ROUTE 55 FREEWAY EXTENSION FEASIBILITY STUDY

Atlantic County, Cape May County and Cumberland County

prepared by:

State of New Jersey
Department of Transportation
Bureau of Preliminary Engineering

Technical Memorandum #4

Needs Assessment and Traffic Data

in association with

Gannett Fleming, Inc.
Taylor, Wiseman & Taylor, Inc.
New Jersey Department of Transportation
Bureau of Environmental Analysis

December 1993

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HOW TO USE THIS MANUAL

This Manual is the fourth in a series of four (4) Technical Memoranda, each one devoted to a particular aspect of the Route 55 Freeway Extension Feasibility Study. The titles of the four memoranda are as follows:

Technical Memorandum No. 1: Freeway Alignments

Technical Memorandum No. 2: Land Service Improvements and Bypasses

Technical Memorandum No. 3: Environmental Constraints

Technical Memorandum No. 4: Needs Assessment and Traffic Data

The information contained within each of the above mentioned memoranda has been summarized in a fourth report entitled Final Summary Report.

Technical Memoranda No. 1 & 2 present ten (10) alternative courses of action that attempt to satisfy the Project Need. These memoranda are most useful for determining future conditions should one of the alternates be constructed. Technical Memoranda No. 3 & 4 describe the existing traffic conditions and environmental constraints in detail and define the Project Need. These are most useful for obtaining information regarding existing conditions.

There are two major categories that separate the ten alternates. The first category assumes that a 20± mile four lane extension of Route 55 is constructed along a new alignment that closely parallels the existing Route 47/670/83 corridor. Two alternates (Alternatives 1 & 2) are presented under this category and are described in Technical Memorandum No. 1: Freeway Alignments.

The second major category assumes that several existing roadways within the study limits could be upgraded in lieu of the construction of a Route 55 Extension. Due to the vast number of possibilities this category presents, the category was further broken down into three (3) separate schemes. Scheme 1 provides for the existing Route 47/670/83 corridor to remain as a two lane roadway, but both horizontal and vertical alignment deficiencies are rectified and bypasses of the towns of Port Elizabeth and Dennisville are provided. Scheme 1 is represented by alternatives 3 and 4. Scheme 2 is similar to Scheme 1 except that the existing two lane roadways would be expanded to four lanes. Scheme 2 is represented by Alternatives 5, 5A, 6, and 6A. Finally, Scheme 3 provides for a two lane upgrade along the Route 49/50 corridor and is represented by Alternatives 7 and 7A. All of these alternates are presented and described in Technical Memorandum No. 2: Land Service Improvements and Bypasses.

Both the new freeway extension and the Route 47/670/83 corridor traverse highly sensitive environmental areas and will impact both residential and commercial properties. To simplify the analysis of each alternate's impacts on these resources, the freeway extension and the Route 47/670/83 corridor were divided into four segments labelled A, B, C, and D.

In order to see what impacts each of the alternatives will have on a given area, first determine whether the area in question is nearest to the Route 47/670/83 corridor or the Route 49/50 corridor (refer to the Project Location Map, Plate 1, located in Section I of Technical Memorandum No. 1 & 2). If the area in question is along the Route 49/50 corridor, refer to Section III of Technical Memorandum No. 2. If the area in question is closest to the Route 47/670/83 corridor, refer to Plate 2 in Section I of either Technical Memorandum No. 1 or 2 and determine which Segment (A, B, C, or D) the subject area is contained within. Then refer to Section II of both Technical Memoranda No. 1 and 2 to compare the impacts each of the eight applicable alternatives will have on the area in question.

Note that each alternative is summarized on two pages. The first page gives a brief description of the alternate within the limits of the segment as well as design parameters (typical section, design speed, etc.), serviceability (Levels of Service), and a description of significant intersection improvements and/or interchanges that will be required. The second page is a tabulation of environmental impacts, including impacts to cultural resources, endangered species, wetlands, contamination sites, and socioeconomic, land use, and visual constraints.

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INTRODUCTION/PROBLEM STATEMENT

The existing Route 55 Freeway serves as a predominant north-south highway in Gloucester and Cumberland Counties. The northern terminus connects with Route 42 in Deptford Township, Gloucester County, and the southern terminus connects with Route 47 in Millville, Cumberland County. The proposed Route 55 extension would extend from the present southern terminus with Route 47 in Cumberland County to the Garden State Parkway in Cape May County, a distance of approximately 20 miles. Two existing parallel routes, Routes 49 and 50 to the north and Routes 47, 670 and 83 to the south, serve to distribute existing Route 55 corridor traffic through Cumberland and Cape May Counties (see Figure 1). Physical attributes of these parallel routes include two ten-foot travel lanes, variable shoulder widths (8 to 10 feet) and primarily level (i.e., zero percent grade) roadbeds. The system components include one signalized intersection, many unsignalized intersections, and clustered residential driveways. Because of their unique locations, these routes serve two trip types: residential-oriented trips and recreational shore-oriented trips.

At the present time, these routes provide a satisfactory level of service for an average day, but summer weekend traffic experiences spot congestion. Year 2005 traffic estimates predict limited spot congestion for an average day but severe, widespread congestion during summer weekend peak periods.

HISTORIC TRENDS

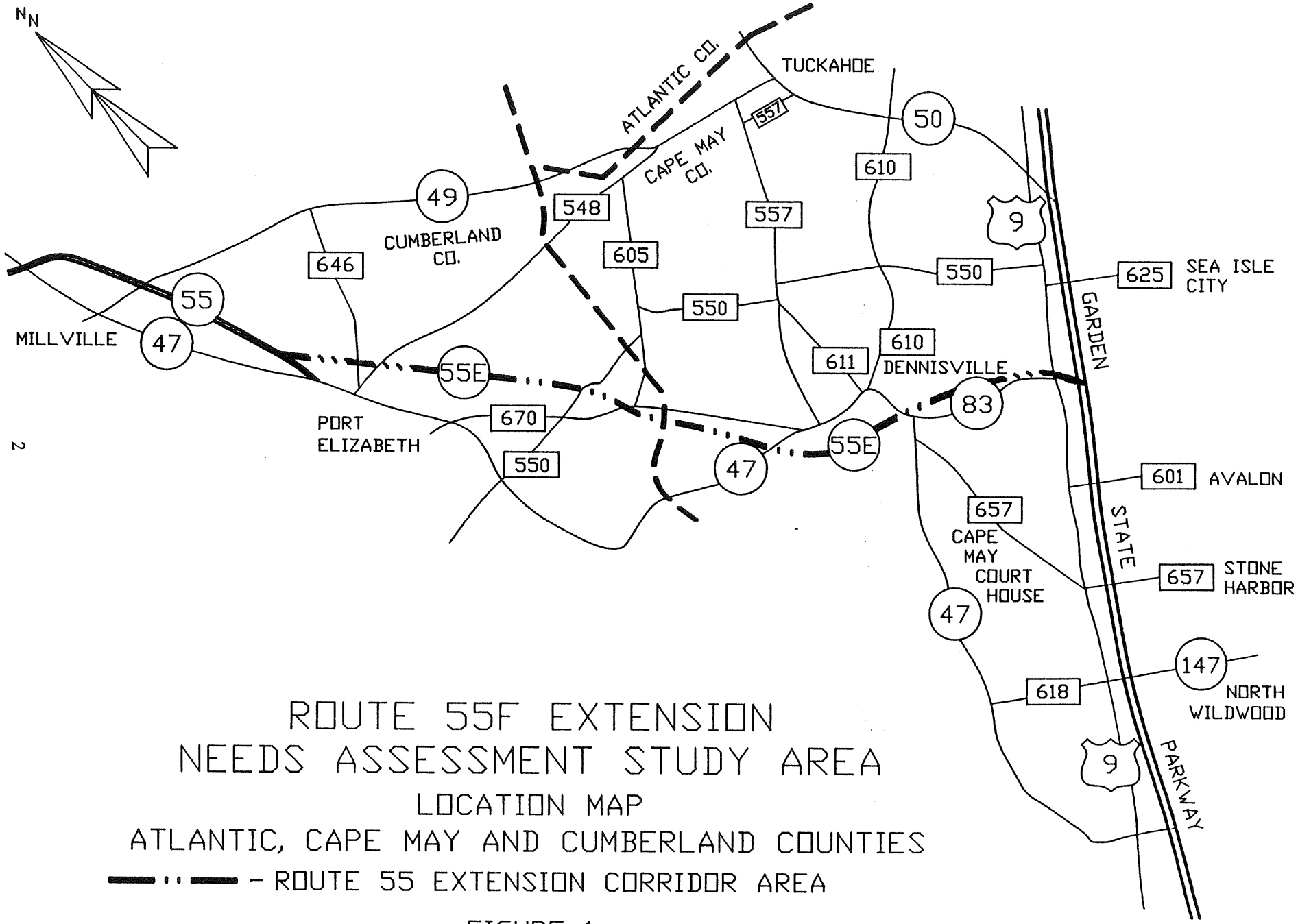
Residential Population

From the review of New Jersey Department of Labor (NJDOL) residential population estimates, the following historic trends emerged for the period from 1980 to 1990 for the study area counties and municipalities:

- In Atlantic County, residential population has grown at an average annual rate of 1.5 percent. However, the municipality of Egg Harbor Township has grown at an annual rate of 2.5 percent and the sparsely populated municipality of Estell Manor City has grown an average annual rate of 5.25 percent for the same ten year period.

- In Cape May County, residential population has grown at an average annual rate of 1.5 percent, while several municipalities within the county study area have experienced substantially higher rates. Dennis Township grew at an annual rate of 3.5 percent and Upper Township grew at an annual rate of 4.75 percent for the same ten year period.

- In Cumberland County, residential population has grown at an average annual rate of 0.4 percent. Two of the three Cumberland County municipalities within the study area



ROUTE 55F EXTENSION
NEEDS ASSESSMENT STUDY AREA
LOCATION MAP
ATLANTIC, CAPE MAY AND CUMBERLAND COUNTIES
— ·· — - ROUTE 55 EXTENSION CORRIDOR AREA

FIGURE 1

encountered relatively little average annual population growth. Millville City experienced annual growth of 0.3 percent and Vineland City experienced 0.25 percent growth. The third municipality, Maurice River Township, experienced a substantially higher average annual population growth rate of 3.75 percent for the ten year period.

Labor Force

From the review of NJDOL, Office of Demographic and Economic Analysis (ODEA) employment estimates, the following historic trends emerged for the period from 1982 to 1987 in the study area counties: The average annual growth in Atlantic County was 5.75 percent per year, while the annual growth in Cape May County was 3.5 percent per year and in Cumberland County was 1.5 percent per year.

Accident History

A review of 1986 and 1987 accident statistics for the study area revealed that the accident rates for Routes 9, 47, 49, 50, 55, 83 and 670 are below the statewide average for similar type road systems. Further, the accident rates for all of the study area roadways are at a minimum 25 percent below the statewide rates for similar type roadway systems. In addition, accidents occurring during the five month peak summer period (May through September) comprise 50 percent of the total accidents for the year, although the accidents tend to be more severe.

EXISTING CONDITIONS

Development Activity

According to the information obtained from the Bureau of Access and Development Impact Analysis, the study area is experiencing very little significant development in Cape May and Cumberland Counties. The lack of significant developments within the study area may be due in part to the restrictive development regulations in these areas. The development consists of approximately 130,000 square feet of retail space in Vineland City and 560 single family units, 100 condominium units, a 100-unit hotel, an industrial park, an electric generating facility and a golf club, which includes 500 planned development units, in Millville.

Structures

The Bureau of Structural Engineering categorized study area structures using the Deficiency Priority Point System. The Deficiency System is used in programming prioritization of

structures for rehabilitation or replacement. The scale ranges from best (0 points) to worst (100 points). The deficiency ratings and conditions for the study area structures are listed below:

- The Route 47 bridge (structure number 0508-150, milepost 17.68) over the Dennis Creek is structurally sound, with a deficiency of 54.1 points.

- The Route 47 bridge (structure number 0508-154, milepost 24.45) over the West Creek is structurally sound, with a deficiency of 50.7 points.

- The Route 47 bridge (structure number 0601-151, milepost 33.74) over the Manamuskin River is structurally sound, with a deficiency of 25.2 points.

- The Route 49 bridge (structure number 0509-151, milepost 53.26) over the New Jersey Transit line is structurally sound, with a deficiency of 36.7 points.

- The Route 50 bridge (structure number 0510-151, milepost 4.59) over the New Jersey Transit line is structurally sound, with a deficiency of 76.5 points.

- The Route 83 bridge (structure number 0512-151, milepost 2.59) over an abandoned rail line is scheduled to be removed, and has a deficiency of 52.4 points.

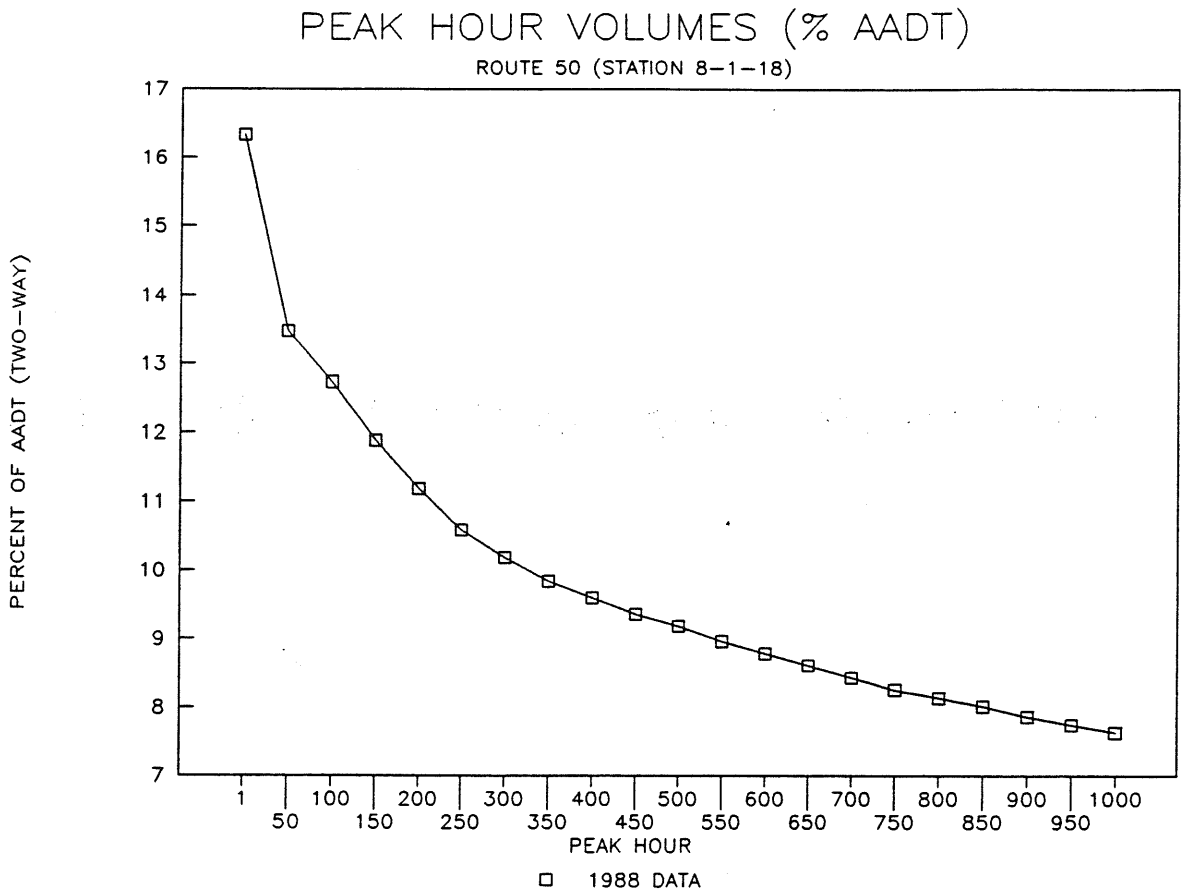
Character of Traffic

The study area facilities experience a seasonal variation in traffic due to the influence of the recreational shore area. Based on 1989 data, this variation amounts to approximately a 70 percent increase in average daily traffic during the summer weekend period. The joint function of these facilities is to serve both recreational and nonrecreational traffic. Nonrecreational trips would consist primarily of home-based trips, including trips to work and shopping.

Summer Peaking Characteristics

The Route 55 extension corridor experiences sharp summer peaking in traffic volumes on Friday through Sunday evenings from May through September. Hourly traffic volumes from Station 8-1-18 on Route 50 just south of Route 49 in Upper Township were analyzed for the years 1988, 1989 and 1990. The station data indicates that the summer weekend peaking condition constitutes the highest 300 hours during the year and an average day peak hour would fall around the 800th highest hour. The highest one thousand peak hours occurring during the year 1988 are graphed in Figure 2. In addition, peaking characteristics of a typical summer weekend are depicted in Figure 3.

FIGURE 2



Traffic Operations

Analyses were conducted to determine existing traffic operations in terms of level of service for the Route 55 extension corridor. These analyses, categorized by average day and summer weekend p.m. peak hours are depicted in Table 1 and are discussed below:

FIGURE 3

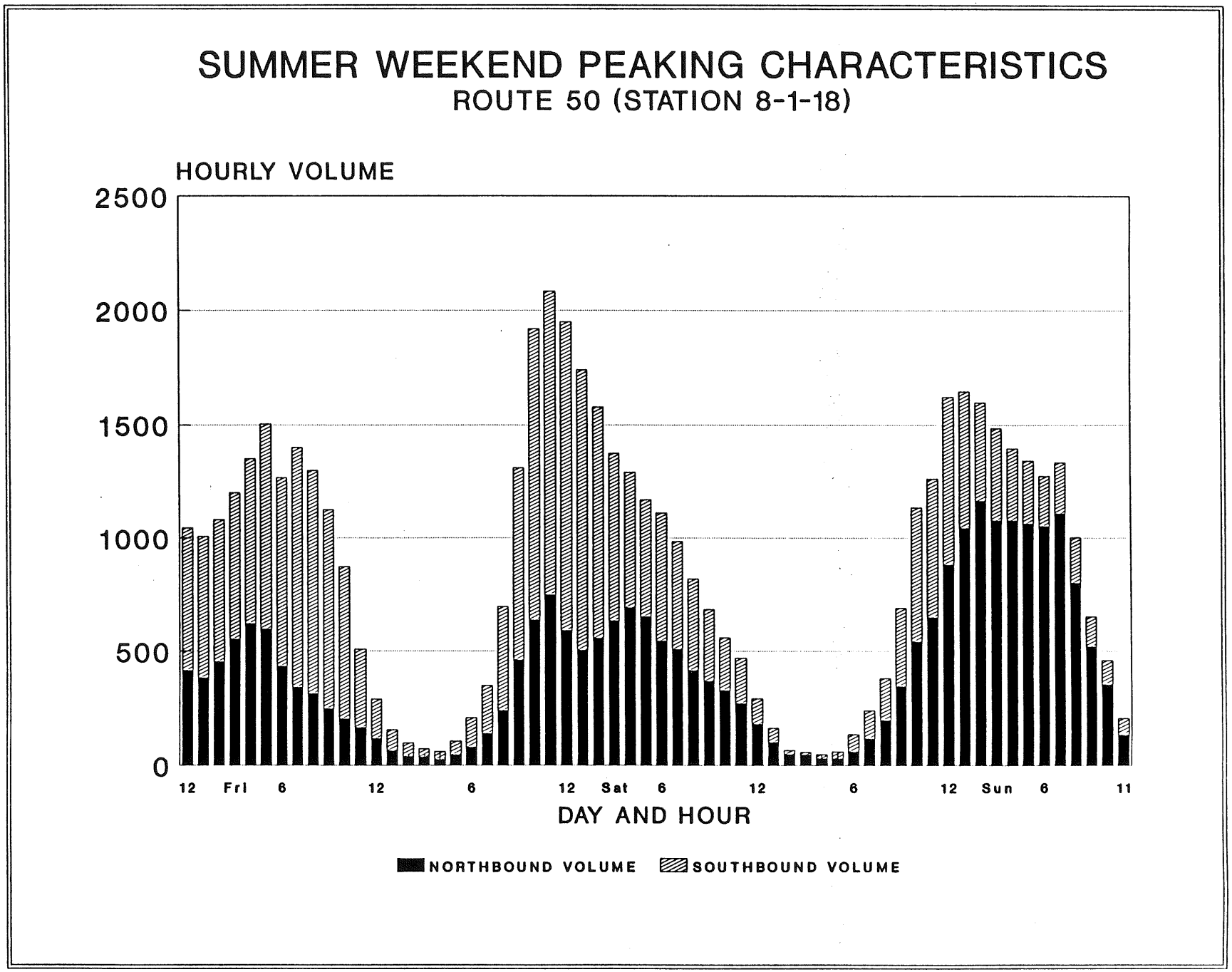

SUMMER WEEKEND PEAKING CHARACTERISTICS
ROUTE 50 (STATION 8-1-18)
HOURLY VOLUME
2500
2000
1500
1000
500
0
12
Fri
6
12
6
12
Sat
6
12
6
12
Sun
6
11
DAY AND HOUR
NORTHBOUND VOLUME
SOUTHBOUND VOLUME

TABLE 1

ROUTE 55 EXTENSION NEEDS ASSESSMENT

LEVEL OF SERVICE
AVERAGE DAY VERSUS SUMMER WEEKEND

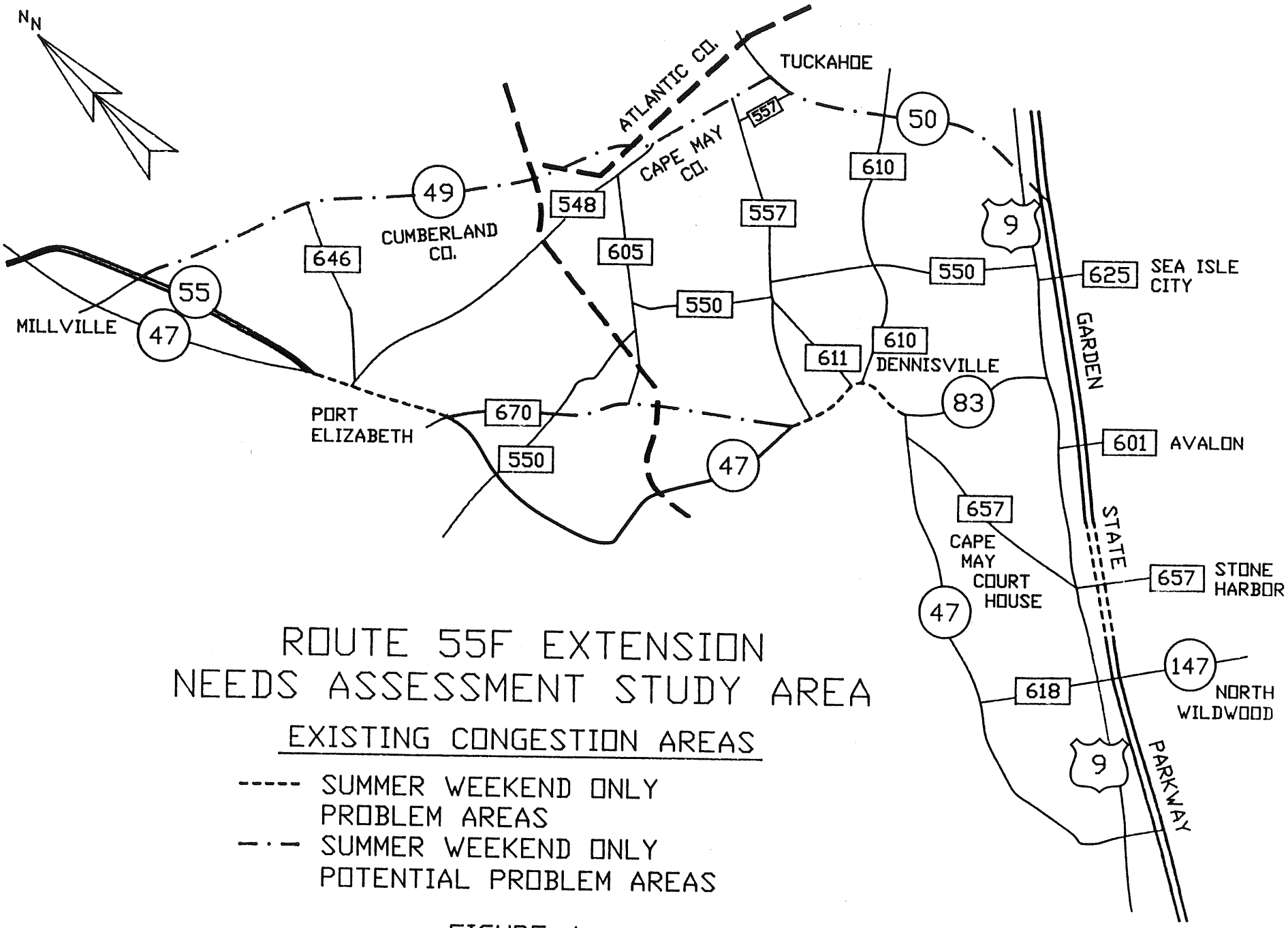
EXISTING CONDITIONS

ROUTE SECTION	EXISTING AVERAGE DAY	EXISTING SUMMER WEEKEND
55F (N OF 49)	LOS A	LOS A
55F (S OF 49)	LOS A	LOS A
47 (55–670)	LOS D	LOS F *
670 (47–47)	LOS C	LOS E
47 (670–670)	LOS D	LOS D
47 (670–83)	LOS D	LOS E *
49 (55–50)	LOS C	LOS E
50 (S OF 49)	LOS D	LOS E
55F EXT	–	–

* INDICATES VOLUME CAPACITY RATIO EXCEEDING 0.90.

- Average Day Conditions: All unsignalized intersections and uninterrupted flow segments throughout the Route 55 extension corridor are at an acceptable level of service (LOS "D" or better) during the existing average day peak hours.

- Summer Weekend Conditions: In contrast, existing summer weekend peak hour conditions have several congested intersections and uninterrupted flow segments. The existing signalized intersection at Routes 47 and 670 in Maurice River Township, Cumberland County, experiences complete failure (LOS "F" on all approaches) during summer weekend peak hours. Presently, new geometry and signalization with a bypass of the existing intersection for trips to and from Routes 47 and 670 is under construction. The proposed Routes 47 and 670 intersection improvements will relieve the existing Routes 47 and 670 intersection but will experience failure (LOS "F" on some approaches) of the new Routes 47 Alternate and 670 intersection during summer weekend peak hours. In addition, the intersection of Routes 47 and 670 in Dennis Township, Cape May County, is presently under construction (new geometry and signalization). The proposed signalized intersection is expected to operate satisfactorily (LOS "C") during summer weekend peak periods. Summer weekend congestion spots occur along Routes 49, 50 and 47, with the most severe sections being on Route 47 to the north and south of the parallel Route 670 section. In addition, summer weekend congestion exists along the GSP arterial section. The uninterrupted flow segments within the Route 55 extension corridor which experience congestion (LOS "E" or below) are depicted in Figure 4.



ROUTE 55F EXTENSION
NEEDS ASSESSMENT STUDY AREA

EXISTING CONGESTION AREAS

----- SUMMER WEEKEND ONLY PROBLEM AREAS

—·— SUMMER WEEKEND ONLY POTENTIAL PROBLEM AREAS

FIGURE 4

NOTE: NO EXISTING AVERAGE DAY PROBLEM AREAS

ANTICIPATED FUTURE CONDITIONS

Residential Population

County-wide estimates from the New Jersey Department of Labor (NJDOL), the Office of Demographic and Economic Analysis (ODEA), the Atlantic County Division of Planning (ACDP), the Cape May County Division of Planning (CMCDP) and the Cumberland County Division of Planning (CCDP) indicate that modest increases are anticipated for residential population. From the year 1990 to the year 2005, the NJDOL has projected average annual growth of approximately 1.25 percent for Atlantic County, 1.25 percent for Cape May County and 0.5 percent for Cumberland County.

For the years 1990 to 2010, the ACDP has projected average annual growth of approximately 1.5 percent for Atlantic County, and the CMCDP has projected 1.75 percent for Cape May County. For the years 1980 to 1995, the CCDP has projected average annual growth of approximately 2.0 percent for Cumberland County.

In addition, a comparison of demographic information from the 1990 Census, NJDOL, Rutgers University Population, Employment and Dwelling Unit Study (Rutgers) and the South Jersey Highway Improvement Study (SJHIS) was performed for Cape May and Cumberland Counties (See Tables 2 and 3). The SJHIS population projections are somewhat high for Cape May County and are median among the projections for Cumberland County. The SJHIS projections are based on NJDOL, as well as county estimates. The 1990 Census figures were not available until recently and have the benefit of ten years of hind sight. Overall, the SJHIS projections are conservative and should yield an upper bound to average day traffic estimates. The seasonal dwelling unit projections have no direct sources for comparison. Therefore, the summer Friday traffic volumes are based on the only available data.

Labor Force

Limited data was available regarding county and local labor force projections; however, information that was obtained generally coincides with anticipated residential population increases. Estimates obtained from the NJDOL's ODEA and the ACDP project that from 1984 to 1995 the average annual growth of covered employment will increase approximately 2.5 percent in Atlantic County, 1.25 percent for Cape May County, and 2.0 percent for Cumberland County.

In addition, a comparison of demographic information from the NJDOL and the South Jersey Highway Improvement Study (SJHIS) was performed for Cape May and Cumberland Counties (See Tables 2 and 3). The SJHIS employment projections are somewhat high for Cape May County and low for Cumberland County. The SJHIS projections are based on NJDOL and county estimates. Overall, the SJHIS

TABLE 2

CAPE MAY COUNTY DEMOGRAPHICS COMPARISONS

POPULATION							
Source	1980	1990	Annual Growth 1980–1990	1995	2005	Annual Growth 1980–2005
1990 Census	82266	95084	1.46%	102224 **	118151 **	1.46%
NJDOL	82266	100000	1.97%	110700	126000	1.72%
Rutgers	82266	102370 *	2.21%	114195 *	142101	2.21%
SJHIS	82266	106462 *	2.61%	121110	142660	2.23%

EMPLOYMENT							
Source	1980	1986	1995	Annual Growth 1980–1995	2000	2005	Annual Growth 1980–2005
SJHIS	25153	29410 *	37185	2.64%	40999 *	45204	2.37%
NJDOL	25153	34400	38194 *	2.82%	43900	50458 **	2.82%

SEASONAL VARIABLES					
Variable	1980	1995	Annual Growth 1980–1995	2005	Annual Growth 1980–2005
Dwelling Units	77800	108000	2.21%	111200	1.44%
Employment	4274	6594	2.93%	7907	2.49%

* interpolated

** extrapolated

TABLE 3

CUMBERLAND COUNTY DEMOGRAPHICS COMPARISONS

POPULATION									
Source	1980	1990		Annual Growth 1980–1990	1995		2005		Annual Growth 1980–2005
1990 Census	132866	138053		0.38%	140722	**	146216	**	0.38%
NJDOL	132866	140200		0.54%	146000		155600		0.63%
Rutgers	132866	140486	*	0.56%	144459	*	152744		0.56%
SJHIS	132866	142455	*	0.70%	147500		151999		0.54%

EMPLOYMENT										
Source	1980	1986		1995		Annual Growth 1980–1995	2000		2005		Annual Growth 1980–2005
SJHIS	55380	55630	*	56006		0.07%	56210	*	56420		0.07%
NJDOL	55380	54200		61220	*	0.67%	63300		65451	**	0.67%

SEASONAL VARIABLES
No seasonal variables for Cumberland County.

* interpolated

** extrapolated

projections are conservative and should yield an upper bound to average day traffic estimates. The seasonal employment projections have no direct sources for comparison. Therefore, the summer Friday traffic volumes are based on the only available data.

Statewide Trends for the 1990s (as reported by the Transportation Executive Council)

A NJDOT report to Governor Florio, The Decision-making Framework for Transportation in the 1990s states that "...several factors converged in the 1980s to fuel unprecedented growth which pushed New Jersey's economic frontiers into previously rural areas and clogged its roads and highways with traffic congestion. However, the economic trends of the 1990s suggest slower economic growth, less speculative investment in either housing or office construction and consequently a slowing of suburban sprawl and rush hour congestion." These forecasts, taken with the land use characteristics of the Route 55 Extension study area, suggest little growth in traffic over the next several years, except for summer weekends.

In a related report, Recommendations for Southern New Jersey, the Transportation Executive Council (TEC) does recognize the seasonal recreational traffic experienced by the shore communities in Cape May County. Traditionally, Cape May County shore communities have been the most popular New Jersey destinations for in-state vacationers, as well as for out-of-state vacationers, typically from Pennsylvania, Delaware and New England. The TEC report further states that transportation investment will be needed to solve the congestion during the peak season that chokes expansion of the market and renders local residents virtually prisoners in their towns on weekends. The TEC has made recommendations pertaining to infrastructure rehabilitation, new capacity, systems and continuity management, high level technology, and the development and implementation of a truly regional intermodal transportation system designed specifically to handle the unique requirements for tourism. The focal point for the TEC improvement strategies to help reduce seasonal traffic is the region served by Route 47, Route 49, and Route 50.

Cape May County Shore Points Projections

The projected traffic volumes attracted to Cape May shore points were obtained from the South Jersey Highway Improvement Study (SJHIS) traffic model and are displayed in Figure 5, "South Jersey Corridor Study Shore Points." Average annual daily traffic (AADT) and summer Friday traffic are shown for years 1980 and 2005, and the associated annual growth rates from 1980 to 2005 for both AADT and summer Friday are also displayed. AADT consistently is projected to increase at a slightly higher rate than is summer Friday traffic. In general the southern Cape May County shore communities, in particular the Wildwoods and Cape May, are expected to experience the highest traffic growth.

SOUTH JERSEY CORRIDOR STUDY

SHORE POINTS

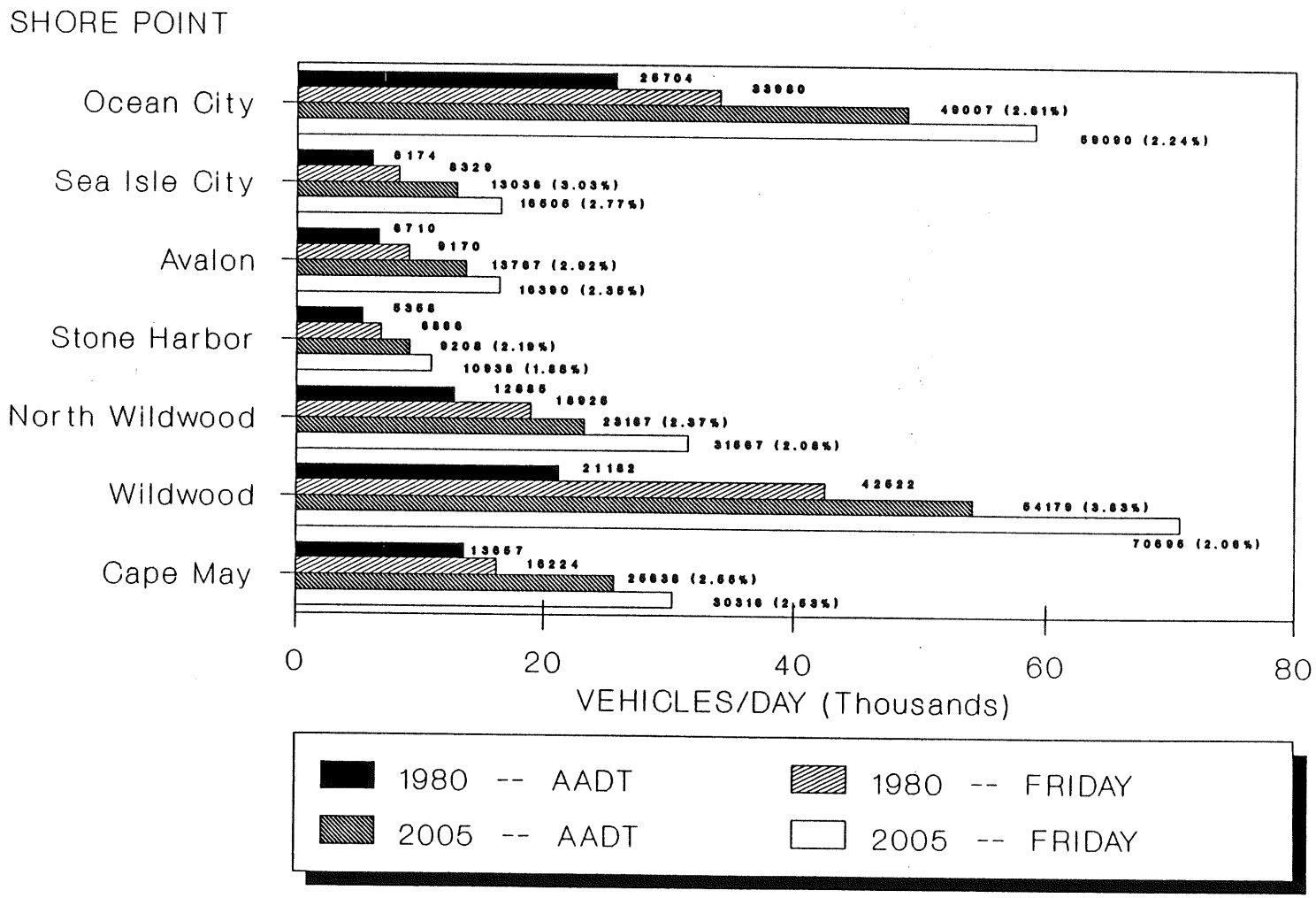


Figure 5

TABLE 4
ROUTE 55 EXTENSION NEEDS ASSESSMENT

LEVEL OF SERVICE
COMPARISON OF ALTERNATIVES

AVERAGE DAY

ROUTE SECTION	EXISTING AVERAGE DAY	2005 AVERAGE DAY NO BUILD	2005 AVERAGE DAY BUILD RT 55F	2005 AVERAGE DAY WIDEN RTS 47/670/83	2005 AVERAGE DAY WIDEN RTS 49/50
55F (N OF 49)	LOS A	LOS A	LOS A	LOS A	LOS A
55F (S OF 49)	LOS A	LOS A	LOS A	LOS A	LOS A
47 (55–670)	LOS D	LOS E	LOS C	LOS A	LOS E
670 (47–47)	LOS C	LOS D	LOS C	LOS A	LOS D
47 (670–670)	LOS D	LOS D	LOS C	LOS C	LOS D
47 (670–83)	LOS D	LOS E	LOS C	LOS A	LOS E
49 (55–50)	LOS C	LOS D	LOS B	LOS D	LOS A
50 (S OF 49)	LOS D	LOS E	LOS D	LOS E	LOS A
55F EXT	–	–	LOS A	–	–

Note: No Volume Capacity Ratio Exceeds 0.90.

TABLE 5
ROUTE 55 EXTENSION NEEDS ASSESSMENT

LEVEL OF SERVICE
COMPARISON OF ALTERNATIVES

SUMMER WEEKEND

ROUTE SECTION	EXISTING SUMMER WEEKEND	2005 SUMMER WEEKEND NO BUILD	2005 SUMMER WEEKEND BUILD RT 55F	2005 SUMMER WEEKEND WIDEN RTS 47/670/83	2005 SUMMER WEEKEND WIDEN RTS 49/50
55F (N OF 49)	LOS A	LOS B	LOS B	LOS B	LOS B
55F (S OF 49)	LOS A	LOS A	LOS C	LOS B	LOS A
47 (55–670)	LOS F *	LOS F *	LOS E	LOS D	LOS F *
670 (47–47)	LOS E	LOS E *	LOS E	LOS D	LOS E *
47 (670–670)	LOS D	LOS D	LOS C	LOS D	LOS D
47 (670–83)	LOS E *	LOS F *	LOS E	LOS E *	LOS F *
49 (55–50)	LOS E	LOS E *	LOS D	LOS D	LOS B
50 (S OF 49)	LOS E	LOS F *	LOS E	LOS E	LOS C
55F EXT	–	–	LOS B	–	–

*** INDICATES VOLUME CAPACITY RATIO EXCEEDING 0.90.**

TABLE 6

ROUTE 55 EXTENSION NEEDS ASSESSMENT

LEVEL OF SERVICE
AVERAGE DAY VERSUS SUMMER WEEKEND

2005 – NO BUILD

ROUTE SECTION	2005 AVERAGE DAY NO BUILD	2005 SUMMER WEEKEND NO BUILD
55F (N OF 49)	LOS A	LOS B
55F (S OF 49)	LOS A	LOS A
47 (55–670)	LOS E	L O S F *
670 (47–47)	LOS D	L O S E *
47 (670–670)	LOS D	LOS D
47 (670–83)	LOS E	L O S F *
49 (55–50)	LOS D	L O S E *
50 (S OF 49)	LOS E	L O S F *
55F EXT	–	–

* INDICATES VOLUME CAPACITY RATIO EXCEEDING 0.90.

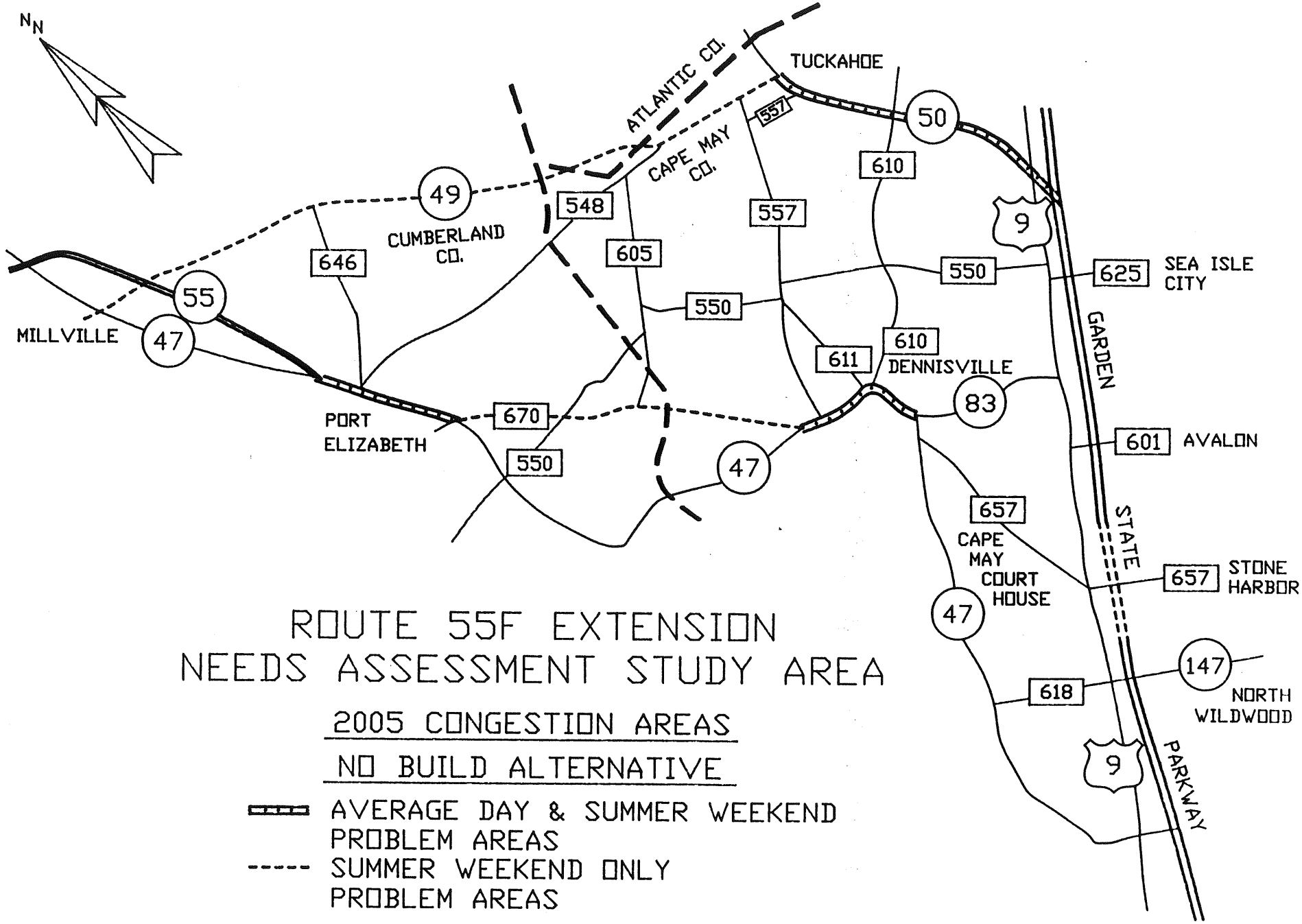
Traffic Operations

The SJHIS Model was employed to estimate future year 2005 traffic volumes for average day, as well as for summer weekend conditions. The four alternatives analyzed are: No Build, Build Route 55 Freeway Extension, Widen Routes 47, 670 and 83, and Widen Routes 49 and 50. The impacts of the four alternatives investigated are listed below and the levels of service on key links are listed in Tables 4 and 5:

- NO BUILD

  The "No Build" alternative consists of no improvements except for the repaving and widening of the travel lanes along Route 47 from 10 feet to 12 feet, which is currently in progress. The Highway Capacity Manual (HCM) analysis yielded a significant increase in the two-lane highway capacity (14 percent) due to this increase in lane width.

  During future average day conditions, Route 47 is expected to experience some congestion problems to the north and south of the parallel Route 670 section and on Route 50 just south of Route 49. In contrast, the future summer weekend conditions will deteriorate to severe congestion along Routes 47 and 670 (Route 47 Alternate). In addition, congestion will spill over to the Routes 49 and 50 corridor, with severe congestion on Route 50 just south of Route 49. The South Jersey Model analysis suggests that traffic prefers to use the Route 47 corridor and that Routes 49 and 50 act as a relief valve for Route 47. Only as congestion on Route 47 becomes critical does traffic begin to shift to Routes 49 and 50. The sections of roadway which are expected to experience congestion during future conditions are highlighted in Table 6 and Figure 6.



ROUTE 55F EXTENSION
NEEDS ASSESSMENT STUDY AREA

2005 CONGESTION AREAS

NO BUILD ALTERNATIVE

AVERAGE DAY & SUMMER WEEKEND PROBLEM AREAS

SUMMER WEEKEND ONLY PROBLEM AREAS

FIGURE 6

TABLE 7

LEVEL OF SERVICE
AVERAGE DAY VERSUS SUMMER WEEKEND

2005 – BUILD RT 55F EXT.

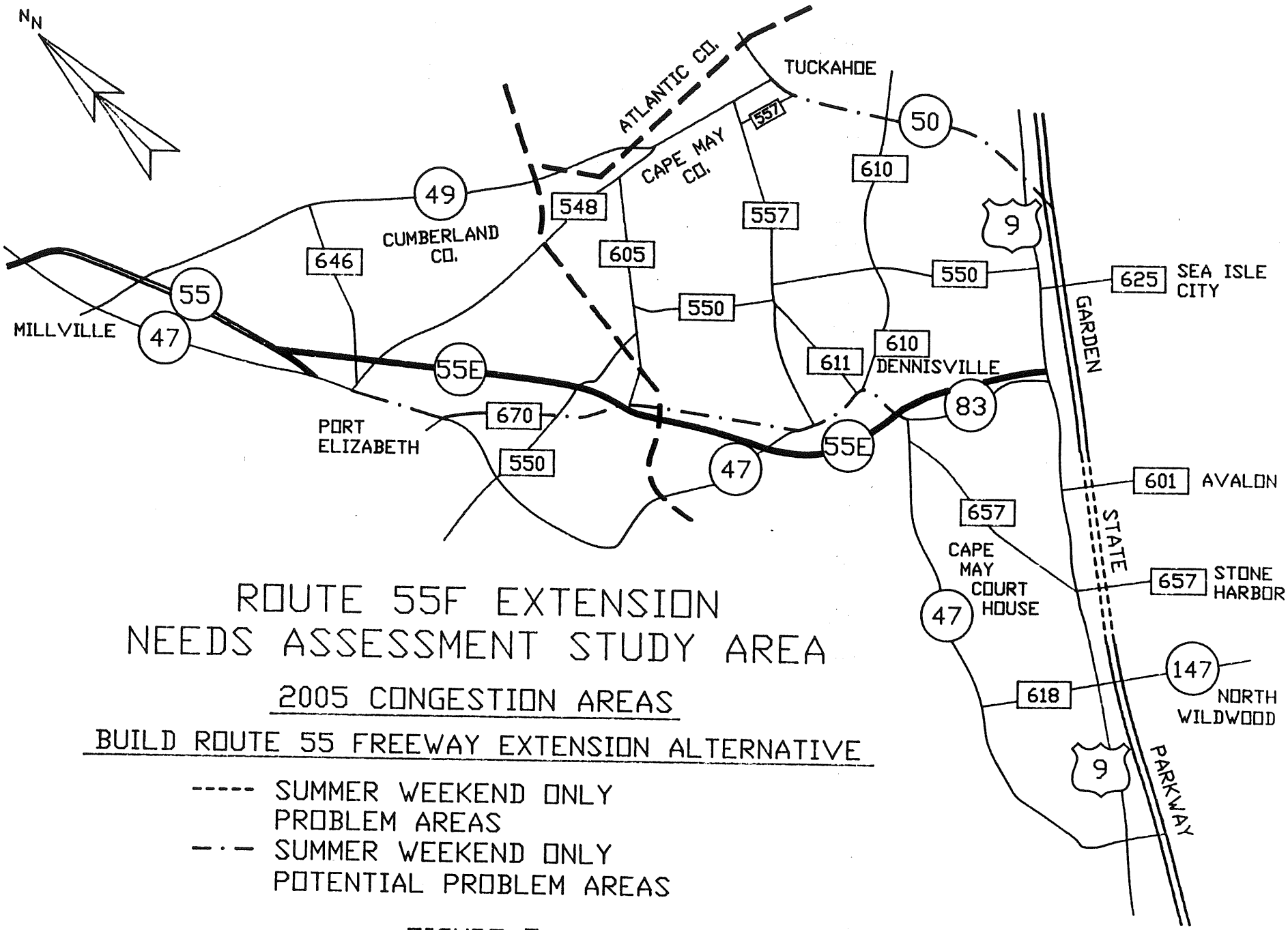
ROUTE SECTION	2005 AVERAGE DAY BUILD RT55F	2005 SUMMER WEEKEND BUILD RT55F
55F (N OF 49)	LOS A	LOS B
55F (S OF 49)	LOS A	LOS C
47 (55–670)	LOS C	LOS E
670 (47–47)	LOS C	LOS E
47 (670–670)	LOS C	LOS C
47 (670–83)	LOS C	LOS E
49 (55–50)	LOS B	LOS D
50 (S OF 49)	LOS D	LOS E
55F EXT	LOS A	LOS B

Note: No Volume Capacity Ratio exceeds 0.90.

- BUILD ROUTE 55 FREEWAY EXTENSION

The "Build Route 55 Freeway Extension" alternative consists of connecting the existing Route 55 Freeway from its present terminus in Maurice River Township to the GSP between Interchanges 13 and 17. This alternative was tested as a four-lane, limited access facility with no interchanges between its present terminus and the GSP.

During future year average day conditions, none of the roadways which were analyzed are expected to experience congestion. In addition, Route 55 Freeway Extension, itself, would be underutilized on an average day and would have a high level of service during summer weekend conditions. Although Route 55 Freeway Extension would provide reserve capacity to the corridor, existing routes would not be without congestion. Route 47 would continue to have some summer weekend congestion to the north and south of the parallel Route 670 section, and Route 50 would continue to have some summer weekend congestion just south of Route 49. In addition, with no improvements to the at-grade intersections, the GSP would experience extreme congestion south of the Route 55 Freeway Extension connection. The sections of roadway which are expected to experience congestion during future conditions are highlighted in Table 7 and Figure 7.



ROUTE 55F EXTENSION
NEEDS ASSESSMENT STUDY AREA

2005 CONGESTION AREAS

BUILD ROUTE 55 FREEWAY EXTENSION ALTERNATIVE

----- SUMMER WEEKEND ONLY PROBLEM AREAS

—·— SUMMER WEEKEND ONLY POTENTIAL PROBLEM AREAS

FIGURE 7

TABLE 8

ROUTE 55 EXTENSION NEEDS ASSESSMENT

LEVEL OF SERVICE
AVERAGE DAY VERSUS SUMMER WEEKEND

2005 – WIDEN RTS 47/670/83

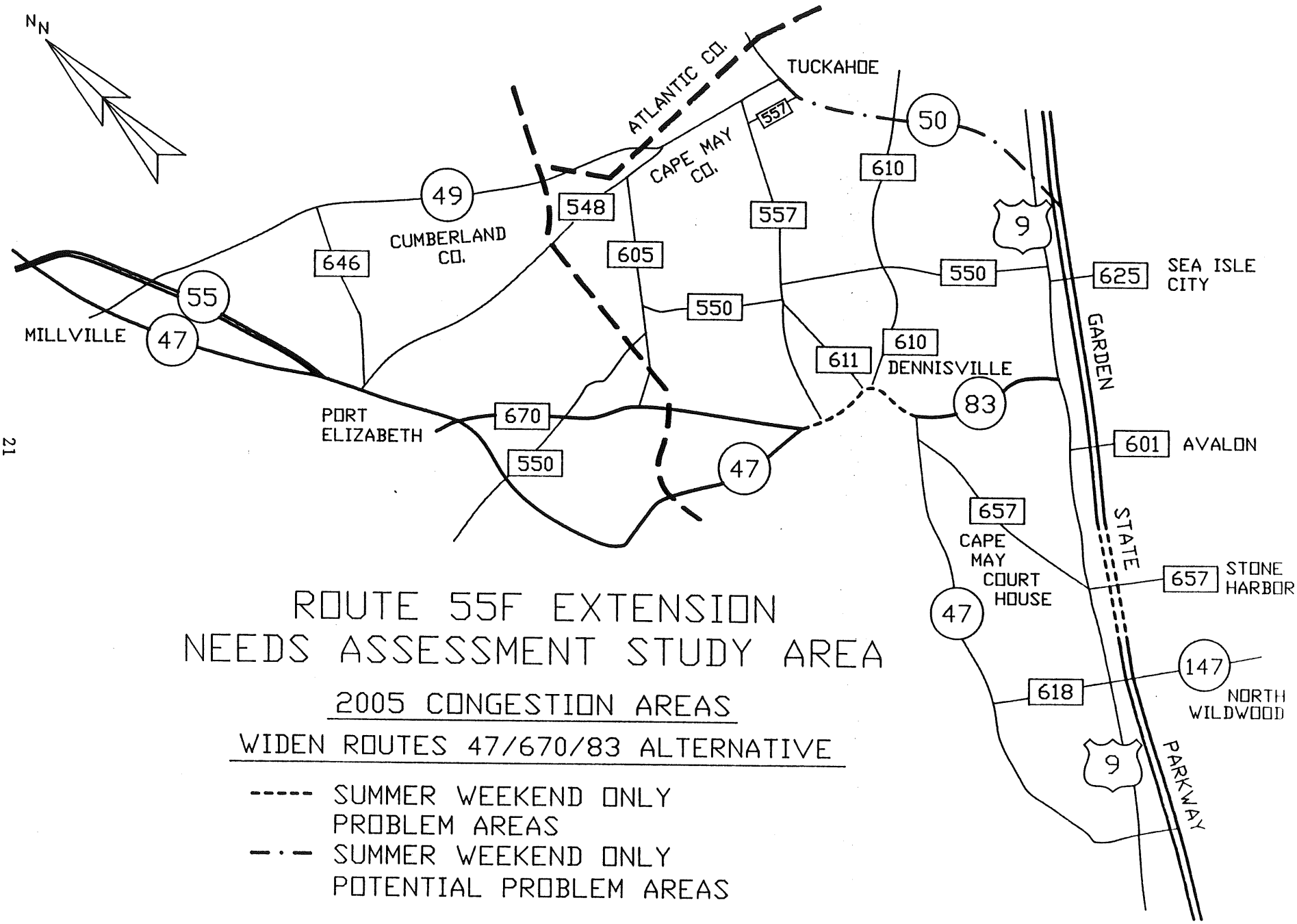
ROUTE SECTION	2005 AVERAGE DAY WIDEN RTS 47/670/83	2005 SUMMER WEEKEND WIDEN RTS 47/670/83
55F (N OF 49)	LOS A	LOS B
55F (S OF 49)	LOS A	LOS B
47 (55–670)	LOS A	LOS D
670 (47–47)	LOS A	LOS D
47 (670–670)	LOS C	LOS D
47 (670–83)	LOS A	L O S E *
49 (55–50)	LOS D	LOS D
50 (S OF 49)	LOS E	LOS E
55F EXT	–	–

* INDICATES VOLUME CAPACITY RATIO EXCEEDING 0.90.

- <u>WIDEN ROUTES 47, 670 AND 83</u>

The "Widen Routes 47, 670 and 83" alternative consists of a widening of existing routes (Routes 47, 670 and 83) from the present terminus of the Route 55 Freeway to Route 9 and then extending Route 83 from Route 9 to a new interchange with the GSP. This alternative was tested as a four-lane arterial route.

During future average day conditions, none of the roadways along the widened route are expected to experience congestion. In fact, Routes 47, 670 and 83 would have a high level of service on an average day. Route 50 is expected to continue to experience congestion during future average day conditions. In contrast on summer weekends, Route 47 would experience congestion south of Route 670 and Route 50 south of Route 49. The sections of roadway which are expected to experience congestion during future conditions are highlighted in Table 8 and Figure 8.



ROUTE 55F EXTENSION
NEEDS ASSESSMENT STUDY AREA

2005 CONGESTION AREAS

WIDEN ROUTES 47/670/83 ALTERNATIVE

----- SUMMER WEEKEND ONLY PROBLEM AREAS

—·— SUMMER WEEKEND ONLY POTENTIAL PROBLEM AREAS

FIGURE 8

TABLE 9

ROUTE 55 EXTENSION NEEDS ASSESSMENT

LEVEL OF SERVICE
AVERAGE DAY VERSUS SUMMER WEEKEND

2005 – WIDEN RTS 49/50

ROUTE SECTION	2005 AVERAGE DAY WIDEN RTS 49/50	2005 SUMMER WEEKEND WIDEN RTS 49/50
55F (N OF 49)	LOS A	LOS B
55F (S OF 49)	LOS A	LOS A
47 (55–670)	LOS E	LOS F *
670 (47–47)	LOS D	LOS E *
47 (670–670)	LOS D	LOS D
47 (670–83)	LOS E	LOS F *
49 (55–50)	LOS A	LOS B
50 (S OF 49)	LOS A	LOS C
55F EXT	–	–

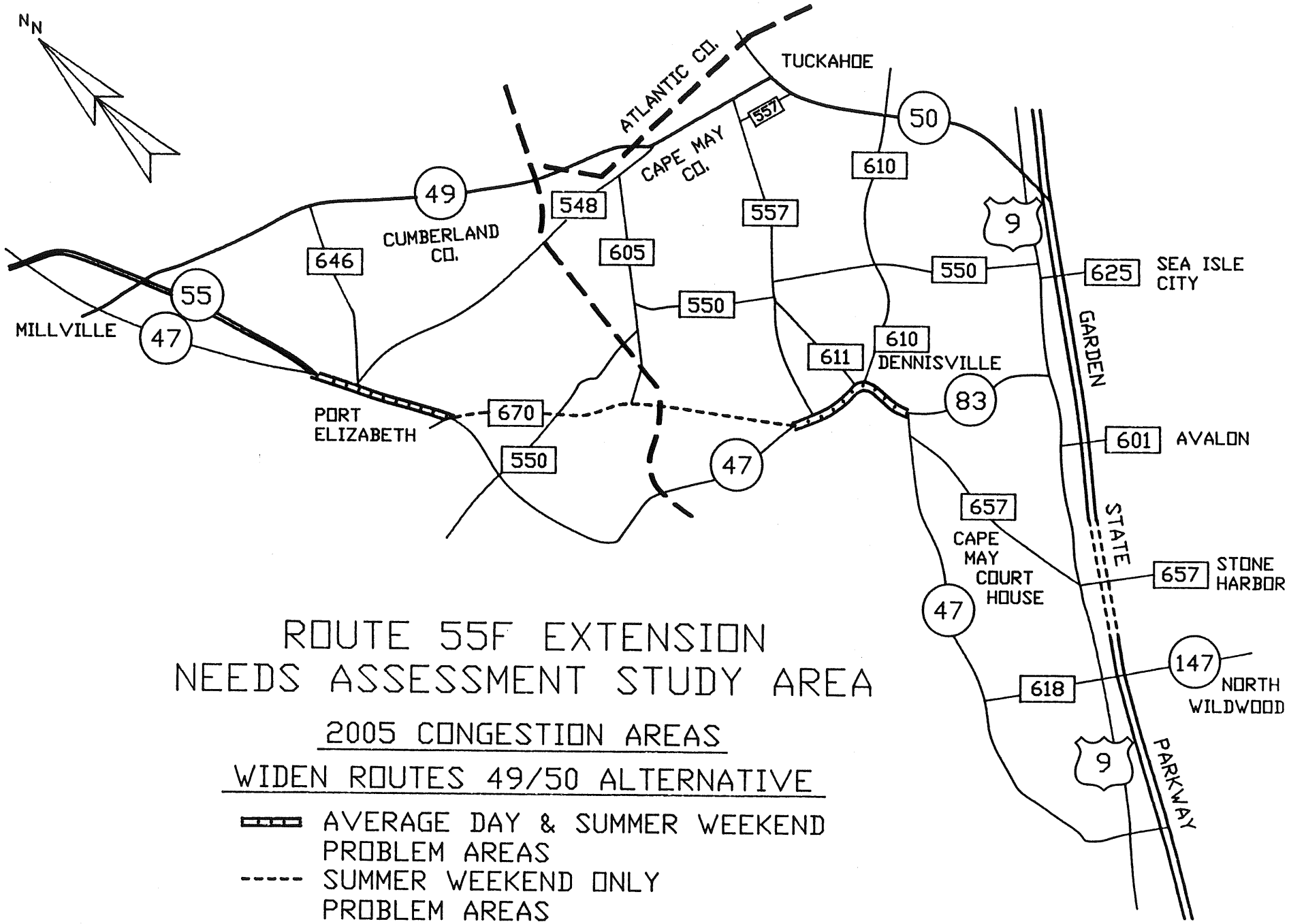
* INDICATES VOLUME CAPACITY RATIO EXCEEDING 0.90.

- WIDEN ROUTES 49 AND 50

The "Widen Routes 49 and 50" alternative consists of widening existing routes (Routes 49 and 50) from the Route 55 Freeway to the GSP. This alternative was tested as a four-lane arterial route.

During future average day conditions, none of the roadways along the widened route are expected to experience congestion. In fact, Routes 49 and 50 would be underutilized on an average day. In addition, Routes 49 and 50 would not experience congestion on summer weekends.

The South Jersey Model analysis suggests that an improved Route 49 and 50 would attract few additional summer weekend trips, none of which appear to be from the Route 47 corridor. Therefore, improvements to Routes 49 and 50 do little to relieve the congestion in the Route 47 corridor. The sections of roadway which are expected to experience congestion during future conditions are highlighted in Table 9 and Figure 9.



ROUTE 55F EXTENSION
NEEDS ASSESSMENT STUDY AREA

2005 CONGESTION AREAS

WIDEN ROUTES 49/50 ALTERNATIVE

AVERAGE DAY & SUMMER WEEKEND PROBLEM AREAS

----- SUMMER WEEKEND ONLY PROBLEM AREAS

FIGURE 9

NJDOT PLANNING STRATEGIES

Information provided by the Bureaus of Statewide Transportation Planning and Local Transportation Planning revealed the following considerations for the study area with regard to NJDOT planning strategies:

Consistency With The 1989 State Transportation Plan

The proposals outlined in the Route 55 Extension Needs Assessment reflect the following challenges, objectives, and strategies contained in the 1989 Transportation Plan:

- Reducing Congestion: While this challenge may, on the surface, appear consistent with road widenings and construction on new alignment, the 1989 Plan states that adding lanes to an existing highway often fails to work because of extensive development along the highway. Even where possible, lane additions can prove expensive and may not provide the relief sought.

- Economic Development: The objective is to pursue those improvements which achieve economic development goals without overtaxing infrastructure requirements. The suggested roadway section widenings and freeway extension may conform to this economic objective in the interest of encouraging tourism in the region.

- Social Well-being: The objective is to promote social well-being by enhancing the accessibility of employment, educational, religious, cultural, recreational, medical, or other activities through new or improved transportation systems or services. Any roadway widening or extension could be interpreted generally to meet this social objective.

- Environmental: The objective is to ensure that efforts to expand the statewide transportation network are carried out with minimal impacts on environmentally sensitive areas. This environmental objective furnishes an argument for performing the widenings instead of or before new construction.

- Preservation: The objective is to promote preservation by discouraging new facilities or improvements to existing ones which would advance development in areas which the State wants to preserve for agriculture or open space, and ensuring that transportation plans, projects, and programs strive to maintain the preservation of environmentally sensitive lands and waters as defined by the Preliminary State Development and Redevelopment Plan, coastal management, and Pinelands preservation. This land use objective shows inconsistency with the proposed Route 55 extension.

- Short-Range Plan - Highways and Bridges: The objective is to expand capacity of existing facilities rather than construct new ones. This policy reflects an important assumption upon which the Transportation Plan is based and, therefore, militates against the alternative of extending Route 55 Freeway. However, it indicates compatibility with widenings on existing alignment.

Statewide System Connectivity

Route 49 begins in Pennsville Township, Salem County, at the convergence of Interstate 295, U.S. Route 40, and U.S. Route 130. It extends eastward for 53.78 miles, ending at Route 50 in Upper Township, Cape May County. It crosses U.S. 40, U.S. 130, I-295, and New Jersey Routes 45, 77, 47, 55, and 50. Route 49 provides a significant east-west artery across the Delaware Bay region to the Atlantic coastline, and facilitates entry onto the Garden State Parkway via Route 50.

Route 50 runs south to north for 26.08 miles, from the Garden State Parkway/U.S. Route 9 Interchange in Upper Township, Cape May County to U.S. Route 30 in Egg Harbor City, Atlantic County. It crosses the Garden State Parkway, U.S. 9, Route 49, U.S. 40, U.S. 322, the Atlantic City Expressway, and U.S. 30. Route 50 serves as an important connection between the Garden State Parkway and the Atlantic City Expressway which eases access to Atlantic and Cape May County shore resorts. It also supplies a north-south shorebound thoroughfare across sparsely settled areas of the two counties.

Traditionally known as Delsea Drive, Route 47 follows a path from the Delaware River to the Atlantic Ocean. It begins at Creek Road in Westville Borough, Gloucester County, and stretches southeast for 74.98 miles, ending at Atlantic Avenue in Wildwood City, Cape May County. It crosses the Garden State Parkway, U.S. 9, Route 83, Route 55, Route 49, Route 56, U.S. 40, U.S. 322, Route 41, the New Jersey Turnpike, I-295, and U.S. 130. Route 47 once served as a major means of reaching the Atlantic shoreline as well as the Delaware Bay area from western New Jersey counties such as Camden and Gloucester. This roadway now functions primarily as a carrier of local and some intercounty traffic.

Route 55 extends from Route 47 in Maurice River Township, Cumberland County for 40.52 miles to Route 42 in Deptford Township, Gloucester County. It crosses Route 47, Route 49, Route 56, U.S. 40, U.S. 322, and Route 42. The completion of this limited access highway has long been awaited as a remedy to relieve congestion on Route 47 as well as heavily traveled county and local roads. The most recently completed section of Route 55 opened in September 1989, and the freeway now serves as the chief

linkage for commuter traffic from various southern New Jersey points to Philadelphia and Camden and Burlington Counties.

Route 83 runs through Dennis Township in Cape May County for only 3.84 miles in an easterly direction, beginning at Route 47 and ending at U.S. Route 9. It mainly acts as a cross-county connector between Route 47 and U.S. 9.

Because all of the roads in question play an important role, to varying degrees, in the accommodation of recreational travel, widening the proposed segments would appear advisable in the effort to enhance connectivity throughout the region. While the Route 55 extension also would meet connectivity needs, the aforementioned environmental considerations would pose a strong deterrent to this measure.

Functional Classification

Within the City of Millville, the subject portion of Route 49 has been designated as an urban principal arterial, a connecting link of rural minor arterials, which ranks below interstates and connecting links of rural principal arterials in terms of funding priority. Outside Millville, it becomes a rural minor arterial, ranking below interstates and other rural principal arterials.

The relevant section of Route 50 also has been named a rural minor arterial, ranking below interstates and other rural principal arterials.

Route 47 functions as a rural major collector from the Millville/Maurice River Township border to Route 55, ranking only above rural minor collectors and local streets. At Route 55, it becomes a rural minor arterial.

Route 55 serves as an urban principal arterial, a connecting link of rural principal arterials within the City of Millville, then becomes a connecting link of rural minor arterials, ranking below interstates.

Route 83 has been designated a rural minor arterial, ranking below interstates and other rural principal arterials.

Except for a portion of Route 47, most of the highways in the study area have been classified as a particular type of arterial route. According to the Federal Highway Administration's Functional Classification Procedures and Guidelines, arterials provide a high level of mobility for through traffic as well as direct service for a large proportion of relatively longer trips generated by cities and large towns. In rural areas, minor arterials link cities and large generators such as major resort areas, and form an integrated network of

interstate and intercounty travel. For this reason, the proposed widenings may receive higher funding priority than under normal circumstances from a functional classification standpoint because they fulfill a resort-oriented function.

Relationship To The State Implementation Plan For Air Quality

The potential highway projects under assessment appear to fit the following criteria found in the November 15, 1990 National Clean Air Act Amendments in Section 108(b) - Transportation Control Measures:

v. Traffic flow improvement programs to achieve emission reductions

It should be noted that this category embraces a broad range of steps which could help alleviate traffic congestion and reduce the accompanying air pollution. But creating new highways and the possibility of generating more traffic could result in higher emission levels and harm rather than ameliorate the air quality. This suggests that the proposed widenings of existing roads could better contribute to air quality enhancement by solving congestion problems at key points along tourist routes during the summer months.

Transportation Improvement Plan (TIP)

A review of the current 1991 to 1995 TIP reveals the following State or Local Aid improvements in the study area vicinity:

- In Atlantic County, Estell Manor Township, Buana-Tuckahoe Road (CR 557): bridge rehabilitation.
- In Cape May County, Dennis and Upper Township, Weatherly Road (CR 548): reconstruction and resurfacing; for Upper Township, Route 50, Section (1) over the Tuckahoe River, structure number 0510152: bridge replacement.
- In Cumberland County, Maurice River Township, Route 47, Section 8D, from County Route 670 to Route 55: intersection improvements and resurfacing.

System Continuity/Planned Improvements

According to the FY 1991 Capital Program, the following two intersection projects in proximity of the Route 55 Extension study area are currently active:

- Route 47, Section 5A in Cape May County: intersection improvements at County Route 670, including signalization.

- Route 47, Sections 6A, 7A and 8D in Cumberland County, from milepost 31.8 to 34.8 (County Route 670 to Route 55): resurfacing and intersection improvements, including new signalization.

SUMMARY

This report assesses the need from a traffic standpoint for the completion of Route 55 in Cumberland and Cape May counties. In addition, improvements to parallel routes within this corridor were evaluated.

° Peaking Characteristics

The Cumberland County and Cape May County corridor is one of the most recreational in New Jersey. Due to summer peaking characteristics, congestion occurs along several routes during recreational periods. Traffic conditions are most severe on summer Friday through Sunday evenings; however, this condition may only occur for 300 to 400 hours a year. Future summer traffic is expected to increase which will compound existing summer weekend congestion.

° NJDOT Planning Strategies

Both the Route 55 Freeway Extension and the widening of existing Routes 47, 670 and 83 would be congruous with many of the NJDOT planning strategies. The freeway extension alternative may better serve to reduce congestion, encourage tourism, provide access to employment and social activities, and provide connectivity. In contrast, the widening of existing routes would also be congruous with the additional strategies of SIP Air Quality and the Short-Range Plan and may not be as detrimental to the preservation strategy as would a new freeway.

° Route 55 Freeway Extension

The construction of a freeway will provide an exceptional level of service in the summer but will be essentially underutilized on an average day. If the shore communities grow at rates substantially beyond those that are now projected, a Route 55 Freeway Extension will provide reserve traffic capacity.

The Routes 47, 670 and 83 corridor will experience approximately equal congestion relief with a Route 55 Freeway Extension as with a widening of Routes 47, 670 and 83.

The GSP will experience a significant increase in congestion south of a Route 55 Freeway connection and improvements to the existing at-grade intersections will be critical.

The Atlantic City Expressway (ACX) and the GSP to the south of the ACX would experience approximately a five percent diversion to the Route 55 Freeway Extension. This diversion would not significantly reduce congestion in these areas.

- Alternative Corridors

Route 47 between Route 55 and Route 83 is presently being upgraded from 10 foot to 12 foot travel lanes with shoulders. Route 670 has recently been resurfaced to 12 foot lanes and shoulders. The intersections of Route 47 and Route 670 in both Cumberland County and Cape May County are being reconstructed. In the near term, these improvements will meet the daily need, although congestion will occur on summer weekends.

During the future summer weekend conditions, a capacity increase of two lanes in the Routes 47, 670 and 83 corridor will provide an adequate level of service, however, some congestion on Route 47 south of Route 670 can be expected. During the future average day, a capacity increase will provide an exceptional level of service and the need for a widening would be marginal. The congestion relief provided by this alternative is approximately equal to the relief which would be provided by a Route 55 Freeway Extension. Improvements to Routes 49 and 50 corridor alone will do little to relieve congestion in the Routes 47, 670 and 83 corridor. However, summer traffic should be encouraged to use the reserve capacity of the Routes 49 and 50 corridor in addition to operational strategies that would manage the peaking characteristics on summer Friday through Sunday evenings. This improvement to the Routes 47, 670 and 83 corridor, in combination with strategies to better utilize the reserve capacity of the Routes 49 and 50 corridor, will defer the need for future improvements and expansions.

RECOMMENDATIONS

A combination of short and long term improvements are recommended for the corridor. Priority 1 recommendations should be advanced in the near term. Priority 2 recommendations should be advanced as Tier 2 projects.

Priority 1 (Short Term) - The following strategies should be implemented regardless of any other improvements in the corridor:

- The signing of specific shore destinations between Cumberland and Cape May Counties in both the northbound and southbound directions should be initiated to take advantage of reserve capacity in the Routes 49/50 corridor.

- Resurface and restripe for 12-foot lanes and 8-foot shoulders on Route 50, connecting the GSP and the recently completed section at Tuckahoe Road (M.P. 5.2).

- Collect and analyze Summer Friday and Sunday traffic data for the following intersections:

  - Route 49 and Route 50
  - Route 50 and Route 9
  - Route 47 and Route 83
  - Route 47 and Route 657

- Analyze and implement, if feasible, recreational travel strategies, such as reversible lanes and/or shoulder usage as a means to address the summer peaking characteristic of the corridor.

Priority 1 (Long Term) - The Route 55 Freeway Extension alternative provides an additional four lanes of capacity in the corridor which results in a exceptional level of service; however, it will be largely underutilized, even on a summer weekend. From a traffic viewpoint, the following recommendation may provide an acceptable alternative to extending the Route 55 Freeway:

- Widen or provide two lanes of additional capacity in the Routes 47/670/83 corridor. A bypass of Maurice River and Dennisville, as well as an improved connection with the GSP should be considered.

- Grade separate the intersections along the GSP between mileposts 8.4 and 11.2 (Middle Township).

Priority 2 (Long Term) - The following are recommended in the Route 49/50 corridor on Route 50 and are dependent on the implementation and success of Priority 1 recommendations:

- Improve access with the GSP. Evaluate the feasibility of a full interchange.

- Improve the intersection of Route 49 and Route 50 considering a bypass as an alternative.

APPENDIX A

New Jersey Summer Recreational Transportation Survey

New Jersey Summer Recreational Transportation Survey

The following report is an aerial photo-survey of highway traffic on selected high volume corridors in New Jersey. The survey was performed by the Skycomp Corporation in the summer of 1991 for the New Jersey Recreational Travel Committee. The purpose of the survey was to determine and document the location, magnitude, and duration of summer weekend traffic congestion along designated highways in southern New Jersey.

Seven flight patterns were flown for this survey. Of these, only one (pattern "E") falls within the defined study limits of the Route 55 Freeway Extension Feasibility Study. Data obtained from flight patterns outside the study limits were deemed unnecessary and were intentionally left out of the following survey report.

COPY
NJHA
1/21/92

New Jersey Summer Recreational Transportation Survey

AERIAL PHOTO-SURVEY OF HIGHWAY TRAFFIC
ON SELECTED HIGH-VOLUME CORRIDORS
JULY 20 & 28, 1991
AUGUST 3 & 4, 1991
AUGUST 18, 1991

1991 FINAL REPORT

Prepared by
Skycomp Corporation, Rockville, MD
for
The New Jersey Recreational Travel Committee

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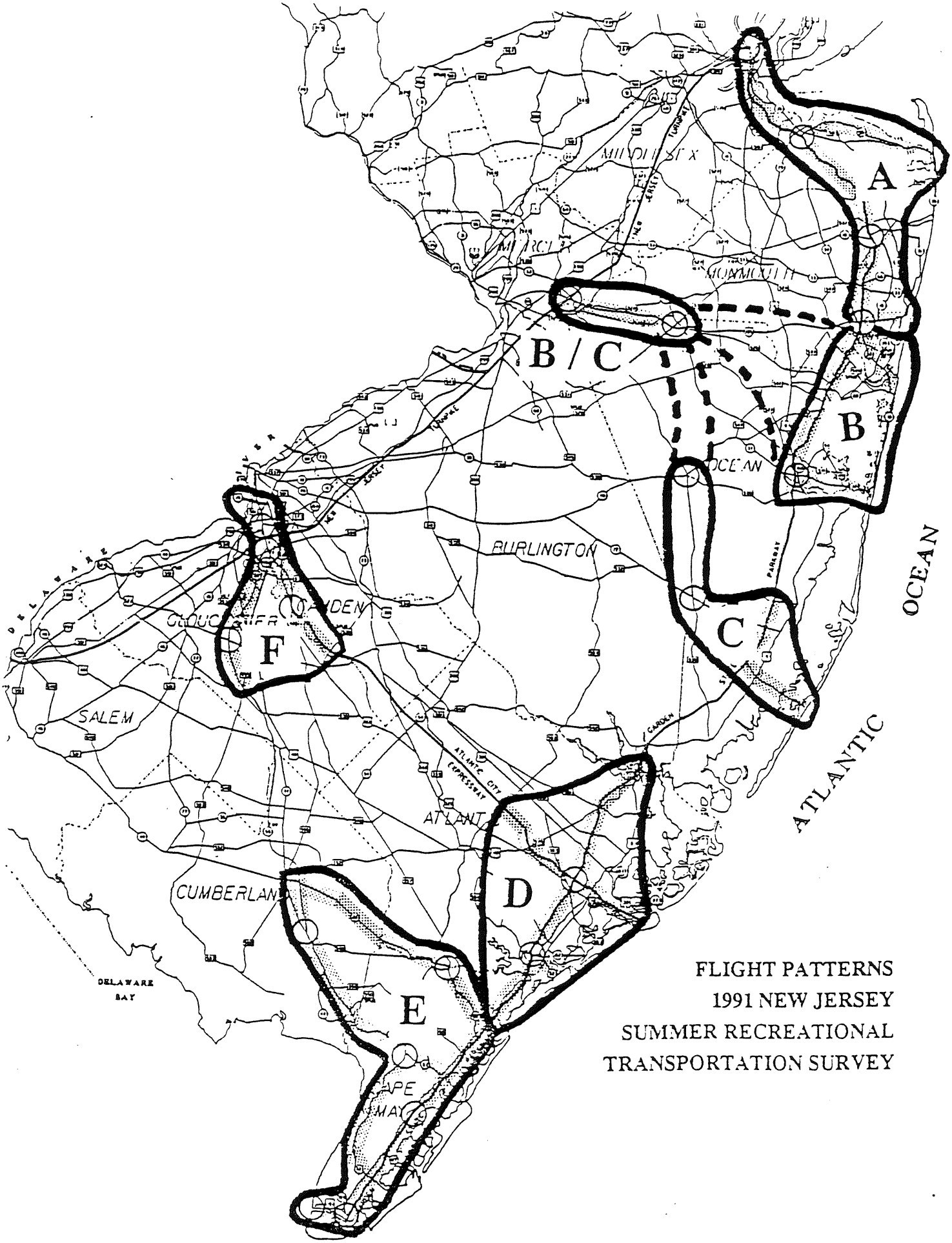


FLIGHT PATTERNS
1991 NEW JERSEY
SUMMER RECREATIONAL
TRANSPORTATION SURVEY

INTRODUCTION

In the summer of 1991 Skycomp conducted an aerial photo-survey of New Jersey recreational highway traffic. The purpose of the survey was to determine and document the location, magnitude and duration of summer weekend congestion along designated highways. Observers aboard Cessna aircraft examined corridors to the New Jersey shore from the Raritan River to Cape May; the Interstate 195 corridor from Interchange 7A of the New Jersey Turnpike to Great Adventure; and the Interstate 76 / NJ 42 corridor from the Walt Whitman Bridge in Philadelphia to the western ends of NJ 55 and the Atlantic City Expressway.

FLIGHT OPERATIONS

High volume recreational corridors were identified by the New Jersey Recreational Travel Committee. These corridors were divided into six flight patterns, labelled "A" through "F" (see map on opposite page). Three airplanes flew the southern zone (patterns D, E & F) on Saturday 20 July from 8:00 a.m. to 12:00 noon; and again on Sunday evening 28 July from 4:00 to 8:00 p.m. The remaining three patterns (the northern zone) were flown Saturday morning 3 August (8:00 a.m. to 12 noon) and Sunday evening 4 August (5:00 to 8:00 p.m). One airplane returned on Sunday 18 August to take a second look at pattern A (4:00 to 8:00 p.m). Each pattern took approximately thirty to forty minutes to complete; thus multiple observations spaced throughout the peak period of travel were made of each roadway. For each mile of surveyed highway, the observers assessed the relative quality of traffic and assigned ratings accordingly. Special notes were made about unusual conditions on the highways; and time-stamped color photographs were taken of congested highways or other points of interest.

DATA REDUCTION AND REPORT

From the photography and data maps prepared in flight, computerized arrowhead maps have been prepared which summarize each hour of flight (see Part One of this report). At locations experiencing persistent queueing, such as at congested intersections, queued vehicle populations have been determined and profiled. At major toll plazas, queued vehicle counts have been divided by volumes in order to produce the average minutes of delay per vehicle (see Part Two). Tables have also been prepared which present each traffic quality rating by milepost and time period (Part Three).

PHOTOGRAPHY

Two sets of color slide photography have been indexed and delivered for review. Many of the slides document the presence or absence of congestion at key points of interest. Others were taken as needed to illustrate the extent of congestion, wherever it was found along the survey path. The date and time of exposure have been imprinted in the lower right-hand corner of each photograph. Participating agencies may request copies of specific slides through the New Jersey Highway Authority.

TRAFFIC QUALITY RATING SYSTEM

Each highway has been classified limited access (LA) or arterial (A). On the *limited access* highways, service levels A through F were assigned by the observer based on the traffic density, traffic speed and freedom to maneuver criteria listed in Chapter Three of the 1985 Highway Capacity Manual (HCM). Density is the defining parameter in the determination of freeway level-of-service; Skycomp has demonstrated that this can be accurately determined by a qualified observer.

However, airborne observers are not technically able to attain *arterial* highway level-of-service; the defining parameters in the HCM are actual (vs. free-flow) average travel speeds. On the other hand, some form of arterial traffic quality can be assessed by an experienced aerial observer; the degree to which vehicles are able to negotiate sections of highway unencumbered by other vehicles is easily seen. For this reason Skycomp observers have evaluated arterial traffic quality by using a six-point scale ranging from light to congested; these ratings are intended to approximate arterial LOS A through F.

Also for the purpose of this survey, a congested rating was given at intersections at which, in the observer's estimation, not all queued vehicles would clear the intersection during the next green phase of the cycle. In general, the starting point for assigning a congested rating on an approach to a signalized intersection was 20 queued vehicles per lane.

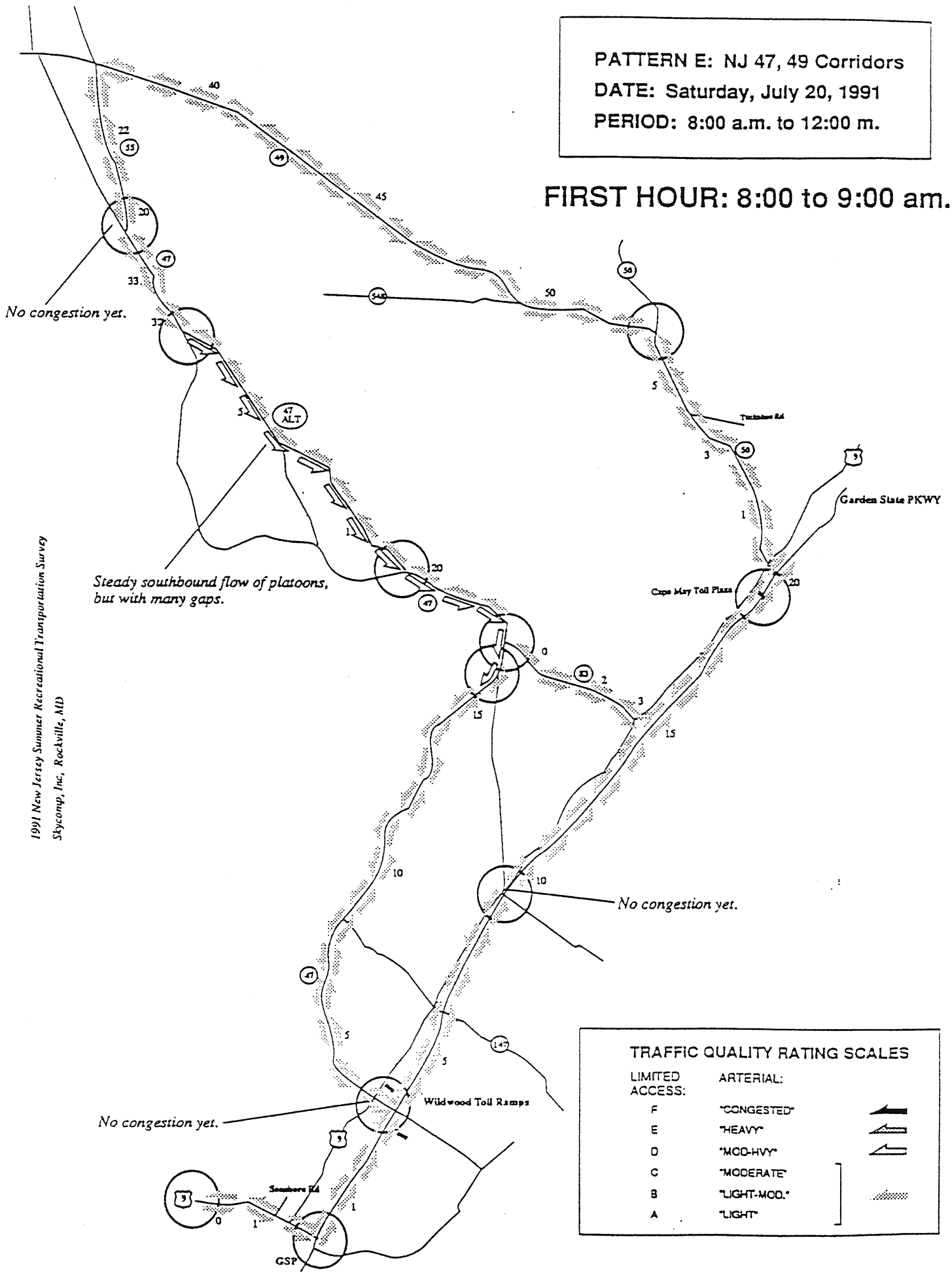
This rating system, like the concept of level-of-service itself, is qualitative. One purpose of the aerial photography is to enable viewers to see the actual conditions behind the ratings and personally assess the conditions. To facilitate this, many of the observer notes on the data maps include cross-references to specific photographs which illustrate the situations.

QUESTIONS

If there are any questions about the methodology of the survey or the contents of this report, please direct them to Gregory Jordan at Skycomp Corporation, at 301-340-6650 (or in New Jersey 609-921-7739).

PATTERN E: NJ 47, 49 Corridors
DATE: Saturday, July 20, 1991
PERIOD: 8:00 a.m. to 12:00 m.

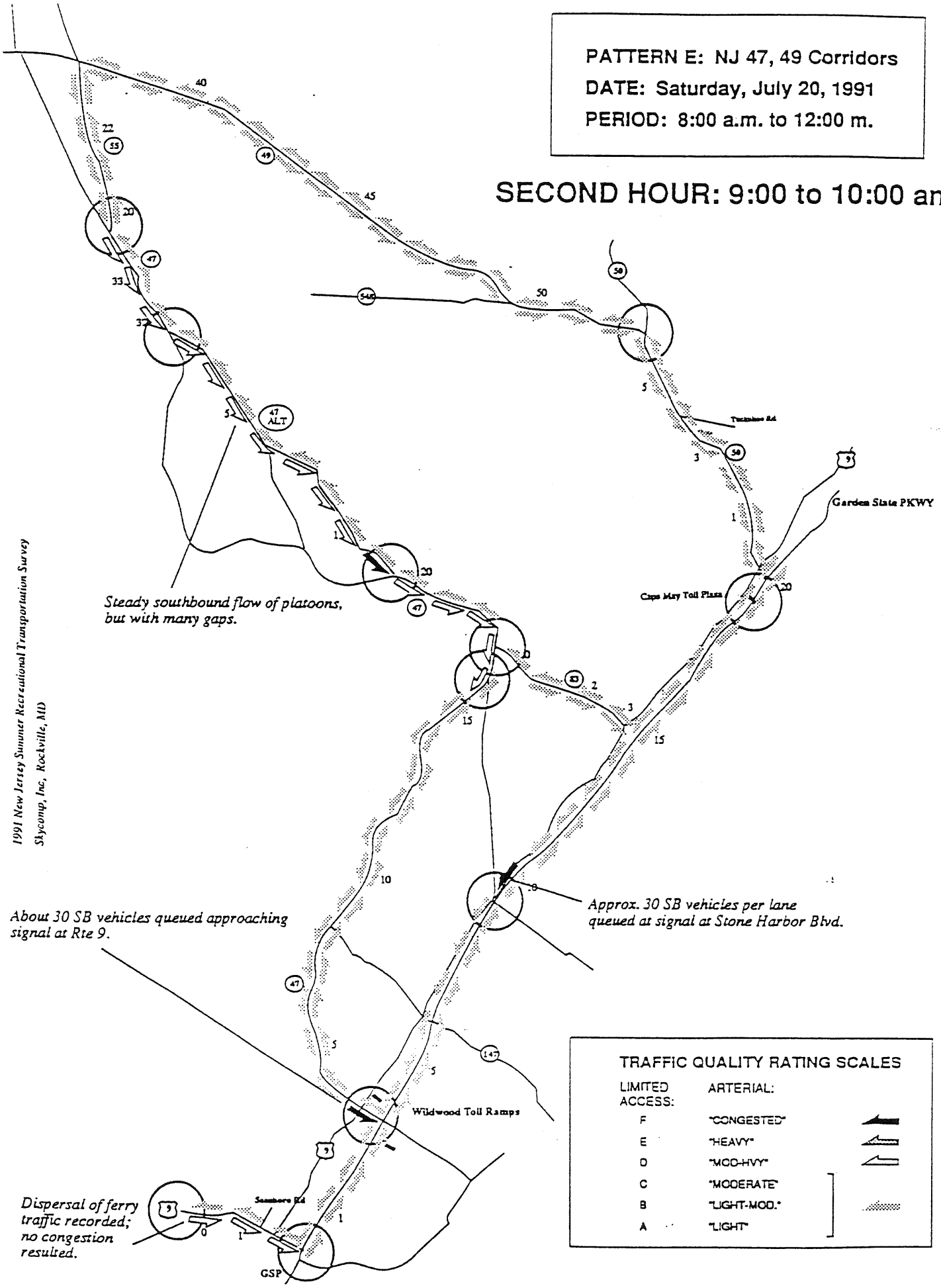
FIRST HOUR: 8:00 to 9:00 am.



1991 New Jersey Summer Recreational Transportation Survey
Skycomp, Inc, Rockville, MD

PATTERN E: NJ 47, 49 Corridors
DATE: Saturday, July 20, 1991
PERIOD: 8:00 a.m. to 12:00 m.

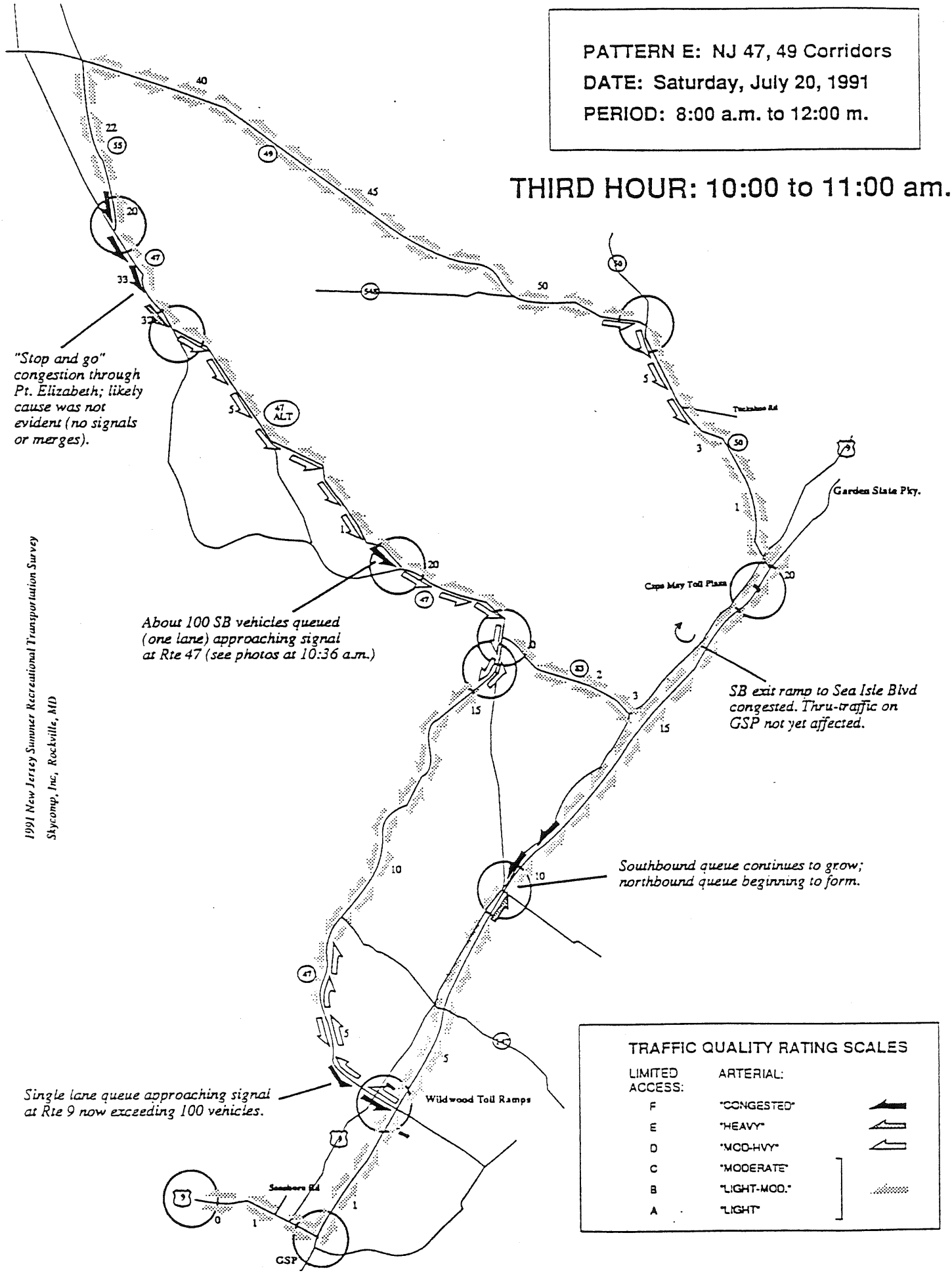
SECOND HOUR: 9:00 to 10:00 am.



1991 New Jersey Summer Recreational Transportation Survey
Skycomp, Inc, Rockville, MD

PATTERN E: NJ 47, 49 Corridors
DATE: Saturday, July 20, 1991
PERIOD: 8:00 a.m. to 12:00 m.

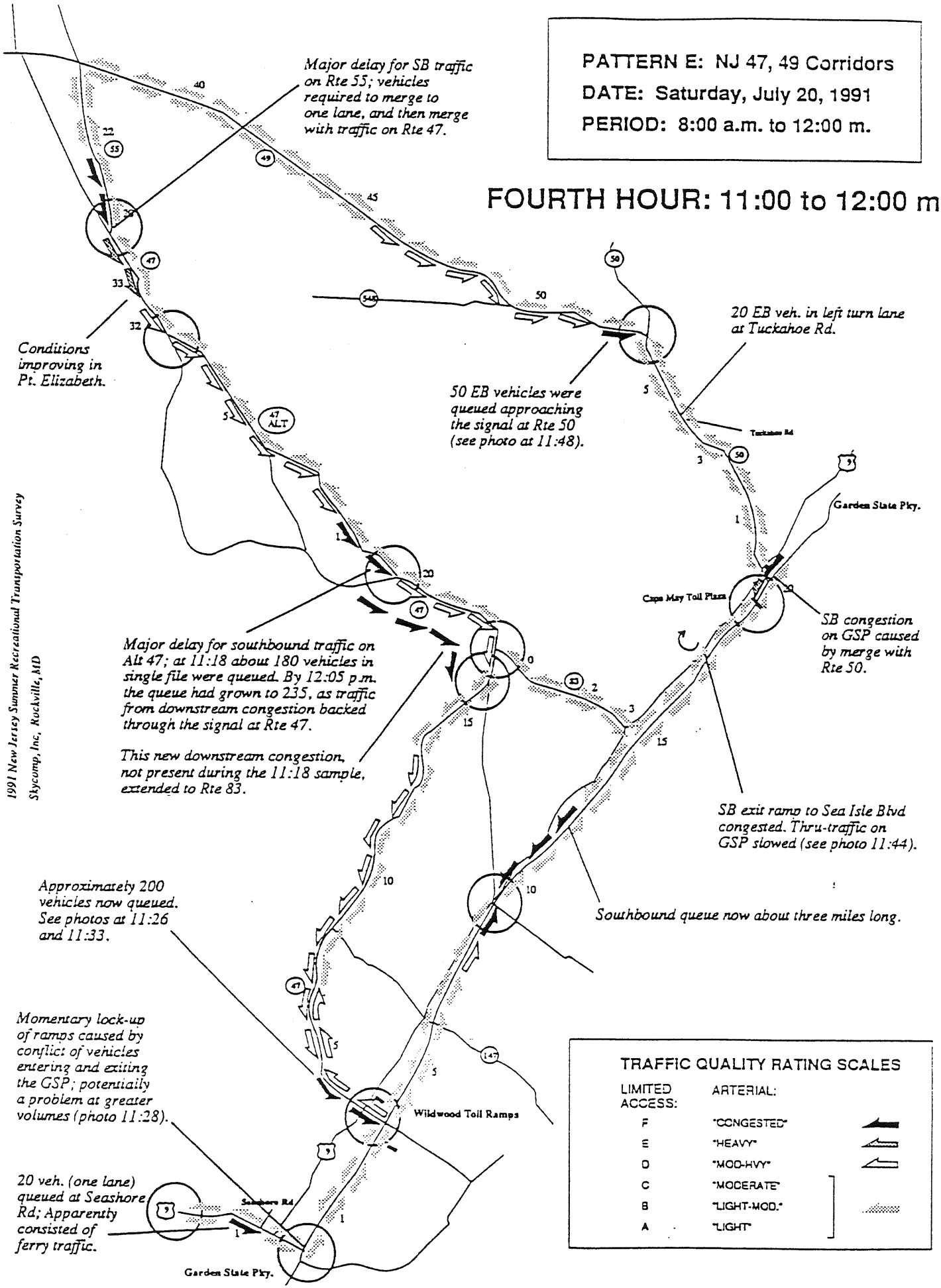
THIRD HOUR: 10:00 to 11:00 am.



1991 New Jersey Summer Recreational Transportation Survey
Skycomp, Inc., Rockville, MD

PATTERN E: NJ 47, 49 Corridors
DATE: Saturday, July 20, 1991
PERIOD: 8:00 a.m. to 12:00 m.

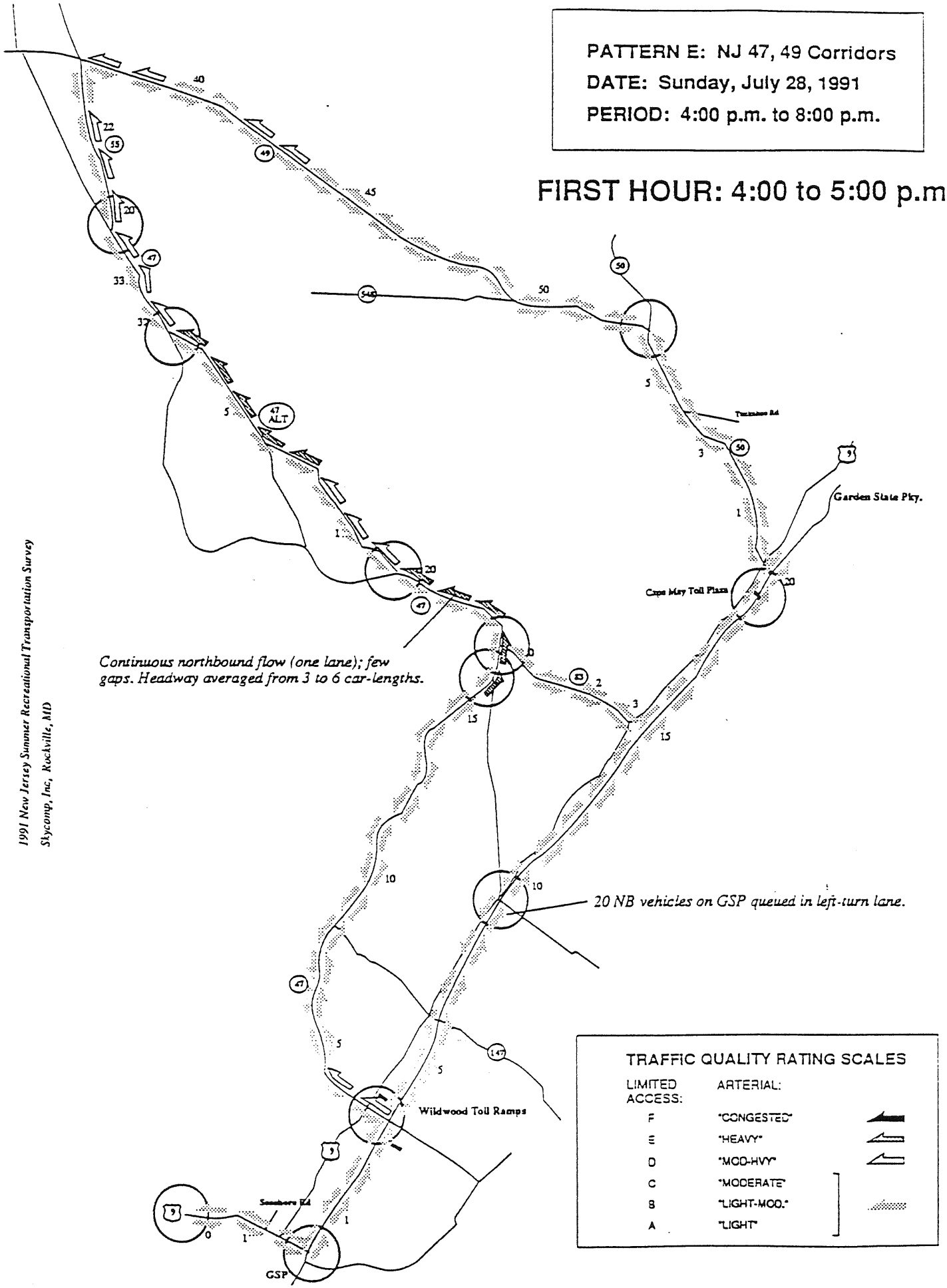
FOURTH HOUR: 11:00 to 12:00 m.



1991 New Jersey Summer Recreational Transportation Survey
Skycomp, Inc., Rockville, MD

PATTERN E: NJ 47, 49 Corridors
DATE: Sunday, July 28, 1991
PERIOD: 4:00 p.m. to 8:00 p.m.

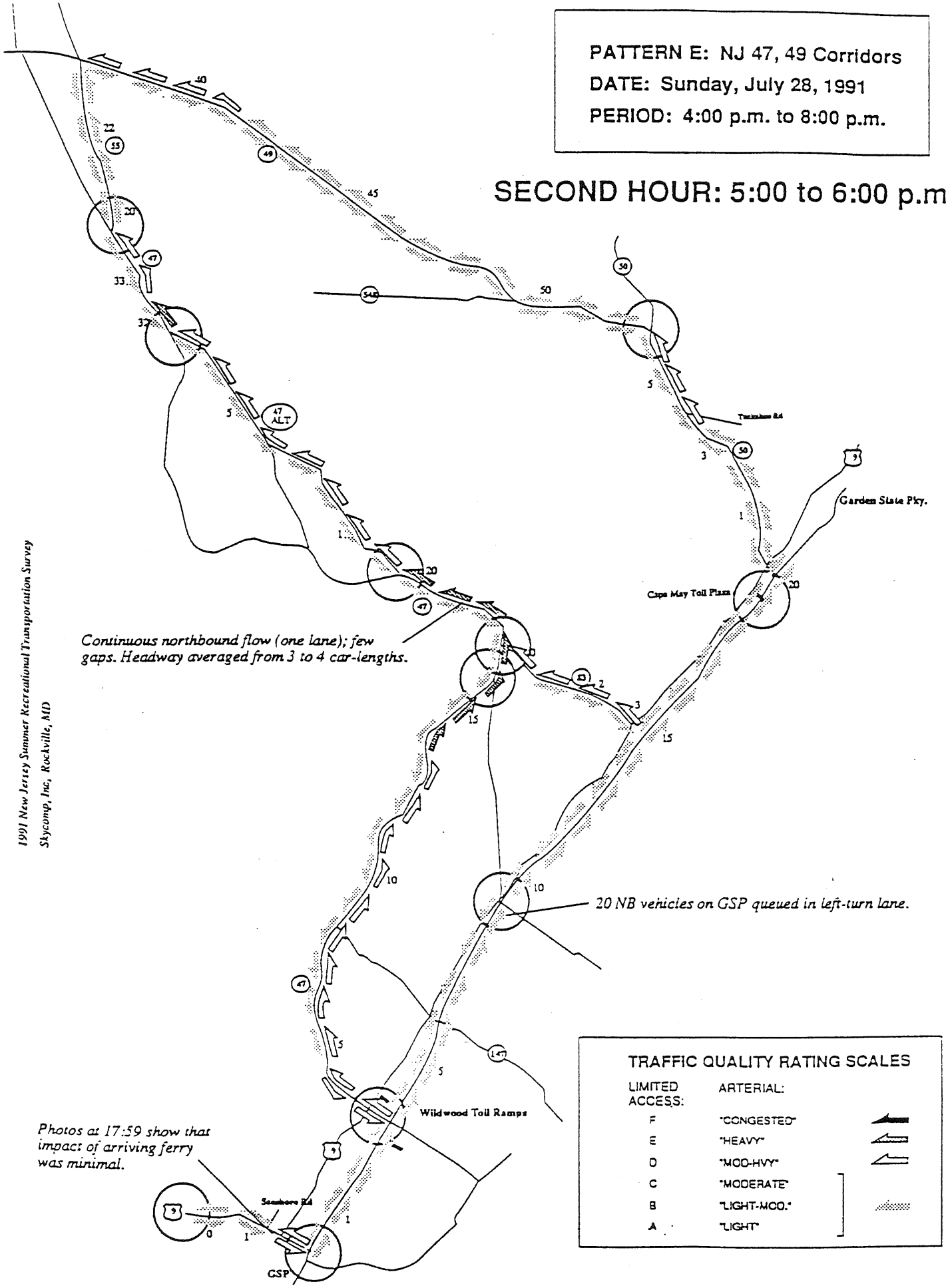
FIRST HOUR: 4:00 to 5:00 p.m.



1991 New Jersey Summer Recreational Transportation Survey
Sycomp, Inc, Rockville, MD

PATTERN E: NJ 47, 49 Corridors
DATE: Sunday, July 28, 1991
PERIOD: 4:00 p.m. to 8:00 p.m.

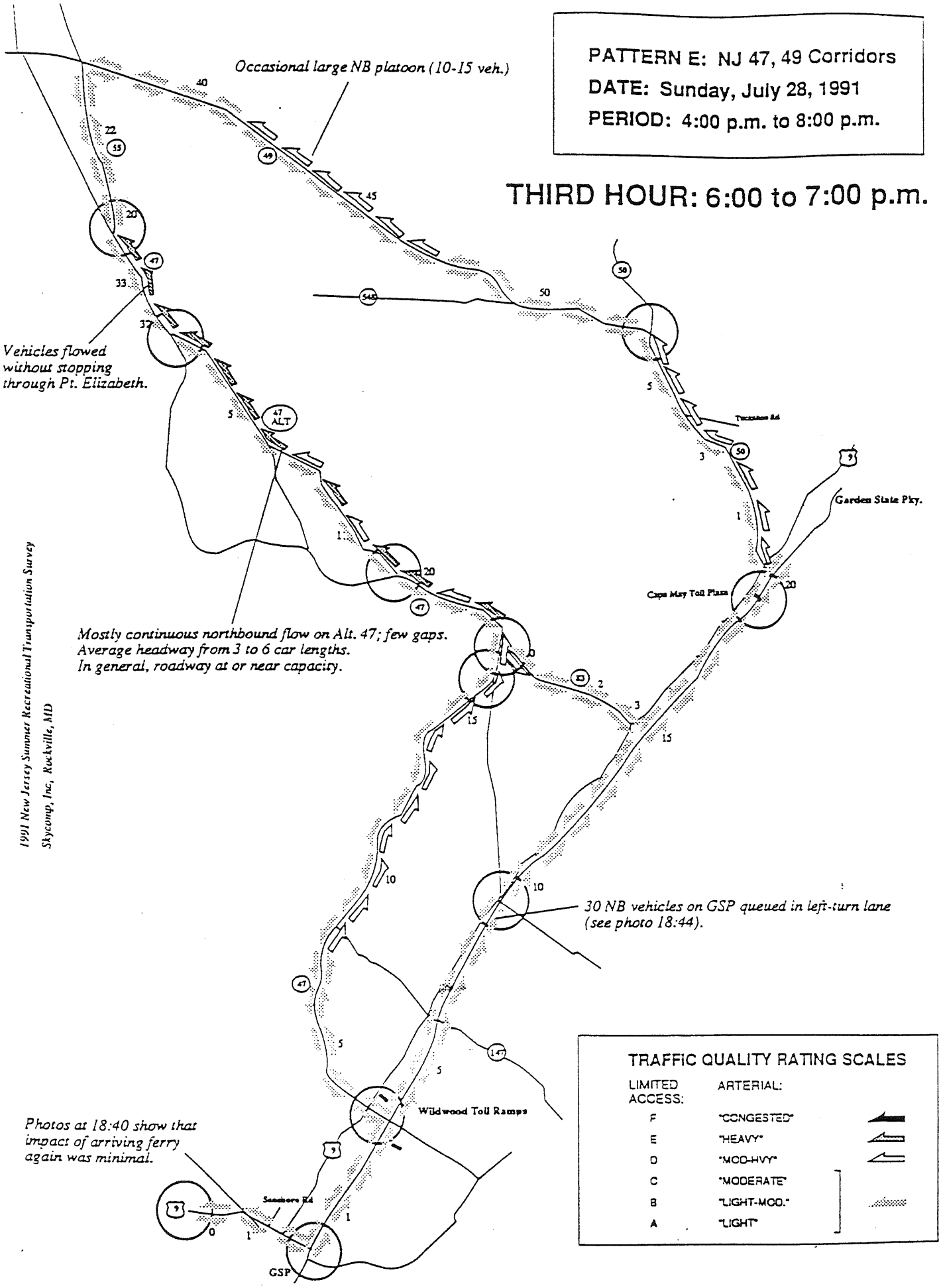
SECOND HOUR: 5:00 to 6:00 p.m.



1991 New Jersey Summer Recreational Transportation Survey
Skycomp, Inc., Rockville, MD

PATTERN E: NJ 47, 49 Corridors
DATE: Sunday, July 28, 1991
PERIOD: 4:00 p.m. to 8:00 p.m.

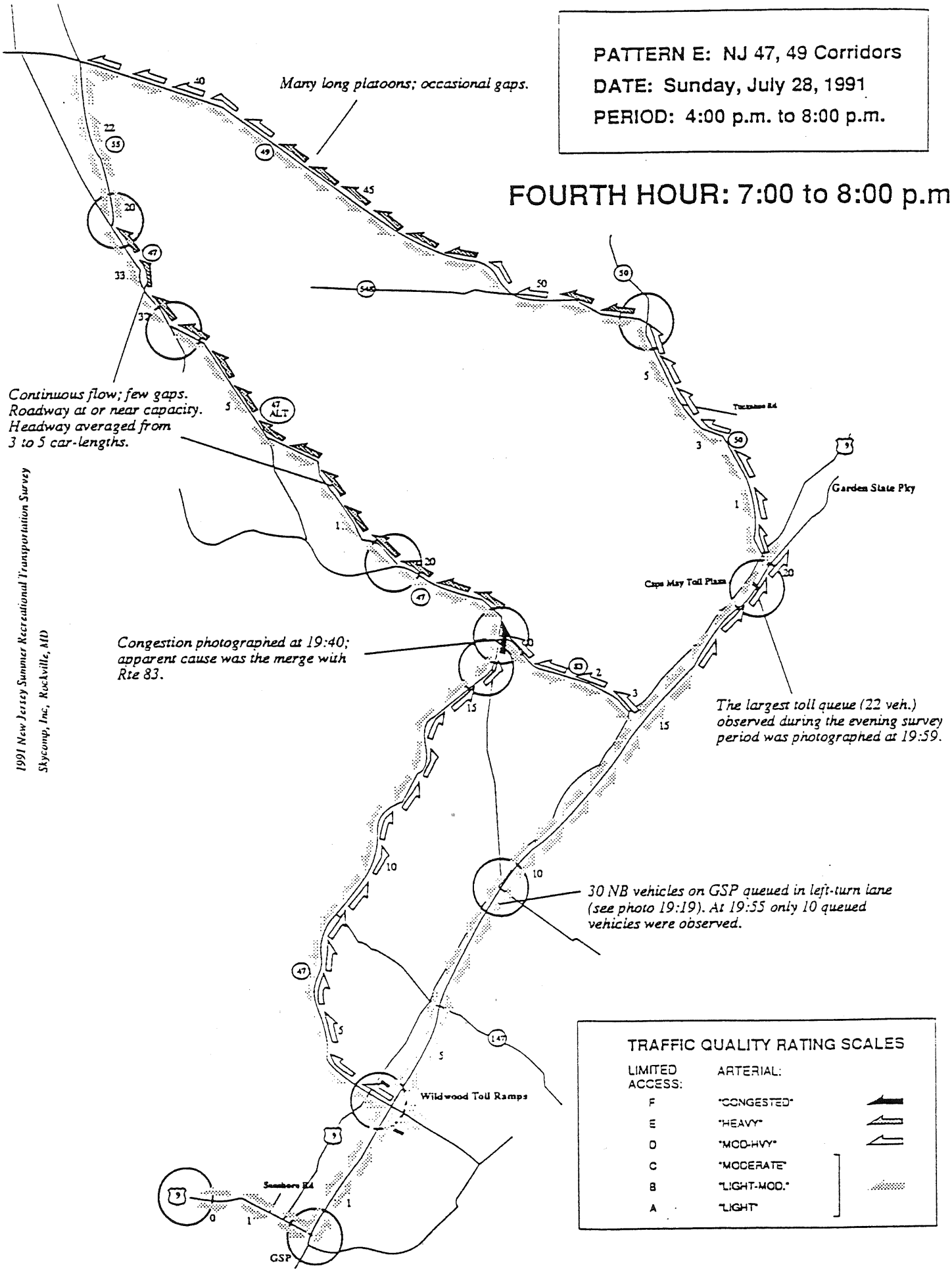
THIRD HOUR: 6:00 to 7:00 p.m.



1991 New Jersey Summer Recreational Transportation Survey
Skycomp, Inc, Rockville, MD

PATTERN E: NJ 47, 49 Corridors
DATE: Sunday, July 28, 1991
PERIOD: 4:00 p.m. to 8:00 p.m.

FOURTH HOUR: 7:00 to 8:00 p.m.



1991 New Jersey Summer Recreational Transportation Survey
Skycomp, Inc, Rockville, MD

PATTERN E / SATURDAY (Direction: Toward NJ Shore)

LEVEL-OF-SERVICE AND ARTERIAL TRAFFIC QUALITY RATINGS

Saturday Morning, 20 July 1991, 8:00 am - 12:00 noon (page 1 of 2)

				FIRST HOUR				SECOND HOUR				THIRD HOUR				FOURTH HOUR			
	MILEPOST:	DIR.	TYPE	1ST	2ND	3RD	4TH	1ST	2ND	3RD	4TH	1ST	2ND	3RD	4TH	1ST	2ND	3RD	4TH
GSP	0	SB	LA		B				A			B			B			A	
	1	SB	LA		B				A			B			B			A	
	2	SB	LA		B				A			B			B			A	
	3	SB	LA		B					B		B			B			B	
	4	SB	LA		B					B		B			C			B	
	5	SB	LA		B					C		C			C			B	
	6	SB	LA		C					C		C			B			C	
	7	SB	LA		C					C		C			C			C	
	8	SB	LA		C					C			C		C			C	
	9	SB	LA		C					C			C		C			C	
	10	SB	LA		C					F			F		F			F	
	11	SB	LA		C					C			E		F			F	
	12	SB	LA		B					C			C		C			F	
	13	SB	LA		B					C			C		C			C	
	14	SB	LA		B					C			C		C			C	
	15	SB	LA		B					C			C		C			C	
	16	SB	LA		B					C			C		C			C	
	17	SB	LA			C				C			C		C			C	
	18	SB	LA			C				C			C		C			C	
	19	SB	LA			C				C			C			F		C	
US 9	0	EB	LA		M-				M+			M-			M		M-		
	1	EB	LA		M-				M+			M-			M		H+		
	2	EB	LA		M-				M+			M-			M		M-		
Rte 47	3	SB	A		M			H+				H+		H+			H+		
	4	SB	A		M			M				H		H+			H+		
	5	SB	A		M-			M-				M+		M+			M+		
	6	SB	A		M-			M-				M		M			M+		
	7	SB	A		M-			M-				M		M			M+		
	8	SB	A		M-			M-				M		M			M+		
	9	SB	A	M-				M-				M		M			M+		
	10	SB	A	M				M				M		M			M+		
	11	SB	A	M			M				M			M			M+		
	12	SB	A	M			M				M			M			M+		
	13	SB	A	M			M				M			M			M+		
	14	SB	A	M			M				M			M			M		
	15	SB	A	M			M				M			M			M		
	16	SB	A	M			M+				M+			M+			M		
	17	SB	A	M			M+				M+			M+			M+		
	18	SB	A	M			M+				M+			M+			M+		
	19	SB	A	M			M+				M+			M+			M+		
	20	SB	A	M			M+				M+			M+			M+		

(continued)

PATTERN E / SATURDAY (Direction: Toward NJ Shore)

LEVEL-OF-SERVICE AND ARTERIAL TRAFFIC QUALITY RATINGS

Saturday Morning, 20 July 1991, 8:00 am - 12:00 noon (page 2 of 2)

				FIRST HOUR				SECOND HOUR				THIRD HOUR				FOURTH HOUR			
	MILEPOST:	DIR.	TYPE	1ST	2ND	3RD	4TH	1ST	2ND	3RD	4TH	1ST	2ND	3RD	4TH	1ST	2ND	3RD	4TH
Alt 47	0	SB	A	M			M+				H+			H+			H+		H+
	1	SB	A	M			M+				M+			M+			M		H+
	2	SB	A	M			M+				M+			M+			M+		M+
	3	SB	A	M			M+				M+			M+			M		M
	4	SB	A	M			M+				M+			M+			M+		M
	5	SB	A	M			M+				M+			M+			M+		M
	6	SB	A	M			M+				M+			M+			M+		M
	7	SB	A	M			M+				M+			M+			M+		M
NJ 47	32	SB	A	M-			M+				M+			H		M+			M
	33	SB	A	M-			M+				M+			H+		H+			M
	34	SB	A	M-			M+				M+			H+		H+			M
NJ 49	38	SB	A			M-					M		M			M			M
	39	SB	A			M-					M		M			M			M
	40	SB	A			M-					M		M			M			M
	41	SB	A			M-					M		M			M			M
	42	SB	A			M-					M		M			M			M
	43	SB	A			M-					M		M			M			M
	44	SB	A			M-					M		M			M			M
	45	SB	A			M-					M		M			M			M
	46	SB	A			M-					M		M			M+			M
	47	SB	A			L					M		M			M+			M
	48	SB	A			L					M		M			M+			M
	49	SB	A			L					M		M			M+			M
	50	SB	A			L					M		M			M+			M
	51	SB	A			L					M		M			M+			M
	52	SB	A			L					M		M+			H+			H+
NJ 50	0	EB	A			L				M			M			M			M-
	1	EB	A			L				M			M			M			M-
	2	EB	A			L				M			M			M			M-
	3	EB	A			L				M			M			M			M-
	4	EB	A			L				M			M+			M			M-
	5	EB	A			L				M			M+			M			M-
	6	EB	A			L				M			M+			M			M-
NJ 55	20	SB	LA	B			C				B			F		F			F
	21	SB	LA	B			B				B			C		F			F
	22	SB	LA	B			B				B			C		B			B
	23	SB	LA	B			B				B			C		B			B
NJ 83	0	EB	A	M-						M-			M-		M-			L	
	1	EB	A	M-						M-			M-		M-			L	
	2	EB	A		L					M-			M-		M-			M-	
	3	EB	A		L					M-			M-		M-			M-	

PATTERN E / SATURDAY (Direction: Away from NJ Shore)

LEVEL-OF-SERVICE AND ARTERIAL TRAFFIC QUALITY RATINGS

Saturday Morning, 20 July 1991, 8:00 am - 12:00 noon (page 1 of 2)

	MILEPOST:	DIR.	TYPE	FIRST HOUR 1ST	FIRST HOUR 2ND	FIRST HOUR 3RD	FIRST HOUR 4TH	SECOND HOUR 1ST	SECOND HOUR 2ND	SECOND HOUR 3RD	SECOND HOUR 4TH	THIRD HOUR 1ST	THIRD HOUR 2ND	THIRD HOUR 3RD	THIRD HOUR 4TH	FOURTH HOUR 1ST	FOURTH HOUR 2ND	FOURTH HOUR 3RD	FOURTH HOUR 4TH
GSP	0	NB	LA		A				B			B			A			A	
	1	NB	LA		A				B			B			A			A	
	2	NB	LA		A				B			B			A			A	
	3	NB	LA		A				B			B			A			A	
	4	NB	LA		B					B		B			B			C	
	5	NB	LA		B					C		B			C			C	
	6	NB	LA		B					C		C			C			C	
	7	NB	LA		B					C		C			C			C	
	8	NB	LA		B					C		C			B			C	
	9	NB	LA		B					C			C		B			D	
	10	NB	LA		B					C			C		F			F	
	11	NB	LA		B					C			C		C			C	
	12	NB	LA		B					C			C		C			C	
	13	NB	LA		B					C			C		C			C	
	14	NB	LA		B					B			C		C			C	
	15	NB	LA		B					B			C		C			C	
	16	NB	LA		B					B			C		C			C	
	17	NB	LA			B				B			B		C			C	
	18	NB	LA			B				B			B		C			C	
	19	NB	LA			B				B			B			C		C	
US 9	0	WB	A		M-				L			M-			M		M-		
	1	WB	A		M-				L			M-			M		M-		
	2	WB	A		M-				L			M-			M		M-		
NJ 47	3	NB	A		M-			M-				M		M+			M+		
	4	NB	A		M-			M-				M		M+			M+		
	5	NB	A		L			M-				M		M+			M+		
	6	NB	A		L			M-				M-		M+			M+		
	7	NB	A		L			M-				M-		M+			M		
	8	NB	A		L			M-				M-		M			M		
	9	NB	A	M-				M-				M-		M			M		
	10	NB	A	M-				M-			M-			M			M		
	11	NB	A	M-			M-				M-			M			M		
	12	NB	A	M-			M-				M-			M-			M		
	13	NB	A	M-			M-				M-			M-			M		
	14	NB	A	M-			M-				M-			M-			M		
	15	NB	A	M-			M-				M-			M-			M		
	16	NB	A	M-			M-				M-			M+			M-		
	17	NB	A	M-			M-				M-			M			M		
	18	NB	A	M-			M-				M-			M			M		
	19	NB	A	M-			M-				M			M			M		
	20	NB	A	M-			M-				M			M			M		

(continued)

PATTERN E / SATURDAY (Direction: Away from NJ Shore)

LEVEL-OF-SERVICE AND ARTERIAL TRAFFIC QUALITY RATINGS

Saturday Morning, 20 July 1991, 8:00 am - 12:00 noon (page 2 of 2)

				FIRST HOUR				SECOND HOUR				THIRD HOUR				FOURTH HOUR			
	MILEPOST:	DIR.	TYPE	1ST	2ND	3RD	4TH	1ST	2ND	3RD	4TH	1ST	2ND	3RD	4TH	1ST	2ND	3RD	4TH
Alt 47	0	NB	A	M-			M-				M-			M			M		M
	1	NB	A	M-			M-				M-			M			M		M
	2	NB	A	M-			M-				M-			M			M		M
	3	NB	A	M-			M-				M-			M			M		M
	4	NB	A	M-			M-				M-			M			M		M
	5	NB	A	M-			M-				M-			M			M		M-
	6	NB	A	M-			M-				M-			M			M		M-
	7	NB	A	M-			M-				M-			M			M		M-
NJ 47	32	NB	A	M-			M-				M-			M		M-			M-
	33	NB	A	M-			M-				M-			M		M-			M-
	34	NB	A	M-			M-				M-			M		M-			M-
NJ 49	38	NB	A			L					M-		M-			M-			M-
	39	NB	A			L					M-		M-			M-			M-
	40	NB	A			L					M-		M-			M-			M-
	41	NB	A			L					M-		M-			M-			M-
	42	NB	A			L					M-		M-			M-			M-
	43	NB	A			L					M-		M-			M-			M-
	44	NB	A			L					M-		M-			M-			M-
	45	NB	A			L					M-		M-			M-			M-
	46	NB	A			L					M-		M-			M-			M-
	47	NB	A			L					M-		M-			M-			M-
	48	NB	A			L					M-		M-			M-			M-
	49	NB	A			L					M-		M-			M-			M-
	50	NB	A			L					M-		M-			M-			M-
	51	NB	A			L					M-		M-			M-			M-
	52	NB	A			L					M-		M-			M-			M-
NJ 50	0	WB	A			L				M-			M-			M-			M-
	1	WB	A			L				M-			M-			M-			M-
	2	WB	A			L				M-			M-			M-			M-
	3	WB	A			L				M-			M-			M-			M+
	4	WB	A			L				M-			M			M-			M
	5	WB	A			L				M-			M			M-			M
	6	WB	A			L				M-			M			M-			M
NJ 55	20	NB	LA	A			A				A			B		B			B
	21	NB	LA	A			A				A			B		A			B
	22	NB	LA	A			A				A			B		A			B
	23	NB	LA	A			A				A			B		A			B
NJ 83	0	WB	A		M-					M-		M-			M-			M-	
	1	WB	A		M-					M-		L			M-			M-	
	2	WB	A		L					M-		L			M-			L	
	3	WB	A		L					M-		L			M-			L	

PATTERN E / SUNDAY (Direction: Toward NJ Shore)

LEVEL-OF-SERVICE AND ARTERIAL TRAFFIC QUALITY RATINGS

Sunday Evening, 28 July 1991, 4:00 p.m. - 8:00 p.m. (page 1 of 2)

				FIRST HOUR				SECOND HOUR				THIRD HOUR				FOURTH HOUR			
	MILEPOST:	DIR.	TYPE	1ST	2ND	3RD	4TH	1ST	2ND	3RD	4TH	1ST	2ND	3RD	4TH	1ST	2ND	3RD	4TH
GSP	0	SB	LA			A		A			B			A			A		A
	1	SB	LA			A		A			B			A			A		A
	2	SB	LA			A		A			B			A			A		A
	3	SB	LA			A		A			B			A			A		A
	4	SB	LA			B		B			B			B			B		A
	5	SB	LA			B		B			B			B			B		B
	6	SB	LA			B		B			B			B			B		B
	7	SB	LA			B		B			B			B			B		B
	8	SB	LA			B		B			B			B			B		B
	9	SB	LA			B		B			B			B			B		B
	10	SB	LA			B			B		B			B			B		B
	11	SB	LA			B			B		B			B			B		B
	12	SB	LA			B			B		B				B		B		B
	13	SB	LA			B			B		B				B		B		B
	14	SB	LA			B			B		B				B		B		B
	15	SB	LA			B			B		B				B		B		B
	16	SB	LA			B			B		B				B		B		B
	17	SB	LA			B			B		B				B		B		B
	18	SB	LA			B			B		B				B		B		B
	19	SB	LA			B			B		B				B		B		B
US 9	0	EB	A			M-		L			M				M	L			M-
	1	EB	A			M-		L			M				M	M-			M-
	2	EB	A			M-		M+			M				M-	M			M
NJ 47	3	SB	A		M			M+		M+			M			M		M	
	4	SB	A		M			M+		M			M-			M		M	
	5	SB	A		M			M		M-			M-			M		M	
	6	SB	A		L			M		M-			M-			M		M-	
	7	SB	A		L			M-		M-			M-			M-		M-	
	8	SB	A		L			M-		M-			M-			M-		M-	
	9	SB	A		L			M-		M-			M			M-		M-	
	10	SB	A		M-			M-		M-			M			M-		M-	
	11	SB	A		M-			M-		M-			M-			M-		M-	
	12	SB	A		M-			M-		M-			M-			M-		M-	
	13	SB	A		M-			M-		M-			M-			M-		M-	
	14	SB	A		M-			M-		M-			M-			M-		M-	
	15	SB	A		M-			M-		M-			M-			M-		M-	
	16	SB	A		M			M-		M-			M-			M-		M-	
	17	SB	A		M			M-		M-			M-			M-		M-	
	18	SB	A		M			M-		M-			M-			M-		M-	
	19	SB	A		M			M-		M-			M-			M-		M-	
	20	SB	A		M			M-		M-			M-			M-		M-	

(continued)

PATTERN E / SUNDAY (Direction: Toward NJ Shore)

LEVEL-OF-SERVICE AND ARTERIAL TRAFFIC QUALITY RATINGS

Sunday Evening, 28 July 1991, 4:00 p.m. - 8:00 p.m. (page 2 of 2)

				FIRST HOUR				SECOND HOUR				THIRD HOUR				FOURTH HOUR			
	MILEPOST:	DIR.	TYPE	1ST	2ND	3RD	4TH	1ST	2ND	3RD	4TH	1ST	2ND	3RD	4TH	1ST	2ND	3RD	4TH
Alt 47	0	SB	A		M-		M-			M-			M-			L		M-	
	1	SB	A		M-		M-			M-			M-			L		M-	
	2	SB	A		M-		M-			M-			M-			L		M-	
	3	SB	A		M-		M-			M-			M-			L		M-	
	4	SB	A		M-		M-			M-			M-			L		M-	
	5	SB	A		M-		M-			M-			M-			L		M-	
	6	SB	A		M-		M-			M-			M-			L		M-	
	7	SB	A		M-		M-			M-			M-			L		M-	
NJ 47	32	SB	A		M-		M-			M-			M-			M-		M-	
	33	SB	A		M-		M-			M-			M-			M-		M-	
	34	SB	A		M-		M-			M-			M-			M-		M-	
NJ 49	38	SB	A				M-		L			L			M-		L		M-
	39	SB	A				M-		L			L			M-		L		M-
	40	SB	A				M-		L			L			M-		L		M-
	41	SB	A				M-		L			L			M-		L		M-
	42	SB	A				M-		L			L			M-		L		L
	43	SB	A				M-		L			L			M-		L		L
	44	SB	A				M-		L			L			M-		L		L
	45	SB	A				M-		L			L			M-		L		L
	46	SB	A				M-		L			L			M-		L		L
	47	SB	A				M-		L			L			M-		L		L
	48	SB	A				M-		L			L			M-		L		L
	49	SB	A				M-		L			L			M-		L		M-
	50	SB	A				M-		L			L			M-		L		M-
	51	SB	A				M-		L			L			M-		L		M-
	52	SB	A				M-		L			L			M-		L		M-
NJ 50	0	EB	A		M-				L			L			M-		L		L
	1	EB	A		M-				L			L			M-		M-		L
	2	EB	A		M-				L			L			M-		M-		L
	3	EB	A		M-				L			L			M-		M-		M-
	4	EB	A		M-				L			L			M-		M-		M-
	5	EB	A		M-				L			L			M-		M-		M-
	6	EB	A		M-				L			L			M-		M-		M-
NJ 55	20	SB	LA		B		B			A			A			A			A
	21	SB	LA		B		B			A			A			A			A
	22	SB	LA		B		B			A			A			A			A
	23	SB	LA		B		B			A			A			A			A
NJ 83	0	EB	A				L	M-		L			L						L
	1	EB	A				L	M-		L			L						L
	2	EB	A				L	M-		L			L						L
	3	EB	A				L	M-		L			L						L

PATTERN E / SUNDAY (Direction: Away from NJ Shore)

LEVEL-OF-SERVICE AND ARTERIAL TRAFFIC QUALITY RATINGS

Sunday Evening, 28 July 1991, 4:00 p.m. - 8:00 p.m. (page 1 of 2)

				FIRST HOUR				SECOND HOUR				THIRD HOUR				FOURTH HOUR			
	MILEPOST:	DIR.	TYPE	1ST	2ND	3RD	4TH	1ST	2ND	3RD	4TH	1ST	2ND	3RD	4TH	1ST	2ND	3RD	4TH
GSP	0	NB	LA			A		B			B			A			A		A
	1	NB	LA			A		B			B			A			A		A
	2	NB	LA			A		B			B			A			A		A
	3	NB	LA			A		B			B			A			A		A
	4	NB	LA			B		B			B			B			C		A
	5	NB	LA			C		B			B			B			C		B
	6	NB	LA			C		C			B			C			C		C
	7	NB	LA			C		C			C			C			C		C
	8	NB	LA			C		C			C			C			C		C
	9	NB	LA			C		C			C			C			C		C
	10	NB	LA			C			C		C			C			C		C
	11	NB	LA			C			C		C			C			C		C
	12	NB	LA			C			C		C				C		C		C
	13	NB	LA			C			C		C				C		C		C
	14	NB	LA			C			C		C				C		C		C
	15	NB	LA			C			C		C				C		C		C
	16	NB	LA			C			C		C				C		C		C
	17	NB	LA			C			C		C				C		C		D
	18	NB	LA			C			C		C				C		C		D
	19	NB	LA			C			C		C				C		C		D
US 9	0	WB	A			M-		M-			M				M	L			M-
	1	WB	A			M-		M-			M				M	M-			M-
	2	WB	A			M		M+			M				M-	M			M
NJ 47	3	NB	A		M+			M+		M+			M			M+		M+	
	4	NB	A		M+			M+		M+			M			M+		M+	
	5	NB	A		M			M+		M+			M			M+		M+	
	6	NB	A		M			M+		M+			M			M+		M+	
	7	NB	A		M			M+		M+			M			M+		M+	
	8	NB	A		M			M+		M+			M+			M+		M+	
	9	NB	A		M			M+		M+			M+			M+		M+	
	10	NB	A		M			M+		M+			M+			M+		M+	
	11	NB	A		M			M+		M+			M+			M+		M+	
	12	NB	A		M			M+		M+			M+			M+		M+	
	13	NB	A		M			M+		M+			M+			M+		M+	
	14	NB	A		M			H		M+			M+			M+		M+	
	15	NB	A		M			H		M+			M+			M+		M+	
	16	NB	A		H			H		M+			M+			M+		M+	
	17	NB	A		H			H		M+			M+			M+		H+	
	18	NB	A		H			H		H			H			M+		H	
	19	NB	A		H			H		H			M+			M+		H	
	20	NB	A		H			H		H			H			M+		H	

(continued)

PATTERN E / SUNDAY (Direction: Away from NJ Shore)

LEVEL-OF-SERVICE AND ARTERIAL TRAFFIC QUALITY RATINGS

Sunday Evening, 28 July 1991, 4:00 p.m. - 8:00 p.m. (page 2 of 2)

				FIRST HOUR				SECOND HOUR				THIRD HOUR				FOURTH HOUR			
	MILEPOST:	DIR.	TYPE	1ST	2ND	3RD	4TH	1ST	2ND	3RD	4TH	1ST	2ND	3RD	4TH	1ST	2ND	3RD	4TH
Alt 47	0	NB	A		M+		M+			M+			H			H		M+	
	1	NB	A		M+		M+			M+			M+			H		M+	
	2	NB	A		M+		M+			M+			H			M+		M+	
	3	NB	A		M+		H			M+			M+			H		M+	
	4	NB	A		M+		H			M+			H			M+		H	
	5	NB	A		M+		H			M+			H			H		H	
	6	NB	A		M+		H			M+			H			M+		H	
	7	NB	A		M+		H			M+			H			H		H	
NJ 47	32	NB	A		M+		M+			H			H			H		H	
	33	NB	A		M+		M+			M+			H			H		H	
	34	NB	A		M+		M+			M+			H			H		H	
NJ 49	38	NB	A				M+		M+			M			M		M+		M+
	39	NB	A				M+		M+			M			M		M+		M+
	40	NB	A				M		M+			M			M		M+		M+
	41	NB	A				M		M+			M			M		M+		M+
	42	NB	A				M+		M			M			M+		M+		M+
	43	NB	A				M+		M			M			M+		M+		H
	44	NB	A				M		M			M			M+		M+		H
	45	NB	A				M		M			M			M+		M+		H
	46	NB	A				M		M			M			M+		M+		H
	47	NB	A				M		M			M			M+		M+		H
	48	NB	A				M		M			M			M		M+		M+
	49	NB	A				M		M			M			M		M+		M+
	50	NB	A				M		M			M			M		M+		H
	51	NB	A				M		M			M			M		M+		H
	52	NB	A				M		M			M			M		M+		H
NJ 50	0	WB	A		M				M			M			M+		M+		M+
	1	WB	A		M				M			M			M+		M+		M+
	2	WB	A		M				M			M			M+		M+		M+
	3	WB	A		M				M			M			M+		M+		M+
	4	WB	A		M				M+			M			M+		M+		M+
	5	WB	A		M				M+			M+			M+		M+		M+
	6	WB	A		M				M+			M+			M+		M+		M+
NJ 55	20	NB	LA		D		D			C			C			C			C
	21	NB	LA		D		D			C			C			C			C
	22	NB	LA		D		D			C			C			C			C
	23	NB	LA		B		D			C			C			C			C
NJ 83	0	WB	A				M	M		M+			M						M+
	1	WB	A				M	M		M+			M						M+
	2	WB	A				M	M		M+			M						M+
	3	WB	A				M	M		M+			M						M+