Ivyhill
- 60/61 Monclair
- 62/134 Newark-Perth Amboy-Rahway
- 70 Newark-Livingston Mall
- 82 Watsessing
- 90 Grove Street Crosstown
- 102 Newark-Paterson
- 107 Newark-Irvington
- 112 Newark-Clifton
- 114 Newark-Butler
- 114 Newark-Butler Express
- 126/128 Newark-Paterson

Trackless Transit

- 5 Union-Irvington
- 22 Roseville
- 64 Orange-Montclair-East Orange
- 94 Stuyvesant Crosstown
- 96 Clinton

Will Morris

- 38 Kearny

DeCamp

- 22 Caldwell-Jersey City

North Newark IBOA

- 18 North Newark

South Orange IBOA

- 31 South Orange Avenue

Clinton Avenue Bus Company

- 16 Clinton Avenue

Newark-Elizabeth-IBOA

- 12 Newark-Elizabeth-Union

Elizabeth, Union, Hillside, Irvington Bus Company

- 6 Irvington-Elizabeth

Beviano Chartered Service

- 44 Edgar Road

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## PART 1 - ROUTE AND SCHEDULE MODIFICATIONS

### Introduction

The existing Newark-Elizabeth transit network has evolved from a continuing process of reacting to a shrinking ridership market. Route and schedule planning activity was not comprehensive and was generally confined to what actions should be taken on specific routes. Comprehensive planning was inhibited by several factors, including:

- o Service reductions could not be spread evenly among all carriers. The number of buses operated by the small carriers remained constant. This meant that TNJ and its predecessor PSCT surrendered a higher portion of line revenue to the independents whenever service was reduced. Thereover, in many cases, witnessed the operation of service in excess of demand. A case in point, shown below, is the service on Central Avenue.
- o The existence of multiple-operators, each with their own routing authority, made it extremely difficult to rationalize the route network.
- o The Public Utilities Commission, which controlled routing and hours of service, did not have the staff to deal with comprehensive planning efforts. Much of the efforts were limited to individual cases pertaining to specific routes.
- o The planning capacities of the largest carrier, TNJ, were greatly reduced in the late 1960's and early 1970's by drastic cuts in the staff needed to support planning efforts.
- o The subsidy program underwrote carrier losses and removed incentives to make changes that would better tailor service to demand. A reduction of subsidy funds in the mid-1970's coupled with a lack of planning capacity, lead to "percentage reduction of service" which was only marginally sensitive to ridership demand.

The purpose of the Newark-Elizabeth Local Bus Study was to view the entire transit system as one network and to use a system's approach to rationalize the route and service structure. Such an approach could look above or overcome the constraints indicated above. The following assumptions were made as part of this approach:

- o One operator would provide all intrastate service in the study area.
- o New routings would not be encumbered by the routing restrictions associated with existing operators.
- o New schedules would not be written to protect buses operated by existing carriers.

The plan which resulted from the "system approach" is, we feel, tailored to meet the needs of today's transit rider as well as the potential riders who are not using transit because of a lack of service or the provision of inadequate service. Unfortunately the routing and scheduling restrictions imposed by the independent carriers must be incorporated into planning processes since they will continue to provide service for the foreseeable future. Additionally, the ability to implement all of the proposed service improvements not involving the independent carriers is restricted by available resources and staff. Thus, the proposals have been segmented into three phases as follows:

- o First Phase - implementation of route and service proposals which have minimum lead time.
- o Second Phase - implementation of route and service proposals which are complex and have longer lead time.
- o Third Phase - implementation of route and service proposals which involve independent carriers and require resolution of complex institutional problems.

The effect of implementing all three phases is to fully realize the "systems approach" described above.

#### Routing Considerations

The routings of transit lines in the Newark-Elizabeth area are, in many cases, identical to those existing in the late 1940's. Since that time the study area environment has changed considerably. Commercial activity has been diverted from the Newark and Elizabeth CBD area to surrounding shopping plazas. Traditional employment areas have been displaced or supplemented by new developments in the Port Newark and Elizabeth areas and in Western Essex County. Shifts in residential concentration have been significant. In addition to general loss in population, certain areas have witnessed a drastic reduction in residential units. The High Street corridor, which is now occupied by government institutions, is an example of this change.

The routing proposals which follow incorporate the following straightforward precepts:

- o Regional transit nodes, i.e. bus centers, should be reinforced or established to aid transferability and to improve routing options.
- o Routes should end at activity centers, where possible, to improve the potential for attracting additional riders and to improve routing options.
- o Duplicate routing should be withdrawn or restructured to obtain a balance between demand and service.

- o Crosstown routes should be made more attractive to potential riders through extensions to activity centers and extensions to effect improved connections with other routes.

- o New routes should be developed or in certain cases old routes reinstituted to serve new commercial and industrial areas and established areas that appear to have transit potential.

- o Through routings should be implemented to reduce turning movements in the Newark CBD and to optimize bus utilization.

- o Route coverage should be maximized to improve access to transit services. This goal must be implemented within the constraint of providing used and useful service.

#### Scheduling Considerations

The establishment of a transit route does not automatically establish a transit service unless it operates a schedule that meets the needs of potential riders. Similarly an existing transit route that is not properly scheduled can be under serving existing riders and failing to attract potential riders. If an existing route is over scheduled, resources are wasted. The schedule recommendations shown by route on the following pages incorporate the following items.

- o Peak hour services should not be scheduled in excess of a load factor of 1.3. Until an adequate level of street supervision is provided, we do not favor using a load factor in excess of 1.0. Due to the lack of supervision, service gaps occur due to both the late and early operation of buses. The lack of a uniform headway will result in heavy loading on certain trips even though a proper number of buses has been provided. Once service reliability has improved, service can be scheduled to the high load factor.

- o Base period headways should not normally exceed 30 minutes on the trunk portion of routes. Base period headways of less than 30 minutes should be sensitive to demand, particularly when the frequency is less than 15 minutes. Figures 1-1 and 1-2 show the midday situation on Central Avenue in October, 1978. The ratio of passengers to seats was 44% outbound and 36% inbound. Under the Phase 3 proposal for a 7.5 minute headway these amounts rise to 71% and 67%.

- o Clock headways (headways that repeat every hour) should be employed within the constraints imposed by varying running time (terminal times may repeat every hour but a variable running time can preclude repeat departure times at subsequent bus stops) and the need to optimize resources (to keep layover time within reasonable limits so as to optimize bus requirements).

o Major radial and crosstown routes should provide service Sunday and evenings after 2100 hours. Headways should not be in excess of 60 minutes.

o A timed transfer system should be provided evenings and Sundays. The principal arrival times at Broad and Market Street should be at 10 and 40 minutes after the hour. Routes operating at 60 minute headway would arrive and leave at 10 past the hours. Routes providing 15 minute service would arrive at the additional times of 25 and 55 past the hour. Street supervision must be provided to insure that all buses arrive and depart at the proper time. This arrangement will allow riders to transfer without the long waits which are normally required on nights and Sundays.

Figure 1-1

Utilization of Existing Midday Service on Central Avenue (Inbound)

Time Period	Time Buses Observed			Seated Capacity	Riders
	TNJ	Route 24 IBOA	Routes 23/44		
1:00-1:09 p		1:07	1:08	100	35
1:10-1:19 p	1:14			50	20
1:20-1:29 p	1:22	1:25 1:21	1:23	200	84
1:30-1:39 p				0	0
1:40-1:49 p	1:45	1:45	1:40	150	47
1:50-1:59 p	1:51	1:51	1:55	150	49
2:00-2:09 p	2:07	2:07		100	50
2:10-2:19 p	2:15	2:16	2:17 2:18	200	94
2:20-2:29 p	2:24	2:24	2:27	150	32
2:30-2:39 p	2:34			50	18
2:40-2:49 p	2:42	2:46 2:49	2:42 2:40	250	74
2:50-2:59 p		2:52	2:50	100	33
Total				1500	536

Capacity provided by a 7 1/2 minute headway - 800

Figure 1-2

Utilization of Existing Midday Service on Central Avenue (Outbound)

<u>Time Period</u>	<u>Time Buses Observed</u>			<u>Seated Capacity</u>	<u>Riders</u>
	<u>TNJ</u>	<u>Route 24</u> <u>IBOA</u>	<u>Routes</u> <u>23/44</u>		
1:00-1:09 p	1:02	1:01		100	44
1:10-1:19 p	1:11	1:18	1:17	150	67
1:20-1:29 p			1:28	50	17
1:30-1:39 p	1:34	1:35 1:34		150	30
1:40-1:49 p	1:47		1:47	100	66
1:50-1:59 p	1:52		1:53	100	33
2:00-2:09 p	2:03	2:03		100	60
2:10-2:19 p	2:12		2:10	100	21
2:20-2:29 p	2:25		2:22	100	42
2:30-2:39 p	2:31		2:38	150	115
2:40-2:49 p			2:42	50	9
2:50-2:59 p	2:57	2:56	2:56	<u>150</u>	<u>63</u>
			Total	1300	567

Capacity provided by a 7 1/2 minute headway - 800.

### Format of the Service Proposals

All recommended proposals are discussed by individual route. With the exception of certain Phase 3 recommendations, four topics are used to describe the proposal. The four are:

- o Proposed Service - The headways proposed for the weekday base period are for the approximate time span of 0900 hours to 1400 hours. The base times shown for Saturday and Sundays is the service proposed for the service day unless superseded by demand. The night service indicated is the service to be operated after 2100 hours. Where headways are separated by slash marks (/), the first number shown is the proposed headway followed by the present headway. The approximate span of service is also shown.

- o Proposed Route - The routes to be serviced are indicated including all arrivals and peak hour only service. Through routing days are also indicated.

- o Discussion - Indicates the rationale for making the proposed changes.

- o New Users/Users with Better or Worse Service - This section details the impact on existing and potential ridership. It should be noted that reduced service is shown for several routes where the present service levels exceed the service level justified by the demand. Among these routes are:

- 8 North Elizabeth Loop
- 29 Caldwell and Verona portions
- 39 Entire route, during the base period
- 44 Entire route, during the base period
- 48 Clinton Place portion
- 49 Elizabeth, Roselle and Cranford portion
- 107 Entire route

These routes would have had service reduced independent of the route changes that we have proposed.

### Routes Not Affected

The following routes are not proposed for any modification to routes and schedules:

- Route 7 - City Subway - The service on this route, according to data collected in October, 1978, is adequately matched to observed demand. Available capacity is sufficient to handle new riders relocating from the extension of Route 74.

Route 43 - Newark-Jersey City - This route operates primarily to service the post office complex in Kearny during rush hours. The present route and schedule adequately meet current ridership demands.

Route 112 - Newark-Passaic - Recommendations for this line will be made at the completion of the Passaic County Rationalization Study.

Route 2 - Bloomfield-Passaic - Recommendations for this line will be made at the completion of the Passaic County Rationalization Study.

### Regional Bus Centers

The proposed routing plan emphasizes existing bus centers at Irvington and Bloomfield. New centers are proposed for North Newark and Orange. A description of the centers follows.

North Newark - This center is proposed to be located at the Franklin Avenue City Subway Station. It would reinforce the crosstown bus network by tying routes 94, 90, 74 and 7 and would improve routing options.

Orange - This center is proposed to be located at Lackawanna Plaza adjacent to ConRail's existing Orange Station. This center would be the focal point for most routes operating through or to the Oranges. It would also function as an intermodal center and enable convenient transfers between ConRail's Morristown line and local buses. The importance of this transfer will increase when the Morristown line achieves Penn Station access.

Bloomfield - This location has been a traditional center of transit activity. The proposed route and schedule recommendations reinforce this location's importance. Specifically, Route 20 is proposed for extension to Nutley, Routes 94 and 96 are merged to provide single line service to Irvington. Access to Willowbrook is improved with additional service and crosstown headways are improved.

Irvington - This traditional center of transit activity is reinforced by proposals for single line service to Linden Center and Bloomfield and improved headways.

In addition to the regional bus centers, the route and schedule improvements also improve transfer potential and access at other locations.

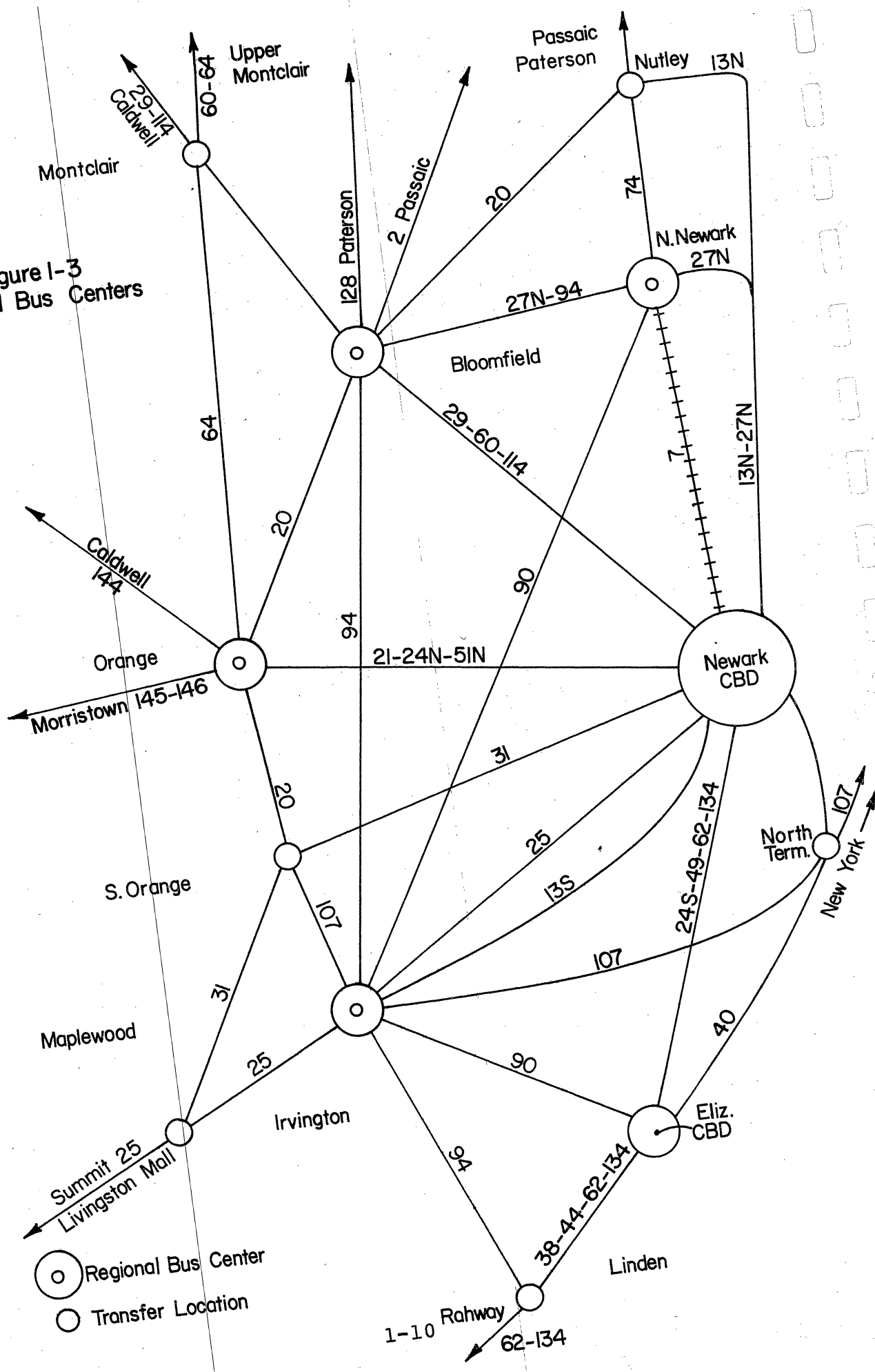
Nutley - The proposed extension of Route 20 will provide direct service to Bloomfield and the Oranges. Convenient transfers will be possible between Routes 13N, 20 and 74.

Montclair - The proposed extension of Route 34, reinstitution of service on Grove Street and improved headways will improve transfer capabilities between Routes 29, 34W, 60, 64 and 114.

Linden - The proposed extension of Route 94 to Linden and restoration of peak hour service on Route 38 improves access and route flexibility in this area.

North Terminal - The proposed route 40S will be scheduled to provide connections to the Port area to and from Route 107, which serves the Wequaciac section of Newark, Irvington and South Orange, as well as the PABT.

A schematic of the proposed route network and its relationship to the bus centers is shown in Figure 1-3.

[illegible]

### Timed Transfers

Presently no attempt is made to coordinate bus arrivals and departures in the Newark CBD during low utilization periods, including evenings after 9:00 p.m. and Sundays. The proposed schedule recommendations call for headways in multiples of fifteen minutes during these periods. This feature will allow the establishment of a timed transfer.

Timed transfers are accomplished by scheduling buses on all operating routes to arrive and depart Broad and Market Streets at the same time. Most routes operate at a 30 minute headway during the period that the timed transfer is in effect. The major timed transfers would thus occur at 10 and 40 minutes past the hour. Several major routes operate at 15 minute headways. Thus a secondary transfer meet would occur at 25 and 55 minutes past the hour.

In order to have the timed transfer operate reliably, a supervisor would have to be stationed at the transfer point. This supervisor would assure that buses did not leave early and would hold buses if connections were late. The use of radio equipped buses would be desirable, but is not essential for this operation.

Connections with rail service would be made more convenient as a result of this transfer. Connections to ConRail Penn Station trains would require a wait of approximately 10 minutes in the outbound direction. Buses making the 10 and 40 minutes past the hour meets would leave Penn Station at 05 and 35 minutes past the hour. Westbound trains are generally scheduled to arrive at 24 and 54 minutes past the hour. PATH trains are scheduled slightly ahead of these times in order to provide sufficient connecting time for ConRail trains. In the inbound direction, connections are similar. Most ConRail trains leave at 25 and 55 minutes past the hour. Buses would be scheduled to arrive at 15 and 45 minutes past the hour. PATH trains are scheduled to leave slightly after ConRail trains so that the wait would be a little longer.

Crosstown lines are impossible to schedule with scheduled connections to all intersecting radial routes due to the close spacing of the radial routes and the relatively infrequent (30 minute) crosstown headways. Key connections will be selected for each crosstown route and schedules will be developed to meet these connections.

### Coordination with Rail Service

The regional routes in the study area consist of the Amtrak Northeast corridor route from New York to Newark and Rahway; four Conrail commuter lines including the former CNJ between Newark and Roselle, the former Lackawanna Morris & Essex division from Hoboken to Newark and Maplewood, the Montclair branch from Hoboken to Newark and Montclair and the former Erie Greenwood Lake branch from Hoboken to North Newark and Upper Montclair and PATH between Newark, Jersey City and New York. The Newark subway (Route 7) was treated as part of the local bus system.

Competition between rail and bus routes - Several long bus routes radiate from Newark and generally parallel portions of the rail system. These include the 49 between Newark, Elizabeth and Dunellen, the 62/134 between Newark, Elizabeth and Rahway, the 70 between Newark, Maplewood and Summit, the 29/60 between Newark, Bloomfield and Montclair, and the 1 between Newark and Jersey City.

Our studies of usage on these lines indicate that they are not really competitive with the rail system. In general, these bus routes provide local service in the corridors that they serve with the rail lines providing service that is primarily New York oriented. With the exception of the Montclair branch and the Greenwood Lake branch, the rail lines also provide substantial service to the Newark CBD.

The pattern of usage is that for trips of less than 5 to 7 miles, the bus is the preferred mode in the corridors with both bus and rail service, due to greater frequency of service and better distribution in the Newark CBD. As a result, the Montclair branch and the Morris & Essex line east of South Orange are used almost entirely for New York oriented travel. Beyond this distance, rail usage predominates to the Newark CBD, with the exception of the Greenwood Lake branch, which has poor CBD access compared with the other routes. It appears that the only place where there is substantial usage of both modes is between Newark and Elizabeth. It is likely that people traveling between these two points tend to choose a mode based on their location with respect to the rail stations.

With respect to specific routes, the 49 and 62/134 have an almost complete turnover of passengers in Elizabeth, with the 62/134 providing Newark-Elizabeth express service while the 49 provides local service in Newark. The 70 has almost complete turnover of people in Irvington. The 1 serves primarily to connect the Ironbound area of Newark and the South Kearny industrial area with both Newark and Jersey City. Only the 29/60 provides a Newark CBD oriented service over its entire length. Even these routes have as much local as CBD usage on their outer portions.

### Coordination Opportunities

Physical coordination - In several places, the local bus system already is suitably located to provide access to the rail system. Elizabeth and Bloomfield are two examples. In the Newark CBD, the almost constant flow of buses on North Broad St. serve as a distributor for the Lackawanna station. Penn Station is the terminal for many bus routes. We have strengthened this structure by utilizing Penn Station as the terminal point for almost all routes in the Newark CBD that are not through-routed.

We have identified several locations for bus centers. These primarily are designed to expand upon existing locations that are focal points for bus routes. An exception is the Orange bus center. This center would be designed to concentrate several routes that now operate through or terminate at several points in Orange. It would be adjacent to the railroad station and would serve the routes that are most likely to be used as rail feeders, including the 144 and 145/146 operating into western Essex County.

Also, opportunities have been sought to expand the availability of crosstown bus service at rail stations. Examples include the northern extension of the 20, which provides service to both Orange and Bloomfield stations, and the combination and extension of the 94/96, which adds a connection between Brick Church station and the Franklin Avenue subway-bus interchange, as well as a service north from Linden.

Several of the changes in bus service to provide for better rail system coordination will become even more useful with possible rail system improvements. For example, the Orange bus center is likely to be a much more significant rail feeder location when service on the Morris & Essex is extended to Penn Station.

Coordinated scheduling - Opportunities for coordinated scheduling are limited due to the multipurpose function of most area bus routes. Experience with rail feeder services has been that the successful services either operate with sufficient frequency that schedule coordination is unnecessary or are dedicated services that perform only a rail feeder function. Many of the routes serving Penn Station, Newark are good examples of the first category, as both the bus routes and the rail lines provide very frequent service. No obvious opportunities for rail feeder services were found in the study area. Very few of the rail stations have the high level of usage and the limitations on station parking that appear to be the most important preconditions for such service.

One schedule coordination opportunity exists at Penn Station, Newark. The evening and Sunday service is proposed to be scheduled with a timed transfer in the Newark CBD. The timed transfer is to be designed so that buses operating to and from Penn Station are in turn scheduled to connect with PATH trains.

Other coordination - Other coordination measures, such as through or joint rail-bus fares and coordinated information and marketing are outside the scope of this study and will be addressed in statewide or regional studies dealing specifically with these areas.

### Route Statistics and Costs

The measures of performance shown in this section include the two most important indices of comparative cost. These are peak bus requirements and platform hours. The peak bus requirement defines the capital cost of equipment, as well as servicing and periodic maintenance that is a function of the number of units. Platform hours define the amount of driver time needed to operate the service.

Table 1-1 shows the peak bus requirements by route. Tables 1-2, 1-3, and 1-4 show the platform hours required to operate the weekday, Saturday and Sunday schedules respectively. All measures decline as the various stages of the plan are implemented, indicating improved efficiency. Bus requirements decline substantially in each stage. Platform hours decline most noticeably in stage 3, as a result of the merger of the independent operators into other routes.

All numbers presented here are preliminary and will be refined as schedules are developed. The current figures are as of the date of the inventory report and represent operations in effect in the fall of 1978.

It is likely that the final schedules will result in slight increases in the number of peak buses and platform hours. This will result from the need to possibly add certain tripper runs to routes to cover peak demands. Each additional tripper bus, if operated in both peaks, represents between 3 and 4 additional platform hours, depending upon the length of the route.

Table 1-1.

## Peak Buses by Route - Weekdays

Current		Stage 1		Stage 2		Stage 3	
Route	Buses	Route	Buses	Route	Buses	Route	Buses
1	15	1/54	22	1	22	1	22
2	4	-	-	-	-	-	-
5	8	5	8	-	-	-	-
6	5	6	4	6	4	6	4
8	2	8	3	8	3	8	4
8/48	11	8/39/48	16	39/48	16	29/48	16
9	7	9	7	9	7	9	7
13	33	13	35	13	35	13	35
14	15	14	15	14	11	14	11
15	1	-	-	-	-	-	-
20	4	20	5	20	5	20	5
21	14	20	5	20	5	20	5
23/44	12	44	6	44	6	-	-
24	21	23/24	21	23/24	21	23/24/44	32
25	18	25	17	25/70	22	25/70	22
26	1	-	-	-	-	-	-
27	15	27	16	27	16	27	16
28	5	28	3	28	3	28	3
29/60/	33	29/60/	27	29/60/	27	29/60/	27
61/114/116		114/116		114/116		114/116	
30	5	30	5	30	5	-	-
34 Eliz- Linden	1	38 Eliz- Rahway	1	38	1	38	1
34 Mkt.	16	2/3/82	19	2/34/82	19	2/34/82	19
39	11	-	-	-	-	-	-
40/41	4	40/41	6	40/61	6	40/41	6
42	2	-	-	-	-	-	-
49	14	49/51	19	49/51	19	49/51	19
51	3	-	-	-	-	-	-
54	9	-	-	-	-	-	-
62	8	62/134	11	62/134	11	62/134	11
70	10	70	10	-	-	-	-
74	9	74	10	74	10	74	10
82	8	-	-	-	-	-	-
90	4	90	5	90	5	90	7
102	22	102	17	102	17	102	17
107	19	107	13	107	13	107	13
128	5	128	6	128	6	128	6
134	7	-	-	-	-	-	-
Total							
TNJ	381		342		325		328
NJ Transit							

Table 1-1 (continued) Peak Buses by Route - Weekdays

Current		Stage 1		Stage 2		Stage 3	
Route	Buses	Route	Buses	Route	Buses	Route	Buses
5	2	-	-	-	-	-	-
22 Roseville	2	-	-	-	-	-	-
64	2	64	1	64	1	64	1
94	7	94/96	11	94/96	11	94/96	11
96	4	-	-	-	-	-	-
Total							
	17		12		12		12
22 JC Caldwell	3	22	2	22	2	22	2
6	3	6	3	6	3	-	-
12	4	12	4	12	4	-	-
16	2	16	2	16	2	-	-
18	6	18	6	18	6	-	-
24	6	24	6	24	6	-	-
25	4	25	4	25	4	-	-
30	2	30	2	30	2	-	-
31	24	31	24	31	24	31	27
38	1	38	1	38	1	-	-
44 Wood Avenue	6	44	5	44	5	44	5
Other Independents	61	59	59	34			
System Total	459		413		396		374
% Change from Current			-10.0%		-13.8%		-18.5%

Table 1-2.

## Platform Hours by Route - Weekdays

Current		Stage 1		Stage 2		Stage 3	
Route	Platform Hours	Route 1	Platform Hours	Route 2	Platform Hours	Route 3	Platform Hours
1	180.2	1/54	237	1/54	237	1/54	237
2	50.2	-	-	-	-	-	-
5	95.3	5	95	-	-	-	-
6	50.3	6	47	6	47	6	47
8	16.2	8	72	8	72	8/30	88
8/48	111.1	8/39/48	164	39/48	164	39/48	164
9	81.5	9	93	9	93	9	93
13	375.3	13	378	13	378	13	378
14	150.6	14	151	14	146	14	146
15	7.7	-	-	-	-	-	-
20	50.7	20	78	20	78	20	78
21	198.7	21	166	21	166	21	166
23/44	135.7	44	70	44	70	-	-
24	261.1	23/24	261	23/24	261	23/24/44	367
25	202.3	25	186	25/70	248	25/70	248
26	3.8	-	-	-	-	-	-
27	183.2	27	199	27	199	27	199
28	47.7	28	42	28	42	28	42
29/60/61/ 114/116	327.1	29/60/ 114/116	267	29/60/ 114/116	267	29/60/ 114/116	267
30	51.2	30	51	30	51	-	-
34 Eliz- Linden	3.5	38 Eliz- Rahway	7	38 Eliz- Rahway	7	38 Eliz- Rahway	7
34 Mkt.	159.2	2/34/82	225	2/34/82	225	2/34/82	225
39	102.2	-	-	-	-	-	-
40/41	35.2	40/41	90	40/41	90	40/41	90
42	11.4	-	-	-	-	-	-
49	154.9	49/51	188	49/51	188	49/51	188
51	23.0	-	-	-	-	-	-
54	86.0	-	-	-	-	-	-
62	86.8	62/134	139	62/134	139	62/134	139
70	106.4	70	106	-	-	-	-
74	117.6	74	207	74	207	74	207
82	79.8	-	-	-	-	-	-
90	55.5	90	67	90	67	6/90	99
102	227.0	102	189	102	189	102	189
107	179.8	107	130	107	130	107	130
128	57.9	128	79	128	79	128	79
134	74.8	-	-	-	-	-	-
Total							
TNJ	4140.9		3984		3840		3873
NJ Transit							

Table 1-2 (continued) Platform Hours by Route - Weekdays

Current		Stage 1		Stage 2		Stage 3	
Route	Platform Hours	Route 1	Platform Hours	Route 2	Platform Hours	Route 3	Platform Hours
5	16.5	-	-	-	-	-	-
22 Roseville	16.4	-	-	-	-	-	-
64	32.3	64	15	64	15	64	15
94	77.2	94/96	140	94/96	140	94/96	140
96	51.1	-	-	-	-	-	-
Total Trackless Transit	193.5		155		155		155
22 Jersey Caldwell	20.4	22	20	22	20	22	28
6	32.5	6	33	6	33	-	-
12	63.7	12	64	12	64	-	-
16	38.5	16	39	16	39	-	-
18	111.0	18	111	18	111	-	-
24	112.3	24	112	24	112	-	-
25	72.7	25	73	25	73	-	-
30	30.8	30	31	30	31	-	-
31	247.0	31	247	31	247	31	277
38	16.3	38	16	38	16	-	-
44 Wood Avenue	79.1	44	79	14	79	44	75
Total Other Independents	824.3		825		825		380
System Total	5158.7		4977		4820		4253
% Change from Current	-		-3.5%		-6.6%		-17.6%

Table 1-3.

## Platform Hours by Route - Saturdays

Current		Stage 1		Stage 2		Stage 3	
Route	Platform Hours	Route	Platform Hours	Route	Platform Hours	Route	Platform Hours
1	88.0	1/54	122	1/54	122	1/54	122
2	26.1	-	-	-	-	-	-
5	41.6	5	42	-	-	-	-
6	16.2	6	18	6	18	6	18
8	0.0	8	45	8	45	8/30	57
8/48	58.4	8/39/48	107	39/48	107	39/48	107
9	41.1	9	70	9	70	9	70
13	228.6	13	233	13	233	13	233
14	106.5	14	107	14	107	107	107
20	33.0	20	44	20	44	20	44
21	138.5	21	105	21	105	21	105
23/44	95.4	-	-	-	-	-	-
24	227.9	23/24/44	210	23/24/44	210	23/24/44	325
25	143.5	25	144	25/70	150	25/70	150
27	150.4	27	169	27	169	27	169
28	13.0	28	39	28	39	28	39
29/60/61/ 114/116	187.0	29/60/ 114/116	206	29/60/ 114/116	206	29/60/ 114/116	206
30	30.7	30	31	30	31	-	-
34 Mkt.	108.1	2/34/82	127	2/34/82	127	2/34/82	127
39	72.3	-	-	-	-	-	-
40/41	9.0	40/41	81	40/41	81	40/41	81
49	92.7	49/51	154	49/51	154	49/51	154
54	29.3	-	-	-	-	-	-
62	28.0	62/134	111	62/134	111	62/134	111
70	50.5	70	51	-	-	-	-
74	52.3	74	117	74	117	74	117
82	14.1	-	-	-	-	-	-
90	14.3	90	43	90	43	6/90	55
102	53.0	102	53	102	53	102	53
107	147.8	107	122	107	122	107	122
128	27.8	128	55	128	55	128	55
134	51.7	-	-	-	-	-	-
Total							
TNJ	2376.8		2606		2519		2627
NJ Transit							

Table 1-3 (continued) Platform Hours by Route - Saturdays

Current		Stage 1		Stage 2		Stage 3	
Route	Platform Hours	Route	Platform Hours	Route	Platform Hours	Route	Platform Hours
5	7.8	-	-	-	-	-	-
64	7.8	64	8	64	8	64	8
94	58.0	94/96	104	94/96	104	94/96	104
96	40.3	-	-	-	-	-	-
Total Trackless Transit	<u>113.9</u>		<u>112</u>		<u>112</u>		<u>112</u>
22 Jersey Caldwell	12.3	22	12	22	12	22	25
6	12.4	6	12	6	12	-	-
12	63.4	12	63	12	63	-	-
16	36.1	16	36	16	36	-	-
18	111.0	18	111	18	111	-	-
24	102.9	24	116	24	116	-	-
25	72.7	25	73	25	73	-	-
30	28.7	30	29	30	29	-	-
31	196.1	31	196	31	196	31	196
38	8.1	38	8	38	8	-	-
44 Wood Avenue	59.0	44	59	14	59	44	59
Total Other Independents	<u>702.7</u>		<u>715</u>		<u>715</u>		<u>280</u>
System Total	3193.4		3433		3346		3019
% Change - from Current			+7.5%		+4.8%		-5.5%

Table 1-4.

## Platform Hours by Route - Sundays

Current		Stage 1		Stage 2		Stage 3	
Route	Platform Hours	Route	Platform Hours	Route	Platform Hours	Route	Platform Hours
1	24.5	1/54	64	1/54	64	1/54	64
2	7.9	-	-	-	-	-	-
5	16.3	5	16	-	-	-	-
8/48	16.8	8/39/48	59	39/48	59	39/48	59
9	32.8	9	34	9	34	9	34
13	92.4	13	141	13	141	13	141
14	16.1	14	16	14	47	14	47
20	18.3	20	18	20	18	20	18
21	121.0	21	104	21	104	21	104
23/44	79.3	-	-	-	-	-	-
24	110.3	23/24/44	143	23/24/44	143	23/24/44	200
25	97.7	25	98	25/70	109	25/70	109
27	94.0	27	126	27	126	27	126
29/60/61/	97.8	29/60/	106	29/60/	106	29/60/	106
114/116		114/116		114/116		114/116	
34 Mkt.	67.9	2/34/82	62	2/34/82	62	2/34/82	62
39	33.1	-	-	-	-	-	-
40/41	0.0	40/41	62	40/41	62	40/41	62
49	0.0	49/51	47	49/51	47	49/51	47
74	16.2	74	66	74	66	74	66
90	8.2	90	27	90	27	6/90	27
102	8.0	102	8	102	8	102	8
107	134.8	107	81	107	81	107	81
128	8.0	128	30	128	30	128	30
Total							
TNJ	1101.4		1308		1334		1391
NJ Transit							

Table 1-4 (continued) Platform Hours by Route - Sundays

Current		Stage 1		Stage 2		Stage 3	
Route	Platform Hours	Route	Platform Hours	Route	Platform Hours	Route	Platform Hours
16	34.1	16	34	16	34	-	-
18	104.8	18	105	18	105	-	-
24	50.7	24	55	24	55	-	-
25	64.7	25	65	25	65	-	-
31	117.3	31	117	31	117	31	117
44 Wood Avenue	14.3	44	14	44	14	44	14
Total	385.9		390		390		131
Other Independents							
System Total	1487.3		1698		1724		1522
% Change - from Current			+14.2%		+15.9%		+2.3%

Table 1-5

## Old and New Route Numbers - TNJ/NJ Transit Routes

<u>Present Route</u>		<u>Proposed Route</u>	<u>Described on Page</u>
1	Newark	1 E & W	1-28, 1-30
2	Ampere	34 W	1-58
5	Kinney	14	1-96
6	Crosstown	6	1-32
7	City Subway	No change	- - -
8	Springfield-Elizabeth	8	1-34
8/48	Lyons-Maple	14	1-96
		39/48	1-100
13	Broad	13 N & S	1-38, 1-40
		74	1-84
14	Clinton Place	14	1-96
15	Nutley	74	1-84
20	Orange Crosstown	20	1-42
21	Orange-Port Newark	21	1-44
		34 E	1-60
		40 S	1-68
23	Central	24 N	1-46, 1-110
24	Elizabeth-West Orange	24 N & S	1-46, 1-48, 1-110, 1-112
		Beviano 44	1-116
25	Springfield	25	1-98
		34 E	1-60
26	Elmora	8	1-34
27	Mt. Prospect	27 N & S	1-50, 1-52
28	Roselle	28	1-54
29/116	Caldwell-Dover	29	1-56
30	First Street	8	1-106
		24 S	1-112
34	Market	1 E	1-28
		34 E & W	1-58, 1-60
34	Elizabeth-Linden	Beviano 44	1-72
39	Harrison	39/48	1-64
40	Davis Avenue	40 N	1-66
41	River Road	40 N	1-66
42	18th Avenue	42	1-70
43	Jersey City	No change	- - -
44	Tremont	24 N, 44	1-46, 1-110
49	Union	49	1-74
		51 S	1-76
51	Park Avenue	51 N	1-78
54	Devine Street	1 W	1-30
60/61	Montclair	27 N	1-50
		60	1-56
62	Newark-Perth Amboy	62/134	1-80
70	Newark-Livingston Mall	25	1-98
74	Main-Passaic	74	1-84

Table 1-5 (continued) Old and New Route Numbers - TNJ/NJ Transit Routes

<u>Present Route</u>		<u>Proposed Route</u>	<u>Described on Page</u>
82	Watsessing	20	1-42
		34 W	1-58
		51 N	1-78
90	Grove Street Crosstown	90	1-86
102	Paterson-Hackensack-Newark	102	1-102
107	Irvington-New York	107	1-90
112	Newark-Clifton	No change	- - -
114/115	Newark-Butler	114/115	1-56
126/128	Newark-Paterson	128	1-92
134	Newark-Metuchen	62/134	1-80
- - -	(Former Rt. 38 Elizabeth-Rahway)	38	1-62

Table 1-6

## Old and New Route Numbers - Independent Operator Routes

<u>Present Route</u>	<u>Proposed Route</u>	<u>Described on Page</u>
2 Passaic-Bloomfield	No change	- - -
5 Union-Irvington	94	1-88
6 Elizabeth-Irvington	TNJ 90	1-118
12 Elmora	TNJ 24 S	1-124
16 Clinton Avenue	TNJ 13 S	1-124
18 North Newark	TNJ 13 N	1-124
22 Roseville	Route discontinued	1-94
22 Jersey City-Caldwell	22	1-108
31 South Orange Avenue	31	1-114
38 Kearny	TNJ 39	1-124
	TNJ 40 N	1-124
44 Edgar Road	44	1-72, 1-116
64 Orange-Montclair	TNJ 34 W	1-58
	64	1-82
94 Stuyvesant	94	1-88
96 Clinton	94	1-88
144 Newark-Caldwell	144	1-120
145/146 Newark-Morristown	145/146	1-122

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PHASE 1 - SERVICE MODIFICATIONS

NEW ROUTE 1E

OLD ROUTES 1-34

PROPOSED SERVICEHeadways in MinutesBase

	<u>Weekday</u>	<u>Saturday</u>	<u>Sunday</u>
Trunk	10/10	15/20	30/40
Jersey City Service	20/20	30/20	60/40
Chapel/Lockwood Short Turn	20/25	30/24	60/40

Night

Trunk	30/50	30/0	30/0
Jersey City Service	60/50	60/0	60/0
Chapel/Lockwood Short Turn	60/30	60/30	60/30

Service Hours

0400-2400	0400-2400	0800-2300
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PROPOSED ROUTES

Begin at Broad Street and proceed via Market Street, Ferry Street, Raymond Boulevard, Lincoln Highway to Jersey City. Return via Lincoln Highway, Raymond Boulevard; Chapel Street, Fleming Street, Mott Street, Ferry Street to Market Street.

Chapel Street Loop - Proceed via the same route to Lockwood Street and then via Lockwood Street, Albert Avenue, Chapel Street, Fleming Street, and return to the same route.

Jacobus Avenue peak hour service - Proceed via the same route to Jacobus Avenue and then via Jacobus Avenue to Pennsylvania Avenue.

Western Electric peak hour service - Proceed via the same route to Central Avenue, and then via Central Avenue to Western Electric.

Through routed with 1W.

## DISCUSSION

It is recommended that Chapel Street trips of this route be extended to serve the Chapel Street branch of Route 34. This extension will permit the discontinuance of 34 service on E. Ferry Street east of Wilson Avenue and on Market Street east of Penn Station, thus eliminating the unnecessary duplication of service in this area.

## NEW USERS/USERS HAVING BETTER OR REDUCED SERVICE

No effect. Routes 1 and former Route 34 either use the same street or are within 1300 feet.

NEW ROUTE 1W

OLD ROUTES 1 and 54

PROPOSED SERVICE

Headways in Minutes

Base

Trunk  
Ivy Hill Service  
20th Street Loop Short Turn

Weekday

10/10  
20/20  
20

Saturday

15/20  
30/35  
30

Sunday

30/40  
30/0  
30

Night

Trunk  
Ivy Hill Service  
20th Street Loop Short Turn

30/50  
30/60  
0

30/0  
30/0  
0

30/0  
30/0  
0

Service Hours

0400-2400

0400-2400

0800-2300

PROPOSED ROUTES

Begin at Broad Street and proceed via Market Street, Springfield Avenue, 15th Avenue, Bergen Avenue, 16th Avenue, Grove Street, 18th Avenue, Sanford Avenue, Mt. Vernon Avenue to Manor Street Loop.

Cutback service - Certain trips will terminate at the 20th Street Loop.

Peak period express service will operate express on Market Street and Springfield Avenue, and local on 18th Avenue, Sanford Avenue and Mt. Vernon Avenue.

## DISCUSSION

We recommend that routes 1 and 54 be combined. Approximately 80% of the usage on the present 54 route is in the section west of Grove Street. The merger of the two routes will provide these people with a faster, more direct route. Most of the remaining portion of the 54 route is either duplicated by route 34 or is within one block of route 31. This change will also permit the hours of service on the route 54 to be expanded, and more frequent service to be provided on both routes during evening hours and on weekends.

## NEW USERS/USERS HAVING BETTER OR REDUCED SERVICE

Better Service	2,900	Faster service for former 54 users west of Grove Street. Inner part of route is all within 1,300 feet of another route.
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NEW ROUTE 6OLD ROUTES 6PROPOSED SERVICEHeadways in MinutesBaseWeekdaySaturdaySunday

30/40

60/75

0

Night

60/70

60/75

0

Service Hours

0500-2400

0500-2300

PROPOSED ROUTES

From Valley Fair Shopping Center via Cordier Street, Lyons Avenue, Chancellor Avenue, Wainwright Street, (Lyons Avenue and Cordier Street southbound) Fabyan Place, 18th Street (19th Street southbound), 14th Avenue, 10th Street, Central Avenue, Roseville Avenue, 6th Avenue, 4th Street, Park Avenue to Roseville Avenue.

## DISCUSSION

The entire route is lightly patronized and was originally a candidate for abandonment. The north end duplicates Route 34, a heavy radial route. Headways on this route are inadequate to provide convenient transfer connections. For these reasons it was our opinion that the service on this route should be concentrated on the unduplicated southern end in order to improve headways utilizing the same number of vehicles. The effect of this change is to require people riding from the north of Main Street to south of 12th Avenue to transfer. We estimate that approximately 350 people in each direction would have to transfer. In addition, the north terminal, which is located adjacent to the Park Avenue subway station, preserves access to the Franklin Avenue subway terminal and its connecting routes.

### NEW USERS/USERS HAVING BETTER OR REDUCED SERVICE

Better Service	1,600	Headways improved for people south of South Orange Avenue
Reduced Service	700	Through service eliminated; transfer at Orange Street

NEW ROUTE 8

OLD ROUTES 8-26

PROPOSED SERVICE

Headways in Minutes

Base

Weekday

Saturday

Sunday

Trunk

30

30

--

Night

Service Hours

0600-2100

0700-1800

--

PROPOSED ROUTES

From Short Hills Mall via NJ 24 service road, Morris Avenue, Green Lane, Magie Avenue, Westfield Avenue, Broad Street and loop via Elizabeth River Loop.

## DISCUSSION

This route presently operates during the peak periods only and is a radial route to Elizabeth. During the public meeting many comments were received about restoring service on this route and extending it to other areas. It is proposed to reroute this line via Magie Avenue to improve its accessibility to residential areas and to extend it to Short Hills Mall, which will place a major traffic generator at each end of the line. The proposed route of the extension, via the Route 24 Frontage Road, is designed to minimize running time.

With the initiation of Route 8 service via Magie Avenue the present Route 26 Elmora is proposed for discontinuance. This move will have virtually no impact on ridership since this line is very lightly used.

## NEW USERS/USERS WITH BETTER OR REDUCED SERVICE

New Users	500	Service to Short Hills Mall and expanded hours of operation
Better Service	450	Improved headway in Elmora

NEW ROUTE 9OLD ROUTES 9PROPOSED SERVICEHeadways in MinutesBaseWeekdaySaturdaySunday

Trunk

15/14

15/23

30/40

Night

Trunk

30/60

30/0

30/0

Service Hours

0500-2400

0500-2400

0600-2400

PROPOSED ROUTES

Begin at Elizabeth Avenue and proceed via Lyons Avenue, Bergen Street,  
Central Avenue, Clifton Avenue to Bloomfield Avenue.

## DISCUSSION

This change has been requested at the public hearing and in various meetings we have attended. The principal reason for the change is to provide better access to the Medical Complex on Bergen Street. The neighborhood served along Jones Street and Norfolk Street has had a drastic reduction in population density, which minimizes inconvenience to local travelers. The line handles a significant amount of transfer riders and this function is not materially affected by the proposed change.

### NEW USERS/USERS WITH BETTER OR REDUCED SERVICE

New Users	200	Better access to the Medical Center on Bergen Avenue.
Better Service	All Users	Better access to the Medical Center on Bergen Avenue.

NEW ROUTE

13N

OLD ROUTES

13

PROPOSED SERVICEHeadways in MinutesBaseWeekdaySaturdaySunday

Trunk  
Nutley Branch  
Joralemon Branch

5  
15  
15

7 1/2  
15  
15

15  
30  
30

Night

Trunk  
Nutley Branch  
Joralemon Branch

30  
30  
0

30  
30  
0

30  
30  
0

Service Hours

0400-0100

0400-0100

0500-0100

PROPOSED ROUTES

Begin on Broad Street at Market Street and operate via Broad Street, Bloomfield Place, Broadway, Washington Avenue, Center Street, Bloomfield Avenue, Kingsland Street, West Passaic Avenue, High Street to Joerg Avenue and return via the same route.

Joralemon Branch - Same route to Joralemon Avenue and Washington Avenue, and then via Joralemon Avenue, Cook Road, Plymouth Road, Bloomfield Avenue to Joralemon Avenue and return via the same route. Trips via Greylock Parkway would operate via Greylock Parkway, Passaic Avenue to the same loop.

Turn back trips - Trips not operating to Nutley or Joralemon Avenue would turn back at Big Tree Garage.

Express Service - Express service will operate over the Nutley Branch and follow the regular route to Verona Avenue and then operate via Verona Avenue, McCarter Highway and Clay Street to regular route.

Through routed with 13S.

## DISCUSSION

The extension of Route 74 should be accompanied by changes on Route 13. Otherwise, Franklin Avenue will be over-served and the performance of both routes will be adversely affected. The proposed level of service on Route 74 and the Nutley Branch of Route 13 will minimize the inconvenience caused by transfers, which some riders will have to make at Franklin Avenue and Centre Street. The level of service on both routes at Franklin Avenue and Joralemon Street will actually improve service over that presently provided by 13A. The changes to Route 13N and 74 should be viewed as a single package.

## NEW USERS/USERS WITH BETTER OR REDUCED SERVICE

Better Service	1,500	Users of 13A, 15 and 82 with improved headways on both routes 74 & 13N
Reduced Service	200	Users of 13 in Nutley who have to transfer from 74 to 13
New Users	300	Improved frequency on Route 74 and connections at the Franklin Avenue Bus Center

NEW ROUTE 13S

OLD ROUTES 13

PROPOSED SERVICE

Headways in Minutes

Base

Weekday

Saturday

Sunday

Trunk

5

7 1/2

15

Night

Trunk

30

30

30

Service Hours

0400-0100

0400-0100

0500-0100

PROPOSED ROUTES

Begin at Market Street and proceed via Broad Street, Clinton Avenue to the Irvington Bus Center.

Through routed with 13N.

### DISCUSSION

No routing changes have been proposed for the south end of Route 13 and only minor schedule changes will occur due to changes on the north end of the line.

### NEW USERS/USERS WITH BETTER OR REDUCED SERVICE

No effect - no significant change in service

NEW ROUTE 20 OLD ROUTES 20-82

PROPOSED SERVICE

<u>Base</u>	<u>Headways in Minutes</u>		
	<u>Weekday</u>	<u>Saturday</u>	<u>Sunday</u>
Trunk	20/25-30	30/40	60/60
<u>Night</u>			
Trunk	60/65	60/65	60/65
<u>Service Hours</u>	0500-2400	0500-2400	0700-2400

PROPOSED ROUTES

Begin at 1st Street and Sloan Street and proceed via Sloan Street, 3rd Street, Valley Street, Scotland Road, Central Avenue, Lincoln Avenue, Lackawanna Place, Day Street, Thomas Boulevard, Dodd Street, Prospect Street, Broad Street, James Street, North Spring Street, Hoover Avenue, Bloomfield Avenue, Harrison Street, Franklin Avenue, New Street, Vincent Place, Chestnut Street and return via the same route.

At shift change times, certain trips will operate via Watsessing and Bloomfield Avenues to serve the Westinghouse Plant.

## DISCUSSION

This route is extended to replace route 82 service between Bloomfield and Belleville and to provide a direct service between Bloomfield and Nutley. Usage of the 82 route in this area is presently almost entirely local to Bloomfield Center and the replacement route will provide for this movement as well as open up greater opportunities for crosstown movement among the communities of Nutley, Bloomfield and the Oranges. Service between the Franklin Avenue subway station, presently provided by route 82, and Bloomfield Center will be provided by route 94.

## NEW USERS/USERS WITH BETTER OR REDUCED SERVICE

New Users	300	Route extended to Nutley
Better Service	2,500	Improved headway

NEW ROUTE 21OLD ROUTES 21PROPOSED SERVICEHeadways in MinutesBaseWeekdaySaturdaySunday

Trunk

10/11

15/15

15/17

Night

Trunk

30/30

30/30

30/30

Service Hours

0500-0100

0500-0100

0500-0100

PROPOSED ROUTES

Begin at Penn Station and operate via Market Street, West Market Street, Main Street, Orange Bus Center, Main Street, Harrison Street to Mississippi Avenue Loop.

### DISCUSSION

The continued operation of Route 21 to the Airport and Port area, along with new services provided by Route 40S and 62/134 will result in redundant service. The present service in the Ironbound area will be merged with the South Street service and assigned to Route 34E-TNJ.

### NEW USERS/USERS WITH BETTER OR REDUCED SERVICE

Better Service	11,160	More reliable service due to removal of Port Newark and Newark Airport legs of this route
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NEW ROUTE S 24N, 44OLD ROUTES 24, 23, 44PROPOSED SERVICE

<u>Base</u>	<u>Headways in Minutes</u>		
	<u>Weekday</u>	<u>Saturday</u>	<u>Sunday</u>
Route 24N			
Trunk	6½	6½	15
Main Street via Oakwood Avenue	6½-13	6½-13	15/30
Central Avenue	19½	19½	60
Route 44	30	30	30
<u>Night</u>			
Route 24N			
Trunk	15	15	15
Main Street via Oakwood Avenue	15-30	15-30	15-30
Central Avenue	60	60	60
Route 44	60	60	60
<u>Service Hours</u>	0500-0100	0500-0100	0500-0100

PROPOSED ROUTES

Main Street via Oakwood Avenue - Begin at Market Street and proceed via Broad Street, Park Place, Central Avenue, Oakwood Avenue, Main Street to Erie Loop.

Central Avenue - Begin at Market Street and proceed via Broad Street, Park Place, Central Avenue, Scotland Road, Main Street to Erie Loop.

Route 44 - Begin at Penn Station Lane Number 2 and proceed via Raymond Plaza East, Raymond Boulevard, Park Place. (University in the opposite direction), Central Avenue, Freeman Avenue, Valley Road, Main Street to Erie Loop.

Through routed with 24S

## DISCUSSION

This interim step is taken to reduce the amount of service provided on Central Avenue. Counts indicate that the present service was in excess of ridership demand.

The proposed relocation of present Route 44 from Scotland Road to Valley Road will serve an isolated area that presently has no transit service. The bulk of riders boarding the existing westbound Route 44 buses do so east of Freeman Avenue. Those riders destined to Scotland Road in the vicinity of Central Avenue can avail themselves of Route 24 buses, thus minimizing the impact of shifting Route 44.

## NEW USERS/USERS WITH BETTER OR REDUCED SERVICE

New Users	400	New service on Valley Road between Tremont Avenue and Orange.
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NEW ROUTE 24SOLD ROUTES 24PROPOSED SERVICEHeadways in MinutesBaseWeekdaySaturdaySunday

Trunk  
Elizabethport Service  
Virginia Avenue Short Turn

6 1/2  
13  
13

6 1/2  
13  
13

15  
30  
30

Night

Trunk  
Elizabethport Service  
Virginia Avenue Short Turn

15  
30  
30

15  
30  
30

15  
30  
30

Service Hours

0500-0100

0500-0100

0500-0100

PROPOSED ROUTES

Begin on Market Street and proceed via Broad Street, Pointer Street, Frelinghuysen Avenue, Newark Avenue, Broad Street, Grand Street, Smith Street (Jacques Street in opposite direction), East Jersey Street to Front Street.

Virginia Avenue Short Turn - Operate via VanVechten Street, Ludlow Street and Virginia Street.

Through routed with 24N.

DISCUSSION

This interim step is proposed to reduce the amount of service which is currently in excess of demand.

NEW USERS/USERS WITH BETTER OR REDUCED SERVICE

No effect - No significant change in service

NEW ROUTE 27NOLD ROUTES 27-61**PROPOSED SERVICE****Headways in Minutes****Base****Weekday****Saturday****Sunday**

Trunk

10/11

10/10

15/15

Franklin Street Branch

20/60

20/85

30/0

Lake Street Branch

20/11

20/10

30/15

**Night** (After 2100)

Trunk

30/30

30/22

30/30

Franklin Street Branch

60/0

30/0

30/0

Lake Street Branch

60/30

0/22

0/30

**Service Hours**

0500-0100

0500-0100

0600-0100

**PROPOSED ROUTES**

Begin on Broad Street and operate via Broad Street, Bloomfield Place, (Broadway in the reverse direction), Bloomfield Avenue, Mt. Prospect Avenue, Verona Avenue, Highland Avenue, private right-of-way to Lake Street.

Franklin Avenue Branch - Same to Mt. Prospect then via Heller Parkway, Franklin Avenue, Municipal Plaza, Bloomfield Avenue, State Street, Liberty Street to Bloomfield Avenue.

Manchester Industrial Trips - Same to Mt. Prospect then via Verona Avenue, Manchester Place, Heller Parkway to Bloomfield Center. Service will run only during shift changes.

Through routed with 27S

## DISCUSSION

The institution of service on Franklin Street can be made with only marginal inconvenience to persons originating or alighting north of Heller Parkway and Mt. Prospect Avenue. The present 61 trips via Franklin Street would be diverted to Bloomfield Avenue to establish a regular headway on that street. Route 61 trips are effectively converted to Route 60 trips. This service would establish transit service between Bloomfield and the Forest Hill section of Newark. Additionally, it would provide better service frequency along Franklin Street.

### NEW USERS/USERS WITH BETTER OR REDUCED SERVICE

New Users	400	New service on Heller Parkway and better service on Franklin Street.
Better Service	200	Improved service on Franklin Street.

NEW ROUTE

27S

OLD ROUTES

27

PROPOSED SERVICEHeadways in MinutesBaseWeekdaySaturdaySunday

Trunk

10/11

10/10

15/15

Night

Trunk

30/30

30/22

30/30

Service Hours

0500-0100

0500-0100

0600-0100

PROPOSED ROUTES

Begin at Market Street and proceed via Broad Street, Clinton Avenue, Elizabeth Avenue, Runyon Street, Bergen Street, Hawthorne Avenue, 20th Street, Clinton Avenue, Fabian Place to Hawthorne Avenue.

## DISCUSSION

Peddie Street is largely devoid of residences and commercial establishments. Runyon Street is a residential street and would afford better service to that area. The new loop via Clinton Avenue serves to offer access to Irvington and points west by means of a transfer to the Route 13.

## NEW USERS/USERS WITH BETTER OR REDUCED SERVICE

No effect - service available within 800' of relocated route

NEW ROUTE 28

OLD ROUTES 28

PROPOSED SERVICEHeadways in MinutesBaseWeekdaySaturdaySunday

Trunk

30/35

60/70

-

NightService Hours

0600-2100

0600-1800

PROPOSED ROUTES

Begin at Union College and proceed via Springfield Avenue, Kenilworth Boulevard, Faitoute Avenue, Westfield Avenue, Broad Street, Bayway, Clarkson Avenue, Arnett Street, Summer Avenue to Clarkson Avenue.

Weekday trips prior to 8:00 AM and after 5:30 PM and all Saturday trips will start at a loop operating via North 20th Street, Monroe Avenue, North 8th Street and proceed as above.

Certain peak hour trips will operate via Broad Street, Bayway to Amboy Street.

Certain peak hour trips will operate via Broad Street, Bayway to Brunswick Avenue to the Exxon Refinery.

## DISCUSSION

This route presently loops just short of Union College. Since this is an institution that draws upon Elizabeth and the service area of this route, the extension is quite logical (this extension was recently implemented.) The extension to the bay area adds service to a densely populated section of Elizabeth that is without any transit service.

## NEW USERS/USERS WITH BETTER OR REDUCED SERVICE

New Users	300	Off peak service on south part of route and extension to Arnett Street.
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NEW ROUTE 29-60-114-115

OLD ROUTES 29-60-114-115

PROPOSED SERVICEHeadways in Minutes

<u>Base</u>	<u>Weekday</u>	<u>Saturday</u>	<u>Sunday</u>
Trunk	10/10	10/12	15/22
Route 60	30/20-40	30/24	30/66
Route 114	30/60	30/65	0/0
Route 29	30/20	30/24	30/22
<u>Night</u>			
Trunk	30/22-25	30/25	30/25
Route 60	60/50	60/50	60/50
Route 114	0/0	0/0	0/0
Route 29	60/50	60/50	60/50
<u>Service Hours</u>	0500-2400	0500-2400	0500-2400

PROPOSED ROUTES

Route 29 - Begin on Broad Street and operate via William Street, Washington Street, Broad Street, Bloomfield Place, (Broadway in the reverse direction) Bloomfield Avenue, Kirkpatrick Lane, Clinton Road, Passaic Avenue and return.

Route 60 - same route to Valley Road in Montclair and then via Valley Road, Normal Avenue to Loop at Railroad Station.

Route 114 - Same route to Pompton Avenue in Verona and then via Pompton Avenue, Stevens Avenue, Main Street, Pompton Avenue to Willowbrook Mall.

Route 115 - No change in route or service

Route 116 - No change in route or service

## DISCUSSION

Several changes are proposed for these routes. The 61 is eliminated and replaced by a branch of the 27N. This change will restore the regular 10 minute headway on Bloomfield Avenue and along with a revision of the 29 and 114 service, provide a regular headway on the 60 in Montclair. The expansion of the 114 service to Willow Brook Mall is designed to build up a route that appears to have as much potential as the outer ends of the 29 and 60. The rerouting of the 60 from Park Avenue to Valley Road in Montclair is designed to provide service to a higher density street with some apartment development, as well as to improve route spacing with the restoration of service on Grove Street.

### NEW USERS/USERS WITH BETTER OR REDUCED SERVICE

Better Service	1,300	Better headways on 114.
	1,100	More regular service on 60.
Reduced Service	1,500	Worse headway on 29 west of Pompton Avenue
New Users	200	60 relocated to Valley Road

NEW ROUTE 34WOLD ROUTES 34-2-82-64**PROPOSED SERVICE****Headways in Minutes**

<b><u>Base</u></b>	<b><u>Weekday</u></b>	<b><u>Saturday</u></b>	<b><u>Sunday</u></b>
Trunk	10/12	15/12	30/20
Bloomfield Center Branch	20/30	30/70	60/0
Montclair Branch	20/50	30/80	60/0
<b><u>Night</u></b>			
Trunk	30/30	30/30	30/25
Bloomfield Center Branch	60/60	60/0	60/0
Montclair Branch	60/60	60/0	60/0
<b><u>Service Hours</u></b>	0500-0100	0500-0100	0500-2400

**PROPOSED ROUTES**

Begin on Market Street and operate via Market Street, 12th Avenue, 7th Street, 11th Avenue, 8th Street, Roseville Avenue, 8th Street, First Avenue, Hoffman Boulevard, Arlington Avenue, Renshaw Avenue, Prospect Street, Broad Street, Bay Avenue, Hoover Avenue and return. Certain trips will operate via Arlington Avenue, Watsessing Avenue and Dodd Street to serve the Westinghouse Plant.

Montclair Branch - Operate the same route to Roseville Avenue, and then via 4th Avenue, Hoffman (18th Street and Whitney Place in the reverse direction), Springdale Avenue, Thomas Boulevard, Orange Road, Elm Street, Bloomfield Avenue, Lackawanna Plaza, Church Street, and return. An alternate loop operates via Bloomfield Avenue, Park Street, Portland Place to Midland Avenue and return.

Delavan Avenue Branch - Operate the same route to Roseville Avenue, and then Bloomfield Avenue, 10th Street, Delavan Avenue, 8th Street and return. Operates peak hours only on weekdays.

Through routed with 34-E

## DISCUSSION

It is recommended that the present routes 2, 34, 82 and a portion of route 64 be consolidated into a single route with two branches. The Montclair branch would incorporate portions of routes 2 and 64. Route 2 would be discontinued as a separate route east of Roseville Avenue. The portion of this route on Sussex Avenue is within 1000' of the 24 route and is used by only 100 people per day. Duplicate service on Roseville Avenue is eliminated. The former route 2 branch on Springdale Avenue is retained and extended to Montclair replacing the eastern leg of Trackless Transit route 64. Headways on this branch are improved and through service to Newark is provided to the southern part of Montclair where it has not previously been available. The Dodd Street branch of route 2 is discontinued as it largely duplicates service provided by the 20 and 94 routes. The proposed route of the Bloomfield branch is routed to serve the portion of the Dodd Street branch that is not otherwise served and portions of the 82 route. The branch terminates at Bloomfield Center as it becomes redundant to the 20, 74 and 94 routes north of that point. Service between Bloomfield Center and the City Subway, presently provided by route 82, will be provided by route 94 and the Franklin Street branch of route 27. These changes will permit the operation of an improved headway on both branches of the new route. The present route 34 north of Bloomfield Avenue is reduced to peak period only service as this portion of the route is used by only 150 people per day, and is also served by the City Subway and the Bloomfield Avenue routes.

## NEW USERS/USERS WITH BETTER OR REDUCED SERVICE

New Users	500	Montclair extension on former route 2
Better Service	1,800	Improved headways on former route 2.
	1,200	Improved headways on former route 82.
Reduced Service	100	Elimination of 64 service to East Orange Center.
	600	Removal of CBD service on Dodd Street and Watsessing Avenue with transfer required from 20 or 94

NEW ROUTE 34E OLD ROUTES 34-25-21

**PROPOSED SERVICE**

<u>Base</u>	<u>Headways in Minutes</u>		
	<u>Weekday</u>	<u>Saturday</u>	<u>Sunday</u>
South Street Branch	20/20	30/15	30/34 (A)
Wilson Avenue Branch	20/24	30/24	30/40
 <u>Night</u>			
South Street Branch	30/30 (A)	30/30 (A)	30/30 (A)
Wilson Avenue Branch	30/30	30/30	30/25-30
 <u>Service Hours</u>	 0500-0100	 0500-0100	 0500-2400

**PROPOSED ROUTES**

Wilson Avenue - Begin at Penn Station and proceed via Ferry Street, Wilson Avenue, Doremus Avenue and loop at the Ideal Toy Company.

Peak Period Service - Certain trips will proceed via Doremus Avenue and return to the regular route via Roanoke Avenue.

South Street - Begin at Penn Station and proceed via McWhorter Street, Walnut Street, Pulaski Street, South Street, Pacific Street, Walnut Street, Union Street to Ferry Street.

Through routed with 34W

(A) Service provided by 25

**CHANGES REQUIRED ON OTHER ROUTES NOT IN FIRST PHASE**

Route 25 - Remove the South Street service from this route except during the evening hours and all day Sunday when it will be used to cover the Ironbound Loop.

## DISCUSSION

It is recommended that service on the Chapel Street branch of this route be discontinued, thus eliminating duplication with routes in this area. Route 1 would be extended to serve the area north of Raymond Boulevard. Service that is not operated to Wilson Avenue will replace routes 21 and 25 using a large loop on Walnut, Pulaski, South and Pacific Streets. This change will eliminate lightly used service on McWhorter Street and reduce delays to the heavily used 21 and 25 routes caused by traffic congestion in the area east of Penn Station. During evening hours and on weekends, service frequency on this route is inadequate to serve both branches. At these times, service to South Street will be provided by extending route 25.

## NEW USERS/USERS WITH BETTER OR REDUCED SERVICE

Reduced Service	450	People who will have to ride around the loop
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NEW ROUTE

38

OLD ROUTES

New Route

PROPOSED SERVICEHeadways in MinutesBaseWeekdaySaturdaySunday

Trunk

Peak Hour Service Only

NightService HoursPROPOSED ROUTES

Begin in Rahway at Elizabeth Avenue and proceed via Irving Street, Milton Avenue, Main Street, Elizabeth Avenue, Park Avenue, Rahway Avenue, Broad Street, East Broad Street, Magnolia Avenue, Newark Avenue to Broad Street.

## DISCUSSION

This route was discontinued in the early 1970's as part of a TNJ systemwide service reduction. Peak hour service is proposed with connections provided in Elizabeth with Routes 49 and 24 and in Rahway with Routes 62 and 134. The primary reason for restoring service is to provide access to jobs located along Elizabeth Avenue. As a by-product, the limited number of residential areas along this street would be provided with improved access to bus transportation.

## NEW USERS/USERS WITH BETTER OR REDUCED SERVICE

New Users	200	New route
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NEW ROUTE

39

OLD ROUTES

39

PROPOSED SERVICEHeadways in MinutesBaseWeekdaySaturdaySunday

Trunk

20/15

20/15

30/30

Night

Trunk

30/30

30/60

60/60

Service Hours

0500-2400

0500-2400

0530-2400

PROPOSED ROUTES

Begin on Broad Street and operate via Broad Street, I-280 Stickel Bridge, Approach Road, Harrison Avenue, 4th Street, Kearny Avenue to Kearny Loop at Harding Avenue. The return route is the same except I-280, State Street to Broad Street.

Through routed with 8/48 (no change to this route in Phase 1)

## DISCUSSION

Base service frequency on this route is recommended to be reduced for two reasons. One is that the usage level is insufficient to warrant the current service frequency. The average number of passengers per bus between 9:00 a.m. and 4:00 p.m. outbound from the Newark CBD is only 17.7. In addition the resources allocated to this route can be utilized to improve service on the 40, which serves an adjacent area of similar characteristics but has much less frequent service.

## NEW USERS/USERS WITH BETTER OR REDUCED SERVICE

No effect - No significant change in service

NEW ROUTE 40N

OLD ROUTES 40-41

PROPOSED SERVICE

Headways in Minutes

Base

Weekday

Saturday

Sunday

Trunk

30/70

30/0

-

Night

Service Hours

0500-1830

0630-1830

-

PROPOSED ROUTES

Begin on Broad Street and operate via Broad Street, I-280, Stickel Bridge, Approach Road, Harrison Avenue, Davis Street, Midland Avenue, Forest Street, Arlington Station Plaza, Elm Street, Belleville Pike, River Road, Stuyvesant Avenue, Park Avenue and loop at Rutherford Station Plaza. Return route is the same except the route operates Elm Street direct to Midland Avenue and I-280, State Street to Broad Street.

Through routed with 40S

## DISCUSSION

Presently, Route 40 has a very poor headway, although it serves an area of medium to high density population. Route 41 is peak hour only and serves a similar area in both Arlington and Lyndhurst. The unification of the two routes connects the communities of Harrison, Kearny, Arlington, Lyndhurst, Rutherford and Newark, and provides access to several community shopping areas. The route can also function as a feeder to NJDOT's Main Line rail service at Lyndhurst. The south end of the present 41 has almost no service area due to the topography. The only load generator on this route is a Two Guys store. Usage of the 41 route to this store is negligible at present.

## NEW USERS/USERS WITH BETTER OR REDUCED SERVICE

New Users	600	Users of 40N north of Belleville Turnpike
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Better Service	1,300	Better service on 40N
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Discontinuance of lower part of 41 has no effect, all users within walking distances of 102

NEW ROUTE 40S OLD ROUTES New Route

PROPOSED SERVICE

<u>Base</u>	<u>Headways in Minutes</u>		
	<u>Weekday</u>	<u>Saturday</u>	<u>Sunday</u>
Trunk	30	30	30
<u>Night</u>			
Trunk	30	30	30
<u>Service Hours</u>	0500-2400	0500-2400	0500-2400

PROPOSED ROUTES

Begin at Market Street and proceed via Broad Street, McCarter Highway, US 1 & 9, North Terminal, Port Street, Marlin Street, Transit Street, Corbin Street, Tyler Street, Export Street, Loop at Calcutta Street, Export Street, Tyler Street, Corbin Street, Lyle King Street, (reverse direction via Aruba Street and North Fleet Street) Cadiz Street, North Fleet Street, Egypt Street, Bay Avenue, Izmir Street, Loop, Izmir Street, Bay Avenue, McLester Street, North Street, Division Street, Jersey Street, Broad Street to Elizabeth River Loop.

On Sundays and after 9:00 p.m. service would operate via Terminals A&B and then to the Port area.

Through routed with 40N

## DISCUSSION

The present service to the Port area from Newark is provided by both Route 21 and Route 12 (from North Terminal). Route 21 access is via the Ironbound, which results in numerous delays in service. Elizabeth has no direct access to the Port area. Route 40S is designed to avoid the Ironbound congestion and to provide a single route service, via North Terminal, to the various Port destinations. The route's extension to Elizabeth affords similar Port access to that city and to the light industrial area along North Avenue and McLester Street. The route is not designed to accommodate through trips between Newark and Elizabeth.

### NEW USERS/USERS WITH BETTER OR REDUCED SERVICE (40S & 62/134)

New Users	200	Expanded coverage of Port area and service to Elizabeth.
Better Service	500	Better headway and more direct service to the Port areas
Reduced Service	150	Discontinuance of direct service between Ironbound and the Port area.

NEW ROUTE 42

OLD ROUTES 42

PROPOSED SERVICE

Headways in Minutes

Base

Weekday

Saturday

Sunday

Peak Period Weekday Service Only

Night

Service Hours

PROPOSED ROUTES

Begin at the Irvington Terminal and operate via Clinton Avenue, Stuyvesant Avenue, Madison Avenue, Lenox Avenue, Orange Avenue, Fuller Avenue, Myrtle Avenue, 18th Avenue and then via Route 1W to the Newark CBD.

## DISCUSSION

This route provides peak service only and is proposed to operate via Route 1E east of Myrtle Street and 18th Avenue. Only 200 people utilize the stops on the existing route between this point and the CBD. All of this route east of Springfield Avenue is either duplicated by route 54 or is within 1000 feet of another route.

### NEW USERS/USERS WITH BETTER OR REDUCED SERVICE

No Effect

Riders east of 18th Avenue and Myrtle Streets and those riders boarding route 5 on the same street

Reduced Service

50

Riders boarding on Spruce and High Streets

NEW ROUTE 44

OLD ROUTES 44 BCS - 34 TNJ

PROPOSED SERVICE

Headways in Minutes

Base

Weekday

Saturday

Sunday

(Peak hour service added to the existing 44 route operated by Beviano Chartered Service to replace the present TNJ route 34 service.)

Night

Service Hours

PROPOSED ROUTES

The peak hour service route will leave the existing 44 route at Wood Street and US Highway 1 (Edgar Road) and operate via Wood Street, 20th Street, Parkway and Main Street in Tremley Point and return.

### DISCUSSION

Presently TNJ route 34 operates a limited number of trips during the peak period. Its principal function is to transport school children on one a.m. and one p.m. trip to and from the Tremley Point area. It is felt that this service could better be provided as a part of the Beviano Route 44.

### NEW USERS/USERS WITH BETTER OR REDUCED SERVICE

No Effect - service provided by a substitute route on the same street

NEW ROUTE 49OLD ROUTES 49PROPOSED SERVICEHeadways in MinutesBaseWeekdaySaturdaySunday

Trunk

30/20

30/20

-

NightService Hours

0500-2100

0500-1800

-

PROPOSED ROUTES

Begin at Washington Park and proceed via Broad Street, Clinton Avenue, Elizabeth Avenue, Broad Street, West Jersey Street, Sheridan Avenue, 2nd Avenue, Laurel Place, South Avenue to areas outside study area.

This proposal and the one for route 51S are companion proposals.

## DISCUSSION

Service frequency on the portion of this route east of Garwood is reduced from 20 minutes to 30 minutes in order to provide a combined 15 minute headway with route 51S in Newark, where service is inadequate, and to eliminate unneeded service in Elizabeth. This route has only 1130 passengers crossing the Newark-Elizabeth City line and only 1660 passengers leaving the Elizabeth CBD to the west. West of Garwood, service frequency is improved to hourly, in order to be consistent with minimum service frequency policy.

### NEW USERS/USERS WITH BETTER OR REDUCED SERVICE (ROUTES 49 & 51N)

Better Service	3,000	More frequent service on Elizabeth Avenue in Newark and west of Garwood
Reduced Service	3,100	Reduced service in Elizabeth, Roselle and Granford

NEW ROUTE 51S OLD ROUTES New Route

PROPOSED SERVICE

<u>Base</u>	<u>Headways in Minutes</u>		
	<u>Weekday</u>	<u>Saturday</u>	<u>Sunday</u>
Trunk	30/0	30/0	30/0
<u>Night</u>			
Trunk	30/0	30/0	30/0
<u>Service Hours</u>	0530-2400	0530-2400	0800-2400

PROPOSED ROUTES

Begin at Market Street and proceed via Broad Street, Clinton Avenue, Elizabeth Avenue, Broad Street to a loop via Ridgeway, Salem Avenue and Hollywood Avenue.

This proposal and the one for Route 49 are companion proposals.

Through routes with 51N

## DISCUSSION

This route between Downtown Newark and Hillside via Elizabeth Avenue is very important to increase the frequency of service on Elizabeth Avenue. The need for this addition was highlighted repeatedly (and loudly) at the first public meeting. This route will also provide late evening and weekend service on Elizabeth Avenue. This change should be tied into the rescheduling of the 49 so that a regular headway is maintained on the common portion of the two routes.

## NEW USERS/USERS WITH BETTER OR REDUCED SERVICE

See Route 49

NEW ROUTE 51N

OLD ROUTES 51-82

PROPOSED SERVICE

Headways in Minutes

Base

Weekday

Saturday

Sunday

30/0

30/0

30/0

Night

30/60

30/0

30/0

Service Hours

0530-2400

0530-2400

0800-2400

PROPOSED ROUTES

Begin at the Orange Bus Center and operate via Main Street, High Street, Park Avenue, Clifton Avenue, 7th Avenue, Summer Avenue, High Street, State (Orange Street, High Street and 7th Avenue in the reverse direction) to Broad Street.

Night and Sunday route loops via North 8th Street, West 6th Avenue and North 4th Street.

Through routed with 51S

## DISCUSSION

Three changes are proposed for this route. One is to extend it to the Orange Bus Center. This change will provide several transfer opportunities that do not now exist and may encourage reverse travel on the route. The second change is the provision of base service on the present route. This appears to be justified considering the density of the area served, and the route spacing. The current lack of base service on this route is due to its serving almost exclusively as a feeder to the subway. This transfer is more attractive during peak periods than during the off peak. A third change is the extension of this route to the CBD via the present 82 route. This change provides the CBD access that is needed to make midday service viable and replaces a section of the 82 through the Colonnade Park area where public input has indicated that the service is inadequate. The combination of this inner portion of the 51N with the 51S will permit night and weekend service to be restored to this area. This change also permits the discontinuance of a portion of the 82 that duplicates the 29/60 on Bloomfield Avenue.

### NEW USERS/USERS WITH BETTER OR REDUCED SERVICE

Better Service	1,800	Better service on 51 and inner end of 82
New Users	300	Expanded hours of operation and direct service to CBD

NEW ROUTE 62-134

OLD ROUTES 62-134

PROPOSED SERVICEHeadways in MinutesBaseWeekdaySaturdaySunday

Trunk  
Metuchen Branch  
Perth Amboy Branch

30/30  
60/60  
60/60

30/30  
60/60  
60/90

-  
-  
-

Night

Perth Amboy Branch

60/60

60/0

-

Service Hours

0500-2200

0500-2200

-

PROPOSED ROUTES

Follow the existing route except that all trips will serve terminals A and B in both directions. The outbound Newark CBD routing is changed to Raymond Boulevard, Mulberry Street, Park Place to Broad Street.

## DISCUSSION

The existing transit service between Newark and the Airport is circuitous and subject to traffic delays in the Ironbound area. Elizabeth has no transit access to the Airport. The deviation of all 62/134 trips to the Airport will offer only minimal inconvenience to existing riders, while affording improved access to Newark Airport. The connections between the Airport and Penn Station is preserved with this service.

### NEW USERS/USERS WITH BETTER OR REDUCED SERVICE

New Users	200	Service to Elizabeth and more direct service to Newark
Better Service	300	Better headway and more direct service
Reduced Service	50	Discontinuance of direct service between Ironbound and the Airport

NEW ROUTE 64OLD ROUTES 64PROPOSED SERVICEHeadways in MinutesBaseWeekdaySaturdaySunday

Trunk

60/60

60/60

0/0

Night

Trunk

0/0

0/0

0/0

Service Hours

0600-2100

0700-2100

PROPOSED ROUTES

Begin at the Upper Montclair Railroad Station and operate via Bellevue Avenue, Grove Street, Bloomfield Avenue, Orange Road, Harrison Avenue, Chestnut Street, Watson Avenue, Washington Street, Watchung Avenue, Lakeside Avenue, High Street, Main Street, Lincoln Avenue and to the Orange Bus Center.

## DISCUSSION

This route is proposed to replace the western leg of the present route 64 and to restore local service on Grove Street in Montclair. This route will provide better coverage in Montclair, in conjunction with the relocation of the route 60 to Valley Road. The proposed route also provides through service for a larger area than the present 64.

## NEW USERS/USERS WITH BETTER OR REDUCED SERVICE

New Users	400	Extension on Grove Street in Montclair
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NEW ROUTE 74OLD ROUTES 74-13-15PROPOSED SERVICEHeadways in MinutesBaseWeekdaySaturdaySunday

Trunk

12/12

15/25

30/40

Night

Trunk

30/80

30/50

30/0

Service Hours

0500-2300

0500-2300

0500-2300

PROPOSED ROUTES

Operates into the study area via Main Street, Passaic Avenue, Kingsland Street, Franklin Avenue, Ropes Place, North 5th Street to City Subway Station. Return via Anthony Street, Franklin Avenue and reverse route.

## DISCUSSION

This route presently terminates on the north side of Nutley near the County Line. Franklin Avenue, the proposed route for the extended 74, is served by two branches of Route 13 and by Route 15. Through service on Franklin Avenue is provided only by Route 15, which is a rush hour service. The Route 74 extension is proposed to:

- o Provide single route service on Franklin Avenue.
- o Provide improved access to the City Subway and Downtown Newark.
- o Provide access to the Oranges, Irvington and West Newark without traveling through the CBD from Nutley, Belleville and Passaic County via (1) transfers at the City Subway, Routes 94 and 90 and (2) transfer in Nutley, Route 20.

Service on Route 15 would be withdrawn at the time Route 74 is extended. This route is largely replaced by much more frequent service on Route 74. The north end of the route is replaced by a substantially expanded 13 service.

## NEW USERS/USERS WITH BETTER OR REDUCED SERVICE

See Route 13N

NEW ROUTE

90

OLD ROUTES

90

PROPOSED SERVICEBaseHeadways in MinutesWeekdaySaturdaySunday

15/25

30/75

30/60

Night

60/65

60/0

60/0

Service Hours

0500-2400

0500-2300

0500-2300

PROPOSED ROUTES

Begin at the Franklin Avenue Subway and proceed via North 5th Street, Anthony Street (Ropes Place in the reverse direction), North 6th Street, Franklin Street, Belmont Avenue, Bloomfield Avenue, Grove Street, Springfield Avenue, Irvington Bus Center, Clinton Avenue, Grove Street, Coit Street, Rene Place, Chestnut Avenue, Banta Place and return.

## DISCUSSION

This route is extended to the Franklin Avenue bus station to provide a connection with Route 74. This connection will provide a direct transit link connecting Irvington and the western portion of Newark with Nutley, Belleville, Passaic and Paterson.

## NEW USERS/USERS WITH BETTER OR REDUCED SERVICE

Better Service	2,500	Improved headways
New Users	150	Route extended to Franklin Avenue Subway Station

NEW ROUTE 94

OLD ROUTES 94-96-5

PROPOSED SERVICE

Headways in Minutes

Base

Weekday

Saturday

Sunday

Trunk  
Union Turnback  
Linden Center

15/22 & 30  
30  
30

20/21 & 25  
0  
20

0/0

Night

Service Hours

0500-2100

0600-2100

--

PROPOSED ROUTES

Begin at the Franklin Avenue subway station and proceed via North 5th Street, Anthony Place (Ropes Place in the reverse direction), Franklin Avenue, Mill Street, Montgomery Street, Walnut Street, Liberty Street, Bloomfield Avenue, Orange Street, Dodd Street, Prospect Street, Washington Place, Evergreen Place, Central Avenue, South Clinton Street, South Orange Avenue, Stuyvesant Avenue, Clinton Avenue, New Street, Stuyvesant Avenue, Chestnut Avenue, Westfield Avenue, Locust Street, 1st Avenue, Chestnut Avenue, Roselle Avenue, Elizabeth Avenue to Linden Center.

Certain peak hour trips will be extended to Union via present Route 5.

## DISCUSSION

The combination of these two Trackless routes and the extensions on the north and south ends of the combined route expand the utility of the route and eliminate a closely parallel service in the section served presently by both routes. The 94 and 96 routes between South Orange Avenue and Main Street parallel each other at a distance of approximately 1500 feet. This spacing is closer than is necessary for cross-town routes. The combination of the routes will provide single vehicle service from Bloomfield and the north end of East Orange to Irvington and Union. The extension to the City Subway provides a direct route to Bloomfield center as well as a connection from the routes operating north from Franklin Avenue to Bloomfield and East Orange. The Linden extension brings the route into a commercial area that it did not previously serve.

Trackless route 5 is recommended to be discontinued as a separate route. It serves approximately 300 people per day in the section that does not duplicate Route 94. Usage is concentrated on a few peak period trips. Service should continue to be provided, as needed, by a branch of the 94 route, utilizing buses going into or out of peak period service.

### NEW USERS/USERS WITH BETTER OR REDUCED SERVICE

Better Service	4,900	Improved headway north of Union Center; through service Irvington to Bloomfield
New Users	300	Extensions to Franklin Avenue subway station and to Linden Center Discontinuance of parallel section has no effect; routes are closely parallel
Reduced Service	150	Hours of operation reduced on former Route 5; routing now generated as a branch

NEW ROUTE 107OLD ROUTES 107**PROPOSED SERVICE****Headways in Minutes****Base****Weekday****Saturday****Sunday**

Trunk

15-30/15

20/12

20/12

South Orange Branch

60/60

40/0

40/0

Ivy Hill Branch

60/60

40/60

40/60

**Night**

Trunk

30/20

30/20

30/20

Ivy Hill Branch

60/70

60/60

60/60

**Service Hours**

0600-0100

0600-0100

0600-0100

**PROPOSED ROUTES**

Begin at the Port Authority Bus terminal in New York and operate into the study area via Route 3, New Jersey Turnpike, North Terminal, Routes US 1 and 9, Haynes Avenue, Meeker Avenue, Elizabeth Avenue, Lyons Avenue, Grove Street, Springfield Avenue, Irvington Bus Center, Clinton Avenue, Parker Avenue, Union Avenue, Irvington Avenue, South Orange Avenue to Sloan Street.

Ivy Hill Branch - Operates the same to Clinton Avenue and then via Irvington Avenue, Manor Street, Mt. Vernon Avenue to Ivy Hill Loop.

I-78 trips - Trips formerly operating via the Garden State Parkway will operate via Clinton Avenue, Grove Street, Lyons Avenue, I-78 to New York.

### DISCUSSION

The Maplewood branch of this route is very lightly used by both intra and interstate passengers. Due to the infrequency of service it is usually faster to take a 25 bus and transfer at Irvington bus terminal. It is proposed that 107 service be concentrated on the South Orange and Ivy Hill branches.

The use of I-70 in place of the Garden State Parkway is designed to offer improved New York service along Grove Street and Lyons Avenue and to reduce running time by avoiding Route 3.

### NEW USERS/USERS WITH BETTER OR REDUCED SERVICE

Reduced Service	100	Transfers from 25 to 107 required to access Maplewood area
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NEW ROUTE 128-126OLD ROUTES 128-126PROPOSED SERVICE

<u>Base</u>	<u>Headways in Minutes</u>		
	<u>Weekday</u>	<u>Saturday</u>	<u>Sunday</u>
	30/55	30/60	60/120
<u>Night</u>	60/120	60/0	60/0
<u>Service Hours</u>	0500-2400	0600-2300	0800-2300

PROPOSED ROUTES

Begin at Penn Station and operate via Raymond Boulevard, Washington Street, Broad Street, Bloomfield Place, Bloomfield Avenue, Broad Street to Paterson. Return via Broad Street, Bloomfield Avenue, Broadway, Broad Street, University Avenue, Raymond Boulevard to Lane 1 at Penn Station.

Peak hour trips will operate express between Bloomfield Center and the Newark CBD (Lackawanna Station).

Route 126 will operate with present schedule and route.

## DISCUSSION

Service frequency on this route is improved to provide a 30 minute headway to the northern part of Bloomfield. This change is in line with a policy of providing base service at 30 minute frequency or greater on all radial routes in Newark and nearby communities.

## NEW USERS/USERS WITH BETTER OR WORSE SERVICE

Better Service	700	Improved service frequency
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ROUTE TO BE DISCONTINUED

Route 22 - Trackless Transit

This route serves approximately 100 people on its north end and 125 people on the south end. The service area on the north end of the route was substantially reduced by the construction of I-280. The remaining service area is in close proximity to the more frequent service on the Central Avenue routes and routes 7 and 82. The south end of the route serves an area that also is served by routes 34, 21 and 25, all of which provide more frequent service to the Newark CBD. Thus, we recommend that this route be discontinued without direct replacement.

PHASE 2 - SERVICE MODIFICATIONS

NEW ROUTE 14

OLD ROUTES 14-8/48-5

PROPOSED SERVICEHeadways in MinutesBase

Trunk  
Valley Fair Short Turn  
Irvington

Weekday

10/10  
20/20  
20/20

Saturday

10/10  
20/20  
20/20

Sunday

30/40  
  
30/40

Night

Trunk  
Irvington

30/30  
30/30

30/30  
30/30

30/0  
30/0

Service Hours

0500-2400

0500-2400

0800-2400

PROPOSED ROUTES

Begin at Penn Station and proceed via Market Street, University Avenue (Washington Street in the opposite direction), Kinney Street, Belmont Street, 18th Avenue, Bergen Street, Chancellor Avenue, 40th Street, Stuyvesant Avenue, and return.

Valley Fair Turnback - Certain trips will turn back at the Valley Fair Shopping Center, Chancellor Avenue and Cordier Street.

Express Service - Begin at Broad Street and proceed non-stop via Market Street, University Avenue, Kinney Street, High Street, Clinton Avenue, Elizabeth Avenue, and then all stops via Chancellor Avenue.

Through routed with 14E.

## DISCUSSION

This route is recommended to be relocated to replace Route 5 between the CBD and the intersection of 18th Ave. and Bergen Street and to replace Route 8/48 on Bergen Street between Runyon Street and Lyons Avenue. This change provides better service frequency to these main route segments. In addition a new CBD oriented service on Bergen Street between Lyons and Chancellor Avenues is provided as well as on Chancellor Avenue east of Maple Avenue. Duplicate service between routes 27 and 8/48 east of the intersection of Bergen Street and Hawthorne Street is eliminated. The effect of this change, along with the proposed changes on Route 48, will be to provide better coverage and service on the major north-south street in this area, Bergen Street, eliminate duplicate service on Clinton Avenue and Elizabeth Avenue, reduce the service on Clinton Place to the level warranted by usage, and combine heavily used segments of several routes into a single strong route.

We recommend that Route 5 be discontinued as a separate route. The portion of the route east of Bergen Street that has the greatest usage level would be replaced by route 14 with improved headways. The remaining portion of the route bends to form a crosstown route that is lightly used and largely duplicated by the route 6. Service to the CBD in this area is provided by 6 intersecting or nearby routes, spaced an average of 1600' apart. 55% of the total usage on this route is between the CBD and Springfield Avenue, the section that is replaced by route 14. 36% of the total usage on this line does not enter the CBD and uses the route as a crosstown route. Many of these people will be able to use routes 6 or 9, while some will have to transfer. Only 9% of the total usage on this route, or approximately 400 people per day, use the route to get between the section of the route west of Springfield Avenue and the CBD.

### NEW USERS/USERS WITH BETTER OR REDUCED SERVICE (14 & 48)

New Users	400	New route on Bergen Street and Chancellor Avenue
Better Service	2,700	More frequent service on Bergen Street and Avon Avenue
Reduced Service	1,000	Less frequent service on Clinton Place
Reduced Service	450	Users of Route 5 as crosstown route who will have to make additional transfer

NEW ROUTE 25

OLD ROUTES 25-70

PROPOSED SERVICEHeadways in Minutes

<u>Base</u>	<u>Weekday</u>	<u>Saturday</u>	<u>Sunday</u>
Trunk	7½/6½	7½/7½	15/10
Hilton Garage Turnback	15/13	15/15	30/20
Maplewood Loop Service	15/20	15/15	30/20
Livingston Mall Branch	30/30	30/30	-
<u>Night</u>			
Trunk	15/40	15/40	15/40
Hilton Garage Turnback	30/60-90	30/80	30/0
Maplewood Loop Service	30/60-90	30/80	30/40
<u>Service Hours</u>	0500-0100	0500-0100	0500-0100

PROPOSED ROUTES

Begin at Penn Station and proceed via Market Street, Springfield Avenue, Millburn Avenue to Millburn, Livingston, Summit and Livingston Mall.

Hilton Turn Back - Certain trips will turn back at Hilton Garage.

Maplewood Turn Back - Certain trips will turn back at Maplewood Loop.

Express Service - Operate from Summit via regular route and express from Irvington Bus Center.

## DISCUSSION

It is recommended that these routes be merged, with the 70 route being operated as an extension of the 25 route. Service on Avon Avenue presently provided by the 70 will be provided by the 48 route except for the section west of S. 13th Street. This section is within 900 feet of another bus route. This change will provide faster service on the 70 route due to a more direct routing as well as the opportunity to tie the combined trips to the express service on the 25. Avon Avenue will receive improved headway due to the route change. In addition to improved service, this change produces a substantial cost reduction as the duplication of service between the two routes through Irvington and Maplewood is eliminated.

## NEW USERS/USERS WITH BETTER OR REDUCED SERVICE

Better Service	8,250	More reliable service on 25, faster service on 70 from CBD to Irvington and beyond
Reduced Service	650	Loss of direct service on Avon Avenue to west

NEW ROUTE

48

OLD ROUTES

48/8

PROPOSED SERVICEHeadways in MinutesBaseWeekdaySaturdaySunday

Trunk

20/20

20/20

30/55

Salem Road Branch

40/40

40/40

60/130

Valley Fair Branch

40/40

40/40

60/70-130

Night

Trunk

30/30

30/60

60/0

Salem Road Branch

60/60

60/0

60/0

Valley Fair Branch

60/60

60/60

0/0

Service Hours

0500-2400

0500-2400

0530-2400

PROPOSED ROUTES

Begin at Market Street and proceed via Broad Street, Clinton Avenue, Avon Avenue, South 13th Street, Clinton Place, Lyons Avenue, Maple Avenue, Hillside Avenue, Liberty Avenue, Salem Road, Beverly Place, Arnet Avenue to Morris Avenue.

Valley Fair Branch - Proceed via the same route to Lyons Avenue, Cordier Street to Valley Fair.

Through routed with 39

## DISCUSSION

We recommend that this route be relocated to operate via Clinton Place, S. 13th Street and Avon Avenue. This change will bring the service on Clinton Place more nearly into balance with the amount of usage in that area and improve service on Avon Avenue. It eliminates duplicate routing on Clinton Avenue between Clinton Place and the CBD. Service on Lyons Avenue between Bergen Street and Clinton Place will continue to be provided by route 107. The effect of this change, along with the proposed changes in route 14, will be to provide more frequent service on the major north-south street in this area, Bergen Street, reduce the service on Clinton Place and eliminate duplicate service on Clinton Avenue and Elizabeth Avenue.

## NEW USERS/USERS WITH BETTER OR REDUCED SERVICE

See Route 14

NEW ROUTE 102-104

OLD ROUTES 102-104

PROPOSED SERVICEHeadways in MinutesBaseWeekdaySaturdaySunday

30/26

60/60

60/100

Night

60/75

60/0

60/0

Service Hours

0500-2400

0500-2200

1800-2200

PROPOSED ROUTES

Begin in Hackensack and operate into the study area via Ridge Road, Kearny Avenue, Midland Avenue, Belgrove Drive, Passaic Avenue, Central Avenue, Clay Street, University Avenue, Raymond Boulevard to Lane 1 at Penn Station. Return via Raymond Plaza East, Raymond Boulevard and via reverse route.

102 Express Trips - These trips operate in the study area on Route 21, McCarter Highway, Clay Street and then via the regular route. The return route is the same.

## DISCUSSION

The changes proposed are quite minimal and involve placing the route on a clock headway as shown on the facing page.

## NEW USERS/USERS WITH BETTER OR REDUCED SERVICE

Better Service	All Riders	Clock headways are provided on weekdays and clock headways with improved frequency is provided on weekday nights and Sundays.
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NOTE: Changes to this route should await any input from the Passaic County Rationalization Study.

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PHASE 3 - SERVICE MODIFICATIONS

NEW ROUTE

8

OLD ROUTES

8-30

PROPOSED SERVICEHeadways in MinutesBaseWeekdaySaturdaySunday

30

30

-

Night

-

-

-

Service Hours

0600-2100

0700-1800

-

PROPOSED ROUTES

From Short Hills Mall via NJ Route 24 Service Road, Morris Avenue, Green Lane, Magie Avenue, Westfield Avenue, Broad Street, East Jersey Street, Madison Avenue, North Avenue, Monroe Avenue, Virginia Avenue to Madison Avenue and return.

### DISCUSSION

The extension of Route 8 service to the North Elizabeth Loop served by present Route 30 allows a better matching of service and demand. The present level of service is far in excess of need. The proposed use of Route 8 in the North Elizabeth area also provides a direct connection to Short Hills Mall, the Elmora section of Elizabeth, and Morris Avenue.

### NEW USERS/USERS WITH BETTER OR REDUCED SERVICE

Reduced Service	1,550	Less frequent service on North Elizabeth Loop
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NEW ROUTE 22 DeCamp

OLD ROUTES 22 DeCamp

PROPOSED SERVICE

Headways in Minutes

<u>Base</u>	<u>Weekday</u>	<u>Saturday</u>	<u>Sunday</u>
Trunk	30/120	30/120	0/0
Kearny Short Turn	60/120	60/120	0/0
Jersey City	60/120	60/120	0/0

Night

Service Hours

0630-2000

0800-2000

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PROPOSED ROUTES

Begin in Jersey City at Journal Square and operate into the study area via Belleville Turnpike, Rutgers Street, Washington Avenue, Belleville Avenue, Broad Street, Prospect Avenue, Lackawanna Plaza and Washington Street.

Kearny short turns - Loop via Schuyler Avenue, Seeley Avenue to Elm Street.

## DISCUSSION

It is recommended that service on this route between Bloomfield and Caldwell be discontinued and that service east of Bloomfield be improved to provide a 30 minute headway between Bloomfield and Kearny and a 60 minute headway between Kearny and Jersey City. The section west of Bloomfield duplicates routes 29/60/114 and serves only 160 people per day. The section east of Bloomfield should provide a useful crosstown function with improved headways. This route should be included in the transfer pool both to replace the discontinued service and to encourage use of the remaining portion.

## NEW USERS/USERS WITH BETTER OR REDUCED SERVICE

Better Service	310	More frequent service east of Bloomfield
Reduced Service	170	Transfer required for trips west of Bloomfield
New Users	100	More frequent service - Bloomfield to Kearny

NEW ROUTE

24N

OLD ROUTES

23-24-44

**PROPOSED SERVICE****Headways in Minutes****Base****Weekday****Saturday****Sunday**

Trunk

7½

7½

10

Main Street Branch

15/7

15/7

30/15

Central Avenue Branch

30/26

30/27

30/30

Tremont Avenue Branch

30/30

30/27

30/30

**Night** (after 2100)

Trunk )

15

15

15

Main Street Branch

30/12

30/15

30/15

Central Avenue Branch

60/60

60/60

60/60

Tremont Avenue Branch

60/60

60/60

60/60

**Service Hours**

0500-0100

0300-0100

0500-0100

**PROPOSED ROUTES**

Central Avenue - Begin on Broad Street and proceed via Park Place, Central Avenue, Valley Road, Joyce Street, Scotland Road and return.

Tremont Avenue - Proceed via the same route to Freeman Avenue and then via Freeman Avenue, Rhode Island Avenue, Sanford Avenue, Tremont Avenue, Valley Road, Main Street, Lincoln Avenue to the Orange Bus Center.

Main Street - Proceed via the same route to Evergreen Place and then via Evergreen Place, Main Street to Orange Bus Center.

Express Service - During weekday peak hour periods certain trips will operate express between Freeman Avenue and the Newark CBD, stopping only at Grove Street and Bergen Avenue.

Through routed with 24S

## DISCUSSION

Presently three routes provide service on Central Avenue in an uncoordinated fashion. At certain times of the day, service is also in excess of needs. All three routes should be merged into a single route and the trunk headway should be evenly spaced and matched with available demand.

The present route via Oakwood Avenue to Main Street should be switched to Evergreen Place. This change would:

- o Provide access from Central Avenue to a primary commercial street.
- o Provide single route access to the two commercial areas of East Orange and the Orange commercial area from Central Avenue.

## NEW USERS/USERS WITH BETTER OR REDUCED SERVICE

Better Service	4,600	Users of trunk route east of Grove Street with more regular service
Reduced Service	600	Users having to transfer from 20 or 21 to 24

NEW ROUTE 24S

OLD ROUTES 24-30

PROPOSED SERVICE

<u>Base</u>	<u>Headways in Minutes</u>		
	<u>Weekday</u>	<u>Saturday</u>	<u>Sunday</u>
Trunk	7½/6½	7½/6½	10/15
Virginia Street Branch	15/13	15/13	20/30
Elizabeth Branch	15/13	15/13	20/30
<u>Night</u>			
Trunk	15/12	15/15	15/15
Virginia Street Branch	30/24	30/30	30/30
Elizabeth Avenue Branch	30/36	30/30	30/30
<u>Service Hours</u>	0500-0100	0500-0100	0500-0100

PROPOSED ROUTES

Begin at Market Street and proceed via Broad Street, Pointer Street, Frelinghuysen Avenue, Newark Avenue, Broad Street, Elizabeth Avenue, 1st Street, Turnbull Street, 2nd Street, Magnolia Avenue and return.

Virginia Avenue Turnback - Certain trips will turn back via VanVechten Street, Ludlow Street and Virginia Street.

Trips will deviate via Singer Plant in Elizabeth at shift changes.

Through routed with 24N

## DISCUSSION

It is recommended that this route be relocated from Grand Avenue to Elizabeth Avenue between the Elizabeth CBD and Elizabethport. This relocation is designed to tie together the two highest volume route segments entering the Elizabeth CBD, to reduce the amount of service on Grand Avenue, which is underutilized, and to reduce delays to this route caused by traffic congestion at the at grade intersection of Grand Avenue and U.S. 1. The intersection of Elizabeth Avenue and U.S. 1 is grade separated.

## NEW USERS/USERS WITH BETTER OR REDUCED SERVICE

Better Service	4,000	More reliable service on portion of route in Elizabeth - route relocation has no effect. Routes are 1,000 feet apart.
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NEW ROUTE 31

OLD ROUTES 31

PROPOSED SERVICE

<u>Base</u>	<u>Headways in Minutes</u>		
	<u>Weekday</u>	<u>Saturday</u>	<u>Sunday</u>
Trunk			
Dover Street Loop Branch	5	5	10
Maplewood Branch	30	30	30
Ridgewood/Prospect Branch	30	30	-
<u>Night</u>			
Trunk			
Dover Street Loop Branch	15	15	15
Maplewood Loop Branch	30	30	30
<u>Service Hours</u>	0400-0100	0400-0100	0400-0100

PROPOSED ROUTES

Begin at Penn Station and proceed via Market Street, Springfield Avenue, South Orange Avenue, Valley Street, Milburn Avenue to Maplewood Loop.

Ridgewood/Prospect Loop - Proceed via the same route to Ridgewood Road, and then via Ridgewood Road, Baker Street, Valley Street, Tuscan Road, Prospect Street to regular route. Service will operate in both directions around this loop.

Dover Turn Back - Certain trips will turn back at Dover Street Loop.

Express Service - Peak period express trips will operate non-stop from Dover Street Loop.

## DISCUSSION

A short extension is proposed for this route via Ridgewood Road between South Orange Center and Maplewood. This extension utilizes bus hours that presently are unproductively employed in providing an alternate 15 and 30 minute headway on Valley Road. It provides service to an area that is isolated from existing service by Conrail's Morristown line right of way, and that appears to justify some local service.

## NEW USERS/USERS WITH BETTER OR REDUCED SERVICE

New Users	250	New service on Ridgewood Road
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NEW ROUTE 44OLD ROUTES 44-24PROPOSED SERVICE

<u>Base</u>	<u>Headways in Minutes</u>		
	<u>Weekday</u>	<u>Saturday</u>	<u>Sunday</u>
Trunk	20/15	20/15	60
<u>Night</u>			
Trunk	60	60	60
<u>Service Hours</u>			
	0500-2400	0500-2400	0600-2200

PROPOSED ROUTES

Begin at Front Street Loop and proceed via East Jersey Street, Broad Street, Pearl Street, (Pearl Street and Rahway Avenue in the other direction), Washington Avenue, Edgar Road, Wood Avenue, Raritan Avenue to Winfield.

Although it is outside of the study area it is suggested that this route be extended via Raritan Avenue and Walnut Avenue to Cranford.

Certain peak hour trips would operate via Wood Street to 20th Street, Parkway, Main Street and return.

## DISCUSSION

This route is recommended for an extension from Smith Street to Elizabethport via East Jersey Street. This extension replaces Route 24 on this segment. Presently there are three parallel routes extending east from the Elizabeth CBD. This change coupled with the relocation of the 24 route to Elizabeth area will combine these three routes into 2. The extension of the 44 serves to combine the most used portions of the present 44 and 24 routes. The route is presently over-served and the extension can be made without additional bus requirements.

## NEW USERS/USERS WITH BETTER OR REDUCED SERVICE

Reduced Service	3,300	Less frequent service
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NEW ROUTE

90

OLD ROUTES

90-6

PROPOSED SERVICE

<u>Base</u>	<u>Headways in Minutes</u>		
	<u>Weekday</u>	<u>Saturday</u>	<u>Sunday</u>
Trunk	15/25	30/75	30/60
Irvington Short Turn Branch	30		
Elizabeth Branch	30	30	30
<u>Night</u>			
Trunk	60/65	60/0	60/0
Irvington Short Turn Branch	60/65	60/0	60/0
<u>Service Hours</u>	0500-2400	0500-2300	0500-2300

PROPOSED ROUTES

Begin at the Franklin Avenue subway station and proceed via Franklin Avenue, Franklin Street, Belmont Street, Bloomfield Avenue, Grove Street, Springfield Avenue, Irvington Bus Center, North Union Avenue, Chancellor Avenue, Chestnut Avenue, Hillside Avenue, Bloy Street, Long Avenue, Liberty Avenue, Salem Avenue, Morris Avenue, Broad Street, West Jersey Avenue, Union Street, West Grand Street, Cherry Street and return.

Certain trips will turn back at Irvington Bus Center.

## DISCUSSION

It is proposed to merge this route with Route 6, E-U-H-I, to provide continuity of service from the Grove Street Corridor to Elizabeth. The merger also allows the provision of a regular headway on the Route 6 portion without the necessity of long layover times. Existing Route 90 service on Grove Street south of Clinton is discontinued, since this street is served by the 107 and the south end is served by the merged route.

## NEW USERS/USERS WITH BETTER OR REDUCED SERVICE

Better Service	1,300	Improved headways on former route 6
Reduced Service	400	Additional transfer at Irvington between 107 and 90

NEW ROUTE 144

OLD ROUTES 144

PROPOSED SERVICE

Headways in Minutes

Base

Weekday

Saturday

Sunday

40/80

30/45

0/0

Night

Service Hours

0500-1900

0500-1900

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PROPOSED ROUTES

Begin at the Orange Bus Center and operate via Main Street, Mt. Pleasant Avenue, Prospect Avenue, Eagle Rock Avenue, Pleasant Valley Way, Mt. Prospect Avenue and to Livingston, Caldwell, West Caldwell, Fairfield and other points outside the study area.

Peak period express trips would operate express between the Orange Bus Center and Penn Station/Newark CBD.

## DISCUSSION

The extension of service on this route to the West Essex industrial area will serve a need that was emphasized by the local planning agencies. The termination of this route at the Orange Bus Center will bring the route into conformity with its major function, which is connecting the residential areas between Newark and Orange with activity in the western part of the county. Although no passenger counts were taken on this route, our observations indicate that peak loads on this route are westbound in the a.m. and eastbound in the p.m. The use of the Orange Bus Center as a transfer point provides a wider distribution of opportunities to utilize this service. However, it may be necessary to provide peak period express service from Penn Station to Orange to serve people arriving at Penn Station destined to the West Essex area.

## NEW USERS/USERS WITH BETTER OR REDUCED SERVICE

No counts were taken on this route. Peak service is unchanged. Off peak service requires transfer at Orange but is more frequent.

NEW ROUTE 145-146

OLD ROUTES 145-146

PROPOSED SERVICE

Headways in Minutes

Base

Weekday

Saturday

Sunday

Trunk

60/120

60/100

60/120

Night

Service Hours

0600-1900

0600-1900

0800-1800

PROPOSED ROUTES

Begin at Orange Bus Center and operate via Northfield Avenue to Livingston and other areas outside of the study area.

Peak period trips would operate express between Orange Bus Center and Penn Station/Newark CBD.

## DISCUSSION

The termination of this route at the Orange Bus Center will bring the route into conformity with its major function, which is connecting the residential areas between Newark and Orange with activity in the western part of the county. Although no passenger counts were taken on this route, our observations indicate that peak loads on this route are westbound in the a.m. and eastbound in the p.m. The use of the Orange Bus Center as a transfer point provides a wider distribution of opportunities to utilize this service. However, it may be necessary to provide peak period express service from Penn Station to Orange to serve people arriving at Penn Station destined to the West Essex area. Headways on this route would be improved to conform with minimum headway policy.

## NEW USERS/USERS WITH BETTER OR REDUCED SERVICE

No counts were taken on this route which is largely outside the study area. Peak service is unchanged. Off peak service requires a transfer at the Orange Bus Center but is more frequent.

#### Routes to be Discontinued

At the time institutional problems are resolved with the independent carriers, it is proposed to merge their operations into a unified system. Load counts will be required at that time to ascertain if additional service should be added on the surviving routes. The routes proposed for merger are as follows:

##### Route 12 - Newark Elizabeth IBOA merged with 24S

It is recommended that this route be merged. The route is largely duplicated by Route 24S. The only portion that is not duplicated by another route, on Elmora Avenue, serves less than 400 passengers per day and is entirely within 1100 feet of other routes.

##### Route 16 - Clinton Avenue Bus Co. merged with Route 13S

This route is recommended to be merged as it is completely duplicated by other routes. Most of its route duplicates the 13. The portion of the route west of Irvington bus terminal receives very limited service and carries less than 100 people per day.

##### Route 18 - North Newark IBOA merge with Route 13N

This route is recommended to be merged, as it is completely duplicated by routes 13N and 24S. The low fare CBD circulator function of this route will become redundant if a CBD free zone is established.

##### Route 38 - Will Morris, Inc. merged with Routes 39 and 40N

This route is recommended for merger, as it serves only 550 people at its peak load point and it is almost entirely duplicated by Routes 39 and 40N. This is a one-bus route operating on an irregular headway. The improved service on Route 40N will eliminate any need for this route.

## PART 2 - OTHER RECOMMENDED IMPROVEMENTS

This part of the report includes recommendations in areas other than routing and scheduling. Among these are:

- Fare Structure, excluding fare zone boundaries, transfer privileges and the use of a CBD free zone.
- Information aids, including timetables, destination signs and telephone information service.
- Improvements to street traffic control and enforcement to aid bus movement.
- Improvements to reliability including a program of increased supervision of service.
- Changes in garages.
- Improvements to aid passenger and driver security.
- A review of shelter programs.

Several of these recommendations are highly desirable to institute along with the initial route and schedule modifications. The items that are most crucial in improving service are:

The free fare zone in Downtown Newark.

An increase in the level of service supervision.

The institution of a transit police force. Other recommendations are important, but do not require as immediate attention as do the three mentioned above.

## FARE STRUCTURE MODIFICATIONS

### Fare Zones

Introduction - Presently the boundary of the Newark fare zone is based on the location of the city limits. This situation has led to several major inequities regarding the distance a rider can travel from downtown Newark for a one-zone fare. For example, a ride to Ivy Hill, which is 3.9 straight line miles from Broad and Market Streets, can be made for a fare of 45¢. A ride of similar distance to the Oranges via Central Avenue will cost 60¢. The distances associated with other routes operating in the Newark fare zone are shown below:

Route 24S	3.6 miles
Route 31	3.5 miles
Route 24N	1.8 miles
Route 21	1.8 miles
Route 29-60-114	2.7 miles
Route 13	3.2 miles

Suburban fare zones are similarly oriented. They vary in length from 1.2 to 4.4 miles, averaging about 2.9, and are sensitive to political boundaries. Generally, trips from a small zone to the next adjacent zone can be made at the one zone fare. Movement between zones 3 and 4 on Route 70 is an example of this situation.

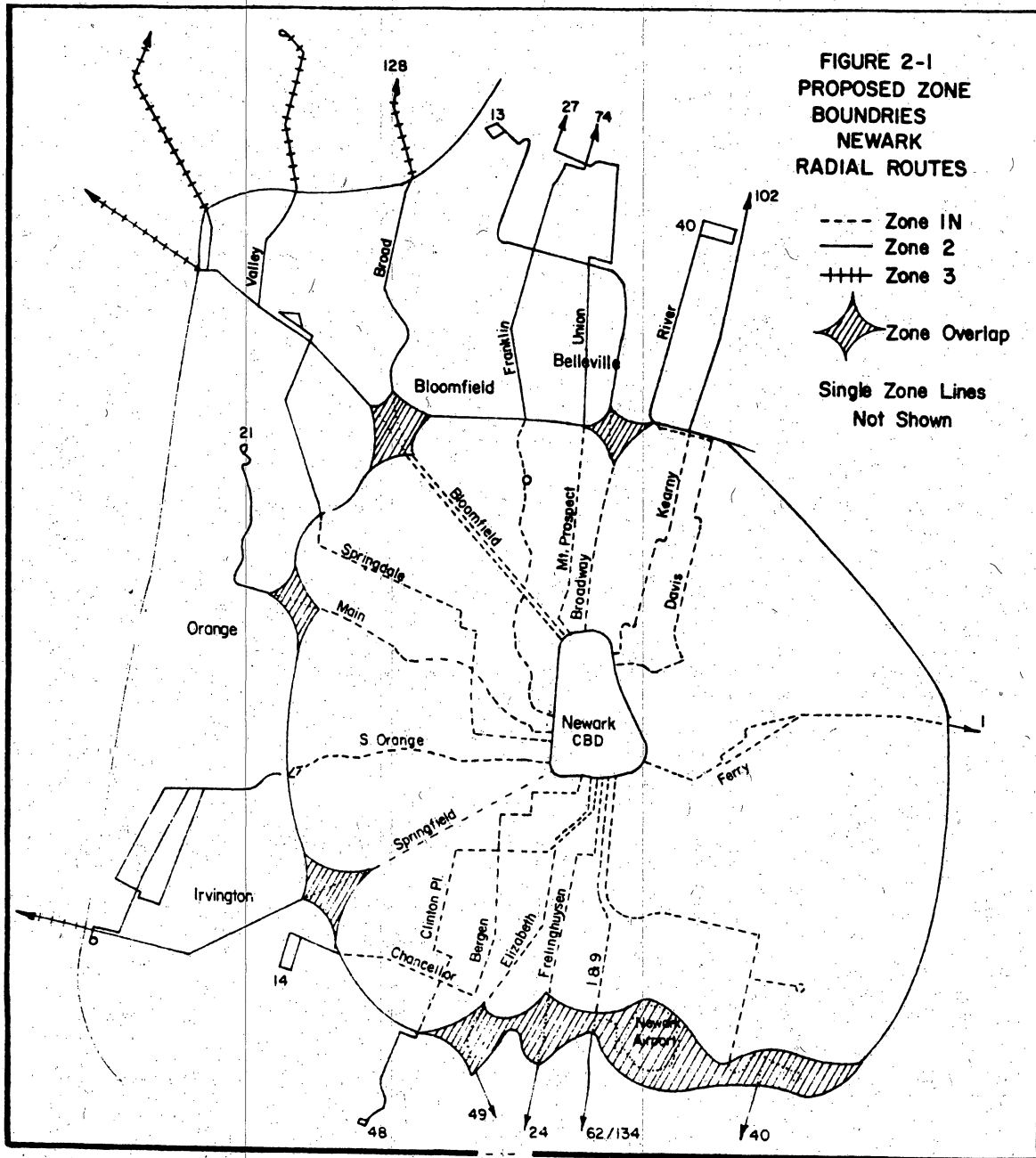
Newark Fare Zone - Radial Routes - It is obvious from the table above that the range of first zone rides varies from 1.8 to 3.9 straight-line miles between Broad and Market Streets and the first zone boundary. The range of distances for other randomly selected cities is shown below:

<u>City</u>	<u>Distance Range between CBD and First Fare Zone</u>
Baltimore	5.3 miles
Washington	4.8 to 7.0 miles (D.C. trips only)
Buffalo	4.5 to 6.0 miles
Detroit	9.0 to 15.8 miles
Rochester	3.5 to 6.0 miles

Clearly, the range for Newark is much lower than the other cities cited.

Although the entire question of zone boundaries needs to be addressed on a statewide basis, existing precedents provide the basis for rationalizing the Newark area zone structure. The zone limits on such routes as 1W (former 54), 31 and 24S can be used to justify rationalizations for the other routes. A proposed scheme for first zone boundary adjustments is shown in Figure 2-1 and Table 2-1.

The proposed zone boundaries form a circular pattern with a radius varying from 3.6 to 4.0 miles from Broad and Market Streets. The longer radii are required to accommodate overlapping zone boundaries, which in turn provide single fare rides to activity centers. For example, the use of the shorter distance to define a zone boundary on Bloomfield Avenue would require all persons traveling to Bloomfield Center from east of the Garden State Parkway to pay 60¢. This would erect barriers and would work to the disadvantage of those riders wishing to stop at the Center. The proposed zones include overlaps at the following locations: (references are to proposed routes).



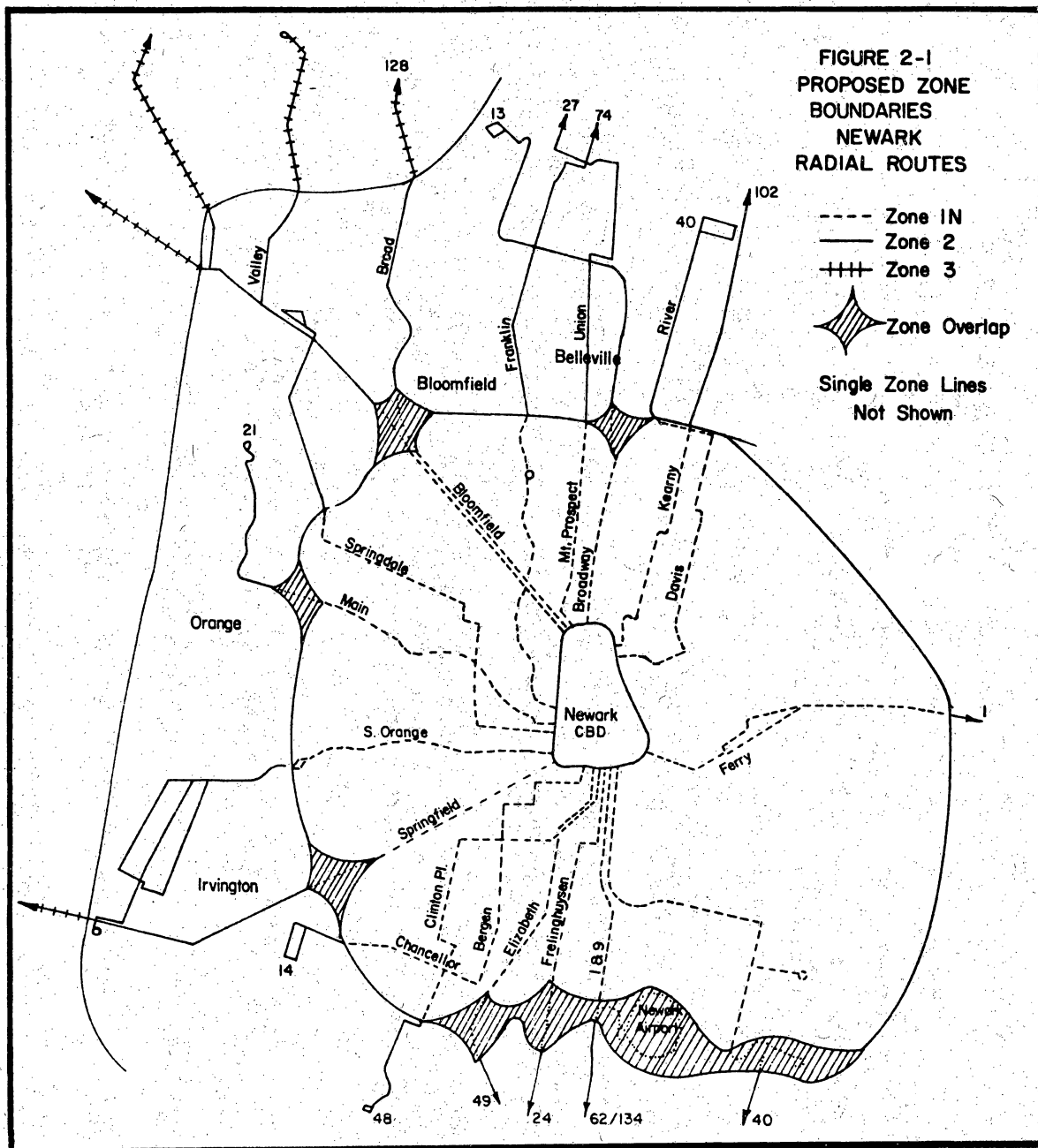


Table 2-1

## PROPOSED NEWARK ZONE CHANGES FOR RADIAL ROUTES

## FIRST FARE ZONE BOUNDARY

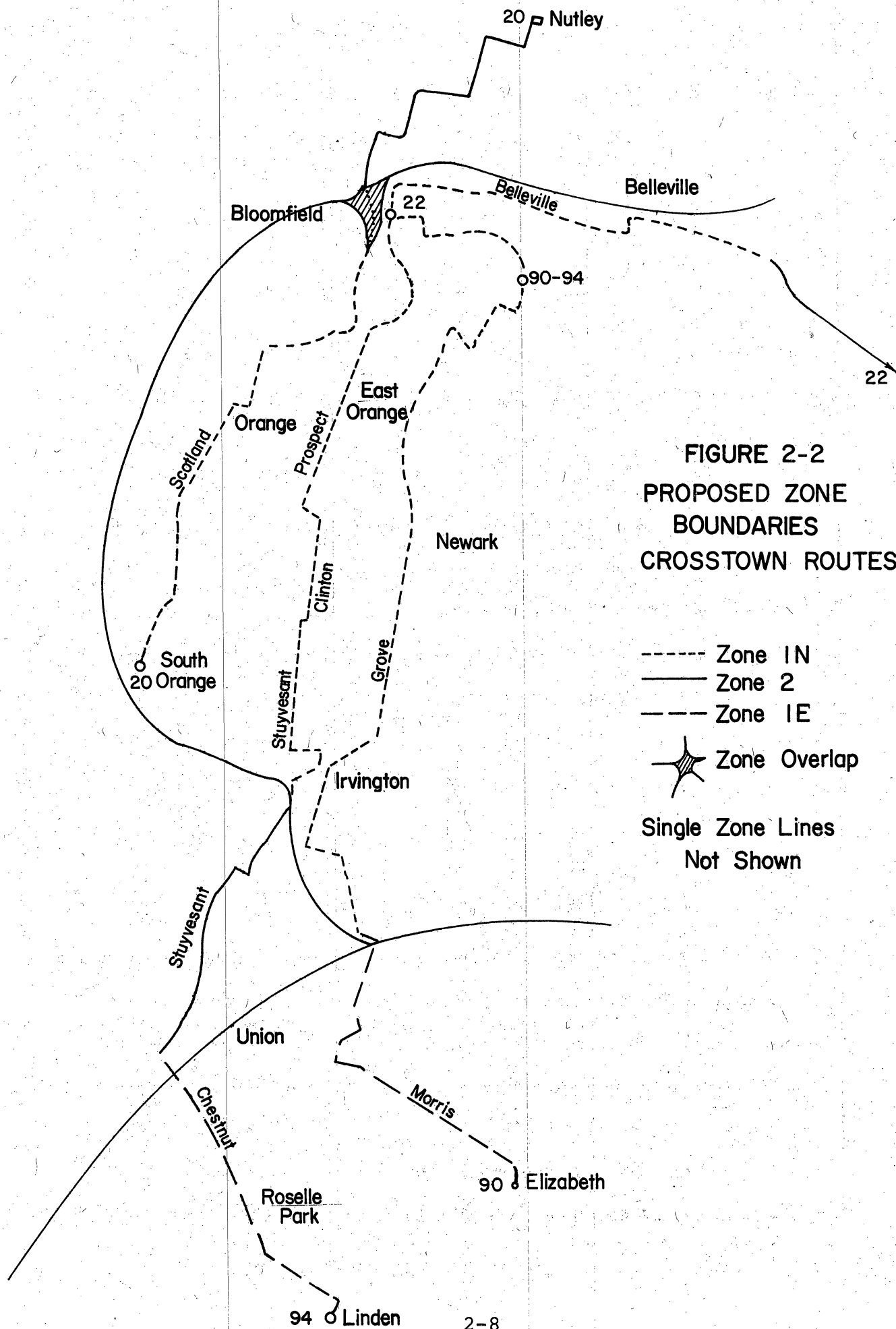
Route	Present	Proposed
62/134	US1 and 9 and McClellan Street	No change.
12	Newark and Virginia Avenues	OB - No change.
24S	Newark and Virginia Avenues	IB - Frelinghuysen and Haynes Avenues
		OB - No change.
		IB - Frelinghuysen and Haynes Avenues
49	IB - Elizabeth Avenue and Grumman Street	No change.
	OB - Broad and King Streets	No change.
48	Maple Avenue and Grumman Street	Maple and Hillside Avenues
14	Chancellor Avenue and Cordier Street	Chancellor and Union Avenues
25	Springfield and Washington Avenues	IB - Springfield and Washington Avenues
		OB - Springfield and Florence Avenues
42	OB - Myrtle and Fuller Avenues	Eliminate
	IB - 18th Avenue and 20th Street	Eliminate
31	Dover Street and South Orange Avenue	No change
24N	IB - Central Avenue and 17th Street	Eliminate
	OB - Central Avenue and West Market Street	
21	West Market Street and Roseville Avenue	IB - Main and Park Street
		OB - Orange Bus Center
51	Park Avenue and North 13th Street (for continuing trip tickets only)	Eliminate
34	4th Avenue and North 13th Street	Thomas Boulevard and Hayward Street
	1st Avenue and North 13th Street	Eliminate
29-60-114	IB - Bloomfield Avenue and Grove Street	IB - No change
	OB - Bloomfield and Watsessing Avenues	OB - Bloomfield Avenue and Park Street
128	IB - Bloomfield and Watsessing Avenues	IB - Bloomfield Avenue and Grove Street
	OB - Bloomfield Avenue and 15th Street	OB - Broad Street and Belleville Avenue
74	--	Franklin Avenue and Belleville Avenue
27	Mt. Prospect Avenue and Mill Street	Union Street and Belleville Avenue
13	IB - Broadway and Verona Avenue	IB - No change
	OB - Washington Avenue and Mill Street	OB - Washington Avenue and Holmes Street

Route 13	In Belleville Center
Routes 29, 60, 114 and 128	In Bloomfield Center
Route 21	In Orange
Route 25	In Irvington
Route 62/134	At Newark Airport


The proposed fare zones will result in a loss of revenue. The annual revenue loss is estimated to be approximately \$950,000. This amount was calculated using the load profiles developed for the Inventory Report. In those instances where the new zone boundaries did not coincide with line segment nodes, estimates were made by interpolation. Since the load profiles indicated loading between 6:30 a.m. and 6:30 p.m., the accumulations at zone boundaries were first factored up to a 24 hour day and then annualized. The revenue loss was then calculated by multiplying the net change in annual zone crossings times the appropriate fare.

It is interesting to note that 72% or \$680,000 of the total revenue loss is associated with the changes occurring in the Oranges on Routes 21 and 24N (former routes 23, 24 and 44). On Central Avenue alone, the 15¢ zone fare would be eliminated for approximately 10,200 daily riders. The comparable figure on Main Street is 4,400 riders.

Newark Fare Zone - Crosstown Routes - Presently the crosstown routes do not have a consistent zone pattern. This fact has arisen for a variety of reasons including differing company policies, location of political boundaries, and so forth. The single zone rides accommodated by the present fare structure vary from 1.5 to 5.3 miles. The proposed changes are shown in Figure 2-2 and Table 2-2. The changes are principally aimed at making the zone boundaries conform with those set for the radial routes and to remove the inequities cited above.



**FIGURE 2-2  
PROPOSED ZONE  
BOUNDARIES  
CROSSTOWN ROUTES**

- Zone 1N
- Zone 2
- · - · - Zone 1E
-  Zone Overlap

Single Zone Lines  
Not Shown

Table 2-2

## PROPOSED ZONE BOUNDARIES - CROSSTOWN ROUTES

<u>Route</u>	<u>Present</u>	<u>Proposed</u>
94	Springdale Avenue and Mt. Prospect Street No existing zone Stuyvesant Avenue and Interstate 78	Eliminate Irvington Bus Center Stuyvesant Avenue and Route 22
64	Harrison and Virginia Avenues	Eliminate
22	Hackensack River Belleville Turnpike and Passaic River Belleville Ave. and Willet Street	No change Belleville Turnpike and Schuyler Avenue Eliminate
90	Chestnut and Hillside Avenues Morris Avenue and Cherry Street	No change Eliminate
20	SB - Dodd and North Park Streets NB - Day and Main Streets	SB - Prospect Street and Railroad NB - Broad Street and Belleville Avenue
107	EB & WB Lyons or Chancellor Ave. at Stecher Street	Eliminate for intrastate trips

The revenue loss associated with making changes on crosstown routes is approximately \$90,000 annually. The amount was determined in a manner similar to that described above. Approximately 50% of the amount is attributable to changes on Route 107 where one intrastate zone was eliminated. Interstate zones on this route were not altered.

Elizabeth Fare Zone - The Elizabeth fare zone has traditionally been treated as a second Newark fare zone. The distances associated with this Elizabeth zone are comparable to other second zone distances. When viewed as a radial network, however, the distances are exceedingly short. The high turnover of loads on routes 49 and 62/134 within Elizabeth, coupled with the existence of a local route network, indicates that Elizabeth should be treated as a radial hub and not as a second zone.

The existing radial distances are shown below.

Route 24	1.5 miles
Route 49 (to Newark)	2.3 miles
Route 8	1.9 miles
Route 28	1.5 miles
Route 62/134 (to Linden)	2.1 miles
Route 49 (to Roselle)	1.1 miles
Route 62/134 (to Newark)	1.6 miles

The proposed zone boundaries for Elizabeth are shown in Figure 2-3 and Table 2-3. The zone boundary forms a circle with a diameter of approximately 2.8 miles. This distance results because of two factors:

- o The size of the Elizabeth zone is restricted by the location of the Newark zone.
- o This distance represents a compromise between treating Elizabeth as a central zone and a second zone.

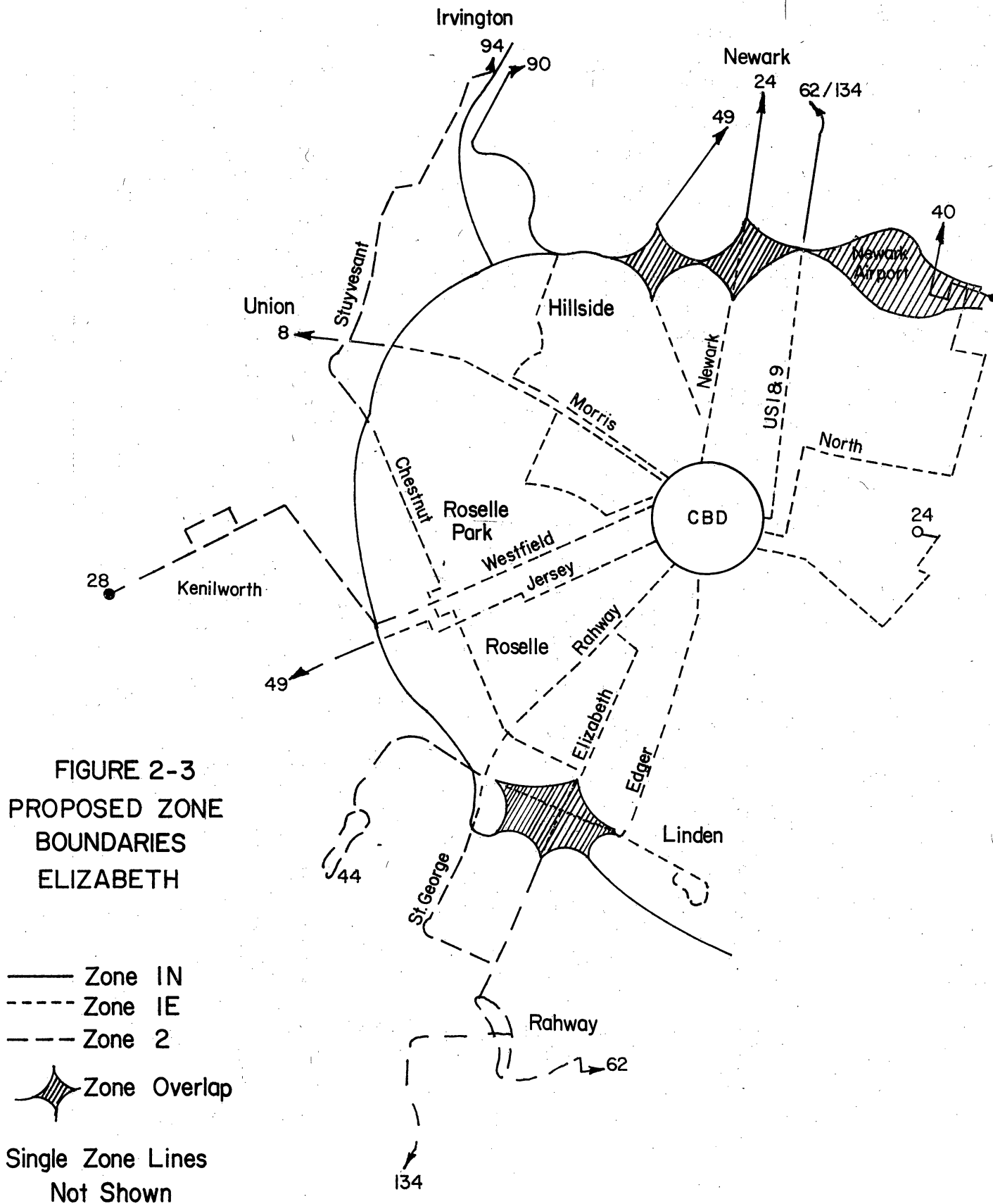


Table 2-3

## PROPOSED ZONE BOUNDARIES - ELIZABETH

Route	Present		Proposed	
	Zones	Boundaries	Zones	Boundaries
44	1-2	Edgar Road and Allen Street	1E-2	IB - Wood Avenue and Edgar Road OB - Wood and St. George Avenues
62/134	0-1	US 1 and 9 and McClellan Street	1N-1E	No change except Newark Airport is in both 1E and 1N
	1-3	Rahway Avenue and Bellevue Street		Eliminate
	3-4	IB - St. George Avenue and Stiles Street OB - St. George Avenue and Ross Street (No changes in remaining zones)	1E-2	St. George Avenue and Stiles Street
49	1-2	IB - Elizabeth Avenue and Grumman Avenue OB - North Broad and King Streets	1N-1E	No change
	2-3	Elizabeth-Roselle Line (No changes in remaining zones)	1E-2	Roselle-Cranford Line
28	1-2	Westfield Avenue and Galloping Hill Road	1E-2	Westfield and Faitoute Avenues
	2-3	Kenilworth Boulevard and Dorset Drive		Eliminate
8	1-2	Morris Avenue and Salem Road	1E-2	Morris Avenue and Route 22
	2-3	Morris Avenue and Rahway River		Eliminate
38	Route not presently operating		1E-2	IB - Elizabeth and Woodlawn Avenues OB - Elizabeth Avenue and Stiles Street
40	Route not presently operating		1E-1N	IB - McLester and Rangoon Streets OB - Elizabeth-Newark Line

Additionally, it should be noted that the proposed zone boundary does include a significant portion of the area that requires radial access to Elizabeth. The proposal also includes overlap areas to provide base fare access to activity centers and in the case of routes 24S and 49 to achieve compatible zone distances.

The revenue loss associated with the Elizabeth zone changes is approximately \$95,000. About 35% of this amount relates to the elimination of a fare zone on route 62/134. The amount was determined in the manner described above.

Outer Fare Zones - All Routes - At the present time the outer zones on certain suburban routes are very confusing, or they are very short and generate inequities. In some instances, the present zone structure on certain routes is not compatible with adjacent routes. The proposed changes are shown in Figure 2-1 and Table 2-4. The length of the resulting zones conforms to area precedents. The revenue loss associated with these changes is estimated to be approximately \$43,000.

Subway - Continuing Trip Tickets - It is proposed that continuing trip privileges be retained for the following routes:

- Route 24 - Central Avenue (former routes 23, 24, and 44)
- Route 51 - Park Avenue
- Route 29 - Bloomfield Avenue
- Route 60 - Bloomfield Avenue
- Route 94 - Stuyvesant Crosstown (replaces former route 82)
- Route 74 - Main/Franklin (replaces former route 15)

The enlargement of the Newark fare zone will enable riders to make longer first zone trips with the continuing trip tickets. The extent of the Newark zone privileges is shown in Figure 2-4.

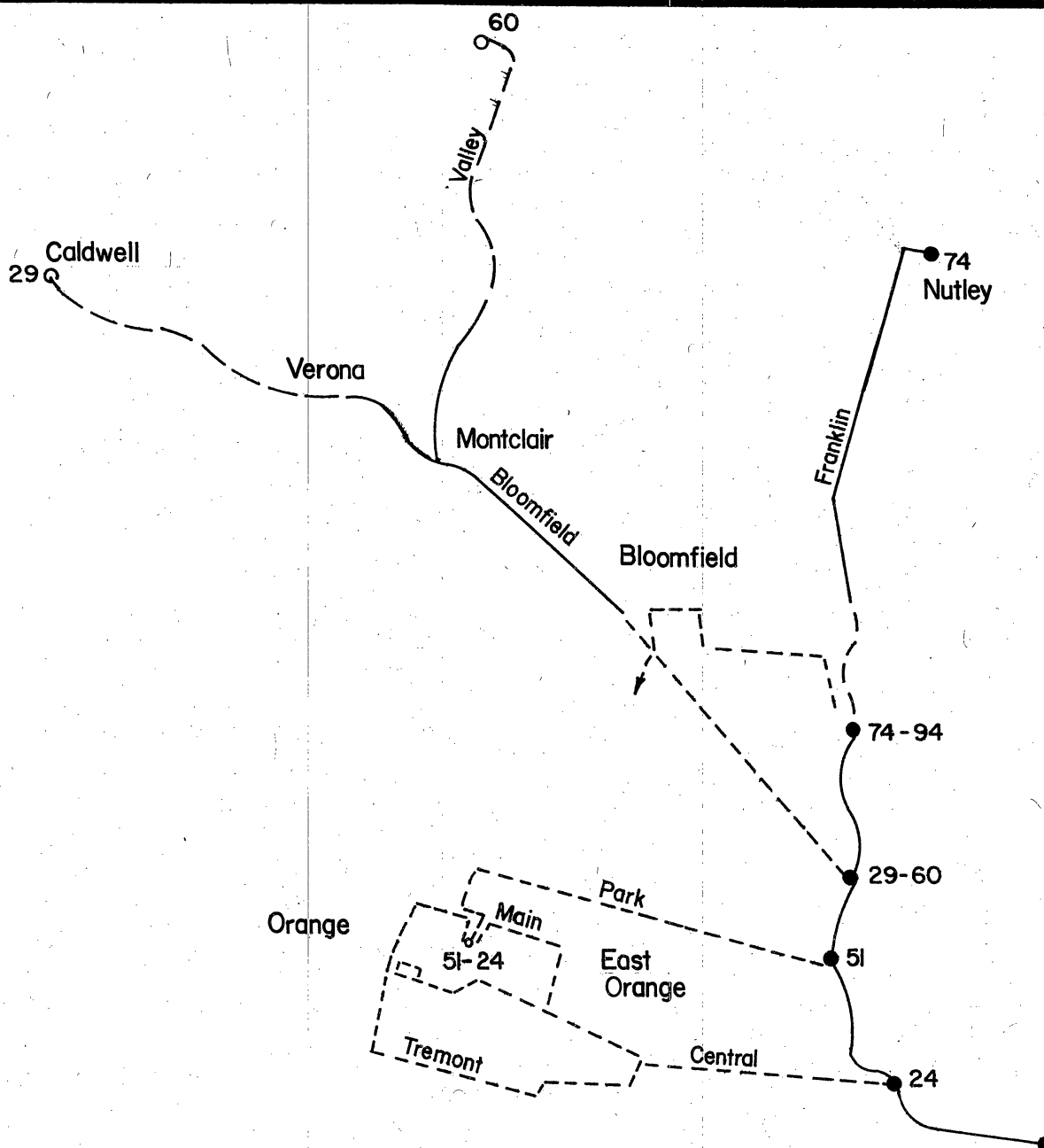


FIGURE 2-4  
NEWARK CITY SUBWAY  
ROUTE 7  
CONTINUING TRIP TICKETS

- Free Transfer Area - Zone 1N
- Zone 2 Areas With Free Transfer Plus Zone Fare
- Zone 3 Areas With Free Transfer " " "

Table 2-4

## PROPOSED SECOND ZONE CHANGES

Route	Present		Proposed	
	Zones	Boundaries	Zones	Boundaries
128	7-5 5-3	Broad Street and Watchung Avenue Broad Street and Hepburn Road (No change in remaining zones)	2-3	Eliminate No change.
29		Local Bloomfield zone 2 is eliminated due to the extension of proposed Newark zone 1E to Bloomfield Avenue and Park Street. (No additional changes are proposed)		
60		Local Bloomfield zone 2 is eliminated as above.		
114	3-13 13-14	Bloomfield and Pompton Avenue Pompton and Franklin Avenues Local Montclair zone 12 is eliminated since it is within new zone 3. (No additional changes are proposed)	2-3	Eliminate No change.
70	2-3 3-4	Maplewood Loop Milburn Avenue and Main Street (No changes in remaining zones)	2-3	No change. Eliminate
27	2-3 3-4	Washington Avenue and Center Street Cathedral Avenue and Orange Street  (No changes in remaining zones.)	2-3	Eliminate OB - Cathedral Avenue and Orange Street IB - Washington Avenue and Kingsland Road

### Fare Collection Equipment

The following proposed routes would be required to utilize National Fare Registers, if existing precedents are continued:

Route 102 - Hackensack

Route 112 - Newark/Clifton

Route 29, 60 and 114 - Bloomfield Avenue

Route 128 - Newark/Paterson

Route 25 - Springfield Avenue

Route 49 - Union

Route 62/134 - Newark/Menlo Park/Perth Amboy

Owing to the simplification of zone structure, it is proposed that the use of National registers be discontinued on routes indicated below and that a zone check system be instituted. The system proposed is similar to that recently installed on Route 107 and described in the Inventory Report. The following routes are affected:

<u>Routes</u>	<u>Present Zones</u>	<u>Proposed Zones</u>
25 (70)	6	5
29	5	4
60	4	3
112	6	5
114 (Willowbrook only)	7	4

Owing to the limited number of through 114/115 trips operating beyond Willowbrook and the apparent low turnover on these trips, it is suggested that non-register buses also be utilized.

### The Transfer System

The transfer system currently employed, (a description is provided in the inventory report), appears to be subject to many widespread abuses.

The most common offenses include:

- o Improper issuance, i.e., most transfers are torn long and are good for the entire day
- o Improper acceptance, i.e., the driver often does not observe proper tear time or determine if the transfer is allowed by regulation.

The effects of these abuses result in riders making round trips for a single fare, using outdated transfers and exceeding the maximum transfer time.

The natural inclination is to enforce the rules and make the system function as was originally intended. The counter to this philosophy is the realization that the abuses have existed for some time and are informally part of the system. Accompanying this realization is the fact that a major effort will be required to correct this situation in addition to problems in such areas as service reliability. The compromise is to formalize some of the informal practices and to enforce some of the regulations currently abused.

A transfer system can be controlled by time of transfer issuance, route of issuance or both. In the study area, the control by route is excellent since drivers are issued only those forms required for their driver assignments. As indicated above, time of issuance is very lax. One solution to this situation would be to eliminate the time tear and institute the use of a p.m. coupon. In this instance all transfers would be issued without the p.m. coupon until 1000 hours and transfers without a p.m. coupon would not be accepted after 1200 hours. Enforcement is now shifted from checking proper tear time throughout the day to checking that the p.m. coupon is removed before 1000 hours.

The p.m. coupon system also allows sufficient time to stop over for shopping, personal business and so forth. Thus an informal practice allowed by the long tear time is formalized. Since transfers are issued by direction of travel, the practice of accepting transfers on their route of issuance should be allowed for trips that continue in the same direction. Thus riders are given the advantage of stopping enroute. In addition to layover times allowed at transfer locations, these features will further enhance the attractions of transit service.

Transfers are frequently saved by riders for reuse since the code lettering reappears throughout the year. This practice can be eliminated by dating all transfers. The dated forms reduce the transfer's possible life to one day. The sale value of transfer books is also reduced to practically zero. Unfortunately the forms which remain unissued cannot be saved for subsequent reuse as are the letter coded forms.

The complicated rules for transfer acceptance (which are printed on each form) are abridged by the fact that almost universal acceptance is allowed at Broad and Market Streets and by lax driver inspection when transfers are lifted. Lifting procedures are simplified as follows:

- o Time is easier to check with the p.m. coupons.
- o Route control permits the driver to accept all transfers except those issued on the route to which he is assigned on trips traveling in the reverse direction and those issued by non-connecting routes.

The revenue loss associated with the proposed revisions is difficult to estimate since the present system is widely abused today. Many riders are correctly using the system so it would be accurate to assume that some loss would be incurred.

### Fare-free Zone in Downtown Newark

The concept of a fare free downtown is not new and has existed for many years in Pittsburgh. In recent years many cities have adopted the idea including Seattle, Nashville and Portland, Oregon. The principal benefits of this plan include:

- o The ability to move about in the CBD is greatly improved since short bus rides can be made without the need to deposit \$.45. The attractiveness of the CBD shopping area can be greatly improved as can its competitive position with regard to other areas.
- o The loading and dwelltime of outbound buses in the CBD particularly in the evening peak can be significantly reduced. This saving results from the institution of a pay enter inbound-pay leave outbound system which is the integral part of the fare free program and will be described in detail below.

An additional benefit will accrue to the bus operator in that separate downtown routes serving both Washington Park and Penn Station will no longer be required. This practice is presently employed on routes 14, 31, 48 and 54. Only route 14 provides significant service to both destinations throughout the day. The remaining routes serve one of the two destinations with only a few rush hour trips. Some riders will be inconvenienced by the disruption of direct access, but this service is limited on all routes except route 14 and will be offset by the availability of a free connecting trip to their destination. Since direct service to one of the downtown destinations is limited on the other routes, not all riders can avail themselves of the through service and are required to transfer. These riders would be aided by the fare free area since the transfer for local CBD trips would be free.

Boundaries of the Fare-Free Area - The boundaries of the fare free area must provide access to all of the major trip generators in the CBD. The following boundary is proposed and shown in Figure 4A:

Eastern Boundary - Passaic River and Amtrak

Southern Boundary - Kinney Street

Western Boundary - University Avenue

Northern Boundary - ConRail-Morristown Line

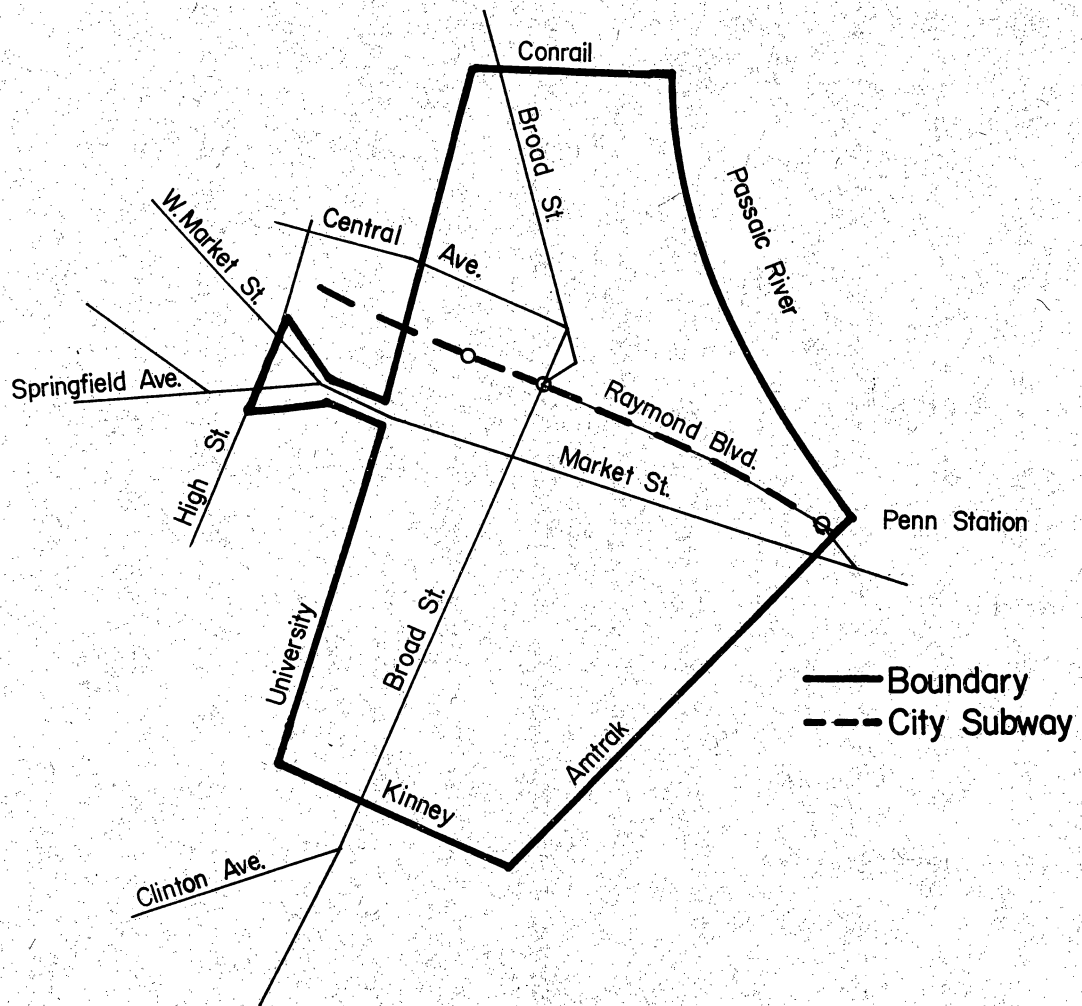
The exception to the above boundaries would occur on Market Street and Springfield Avenue where the fare free zone would be extended to High Street to provide access to the Court House and Essex Community College.

The 10¢ local fare on the subway would be replaced by the free fare zone at all stations except Warren Street. The 10¢ fare would be retained at that station.

Mechanics of Operation - As was indicated above the pay enter inbound and pay leave outbound system is a major component of the fare free program. The operation of this system is very straightforward and requires no change in fare payment procedures in the inbound direction. In the outbound direction fares are paid when leaving the bus. The exceptions are those persons boarding an outbound bus in one of the outer fare zones. These passengers would pay their fare when boarding and receive a fare receipt. Alighting passengers would either pay the fare from the CBD or surrender their fare receipt.

Boarding passengers in the CBD enter the bus without stopping to pay their fare and can use both doors. The dwell time associated with passenger handling can be decreased, resulting in shorter travel times. CBD riders can board and alight using either door and will not incur a fare so long as their trip does not cross the zone boundary.

FIGURE 2-5  
NEWARK FARE FREE ZONE



Problem Areas - The implementation of this system will cause one initial problem which is self-correcting over time. Riders are currently used to entering the bus in the front and remaining in that area. Since only the front door will be used for exiting in the outbound direction, short distance travelers will have to maneuver through the crowd to pay their fares, increasing dwell time at some bus stops. As passengers realize that both doors can be used for loading, they will tend to disperse themselves throughout the bus and thus eliminate the problem. One problem will arise whose impact can be minimized but not eliminated. Presently passengers traveling through the Newark CBD on a through route, such as the 13 or 27, can do so without additional fare payment. Under the proposed fare collection processes, they would have to pay two full fares. This impact can be lessened by allowing through riders to purchase a transfer on one end of the route which would be accepted as payment of fare on the other end of the route. For example, a rider traveling from Weequanick to Forest Hill on route 27 would purchase a transfer when boarding in Weequanick and surrender it in Forest Hill. The net increase in fare paid is thus only \$.10. The impact of this situation is further limited by the fact that the turnover is over 90% on most through routes.

Some of the present buses used by Newark transit operators would pose a further problem. The State-owned Flexible buses have a push rear door which is unlocked by the driver but opened by the passenger. Since it is proposed to board passengers through the rear door, this door would have to be equipped for air operation or a handle would have to be installed for exterior opening. The current generation ADB's are equipped with power operated doors as are the older TNJ buses.

## INFORMATION AIDS

This section deals with the current state of information aids employed in the study area and discusses possible improvements. The following items are covered:

- o Public Timetables
- o System Maps
- o Destination Signs
- o Telephone Information Services
- o Bus Stop Signs
- o Service Change Notices

### Public Timetables

Timetables are currently available for most study area routes. The issuing carriers include:

Transport of New Jersey - all TNJ routes

Trackless Transit - 5, 22, 64, 94, 96, 144

DeCamp - 22, 145/146

Beviano - 44

Elizabeth-Union-Hillside-Irvington - 6

Typically, the IBOA carriers do not issue timetables. TNJ does include independent trips in its schedules of Routes 24 and 30.

The design and formatting of a timetable must accommodate two principal groups:

- o Current users of a given route - These riders use timetables for updating at schedule change times and for information on trips that are made outside of normal trip patterns.
- o Non-users or infrequent users of a given route or transit service in general - In this instance the timetable is a training aid. An understandable presentation of required information makes transit service far more attractive.

It should also be pointed out that the quality of information aids can affect activity levels at telephone information centers. Improved quality coupled with availability can reduce the problems of these centers.

TNJ Timetables - The present TNJ schedules do an effective job of providing bus information. The format used for schedule times is well organized. It incorporates an adequate number of time points and minimizes the use of footnotes. In reviewing the various timetables issued for study area routes, several observations have been made and are detailed below.

Maps - Route maps are not routinely provided on timetables. Presently only routes 7, 25, 82 and 128 include maps. These maps do not indicate transfer locations with other area routes, the location of major activity centers, or fare zone boundaries. Further, time point identification does not always correlate with map information.

Schedule Format - The following observations were made:

- o Many of the time points are listed with single streets rather than an intersection making it difficult for the uninformed reader to determine their location. Sometimes point names have lost their relevance, i.e., Erie Loop.
- o The listing of departure times on the busier routes presents the reader with a vast array of numbers without any horizontal separations. This feature detracts from the ease of reading.
- o Some time points are used to accommodate relatively few trips, e.g., Western Electric trips on Route 34. This practice tends to increase the complexity of the schedule and wastes space.
- o Only a few timetables indicate zone fares and none indicates zone boundaries.
- o The timetables vary greatly in size, ranging from 2 1/2" to 3" wide and 4 1/2" to 8 1/2" long. This feature makes it difficult to use standard display racks, although it does generally reduce paper requirements.

- o A common paper stock appears to be used for all Newark area timetables. This paper is quite adequate for most of the schedules that have several panels but is too light to use for the single panel schedules used on such routes as 8, 12, 42 and 43. The light paper reduces the life of the timetable and makes it more difficult to display in pamphlet racks.

Distribution - TNJ timetables were found to be available to the public as follows:

- o Garages - all garages had adequate supplies of timetables available to the public. There are five garages in the study area.
- o On-board Vehicles - Many drivers do carry schedules for their routes, especially at the time of schedule changes. This source is not reliable, though, and a rider generally makes several inquiries before obtaining a schedule.
- o Telephone Information Service - Phone inquiries can be made to secure timetables by mail.
- o Newark Airport - Copies of the 21 schedule are available occasionally in the ground transportation display racks located throughout the terminal.
- o Trailways Depot - Limited numbers of schedules are available at this depot located on Raymond Boulevard in the Public Service Building.

Several years ago TNJ maintained a bus terminal in the rear of the PS Building. All timetables were available at this location and patrons could also buy tickets, seek bus information and so forth.

Tie-in with Other Information Aids - The front panel of a timetable indicates the route name and location served. There are instances where the timetable terminology is different than that used on destination signs, e.g., Route 54. The timetable refers to the route as 54 Devine, whereas the destination signs read 54 Ivy Hill. There are also instances where time point names do not correspond to destination readings. In the case of 34 Market, destination signs refer to an Ironbound branch as Avenue L, whereas the timetable lists the same branch as Wilson Avenue.

All timetables now include the telephone information number. The number's location and type size vary from timetable to timetable.

Independent Operators' Timetables - Trackless Transit issues most of the independent operator timetables. They are very readable and comparable in quality to TNJ's timetables. The same observations would also apply with the following exceptions:

- o Most of the timetables include maps, although the graphic quality is very poor.
- o Distribution points appear to be limited to Trackless's garage.

Suggested Improvements - The following additions or changes are designed to overcome the problems indicated above and to make each timetable a more useful document.

Maps - Maps should be included in all public timetables. An example of the type of information proposed for incorporation in these maps is shown in Figure 2-6 and includes:

- o Route location - The route location is shown in a bold face line as is the current practice. The drawing need not be to scale, but should include all streets utilized.
- o Time points - The time points used in the body of the schedule should be shown on the map.
- o The destination readings used on the destination signs should also be included. This feature becomes more important when a line has a number of branches or intermediate turnbacks.
- o Location of connecting transit routes.
- o Location of fare zone boundaries.
- o The towns and boroughs served should be shown.
- o A vicinity map should be employed to show the route location within the city or county it serves.

## 9 - BERGEN CROSSTOWN

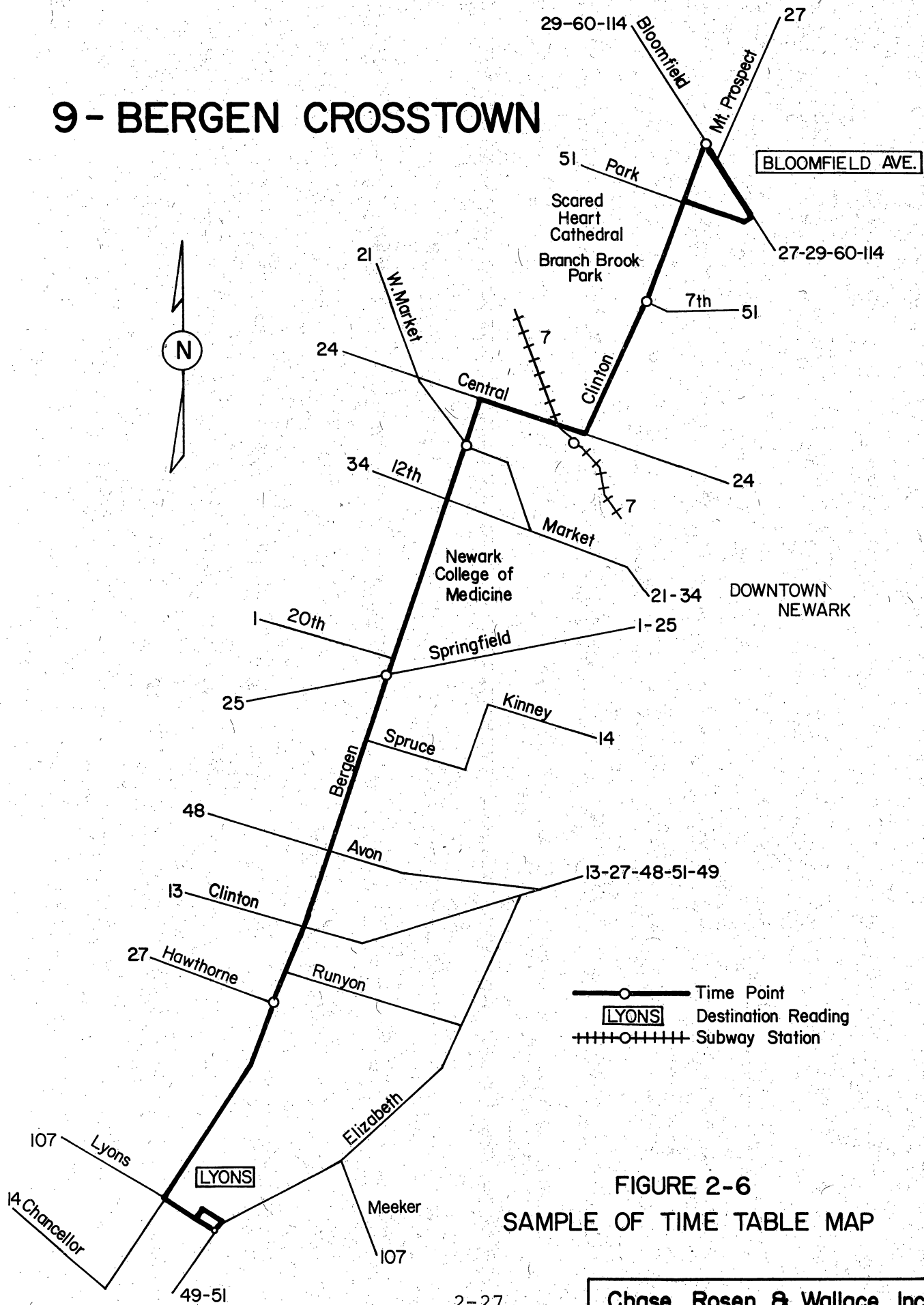


FIGURE 2-6  
SAMPLE OF TIME TABLE MAP

Schedule Format - The following improvements are recommended in the present TNJ schedules:

- o The size of the timetables should be uniform to allow the use of standard display racks. A commonly used size is 4"x8", but other dimensions are equally workable.
- o Time points should indicate the community in which they are located, as is current practice, unless the route is entirely within one community. All time points should be shown as the intersection of two streets or the name of the place served, such as Western Electric. Terminal time points should incorporate the names used on the destination signs and shown on timetable maps.
- o The heading and columnar formats should include graphic treatments that make the timetable easier to read. All headings should "boldly" indicate the days the schedule is in force and the direction of travel, e.g., To Newark or To Ivy Hill. Through route headings should indicate both major destinations such as "To Downtown Newark and Ironbound." Standard formats should be devised to provide the appropriate number of time point columns with a layout that fits attractively on a standard panel size. The time point for the CBD could be shaded for ease of identification. All radial routes should include a time point at Broad and Market Streets.
- o Horizontal breaks could be employed to make scanning easier. These breaks could consist of a skipped line, shading bands or a ruled line every five or twenty lines. If a line has frequent service, i.e., less than 7 to 10 minutes, and does not have many branches, peak hour service can be omitted and replaced by a note "Service Every 10 Minutes or less".
- o Branch line service that is limited to a few trips should not be shown in the main body of the timetable, but in a separate box. For example, the existing Route 34 service to Western Electric and Doremus Avenue wastes a good deal of space. This service could be shown much more concisely in a separate box.
- o Single and double panel schedules should be printed on heavier stock paper.
- o The front panel or cover of the timetable should be attractive and incorporate the following items:
  - Route name and number. The name used should be identical to that used on other information aids.
  - Principal locations served
  - Operators name
  - System slogans such as "We are here to get you there"
  - Effective date
  - Indication that the route is an exact fare line.

Distribution of Timetables - The following improvements are recommended

to improve timetable distribution:

- o A storefront rider information center could be provided in Downtown Newark. Such a center would distribute all timetables plus provide a person to person contact point to provide information, customer complaints and suggestions, and so forth. Such a center could also sell suburban bus tickets or other bulk purchases of transportation that may be adopted later.
- o Standard timetable displays should be provided at locations frequented by transit riders such as:
  - Major retail stores
  - Government agencies serving client groups
  - Medical facilities serving the community
  - Transportation terminals, e.g., Penn Station at Newark and New York, and PABT.
  - Major office building lobbies
  - Major employers
  - Major shopping centers.

Such a distribution plan would also have to be accompanied by the necessary logistics to maintain and restock the displays.

- o Bus "take-one" racks should be stocked with timetables just prior to their effective date.
- o All drivers should carry timetables for their assigned routes.

## System Maps

System maps have not been prepared by TNJ in recent years. Formerly, in the days of Public Service Coordinated Transport (PSCT), detailed maps were prepared and made available. In recent years Columbia Marketing Corporation of New York has prepared and sold transit maps for urban New Jersey Counties including Essex County. A copy of the map secured for this study was out of date at the time of its purchase and did not include all study area routes. It has not been determined if the map is continuously updated.

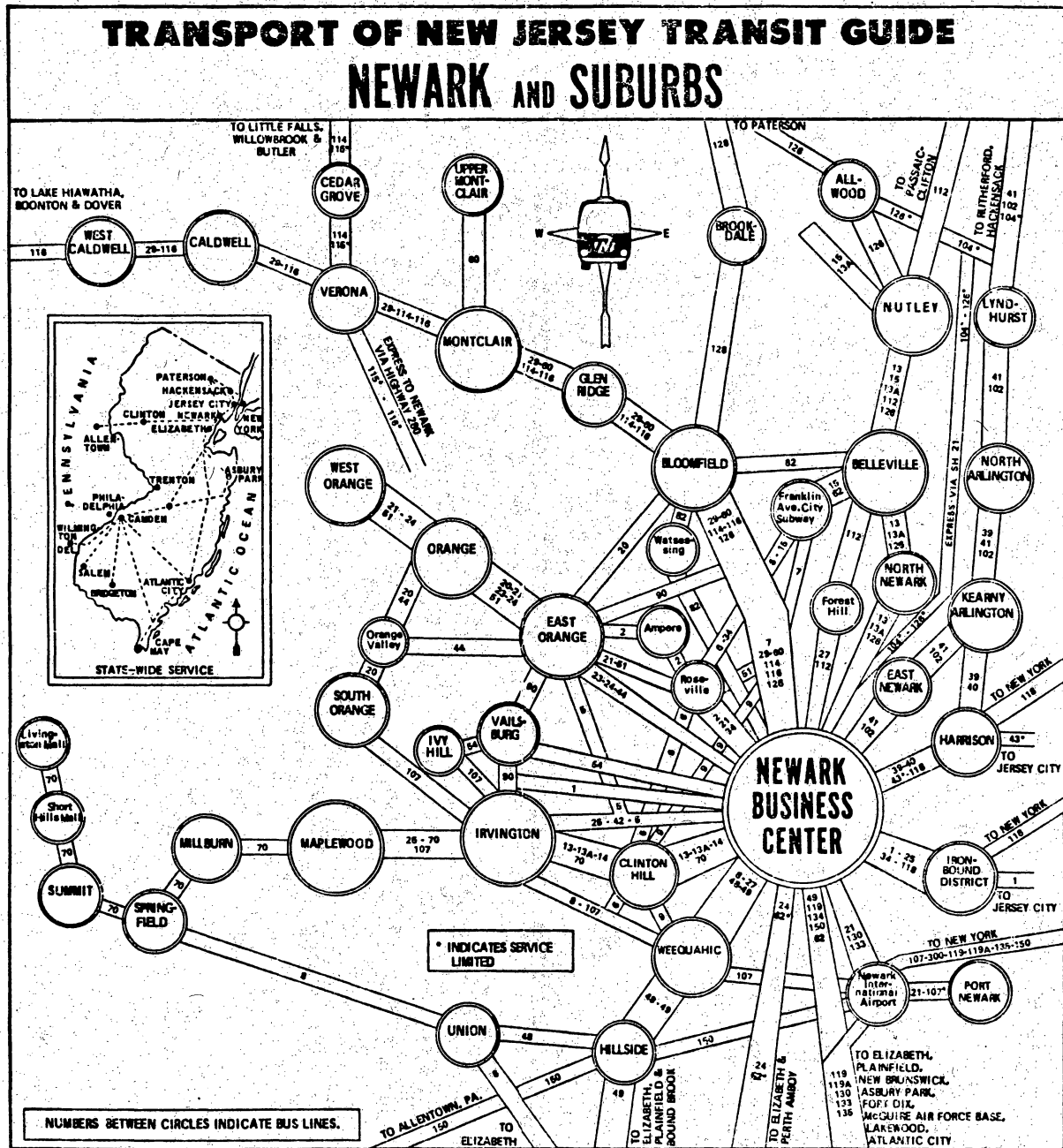
TNJ does produce a Quick Reference Guide as shown in Figure 2-7. The Guide is also accompanied by a route listing which provides a generalized route description. Routes or portions of routes offering limited service are also indicated. This map is an excellent aid in determining which routes serve various communities, but does not serve the same function as a detailed route map. The level of detail is not sufficient to direct a rider to the route closest to their origin or destination.

System maps are one means of marketing transit service. Generally they can serve the following functions:

- o A tool to familiarize the non-rider with the transit services available.
- o A tool to familiarize the current rider with those services he does not normally use.
- o A tool to lessen calls to the information center or to allow the caller to further refine their question.
- o A teaching aid to be used in transit training courses in public schools.

It is our feeling that a good system map should be prepared for the Greater Newark Area and that it should include the Reference Guide Map. The Reference Guide Map is extremely useful in selecting a generalized

FIGURE 2-7  
TNJ - TRANSIT GUIDE MAP



route. The reader can then refer to the detailed map to further refine his intended route. It is also suggested that steps be taken to include the Reference Guide Map in local phone directories or the Yellow Pages.

#### Destination Signs

TNJ currently uses single curtain front destination signs. The use of side destination signs has apparently been discontinued since the new State buses do not have side signs. Buses purchased prior to 1973 are equipped with sign boxes but many are missing the curtain and others appear not to be used.

The present readings are extremely well established and appear to be discernable to current riders. Many of the present readings can be confusing to those not familiar with transit services in the study area. Some examples of this situation are as follows:

- o The reading "1-Newark" does not indicate to the potential rider that this route serves the 16th Avenue corridor and terminates at 20th Street.
- o The readings "54-Devine" and "54 Ivy Hill" can be confusing to the rider who wants to travel to the Ivy Hill sections of Newark. The unsuspecting person does not know that both buses travel to the same destination.

The terminology used on destination signs and timetables also needs to be identical. For example, Route 54 is generally known as Ivy Hill bus, but the name used on the timetable is Devine Street. The 54 operates on Devine Street for about three blocks in Newark and Irvington.

The following steps are recommended to improve bus signage:

- o Return to the use of split front destination signs. The left sign facing the bus would indicate route number and name. The right panel would indicate the vehicle's destination.

- o All route names and destinations should be tied into those used on the timetables.
- o The use of side destination signs should be reinstituted. This sign would display only the route number and name.
- o The route number should be displayed in the rear of the vehicle. This feature will aid passenger identification of buses in queues on Market or Broad Streets.

Route names and terminal destinations for the proposed routes are shown in Figure 2-8. The destinations shown are not an inclusive list. Additional readings would be required to accommodate pull-off runs that are returning to the garage.

Another problem with destination signs is that drivers often do not change signs at the end of each trip. For example, "27 Mt. Prospect" can often be seen on buses going in both directions on Broad Street. This problem can be solved by better supervision and emphasis in training programs.

Figure 2-8

## PROPOSED DESTINATION READINGS

<u>Route Name and Number</u>	<u>Destinations</u>
1 Newark - 16th Avenue	20th Street Ivy Hill Ivy Hill Express
1 Ferry	Chapel Western Electric
1 Jersey City	Journal Square Exchange Place
6 Roseville Crosstown	Valley Fair Roseville
8 Morris Avenue	Short Hills Mall North Elizabeth
9 Bergen Crosstown	Bloomfield Avenue Lyons Avenue
13 Broad Clinton Avenue Broad Express	Nutley Belleville Belleville-Joralemon Irvington
14 Chancellor Avenue Chancellor Avenue Express	Irvington Valley Fair Penn Station South Street
20 Orange Crosstown	South Orange Orange Bus Center Bloomfield Nutley
21 Orange Orange Express	West Orange Orange Bus Center Penn Station
22 Belleville Crosstown	Bloomfield Kearny Journal Square
24 Central Avenue Central Avenue Express	Orange via Main Orange via Tremont Valley Road

<u>Route Number and Name</u>	<u>Destinations</u>
24 Frelinghuysen Avenue	Virginia Avenue Elizabethport
25 Springfield Avenue	Penn Station
25 Springfield Avenue Express	43rd Street Maplewood Milburn Summit Short Hills Mall Livingston Mall
27 Mt. Prospect	North Newark Bloomfield Bloomfield via Manchester
27 Hawthorne	20th Street
28 Roselle Park	Union College Kenilworth
28 Bayway	Clarkson Exxon Amboy
29 Bloomfield Avenue	West Essex Mall Caldwell Loop Montclair Bloomfield Center Newark Subway
31 South Orange Avenue South Orange Avenue Expresss	Penn Station Dover Street South Orange Maplewood Prospect/Ridgewood Ridgewood/Prospect
34 Market	Montclair Bloomfield Center Delavan Penn Station Wilson-Avenue L Wilson-Doremus Wilson-Roanoke South Street

Route Number and NameDestinations

38	Elizabeth Avenue	Elizabeth Rahway
40	Davis-River	Lyndhurst Rutherford
40	Port Newark	Elizabeth Elizabeth via Terminals AB&C Newark via Terminals AB&C
42	18th Avenue	Irvington Penn Station
44	Edgar Road	Winfield-Linden Elizabethport Winfield via Tremley Elizabethport via Tremley Linden
48/39	Clinton Place	Valley Fair Salem Road Kean College
48/39	Harrison	Kearny Loop
49	Union	Newark Roselle Garwood Dunellen Hillside
51	Park Avenue	Orange Subway Station
51	Elizabeth Avenue	Hillside
62	Newark-Perth Amboy	Newark via Airport Perth Amboy via Airport Turnpike Express
134	Newark-Menlo Park Newark-Metuchen	Newark via Airport Menlo Park via Airport Metuchen via Airport

<u>Route Number and Name</u>	<u>Destinations</u>
60 Bloomfield Avenue	Newark Montclair College Subway
64 Montclair Crosstown	Upper Montclair Orange
74 Main-Franklin	Paterson Paterson via Delawanna Franklin Station Franklin via Delawanna
90 Grove Crosstown	Elizabeth Irvington Bloomfield-Franklin Station
94 Stuyvesant Crosstown	Linden Union Center Franklin Station South Orange Avenue
107 Irvington-New York Irvington-New York Express	South Orange Ivy Hill Irvington New York
128 Newark-Paterson	Newark Paterson Bloomfield

### Telephone Information Services

Area callers for bus information are faced with a confusing and sometimes frustrating situation. It is difficult to know whom to call, and in many time periods the phones are either busy or there is a recorded message and a long wait before an operator handles the call. If a trip involves another mode or different bus system, the caller must call a second information number and experience busy signals and delays again. This problem has been recognized by TNJ and the NJDOT and steps have been taken to improve the service. Planning is underway for a statewide telephone center that will provide information on any transit service operated in the State.<sup>1/</sup> A brief description of the current status, recent steps to improve telephone services and suggestions for additional improvement follow.

Information Numbers - The potential user who wishes to obtain bus information may have difficulty in determining whom to call. For example, under "Bus Lines" in the Newark directory, there are more than 20 companies listed. Many of the IBOA's are not listed and do not operate a telephone information service. As an additional complication TNJ has more than 10 local and 800 numbers. Thus, to locate the correct bus company by telephone, the caller must have some degree of sophistication to know which company operates the desired service.

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<sup>1/</sup> "Action Plan to Develop a Statewide Transit Information System", Chase, Rosen & Wallace, Inc., October 12, 1979.

Lost Calls and Busy Signals - A large number of calls, in the 2400 per day range, are received by the TNJ telephone center. On the average, ten to fifteen percent of the calls that reach the center are lost because of delays. Moreover, an uncounted but likely significant number of callers reach busy signals. Lost call rates are even worse considering that during certain time periods when there are peaks in the numbers of people attempting to reach the center, the lost call rate can go to 30 to 40 percent. In these peak periods it is not unusual for more than half of the callers to either receive a busy signal or abandon a call after waiting. This is unfortunately typical of most large transit systems and not unique to TNJ.

Hours of Operation - TNJ answers calls from 7:00 a.m. to 8:00 p.m. on weekdays and 7:00 a.m. to 6:00 p.m. on weekends. Other large systems are open for longer periods each day and an extension of hours is under consideration. The importance of extending hours of operation can be seen by examining call volumes experienced by selected systems after 8:00 p.m. on a weekday and after 6:00 p.m. on the weekend. For example, in Baltimore, Chicago and Philadelphia, approximately 16 to 23 percent of the total daily calls are received after 8:00 p.m. on a typical weekday. Also in Baltimore, there is a peak in calls between 6:00 and 8:00 p.m. on Sundays.

Recent Improvements and Suggestions for Additional Actions - TNJ has recently improved the telephone information center by improving working conditions. A new work area was constructed that has a separate work station for each operator and is a well lighted, pleasant office. The telephone system has been upgraded through introduction of more trunks and an automatic call director. Information materials on all services operated by TNJ are available at each agent's work station, and plans are underway to improve information services further by:

- o Introducing a single toll-free telephone number for all calls in the State,
- o Enlarging the scope of information to cover all transit services operated in the State,
- o Introducing appropriate systems to facilitate the rapid and accurate retrieval of information,
- o Installing a computer-based management information system that will capture call data and handling characteristics for use in controlling and planning operations.

We suggest, as an interim step until the statewide center is operational, that the TNJ telephone agents should be supplied with descriptions of areas served and service provided by the independent operators in the study area. This would include Trackless Transit, Bevilacqua, Elizabeth-Union-Hillside-Irvington, South Orange Avenue, DeCamp and Community. In addition, information on these operators should be included in selected printed materials distributed on request by the TNJ agents. This has been done in New York City where the Manhattan and Queens bus maps prepared by NYCTA include routes and information numbers for private operators.

### Bus Stop Signs

The standard bus stop signs in the study area are those erected in past years by PSCT, TNJ's predecessor. It was our determination that no active maintenance program is in place to maintain this signage or to remove and place in service new signs as occasioned by service changes. Numerous signs were observed in areas that have not had bus service for several years. Conversely, many bus stops currently used are not formally signed.

The City of Newark has a very cumbersome manner of handling bus stops. The city's Municipal Council is required to approve, by resolution, new locations and relocations of bus stops. Normally, local traffic engineering departments and transit operators jointly decide on the location of bus stops. The effect of this procedure is to add to the lead time necessary to effect changes. Despite Newark's formality in locating bus stops, there is a high incidence of informal bus stops which are used on a regular basis.

The following steps are recommended to improve bus stop service:

- o Inventory all bus stops. This will require a review of the formal resolutions of the City of Newark as to the formal locations of bus stops and field surveillance to determine the informal locations.
- o Generate a list of bus stop locations which are agreed to by both the local municipality and the transit operator. It is expected that this process will formalize most of the existing informal locations and delete some formal unused stops.
- o Develop and install a new generation bus stop sign. The sign should be designed for use throughout the State. The signage should be installed on a route by route basis commencing with the heaviest routes. The installation of bus stop signage should be accompanied by the installation of traffic control signs as required.

Ideally bus stop signage should list what routes serve a given stop and indicate service exceptions, i.e., rush hour service only or no service Saturday and Sunday. This information is extremely helpful but requires a logistics effort to maintain up to date information. Since the necessary support is not now in place, it is recommended that new signage be designed to accommodate this information at a later date.

#### Service Change Notice

TNJ has had the practice of posting notices in its buses to indicate changes. The changes normally included are:

- o Fare changes
- o Timetable changes
- o Route revisions
- o Service discontinuance

It is recommended that this practice be continued. When TNJ is conveyed to NJ Transit, this system could also be used to inform the public of the numerous public meetings that are required.

#### Conclusions

The level of effort required to improve the various types of standard information aids will be significant. This fact requires that a priority be attached to each of the information aids proposed for improvement.

The priorities are as follows:

- o First priority Telephone Center improvement - The recommended interim steps can be implemented immediately with little or no expenditure.

- o Second priority Timetable improvement - The logistics of this improvement are straightforward since timetables are entirely the operator's responsibility. This improvement will also have an immediate beneficial impact on current and potential riders.
- o Third priority Destination Sign improvements - Improvements in this area are closely coupled with the second priority improvements.
- o Fourth priority Bus Stop Signage - The actual implementation of a signage program is dependent upon formalizing all bus stop locations and securing the funds for purchase and installation. The longer lead time required and the delayed impact of the program are the principal reasons for the fourth level priority.
- o Fifth priority System Maps - It is expected that major route changes will occur during the near term. Since the costs associated with system maps are significant, these should not be prepared until major service changes have been implemented.

## STREET AND HIGHWAY CHARACTERISTICS

During the course of this study, many man-hours have been spent riding buses and driving over existing and proposed bus routes. It has thus been possible to identify in considerable detail those locations where traffic engineering improvements may aid transit operations. In the sections that follow, we will first address general problem categories and locations that are common to several bus routes. Subsequently, specific traffic engineering opportunities will be identified on a route by route basis.

In general, the traffic regulations applied in the study area are very well conceived and in keeping with state of the art practices in traffic engineering. Further, maintenance of traffic control devices is of generally high quality. In some areas, lack of adequate enforcement was observed, resulting in traffic congestion and delays to mass transit, as well as to general traffic.

### Downtown Newark

Very significant to transit operations in the downtown Newark area is the presence on Broad Street of reserved curb bus lanes during peak periods. Specifically, both the northbound and southbound curb lanes are signed for "Buses and Bikes Only, 7-9:30 A.M. and 4-6 P.M." In addition, parking regulations call for "No Parking 7-9:30 A.M." and "No Stopping/Standing 4-6 P.M." The reserved bus lanes do much to facilitate bus operations in the downtown area. In addition, the remaining mixed traffic lanes appear to be adequate for current traffic demands.

Consideration should be given to changing the parking regulations to "No Stopping or Standing, 7-9:30 A.M. and 4-6 P.M." As the regulations currently apply, standing is permitted in the morning peak period. A standing vehicle can eliminate the utility of a bus lane as surely as a parked vehicle.

North of Military Park an innovative reversible lane operation is used on Broad Street. The two middle lanes are reversible and are used to carry peak period directional traffic. The divider between opposing traffic lanes is indicated by a row of traffic cones that are placed at the beginning of the peak and removed at its end. During the midday period, the cones are not present and no clear delineation of proper lane usage is evident. Although overhead mastarms are in place and lane indications are mounted, they are not in operation. The use of reversible lanes to accommodate peak directional traffic works very well as applied in Newark. However, full operation of lane indicators should be a priority.

A significant traffic operations problem on Broad Street, Market Street, and throughout the downtown area is the high disregard for parking regulations. Although there are sufficient traffic lanes to carry current demands, widespread double-parking and even occasional triple-parking create serious traffic constraints and safety hazards.

Another practice that appears somewhat confusing is the apparent haphazard system of bus stops in the downtown area, particularly on Broad Street. While there is some segregation of bus stops for different routes, the system appears to be non-uniform in its application. Some buses are observed to stop at every block, while others appear to skip-stop. At some bus stop locations several buses will be bumper to bumper

in no particular order. With a lack of side and rear route indicators on the buses, there is much confusion as passengers scurry to find the right bus.

Illustrated in Figure 2-9 is a proposed bus stop location scheme for Broad and Market Streets in Downtown Newark. Route numbers reflect the routing configuration proposed by CRW. Basically, this bus stop plan attempts to equalize the frequency of buses at each block face, while providing for buses with similar destinations to stop at the same place. Thereby, persons with close-in destinations can choose from several different routes, all of which stop at the same bus stops.

Courthouse Area, Newark - The street system in the vicinity of the County Courthouse, notably the intersection of Springfield Avenue and Market Street between High and University, appears to present a substantial safety hazard. In particular, traffic moving westbound from Market to Springfield conflicts with eastbound traffic on Market. Somehow the system appears to work from a capacity viewpoint and it is feared that any tampering may upset a delicate balance. Very recently, a channelization design has been painted on the intersection. The design, which is virtually identical to one contemplated by CRW, has done much to clarify traffic movements and improve safety without changing the basic traffic patterns.

#### Double Parking

Double parking seriously inhibits traffic flow by blocking a lane of traffic. There is only one remedy for double parking - a strong enforcement program. Many times cars were observed to be double parked, while curbside spaces went unfilled. This disregard for common courtesy should not be tolerated.

# Bus Stop Routes

- A - 1, 14, 31
- B - 21, 34, 25
- C - 1, 14, 34, 21
- D - 25, 31
- E - 13, 39-48, 27, 49-51
- F - 24, 62-134, 40, 29-60
- G - 13, 29-60, 27
- H - 24, 39-48, 40, 49-51, 62-134

+ Except 24, 62-134

+ + Except PM Peak

+ + + PM Peak Only

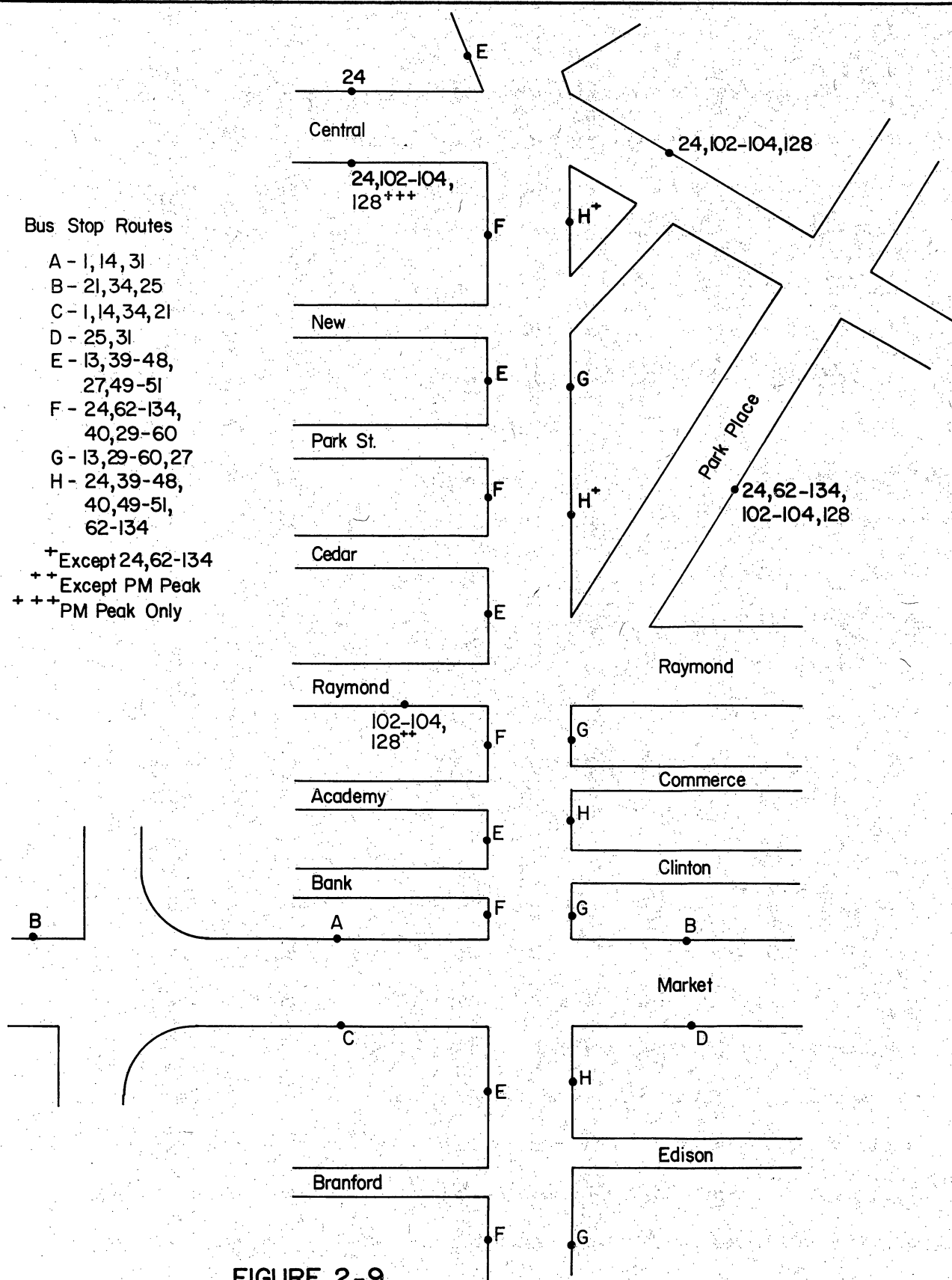


FIGURE 2-9  
PROPOSED BUS STOP LOCATION  
DOWNTOWN NEWARK

As already mentioned, this practice is very common on Broad and Market Streets, and at many of the smaller commercial areas in the study area. Detailed locations are identified on a route basis in subsequent sections.

#### On-Street Loading

Many instances of stopped commercial vehicles blocking a lane of traffic while loading or unloading were observed throughout the study area. In terms of traffic operations, on-street loading which blocks a lane is at least as bad as double parking. Not only is a traffic lane blocked, but visibility is often obstructed. Again, the remedy here is strict enforcement.

#### Inadequate Intersection Geometrics

This deficiency can take several forms. Cases were observed where buses had extreme difficulty negotiating turns due to opposing vehicles being too close to the intersection. This problem can be remedied by moving stop lines back further from the intersection.

At times a turning bus can experience difficulty due to the proximity of parked vehicles to the intersection. This problem is particularly acute in the Ironbound area. Here again, the remedy is very straightforward--to create an additional no parking zone adjacent to the intersection to facilitate bus movements.

Finally, in certain cases the curb radius together with other intersection features is inadequate and buses routinely go over the curb to complete a turn. It may be necessary for certain curb radii to be modified, although often other factors can be changed to avoid physical modifications.

### Specific Route Trails

The most important routes in CRW's proposed system were driven, carefully noting particular problems in bus operation due to traffic operations or street characteristics. Preliminary route recommendations have been modified to reflect the observed suitability of various streets for bus traffic. Following is a summary of the observations on these major routes.

#### Route 1

The following observations were noted:

Mt. Vernon Avenue (Newark) - Poor pavement quality slows buses and provides poor ride quality. Suggest repaving.

Ferry Street (Newark) - Traffic congestion due in large part to double parking and loading activities. Strong enforcement against these violations is particularly important in the Ironbound area due to narrow streets, traffic congestion, and substantial pedestrian activity.

#### Route 6

The 6 Route operates over part of its Newark route on the one-way pair of 19th Street northbound and 18th Street southbound. Typically intersections along 18th Street are signalized, while those along 19th Street are not. As a result, northbound buses must wait for gaps in the traffic stream to cross intersecting streets. Sometimes (not always) installation of a signal will reduce delay to the bus riders. In most cases, safety will be enhanced. It is recommended that consideration be given to signalizing this portion of 19th Street.

#### Route 48

Broad Street (Newark) - Commonplace double parking consumes a traffic lane. Lack of pavement marking on Broad Street, south of Market, makes it impossible to know how many lanes there are supposed to be. It is recommended that lane markings be clearly delineated.

13th Street (Newark) - To enable 13th Street to handle bus traffic, it is suggested that parking be prohibited on one side of the street, to provide sufficient room for moving vehicles to pass by each other. If this is infeasible, then the bus route should be shifted to 11th Street northbound and either 10th Street or 12th Street southbound.

Lyons Avenue at Maple Avenue (Newark) - The right turn from Lyons onto Maple is quite difficult due to cars parked too close to the corner. It is suggested that a no parking zone be delineated 60 feet back from the southwest corner of this intersection and that enforcement be strong.

#### Route 13

Clinton Avenue (Newark) - There are significant problems with double parking and loading activities blocking the street, particularly between Fabyan Place and Elizabeth Avenue. Strong enforcement is suggested.

Broad Street (Newark) - The ever-present double parking problems in need of strong enforcement actions.

Broadway at Bloomfield Place (Newark) - The right turn from Bloomfield Place onto Broadway is very difficult if cars are parked too close to the corner.

Franklin at Joralemon (Belleville) - Although CRW is recommending a rerouting that will eliminate this problem, currently on Route 13A it was noted that inbound buses make a passenger stop on the near side corner of Franklin and Joralemon and then immediately make a left turn. This results in a need to weave across traffic on Franklin with virtually no distance to accomplish same. Due to the proximity of the bus stop to the intersection, traffic is normally queued to such a point that the bus must force its way across traffic to make the left turn. In general, the simplest solution is to move the bus stop to the far side of the intersection.

#### Route 14

Stuyvesant Avenue at Mill Road (Irvington) - At this location traffic going northbound on Stuyvesant effectively must make a left turn across a heavy movement on-coming from Mill Road. The intersection is signalized and the heavy on-coming movement makes the left a difficult one. Consideration should be given to a short left turn phase at this location.

University Avenue at Kinney Street (Newark) - The right turn from University onto Kinney is made difficult by cars parked too close to the corner. A no parking zone should be delineated and enforced.

## Route 20

Valley Street at 1st Street (South Orange) - Illegally parked cars in close proximity to the intersection make this a difficult turn. The need for better enforcement is indicated.

Tony Galento Plaza (Orange) - The diagonal parking between the railroad station and Essex needs to be removed to enable two way traffic to move smoothly.

Bloomfield Avenue at Harrison Street (Nutley) - Geometrics of this right turn is tight, as the curb radius is insufficient. Although the intersection is signal-controlled, there is no stop line for westbound Harrison. A stop line should be delineated sufficiently far back from the intersection to permit buses to make a right turn onto Harrison.

## Route 21

West Market Street, between Bergen and Central Avenues (Newark) - The roadway is sufficiently wide, but with no lane markings it is unclear how many traffic lanes exist.

Market Street, east of Broad (Newark) - Double parking reduces traffic to a single lane, thereby impeding traffic flow.

## Route 24

Frelinghuysen Avenue (Newark) - Truck loading sometimes blocks a lane of traffic or more, but it is unlikely the situation can be remedied in this warehousing section.

Broad Street (Newark) - Ever present double parking constrains traffic flow.

Evergreen at Main Street (Orange) - The proposed route would go north on Evergreen and make a left on Main. Unfortunately, this left is not permitted due to relatively meager storage space before the subsequent signal on Main (actually for southbound Evergreen). It is recommended that this regulation be modified to permit buses only to make this left turn. There is adequate storage room for at least one bus and several cars, so permitting the turn by buses would not impede traffic flow through the intersection.

An alternative routing would be north on Evergreen, left on Brick Church, right on Harrison, and then left on Main.

#### Route 27

Mount Prospect Avenue, near Heller Parkway (Newark) - Double parking is the rule, not the exception. Strong enforcement is needed.

Broadway (Newark) - Double parking constricts traffic to one lane. Strong enforcement is needed.

Broad Street (Newark) - Ever present double parking.

#### Route 29-60

Bloomfield Avenue (Newark) - The combination of left turning vehicles (which partially block the left lane) and double parking, constricts traffic capacity.

Bloomfield Avenue at Claremont Avenue (Montclair/Vernona Line) - The highway geometrics is a bit tight here as Bloomfield and Claremont merge and diverge; however, short of roadway widening, there is little that could be done to improve this situation.

#### Route 31

No traffic problems of consequence were observed, other than those already addressed, in the Newark downtown area.

#### Route 34

Most of the traffic problems observed on this route were in the Ironbound area, due to its high concentration of activity and narrow streets.

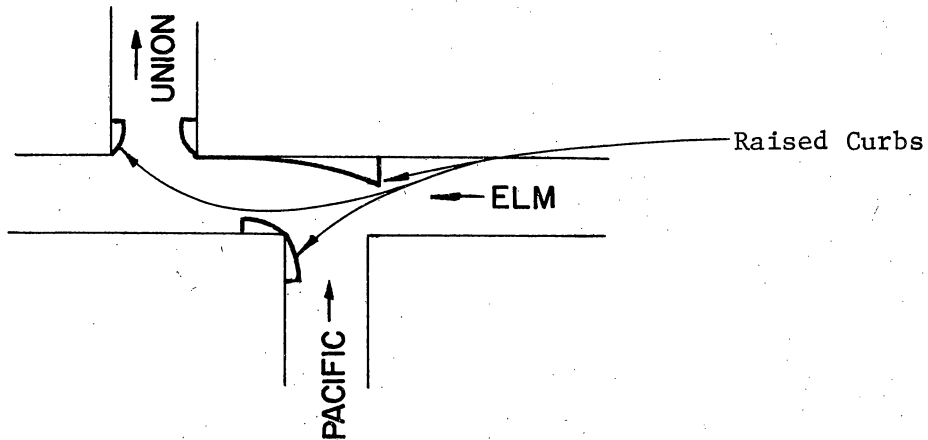
Roseville Avenue, near Rutledge Avenue (Newark) - Substantial double parking constricts traffic to one lane southbound.

Market Street - east of Broad Street (Newark) - Double parking and loading activities constrict traffic flow.

McWhorter Street (Newark) - Loading and unloading activities sometimes block entire street.

South Street (Newark) - Poor pavement quality translates to poor ride quality.

Pacific Street at Elm (Newark) - Extremely tight geometrics, compounded by vehicles parked too close to corner makes this a very difficult bus movement. To keep the intersection corners clear of parked cars, it is recommended that a positive curb - controlled parking limit be established, as illustrated below:



Union Street (Newark) - Trucks loading and unloading result in traffic delays.

Route 49

No difficulties except for double parking on Broad Street, Newark.

## RELIABILITY

Presently the reliability of service on study area routes is far from acceptable. Table 3.1, in the Inventory Report, indicates the following spread for on-time performance.

<u>Percent on Time</u>	<u>Incidence by Route Direction</u>
0 - 19%	0
10 - 19%	0
20 - 29%	5
30 - 39%	8
40 - 49%	8
50 - 59%	18
60 - 69%	0
70 - 79%	9
80 - 89%	2
90 - 99%	0

For the purposes of this tabulation, "on-time" is defined as not more than one minute early or three minutes late. As indicated above, more than half of the routes have an on-time performance of less than 60 percent. A significant proportion of the on-time problems involves vehicles that were operated early or ahead of schedule.

### Principal Problem Areas

The reasons for the current reliability problem are many and include the following:

- o Driver Discipline - Drivers are taking many liberties with their schedules, as is evidenced by high incidence of early operation. Disciplinary action appears to be taken in only extreme cases, giving the drivers a fair amount of latitude.
- o Supervision - Typically, garages have only one or two assigned supervisors. The entire study area only has the equivalent of five full time supervisors. This level of manpower is insufficient to supervise the existing or recommended route structure.
- o Transportation for Supervisors - Company autos are sparingly provided and must be shared by management personnel at the various garages. Many of the autos currently in use are well beyond their useful life. The result limits the existing supervisor's capability and his effectiveness to monitor operations and take corrective action.

- o Communication - There is no central control center or communications system which can be utilized to coordinate activities between supervisors and drivers to overcome service disruptions, bunching and so forth. Presently the supervisors do not have radios to coordinate their own activities if the necessity arose.
- o Management Structure - Under TNJ's current management structure, each garage is responsible for supervising and operating only its assigned routes. Supervision of routes which may operate in the same area is left to their home garage and there appears to be little attempt to coordinate supervisory activities.
- o Joint Operation - The operation of a route by both TNJ and an IBOA generally results in unreliable service to the traveling public. Vehicles tend to bunch when one of the two carriers, usually the IBOA vehicle, attempts to run just ahead of its competition in order to secure the greatest number of riders. This practice is quite prevalent on Route 25, but is also witnessed on Route 24 in spite of the fact that TNJ and the West Orange IBOA operate a joint schedule.
- o Responsiveness to Special Events - Special events that generate significant crowds will disrupt service if they occur during evening and weekend hours. Such disruptions do occur on Route 34 due to events at City Stadium.
- o Overcrowding - Overcrowding typically results in slower operations and can result in bunching. Such a situation has been observed on some routes. Currently it appears that TNJ has only a limited staff to load check its routes.
- o Insufficient Running Time - Running time was typically adjudged to be adequate. Scattered routes, such as Trackless Transit, Route 94, are tight on running time, resulting in late operations. Again, virtually no staff is available to check the adequacy of running time.

#### Proposed Solutions

Each area addressed above is individually discussed below. When taken collectively the overall solution is to put in place a supervisory force that has the necessary tools and organizational structure to adequately monitor and manage bus service.

- o Driver Discipline - Procedures are in place to enforce compliance with posted schedules. Drivers are faced with reprimands, suspensions or discharge, depending upon severity of the infringement or the number of times such infringements have been detected. Unfortunately, there is only sufficient supervisory

manpower to detect the most flagrant violations. The present "off schedule" operation appears to have been a common practice for several years. As such, corrective efforts will have to be concentrated over a period of time, perhaps a year or more, before drivers become completely reaccustomed to a "normal" mode of operation.

Although the majority of all work is assigned to regular drivers who are familiar with their assignments, extra men are routinely required to cover for regular drivers who are sick or on vacation and to operate trippers. Extra drivers should be provided with a "paddle" which indicates terminal departure times and the appropriate running time. Such a practice would be an aid to extra drivers that are given different assignments daily and will aid schedule reliability.

- o Supervision - Additional manpower and transportation should be provided to adequately supervise the region's bus operations. This area and the accompanying organizational changes are more fully addressed in the section below.
- o Communications - A centralized control center should be established for this region. The center would coordinate and direct the activities of supervisors in cases involving:
  - Rerouting for major disruptions,
  - Routes that have bunched or are otherwise not operating on schedule,
  - Accident investigation,
  - Redeployment of staff during major disruptions, and other actions required to maintain service.
  - Passenger complaints.

The center should also establish communication links with the various fire and police departments in the area.

A radio system should be provided for communication between the center and the supervisors. The system should allow for communication or contact when the supervisors are away from their autos. In addition, the system should be gradually expanded to include all buses. The number of radio-equipped buses could expand as follows:

- All buses in service after 7:00 p.m.
- All buses in service on Saturday or during the weekday base, whichever is greater.
- All buses.

The initial assignment of radio equipped buses on weekdays should favor long distance routes and those with sparse headways.

- o Joint Operation - Initial attempts to improve route structure and schedules should be accompanied by the assignment of all routes to one operator. Such actions will eliminate "competitive bunching" and increase service reliability. This point has been incorporated in the route and schedule recommendations.

- o Responsiveness to Special Events - The impact of special events appears to be random and could be solved by several possible actions:

- Assign a supervisor to be present at the end of the event. Buses that might normally just miss the exiting crowd could be held to accommodate riders.
- Pull-in buses could be requested to make an extra trip.
- Trippers could be scheduled for major events that draw above average crowds.

Communication should be established with event sponsors, or management of the accommodating facility to determine the size of crowds and the need for additional transportation.

- o Overcrowding and Running Time - A field surveillance or checking section, responsible to the schedule department, should be established to make periodic load and running time checks. Such a staff could be largely comprised of retired drivers who work on a part time basis.

As part of this project checkers were employed to take cordon counts on the periphery of Newark and Elizabeth and to perform riding counts. Such counts should be performed on an ongoing basis to insure that usage and level of service are properly matched, especially during the peak periods.

## Supervision

One of the major problems that we have identified as part of the Newark Elizabeth Local Bus Study is the lack of supervision of bus operations. TNJ has four supervisors assigned to this area, each being responsible for the routes assigned to a specific garage and reporting to the garage manager. The following table compares the number of supervisors for the Newark-Elizabeth operation of TNJ and several similar size transit systems.

	<u>Number of Buses Operating in Peak</u>	<u>Number of Supervisors</u>
TNJ Newark-Elizabeth	395	4
Buffalo	368	11
Milwaukee	465	22
Miami	429	31

In addition, the three other transit systems shown in the table have all radio equipped buses and thus should need less supervision than the TNJ service where there are no radio equipped vehicles.

The supervisory structure that we recommend includes a staff of road supervisors reporting to a central control center. This would replace the existing structure where supervisors are assigned to individual garages and report to the garage manager. A supervisor would be responsible for all New Jersey Transit routes in the Newark-Elizabeth area that are in his assigned territory or as directed by the control center. The control center would serve as the contact point between road supervisors and garages, as well as with transit police and emergency services such as fire departments and ambulances. This section details our recommendations on supervision including coverage, manpower requirements, responsibilities, organizational structure and equipment.

Coverage - A proposed allocation of supervisory coverage is described below. This program includes both area supervisors and location supervisors. The program is broken down by time of day and day of week.

Weekday coverage

4 area supervisors	5 a.m. to 9 p.m.	
2 area supervisors	9 p.m. to 1 a.m.	
2 location supervisors	7 a.m. to 9 a.m.	Irvington and Orange
2 location supervisors	7 a.m. to 9 a.m.	- Penn Station and Franklin Avenue
1 location supervisor	9 p.m. to 1 a.m.	- Broad and Market
1 CBD area supervisor	3 p.m. to 7 p.m.	

Saturday coverage

4 area supervisors	5 a.m. to 7 p.m.	
2 area supervisors	7 p.m. to 1 a.m.	
1 location supervisor	7 p.m. to 1 a.m.	- Broad and Market
1 CBD area supervisor	4 p.m. to 6 p.m.	

Sunday coverage

2 area supervisors	5 a.m. to 1 a.m.	
1 location supervisor	9 a.m. to 1 a.m.	- Broad and Market

The areas that supervisors would be assigned to would be flexible.

In general, a supervisor assigned to an area would handle problems that came up in that area. However, when a supervisor assigned to an area is busy, supervisors from adjacent areas would be called in to cover additional problems occurring in an area.

The areas that we suggest for supervisor's assignments are:

North:	Belleville, North Arlington, Kearny, Nutley, Lyndhurst, Bloomfield, Glen Ridge, Montclair, Verona, Cedar Grove, Caldwell.
West:	East Orange, Orange, South Orange, West Orange, Maplewood, Irvington, Vailsburg section of Newark, Springfield, Millburn, Summit.
South:	Elizabeth, Hillside, Union, Linden, Rahway, Kenilworth, Roselle, Roselle Park, Cranford, Westfield.
Central:	Newark (except Vailsburg section), Harrison.

During the evening peak, an additional supervisor would be assigned to the central area to handle problems in and immediately adjacent to the Newark CBD. On Sundays and late evenings, only two area supervisors would be on duty. These supervisors would cover areas north and south of the Newark CBD.

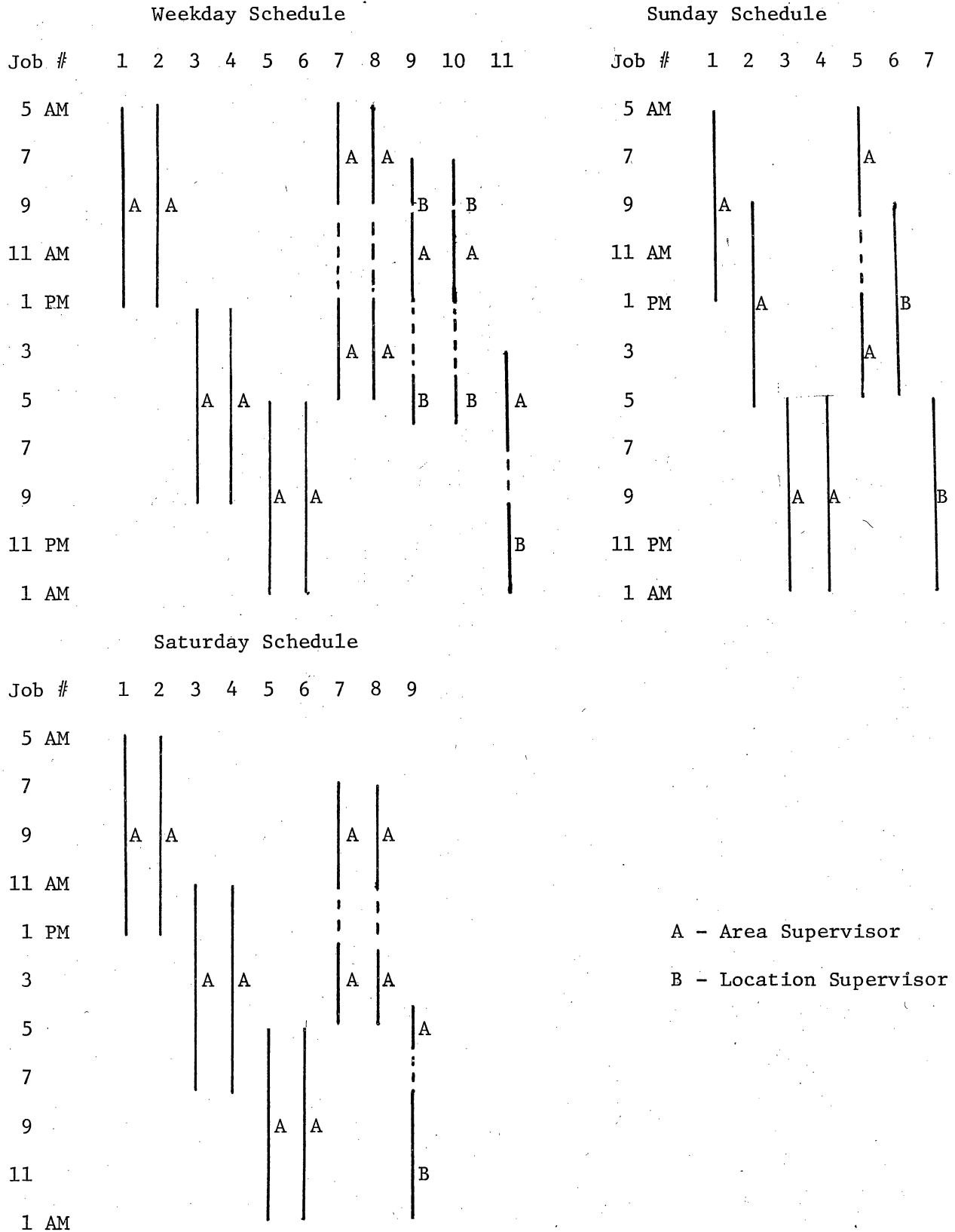
Location supervisors are assigned to the Orange Bus Center and Irvington Bus Terminal during the morning peak. During the evening peak, location supervisors are assigned at Penn Station and at the Franklin Avenue terminal of the City Subway. A location supervisor is assigned to Broad and Market Streets during the evening and on Sunday, when scheduled connections are provided at that point.

The control center would initially require one position. This position would be manned 24 hours per day, 7 days per week. Several additional positions will be required for weekday and Saturday daytime and early evening when bus radios are acquired.

Manpower - A proposed schedule for assignment of supervisors is shown in Figure 9. Supervisors are presently covered under the TNJ salaried employees contract. They receive overtime pay at time and a half for work in excess of 8 hours per day or 40 hours per week. The present agreement does not mention split assignments. However, supervisors have traditionally been given split shift assignments. For purposes of estimating costs, we have assumed that the outside times of a split shift cannot exceed 12 hours, and that any split shift job over 10 hours would pay overtime for the outside time in excess of 10 hours. These provisions are slightly more restrictive than in the drivers' contract, and are representative of the type of agreement that is likely if split shift rules are formalized.

Figure 2-10

WORK SCHEDULE - SUPERVISORS - NEWARK ELIZABETH AREA



The present pay rate for experienced supervisors is \$361.25 per week. There is an entry level pay rate of \$348.70 per week but for cost estimation purposes we have used the higher rate. There is also a lower rate for location supervisors or starters. However, we recommend that the road supervisors rate should apply to all positions and that the people be interchangeable in any field supervision job.

It should be noted that the equivalent hourly pay rate for supervisors is only 4.9% greater than the current hourly rate for drivers after 30 months experience. It may be necessary to increase the salary to attract qualified people, particularly as the opportunity to earn overtime is more restricted.

Costs for the schedule shown in Figure 9 were computed using the existing rates. The salary cost of road supervision based on this schedule would be \$324,520 per year. This include 16 jobs at an annual salary of \$18,785 per year. The schedule includes 71 assignments per week, or work for 14.2 full time people. Sixteen employees will be needed to cover these jobs plus relief positions. In addition the schedule includes 34 hours of overtime per week, at a rate of \$13.55 per hour, for a total overtime cost of \$23,960 per year. Fringe benefit costs will have to be added to this figure to obtain a total payroll cost.

Salary costs for control center supervisors would be \$108,025 per year. This cost is based on a 15% premium for this position over the road supervisors salary. There is no comparable present job in TNJ. Five people at an annual salary of \$21,605 would be required. The center would be staffed with one person 24 hours per day, 7 days per week, for the equivalent of 4.2 full time people. No overtime would be regularly scheduled. The fifth person would be needed for relief work.

For both groups of people, it is likely that a small amount of additional overtime will be paid when it is necessary to call in a person on his day off to cover for illness or other unusual conditions.

Supervisors should be recruited from bus drivers as is the practice on most transit systems. A certain number of years of driving experience should be required but the minimum should be set low enough so that younger, more highly motivated people, are eligible. Control center supervisors should be a promotional step from road supervisor.

Responsibilities - The responsibilities of the supervisors should be to monitor service, restore service after disruptions by directing buses to short turn, deviate from a route or by calling for extra buses, supervise operations at special events, respond to emergency calls and investigate accidents, investigate improper operation and recommend discipline. Supervisors should have the authority to remove an operator from service in cases of flagrant violation of operating rules.

Supervisors should be assigned full time to supervision. Routine duties such as point load counts should be assigned to lower level personnel.

The control center supervisor will serve as a dispatcher for the road supervisors. The control center would handle all communications with the individual garages including obtaining replacement buses, repair trucks or authorizing extra service.

The control center will also handle all communications with transit police and with local police, and fire departments. Other control center functions would be to monitor weather conditions and initiate response measures to severe weather conditions, and to maintain contact with other transportation agencies and to initiate response to conditions such as street closings or rail service breakdowns.

Organizational Structure and Equipment - Supervisors should report to a control center that is manned full time, rather than to individual garages as at present. The Newark-Elizabeth area is of sufficient size to warrant a regional control center, although in a statewide system, it is likely that it would be part of a large region. All supervisors should be assigned a radio equipped car while on duty. This includes those supervisors that have location assignments as well as area supervisors. Radio communication should be with the control center. A single radio frequency should be obtained immediately for use by supervisory personnel. As radio equipped buses are put in service, the number of frequencies would be expanded. However, a separate supervisory frequency should be maintained even with radio equipped buses.

It must be emphasized that obtaining use of a group of two way radio frequencies can be a time consuming process. This process should be started as soon as possible and should include the full complement of frequencies that will be required for radio equipped buses.

Another requirement for both road supervisors and the control center is access to operating schedule information in a convenient form. The present run guides and headway sheets are large and would be awkward to use in a control center and almost impossible in the field. Consideration should be given to producing a version of these documents in a form that is more suited for use by supervisors.

## GARAGES

At present the TNJ routes in the Newark-Elizabeth area utilize five garages. The proposed system can easily be operated from three garages. It is our recommendation that Elizabeth and Lake Street garages be closed as soon as possible. Highest priority should be given to closing Lake Street, as it is a very cramped facility and may be unable to accommodate 102" wide buses. None of the State-purchased 102"-wide buses are presently assigned to this garage.

In order to close Lake Street Garage a sufficient number of new buses will have to be acquired so that the exceptionally high numbers of spare buses presently kept at TNJ garages may be reduced to a more normal spare ratio. At present the four Newark garages, excluding Elizabeth, schedule a total of 303 buses in the peak. The number of buses presently assigned to Hilton, Orange and Big Tree garages is 359. With a 15% spare ratio, approximately 350 buses would be required for the routes operating from the four Newark garages.

The closure of Elizabeth garage would require the transfer of the interstate services to other locations as well as the implementation of the 375 bus system that we have proposed. Most of the interstate buses operating from Elizabeth are used in the Route 9 corridor and should be based at a garage that is better located to serve this corridor. An exception is the small number of buses used to operate the Newark Airport service which could be transferred to Union City or Hilton garages. Union City would be a better location as this route uses parlor type buses. In addition, the 62 and 134 routes would have to be moved to New Brunswick garage, replacing Route 9 corridor buses presently operated from New Brunswick.

The proposed 375 bus system would consist of approximately 300 buses operating from Newark area TNJ garages, 35 buses operating from other TNJ garages (Paterson and New Brunswick) and 40 buses on 3 routes that are likely to remain with independent operators. The garage requirements would then be approximately the same as for the previous situation, in that Hilton, Orange and Big Tree garages could easily accommodate a fleet of this size. It appears that there is sufficient unused capacity in Hilton and Orange garages to accommodate the 40 independent operator buses mentioned above, if these routes are absorbed by New Jersey Transit.

## SECURITY

The problem of driver and passenger security is obvious both from our observations of the Newark-Elizabeth bus system and from the input from the citizen participation process.

There are two significant improvements that can be made to enhance security. One is the installation of two way radios on buses. First priority for the installation of two way radios should be for buses that are used to provide service after 7:00 p.m. and on weekends. Second priority should be for buses used on long distance routes or routes with infrequent base service. Both of these high priority installations would provide communication between drivers and a control center for buses that are likely to be a substantial distance from other buses, supervisors or police, and thus improve reliability as well as security.

Two way radio communication will also be a significant psychological benefit to the drivers, as presently they have a noticeable feeling of having to be "on their own" once they pull out of the garage.

One feature offered as part of radio systems is a "silent alarm" operated by a foot switch at the driver's position. Experience with this feature has been mixed. Some transit systems have found that the number of false alarms produced is high enough so that instead of alerting the police, the control center sends a supervisor to determine the nature of the alarm. Other emergency alarm devices, such as flashing exterior lights, have the disadvantage of being obvious to the criminal as well as the police or other bus drivers.

The second improvement that could be made would be the formation of a transit police force. Many of the problems encountered on the bus system are of a minor nature, such as rowdiness, fare evasion and vandalism.

These problems are not considered to be serious enough to warrant police attention, particularly in areas such as Newark where the number of police on duty has been reduced due to budget problems.

The transit police force need not be large, as the primary need is for police personnel to be available to deal with recurring problems, rather than with isolated incidents. There is little experience to go on in estimating the number of police needed for the Newark-Elizabeth system. Most transit systems that have their own police are rail system operators and the police force is engaged primarily in patrolling the rail system.

We suggest a police force of from 8 to 10 people, including a supervisor, as a starting point. This level of staffing would provide 4 to 5 police officers on duty during the high incident hours between 3:00 p.m. and 9:00 p.m., with a reduced level of coverage during other times and on weekends.

Dispatching of police should be handled by the control center. A separate police dispatching function would not be needed unless the police force became significantly larger. The supervisory radio frequency could initially be used for police communications.

Police assignments should be a mix of uniformed officers with patrol cars and plainclothes officers assigned to riding buses. Patrol car assignments would be on an area basis similar to supervisors assignments, although with a greater concentration in areas where problems exist. Plainclothes police assignments would include both random bus riding and riding specific routes or trips where problems have been reported.

The salary cost of a police force of this size is likely to be on the order of \$200,000 per year. Fringe benefits, equipment and other expenses will bring the total cost to the order of \$300,000 per year.

## SHELTERS

During the course of this study, the City of Newark entered into an agreement with Convenience and Safety Corporation to install approximately 250 shelters throughout the city. The proposed installation plan is quite extensive and covers the vast majority of high volume areas that can accommodate shelters. At the time of our inquiry, about 130 shelters had been installed. The agreement covering the shelters provided for the inclusion of advertising and the provision of continuous maintenance.

The shelters shown in Figure 2-11 are quite attractive and blend nicely with their surroundings. The shelter is enclosed on two sides, one of which is a glass panel and the other contains the advertising copy. The shelters are designed to be lighted.

Several problems have been observed in conjunction with the shelter program. Electrical connections were provided to only a few of the shelters. Failure to supply all the shelters was apparently due to the non-existence of a nonmetered rate for the shelters. A more serious problem appears to be the locations selected for some of the shelters. For example, a shelter was erected at the rear of Penn Station for Route 31. Presently this shelter sees little use since transit patrons typically wait in the station or under the entrance canopy. A far better location would have been directly across the street where Routes 1, 21 and 25 buses stop. Other shelters have been located too far to the rear of the bus stop and are not used since they are typically blocked by parked cars. Generally, the shelter program adds a needed feature to the Newark transit system.

FIGURE 2-II  
TYPICAL SHELTER



The list of transit shelters erected in mid-1979 was contrasted to the proposed route structure. It appears that none of the shelters has been located on streets proposed for withdrawal of service. A list of the shelters erected by mid-1979 appears in Figure 2-12. The shelters are located on the first named street and on the side of the street indicated in the direction column.

Unfortunately, the shelter program is limited to Newark. A similar program is recommended for the areas outside of Newark. The primary and secondary corridors of interest are indicated in Figure 2-13. If the shelters are not erected by an outside firm but by State, county or local governments, proper logistics support should be provided to clean and maintain the structures.

Figure 2-12

## PRESENT SHELTER LOCATIONS IN NEWARK

<u>LOCATION</u>	<u>DIRECTION</u>
Broad St. & Hill St.	S.B.
Broad St. & Washington St.	S.B.
Broad St. & Clinton Ave.	S.B.
Broad St. & West Park St.	N.B.
Broad St. & Miller St.	N.B.
Clinton Ave. & High St.	W.B.
Ferry St. & Van Buren St.	E.B.
Bloomfield Ave. & 4th St.	W.B.
Chapel St. & Fleming Ave.	S.B.
W. Market St. & High St.	W.B.
W. Market St. & University Ave.	W.B.
W. Market St. & Mulberry St.	W.B.
Bloomfield Ave. & 6th St.	W.B.
Bloomfield Ave. & 10th St.	W.B.
Bloomfield Ave. & 13th St.	E.B.
Bloomfield Ave. & 12th St.	E.B.
Bloomfield Ave. & 10th St.	E.B.
Elizabeth Ave. & Miller St.	N.B.
Elizabeth Ave. & Wright St.	N.B.
Elizabeth Ave. & Meeker Ave.	N.B.
Elizabeth Ave. & West Alpine St.	S.B.
Central Ave. & 4th St.	E.B.
Central Ave. & 7th St.	E.B.
Bloomfield Ave. & Clifton Ave.	W.B.
Bloomfield Ave. & Roseville Ave.	E.B.
Broadway & 7th Ave.	S.B.
Broadway & Hinsdale Pl.	S.B.
Broadway & Delevan Ave.	N.B.
Broad St. & Lackawanna Ave.	S.B.
Chancellor Ave. & Clinton Pl.	E.B.
Bloomfield Ave. & Summer Ave.	E.B.
Elizabeth Ave. & W. Bieglow St.	S.B.
Lyons Ave. & Elizabeth Ave.	W.B.
Lyons Ave. & Maple Ave.	W.B.
Lyons Ave. & Osborne Terr.	W.B.
Elizabeth Ave. & W. Peddie St.	S.B.
Clinton Ave. & Leslie St.	E.B.
Clinton Ave. & Bergen St.	E.B.
Elizabeth Ave. & E. Bigelow St.	W.B.
Hawthorne Ave. & Clinton Pl.	E.B.
Lyons Ave. & Bergen St.	W.B.
Elizabeth Ave. & Hawthorne Ave.	S.B.

Figure 2-12

PRESENT SHELTER LOCATIONS IN NEWARK  
(continued)

<u>LOCATION</u>	<u>DIRECTION</u>
S. Orange Ave. & Sanford Ave.	E.B.
S. Orange Ave. & Stuyvesant Ave.	E.B.
S. Orange Ave. & Munn Ave.	E.B.
Central Ave. & Halsey St.	W.B.
S. Orange Ave. & 8th St.	W.B.
Central Ave. & University Ave.	E.B.
S. Orange Ave. & S. 18th St.	E.B.
Mt. Vernon Pl. & Kerrigan Blvd.	E.B.
Central Ave. & S. 8th St.	W.B.
Central Ave. & S. 12th St.	W.B.
Central Ave. & Norfolk St.	E.B.
Central Ave. & Norfolk St.	W.B.
Central Ave. & 3rd St.	W.B.
W. Market St. & Bergen St.	E.B.
Central Ave. & 1st St.	W.B.
Central Ave. & Morris Ave.	E.B.
Roseville Ave. & Orange St.	S.B.
Springfield Ave. & S. 17th St.	E.B.
Springfield Ave. & Bergen St.	E.B.
Springfield Ave. & W. Kinney St.	E.B.
Springfield Ave. & Irv. T. Blvd.	E.B.
Springfield Ave. & Bergen St.	W.B.
Central Ave. & Lock St.	E.B.
Central Ave. & Dey St.	W.B.
Irv. Tur. Blvd. & W. Kinney St.	N.B.
Irv. Tur. Blvd. & W. Kinney St.	S.B.
Irv. Tur. Blvd. & 18th Ave.	S.B.
W. Market St. & Norfolk St.	E.B.
W. Market St. & Wick. & High St.	S.B.
Broad St. & Market St.	S.B.
Raymond Plaza East & Market St.	S.B.
Central Ave. & High St.	E.B.
Central Ave. & Colden St.	E.B.
Broad St. & Lincoln Pk.	S.B.
Elizabeth Ave. & W. Runyon St.	S.B.
Central Ave. & Colden St.	W.B.
S. Orange Ave. & 8th St.	E.B.
Lyons Ave. & Bergen St.	E.B.
S. Orange Ave. & Grove St.	E.B.
W. Kinney St. & High St.	E.B.
Clinton Pl. & Hawthorne Ave.	N.B.
Broadway Btwn. 3rd & 4th St.	N.B.
Broadway & Chester St.	N.B.
Broadway & Elmwood Ave.	S.B.

Figure 2-12

PRESENT SHELTER LOCATIONS IN NEWARK  
(continued)

<u>LOCATION</u>	<u>DIRECTION</u>
Raymond Blvd. & Park Place	W.B.
Raymond Blvd. & McCarter Hwy.	E.B.
Market St. & Washington St.	E.B.
Broad St. & Clay St.	N.B.
Broad St. & Court St.	S.B.
Broad St. & South St.	S.B.
Broad St. & Wright St.	S.B.
Broad St. & W. Park St.	N.B.
Broad St. & Rector St.	N.B.
Clinton Ave. & Bergen St.	W.B.
Clinton Ave. & So. 18th St.	E.B.
Ferry St. & Market St.	W.B.
Bergen St. & Renner Ave.	N.B.
18th Ave. & Bergen St.	E.B.
18th Ave. & Boyd St.	E.B.
Springfield Ave. & Fairmount Ave.	E.B.
Springfield Ave. & 6th St.	E.B.
S. Orange Ave. & Alexander St.	E.B.
S. Orange Ave. & W. End Ave.	E.B.
S. Orange Ave. & 19th St.	E.B.
S. Orange Ave. & S. 14th St.	E.B.
S. Orange Ave. & Maybaum St.	W.B.
Broad St. & Pennington St.	S.B.
Broad St. & Pennington St.	N.B.
Broad St. & Wright St.	N.B.
Broad St. & Emmet St.	N.B.
Broad St. & Morray St.	N.B.
Broad St. & Parkhurst St.	N.B.
Elizabeth Ave. & Clinton Ave.	S.B.
Broad St. & Chestnut St.	N.B.
Broad St. & E. Kinney St.	N.B.
Broad St. & Walnut St.	N.B.
Broad St. & Raymond Blvd.	N.B.
Broad St. & Green St.	N.B.
Broad St. & 8th Ave.	N.B.
Broad St. & 8th Ave.	S.B.
Broad St. & W. Kinney St.	S.B.
Broad St. & Parkhurst St.	S.B.
Bloomfield Ave. & 1st Ave.	E.B.
Springfield Ave. & Blum St.	W.B.
Clinton Ave. & Astor St.	E.B.
Broad St. & New St.	N.B.

Figure 2-13

## CORRIDOR LOCATIONS FOR SHELTERS OUTSIDE OF NEWARK

<u>CORRIDOR</u>	<u>ROUTES</u>	<u>COMMUNITY</u>
<u>FIRST PRIORITY</u>		
Washington Avenue	13N	Belleville
Franklin Avenue	74	Belleville, Nutley
Bloomfield Avenue	29,60,114	Bloomfield, Glen Ridge Montclair, Verona, Caldwell
Main Street	21,24N	East Orange, Orange, West Orange
Central Avenue	24N	East Orange, Orange
South Orange Avenue	31	South Orange
Springfield Avenue	25	Irvington, Maplewood
Newark Avenue	24S	Elizabeth, Hillside
Broad Street	49	Elizabeth, Hillside
St. George Avenue	62/134	Elizabeth, Linden, Rahway
Elizabeth Avenue	24S	Elizabeth
Kearny Ave., Ridge Road	39/102	Harrison, Kearny, N. Arlington
<u>SECOND PRIORITY</u>		
Union Ave., Center St.	13N,27N	Belleville, Nutley
Broad Street	34N,128	Bloomfield
Valley Road	60	Montclair
Pompton Road	114	Verona, Cedar Grove
Springdale Avenue, Orange Street	34N	East Orange, Montclair
Park Avenue	51N	East Orange, Orange
Rhode Island Ave., Tremont St., Valley Rd.	24N	East Orange, Orange

Figure 2-13

CORRIDOR LOCATIONS FOR SHELTERS OUTSIDE OF NEWARK  
(continued)

<u>CORRIDORS</u>	<u>ROUTES</u>	<u>COMMUNITY</u>
Prospect St., Central Ave., Stuyvesant Ave.	94	Bloomfield, East Orange, Irvington, Union
Chancellor Ave.	14	Irvington
Morris Ave.	8,90	Elizabeth, Morris, Union
Westfield Ave.	28	Elizabeth, Roselle Park
West Jersey St.	49	Elizabeth, Roselle
Edgar Road & Wood St.	44	Elizabeth, Linden
E. Jersey St.	44	Elizabeth



