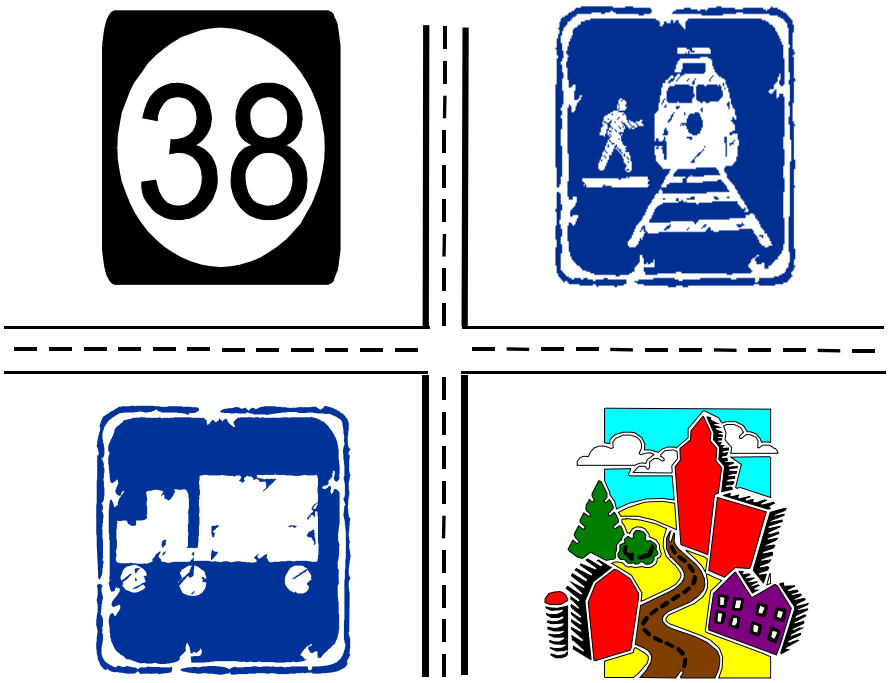
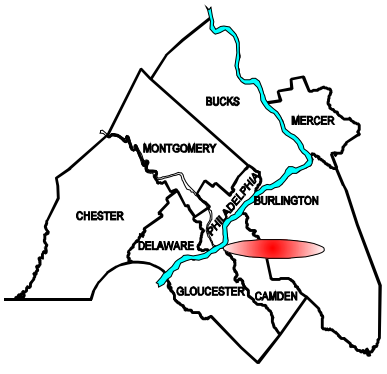


NJ 38 Corridor Study



YEAR 2020 PLANNING CORRIDORS
REPORT 5

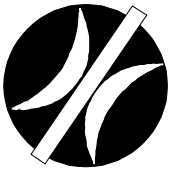
DELAWARE VALLEY REGIONAL PLANNING COMMISSION

NJ 38 CORRIDOR STUDY
BURLINGTON AND CAMDEN COUNTIES

Delaware Valley Regional Planning Commission
The Bourse Building
111 S. Independence Mall East
Philadelphia, PA 19106
www.dvrpc.org

August 2001

Created in 1965, the Delaware Valley Regional Planning Commission (DVRPC) is an interstate, intercounty and intercity agency that provides continuing, comprehensive and coordinated planning to shape a vision for the future growth of the Delaware Valley region. The region includes Bucks, Chester, Delaware, and Montgomery counties, as well as the City of Philadelphia, in Pennsylvania; and Burlington, Camden, Gloucester and Mercer counties in New Jersey. DVRPC provides technical assistance and services; conducts high priority studies that respond to the requests and demands of member state and local governments; fosters cooperation among various constituents to forge a consensus on diverse regional issues; determines and meets the needs of the private sector; and practices public outreach efforts to promote two-way communication and public awareness of regional issues and the Commission.



Our logo is adapted from the official DVRPC seal, and is designed as a stylized image of the Delaware Valley. The outer ring symbolizes the region as a whole, while the diagonal bar signifies the Delaware River. The two adjoining crescents represent the Commonwealth of Pennsylvania and the State of New Jersey.

DVRPC is funded by a variety of funding sources including federal grants from the U.S. Department of Transportation's Federal Highway Administration (FHWA) and Federal Transit Administration (FTA), the Pennsylvania and New Jersey departments of transportation, as well as by DVRPC's state and local member governments. The authors, however, are solely responsible for its findings and conclusions, which may not represent the official views or policies of the funding agencies.

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INTRODUCTION - EXECUTIVE SUMMARY

This document presents a transportation improvement plan for the NJ 38 Corridor in Camden and Burlington Counties (Figure 1). The corridor planning effort undertakes the traditional examinations of an existing transportation/circulation system, in this case NJ 38 and surrounding facilities, identifying safety and functional or operational problems and recommending potential solutions, as appropriate. This plan takes a comprehensive look at the transportation needs of the corridor and identifies which project locations are in need of immediate attention and who is responsible to get these projects moving to the next step. The transportation problem locations identified through the planning process are presented in Table 1.

The Delaware Valley Regional Planning Commission (DVRPC) was requested by the New Jersey Department of Transportation (NJ DOT) to conduct a corridor planning effort which addressed issues affecting transportation and mobility. A steering committee, composed of representatives of the 14 municipalities located along the corridor, Camden and Burlington counties, NJ DOT. New Jersey Transit (NJ Transit) and the Cross County Connection Transportation Management Association (CCCTMA) played an active role throughout the study process and were especially vital to DVRPC's efforts in preparing the corridor study. The participants from the series of municipal meetings are listed in Appendix A. Specifically, the municipalities included in the corridor are: Pennsauken Township, Merchantville Borough, Cherry Hill Township, Maple Shade Township, Mount Laurel Township, Moorestown Township, Hainesport Township, Lumberton Township, Mount Holly Township, Westampton Township, Eastampton Township, Southampton Township, Pemberton Township, and Pemberton Borough (Figure 2).

A description of the existing conditions, identified problems and potential improvement scenarios for each location is presented along with schematic figures and photographs. Improvement scenarios have been recommended based on their ability to correct existing or potential problems or deficiencies. Transportation improvements at these locations will have important implications for the economic vitality of the local areas as well as the quality of life and mobility of the corridor as a whole. This document also lists, in Table 3, those problem locations in the corridor which have been previously identified and are either programmed for implementation on DVRPC's FY 2001 - 2004 Transportation Improvement Program (TIP), listed on NJ DOT's FY 2001-2002 Study and Development Program, identified by DVRPC's Planning Beyond the Pipeline, identified as part of DVRPC's Long Range Plan (LRP) or identified in NJ DOT's 1996 NJ 38 Corridor Technical Memorandum or NJDOT's Route 73 Corridor Needs Assessment Study. By including these projects, this corridor plan becomes as comprehensive as possible in identifying the transportation needs of the corridor.

TABLE 1
CORRIDOR PROJECT LOCATIONS

PENNSAUKEN TOWNSHIP	
• Westbound NJ 70 Ramp at NJ 38 Merge	• Browning Road: NJ 38 to North Park Drive (CR 628)
• The Point at NJ 38 and NJ 70	• NJ 38 at Mansion Ave. (CR 613) and Drexel Ave.
CHERRY HILL TOWNSHIP	
• Cuthbert Boulevard (CR 636): NJ 38 to Hampton Road (CR 623)	• NJ 38 at the NJ Transit Atlantic City Rail Line Overpass
• NJ 38 and Chapel Avenue (CR 626)	• Chapel Ave.(CR 626) at the Atlantic City Rail Line
• NJ 38 and Haddonfield Road (CR 644)	• NJ 38: Haddonfield Rd. (CR 644) to Cherry Hill Mall Dr.
• NJ 38 and Cherry Hill Mall Drive	• NJ 70 in Erlton
• NJ 38/CR 627/CR 616 Circle	• NJ 70: I-295 to Covered Bridge/Frontage Road
MAPLE SHADE TOWNSHIP	
• NJ 38: NJ 41 to NJ 73	• NJ 73: Main Street (CR 537) to Fox Meadow
• NJ 73: I-295 to Collins Avenue	• NJ 38 and Lenola Road
MOORESTOWN TOWNSHIP	
• NJ 38 and Lenola Road	• NJ 38 and East Gate Drive
• NJ 38 and Church Road (CR 607) / Fellowship Road (CR 673)	• NJ 38 and Moorestown-Mount Laurel Road (CR 603)
MOUNT LAUREL TOWNSHIP	
• NJ 73: I-295 to Collins Avenue	• NJ 73: I-295 to Atrium Way
• NJ 38 and Marter Avenue (CR 615)	• NJ 38: I-295 to Briggs Road
HAINESPORT TOWNSHIP	
• CR 537 and Creek Road	• Mount Holly Bypass (CR 541) in Vicinity of NJ 38
• NJ 38 in Vicinity of Hainesport-Mt. Laurel Rd. (CR 674) and Creek Rd.	
LUMBERTON TOWNSHIP	
• Mount Holly Bypass (CR 541) in Vicinity of NJ 38	• NJ 38 and Eayrestown Road (CR 612)
• NJ 38 and Madison Ave/Mt. Holly-Lumberton Rd. (CR 691)	
MOUNT HOLLY TOWNSHIP	
• CR 537 in Mount Holly	• NJ 38 and Eayrestown Road (CR 612)
• NJ 38 in the Vicinity of Savory Way	
SOUTHAMPTON TOWNSHIP	
• NJ 38/CR 530 and US 206	• US 206: CR 616 to NJ 38
• CR 530: US 206 to CR 616	
PEMBERTON TOWNSHIP	
• CR 530: US 206 to CR 616	• CR 530 and Birmingham Road (CR 685)
PEMBERTON BOROUGH	
• CR 530: US 206 to CR 616	

Figure 1 :
NJ 38 CORRIDOR STUDY
Regional Map

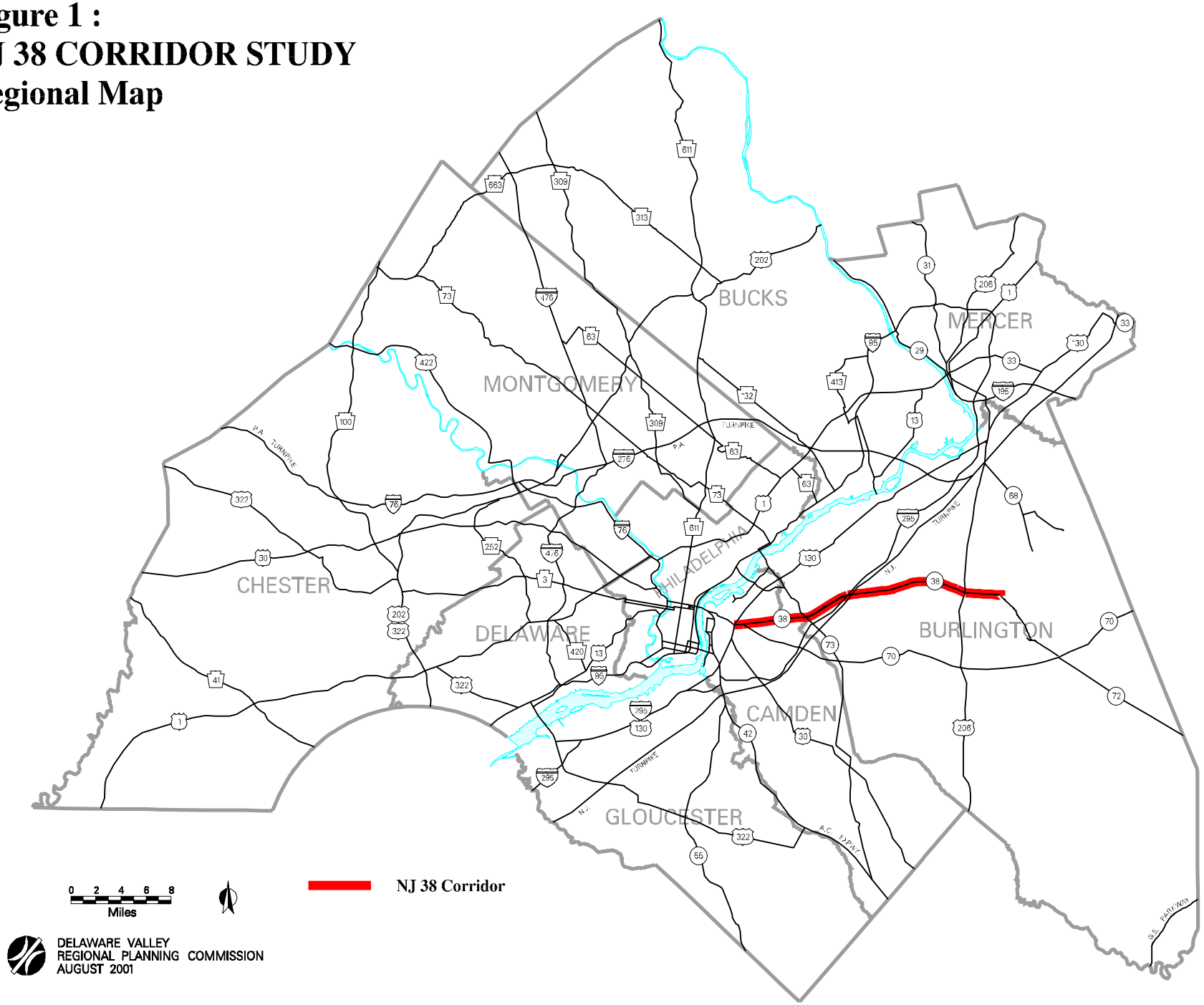
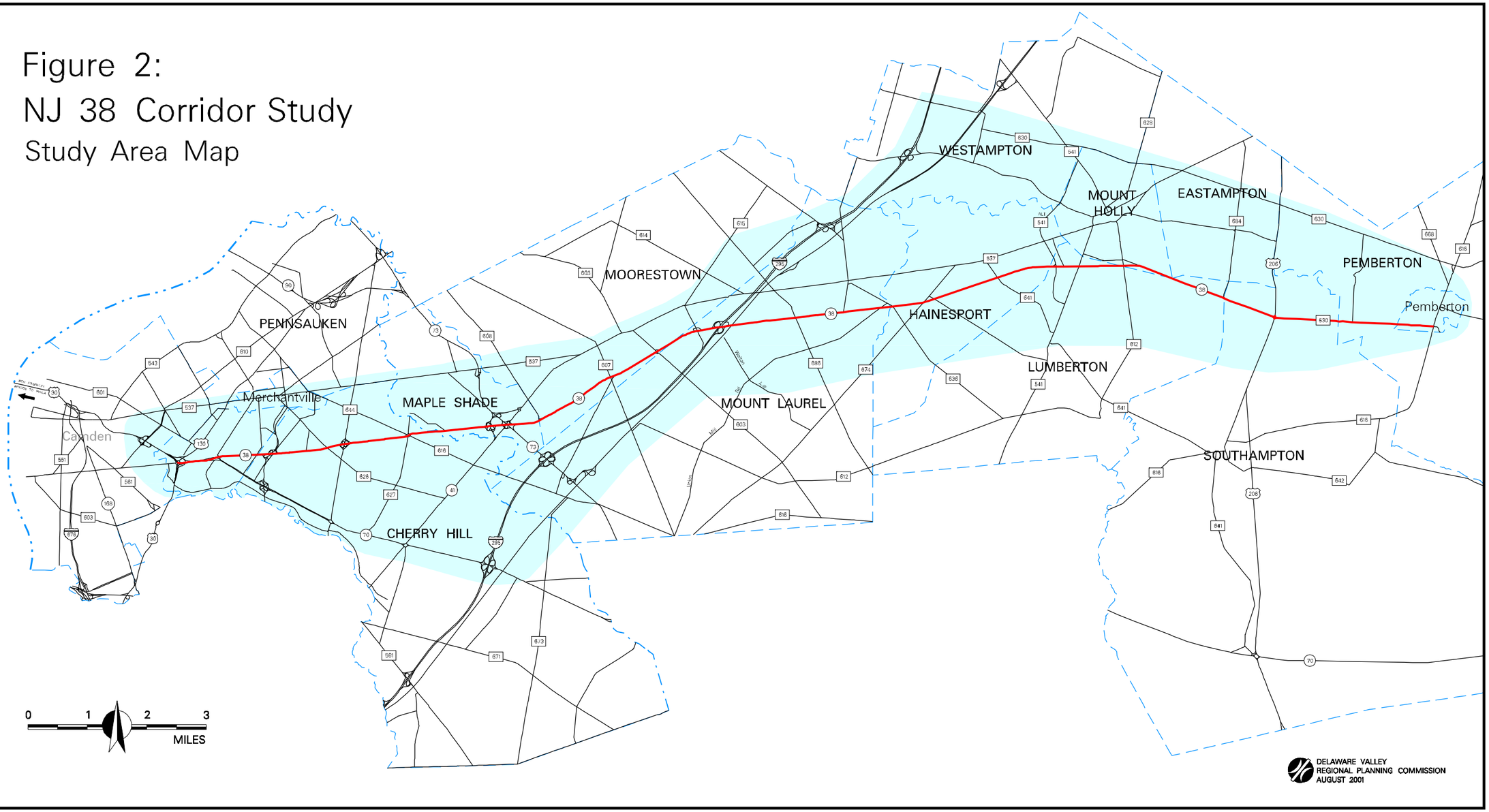


Figure 2:
NJ 38 Corridor Study
Study Area Map



BACKGROUND

Regional Setting

The corridor study area incorporates Camden and Burlington counties and consists of 14 municipalities between Pennsauken Township and Pemberton Borough. The corridor is approximately 21 miles long and NJ 38 is the primary facility carrying east-west traffic. NJ 38 is vital to the growth and progress of Southern New Jersey.

At its western end NJ 38 terminates at the Airport Circle where it meets US 130 and US 30. US 30 provides access to Philadelphia via the Ben Franklin Bridge. US 130 runs north-south between Mercer County to the north and Salem County and the Delaware Memorial Bridges to the south. Near the eastern end of the corridor the NJ 38 designation ends at US 206 in Southampton Township at which point the facility continues as County Route (CR) 530. NJ 38 intersects two major north-south facilities, NJ 73 and I-295. Interstate 295 is a limited access highway that connects Trenton to the north and Wilmington to the south. The I-295 and NJ 38 interchange does not accommodate all movements which limits access and shifts additional traffic to surrounding facilities. NJ 73 provides access to Philadelphia via the Tacony-Palmyra Bridge at its northern terminus and the Atlantic City Expressway at interchange 31 at its southern terminus. This facility meets NJ 38 at a grade separated interchange. Other critical connections which feed local traffic into NJ 38 include NJ 70, CR 636 (Cuthbert Boulevard), CR 644 (Haddonfield Road), CR 616 (Church Road), CR 603 (Moorestown-Mount Laurel Road), CR 615 (Marter Avenue), CR 541 (Mount Holly Bypass), and US 206. NJ 38 serves as the main east-west artery for moving people and goods through the corridor. As such, it also accommodates local trips between residential neighborhoods and shopping and service destinations. This is especially true for Cherry Hill Township, Moorestown Township, and Mount Laurel Township.

NJ 38 is predominantly three lanes in each direction from its origin near the Airport Circle through Mount Laurel. From Mount Laurel to US 206 it is primarily two lanes by direction. Many intersections of this facility have been upgraded over time to accommodate left turns via jughandles and to a lesser extent left turn slots at the intersection. Most of NJ 38 is divided by a jersey barrier median, particularly in the six lane section, which prohibits cross movements. One modified traffic circle is still in existence at the confluence of NJ 38, CR 616 (Church Road) and CR 627 (Cooper Landing Road/Coles Avenue). This circle was redesigned providing a cut through for NJ 38 traffic. The outer ring is still used to accommodate turning movements. The predominant speed limit on

both NJ 38 and CR 530 is 45 mph.

The NJ 38 corridor is more densely developed at its western end through its mid-section and becomes increasingly less developed toward its eastern end. This development pattern is typical of other southern New Jersey corridors which sprawl outward away from the Philadelphia urban core, (i.e. NJ 73, NJ 70). As a result, traffic volumes are higher in the more densely populated areas and congestion has become an issue. This corridor is currently experiencing significant growth within its mid-section with NJ 38 being the main facility providing east-west access for these new developments.

Demographics

According to the U.S. Census Bureau, the average population of the corridor municipalities increased by 11.4% between 1990 and 2000. Of these 14 minor civil divisions (MCD), four experienced overall decreases with the greatest decline at -11% in Pemberton Borough. During this period, Lumberton Township had the highest increase in population at 56% and Mount Laurel was second with a 33% increase. The DVRPC *Year 2020 County and Municipal Interim Population and Employment Forecasts* projects an overall population increase of 22.5% for the 14 corridor municipalities with Eastampton, Westampton, and Mount Laurel Townships leading the way with growth rates of 102.9%, 52.8%, and 31.5%, respectively. The 2000 census figures list the top three most populated MCD in the study area as Cherry Hill Township (69,965), Mount Laurel Township (40,221), and Pennsauken Township (35,737).

In terms of population density, the US Census Bureau figures for 2000 indicate that Merchantville Borough is the most densely populated municipality within the corridor at 9.84 persons per acre. This number is much greater than the densities for both Burlington and Camden Counties which are 0.75 and 3.4 persons per acre respectively. The 14 MCDs of the study area have an average density of 3.31 persons per acre. The population densities of the corridor municipalities are consistent with the corridor's development pattern, being more densely populated in the western section and less dense to the east. Mount Laurel Township, which experienced a 33% increase in population between 1990 and 2000 (from 30,270 people to 40,221 people), is evidence of sprawling eastward development.

An average increase in employment of 23% is forecast for the 14 corridor municipalities according to DVRPC's year 2020 forecasts. Leading this trend are Mount Laurel (44.3%), Hainesport

(31.5%), Westampton (31.3%), and Lumberton (28.5%) Townships, all showing employment growth prospects greater than Burlington County (27.7%) as a whole. The vicinity of the NJ 38 and I-295 interchange continues to experience dramatic increases in population and employment. According to figures compiled by the Burlington County Engineers Office in 1999, six million square feet of development is planned for this area which includes Moorestown and Mount Laurel Townships. These developments will incorporate a mix of uses including office, retail, light industrial and hotel.

Land Use

The communities of Pennsauken, Cherry Hill, and Maple Shade Townships, and Merchantville Borough, are predominantly older communities comprising a mix of housing styles and retail and commercial developments with very little available land for additional development. Moorestown and Mount Laurel Townships are currently experiencing burgeoning growth concentrated in the vicinity of the NJ 38 and I-295 interchange. Office complex, single family residential, and to a lesser extent retail, account for the majority of new developments in this area. The more rural townships of Hainesport, Westampton, Lumberton, Eastampton, and Southampton, although mostly agricultural, are also experiencing residential growth on what was once farmland and wooded areas. Mount Holly Township and Pemberton Borough are older communities that are starting to feel the pressures of development, particularly increased traffic volumes, from the surrounding municipalities.

According to DVRPC's *1995 Land Use By Minor Civil Division* publication, the corridor municipalities occupy a total land area of approximately 224 square miles (the actual study area is less). Of that total, 3.5% is commercial, concentrated mainly in Cherry Hill, Moorestown, and Mount Laurel Townships. These municipalities, along with Pemberton Township also account for 62% of the corridor's total single family detached housing, with single family detached housing being 15% of the total land area. Single family attached and multi-family dwellings account for less than 1% of the residential total in each of the corridor municipalities. More than 30% of Southampton Township is devoted to agriculture and more than 50% of Pemberton Township's total land area is wooded. These numbers support the trend of sprawling development that has been shaping the corridor.

Traffic Volumes

Along NJ 38, the traffic volumes are higher in the western section, drop only slightly through its

mid-section, and level off to a much lower volume at the eastern end of the study area. This pattern correlates closely with the corridor's development pattern. The highest volumes are typically at or near NJ 38's intersections with other major facilities. A 1995 DVRPC annual average daily traffic (AADT) count of 53,186 vehicles per day was recorded on NJ 38 east of the Cuthbert Road interchange. On the west side of the NJ 73 interchange a 1995 AADT of 51,037 was recorded on NJ 38 in Maple Shade Township. AADT volumes dropped significantly east of the NJ 38 and I-295 interchange to 38,971 vehicles per day in 1995. At the eastern end of the corridor an AADT of 21,146 was recorded in Pemberton Borough in 1999. Important feeder routes also showed significant traffic volumes in 1995. In Cherry Hill Township on Haddonfield Road, south of the NJ 38 interchange, an AADT of 27,215 vehicles per day was recorded. This is most likely due in large part to its proximity to the Cherry Hill Mall. In 1999, a volume of 22,603 vehicles per day was recorded on Lenola Road, which boarders Maple Shade and Moorestown Townships. This facility provides access to both the Moorestown Mall and further south to the East Gate Shopping Center. These volumes and others recorded by DVRPC in the corridor are presented in Figures 3a, 3b, and 3c.

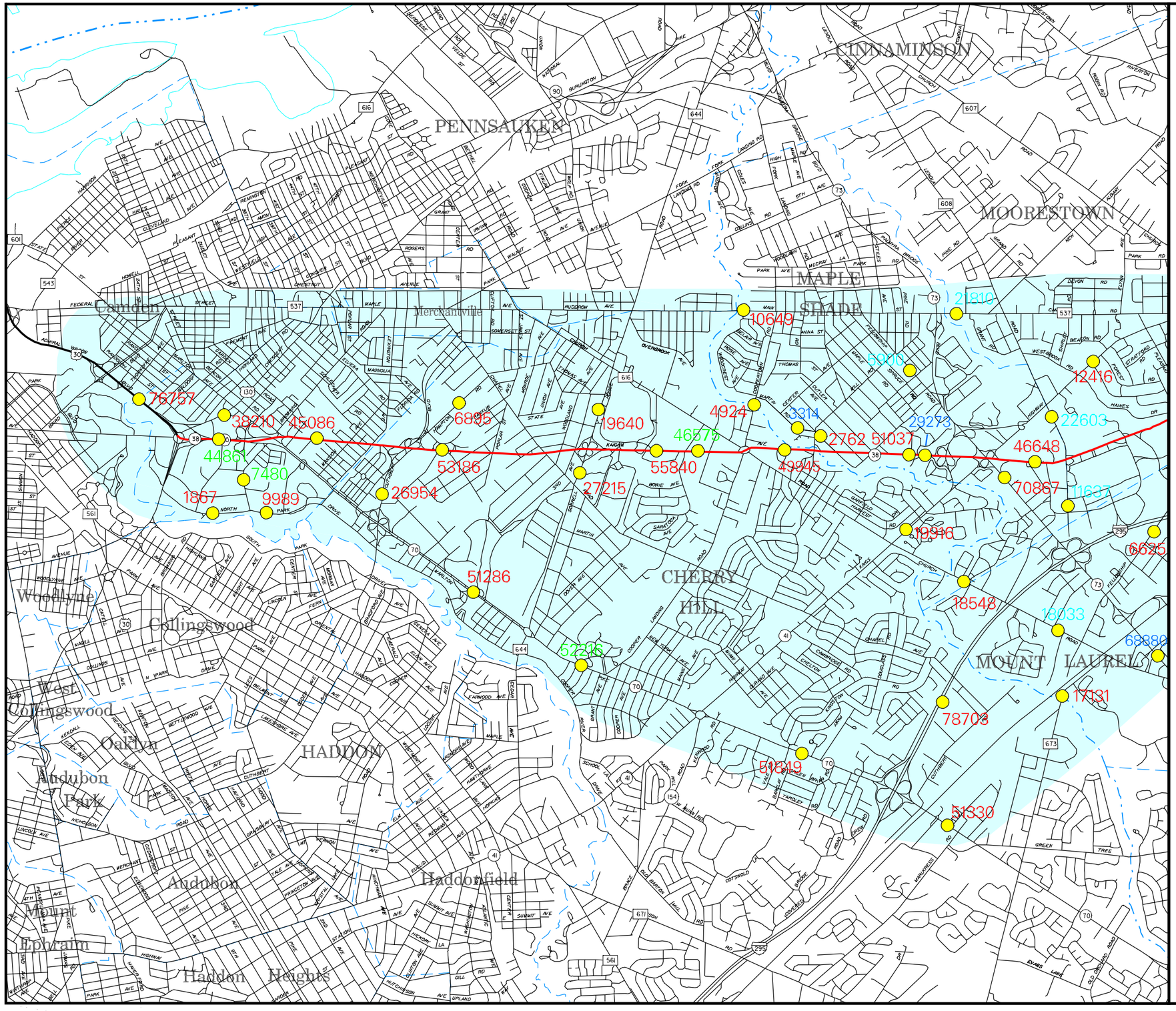


Figure 3A:

NJ 38
Corridor Study
Western Section

Traffic Volumes

Average Annual Daily Traffic (AADT)

- Traffic Count Location
- 68880 1999 Traffic Count
- 52216 1998 Traffic Count
- 17413 1997 Traffic Count
- 10062 1996 Traffic Count
- 42376 1995 Traffic Count

0 1 MILES

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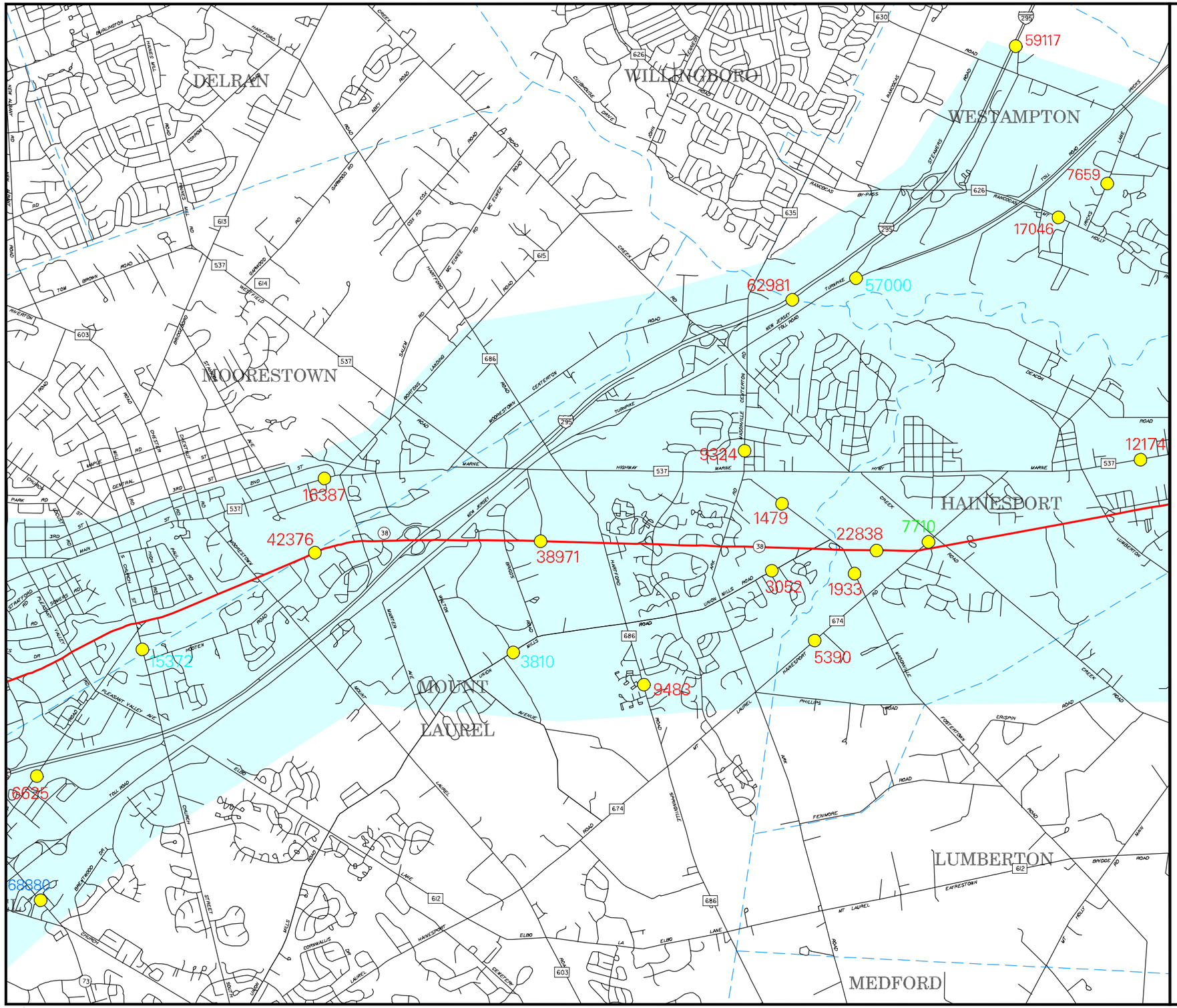
AUGUST 2001

Figure 3B:

NJ 38 Corridor Study Central Section

Traffic Volumes



Average Annual Daily Traffic (AADT)

●	Traffic Count Location
68880	1999 Traffic Count
52216	1998 Traffic Count
17413	1997 Traffic Count
10062	1996 Traffic Count
42376	1995 Traffic Count

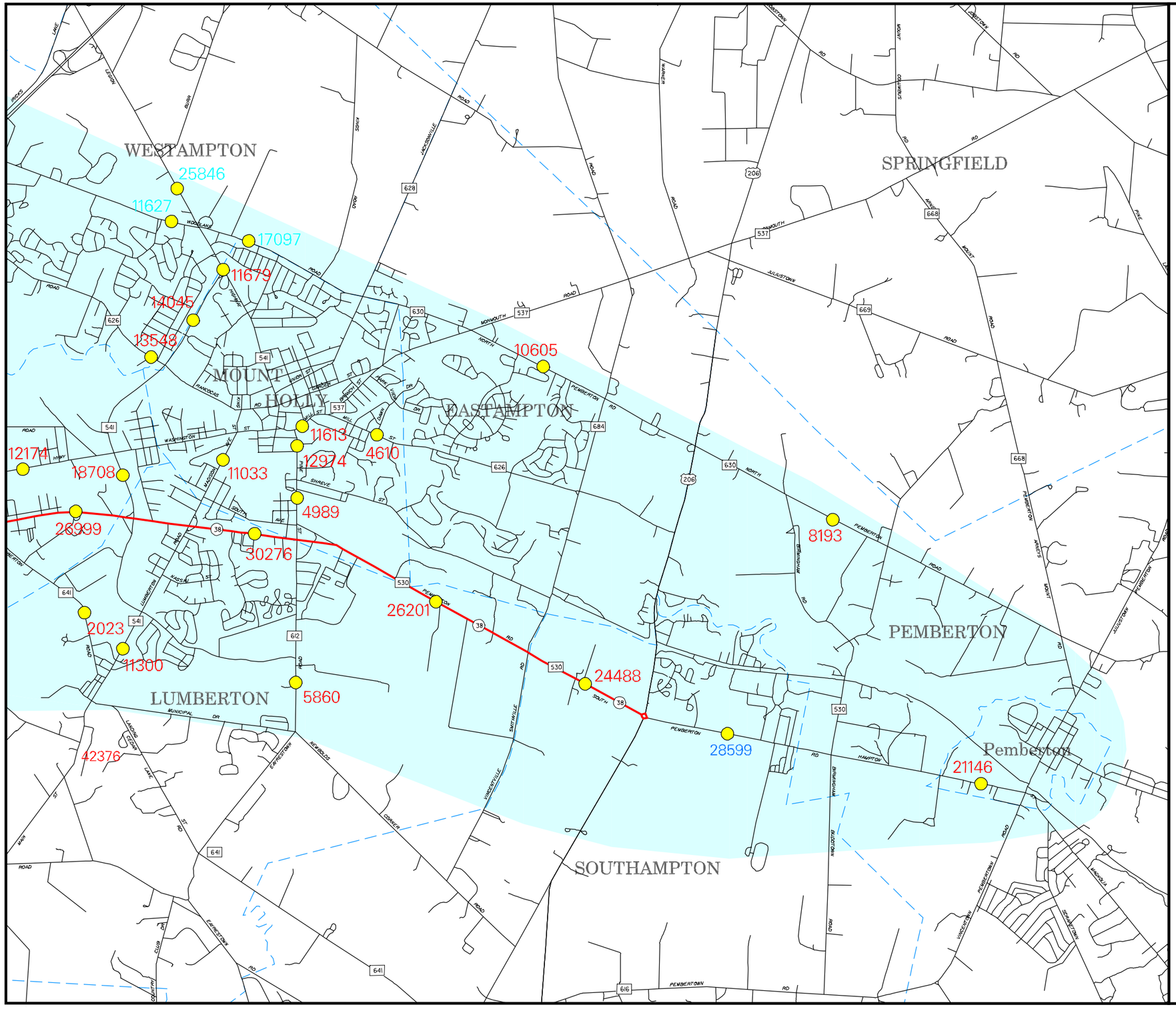
0 1 MILES

DELAWARE VALLEY REGIONAL PLANNING COMMISSION
AUGUST 2001

Figure 3C:

NJ 38
Corridor Study
Eastern Section

Traffic Volumes



Average Annual Daily Traffic (AADT)

- Traffic Count Location
- 68880 1999 Traffic Count
- 52216 1998 Traffic Count
- 17413 1997 Traffic Count
- 10062 1996 Traffic Count
- 42376 1995 Traffic Count

0 1 MILES

DELAWARE VALLEY
REGIONAL PLANNING COMMISSION
AUGUST 2001

TRANSIT/BICYCLE OPPORTUNITIES

Transit Service

Buses are the sole mode of public transit in the corridor. There are several New Jersey Transit bus routes providing service within the NJ 38 corridor. The eleven routes providing service within the corridor are described below.

Route 317 - Philadelphia to Asbury Park – Provides seven-days-a-week service every two hours between Philadelphia and Asbury Park. The 3 hour and 40 minute trip operates primarily on NJ 38 within the study area and serves Camden, Cherry Hill, Mt. Laurel, Mt. Holly, as well as Fort Dix and McGuire Air Force Base.

Route 318 - Philadelphia to Six Flags Great Adventure – This route operates once a day during the Summer. The bus leaves Philadelphia at 9AM and departs Six Flags Great Adventure in the evening. The route operates primarily along Route 38.

Route 404 - Philadelphia to Cherry Hill Mall via Pennsauken – This route travels through Pennsauken via Westfield Avenue, Cove Road, Park Avenue (CR 621) and Haddonfield Road en route to the Cherry Hill Mall. Limited weekday service is provided to the Pennsauken Industrial Park. Peak hour headways are 10 to 20 minutes and off-peak headways are 30 to 45 minutes. Saturday (40 minute headways) and Sunday (60 minute headways) service is provided.

Route 405 - Philadelphia to Cherry Hill Mall via Merchantville – This route also connects Philadelphia, Camden and the Cherry Hill Mall but provides service to Merchantville by means of Maple Avenue (CR 537). Limited extended service to Kingston Estates is provided on weekdays. Service is not as extensive as on Route 404 with headways of 20 (peak) to 60 minutes (off-peak). The route runs seven days a week.

Route 406 - Philadelphia to Medford Lakes – Peak headways are 10 to 30 minutes and off-peak service is 15 to 40 minutes on this route which travels mostly on NJ 70. There is weekend service. Operating time between Philadelphia and Marlton is approximately 1 hour and 25 minutes with an additional 20 minutes to Medford Lakes. There are several limited service portions of this route with the majority of runs terminating at Marlton.

Route 407 - Philadelphia to Moorestown Mall via Merchantville – This route, which travels on CR 537 through Merchantville and Moorestown before heading to NJ 38 and the Moorestown Mall, runs seven days a week. Peak headways are 15-30 minutes and off-peak headways are 40 minutes. A one-way trip takes approximately one hour.

Route 409 - Philadelphia to Trenton – Utilizing US 130, this route runs seven days a week. There are 15-30 minute peak headways and 30 minute off-peak. The route serves Pennsauken, Cinnaminson, Delran, Willingboro, Burlington, Roebling, Bordentown and Trenton. There is limited service to Mt. Holly and several runs terminate at Burlington. Additionally, some runs operate as express service. The proposed light rail line will closely parallel this route.

Route 413 - Philadelphia to Mt. Holly/Burlington – This route provides 30 minute peak period service to Mt. Holly and 60 minute peak period service to Burlington. Off peak headways are 60 minutes for both Burlington and Mt. Holly. The route has several limited service portions. Service between Philadelphia and Burlington takes approximately an hour and a half while service to Mt. Holly takes approximately one hour. Weekend service is provided. This route travels on NJ 38/Kings Highway and CR 537 within the study area.

Route 450 - Camden to Cherry Hill Mall via Audubon – Another route that provides service between Camden and the Cherry Hill Mall. This route serves South Camden, Audubon, Haddon and Westmont. Direct service is provided to the Westmont PATCO station and the NJ Transit Atlantic City Rail Line station at Garden State Park. Peak hour headways are 30 minutes while off-peak service is hourly. Weekend service is provided.

Route 455 - Cherry Hill Mall to National Park – Municipalities served by this route include Haddonfield, Haddon Heights, Runnemede, Deptford and Woodbury. Extended service is offered to Paulsboro. The route directly serves the Deptford Center Mall and the Haddonfield PATCO station. Hourly service is provided Monday through Saturday along this route with a one-way trip taking approximately 1 hour 20 minutes.

Route 457 - Camden to Moorestown Mall – Peak hour headways on this route are 30 minutes and off-peak headways are 2 hours. Travel time on the route is approximately 1 hour and 20 minutes. There is no Sunday service on this route. Communities served by this route include

Camden, Gloucester City, Mt. Ephraim, Audubon, Haddonfield, Cherry Hill, Mt. Laurel. Limited service is provided to the Eastgate Industrial Center. Within the study area the bus utilizes Kings Highway, Church Road and Fellowship Road.

BurLink Shuttle - There are three BurLink shuttle routes operated by Burlington County. The Pemberton to Mount Holly route has three AM runs and four PM runs. The Mount Holly to Willingboro route has five AM runs and seven PM runs. There is also a Burlington County College Express bus which departs from Willingboro with three morning runs and four afternoon runs. Fares are $1 each way (the Express costs $2). A transfer to a NJ Transit bus is free while a transfer from a NJ Transit bus to the shuttle is only $0.40. The shuttles make connections with NJ Transit routes 317, 409 and 413 and will have a connection with the Southern New Jersey Light Rail Transit line.

As of April 2000, all New Jersey Transit bus lines serving southern New Jersey accommodate bicycles. Most buses can carry up to two bicycles on a front-mounted rack. Some lines occasionally utilize cruiser-type buses with baggage compartments. Up to six bikes may be carried in these compartments on the right side of the bus, when traveling to or from stops along streets and highways. Up to six additional bikes may be stowed in the left side compartments, but loading and unloading are permitted only at bus terminals.

Bicycle accommodation on buses effectively expands the area served by transit. The typical outer limit for a pedestrian trip to or from a transit stop is approximately one-quarter mile. A pedestrian can cover this distance in approximately 5 minutes. In the same amount of time, however, an average bicyclist can travel approximately one mile. Buses which accommodate bikes allow transit patrons to use their bikes at both trip ends. Use of NJ Transit's "Rack 'n' Roll" service is expected to grow significantly during the next year in the corridor, bringing an increase in bicycle traffic on corridor roadways.

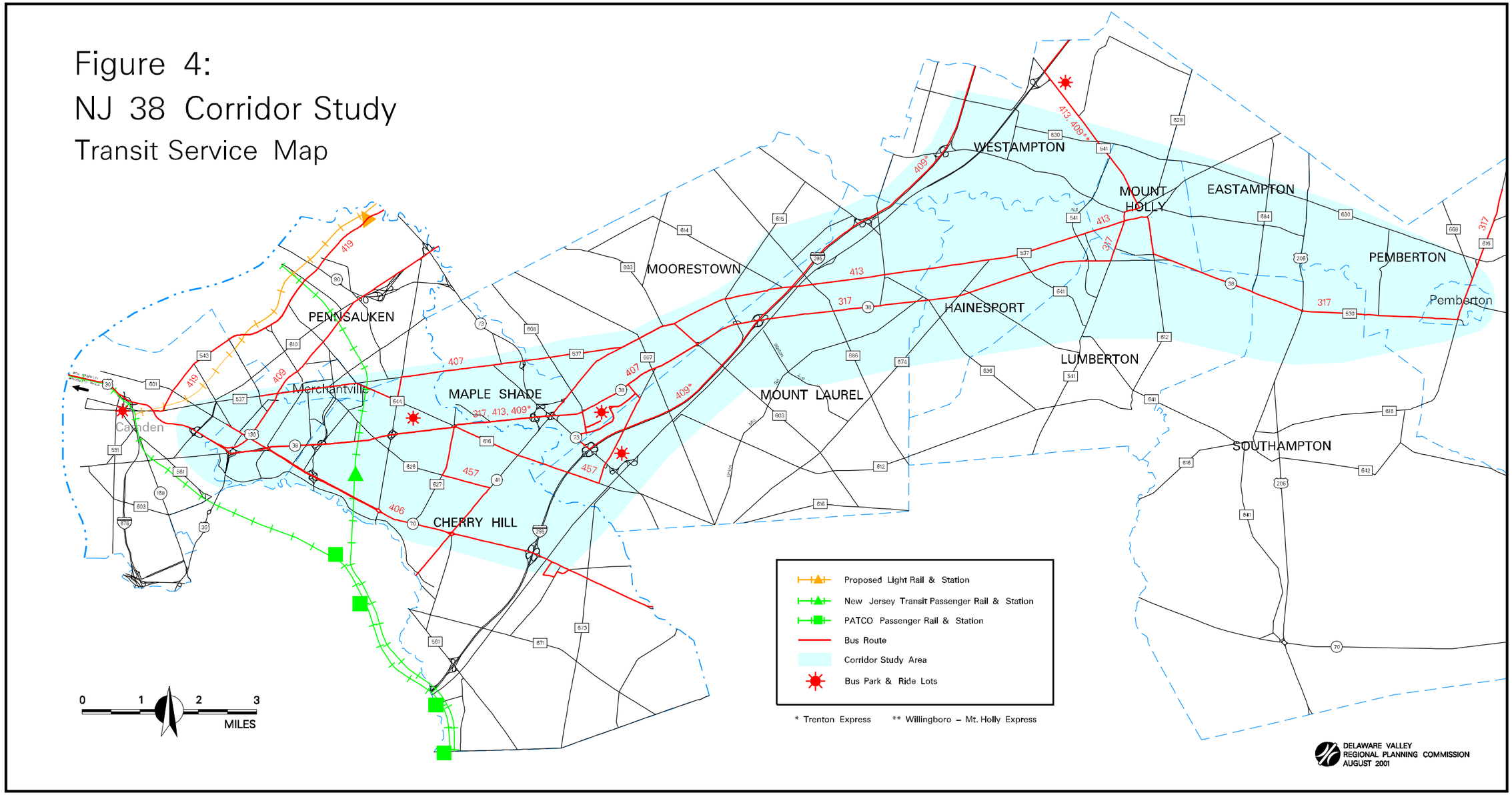
Bicycle and Pedestrian Facilities

In April 1997, the DVRPC board adopted the Southern New Jersey Bicycle and Pedestrian Mobility Plan. This plan proposes a Southern New Jersey Bicycle Network, a comprehensive system of roads recommended for improvements to bicycling. This network includes virtually all the 500, 600, and 700 series county roads. Much of this network can be ridden in relative comfort by a majority of bicyclists: the curb lanes are sufficiently wide for road sharing or the roads have shoulders; and

traffic volumes and speeds are relatively low.

Burlington County has been making strides toward a more bike-friendly road network by adding shoulders as part of nearly all resurfacing projects. Camden County has included bike lanes in some recent resurfacings, including a stretch of CR 537 between Haddonfield Road and the county line. Bicycle lanes should be striped during future resurfacing projects on CR 537. Where installed, bike lanes have provided the additional benefit of traffic calming. Within the corridor, Moorestown Township has an exemplary bicycle circulation plan, which it is implementing. Bicycle and pedestrian planning and design is currently a rapidly evolving field. It is imperative that facilities are planned and designed in accordance with current guidance and standards.

Figure 4:
NJ 38 Corridor Study
Transit Service Map



INTELLIGENT TRANSPORTATION SYSTEM (ITS) COMPONENTS

New Jersey DOT has developed an ITS Strategic Business Plan to meet future transportation challenges facing the state through the deployment of ITS components. ITS is the application of advanced technologies (computers, communications, electronics, sensors) in an integrated manner for the operation of transportation systems at their optimal safety and efficiency. This plan focuses the ITS efforts into a strategic corridor planning program that will best maximize the benefits of ITS and limited available funding.

New Jersey DOT has identified the South Jersey Urban Commuting Corridor as a priority corridor for ITS investment. This corridor addresses the needs of commuting within the counties of Gloucester, Camden and Burlington. These counties provide the commuter shed to the Philadelphia/Camden area which experiences significant daily congestion. The corridor's commuting pattern is spread out in a radial pattern with demand centered toward the urban core. Limited access routes such as I-76, I-295, I-676, NJ 42, NJ 55, NJ 90 and the NJ Turnpike as well as urban arterials such as US 30, US 130, NJ 38, NJ 70 and NJ 73 provide both a daily incident management challenge and opportunity to manage demand. Given the nature of the transportation system demands and opportunities for management, this corridor can be well served by strategic investments in ITS projects.

A significant investment in ITS technologies has already taken place and is programmed to continue within the South Jersey Urban Commuting Corridor. The installation of closed circuit TV (CCTV) cameras, variable message signs (VMS) and highway advisory radio (HAR) throughout the corridor along with the Emergency Service Patrols (ESP) and the Incident Management Response Teams (IMRT) assists NJ DOT staff in the traffic operation center (TOC) in Cherry Hill Township monitor traffic conditions, assist in incident management and disseminate information to the public. A closed loop traffic signal system is being installed on US 30, NJ 38, NJ 70 and NJ 73 which will allow NJ DOT's staff to operate the traffic signals along the corridor remotely from the TOC. Every traffic signal along NJ 38 from US 30/US 130 to I-295 will be interconnected through a fiber optic network within the closed loop system. These signalized intersections are part of an Advanced Traffic Management System which includes the connection and integration of 97 signalized intersections, installation of 19 CCTV cameras, 4 HAR transmitters and 13 VMS. The system includes fiber optic installation to allow communication to NJ DOT's TOC. Table 2 identifies the ITS components existing or programmed to be deployed within the NJ 38 corridor.

TABLE 2
ITS Components

Route	Milepost	Location	Municipality	Component
NJ 38	0.6		Pennsauken	CCTV
NJ 38	1.5		Cherry Hill	CCTV
NJ 38	2.8		Cherry Hill	CCTV
NJ 38	3.9		Cherry Hill	CCTV
NJ 38	6.5		Moorestown	CCTV
NJ 38	9.2		Mount Laurel	HAR
NJ 38 WB	1.0		Pennsauken	VMS
NJ 38 WB	6.3		Moorestown	VMS
NJ 38	0.0 to 9.5		16 Intersections	CTSS
NJ 38	1.2	Mansion Blvd	Pennsauken	Closed Loop
NJ 38	2.0	Longwood Ave	Cherry Hill	Closed Loop
NJ 38	2.5	Chapel Ave	Cherry Hill	Closed Loop
NJ 38	3.2	Cherry Hill Mall Entrance	Cherry Hill	Closed Loop
NJ 38	3.9	Cooper Landing / Church Road	Cherry Hill	Closed Loop
NJ 38	4.4	Mill Road / Columbia Blvd	Cherry Hill	Closed Loop
NJ 38	4.7	Cutler / Rudderow Ave	Maple Shade	Closed Loop
NJ 38	6.1	S. Lenola Road	Moorestown	Closed Loop
NJ 38	6.5	Nixon Drive	Moorestown	Closed Loop
NJ 38	6.7	E. Gate Drive	Moorestown	Closed Loop
NJ 38	7.0	Pleasant Valley Ave	Moorestown	Closed Loop
NJ 38	7.5	S. Church Street	Moorestown	Closed Loop
NJ 38	7.6	Fellowship Road	Mount Laurel	Closed Loop
NJ 38	8.4	Mount Laurel Road	Mount Laurel	Closed Loop
NJ 38	8.7	Midlantic Drive	Mount Laurel	Closed Loop
NJ 38	9.2	Marter Ave	Mount Laurel	Closed Loop

CORRIDOR TRANSPORTATION PROBLEMS AND POTENTIAL IMPROVEMENT SCENARIOS

This section of the report presents those locations within the corridor which have been identified using technical analysis and suggestions from the local municipalities as currently experiencing transportation problems, as critical to the mobility of people or goods throughout the corridor or as projected to have significant impacts to the transportation infrastructure because of proposed changes in a nearby land use (economic development pressures). There are 37 locations which have been identified within the 14 municipalities which make up this corridor. These locations are shown graphically on figures 5a, 5b and 5c. A relatively detailed write-up of the existing conditions, identified problems and potential improvement scenarios for each location is presented along with schematic figures and photo.

Because of the nature of this planning document, specific detailed improvement recommendations are not provided. However potential improvement scenarios which in some cases represent a range of alternatives are presented. These scenarios have been discussed with the study stakeholders in relation to their ability to solve existing or potential problems or deficiencies and are considered worthy of future action. Transportation improvements at these locations could have important implications for the economic vitality of the local areas as well as the mobility of the corridor as a whole.

At the onset of this effort, multi-agency field views were conducted to review potential locations for inclusion into the study. Participants included representatives from each of the local municipalities, staff from the Burlington County Engineer's Office, New Jersey Department of Transportation, the Delaware Valley Regional Planning Commission and the Cross County Connection TMA. During these preliminary field views, a base set of locations was identified for further review. DVRPC staff conducted subsequent follow-up field views to better define the existing conditions, observe the operating conditions, refine the problem identification and begin to formulate potential improvement scenarios. Each location was documented in terms of the above mentioned criteria. The information that follows for each location is a result of that process and recommends actions to be pursued based on cooperative discussions and input from each of the study participants. The location descriptions are presented from a general west to east direction through the corridor and the numbering has no relation to project priority.

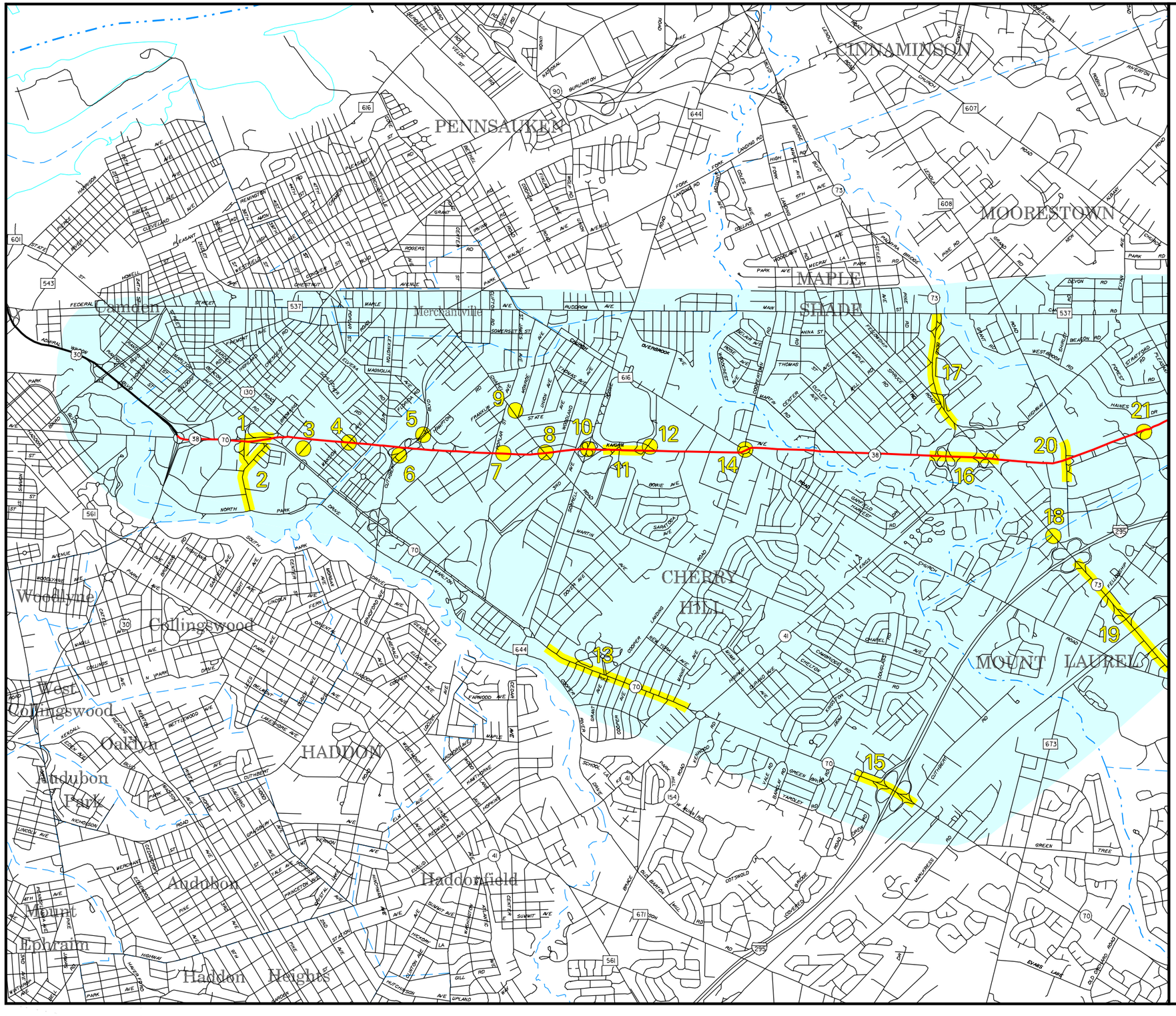


Figure 5A:

NJ 38
Corridor Study
Western Section

Transportation
Problem
Locations

DELAWARE VALLEY
REGIONAL PLANNING COMMISSION
SEPTEMBER 2001

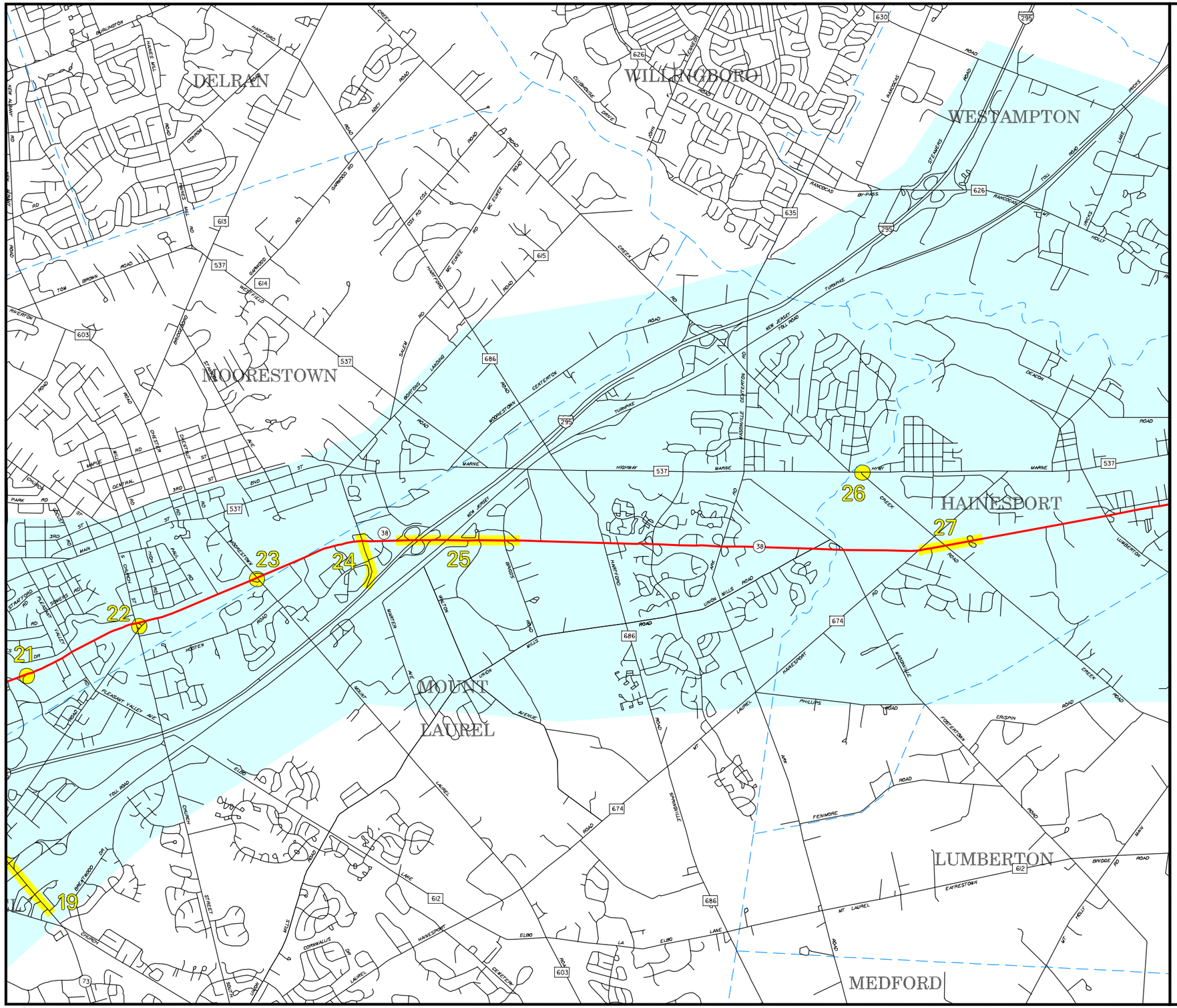


Figure 5B:

NJ 38
Corridor Study
Central Section

Transportation
Problem
Locations

DELAWARE VALLEY
REGIONAL PLANNING COMMISSION
SEPTEMBER 2001

Figure 5C:

NJ 38
Corridor Study
Eastern Section

Transportation
Problem
Locations

WESTAMPTON
SPRINGFIELD
MOUNT HOLLY
EASTAMPTON
LUMBERTON
PEMBERTON
Pemberton
SOUTHAMPTON

28 29 30 31 32 33 34 35 36

0 1 MILES

DELAWARE VALLEY
REGIONAL PLANNING COMMISSION
SEPTEMBER 2001

1. WESTBOUND NJ 70 RAMP AT NJ 38 MERGE

Pennsauken Township, Camden County
Milepost 0.22 to 0.71

Existing Conditions:

There are four major arterial facilities in the vicinity of the Airport Circle. US 130 and US 30 intersect at the circle. NJ 38 begins at the Circle and NJ 70 diverges from NJ 38 just east of the Circle. Before merging with NJ 38, westbound NJ 70 is carried over NJ 38 via a flyover ramp. The ramp carries three travel lanes with no shoulder. There is an interchange with Browning Road on the ramp. The first exit from the flyover ramp is northbound Browning Road. A travel lane drops off 400 feet later at the southbound Browning Road exit. The Browning Road on-ramp is 200 feet beyond that point adding a travel lane. At this point NJ 70 merges with NJ 38. The US 30 westbound exit to the Benjamin Franklin Bridge is 750 feet from the NJ 70/NJ 38 merge. The two right lanes of westbound NJ 38 become the westbound US 30 off-ramp. There are several businesses along the north side of NJ 38 beginning immediately adjacent to the NJ 70/NJ 38 merge and continuing to Strand Avenue. After the NJ 70 merge, NJ 38 is five lanes by direction. The posted speed limit is 45 m.p.h. on both NJ 70 and NJ 38 in this vicinity.

Identified Problems:

There are weaving problems associated with the NJ 70/NJ 38 and the NJ 38/westbound US 30 merge. This is compounded by the high rate of speed of traffic in this vicinity and vehicles trying to access the businesses along the north side of NJ 38. There is only 750 feet on NJ 38 between the NJ 70 merge and the US 30 off-ramp. There are six curb cuts on the north side of NJ 38 serving a variety of businesses which compound this problem. A few businesses are located directly adjacent to the Browning Road on-ramp to NJ 38 and it is difficult for vehicles on NJ 38 to access these businesses. NJ 70 drops from three to two lanes at the southbound Browning Road off ramp. 200 feet later at the NJ 38 and NJ 70 merge, the southbound Browning Road on ramp comes in. The lane drop is not signed and traffic in the far right lane on westbound NJ 70 must merge quickly or exit. Additionally, the overhead sign for the southbound Browning Road off-ramp is obscured by a tree.

Suggested Improvement Scenarios:

- The tree branches which obscures the southbound Browning Road off-ramp should be cut back.

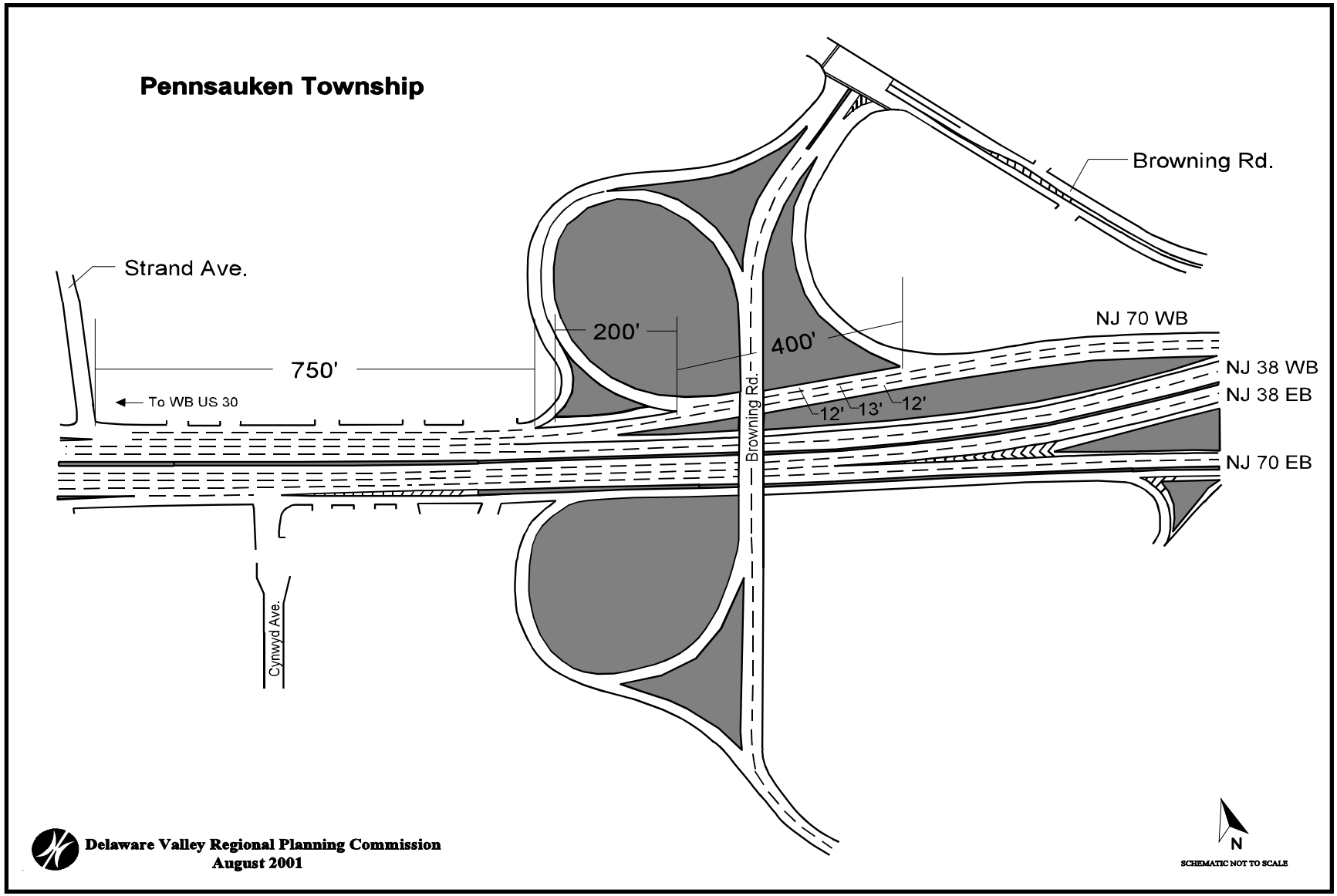
- The lane drop at the southbound Browning Road off-ramp should be signed as an exit only lane.

- The businesses located along the north side of NJ 38 should be approached to examine consolidating the numerous curb cuts along this stretch of NJ 38 in order to decrease potential points of conflict.

FIGURE 6: Westbound NJ 70 Ramp Looking Towards NJ 38 Merge

FIGURE 7: Westbound NJ 70 and NJ 38 Merge Looking Towards US 30 Split

Figure 8: Westbound NJ 70 Ramp at NJ 38 Merge



2. BROWNING ROAD: NJ 38 TO NORTH PARK DRIVE (CR 628)

Pennsauken Township, Camden County

Existing Conditions:

This section of Browning Road is one lane by direction and serves as a primary access road for the Airport Circle Industrial Park. Consequently, truck traffic is heavy along this stretch of Browning Road. There is only access to westbound NJ 38 from the Browning Road interchange. There is no direct access to eastbound NJ 38 because the Browning Road on-ramp is separated from NJ 38 by a median barrier which directs all Browning Road traffic onto eastbound NJ 70 at a point after the NJ 38/NJ 70 split. However, eastbound NJ 38 can be accessed from the industrial park by Cynwyd Avenue.

Identified Problems:

Browning Road is a main pedestrian route between residential areas of Pennsauken to the north and Cooper River Park because pedestrians can use the Browning Road overpass instead of crossing NJ 38 at grade level. Unfortunately, there are no sidewalks and no lane markings along this segment of Browning Road. On one site visit, a handicapped person was observed walking in the street.

Suggested Improvement Scenarios:

- Stripe and sign Browning Road to incorporate a wide shoulder to be used for walking and bicycling.

FIGURE 9: Browning Road Looking North

3. THE POINT AT NJ 38 AND NJ 70

Pennsauken Township, Camden County
Milepost 0.72 to 0.95

Existing Conditions:

The convergence of NJ 38 and NJ 70 is commonly referred to as the Point. The adjacent plot of land is home to a cinema, restaurant and two currently vacant speculative retail buildings with shared parking. Access to this parcel from eastbound NJ 38 is right in and right out only. There is no direct access from westbound NJ 38. Access from NJ 70 is from a signalized intersection at McLellan Avenue . There is also right in/right out access further west on NJ 70.

Identified Problems:

Vehicles are using the parking lot as a cut through between NJ 70 and NJ 38. This unofficial cut through is frequently used by vehicles on eastbound NJ 38 that missed the NJ 70 split 800 feet back or westbound NJ 70 vehicles wishing to get to eastbound NJ 38. These vehicles generally travel at a high rate of speed for a parking lot. There is a ramp for direct access from westbound NJ 70 to eastbound NJ 38 only 800 feet from the signalized intersection of NJ 70 and McLellan Avenue. The ramp is a much safer direct way to access eastbound NJ 38 from westbound NJ 70 compared to maneuvering through the parking lot.

Suggested Improvement Scenarios:

- Provide a sign on westbound NJ 70 alerting motorists of the eastbound NJ 38 ramp and a sign on eastbound NJ 38 directing traffic to the Cuthbert Boulevard interchange to reach eastbound NJ 70..

- Institute improvements such as channelization and speed bumps within the parking lot to discourage through traffic.

4. NJ 38 AT MANSION AVENUE (CR 613) AND DREXEL AVENUE

Pennsauken Township, Camden County
Milepost 1.16

Existing Conditions:

This is a six-legged signalized intersection with Drexel Avenue being slightly off-set from NJ 38 and Mansion Avenue. Southbound Drexel Avenue is only accessible from Mansion Avenue and eastbound NJ 38. Northbound Drexel Avenue is accessible only from Westbound NJ 38. NJ 38 is three lanes by direction east of the intersection but westbound NJ 38 tapers to two lanes by direction to the west of the intersection (eastbound NJ 38 is three lanes by direction to the west). NJ 38 and Mansion Avenue is an angled intersection. There is a nearside jughandle (King Avenue) on westbound NJ 38 and a nearside right in-right out jughandle (Burwood Avenue) on eastbound NJ 38 to handle turning movements at Mansion Avenue. This area is fully developed with a small strip mall and a floral shop on the north side of NJ 38 and a liquor store, gas station and small strip of offices on the south side of NJ 38. The small strip mall has a parking lot that fronts along Mansion Avenue.

Identified Problems:

The small strip mall on the northwest corner of the intersection includes an appliance store. Large tractor trailers making deliveries to the appliance store have difficulty maneuvering around the intersection and small parking lot. A tractor trailer was observed jumping the curb in this vicinity and taking up both lanes on Mansion Avenue. Traffic using the westbound NJ 38 jughandle (King Avenue) frequently cannot turn onto southbound Mansion Avenue because the stacking queue is backed up. The stacking area is only 100 feet long (and only stripped for two lanes for 45 feet) and fills up quickly due to the long red cycle on Mansion Avenue. Additionally, the parking lot for the small strip mall is reached from this stretch of Mansion Avenue. There is a law office parking lot on the jughandle which is partly hidden from view when exiting from NJ 38. On the south side of Mansion Avenue parking is allowed on the northbound side of the street. Since the street is only striped for one lane, this does not permit turn lanes at the intersection.

Suggested Improvement Scenarios:

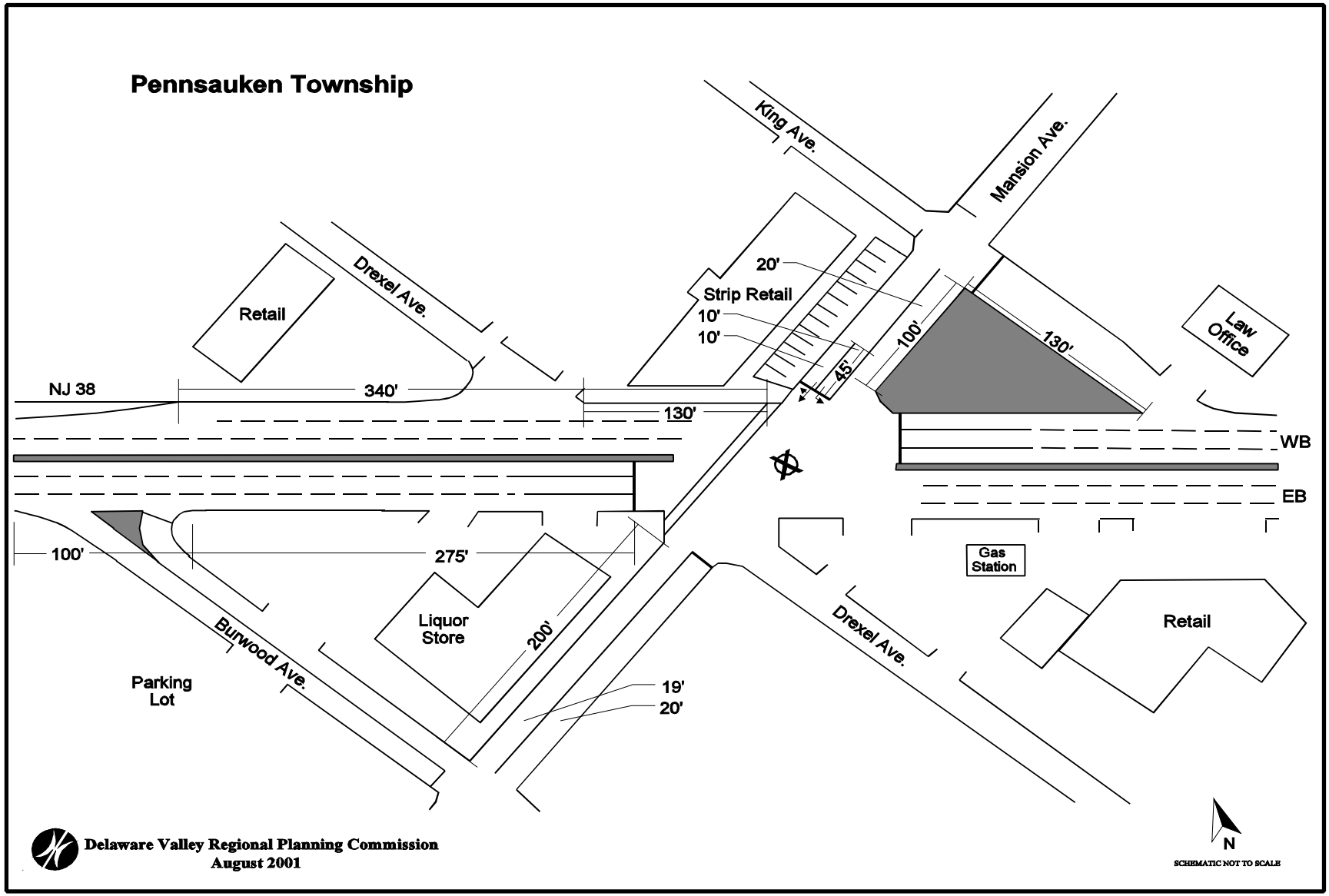
- Stripe a stop bar before the jughandle (King Avenue) on Mansion Avenue and install a "Do Not Block Intersection" sign. Also, extend the existing striping for two turn lanes from NJ 38 to King Avenue. This can be accomplished within the existing cartway.

- Prohibit on street parking on northbound Mansion Avenue immediately adjacent to the intersection of NJ 38 to allow for striping of a left-hand turn lane and a through/right-hand turn lane at NJ 38. Based on field observations of current volumes and conditions, turn lanes need only be about 50 feet in length at this time.

FIGURE 10: Mansion Avenue Looking South Towards NJ 38

FIGURE 11: Mansion Avenue Looking North Towards NJ 38

Figure 12: NJ 38 at Mansion Avenue (CR 613) and Drexel Avenue



5. CUTHBERT BOULEVARD (CR 636): HAMPTON ROAD (CR 633) TO NJ 38

Cherry Hill Township, Camden County

Existing Conditions:

This location near the NJ 38 and Cuthbert Boulevard interchange at the confluence of the NJ 38 ramps, Cuthbert Boulevard, Hampton Road, an access road to the Bradlees Shopping Center, and two driveways to Camden Catholic High School was recently realigned. The improvements which included a reconfiguration of traffic flow and new traffic signals greatly improved safety at this location by eliminating dangerous crossing movements.

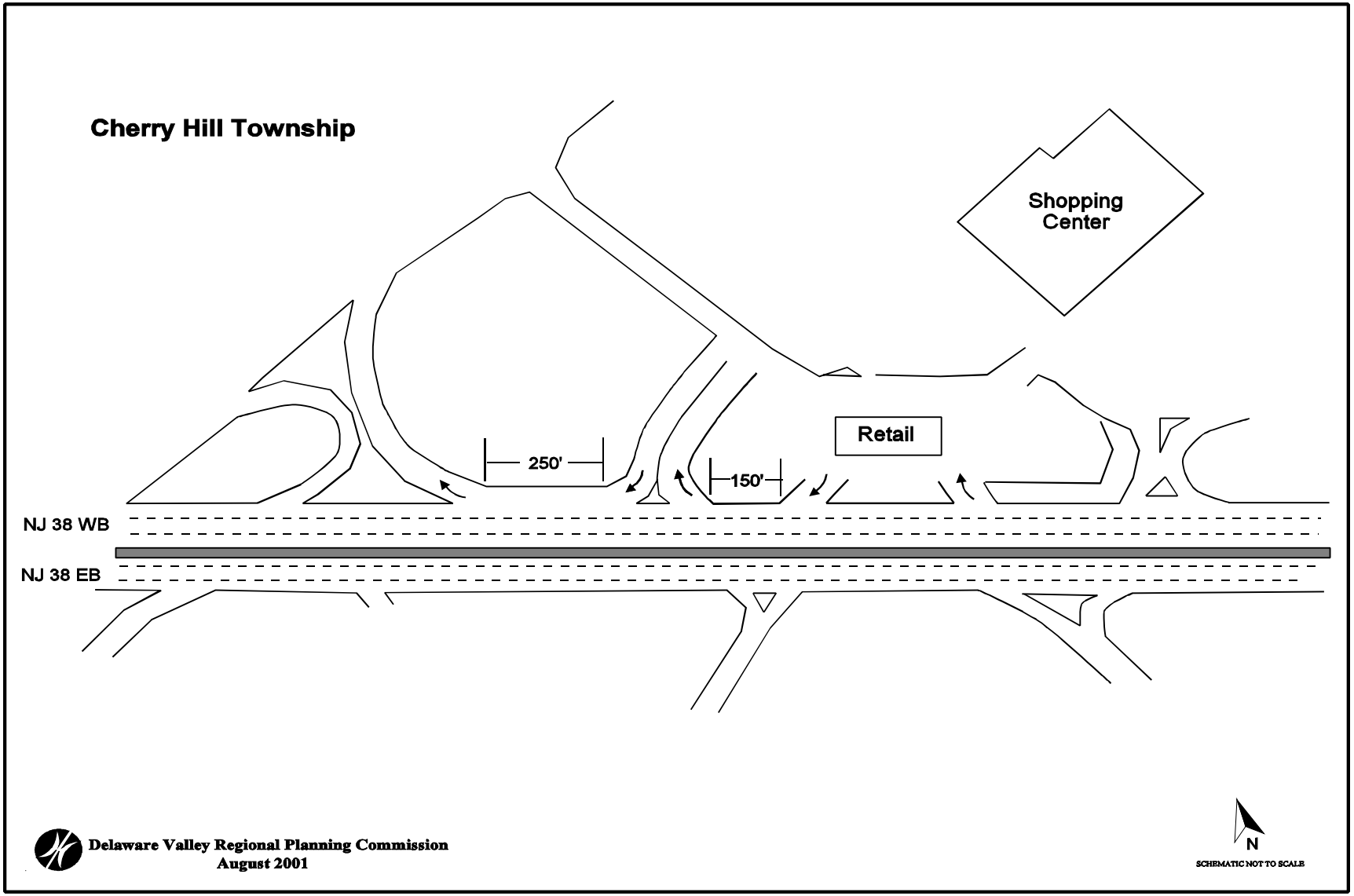
Identified Problems:

There is a right in/right out access point on westbound NJ 38 only 250 feet from the northbound Cuthbert Boulevard off-ramp from westbound NJ 38. Additionally, there is a right out egress drive from a video store located just 150 feet to the east of the right in/right out access drive. The right in/right out access connects to the road between the Bradlees Shopping Center and Cuthbert Boulevard. The close proximity to the Cuthbert Boulevard interchange creates weaving conflicts and insufficient acceleration distance.

Suggested Improvement Scenarios:

- The right in/right out access noted above should be closed. Traffic to and from the Bradlees Shopping Center can access NJ 38 from the Cuthbert Boulevard interchange or use the main drive further east on NJ 38.

Figure 13: NJ 38 in Vicinity of Cuthbert Boulevard (CR 636)



6. CUTHBERT BOULEVARD (CR 636): NJ 38 TO HAMPTON ROAD (CR 623)

Cherry Hill Township, Camden County

Existing Conditions:

Similar to the north side of the Cuthbert Boulevard interchange, this location has a problematic intersection abutting the NJ 38 ramps. Hampton Road intersects Cuthbert Boulevard just south of the NJ 38 interchange. The eastern leg of Hampton Road serves as the on-ramp for eastbound NJ 38. This intersection is not controlled by a traffic signal. Hampton Road (CR 623) is one lane by direction and Cuthbert Boulevard is two lanes by direction. The posted speed limit on Cuthbert Boulevard is 40 m.p.h. but traffic was observed at higher speeds. This is due to the lack of stop controls as vehicles cross over NJ 38.

Identified Problems:

Motorists on northbound Hampton wishing to access eastbound NJ 38 must cross four lanes of traffic on Cuthbert Boulevard. The Hampton and Cuthbert Boulevard intersection is severely angled and there is poor sight distance from Hampton to both directions on Cuthbert due to the curvature of Cuthbert on the south side and the geometrics of Cuthbert Boulevard as it crosses over NJ 38 to the north. Vehicles, including trucks, were observed crossing the southbound lanes of Cuthbert and then waiting in the narrow median (less than 7 feet) to cross the northbound lanes. This presents a hazard to motorists on both Hampton and Cuthbert.

Additionally, the eastbound NJ 38 to southbound Cuthbert Boulevard off-ramp enters Cuthbert Boulevard only 350 feet from Hampton Road. This often results in vehicles entering southbound Cuthbert from the off-ramp without being seen by motorists on Hampton waiting to cross Cuthbert. This is compounded by the high speed of traffic on the Cuthbert Boulevard overpass. There is a truck training school on the corner of northbound Cuthbert and Hampton Road.

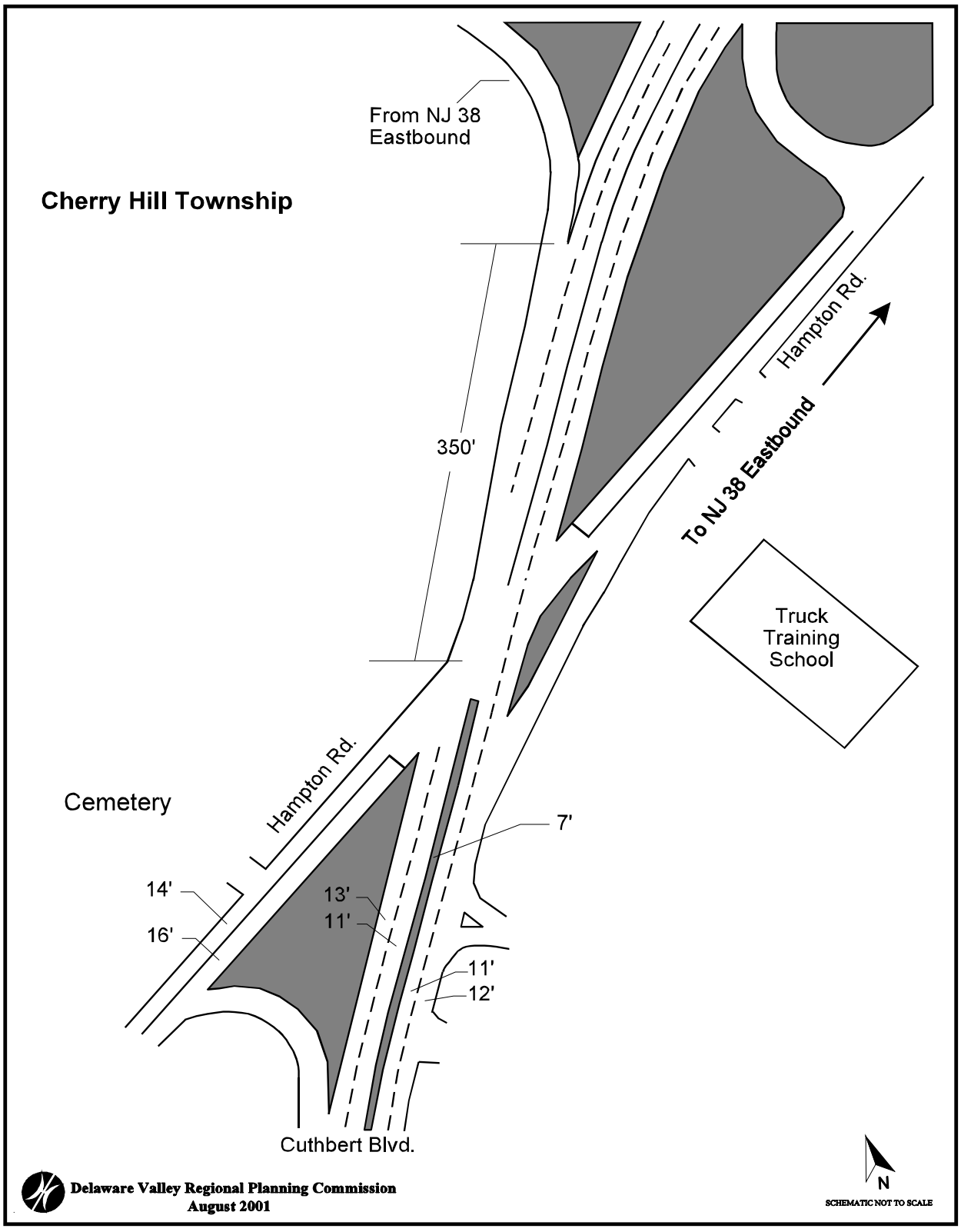
Suggested Improvement Scenarios:

- Close the NJ 38 median at Hampton Road. On the south side of NJ 38, stripe Hampton Road one-way southbound to the cemetery entrance and then two-way after that in order to maintain access to the cemetery. All turns from Hampton Road would be accommodated at

a new intersection at a point near the current ramp from northbound Hampton Road to southbound NJ 38. This improvement would in effect create a disjointed intersection between NJ 38 and Hampton Road but will allow motorists additional space and sight distance to access NJ 38 or continue onto Hampton Road . A signal warrant analysis should be conducted for this location.

FIGURE 14: Cuthbert Boulevard (CR 636) Looking North with Hampton Road in Foreground

Figure 15: Cuthbert Boulevard (CR 636): NJ 38 to Hampton Road (CR 623)



7. NJ 38 AT THE NEW JERSEY TRANSIT ATLANTIC CITY RAIL LINE OVERPASS

Cherry Hill Township, Camden County
Milepost 2.19

Existing Conditions:

NJ 38 tapers from six lanes to four lanes at this location in order to pass under the New Jersey Transit Atlantic City Rail Line bridge.

Identified Problems:

A bottleneck exists at this location because there are six lanes on either side of the rail bridge. The bridge piers are immediately adjacent to the cartway which prevents the addition of a third lane in either direction. Additionally, the roadway experiences flooding during heavy rains due to the gully under the overpass.

Suggested Improvement Scenarios:

- Short Term: Correct drainage problems under the overpass. Install signs to advise motorists of the lane drop in order to give adequate time for motorists to merge.

- Long Term: Study feasibility of replacing bridge with a structure with wider piers which would allow an additional lane by direction.

FIGURE 16: NJ 38 Looking East Toward NJ Transit Atlantic City Rail Line Bridge

8. NJ 38 AND CHAPEL AVENUE (CR 626)

Cherry Hill Township, Camden County
Milepost 2.52

Existing Conditions:

NJ 38 is three lanes by direction and Chapel Avenue is one lane by direction at this location. The intersection is angled and signalized. No left turns are permitted onto or from NJ 38 at Chapel Avenue. Motorists must utilize either Hollywood Avenue on the north side of NJ 38 or Woodland Avenue on the south side of NJ 38. Both local streets essentially function as far side jughandles. However, they are not immediately adjacent to the intersection and are a very long and circuitous movement. Westbound NJ 38 traffic wishing to turn left onto southbound Chapel Avenue must pass the (signalized) intersection of Chapel Avenue, travel 500 feet and turn right onto Hollywood Avenue, travel 400 feet to Chapel Avenue make a right and travel another 300 feet back to the intersection of Chapel and NJ 38 and possibly wait again at the traffic signal. This circuitous route involves of a total of two traffic signals and 1,200 feet to make a left turn.

Identified Problems:

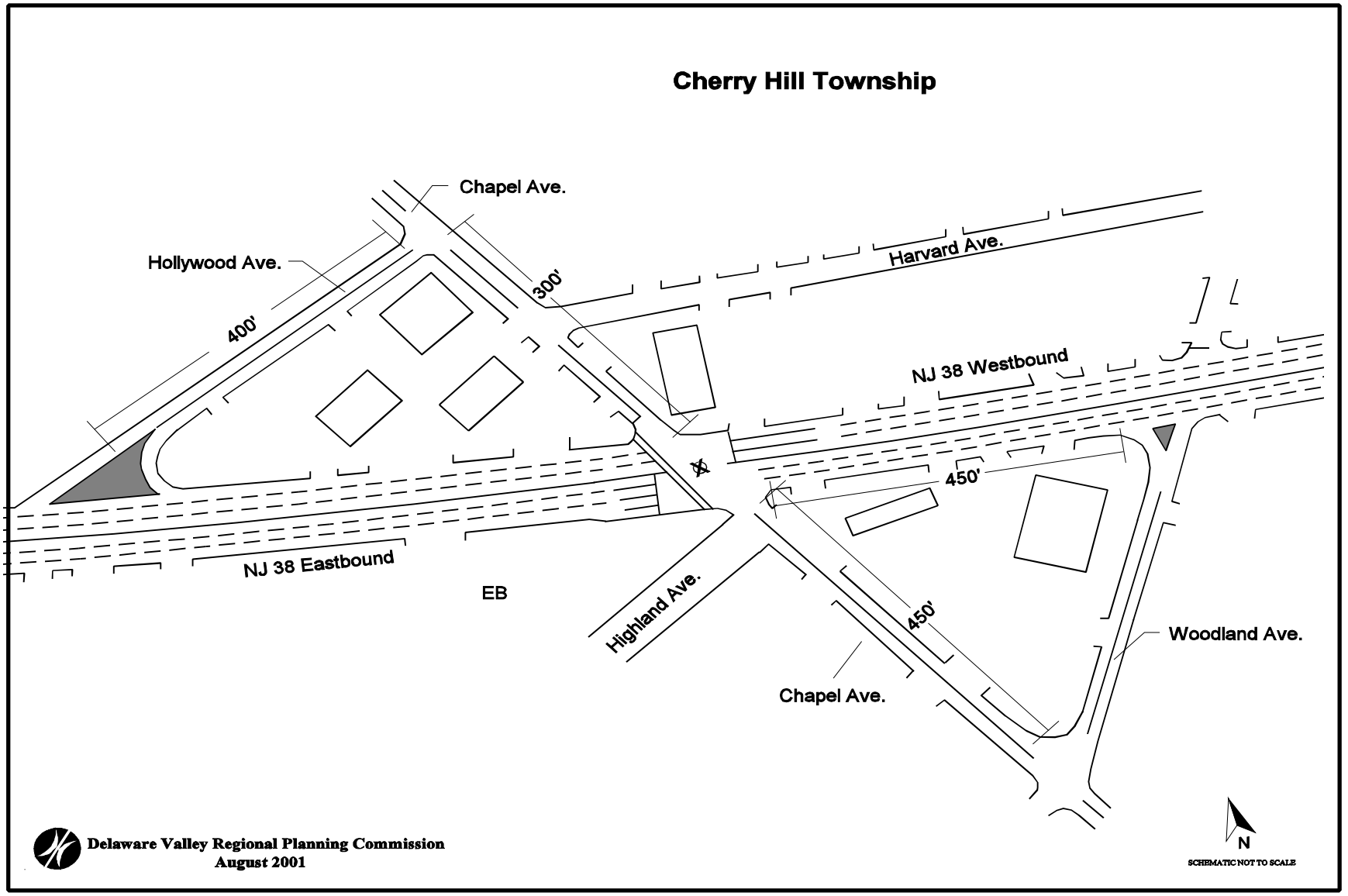
All left turns from NJ 38 must use either Woodland Avenue on the south side of NJ 38 or Hollywood Avenue on the north side as far side jughandles. These streets are well signed but as noted above circuitous and long. Additionally, southbound traffic on Chapel Avenue frequently blocks access to Hollywood Avenue which creates a secondary back up on northbound Chapel Avenue, which is one lane at this location.

Suggested Improvement Scenarios:

- Due to dense development along NJ 38, there is no room for installing jughandles. Therefore, the focus should be on improving the existing local street network of jughandles. A stop bar and signage should be placed on southbound Chapel Avenue at Hollywood so that Chapel Avenue traffic does not block the intersection with Hollywood. This would allow both northbound Chapel Avenue traffic to access Hollywood Avenue and eastbound Hollywood Avenue vehicles to access southbound Chapel Ave.

- Additionally on the north side, Harvard Avenue via Woodland Avenue should be investigated for use as a nearside jughandle. Clear signing for this route would need to be provided.

Figure 17: NJ 38 and Chapel Avenue (CR 626)



9. CHAPEL AVENUE (CR 626) AT THE NJ TRANSIT ATLANTIC CITY RAIL LINE

Cherry Hill Township, Camden County

Existing Conditions:

The bridge carrying Chapel Avenue over the New Jersey Transit Atlantic City Rail Line carries one lane of traffic by direction. There is also a sidewalk separated from the road by a guide rail. Kenilworth Avenue (CR 625) intersects Chapel to the north of the rail line and Monroe Avenue and State Street converge and intersect Chapel Avenue on the south side of the rail line. There is also a restaurant/bar with a parking lot which is accessed near the base of the bridge opposite Monroe and State Street.

Identified Problems:

Motorists approaching the overpass from either side do not see traffic on the other side of the overpass. Vehicles may back up on the downside due to turning vehicles at the intersections at the base of the bridge and motorists may not see the backed up traffic until they have crested the hill. Northbound sight distance is 250 feet from the crest of the hill to the next intersection while southbound it is 300 feet from the crest of the hill to the intersection at the base of the bridge. This is compounded by the lack of lighting and heavy foliage around the bridge

Suggested Improvement Scenarios:

- Install signing, reduce speed limit, cutback trees and shrub for better visibility, and increase lighting for better visibility

FIGURE 18: Chapel Avenue (CR 626) Looking North from NJ Transit Atlantic City Rail Line Bridge

10. NJ 38 AND HADDONFIELD ROAD (CR 644)

Cherry Hill Township, Camden County
Milepost 2.80

Existing Conditions:

There is a full cloverleaf interchange at NJ 38 and Haddonfield Road. The surrounding area is heavily developed with several large-scale commercial and retail properties. The Cherry Hill Mall is on the Northeast quadrant of the interchange and the Southeast quadrant contains a multiplex cinema and other retail outlets. In the southwest quadrant there are several office buildings. This is the most heavily traveled section of NJ 38 with average annual daily traffic volumes of 55,800. NJ 38 is six lanes wide in this vicinity with an intermittent acceleration/deceleration lane in each direction. Haddonfield Road is a four lane facility which provides access to several office complexes and secondary access to the Cherry Hill Mall. Haddonfield Road volumes vary from 19,600 north of the interchange to 27, 200 south of NJ 38. All counts predate the recent development in this area which includes the Hillview Shopping Center and Loew's Cinema. Therefore, actual volumes are probably higher.

Identified Problems:

There are no acceleration or deceleration lanes on any of the legs of the interchanges. The proximity of the ramps also leads to weaving problems as each segment here is generally less than 350 feet between an on-ramp and an off-ramp on Haddonfield Road. This is compounded by the heavy traffic volume on this stretch of Haddonfield Road . The close proximity of two intersections just south of the interchange (the Loew's/Liberty View Corporate Center and Chapel Avenue) leads to back-ups to the interchange. Additionally, the signals do not appear to be coordinated and have long red phases on Haddonfield Road which contributes to the back-ups. The northwest quadrant cloverleaf ramp in particular backs up as westbound NJ 38 traffic tries to enter southbound Haddonfield Road. During peak periods, traffic backs up onto NJ 38.

There are sporadic missing segments of sidewalk along this stretch of Haddonfield Road. There is a large section missing along the west side of Haddonfield Road to the south of NJ 38 and on the east side to the north of the interchange. Haddonfield Road connects residential areas to the south with commercial uses to the north and pedestrians were frequently observed during field views at the site.

The ramp from southbound Haddonfield Road to westbound NJ 38 forms a four point intersection with westbound NJ 38, 3rd Avenue and Harvard Avenue. This creates a weaving problem between vehicles on the ramp and westbound NJ 38 traffic exiting to 3rd Avenue or Harvard Avenue. Traffic from 3rd Avenue waiting to enter NJ 38 blocks access to Harvard Avenue from westbound NJ 38..

Suggested Improvement Scenarios:

- The intersection of 3rd Avenue, Harvard Avenue and NJ 38 at the Haddonfield Road off-ramp should be closed. Motorists will still be able to access both streets from westbound NJ 38 via Woodland Avenue which is the next intersection further west on NJ 38. This alternative will eliminate the weaving problem at the off-ramp and still maintain access to 3rd Avenue and Harvard Avenue.

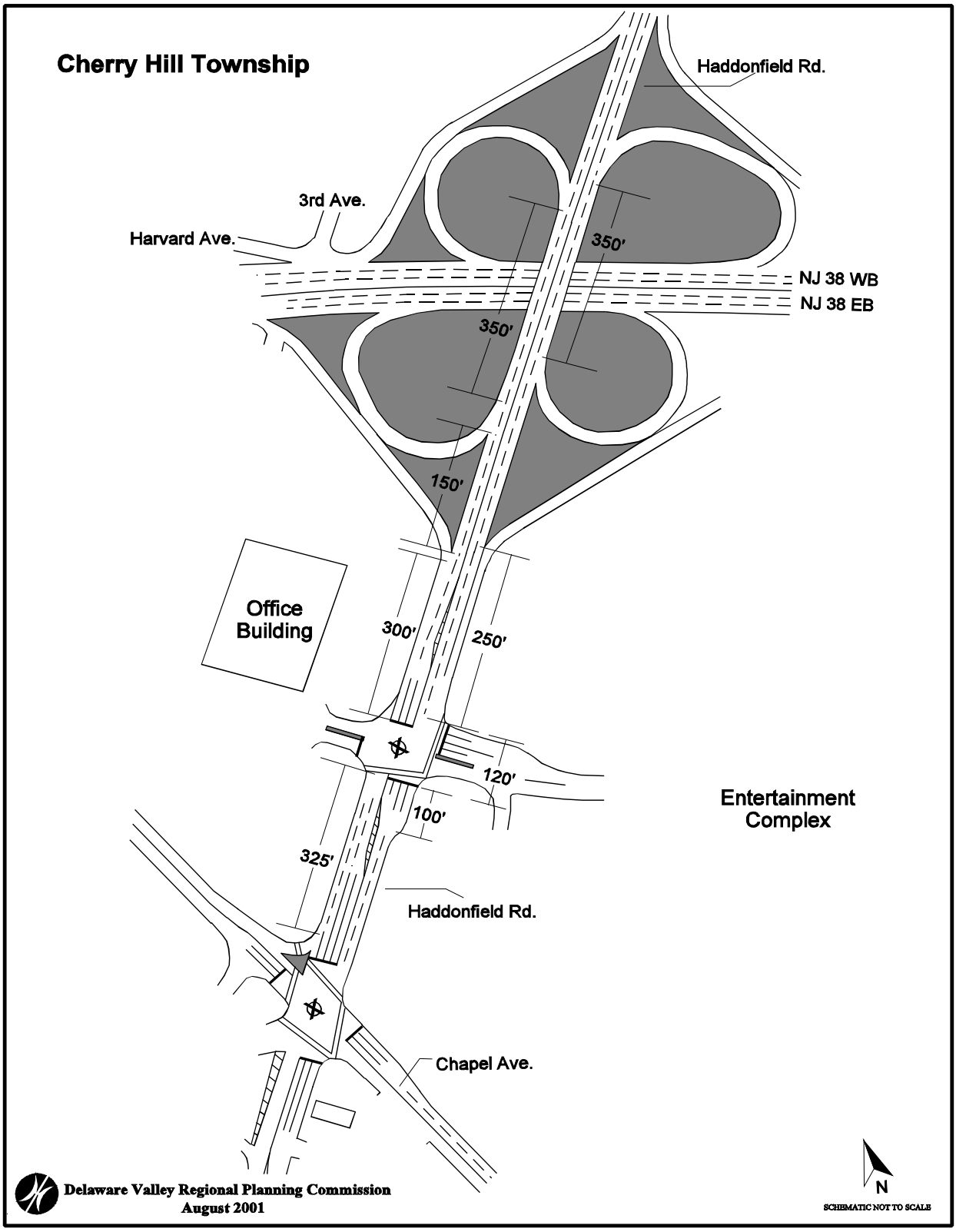
- Sidewalks along Haddonfield Avenue should be uninterrupted and any missing segments should be filled in.

- Long Term: Realign the northwest quadrant cloverleaf ramp (westbound NJ 38 off ramp) to intersect Haddonfield Road at a point further north. This will necessitate realigning the tangent westbound NJ 38 on ramp. This will increase the queue length for the ramp and will also increase the distance between this ramp and the eastbound NJ 38 on ramp.

FIGURE 19: Haddonfield Road (CR 644) Looking South with Ramp From Eastbound NJ 38 in Foreground

FIGURE 20: Haddonfield Road (CR 644) Looking South Towards Chapel Avenue

Figure 21: Haddonfield Road (CR 644) from NJ 38 to Chapel Avenue (CR 626)



11. NJ 38: HADDONFIELD ROAD (CR 644) TO CHERRY HILL MALL DRIVE

Cherry Hill Township, Camden County
Milepost 2.8 to 3.23

Existing Conditions:

The Cherry Hill Mall and the Hillview Shopping Center are separated by more than eight lanes of NJ 38. Additionally, there is a Jersey median barrier separating travel on NJ 38.

Identified Problems:

There is no pedestrian access between the Hillview Shopping Center and the Cherry Hill Mall and other retail establishments on the north side of NJ 38 between Haddonfield Road and Cherry Hill Mall Drive. A pedestrian overpass located midway between Haddonfield Road and Cherry Hill Mall Drive was demolished by a truck several years ago. The location of the bridge is the most direct point between the retail centers for pedestrians. The former pedestrian bridge also served the cinema and restaurant on the south side of NJ 38. There are pedestrian accommodations on Haddonfield Road and Cherry Hill Mall Drive but they require a lengthy and circuitous walk and are not especially pedestrian-friendly. Pedestrians on Haddonfield Road must intermingle with vehicles at several points and the pedestrian crossing signal on NJ 38 at Cherry Hill Mall Drive is not long enough for average to slow walkers. On several different field views, pedestrians were observed crossing NJ 38 near the location of the former pedestrian overpass. Frequently, pedestrians must straddle the jersey barrier while waiting for gaps in traffic to cross the opposing lanes of travel because there is no shoulder adjacent to the median.

Suggested Improvement Scenarios:

- Replace the pedestrian overpass

FIGURE 22: NJ 38 Looking East Towards Site of Demolished Pedestrian Bridge

12. NJ 38 AND CHERRY HILL MALL DRIVE

Cherry Hill Township, Camden County
Milepost 3.23

Existing Conditions:

This location serves as the main access point to the Cherry Hill Mall and adjacent shopping centers on the north side of NJ 38 and the Hillview Shopping Center on the south side of NJ 38. Eastbound NJ 38 traffic must utilize the jughandle to access the Mall. NJ 38 westbound traffic must also utilize a jughandle to access the Hillview Shopping Center and Cherry Hill Mall Drive. Cherry Hill Mall Drive is a two lane by direction facility but widens as it approaches NJ 38. The westbound NJ 38 jughandle intersects Cherry Hill Mall Drive 140 feet north of the Cherry Hill Mall Drive and NJ 38 intersection. Southbound Cherry Hill Mall Drive expands to two two-lane sections separated by a raised concrete median just north of the intersection with the jughandle. The two separated lanes combine after the jughandle intersection to form a single four-lane section. The two easternmost lanes are for left turns the westernmost lane is for right turns and the adjacent lane is for through traffic to the Hillview Shopping Center. The jughandle is four lanes wide with a dual left turn lane, a through lane and a right turn lane at the intersection with Cherry Hill Mall Drive.

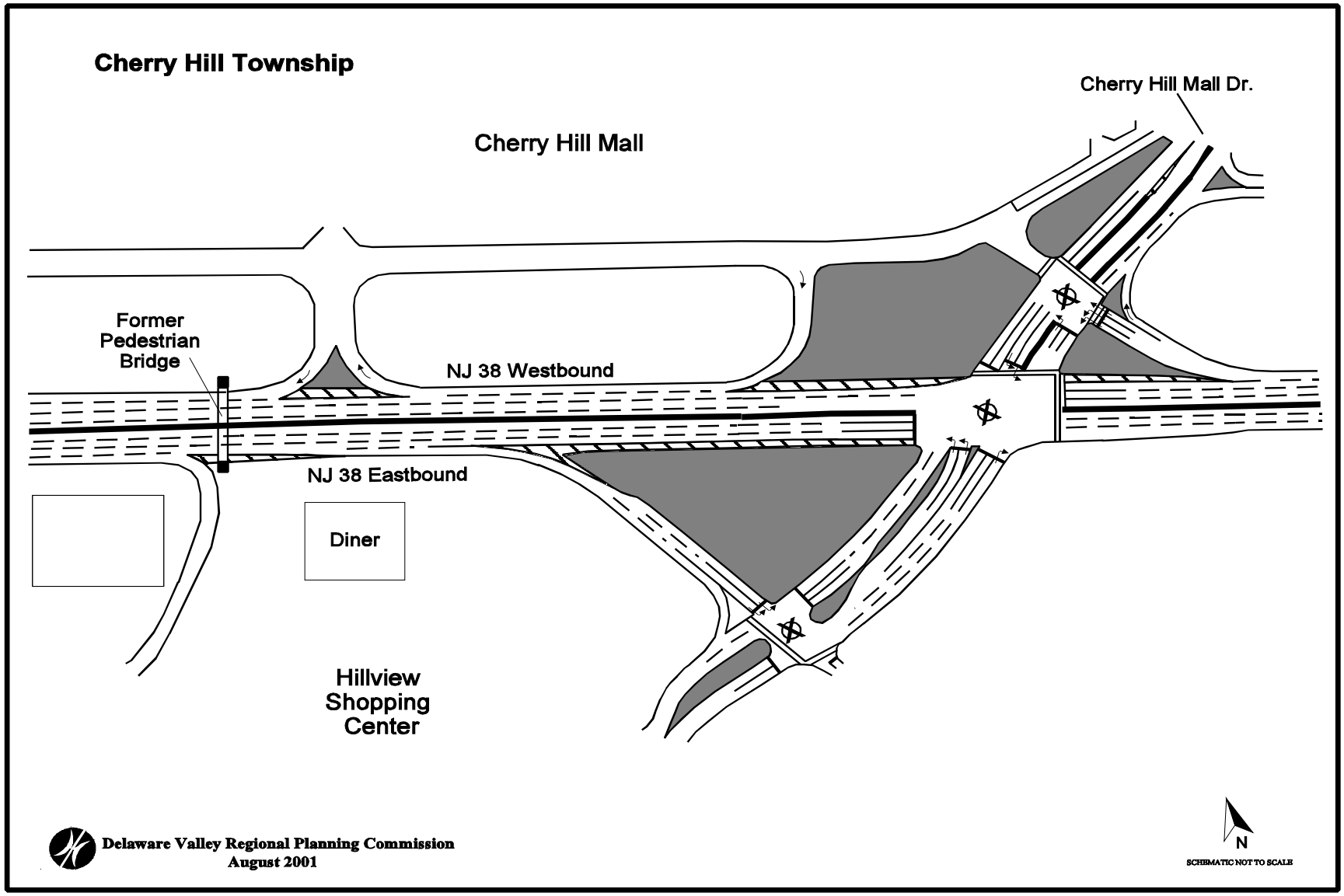
Identified Problems:

Vehicles on southbound Cherry Hill Mall Drive are separated by a raised median at the intersection of the jughandle. If they wish to make a left or right turn onto NJ 38 and they are on the west side of the median they are not able to get in the correct lane after the intersection because there is less than 140 feet to the NJ 38 intersection. Additionally the cycle length of the traffic signal is short which is exacerbated by the congestion caused by the cars attempting to switch lanes after the jughandle.

Suggested Improvement Scenarios:

- Remove the raised median between the southbound lanes on Cherry Hill Mall Drive and provide larger overhead signing and lane markings on Cherry Hill Mall Drive before the jughandle intersection so that motorists have time to get in the correct lane.

Figure 23: NJ 38: Haddonfield Road (CR 644) to Cherry Hill Mall Drive



13. NJ 70 IN ERLTON

Cherry Hill Township, Camden County
Milepost 2.3 to 3.7

Existing Conditions:

This segment of NJ 70 through Erlton is two lanes by direction. Travel lanes are 10 feet wide and there is a 10 feet wide shoulder in both directions. On-street parking is prevalent along this segment of Route 70. There is an unprotected grass median approximately 25 to 30 feet wide separating east and westbound traffic. There are no turning lanes but there are approximately 10 formal and 1 unofficial median cut-throughs to allow traffic to make left turns or U-turns. Approximately half of the cut-throughs are mid-block and are primarily intended for U-turns on NJ 70. There is a signal at Edison Avenue. Development along this stretch is a dense mix of residential, commercial and institutional uses.

Identified Problems:

This segment of NJ 70 is a bottleneck because the adjoining sections to the east and the west are three lanes by direction. This is compounded by on-street parking and the denser scale of development in Erlton. Also, municipal officials noted the lack of adequate pedestrian amenities, particularly to cross NJ 70. Traffic attempting to make left or U-turns use the cut-throughs which can only accommodate 1 to 2 vehicles. This reduces capacity as cars stack up in the through lane thereby effectively diminishing through capacity by half. Furthermore, both directions use the cut-throughs which can result in a head-on collision of vehicles using the cut-throughs. There is an illegal cut through to the east of the easternmost official cut-through which is indicated by the worn tire tracks in the grass.

Suggested Improvement Scenarios:

- A series of left turn lanes should be carved out of the grass median.

- Better pedestrian amenities at Edison Avenue should be implemented, including better striping, signing and protected signal phasing.

FIGURE 24: NJ 70 in Erlton

14. NJ 38/COOPER LANDING RD.-COLES AV. (CR 627)/CHURCH RD. (CR 616) CIRCLE

Cherry Hill Township, Camden County
Milepost 3.85

Existing Conditions:

NJ 38, Church Road (CR 616) and Cooper Landing Road/Coles Avenue (CR 627) converge at this location. CR 616 and CR 627 utilize the traffic circle while NJ 38 bisects the circle. NJ 38 has two sets of signals westbound and three signals eastbound. The extra set of eastbound signals is due to the need for the firehouse located at NJ 38 and Church Road to access NJ 38. The area around the circle is fully developed with at least one retail or commercial development in each quadrant of the circle. There are usually several access points to each site. Church Road is frequently used as a short cut to the Cherry Hill Mall and adjacent shopping centers. . . . . .

Identified Problems:

The high volume of traffic coupled with the retail development and circle geometrics combine to create a problematic situation. There is a weaving problem on the eastern side of the circle between Church Road and NJ 38. Traffic in the circle backs up at the signal and traffic from Church Road cannot merge left to continue in the circle due to the traffic in the circle wishing to turn right onto NJ 38. There is a similar situation on the north side of the circle as traffic on southbound Church Road bound for eastbound NJ 38 experiences weaving conflicts with traffic already in the circle. Traffic congestion on NJ 38 is predominant in the westbound direction during the AM peak and eastbound during the afternoon peak.

Several vehicles exiting Windsor Diner were witnessed making a wrong way clockwise movement in the circle in order to access the eastbound NJ 38 cut-through, rather than utilizing the circle to access eastbound Route 38.

Suggested Improvement Scenarios:

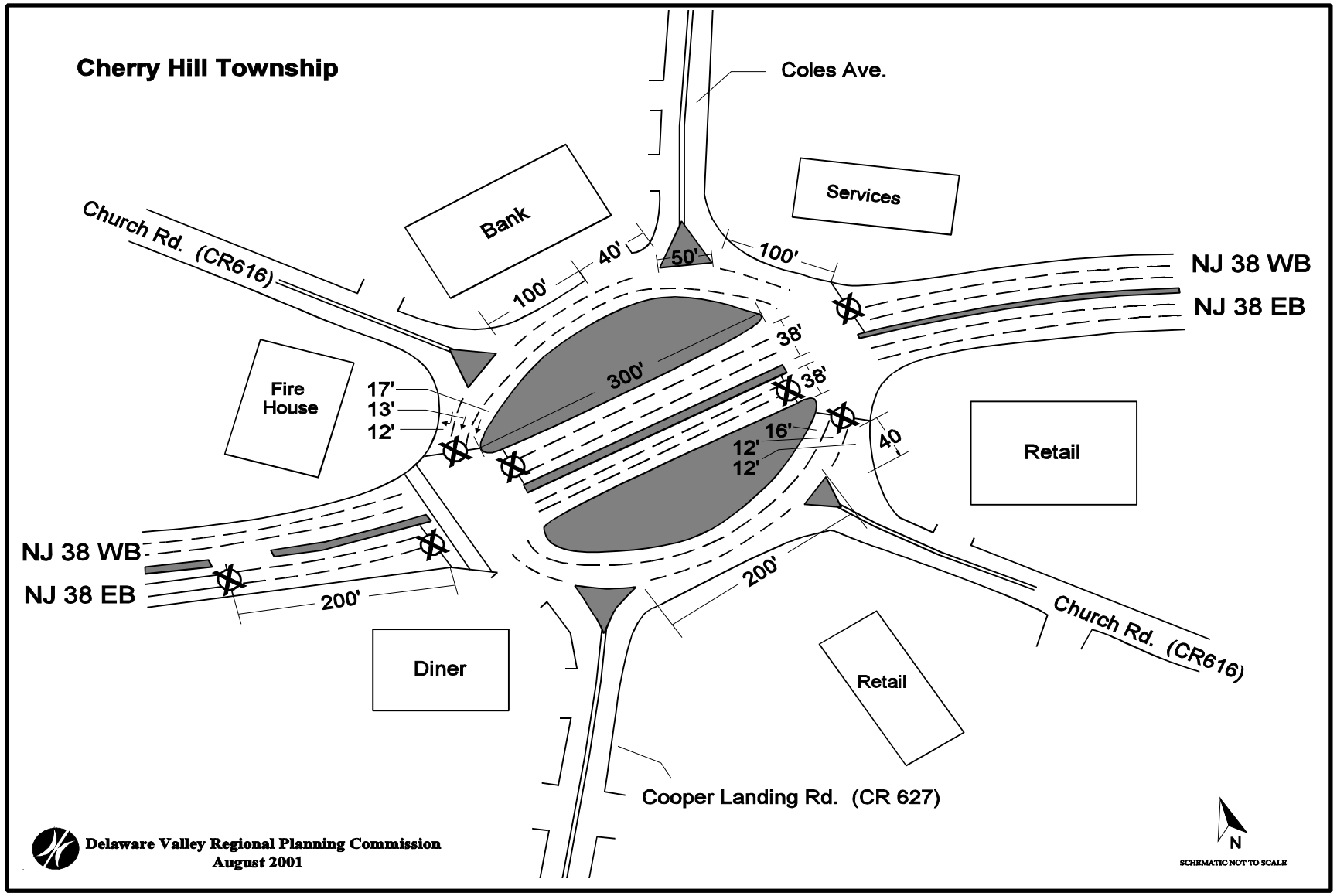
- Install two separate coordinated signals on the circle at Cooper Landing Road and Coles Avenue to control traffic already in the circle and allow traffic on both legs of Church Road to enter the circle. The signals would be coordinated with the signals at NJ 38 and the circle.

- Once the signals on NJ 38 are tied into the new traffic operations center they will have the ability to respond to the current level of traffic which should improve traffic flow on NJ 38 especially during peak periods.

- Close the access to the diner on the circle to prevent illegal shortcuts to eastbound NJ 38. The diner would still have two access points a short distance away on Cooper Landing Road. The closing of the circle access should actually result in additional parking close to the diner's entrance.

FIGURE 25: NJ 38/CR 627/CR 616 Circle Showing Vehicle Entering From Northbound CR 616

Figure 26: NJ 38/Cooper-Landing Rd.-Coles Ave.(CR 627)/Church Rd.(CR 616) Circle



15. NJ 70: I-295 TO COVERED BRIDGE/FRONTAGE ROAD

Cherry Hill Township, Camden County
Milepost 5.07 to 4.83

Existing Conditions:

In this section, the number of travel lanes on NJ 70 changes throughout. In the eastbound direction, NJ 70 carries two travel lanes in the vicinity of Covered Bridge Road. As the I-295 southbound on-ramp merges in, it adds another through lane and the I-295 northbound off-ramp adds a fourth lane to NJ 70 which it carries down to Springdale Road. In the westbound direction, NJ 70 carries four travel lanes from Springdale Road to the I-295 northbound on-ramp where it drops a lane. As NJ 70 passes through the I-295 interchange in the westbound direction, it tapers from three travel lanes to two with the right lane becoming the I-295 southbound on-ramp. As the southbound I-295 off-ramp merges with westbound NJ 70 it carries a third lane into the signalized Frontage Road intersection. This lane only serves right turning traffic onto Frontage Road or traffic headed to the far-side jughandle which serves movements into the hotel, onto Covered Bridge Road or NJ 70 eastbound. Traffic from the I-295 southbound off-ramp must weave across this lane to proceed westbound on NJ 70.

The signalized intersection of NJ 70 and Covered Bridge Road/Frontage Road serves as the access/egress point for many destinations including the hotel, hi-rise condominiums and apartments north of NJ 70 and the residential neighborhood south of NJ 70. Left turns/U-turns from NJ 70 eastbound are accommodated by the near-side jughandle that utilizes a section of Pine Valley Road to access Covered Bridge Road. The Covered Bridge Road approach consists of a left turn only lane and a shared through/right turn lane. Frontage Road is one lane by direction but at its approach to NJ 70 the reverse jughandle merges with Frontage Road and adds a second lane. Traffic on Frontage Road is stop controlled at the juncture with the jughandle. This approach to NJ 70 also consists of a left-turn only lane and a shared through/right turn lane. The distance between where the jughandle merges in and NJ 70 is approximately 110 feet. Weaving movements between the jughandle traffic and Frontage Road must be accommodated in this area. Frontage Road traffic frequently has difficulty getting to the shared through/right turn lane and this situation causes queuing on Frontage Road.

Identified Problems:

Within the interchange, both directions of NJ 70 experience a weaving problem between the I-295 off and on ramps. The combination of the westbound land drop and the weaving movement creates a hazardous condition.

The intersection of NJ 70 and Frontage Road/Covered Bridge Road experiences significant congestion during both peak periods and can become congested throughout the day. The current alignment of the jughandle as it merges with the Frontage Road approach to the intersection along with the current traffic signal timing contribute to the congestion and safety problems. The alignment of the approach lanes on Frontage Road are slightly offset from the approach lanes on Covered bridge Road which also adds to the operational problems at this location.

Suggested Improvement Scenarios:

- The third travel lane on westbound NJ 70 should be carried through to Frontage Road instead of being dropped at the I-295 southbound on-ramp. This will help the weaving movements through the interchange area. The wide gore area and shoulder could potentially be converted into the needed travel lane.

- To improve operations at the NJ 70 and Frontage Road/Covered Bridge Road intersection, the jughandle should be enlarged and realigned in front of the existing hotel to create a stop controlled intersection with Frontage Road and the access to the hi-rise apartment complex. Frontage Road should be widened to provide three approach lanes to NJ 70. As there are over 250 peak hour left turns in both peak periods, a double left turn lane should be provided. The other approach lane would serve through and right turning movements. Covered Bridge Road should also provide three approach lanes. A protected left turn phase for the Frontage Road. Covered Bridge Road approaches should be included with the optimized signal timing.

FIGURE 27: NJ 70 Westbound Jughandle/Frontage Road Looking Toward NJ 70

16. NJ 38: NJ 41 TO NJ 73

Maple Shade Township, Burlington County
Milepost 5.1 to 5.7

Existing Conditions:

This stretch of NJ 38 is two lanes by direction with additional lane additions and drops at the interchanges with NJ 73 and NJ 41. Both interchanges are carried over NJ 38. There is considerable retail and commercial development on the side of the road.

Identified Problems:

NJ 38 is slightly depressed at the both the NJ 73 and NJ 41 overpasses. During heavy rains, drainage becomes a problem particularly at the NJ 41 overpass.

Suggested Improvement Scenarios:

- Improve drainage along this stretch of road.

17. NJ 73: MAIN STREET (CR 537) TO FOX MEADOW

Maple Shade Township, Burlington County
Milepost 29.68 to 29.12

Existing Conditions:

NJ 73 carries two travel lanes in each direction through this area. In the northern end of this segment, the northbound and southbound traffic are separated by a jersey barrier. In the southern end, a grass median serves as the divider between northbound and southbound traffic flow. The posted speed limit on NJ 73 is 50 MPH. Access to NJ 73 is provided in various ways. At Main Street, a grade separated interchange utilizes a set of ramps to provide access. An at-grade signalized intersection with near side jughandles to accommodate U and left turns, provides access to the Fox Meadow Apartments and Fellowship Road. There are also several right in/right out streets/driveways located in this section. Approximately 1,100 feet north of Main Street, NJ 73 is crossed by a rail bridge which carries freight traffic.

Identified Problems:

This section of NJ 73 experiences significant peak period congestion. Access problems associated with ramps/jughandles at Main Street and Fox Meadow contribute to the operational problems. Drainage problems exist on NJ 73 under the Main Street overpass and under the rail overpass just north of Main Street.

Suggested Improvement Scenarios:

- An improvement project programmed on DVRPC's Transportation Improvement Program (TIP) (#94068) will address operational improvements along NJ 73 from Main Street to Fox Meadow. A realignment of the Main Street ramps and the Fox Meadow/Fellowship Road jughandles have been proposed. The addition of another travel lane through this section and a new connecting road from the apartment complex to the Main Street ramp is expected to improve operating conditions in this section. This TIP project however, does not address the drainage problem at either the Main Street overpass or rail overpass. Improvements to the drainage problems should be included in the project to improve the operational conditions. The proximity of the rail bridge to this programmed improvement makes it appropriate to combine these two problems. It may even be appropriate to carry the additional travel lane north through the rail overpass.

- NJ DOT should identify alternate routes which could serve as detours when incidents or heavy congestion make this section of NJ 73 unpassable. These detour routes could also help mitigate the effects of the upcoming construction project. Detour plans should be developed with consideration given to the following facilities to be used as alternate routes: NJ 38, Coles Ave (CR 627), Main Street (CR 537), NJ 41 and Lenola Road (CR 608).

18. NJ 73: I-295 TO COLLINS AVENUE

Maple Shade Township and Mount Laurel Township, Burlington County
Milepost 27.68 to 27.97

Existing Conditions:

NJ 73 is divided by a concrete median barrier through this section and the number of travel lanes varies. Two lanes by direction are available just north of the bridge over I-295. North of I-295, a third lane is added northbound to accommodate right turns onto Collins Avenue. North of Collins Avenue, this third lane serves as a general purpose travel lane. Entering this section southbound, three lanes are available with one serving right turn movements onto the Waverly Avenue jughandle. South of the Waverly Avenue jughandle, the third lane serves right turn movements onto the I-295 southbound on-ramp. At this point, the third lane is dropped and two lanes are available until the southbound I-295 off-ramp merges into NJ 73. On the bridge over I-295, a third lane in each direction serves as a short accel/decl. lane for the I-295 ramps. As a result of all these lane changes and lane drops, a lot of weaving movements occur within this section of NJ 73.

A traffic signal controls operations at the intersection of NJ 73 and Waverly Avenue/Willow Road. On the northbound side of NJ 73, Willow Road is one-way only towards NJ 73 and provides three approach lanes: two left turn only lanes and a shared through/right turn lane. On the southbound side of NJ 73, Waverly Avenue provides two approach lanes (right turn only and left turn only) and one departure lane. The Collins Avenue intersection serves right-in and right-out movements only with one lane in each direction. Collins Avenue provides access to the Moorestown Mall and the East Gate Square Shopping Center for northbound NJ 73 traffic.

The I-295 southbound off-ramp to northbound NJ 73 was removed and relocated onto Nixon Drive in the East Gate Square Shopping Center. Traffic destined to northbound NJ 73 must now use Nixon Drive/Collins Avenue.

Identified Problems:

This section of NJ 73 experiences extreme congestion during both peak periods and is frequently congested throughout the day. The heavy traffic volumes are related to the through traffic, the access to I-295, access to the NJ Turnpike and the concentration of commercial development including the Moorestown Mall and the East Gate Square Shopping

Center. Many of the operational problems are related to the lane configurations, signal timing and weaving/merging movements.

A weaving/merging problem exists on NJ 73 northbound in the vicinity of the I-295 northbound off-ramp and the I-295 southbound on-ramp. This maneuver is further complicated by the northbound NJ 73 traffic wishing to stay in the right turn lane in order to turn right on to Collins Avenue to access the shopping areas.

The obtuse angle of the approach legs and the numerous conflicting turning movements at the intersection of Willow Road and Collins Avenue creates congestion and safety problems. A traffic signal is planned for this intersection.

Suggested Improvement Scenarios:

- Install a traffic signal at the intersection of Willow Road and Collins Avenue to control the movements at this intersection.

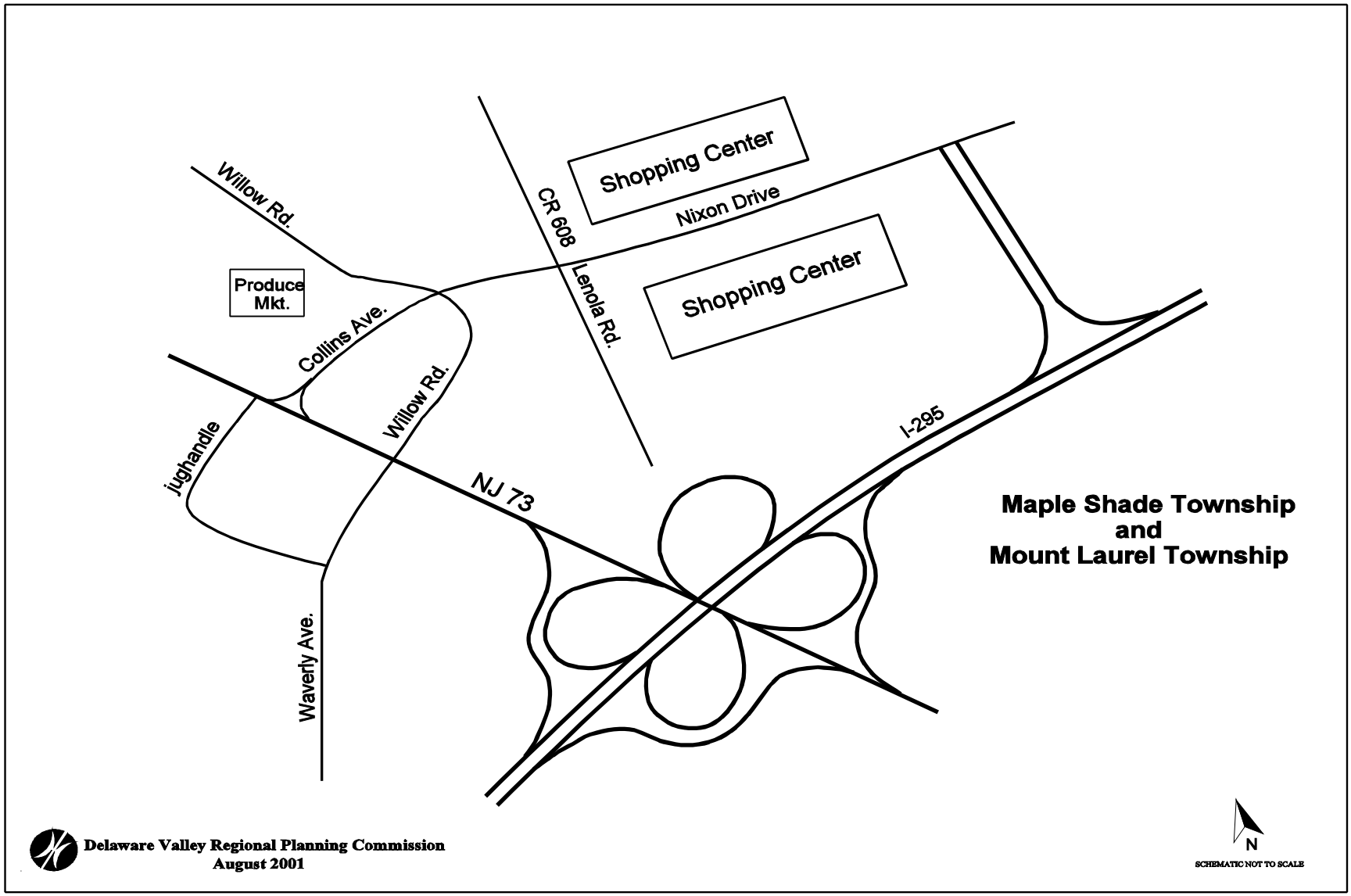
- Optimize signal timing and interconnect signals at the NJ 73/ Willow Road and Collins Avenue/Willow Road intersections

- Install lane designation signing and striping to better inform motorists of approaching lane drops and merge areas.

- Because of the proximity of the southbound I-295 on-ramp from Nixon Drive, it is not recommended to reinstall the southbound I-295 off-ramp to northbound NJ 73. The spacing of these two ramps would create hazardous weaving movements.

FIGURE 28: Willow Road Looking Towards NJ 73 at Collins Avenue

Figure 29: NJ 73: I-295 to Collins Avenue



19. NJ 73: I-295 TO ATRIUM WAY

Mount Laurel Township, Burlington County
Milepost 27.66 to 26.15

Existing Conditions:

NJ 73 carries two travel lanes in each direction and is separated by a grass median through this section. However, in selected areas auxiliary lanes have been added to accommodate left or right turns. In the southbound direction, NJ 73 provides four lanes on the approach to Fellowship Road (CR 673). The two left lanes carry southbound through traffic. The next lane provides access to the NJ Turnpike Interchange on-ramp, south of Fellowship Road. The far right lane serves traffic turning right onto Fellowship Road or accessing the far side jughandle for left turns onto Fellowship Road. This lane configuration is often confusing to motorists. Although there is some signing for the lane designation it is not prominent or far enough in advance for vehicles to position themselves when traffic flow is heavy. Although southbound left turns are accommodated by a far side jughandle at this intersection, the northbound left turns use a center left turn lane.

Other signalized intersections in this segment exist at Howard Blvd., at Church Road (CR 616)/Ramblewood Parkway and at Atrium Way. Left turns from NJ 73 are accommodated at these intersections via center left turn lanes. The Church Road/Ramblewood Parkway intersection is a five-leg intersection with the two Church Road legs offset by approximately 400 feet. Eastbound traffic on Church Road must turn right onto NJ 73 southbound, cross the two through lanes and enter the left turn lane within the 400 foot offset and make a left turn to proceed eastbound on Church Road. This movement is replayed in the westbound direction for westbound Church Road through traffic. Atrium Way is a three-leg intersection which provides access to an office complex on the southbound side of NJ 73. The land use adjacent to NJ 73 along this segment is primarily commercial and office.

Identified Problems:

This section of NJ 73 experiences severe congestion during both peak periods and congestion can occur throughout the day. Significant congestion also occurs on the cross streets at the signalized intersections with NJ 73. The most common conditions contributing to the congestion in this area include: the highway's limited ability to accommodate the high demand, weaving movements to access turn lanes/ramps to cross streets or interchanges and

signalized intersections stretched to provide access for both NJ 73 and high volume cross streets (Church Road CR 616). Because of the heavy demand for northbound and southbound left turns from NJ 73 onto Church Road, vehicles frequently spill back into the through lane effectively reducing the through capacity to one lane.

Commuters have been observed alighting the NJ Transit bus routes 406 and 457 to reach the office park along Atrium Way. There are no sidewalks are provided in this area and pedestrians must walk along the shoulders or roadway edge.

Suggested Improvement Scenarios:

- Detailed intersection analysis should be conducted at the Fellowship Road intersection and at the Church Road (CR 616)/Ramblewood Parkway intersection with consideration given to adding or realigning auxiliary lanes to serve turning movements.

- Additional lane designation signing should be constructed at the signalized intersections and also far enough in advance of the intersections to allow drivers adequate time to line up in the appropriate lanes.

- To address the left turn problems at the Church Road (CR 616)/Ramblewood Parkway intersection, the ability to make these turns at another location should be investigated. An extension of Atrium Drive intersecting a Church Road/Commerce Parkway connector could potentially remove some of the turning movements from the NJ 73/Church Road/Ramblewood Parkway intersection. This would require right-of-way acquisition and impact an existing business along NJ 73 (equipment rental business). This extension and connector could also provide benefits to other locations along the corridor.

- NJ DOT should utilize the ITS equipment (currently deployed or planned)in this area to monitor real time traffic conditions and disseminate information via variable message signs, highway advisory radio, SmarTraveler website and through the media. Use of the ITS equipment such as vehicle detection systems, closed circuit TV cameras and closed loop signal systems will help improve the operations of this section of the corridor.

- NJ DOT should consider the development of an accident investigation site and the introduction of peak period emergency service patrols to quickly remove damaged or disabled vehicles from the roadway thereby freeing up much needed capacity.

- NJ DOT should identify alternate routes which could serve as detours when incidents or heavy congestion make this section of NJ 73 unpassable. Detour plans should be developed with consideration given to the following facilities to be used as alternate routes: I-295, NJ 70, NJ 41, Fellowship Road (CR 673) and Church Road (CR 616).

- Sidewalks should be added to provide access from NJ Transit bus routes 406 and 457 to the office park along Atrium Way.

20. NJ 38 AND LENOLA ROAD (CR 608)

Maple Shade Township and Moorestown Township, Burlington County
Milepost 6.1

Existing Conditions:

This intersection is located to the east of the NJ 73 and NJ 38 interchange. Lenola Road is the dividing line between Maple Shade Township and Moorestown Township in the vicinity of NJ 38. Lenola Road is County Route 608 on the north side of NJ 38 and a local facility on the south side. The northeast and southeast quadrants of this intersection are occupied by the Moorestown Shopping Square and the Moorestown Mall respectively. The northwestern quadrant contains a gas station and the southwest quadrant an automobile dealership. Access to all of these developments is gained via Lenola Road. Lenola Road also provides access to the Eastgate Shopping Center, located approximately ¼ mile south of NJ 38. This intersection handles a large volume of turning movements due to its proximity to these retail establishments and because it provides access to residential developments and an industrial park located north of the intersection in Moorestown Township with access via Lenola Road. The southbound I-295 on and off ramps are routed through Eastgate Shopping Center and use Lenola Road to access NJ 38.

NJ 38 is three lanes in each direction at this location with a posted speed limit of 50 m.p.h.. Left turns from NJ 38 to Lenola Road are handled by jughandles. Eastbound NJ 38 traffic has access to Lenola Road northbound and U-turns via a far side reverse jug handle. Right turns from this direction onto Lenola Road southbound can be made directly from the intersection. Westbound 38 traffic can access Lenola Road northbound and southbound by way of a near side jug handle that accommodates two lanes of traffic.

On the south side of NJ 38 Lenola Road is six lanes broken down by four northbound lanes and two southbound lanes at the intersection. All have an average width of 11 feet. The provided northbound movements are two dedicated left turn lanes, one through lane, and one shared through-right turn lane. On the north side of NJ 38 Lenola Road is five lanes, two northbound and three southbound, with an average lane width of 11 feet. The three southbound movements consist of one shared through-right turn lane, one shared through-left turn lane, and a dedicated left turn only lane.

Identified Problem:

There are two separate issues at this location, both concerning the jughandles from NJ 38. 1) On the south side of NJ 38 there is a problem with traffic exiting out of the jughandle onto Lenola Road. This far side reverse jug handle empties traffic onto Lenola Road approximately 100 feet from the Lenola Road northbound stop bar. Traffic queuing in the Lenola Road northbound lanes prevents jughandle traffic from entering. This problem is particularly daunting for vehicles trying to enter the two left turn lanes necessary for making a U-turn . As a result traffic backs up in the jughandle especially during the peak hours.

2) On the north side of NJ 38 traffic exiting westbound NJ 38 can not get out of the jughandle onto southbound Lenola Road due to stacking vehicles at the intersection. Accommodations have been made at this jughandle to better expedite traffic. The mouth of the jughandle is striped for two lanes allowing northbound Lenola Road traffic to proceed without having to queue behind southbound Lenola Road vehicles. The jughandle meets Lenola Road approximately 85 feet from the stop bar at the intersection. At the point where the jughandle meets Lenola Road the yellow center lane markings have been removed to allow traffic to access Lenola Road southbound. Even with this accommodation the jug handle does not clear efficiently.

Suggested Improvement Scenario:

Short Term

- On the south side of NJ 38, place a "Stop Here On Red" sign and painted stop bar on Lenola Road northbound just below the point at which the jughandle meets Lenola Road. This is an inexpensive measure which would which hold traffic back and allow jughandle traffic to enter Lenola Road. If it is determined that this measure is necessary only during peak periods then a time restriction could be implemented with the stop bar.

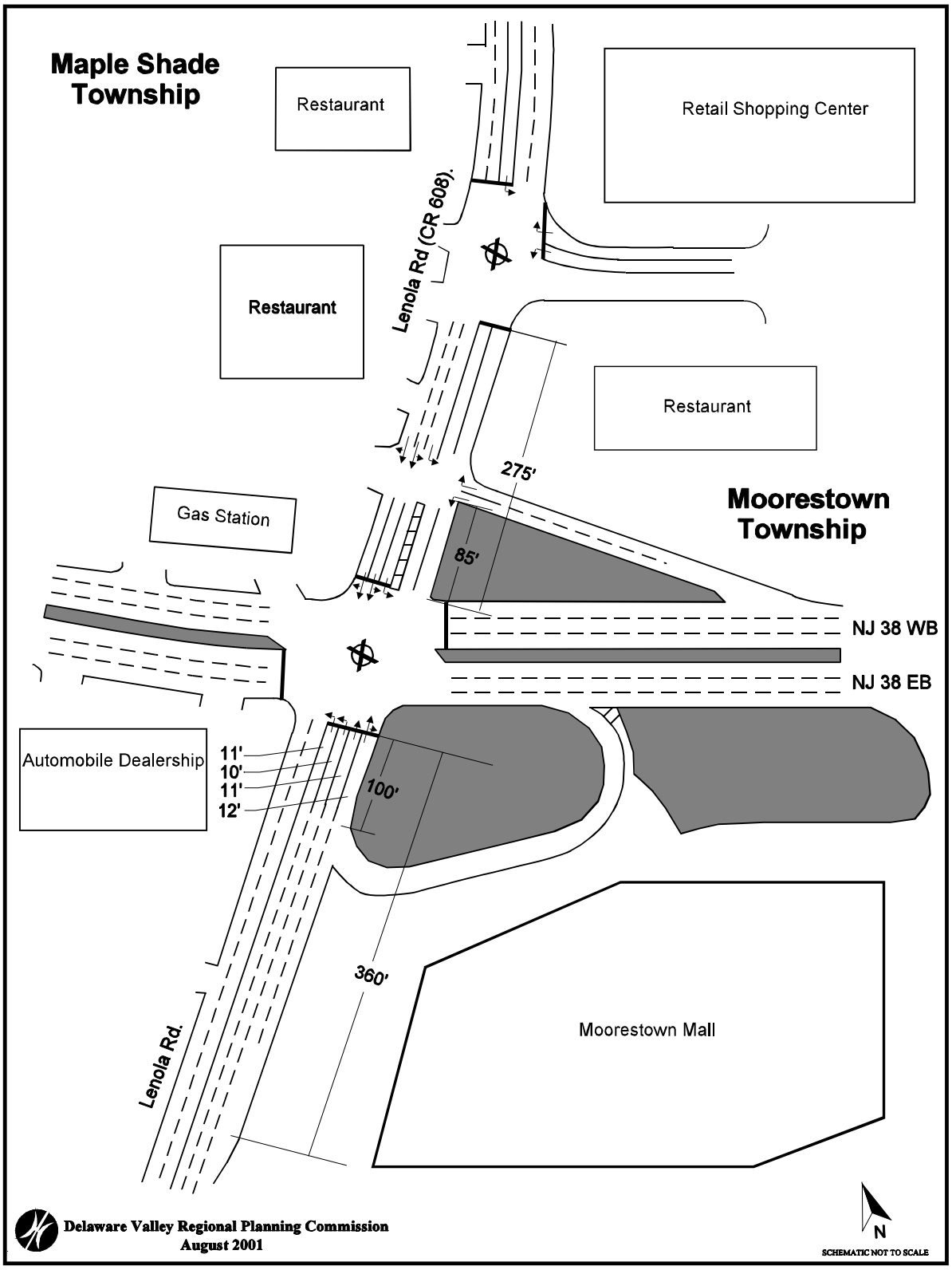
- On the north side of NJ 38 a "Stop Here On Red" sign and painted stop bar can be added just north of the jughandle mouth to keep southbound Lenola Road traffic from blocking the traffic exiting the westbound NJ 38 jughandle onto Lenola Road. This would keep the stacking lanes from filling up and allow jughandle traffic turning left onto Lenola Road southbound to fill in. Currently there is a break in the lane striping at the point where the jughandle meets Lenola Road making the stop bar and "Stop Here On Red" sign a logical next step

Long Term

- Relocate the mouth of the jughandle back further south on Lenola Road. Thus, the northbound Lenola Road through traffic stacking at the intersection would not inhibit the exiting jughandle traffic from entering Lenola Road. This would make it easier for the jug handle traffic to cross over to the left turn only lanes also. This is a more expensive measure which would require a more detailed analysis. Depending on the severity of the situation it would also be possible to use a stop bar and "Stop Here On Red" sign in conjunction with the relocated jughandle.

FIGURE 30: Lenola Road (CR 608) Looking North Towards NJ 38

Figure 31: NJ 38 and Lenola Road (CR 608)



21. NJ 38 AND EAST GATE DRIVE

Moorestown Township, Burlington County
Milepost 6.7

Existing Conditions:

East Gate Drive is a local facility that stretches from NJ 38 in the west to Pleasant Valley Avenue in the east. It runs through Moorestown and Mount Laurel Townships serving the office park developments along eastbound NJ 38 and at the East Gate Business Center.

The intersection of NJ 38 and East Gate Drive is signalized but does not allow all movements. Northbound traffic on East Gate Drive is only permitted to make right turns onto eastbound NJ 38. The main function of this signal is to provide access to East Gate Drive from westbound NJ 38. This is achieved by a left turn arrow and a left turn stacking lane which is 0.2 mile long This signal also provides access to eastbound NJ 38 from East Gate Drive via two dedicated right turn lanes. Eastbound NJ 38 traffic can access East Gate Drive via a channelized right turn.

Identified Problems:

The main issue is the left turn stacking lane on westbound NJ 38. It seems that this queue length is inadequate and can not handle the large volume of commuter traffic entering East Gate Drive during the AM peak period.. The stacking lane is 0.2 mile long. Vehicles are over filling this left turn lane and causing a back up into the westbound NJ 38 travel lane.

Suggested Improvement Scenarios:

Short Term

- A reevaluation of the signal timing at this intersection is advisable. A longer green time for the left turn movement may be possible without degrading the level of service of the intersection. This would allow more vehicles to enter East Gate Drive from westbound NJ 38.

Long Term

- A more cost intensive and longer term improvement would be to widen NJ 38 to accommodate a second left turn lane at the intersection. In the vicinity of this intersection,

NJ 38 eastbound and westbound are comprised of two 12 feet travel lanes with a 12 feet shoulder and a 16 feet median. It is possible to utilize some of this existing roadway width in combination with a portion of new land from the westbound NJ 38 shoulder area. This land area is currently undeveloped although it borders a wetland area. The actual impacts, if any, to the wetland area would be determined in an Environmental Assessment which would be part of the overall project scope should this improvement scenario be considered. Currently, southbound East Gate Drive can accommodate one lane of traffic. To handle the traffic from an additional left turn lane, a second southbound lane would need to be created on East Gate Drive.

22. NJ 38 AT CHURCH STREET (CR 607) AND FELLOWSHIP ROAD (CR 673)

Moorestown Township, Burlington County
Milepost 12.1 to 12.2

Existing Conditions:

This is a signalized intersection where Church Street intersects NJ 38 at a perpendicular angle. Fellowship Road intersects south Church Street at an acute angle from the southwest approximately 160 feet south of NJ 38 and continues on to intersect NJ 38 approximately 300 feet east of the NJ 38 and Church Street intersection. This configuration forms a triangle between NJ 38, Church Street and Fellowship Road . Left turns and u-turns from NJ 38 eastbound are provided for by a far side reverse jug handle. Right turns onto south Church Street can be made directly from the intersection. NJ 38 westbound traffic en route to south Church Street and Fellowship Road must utilize a signalized left turn lane located on NJ 38 east of the Church Street intersection at the point where Fellowship Road meets NJ 38. This traffic then follows Fellowship Road in a south westerly direction to another signal at the intersection of south Church Street and Fellowship Road. This section of Fellowship Road is one lane in each direction.

Eastbound traffic on Fellowship Road continues beyond the intersection with south Church Street and provides access to NJ 38 eastbound. Northbound Church Street traffic can also gain access to NJ 38 eastbound by turning right onto Fellowship Road or by continuing northbound on Church Street to the NJ 38 intersection. Right turns from westbound NJ 38 onto Church Street northbound can be made directly at that intersection. Church Street serves a residential area of Moorestown to the north of NJ 38 and provides access to the East Gate Business Center to the south. The East Gate Business Center generates a significant number of auto trips.

Identified Problems:

There is a merging and weaving problem between vehicles using the far side reverse jughandle from eastbound NJ 38 and the southbound Fellowship Road traffic en route from NJ 38 westbound. This causes back ups on the jug handle onto NJ 38 as well as delays in the clearing of this stretch of Fellowship Road.

Left turns from both directions of Church Street onto NJ 38 are not protected. Northbound Church Street (south side of NJ 38) is striped for two lanes, a through lane and a left turn lane. Southbound Church Street (north side of NJ 38) is only striped for one 15 feet lane even though the cartway is 18 feet wide. Although only one lane is provided on the north side of the intersection, field observations revealed that vehicles are creating two lanes in the given space to allow through traffic to proceed. The northbound departure lane cartway at this intersection is also 18 feet wide so there is still ample room for northbound traffic to proceed even if the two southbound lanes crowd over the center lines.

The turning radius is too tight for traffic turning right from westbound NJ 38 onto northbound Church Street. The mouth of the lane has been widened somewhat to accommodate these turns although it is not sufficient for large trucks, especially tractor trailers.

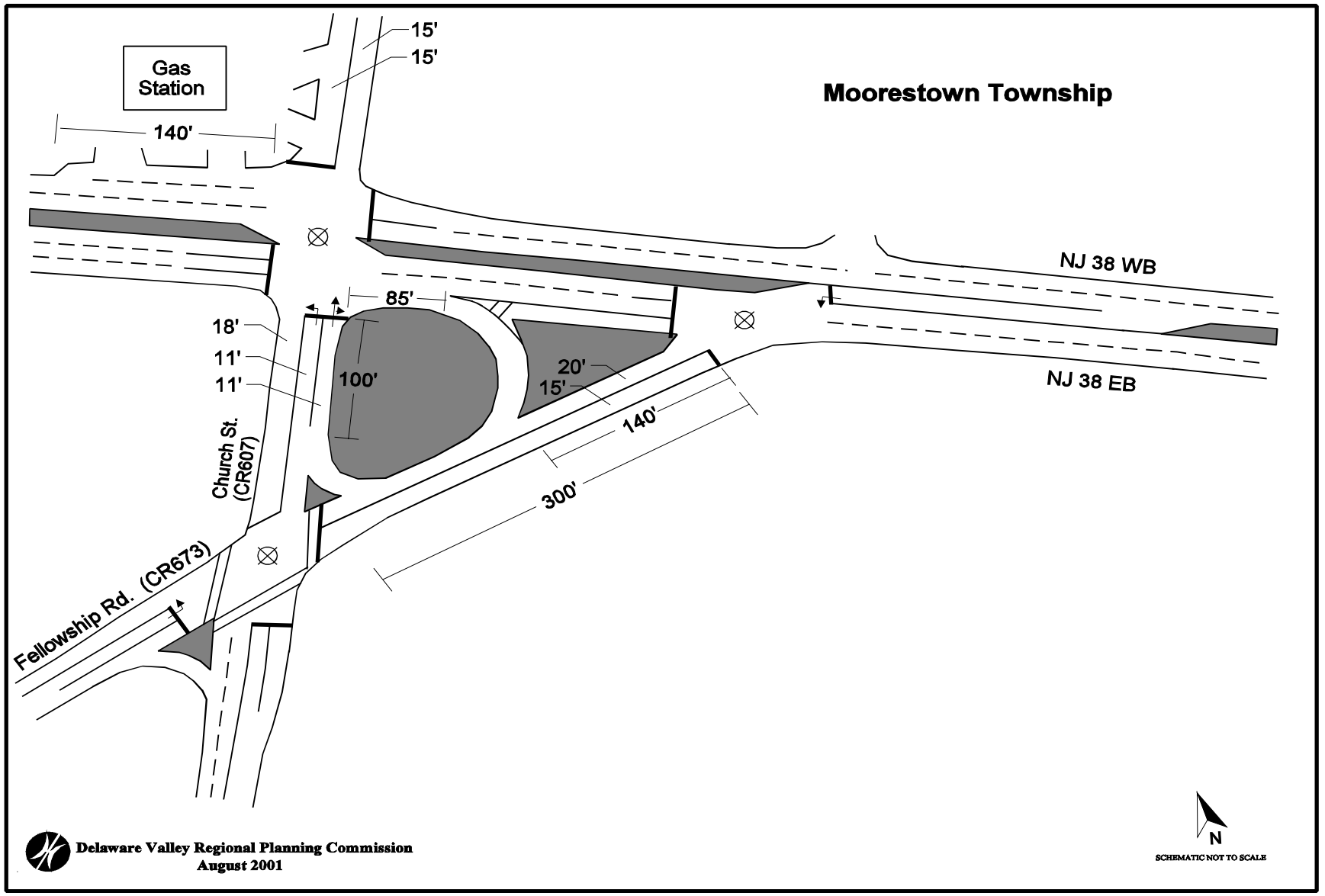
Suggested Improvement Scenarios:

• Currently the jughandle traffic from eastbound NJ 38 and southbound Fellowship Road traffic must merge to access both directions of Church Street and northbound Fellowship Road. Traffic from the jughandle must merge with vehicles on southbound Fellowship Road, which provides only one travel lane. There is adequate land inside the jug handle to provide a dedicated lane for traffic en route to Church Street northbound or u-turns onto westbound NJ 38. This improvement would help to clear the jughandle more efficiently and would relieve problems associated with weaving and merging.

• Slightly widening the north side intersection of Church Street and NJ 38 would accommodate a second southbound lane and increase the turning radius from westbound NJ 38 to northbound Church Street. The northeastern quadrant is occupied by a residence. Although the property is set back from NJ 38, some land would have to be acquired in order to implement this improvement. The second southbound lane would be designated as a left turn lane. Since southbound Church Street traffic is currently forming two lanes at the intersection, this improvement will formalize this practice. Left turns onto NJ 38 by both northbound and southbound Church Street traffic can be better accommodated by the addition of a protected left turn signal phasing. This would require a separate analysis to determine the feasibility of this improvement.

FIGURE 32: Fellowship Road (CR 673) Looking South Towards Eastbound NJ 38 Jughandle and Church St.

Figure 33: NJ 38 at Church Street (CR 607) and Fellowship Road (CR 673)



23. NJ 38 AND MOORESTOWN-MOUNT LAUREL ROAD (CR 603)

Moorestown Township, Burlington County
Milepost 8.43

Existing Conditions:

This intersection is located on the border between Moorestown and Mount Laurel Townships, approximately ¾ miles west of Marter Avenue (CR 615). All turns from both directions on NJ 38 onto Moorestown-Mount Laurel Road are accommodated by nearside jughandles. The southeastern quadrant of the intersection contains a gas station. The other three quadrants are undeveloped. Neither of the two jughandles have adequate land area within them to accommodate development.

On the south side of NJ 38, Moorestown-Mount Laurel Road is three lanes, one southbound departure lane and two approach lanes; a left turn only lane and a shared through/right turn lane. On the north side of NJ 38 Moorestown-Mount Laurel Road is also three lanes with the same configuration. In both Mount Laurel Township and Moorestown Township, Moorestown-Mount Laurel Road serves predominantly residential areas. There are also large tracts of undeveloped land on either side of the roadway in Mount Laurel Township.

Identified Problems:

Both jughandles are having trouble handling the peak hour traffic volume. Traffic is stacking out of the jughandle onto NJ 38. This is in part due to traffic on Moorestown - Mount Laurel Road stacking from the intersection back beyond the mouth of the jughandle. The presence of these vehicles prohibits the jughandle traffic from entering Moorestown-Mount Laurel Road thereby causing back ups.

Suggested Improvement Scenarios:

• The jughandle could more easily clear if it were wide enough to accommodate both a dedicated left turn lane and a dedicated right turn lane onto Moorestown-Mount Laurel Road. Both jughandles are an average width of approximately 19 feet. This width could be combined with some new land area from within the jughandle to create two lanes. In addition, a stop bar and a “Stop Here On Red” sign should be placed on Moorestown-Mount Laurel Road before the mouth of the jughandle. This would leave the mouth of the jughandle unobstructed allowing vehicles to enter Moorestown-Mount Laurel Road.

24. NJ 38 AND MARTER AVENUE (CR 615)

Mount Laurel Township, Burlington County
Milepost 9.2

Existing Conditions:

This intersection is in Moorestown Township near the border of Mount Laurel Township and approximately .10 mile west of the I-295 southbound off-ramp to westbound NJ 38. Marter Avenue intersects NJ 38 perpendicularly. NJ 38 is two lanes in each direction with an average lane width of 12 feet. All turns at this intersection are accommodated by near side jug handles. The eastbound NJ 38 nearside jug handle is two lanes wide and is striped for a left turn only lane and a right turn only lane. Together they provide access to both northbound and southbound Marter Avenue. The jug handle on westbound NJ 38 is one lane wide and .10 mile long. The space within the eastbound NJ 38 jug handle is vacant while the westbound jughandle contains an equipment rental establishment.

On the south side of NJ 38, Marter Avenue serves as the main access for two office buildings. During a field view it was observed that infrastructure was in place for more development within the vicinity of the existing office buildings. Beyond the entrance of the southernmost development, Marter Avenue becomes an on-ramp for southbound I-295. On the north side of NJ 38, Marter Avenue serves as a connector to Marne Highway (CR 537). The land area surrounding this section of Marter Avenue is sparsely developed with retail, professional, and residential uses, although it remains largely undeveloped. Currently a 1.1 million square foot retail and office complex development is proposed for the northeastern quadrant of this intersection. This development would be a significant traffic generator having a major impact on the existing infrastructure.

Identified Problems:

The westbound NJ 38 jughandle to Marter Avenue is experiencing back ups during the peak period. This is due to the inability of vehicles to enter southbound Marter Avenue from the jughandle because vehicles are stacked back from the intersection. This heavy volume is due in large part to Marter Avenue serving as the on-ramp for southbound I-295. Additionally, all westbound NJ 38 traffic en route to northbound I-295 must utilize Marter Avenue to gain access to the interstate. Also, there is no southbound I-295 to eastbound NJ 38 ramp. Southbound I-295 traffic must also use Marter Avenue to get to eastbound NJ 38.

Southbound Marter Avenue becomes the southbound I-295 on-ramp. Currently there is a “To I-295" sign on Marter Avenue. This sign does not indicate to motorists that after the last office building entrance, there is no other option but to enter I-295 because there is insufficient space for vehicles who are lost to turn around. It has been brought to our attention that vehicles have been seen backing up on Marter Avenue upon discovering that they were about to enter I-295. This creates congestion and a safety problem.

The close proximity of the southbound I-295 off-ramp to the westbound NJ 38 nearside jughandle to Marter Avenue is causing a weaving/merging problem. There is only .10 mile between these two ramps. Traffic attempting to get onto westbound NJ 38 from the I-295 off-ramp must navigate around the westbound NJ 38 traffic attempting to access the Marter Avenue near side jughandle. This causes disruption in the traffic flow and presents safety concerns, particularly due to the high speed of vehicles existing the interstate and on this segment of NJ 38.

Suggested Improvement Scenarios:

Short Term

• Currently the jug handle is striped for only one lane and is 15 feet wide. Slightly increasing the width of the jughandle will allow the creation of a second lane that will allow for separate right and left turn lanes. This would keep vehicles turning right from having to wait behind vehicles turning left and help to reduce the back up on the jug handle.

• In addition to this measure the placement of a stop bar and a “Stop Here On Red” sign on Marter Avenue would create a space for left turning vehicles to exit the jug handle. The stop bar and sign should be placed on Marter Avenue southbound just before the intersection of the jug handle. The signal timing may need to be reexamined to ensure that Marter Avenue southbound traffic is still able clear during the green phase.

• Southbound Marter Avenue is three lanes in this section, an exclusive left turn, a through lane, and a shared through and right lane. Two left turn lanes from the jug handle would allow traffic to clear out of the jug handle even more efficiently. In conjunction with this improvement, the southbound Marter Avenue approach to NJ 38 should be restriped to a left turn lane, a shared left turn/through lane and a shared through/right turn lane.

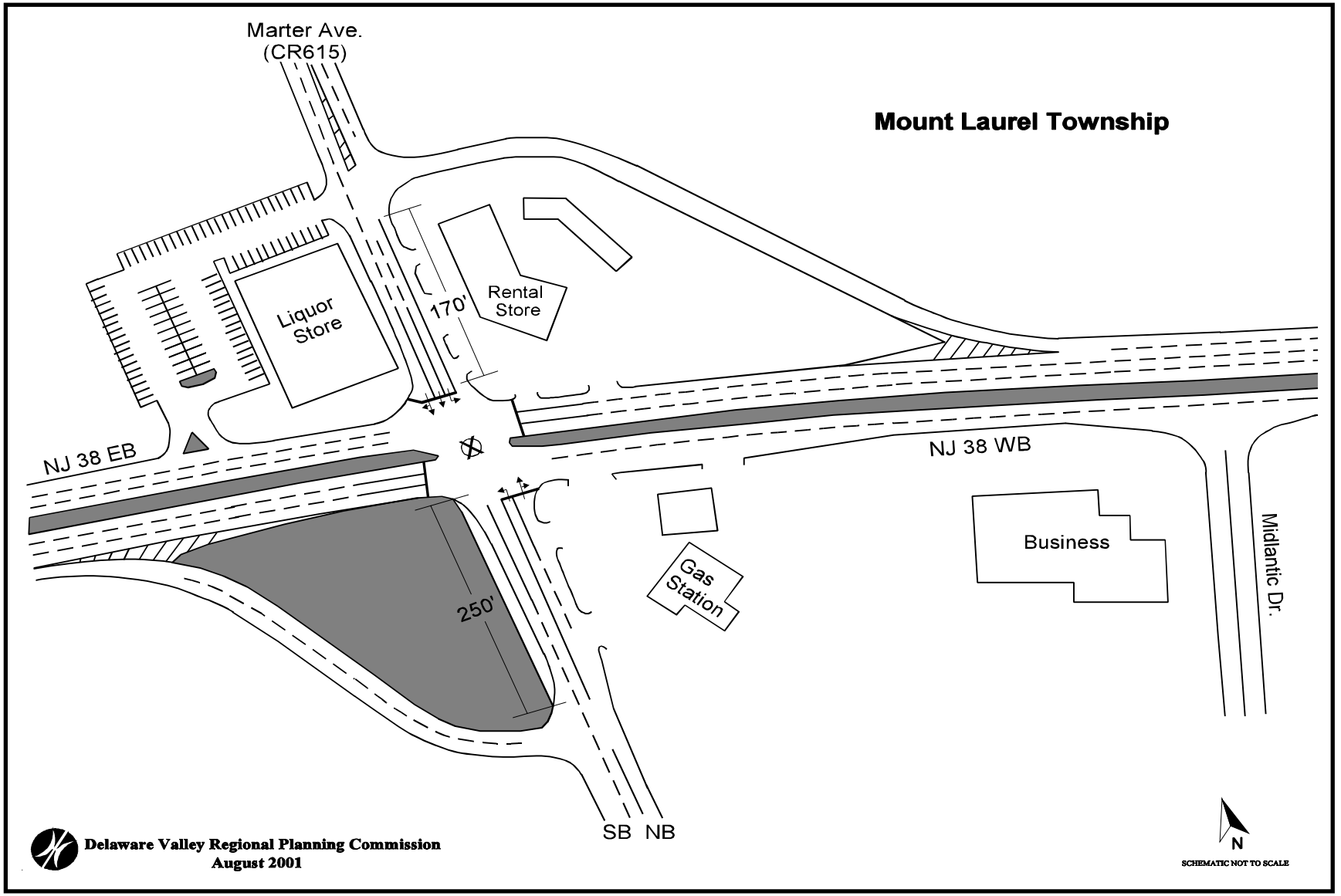
Long Term

- A more expensive but better improvement scenario would involve relocating the mouth of the jughandle further back, approximately 75 feet, north on Marter Avenue. This would allow traffic exiting the jughandle to enter Marter Avenue southbound further back from the intersection, behind the stacked vehicles rather than trying to cut into the stack line. At the time of this report's release there was a large undeveloped tract of land in the northeastern quadrant of this intersection, north of the existing jughandle.

- The construction of a northbound I-295 on-ramp from westbound NJ 38 would eliminate traffic from using the jughandle to make a U-turn in order to access the northbound I-295 on-ramp from eastbound NJ 38.

FIGURE 34: Marter Avenue (CR 615) Looking North Towards NJ 38

Figure 35: NJ 38 and Marter Avenue (CR 615)



25. NJ 38: I-295 TO BRIGGS ROAD

Mount Laurel Township, Burlington County
Milepost 9.5 to 10.2

Existing Conditions:

Interstate 295 intersects NJ 38 at interchange 40 in the western section of Mount Laurel Township near the border of Moorestown Township. This interchange does not accommodate all movements between NJ 38 and I-295. The on-ramp to I-295 from westbound NJ 38 is missing as is the southbound I-295 off ramp to eastbound NJ 38. The far side jughandle on eastbound NJ 38 and Briggs Road accommodates left turns from eastbound NJ 38 onto northbound Briggs Road. Additionally it serves u-turns to westbound NJ 38. At the intersection with NJ 38, northbound Briggs Road is three lanes, with one left turn lane and one through lane and a shared through/right turn lane. Westbound NJ 38 traffic has access to Briggs Road via a near side jug handle.

This section of the corridor is experiencing a tremendous amount of development, especially in Mount Laurel Township. This trend is expected to continue though most of the decade. Part of this growth includes the new strip retail development having 12 businesses located in the northwestern quadrant of NJ 38 and Briggs Road. Other recent development includes the Bishop's Gate office complex located on the south side of NJ 38, east of interchange 40. Bishop's Gate has direct access to NJ 38 eastbound via a right in right out access at a point between I-295 and Briggs Road. Access from the Bishop's Gate development to westbound NJ 38 is via Briggs Road. A short distance northeast of the NJ 38 and Briggs Road intersection is the Burlington County College which is also a large traffic generator.

Another development, Centerton Square, is planned for the northwest quadrant of interchange 40 and will reside partly in both Mount Laurel and Moorestown Townships. This 1.1 million square foot retail and office complex will occupy 137 acres of land and will include more than 5,000 parking spaces.

Identified Problems:

This area of the corridor is experiencing the greatest growth in terms of development and employment. As a result, the supporting infrastructure is beginning to experience problems in effectively handling the increase in traffic volume. There are three significant

infrastructure issues effecting the mobility of traffic in this vicinity.

1) Interchange 40 of I-295 does not accommodate all movements between I-295 and NJ 38. Missing from the interchange are the westbound NJ 38 to northbound I-295 movement and the southbound I-295 to eastbound NJ 38 movement. The eastbound NJ 38 to southbound I-295 movement is not able to be made directly at the interchange but can be made via Marter Avenue. These missing moves make this area more difficult to access while also putting stress on the existing facilities as motorists develop alternative routes for reaching their destination.
2) The eastbound NJ 38 jughandle at Briggs Road does not have adequate capacity to handle the high volume of traffic forecast with the burgeoning growth and development of this area.

3) The Bishop's Gate development needs an additional access point to westbound NJ 38 in addition to Briggs Road. High volumes of traffic, particularly during the peak period, are causing the Briggs Road jughandle to fail due to over capacity. One consequence of this is traffic is trying to access westbound NJ 38 via local roads located behind the development which lead to Moorestown-Mount Laurel Road (CR 603). This has caused unnecessary traffic in the residential neighborhoods in this vicinity and back ups on CR 603.

Suggested Improvement Scenarios:

- Construct the missing movements between I-295 and NJ 38. Burlington County and NJ DOT are currently analyzing the addition of ramps at Interchange 40. The off ramp from southbound I-295 to eastbound NJ 38 will be very difficult to construct due to the geometrics of the interchange and existing development. However, the on ramp to northbound I-295 from westbound NJ 38 should receive the highest priority. This improvement will greatly improve access to this area of the corridor as well as relieve some of the traffic from the surrounding local street network.

- The increase in traffic utilizing the Briggs Road jughandle on eastbound NJ 38 has created the need for additional capacity. Handling this increased capacity can be achieved by implementing a two pronged solution. The first step would increase the capacity at the intersection of Briggs Road and NJ 38. A short term solution would be to restripe the northbound Briggs Road approach to NJ 38 for a left turn lane, a shared left turn/through lane and a shared through right turn lane. If additional capacity is still needed the northbound approach could be widened for a fourth lane and reconfigured to two left turn lanes, a through

lane and a shared through/right turn lane.

The second step is to increase the capacity of the eastbound NJ 38 jughandle by relocating the mouth of the jughandle further south from the intersection. There is currently a residence just south of the jughandle mouth so it couldn't be relocated very far from it's present location without taking the property. However, if the mouth of the jughandle were brought to a T-intersection with Briggs Road it would create an increase in capacity on Briggs Road. This would allow traffic exiting the jughandle to enter northbound Briggs Road further back from the intersection, behind the stacked vehicles rather than trying to cut into the queue.

Another consideration would be to add a second lane to the jughandle utilizing land in the island created by the jughandle. This would make it possible to dedicate an inner lane to northbound Briggs Road and an outer lane to left turns. Also, adding a second left turn lane on northbound Briggs Road would increase the existing capacity and help to clear traffic from the intersection more efficiently.

• Their is a need for an additional connection between the Bishop's Gate development and westbound NJ 38. A study should be undertaken to investigate ways to increase the mobility from the Bishop's Gate development to westbound NJ 38. Several alternatives should be considered including reconnecting Marter Avenue by extending its current termini across I-295 and the New Jersey Turnpike and extending the Industrial Highway to Moorestown-Mt. Laurel Road (CR 603). Each of these alternatives may lead to additional problems elsewhere in the corridor so any analysis should address the consequences of any proposed improvement.

26. CR 537 AND CREEK ROAD

Hainesport Township, Burlington County
Milepost 15.14

Existing Conditions:

This section of Creek Road (CR 640) in Hainesport Township is a two lane facility which connects NJ 38 with Marne Highway (CR 537) and serves a predominantly residential area. Creek Road passes underneath a rail line overpass approximately 10 feet south of its intersection with Marne Highway. This intersection is controlled by a stop sign on Creek Road. Creek Road continues northbound as a local road on the other side of Marne Highway approximately 300 feet west of the intersection.

Identified Problems*:*

Creek Road meets the rail overpass at an angle which greatly compromises the sight distance of oncoming vehicles. Northbound Creek Road traffic is stop sign controlled at this intersection. A field view revealed that motorists on Creek Road do not have an unobstructed view of the intersection from the stop sign. In order to get a full view of the intersection, they must precede past the stop sign to a point just before the railroad overpass. This situation presents a significant safety concern. Additionally, motorists turning from CR 537 onto Creek Road were observed crossing the unmarked median.

Suggested Improvement Scenarios:

Short Term

- Move the existing stop sign on Creek Road further north towards the railroad overpass and stripe a stop bar. Install additional signage on Creek Road to warn motorists of sight distance problem and on CR 537 to warn motorists of hidden intersection. Also, stripe a center line on Creek Road so that motorists on CR 537 stay within the southbound lane on Creek Road when turning.

Long Term

- The land adjacent to Creek Road in the vicinity of the rail overpass is wooded and undeveloped. Use this land to realign Creek Road to a perpendicular intersection with Marne Highway. This improvement will greatly improve sight distance on both Creek Road and CR 537.

FIGURE 36: CR 537 Looking East at Creek Road (CR 640) Intersection

FIGURE 37: Creek Road (CR 640) Looking North Towards CR 537 Intersection

27. NJ 38 IN VICINITY OF HAINESPORT-MT. LAUREL ROAD AND CREEK ROAD

Hainesport Township, Burlington County
Milepost 12.95 to 13.3

Existing Conditions:

Located in Hainesport Township this portion of NJ 38 intersects two county routes, Hainesport-Mount Laurel Road (CR 674) and Creek Road (CR 640). Both of these routes meet NJ 38 at an angle. North of NJ 38 they then intersect each other forming a triangle with NJ 38. A school bus company is located in the triangle formed by the three roads. The intersection of NJ 38 and Creek Road was severed by a concrete median barrier on NJ 38 approximately five years ago. At that time a mid-block jughandle was installed on NJ 38 to the east of Creek Road to handle through movements and left turns on Creek Road and U-turns on NJ 38. This section of NJ 38 is three lanes in each direction with an average lane width of 12 feet, with a jersey barrier which is open at CR 674 but not at CR 640.

Creek Road (CR 640) is bisected by NJ 38. Southbound Creek Road through traffic must follow CR 674 to NJ 38 eastbound to the continuation of Creek Road and turn right onto Creek Road southbound. Northbound Creek Road traffic must follow NJ 38 eastbound to the mid-block jughandle to make a U-turn onto westbound NJ 38 then back track to continue north on Creek Road. Westbound NJ 38 traffic can access northbound Creek Road directly at the Creek Road intersection. Westbound NJ 38 traffic can access southbound Creek Road by taking northbound Creek Road to access the CR 674 and NJ 38 intersection, making a left turn onto eastbound NJ 38 and then making a right turn onto southbound Creek Road.

Identified Problems:

Hainesport Township is a growing community. A 400 unit residential development is planned for the area south of NJ 38 with its main access being Creek Road. In addition, there is more developable land in this vicinity which would potentially utilize Creek Road as its main access. Northbound Creek Road currently only has direct access to eastbound NJ 38. All traffic from future developments on the south side of NJ 38 utilizing Creek Road as their main access to westbound NJ 38 or northbound Creek Road are forced to make a u-turn at the mid-block jug handle east of the Creek Road and NJ 38 intersection. The volume of new traffic generated by future developments will most likely exceed the capacity of this jug handle eventually causing a back up onto eastbound NJ 38 during peak periods. This is a circuitous

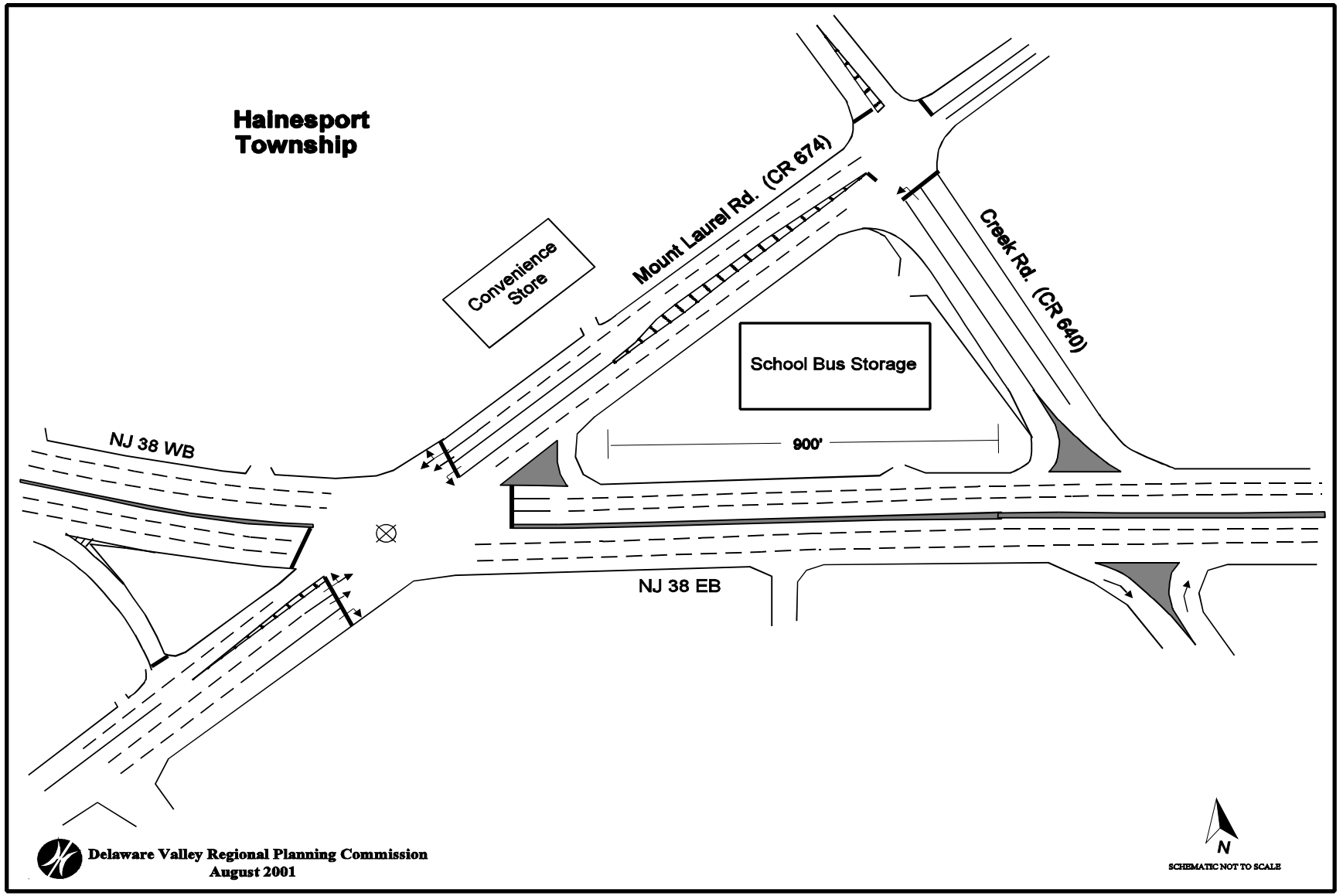
movement that forces traffic to back track.

Suggested Improvement Scenarios:

• This is a mobility issue concerning Creek Road. There is a development of 400 units planned along Creek Road on the south side of NJ 38. Hainesport Township is advocating the reopening of the NJ 38 median barrier at Creek Road and restoring a full intersection at this location to better facilitate turning movements between Creek Road and NJ 38. This improvement would require a more detailed study to determine the need for and viability of such an improvement, particularly in regards to left turn movements at the restored intersection. The study also needs to consider the impact on the Hainesport-Mount Laurel Road intersection with NJ 38 and the mid-block jughandles to the east of Creek Road. The current intersection configuration seems to operate well for the purpose and traffic volumes for which it was designed.

FIGURE 38: Creek Road (CR 640) Looking South Towards NJ 38

Figure 39: NJ 38 in the Vicinity of Hainesport-Mount Laurel Road and Creek Road



28. MOUNT HOLLY BYPASS (CR541) IN VICINITY OF NJ 38

Hainesport Township and Lumberton Township, Burlington County
Milepost 16.05 to 16.35

Existing Conditions:

The Mount Holly Bypass (CR 541) intersects NJ 38 in Lumberton Township near the border of Hainesport Township. On the north side of NJ 38 the Bypass follows the western border of Mount Holly Township and eventually rejoins CR 541 Business in northern Mount Holly Township. This facility enables vehicles en route to points north of Mount Holly Township to circumvent the downtown business district, which is accessible via CR 541 Business. Left turns from eastbound NJ 38 onto the Bypass are accommodated by a near-side jughandle. Right turns can be made directly from westbound NJ 38 onto the northbound Bypass. Left turns from westbound NJ 38 are not accommodated. On the south side of NJ 38 the Bypass is comprised of four northbound lanes and two south bound lanes. The northbound lanes are striped for two through lanes, a left turn only lane, and a right turn only lane.

There is development taking place in the vicinity of the Bypass, specifically in the southeast quadrant of the intersection with access from the Bypass. There is an existing office complex further south on the Bypass. There are many additional parcels with access to the Bypass on the south side of NJ 38 that remain undeveloped.

Identified Problems:

Vehicles turning left from the jughandle onto the northbound Bypass are having trouble getting into the appropriate lane due to vehicles stacking from the intersection back to the mouth of the jughandle. In addition, these vehicles must cross two lanes of southbound traffic which can be heavy during peak hours.

At the time of the follow-up field view it was observed that infrastructure was in place for a new assisted living development on the northbound side of the Bypass within the southeast quadrant of the intersection. The southbound Bypass left turn stacking lane for access to the new development is a short distance from the point where the NJ 38 jughandle intersects the southbound Bypass. Due to this short distance it is probable that a weaving problem will occur when traffic exiting the jughandle onto the southbound Bypass attempts to enter the left turn lane.

The southbound Bypass is not accessible from westbound NJ 38. This poses an access problem for the new developments coming into the area south of NJ 38 adjacent to the Bypass. To access this area from points east motorists must use the Main Street/Madison Avenue jughandle to southbound Main Street. Main Street intersects the Bypass and motorists then make a right turn onto the Bypass.

There are no sidewalks along the Bypass. During field observations several people were observed walking in the street towards NJ 38, presumably to catch a bus.

Suggested Improvement Scenarios:

• Reevaluate the signal timing to see if a greater green time can be afforded for northbound Bypass traffic thus expediting more vehicles through the intersection. In addition, adding more green time for the left turn movement could also be beneficial.

• Add a stop bar to the northbound Bypass lanes at a point just south of where the jughandle meets the Bypass. Also add an actuated flashing signal which directs vehicles to "Stop Here When Flashing" to allow the jughandle to clear. The sign would be linked to sensors in the jug handle and would activate when the queue of vehicles has reached a designated point. Since this problem is mainly occurring during the peak hour this system would only be triggered into operation a short period of time during the course of the day.

• Eliminate the left turn access point for the new assisted living development on the southbound Bypass. Southbound Bypass traffic can access this development via a u-turn at the Berry Drive intersection a short distance south of the jughandle mouth. This coordinated access plan would facilitate more efficient traffic flow.

• Install sidewalks along the Bypass.

In order to accommodate left turns onto the Bypass from westbound NJ 38:
Short Term
• Provide directional signing on westbound NJ 38 along the current route (Main Street to the Bypass) to direct motorists wishing to access the Bypass southbound.

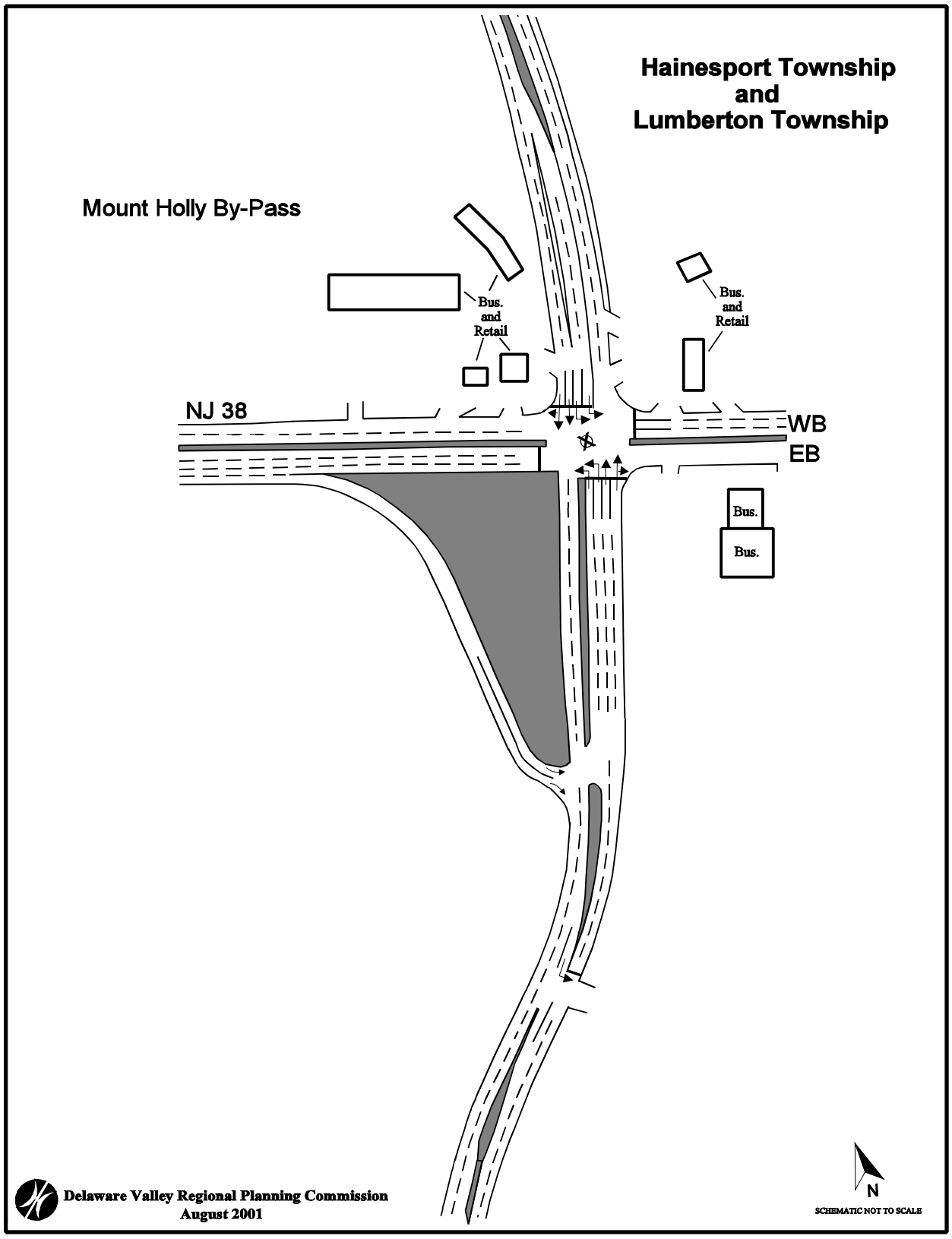
Long Term

- Seek an alternative such as a jughandle at the intersection to accommodate westbound NJ 38 traffic. Currently the land area in the two quadrants on the north side of NJ 38 at the intersection contain commercial uses. Study possible locations and routings for a jughandle at this intersection.

FIGURE 40: Mount Holly By-Pass (CR 541) Looking South from Jughandle Cut-Through Toward Left Turn Slot

FIGURE 41: Mount Holly By-Pass (CR 541) Looking North from Jughandle Cut-through Towards NJ 38

Figure 42: Mount Holly Bypass (CR 541) in Vicinity of NJ 38



29. CR 537 IN MOUNT HOLLY

Mount Holly Township, Burlington County
Milepost 17.62 to 20.32

Existing Conditions:

Mount Holly Township is the county seat of Burlington County and is located on the north side of NJ 38. It has a bustling downtown with a significant amount of pedestrian activity. The vehicle traffic moving through town is largely local. The main route through town is Mill Street (CR 537). Mill Street is one lane in each direction with metered parking and sidewalks in both directions.

Identified Problems:

The downtown section of Mount Holly is experiencing a high volume of through truck traffic. Local officials have determined that these trucks are destined for points west of Mount Holly Township. These trucks are traveling westbound on CR 537 from points east and suddenly find themselves on Mill Street in a downtown commercial district. This section of the municipality currently experiences congestion due to high traffic volumes during the peak hour. The added truck traffic exacerbates this problem. In addition, trucks have problems maneuvering on the narrow cartway of Mill Street.

Mount Holly Township has already instituted a temporary truck diversion route marked by signs on CR 537 near the eastern border of the municipality. The local police have been enforcing this ordinance

Suggested Improvement Scenarios:

- Mount Holly Township has developed a truck diversion route in an effort to keep through truck traffic out of their downtown. This route redirects non-local delivery truck traffic onto perimeter facilities which are better suited to handle this type of through traffic. The diversion route redirects westbound CR 537 traffic to NJ 38 via the following facilities: CR 537 to Woodlane Road (CR 630) westbound to Mount Holly-Burlington Road (CR 541) southbound to the Mount Holly By-Pass (CR 541) to westbound NJ 38. A field observation revealed that the diversion route is appropriate. However, the intersection of Woodlane Road and Mount Holly-Burlington Road has a tight turning radius making a left turn at this location difficult for large trucks. An analysis should be undertaken at this location to

investigate the possibility of improving the turning radius at this location. Mount Holly Township is currently working to reach an agreement with Eastampton, Hainesport, and Lumberton Townships on the final route designation and enforcement issues.

30. NJ 38 AND MADISON AVENUE / MAIN STREET (CR 691)

Lumberton Township, Burlington County
Milepost 15.8

Existing Conditions:

Madison Avenue/Main Street (CR 691) intersects NJ 38 at an acute angle within Lumberton Township, approximately ¼ mile east of the Mount Holly Bypass. This intersection is signalized and all turns from NJ 38 are accommodated via two jug handles. CR 691 serves as the main access road to one of the largest residential areas in Lumberton Township.

All through movements on Madison Avenue northbound must go through a series of two jug handles. Eastbound NJ 38 to northbound Madison Avenue traffic must follow the channelized right turn onto southbound Madison Avenue and then quickly turn left to enter the jughandle to proceed north. Westbound NJ 38 traffic must follow the near side northbound Madison Avenue jughandle to reach Madison Avenue and then turn left onto southbound Madison Avenue.

Identified Problems:

This intersection was recently redesigned incorporating the jug handles of its current configuration. The redesign did not eliminate a channelized right turn from westbound NJ 38 onto northbound Madison Avenue located at the intersection. The new configuration routes this traffic to Madison Avenue northbound via the near side jug handle. This new configuration makes the channelized right turn redundant. Currently there is no development within the land area adjacent to jug handle which would benefit from retaining this access. The north side of Madison Avenue adjacent to the jug handle is three southbound lanes with no lanes northbound. The nearside jughandle on the north side of NJ 38 serves as the Madison Avenue northbound lanes. The old channelized right turn from NJ 38 to Madison Avenue gives motorists the misconception that northbound Madison Avenue is accessible at the intersection directly from NJ 38 westbound.

Suggested Improvement Scenarios:

- In order to avoid any possible accidents, this right turn lane from westbound NJ 38 to CR 691 should be closed and the slot on NJ 38 should be converted to a shoulder.

31. NJ 38 AND EAYRESTOWN ROAD (CR 612)

Mount Holly Township and Lumberton Township, Burlington County
Milepost 16.5

Existing Conditions:

There are business and retail land uses in each of the four intersection quadrants of NJ 38 and Eayrestown Road (CR 612). All turning movements from NJ 38 are made through two jug handles (one for each direction of NJ 38), both located on the east side of Eayrestown Road,. Left turns from eastbound NJ 38 to northbound Eayrestown Road are made through the Eayrestown Road northbound jug handle via the following series of movements: 1) a right turn from NJ 38 onto southbound Eayrestown Road; 2) a left turn to enter the northbound Eayrestown Road jug handle which directs traffic to a signalized intersection with NJ 38; 3) follow the jug handle across NJ 38 and into the westbound NJ 38 jug handle which merges with South Pemberton Road and eventually meeting northbound Eayrestown Road at a stop sign controlled intersection. The intersection of NJ 38 and the Eayrestown Road jug handle is signalized and the jughandle approach is striped for three lanes: one left turn only lane, a shared through left turn lane, and a shared through right turn lane.

Northbound through traffic on Eayrestown Road must also perform this maneuver because the area north of the entrance to the south side jughandle on northbound Eayrestown Road is for local access only. There is a bank in the southeast quadrant (located within the jug handle) which has its own right turn out only access to northbound Eayrestown Road. There is also a fast food establishment located adjacent to the south side jughandle along eastbound NJ 38. The restaurant has right turn out access to the jughandle.

Westbound NJ 38 traffic wishing to access northbound or southbound Eayrestown Road must utilize South Pemberton Road, which splits from NJ 38 east of the Eayrestown Road intersection. NJ 38 curves at the point where South Pemberton Road separates. The Eayrestown Road jughandle joins South Pemberton Road at a point midway between NJ 38 and Eayrestown Road. Both South Pemberton Road and the north side Eayrestown Road jughandle have two-way traffic with one lane in each direction (South Pemberton Road is one-way from NJ 38 until the merge with the jughandle. After that point it is two-way traffic). Vehicles on South Pemberton Road must yield to traffic in the jughandle. Eastbound South Pemberton Road provides access to two businesses located in the land area within the jug

handle. These access points are uncontrolled allowing vehicles exiting these businesses to turn right or left onto the jughandle.

Identified Problems:

There is a weaving and merging problem between jughandle traffic and South Pemberton Road traffic. The problem occurs at the point where northbound Eayrestown Road traffic in the north side jughandle meets traffic from South Pemberton Road, departing westbound NJ 38. Traffic from both directions is en route to the intersection of South Pemberton Road and Eayrestown Road. The weaving problem is exacerbated by the high speed of traffic on South Pemberton Road that has just left westbound NJ 38. In addition, there is poor sight distance from the northbound Eayrestown Road jughandle of the traffic on South Pemberton Road due to the angle at which the jughandle and South Pemberton Road merge.

Directional signage for the jughandle is poor. There is signage on both southbound and northbound Eayrestown Road directing traffic to the jughandle. However, the signs are small and easy to miss.

There is also a potential problem with egress from the business located immediately to the west of the north side jug handle. The problem occurs when a vehicle exits this business and turns left onto westbound South Pemberton Road. This movement requires crossing the eastbound South Pemberton Road lane and then merging with westbound South Pemberton Road/jughandle traffic. Both of these lanes of traffic are moving at higher speeds than the traffic from the business which further exacerbates the merging problem at this location.

Suggested Improvement Scenarios:

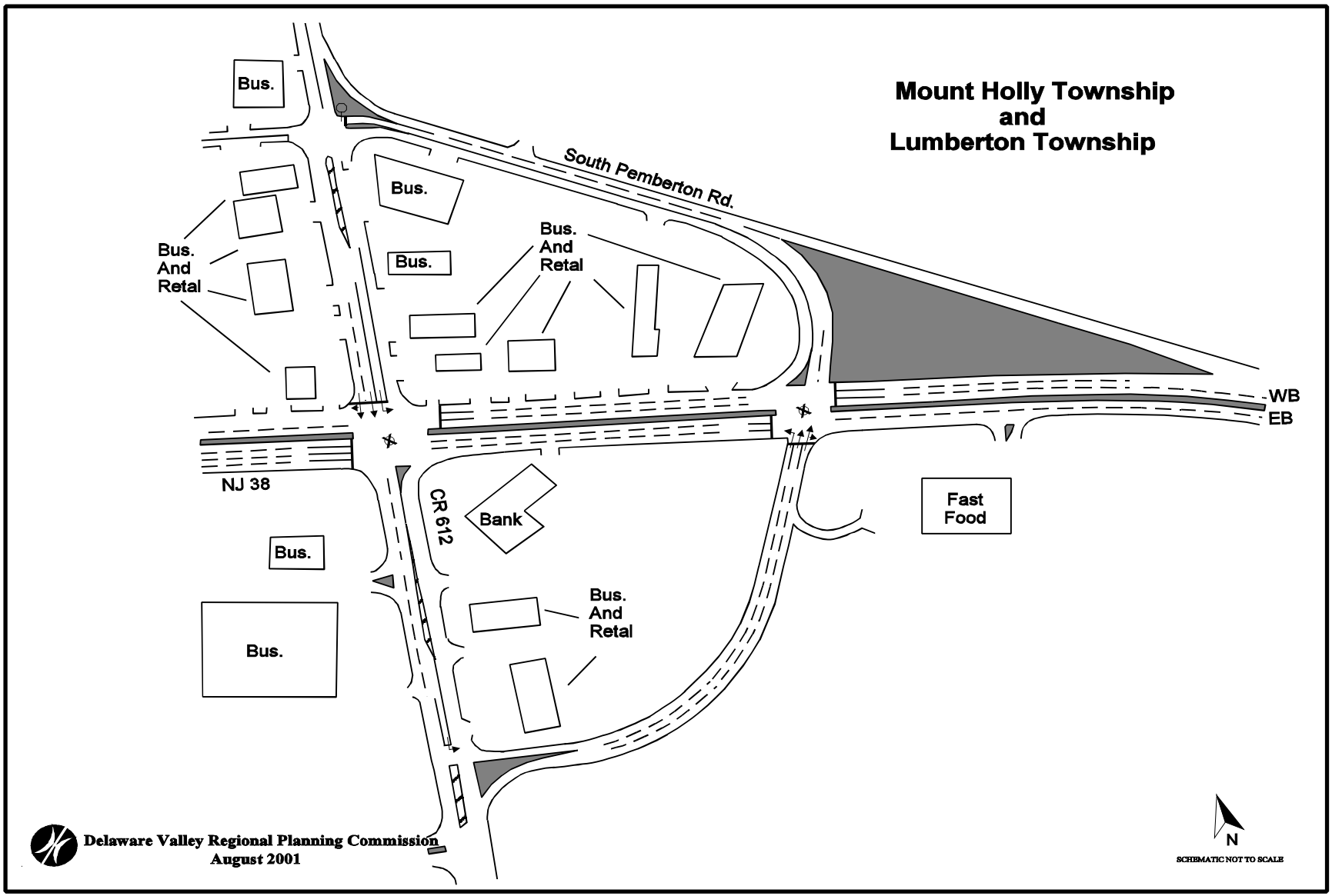
• Currently, South Pemberton Road has two "Yield Left" signs, one on either side of the lane where it merges with the north side Eayrestown Road jughandle. Also, there is a lane configuration sign closer to the intersection. Westbound South Pemberton Road is wide enough to stripe for two lanes. To reduce the weaving/merging problem create two lanes out of the existing single lane by adding a broken white line and add directional markings to each new lane. This improvement will serve two purposes: 1) the new lane designations with pavement markings will keep traffic separated, causing only the vehicles that must cross to do so; 2) the new narrower lanes will calm traffic by effectively reducing speed. It would also be beneficial to add lane designation signs further back from the intersection to indicate the function of each lane.

• Implement better signage to direct eastbound NJ 38 traffic bound for northbound Eayrestown Road and for northbound Eayrestown Road through traffic.

• The access points for the businesses located on the north side jughandle should be joined and made into a single access point closer to the center point between the merge area and the intersection of South Pemberton Road and Eayrestown Road. This will allow for increased sight distance for motorists making left turns out of the business. Currently there is enough vacant land between the establishments within the jughandle for this improvement. However, the status of this land area is unknown.

FIGURE 43: South Pemberton Road Looking West at North Side Eayrestown Road Jughandle

Figure 44: NJ 38 and Eayrestown Road (CR 612)



32. NJ 38 IN THE VICINITY OF SAVORY WAY

Mount Holly Township, Burlington County
Milepost 16.9 to 17.2

Existing Conditions:

The land area on the south side of NJ 38 is occupied by several retail establishments which currently have uncontrolled (with the exception of median striping) access to both the eastbound and westbound directions of NJ 38. They include an office building, a convenience store, and a strip mall containing nine businesses that share two access points. All of these uses are significant trip generators. The office building has two access points, a right in/right out on the western perimeter of the property and an uncontrolled access on the eastern perimeter. The convenience store has an uncontrolled access to NJ 38 and another onto Windmill Way, an adjacent local street to the west. The strip mall has two access points to NJ 38, both uncontrolled. There is a jersey median barrier that begins at the point where South Pemberton Road splits from NJ 38 and extends westward.

Windmill Way provides access to a residential development situated behind the retail establishments on the south side of NJ 38. Windmill Way is uncontrolled allowing access to both the eastbound and westbound directions of NJ 38. East of the strip mall is another local road, Savory Way, which meets NJ 38 at a signalized intersection. NJ 38 is three lanes in each direction at this intersection providing a dedicated right turn lane eastbound and a dedicated left turn lane westbound. Savory Way is the main access to another residential development located behind a larger retail strip mall on NJ 38.

Identified Problems:

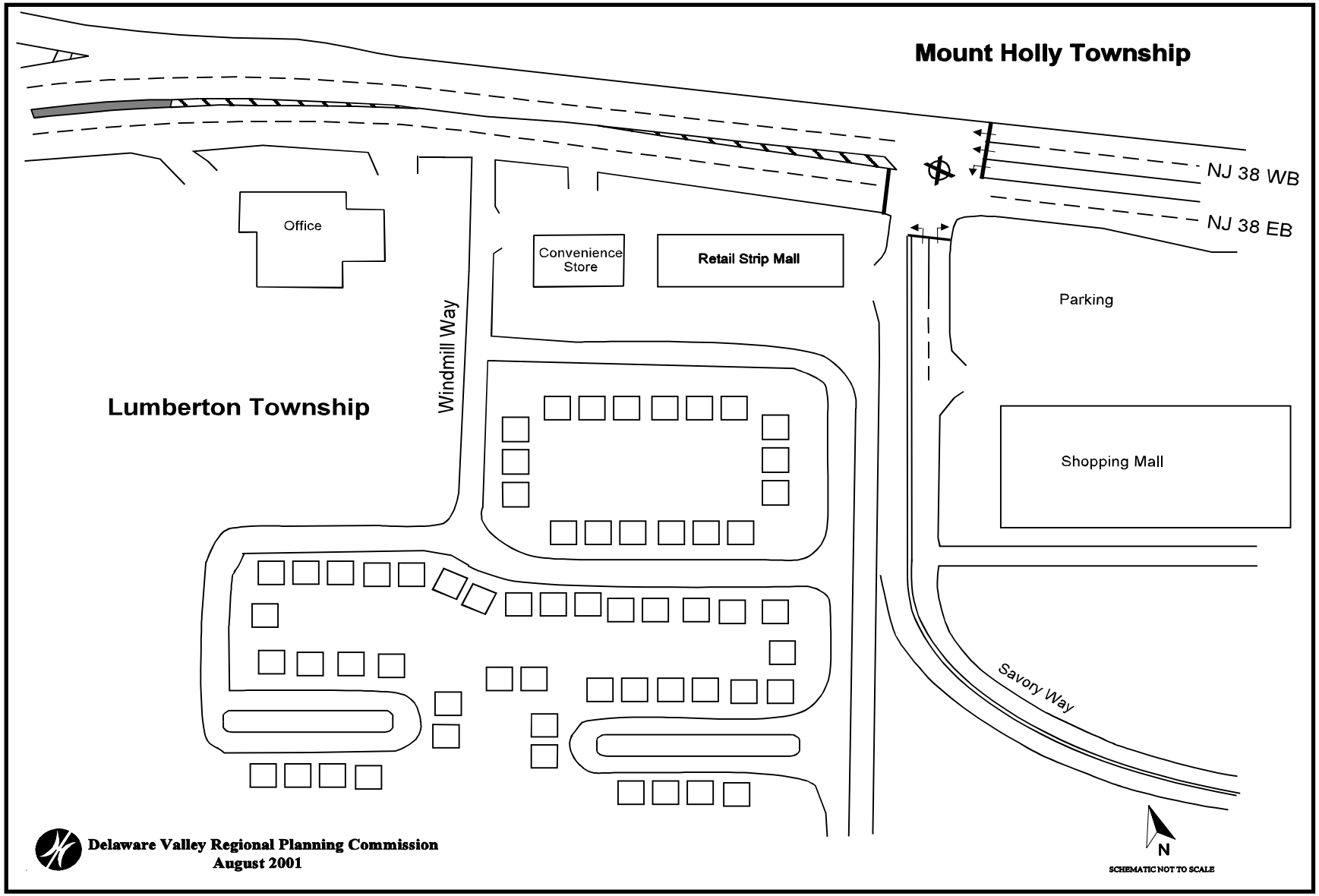
West of the signalized intersection with Savory Way, there are no left turn lanes on westbound NJ 38 for access to the retail establishments in this vicinity. The small median is striped for no turns but the prohibition is routinely ignored. Vehicles are stacking in the westbound NJ 38 passing lane while waiting for an opportunity to cross the eastbound NJ 38 lanes and turn left into these businesses. This situation is most dangerous at the convenience store entrance because sight distance is reduced due to the curvature of NJ 38. At the same time vehicles are making left turns out of these establishments and crossing over the two eastbound NJ 38 lanes to access westbound NJ 38. This situation is occurring simultaneously at each of the businesses and at Windmill Way during the peak period. This problem is at its worst during

the AM peak period.

***Suggested Improvement Scenarios*:**

• Conduct a traffic study for the area which should consider extending the jersey barrier east to the intersection of NJ 38 and Savory Way. This would render each access point along this stretch to function as a right in - right out only, thus eliminating the dangerous left turns. The traffic study should also assess the placement of a traffic signal and left turn slots at NJ 38 and Windmill Way to allow access to and from westbound NJ 38 for the convenience store, office building and apartment complex.

Figure 45: NJ 38 in the Vicinity of Savory Way



33. NJ 38/CR 530 AND US 206

Southampton Township, Burlington County
Milepost 19.25

Existing Conditions:

NJ 38 terminates and CR 530 begins at the intersection of US 206. NJ 38/CR 530 is two lanes by direction in this vicinity. US 206 is two lanes by direction north of the intersection and one lane by direction to the south. US 206 has one through, one left turn and one channelized right turn lane in both directions at the intersection. NJ 38/CR 530 has two through, one left turn, and one channelized right turn lane by direction at the intersection.

Identified Problems:

Fast moving vehicles on NJ 38/CR 530 have become airborne at US 206 due to the drainage swales located on either side of the width of US 206. During rain storms the swales fill with water and cars traveling at high speeds hit the pools of water and tend to hydroplane. The traffic signal mast arms at this location are rather long and sway excessively during high wind situations. Local representatives have reported incidences of signals heads being knocked off and/or damaged by passing vehicles. In addition, there is no center turn lane in this vicinity and cars frequently back up on eastbound CR 530 waiting to turn left into the convenience store in the northeast quadrant of the intersection..

Suggested Improvement Scenarios:

• Reconstruct the intersection to correct pavement inconsistencies and implementing better designed drainage swales that present a lower profile. In the interim, implement police monitoring and enforcement of speed restrictions, especially during rainstorms. Additionally, signal head mast arms should be raised to add greater clearance for tall vehicles. The mast arms should be reinforced to reduce movement during windy conditions, especially if they are raised.

• Conduct an accident investigation for left turn movements to and from CR 530 and the convenience store to determine whether access to the store along CR 530 should be right in/right out only. A comparative accident investigation should be conducted for movements between the convenience store and US 206 to determine if routing all left turns between CR 530 and the convenience store can be more safely accommodated via US 206.

34. US 206: CR 616 TO NJ 38

Southampton Township, Burlington County
Milepost 22.1 to 23.45

Existing Conditions:

This section of the study area is located south of NJ 38 / CR 530 in central Southampton Township. US 206 is two lanes by direction north of the NJ 38/CR 530 intersection and one lane by direction to the south. There is a small four-lane segment of US 206 between CR 681 and CR 616. The shoulder is generally wide.

Identified Problems:

Drainage is a problem during heavy rains, primarily due to the high berm along the cartway. Deer are also prevalent in the areas south of NJ 38/CR 530. Northbound US 206 merges from two lanes to one lane in the vicinity of CR 681. The merge is complicated by vehicles attempting to make left turns onto CR 681 en route to Vincentown. This maneuver creates back-ups and the increased potential for rear-end accidents. This problem is exacerbated by traffic backs up on northbound US 206 from NJ 38/CR 530 south for approximately 3/4 mile in the AM peak period.

Suggested Improvement Scenarios:

• The drainage problem can be addressed by modifying the roadway and shoulder to better accommodate run-off. It is also possible that drainage culverts in this vicinity are blocked or clogged. If such is the case, remediating this situation may be a very inexpensive solution to the problem.

• This is a rural area of Burlington County so it is likely that the deer population is significant. With the realization of future growth and development of this area the animals will become increasingly displaced and probably present a greater threat to motorists. Implementation of lighting along US 206 would serve to protect both the deer population and the motorists.

• Prohibit left turns from northbound US 206 to CR 681. Motorists wishing to access CR 681 and/or Vincentown can do so by using CR 616.

FIGURE 46: US 206 Looking South at CR 681 Split

35. CR 530: US 206 TO CR 644

Southampton Township, Pemberton Township and Pemberton Borough, Burlington County
Milepost 0.0 to 2.75

Existing Conditions:

CR 530 serves as a continuation of NJ 38 to the east of the US 206 intersection. It is four lanes wide with no center turn lane or shoulders. The south side of the roadway is primarily undeveloped with some development concentrated at the eastern end of Pemberton Township near Pemberton Borough. Truck volumes are high along this stretch, many heading to the Sybron chemical plant along Birmingham Road. The speed limit is posted at 45 mph but a field observation revealed that traffic typically exceeds this limit.

Identified Problems:

There have been a number of fatal accidents along this stretch of road over the past decade. The majority of accidents occur while motorists attempt to make a left turn from the passing lane of CR 530. There is very poor drainage along the south side of CR 530 during rain storms. There is a high berm along the road and the drainage system is dry wells which quickly fill up. This results in a water-logged road and hydroplaning during rain storms. There are no center turn lanes and no shoulders which forces traffic to back up in the passing lane while motorist wait to make left turns. There are electrical lines and a high berm immediately adjacent to the cartway which make adding shoulders difficult. There are a large number of curb cuts along the north side of CR 530. Also, sight distance is very poor for vehicles exiting the businesses along the north side of CR 530 due to the proximity of the electrical poles and lack of shoulders. NJ Transit vehicles and school buses using CR 530 make frequent stops to pick-up and discharge passengers along the way. Before Hanover Street (CR 616), eastbound CR 530 narrows to one lane. The lane reduction causes traffic to back up at this location.

Suggested Improvement Scenarios:

• The most costly but most effective improvement would be adding a center turn lane for the entire length of CR 530 from the end of NJ 38 to CR 616. There are two approaches to implementing this improvement. The first would be to widen the existing roadway to five lanes adding a dedicated center turn lane for the entire width. This would allow two lanes of through traffic to flow freely without having to wait behind vehicles turning left. The major

undertaking in this scenario involves the acquisition of right of way and the possible relocation of power lines. This improvement would provide an opportunity to re-grade the road surface to better handle the run-off. The second and less costly improvement involves converting the passing lanes to left turn lanes including sufficient queue lengths. While this would effectively improve safety along the corridor it would also increase congestion by reducing the capacity of the through lanes. In either scenario, shoulders should be provided on both sides of the roadway. In addition, the drainage problem also needs to be addressed.

These improvements can be incorporated more easily in the undeveloped portion of CR 530. In the eastern segment nearer to the intersection on CR 616 development is much more prevalent. Much of this development is not set back very far from the roadway which would require major modifications if the entire length of CR 530 were to be widened, including the possible acquisition of all or parts of existing businesses and residences. On average, five to 15 additional feet of right-of-way would be required from properties adjoining the length of the road. An additional consideration is that a large portion of the land area on the south side of CR 530 is part of the Pinelands and is subject to stringent environmental regulations.

To eliminate the eastbound lane reduction at Hanover Street, eastbound CR 530 should be widened to two lanes with a center turn lane at this location. There is a historic cemetery on the north side of CR 530 in this vicinity which will prohibit lanes to be widened on the north side. Therefore, some property acquisition may be needed on the south side of CR 530 in this vicinity.

FIGURE 47: CR 530 Looking East Towards Birmingham Road

36. CR 530 AND BIRMINGHAM ROAD (CR 685)

Pemberton Township
Milepost 1.31

Existing Conditions:

This intersection is located in Pemberton Township near the border of Southampton Township. At this location CR 530 is two lanes in each direction with no shoulders and no center turn lanes. Utility poles are located along the roadway close to the edge of the road. The posted speed limit is 45 mph. Birmingham Road intersects CR 530 in Pemberton Township east of the Southampton Township border. In addition to serving residences, Birmingham Road is also the main access road to Sybron Chemical, a significant truck trip generator. On the south side of CR 530 the land is undeveloped. The immediate northeast quadrant of the intersection is occupied by a residence. The northwest quadrant is undeveloped.

Identified Problems:

The intersection of CR 530 and Birmingham Road is a standard 4 leg right angle design. Access to CR 530 from Birmingham Road is stop sign controlled. In addition, there are no left turn lanes on CR 530. This causes traffic to back up in the passing lane while waiting for the turning vehicle. This problem is exacerbated by the high volume of trucks entering Birmingham Road from CR 530 because large trucks need a longer gap in the oncoming traffic in order to make a left turn. This situation also presents a safety issue due to vehicles weaving from the left lane to the right lane in an effort to avoid getting stuck behind vehicles waiting to turn left. This intersection has been the site of several accidents during recent years.

Another concern at this location is the sharp turning radius of the intersection which makes it extremely difficult for trucks to negotiate right turns onto Birmingham Road from westbound CR 530. This causes them to slow down significantly, causing delays for the through traffic. There is also a private driveway onto westbound CR 530 approximately 90 feet east of Birmingham Road.

Suggested Improvement Scenarios:

• The addition of a traffic signal at this location along with a left turn lane for eastbound CR 530 traffic would allow the through traffic to continue uninterrupted and provide a protected

movement for turning vehicles. The land area to the south of CR 530 is currently undeveloped although the utility lines would need to be relocated. Environmental issues may also come into play as the south side of CR 530 is part of the Pinelands. See problem location 36 for a more detailed description of these suggested improvement scenarios.

FIGURE 48: Birmingham Road Looking North Towards CR 530

Figure 49: Tractor-trailer Making a Left Turn Onto Northbound Birmingham Road from Eastbound CR 530

TABLE 3
Previously Identified Transportation Problems

DVRPC FY 2001-2003 TRANSPORTATION IMPROVEMENT PROGRAM
NJ DOT FY 2001-2002 STUDY AND DEVELOPMENT PROGRAM
NJ PROBLEM IDENTIFICATION AND PRIORITIZATION MAY 2001
DVRPC'S YEAR 2020 LONG RANGE PLAN

T1 Ark Road and Marne Highway
CR 635, CR 537
DB# 9901
This project in Mount Laurel Township will provide intersection improvements at Ark Rd. and Marne HW, including the rebuilding of the RR grade crossing adjacent to the intersection.

T2 Hanover Street Bridge
CR 616
DB#D9902
This structurally deficient bridge will be replaced in Pemberton Borough.

T3 Smithville Road Bridge
CR 684
DB#9903
This project is in Eastampton Township and will replace the structure over Rancocas Creek

T4 South Pemberton Road
US 206 to CR 644
DB#D9912
This project will provide for the reconstruction of CR 530 to improve safety, reduce accidents, facilitate left turn movements, and add shoulders. The project includes Southampton Township, Pemberton Township, and Pemberton Borough.

T5 NJ 73: Fox Meadow/Fellowship Road

Vicinity of Route 41 to vicinity of Main Street (CR 537)

DB# 94068

This project in Maple Shade Township may include widening of Route 73, intersection improvements at Route 73 and Fox Meadow, realignment of the ramps at Main Street and bridge replacement at Main Street.

T6 Burlington/Camden Rigid Pavement

I-295: South of CR 561 to north of NJ 38 interchange.

DB#99373

This project will address the rehabilitation of the roadway due to its deteriorated condition in Cherry Hill Township and Mount Laurel Township.

T7 Burlington Traffic Sign Management

Various county routes

DB#D035

This program will address implementation of a Traffic Sign Management Program for all county-maintained roadways. It will involve inventory, material procurement, sign fabrication, sign installation, and establishment and maintenance of records.

T8 Burlington County Computerized Signal Control, Phase IV

CR607, CR616, CR 674, CR 673

DB#9911

This ITS project will be a traffic responsive signal system, consisting of 24 intersections.

T9 Camden Traffic Sign Management Program

Various county routes

DB#D031

This program will provide for the development and implementation of a system to inventory, maintain, and install or replace traffic signs on 400 miles of Camden County Roadways.

T10 Median Closures

NJ 73: Cooper Folly Road to Fellowship Road

DB#94035

This project will close selected median openings or construct left turn slots.

T11 Traffic Signal Contract 16

NJ 70, US 30, NJ 38, NJ 73

DB#713

Implementation of a computerized traffic system which will tie into the Traffic Operations Center South. Major items of work include installation of variable message signs, closed circuit television cameras, highway advisory radio, and accident management system. Also, 70 miles of fiber optic cable will be installed on Routes 30, 38, 70 & 73 to control traffic signals on these highways.

S1 Creek Road

CR 636: Creek Road from Moorestown-Bridgeboro Road (CR 613) to Centerton Road, Including improvement of Creek and Ark Roads.

DB#L019

Rehabilitation of existing roadway, including replacement of culverts and intersection safety improvements in Moorestown and Mount Laurel Townships.

S2 Corridor Study

NJ 38: US 130 (Airport Circle) to US 206

DB#191

This study will address possible operational improvements within this corridor.

S3 Missing Moves

I-295 and NJ 38, vicinity of interchange 40

DB#191A

The existing I-295 and NJ 38 interchange does not provide all the direct traffic movements between these two roadways. A study will be undertaken to determine whether it is appropriate to complete the interchange. The adjacent signalized intersections of Marter Avenue and Briggs Road along NJ 38 will be included in the study.

S4 3P

NJ 73, I-295 to Commerce Parkway, Operational Movements

DB#9163

This project involves intersection improvements at the Fellowship Road, Church Road, and Atrium Way intersections with NJ 73. The Fellowship Road intersection will eliminate the ramp on the southwest corner and construct a ramp on the northwest corner. NJ 73 and

Church Road will be slightly realigned at the intersection and a two-way ramp will be located on the northwest corner and two ramps will be located on the southeast corner. A forward jughandle will be located on the northbound side of NJ 73 at Atrium Way.

S5 US 206

Monmouth Road (CR537) to NJ 38

DB#9212

A planning study will be undertaken for the development of a project for comprehensive corridor rehabilitation and operational improvements including pavement rehabilitation, intersection improvements, drainage improvements, development of an access management plan, pedestrian improvements, signing and lighting improvements, and roadside rehabilitation. This study will involve Eastampton, Pemberton, and Springfield Townships.

S6 Corridor No. 3B

US 130: Airport Circle to High Street (CR 541)

DB#95078B

A corridor deficiency study will be undertaken for the development of a project for comprehensive corridor rehabilitation and operational improvements including pavement rehabilitation, intersection improvements, drainage improvements, development of an access management plan, pedestrian improvements, signing and lighting improvements, and roadside rehabilitation, for various municipalities.

S7 Main Street Bridge, Drainage

NJ 73 at CR 537

DB#96005

Proposed improvements to an identified drainage problem which results in periodic flooding under the Main Street Bridge in Maple Shade Township.

S8 US 206 Bicycle Improvements

US 30 to NJ 38

DB#97043

The proposed project may include intersection studies at Tabernacle Road and Pemberton Road on US 206 to determine if elimination of the second lane is possible; improve intersections with crosswalks, signage and pedestrian signals; widen shoulders at entrances and exits to traffic circle; and installation of “Share the Road” signs.

S9 NJ 38 Pedestrian Bridge

DB#00347

Replacement of pedestrian bridge over NJ 38 in Cherry Hill Township.

S10 NJ 70 Needs Analysis, Corridor 1

NJ 38 to NJ 73

DB#252A

A needs analysis will be undertaken for the development of a project to remediate identified safety and operational improvements.

S11 Maple Avenue over Atlantic City Line, Pennsauken

CR 537

DB#98341

This project will provide for the proposed rehabilitation or replacement of the existing structure.

S12 Chapel Avenue NJT Bridge

CR 626

DB#98520

This is a deficient structure carrying a local roadway over NJ Transit tracks and has been identified by NJ Transit as a candidate for replacement.

N1 NJ 38 Park and Ride Lot at CR 541

B007, 2020 SYS-WIDE

Construct a park and ride lot at CR 541 to reside partly in Lumberton Twp., and Hainesport Twp.

N2 Burlington-Gloucester Transit Lines

2020#1

Implement fixed guideway transit service between Camden City and Mount Holly as well as between Camden City and Glassboro.

N3 I-295 Park and Ride Lot at NJ 70

PBP#C1

Construct park and ride lot.

N4 I-295 Park and Ride Lot at NJ 38

B001

Construct park and ride lot.

N5 CR 530

Birmingham Road to Anderson Road.

B041

Pavement overlay project in Pemberton Township and Pemberton Borough.

N6 CR 626

CR 541 to Willingboro Township Line.

B043

This route in Westampton Township has poor pavement and is experiencing congestion.

N7 Lenola Road (CR 608)

NJ 38 to the Cinnaminson Township Line

B045

This route in Moorestown Township has poor pavement and is experiencing congestion.

N8 NJ 38

CR 616/CR 627 to Burlington County Line.

C024

This route in Cherry Hill Township is experiencing congestion.

L1 CR 636 Creek Road

CR 613 to Moorestown-Centerton Road.

2020#8

Reconstruction of the existing lanes from a pavement width of 20 feet to 40 feet with two 8 foot shoulders; reconstruction of five culverts; and addition of turn lanes at the intersections.

L2 Cherry Hill Mall Transportation Center

2020#48

Involves an integrated development and transportation plan. Establish a new circulator bus route to the Cherry Hill rail station, provide additional support by installing passenger amenities at the center and increasing feeder bus service.

L3 Moorestown Mall Transportation Center

2020#50

Involves an integrated development and transportation plan. Increase feeder bus service to the center and provide additional passenger amenities.

L4 Burlington-Gloucester Transit Lines

2020#1

Implement fixed guideway transit service between Camden City and Mount Holly as well as between Camden City and Glassboro.

T# DVRPC FY 2001-2003 Transportation Improvement Program
S# NJ DOT FY 2001-2002 Study and Development Program
N# NJ Problem Identification and Prioritization May 2001
L# DVRPC's Year 2020 Long Range Plan

CONGESTION MANAGEMENT SYSTEM

Introduction

The Congestion Management System (CMS) is one of the six management systems established by the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA). The purpose of the management systems is to aid decision-makers in gauging system performance and needs, and selecting cost-efficient strategies and actions to improve and protect the investment in the nation's infrastructure. The management systems are used in a variety of planning endeavors such as prioritizing and selecting projects for the Transportation Improvement Program (TIP), guiding the planning activities of the Long Range Plan and serving as inputs for Major Investment Studies (MIS).

The Congestion Management System is defined in the federal regulations as a "systematic process that provides information on transportation system performance and alternative strategies to alleviate congestion and enhance the mobility of persons and goods." The federal guidance declares that the CMS should include strategies to reduce single occupant vehicle (SOV) travel and improve the efficiency of the existing transportation infrastructure.

A major role of the Congestion Management System is to identify all capacity-adding SOV projects. Any project that receives federal funds, is located in an area that is in nonattainment of the National Ambient Air Quality Standards, and results in the equivalent of one or more lanes of carrying capacity for single occupant vehicles (adding general purpose lanes to an existing highway or constructing a new highway) must result from a region's Congestion Management System. The Federal Highway Administration (FHWA) has explicitly exempted projects that address safety problems and eliminate bottlenecks from the CMS requirements. A safety improvement is a physical or operational improvement that is implemented primarily to reduce accident frequency or severity. A bottleneck is considered a limited section of the transportation system in which the maximum carrying capacity is significantly less than the adjoining sections.

Determining whether a highway required widening or a new alignment previously occurred in the project development phase. In keeping with the spirit and intent of ISTEA, this decision is now made in the planning process and project development instead focuses on alignment and environmental issues. In 1997, DVRPC developed a regional Congestion Management System for New Jersey in conjunction with NJ DOT and the counties. The result of that collaboration is the *New Jersey Congestion Management System Report* (abstract #98020), which serves as the operational CMS for the New Jersey portion of the DVRPC region. The *NJ CMS Report* serves as

a framework for CMS planning activities. CMS analysis for specific locations or projects is performed where applicable using guidelines set forth in the *NJ CMS Report*. The *NJ CMS Report* provides an initial assessment of the appropriateness of SOV widening within a particular corridor. Further study may be necessary to determine if SOV widening is warranted for a particular facility.

As part of its Long Range Plan and Transportation Improvement Program development process, DVRPC reviews projects to determine if all potential SOV capacity-increasing projects are contained in this document. Highway improvements which do not add a general purpose lane and exempted project categories (i.e., safety improvements and elimination of bottlenecks) do not require a determination of CMS consistency.

A project is said to result from the regional CMS if SOV widening is identified in the *NJ CMS Report* as either a *very practical* or *practical* strategy for the (sub)corridor. DVRPC makes a determination of whether a more detailed CMS analysis is required to identify appropriate travel demand reduction or operational management strategies. In many cases, congestion levels or project scope may not warrant a detailed study. In such instances, a review of previously screened strategies to detect appropriate supplementary congestion mitigation techniques will suffice. If SOV widening is deemed *not very practical* in the *NJ CMS Report*, DVRPC will make a recommendation, after consultation with NJ DOT and FHWA, to the Regional Transportation Committee that the project should be abandoned or that a CMS study is required to justify the need for SOV widening and to identify appropriate CMS commitments.

The *New Jersey CMS Report* is based on 16 travel corridors that were established in DVRPC's *Direction 2020 Long Range Transportation Plan*. Each CMS corridor is typically organized around a major highway and parallel road. Even though a corridor contains many roads and CMS recommendations apply to the entire corridor, the primary focus is on the major highway(s). To be more reflective of the transportation network, land use and trip-making patterns, corridors were divided into subcorridors. In each subcorridor the location and severity of traffic congestion in the CMS network was evaluated along with the primary and secondary causes of congestion. Similarly for the transit network, all bus routes and rail stations in the subcorridor are noted along with service frequency and parking availability where applicable. This information was compiled on corridor fact sheets.

Over 60 improvement strategies were evaluated to determine their effectiveness in reducing SOV travel within a subcorridor. The strategies are grouped by the three goals of the regional CMS: (1)

easing traffic congestion through the reduction of single-occupant vehicles; (2) optimizing the efficiency of the existing transportation systems; and (3) improving access to and proficiency of the transportation network to relieve congestion and improve the mobility of goods and people. The strategies range from low-cost alternatives to driving , to moderate improvements to the transit and highway systems and ultimately to significant SOV capacity improvements.

For each subcorridor, strategies were reviewed for applicability and effectiveness based upon characteristics of the transportation network, the extent and cause of traffic congestion, and population, employment and other characteristics inventoried in the *Direction 2020 Transportation Plan* corridor analyses. A standard strategy matrix was developed that rated each strategy as either *very practical*, *practical* or *not very practical* within a subcorridor.

Taken together, the fact sheets and strategy matrices provide a comprehensive macro-level overview of the location and causes of congestion and improvement strategies. The corridor overviews summarize the existing transportation facilities in the subcorridors, the level of congestion and key causes, and presents a brief overview of the primary and secondary strategies to manage congestion. The *New Jersey CMS Report* is considered a systems-level analysis because it examines generalized highway links and evaluates strategies applicable to larger areas. In the project development and planning process, the opposite is true; the focus is on a small study area.

Findings of the New Jersey CMS Report

In the *New Jersey Congestion Management System Report*, the Camden to Mt. Holly corridor runs the length of Route 38 from the Benjamin Franklin Bridge to US 206. The corridor was broken down into three subcorridors to better reflect the surrounding land use and travel patterns. The Camden subcorridor is characterized by older commercial strip development and a high density mix of residential, institutional and commercial uses in the Camden and Pennsauken area in varying states of economic vitality. The Moorestown/Cherry Hill subcorridor is distinguished by residential development and intense commercial development clustered along major arterial highways. The Mt. Holly subcorridor is characterized by a mix of residential, agricultural and wooded areas. There are some scattered office and industrial parks along NJ 38 and CR 537. Commercial uses are clustered along NJ 38 and in Mt. Holly. Mt. Holly is the county seat and has many institutional uses. Each of the subcorridors has different sorts of transportation-related problems and each requires a unique set of solutions. Therefore, each subcorridor was analyzed separately.

Volume to capacity (V/C) ratios were the primary measure of congestion within a corridor. The V/C ratios were calculated using DVRPC travel simulation model and the New Jersey DOT CMS model. The models are a macro-scale approach. Therefore, congestion on a more localized level may not appear. DVRPC met with state and county transportation officials and representatives of traffic reporting services and State Police to review the findings of the travel simulation model and to determine if any congested locations were omitted. Some areas may not currently be congested but proper steps taken today can help assure that they will not become congested in the future.

Strategies to alleviate congestion within the subcorridors were selected from a matrix of over 60 transit, transportation demand management, and traffic operations improvements. Staff reviewed and ranked the applicability of each of the strategies to the problems identified within the corridor. A strategy synopsis was then constructed for each of the subcorridors to highlight the most appropriate strategies. The findings of the *New Jersey CMS Report* for each subcorridor are summarized below.

Camden Subcorridor - US 130 is congested for its entire length through the subcorridor. Intense roadside development, frequent signalized intersections, heavy through volumes and significant truck traffic are the major contributors to this congestion.

The concentration of employment in Camden and Pennsauken and the accessibility of transit service make mode shift strategies such as carpool/vanpool programs, transit marketing and transit first policies very practical strategies for addressing congestion. Alternative work hours, parking management and transit enhancements are also considered very practical strategies. The Ben Franklin bridge, US 30 and I-676 would benefit from strategies such as advanced traveler information services and other incident management strategies.

Cherry Hill/Moorestown Subcorridor - NJ 38 and CR 537 are both congested from Cherry Hill through Moorestown. Traffic generated by the Cherry Hill and Moorestown Malls as well as the roadside commercial and office parks greatly impacts these conditions. Congestion on CR 608, CR 616 and CR 644 is also related to commercial development.

The amount of employment in this subcorridor is conducive to mode shift and alternative work hour strategies. The numerous traffic signals located within this subcorridor are good candidates for a computerized traffic signal system and incident detection/verification.

Enhancements/expansions of the transit system is considered a very practical strategy for this area.

Mount Holly Subcorridor - Congested conditions were found throughout the subcorridor. In the vicinity of Mount Holly, CR 691 and CR 612, which act as primary connectors between NJ 38 and downtown Mount Holly, experience congestion as do CR 626 and CR 630. NJ 38 and CR 537, both cross-county connectors, experience congestion in the western part of the subcorridor.

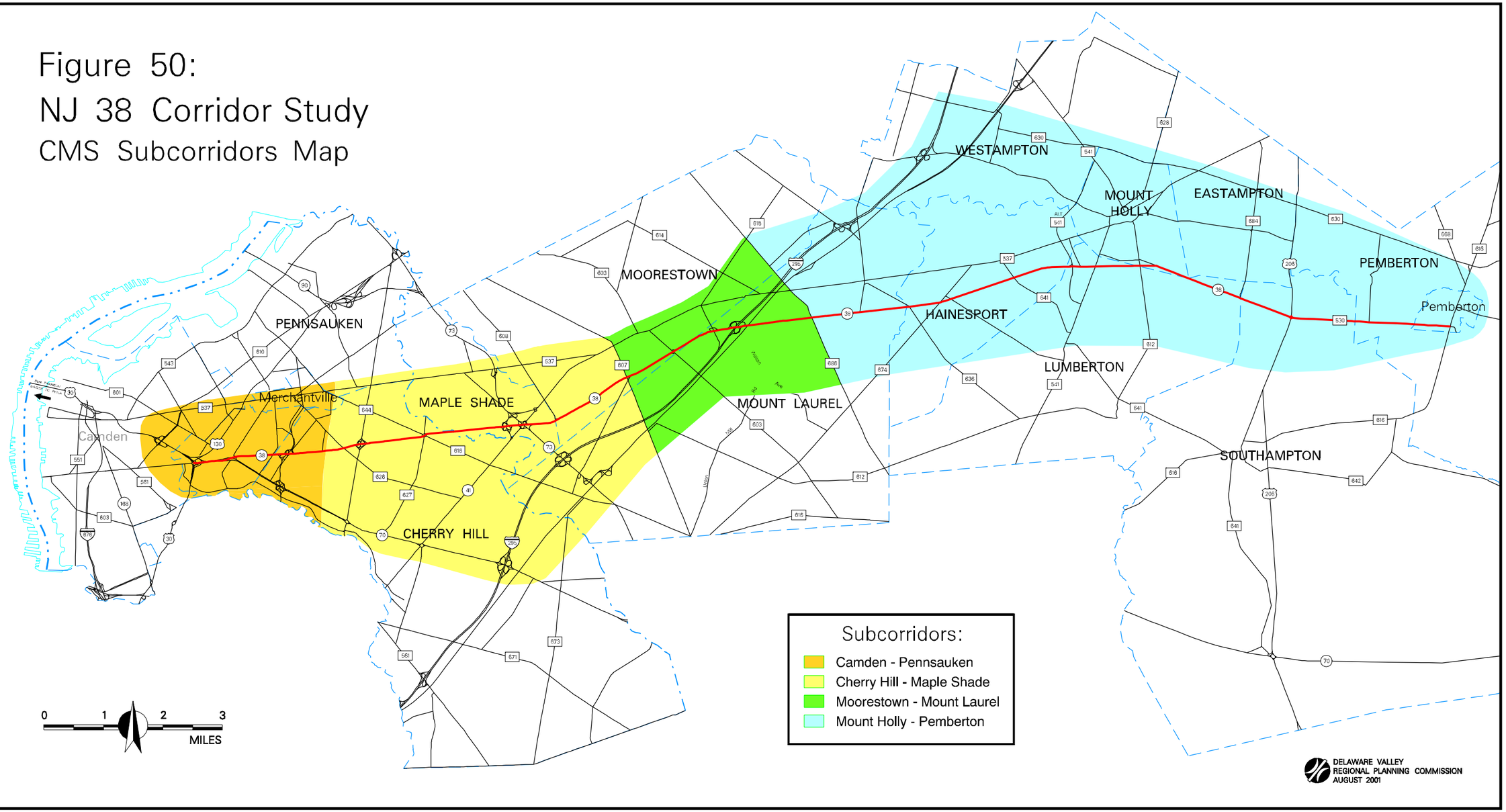
The concentration of employment and other development in Mount Holly makes mode shift type strategies, traffic improvements and transit enhancements very practical. Congestion caused by strip commercial type development along NJ 38 and CR 537 should be addressed by access management strategies.

NJ 38 Corridor Congestion Management System Analysis

The NJ 38 Corridor Study provides a great opportunity to update the *NJ CMS Report* and look at CMS issues within the corridor in greater detail. Congested locations identified in the *NJ CMS Report* were augmented by touring the corridor with local officials such as planners and police. Since municipal representatives travel the roads every day they are the most qualified to identify and prioritize the congested areas. The municipal representatives pointed out chronically congested locations, including some additional areas that were not identified in the *NJ CMS Report*.

Information gathered in the field views was compared to the findings of the *NJ CMS Report* and strategies were chosen to address congestion at problem locations discussed earlier in this report. A subcorridor overview was then developed from the problem locations, the *NJ CMS Report* and field observations to address congestion within the entire subcorridor. The subcorridors were reconfigured as the results of this study. Four subcorridors, instead of three, were identified: Camden/Pennsauken; Cherry Hill/Maple Shade; Moorestown/Mount Laurel; and Mount Holly/Pemberton. Subcorridor boundaries shown on Figure 50 reflect the approximate boundaries of the subcorridors. In many cases, land use and transportation characteristics flow from one subcorridor into another with no clear demarcation. Particular emphasis was placed on the Moorestown/Mount Laurel subcorridor because it has and will continue to receive the greatest amount of development pressure. Additionally, NJ DOT has already studied several locations within the subcorridor. An overview of each subcorridor follows.

Figure 50:
NJ 38 Corridor Study
CMS Subcorridors Map



Camden/Pennsauken Subcorridor

PRIMARY ISSUES: Redevelopment of vacant and underused parcels; Pedestrian and bike connectivity; Transit linkages; Convergence of highway and transit facilities

RECOMMENDED CMS STRATEGIES: Pedestrian and bike improvements; Access management; Traffic operations improvements; Mode shift strategies; Transit coordination

Due to its close proximity to Camden and Philadelphia, this subcorridor was developed earlier than the other subcorridors. Therefore, development, particularly retail, tends to be smaller scale and much closer to the roadside which has led to many access points and curb cuts along this section of NJ 38. Many parcels are either underutilized or vacant.

Also, due to this subcorridor's closeness to Philadelphia and Camden, many major arterial facilities converge in this vicinity. Most major routes follow old trials which radiated from the Camden waterfront. US 30, US 130, NJ 38 and NJ 70 all converge near the Airport Circle. Volumes on these roadways tend to be high in this subcorridor. However, most major facilities have been widened in recent years and have sufficient capacity for the higher volume of traffic. Therefore, capacity increase is not seen as a practical strategy for this corridor with the exception of eliminating bottlenecks.

Congestion was not noted within the subcorridor except on US 130 to the north and on US 30/US 130 in the vicinity of the Airport Circle. Both of these locations were noted in the *New Jersey Congestion Management System Report*. Congestion at the Airport Circle location is more symptomatic of the geometrics of the circle and having several major routes converge at one point than of excessive traffic volume. US 130 congestion is primarily due to intense roadside development with frequent curb cuts and traffic signal timing issues.

Transit service also radiates from Camden and is abundant in this subcorridor. All routes utilize the Walter Rand Transportation Center in downtown Camden and most travel to Philadelphia. All major arterial roadways in this subcorridor are served by transit, including US 30, US 130, NJ 38, NJ 70 and CR 537

Because of the dense development in the subcorridor and large employment base, particularly in Camden, CMS strategies should focus on shifting modes from the private car to transit, carpool or even bike and pedestrian travel. Bike and pedestrian initiatives should play an important role in

this subcorridor because the density and closeness of development promotes walking and biking. Highway and transit facilities are already good. Future improvements should focus on better service and coordination. A key CMS strategy should be reducing the number of curb cuts. This can be accommodated by closing redundant curb cuts or consolidating adjacent access points to a common access point. Circulator or service drives parallel to the main road can also better accommodate traffic in a safe manner.

Cherry Hill/Maple Shade Subcorridor

PRIMARY ISSUES: Heavy retail development; Transit linkages and amenities;

RECOMMENDED CMS STRATEGIES: Transit operations improvements; Traffic operations improvements; Access management;

This subcorridor is home to two large regional malls, Cherry Hill and Moorestown Malls, as well as numerous smaller strip center developments. There are also a number of major routes which feed into NJ 38 such as Haddonfield Road, Church Road, NJ 41 and NJ 73. This subcorridor has a combination of local and through trips. Through trips are generally highest during the AM and PM peak periods while the malls primarily generate off-peak traffic. Therefore, traffic is uniformly heavy throughout the day and week with intermittent spikes.

Congestion identified by the *New Jersey Congestion Management System Report* was verified on NJ 38 (from Church Road eastward); CR 537 (throughout the corridor); Haddonfield Road; Church Road (from Haddonfield Road past NJ 41); NJ 73 (throughout the corridor); and NJ 41 (in the vicinity of NJ 73 and NJ 38). NJ 38 traffic flows well to the west of Church Road. Even though there is much development in that section, Route 38 is generally three lanes by direction and is able to sufficiently handle the capacity. One notable exception is the bottleneck created by the New Jersey Transit Atlantic City Rail Line Bridge which constrains NJ 38 from three to two lanes by direction as it passes under the bridge. NJ 70 through Erlton is another identified bottleneck. NJ 70 decreases from three to two lanes through Erlton. The installation of left turn slots at the intersections in the existing grass median should help improve traffic flow through this area.

To the east of Church Road, NJ 38 decreases to two lanes by direction and becomes congested when compared to the western section of this subcorridor. Congestion tends to be directional with back-ups westbound in the AM peak period and eastbound during the PM peak period due to the large

number of office buildings in this vicinity. CR 537 parallels NJ 38 but travels through the downtown commercial districts of Maple Shade and Moorestown and therefore is not desirable as a parallel route due to the number of signalized intersections.

Strategies within this area should concentrate on improving transit service through means such as transportation centers, better coordination between routes and modes and enhancements of existing service. Improving pedestrian amenities such as replacing the pedestrian overpass at the Cherry Hill Mall will also contribute to reducing trips in the corridor. Consolidating or closing curb cuts along NJ 38 will also help improve traffic flow on that route.

The Garden State Park is being redeveloped as a mixed-use development. This presents a unique opportunity to incorporate CMS type strategies into the redevelopment of this site. Mixed-use developments allow heightened pedestrian amenities and the existence of the station on the New Jersey Transit Atlantic City to Philadelphia rail line also presents additional opportunities to increase transit ridership. The township should work with the developers during the design and approval phase of the project to insure that pedestrian, bicycle and transit friendly elements are included in the site design.

Moorestown/Mount Laurel Subcorridor

PRIMARY ISSUES: Heavy and growing office development; Mobility and access; Turning movements and intersection capacity

RECOMMENDED CMS STRATEGIES: Mode shift; Growth management; Traffic Operations improvements; Transportation Demand Management; Transit service improvements; Capacity enhancements.

This portion of the corridor has experienced heavy growth in office development over the past few decades. More than six million square feet of new development is proposed in the area around the I-295 interchange alone. Travel and congestion are geared towards the peak periods. NJ 38 is primarily two lanes by direction through the corridor and the single largest problem is the inability of intersections to handle the large amount of turning movements to and from the office parks.

NJ 38 is congested throughout this corridor during the peak periods with eastbound NJ 38 being congested during the PM peak and westbound NJ 38 congested during the AM peak. This is

primarily caused by the back-ups at the signalized intersections near the office parks. At many intersections the jughandles do not have sufficient capacity to handle the large volume of turning movements. CR 537 serves as the main thorofare through the downtown commercial districts of Maple Shade and Moorestown and is congested through both towns. Congestion within the downtown districts is primarily caused by the dense nature of development and on-street parking. Additionally, there are many unaligned intersections in Moorestown. A number of connector routes between NJ 38 and CR 537 are also congested including Lenola Road (CR 608), Church Street (CR 607), Moorestown Mt. Laurel Road (CR 603) and Hartford Road.

Mobility is also an issue in this subcorridor. The missing movements at the NJ 38 and I-295 interchange and lack of direct westbound egress from the Bishop's Gate and East Gate office complexes lead to high traffic volumes on local streets that are ill-equipped to handle large volumes of traffic.

Many of the recommended strategies for the problem areas identified within this subcorridor focus on traffic operations improvements. Particularly relating to improving turning movements via realigning or increasing capacity on the jughandles. Mobility in terms of system connectivity is also a problem in this subcorridor. The missing movements between I-295 and NJ 38 is a prime example.

The office parks themselves offer an opportunity to implement mode shift strategies. Flex-time, compressed work weeks and telecommuting are very applicable strategies. Carpool/vanpool and associated transportation demand management strategies such as guaranteed ride home and preferential parking should be marketed by the TMA to employers in the area.

Mount Holly/Pemberton Subcorridor

PRIMARY ISSUES: Spreading development; Redevelopment of vacant and underused parcels

RECOMMENDED CMS STRATEGIES: Growth management; Traffic operations improvements;

This subcorridor is dominated by two older densely developed towns of Mount Holly and Pemberton and relatively large areas of undeveloped or agricultural land. Congestion is focused around the downtown area of Mt. Holly on Madison Avenue and Pine Street which connect NJ 38 to downtown Mount Holly. NJ 38 is two lanes by direction through this area and flows well. CR 530 experiences

spot congestion, relating mostly to the lack of turn lanes along its length and the eastbound lane drop at CR 616.

Strategies in this subcorridor should focus on ways to appropriately direct development such as land use regulations and ordinances. This will help redevelop established areas such as Mount Holly and Pemberton while retaining open spaces. Curb access regulations will help to insure that NJ 38 does not become congested in this vicinity. Since Mt. Holly is the county seat, mode shift strategies may be implemented by the county to reduce peak period congestion in Mt. Holly. Traffic operations improvements are needed along CR530. NJ 38 in the vicinity of Mount Holly also could benefit from traffic operations improvements, particularly in the area around Eayrestown Road to Savory Way.

TABLE 4: CMS STRATEGIES FOR THE NJ 38 CORRIDOR

CMS Strategy	Location
Access Management	Westbound NJ 70 Ramp at NJ 38 Merge Cuthbert Boulevard: Hampton Road (CR 633) to NJ 38 Cuthbert Boulevard: NJ 38 to Hampton Road (CR 623) NJ 38 and Haddonfield Road (CR 644) NJ 38/CR 627/CR 616 Circle NJ 38 in the Vicinity of Hainesport-Mount Laurel Road and Creek Road Mount Holly Bypass (CR 541) in the Vicinity of NJ 38 NJ 38 and Madison Avenue/Main Street (CR 691) NJ 38 and Eayrestown Road (CR 612) NJ 38 in the Vicinity of Savory Way
Traffic Operations/Channelization/Turn Lanes	NJ 38 and Cherry Hill Mall Drive NJ 70 in Erlton NJ 70: I-295 to Covered Bridge/Frontage Road NJ 73: I-295 to Atrium Way NJ 38 and Lenola Road (CR 608) NJ 38 and East Gate Drive NJ 38 at Church Street (CR 607)/Fellowship Road (CR 673) NJ 38 and Moorestown-Mount Laurel Road (CR 603) NJ 38 and Marter Avenue (CR 615) NJ 38: I-295 to Briggs Road NJ 38 and Eayrestown Road (CR 612) CR 530: US 206 to CR 644
Bicycle/Pedestrian Improvements	Browning Road: NJ 38 to North Park Drive (CR 628) NJ 38 and Haddonfield Road (CR 644) NJ 38: Haddonfield Road (CR 644) to Cherry Hill Mall Drive NJ 70 in Erlton NJ 73: I-295 to Atrium Way Mount Holly Bypass (CR 541) in the Vicinity of NJ 38
Parking Management	NJ 38 at Mansion Avenue (CR 613) and Drexel Avenue
Bottleneck Elimination	NJ 38 at the NJ Transit Atlantic City Rail Line Overpass NJ 70: I-295 to Covered Bridge/Frontage Road
Traffic Signal Operations	NJ 38/CR 627/CR 616 Circle NJ 73: I-295 to Collins Avenue CR 530 and Birmingham Road
Capacity Enhancement	NJ 73: Main Street (CR 537) to Fox Meadow NJ 73: I-295 to Atrium Way NJ 38: I-295 to Briggs Road CR 530: NJ 38 to CR 644
ITS	NJ 38: US 130/US 30 to I-295 NJ 73: I-295 to Atrium Way NJ 70: NJ 38 to I-295
Incident Management	NJ 73: Main Street (CR 537) to Fox Meadow NJ 73: I-295 to Atrium Way CR 537 in Mount Holly

PLAN IMPLEMENTATION

The *NJ 38 Corridor Study* can be used as a dynamic long range tool for the systematic selection of projects to create a significantly improved transportation system within the corridor. This document can serve as a *punch list* for the government agencies with a stake in the implementation of improvements. Municipal governments are key players in this process. Even though a highway may be maintained by the state or county, it is the welfare of the local residents which is affected the most. Safety and mobility benefits are felt more by those who use the highway frequently. Therefore, the local municipality should assure that the improvements are advanced expediently by being involved in the process no matter which agency has a lead role.

Characteristics

In choosing which projects should advance first, stakeholders can be guided by the information presented in Table 5: *NJ 38 Corridor Transportation Improvements Implementation Matrix*. This easy to use matrix suggests the relative importance to stakeholders of the various attributes of each problem location. Each improvement scenario identified is evaluated in terms of State Development and Redevelopment Plan (SDRP) Centers designation, Municipal Distress Index, project priority, cost range and project benefits. The stakeholders necessary to carry out the plan are also identified.

The end of the matrix lists those projects in the corridor which are farther advanced through the planning process. These improvements are programmed for implementation on DVRPC's FY 2001-2004 Transportation Improvement Program (TIP), NJ DOT FY 2001-2002 Study and Development Program, identified in DVRPC's Non-Pipeline Transportation Problems - July 2000, listed in DVRPC's Year 2020 Long Range Plan or listed in NJ DOT's Corridor Needs Assessment (1994). By listing those projects which are already part of the LRP and TIP, this improvement plan becomes as comprehensive as possible in identifying the transportation needs of the corridor.

State Development and Redevelopment Plan (SDRP) Centers and Municipal Distress Index

Centers are an important part of the State Plan's Resource Planning and Management Structure for achieving the goals of the State Planning Act. The concept of Centers is the organizing planning principle for achieving a more effective and efficient pattern of development in New Jersey. Under the Goals, Strategies and Policies of the State Plan, new growth and development should be organized into compact development in the form of Centers surrounded by carefully controlled "environs" by way of municipal master plans and regulations and through public investment policy. Specifically, the SDRP defines a Center as " central places within Planning Areas where growth

either should be attracted or not attracted, depending upon the unique characteristics and growth opportunities of each Center". The Plan identifies five types of Centers: 1) Urban Centers; 2) Towns; 3) Regional Centers; 4) Villages; and 5) Hamlets and designates specific locales as centers. There are currently no "designated centers" located within the corridor. Vincentown in Southampton Township, Burlington County is a designated center but lies just outside the corridor boundary. However, several municipalities have been identified or proposed in the State Plan by counties and municipalities as Centers through the cross-acceptance process. They are: Lumberton, Maple Shade, Moorestown, Mount Holly and Pemberton (borough and township) in Burlington County and Cherry Hill Township in Camden County.

The Municipal Distress Index (MDI) ranking is one of a number of factors used for determining priority in the Statewide Policies for Public Investment Priorities as well as for priority for municipal strategic revitalization planning under Statewide Policies for Urban Revitalization in the State Plan. The MDI has also been used as one of the factors in distributing certain "need based" funds most recently in the NJ DOT's criteria for Transportation Enhancement Projects. The ranking is maintained by the New Jersey Office of State Planning and represents a composite distress comparison for all 567 New Jersey municipalities. The index is composed of 1) the Economic Dimension of Distress measured by the unemployment rate and per capita income; 2) the Physical Infrastructure Dimension of Distress measured by ratio of older housing and ratio of substandard housing units; 3) the Social Dimension of Distress measured by the percentage of children on welfare and population rate of change; and 4) the Fiscal Dimension of Distress based on the average equalized tax rate and valuation per capita. Pemberton Township is the only municipality within the study corridor which has been designated as a distressed municipality.

Priority

Priorities are estimated in terms of three categories: high, moderate and low. Priorities are assigned based on the perception of the extent of the problems they present drivers, with safety being most important, but congestion (or time delay) and mobility also being considered. A higher degree of priority is also assigned if there is an urgency to complete the improvement due to the immanent completion of a nearby major investment (development or transportation improvement). If there is concern that a section of right-of-way needed to complete an improvement is in danger of being developed or used for another use, the priority to act on that improvement is also heightened. If a project is relatively small scale and low cost, yet offers a projected high benefit, it also receives a higher priority ranking.

Cost Range

Costs are also assigned to categories of high, moderate and low. High cost projects usually involve a major commitment from one or more funding source, lengthy public involvement and several years lead time in programming the required funds. They are typically large scale, complex or multi-phased improvements and can entail the construction of new facilities. In general, a project in this category is estimated to cost between $5 and $35 million, however some major projects have been known to cost in the hundreds of millions of dollars. An improvement estimated to have a moderate cost could involve a major reconstruction of an intersection, construction of a short connector road or a widening of an existing road. In general, a project in this category is estimated to cost between $2 and $5 million. Low cost projects can often be fast-tracked with maintenance, or pool funding. They are often operational type improvements at isolated locations and typically cost less than $2 million. These cost ranges are generalized estimates and could be significantly changed for a specific location due to environmental, right-of-way or other factors uncovered during detailed design of the improvement.

Benefits

Benefits describe the kind of impact the improvement will yield, such as enhancing safety, lessening congestion, improving mobility or encouraging economic development. Economic development benefits are derived from a transportation improvement generally through an increase in the accessability of affected individual properties or areas. The strategic location and magnitude of the improvement determines the extent of the benefits received by the affected properties. The increased level of access to a property may make it attractive enough to induce new commercial or residential development or entice existing land uses to expand. Increased accessability can also have a positive effect on property values.

Roles of Agencies

In terms of a hierarchy of agencies, the New Jersey Department of Transportation (NJ DOT) is primary, both in terms of maintaining NJ 38 and providing much of the design, right-of-way and construction funding for major improvements. Municipalities make land use decisions in the corridor, which ultimately affect traffic levels on NJ 38. In addition, many of the cross streets are designed, built and maintained by local and county government, and these also impact how well NJ 38 functions. Lastly, developers actually build the housing, commercial and industrial projects which generate the trips which must be accommodated by a publicly-owned transportation infrastructure. In addition, some the transportation improvements themselves are designed and financed by developers.

New Jersey Department of Transportation

NJ DOT has jurisdiction over the state highways in the corridor. In addition to NJ 38 these include: I-295, NJ 41, NJ 70, NJ 73, US 130, US 206 and US 30. Improvements to these highways are typically financed by state and/or federal funds. Occasionally, developer contributions are also a source of funding if the project has special impact by a development. The State ultimately makes the decision on what improvements are done to their facilities but often coordinates with the county or local municipalities when the improvements include facilities under their jurisdiction.

Burlington and Camden Counties

The counties have jurisdiction over a network of roads throughout the study area. In New Jersey, county roads are given 500, 600 or 700 route designations. The 500 series of county roads are typically part of a statewide network of interconnected county routes; therefore 500 series routes are generally more significant than the other county roads. There are several 500 series routes within the corridor: CR 530, CR 537, and CR 541. Most of the county roads in the corridor serve as access roads into or across NJ 38. The primary function of the county network is to serve medium range trips or to serve as feeders to the state system. Improvements to county roads are financed by county dollars or where eligible can they can receive federal or state funding. The county has the ultimate decision concerning improvements on county roads but typically coordinates with the municipality in which the improvement is located.

Metropolitan Planning Organization (MPO)

DVRPC, serving as the MPO for this region, is required to coordinate a comprehensive and continuing transportation planning process. This process results in the development of a Transportation Improvement Program (TIP) which identifies all priority projects for which federal funds will be sought. The TIP represents a consensus among state and regional officials as to what regional improvements are to be made. In addition to the TIP, the MPO is required by federal legislation to develop a long rang plan (LRP) to help direct region-wide transportation decision making over a period of at least 20 years. Long range plans do not specify the design of actual projects. Rather, they identify future needs to address transportation deficiencies.

Municipalities

Local governments not only have jurisdiction over their local road system they also control local land use decisions. The decisions made at the local level can effect the traffic on roads at all levels. Therefore, local officials must understand the traffic impacts which could be generated from a particular development and understand the synergy that exists between land use decisions and transportation improvements. Local officials need to be involved in the transportation planning

process for all levels of transportation improvements to make sure that the concerns of their residents are addressed and to assist in the problem identification and improvement recommendations. Municipal officials need to make use of the circulation element of their Master Plan to identify important missing links in their highway network and begin to preserve space for these links to be built. The Master Plan is an important tool for municipalities to use in addressing their circulation needs.

Developers

As properties are developed or redeveloped, the transportation needs of the properties can change, sometimes drastically. Providing proper transportation access to a new development is often critical to the success of that development. Therefore, developers must work with the transportation providers to assure that the necessary changes are beneficial to both the development and the existing transportation infrastructure. Developers frequently design and construct improvements for traffic attributable to their developments or to provide enhanced access to their site.

TABLE 5
NJ 38 Transportation Improvements Implementation Matrix

Location		*Center/ Distressed*	*Priority*	*Cost Range*	*Benefits*	*Lead Role*	*Assisting Role*
1	Westbound NJ 70 Ramp at NJ 38 Merge (Pennsauken Twp)		M	L	Safe, Mobl, Cong	DOT	
2	Browning Road: NJ 38 to North Park Drive (CR 628) (Pennsauken Twp)		M	L	Safe	Co	MCD
3	The Point at NJ 38 and NJ 70 (Pennsauken Twp)		L	L	Safe, Mobl	DOT	
4	NJ 38 and Mansion Avenue (CR 613) (Pennsauken Twp)		M	L	Cong, Mobl	Co	MCD
5	Cuthbert Boulevard (CR 636): Hampton Road (CR 633) to NJ 38 (Cherry Hill Twp)	C*	M	M	Safe	DOT	Co, Dev
6	Cuthbert Boulevard (CR 636): NJ 38 to Hampton Road (CR 623) (Cherry Hill Twp)	C*	H	M	Safe, Mobl	DOT	Co
7	NJ 38 at the NJ Transit Atlantic City Rail Line Short Term Improvements Long Term Improvements (Cherry Hill Twp)	C*	 H H	 L H	Safe, Mobl	DOT	NJT
8	NJ 38 and Chapel Avenue (CR 626) (Cherry Hill Twp)	C*	L	L	Mobl	Co	DOT

TABLE 5
NJ 38 Transportation Improvements Implementation Matrix

Location		*Center/ Distressed*	*Priority*	*Cost Range*	*Benefits*	*Lead Role*	*Assisting Role*
9	Chapel Avenue (CR 626) at the New Jersey Transit Atlantic City Rail Line (Cherry Hill Twp)	C*	L	L	Safe	Co	
10	NJ 38 and Haddonfield Road (CR 644) (Cherry Hill Twp)	C*	H	H	Safe, Cong	DOT	Co, MCD, Dev
11	NJ 38: Haddonfield Road (CR 644) to Cherry Hill Mall Drive (Cherry Hill Twp)	C*	H	M	Safe, Mobl	DOT	
12	NJ 38 and Cherry Hill Mall Drive (Cherry Hill Twp)	C*	L	L	Mobl, Cong	Dev	
13	NJ 70 in Erlton (Cherry Hill Twp)	C*	H	H	Cong, Safe, Mobl	DOT	MCD
14	NJ 38/Cooper Landing Rd.-Coles Av. (CR 627)/Church Rd. (CR 616) Circle (Cherry Hill Twp)	C*	H	M	Cong, Mobl	DOT	MCD, Dev
15	NJ 70: I-295 to Covered Bridge/Frontage Road (Cherry Hill Twp)	C*	H	M	Cong, ED	DOT	MCD
16	NJ 38: NJ 41 to NJ 73 (Maple Shade Twp)	C*	H	M	Safe	DOT	
17	NJ 73: Main Street (CR 537) to Fox Meadow (Maple Shade Twp)	C*	H	H	Cong, Safe, Mobl	DOT	Co, MCD
18	NJ 73: I-295 to Collins Avenue (Maple Shade Twp and Mount Laurel Twp)	C*	H	L	Cong, Safe, Mobl	DOT	Co, MCD

TABLE 5
NJ 38 Transportation Improvements Implementation Matrix

Location		*Center/ Distressed*	*Priority*	*Cost Range*	*Benefits*	*Lead Role*	*Assisting Role*
19	NJ 73: I-295 to Atrium Way (Mount Laurel Twp)		H	H**	Cong, Safe, Mobl	DOT	Co, MCD
20	NJ 38 and Lenola Road (CR 608)	C*			Cong, Mobl	Co	DOT, Dev
	Short Term Improvements		H	L			
	Long Term Improvements		M	H			
	(Maple Shade Twp and Moorestown Twp)						
21	NJ 38 and East Gate Drive	C*			Cong, Mobl		
	Short Term Improvements		M	L		DOT	MCD
	Long Term Improvements		M	M		DOT	MCD, Dev
	(Moorestown Twp)						
22	NJ 38 and Church Road (CR 607) / Fellowship Road (CR 673) (Moorestown Twp)	C*	M	M	Cong, Mobility	Co	DOT, MCD
23	NJ 38 and Moorestown-Mount Laurel Road (CR 603) (Moorestown Twp)	C*	M	M	Cong, Mobility	Co	DOT, MCD
24	NJ 38 and Marter Avenue (CR 615)				Cong, Mobl	Co	DOT, MCD
	Short Term Improvements		H	L			
	Long Term Improvements		M	M			
	(Mount Laurel Twp)						
25	NJ 38: I-295 to Briggs Road (Mount Laurel Twp)		H	H	Mobl, Cong	DOT	Co, MCD

TABLE 5
NJ 38 Transportation Improvements Implementation Matrix

Location		*Center/ Distressed*	*Priority*	*Cost Range*	*Benefits*	*Lead Role*	*Assisting Role*
26	CR 537 and Creek Road				Safe	MCD	Co
	Short Term Improvements		M	L			
	Long Term Improvements		M	M			
	(Hainesport Township)						
27	NJ 38 in Vicinity of Hainesport-Mount Laurel Road and Creek Road (Hainesport Twp))	C*	L	M	Mobl	DOT	MCD, Co
28	Mt. Holly Bypass (CR 541) in Vicinity of NJ 38	C*			Mobl, Cong	Co	DOT, MCD
	Short Term Improvements		M	L			
	Long Term Improvements		H	H			
	(Hainesport Twp and Lumberton Twp)						
29	CR 537 in Mount Holly (Mount Holly Twp)	C*	M	L	Cong, Mobl	MCD	Co
30	NJ 38 and Madison Avenue/Main Street (CR 691) (Lumberton Twp)	C*	L	L	Safe	Co	MCD, DOT
31	NJ 38 and Eayrestown Road (CR 612) (Mount Holly Twp and Lumberton Twp)	C*	M	L	Safe, Mobl	Co	MCD, DOT
32	NJ 38 in the Vicinity of Savory Way (Mount Holly Twp)	C*	H	H	Safe, Cong, Mobl	DOT	MCD, Dev
33	NJ 38/CR 530 and US 206 (Southampton Twp)		M	M	Safe, Cong	DOT	Co, MCD
34	US 206: NJ 38 to CR 616 (Southampton Twp)	C	L	L	Safe, Cong	DOT	Co, MCD

TABLE 5

NJ 38 Transportation Improvements Implementation Matrix

Location		*Center/ Distressed*	*Priority*	*Cost Range*	*Benefits*	*Lead Role*	*Assisting Role*
35	CR 530: US 206 to CR 616 (Southampton Twp, Pemberton Twp and Pemberton Boro)	C*	H	H	Safe, Cong	Co	MCD
36	CR 530 and Birmingham Road (CR 685) (Pemberton Twp)	C*	H	M	Safe, Cong	Co	MCD

Key:

Location: T1 = DVRPC FY 2001-2004 TIP, S1 = NJ DOT FY 2001-2002 Study and Development Program, P1 = DVRPC Non-Pipeline Transportation Problems - July 2000, L1 = DVRPC Year 2020 Long Range Plan, M1 = NJ DOT NJ 38 Corridor Technical Memorandum 1996, C1 = NJ DOT NJ 73 Corridor Needs Assessment 1994

Center/Distressed: C = State Development and Redevelopment Plan designated center/corridor, C* = Identified as a center by county/municipality during cross-acceptance but not designated in SDRP. D = Ranked in Municipal Distress Index Top 100 distressed municipalities.

Priority: H = High, M = Moderate, L = Low

Cost Range: H = High, M = Moderate, L = Low

Benefits: Cong = Congestion, ED = Economic Development, Mobl = Mobility, Safe = Safety,

Role: MCD = municipality, Co = county, DOT = NJ Department of Transportation, NJT = NJ Transit, Dev = Developers

** An improvement scenario is identified which recommends conducting a study or further evaluation; the designation for the cost represents an expected cost for completion of the improvement at the location not just the study cost.

APPENDIX A

List of Municipal Meeting Participants

Cherry Hill Township
Marge DellaVecchia

Eastampton Township
Thomas Czniecki

Hainesport Township
Chris J. Schultz

Lumberton Township
David Latini

Maple Shade Township
George Haeuber

Merchantville Borough
Mayor Patrick Brennan

Moorestown Township
Bob Hall
William Wesolowski

Mount Holly Township
Officer Bill Seitz
Lt. William Craig

Mount Laurel Township
Officer Kurt Shepherd
Henry Haley, Omega Engineering

Pemberton Township
Mayor Thalia Kay
Robert Glass

Pennsauken Township
Bernie Kavanagh

Southampton Township
Ed Budd
Charles E. Oatman

Westampton Township
Bert Harper, Chief of Police
Donna Ryan

Burlington County
Carol Thomas

Camden County
Doug Griffith

Cross County Connection TMA
Bill Ragozine
Paul Heller

NJ DOT
Jim Badgely
Debbie Kingsland

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Key Words: corridor study, transportation problem locations, improvement scenarios, project priorities, project benefits, implementation plan

ABSTRACT: This document presents a transportation improvement plan for the NJ 38 Corridor in Burlington County and Camden County. The corridor planning effort undertakes the traditional examinations of an existing transportation/circulation system, in this case NJ 38 and surrounding facilities, identifying safety and functional or operational problems and recommending potential solutions, as appropriate. This plan takes a comprehensive look at the transportation needs of the corridor and identifies which project locations are in need of immediate attention and who is responsible to get these projects moving to the next step.

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