



ROUTE 39/743 TRANSPORTATION AND LAND USE STUDY

FINAL REPORT

June 2004

prepared for

**Route 39/743 Transportation and
Land Use Study Group**

prepared by



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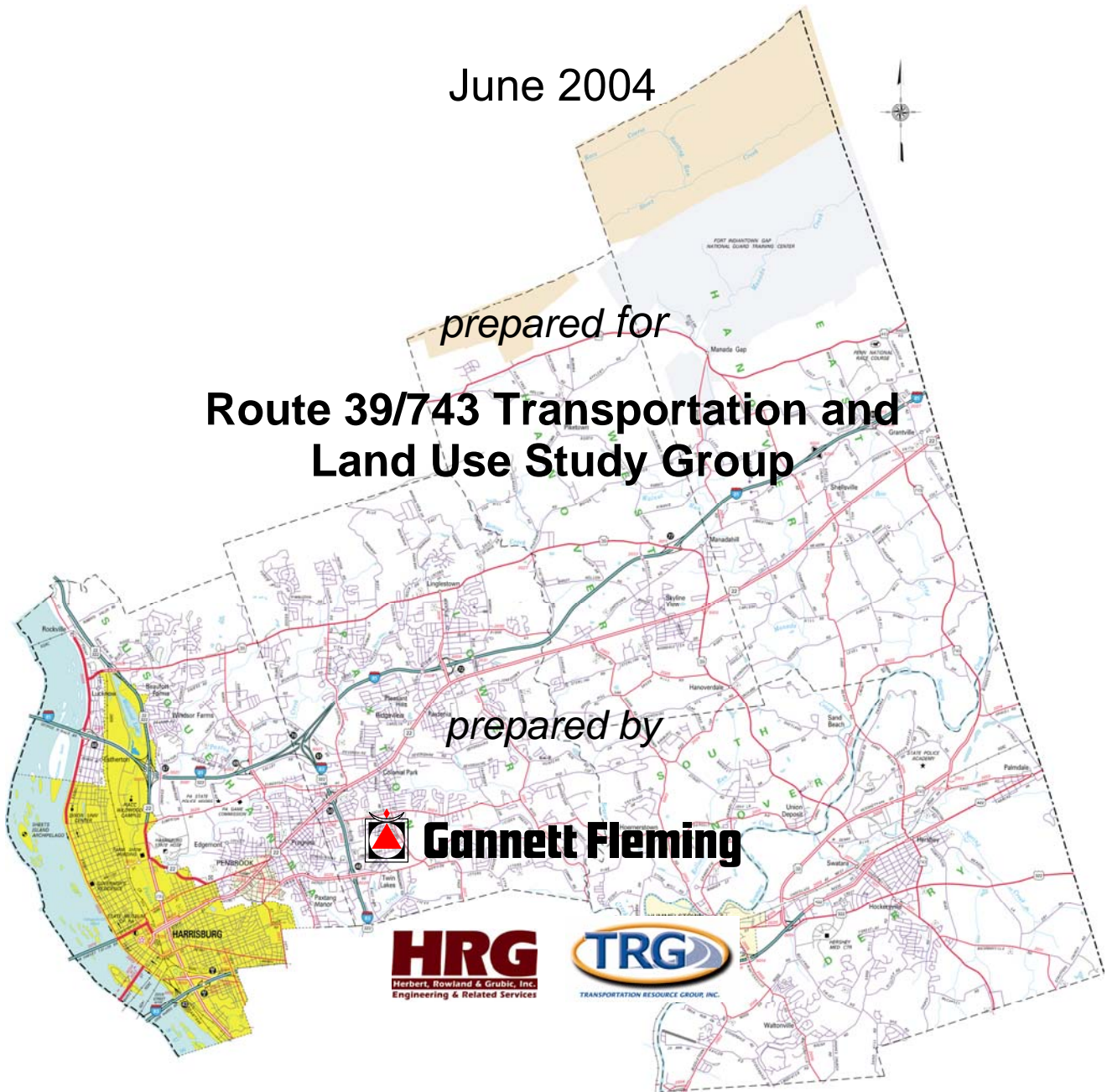


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Executive Summary

The SR 39 corridor study area extends from the Hersheypark Drive/Park Boulevard intersection in Derry Township to Front Street in Susquehanna Township. The SR 743 corridor study area extends from the Hersheypark Drive/Park Boulevard intersection in Derry Township to SR 443 in East Hanover Township. Both roadways are primarily two-lane facilities with widening for auxiliary lanes at major intersections.

Data Collection

At the beginning of the study, a significant field data collection program was initiated.

A **safety audit** was conducted of the study roadways to identify roadway conditions that may contribute to crashes or undesirable operating conditions.

A **comprehensive data collection program** was completed to establish existing traffic volumes for the study area. The data collection program consisted of a combination of 24-hour traffic volume recordings through the placement of Automatic Traffic Recording (ATR) devices at 9 locations as well as Intersection Turning movement Counts at all study intersections.

For SR 39, traffic volumes are at their highest at the limits of the study area, with much lower volumes experienced immediately west of SR 81. On SR 743, traffic volumes increase as you approach Hersheypark Drive. While truck percentages were higher on SR 743, the total number of trucks was comparable for both roadways between SR 81 and Hersheypark Drive.

With few exceptions, the highest traffic volumes were observed during the PM Peak Hour. Pedestrian activity was minimal, while total intersection truck percentages on a weekday ranged from 1.7 percent during the PM Peak Hour at SR 39 and Progress Avenue to 9.1 percent during the AM Peak Hour at SR 743 and the SR 81 Southbound Ramp.

Crash Analysis

The Pennsylvania Department of Transportation (PENNDOT) provided a five-year reportable crash history for the years 1996-2000 for the intersections in the study area. Only the intersection of SR 39 and SR 2016/Park Boulevard is considered to be a high crash location. The following intersections have crash rates of 5-9 crashes per year:

SR 743 and Sand Beach Road/Park Avenue
SR 743 and Laudermilch Road
SR 743 and SR 22.

As expected, the majority of crashes at signalized intersections are angle-type crashes, which are generally related to red-light running. Most of the crashes at unsignalized

intersections are rear-end crashes, involving vehicles being struck while waiting to execute turning maneuvers. Also, the crashes at unsignalized locations are generally more severe and involve more injuries.

The following six locations experienced fatal crashes during this time frame:

- SR 39 and Piketown Road
- SR 39 and Fairville Avenue
- SR 39 and SR 22
- SR 39 and SR 2016/Park Boulevard
- SR 743 and Meadow Lane
- SR 743 and SR 81.

In addition, a very serious crash occurred on July 13, 2002 along SR 39 between Greenwood Road and Pleasant Hill Road involving six fatalities. An extensive investigation of this crash indicated that alcohol and reckless driving were the cause and roadway conditions in the area were not a contributing factor.

Existing Operations

Capacity calculations were conducted for the existing traffic volumes utilizing the Synchro traffic analysis and simulation software package. This package follows the methodologies outlined in the *Highway Capacity Manual*.

Several intersections along the SR 39 corridor are presently experiencing operational problems during one or more of the peak hours analyzed (LOS E and F), including the following:

- SR 39 and Canal Street
- SR 39 and Hanover Street
- SR 39 and Grandview Drive
- SR 39 and Devonshire Heights Road
- SR 39 and Green Hill Road
- SR 39 and Mountain Road
- SR 39 and Blue Mountain Parkway
- SR 39 and Crums Mill Road
- SR 39 and Progress Avenue
- SR 39 and SR 22/322 Eastbound Ramp/Industrial Road.

Land Use and Development

Each of the Township's Zoning Plans was reviewed to identify zoning practices along each of the corridors. For both corridors, the area between Hersheypark Drive and SR 81 is primarily zoned residential, except for a small portion of SR 743 that is zoned agricultural. Those areas near SR 22, Jonestown Road, and SR 81 are zoned for commercial development. SR 39 from SR 81 to approximately Crums Mill Road is a

mix of uses, while the predominant zoning from Crums Mill Road to Front Street is residential.

In addition to existing zoning, information was obtained relative to planned/approved developments in each of the Townships that may affect the study area. The following is a summary of these developments.

Table 1 Planned/Approved Developments

Susquehanna Township	<ul style="list-style-type: none"> • Dennison Estates – 348 residential units located on the south side of SR 39 between Progress Avenue and Crums Mill Road. • Vartan Supply Company – 413,410 square foot office/retail development located on the north side of SR 39 between Progress Avenue and Crooked Hill Road.
Lower Paxton Township	<ul style="list-style-type: none"> • No anticipated developments.
West Hanover Township	<ul style="list-style-type: none"> • Capital Baptist Church – 60,000 square foot church located on SR 39 between SR 22 and Jonestown Road. • Sagewicke, Brynfield, and Brynfield East – 262 condominium unit, 80 student daycare, and 100 unit congregational care development located on SR 39 between SR 22 and Green Hill Road. • Central Dauphin High School – 1,800 student high school located on Blue Ridge Avenue between SR 39 and Jonestown Road. • Russell Tract – 143 residential units located on SR 39 between Piketown Road and SR 81. • The Townes of Hershey Road – 79 residential units located on SR 39 between Green Hill Road and SR 22. • Sandy Hollow – 79 residential units located on Manor Drive south of SR 39. • Mayberry – 90 residential units located on Clover Lane. • Meadows of Fort Stewart – 80 residential units located Sandy Hollow Road between Piketown Road and Jonestown Road.
East Hanover Township	<ul style="list-style-type: none"> • Truck Terminal – Truck terminal located on Bow Creek Road.
South Hanover Township	<ul style="list-style-type: none"> • Meadows of Hanover – 824 residential unit and 96,000 square foot commercial development located on SR 39 north of Grandview Road.
Derry Township	<ul style="list-style-type: none"> • No anticipated developments.

Other Studies and Projects

There are a number of other transportation studies being conducted in the study area along with several planned improvements that may impact traffic operations in the corridors. The following table outlines each project.

Table 2 Other Studies and Projects

I-81 Widening Study	Evaluation of impacts associated with widening SR 81 to 3 lanes in each direction from Maryland border to Interstate 83.
SR 39 and Sturbridge Drive	Signalization
Linglestown Square Study	Evaluation of improvement alternatives to reduce congestion and improve safety for the intersections of SR 39 with Blue Mountain Parkway, Mountain Road, and surrounding area.

SR 39 and Piketown Road	Realignment to form four-leg intersection with signalization.
SR 39/SR 81 Study	Evaluation of improvements to the SR 39/SR 81 area including Fairville Avenue and Jonestown Road.
SR 22 Corridor Study	Traffic signal upgrades and retiming from Blue Ribbon Road to Interstate 78.
SR 39 and Grandview Drive/Hanover Street	Signalization.
SR 39/SR 2016 and Park Boulevard	Geometric and signalization upgrades presently under construction.
Hersheypark Drive Extension	Extension of Hersheypark Drive from Laudermilch Road to US 422 presently under construction.

Traffic Volume Forecasting

Traffic was forecasted based on current and approved land use within the study area for 2012 and 2022 to evaluate study intersections and identify existing and future problems to determine possible mitigating improvements. A scenario with three potential changes in land use was also developed to forecast traffic given certain potential developments.

Two options for determining the average weekday and weekend projections for the study were examined and compared. Recommendations were made from these comparisons.

PENNDOT HPMS Projections – The PENNDOT HPMS is one option for deriving the traffic forecasts for the 39/743 Transportation and Land Use Study. This section examines the HPMS projections and the corresponding traffic growth factors and forecast factors. By applying HPMS factors to the traffic counts, the average weekday and weekend 2012 and 2022 projections can be determined.

Tri-County Regional Planning Commission (TCRPC) Model Projections – Another option for predicting the traffic forecasts for the study is through the TCRPC Model. Growth factors and forecast factors are identified for this option and applied to the traffic counts.

For this study it was determined that the TCRPC model be used to factor existing traffic counts to yield the 2012 and 2022 forecast year traffic volumes for all locations except between I-81 and Linglestown Square, Progress Avenue and SR 22-322 on SR 39, and SR 22 and SR 81 on SR 743.

These locations have significantly higher volumes using the model method over the HPMS method. The traffic volume counts are higher for 2002 than would have been expected in the model outputs. Therefore, the model values were not utilized in this study for those segments. HPMS projections are the preferred set of traffic volumes for these three segments only.

The TCRPC identified three possible land use changes within the study area. These were identified as potentially having significant impacts within the 39/743 corridor. The three changes include:

- **The development of a truck terminal north of I-81 exit 80** – There has been a filing of a preliminary land development plan for a 102,900 SF truck facility terminal and office building. A traffic impact study has been completed for this development.
- **The addition of slot machines to the Penn National Racetrack complex** – A recent initiative by Governor Rendell is to allow for slot machines at race tracks in Pennsylvania. Yet to be approved by the state legislature, a traffic impact study was completed by Penn National Gaming for the addition of 3,000 slots by 2013.
- **The building of an amphitheater just south of SR 22 along SR 743** – Hershey Entertainment and Resorts has been discussing the concept of developing a 20,000 seat Performing Art Center specifically for concerts. The concept has not progressed past the conceptual stage and several East Hanover Township concerns must be resolved before a proposal will be considered.

Based on the development possibilities provided and the model projections the following final projections were derived:

Table 3 Projected Traffic Volumes

Location #	Location	Scenario Projections	
		2012 Projections	2022 Projections
1	SR 39 between Hersheypark Drive and Canal Street	18,396	22,100
1A	SR 39 between Hersheypark Drive and Canal Street	16,116	19,361
2	SR 39 between Grandview Drive and U.S.22	16,808	19,777
3	SR 39 between U.S. 22 and SR 81	15,443	20,755
4	SR 39 between I-81 and Linglestown Square	11,093	15,664
5	SR 39 between Linglestown Square and Progress Avenue	20,738	28,597
6	SR 39 between Progress Avenue and SR 22-322	27,805	34,918
7	SR 39 between SR 22-322 and Front Street	16,454	17,830
8A	SR 743 between Sand Beach Road and S.R.2012 Connector	18,330	21,064
8B	SR 743 between Sand Beach Road and S.R.2012 Connector	16,193	18,607
9	SR 743 between SR 2012 Connector and Canal Street	12,290	14,123
10	SR 743 between U.S.22 and SR 81	12,263	16,673
S1	SR 743 North of SR 81	15,055	25,740

Traffic is expected to increase at all locations throughout the corridor. The annual factor will vary from 0.8percent to 7.8percent among the segments.

Based on these results, the improvement options shown in the table at the end of this section are being recommended.

Results

Table 4 Prioritization and Scenario Funding Amounts

SCENARIO	PRIORITY LEVEL				TOTAL
	HIGH	MED	LOW	NA	
SHORT-TERM	\$268,800	\$48,900	\$108,600	\$0	\$426,300
MID-TERM	\$8,720,000	\$16,224,000	\$2,959,000	\$8,712,000 (1)	\$36,615,000
LONG-TERM	\$226,470,000	\$20,374,000	\$5,458,000	\$0	\$252,302,000
TOTAL	\$235,458,800	\$36,646,900	\$8,525,600	\$8,712,000	\$289,343,000

(1) SR 39 and I-81 Upgrade under design was not prioritized.

(2) Linglestown plan was not included in cost estimates and was not prioritized.

Ultimately, the total costs of improvements will likely exceed funding available. Creative funding of improvements including private funding sources may reduce some burden. By developing timeframe scenarios and identifying priority levels, the plan is intended to assist stakeholders in identifying appropriate projects when funding becomes available.

Table 5 Prioritization and Scenario Funding Amounts

Int #	Location	Municipality	Timeframe	Improvement	Total Improvement Cost	Priority Level	Funding Considerations	Action Items and Other Considerations	Responsible Party
NA.1	SR 39 from Mountain Road to Fairview Avenue	West Hanover Township	MID	Utility pole and drainage enhancement program to improve roadway clear zone and to prevent water on the roadway.	\$2,490,000	MEDIUM	<input type="checkbox"/> Local funding should be used to address drainage issues. Consider use of Liquid Fuels. <input type="checkbox"/> State/ Federal funding should be pursued to address utility pole issues. Consider a partnership with utility providers. <input type="checkbox"/> The Agility Program may be a mechanism to be considered.	<input type="checkbox"/> Pursue partnership with utility providers.	Local/State
NA.2	Linglestown	Lower Paxton Township	LONG	Alteration of traffic patterns through Linglestown Borough	Others	NA	<input type="checkbox"/> Final design funds of \$225,000 have been set aside in the first four years of the Twelve-year plan	<input type="checkbox"/> ONGOING -Study group currently moving project forward	NA
NA.3	I-81 to Hershey Park Drive	Multiple	LONG	Add capacity to corridors from I-81 to HPD via new alignment, upgrades or other means.	\$120,000,000	HIGHER	<input type="checkbox"/> State/Federal funding. Pursue funding through Twelve-year Program or innovative alternative.	<input type="checkbox"/> Consider formation of working group to move project forward. Group should consist of Tri-County, PENNDOT, municipalities, political leaders and local stakeholders such as HERCO and Hershey Medical Center <input type="checkbox"/> Program and initiate feasibility and environmental studies	HATS/ State
NA.4	Meadows of Hanover to Hershey Park Dr	South Hanover Township/ Derry Township	SHORT	Interjurisdictional signal system between Meadows of Hanover signals and Hersheypark Dr signal	\$80,000	HIGHER	<input type="checkbox"/> Local funding should be used.	<input type="checkbox"/> Coordinate with Meadows of Hanover to ensure the proper equipment is purchased	Local
NA.5	Meadows of Hanover to Hershey park Dr	South Hanover Township/ Derry Township	MID	Extend the cross section near Meadows of Hanover to the south to include turning lanes and wider shoulders	\$1,900,000	MEDIUM	<input type="checkbox"/> Local and/or State funding. Consider Liquid Fuels and/ or Transportation Enhancement Program. <input type="checkbox"/> The Agility Program may be a mechanism to be considered.	<input type="checkbox"/> Coordination between South Hanover Township and Derry Township should continue <input type="checkbox"/> Before implementing this improvements review status of I81 to HPD upgrade to determine if improvement is still worth considering	Local/State
NA.6	Orchard Hill Rd	West Hanover	MID	Provide geometric improvements to improve sight distance	\$406,000	MEDIUM	<input type="checkbox"/> State/ Federal funding should be used. Consider Twelve-year Program.	<input type="checkbox"/> Before implementing this improvements review status of I81 to HPD upgrade to determine if improvement is still worth considering	Local/State
1	SR 39 & Front Street	Susquehanna Township	SHORT	Install WB lane use control signs. Improve pavement markings to delineate travel way boundaries	\$24,000	MEDIUM	<input type="checkbox"/> Local and/or State funding. Consider Liquid Fuels and/ or Transportation Enhancement Program. <input type="checkbox"/> The Agility Program may be a mechanism to be considered.	<input type="checkbox"/> Coordinate improvements with investigation of signal warrants and possible implementation of a signal at SR 39 and Sixth Street	Local/ State
2	Intersections 2 and 3 SR 39 & SR 0322 WB/EB Ramps/Industrial Road	Susquehanna Township	LONG	Construct one of the upgrade options presented in report.	\$57,000,000	HIGHER	<input type="checkbox"/> State/Federal funding. Pursue funding through Twelve-year Program or innovative alternative.	<input type="checkbox"/> Program and initiate feasibility and environmental studies	HATS/ State
4	SR 39 & Crooked Hill Road AND SR 39 Widening	Susquehanna Township	MID	Construct an eastbound right-turn lane, a westbound right-turn lane and an additional southbound left-turn lane. THIS INCLUDES PART OF WIDENING (4-lane) OF SR 39 FROM US 322 THRU PROGRESS AVENUE.	\$7,500,000	MEDIUM	<input type="checkbox"/> State/Federal funding. Pursue funding through Twelve-year Program or innovative alternative. <input type="checkbox"/> Consider packaging with Intersection 5/MID-TERM as one project.	<input type="checkbox"/> Program and initiate feasibility and environmental studies	HATS/ State
5	SR 39 & Progress Avenue AND SR 39 Widening	Susquehanna Township	MID	Construct an additional eastbound thru lane and a westbound thru lane. Construct a westbound right-turn lane and a northbound right-turn lane. Modify signal phasing by adding a protected westbound left-turn phase and northbound left-turn turn phase to the existing signal configuration. THIS INCLUDES PART OF WIDENING (4-lane) OF SR 39 FROM US 322 THRU PROGRESS AVENUE	\$6,600,000	HIGHER	<input type="checkbox"/> State/Federal funding. Pursue funding through Twelve-year Program or innovative alternative. <input type="checkbox"/> Consider packaging with Intersection 4/MID-TERM as one project.	<input type="checkbox"/> Program and initiate feasibility and environmental studies <input type="checkbox"/> Consider long-term needs and possibly merge with LONG-TERM improvements at this location.	HATS/ State
5	SR 39 & Progress Avenue	Susquehanna Township	LONG	Option 1 – Traditional Intersection: Northbound lane requirements -triple left-turn, single thru, double right; Southbound lane requirements -single left, single thru, single/free right; Eastbound lane requirements- single left, triple thru, single/ free right; Westbound lane requirement-triple left, double thru, single/ free right or Option 2 – Single Point Urban Interchange (SPUI) Construct a single point urban interchange with Progress Avenue crossing over SR 39.	\$31,800,000	HIGHER	<input type="checkbox"/> State/Federal funding. Pursue funding through Twelve-year Program or innovative alternative.	<input type="checkbox"/> Program and initiate feasibility and environmental studies <input type="checkbox"/> Consider mid-term needs and possibly merge with MID-TERM improvements at this location.	HATS/ State
6	SR 39 & Crums Mills Road	Lower Paxton Township	MID	Install a traffic signal and construct a northbound right-turn lane	\$431,000	LOWER	<input type="checkbox"/> State/Federal funding. Pursue funding through Twelve-year Program or innovative alternative. <input type="checkbox"/> Since this is a LOWER priority and there are long-term Improvements identified, it may be beneficial to consider Developer Funded Improvements if additional development occurs in the vicinity of the intersection.	<input type="checkbox"/> Consider long-term needs and possibly merge with LONG-TERM improvements at this location.	HATS/ State

Table 5 Prioritization and Scenario Funding Amounts

Int #	Location	Municipality	Timeframe	Improvement	Total Improvement Cost	Priority Level	Funding Considerations	Action Items and Other Considerations	Responsible Party
6	SR 39 & Crums Mills Road AND SR 39 Widening	Lower Paxton Township	LONG	Construct an additional eastbound thru lane and a westbound thru lane. THIS INCLUDES PART OF THE COST OF THE EXTENSION OF WIDENING (4-lane) PROGRESS AVE THRU COLONIAL ROAD.	\$5,250,000	HIGHER	<input type="checkbox"/> State/Federal funding. Pursue funding through Twelve-year Program or innovative alternative. <input type="checkbox"/> Consider packaging with Intersection 7/LONG-TERM as one project.	<input type="checkbox"/> Program and initiate feasibility and environmental studies <input type="checkbox"/> Consider long-term needs and possibly merge with MID-TERM improvements at this location.	HATS/ State
7	SR 39 & Colonial Road	Lower Paxton Township	SHORT	Modify signal phasing by adding a protected eastbound left-turn phase and southbound left-turn turn phase to the existing signal configuration	\$4,400	HIGHER	<input type="checkbox"/> Local funding should be used. Consider use of Liquid Fuels.	<input type="checkbox"/> Contact PENNDOT to begin process of revising signal permit.	Local
7	SR 39 & Colonial Road	Lower Paxton Township	MID	Construct a westbound right-turn lane and a northbound right-turn lane. Construct a westbound left-turn lane	\$1,440,000	HIGHER	<input type="checkbox"/> State/Federal funding. Pursue funding through Twelve-year Program or innovative alternative. <input type="checkbox"/> Since there are Long-term Improvements identified, it may be beneficial to consider developer funded Improvements if additional development occurs in the vicinity of the intersection.	<input type="checkbox"/> Consider long-term needs and possibly merge with LONG-TERM improvements at this location.	HATS/ State
7	SR 39 & Colonial Road AND SR 39 Widening	Lower Paxton Township	LONG	Construct an additional eastbound thru lane and a westbound thru lane. Construct an additional southbound left-turn lane. Construct an additional northbound left-turn lane. THIS INCLUDES PART OF THE COST OF THE EXTENSION OF WIDENING (4-lane) PROGRESS AVE THRU COLONIAL ROAD.	\$19,000,000	MEDIUM	<input type="checkbox"/> State/Federal funding. Pursue funding through Twelve-year Program or innovative alternative. <input type="checkbox"/> Consider packaging with Intersection 6/LONG-TERM as one project.	<input type="checkbox"/> Program and initiate feasibility and environmental studies <input type="checkbox"/> Consider long-term needs and possibly merge with MID-TERM improvements at this location.	HATS/ State
10	Intersections 10 and 11 SR 39 & Piketown Road	West Hanover Township	LONG	Based on analysis of the proposed design, additional capacity may be needed, construct an additional EB left, an additional WB through lane, and a WB right-turn lane.	\$5,300,000	LOWER	<input type="checkbox"/> State/Federal funding. Pursue funding through Twelve-year Program or innovative alternative. <input type="checkbox"/> Since this is a LOWER priority and there have been recent improvements, it may be beneficial to consider Developer Funded Improvements if additional development occurs in the vicinity of the intersection.		HATS/ State
12	SR 39 & Manor Drive (NW)	West Hanover Township	SHORT	Improve sight distance for traffic entering SR 39 by grading and clearing vegetation to the east and clearing vegetation to the west. Consider intersection and curve warning signs.	\$12,000	MEDIUM	<input type="checkbox"/> Local funding should be used. Consider use of Liquid Fuels. <input type="checkbox"/> Consider trying to get developer funding for these improvements as part of ongoing development.		Local
14	Intersections 14, 15 AND 16 SR 39 & SR 0081 NB/SB Ramps	West Hanover Township	MID	SB- Realign westbound right-turn lane, NB-Realignment of the eastbound right-turn lane. Addition of a westbound left-turn lane on SR 39 @ Jonestown Road	\$8,712,000	NA	<input type="checkbox"/> Preliminary Engineering funds of \$2,293,000 have been set aside in the first four years of the Twelve-year plan	<input type="checkbox"/> ONGOING – Preliminary engineering activities are ongoing.	HATS/ State
16	SR 39 & Jonestown Road	West Hanover Township	SHORT	Shoulder widening on the eastern side	\$3,000	LOWER	<input type="checkbox"/> Local funding should be used. Consider use of Liquid Fuels.		Local
17	SR 39 & SR 0022	West Hanover Township	SHORT	Modify phasing by adding a northbound protected left-turn phase	\$2,200	HIGHER	<input type="checkbox"/> Local funding should be used. Consider use of Liquid Fuels.	<input type="checkbox"/> Contact PENNDOT to begin process of revising signal permit.	Local
17	SR 39 & SR 0022	West Hanover Township	MID	Construct a northbound left-turn lane and a southbound left-turn lane	\$680,000	HIGHER	<input type="checkbox"/> Local/ State/ Federal and local funding should be considered. <input type="checkbox"/> Pursue Twelve-year Program funding or developer/private funding		HATS/ State
17	SR 39 & SR 0022	West Hanover Township	LONG	Construct an additional northbound, southbound and westbound left-turn lane. Construct an additional northbound and southbound thru lane or alternate route	Cost included in NA.3 (I-81 to HPD)	NA	<input type="checkbox"/> To be determined	<input type="checkbox"/> COORDINATE LONG-TERM NEEDS WITH NA.3 (I-81 TO HPD) STUDIES AND OUTCOMES. OUTCOME OF FEASIBILITY AND ENVIRONMENTAL STUDIES MAY IMPACT LONG-TERM IMPROVEMENTS AT THIS LOCATION.	TBD
18	SR 39 & Manor Drive (SE)	West Hanover Township	SHORT	Install traffic calming devices to limit cut-through traffic from SR 22 to SR 39. Install curbing to control access to adjacent properties	\$10,000	LOWER	<input type="checkbox"/> Local funding should be used. Consider use of Liquid Fuels.	<input type="checkbox"/> Contact PENNDOT for guidance on evaluation and installation of traffic calming measures.	Local
19	SR 39 & Green Hill Road	West Hanover Township	SHORT	Restrict traffic to right-in/right-out movements. Northbound SR 39 traffic will be rerouted to SR 22 or Manor Drive. Eastbound left Green Hill Rd traffic will be rerouted to Clover Lane and SR 22.	\$4,300	MEDIUM	<input type="checkbox"/> State/ Federal funding should be used. <input type="checkbox"/> Consider packaging short-term restrictions at intersections 19, 34 and 35 as one improvement project.	<input type="checkbox"/> Pursue mid-term and long-term improvement alternatives to determine if short-term restrictions should be implemented or if other improvements can be implemented as restrictions may have negative feedback.	State
19	SR 39 & Green Hill Road	West Hanover Township	MID	Grade the southern approach to improve sight distance for entering vehicles if complete access remains	\$1,800,000	LOWER	<input type="checkbox"/> State/ Federal funding should be used. Consider Twelve-year Program.	<input type="checkbox"/> Before implementing this improvements review status of I81 to HPD upgrade to determine if improvement is still worth considering	HATS/ State

Table 5 Prioritization and Scenario Funding Amounts

Int #	Location	Municipality	Timeframe	Improvement	Total Improvement Cost	Priority Level	Funding Considerations	Action Items and Other Considerations	Responsible Party
20	SR 39 & Devonshire Heights Road	West Hanover Township	SHORT	Install curbing to control access to the church parking lot in the southeast quadrant and install a speed warning system (SWS) as a rural Intelligent Transportation System (ITS): YOUR SPEED XX, SAFE SPEED XX. In Colorado, speeds went from 66 to 45 mph.	\$79,000	LOWER	<input type="checkbox"/> Local and private funding for access control as part of Church expansion is ongoing. <input type="checkbox"/> State and local should coordinate and fund SWS through Twelve-year Program or it may be beneficial to pursue funding as a pilot evaluation of SWS in this application.	<input type="checkbox"/> ONGOING - Church and local coordinate access improvements as part of expansion. <input type="checkbox"/> Investigate SWS pilot initiative.	Local/ HATS/ State
20	SR 39 & Devonshire Heights Road	West Hanover Township	MID	Relocate the Douglas Road intersection onto Devonshire Heights and realign to the Devonshire Heights to east. Grade roadway to provide optimum site distance.	\$440,000	LOWER	<input type="checkbox"/> State/ Federal funding should be used. Consider the Twelve-year Program.	<input type="checkbox"/> Before implementing this improvements review status of I81 to HPD upgrade to determine if improvement is still worth considering	HATS/ State
20	SR 39 & Devonshire Heights Road	West Hanover Township	LONG	Construct exclusive left and right-turn lanes for both approaches of Devonshire Heights Road.	Cost included in NA.3 (I-81 to HPD)	NA	<input type="checkbox"/> To be determined	<input type="checkbox"/> COORDINATE LONG-TERM NEEDS WITH NA.3 (I-81 TO HPD) STUDIES AND OUTCOMES. OUTCOME OF FEASIBILITY AND ENVIRONMENTAL STUDIES MAY IMPACT LONG-TERM IMPROVEMENTS AT THIS LOCATION.	TBD
27	SR 39 & Hershey Park Dr	Derry Township/ South Hanover Township	SHORT	Install a changeable message sign on EB SR 39 to direct traffic to the appropriate lanes	\$180,000	HIGHER	<input type="checkbox"/> Local funding should be used.	<input type="checkbox"/> Coordination between South Hanover and Derry Townships should continue in monitoring this area	Local
27	SR 39 & Hershey Park Drive	Derry Township	LONG	Construct and additional SB left-turn lane	Cost included in NA.3 (I-81 to HPD)	NA	<input type="checkbox"/> To be determined	<input type="checkbox"/> COORDINATE LONG-TERM NEEDS WITH NA.3 (I-81 TO HPD) STUDIES AND OUTCOMES. OUTCOME OF FEASIBILITY AND ENVIRONMENTAL STUDIES MAY IMPACT LONG-TERM IMPROVEMENTS AT THIS LOCATION.	TBD
28	Hershey Park Drive & Sand Beach Road	Derry Township	SHORT	Modify phasing by adding a protected/permitted northbound left-turn phase	\$2,200	HIGHER	<input type="checkbox"/> Local funding should be used. Consider use of Liquid Fuels.	<input type="checkbox"/> Contact PENNDOT to begin process of revising signal permit.	Local
30	SR 743 & Gravel Hill Road	Derry Township	MID	Install a traffic signal including a southbound protected left-turn phase	\$158,000	LOWER	<input type="checkbox"/> State/Federal funding. Pursue funding through the Twelve-year Program <input type="checkbox"/> It may be beneficial to consider developer funded Improvements if additional development occurs in the vicinity of the intersection	<input type="checkbox"/> Monitor traffic volumes to determine when levels warrant signalization.	HATS/ State
31	SR 743 & Bindnagle Road	Derry Township	LONG	Install a traffic signal	\$158,000	LOWER	<input type="checkbox"/> State/Federal funding. Pursue funding through the Twelve-year Program <input type="checkbox"/> It may be beneficial to consider Developer Funded Improvements if additional development occurs in the vicinity of the intersection	<input type="checkbox"/> Monitor traffic volumes to determine when levels warrant signalization.	TBD
32	SR 743 & Canal Street	East Hanover Township	SHORT	Improve sight distance by grading slopes to north and south	\$11,600	LOWER	<input type="checkbox"/> Local funding should be used. Consider use of Liquid Fuels.	<input type="checkbox"/> Talk to property owners.	Local
33	SR 743 & Pine Road	East Hanover Township	SHORT	Relocate utility pole on southeast corner. Install curve warning pavement markings to north	\$5,000	LOWER	<input type="checkbox"/> Local funding should be used. Consider use of Liquid Fuels. <input type="checkbox"/> State should install curve-warning markings as part of maintenance activities.		Local/ State
34	SR 743 & Earlys Mill Road	East Hanover Township	SHORT	Restrict access to right-in/ right-out and grade roadway surface to north, possible SWS site	\$4,300	MEDIUM	<input type="checkbox"/> State/ Federal funding should be used. <input type="checkbox"/> Consider packaging short-term restrictions at intersections 19, 34 and 35 as one improvement project.	<input type="checkbox"/> Pursue mid-term and long-term improvement alternatives to determine if short-term restrictions should be implemented or if other improvements can be implemented as restrictions may have negative feedback.	HATS/ State
34	SR 743 & Earlys Mill Road	East Hanover Township	MID	Improve sight distance by realigning the west leg to align with the east leg (to the south) and grade roadway surface to north; or improve sight distance by removing structure and grade roadway surface to north	\$406,000	MEDIUM	<input type="checkbox"/> State/ Federal funding should be used. Consider Twelve-year Program.	<input type="checkbox"/> Before implementing this improvements review status of I81 to HPD upgrade to determine if improvement is still worth considering	HATS/ State
35	SR 743 & Meadow Lane	East Hanover Township	SHORT	Restrict access to right-in/ right-out, possible SWS site	\$4,300	MEDIUM	<input type="checkbox"/> State/ Federal funding should be used. <input type="checkbox"/> Consider packaging short-term restrictions at intersections 19, 34 and 35 as one improvement project.	<input type="checkbox"/> Pursue mid-term and long-term improvement alternatives to determine if short-term restrictions should be implemented or if other improvements can be implemented as restrictions may have negative feedback.	HATS/ State
35	SR 743 & Meadow Lane	East Hanover Township	MID	Improve sight distance by realigning the west leg to the south or improve sight distance by removing structure	\$256,000	MEDIUM	<input type="checkbox"/> State/ Federal funding should be used. Consider Twelve-year Program.	<input type="checkbox"/> Before implementing this improvements review status of I81 to HPD upgrade to determine if improvement is still worth considering	HATS/ State

Table 5 Prioritization and Scenario Funding Amounts

Int #	Location	Municipality	Timeframe	Improvement	Total Improvement Cost	Priority Level	Funding Considerations	Action Items and Other Considerations	Responsible Party
36	SR 743 & SR 0022	East Hanover Township	MID	Construct a second westbound left-turn lane	\$2,200,000	MEDIUM	<input type="checkbox"/> State/Federal funding. Pursue funding through Twelve-year program or innovative alternative.	<input type="checkbox"/> Program and initiate feasibility and environmental studies <input type="checkbox"/> Consider long-term needs and possibly merge with LONG-TERM improvements at this location.	HATS/ State
36	SR 743 & SR 0022	East Hanover Township	LONG	Construct a northbound left-turn lane and a southbound left-turn lane. Construct a southbound right-turn lane	\$974,000	MEDIUM	<input type="checkbox"/> State/Federal funding. Pursue funding through Twelve-year Program or innovative alternative.	<input type="checkbox"/> Program and initiate feasibility and environmental studies <input type="checkbox"/> Consider mid-term needs and possibly merge with MID-TERM improvements at this location.	HATS/ State
37	SR 743 & Jonestown Road	East Hanover Township	MID	Install a signal	\$130,000	LOWER	<input type="checkbox"/> State/Federal funding. Pursue funding through the Twelve-year program <input type="checkbox"/> It may be beneficial to consider Developer Funded Improvements if additional development occurs in the vicinity of the intersection	<input type="checkbox"/> Monitor traffic volumes to determine when levels warrant signalization. <input type="checkbox"/> Consider long-term needs and possibly merge with LONG-TERM improvements at this location.	TBD
37	SR 743 & Jonestown Road	East Hanover Township	LONG	Construct a northbound left-turn lane and a southbound left-turn lane	\$400,000	MEDIUM	<input type="checkbox"/> State/Federal funding. Pursue funding through Twelve-year Program or innovative alternative.	<input type="checkbox"/> Consider mid-term needs and possibly merge with MID-TERM improvements at this location	HATS/ State
38	Intersections 38 and 39 SR 743 & I-81 Northbound Ramps/Southbound Ramps	East Hanover Township	MID	NB Ramps: Install a traffic signal. Construct an eastbound free right. SB Ramps: Install a traffic signal. Construct a northbound left-turn lane.	\$1,066,000	MEDIUM	<input type="checkbox"/> State/Federal funding. Pursue funding through Twelve-year program or innovative alternative. <input type="checkbox"/> Consider developer-funded improvements.	<input type="checkbox"/> Program and initiate feasibility and environmental studies <input type="checkbox"/> Consider long-term needs and possibly merge with LONG-TERM improvements at this location.	HATS/ State
38	Intersections 38 and 39 SR 743 & I-81 Northbound Ramps/Southbound Ramps	East Hanover Township	LONG	NB Ramps: Construct an additional northbound thru lane. Construct an additional southbound thru lane. Construct eastbound double left-turn lanes. SB Ramps: Construct an additional westbound left-turn lane. Construct an additional northbound thru lane. Construct an additional southbound thru lane. Construct a southbound free right	\$12,420,000	HIGHER	<input type="checkbox"/> State/Federal funding. Pursue funding through Twelve-year program or innovative alternative. <input type="checkbox"/> Consider developer-funded improvements.	<input type="checkbox"/> Program and initiate feasibility and environmental studies <input type="checkbox"/> Consider mid-term needs and possibly merge with MID-TERM improvements at this location.	HATS/ State

Public Involvement

Three public meetings were held for this project:

The first public meeting for the project was held on February 6, 2003 at the West Hanover Township Volunteer Fire Company Social Hall. An open house forum was utilized to present project information and solicit input from the public. The meeting served to introduce the study, present the existing transportation situation for the subject corridors, and allow the community to meet and interact with the project team. A survey was also distributed to assist in gathering input from the public. Approximately 100 people attended the meeting, of which 41 completed and returned the survey.

The second public meeting for the project was held at 2 locations: the Linglestown Junior High School on September 11, 2003 and at the East Hanover Township Building on September 17, 2003. An open house forum was utilized to present project information and solicit input from the public. The meeting served to present proposed improvement alternatives for the public to view and comment on. A survey was also distributed to assist in gathering input from the public. Approximately 77 people total attended the meetings, of which 23 completed and returned the survey.

The third public meeting for the project was held at the Linglestown Junior High School on December 17, 2003. An open house forum was utilized to present project information and solicit input from the public. The meeting served to present final results of the study for the public to view and comment on. A survey was also distributed to assist in gathering input from the public. Approximately 40 people attended the meeting, of which 6 completed and returned the survey.

1. Existing Roadway Conditions

The SR 39 corridor study area extends from the Hersheypark Drive/Park Boulevard intersection in Derry Township to Front Street in Susquehanna Township. The SR 743 corridor study area extends from the Hersheypark Drive/Park Boulevard intersection in Derry Township to SR 443 in East Hanover Township. Both roadways are primarily two-lane facilities with widening for auxiliary lanes at major intersections. The pages following **Figure 1** identify the existing conditions for each study intersection.

Route 39/743 Transportation
and Land Use Study Group



Tri-County Regional
Planning Commission



Dauphin County
Planning Commission

Route 39/743 Transportation and Land Use Study

Study Area

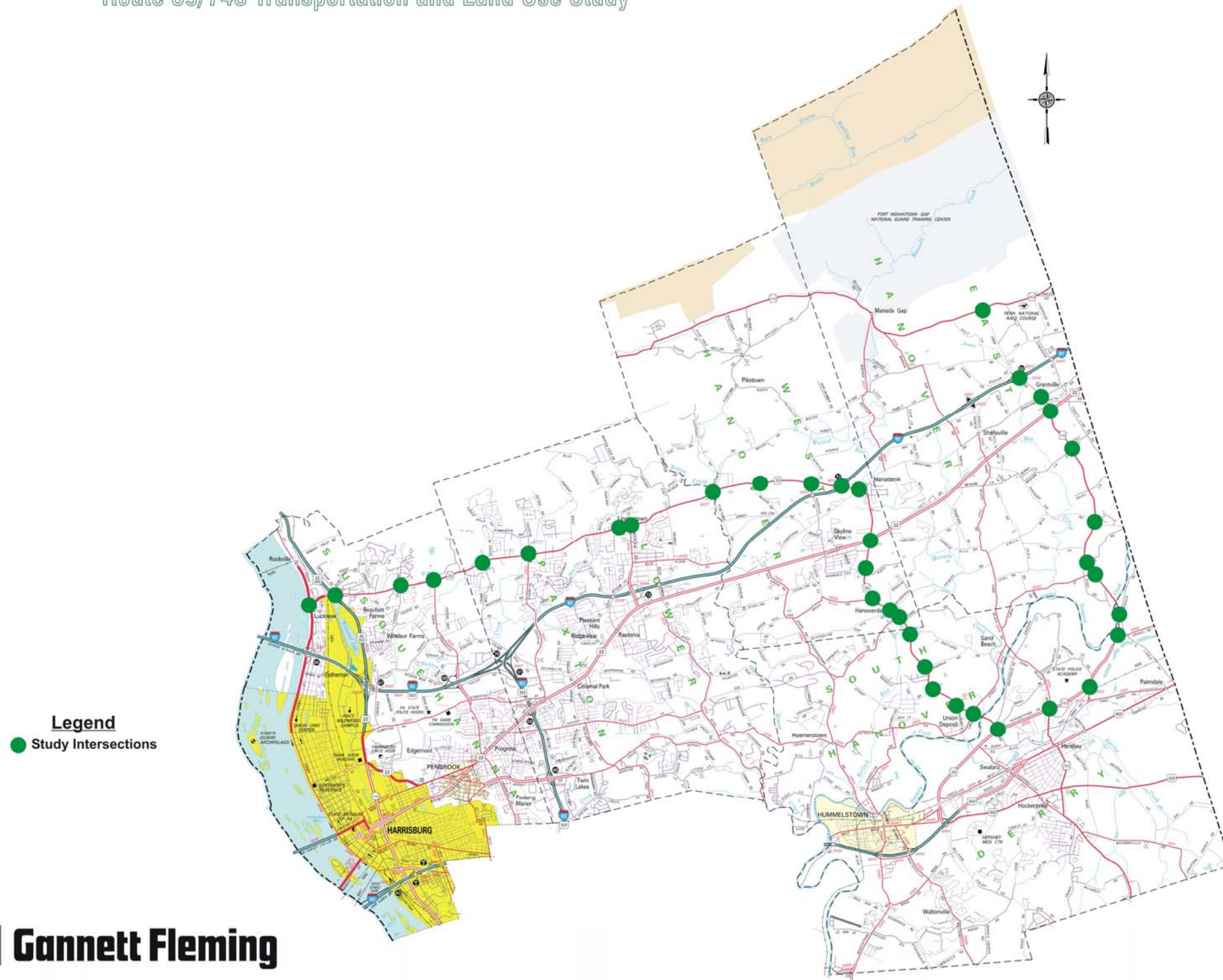














Figure 1 Route 39/743 Transportation and Land Use Study Area




Table 6 Study Area Existing Conditions




Intersection	Photo	Lane Assignments	Control	Curbing, Sidewalks, or Lighting?	Land Use
<p>SR 39/SR 2016 and Park Boulevard (Under construction at time of study)</p>		<p>Four-leg intersection EB – L, L, T, T, R WB – L, L, T, T, R NB – L, L, T, R SB – L, T, T, R Channelization on each approach</p>	<p>Eight-phase traffic signal w/ protected left-turn phasing in each direction</p>	<p>Curbing; lighting</p>	<p>Hersheypark, Giant Center, undeveloped land</p>
<p>SR 39 and Canal Street</p>		<p>Four-leg intersection One lane on each approach</p>	<p>STOP signs on Canal Street approaches</p>	<p>None</p>	<p>Undeveloped</p>
<p>SR 39 and Hanover Street</p>		<p>T-intersection One lane on each approach Channelization on SB SR 39</p>	<p>STOP sign on Hanover Street approach</p>	<p>Lighting</p>	<p>Residence and undeveloped land</p>




Intersection	Photo	Lane Assignments	Control	Curbing, Sidewalks, or Lighting?	Land Use
<p>SR 39 and Grandview Drive</p>		<p>T-intersection One lane on each approach</p>	<p>STOP sign on Grandview Drive approach</p>	<p>Curbing in northwest quadrant</p>	<p>Residence, convenience store, and office</p>
<p>SR 39 and Hanshue Road</p>		<p>Offset four-leg intersection One lane on each approach</p>	<p>STOP signs on Hanshue Road approaches</p>	<p>None</p>	<p>Residences and undeveloped land</p>
<p>SR 39 and Shetland Drive</p>		<p>T-intersection One lane on each approach</p>	<p>STOP signs Shetland Drive approach</p>	<p>None</p>	<p>Residences and undeveloped land</p>




Intersection	Photo	Lane Assignments	Control	Curbing, Sidewalks, or Lighting?	Land Use
<p>SR 39 and Red Top Road</p>		<p>T-intersection One lane on each approach</p>	<p>STOP signs on Red Top Road approach</p>	<p>None</p>	<p>Residence, nursery, and undeveloped land</p>
<p>SR 39 and Devonshire Heights Road</p>		<p>Offset four-leg intersection One lane on each approach</p>	<p>STOP signs on Devonshire Heights Road approaches Restricted sight distance due to vertical curve on SR 39</p>	<p>None</p>	<p>Residences and undeveloped land</p>
<p>SR 39 and Green Hill Road</p>		<p>T-intersection One lane on each approach</p>	<p>STOP sign on Green Hill Road approach Restricted sight distance due to vertical curve on SR 39 south of intersection</p>	<p>Limited lighting</p>	<p>Residences and Agway</p>




Intersection	Photo	Lane Assignments	Control	Curbing, Sidewalks, or Lighting?	Land Use
<p>SR 39 and Manor Drive</p>		<p>T-intersection One lane on each approach</p>	<p>STOP sign on Manor Drive approach</p>	<p>None</p>	<p>Residence, restaurant, and parking lot</p>
<p>SR 39 and SR 22</p>		<p>Skewed, four-leg intersection EB – L, T, TR WB – L, T, TR NB – LTR SB – LTR Channelization on EB, WB, and NB approaches</p>	<p>Five-phase traffic signal w/ protected left-tern phasing in EB and WB directions</p>	<p>Lighting</p>	<p>Residence and undeveloped land</p>
<p>SR 39 and Jonestown Road</p>		<p>Skewed, four-leg intersection EB – L, TR WB – LTR NB – LTR SB – L, TR</p>	<p>Two-phase traffic signal</p>	<p>Lighting; curbing on west side</p>	<p>Hotel, church, residence, and undeveloped land</p>



Intersection	Photo	Lane Assignments	Control	Curbing, Sidewalks, or Lighting?	Land Use
<p>SR 39 and SR 81 Northbound Ramps</p>		<p>Four-leg intersection</p> <p>NB – LR EB – L, T, T WB – T, TR</p> <p>Channelization on NB and WB approaches</p>	<p>STOP and YIELD signs on I-81 Northbound Ramp approach</p>	<p>None</p>	<p>Hotel and service station</p>
<p>SR 39 and SR 81 Southbound Ramps</p>		<p>Four-leg intersection</p> <p>SB – LR EB – T, TR WB – L, T, T</p> <p>Channelization on SB and EB approaches</p>	<p>STOP and YIELD signs on I-81 Southbound Ramp approach</p>	<p>None</p>	<p>Restaurant and service station</p>
<p>SR 39 and Fairville Avenue</p>		<p>T-intersection</p> <p>One lane on each approach</p>	<p>STOP sign on Fairville Avenue approach</p>	<p>Curbing on Fairville</p> <p>Curbing and sidewalk on SR 39 north of intersection</p>	<p>Hotel and service stations</p>




Intersection	Photo	Lane Assignments	Control	Curbing, Sidewalks, or Lighting?	Land Use
<p>SR 39 and Manor Drive</p>		<p>T-intersection One lane on each approach</p>	<p>STOP sign on Manor Drive approach</p>	<p>None</p>	<p>Residence and undeveloped land</p>
<p>SR 39 and Piketown Road</p>		<p>Offset four-leg intersection One lane on each approach Acceleration lane eastbound</p>	<p>STOP signs on Piketown Road approaches</p>	<p>None</p>	<p>Undeveloped land</p>
<p>SR 39 and Mountain Road</p>		<p>Four-leg intersection with small center traffic island One lane on each approach</p>	<p>STOP signs on Mountain Road approaches</p>	<p>Lighting</p>	<p>Residence and commercial uses</p>




Intersection	Photo	Lane Assignments	Control	Curbing, Sidewalks, or Lighting?	Land Use
<p>SR 39 and Blue Mountain Parkway</p>		<p>T-intersection One lane on each approach</p>	<p>STOP sign on Blue Mountain Parkway approach</p>	<p>Curbing and sidewalk for portion of south side of intersection</p>	<p>Residence and commercial uses</p>
<p>SR 39 and Colonial Road</p>		<p>Four-leg intersection EB – L, T, R WB – L, T, R NB – L, TR SB – L, T, R</p>	<p>Eight-phase traffic signal w/ protected/permitted left-turn phasing in each direction</p>	<p>Lighting and curbing Sidewalks on north side of intersection</p>	<p>Commercial uses and undeveloped land</p>
<p>SR 39 and Crums Mill Road</p>		<p>T-intersection EB – T, R WB – L, T NB – LR</p>	<p>STOP sign on Crums Mill Road approach</p>	<p>None</p>	<p>Commercial uses and undeveloped land</p>




Intersection	Photo	Lane Assignments	Control	Curbing, Sidewalks, or Lighting?	Land Use
<p>SR 39 and Progress Avenue</p>		<p>Four-leg intersection</p> <p>EB – L, T, R WB – L, TR NB – L, TR SB – L, TR</p>	<p>Four-phase traffic signal w/ protected/permitted left-turn phasing in EB and NB directions</p>	<p>Curbing and lighting</p> <p>Sidewalks on north side of intersection</p>	<p>Residence, commercial uses, and undeveloped land</p>
<p>SR 39 and Crooked Hill Road</p>		<p>Four-leg intersection</p> <p>EB – L, TR WB – L, TR NB – L, T, R SB – L, TR</p>	<p>Three-phase traffic signal w/ protected/permitted left turn phasing in WB direction</p>	<p>Curbing, sidewalks, and lighting</p>	<p>Commercial uses, school, and residence</p>
<p>SR 39 and SR 22/322 Westbound Ramp/Mountain View Road</p>		<p>Four-leg intersection</p> <p>EB – L, T, T WB – T, T, R NB – LR SB – LTR</p> <p>Channelization on WB, NB, and SB approaches</p>	<p>Four-phase traffic signal w/ protected/permitted left turn phasing in EB direction and split phasing in NB and SB directions</p>	<p>Lighting</p>	<p>Residence and undeveloped land</p>


Intersection	Photo	Lane Assignments	Control	Curbing, Sidewalks, or Lighting?	Land Use
<p>SR 39 and SR 22/322 Eastbound Ramp/Industrial Road</p>		<p>Four-leg intersection</p> <p>EB – T, TR WB – L, T, T NB – LTR SB – LR</p> <p>Channelization on SB approach</p>	<p>Four-phase traffic signal w/ protected/permitted left turn phasing in WB direction and split phasing in NB and SB directions</p>	<p>Lighting</p>	<p>Railroad and undeveloped land</p>
<p>SR 39 and Front Street</p>		<p>T-intersection</p> <p>WB – L, R NB – T, TR SB – L, T, T</p>	<p>Three-phase traffic signal w/ protected/permitted left turn phasing in SB direction</p>	<p>Lighting and curbing</p>	<p>Commercial uses</p>
<p>SR 743 and Sand Beach Road/Park Avenue</p>		<p>Four-leg intersection</p> <p>EB – L, T, T, R WB – L, T, TR NB – L, T, R SB – LTR</p>	<p>Five-phase traffic signal w/ protected/permitted left turn phasing in EB and WB directions</p>	<p>Lighting</p> <p>Curbing on south side of intersection</p>	<p>Commercial uses, Hersheypark, and undeveloped land</p>

Intersection	Photo	Lane Assignments	Control	Curbing, Sidewalks, or Lighting?	Land Use
<p>SR 743 and Laudermilch Road</p> <p>(Existing)</p>		<p>T-intersection</p> <p>EB – L, R NB – LT SB – TR</p> <p>Channelization on EB approach</p>	<p>Three-phase traffic signal w/ lead phase in NB direction</p>	<p>Lighting</p> <p>Curbing on southwest quadrant and east side of intersection</p>	<p>Undeveloped land</p>
<p>SR 743 And Laudermilch Road</p> <p>(Proposed w/ Hersheypark Drive extension)</p>	<p>No photo for proposed condition.</p>	<p>Four-leg intersection</p> <p>EB – L, T, TR WB – L, T, TR NB – L, TR SB – L, T, R</p> <p>Channelization on EB and WB approaches</p>	<p>Four-phase traffic signal w/ protected/permitted left turn phasing in EB and NB directions</p>		
<p>SR 743 and Gravel Hill Road</p>		<p>T-intersection</p> <p>WB – LR NB – TR SB – L, T</p> <p>Channelization on WB approach</p>	<p>STOP sign on Gravel Hill Road approach</p>	<p>None</p>	<p>Undeveloped land</p>

Intersection	Photo	Lane Assignments	Control	Curbing, Sidewalks, or Lighting?	Land Use
<p>SR 743 and Bindnagle Road</p>		<p>T-intersection One lane on each approach</p>	<p>STOP sign on Bindnagle Road approach</p>	<p>None</p>	<p>Undeveloped land</p>
<p>SR 743 and Canal Street</p>		<p>T-intersection One lane on each approach</p>	<p>STOP sign on Canal Street approach Restricted sight distance due to horizontal curvature of SR 743 and slopes adjacent to roadway</p>	<p>None</p>	<p>Residence and undeveloped land</p>
<p>SR 743 and Pine Road</p>		<p>Four-leg intersection One lane on each approach</p>	<p>STOP sign on Pine Road approaches</p>	<p>None</p>	<p>Residences and undeveloped land</p>

Intersection	Photo	Lane Assignments	Control	Curbing, Sidewalks, or Lighting?	Land Use
<p>SR 743 and Earlys Mill Road</p>		<p>Four-leg intersection One lane on each approach</p>	<p>STOP signs on Earlys Mill Road approaches Restricted sight distance due to vertical and horizontal curvature of SR 743</p>	<p>None</p>	<p>Residences and undeveloped land</p>
<p>SR 743 and Meadow Lane</p>		<p>T-intersection One lane on each approach</p>	<p>STOP sign on Meadow Lane approach Restricted sight distance due to vertical and horizontal curvature of SR 743 and slopes adjacent to roadway</p>	<p>None</p>	<p>Residences and undeveloped land</p>
<p>SR 743 and SR 22</p>		<p>Four-leg intersection EB – L, T, TR WB – L, T, T, R NB – LTR SB – LTR Channelization on EB, WB, and NB approaches</p>	<p>Five-phase traffic signal w/ protected left-turn phasing in EB and WB directions</p>	<p>Lighting Curbing in all quadrants but southwest</p>	<p>Residence and commercial uses</p>

Intersection	Photo	Lane Assignments	Control	Curbing, Sidewalks, or Lighting?	Land Use
<p>SR 743 and Jonestown Road</p>		<p>Four-leg intersection One lane on each approach</p>	<p>STOP signs on Jonestown Road approaches and flashing beacon</p>	<p>None</p>	<p>Farm, commercial use, and undeveloped land</p>
<p>SR 743 and SR 81 Northbound Ramps</p>		<p>Four-leg intersection One lane on each approach Channelization on EB approach</p>	<p>STOP sign on I-81 NB Ramp approach</p>	<p>None</p>	<p>Commercial uses and undeveloped land</p>
<p>SR 743 And SR 81 Southbound Ramps</p>		<p>Four-leg intersection One lane on each approach Channelization on WB approach</p>	<p>STOP sign on I-81 SB Ramp approach</p>	<p>None</p>	<p>Commercial uses</p>

Intersection	Photo	Lane Assignments	Control	Curbing, Sidewalks, or Lighting?	Land Use
<p>Bow Creek Road and SR 443</p>		<p>T-intersection One lane on each approach</p>	<p>STOP sign on SR 743 approach</p>	<p>None</p>	<p>Residence and undeveloped land</p>

A safety audit (summarized in **Table 7**) was also conducted of the study roadways to identify roadway conditions that may contribute to crashes or undesirable operating conditions. The following table outlines the long-range safety items to be considered in planning for the corridors, while the appendix contains a detailed summary of all observations.

Table 7 Safety Audit Results

Location	Observation
SR 39 and Colonial Club Drive	Poor sight distance looking west.
SR 39 and Sarah Street	Poor sight distance on northbound approach.
SR 39 between I-81 and West Hanover	No shoulders.
SR 39 south of Manor Drive	Several abrupt vertical curves.
SR 39 at Fairville Avenue	Several abrupt vertical curves.
SR 39 and Cassel Drive	Poor sight distance exiting Cassel.
SR 39 and Devonshire Road	Poor sight distance from eastbound Devonshire Road.
SR 39 and 6 th Street	Left-turning vehicles queue in thru lane.
SR 743 and Meadow Lane	Poor corner sight distance.
SR 743 and Earlys Mill Road	Poor corner sight distance.

Existing Traffic Volumes

A comprehensive data collection program was completed to establish existing traffic volumes for the study area. The data collection program consisted of a combination of 24-hour traffic volume recordings through the placement of Automatic Traffic Recording (ATR) devices as well as intersection turning movement counts.

24-Hour Traffic Volume Recordings

The ATRs were placed at several locations along both corridors to obtain information relative to hourly and daily traffic volumes and truck percentages. They were placed at the following locations:

- SR 39** Between Hersheypark Drive and Canal Street
 Between Canal Street and Hanshue Road
 Between Piketown Road and Mountain Road
 Between Blue Mountain Parkway and Colonial Road
 Between Crooked Hill Road and US22/322
 Between SR 22/322 and Front Street
- SR 743** Between Sand Beach Road and Laudermilch Road
 Between Bindnagle Road and Canal Street
 Between Jonestown Road and SR 81

These recordings were conducted for several weekdays and a weekend in August-November of 2003, and included vehicle classification. Data was collected at the locations on each roadway closest to Hersheypark Drive before and after the close of the summer season to determine the impact of tourist traffic. The comparison of volumes is illustrated in **Table 8**.

Table 8 Seasonal Traffic Volume Variation (Average Daily Traffic)

Location	Average Weekday		Saturday	
	August	September - October	August	September-October
SR 39 between Hersheypark Drive and Canal Street	15,313	13,415	15,620	12,083
SR 743 between Sand Beach Road and Laudermilch Road	15,951	14,091	15,590	12,888

As can be seen, the seasonal variation in weekday traffic volumes is relatively minor for a 24-hour period, while it is more pronounced on a Saturday. The peaking characteristics are also very similar for the weekday, with more traffic observed during the middle of the day in the summer. In addition, the Saturday volumes are comparable to the average weekday volumes. **Figure 2** details the 24-hour average weekday traffic volumes for each corridor.

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24-Hour Traffic Volumes

- Legend**
- 2002 Traffic Volume
 - 2012 Traffic Volume
 - ◇ 2022 Traffic Volume
 - 000 - Weekday Average Daily Traffic Volume
 - (0%) - Weekday Average Daily Truck Traffic (%)

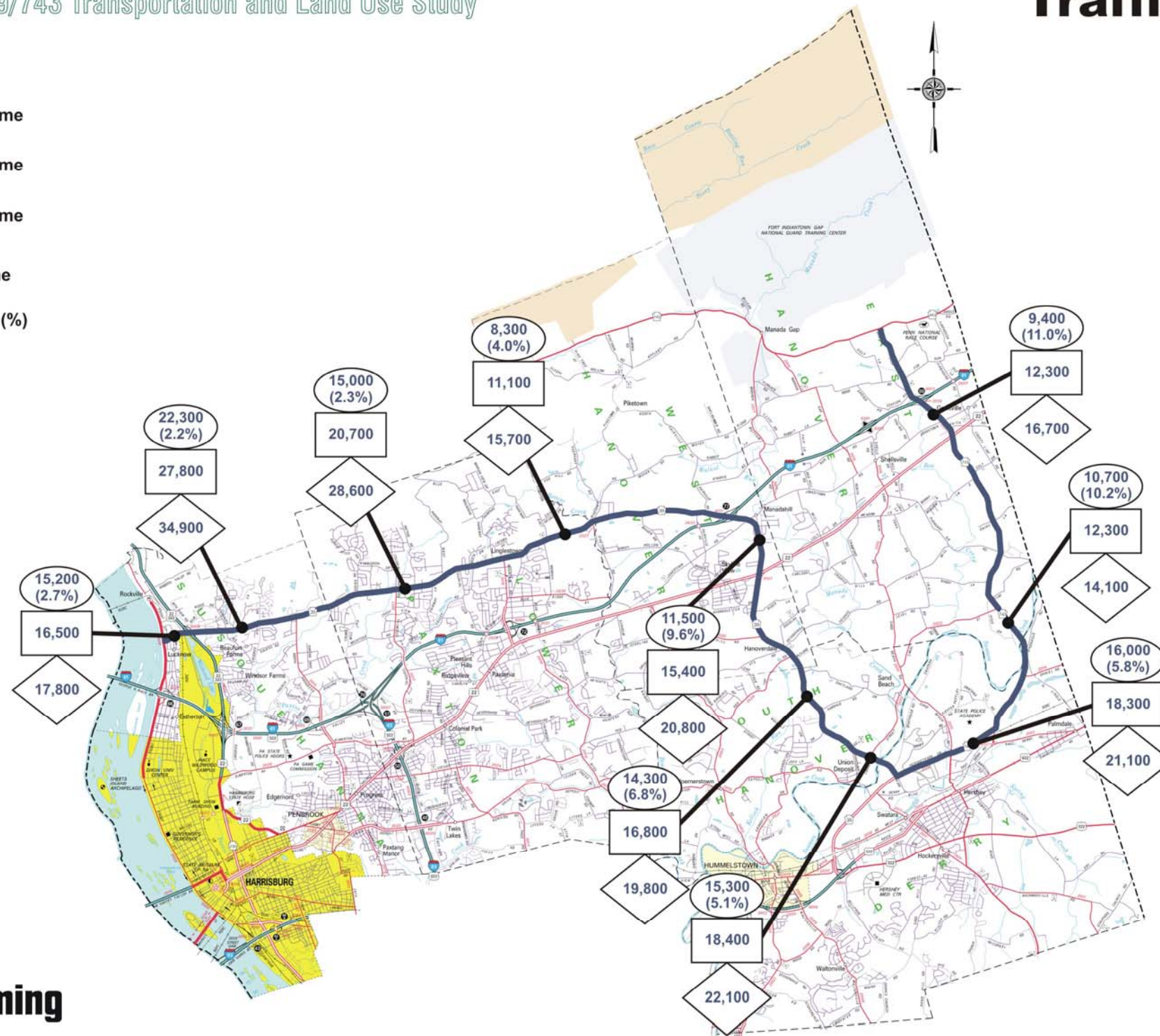


Figure 2 24-Hour Average Weekday Volumes

For SR 39, traffic volumes are at their highest at the limits of the study area, with much lower volumes experienced immediately west of SR 81. On SR 743, traffic volumes increase as you approach Hersheypark Drive. While truck percentages were higher on SR 743, the number of trucks were similar for both roadways between SR 81 and Hersheypark Drive.

Intersection Turning Movement Traffic Volume Recordings

The intersection turning movement counts were conducted at a majority of the study intersections as described earlier. Count data was also obtained from other studies for the following intersections:

- SR 39 and Fairville Avenue
- SR 39 and SR 81
- SR 39 and Jonestown Road
- SR 39 and Piketown Road
- SR 39 and Manor Drive.

Additional counts were conducted at the SR 39 intersections with Fairville Avenue, SR 81, and Jonestown Road as part of the SR 81 interchange study.

Data was collected on a typical weekday at each intersection from 6:00 AM to 9:00 AM and 3:00 PM to 6:00 PM. Truck percentages and pedestrian activity were also recorded. Since summer traffic volumes appear to be higher in the vicinity of Hersheypark, traffic volume information along SR 39 between Hersheypark Drive and SR 81 was collected before the end of the summer season, along with the SR 743 intersections with SR 81, Jonestown Road, Laudermilch Road, and Sand Beach Road. In addition, Saturday traffic volumes were recorded at the following selected locations from 11:00 AM to 1:00 PM:

- SR 39 and SR 81
- SR 39 and SR 22
- SR 39 and Hanover Street
- SR 39/SR 2016 and Park Boulevard
- SR 743 and SR 81
- SR 743 and SR 22
- SR 743 and Laudermilch Road
- SR 743 and Sand Beach Road.

The following tables outline the total peak hour intersection volumes for each location.

Table 9 SR 39 Total Intersection Peak Hour Volumes

Location	AM Peak Hour	PM Peak Hour	Saturday Peak Hour
SR 2016 and Park Boulevard	2,078	3,433	3,332
Canal Street	1,043	1,460	N/A
Hanover Street	1,064	1,547	1,076
Grandview Drive	1,124	1,599	N/A
Hanshue Road	926	1,099	N/A
Shetland Drive	1,036	1,311	N/A
Red Top Road	1,065	1,322	N/A
Devonshire Heights Road	1,067	1,332	N/A
Green Hill Road	980	1,216	N/A
Manor Drive	978	1,338	N/A
SR 22	1,690	2,162	1,734
Jonestown Road	1,026	1,016	N/A
SR 81 Northbound Ramps	1,184	1,522	1,260
SR 81 Southbound Ramps	1,303	1,357	1,201
Fairville Avenue	511	607	N/A
Manor Drive	415	475	N/A
Piketown Road	687	834	N/A
Mountain Road	1,306	1,468	N/A
Blue Mountain Parkway	1,291	1,535	N/A
Colonial Road	2,155	2,613	N/A
Crums Mill Road	1,724	2,105	N/A
Progress Avenue	2,617	3,028	N/A
Crooked Hill Road	2,305	2,368	N/A
SR 22/322 Westbound Ramp/Mountain View Road	2,501	2,704	N/A
SR 22/322 Eastbound Ramp/Industrial Road	2,574	2,554	N/A
Front Street	2,628	2,295	N/A

N/A – Not Available

Table 10 SR 743 Total Intersection Peak Hour Volumes

Location	AM Peak Hour	PM Peak Hour	Saturday Peak Hour
Sand Beach Road/Park Avenue	1,327	2,176	2,168
Laudermilch Road	1,507	1,849	1,434
Gravel Hill Road	1,236	1,248	N/A
Bindnagle Road	899	842	N/A
Canal Street	817	761	N/A
Pine Road	581	755	N/A
Earlys Mill Road	781	762	N/A
Meadow Lane	664	666	N/A
SR 22	1,267	1,597	1,292
Jonestown Road	863	1,016	N/A
SR 81 Northbound Ramps	907	1,110	890
SR 81 Southbound Ramps	719	741	953
SR 443	212	261	N/A

N/A – Not Available

With few exceptions, the highest traffic volumes were observed during the PM Peak Hour. Pedestrian activity was minimal, while total intersection truck percentages on a weekday ranged from 1.7percent during the PM Peak Hour at SR 39 and Progress Avenue to 9.1percent during the AM Peak Hour at SR 743 and the SR 81 Southbound Ramp. The resulting intersection turning movement traffic volumes are displayed on **Figures 3 through 5**.

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Existing AM Peak Hour Traffic Volumes

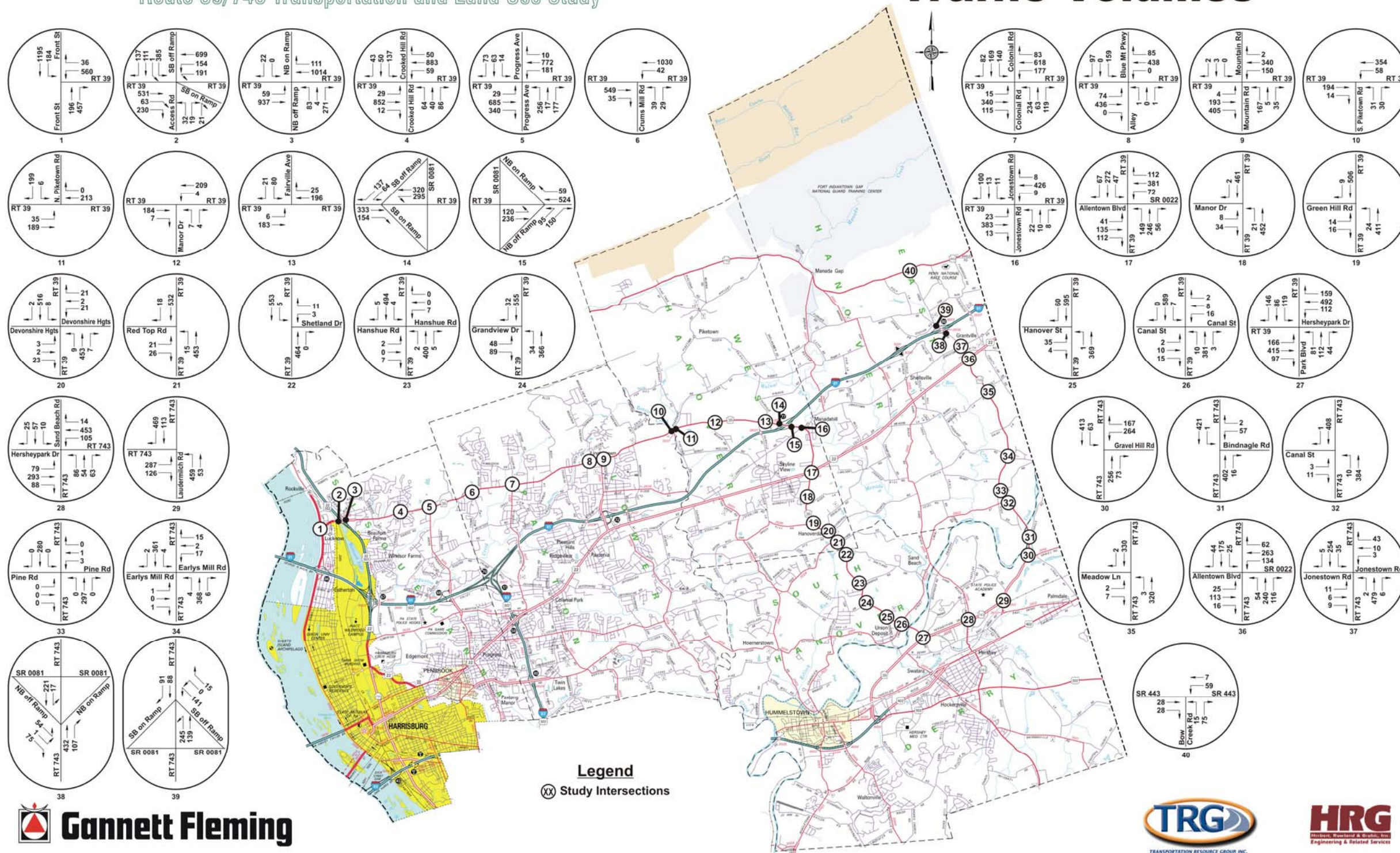


Figure 3 Existing AM Peak Hour Traffic Volumes

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Existing PM Peak Hour Traffic Volumes

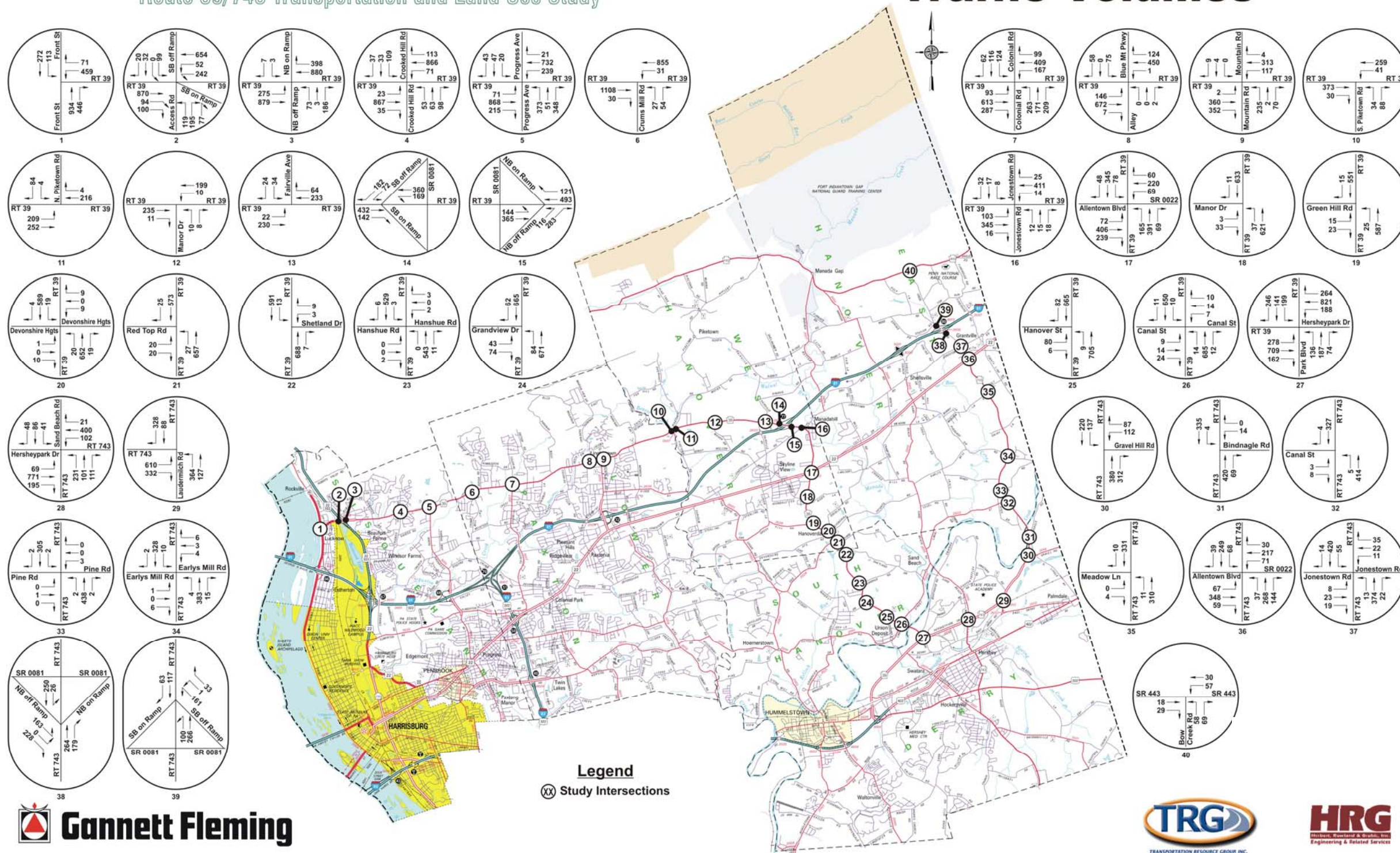


Figure 4 Existing PM Peak Hour Traffic Volumes

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Existing Saturday Peak Hour Traffic Volumes

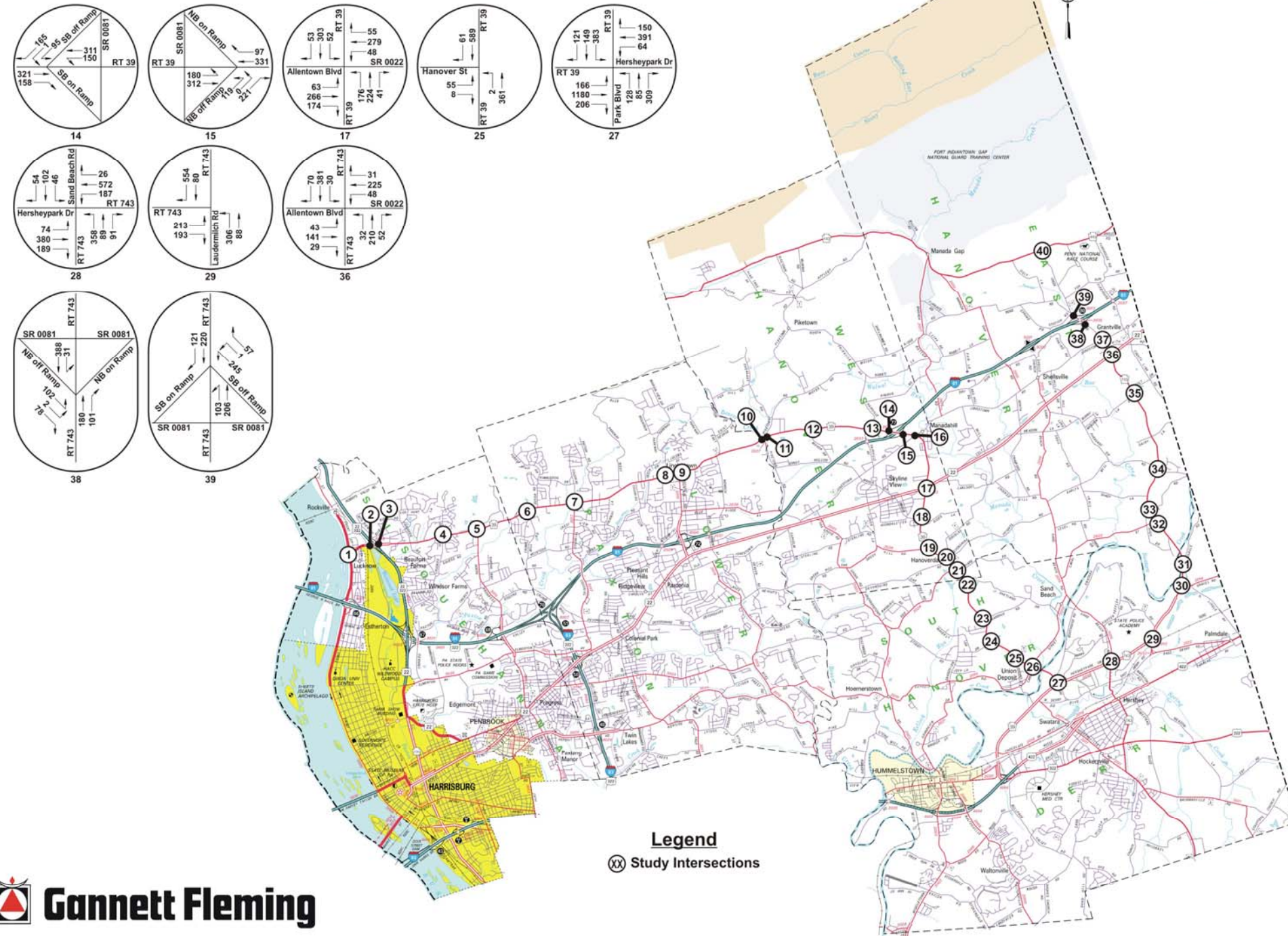


Figure 5 Existing Saturday Peak Hour Traffic Volumes

Existing Crash Data

The Pennsylvania Department of Transportation (PENNDOT) provided a five-year reportable crash history for the years 1996-2000 for the intersections in the study area. A reportable crash is one in which an injury or fatality occurs or if at least one of the vehicles involved required towing from the scene. The type of information provided includes number of injuries and fatalities, date, time of day, weather and roadway conditions, and type of crash. For the purposes of this study, any location with five or more reportable crashes per year was considered to be a high crash location. **Figure 6** illustrates the crash rate per intersection, number of crashes, and a summary of injuries/fatalities and predominant crash types.

As can be seen, only the intersection of SR 39 and SR 2016/Park Boulevard is considered to be a high crash location. The following intersections have crash rates from 5-9 crashes per year:

- SR 743 and Sand Beach Road/Park Avenue
- SR 743 and Laudermilch Road
- SR 743 and SR 22.

A review of the crash data reveals some typical trends related to the types of crashes. As expected, the majority of crashes at signalized intersections are angle-type crashes, which are generally related to red-light running. Most of the crashes at unsignalized intersections are rear-end crashes, involving vehicles being struck while waiting to execute turning maneuvers. Also, the crashes at unsignalized locations are generally more severe and involve more injuries.

The following six locations experienced fatal crashes during this time frame:

- SR 39 and Piketown Road
- SR 39 and Fairville Avenue
- SR 39 and SR 22
- SR 39 and SR 2016/Park Boulevard
- SR 743 and Meadow Lane
- SR 743 and SR 81.

In addition, a very serious crash occurred on July 13, 2002 along SR 39 between Greenwood Road and Pleasant Hill Road involving six fatalities. An extensive investigation of this crash indicated that alcohol and reckless driving were the cause and roadway conditions in the area were not a contributing factor.

The local police departments were also contacted to obtain local knowledge relative to operations and safety in the study area. **Table 11** provides a summary of those discussions.

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Crash Data

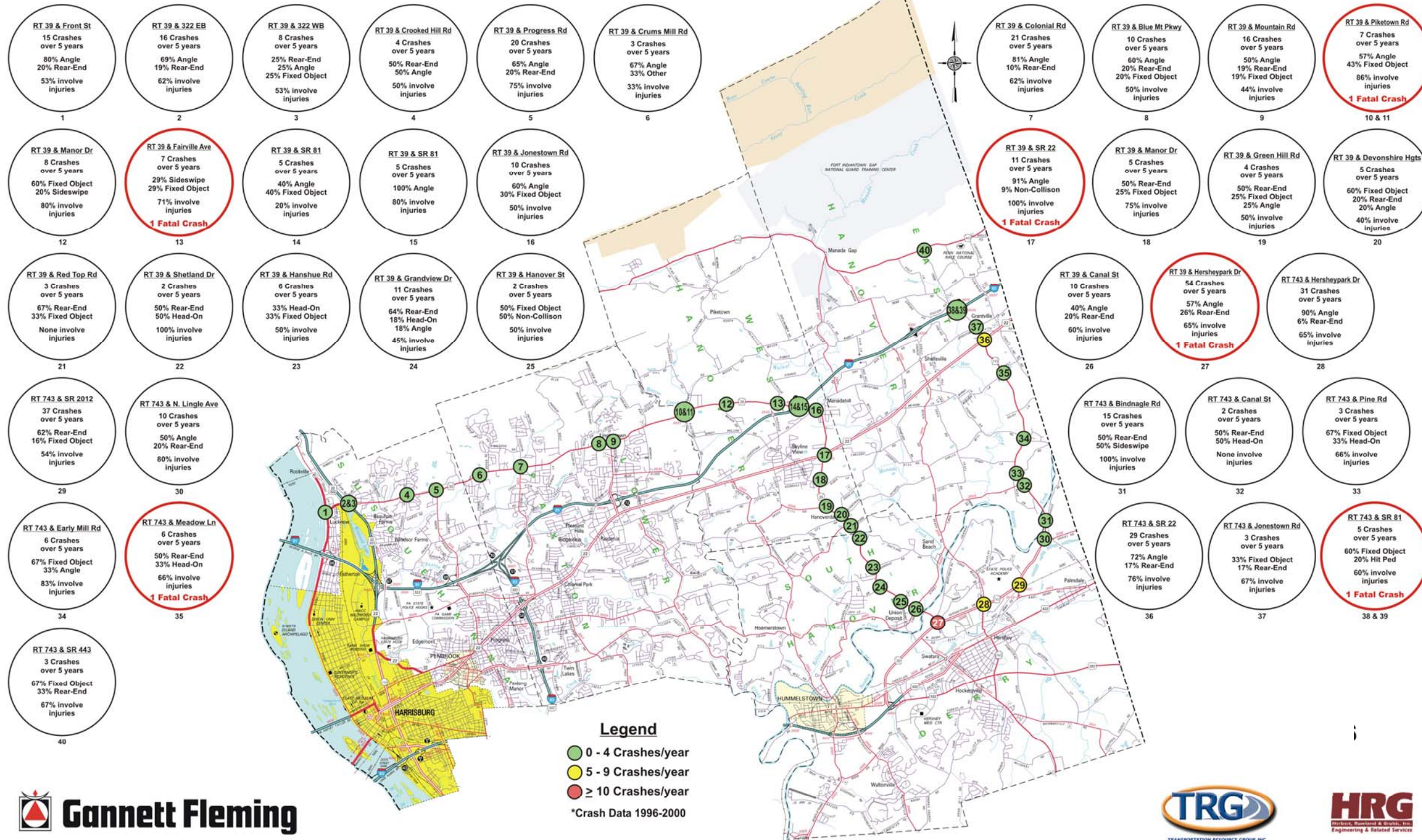


Figure 6 Crash Data

Table 11 Local Police Department Interviews

Susquehanna Township	<ul style="list-style-type: none"> • The intersection of SR 39 and 6th Street needs a signal. • Concern with unprotected southbound left turns and westbound right turns on red at the intersection of SR 39 and Front Street. • The protected left turn phase for Crooked Hill Road at SR 39 is too short. • Coordination/progression along SR 39 between Crooked Hill Road and Oakhurst is poor.
Lower Paxton Township	<ul style="list-style-type: none"> • SR 39 and Colonial Road is the biggest problem. • SR 39 and Mountain Road is also a concern, although crashes tend to be less severe than at Colonial Road.
West Hanover Township	<ul style="list-style-type: none"> • The biggest problems are experienced at the SR 39/SR 81 interchange area. There are a number of concerns related to the operation of access points, weaving, geometrics, and queues.
East Hanover Township	<ul style="list-style-type: none"> • SR 743 and Jonestown Road is the biggest problem. • Sight distance concerns at SR 743 with Meadow Lane and Earlys Mill Road • Sharp curve on SR 743 between Shady Lane and Pine Road. • SR 743 and Dairy Lane has had several rear-end collisions. • Increases in traffic due to future development at SR 743 and SR 81.
South Hanover Township	<ul style="list-style-type: none"> • SR 39 and Canal Road crashes tend to be severe. • Pulling out of Grandview Drive at SR 39 is difficult. • There are an unusually high number of crashes on SR 39 near Hayshed Road due to curvature of roadway.
Derry Township	<ul style="list-style-type: none"> • The banking at Laudermilch Rd causes rollover crashes – 2 since the intersection was reopened to traffic. • The dedicated right from EB HPD to Park Avenue bottles up because of traffic trying to enter the suite holder parking, signing needs to be improved to tell drivers where to go. • Crashes at Sandbeach Rd are from drivers coming from HP trying to beat the light.

Existing Operational Conditions

Existing operational conditions were identified by conducting capacity analyses for each of the study intersections utilizing the methodologies outlined in the *Highway Capacity Manual* published by the Transportation Research Board. By definition, capacity represents “the maximum hourly rate at which persons or vehicles can reasonably be expected to traverse a point or uniform section of a lane or roadway during a given time period under prevailing roadway, traffic, and control conditions”. Capacity is generally described by Level of Service (LOS), which is defined as a qualitative measure that characterizes “operational conditions within a traffic stream and their perception by motorists and passengers”.

LOS for signalized and unsignalized intersections is based on average control delay per vehicle, although the criteria are somewhat different because drivers expect different levels of performance from different kinds of transportation systems. For signalized intersections, the expectation is that higher traffic volumes can be accommodated as compared to unsignalized intersections. In general, LOS C is considered to be the threshold criterion for acceptable operations in suburban conditions. The correlation between LOS and performance measures for each type of facility is illustrated in the following tables.

Table 12 Level of Service Criteria for Signalized Intersections

Level of Service	Description	Control Delay Per Vehicle (sec./veh.)
A	Very low control delay; short cycle lengths; progression is extremely favorable; most vehicles do not stop at all.	≤ 10
B	Good progression; short cycle lengths; more vehicles stop than with LOS A causing higher levels of average delay.	>10 and ≤20
C	Fair progression; longer cycle lengths; high volume/capacity ratios; individual cycle failures may begin to appear; the number of vehicles stopping is significant, although many still pass through the intersection without stopping.	>20 and ≤35
D	The influence of congestion becomes more noticeable; unfavorable progression; long cycle lengths; many vehicles stop, and the proportion of vehicles not stopping declines; individual cycle failures are noticeable.	>35 and ≤55
E	Considered by many agencies to be the limit of acceptable delay; poor progression; long cycle lengths; high volume/capacity ratios; individual cycle failures are frequent occurrences.	>55 and ≤80
F	Considered to be unacceptable to most drivers; arrival flow exceeds the capacity of the intersection; high volume/capacity ratios with many individual cycle failures; poor progression; long cycle lengths.	>80

Table 13 Level of Service Criteria for Unsignalized Intersections

Level of Service	Description	Control Delay Per Vehicle (sec./veh.)
A	Little or no delay.	≤ 10
B	Short traffic delays.	>10 and ≤15
C	Average traffic delays.	>15 and ≤25
D	Long traffic delays.	>25 and ≤35
E	Very long traffic delays.	>35 and ≤50
F	Extreme delays and possible severe congestion.	>50

Capacity calculations were conducted for the existing traffic volumes utilizing the Synchro traffic analysis and simulation software package. This package follows the methodologies outlined in the *Highway Capacity Manual*. **Figure 7** details the results of this analysis.

Several intersections along the SR 39 corridor are presently experiencing operational problems during one or more of the peak hours analyzed (LOS E and F), including the following:

- SR 39 and Canal Street
- SR 39 and Hanover Street
- SR 39 and Grandview Drive
- SR 39 and Devonshire Heights Road
- SR 39 and Green Hill Road
- SR 39 and Mountain Road
- SR 39 and Blue Mountain Parkway
- SR 39 and Crums Mill Road
- SR 39 and Progress Avenue
- SR 39 and SR 22/322 Eastbound Ramp/Industrial Road.

Several others experience LOS D during one or more of the peak periods. Along SR 743, only the intersections with Laudermilch Road and Gravel Road are presently experiencing operational problems.

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Existing Levels of Service

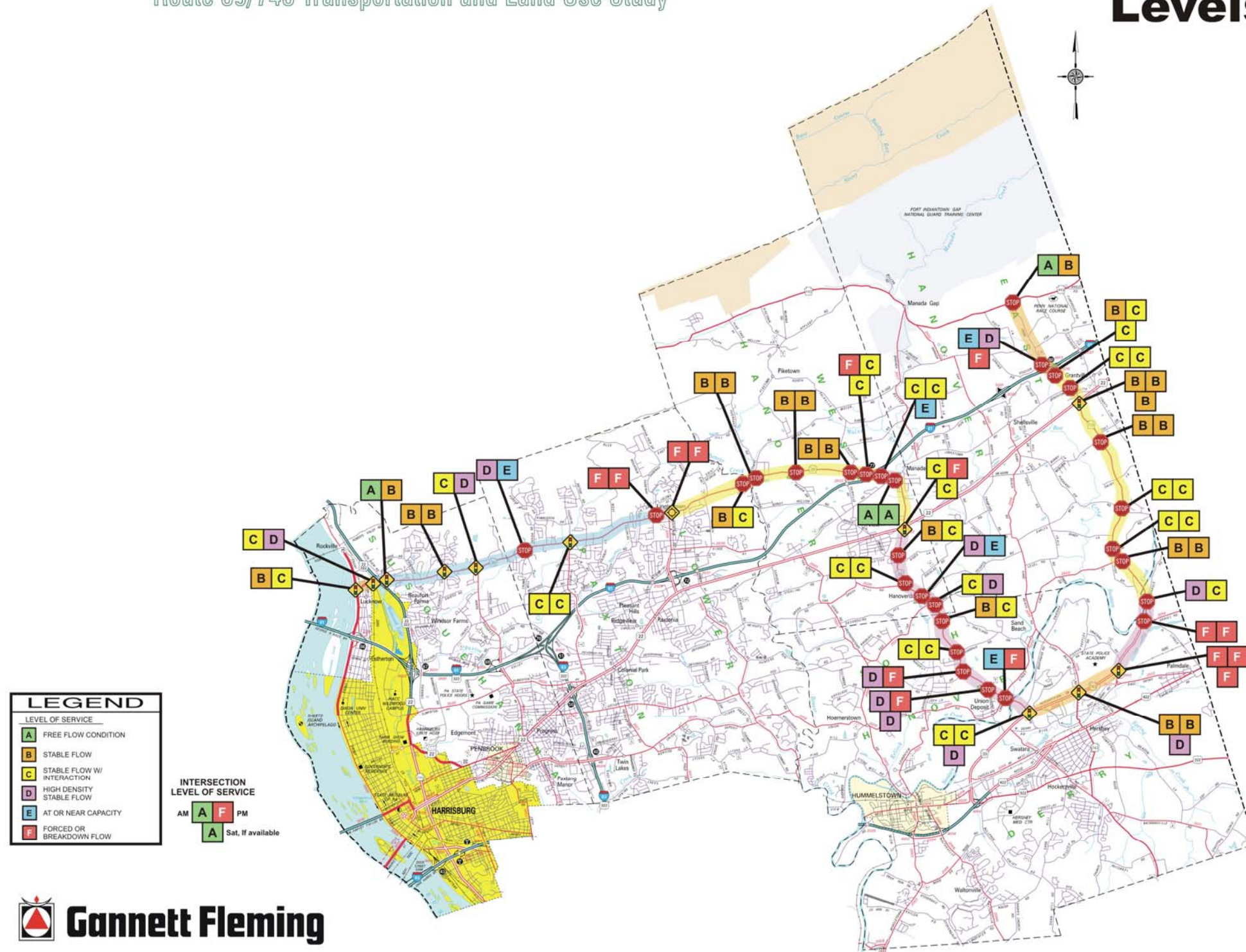


Exhibit 7

Figure 7 Existing Levels of Service



Land Use/Zoning

Each of the Township’s Zoning Plans was reviewed to identify zoning practices along each of the corridors. For both corridors, the area between Hersheypark Drive and SR 81 is primarily zoned residential, except for a small portion of SR 743 that is zoned agricultural. Those areas near SR 22, Jonestown Road, and SR 81 are zoned for commercial development. SR 39 from SR 81 to approximately Crums Mill Road is a mix of uses, while the predominant zoning from Crums Mill to Front Street is residential. A 21-acre parcel of land along SR 39 in West Hanover Township was recently rezoned from FRA (Flexible Rural Agriculture) to R-3 (Suburban Residential). **Figure 8** illustrates the zoning practices adjacent to the study corridors.

In addition to existing zoning, information was obtained relative to planned/approved developments in each of the Townships that may affect the study area. The following is a summary of these developments.

Table 14 Planned/Approved Development Information

Susquehanna Township	<ul style="list-style-type: none"> • Dennison Estates – 348 residential units located on the south side of SR 39 between Progress Avenue and Crums Mill Road. • Vartan Supply Company – 413,410 square foot office/retail development located on the north side of SR 39 between Progress Avenue and Crooked Hill Road.
Lower Paxton Township	<ul style="list-style-type: none"> • No anticipated developments.
West Hanover Township	<ul style="list-style-type: none"> • Capital Baptist Church – 60,000 square foot church located on SR 39 between SR 22 and Jonestown Road. • Sagewicke, Brynfield, and Brynfield East – 262 condominium unit, 80 student daycare, and 100 unit congregational care development located on SR 39 between SR 22 and Green Hill Road. • Central Dauphin High School – 1,800 student high school located on Blue Ridge Avenue between SR 39 and Jonestown Road. • Russell Tract – 143 residential units located on SR 39 between Piketown Road and SR 81. • The Townes of Hershey Road – 79 residential units located on SR 39 between Green Hill Road and SR 22. • Sandy Hollow – 79 residential units located on Manor Drive south of SR 39. • Mayberry – 90 residential units located on Clover Lane. • Meadows of Fort Stewart – 80 residential units located Sandy Hollow Road between Piketown Road and Jonestown Road.
East Hanover Township	<ul style="list-style-type: none"> • Truck Terminal – Truck terminal located on Bow Creek Road.
South Hanover Township	<ul style="list-style-type: none"> • Meadows of Hanover – 824 residential unit and 96,000 square foot commercial development located on SR 39 north of Grandview Road.
Derry Township	<ul style="list-style-type: none"> • No anticipated developments.

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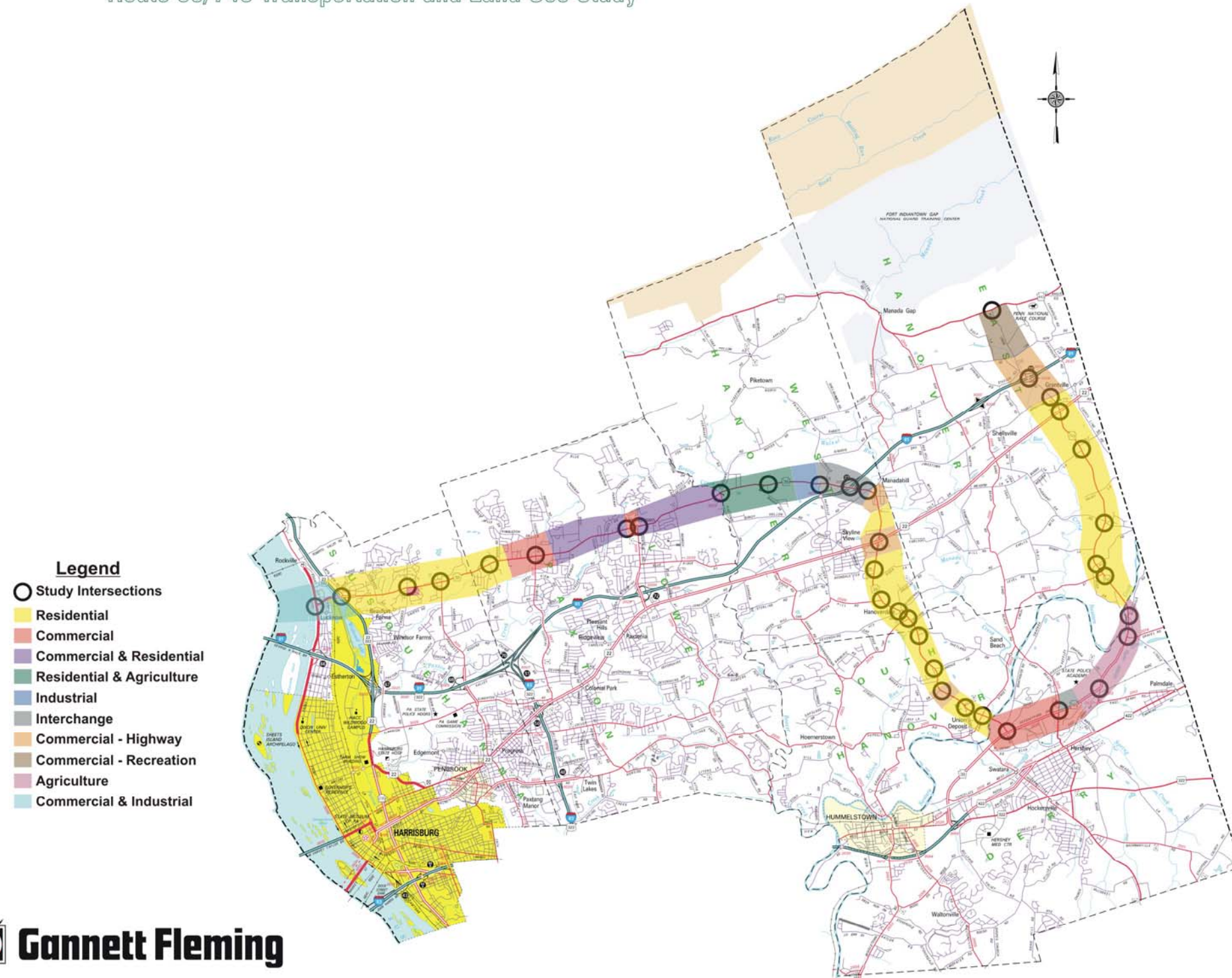
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Land Use



- Legend**
- Study Intersections
 - Residential
 - Commercial
 - Commercial & Residential
 - Residential & Agriculture
 - Industrial
 - Interchange
 - Commercial - Highway
 - Commercial - Recreation
 - Agriculture
 - Commercial & Industrial

Exhibit 8



Figure 8 Land Use Adjacent to the Corridor

Other Studies and Projects

There are a number of other transportation studies being conducted in the study area along with several planned improvements that may impact traffic operations in the corridors. The following table outlines each project, and **Figure 9** identifies their locations.

Table 15 Other Studies and Projects

I-81 Widening Study	Evaluation of impacts associated with widening SR 81 to 3 lanes in each direction from Maryland border to Interstate 83.
SR 39 and Sturbridge Drive	Signalization
Linglestown Square Study	Evaluation of improvement alternatives to reduce congestion and improve safety for the intersections of SR 39 with Blue Mountain Parkway, Mountain Road, and surrounding area.
SR 39 and Piketown Road	Realignment to form four-leg intersection with signalization.
SR 39/SR 81 Study	Evaluation of improvements to the SR 39/SR 81 area including Fairville Avenue and Jonestown Road.
SR 22 Corridor Study	Traffic signal upgrades and retiming from Blue Ribbon Road to Interstate 78.
SR 39 and Grandview Drive/Hanover Street	Signalization.
SR 39/SR 2016 and Park Boulevard	Geometric and signalization upgrades presently under construction.
Hersheypark Drive Extension	Extension of Hersheypark Drive from Laudermilch Road to US 422 presently under construction.

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Other Studies and Projects

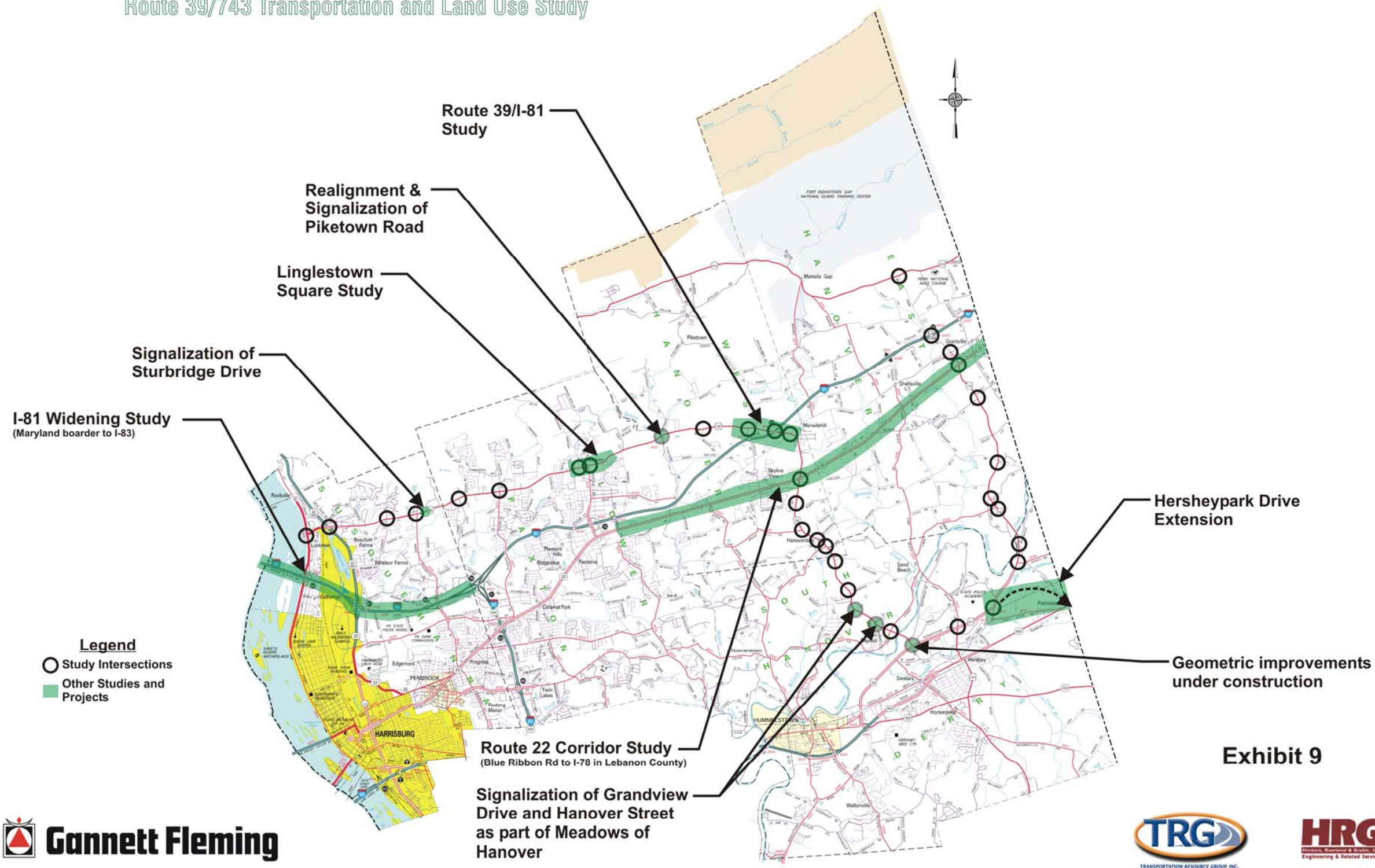


Exhibit 9



Figure 9 Other Studies and Projects

2. Traffic Forecasts

Traffic was forecasted based on current and approved land use within the study area for 2012 and 2022 to evaluate study intersections and identify existing and future problems to determine possible mitigating improvements. A scenario with three potential changes in land use was also developed to forecast traffic given certain potential developments.

Two options for determining the average weekday and weekend projections for the study were examined and compared. Recommendations were made from these comparisons.

Existing Traffic Volumes – Traffic Data was collected as described in the Existing Roadway Conditions section of this report.

PENNDOT HPMS Projections – The PENNDOT HPMS is one option for deriving the traffic forecasts for the Route 39/743 Transportation and Land Use Study. This section examines the HPMS projections and the corresponding traffic growth factors and forecast factors. By applying HPMS factors to the traffic counts, the average weekday and weekend 2012 and 2022 projections can be determined.

Tri-County Regional Planning Commission (TCRPC) Model Projections – Another option for predicting the traffic forecasts for the study is through the TCRPC Model. Growth factors and forecast factors are identified for this option and applied to the traffic counts.

Comparison of HPMS and TCRPC Forecasts – The TCRPC Model Projections and the HPMS Projections were compared in this section of the report. Major differences in the two are summarized and a forecast recommendation made.

Land Use Scenario Projections – As part of the Route 39/743 Transportation and Land Use Study, TCRPC identified three possible land use changes within the study area. This section summarizes the three land use changes and describes the process of how this was accomplished. Results are also presented.

The traffic forecasts were derived from the Tri-County Regional Planning Commission's (TCRPC) travel demand model outputs developed for the Capital Area Transit (CAT) Corridor One project and the PENNDOT HPMS traffic growth factors to determine 2012 and 2022 projections. These forecasts were compared to recommend the appropriate projections for use in the study.

A land use scenario was then developed based on suggestions from the TCRPC. The land use changes within the scenario are not included in the TCRPC model outputs, but could occur and have a potentially significant impact along the study area roadways. Forecasted traffic from the scenario was developed and analyzed at the link level within the study area.

PENNDOT HPMS Projections

PENNDOT HPMS Traffic Growth Factors

PENNDOT HPMS Traffic Growth Factors are percentage factors to estimate future Annual Average Daily Traffic (AADT) values. These factors are estimates and do not take into consideration specific land uses (opening of shopping centers, tourist attractions, etc.) which could cause growth to change over time within specific areas.

Growth values were determined by PENNDOT using an average of the last 9 years of growth information (1993 to 2002) and comparing it to an average growth calculated from 9 years of historical growth (1975 to 1984). These annual growth rates are calculated for each county and are sub-divided into six Functional Class Groups. The Functional Class Groups and their related growth rate percentages for Dauphin County are:

1. Urban Interstate – 2.3percent
2. Rural Interstate – 2.5percent
3. Urban: Freeway/Expressway, Other Principal Arterial and Major Arterial – 2.2percent
4. Rural: Principal Arterial, Minor Arterial – 2.4percent
5. Urban: Collector, Local – 2.2percent
6. Rural: Major Collector, Minor Collector & Local – 2.4percent

Both SR 39 and SR 743 are in Dauphin County and are classified as urban collectors (Functional Class 5) according to PENNDOT's official functional classification map. This equates to a 2.2percent annual traffic growth on the study area roadways.

PENNDOT HPMS Factor Forecasts

As a result of applying the above PENNDOT HPMS factors to the traffic counts, the average weekday and average weekend 2012 and 2022 traffic projections are shown in **Tables 16** and **17**.

Note: A link was added to this analysis north of I-81 (S1) for comparison purposes. Traffic counts were not taken at this location; however it is located closest to the scenario development discussed later. Current volumes were calculated using the TCRPC model outputs from 1995 and factoring them to 2002 using the annual growth from the model.

Table 16 Average Weekday PENNDOT HPMS Factor Projections

Location		Current Counts			2012 Projections			2022 Projections		
		EB-NB	WB-SB	Total	EB-NB	WB-SB	Total	EB-NB	WB-SB	Total
1	SR 39 between Hersheypark Drive and Canal Street	7,851	7,462	15,313	9,578	9,104	18,682	11,685	11,106	22,792
1A	SR 39 between Hersheypark Drive and Canal Street	7,001	6,414	13,415	8,541	7,825	16,366	10,420	9,547	19,967
2	SR 39 between Grandview Drive and SR 22	6,994	7,290	14,284	8,533	8,894	17,426	10,410	10,850	21,260
3	SR 39 between SR 22 and SR 81	5,776	5,715	11,491	7,047	6,972	14,019	8,597	8,506	17,103
4	SR 39 between I-81 and Linglestown Square	4,119	4,186	8,305	5,025	5,107	10,132	6,131	6,230	12,361
5	SR 39 between Linglestown Square and Progress Avenue	7,367	7,671	15,038	8,988	9,359	18,346	10,965	11,418	22,383
6	SR 39 between Progress Avenue and SR 22-322	10,728	11,620	22,348	13,088	14,176	27,265	15,968	17,295	33,263
7	SR 39 between SR 22-322 and Front Street	6,433	8,751	15,184	7,848	10,676	18,524	9,575	13,025	22,600
8A	SR 743 between Sand Beach Road and SR 2012 Connector	7,599	8,352	15,951	9,271	10,189	19,460	11,310	12,431	23,741
8B	SR 743 between Sand Beach Road and SR 2012 Connector	7,494	6,597	14,091	9,143	8,048	17,191	11,154	9,819	20,973
9	SR 743 between SR 2012 Connector and Canal Street	5,281	5,414	10,695	6,443	6,605	13,048	7,860	8,058	15,918
10	SR 743 between SR 22 and SR 81	4,575	4,794	9,369	5,582	5,849	11,430	6,809	7,135	13,945
S1	SR 743 North of SR 81	4,302	4,315	8,617	5,249	5,264	10,513	6,403	6,422	12,826

Table 17 Average Weekend PENNDOT HPMS Factor Projections

Location		Current Counts			2012 Projections			2022 Projections		
		EB-NB	WB-SB	Total	EB-NB	WB-SB	Total	EB-NB	WB-SB	Total
1	SR 39 between Hersheypark Drive and Canal Street	7,756	7,864	15,620	9,462	9,594	19,056	11,544	11,705	23,249
1A	SR 39 between Hersheypark Drive and Canal Street	6,281	5,802	12,083	7,663	7,078	14,741	9,349	8,636	17,984
2	SR 39 between Grandview Drive and SR 22	7,117	7,312	14,429	8,683	8,921	17,603	10,593	10,883	21,476
3	SR 39 between SR 22 and SR 81	5,645	5,686	11,331	6,887	6,937	13,824	8,402	8,463	16,865
4	SR 39 between I-81 and Linglestown Square	3,296	3,321	6,617	4,021	4,052	8,073	4,906	4,943	9,849
5	SR 39 between Linglestown Square and Progress Avenue	5,288	5,561	10,849	6,451	6,784	13,236	7,871	8,277	16,148
6	SR 39 between Progress Avenue and SR 22-322	7,037	6,482	13,519	8,585	7,908	16,493	10,474	9,648	20,122
7	SR 39 between SR 22-322 and Front Street	3,742	5,327	9,069	4,565	6,499	11,064	5,570	7,929	13,498
8A	SR 743 between Sand Beach Road and SR 2012 Connector	7,378	8,212	15,590	9,001	10,019	19,020	10,981	12,223	23,204
8B	SR 743 between Sand Beach Road and SR 2012 Connector	6,912	5,976	12,888	8,433	7,291	15,723	10,288	8,895	19,182
9	SR 743 between SR 2012 Connector and Canal Street	5,786	5,625	11,411	7,059	6,863	13,921	8,612	8,372	16,984
10	SR 743 between SR 22 and SR 81	5,219	5,540	10,759	6,367	6,759	13,126	7,768	8,246	16,014
S1	SR 743 North of SR 81	4,302	4,315	8,617	5,249	5,264	10,513	6,403	6,422	12,826

Table 18 Average Total Weekday Traffic vs. Average Total Weekend Day Traffic

Location		Current Count Differences			2012 Projection Differences			2022 Projection Differences		
		EB-NB	WB-SB	Total	EB-NB	WB-SB	Total	EB-NB	WB-SB	Total
1	SR 39 between Hersheypark Drive and Canal Street	(95)	402	307	(116)	490	375	(141)	598	457
1A	SR 39 between Hersheypark Drive and Canal Street	(720)	(612)	(1,332)	(878)	(747)	(1,625)	(1,072)	(911)	(1,983)
2	SR 39 between Grandview Drive and SR 22	123	22	145	150	27	177	183	33	216
3	SR 39 between SR 22 and SR 81	(131)	(29)	(160)	(160)	(35)	(195)	(195)	(43)	(238)
4	SR 39 between I-81 and Linglestown Square	(823)	(865)	(1,688)	(1,004)	(1,055)	(2,059)	(1,225)	(1,287)	(2,512)
5	SR 39 between Linglestown Square and Progress Avenue	(2,079)	(2,110)	(4,189)	(2,536)	(2,574)	(5,111)	(3,094)	(3,141)	(6,235)
6	SR 39 between Progress Avenue and SR 22-322	(3,691)	(5,138)	(8,829)	(4,503)	(6,268)	(10,771)	(5,494)	(7,647)	(13,141)
7	SR 39 between SR 22-322 and Front Street	(2,691)	(3,424)	(6,115)	(3,283)	(4,177)	(7,460)	(4,005)	(5,096)	(9,102)
8A	SR 743 between Sand Beach Road and SR 2012 Connector	(221)	(140)	(361)	(270)	(171)	(440)	(329)	(208)	(537)
8B	SR 743 between Sand Beach Road and SR 2012 Connector	(582)	(621)	(1,203)	(710)	(758)	(1,468)	(866)	(924)	(1,791)
9	SR 743 between SR 2012 Connector and Canal Street	505	211	716	616	257	874	752	314	1,066
10	SR 743 between SR 22 and SR 81	644	746	1,390	786	910	1,696	959	1,110	2,069
	Shows higher total weekend day traffic than total weekday traffic for 24 hour period									

Note: Because location S1 was not counted and the volumes came directly out of the TCRPC model, weekend projections will not differ from the weekday.

TRI-County Regional Planning Commission (TCRPC) Model Projections

The TCRPC regional travel demand model used for this project provides a set of projections that are linked to the projected land development and growth in the region. The model has a 1995 base year validation and a 2020 projection. The model was updated in 2002 as part of the CORRIDOR One Transitional Study to improve the mode split component within the model chain.

Land use and the corresponding population, employment, and other trip generators create the basis for traffic forecasts within the TCRPC model. The types of land uses determine the number of trips produced by, and attracted to, zones within the model. Therefore, future development of vacant land will have a corresponding increase in area traffic volumes. Travel demand models must therefore include planned future land use to forecast future traffic volumes and patterns.

TCRPC Model Growth Factors

Because the model projection year (2002) varies from that of this study (2012, 2022), outputs for selected segments from the two model years were summarized and annual traffic growth factors developed to forecast traffic based on current counts. The segments summarized are those where ATR traffic counts were taken to allow comparison between model outputs and actual volumes. These factors are shown in **Table 19**.

Table 19 Annual Total Traffic Growth 1995 to 2020

TCRPC Model Factors (Base Case)					
Location #	Model Link	Location	EB-NB Annual Factors	WB-SB Annual Factors	Total Annual Factors
1	2263-2646	SR 39 between Hersheypark Drive and Canal Street	1.7%	1.9%	1.8%
1A	2263-2646	SR 39 between Hersheypark Drive and Canal Street	1.7%	1.9%	1.8%
2	6046-6047	SR 39 between Grandview Drive and SR.22	1.3%	1.5%	1.4%
3	2660-6036	SR 39 between SR 22 and SR 81	1.6%	1.5%	1.5%
4	2659-2940	SR 39 between I-81 and Linglestown Square	6.6%	6.6%	6.6%
5	2935-6120	SR 39 between Linglestown Square and Progress Avenue	3.6%	3.6%	3.6%
6	2857-2928	SR 39 between Progress Avenue and SR 22-322	5.5%	4.9%	5.2%
7	2269-2666	SR 39 between SR 22-322 and Front Street	0.8%	0.8%	0.8%
8A	2260-2985	SR 743 between Sand Beach Road and SR 2012 Connector	1.8%	1.8%	1.8%
8B	2260-2985	SR 743 between Sand Beach Road and SR 2012 Connector	1.8%	1.8%	1.8%
9	2985-6049	SR 743 between SR 2012 Connector and Canal Street	1.8%	1.8%	1.8%
10	2025-2988	SR 743 between SR 22 and SR 81	5.9%	5.9%	5.9%
S1	2025-2990	SR 743 North of I-81	1.9%	1.8%	1.8%

Model outputs comprise total vehicles during a typical 24-hour weekday period (not peak hour or weekend) and the TCRPC model has no separate truck component. For the base case it is assumed that the rate of truck growth is equal to that of other vehicles.

TCRPC Model Forecasts (Base Case)

The TCRPC Model forecast for the base case was derived from applying the annual growth factors described above to the ATR traffic counts presented in **Table 20** to forecast daily traffic for the study years (2012 and 2022). The results are shown in **Table 21** and **22**.

Table 20 Daily Weekday TCRPC Model Traffic Forecasts (Base Case)

Location #	Model Link	Location	Current Counts			2012 Projections			2022 Projections		
			EB-NB	WB-SB	Total	EB-NB	WB-SB	Total	EB-NB	WB-SB	Total
1	2263-2646	SR 39 between Hersheypark Drive and Canal Street	7,851	7,462	15,313	9,162	8,863	18,028	10,691	10,527	21,225
1A	2263-2646	SR 39 between Hersheypark Drive and Canal Street	7,001	6,414	13,415	8,170	7,618	15,794	9,534	9,049	18,594
2	6046-6047	SR 39 between Grandview Drive and U.S.22	6,994	7,290	14,284	7,885	8,390	16,270	8,889	9,655	18,533
3	2660-6036	SR 39 between SR 22 and SR 81	5,776	5,715	11,491	6,699	6,546	13,244	7,769	7,498	15,264
4	2659-2940	SR 39 between I-81 and Linglestown Square	4,119	4,186	8,305	6,857	6,937	13,794	11,413	11,497	22,911
5	2935-6120	SR 39 between Linglestown Square and Progress Avenue	7,367	7,671	15,038	10,004	10,437	20,440	13,584	14,201	27,783
6	2857-2928	SR 39 between Progress Avenue and SR 22-322	10,728	11,620	22,348	16,610	17,355	33,987	25,716	25,920	51,687
7	2269-2666	SR 39 between SR 22-322 and Front Street	6,433	8,751	15,184	6,940	9,452	16,390	7,487	10,209	17,692
8A	2260-2985	SR 743 between Sand Beach Road and S.R.2012 Connector	7,599	8,352	15,951	8,955	9,831	18,787	10,553	11,572	22,126
8B	2260-2985	SR 743 between Sand Beach Road and S.R.2012 Connector	7,494	6,597	14,091	8,831	7,765	16,596	10,407	9,141	19,546
9	2985-6049	SR 743 between SR 2012 Connector and Canal Street	5,281	5,414	10,695	6,223	6,373	12,596	7,334	7,502	14,835
10	2025-2988	SR 743 between SR 22 and SR 81	4,575	4,794	9,369	7,291	7,634	14,925	11,619	12,158	23,777
S1	2025-2990	SR 743 North of I-81	4,302	4,315	8,617	5,103	5,105	10,208	6,053	6,039	12,092

Table 21 Daily Weekend TCRPC Model Traffic Forecasts (Base Case)

Location #	Model Link	Location	Current Counts			2012 Projections			2022 Projections		
			EB-NB	WB-SB	Total	EB-NB	WB-SB	Total	EB-NB	WB-SB	Total
1	2263-2646	SR 39 between Hersheypark Drive and Canal Street	7,756	7,864	15,620	9,051	9,341	18,392	10,562	11,094	21,657
1A	2263-2646	SR 39 between Hersheypark Drive and Canal Street	6,281	5,802	12,083	7,330	6,891	14,221	8,553	8,185	16,739
2	6046-6047	SR 39 between Grandview Drive and SR 22	7,117	7,312	14,429	8,024	8,415	16,438	9,046	9,684	18,730
3	2660-6036	SR 39 between SR 22 and SR 81	5,645	5,686	11,331	6,547	6,513	13,060	7,593	7,460	15,053
4	2659-2940	SR 39 between I-81 and Linglestown Square	3,296	3,321	6,617	5,487	5,504	10,990	9,133	9,122	18,255
5	2935-6120	SR 39 between Linglestown Square and Progress Avenue	5,288	5,561	10,849	7,181	7,566	14,747	9,751	10,295	20,045
6	2857-2928	SR 39 between Progress Avenue and SR 22-322	7,037	6,482	13,519	10,895	9,681	20,576	16,868	14,459	31,327
7	2269-2666	SR 39 between SR 22-322 and Front Street	3,742	5,327	9,069	4,037	5,754	9,791	4,355	6,214	10,569
8A	2260-2985	SR 743 between Sand Beach Road and SR 2012 Connector	7,378	8,212	15,590	8,694	9,666	18,361	10,246	11,378	21,624
8B	2260-2985	SR 743 between Sand Beach Road and SR 2012 Connector	6,912	5,976	12,888	8,145	7,034	15,180	9,599	8,280	17,879
9	2985-6049	SR 743 between SR 2012 Connector and Canal Street	5,786	5,625	11,411	6,818	6,621	13,440	8,035	7,794	15,829
10	2025-2988	SR 743 between SR 22 and SR 81	5,219	5,540	10,759	8,317	8,822	17,140	13,254	14,050	27,304
S1	2025-2990	SR 743 North of I-81	4,302	4,315	8,617	5,103	5,105	10,208	6,053	6,039	12,092

Table 22 TCRPC Average Weekday Traffic minus Average Weekend Traffic

Location		Current Count Differences			2012 Projection Differences			2022 Projection Differences		
		EB-NB	WB-SB	Total	EB-NB	WB-SB	Total	EB-NB	WB-SB	Total
1	SR 39 between Hersheypark Drive and Canal Street	(95)	402	307	(116)	490	375	(141)	598	457
1A	SR 39 between Hersheypark Drive and Canal Street	(720)	(612)	(1,332)	(878)	(747)	(1,625)	(1,072)	(911)	(1,983)
2	SR 39 between Grandview Drive and SR 22	123	22	145	150	27	177	183	33	216
3	SR 39 between SR 22 and SR 81	(131)	(29)	(160)	(160)	(35)	(195)	(195)	(43)	(238)
4	SR 39 between I-81 and Linglestown Square	(823)	(865)	(1,688)	(1,004)	(1,055)	(2,059)	(1,225)	(1,287)	(2,512)
5	SR 39 between Linglestown Square and Progress Avenue	(2,079)	(2,110)	(4,189)	(2,536)	(2,574)	(5,111)	(3,094)	(3,141)	(6,235)
6	SR 39 between Progress Avenue and SR 22-322	(3,691)	(5,138)	(8,829)	(4,503)	(6,268)	(10,771)	(5,494)	(7,647)	(13,141)
7	SR 39 between SR 22-322 and Front Street	(2,691)	(3,424)	(6,115)	(3,283)	(4,177)	(7,460)	(4,005)	(5,096)	(9,102)
8A	SR 743 between Sand Beach Road and SR .2012 Connector	(221)	(140)	(361)	(270)	(171)	(440)	(329)	(208)	(537)
8B	SR 743 between Sand Beach Road and SR 2012 Connector	(582)	(621)	(1,203)	(710)	(758)	(1,468)	(866)	(924)	(1,791)
9	SR 743 between SR 2012 Connector and Canal Street	505	211	716	616	257	874	752	314	1,066
10	SR 743 between SR 22 and SR 81	644	746	1,390	786	910	1,696	959	1,110	2,069
	Shows higher weekend traffic than weekday for 24 hour period									

Comparison of HPMS and TCRPC Forecasts

There are substantial differences between the two forecasting methods and their results. The PENNDOT HPMS method takes into consideration historical travel trends over the past 18 years within specific counties and roadway type, and uses this information to forecast future traffic volumes. The TCRPC model generates future volumes based upon committed transportation improvement projects as well as existing and future land use. **Tables 23** and **24** show the detailed daily weekday and daily weekend traffic differences between the two approaches.

Table 23 Daily Weekday Comparison between PENNDOT and TCRPC Growth Factors (Base Case)

Location #	Location	PENNDOT Traffic Projections		TCRPC Traffic Projections		Traffic Differences		Percentage Differences	
		2012	2022	2012	2022	2012	2022	2012	2022
1	SR 39 between Hersheypark Drive and Canal Street	18,682	22,792	18,028	21,225	-654	-1,567	-3.1%	-7.4%
1A	SR 39 between Hersheypark Drive and Canal Street	16,366	19,967	15,794	18,594	-573	-1,373	-3.1%	-7.4%
2	SR 39 between Grandview Drive and SR 22	17,426	21,260	16,270	18,533	-1,156	-2,728	-6.2%	-14.7%
3	SR 39 between SR 22 and SR 81	14,019	17,103	13,244	15,264	-775	-1,839	-5.1%	-12.0%
4	SR 39 between I-81 and Linglestown Square	10,132	12,361	13,794	22,911	3,662	10,550	16.0%	46.0%
5	SR 39 between Linglestown Square and Progress Avenue	18,346	22,383	20,440	27,783	2,094	5,401	7.5%	19.4%
6	SR 39 between Progress Avenue and SR 22-322	27,265	33,263	33,987	51,687	6,722	18,425	13.0%	35.6%
7	SR 39 between SR 22-322 and Front Street	18,524	22,600	16,390	17,692	-2,134	-4,907	-12.1%	-27.7%
8A	SR 743 between Sand Beach Road and SR 2012 Connector	19,460	23,741	18,787	22,126	-674	-1,615	-3.0%	-7.3%
8B	SR 743 between Sand Beach Road and SR 2012 Connector	17,191	20,973	16,596	19,546	-595	-1,427	-3.0%	-7.3%
9	SR 743 between SR 2012 Connector and Canal Street	13,048	15,918	12,596	14,835	-452	-1,083	-3.0%	-7.3%
10	SR 743 between SR 22 and SR 81	11,430	13,945	14,925	23,777	3,495	9,832	14.7%	41.4%
S1	SR 743 North of I-81	10,744	13,107	10,208	12,092	-536	-1,015	-4.4%	-8.4%

Table 24 Daily Weekend Comparison between PENNDOT and TCRPC Growth Factors (Base Case)

Location #	Location	PENNDOT Traffic Projections		TCRPC Traffic Projections		Traffic Differences		Percentage Differences	
		2012	2022	2012	2022	2012	2022	2012	2022
1	SR 39 between Hersheypark Drive and Canal Street	19,056	23,249	18,392	21,657	-665	-1,592	-3.1%	-7.4%
1A	SR 39 between Hersheypark Drive and Canal Street	14,741	17,984	14,221	16,739	-520	-1,245	-3.1%	-7.4%
2	SR 39 between Grandview Drive and SR 22	17,603	21,476	16,438	18,730	-1,165	-2,746	-6.2%	-14.7%
3	SR 39 between SR 22 and SR 81	13,824	16,865	13,060	15,053	-764	-1,812	-5.1%	-12.0%
4	SR 39 between I-81 and Linglestown Square	8,073	9,849	10,990	18,255	2,918	8,406	16.0%	46.0%
5	SR 39 between Linglestown Square and Progress Avenue	13,236	16,148	14,747	20,045	1,511	3,897	7.5%	19.4%
6	SR 39 between Progress Avenue and SR 22-322	16,493	20,122	20,576	31,327	4,083	11,206	13.0%	35.8%
7	SR 39 between SR 22-322 and Front Street	11,064	13,498	9,791	10,569	-1,274	-2,929	-12.1%	-27.7%
8A	SR 743 between Sand Beach Road and S.R.2012 Connector	19,020	23,204	18,361	21,624	-659	-1,580	-3.0%	-7.3%
8B	SR 743 between Sand Beach Road and SR 2012 Connector	15,723	19,182	15,180	17,879	-544	-1,304	-3.0%	-7.3%
9	SR 743 between SR 2012 Connector and Canal Street	13,921	16,984	13,440	15,829	-482	-1,155	-3.0%	-7.3%
10	SR 743 between SR 22 and SR 81	13,126	16,014	17,140	27,304	4,014	11,291	14.7%	41.4%
S1	SR 743 North of I-81	10,744	13,107	10,208	12,092	-536	-1,015	-4.4%	-8.4%

Forecast Recommendation

The different approaches yield forecasts that have advantages and disadvantages. The HPMS gives a general idea of how a certain classification of road within a particular county will increase in traffic. The TCRPC model provides an increase in volume based on the land uses within the transportation analysis zones (TAZ) of the model and produces more detailed changes in traffic volumes over time.

For this study it is recommended that the TCRPC model be used to factor existing traffic counts to yield the 2012 and 2022 forecast year traffic volumes for all locations except 4, 6, and 10. The reasons for this recommendation are below.

- The HPMS forecasts are more general and do not consider planned land use changes in estimating future traffic volumes.
- The TCRPC model forecasts take these land use changes into account as well as changes in capacity to the transportation infrastructure (projects in the TIP) planned for the future.
- Using the TCRPC model allows for forecasting traffic within different land use scenarios and evaluating them on their impact to the local roadway network.
- Based on the review of the projections professional judgment indicates the TCRPC volumes to be more reasonable in the long term given expected land use changes.

Locations 4, 6, and 10 in **Table 25** have significantly higher volumes using the model method over the HPMS method. The traffic volume counts from **Table 10** are higher for 2002 than would have been expected in the model outputs. Therefore, the model values were not recommended for use in this study for those segments. HPMS projections are the preferred set of traffic volumes for these three segments only.

Tables 26 and **27** present the recommended projections for all of the locations.

Table 25 Daily Weekday Recommended Projections (Base Case)

Location #	Location	2012 Projections			2022 Projections		
		EB-NB	WB-SB	Total	EB-NB	WB-SB	Total
1	SR 39 between Hersheypark Drive and Canal Street	9,162	8,863	18,025	10,691	10,527	21,219
1A	SR 39 between Hersheypark Drive and Canal Street	8,170	7,618	15,788	9,534	9,049	18,583
2	SR 39 between Grandview Drive and SR 22	7,885	8,390	16,274	8,889	9,655	18,544
3	SR 39 between SR 22 and SR 81	6,699	6,546	13,245	7,769	7,498	15,267
4*	SR 39 between I-81 and Linglestown Square	5,025	5,107	10,132	6,131	6,230	12,361
5	SR 39 between Linglestown Square and Progress Avenue	10,004	10,437	20,441	13,584	14,201	27,785
6*	SR 39 between Progress Avenue and SR 22-322	13,088	14,176	27,265	15,968	17,295	33,263
7	SR 39 between SR 22-322 and Front Street	6,940	9,452	16,392	7,487	10,209	17,696
8A	SR 743 between Sand Beach Road and SR 2012 Connector	8,955	9,831	18,786	10,553	11,572	22,125
8B	SR 743 between Sand Beach Road and SR 2012 Connector	8,831	7,765	16,596	10,407	9,141	19,547
9	SR 743 between SR 2012 Connector and Canal Street	6,223	6,373	12,596	7,334	7,502	14,835
10*	SR 743 between SR 22 and SR 81	5,582	5,849	11,430	6,809	7,135	13,945
S1	SR 743 North of I-81	5,103	5,105	10,208	6,053	6,039	12,092

Table 26 Daily Weekend Recommended Projections (Base Case)

Location #	Location	2012 Projections			2022 Projections		
		EB-NB	WB-SB	Total	EB-NB	WB-SB	Total
1	SR 39 between Hersheypark Drive and Canal Street	9,051	9,341	18,392	10,562	11,094	21,657
1A	SR 39 between Hersheypark Drive and Canal Street	7,330	6,891	14,221	8,553	8,185	16,739
2	SR 39 between Grandview Drive and SR 22	8,024	8,415	16,438	9,046	9,684	18,730
3	SR 39 between SR 22 and SR 81	6,547	6,513	13,060	7,593	7,460	15,053
4*	SR 39 between I-81 and Linglestown Square	4,021	4,052	8,073	4,906	4,943	9,849
5	SR 39 between Linglestown Square and Progress Avenue	7,181	7,566	14,747	9,751	10,295	20,045
6*	SR 39 between Progress Avenue and SR 22-322	8,585	7,908	16,493	10,474	9,648	20,122
7	SR 39 between SR 22-322 and Front Street	4,037	5,754	9,791	4,355	6,214	10,569
8A	SR 743 between Sand Beach Road and SR 2012 Connector	8,694	9,666	18,361	10,246	11,378	21,624
8B	SR 743 between Sand Beach Road and SR 2012 Connector	8,145	7,034	15,180	9,599	8,280	17,879
9	SR 743 between SR 2012 Connector and Canal Street	6,818	6,621	13,440	8,035	7,794	15,829
10*	SR 743 between SR 22 and SR 81	6,367	6,759	13,126	7,768	8,246	16,014
S1	SR 743 North of I-81	5,103	5,105	10,208	6,053	6,039	12,092

Land Use Scenario Projections

The TCRPC identified three possible land use changes within the study area. These were identified as potentially having significant impacts within the 39/743 corridor. The three changes include:

- **The development of a truck terminal north of I-81 exit 80** – There has been a filing of a preliminary land development plan for a 102,900 SF truck facility terminal and office building. A traffic impact study has been completed for this development.
- **The addition of slot machines to the Penn National Racetrack complex** – A recent initiative by Governor Rendell is to allow for slot machines at race tracks in Pennsylvania. Yet to be approved by the state legislature, a traffic impact study was completed by Penn National Gaming for the addition of 3,000 slots by 2013.
- **The building of an amphitheater just south of SR 22 along PA743** – Hershey Entertainment and Resorts has been discussing the concept of developing a 20,000 seat Performing Art Center specifically for concerts. The concept has not progressed past the conceptual stage and several East Hanover Township concerns must be resolved before a proposal will be considered.

These three changes were coded into the model to compare the changes in traffic volumes to the base case traffic projections. How this was done and the results are presented in the following section.

TCRPC Model Forecasts (Scenario)

The TCRPC model is a 24 hour model with no time of day or peak hour assignment of traffic. It is expected that activities at the racetrack and the proposed amphitheater activities will take place during off-peak hours and on weekends. This is the current racetrack traffic pattern. Existing traffic counts show SR 743 just south of the I-81 interchange has greater traffic volumes during the weekends than on weekdays. Therefore, it is reasonable to assume that an increase in activity in the area will primarily increase this weekend traffic. For a peak analysis, peaking factors can be used to determine the impact of scenario traffic during this time period. Truck terminal operations are expected to take place during the week.

The potential land use changes are in two different model TAZs. The Penn National Racetrack and the proposed truck terminal are in one (#449) and the potential amphitheater in another (#447). Two separate Traffic Impact Studies have been conducted for the addition of slot machines and the truck terminal. These studies provide generated traffic and its distribution for the changes in land uses.

For this study it is assumed that the maximum scenario build-out will occur by the 2012 forecast year. It should be noted that this analysis of the combined land use scenarios assumes a “worst-case” scenario where an event at the amphitheatre would draw a capacity crowd and generate the associated traffic. This use will most likely generate off-peak or weekend traffic and is accounted for during the post-processing of the model output.

The following details the different scenario changes and the inputs to the traffic generation.

Slot Machines

- The state of Pennsylvania is considering allowing slot machines to operate at race tracks throughout the Commonwealth.
- The transportation impacts of approximately 3,000 slot machines were evaluated for zone 449.
- Preliminary plans by Penn National predict a maximum build out by 2013. For this analysis assumed that maximum build out will occur by the 2012 forecast year.
- The study assumed an average trip rate of 3.662 daily trips per slot machine and approximately 200 employees would be needed for this increase in operations. This results in 11,186 daily trips for the zone.
- It was assumed that the distribution of these trips would be consistent with current zone distribution, since that zone is currently comprised of entertainment-type uses.

Amphitheater

- This analysis assumes a 20,000 seat amphitheater located within transportation analysis zone (TAZ) 447. This zone is currently zoned agricultural/residential and is currently estimated to produce 4,087 trips in 2020 base case.
- The 20,000-seat amphitheatre is assumed to require approximately one parking space per every 4 seats or 5,000 parking spaces (and subsequently 10,000 trips).
- It was assumed that the distribution of the trips from the proposed amphitheatre would be similar to that of neighboring zone 449 which is comprised mostly of entertainment-type uses including the Penn National Racecourse.
- The Amphitheater is expected to produce a total of 8,089 total new trips to and from zone 447.

Truck Terminal

- Plans for a multi-use truck terminal resulted in a transportation impact study. Based in part by this study, it was assumed that approximately 895 additional trips would be generated by the terminal daily (from zone 449).
- These trips are factored to convert trips to truck trips. It was also assumed that given the primary function of this facility; most of the trucks would have either external origins or external destinations, and would primarily use the interstate highway system. The following access and egress distributions were assumed:

Table 27 Trip Distribution Assumptions for Proposed Truck Terminal near I-81

		DESTINATIONS				
ORIGINS	Zone	449	531	560	549	
	449	N/A	60%	10%	30%	
	531	50%	N/A	N/A	N/A	
	560	10%	N/A	N/A	N/A	
	549	40%	N/A	N/A	N/A	

It should also be noted that the truck terminal analysis shows additional trips generated, not necessarily truck trips. A vehicle to truck factor will need to be applied as part of the post-processing of the model output in order to account for the additional length of the trucks.

Based on the above inputs the traffic was generated and the model was run for the 2020 model year. Traffic was then factored up in the same manner as the base case using the following factors derived from the model outputs. An additional link was added to the scenario analysis: PA743 north of I-81. This link provides access to and from the truck terminal and Penn National and carries the bulk of the traffic for these uses. The factors and results are presented in **Tables 28, 29, and 30**.

Table 28 TCRPC Model Total Traffic Outputs (Scenario)

Location #	Model Link	Location	1995 Model Outputs			2020 Model Outputs		
			EB-NB	WB-SB	Total	EB-NB	WB-SB	Total
1	2263-2646	SR 39 between Hersheypark Drive and Canal Street	10,749	10,648	21,397	14,022	13,837	27,859
1A	2263-2646	SR 39 between Hersheypark Drive and Canal Street	10,749	10,648	21,397	14,022	13,837	27,859
2	6046-6047	SR 39 between Grandview Drive and SR 22	7,557	7,492	15,049	9,598	9,439	19,037
3	2660-6036	SR 39 between SR 22 and SR 81	4,549	4,607	9,156	6,948	6,932	13,880
4	2659-2940	SR 39 between I-81 and Linglestown Square	2,592	2,634	5,226	5,670	5,644	11,314
5	2935-6120	SR 39 between Linglestown Square and Progress Avenue	6,689	6,702	13,391	10,514	10,490	21,004
6	2857-2928	SR 39 between Progress Avenue and SR 22-322	7,566	7,617	15,183	13,886	13,708	27,594
7	2269-2666	SR 39 between SR 22-322 and Front Street	8,747	8,649	17,396	9,734	9,844	19,578
8A	2260-2985	SR 743 between Sand Beach Road and SR 2012 Connector	4,820	4,822	9,642	5,899	5,900	11,799
8B	2260-2985	SR 743 between Sand Beach Road and SR 2012 Connector	4,820	4,822	9,642	5,899	5,900	11,799
9	2985-6049	SR 743 between SR 2012 Connector and Canal Street	4,820	4,822	9,642	5,899	5,900	11,799
10	2025-2988	SR 743 between SR 22 and SR 81	7,758	7,749	15,507	15,678	15,692	31,370
S1	2025-2990	SR 743 North of I-81	3,806	3,825	7,631	7,868	7,886	15,754

Table 29 TCRPC Annual Total Traffic Growth 1995 to 2020 (Scenario)

Location #	Model Link	Location	EB-NB Annual Factors	WB-SB Annual Factors	Total Annual Factors
1	2263-2646	SR 39 between Hersheypark Drive and Canal Street	2.0%	2.0%	2.0%
1A	2263-2646	SR 39 between Hersheypark Drive and Canal Street	2.0%	2.0%	2.0%
2	6046-6047	SR 39 between Grandview Drive and SR 22	1.8%	1.7%	1.8%
3	2660-6036	SR 39 between SR 22 and SR 81	3.5%	3.4%	3.4%
4	2659-2940	SR 39 between I-81 and Linglestown Square	7.9%	7.6%	7.8%
5	2935-6120	SR 39 between Linglestown Square and Progress Avenue	3.8%	3.8%	3.8%
6	2857-2928	SR 39 between Progress Avenue and SR 22-322	5.6%	5.3%	5.4%
7	2269-2666	SR 39 between SR 22-322 and Front Street	0.8%	0.9%	0.8%
8A	2260-2985	SR 743 between Sand Beach Road and SR 2012 Connector	1.5%	1.5%	1.5%
8B	2260-2985	SR 743 between Sand Beach Road and SR 2012 Connector	1.5%	1.5%	1.5%
9	2985-6049	SR 743 between SR 2012 Connector and Canal Street	1.5%	1.5%	1.5%
10	2025-2988	SR 743 between SR 22 and SR 81	6.8%	6.8%	6.8%
S1	2025-2990	SR 743 North of I-81	7.1%	7.1%	7.1%

Table 30 TCRPC Model Traffic Forecasts (Scenario)

Location #	Model Link	Location	2002 Traffic Counts			2012 Projections			2022 Projections		
			EB-NB	WB-SB	Total	EB-NB	WB-SB	Total	EB-NB	WB-SB	Total
1	2263-2646	SR 39 between Hersheypark Drive and Canal Street	7,851	7,462	15,313	9,445	8,952	18,396	11,362	10,739	22,100
1A	2263-2646	SR 39 between Hersheypark Drive and Canal Street	7,001	6,414	13,415	8,422	7,695	16,116	10,132	9,231	19,361
2	6046-6047	SR 39 between Grandview Drive and SR 22	6,994	7,290	14,284	8,253	8,553	16,808	9,739	10,035	19,777
3	2660-6036	SR 39 between SR 22 and SR 81	5,776	5,715	11,491	7,807	7,638	15,443	10,551	10,207	20,755
4	2659-2940	SR 39 between I-81 and Linglestown Square	4,119	4,186	8,305	7,380	7,375	14,755	13,222	12,994	26,214
5	2935-6120	SR 39 between Linglestown Square and Progress Avenue	7,367	7,671	15,038	10,175	10,561	20,738	14,055	14,541	28,597
6	2857-2928	SR 39 between Progress Avenue and SR 22-322	10,728	11,620	22,348	16,702	17,815	34,527	26,003	27,312	53,342
7	2269-2666	SR 39 between SR 22-322 and Front Street	6,433	8,751	15,184	6,917	9,557	16,454	7,437	10,437	17,830
8A	2260-2985	SR 743 between Sand Beach Road and SR 2012 Connector	7,599	8,352	15,951	8,733	9,597	18,330	10,036	11,027	21,064
8B	2260-2985	SR 743 between Sand Beach Road and SR 2012 Connector	7,494	6,597	14,091	8,612	7,580	16,193	9,898	8,710	18,607
9	2985-6049	SR 743 between SR 2012 Connector and Canal Street	5,281	5,414	10,695	6,069	6,221	12,290	6,975	7,148	14,123
10	2025-2988	SR 743 between SR 22 and SR 81	4,575	4,794	9,369	7,689	8,070	15,758	12,922	13,585	26,505
S1	2025-2990	SR 743 North of I-81*	4,392	4,414	8,806	7,517	7,538	15,055	12,866	12,874	25,740

Comparison of the Base Case Forecasts and Land Use Scenario Forecasts

The land use scenario produced higher annual growth rates than the base case on most of the links within the study area. As expected the largest percent increase in traffic volumes over the base case is near the development on SR 743 near the I-81 interchange where the volumes increase nearly 7 percent annually.

Table 31 TCRPC Model Factors - Base Case vs. Scenario

Location #	Model Link	Location	Base Annual Factors	Scenario Annual Factors
1	2263-2646	SR 39 between Hersheypark Drive and Canal Street	1.8%	2.0%
1A	2263-2646	SR 39 between Hersheypark Drive and Canal Street	1.8%	2.0%
2	6046-6047	SR 39 between Grandview Drive and SR 22	1.4%	1.8%
3	2660-6036	SR 39 between SR 22 and SR 81	1.5%	3.4%
4	2659-2940	SR 39 between I-81 and Linglestown Square	6.6%	7.8%
5	2935-6120	SR 39 between Linglestown Square and Progress Avenue	3.6%	3.8%
6	2857-2928	SR 39 between Progress Avenue and SR 22-322	5.2%	5.4%
7	2269-2666	SR 39 between SR 22-322 and Front Street	0.8%	0.8%
8A	2260-2985	SR 743 between Sand Beach Road and SR 2012 Connector	1.8%	1.5%
8B	2260-2985	SR 743 between Sand Beach Road and SR 2012 Connector	1.8%	1.5%
9	2985-6049	SR 743 between SR 2012 Connector and Canal Street	1.8%	1.5%
10	2025-2988	SR 743 between SR 22 and SR 81	5.9%	6.8%
S1	2025-2990	SR 743 North of I-81	1.8%	7.1%

SR 743 north of I-81 experiences the largest change from the base case. Within the model network this is the segment that accommodates most of the truck terminal traffic and most of the increase from the Penn National development. SR 743 South of I-81 (between I-81 and US22) experiences the second highest annual percentage growth, primarily due to the amphitheater development just south of SR 22.

Although locations 8 and 9 have lower scenario growth rates, these locations continue to grow albeit at a lower rate than the base case.

Table 32 Total Traffic Comparison between TCRPC Base and TCRPC Scenario Growth Factors

Location #	Location	TCRPC Base Case		TCRPC Scenario		Traffic Differences		Percentage Differences	
		2012 Proj.	2022 Proj.	2012 Proj.	2022 Proj.	2012 Proj.	2022 Proj.	2012 Proj.	2022 Proj.
1	SR 39 between Hersheypark Drive and Canal Street	18,028	21,225	18,396	22,100	368	875	1.7%	4.0%
1A	SR 39 between Hersheypark Drive and Canal Street	15,794	18,594	16,116	19,361	322	767	1.7%	4.0%
2	SR 39 between Grandview Drive and SR 22	16,270	18,533	16,808	19,777	537	1,244	2.7%	6.3%
3	SR 39 between SR 22 and SR 81	13,244	15,264	15,443	20,755	2,200	5,491	10.6%	26.5%
4	SR 39 between I-81 and Linglestown Square	13,794	22,911	14,755	26,214	961	3,303	3.7%	12.6%
5	SR 39 between Linglestown Square and Progress Avenue	20,440	27,783	20,738	28,597	297	814	1.0%	2.8%
6	SR 39 between Progress Avenue and SR 22-322	33,987	51,687	34,527	53,342	540	1,655	1.0%	3.1%
7	SR 39 between SR 22-322 and Front Street	16,390	17,692	16,454	17,830	63	137	0.4%	0.8%
8A	SR 743 between Sand Beach Road and SR 2012 Connector	18,787	22,126	18,330	21,064	-457	-1,062	-2.2%	-5.0%
8B	SR 743 between Sand Beach Road and SR 2012 Connector	16,596	19,546	16,193	18,607	-403	-939	-2.2%	-5.0%
9	SR 743 between SR 2012 Connector and Canal Street	12,596	14,835	12,290	14,123	-306	-712	-2.2%	-5.0%
10	SR 743 between SR 22 and SR 81	14,925	23,777	15,758	26,505	833	2,728	3.1%	10.3%
S1	SR 743 North of SR 81	10,208	12,092	15,055	25,740	4,848	13,647	18.8%	53.0%

Table 33 Scenario Projections (Final)

Location #	Location	Scenario Projections	
		2012 Projections	2022 Projections
1	SR 39 between Hersheypark Drive and Canal Street	18,396	22,100
1A	SR 39 between Hersheypark Drive and Canal Street	16,116	19,361
2	SR 39 between Grandview Drive and U.S.22	16,808	19,777
3	SR 39 between U.S. 22 and SR 81	15,443	20,755
4	SR 39 between I-81 and Linglestown Square	11,093	15,664
5	SR 39 between Linglestown Square and Progress Avenue	20,738	28,597
6	SR 39 between Progress Avenue and SR 22-322	27,805	34,918
7	SR 39 between SR 22-322 and Front Street	16,454	17,830
8A	SR 743 between Sand Beach Road and S.R.2012 Connector	18,330	21,064
8B	SR 743 between Sand Beach Road and S.R.2012 Connector	16,193	18,607
9	SR 743 between A.R.2012 Connector and Canal Street	12,290	14,123
10	SR 743 between U.S.22 and SR 81	12,263	16,673
S1	SR 743 North of SR 81	15,055	25,740

The change in land use has a significant impact on the surrounding roadways. In order to include this within the model links that were formulated from the HPMS factors (locations 4, 6, and 10) projections were derived from all forecasts using the following formula. This formula produces traffic projections that are reasonable and takes into account the scenario land use.

$$\left(\begin{array}{l} \text{Forecast} \\ \text{Year} \\ \text{TCRPC} \\ \text{Scenario} \\ \text{Traffic} \end{array} - \begin{array}{l} \text{Forecast} \\ \text{Year} \\ \text{TCRPC} \\ \text{Base} \\ \text{Traffic} \end{array} \right) + \begin{array}{l} \text{Forecast} \\ \text{Year} \\ \text{HPMS} \\ \text{Traffic} \end{array} = \begin{array}{l} \text{Forecast} \\ \text{Year} \\ \text{Link} \\ \text{Traffic} \end{array}$$

This process separates the traffic associated with the scenario (as produced by the model run) and adds it to the recommended Base Case traffic.

Tables 34 and **35** compare the recommended base case projections and the recommended scenario projections.

Table 34 Weekday Recommended Base Case and Scenario Comparison

Location #	Location	Base Case		Scenario		Traffic Differences		Percentage Differences	
		2012 Proj	2022 Proj	2012 Proj	2022 Proj	2012 Proj	2022 Proj	2012 Proj	2022 Proj
1	SR 39 between Hersheypark Drive and Canal Street	18,028	21,225	18,396	22,100	368	875	2.0%	4.1%
1A	SR 39 between Hersheypark Drive and Canal Street	15,794	18,594	16,116	19,361	322	767	2.0%	4.1%
2	SR 39 between Grandview Drive and SR 22	16,270	18,533	16,808	19,777	537	1,244	3.3%	6.7%
3	SR 39 between SR 22 and SR 81	13,244	15,264	15,443	20,755	2,200	5,491	16.6%	36.0%
4	SR 39 between I-81 and Linglestown Square	10,132	12,361	11,093	15,664	961	3,303	9.5%	26.7%
5	SR 39 between Linglestown Square and Progress Avenue	20,440	27,783	20,738	28,597	297	814	1.5%	2.9%
6	SR 39 between Progress Avenue and SR 22-322	27,265	33,263	27,804	34,917	540	1,655	2.0%	5.0%
7	SR 39 between SR 22-322 and Front Street	16,390	17,692	16,454	17,830	63	137	0.4%	0.8%
8A	SR 743 between Sand Beach Road and SR 2012 Connector	18,787	22,126	18,330	21,064	-457	-1,062	-2.4%	-4.8%
8B	SR 743 between Sand Beach Road and SR 2012 Connector	16,596	19,546	16,193	18,607	-403	-939	-2.4%	-4.8%
9	SR 743 between SR 2012 Connector and Canal Street	12,596	14,835	12,290	14,123	-306	-712	-2.4%	-4.8%
10	SR 743 between SR 22 and SR 81	11,430	13,945	12,263	16,673	833	2,728	7.3%	19.6%
S1	SR 743 North of I-81	10,208	12,092	14,732	14,732	4,524	2,640	44.3%	21.8%

Table 35 Weekend Recommended Base Case and Scenario Comparison

Location #	Location	Base Case		Scenario		Traffic Differences		Percentage Differences	
		2012 Proj	2022 Proj	2012 Proj	2022 Proj	2012 Proj	2022 Proj	2012 Proj	2022 Proj
1	SR 39 between Hersheypark Drive and Canal Street	18,392	21,657	18,765	22,543	373	886	2.0%	4.1%
1A	SR 39 between Hersheypark Drive and Canal Street	14,221	16,739	14,516	17,438	295	699	2.1%	4.2%
2	SR 39 between Grandview Drive and SR 22	16,438	18,730	16,978	19,978	540	1,248	3.3%	6.7%
3	SR 39 between SR 22 and SR 81	13,060	15,053	15,228	20,466	2,169	5,414	16.6%	36.0%
4	SR 39 between I-81 and Linglestown Square	8,073	9,849	8,838	12,480	766	2,631	9.5%	26.7%
5	SR 39 between Linglestown Square and Progress Avenue	14,747	20,045	14,961	20,631	214	586	1.5%	2.9%
6	SR 39 between Progress Avenue and SR 22-322	16,493	20,122	16,803	21,063	310	941	1.9%	4.7%
7	SR 39 between SR 22-322 and Front Street	9,791	10,569	9,827	10,649	37	80	0.4%	0.8%
8A	SR 743 between Sand Beach Road and SR 2012 Connector	18,361	21,624	17,915	20,587	-446	-1,037	-2.4%	-4.8%
8B	SR 743 between Sand Beach Road and SR 2012 Connector	15,180	17,879	14,810	17,019	-370	-860	-2.4%	-4.8%
9	SR 743 between SR 2012 Connector and Canal Street	13,440	15,829	13,113	15,068	-327	-760	-2.4%	-4.8%
10	SR 743 between SR 22 and SR 81	13,126	16,014	14,083	19,147	957	3,133	7.3%	19.6%
S1	SR 743 North of I-81	10,208	12,092	14,732	14,732	4,524	2,640	44.3%	21.8%

3. Future Operation Levels

As discussed in the Existing Roadway Conditions section, turning movement counts (TMCs) were performed for each of the study intersections and operational levels were determined. The level of service for each intersection was calculated using the methodologies set forth in the Highway Capacity Manual and utilizing the Synchro software package. Intersection level of service is a measure of intersection operations. For signalized intersections, a letter grade is based on the delay that is encountered at the intersection. **Table 36** shows the parameters for the control delay per vehicle and the corresponding grade based on the Highway Capacity Manual (2000 Edition). In urban settings, level of service C or better is generally deemed acceptable. **Figure 7** reflects the existing levels of service at each intersection throughout the study corridor. The corridor was also broken down into 10 segments and a traffic profile was created by collecting data with automatic traffic recorders (ATRs). **Figure 2** indicates the results of the ATR data collected and also shows the projected volumes for each of the segments within the study area.

Table 36 Highway Capacity Manual (2000) Level of Service

Level of Service	Control Delay Per Vehicle (sec)
A	≤10
B	>10 and ≤20
C	>20 and ≤35
D	>35 and ≤55
E	>55 and ≤80
F	>80

The existing SR 39 study corridor experiences deficient segment operations from the Route 322 interchange through Progress Avenue. Roadway segment operations from I-81 to Hershey Park Drive along SR 39 are at LOS D, which is approaching unacceptable operations. Most deficient intersection operations occur at unsignalized intersections where there are insufficient mainline gaps for entering traffic or where signalization may be warranted now or in the future

Future Conditions

As the Future Forecasts section identified, traffic is expected to increase at all locations throughout the corridor. The annual factor will vary from 0.8 percent to 7.8 percent among the segments identified in **Figure 2**. **Figure 10** and **Figure 11** indicate what the expected levels of service will be in 2012 and 2022, respectively, if improvements are not implemented.

In year 2012, several segments continue to degrade. SR 39 from I-81 to Hersheypark Drive will begin to experience unacceptable mainline operations in several areas and SR 743 will reach LOS D. In year 2012, many unsignalized intersections continue to degrade without improvement and several signalized intersections begin to experience operational deficiencies.

By year 2022, mainline conditions for SR 39 from Route 322 to Colonial Road will be at unacceptable levels, as will most of SR 39 from I-81 to Hershey Park Drive. Additionally, segments of SR 743 near I-81 will begin to experience breakdown conditions. By year 2022, 29 of the 39 intersections studied will experience operational deficiencies during at least one time period. Nine of those intersections are currently signalized intersections.

Route 39/743 Transportation
and Land Use Study Group



Dauphin County
Planning Commission

Route 39/743 Transportation and Land Use Study

2012 Projected Levels of Service without Improvements

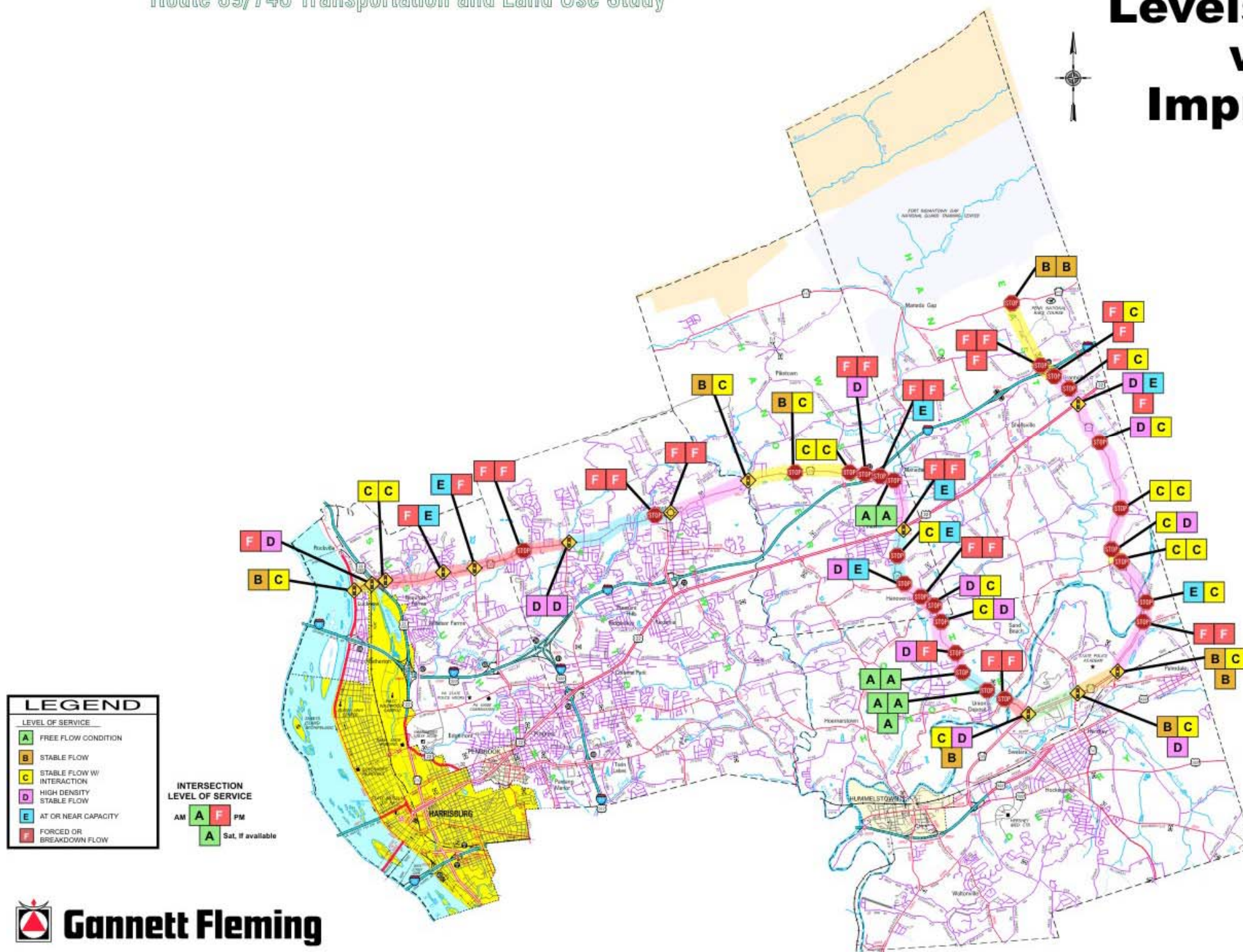


Figure 10 2012 Projected Levels of Service without Improvements



Route 39/743 Transportation
and Land Use Study Group



Tri-County Regional
Planning Commission



Dauphin County
Planning Commission

Route 39/743 Transportation and Land Use Study

2022 Projected Levels of Service without Improvements

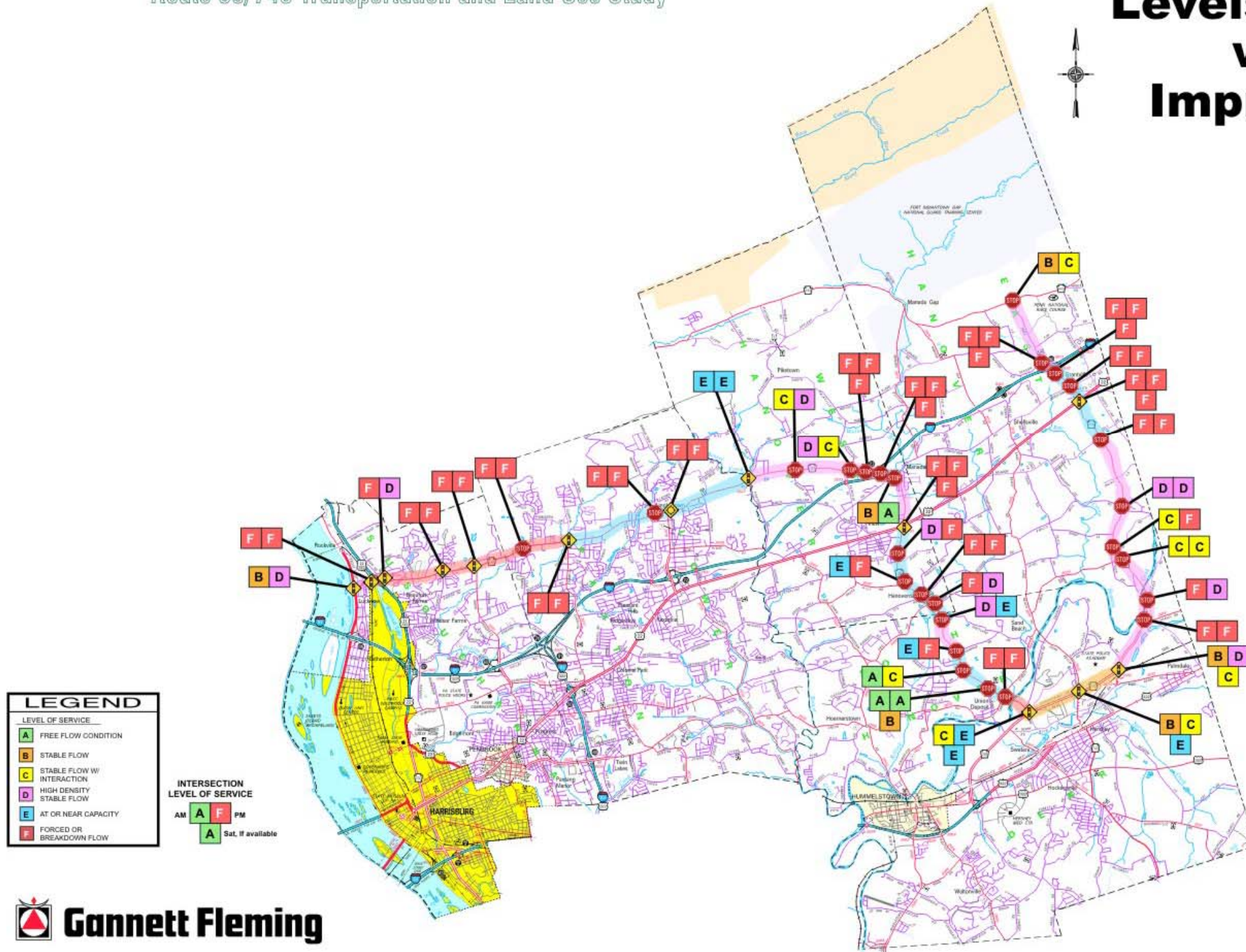


Figure 11 2022 Projected Levels of Service without Improvements



4. Improvement Options

This section identifies improvement options for each of the intersections within the study area. Improvements are designated in one of three categories.

Short-Term Improvements are largely those identified during field observations. Although these improvements may not mitigate recurring congestion, they may improve the safety of the corridor thus reducing non-recurring congestion. Many of these improvements are low-cost improvements that may be covered through regular maintenance activities or with limited funding.

Mid-Term improvements are those that should be considered for implementation by year 2012 to maintain acceptable LOS.

Long-Term improvements are those that should be considered for implementation by year 2022 to maintain acceptable LOS.

In some cases, 2012 improvements were too significant for implementation in that time frame. In that case steps were identified to further the improvement options presented in the Long-Term category.

(1)SR 39 and Front Street

Scenario	Considerations and Improvements	Anticipated Operations		
		AM	PM	SAT
Existing	↳ Operating at an acceptable LOS for all time periods	B	C	N/A
Future “No Build”	↳ Continued acceptable operation	B	D	N/A
Short-Term	↳ Install WB lane use control signs. Improve pavement markings to delineate travel way boundaries	N/A	N/A	N/A
Mid-Term	↳ No improvement options	B	C	N/A
Long-Term	↳ No improvement options	B	C	N/A

SR 39 and Sixth Street

- Not analyzed as part of study, but further evaluation including signal warrant analysis suggested

(2)SR 39 and S.R. 0322 Eastbound Ramps/Industrial Road

Scenario	Considerations and Improvements	Anticipated Operations		
		AM	PM	SAT
Existing	↳ Five leg intersection	C	D	N/A
Future “No Build”	↳ Volumes will continue to increase at 0.8 percent per year	F	F	N/A
Short-Term	↳ Monitor traffic signal operations to provide optimum processing rates	N/A	N/A	N/A
Mid-Term	↳ Coordinate with agencies and seek funding sources for Long-Term improvements ↳ Advance environmental and preliminary engineering activities	C	C	N/A
Long-Term	↳ Construct one of the options on the following page	C	C	N/A

(3)SR 39 and S.R. 0322 Westbound Ramps

Scenario	Considerations and Improvements	Anticipated Operations		
		AM	PM	SAT
Existing	↳ Four-leg intersection with access to residential area in northeast quadrant	A	B	N/A
Future “No Build”	↳ Traffic will continue to increase at 0.8 percent per year	F	D	N/A
Short-Term	↳ Monitor traffic signal operations to provide optimum processing rates	N/A	N/A	N/A
Mid-Term	↳ Coordinate with agencies and seek funding sources for Long-Term improvements ↳ Advance environmental and preliminary engineering activities	B	C	N/A
Long-Term	↳ Construct one option identified in Figure 12-15	B	B	N/A

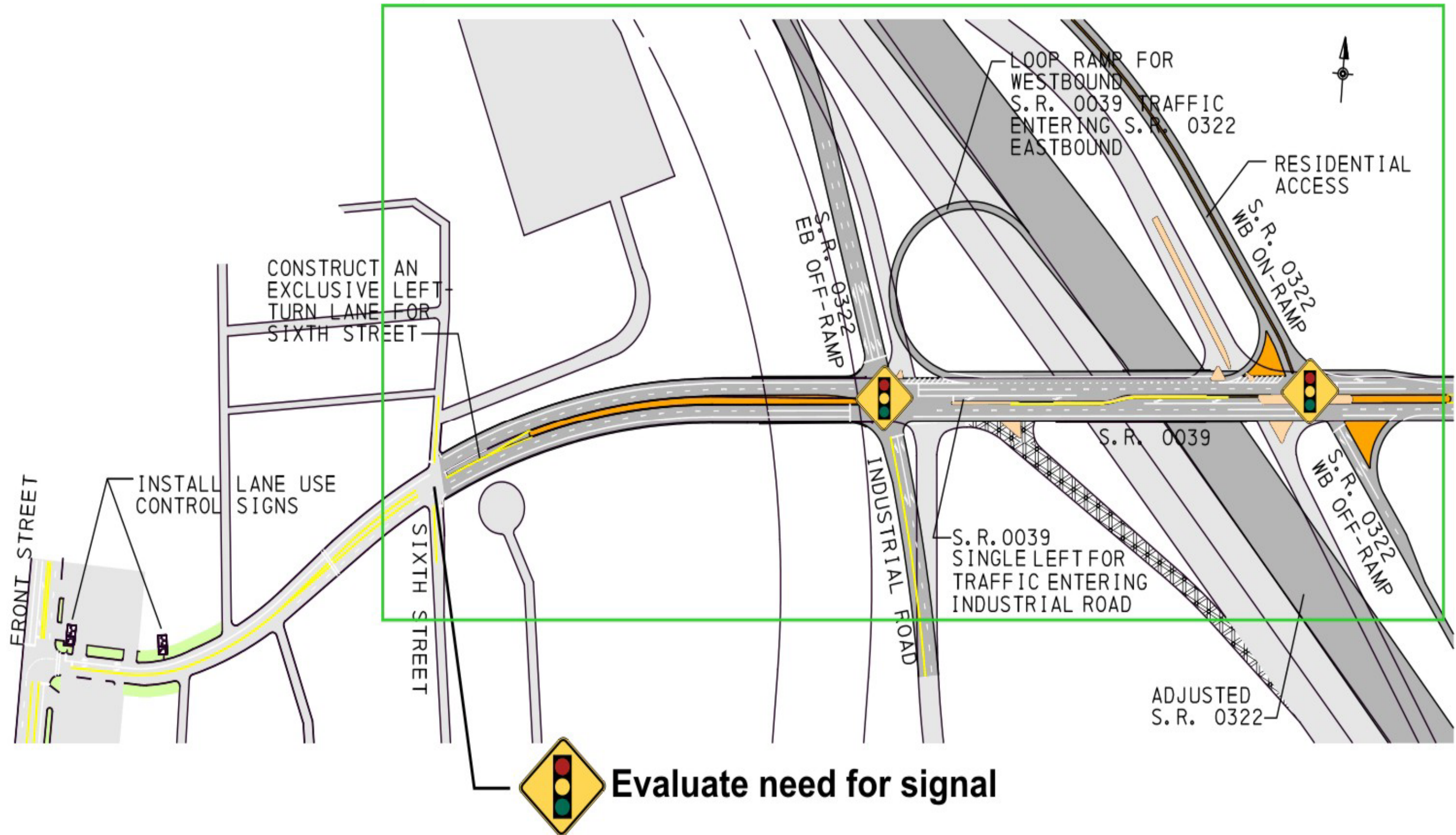


Figure 12 SR 39 at S.R. 322 Long-Term Improvement Option 1

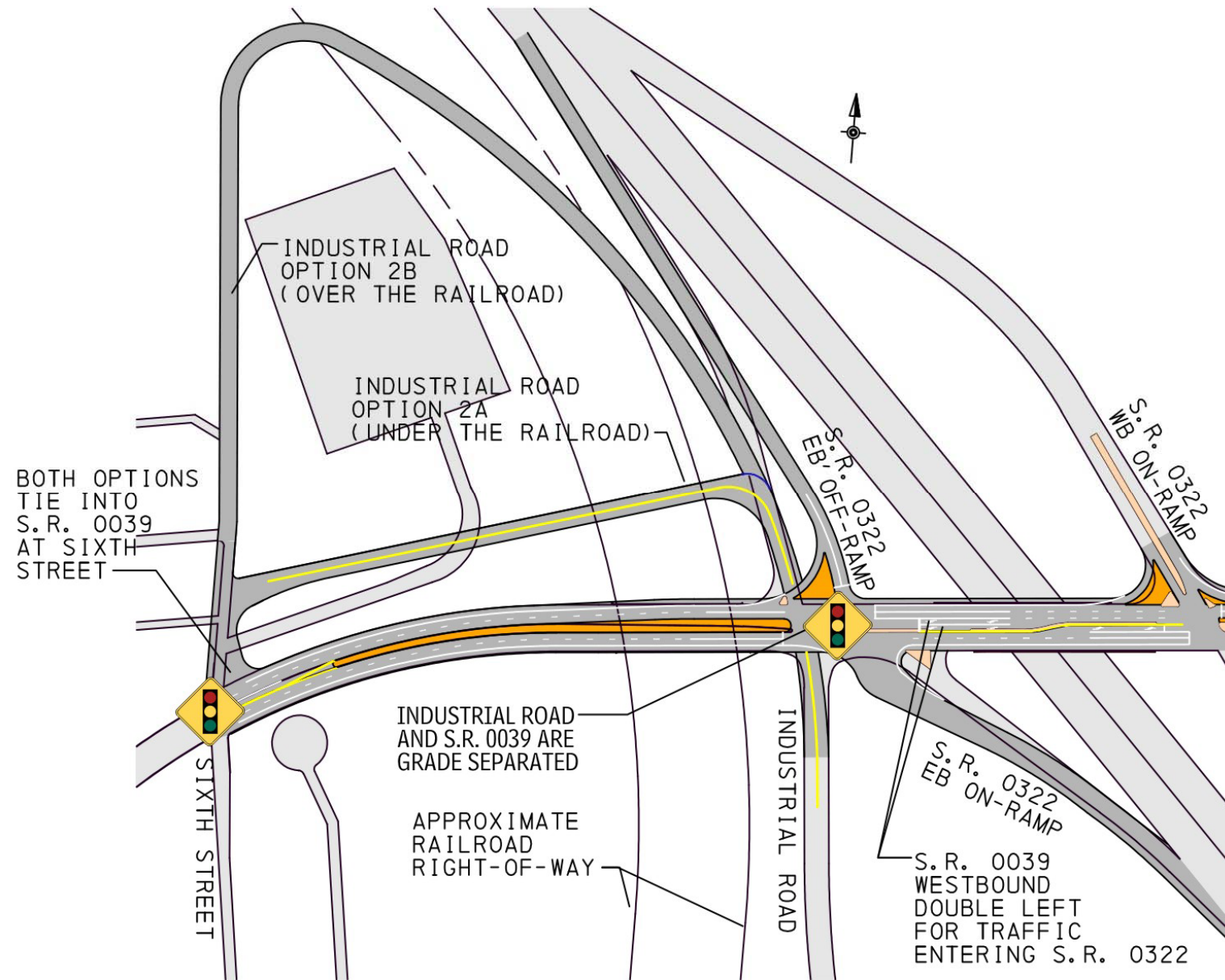


Figure 14 SR 39 at S.R. 322 Long-Term Improvement Option 2A and 2B

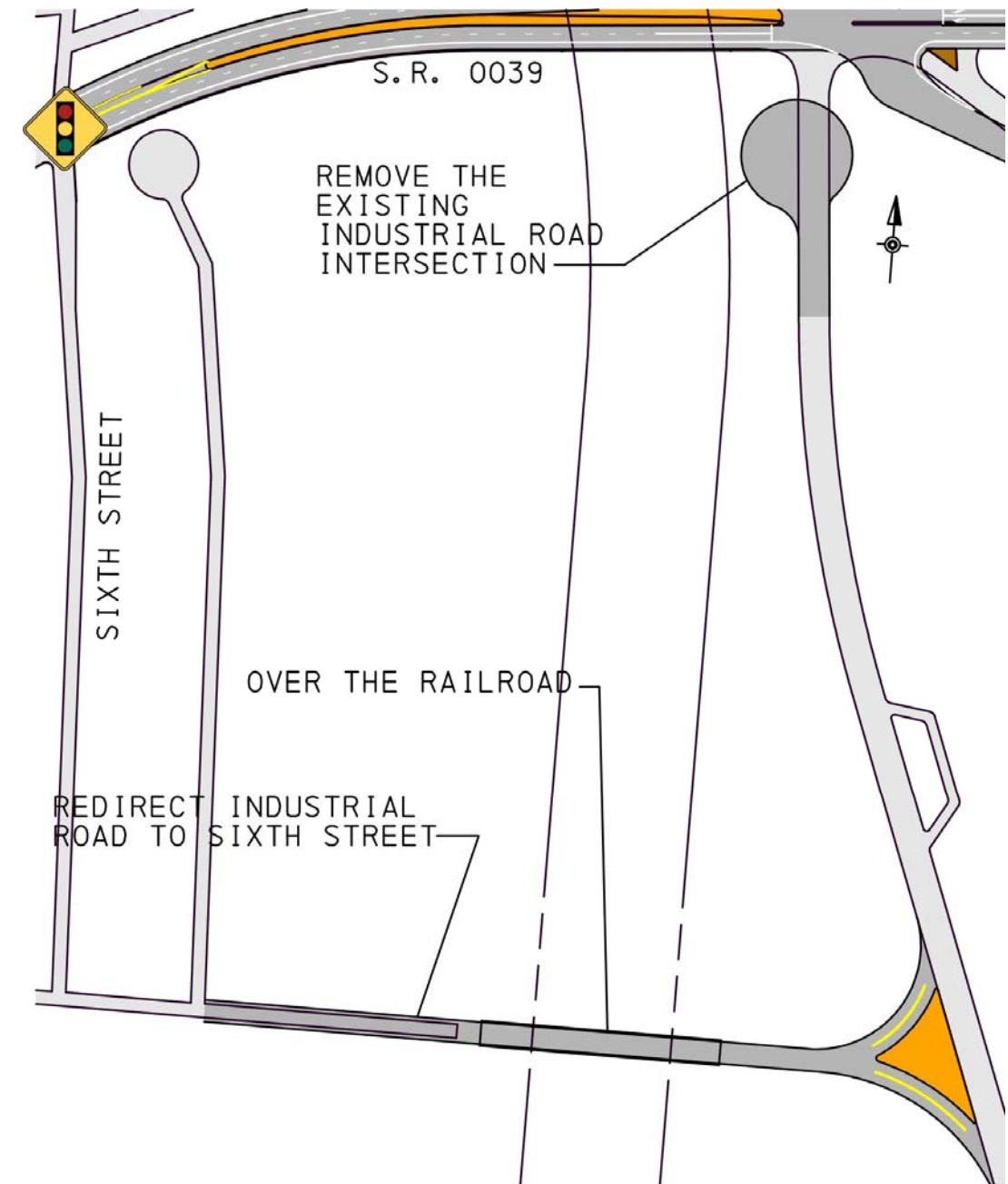


Figure 13 SR 39 at S.R. 322 Long-Term Improvement Option 3

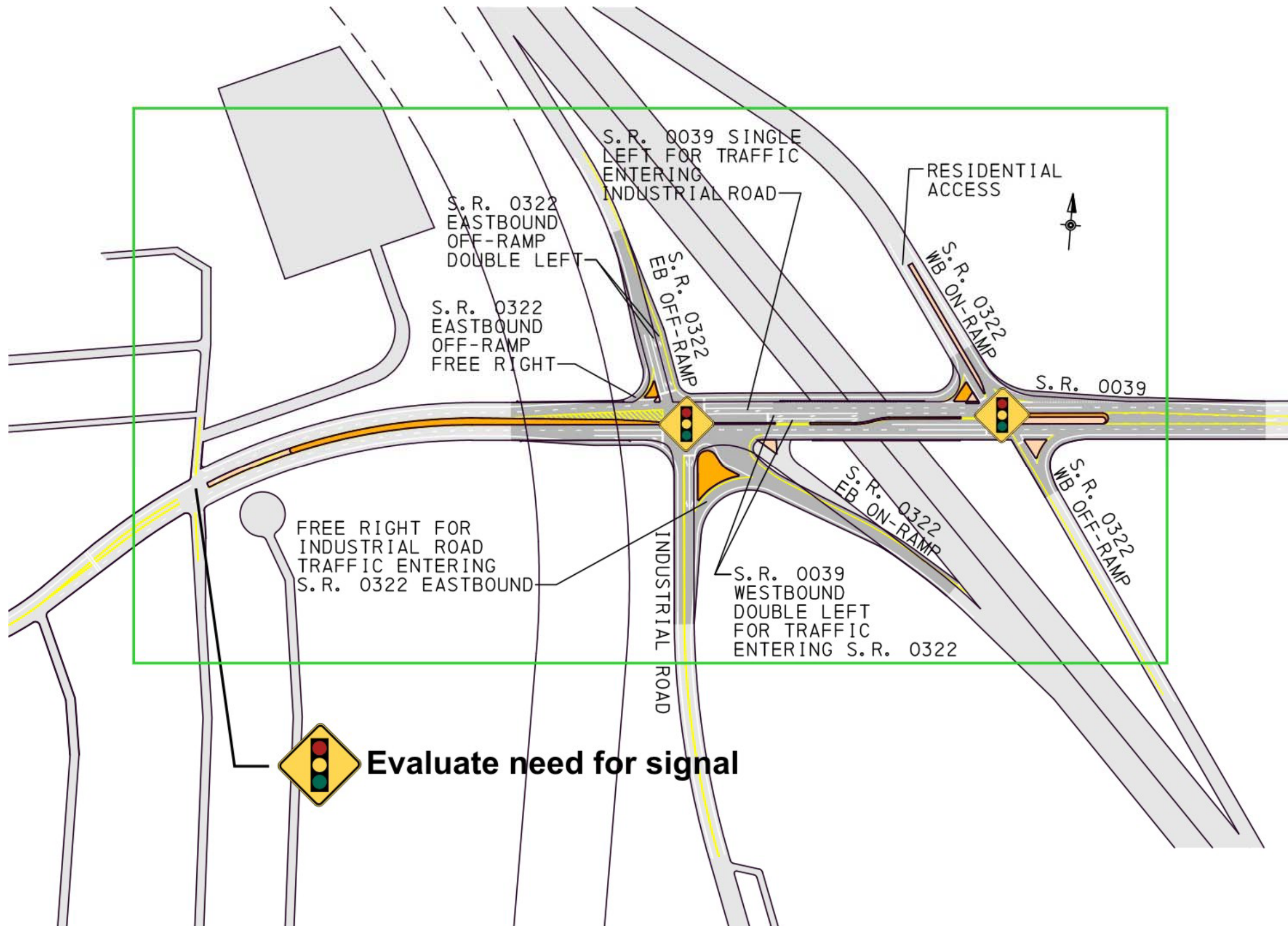


Figure 15 SR 39 at S.R. 322 Long-Term Improvement Option 4

(4)SR 39 and Crooked Hill Road

Scenario	Considerations and Improvements	Anticipated Operations		
		AM	PM	SAT
Existing	↳ Four-leg intersection with WB prot/perm phase	B	B	N/A
Future “No Build”	↳ Traffic volume will continue to increase at 5.4 percent per year	F	F	N/A
Short-Term	↳ No improvements identified	N/A	N/A	N/A
Mid-Term	↳ Construct an additional eastbound thru lane and a westbound thru lane as illustrated in Figure 16	B	C	N/A
Long-Term	↳ Construct an eastbound right-turn lane, a westbound right-turn lane and an additional southbound left-turn lane as illustrated in Figure 16	D	D	N/A

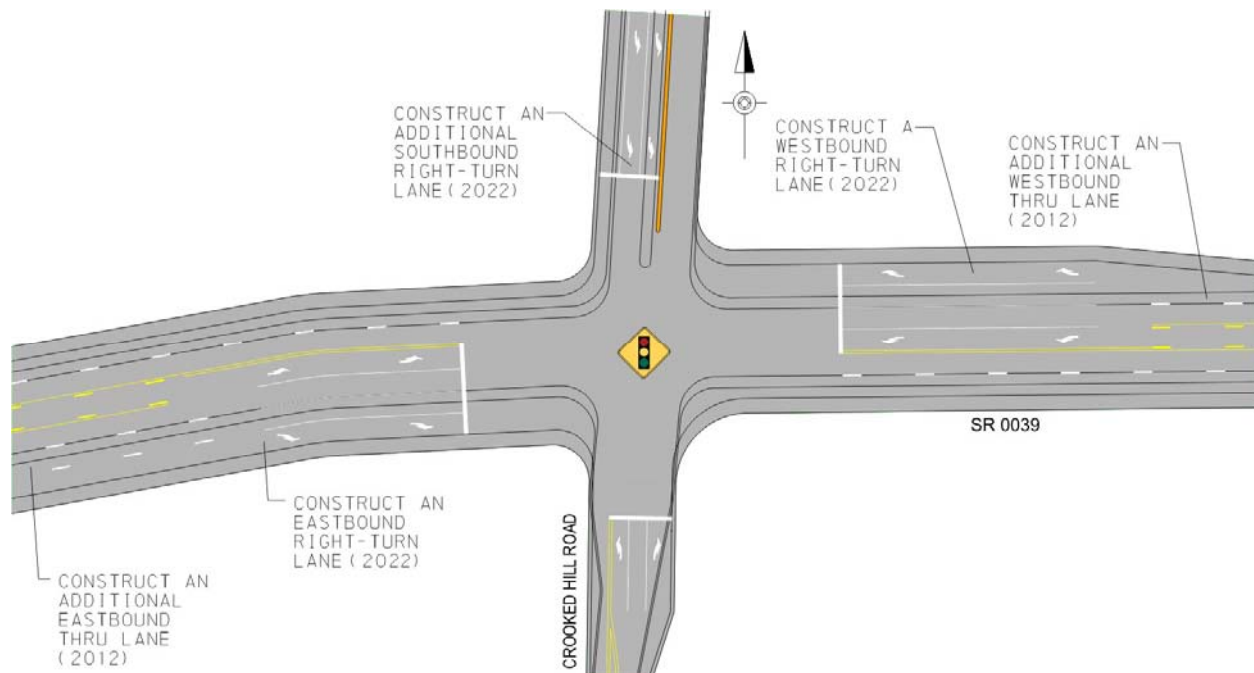


Figure 16 SR 39 at Crooked Hill Mid-Term Improvement Option

(5)SR 39 and Progress Avenue

Scenario	Considerations and Improvements	Anticipated Operations		
		AM	PM	SAT
Existing	↳ 4 leg intersection w/ four phase traffic signal	C	D	N/A
Future “No Build”	↳ Traffic volumes will continue to increase at nearly 5.4 percent.	F	F	N/A
Short-Term	↳ Coordinate with local stakeholder and developers in reserving right-of-way	N/A	N/A	N/A
Mid-Term	↳ Construct an additional eastbound thru lane and a westbound thru lane. ↳ Construct a westbound right-turn lane and a northbound right-turn lane ↳ Modify signal phasing by adding a protected westbound left-turn phase and northbound left-turn turn phase to the existing signal configuration. See Figure 18	C	D	N/A
Long-Term	↳ Option 1 – Traditional Intersection Northbound lane requirements -triple left-turn, single thru, double right; Southbound lane requirements -single left, single thru, single/free right; Eastbound lane requirements- single left, triple thru, single/ free right; Westbound lane requirement-triple left, double thru, single/ free right ↳ Option 2 – Single Point Urban Interchange (SPUI) Construct a single point urban interchange with Progress Avenue crossing over SR 39 See Figure 17	D	E	N/A

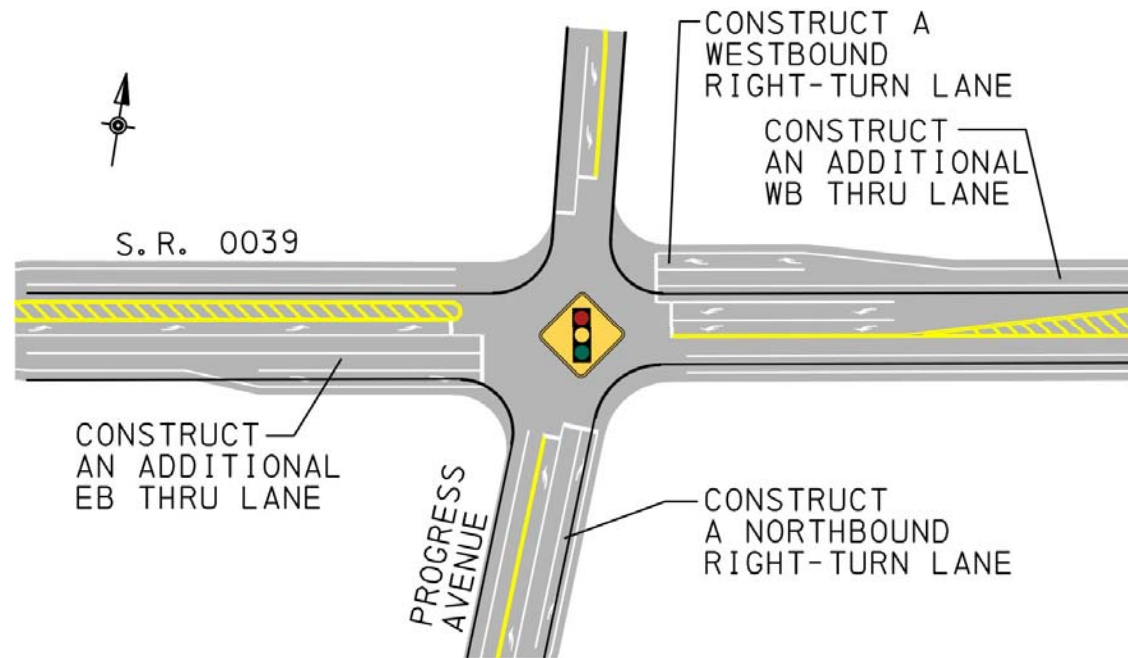


Figure 18 SR 39 at Progress Avenue Short-Term Improvement Option

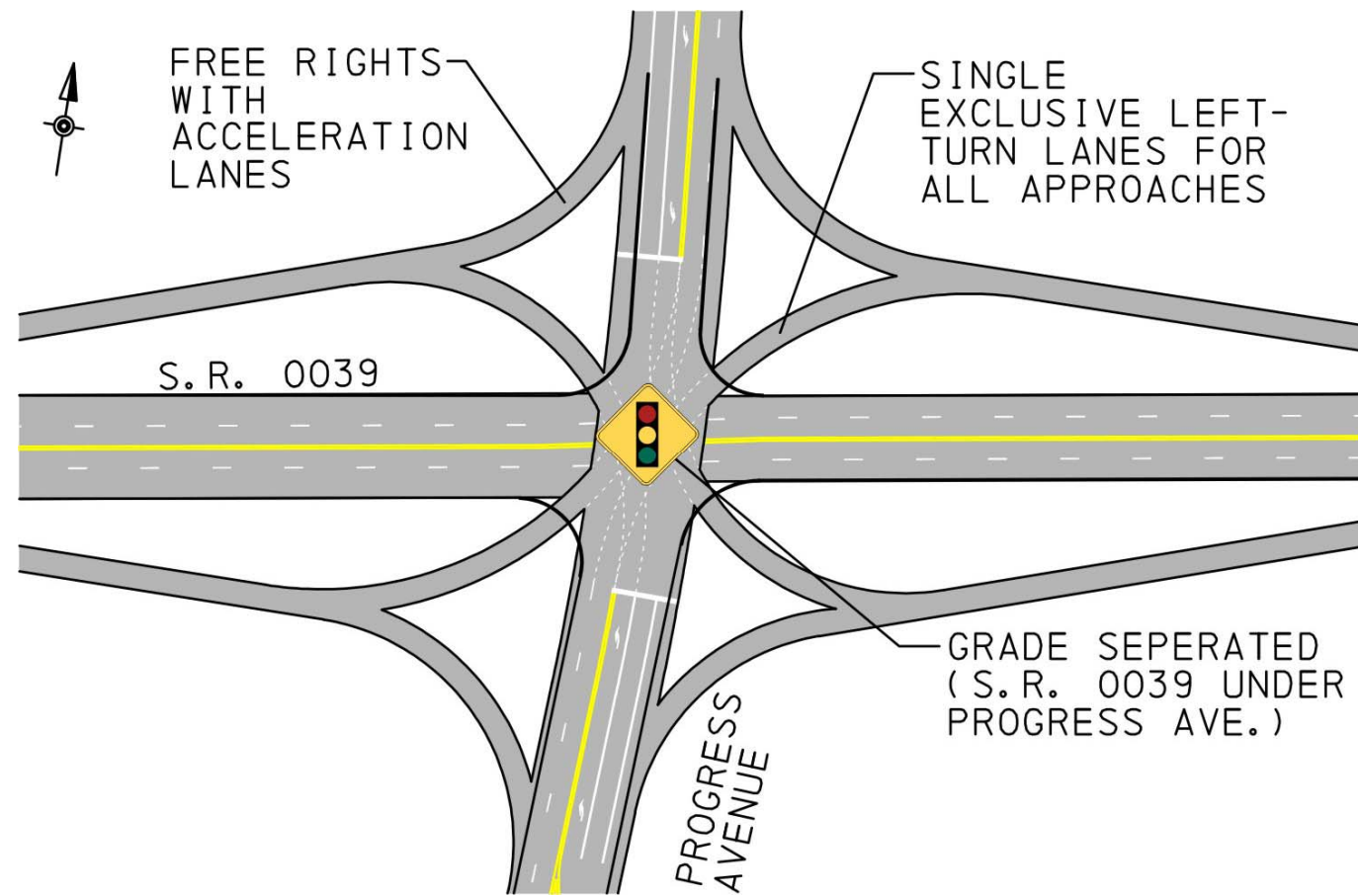


Figure 17 SR 39 at Progress Avenue Long-Term Improvement Option

(6)SR 39 and Crums Mill Road

Scenario	Considerations and Improvements	Anticipated Operations		
		AM	PM	SAT
Existing	↳ T-intersection, STOP control on Crums Mill Rd approach	D	E	N/A
Future “No Build”	↳ Traffic volumes will increase at 3.8 percent per year	F	F	N/A
Short-Term	↳ No improvement options	N/A	N/A	N/A
Mid-Term	↳ Install a traffic signal ↳ Construct a northbound right-turn lane	D	D	N/A
Long-Term	↳ Construct an additional eastbound thru lane and a westbound thru lane	A	A	N/A

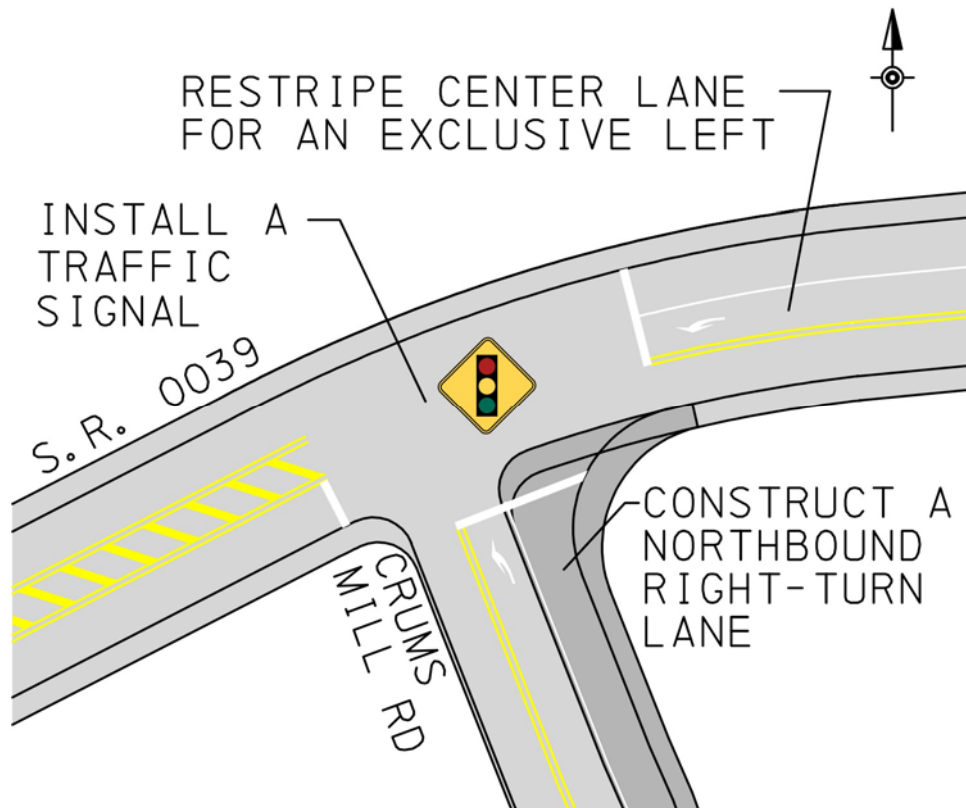


Figure 19 SR 39 at Crums Mill Rd Mid-Term and Long-Term Improvement Options

(7)SR 39 and Colonial Road

Scenario	Considerations and Improvements	Anticipated Operations		
		AM	PM	SAT
Existing	↳ Four-leg intersection with an eight-phase signal	C	C	N/A
Future “No Build”	↳ Traffic volumes will increase at 3.8 percent per year	F	F	N/A
Short-Term	↳ Modify signal phasing by adding a protected eastbound left-turn phase and southbound left-turn turn phase to the existing signal configuration.	N/A	N/A	N/A
Mid-Term	↳ Construct a westbound right-turn lane and a northbound right-turn lane ↳ Construct a westbound left-turn lane	C	C	N/A
Long-Term	↳ Construct an additional eastbound thru lane and a westbound thru lane. ↳ Construct an additional southbound left-turn lane ↳ Construct an additional northbound left-turn lane	D	C	N/A

(8)SR 39 and Blue Mountain Parkway

Scenario	Considerations and Improvements	Anticipated Operations		
		AM	PM	SAT
Existing	↳ T-intersection, STOP control on Blue Mountain Pkwy approach	F	F	N/A
Future “No Build”	↳ Traffic Volumes will increase at 3.8 percent per year	F	F	N/A
Short-Term	↳ No improvement options	N/A	N/A	N/A
Mid-Term	↳ No improvement options	N/A	N/A	N/A
Long-Term	↳ No improvement options	N/A	N/A	N/A

(9)SR 39 and Mountain Road

Scenario	Considerations and Improvements	Anticipated Operations		
		AM	PM	SAT
Existing	↳ Four-leg intersection with small traffic island	F	F	N/A
Future “No Build”	↳ Traffic volumes will increase at nearly 5.0percent per year	F	F	N/A
Short-Term	↳ No improvement options	N/A	N/A	N/A
Mid-Term	↳ No improvement options	N/A	N/A	N/A
Long-Term	↳ No improvement options	N/A	N/A	N/A

SR 39 from Mountain Road to Fairville Avenue

2012

- Utility pole and drainage enhancement program to improve roadway clear zone and to prevent water on the roadway.

(11)SR 39 and Piketown Road North and (10)Piketown Road South

Scenario	Considerations and Improvements	Anticipated Operations		
		AM	PM	SAT
Existing	↳ Offset four-leg intersection with STOP control on NB and SB approaches	B/B	B/C	N/A
Future “No Build”	↳ Traffic will increase at 7.8 percent per year	E	E	N/A
Short-Term	↳ Currently in the final design and construction process, no additional improvement options identified	N/A	N/A	N/A
Mid-Term	↳ No improvement options	B	C	N/A
Long-Term	↳ Based on analysis of the proposed design, additional capacity may be needed, construct an additional EB left, an additional WB through lane, and a WB right-turn lane.	C	C	N/A

(12)SR 39 and Manor Drive (NW)

Scenario	Considerations and Improvements	Anticipated Operations		
		AM	PM	SAT
Existing	↳ T-intersection with STOP control on Manor Drive	B	B	N/A
Future “No Build”	↳ Traffic volumes will increase at 7.8 percent per year	C	D	N/A
Short-Term	↳ Improve sight distance for traffic entering SR 39 by grading and clearing vegetation to the east and clearing vegetation to the west. ↳ Consider intersection and curve warning signs.	N/A	N/A	N/A
Mid-Term	↳ No improvement options	B	C	N/A
Long-Term	↳ No improvement options	C	D	N/A

(13)SR 39 and Fairville Avenue

Scenario	Considerations and Improvements	Anticipated Operations		
		AM	PM	SAT
Existing	↳ T-intersection with STOP control on Fairville Avenue	B	B	N/A
Future “No Build”	↳ Traffic volumes will increase at 7.8 percent per year	D	C	N/A
Short-Term	↳ No improvement options	N/A	N/A	N/A
Mid-Term	↳ No improvement options	C	C	N/A
Long-Term	↳ Provide exclusive turn-lanes for all approaches	B	C	N/A

(14)SR 39 and SR 81 Southbound Ramps

Scenario	Considerations and Improvements	Anticipated Operations		
		AM	PM	SAT
Existing	↳ Operating at an acceptable LOS for all time periods	F	C	C
Future “No Build”	↳ Traffic volumes will increase at nearly 5.0 percent per year	F	F	F
Short-Term	↳ No improvement options	N/A	N/A	N/A
Mid-Term	↳ Realign westbound right-turn lane	C	C	C
Long-Term	↳ Provide an eastbound right-turn lane	B	B	B

(15)SR 39 and SR 81 Northbound Ramps

Scenario	Considerations and Improvements	Anticipated Operations		
		AM	PM	SAT
Existing	↳ Four-leg intersection with channelization on SB and EB approaches	C	C	E
Future “No Build”	↳ Traffic volumes will increase at 3.8 percent per year	F	F	F
Short-Term	↳ No improvement options	N/A	N/A	N/A
Mid-Term	↳ Realignment of the eastbound right-turn lane	C	B	C
Long-Term	↳ Provide signal optimization	B	B	B

(16)SR 39 and Jonestown Road

Scenario	Considerations and Improvements	Anticipated Operations		
		AM	PM	SAT
Existing	↳ Skewed four-leg intersection with two-phase traffic signal	A	A	N/A
Future “No Build”	↳ Traffic volumes will increase at 5.4 percent per year	B	A	N/A
Short-Term	↳ Shoulder widening on the eastern side	N/A	N/A	N/A
Mid-Term	↳ Addition of a westbound left on SR 39	A	A	N/A
Long-Term	↳ No improvement options	A	A	N/A

SR 39 from I-81 to Hersheypark Drive

- By 2022 additional mainline capacity or an alternate route may be needed based on the following issues:
 1. The level of service provided by the existing roadway will be at or near failing condition.
 2. Intersecting roadways will experience unacceptable LOS.
 3. Users of the facility experience an average travel speed of 25 mph during congested conditions
 4. There are right-of-way constraints on both sides of the existing roadway
 5. Geometric impacts could cause small villages along the segment to loose their sense of identity.
 6. Sight distance and deficient curve radii issues persist throughout the segments
 7. 50 percent of crashes at the intersections along this segment involved injuries

- An alternative roadway should be considered for this area
 1. Establish a working group that involves all affected municipalities that will develop and adopt a map/policy that outlines an alternative route corridor or outlines specific areas along the existing alignment to be set aside for the addition of capacity. Connections to development areas is a key component of developing the official map or policy.
 2. investigate funding sources and seek support from political, public and private sources.
 3. Progress through the required documentation processes to further develop the adopted map/plan.
 4. Promote development that will tie into the adopted plan/policy.

- Until the alternative roadway is ready to be constructed, interim measures are presented on the following pages to mitigate some of the issues that persist along the corridor in this area. These interim measures include:
 1. Construction of turn lanes
 2. Installation of rural ITS
 - Message boards
 - Speed warning systems
 3. Expansion of the roadway cross section
 4. Signal interconnection between South Hanover and Derry Townships



Route 39/743 Transportation and Land Use Study

Alternative Route Options

Why should an alternate alignment from I-81 to Hersheypark Drive be considered?

- Sight distance and curve radii issues persist throughout both corridors from I-81 to Hersheypark Drive.
- 50 percent of crashes at the intersections along both corridors involve injuries.
- By 2022, additional mainline capacity or an alternate route may be needed to provide acceptable levels of service.
- Several intersections will operate at unacceptable levels of service.
- The average speed will be 25 mph due to congestion.
- There is a significant percentage of through traffic on both corridors.
- There are right-of-way constraints on both sides of the existing roadway that may make adding capacity cost prohibitive.
- Geometrical impacts could cause small villages along the segment to lose their sense of identity.
- If traffic volumes reach their projected levels, the quality of living along the roadways could be adversely affected.

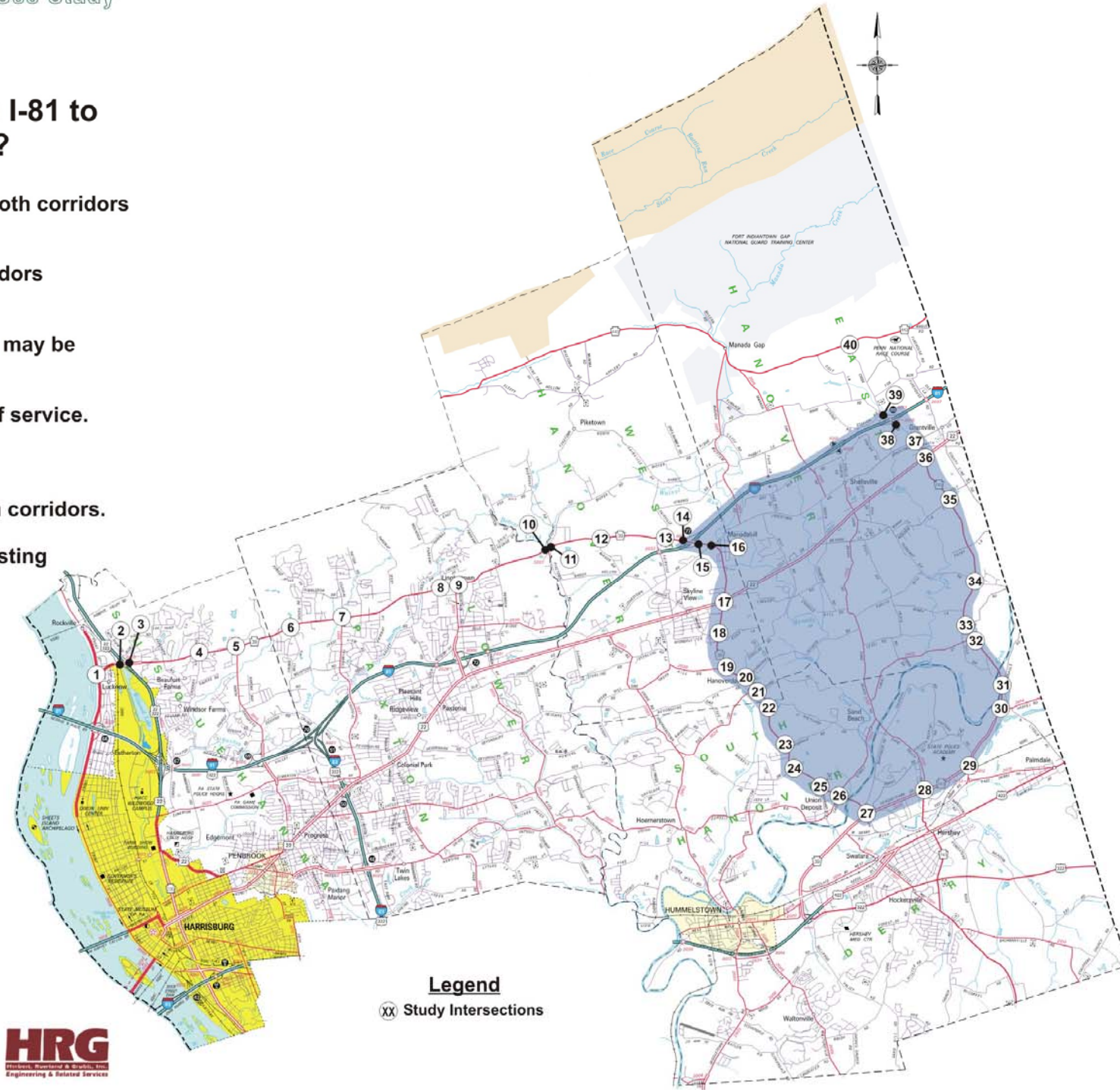


Figure 20 Alternative Route Options

(17)SR 39 and SR 22

Scenario	Considerations and Improvements	Anticipated Operations		
		AM	PM	SAT
Existing	↳ Operating at an acceptable LOS for all time periods	C	F	C
Future “No Build”	↳ Traffic volumes will increase at 3.4 percent per year	F	F	F
Short-Term	↳ Modify phasing by adding a northbound protected left-turn phase	N/A	N/A	N/A
Mid-Term	↳ Construct a northbound left-turn lane and a southbound left-turn lane ↳ See Figure 20	C	C	C
Long-Term	↳ Construct an additional northbound, southbound and westbound left-turn lane ↳ Construct an additional northbound and southbound thru lane or alternate route ↳ See Figure 21 ↳ Capacity to be added by alternative roadway or SR 39 expansion	C	D	C

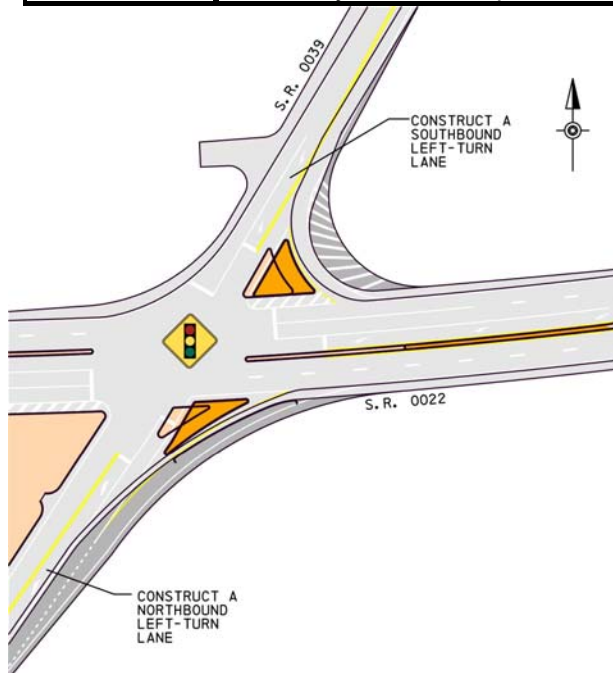


Figure 21 SR 39 and SR 22 Mid-Term Improvement Option

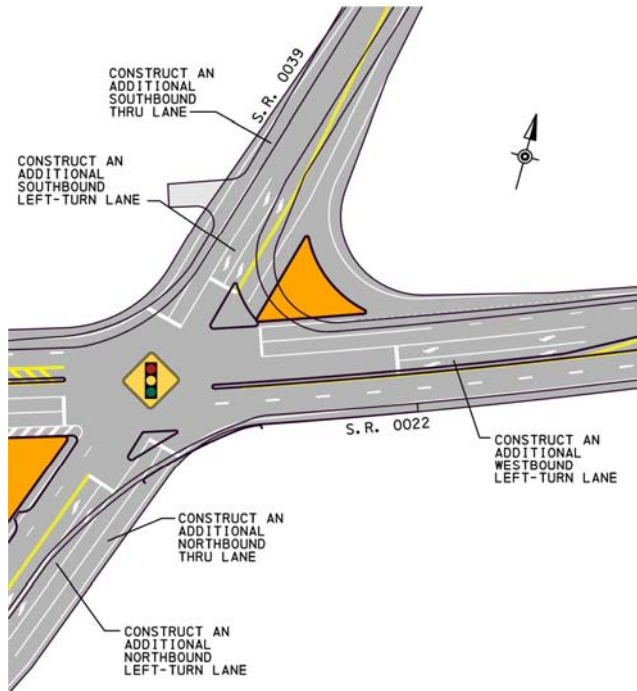


Figure 22 SR 39 and SR 22 Long-Term Improvement Option

(18)SR 39 and Manor Drive (SE)

Scenario	Considerations and Improvements	Anticipated Operations		
		AM	PM	SAT
Existing	↳ T-intersection with STOP control on Manor Drive	B	C	N/A
Future “No Build”	↳ Traffic volumes will be increasing at nearly 2 percent per year on SR 39	D	F	N/A
Short-Term	↳ Install traffic calming devices to limit cut-through traffic from SR 22 to SR 39 ↳ Install curbing to control access to adjacent properties	N/A	N/A	N/A
Mid-Term	↳ No improvement options	C	E	N/A
Long-Term	↳ No improvement options. LOS reflects two lanes of travel for each direction on SR 39. ↳ Capacity to be added by alternative roadway or SR 39 expansion	C	D	N/A

(19)SR 39 and Green Hill Road

Scenario	Considerations and Improvements	Anticipated Operations		
		AM	PM	SAT
Existing	↳ T-intersection with STOP control on Green Hill Rd	C	C	N/A
Future “No Build”	↳ Traffic volumes will increase at nearly 2.0 percent per year on SR 39	E	F	N/A
Short-Term	↳ Restrict traffic to right-in/right-out movements (Figure 22) ↳ Northbound SR 39 traffic will be rerouted to SR 22 or Manor Drive Eastbound left Green Hill Rd traffic will be rerouted to Clover Lane and SR 22 ↳ Grade the southern approach to improve sight distance for entering vehicles if complete access remains	N/A	N/A	N/A
Mid-Term	↳ No improvement options	B	C	N/A
Long-Term	↳ No improvement options. LOS reflects two lanes of travel for each direction on SR 39. ↳ Capacity to be added by alternative roadway or SR 39 expansion	B	B	N/A

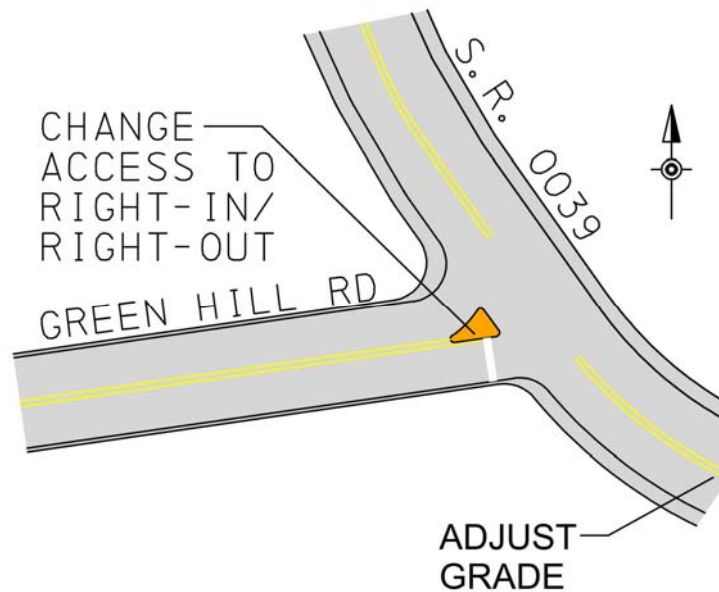
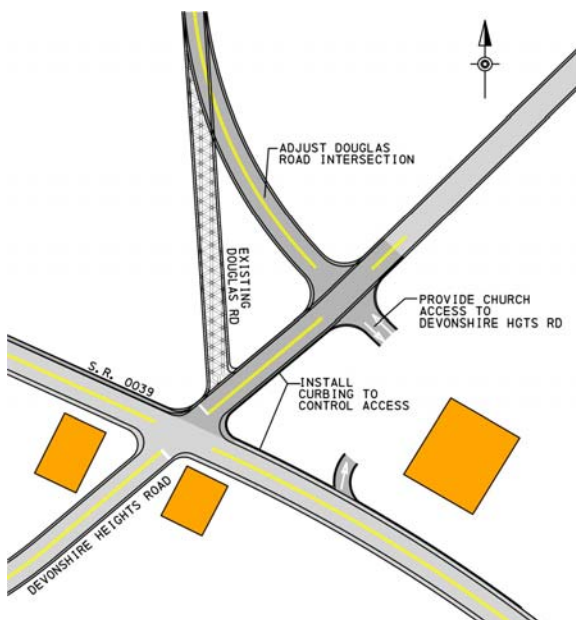


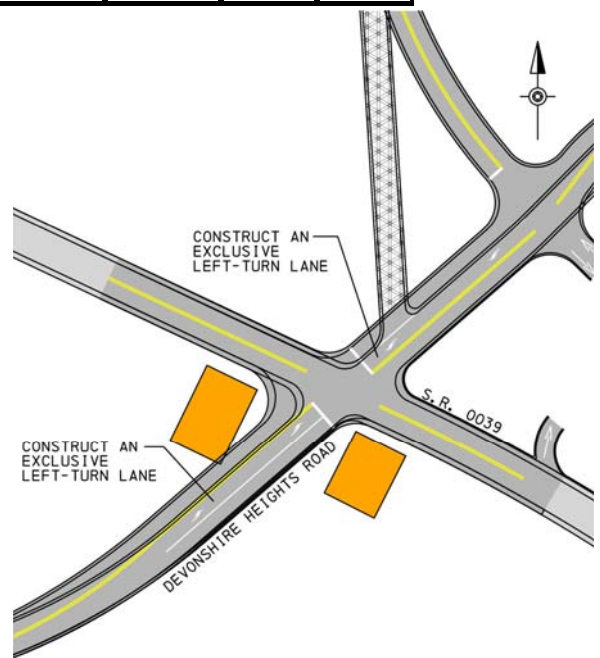
Figure 23 SR 39 and Green Hill Rd Short-Term Improvement Option

(20)SR 39 and Devonshire Heights Road

Scenario	Considerations and Improvements	Anticipated Operations		
		AM	PM	SAT
Existing	↳ Offset four-leg intersection with STOP control on each approach of Devonshire Hgts. Rd	D	E	N/A
Future “No Build”	↳ Traffic volume will increase at nearly 2.0 percent per year on SR 39	F	F	N/A
Short-Term	↳ Install a speed warning system (SWS) as a rural Intelligent Transportation System (ITS) : YOUR SPEED XX, SAFE SPEED XX ↳ In Colorado, speeds went from 66 to 45 mph. ↳ Install curbing to control access to the church parking lot in the southeast quadrant	N/A	N/A	N/A
Mid-Term	↳ Relocate the Douglas Road intersection with Devonshire Heights and realign Devonshire Heights to east. ↳ Grade roadway to provide optimum site distance	F	F	N/A
Long-Term	↳ Construct exclusive left and right-turn lanes for both approaches of Devonshire Heights Road. ↳ Capacity to be added by alternative roadway or SR 39 expansion	F	F	N/A



**Figure 25 SR 39 at Devonshire Hgts Rd
Mid-Term Improvement Option**



**Figure 24 SR 39 at Devonshire Hgts Rd
Long-Term Improvement Option**

(21)SR 39 and Red Top Road

Scenario	Considerations and Improvements	Anticipated Operations		
		AM	PM	SAT
Existing	↳ T-intersection with STOP control on Red Top Road	C	D	N/A
Future “No Build”	↳ Traffic volumes will increase at nearly 2.0 percent per year on SR 39	F	D	N/A
Short-Term	↳ No improvement options	N/A	N/A	N/A
Mid-Term	↳ No improvement options	D	C	N/A
Long-Term	↳ Capacity to be added by alternative roadway or SR 39 expansion	E	D	N/A

Orchard Hill Road

Scenario	Considerations and Improvements	Anticipated Operations		
		AM	PM	SAT
Existing	↳ T-intersection with STOP control on Orchard Road	N/A	N/A	N/A
Future “No Build”	↳ Traffic volumes will increase at nearly 2.0 percent per year on SR 39	N/A	N/A	N/A
Short-Term	↳ Coordinate with West Hanover Township to monitor development in South Hanover Township that accesses Orchard Hill Rd	N/A	N/A	N/A
Mid-Term	↳ Provide geometric improvements to improve sight distance	N/A	N/A	N/A
Long-Term	↳ Capacity to be added by alternative roadway or SR 39 expansion	N/A	N/A	N/A

(22)SR 39 and Shetland Drive

Scenario	Considerations and Improvements	Anticipated Operations		
		AM	PM	SAT
Existing	↳ T-intersection with STOP control on Shetland Drive	B	C	N/A
Future “No Build”	↳ Traffic volumes will increase at nearly 2.0 percent per year on SR 39	D	E	N/A
Short-Term	↳ No improvement options	N/A	N/A	N/A
Mid-Term	↳ No improvement options	C	D	N/A
Long-Term	↳ Capacity to be added by alternative roadway or SR 39 expansion	C	D	N/A

(23)SR 39 and Hanshue Road

Scenario	Considerations and Improvements	Anticipated Operations		
		AM	PM	SAT
Existing	↳ T-intersection with STOP control on Hanshue Rd, West leg was changed to right-in/right-out access only.	C	C	N/A
Future “No Build”	↳ Traffic volumes will increase at 1.8 percent per year on SR 39	E	F	N/A
Short-Term	↳ No improvement options	N/A	N/A	N/A
Mid-Term	↳ No improvement options	F	F	N/A
Long-Term	↳ Capacity to be added by alternative roadway or SR 39 expansion	D	F	N/A

(24)SR 39 and Grandview Drive

Scenario	Considerations and Improvements	Anticipated Operations		
		AM	PM	SAT
Existing	↳ T-intersection with STOP control on Grandview Drive	D	F	N/A
Future “No Build”	↳ Traffic volumes will increase at 1.8 percent per year on SR 39	A	C	N/A
Short-Term	↳ Coordinate signal with HPD, signal delay decreases by 10 percent. Install an event coordination program that can be activated when the HPD signal is operated manually for traffic leaving the Hershey complex. (LOS F to C)	N/A	N/A	N/A
Mid-Term	↳ No improvement options	A	A	N/A
Long-Term	↳ Capacity to be added by alternative roadway or SR 39 expansion	A	A	N/A

(25)SR 39 and Hanover Street

Scenario	Considerations and Improvements	Anticipated Operations		
		AM	PM	SAT
Existing	↳ T-intersection with STOP control on Hanover St	D	F	D
Future “No Build”	↳ Traffic volumes will increase at 2.0 percent per year on SR 39	A	A	B
Short-Term	↳ Coordinate with HPD, intersection delay decreases by 9 percent. Install an event coordination program that can be activated when the HPD signal is operated manually for traffic leaving the Hershey complex. Install a CMS near the Swatara Creek crossing. (LOS F to C)	N/A	N/A	N/A
Mid-Term	↳ Extend the existing SR 39 cross section (As constructed by Meadows of Hanover) east to HPD	A	A	A
Long-Term	↳ Capacity to be added by alternative roadway or SR 39 expansion	A	A	A

(26)SR 39 and Canal Street

Scenario	Considerations and Improvements	Anticipated Operations		
		AM	PM	SAT
Existing	↳ Four-leg intersection with STOP control on Canal Street	E	F	N/A
Future “No Build”	↳ Traffic volumes will increase at 2.0 percent per year on SR 39 ↳ Does not meet signal warrants	F	F	N/A
Short-Term	↳ Install a CMS sign eastbound prior to the Hersheypark Drive intersection to aid in directing travelers to the appropriate locations	N/A	N/A	N/A
Mid-Term	↳ Extend the existing SR 39 cross section (As constructed by Meadows of Hanover) east to HPD	F	F	N/A
Long-Term	↳ Capacity to be added by alternative roadway or SR 39 expansion	F	F	N/A

(27)SR 39 and Hershey Park Drive

Scenario	Considerations and Improvements	Anticipated Operations		
		AM	PM	SAT
Existing	↳ Four-leg intersection	C	C	D
Future “No Build”	↳ Traffic volumes will increase at 2.0 percent per year	C	E	E
Short-Term	↳ Construction completed in conjunction with adjacent land development ↳ Coordinate this signal with Meadows of Hanover signals ↳ Coordinate with SAMI improvements ongoing	N/A	N/A	N/A
Mid-Term	↳ Match the cross section of Meadows of Hanover to the west of this intersection	C	D	B
Long-Term	↳ Construct and additional SB left-turn lane ↳ Capacity to be added by alternative roadway or SR 39 expansion	C	D	D

(28) Hershey Park Drive and Sand Beach Road

Scenario	Considerations and Improvements	Anticipated Operations		
		AM	PM	SAT
Existing	↳ Four-leg intersection with a three-phase traffic signal	B	B	D
Future “No Build”	↳ Traffic volumes will increase at 1.5 percent per year	B	C	E
Short-Term	↳ Modify phasing by adding a protected/permitted northbound left-turn phase ↳ Coordinate with SAMI improvements ongoing	N/A	N/A	N/A
Mid-Term	↳ No improvement options	B	C	D
Long-Term	↳ Capacity to be added by alternative roadway or SR 39 expansion	B	C	D

(29) Hershey Park Drive and SR 743/Hershey Park Extension/Laudermilch Rd

Scenario	Considerations and Improvements	Anticipated Operations		
		AM	PM	SAT
Existing	↳ Under construction in conjunction with the Hersheypark Drive extension project.	F	F	F
Future “No Build”	↳ Traffic volumes will increase at 1.5 percent per year	B	D	C
Short-Term	↳ No improvement options	N/A	N/A	N/A
Mid-Term	↳ Reevaluate after project completion and as development occurs.	B	C	B
Long-Term	↳ No improvement options ↳ Alternative roadway or SR 39 expansion could affect performance levels	B	C	B

(30)SR 743 and Gravel Hill Road

Scenario	Considerations and Improvements	Anticipated Operations		
		AM	PM	SAT
Existing	↳ T-intersection with STOP control on Gravel Hill Rd	F	F	N/A
Future “No Build”	↳ Traffic volumes will increase at 1.5 percent per year	F	F	N/A
Short-Term	↳ No improvement options	N/A	N/A	N/A
Mid-Term	↳ Install a traffic signal including a southbound protected left-turn phase	B	A	N/A
Long-Term	↳ Alternative roadway or SR 39 expansion could affect performance levels	B	A	N/A

(31)SR 743 and Bindnagle Road

Scenario	Considerations and Improvements	Anticipated Operations		
		AM	PM	SAT
Existing	↳ T-intersection with STOP control on Bindnagle Rd	D	C	N/A
Future “No Build”	↳ Traffic volumes will increase at 1.5 percent per year	F	D	N/A
Short-Term	↳ No improvement options	N/A	N/A	N/A
Mid-Term	↳ No improvement options	E	C	N/A
Long-Term	↳ Install a traffic signal ↳ Alternative roadway or SR 39 expansion could affect performance levels	A	A	N/A

(32)SR 743 and Canal Street

Scenario	Considerations and Improvements	Anticipated Operations		
		AM	PM	SAT
Existing	↳ T-intersection with STOP control on Canal Street	B	B	N/A
Future “No Build”	↳ Traffic volumes will increase at 1.5 percent per year	C	C	N/A
Short-Term	↳ Improve sight distance by grading slopes to north and south	N/A	N/A	N/A
Mid-Term	↳ No improvement options	C	C	N/A
Long-Term	↳ Alternative roadway or SR 39 expansion could affect performance levels	C	C	N/A

(33)SR 743 and Pine Road

Scenario	Considerations and Improvements	Anticipated Operations		
		AM	PM	SAT
Existing	↳ Four-leg intersection with STOP control on Pine Road	C	C	N/A
Future “No Build”	↳ Traffic volumes are not predicted to increase at a significant rate	C	F	N/A
Short-Term	↳ Relocate utility pole on southeast corner ↳ Install curve warning pavement markings to north	N/A	N/A	N/A
Mid-Term	↳ No improvement options	C	D	N/A
Long-Term	↳ Alternative roadway or SR 39 expansion could affect performance levels	C	E	N/A

(34)SR 743 and Earlys Mill Road

Scenario	Considerations and Improvements	Anticipated Operations		
		AM	PM	SAT
Existing	↳ Offset four-leg intersection with STOP control on Earlys Mill Rd	C	C	N/A
Future “No Build”	↳ Traffic volumes are not predicted to increase at a significant rate	D	D	N/A
Short-Term	↳ Improve sight distance by realigning the west leg to align with the east leg (to the south) and grade roadway surface to north (Figure 25); or ↳ Improve sight distance by removing structure and grade roadway surface to north; or ↳ Restrict access to right-in/ right-out and grade roadway surface to north	N/A	N/A	N/A
Mid-Term	↳ No improvement options	C	C	N/A
Long-Term	↳ Alternative roadway or SR 39 expansion could affect performance levels	D	D	N/A



Figure 26 SR 743 at Earlys Mill Rd Short-Term Improvement Option

(35)SR 743 and Meadow Lane

Scenario	Considerations and Improvements	Anticipated Operations		
		AM	PM	SAT
Existing	↳ T-intersection with STOP control on Meadow Lane	B	B	N/A
Future “No Build”	↳ Traffic volumes are not predicted to increase at a significant rate	F	F	N/A
Short-Term	↳ Improve sight distance by realigning the west leg to the south; or ↳ Improve sight distance by removing structure; or ↳ Restrict access to right-in/ right-out	N/A	N/A	N/A
Mid-Term	↳ No improvement options	D	C	N/A
Long-Term	↳ Alternative roadway or SR 39 expansion could affect performance levels	F	F	N/A

(36)SR 743 and SR 22

Scenario	Considerations and Improvements	Anticipated Operations		
		AM	PM	SAT
Existing	↳ Four-leg intersection with five-phase traffic signal	B	B	B
Future “No Build”	↳ Traffic volumes will increase at 6.8 percent per year	F	F	F
Short-Term	↳ No improvement options	N/A	N/A	N/A
Mid-Term	↳ Construct a second westbound left-turn lane ↳ See Figure 26	B	D	C
Long-Term	↳ Construct a northbound left-turn lane and a southbound left-turn lane ↳ Construct a southbound right-turn lane ↳ Alternative roadway or SR 39 expansion could affect performance levels	C	D	D

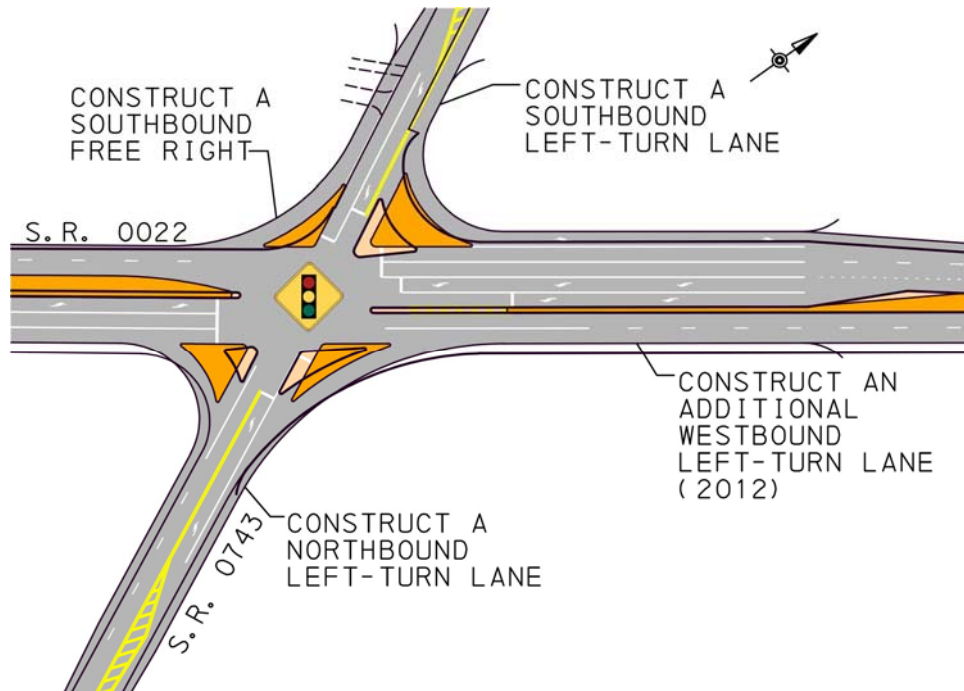


Figure 27 SR 743 at SR 22 Mid-Term and Long-Term Improvement Options

(37)SR 743 and Jonestown Road

Scenario	Considerations and Improvements	Anticipated Operations		
		AM	PM	SAT
Existing	↳ Four-leg intersection with STOP control on Jonestown Rd and flashing beacon	C	C	N/A
Future “No Build”	↳ Traffic volumes will increase at 6.8 percent per year	F	F	N/A
Short-Term	↳ No improvement options	N/A	N/A	N/A
Mid-Term	↳ Install a signal ↳ See Figure 7	C	A	N/A
Long-Term	↳ Construct a northbound left-turn lane and a southbound left-turn lane	C	B	N/A

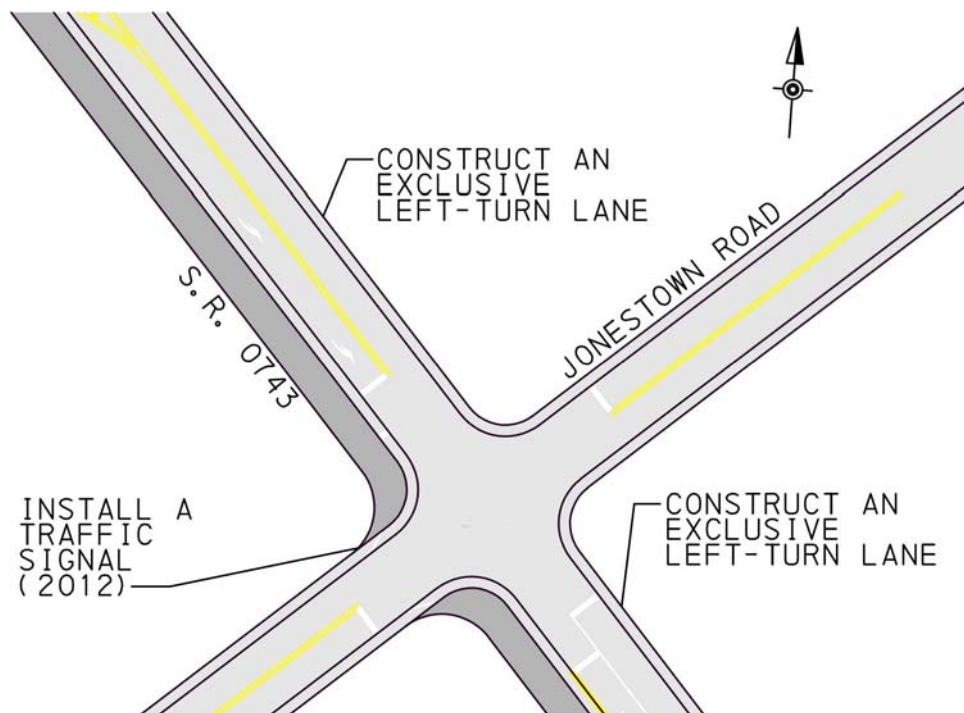


Figure 28 SR 743 at Jonestown Rd Mid-Term and Long-Term Improvement Options

(38)SR 743 and SR 81 Northbound Ramps

Scenario	Considerations and Improvements	Anticipated Operations		
		AM	PM	SAT
Existing	↳ Four-leg intersection with STOP control for I-81 ramps	B	C	C
Future “No Build”	↳ Traffic volumes will increase at nearly 7.0 percent per year	F	F	F
Short-Term	↳ No improvement options	N/A	N/A	N/A
Mid-Term	↳ Install a traffic signal ↳ Construct an eastbound free right ↳ See Figure 28	A	A	A
Long-Term	↳ Construct an additional northbound thru lane ↳ Construct an additional southbound thru lane ↳ Construct eastbound double left-turn lanes ↳ See Figure 29	C	B	B

(39)SR 743 and SR 81 Southbound Ramps

Scenario	Considerations and Improvements	Anticipated Operations		
		AM	PM	SAT
Existing	↳ Four-leg intersection with STOP control for I-81 ramps	E	D	F
Future “No Build”	↳ Traffic volumes will increase at nearly 7.0 percent per year	F	F	F
Short-Term	↳ No improvement options	N/A	N/A	N/A
Mid-Term	↳ Install a traffic signal ↳ Construct a northbound left-turn lane ↳ See Figure 28	B	B	C
Long-Term	↳ Construct an additional westbound left-turn lane ↳ Construct an additional northbound thru lane ↳ Construct an additional southbound thru lane ↳ Construct a southbound free right ↳ See Figure 29	C	B	C

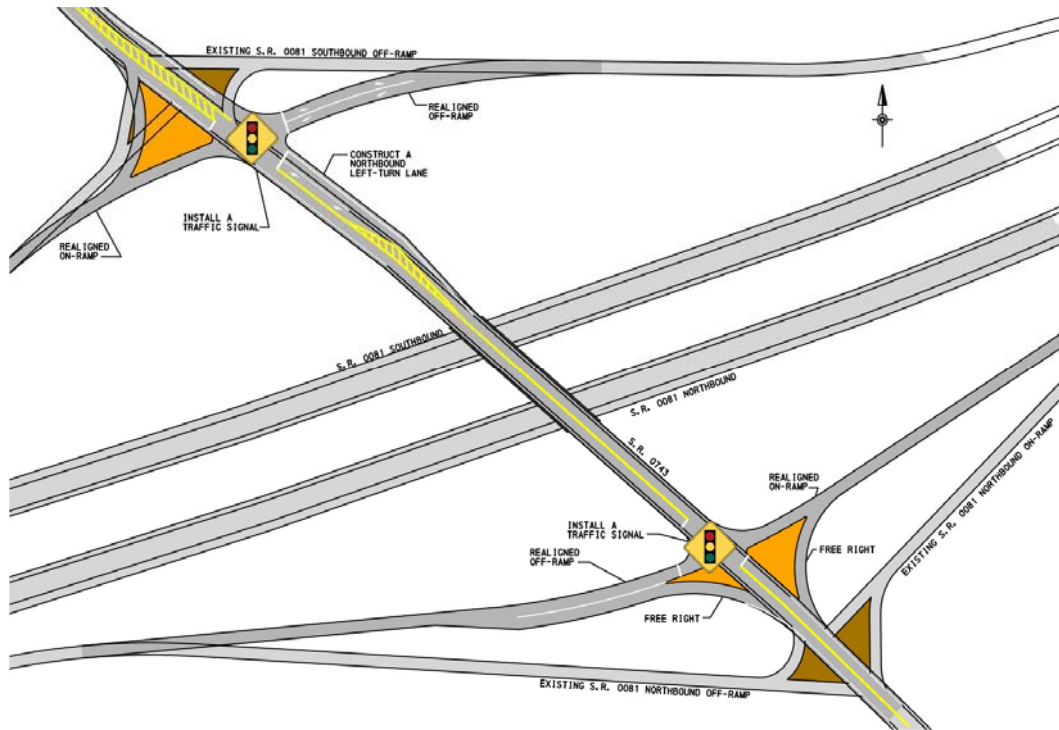


Figure 29 SR 743 at I-81 Mid-Term Improvement Option

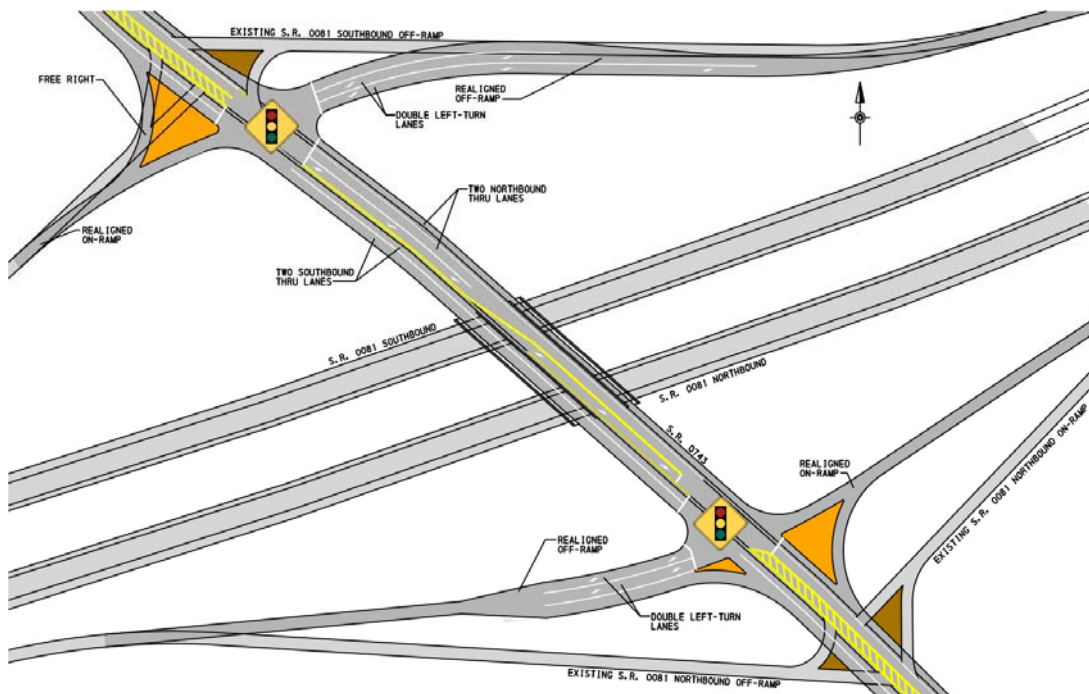


Figure 30 SR 743 at I-81 Long-Term Improvement Option

(40)Bow Creek Road and S.R. 0443

Scenario	Considerations and Improvements	Anticipated Operations		
		AM	PM	SAT
Existing	↳ T-intersection with STOP control on Bow Creek Road	A	B	N/A
Future “No Build”	↳ Continued acceptable operation	B	C	N/A
Short-Term	↳ No improvement options	N/A	N/A	N/A
Mid-Term	↳ No improvement options	B	C	N/A
Long-Term	↳ No improvement options	B	C	N/A

5. General Improvements

Street Name Signing Plan

- Several intersections throughout the area do not have street name signs.
- The implementation of street name signs at key intersection will assist those unfamiliar with the area.

Sight Distance Enhancements

- Several intersections have limited sight distance that can be enhanced through sideslope grading, clearing of vegetation or other measures.

Utility Pole and Drainage Mitigation

- Several areas have utility poles in close proximity to the roadway clear zone or have drainage issues.
- SR 39 from Mountain Road to Fairville Avenue is the most noticeable area.
- Utility pole and drainage enhancement program should be implemented to improve roadway clear zone and to prevent water on the roadway.

Speed Warning System (SWS) Pilot Program

- Install a speed warning system (SWS) as a rural Intelligent Transportation System (ITS) at Devonshire Heights Road
- YOUR SPEED XX, SAFE SPEED XX
- In Colorado, speeds went from 66 to 45 mph
- If successful, consider elsewhere

Access Management Plan

- Work with property owners in “smart” consolidation of access points while preserving viable access to properties.
- Reduces congestion associated with numerous access points and enhances safety

Traffic Impact Fee Assessment Plan and Transportation Partnerships

- Mechanisms to work with community and developers in addressing transportation infrastructure in cooperative and smart manner

6. Funding and Programming

Development and Prioritizations of Improvements

Improvement Identification Process

Previous sections of this report have identified the process used in the identification of improvement alternatives.

Improvements were initially categorized based on the timeframe of improvements as they related to operations or safety. Those categories included:

- Short-term improvements - Those improvements identified during field observations. Although these improvements may not mitigate recurring congestion, they may improve the safety of the corridor thus reducing non-recurring congestion. Many of these are low-cost improvements that may be covered through regular maintenance activities or with limited funding.
- Mid-term improvements - Those improvements that should be considered for implementation by year 2012 to maintain acceptable LOS.
- Long-term improvements - Those improvements that should be considered for implementation by year 2022 to maintain acceptable LOS.

Re-categorization Based on Cost Estimates

As improvement alternative cost estimates were developed, each alternative was reviewed to determine if costs were suitable for the improvement scenario.

Generally, unfunded improvements were re-categorized as needed using the following criteria:

- Short-term improvements: <\$500K
- Mid-term improvements: \$500K - \$2M
- Long-term improvements: >\$2M

Funded (or partially-funded) improvements were assumed to occur in the timeframe needed or when funding is released. Some improvements that were not within these funding levels were retained in their originally designated improvement scenario timeframe if they were of a high priority and provided significant operational improvements.

Subjective Prioritization

Prioritization of improvements was developed by improvement scenario. Generally, improvements were categorized as High, Medium or Low based on both qualitative and subjective considerations. Key considerations in the assessment included:

- Total Intersection (or Segment) Volume – Total usage during AM and PM peak hours

- Capacity Related Benefit /Cost Ratio – Estimated monetary benefits of capacity enhancements versus cost of implementation
- Delay savings/hours – Estimated vehicular delay savings
- Safety Benefit – Estimated savings in property damage, injuries and fatalities considering the crash history, anticipated crash reductions and FHWA monetary values for property damage, injuries and fatalities

A ranking was developed for each category and was used by the study team in subjectively categorizing each improvement.

It should be noted that all improvements warrant consideration and that “Low” rated improvements are still worthwhile, but fell into the “Low” category when compared to other improvements.

Smart Implementation of Improvements

When planning the implementation of improvement alternatives, two considerations should be made to maximize resources:

- Consider needed improvements at one location for different timeframes - The eventual needed improvements should be considered when implementing shorter-term improvements. An example of this is at SR 743 and Jonestown Road. In the mid-term, signalization should be considered. In the long-term, the implementation of northbound and southbound left-turn lanes should be considered. It may be more beneficial to group these improvements together into one project or to design the signal to accommodate future turning lane needs.
- Coordinate neighboring projects – If appropriate, neighboring projects should be coordinated for implementation.

Program and Financing Strategies

Funding strategies are broken into two general categories.

1. Local
2. State/ Federal

Under each category, programs and strategies for implementation are further discussed.

Programs

Specific programs and strategies for considerations are discussed below.

Liquid Fuels Program

PENNSYLVANIA TITLE 75 CHAPTER 90 Section §9010 provides counties with an annual separate fund from which payments may be made for construction, maintenance, and repair of local roads and bridges. The title also provides that counties may allocate monies from this fund to their political subdivisions for these same

purposes. ACT 655 DATED 1956 AND AMENDMENTS provides municipalities other than counties with an annual allocation of Liquid Fuels Taxes from the State's Motor License Fund. This allocation is based on the mileage and population of the municipality and the revenues must be used on the roads and streets for which the municipalities are responsible. Allocations are made on the basis of 50 percent mileage and 50 percent population. Mileage is determined by the Department of Transportation. Population is based on official United States Census Reports.

These funds can be used for minor maintenance related improvements identified as part of this study.

Agility Program

As part of PENNDOT's Agility Program, Pennsylvania's new "Agile Maintenance Enterprises" (AMEs) operate under Agility principles to provide better maintenance services, faster, and at less expense to their customers. These AMEs consist of PENNDOT field organizations, county and local government partners, and customers who identify operational needs and the organizational core competencies to fill those needs. This results in a unique sharing of resources, typically unheard of in government, and a unified vision for an improved transportation system regardless of how ownership is divided. When governmental jurisdictions cooperate in "virtual" or temporary relationships, individual sovereignty is not challenged but the benefits of consolidation are realized. As a result, transportation customers are enriched through improved transportation services.

Delivering improved transportation products and services is accomplished through the formation of these AMEs between PENNDOT and other government or not-for-profit partners. These agile partners share resources and work toward a unified work plan for improving the overall transportation system. AMEs are developed to address highly localized and customer impact projects.

Twelve Year Program/Transportation Improvement Program

Probably the most well known funding mechanism for transportation projects is PENNDOT's Twelve Year Program. The 12 Year Program is not a funding source per se, but a programmed listing of projects that the Harrisburg Area Transportation Study (HATS) reviews, amends, modifies and extends every two years. HATS is required to develop and maintain this program in consultation with PENNDOT.

A subset of the 12 Year Program, the Transportation Improvement Program (TIP) encompasses the first four year period of the 12 Year Program and generally constitutes the highest priority projects as deemed by HATS. For transportation projects, getting onto the TIP represents an important first step towards receiving federal and state funding and commitment. HATS sends letters of solicitation to its member municipalities every other year in seeking project requests. Thus, municipal officials can and must work directly with their representatives on the MPO in advocating the municipality's transportation project needs as projects face county-wide competition for a limited amount of MPO funds.

Financing Options

Other mechanisms or tools exist to advance proposed transportation improvements. This section summarizes some of the more common funding tools, including:

State Infrastructure Bank

Created by legislation signed by then-Governor Ridge in 1997, the Pennsylvania Infrastructure Bank provides loan and credit opportunities to transportation project sponsors for financing projects. The bank affords transportation project sponsors with several benefits that include:

- Accelerated implementation schedules.
- Ability to leverage other state and federal funding sources.
- Construction of non-traditional projects that otherwise would not be funded through the TIP process.
- Attract and involve local financial support in economic development opportunities.

Rapid development trends require transportation projects that can be quickly financed and constructed to foster the movement of people and goods and promote economic development. In light of these events, Pennsylvania's local governments must employ innovative financing tools that allow them to expedite transportation project financing and construction. The Pennsylvania State Infrastructure Bank can be a powerful tool for municipalities to use to finance transportation projects that help to insure the adequacy of their transportation system. Low interest loans are issued at ½ the current prime-lending rate as determined by the Federal Reserve. A complete financing plan must be presented when applying for funds.

Tax Increment Financing

The concept of tax increment financing is to use the difference in taxes generated from a property as vacant land to the taxes generated from that same property once developed to pay for improvements made in that region. Tax increment financing requires that all of the taxing agencies or authorities commit to earmarking the additional tax revenue for a set period of time to pay for agreed upon improvements.

Transportation Partnership District

A transportation partnership provides for a special assessment on land and development to pay for off-site transportation improvements. The special assessment must be approved by those who own at least 50 percent of the assessed land value in order to approve the formation of the district. A district can be used to pay for part or all of the costs associated with a project. To make a district successful, the majority of the landowners in a proposed district need to see direct transportation benefits.

Developer Funded Improvements

New developments will impose traffic impacts on the roadway network. As part of PENNDOT's Highway occupancy permit process, developers must meet the Department's requirements for improvements in order to maintain roadway levels of

service and safety. Some of the improvements in the study area may fall under the HOP permit process. In addition, the municipalities in the study area have the ability to negotiate with developers for on site improvements related to their development. It is not unusual to exact these improvements from the developer through negotiations.

Traffic Impact Fees

Impact fees can be used to capture the costs that development can levy on the transportation system and the surrounding community. To implement an impact fee ordinance in Pennsylvania, municipalities must conduct a detailed existing traffic conditions study to form a basis for assessing new impacts to development. Much of this information is contained within this study.

Other Financing Considerations

Typically, the ultimate financial plan will rely on “packaging” more than one of the sources noted. Stakeholders should work with HATS and PENNDOT to advance these improvements. Recognizing that the stakeholders will want to avoid a proliferation of committees, project committees should be considered to advance efforts to fund transportation improvements for key projects. Project committees should interface with the stakeholders and through the municipalities with HATS and PENNDOT. Membership could include representatives from:

- Municipal staff and/or supervisors
- PENNDOT
- HATS
- Local stakeholders
- Political leaders
- Other

A project such as providing additional capacity from I-81 to Hershey Park Drive which may include an upgrade of SR 39 and/or SR 743 as well as considering new alignments may have the interest of all municipalities in the subject area as well as other stakeholder such as HERCO, Hershey Medical Center and political leaders.

Another consideration may be to pursue Federal funding as part of the ongoing transportation reauthorization. The study area falls within the 17th U.S. Congressional District. Congressman Tim Holden is a Member of the United States Congress, representing the 17th District (Dauphin, Lebanon, Schuylkill, Berks, Perry) of Pennsylvania and serves on the House Committee for Transportation and Infrastructure. Congressman Holden could be a significant resource in identifying funding sources.

Also, Congressman Todd Platts is a Member of the United States Congress, representing the 19th District (Adams, Cumberland and York) of Pennsylvania and serves on the House Committee for Transportation and Infrastructure and may be a valuable resource in promoting area projects.

Additionally, Senator Arlen Specter is a Member of the United States Senate and serves on the Senate Transportation Appropriations Subcommittee

The State Transportation Advisory Committee provides input on state transportation issues including funding priorities. The current chairman of the committee is Mr. H. Michael Liptak, with Highway Equipment & Supply Company and an area resident. Mr. Liptak may also be a key resource in identifying appropriate funding mechanisms.

Programmatic Plan and Action Items

A detailed programmatic table is provided and is sorted by location/ municipality. Improvements identified for the entire study area total \$289,343,300. Priority and timeframe scenario for these improvements are identified below:

Table 37 Prioritization and Scenario Funding Amounts

SCENARIO	PRIORITY LEVEL				TOTAL
	HIGH	MED	LOW	NA	
SHORT-TERM	\$268,800	\$48,900	\$108,600	\$0	\$426,300
MID-TERM	\$8,720,000	\$16,224,000	\$2,959,000	\$8,712,000 (1)	\$36,615,000
LONG-TERM	\$226,470,000	\$20,374,000	\$5,458,000	\$0	\$252,302,000
TOTAL	\$235,458,800	\$36,646,900	\$8,525,600	\$8,712,000	\$289,343,300

(3) SR 39 and I-81 Upgrade under design was not prioritized.

(4) Linglestown plan was not included in cost estimates and was not prioritized.

Ultimately, the total costs of improvements will likely exceed funding available. Creative funding of improvements including private funding sources may reduce some burden. By developing timeframe scenarios and identifying priority levels, the plan is intended to assist stakeholders in identifying appropriate projects when funding becomes available.

Table 38 SR 39/743 Transportation and Land Use Study Summary Table

Int #	Location	Municipality	Timeframe	Improvement	Total Improvement Cost	Priority Level	Funding Considerations	Action Items and Other Considerations	Responsible Party
NA.1	SR 39 from Mountain Road to Fairview Avenue	West Hanover Township	MID	Utility pole and drainage enhancement program to improve roadway clear zone and to prevent water on the roadway.	\$2,490,000	MEDIUM	<input type="checkbox"/> Local funding should be used to address drainage issues. Consider use of Liquid Fuels. <input type="checkbox"/> State/ Federal funding should be pursued to address utility pole issues. Consider a partnership with utility providers. <input type="checkbox"/> The Agility Program may be a mechanism to be considered.	<input type="checkbox"/> Pursue partnership with utility providers.	Local/State
NA.2	Linglestown	Lower Paxton Township	LONG	Alteration of traffic patterns through Linglestown Borough	Others	NA	<input type="checkbox"/> Final design funds of \$225,000 have been set aside in the first four years of the Twelve-year plan	<input type="checkbox"/> ONGOING -Study group currently moving project forward	NA
NA.3	I-81 to Hershey Park Drive	Multiple	LONG	Add capacity to corridors from I-81 to HPD via new alignment, upgrades or other means.	\$120,000,000	HIGHER	<input type="checkbox"/> State/Federal funding. Pursue funding through Twelve-year Program or innovative alternative.	<input type="checkbox"/> Consider formation of working group to move project forward. Group should consist of Tri-County, PENNDOT, municipalities, political leaders and local stakeholders such as HERCO and Hershey Medical Center <input type="checkbox"/> Program and initiate feasibility and environmental studies	HATS/ State
NA.4	Meadows of Hanover to Hershey Park Dr	South Hanover Township/ Derry Township	SHORT	Interjurisdictional signal system between Meadows of Hanover signals and Hersheypark Dr signal	\$80,000	HIGHER	<input type="checkbox"/> Local funding should be used.	<input type="checkbox"/> Coordinate with Meadows of Hanover to ensure the proper equipment is purchased	Local
NA.5	Meadows of Hanover to Hershey park Dr	South Hanover Township/ Derry Township	MID	Extend the cross section near Meadows of Hanover to the south to include turning lanes and wider shoulders	\$1,900,000	MEDIUM	<input type="checkbox"/> Local and/or State funding. Consider Liquid Fuels and/ or Transportation Enhancement Program. <input type="checkbox"/> The Agility Program may be a mechanism to be considered.	<input type="checkbox"/> Coordination between South Hanover Township and Derry Township should continue <input type="checkbox"/> Before implementing this improvements review status of I81 to HPD upgrade to determine if improvement is still worth considering	Local/State
NA.6	Orchard Hill Rd	West Hanover	MID	Provide geometric improvements to improve sight distance	\$406,000	MEDIUM	<input type="checkbox"/> State/ Federal funding should be used. Consider Twelve-year Program.	<input type="checkbox"/> Before implementing this improvements review status of I81 to HPD upgrade to determine if improvement is still worth considering	Local/State
1	SR 39 & Front Street	Susquehanna Township	SHORT	Install WB lane use control signs. Improve pavement markings to delineate travel way boundaries	\$24,000	MEDIUM	<input type="checkbox"/> Local and/or State funding. Consider Liquid Fuels and/ or Transportation Enhancement Program. <input type="checkbox"/> The Agility Program may be a mechanism to be considered.	<input type="checkbox"/> Coordinate improvements with investigation of signal warrants and possible implementation of a signal at SR 39 and Sixth Street	Local/ State
2	Intersections 2 and 3 SR 39 & SR 0322 WB/EB Ramps/Industrial Road	Susquehanna Township	LONG	Construct one of the upgrade options presented in report.	\$57,000,000	HIGHER	<input type="checkbox"/> State/Federal funding. Pursue funding through Twelve-year Program or innovative alternative.	<input type="checkbox"/> Program and initiate feasibility and environmental studies	HATS/ State
4	SR 39 & Crooked Hill Road AND SR 39 Widening	Susquehanna Township	MID	Construct an eastbound right-turn lane, a westbound right-turn lane and an additional southbound left-turn lane. THIS INCLUDES PART OF WIDENING (4-lane) OF SR 39 FROM US 322 THRU PROGRESS AVENUE.	\$7,500,000	MEDIUM	<input type="checkbox"/> State/Federal funding. Pursue funding through Twelve-year Program or innovative alternative. <input type="checkbox"/> Consider packaging with Intersection 5/MID-TERM as one project.	<input type="checkbox"/> Program and initiate feasibility and environmental studies	HATS/ State
5	SR 39 & Progress Avenue AND SR 39 Widening	Susquehanna Township	MID	Construct an additional eastbound thru lane and a westbound thru lane. Construct a westbound right-turn lane and a northbound right-turn lane. Modify signal phasing by adding a protected westbound left-turn phase and northbound left-turn turn phase to the existing signal configuration. THIS INCLUDES PART OF WIDENING (4-lane) OF SR 39 FROM US 322 THRU PROGRESS AVENUE	\$6,600,000	HIGHER	<input type="checkbox"/> State/Federal funding. Pursue funding through Twelve-year Program or innovative alternative. <input type="checkbox"/> Consider packaging with Intersection 4/MID-TERM as one project.	<input type="checkbox"/> Program and initiate feasibility and environmental studies <input type="checkbox"/> Consider long-term needs and possibly merge with LONG-TERM improvements at this location.	HATS/ State
5	SR 39 & Progress Avenue	Susquehanna Township	LONG	Option 1 – Traditional Intersection: Northbound lane requirements -triple left-turn, single thru, double right; Southbound lane requirements -single left, single thru, single/free right; Eastbound lane requirements- single left, triple thru, single/ free right; Westbound lane requirement-triple left, double thru, single/ free right or Option 2 – Single Point Urban Interchange (SPUI) Construct a single point urban interchange with Progress Avenue crossing over SR 39.	\$31,800,000	HIGHER	<input type="checkbox"/> State/Federal funding. Pursue funding through Twelve-year Program or innovative alternative.	<input type="checkbox"/> Program and initiate feasibility and environmental studies <input type="checkbox"/> Consider mid-term needs and possibly merge with MID-TERM improvements at this location.	HATS/ State
6	SR 39 & Crums Mills Road	Lower Paxton Township	MID	Install a traffic signal and construct a northbound right-turn lane	\$431,000	LOWER	<input type="checkbox"/> State/Federal funding. Pursue funding through Twelve-year Program or innovative alternative. <input type="checkbox"/> Since this is a LOWER priority and there are long-term Improvements identified, it may be beneficial to consider Developer Funded Improvements if additional development occurs in the vicinity of the intersection.	<input type="checkbox"/> Consider long-term needs and possibly merge with LONG-TERM improvements at this location.	HATS/ State

Int #	Location	Municipality	Timeframe	Improvement	Total Improvement Cost	Priority Level	Funding Considerations	Action Items and Other Considerations	Responsible Party
6	SR 39 & Crums Mills Road AND SR 39 Widening	Lower Paxton Township	LONG	Construct an additional eastbound thru lane and a westbound thru lane. THIS INCLUDES PART OF THE COST OF THE EXTENSION OF WIDENING (4-lane) PROGRESS AVE THRU COLONIAL ROAD.	\$5,250,000	HIGHER	<input type="checkbox"/> State/Federal funding. Pursue funding through Twelve-year Program or innovative alternative. <input type="checkbox"/> Consider packaging with Intersection 7/LONG-TERM as one project.	<input type="checkbox"/> Program and initiate feasibility and environmental studies <input type="checkbox"/> Consider long-term needs and possibly merge with MID-TERM improvements at this location.	HATS/ State
7	SR 39 & Colonial Road	Lower Paxton Township	SHORT	Modify signal phasing by adding a protected eastbound left-turn phase and southbound left-turn turn phase to the existing signal configuration	\$4,400	HIGHER	<input type="checkbox"/> Local funding should be used. Consider use of Liquid Fuels.	<input type="checkbox"/> Contact PENNDOT to begin process of revising signal permit.	Local
7	SR 39 & Colonial Road	Lower Paxton Township	MID	Construct a westbound right-turn lane and a northbound right-turn lane. Construct a westbound left-turn lane	\$1,440,000	HIGHER	<input type="checkbox"/> State/Federal funding. Pursue funding through Twelve-year Program or innovative alternative. <input type="checkbox"/> Since there are Long-term Improvements identified, it may be beneficial to consider developer funded Improvements if additional development occurs in the vicinity of the intersection.	<input type="checkbox"/> Consider long-term needs and possibly merge with LONG-TERM improvements at this location.	HATS/ State
7	SR 39 & Colonial Road AND SR 39 Widening	Lower Paxton Township	LONG	Construct an additional eastbound thru lane and a westbound thru lane. Construct an additional southbound left-turn lane. Construct an additional northbound left-turn lane. THIS INCLUDES PART OF THE COST OF THE EXTENSION OF WIDENING (4-lane) PROGRESS AVE THRU COLONIAL ROAD.	\$19,000,000	MEDIUM	<input type="checkbox"/> State/Federal funding. Pursue funding through Twelve-year Program or innovative alternative. <input type="checkbox"/> Consider packaging with Intersection 6/LONG-TERM as one project.	<input type="checkbox"/> Program and initiate feasibility and environmental studies <input type="checkbox"/> Consider long-term needs and possibly merge with MID-TERM improvements at this location.	HATS/ State
10	Intersections 10 and 11 SR 39 & Piketown Road	West Hanover Township	LONG	Based on analysis of the proposed design, additional capacity may be needed, construct an additional EB left, an additional WB through lane, and a WB right-turn lane.	\$5,300,000	LOWER	<input type="checkbox"/> State/Federal funding. Pursue funding through Twelve-year Program or innovative alternative. <input type="checkbox"/> Since this is a LOWER priority and there have been recent improvements, it may be beneficial to consider Developer Funded Improvements if additional development occurs in the vicinity of the intersection.		HATS/ State
12	SR 39 & Manor Drive (NW)	West Hanover Township	SHORT	Improve sight distance for traffic entering SR 39 by grading and clearing vegetation to the east and clearing vegetation to the west. Consider intersection and curve warning signs.	\$12,000	MEDIUM	<input type="checkbox"/> Local funding should be used. Consider use of Liquid Fuels. <input type="checkbox"/> Consider trying to get developer funding for these improvements as part of ongoing development.		Local
14	Intersections 14, 15 AND 16 SR 39 & SR 0081 NB/SB Ramps	West Hanover Township	MID	SB- Realign westbound right-turn lane, NB-Realignment of the eastbound right-turn lane. Addition of a westbound left-turn lane on SR 39 @ Jonestown Road	\$8,712,000	NA	<input type="checkbox"/> Preliminary Engineering funds of \$2,293,000 have been set aside in the first four years of the Twelve-year plan	<input type="checkbox"/> ONGOING – Preliminary engineering activities are ongoing.	HATS/ State
16	SR 39 & Jonestown Road	West Hanover Township	SHORT	Shoulder widening on the eastern side	\$3,000	LOWER	<input type="checkbox"/> Local funding should be used. Consider use of Liquid Fuels.		Local
17	SR 39 & SR 0022	West Hanover Township	SHORT	Modify phasing by adding a northbound protected left-turn phase	\$2,200	HIGHER	<input type="checkbox"/> Local funding should be used. Consider use of Liquid Fuels.	<input type="checkbox"/> Contact PENNDOT to begin process of revising signal permit.	Local
17	SR 39 & SR 0022	West Hanover Township	MID	Construct a northbound left-turn lane and a southbound left-turn lane	\$680,000	HIGHER	<input type="checkbox"/> Local/ State/ Federal and local funding should be considered. <input type="checkbox"/> Pursue Twelve-year Program funding or developer/private funding		HATS/ State
17	SR 39 & SR 0022	West Hanover Township	LONG	Construct an additional northbound, southbound and westbound left-turn lane. Construct an additional northbound and southbound thru lane or alternate route	Cost included in NA.3 (I-81 to HPD)	NA	<input type="checkbox"/> To be determined	<input type="checkbox"/> COORDINATE LONG-TERM NEEDS WITH NA.3 (I-81 TO HPD) STUDIES AND OUTCOMES. OUTCOME OF FEASIBILITY AND ENVIRONMENTAL STUDIES MAY IMPACT LONG-TERM IMPROVEMENTS AT THIS LOCATION.	TBD
18	SR 39 & Manor Drive (SE)	West Hanover Township	SHORT	Install traffic calming devices to limit cut-through traffic from SR 22 to SR 39. Install curbing to control access to adjacent properties	\$10,000	LOWER	<input type="checkbox"/> Local funding should be used. Consider use of Liquid Fuels.	<input type="checkbox"/> Contact PENNDOT for guidance on evaluation and installation of traffic calming measures.	Local
19	SR 39 & Green Hill Road	West Hanover Township	SHORT	Restrict traffic to right-in/right-out movements. Northbound SR 39 traffic will be rerouted to SR 22 or Manor Drive. Eastbound left Green Hill Rd traffic will be rerouted to Clover Lane and SR 22.	\$4,300	MEDIUM	<input type="checkbox"/> State/ Federal funding should be used. <input type="checkbox"/> Consider packaging short-term restrictions at intersections 19, 34 and 35 as one improvement project.	<input type="checkbox"/> Pursue mid-term and long-term improvement alternatives to determine if short-term restrictions should be implemented or if other improvements can be implemented as restrictions may have negative feedback.	State
19	SR 39 & Green Hill Road	West Hanover Township	MID	Grade the southern approach to improve sight distance for entering vehicles if complete access remains	\$1,800,000	LOWER	<input type="checkbox"/> State/ Federal funding should be used. Consider Twelve-year Program.	<input type="checkbox"/> Before implementing this improvements review status of I81 to HPD upgrade to determine if improvement is still worth considering	HATS/ State
20	SR 39 & Devonshire Heights Road	West Hanover Township	SHORT	Install curbing to control access to the church parking lot in the southeast quadrant and install a speed warning system (SWS) as a rural Intelligent Transportation System (ITS): YOUR SPEED XX, SAFE SPEED XX. In Colorado, speeds went from 66 to 45 mph.	\$79,000	LOWER	<input type="checkbox"/> Local and private funding for access control as part of Church expansion is ongoing. <input type="checkbox"/> State and local should coordinate and fund SWS through Twelve-year Program or it may be beneficial to pursue funding as a pilot evaluation of SWS in this application.	<input type="checkbox"/> ONGOING - Church and local coordinate access improvements as part of expansion. <input type="checkbox"/> Investigate SWS pilot initiative.	Local/ HATS/ State

Int #	Location	Municipality	Timeframe	Improvement	Total Improvement Cost	Priority Level	Funding Considerations	Action Items and Other Considerations	Responsible Party
20	SR 39 & Devonshire Heights Road	West Hanover Township	MID	Relocate the Douglas Road intersection onto Devonshire Heights and realign to the Devonshire Heights to east. Grade roadway to provide optimum site distance.	\$440,000	LOWER	<input type="checkbox"/> State/ Federal funding should be used. Consider the Twelve-year Program.	<input type="checkbox"/> Before implementing this improvements review status of I81 to HPD upgrade to determine if improvement is still worth considering	HATS/ State
20	SR 39 & Devonshire Heights Road	West Hanover Township	LONG	Construct exclusive left and right-turn lanes for both approaches of Devonshire Heights Road.	Cost included in NA.3 (I-81 to HPD)	NA	<input type="checkbox"/> To be determined	<input type="checkbox"/> COORDINATE LONG-TERM NEEDS WITH NA.3 (I-81 TO HPD) STUDIES AND OUTCOMES. OUTCOME OF FEASIBILITY AND ENVIRONMENTAL STUDIES MAY IMPACT LONG-TERM IMPROVEMENTS AT THIS LOCATION.	TBD
27	SR 39 & Hershey Park Dr	Derry Township/ South Hanover Township	SHORT	Install a changeable message sign on EB SR 39 to direct traffic to the appropriate lanes	\$180,000	HIGHER	<input type="checkbox"/> Local funding should be used.	<input type="checkbox"/> Coordination between South Hanover and Derry Townships should continue in monitoring this area	Local
27	SR 39 & Hershey Park Drive	Derry Township	LONG	Construct and additional SB left-turn lane	Cost included in NA.3 (I-81 to HPD)	NA	<input type="checkbox"/> To be determined	<input type="checkbox"/> COORDINATE LONG-TERM NEEDS WITH NA.3 (I-81 TO HPD) STUDIES AND OUTCOMES. OUTCOME OF FEASIBILITY AND ENVIRONMENTAL STUDIES MAY IMPACT LONG-TERM IMPROVEMENTS AT THIS LOCATION.	TBD
28	Hershey Park Drive & Sand Beach Road	Derry Township	SHORT	Modify phasing by adding a protected/permitted northbound left-turn phase	\$2,200	HIGHER	<input type="checkbox"/> Local funding should be used. Consider use of Liquid Fuels.	<input type="checkbox"/> Contact PENNDOT to begin process of revising signal permit.	Local
30	SR 743 & Gravel Hill Road	Derry Township	MID	Install a traffic signal including a southbound protected left-turn phase	\$158,000	LOWER	<input type="checkbox"/> State/Federal funding. Pursue funding through the Twelve-year Program <input type="checkbox"/> It may be beneficial to consider developer funded Improvements if additional development occurs in the vicinity of the intersection	<input type="checkbox"/> Monitor traffic volumes to determine when levels warrant signalization.	HATS/ State
31	SR 743 & Bindnagle Road	Derry Township	LONG	Install a traffic signal	\$158,000	LOWER	<input type="checkbox"/> State/Federal funding. Pursue funding through the Twelve-year Program <input type="checkbox"/> It may be beneficial to consider Developer Funded Improvements if additional development occurs in the vicinity of the intersection	<input type="checkbox"/> Monitor traffic volumes to determine when levels warrant signalization.	TBD
32	SR 743 & Canal Street	East Hanover Township	SHORT	Improve sight distance by grading slopes to north and south	\$11,600	LOWER	<input type="checkbox"/> Local funding should be used. Consider use of Liquid Fuels.	<input type="checkbox"/> Talk to property owners.	Local
33	SR 743 & Pine Road	East Hanover Township	SHORT	Relocate utility pole on southeast corner. Install curve warning pavement markings to north	\$5,000	LOWER	<input type="checkbox"/> Local funding should be used. Consider use of Liquid Fuels. <input type="checkbox"/> State should install curve-warning markings as part of maintenance activities.		Local/ State
34	SR 743 & Earlys Mill Road	East Hanover Township	SHORT	Restrict access to right-in/ right-out and grade roadway surface to north, possible SWS site	\$4,300	MEDIUM	<input type="checkbox"/> State/ Federal funding should be used. <input type="checkbox"/> Consider packaging short-term restrictions at intersections 19, 34 and 35 as one improvement project.	<input type="checkbox"/> Pursue mid-term and long-term improvement alternatives to determine if short-term restrictions should be implemented or if other improvements can be implemented as restrictions may have negative feedback.	HATS/ State
34	SR 743 & Earlys Mill Road	East Hanover Township	MID	Improve sight distance by realigning the west leg to align with the east leg (to the south) and grade roadway surface to north; or improve sight distance by removing structure and grade roadway surface to north	\$406,000	MEDIUM	<input type="checkbox"/> State/ Federal funding should be used. Consider Twelve-year Program.	<input type="checkbox"/> Before implementing this improvements review status of I81 to HPD upgrade to determine if improvement is still worth considering	HATS/ State
35	SR 743 & Meadow Lane	East Hanover Township	SHORT	Restrict access to right-in/ right-out, possible SWS site	\$4,300	MEDIUM	<input type="checkbox"/> State/ Federal funding should be used. <input type="checkbox"/> Consider packaging short-term restrictions at intersections 19, 34 and 35 as one improvement project.	<input type="checkbox"/> Pursue mid-term and long-term improvement alternatives to determine if short-term restrictions should be implemented or if other improvements can be implemented as restrictions may have negative feedback.	HATS/ State
35	SR 743 & Meadow Lane	East Hanover Township	MID	Improve sight distance by realigning the west leg to the south or improve sight distance by removing structure	\$256,000	MEDIUM	<input type="checkbox"/> State/ Federal funding should be used. Consider Twelve-year Program.	<input type="checkbox"/> Before implementing this improvements review status of I81 to HPD upgrade to determine if improvement is still worth considering	HATS/ State
36	SR 743 & SR 0022	East Hanover Township	MID	Construct a second westbound left-turn lane	\$2,200,000	MEDIUM	<input type="checkbox"/> State/Federal funding. Pursue funding through Twelve-year program or innovative alternative.	<input type="checkbox"/> Program and initiate feasibility and environmental studies <input type="checkbox"/> Consider long-term needs and possibly merge with LONG-TERM improvements at this location.	HATS/ State
36	SR 743 & SR 0022	East Hanover Township	LONG	Construct a northbound left-turn lane and a southbound left-turn lane. Construct a southbound right-turn lane	\$974,000	MEDIUM	<input type="checkbox"/> State/Federal funding. Pursue funding through Twelve-year Program or innovative alternative.	<input type="checkbox"/> Program and initiate feasibility and environmental studies <input type="checkbox"/> Consider mid-term needs and possibly merge with MID-TERM improvements at this location.	HATS/ State

Int #	Location	Municipality	Timeframe	Improvement	Total Improvement Cost	Priority Level	Funding Considerations	Action Items and Other Considerations	Responsible Party
37	SR 743 & Jonestown Road	East Hanover Township	MID	Install a signal	\$130,000	LOWER	<input type="checkbox"/> State/Federal funding. Pursue funding through the Twelve-year program <input type="checkbox"/> It may be beneficial to consider Developer Funded Improvements if additional development occurs in the vicinity of the intersection	<input type="checkbox"/> Monitor traffic volumes to determine when levels warrant signalization. <input type="checkbox"/> Consider long-term needs and possibly merge with LONG-TERM improvements at this location.	TBD
37	SR 743 & Jonestown Road	East Hanover Township	LONG	Construct a northbound left-turn lane and a southbound left-turn lane	\$400,000	MEDIUM	<input type="checkbox"/> State/Federal funding. Pursue funding through Twelve-year Program or innovative alternative.	<input type="checkbox"/> Consider mid-term needs and possibly merge with MID-TERM improvements at this location	HATS/ State
38	Intersections 38 and 39 SR 743 & I-81 Northbound Ramps/Southbound Ramps	East Hanover Township	MID	NB Ramps: Install a traffic signal. Construct an eastbound free right. SB Ramps: Install a traffic signal. Construct a northbound left-turn lane.	\$1,066,000	MEDIUM	<input type="checkbox"/> State/Federal funding. Pursue funding through Twelve-year program or innovative alternative. <input type="checkbox"/> Consider developer-funded improvements.	<input type="checkbox"/> Program and initiate feasibility and environmental studies <input type="checkbox"/> Consider long-term needs and possibly merge with LONG-TERM improvements at this location.	HATS/ State
38	Intersections 38 and 39 SR 743 & I-81 Northbound Ramps/Southbound Ramps	East Hanover Township	LONG	NB Ramps: Construct an additional northbound thru lane. Construct an additional southbound thru lane. Construct eastbound double left-turn lanes. SB Ramps: Construct an additional westbound left-turn lane. Construct an additional northbound thru lane. Construct an additional southbound thru lane. Construct a southbound free right	\$12,420,000	HIGHER	<input type="checkbox"/> State/Federal funding. Pursue funding through Twelve-year program or innovative alternative. <input type="checkbox"/> Consider developer-funded improvements.	<input type="checkbox"/> Program and initiate feasibility and environmental studies <input type="checkbox"/> Consider mid-term needs and possibly merge with MID-TERM improvements at this location.	HATS/ State

7. Public Involvement

Public Meeting No. 1

The first public meeting for the project was held on February 6, 2003 at the West Hanover Township Volunteer Fire Company Social Hall. An open house forum was utilized to present project information and solicit input from the public. The meeting served to introduce the study, present the existing transportation situation for the subject corridors, and allow the community to meet and interact with the project team. A survey was also distributed to assist in gathering input from the public. Approximately 100 people attended the meeting, of which 41 completed and returned the survey. The following provides a breakdown of the location of survey respondents.

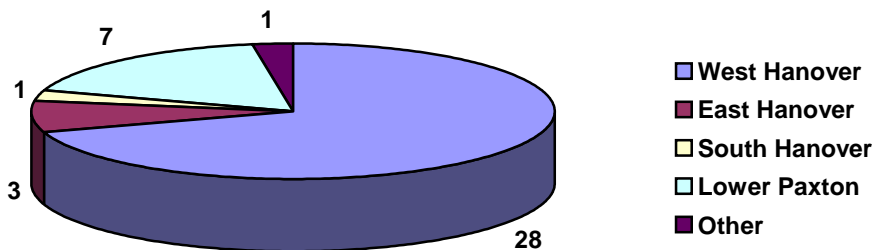


Figure 31 Public Meeting No.1 Surveys Received

In general, the survey respondents identified areas that were of concern to them. The main areas of concern were: Route 39 between I-81 and Hersheypark Drive, Linglestown and both intersections that access I-81. The appendix provides a complete summary of the key ideas and concerns raised by those in attendance.

Public Meeting No. 2

The second public meeting for the project was held at 2 locations: the Linglestown Junior High School on September 11, 2003 and at the East Hanover Township Building on September 17, 2003. An open house forum was utilized to present project information and solicits input from the public. The meeting served to present proposed improvement alternatives for the public to view and comment on. A survey was also distributed to assist in gathering input from the public. Approximately 77 people total attended the meetings, of which 23 completed and returned the survey. The following provides a breakdown of the location of survey respondents.

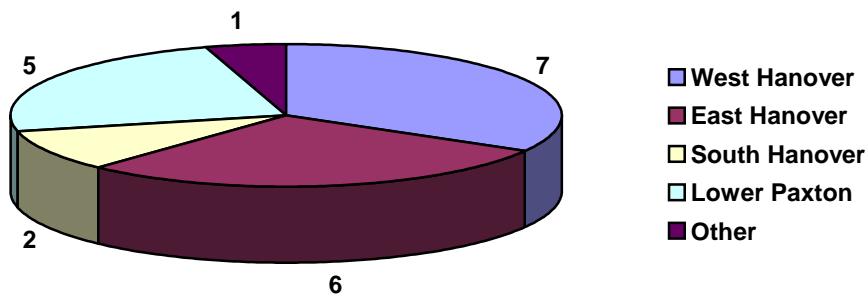


Figure 32 Public Meeting No. 2 Surveys Received

The survey respondents were generally pleased with the options presented but critical of the timetable for implementing the changes. Respondents also voiced concern over the changes proposed for the area between I-81 and Hersheypark Drive for Route 39. The appendix provides a complete summary of the key ideas and concerns raised by those in attendance.

Public Meeting No. 3

The third public meeting for the project was held at the Linglestown Junior High School on December 17, 2003. An open house forum was utilized to present project information and solicit input from the public. The meeting served to present final results of the study for the public to view and comment on. A survey was also distributed to assist in gathering input from the public. Approximately 40 people attended the meeting, of which 6 completed and returned the survey. The following provides a breakdown of the location of survey respondents.

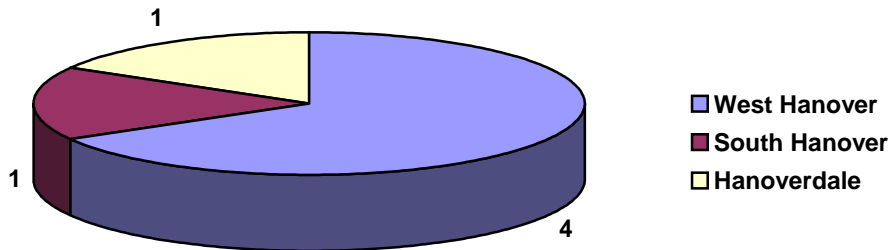


Figure 33 Public Meeting No. 3 Surveys Received

Respondents voiced concern over the changes proposed at the intersection of SR 39 and Green Hill Rd and also stated that from approximately 8:30pm to 7:00am there is a small amount of traffic using the SR 39 corridor between I-81 and Hersheypark Drive. The appendix provides a complete summary of the key ideas and concerns raised by those in attendance.

SR 39/743 Transportation and Land Use Study Appendix

Safety Audit

General

- Access management needs particularly on SR 39 from Front Street to Linglestown and in areas south of I-81 to just north of Hersheypark Drive.
- Turndown guiderail is prevalent throughout both corridors.
- RPM's are generally not in use except for area of SR 743 from Swatara Creek to near Jonestown Road.
- No Street Name signs on most signals.
- Pavement markings are in good condition, most likely because of spring replacement.
- Utility pole fixed objects common as is usually the case.
- Centerline rumble strips are not installed on most curves

SR 39

- Too many access points near Front Street signal
- Second Street is offset and 3rd Street nearby. Essentially 3 intersections in short distance. Restriping or turn lanes may improve situation unless closure is possible.
- WB SR 39 approach to 6th Street may need left-turn lane.
- Two lanes WB are separated by solid line for quite a distance before Front Street. Need lane marking arrows and more signing to make this clear. It almost appears as if right lane is a shoulder.
- SIGNAL AHEAD sign may be necessary for Industrial Road signal.
- Buckled pavement, rutting in vicinity of SR 322 ramp intersections.
- Pavement rutting near Progress Avenue.
- Shoulder in good condition.
- Unprotected slope along Golf Course near Parkway West intersection.
- Corner sight distance is restricted from Colonial Club Dr.
- Linglestown Fire Co. has fixed object steel I-beam "fence" sections which are unnecessary and should be removed immediately.
- Shoulders are in poor condition with depressed inlets in Linglestown.
- Absence of curbing in Linglestown leaves trees as fixed object hazards.
- NO U-TURN necessary at Flagpole in square.
- Speed Limit through Linglestown seems high at 35 mph. More comfortable speed seems to be 25 mph.
- Sight distance from Sarah street is poor (see photo).
- Poor drainage west of Sarah Street and low lying area of water near Parkway East intersection (photos of both).
- Between Sarah St and Parkway East, the eastbound travel lane has manholes with depressions that are in the wheel path.
- Shoulders and travel lanes are in poor condition near Greenwood Road.
- At West Hanover Township line eastward toward I-81 there are no shoulders.



- South of Manor Drive there are small, abrupt vertical curves that could cause higher speed vehicles to launch and lose control. For this reason 40 mph seems high. Same condition near Fairville Avenue (about ½ mile north of I-81)
- Fixed object drainage headwalls are present near Houck business, about 1000 feet south of Manor Street.
- The Travel Center access north of I-81 is very difficult for trucks to exit. Trucks must aggressively pull onto SR 39 without a safe gap and then SR 39 traffic stops and waits.
- South of I-81 shoulders are wide but in poor condition, broken with gravel.
- At SR 39 and Jonestown Road it appears that heavy truck traffic uses west leg and it is not designed as such. Off tracking evident on NW corner radius and EB approach is in extremely poor condition with rutting, large potholes, and depressed inlet.
- Manada Hill Church on NW corner of SR 39 and Jonestown Road has a single access along SR 39 relatively close to signal. Access could be moved to Jonestown Road approach where it appears volumes are lower.
- The SB approach of SR 39 to SR 22 has rutting and buckled pavement as does SB roadway leaving signal.
- Sight distance exiting Cassel Drive is poor to the south.
- Centerline rumble strips are present from SR 22 southward for several miles.
- Sight distance from EB Devonshire Rd approach is poor in both directions.
- In town of Hanoverdale there is no curbing, leaving trees as fixed object hazards.
- Cable guiderail still in use along SB 39 near “Pumpkin World USA” and between the Swatara Creek and Hersheypark Drive.
- The approaches to the Swatara Creek bridge are unprotected with cable guiderail. Basically parapet is a fixed object as well as cable guiderail.

SR 743

- Near police academy/outlet traffic signal, pavement is deteriorating and has alligator cracking here to Laudermilch Road.
- Large shoulder drop-off along northbound side near Hershey Cemetery
- The Earlys Mill Road approach has very poor corner sight distance. A mirror is provided to aid exiting vehicles.
- The Meadow Lane approach has very poor corner sight distance. A mirror is provided to aid exiting vehicles.
- Delineation is needed at the I-81 ramps since awkward configuration (left turns not at 90 degree intersection). Particularly a problem at night
- The shoulder is in very poor condition from near I-81 northward to Penn National’s first entrance.
- At the SR 743 north terminus there are no route marker signs to show what the intersecting roadway is (SR 443).



The following are horizontal curves with reduced advisory speeds and are candidate locations for centerline rumble strips:

SR 743:

1. 200' north of SR 22
2. 1,000' south of SR 22
3. 1,000' south of Meadow Lane
4. 500' south of Dairy Lane
5. At Earlys Mill Road
6. 500' south of Shady Lane

SR 39:

1. At Manor Street
2. Just east of Balthaser Street



SR 39/743 Transportation and Land Use Study Public Involvement

**Route 39/743 Transportation and Land Use Study
Public Open House Survey Results
February 6, 2003**

Number of Surveys received: 41

1. In what town, township, or borough do you live?

West Hanover Township	<u>28</u>
Lower Paxton Township	<u>6</u>
East Hanover Township	<u>3</u>
South Hanover Township	<u>1</u>
Linglestown (Lower Paxton Twp.)	<u>1</u>
Hummelstown (Twp.)	<u>1</u>
Hanoverdale (West Hanover Twp.)	<u>1</u>

2. How did you hear about tonight's public open house?

Advertisement in local paper	<u>26</u>
Neighbor/another member of the community	<u>17</u>
Television	<u>1</u>
TCRPC Web site	<u>0</u>
Other (please specify)	<u>7</u>
Township Meeting	<u>3</u>
Radio	<u>1</u>
Local Planning Commission	<u>1</u>
EAC West Hanover Township	<u>1</u>
HACC Student	<u>1</u>

3. Please list any concerns you have regarding congestion, capacity, and safety in the project area.

If you are having a meeting to inform the public on your plans, I believe your information should be current, not seven or eight years old.

Counts, boards, etc. reflect existing configurations (e.g. lights, T-intersections, etc.) Will you consider alterations (e.g. roundabouts), substitute traffic modes (e.g. Ped-path in suburbs)?

Route 39 cross traffic turns in intersection #19. Large truck traffic to and from Hershey. The placement of traffic signals. How about widening the road to improve the traffic flow?

1. We need left turning lanes at Route 22 and 39 from north and south directions
2. Traffic signal light at Piketown Road and Route 39 when new high school is built
3. Traffic signal light at 39 and Ryder Lane
4. Route 39 needs to be wider from Linglestown to Hershey.

<p>Road elevations from Piketown Road to Chestnut Avenue should be corrected since there's a great hazard for the side street traffic</p> <p>Manor Drive and 39 to truck stops need improvement.</p> <p>Truck stop areas of Route 39 are disastrous to the local traffic. Also, the new traffic signal area of Route 39 and Old Route 22 needs some new engineers.</p>
<p>Just put a traffic light at the square. Remove flag and put it in a memorial park. No need to re-route traffic and property in a 200+ year old town.</p> <p>The roads (highways) are new. There is not much reason for 18-wheelers to clog up this road.</p> <p>Also the Manada Hill truck area is a death trap. The trucks are rude and scary.</p>
<p>It is difficult to see oncoming traffic when turning into driveways beside Green Hill Road when traveling from Hershey on Route 39 (because of hill and valley). Maybe raise grade of valley or lower grade of hill. Headed to Hershey in area at Agway (Green Hill Road) difficult to see a safe distance in front of vehicle (because of hill and valley).</p>
<p>Work on #39</p>
<p>Main concern area – Linglestown Square. Remove flagpole and correct problem properly. Disregard lame excuses of a historical landmark. I respect the flag dearly, but move it to a visible same location. Please don't make a "band-aid" correction that will be obsolete before the project is completed.</p> <p>Route 39 and 81 – Remove rise at Bailey Landscaping and major reconstruction and signaling of area from warehouse to and including Route 22</p>
<p>Increased traffic on Route 39 due to new C.D. school, new developments, and HersheyPark, Giant Center, and Hershey Med Center</p> <p>Route 22 and 39 intersection – Route 39 could possibly use some realignment and left turn lanes to relieve back ups along Route 39.</p>
<p>The high school plus the new developments that have been approved will greatly increase traffic flow along 39 especially between I-81 and Piketown Road. This study should have been done prior to the approvals but I was told at a BOX meeting that it was not necessary yet. (Why???)</p> <p>Accidents on I-81 already cause increased traffic flow and tandems are occasionally seen and should be prohibited. How wide will LTR be? Will anything be done about the curve at Stiney's??? (LTR/Manor Drive)</p>

<p>Your statistics show that a considerable amount of traffic flows in both direction past the intersection of Route 39 and Umbege Road. I am concerned about the fact that my children must cross Route 39 at Umbege Road to catch a northbound school bus that approaches from the intersection of SR 22 and Route 39. This is especially troubling to me in the mornings when it's predawn and/or foggy and rainy. Please convince the school district to reroute the bus. Thanks. Carol Royr 657-2749</p>
<p>The amount of traffic using the intersection of Route 39 and 22 requires that turning lane be installed on both northbound and southbound (Route 39).</p> <p>This section is also part of the blue (detour) and is heavily traveled by trucks and cars when an accident occurs on I-81. The section of Route 39 between I-81 and Route 22 should have a center turning land due to the number of developments located off this road.</p>
<p>Linglestown Square Area Piketown Road and 39 Concern about school traffic Fairville Avenue and truck stops – need more room</p>
<p>Should be a light at 39 and Devonshire</p>
<p>Conduct and origin-destination study. Imho commuters would be better served by public transportation, (bus maybe; what about rail?), which would also reduce air pollution and dependence on foreign oil. I think local residents are willing to look at this "bigger picture."</p>
<p>Signal needed at Route 39 and Devonshire Heights Road. Blind both ways with curve and slight hill.</p> <p>Turn lane at Route 22 and Route 39 red light.</p>
<p>Walnut Avenue and Route 39, looking east you cannot see more that 100 feet for oncoming traffic. Where will school zone start and stop?</p> <p>Will bus traffic enter and exit from 39?</p> <p>Devonshire Road and Route 39 – traffic signal?</p>
<p>SR 81 and Route 39, Route 22 and 39, Fairville and Route 39, Linglestown and 39, HersheyPark Drive and Route 39 The whole truck stop area Redtop Road and Route 39, all the developments from Linglestown to HersheyPark Drive.</p>

1. Route 39 and HersheyPark Drive – elimination of left turn from Route 39 east, and increased light times form HersheyPark and arena to benefit park and not public, change back.
2. Study done before Giant Center open – huge impact on Route 39
3. Study areas concentrated in commercial areas, to the detriment of long-term residents in residential section.
4. Route 39 from I-81 to Hershey needs to be three lanes minimum.
5. Need to incorporate pedestrian paths along/over/under Route 39.
6. Need to look at elevation changes and blind spots in planning
7. Route 39 and Route 22 can go to left turn lane now without major redesign.

The original design of Route 39 is not able tot handle the current capacity of traffic as is. The local government has not gone far enough to limit and enforce the current development within their jurisdiction. Current traffic exceeds even projected during an event at HersheyPark. Most of us who live along Route 39 grow accustomed to the difficulties. Those of us who are involved in the transportation industry realize more than average consequences of “volume.” With the majority of 39 already restricted to truck traffic, it is discouraging to hear people more concerned with trucks than with slowing the development in the area. This area has shown significant residential development versus commercial or industrial growth. We would appreciate more open meetings with those who are directly impacted by the traffic we see.

Route 39 in the entire study area is going to grow in density and traffic. The growth of businesses and residential areas will (has already) contribute to heavy traffic for a two-lane highway. At the very least, a turning lane should be added and care should be taken to avoid blind entry to traffic (i.e. Ryder Lane).

Intersection of Devonshire Heights Road and Route 39. We need a traffic light to enter onto 39. Cars are parked at Hackman HPPT. You can hardly see traffic coming from 22 towards Hershey. And you want to make a left turn to go toward 22.

Area around the truck stops. Too much traffic for the road – unsafe square in Linglestown needs rerouted.

Traffic congestion is terrible in the areas of the Route 39, I-81 interchange, and the square in Linglestown.

Our driveway comes out onto Route 39 (155 N. Hershey Road)

Expansion of building in West Hanover is creating a lot more traffic.

To make provisions for bicyclists.

It is apparent that the best solution to the Route 39 problems was ignored and pushed aside by politicians and engineers quite a few years ago. Now, because right of way for a relocation or split directional roadways is probably not available or within the price

range of the aforementioned people, a less than completely acceptable solution will be recommended and at some future date be accepted. With the planned development along Route 39 and the proximity of existing housing to 39, a solution along the existing location will be made more difficult. I believe the existing housing construction will necessitate left turn lanes at most intersections. Signals may be required at several intersections, but approach sight distances may be a problem and any widening will have to be limited by existing buildings. I won't comment any further except to say that there is probably room remaining to improve Route 743 with widening, split roadways, relocation, etc. However, this should be done quickly or another Route 39 will exist.

1. The curve east of Linglestown
2. Take curve out of Steiny's welding
3. Take hump out at truck stop
4. Put red light at Piketown Road and Linglestown Road due to school coming in and bring intersection together properly.

One problem we see is the high rate of speed everyone seems to be traveling along the road.

Not enough people are aware of the amount of wildlife that is in the area – deer, fox, etc.

Very concerned over volume of traffic and speed of traffic on Route 39 around the new high school. Your studies didn't note the accidents that often occur at Route 39 and Wenrich/Parkway E.

The school opens as this study is just finishing up?!?

This type of communication is excellent in keeping us informed of the process, not decisions already made.

Try to straighten Route 39 the best that can be done. It would be a good idea to put a bypass off of Mountain Road around the back of the firehouse to a traffic circle on Linglestown Road.

I am concerned about roundabouts in Linglestown. My opinion is that there is not enough area without moving buildings from the square area, which is all historic. My opinion is that traffic could be routed around Linglestown and leave the town as is – beautiful!

Route 743, Early Mill Road area. Highway is not wide enough and does not have sufficient berm to deal with the LARGE amount of tractor-trailer and bus traffic, combined with almost no enforcement of posted speed limits.

There should be a signal light installed at the intersection of Devonshire Heights Road and Route 39 in Hanoverdale.

Due to limited sight distances when entering Route 39 at Devonshire Heights Road, especially mornings and evenings and whenever there is some special program at Hershey, there is a danger of collision. Please reconsider this request.

Route 743 from Swatara Bridge to Route 22 and Route 81 is extremely bad highway. Mirrors at intersections, bad curves, and turns – two lanes is too narrow and is a death trap as traffic increases to the Hershey area with out of state drivers and also local citizens.

Suggestion would be to put in new four-lane highway to the east side of 743 – open farmland to Route 22 and Route 81. Also, Hershey owns much of this land, which benefits the Hershey Arena – Park, Med Center, etc. This new 743 highway could be straight and safe – just my thoughts. Thanks. Ron Allison.

Faith Road sight distance north on 743
Ned to bridge 743 and 22

A. It is extremely difficult to make a left turn to southbound Route 39 from east side intersection streets. No provision is being made in any of the new traffic signals or intersection designs.

B. It is very hard to make a left turn onto westbound Route 22 from northbound Route 39, due to the volume of traffic on Southbound Route 39. This light needs a permitted left phase so you don't have to wait through multiple light cycles to be able to turn. This is getting worse with the new developments.

C. There is no sight distance to the right at Orchard Road on the east side of Route 39. You can't see due to the ___ bend.

D. You need to take into account all activities at HersheyPark/Stadium and Giant Center. Activities and events are year round, weekends, and weekdays and traffic volume is growing continuously. Southbound backups often go past Grandview when multiple events are scheduled.

E. With all the new developments going, in traffic volume is increasing tremendously. Coordination of traffic signals and center left/right lanes are needed to keep traffic moving and prevent accidents. More building is on the way.

F. Greenhill Road by the Agway needs a northbound left lane and traffic light. Sight distance is poor. Agway's information sign blocks the view and should be removed.

The # 39 and Blue Mountain Parkway intersection. We take our lives in our hands, literally, from 6:30 a.m. to 8:00 a.m., but especially from 3:30 till 6:00 p.m. when a left turn is necessary. Many times traffic is backed up to the former Stammel farmhouse. In desperation, we must sometimes turn right, then around the old firehouse and back onto 39 and turn to the right. This sets up the possibility of an accident three times instead of once! Those who live on Jacobs Avenue have no other exit, and time wise, plus gasoline prices, should not have to reroute up the mountain to use parkway east or West! Since the traffic survey before development of the Stammel farm indicated 1,500 more day trips to 39, no one can understand why this situation was allowed to reach this

point before action was taken. It didn't happen overnight – guess too many heads were in the sand!

4. Please use the space below for any additional comments that you may have about this project.

The future growth of traffic needs to be realistically considered. There is much more development occurring now than in many years. Also, roadway improvements will draw traffic to SR 39 more than will be predicted. What affect will any relocation of SR 724 east of Hershey have on these corridors?

Is future expansion accounted for? The Park will continually expand beyond its present constraints.

By improving the highway, will zoning be done to allow more business to locate or expand in this area?

If the answer is expansion, will this help reduce the property taxes?

Displays would have presented information in a much more effective manner if data (am pm counts) were presented differently.

How soon will PENNDOT start to move form paper to doing the real project work? The whole problem is that these projects take forever to develop and we need solutions today, not 20 years from today.

Don't delay.

Can the public transportation come to West Hanover two or more times per day?

How much do the opinions and concerns of the residents along the corridor between square and the truck stops carry?

Thanks for hosting and asking for our input. I hope you use it.

The time scale should be shortened and the first part of the project should be 81 and 39 and 22 and 39. "High Priority"

Please use Lower Paxton township newsletter to give notice of future meetings.

Please don't let Route 39 turn into Route 22 (Colonial Park area) or Carlisle Pike.

Route 39/743 Transportation and Land Use Study

**Public Open House Survey Results
September 11 and 17, 2003**

Number of surveys received: 23

1. In what town, township, or borough do you live?

West Hanover Township	<u>7</u>
East Hanover Township	<u>6</u>
Lower Paxton Township	<u>5</u>
South Hanover Township	<u>2</u>
North Londonderry	<u>1</u>

2. How did you hear about tonight's public meeting?

Advertisement in local paper		<u>14</u>
Neighbor/another member of the community		<u>5</u>
Television	<u>4</u>	
Other (please specify)		<u>3</u>
West Hanover Township Planning Meeting		<u>1</u>
Newspaper		<u>1</u>
Township meeting		<u>1</u>

3. Please list any thoughts you have about the proposed options that were presented this evening.

They weren't very good! Route 39 at SR 22 was very poor. This should be any interchange, which would not be difficult given the topography of the area and the high use of 39 to Hershey and I-81 (area has high fatality rate). At 743 and US an interchange was shown, this doesn't make any sense 743 is poor going to Hershey versus PA 39 (the costs as presented would be very high and benefit fewer.

Put a left turn lane at Route 39 West and Route 22 as soon as possible. Would do a lot to reduce often long traffic backups behind a vehicle waiting to make a left onto 22 West – Route 39 is very heavily traveled now and will get worse rapidly as new developments are completed. Getting on it sometimes is a long wait.

More needs to be done to correct overuse of Route 39. It needs to be done before 2012. Traffic will become even heavier as the 800 unit development (Hanover Hills) is finished. Brynfield adds to heavy traffic. It is not just confined to summer months.

Speed enforcement a must.

<p>Would like to see more of plan for Lingle Avenue, Route 743 in Derry Township. Should also consider dangerous curve in Lebanon County on Gravel Road/Ridge Road.</p>
<p>Between intersection #12 Manor Drive and #11 Piketown Road there are developments approved that will add about 200 trips to the am and pm volumes on Route 39.</p>
<p>Lights proposed at “turn abouts” on Route 39 Linglestown not clarified.</p>
<p>We live up Blue Mt Parkway. Most days it is impossible to get in or out. Wait time can be as long as 15 minutes. The traffic circle proposed in my mind is only a bandaid. I think that this will not improve the traffic flow.</p>
<p>Blue Mountain Parkway roundabout seems to be a displacement of the problems with no or little improvement.</p>
<p>Everything is fine. Let’s get it done.</p>
<p>They appear to be well thought out. Make the improvements of Routes 22 and 39 as soon as possible!</p>
<p>SR 22 at 743 2012 proposal for additional westbound left turn lane seems to be unnecessary. I’ve never seen any backup there even under concert traffic. If implemented, widening of SR 22 needs to be on north side. Southeast corner of intersection 22-743 had land taken during the last 22-743 intersection improvement (743 right turn ramp construction) 2022 proposal for 81-743 interchange is good, and widen 743 to the west side as shown in the proposal.</p>
<p>Proposed changes are obviously very well thought out. I would like to see a left turn onto 39 from Green Hill, but I can see where the numbers don’t warrant it.</p>
<p>Improvement for Route 743 and Route 39 are definitely needed.</p>
<p>Looks good if anything, traffic growth might be low based on recent development trends.</p>
<p>I-81 North at Exit 77 (Route 39) – Plan only has one traffic lane turning left onto Route 39. Traffic often backs up at that interchange. One disabled truck often backs traffic up onto the interstate. It would be very cost effective and very east to have two lanes to turn left considering the volume of trucks and the number of truck stops located at this interchange.</p>
<p>Okay, time start and time completion.</p>
<p>Route 743 has many intersecting roads that are addressed and require many safety concerns that seem to be considered. Crossing and turning from 743 to</p>

any l/r should have turning lanes to ease turns.
I don't think the no improvement option at Shetland, Hershaw and Canal Street at SR 39 is very good. It does nothing to address the problem someone on the east side of 39 has to make a left turn into town. The level of service projected (existing is unacceptable). Also make Green Hill right-in/right-out stinks and destroys access.
Route 39 needs more consideration for turning lanes at side streets considering the projected increase truck traffic.

4. Are there any ideas for the study area that you were not identified that you would like to see investigated?

This is bad enough, but that situation causes drivers to do inappropriate things.
Make Manor Drive a non-through street. Trucks ignore that no truck signs. People fly over the hill approaching Route 39. It is a danger for residents trying to leave their homes.
Hershey Park Drive extension by Buchart Horn – I own 10 acres on this plan that is not correctly depicted as of subdivision plan of four years ago.
Bypass town of Linglestown. Perhaps from proposed B. Mt. Parkway. Turn about West to Shoops Church east ??
<ol style="list-style-type: none">1. Will officials of Hershey Entertainment and Derry Township take a leadership role in “encouraging” drivers to use the 743 corridor from Route 81 to Hershey?2. Traffic reduction by promotion of public transportation as an option.3. Promotion of “shared rides” by providing daytime parking at key locations.
Get rid of the committee in Linglestown and let PENNDOT draw up the plans for Linglestown Square and Blue Mountain Parkway.
Proposal down the road to turn 39 into four lanes. It's probably a separate issue.
I would like to see more four lanes limited access highways.
Study to identify new 81 to HP corridor should be advanced ASAP and then work with developers to at least preserve corridor if not region to build highway at least with grading.
The two sections of Fairville Avenue at Route 39 should be connected like what is proposed for Route 39 and Piketown Road. It would make a much safer intersection especially as traffic volumes decrease.

Possible real estate to be effected.
How can someone make a left turn southbound from the east side of SR 39? Does someone have to get killed before anything can be done? When will SR 22 intersection be improved? It needs work now! How realistic is the alternative route under study? Can the money be better spent improving the existing roads (39 and 743)?

5. Please use the space below for any additional comments that you may have about this study.

I was disappointed that information on PA 39 at Mountain Road was not shown. From what I understand so far in this area the proposed work will appease a few in Linglestown and not really help the traffic problems much.
Traffic on Manor Drive between 39 and 22 is largely through traffic as you know and does not drive appropriately for the road and area. I suggested years ago, and now am again, that Manor Drive be disconnected from 39 at the south end. This would stop the through traffic. This probably should be in conjunction with a traffic signal at 39 and 22 (not that I like it.)
Since Hershey entertainment has significantly contributed to the problem, they should help pay for the solution.
Would like to learn about public meetings on rerouting 743 south from Hershey.
Good proposals – get the funding and get started as soon as possible.
Thanks for having this open house. It clarifies actual from rumor.
What kind of stormwater control facilities will you have on Hershey Park Drive? Detention basins and swales, bioretention basins and swales, or what? If you intend detention basins, how can you justify this choice, given the coming PA changed stormwater regulations? Other options for water quality improvement?
Although costly...a bypass from I-81 to Hershey should be considered and would make travel on 39 much safer and would decrease traffic greatly on Route 39.
I live on the northwest corner of the 743 and Route 22 intersection I was wondering the future of my property if the proposed plans go through.
Since there are so many options in this study, it seems as if it will take almost forever to accomplish. It looks impressive and is a start; let's hope there will be

action sooner than later.

The needed changes for the Route 743 fro Route 22 to 443 will need major update in the very near future if slot machines come to town.

If possible, please supply a small graphic that I could give to the Manada Hill United Methodist Church. I need to be able to show the people how the e proposed project will affect the property. Many thanks.



**Route 39/743 Transportation and Land Use Study
Public Open House Survey Results
December 17, 2003**

Number of Surveys received: 6

1. In what town, township, or borough do you live?

West Hanover Township	<u>4</u>
South Hanover Township	<u>1</u>
Hanoverdale (West Hanover Twp.)	<u>1</u>

2. How did you hear about tonight's public open house?

Advertisement in local paper	<u>4</u>	
Neighbor/another member of the community	<u>2</u>	
Television	<u>1</u>	
TCRPC Web site	<u>0</u>	
Other (please specify)	<u>0</u>	
Township Meeting		<u>0</u>
Radio		<u>0</u>
Local Planning Commission		<u>0</u>
EAC West Hanover Township		<u>0</u>
HACC Student		<u>0</u>

3. Please list any thoughts you have about the proposed options that were presented this evening.

Good Idea for Devonshire Heights at Route 39
South Hanover – A few lights will balance the flow at rush hour
Rumors of 743 or other road to be a main to Hershey would be nice for Hanoverdale area.
Really only at rush hour do I notice it being to busy – most people know the twists and turns
I don't like the plan for Route 39 from I-81 to Hershey. The timing is late, something needs to be done in the next year or two
The problem at Devonshire Hgts Rd and Route 39 is not solved. A red light would be a better idea. The turns at Green Hill and Rt 39 will kill one(1) business
We need a red light at Green Hill Rd and Rt 39 at our store entrance. Approx. 100 cars in and out in one hour in the busy season

Accidents at the intersection of Rt 39 and Green Hill Rd, how many per year? Speed limit should be reduced along the stretch from 22 to Hersheypark Drive

4. Are there any ideas for the study area that were not identified that you would like to see investigated?

We are behind anything that would bypass Hanoverdale and the homes that have been handed down for generations/ from 4 lanes.

743 or Sandbeach Rd looks like less of an impact to many homes. Hershey wants 743 for trucks anyway! Let 743 be improved and keep Rt 39 more rural. It is amazingly quiet after 6:00/rush hours

All roads intersecting with Rt 39 needs left turning lanes (off of Rt 39) especially Devonshire Heights intersection. Rt 39 should be cut down at the little hills (2 to 3 feet) to give improved sight distances in both directions, when entering Rt 39 from Devonshire Heights Rd

See #3

No

Timeframe

We would like to see a red light at Green Hill Rd and Rt 39. In the busy spring season we have 75-100 cars per hour (approx.) sometimes more/less

5. Please use the space below for any additional comments that you may have about this study.

It would be nice to have a comparison of 743 and Sandbeach or 39. A comparison of cost, plans, land impact, home impact and buyouts. I'm sure 39 would be more expensive to work versus the others.

My longest investment is my home and want to share it with my grandchildren.

A lot of custom, hand made work that would be lost in widening of Rt 39 using my land as yours. Not an Option!! Sorry!

West Hanover and/or State did poor planning to allow all the development along this section of highway by not requiring improvements to more than one intersection. Now we have to wait 10 years to even think of having Rt 39 traffic improvements. Improvements need to happen very soon.

A meeting with local people, not a study group would give a lot of ideas to improve traffic flow
No red light at Green Hill Rd and 39 crates accident after accident and danger to customers going and coming from Agway store – speed limit should be reduced before light installed
Please keep me posted when you make the evaluation on the road changes of above. I thought this study would have accomplished that to make a valid statement for upgrades – without it – will these upgrades be obsolete by 2012.
Really, unless a concert is at Hershey we are quiet from 8:30 to 7:00 AM!
Daytime crossing is fine!
Only rush hour a problem!! Lights should ease that!

