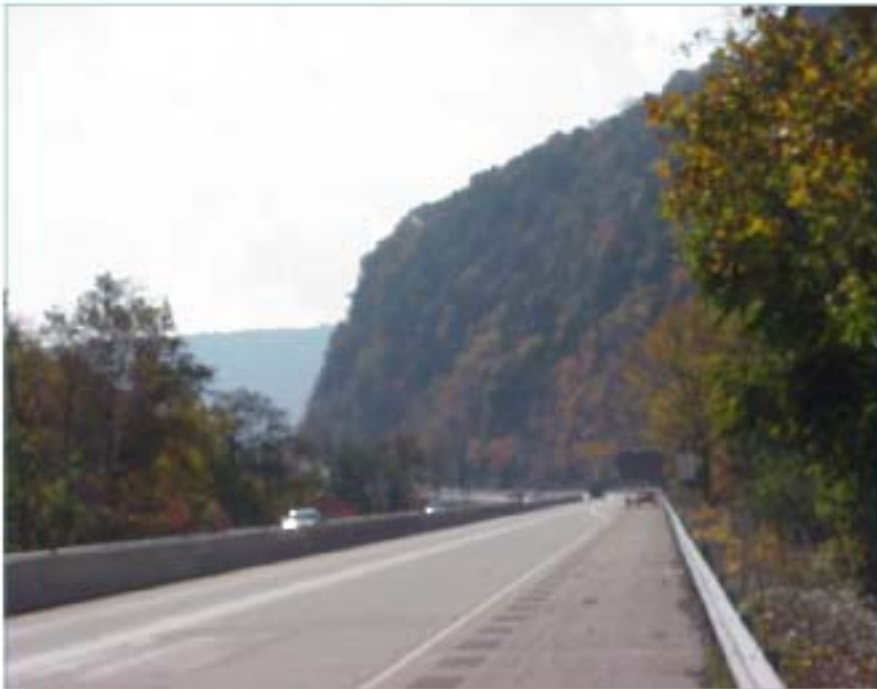


Cumberland and Perry Counties
**SAFETY AND CONGESTION
MANAGEMENT SYSTEM STUDY**

Submitted to

TRI-COUNTY REGIONAL PLANNING COMMISSION
112 MARKET STREET
HARRISBURG, PA 17101



Submitted by

Orth-Rodgers & Associates, Inc.

4999 Louise Drive

Mechanicsburg, PA 17055

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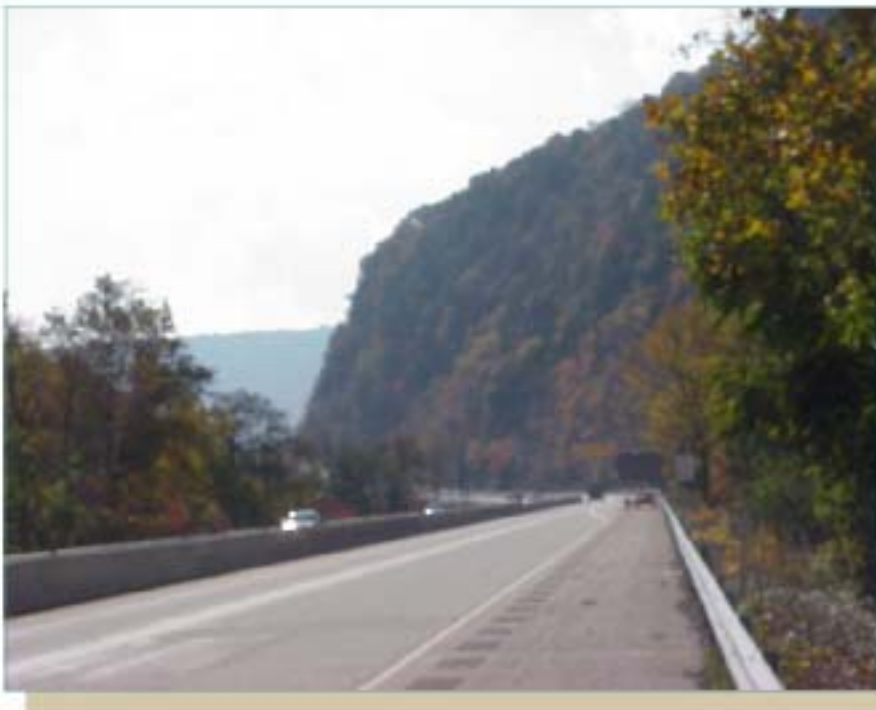
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CHAPTER I

EXECUTIVE SUMMARY

A. Study History and Project Purpose

Data from the census show that 70 percent of the workers who live in Perry County work for employers located outside of the County. The subsequent commuting patterns have created safety and congestion problems in the area, particularly as traffic moves between Perry and Cumberland Counties through PA Route 34 (Sterretts Gap), PA Route 274, PA Route 850, PA Route 944 (Wertzville Road), US Routes 11/15, Interstate 81, PA Route 849, and US Routes 22/322. A group of municipalities concerned with this problem organized to form the Cumberland/Perry Counties Joint Task Force on Transportation and Planning (CPTF), which is the group responsible for initiating and securing funding for this study. This study was financed (in part) by a grant from the Commonwealth of Pennsylvania, Department of Community and Economic Development.

The Cumberland and Perry Joint Task Force includes representatives of the Tri-County Regional Planning Commission, PENNDOT, and representatives from the following 17 municipalities in Perry and Cumberland Counties:

Four municipalities in northeastern Cumberland County:

Middlesex Township	Hampden Township
Silver Spring Township	East Pennsboro Township

Thirteen municipalities in southeastern Perry County:

Bloomfield Borough	Newport Borough
Carroll Township	Oliver Township
Centre Township	Penn Township
Duncannon Borough	Rye Township
Howe Township	Watts Township
Marysville Borough	Wheatfield Township
Miller Township	

The main purpose of this safety and congestion management systems study is to quantify existing safety and congestion problems with respect to commuting between and through Perry and Cumberland/Dauphin Counties, and to suggest improvements to the transportation system. Concurrently, the study will identify existing or potential future transportation impacts from land development near major corridors in the study area. Although the study will cover a broad geographic area (including four municipalities in Cumberland

County and 13 municipalities in Perry County), study efforts will focus on improvements to the roadway corridors noted above. Development activity and existing zoning regulations that impact these corridors will provide a context within which to evaluate necessary transportation improvements. Recommended future improvements to the roadway corridors will be based on future traffic volumes that result from the proposed development activity and the existing zoning regulations.

B. Summary of Improvements to Existing Roadways and Intersections

Numerous safety and congestion problems currently exist on the study area roadway corridors. By the year 2020, the increase in development and the resulting growth in traffic volume on the more heavily traveled study area roadways (such as PA Route 34, US Routes 11/15, PA Route 944, and PA Route 274) will only worsen the existing problems, and will create a handful of new safety and congestion issues. In order to solve the existing and projected safety and congestion problems within the study area, capacity and safety improvements to the existing roadways and intersections must be implemented.

Improvement Packages

In developing the implementation plan, the project team met with the Planning and Programming Unit at PENNDOT District 8-0. It was determined that individual projects should be grouped together based on improvement type and geographical location into “improvement packages”. The improvement packages are more likely to be implemented than the various individual improvement concepts.

The improvement packages that have been placed on the implementation plan for the study area have been grouped into three categories, depending on the type of improvement that it is proposed. The three categories are as follows:

1. Capacity and Safety Improvement Packages in the Study Area
2. Betterment Projects in the Study Area
3. Related Projects Outside the Study Area

The majority of the improvement packages are categorized as a “Capacity and Safety Improvement”. Most of the improvement packages contain specific proposed projects that mitigate an explicit transportation problem, such as a severe safety problem or recurring traffic congestion. The betterment projects in the study area are generally lower cost, spot safety improvements that can be implemented via regular PENNDOT betterment programs. The related projects outside the study area (944-OUT) include projects that are located outside the study area borders that should be completed as part of the

implementation plan to ensure that the finished package results in a complete and coherent transportation system in the design year.

The general locations of the improvement packages that have been included in the implementation plan are shown in Figure I-1 on the following page.

Summary of Areas of Concern and Recommended Improvement Packages

The locations of the existing and projected safety and traffic congestion problem areas within the study area have been identified from the traffic and crash data that has been collected, from the results of the crash and traffic analyses, from field visits to the study area, and from conversations with law enforcement officials and residents of the study area. In addition to the factors just mentioned, the recommended improvement packages were also formulated by consulting the Congestion Management System (CMS) screening process and the environmental concerns summary as a guide. Table I-1 summarizes the cost estimates and rankings for each of the recommended improvement packages.

PA Route 34

Capacity Concerns:

- € PA Route 34 between PA Route 850 and Sunnyside Drive
- € Intersection of PA Route 34 and Sunnyside Drive
- € At PA Route 34 intersections with: Windy Hill Road, PA Route 850, and Fox Hollow Road

Safety Concerns:

- € Sight distance problems at PA Route 34 intersections with: Sunnyside Drive, PA Route 850, Windy Hill Road, Juniata Parkway, and Shortcut Road
- € Shopping center access near intersection of PA Route 34 and PA Route 850
- € Confusing intersection at Mecks Corner (Dellville Road and SR 2006 intersection)
- € Left-turning vehicle concerns at PA Route 34 intersections with: Rambo Hill Road, Richwine Road, and Fox Hollow Road

Proposed Solutions:

Improvement Package 34-A:

- € Redesign and reconstruct the intersection at Sterretts Gap (Sunnyside Dr. and PA Route 34)
- € Install a two-way center left-turn lane on PA Route 34 between the Shermans Dale bridge and Richwine Road
- € Install northbound left-turn lanes at the PA Route 34 intersections with Fox Hollow Road and Rambo Hill Road
- € Install traffic signal, and relocate/reconstruct the shopping center driveways at the PA Route 34 and PA Route 850 intersection in Shermans Dale
- € Relocate Windy Hill Road to tie in with Souder Road and install traffic signal at the intersection

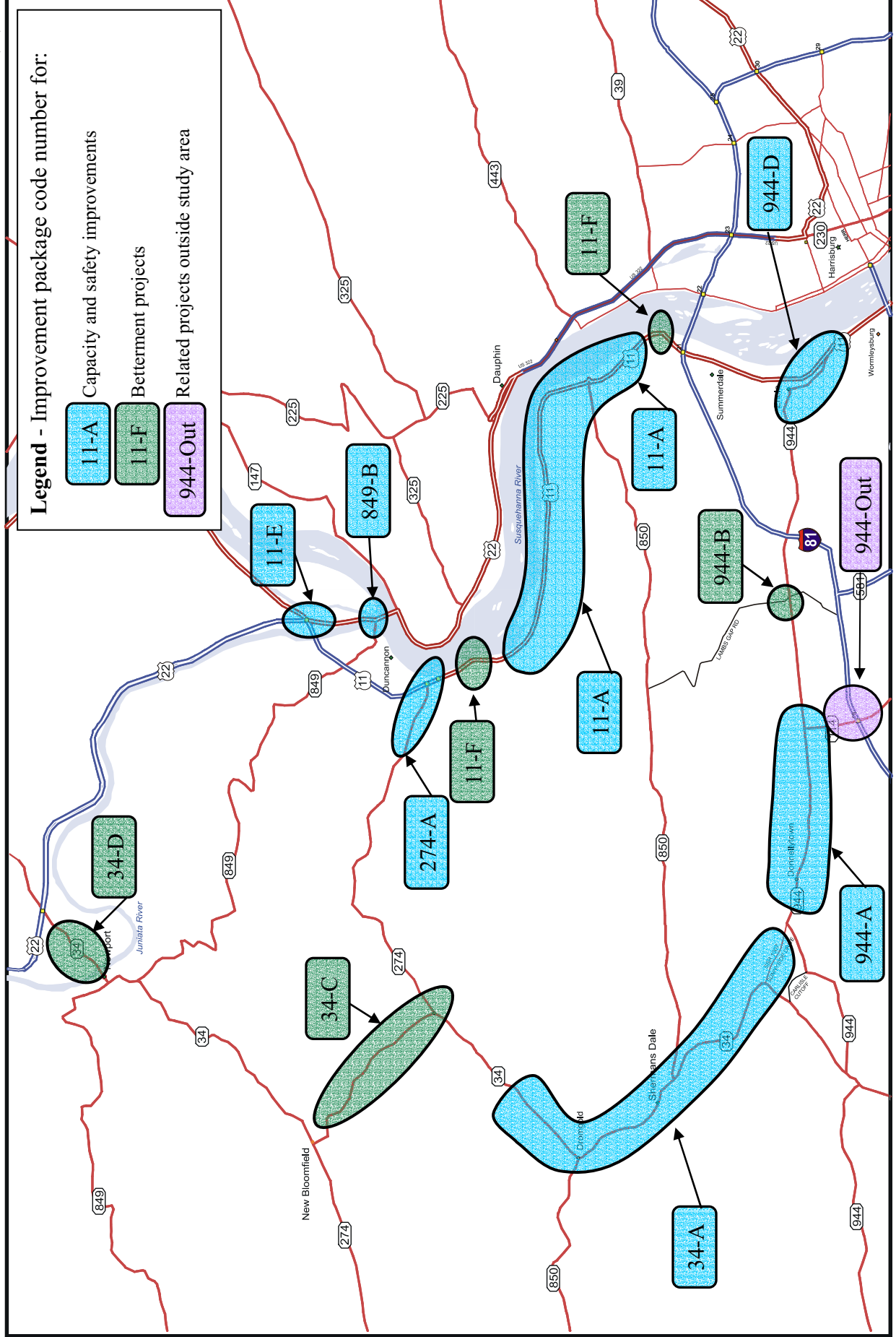
Improvement Package 34-C:

- € Restripe Mecks Corner (PA 34, PA 274, Dellville Road) intersection
- € Realign horizontal and vertical curve at the PA Route 34 intersection at Barnett Road

Improvement Package 34-D:

- € Cut back embankment and install retaining wall at the PA Route 34 intersection with Shortcut Road
- € Modify sight distance obstructions at the PA Route 34 intersection with the Juniata Parkway

General Locations of Proposed Improvements on Implementation Plan – Overall Map
Safety and Congestion Management System Study
CUMBERLAND AND PERRY COUNTIES, PENNSYLVANIA



PA Route 944

Capacity Concerns:

- € PA Route 944 between Sunnyside Drive and PA Route 114
- € Delays experienced with the heavy turning movements at the intersection of PA Route 944 and PA Route 114
- € Delays experienced on PA Route 944 at the intersection of PA Route 944 and US Routes 11/15

Safety Concerns:

- € Sight distance problems at PA Route 944 intersections with: Rich Valley Road, Deer Lane, Lambs Gap Road and PA Route 114.
- € Dangerous conditions at the offset intersections of Magaro Road/Carol Lane and PA Route 944

Proposed Solutions:

Improvement Package 944-A:

- € Construct a two-way center-left turn lane on PA Route 944 between Sunnyside Drive and PA Route 114 while improving the intersection sight distance at deficient locations, and perform a traffic signal warrant study at the Sunnyside Drive intersection
- € Construct a second (2nd) northbound left-turn lane on PA Route 114 at the PA Route 944 intersection

Improvement Package 944-B:

- € Flatten crest vertical curve adjacent to the intersection of PA Route 944 and Lambs Gap Road

Improvement Package 944-D:

- € Restripe and sign the southbound approach of US Routes 11/15 at the intersection of PA Route 944
- € Realign offset intersection of PA Route 944 and Magaro Road/Carol Lane

PA Route 849

Safety Concern:

- € Occurrence of illegal left-turns from PA Route 849 eastbound to US Routes 22/322 westbound

Proposed Solutions:

Improvement Package 849-B:

- € Modify concrete island at the PA 849 & US 22/322 intersection to discourage illegal left turns

PA Route 274

Safety Concerns:

- € Sight distance problems at the PA 274 intersections with: Mecks Corner Cutoff (SR 2006) and Faculty Road
- € Confusion involving motorist right-of-way at the intersection of the US 11/15 Southbound off-ramp and PA 274
- € Low clearance height on PA Route 274 at the US Routes 11/15 overpass
- € Substandard (narrow) roadway and shoulders on PA 274 between Mutzbaugh's Market and US 11/15

Proposed Solutions:

Improvement Package 274-A:

- € Widen shoulders and replace guide rails on PA Route 274 between US 11/15 and Dellville Rd
- € Restripe intersection to delineate stop bars and turning movements at the intersection of PA Route 274 and the Southbound off ramp of US Routes 11/15
- € Improve overhead clearance on PA Route 274 beneath the US Routes 11/15 overpass

Improvement Package 34-C:

- € Flatten crest vertical curve and lessen skew angle of the PA 274 with the Mecks Corner Cutoff

US Routes 11/15

Capacity Concerns:

- € General capacity problems on US Routes 11/15 between Interstate 81 and PA Route 274
- € Significant delays experienced at the US Routes 11/15 intersections with: Susquenita High School driveway, Sheetz driveway, PA Route 850

Safety Concerns (US Routes 11/15, continued):

- € Sight distance problems at the US Routes 11/15 intersection with PA Route 850
- € Large amount of northbound right-turning vehicles at the Sheetz driveway
- € Confusion involving motorist right-of-way at the intersection of the US Routes 11/15 Southbound off-ramp and PA Route 274
- € Safety issues in the Perdix area include parked vehicles, pedestrians along the roadway, very narrow shoulders, and poor emergency vehicle access to the Perdix firehouse
- € Frequent rock slides along the mountainous sections of US Routes 11/15
- € Access management issues on US Routes 11/15 in Marysville
- € Insufficient acceleration / deceleration lanes and weaving areas at the US Routes 11/15 interchanges with US Routes 22/322

Proposed Solutions:

Improvement Package 11-A:

- € “Main Street” Concept in Perdix and Marysville –
 - € Construct bicycle lanes and/or walking paths in coordination with the Susquehanna Greenway and the right-of-way acquisition for the proposed sewer system in Perdix. Access to the riverfront should also be provided.
 - € Construct pedestrian facilities (e.g., crosswalks and pedestrian warning signs).
 - € Prohibit parking immediately along US Routes 11/15 and construct a parking access road (in coordination with the right-of-way acquisition for the proposed sewer system in Perdix). Recessed (cut-out) parking spaces (away from the edge of the road) should be provided in areas that can accommodate them.
 - € Convert certain side streets that intersect US Routes 11/15 in Marysville to one-way roadways.
 - € Continue the public involvement process for the “Main Street” concept to ensure that all stakeholders in the affected communities have input into the improvements that will be considered in the preliminary engineering phase of the project.
- € Install an emergency flashing signal at the Perdix Firehouse.
- € Install a traffic signal, construct an eastbound right-turn lane, and install a no left-turn sign at the PA Route 850 intersection in Marysville.
- € Install a traffic signal at the Susquenita High School Driveway.
- € Construct a separate northbound right-turn lane at the Sheetz Driveway intersection.
- € Install “Share-a-Ride” signs on US Routes 11/15 north of I-81 and south of PA Route 274. This should be implemented in conjunction with construction of the Park-N-Ride lot near the PA Route 274 interchange with US Routes 11/15.
- € Perform a Route Relocation Study to investigate the re-designation of US Routes 11/15 as “Business US Routes 11/15”, and the prohibition of through truck traffic (US Routes 11/15 between Interstate 81 and PA Route 274 would be for local trucks only). The Route Relocation Study will need to include a Business Impact Survey that would determine the financial impacts of a route re-designation to the owners of the business along US Routes 11/15.

Improvement Package 11-E:

- € At the US 22/322 & US 11/15 interchange, force eastbound traffic into left lane

Improvement Package 11-F:

- € Provide protection for rock falls at the mountains along US 11/15

PA Route 114 - Improvement Package 944-OUT (outsides study area):

- € At the PA 114 / I-81 ramps intersections, examine the adequacy of capacity, queuing storage, and traffic flow progression.
- € Examine the adequacy of the capacity of the two-lane section of PA 114 between I-81 and PA 944

**Table I-1
SUMMARY OF COST ESTIMATES FOR IMPROVEMENT PACKAGES
IN THE IMPLEMENTATION PLAN**

Improvement Package	Category	Total Approximate Cost	Preliminary Ranking
34-A	C & S	\$8,990,000	1
944-A	C & S	\$14,500,000	2
11-A	C & S	\$8,437,000	3
274-A	C & S	\$3,638,000	4
849-B	C & S	\$35,000	5
944-D	C & S	\$760,000	6
11-F	Bet	\$745,000	7
944-B	Bet	\$580,000	8
11-E	C & S	\$88,000	9
34-C	Bet	\$912,000	10
34-D	Bet	\$237,000	11

C & S = Capacity and Safety
Bet = Betterment

The total cost of all of the recommended improvement packages for the study area is nearly \$39,000,000.

C. Summary of Growth Management Recommendations

The following is a summary of the growth management recommendations of this study:

Land Use:

- € Institute and/or update comprehensive planning and zoning in the study area municipalities; the municipalities should also consider regional comprehensive planning and zoning.
- € Review land use plans in each municipality for opportunities for low-density zoning districts. Two common types of low-density zoning are agricultural zoning, at 10 to 20 acres or more per lot, and conservation districts.
- € Plan for environmentally sensitive features, through reducing development density in areas with steep slopes, wetlands and floodplains.
- € Consider Transfer of Development Rights (TDR) and conservation subdivisions to protect open space.
- € Adopt village center zoning to concentrate development in areas planned for infrastructure within townships, and support efforts to the boroughs to attract more development and redevelopment.
- € Coordinate growth management efforts in the Cumberland/Perry study area with the Regional Growth Management Plan of the Tri-County Regional Planning Commission.

Transportation:

- € Adopt access management overlay districts to improve traffic operations along arterials.
- € Adopt traffic impact study ordinance to better identify and address the impact of new developments.
- € Upgrade pedestrian and bicycle facilities.

The above land use recommendations should be implemented independent of any transportation improvements in order to better manage future growth and to create better and more livable communities. Although municipalities can individually carry out many of the growth management strategies listed above, the same inter-municipal coordination that was critical to the workings of the Cumberland Perry task force is recommended for the implementation of these strategies. At a minimum step, the municipal representatives should continue to meet and discuss the effects of the planning strategies that will be implemented. This coordination could be guided by the Tri-County Regional Planning Commission and the West Shore Council of Governments. These same entities could supervise a re-evaluation of land use and traffic conditions every five years in the future.

Inter-municipal coordination could be most effectively implemented through inter-municipal planning. As recently provided for in the Pennsylvania Municipalities Planning Code (Article XI), municipalities may enter into “intergovernmental cooperative agreements.” Municipalities can coordinate in preparing a regional comprehensive plan, which, in turn, can serve as the basis for other inter-municipal activities, such as zoning ordinances and transfer of development rights programs. Cooperative implementation agreements also include a process for review and approval of developments of regional significance (although the host municipality ultimately exercises subdivision and land development powers). A cooperative, inter-municipal planning process is thus recommended to supplement the transportation strategies outlined elsewhere in this study.

CHAPTER II

SUMMARY OF EXISTING TRANSPORTATION AND LAND USE / DEMOGRAPHIC CONDITIONS

Data show that 70 percent of the workers who live in Perry County work for employers located outside of the County. The subsequent commuting patterns have created safety and congestion problems in the area, particularly as traffic moves between Perry and Cumberland Counties through PA Route 34 (Sterretts Gap), PA Route 274, PA Route 850, PA Route 944 (Wertzville Road), US Routes 11/15, Interstate 81, PA Route 849, and US Routes 22/322. A group of municipalities concerned with this problem organized to form the Cumberland/Perry Counties Joint Task Force on Transportation and Planning (CPTF).

The main purpose of the existing conditions analysis of the congestion management systems study is to quantify existing safety and congestion problems with respect to commuting between and through Perry and Cumberland / Dauphin Counties. The land use / demographic conditions analysis summarizes the demographic conditions that affect traffic patterns in the study area, including population trends and planning activities undertaken by the individual municipalities. Although this study covers a broad geographic area, study efforts will focus on the roadway corridors noted above.

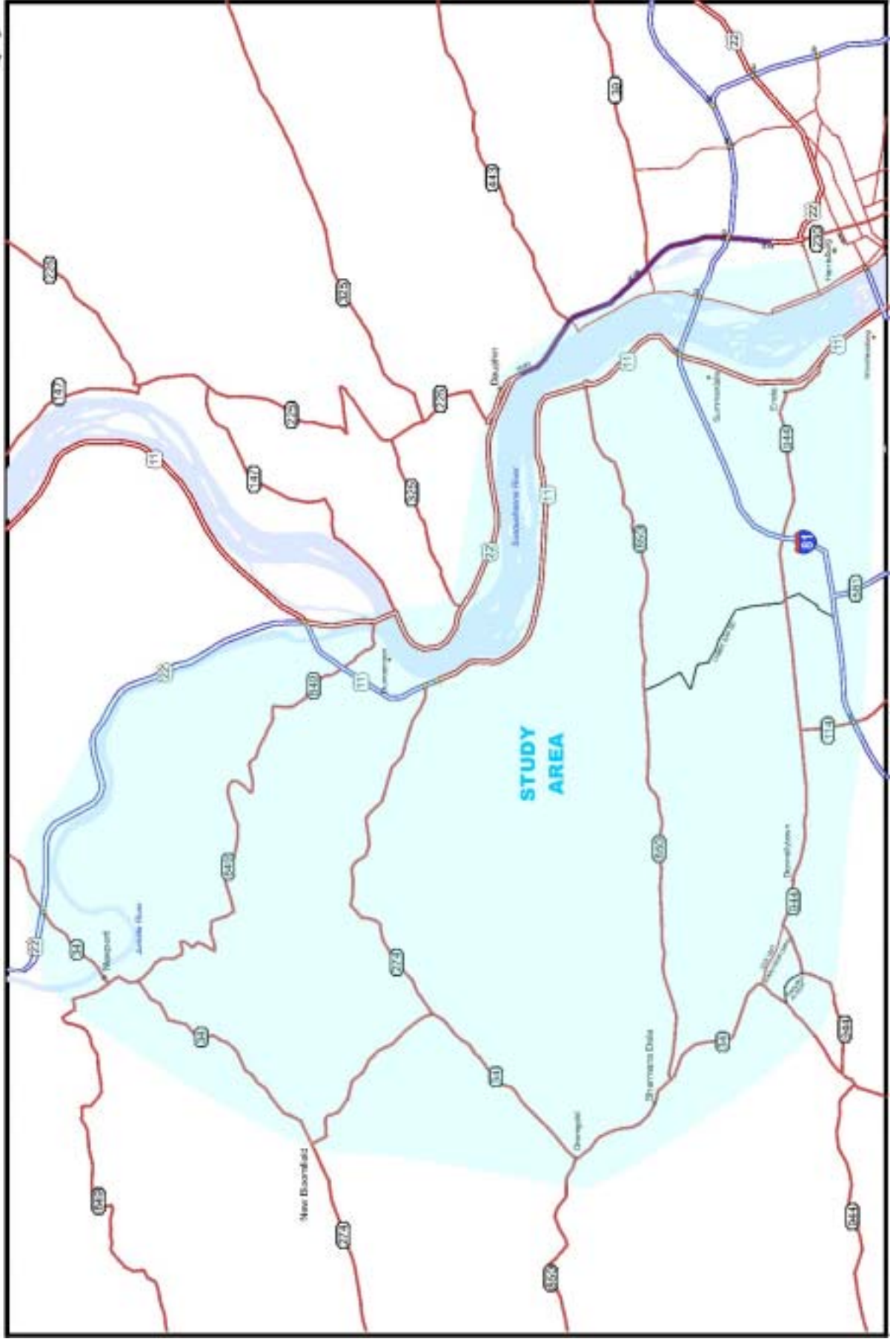
The following information contains a summary of the existing transportation and land use / demographic conditions analyses for this study area. More detailed information can be found in the associated Existing Conditions and Demographic Analyses Technical Memoranda dated October 2001 and June 2001, respectively.

A. Project Study Area and the Existing Transportation Network

The study area for the Cumberland and Perry Counties Safety and Congestion Management Systems (CMS) project includes a network of local, regional, and interstate roadways. Figure II-1 shows the study area for this project and the surrounding regional area.

Study Area

Safety and Congestion Management System Study
CUMBERLAND AND PERRY COUNTIES, PENNSYLVANIA



The study area consists of four municipalities in northeastern Cumberland County:

Middlesex Township	Hampden Township
Silver Spring Township	East Pennsboro Township

and thirteen municipalities in southeastern Perry County:

Bloomfield Borough	Newport Borough
Carroll Township	Oliver Township
Centre Township	Penn Township
Duncannon Borough	Rye Township
Howe Township	Watts Township
Marysville Borough	Wheatfield Township
Miller Township	

The Cumberland and Perry Counties Joint Task Force on Transportation and Planning (CPTF) has identified the project study area as supporting a network of regional principal arterial and collector type roadways, which collect and convey a high percentage of commuter traffic from local feeder streets and roads to east-west collector roadways then to the north-south arterial roadways. The project study area can be characterized as rapidly developing rural bedroom communities where primary goods, services, and employment are obtained within the Harrisburg metropolitan and Interstate 81 development corridor areas. Major commuter routes include PA Route 34, PA Route 274, PA Route 850, PA Route 944, and PA Route 849.

Interstate 81, which crosses the southeast corner of the study area, connects north central and northeastern Pennsylvania and New York State with the Harrisburg metropolitan area, the Pennsylvania Turnpike, and Hagerstown, Maryland. East of Harrisburg, Interstate 81 connects directly to Interstate 78, which serves the Lehigh Valley and the northern New Jersey/New York City metropolitan areas.

US Route 322 is a major east-west cross-Pennsylvania transportation corridor that parallels the Pennsylvania Turnpike and Interstate 80. US Route 322 connects the Harrisburg metropolitan area with State College, Penn State University, and Interstate 80. US Route 322 is joined by US Route 22 to form US Routes 22/322 within the study area. Recently, US Routes 22/322 was improved

and upgraded to a four-lane limited access freeway between Dauphin and Clark's Ferry (Dauphin Narrows).

US Route 15, another major Central Pennsylvania north-south transportation corridor, connects the Corning-Elmira, New York area to the Frederick, Maryland/Northern Virginia metropolitan areas. In the study area, US Route 15 is joined by US Route 11 to form US Routes 11/15. Immediately north of Harrisburg, US Routes 11/15 is located on the west shore of the Susquehanna River opposite US Routes 22/322, which is located on the east shore of the river.

Proposed improvements to other portions of US Route 322 in Centre and Clearfield Counties; US Route 15 in York County, Tioga County, Lycoming County, and Northumberland County; Interstate 81 in Dauphin County and sections of Interstate 78 will likely increase the flow of both out-of-state and cross-state traffic through the project study area. The completion of the Dauphin Narrows project has alleviated the daily traffic congestion that was a common occurrence on old two-lane US Routes 22/322 in the vicinity of the borough of Dauphin.

The following paragraphs describe the existing transportation network of the study area corridors in greater detail.

PA Route 34 is the main north-south arterial traveling through the communities of east-central Perry County. PA Route 34 collects traffic off of the major east-west roadways and the minor local roadways in Perry County and funnels it through Sterretts Gap into Cumberland County. As a result, the roadway carries high amounts of peak hour traffic, most of which consists of commuter trips heading from their homes in Perry County (New Bloomfield, Newport, and Shermans Dale) to their places of employment in Carlisle, Camp Hill, Mechanicsburg, and Harrisburg. Because of this, the traffic on PA Route 34 is highly directional during the peak hours with most of the traffic heading south (to work) in the morning and north (to home) in the evening. Traffic volumes are heaviest at the southern end of PA Route 34.

Throughout the study area, PA Route 34 has one travel lane in each direction and has been given the functional classification of 'rural minor arterial'. The speed limit on PA Route 34 is

generally posted at 45 miles per hour, but it is as low as 25 miles per hour as the roadway travels through the middle of the residential areas in the towns that are located within the study area, such as New Bloomfield and Newport. PA Route 34 travels through generally rural to low-density suburban areas in addition to traveling through the older boroughs. Residential development becomes generally more concentrated and traffic volumes greatly increase toward the southern end of PA Route 34.

Sterretts Gap is located at the Cumberland/Perry County border. Traffic that is headed from east-central Perry County into Cumberland County and the Harrisburg metropolitan area is funneled onto PA Route 34 and through Sterretts Gap from the numerous collector roadways and side streets because PA Route 34 is one of the few relatively major roadways that crosses Blue Ridge from Perry County into Cumberland County. An extremely large amount of traffic navigates through Sterretts Gap on PA Route 34

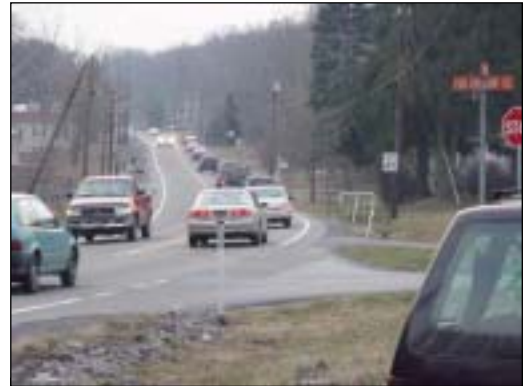


Photo 1 – Looking south on PA Route 34 at the regular morning peak hour traffic congestion at Fox Hollow Road

during the morning peak hour, causing long backups daily. Traffic backups in excess of one mile (from locations north of Fox Hollow Road to Sterretts Gap) are commonplace due to the intersection configuration at Sterretts Gap.

The stop-controlled intersection of SR 1007 (Sunnyside Drive), Mountain Road (a minor local street) and PA Route 34 exists at Sterretts Gap. Most of the traffic traveling through Sterretts Gap travels via Sunnyside Drive to/from points south. During the evening peak hour, regular mile-long backups are experienced in the northbound direction on the Sunnyside Drive approach to Sterretts Gap. The same traffic that funnels southbound through Sterretts Gap during the morning peak hour returns home to Perry County in the northbound direction during the evening peak hour. The congestion and delays on Sunnyside Drive can be attributed to a combination of the stop sign at the PA Route 34 intersection, the extremely high traffic volumes, and a few slow-moving trucks traveling up the steep incline.

PA Route 944 travels east to west within the study area along the southern base of Blue Mountain in Cumberland County. The landscape, the land uses adjacent to the roadway, and the traffic volumes vary widely along the length of the corridor. The western end of the PA Route 944 corridor is relatively rural in character. The landscape along the eastern half of the corridor, which lies much closer to Harrisburg, is suburban in character and is experiencing a high amount of development. The eastern end of the corridor has relatively dense residential development in the Enola area. The traffic volumes in the developed areas are much greater than those in the rural areas west of Sunnyside Drive (SR 1007). PA Route 944 also collects much of the high volume of peak hour traffic that travels from Perry County through Sterretts Gap (via PA Route 34 and Sunnyside Drive) and distributes it to PA Route 114, PA Route 581, and Interstate 81. This causes the segment of PA Route 944 between Sunnyside Drive and PA Route 114 to be the most heavily traveled section within the study area.

Along most of its length, PA Route 944 is a two-lane roadway with the exception of the segment of roadway that lies between Good Hope Road and Valley Road (in the vicinity of the Interstate 81 interchange). This section of PA Route 944 is a four-lane roadway with two travel lanes in each direction. Auxiliary turning lanes are provided at some of the major signalized and unsignalized intersections along the corridor. The posted speed limit on PA Route 944 within the study area varies from 40 miles per hour west of Sunnyside Drive, to 45 miles per hour between Sunnyside Drive and the Hampden Township/East Pennsboro Township Border. Within the medium-density residential sections of East Pennsboro Township, the speed limit on PA Route 944 is 35 miles per hour on the Wertzville Road section and 25 miles per hour on the Enola Drive section.

The most heavily traveled section of PA Route 944 is the section between Sunnyside Drive and PA Route 114 because of the addition of Perry County traffic (from Sunnyside Drive); this is especially true during the morning and evening peak periods. Again, the peak period traffic volumes on this section are very heavy and highly directional; a large majority of the traffic is



Photo 2 – Looking west on PA Route 944 at PA Route 114

headed east in the morning and west in the evening.

Farther east, PA Route 944 meets up with PA Route 114 at a signalized intersection. At this location during the morning peak period, the majority of the eastbound PA Route 944 traffic makes a right-turn onto PA Route 114 eastbound. Much of this traffic that is turning from eastbound PA Route 944 onto PA Route 114 eastbound consists of the commuter vehicles that originated in central Perry County, traveled through Sterretts Gap (via PA Route 34 and Sunnyside Drive), and are destined for Interstate 81 and the employment centers of Cumberland County and the Harrisburg metropolitan area (Camp Hill, Mechanicsburg, and Harrisburg). The mirror image of this very heavy turning movement at this intersection occurs during the evening peak hour; the left-turn from PA Route 114 westbound onto PA Route 944 westbound is extremely heavy.

As one travels east along PA Route 944 from PA Route 114, the surrounding landscape transitions from mixed rural and low-density residential to medium-density residential, office park, and retail land uses that are characteristic of the ‘typical’ suburban setting. Numerous new housing developments have been built, are being built, or are planned to be built in the immediate area surrounding this section of PA Route 944 in Hampden Township and East Pennsboro Townships. A series of signalized intersections are encountered along the eastern sections of PA Route 944. One of the signalized intersections along PA Route 944 is with newly constructed East Penn Drive, which gives travelers originating from the surrounding housing developments in East Pennsboro Township and Hampden Township a quick way to access the Camp Hill (Capital City) Business Center and downtown Harrisburg.

US Routes 11/15 is the major north/south arterial serving the residents of eastern Perry County. The roadway is used by local traffic as a commuter route from their homes in eastern Perry County to their places of employment in Cumberland County (Camp Hill and Mechanicsburg) and Harrisburg in Dauphin County. The peak period traffic patterns are directional with most of the traffic headed toward the south (to work) in the morning and to the north (to home) in the evening, and the volumes are heaviest along the southern end of the corridor. Traveling along the west bank of the Susquehanna River, US Routes 11/15 also serves a considerable amount of

through traffic in addition to the local commuter traffic. US Routes 11/15 is the major route from Harrisburg to Selinsgrove, Williamsport, the central and upper Susquehanna Valley, and points north. Many vehicles also use US Routes 11/15 to get to their recreation destinations in north-central Pennsylvania. In addition to the local travelers, vehicles from the Washington, D.C./Maryland metropolitan areas also use US Routes 11/15 as a through route to the recreational areas to the north (in addition to US Routes 22/322, which is located on the opposite side of the Susquehanna. Previously, severe traffic congestion and frequent backups have been noted on US Routes 11/15 from Duncannon to Marysville. These problem areas may have been remedied by the construction of the Dauphin Narrows Bypass (US Routes 22/322) on the east bank of the Susquehanna River, which is a four-lane limited-access expressway that takes the through traffic off of the local two-lane roadway (old US Routes 22/322). The completion of the Dauphin Narrows project has alleviated the daily traffic congestion that was a common occurrence on old two-lane US Route 22/322 in the vicinity of the borough of Dauphin, but the longtime effects of the US Route 22/322 bypass on the US Route 11/15 corridor has not been fully determined. Even with the completion of the Dauphin Narrows Bypass, a significant amount of truck traffic still exists on US Routes 11/15 within Perry County.

Within the study area, US Routes 11/15 has been given the functional classifications of ‘rural principal arterial’ north of Marysville and ‘urban principal arterial’ from Marysville south to the study area border in East Pennsboro Township, Cumberland County. The number of lanes on US Routes 11/15 varies within the study area. In Penn Township (near Duncannon) and Watts Township in the north and near Interstate 81 in the south, US Routes 11/15 is a four-lane divided limited-access roadway. In the Cove section of Penn Township and in the Summerdale Section in East Pennsboro Township, US Routes 11/15 is a three-lane roadway with one travel lane in each direction and a continuous center left-turn lane. In the Perdix section of Penn Township, the principal arterial is a two-lane roadway with one travel lane in each direction. This is the last two-lane section of US Routes 11/15 between Interstate 81 and the intersection of US Route 11 and US Route 15 in Snyder County (near Northumberland and Sunbury). Furthermore, within Perdix, there are a considerable number of residences located in close proximity to the roadway as well as many parked vehicles and pedestrians, all of which influence the flow of traffic. Many businesses

and homes are located along the entire length of the free-access section of US Routes 11/15 in the study area.

The speed limit varies from 55 miles per hour in the limited-access section of US Routes 11/15 near Duncannon to 35 miles per hour in Perdix to 40 miles per hour in Marysville and near the southern border of the study area. Frequently, US Routes 11/15 is closed due to rockslides, storm damage, and vehicular crashes resulting in increased traffic congestion and delays in emergency vehicles' response time. Segments of US Routes 11/15 that are cut into a rock formation have narrow shoulders and generally lack rock slide protection with the exception of the segment between Perdix and Marysville. The Kinkora Heights section of US Routes 11/15 (between Duncannon and Cove) and the section near the border between Cumberland and Perry Counties are particularly susceptible to the dangerous rockslides. Rumble strips have been installed as a safety enhancement feature on different sections of US Routes 11/15. The rumble strips are helpful because they warn the motorist when their vehicle has drifted outside of the cartway. The rumble strips are placed inconsistently on US Routes 11/15; sometimes they are located in the middle of the roadway (usually in the two-lane sections), sometimes they are located on the shoulders, and on some sections of roadway the rumble strips have not been installed.

South of the PA Route 274 interchange, US Routes 11/15 quickly transitions from a four-lane divided limited-access roadway to a two-lane undivided unlimited access roadway while rounding the dangerous curve just south of Duncannon at Kinkora Heights. South of the northern Schoolhouse Road intersection, is the Susquenita School complex. Two driveways intersect directly with US Routes 11/15; the northernmost driveway serves the high school area, and the southernmost driveway gives the middle school and elementary school access to US Routes 11/15. Many school buses use the access driveways. Additionally, the section of US Routes 11/15 immediately in front of the school complex is designated as a school zone. The school zone speed limit of 15 miles per hour on US Routes 11/15 is in effect when the students are arriving at school, leaving school, and during lunch recess. The slower school zone speed limits along US Routes 11/15 provide for student safety, but can cause the morning and evening peak hour traffic along US Routes 11/15 to form long queues. The school bus-related traffic backups occur more frequently during the morning peak hour than in the evening peak hour because the beginning of the school

day typically coincides with morning peak traffic period and ends prior to the onset of the evening peak traffic period. Many school bus stops exist along the free-access section of US Routes 11/15. Student safety is provided and traffic backups can occur when the traffic stops with each stopping of a school bus (the red lights on the bus turn on).



Photo 3 – Looking south on US Routes 11/15 in Perdix at the Perdix Firehouse and Firehouse Road

Continuing farther south on US Routes 11/15 just past the southern intersection of Schoolhouse Road, the roadway narrows to become a two-lane roadway and the speed limit drops to 35 miles per hour as US Routes 11/15 enters into the village of Perdix in Penn Township. Many single-family homes are located along this section of US Routes 11/15. Because of the many homes with school-age children that exist along this section of roadway, there are also many school bus stops. Despite the fact the school buses provide for

student safety when stopping traffic during the picking up and the discharging of students, many of the children are still in danger. There are no sidewalks along this section of roadway, and the children must walk on the side of the road on busy and dangerous US Routes 11/15 to get to their homes. The danger is compounded by the fact that the homes are located very close to the roadway, the shoulders here are extremely narrow, and that there are many parked cars along the side of the road. This causes pedestrians and the school-age children to walk even closer to US Routes 11/15 thereby placing them in an even more perilous situation. The exceedingly narrow clear zones along US Routes 11/15 in Perdix make it very difficult for the police to effectively enforce the law and for motorists to pull over in case of an emergency.

In Marysville, there are many intersections between the local roadways and US Routes 11/15 but the main intersection is with PA Route 850 (Valley Street). This intersection has extremely tight turning radii, and somewhat of a sight distance problem as well. Because the peak period traffic volumes on US Routes 11/15 are quite heavy, delays occasionally do occur for vehicles on the eastbound PA Route 850 approach to the intersection. When the traffic backs up significantly on PA Route 850, a small amount of the vehicles that wish to head southbound on US Routes 11/15

from eastbound PA Route 850 alter their travel patterns. The vehicles turn off of Valley Street (PA Route 850) and onto Front Street, which intersects US Routes 11/15 one block south of the PA Route 850 intersection. During the peak travel periods, a motorist traveling on southbound US Routes 11/15 occasionally stops to allow vehicles to turn off of PA Route 850 onto southbound US Routes 11/15. When this transpires, the heavy traffic on southbound US Routes 11/15 stops in a ‘shock wave’ effect that causes intermittent stop-and-go traffic for a period of time a mile upstream of the initial stopped vehicle at the PA Route 850 intersection.



Photo 4 – Looking north on US Routes 11/15 from the PA Route 850 intersection in Marysville

South of the Interstate 81 interchange on US Routes 11/15 (in the Summerdale section of East Pennsboro Township), the landscape surrounding the US Routes 11/15 corridor in this area is much more suburban and urban than rural. There is a great deal of commercial development adjacent to this segment of US Routes

11/15 in addition to the relatively dense residential development that exists to the west.

PA Route 274 connects the eastern Perry County communities of New Bloomfield and Duncannon. This roadway does not carry long-distance traffic, but it does carry vehicles wishing to cross Perry County from the west to the east. PA Route 274 acts as a ‘feeder route’ to PA Route 34 and US Routes 11/15, both of which collect traffic off of the ‘feeder routes’ and funnel the commuter traffic from Perry County into Cumberland County. The traffic volumes on PA Route 274 are not as heavy as those seen on the major routes such as US Routes 11/15 and PA Route 34.

Throughout the study area, two-lane PA Route 274 has been given the functional classification of ‘rural minor arterial’. The speed limit on PA Route 274 varies from 35 miles per hour in New Bloomfield to 45 miles per hour in sections of Wheatfield and Penn Townships.

Entering the study area from the west and heading east on PA Route 274 (Main Street) in New Bloomfield (Bloomfield Borough), there are closely spaced houses and businesses located close

to the roadway. Many driveways, local streets, and access roads intersect PA Route 274 within New Bloomfield. South of New Bloomfield, the landscape transitions from medium-density residential to low-density residential and rural in Centre Township. The adjacent land uses consist of a mix of private homes and small farms with grazing cattle. Farther south, PA Route 274 eastbound departs PA Route 34 at Mecks Corner as it heads east into Wheatfield Township and toward Duncannon. This junction (Mecks Corner) results in a confusing intersection because Dellville Road traffic that is intending to travel north on PA Route 34 sometimes crosses the path of motorists from the PA Route 274 west connector attempting to enter PA Route 34 southbound. This occurs because Dellville Road and the PA Route 274 west connector, which are the two approaches controlled by a stop sign at this intersection, connect with PA Route 34 on the east side of the roadway.

East of the southern junction of PA Route 34 and PA Route 274 at Mecks Corner, the countryside is characterized by widely spaced single-family homes with farmland/grazing land located between the homes. Farther east, the traffic volumes on PA Route 274 tend to increase because more vehicles are using the roadway to get to US Routes 11/15 in Duncannon. Near the Dellville Road intersection, a small shopping



Photo 5 – Looking east on PA Route 274 approaching US Routes 11/15

center with a supermarket (Mutzbaugh Market) is located adjacent to PA Route 274. The traffic associated with the supermarket accesses PA Route 274 via Business Campus One Driveway. The intersection of PA Route 274 and the Business Campus One Driveway experiences high traffic volumes and dangerous conditions during the morning and evening peak traffic periods. Additional commercial/office development is also planned at Business Campus One in the near future.

From this location, PA Route 274 heads east down the hill toward Duncannon and the US Routes 11/15 interchange. This section of PA Route 274, between Dellville Road (SR 2002) and US Routes 11/15, currently experiences heavy traffic flows and dangerous conditions that are, in

part, caused by narrow shoulders and poor sight distance from the intersecting side roads and driveways.

The traffic from Wheatfield Township and northern Penn Township that is fed onto PA Route 274 can access US Routes 11/15 and the Harrisburg metropolitan area via the US Routes 11/15 – PA Route 274 interchange. The US Routes 11/15 bridge over PA Route 274 has a low clearance height of 13’7”. According to the PENNDOT Design Manual Part 2, the minimum vertical clearance height for structures crossing over the arterial and collector roadways is 14’6”. This includes a six-inch allowance for future resurfacing of the roadway.

PA Route 850, west of PA Route 34, is an arterial roadway that serves traffic headed from Loysville and Landisburg to PA Route 34 southbound and Cumberland County. Between PA Route 34 and US Routes 11/15 (east of PA Route 34), PA Route 850 is a ‘feeder route’ that runs east to west in the valley on the north side of Blue Mountain. PA Route 850 collects the local traffic from the valley and feeds it onto either PA Route 34 or US Routes 11/15. Because a high amount of commuter traffic uses PA Route 850, the directional distribution of the peak hour traffic is unbalanced.

Depending on the section of roadway, PA Route 850 has been given different functional classifications. The section of PA Route 850 that is west of PA Route 34 and the section of PA Route 850 that is joined with PA Route 34 have been given the functional classification of ‘rural minor arterial’. The ‘rural minor arterial’ sections of PA Route 850 carry more traffic than the section of roadway that is east of PA Route 34. This section of PA Route 850 (east of PA Route 34) has been given the functional classification of ‘rural major collector’. In the borough of Marysville, PA Route 850 has been given the functional classification of ‘urban minor arterial’ because of the urban surroundings and the higher amount of traffic that is carried on this section of roadway. PA Route 850 is a two-lane roadway for its entire length within the study area. The posted speed limit on PA Route 850 varies from 55 miles per hour in the rural sections in Rye Township to 35 miles per hour in the urban sections within the borough of Marysville.

Entering the study area from the west and traveling east in Carroll Township, PA Route 850 travels through generally rural terrain as it carries relatively heavy commuter traffic from Landisburg and Loysville. This section of PA Route 850 is the major 'feeder route' onto PA Route 34 southbound. The intersection of Windy Hill Road (SR 2001) and PA Routes 34/850 in Shermans Dale is another major 'feeder route' onto PA Routes 34/850. The Windy Hill Road approach to the intersection has a very steep down grade and sight distance problems. As traffic volumes increase, this will become an even more serious problem location.

East of the southern intersection of PA Route 850 and PA Route 34, PA Route 850 (Valley Street) there are widely spaced low-density residences mixed with farms and grazing lands along the PA Route 850 corridor. The driveways of the single-family homes intersect directly with PA Route 850. Farther east of this intersection, the single-family residences become more widely scattered and the surrounding landscape becomes even more rural in character. Farms, ranches, and grazing lands are typical land uses adjacent to the roadway.

The section of PA Route 850 (east of Lambs Gap Road) is located closer to US Routes 11/15 and Marysville, and the land areas surrounding the PA Route 850 corridor are becoming increasingly more developed with single family homes. The traffic volumes increase on PA Route 850 because of the proximity to US Routes 11/15. Because of the nearby residences, there is an increase in the number of school bus stops along PA Route 850.

Farther to the east, PA Route 850 enters the western end of the borough of Marysville where there are new single-family and multi-family (townhouse) developments. Located east of the newer neighborhoods in Marysville are the older and more closely spaced housing. The older homes are situated right up to the edge of the road along PA Route 850. There are numerous intersections with driveways, alleys, and the local roadways within the older section of Marysville. The traffic volumes on this section of PA Route 850 become much heavier because the local traffic that wishes to access US Routes 11/15 is being fed onto PA Route 850, which is the only major east to west through route. The eastern terminus of PA Route 850 is located in Marysville at the intersection of PA Route 850 and US Routes 11/15, which has been previously described under the US Routes 11/15 section.

PA Route 849 is an east-west rural collector roadway that connects the borough of Newport to Duncannon. The traffic volumes on the section of PA Route 849 between Newport and Duncannon are very light because almost all of the traffic that travels between the boroughs uses the much faster route of US Routes 22/322. Within the study area, PA Route 849 is a meandering, hilly route with steep side slopes and sharp curves that carries mostly short-distance and local traffic. Commuter traffic from the Borough of Duncannon is fed onto US Routes 22/322 at Clarks Ferry via PA Route 849.

PA Route 849 has been given the functional classifications of ‘rural minor collector’ north of Newport and ‘rural major collector’ between Newport and its eastern terminus at US Routes 22/322. Throughout the study area, PA Route 849 is a two-lane roadway (one lane in each direction) with severe horizontal and vertical curves. The posted speed limit on PA Route 849 varies from as low as 25 miles per hour in the built-up residential sections of Newport to as high as 40 miles per hour in the rural sections of Miller, Wheatfield, and Penn Townships.

Entering the study area from the north and traveling toward the south, PA Route 849 enters the study area within the borough of Newport where it is known as Fourth Street. The borough of Newport is a densely developed town with many homes, and parking is available along the east side of the street. There are many intersections with driveways, alleys, and local streets along this section of PA Route 849.

Outside of Newport and south of its junction with PA Route 34, PA Route 849 enters into Miller Township where the posted speed limit is 35 miles per hour. The section of PA Route 849 that is in Miller Township has very sharp curves and extremely steep grades. Low-speed hairpin curves and grades as steep as 14 percent make it very difficult for trucks to travel. The physical geometry of the roadway allows for very lengthy travel times and slow rates of speed. These are deterrents for through traffic in addition to being cost-prohibitive for commercial truck traffic. As a result, the traffic volumes on the section of PA Route 849 between Newport and Duncannon are very low. The surrounding landscape is very rural with a considerable amount of forested land and a few widely spaced single-family homes.

East of its overpass crossing of US Routes 11/15, PA Route 849 intersects with Market Street, which is immediately north of Duncannon. During times of high river levels, this section of PA Route 849 is flooded out and closed to traffic. The facilities needed to pump out the water in the Duncannon Subway currently exist and are not being used to mitigate the current flooding situation. When flooded, US Routes 22/322 cannot be accessed from Duncannon via PA Route 849. The importance of maintaining this section of roadway is evident in the fact that the delays and detours caused by the flooding are especially harmful to emergency vehicle access. This section of PA Route 849 has higher amounts of traffic because it connects Duncannon to US Routes 22/322. PENNDOT is planning on remedying this problem.

Just east of the ‘Duncannon Subway’, PA Route 849 crosses over the Juniata River, via the Juniata River Bridge, and into Reed Township in Dauphin County. This bridge is a narrow structure and is in deteriorating condition. Immediately east of the bridge over the Juniata River is the eastern terminus of PA Route 849 at US Routes 22/322.

B. Existing Transit Service Information

Public transportation can play a role in rapidly growing areas such as Cumberland and Perry Counties. The extent of the current transit system must be assessed so that possible improvements or expansions in service can be suggested. For each corridor, the existing transit service routes that currently provide service along the corridor are quantified, and the ridership numbers (if available) are also given below.

In the study area, two types of transit services are available, fixed-route bus service and paratransit service. The fixed route bus service is provided by Capital Area Transit (CAT), which is the provider of public transit services to the Harrisburg metropolitan area. The paratransit services are provided by the Cumberland County Transportation Department (in Cumberland County) and by the Perry County Transportation Authority (in Perry County).

The transit service (provided by Capital Area Transit) provides transportation service along pre-determined, scheduled, fixed routes for a fare (charged on a per use basis). Service is provided

on most routes during the day from Monday through Saturday, CAT does not operate buses on Sundays and major holidays. The general public is charged the full fare, senior citizens (over 65 years old) ride free during off-peak hours, and handicapped persons (with proper identification) ride for half price.

Utilized by fixed-route transit patrons and by carpooling motorists, the existing park and ride facilities that are located within the study area are inventoried and described below. Information on existing park and ride facilities has been gathered from the Tri-County Regional Planning Commission.

The paratransit services in Cumberland and Perry Counties provide transportation (via minibuses) for senior citizens, the mentally and developmentally disabled, the general public, and transportation for medical appointments. In order to use the paratransit services, the patron must call and make a reservation while also providing information such as the time and the location that he or she wishes to be picked up and the location of their final destination. Often, the reservations need to be made one or two days in advance of the actual trip. For the use of this service, full fares (as high as \$10.00) are charged to the general public, while senior citizens and the handicapped pay a reduced fare (approximately \$1.00), and some senior citizens qualify for free rides. Paratransit service is available Monday through Friday from 8:00 AM to 4:00 PM. The Cumberland County Transportation Department provides paratransit service throughout Cumberland County, and paratransit service is provided throughout Perry County by the Perry County Transportation Authority.

North of Newport on PA Route 34 and adjacent to the US Routes 22/322 interchange, commuters form an unofficial carpool park and ride lot in the shopping center parking lot. This carpool park and ride lot, which is used by people that live in the Newport area, has excellent access to the Harrisburg area because it is located on PA Route 34 just south of the US Routes 22/322 interchange.

Only the eastern end of the PA Route 944 corridor in East Pennsboro and Hampden Townships has access to fixed route transit service. The fixed route transit services are provided by Capital

Area Transit (CAT). A map of the existing fixed route transit service areas is shown on Figure II-2.

CAT Bus Route F travels from downtown Harrisburg via US Routes 11/15 into the study area and onto PA Route 944 (State Street). Bus Route F continues on PA Route 944 onto South Enola Drive, with bus stops located at the beginning of every block. PA Route 944 makes a left-turn from South Enola Drive onto Wertzville Road, but CAT Bus Route F continues along Enola Drive on its way to the park and ride lot in the Summerdale Shopping Center along US Routes 11/15. CAT Bus Route F uses the same roads (opposite direction) for the inbound bus route.

The CAT buses operate from 6:40 AM to 5:40 PM Monday through Friday. There are eight scheduled buses each day per direction for a total of 16 scheduled buses (inbound and outbound). There is no weekend service on this bus route. The average daily ridership on CAT Bus Route F is 102 one-way trips per day (51 round trips). This is the total ridership for the entire route from Enola to downtown Harrisburg.

Recently, CAT Bus Route F traveled farther north on US Routes 11/15 into Marysville, Perry County. The fixed route bus service to Perry County was discontinued by CAT in March 2001 because of low ridership numbers. An average of only eight people per day made the round trip from the Marysville park and ride lot into Harrisburg. The park and ride lot still exists at the same location on the southbound side of US Routes 11/15 in Marysville. Commuters can still use this location as a carpool park and ride lot.

CAT Bus Route K serves the Cumberland Technology Park and the Harrisburg Patriot-News Distribution center at the intersection of PA Route 944 and Valley Road in Hampden Township. The bus route travels northbound from Camp Hill on East Penn Drive and then turns left onto Wertzville Road on its way to the Cumberland Technology Park at Valley Road. There are currently only two scheduled buses per day in each direction for a total of four scheduled buses (inbound and outbound). There is no weekend service on this bus route.

An informal carpool park and ride lot exists along PA Route 114 between PA Route 944 and Interstate 81 (see Photo 6). A number of commuters currently park in the gravel area off of the westbound shoulder of PA Route 114 where they wait for their carpool to form. Fixed-route transit service does not currently exist in the immediate vicinity.

Although there are no fixed route transit services nearby, a small number of commuters currently utilize South Main Street near the PA Route 274 interchange with US Routes 11/15 as a carpool park and ride location. The construction of a new official park-and-ride carpool lot at this interchange is currently on the fourth of the four-year Transportation Improvement Program (TIP).

During the construction of the Dauphin Narrows Bypass, Capital Area Transit (CAT) provided for fixed-route service from Harrisburg to Halifax via US Routes 22/322. This route has since been canceled because of low ridership numbers. There is currently no fixed route transit service



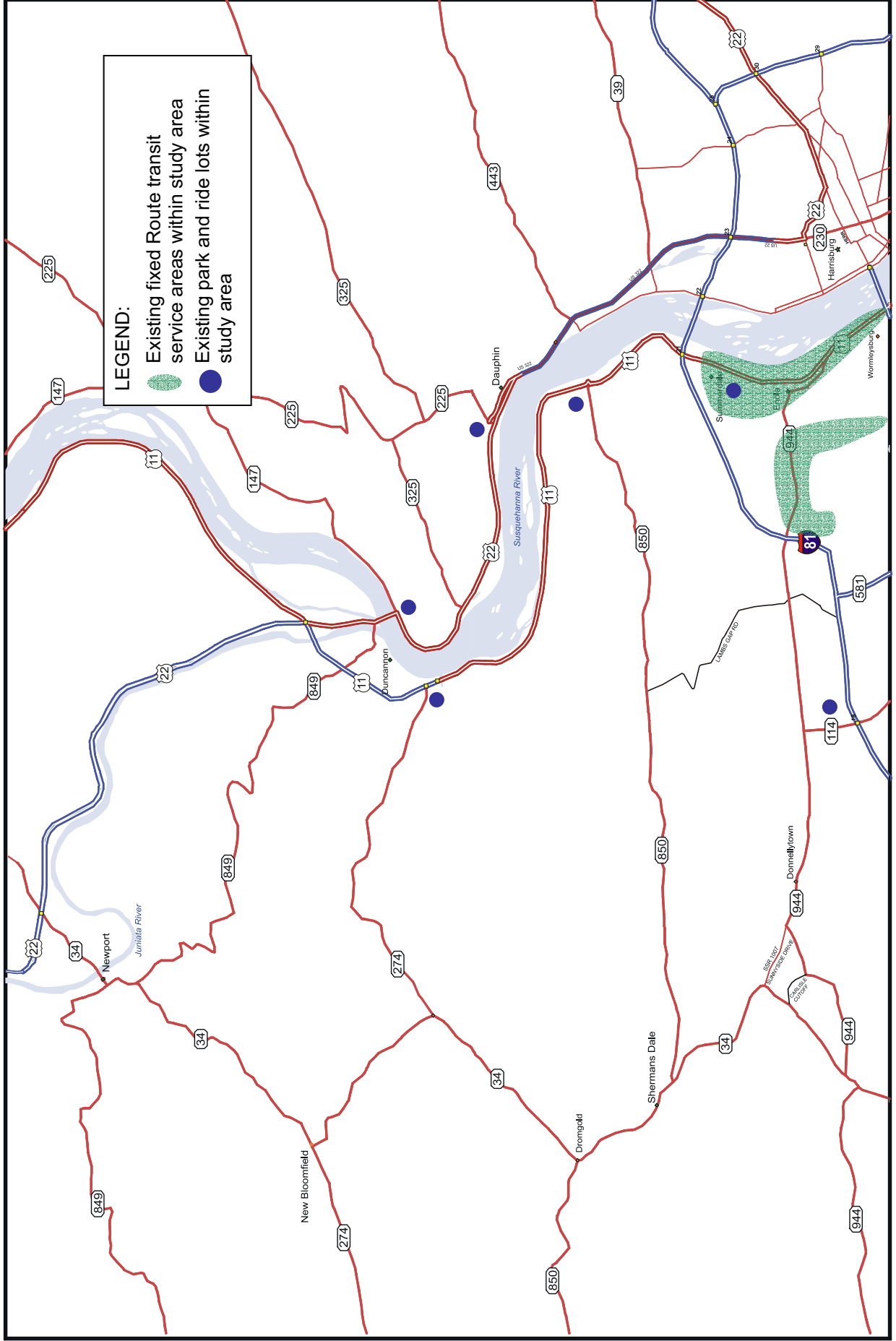
Photo 6 – Looking west at the park and ride lot on PA Route 114 approaching PA Route 944

along the US Routes 22/322 corridor within the study area. A carpool park and ride lot has been constructed at the PA Route 225 interchange with the rebuilt US Routes 22/322. This lot has the potential to be served by a future fixed-route transit line. Motorists presently use the paved parking area at the interchange of US Routes 22/322 with PA Route 147 as an informal carpool lot.

A map showing the locations of carpool park and ride lots within the study area is shown on Figure II-2.

**Existing Transit Service Areas and Park-and-Ride Lot Locations
 Safety and Congestion Management System Study
 CUMBERLAND AND PERRY COUNTIES, PENNSYLVANIA**

Figure II-2



C. Existing Traffic Volumes

Overview of Regional Traffic Conditions

Peak hour traffic congestion occurs at several locations within the project study area during the commute into and from the Harrisburg/Camp Hill/Mechanicsburg employment centers and commercial areas. A map that shows the existing areas of congestion is shown on Figure II-3.

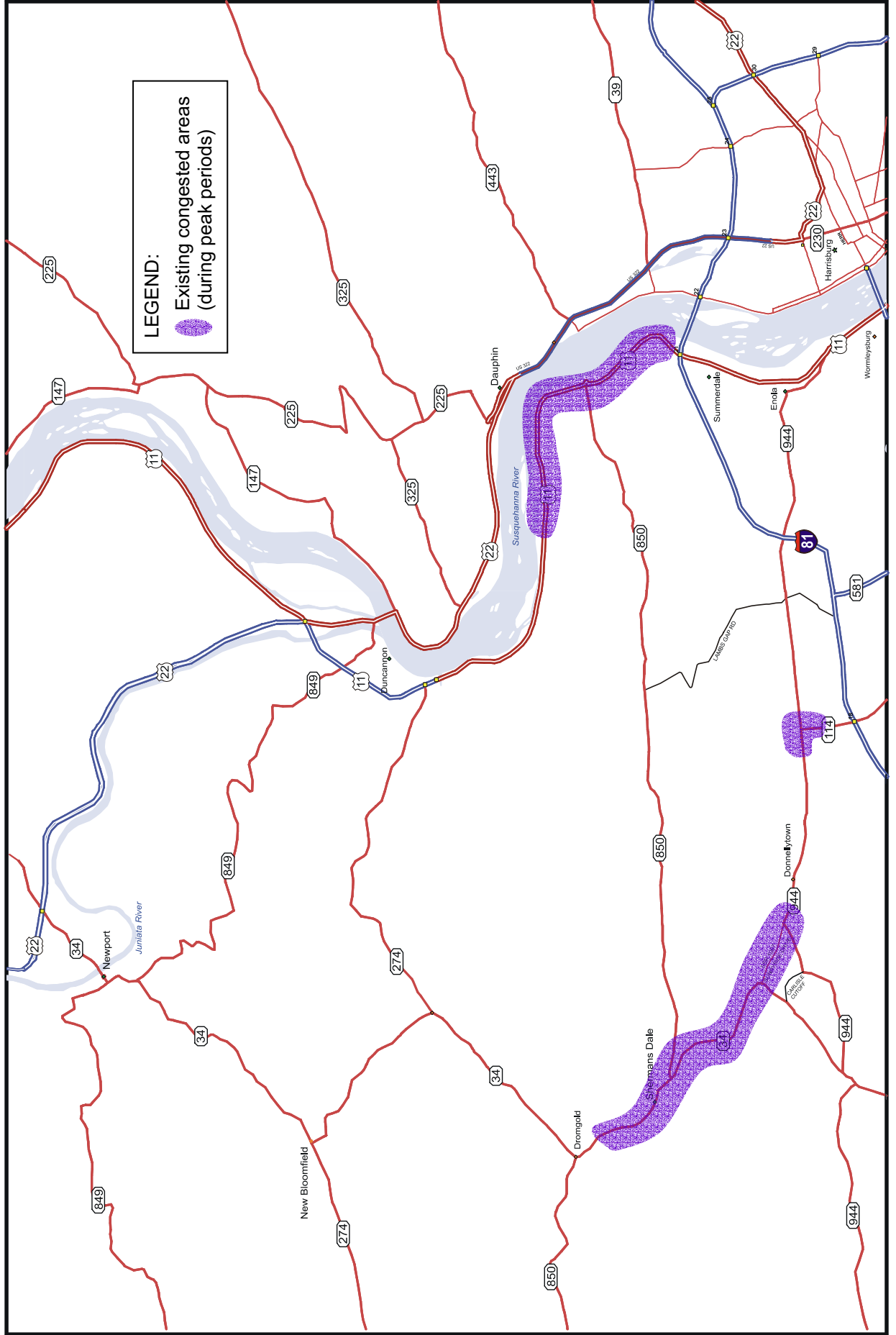
Primary congestion occurs as traffic flows accumulate from local roads and streets within the study area to east-west cross-routes including PA Route 849, PA Route 274, PA Route 850, and from points beyond the study area including Blain, Juniata County, Liverpool, and beyond. Traffic accumulates to create morning peak hour backups on PA Route 34 from Sterretts Gap to Shermans Dale, US Routes 11/15, and at some locations on PA Route 944.

Previously, severe traffic congestion and frequent backups have occurred on US Routes 22/322 from Dauphin to the Clarks Ferry Bridge and on US Routes 11/15 from Duncannon to Marysville. These problem areas on US Routes 11/15 may have been remedied by the construction of the Dauphin Narrows Bypass (US Routes 22/322), which is a four-lane limited-access expressway that takes the through traffic off of the local two-lane roadway (old US Routes 22/322). The existing traffic flows, which include a significant amount of heavy vehicle traffic, are relatively heavy and steady on the section of US Routes 11/15 between Duncannon and Marysville. The travel times experienced on the new four-lane US Routes 22/322 are greatly improved compared to those experienced on the existing two-lane roadway of US Routes 22/322.

The truck traffic on US Routes 22/322 typically increases during the day to become a significant portion of the traffic stream. North and west of Clark's Ferry and the US Routes 11/15 - US Routes 22/322 interchange, the through truck traffic is split between US Routes 11/15 and US Routes 22/322.

**Existing Congested Areas Location Map
Safety and Congestion Management System Study
CUMBERLAND AND PERRY COUNTIES, PENNSYLVANIA**

Figure II-3



Major destinations of vehicles originating in Perry County include the Harrisburg Government centers of employment, which can be reached via Front Street in Harrisburg and US Routes 11/15 in Wormleysburg; the Camp Hill business complex via the same roads, and the recently completed East Penn Drive (Center Street); and the commercial districts in Mechanicsburg along Gettysburg Pike and Carlisle Pike via Interstate 81, PA Route 581, PA Route 114, and to a lesser extent Lambs Gap Road. Access to the Carlisle Business District and industries also occurs by way of PA Route 34 from Perry County.

As traffic volumes and congestion on the major collectors/arterials (PA Route 34 and US Routes 11/15) increase, drivers begin to seek alternative routes with lower design speeds, reduced capacity, and increased deficiencies. Alternative routes include Dellville Road, Pine Hill Road, Mountain Road, Idle Road, Lambs Gap Road, and Tower Road in Rye Township and the Overview Road and bridge in Marysville/Summerdale.

Key capacity reducing "bottlenecks" include: US Routes 11/15 at Marysville (a two-lane roadway carrying greater than 22,000 Average Daily Traffic (ADT) squeezed between Blue Ridge Mountain, Norfolk Southern Rail lines and the Susquehanna River), and PA Route 34, which funnels greater than 17,000 vehicles per day from Central Perry County (a rapidly growing area) through Sterretts Gap (a section of steep mountainous roadway with several high-conflict intersections) and access points.

Prior to the completion of the Dauphin Narrows Bypass (US Routes 22/322), the return (evening) commute from the previously identified points of destination (Harrisburg, Camp Hill, Mechanicsburg, Carlisle) typically deteriorated from east to west with vehicle stacking beginning at US Routes 22/322 in Dauphin. Congestion then followed on the west side of the river at US Routes 11/15 at the end of the mountain in Marysville. PA Route 34 also experiences congestion as many commuters make their way through Sterretts Gap into Perry County. As traffic at these points of egress accumulates, alternative secondary roads experience increased traffic volumes and flows which conflict with local residential traffic.

Now that the Dauphin Narrows Bypass is complete, the extreme traffic congestion on US Routes 22/322 has disappeared, and the severe backups that were experienced on US Routes 11/15 have transformed in to a moderately heavy, but steady stream of traffic with occasional stop and go traffic during peak travel periods. Today, PA Route 34 in the vicinity of Sterretts Gap still experiences the heavy congestion and long backups that are present during the morning and evening peak periods.

The volume of out-of-state traffic through the project study area builds to a peak throughout the week and is greatest during the Friday evening peak period as Marylanders and Virginians cross through the area to weekend vacation sites in north-central, central, and west-central Pennsylvania. Their return trip back through the study area is marked by very heavy traffic volumes on US Route 322 and US Routes 11/15 on Sunday afternoons. New Yorkers vacationing in central Pennsylvania visiting area tourist attractions in Gettysburg, Hershey, and Lancaster are also included with the through traffic that contribute to the vehicle mix of local and through traffic on the major study area roadways.

Existing Traffic Volumes

In order to adequately assess the existing transportation conditions of the roadways within the study area, the existing traffic volumes on the major roadways must be quantified. The existing traffic volume data within the study area was collected in two manners: manual intersection counts and automatic traffic recorder counts.

The manual turning movement traffic counts were performed at key intersections along the major roadways within the study area. Table II-1 shows the locations of the intersections that were manually counted.

**Table II-1
MANUAL TRAFFIC COUNT LOCATIONS**

Date of Traffic Count	Intersection
April 4, 2001	PA Route 34 and Fox Hollow Road
April 5, 2001	PA Route 274/Dellville Road and PA Route 34 (Mecks Corner)
April 4, 2001	PA Route 274 and US Routes 11/15 (movements adjacent to interchange)
April 4, 2001	PA Route 850 and PA Route 34 – Shermans Dale (Southern Intersection)
April 5, 2001	PA Route 34 and SR 1007 (Sunnyside Drive) – including Mountain Road
April 5, 2001	PA Route 944 and SR 1007 (Sunnyside Drive)
April 4, 2001	PA Route 944 and PA Route 114
April 4, 2001	PA Route 34 and Richwine/Young’s Church Road
April 4, 2001	PA Route 34 and SR 2001 (Windy Hill Road) (at Shermans Dale)
April 5, 2001 (AM) April 10, 2001 (PM)	PA Route 944 and US Routes 11/15
March 27, 2001	PA Route 850 and US Routes 11/15
April 5, 2001	PA Route 849 and US Routes 22/322
March 28, 2001	US Routes 11/15 and Firehouse Road
March 29, 2001	US Routes 11/15 and Sheetz/Rohrer Bus Area
March 28, 2001	US Routes 11/15 and Susquenita School complex
March 27, 2001	US Routes 11/15 and Cove Road
March 29, 2001	PA Route 34 and PA Route 850 - Dromgold’s (Northern Intersection)
April 3, 2001	PA Route 34 and Barnett Drive (Southern Intersection)

The manual counts were conducted on a typical weekday (Tuesday, Wednesday, Thursday) during March and April 2001. The manual counts were taken during the morning and evening peak traffic periods (6:00 – 9:00 AM and 3:00 – 6:00 PM). In addition to counting the total traffic passing through each intersection, the heavy vehicles were also counted (noted by turning movement).

By the use of automatic traffic recorders (ATRs), automatic traffic counts were conducted at midblock locations on the principal study area roadways. A select number of ATRs were set up as ‘classification counts’ to determine the amount of light and heavy truck traffic that exists on the study area roadways in addition to the total traffic volume count. The ATRs at the remaining locations were programmed to record the traffic volumes only. Table II-2 describes which locations on the major roadways were counted automatically, and whether each location was a ‘classification count’ or a ‘volume count’.

In order to obtain average daily traffic volumes, all ATR counts were conducted for 24 hours a day for a period of one complete week. The automatic traffic counts were conducted during between Monday, March 26, 2001, and Monday, April 9, 2001.

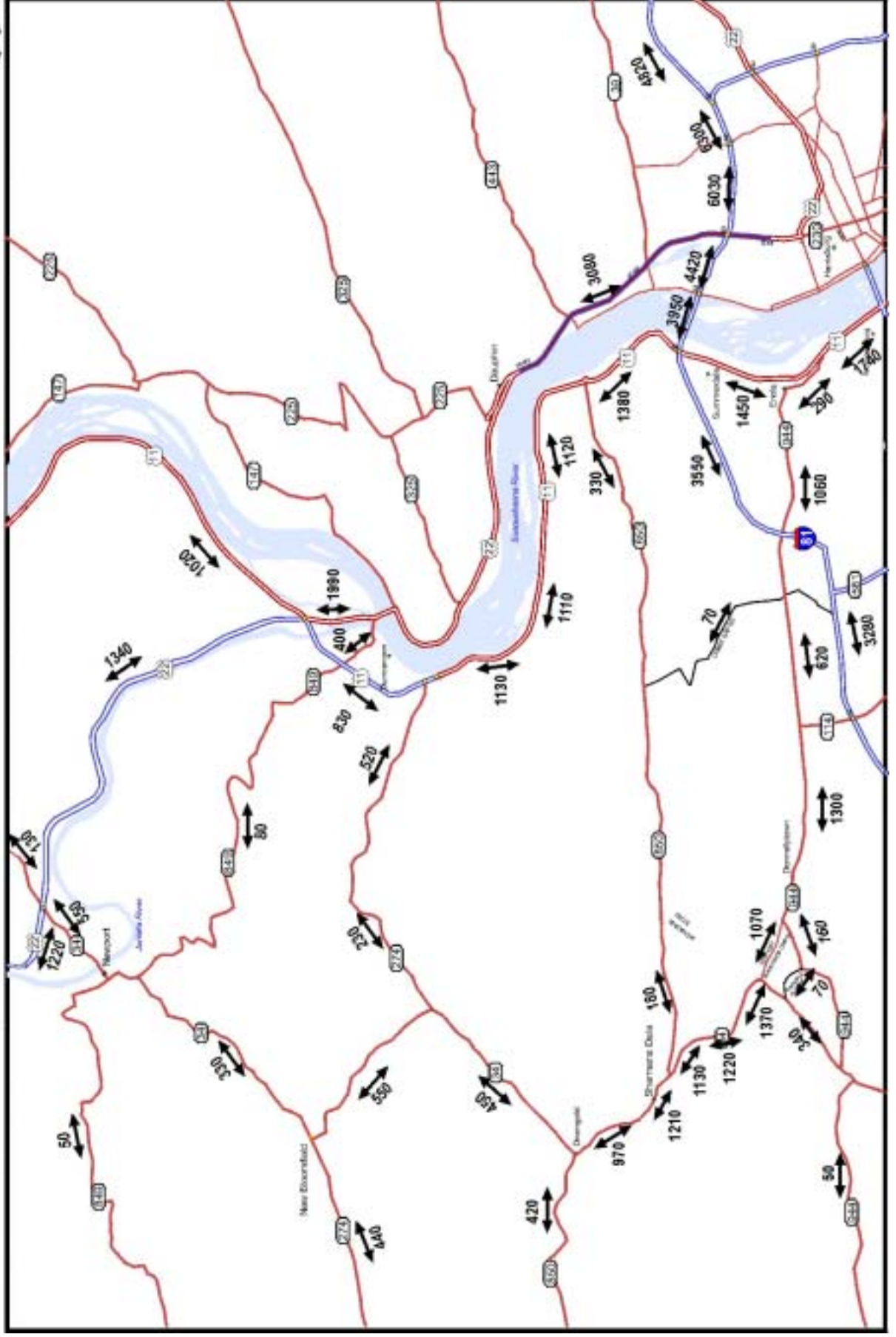
**Table II-2
AUTOMATIC TRAFFIC COUNT LOCATIONS**

Roadway	Location	Type of Traffic Count
US Routes 22/322	Between PA Route 325 and PA Route 225	Classification
US Routes 22/322	Between PA Route 849 and US Routes 11/15	Volume
US Routes 11/15	All eight (8) interchange ramps with US Routes 22/322	Classification
US Routes 11/15	All 8 interchange ramps with Interstate 81	Classification
US Routes 11/15	Between PA Route 850 and PA Route 274	Classification
US Routes 11/15	South of PA Route 944	Classification
PA Route 34	South of Sterretts Gap (Sunnyside Drive – SR 1007)	Volume
PA Route 944	West of Sunnyside Drive – SR 1007	Volume
PA Route 944	Between Sunnyside Drive and PA Route 114	Volume
PA Route 944	East of PA Route 114	Volume
PA Route 944	Between Interstate 81 and Center Street	Classification
PA Route 850	West of PA Route 34	Volume
PA Route 850	East of Lambs Gap Road	Volume
PA Route 274	West of PA Route 34	Volume
PA Route 274	West of US Routes 11/15	Volume
PA Route 849	West of US Routes 22/322	Volume
Lambs Gap Rd	Between PA Route 944 and PA Route 850	Volume
Carlisle Cutoff	Between PA Route 34 and PA Route 944	Volume
US Routes 22/322	West of PA Route 34	Volume

Figure II-4, Figure II-5, and Figure II-6 summarize the existing average daily traffic volumes, the morning peak hour traffic volumes, and the evening peak hour traffic volumes for select roadway segments within the study area.

FIGURE II-5

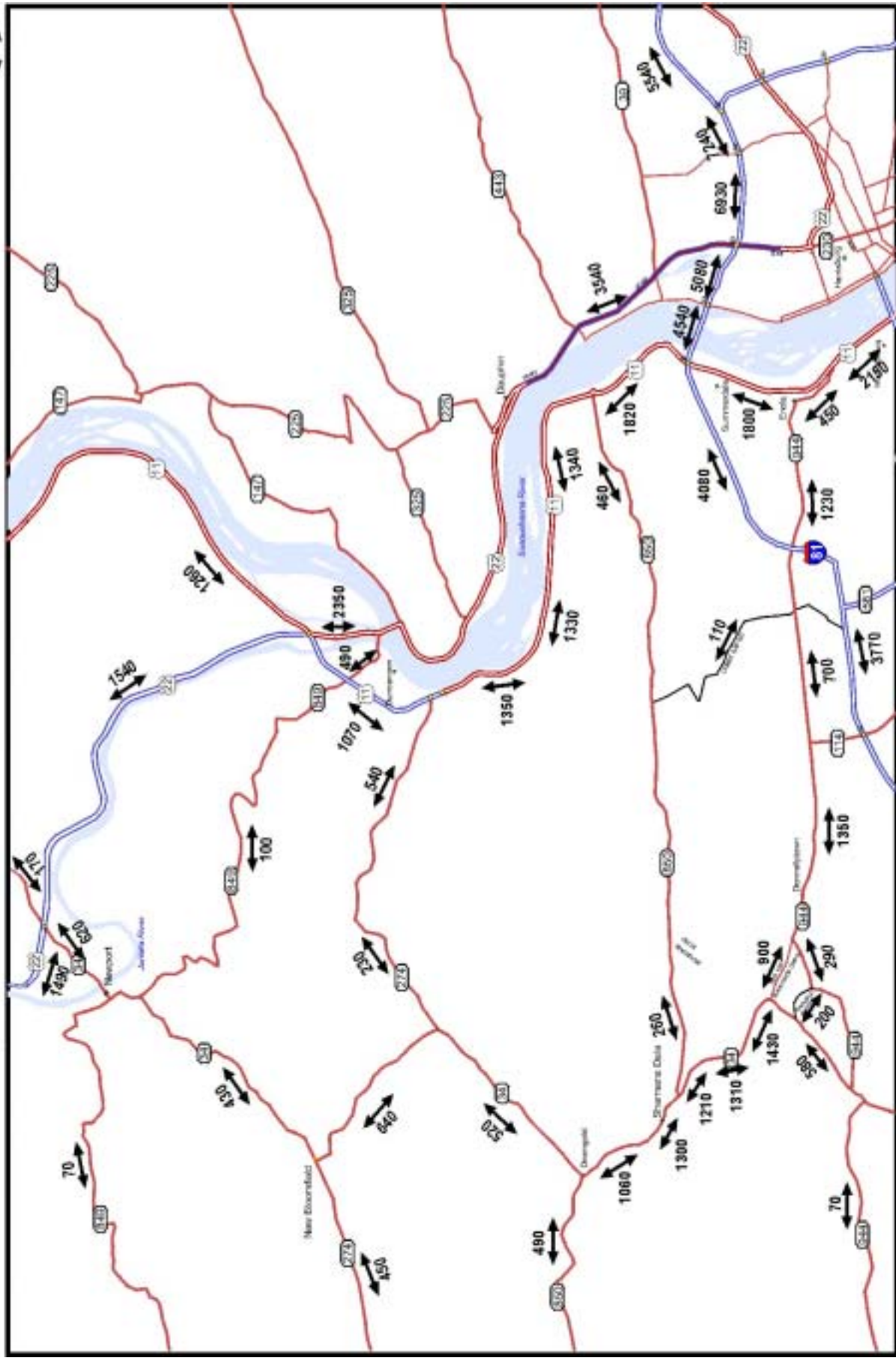
Year 2001 Existing Morning Peak Hour Midblock Traffic Volumes
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Year 2001 Existing Evening Peak Hour Midblock Traffic Volumes

Safety and Congestion Management System Study

CUMBERLAND AND PERRY COUNTIES, PENNSYLVANIA



In general, the existing traffic data shows that the morning peak hour traffic volumes are marginally less than the evening peak hour traffic volumes. The intersections and roadways nearest to Harrisburg and Interstate 81 exhibit the highest daily and peak hour traffic volumes. Generally, whatever traffic is headed eastbound (or southbound) during the morning returns by traveling westbound (or northbound) during the evening; this is evidence of the many commuters that reside in Perry County and work in Cumberland and Dauphin Counties.

D. Existing Levels of Service

Overview of Capacity Analysis Procedures

While existing traffic volumes provide an important measure of activity on the study area roadway system, evaluating how well the system accommodates those volumes is also very important. A comparison of the peak hour traffic volumes to the constraints of the existing roadway geometry, environment, traffic characteristics, and controls is a very good way to gain an understanding of the capacity of a traffic system. In general, rural roadways and intersections are designed to attain a Level of Service 'C', and urban roadways and intersections are designed to attain a Level of Service 'D'.

Intersections generally control capacity in road networks because most conflicts exist at these points between through, crossing, and turning vehicles. Because of these conflicts, congestion is most likely to occur at intersections. Therefore, intersections are studied most often when determining the quality of traffic flow on a road network.

An unsignalized intersection on a through route is seldom critical from an overall capacity standpoint. However, it may be of great significance to the capacity of the minor cross route and it may influence the level of service on both. In analyzing two-way stop-controlled unsignalized intersections, it is assumed that the through movement on the major street and the right turns from the major street are unimpeded and have the right-of-way over all side street traffic and left turns from the major street. All other movements through the intersection either cross, merge with, or are affected by other flows. A descriptive mechanism (Level of Service) has been developed for unsignalized intersections which indicates the average delay at the intersection on

a scale from ‘a’, indicating an average delay between 0 and 10 seconds, to ‘f’ indicating an average delay greater than 50 seconds. Table II-3 summarizes the unsignalized intersection level of service criteria.

**Table II-3
LEVEL OF SERVICE AND EXPECTED DELAY FOR
UNSIGNALIZED INTERSECTIONS¹**

Level of Service	Expected Traffic Delay	Average Total Delay (seconds per vehicle)
a	Little or no delay	0.0 to 10.0
b	Short traffic delays	10.1 to 15.0
c	Average traffic delays	15.1 to 25.0
d	Long traffic delays	25.1 to 35.0
e	Long traffic delays	35.1 to 50.0
f	Very long traffic delays	greater than 50.0

At signalized intersections, such as the intersection of PA Route 944 and PA Route 114, factors that affect the various approach capacities include the width of the lanes of the approach, the number of lanes, the signal ‘green time’, the turning volumes, the truck percentages, etc. The traffic conditions at the signalized intersections are measured by Level of Service (LOS), where Level of Service ‘A’ is the best (less than ten seconds of delay), and Level of Service ‘F’ is the worst (greater than 80 seconds of delay). However, operation at maximum capacity can be less than satisfactory since substantial delays or reduced operating speeds are likely. Delays cannot be related to capacity in a simple one-to-one fashion. It is possible to have delays in the Level of Service ‘F’ range without exceeding roadway capacity. Substantial delays can exist without exceeding capacity if one or more of the following conditions exist:

- ∄ Long signal cycle lengths
- ∄ A particular traffic movement experiences a long red time
- ∄ Progressive movement for a particular lane group is poor

Table II-4 shows the level of service criteria and the associated delays for signalized intersections. All computer analyses for the signalized and unsignalized intersections were

¹ *Transportation Research Board, Special Report 209, Highway Capacity Manual, Third Edition, published by the Transportation Research Board, Washington, D.C., 1998.*

performed using the most recent version of the Federal Highway Administration’s Highway Capacity Software (HCS).

**Table II-4
LEVEL OF SERVICE AND EXPECTED DELAY FOR
SIGNALIZED INTERSECTIONS²**

Level of Service	Description	Average Total Delay (seconds per vehicles)
A	Very low delay, very good progression; most vehicles do not stop at intersection	0.0 to 10.0
B	Generally good signal progression and/or short cycle length; more vehicles stop at intersection than Level of Service ‘A’	10.1 to 20.0
C	Fair progression and/or longer cycle length; significant number of vehicles stop at intersection	20.1 to 35.0
D	Congestion becomes more noticeable; individual cycle failures; longer delays from unfavorable progression, long cycle length, or high volume/capacity ratio; most vehicles stop at intersection	35.1 to 55.0
E	Usually considered limit of acceptable delay, high delay values are indicative of poor progression, long cycle length, or high volume/capacity ratio; frequent individual cycle failures	55.1 to 80.0
F	Could be considered excessive delay in some areas, frequently an indication of oversaturation (i.e. arrival flow exceeds capacity), or very long cycle lengths with minimal side street green time. Capacity is not necessarily exceeded under this level of service	greater than 80.0

In addition to the level of service analysis at the signalized and unsignalized intersections, the operating conditions within certain segments (mid-blocks) of the major study area roadways were also analyzed by the most recent version of HCS. The analyzed roadway segments in the reported within this document are at those locations that exhibited the greatest peak hour traffic volumes.

² *Transportation Research Board, Special Report 209, Highway Capacity Manual, Third Edition, published by the Transportation Research Board, Washington, D.C., 1998.*

**Table II-5
MID-BLOCK LEVEL OF SERVICE
TWO-LANE HIGHWAYS³**

Level of Service	Percent Time Following (Delay)
A	35 percent or less
B	35 percent - 50 percent
C	50 percent - 65 percent
D	65 percent - 80 percent
E	Greater than 80 percent
F	Greater then 3200 passenger cars per hour

The percent time delay referenced in Table II-5 is the percentage of the time that an individual vehicle is traveling within a platoon of vehicles on that particular section of roadway.

Existing Levels of Service

A summary of the existing overall intersection levels of service resulting from the capacity analyses are shown in Table II-6. The undesirable levels of service are shown in **boldface** and the failing levels of service are shaded in gray. Most of the intersections are shown as having currently undesirable levels of service and many intersections exhibit failing levels of service during the existing peak periods. At the unsignalized intersections, motorists traveling unimpeded on the main street through the intersections generally do not experience delay; motorists on the side streets are experiencing the undesirable and failing levels of service as they wait for at the stop-controlled intersections for gaps in the mainstream traffic. The results on the table show that the intersections closest to Harrisburg generally experience poorer levels of service than locations that are farther to the north. In particular, the PA Route 34 corridor north of Sterretts Gap and the US Routes 11/15 corridor experience poor levels of service.

The mid-block levels of service for two of the most heavily traveled two-lane roadways in the study area are shown in Table II-7. An undesirable level of service is common in the two-lane level of service analysis because the parameter used for the classification of level of service is the proportion of time spent following other vehicles within a platoon.

³ *Transportation Research Board, Special Report 209, Highway Capacity Manual, Third Edition, published by the Transportation Research Board, Washington, D.C., 1998.*

**TABLE II-6
EXISTING OVERALL INTERSECTION LEVELS OF SERVICE**

Intersection	AM Peak Hour	PM Peak Hour
PA Rt. 34 and Barnett Drive	b	b
PA Rt. 34 and PA Rt. 274 (N. Int. @ Mecks Corner)	a	b
PA Rt. 34 and PA 274/SR 2002 (S. Int. @ Mecks Corner)	c	c
PA Rt. 34 and PA Rt. 850 (Dromgold's Corner)	c	b
PA Rt. 34 and Windy Hill Road	f	e
PA Rt. 34 and PA Rt. 850 (Shermans Dale)	f	f
PA Rt. 34 and Richwine/Youngs Church Road	f	d
PA Rt. 34 and Fox Hollow Road	f	d
PA Rt. 34 and Mountain Road	f	e
PA Rt. 34 and Sunnyside Drive	b	f
PA Rt. 944 and Sunnyside Drive	e	b
PA Rt. 944 and PA Rt. 114	C	F
PA Rt. 944 and US Rt. 11/15	f	c
US Rt. 11/15 and PA Rt. 850	f	d
US Rt. 11/15 and Firehouse Road	d	d
US Rt. 11/15 and Sheetz Drive/Rohrer Drive	f	f
US Rt. 11/15 and Susquenita Middle School	e	f
US Rt. 11/15 and Susquenita High School	e	e
US Rt. 11/15 and Cove Road	d	d
US Rt. 11/15 SB Ramp and PA Rt. 274 (W. Int.)	a	a
US Rt. 11/15 NB Ramp and PA Rt. 274 (E. Int.)	b	c
PA Rt. 274 and SR 2006 (E. Int @ Mecks Corner)	b	b
PA Rt. 849 and US Rt. 22/322	f	c
Number of intersections at LOS 'd' or worse:	14	13
Number of intersections at LOS 'f':	9	5

c: Unsignalized intersection Level of Service (LOS)

C: Signalized intersection LOS

**Table II-7
EXISTING MID-BLOCK LEVELS OF SERVICE**

Intersection	AM Peak Hour	PM Peak Hour
US Rt. 11/15 in Perdix	E	E
PA Route 34 immediately north of Sterretts Gap	E	E

E: Mid-block Level of Service – The Midblock LOS shows the two-lane roadway sections with highest traffic volumes and poorest traffic conditions.

E. Crash Analysis

Overview of Crash Analysis Procedures

From its Crash Record System, PENNDOT has provided crash data for the study area state-maintained roadways for a five-year period (from January 1, 1995 through December 31, 1999). A database of the crash records received from PENNDOT for the five-year period was established. The crash database for each corridor provides the ability to extract cross-tabulations of crashes sorted by location, type, frequency, causation factor, etc.

Within this document, the current crash rates for each study area roadway corridor are compared to those crash rates experienced on similar highways across the state. The comparison of the crash rates on similar roadways is useful in determining the relative overall safety of each roadway corridor. The statewide average crash rate, which is expressed in crashes per million vehicle miles traveled, takes into consideration the average amount of traffic that travels on that roadway and the number of crashes that occur on that roadway. Dangerous segments of roadway can be identified and comparisons can be made between roadways of similar characteristics and functional classifications by using the statewide average crash rate as a benchmark. Figures and tables included within this report show the actual crash rate for the segments of the roadway corridor compared to the statewide average crash rate for that particular type of roadway.

The main goal of the crash analysis is not limited only to identifying the number of crashes, the statewide rate comparisons, and the causation factors; the most important intent of the crash analysis is to determine *why* the crashes are occurring. The locations of crash clusters are examined and compared to the roadway deficiencies to determine if there might be a link. The type of access control, the vehicle mix, conflicts between through and local traffic, a specific roadway condition, or weather condition are all possible critical elements of a crash if a cause and effect relationship is developed. With the cross-tabulations of the crash database, a cause and effect relationship can be determined.

It should be noted that the Pennsylvania Department of Transportation defines crashes as those that involve a fatality, injury, or require towing of one or more vehicles. Therefore, the Crash Record System includes data from those “reportable” incidents. Analysis of this data showed

2,580 reported motor vehicle crashes on the study area roadways within the five-year analysis period. All reportable crashes were examined in order to identify those locations with multiple crashes. The non-reportable crashes that have occurred within the study area are summarized in a later section of this chapter for locations where non-reportable crash data is available.

Tables II-8 through II-15 summarize the crash rate comparisons for each of the study area roadway corridors: PA Route 34, PA Route 944, US Routes 11/15, PA Route 274, PA Route 850, PA Route 849, Interstate 81, US Routes 22/322.

The relative average crash rates and the crash cluster locations are graphically shown for each of the above-mentioned study corridors on Figures II-7 through II-14. Not surprisingly, all of the major crash clusters are located at intersections because of the fact that intersections are the locations that experience conflicting traffic patterns more frequently than mid-block and merging locations.

**Table II-8
PA ROUTE 34
CRASH RATE COMPARISON**

Segment	Length (miles)		Crash Rate (Crashes/MVM)		
	Total	Over Statewide Crash Rate	Statewide Average	Observed	Percent Difference
Study area boundary to Sunnyside Drive (SR 1007)	3.26	1.45	1.53	1.76	15 percent
Sunnyside Drive (SR1007) to Dromgold (PA Route 850)	5.12	2.54	1.05	1.45	38 percent
Dromgold (PA Route 850) to Mecks Corner (PA Route 274)	3.99	2.06	1.53	1.90	24 percent
Mecks Corner (PA Route 274) to New Bloomfield	3.39	3.39	1.53	6.47	323 percent
New Bloomfield to Northern study boundary	8.23	3.86	1.51	1.69	12 percent
Total	23.99	13.30	1.42	1.74	23 percent

Note: Percent difference (observed rate/statewide rate)

**Table II-9
PA ROUTE 944
CRASH RATE COMPARISON**

Segment	Length (miles)		Crash Rate (Crashes/MVM)		
	Total	Over Statewide Crash Rate	Statewide Average	Observed	Percent Difference
Study Area Boundary to PA Route 34	0.51	0.51	1.53	1.82	19 percent
PA Route 34 North to Sunnyside Drive (SR1007)	3.22	0.97	1.53	1.48	-3 percent
Sunnyside Drive (SR1007) to PA Route 114	3.36	1.63	1.05	1.12	6 percent
PA Route 114 to Interstate 81	3.88	2.46	1.16	1.83	59 percent
Interstate 81 to US Routes 11/15	3.95	0.79	2.12	1.42	-33 percent
Total	14.92	6.36	1.48	1.39	-6 percent

Note: Percent difference (observed rate/statewide rate)

**Table II-10
US ROUTES 11/15
CRASH RATE COMPARISON**

Segment	Length (miles)		Crash Rate (Crashes/MVM)		
	Total	Over Statewide Crash Rate	Statewide Average	Observed	Percent Difference
Study area boundary to Cumberland/Perry Border	4.00	0.27	2.14	0.85	-60 percent
Cumberland/Perry Border to Perdix (Woodland Drive)	3.18	0.97	1.57	0.42	-73 percent
Perdix (Woodland Drive) to Duncannon (PA Route 274)	6.02	5.21	0.29	0.85	194 percent
Duncannon (PA Route 274) to US Routes 322/22	2.31	2.14	0.29	0.51	76 percent
US Routes 322/22 to Northern study boundary	1.09	1.09	0.29	0.81	180 percent
Total	16.60	9.68	0.98	0.71	-27 percent

Note: Percent difference (observed rate/statewide rate)

**Table II-11
PA ROUTE 274
CRASH RATE COMPARISON**

Segment	Length (miles)		Crash Rate (Crashes/MVM)		
	Total	Over Statewide Crash Rate	Statewide Average	Observed	Percent Difference
Study Area Boundary to New Bloomfield (PA Route 34)	0.73	0.24	1.53	2.34	53 percent
New Bloomfield (PA Route 34 N) to Mecks Corner (PA Route 34 S)	3.39	3.39	1.53	6.47	323 percent
Mecks Corner (PA Route 34 S) to SR 2005 (Paradise Road)	2.65	2.65	1.53	4.76	211 percent
SR 2005 (Paradise Road) to US Routes 11/15	4.45	1.18	1.53	1.27	-17 percent
Total	11.22	7.46	1.53	2.41	58 percent

Note: Percent difference (observed rate/statewide rate)

**Table II-12
PA ROUTE 850
CRASH RATE COMPARISON**

Segment	Length (miles)		Crash Rate (Crashes/MVM)		
	Total	Over Statewide Crash Rate	Statewide Average	Observed	Percent Difference
Study Area Boundary to Dromgold (PA Route 34 N)	1.11	1.11	1.53	2.16	42 percent
Dromgold (PA Route 34 N) to Shermans Dale (PA Route 34 S)	2.46	1.60	1.05	2.00	91 percent
Shermans Dale (PA Route 34 S) to Marysville Border	11.99	5.12	1.53	1.46	-5 percent
Marysville Border to US Routes 11/15	0.82	0.57	1.43	1.19	-17 percent
Total	16.38	8.40	1.45	1.70	17 percent

Note: Percent difference (observed rate/statewide rate)

**Table II-13
PA ROUTE 849
CRASH RATE COMPARISON**

Segment	Length (miles)		Crash Rate (Crashes/MVM)		
	Total	Over Statewide Crash Rate	Statewide Average	Observed	Percent Difference
Study Area Boundary to PA Route 34 N intersection (in Newport)	0.92	0.43	1.53	1.71	12 percent
Newport (PA Route 34 N) to PA Route 34 S intersection (PA Routes 34/849)	0.60	0.00	1.53	1.03	-33 percent
PA Route 34 S Intersection (PA Routes 34/849) to US Routes 11/15 Overpass	8.76	4.33	1.53	1.82	19 percent
US Routes 11/15 overpass to US Routes 22/322	1.67	1.22	1.53	4.85	217 percent
Total	11.95	5.98	1.53	2.06	34 percent

Note: Percent difference (observed rate/statewide rate)

**Table II-14
INTERSTATE 81
CRASH RATE COMPARISON**

Segment	Length (miles)		Crash Rate (Crashes/MVM)		
	Total	Over Statewide Crash Rate	Statewide Average	Observed	Percent Difference
West of PA Route 114	0.47	0.00	0.29	0.24	-16 percent
PA Route 114 to PA Route 581	3.04	2.05	0.29	0.40	38 percent
PA Route 581 to PA Route 944	1.00	1.00	0.29	0.39	34 percent
PA Route 944 to US Routes 11/15	3.99	0.00	0.55	0.23	-58 percent
US Routes 11/15 to North Front Street	0.55	0.00	0.55	0.55	0 percent
North Front Street to US Routes 322/22	2.09	0.98	0.55	0.49	-10 percent
East of US Routes 22/322	1.51	0.00	0.55	0.25	-53 percent
Total	12.65	4.03	0.46	0.35	-25 percent

Note: Percent difference (observed rate/statewide rate)

**Table II-15
US ROUTES 22/322
CRASH RATE COMPARISON**

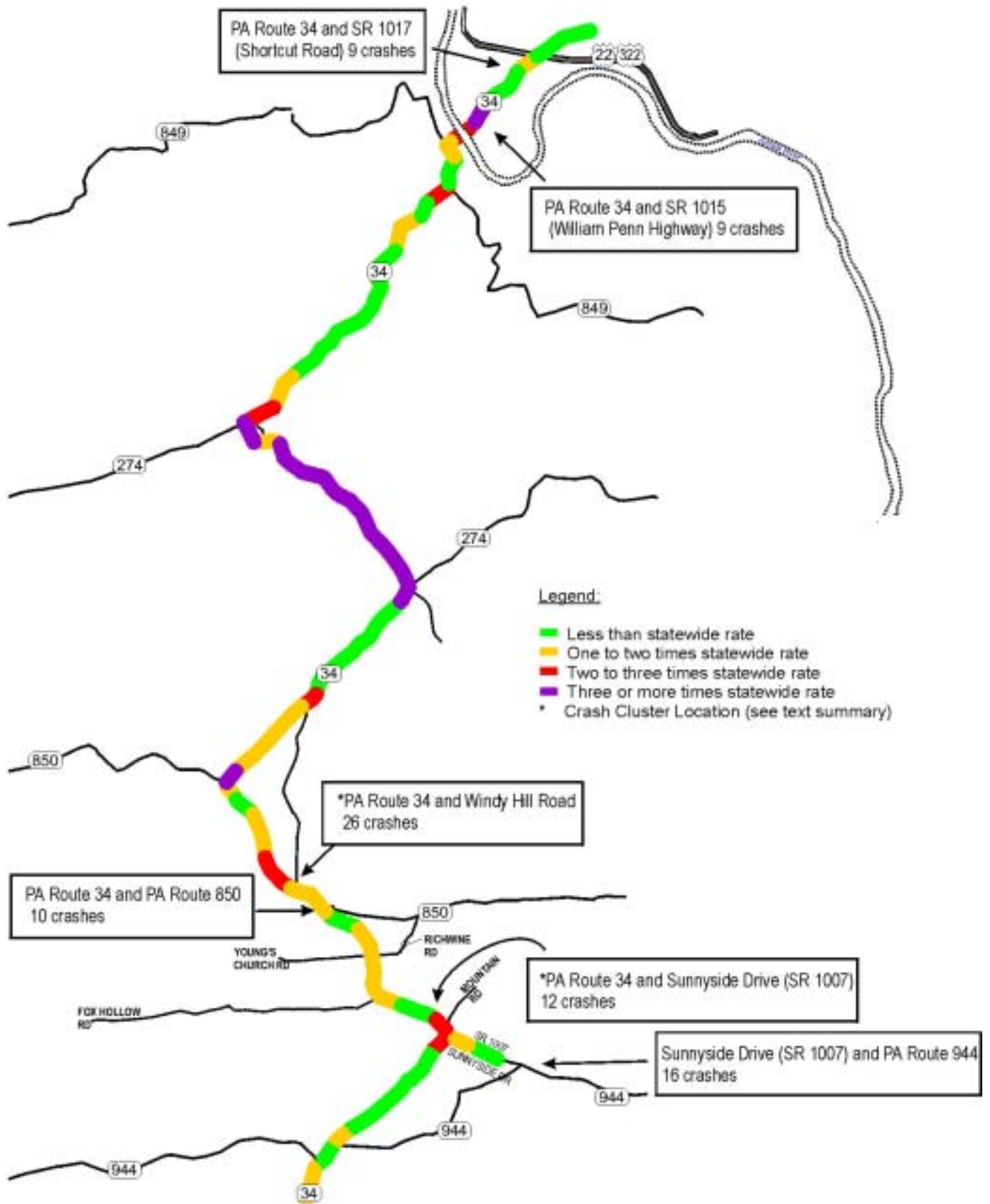
Segment	Length (miles)		Crash Rate (Crashes/MVM)		
	Total	Over Statewide Crash Rate	Statewide Average	Observed	Percent Difference
Study Area Boundary to PA Route 34 Interchange	0.94	0.90	0.29	0.54	87 percent
PA Route 34 Interchange to Watts Interchange	6.03	3.05	0.29	0.36	25 percent
Watts Interchange to US Routes 11/15 Interchange	1.84	0.88	0.29	0.34	17 percent
US Routes 11/15 Interchange to PA Route 147 Interchange	2.42	0.48	1.22	0.54	-55 percent
Total	11.23	5.31	0.49	0.46	-5 percent

Note: Percent difference (observed rate/statewide rate)

Crash Locations - PA Route 34 Corridor

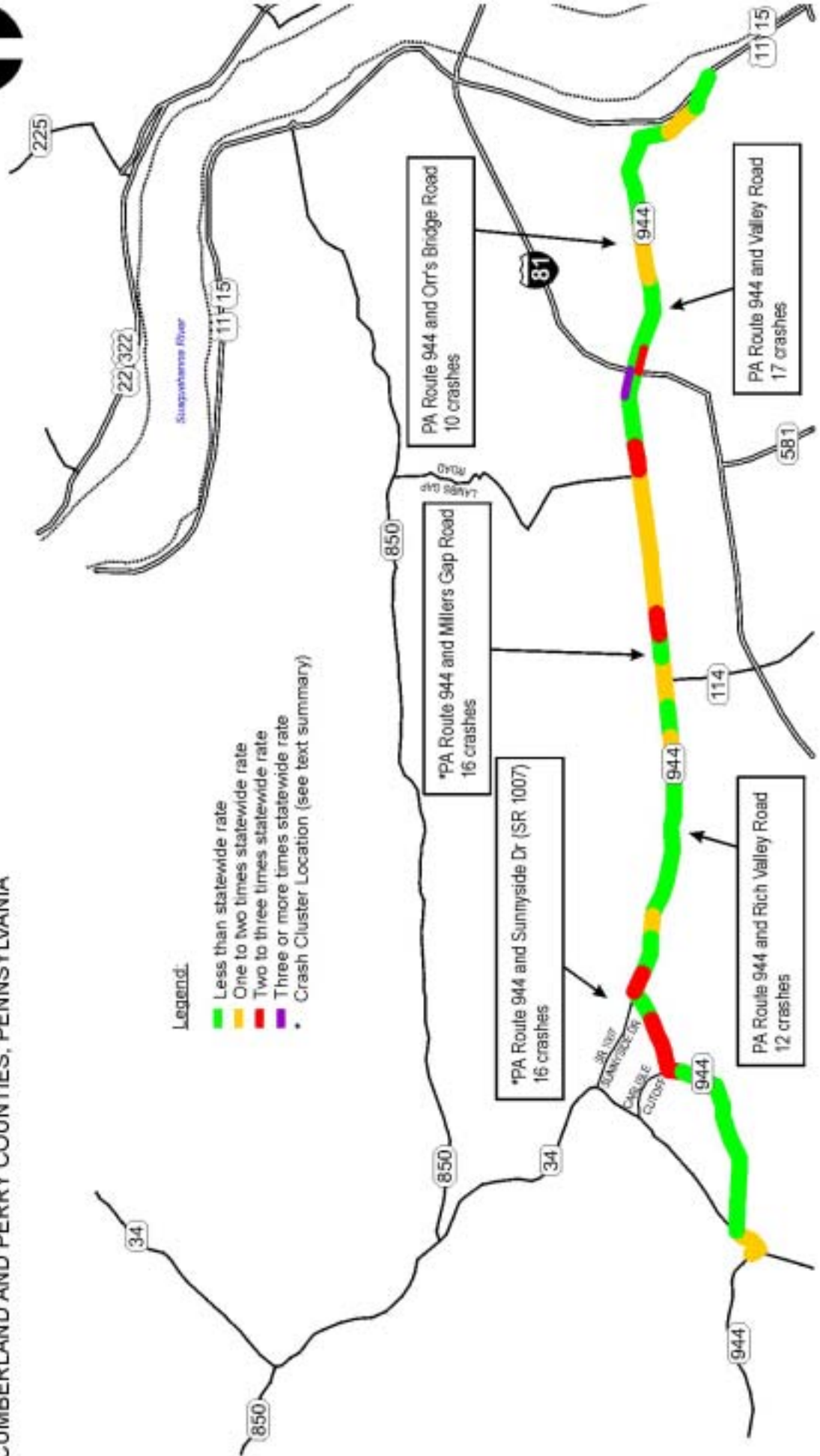
Safety and Congestion Management System Study

CUMBERLAND AND PERRY COUNTIES, PENNSYLVANIA



Crash Locations - PA Route 944 Corridor Safety and Congestion Management System Study CUMBERLAND AND PERRY COUNTIES, PENNSYLVANIA

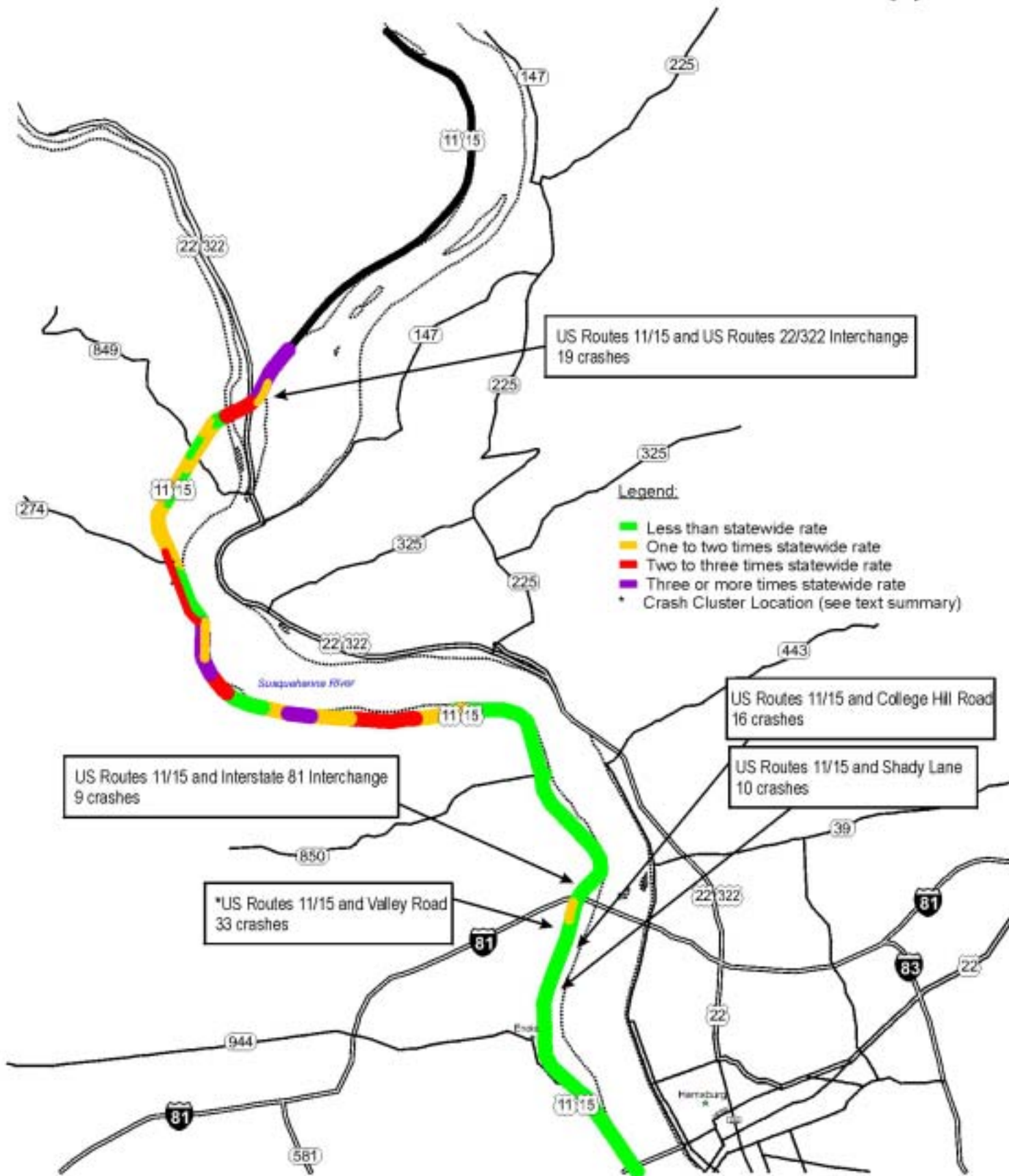
FIGURE 11-8



Crash Locations - US Routes 11/15 Corridor

Safety and Congestion Management System Study

CUMBERLAND AND PERRY COUNTIES, PENNSYLVANIA



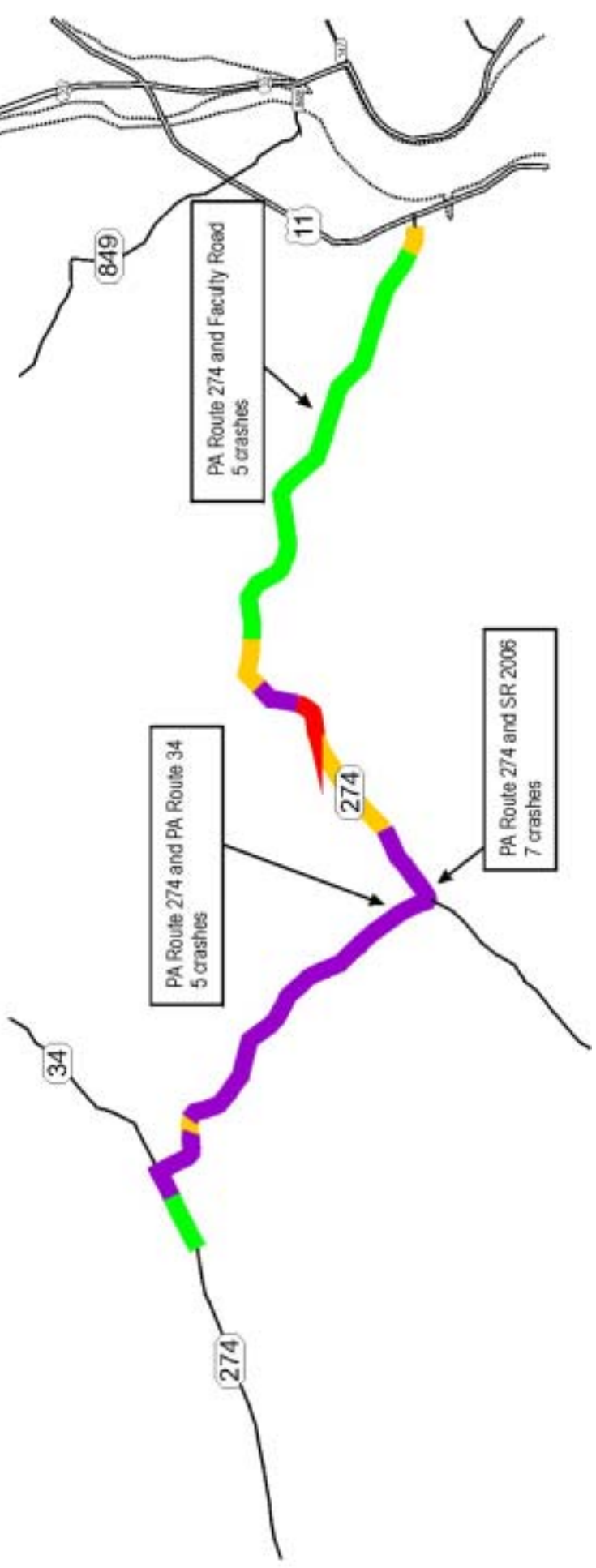
Crash Locations - PA Route 274 Corridor
Safety and Congestion Management System Study
 CUMBERLAND AND PERRY COUNTIES, PENNSYLVANIA

FIGURE II-10

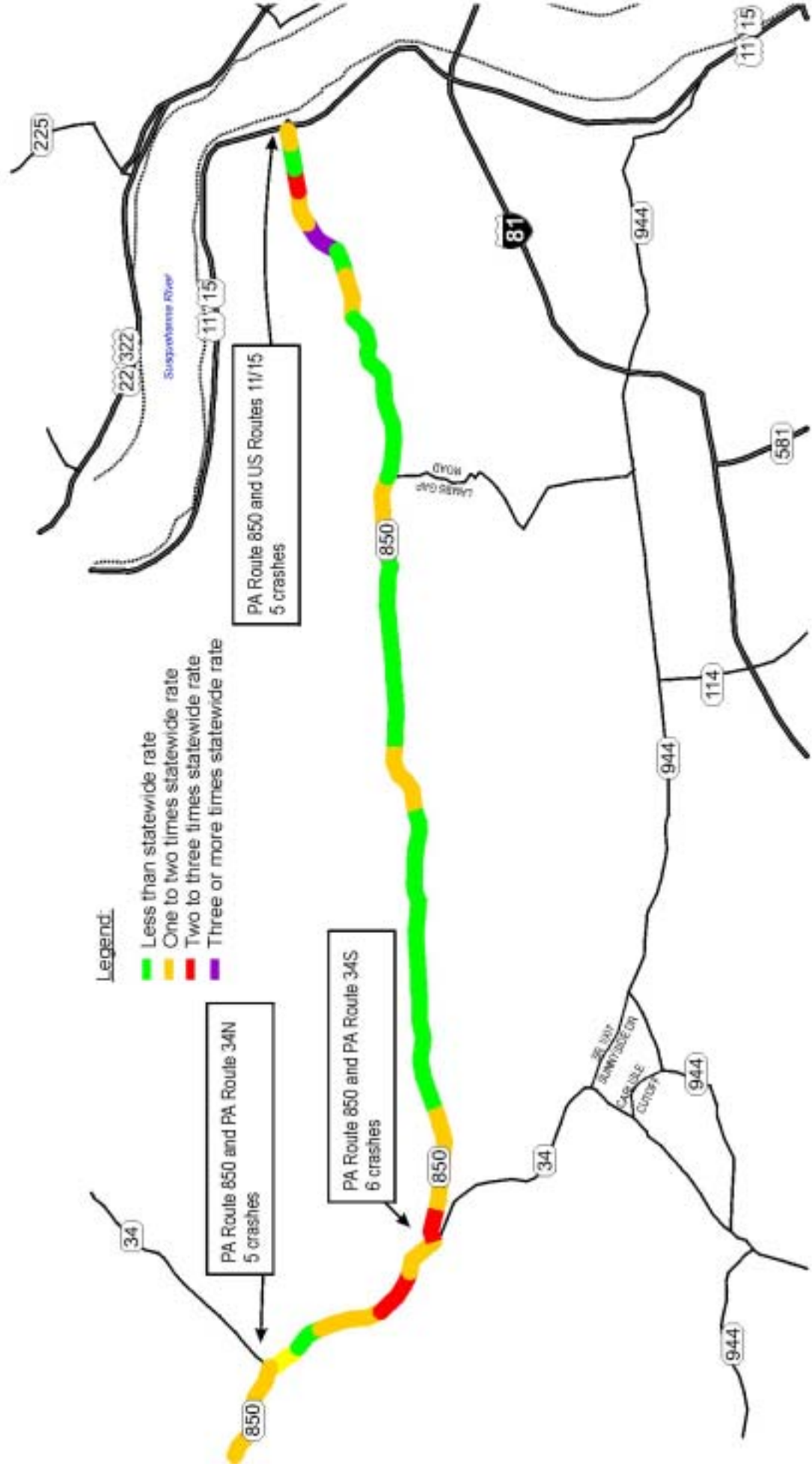


Legend:

- █ Less than statewide rate
- █ One to two times statewide rate
- █ Two to three times statewide rate
- █ Three or more times statewide rate

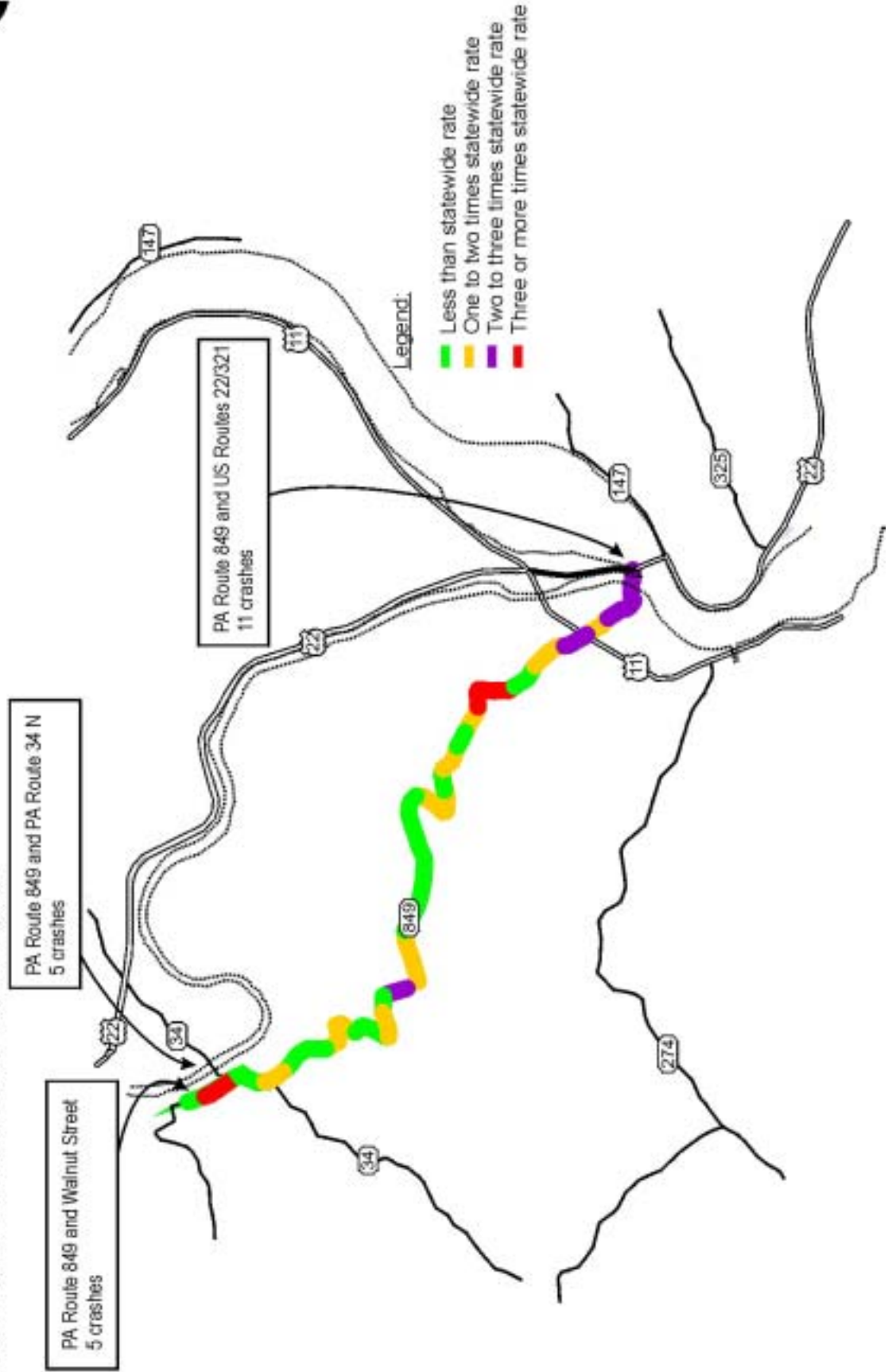


Crash Locations - PA Route 850 Corridor Safety and Congestion Management System Study CUMBERLAND AND PERRY COUNTIES, PENNSYLVANIA

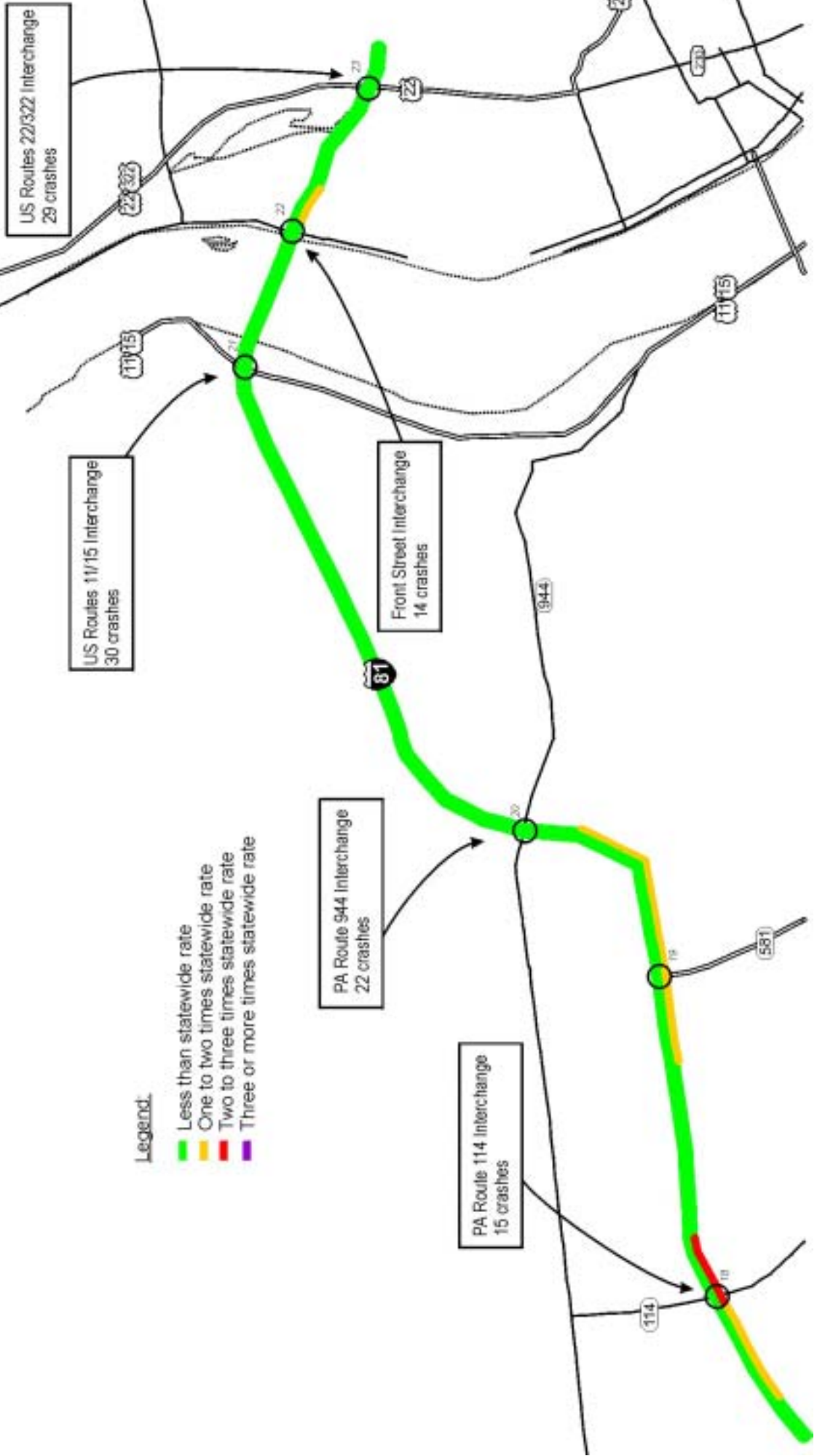


Crash Locations - PA Route 849 Corridor Safety and Congestion Management System Study CUMBERLAND AND PERRY COUNTIES, PENNSYLVANIA

FIGURE II-12



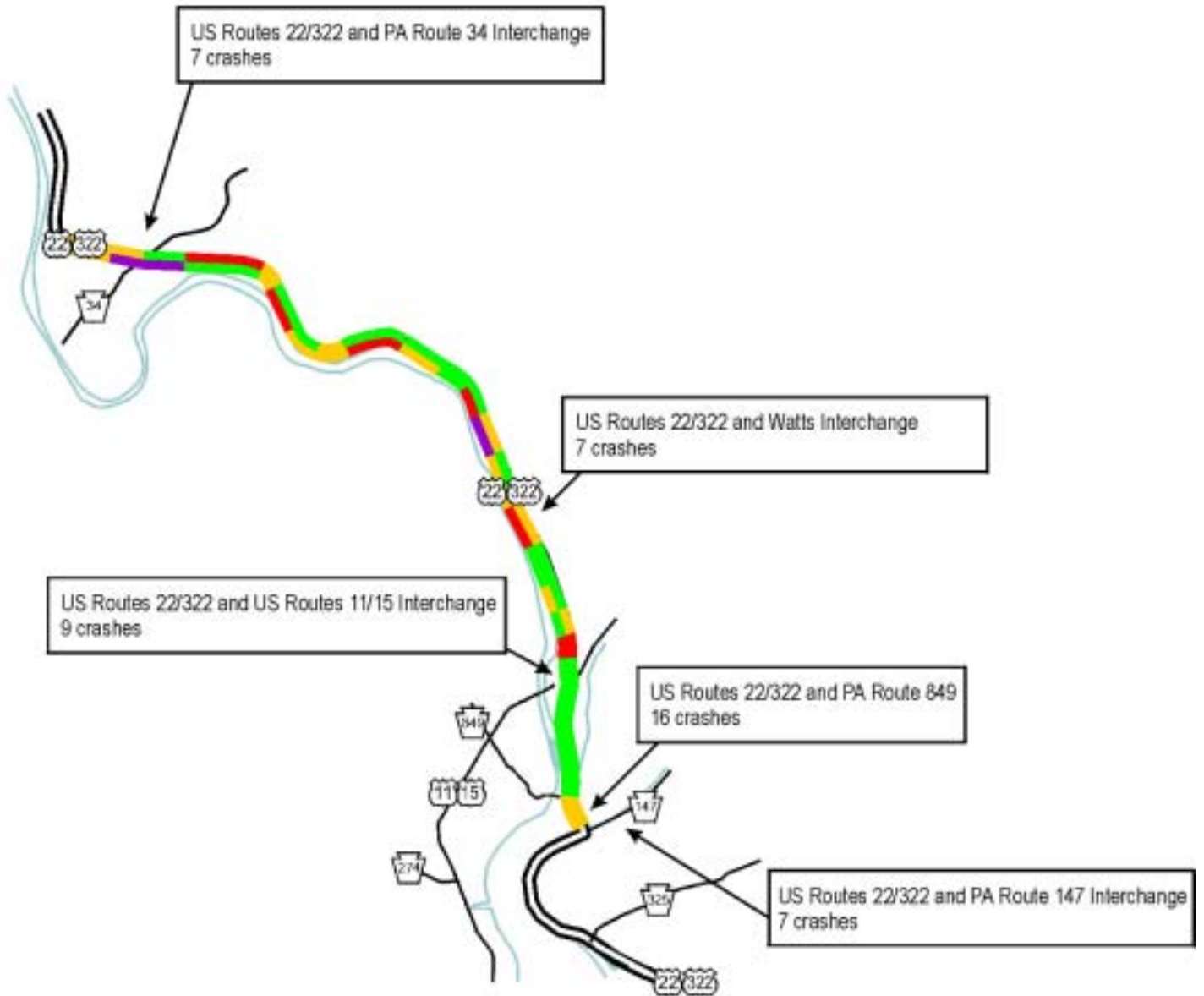
Crash Locations - Interstate 81 Corridor
Safety and Congestion Management System Study
 CUMBERLAND AND PERRY COUNTIES, PENNSYLVANIA



Crash Locations - US Route 22/322 Corridor

Safety and Congestion Management System Study

CUMBERLAND AND PERRY COUNTIES, PENNSYLVANIA



Legend:

- Less than statewide rate
- One to two times statewide rate
- Two to three times statewide rate
- Three or more times statewide rate

The following paragraphs detail the five crash cluster locations with the greatest amount of reportable crashes in the study area.

€ US Routes 11/15 and Valley Road (SR 1004)
(33 crashes)

This is a T-intersection controlled via a traffic signal. Sixteen (48 percent) of the 33 crashes were angle collisions, eleven (33 percent) crashes were rear end collisions; and the remaining six crashes (19 percent) were vehicles colliding with a fixed object. The angle collisions occurred because of pulling out too soon and failure to stop at the red light. The rear end collisions were due to tailgating and failure to heed a stopped driver. The crashes involving a fixed object were due to a variety of reasons.

€ PA Route 34 and Windy Hill Road (SR 2001)
(26 crashes)

This is a T-intersection controlled via a stop sign on Windy Hill Road. As previously noted, the Windy Hill Road approach to the intersection has a very steep down grade and sight distance problems. Eleven (42 percent) of the 26 crashes are rear end collisions, eight (31 percent) crashes are angle collisions; and the remaining seven crashes (27 percent) were vehicles colliding with a fixed object. The rear end collisions were due to tailgating and failure to heed a stopped driver. The angle collisions occurred because of pulling out too soon and failure to stop. The crashes involving a fixed object were due to a variety of reasons.

€ PA Route 944 and Sunnyside Drive (SR1007)
(16 crashes)

This is a four-legged intersection located on the western end of PA Route 944. Of the 16 crashes that occurred here 10 crashes (62 percent) were angle crashes and can be attributed to improper turning and pulling out too soon. Three crashes (19 percent) were rear end collisions; tailgating and speeding are the primary causation factors for these crashes. Speeding, abrupt lane changes and drunk driving were the factors causing the remaining

three (19 percent) fixed object collisions. It should be noted that this intersection has recently been reconfigured and reconstructed.

€ PA Route 944 (Wertzville Road) and Millers Gap Road (T594)/Willow Mill Road (T717)
(16 crashes)

This intersection is located just east of PA Route 114. Thirteen crashes (81 percent) at this location were angle collisions due to drivers pulling out too soon and not properly turning. The remaining crashes were rear end collisions (2 crashes, 13 percent) and hitting a fixed object (1 crash, 6 percent). The rear end collisions were due to tailgating and the weather; the fixed object collision was due to driver distraction (tape/radio). An angle collision at this intersection was due to driver drinking.

€ PA Route 34 and Sunnyside Drive (SR 1007) / Mountain Road
(12 crashes)

This is a four-legged stop sign controlled intersection located at Sterretts Gap on the border between Cumberland County and Perry County. Both of the minor streets, Sunnyside Drive and Mountain Road, are each controlled by a stop sign and connect with PA Route 34 on the same (east) side of the roadway. Five (42 percent) of the 12 crashes were angle collisions, three (25 percent) were rear end collisions, and the remaining four (33 percent) involved vehicles hitting a fixed object, a sideswipe collision, and a non-collision incident. Two of the angle collisions were due to drunk drivers turning improperly and pulling out into the roadway too soon. The remaining three angle collisions were also caused by improper turning and pulling out too soon. The three rear end collisions were caused by failing to heed a stopped vehicle, tailgating, and other distractions. One vehicle hit a fixed object because of a deer in the roadway and the other fixed object collision was caused by an out of control vehicle. The sideswipe collision was caused by an attempted pass in a no passing zone. The non-collision incident was due to engine failure.

Non-reportable Crashes

Many crashes that occur within the study area are non-reportable crashes and are not entered into the Department's crash record database. In the more congested areas, such as the two-lane

section of US Routes 11/15, vehicles are traveling closer together at slower speeds and crashes tend to be “fender benders” and non-reportable. To collect data on “non-reportable” crashes, the local municipalities, fire companies, EMS, and State Police have been contacted numerous times. All available non-reportable crash data have been collected. However, this may not be a complete set of data because many non-reportable crashes are undocumented being that the emergency response agencies (Fire, Police, EMS) do not respond to non-reportable crashes (because non-reportable crashes do not involve an emergency or a serious injury). Also, the State Police does not keep records of non-reportable crashes. Most of the non-reportable crash data that has been collected does not contain all of the specifics (such as causation factors, weather conditions, location, etc.) that are included in the reportable crash data that has been provided by PENNDOT. Nonetheless, the cluster areas of the non-reportable crashes have been noted, and locations where the non-reportable crash data is available are referenced below.

In Middlesex Township, 14 non-reportable crashes on PA Route 944 were recorded by the Middlesex Township Police Department between November 1998 and April 2001. Three of the 14 non-reportable crashes occurred at the Deer Lane intersection. Between January 1999 and September 2001, 26 non-reportable crashes on PA Route 944 were documented by the Silver Spring Township Police Department, with six of the crashes located at the PA Route 114 intersection and five crashes located at the Rich Valley Road intersection. Ten non-reportable crashes on PA Route 944 were recorded by the East Pennsboro Township Police Department from January 1997 until September 2001. Two of the ten non-reportable crashes occurred at the Magaro Road intersection with PA Route 944.

In East Pennsboro Township, 121 non-reportable crashes were recorded by the East Pennsboro Township Police Department from January 1997 until September 2001 on US Routes 11/15. The location for the majority of these non-reportable crashes is reported as ‘unknown’, but 30 of the 121 crashes were known to occur at the Valley Street intersection with US Routes 11/15. Many non-reportable crashes are known to occur at this signalized intersection because of the combination of the downgrade on the southbound approach, the traffic signal, and the poor pavement conditions that are present during inclement weather. On the two and three-lane sections of US Routes 11/15 in Marysville and Penn Township, many non-reportable crashes are

known to occur because of the “fender benders” that are commonplace in the presence of congested conditions and stop-and-go traffic.

F. Demographic and Land Use Summary

Population Trends

The study area has seen significant growth in recent years. Significant residential development has occurred in almost all of the 17 municipalities in the past two decades, and large-scale commercial development has taken place along major arterials in the Cumberland County portion of the study area. The Cumberland County municipalities make up two-thirds of the population of the study area. Hampden and East Pennsboro together contain almost half of the total population in the study area. With just over 5,000 people, Carroll Township is the largest Perry County municipality in the study area. Population trends and projections for the study area are shown in Table II-16.

**Table II-16
POPULATION TRENDS AND PROJECTIONS**

	1960	1970	1980	1990	2000	2020	change		
							80-90	90-00	00-20
Cumberland County									
East Pennsboro	8,977	12,440	13,931	15,185	18,254	22,394	1,254	3,069	4,140
Hampden	6,558	11,847	17,732	20,384	24,135	31,911	2,652	3,751	7,776
Middlesex	2,333	2,857	4,506	5,780	6,669	8,396	1,274	889	1,727
Silver Spring	4,044	6,324	7,148	8,369	10,592	12,872	1,221	2,223	2,280
TOTAL	21,912	33,468	43,317	49,718	59,650	75,573	6,401	9,932	15,923
County TOTAL	124,816	158,177	179,625	195,257	213,674	258,383	15,632	18,417	44,709
Perry County									
Bloomfield	987	1,032	1,109	1,092	1,077	1,136	-17	-15	59
Carroll	1,534	1,904	3,173	4,597	5,095	6,997	1,424	498	1,902
Centre	880	1,109	1,663	1,974	2,209	2,908	311	235	699
Duncannon	1,800	1,739	1,645	1,450	1,508	1,573	-195	58	65
Howe	353	397	460	459	493	579	-1	34	86
Marysville	2,580	2,328	2,452	2,425	2,306	2,892	-27	-119	586
Miller	344	458	660	894	953	1,427	234	59	474
Newport	1,861	1,747	1,600	1,568	1,506	1,676	-32	-62	170
Oliver	1,239	1,557	1,749	2,039	2,061	2,781	290	22	720
Penn	2,072	2,269	2,841	3,283	3,013	4,256	442	-270	1,243
Rye	832	1,316	1,642	2,136	2,327	2,974	494	191	647
Watts	520	613	962	1,152	1,196	1,607	190	44	411
Wheatfield	947	1,297	2,376	3,097	3,329	4,591	721	232	1,262
TOTAL	15,949	17,766	22,332	26,166	27,073	35,397	3,834	907	8,324
County TOTAL	26,582	28,615	35,718	41,172	43,602	55,415	5,454	2,430	11,813
Study Area TOTAL	37,861	51,234	65,649	75,884	86,723	110,970	10,235	10,839	24,247
Source: U.S. Census Bureau, Tri-County Regional Planning Commission									

As shown above, the bulk of the study area has seen large increases in population in recent years. As a whole, the study area experienced a 14.3% increase in population from 1990 to 2000, greatly outpacing the 3.4% growth in the state as a whole in the last decade.

Reflecting population trends, residential development was consistent throughout the 1990s in most study area municipalities. An average of 655 new homes were built annually, or over 6,500 from 1990 to 1999. More than half of these were constructed in East Pennsboro and Hampden Townships, and a full three-fourths occurred in the Cumberland County part of the study area.

The population projections for 2020 show that the population for four Cumberland County townships is expected to increase by almost 16,000 from 2000 to 2020, while the Perry municipalities are projected to receive over 8,000 new residents. Continuing the trend of the 1990s, the majority of the growth anticipated in the Cumberland Townships is projected to be concentrated in East Pennsboro and Hampden Townships. In Perry County, Penn and Wheatfield Townships are projected to gain over 1,000 residents each in the coming two decades, with almost 2,000 new residents projected in Carroll Township.

Study Area Employment

Tri-County Regional Planning Commission (TCRPC) estimated that there were over 57,000 jobs in the study area in 1995. This figure represents an increase of more than 4,000 jobs since 1990. TCRPC projects further growth into the 21st century, to over 80,000 jobs in the study area by 2020.

The total number of employees in Cumberland County increased by 13,837, or 14.1%, from 1990 to 1998, while Perry's total increased by 25.1% with the addition of 1,130 jobs in the same period. The large majority of job growth in the coming decades is anticipated to be concentrated in the Cumberland part of the study area. Local level employment projections are detailed in Table II-17.

**Table II-17
EMPLOYMENT TRENDS AND PROJECTIONS**

	1990	1995	2010	2020	change 95-20	% change 95 - 20
Cumberland County						
East Pennsboro	13,845	15,347	19,862	23,610	8,263	53.8%
Hampden	21,130	23,282	26,154	28,547	5,265	22.6%
Middlesex	6,701	5,565	7,912	9,857	4,292	77.1%
Silver Spring	6,703	7,789	10,872	13,431	5,642	72.4%
TOTAL	48,379	51,983	64,800	75,445	23,462	45.1%
County TOTAL	125,985	136,776	170,175	197,932	61,156	44.7%
Perry County						
Bloomfield	647	666	735	792	126	18.9%
Carroll	241	248	322	384	136	54.8%
Centre	57	59	76	91	32	54.2%
Duncannon	1,290	1,328	1,465	1,579	251	18.9%
Howe	23	24	31	36	12	50.0%
Marysville	589	589	722	833	244	41.4%
Miller	22	23	31	39	16	69.6%
Newport	649	825	916	993	168	20.4%
Oliver	187	192	250	298	106	55.2%
Penn	903	1,182	1,561	1,877	695	58.8%
Rye	25	26	34	40	14	53.8%
Watts	18	18	26	32	14	77.8%
Wheatfield	38	39	47	53	14	35.9%
TOTAL	4,689	5,219	6,216	7,047	1,828	35.0%
County TOTAL	6,600	7,483	9,207	10,644	3,161	42.2%
Study Area TOTAL	53,068	57,202	71,016	82,492	25,290	44.2%

Source: Tri-County Regional Planning Commission

Development Trends

Between 1995 and 2000, the thirteen Perry County and four Cumberland County municipalities added over 53,000 and 154,000 square feet of industrial and warehouse space, respectively, in addition to 83,000 and 1.68 million square feet of retail and office space. The vast majority of this type of development, especially retail and office, is concentrated in the Cumberland townships.

Significant new retail uses are found along the major arterials including U.S. Route 11, the Carlisle Pike, and at I-81 interchanges. Extensive office parks have been completed in the last five years and have space available for further development. For example, the Cumberland

Technology Park in Hampden Township is comprised of 218 acres. The Patriot News printing and distribution facility and Pinnacle Health Outpatient Clinic, totaling over 275,000 square feet, have already been constructed. Over 100 acres of the park remain to be developed.

Recent residential, commercial, and industrial development has contributed significantly to the population and employment increases described above. The sewer and developed areas map, which is located in the Technical Appendix, shows the locations of this development, as well as sewer service areas, which have a significant effect on the location and density development in the study area. Most development is found in the Cumberland County townships. In Perry County, Carroll Township has experienced the most new development, especially new residential subdivisions. Commercial and industrial development in Perry is found along U.S. 11/15 and near Shermans Dale on PA Route 34 in Carroll Township.

Land Use Planning Activities

Land use controls such as zoning ordinances and comprehensive plans guide the location and extent of future development. All of the municipalities have a Subdivision and Land Development Ordinance (SALDO) as required by Pennsylvania law. Most have a Comprehensive Plan and 13 of the 17 municipalities have zoning regulations. Since preparation of the Demographic Technical Memorandum in June of 2001, Watts Township has enacted zoning. Recent Act 537 Plans, which details future plans for the construction of public sewer facilities, have been prepared by seven communities. The four boroughs in the study area that have public sewer systems likely prepared Act 537 plans in the past, even though those plans are no longer available.

In Perry County, public sewer is currently available in and immediately adjacent to the four boroughs, along US 11/15 in southeastern Penn Township, and in the village of Shermans Dale. Future expansion of service is expected around Marysville, Duncannon, Perdix, and Newport, and to a small area adjacent to Bloomfield. In Cumberland County public sewer is available in much of East Pennsboro and Hampden Townships, along major arterials in Middlesex and Silver Spring Townships, and near the Mechanicsburg border in Silver Spring. Public water is available in Cumberland in generally the same areas as public sewer, although the sewer area

is slightly more extensive in Middlesex, Hampden, and East Pennsboro Townships. In Perry County, public water is available in and near the four boroughs and along PA 850 in eastern Rye Township.

Key policies for each municipality that affect future development are summarized in the Appendix, including permitted densities for new development, provisions for cluster and planned residential development, village zoning, and restrictions placed on development due to the presence of various environmental resources. The zoning of key study area corridors is also provided. This information and recommendations for future growth management strategies are further addressed in Chapter VII.

CHAPTER III

ENVIRONMENTAL FEATURES SUMMARY

The project team has performed an inventory of the environmental features of the entire 17-municipality Study area in Cumberland and Perry Counties. The existing environmental features within the study area have been summarized in order to provide a preliminary assessment of the potential environmental impacts of the proposed transportation improvement plans contained within this study.

Data collection included secondary source GIS information provided by the Tri-County Regional Planning Commission, GIS information provided from a variety of state and county sources, secondary literature and internet searches, interviews with local officials, and limited field reconnaissance/verification.

The locations of the following environmental features are shown on the seven foldout maps attached to this document:

- ∅ Soils, Geology, Groundwater, Archeological, and Historical Features
- ∅ Agricultural Lands
- ∅ Surface Waters and Wetlands/Wildlife Habitat Areas
- ∅ Community Facilities
- ∅ Public Facilities
- ∅ Businesses and Employment Centers
- ∅ Section 4(f) and 2002 Resources

Detailed analyses and explanations of the Environmental Inventory are given in the Environmental Features Inventory and Overview Report, dated August 2001.

CHAPTER IV

YEAR 2020 NO-BUILD FUTURE VOLUMES AND TRANSPORTATION CONDITONS

The estimation of future traffic volumes for this study involved the use of a travel projection model that utilizes existing trends and basic demographic inputs. These inputs are then translated into traffic volumes that are distributed to the study area highway system.

The Tri-County Regional Planning Commission (TCRPC) has a functional travel demand model that has been used to develop travel projections on other projects, such as Capital Area Transit's Corridor ONE Study. The TCRPC travel demand model was used to prepare a set of traffic projections for the year 2020 for this study.

The traffic counts that were conducted in April 2001 were used in conjunction with the TCRPC traffic model to develop a calibration set of existing traffic volumes for the entire study area. A comparison between the model outputs for the year 1995 calibration data set and the traffic counts conducted for this project allowed for the development of a series of comparative growth factors for the model data.

The population, housing, and employment projections and the projected development areas summarized in Chapter II were used to refine the traffic analysis zone data in the traffic model. The demographic projections were then used along with the calibrated model to execute the model for the year 2020 travel projections. The travel projections will be used to determine the future traffic conditions on the study area roadways and the need for improvements on these roadways.

The year 2020 no-build scenario assumes that planned future development identified in the study area would occur, but that no highway or roadway improvements would occur along study area roadways.

The information presented in this chapter contains a summary of the projected year 2020 no-build scenario traffic volumes, conditions, and analyses for this study area. The demographic (population and employment) projections are located at the end of Chapter II (page II-52). All detailed technical information can be found in the Technical Appendix.

A. Year 2020 No-Build Scenario Future Traffic Volumes

The projected year 2020 no-build average daily traffic volumes are shown on Figure IV-1. The existing average daily traffic volumes are compared to the projected year 2020 no-build traffic volumes on Table IV-1.

The year 2020 average daily traffic volumes show that traffic volumes on the study area roadways are generally 30 to 35 percent greater than the year 2001 existing traffic volumes. This translates to 1.5 to 2 percent annual increase in traffic volume.

The highest average daily traffic volumes in Perry County are on projected to be on US Routes 22/322 (26,500 vehicles per day north of US Routes 11/15), US Routes 11/15 (29,500 vehicles per day between the Cumberland County border and PA Route 850), and PA Route 34 (23,500 vehicles per day between the Cumberland County border and PA Route 850).

**Table IV-1
AVERAGE DAILY TRAFFIC (ADT) VOLUME COMPARISON**

Location	2001 Existing ADT	2020 No Build ADT
PA 34 - N of US 22/322	2,100	2,800
PA 34 - Bet US 22/322 and PA 849	7,500	10,000
PA 34 - Bet PA 849 and PA 274	5,200	6,900
PA 34 - Bet PA 274 and PA 274	8,250	10,700
PA 34 - Bet PA 274 and PA 850	7,250	9,400
PA 34 - Bet PA 850 and PA 850	13,800	17,900
PA 34 - Bet PA 850 and Sunnyside Dr	17,550	23,500
PA 34 - Bet Sunnyside Dr and PA 944	4,300	9,400
PA 944 - W of PA 34	850	1,100
PA 944 - Bet PA 34 and Sunnyside Dr	1,950	6,700
PA 944 - Bet Sunnyside Dr and PA 114	13,600	21,900
PA 944 - Bet PA 114 and I-81	6,100	11,800
PA 944 - Bet I-81 and US 11/15	11,800	15,700
US 11/15 - N of US 22/322	16,000	21,200
US 11/15 - Bet US 22/322 and PA 274	13,600	18,000
US 11/15 - Bet PA 274 and PA 850	16,350	22,300
US 11/15 - Bet PA 850 and I-81	22,000	29,500
US 11/15 - Bet I-81 and PA 944	21,750	29,500
US 11/15 - S of PA 944	21,750	37,000
PA 274 - W of PA 34	5,450	7,200
PA 274 - E of PA 34	3,500	4,700
PA 274 - W of US 11/15	9,350	13,000
PA 850 - W of PA 34	5,850	7,800
PA 850 - E of PA 34	3,050	4,200
PA 850 - W of US 11/15	5,400	7,400
PA 849 - W of PA 34	850	1,100
PA 849 - E of PA 34	1,200	1,600
PA 849 - W of US 22/322	4,850	8,000
I-81 - Bet PA 114 and PA 944	49,000	65,000
I-81 - Bet PA 944 and US 11/15	53,000	70,300
I-81 - Bet US 11/15 and Front Street	59,000	78,300
I-81 - Bet Front Street and US 22/322	66,000	87,600
US 22/322 - W of PA 34	20,300	26,900
US 22/322 - Bet PA 34 and US 11/15	20,000	26,500
US 22/322 - Bet US 11/15 and PA 849	35,600	38,100
US 22/322 - Bet PA 849 and PA 147	40,000	44,300
Sunnyside Dr (SR 1007)	11,000	14,200
Carlisle Cutoff	850	1,100
Lambs Gap Road	750	1,000

B. Year 2020 No-Build Scenario Future Levels of Service

A summary of the year 2020 no-build overall intersection levels of service are shown in Table IV-2. For the sake of comparison, the existing levels of service are also shown in the table. The undesirable levels of service are shown in **boldface** and the failing levels of service are shaded in gray. The levels of service shown represent the intersection levels of service with no improvements to the existing roadway system.

Most of the intersections are shown as having currently undesirable levels of service and many intersections exhibit failing levels of service during the existing and no-build peak periods. At the unsignalized intersections, motorists traveling unimpeded on the main street through the intersections generally will not experience delay; as is the case today, motorists on the side streets will experience the undesirable and failing levels of service as they wait at the stop-controlled intersections for gaps in the mainstream traffic. Due to the projected increase in traffic volumes, the totals at the bottom of the table show that more intersections will experience unacceptable levels of service in year 2020 than in year 2001. The intersections at the northern end of the study area are still projected to experience acceptable levels of service.

The projected year 2020 mid-block levels of service for two of the most heavily traveled two-lane roadways in the study area are compared to the existing mid-block level of service in Table IV-3. An undesirable level of service is common in the two-lane level of service analysis because the parameter used for the classification of level of service is the proportion of time spent following other vehicles within a platoon. That being said, the roadway is not over capacity until a mid-block Level of Service 'F' is achieved. New alignments that bypass existing roadways are not usually needed until the existing roadway is over capacity.

**TABLE IV-2
EXISTING AND 2020 NO-BUILD OVERALL INTERSECTION LEVELS OF SERVICE**

Intersection	AM Peak Hour		PM Peak Hour	
	Year 2001 Existing	Year 2020 No-Build	Year 2001 Existing	Year 2020 No-Build
PA Rt. 34 and Barnett Drive	b	c	b	c
PA Rt. 34 and PA Rt. 274 (N. Int. @ Mecks Corner)	a	b	b	a
PA Rt. 34 and PA 274/SR 2002 (S. Int. @ Mecks Corner)	c	c	c	c
PA Rt. 34 and PA Rt. 850 (Dromgold's Corner)	c	e	b	d
PA Rt. 34 and Windy Hill Road	f	f	e	f
PA Rt. 34 and PA Rt. 850 (Shermans Dale)	f	f	f	f
PA Rt. 34 and Richwine/Youngs Church Road	f	f	d	f
PA Rt. 34 and Fox Hollow Road	f	f	d	f
PA Rt. 34 and Mountain Road	f	f	e	f
PA Rt. 34 and Sunnyside Drive	b	d	f	f
PA Rt. 944 and Sunnyside Drive	e	f	b	b
PA Rt. 944 and PA Rt. 114	C	E	F	F
PA Rt. 944 and US Rt. 11/15	f	f	c	d
US Rt. 11/15 and PA Rt. 850	f	f	d	f
US Rt. 11/15 and Firehouse Road	d	e	d	e
US Rt. 11/15 and Sheetz Drive/Rohrer Drive	f	f	f	f
US Rt. 11/15 and Susquenita Middle School	e	f	f	e
US Rt. 11/15 and Susquenita High School	e	f	e	f
US Rt. 11/15 and Cove Road	d	e	d	f
US Rt. 11/15 SB Ramp and PA Rt. 274 (W. Int.)	a	c	a	c
US Rt. 11/15 NB Ramp and PA Rt. 274 (E. Int.)	b	e	c	c
PA Rt. 274 and SR 2006 (E. Int @ Mecks Corner)	b	a	b	a
PA Rt. 849 and US Rt. 22/322	f	f	c	d
Number of intersections at LOS 'd' or worse:	14	18	13	16
Number of intersections at LOS 'f':	9	12	5	11

c: Unsignalized intersection Level of Service (LOS)
C: Signalized intersection LOS

**Table IV-3
EXISTING AND 2020 NO-BUILD MID-BLOCK LEVELS OF SERVICE**

Intersection	Existing – Year 2001		No Build – Year 2020	
	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
US Rt. 11/15 in Perdix	E	E	E	E
PA Route 34 immediately north of Sterretts Gap	E	E	E	E

E: Mid-block Level of Service – The Mid-block LOS shows the two-lane roadway sections with highest traffic volumes and poorest traffic conditions.

CHAPTER V

NEW ROADWAY ALTERNATIVES YEAR 2020 BUILD SCENARIO FUTURE VOLUMES AND TRANSPORTATION CONDITONS

A number of new roadway alternatives were examined as part of this study as possible improvements to the existing transportation system. The presence of the new alternatives will affect the traffic volumes and the traffic patterns on the existing roadway system. This chapter summarizes the new roadway alternatives and their effect on the study area transportation system. The detailed technical information can be found in the Technical Appendix.

A. New Roadway Alternatives

The US Routes 11/15 corridor and the PA Route 34 corridor are the two major north-south routes between Cumberland and Perry Counties. Because these roadways are expected to handle significant increases in traffic volume over the next twenty years, the existing traffic congestion along PA Route 34, Sunnyside Drive, and US Routes 11/15 will likely worsen.

It was determined that logical locations for the new roadway alternatives would be bypasses parallel to PA Route 34 / Sunnyside Drive and US Routes 11/15. The three alternative bypasses that were studied are shown on Figure V-1.

The southern terminus of Alternative A connects to the intersection of PA Route 944 and PA Route 114 in Cumberland County. The new roadway then travels over the mountain and into Perry County. Alternative A travels northward through Perry County on the east side of PA Route 34 before terminating at PA Route 34 just north of Mecks Corner.

The southern terminus of Alternative B connects to US Routes 11/15 south of Marysville. The roadway travels parallel to US Routes 11/15 bypassing the built-up areas of Marysville and Perdix before connecting to the four-lane section of US Routes 11/15 near Duncannon.

Alternative C is similar to Alternative B such that it acts as a bypass to US Routes 11/15. Alternative C is a less expensive version of Alternative B; Alternative B has three to five mountain ridges in its path, while Alternative C does not have any major ridge crossings. Alternative C travels parallel to US Routes 11/15 bypassing the Perdix area. Its northern terminus is south of Cove Road, and its southern terminus is south of Perdix but north of Marysville.

B. Year 2020 Build Scenario Future Traffic Volumes

Each of the three roadway alternatives were coded separately into the traffic model to obtain the year 2020 build scenario future traffic volumes.

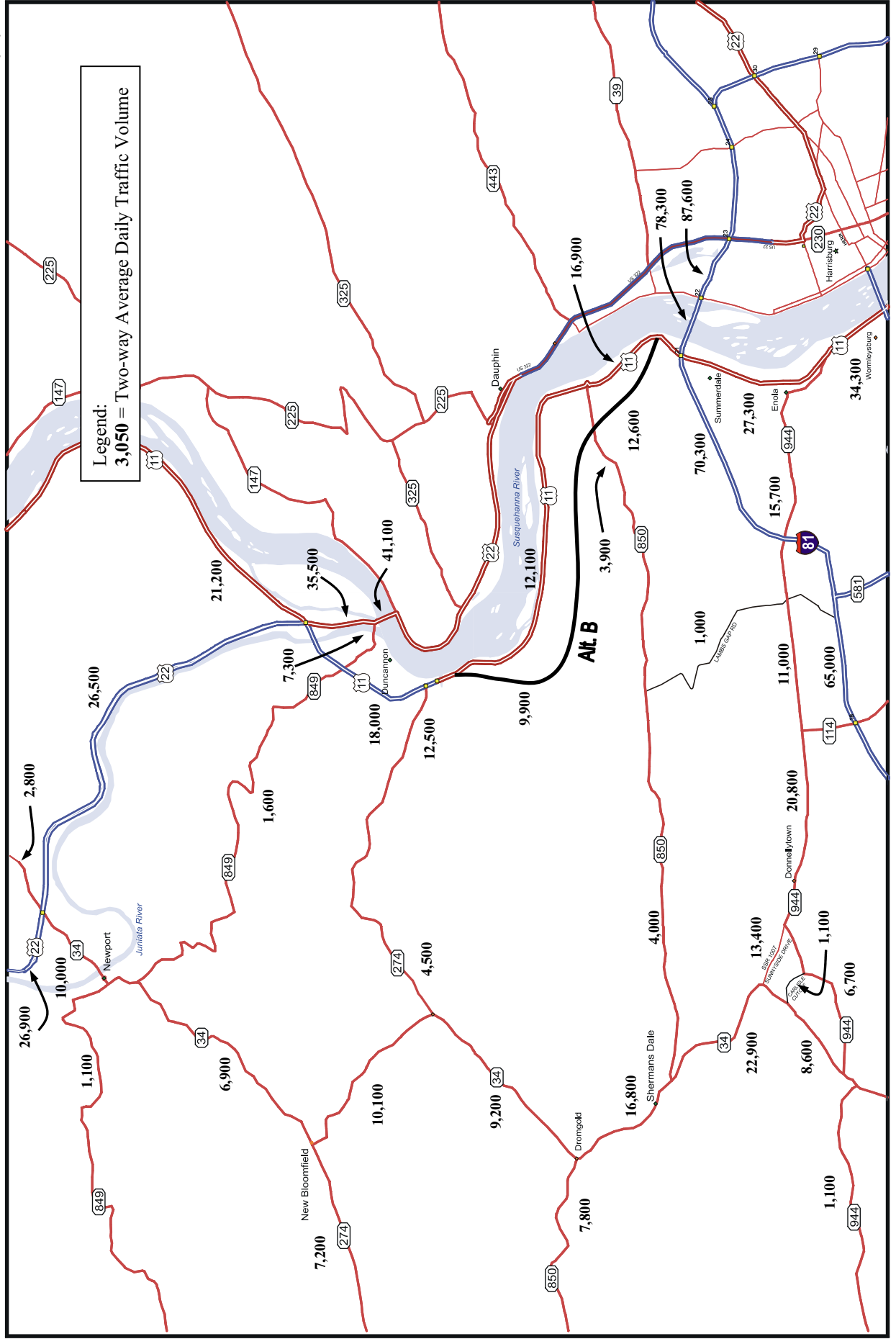
The projected year 2020 build scenarios average daily traffic volumes for Alternatives A, B, and C are shown on Figures V-2, V-3, and V-4, respectively. The existing and no-build scenario average daily traffic volumes are compared to the projected year 2020 traffic volumes for the build scenarios on the existing roadways in Table V-1.

A comparison of the average daily traffic volumes shows that the new roadway alternatives draw traffic off of their companion parallel roadways. The new roadway alternatives solve the local traffic problems; they do not solve the safety and traffic congestion problems of the entire study area. Compared to the no-build traffic volumes, the Alternative A scenario traffic volumes exhibit a decrease on PA Route 34, the Alternative B and C scenario traffic volumes display a decrease on US Routes 11/15. The traffic volumes on PA Route 34 are negligibly affected by the existence of Alternatives B and C, and the traffic volumes on US Routes 11/15 are negligibly affected by the existence of Alternative A. The build scenario traffic volume information demonstrates that the new roadway alternatives do not solve the traffic congestion problems of the entire study area, and even with the new roadways, the many of the safety problems will still exist.

**Table V-1
AVERAGE DAILY TRAFFIC (ADT) VOLUME COMPARISON**

Location	2001 Existing ADT	2020 No Build ADT	2020 Alt. A ADT	2020 Alt. B ADT	2020 Alt. C ADT
PA 34 - N of US 22/322	2,100	2,800	2,800	2,800	2,800
PA 34 - Bet US 22/322 and PA 849	7,500	10,000	10,000	10,000	10,000
PA 34 - Bet PA 849 and PA 274	5,200	6,900	6,900	6,900	6,900
PA 34 - Bet PA 274 and PA 274	8,250	10,700	10,200	10,100	10,100
PA 34 - Bet PA 274 and PA 850	7,250	9,400	6,200	9,200	9,200
PA 34 - Bet PA 850 and PA 850	13,800	17,900	12,100	16,800	16,800
PA 34 - Bet PA 850 and Sunnyside Dr	17,550	23,500	15,200	22,900	22,900
PA 34 - Bet Sunnyside Dr and PA 944	4,300	9,400	6,400	8,600	8,600
PA 944 - W of PA 34	850	1,100	1,100	1,100	1,100
PA 944 - Bet PA 34 and Sunnyside Dr	1,950	6,700	4,200	6,700	6,700
PA 944 - Bet Sunnyside Dr and PA 114	13,600	21,900	13,700	20,800	20,800
PA 944 - Bet PA 114 and I-81	6,100	11,800	7,700	11,000	11,000
PA 944 - Bet I-81 and US 11/15	11,800	15,700	15,700	15,700	15,700
US 11/15 - N of US 22/322	16,000	21,200	21,200	21,200	21,200
US 11/15 - Bet US 22/322 and PA 274	13,600	18,000	18,000	18,000	18,000
US 11/15 - Bet PA 274 and PA 850	16,350	22,300	21,000	12,100	12,100
US 11/15 - Bet PA 850 and I-81	22,000	29,500	28,700	16,900	29,500
US 11/15 - Bet I-81 and PA 944	21,750	29,500	27,300	27,300	27,300
US 11/15 - S of PA 944	21,750	37,000	34,500	34,300	34,300
PA 274 - W of PA 34	5,450	7,200	7,200	7,200	7,200
PA 274 - E of PA 34	3,500	4,700	3,100	4,500	4,500
PA 274 - W of US 11/15	9,350	13,000	12,200	12,500	12,500
PA 850 - W of PA 34	5,850	7,800	7,800	7,800	7,800
PA 850 - E of PA 34	3,050	4,200	2,700	4,000	4,000
PA 850 - W of US 11/15	5,400	7,400	7,200	3,900	7,400
PA 849 - W of PA 34	850	1,100	1,100	1,100	1,100
PA 849 - E of PA 34	1,200	1,600	1,600	1,600	1,600
PA 849 - W of US 22/322	4,850	8,000	7,500	7,300	7,300
I-81 - Bet PA 114 and PA 944	49,000	65,000	65,000	65,000	65,000
I-81 - Bet PA 944 and US 11/15	53,000	70,300	70,300	70,300	70,300
I-81 - Bet US 11/15 and Front Street	59,000	78,300	78,300	78,300	78,300
I-81 - Bet Front Street and US 22/322	66,000	87,600	87,600	87,600	87,600
US 22/322 - W of PA 34	20,300	26,900	26,900	26,900	26,900
US 22/322 - Bet PA 34 and US 11/15	20,000	26,500	26,500	26,500	26,500
US 22/322 - Bet US 11/15 and PA 849	35,600	38,100	36,900	35,500	35,500
US 22/322 - Bet PA 849 and PA 147	40,000	44,300	42,700	41,100	41,100
Sunnyside Dr (SR 1007)	11,000	14,200	9,400	13,400	13,400
Carlisle Cutoff	850	1,100	1,100	1,100	1,100
Lambs Gap Road	750	1,000	1,000	1,000	1,000
New Alignment (Highest Volume)	N/A	N/A	7,000	12,600	10,000

**Alternative B 2020 Average Daily Traffic Volumes
Safety and Congestion Management System Study
CUMBERLAND AND PERRY COUNTIES, PENNSYLVANIA**



The projected average daily traffic volume in year 2020 on Alternative A is as high as 7,700 vehicles per day. On Alternative C, the traffic projections show that nearly 10,000 vehicles will travel the roadway each day. The projected average daily traffic volumes on Alternative B are as great as 12,600 vehicles per day. These volumes are shown in boldface on Table V-1.

C. Alternative D – Recommended Improvements to Existing Roadways and Intersections

The recommended improvements for this study area, which are detailed in Chapter VI and summarized in Chapters I and VIII of this document, do not include any of the three new bypass roadways that were investigated. The recommended enhancements to the transportation system include capacity and safety improvements to the existing roadways and intersections, such as minor widening and intersection signalization. Alternative D consists of these recommended improvements to the study area intersections and roadways.

D. Year 2020 Build Scenario Future Levels of Service

A summary of the year 2020 build scenario overall intersection levels of service are shown in Table V-2. For the sake of comparison, the existing and year 2020 no-build scenario levels of service are also shown in the table. Additionally, the levels of service for Alternative D (recommended improvements to the existing roadways) are shown in the table. It should be noted that the projected (year 2020) traffic volumes utilized in the level of service analyses for Alternative D are the same traffic volumes used for the year 2020 level of service analyses for the No-Build Alternative. The undesirable levels of service are shown in **boldface** and the failing levels of service are shaded in gray. The levels of service shown for all alternatives, with the exception of Alternative D, represent the intersection levels of service with no improvements to the existing roadway system (other than the new parallel roadways in the build scenarios for Alternatives A through C).

In the existing and no-build scenarios, most of the intersections are shown as having currently undesirable levels of service and many intersections exhibit failing levels of service during the existing and no-build peak periods. At the unsignalized intersections, motorists traveling

unimpeded on the main street through the intersections generally will not experience delay; motorists on the side streets will experience the undesirable and failing levels of service as they wait at the stop-controlled intersections for gaps in the mainstream traffic, which is the case today.

With the new roadways constructed under the build scenario, the levels of service show improvement on the intersections parallel to their associated bypasses (Alternatives A through C). However, the intersections on roadways that are not located near the bypasses still exhibit poor levels of service. For example, PA Route 34 shows improved levels of service under Alternative A, which lies closely parallel to the existing PA Route 34. The improvements become apparent by comparing the LOS F on the PA Route 34 intersections under the other alternatives to LOS D under Alternative A. The locations of the boldface text / gray shaded areas and the numbers at the bottom of Table V-2 demonstrate this phenomenon. The intersections at the northern end of the study area are projected to experience acceptable levels of service under all scenarios and peak hours. The level of service analyses for Alternative D, which includes all of the recommended improvements to the existing roadways (with no bypass roadways), shows a dramatic improvement for most of the study area intersections when compared to the No-Build and Build Alternatives (A through C) levels of service. In addition, the recommended improvements under Alternative D will mitigate many of the current safety problems in addition to the projected congestion problems that are expected to be experienced on the study area roadways.

The projected year 2020 build scenario mid-block levels of service for two of the most heavily traveled two-lane roadways in the study area are compared to the existing and no-build mid-block level of service in Table V-3. An undesirable level of service is common in the two-lane level of service analysis because the parameter used for the classification of level of service is the proportion of time spent following other vehicles within a platoon.

The mid-block level of service comparison table demonstrates that the presence of the new alignments have no effect on the resulting mid-block levels of service. The most heavily traveled roadways exhibit a Level of Service 'E' regardless of the alternative in year 2020.

While a Level of Service 'E' is undesirable, the roadway is not over capacity until a mid-block Level of Service 'F' is achieved. New alignments that bypass existing roadways are not usually needed until the existing roadway is over capacity.

The projected traffic volumes and the results of the level of service analyses demonstrate that the presence of the new roadway alternatives do not have a significant effect on the traffic volumes and traffic conditions of the regional roadways, but the new alternatives do affect the traffic volumes and the capacity of the intersections on the roadways to which they are parallel. The new roadway alternatives may solve some of the capacity problems of the intersections on the roadways to which they are parallel, but they do not solve the safety problems of their existing parallel roadways, and they do not solve the regional traffic congestion and safety problems of the study area. For the projected cost of a new roadway over the mountainous terrain, the new bypass should be an effective solution. The new bypasses are not an effective solution because the projected 20-year traffic volumes do not put the most heavily traveled existing roadways over capacity. It is a fact that there are limited financial resources; a different strategy in investment will make better use of the available funds in order to solve the safety and congestion problems that exist and are projected to occur in the study area. The new roadway alternatives (Alternatives A, B, and C) would not solve many of the sight distance related safety problems that currently exist on the study area roadway corridors. The recommended improvements (Alternative D) will improve the level of service of the transportation system and will alleviate many of the safety problems exhibited on the study area roadways in a more fiscally efficient and environmentally friendly manner than would a new bypass roadway.

The recommended improvements (Alternative D) are detailed in Chapter VI and are summarized in Chapters I and VIII of this document.

**TABLE V-2
EXISTING AND FUTURE OVERALL INTERSECTION LEVELS OF SERVICE**

Intersection	AM Peak Hour					PM Peak Hour						
	Year 2001 Existing	Year 2020 No-Build	Year 2020 Alt. A	Year 2020 Alt. B	Year 2020 Alt. C	Year 2020 Alt. D	Year 2001 Existing	Year 2020 No-Build	Year 2020 Alt. A	Year 2020 Alt. B	Year 2020 Alt. C	Year 2020 Alt. D
	PA Rt. 34 and Barnett Drive	b	c	b	b	b	c	b	c	c	c	c
PA Rt. 34 and PA Rt. 274 (N. Int. @ Mecks Corner)	a	b	a	a	a	b	b	a	b	b	b	a
PA Rt. 34 and PA 274/SR 2002 (S. Int. @ Mecks Corner)	c	c	b	c	c	c	c	c	b	c	c	c
PA Rt. 34 and PA Rt. 850 (Dromgold's Corner)	c	e	b	d	d	e	b	d	b	c	c	d
PA Rt. 34 and Windy Hill Road	f	f	d	f	f	B	e	f	d	f	f	B
PA Rt. 34 and PA Rt. 850 (Shermans Dale)	f	f	c	f	f	B	f	f	d	f	f	B
PA Rt. 34 and Richwine/Youngs Church Road	f	f	d	f	f	b	d	f	d	f	f	a
PA Rt. 34 and Fox Hollow Road	f	f	d	f	f	d	d	f	c	f	f	a
PA Rt. 34 and Mountain Road	f	f	d	f	f	D	e	f	d	f	f	B
PA Rt. 34 and Sunnyside Drive	b	d	b	c	c	D	f	f	f	f	f	C
PA Rt. 944 and Sunnyside Drive	e	f	c	f	f	C	b	b	b	b	b	B
PA Rt. 944 and PA Rt. 114	C	E	B	B	B	B	F	F	B	E	E	B
PA Rt. 944 and US Rt. 11/15	f	f	f	f	f	a	c	d	c	c	c	a
US Rt. 11/15 and PA Rt. 850	f	f	f	c	f	C	d	f	f	b	f	B
US Rt. 11/15 and Firehouse Road	d	e	d	b	b	c	d	e	e	c	c	c
US Rt. 11/15 and Sheetz Drive/Rohrer Drive	f	f	f	c	c	d	f	f	f	d	d	d
US Rt. 11/15 and Susquenita Middle School	e	f	e	c	c	c	f	e	f	c	c	c
US Rt. 11/15 and Susquenita High School	e	f	f	c	c	B	e	f	f	c	c	B
US Rt. 11/15 and Cove Road	d	e	e	c	e	e	d	f	e	c	f	f
US Rt. 11/15 SB Ramp and PA Rt. 274 (W. Int.)	a	c	b	b	b	c	a	c	c	c	c	c
US Rt. 11/15 NB Ramp and PA Rt. 274 (E. Int.)	b	e	c	c	c	e	c	c	d	d	d	c
PA Rt. 274 and SR 2006 (E. Int @ Mecks Corner)	b	a	a	a	a	a	b	a	a	a	a	a
PA Rt. 849 and US Rt. 22/322	f	f	f	f	f	f	c	d	c	c	c	d
Number of intersections at LOS 'd' or worse:	14	18	12	9	11	8	13	16	12	9	11	4
Number of intersections at LOS 'f':	9	12	5	8	9	1	5	11	5	6	8	1

c: Unsignalized intersection Level of Service (LOS)

C: Signalized intersection LOS

**Table V-3
EXISTING AND FUTURE MID-BLOCK LEVELS OF SERVICE**

Intersection	AM Peak Hour					PM Peak Hour						
	Year 2001 Existing	Year 2020 No-Build	Year 2020 Alt. A	Year 2020 Alt. B	Year 2020 Alt. C	Year 2020 Alt. D	Year 2001 Existing	Year 2020 No-Build	Year 2020 Alt. A	Year 2020 Alt. B	Year 2020 Alt. C	Year 2020 Alt. D
	US Rt. 11/15 in Perdix	E	E	E	E	E	E	E	E	E	E	E
PA Route 34 immediately north of Sterretts Gap	E	E	E	E	E	E	E	E	E	E	E	E

E: Mid-block Level of Service – The Midblock LOS shows the two-lane roadway sections with highest traffic volumes and poorest traffic conditions.

CHAPTER VI

SUMMARY OF PROPOSED IMPROVEMENTS TO EXISTING ROADWAYS AND INTERSECTIONS

Numerous safety and congestion problems currently exist on the study area roadway corridors. By the year 2020, the increase in development and the resulting growth in traffic volume on the more heavily traveled study area roadways (such as PA Route 34, US Routes 11/15, PA Route 944, and PA Route 274) will only worsen the existing problems, and will create a handful of new safety and congestion issues. The new roadway alternatives described in Chapter V merely mitigate the traffic congestion along roadways to which they are parallel. For the projected cost of a new roadway over the mountainous terrain, the new bypass should be an effective solution. The new bypasses are not an effective solution because the projected 20-year traffic volumes do not put the most heavily traveled existing roadways over capacity. It is a fact that there are limited financial resources; a different strategy in investment will make better use of the funds in order to solve the safety and congestion problems that exist and are projected to occur in the study area. The new roadway alternatives would not solve many of the sight distance related safety problems that currently exist on the study area roadway corridors.

In order to solve the existing and projected safety and congestion problems within the study area, capacity and safety improvements to the existing roadways and intersections must be implemented. This chapter summarizes the proposed improvements to the existing study area roadways.

A. Congestion Management System (CMS) Screening Process

Before the roadway improvements were formulated, the study area roadway corridors underwent Congestion Management System (CMS) screening process. CMS screening is an integral part of the National Environmental Policy Act (NEPA) process and meets the intent of the law by providing the following:

- ∅ Systematic interdisciplinary approach to improvement alternative selection

- € Concentrates on issues pertaining to mobility and congestion
- € Provides a broad range of alternatives for advancement into detailed study

Specific criteria were developed in order to provide a uniform and common performance basis with which to evaluate the many ranges of traditional and non-traditional improvement options along each roadway corridor. The CMS screening criteria are those which weed out clearly ineligible or unfeasible projects.

The eight study area roadway corridors were subjected to the five CMS strategy groups listed below, which are listed in order of highest priority to lowest priority. In other words, if a roadway corridor meets the criteria for a strategy that is high on the list, that improvement option should be examined before the strategies listed lower on the list are implemented (for example, carpooling should be examined prior to adding lanes to the road if that particular corridor meets the criteria for both strategies). The CMS five strategy groups and their associated subgroups are:

- € Eliminate person trips or vehicle miles traveled
 - Growth management
 - Congestion pricing
 - Flex time
- € Shift trips from the automobile to other modes of transportation (such as transit)
 - Public transit capital improvements
 - Public transit operational improvements
 - Advanced public transportation systems
 - Encourage use of non-traditional modes
- € Shift trips from the automobile to High Occupancy Vehicle (HOV) (carpool / vanpool)
 - Encourage HOV use
 - Transportation demand management
- € Improve highway operations
 - Traffic operational improvements
 - Highway operations and management
 - Access management

- Intelligent transportation systems
- € Add general purpose capacity
 - Addition of general purpose lanes

Within each of the strategy groups, there are two levels of screening: Level One screening and Level Two Screening. The Level One screening consists of a general questions related to the improvement option that is being tested for a particular roadway corridor. The Level Two Screening asks more detailed questions pertaining to that improvement option for the roadway corridor. If a particular improvement option passes the screening process for the Level One criteria, then the more stringent Level Two screening process is applied. If that improvement option passes the stricter standards of the Level Two screening process, then that improvement alternative should be examined in further detail. The projects that do not pass the screening criteria are usually not considered for further study.

An example of a Level One screening question for the implementation of commuter rail is: “Is the corridor’s gross population density at least 2000 persons per square mile?” An example of a Level Two screening question for commuter rail is: “Does the corridor’s major employment area have an employment density of at least 15,000 people per square mile?” The specific criteria used in the CMS screening process for each of the five strategy groups for each of the study area roadway corridors are contained within the technical files for this project.

The bi-level CMS screening criteria were applied separately to each of the eight roadway corridors in the study area. Generally, many of the transit related improvement options were eliminated during this process because the population densities of the study area would not support transit. The improvement strategies that were recommended from the CMS screening process were used as a guide in the determination of the improvement concepts that are summarized later in this chapter.

Table VI-1 summarizes the improvement strategies that were subjected to the CMS screening process. The table also shows whether particular improvement strategies passed or failed the Level One and Level Two screening process for each study area roadway corridor.

**Table VI-1
Cumberland and Perry Counties Safety and Congestion Management System Study
Improvement Concept Screening Level 1 and Level 2 Summary**

Pass  Fail 

Group	Subgroup	Strategy	Level	SR 34	SR 944	US 11/15	SR 850	SR 849	SR 274	I-81	US 22/322	
Shift trips from automobile to other modes(continued from previous page)	Public transit operational improvements	Service provision/expansion/enhancement	1									
			2									
		Traffic signal pre-emption	1									
			2									
		Fare reduction or reduced rate of fare increases	1									
			2									
		Transit information systems	1									
			2									
		Transit coordination	1									
			2									
		Increased transit security	1									
			2									
		Transit marketing	1									
			2									
		Advanced Public Transportation Systems	Intelligent bus stops	1								
2												
Encourage use of non-traditional modes	Advanced mode choice systems	1										
		2										
	Bicycle facilities and storage systems	1										
		2										
	Pedestrian facilities	1										
		2										
	Ferry service	1										
		2										
	Traffic calming	1										
		2										
Encourage HOV use	HOV lanes and bus bypass lanes	1										
		2										
	HOV toll savings	1										
		2										
Transportation demand management	HOV and carpool park-n-ride lots	1										
		2										
	Guaranteed ride home programs and employer trip reduction programs	1										
		2										
Shift trips from auto to HOV auto/van	HOV and carpool parking management	1										
		2										
	Rideshare matching services and vanpool programs	1										
		2										

B. Environmental Concerns

The environmental features of the study are a very important consideration when determining the proposed improvements to the study area transportation system. The National Environmental Policy (NEPA) Act of 1969 requires that all Federal agencies evaluate the environmental consequences of any major action, including transportation projects. Since nearly all major transportation projects utilize Federal funds, the NEPA laws are applicable, and environmental consequences must be investigated.

The existing environmental features within this study area have been cataloged, and they have been used in the formulation of the improvement concepts that are summarized later in this chapter. The inventory of the existing environmental features has provided guidance for avoidance by the proposed transportation improvement concepts that are situated near locations of critical environmental features.

The environmental areas of concern are summarized in Table VI-2. The proposed improvement areas are shown along with the identified environmental concerns. This table will provide guidance in the future as some of the proposed improvement concepts reach the preliminary design phase. The most serious environmental concerns will already have been documented, and the preliminary designs of the improvements will be formulated with knowledge of the environmental features in mind.

Table VI-2
Environmental Concerns

Proposed Improvement Area	Wetlands	Historic Resources	Archeology	Schools	Cemeteries	Farmland	Natural Areas	Trails and Parks	Waste Sites	Floodplains/ Floodways	Scenic Rivers	Environmental Justice
INTERSTATE 81		X	X	X	X	X	X	X				
I-81 from 944 to 581		Two historic resources adjacent to 81 southbound on ramp from 944	PASS site near 944/81 interchange; areas of high prehistoric potential near streams	Shaul Elementary southwest of 944/81 interchange	Mt Zion - southeast of 944/81 interchange	Prime Farmland soils and active farmland throughout						
I-81 from 581 to 22/322 - interchanges		Two historic resources adjacent to 81 southbound on ramp from 944. Historic structures/potential historic sites north and west of district at Front Street interchange	PASS site near 944/81 interchange; potential historic sites north and west of the 11/15 and 81 interchange	HACC at 322/22 and 81 interchange			McCormicks Island Archipelago west of Front Street and 81 interchange. Wildwood Lake northwest of 81 and 322/22 interchange					
US 22/322	X	X	X			X	X	X	X	X	X	
US 22/322 through Clarks Ferry		Historic resources at Clarks Ferry, Juniata River Bridge is historic	High prehistoric potential near Susquehanna River					Appalachian Trail at Clarks Ferry	Clarks Ferry Truck Stop	Yes		
PA 849	X	X	X		X	X	X	X	X	X		
849 and US 22/322 intersection		Juniata River Bridge is historic	High prehistoric potential near Susquehanna River					Appalachian Trail at Clarks Ferry		Yes		
Juniata River Bridge	Wetlands adjacent to western approach	Bridge is historic, PA Canal	High prehistoric potential near Susquehanna River, PA Canal historic potential					Part of the Appalachian Trail, Lions Club Park located at west approach		Yes	Susquehanna River is scenic north of the Clarks Ferry Bridge	
Duncannon Subway		Bridge is historic	High prehistoric potential near Susquehanna River					Lions Club Park located at east approach		Yes		
Potential interchange at 849 and US 11/15		Three historic resources in eastern quadrant of roadways				ASAs, ACEs, active farmland, and Prime Farmland soils in all quadrants - AL CAB involvement would be required						
PA 850	X	X	X		X	X	X	X	X	X		
850 and 34		Three historic structures (2 are mills) in vicinity	PASS site near intersection, areas of high prehistoric potential near streams				Sherman Creek			Yes		
850 and US 11/15		Historic structures along 850 at intersection								Yes		
850 and Pine Hill Road/Mountain Road						ASAs adjacent to eastern portions of intersection						
850 and 2003			High prehistoric potential near streams							Yes		
850 and 34		Three historic structures west of 34	High prehistoric potential near streams						Former Cigo gas station	Yes		
PA 274	X	X	X		X	X	X	X	X	X		X
274 between US 11/15 and Business Campus Drive		Historic structures surrounding 274 and 11/15 ramp intersection	Six areas of historic potential near 11/15 ramp intersection, high prehistoric potential near stream east of 11/15			Active farmland adjacent to roadway		Penn Township Park north of 274				
274 and 2006												
274 and Faculty Road												
US 11/15	X	X	X	X	X	X	X	X	X	X		X
US 11/15 and 944												
US 11/15 and Sheetz Gas Station	Wetlands on south side of 11/15								Tanks associated with Sheetz			
US 11/15 and Susquenita High School		Several historic structures south of 11/15	High prehistoric potential near Susquehanna River	Susquenita						Yes		
US 11/15 between I-81 and 274	Numerous wetlands	Numerous historic structures	High prehistoric potential near Susquehanna River, high historic potential in several areas and along railroad	Susquenita			Cove Mountain Slopes and Cove Mountain Outcrop		Numerous adjacent to roadway	Yes		Sections of Marysville Borough
US 11/15 and Shady Lane		Historic structures adjacent to 11/15 and side roads	Historic potential with proximity to railroad					Lion's Club park adjacent to 11/15				
US 11/15 in Marysville												

Note: PASS - Pennsylvania Archeological Site Survey (PASS) files are maintained by the Pennsylvania Historical and Museum Commission (PHMC)

Table VI-2
Environmental Concerns

Proposed Improvement Area	Wetlands	Historic Resources	Archeology	Schools	Cemeteries	Farmland	Natural Areas	Trails and Parks	Waste Sites	Floodplains/ Floodways	Scenic Rivers	Environmental Justice
US 11/15 southbound off ramp and 274		Historic structures surrounding 274 and 11/15 ramp intersection	Six areas of historic potential near 11/15 ramp intersection, high prehistoric potential near stream east of 11/15									
US 11/15 in Perdix interchange		Numerous structures adjacent to 11/15	High prehistoric potential near Susquehanna River						Closed Reedy Landfill			
US 11/15 and I-81 interchange		Several structures north of the interchange, PA canal	Several areas with historic potential north and west of the interchange						Former bank farm south of interchange, former gas station north of interchange	Yes		
US 22/322 interchange	X	Several structures east of the interchange	High prehistoric potential on 114 leg of intersection	X	X	X		X	X	X		X
PA 944		Numerous structures adjacent to 944	Crosses several areas of high prehistoric potential, one area of historic potential south of 944			ASA's east of the 1007 and 114 intersection		Appalachain Trail crossing				Regency Woods MHP adjacent to roadway
944 and 114					MT Zion - southeast interchange					Yes		
944 between 1007 and 114												
944 between I-81 and 1015												
944 and Magaro Road/Carol Lane												
944 and 1004												
944 and Orr's Bridge Road												
944 and Rich Valley Road												
944 and Deer Lane												
944 and 1011												
944 between 11/15 and 34												
PA 34	X	X	X	X	X	X	X	X	X	X	X	X
34 between 850 and 1007	Several wetlands adjacent to roadway	Numerous historic structures	Numerous crossing of high prehistoric potential areas						Mountain Auto Service	Yes		
34 and 1007		Four historic structures							Mountain Auto Service			
34 and 2001		Cluster of historic structures surrounding intersection	High prehistoric potential south of intersection						Shermansdale Fire Company	Yes		
34 and Fox Hollow Road		Eight historic structures	High prehistoric potential near streams									
34 and Barnett Road	Several wetlands north of 34		Moderate prehistoric potential adjacent to stream									
34 and 1017		Juniatia River Bridge is historic; six historic structures surrounding intersection, PA Canal	PA Canal						New Latchford Saw, Newport Exxon	Yes		
34 and 1015			Moderate prehistoric potential adjacent to stream									
34 and Old Mill Road		Six historic structures adjacent to intersection (1 is a mill)	High and moderate prehistoric potential adjacent to stream							Yes		
34 and 2002/2006		Cluster of historic structures surrounding intersection										
34 and Rambo Hill Road		Crums Corner cluster of structures										
34 and Richwine/Young's Church Road		Four historic structures	High prehistoric potential near streams									
34 between 274 and 944	Numerous wetlands	Numerous historic structures, historic district in New Bloomfield	Numerous crossing of high prehistoric potential areas and several areas of adjacent historic potential areas	Carroll Elementary		ASA's and active farmland adjacent to roadway		Appalachain Trail crossing	Several adjacent to roadway	Yes		Yes

Note: PASS - Pennsylvania Archeological Site Survey (PASS) files are maintained by the Pennsylvania Historical and Museum Commission (PHMC)

C. Improvement Concepts

The existing safety and traffic conditions of the study area are summarized in Chapter II, and the projected future traffic conditions are summarized in Chapter IV. The locations of the existing and projected safety and traffic congestion problem areas within the study area have been identified from the traffic and crash data that has been collected, from the results of the crash and traffic analyses, from field visits to the study area, and from conversations with law enforcement officials and residents of the study area. In addition to the factors just mentioned, the improvement concepts that are summarized on the next page were also formulated by consulting the Congestion Management System (CMS) screening process and the environmental concerns summary as a guide.

For some of the improvement concept summaries that are summarized later in this chapter, multiple options are given as a solution to a problem (or problems) at a location. The cost estimate for the improvement option that has been chosen to progress into the implementation plan (see Chapter VIII) is shown in boldface on the following improvement concept summaries. The location numbers and the improvement package designations of each improvement concept are also shown on the following improvement concept summaries. The improvement location number is used to identify the project on the summary spreadsheet titled, “Improvement Concepts – Cost Estimates”, which is located in the Technical Appendix. The individual improvement concepts that were carried forward into the Implementation Plan are highlighted in gray on the improvement concept summary spreadsheets, and they have been grouped into Improvement Packages. The processes involved in the grouping of the improvement packages are explained in further detail within the description of the Implementation Plan in Chapter VIII. Details of the ‘planning level’ cost estimates that are given for each of the improvement concepts are also given in Chapter VIII. The calculations and assumptions used in the ‘planning level’ cost estimates are located in the technical appendix.

The improvement location numbers and improvement package numbers are shown on the location maps for each study area roadway corridor. The location maps for each corridor are shown preceding the improvement concept summaries for that corridor in this chapter. The improvement location numbers and their associated improvement package designations that were carried forward into the Implementation Plan are shown as boldface and italic text on the location maps. The levels of service for the recommended improvements are summarized under the designation of Alternative D in Chapter V of this document.

PA Route 34 - Locations of Proposed Improvements

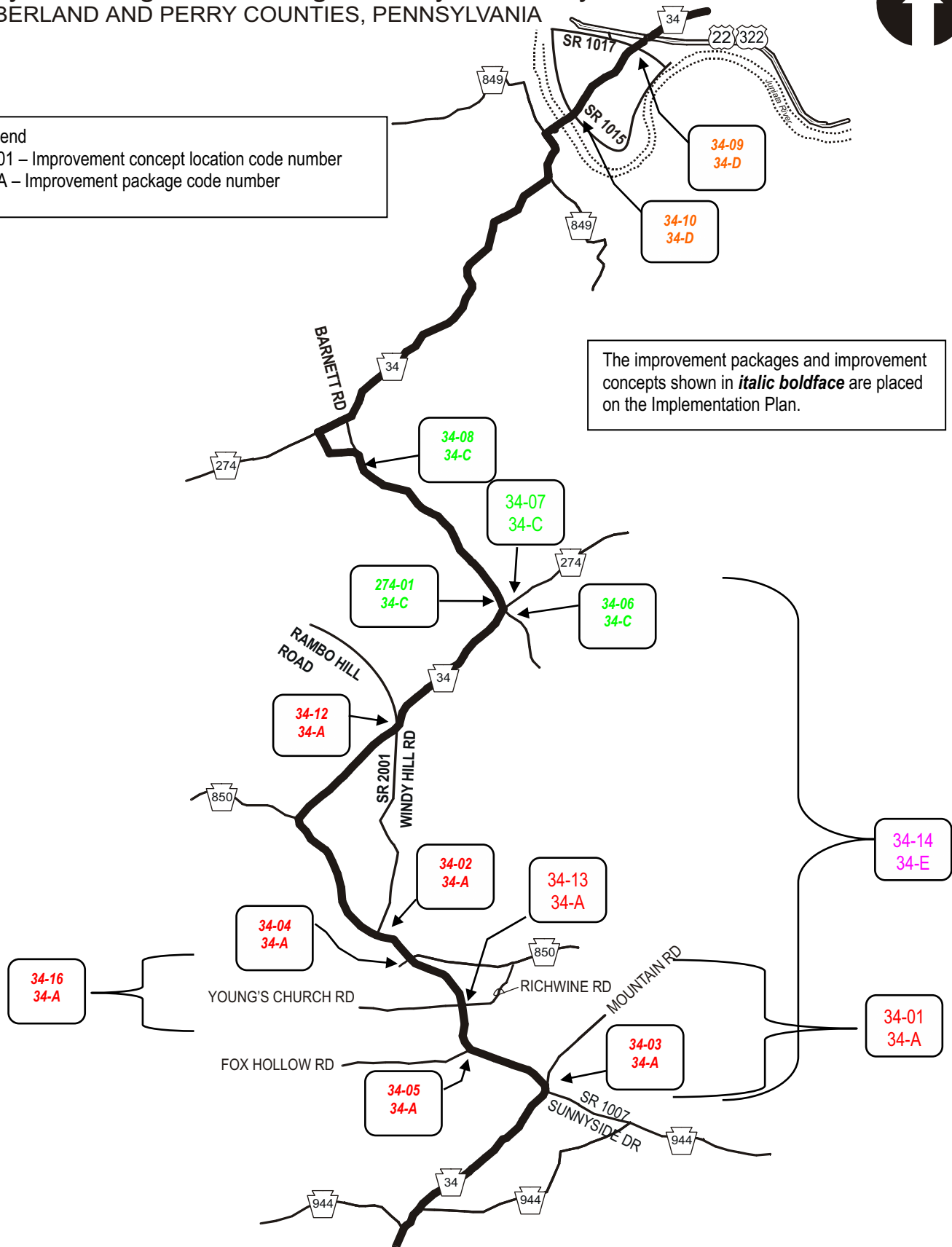
Safety and Congestion Management System Study

CUMBERLAND AND PERRY COUNTIES, PENNSYLVANIA



Legend
 34-01 – Improvement concept location code number
 34-A – Improvement package code number

The improvement packages and improvement concepts shown in **italic boldface** are placed on the Implementation Plan.



IMPROVEMENT CONCEPT SUMMARY

Location(s): PA Route 34 between PA Route 850 (Shermans Dale Area) / Fox Hollow Road and Sunnyside Drive (Sterretts Gap)

**Location Number /
Improvement Package:** 34-01, 34-16 / 34-A

Statement of problem: Level of service problems were noted on southbound PA Route 34 during the morning peak hour. Slow-moving heavy trucks combined with the heavy traffic flows cause backups up the mountain. The following photo shows the recurrent congestion on southbound PA Route 34.



Photo of the recurring morning congestion on southbound PA Route 34 between PA Route 850 and Sterretts Gap

Proposed Solution(s): The addition of a truck climbing lane could eliminate the frequent back-ups that occur during the morning peak period in this location. The addition of a truck climbing lane on Sunnyside Drive could also mitigate the traffic congestion that is experienced during the evening peak hour on the other side of the mountain.

Another alternative that would reduce congestion and enhance safety along this section of PA Route 34 includes the addition of a two-way center left-turn lane on PA Route 34 between the Shermans Dale Bridge and Richwine Road. Many driveways and side streets are located along this section of roadway.

Technical Committee

Comment:

The school buses stopping along PA Route 34 also cause traffic backups. The timing of the school bus stops should be improved or school bus routes should be consolidated. Efforts should also be made to place the school bus stops on side streets and not directly on PA Route 34 wherever conditions permit.

Public Comment:

Approximately 65 percent of persons surveyed who attended the January Public Meetings identified roadway widening as an effective measure.

Approx. Cost Estimate:

\$6.4 million (truck climbing lane)

\$2.78 million (center left-turn lane between the Shermans Dale Bridge and Richwine Road)

IMPROVEMENT CONCEPT SUMMARY

Location(s): PA Route 34 and Sunnyside Drive (SR 1007) / Mountain Road intersection

Location Number / Improvement Package: 34-03 / 34-A

Statement of problem: Level of Service problems were noted at this location and are projected to occur in the year 2020, on the uphill portions of both roadways (PA Route 34 and Sunnyside Drive). During the evening peak hour, vehicles use the Carlisle Cutoff to PA Route 34 to bypass the traffic backups on Sunnyside Drive. The following summary is provided.

**Table VI-3
OVERALL INTERSECTION LEVELS OF SERVICE
PA ROUTE 34 AND SUNNYSIDE DRIVE / MOUNTAIN ROAD**

Intersection	Existing (2001)		Future (2020)	
	Morning	Evening	Morning	Evening
PA Route 34 and Sunnyside Drive	b	f	d	f
PA Route 34 and Mountain Road	f	e	f	f

*a: Unsignalized intersection Level of Service
Items in bold text represent undesirable levels of service*

An examination of the crash data and the physical geometry of the intersection demonstrates that this location experiences insufficient intersection sight distance. Because of the sharp horizontal and vertical curve at the crest of the hill at Sterretts Gap, the intersection of PA Route 34 and Sunnyside Drive appears to experience poor intersection sight distance.

Proposed Solution(s): 1. Installation of a traffic signal. This intersection currently meets Peak Hour Volume and/or Peak Hour Delay warrants for traffic signal installation. Detailed traffic signal warrant analyses and traffic signal operations analyses should be conducted at this intersection. This traffic signal will create gaps in the traffic along PA Route 34 such that the side street traffic can safely enter PA Route 34 and, as a result, the number of angle collisions along the corridor should be reduced. The table below shows the resulting Levels of Service in 2020 if this intersection becomes signalized.

Table VI-4
OVERALL SIGNALIZED INTERSECTION LEVELS OF SERVICE
PA ROUTE 34 AND SUNNYSIDE DRIVE / MOUNTAIN ROAD

Intersection	2020 Levels of Service	
	Morning	Evening
PA Route 34 and Sunnyside Drive / Mountain Road	D	C

A: Signalized intersection Level of Service

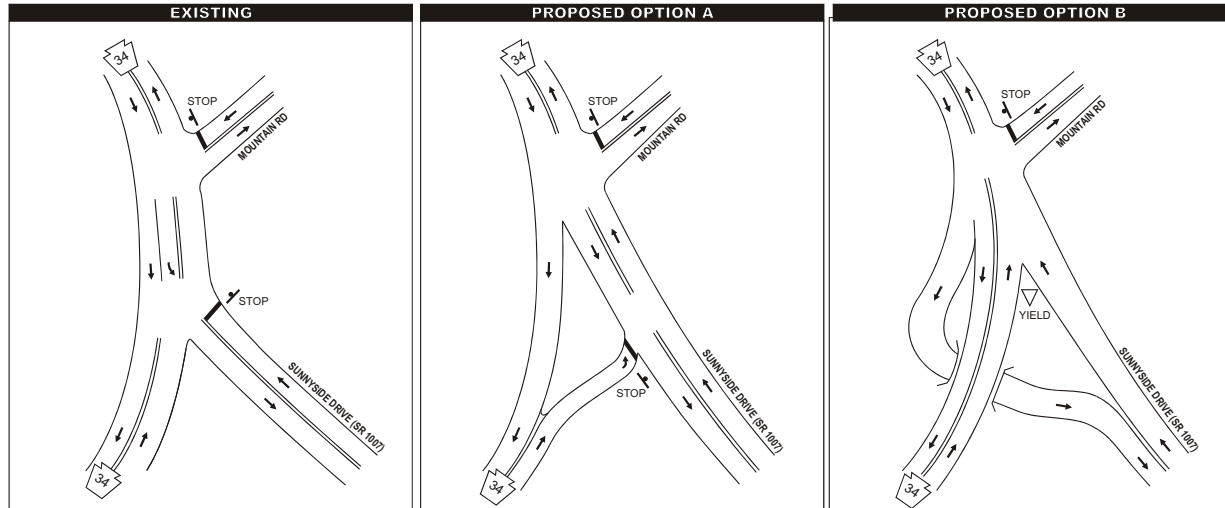
Items in bold text represent undesirable levels of service

2. Because the above location appears to experience insufficient sight distance, physical alterations could be made at the deficient location so that the sight distance is improved (if the benefits justify the costs). In this case, physical alterations should include the flattening of the crest vertical curve at the crest of the hill at Sterretts Gap.

It should be noted that any operational improvements that are made to this intersection would be designed such that sufficient sight distance is maintained.

3. The combination of any of the intersection improvements (shown on the next page) and the addition of the center left-turn lane on PA Route 34 should provide for sufficient capacity while enhancing the safety of this intersection. It should be noted that any improvements that are made to this intersection would involve three local municipalities (Middlesex Township in Cumberland County along with Rye Township and Carroll Township in Perry County).

Additional proposed improvement: Switch location of stop sign at Sterretts Gap (from Sunnyside Drive to the northbound approach of PA Route 34). Previously, concerns have been raised by the public and by PENNDOT that the existing grade on the northbound PA Route 34 approach to the Sterretts Gap intersection is too steep to support heavy vehicles that are stopped in a queue, especially with the icy pavements that are experienced during the winter months. Under icy or snowy weather conditions, the heavier vehicles would likely have great trouble starting from a stopped condition on the steep grade, and they might even begin to slide backwards down the hill if the pavement is extremely slippery. In order for the intersection to operate safely with the relocated stop sign, the grades of the approaches to the intersection would likely have to be altered, which means that the intersection would have to be reconstructed. This improvement concept would then require further study and detailed engineering design, which means that it is no longer a short-term fix that could be implemented immediately.



Public Comment:

1. Approximately 65 percent of persons surveyed who attended the January Public Meetings identified traffic signals as an effective measure.
2. No specific response (either positive or negative) was received from the public on this concept.
3. Public concern was expressed over Option A and the stopping of vehicles on northbound SR 34 (especially any heavy vehicles).

Approx. Cost Estimate:

1. This improvement concept would include limited safety improvements at the intersection. - \$1.1 million
2. \$1.0 million
3. **\$2.5 million (Option A)** \$5.1 million (Option B)

IMPROVEMENT CONCEPT SUMMARY

Location(s): PA Route 34 and PA Route 850 intersection (Shermans Dale)

**Location Number /
Improvement Package:** 34-04 / 34-A

Statement of problem: Level of Service and congestion problems associated with the numerous conflicting turning movements with the adjacent shopping center driveway were noted and are projected at this location. The following summary is provided.

**Table VI-5
OVERALL INTERSECTION LEVELS OF SERVICE
PA ROUTE 34 AND PA ROUTE 850 (Shermans Dale)**

Intersection	Existing (2001)		Future (2020)	
	Morning	Evening	Morning	Evening
PA Route 34 and PA Route 850 (Shermans Dale)	f	f	f	f

*a: Unsignalized intersection Level of Service
Items in bold text represent undesirable levels of service*

An examination of the crash data and the physical geometry of the intersection demonstrates that this location experiences insufficient intersection sight distance. The westbound approach of PA Route 850 has poor sight distance looking toward the south as seen in the following photo.



Photo of the view from the westbound approach of PA Route 850 looking southbound on PA Route 34

Proposed Solution(s):

1. Installation of a traffic signal. This intersection currently meets Peak Hour Volume and/or Peak Hour Delay warrants for traffic signal installation. Detailed traffic signal warrant analyses and traffic signal operations analyses should be conducted at this intersection. This traffic signal will create gaps in the traffic along PA Route 34 such that the side street traffic can safely enter PA Route 34 and, as a result, the number of angle collisions along the corridor should be reduced. The table below shows the resulting Levels of Service in 2020 if this intersection becomes signalized.

**Table VI-6
OVERALL SIGNALIZED INTERSECTION LEVELS OF SERVICE
PA ROUTE 34 AND PA ROUTE 850 (Shermans Dale)**

Intersection	2020 Levels of Service	
	Morning	Evening
PA Route 34 and PA Route 850 (Shermans Dale)	B	B

A: Signalized intersection Level of Service

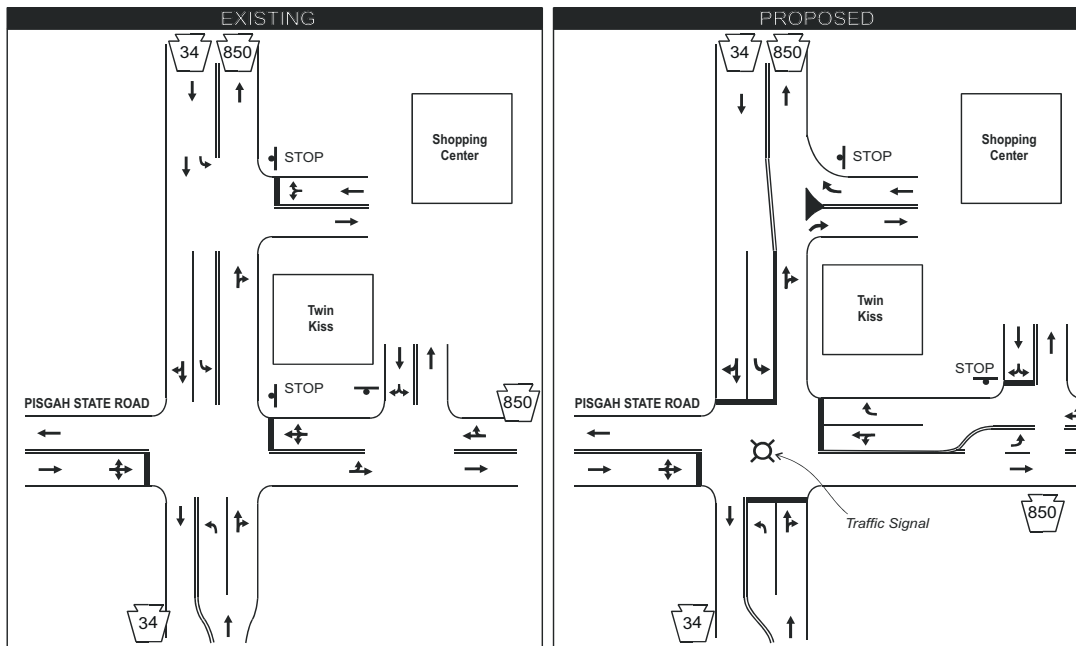
Items in bold text represent undesirable levels of service

2. Because the above location appears to experience insufficient sight distance, physical alterations could be made at the deficient location so that the sight distance is improved (if the benefits justify the costs). In this case, physical alterations should include cutting back of the embankment on the southwest corner of the intersection.

A less expensive solution to the sight distance problem would be to install a traffic signal at this location.

3. Implementation of access management strategies. The shopping center driveway immediately north of PA Route 850 should be reconfigured to a right-turn in/right-turn out only driveway. Left-turn movements into and out of the shopping center would then be made via the access driveway on PA Route 850. This will increase the traffic volume on PA Route 850, but reducing the number of conflicting turning movements will enhance the overall safety of the intersection. The four-legged intersection could be signalized if the future traffic volumes satisfy traffic signal warrants.

**Preliminary Proposed Improvements
Southern Intersection of PA Route 34 and PA Route 850 (Shermans Dale)
Safety and Congestion Management System Study
CUMBERLAND AND PERRY COUNTIES, PENNSYLVANIA**



**Technical Committee
Comment:**

The southern shopping center driveway, which intersects with PA Route 850, should be reconstructed as far as possible to the east to lessen the probability of queuing problems associated with a new traffic signal. The distance between the southern shopping center driveway and PA Route 34 should be maximized to allow for the greatest amount queue storage within the back-to-back left-turn lanes.

Problems and confusion with right-turning vehicles into the northern shopping center driveway currently exist. The confusion occurs when the northbound motorists that wish to turn into the northern shopping center driveway from PA Route 34 have their right-turn signal on as they approach the PA Route 850 intersection, which is located immediately to the south of the shopping center driveway. The motorists wishing to enter PA Route 34 from the westbound PA Route 850 cross the northbound PA Route 34 traffic stream believing that the shopping center-bound motorists are making a right turn onto PA Route 850 eastbound. The northern shopping center driveway, which intersects with PA Route 34, should be closed, or, at a minimum, the driveway should be relocated as far as possible to the north to reduce the possibility of confusion.

Public Comment:

1. Approximately 65 percent of persons surveyed who attended the January Public Meetings identified traffic signals as an effective measure.
2. No specific response (either positive or negative) was received from the public on this concept.
3. Same comments as number one above.

Approx. Cost Estimate:

1. This improvement concept would include limited safety improvements at the intersection - \$95,000
2. \$125,000
3. **This improvement concept would include signalization and other limited safety improvements at the intersection = \$700,000**

IMPROVEMENT CONCEPT SUMMARY

Location(s): PA Route 34 and Windy Hill Road (SR 2001) intersection

Location Number / Improvement Package: 34-02 / 34-A

Statement of problem: Level of Service problems were noted and are projected at this location, and the following summary is provided.

**Table VI-7
OVERALL INTERSECTION LEVELS OF SERVICE
PA ROUTE 34 AND WINDY HILL ROAD**

Intersection	Existing (2001)		Future (2020)	
	Morning	Evening	Morning	Evening
PA Route 34 and Windy Hill Road	f	e	f	f

a: Unsignalized intersection Level of Service
Items in bold text represent undesirable levels of service

An examination of the crash data and the physical geometry of the intersection demonstrates that this location experiences insufficient intersection sight distance. The southbound approach of SR 2001 experiences poor sight distance because of houses next to the roadway and the horizontal curvature of the roadway adjacent to the intersection as shown in the photo below.



Photo of the view from the westbound approach of Windy Hill Road looking northbound on PA Route 34

Proposed Solution(s): 1. Installation of a traffic signal. This intersection currently meets Peak Hour Volume and/or Peak Hour Delay warrants for traffic signal installation. Detailed traffic signal warrant analyses and traffic signal operations analyses should be conducted at this

intersection. This traffic signal will create gaps in the traffic along PA Route 34 such that the side street traffic can safely enter PA Route 34 and, as a result, the number of angle collisions along the corridor should be reduced. The table below shows the resulting Levels of Service if this intersection becomes signalized.

**Table VI-8
OVERALL SIGNALIZED INTERSECTION LEVELS OF SERVICE
PA ROUTE 34 AND WINDY HILL ROAD**

Intersection	2020 Levels of Service	
	Morning	Evening
PA Route 34 and Windy Hill Road	B	B

A: Signalized intersection Level of Service

Items in bold text represent undesirable levels of service

2. Because this appears to experience insufficient sight distance, physical alterations could be made at the deficient location so that the sight distance is improved (if the benefits justify the costs). At this intersection, physical alterations here should include the flattening of the horizontal curve on PA Route 34 and the removal of any obstructions that adversely impact sight distance.

A less expensive solution to the sight distance problem would be to install a traffic signal at this location.

3. A third solution would involve relocating and reconstructing Windy Hill Road to the southeast and joining it with Souder Road at a new intersection. If possible, this improvement should be coordinated with the Shermans Dale Bridge reconstruction project.

Public Comment:

1. Approximately 65 percent of persons surveyed who attended the January Public Meetings identified traffic signals as an effective measure.

2. and 3. No specific response (either positive or negative) was received from the public on this concept.

Approx. Cost Estimate:

1. This improvement concept would include limited safety improvements at the intersection - \$300,000

2. \$900,000

3. \$2.5 million

IMPROVEMENT CONCEPT SUMMARY

Location(s): PA Route 34 and Fox Hollow Road intersection

Location Number / Improvement Package: 34-05 / 34-A

Statement of problem: Level of Service problems were noted and are projected at this location, and the following summary is provided.

**Table VI-9
OVERALL INTERSECTION LEVELS OF SERVICE
PA ROUTE 34 AND FOX HOLLOW ROAD**

Intersection	Existing (2001)		Future (2020)	
	Morning	Evening	Morning	Evening
PA Route 34 and Fox Hollow Road	f	d	f	f

*a: Unsignalized intersection Level of Service
Items in bold text represent undesirable levels of service*

An examination of the crash data and the traffic count data demonstrates that high numbers of rear-end crashes occur at this location due to a high number of left-turning vehicles.

Proposed Solution(s): 1. Installation of a traffic signal. This intersection currently meets Peak Hour Volume and/or Peak Hour Delay warrants for traffic signal installation. Detailed traffic signal warrant analyses and traffic signal operations analyses should be conducted at this intersection. This traffic signal will create gaps in the traffic along PA Route 34 such that the side street traffic can safely enter PA Route 34 and, as a result, the number of angle collisions along the corridor should be reduced. The table below shows the resulting Levels of Service if this intersection becomes signalized.

**Table VI-10
OVERALL SIGNALIZED INTERSECTION LEVELS OF SERVICE
PA ROUTE 34 AND FOX HOLLOW ROAD**

Intersection	2020 Levels of Service	
	Morning	Evening
PA Route 34 and Fox Hollow Road	D	D

*A: Signalized intersection Level of Service
Items in bold text represent undesirable levels of service*

2. Construction of a separate left-turn lane at this location would lessen the probability of rear-end crashes while enhancing the safety and lessening delays experienced by motorists on PA Route 34.

Public Comment:

1. Approximately 65 percent of persons surveyed who attended the January Public Meetings identified traffic signals as an effective measure.
2. No specific response (either positive or negative) was received from the public on this concept.

Approx. Cost Estimate:

1. This improvement concept would include limited safety improvements at the intersection - \$80,000
2. **This improvement concept (install a northbound left-turn lane) does not include signalization - \$185,000**

IMPROVEMENT CONCEPT SUMMARY

Location(s): PA Route 34 and Richwine Road/Young’s Church Road intersection

Location Number / Improvement Package: 34-13 / 34-A

Statement of problem: Level of Service problems were noted and are projected at this location, and the following summary is provided.

**Table VI-11
OVERALL INTERSECTION LEVELS OF SERVICE
PA ROUTE 34 AND RICHWINE / YOUNG’S CHURCH ROAD**

Intersection	Existing (2001)		Future (2020)	
	Morning	Evening	Morning	Evening
PA Route 34 and Richwine / Young’s Church Rd	e	d	f	f

*a: Unsignalized intersection Level of Service
Items in bold text represent undesirable levels of service*

An examination of the crash data and the traffic count data demonstrates that high numbers of rear-end crashes occur at this location due to a high number of left-turning vehicles.

Proposed Solution(s): 1. Installation of a traffic signal. This intersection currently meets Peak Hour Volume and/or Peak Hour Delay warrants for traffic signal installation. Detailed traffic signal warrant analyses and traffic signal operations analyses should be conducted at this intersection. This traffic signal will create gaps in the traffic along PA Route 34 such that the side street traffic can safely enter PA Route 34 and, as a result, the number of angle collisions along the corridor should be reduced. The table below shows the resulting Levels of Service if this intersection becomes signalized.

**Table VI-12
OVERALL SIGNALIZED INTERSECTION LEVELS OF SERVICE
PA ROUTE 34 AND RICHWINE / YOUNG’S CHURCH ROAD**

Intersection	2020 Levels of Service	
	Morning	Evening
PA Route 34 and Richwine / Young’s Church Road	B	B

*A: Signalized intersection Level of Service
Items in bold text represent undesirable levels of service*

The installation of all traffic signals proposed on PA Route 34 would definitely cause the currently unimpeded through movements on PA Route 34 to experience some delays at the

signalized intersections. The average speed of the vehicles on PA Route 34 would become lower as a result of the traffic signal installation. In order to quantify the reduction in speed, arterial level of service analyses were performed with all of the traffic signals installed along the corridor. The table below summarizes the arterial level of service and the average speeds with the presence of traffic signals on PA Route 34.

**Table VI-13
PA ROUTE 34 – ARTERIAL LEVEL OF SERVICE (LOS)
WITH SIGNALIZED INTERSECTIONS**

Segment	Time Period	Direction	LOS	Speed (mph)
PA Route 34 – Between Sunnyside Drive and Windy Hill Road <i>Free-flow Speed: 45 mph</i>	Morning Peak	Northbound	A	40
		Southbound	A	35
	Evening Peak	Northbound	A	36
		Southbound	A	39

2. Construction of a separate left-turn lane at this location would lessen the probability of rear-end crashes while enhancing the safety and lessening delays experienced by motorists on PA Route 34.

Public Comment:

1. Approximately 65 percent of persons surveyed who attended the January Public Meetings identified traffic signals as an effective measure.
2. No specific response (either positive or negative) was received from the public on this concept.

Approx. Cost Estimate:

1. This improvement concept would include limited safety improvements at the intersection - \$95,000
2. This improvement concept does not include signalization - \$185,000

It should be noted that because the improvement concept that provides for a center left-turn lane on this section of PA Route 34 (between the Shermans Dale Bridge and Richwine / Young’s Church Road) has been chosen to be placed on the implementation plan, neither improvement option at this location has been chosen to move forward into the implementation stage at this time.

IMPROVEMENT CONCEPT SUMMARY

Location(s):	PA Route 34 and Barnett Road intersection (southern)
Location Number / Improvement Package:	34-08 / 34-C
Statement of problem:	The horizontal curvature and vertical curvature on PA Route 34 south of the intersection are severe enough to cause sight distance problems for motorists on the southbound approach of Barnett Road.
Proposed Solution(s):	Because the above location appears to experience insufficient sight distance, alterations could be made at the deficient location so that the sight distance is improved (if the benefits justify the costs). A solution would involve physical alterations including the flattening of the vertical and horizontal curves near the intersection.
Technical Committee Comment:	A very narrow bridge currently exists on Barnett Road north of the PA Route 34 intersection. If this bridge is improved, the traffic that uses Barnett Road as a shortcut around the center of New Bloomfield will likely increase in volume. The increase in traffic volume in combination with the existing sight distance problem further demonstrates the need for improvements at this intersection.
Public Comment:	No specific response (either positive or negative) was received from the public on this concept.
Approx. Cost Estimate:	\$400,000

IMPROVEMENT CONCEPT SUMMARY

Location(s): PA Route 34 and Shortcut Road (SR 1017) intersection
PA Route 34 and Juniata Parkway (SR 1015) intersection

**Location Number /
Improvement Package:** 34-09, 34-10 / 34-D

Statement of problem: An examination of the crash data and the physical geometry of the intersection demonstrates that both of these locations experience insufficient intersection sight distance. Obstructions close to the roadway are the cause of the poor sight distance that are experienced at these locations. The bridge truss that is located immediately south of the Juniata Parkway intersection blocks the view for motorists on Juniata Parkway. At the Shortcut Road intersection, the embankment that is close to the roadway obstructs the sight distance as shown in the photo below.



Photo of the view from the northbound approach of Shortcut Road looking southbound on PA Route 34

Proposed Solution(s): Because the above locations appear to experience insufficient sight distance, alterations could be made at the deficient locations so that the sight distance is improved (if the benefits justify the costs). At these intersections, physical alterations should include the cutting back of the embankment at Shortcut Road or the modification of the structure at Juniata Parkway.

Public Comment: No specific response (either positive or negative) was received from the public on this concept.

Approx. Cost Estimate: **\$57,000 (SR 34 and Shortcut Road)**
\$180,000 (SR 34 and Juniata Parkway)


IMPROVEMENT CONCEPT SUMMARY

Location(s): PA Route 34 / Dellville Road (SR 2002) / SR 2006 intersection
(Southern Mecks Corner Intersection)

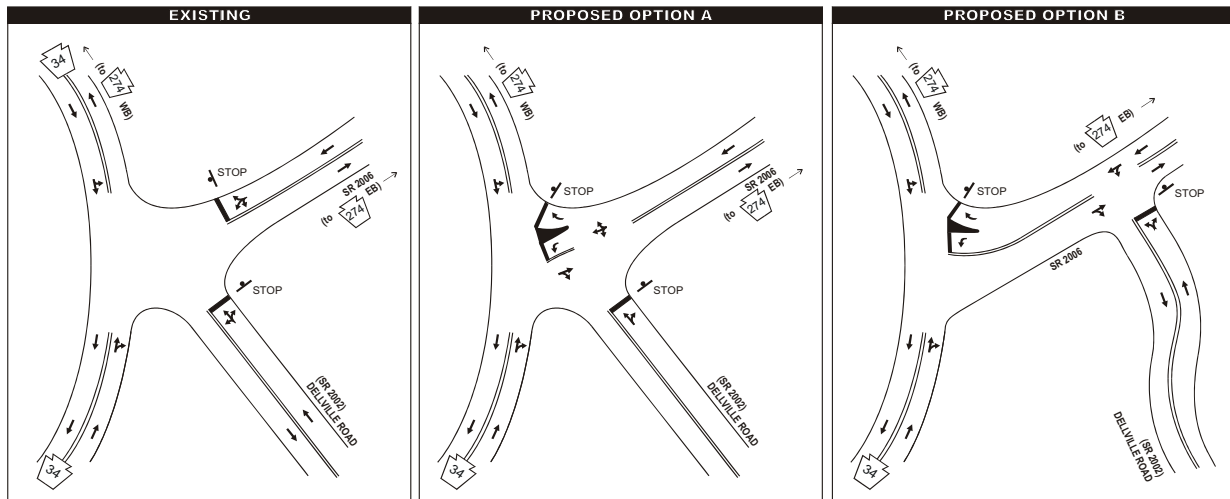
**Location Number /
Improvement Package:** 34-06 / 34-C

Statement of problem: This intersection consists of two stop-controlled intersections on the east side of PA Route 34. The current design of the intersection poses safety problems and is confusing to motorists.

Proposed Solution(s): This intersection should be re-striped or a more expensive solution would be to redesign the intersection as shown in the graphic below.


Orin R. Anderson, Inc.
Preliminary Proposed Improvements
Intersection of PA Route 34, Dellville Road (SR 2002), and SR 2006 (Mecks Corner)
Safety and Congestion Management System Study
CUMBERLAND AND PERRY COUNTIES, PENNSYLVANIA

FIGURE




It should be noted that these improvements would be nullified and superseded if the proposed improvements at Mecks Corner (three intersections) are implemented; please see the corresponding improvement concept summary on the next page of this chapter.

Public Comment: No specific response (either positive or negative) was received from the public on this concept.

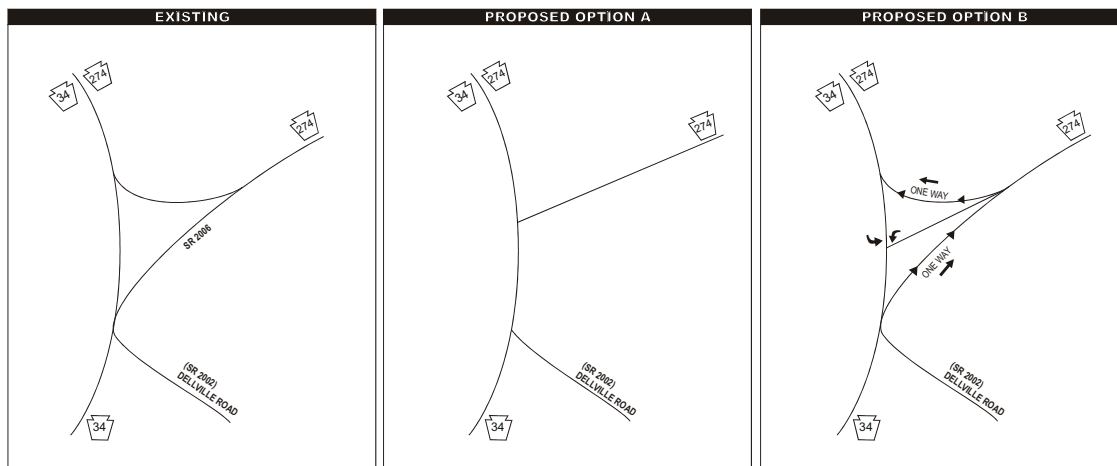
Approx. Cost Estimate: **\$12,000 (Re-stripe intersection)**
 \$2.5 million (Reconstruct intersection)

IMPROVEMENT CONCEPT SUMMARY

- Location(s):** Mecks Corner (Three intersections)
PA Route 34 / PA Route 274 / SR 2006
- Location Number / Improvement Package:** 34-07 / 34-C
- Statement of problem:** This complex of three intersections consists of a confusing intersection (southern intersection) and an intersection with poor sight distance (eastern intersection).
- Proposed Solution(s):** The existing connector roads to PA Route 274 should be abandoned, and a single road with one intersection with PA Route 34 should be constructed (Option A). Or, the connector roads could be converted to one-way feeder roads that would be used in conjunction with the new connector roadway (Option B).


OREA
Owens & Associates, Inc.
Preliminary Proposed Improvements
Mecks Corner (PA Route 34, PA Route 274, and SR 2002)
Safety and Congestion Management System Study
CUMBERLAND AND PERRY COUNTIES, PENNSYLVANIA

FIGURE



It should be noted that these improvements nullify and supersede the proposed improvements at the intersection of PA Route 34, SR 2006, and Dellville Road (SR 2002) and at the intersection of SR 2006 and PA Route 274. However, the re-striping option from the previous improvement concept has been chosen to be placed on the implementation plan.

- Public Comment:** No specific response (either positive or negative) was received from the public on this concept.
- Approx. Cost Estimate:** \$3.4 million (Option A)
\$2.9 million (Option B)

IMPROVEMENT CONCEPT SUMMARY

Location(s):	PA Route 34 and Rambo Hill Road intersection
Location Number / Improvement Package:	34-12 / 34-A
Statement of problem:	An examination of the crash data and the traffic count data demonstrates that high numbers of rear-end crashes occur at this location due to a high number of left-turning vehicles.
Proposed Solution(s):	Construction of a separate left-turn lane at this location would lessen the probability of rear-end crashes while enhancing the safety and lessening delays experienced by motorists on PA Route 34.
Public Comment:	No specific response (either positive or negative) was received from the public on this concept.
Approx. Cost Estimate:	\$185,000 (SR 34 and Rambo Hill Road)

IMPROVEMENT CONCEPT SUMMARY

Location(s):	PA Route 34 – (PA Route 274 to PA Route 944)
Location Number / Improvement Package:	34-14 / 34-E
Statement of problem:	An examination of the crash data, the traffic count data, and the capacity analyses demonstrates that safety problems and congestion problems currently exist and are projected to exist along the PA Route 34 corridor.
Proposed Solution(s):	<p>A long-range improvement solution involves the construction of a new roadway corridor (Alternative A). The new roadway corridor would branch off from PA Route 34 near Mecks Corner (PA Route 274) then it would head southeast to intersect PA Route 850 at Millers Gap or Deans Gap before ending at either the PA Route 944 and PA Route 114 intersection or the Interstate 81 and PA Route 581 interchange.</p> <p>Preliminary analysis of the proposed roadway shows diversion up to 600 vehicles during the morning peak hour and up to 800 vehicles during the evening peak hour. Total daily traffic estimates for the proposed roadway are approximately 8,000 vehicles per day. This traffic is diverted from southern sections of SR 34 and western sections of SR 944 as well as SR 850 (assuming an intersection between SR 850 and the proposed roadway). This reduction provides significant relief to the southern sections of SR 34 and western SR 944. The new roadway corridor draws traffic off of roadways to which they are parallel.</p> <p>The construction of a new roadway will have minimal traffic impacts to other roadway corridors in the study area in addition to PA Route 34. A new roadway would draw a small amount of traffic off of the other existing parallel corridors, but it would draw traffic to the roadway corridors that have an intersection with the new off-line alternative.</p>
Public Comment:	There as been generally favorable public response to this concept.
Approx. Cost Estimate:	\$260 million (New Roadway – Alternative A)

PA Route 944 - Locations of Proposed Improvements

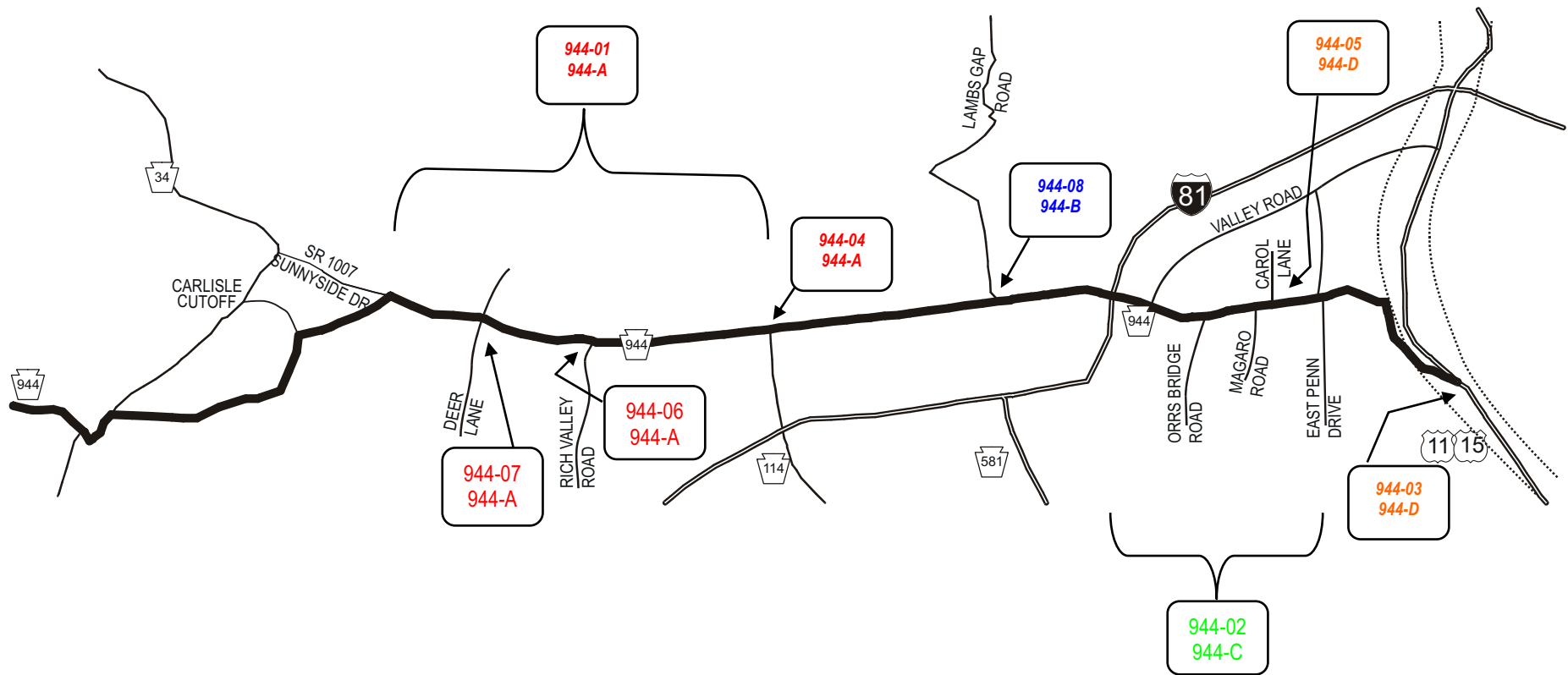
Safety and Congestion Management System Study

CUMBERLAND AND PERRY COUNTIES, PENNSYLVANIA



Legend
 944-01 – Improvement concept location code number
 944-A – Improvement package code number

The improvement packages and improvement concepts shown in ***italic boldface*** are placed on the Implementation Plan.



IMPROVEMENT CONCEPT SUMMARY

Location(s): PA Route 944 and PA Route 114 intersection

**Location Number /
Improvement Package:** 944-04 / 944-A

Statement of problem: Level of service problems were noted and are projected at this intersection, as summarized in the following table:

**Table VI-14
OVERALL INTERSECTION LEVELS OF SERVICE
PA ROUTE 944 AND PA ROUTE 114**

Intersection	Existing (2001)		Future (2020)	
	Morning	Evening	Morning	Evening
PA Route 944 and PA Route 114	C	E	C	F

A: Signalized intersection Level of Service, Items in bold text represent undesirable levels of service

An examination of the crash data and the physical geometry of the intersection demonstrates that this location experiences insufficient intersection sight distance. Left-turning vehicles on the westbound approach of PA Route 944 and the northbound approach of PA Route 114 experience limited sight distance when looking for gaps in oncoming traffic. Crash data shows that a high percentage of crashes that occurred at this location were angle collisions, which is indicative of poor sight distance and/or problems with the timing of the clearance periods of the traffic signal. This traffic signal has been installed at this locations recently, and it is possible that the aforementioned safety problems are not as severe.



Photo of the view from the westbound approach of PA Route 944 looking at its intersection with PA Route 114

Proposed Solution(s):

1. a) Optimize signal timing at PA Route 944/PA Route 114 intersection to improve Level of Service.
- b) Extend northbound left-turn lane on PA Route 114 to provide needed storage for turning vehicles.
- c) Install a second northbound left-turn lane on PA Route 114 to provide needed storage and capacity for turning vehicles.

The year 2020 evening peak hour levels of service with improvements are shown in the table below. The resulting levels of service for two of the improvement scenarios are shown in the table; the results with signal timing improvements only and the results with an additional (second) left-turn lane.

**Table VI-15
OVERALL INTERSECTION LEVELS OF SERVICE
PA ROUTE 944 AND PA ROUTE 114**

Intersection	Year 2020			
	Optimized Timing		2 nd NB Left-turn Lane	
	Morning	Evening	Morning	Evening
PA Route 944 and PA Route 114	B	E	B	B

2. Because the above location appears to experience insufficient sight distance, alterations could be made at the deficient location so that the sight distance is improved (if the benefits justify the costs). An inexpensive solution would be to adjust the signal phasing to allow for split phases and/or protected/prohibited left-turn phases at this intersection. A more expensive solution would involve physical alterations including the flattening of the crest vertical curve at the intersection.

3. Review and adjustment of the traffic signal clearance period at this intersections. As previously mentioned, the traffic signals have been installed at these locations recently, and it is possible that the safety problems are not as severe.

Public Comment:

Some people have questioned the need for a second left-turn lane on PA Route 114.

Approx. Cost Estimate:

1. \$3,000 (Re-time signal)
\$185,000 (Extend northbound left-turn lane)
\$500,000 (Construct additional northbound left-turn lane)
2. \$8,000 (Signal re-phasing)
\$875,000 (Sight distance)
3. \$3,000 (SR 944 and SR 114)

IMPROVEMENT CONCEPT SUMMARY

Location(s): PA Route 944 and US Routes 11/15 intersection

Location Number / Improvement Package: 944-03 / 944-D

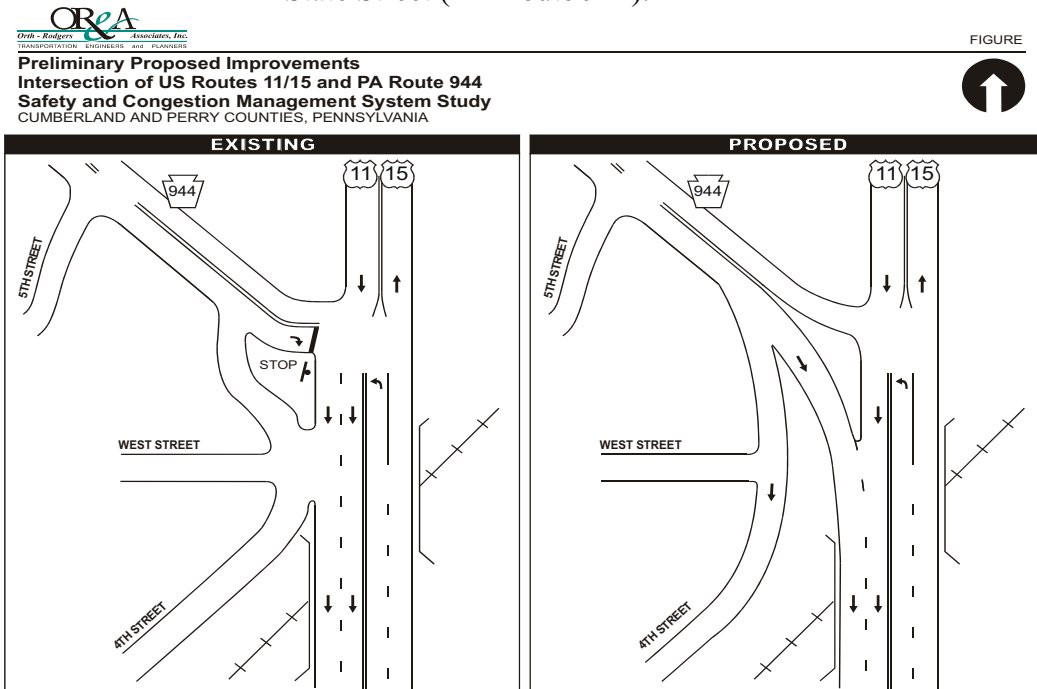
Statement of problem: Level of service problems were noted on the eastbound PA Route 944 approach during the morning peak hour, as summarized in the following table:

**Table VI-16
OVERALL INTERSECTION LEVELS OF SERVICE
PA ROUTE 944 AND US ROUTES 11/15**

Intersection	Existing (2001)		Future (2020)	
	Morning	Evening	Morning	Evening
PA Route 944 and US Routes 11/15	f	c	f	d

*a: Unsignalized intersection Level of Service
Items in bold text represent undesirable levels of service*

Proposed Solution(s): Construct acceleration lane at the US Routes 11/15 southbound entrance point to improve Level of Service. With the addition of an acceleration lane, the intersection would be reconstructed to discourage illegal left-turns onto US Routes 11/15 Northbound. To allow for the acceleration lane, the access point to the Fourth Street area would be moved to the Fifth Street intersection with State Street (PA Route 944).



Install traffic signal

Restripe and sign southbound approach of US Routes 11/15 at the PA Route 944 intersection such that southbound vehicles (on US Routes 11/15) remain in the left-lane and motorists on eastbound PA Route 944 can safely merge with southbound US Routes 11/15 traffic.

Public Comment: The public response to the acceleration lane has not been favorable because access would be closed off to Fourth Street.

Approx. Cost Estimate: \$1.4 million (construct acceleration lane)
\$80,000 (install traffic signal)
\$10,000 (Restripe and install new signs)

IMPROVEMENT CONCEPT SUMMARY

Location(s):	PA Route 944 between: Sunnyside Drive (SR 1007) and PA Route 114 Interstate 81 and East Penn Drive (SR 1015)
Location Number / Improvement Package:	944-01 / 944-A (Sunnyside to PA 114) 944-02 / 944-C (I-81 to East Penn Drive)
Statement of problem:	Mid-block level of service problems were noted and are expected on segments of PA Route 944 during the peak hour. By the year 2020, the segment of PA Route 944 between East Penn Drive and I-81 is expected to experience a mid-block Level of Service 'E', and the segment of PA 944 between Sunnyside Drive and PA 114 is expected to experience a mid-block Level of Service 'F' during the evening peak hour.
Proposed Solution(s):	Construction of a two-way center left-turn lane, will improve segment capacity and Level of Service. It should be noted that the existing sight distance problems at the intersections along PA Route 944 would be mitigated by any roadway widening projects. As a result, the sight distance improvement concepts at the effected locations would be superseded by the widening improvement concept. Please note that additional traffic counts should be conducted in the future at the intersection of PA Route 944 and Sunnyside Drive. If the new traffic counts warrant the installation of a traffic signal, signal installation should occur. The new traffic signal at this location will create gaps in the traffic stream such that residents that live along PA Route 944 will be able to exit their driveways and access roadways with greater ease during the peak traffic periods in the future.
Public Comment:	Generally negative public response due to potential residential impacts.
Approx. Cost Estimate:	\$14 million (Between Sunnyside Drive and PA Route 114) \$11 million (Between I-81 and East Penn Drive)

IMPROVEMENT CONCEPT SUMMARY

Location(s): PA Route 944 and Magaro Road / Carol Lane intersection

**Location Number /
Improvement Package:** 944-05 / 944-D

Statement of problem: The offset intersection of PA Route 944 and Magaro Road / Carol Lane causes safety and delay problems for motorists. Rapid development occurring in the area will increase traffic volumes and the associated delays and safety problems. Photos of the intersection are shown below:



Photo of the offset intersection of PA Route 944 and Magaro Road / Carol Lane



Photo of the offset intersection of PA Route 944 and Magaro Road / Carol Lane

Proposed Solution(s): Implement an access management strategy involving the realignment of the three-leg unsignalized intersections of PA Route 944 with Magaro Road / Carol Lane into a four-leg intersection. The new four-leg intersection could be signalized if the future traffic volumes satisfy traffic signal warrants. Examine the feasibility of the reduction / combination of driveway locations along the entire PA Route 944 corridor.

Public Comment: No specific response (either positive or negative) was received from the public on this concept.

Approx. Cost Estimate: \$750,000

IMPROVEMENT CONCEPT SUMMARY

Location(s):	PA Route 944 and Rich Valley Road intersection
Location Number / Improvement Package:	944-06 / 944-A
Statement of problem:	An examination of the crash data and the physical geometry of the intersection demonstrates that this location experiences insufficient intersection sight distance. The northbound and southbound approaches of Rich Valley Road appear to have insufficient sight distance.
Proposed Solution(s):	Because the above location appears to experience insufficient sight distance, physical alterations could be made at the deficient location such that the sight distance is improved (if the benefits justify the costs). In this case, physical alterations should include the flattening of the crest vertical curve on PA Route 944 immediately west of Rich Valley Road.
Public Comment:	No specific response (either positive or negative) was received from the public on this concept.
Approx. Cost Estimate:	\$500,000 This cost for this improvement package is not in boldface because it will be implemented along with the widening of PA Route 944 to three lanes between Sunnyside Drive and PA Route 114.

IMPROVEMENT CONCEPT SUMMARY

Location(s): PA Route 944 and Deer Lane intersection

**Location Number /
Improvement Package:** 944-07 / 944-A

Statement of problem: An examination of the crash data and the physical geometry of the intersection demonstrates that this location experiences insufficient intersection sight distance. All approaches of Deer Lane and PA Route 944 appear to have insufficient sight distance because of the extremely sharp vertical curve at the crest of the hill at this intersection. Photos of the intersection of Deer Lane and PA Route 944 are shown below.



Looking east at the intersection of PA Route 944 and Deer Lane, which is located at the crest of the hill



Photo of the view from the northbound approach of Deer Lane looking westbound on PA Route 944

Proposed Solution(s): Because the above location appears to experience insufficient sight distance, physical alterations could be made at the deficient location such that the sight distance is improved (if the benefits justify the costs). In this case, physical alterations should include the flattening of the crest vertical curve while maintaining sufficient access to Deer Lane.

Public Comment: Improvement at this location was supported by the public at the January Public Meetings.

Approx. Cost Estimate: \$800,000

This cost for this improvement package is not in boldface because it will be implemented along with the widening of PA Route 944 to three lanes between Sunnyside Drive and PA Route 114.

IMPROVEMENT CONCEPT SUMMARY

Location(s): PA Route 944 and Lambs Gap Road (SR 1011) intersection

**Location Number /
Improvement Package:** 944-08 / 944-B

Statement of problem: An examination of the crash data and the physical geometry of the intersection demonstrates that this location experiences insufficient intersection sight distance. The northbound and southbound approaches of Lambs Gap Road appear to have insufficient sight distance.



Photo of the view from the northbound approach of Lambs Gap Road looking westbound on PA Route 944

Proposed Solution(s): Because the above location appears to experience insufficient sight distance, physical alterations could be made at the deficient location so that the sight distance is improved (if the benefits justify the costs). The sight distance problems experienced at the Lambs Gap Road intersection are similar to those experienced at the Rich Valley Road intersection. Similarly, physical alterations here should also include the flattening of the crest vertical curve on PA Route 944 immediately west of Lambs Gap Road. It should be noted that the existing traffic volumes at this intersection do not meet traffic signal warrants.

Public Comment: No specific response (either positive or negative) was received from the public on this concept.

Approx. Cost Estimate: \$580,000

US Routes 11/15 - Locations of Proposed Improvements

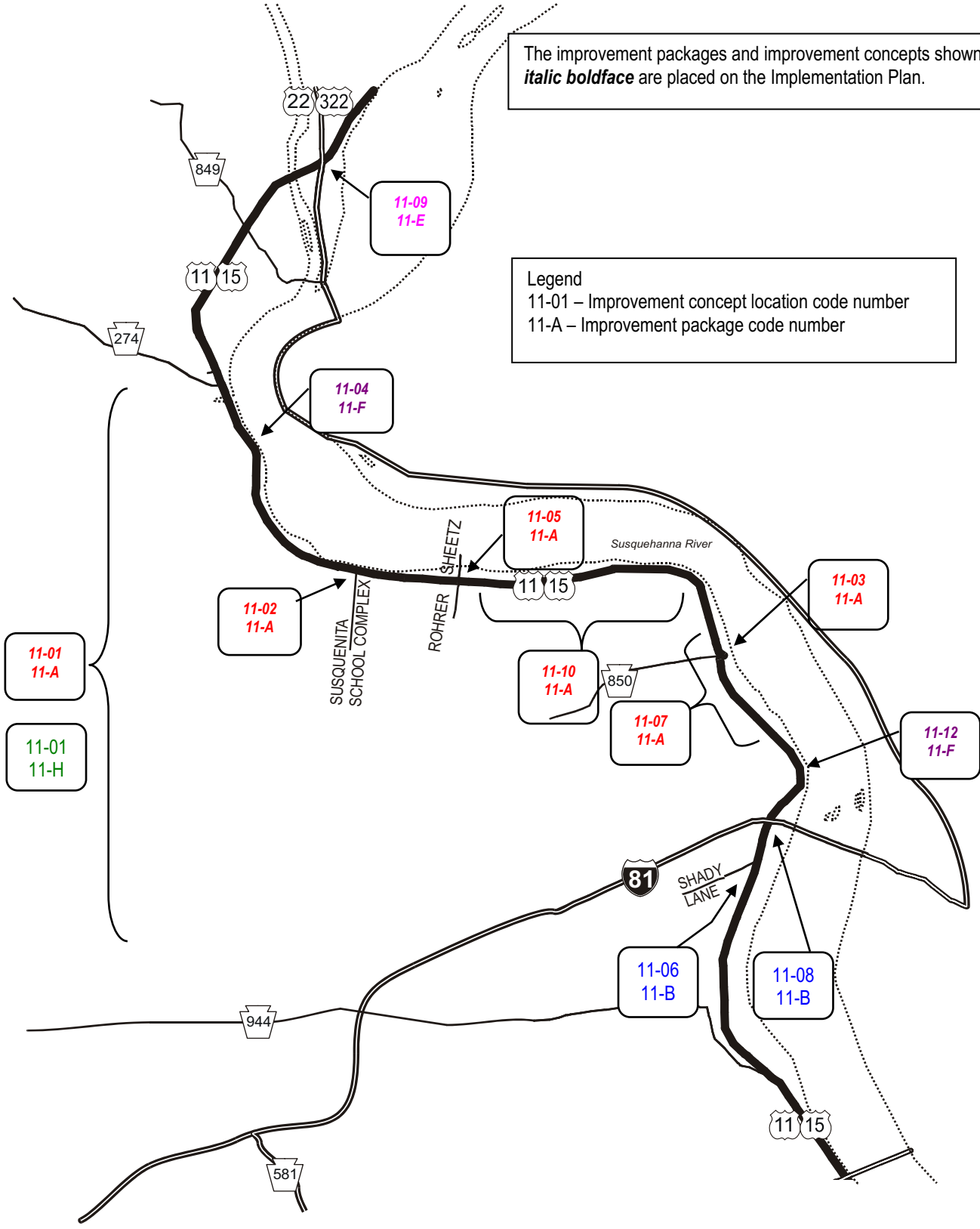
Safety and Congestion Management System Study

CUMBERLAND AND PERRY COUNTIES, PENNSYLVANIA



The improvement packages and improvement concepts shown in ***italic boldface*** are placed on the Implementation Plan.

Legend
 11-01 – Improvement concept location code number
 11-A – Improvement package code number



IMPROVEMENT CONCEPT SUMMARY

Location(s): US Routes 11/15 and PA Route 850 intersection

**Location Number /
Improvement Package:** 11-03 / 11-A

Statement of problem: Level of service problems were noted and are projected on US Routes 11/15 at the intersection listed above; the following summary is provided:

**Table VI-17
OVERALL INTERSECTION LEVELS OF SERVICE
US ROUTES 11/15 AND PA ROUTE 850**

Intersection	Existing (2001)		Future (2020)	
	Morning	Evening	Morning	Evening
US Routes 11/15 and PA Route 850	f	d	f	f

*a: Unsignalized intersection Level of Service
Items in bold text represent undesirable levels of service*

The capacity analysis software does not allow for the modeling of the conditions that currently exist during the morning peak hour on southbound US Routes 11/15 in the Marysville area. Motorists traveling in the heavy morning traffic on southbound US Routes 11/15 slow down to allow vehicles from PA Route 850 and the other roadways in Marysville to enter the southbound traffic stream. When this occurs, motorists upstream on southbound US Routes 11/15 experience delays that are not modeled or shown in the results of the capacity analysis. The photo on the next page illustrates the dynamic operation of the intersection of US Routes 11/15 and PA Route 850 during the morning peak hour.

An examination of the crash data and the physical geometry of the intersection demonstrates that this location experiences insufficient intersection sight distance. The eastbound approach of PA Route 850 has poor sight distance looking toward the north because of the structures and signs that block the view from the intersection (as seen in the following photo) and the parked vehicles along the southbound side of US Routes 11/15 north of the intersection. This intersection also has extremely tight turning radii that cause problems for trucks and other large vehicles that desire to turn at the intersection.



Photo of the view looking south on US Routes 11/15 at the PA Route 850 intersection



Photo of the view from the eastbound approach of PA Route 850 looking northbound on US Routes 11/15

Proposed Solution(s):

1. Installation of a traffic signal. This intersection along US Routes 11/15 currently meets Peak Hour Volume and/or Peak Hour Delay warrants for traffic signal installation. Detailed traffic signal warrant analyses and traffic signal operations analyses should be conducted at this intersection. The traffic signal will create gaps in the traffic on US Routes 11/15 such that the side street traffic can safely enter US Routes 11/15 and, as a result, the number of angle collisions along the corridor should be reduced. Flashing signals should be considered at locations where the traffic volume over the course of the entire day does not warrant traffic signal installation. The table on the next page shows the resulting intersection Levels of Service on US Routes 11/15 in year 2020 if the intersection becomes signalized. The eastbound approach of

PA Route 850 at its intersection with US Routes 11/15 will need to be widened to include separate left-turn and right-turn lanes in order for the signalized intersection to operate at desirable levels of service.

**Table VI-18
OVERALL SIGNALIZED INTERSECTION LEVELS OF SERVICE
US ROUTES 11/15 AND PA ROUTE 850**

Intersection	2020 Levels of Service	
	Morning	Evening
US Routes 11/15 and PA Route 850	C	B

*A: Signalized intersection Level of Service
Items in bold text represent undesirable levels of service*

2. Sight distance problems are evident at this intersection. Physical alterations should include removal of the structure and any other objects that block the view from the intersection.

The construction of an acceleration lane from eastbound PA Route 850 to southbound US Routes 11/15 would enhance the safety and also decrease delays at this location.

Public Comment:

1. Half of the persons surveyed at the January public meetings indicated that traffic signals would be an effective solution.
2. No specific response (either positive or negative) was received from the public on this concept.

Approx. Cost Estimate:

1. This improvement concept would address some of the safety problems and would include an additional eastbound right-turn lane at the intersection. - **\$400,000**
2. Addresses most safety concerns
 - \$310,000 (removal of obstructions)
 - \$1.05 million (construction of acceleration lane)

IMPROVEMENT CONCEPT SUMMARY

Location(s): US Routes 11/15 and the Sheetz/Rohrer Bus Driveway intersection

**Location Number /
Improvement Package:** 11-05 / 11-A

Statement of problem: Level of service problems were noted and are projected on US Routes 11/15 at the intersection listed above; the following summary is provided:

**Table VI-19
OVERALL INTERSECTION LEVELS OF SERVICE
US ROUTES 11/15 AND SHEETZ / ROHRER DRIVEWAY**

Intersection	Existing (2001)		Future (2020)	
	Morning	Evening	Morning	Evening
US Routes 11/15 and Sheetz / Rohrer Driveway	f	f	f	f

*a: Unsignalized intersection Level of Service
Items in bold text represent undesirable levels of service*

An examination of the crash data and the traffic count data demonstrates that high number of rear-end crashes (non-reportable and reportable) occurs at this location due to a high number of right-turning vehicles.



Photo of the view from the northbound approach of US Routes 11/15 looking northbound at the Sheetz / Rohrer Driveway

Proposed Solution(s):

1. Installation of a traffic signal. This intersection along US Routes 11/15 currently meets Peak Hour Volume and/or Peak Hour Delay warrants for traffic signal installation. Detailed traffic signal warrant analyses and traffic signal operations analyses should be conducted at this intersection. The traffic signals will create gaps in the traffic on US Routes 11/15 such that the side street traffic can safely enter US Routes 11/15 and, as a result, the number of angle collisions along the corridor should be reduced. Flashing signals should be considered at locations where the traffic volume over the course of the entire day does not warrant traffic signal installation. The table on the next page shows the resulting intersection Levels of Service on US Routes 11/15 if the intersection becomes signalized. It should be noted that the Sheetz/Rohrer Driveway is a private driveway.

**Table VI-20
OVERALL SIGNALIZED INTERSECTION LEVELS OF SERVICE
US ROUTES 11/15 AND PA ROUTE 850**

Intersection	2020 Levels of Service	
	Morning	Evening
US Routes 11/15 and Sheetz / Rohrer Driveway	B	B

*A: Signalized intersection Level of Service
Items in bold text represent undesirable levels of service*

2. Construction of a separate right-turn lane at this location would lessen the probability of rear-end crashes while enhancing the safety and lessening delays experienced by motorists on US Routes 11/15.

Additionally, the continuous center left-turn lane should be extended farther to the south on US Routes 11/15 to ensure a smoother transition from the two-lane section (immediately south of this location) to the three-lane section.

Public Comment:

1. Half of the persons surveyed at the January public meetings indicated that traffic signals would be an effective solution.
2. No specific response (either positive or negative) was received from the public on this concept.

Approx. Cost Estimate:

1. This improvement concept would include some safety improvements at the intersection and an additional right-turn lane. - \$185,000
2. Estimates do not include signalization of intersection
 - \$90,000 (Northbound right-turn lane)**
 - \$2,500 (Extend center-turn lane by repainting)
 - \$140,000 (Extend center-turn lane by widening roadway)

IMPROVEMENT CONCEPT SUMMARY

Location(s): US Routes 11/15 and the Susquenita High School driveway

**Location Number /
Improvement Package:** 11-02 / 11-A

Statement of problem: Level of service problems were noted and are projected on US Routes 11/15 at the locations listed above; the following summary is provided:

**Table VI-21
OVERALL INTERSECTION LEVELS OF SERVICE
US ROUTES 11/15 AND THE SUSQUENITA HIGH SCHOOL DRIVEWAY**

Intersection	Existing (2001)		Future (2020)	
	Morning	Evening	Morning	Evening
US Routes 11/15 and Susquenita High School Drive	e	e	f	f

*a: Unsignalized intersection Level of Service
Items in bold text represent undesirable levels of service*

Proposed Solution(s): Installation of traffic signals. These intersections along US Routes 11/15 currently meet Peak Hour Volume and/or Peak Hour Delay warrants for traffic signal installation. Detailed traffic signal warrant analyses and traffic signal operations analyses should be conducted at these two intersections. The traffic signals will create gaps in the traffic on US Routes 11/15 such that the side street traffic can safely enter US Routes 11/15 and, as a result, the number of angle collisions along the corridor should be reduced. Flashing signals should be considered at locations where the traffic volume over the course of the entire day does not warrant traffic signal installation. The table on the next page shows the resulting intersection Levels of Service on US Routes 11/15 if the intersections become signalized.

**Table VI-22
OVERALL SIGNALIZED INTERSECTION LEVELS OF SERVICE
US ROUTES 11/15 AND THE SUSQUENITA HIGH SCHOOL DRIVEWAY**

Intersection	2020 Levels of Service	
	Morning	Evening
US Routes 11/15 and Susquenita High School Drive	B	B

*A: Signalized intersection Level of Service
Items in bold text represent undesirable levels of service*

The installation of all traffic signals proposed on US Routes 11/15 would definitely cause the currently unimpeded through movements on US Routes 11/15 to experience some delays at the

signalized intersections. The average speed of the vehicles on US Routes 11/15 would become lower as a result of the traffic signal installation. In order to quantify the reduction in speed, arterial level of service analyses were performed with all of the traffic signals installed along the corridor. The table below summarizes the arterial level of service and the average speeds with the presence of traffic signals on US Routes 11/15.

**Table VI-23
US ROUTES 11/15 – ARTERIAL LEVEL OF SERVICE (LOS)
WITH SIGNALIZED INTERSECTIONS**

Segment	Time Period	Direction	LOS	Speed (mph)
US Routes 11/15 – Between Sheetz/Rohrer Driveway and Susquenita <i>Free-flow Speed: 45 mph</i>	Morning Peak	Northbound	A	36
		Southbound	B	33
	Evening Peak	Northbound	B	33
		Southbound	A	36

Public Comment: Half of the persons surveyed at the January public meetings indicated that traffic signals would be an effective solution.

Approx. Cost Estimate: \$80,000 (US 11/15 and Susquenita High School Driveway)

IMPROVEMENT CONCEPT SUMMARY

Location(s): US Routes 11/15 and Shady Lane intersection

**Location Number /
Improvement Package:** 11-06 / 11-B

Statement of problem: An examination of the crash data and the physical geometry of the intersection demonstrates that this location experiences insufficient intersection sight distance. Because of the sharp vertical curve immediately to the south, the intersection of US Routes 11/15 and Shady Lane appears to experience poor intersection sight distance. The traffic signal at the shopping center driveway immediately north of this location does create gaps in the traffic stream, but sight distance problems still exist.



Photo of the view looking south on US Routes 11/15 at the Shady Lane intersection

Proposed Solution(s): Because the above location appears to experience insufficient sight distance, physical alterations could be made at the deficient location so that the sight distance is improved (if the benefits justify the costs). In this case, physical alterations should include the flattening of the crest vertical curve immediately to the south.

A less expensive solution to the sight distance problem would be to install a traffic signal at this location (if the traffic volumes satisfy signal warrants).

Public Comment: The comment was made that a traffic signal would be unlikely here because of the new signal at the shopping center, which is immediately north of this intersection.

Approx. Cost Estimate: \$400,000 (vertical curve adjustments)
\$80,000 (traffic signal installation)

IMPROVEMENT CONCEPT SUMMARY

Location(s): US Routes 11/15 in Marysville

**Location Number /
Improvement Package:** 11-07 / 11-A

Statement of problem: There are over ten intersections with US Routes 11/15 within the borough of Marysville. The highly concentrated area of intersections has safety concerns because of the many points of conflict between the turning and through traffic.



Photo of the view from southbound US Routes 11/15 in Marysville

Proposed Solution(s): Access management strategies
Examine feasibility of converting certain streets in Marysville that intersect US Routes 11/15 to one-way streets. Upon initial examination, Walnut, Chestnut, and Landsvale Streets could be converted to one-way in the eastbound direction, and Blackberry, William, Funts Alley, and Cassel Streets could be converted to one-way in the westbound direction. PA Route 850 (Valley Street) should remain as a two-way east-west street. Front Street is currently one-way in the eastbound direction, and Cameron Street is currently one-way in the westbound direction. Also examine the feasibility of the elimination of direct access to US Routes 11/15 for particular roadways.

Additionally, the “Main Street” concept that is proposed for Perdix (see location number 11-10 for details) is suggested to extend into Marysville.

Public Comment: No specific response (either positive or negative) was received from the public on this concept.

Approx. Cost Estimate: **\$150,000 (One-way street re-designation)**
\$4 million (Access closure)

IMPROVEMENT CONCEPT SUMMARY

Location(s): US Routes 11/15 in the Perdix Area

**Location Number /
Improvement Package:** 11-10 / 11-A

Statement of problem: The section of US Routes 11/15 in the Perdix area is currently a heavily traveled section of two-lane roadway with extremely narrow or non-existent shoulders, parked cars along the side of the road, and school-age pedestrians. Emergency vehicles have difficulty exiting the Perdix Firehouse because of the heavy traffic on US Routes 11/15.



Photo on southbound US Routes 11/15 in the Perdix Area

An examination of the crash data demonstrates that safety problems currently exist and are projected to exist along this section of the US Routes 11/15 corridor.

**Table VI-24
US ROUTES 11/15
CRASH RATE COMPARISON**

Segment	Length (miles)		Crash Rate (Crashes/MVM)		
	Total	Over Statewide Crash Rate	Statewide Average	Observed	Percent Difference
Perdix (Woodland Drive) to Duncannon (PA Route 274)	6.02	5.21	0.29	0.85	194 percent

Proposed Solution(s):

Develop pedestrian facilities in Perdix. US Routes 11/15 in this section is currently a two-lane road without sidewalks and with parked cars and single-family homes along the roadway. Consider prohibiting parking and constructing sidewalks and crosswalks to provide for safety of pedestrians, especially the school-age children. Also consider placing pedestrian warning signs and street lighting along US Routes 11/15 through the Perdix area. Install emergency flashing signal on US Routes 11/15 at the Perdix Firehouse driveway to allow for safe emergency vehicle egress onto US Routes 11/15.

Sections of US Routes 11/15 in Perdix currently have very narrow shoulders (one to four feet wide). The shoulders should be widened and/or parking should be prohibited to provide an escape area for drivers avoiding a collision.

Because the through route to the north from Harrisburg is technically on the other side of the river (on US Routes 22/322), through traffic could be further discouraged from using US Routes 11/15 with the implementation of traffic calming measures in the Perdix area in combination with the installation traffic signals in Marysville and Cove. Traffic calming measures such as bicycle lanes, sidewalks, and crosswalks will give the Perdix area a 'village' character.

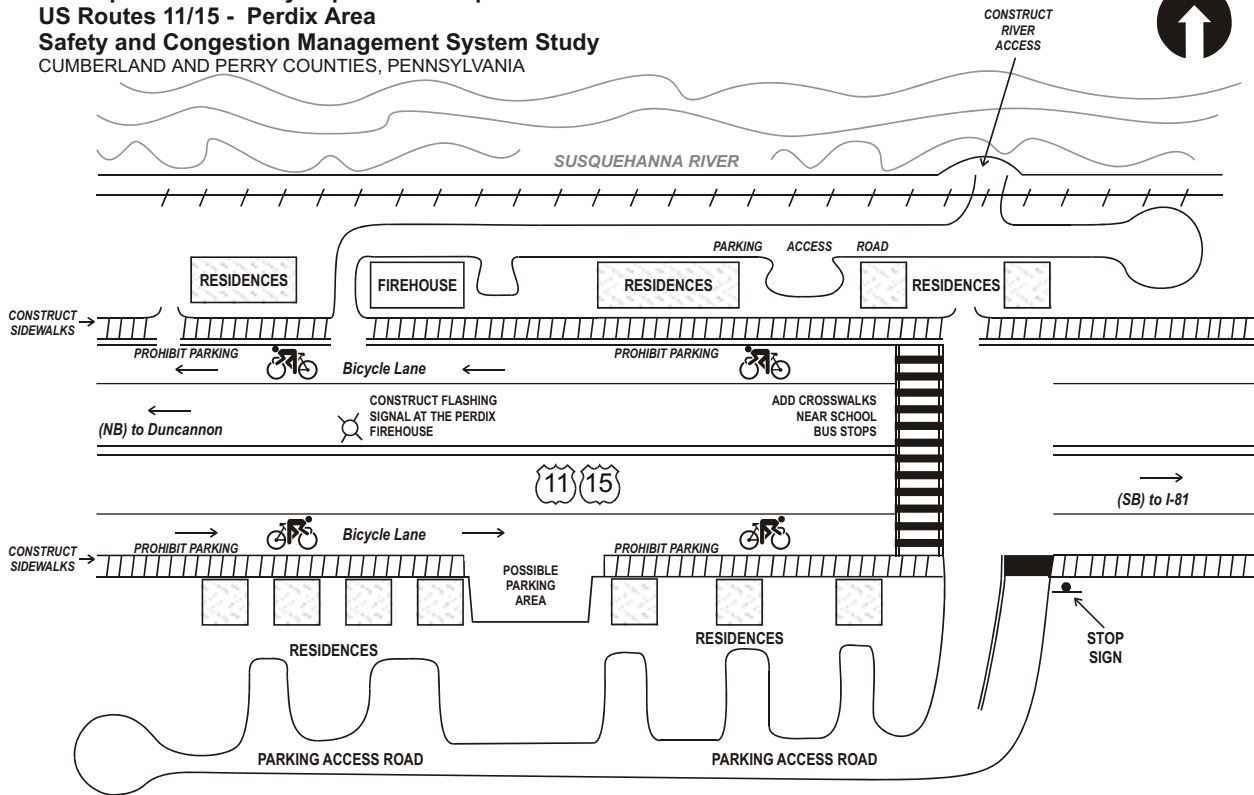
The narrow shoulders in Perdix could possibly be improved and the traffic calming measures could be implemented along with the planned installation of sewer lines in the area.

Construct a bypass around Perdix (Alternative C) to remove through traffic from the roadway or install a two-way center left-turn lane through Perdix.

Implement access management strategies in Perdix by consolidating driveways and intersections.

Many of the above improvements are combined into what is known as a "Main Street" concept. A parking driveway / access roadway would be constructed behind the existing homes along US Routes 11/15 in order to provide adequate parking (after parking is prohibited on US Routes 11/15). Bicycle lanes / walking paths will also be constructed along this stretch of US Routes 11/15 in coordination with the Susquehanna Greenway. The "Main Street" concept is proposed for sections of US Routes 11/15 in Marysville as well. See the concept sketch shown below for a better idea of what is involved with the "Main Street" concept.

Conceptual Preliminary Improvement Options - Plan View
US Routes 11/15 - Perdix Area
Safety and Congestion Management System Study
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Public Comment:

There was mixed response to different aspects of this improvement concept. Please see Chapter IX for a detailed summary of public comments from the October 30, 2002 Perdix / Marysville public meeting.

Approx. Cost Estimate:

- \$690,000 (Pedestrian facilities)**
- \$135,000 (Street lights)**
- \$6.2 million (Widen shoulders)**
- \$80,000 (Flashing light for fire house)**
- \$61 million (New bypass around Perdix – Alternative C)**
- \$56 million (Two-way center left-turn lane)**
- \$1.2 million (Access management)**

IMPROVEMENT CONCEPT SUMMARY

Location(s):	US Routes 11/15 interchange with Interstate 81
Location Number / Improvement Package:	11-08 / 11-B
Statement of problem:	An examination of the crash data at this interchange indicates that seven out of nine crashes at the Interstate 81 interchange were rear end collisions. The lengths of the deceleration lanes, acceleration lanes, and weaving lanes at the interchanges appear to be deficient.
Proposed Solution(s):	Review the weaving speeds and the lengths of the deceleration lanes and acceleration lanes. If the detailed studies reveal that the interchange design is deficient for amount of traffic and the observed speeds of vehicles using the interchange, then the interchange should be redesigned and reconstructed (if the benefits justify the costs).
Public Comment:	No specific response (either positive or negative) was received from the public on this concept.
Approx. Cost Estimate:	\$20.8 million (Reconstruction of US 11/15 and I-81 interchange)

IMPROVEMENT CONCEPT SUMMARY

Location(s):	US Routes 11/15 interchange with US Routes 22/322
Location Number / Improvement Package:	11-09 / 11-E
Statement of problem:	An examination of the crash data at this interchange indicates that thirteen out of nineteen crashes at the US Routes 22/322 interchange involved a collision with a fixed object. The lengths of the deceleration lanes, acceleration lanes, and weaving lanes at the interchanges appear to be deficient.
Proposed Solution(s):	<p>Review the weaving speeds and the lengths of the deceleration lanes and acceleration lanes. If the detailed studies reveal that the interchange design is deficient for amount of traffic and the observed speeds of vehicles using the interchange, then the interchange should be redesigned and reconstructed (if the benefits justify the costs).</p> <p>Another solution would be to force all eastbound traffic on US Routes 22/322 that wishes to continue on US Routes 22/322 through the US Routes 11/15 interchange area into the left lane. This would eliminate the weave area on eastbound US Routes 22/322 by allowing motorists that are headed from US Routes 11/15 southbound to have their own lane as they enter US Routes 22/322 eastbound. Although the normal peak hour traffic volumes on US Routes 22/322 eastbound approaching the US Routes 11/15 interchange are low enough that travel in a single lane through the interchange can be accommodated, the increased traffic volumes on the event weekends (Penn State Football games, hunting season, etc.) could cause delays if the traffic was forced to use a single lane.</p>
Public Comment:	No specific response (either positive or negative) was received from the public on this concept.
Approx. Cost Estimate:	\$14.2 million (US 11/15 and US 22/322) \$88,000 (Lane merge on US 22/322)

IMPROVEMENT CONCEPT SUMMARY

Location(s):	US Routes 11/15 – (PA Route 274 to Interstate 81)
Location Number / Improvement Package:	11-01 / 11-A
Statement of problem:	An examination of the crash data, the traffic count data, and the capacity analyses demonstrates that safety problems and congestion problems currently exist and are projected to exist along this section of the US Routes 11/15 corridor.
Proposed Solution(s):	<p>An inexpensive strategy that can be used to reduce the number of vehicles on US Routes 11/15 would be to encourage carpooling. The installation of “Share-a-Ride” signs near the northbound and southbound entrance points of the two-lane section of US Routes 11/15 (Northbound – near the Cumberland / Perry County border, Southbound – just south of the Duncannon interchange).</p> <p>ITS equipment, namely variable message signs (VMS) should be installed near the US Routes 11/15 junctions with I-81 and US Routes 22/322. The approximate travel time on both of the river routes (US 11/15 and US 22/322) would be provided to motorists so they can make a better decision on which route to take.</p> <p>A park-and-ride lot should be constructed near the interchange of PA Route 274 and US Routes 11/15. As discussed in the <u>Penn Township, Perry County Park N’ Ride Study</u>, written by Tri-County Regional Planning Commission in Spring 1999, the lot should be constructed at either the existing American Legion or the Norfolk Southern property. Both locations are located very close to the interchange. This project is currently on the TIP (4th year).</p> <p>Another inexpensive strategy that would likely reduce the number of long-distance trips to this section of US Routes 11/15 could be to Re-sign US Routes 11/15 as ‘Business’ US Routes 11/15. With the completion of the Dauphin Narrows Bypass (US Routes 22/322), a viable alternative limited-access through route between Interstate 81 and the Clarks Ferry area now exists. Existing US Routes 11/15 between the Interstate 81 interchange and the US Routes 22/322 interchange could be re-signed as ‘Business’ US Routes 11/15. The labeling of US Routes 11/15 would then be placed on Interstate 81 across the Susquehanna River and then westbound on the US Routes 22/322 bypass until it meets the existing US Routes 22/322 and US Routes 11/15 interchange. The prohibition of through truck traffic on this section of US Routes 11/15 should also be examined in concert with the Route Relocation Study. The Route Relocation Study will need to include a Business Impact Survey that would determine the financial impacts of a route-designation to the owners of the businesses along US Routes 11/15.</p>
Public Comment:	Business owners are generally opposed to renaming existing US Routes 11/15.
Approx. Cost Estimate:	\$22,000 (Share-A-Ride signs) \$200,000 (ITS equipment) \$240,000 (Park-and-ride lot) \$350,000 (Business 11/15 designation and Route Relocation Study)

IMPROVEMENT CONCEPT SUMMARY

Location(s):	US Routes 11/15 – (PA Route 274 to Interstate 81)
Location Number / Improvement Package:	11-01 / 11-H
Statement of problem:	An examination of the crash data, the traffic count data, and the capacity analyses demonstrates that safety problems and congestion problems currently exist and are projected to exist along this section of the US Routes 11/15 corridor.
Proposed Solution(s):	<p>A long-range improvement solution involves the construction of a new roadway corridor (Alternative B). The new roadway corridor would branch off from US Routes 11/15 near the end of the freeway section south of Duncannon, then it would head south to connect to either the PA Route 944 and PA Route 114 intersection, the Interstate 81 and PA Route 581 interchange, or US Routes 11/15 immediately north of Interstate 81.</p> <p>Preliminary analysis of the proposed roadway shows diversion up to 600 vehicles during the morning peak hour and up to 900 vehicles during the evening peak hour. Total daily traffic estimates for the proposed roadway are approximately 10,000 vehicles per day. This traffic is diverted from southern sections of US Routes 11/15 and eastern sections of SR 850 (assuming an intersection between SR 850 and the proposed roadway). This reduction provides significant relief to the southern sections of US Routes 11/15. The new roadway corridor draws traffic off of roadways to which they are parallel (US Routes 11/15).</p> <p>The construction of a new roadway will have minimal traffic impacts to other roadway corridors in the study area in addition to US Routes 11/15. A new roadway would draw a small amount of traffic off of the other existing parallel corridors, but it would draw traffic to the roadway corridors that have an intersection with the new off-line alternative.</p>
Public Comment:	There as been generally favorable public response to this concept.
Approx. Cost Estimate:	\$310 million (New roadway – Alternative B)

IMPROVEMENT CONCEPT SUMMARY

Location(s):	US Routes 11/15 – at Kinkora Heights (between PA 274 and Cove Road) (11-04) and at the Cumberland / Perry County Border (11-12)
Location Number / Improvement Package:	11-04 / 11-F 11-12 / 11-F
Statement of problem:	Rock falls are prevalent at this location along the US Routes 11/15 corridor.
Proposed Solution(s):	Walls and/or fences should be installed to provide protection from falling rocks on the mountainous sections of US Routes 11/15 between Interstate 81 and PA Route 274 especially at Kinkora Heights (immediately south of PA Route 274) and at the Cumberland/Perry county border. Additional cut to the back slopes might be required to increase/maintain the shoulder widths. PENNDOT is currently planning improvements at the Cumberland / Perry County border.
Public Comment:	No specific response (either positive or negative) was received from the public on this concept.
Approx. Cost Estimate:	\$250,000 (11-04) \$495,000 (11-12)

PA Route 274 - Locations of Proposed Improvements

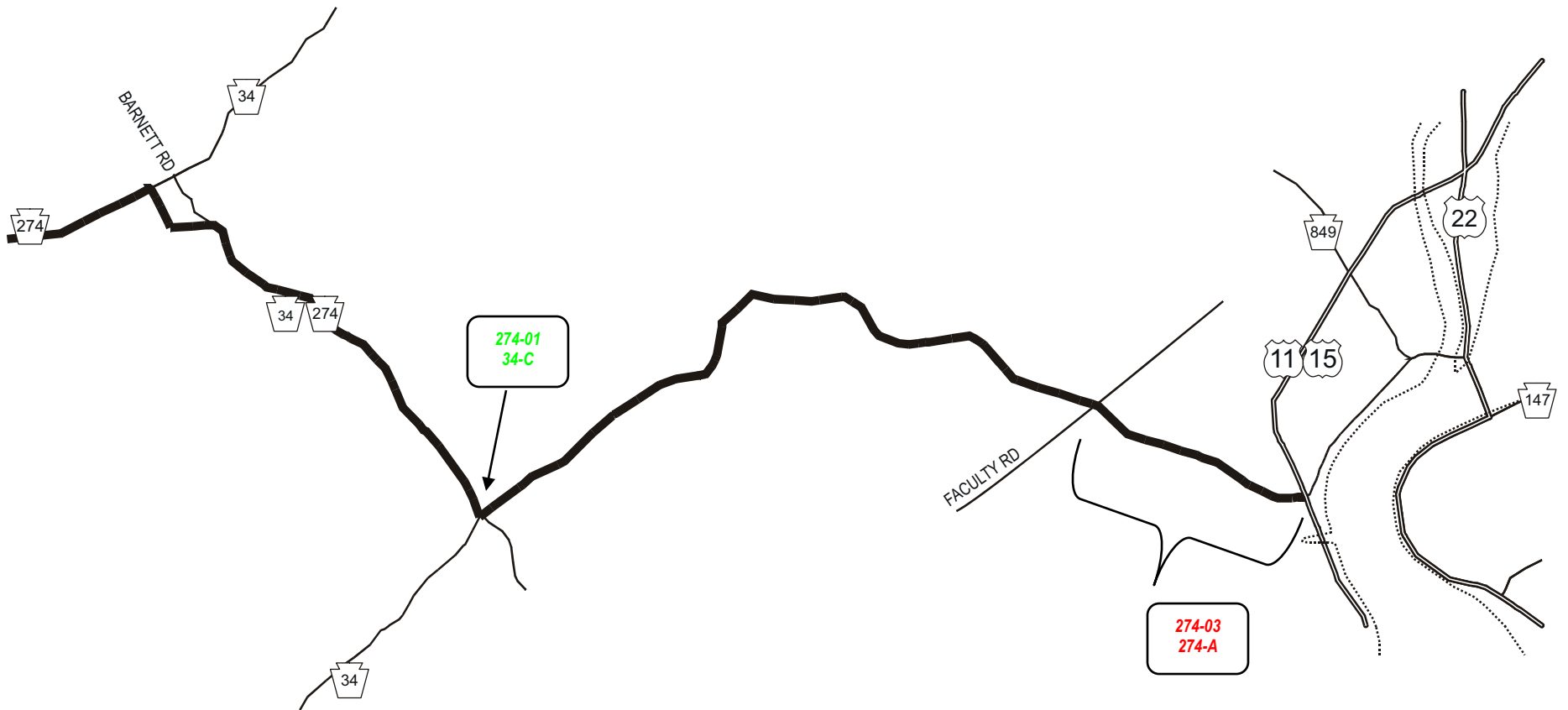
Safety and Congestion Management System Study

CUMBERLAND AND PERRY COUNTIES, PENNSYLVANIA



Legend
274-01 – Improvement concept location code number
274-A – Improvement package code number

The improvement packages and improvement concepts shown in ***italic boldface*** are placed on the Implementation Plan.



IMPROVEMENT CONCEPT SUMMARY

Location: PA Route 274 between US Routes 11/15 and Dellville Road
US Routes 11/15 southbound off-ramp and PA Route 274 intersection

**Location Number /
Improvement Package:** 274-03 / 274-A

Statement of problem: This section of PA Route 274 is built differently than the rest of the corridor; the shoulders and the lanes are very narrow. This section also has the highest traffic volumes of any section of PA Route 274, and it experiences poor levels of service during the evening peak hour. This section of PA Route 274 will experience increased traffic volumes associated with the development of Business Campus One, which is located at Business Campus One Drive. The following photo shows this section of PA Route 274.



Photo of the section of PA Route 274 between US Routes 11/15 and Business Campus One Drive (Mutzbaugh's Market)

The intersection of PA Route 274 and the US Routes 11/15 Southbound off-ramp is confusing to motorists that are not familiar with the area. The turning-lanes and stop-controlled approaches are not clearly defined. Additionally, there are problems with the low clearance height on PA Route 274 at the US Routes 11/15 overpass.



Photo of the view from eastbound PA Route 274 looking at US Routes 11/15 overpass and southbound off -ramp

Proposed Solutions:

Widening of the narrow shoulders should aid in the increase of capacity along this section of PA Route 274. The safety along this area of the PA Route 274 corridor would also be enhanced by the widening of the narrow shoulders. Roadside hazards should also be removed or guiderails should be installed to protect traffic. The deficiencies in design in this section need to be addressed .

At the intersection of PA Route 274 and the US Routes 11/15 Southbound ramps, treat roadway with stop bars and rumble strips so that the approaches and movements that are controlled by a stop sign are clearly defined. Clearly define turning lanes on all approaches by re-striping intersection. The eastbound approach of PA Route 274 should be striped as a separate through lane and right-turn lane. Add “3-Way” sign to each stop sign to advise motorists that three approaches to this intersection are controlled by a stop sign. Also, add more signage indicating the low clearance height experienced at the US Routes 11/15 overpass. The overhead clearance at this location should be improved. The current clearance height of the overpass is signed as 13’7”. The clearance height for collector roadways such as PA Route 274 should be 14’6”.

Public Comment:

No specific response (either positive or negative) was received from the public on this concept.

Approx. Cost Estimate:

\$2.2 million (widen shoulders)
\$320,000 (install guide rail)
\$11,000 (Intersection restriping)
\$1.1 million (Increase clearance by re-grading roadways)
\$3.6 million (Increase clearance by modifications to overpass)

IMPROVEMENT CONCEPT SUMMARY

Location: PA Route 274 and SR 2006 intersection (PA Route 274 – at Mecks Corner)

**Location Number /
Improvement Package:** 274-01 / 34-C

Statement of problem: An examination of the crash data and the physical geometry of the intersection demonstrates that this location experiences insufficient intersection sight distance. Because of the sharply skewed intersection alignment and the vertical curve on PA Route 274 west of the intersection, the eastbound approach of SR 2006 appears to experience poor sight distance at the PA Route 274 intersection.



Photo of the view from PA Route 274 westbound approaching its intersection with SR 2006 at Mecks Corner

Proposed Solution: Because the above location appears to experience insufficient sight distance, physical alterations could be made at the deficient location so that the sight distance is improved (if the benefits justify the costs). In this case, physical alterations should include the flattening of the crest vertical curve west of the intersection and the lessening of the skew angle at the intersection. Another solution would be to relocate PA Route 274 between this intersection and its intersection with PA Route 34.

Public Comment: No specific response (either positive or negative) was received from the public on this concept.

Approx. Cost Estimate: **\$500,000 (modifications at intersection)**
\$3.4 million (relocate roadway)

PA Route 850 - Locations of Proposed Improvements

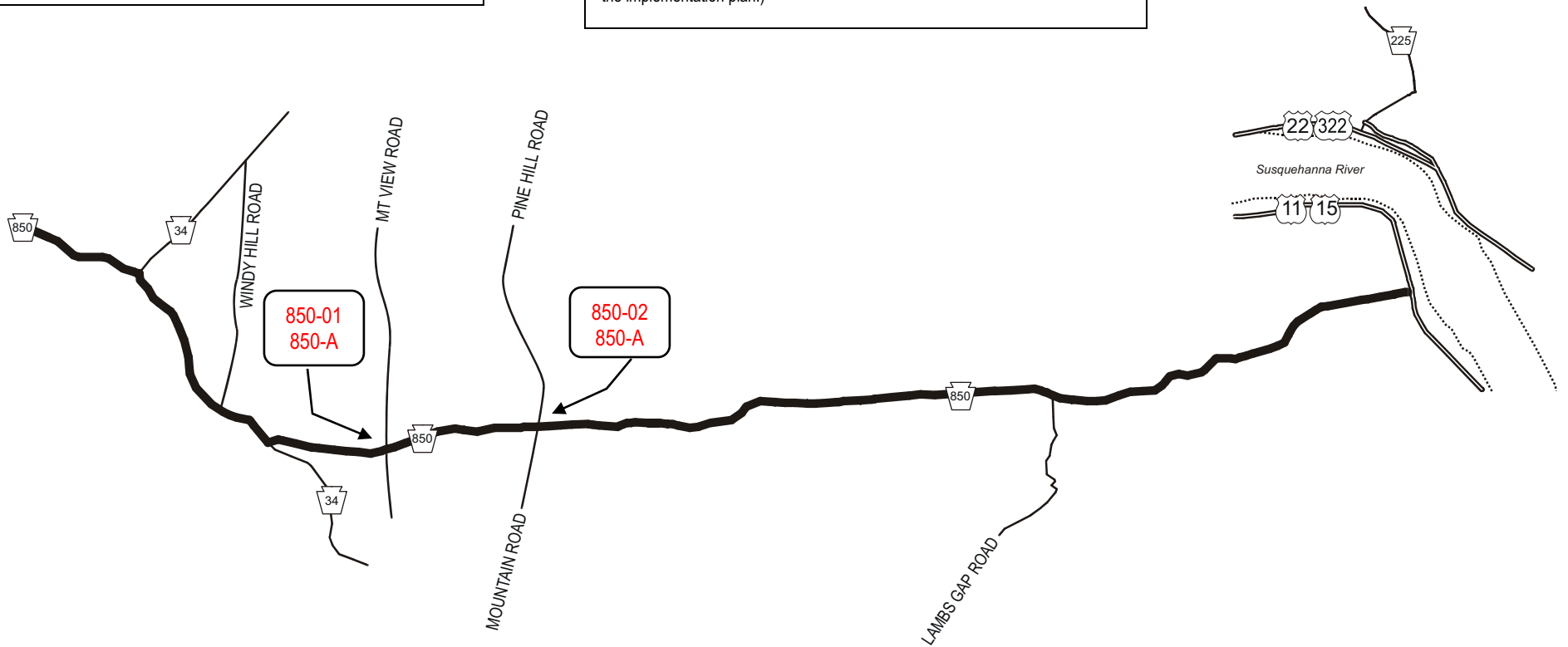
Safety and Congestion Management System Study

CUMBERLAND AND PERRY COUNTIES, PENNSYLVANIA



Legend
 850-01 – Improvement concept location code number
 850-A – Improvement package code number

The improvement packages and improvement concepts shown in ***italic boldface*** are placed on the Implementation Plan.
 (Note that none of the improvement concepts on this sheet are to be placed on the implementation plan.)



IMPROVEMENT CONCEPT SUMMARY

Location: PA Route 850 and Mountain View Road (SR 2003) intersection

**Location Number /
Improvement Package:** 850-01 / 850-A

Statement of problem: An examination of the physical geometry of the intersection demonstrates that this location experiences insufficient intersection sight distance. Because of the crest vertical curve at the intersection, the southbound approach of Mountain View Road appears to experience poor sight distance at its intersection with PA Route 850.



Photo of the view from the southbound approach of Mountain View Road looking towards the east on PA Route 850

Proposed Solution: Because the above location appears to experience insufficient sight distance, physical alterations could be made at the deficient location so that the sight distance is improved (if the benefits justify the costs). In this case, physical alterations should include the flattening of the crest vertical curve at the intersection.

Public Comment: No specific response (either positive or negative) was received from the public on this concept.

Approx. Cost Estimate: \$740,000

IMPROVEMENT CONCEPT SUMMARY

Location: PA Route 850 and Pine Hill Road / Mountain Road intersection

**Location Number /
Improvement Package:** 850-02 / 850-A

Statement of problem: An examination of the physical geometry of the intersection demonstrates that this location experiences insufficient intersection sight distance. The approaches of Pine Hill Road and Mountain Road experience poor sight distance because of the sharp vertical curve located immediately east of the intersection.



Photo of the view from the southbound approach of Pine Hill Road looking towards the east on PA Route 850

Proposed Solution: Because the above location appears to experience insufficient sight distance, physical alterations could be made at the deficient location so that the sight distance is improved (if the benefits justify the costs). In this case, physical alterations should include the flattening of the crest vertical curve that is located immediately east of the intersection on PA Route 850.

Public Comment: No specific response (either positive or negative) was received from the public on this concept.

Approx. Cost Estimate: \$380,000

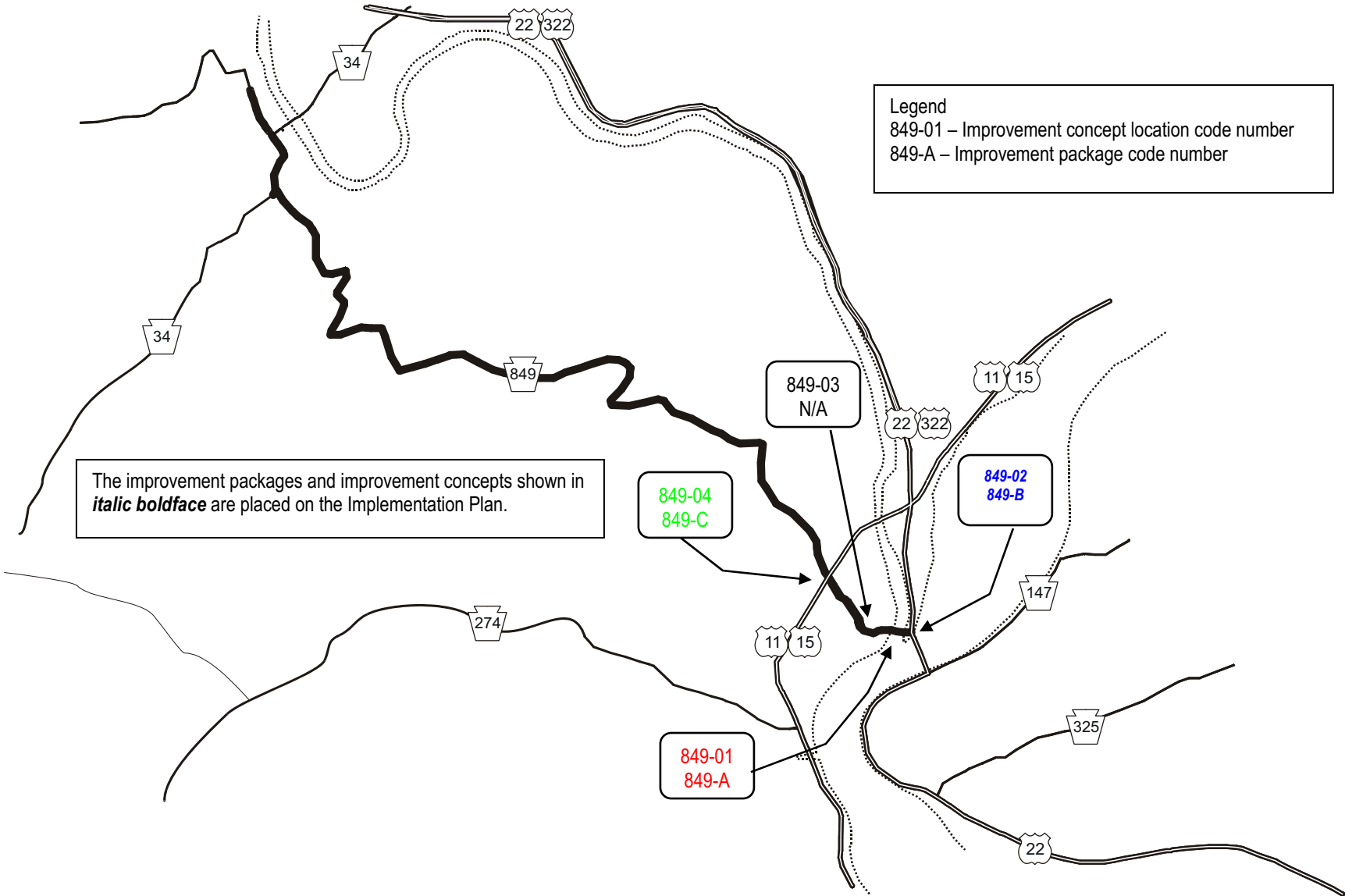
PA Route 849 - Locations of Proposed Improvements

Safety and Congestion Management System Study

CUMBERLAND AND PERRY COUNTIES, PENNSYLVANIA



Legend
 849-01 – Improvement concept location code number
 849-A – Improvement package code number



The improvement packages and improvement concepts shown in ***italic boldface*** are placed on the Implementation Plan.

IMPROVEMENT CONCEPT SUMMARY

Location: PA Route 849 and US Routes 22/322 intersection

**Location Number /
Improvement Package:** 849-02 / 849-B

Statement of problems: Motorists that use the eastbound approach of PA Route 849 at this intersection experience significant delays and poor levels of service during the morning peak hour as shown in the table below.

**Table VI-25
OVERALL INTERSECTION LEVELS OF SERVICE
PA ROUTE 849 AND US ROUTES 22/322 INTERSECTION**

Intersection	Existing (2001)		Future (2020)	
	Morning	Evening	Morning	Evening
PA Route 849 and US Routes 22/322	f	c	f	d

*a: Unsignalized intersection Level of Service
Items in bold text represent undesirable levels of service*



Photo of the view from eastbound PA Route 849 at its intersection with US Routes 22/322

Additionally, vehicles have been observed making the illegal left-turn from PA Route 849 eastbound to US Routes 22/322 westbound. Vehicles that desire to access US Routes 22/322 westbound from PA Route 849 must currently follow the signs and cross the Clarks Ferry Bridge and exit at PA Route 147. Then, the motorists can access US Routes 22/322 via the on-ramp from PA Route 147.

Proposed Solutions: Mitigate morning peak hour delay experienced at this location by constructing an acceleration lane onto eastbound US Routes 22/322. With new development occurring along PA Route 849 in Miller and Wheatfield Townships, traffic delays will likely increase. The delay is experienced only during the morning peak hour, and the benefits gained by constructing the acceleration lane may not be justified by the cost and the impacts to the adjacent Clarks Ferry Bridge.

Modify concrete island and add a jersey barrier to the median to further discourage illegal left-turns from PA Route 849 eastbound to US Routes 22/322 westbound.

Widen narrow left-turn lane on westbound US Routes 22/322.

Public Comment: Concept to further prohibit left-turn vehicles from SR 849 onto westbound US Routes 22/322 was suggested by public. No other specific comments or responses (either positive or negative) were received from the public on these concepts.

Approx. Cost Estimate: \$2.1 million (Acceleration lane)
\$35,000 (Concrete island modification and jersey barrier)
\$575,000 (Westbound left-turn lane)

IMPROVEMENT CONCEPT SUMMARY

Location: Juniata River Bridge on PA Route 849

**Location Number /
Improvement Package:** 849-01 / 849-A

Statement of problem: The superstructure of the narrow bridge is in deteriorating condition, but the substructure of the bridge seems to be in adequate condition.



Photo of the view from eastbound PA Route 849 approaching the Juniata River Bridge

Proposed Solution: Because the superstructure of the narrow Juniata River Bridge is in deteriorating condition, it may soon need to be repaired or replaced. It is also imperative to maintain pedestrian access to this bridge because it is a part of the Appalachian Trail.

If this bridge is replaced, consideration should be given to the possibility of designing the new structure such that it would be built over the Duncannon Subway.

Public Comment: No specific response (either positive or negative) was received from the public on this concept.

Approx. Cost Estimate: \$5.6 million (bridge replacement)
\$3.75 million (superstructure rehabilitation)

IMPROVEMENT CONCEPT SUMMARY

Location: The Duncannon Subway on PA Route 849

**Location Number /
Improvement Package:** 849-03 / N/A

It should be noted that improvements to the Duncannon Subway are currently being investigated by PENNDOT and are not included in any improvement package.

Statement of problem: The Duncannon Subway, which is a vital link between the Borough of Duncannon and US Routes 22/322, is frequently closed due to flooding during periods of high water levels on the adjacent rivers.



Photo of the view from westbound PA Route 849 approaching the Duncannon Subway

Proposed Solution: Maintain the subway and pump out floodwater to keep the road open by installing flap gates and a water pumping station. It is imperative that the section of PA Route 849 through the Duncannon Subway remains open because this section of roadway is very important for emergency vehicle access to and from the Borough of Duncannon. It should be noted that PENNDOT has recently completed some general drainage improvements at this location.

A long-term solution would be to construct a new bridge over the railroad tracks at this location.

Public Comment: No specific response (either positive or negative) was received from the public on this concept.

Approx. Cost Estimate: \$80,000 (Pumping)
\$19.5 million (New bridge)

IMPROVEMENT CONCEPT SUMMARY

Location:	PA Route 849 at US Routes 11/15
Location Number / Improvement Package:	849-04 / 849-C
Statement of problem:	Currently, it is difficult to access US Routes 11/15 directly from PA Route 849.
Proposed Solution:	Examine potential for interchange between PA Route 849 and US Routes 11/15. Benefit gained by this interchange may not justify the cost or the impacts to prime farmlands located adjacent to the proposed interchange.
Public Comment:	No specific response (either positive or negative) was received from the public on this concept.
Approx. Cost Estimate:	\$32.3 million

CHAPTER VII

SUMMARY OF OPTIMISTIC SCENARIO AND LAND USE RECOMMENDATIONS

This chapter discusses preparation of a “2020 optimistic scenario” for the Cumberland-Perry study area, and land use and transportation planning measures that can be used to manage traffic growth in the Cumberland-Perry study area.

Transportation improvements have been placed on the implementation plan (see Chapter VIII) to address safety and capacity deficiencies on study area roadways. To test the sensitivity of these improvements in the event that future development exceeds the level projected in the current traffic model, a “2020 optimistic scenario” was prepared. It was determined that traffic levels of service would still be acceptable under optimistic growth conditions.

In addition to this sensitivity test, land use and transportation planning measures have been proposed to better manage growth in the Cumberland-Perry study area in the future. These measures are an important supplement to the proposed transportation improvements. Given the recent completion of US Routes 22/322, and the potential for growth in the study area, implementation of these measures provides yet another measure of assurance that traffic levels of service will be acceptable well into the future.

A. ‘Optimistic Scenario’

To determine the ability of planned and proposed roadway improvements to accommodate potential traffic growth in the Cumberland-Perry study area, a “2020 optimistic scenario” was analyzed. This scenario – while not a build-out analysis – assumes a more intense level of development for the year 2020 than in the current model. (Note that the year 2020 demographic projections for the current model is located in Chapter II of this document.)

It should be emphasized that this “optimistic scenario” was prepared solely for the purpose of conducting a regional transportation analysis, and gauging the sensitivity of proposed transportation improvements to land development. Local land use decisions have regional

transportation impacts, and this illustrates the importance of intermunicipal coordination in establishing a planning agenda. However, it should also be emphasized that the impacts upon transportation systems are only one of many factors that should be considered by municipal officials as they engage in land use planning, and create or modify zoning districts.

Although the method of projecting future development differed for population and employment, there were some common principles. Rather than arbitrarily assuming a certain percentage growth of housing units and employment in the study area, the model derived 2020 projections based upon “high growth” periods in the past. An analysis was done of developable lands in the study area to determine if the projected growth in employment or housing units could be accommodated within the different municipalities. The growth was assigned with preference for locations in public sewer areas, or close to major roadways, as this infrastructure is normally present in areas that experience rapid growth. Comprehensive plans and zoning ordinances, where available, were also used to guide growth. There was also an effort made to avoid over-assigning growth to Traffic Analysis Zones (TAZ’s) in the study area that already received a significant housing unit or employment allocation under the current model.

The optimistic employment and population growth for each TAZ was then translated into peak hour traffic volumes. The improvement packages that have been placed on the implementation plan were then checked to determine if sufficient capacity was still available with the higher, optimistic year 2020 traffic volumes. It was determined that the recommended improvements that have been placed on the implementation plan will be able to accommodate the additional traffic volumes associated with the surplus optimistic residential and employment development.

Employment

The “2020 optimistic scenario” projects the growth of close to 30,000 jobs in the study area municipalities from 1995 to 2020. Employment is projected to grow in Cumberland County by 51 percent in this period, and Perry County by 61 percent. The projection of 30,000 jobs represents an increase of 4,360 jobs over the projection prepared for the traffic model for the design year of 2020. Table VII-1 indicates projected employment under the optimistic scenario.

**Table VII-I
Projected Employment - Year 2020**

	1995 Current Model	2000 Actual Employment	2020 Optimistic Model	1995 - 2020 Change Optimistic Model	
Cumberland County				Number	Percent
East Pennsboro	15,347	0	23,765	8,418	54.9%
Hampden	23,282	0	30,442	7,160	30.8%
Middlesex	5,565	0	10,462	4,897	88.0%
Silver Spring	7,789	0	13,766	5,977	76.7%
TOTAL	51,983	0	78,435	26,452	50.9%
Perry County				Number	Percent
Bloomfield	666	N/A	862	196	29.4%
Carroll	248	N/A	504	256	103.2%
Centre	59	N/A	131	72	122.0%
Duncannon	1,328	N/A	1,699	371	27.9%
Howe	24	N/A	556	532	2216.7%
Marysville	589	0	903	314	53.3%
Miller	23	N/A	64	41	178.3%
Newport	825	925	1,093	268	32.5%
Oliver	192	N/A	323	131	68.2%
Penn	1,182	N/A	2,007	825	69.8%
Rye	26	N/A	140	114	438.5%
Watts	18	N/A	57	39	216.7%
Wheatfield	39	N/A	78	39	100.0%
TOTAL	5,219	N/A	8,417	3,198	61.3%

Source: Orth-Rodgers & Associates - 2020 Optimistic Model Projections, August 2002
 Tri-County Regional Planning Commission - 2020 Current Model Projections
 PA Dept of Community and Economic Development - 2000 Municipal Revenue Information
 PA Dept of Community and Economic Development - 2020 Occupational Privilege Tax Rates
 U.S. Census Bureau - 2000 Census of Population and Housing

The optimistic forecast for the Perry County municipalities was calculated based upon the employment growth in the entire county for the period 1990 to 1995, as provided by the Pennsylvania Department of Labor. The linear growth rate for this period was extrapolated through the year 2020, and proved to be 19 percent higher than the employment forecast projected in the current model. Therefore, the employment projection was increased by 1,370. Howe Township, at the intersection of US 22/322 and PA 34, and with public sewer, was seen as being one of the areas poised for growth by the year 2020, which was not anticipated in the current model projections. Much of the growth in this area would likely be in retail. Penn Township was assigned an additional 130 jobs; these are likely to be office and industrial. The added jobs for other Perry County municipalities ranged from 25 to 120. All of the Perry County jobs added under the optimistic scenario fall within the study area.

The optimistic forecast for Cumberland County was also based upon employment growth in the entire county for the period 1990 to 1995. The linear growth rate for this period was extrapolated, and was found to be 2 percent higher than the current model. While seemingly insignificant, this growth rate resulted in 1,500 additional jobs over the current model. The current model was in some respects optimistic itself, with a higher growth rate than for either the 1990 to 1995, or 1990 to 2000 periods. Indeed, the optimistic model based on 1990 to 1995 growth was 5,500 jobs higher than if the current model had been based on 1990 to 2000 growth.

In an effort to further consider employment potential in Cumberland County, and to build in an additional “level of optimism,” 1,500 additional jobs were assigned to Cumberland County, for an increase of 3,000 jobs over the current model. These 1,500 additional jobs were assumed to be located in the Cumberland Technology Park at the interchange of I-81 and Wertzville Road in Hampden, and reflects the new employment generated by the IBM facility under construction, as well as potential for development on other tracts within the Technology Park. In total, close to 2,500 new jobs are projected for the Technology Park and other lands adjacent to the I-81 interchange between 1995 and 2020.

With the exception of the office district at the interchange of I-81 and Wertzville Road, much of the available land in commercial districts in Cumberland County lies to the south of the study

area, minimizing the potential impact on study area roads from future commercial development in those municipalities. A very modest increase was projected in Silver Spring along Wertzville Road where small commercial zones are located. Of the 3,000 additional jobs projected for Cumberland County municipalities, 1,755 jobs are within the study area.

Population

The “2020 optimistic scenario” projects the growth of over 14,000 housing units in the study area from 2000 to 2020, or a 40 percent increase. Cumberland County municipalities are projected to add 9,670 housing units, and Perry County municipalities 4,370 units. The optimistic scenario represents an additional 4,410 housing units over the projections prepared for the traffic model for design year 2020. Population projections are indicated in Table VII-2, and housing unit projections in Table VII-3.

To determine an optimistic scenario for municipalities in both Cumberland and Perry Counties, a population projection model was run incorporating historic population trends from 1980 to 2000. For many of the communities, the results of the geometric model were used for the optimistic scenario. Because the geometric model assumes continuation of the historic population growth rate – and not simply continuation of the absolute population growth – the geometric model typically results in higher population projections than a linear regression model. In two cases – Hampden Township in Cumberland County, and Howe Township in Perry County – the results of the parabolic model were adopted, which represent an even higher level of growth.

The models were ideal for projecting optimistic scenarios in Cumberland County, where the municipalities have experienced fairly constant growth over the past several decades. Middlesex and Silver Spring Townships are projected to grow at a faster rate than East Pennsboro or Hampden Township, since they are farther from the Harrisburg Metropolitan Area, and therefore have not built out to the extent that East Pennsboro and Hampden Townships have. Of the 3,260 additional housing units in Cumberland County, a total of 880 fall within study area boundaries.

**Table VII-2
Projected Population - Year 2020**

	2000 Population	2020 Optimistic Model Population	2000-2020 Change Optimistic Model	
Cumberland County			Number	Percent
East Pennsboro	18,254	23,293	5,039	27.6%
Hampden	24,135	34,934	10,799	44.7%
Middlesex	6,669	10,046	3,377	50.6%
Silver Spring	10,592	15,493	4,901	46.3%
TOTAL	59,650	83,766	24,116	40.4%
Perry County				
Bloomfield	1,077	1,136	59	5.5%
Carroll	5,095	8,055	2,960	58.1%
Centre	2,209	2,963	754	34.1%
Duncannon	1,508	1,573	65	4.3%
Howe	493	666	173	35.1%
Marysville	2,306	3,005	699	30.3%
Miller	953	1,612	659	69.2%
Newport	1,506	1,676	170	11.3%
Oliver	2,061	2,908	847	41.1%
Penn	3,013	4,756	1,743	57.8%
Rye	2,327	3,397	1,070	46.0%
Watts	1,196	1,607	411	34.4%
Wheatfield	3,329	4,817	1,488	44.7%
TOTAL	27,073	38,171	11,098	41.0%

Source: Orth-Rodgers & Associates - 2020 Optimistic Model Projections, August 2002

Tri-County Regional Planning Commission, 2020 Current Model Projections

U.S. Census Bureau - 2000 Census of Population and Housing

**Table VII-3
Projected Housing Units - Year 2020**

	2000 Occupied Housing Units	2020 Optimistic Model Housing Units ^a	2000-2020 Change Optimistic Model	
Cumberland County			Number	Percent
East Pennsboro	7,670	9,804	2,134	27.8%
Hampden	9,732	14,087	4,355	44.8%
Middlesex	2,555	3,852	1,297	50.8%
Silver Spring	4,074	5,961	1,887	46.3%
TOTAL	24,031	33,704	9,673	40.3%
Perry County				
Bloomfield	479	505	26	5.5%
Carroll	1,894	2,996	1,102	58.2%
Centre	843	1,135	292	34.6%
Duncannon	667	696	29	4.3%
Howe	201	376	175	86.9%
Marysville	1,025	1,335	310	30.3%
Miller	340	576	236	69.2%
Newport	666	742	76	11.3%
Oliver	811	1,145	334	41.1%
Penn	1,215	1,917	702	57.8%
Rye	849	1,240	391	46.0%
Watts	451	606	155	34.3%
Wheatfield	1,211	1,754	543	44.9%
TOTAL	10,653	15,023	4,370	41.0%

Source: Orth-Rodgers & Associates - 2020 Optimistic Model Projections, August 2002

Tri-County Regional Planning Commission, 2020 Current Model Projections

U.S. Census Bureau - 2000 Census of Population and Housing

^a Current Model Number had to be adjusted based on 2020 Current Model Discrepancies

The population projection model indicated that the current model projections for Perry County municipalities were, in many cases, already optimistic. Indeed, for eight of the 13 Perry County municipalities, the models when applied to 1980 to 2000 trends indicated that no growth or even slight declines were likely for the future. For the purpose of the optimistic scenario analysis, however, it was assumed that the current model projections would materialize, as the boroughs benefit from revitalization. For townships with slow or no growth, between 50 and 200 additional housing units were assigned, based on the extent of sewered areas and proximity to

major roads. In total, the Perry County municipalities were assigned an additional 1,150 housing units over the current model. All of these units are within study area boundaries.

Impacts to Transportation System

The additional amount of residential and employment growth that would likely occur under an ‘optimistic development’ scenario for the year 2020 is summarized above. The additional development that was determined is above and beyond what is already included in the TCRPC traffic model. Residential and employment growth was determined for each municipality within the study area. A trip generation analysis was performed for the projected development in each traffic analysis zone (TAZ). Trips were generated for the following land uses:

- € Single-family homes
- € Multi-family homes
- € Retail (shopping center)
- € Industrial parks
- € General office space

For the portion of each municipality that lies within the study area, the total daily trip ends generated by the traffic model in the base year of 2000 are compared to the total daily trip ends generated in year 2020 under the optimistic development scenario in Table VII-4. Daily and peak hour trip generation rates for the land uses listed above and some additional land uses are summarized in Table VII-5.

**Table VII-4
Projected Daily Trip Ends**

	2000 Daily Trip Ends	2020 Optimistic Model Trip Ends	2000-2020 Change Optimistic Model	
Cumberland County			Number	Percent
East Pennsboro*	56,068	72,895	16,827	30.0%
Hampden*	16,740	45,569	28,829	172.2%
Middlesex*	26,405	42,901	16,496	62.5%
Silver Spring*	18,117	31,852	13,735	75.8%
TOTAL	117,330	193,217	75,887	64.7%
Perry County				
Bloomfield	8,959	11,191	2,232	24.9%
Carroll	18,667	26,953	8,286	44.4%
Centre	7,107	9,479	2,372	33.4%
Duncannon	14,664	18,308	3,644	24.8%
Howe	1,852	9,221	7,369	397.9%
Marysville	12,201	15,876	3,675	30.1%
Miller	3,504	5,058	1,554	44.3%
Newport	12,011	14,566	2,555	21.3%
Oliver	8,935	11,254	2,319	26.0%
Penn	23,406	32,330	8,924	38.1%
Rye	7,307	10,625	3,318	45.4%
Watts	4,055	5,230	1,175	29.0%
Wheatfield	2,091	3,434	1,343	64.2%
TOTAL	124,759	173,525	48,766	39.1%

Source: Orth-Rodgers & Associates - 2020 Optimistic Model Projections, August 2002

Tri-County Regional Planning Commission, 2020 Current Model Projections

U.S. Census Bureau - 2000 Census of Population and Housing

Tri-County Regional Planning Commission - Base Year Model Projections

*Projected trips are for (traffic analysis zones) TAZ's in the study area only

**Table VII-5
Average Daily and Peak Hour Trip Generation Rates
for Selected Land Uses and Variables**

Land Use	Variable	Average Trip Rates (Trips per unit variable)		
		Morning Peak Hr	Evening Peak Hr	Daily (Weekday)
Single-Family Detached Housing	Dwelling Units	0.75	1.01	9.57
Residential Townhouse	Dwelling Units	0.44	0.54	5.86
Mobile Home Park	Occupied Dwelling Units	0.40	0.56	4.81
Industrial Park	Acres	10.17	10.47	63.11
General Office Building	1000 sq. ft. GFA	1.56	1.49	11.01
Medical/Dental Office Building	1000 sq. ft. GFA	2.43	3.66	36.13
Office Park	1000 sq. ft. GFA	1.74	1.50	11.42
Free-Standing Discount Store	1000 sq. ft. GFA	0.99	4.24	56.63
Shopping Center	1000 sq. ft. GLA	1.03	3.74	42.92
High-Turnover, Sit-Down Restaurant	1000 sq. ft. GFA	9.27	10.86	130.34
Fast-Food Restaurant (w/ Drive-Through)	1000 sq. ft. GFA	49.86	33.48	496.12
Convenience Market (w/ Gas Pumps)	1000 sq. ft. GFA	45.58	60.61	845.60
Drive-in Bank	1000 sq. ft. GFA	12.63	54.77	265.21

Source: Trip Generation Manual, 6th Edition, published by the Institute of Transportation Engineers, 1997.
Note: GFA = Gross Floor Area, GLA = Gross Leasable Area

When consulting Table VII-5, it should be noted that many of the trips generated by a new retail development are not necessarily new trips to the roadway system because they are pass-by trips; in other words, vehicles that currently travel the existing roadway network will access the new retail development.

For the optimistic development scenario, the new trips that were generated by the optimistic development were then distributed and assigned to the study area network based upon the existing traffic patterns, census data, and the relative attractiveness and location of the new developments and population centers.

Table VII-6 on the following page summarizes the Average Daily Traffic (ADT) volumes for selected study area roadways under existing (2001) conditions, year 2020 ‘base’ conditions, and year 2020 ‘optimistic development’ conditions.

**Table VII-6
Average Daily Traffic (ADT) Comparison**

Location	2001 ADT	2020 ADT		
	Existing	Base	Optimistic Scenario	% Difference: Existing (2001) to Opt. Scenario (2020)
PA 34 - Between PA 274 and PA 850	7,250	9,400	9,900	37%
PA 34 - Between PA 850 and PA 850	13,800	17,900	19,200	39%
PA 34 - Between PA 850 and Sunnyside Dr	17,550	23,500	25,700	46%
PA 944 - Between Sunnyside Dr and PA 114	13,600	21,900	23,900	76%
PA 944 - Between East of PA 114	6,100	11,800	12,100	98%
US 11/15 - Between PA 274 and PA 850	16,350	22,300	24,200	48%
US 11/15 - Between PA 850 and I-81	22,000	29,500	32,700	49%
US 11/15 - South of PA 944	21,750	37,000	37,400	72%
PA 274 - West of US 11/15	9,350	13,000	13,500	44%
PA 850 - West of US 11/15	5,400	7,400	9,300	72%
PA 849 - W of US 22/322	4,850	8,000	8,300	71%
US 22/322 - Between US 11/15 and PA 849	35,600	38,100	42,500	19%
US 22/322 - Between PA 849 and PA 147	40,000	44,300	49,000	23%
Sunnyside Dr (SR 1007)	11,000	14,200	16,300	48%

The extra development associated with the optimistic growth scenario is responsible for roughly 5 to 15 percent additional traffic on the study area roadways.

Capacity analyses were performed at key bottleneck intersections. The intersections were analyzed using traffic volumes during the critical peak hour. In the study area, the critical peak hour is the evening peak hour. Additionally, the new developments will generate the maximum amount of new trips during the evening peak hour. The capacity analysis was performed using the roadway improvements that have been placed in the implementation plan. The overall intersection Levels of Service (LOS) for the year 2020 ‘base’ traffic volumes and the year 2020 ‘optimistic development scenario’ traffic volumes are summarized on the following page in Table VII-7.

**Table VII-7
Level of Service (LOS) Comparison
Evening Peak Hour**

Intersection	Year 2020 Overall Level of Service	
	Base Scenario	Optimistic Scenario
PA Route 34 and Sunnyside Drive (Sterretts Gap)	C	C
PA Route 34 and PA Route 850 (Shermans Dale)	B	B
PA Route 944 and PA Route 114 (Wertzville)	B	C
PA Route 850 and US Routes 11/15 (Marysville)	B	C

The results of the capacity analysis demonstrate that the additional traffic volumes experienced under the optimistic scenario will slightly degrade the overall Level of Service at these key bottleneck intersections in year 2020, but the intersections will still operate with an acceptable Level of Service with the improvements from the implementation plan in place.

In summary, the additional traffic volumes generated by the extra development that is projected under the ‘optimistic growth’ scenario will have no effect on the implementation plan of roadway improvements for the study area. The recommended improvements will be able to accommodate the additional traffic volumes associated with the surplus optimistic residential and employment development.

Extreme care should be taken by the municipalities when using the aforementioned trip generation rates in combination with the projected year 2020 optimistic housing, population, and development levels (and their associated optimistic scenario projected traffic volumes) as the sole guide when monitoring the capacity of the future transportation network. Transportation improvement projects inside or outside the study area and regional shifts in travel patterns can drastically alter the future traffic volumes on the study area roadways, thus altering the optimistic projections presented in this chapter. In other words, monitoring cannot be done in a vacuum; it requires attention to regional context.

B. Summary of Growth Management Measures

Cumberland and Perry Counties exhibit distinctly different land use characteristics within the study area. Cumberland County municipalities – particularly East Pennsboro and Hampden Townships, which have absorbed much of the suburban development moving outwards from Harrisburg and along the I-81 / US Route 11 corridor – have experienced significant population growth in the last two decades. The municipalities in Perry County are much more rural; they added 4,700 new persons since 1980, as opposed to the growth of 16,300 persons in the Cumberland County portion of the study area. Further, the vast majority of retail and office development in the study area within the last two decades has been concentrated within Cumberland County.

The differences between counties extend to land use controls as well. Cumberland County municipalities use the full range of land use controls – comprehensive plans, zoning ordinances, and subdivision and land development ordinances. As of 2002, four of the 13 Perry County municipalities did not have zoning ordinances, and zoning was only recently enacted in several others. The difference in use of land use controls in the two counties is not surprising, inasmuch as many municipalities only become skilled in the use of these controls when confronted by periodic development.

Although this chapter refers to growth management practices in individual study area municipalities, it also, on occasion, refers to the Cumberland County municipalities and the Perry County municipalities as two separate groups, given the differences between these two “sub-areas” within the overall study area, and to emphasize the broad application of many of these strategies.

The congestion which exists on study area roadways today will not be affected by any of the measures recommended in this memorandum. However, these growth management measures can help to temper traffic growth in the future. Further, they can help to extend the life of any transportation improvements which are constructed in the future. Indeed, growth management

measures can assume even greater importance in the wake of new improvements. Within a metropolitan area, development in outlying areas often accelerates following the construction of improvements, as travel times decrease. As greater volumes of traffic are attracted to the new or improved roadway, congestion can once again become a problem. Growth management measures can help avoid this built-in obsolescence.

Following are growth management recommendations of this study:

Land Use:

- € Institute and/or update comprehensive planning and zoning in the study area municipalities; the municipalities should also consider regional comprehensive planning and zoning.
- € Review land use plans in each municipality for opportunities for low-density zoning districts. Two common types of low-density zoning are agricultural zoning, at 10 to 20 acres or more per lot, and conservation districts.
- € Plan for environmentally sensitive features, through reducing development density in areas with steep slopes, wetlands and floodplains.
- € Consider Transfer of Development Rights (TDR) and conservation subdivisions to protect open space.
- € Adopt village center zoning to concentrate development in areas planned for infrastructure within townships, and support efforts to the boroughs to attract more development and redevelopment.
- € Coordinate growth management efforts in the Cumberland/Perry study area with the Regional Growth Management Plan of the Tri-County Regional Planning Commission.

Transportation:

- € Adopt access management overlay districts to improve traffic operations along arterials.
- € Adopt traffic impact study ordinance to better identify and address the impact of new developments.
- € Upgrade pedestrian and bicycle facilities.

The above land use recommendations should be implemented independent of any transportation improvements in order to better manage future growth and to create better and more livable communities. These growth management recommendations are discussed in greater detail within this chapter. Table VII-8 summarizes the applicability of these recommendations for each of the study area municipalities.

**Table VII-8
GROWTH MANAGEMENT RECOMMENDATIONS**

Municipality	Comprehensive Planning	Zoning	Environmental Planning	Village Center	Traffic Impact Study Ordinance	Access Management
<i>Cumberland County</i>						
East Pennsboro Township	Update comprehensive plan	Existing low-density zones; consider regional TDR with other Cumberland municipalities	Existing adequate wetland and slope protection provisions	Much of township developed, but consider mixed use redevelopment	Existing; update ordinance	Adopt overlay district for US 11/15 between I-81 and PA 944
Hampden Township	Update comprehensive plan	Existing low-density zones; consider regional TDR with other Cumberland municipalities	Consider wetland and slope protection provisions	Much of town developed, but consider mixed use redevelopment	Adopt ordinance	Adopt overlay district for PA 944
Middlesex Township	Update comprehensive plan; consider joint planning with Silver Spring Township	Increase size of lots in RF zone; consider regional TDR with other Cumberland municipalities	Consider adjusted tract acreage provisions	Revise linear Village Center zone along US 11 to nodal form; update VC design requirements	Existing; update ordinance	Adopt overlay district for US 11, PA 34, PA 944
Silver Spring Township	Update comprehensive plan; consider joint planning with Middlesex Township	Existing low-density zones; consider regional TDR with other Cumberland municipalities, or municipal-wide TDR	Existing slope provisions; consider adjusted tract acreage provisions	Strengthen existing Village Overlay zone with TDR incentive; consider increasing commercial % in VO zone	Revise existing; lower threshold for commercial uses	Existing
<i>Perry County</i>						
Bloomfield Borough	Update comprehensive plan; engage in joint planning with Centre and Carroll Townships	Existing low-density zone; given the Borough's goal to be regional center, low density not critical here	NA	Promote revitalization; consider increasing density, with TDR credits sent from Centre; encourage mixed use buildings	Update existing; require TIS for commercial uses, smaller subdivisions	NA

Municipality	Comprehensive Planning	Zoning	Environmental Planning	Village Center	Traffic Impact Study Ordinance	Access Management
Carroll Township	Update comprehensive plan; engage in joint planning with Centre Township and Bloomfield Borough	Consider agricultural zone	Adopt adjusted tract acreage provisions	Consider proximate to Carroll Elementary School. Update design guidelines for VC at Shermans Dale	Update existing	Adopt district for PA 34
Centre Township	Prepare comprehensive plan, or joint plan with Carroll Township and Bloomfield Borough	Adopt zoning ordinance, including agricultural zone	Adopt adjusted tract acreage provisions	Coordinate with Bloomfield on promotion of borough as regional center	Existing	Consider district for PA 34, PA 274 in future; currently not critical
Duncannon Borough	Update comprehensive plan; engage in joint planning with Penn and Wheatfield Townships	No action necessary	NA	Promote revitalization; encourage mixed-use buildings	Revise; require for commercial uses	NA
Howe Township	Update comprehensive plan; engage in joint planning with Newport Borough and Oliver and Miller Townships	Increase size of lots in RA zone	Adopt adjusted tract acreage provisions	Consider VC on PA 34, proximate to intersection with US 22/322	Adopt ordinance	Adopt district along PA 34
Marysville Borough	Update comprehensive plan; engage in joint planning with Rye Township	No action necessary	Adopt adjusted tract acreage provisions	Promote revitalization; encourage mixed-use buildings; increase density	Adopt ordinance	Adopt district along US 11/15
Miller Township	Prepare comprehensive plan, or joint plan with Howe and Oliver Townships and Newport Borough	Adopt ordinance, including low density zone	Adopt adjusted tract acreage provisions	Not applicable at this time	Not applicable at this time	Not applicable at this time
Newport Borough	Update comprehensive plan; engage in joint planning with Howe, Oliver and Miller Townships	No action necessary	NA	Promote revitalization; encourage mixed-use buildings	Adopt ordinance	NA

Municipality	Comprehensive Planning	Zoning	Environmental Planning	Village Center	Traffic Impact Study Ordinance	Access Management
Oliver Township	Update comprehensive plan; engage in joint planning with Newport Borough and Howe and Miller Townships	Adopt ordinance, including agricultural and conservation zone	Adopt adjusted tract acreage provisions	Concentrate development proximate to Newport	Adopt ordinance	Consider district along PA 34 in future; currently not critical
Penn Township	Update comprehensive plan; engage in joint planning with Duncannon Borough and Wheatfield Township	Increase lot size in agricultural zone. Existing Forest Conservation zone is adequate	Adopt adjusted tract acreage provisions	Consider VC in Cove or Perdix; consider concentrating development proximate to Duncannon Borough	Adopt ordinance	Adopt district along US 11/15
Rye Township	Engage in joint planning with Marysville Borough	Increase lot size in agricultural zone. Existing Forest Conservation zone is adequate	Adopt adjusted tract acreage provisions	Concentrate development proximate to Marysville Borough	Expand existing ordinance	Consider district along PA 850; currently not critical
Watts Township	Engage in joint planning with New Buffalo Borough	Include conservation zone in ordinance	Adopt adjusted tract acreage provisions	Concentrate development around New Buffalo Borough	Adopt ordinance	Adopt district along US 11/15
Wheatfield Township	Update comprehensive plan; engage in joint planning with Duncannon Borough and Penn Township	Increase lot size in agricultural zone	Adopt adjusted tract acreage provisions	Currently little potential for VC	Adopt ordinance	Consider district along PA 274; currently not critical

C. Land Use

Comprehensive Planning and Zoning

The most basic means to manage growth in Perry County would be to institute zoning in those communities that currently lack it. As of May 2002, four municipalities did not have approved zoning ordinances, but one of the four – Penn Township – has made significant progress toward its enactment. In the absence of a zoning ordinance, municipalities are restricted to using subdivision and land development techniques to regulate lot creation. In this case, lots need be large enough only to pass soil percolation tests, which typically requires a lot size of about one acre. Further, municipalities do not have discretion in approving different intensities of development for different places within the municipality, and are thus hampered from engaging in the most basic tasks of strategic planning.

Given the important shared goals and land use characteristics of many of the Perry County communities, a desired first step would be to enact a multi-municipal comprehensive plan. This would have several benefits. It would place the communities in a stronger position for attracting grant funding for planning services. It would help achieve economies of scale for the many rural communities in the study area that do not have significant resources. By leading to a multi-municipal zoning ordinance, it would also enable different land uses to be placed in their most logical position in the larger area. If a municipality is not involved in a regional planning and zoning effort, under Pennsylvania law, its zoning ordinance must provide for the possibility of accommodating every land use.

Multi-municipal comprehensive planning and zoning has been used in Pennsylvania with some effect. For example, the Townships of Newton, Wrightsville, and Upper Makefield in Bucks County have also cooperated in a joint zoning ordinance, primarily for the purpose of concentrating development in one township and preserving farmland and open space in the other two townships. Many other communities have engaged in regional planning without yet enacting a regional zoning ordinance.

In the short term, Perry County could take immediate action in passing a zoning ordinance for those communities that lack zoning. The county ordinance would be repealed once the municipality took steps to enact its own zoning ordinance. Of course, individual municipal ordinances are an option for those townships that have not yet enacted them.

Agricultural and open space preservation should be an important feature of any planning effort in these communities. Protecting these areas through zoning will be discussed in greater detail in the following section.

Low Density Zoning

In those municipalities with zoning, the creation of low-density residential zoning districts is one of the most effective means for controlling long-term traffic growth. This is accomplished through reducing the build-out potential for new residential units. It should be emphasized that it is not recommended that municipalities uniformly downzone in all residential districts. With the exception of the most rural or environmentally constrained municipalities, high- to medium-density residential developments are desirable for their ability to create compact “walkable” neighborhoods, to provide for municipal services in a more economically efficient manner, and for many other planning reasons.

However, in areas with agricultural or other important natural resources, or in areas that are environmentally constrained due to steep slopes or wet soils, large-lot zoning can be effective in better protecting these natural conditions, with the accompanying beneficial effect of tempering traffic growth. This is of greater applicability in Perry County than in Cumberland County; large portions of the study area in Cumberland County (with the exception of Silver Spring and Middlesex Townships) have already been built at typical suburban densities. In contrast, much of the land in Perry County is undeveloped.

Agricultural Zoning

Under the practice of effective agricultural zoning, dwellings in residential districts are permitted at sparse densities that discourage conventional development. This practice has been employed in Pennsylvania to the greatest extent in York and Lancaster Counties, in

which municipalities have zoned agricultural areas at 20 to 30 acres per dwelling. Some of these municipalities have also used “sliding scale” zoning, in which smaller tracts with less agricultural viability are allowed at a higher density. Agricultural zoning should be paired with provisions in which homes that are permitted in these areas are placed on one to two acre lots (and not, for example, on 20 acre lots) in order that the farmland is not chopped up but is preserved with the greatest number of contiguous acres. For example, on an 80-acre tract in a 20-acre zone, the four permitted dwellings could be clustered together on 4 to 8 contiguous acres. Conservation subdivisions (see below) can also help protect agricultural lands.

Zoning at 20 acres or more per lot in agricultural areas has withstood legal challenges in Commonwealth Courts. It is important, however, to establish agricultural preservation as a goal in the municipal or regional comprehensive plan, before proceeding with zoning at such a scale.

The best example of agricultural preservation in the study area, from the perspective of both comprehensive planning and zoning, is found in Silver Spring Township. The 1995 Comprehensive Plan states the goal of maintaining a “critical mass” of land in principal agricultural use, partly with the intent to discourage the filing of nuisance lawsuits by residents in newly created subdivisions. Residences in farmland areas are recommended to be placed on smaller lots, and clustered where possible, to minimize loss of farmland. The Township also maintains Agricultural Security Areas. These goals are translated into concrete action in the zoning ordinance; 10 acre lots are required, the largest of any community in the study area. In this and in other respects, other study area communities – particularly in Perry County – should consider the Silver Spring agricultural planning as a model.

It should be acknowledged that Silver Spring has a greater concentration of agricultural lands than other townships in the study area. However, other municipalities have agricultural preservation plans and ordinances. Rye Township has much less land in agricultural production than Silver Spring Township. Nevertheless, the 1999 Rye Township Comprehensive Plan states the importance of maintaining agricultural as a viable industry.

However, its zoning – permitting two acre lots on lands with less than 15% slope – may not be effective in the long term in protecting farmland. Indeed, no Perry County municipality has agricultural zoning that requires lots greater than two acres. Given the distance of some of these communities from Harrisburg, and the lack of sewer, development has not yet encroached upon many of these farming areas. These municipalities should act now to preserve farmland through zoning techniques to the greatest extent practicable before suburban encroachment becomes more of a reality.

Conservation/Open Space/Forest Slope Zoning

A number of the study area municipalities have districts which are intended to protect sensitive environmental features, and which thus adopt large lot sizes. Hampden, Howe, Rye and Wheatfield Townships are all examples of communities that have Conservation Forest districts with minimum five acre lots. The benefit of this approach is that it encourages the developer to minimize the disturbance to sensitive natural features; the developer has ample land to choose in grading and construction. Further, these districts help preserve the rural character of the area, and reduce the potential for development which leads to traffic growth. Sensitive natural features are found in all study area communities, and these districts can be adopted by the other study area municipalities.

Planning for Environmentally Sensitive Features

Environmentally sensitive features – most conspicuously steep slopes – are taken into consideration in many of the study area municipal ordinances. In Cumberland County, several of the municipalities have identified certain districts whose residential density depends upon the area's average slope. In East Pennsboro Township, for example, lots in the Residential Conservation district may range from 1.5 to 10 acres depending upon the severity of slope and the provision of public sewer and water. For those Perry County municipalities with zoning ordinances, lot size typically depends upon the availability of public sewer and water. For those Perry County municipalities without zoning, their SALDO's typically contain provisions that lot size will increase (typically by at least 50%) in the presence of steep slopes or subsoil conditions that would have the effect of increasing septic run-off, or in which septic failures are ultimately more likely.

It is desirable to account for environmentally sensitive features in a more systematic manner than municipalities in the study area currently employ, through the deduction of land with environmentally sensitive features from tract acreage. An increasing number of communities in Pennsylvania have adopted density “net-outs,” in which the most environmentally sensitive features – typically slopes over 25%, wetlands and floodplains – are deducted from the eligible lot area for all residential zoning districts.

Another approach is to apply a “density factor” to environmentally sensitive features. This method is described by Randall Arendt in the *Growing Greener* report he prepared for the Pennsylvania Department of Conservation and Natural Resources. Under this system, unconstrained land has a factor of 1.0, but slopes over 25% receive a factor of .25, and wetlands receive a factor of .05. The acreage covered by the environmentally sensitive features are multiplied by the density factors to determine the total tract acreage upon which residential density is calculated. This method was upheld by the Pennsylvania Commonwealth Court in 1992. Because even environmentally constrained land receives some development credit, this method permits a greater amount of development and better addresses concerns about effects on property values.

These methods can be employed in all residential zoning districts in a community, and can thus protect natural resources and manage growth in a more comprehensive manner than simply incorporating steep slope provisions in selected districts. They also assist growth management by reducing the potential number of lots available at build-out.

Transfer of Development Rights/Conservation Subdivision

The techniques discussed in this section, unlike the measures discussed above, do not have the ability to manage growth by reducing residential build-out. However, they should be considered by study area communities because they can help preserve important natural features. Under Transfer of Development Rights (TDR), the right to develop a property – typically farmland or other desirable open space – is sold to a developer that owns land in an area able to accommodate greater development. The land for which the development right

was sold will forever remain as farmland or open space . The existing owner can keep it in its natural state, or may opt to transfer it to a public or non-profit agency. Washington Township in Berks County has used its TDR program to preserve over 300 acres of farmland. TDR can be implemented on a municipal- or region-wide basis. The “receiving zones” for TDR should have infrastructure; they should be placed within boroughs to the extent possible, or within village center zones in townships.

Development rights to agricultural lands may also be purchased. In Perry County, over 3,300 farm acres have been preserved since 1995 through the purchase (or sometimes the donation) of easements under the County preservation program. About \$250,000 is available under the program for fiscal year 2002, with 20 farms on the waiting list. Penn Township has used the program more than other study area communities, preserving three farms. The agricultural preservation program is much better funded in Cumberland County, at close to \$1.4 million for fiscal year 2002. About 8,500 acres have been preserved, with relatively few of those in the study area.

Conservation subdivision, also known as “cluster developments,” are able to preserve open space or other desirable features by clustering homes on smaller average lots, while maintaining the overall base density of a development. This principle is incorporated in the Cluster Option in the Wheatfield Zoning Ordinance. Wheatfield mandates that at least 50% of the area be maintained with a vegetative cover. In general, it is recommended that open space areas not be less than 40%. Many communities in Pennsylvania offer a moderate density bonus for clusters, since the preservation of open space is seen as quite desirable.

Village Center Zoning

Village center zoning, in which residential units are permitted at a higher density, and with the provision of commercial services intended for the local population, should be considered by communities in the study area. They are suitable for communities with public sewer, due to the need to accommodate higher densities. Four communities – two each in Cumberland and Perry Counties – currently offer Village Center zones. Village centers, with higher densities, and in which residents can access retail services within walking distance, have the ability to

reduce trips made by automobile. Studies indicate that walkable, mixed use communities have the potential to reduce the number of vehicular trips by up to 5%. They also create desirable nodes of development. Village centers can be distinct places in the midst of conventional suburban development.

Revitalization of the older boroughs is also a desirable planning strategy, for its potential to concentrate growth and reduce trips. The boroughs could be shown as designated growth areas in a regional comprehensive plan.

Regional Growth Management Plan

Land development that occurs within the study area in the future should be consistent with the Regional Growth Management Plan (RGMP) of the Tri-County Regional Planning Commission (TCRPC). This planning effort, which is scheduled for completion in September 2002, is primarily intended to coordinate development in the Tri-County region through the year 2020 with the Harrisburg Area Transportation Plan (HATS). The plan encourages development in areas with existing infrastructure, which reinforces the recommendation made above for concentrating development within the boroughs where feasible, as well as within urbanized areas of the townships. Further, by increasing awareness of the connection between land use and transportation, the RGMP will create public support for the different growth management initiatives found within this chapter.

D. Transportation

An access management ordinance and traffic impact study ordinance both offer ways to manage traffic growth in the study area municipalities. Neither ordinance is intended to reduce the potential for the number of trips that could be generated in the future, and the access management ordinance, in particular, will have little effect for the most rural parts of the study area. However, these two ordinances can help municipalities to manage and prepare for the traffic that is generated.

Access Management

Access management is a comprehensive approach to improve traffic operations by managing the number, location, and width of driveways. An access management ordinance can accomplish this by reducing the frequency and proximity of driveways along arterial roadways, and by ensuring that the driveways are separated by a safe distance. The ordinance also encourages internally linked parking lots and driveways, as these will permit both motorists and pedestrians to pass between adjacent developments without re-entering the arterial roadway. Existing nonconforming driveways would be “grandfathered,” and the landowners would not be required to meet the ordinance standards unless they change the use and intensity of their property.

Access management provisions would be applied through the establishment of an “access management overlay district.” This overlay district would be placed over appropriate arterial roadways: roadways that have started to be developed, or have promise in the future to be developed and thus see a significant increase in the number of driveways. One example of a roadway in the study area that would have benefited from improved access management is US Routes 11/15, particularly south of its interchange with I-81.

Extensive research has demonstrated that access management – through standards controlling the number, location, and width of driveways – can reduce the number of crashes on roadways, and improve traffic flow. A 1999 Transportation Research Board study concluded that adding one driveway to an undivided highway in a rural area would increase the annual accident rate by .07. The same study determined that the number of crashes is disproportionately higher at driveways than other intersections.

The ability of townships to regulate access onto state roadways is well-grounded. It is derived primarily from the municipality’s police power, which gives a local government the right to protect and promote public health, safety and welfare. Access management techniques are employed in other Pennsylvania municipalities.

The township's role in reviewing access management is recognized within Pennsylvania state law and court decisions. The *Pennsylvania Code*, Title 67, authorizes PENNDOT's control of access to state roadways. Section 441.2(b) states: "Issuance of a permit under these regulations does not relieve the permittee from any additional responsibility to secure other Federal, State or local approvals or permits as may be required by law. Section 441.6(2) states, "All work authorized by the permit shall be subject to the following: (i) All applicable laws, rules and regulations, including but not limited to the following:..(F) Ordinances enacted by local municipalities which contain more stringent minimum safety requirements than this chapter."

In *Ice v. Cross Roads Borough* (Atlantic Reporter, 2d, Vol. 694, p. 401), the Pennsylvania Commonwealth Court stated that "if a municipality has ordinances, as in the case here where the Borough's subdivision ordinance allowed for the condition limiting access to only subdivision roads, then a landowner seeking access to a state highway must be given permission for this access by both governmental entities."

Currently, the only municipality in the study area with access management provisions is Silver Spring Township, in its subdivision and land development ordinance. This ordinance contains principles which are fundamental to any access management program, although it would benefit from greater specificity. The Silver Spring Township Agricultural Zoning Ordinance is located in the Technical Appendix.

A model access management ordinance is located in the Technical Appendix. It contains language which could be used to supplement the Silver Spring ordinance, and which could be adopted (and revised, if needed) by the other municipalities which lack such provisions. It has several important provisions. It requires developers to use an alternative to the arterial roadway for their access when feasible. It contains driveway spacing standards, and thus establishes a threshold that developers must address in the planning process. These standards can be modified depending upon the development status of the community. For municipalities that have experienced little development upon its arterial roadways, spacing

standards with greater distances between driveways can be considered. Two alternative standards are presented in the ordinance for the consideration of the municipality.

It should be emphasized, however, that no landowner will ultimately be denied access to a roadway. Although not ultimately required, the ordinance requires developers to at least address the feasibility of the use of joint driveways, cross access drives and linked parking lots. The ordinance provides an incentive for developers to reduce access points, by offering to reduce the required number of parking spaces by 15 percent when access points of adjacent developments are combined. It also contains provisions encouraging coordination between the township and PENNDOT for access permits on state roadways. By having both parties involved in the application process, neither party will be presented with an approved permit that contains unwelcome surprises.

Traffic Impact Study Ordinance

A traffic impact study ordinance enables a township to identify the impact of a proposed land development or subdivision on township roadways, and to identify transportation improvements that can address potential problems. The ordinance is intended to be compatible with the traffic impact study process as detailed in the PENNDOT *Highway Occupancy Permit Handbook*. PENNDOT has the ability to require traffic impact studies to be performed for developments on state roadways.

The significant advantage of a municipal ordinance is that it allows the municipality to review the impacts of development located on local roadways as well as on state roadways. Further, by formalizing the municipality's role in reviewing the traffic impact of developments, the municipality will have a greater understanding of changing traffic conditions on their roadways. It will also give the municipality a greater role in negotiating with developers to provide improvements to address anticipated traffic problems.

The ordinance also allows the municipality to retain a traffic engineer to review the traffic impact study at the applicant's expense. This helps the municipality to perform an adequate review of the study.

The traffic impact study ordinance is familiar in much of the study area; nine of the 17 study area municipalities currently incorporate traffic impact study provisions into their ordinances. These ordinances vary widely in their language and in the size and type of developments that would be affected. In certain cases, the provisions are quite general, and developers would be provided excess leeway in determining how to document traffic impacts. Other ordinances are very extensive and need very little modification. Centre Township, for example, has very detailed requirements on conducting traffic impact studies in its SALDO. The Centre Township Ordinance is located in the Technical Appendix.

One action is recommended for the consideration of all townships. Currently, all townships use the size of the development, typically expressed in dwelling units for residential developments or square feet for nonresidential developments, to establish the threshold for determining which developers are required to file traffic impact statements. The trouble with this approach is that the number of trips per square foot generated by commercial uses varies so widely. For example, in the PM peak hour, the number of trips generated by 1000 square feet of a supermarket would be almost eight times the number of trips generated by an office building. It is thus recommended that ordinances use the number of trips generated in the peak hour as the basis for screening developments.

A model ordinance is located in the Technical Appendix for consideration of the study area municipalities. It suggests the use of 50 peak hour trips as the threshold for conducting traffic impact studies. Municipalities may choose to be more stringent if desired. It is noted that some municipalities require traffic impact studies to be prepared for residential developments with 10 units. A development of this size would generate only 10 trips in the peak hour, and the time spent investigating the traffic impact may not be worth it.

Bicycle and Pedestrian Facilities

Through the accommodation of bicyclists, and through providing pedestrian facilities such as sidewalks, trail and other pedestrian linkages between different developments, the number of vehicular trips in the study area can be reduced. The improvement of shoulders along narrow

roadways would also benefit pedestrians and bicyclists. Although the reduction in vehicular trips will be slight – particularly in more rural areas – the residents of these communities will benefit from having greater choice in their transportation modes. The request for better pedestrian and bicycle facilities, especially along state roadways, was made as part of the public involvement process for the study. US Routes 11/15 in Perdix is an example of a roadway in the study area that should be planned for pedestrian facilities.

E. Conclusion

Numerous strategies for growth management have been identified in this chapter. Although municipalities can individually carry out many of the strategies listed, the same intermunicipal coordination that was critical to the workings of the Cumberland Perry task force is recommended for the implementation of these strategies. At a minimum step, the municipal representatives should continue to meet and discuss the effects of the planning strategies that will be implemented. This coordination could be guided by the Tri-County Regional Planning Commission and the West Shore Council of Governments. These same entities could supervise a re-evaluation of land use and traffic conditions every five years in the future.

Intermunicipal coordination could be most effectively implemented through intermunicipal planning. As recently provided for in the Pennsylvania Municipalities Planning Code (Article XI), municipalities may enter into “intergovernmental cooperative agreements.” Municipalities can coordinate in preparing a regional comprehensive plan, which, in turn, can serve as the basis for other intermunicipal activities, such as zoning ordinances and transfer of development rights programs. Cooperative implementation agreements also include a process for review and approval of developments of regional significance (although the host municipality ultimately exercises subdivision and land development powers).

A cooperative, intermunicipal planning process is thus recommended to supplement the transportation strategies outlined elsewhere in this study.

CHAPTER VIII

IMPLEMENTATION PLAN

As part of the Cumberland and Perry Counties Safety and Congestion Management System study, it is appropriate to develop an implementation plan for the \$39 million program of improvements for the corridor. An implementation plan consists of two parts – how and when the improvement packages associated with the plan are to be constructed and who is to pay for the projects. At this point, neither component is finalized. Accordingly, this chapter represents the initial attempt at developing an implementation plan. As with any major undertaking, the implementation plan will evolve over time because the roles of private/public partnerships and funding capabilities are continuously changing. Therefore, it is imperative that the Cumberland and Perry Counties Joint Task Force on Transportation and Planning remain a functioning group to act as the main advocate for the implementation plan. Funding of the implementation plan will require continued participation from the task force and a concerted effort to obtain financing for the projects.

A. Improvement Packages

In developing the implementation plan, the project team met with the Planning and Programming Unit at PENNDOT District 8-0. It was determined that individual projects should be grouped together based on improvement type and geographical location into “improvement packages”. The improvement packages are more likely to be implemented than the various individual improvement concepts. For specific locations with multiple improvement options, the project that most effectively solves the problem was placed in the improvement package. The projects that have been placed into the improvement packages are shown in Tables VIII-1 through VIII-4. The projects that have been placed into the improvement packages are shaded in gray on the Improvement Concepts – Cost Estimates summary table, which is shown in the Technical Appendix.

The improvement packages for the study area have been grouped into four categories, depending on the type of improvement that it is proposed. The four categories are as follows:

1. Capacity and Safety Improvement Packages in the Study Area
2. New Roadways in the Study Area
3. Betterment Projects in the Study Area
4. Related Projects Outside the Study Area

The majority of the improvement packages are categorized as a “Capacity and Safety Improvement”. Most of the improvement packages contain specific proposed projects that mitigate an explicit transportation problem, such as a severe safety problem or recurring traffic congestion.

There are three improvement packages that have been grouped into the “New Roadways” category. Given the terrain of the area, these bypass roadways are extremely expensive to construct, and they generally do not solve the regional congestion and safety problems of the study area (for the expense incurred – greater than \$260 million). For the projected cost of a new roadway over the mountainous terrain, the new bypass should be an effective solution. The new bypasses are not an effective solution because the projected 20-year traffic volumes do not put the most heavily traveled existing roadways over capacity. It is a fact that there are limited financial resources; a different strategy in investment will make better use of the funds in order to solve the safety and congestion problems that exist and are projected to occur in the study area. The new roadway alternatives would not solve many of the sight distance related safety problems that currently exist on the study area roadway corridors.

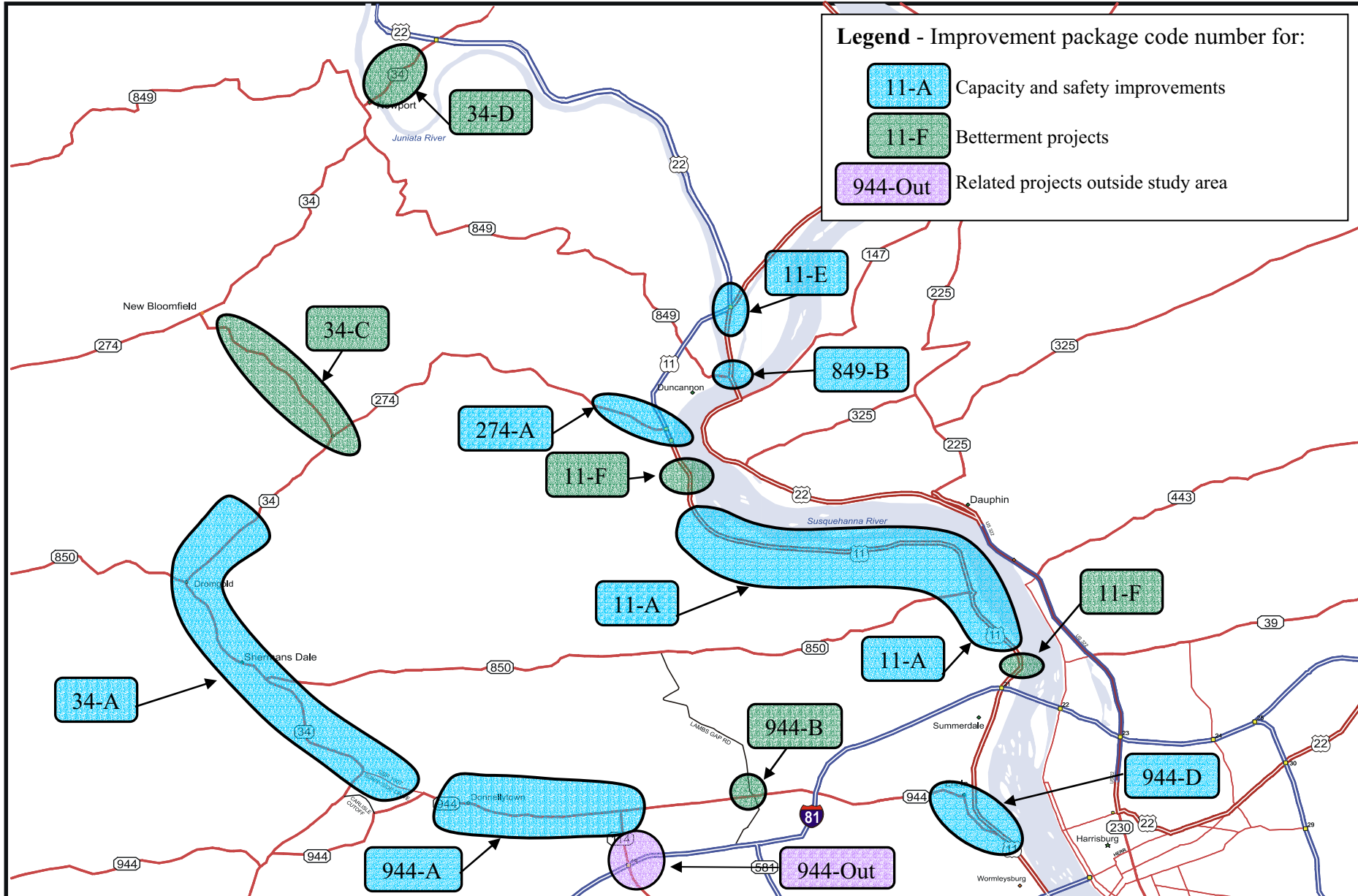
The betterment projects in the study area are generally lower cost, spot safety improvements that can be implemented via regular PENNDOT betterment programs.

The related projects outside the study area include projects that are located outside the study area borders. These projects should be completed as part of the implementation plan to ensure that the finished package results in a complete and coherent transportation system in the design year.

Tables VIII-1, VIII-2, VIII-3, and VIII-4 show the improvement packages grouped into the four separate categories mentioned above. The tables show which improvement concepts have been placed into particular improvement packages. The cost estimates and brief descriptions of the specific improvements are also summarized for each of the improvement concepts within each of the improvement packages. Those improvement packages that were not selected to be placed on the implementation plan are not shown on these tables, with one exception; Table VIII-2 summarizes the new roadway alternatives, none of which were selected to be placed on the implementation plan. A comprehensive table showing all improvement packages that were and were not placed on the implementation plan is shown in the Technical Appendix.

The general locations of the improvement packages that have been included in the implementation plan (as summarized in Tables VIII-1 through VIII-4) are shown in Figure VIII-1 on the following page.

General Locations of Proposed Improvements on Implementation Plan – Overall Map
Safety and Congestion Management System Study
CUMBERLAND AND PERRY COUNTIES, PENNSYLVANIA



**Table VIII-1
CAPACITY AND SAFETY IMPROVEMENT PACKAGES IN THE STUDY AREA
(Sorted by Preliminary Ranking)**

Improvement Package	Location Number	Location	Affected Corridors	Affected Municipalities	Type of Improvement	Specific Improvement	Potential Funding Sources	Total Approximate Costs	Approximate Costs - Design	Approximate Costs - Right-of-Way	Approximate Costs - Construction	Preliminary Ranking	Placed on Implementation Plan
34-A	34-03	PA Route 34 and Sunnyside Drive (SR 1007) / Mountain Road intersection	PA 34	Carroll, Rye, Middlesex	Congestion & Safety	Redesign intersection - Option A - Intersection realignment/reconstruct - possible traffic signal	Federal, State, Local	\$2,500,000	\$375,000	\$125,000	\$2,000,000	1	X
34-A	34-16	PA Route 34 - Between Shermans Dale Bridge and Richwine Road	PA 34	Carroll	Safety	Install two-way center left-turn lane	Federal, State	\$2,780,000	\$417,000	\$139,000	\$2,224,000	1	X
34-A	34-05	PA Route 34 and Fox Hollow Road intersection	PA 34	Carroll	Safety	Install northbound left-turn lane	Federal, State	\$185,000	\$28,000	\$0	\$157,000	1	X
34-A	34-04	PA Route 34 and PA Route 850 intersection (Shermans Dale)	PA 34, PA 850	Carroll	Safety	Relocate / reconstruct shopping center driveways - install traffic signal	Federal, State, Local	\$700,000	\$105,000	\$35,000	\$560,000	1	X
34-A	34-02	PA Route 34 and Windy Hill Road (SR 2001) intersection	PA 34, PA 850	Carroll	Congestion & Safety	Relocate Windy Hill Road to the southeast - tie in with Souder Road at new intersection	Federal, State	\$2,500,000	\$375,000	\$125,000	\$2,000,000	1	X
34-A	34-12	PA Route 34 and Rambo Hill Road intersection	PA 34	Carroll	Safety	Install northbound left-turn lane	Federal, State	\$185,000	\$28,000	\$9,000	\$148,000	1	X
Improvement Package 34-A Total:								\$8,850,000	\$1,328,000	\$433,000	\$7,089,000	1	X
944-A	944-01	PA Route 944 - Between	PA 944	Middlesex, Silver	Congestion	Addition of a two-way center	Federal,	\$14,000,000	\$2,100,000	\$700,000	\$11,200,000	2	X
944-A	944-04	PA Route 944 and PA Route 114 intersection	PA 944	Silver Spring	Congestion	Construct second NB left-turn lane	Federal, State	\$500,000	\$75,000	\$25,000	\$400,000	2	X
Improvement Package 944-A Total:								\$14,500,000	\$2,175,000	\$725,000	\$11,600,000	2	X

**Table VIII-1
CAPACITY AND SAFETY IMPROVEMENT PACKAGES IN THE STUDY AREA
(Sorted by Preliminary Ranking)**

Improvement Package	Location Number	Location	Affected Corridors	Affected Municipalities	Type of Improvement	Specific Improvement	Potential Funding Sources	Total Approximate Costs	Approximate Costs - Design	Approximate Costs - Right-of-Way	Approximate Costs - Construction	Preliminary Ranking	Placed on Implementation Plan
11-A	11-02	US Routes 11/15 and	US 11/15	Penn	Congestion &	Install traffic signal	Federal,	\$80,000	\$16,000	\$0	\$64,000	3	X
11-A	11-05	US Routes 11/15 and Sheetz/Rohrer Driveway	US 11/15	Penn	Safety	Install separate NB right-turn lane on US 11/15	Federal, State	\$90,000	\$14,000	\$4,000	\$72,000	3	X
11-A	11-10	US Routes 11/15 in Perdix ²	US 11/15	Penn	Safety	Install street lights	Federal, State	\$135,000	\$20,000	\$7,000	\$108,000	3	X
					Safety	Install emergency flashing signal at the Perdix Firehouse	Federal, State, Local	\$80,000	\$16,000	\$0	\$64,000	3	X
					Safety	Develop pedestrian facilities (sidewalks, crosswalks, warning signs) ² "Main Street" Concept	Local	\$690,000	\$18,000	\$120,000	\$552,000	3	X
					Safety	Widen Shoulders, may involve construction of an access road to be used for parking in Perdix	Federal, State, Local	\$6,200,000	\$930,000	\$310,000	\$4,960,000	3	X
11-A	11-01	US 11/15 - Between Interstate 81 and PA Route 274	US 11/15	East Pennsboro, Marysville, Penn	Congestion	Resign US 11/15 as 'Business US 11/15'. This improvement will likely result from a "Route Relocation Study" ¹	Federal, State	\$350,000	\$100,000	\$0	\$250,000	3	X
					Congestion	Install Share-a-Ride signs	Federal, State	\$22,000	\$20,000	\$0	\$2,000	3	X
					Congestion	Install ITS equipment (VMS) at key locations near I-81 and US 22/322	Federal, State	\$200,000	\$10,000	\$0	\$190,000	3	X
					Congestion	<i>*Construct park-and-ride facilities near US 11/15 interchange with PA Route 274</i>	Federal, State	\$240,000	\$36,000	\$20,000	\$184,000	3	X
11-A	11-03	US Routes 11/15 and PA Route 850 intersection	US 11/15, PA 850	Marysville	Congestion & Safety	Install traffic signal and no left-turn lane sign. May require property acquisition and construction of an eastbound right-turn lane	Federal, State, Local	\$400,000	\$40,000	\$100,000	\$260,000	3	X
11-A	11-07	US Routes 11/15 in	US 11/15	Marysville	Safety	Convert particular streets to	Federal,	\$150,000	\$50,000	\$0	\$100,000	3	X
Improvement Package 11-A (without Perdix Bypass) Total:								\$8,637,000	\$1,270,000	\$561,000	\$6,806,000	3	X

**Table VIII-1
CAPACITY AND SAFETY IMPROVEMENT PACKAGES IN THE STUDY AREA
(Sorted by Preliminary Ranking)**

Improvement Package	Location Number	Location	Affected Corridors	Affected Municipalities	Type of Improvement	Specific Improvement	Potential Funding Sources	Total Approximate Costs	Approximate Costs - Design	Approximate Costs - Right-of-Way	Approximate Costs - Construction	Preliminary Ranking	Placed on Implementation Plan
274-A	274-03	PA Route 274 (between US	PA 274,	Duncannon,	Safety	Restripe Intersection, add	Federal,	\$11,000	\$5,000	\$0	\$6,000	4	X
					Safety	Improve overhead clearance underneath US 11/15 overpass	Federal, State	\$1,100,000	\$165,000	\$0	\$935,000	4	X
					Safety	Widen shoulders to address deficiencies in design	Federal, State, Private	\$2,200,000	\$330,000	\$110,000	\$1,760,000	4	X
					Safety	Install/Replace Guide Rails	Federal, State, Private	\$320,000	\$0	\$0	\$320,000	4	X
Improvement Package 274-A Total:								\$3,631,000	\$500,000	\$110,000	\$3,021,000	4	X
849-B	849-02	PA Route 849 and US	PA 849,	Reed (Dauphin	Safety	Modify concrete island to	Federal,	\$35,000	\$7,000	\$0	\$28,000	5	X
Improvement Package 849-B Total:								\$35,000	\$7,000	\$0	\$28,000	5	X
944-D	944-03	PA Route 944 and US	PA 944,	East Pennsboro	Congestion	Restripe and sign	Federal,	\$10,000	\$5,000	\$0	\$5,000	6	X
944-D	944-05	PA Route 944 and Magaro Road/Carol Lane offset intersection	PA 944	East Pennsboro	Congestion & Safety	Realign the two closely spaced offset intersections to a single, four-leg intersection	Federal, State	\$750,000	\$40,000	\$150,000	\$560,000	6	X
Improvement Package 944-D Total:								\$760,000	\$45,000	\$150,000	\$565,000	6	X
11-E	11-09	US 11/15 & US 22/322	US 11/15,	Watts, Reed	Safety	On EB US 22/322 force	Federal,	\$88,000	\$18,000	\$0	\$70,000	9	X
Improvement Package 11-E Total:								\$88,000	\$18,000	\$0	\$70,000	9	X

Use \$39,000,000 maximum funding as a guideline

*Improvements denoted by an asterisk are improvements that are currently listed within the fourth year of the four-year TIP.

¹The US 11/15 route relocation study will examine relocation of US Routes 11/15 between the PA 581/US 15/US 11 interchange in Camp Hill to the US 22/322 - US 11/15 Interchange near Clarks Ferry

**Table VIII-2
NEW ROADWAYS IN THE STUDY AREA
(Sorted by Preliminary Ranking)**

Improvement Packages Not Placed on Implementation Plan

Improvement Package	Location Number	Location	Affected Corridors	Affected Municipalities	Type of Improvement	Specific Improvement	Potential Funding Sources	Total Approximate Costs	Approximate Costs - Design	Approximate Costs - Right-of-Way	Approximate Costs - Construction	Preliminary Ranking	Placed on Implementation Plan
11-A (Perdix Bypass) (Alternative C)	11-10	US Routes 11/15 in Perdix	US 11/15	Penn	Congestion & Safety	Where widening not possible on existing US 11/15 in Perdix, new sections will be built as a bypass (new roadway)	Federal, State	\$61,000,000	\$9,150,000	\$1,000,000	\$50,850,000	12	
Improvement Package 11-A (with Perdix Bypass) Total:								\$61,000,000	\$9,150,000	\$1,000,000	\$50,850,000	12	
11-H (Alternative B)	11-01	US 11/15 - Between Interstate 81 and PA Route 274	US 11/15	East Pennsboro, Marysville, Penn	Congestion	Construct new roadway - Parallel to US 11/15	Federal, State	\$310,000,000	\$46,500,000	\$5,500,000	\$258,000,000	18	
Improvement Package 11-H Total:								\$310,000,000	\$46,500,000	\$5,500,000	\$258,000,000	18	
34-E (Alternative A)	34-14	Parallel to PA 34 (between Mecks Corner and PA 944 at PA 114)	PA 34, PA 850, PA 944	Wheatfield, Carroll, Rye, Middlesex, Silver Spring	Congestion	Construct new roadway - Parallel to PA 34	Federal, State	\$260,000,000	\$39,000,000	\$3,000,000	\$218,000,000	19	
Improvement Package 34-E Total:								\$260,000,000	\$39,000,000	\$3,000,000	\$218,000,000	19	

Use \$39,000,000 maximum funding as a guideline

**Table VIII-3
BETTERMENT PROJECTS IN THE STUDY AREA
(Sorted by Preliminary Ranking)**

Improvement Package	Location Number	Location	Affected Corridors	Affected Municipalities	Type of Improvement	Specific Improvement	Potential Funding Sources	Total Approximate Costs	Approximate Costs - Design	Approximate Costs - Right-of-Way	Approximate Costs - Construction	Preliminary Ranking	Placed on Implementation Plan
11-F	11-04	US Routes 11/15 (at Kinkora heights - between PA 274 and Cove Road)	US 11/15	Penn	Safety	Provide protection from rock falls	Federal, State	\$250,000	\$35,000	\$5,000	\$210,000	7	X
11-F*	11-12	US Routes 11/15 (at the Cumberland/Perry border)	US 11/15	East Pennsboro, Marysville, Penn	Safety	*Provide protection from rock falls	Federal, State	\$495,000	\$45,000	\$9,000	\$441,000	7	X
Improvement Package 11-F Total:								\$745,000	\$80,000	\$14,000	\$651,000	7	X
944-B	944-08	PA Route 944 and Lambs Gap Road (SR 1011)	PA 944	Hampden	Safety	Sight distance improvements - Flatten crest vertical curve adjacent to intersection	Federal, State	\$580,000	\$36,000	\$80,000	\$464,000	8	X
Improvement Package 944-B Total:								\$580,000	\$36,000	\$80,000	\$464,000	8	X
34-C	34-06	PA Route 34 / SR 2006 / Dellville Road (SR 2002) - S Mecks Corner Int	PA 34, PA 274	Carroll, Wheatfield	Safety	Restripe Intersection	Federal, State	\$12,000	\$5,000	\$0	\$7,000	10	X
34-C	34-08	PA 34 and Barnett Road intersection	PA 34, PA 274	Centre, New Bloomfield	Safety	Sight distance improvements - Realign horizontal and vertical curves	Federal, State	\$400,000	\$60,000	\$20,000	\$320,000	10	X
34-C	274-01	PA Route 274 and SR 2006 (PA Route 274 connector) - Eastern intersection of Mecks Corner	PA 274	Carroll, Wheatfield	Safety	Flatten crest vertical curve and lessen skew angle of intersection to improve sight distance	Federal, State	\$500,000	\$75,000	\$25,000	\$400,000	10	X
Improvement Package 34-C Total:								\$912,000	\$140,000	\$45,000	\$727,000	10	X
34-D	34-09	PA 34 and Shortcut Road (SR 1017) intersection	PA 34	Howe	Safety	Sight distance improvements - Cut back embankment - install retaining wall	Federal, State	\$57,000	\$9,000	\$2,000	\$46,000	11	X
34-D	34-10	PA 34 and Juniata Parkway (SR 1015)	PA 34	Howe	Safety	Sight distance improvements - Modifications to bridge	Federal, State	\$180,000	\$27,000	\$0	\$153,000	11	X
Improvement Package 34-D Total:								\$237,000	\$36,000	\$2,000	\$199,000	11	X

Use \$39,000,000 maximum funding as a guideline

*Improvements denoted by an asterisk are improvements that PENNDOT is currently examining or are currently on the TIP.

**Table VIII-4
RELATED PROJECTS OUTSIDE STUDY AREA
(Sorted by Preliminary Ranking)**

Improvement Package	Location Number	Location	Affected Corridors	Affected Municipalities	Type of Improvement	Specific Improvement	Potential Funding Sources	Total Approximate Costs	Approximate Costs - Design	Approximate Costs - Right-of-Way	Approximate Costs - Construction	Preliminary Ranking	Placed on Implementation Plan
11-A	11-01	US 11/15 - Between Interstate 81 and PA Route 274	US 11/15	East Pennsboro, Marysville, Penn	Congestion	Resign US 11/15 as 'Business US 11/15'. This improvement will likely result from a "Route Relocation Study" ¹	Federal, State	\$350,000	\$100,000	\$0	\$250,000	3	X
944-OUT	N/A	PA Route 114 and I-81 NB Ramps and SB Ramps Intersections	PA 944, I-81	Silver Spring	Congestion & Safety	Increased traffic flow from PA 944 and Perry County may cause congestion. Examine adequacy of capacity, queuing storage, and traffic flow progression at these signalized intersections.	N/A	N/A	N/A	N/A	N/A	N/A	
		PA Route 114 between I-81 and PA Route 944	PA 944, I-81	Silver Spring	Congestion & Safety	Increased traffic flow from PA 944 and Perry County may cause congestion. Examine adequacy of the capacity of this two-lane section of PA 114.	N/A	N/A	N/A	N/A	N/A	N/A	

Use \$39,000,000 maximum funding as a guideline

¹The US 11/15 route relocation study will examine relocation of US Routes 11/15 between the PA 581/US 15/US 11 interchange in Camp Hill to the US 22/322 - US 11/15 Interchange near Clarks Ferry
It will also examine the potential financial impact of a route re-designation to business that exist along the US Routes 11/15 corridor and it will examine the prohibition of through trucks from US 11/15

B. Estimated Improvement Cost

Preliminary cost estimates were conducted for each proposed improvement concept and each improvement package. The estimates examined the length of the roadway and a proposed typical section to develop a total cost for each improvement. The total cost for each improvement concept was calculated taking into consideration the design costs and the right-of-way costs. The design costs were assumed to be a percentage of total construction costs. Right-of-way costs were determined based on the estimate of the amount of actual land needed. The calculations and assumptions used to arrive at the total cost estimates for each improvement project are shown on the table titled “Improvement Concepts – Cost Estimates”, which is located in the Technical Appendix. The cost estimates for each improvement package are shown on Table VIII-5. The total cost of the implementation program is estimated to be nearly \$39 million.

**Table VIII-5
SUMMARY OF COST ESTIMATES FOR IMPROVEMENT PACKAGES
IN THE IMPLEMENTATION PLAN**

Improvement Package	Category	Approximate Cost			
		Total	Design	Right-of-Way	Construction
34-A	C & S	\$8,850,000	\$1,328,000	\$433,000	\$7,089,000
944-A	C & S	\$14,500,000	\$2,175,000	\$725,000	\$11,600,000
11-A	C & S	\$8,637,000	\$1,270,000	\$561,000	\$6,806,000
274-A	C & S	\$3,631,000	\$500,000	\$110,000	\$3,021,000
849-B	C & S	\$35,000	\$7,000	\$0	\$28,000
944-D	C & S	\$760,000	\$45,000	\$150,000	\$565,000
11-F	Bet	\$745,000	\$80,000	\$14,000	\$651,000
944-B	Bet	\$580,000	\$36,000	\$80,000	\$464,000
11-E	C & S	\$88,000	\$18,000	\$0	\$70,000
34-C	Bet	\$912,000	\$140,000	\$45,000	\$727,000
34-D	Bet	\$237,000	\$36,000	\$2,000	\$199,000

C & S = Capacity and Safety
Bet = Betterment

Regarding the assumptions used in developing the cost estimates, it should be noted that the estimates are planning level estimates. More detailed cost estimates will have to await the development of more detailed engineering designs. Further, it should also be recognized that individual improvement proposals might have to be modified somewhat as engineering proceeds. It is also possible that alternate schemes may be developed in the course of engineering, further

refining the cost estimates. The estimated costs are reflective of 2002 construction costs, and the calculations and the assumptions used in the cost estimates are shown in the Technical Appendix.

C. Improvement Packages Included in the Implementation Plan

Because projects cannot successfully be implemented without adequate funding, a rough maximum funding limit of \$39 million was assumed for all implemented projects in the study area. The tables (VIII-1 through VIII-4) shown on the previous pages show the improvement packages that will be placed on the implementation plan. Table VIII-6, which is shown below, shows the aggregate cost for all of the improvement packages based upon the preliminary ranking.

**Table VIII-6
SUMMARY OF COST ESTIMATES FOR THE IMPLEMENTATION PLAN**

Improvement Package Preliminary Rank Number	Estimate of Total Cost
Improvement Package Ranked as #1	\$8,850,000
Improvement Packages Ranked 1-2	\$23,350,000
Improvement Packages Ranked 1-3	\$31,987,000
Improvement Packages Ranked 1-4	\$35,618,000
Improvement Packages Ranked 1-5	\$35,653,000
Improvement Packages Ranked 1-6	\$36,413,000
Improvement Packages Ranked 1-7	\$37,158,000
Improvement Packages Ranked 1-8	\$37,738,000
Improvement Packages Ranked 1-9	\$37,826,000
Improvement Packages Ranked 1-10	\$38,738,000
Improvement Packages Ranked 1-11	\$38,975,000
Improvement Packages Ranked 1-12	\$99,975,000
Improvement Packages Ranked 1-13	\$110,975,000
Improvement Packages Ranked 1-14	\$131,855,000
Improvement Packages Ranked 1-15	\$164,155,000
Improvement Packages Ranked 1-16	\$167,905,000
Improvement Packages Ranked 1-17	\$169,025,000
Improvement Packages Ranked 1-18*	\$418,025,000
Improvement Packages Ranked 1-17 and 19	\$429,025,000

Items in **boldface** are being placed on the implementation plan.
 *Improvement Package Ranking 18 involves the construction of a new bypass parallel to US 11/15. With this new roadway, a bypass around Perdix will not be necessary.
 Use \$39,000,000 maximum funding guideline

A natural cutoff exists after the 11th ranked project; after this point, the addition of extra projects becomes increasingly expensive. The lower-ranked improvement packages are generally those that contain projects that have benefits that do not justify the costs (greater than \$260 million). The new roadways (bypasses) were not included on the implementation plan because the new highways only solve the congestion problems on roadways to which they are parallel. Most safety problems would still exist, even with the construction of the new roadways. For the projected cost of a new roadway over the mountainous terrain, the new bypass should be an effective solution. As previously stated, the new bypasses are not an effective solution because the projected 20-year traffic volumes do not put the most heavily traveled existing roadways over capacity, and it is a fact that there are limited financial resources; a different strategy in investment will make better use of the funds in order to solve the safety and congestion problems that exist and are projected to occur in the study area. The new roadway alternatives would not solve many of the sight distance related safety problems that currently exist on the study area roadway corridors. The other similarly expensive, low-benefit improvement packages are ranked low and have not been included in the implementation plan.

The general locations of the improvement packages that have been included in the implementation plan are shown in Figure VIII-1 on page VIII-4, which accompanies Tables VIII-1 through VIII-4 on the previous pages.

D. Sequencing of the Improvement Packages within the Implementation Plan

The preliminary rankings should be used as a guide when determining the sequencing of the implementation of the improvement packages. Improvement package 944-A should be implemented immediately after the number one ranked improvement package (34-A). This sequencing is necessary to ensure that the additional capacity that is added to the roadways to help shuttle high volumes of traffic up and over Sterretts Gap (with the implementation of improvement package 34-A) does not allow motorists to encounter a bottleneck at an unimproved, single-lane PA Route 944. It is important to consider the order of implementation when performing the programming of the improvement packages. The remainder of the improvement packages should be implemented using the preliminary rankings as a guide.

Improvement package 944-OUT, which is located outside the study area, should be considered concurrently with improvement package 944-A. The intersection of PA Route 114 and the I-81 ramps, which is located outside the borders of the study area, currently experiences capacity problems, and the problems are expected to worsen in the future. The additional capacity that is added along PA Route 34 (in Perry County) and PA Route 944 (between PA Route 114 and Sunnyside Drive) should not experience a bottleneck at the PA Route 114 / I-81 ramps intersection. Additionally, a bottleneck should not occur along the existing two-lane section of PA Route 114 between I-81 and PA Route 944; this section of PA Route 114 should also be placed in improvement package 944-OUT (and should be examined concurrently with improvement package 944-A). Likewise, the re-signing of US Routes 11/15 between US Routes 22/322 and I-81 as Business 11/15, as it is proposed, will likely need to be a part of a more large-scale route relocation study. The route relocation study would also need to include a business impact survey that will determine the financial repercussions of re-signing US Routes 11/15. The route relocation study limits would use the PA Route 581 - US Routes 11/15 interchange in Camp Hill as its southern end and the US Routes 22/322 – US Routes 11/15 interchange in Clarks Ferry as its northern limit.

The first six improvement packages that should be implemented are as follows (shown in sequential order):

1. 34-A
2. 944-A
3. 11-A
4. 274-A
5. 849-B
6. 944-D

E. Implementation Plan Responsibility and Funding (Strategies for Implementation)

With the development of a comprehensive improvement program, the closely related question of phasing and funding can be addressed. Key questions to be addressed are:

- € What level of funding can be expected from the state and federal government?
- € How and to what level can (or will) the local government fund some local share of the improvement package?
- € What role will the private sector play?

Clearly, the pace of the implementation plan will be dictated by the availability of funding. Further, it is also clear that many of these questions will not be fully answered within the time frame of this study. Therefore, as a first step, the Task Force should remain “convened” and active in seeking the answers to these key questions. It is possible that the Task Force may need to be expanded to include members of the development community or other groups or agencies. As before, the goal of the Task Force must always be the improvement of the transportation picture within the goals of the community.

The second step is the assignment of funding responsibilities for the various projects. Normally, for state highways, the major source of funds has traditionally been PENNDOT and the federal government. However, there is strong competition for the limited amount of funds available and PENNDOT is searching for ways to “stretch” their funds to address their needs.

It is anticipated that the funding responsibility of the local municipalities for most of the improvement packages will be minimal because all of the improvement packages involve improvements to state-maintained roadways. However, a number of traffic signals are recommended for installation in certain municipalities. Traditionally, municipalities (or developers) are responsible for the funding of the installation of traffic signals. However, if a PENNDOT project is planned for a roadway, and if a traffic signal is required or asked for by the municipality during design, then PENNDOT will fund the construction of the signal. The improvement packages included in this implementation plan can be used as a means of obtaining

PENNDOT funding for the construction of traffic signals thereby saving money for financially-strapped municipalities. Even if PENNDOT pays for the construction of the signal, the municipalities will still be responsible for funding of regular maintenance, which costs approximately \$200 to \$750 per year per signal (depending on the age of the equipment).

Portions of improvement package 11-A, which includes the “Main Street” concept on US Routes 11/15 in Perdix and Marysville, will likely not receive all of its funding through the traditional 80% federal / 20% state funding formula. Because of the nature of the proposed improvements, especially the “Main Street” concept, improvement package 11-A will likely be eligible for additional grants such as “Main Street” grants, Pennsylvania Department of Economic and Community Development (DECD) grants, the Susquehanna Greenway Trail funding, and other similar grants and funding. Additionally, funding for this improvement package will be part of the MPO (Metropolitan Planning Organization) process, and as such, a management agency will be needed to take the lead in order to implement the grants and to determine where each dollar is spent. The “Main Street” concept for US Routes 11/15 is explained in detail in Chapter VI and Chapter IX; the public response to this concept (from the October 30, 2002 public meeting) is also summarized in Chapter IX.

For this study, the opportunity to join forces with the private sector to obtain funding exists for the improvement package recommended for the eastern end of PA Route 274. The Perry County Business Campus One, which is located adjacent to PA Route 274 in Penn Township, is slated for development by private developers in the immediate future. Because this land will likely be developed as light industrial and office space, there will be definite traffic impacts to PA Route 274 between the business campus and US Routes 11/15. Given this situation, it is recommended that a “partnership” between the public and the private sectors be explored. Such a partnership would be more effective in securing federal and state funding for the improvement packages.

Public sector funding of highway projects is typically accomplished through the Twelve-Year Transportation Program that is managed cooperatively by the Tri-County Regional Planning Commission and the Pennsylvania Department of Transportation. The Twelve-Year Transportation Program is a fiscally constrained listing of transportation projects that are

expected to utilize federal and/or state transportation funds during the twelve-year period. The Twelve-Year Program is divided into three, four-year periods. After the three county planning commissions (Cumberland, Dauphin, and Perry) and the Tri-County Regional Planning Commission (TCRPC), in a joint effort with local municipal governments, review and make recommendations for project priorities to be considered in the program, the program is reviewed and then approved by the Harrisburg Area Transportation Study (HATS). Finally, the program becomes effective once it is adopted by the State Transportation Commission (STC) and then lastly by the Federal Highway Administration (FHWA). This process occurs every two years and represents the process by which the region decides to spend transportation dollars.

It is recommended that each improvement package be placed on the Twelve-Year Program as an individual line item so it can be tracked. However, to meet the requirements of the National Environmental Policy Act (NEPA) and the Clean Water Act (Section 404) at the federal level and the procedures of the Pennsylvania Department of Transportation established pursuant to State Law, certain improvement packages must obtain specific levels of environmental clearance. This process requires additional engineering and alternative analyses and environmental studies. These studies must also be listed on the Twelve-Year Program. It is in this part of the project development process that all alternates are evaluated and preliminary engineering occurs. The next step is the preparation of construction drawings and acquisition of the required right-of-way.

Strategies for Implementation

The outline below summarizes the strategies for implementation of the recommended improvement packages:

1. Continue to hold periodic meetings and maintain the Cumberland and Perry Counties Joint Task Force on Transportation and Planning (CPTF) – this will sustain credibility as a working regional group
 - a. Monitor land development in the study area and the growth in traffic volumes in order to maintain validity of the recommended improvements – this can be accomplished by using the results of the optimistic scenario (in Chapter VII of this document) as a guide

- b. Continued communication between members of the CPTF to identify other needs as they arise
2. Presentation of the recommended improvements to the HATS Technical Committee in January or February 2003
 - a. Continued CPTF presence at HATS meetings
3. Placement of improvement packages into local/regional transportation plans
 - a. Regional Transportation Plan (update is currently underway) – December 2003 completion
 - b. Congestion Management System Plan (update currently underway) – December 2002 completion
 - c. County Comprehensive Plans – updates currently underway
 - d. Transportation Improvement Program (TIP) – next update begins May 2003
 - e. Presentation to State Transportation Commission (STC) – possibly Fall 2003
4. Funding – other than the region’s base allocation (which is the most competitive)
 - a. Earmarked funds – work with area legislators to get funds assigned to the recommended improvement packages
 - b. Overmatch – Provide ‘local’ funds (municipal, state or federal sources) for the local match in excess of the minimum 20% matching funds typically required for projects
5. Federal (base allocation) funds
 - a. Submit application to HATS (as a regional group – CPTF) – sample applications are located in the Appendix of this document
 - b. Municipalities should add letters of support to application
 - c. Municipalities must balance priorities for their more local projects and support of the CPTF recommended improvement packages
6. State Betterment Funds
 - a. Follow PENNDOT procedures

It should be noted that the recommended improvement packages should have the full support of the CPTF in order for HATS to give the projects a higher priority in their ranking system. The recommended improvement packages from this study will be competing with other transportation improvement projects in the Harrisburg region, which includes all of Cumberland, Dauphin, and Perry Counties, Fairview Township in York County, and Palmyra Borough and North Londonderry Township in Lebanon County. The HATS Technical Committee takes input, evaluates the project proposals, and passes on their recommended priority list to the HATS Coordinating Committee. The HATS coordinating committee makes the final decisions on which projects get selected and the final rankings of the HATS priority list. The higher priority projects, as determined by HATS, will compete with other transportation improvement projects from the Harrisburg region in order to be placed on the Transportation Improvement Program (TIP).

A sample project suggestion form (application) that is submitted to HATS has been completed for each improvement package that has been placed on the implementation plan; the sample form is located in the Appendix at the end of this document. Additionally, the project ranking criteria that is used by the HATS Technical Committee is also included in the Appendix at the end of this document.

F. Coordination

Certain areas that have been identified in this study as locations where improvement projects are needed are currently being examined or are planned to be examined by PENNDOT. These areas include the Duncannon Subway, the Shermans Dale Bridge (near Windy Hill Road on PA Route 34), the park-and-ride lot at the PA Route 274 interchange with US Routes 11/15, and US Routes 22/322 in Clarks Ferry. It is important that the local municipalities that are affected by these projects and any future projects are contacted and coordinated with early on in the project development / design process. The PENNDOT project manager for any transportation improvement project should be responsible for contacting the local municipalities early in the project development and design process. This will ensure that all parties are made aware of any improvement projects, and it will prevent any conflicting plans for improvements before it is too late in the design process.

It is also important for the study area municipalities to coordinate with TCRPC in issues related to transportation planning and automobile trip-reducing initiatives. Although transit may not be a cost-effective option for the rural, low-density nature of Perry County, many vehicles can be taken off of the congested study area roadways during the peak periods through ride-sharing or carpooling incentives. With the availability of new park and ride lots in the study area, and the proposed construction of a new park and ride lot near the PA Route 274 and US Routes 11/15 interchange near Duncannon, carpooling and ride-sharing should become easier and should be a priority for the study area municipalities. The local municipalities should coordinate with each other and with TCRPC regarding the TCRPC carpool initiative.

Other non-traditional methods of reducing congestion also need to be implemented along with any physical transportation improvements in order to lengthen the service life of the implemented improvements. The non-traditional methods, which are also listed in the Congestion Management System Screening Process in Chapter VI, include but are not limited to the following strategies: congestion pricing, flex time, telecommuting, increased ride-sharing and transit use, and intelligent transportation systems. These congestion management strategies, if implemented properly, will lengthen the service life of any physical capacity improvement and could even delay the need for additional physical capacity improvements (i.e., more lanes).

G. Next Steps

In addition to maintaining the Task Force and executing the strategies for implementation, the next steps listed below should be conducted to help reach successful completion of the program.

1. Program and fund improvement packages.
2. Continue to examine environmental constraints within the recommended improvement areas. Mitigate all historical and environmental impacts and secure the necessary clearances.
3. Finalize roadway alignments and prepare construction plans.
4. Secure necessary right-of-way to complete each improvement. Develop zoning initiatives to keep prospective important locations from being commercialized or detrimental to the proposed implementation plan.

5. Construct the improvement packages within the necessary time frame to have all improvements completed by the year 2020.

H. Potential Long-Term Projects (Beyond Year 2020)

The design year for this study is the year 2020. The recommended improvements that are included within this report will be to handle the year 2020 projected peak hour traffic, and the improvements will actually be able to handle optimistic projections of peak hour traffic in the year 2020, as shown in Chapter VII of this document. Because of this, the proposed bypass roadways for PA Route 34 and US Routes 11/15 were not recommended in this report.

Beyond year 2020, it is possible that the traffic volumes on the main thoroughfares between Cumberland and Perry Counties will grow to such levels that they are greater than the optimistic projections. The possibility of bypass roadways in the future should never be totally discounted. When the long-term future (beyond year 2020) traffic volumes cause recurring traffic congestion on the improved study area roadways, and all non-traditional congestion management techniques have been exhausted, the only alternatives available to mitigate the long-term future transportation problems could be to widen the existing roadways or to build new bypass roadways. Such long-term transportation projects could include, but are not limited to:

- € PA Route 34 / PA Route 944 bypass roadway or further widening on PA Route 34 and PA Route 944
- € US Routes 11/15 bypass roadway or widening on US Routes 11/15
- € A new roadway that connects PA Route 34 near Sterretts Gap to a new interchange with I-81. The new interchange with I-81 would be located between US Route 11 (Exit 52) and PA Route 114 (Exit 57).

CHAPTER IX

PUBLIC INVOLVEMENT SUMMARY

A public involvement program was undertaken as part of the Cumberland and Perry Counties Safety and Congestion Management Systems Study. The progress and the results of the study were made available to the public by holding three rounds of public meetings within the study area. Another public meeting was held at the Perdix Firehouse to gauge the level of public support for the proposed improvements on US Routes 11/15. At the public meetings, the general public was able to examine the progress/results of the study and they were permitted to ask questions of members of the project team. Travel survey questionnaires were distributed at the first two rounds of public meetings in order to gain a better understanding of the travel habits of the general population. Questionnaires were also distributed at the Perry County Fair and were printed in the Sunday edition of the *Carlisle Sentinel*. This chapter summarizes the public involvement summary, the public meetings, and the results from the questionnaires that were distributed. The detailed public involvement information and the detailed summaries of the results from the surveys can be found in the Technical Appendix.

A. Public Meeting #1

The first public meeting was held at the Silver Spring Fire Company Social Hall in Silver Spring Township, Cumberland County. The public meeting was held on Thursday, July 19, 2001, from 5:00 PM to 9:00 PM.

The meeting was the first in a series of three public meetings to be held during the duration of the study. The purpose of the meeting was to present the results of the traffic, planning, and environmental studies in the existing conditions phase of the project and to solicit public input. The meeting was held for all interested residents in and around the study area. In addition to members of the project team, several members of the Task Force were in attendance as well.

There were seventy-six residents in attendance at the public meeting, and they primarily resided in Silver Spring, Middlesex, and Hampden Townships.

The meeting was separated into two formats. The first format provided an opportunity for attendees to review displays showing the results of the study to date, and ask questions of the staff. During the second format, Michael Hanna (ORA), Susan Blickstein (ORA), and Thomas Graupensperger (GTS) presented the traffic, planning, and environmental findings from the existing conditions phase of the project. They also fielded questions raised by the public in attendance.

As the attendees entered the building, they were signed in, received comment sheets and literature on the project, and were then directed to view the project plans. There were 23 boards presented for public display, which included existing traffic volume, level of service, and crash summary boards for each of the corridors, demographic informational boards, existing land use boards, and environmental boards which summarized environmental features such as wetlands, historic resources, agricultural lands, etc.

The presentation commenced with Michael Hanna (Orth-Rodgers & Associates) giving an introduction to the project, and presenting the traffic analysis to date. Susan Blickstein (Orth-Rodgers & Associates) then presented the demographic analysis findings. Thomas Graupensperger (GTS) continued with the existing environmental findings, and Michael Hanna closed the presentation by opening the floor to questions. The subjects covered by the presentation were the existing traffic volumes, existing levels of service, crash analysis, existing demographic / employment analysis, and the environmental overview.

Following the presentation, questions were fielded regarding the project as a whole. Several persons did not have actual questions, but made comments following the presentation. Some comments came as a result of the questionnaire that was distributed. A detailed summary of the question and answer period, and a summary of the public comments are shown in the Technical Appendix.

A questionnaire was distributed to the attendees of the Tuesday, July 19, 2001 public meeting. Existing travel patterns, safety problem areas, and traffic conditions were among the items that

were surveyed in the questionnaire. The transportation survey was also distributed at the Perry County Fair in August 2001, and it was printed in the Sunday, August 19, 2001 edition of *The Carlisle Sentinel* and the Tuesday August 21, 2001 edition of the *Sentinel's* free weekly newspaper distribution in Perry County. One hundred and sixteen total questionnaires were returned. A list of the questions and a brief summary of the highlights of the answers from the questionnaire is shown below. Detailed summaries of the questionnaire results are summarized in the Technical Appendix.

Q1: Where do you live?

Forty-two percent of the 116 people surveyed live in the Perry County portion of the study area, 41 percent live in the Cumberland County portion of the study area, and 16 percent of the respondents live outside the study area, but within Cumberland or Perry Counties.

Q2: Where do you work?

Thirty-five percent of the respondents work outside the study area, 22 percent work in Cumberland County, and 5 percent work in Perry County.

Q3: Which of the eight study corridors do you take to get to/from work?
(PA Route 34, PA Route 944, US Routes 11/15, PA Route 274, PA Route 850, PA Route 849, Interstate 81, and US Routes 22/322)

The majority of respondents take multiple corridors to/from work. Overall, 36 percent of the respondents take PA Route 944, while 27 percent use US Routes 11/15. Twenty-eight percent of the respondents use I-81 while 25 percent use PA Route 34.

Q4: What time do you generally leave home for work?

Twenty-eight percent of the respondents leave home for work between 7:00 AM and 8:00 AM, while 23 percent leave between 6:00 AM and 7:00 AM.

Q5: What time do you generally leave work for home?

Twenty-eight percent of individuals leave work for home between 4:00 PM and 5:00 PM, and 21 percent leave between 5:00 p.m. and 6:00 p.m.

Q6: How long does your commute typically take?

Twenty-seven percent of respondents have a one-way commute between 15 minutes and 30 minutes, and 22 percent of persons have a one-way commute between 30 minutes and

45 minutes.

Q7: At what intersection or corridor locations do you experience the greatest traffic delays?

Thirty-five percent of the respondents named US Routes 11/15 as one of the corridors where the greatest delays are experienced and 22 percent of the respondents named Sterretts Gap (Sunnyside Drive and PA Route 34) as another intersection where great delays are experienced. Sixteen percent of the respondents named PA Route 944 as a corridor where the significant delays are experienced.

Q8: In your opinion, what improvements would you like to see implemented to resolve the traffic congestion problems that were indicated in question #7 above?

Nineteen percent of respondents would like to see the installation of new traffic signals. Locations where persons would like to see the new signals installed include the following: the intersection of PA Route 34 and Sunnyside Drive at Sterretts Gap; PA Route 850 and PA Route 34 (Shermans Dale); and PA Route 944 and US Routes 11/15. Also, 20 percent of respondents would like to see the widening of certain intersections/corridors. Locations where person would like to see widening occur include the following: the intersection of PA Route 34 and Sunnyside Drive at Sterretts Gap; PA Route 944 between PA Route 114 and Sunnyside Drive, as well as the intersection of PA Route 850 and PA Route 34 (Shermans Dale).

Q9: At what intersection or corridor locations do you have safety concerns?

Twenty-eight percent of the respondents named PA Route 944 as one of the corridors with the greatest safety concerns. Specific intersections highlighted along PA Route 944 included PA Route 944 and Deer Lane; PA 944 and Lambs Gap Road; and PA Route 944 and Rich Valley Road.

Another 28 percent of the respondents named US Routes 11/15 as one of the corridors with the greatest safety concerns. Specific intersections and segments highlighted along US Routes 11/15 included US Routes 11/15 and PA Route 850; US Routes 11/15 and PA Route 944; US Routes 11/15 between Marysville and Duncannon (Perdix); and US Routes 11/15 and Firehouse Road.

Q10: In your opinion, what are the identifiable problems associated with A. – E. from question #9 above?

Several problems were identified at the intersections and corridor locations mentioned in question 9. Bumper-to-bumper traffic, poor sight distance, stop-and-go traffic, and excessive speeding were the most identifiable problems.

Q11: If it was just a little less convenient (In terms of time and effort) to make your commute by driving to a park and ride lot and then taking mass transit to work, would you?

Twenty-eight percent of respondents would drive to the park and ride and take mass transit to work, and 50 percent indicated that they would not take mass transit.

B. Public Meeting #2

The second round of public meetings were held on Tuesday, January 15 and Thursday, January 17, 2002, from 5:00 PM to 9:00 PM. The Tuesday meeting was held at the Duncannon EMS Social Hall in Penn Township, Perry County, and the Thursday meeting was held at the Middlesex Elementary School in Middlesex Township, Cumberland County.

These public meetings were the second set in a series of three public meetings. The purpose of these meetings was to present the preliminary proposed improvements to each of the study area roadway corridors and to solicit public input. The meeting was held for all interested residents in and around the study area. In addition to project team personnel, several members of the Task Force were in attendance as well.

One hundred residents were in attendance (both days combined) and they primarily resided in Silver Spring, Middlesex, Hampden, and Penn Townships. The evening was separated into two formats. The first format provided an opportunity for attendees to review displays showing the results of the study to date, and to ask questions of staff members stationed at the display boards. During the second format, a presentation was given summarizing the areas of concern and the preliminary improvement concepts. The completed existing conditions phase of the project was also summarized in the presentation. Following the presentation, Michael Hanna fielded questions raised by the public in attendance.

As the attendees entered the building, they were signed in, received comment sheets, literature on the project, and a questionnaire to complete, and were then directed to view the project plans. The boards on display included the same environmental and existing traffic conditions boards that were on display during the first public meeting in July 2001 as well as new display boards that summarized the preliminary proposed improvements.

Michael Hanna of Orth-Rodgers & Associates opened the presentation with a brief overview of the entire project, presented the areas of concern and the preliminary proposed improvement concepts, and closed the presentation by opening the floor to questions. The subjects covered by the presentation included the purpose of the public meeting, the overall project process, the areas of concern, and the recommended improvements for each corridor.

Following the presentations, questions were fielded regarding the presentation and the overall study. Several people did not have actual questions, but made comments following the presentation. Some comments came as a result of the questionnaire that was distributed. A detailed summary of the question and answer period, and a summary of the public comments are shown in the Technical Appendix.

A questionnaire was distributed to the attendees of both public meetings (the Tuesday, January 15, 2002 meeting and the Thursday January 19, 2002 meeting). Existing travel patterns and potential improvements to the study area roadways were among the items that were surveyed in the questionnaire. Forty-six questionnaires were returned from both meetings. A list of the questions and a brief summary of the highlights of the answers from the questionnaire is shown below. Detailed summaries of the questionnaire results are summarized in the Technical Appendix.

Q1: Where do you live?

Fifty-two percent of the people surveyed live in Perry County, while 39 percent of respondents indicated that they live in Cumberland County.

Q2: Where do you work?

Fifty-five percent of respondents indicated that they work outside the study area. Twenty-seven percent work in Cumberland County, and 11 percent indicated that they work in Perry County.

Q3: Which of the eight study corridors do you take to get to/from work?
(PA Route 34, PA Route 944, US Routes 11/15, PA Route 274, PA Route 850, PA Route 849, Interstate 81, and US Routes 22/322)

Most people indicated that they take multiple corridors to and from work. Fifty-eight

percent of respondents indicated that Interstate 81 was traveled to and from work, and 56 percent of those surveyed indicated that PA Route 944 was traveled. Another 37 percent indicated that US Routes 11/15 was traveled, and approximately 35 percent indicated that PA Route 34 was traveled.

Q4: Using the improvement concepts listed below (A-H), please rank what you think would be the most effective improvement(s) for each roadway corridor for each time frame listed. (In order from your favorite to your least favorite).

- | | | |
|--------------------|-------------------------------|--------------------------|
| A. Repave Road | D. Widen Intersection | G. Retime/Improve Signal |
| B. Widen Road | E. Build New Parallel Roadway | H. Other: |
| C. Widen Shoulders | F. Install Traffic Signal | |

Note: Each percentage is based upon the response for a particular corridor rather than total number of surveys returned. Multiple responses were allowed for the following questions.

Q4a. Short-term Improvements

PA Route 34 (17 respondents)

Approximately 65 percent of respondents would like to see PA Route 34 roadway widened, and about 65 percent of respondents feel that installing a new traffic signal would be an effective improvement. Fort-seven percent of the total surveyed would like the shoulders of PA Route 34 widened.

PA Route 944 (21 respondents)

Approximately 62 percent of those responding would like the PA Route 944 roadway widened, and 57 percent would like the shoulder widened. Thirty-eight percent believe that there are specific intersections that need to be widened.

US Routes 11/15 (15 respondents)

60 percent would like US Routes 11/15 widened, and 60 percent would also like the shoulders widened. Another 60 percent would like to see a new parallel roadway built.

Q4b. Mid-term Improvements

PA Route 34 (9 respondents)

Thirty-three percent of the respondents would like the PA Route 34 roadway widened, while another 33 percent suggest that widening the shoulders would be an effective mid-term improvement and that they would like specific intersections widened.

PA Route 944 (12 respondents)

50 percent of those responding believe that widening the shoulders along PA Route 944 would be an effective mid-term improvement, and about 42 percent of the respondents would like to see the roadway repaved. Another 42 percent believe that widening the roadway and / or widening intersections would be an effective improvement.

US Routes 11/15 (6 respondents)

Almost 67 percent of the persons responding to this question believe that widening US Routes 11/15 would be an effective mid-term improvement, while another 67 percent suggest building a new parallel roadway. Fifty percent suggested installing traffic signals.

Q4c. Long-term Improvements

PA Route 34 (15 respondents)

Sixty percent of the respondents would like to see a new parallel roadway built adjacent to PA Route 34, and about 27 percent believe that widening the roadway and / or the shoulders would be an effective long-term improvement.

PA Route 944 (10 respondents)

Sixty percent of the respondents would like to see the shoulders along PA Route 944 widened. Fifty percent believe that widening specific intersections would be an effective long-term improvement. Forty percent of those surveyed would like the roadways widened.

US Routes 11/15 (10 respondents)

Sixty percent of the persons that responded would like to see a new parallel roadway built as a long-term improvement, and 40 percent believe that the roadway needs to be widened. Twenty percent would like to see the installation of a new traffic signal.

Q5: How did you find out about tonight's meeting?

Sixteen percent of the respondents found out about the meeting through the Harrisburg Patriot News, while 15 percent read about the meeting in the Sentinel Newspaper. Fifteen percent of persons heard about the meeting through neighbors and friends or their local municipality newsletters. Fifty-four percent of individuals did not respond to this question.

C. Public Meeting #3

The third round of public meetings were held on Monday, September 9 and Tuesday, September 10, 2002, from 7:00 PM to 9:00 PM. A meeting with the public officials from the study area will be held immediately before the public meeting (at 5:00 PM) at each location. The Monday meeting was held at the Green Ridge Elementary School Gymnasium in Hampden Township, Cumberland County, and the Tuesday meeting was held at the Shermans Dale Fire Company Social Hall in Carroll Township, Perry County.

The purpose of these meetings was to present the proposed improvement packages for each of the study area roadway corridors and to solicit public input. The meeting was held for all interested residents in and around the study area. In addition to ORA and GTS personnel, several members of the Task Force were in attendance.

There were 40 residents in attendance on the first night of the meetings, and 76 residents present the second evening. Residents primarily resided in Silver Spring, Middlesex, Carroll, and Hampden Townships. Public officials arrived prior to the meeting start and had an opportunity to preview information before it was presented to the public. The evening was separated into two formats. The first format provided an opportunity for attendees to review displays showing the results of the study to date, and ask questions of the staff. During the second format, Jeff Greene, PE, PTOE of Orth-Rodgers & Associates (ORA) presented the improvement packages. Following the presentation, Jeff Greene fielded questions raised by the public in attendance.

A summary of write-in public comments, comments from the question and answer session, and comments from the public officials meeting have been summarized below. The detailed comment forms are located in the Technical Appendix of the revised Final Report.

- € The short-term safety and congestion improvements outlined in this study most definitely need to be implemented as soon as the money becomes available. Thank you for allowing the public to comment on this study.

- € Zoning should be mandatory before any of the improvements begin. It appears that

counties that do not have improvements would undermine suggested improvements. Unregulated development will harm any improvement attempts.

- € PennDOT is currently working on some of the suggestions you have proposed in your improvement packages. The Shermans Dale Bridge is being redesigned and scheduled for reconstruction in 2005. Also, a study of US 22/322 in Clarks Ferry is underway.
- € Interstates 81 and 83 are going to take a long time to build. Can we take some of the suggested short-term improvements, but still consider a bypass for 15-20 years from now?
- € What does the public have to do to get some of the short-term improvements in place now?

PA Route 34

Many residents were concerned about the intersection of PA Route 34 and Sunnyside Drive. The following were some of the comments:

- *Eliminate the stop sign on top of the mountain at the intersection of PA Route 34 and Sunnyside Drive. Instead have a merge lane to accept traffic from Sunnyside Drive onto PA Route 34. Increase the length of the center turn lane on PA Route 34 to Sunnyside Drive to accept more than two or three cars. Add an additional lane (right-turn only) from Pisgah State Road on to PA Route 34 (across from PA Route 850). And, re-connect Mountain Road to PA Route 34 (on the Perry Side).*
- *Along PA Route 34, realigning the Sunnyside Drive/Mountain Road/PA Route 34 intersection and installing a traffic signal would be a better solution than either of the two proposed options. The two proposed options both increase line of sight difficulties for people traveling north on PA Route 34.*

Other comments regarding PA Route 34 included the following:

- € PA Route 34 definitely needs improvement. There are many buses along this corridor controlling the overall traffic flow. PA Route 34 was never designed to have this high volume of traffic. The proposed driveways along PA Route 34 would only add to the problem.
- € A traffic signal is needed at the intersection of PA Route 850 and PA Route 34. People trying to get out on PA Route 850 from driveways on Pisgah State Road wait for very long periods of time to get out onto the roadway. School buses cross that intersection as well, and there is very poor sight distance.
- € Consider a turn lane between Fox Hollow Road and Richwine Road. There are many businesses between this stretch of roadway. It seems as though there would be enough room for a third lane.

- € Add a short left-turn lane on PA Route 34 south of Rambo Hill Road. This side would need to be widened to align with the northbound left turn lane.
- € The PA Route 34 overlay project might take care of the embankment at Old Mill Road and PA Route 34.
- € Was a bypass considered to the west of PA Route 34?
- € Close the driveway at the Shermans Dale Plaza on PA Route 34 or make the driveway an exit to North PA Route 34. Increase the sight distance on Mill Road and PA Route 34. Redesign the grade on Windy Hill at PA Route 34. Install a traffic signal at Sunnyside Drive and PA Route 34.
- € Take off the Faculty Road Embankment Project, 274-A.

PA Route 944

Many residents were opposed to constructing a two-way center-left turn lane on PA Route 944 between Sunnyside Drive and PA Route 114. Most of the residents that were opposed to widening PA Route 944 live along the affected stretch of PA Route 944. The following were some of the comments:

- *Residents living along Wertzville Road (PA 944) do not want to see this type of widening take place. This would take the front yards of people living in Cumberland County and reduce their quality of life. People living in this area do not want to live along a highway or deal with a lot of traffic.*
- *Creating a three-lane roadway along PA Route 944 would be dangerous for persons living along this roadway. Cars constantly pass along this roadway and some persons have to walk across the street to pick up their mail or bring farm equipment out along the roadway. A better solution would be to improve the existing two-lane roadway with turn lanes at select locations.*
- *Keep PA Route 944 as two lanes. This would eliminate the need for a lot of right-of-way acquisition. People living along PA Route 944 are very concerned about the affect the impact widening the road would have on their property. Build turn lanes at key intersections and install traffic signals to help control the flow and speed of the traffic. Also, consider widening PA Route 114 from PA Route 944 and I-81.*

Other comments regarding PA Route 944 included the following:

- € A PA Route 114 relief route would be worth the money. Adding traffic signals only contributes to the problems. It seems as though the suggested improvement favor persons living in Perry County, and do nothing for residents living in Cumberland County.

- € School buses from Cumberland Valley High School and the Cumberland/Perry Vo-Tech School travel these roads a minimum of twice daily. There are also additional buses transporting students from after school sports and programs. There are safety issues that a three-lane roadway would create.
- € This seems like a lot of money to spend when installing traffic lights seems like a good solution.
- € The PA Route 114 corridor is a concern from PA Route 944 to Interstate 81 (I-81). Traffic coming down PA Route 944 from PA Route 34 turns onto PA Route 114 to access I-81. These drivers take I-81 north to 581. This traffic will only increase. PA Route 114 has several problems. The right-turn lane at the top of the ramp from southbound I-81 merges with 114. A YIELD sign governs this. It needs to become a STOP sign. At PA Route 944, PA Route 114 changes from one to two lanes and cars “jockey for position”. Drivers have a hard time positioning themselves to move into the flow of traffic. Crossing PA Route 114, drivers have poor sight distance.
- € Constructing a passing lane from Sunnyside Drive to PA Route 114 will make this road unsafe for left-turning vehicles. People already pass on the double lines at the Deer Lane intersection when traffic is stopped waiting for oncoming traffic to clear the intersection. Instead of the passing lane, construct left-turn lanes only at key locations such as: Deer Lane, Rich Valley Road, Glendale and Linda. Narrow back down to two lanes in other areas to reduce the risk of a third lane being misused. Reduce the speed limit to 35 mph throughout the entire road. Place private driveway signs at necessary locations.
- € Why install a separate northbound left-turn lane at PA Route 114 throughout the entire section? Vehicles would have nowhere to go but to merge into one lane creating backups. Instead, omit the second left-turn lane and restripe PA Route 114 approaching the intersection allowing motorists to legally make a left on PA Route 944 and move into the left lane from Old Will Mill onward.
- € Head-on collisions are a problem at the intersection of PA Route 114 and Sunnyside Drive.
- € A limited access highway is needed over the mountain from PA Route 114 to PA Route 34 or PA Route 850.
- € Lower the speed limit on PA Route 944 and enforce it.
- € Are there any sight distance improvements scheduled for Deer Lane? Widening, without grade and sight distance improvements, would not seem to fix the problem.

US Routes 11/15

Many residents were opposed to some of the traffic calming measures proposed along US Routes 11/15 in Perdix. The following were some of the comments:

- *You are looking to calm traffic in this area. Residents want to see the traffic keep moving in this area.*
- *Some individuals do not want to see sidewalks along this stretch of roadway. Although it would be nice to have a place for children to stand waiting on the bus, residents would have the new responsibility of maintaining the sidewalk. And, where would the money for such an effort come from if PennDOT doesn't generally fund these types of projects? There is only so much money coming into this area.*
- *Residents like the idea of providing a separate street for parking behind the homes. They are uninterested however in bicycle lanes and making the area a "village". Creating this would attract more people which is not what the residents favor.*
- *Why not consider rapid transit?*

Other comments regarding US Routes 11/15 included the following:

- € The improvements along US Routes 11/15 appear to be trying to make this road less attractive to traffic. This would create problems when there is an accident on US 22/322 because traffic uses US Routes 11/15 as an alternate (creating a gridlock situation). US Routes 11/15 should be widened, and the parking as well as the bike path placed behind the homes for safety reasons. Consider building a bridge overpass in key locations. Persons living and working on the west shore would never favor taking US Route 22/322 because it forces them out of their way causing them to spend more time and money to travel further. Even though you are moving the official US Routes 11/15 designation over to US Route 22/322, most people who travel these roads on a daily basis will continue in their current travel patterns. Also, increase the speed limit along US Routes 11/15 to at least 45 mph and make the roadway four lanes. Move the walkways, bikes, and parking off the highway and widen the highway up to the turn lanes.
- € Traffic lights along US Routes 11/15 will create a parking lot. Instead, consider creating an acceleration lane in Marysville below the PA Route 850 entrance or a third lane below PA Route 850 on US Route 11/15 to the I-81 entrance.
- € A traffic light at the Susquenita School will create a parking lot. Traffic ties up to Perdix now without a traffic light. Also, consider using School House Lane for all school bus traffic northbound and southbound.
- € The speed limit on School House Lane is higher than the speed limit on US Routes 11/15. This does not seem to make a lot of sense. The speed limit on US Routes 11/15 needs to be increased to at least 45 mph.

US Route 22/322

- € US Route 22/322 needs to be completely rebuilt.

- € When accidents occur on US Route 22/322, traffic shifts to US Route 11/15. The proposal calls for widening the roadway. People who live and work on the west shore will not want to take the suggested route.
- € Persons should be able to turn left on US Route 322 at PA Route 849.

PA Route 274

- € Pavement marking needs to be better along PA Route 274.
- € At the intersection of Locust Street and PA Route 274 there is a blind corner, and it is difficult to see traffic coming downhill on PA Route 274.

As mentioned previously, any additional comments resulting from these meetings have been included in the Technical Appendix of the Revised Final Report.

D. Perdix / Marysville October 30, 2002 Public Meeting

The recommended improvements for US Routes 11/15 in Perdix (Penn Township) and Marysville will likely have a significant effect on the quality of life and on the business owners that live and work along the US Routes 11/15 corridor. The proposed improvements are described at the end of this section of the report.

A public meeting was held at the Perdix Firehouse from 7:00 PM to 9:00 PM on Wednesday, October 30, 2002. The purpose of the public meeting was to gauge public support of the proposed improvements and to record the public comments. Jeff Greene, PE, PTOE of Orth-Rodgers & Associates gave a presentation, which was followed by a question and answer session with the public. Members of the Task Force in attendance were representatives of Penn Township and the Borough of Marysville. Approximately 90 people were in attendance at the public meeting. The summary of public comments is shown below:

- € Approximately one-third of the people in attendance were owners of businesses located along US Routes 11/15 (between Marysville and Duncannon)
- € Many of the business owners expressed concern that the re-designation of US Routes 11/15 will cause much of the through traffic to be diverted from the existing roadway. They mentioned that out-of-state (through) traffic is the majority of their client base. The business owners feared that their businesses (and their livelihood) could not survive without the through traffic on US Routes 11/15.

- € Some of the business owners spoke against the installation of traffic lights because they also would cause through traffic to divert to other roadways.
- € Some residents understood the need for a traffic signal at the US Routes 11/15 intersections with PA Route 850 and the Sheetz Driveway, but some questioned the need for a traffic signal at the Susquenita High School Complex.
- € Both the Police Chief of Marysville and one of the volunteer firefighters from the Perdix Firehouse commented separately that they believe that a traffic signal at the intersection of PA Route 850 and US Routes 11/15 will cause more crashes and safety problems than currently exist at those locations. Another alternative for this location is to place a “No Left Turn” sign that will prohibit eastbound PA Route 850 traffic from accessing northbound US Routes 11/15.
- € Many of the attendees agreed that the proposed emergency signal at the Perdix Firehouse was a good idea and should be installed.
- € One attendee stated that large trucks traveling through the study area should be banned from traveling on US Routes 11/15 and only local delivery trucks should be permitted.
- € A couple of attendees voiced their opinions by stating that people who want to patronize the businesses along US Routes 11/15 will continue to do so regardless of the “route designation” of the roadway.
- € Some people questioned the need and the justification for the cost of a bicycle lane and sidewalks, and said that the money should be spent on widening the existing roadway to four lanes instead.
- € Other attendees stated that US 11/15 has become less congested during the peak travel periods because of the existence of the US Routes 22/322 expressway on the other side of the river.
- € Several residents of Perdix voiced their concerns that school-age children that live along US Routes 11/15 must walk along the narrow shoulders between the parked vehicles and the moving traffic to reach their school bus stop. They believe that the improvements proposed would benefit their community and make the commute to school much safer for their children.
- € Some business owners said that they were in favor of some of the proposed improvements, but they were against re-designating US Routes 11/15 as “Business” US Routes 11/15 for the fear of losing potential customers. These business owners are in support of a Business Impact Survey that would determine the financial impacts of re-designating US Routes 11/15 as “Business” US Routes 11/15.
- € It was noted that the proposed bicycle path could be linked up with the Susquehanna Greenway Partnership, which is looking to construct a network of trails along the entire

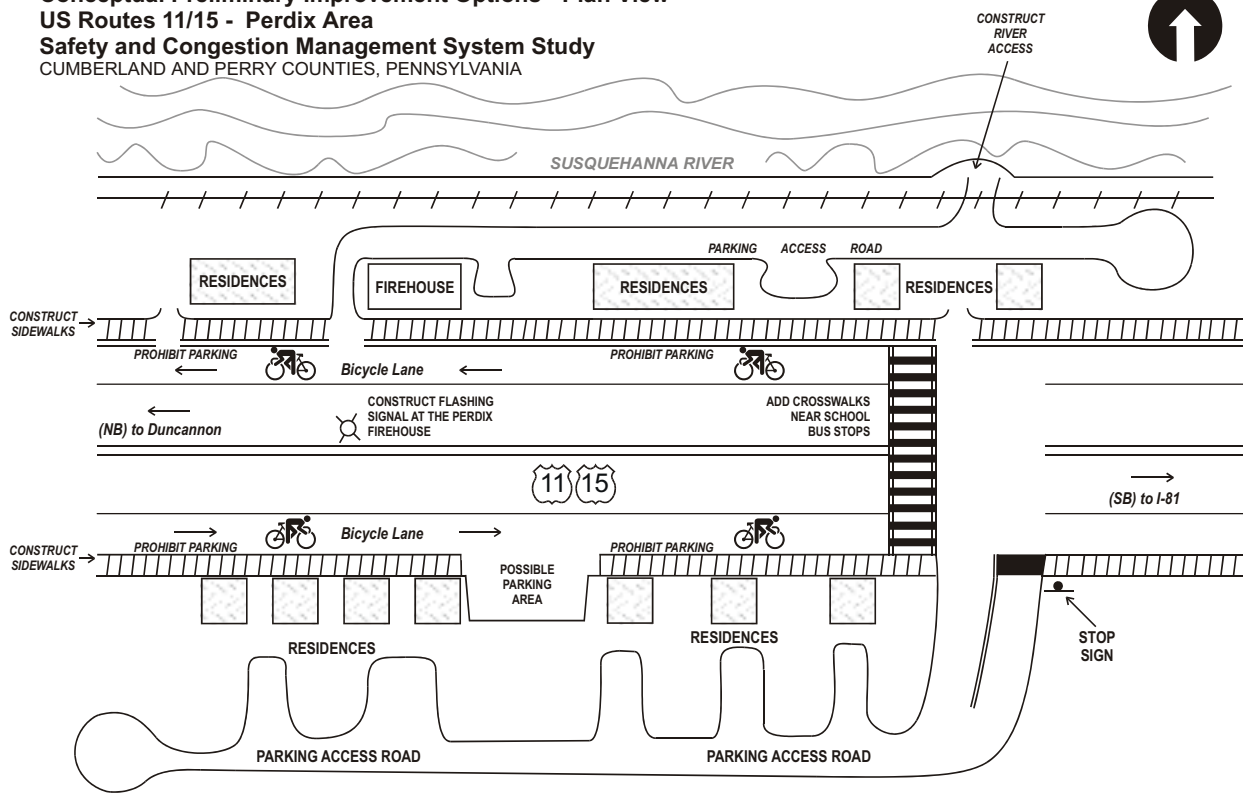
length of the Susquehanna River. There was strong sentiment among the attendees that a bicycle path didn't belong on US Routes 11/15 right-of-way.

- € Some residents were concerned that they would be responsible for maintaining the proposed sidewalks along US Routes 11/15.
- € A few attendees voiced their support of the proposed improvements, and stated that they would like to see their neighborhoods become more of a "community".
- € Other residents stated that there are no traffic problems along US Routes 11/15 and that the road should remain as it is with no improvements.
- € One gentleman said that the business owners and the residents of Perdix and Marysville should get together in smaller groups (of 5 to 10 people) so they can "iron out" their differences and come up with a plan that is beneficial to both segments of the community.
- € A couple of attendees stated that they would like to see the return of regular (hourly) bus service between Harrisburg and the study area communities.
- € It was stated that the balance between business and traffic flow is not mutually exclusive; they can both co-exist very well.
- € The Penn Township Municipal Authority is planning to acquire right-of-way for the implementation of sewers in the Perdix area. To expedite the right-of-way acquisition for any proposed transportation improvements, the eventual construction of off-street parking and/or bicycle/walking paths should be considered in concert with the acquisition of right-of-way for the proposed sewers in Perdix.
- € At the end of the public meeting, it was discovered that there were some people in the audience that were supportive of the proposed improvements that didn't speak out because of the very adamant, vocal opposition. The extent of support for the proposed improvements is not known because the number of people that were in favor of the proposed improvements but did not assert themselves at the public meeting cannot be determined.

Recommendations for Improvements on the US Routes 11/15 Corridor

Detailed, specific improvement recommendations for the "Main Street" concept for the Perdix and Marysville areas will be formulated during the preliminary engineering phase of the project. Conceptual improvements are shown in the figure on the next page; all recommended improvements for the US Routes 11/15 corridor are summarized below the figure on the next page and supercede any specific improvements shown in the figure.

Conceptual Preliminary Improvement Options - Plan View
US Routes 11/15 - Perdix Area
Safety and Congestion Management System Study
CUMBERLAND AND PERRY COUNTIES, PENNSYLVANIA



The recommended improvements for the US Routes 11/15 corridor include:

- € “Main Street” Concept in Perdix and Marysville –
 - € Construct bicycle lanes and/or walking paths in coordination with the Susquehanna Greenway and the right-of-way acquisition for the proposed sewer system in Perdix. Access to the riverfront should also be provided.
 - € Construct pedestrian facilities (e.g., crosswalks and pedestrian warning signs).
 - € Prohibit parking immediately along US Routes 11/15 and construct a parking access road (in coordination with the right-of-way acquisition for the proposed sewer system in Perdix). Recessed (cut-out) parking spaces (away from the edge of the road) should be provided in areas that can accommodate them.
 - € Convert certain side streets that intersect US Routes 11/15 in Marysville to one-way roadways.
 - € Continue the public involvement process for the “Main Street” concept to ensure that all stakeholders in the affected communities have input into the improvements that will be considered in the preliminary engineering phase of the project.
- € Install an emergency flashing signal at the Perdix Firehouse.

- € Install a traffic signal, construct an eastbound right-turn lane, and install a no left-turn sign at the PA Route 850 intersection in Marysville.
- € Install a traffic signal at the Susquenita High School Driveway.
- € Construct a separate northbound right-turn lane at the Sheetz Driveway intersection.
- € Install “Share-a-Ride” signs on US Routes 11/15 north of I-81 and south of PA Route 274. This should be implemented in conjunction with construction of the Park-N-Ride lot near the PA Route 274 interchange with US Routes 11/15.
- € Perform a Route Relocation Study to investigate the re-designation of US Routes 11/15 as “Business US Routes 11/15”, and the prohibition of through truck traffic (US Routes 11/15 between Interstate 81 and PA Route 274 would be for local trucks only). The Route Relocation Study will need to include a Business Impact Survey that would determine the financial impacts of a route re-designation to the owners of the business along US Routes 11/15.

APPENDIX

APPENDIX A –

SAMPLE COMPLETED HATS PROJECT SUGGESTION FORMS

2003 TRANSPORTATION IMPROVEMENT PROGRAM
(not including Transportation Enhancement projects)

PROJECT SUGGESTION INFORMATION FORM
Harrisburg Area Transportation Study (HATS)

**Forms due to
TCRPC by
AUGUST 31, 2001**

Suggestion #: _____
assigned by HATS staff

Please use one form for each project. Each form is two pages long

CONTACT INFORMATION		Date: _____
County: <u>Cumb. Per.</u>	Municipality/ Sponsor: <u>Carroll, Rye, Middlesex</u>	
Contact Person: _____		
Mailing Address: _____		
<small>Street</small>	<small>City</small>	<small>State</small> <small>Zip</small>
Telephone: _____	Fax: _____	Email: _____

GENERAL INFORMATION	
Local Priority: <u>1</u> (Rank all projects from 1 to <u>11</u> .)	Currently in Program? <input type="checkbox"/> (if yes, check box)
Mode (Select as many as apply):	Other: _____ <small>(Please specify - such as rail, air, etc.)</small>
<input checked="" type="checkbox"/> Roadway <input type="checkbox"/> Transit	
<input type="checkbox"/> Bridge <input type="checkbox"/> Bicycle/Pedestrian	
Description (Please describe the project, its location, and attach a 8 1/2" x 11" map and/or photographs.)	
Designated as Improvement Package 34-A in the Cumberland and Perry Counties Safety and CMS Study (Dated November 20, 2002). This improvement package includes: improvements to the intersection at Sterretts Gap (PA 34 / Sunnyside Drive) PA 34 corridor, construction of a two-way center left-turn lane on PA 34 between the Shermans Dale Bridge and Richwine Road, Improvements and traffic signal installation at the Windy Hill Road intersection, construction of a northbound left-turn lane at Rambo Hill Road and at Fox Hollow Road, and the installation of a traffic signal and driveway relocation at the PA 34 / PA 850 intersection.	
Purpose/Need Statement (Please describe the reason why the project is needed and what it is intended to do.)	
Recurring traffic congestion during commuter peak periods on PA Route 34 (between PA 850 and Sunnyside Drive), on Sunnyside Drive, and at the PA 34 intersections with Windy Hill Road, PA 850, Fox Hollow Road, and Sunnyside Drive. Safety concerns at the PA 34 intersections with: Sunnyside Drive, PA 850, Windy Hill Road (Sight Distance) - and at the PA 34 intersections with Rambo Hill Road, Richwine Road, Fox Hollow Road, Shopping Center Driveways (left-turning vehicles and unsafe traffic operations). The problems are projected to worsen in the future. This improvement package is designed to mitigate these problems.	
Other alternatives that were considered to address the need included:	
Truck climbing lane on PA 34 on the uphill approaches to Sterretts Gap. Traffic signals were also considered at various locations along PA Route 34. Different improvement alternatives are still under consideration at Sterretts Gap and Windy Hill Road. A new bypass roadway was also considered.	

PROJECT SPECIFICS	
COST ESTIMATE (Please provide some information even if a formal, detailed estimate has not yet been prepared for the project.)	
Prelim Engineering: \$ <u>453,000</u>	Right-of-Way: \$ <u>433,000</u> Utility: \$ <u>400,000</u>
Final Design: \$ <u>875,000</u>	Construction: \$ <u>6,689,000</u> Total Cost: \$ <u>8,850,000</u>
Local/Municipal match: <u>0</u> % -- Typically, 20% match is required on local bridges or Federal Aid System. <small>Match rates may vary - some bridges may be eligible for an 80-15-5% federal, state, local split; safety, carpool, priority control systems and ITS may be 100% federally funded.</small>	

ROADWAY On Federal Aid System?
*(if yes, check box)*Road Name: PA Route 34 / Sunnyside DriveTraffic Route No.: _____ State Route No.: 0034/1007 Township Route No.: _____Limits - From: Sterretts Gap (Sunnyside Drive - SR 1007) To: Rambo Hill RoadLength 7.1 miles Avg Daily Traffic - ADT 17,550 Truck %: 3 Year Last Improved: _____Improvement Suggestion: Resurface Add lanes Relocate Grade Crossing Reconstruct Widen shoulders New Road _____
(Select as many as apply): Other: *(Please specify)*Municipal Participation: Municipalities will be responsible for maintenance of traffic signals
*(curbs, sidewalks, traffic signals, etc.)***BRIDGE**Bridge Name: _____ BMS No: _____
*(BMS = Bridge Mgmt System)*Feature Crossed: _____ SR Value _____
*(SR = Sufficiency Rating)*Bridge Type: _____ Length: _____ Width: _____ Age: _____
(steel truss, arch, box, etc.) *(Year built)*Vertical Clearance: _____ Weight Limit *(posted)*: _____ Detour _____ mi.
*(if yes, check box + note miles)*Improvement Suggestion: Replace Rehabilitate Remove Dwellings affected by closure?
*(if yes, check box + explain on pg. 1, Purpose/Need Statement)***TRANSIT**Improvement Suggestion: New Service Expanded Service Equipment Facility
Other *(Please specify)*: _____General Purpose *(Select as many as apply):* Basic Mobility Congestion Relief Location Efficiency

Location- From: _____ To: _____

Length: _____ miles Service _____

Ridership Estimate _____ per day Generators: _____

BICYCLE / PEDESTRIANFacility: _____ General Purpose: Transportation Recreation
(check one)

Location - From: _____ To: _____

Length: _____ miles Nearest Route No.: _____ Anticipated No. of Users: _____

Improvement Suggestion *(Select as many as apply):* New Path New Lane Shoulder Improvement Connect to existing network
Other *(Please specify)*: _____**OTHER** *Please provide information below such that proper consideration may be given to the suggested improvement. Attach additional sheets, as necessary.*

Please consult the Revised Final Report for the Cumberland and Perry Counties Safety and Congestion Management System Study (dated November 20, 2002) for more information about the proposed improvements. This document was submitted to TCRPC for the Cumberland and Perry Counties Joint Task Force on Transportation and Planning (CPTF).

2003 TRANSPORTATION IMPROVEMENT PROGRAM
(not including Transportation Enhancement projects)

PROJECT SUGGESTION INFORMATION FORM
Harrisburg Area Transportation Study (HATS)

**Forms due to
TCRPC by
AUGUST 31, 2001**

Suggestion #:
assigned by HATS staff

Please use one form for each project. Each form is two pages long

CONTACT INFORMATION		Date: _____
County: <u>Cumberland</u>	Municipality/ Sponsor: <u>Middlesex, Silver Spring</u>	
Contact Person: _____		
Mailing Address: _____		
<small>Street</small>	<small>City</small>	<small>State</small> <small>Zip</small>
Telephone: _____	Fax: _____	Email: _____

GENERAL INFORMATION	
Local Priority: <u>2</u> (Rank all projects from 1 to <u>11</u> .)	Currently in Program? <input type="checkbox"/> (if yes, check box)
Mode (Select as many as apply):	Other: _____ <small>(Please specify - such as rail, air, etc.)</small>
<input checked="" type="checkbox"/> Roadway <input type="checkbox"/> Transit	
<input type="checkbox"/> Bridge <input type="checkbox"/> Bicycle/Pedestrian	
Description (Please describe the project, its location, and attach a 8 1/2" x 11" map and/or photographs.)	
Designated as Improvement Package 944-A in the Cumberland and Perry Counties Safety and CMS Study (Dated November 20, 2002). This improvement package includes: construction of a center left-turn lane on PA 944 between Sunnyside Drive and the construction of a 2nd northbound left-turn lane at the PA Route 114 intersection.	
Purpose/Need Statement (Please describe the reason why the project is needed and what it is intended to do.)	
Capacity and safety problems exist and are projected to worsen on PA Route 944 (between Sunnyside Drive and PA 114), and at the intersection of PA 944 / PA 114. This improvement package is designed to mitigate these problems.	
Other alternatives that were considered to address the need included:	
Reconstruction of PA 944 as a four-lane or five-lane roadway. A new traffic signal is still a possibility at the intersection PA 944 and Sunnyside Drive. A new bypass roadway was also considered.	

PROJECT SPECIFICS			
COST ESTIMATE (Please provide some information even if a formal, detailed estimate has not yet been prepared for the project.)			
Prelim Engineering: \$ <u>725,000</u>	Right-of-Way: \$ <u>725,000</u>	Utility: \$ <u>600,000</u>	
Final Design: \$ <u>1,450,000</u>	Construction: \$ <u>11,000,000</u>	Total Cost: \$ <u>14,500,000</u>	
Local/Municipal match: <u>0</u> % -- Typically, 20% match is required on local bridges or Federal Aid System.			
<small>Match rates may vary - some bridges may be eligible for an 80-15-5% federal, state, local split; safety, carpool, priority control systems and ITS may be 100% federally funded.</small>			

ROADWAY On Federal Aid System?
*(if yes, check box)*Road Name: PA Route 944Traffic Route No.: _____ State Route No.: 0944 Township Route No.: _____Limits - From: Sunnyside Drive To: PA Route 114Length 4.1 miles Avg Daily Traffic - ADT 13,600 Truck %: 3 Year Last Improved: _____Improvement Suggestion: Resurface Add lanes Relocate Grade Crossing Reconstruct Widen shoulders New Road
(Select as many as apply): Other: *(Please specify)* _____Municipal Participation: Municipalities will be responsible for maintenance of traffic signals
*(curbs, sidewalks, traffic signals, etc.)***BRIDGE**Bridge Name: _____ BMS No: _____
*(BMS = Bridge Mgmt System)*Feature Crossed: _____ SR Value _____
*(SR = Sufficiency Rating)*Bridge Type: _____ Length: _____ Width: _____ Age: _____
(steel truss, arch, box, etc.) *(Year built)*Vertical Clearance: _____ Weight Limit *(posted)*: _____ Detour 0 mi.
*(if yes, check box + note miles)*Improvement Suggestion: Replace Rehabilitate Remove Dwellings affected by closure?
*(if yes, check box + explain on pg. 1, Purpose/Need Statement)***TRANSIT**Improvement Suggestion: New Service Expanded Service Equipment Facility
Other *(Please specify)*: _____General Purpose *(Select as many as apply):* Basic Mobility Congestion Relief Location Efficiency

Location- From: _____ To: _____

Length: 0.00 miles Service _____Ridership Estimate 0 per day Generators: _____**BICYCLE / PEDESTRIAN**Facility: _____ General Purpose: Transportation Recreation
(check one)

Location - From: _____ To: _____

Length: _____ miles Nearest Route No.: _____ Anticipated No. of Users: _____

Improvement Suggestion *(Select as many as apply):* New Path New Lane Shoulder Improvement Connect to existing network
Other *(Please specify)*: _____**OTHER** *Please provide information below such that proper consideration may be given to the suggested improvement. Attach additional sheets, as necessary.*

Please consult the Revised Final Report for the Cumberland and Perry Counties Safety and Congestion Management System Study (dated November 20, 2002) for more information about the proposed improvements. This document was submitted to TCRPC for the Cumberland and Perry Counties Joint Task Force on Transportation and Planning (CPTF).

2003 TRANSPORTATION IMPROVEMENT PROGRAM
(not including Transportation Enhancement projects)

PROJECT SUGGESTION INFORMATION FORM
Harrisburg Area Transportation Study (HATS)

Forms due to
TCRPC by
AUGUST 31, 2001

Suggestion #:
assigned by HATS staff

Please use one form for each project. Each form is two pages long

CONTACT INFORMATION		Date: _____
County: <u>Perry</u>	Municipality/ Sponsor: <u>Penn, Marysville</u>	
Contact Person: _____		
Mailing Address: _____		
<small>Street</small>	<small>City</small>	<small>State</small> <small>Zip</small>
Telephone: _____	Fax: _____	Email: _____

GENERAL INFORMATION	
Local Priority: <u>3</u> (Rank all projects from 1 to <u>11</u> .)	Currently in Program? <input type="checkbox"/> (if yes, check box)
Mode (Select as many as apply):	Other: _____ <small>(Please specify - such as rail, air, etc.)</small>
<input checked="" type="checkbox"/> Roadway <input type="checkbox"/> Transit	
<input type="checkbox"/> Bridge <input checked="" type="checkbox"/> Bicycle/Pedestrian	
Description (Please describe the project, its location, and attach a 8 1/2" x 11" map and/or photographs.)	
Designated as Improvement Package 11-A in the Cumberland and Perry Counties Safety and CMS Study (Dated November 20, 2002). This improvement package includes: installation of a traffic signal at the US 11/15 intersections with Susquenita High School Driveway and PA 850 (and a right-turn lane and a no left-turn sign at PA 850), the installation of an emergency flashing signal at the Perdix Firehouse, construction of NB right-turn lane at Sheetz, pedestrian / bicycle facilities in Perdix and Marysville, parking access road in Marysville, installation of share-a-ride signs and a Park-N-Ride lot, and a route relocation and through truck prohibition study (route re-designation study) for US 11/15 between I-81 and PA 274	
Purpose/Need Statement (Please describe the reason why the project is needed and what it is intended to do.)	
Capacity and safety problems exist and are projected to worsen on US 11/15 (between I-81 and PA 274), and at certain intersections along US 11/15. There is also an unnecessary amount of through truck traffic on US 11/15 - a through traffic bypass (US 22/322) exists on the other side of the Susquehanna River. There are also severe conflicts between pedestrians in Perdix, which have no sidewalks to walk on, and the through traffic on US 11/15. This improvement package is designed to mitigate these problems.	
Other alternatives that were considered to address the need included: Widening of US 11/15 to a three, four, or five-lane roadway. Closing off access from side streets was considered. A new bypass roadway was also considered.	

PROJECT SPECIFICS	
COST ESTIMATE (Please provide some information even if a formal, detailed estimate has not yet been prepared for the project.)	
Prelim Engineering: \$ <u>508,000</u>	Right-of-Way: \$ <u>561,000</u> Utility: \$ <u>306,000</u>
Final Design: \$ <u>762,000</u>	Construction: \$ <u>6,500,000</u> Total Cost: \$ <u>8,637,000</u>
Local/Municipal match: _____% -- Typically, 20% match is required on local bridges or Federal Aid System. <small>Match rates may vary - some bridges may be eligible for an 80-15-5% federal, state, local split; safety, carpool, priority control systems and ITS may be 100% federally funded.</small>	

ROADWAY

On Federal Aid System?
(if yes, check box)

Road Name: US Routes 11/15

Traffic Route No.: _____ State Route No.: 0011 Township Route No.: _____

Limits - From: Cumberland County Border To: Susquenita School Complex

Length 6.0 miles Avg Daily Traffic - ADT 22,000 Truck %: 7 Year Last Improved: _____

Improvement Suggestion: Resurface Add lanes Relocate Grade Crossing Reconstruct Widen shoulders New Road Safety enhancements
(Select as many as apply): Other: *(Please specify)*

Municipal Participation: Municipalities will be responsible for maintenance of traffic signals and the parking access roads.
(curbs, sidewalks, traffic signals, etc.)

BRIDGE

Bridge Name: _____

BMS No: _____
(BMS = Bridge Mgmt System)

Feature Crossed: _____

SR Value _____
(SR = Sufficiency Rating)

Bridge Type: _____ Length: _____ Width: _____ Age: _____
(steel truss, arch, box, etc.) *(Year built)*

Vertical Clearance: _____ Weight Limit *(posted)*: _____

Detour 0 mi.
(if yes, check box + note miles)

Improvement Suggestion: Replace Rehabilitate Remove

Dwellings affected by closure?
(if yes, check box + explain on pg. 1, Purpose/Need Statement)

TRANSIT

Improvement Suggestion: New Service Expanded Service Equipment Facility
Other *(Please specify)*: _____

General Purpose *(Select as many as apply)*: Basic Mobility Congestion Relief Location Efficiency

Location- From: _____ To: _____

Length: 0.00 miles Service _____

Ridership Estimate 0 per day Generators: _____

BICYCLE / PEDESTRIAN

Facility: Bike and Ped Facility - Susquehanna Greenway

General Purpose: Transportation Recreation
(check one)

Location - From: Cumberland / Perry border

To: Susquenita High School

Length: 6.0 miles Nearest Route No.: 11/15

Anticipated No. of Users: _____

Improvement Suggestion *(Select as many as apply)*:

New Path New Lane Shoulder Improvement Connect to existing network

Other *(Please specify)*: Should connect to the proposed Susqu. Greenway

OTHER *Please provide information below such that proper consideration may be given to the suggested improvement. Attach additional sheets, as necessary.*

Please consult the Revised Final Report for the Cumberland and Perry Counties Safety and Congestion Management System Study (dated November 20, 2002) for more information about the proposed improvements. This document was submitted to TCRPC for the Cumberland and Perry Counties Joint Task Force on Transportation and Planning (CPTF). It should be noted that the local match has yet to be determined and that this improvement package should be eligible for "Main Street" grants, Pennsylvania Department of Economic and Community Development (DECD) grants, the Susquehanna Greenway Trail funding, and other similar grants and

2003 TRANSPORTATION IMPROVEMENT PROGRAM
(not including Transportation Enhancement projects)

PROJECT SUGGESTION INFORMATION FORM
Harrisburg Area Transportation Study (HATS)

**Forms due to
TCRPC by
AUGUST 31, 2001**

Suggestion #: _____
assigned by HATS staff

Please use one form for each project. Each form is two pages long

CONTACT INFORMATION		Date: _____
County: <u>Perry</u>	Municipality/ Sponsor: <u>Penn, Duncannon</u>	
Contact Person: _____		
Mailing Address: _____		
<small>Street</small>	<small>City</small>	<small>State</small> <small>Zip</small>
Telephone: _____	Fax: _____	Email: _____

GENERAL INFORMATION	
Local Priority: <u>4</u> (Rank all projects from 1 to <u>11</u> .)	Currently in Program? <input type="checkbox"/> (if yes, check box)
Mode (Select as many as apply):	Other: _____ <small>(Please specify - such as rail, air, etc.)</small>
<input checked="" type="checkbox"/> Roadway <input type="checkbox"/> Transit	
<input type="checkbox"/> Bridge <input type="checkbox"/> Bicycle/Pedestrian	
Description (Please describe the project, its location, and attach a 8 1/2" x 11" map and/or photographs.)	
Designated as Improvement Package 274-A in the Cumberland and Perry Counties Safety and CMS Study (Dated November 20, 2002). This improvement package includes: widening of the shoulders on PA 274 between Delville Road and US 11/15, intersection improvements at the PA 274 intersection with the US 11/15 SB off-ramp and improvement of the overhead clearance at the US 11/15 overpass (over PA 274).	
Purpose/Need Statement (Please describe the reason why the project is needed and what it is intended to do.)	
Motorist confusion exists and is projected to worsen at the US 11/15 SB off-ramp intersection with PA 274. A low vertical clearnace height exists under the US 11/15 overpass. Substandard shoulders exist on PA 274 between Dellville Road and US 11/15. This improvement package is designed to mitigate these problems.	
Other alternatives that were considered to address the need included:	
Modifications to the US 11/15 overpass have been considered, instead, re-grading the roadway underneath will likely be a more cost-effective improvement while still achieving the desired results.	

PROJECT SPECIFICS			
COST ESTIMATE (Please provide some information even if a formal, detailed estimate has not yet been prepared for the project.)			
Prelim Engineering: \$ <u>165,000</u>	Right-of-Way: \$ <u>110,000</u>	Utility: \$ <u>231,000</u>	
Final Design: \$ <u>335,000</u>	Construction: \$ <u>3,021,000</u>	Total Cost: \$ <u>3,631,000</u>	
Local/Municipal match: <u>0</u> % -- Typically, 20% match is required on local bridges or Federal Aid System.			
<small>Match rates may vary - some bridges may be eligible for an 80-15-5% federal, state, local split; safety, carpool, priority control systems and ITS may be 100% federally funded.</small>			

ROADWAY

On Federal Aid System?
(if yes, check box)

Road Name: PA Route 274

Traffic Route No.: _____ State Route No.: 0274 Township Route No.: _____

Limits - From: US Routes 11/15 To: Dellville Road (SR 2002)

Length 1.1 miles Avg Daily Traffic - ADT 9,350 Truck %: 3 Year Last Improved: _____

Improvement Suggestion: Resurface Add lanes Relocate Grade Crossing Reconstruct Widen shoulders New Road
(Select as many as apply): Other: *(Please specify)* _____

Municipal Participation: _____
(curbs, sidewalks, traffic signals, etc.)

BRIDGE

Bridge Name: _____ BMS No: _____
(BMS = Bridge Mgmt System)

Feature Crossed: _____ SR Value _____
(SR = Sufficiency Rating)

Bridge Type: _____ Length: _____ Width: _____ Age: _____
(steel truss, arch, box, etc.) *(Year built)*

Vertical Clearance: _____ Weight Limit *(posted)*: _____ Detour 0 mi.
(if yes, check box + note miles)

Improvement Suggestion: Replace Rehabilitate Remove Dwellings affected by closure?
(if yes, check box + explain on pg. 1, Purpose/Need Statement)

TRANSIT

Improvement Suggestion: New Service Expanded Service Equipment Facility
Other *(Please specify)*: _____

General Purpose *(Select as many as apply):* Basic Mobility Congestion Relief Location Efficiency

Location- From: _____ To: _____

Length: 0.00 miles Service _____

Ridership Estimate 0 per day Generators: _____

BICYCLE / PEDESTRIAN

Facility: _____ General Purpose: Transportation Recreation
(check one)

Location - From: _____ To: _____

Length: _____ miles Nearest Route No.: _____ Anticipated No. of Users: _____

Improvement Suggestion *(Select as many as apply):* New Path New Lane Shoulder Improvement Connect to existing network
Other *(Please specify)*: _____

OTHER *Please provide information below such that proper consideration may be given to the suggested improvement. Attach additional sheets, as necessary.*

Please consult the Revised Final Report for the Cumberland and Perry Counties Safety and Congestion Management System Study (dated November 20, 2002) for more information about the proposed improvements. This document was submitted to TCRPC for the Cumberland and Perry Counties Joint Task Force on Transportation and Planning (CPTF).

2003 TRANSPORTATION IMPROVEMENT PROGRAM
(not including Transportation Enhancement projects)

PROJECT SUGGESTION INFORMATION FORM
Harrisburg Area Transportation Study (HATS)

**Forms due to
TCRPC by
AUGUST 31, 2001**

Suggestion #:
Assigned by HATS staff

Please use one form for each project. Each form is two pages long

CONTACT INFORMATION		Date: _____
County: <u>Dauphin</u>	Municipality/ Sponsor: <u>Reed</u>	
Contact Person: _____		
Mailing Address: _____		
<small>Street</small>	<small>City</small>	<small>State</small> <small>Zip</small>
Telephone: _____	Fax: _____	Email: _____

GENERAL INFORMATION	
Local Priority: <u>5</u> (Rank all projects from 1 to <u>11</u> .)	Currently in Program? <input type="checkbox"/> (if yes, check box)
Mode (Select as many as apply):	Other: _____ <small>(Please specify - such as rail, air, etc.)</small>
<input checked="" type="checkbox"/> Roadway <input type="checkbox"/> Transit	
<input type="checkbox"/> Bridge <input type="checkbox"/> Bicycle/Pedestrian	
Description (Please describe the project, its location, and attach a 8 1/2" x 11" map and/or photographs.)	
Designated as Improvement Package 849-B in the Cumberland and Perry Counties Safety and CMS Study (Dated November 20, 2002). This improvement package includes the modification of the concrete island at the PA 849 and US 22/322 intersection to discourage illegal left-turns from eastbound PA 849 to westbound US 22/322.	
Purpose/Need Statement (Please describe the reason why the project is needed and what it is intended to do.)	
A safety problem is created by the frequent occurrences of vehicles making the illegal left-turn from PA 849 across the eastbound US 22/322 traffic to westbound US 22/322. This improvement package is designed to mitigate these problems.	
Other alternatives that were considered to address the need included:	
Signalizing the intersection to allow left-turns was considered and disqualified as an improvement measure	

PROJECT SPECIFICS	
COST ESTIMATE (Please provide some information even if a formal, detailed estimate has not yet been prepared for the project.)	
Prelim Engineering: \$ <u>0</u>	Right-of-Way: \$ <u>0</u> Utility: \$ <u>0</u>
Final Design: \$ <u>7,000</u>	Construction: \$ <u>28,000</u> Total Cost: \$ <u>35,000</u>
Local/Municipal match: <u>0</u> % -- Typically, 20% match is required on local bridges or Federal Aid System.	
<small>Match rates may vary - some bridges may be eligible for an 80-15-5% federal, state, local split; safety, carpool, priority control systems and ITS may be 100% federally funded.</small>	

ROADWAY On Federal Aid System?
*(if yes, check box)*Road Name: PA Route 849Traffic Route No.: _____ State Route No.: 0849 Township Route No.: _____Limits - From: at its intersection with US 22/322 To: N/ALength 0.1 miles Avg Daily Traffic - ADT 4,850 Truck %: 3 Year Last Improved: _____Improvement Suggestion: Resurface Add lanes Relocate Grade Crossing Reconstruct Widen shoulders New Road
(Select as many as apply): Other: *(Please specify)* _____Municipal Participation: _____
*(curbs, sidewalks, traffic signals, etc.)***BRIDGE**Bridge Name: _____ BMS No: _____
*(BMS = Bridge Mgmt System)*Feature Crossed: _____ SR Value _____
*(SR = Sufficiency Rating)*Bridge Type: _____ Length: _____ Width: _____ Age: _____
(steel truss, arch, box, etc.) *(Year built)*Vertical Clearance: _____ Weight Limit *(posted)*: _____ Detour 0 mi.
*(if yes, check box + note miles)*Improvement Suggestion: Replace Rehabilitate Remove Dwellings affected by closure?
*(if yes, check box + explain on pg. 1, Purpose/Need Statement)***TRANSIT**Improvement Suggestion: New Service Expanded Service Equipment Facility
Other *(Please specify)*: _____General Purpose *(Select as many as apply):* Basic Mobility Congestion Relief Location Efficiency

Location- From: _____ To: _____

Length: 0.00 miles Service _____Ridership Estimate 0 per day Generators: _____**BICYCLE / PEDESTRIAN**Facility: _____ General Purpose: Transportation Recreation
(check one) RecreationLocation - From: _____
To: _____

Length: _____ miles Nearest Route No.: _____ Anticipated No. of Users: _____

Improvement Suggestion *(Select as many as apply):* New Path New Lane Shoulder Improvement Connect to existing network
Other *(Please specify)*: _____**OTHER** *Please provide information below such that proper consideration may be given to the suggested improvement. Attach additional sheets, as necessary.*

Please consult the Revised Final Report for the Cumberland and Perry Counties Safety and Congestion Management System Study (dated November 20, 2002) for more information about the proposed improvements. This document was submitted to TCRPC for the Cumberland and Perry Counties Joint Task Force on Transportation and Planning (CPTF).

2003 TRANSPORTATION IMPROVEMENT PROGRAM
(not including Transportation Enhancement projects)

PROJECT SUGGESTION INFORMATION FORM
Harrisburg Area Transportation Study (HATS)

Forms due to
TCRPC by
AUGUST 31, 2001

Suggestion #:
assigned by HATS staff

Please use one form for each project. Each form is two pages long.

CONTACT INFORMATION		Date: _____
County: <u>Cumberland</u>	Municipality/ Sponsor: <u>East Pennsboro</u>	
Contact Person: _____		
Mailing Address: _____		
<small>Street</small>	<small>City</small>	<small>State</small> <small>Zip</small>
Telephone: _____	Fax: _____	Email: _____

GENERAL INFORMATION	
Local Priority: <u>6</u> (Rank all projects from 1 to <u>11</u> .)	Currently in Program? <input type="checkbox"/> (if yes, check box)
Mode (Select as many as apply):	Other: _____ <small>(Please specify - such as rail, air, etc.)</small>
<input checked="" type="checkbox"/> Roadway <input type="checkbox"/> Transit	
<input type="checkbox"/> Bridge <input type="checkbox"/> Bicycle/Pedestrian	
Description (Please describe the project, its location, and attach a 8 1/2" x 11" map and/or photographs.)	
Designated as Improvement Package 944-D in the Cumberland and Perry Counties Safety and CMS Study (Dated November 20, 2002). This improvement package includes: the reconstruction / realignment of the PA Route 944 offset intersection with Magaro Road and Carol Lane into a single, four-leg intersection, and the re-striping of the US 11/15 intersection of PA 944.	
Purpose/Need Statement (Please describe the reason why the project is needed and what it is intended to do.)	
Capacity and safety problems exist and are projected to worsen at the PA 944 intersection with US 11/15 and at the offset intersection of PA 944 and Magaro Road / Carol Lane. This improvement package is designed to mitigate these problems.	
Other alternatives that were considered to address the need included:	
Signalizing the intersection to allow vehicles to turn from PA 944 onto US 11/15 southbound, and the construction of a southbound acceleration lane were considered and disqualified as improvement measures.	

PROJECT SPECIFICS	
COST ESTIMATE (Please provide some information even if a formal, detailed estimate has not yet been prepared for the project.)	
Prelim Engineering: \$ <u>15,000</u>	Right-of-Way: \$ <u>150,000</u> Utility: \$ <u>55,000</u>
Final Design: \$ <u>30,000</u>	Construction: \$ <u>510,000</u> Total Cost: \$ <u>760,000</u>
Local/Municipal match: <u>0</u> % -- Typically, 20% match is required on local bridges or Federal Aid System.	
<small>Match rates may vary - some bridges may be eligible for an 80-15-5% federal, state, local split; safety, carpool, priority control systems and ITS may be 100% federally funded.</small>	

ROADWAY

On Federal Aid System?
(if yes, check box)

Road Name: PA Route 944

Traffic Route No.: _____ State Route No.: 0944 Township Route No.: _____

Limits - From: Magaro Road / Carol Lane To: US Routes 11/15

Length 2.3 miles Avg Daily Traffic - ADT 11,800 Truck %: 4 Year Last Improved: _____

Improvement Suggestion: Resurface Add lanes Relocate Grade Crossing Reconstruct Widen shoulders New Road Re-stripe intersection
(Select as many as apply): Other: *(Please specify)*

Municipal Participation: Municipalities will be responsible for maintenance of traffic signals should signals be warranted in the future
(curbs, sidewalks, traffic signals, etc.)

BRIDGE

Bridge Name: _____ BMS No: _____
(BMS = Bridge Mgmt System)

Feature Crossed: _____ SR Value _____
(SR = Sufficiency Rating)

Bridge Type: _____ Length: _____ Width: _____ Age: _____
(steel truss, arch, box, etc.) *(Year built)*

Vertical Clearance: _____ Weight Limit *(posted)*: _____ Detour 0 mi.
(if yes, check box + note miles)

Improvement Suggestion: Replace Rehabilitate Remove Dwellings affected by closure?
(if yes, check box + explain on pg. 1, Purpose/Need Statement)

TRANSIT

Improvement Suggestion: New Service Expanded Service Equipment Facility
Other *(Please specify)*: _____

General Purpose *(Select as many as apply)*: Basic Mobility Congestion Relief Location Efficiency

Location- From: _____ To: _____

Length: 0.00 miles Service _____

Ridership Estimate 0 per day Generators: _____

BICYCLE / PEDESTRIAN

Facility: _____ General Purpose: Transportation Recreation
(check one)

Location - From: _____ To: _____

Length: _____ miles Nearest Route No.: _____ Anticipated No. of Users: _____

Improvement Suggestion *(Select as many as apply)*: New Path New Lane Shoulder Improvement Connect to existing network
Other *(Please specify)*: _____

OTHER *Please provide information below such that proper consideration may be given to the suggested improvement. Attach additional sheets, as necessary.*

Please consult the Revised Final Report for the Cumberland and Perry Counties Safety and Congestion Management System Study (dated November 20, 2002) for more information about the proposed improvements. This document was submitted to TCRPC for the Cumberland and Perry Counties Joint Task Force on Transportation and Planning (CPTF).

2003 TRANSPORTATION IMPROVEMENT PROGRAM
(not including Transportation Enhancement projects)

PROJECT SUGGESTION INFORMATION FORM
Harrisburg Area Transportation Study (HATS)

Forms due to
TCRPC by
AUGUST 31, 2001

Suggestion #:
assigned by HATS staff

Please use one form for each project. Each form is two pages long.

CONTACT INFORMATION		Date: _____
County: <u>Perry</u>	Municipality/ Sponsor: <u>Penn, Marysville</u>	
Contact Person: _____		
Mailing Address: _____		
<small>Street</small>	<small>City</small>	<small>State</small> <small>Zip</small>
Telephone: _____	Fax: _____	Email: _____

GENERAL INFORMATION	
Local Priority: <u>7</u> (Rank all projects from 1 to <u>11</u> .)	Currently in Program? <input type="checkbox"/> (if yes, check box)
Mode (Select as many as apply):	Other: _____ <small>(Please specify - such as rail, air, etc.)</small>
<input checked="" type="checkbox"/> Roadway <input type="checkbox"/> Transit	
<input type="checkbox"/> Bridge <input type="checkbox"/> Bicycle/Pedestrian	
Description (Please describe the project, its location, and attach a 8 1/2" x 11" map and/or photographs.)	
Designated as Improvement Package 11-F in the Cumberland and Perry Counties Safety and CMS Study (Dated November 20, 2002). This improvement package includes: the construction of rock fall protection on US 11/15 at the Cumberland / Perry border and on US 11/15 at Kinkora Heights (between PA 274 and Cove Road).	
Purpose/Need Statement (Please describe the reason why the project is needed and what it is intended to do.)	
Rocks falling from the mountainsides onto US 11/15 cause severe safety problems. This improvement package is designed to mitigate these safety problems.	
Other alternatives that were considered to address the need included:	

PROJECT SPECIFICS	
COST ESTIMATE (Please provide some information even if a formal, detailed estimate has not yet been prepared for the project.)	
Prelim Engineering: \$ <u>25,000</u>	Right-of-Way: \$ <u>14,000</u> Utility: \$ <u>51,000</u>
Final Design: \$ <u>55,000</u>	Construction: \$ <u>600,000</u> Total Cost: \$ <u>745,000</u>
Local/Municipal match: <u>0</u> % -- Typically, 20% match is required on local bridges or Federal Aid System.	
<small>Match rates may vary - some bridges may be eligible for an 80-15-5% federal, state, local split; safety, carpool, priority control systems and ITS may be 100% federally funded.</small>	

ROADWAY On Federal Aid System?
*(if yes, check box)*Road Name: US Routes 11/15Traffic Route No.: _____ State Route No.: 0011 Township Route No.: _____Limits - From: Cumberland / Perry Border To: Kinkora HeightsLength 1.0 miles Avg Daily Traffic - ADT 22,000 Truck %: 7 Year Last Improved: _____Improvement Suggestion: Resurface Add lanes Relocate Grade Crossing Reconstruct Widen shoulders New Road Other: *(Please specify)*
Install Rock ProtectionMunicipal Participation: _____
*(curbs, sidewalks, traffic signals, etc.)***BRIDGE**Bridge Name: _____ BMS No: _____
*(BMS = Bridge Mgmt System)*Feature Crossed: _____ SR Value _____
*(SR = Sufficiency Rating)*Bridge Type: _____ Length: _____ Width: _____ Age: _____
(steel truss, arch, box, etc.) *(Year built)*Vertical Clearance: _____ Weight Limit *(posted)*: _____ Detour 0 mi.
*(if yes, check box + note miles)*Improvement Suggestion: Replace Rehabilitate Remove Dwellings affected by closure?
*(if yes, check box + explain on pg. 1, Purpose/Need Statement)***TRANSIT**Improvement Suggestion: New Service Expanded Service Equipment Facility
Other *(Please specify)*: _____General Purpose *(Select as many as apply)*: Basic Mobility Congestion Relief Location Efficiency

Location- From: _____ To: _____

Length: 0.00 miles Service _____Ridership Estimate 0 per day Generators: _____**BICYCLE / PEDESTRIAN**Facility: _____ General Purpose: Transportation Recreation
(check one) Recreation

Location - From: _____

To: _____

Length: _____ miles Nearest Route No.: _____ Anticipated No. of Users: _____

Improvement Suggestion *(Select as many as apply)*: New Path New Lane Shoulder Improvement Connect to existing network
Other *(Please specify)*: _____**OTHER** *Please provide information below such that proper consideration may be given to the suggested improvement. Attach additional sheets, as necessary.*

Please consult the Revised Final Report for the Cumberland and Perry Counties Safety and Congestion Management System Study (dated November 20, 2002) for more information about the proposed improvements. This document was submitted to TCRPC for the Cumberland and Perry Counties Joint Task Force on Transportation and Planning (CPTF).

2003 TRANSPORTATION IMPROVEMENT PROGRAM
(not including Transportation Enhancement projects)

PROJECT SUGGESTION INFORMATION FORM
Harrisburg Area Transportation Study (HATS)

**Forms due to
TCRPC by
AUGUST 31, 2001**

Suggestion #: _____
assigned by HATS staff

Please use one form for each project. Each form is two pages long

CONTACT INFORMATION		Date: _____
County: <u>Cumberland</u>	Municipality/ Sponsor: <u>Hampden</u>	
Contact Person: _____		
Mailing Address: _____ <small>Street City State Zip</small>		
Telephone: _____ Fax: _____ Email: _____		

GENERAL INFORMATION	
Local Priority: <u>8</u> (Rank all projects from 1 to <u>11</u> .)	Currently in Program? <input type="checkbox"/> (if yes, check box)
Mode (Select as many as apply): <input checked="" type="checkbox"/> Roadway <input type="checkbox"/> Transit <input type="checkbox"/> Bridge <input type="checkbox"/> Bicycle/Pedestrian	Other: _____ <small>(Please specify - such as rail, air, etc.)</small>
Description (Please describe the project, its location, and attach a 8 1/2" x 11" map and/or photographs.) Designated as Improvement Package 944-B in the Cumberland and Perry Counties Safety and CMS Study (Dated November 20, 2002). This improvement package includes: the flattening of the crest vertical curve at the intersection of Lambs Gap Road and PA Route 944.. _____ _____ _____	
Purpose/Need Statement (Please describe the reason why the project is needed and what it is intended to do.) Sight distance problems exist at the PA 944 intersection with Lambs Gap Road. This improvement package is designed to mitigate these problems. _____ _____ _____	
Other alternatives that were considered to address the need included: _____ _____ _____	

PROJECT SPECIFICS	
COST ESTIMATE (Please provide some information even if a formal, detailed estimate has not yet been prepared for the project.)	
Prelim Engineering: \$ <u>12,000</u>	Right-of-Way: \$ <u>80,000</u> Utility: \$ <u>44,000</u>
Final Design: \$ <u>24,000</u>	Construction: \$ <u>420,000</u> Total Cost: \$ <u>580,000</u>
Local/Municipal match: <u>0</u> % -- Typically, 20% match is required on local bridges or Federal Aid System. <small>Match rates may vary - some bridges may be eligible for an 80-15-5% federal, state, local split; safety, carpool, priority control systems and ITS may be 100% federally funded.</small>	

ROADWAY On Federal Aid System?
*(if yes, check box)*Road Name: PA Route 944Traffic Route No.: _____ State Route No.: 0944 Township Route No.: _____Limits - From: At the Lambs Gap Road Interseciton To: N/ALength 0.2 miles Avg Daily Traffic - ADT 6,100 Truck %: 3 Year Last Improved: _____Improvement Suggestion: Resurface Add lanes Relocate Grade Crossing Reconstruct Widen shoulders New Road
(Select as many as apply): Other: *(Please specify)* _____Municipal Participation: _____
*(curbs, sidewalks, traffic signals, etc.)***BRIDGE**Bridge Name: _____ BMS No: _____
*(BMS = Bridge Mgmt System)*Feature Crossed: _____ SR Value _____
*(SR = Sufficiency Rating)*Bridge Type: _____ Length: _____ Width: _____ Age: _____
(steel truss, arch, box, etc.) *(Year built)*Vertical Clearance: _____ Weight Limit *(posted)*: _____ Detour 0 mi.
*(if yes, check box + note miles)*Improvement Suggestion: Replace Rehabilitate Remove Dwellings affected by closure?
*(if yes, check box + explain on pg. 1, Purpose/Need Statement)***TRANSIT**Improvement Suggestion: New Service Expanded Service Equipment Facility
Other *(Please specify)*: _____General Purpose *(Select as many as apply):* Basic Mobility Congestion Relief Location Efficiency

Location- From: _____ To: _____

Length: 0.00 miles Service _____Ridership Estimate 0 per day Generators: _____**BICYCLE / PEDESTRIAN**Facility: _____ General Purpose: Transportation Recreation
(check one)

Location - From: _____ To: _____

Length: _____ miles Nearest Route No.: _____ Anticipated No. of Users: _____

Improvement Suggestio *(Select as many as apply):* New Path New Lane Shoulder Improvement Connect to existing network
Other *(Please specify)*: _____**OTHER** *Please provide information below such that proper consideration may be given to the suggested improvement. Attach additional sheets, as necessary.*

Please consult the Revised Final Report for the Cumberland and Perry Counties Safety and Congestion Management System Study (dated November 20, 2002) for more information about the proposed improvements. This document was submitted to TCRPC for the Cumberland and Perry Counties Joint Task Force on Transportation and Planning (CPTF).

2003 TRANSPORTATION IMPROVEMENT PROGRAM
(not including Transportation Enhancement projects)

PROJECT SUGGESTION INFORMATION FORM
Harrisburg Area Transportation Study (HATS)

Forms due to
TCRPC by
AUGUST 31, 2001

Suggestion #:
assigned by HATS staff

Please use one form for each project. Each form is two pages long

CONTACT INFORMATION		Date: _____
County: <u>Dauphin</u>	Municipality/ Sponsor: <u>Reed</u>	
Contact Person: _____		
Mailing Address: _____		
<small>Street</small>	<small>City</small>	<small>State</small> <small>Zip</small>
Telephone: _____	Fax: _____	Email: _____

GENERAL INFORMATION	
Local Priority: <u>9</u> (Rank all projects from 1 to <u>11</u> .)	Currently in Program? <input type="checkbox"/> (if yes, check box)
Mode (Select as many as apply):	Other: _____ <small>(Please specify - such as rail, air, etc.)</small>
<input checked="" type="checkbox"/> Roadway <input type="checkbox"/> Transit	
<input type="checkbox"/> Bridge <input type="checkbox"/> Bicycle/Pedestrian	
Description (Please describe the project, its location, and attach a 8 1/2" x 11" map and/or photographs.)	
Designated as Improvement Package 11-E in the Cumberland and Perry Counties Safety and CMS Study (Dated November 20, 2002). This improvement package includes: the channelization of all eastbound traffic on US 22/322 approaching the US 11/15 interchange into the left lane. This will create a free-merge condition for traffic heading to US 22/322 eastbound from US 11/15 southbound.	
Purpose/Need Statement (Please describe the reason why the project is needed and what it is intended to do.)	
Safety problems exist with the conflicts in traffic that occur on US 22/322 eastbound at US 11/15 between traffic that is heading to US 22/322 eastbound from US 11/15 southbound and the traffic that is on US 22/322 eastbound. This improvement package is designed to mitigate this problem.	
Other alternatives that were considered to address the need included:	
The lengthening of the acceleration lanes have been considered, instead, the recommended improvement will likely be a more cost-effective improvement while still achieving the desired results.	

PROJECT SPECIFICS	
COST ESTIMATE (Please provide some information even if a formal, detailed estimate has not yet been prepared for the project.)	
Prelim Engineering: \$ <u>0</u>	Right-of-Way: \$ <u>0</u> Utility: \$ <u>0</u>
Final Design: \$ <u>18,000</u>	Construction: \$ <u>70,000</u> Total Cost: \$ <u>88,000</u>
Local/Municipal match: <u>0</u> % -- Typically, 20% match is required on local bridges or Federal Aid System.	
<small>Match rates may vary - some bridges may be eligible for an 80-15-5% federal, state, local split; safety, carpool, priority control systems and ITS may be 100% federally funded.</small>	

ROADWAY On Federal Aid System?
(if yes, check box)Road Name: US 22/322Traffic Route No.: _____ State Route No.: 0022 Township Route No.: _____Limits - From: at the US 11/15 interchange To: N/ALength 0.25 miles Avg Daily Traffic - ADT 35,600 Truck %: 20 Year Last Improved: _____Improvement Suggestion: Resurface Add lanes Relocate Grade Crossing Reconstruct Widen shoulders New Road Other: Add channelization devices
(Select as many as apply):Municipal Participation: _____
(curbs, sidewalks, traffic signals, etc.)**BRIDGE**Bridge Name: _____ BMS No: _____
(BMS = Bridge Mgmt System)Feature Crossed: _____ SR Value _____
(SR = Sufficiency Rating)Bridge Type: _____ Length: _____ Width: _____ Age: _____
(steel truss, arch, box, etc.) (Year built)Vertical Clearance: _____ Weight Limit (posted): _____ Detour 0 mi.
(if yes, check box + note miles)Improvement Suggestion: Replace Rehabilitate Remove Dwellings affected by closure?
(if yes, check box + explain on pg. 1, Purpose/Need Statement)**TRANSIT**Improvement Suggestion: New Service Expanded Service Equipment Facility
Other (Please specify): _____General Purpose (Select as many as apply): Basic Mobility Congestion Relief Location Efficiency

Location- From: _____ To: _____

Length: 0.00 miles Service _____Ridership Estimate 0 per day Generators: _____**BICYCLE / PEDESTRIAN**Facility: _____ General Purpose: Transportation Recreation
(check one)

Location - From: _____ To: _____

Length: _____ miles Nearest Route No.: _____ Anticipated No. of Users: _____

Improvement Suggestion (Select as many as apply): New Path New Lane Shoulder Improvement Connect to existing network
Other (Please specify): _____**OTHER** Please provide information below such that proper consideration may be given to the suggested improvement. Attach additional sheets, as necessary.

Please consult the Revised Final Report for the Cumberland and Perry Counties Safety and Congestion Management System Study (dated November 20, 2002) for more information about the proposed improvements. This document was submitted to TCRPC for the Cumberland and Perry Counties Joint Task Force on Transportation and Planning (CPTF).

2003 TRANSPORTATION IMPROVEMENT PROGRAM
(not including Transportation Enhancement projects)

PROJECT SUGGESTION INFORMATION FORM
Harrisburg Area Transportation Study (HATS)

**Forms due to
TCRPC by
AUGUST 31, 2001**

Suggestion # :
assigned by HATS staff

Please use one form for each project. Each form is two pages long

CONTACT INFORMATION		Date: _____
County: <u>Perry</u>	Municipality/ Sponsor: <u>Carroll, Centre, Wheatfield, N. Bloomfield</u>	
Contact Person: _____		
Mailing Address: _____ <small>Street City State Zip</small>		
Telephone: _____ Fax: _____ Email: _____		

GENERAL INFORMATION	
Local Priority: <u>10</u> (Rank all projects from 1 to <u>11</u> .)	Currently in Program? <input type="checkbox"/> (if yes, check box)
Mode (Select as many as apply): <input checked="" type="checkbox"/> Roadway <input type="checkbox"/> Transit <input type="checkbox"/> Bridge <input type="checkbox"/> Bicycle/Pedestrian	Other: _____ <small>(Please specify - such as rail, air, etc.)</small>
Description (Please describe the project, its location, and attach a 8 1/2" x 11" map and/or photographs.) Designated as Improvement Package 34-C in the Cumberland and Perry Counties Safety and CMS Study (Dated November 20, 2002). This improvement package includes: the re-striping of the southern Mecks Corner intersection (PA 34, SR 2006, SR 2002), flattening the crest vertical curve at the eastern Mecks Corner intersection (SR 2006, PA 274), and the re-alignment of the PA 34 intersection with Barnett Road.. _____ _____	
Purpose/Need Statement (Please describe the reason why the project is needed and what it is intended to do.) Sight distance problems exist on PA 34 at Barnett Road and at the eastern Mecks Corner intersection. The lack of pavement markings at the western Mecks Corner intersection cause motorist confusion. This improvement package is designed to mitigate these problems. _____ _____	
Other alternatives that were considered to address the need included: Re-construction and re-alignment of the Mecks Corner intresection have been considered, instead, the recommended improvement will likely be a more cost-effective improvement while still achieving the desired results. _____ _____	

PROJECT SPECIFICS	
COST ESTIMATE (Please provide some information even if a formal, detailed estimate has not yet been prepared for the project.)	
Prelim Engineering: \$ <u>46,000</u>	Right-of-Way: \$ <u>45,000</u> Utility: \$ <u>27,000</u>
Final Design: \$ <u>94,000</u>	Construction: \$ <u>700,000</u> Total Cost: \$ <u>912,000</u>
Local/Municipal match: <u>0</u> % -- Typically, 20% match is required on local bridges or Federal Aid System. <small>Match rates may vary - some bridges may be eligible for an 80-15-5% federal, state, local split; safety, carpool, priority control systems and ITS may be 100% federally funded.</small>	

ROADWAY

On Federal Aid System?
(if yes, check box)

Road Name: PA Route 34

Traffic Route No.: _____ State Route No.: 0034 Township Route No.: _____

Limits - From: Mecks Corner (PA 274 - Southern intersection) To: Barnett Road

Length 3.3 miles Avg Daily Traffic - ADT 8,250 Truck %: 3 Year Last Improved: _____

Improvement Suggestion: Resurface Add lanes Relocate Grade Crossing Reconstruct Widen shoulders New Road Other: *(Please specify)* _____

Municipal Participation: _____
(curbs, sidewalks, traffic signals, etc.)

BRIDGE

Bridge Name: _____ BMS No: _____
(BMS = Bridge Mgmt System)

Feature Crossed: _____ SR Value _____
(SR = Sufficiency Rating)

Bridge Type: _____ Length: _____ Width: _____ Age: _____
(steel truss, arch, box, etc.) *(Year built)*

Vertical Clearance: _____ Weight Limit *(posted)*: _____ Detour 0 mi.
(if yes, check box + note miles)

Improvement Suggestion: Replace Rehabilitate Remove Dwellings affected by closure?
(if yes, check box + explain on pg. 1, Purpose/Need Statement)

TRANSIT

Improvement Suggestion: New Service Expanded Service Equipment Facility
Other *(Please specify)*: _____

General Purpose *(Select as many as apply)*: Basic Mobility Congestion Relief Location Efficiency

Location- From: _____ To: _____

Length: 0.00 miles Service _____

Ridership Estimate 0 per day Generators: _____

BICYCLE / PEDESTRIAN

Facility: _____ General Purpose: Transportation Recreation
(check one)

Location - From: _____ To: _____

Length: _____ miles Nearest Route No.: _____ Anticipated No. of Users: _____

Improvement Suggestion *(Select as many as apply)*: New Path New Lane Shoulder Improvement Connect to existing network
Other *(Please specify)*: _____

OTHER *Please provide information below such that proper consideration may be given to the suggested improvement. Attach additional sheets, as necessary.*

Please consult the Revised Final Report for the Cumberland and Perry Counties Safety and Congestion Management System Study (dated November 20, 2002) for more information about the proposed improvements. This document was submitted to TCRPC for the Cumberland and Perry Counties Joint Task Force on Transportation and Planning (CPTF).

2003 TRANSPORTATION IMPROVEMENT PROGRAM
(not including Transportation Enhancement projects)

PROJECT SUGGESTION INFORMATION FORM
Harrisburg Area Transportation Study (HATS)

**Forms due to
TCRPC by
AUGUST 31, 2001**

Suggestion #:
assigned by HATS staff

Please use one form for each project. Each form is two pages long

CONTACT INFORMATION		Date: _____
County: <u>Perry</u>	Municipality/Sponsor: <u>Howe</u>	
Contact Person: _____		
Mailing Address: _____		
<small>Street</small>	<small>City</small>	<small>State</small> <small>Zip</small>
Telephone: _____	Fax: _____	Email: _____

GENERAL INFORMATION	
Local Priority: <u>11</u> (Rank all projects from 1 to <u>11</u> .)	Currently in Program? <input type="checkbox"/> (if yes, check box)
Mode (Select as many as apply):	Other: _____ <small>(Please specify - such as rail, air, etc.)</small>
<input checked="" type="checkbox"/> Roadway <input type="checkbox"/> Transit	
<input type="checkbox"/> Bridge <input type="checkbox"/> Bicycle/Pedestrian	
Description (Please describe the project, its location, and attach a 8 1/2" x 11" map and/or photographs.)	
Designated as Improvement Package 34-D in the Cumberland and Perry Counties Safety and CMS Study (Dated November 20, 2002). This improvement package includes: the cutting back of an embankment and the installation of a retaining wall at the PA 34 intersection with Shortcut Road (SR 1017), and sight distance improvements at the PA 34 intersection with the Juniata Parkway (SR 1015).	
Purpose/Need Statement (Please describe the reason why the project is needed and what it is intended to do.)	
Sight distance problems exist on PA 34 at Shortcut Road and at the Juniata Parkway intersection. This improvement package is designed to mitigate these problems.	
Other alternatives that were considered to address the need included:	
The installation of rock fall protection was considered at the Shortcut Road intersection.	

PROJECT SPECIFICS			
COST ESTIMATE (Please provide some information even if a formal, detailed estimate has not yet been prepared for the project.)			
Prelim Engineering: \$ <u>12,000</u>	Right-of-Way: \$ <u>2,000</u>	Utility: \$ <u>19,000</u>	
Final Design: \$ <u>24,000</u>	Construction: \$ <u>180,000</u>	Total Cost: \$ <u>237,000</u>	
Local/Municipal match: <u>0</u> % -- Typically, 20% match is required on local bridges or Federal Aid System.			
<small>Match rates may vary - some bridges may be eligible for an 80-15-5% federal, state, local split; safety, carpool, priority control systems and ITS may be 100% federally funded.</small>			

ROADWAY

On Federal Aid System?
(if yes, check box)

Road Name: PA Route 34

Traffic Route No.: _____ State Route No.: 0034 Township Route No.: _____

Limits - From: Juniata Parkway (SR 1015) To: Shortcut Road (SR 1017)

Length 1.2 miles Avg Daily Traffic - ADT 7,500 Truck %: 5 Year Last Improved: _____

Improvement Suggestion: Resurface Add lanes Relocate Grade Crossing Reconstruct Widen shoulders New Road Other: *(Please specify)*
(Select as many as apply): Sight Distance Improvement

Municipal Participation: _____
(curbs, sidewalks, traffic signals, etc.)

BRIDGE

Bridge Name: _____ BMS No: _____
(BMS = Bridge Mgmt System)

Feature Crossed: _____ SR Value _____
(SR = Sufficiency Rating)

Bridge Type: _____ Length: _____ Width: _____ Age: _____
(steel truss, arch, box, etc.) *(Year built)*

Vertical Clearance: _____ Weight Limit *(posted)*: _____ Detour 0 mi.
(if yes, check box + note miles)

Improvement Suggestion: Replace Rehabilitate Remove Dwellings affected by closure?
(if yes, check box + explain on pg. 1, Purpose/Need Statement)

TRANSIT

Improvement Suggestion: New Service Expanded Service Equipment Facility
Other *(Please specify)*: _____

General Purpose *(Select as many as apply)*: Basic Mobility Congestion Relief Location Efficiency

Location- From: _____ To: _____

Length: 0.00 miles Service _____

Ridership Estimate 0 per day Generators: _____

BICYCLE / PEDESTRIAN

Facility: _____ General Purpose: Transportation Recreation
(check one)

Location - From: _____ To: _____

Length: _____ miles Nearest Route No.: _____ Anticipated No. of Users: _____

Improvement Suggestion *(Select as many as apply)*: New Path New Lane Shoulder Improvement Connect to existing network
Other *(Please specify)*: _____

OTHER *Please provide information below such that proper consideration may be given to the suggested improvement. Attach additional sheets, as necessary.*

Please consult the Revised Final Report for the Cumberland and Perry Counties Safety and Congestion Management System Study (dated November 20, 2002) for more information about the proposed improvements. This document was submitted to TCRPC for the Cumberland and Perry Counties Joint Task Force on Transportation and Planning (CPTF).

APPENDIX B –

HATS PROJECT RANKING CRITERIA

Project Ranking Criteria

2003 Transportation Program Update

BACKGROUND

The goal of the project ranking criteria is to ensure consistency between the mix of projects and investments of the TIP and the goals and policies implemented through the plans and programs in our region.

These criteria are intended to serve as a starting point when evaluating projects, and it is expected that they will evolve over time. Common evaluation criteria also will initiate a documented process to track project progress and keep local municipalities informed of their projects' status.

STRUCTURE

Potential transportation projects will be evaluated against each of the 17 criteria, as defined by the HATS Technical Committee below.

Criteria 1 - 9: The first seven are the minimum requirements for our transportation program as defined by Federal (TEA-21) regulations. Other federal regulations applicable to our region are air quality and social/environmental justice impacts.

Criteria 10 - 14: Regional factors considered include the HATS Regional Transportation Plan, Congestion Management Plan, Regional Growth Management Plan, funding history and new funds available, and PennDOT's *PennPlan Moves* plan.

Criteria 15 - 17: Local priorities are also considered in project evaluation. This includes consistency with the County's Comprehensive Plan, local/sponsor priority, and local funding commitment.

DESCRIPTION

Each criterion is described in more detail (attached). A brief statement describes the purpose of the criteria. Federal regulations are quoted directly from the Federal Register for the seven TEA-21 planning factors; the remaining criteria are more broadly described.

General project characteristics for each criterion are then listed to determine whether or not a proposed project meets the objective of the criterion, and subsequently earn points under that criterion. If a project does not fit the purpose or characteristics of the criterion, it earns zero points for that criterion. It is not expected that a project will earn points for every criterion. On the whole, all of the projects will be evaluated consistently across the criterion and each project's merits relative to other projects being proposed can be illustrated.

The number of points assigned for each project is determined by its "impact". Specific improvements or activities are listed to define "high-impact", "medium-impact", or "low-impact" projects, earning 10 points, 5 points or 1 point, respectively. A project earns points according to one impact level only. In some cases, "plus" or "minus" points may be assigned if a project has a particular strength in support of or opposition to a criterion. These plus/minus points are specified in nine of the criterion.

The points earned from the criterion are summed to give each project a total "score", and ranked in numerical order to indicate a preliminary priority order for the proposed projects.

The priority order will be further refined based on eligibility and availability of specific funding sources (such as CMAQ, STP, bridge, etc.). Fiscal constraint will continue to influence the timing of projects, as undoubtedly will other unforeseen matters.

TEA-21 Planning Factors

1. Support the **economic vitality** of the metropolitan planning area, especially by enabling global competitiveness, productivity, and efficiency.

General project characteristics include:

- ! Improves access to airport or intermodal freight facility (within corridor that provides access to foreign trade zone or urban enterprise zone)
- ! Leads to redevelopment of brownfields, etc.
- ! Assists tourism/recreation travel within 5 miles of a facility
- ! Enhances freight movement (truck percentage served, links to rail/freight yards or industrial parks)
- ! Improves mobility to job centers

High Impact Projects – 10 points	
<ul style="list-style-type: none"> ! Improves access to existing regional activity centers ! On route where (heavy) trucks are more than 20% of average daily traffic ! Improves access to HIA and Capital City Airport 	<ul style="list-style-type: none"> ! Improves rail or vehicular access to freight distribution facilities or major industrial districts ! Transportation demand strategies, programs and incentives such as the Commuter Alternatives Program (CAP) ! Alternative fuel infrastructure at major activity centers
Medium Impact Projects – 5 points	
<ul style="list-style-type: none"> ! On route where heavy trucks are between 10% and 20% of average daily traffic 	
Low Impact Projects – 1 point	
<ul style="list-style-type: none"> ! Supports mobility needs of business and industry not in an activity center 	<ul style="list-style-type: none"> ! Rehabilitation of existing access facilities
Improvement to distressed municipalities = <i>plus</i> 5 points	

Brownfields are abandoned, idled, or under-used industrial and commercial facilities where expansion or redevelopment is complicated by real or perceived environmental contamination.

Because lenders, investors, and developers fear that involvement with these sites may make them liable for cleaning up contamination they did not create, they are more attracted to developing sites in pristine areas, called "greenfields." The result can be blighted areas with many abandoned industrial facilities that create safety and health risks for residents, drive up unemployment, and foster a sense of hopelessness. These areas are called "brownfields." (Source: EPA website - <http://www.epa.gov/swerosps/bf/index.html#info>).

Distressed municipalities are geographic areas where at least 30 percent of the residents have incomes less than the national poverty level, and the unemployment rate is at least 1.5 times greater than the national average. (Source: 12 CFR 1806.200).

2. Increase the **safety and security** of the transportation system for motorized and non-motorized users.

General project characteristics include:

- ! Improves bridge, roadway poor conditions
- ! Reduces accidents
- ! Improves signalization
- ! Reduces vehicle speeds or traffic volumes (in areas with high potential for pedestrian and bicycle activity)
- ! Improves accommodations for non-motorized travel
- ! Eliminates conflicts between bike/pedestrian and other traffic
- ! Avoids breakdowns or disasters (flooding, rock slides)

High Impact Projects – 10 points	
<ul style="list-style-type: none"> ! Improves sight distance, intersection alignment problems ! New median barriers/guardrail ! Interchange modifications ! Grade separations on existing highways - Rail grade crossing improvements ! Reduces accidents at intersections and/or segments with accident rates higher than average for that type of facility ! New (warranted) traffic signal where none exist 	<ul style="list-style-type: none"> ! Bridge safety improvements with sufficiency rating up to 50 ! Elimination of chronic standing water or rock slide hazard ! Bicycle/pedestrian facility within established neighborhood or activity center ! Pedestrian refuge islands, bike lockers or racks, safe storm grates ! Traffic calming within established neighborhood or activity center
Medium Impact Projects – 5 points	
<ul style="list-style-type: none"> ! Traffic calming ! New bicycle/pedestrian facility ! Bridge safety improvements with sufficiency rating from 50.1-80 ! Transit equipment for safety or security – such as transit shelters, weather and traffic-protected waiting areas 	<ul style="list-style-type: none"> ! Upgrade median/guardrail ! Improves emergency access ! Reduces accidents at intersections and/or segments with accident rates on average for that type of facility
Low Impact Projects – 1 point	
<ul style="list-style-type: none"> ! Improves lighting for all facilities ! Reduces accidents at intersections and/or segments with accident rates lower than average for that type of facility 	<ul style="list-style-type: none"> ! New interchanges

3. Increase the **accessibility and mobility** options available to people and for freight.

General project characteristics include:

- ! Reduces travel time
- ! Relieves congestion – Congestion Management System (CMS) strategies (see #11 below)
- ! Improves information, convenience to users, intermodal linkages
- ! Optimizes existing capacity
- ! Increases access to bus, train stations
- ! Adds frequency and service of bus/transit/rail
- ! Bicycle and pedestrian facilities

High Impact Projects – 10 points	
! New/expanded transit infrastructure – platforms, parking and stations, rail lines	! Access to HIA or Capital City Airport, freight distribution facilities, or major industrial districts
! New transit service, commuter rail, inter-city service	! ITS systems
! Significant expansion (passengers) of existing transit service	! Transportation demand strategies, program, and incentives such as CAP
! Upgrade/computerize signal controllers	! Park and ride lots, and other intermodal linkages
! Bicycle/pedestrian facility serving primarily a transportation use (ie. not recreation)	! On route where heavy trucks are more than 20% of average daily traffic
! Alternative fuel vehicles and infrastructure	! ROW preservation for future transportation corridor
Medium Impact Projects – 5 points	
! Upgrade existing transit infrastructure	! Bicycle/pedestrian facility within established neighborhood or activity center
! On route where heavy trucks are between 10% and 20% of average daily traffic	! Functional class - Improvements to rural interstates, rural principal arterials, urban interstates, or urban freeway/expressway
Low Impact Projects – 1 point	
! On route where heavy trucks are less than 10% of average daily traffic	! Signing and informational systems (other than ITS)
! Functional class - Improvements to rural minor arterials, rural major collectors, urban principal arterials, or urban minor arterials	

4. Protect and enhance the **environment**, promote energy conservation, and improve quality of life.

General project characteristics include:

- ! Improves air quality (see #8)
- ! Eliminates vehicle trips – promote bike/pedestrian, transit facilities
- ! Generates positive effect on water quality (limits impervious surfaces, runoff)
- ! Abates noise
- ! Uses recycled materials
- ! Aesthetics considered in design (context-sensitive design, landscaping, visual easements, scenic overlooks)

High Impact Projects – 10 points	
<ul style="list-style-type: none"> ! Traffic calming within established neighborhood or activity center ! Directly promotes shift from single occupancy vehicle (SOV) ! Bus replacement for vehicles beyond useful life (standard transit bus = 12 years or 500,000 miles; vans = 4 years or 100,000 miles) ! Clean fuel buses/vehicles - alternative fuel infrastructure ! Preservation of existing greenway corridors 	<ul style="list-style-type: none"> ! Parking management within established neighborhood or activity center ! Transportation demand strategies, programs, and incentives (CAP) ! Bicycle/pedestrian facilities serving primarily a transportation use ! Creates an improvement in the quantity/quality of water runoff ! Preservation of wetlands
Medium Impact Projects – 5 points	
<ul style="list-style-type: none"> ! Traffic calming ! Bicycle/pedestrian facility within established neighborhood or activity center ! No significant change in quantity/quality of water runoff ! Rehab or reconstruction of transit vehicles or facilities that increases ridership ! Parking management ! Enhances efficiency of transit operators 	<ul style="list-style-type: none"> ! Signal updating and interconnections ! Wetlands banking/mitigation ! Intersection channelization resulting in the reduction of stop and go traffic ! Preservation of historic structures in national or state register, or of significant local interest ! Park and ride lots
Low Impact Projects – 1 point	
<ul style="list-style-type: none"> ! New signal projects ! Noise barrier projects 	<ul style="list-style-type: none"> ! Performance/condition improvement of transit vehicles or facilities
Capacity increase for SOV = <i>minus</i> 5 points	
Adverse impact on environmentally sensitive areas = <i>minus</i> 5 points	

Environmentally sensitive areas as defined in the Regional Growth Management Plan (RGMP): Flood plains, wetlands, stream corridors, Class 1, 2 and 3 prime agricultural soils, steep slopes, and woodlands.

5. Enhance the **integration and connectivity** of the transportation system, across and between modes, for people and freight.

General project characteristics include:

- ! Supports redevelopment, infill and mixed use development in existing activity centers
- ! Promotes intermodalism (use of alternate modes - park and ride lots, access to transit/rail, bike/pedestrian facilities, feeder service, signage)
- ! Eliminates major barrier in regional corridor; provides gap closure; links jurisdictions and connects major activity centers
- ! Provides linkages to other regional systems (Maryland, New York, New Jersey)
- ! Removes height or weight restrictions

High Impact Projects – 10 points	
! Commuter or inter-city rail project	! Park and ride lots
! Corridor preservation project in major regional corridor	! Bicycle/pedestrian facilities making intermodal linkages or regional connections
! Eliminates or overcomes major barrier in an existing regional corridor	! Development of intermodal transportation centers
! Provides gap closure in major regional corridor	
Medium Impact Projects – 5 points	
! Corridor preservation project in minor regional corridor	! Eliminates or overcomes minor barrier in an existing major regional corridor
! Transportation demand strategies, programs and incentives (CAP)	! Rehabilitation of intermodal transportation centers
! Provides gap closure in minor regional corridor	
Low Impact Projects – 1 point	
! Eliminates or overcomes barrier in a minor regional corridor	! Provides gap closure in local corridor

Major regional corridors include routes such as I-81, I-83, US 11/15, PA 283, (I-76) – routes which connect our region with other regions. **Minor regional corridors** include US 22/322, US 22, US 322/422, US 322, US 422, US 11, US 15, US 209, I-283, PA 114, PA 944, PA 581, PA 230, PA 443, PA 225, PA 325, PA 39, PA 34, PA 274, PA 850 – routes providing connectivity within our region.

Major barriers include problems such as facility closures, lengthy detours or delays, geography such as rivers and mountains, or rail rights-of-way. **Minor barriers** include issues such as weight/height restrictions, poor intersection alignments.

6. Promote efficient **system management and operation.**

General project characteristics include:

- ! Result of or establishes multi-municipal or public-private partnership
- ! Supports coordination of land use and transportation systems
- ! Reduces existing/prevent future congestion (improve flow, reduce travel time)
- ! Reduces SOV trips and promotes transit

High Impact Projects – 10 points	
! Increases transit service capacity / reliability	! Relieves congestion on parallel route
! Park and ride lots, vanpools	! ITS improvements
! New or improved intermodal transportation center	! Grade separations on existing highway to improve flow
! Upgrades existing interchanges by improving bicycle/pedestrian access	! Bicycle/pedestrian facility within established neighborhood or activity center
! Signal interconnect of 6 or more signals	! Transportation demand strategies, programs and incentives (CAP)
! Improves roadway at LOS E or F	
Medium Impact Projects – 5 points	
! Upgrade existing interchanges	! Signal interconnection of 2 to 5 signals
! Introduces new connections between existing street patterns	! New signal which relieves congestion
! Reduces travel time	! Traffic flow improvements
! Intersection improvements	! Median treatments
! Improves roadway at LOS D	
Low Impact Projects – 1 point	
! Left or center turn lanes	! New interchanges on limited access highway to relieve congestion
! Station/stop amenities and shelters	
New non-interconnected signal (lessens efficiency) = <i>minus</i> 5 points	

7. Emphasize the **preservation of the existing** transportation system.

General project characteristics include:

- ! Optimal replacement cycle - delay need for repair/reconstruction (reduces truck vehicle miles traveled (VMT), diverts heavy truck traffic, pavement/resurfacing)
- ! Facility and fleet replacement or modernization
- ! Traffic signals and railroad grade crossings improvements

High Impact Projects – 10 points	
<ul style="list-style-type: none"> ! Normal pavement or bridge rehabilitation when in pavement or bridge management system ! Reconstruction or resurfacing of arterial highways ! Traffic signal upgrade ! Rail warning signals, grade crossings improvement/replacement 	<ul style="list-style-type: none"> ! Existing transit facility replacement/rehab that prolongs useful life of assets (improves “substandard” or “poor” condition ratings) ! Transit vehicle replacement/rehab consistent with Federal Transit Administration (FTA) standards (standard transit bus = 12 years or 500,000 miles; vans = 4 years or 100,000 miles) ! Maintains/preserves publicly owned bicycle and pedestrian facilities
Medium Impact Projects – 5 points	
<ul style="list-style-type: none"> ! Normal pavement or bridge rehabilitation when not in pavement or bridge management system ! Reconstruction of collector highways 	<ul style="list-style-type: none"> ! Existing transit facility replacement/rehab that prolongs useful life of assets (improves “adequate” condition ratings) ! Roadway and bridge support infrastructure improvements (drainage, retaining, signal)
Low Impact Projects – 1 point	
<ul style="list-style-type: none"> ! General resurfacing of roadway 	

Other Fed Regs

8. **Air Quality** – effects on air quality; US Environmental Protection Agency (EPA) standard for ozone

General project characteristics include:

- ! Improve traffic flow, but do not add lanes/capacity or relocate facilities
- ! Reduce vehicle miles traveled (VMT), discourage single occupancy vehicles (SOV)
- ! Reduce congestion, or support transit and more compact development

High Impact Projects – 10 points	
<ul style="list-style-type: none"> ! New (warranted) traffic signal where none exist, and relieves congestion ! New or improved transit facilities (stations, buses, park & rides) ! New bicycle/pedestrian facility serving primarily a transportation use 	<ul style="list-style-type: none"> ! Parking Management ! Transportation demand strategies, programs and incentives (CAP)
Medium Impact Projects – 5 points	
<ul style="list-style-type: none"> ! Traffic flow improvements (such as intersection channelization and alignments, signal upgrade/timing/interconnections) 	<ul style="list-style-type: none"> ! Bicycle/pedestrian improvements to existing facilities (roadway or bike/ped)
Low Impact Projects – 1 point	
<ul style="list-style-type: none"> ! Projects that have no/neutral air quality impact 	
Increase VMT/congestion = <i>minus</i> 5 points	

9. Social Impacts

General project characteristics include:

- ! Low-income and minority populations not disproportionately affected in adverse way
- ! Low-income and minority populations not prevented from, or caused to have a significant delay in, the receipt of benefits
- ! Serve elderly or mobility-impaired populations

High Impact Projects – 10 points	
! Improves accessibility and mobility and enhances community cohesion	
Medium Impact Projects – 5 points	
! Improves accessibility with no negative impact to community cohesion	
Low Impact Projects – 1 point	
! No improvement in access or community cohesion	
Disproportionately impacts access or community cohesion = <i>minus</i> 5 points	

Low-income and minority groups as defined by Title VI of the Civil Rights Act Environmental Justice includes Black, Hispanic, Asian American, American Indian and Alaskan Native, and persons whose household income is at or below the U.S. Department of Health and Human Services poverty guidelines.

Regional Factors

10. HATS Transportation Plan – regional projects identified in the Regional Transportation Plan (RTP)

General project characteristics include:

- ! Enhances funding
- ! Maintains, improves, and better coordinates system
- ! Increases use of alternate modes, including bicycle & pedestrian
- ! Land use planning and administration
- ! Improves mobility and accessibility of regional network
- ! Reduces negative effects on communities and environment
- ! Improves intermodal system/facilities – inter-city passenger rail and rail freight

High Impact Projects – 10 points	
! Priorities identified in the HATS Transportation Plan (including Tables #2, 24, and 25)	
Low Impact Projects – 1 point	
! Consistent with goals and objectives of the RTP	
Conflict with RTP goals & objectives = <i>minus</i> 5 points	

11. CMS plan

General project characteristics include:

- ! Transit, rideshare, park and ride/carpool, non-traditional modes
- ! Operational improvements (signal timing, etc.)
- ! Eliminate bottlenecks (physical barriers)
- ! Freight movement
- ! Incident management
- ! Public education/PR
- ! Land use/growth management
- ! ITS applications
- ! Access management
- ! Employer programs (variable work hours, telecommuting, parking management)

High Impact Projects – 10 points	
! High priority areas identified in 1995 CMS study	! “Very practical” strategies identified in 1995 CMS study
Medium Impact Projects – 5 points	
! Medium priority areas identified in 1995 CMS study	! “Practical” strategies identified in 1995 CMS study
Low Impact Projects – 1 point	
! Low priority areas identified in 1995 CMS study	! Consistent with the goals and objectives of the CMS study

12. Regional Growth Management Plan (RGMP)

(Not applicable until RGMP officially adopted)

General project characteristics include:

- ! Development patterns/design that promote pedestrian and non-motorized transportation, reduces auto dependence
- ! Balanced development - mix of complementary uses
- ! Compact growth/activity – address planned density (residential, economic, supports transit)
- ! Link neighborhoods, connect streets, sidewalks, trails
- ! Integrate activity areas with surrounding neighborhoods/areas
- ! Preserve/provide functional open space and natural features
- ! Intergovernmental cooperation
- ! Manage supply/effects of parking (congestion, impervious surfaces)
- ! Retain and attract jobs

High Impact Projects – 10 points	
! Located within and support defined “Planned Growth Areas”	! Supports development of regional rail initiatives
Medium Impact Projects – 5 points	
! Addresses two or more of the above characteristics	
Low Impact Projects – 1 point	
! Located outside defined “Planned Growth Areas”	! Consistent with the goals and objectives of the RGMP
In conflict with RGMP goals & objectives = <i>minus</i> 5 points	

13. “New” or Previous \$ invested

General project characteristics include:

- ! Projects listed on the previous TIP
- ! “Reserve” priority project list (derived from RTP and project suggestions not initially placed on program) funded as federal funds become available – cost savings or new \$
- ! “New” funds – earmarked for specific projects – does not affect base allocation
- ! Reimbursement for advance construct projects – estimated line item and potential project listing provided

High Impact Projects – 10 points	
! Listed on the previous TIP	! Listed on “reserve” priority project list (as federal funds become available – cost savings or new \$)
Low Impact Projects – 1 point	
! Reimbursement for advance construct projects listed on potential project listing	! “Earmarked” with specific funds outside base allocation

14. PennPlan Moves!

General project characteristics include:

- ! Consistency with statewide long range plan

High Impact Projects – 10 points	
! Listed on the previous STIP	
Medium Impact Projects – 5 points	
! Corridor projects within the HATS region: Capitol, Keystone, Blue Mountain, Susquehanna Valley, Cumberland Valley	
Low Impact Projects – 1 point	
! Corridor projects of state priority outside HATS region which improve accessibility, mobility, or intermodal connectivity of HATS regional network	
In conflict with PennPlan = <i>minus</i> 5 points	

Local Factors

15. County Priority (Comp Plan)

- ! Priority ranking assigned by Cumberland, Dauphin and Perry Counties, Fairview Township in York County, and North Londonderry Township and Palmyra Borough in Lebanon County
- ! Consistency with local plans

High Impact Projects –10 points	
! County Priority #1	
Medium Impact Projects –5 points	
! County Priority #2	
Low Impact Projects –1 point	
! County Priority #3	
In conflict with local plans = <i>minus</i> 5 points	

16. Local/sponsor priority

- ! Priority ranking assigned by municipality/sponsor

High Impact Projects – 10 points	
! Local Priority #1	
Medium Impact Projects – 5 points	
! Local Priority #2	
Low Impact Projects – 1 point	
! Local Priority #3	

17. Local \$ Commitment

! Source for local funding/match available

High Impact Projects – 10 points	
! Local match above required % (non-federal share)	! Partnership (public/private) projects including multi-municipal efforts