Cecil County
Roadway Improvement Strategic Plan

April 2007

Cecil County Roadway Improvements Strategic Plan

PREPARED FOR:

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I. INTRODUCTION

Cecil County is at a crossroads in its history. For many years, the County was dotted by rural low density developments outside of the immediate area of the Town Centers such as Elkton, North East and Perryville. In the last ten years, change has started to occur. At first this started near the Delaware border where residential development sprung up to feed areas such as Wilmington and Newark. Other residential developments were built near one of the major resources of Cecil County which is its access to numerous water ways. Now, not only is residential development continuing to occur, but Cecil County is increasingly becoming a destination for businesses such as Principio Business Park, Bainbridge and the North East Commerce

US 40 Pulaski Highway (top) was opened in 1941 while I-95 John F. Kennedy Memorial Highway (bottom) was dedicated in 1963 in Cecil County. In the past 10 years, volumes on these roadways have increased by 20-35%

This development is leading to increased volumes of traffic along interstates, arterials and collector roadways located in Cecil County. Before the additional traffic overwhelms the roadway system, a strategic roadway plan is needed not only to meet the needs of the present traffic conditions, but to determine how the future traffic will be addressed. Failure to develop a plan will mean the possibility of higher future transportation and operational improvements costs, the inability to preserve right-of-way for improvements, a reduction in overall safety due to increased congestion, reduced economic viability, increased travel times and an overall lower quality of life for all county residents.

A. Purpose And Intent

The purpose of developing a Roadway Improvement Strategic Plan for Cecil County is to evaluate projects and identify existing and future needs within the growth corridor of the County. The Cecil County Growth Area consists of the Development, Suburban, Town and to a lesser extent the Village Districts of the 1990 Comprehensive Plan. The Development and Suburban Districts are found in a swath of the County extending from Perryville and Port Deposit in the west through the Charlestown-North East-Hances Point- Bayview area and on to the Elkton-Oldfield Point-Glen Farms vicinity in the east. The Town District is found adjacent to the Towns of Rising Sun, Chesapeake City and Cecilton. The Villages are disbursed throughout the County. This Growth Area is intended to accept the majority of the residential, commercial and industrial development that occurs over the life of the Comprehensive Plan. The existing needs will be based on a review of the capacity and safety of various roadways within the corridor. The future needs will be based on the development of year 2030 travel demand forecasts and analyzing that information to determine the area where projects will need to be programmed for in the upcoming years.

The development of the Roadway Improvement Strategic Plan is a collaborative effort of the following groups:

- Cecil County Department of Public Works
- Cecil County Department of Planning and Zoning
- Cecil County Office of Economic Development
- Maryland State Highway Administration
- Maryland Transportation Authority

Various other agencies such as the (Wilmington Area Planning Council) WILMAPCO assisted in providing data for the study.

B. Roadways

The major mode of transportation for the movement of goods and services throughout Cecil County is the roadway system followed by the railway system. The first modern

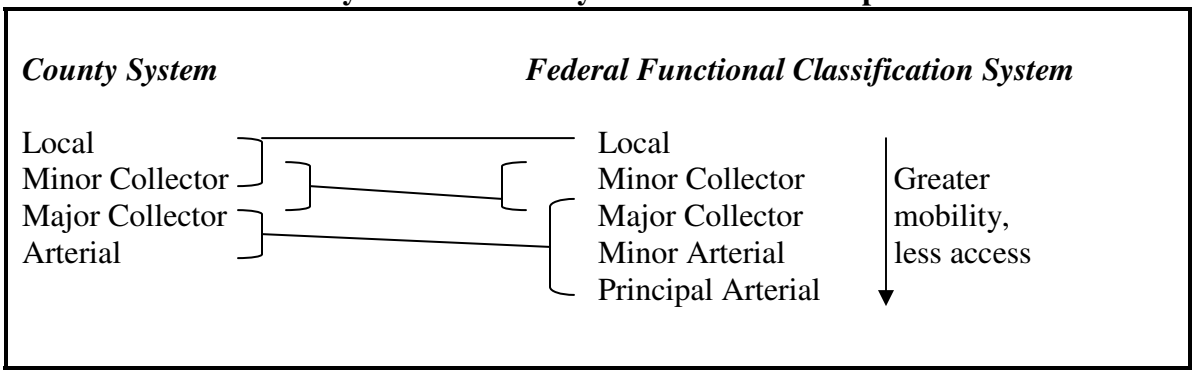
highway in Cecil County was US 40 Pulaski Highway which was built in 1941. Cecil County played an important part in history when the first section of I-95 to appear in Maryland was the Northeast Expressway toll road, opened on November 14, 1963 with a ribbon cutting by President John F. Kennedy. It was renamed for the late President after his assassination the following week. I-95 has since served as the major roadway through Cecil County.

Cecil County is located in the northeastern corner of Maryland. It is bordered on the north by Pennsylvania, the east by Delaware, on the west by the Susquehanna River and the south by Kent County. The growth corridor lies in the central portion of the County. Approximately fifty (50) roadways have been identified within the corridor. Besides US 40 and I-95, the higher functioning roadways in the growth corridor include:

- MD 272
- MD 275
- MD 276
- MD 222
- MD 279
- MD 213
- MD 7
- Mechanics Valley Road
- Old Elk Neck Road
- Barksdale Road
- Red Toad Road
- Appleton Road
- Belvidere Road

The roadways included in the Roadway Improvement Strategic Plan are shown in Figure 1 Location Map. The Cecil County Department of Public Works and Maryland State Highway operate and maintain a wide variety of roadways geared toward serving both higher speed and higher volume traffic movements and lower level roadways serving mostly local traffic. Roadways are classified to ensure that as more mobility is provided, less access points occur. This ensure adequate capacity is provided along with the appropriate level of access. Planning for the proper match of roadway improvements will allow for less costly projects in the future.

Roadway Classification Systems General Comparison



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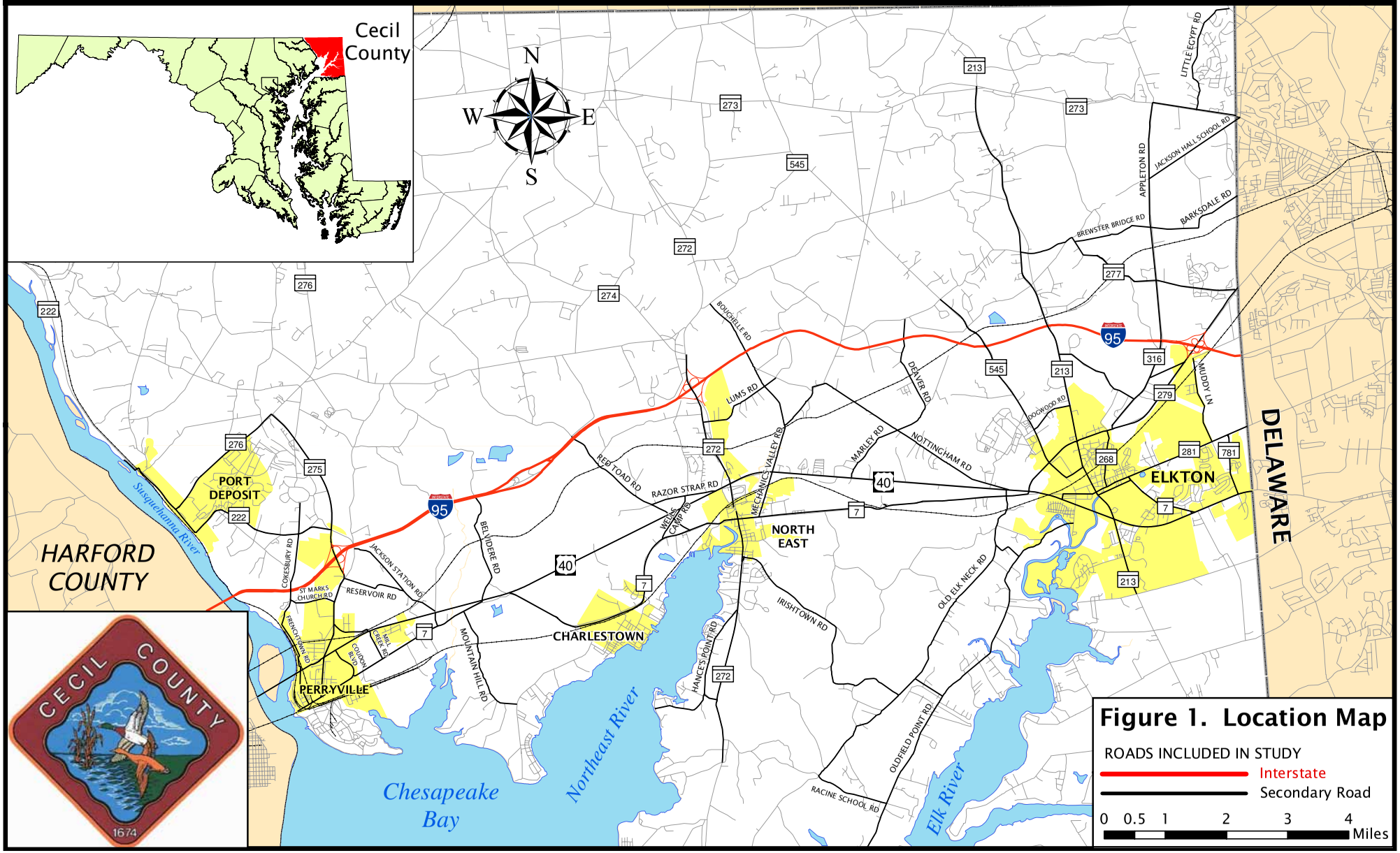

Figure 1. Location Map

ROADS INCLUDED IN STUDY

Interstate

Secondary Road

0 0.5 1 2 3 4 Miles

II. EXISTING CONDITIONS

The development of a Roadway Improvement Strategic Plan for Cecil County required that background data be gathered in a wide variety of areas. These areas included traffic volumes, accident data, roadway width, shoulder width, functional classification and a review of access points. Data for each one of these areas was developed based on available information plus field reconnaissance. Once the data was developed, analysis was performed to determine the necessary level of improvements.

A. Traffic Volumes

Traffic volume data was gathered from the Maryland State Highway Administration, the Maryland Transportation Authority, and the Cecil County Department of Public Works. In addition, traffic counts were performed specifically for purposes of this study. Traffic volume data was gathered through two methods. At intersections people were stationed to determine the number of through, left and right turning motorists. Portable counters were placed along various roadways to record the traffic volumes of through movements in each direction on an hourly basis.

The traffic volume data was compiled together in two formats. The first format is the volume of traffic over a given day. This is referred to as the average daily traffic or ADT. The second format is the period in which the highest traffic volume that occurs on the roadway. This is in the AM peak period from approximately 6-9 AM and the PM peak period from 3-7 PM. The highest volume hour of those two periods is considered to be the AM and PM peak hour volume.

Since the traffic counts were not all conducted at the same time, adjustments were made to the data. On a given roadway even during the same month and during the middle of the week (Tuesday, Wednesday or Thursday) volume can vary up to 10% or more due to vacation, business trips, day care, or school and recreational activities. These variations require that traffic be balanced between adjacent locations. For example, if no driveways or streets exist between two intersections the traffic volume between those locations should be equal. Due to the counts being performed on different days this will normally not be the case. Balancing analyzes each intersection within the corridor and accounts for the variation in volume at those locations to provide for a uniform representative traffic flow diagram.

The Average Daily Traffic volumes for the roadways in the study area are shown in Figure 2. The highest volume roadway in the County is I-95. This roadway carries between 74,000 and 82,000 vehicles per day. US 40 is the next highest volume roadway in the County. The traffic volume along this roadway ranges from approximately 18,000 vehicles per day west of Red Toad Road to over 34,000

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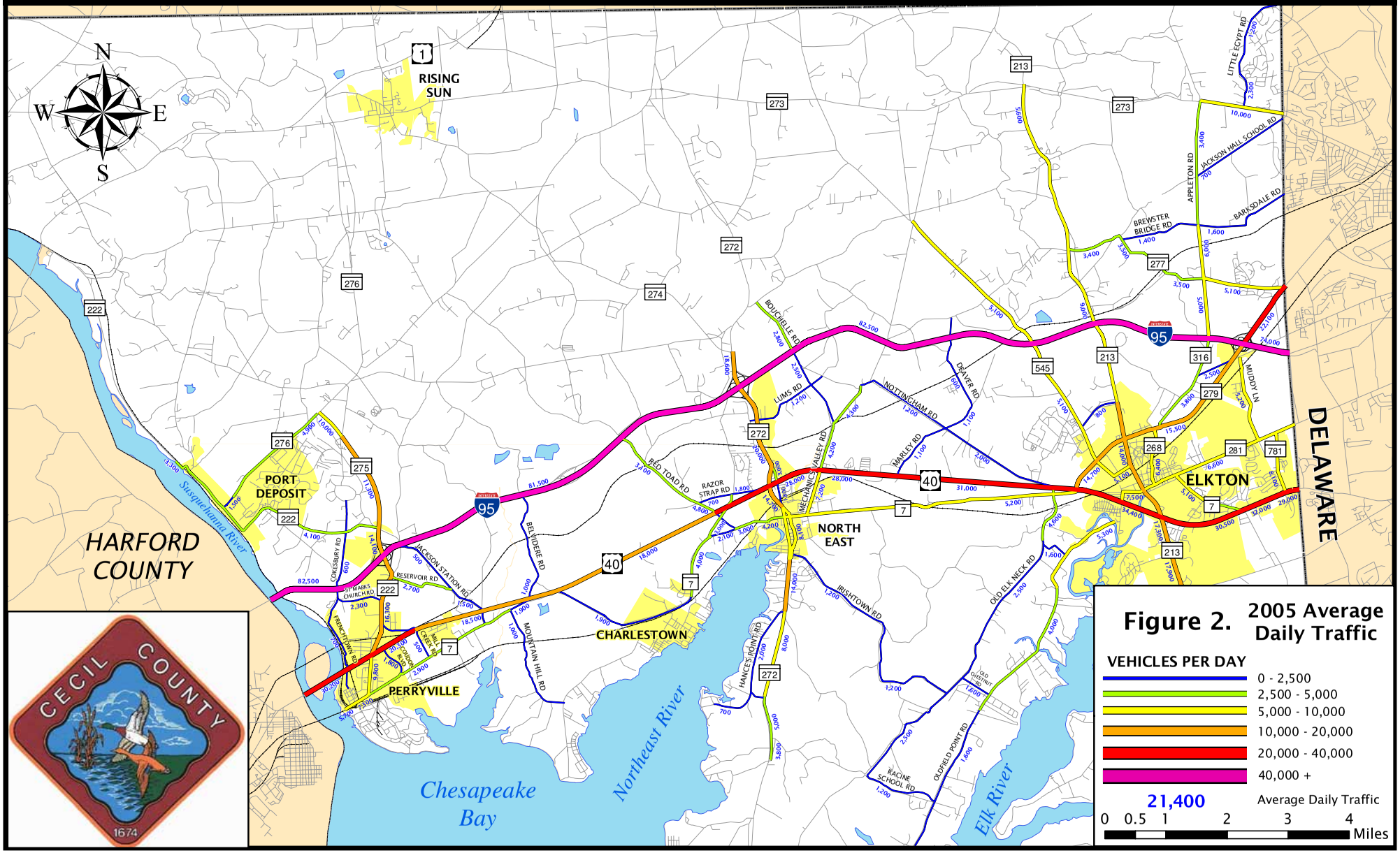

vehicles per day west of MD 213. The other state roadways with the highest volumes are MD 213, MD 272, MD 279, MD 222 and MD 275. The highest volume County roadways include Mechanics Valley Road with an Average Daily Traffic volume of 7,200 vehicles per day. Muddy Lane, Oldfield Point Road and Appleton Road all carry volumes of at least 5,000 vehicles per day.

US 40 is one of the highest volume roadways in the County.

The AM peak hour volumes are highest along I-95 with up to approximately 2,700 vehicles per hour across the Susquehanna River at the Tydings Bridge. Roadways with over 1,000 vehicles per hour in the peak direction include US 40 west of MD 222, US 40 west of MD 272 and MD 213 south of Frenchtown Road. Roadways with over 500 vehicles per hour in the peak direction include the remaining sections of US 40, MD 222, MD 275, MD 279, sections of MD 281, and MD 213. The highest volume peak directions for County roadways include Mechanics Valley Road with 375 vehicles, Old Elk Neck south of MD 7 (300), Appleton Road (265-290), Oldfield Point Road (275), and Red Toad Road (250 vehicles). These volumes in the peak direction are shown in Figure 3.

In general, the PM peak hour volumes are higher than the AM peak hour volumes. The PM peak hour volumes in the peak direction are shown in Figure 4. Again, I-95 is the highest volume facility in Cecil County ranging from approximately 2,300 to 2,800 vehicles per hour in the peak direction. US 40 has the second highest volume ranging from approximately 900 to 1,900 vehicles per hour. Roadways with over 500 vehicles in the PM peak direction include:

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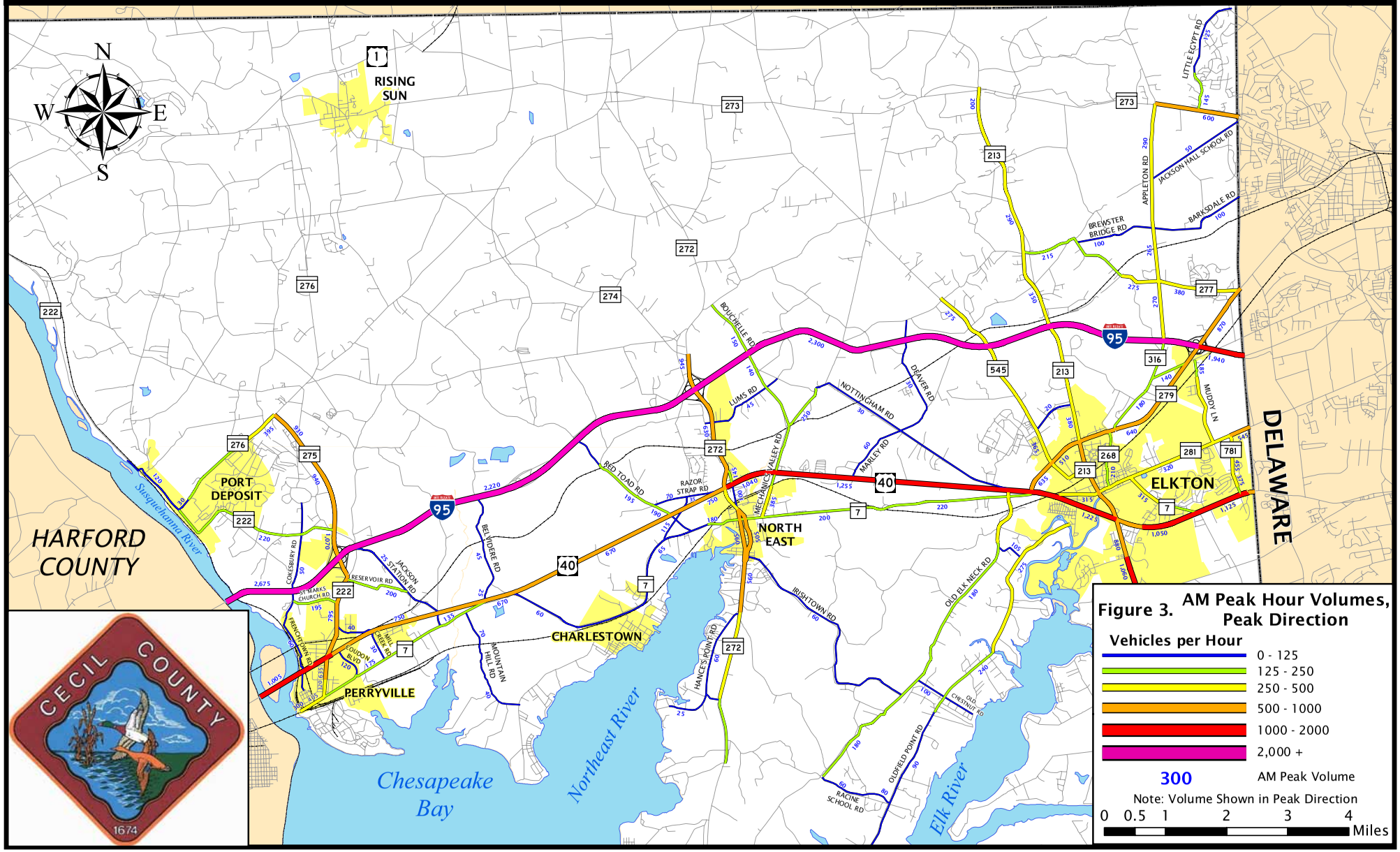

Figure 3. AM Peak Hour Volumes, Peak Direction

Vehicles per Hour

- 0 - 125
- 125 - 250
- 250 - 500
- 500 - 1000
- 1000 - 2000
- 2,000 +

300 AM Peak Volume

Note: Volume Shown in Peak Direction

0 0.5 1 2 3 4 Miles

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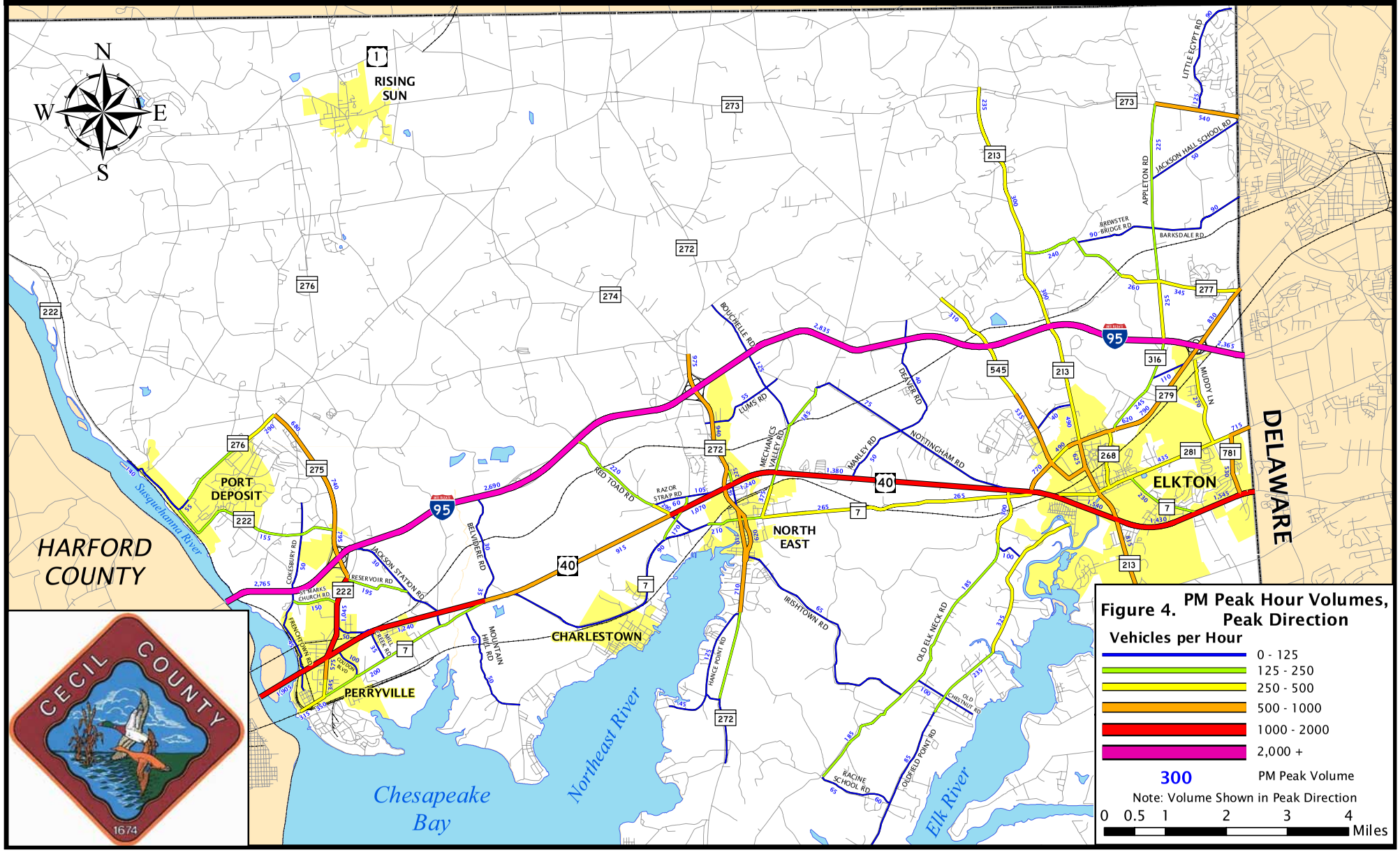

- MD 275
- MD 222
- MD 272
- MD 279
- MD 213 south of MD 279
- MD 273
- MD 781
- MD 281 east of MD 781
- MD 545

The Cecil County roadways with over 200 vehicles in the PM peak hour peak direction include:

- Mechanics Valley Road south of US 40
- Old Elk Neck Road -northern section
- Oldfield Point Road - northern section
- Muddy Lane
- Appleton Road
- Red Toad Road

The balanced traffic volumes for the turning movements at major intersections were included in the traffic analysis. Traffic analysis is conducted to determine how well a roadway operates. Analyses are performed for two separate areas including intersections and along sections of roadway between intersections or freeway interchanges. Roadway sections are referred to as link level of service. The intersection analysis was performed using the Critical Lane Volume Summation Technique in accordance with Maryland State Highway Administration procedures. The roadway link analysis was based on the 2000 Highway Capacity Manual.

The results of the traffic analysis produce a level of service (LOS). The LOS at an intersection or along a roadway link ranges from A-F. The highest or best operation at an intersection or roadway link occurs at LOS A. This would mean that traffic would operate under free flow conditions with minimal amount of delay. At the other end of the spectrum, LOS F would mean that stop and go traffic conditions would occur and at intersections many motorist would wait multiple cycles to clear the intersections. The entire definitions for the various levels of service are included in the appendix.

The peak hour volumes were analyzed to determine the level of service at intersections. Intersections LOS are shown in Figure 5.
This analysis showed that only two locations operated at level of service “E” or worse. The two intersections are US 40 @ MD 222 and US 40 @ MD 213

The link analysis showed that two locations operate at level of service “E”. These are shown in Table 1.

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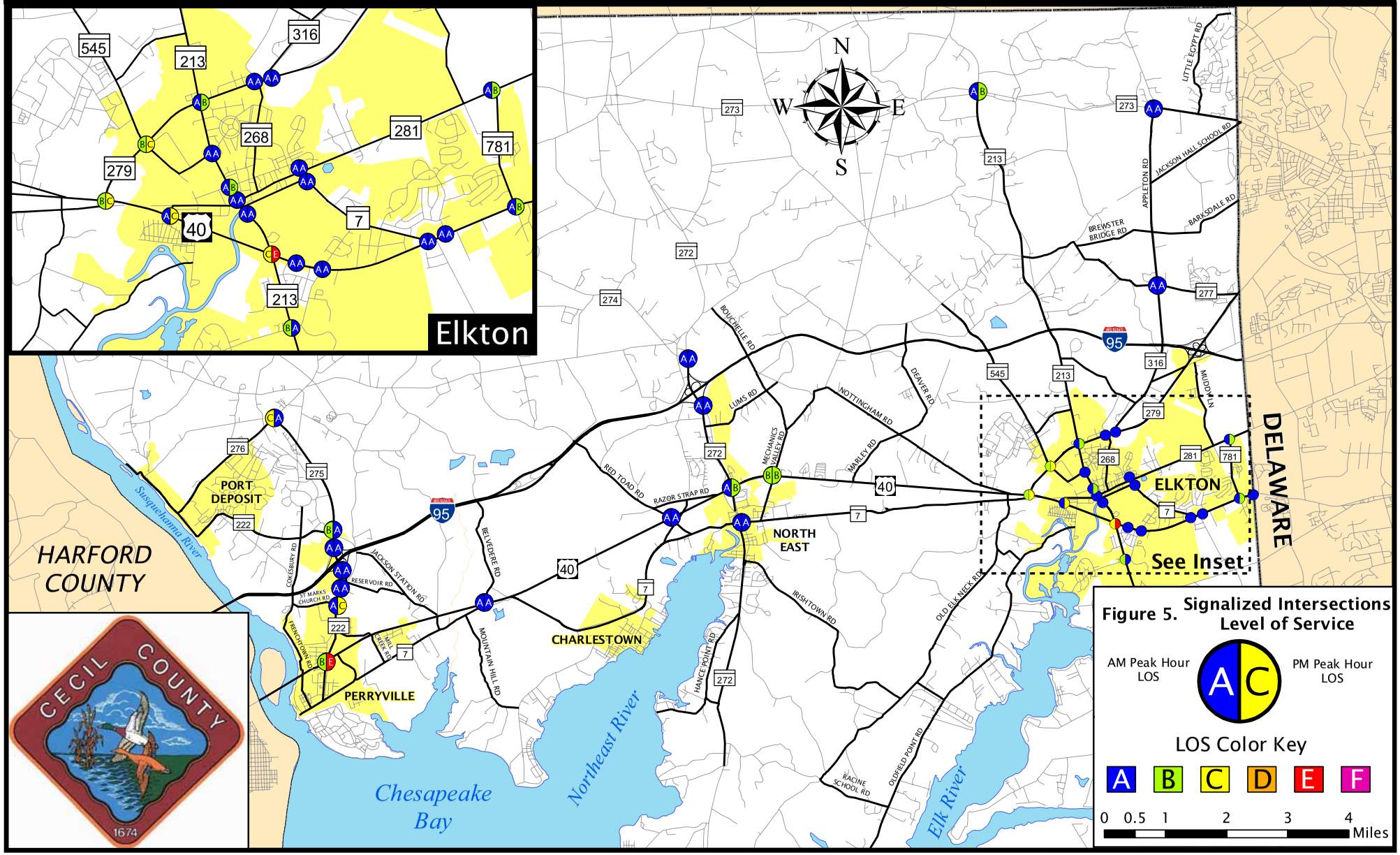

Table 1. Link Level of Service

Location	LOS	
	AM	PM
MD 272 S of I-95 to US 40	D	E
MD 213 S of Frenchtown Road	E	D

The 2005 AM peak hour link Levels of Service are shown in Figure 6. The Level of Service for the various links in the PM peak hour is depicted in Figure 7.

B. Roadway Width

Data was gathered for roadways within the growth corridor to determine their average traveling width for each roadway. Roadways are considered substandard by the American Association of State Highway Transportation Officials (AASHTO) if the width of the roadway is less than 18 feet. This occurs only in a few locations mainly related to one lane bridges. The locations are Cedar Corner Road, Lums Road west of MD 272, and Mountain Hill Road.

The width of Mountain Hill Road is less than 18 feet under the CSX railroad bridge

Numerous other locations have roadway widths less than 20 feet. It is recommended that roadways with average daily traffic volumes greater than 400 vehicles per day have a minimum roadway width of 20 feet. The following roadways have sections that are less than 20 feet wide and have an ADT over 400 vehicles per day:

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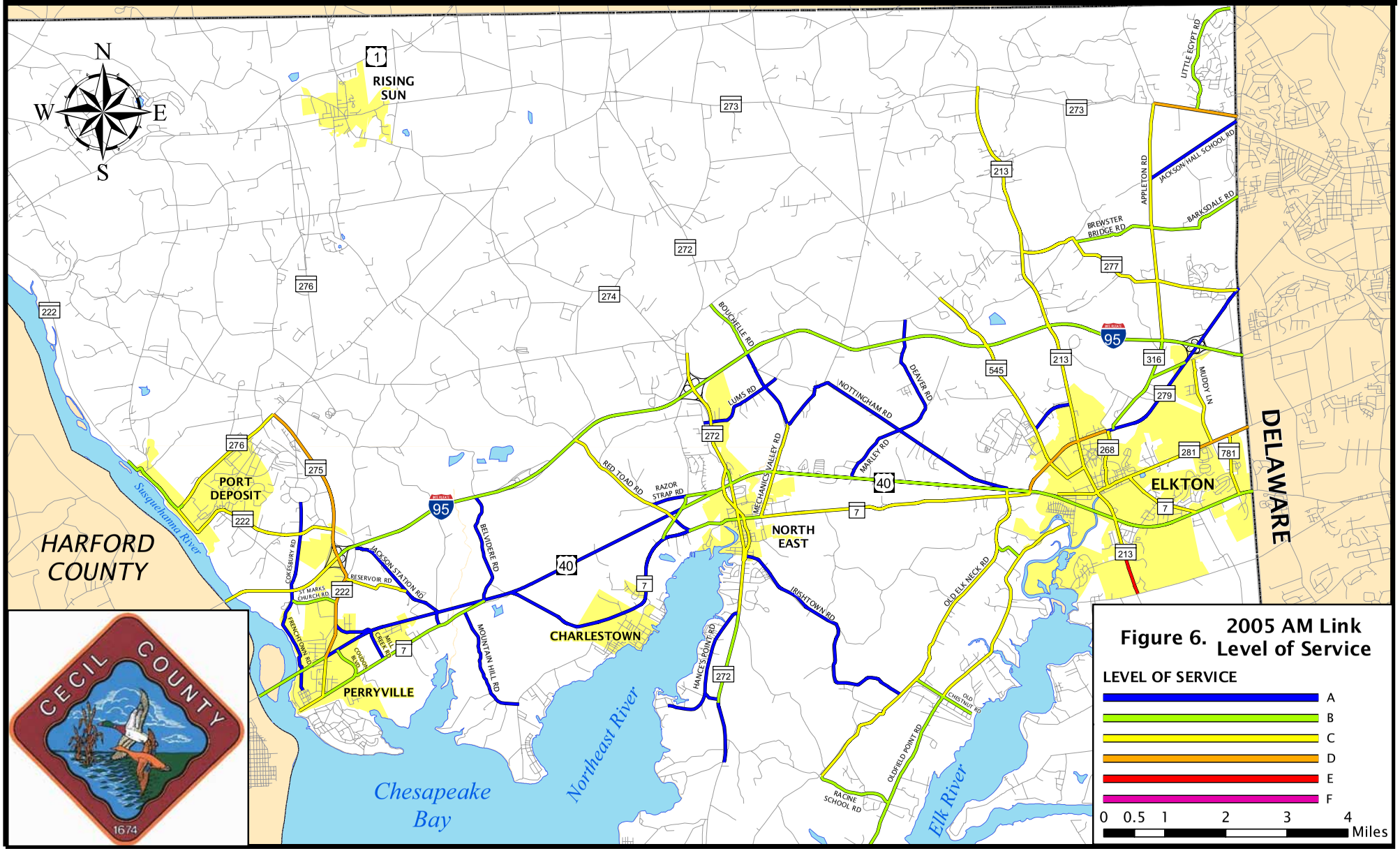

Figure 6. 2005 AM Link Level of Service

LEVEL OF SERVICE

- A
- B
- C
- D
- E
- F

0 0.5 1 2 3 4 Miles

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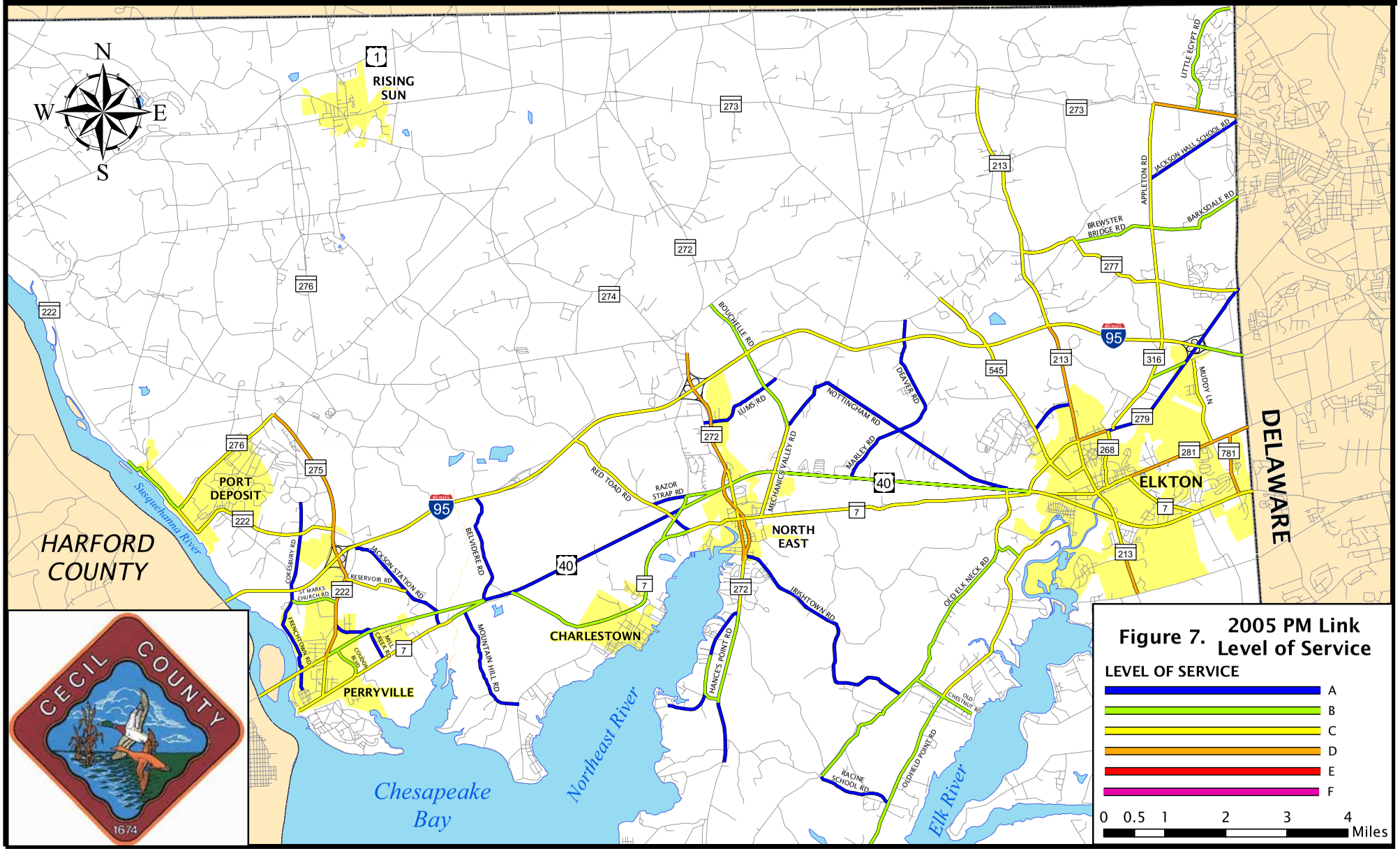

- Cokesbury Road
- Frenchtown Road
- Reservoir Road
- Mill Creek Road
- Razor Strap Road
- Cedar Corner Road
- Lums Road
- Racine School Road
- Oldfield Point Road
- Muddy Lane
- Appleton Road
- Jackson School Road
- Mountain Hill Road

All the roadway widths are show in Figure 8.

C. Shoulders

Shoulders serve an important function by providing an area for bicyclist and pedestrians. Shoulders also allow motorists to move their vehicle off the travelway if they breakdown, and prevent motorists from running off the roadway. Shoulders should be provided in accordance with appropriate design standards based on the classification of the roadway. Shoulders can be grass, gravel or paved based on need and roadway function. Grass or gravel shoulders are appropriate for low speed, low volume roadways. On roadways where a combination of traffic volumes, speed and roadway geometrics are a concern, paved shoulders are more suitable.

According to the AASHTO "A Policy on Geometric Design of Highways and Streets" it is recommended that a minimum two foot paved shoulder be provided for low volume roadways and a six to eight foot shoulder is preferred. A ten foot shoulder is preferred for high volume highways, and a twelve foot shoulder should be considered for highways with high truck volumes.

In Cecil County, several roadways have shoulders greater than six feet. Examples of these roadways include I-95; large portions of US 40, MD 7, and MD 281 and MD 213. Most county roads have no shoulders or 18 inch gravel shoulders with limited function. The only county roadways with paved shoulders include Coudon Boulevard, sections of Mechanics Valley Road, and Oldfield Point Road. All shoulder widths are shown in Figure 9.

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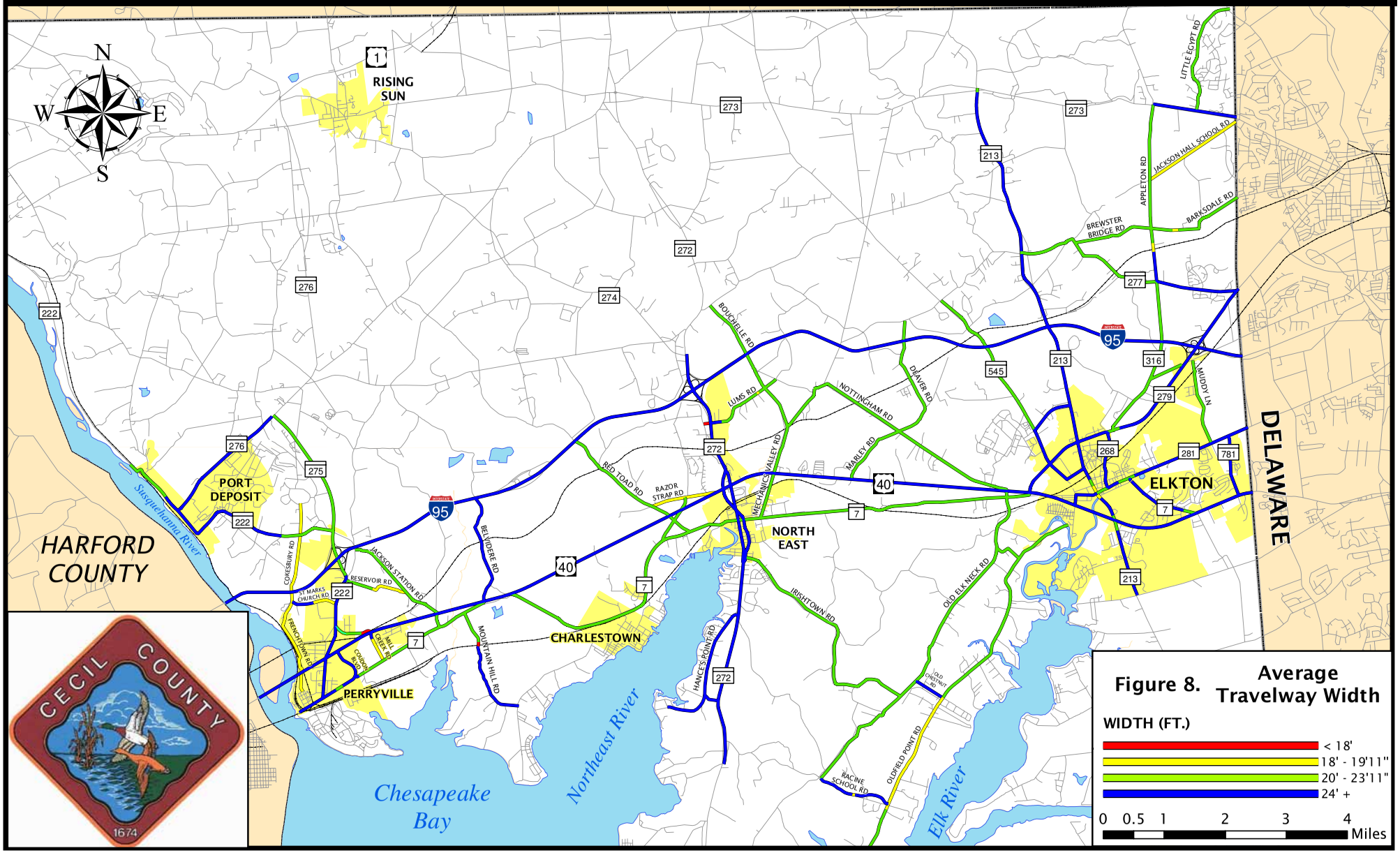

Figure 8. Average Travelway Width

WIDTH (FT.)

- < 18'
- 18' - 19'11"
- 20' - 23'11"
- 24' +

0 0.5 1 2 3 4 Miles

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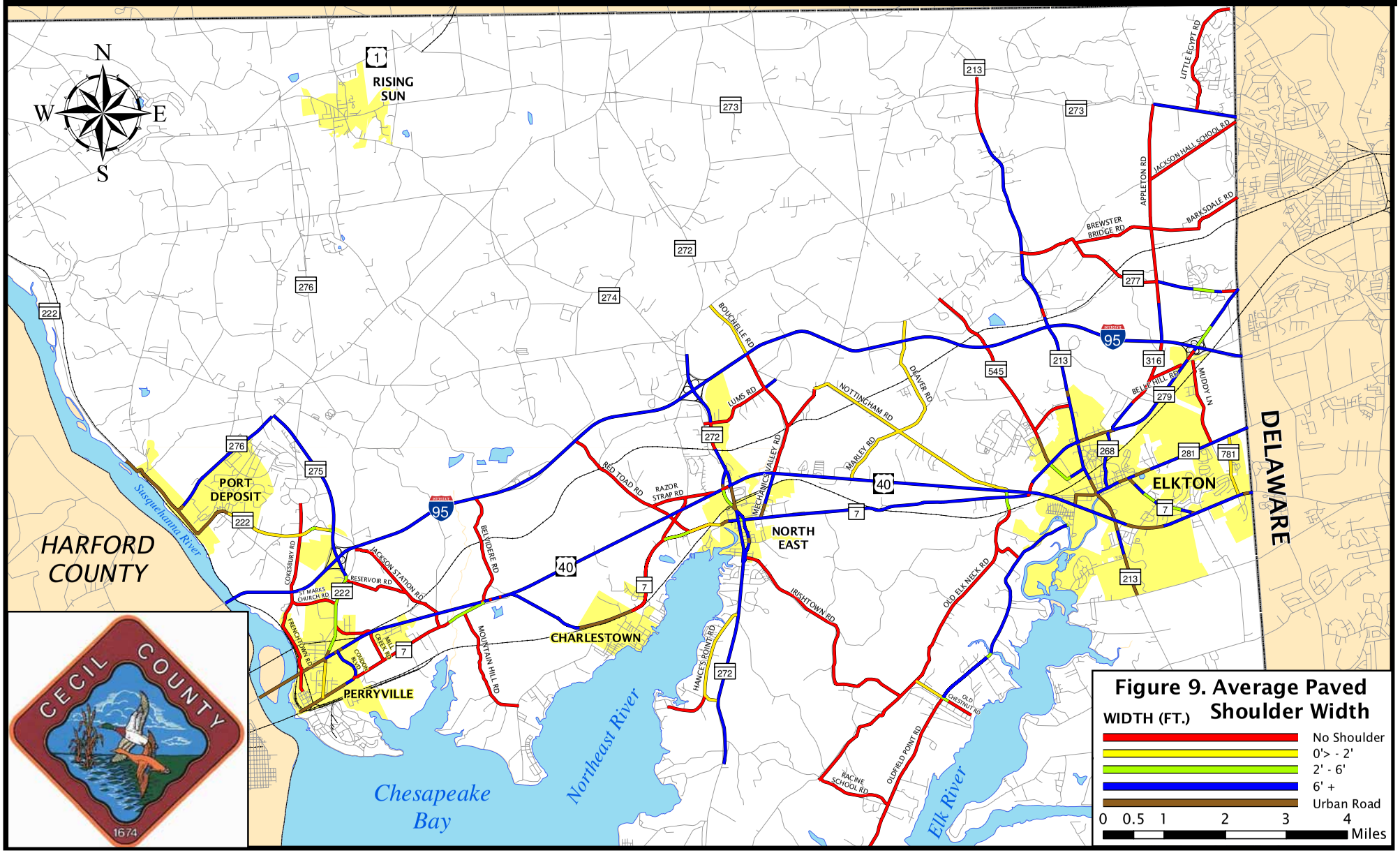

Red Toad Road is an example of a county roadway with limited shoulders

D. Functional Classification

Roadways are classified according to the type of traffic they will serve. Roadways with higher classifications are intended to support long distance trips and movement of the movement of goods. The highest functioning roadway is the interstate system with I-95 being the lone interstate through Cecil County. Roadways classified as arterials in Cecil County are US 40, MD 213, MD 272, MD 222, MD 273, MD 275, and MD 276. No county roads are classified higher than a minor collector roadway. The county roadways serve as feeders to the arterials and I-95 in the Cecil County Growth Corridor. They are dotted by residential driveways and are meant to move local traffic. The functional classification of the study area roadways is shown on Figure 10. The entire functional classification system from highest to lowest classification is as follows:

- Interstate
- Principal Arterial
- Minor/Other Principal Arterial
- Major Collector
- Minor Collector
- Local

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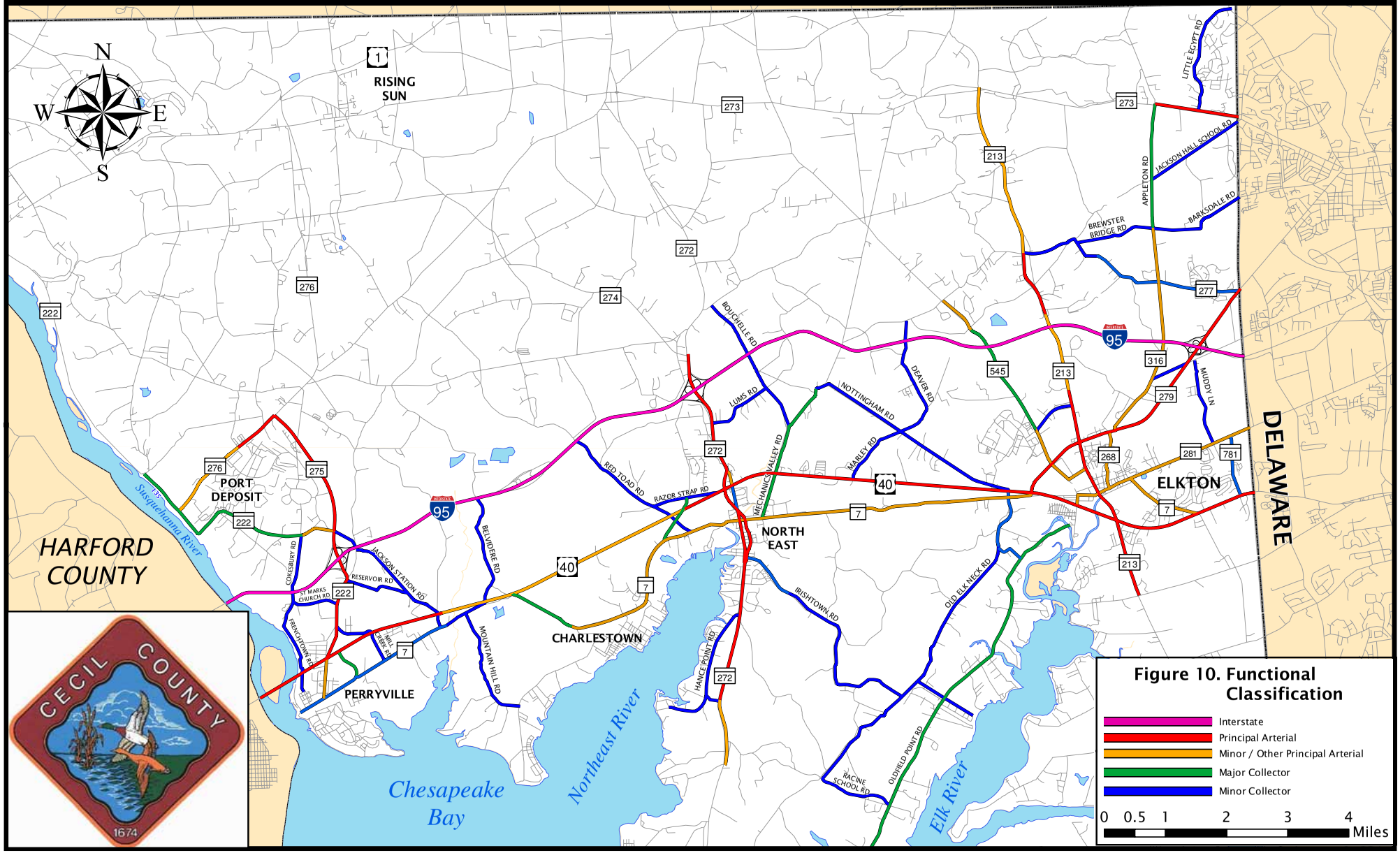

Muddy Lane is classified as a minor collector roadway and has an average daily traffic volume of 5,200 vehicles per day.

E. Safety

A safety review was performed for the roadways in the growth corridor. Accident data was gathered from the Maryland State Highway Administration (SHA) Office of Traffic and Safety. The data was gathered for the period of 2002 through 2004. An analysis was performed of the accident data to determine locations where safety issues exist. In accordance with SHA's procedures, the roadways were broken down into half mile segments. A criterion was used to identify segments where three or more accidents occurred within a one year period or 6 accidents over a three year period. This identified the following roadways as not having a high rate of accidents:

- Belle Hill Road
- Belvidere Road
- Brewster Bridge Road
- Cedar Corner Road
- Cokesbury Road
- Coudon Blvd
- Deaver Road
- Dogwood Road
- Hances Point Road
- Jackson Hall School Road.
- Little Egypt Road
- Main Street Extended in North East
- Marley Road
- Mill Creek Road
- Old Chestnut Road
- Racine School Road
- Razor Strap Road
- Rogers Road
- St. Mark's Church Road
- Well's Camp Road

The remaining roadways were tabulated with the half mile segment where the accidents occurring and the number of accidents in a given year. An accident rate per hundred million vehicle miles was calculated based on the average daily traffic on

that section of roadway and the number of accidents that took place. This is shown in Table 2. Figure 11 shows the location of these roadway segments to be considered for safety improvements.

Table 2. Cecil County Accident Locations

Roadway	Log Mile	Number	Rate[1]
Barksdale Road.	0.32 to 0.82	4 in 2003	1,369
Barksdale Road.	1.15 to 1.65	4 in 2004	1,369
Bouchelle Road.	0.99 to 1.49	3 in 2004	587
Bouchelle Road.	1.97 to 2.47	3 in 2004	587
Frenchtown Road.	0.00 to 0.50	3 in 2003	2,348
Jackson Station Road.	0.59 to 1.09	3 in 2002	2,191
Jones Chapel Road.	0.00 to 0.50	4 in 2002	1,370
Lums Road.	0.78 to 1.28	3 in 2004	1,369
Mechanics Valley Road.	0.20 to 0.70	3 in 2004	391
Mechanics Valley Road.	0.75 to 1.25	6 in 2004	783
Mountain Hill Road.	0.04 to 0.54	3 in 2004	1,643
Mountain Hill Road.	0.59 to 1.09	4 in 2003	2,191
Muddy Lane	0.18 to 0.68	3 in 2004	316
Nottingham Road.	1.65 to 2.15	4 in 2004	1,826
Old Elk Neck Road.	0.56 to 1.06	4 in 2004	477
Old Elk Neck Road.	2.20 to 2.70	4 in 2004	876
Old Elk Neck Road.	2.89 to 3.39	5 in 2004	1,095
Red Toad Road.	4.12 to 4.62	5 in 2004	883
Red Toad Road.	4.12 to 4.62	4 in 2002	706
Red Toad Road.	5.73 to 6.23	3 in 2002	530
Reservoir Road.	0.54 to 1.04	3 in 2002	608

1 - Rate is per 100,000,000 vehicle miles.

The accident data was only used and gathered for County roadways. The Maryland State Highway Administration has a separate Candidate Safety Improvement Location program that reviews all state roadways within the County. This program then develops projects identified under Fund 76 to address accident issues at these locations. This is an annual program and insures that a system wide evaluation is performed. Therefore, state highway locations requiring safety improvements will not be part of this report.

Accident Analysis

A supplemental report titled "Cecil County Safety Review" was submitted to Cecil County in May 2006 and is included in the Appendix of this report. The report includes analysis that identified the various patterns, environmental factors and causes of the accidents that occurred along these one half mile segments. Field reviews were performed to determine the probable cause of accidents. This allowed for identification of such items as geometrics of the roadway, signing and marking

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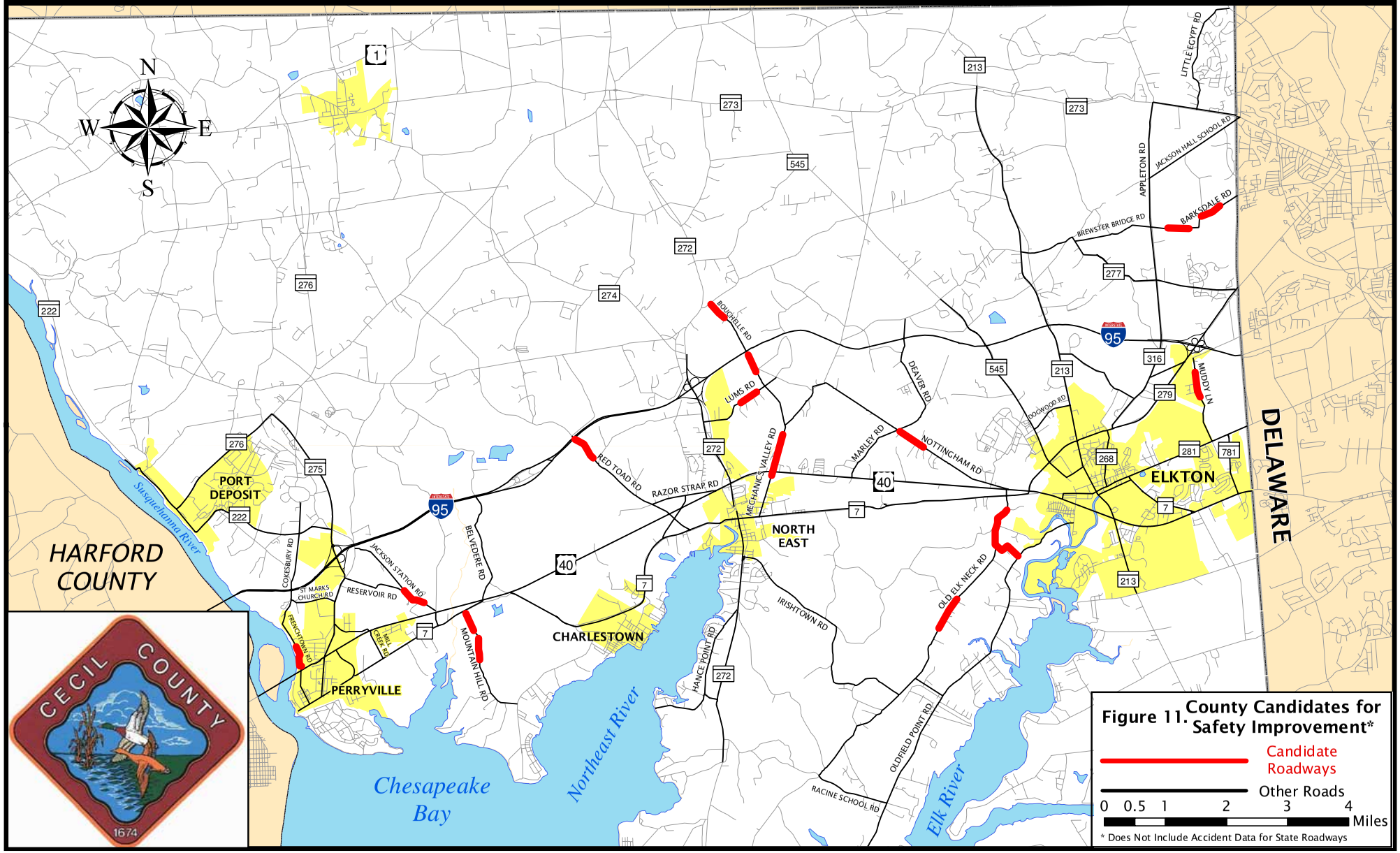

Figure 11. County Candidates for Safety Improvement*

Candidate Roadways

Other Roads

0 0.5 1 2 3 4 Miles

* Does Not Include Accident Data for State Roadways

issues and overall traffic operations. Condition diagrams were developed for the locations. Based upon the characteristics, recommendations were developed for each location. It should be noted that several recommendations have been implemented and others are included in the County Capital Improvement Program while a few require incorporation into the Capital Improvement Projects (CIP).

F. Mass Transit

Mass transit will continue to become a more important transportation component into the middle of the 21st century. Efforts should be made to encourage use of transit in order to minimize trips, help reduce emissions, increase economic opportunities for persons without motor vehicles and provide service to the elderly and those with medical needs. There are three agencies providing mass transit in Cecil County: these are:

- Maryland Rail Commuter (MARC)
- Delaware Transit Corporation (DART First State)
- Cecil County Department of Aging (The Bus)

The MARC train has its northern most stop of the Penn Line in Perryville and provides service to Baltimore and Washington, DC. Service to Perryville is limited to six trips per day in each direction and there is no service on weekends.

DART is the state of Delaware's bus service which provides service between Elkton and Newark. DART ties in with SEPTA R2 service to provide commuter rail service between Delaware and Pennsylvania.

The "Bus" is maintained by the Cecil County Department on Aging and is open to everyone. The "Bus" makes stops at DART connections in Glasgow and service is available to Perryville upon request.

In order to improve the Cecil County Transportation System, the following improvements are recommended to encourage ridership and expand service:

1. Enhance Bus Service

It is recommended that Cecil County study a countywide bus system to service weekday trips between Elkton, Perryville, North East and Charlestown and provide connections to DART. The transit service could start out as a rural type transit system that provides stops on demand by passengers. As the system grows, set lines and stops could be established. At this point, amenities such as bus shelters, sidewalks to access the stops, and crosswalks, should be added to further encourage ridership.

2. Study the Expansion and Tie in of MARC and SEPTA Services

It is recommended that a study be conducted to determine the need for a connection between the MARC train system and SEPTA. This would mean expansion of either one or both of the systems. The second option to this is to expand SEPTA R2 service to Elkton.

III. FUTURE CONDITIONS

In order to evaluate the need for future roadway improvements in Cecil County, travel demand forecasts were developed for the study area. These forecasts were based on the WILMAPCO regional model. The model was validated for the base year 2000 condition to replicate existing volumes on the roadway. A major input into the future 2030 travel demand model is socio-economic data such as growth in population and employment. Various Cecil County agencies provided information for the anticipated land development projects. These were compared to the regional model projections. It was decided to increase the amount of growth anticipated to occur in some of the zones if it appeared that development would be greater than projected. An example of this would be the area between Belvidere Road and Red Toad Road where the Stewart property exists. All changes to the WILMAPCO regional model projection are included in the Appendix.

A. Year 2030 Base Condition

Volumes

Travel demand forecasts were developed for the year 2030 base condition. The base condition includes no roadway improvements and no proposed interchange at I-95 and Belvidere Road. The projections were developed on an average daily traffic basis, and also for the AM and PM peak hours which experience the highest volume of traffic. Year 2030 base condition volumes are shown on Figure 12, the AM and PM peak volumes are shown on Figures 13 and 14, respectively.

Red Toad Road (top) and Belvidere Road are expected to see the greatest increase in traffic countywide.

Volumes on I-95 are expected to increase from between 74,000 and 82,000 to between 120,000 to 136,000 vehicles per day. Volumes on US 40 west of North East are expected to increase from 18,000 vehicles per day to 39,600 vehicles per day and volumes through Elkton are expected to increase from 34,400 vehicles per day to 48,100 vehicles per day. Due to the development of the Stewart Property, the county roadways anticipated to experience the highest rate of growth in traffic include Belvidere Road and Red Toad

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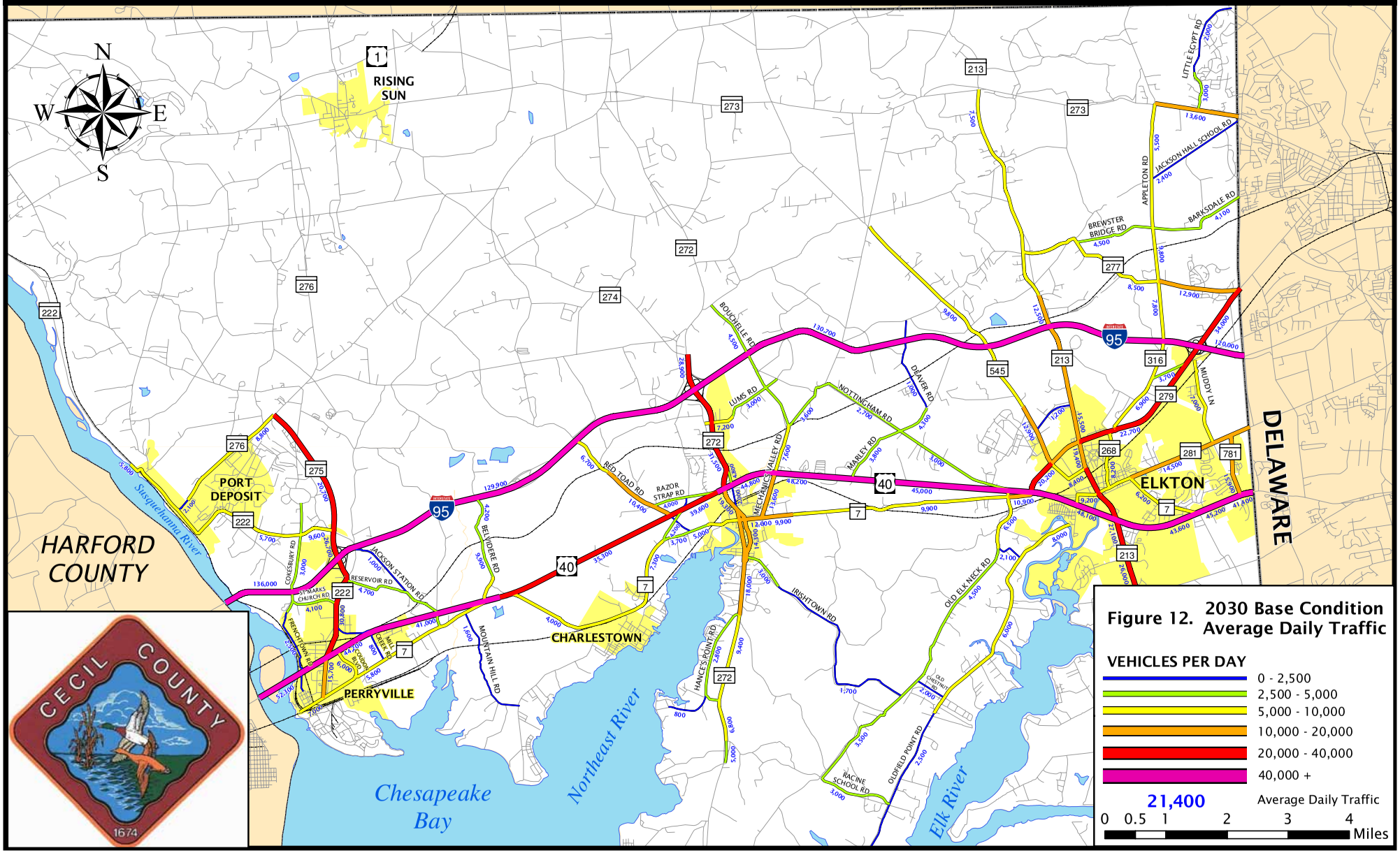

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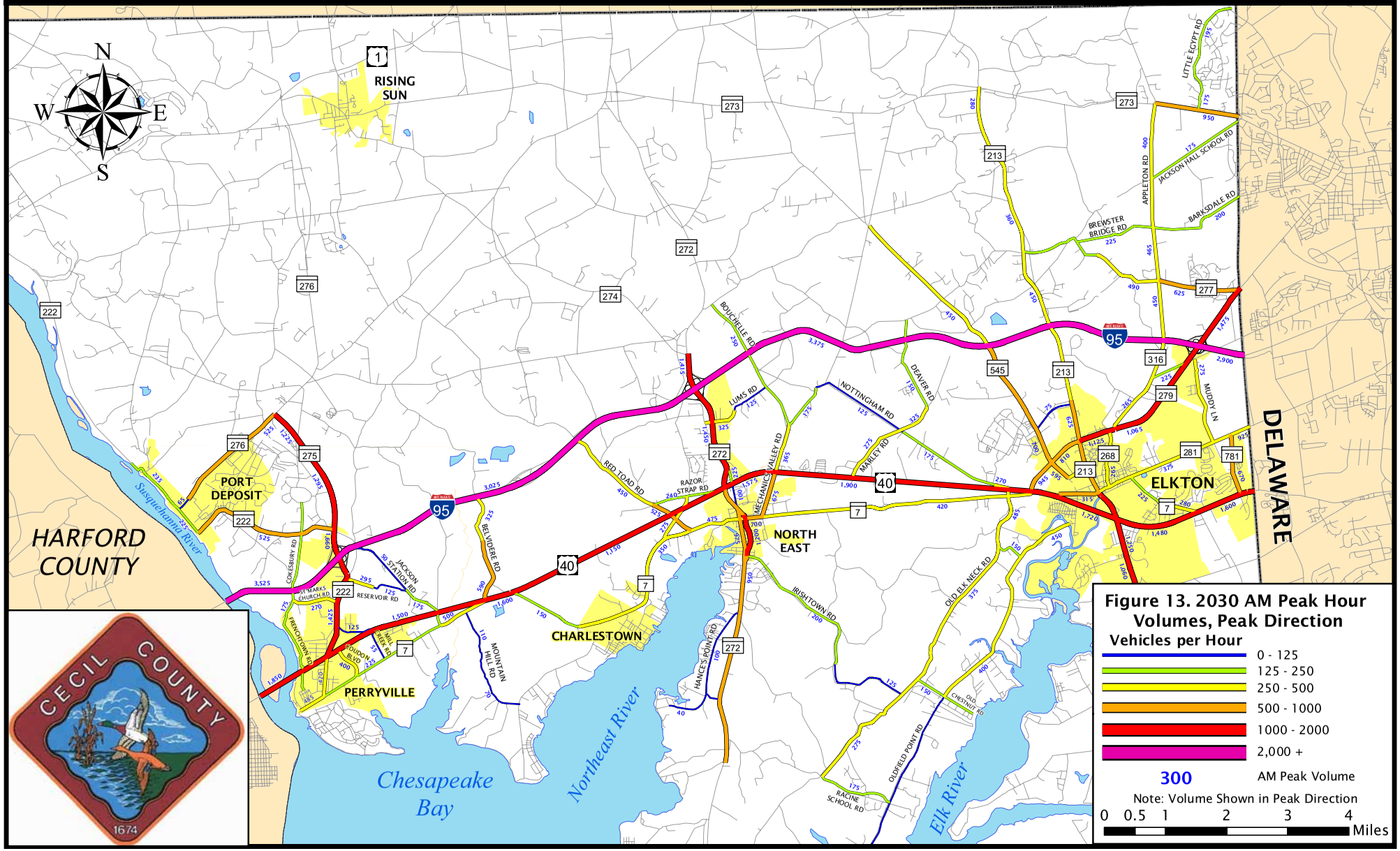

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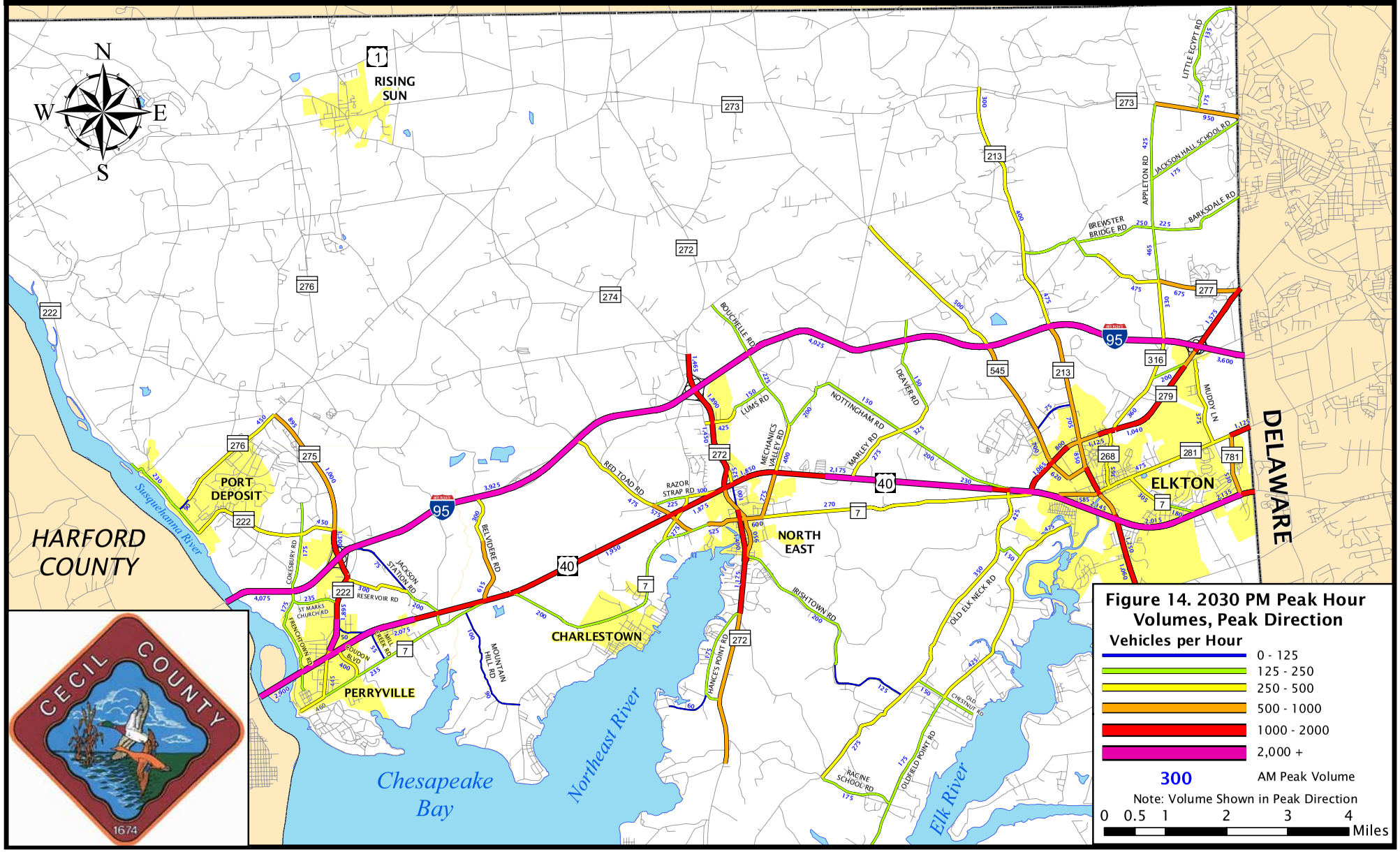

Road. MD 7 through Charlestown is expected to see a large percent increase in volume for a state roadway from 1,900 vehicles per day in the year 2005 to 4,000 vehicles per day in the year 2030. A comparison of average daily traffic volumes between existing and future traffic for select roadways are shown in the table below:

Table 3. Year 2005 and Year 2030 Average Daily Traffic Comparison

Location	2005 ADT	2030 ADT
US 40 – Susquehanna River to MD 222	30,200	52,300
US 40 – MD 222 to MD 272	18,000 – 20,300	35,300 – 44,200
US 40 – MD 272 to MD 279	28,000 – 31,000	44,800 – 48,200
US 40 – MD 279 to Delaware	29,000 – 34,400	41,400 – 48,100
I-95 – Susquehanna River to MD 222	82,500	136,000
I-95 – MD 222 to MD 272	81,500	129,900
I-95 – MD 272 to MD 279	82,500	130,700
I-95 – MD 279 to Delaware	74,000	120,000
MD 213 – Frenchtown Road to US 40	17,300 – 17,900	26,500 – 27,100
MD 213 – US 40 to MD 279	14,000	19,400
MD 222 – US 40 to MD 275	16,300	30,800
MD 272 – US 40 to I-95	20,000	31,500
MD 279 – MD 213 to I-95	14,700	20,200
MD 279 – US 40 to MD 213	15,500	22,700
Belvidere Road	1,000	9,000
Brewster Bridge Road	1,400	8,500
Coudon Boulevard	1,800	6,000
Mechanics Valley Road	4,200 – 7,200	7,600 – 13,600
Muddy Lane	5,200	7,000
Old Elk Neck Road	2,500 – 4,600	3,500 – 6,500
Red Toad Road	3,100 – 4,800	6,700 – 10,400

The AM peak hour projected volumes are highest along I-95 with up to approximately 3,525 vehicles during the AM peak in the peak direction across the Susquehanna River at the Tydings Bridge. During the AM Peak, roadways with over 1,400 vehicles per hour in the peak direction include US 40 through Perryville and Elkton and US 40 from Elkton to MD 7 (Philadelphia Road) and MD 279 north of I-95, MD 272 south of I-95, MD 275 north of I-95, and MD 222 through Perryville. County roadways with AM peak hour volumes over 400 vehicles per hour in the peak direction include the following:

- Mechanics Valley Road
- Belvidere Road
- Red Toad Road
- Old Elk Neck south of MD 7
- Appleton Road
- Oldfield Point Road
- Muddy Lane

In general the year 2030 PM peak hour volumes are higher than the AM peak hour volumes since morning trips are spread out over a longer period of time than evening trips. I-95 crossing the Susquehanna River is the highest volume location in Cecil County in the PM peak hour in the peak direction with over 4,000 vehicles. US 40 has the second highest volume in the county ranging from approximately 1,875 to 2,900 vehicles per hour. Roadways with over 1,400 vehicles in the peak direction include:

- MD 222 south of I-95
- MD 272
- MD 279
- MD 213 south of MD 279
- MD 281 east of MD 781
- MD 275 in Perryville
- MD 781
- MD 545

The Cecil County roadways with over 400 vehicles per hour in the PM peak hour peak direction include:

- Mechanics Valley Road south of US 40
- Belvidere Road
- Red Toad Road
- Oldfield Point Road south of MD 7
- Old Elk Neck Road Northern Section
- Lums Road
- Muddy Lane
- Appleton Road

Capacity Analysis

Capacity analysis was performed to identify areas that may experience congestion in the future. The AM and PM peak hour volumes were analyzed to determine the level of service at intersections. This analysis showed that several locations are expected to operate at level of service "E" or worse. The locations are:

- US 40/MD 222
- US 40/Belvidere Road
- US 40/Red Toad Road
- US 40/MD 272
- US 40/Mechanics Valley Road
- US 40/MD 279
- US 40/MD 7 (Landing Lane)
- US 40/MD 213
- US 40/MD 781
- MD 222/St. Mark's Church Road.
- MD 222/Reservoir Road
- MD 222/I-95 Northbound
- MD 222/I-95 Southbound
- MD 222/MD 275

- MD 275/MD 276
- MD 272/MD 7
- MD 272/MD 274
- MD 279/MD 545
- MD 279/MD 213
- MD 213/Main Street
- MD 281/MD 781

All other intersections LOS for the AM and PM peak hours are shown in Figure 15. The link analysis showed that several locations operate at LOS E or worse. During the PM peak, three intersections operate at E and one location operates at LOS F. These are shown in Table 4. The 2030 AM and PM peak hour link Levels of Service are shown in Figures 16 and 17, respectively.

Table 4. Link Level of Service

Location	LOS	
	AM	PM
MD 272 I-95 to Irishtown Road	E/F	F
MD 222 North of US 40 to I-95	F	F
US 40 East of MD 279	C	E
US 40 in Elkton	D/F	E/F
MD 275 South of MD 276 to MD 222	E	D
MD 213 North of Frenchtown Road to Whitehall Road	E	E
MD 281 West of Big Elk Creek to Delaware State Line	B/C	D/E
MD 279 West of MD 545 to MD 268	D	E

B. I-95 Interchange Option

A second alternative for the roadway network in Cecil County was developed. This was placing a new interchange along I-95 between MD 222 and MD 272. This interchange would serve the seven mile stretch of western Cecil County and provide access to various industrial developments plus any future development such as at the Stewart property. It was assumed for purposes of this study the interchange would be along Belvidere Road. An option to this is to provide an interchange at Red Toad Road, partial interchange at Red Toad Road and Belvidere Road or along a service road between both roadways. The interchange would need to conform to spacing requirements as set forth by the Federal Highway Administration. This proposed interchange would need to take into account Chesapeake House Service Area. An interchange at Belvidere Road would include a service road from Red Toad Road to Belvidere Road.

Cecil County Road Improvement Strategic Plan

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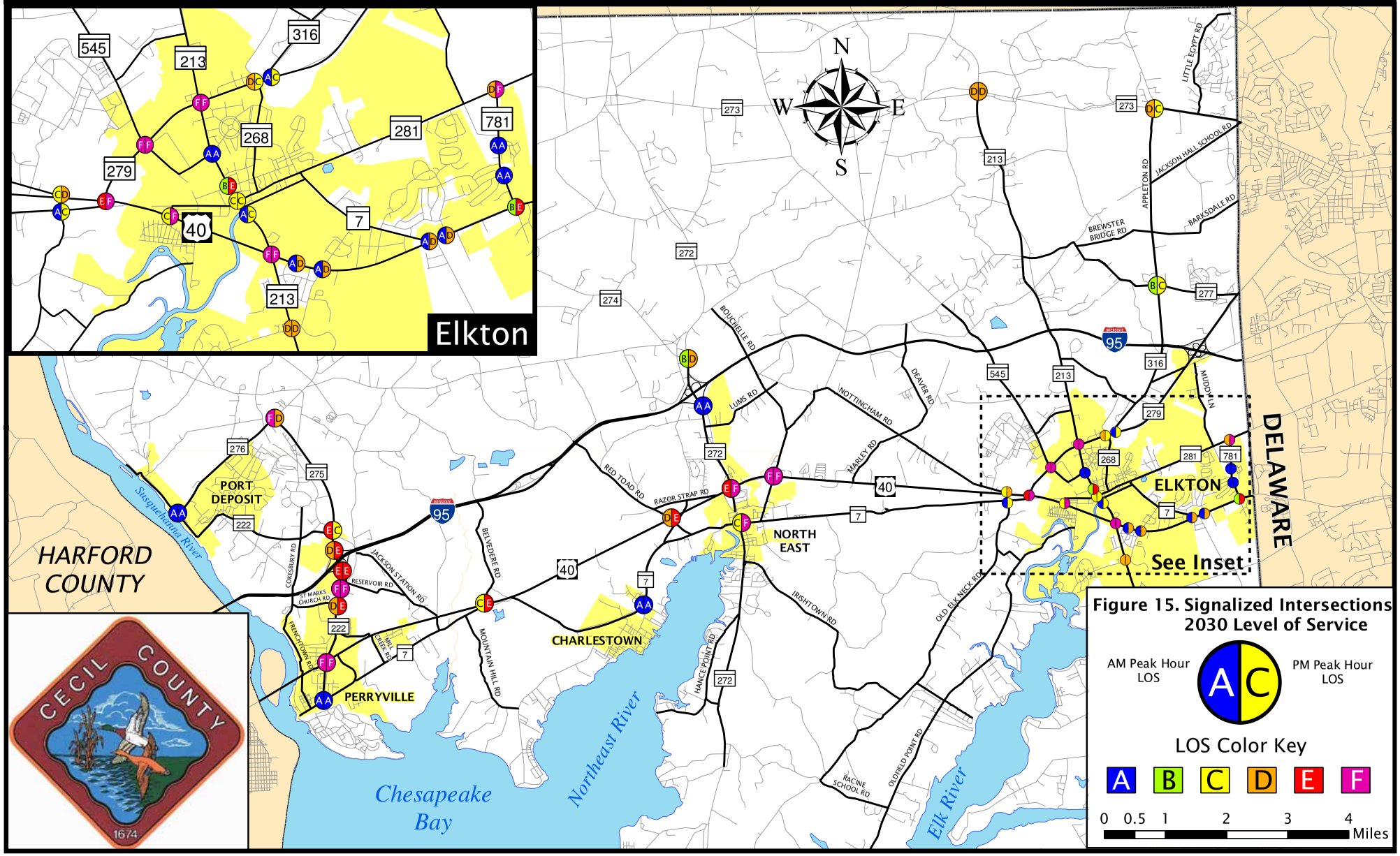

Cecil County Road Improvement Strategic Plan

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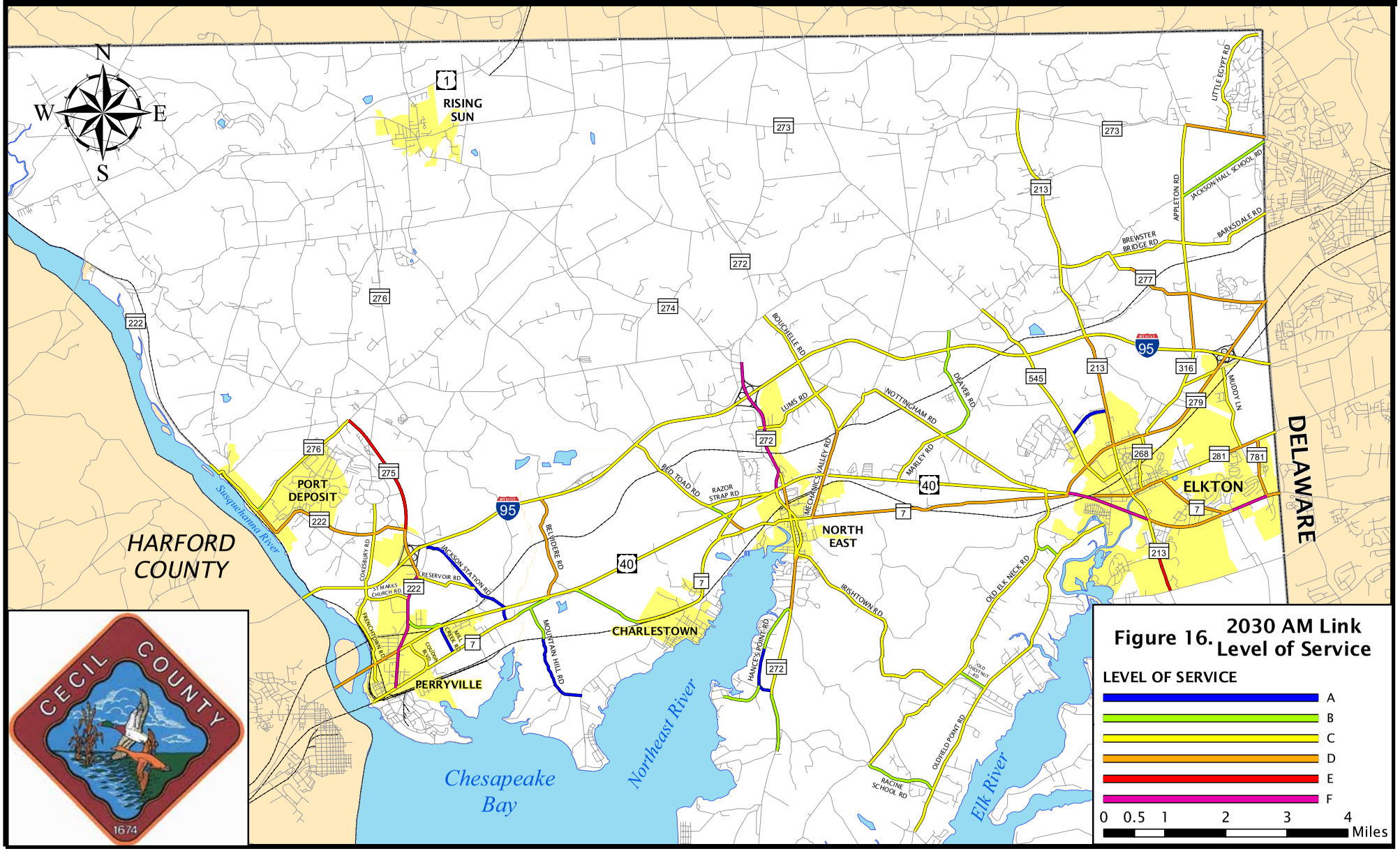

Figure 16. 2030 AM Link Level of Service

LEVEL OF SERVICE

A
B
C
D
E
F

0 0.5 1 2 3 4 Miles

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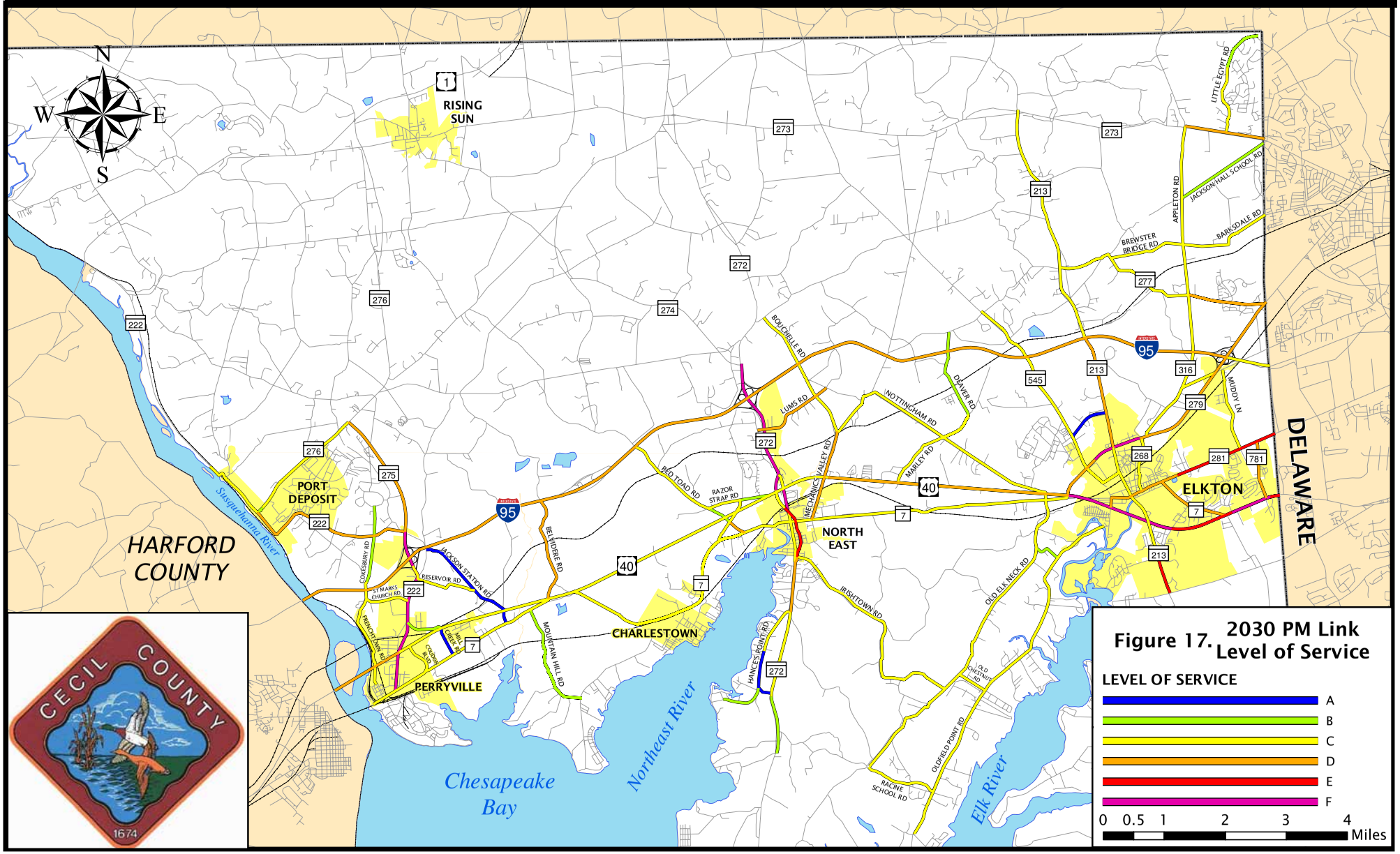

Belvidere Road volumes are expected to increase significantly due to industrial developments.

Travel demand forecasts were developed for the option of constructing an interchange along I-95. These forecasts were developed using the Maryland DOT model which was developed in cooperation with WILMAPCO. The forecasts were developed on an average daily traffic basis and for the AM and PM peak hours. The average daily traffic is shown is Figure 18 while the AM peak hour volumes are shown on Figure 19 and the PM peak hour volumes are shown on Figure 20. An interchange will cause traffic to increase significantly on roadways such as Belvidere Road and Red Toad Road.

Capacity analysis was conducted for the intersections and the Level of Service is displayed on Figure 21. With an interchange at Belvidere Road, the level of service is expected to improve at several intersections including:

- US 40/MD 222
- US 40/Red Toad Road
- US 40/Belvidere Road
- US 40/St. Mark's Church Road
- MD 222/Reservoir Road
- MD 222/I-95 interchange ramps
- MD 222/MD 275

Link LOS for the AM and PM peaks is displayed on Figures 22 and 23, respectively. The LOS along MD 222 is expected to improve from LOS F during the AM and PM peak to LOS D and E during the AM and PM peak, respectively.

Cecil County Road Improvement Strategic Plan

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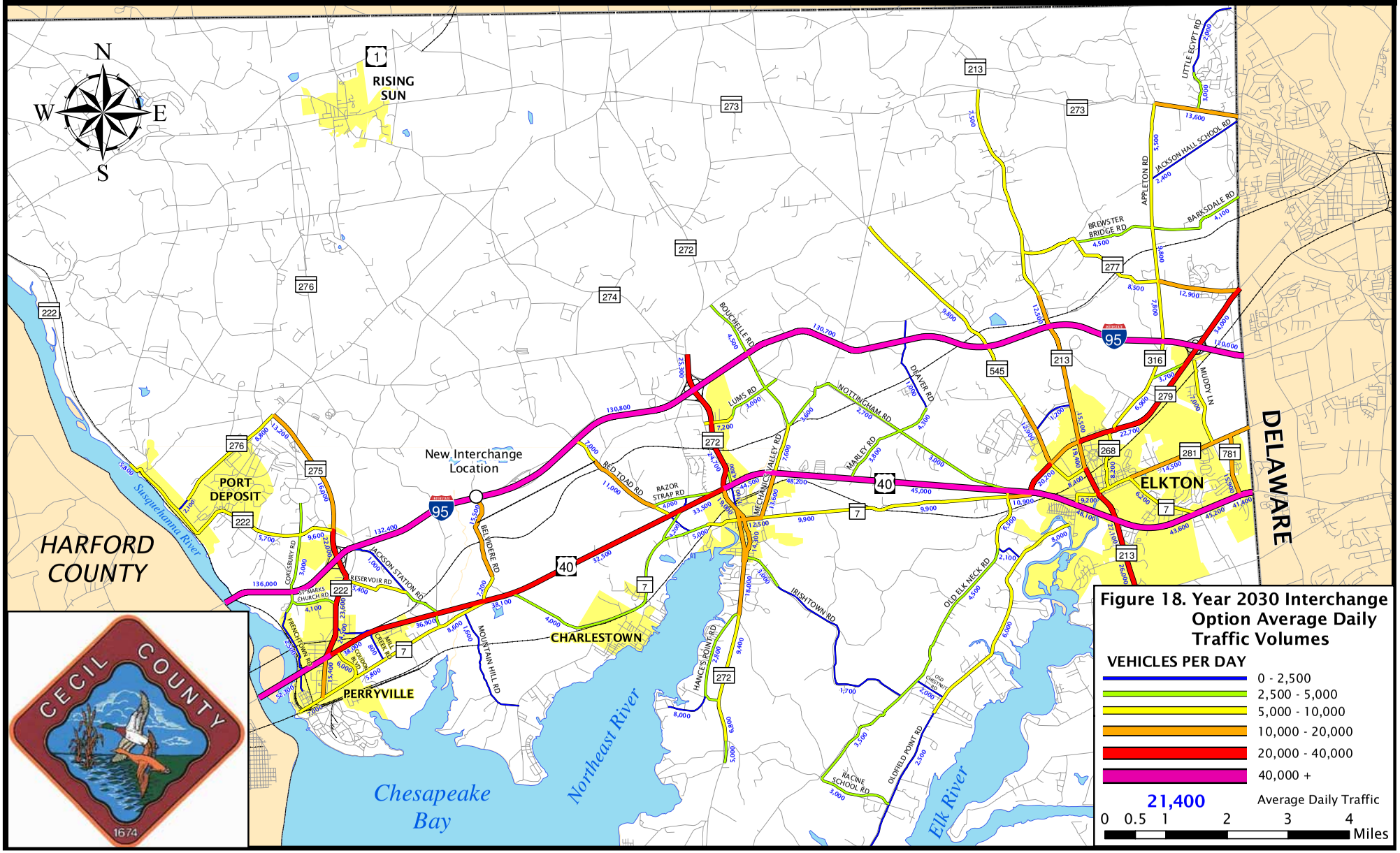

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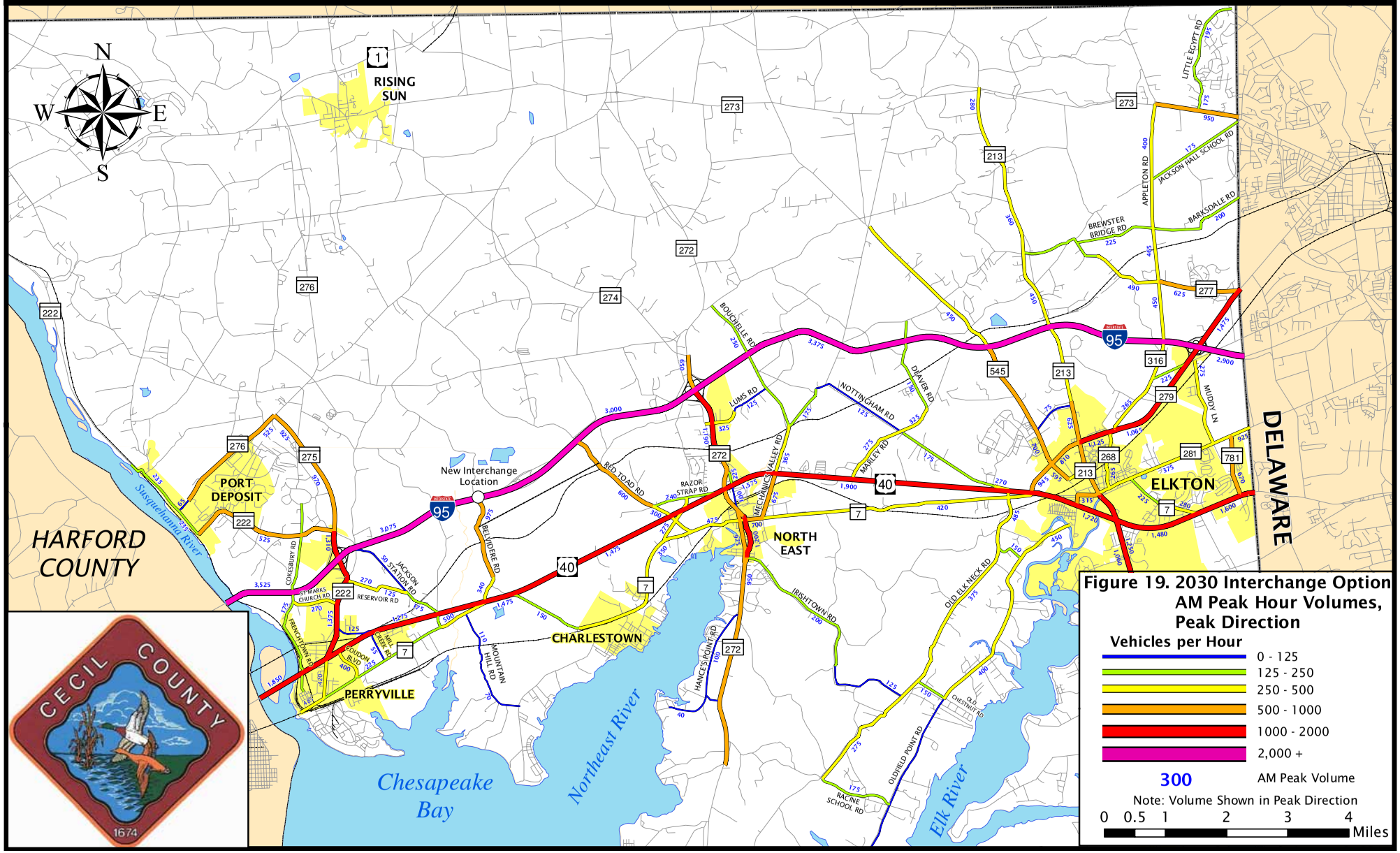

Figure 19. 2030 Interchange Option AM Peak Hour Volumes, Peak Direction

Vehicles per Hour

- 0 - 125
- 125 - 250
- 250 - 500
- 500 - 1000
- 1000 - 2000
- 2,000 +

300 AM Peak Volume

Note: Volume Shown in Peak Direction

0 0.5 1 2 3 4 Miles

Cecil County Road Improvement Strategic Plan

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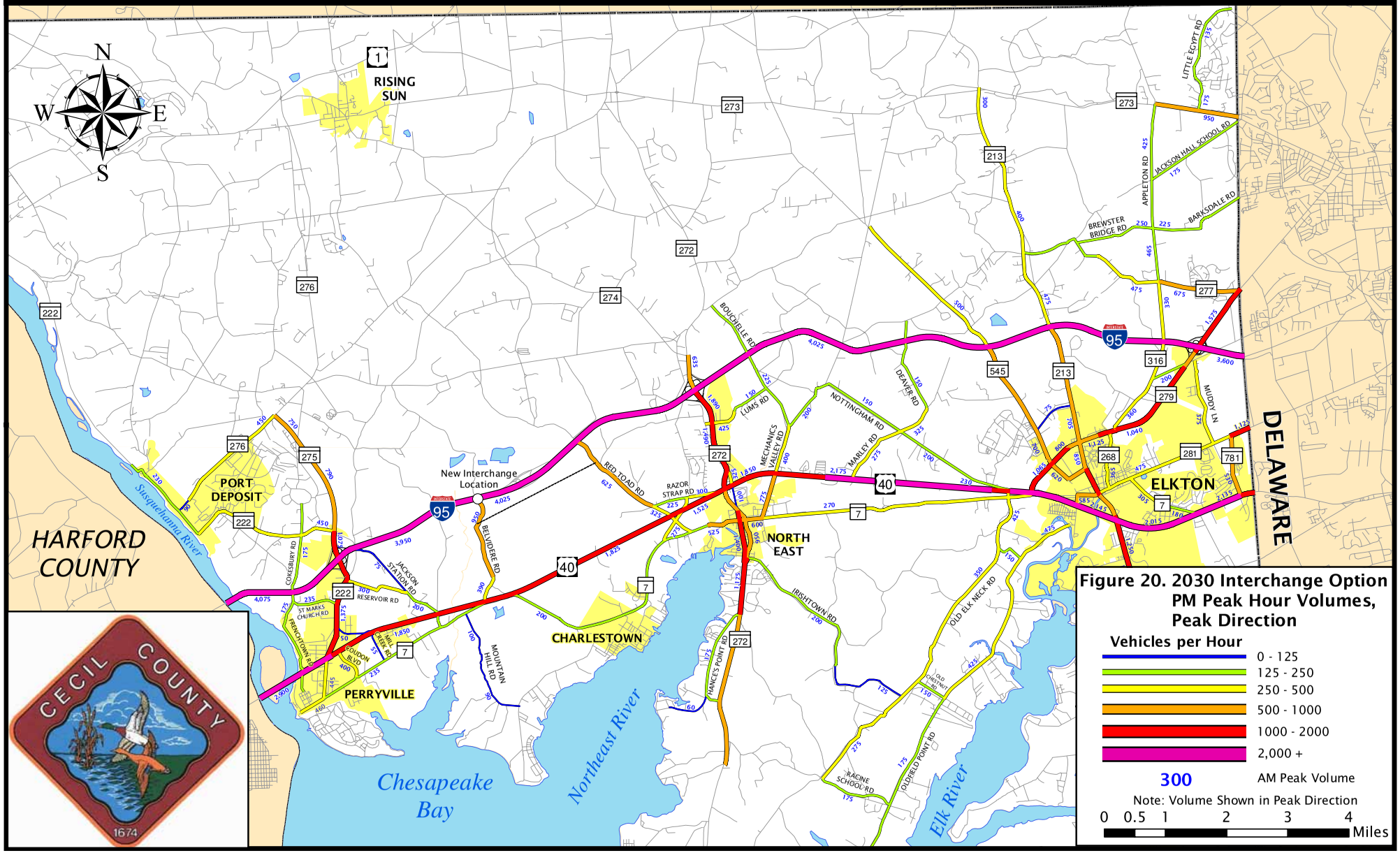

Figure 20. 2030 Interchange Option PM Peak Hour Volumes, Peak Direction

Vehicles per Hour

- 0 - 125
- 125 - 250
- 250 - 500
- 500 - 1000
- 1000 - 2000
- 2,000 +

300 AM Peak Volume

Note: Volume Shown in Peak Direction

0 0.5 1 2 3 4 Miles

Cecil County Road Improvement Strategic Plan

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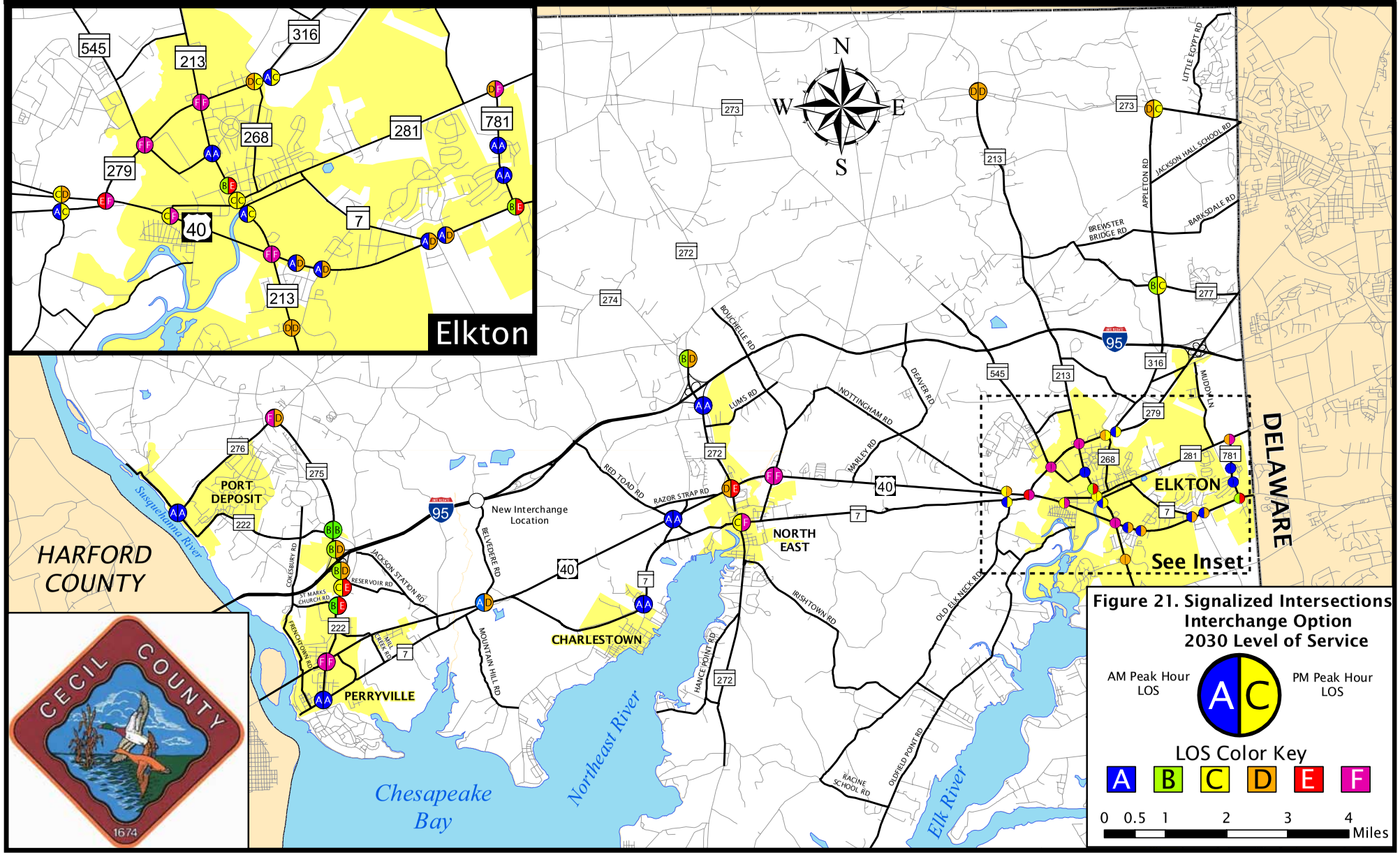

Figure 21. Signalized Intersections
Interchange Option
2030 Level of Service

Cecil County Road Improvement Strategic Plan

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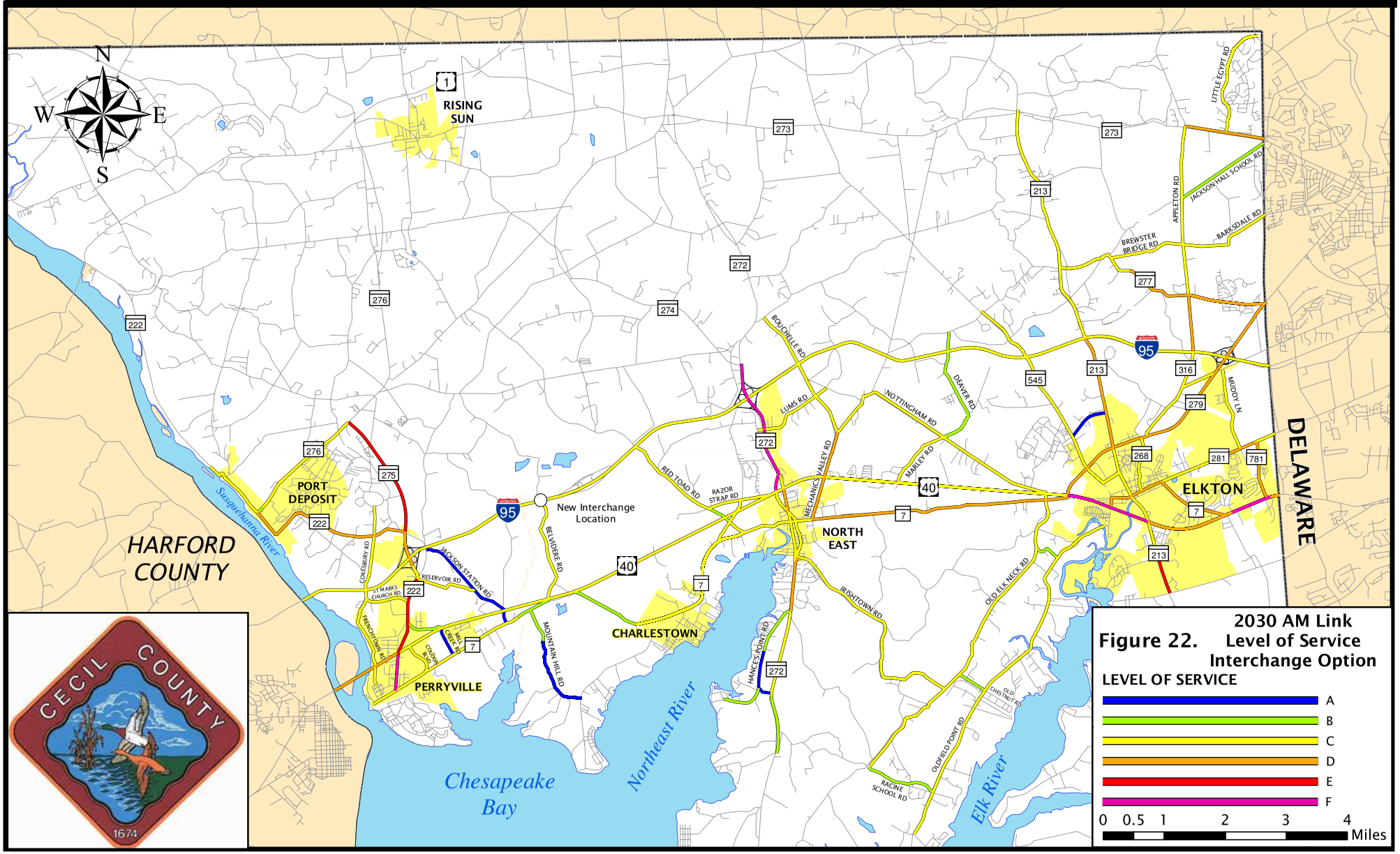

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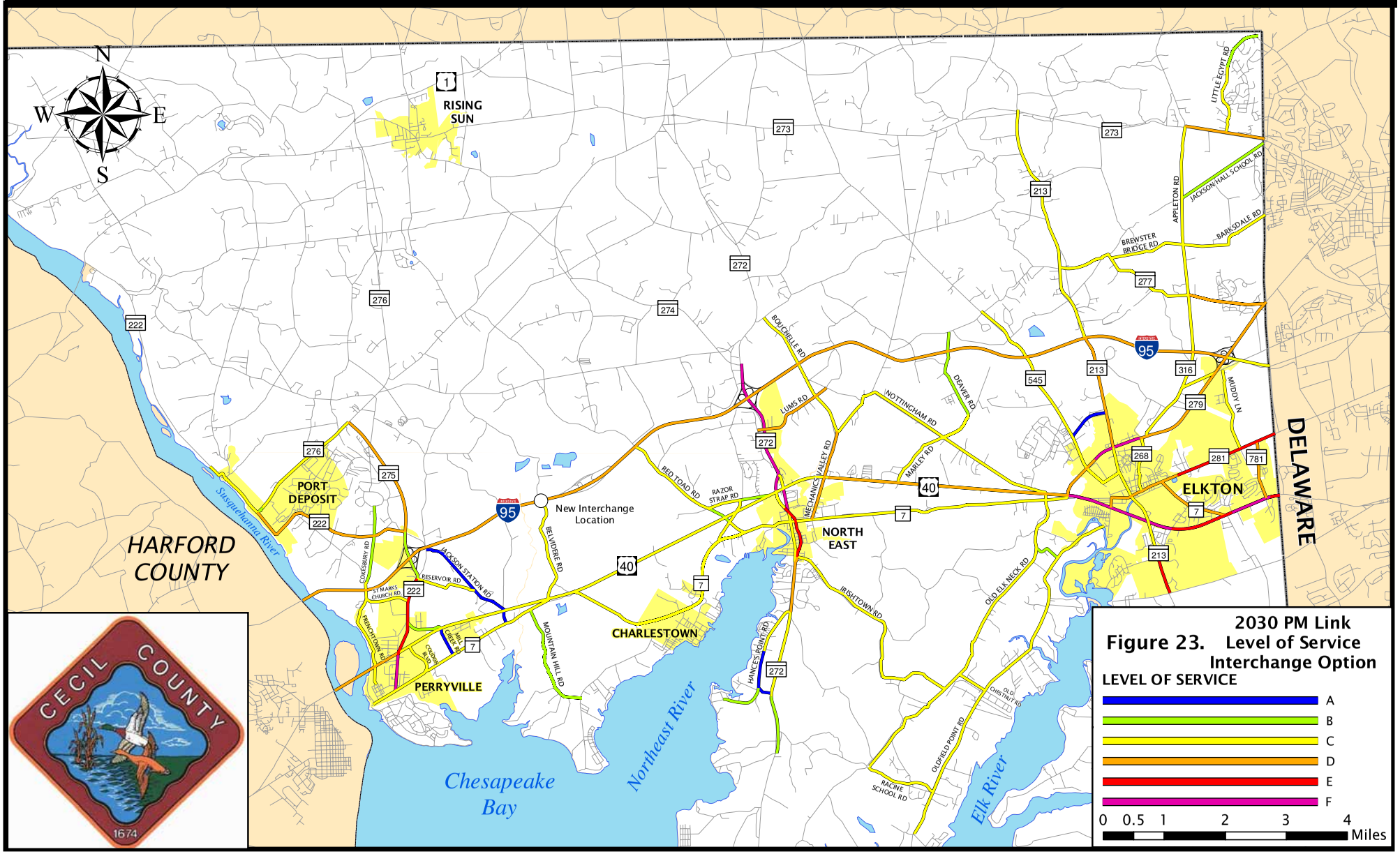

C. Roadway Improvements

Signing and pavement marking recommendations for county roadways were made based on the MUTCD and were provided as a separate report to Cecil County Department of Public Works. Countywide improvements including upgrades to signing and pavement markings should be implemented immediately. Several roadways lack advanced warning signs, stop bars, route signs, striping right turn lanes, and curve warning signs. Quick and inexpensive improvements such as these can help improve the safety and function of the roadways.

County Roadway Improvements

Several Cecil County roadways require Resurfacing, Restoration and Rehabilitation (RRR) projects to improve roadway safety and drivers' expectations. Projects are needed to improve the following countywide roadway deficiencies:

- Narrow roadways,
- Lack of shoulders,
- Vertical and horizontal curves requiring the driver to slow from the posted speed limit,
- Variances in roadway widths, especially at bridges and underpasses,

Based on Special Report 214 "Designing Safer Roads" by the Transportation Research Board (TRB), the FHWA recommends at a minimum all RRR projects have roadways with over 750 ADT upgraded to 22 feet wide with an 18 inch to 2' foot stabilized shoulder along all collector roadways where possible. The stabilized shoulder could be crusher run, tar & chip or paved. Cecil county roadways were evaluated to determine the priority for improvements. The roadways were grouped into three priority categories **1 High Priority, 2 Medium Priority, and 3 Low Priority.** The priority categorization was based on roadway function, average daily traffic, accident history, truck traffic, and the geometric condition of the roadway. Roads recommended for improvement and cost estimates excluding right-of-way and bridge improvements are also shown on Table 5 below:

Table 5. Cecil County Roadway Upgrades and Cost Estimates

Location	Priority	Cost ($1000)
Appleton Road	1	$1,200
Barksdale Road	1	$700
Cokesbury Road	1	$575
Jackson Hall School Road	1	$700
Lums Road*	1	$1,250
Old Elk Neck Road	1	$800
Oldfield Point Road*	1	$4,262
Racine School Road*	1	$1,110

Location	Priority	Cost ($1000)
Razor Strap Road*	1	$2,152
Red Toad Road*	1	$700
Reservoir Road	1	$450
St. Mark's Church Road	1	$200
Bouchelle Road	2	$1,000
Little Egypt Road	2	$800
Marley Road	2	$500
Mechanics Valley Road	2	$700
Wells Camp Road	2	$400
Brewster Bridge Road	3	$550
Cedar Corner Road	3	$250
Deaver Road	3	$1,000
Frenchtown Road	3	$200
Irishtown Road	3	$1,800
Jackson Station Road	3	$750
Mill Creek Road	3	$250
Mountain Hill Road	3	$1,800

*From County Transportation Improvement Program Cost Estimate

The TRB Special Report 214 states that although the FHWA emphasizes lane and shoulder width improvements, the report alternatively recommends alignment improvements, bridge widening, improved sight distance, improved roadside characteristics, and intersection improvements stating it could have a greater positive impact. The TRB Special Report 214 recommends that roadways with traffic volumes greater than 750 vehicles per day, reconstruction of horizontal curves can be more safety cost-effective than lane and shoulder widening and can reduce vehicle operating costs and travel time. The TRB Special Report 214 recommends improvements to horizontal and vertical curves where the design speed of an existing curve is more than 15 MPH below the running speed with an ADT greater than 750 vehicles per day and the superelevation be increased where design speeds are below the running speed. The ability to make improvements depends on the fact that Cecil County has only the prescriptive right of maintenance on most of the road sections discussed and ROW acquisition will be a limiting factor for many of these upgrades. In addition to the roadway upgrades listed in the table above, specific roadway improvements to county roads are also recommended. In general, all one lane bridges or bridges less than 18 feet wide should be improved and should be considered a high priority. The roadway improvements were grouped into three priority categories – **1 High Priority, 2 Medium Priority, and 3 Low Priority**. Those projects are listed below in order of importance along with priority level and estimated unit cost of improvement excluding right of ways is shown below followed by a detailed description of selected roadway projects. These projects are also displayed on Figure 24.

Cecil County Road Improvements Strategic Plan

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Specific Roadway Improvements

	Description	Priority	Cost
	Upgrade Bridges:		
A	Appleton Road Bridge over CSX CE109*	1	$3,035,000
B	Nottingham Road Bridge over CSX CE044*	1	$3,550,000
C	Razor Strap Road Bridge CE072*	1	$910,000
D	Deaver Road over CSX CE098*	1	$880,000
E	Mechanics Valley Road Bridge over CSX CE101*	1	$925,000
F	Barksdale Road Bridge over West Branch of Christina CE067*	1	$375,000
	Roadway Improvements:		
G	Convert Cedar Corner Road to one way for approximately 500 feet north of US 40 and provide turnaround.	1	$30,000
H	Provide a left turn lane on eastbound MD 281 @ Muddy Lane	1	$200,000
I	Provide additional turn lanes at the MD 7@ Mechanics Valley Road intersection on MD 7 eastbound and Mechanics Valley Road southbound. Study the possibility of realigning with Cemetery Road	1	$300,000
J	Realign the Mechanics Valley Road/Bouchelle Road intersection	1	$300,000
K	Provide intersection improvements at Red Toad Road @ Principio Road*	1	$325,000
L	Provide intersection improvements at the Marley Road/Nottingham Road intersection	3	$300,000
M	Realign the Jackson Station Road/Winch Road intersection	3	$500,000
N	Realign Old Elk Neck Road near Crestwood Drive	3	$350,000
O	Realign the Nottingham Road @ Union Church Road intersection	3	$160,000
P	Realign Jackson Hall School Road @ Appleton Road	3	$300,000
Q	Realign Belle Hill Road @ Muddy Lane to make Muddy Lane the through movement	3	$300,000
R	Provide right turn lanes from US 40 to Mill Creek, Red Toad, Jackson Station Road and Cedar Corner Road and all other county roadways along US 40	3	$25,000 per location
S	Realign the Blythedale/Reservoir Road intersection	3	$350,000
T	Provide additional northbound lane on MD 781 at the MD 281 intersection	3	$200,000

Roadway Upgrades

Location	Priority	Cost ($1000)
Appleton Road	1	$1,200
Barksdale Road	1	$700
Cokesbury Road	1	$575
Jackson Hall School Road	1	$700
Lums Road*	1	$1,250
Old Elk Neck Road	1	$800
Oldfield Point Road*	1	$4,180
Racine School Road*	1	$1,100
Razor Strap Road*	1	$1,715
Red Toad Road*	1	$700
Reservoir Road	1	$450
St. Mark's Church Road	1	$200
Bouchelle Road	2	$1,000
Little Egypt Road	2	$800
Marley Road	2	$500
Mechanics Valley Road	2	$700
Wells Camp Road	2	$400
Brewster Bridge Road	3	$550
Cedar Corner Road	3	$250
Deaver Road	3	$1,000
Frenchtown Road	3	$200
Irishtown Road	3	$1,800
Jackson Station Road	3	$750
Mill Creek Road	3	$250
Mountain Hill Road	3	$1,800

*From County Transportation Improvement Program Cost Estimate

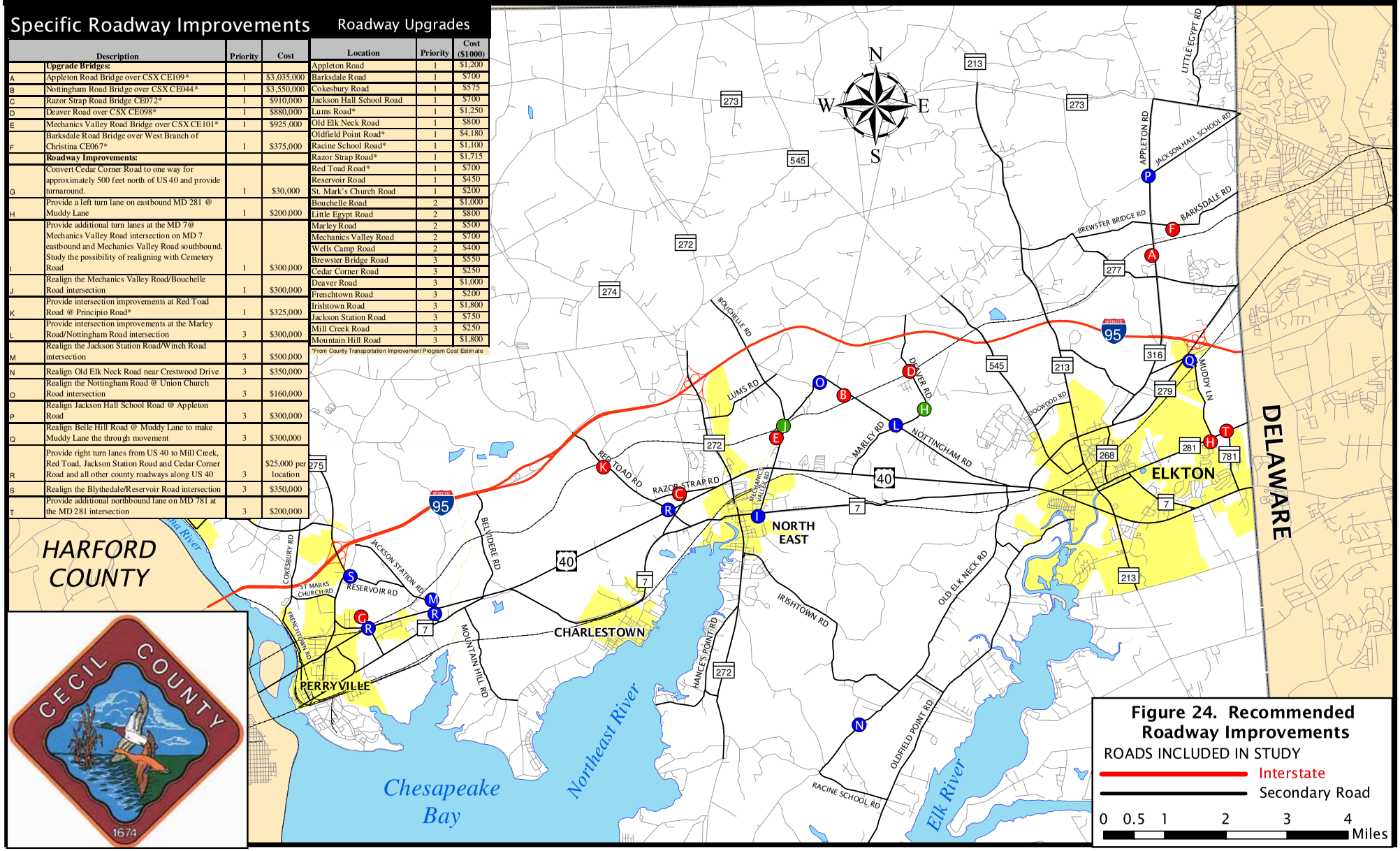

Table 6. Specific Roadway Improvement Projects

Description	Priority	Cost
Upgrade Bridges:		
Appleton Road Bridge over CSX CE109*	1	$2,450,000
Nottingham Road Bridge over CSX CE044*	1	$3,050,000
Razor Strap Road Bridge CE072*	1	$1,485,000
Deaver Road over CSX CE098*	1	$880,000
Mechanics Valley Road Bridge over CSX CE101*	1	$925,000
Mechanics Valley Road Bridge over CSX CE042*	1	$3,553,000
Barksdale Road Bridge over West Branch of Christina CE067*	1	$400,000
Red Toad Road over CSX CE040*	1	$3,040,000
Roadway Improvements:		
Convert Cedar Corner Road to one way for approximately 500 feet north of US 40 and provide turnaround.	1	$30,000
Provide a left turn lane on eastbound MD 281 @ Muddy Lane	1	$200,000
Provide additional turn lanes at the MD 7@ Mechanics Valley Road intersection on MD 7 eastbound and Mechanics Valley Road southbound. Study the possibility of realigning with Cemetery Road	1	$300,000
Realign the Mechanics Valley Road/Bouchelle Road intersection	1	$300,000
Provide intersection improvements at Red Toad Road @ Principio Road*	1	$325,000
Provide intersection improvements at the Marley Road/Nottingham Road intersection	3	$300,000
Realign the Jackson Station Road/Winch Road intersection	3	$500,000
Realign Old Elk Neck Road @ Crestwood Drive Intersection Improvements*	3	$1,300,000
Realign the Nottingham Road @ Union Church Road intersection	3	$160,000
Realign Jackson Hall School Road @ Appleton Road	3	$300,000
Realign Belle Hill Road @ Muddy Lane to make Muddy Lane the through movement	3	$300,000
Realign the Blythedale/Reservoir Road intersection	3	$350,000
Provide right turn lanes from US 40 to Mill Creek, Red Toad, Jackson Station Road and Cedar Corner Road and all other county roadways along US 40	3	$25,000 each
Provide additional northbound lane on MD 781 at the MD 281 intersection	3	$200,000

*From County Transportation Improvement Program Cost Estimate

Barksdale Road is only one lane here across the bridge.

Convert Cedar Corner Road to One Way

Cedar Corner Road just north of US 40 is a single lane underpass with the CSX railroad tracks overhead. This single lane continues for a four hundred feet and then turns into an almost 90 degree curve before transitioning to a two lane roadway. Motorist heading southbound on Cedar Corner Road have very limited sight distance as they approach the single lane section. One option to reduce the possibility of accidents in this section is to have the initial portion of the roadway near US 40 be one-way. If this option is selected, community input should be used to determine a preference for the one-way direction. A second option would be to relocate the roadway to the north allowing for motorists to be tangent when the reduction from two lanes to one lane occurs due to the underpass.

Realign Intersection

Various county road intersections are in need of geometric improvements due to the angle of approach of a particular movement. It is preferred to have all legs of the intersection meet at 90 degree angles. This will assist with safety by providing better sight distance. The intersections are:

- Hances Point Road @ Plum Creek Road
- Mechanics Valley Road @ Bouchelle Road
- Marley Road @ Deaver Road
- Jackson Station Road @ Winch Road
- Nottingham Road @ Union Church Road
- Razor Strap @ Red Toad Road

Various intersections could use geometric improvements to better facilitate traffic flow. These improvements will provide for a standardization of the intersection.

Recommended intersections include Jackson Hall School Road/Appleton Road and Belle Hill Road/Muddy Lane.

The Jackson Hall School Road eastbound and westbound approaches to Appleton Road are offset with the west leg approximately 200 feet south of the east leg. Northbound Appleton Road motorist making a left turn must wait for a gap in traffic from both southbound Appleton Road and traffic turning left from westbound Jackson Hall School Road. A standard four legged intersection would better serve traffic operations at this location.

Belle Hill Road ends to the east at Muddy Lane and all eastbound traffic on Belle Hill Road continues onto Muddy Lane and vice versa. It would be preferable to realign the intersection to meet the traffic patterns.

The Blythedale Road/Reservoir Road intersection is in relatively close proximity to the MD 222/Reservoir Road intersection. This leads to an unusual pattern for motorist.

Construct Right Turn Lanes on US 40

Most intersections along US 40 in Cecil County have both right and left turn lanes to allow for deceleration of vehicles to take place outside the through lanes. The construction of right turn lanes where there are none will assist in reducing the speed differential between motorists which is a leading cause of accidents. Shoulders are presently provided at these locations but often guardrails are located next to the shoulder. The following locations are in need of right turn lanes: Mill Creek Road, Jackson Station Road, Cedar Corner Road, and Red Toad Road.

There is no westbound right turn lane on US 40 to Cedar Corner Road.

The Marley Road/Deaver Road intersection (above) should be realigned. The Belle Hill Road/Muddy Lane intersection should be realigned so the northbound Muddy Lane movement does not have to yield to the westbound Belle Hill Road Movement. Belle Hill Road dead ends just 500 feet east of the intersection and produces almost no traffic.

Signing and Marking

Many county roadways over the next 25 years will see a significant increase in traffic volumes. These roadways with formerly little to no traffic on them will begin to see more drivers who are unfamiliar with the road. These motorist need to be alerted about the various curves, speed limits and geometrics that they will encounter. Additional warning regulatory and guide signs should be provided along these roadways. Pavement markings should provide supplemental driver information. All signing and marking should be accomplished in accordance with MUTCD standards. Improvements for the study area roadways were submitted in a separate report.

Construct Turn Lanes on County Roads

The addition of turn lanes provide for both an improvement in safety and capacity at an intersection. The following locations have been identified for additional turn lanes:

- MD 7 @ Mechanics Valley Road (study realigning with Cemetery Road)
- MD 281 @ Muddy Lane (evaluating remarking shoulder)

Minor Geometric Improvements at Intersections

Minor intersection improvements can assist in standardizing an intersection to meet driver expectancy. Often locations have very wide approaches often leaving drivers often confused of where they should turn or stop. Narrowing approaches or striping can better define approaches. Locations identified for such improvements include:

- Razor Strap Road @ Red Toad Road
- Little Egypt Road @ New London Road

Provide Improvements to Old Elk Neck Road

Old Elk Neck Road is one of the longest roads within Cecil County. An increase in residential development has occurred along roadways that feed Old Elk Neck Road. Old Elk Neck Road has numerous horizontal and vertical curves. In order to improve safety and operations along the road two locations were identified for improvements:

- Realign Old Elk Neck Road near Crestwood Drive
- Old Elk Neck Road/Racine School Road intersection upgrades to improve sight distance from Racine School Road

D. Connective Roadway Network

A connected road network provides numerous alternate routes for trips between the same origins and destinations and a connected roadway will benefit Cecil County by

reducing the number of vehicle trips and vehicle miles traveled, and by improving accessibility. A poorly connected roadway offers few, if any, alternate routes between the same trip origins and destinations and traffic gravitates towards expressways, and arterials. This allows motorists the option of choosing different routes and thereby reducing trips on one single route.

Cecil County's roadway network should be developed so that there is connectivity on county roadways paralleling major state roadways. Many county roadways are disconnected or are closed due to the bridges countywide. A high degree of connectivity along the county roads to the state roadways vastly improves a road network's performance and traffic throughput. The existing roadway forces short trips of one or two miles onto state roadways. It should be possible for trips of this sort to be made using county or other secondary roads.

The recommended roadway connectivity network for Cecil County is displayed on Figure 25. The roads in the connectivity network should be improved so the roadway is at least 22 feet wide and there should be a 2 foot shoulder where possible. All one lane bridges should be widened and any significant horizontal and vertical curves should be improved. All roadways in the connectivity plan requiring improvements were listed as a top improvement priority in the "Upgrade Existing Roadways" recommendations section. The recommended connected roadway network around Perryville, which would provide alternative routes to MD 222 and MD 275, includes Cokesbury Road, Frenchtown Road, Reservoir Road, and Jackson Station Road. In the area between MD 222 and MD 272 upgrades should be provided for Belvidere Road, Red Toad Road, and Bethel Church Road. A bypass around Elkton could be provided by linking Marley Road, Zeitler Road, Deaver Road and Ricketts Mill Road.

Better access to areas on Old Elk Neck Road could be provided by improving this roadway. Improving countywide connectivity will require the construction of new roadways to link existing roadway. The following roadway connections are recommended:

Provide a New Roadway Connection between MD 781 and MD 316

This proposed connection would provide a northern route around the Town of Elkton. The roadway would commence at the intersection of MD 281 and MD 781. The roadway would traverse in a northeasterly direction tying into Muddy Lane, passing over the railroad tracks to form an intersection with MD 279. From there it would tie into Ricketts Mill Road. This will assist in reducing traffic through the Town of Elkton, provides access to I-95, and reduce traffic on the narrow underpass on Muddy Lane. The key concern with this proposed improvement is the railroad crossing.

Provide a Roadway Connection between Ricketts Mill Road and Zeitler Road

This connection will provide a tie-in of MD 213 and MD 545 south of I-95 and north of the Town of Elkton. It would assist in relieving traffic along MD 279. This

Cecil County Road Improvement Strategic Plan

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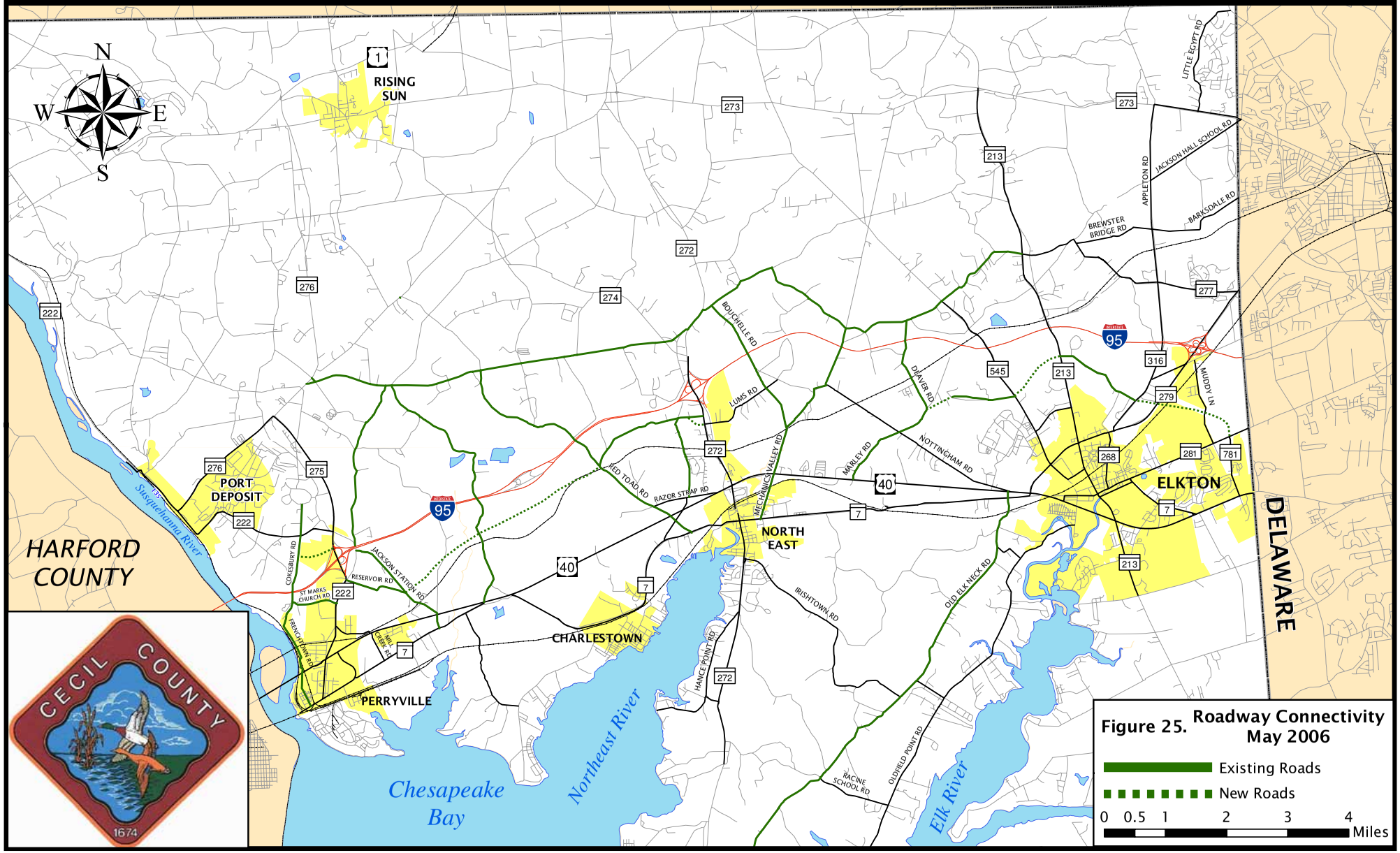


Figure 25. Roadway Connectivity May 2006

Existing Roads

New Roads

0 0.5 1 2 3 4 Miles

roadway would provide access to the Villages at Heron Lake and alternative access to the Triumph Industrial Park.

Study Tying in Lums Road to Bethel Church Road

Possible future development is proposed in the area between Belvidere Road and Red Toad Road. The access to these roadways is very limited and today, motorists use MD 222 and MD 272 to US 40 to access the area. Lums Road serves the Northeast Commerce Center to the west of MD 272 and is a major intersection along MD 272. A direct connection from Lums Road and the upgrade of Bethel Church Road will provide a means of access to the Red Toad Road area and reduce trips along US 40.

Provide an Access Roadway between Red Toad Rd and Belvidere Road and Continuing on to Jackson Station Road

The proposed portion of the roadway between Belvidere Road and Red Toad Road will provide access to the Stewart property and the proposed associated development. The roadway could also be used if a new interchange was developed along I-95. This portion of the roadway should be constructed as part of the proposed land development. The portion of the roadway from Belvidere Road to Jackson Station Road will provide a parallel route to US for alternative access to I-95. This will assist in reducing trips along MD 222 which is anticipated to experience congestion.

Provide a Roadway Connection between Cokesbury Road and MD 222

Cokesbury Road provides alternative access to the Town of Perryville and other destinations such as the Veterans Administration Building. MD 222 is projected to operate over capacity in the future. In order to reduce traffic along MD 222 a tie in could occur from the I-95 southbound ramps to Cokesbury Road. This could occur through the proposed development on the west side of the interchange.

E. Additional Projects

Study the Relocation of the Toll Booths along I-95

The Maryland Transportation Authority presently collects tolls in the northbound direction of I-95 at the Susquehanna River (Tydings Bridge) and at US 40 (Hatem Bridge). Motorists are offered a reduced monthly toll rate on the Hatem Bridge versus the Tydings Bridge. This means that about 3,000 motorists driving northbound on I-95 exit at MD 155 in Harford County pass over the Hatem Bridge and then use MD 222 to return to I-95. This increases congestion along MD 222 and at the US 40/ MD 222 intersection. It has been proposed to relocate the toll booths to the Delaware line. The problem with this is the increased amount of traffic that would utilize local roads to bypass the toll and the loss of revenues to the Maryland Transportation Authority. A study should explore the feasibility of such an option.

The Tydings Memorial Bridge Toll is located in northwestern Cecil County

Widen MD 222 to Five Lanes between MD 275 and US 40

MD 222 is experiencing congestion with the US 40/ MD 222 intersection being one of the poorest operating intersections in the County. The increase in development which is anticipated to occur will cause other intersections such as St Mark's Church Road to fail plus the overall operation of MD 222 is expected to fail. A widening of MD 222 would assist in improving traffic operations. There would be impacts to the residents that live along this section of roadway.

Year 2030 forecast volumes along MD 222 are expected to make it one of the highest volume roadways in the county.

Widen MD 272 to Four Lanes from I-95 to South of US 40

Maryland 272 is presently programmed in the WILMAPCO long range plan for improvements. This is consistent with the future travel demand for the facility. The roadway is anticipated to fail by the design year, carrying approximately 30,000 vehicles per day. In order to meet the future demand the roadway should be widened to four lanes.

MD 213 Improvements

Maryland 213 is a primary north-south artery through Cecil County. The intersection of US 40/MD 213 is one of the two lowest operating intersections in Cecil County. Traffic volumes along MD 213 south of US 40 are approximately 20,000 vehicles per day. Future traffic volumes are anticipated to grow to approximately 27,000 vehicles per day. This increase means that average speeds will be reduced and delays will increase along the roadway. A four lane section should be incorporated along MD 213 from south of Frenchtown Road to north of US 40. Intersection improvements should be included at the intersection of MD 213 and US 40.

US 40 Streetscape

It is recommended a streetscape study be conducted for US 40 through Elkton and Perryville. Streetscape projects provide for a safe and beautiful public environment for the urban community. Instead of large paved areas that are unfriendly to pedestrians, streetscapes provide a visually appealing sense of place. Trees are planted to provide shade. Lighting is placed to meet the character of the community while providing elements of safety. Sidewalks are defined to encourage pedestrian usage. The creation of distinct parkway and suburban boulevard segments along US 40 plus the establishment of special “gateways” into Elkton and Perryville will help to identify and reinforce the land use transitions along US 40.

Intersection Capacity Improvements

The following intersections are expected to operate at LOS E or worse after recommended widening at MD 222 and MD 272 and will require intersection capacity improvements:

- US 40/Belvidere Road
- US 40/Red Toad Road
- US 40/Mechanics Valley Road
- US 40/MD 279
- US 40/MD 7 (Landing Lane)
- US 40/MD 213
- US 40/MD 781
- US 40/MD 222
- MD 275 @ MD 276

- MD 272 @ MD 7
- MD 781 @ MD 281
- MD 213 @ Main Street
- MD 213 @ MD 279
- MD 545 @ MD 279

F. Access Management

Access management is the process that manages access to land development while simultaneously preserving the flow of traffic on the surrounding public road system in terms of safety, capacity, and speed. Access management provides a systematic means of balancing access needs and mobility requirements of streets and roads.

The consolidation of existing driveways will improve safety by decreasing the number of access points and the potential for conflicts. Constructing curbs will decrease driver confusion and prohibit multiple motorists from accessing the main roadway from one entrance. Service roads provide ease of access to adjacent properties and eliminate the need for the motorist to travel on the main roadway.

The need for the development of an access management plan for Cecil County roadways was based on a review of factors such as roadway function, existing zoning, and traffic volumes. As a result, the roads selected for access management plan include US 40, MD 222, and MD 272.

An access management plan is recommended along US40

Access management plans were developed using a combination of field investigations, 2005 zoning plans, the Maryland State Highway Administration's US 40 access management plan and input from team members of this study. Access Management Plans were developed for two stages:

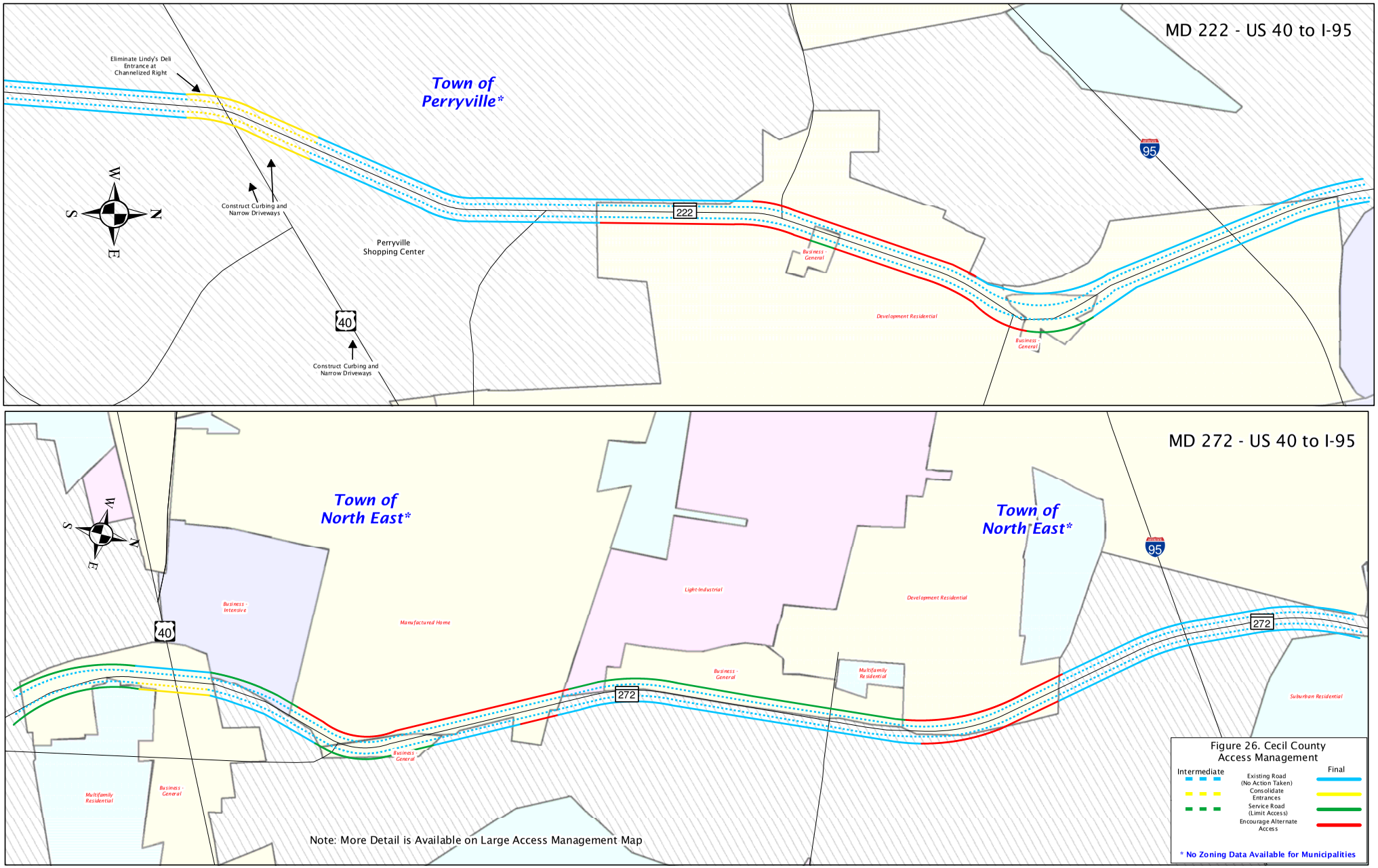
1. **Intermediate** – immediate consolidation of existing access points and driveways, construction of curbing, and narrowing of driveways.

2. **Final** – recommended guidelines for future developments. The final plan recommends no restrictions for areas zoned agricultural, consolidated entrances for existing businesses located in areas zoned commercial in incorporated areas, service roads for areas zoned industrial, and encouragement of alternate access for areas zoned residential.

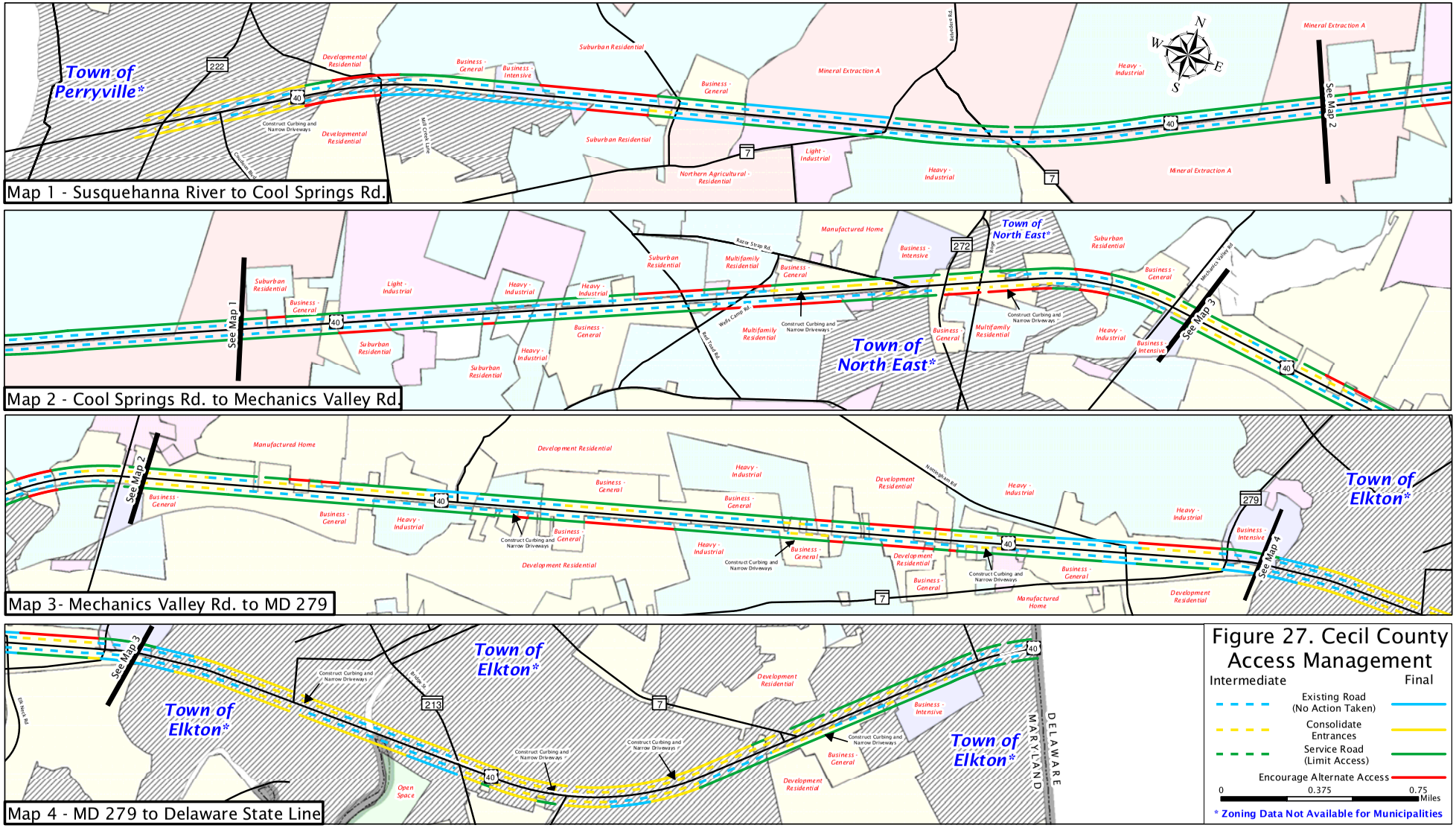
Successful implementation of the access management plan will require a two pronged approach: 1) Cecil County's responsibility will be to make roadway improvements consistent with the access management plan and 2) developers will be responsible for following the guidelines of the access management plan and will need to provide funding in order to comply with the plan or withhold from development until Cecil County has made any necessary upgrades.

The recommended access management plans for US 40, MD 222, and MD 272 are shown on Figures 26 and 27. Large scale versions of the access management plans with aerial photography were provided to Cecil County.

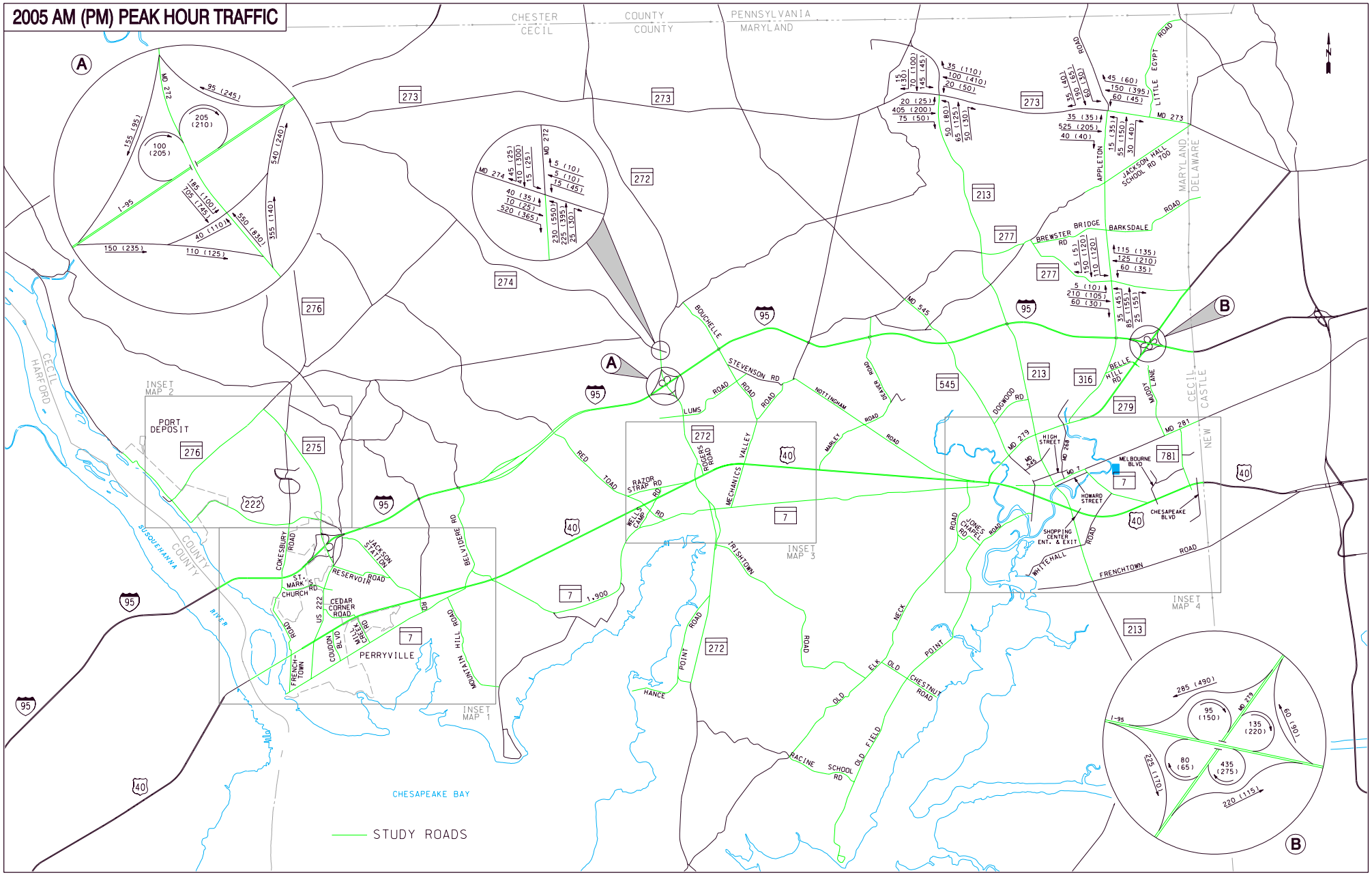
In the future, an access management plan should also be implemented for MD 279. Median openings should be limited to every 1,500 feet.


MD 222 - US 40 to I-95
Eliminate Lindy's Deli Entrance at Channelized Right
Town of Perryville*
Construct Curbing and Narrow Driveways
Perryville Shopping Center
222
40
Construct Curbing and Narrow Driveways
Business - General
Development Residential
Business - General
95
MD 272 - US 40 to I-95
Town of North East*
Town of North East*
Business - Intensive
Manufactured Home
Light-Industrial
Development Residential
40
272
Business - General
Multifamily Residential
Business - General
Multifamily Residential
Suburban Residential
95
Note: More Detail is Available on Large Access Management Map
Figure 26. Cecil County Access Management
Intermediate
Final
Existing Road (No Action Taken)
Consolidate Entrances
Service Road (Limit Access)
Encourage Alternate Access
* No Zoning Data Available for Municipalities

Note: More Detail is Available on Large Access Management Map



APPENDIX A


2005 AM (PM) PEAK HOUR TRAFFIC
CHESTER COUNTY
CECIL COUNTY
PENNSYLVANIA
MARYLAND
INSET MAP 1
INSET MAP 2
INSET MAP 3
INSET MAP 4
PERRYVILLE
PORT DEPOSIT
CHESAPEAKE BAY
SUSQUEHANNA RIVER
STUDY ROADS
MARYLAND
DELAWARE
CECIL COUNTY
HARFORD COUNTY
NEW CASTLE COUNTY
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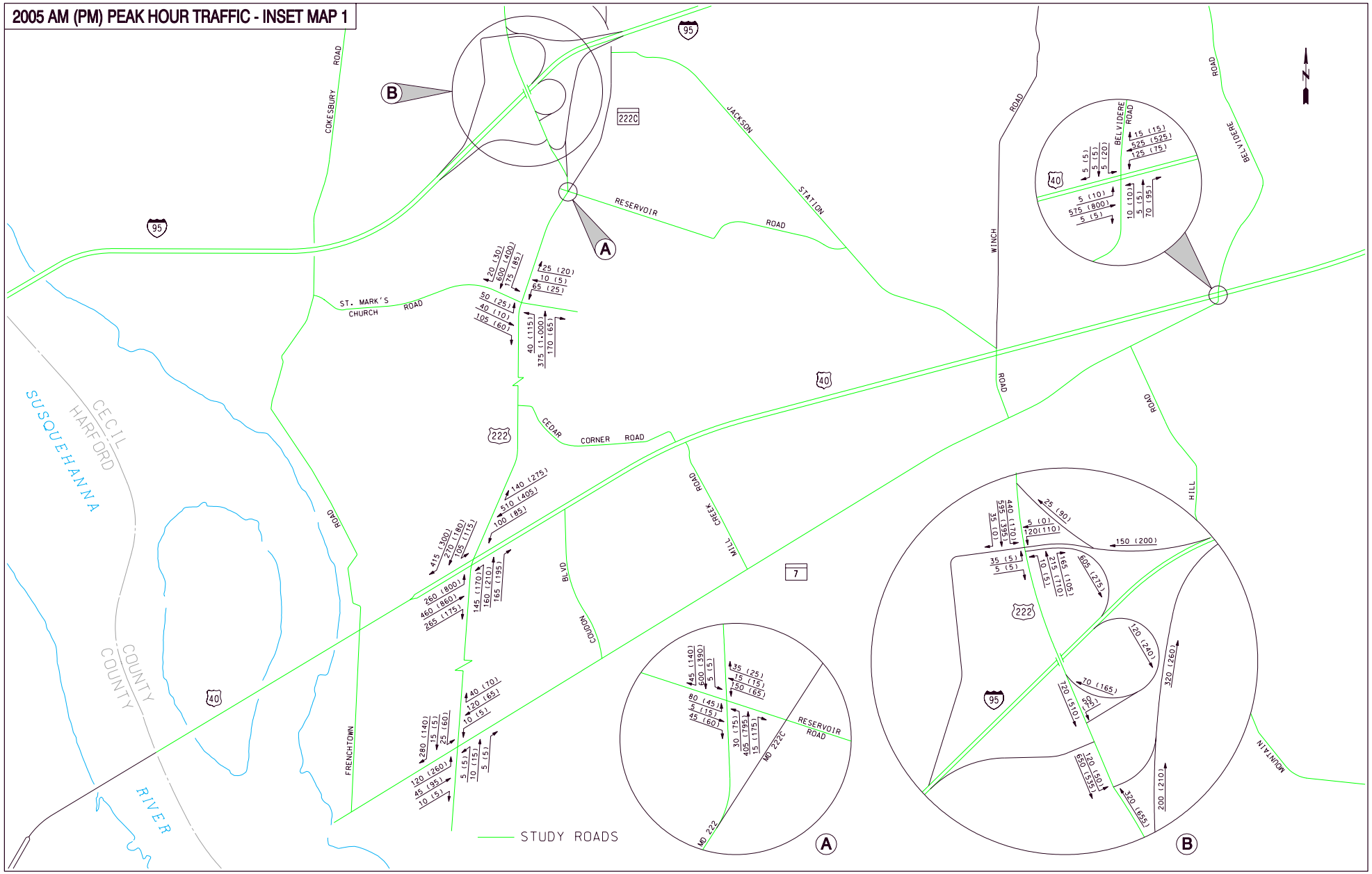
2/15/2007



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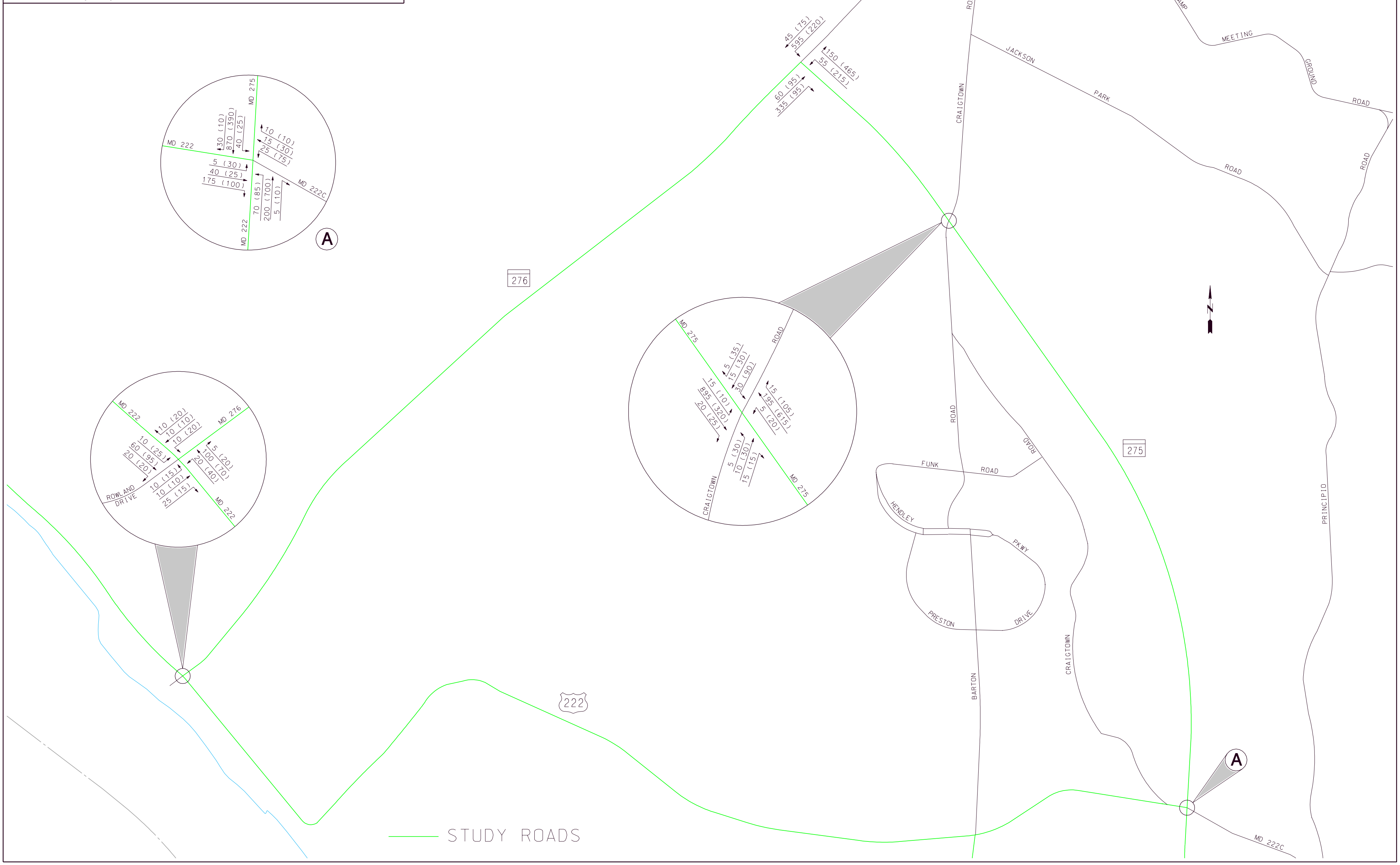
2/15/2007

2005 AM (PM) PEAK HOUR TRAFFIC - INSET MAP 2



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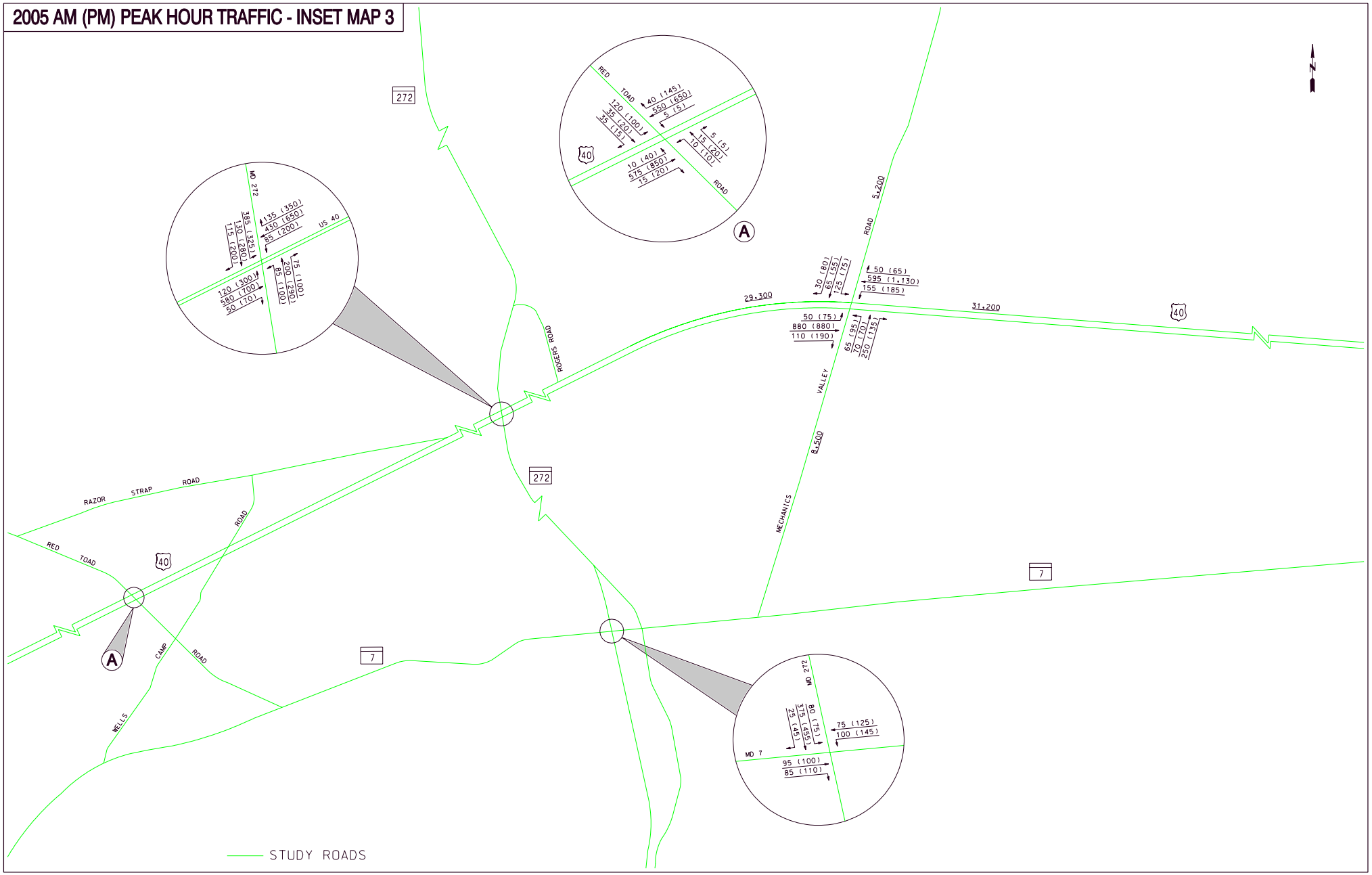
2/15/2007

2005 AM (PM) PEAK HOUR TRAFFIC - INSET MAP 3



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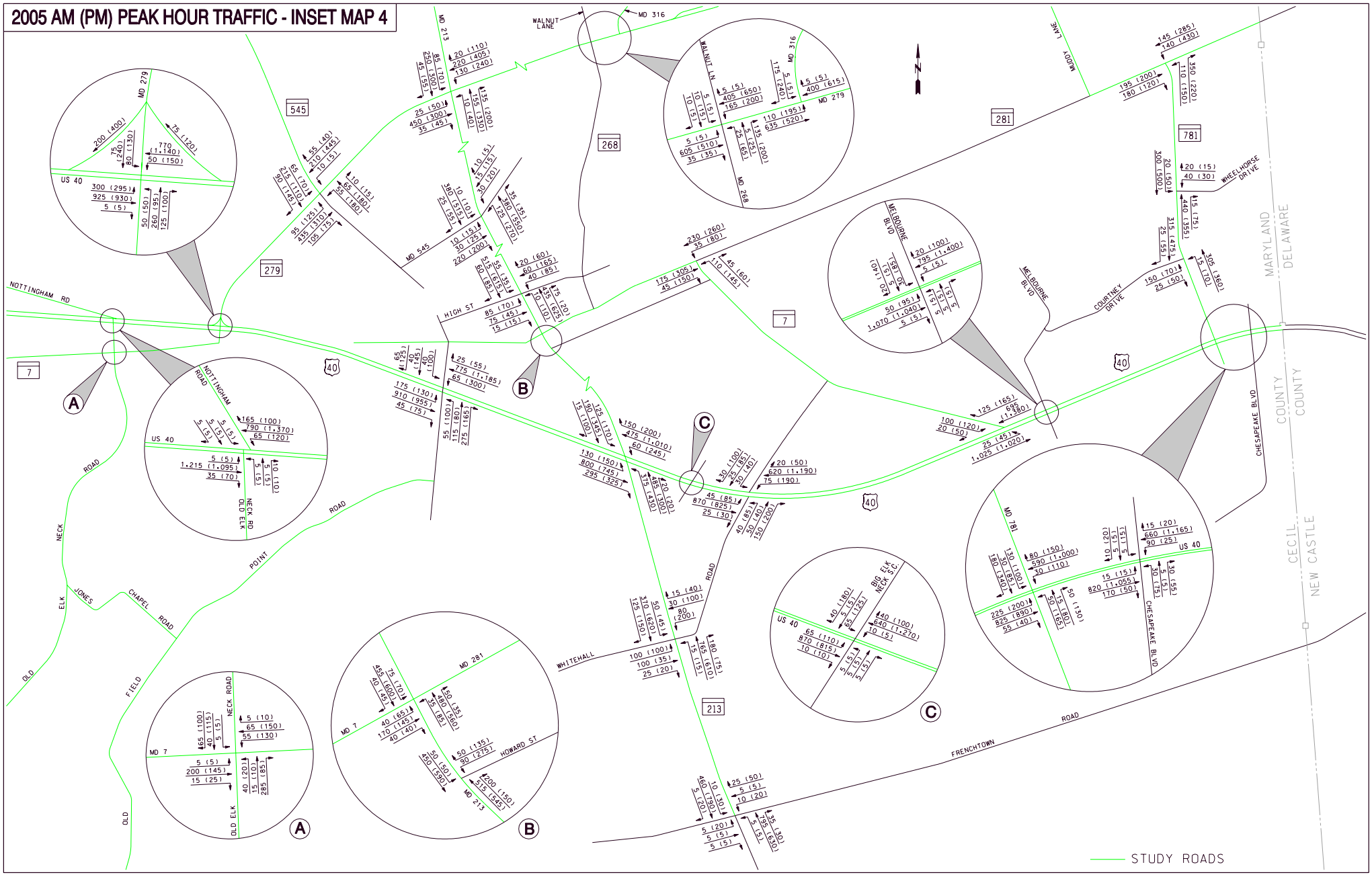
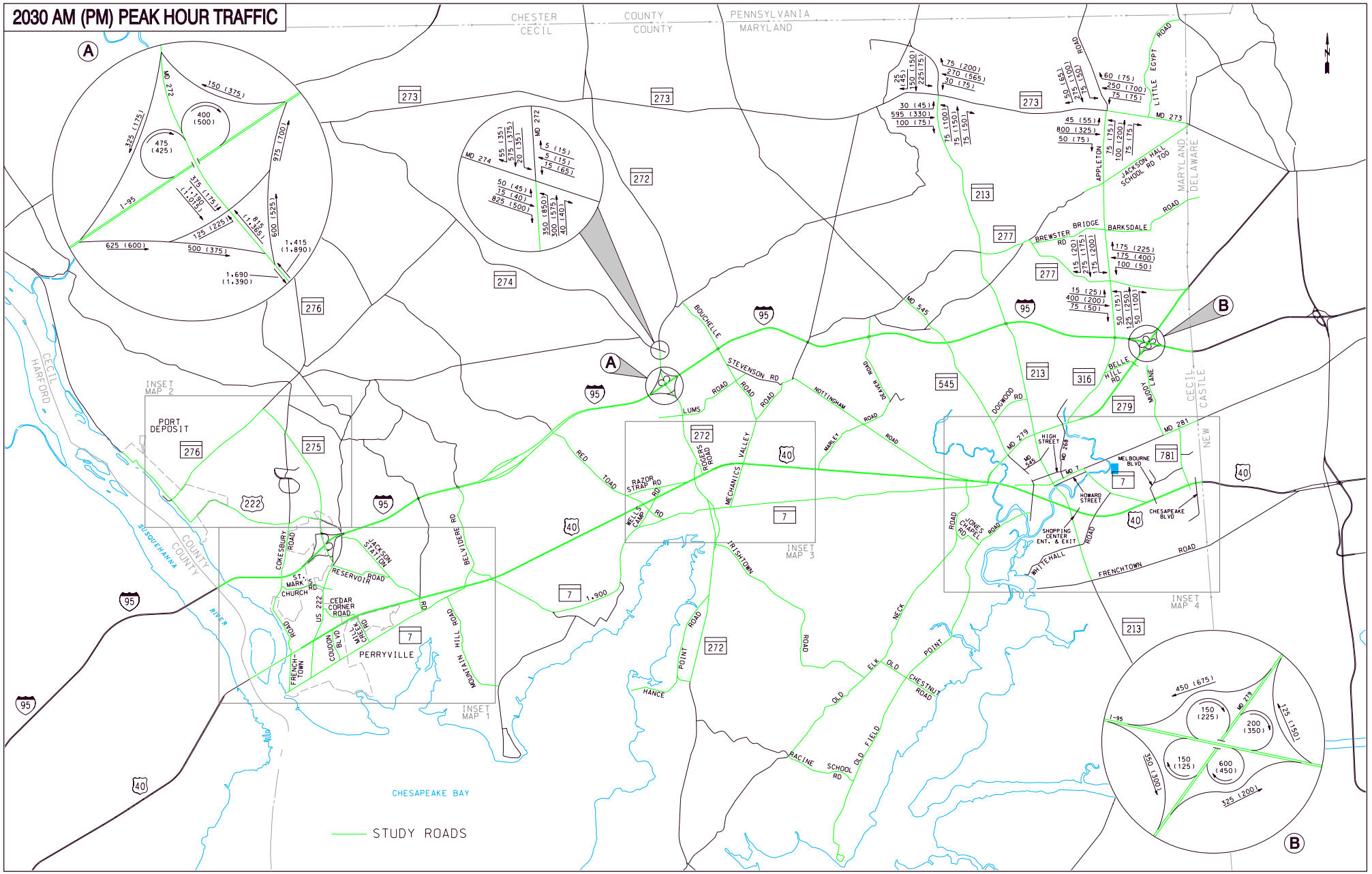
2005 AM (PM) PEAK HOUR TRAFFIC - INSET MAP 4




2030 AM (PM) PEAK HOUR TRAFFIC
CHESTER COUNTY
CECIL COUNTY
PENNSYLVANIA
MARYLAND
INSET MAP 1
INSET MAP 2
INSET MAP 3
INSET MAP 4
PORT DEPOSIT
PERRYVILLE
NEW CASTLE
CECIL COUNTY
HARFORD COUNTY
SUSQUEHANNA RIVER
CHESAPEAKE BAY
MARYLAND
DELAWARE
STUDY ROADS
I-95
MD 272
MD 274
MD 273
MD 545
MD 279
MD 281
MD 213
MD 7
MD 222
MD 276
MD 275
MD 277
MD 316
MD 781
US 40
US 222
US 1
US 213
BOUCHELLE ROAD
STEVENSON RD
LUMS ROAD
RED TOAD ROAD
RAZOR STRAP RD
WELLS CAMP RD
ROGERS ROAD
MECHANICS VALLEY ROAD
MARLEY ROAD
NOTTINGHAM ROAD
DOCKWOOD RD
BELLE HILL RD
MADDUX LANE
MELBOURNE BLVD
HOWARD STREET
CHESAPEAKE BLVD
SHOPPING CENTER ENT. & EXIT
CLONES CHAPEL ROAD
WHITEHALL ROAD
FRENCHTOWN ROAD
HIGH STREET
APPLETON ROAD
LITTLE EGYPT ROAD
JACKSON HALL SCHOOL RD
BARKSDALE BRIDGE ROAD
BREWSTER RD
COKESBURY ROAD
JACKSON STATION ROAD
RESERVOIR ROAD
ST. MARK CHURCH RD
CEDAR CORNER ROAD
US 222
COUDON BLVD
CECIL MANOR ROAD
FRENCH-TOWN ROAD
BELVIDERE RD
MONTAIN HILL ROAD
TRISHTOWN ROAD
HANCE POINT ROAD
OLD ELK NECK ROAD
OLD CHESTNUT POINT ROAD
RACINE SCHOOL RD
OLD FIELD POINT
A
B
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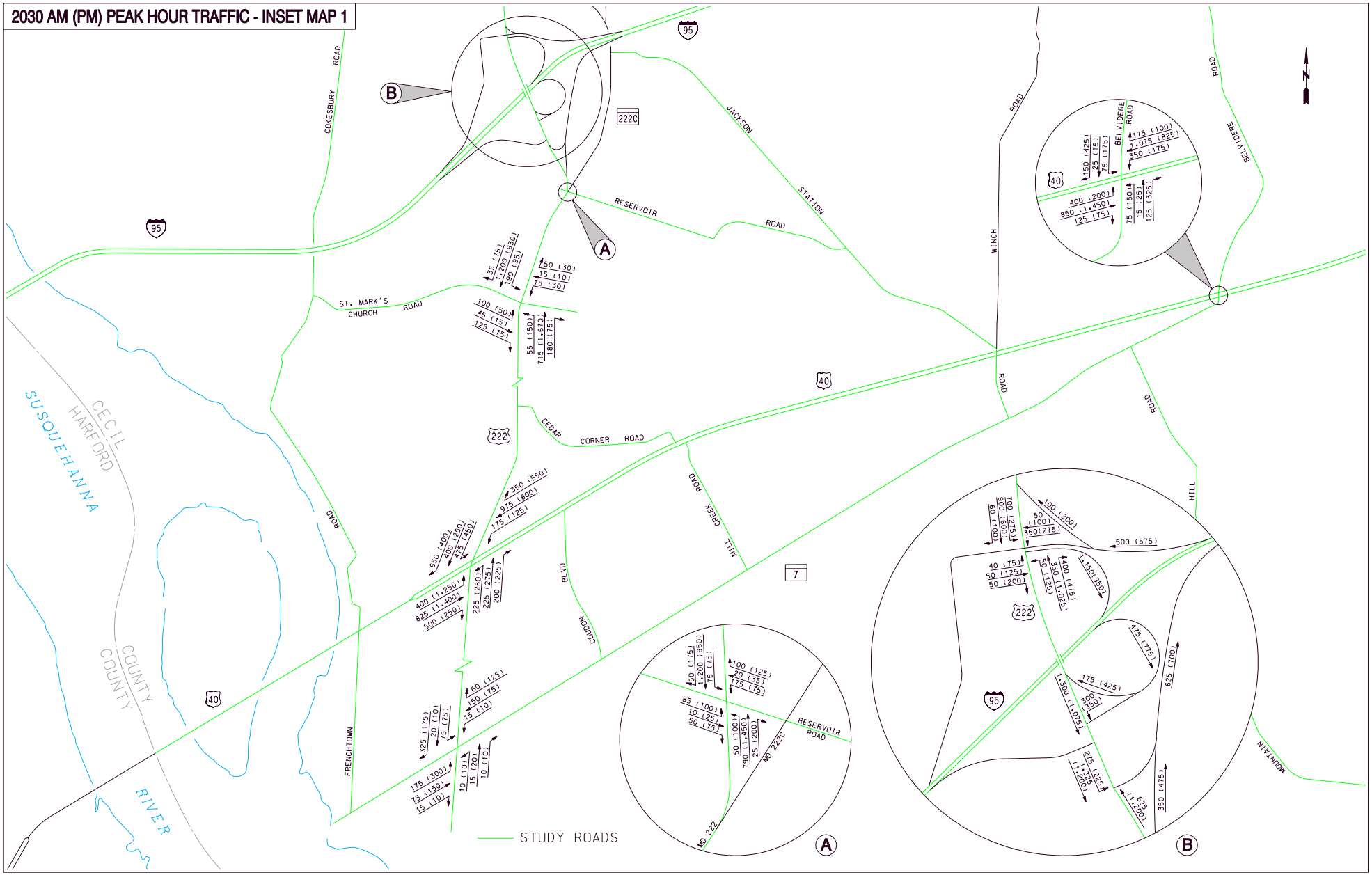
2030 AM (PM) PEAK HOUR TRAFFIC - INSET MAP 1



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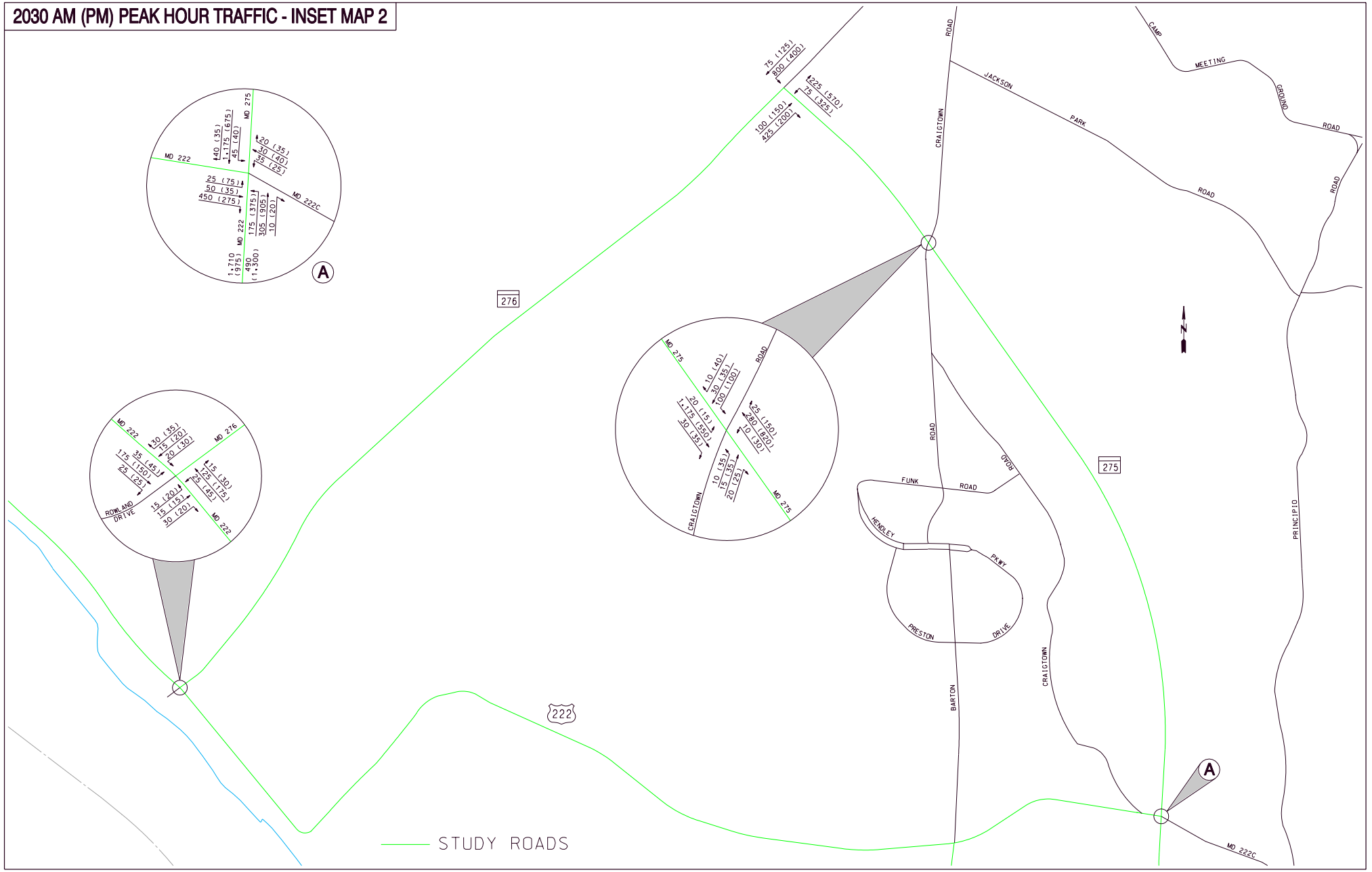

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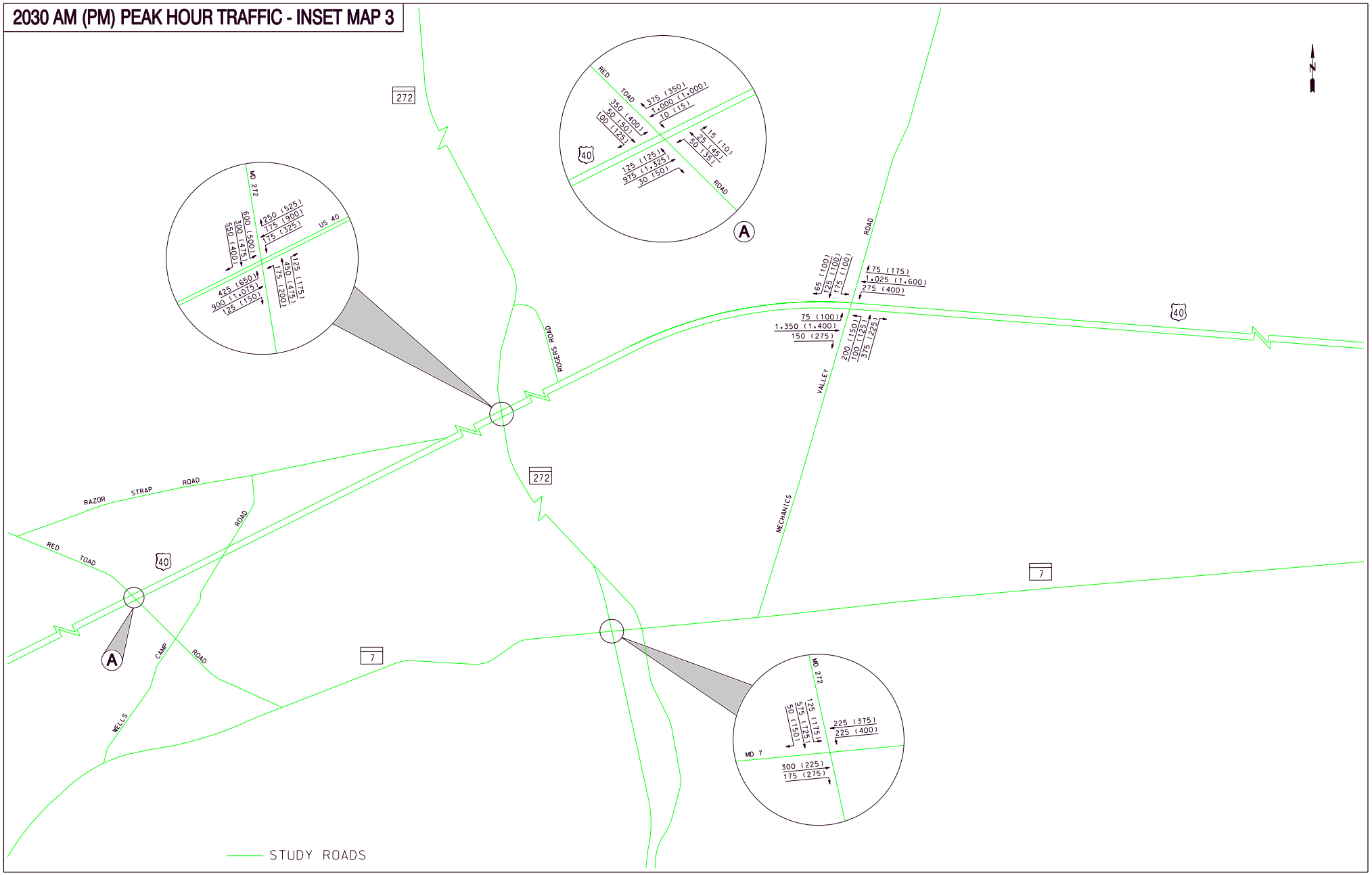

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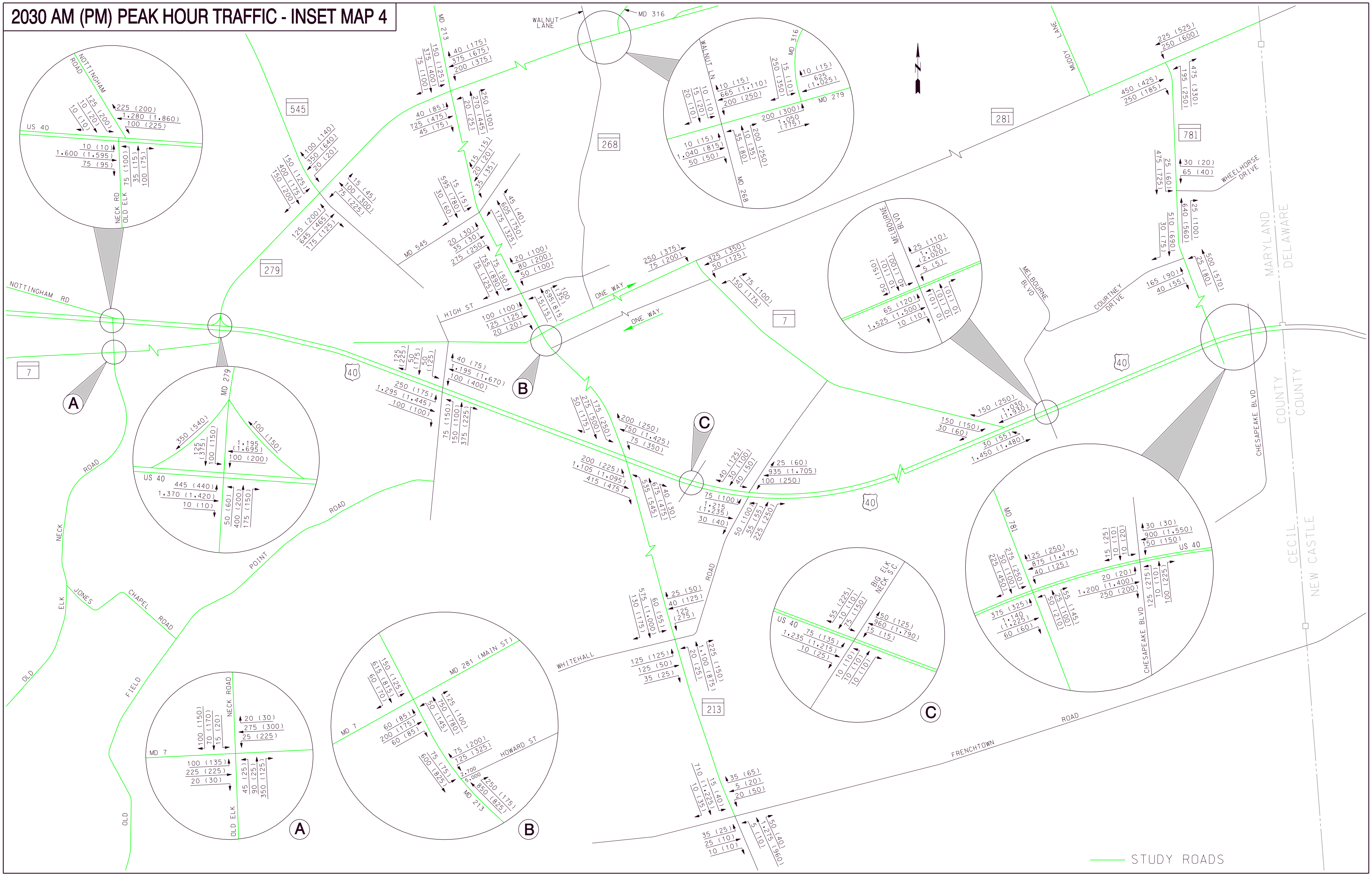
2030 AM (PM) PEAK HOUR TRAFFIC - INSET MAP 4



US 40
NOTTINGHAM ROAD
NOTTINGHAM RD
OLD ELK NECK RD
NECK ROAD
MD 7
MD 279
MD 213
MD 545
MD 316
MD 268
WALNUT LANE
WALNUT LN
HIGH ST
ONE WAY
MELBOURNE BLVD
COURTNEY DRIVE
WHEELHORSE DRIVE
MUDDY LANE
CHESAPEAKE BLVD
MD 781
MD 281 (MAIN ST)
HOWARD ST
WHITEHALL ROAD
FRENCHTOWN ROAD
BIG ELK NECK S.C.
POINT ROAD
OLD FIELD ROAD
JONES CHAPEL ROAD
OLD ELK NECK ROAD
MARYLAND
DELAWARE
CECIL COUNTY
NEW CASTLE COUNTY
545
279
268
281
781
7
40
213
A
B
C

STUDY ROADS

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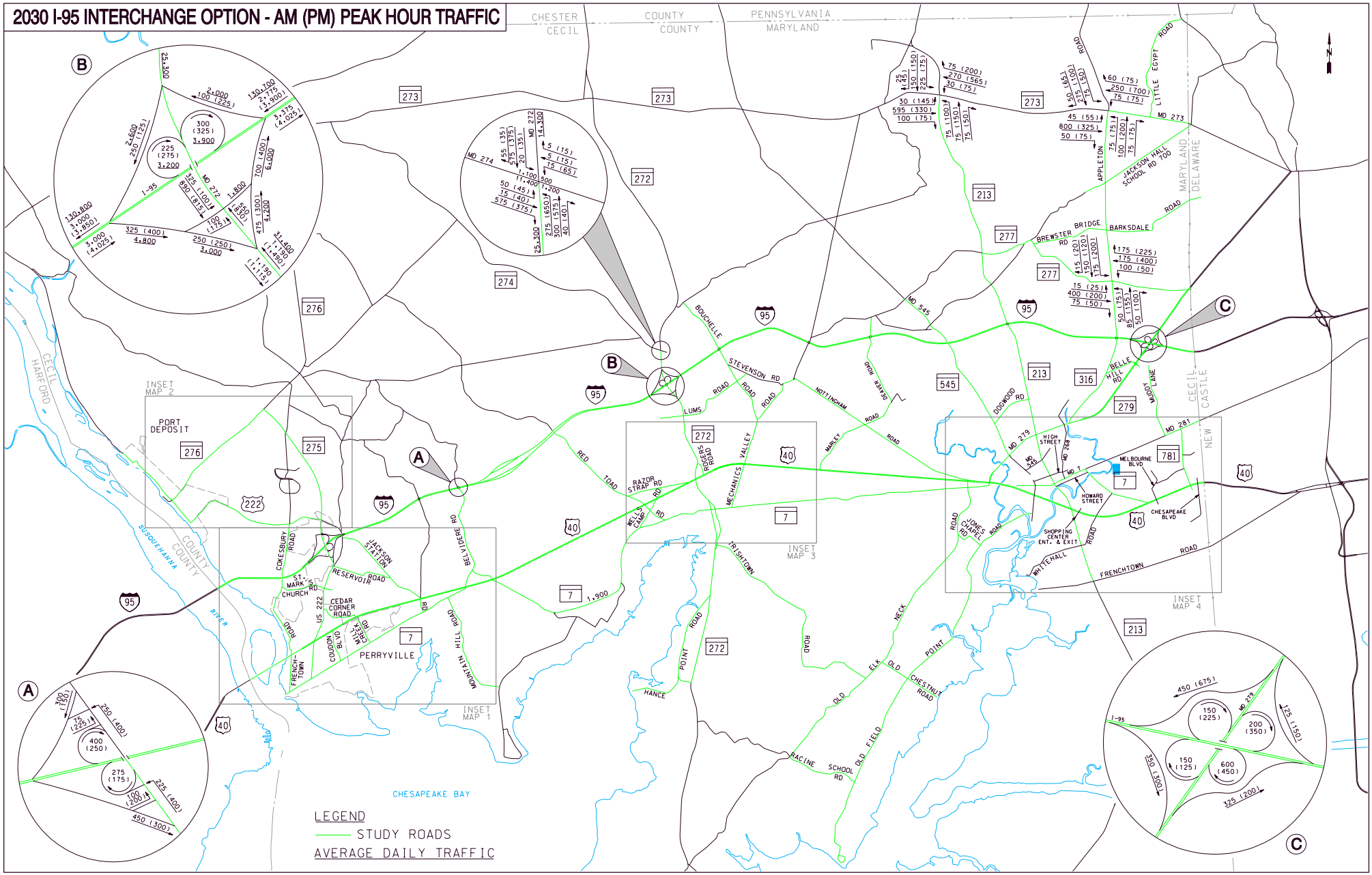
2030 I-95 INTERCHANGE OPTION - AM (PM) PEAK HOUR TRAFFIC
CHESTER COUNTY
CECIL COUNTY
PENNSYLVANIA
MARYLAND
INSET MAP 1
INSET MAP 2
INSET MAP 3
INSET MAP 4
PORT DEPOSIT
PERRYVILLE
CHESAPEAKE BAY
SUSQUEHANNA RIVER
CECIL COUNTY
HARFORD COUNTY
MARYLAND
DELAWARE
NEW CASTLE
LEGEND
STUDY ROADS
AVERAGE DAILY TRAFFIC
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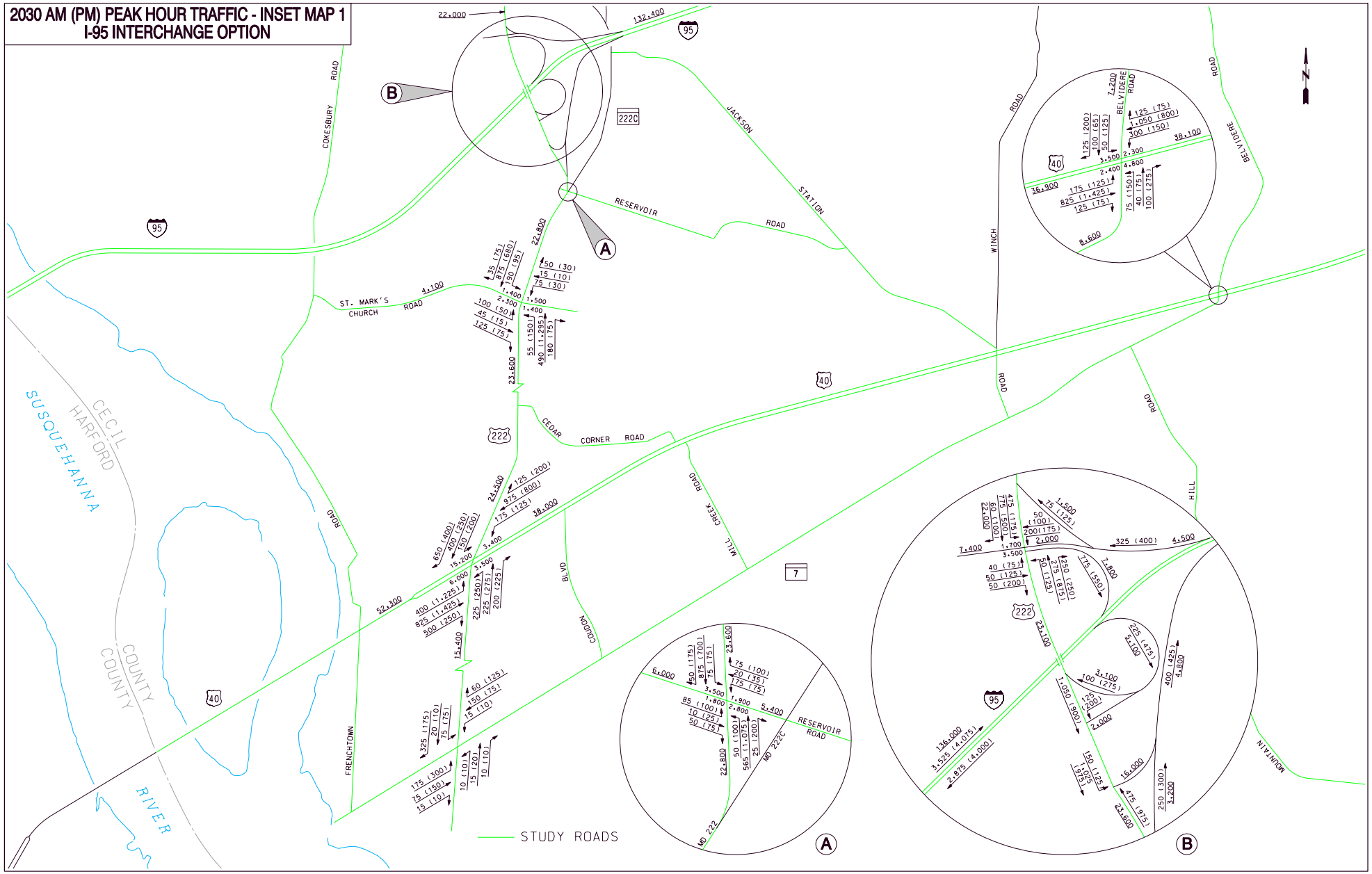
2030 AM (PM) PEAK HOUR TRAFFIC - INSET MAP 1
I-95 INTERCHANGE OPTION



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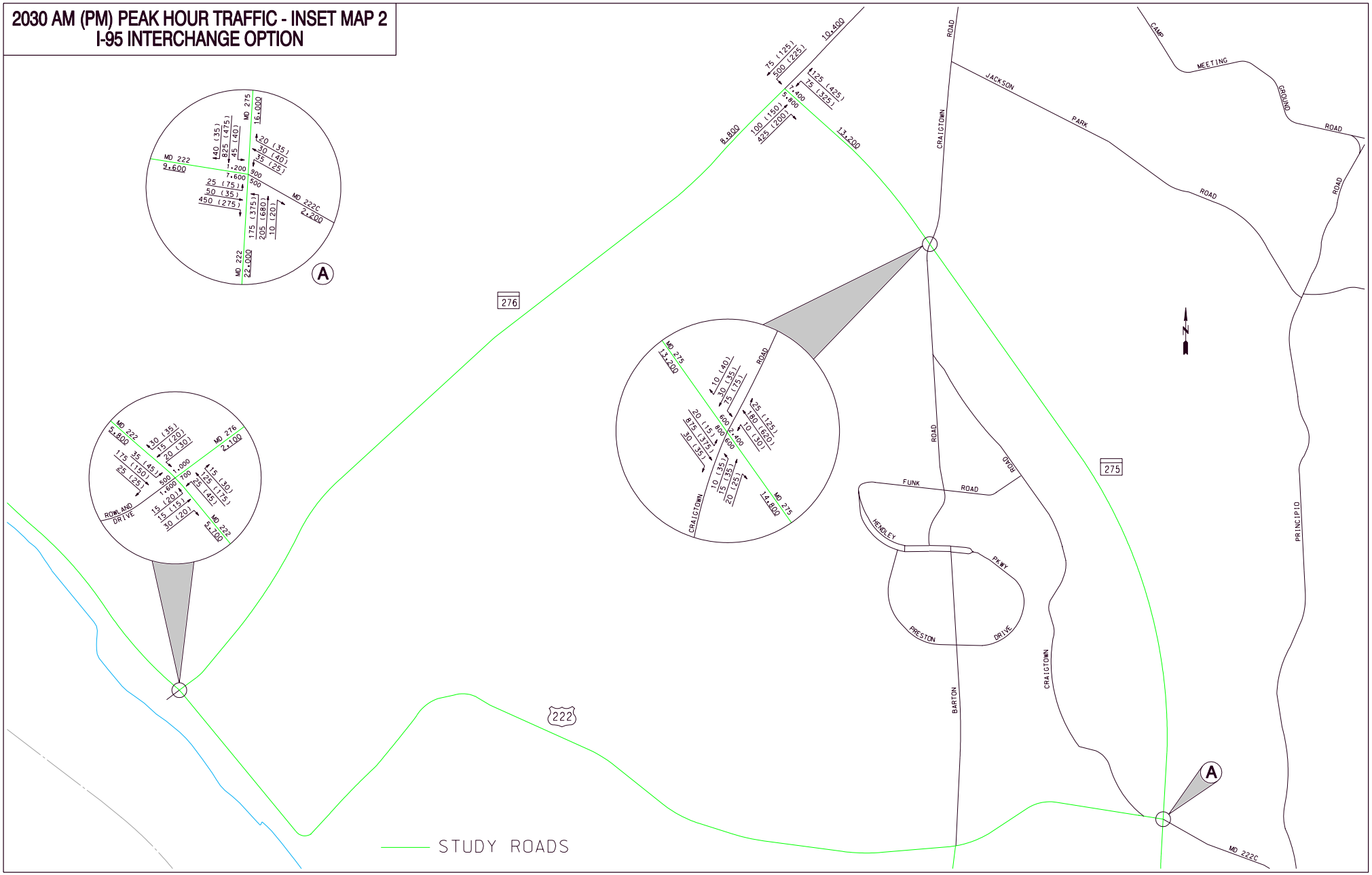
2030 AM (PM) PEAK HOUR TRAFFIC - INSET MAP 2
I-95 INTERCHANGE OPTION



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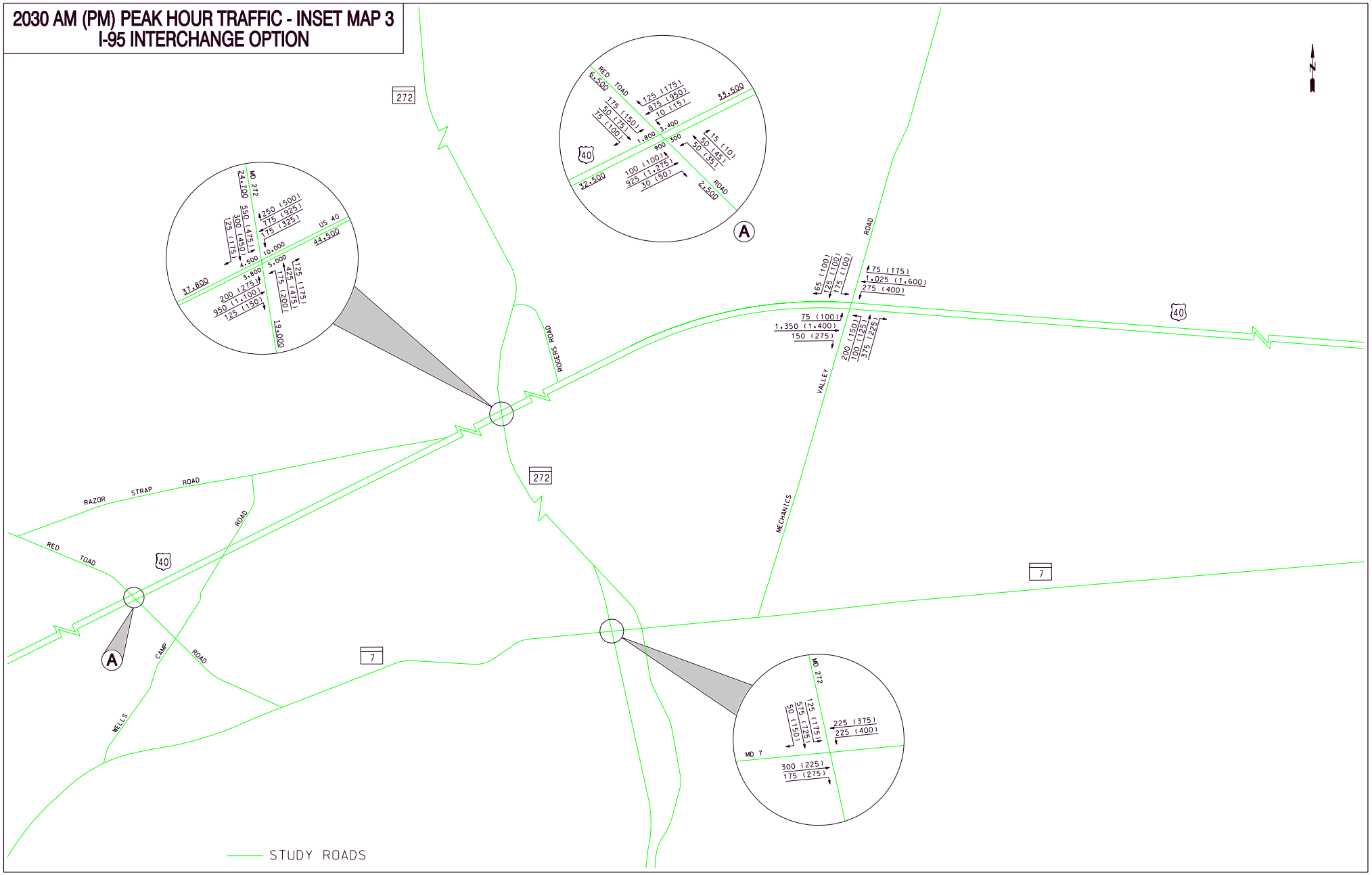
2030 AM (PM) PEAK HOUR TRAFFIC - INSET MAP 3
I-95 INTERCHANGE OPTION



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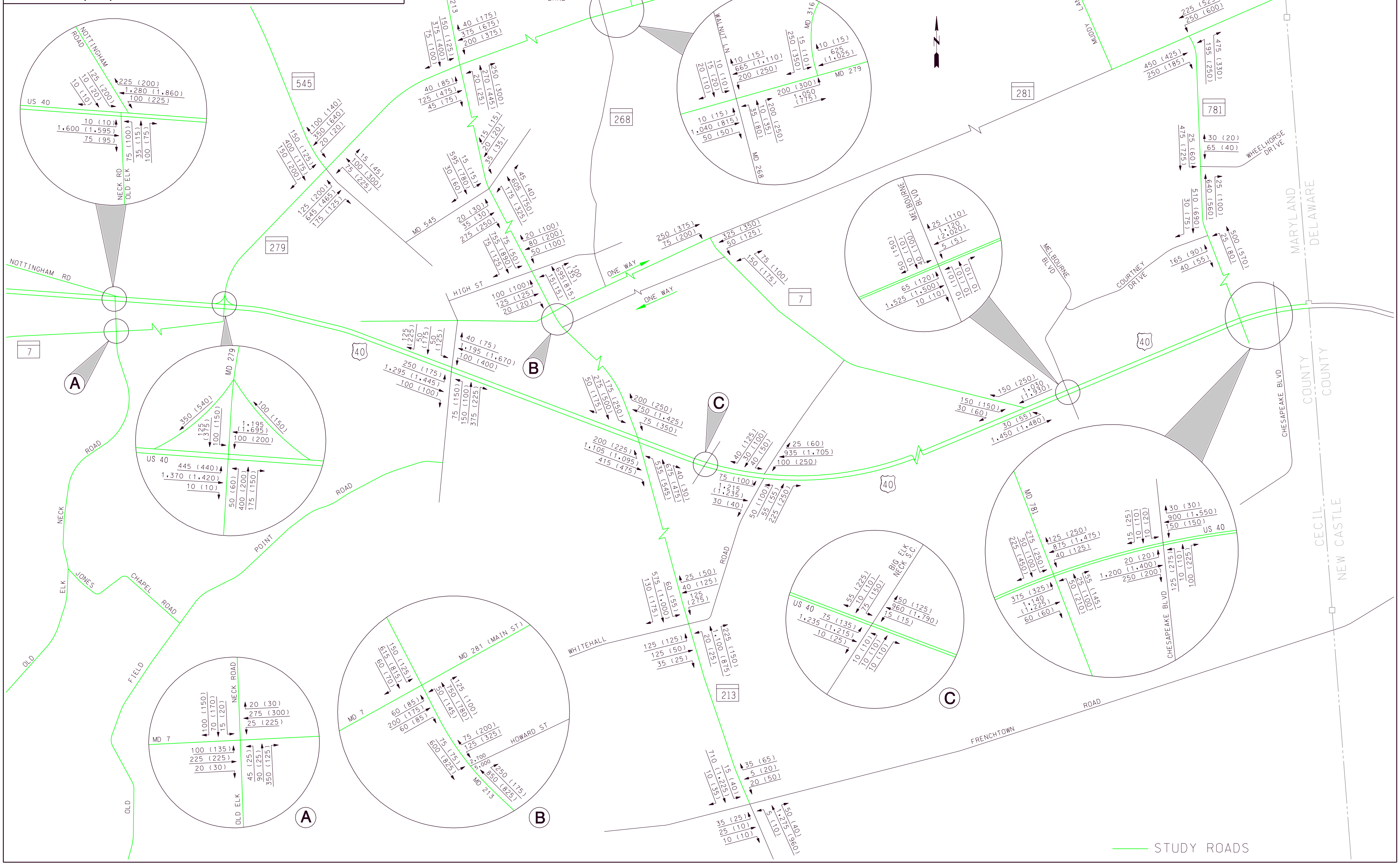
2030 AM (PM) PEAK HOUR TRAFFIC - INSET MAP 4


MARYLAND
DELAWARE
CECIL COUNTY
NEW CASTLE COUNTY
US 40
MD 7
MD 213
MD 279
MD 281 (MAIN ST)
MD 316
MD 268
MD 545
MD 781
NOTTINGHAM RD
NOTTINGHAM ROAD
OLD ELK NECK RD
OLD ELK NECK ROAD
WALNUT LANE
WALNUT LN
HIGH ST
HOWARD ST
ONE WAY
MELBOURNE BLVD
COURTNEY DRIVE
WHEELHORSE DRIVE
MUDDY LANE
CHESAPEAKE BLVD
WHITEHALL ROAD
FRENCHTOWN ROAD
POINT ROAD
CHAPEL ROAD
JONES
FIELD
ELK NECK
OLD
BIG ELK NECK S.C.
A
B
C
STUDY ROADS

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APPENDIX B

LEVEL OF SERVICE DEFINITIONS

The following are the definitions for level of service for intersections, multi-lane highways and two lane highways.

Intersections[1]

LOS A - Free traffic flow.

LOS B - Stable traffic flow, occasional delays at traffic signals.

LOS C - Stable traffic flow, moderate delays at traffic signals.

LOS D - Approaching unstable traffic flow, frequent delays at traffic signals.

LOS E - Unstable traffic flow, signal backups.

LOS F - Unacceptable, forced traffic flow.

Multi-Lane Highway[1]

LOS A describes completely free-flow conditions.

LOS B indicates free flow, although the presence of other vehicles becomes noticeable.

In LOS C the ability to maneuver within the traffic stream is clearly affected by other vehicles.

At LOS D, the ability to maneuver is severely restricted due to traffic congestion. Travel speed is reduced by the increasing volume.

LOS E represents operations at or near capacity, an unstable level. Vehicles are operating with the minimum spacing for maintaining uniform flow.

LOS F represents forced or breakdown flow.

Two Lane Highways[1]

LOS A describes the highest quality of traffic service, when motorists are able to travel at their desired speed.

LOS B characterizes traffic flow with speeds of 50 mi/h or slightly higher. The demand for passing to maintain desired speeds becomes significant and approximates the passing capacity at the lower boundary of LOS B. Drivers are delayed in platoons up to 50 percent of the time.

LOS C describes further increases in flow, resulting in noticeable increases in platoon formation, platoon size, and frequency of passing impediments.

LOS D describes unstable traffic flow. The two opposing traffic streams begin to operate separately at higher volume levels, as passing becomes extremely difficult.

At LOS E, passing is virtually impossible and platooning becomes intense, as slower vehicles or other interruptions are encountered.

LOS F represents heavily congested flow with traffic demand exceeding capacity. Volumes are lower than capacity and speeds are highly variable.

1 - Highway Capacity Manual/2000

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