DANVILLE AREA Transportation Study

PREPARED FOR:
SEDA-Council of Governments

PREPARED BY:
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June 2020

Danville Area Transportation Study

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Executive Summary

Michael Baker International, Inc. (MBI) worked with representatives from the SEDA-Council of Governments (SEDA-COG), Pennsylvania Department of Transportation (PennDOT) Engineering District 3-0, PennDOT Central Office, and Danville Borough to develop a transportation study for Danville Borough and the surrounding area. The Danville Area Transportation Study (DATS) assessed existing transportation conditions within the Greater Danville area and identified issues to be addressed as part of future project development (including through the PennDOT Connects process). A 2040 horizon year was used as the future analysis year. The intent of the project was to create a guide document for PennDOT and SEDA-COG that points to a listing of multimodal issues (including fundable projects), and problem statements, with a menu of potential solutions for addressing each.

An inventory of the study area's existing transportation conditions was developed, which included traffic/operations, socio-economic characteristics, and multimodal transportation. Data collection and analysis activities were then developed to bridge the gap between the existing conditions profile and a projected future conditions profile. Data collection included intersection turning movement counts, road segment Automated Traffic Recorders (ATRs), and a network-level reportable crash data investigation.

Based on the existing data collected, capacity analyses were conducted to determine intersection capacity concerns during morning and evening peak periods under both 2019 existing conditions and 2040 horizon year conditions to yield insights for recommendations, such as timing enhancements and changes in signal infrastructure (i.e., adding turn lanes or changing signal phasing).

MBI engaged study area stakeholders through a series of one-on-one interviews and municipal round tables. Discussions revolved around major planned land developments, safety and congestion concerns, and desired (multimodal) transportation project considerations.

Based on information garnered, MBI developed future condition profiles and this final report to provide an objective assessment of the study area's transportation problems and concerns. Alternative ideas and a range of potential solutions were identified for each of the listed problems and concerns. Based on the recommendations developed from the identified global/network-wide and location-specific transportation issues, an implementation strategy was developed prioritizing the potential solutions and developing a playbook by which planning and funding sources can be explored.

Study Purpose & Extents

The purpose of the Danville Area Transportation Study (DATS) is to assess existing transportation conditions within the Greater Danville area and identify issues to be addressed as part of future project development. The intent of the project was to create a guide document for PennDOT and the metropolitan planning organization (MPO) that points to a listing of multimodal issues (including fundable projects), and problem statements, with a menu of potential solutions for addressing each. Multimodal issues investigated included the following:

- Street Network Connectivity
- Multimodal Transportation
- Land Use & Development
- Traffic Operations

This is one of a number of multi-modal planning studies being advanced across the state through PennDOT Connects Funding. Like all of the Connects efforts, it supports the Principles of PennDOT Connects, coordination, collaboration and early consideration of multimodal contextual issues. The recommendations of the study will inform design and construction efforts on future projects.

The Greater Danville Area, for the purposes of this study, is composed of Danville Borough and Mahoning Township in Montour County. Shown in **Figure 1** below, the DATS Study Area is located in Ridge-and-Valley Province of the Appalachian Mountains in Central Pennsylvania, halfway between Harrisburg and Scranton along US 11.

Mahoning Township is home to the Geisinger Medical Center, which provides healthcare services to residents across northeastern and central Pennsylvania. Geisinger Medical Center receives up to 8,000 patients and visitors per day and is staffed by approximately 5,000 employees working multiple shifts. The DATS study area is also influenced by nearby regional traffic generators, including the Knoebels Amusement Resort and the Bloomsburg Fair. Residents, workers, and businesses benefit from National Highway System routes bisecting the study area (US 11 and PA 54), which provide access to Interstate 80.

Figure 1: DATS Study Area Regional Position

Methodology/Approach

Management Committee

The study methodology followed a five-step process, identified on the right. A management committee was formed to provide direction regarding the study process. Activities included:

- Identifying study area boundaries
- Biweekly conference calls
- Reviewing scope and schedule
- Stakeholder engagement coordination and participation
- Recurring feedback on draft study products

Existing Study Area Traffic Conditions
- Traffic/Operations
- Socio-Economic Characteristics
- Multimodal Transportation

Data Collection: Targeted Traffic Data Collection and Analyses
- Trip generation estimates
- Turning movement counts
- Automated Traffic Recorder counts
- Existing condition traffic volumes and estimates to 2040 Horizon Year conditions
- Capacity analysis for 2019 Existing and 2040 Horizon Year
- Crash data investigation

Targeted Stakeholder Engagement
- Municipal Roundtable
- One-on-One Interviews
- Stakeholder Interviews

Future Focus Area Condition Profiles
- Transportation Operations & Safety
- Hazards including Flooding
- Maintenance and Construction Project Sequencing
- Maintenance and Protection of Traffic Considerations
- Special Events
- Multimodal Connections
- Employer Connections

Final Report
Summary of findings and for each Future Focus Area:
- Transportation Concern
- Purpose & Need Stakeholder Input
- Supporting Analysis
- Potential Solutions

Stakeholder Engagement

The MBI project team conducted stakeholder outreach for the DATS in September and October 2019. This work was completed as outlined in the Stakeholder Approach/Playbook document prepared by MBI and reviewed by the Management Committee at its August 13, 2019 meeting.

This summary compiled comments and observations pertaining to identified problem locations as collected during municipal roundtables, interviews with major employers and stakeholders, and the Study Area Tour conducted in May 2019. Two municipal roundtables were held September 27, 2019. Municipalities unable to attend were contacted after via phone. Stakeholder interviews were conducted in person and over phone in September, October, and November 2019. The stakeholder outreach summary has been included as **Appendix A**.

The stakeholder engagement and roundtable efforts reflects the Principles of PennDOT Connects, coordination, collaboration and early consideration of multimodal contextual issues with the local municipalities.

Traffic Data Collection

The following data was collected to identify existing traffic conditions and patterns within the study area and identified locations:

- Turning movement counts, including vehicular, heavy vehicle, bicycle, and pedestrian movements, were conducted at 11 key intersections within Danville Borough, Mahoning Township, Ralpho Township, and

Catawissa Township. Data was collected over a 24-hour period on an average weekday (Thursday, May 16, 2019). Turning movement counts were obtained at the following 11 key intersections:

1. PA 54/D&H Avenue & Sunbury Road (SR 4001)
2. PA 54 & Front Street
3. Mill Street (SR 2054) & Front Street
4. US 11 & PA 54
5. US 11 & Mill Street (SR 2054)
6. US 11 & Railroad Street
7. Bloom Road (SR 2008) & Railroad Street/Academy Avenue
8. US 11 & State Hospital Drive
9. US 11 & Woodbine Lane
10. PA 54 & PA 487
11. PA 42/PA 487 & Longwoods Road/Mt. Zion Road (SR 3012)

Turning movement counts during the A.M. and P.M. peak hours are provided in **Exhibit 1** of **Appendix B**.

- Nine Automated Traffic Recorders (ATRs) were installed for a week duration, coinciding with the turning movement counts, to record vehicle class, speeds, and understand traffic composition characteristics.
- Reportable crash data for a five-year period (2013-2017) was reviewed across the study area road network to identify any trends.

Background Profile

An inventory of the study area's existing transportation conditions was developed, multimodal in scope, and drew from resources and activities, such as traffic/operations, socio-economic characteristics, and multimodal transportation.

Socioeconomic Conditions

Population Change

Change in population is but one indicator in marking the health of a region's economy. Population characteristics are also important drivers in affecting the demand for travel. Population change in the Danville area could be characterized as being static, with no dramatic "boom and bust" cycles, or precipitous changes, overall. From 2000 to 2017, the study area has experienced a nearly 4 percent decline in population, as depicted in **Table 1**.

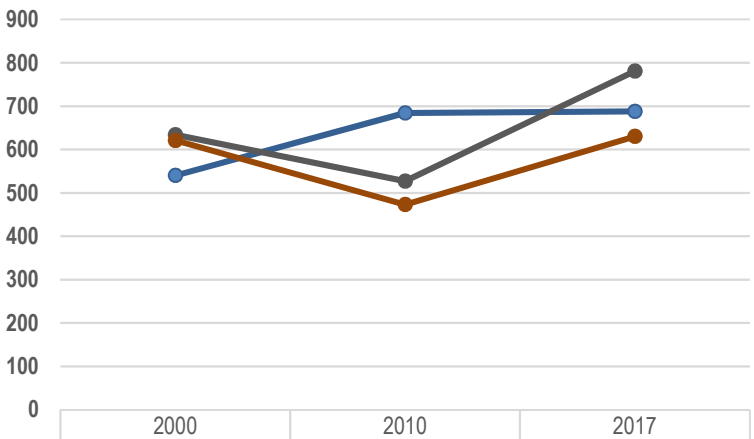
Table 1: Danville/Mahoning Area Population Change (2000 - 2017)

	2000	2010	2017	2000-2017 % Change
Mahoning	4,263	4,171	4,173	-2.1%
Danville	4,897	4,699	4,637	-5.3%
Study Area Total	9,160	8,870	8,810	-3.8%

Source: U.S. Census Bureau 2000 and 2010 Decennial Census and American Community Survey 2013-17 5-year Estimates

There has been a slight increase in the DATS study area's senior population, a trend that has continued from 2000 to the present. The total population age 65 and older is growing in both the DATS study area and across Pennsylvania. Many age cohorts experienced population loss between 2000 and 2017 in Danville Borough and Mahoning Township, with the exception of individuals between the ages of 25 and 39. Shown in **Figure 2**, the young adult population between the ages of 30 and 39 decreased from 2000 to 2010, but rebounded significantly from 2010 to 2017.

Figure 2: Young Adult Population Change (2000 - 2017)



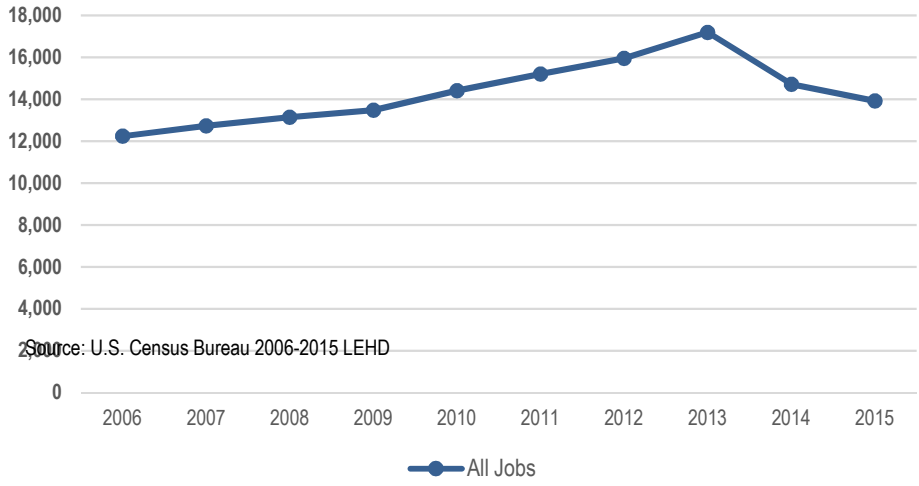
	2000	2010	2017
25 to 29 years	540	684	688
30 to 34 years	634	527	781
35 to 39 years	621	473	630

Source: U.S. Census Bureau 2000 and 2010 Decennial Census and American Community Survey 2013-17 5-year Estimates

Study Area Employment

Employment data obtained from the Census Bureau Longitudinal Employer-Household Dynamics (LEHD) provides quantitative insights into which industries have gained or lost jobs over the most recent 10-year period. According to the LEHD, the DATS study area gained a total of 1,692 jobs from 2006 to 2015. Over the 8-year period from 2006 to 2013, approximately 5,000 new jobs were added, representing a 40 percent increase in total jobs. Of those, 2,600 were in the Health Care and Social Assistance industry sector. Geisinger Medical Center is a key factor in new jobs added to the local economy and underscores a broader national trend of a growing health care sector.

Figure 3: Study Area Total Employment (2006-2015)



Source: U.S. Census Bureau 2006-2015 LEHD

In more recent years, overall employment within the study area has decreased by approximately 3,200 jobs (shown in **Figure 3**). This change can be explained by the significant decrease in jobs within the Management of Companies and Enterprises industry sector, which experienced a 75.5 percent decrease in total employment over the 3-year period. Counteracting this loss of jobs, the Healthcare and Social Assistance industry sector and the Finance and Insurance both grew significantly from 2013 to 2015 (shown in **Table 2**). All other industry sectors experienced nominal changes.

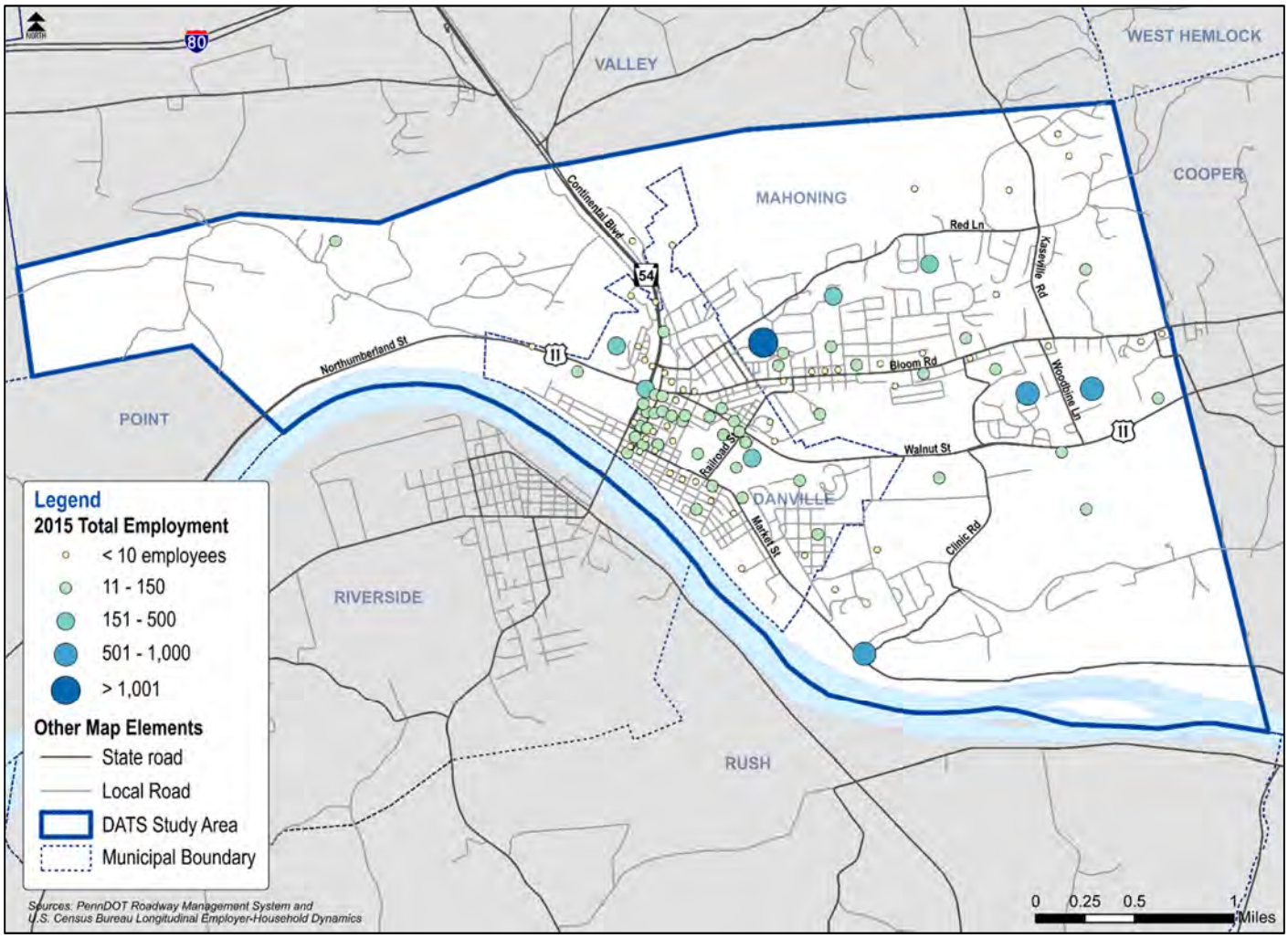
Table 2: Greatest Industry Sector Gains and Losses (2013-2015)

NAICS Industry Sector	2013	2014	2015	2013-2015 # Change	2013-2015 % Change
Healthcare and Social Assistance	7,844	8,982	8,632	788	10.0%
Finance and Insurance	131	906	1,033	902	688.5%
Management of Companies and Enterprises	6,402	1,904	1,554	-4,848	-75.7%

Source: U.S. Census Bureau 2006-2015 LEHD

Figure 4 shows the spatial distribution of employment within the study area.

Figure 4: Total Employment within the Study Area (2015)

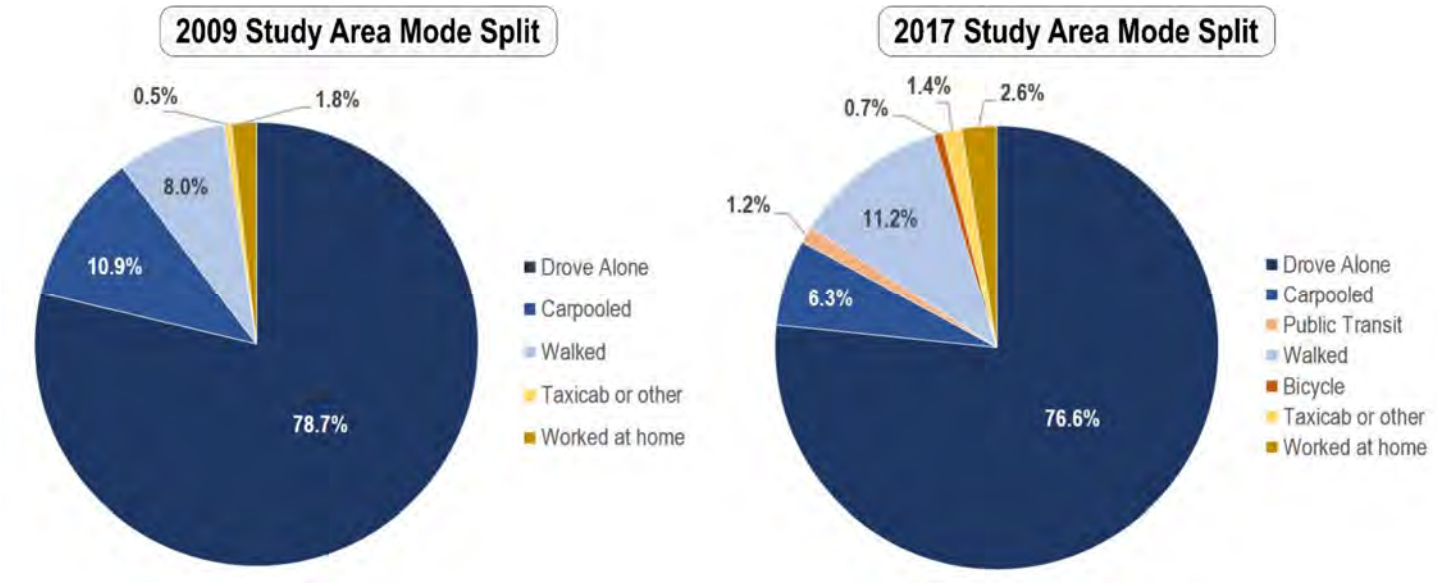


Commuting Patterns and Journey to Work

Workers age 16 years and over in the study area predominately travel to work by car, truck, or van. From 2009 to 2017, however, mode choice for commuters in Danville Borough and Mahoning Township has gradually shifted away from single occupancy vehicles and carpooling to other modes (shown in **Figure 5**). Over the 8-

year period, non-vehicular journey to work modes and work from home increased by nearly 6 percent. Walking experienced the greatest increase as a mode of journey to work from 2009 to 2017 and surpassed carpooling as the second-most common means of travel to work within the study area.

Figure 5: Change in Mode Split 2009-2017



Source: U.S. Census Bureau 2006-2015 LEHD

The LEHD Program provides data on inflow and outflow labor characteristics of a defined geography. Specifically, the data indicates the number of non-resident workers employed within the area (inflow) and resident workers are employed outside of the area (outflow). Interior flow refers to residents living and working within the defined area.

Based on 2015 LEHD data, the DATS study area is a net importer of workers. Of the 13,929 total jobs that exist in Danville Borough and Mahoning Township, 12,174 jobs (or 87.4 percent) are held by workers who live outside of the study area and commute in on a daily basis; 1,755 individuals live and work within the study area; while 2,321 workers live in the study area but work elsewhere. **Figure 6** provides a visual representation of the labor inflow/outflow in Danville Borough and Mahoning Township and the number of resident workers employed outside.

Figure 6: Study Area Inflow/Outflow Job Counts (2015)

Transportation Systems

Functional Classification

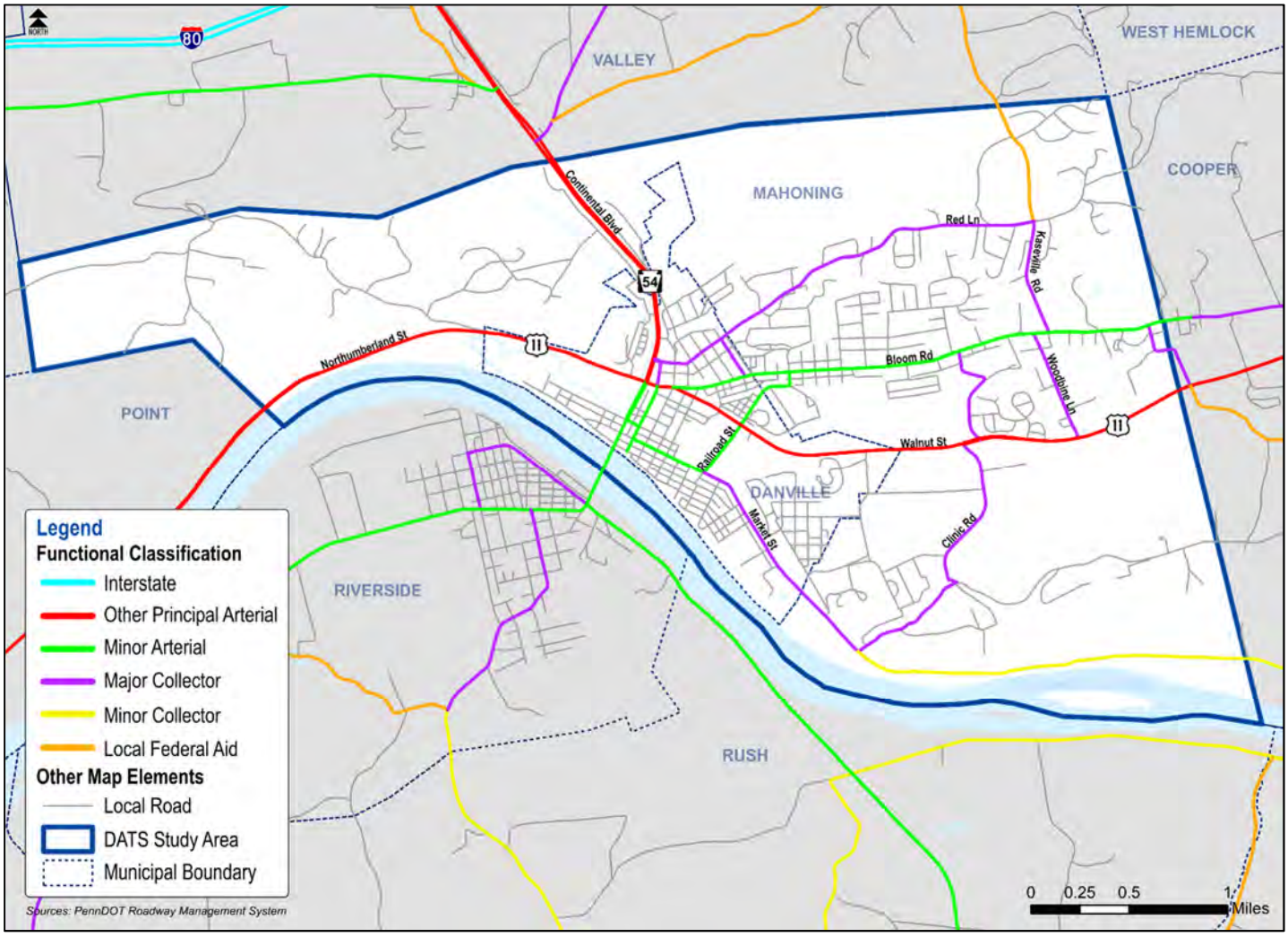
The study area is crisscrossed by approximately 87 miles of both state- and locally-owned roadway. US 11 and PA 54 are the highest-order roadways serving the area, directly connecting motorists and motor carriers to Interstate 80 and US 11. Depicted in **Figure 7**, both roadways are classified as principal arterials and are included on the National Highway System (NHS), a federal designation created by Congress in 1995 as part of the passage of the Intermodal Surface Transportation Efficiency Act (ISTEA) four years earlier.

The remainder of the study area roadways consist of lower-order state-owned roadways and locally-owned streets. They constitute the majority of the study area's total roadway mileage, and—of all roadway types—offer the greatest level of accessibility to trip origins and destinations.

Two proposed changes in federal functional class within the study area presently being considered include:

- **Frosty Valley Road**—proposed Major Collector starts at Columbia Hill Rd and ends at SR 42, Mall Blvd.
- **Kaseville Road**—proposed Major Collector begins at Red Lane and ends at Frosty Valley Rd.

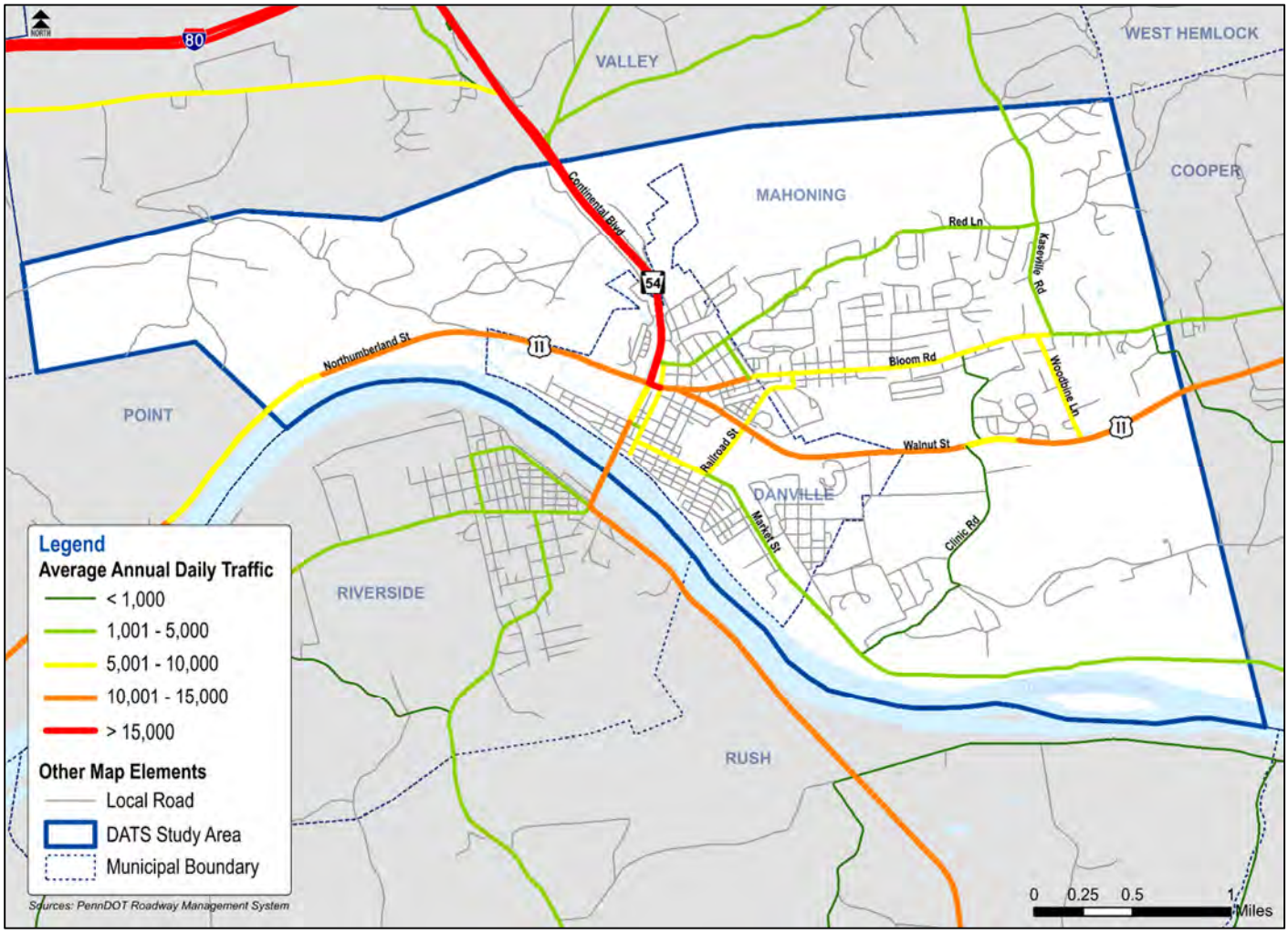
Figure 7: DATS Study Area Functional Classification



Average Annual Daily Traffic

Within the study area, PA 54 experiences the greatest amount of daily traffic, with total traffic volumes currently surpassing 20,000 (as shown in **Figure 8**). US 11 serves as a major east-west corridor through both Danville and Mahoning Township and annual average daily traffic (AADT) figures along the route consistently surpass 10,000 vehicles.

Figure 8: Study Area Average Annual Daily Traffic



Traffic Operations

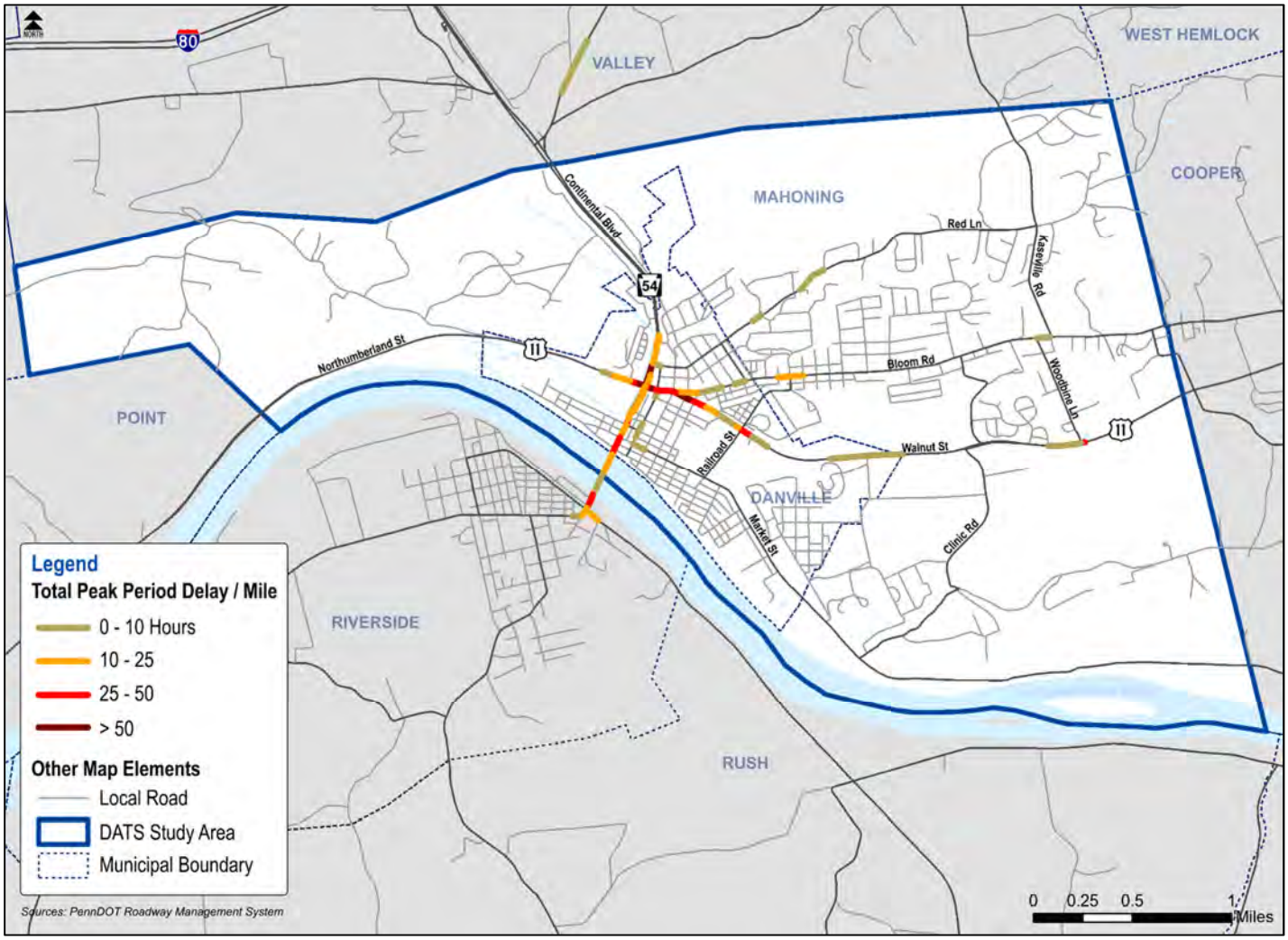
An assessment of traffic congestion provides a basis for identifying transportation needs and strategies to improve mobility. For the DATS study area, information on traffic congestion was assembled based on historical travel time data from the TomTom and INRIX providers.

TomTom travel time data was acquired by PennDOT in early 2017. The data represents average weekday peak hour travel times over a two-year period (2014-2016) for both passenger vehicles and trucks. The TomTom travel times are aggregated over small roadway segments and include many of the study area's key roadways. Despite being several years old, this data source can be used to evaluate the locations and levels of historical traffic congestion. Based on the travel time data, a travel delay measure was estimated for each road segment. The delay represents the difference between peak period (highest of AM and PM time periods) and off-peak travel times, multiplied by the total traffic volume.

Traffic volumes were obtained from PennDOT's Roadway Management System (RMS). The calculated delay values were divided by the roadway segment lengths to produce a delay per mile measure. As illustrated in

Figure 9, the intersection of PA 54 and US 11 experiences the most severe levels of vehicular delay during the AM and PM peak periods. Roadways outside of the Danville Central Business District demonstrate significantly lower levels of peak period vehicular delay.

Figure 9: Average Weekday Vehicle Delay per Mile (2014-2016)



PennDOT currently maintains access to the Regional Integrated Transportation Information System (RITIS). RITIS is an interface and reporting tool for INRIX travel time data and includes historical travel time data for every hour since 2010. As compared to the TomTom information obtained by PennDOT, INRIX includes more recent travel times and the ability to process that data in more detail. However, the INRIX reporting segments are larger with less roadway coverage in the DATS study area.

The following performance measure was used in evaluating the study area's roadway network:

- **Planning Time Index (PTI) = (95th Percentile Travel Time) / (Free-Flow Travel Time)**

  PTI is a ratio of the near-worst travel time to light or free-flow conditions. This measure is often used to assess traffic reliability, indicating whether traffic congestion is highly variable. This measure may be

highly impacted by traffic incidents, peak days of freight or airport access in the study area, or construction activities. Values higher than 2.5 generally indicate unreliable conditions.

Figure 10 spatially depicts the study area's PTI values for the PM (4:30-5:30 p.m.) peak hour from January 1 to December 31, 2018. In addition to experiencing the highest level of peak hour delay, the intersection of US 11 and PA 54 in Danville Borough is severely unreliable based on the 2018 PTI value.

Figure 10: Planning Time Index (PTI) for Study Area Roadways

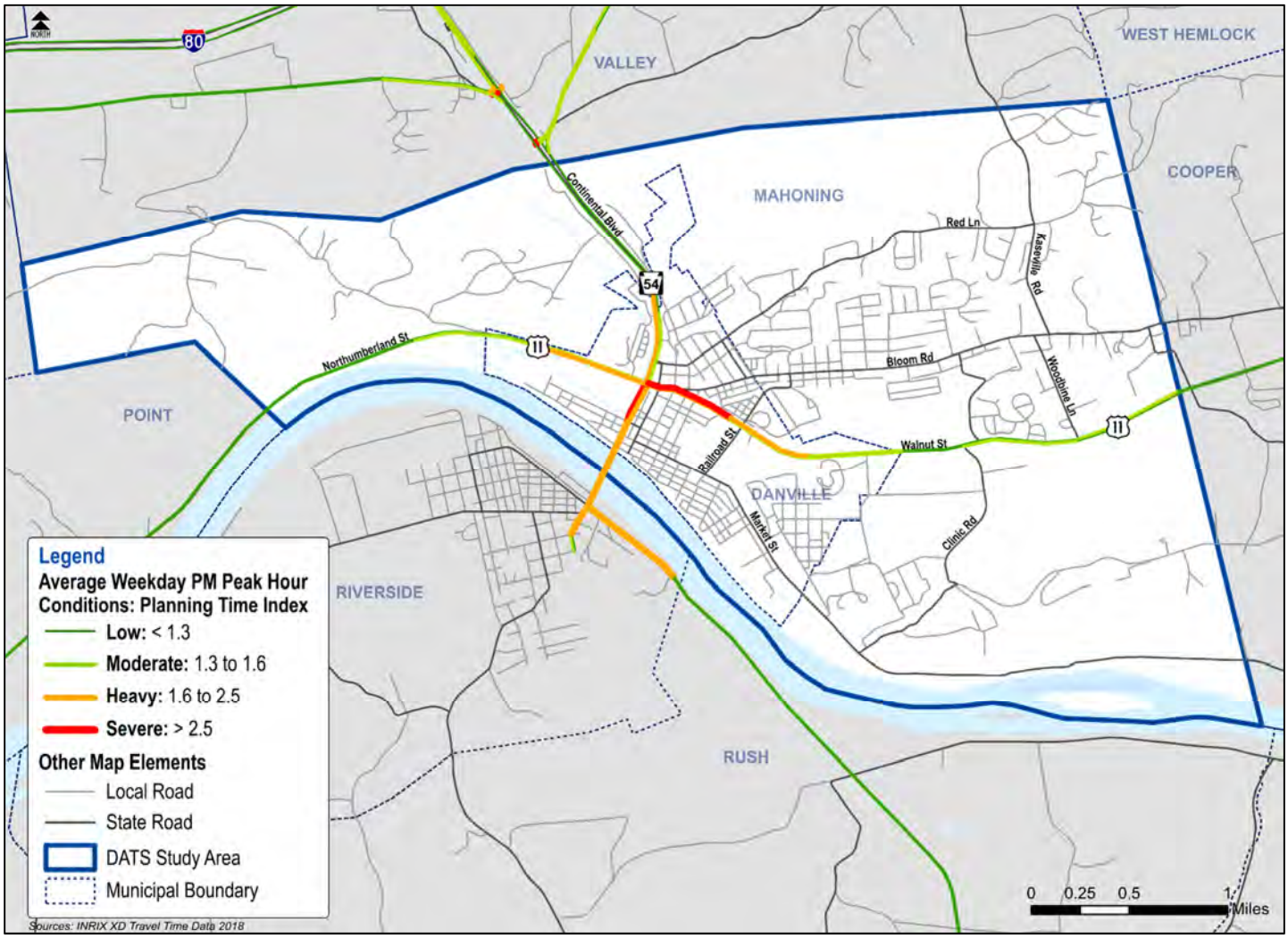


Table 3 provides the ATR locations studied during the data collection process as well as the average daily traffic (ADT), heavy vehicle percentages, and 85th percentile speeds. The ATR locations and data are also visually represented in **Exhibit 2** of **Appendix B**. In addition, historical ATR counts from PennDOT's One Map, PennDOT's web-based GIS mapping application, have been provided in **Exhibit 3** of **Appendix B** to provide additional historical traffic counts.

Table 3: ATR Volume, Heavy Vehicle Percentage, and Speed Summary

Location		Weekday (Tues - Thurs)		Weekend		85th Percentile Speed (MPH)
		ADT (VPD)	HV %	ADT (VPD)	HV %	
1	**Montour Street (North of US 11)**	**1,659**	**3.1%**	**1,318**	**1.2%**	**22**
	Northbound	582	4.2%	422	2.8%	23
	Southbound	1,077	2.6%	896	0.4%	20
2	**PA 54 (South of Montour Street)**	**26,843**	**12.4%**	**20,868**	**6.8%**	**50**
	Eastbound Travel Lane	4,310	19.2%	4,046	8.7%	49
	Eastbound Passing Lane	9,135	7.8%	6,559	4.0%	48
	Westbound Travel Lane	7,414	14.1%	5,638	7.0%	49
	Westbound Passing Lane	5,984	8.6%	4,625	7.6%	53
3	**Mill Street (SR 2054) (North of US 11)**	**4,851**	**4.2%**	**2,740**	**4.0%**	**27**
	Northbound	1,373	5.7%	829	2.9%	28
	Southbound	3,478	3.5%	1,911	2.2%	26
4	**Bloom Street (SR 2010) (East of Church Street)**	**10,913**	**2.7%**	**6,770**	**1.5%**	**35**
	Eastbound	5,682	2.5%	3,462	1.8%	34
	Westbound	5,231	2.9%	3,308	1.2%	35
5	**US 11 (West of A Street)**	**10,262**	**4.3%**	**12,451**	**5.9%**	**35**
	Northbound	5,380	4.6%	6,694	6.0%	36
	Southbound	4,882	4.0%	5,757	5.8%	33
6	**Railroad Street (South of Bloom Road)**	**5,345**	**2.8%**	**2,452**	**1.4%**	**31**
	Northbound	2,699	3.0%	1,210	1.1%	33
	Southbound	2,646	2.6%	1,242	1.7%	29
7	**State Hospital Drive (North of Wall Street)**	**2,290**	**2.7%**	**1,147**	**1.4%**	**32**
	Northbound	994	3.0%	513	1.6%	33
	Southbound	1,296	2.4%	634	1.2%	31
8	**Bloom Road (SR 2008) (West of Kaseville Road)**	**6,367**	**3.5%**	**3,740**	**2.3%**	**27**
	Eastbound	2,990	4.2%	1,782	3.0%	28
	Westbound	3,377	3.0%	1,958	1.8%	26
9	**Bloom Road (SR 2008) (East of Kaseville Road)**	**3,888**	**3.5%**	**2,490**	**2.2%**	**40**
	Eastbound	1,878	3.6%	1,222	2.4%	41
	Westbound	2,010	3.4%	1,268	2.0%	39

- **Table 4** and **Table 5** provide reportable crash data detailing collision type and crash severity, respectively, along key roadway links and at key intersections within the study area.

Table 4: Reportable Crash Data (2013-2017) – Collision Type

Location	Muni.	Total Crashes	Collision Type									
			Angle	Rear End	Head On	Hit Fix Obj	Peds	Same Dir. SS	Opp Dir. SS	Backing	Non Collision	Unknown
US 11 Between Bloom Street and State Hospital Drive	Danville	56	22	17	4	3	3	3	0	0	0	4
US 11/SR 54 Intersection	Danville	39	21	8	6	2	0	1	0	0	1	0
US 11/Woodbine Lane Intersection	Mahoning	11	3	6	1	1	0	0	0	0	0	0
SR 54/Danville River Bridge	Danville/ Riverside/ Mahoning	132	81	15	6	13	0	7	1	0	2	7
US 11/State Hospital Drive Intersection	Danville	8	0	5	0	0	0	0	0	0	0	3
Mill Street between East Front Street and Spruce Street	Danville	19	7	2	3	1	2	3	0	1	0	0
PA 54 between Montour Street and Spruce Street	Danville	29	23	3	1	1	0	1	0	0	0	0
PA 54/PA 642 Intersections	Danville	27	23	1	0	1	0	1	1	0	0	0
Montour Street Corridor	Danville	22	14	2	2	2	0	1	1	0	0	0
Spruce Street/Red Lane between PA 54 and Red Oak Drive	Danville/ Mahoning	18	11	2	0	2	2	1	0	0	0	0
PA 54/PA 487 Intersection	Ralpho	20	8	7	2	1	0	0	1	0	1	0
PA 42/PA 487 Intersection	Catawissa	12	2	2	1	4	0	1	0	0	0	2
Bloom Road/Woodbine Lane & Kaseville Road Intersections	Mahoning	6	3	1	0	2	0	0	0	0	0	0
Railroad Street/Academy Avenue between US 11 and Bloom Road	Danville/ Mahoning	17	10	3	0	3	0	1	0	0	0	0
Wall Street and State Hospital Drive Corridor	Danville	5	2	1	0	0	0	0	0	0	0	2
Bloom Street between Ferry Street and Jade Avenue	Danville/ Mahoning	27	14	10	1	0	0	2	0	0	0	0
Red Lane/Kaseville Road Intersection	Mahoning	5	4	1	0	0	0	0	0	0	0	0

Table 5: Reportable Crash Data (2013-2017) – Crash Severity

Location	Municipality	Total Crashes	Crash Severity						
			Fatal	Suspected Serious	Suspected Minor	Possible Injury	UNK Severity	UNK Injured	PDO
US 11 Between Bloom Street and State Hospital Drive	Danville	56	0	3	3	7	7	1	35
US 11/SR 54 Intersection	Danville	39	0	0	3	8	1	0	27
US 11/Woodbine Lane Intersection	Mahoning	11	1	1	1	3	0	0	5
SR 54/Danville River Bridge	Danville/ Riverside/ Mahoning	132	2	5	28	29	9	0	59
US 11/State Hospital Drive Intersection	Danville	8	0	0	0	4	0	0	4
Mill Street between East Front Street and Spruce Street	Danville	19	0	0	0	7	2	0	10
PA 54 between Montour Street and Spruce Street	Danville	29	0	1	7	5	3	0	13
PA 54/PA 642 Intersections	Danville	27	1	0	11	5	3	0	7
Montour Street Corridor	Danville	22	0	0	4	3	2	0	13
Spruce Street/Red Lane between PA 54 and Red Oak Drive	Danville/ Mahoning	18	0	1	5	1	2	0	9
PA 54/PA 487 Intersection	Ralpho	20	0	1	4	1	3	1	10
PA 42/PA 487 Intersection	Catawissa	12	1	0	0	2	1	0	8
Bloom Road/Woodbine Lane & Kaseville Road Intersections	Mahoning	6	0	0	2	1	0	0	3
Railroad Street/ Academy Avenue between US 11 and Bloom Road	Danville/ Mahoning	17	0	1	2	2	1	0	11
Wall Street and State Hospital Drive Corridor	Danville	5	0	0	1	0	0	0	4
Bloom Street between Ferry Street and Jade Avenue	Danville/ Mahoning	27	0	1	2	2	5	0	17
Red Lane/Kaseville Road Intersection	Mahoning	5	0	0	0	2	1	0	2

Traffic Analysis

Capacity analysis for signalized and stop-controlled intersections was completed following the Highway Capacity Manual (HCM) 6th Edition methodologies using Synchro 10 software for the key study area intersections. The capacity analyses calculate the control delay for vehicles per lane group at each intersection, which is also aggregated into an average control delay for the overall intersection. Control delay measures the average additional delay incurred by vehicles as a result of the traffic control device (stop-control, signal, roundabout, etc.), and control delay includes stopped time as well as acceleration and deceleration delay. Level of service (LOS) is determined based on the control delay using the following thresholds established in the HCM 6th Edition as indicated in **Table 6**. In a rural area, LOS C is considered to be acceptable.

Table 6: Level of Service Criteria

Level of Service	Control Delay (seconds per vehicle)	
	Stop-Control	Signal
A	≤ 10	≤ 10
B	> 10 – 15	> 10 – 20
C	> 15 – 25	> 20 – 35
D	> 25 – 35	> 35 – 55
E	> 35 – 50	> 55 – 80
F	> 50 or v/c >1.0	> 80 or v/c >1.0

Source: *Highway Capacity Manual*, *6th Edition*; v/c = volume to capacity ratio

The LOS and delay for existing conditions at the study intersections are presented in **Exhibit 4** and **Exhibit 5** within **Appendix B** for the weekday A.M. and P.M. peak hours, respectively.

Background Traffic

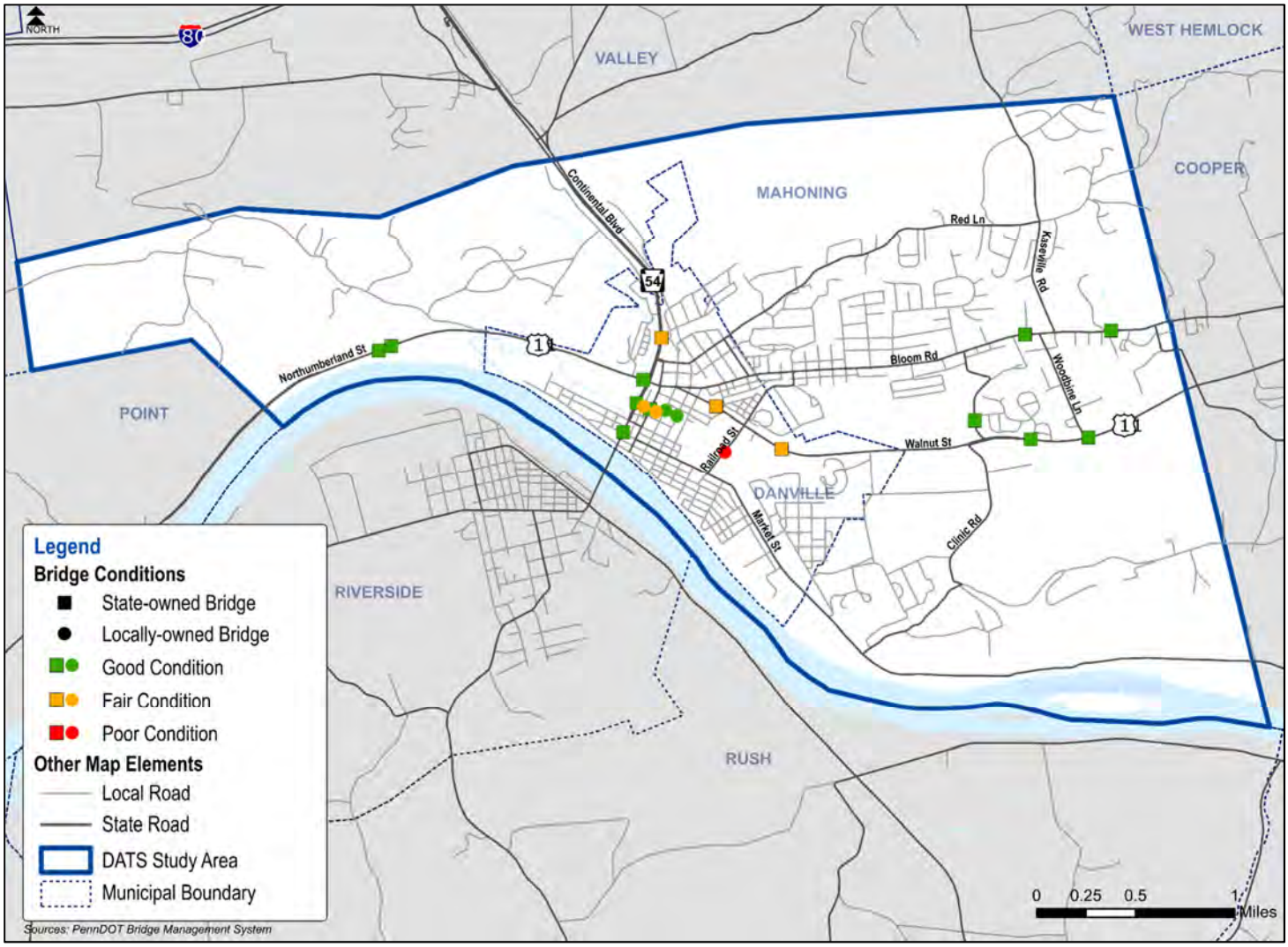
A horizon year of 2040 was used in this study to evaluate long-term impacts within the study area. Future base traffic volumes were projected by applying an annual growth rate developed using the PennDOT Growth Facts published for August 2018 to July 2019. The annual compounded growth rate calculated from the PennDOT Growth Factors is 0.34%. For the horizon year of 2040, the annual growth rate of 0.34% is compounded over 21 years to yield a growth factor of 7.39%.

Capacity analyses were completed at the study area intersections for the 2040 horizon year condition traffic volumes, taking into account the background traffic growth and anticipated future developments in the study area, which are detailed in the next section. The peak hour turning movement counts and LOS for the 2040 horizon conditions are provided in **Appendix B, Exhibits 6** through **8**.

Bridge Conditions

The DATS study area road network is supported by 14 state-owned bridges greater than 8 feet in length, and 6 locally-owned bridges that are greater than 20 feet in length (**Figure 11**). Of the 20 total bridges located within the study area, one locally-owned bridge is in poor condition, located along Railroad Street. The average age of state-owned bridges within the study area is 47 years old, compared to the statewide average of 56 years old.

Figure 11: DATS Study Area Bridge Conditions



Planned Projects and Developments

Planned developments and transportation projects anticipated to be constructed by the 2040 horizon year were inquired from and provided by Northumberland and Montour Counties, Danville Borough, Mahoning Township, Riverside Borough, Ralpho Township, SEDA-COG, and PennDOT.

Transportation Improvement Program (TIP) Projects & PennDOT Construction/Maintenance Projects

There are 11 transportation infrastructure improvement projects planned within the DATS study area as identified in the Multi-modal Project Management System (MPMS). The list of MPMS projects and project limits are provided in **Table 7**. Please Note: The project dates listed below may change due to constraints found during the design process and funding availability.

Table 7: TIP Project Limits

MPMS #	TIP Status	Title	County	Route	Segment Begin	Offset Begin	Segment End	Offset End
107128	Other	SR 54 under Market Street	Montour	54	282	330	282	364
MPMS# 107128 is a study phase project to study the cut and cover area over SR 54 to determine needed improvements.								
110888	Other	Danville Borough RRX	Montour	2054	10	250	10	350
MPMS# 110888 is a railroad warning device installation project completed in the fall of 2019 at crossings at Mill Street (SR 2054) and Jacobs Alley crossing in Danville Borough. The project is included on the TIP and TYP.								
100451	Future Development	SR 2008 from Byrd Avenue to Grovania Drive	Montour	2008	50	0	110	3320
MPMS# 100451 is an upcoming highway resurfacing project along Bloom Road (SR 2008) between Byrd Avenue and Grovania Drive in Mahoning Township and Cooper Township. This project will be done with PennDOT Department Forces estimated to be started in calendar year 2026 with work estimated to be completed by calendar year 2027. The project was included on both the TIP and TYP.								
103853	In Development	SR 54 Corridor Safety Improvements	Montour	54	221	667	241	870
					230	667	240	870
				642	170	2210	170	3646
					180	0	190	1840
MPMS# 103853 is an upcoming intersection safety improvement project along SR 54 at the two intersections with SR 642 in Valley Township and Mahoning Township. The project is currently in development and is estimated to be open for bid in calendar year 2022, with work estimated to be completed by calendar year 2026.								
108434	Future Development	SR 54 from SR 2028 (Park Ave) to SR 487	Northumberland	54	360	616	500	280
MPMS# 108434 is an upcoming micro-surfacing treatment project along SR 54 between Park Avenue (SR 2028) and SR 487 in Ralpho Township, Coal Township, and Mount Carmel Township. The project is estimated to be open for bid in calendar year 2022, with work estimated to be completed by calendar year 2023. The project was included on both the TIP and TYP.								
88778	In Development	SR 54 over Diebler Creek	Northumberland	54	360	2810	360	2825
MPMS# 88778 is an upcoming bridge replacement project along SR 54 over Diebler Creek in Ralpho Township. The project is estimated to be open for bid in calendar year 2023, with work estimated to be completed by calendar year 2026. It is included on both the TIP and TYP.								
100443	Future Development	SR 42 from Poor House Road to Catawissa Creek	Columbia	42	100	0	350	1581
MPMS# 100443 is an upcoming highway resurfacing project along SR 42 from Poor House Road to Catawissa Creek in Locust Township and Catawissa Township. The project is estimated to be open for bid in calendar year 2024, with work estimated to be completed by calendar year 2025. The project was included on both the TIP and TYP.								
88798	In Development	Four bridges	Columbia	42	330	1514	330	1527
MPMS# 88798 is an upcoming bridge preservation project for six separate bridges in District 3-0, with one of the bridges being along SR 42 over the Catawissa Creek in Catawissa Township. The project is estimated to be open for bid in calendar year 2022, with work estimated to be completed by calendar year 2025.								
113888	In Development	SR 487 to Catawissa Creek	Columbia	42	340	540	350	1365
MPMS# 113888 is an upcoming resurfacing project along SR 42 between SR 487 and Catawissa Creek in Catawissa Township and Catawissa Borough. The project is estimated to be open for bid in calendar year 2020, with work estimated to be completed by calendar year 2021.								

The stakeholder outreach conducted by the MBI project team produced a list of future development based on the input received from municipal roundtables/interviews, interviews with major employers, and stakeholder

interviews. The list was reviewed and approved by the Management Committee and is provided below, separated by municipality.

Cooper Township, Montour County

- Sewer lines have been installed along US 11 in anticipation of growth along the corridor. The property between Bloom Road (SR 2008) and US 11 has been rezoned to Commercial-Highway (C-H).

Danville Borough, Montour County

- The DRIVE Industrial Complex is expected to expand, with additional square footage being added.
- A new residential townhome development is being proposed at the corner of Alton Street & Franklin Street. Approximately 10 dwelling units are being proposed.
- Danville Area School District (DASD) anticipates moving the Liberty Valley Intermediate School and Danville Middle School to the Ironmen Lane campus near the Danville Primary School.
- All traffic signals in the Borough have recently been studied for retiming to optimize performance.

Mahoning Township, Montour County

- All traffic signals in the Township are being studied for retiming to optimize performance.
- 80 higher end units/townhomes have been proposed along US 11 between Woodbine Lane and the Cooper Township border.
- New residential development is under construction consisting of 139 apartments along Bloom Road (SR 2008) between Prosseda Drive and the Mahoning Terrace Apartments.
- Pediatric Specialties is planning on constructing a new pediatric hospital along Stearns Lane adjacent to Woodbine Lane, employing approximately 200.
- Discussions have been made about rezoning property south of the US 11/Woodbine Lane intersection from Agricultural/Forest, but it is developer-dependent. The area currently includes a small park and trails.
- Frosty Valley Country Club is planning on making renovations and expansion by adding 18-24 dwelling units and adding a wedding venue.
- Geisinger is planning for new building/redevelopment on the existing campus as part of their long-range plan.

Valley Township, Montour County

- Along PA 642; 130-acre parcel currently farmed; zoning overlay for commercial development.
- Property along both sides of PA 54 is zoned Commercial-Highway.
- There have been discussions to revitalize properties around the I-80 interchange at PA 54. An overlay zone has been approved around the interchange. A Sheetz development has been proposed across from the existing McDonalds restaurant. Sewer installation will facilitate the development.

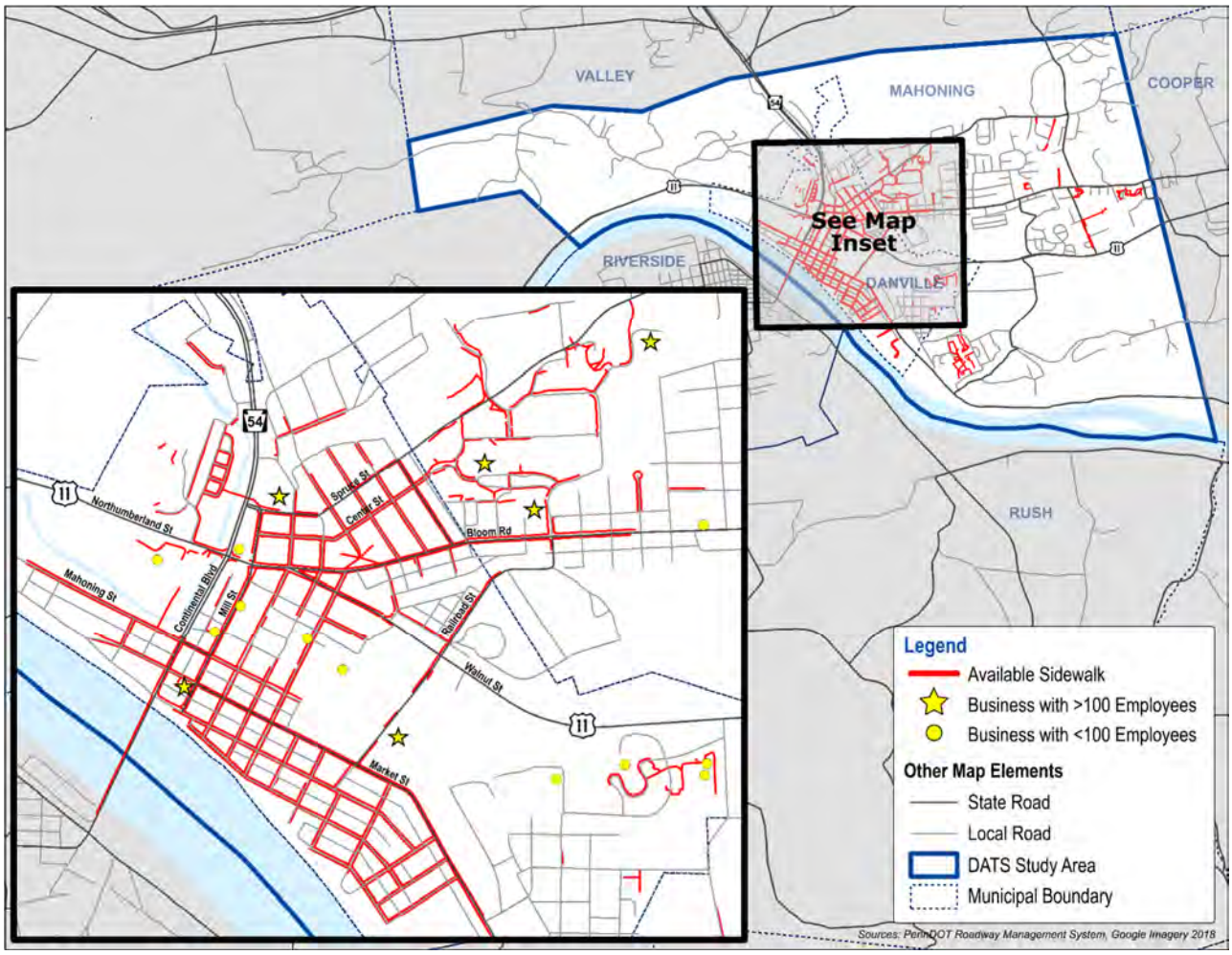
Non-Motorized Transportation Modes

Pedestrian Facilities

Within the DATS study area, the pedestrian environment varies greatly due to the diversity and intensity of existing land uses, as well as the motorized transportation systems that support them. **Figure 12** depicts the results from a manually-digitized sidewalk inventory, where Google Maps 2019 aerial imagery was used to determine where sidewalks are located. The sidewalk inventory does not include information on sidewalk

conditions (e.g., ADA accessible curb ramps, observed sidewalk obstructions, deteriorating sidewalk pavements, etc.), but it does provide a high-level understanding of where possible network gaps may exist.

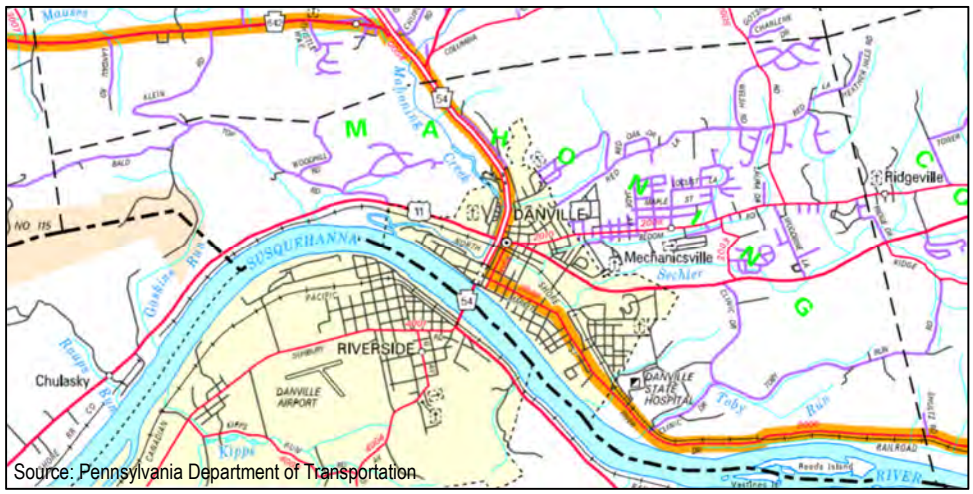
Figure 12: Study Area Existing Sidewalk Network



Bicycle Facilities

BicyclePA Route V bisects the study area and is characterized by a variety of roadway types and conditions, ranging from a divided 4-lane highway to the north along PA 54 to local roads in Danville Borough (shown in **Figure 13**).

Figure 13: BicyclePA Route V



Source: Pennsylvania Department of Transportation

Transit Providers

Intercity Fixed Route Transit

Fullington Trailways, an intercity bus carrier based in Williamsport, has two intercity bus lines providing four daily departures from Danville. These trips offer direct intercity bus service to Lewisburg, Williamsport, Bloomsburg, Berwick, Hazleton, Lehighton, Allentown, Quakertown, Philadelphia, Beaver Meadows, Hudsondale, Lehighton, Bath, and Easton, PA, Newark, NJ, and New York, NY. The Fullington Trailways stop is located at 435 Mill Street in the CVS parking lot. Departures toward Lewisburg and other points west are at 12:25 pm and 7:00 pm every day. Departures toward Bloomsburg and other points east are at 7:40 am and 4:00 pm every day.

Danville Borough and Mahoning Township are not currently served by any fixed route local transit service providers.

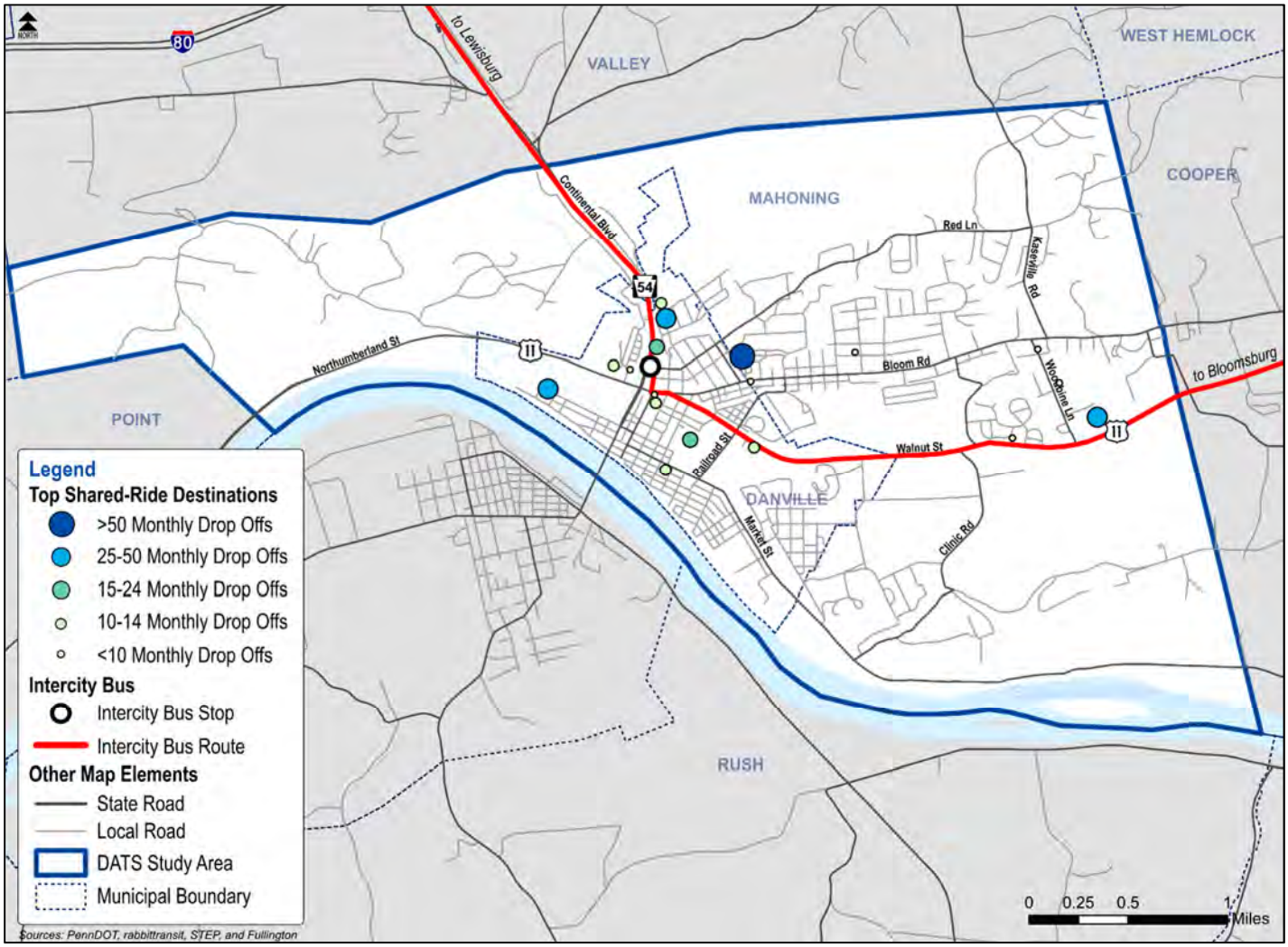
Shared-ride Transit

Shared-ride service is provided by rabbittransit, a transportation provider based in York. Shared-ride trips provide curb-to-curb services to any address in the region provided they are reserved at least one day in advance. Fares are determined based on the trip distance and vary depending on trip origin.

Figure 14 shows the top 25 shared-ride destinations within the study area. The top destination by far is Geisinger Medical Center, with an average of 142 trips per month. Rounding out the top five are Heritage Heights apartments with 66 trips per month, Grandview Nursing and Rehabilitation Center with 50 trips per month, Danville Senior Citizens Center with 48 trips per month and the Bloomsburg Walmart Supercenter (off the map).

Geisinger Medical Center also began a new program in March 2018 that pays for shared-ride trips to their facilities for appointments through Geisinger Health Plan insurance. These services are scheduled and paid for by Geisinger but serviced by rabbittransit under the same Shared-ride program offered to the general public.

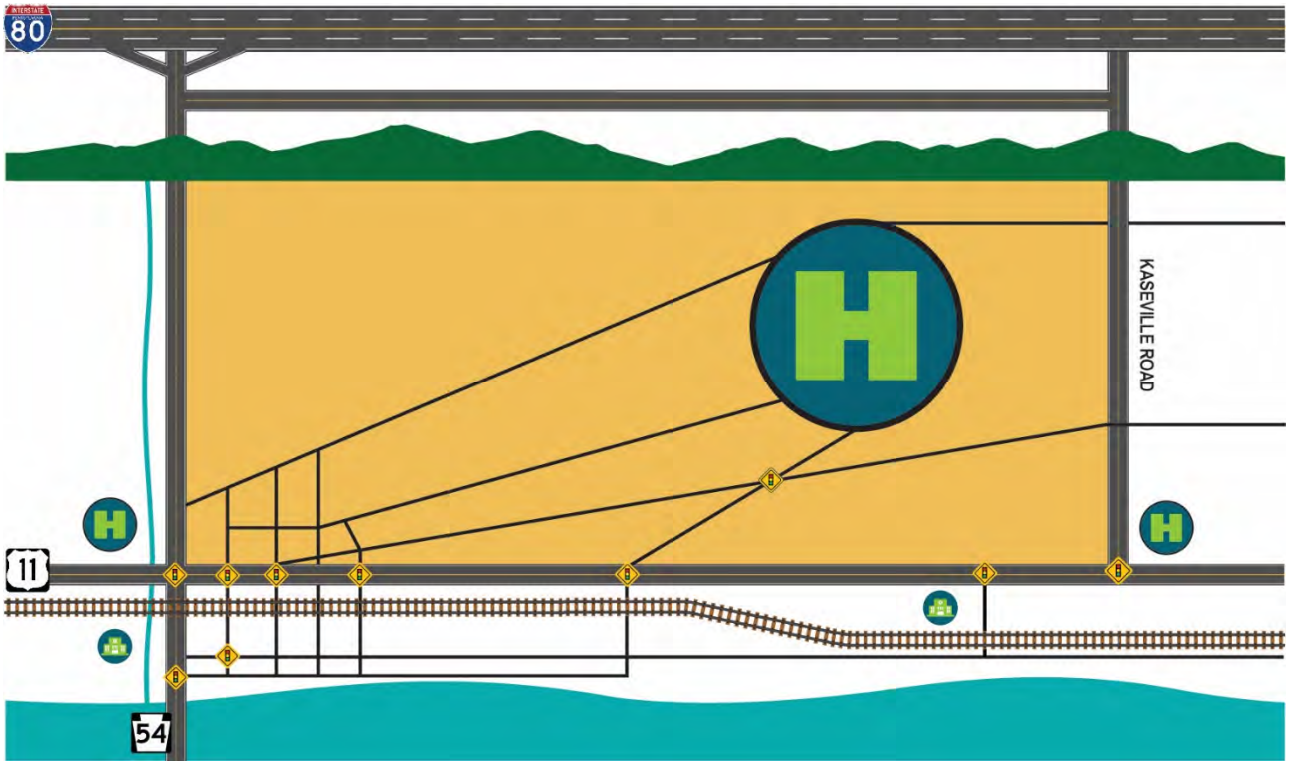
Figure 14: Average Monthly Shared-ride Trip Drop-offs



Transportation Concerns

The Danville Area community and transportation network is funneled between a ridge to the north and the Susquehanna River to the south. Taken together, these geographic features greatly constrain the area's land use options and transportation linkages. US 11 is the only arterial highway providing east-west regional mobility while the same can be said for PA 54 that connects the local area's only river crossing to Interstate 80. These two higher mobility roadways intersect at the convergence of an active railroad and the Mahoning Creek levee. Danville Borough's downtown is immediately adjacent to this regional transportation pinch point. Looking to the north side of US 11, this primarily residential area, contained generally between the ridge, US 11, Kaseville Road/Woodbine Lane, and PA 54, consists of mixed in commercial, industrial, and medical land uses. Considering that the Geisinger Medical Center, the area's largest employer, is situated in a neighborhood setting with lower functional roadways to access the interior of the study area, there are few viable transportation linkages for efficient access to/from an already inefficient transportation network. **Figure 15** schematically depicts this concept of layered transportation barriers that cause ineffective and inefficient mobility in the Danville Area.

Figure 15: Danville Area Transportation – A Story of Bottled-up Demand



While it is impractical to move a ridge or a river, it is important to mutually understand the limitations and constraints of the Danville Area transportation network. Understanding these challenges refines and focuses areas for improvement. There are four such areas, identified in **Figure 16**, that this section of the study report will expound upon and further define the transportation concern. The following section of the study report then pairs opportunities for improvement or change that address each of these four areas.

Figure 16: Transportation Concern Focus Areas

Seventeen specific locations within Danville Borough, Mahoning Township, Ralpho Township, and Catawissa Township were identified as having corridor and/or intersection transportation concerns. These locations are delineated in **Figure 17** and **Figure 18**. These individual locations are referenced in the Transportation Concerns and Transportation Recommendations sections of the report and details of these locations, including transportation concerns, stakeholder comments, quantitative data, and recommendations, are provided in **Appendix C**.

Figure 17: Danville Area Location-Specific Transportation Concerns

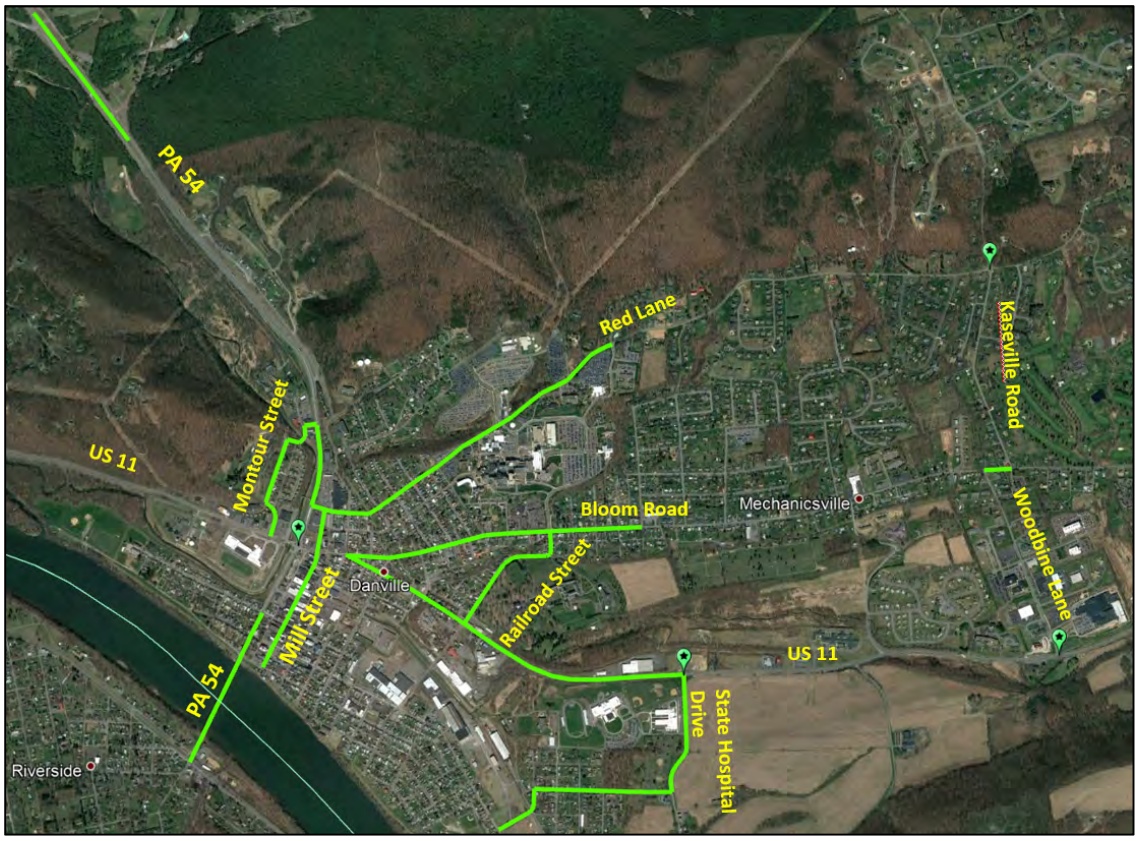


Figure 18: Satellite Location-Specific Transportation Concerns

Street Network Connectivity

Danville Borough is uniquely situated at a crossroads between two major arterial roadways in US 11 and PA 54, and laterally confined by environmental and multimodal factors. Due to lateral confinement from the North Branch of the Susquehanna River, Mahoning Creek, Montour Ridge, and railroad lines there are limited access points to/from the Borough. Commuters traveling from the south and east of Danville Borough enter and exit via PA 54, crossing over the Danville River Bridge. The number of bridges crossing the Susquehanna River in this area is limited, with the next closest bridge being nearly nine miles away to the east in Catawissa. As a result, traffic along the Danville River Bridge becomes congested during the peak hours, as alternate routes are not available. See Location 4 (PA 54/Danville River Bridge) in **Appendix C** for a detailed review of the Danville River Bridge and transportation concerns.

A significant portion of traffic entering and exiting Danville Borough does so via Interstate 80, with Exit 224 located at PA 54 in Valley Township. Due to congestion within the Borough along US 11 and PA 54, commuters utilize Kaseville Road as an alternate route to access Interstate 80 and areas to the north of the study area.

The limited access points, located via US 11 and PA 54, create funnels that draw heavy vehicle demand and lead to capacity issues during the morning and evening peak hours. As these two roads, along with Bloom Street

(SR 2010) are the heaviest traveled roads in the network and contain multiple, closely spaced signalized intersections, major congestion and queuing issues exist.

- The PA 54 corridor experiences high congestion during peak hours by drawing vehicles from the north via I-80 and from the south.
- The US 11 corridor within the Borough experiences high congestion during peak hours as a result of commuters traveling to/from Geisinger's Woodbine Lane Clinic and the Town of Bloomsburg.
- The Bloom Street (SR 2010) corridor is a highly traveled corridor that serves as an alternate route to US 11 and includes the main entrance to the Geisinger medical facilities, which generates a large amount of traffic.

As a result of these three heavily traveled roadways, commuters look for alternative ways into/out of the Borough during the peak morning and evening hours in an effort to find the path of least resistance to reach their destination. This results in congestion and queuing along various side streets, which include Mill Street, Red Lane/Spruce Street, Railroad Street, Market Street (SR 2006), Kaseville Road (SR 2005), and Academy Avenue. Although Mill Street (SR 2054), Kaseville Road (SR 2005), and Market Street (SR 2006) are state owned roads, they along with the locally owned side streets, are residential in nature and were not designed to accommodate the current demand of commuter traffic. These side streets feature narrow lane widths that can constrict the flow of traffic. See Location 6 (Mill Street between East Front Street & Spruce Street), Location 14 (Railroad Street between US 11 and Bloom Road), and Location 16 (Bloom Street between Ferry Street and Jade Avenue) in **Appendix C** for detailed reviews of various side streets in the Borough and associated transportation concerns.

There is a need to improve the connections between roads within the borough network to more efficiently carry traffic into/out of the Borough. Two of the major generators of traffic that need to be considered when it comes to improving street network connections within the Borough include the Geisinger Health System and the Danville Area School District.

Geisinger Health System

The expansion of the Geisinger Health System over the past several decades has added to the stress on the flow of traffic into and out of Danville and surrounding communities. It should be noted that while traffic flows have increased as Geisinger has expanded, the positive impact the headquarters of the regional health care provider has had on the community and region is significant, providing health care services for 7,000 – 8,000 patients per day and employing 5,000 people working multiple shifts daily. However, the increase in facilities and employees at both Geisinger's main hospital complex and Woodbine Lane facilities have increasingly been adding to area traffic congestion.

Part of the congestion is due in part to Geisinger's physical location within the community. The main hospital complex is located on approximately 400 acres of land, much of which is constrained topographically. In addition, accessing the main hospital campus requires visitors and employees to travel through many of Danville and Mahoning Township's established, older neighborhoods. The transportation network is truly neighborhood scale. The narrow roads accommodate the traditional grid development patterns, albeit influenced by terrain

considerations, of neighborhoods likely constructed during the 1940s and 1950s and some pre-1940. Of the 2,498 housing units in Danville Borough, 1,106 or nearly 45% were constructed pre-1940.[1]

Geisinger has expanded in recent decades into land it owns surrounding the main hospital including health care buildings and employee parking. Health care expansion has required Geisinger to find alternate locations off the primary hospital campus such as downtown Danville, along Woodbine Lane, and at the former Holy Family Convent. Development along Woodbine Lane in particular, has added to traffic travelling through the greater Danville area.

According to Geisinger's long range plan, Geisinger will continue expanding its health care services at an estimated three percent growth per year. Geisinger officials note that growth will not result in a significant increase in trips as new facilities might not necessarily bring in an increased number of patients. For example, a new bed tower would include single occupancy rooms, the current trend, which do not increase trips.

Long-range planning calls for the construction of new facilities at the Geisinger Danville campus and redeveloping existing parcels. As surface parking is a constraining factor, vertical construction may be considered. Expansion will also take place along Woodbine Lane although specific details were not available when this report was prepared.

Expansion is not currently anticipated at the Geisinger Holy Name facility near Montour Road. Also, Geisinger has no plans to expand into neighboring Cooper Township at present.

While Geisinger has added to the volume of traffic in the Danville area through its acquisition of Holy Family Convent, the employer has acted as a financial contributor and partner in vehicular transportation improvements throughout the region. Examples include:

- Danville traffic signal retiming
- Upgrades to Spruce Street
- Intersection improvements at Woodbine Lane/Bloom Road
- 4-way stop at Woodbine Lane/Justin Drive
- Pledged funds to relocate the entrance of Danville Middle School west on US 11 (not completed per Danville Area School District (DASD))

Access to Geisinger's main campus is controlled at two locations: The main entrance located along Academy Avenue at Bloom Road and a rear entrance located along Academy Avenue at Red Lane. While vehicles arrive to Geisinger's campus via Bloom Road and Red Lane, others arrive via Railroad Street, which serves as a connector road between Bloom Road and US 11. This connector road is a Borough-owned residential road that was not designed to handle the demand it currently experiences. A severe reverse curve located at the northern end of the segment has a crash history as a result of vehicles traveling too fast around the curves. See Location 14 (Railroad Street between US 11 and Bloom Road) in **Appendix C** for a more detailed review of Railroad Street.

[1] U.S. Census Bureau, 2013-2017 American Community Survey 5-Year Estimates, Selected Housing Characteristics. Danville Borough, PA.

Danville Area School District (DASD)

DASD has discussed the potential of relocating the Danville Middle School from its current location near the US 11/PA 54 intersection and Liberty Valley Intermediate School from its current location on PA 642 (Liberty Valley Road). Both schools would potentially be relocated to the Ironmen Campus. The relocation would be on 40 acres of property at the southeast intersection of US 11/State Hospital Drive. Proposed modifications to State Hospital Drive would need to be reviewed and approved by Danville State Hospital. DASD would also need to work with Danville Borough and Mahoning Township for future construction at the 40-acre site.

Consolidating DASD operations at one location would add to the existing traffic congestion along the US 11 corridor from the 5-points intersection to Woodbine Lane during A.M./P.M. peak hours. Potential development resulting from rezoning and sewer infrastructure in Cooper Township should be considered in future planning.

While consolidating DASD operations would increase traffic, it would improve congestion and safety at the US 11/PA 54 intersection as cross traffic turns into and out of Danville Middle School. DASD officials report turning movements have increased over recent years due to an increasing number of parents dropping off/picking up students rather than using available school district bus transportation.

Access to the DASD Ironmen Campus is controlled by two driveways along State Hospital Drive, just south of US 11. With all school-related traffic entering and exiting through the US 11/State Hospital Drive intersection, congestion builds during the morning and evening peak hours. A secondary campus entrance/exit would alleviate congestion concerns at this intersection. See Location 1 (US 11 between Bloom Street and State Hospital Drive) in **Appendix C** for a more detailed review of US 11.

In addition to Geisinger and DASD, business growth is also anticipated at DRIVE's industrial complex along Railroad Street. To access the industrial complex, trucks travel US 11 to Railroad Street. Railroad Street provides direct access to industrial sites located along the road. Access to the eastern portion of DRIVE's Industrial Complex is from Wall Street via Market Street. To access this portion of the industrial park, trucks must travel from Railroad Street to Wall Street. The existing configuration of the Railroad Street/Market Street intersection makes the turn difficult for trucks. The intersection is not wide enough, and trucks run over existing curbs. A post-consumer plastics recycler will be locating at the former Metso Minerals site in the eastern portion of the industrial complex. The company's project requires repaving the access road from Wall Street, relocating and expanding the railroad crossing to two lanes, constructing a new access road, raising the rail bridge over Sechler Run, drainage improvements, and constructing a new rail siding. State and local funds will be used to finance the project.[2] It is anticipated the project will generate 6 additional railcars per week.

[2] The Danville News. *$1M grant will go toward rail siding project*. April 3, 2019.

Multimodal Transportation

Multimodal transportation considerations identified during stakeholder outreach included improving public transportation options, ensuring safe and effective pedestrian and bicycle access, and increasing rail freight transportation. Recommendations will be required to improve and integrate multimodal transportation between all modes.

Public Transportation

Several public transportation pilot projects have been implemented and are being considered in the Danville area. Geisinger and several partners are working on three pilot projects to address patient and employee transportation. Supporting and monitoring each of the pilot projects will ensure improved public transportation throughout the region.

1. 5-County Fixed Route Pilot – Partnership between the Greater Susquehanna Valley United Way, PennDOT, Bucknell University, and Geisinger.

The 5-County Fixed Route Pilot aims to provide fixed route public transportation at major hubs in five counties (Columbia, Montour, Northumberland, Union, Snyder) for transportation to healthcare and jobs in a financially feasible way. Bucknell University conducted analysis to refine the proposed route planned to originate and terminate in Williamsport. Stops are anticipated in Lewisburg, Northumberland, Danville, Bloomsburg, Berwick, Selinsgrove, and Sunbury.

The fixed route pilot is focused on increasing mobility options for people with medical needs and disabilities, seniors, and the region's workforce. Additionally, the pilot focuses on reducing the number of shared ride trips for medical services and area employees by shifting to a fixed route system. The pilot will require willingness and flexibility from industry partners.

An application for pilot project funding will be submitted to PennDOT and according to the Greater Susquehanna Valley United Way an application submission date has not been determined.

2. Health and Wellness Pilot – Partnership between rabbittransit and Geisinger.

This 2-year patient focused pilot aims to improve overall patient health and wellness by reducing the number of missed medical appointments and emergency room visits for those lacking reliable transportation. The geographic scope of the project is within a 50-mile radius of Danville and a 25-mile radius of Scranton.

The pilot began in April 2018 and an additional year was added in 2019. An estimated 13,000 trips were completed in 2019. rabbittransit coordinates all logistics for patients including trips to medical appointments, pharmacy, and grocery stores.

To show the greatest return on investment (ROI), the pilot needs to positively impact the cost of health care by demonstrating improved health outcomes for participants.

3. Emergency Transportation Pilot – Geisinger

This Geisinger led pilot is for individuals who do not have transportation home after hospital and emergency room visits. Geisinger's overall goal is to decrease the length of patient hospital stay for those patients who do not have transportation by providing transportation home.

Pedestrian/Bicycle Access

Stakeholders identified several locations within the study area requiring pedestrian and bicycle access improvements as well as existing studies or efforts to improve pedestrian access. Implementing pedestrian and bicycle connections will improve safety and amenities. Coordinating pedestrian and bicycle projects with Montour Area Recreation Commission (MARC) and other partners will make certain safety access is considered as part of the overall transportation network.

- Pedestrian Improvements Identified/Underway
    - US 11/PA 54: Safe pedestrian crossing at the US 11/PA 54 intersection should be addressed.
    - Danville Primary School/Danville Area High School: Sidewalks are needed near Danville Primary School and Danville Area High School; specifically, Gulick's Addition and the Highlands.
    - Bloom Road bicycle/pedestrian project: Geisinger partnered with Mahoning Township on a Pennsylvania Redevelopment and Capital Assistance Program (RACP) grant for bicycle/pedestrian access along Bloom Road.
    - 2012 Danville Riverfront Plan Projects: Trail connections in Danville include the North Branch Canal Trail Connections from Catawissa to Danville and the Monkey Drift Trail along the Montour Street corridor.
- Existing Studies/Initiatives
    - Danville Business Alliance Design Committee Pedestrian Initiative: The Danville Business Alliance Design Committee recently began working on an initiative to improve pedestrian access and safety between downtown Danville and Geisinger Hospital, and pedestrian connections and safety from Hess Field and Danville Middle School to downtown Danville. MARC is a partner working with the committee to identify the safest routes.
    - Geisinger Crosswalk Evaluation: Geisinger completed a Crosswalk Evaluation in 2010 which included recommendations to improve safe passage of employees and visitors at Geisinger's main campus.
    - 2012 Danville Riverfront Plan: MARC through the 2012 Danville Riverfront Plan has prioritized projects in Danville Borough as noted above. As part of the North Branch Canal Trail, a funding application has been submitted for the River Road segment (1.15 miles on River Road on land owned by Montour County). Danville Borough is working with Livic Civil on a levee flood protection project and MARC has been working with local officials to incorporate pedestrian access, if feasible.
    - Danville Master Plan Phase II: The Danville Master Plan Phase II 2009 revitalization study completed by Penn State addresses pedestrian access along the Mill Street Corridor.

Increasing Rail Freight Activity

New at-grade signal crossings along Wall Street near Franklin Street to accommodate industrial growth will facilitate rail access at the eastern portion of DRIVE's industrial complex. The rail infrastructure improvements will result in additional economic growth and tax base increases for Danville Borough.

The industrial activity will increase the number of rail cars traversing Danville which could in turn impact vehicular and pedestrian transportation at-grade crossings in Danville including the US 11/PA 54 intersection and Wall Street near Franklin Street. Rail crossings south of the river in Riverside Borough also impact vehicular traffic

flow. According to stakeholders interviewed, rail traffic will often cause vehicular traffic backups to Boyd Station on PA 54.

Coordinating increased rail activity with railroads including Norfolk Southern and North Shore Railroad/SEDA-COG Joint Rail Authority, DRIVE, and municipalities will ensure railroad activity is efficiently considered as part of the overall transportation network.

Land Use & Development

Development is planned and anticipated in several locations throughout the study area. This new development will increase traffic on the local road network and in some cases necessitate transportation improvements. Proactive transportation planning solutions are required to mitigate land use impacts.

Beyond the future growth and land development projects anticipated by traffic generators such as Geisinger and DASD as discussed above, the region's major tourism driver, Knoebels Amusement Resort, also generates seasonal traffic that should be monitored in the future.

Anticipated/Planned Development

The following land development projects or zoning changes were identified through stakeholder outreach. As land development projects are implemented, the Danville area's transportation network will be impacted. The list of anticipated/planned developments are listed in **Table 8**.

Table 8: Anticipated/Planned Developments

Municipality/Activity	Description/Potential Transportation Impact
Cooper Township ***US 11 Sewer Extension / Rezoning***	Cooper Township recently installed sewer on US 11 with property between Bloom Road and US 11 (Montour Boulevard) rezoned to Commercial-Highway (C-H). The rezoning will facilitate increased development intensity in this area over time. While Cooper Township has not yet received land development applications, there has been recent interest in constructing townhomes in the area.
Danville Borough ***DRIVE Industrial Complex***	The expansion of the DRIVE Industrial Complex along Railroad Street and Wall Street will result in increased truck and rail traffic in Danville Borough.
Danville Borough ***Residential Development***	New townhome development at corner of Alton Street & Franklin Streets will increase vehicular traffic near State Hospital Drive and Wall Street.
Danville Borough, Mahoning Township ***Future DASD Planning***	DASD will potentially relocate both Liberty Valley Intermediate School and Danville Middle School to the Ironmen Lane campus. In addition potential building modifications or a new building are planned near the Primary School. Consolidation of schools at this location will impact vehicular access to US 11 and State Hospital Drive (owned by Danville State Hospital).
Mahoning Township ***Residential Development***	139 new apartments will be constructed along Bloom Road between Prosseda Drive and Mahoning Terrace Apartments. This new development will increase vehicular traffic along Bloom Road as well as Woodbine Lane.
Mahoning Township	Future Geisinger development along Woodbine Lane will add increased vehicular traffic to the local road network.

Municipality/Activity	Description/Potential Transportation Impact
Woodbine Lane Development	
Mahoning Township ***Potential Rezoning***	Potential to rezone property south of the US 11/Woodbine Lane intersection from Agricultural/Forest (A/F). Future development is dependent on developer interest and would require coordination with MARC regarding minimizing impact to Hopewell Park.
Mahoning Township ***Frosty Valley Resort Renovations***	An anticipated renovation and expansion of Frosty Valley Resort located along Bloom Road could impact the local transportation network near Woodbine Lane.
Mahoning Township ***Geisinger Main Campus Development***	Geisinger is planning for new building/redevelopment on existing campus as part of long-range plan. There is a need for increased parking. Development could potentially be accommodated vertically.
Valley Township ***Development Potential: I-80/PA 54***	Valley Township has contemplated zoning changes surrounding the I-80 interchange in an effort to revitalize the interchange area and promote economic development. Sewer line installation will facilitate development.
Valley Township ***Development Potential: PA 642/PA 54***	A commercial development overlay zone has been approved for a 130-acre parcel along PA 642 near PA 54. Future development will increase vehicular transportation on the surrounding road network.

Access Management Plan: US 11 and PA 54 Corridors

Collectively, the land development and land use changes identified above will impact the US 11 and PA 54 corridors. To ensure that new development is coordinated effectively, an access management plan for the US 11 and PA 54 corridors is recommended. Such plans will consider effective ingress and egress from both roadways and efficient spacing and design to ensure the functional integrity of the road network is maintained and enhanced.

As part of each roadway's access management plan, specific recommendations should consider the implications of the development noted above and future development to be determined. Anticipated recommendations would include items such as:

- Adopt Official Maps – Encourage municipalities to adopt an official map to designate future corridors for public improvements.
- Coordination with DASD - Coordinate with DASD not only on planned building expansions but on future reuse of for vacated facilities.

Tourism

Knoebels Amusement Resort in Ralpho Township, Northumberland County is a significant tourism draw for the region. Knoebels works with Ralpho Township police to mitigate traffic congestion on PA 487; however, during summer months and especially during October's annual Covered Bridge Festival, residents in communities on both sides of the Danville River Bridge experience increased traffic congestion from visitors heading to/from Knoebels.

Tourists use regional roads from all directions to access PA 487 and visit the amusement park and campground, travelling the easiest route possible to the park. Both visitors and Knoebels employees have accessed the park from PA 487 on foot and by bicycle. Addressing pedestrian and bicycle access along PA 487 from Knoebels west to Elysburg would be beneficial.

Some visitors exit I-80 and travel back roads through Catawissa Borough to access the park. Catawissa Borough officials report that the routine use of GPS has led to visitors travelling alternate, low volume back roads that do not typically experience much traffic.

Re-signalization at the intersection of PA 487/PA 54 in Elysburg is anticipated to be complete in 2020 and is intended to address some of the concerns noted above. The project will include a dedicated left turn lane on PA 487 westbound from Knoebels, an adaptive signal, and pedestrian crossing apparatus. Upon completion, all directions at the intersection will have a dedicated left turn lane. Monitoring the impact of this improvement in the future will help determine if additional transportation improvements are warranted.

Environmental/Hazard Planning

Hazards such as floods and rockslides/subsidence were identified during the study's stakeholder outreach process. Locations identified included those listed in **Table 9**.

Table 9: Environmental Hazards

Municipality	Location/Description
Flooding	
Catawissa Township	Flooding at the PA 42/PA 487 Intersection impacting area travel
Danville Borough	Significant rainfall events cause flooding on US 11, Railroad Street, and East Market Street. This leaves Danville Borough landlocked from a transportation perspective.
Derry Township (Washingtonville)	Flooding at the intersection of PA 54/SR 254 has caused multi-day impacts affecting manufacturing plant operations. Montour County is working on home buyouts near the intersection.
Mahoning Township	Flooding at the Bloom Road/Academy Avenue intersection impacts the primary entrance to Geisinger.
Mahoning Township	Flooding at the Bloom Road/Woodbine Lane/Kaseville Road intersection is an ongoing issue during periods of heavy rain, resulting in road detours.
Mahoning Township	Residential properties adjacent to Red Lane have had poor stormwater management leading to flooding.
Rockslides/Subsidence	
Mahoning Township	Rockslides on US 11 west of Danville Borough.
Mahoning Township	Bald Top Road closed due to road subsidence caused by severe storm event and steep slopes.
Rush Township	Rockslides on PA 54 south of Riverside Borough.

Flood events in 2018 have prompted the authorization of flood mitigation funding that could potentially address flooding in Washingtonville and flooding that occurs at Geisinger's main campus front entrance.

Based on a telephone discussion with SEDA-COG's Director of Housing Rehabilitation and Flood Resiliency, the Federal Emergency Management Agency (FEMA) declared a Major Disaster Declaration on November 27, 2018 for severe storms and flooding in specified Pennsylvania counties between August 10, 2018 to August 15, 2018 (DR-4408). Both Columbia and Montour counties are referenced in the disaster recovery declaration. In September 2019, the U.S. Economic Development Administration (EDA) announced a Notice of Funding Availability (NOFA) under the Additional Supplemental Appropriations for Disaster Relief Act, 2019 (Public Law 116-20). As part of this act, EDA will award $587M in grants to communities experiencing economic distress or economic harm resulting from several identified disasters including flooding in Pennsylvania communities. This disaster supplemental funding might be potentially available to address flooding at the Geisinger main entrance at the intersection of Bloom Street and Academy Avenue.

Providing a summary of study findings pertaining to flooding, rockslides, and subsidence to Montour County's Emergency Management Agency (EMA) will be beneficial for the county's Hazard Mitigation Plan annual update. This will demonstrate the coordination and integration of planning documents to both the Federal Emergency Management Agency (FEMA) and Pennsylvania Emergency Management Agency (PEMA) and help provide a justification for future hazard mitigation funding requests.

Traffic Operations

As stated previously under "Street Network Connectivity", Danville Borough experiences high travel demand and generates capacity issues during the morning and evening peak hours. Another issue that results from this high demand is the need to improve traffic operations through maximizing the efficiency of the existing street network.

Traffic Control Improvements

Currently vehicles are experiencing increased delay while proceeding through intersections within the Borough. There are nine signalized intersections located within Danville Borough and two signalized intersections within Mahoning Township. Along the PA 54 corridor there are three signalized intersections between US 11 and Front Street, while seven exist along the US 11 corridor between PA 54 and Woodbine Lane.

Along US 11 there are three signalized intersections (US 11 & PA 54, US 11 & Mill Street (SR 2054), US 11 & Bloom Street (SR 2010)/Ferry Street) located within 750 feet of one another. Due to the high demand during peak hours and little vehicle storage space between intersection, queue stacking occurs where upstream vehicles are unable to proceed through an intersection due to vehicle queuing at a downstream intersection. This produces a stacking effect where vehicles are stuck in between intersections due to improper signal timings and short storage areas. As there are numerous signalized intersections located within Danville Borough and Mahoning Township, all signal timings need to be improved and in coordination with one another to improve traffic operations.

All signalized intersections within Danville Borough and Mahoning Township have recently undergone or are in the process of undergoing signal improvements in an effort to increase capacity and reduce delay.

In addition to signal improvements being done in Danville Borough and Mahoning Township, additional intersections in the study area are in need of improvements, which include the following:

- PA 54/PA 642 Intersection: Located in Valley Township just north of Danville Borough, this stop-controlled intersection has a severe crash history as a result of vehicles turning from PA 642 onto PA 54 without sufficient clearance, resulting in 27 crashes over a 5-year period, including one fatal crash. Improvements are being made at this intersection through MPMS Project #103853, which will enhance the safety at this intersection. Additional information on this concern is provided in **Appendix C**, Location 8 (PA 54/PA 642 Intersections).
- PA 54/PA 487 Intersection: Located in Ralpho Township, this intersection in Elysburg is a highly utilized intersection for commuters traveling to the north and west, and serves as an important route for tourists traveling to/from Knoebels. The intersection serves as a crossroads for commuters, creating heavy turning movements along all approaches, which causes additional vehicle delay. Congestion at this intersection increases even more when Knoebels is in operation. Additional information on this concern is provided in **Appendix C**, Location 11 (PA 54/PA 487 Intersection).
- PA 42/PA 487 Intersection: Located in Catawissa Township, this stop-controlled intersection is highly utilized intersection and has poor geometry and sight distance issues, particularly along the PA 487 approach, and results in numerous crashes. The stop-controlled approach of PA 487 becomes even more congested during the warmer months as a result of Knoebels traffic. Flooding is also an issue at this intersection due to the presence of nearby creeks/streams. Additional information at this location is provided in **Appendix C**, Location 12 (PA 42/PA 487 Intersection).

Intersection Geometric Improvements

The following intersections require geometric improvements to improve congestion and reduce delay:

- US 11/Woodbine Lane: During the morning and evening peak hours congestion issues are present at the intersection of US 11 and Woodbine Lane (T-372) as vehicles access the Geisinger's Woodbine Lane Clinic and Sheetz gas station. Additional information is provided in **Appendix C**, Location 3 (US 11/Woodbine Lane Intersection).
- US 11/State Hospital Drive: The intersection of US 11 and State Hospital Drive experiences heavy through movements during the morning and evening time periods, leaving little time for vehicles along State Hospital Drive to make turns. As a result, vehicles along the northbound State Hospital Drive approach experience longer queue times and increased delay. Additional information is provided in **Appendix C**, Location 5 (US 11/State Hospital Drive Intersection).
- PA 54/Spruce Street: Frequent left-turns are made onto/from PA 54 for Geisinger traffic and Weis Markets. Additional information is provided in **Appendix C**, Location 7 (PA 54 between Montour Street and Spruce Street).

Traffic Calming

A primarily residential area, the Montour Street corridor has seen an increase in the number of vehicles as a result of the new Geisinger medical facility located west of Montour Street and vehicles using the route as a

detour for the PA 54 & US 11 intersection. The corridor was not meant to handle the current level of traffic. Additional information is provided in **Appendix C**, Location 9 (Montour Street Corridor).

The Spruce Street/Red Lane corridor between PA 54 and Red Oak Drive is a local road that experiences high levels of congestion during the morning and evening peak hours as a result of commuters accessing the Geisinger medical facilities via the Red Lane rear entrance. Commuters use this route to avoid US 11 and the US 11 & PA 54 intersection. High travel speeds have been reported at this location and high pedestrian activity is present at marked crosswalks near the Geisinger rear entrance. Motorists often do not yield to the pedestrians. Additional information is provided in **Appendix C**, Location 10 (Spruce Street/Red Lane between PA 54 and Red Oak Drive).

Pedestrian Crossings

In addition to traffic concerns along the Montour Street corridor there are pedestrian/bicycle issues as a result of multiple trails being located in the area. Currently no trail markers exist in the area and trail connections are needed to connect the existing sidewalk infrastructure to the trails. Sidewalk and pedestrian markings are needed near the Montour Street bridge over Mahoning Creek and along Meadow Lane to Hess Park. Additional information is provided in **Appendix C**, Location 9 (Montour Street Corridor).

Roundabout Conversion

The intersection of PA 54 and PA 487 in Ralpho Township is a highly utilized intersection for commuters traveling to the north and west, and serves as an important route for tourists traveling to/from Knoebels. The intersection serves as a crossroads for commuters, creating heavy turning movements along all approaches, which causes additional vehicle delay. Congestion at this intersection increases even more when Knoebels is in operation. Additional information is provided in **Appendix C**, Location 11 (PA 54/PA 487 Intersection).

The intersection of Kaseville Road and Red Lane is a two-way stop-controlled intersection along Red Lane that has a crash history of angle crashes as a result of vehicles turning from Red Lane onto Kaseville Road. The intersection also receives additional traffic during the peak hours as a result of vehicles destined to/from the Geisinger medical facilities, which is expected to increase as Geisinger increases in size. Additional information is provided in **Appendix C**, Location 17 (Red Lane/Kaseville Road Intersection).

Sight Distance Issues

The intersections of Bloom Road (SR 2008) & Woodbine Lane (T-372) and Bloom Road (SR 2008) & Kaseville Road (SR 2005) have both had safety issues in the past involving vehicles proceeding without clearance through the intersections. The two all-way stop-controlled intersections are closely spaced and do not create an efficient movement along Bloom Road (SR 2008). Improvements have been made and reduced these issues, but the roadway can be unreliable, as this area experiences frequent flooding that pushes traffic onto the nearby residential roads. Additional information is provided in **Appendix C**, Location 13 (Bloom Road/Woodbine Lane & Kaseville Road Intersections).

The intersection of Kaseville Road and Red Lane has a crash history as the result of poor sight distance along Red Lane looking to the north along Kaseville Road. The sight distance issues are caused by road geometry and vegetation growing close to the edge of the road. Additional information is provided in **Appendix C**, Location 17 (Red Lane/Kaseville Road Intersection).

Road Segment Widening

The Wall Street and State Hospital Drive corridor in Danville Borough/Mahoning Township is comprised with locally-owned residential road segment but operates as an alternative commuter route during the peak hours for vehicles entering/exiting the area. The corridor was not designed to handle the heavy traffic it is currently experiencing, with inadequate road widths. The study area has a need for additional routes into/out of the Borough during the peak commute times. Additional information is provided in **Appendix C**, Location 15 (Wall Street and State Hospital Drive Corridor).

Interstate Traffic Detours

Two colored detours run through the study area. The blue detour diverts eastbound Interstate 80 traffic off Exit 224 to PA 54 East and US 11 North through Danville Borough and Mahoning Township to PA 42 and Interstate 80 Exit 232. The red detour diverts westbound Interstate 80 traffic from Exit 232 to Exit 224 via the same route as the blue detour, except opposing directions.

Traffic incidents or construction on the area's interstates require travelers to find alternate routes. When I-80 is closed, traffic is detoured and, depending on the mile marker, traffic is routed off I-80 and south through Danville via US 11 and PA 54. While not a daily occurrence, stressed intersections need to filter additional traffic when incidents occur on the region's interstate highways.

Railroad Crossings

Norfolk Southern (NS) owns and operates a Class 1 rail-line located across the Susquehanna River in Riverside Borough that intersects PA 54 at the PA 54/D&H Avenue & Sunbury Road (SR 4001) intersection. Trains pass through the crossing approximately 5-6 times per day, causing vehicle delays throughout the day and impacting adjacent signals located upstream.

North Shore Railroad Company (NSRC) owns and operates a short line rail-line in Danville Borough that intersects the US 11/PA 54 intersection. Although trains pass through the crossing approximately once per day, the delays caused by the train severely impact the ability of vehicles to travel throughout the Borough.

Transportation Recommendations

The Greater Danville area has been a significant center for growth within the SEDA-COG region, as well as within PennDOT District 3-0. Danville Borough and surrounding Mahoning Township together constitute one of the largest employment centers within the region, offering a wide range of employment opportunities, chief of which include a major medical facility in Geisinger Medical Center, which currently employs 5,000 workers and receives even more in the way of patients and suppliers.

The area's physiography has constrained the Borough's development patterns. Natural features, such as the North Branch of the Susquehanna River and Montour Ridge, have shaped how the community has developed and evolved over time. The built environment too has introduced its own development constraints, including railroads (Class 1 NS and short line NSRC) and a roadway network that features narrow lane widths that can constrict the flow of traffic. The study area's roadway network is also characterized by a lack of redundancy, which contributes to congestion and poor network reliability.

The area's most significant employer and traffic generator –Geisinger Medical Center – is accessed largely by local streets, away from the state roadway network. This has introduced traffic patterns and volumes on locally-owned roadways that were not designed to accommodate the level of traffic presently being experienced. Future development by public entities such as the planned relocation of a middle school will create additional major traffic generators on the borough's eastern side.

The Borough and its partners at SEDA-COG and PennDOT District 3-0 identified specific locations to be evaluated. While the study seeks to advance recommendations for each of these locations, there are also broader cross-cutting recommendations aimed at improving the safety and performance of each.

This section of the report offers a range of recommendation types based on the transportation concerns described in the previous section, including:

- Street Network Connectivity
- Multimodal Transportation
- Land Use, Development, and Transportation Funding
- Traffic Operations

Street Network Connectivity

Table 10 describes the recommended actions for the street network connectivity-related transportation concerns, as well as providing a brief description and the responsible entity and support partners for moving the recommendation forward.

Table 10: Street Network Connectivity (SC) Recommendations

Recommendation		Description	Responsible Entity (Support Partners)
SC-1	Wayfinding Signage Improvements	Improve wayfinding signage at the US 11/Bloom Street/Ferry Street intersection.	PennDOT (SEDA-COG, Danville Borough)
• *Location 1 (US 11 between Bloom Street and State Hospital Drive)* • *No wayfinding signage or lane direction pavement markings are provided at the US 11/Bloom Street/Ferry Street intersection to direct vehicles to US 11 or Bloom Street.* • *The addition of signage and pavement markings will better direct traffic through the intersection and improve safety.*			
SC-2	Roundabout Conversions	Convert the Front Street/Mill Street, Front Street/Railroad Street, Mill Street/Market Street, US 11/Railroad Street, and Market Street/Railroad Street intersections to roundabouts.	PennDOT (SEDA-COG, Danville Borough)
• *Building up the side streets would improve traffic flow entering and exiting the Borough.* • *The conversion of intersections to roundabouts will enhance safety and mobility through the corridor.* • *The conversion would draw additional vehicles through the corridor and avoid the PA 54/US 11 intersection.* • *Users would be able to access Geisinger Medical Center easier via the realigned Railroad Street and converting the existing signalized US 11/Railroad Street intersection to a roundabout.* • *See **Figure 19** for a sketch drawing.*			
SC-3	Road Extension/New Intersection	Extend Liberty Street to intersect US 11 near Danville High School.	PennDOT (SEDA-COG, Danville Borough, DASD)
• *Location 1 (US 11 between Bloom Street and State Hospital Drive)* • *The extension of Liberty Street to US 11 produces an additional access point for DASD and the surrounding residential area.* • *The intersection will be stop-controlled along the Liberty Street approach.*			
SC-4	Road Realignment	Realign Railroad Street to connect US 11 to Drexel Avenue.	PennDOT (SEDA-COG, Danville Borough, Mahoning Township)
• *Location 14 (Railroad Street between US 11 and Bloom Road)* • *The corridor is unsafe and has a crash history, due to the presence of a reverse curve located in front of St. Cyrils Academy.* • *The crash history showed instances of vehicles driving too fast for conditions, leading to the vehicles hitting fixed objects or causing same direction sideswipe crashes.* • *The recommendation would involve realigning Railroad Street prior to the existing reverse curve and intersect with Drexel Avenue and Bloom Road (SR 2008).* • *To create this connection, the intersection of Railroad Street/Drexel Avenue & Bloom Road would require signalization.* • *See **Figure 20** for a sketch drawing.*			
SC-5	New Geisinger Access/Alignment from PA 54	Design a rear entrance to Geisinger Medical Center via PA 54	SEDA-COG (PennDOT, Danville Borough, Geisinger)
• *The creation of an improved secondary entrance along PA 54 would decrease the number of commuter vehicles passing through Danville Borough and the US 11/PA 54 intersection.* • *The recommendation would involve constructing a new roadway from PA 54 to Red Lane, utilizing existing local roads and passing through the adjacent ridge.*			

Recommendation		Description	Responsible Entity (Support Partners)
SC-6	New River Bridge Construction	Conduct a feasibility study for the creation of a new Susquehanna River bridge upstream from the existing structure along PA 54.	SEDA-COG (PennDOT, Mahoning Township, Rush Township)
• *The new bridge would directly carry traffic from PA 54 to destinations in the growing eastern portion of the study area.* • *The bridge would span the river and provide a grade-separated crossing of the Norfolk Southern line that parallels the river.* • *The new alignment would attract motorists from eastern Danville Borough/Mahoning Township and reduce demand along the existing PA 54 river bridge, which currently experiences heavy queueing during the peak hours.* • *This new bridge would also reduce queuing through the downtown borough, as there is another entrance/exit point east of the borough.* • *See **Figure 21** for a sketch drawing.*			
SC-7	New I-80 Interchange	Conduct a feasibility study for constructing a new interchange on Interstate 80 and route traffic to Geisinger Medical Center from the north.	SEDA-COG (PennDOT, Mahoning Township, Valley Township)
• *Origin-destination mobile-source data could be acquired as part of the analysis as part of the study.* • *A Point of Access study would subsequently be required if such an interchange were found to be feasible.* • *Road widening and improvements would also be required along Kaseville Road (SR 2005) and Columbia Hill Road (SR 2007).* • *See **Figure 22** for a sketch drawing.*			

Figure 19: SC-2 Roundabout Conversions Conceptual Sketch

Figure 20: SC-4 Railroad Street Realignment Conceptual Sketch

Figure 21: SC-6 Susquehanna River Bridge Crossing Conceptual Sketch

Figure 22: SC-7 New I-80 Interchange Conceptual Sketch

Multimodal Transportation

Table 11 describes the recommended actions for the multimodal transportation-related transportation concerns, as well as providing a brief description and the responsible entity for implementation.

Table 11: Multimodal Transportation (MT) Recommendations

Recommendation		Description	Responsible Entity (Support Partners)
MT-1	Monitor the 5-County Fixed Route Pilot Project	Monitor the status of the 5-County Fixed Route pilot project and integrate outcomes into regional public transportation planning through community awareness and outreach.	SEDA-COG (PennDOT, River Valley Transit, Geisinger)
Notes: • *Continue to monitor the status of Geisinger's public transportation pilot projects. As pilot projects continue or transition to long-term transportation options, encourage outreach to improve community awareness about public transportation in the greater Danville area.* • *The area's concentration of jobs within the Geisinger Medical Center and its accessibility via locally-owned roadways raise the premium for alternative forms of transportation within the study area. The results of an ongoing pilot study should be monitored for its potential benefit to the study area in implementation.*			
MT-2	Plan for and implement pedestrian and bicycle improvements	Coordinate with area stakeholders to plan for and implement pedestrian and bicycle improvements identified in this report.	SEDA-COG (MARC, Danville Business Alliance Design Committee, local and county governments, Geisinger)
• *Location 9 (Montour Street Corridor)* • *The study area is registering greater demand for active transportation infrastructure.* • *Trail improvements are required to complete Monkey Drift Trail including sidewalks or pedestrian markings near the Montour Street bridge over Mahoning Creek and along Meadow Lane to Hess Park.*			
MT-3	Address Increasing Rail Freight Activity	Coordinate future multi-modal transportation improvements to accommodate increased truck and rail movements to /from DRIVE's industrial complex in Danville.	DRIVE (Norfolk Southern, NSHR/SEDA-COG JRA, Danville Borough)
Notes: • *Improve the Railroad Street/East Market Street intersection to improve truck turning movements.*			

Land Use, Development, and Transportation Funding

Table 12 describes the recommended actions for the land use, development, and transportation funding-related transportation concerns, as well as providing a brief description and the responsible entity for moving the recommendation forward.

Table 12: Land Use & Development (LD) Recommendations

Recommendation		Description	Responsible Entity (Support Partners)
LD-1	Access Management Plans	Prepare an access management plan for both US 11 and PA 54 to address anticipated development activity in the region.	SEDA-COG (Montour County, Northumberland County, local governments)
• *Stakeholders identified access management issues at multiple locations as a concern throughout the study area. Developing access management plans will promote safe and efficient use of the transportation network.* • *Access Management Plan recommendations could include strategies such as corridor access projects, enacting municipal ordinances to improve safety and capacity, and municipal adoption of official maps to reserve land for future transportation improvements.*			
LD-2	Consider Geisinger and DASD future planning and transportation needs	Meet annually with Geisinger and the DASD to discuss land development and associated transportation impacts.	SEDA-COG (Geisinger, PennDOT, local governments)
• *Facilitate the efficient and effective implementation of transportation improvements at DASD's Ironmen Campus as necessitated by future school district facility planning.* • *Coordinate with Danville Area School District (DASD), Danville Borough, Mahoning Township, and Danville State Hospital to facilitate the efficient and effective implementation of transportation improvements at DASD's Ironmen Campus as necessitated by future school district facility planning.*			
LD-3	Address local transportation needs through PennDOT Connects	Use the resources in place through PennDOT Connects to monitor and address local transportation needs associated with future land development activity.	PennDOT (SEDA-COG, local governments)
• *Planners should use the outcomes of the study process as part of future PennDOT Connects coordination meetings between the municipalities, MPO, and PennDOT District 3-0. This will help ensure that future projects are designed with community preferences in mind, and ultimately lead to better project scopes and budgets.*			
LD-4	Provide hazard mitigation information to Montour County's EMA	Provide a summary of study findings pertaining to flooding, rockslides, and subsidence to Montour County's EMA.	SEDA-COG (Montour County EMA)
• *Summary will help justify future hazard mitigation funding requests and should be included as part of Montour County's Hazard Mitigation Plan annual update. This will demonstrate plan integration to FEMA and PEMA.* • *Coordinate with federal officials to secure EDA Additional Supplemental Appropriations for Disaster Relief funding to address flooding at Geisinger's main entrance.*			
LD-5	Local Use Tax	Enact a local use tax to fund improvements to local roads and bridges.	Montour County
• *The passage of Act 89 of 2013 gave counties the option of levying a $5 fee as part of vehicle registration renewals.* • *The State collects the funds on behalf of the County, and distributes the revenue, which is to be used for funding improvements to local roads and bridges. Funds can be used for construction, reconstruction, maintenance, repair of and safety on public highways and bridges.* • *As of the writing of this study report, 23 counties statewide have enacted the fee. There are approximately 20,200 registered vehicles in the County, which could translate into $100,000 in additional funding annually for transportation.*			
LD-6	Adopt Municipal Transportation Funding Tools	Identify a transportation funding mechanism(s) to fund transportation improvements	Danville Borough; Mahoning Township
• *Under this financing mechanism, property owner abatements are voluntarily applied toward property owner assessments as part of the Transportation Development Districts (TDD) and used to fund transportation improvements in the established TDD.* • *Other, similar tools that could be explored include: Transportation Impact Fees, Tax Increment Financing (TIF), or use of the Pennsylvania Infrastructure Bank (PIB).*			

Traffic Operations

Table 13 describes the recommended actions for the traffic operations-related transportation concerns, as well as providing a brief description and the responsible entity for moving the recommendation forward.

Table 13: Traffic Operations (TO) Recommendations

Recommendation		Description	Responsible Entity (Support Partners)
TO-1	Signal Monitoring	Monitor all intersections in Danville Borough and Mahoning Township following the implementation of improved signal timings.	Municipalities (PennDOT, SEDA-COG)
• *Following the implementation of additional recommendations, study and adjust, if necessary, the signal timings to increase capacity during the peak hours.*			
TO-2	Intersection Geometric Improvements	At the US 11/Woodbine Lane intersection construct dual turn lanes along both US 11 approaches and dual receiving lanes along Woodbine Lane.	PennDOT (SEDA-COG, Mahoning Township)
• *Location 3 (US 11/Woodbine Lane Intersection)* • *The additional lanes at the intersection will increase capacity during the peak hours.*			
TO-3	Intersection Geometric Improvements	At the US 11/State Hospital Drive intersection construct left and right-turn lanes along the State Hospital Drive approach.	PennDOT (SEDA-COG, Danville Borough)
• *Location 5 (US 11/State Hospital Drive Intersection)* • *The need for turn lanes along State Hospital Drive assumes the anticipated growth of DASD and moving the schools to the Ironmen Lane campus.*			
TO-4	Intersection Geometric Improvements	Extend the southbound PA 54 left-turn lanes at Ferry Street and Spruce Street.	PennDOT (SEDA-COG, Danville Borough)
• *Location 7 (PA 54 between Montour Street and Spruce Street)* • *Extending the left-turn lanes at these two intersections will accommodate additional vehicles accessing Geisinger Medical Center and nearby local businesses.*			
TO-5	Intersection Monitoring	Monitor the PA 54/PA 642 intersections following completion of MPMS Project #103853.	PennDOT (SEDA-COG, Valley Township)
• *Location 8 (PA 54/PA 642 Intersections)* • *The project will realign the PA 642 approaches and enhance safety.* • *Construction is expected to start in 2022 with anticipated construction completion in 2024.*			
TO-6	Traffic Calming	Implement speed humps along Beaver Pl.	Danville Borough
• *Location 9 (Montour Street Corridor)* • *Implementing the speed humps will reduce speeding and PA 54 cut-through traffic along the residential areas.*			
TO-7	Pedestrian Crossings	Improve signage/sidewalk connections along the Montour Street corridor.	PennDOT (SEDA-COG, Danville Borough)
• *Location 9 (Montour Street Corridor)* • *No trail signage is present along Montour Street.* • *The improvements will accommodate pedestrians and bicyclists utilizing the multiple trails in the area.*			
TO-8	Traffic Calming	Implement speed humps along Spruce Street and Red Lane to reduce speeding along the corridor.	Danville Borough, Mahoning Township
• *Location 10 (Spruce Street/Red Lane between PA 54 & Red Oak Drive)* • *Implementation of speed humps will reduce speeding along the corridor for Geisinger-related traffic.*			
TO-9	Traffic Calming	Implement rectangular rapid flash beacons (RRFBs) at pedestrian crossing locations along Spruce Street and Red Lane.	Danville Borough, Mahoning Township
• *Location 10 (Spruce Street/Red Lane between PA 54 & Red Oak Drive)*			

	Recommendation	Description	Responsible Entity (Support Partners)
• *Implement the RRFBs at marked crosswalks along Red Lane (including at the intersection of Academy Avenue and parking lot entrances).* • *The RRFBS will increase safety and encourage motorists to yield to pedestrians.*			
TO-10	Intersection Monitoring	Consult with Ralpho Township and Knoebels one year after PA 54/PA 487 intersection improvements are complete.	PennDOT, Ralpho Township (SEDA-COG, Catawissa Borough, Knoebels)
• *Location 11 (PA 54/PA 487 Intersection)* • *An adaptive signal and pedestrian crossing apparatus are to be installed, along with a dedicated left-turn lane on PA 487 WB from Knoebels.* • *Re-signalization at the intersection is in final PennDOT design, with anticipated construction in 2020.* • *Assess improvement effectiveness to address seasonal traffic and the need for additional intersection improvements in the future.*			
TO-11	Roundabout Conversion	PA 54/PA 487 Intersection	PennDOT (SEDA-COG, Ralpho Township)
• *Location 11 (PA 54/PA 487 Intersection)* • *If additional intersection improvements at the PA 54/PA 487 intersection are required, consider converting the signalized intersection to a roundabout to allow for consistent traffic flow and enhanced safety.*			
TO-12	Signalized Intersection	Signalize the PA 42/PA 487 intersection.	PennDOT (SEDA-COG, Catawissa Township)
• *Location 12 (PA 42/PA 487 Intersection)* • *Signalizing the intersection will improve safety and turning movements along PA 487.* • *Existing conditions at the intersection meet the signal warrant conditions for Warrant 1, Eight-Hour Vehicular Volume, Warrant 2, Four-Hour Vehicular Volume, and Warrant 3, Peak Hour.*			
TO-13	ROW Acquisition/Demolition	Acquire the northwest property at the Kaseville Road/Bloom Road intersection and demolish it to improve sight distance at the intersection and improve safety.	PennDOT (SEDA-COG, Mahoning Township)
• *Location 13 (Bloom Road/Woodbine Lane & Kaseville Road Intersections)* • *Acquiring the property and demolishing the building will improve sight distance at the intersection and improve safety.*			
TO-14	Road Segment Widening	Coordinate with Danville State Hospital to widen State Hospital Drive.	PennDOT (SEDA-COG, Danville Borough, Mahoning Township, Danville State Hospital)
• *Location 15 (Wall Street and State Hospital Drive Corridor)* • *Widening will make it easier for vehicles utilizing the roadway that are entering/exiting Danville Borough.* • *With additional development as a result of DASD and DRIVE Industrial Complex, demand on State Hospital Drive will increase.*			
TO-15	Sight Distance Improvements	Perform selective tree-trimming along the approaches to increase sight distance along the eastbound and westbound Red Lane approaches.	PennDOT (SEDA-COG, Mahoning Township)
• *Location 17 (Red Lane/Kaseville Road Intersection)* • *Sight Distance issues exist for vehicles turning from Red Lane due to road geometry and plant overgrowth.* • *The intersection has a crash history as a result of vehicles proceeding through the intersection without clearance.*			
TO-16	Roundabout Conversion	Convert the Kaseville Road/Red Lane two-way stop-controlled intersection to a roundabout.	PennDOT (SEDA-COG, Mahoning Township)
• *Location 17 (Red Lane/Kaseville Road Intersection)* • *Monitor the intersection following tree-trimming and if crashes persist, consider converting the intersection from stop-controlled to a roundabout.*			

Implementation

An implementation complexity matrix, **Table 14**, was developed to provide weighting information for each recommendation. In this way, the recommendations can be compared against one another to summarize the relative complexity of each to help determine and prioritize which improvements should be pursued, and determine which can be considered short-term, medium-term, long-term, and ongoing projects.

Table 14: Implementation Complexity Matrix

Recommendation	Description	Cost	Complexity					Horizon
			ROW Impacts	Utility Impacts	Construction Impacts	Structure Impacts	Traffic Control	
SC-1	US 11 Wayfinding Signage Improvements	$$	1	0	1	0	2	Short-Term
TO-6	Beaver Place Traffic Calming	$$	0	0	2	0	1	Short-Term
TO-8	Spruce Street/Red Lane Traffic Calming (Speed Humps)	$$	0	0	2	0	1	Short-Term
TO-9	Spruce Street/Red Lane Traffic Calming (RRFBs)	$$	0	1	3	0	3	Short-Term
TO-13	Kaseville Road/Bloom Road ROW Acquisition/Demolition	$$	5	1	0	0	0	Short-Term
TO-15	Kaseville Road Sight Distance Improvements	$	1	1	0	0	0	Short-Term
SC-3	Liberty Street Road Extension	$$$$	4	1	4	1	3	Medium-Term
TO-7	Montour Street Pedestrian Crossings	$$	1	0	2	0	3	Medium-Term
TO-10	PA 54/PA 487 Intersection Monitoring	$	0	0	0	0	0	Medium-Term
SC-5	New Geisinger Access/Alignment from PA 54	$$$$	5	5	5	5	4	Long-Term
SC-2	Danville Borough Roundabout Conversions	$$$$	3	2	5	3	4	Long-Term
SC-4	Railroad Street Road Realignment	$$$$	5	4	4	5	5	Long-Term
SC-6	New River Bridge Construction	$$$$$	5	5	5	5	5	Long-Term
SC-7	New I-80 Interchange	$$$$$	5	5	5	5	5	Long-Term
TO-2	US 11/Woodbine Lane Intersection Geometric Improvements	$$$$	3	3	4	5	4	Long-Term
TO-3	US 11/ State Hospital Drive Intersection Geometric Improvements	$$$	3	2	3	2	3	Long-Term
TO-4	PA 54 Intersection Geometric Improvements	$$$	1	0	2	1	3	Long-Term
TO-11	PA 54/PA 487 Roundabout Conversion	$$$	3	1	4	1	4	Long-Term
TO-12	PA 42/PA 487 Signalized Intersection	$$$	2	3	3	2	5	Long-Term
TO-14	State Hospital Drive Road Segment Widening	$	4	3	4	3	3	Long-Term
TO-16	Kaseville Road/Red Lane Roundabout Conversion	$$$	3	2	4	1	4	Long-Term
MT-1	Monitor the 5-County Fixed Route Pilot Project	$$	0	0	0	0	0	Ongoing
MT-2	Plan for and implement pedestrian and bicycle improvements	$$	0	0	0	0	0	Ongoing
MT-3	Address Increasing Rail Freight Activity	$$	0	0	0	0	0	Ongoing
TO-1	Danville Borough/Mahoning Township Signal Monitoring	$$	0	0	0	0	4	Ongoing
TO-5	PA 54/PA 642 Intersection Monitoring	$$	0	0	0	0	3	Ongoing
LD-1	Access Management Plans	$	0	0	0	0	0	Ongoing
LD-2	Consider Geisinger and DASD future planning and transportation needs	$	0	0	0	0	0	Ongoing
LD-3	Address local transportation needs through PennDOT Connects	$	0	0	0	0	0	Ongoing
LD-4	Provide hazard mitigation information to Montour County's EMA	$	0	0	0	0	0	Ongoing
LD-5	Adopt a Local Use Fee	$	0	0	0	0	0	Ongoing
LD-6	Adopt Municipal Transportation Funding Tools	$	0	0	0	0	0	Ongoing

Complexity

- Rated 0 – 5: 0 = not complex, 5 = very complex

Design and Construction Complexity Factors

- **ROW Impacts**: ROW research, acquisition, and construction easements
- **Utility Impacts**: Utility conflict identification, coordination, and relocation
- **Construction Impacts**: Grading, cut, fill, drainage, swales, pipes, inlets, curb, subbase, pavement, shoulder construction, guiderail, retaining walls
- **Structure Impacts**: Bridge construction or widening, culvert construction, or widening
- **Traffic Control**: Signing, pavement marking, delineators, raised pavement markers, traffic signals

Legend for Estimated Costs: Construction Costs (Design Costs as a Percentage of Construction)

$: < $250K (75%)
$$: Between $250K and $500K (75%)
$$$: Between $500K and $1M (60%)
$$$$: Between $1M and $5M (25%)
$$$$$: > $5M (15%)

Based on the recommendations developed from the identified transportation issues, **Table 15** provides the next steps of action to take each recommendation, with **Table 16** providing the potential funding source code numbers. The Cost column values are the same as those represented on the previous page.

Table 15: Recommendation Project Next Steps

Project	Recommendation	Action Milestone	Cost	Responsibility (Support Partners)	Potential Funding Sources
US 11 Wayfinding Signage Improvements	**SC-1**	Design and plan for the implementation of signing and pavement markings.	$$	PennDOT (SEDA-COG, Danville Borough)	2
Danville Borough Roundabout Conversions	**SC-2**	Conduct a feasibility study for the conversion of Danville Borough intersections to roundabouts.	$$$$	PennDOT (SEDA-COG, Danville Borough)	6, 7
Liberty Street Road Extension	**SC-3**	Conduct a Point of Access study for the extension of Liberty Street to intersect with US 11.	$$$$	PennDOT (SEDA-COG, Danville Borough, DASD)	6, 7
Railroad Street Road Realignment	**SC-4**	Conduct a feasibility study for the realignment of Railroad Street.	$$$$	PennDOT (SEDA-COG, Danville Borough, Mahoning Township)	6, 7
New River Bridge Construction	**SC-5**	Add this as an "eligible but unfunded" project to the out years of the update of the MPO's LRTP for future study.	$	SEDA-COG (PennDOT, Mahoning Township, Rush Township)	n/a
New I-80 Interchange	**SC-6**	Add this as an "eligible but unfunded" project to the out years of the update of the MPO's LRTP for future study.	$	SEDA-COG (PennDOT, Mahoning Township, Valley Township)	n/a
Geisinger Access on New Alignment from PA 54	**SC-7**	Solicit SEDA-COG to add as a candidate project on the LRTP.	$$$$	SEDA-COG (PennDOT, Danville Borough, Geisinger)	7, 10
Monitor the 5-County Fixed Route Pilot Project	**MT-1**	Monitor for potential additions/changes to the MPO Local Coordinated Plan and/or Transit TIP.	$	SEDA-COG (PennDOT, River Valley Transit, Geisinger)	n/a
Plan for and implement pedestrian and bicycle improvements	**MT-2**	Meet with area stakeholders to brief on DATS recommendations and develop an approach for pedestrian/bicycle improvements.	$	SEDA-COG (MARC, Danville Business Alliance Design Committee, local and county governments, Geisinger)	n/a
Plan for and implement pedestrian and bicycle improvements	**TO-7**	Complete Monkey Drift Trail connections near the Montour Street bridge.	$$	PennDOT (SEDA-COG, Danville Borough)	3, 6, 7, 9
Address Increasing Rail Freight Activity	**MT-3**	Monitor future multi-modal transportation improvements and reach out to coordinate efforts.	$	DRIVE (Norfolk Southern, NSHR/SEDA-COG JRA, Danville Borough)	6, 7, 11, 15, 16, 17
Access Management Plans	**LD-1**	Prepare an access management plan for both US 11 and PA 54 to address anticipated development activity in the region.	$	SEDA-COG (Montour County, Northumberland County, local governments)	8, 12
Consider Geisinger and DASD future planning and transportation needs	**LD-2**	Meet annually with Geisinger and the DASD to discuss land development and associated transportation impacts.	$	SEDA-COG (Geisinger, PennDOT, local governments)	n/a
Address local transportation needs through PennDOT Connects	**LD-3**	Reference the outcomes of this study at future PennDOT Connects coordination meetings.	$	PennDOT (SEDA-COG, local governments)	n/a
Provide hazard mitigation information to Montour County's EMA	**LD-4**	Provide a summary of study findings pertaining to flooding, rockslides, and subsidence to Montour County's EMA.	$	SEDA-COG (Montour County EMA)	n/a
Adopt a Local Use Fee	**LD-5**	Enact a local use fee to fund improvements to local roads and bridges.	$	Montour County	14
Adopt Municipal Transportation Funding Tools	**LD-6**	Identify a transportation funding mechanism(s) to fund transportation improvements.	$	Danville Borough; Mahoning Township	15, 18, 19, 20
Danville Borough/Mahoning Township Signal Monitoring	**TO-1**	Review signalized intersection performances on a yearly basis and adjust timings as necessary.	$$	Municipalities (PennDOT, SEDA-COG)	5
US 11/Woodbine Lane Intersection Geometric Improvements	**TO-2**	Coordinate with Geisinger to determine anticipated growth at the Woodbine Lane facilities.	$$$$	PennDOT (SEDA-COG, Mahoning Township)	n/a
State Hospital Drive Improvements	**TO-3**	Coordinate with Danville State Hospital and DASD to plan out future development plans and improvements necessary to State Hospital Drive.	$$$	PennDOT (SEDA-COG, Danville Borough)	n/a
State Hospital Drive Improvements	**TO-14**	Coordinate with Danville State Hospital and DASD to plan out future development plans and improvements necessary to State Hospital Drive.	$	PennDOT (SEDA-COG, Danville Borough, Mahoning Township, Danville State Hospital)	n/a

Project	Recommendation	Action Milestone	Cost	Responsibility (Support Partners)	Potential Funding Sources
PA 54 Intersection Geometric Improvements	**TO-4**	Conduct turning movement counts at the PA 54/Ferry Street and PA 54/Spruce Street intersections to determine appropriate left-turn lane lengths.	$$$	PennDOT (SEDA-COG, Danville Borough)	5
PA 54/PA 642 Intersection Monitoring	**TO-5**	Monitor the PA 54/PA 642 intersections following completion of MPMS Project #103853, anticipated construction completion in 2024.	$	PennDOT (SEDA-COG, Valley Township)	n/a
Beaver Place Traffic Calming	**TO-6**	Conduct a speed study along Beaver Place to determine if traffic calming solutions are necessary.	$$	Danville Borough	5
Spruce Street/Red Lane Traffic Calming (Speeds Humps)	**TO-8**	Conduct a speed study along Spruce Street/Red Lane to determine if traffic calming solutions are necessary.	$$	Danville Borough, Mahoning Township	5
Spruce Street/Red Lane Traffic Calming (RRFBs)	**TO-9**	Conduct a speed study along Spruce Street/Red Lane to determine if traffic calming solutions are necessary.	$$	Danville Borough, Mahoning Township	5
PA 54/PA 487 Intersection Improvements	**TO-10**	Assess the improvement effectiveness one year after improvements are complete.	$	PennDOT, Ralpho Township (SEDA-COG, Catawissa Borough, Knoebels)	n/a
PA 54/PA 487 Intersection Improvements	**TO-11**	Conduct a feasibility study into converting the intersection into a roundabout.	$$$	PennDOT (SEDA-COG, Ralpho Township)	6, 7
PA 42/PA 487 Signalized Intersection	**TO-12**	Coordinate with PennDOT and conduct a signal warrant analysis.	$$$	PennDOT (SEDA-COG, Catawissa Township)	4
Kaseville Road/Bloom Road ROW Acquisition/Demolition	**TO-13**	Produce a cost estimate for the acquisition of ROW and building demolition.	$$	PennDOT (SEDA-COG, Mahoning Township)	n/a
Kaseville Road/Red Lane Intersection Improvements	**TO-15**	Perform selective tree-trimming along all approaches.	$	PennDOT (SEDA-COG, Mahoning Township)	1
Kaseville Road/Red Lane Intersection Improvements	**TO-16**	Conduct a feasibility study into converting the intersection into a roundabout.	$$$	PennDOT (SEDA-COG, Mahoning Township)	6, 7

Table 16: Funding Source Codes

Code	Name	Acronym	Notes/Eligibility Requirements
1	State Maintenance Funds	582	Distributed to PennDOT County Maintenance Offices via formula
2	Automated Red Light Enforcement Program	ARLE	http://www.dot.state.pa.us/Portal%20Information/Traffic%20Signal%20Portal/FUNDARLE.html
3	Community Conservation Partnership Program	C2P2	https://brcgrants.dcnr.pa.gov/
4	Green Light-Go: Pennsylvania's Municipal Signal Partnership Program	GLG	http://www.dot.state.pa.us/Portal%20Information/Traffic%20Signal%20Portal/FUNDGLG.html
5	General Operating Funds	GOF	Municipal general budget
6	Multimodal Transportation Fund - DCED	MTF-CFA/DCED	https://dced.pa.gov/programs/multimodal-transportation-fund/
7	Multimodal Transportation Fund - PennDOT	MTF-PennDOT	https://www.penndot.gov/ProjectAndPrograms/MultimodalProgram/Pages/default.aspx
8	PennDOT Connects	PennDOT Connects	PennDOT funding for studies linking land use planning and transportation planning
9	Surface Transportation Block Grant Program Set-Aside	STBG (TAP)	Formerly the TAP program - a statewide competitive process for funding
10	Appalachian Regional Commission Access Road Program	ARC	https://www.arc.gov/program_areas/AccessRoadProgram.asp
11	DCED Business in our Sites	CFA/DCED Business in our Sites	https://dced.pa.gov/programs/business-in-our-sites-grants-and-loans-bos/
12	DCED Municipal Assistance Program	DCED MAP	https://dced.pa.gov/programs/municipal-assistance-program-map/
13	Local Use Fee	LUF	http://www.dot.state.pa.us/public/dvspubsforms/BMV/BMV%20Fact%20Sheets/fs-feeLocal.pdf
14	National Highway Performance Program	NHPP	For projects on Interstates and on the NHS (e.g., US 11)
15	Pennsylvania Infrastructure Bank	PIB	https://www.penndot.gov/ProjectAndPrograms/Planning/Pages/PA-Infrastructure-Bank.aspx
16	Rail-Freight Assistance Program	RFAP	https://www.penndot.gov/Doing-Business/RailFreightAndPorts/Pages/Grants-and-Loans.aspx
17	Rail Transportation Assistance Program	RTAP	https://www.penndot.gov/Doing-Business/RailFreightAndPorts/Pages/Grants-and-Loans.aspx
18	Transportation Development Districts	TDD	Funding mechanism - revenue generator
19	Transportation Impact Fees	Transportation Impact Fees	Funding mechanism - revenue generator
20	Tax Increment Financing	TIF	Funding mechanism - revenue generator
PennDOT's Community and Local Government Assistance Brochure		https://www.penndot.gov/Doing-Business/LocalGovernment/Documents/Community_And_Local_Government_Assistance_PDF.pdf	

Based on the recommendations developed from the identified transportation issues, an implementation strategy has been developed prioritizing the potential solutions and developing a playbook by which planning and funding sources can be explored. The implementation strategy is provided in **Table 17**.

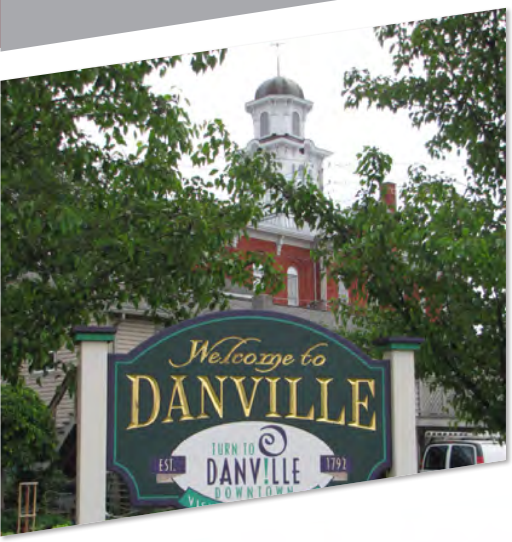
Table 17: Priority of Recommendations

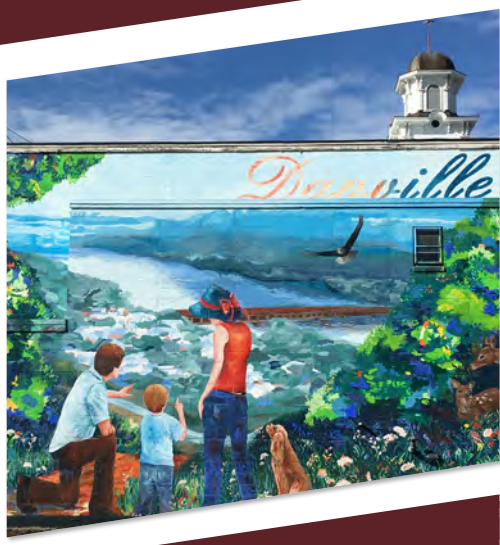
Priority	Recommendation	Sequencing Considerations[3]	Description	Cost	Horizon
1A	LD-1		Access Management Plans	$	Ongoing
1B	LD-2		Consider Geisinger and DASD future planning and transportation needs	$	Ongoing
2	LD-3		Address local transportation needs through PennDOT Connects	$	Ongoing
3	LD-5		Adopt a Local Use Fee	$	Ongoing
4	LD-6		Adopt Municipal Transportation Funding Tools	$	Ongoing
5	MT-3		Address Increasing Rail Freight Activity	$$	Ongoing
6	TO-2	X	US 11/Woodbine Lane Intersection Geometric Improvements	$$$$	Long-Term
7	TO-12	X	PA 42/PA 487 Signalized Intersection	$$$	Long-Term
8	SC-1		US 11 Wayfinding Signage Improvements	$$	Short-Term
9	SC-5	X	New Geisinger Access/Alignment from PA 54	$$$$	Long-Term
10	SC-2	X	Danville Borough Roundabout Conversions	$$$$	Long-Term
11	MT-1		Monitor the 5-County Fixed Route Pilot Project	$$	Ongoing
12	MT-2		Plan for and implement pedestrian and bicycle improvements	$$	Ongoing
13A	TO-8	X	Spruce Street/Red Lane Traffic Calming (Speed Humps)	$$	Short-Term
13B	TO-9	X	Spruce Street/Red Lane Traffic Calming (RRFBs)	$$	Short-Term
14	TO-13		Kaseville Road/Bloom Road ROW Acquisition/Demolition	$$	Short-Term
15A	TO-6	X	Beaver Place Traffic Calming	$$	Short-Term
15B	TO-7		Montour Street Pedestrian Crossings	$$	Medium-Term
16	SC-3	X	Liberty Street Road Extension	$$$$	Medium-Term
17A	TO-3	X	US 11/ State Hospital Drive Intersection Geometric Improvements	$$$	Long-Term
17B	TO-14	X	State Hospital Drive Road Segment Widening	$	Long-Term
18	TO-4	X	PA 54 Intersection Geometric Improvements	$$$	Long-Term
19	TO-15		Kaseville Road Sight Distance Improvements	$	Short-Term
20	SC-4	X	Railroad Street Road Realignment	$$$$	Long-Term
21	TO-10	X	PA 54/PA 487 Intersection Monitoring	$	Medium-Term
22	TO-11	X	PA 54/PA 487 Roundabout Conversion	$$$	Long-Term
23	TO-16	X	Kaseville Road/Red Lane Roundabout Conversion	$$$	Long-Term
24	LD-4		Provide hazard mitigation information to Montour County's EMA	$	Ongoing
25	TO-1		Danville Borough/Mahoning Township Signal Monitoring	$$	Ongoing
26	TO-5		PA 54/PA 642 Intersection Monitoring	$$	Ongoing
27	SC-6	X	New River Bridge Construction	$$$$$	Long-Term
28	SC-7	X	New I-80 Interchange	$$$$$	Long-Term

[3] Projects should be implemented considering several variables, including the time of year and location of adjacent projects. Special attention should be given to ensure the appropriate sequencing of these projects, particularly regarding seasonal travel patterns, maintenance and protection of traffic and incident management so as to minimize transportation disruptions. Critical points of interest that should be considered during the sequencing include the Susquehanna River crossing, the US 11 corridor, the PA 54 corridor, and key collectors to include Mill Street, Red Lane/Spruce Street, Bloom Road, and Kaseville Road/Woodbine Lane.

APPENDIX A

Stakeholder Outreach Summary





Overview

The Michael Baker International (MBI) project team conducted stakeholder outreach for the Danville Area Transportation Study (study) in September and October 2019. This work was included as part of Task 5 (Data Collection: Targeted Stakeholder Engagement) of the study scope and completed as outlined in the Stakeholder Approach/Playbook document prepared by MBI and reviewed by the Management Committee at its August 13, 2019 meeting.

This summary compiles comments and observations pertaining to each of the seventeen (17) pinch point locations as collected during municipal roundtables, interviews with major employers and stakeholders, and the Study Area Tour conducted in May 2019. Two (2) municipal roundtables were held September 27, 2019. Municipalities unable to attend were contacted after via phone. Stakeholder interviews were conducted in person and over phone in September, October, and November 2019. The following table lists the organizations which participated in the stakeholder outreach.

Municipal Roundtables or Phone Interviews	Interviews with Major Employers	Stakeholder Interviews
• Columbia County • Catawissa Borough • Catawissa Borough	• Cole's Hardware • Danville State Hospital • Geisinger • Knoebels • Merck & Co., Inc. • United States Gypsum • Weis Markets, Inc.	• Danville Business Alliance • DRIVE • Montour Area Recreation Commission (MARC) • Danville Area School District • rabbittransit • Montour County EMA • River Valley Transit
• Montour County • Cooper Township • Danville Borough • Mahoning Township • Valley Township		
• Northumberland County • Ralpho Township • Riverside Borough • Rush Township		

Information collected is categorized throughout this document under the following topics.

- Pinch point comments and observations by stakeholder type
- Additional locations of transportation concern
- Anticipated and planned development
- Pedestrian comments/studies
- Public transportation comments/studies
- General transportation comments
- Coordination with hazard mitigation planning

Comments/Observations by Stakeholder Type

To compile a full list of comments pertaining to each of the pinch points, data collected during the Study Area Tour held in May 2019 was combined with data collected during the municipal roundtables and stakeholder interviews. Information is summarized in the following table by stakeholder type.

Comments/Observations	Study Area Tour	Stakeholder Interviews	Municipal Roundtables
Pinch Point 1: US 11 Between Bloom Street and State Hospital Drive			
High AADT to Geisinger/schools	X	X	X
US 11 (Walnut Street) backs up in the morning (7:00 AM – 8:00 AM) EB at the intersection with State Hospital Drive	X	X	X
US 11 (Walnut Street) backs up in the afternoon (3:00 PM – 5:30 PM) WB from Bloom Street to Railroad Street	X	X	X
Traffic travelling WB often backs up to the beer distributor on US 11		X	
Unconventional and confusing intersections	X		
5-points intersection. Left turn onto Ferry Street from Bloom Street EB is a concern. Parents dropping off/picking up kids at St. Joseph School. No left turn sign onto Ferry Street was removed.		X	
Is there potential to construct a new access to DASD buildings from US 11? Connect Liberty Street north between Danville Area Community Center (DACC) and the DASD stadium to US 11.		X	
Signal optimization is a potential solution	X	X	X
Retiming traffic signals might not be effective; too many choke points at each intersection; volume changing as vehicles use different side streets coming from Woodbine Lane (Wall Street, Railroad Street, Pine Street, Market Street)			X
Not enough lanes and too many turning movements on US 11			X
Unsafe for bicyclists/pedestrians	X		
Significant rainfall events cause flooding on US 11, Railroad Street, and East Market Street; leaving Danville Borough landlocked from a transportation perspective.	X		
Pinch Point 2: US 11/SR 54 Intersection			

Comments/Observations	Study Area Tour	Stakeholder Interviews	Municipal Roundtables
Significant congestion from US 11 to 5-points intersection during AM/PM commute	X	X	X
Traffic from all directions cannot flow smoothly through the intersection		X	
Along with automobiles, many tractor trailers and buses travel through the intersection	X	X	
EMS will use opposing traffic lanes during peak congestion hours; this slows response time			X
Traffic lights are not synchronized; traffic signal timing is short		X	X
Traffic signal retiming discussed for the past 4 -5 years		X	
Distance between lights EB from intersection is too short	X	X	
Pedestrian crossing is timed too short for an adult; difficult for children or families with small children; not safe for bicyclists	X	X	X
Traffic coming to/from major employers and trip generators such as Geisinger and DASD cause delays at intersection	X	X	X
Commuters travelling to Danville NB across the Danville Bridge need to add extra 15 minutes to commute and cross bridge by 7:15 AM to avoid traffic when school is in session		X	
Wendy's restaurant traffic entering/exiting causes traffic backups. Vehicles exit and try to turn left; crossing traffic and stop on roadway until signals change. Drive thru backups onto US 11.	X	X	X
Danville Middle School traffic issues. EB and WB traffic both use the center lane on US 11 near Danville Middle school. AM/PM school buses and parent vehicles dropping off students have difficulty turning left into the middle school driveway from US 11. Vehicles stack trying to cross left over US 11. Commuters travelling EB on US 11 in the AM make left at the US 11/SR 54 intersection causing conflict with vehicles turning onto middle school property.		X	X
DASD had discussed moving middle school entrance near the adjacent sewer plant. Cost to relocate was a reported factor for DASD. Geisinger had pledged funds to relocate the entrance.		X	X
Relocating Danville Middle School entrance will not address the congestion, but rather move the congestion west on US 11		X	X
At least a mile back up to/past Bald Top Road traveling EB in the AM (*suggested as another Pinch Point*)		X	
Future DASD Planning: move both Liberty Valley Intermediate School and Danville Middle School (*Pinch Point 2*) to Ironmen Lane campus (State Hospital Drive)		X	X

Comments/Observations	Study Area Tour	Stakeholder Interviews	Municipal Roundtables
High speeds on SB approach to intersection on SR 54	X		
Increasing commercial development	X		
Flood control constraints	X		
Can get North Shore and NS traffic on south side bridge at same time	X		
Railroad track crossing required to access the middle school; students sometimes trespass on tracks	X	X	X
Train passes through once per day, could be increased with industrial redevelopment. Safety impacts and congestion issues.	X	X	X
Pinch Point 3: US 11/Woodbine Lane Intersection			
Traffic has increased with new development along Woodbine Lane; mostly Geisinger facilities	X	X	X
Crashes at this intersection (some fatalities) are often caused by improper turning movements.			X
rabbittransit bus rear ended at intersection; turning from US 11 left onto Woodbine Lane		X	
Woodbine Lane is congested during AM and PM peak hours, but traffic moves	X	X	X
Cole's Hardware was one of the first tenants in the park (1990s); approximately 15 tractor trailers per day. Often a bottleneck making a left onto Woodbine Lane from Enterprise Drive. Industrial tenant trucks avoid accessing Woodbine Lane during AM (7:30 AM – 8:30 AM) and PM (2:30 PM - 5:30 PM) peak hours.		X	
Traffic light installed when Geisinger Hughes center was constructed. Geisinger proposed an intelligent traffic light at the intersection.		X	
Traffic backs up to Justin Drive both directions between 4:00 PM and 4:30 PM. Addition of stop sign at Woodbine Lane and Justin Drive has helped with traffic flow.		X	
Stacking lanes are too short on US 11		X	X
Comprehensive signal timing study recommended lengthening right turn lane on Woodbine Lane. Converted from shoulder; does not meet design criteria. EB left turn lane on US 11 needs lengthened. Restriping intersection could be a potential solution.			X
Mahoning Township completing a Woodbine Lane study that would likely include recommendations for better access and turn lanes near Geisinger and Sheetz.			X
Conflicts with turns into/out of Sheetz and out of Geisinger surgery center during peak hours; left turn out of Sheetz is dangerous	X	X	X

Comments/Observations	Study Area Tour	Stakeholder Interviews	Municipal Roundtables
Signal optimization throughout the day	X		
Success means better, more efficient flows of traffic and ease of access to the Woodbine Lane facility	X		
Dual turn lanes	X		
Local business start times	X	X	
Grade issues along Woodbine Lane – cars/trucks can bottom out if moving	X		
Heavy pedestrian traffic along Woodbine Lane, additional sidewalks would be an improvement		X	X
Pedestrian access across US 11 at Woodbine Lane should be addressed if future development occurs south of US 11. Approximately 30 acres zoned Agriculture. Could be rezoned depending on developer interest.			X
Montour County property and an additional vacant lot on Woodbine Lane will likely be listed for sale in the near future. New pediatric hospital on Stearns Lane. There could be issues with too many turning movements and access points along this road.		X	X
Pinch Point 4: SR 54/Danville River Bridge			
Signalization and timing issues; optimize signals to move traffic through	X	X	X
In the afternoon drivers leaving Danville SB across Danville River Bridge take alternate routes to avoid the US 11/SR 54 intersection		X	X
Traffic signal at SR 54 (Danville Bridge) and Front Street backs up. Left turn onto Danville Bridge (SR 54) from Front Street allows only 4 vehicles per cycle. During afternoon peak cars back up on Front Street to Mill Street to Market Street.	X	X	X
Workers leaving Geisinger facilities or other employer locations travel from Railroad Street or Wall Street or Copper Beech Drive (at Danville State Hospital) to access Market Street.		X	X
Cycle of traffic signals on Danville side of the Danville Bridge are connected with light at the US 11/SR 54. When crosswalk button is pushed at the intersection, traffic congestion increases along entire corridor. Throws off timing; takes a while for lights to reset (hours).		X	
Riverside Borough side of the Danville Bridge traffic signals work better; disconnected from the Danville side; coordinate lights to improve congestion		X	X

Comments/Observations	Study Area Tour	Stakeholder Interviews	Municipal Roundtables
Confusion about the appropriate lanes to travel or turn in. There are three southbound lanes, entering into Riverside. Suggestions for improvement include simple improvements such as adding signage above each lane or additional turning symbols.			X
Substantial truck traffic. Sharp turns in Danville were not designed for trucks. Improvements needed.			X
Tunnel restricts traffic on PA 54	X		
On Riverside Borough side of Danville Bridge, traffic backs up in the morning; often to Boyd Station on SR 54 (Elysburg Road). (*suggested as another Pinch Point location*)		X	X
Lengthen the turning lane on SR 54 (Elysburg Road) in Riverside to make the right over the bridge		X	
Trucks occasionally stack up leaving Merck when making a left turn from S D & H Avenue traveling NB over Danville River Bridge		X	
Rockslides on PA 54 on southside of Danville Bridge are an issue. If road/bridge are closed it is an emergency and safety issue.			X
Class 1 on South Shore – 5-6 crossing per day, major congestion issue; railroad crossing impacts	X		
Increased congestion and traffic from Knoebels	X	X	X
One of very few river crossings in the area	X		X
Pinch Point 5: US 11/State Hospital Drive Intersection			
Major traffic generators located nearby	X	X	X
Congestion during peak hours and detour routes	X	X	X
Danville Borough completed a traffic signal optimization study at intersection (Green Light-Go); not yet implemented; signal optimization	X	X	X
Lengthen EB right turn lane from US 11 onto State Hospital Drive to accommodate buses and traffic		X	X
DASD suggests additional lanes (3 lanes; 4 lanes ideal) on State Hospital Drive in front of the Primary School building. Right turn lane into DASD campus, lane straight, lane (or two) to go left or right on US 11		X	

Comments/Observations	Study Area Tour	Stakeholder Interviews	Municipal Roundtables
State Hospital Drive owned by Danville State Hospital State Hospital, with the exception of the curved portion from the cemetery to Wall Street which is owned by Danville Borough. Danville State Hospital plows and maintains the road.		X	
Per Danville State Hospital, any future use of or modification to State Hospital Road would need to be coordinated with Danville State Hospital. When Primary School was constructed Danville State Hospital only permitted one entrance from State Hospital Drive, two entry points were constructed by DASD.		X	
DASD Development Planning: Danville Middle School and Liberty Intermediate School may potentially be relocated to the Ironmen Campus on 40 acres of property at southeast intersection of US 11/State Hospital Drive.		X	
Danville State Hospital transferred 40 acres to Danville Borough. DASD currently leasing 20 acres from Borough for recreational fields. DASD future planning includes working with the Borough to purchase the 40 acres.		X	
Overflow parking on-street for recreational fields	X		
DASD would like to place a temporary stone parking lot at this location for overflow parking; teacher or parent parking during large events.		X	
Some high school students park at DACC.		X	
Pinch Point 6: Mill Street between East Front Street and Spruce Street			
Mill Street is an alternate route to the bridge; congestion	X		
Borough has CDBG funds for Mill Street - trees, signage, etc.	X		
Not many traffic issues travelling NB on Mill Street between Front Street north to Bloom Street		X	
Backups at Mill Street and Front Street during afternoon peak hours due to signalization/timing at the traffic light at Front Street/SR 54 turning left to go over the Danville Bridge (s*ee Pinch Point 4*)		X	
Traffic backups on Mill Street from US 11 to Spruce Street; both directions in AM and PM (3:00 PM to 6:00 PM) periods		X	
Trucks frequently travel Mill Street due to inability to travel through underpass on SR 54			X
Pedestrians have difficulty crossing US 11 from Mill Street		X	
Had been a pedestrian crossing - removed due to cost, busy in peak periods	X		

Comments/Observations	Study Area Tour	Stakeholder Interviews	Municipal Roundtables
Good ops by vehicles and pedestrians	X		
Difficult to get into/out of Weis Markets between 3:00 PM and 6:00 PM		X	
A traffic light is needed by Weis at Spruce Street to control AM/PM traffic		X	
Pinch Point 7: PA 54 between Montour Street and Spruce Street			
High speeds and AADT	X	X	
Many turns for Geisinger traffic and Weis	X	X	
Geisinger in development, need signal at Montour Street	X		
New access to Geisinger Main Complex	X		
Dangerous left turns from PA 54 East; cars avoid US 11/SR intersection; many cars trying to make left turn onto Spruce Street	X	X	
Congestion from river bridge causes backups on PA 54 to Montour Street at times	X	X	
Road upgrades, pavement markings, double stop sign, stacking lanes have improved traffic flow	X	X	X
Restricted left turns from Spruce Street & Ferry Street to PA 54	X	X	
DASD: This area has been addressed and is adequate at this time.		X	
Pinch Point 8: PA 54/PA 642 Intersections			
High speeds and AADT	X	X	X
Unfamiliar travelers going to Geisinger	X	X	
Fatal crashes near Route 642 when drivers cut across SR 54 during AM/PM peaks		X	
Motorists ride in the passing lane; stack in the median to cross over PA 54		X	X
An underutilized park and ride will be eliminated as part of the future improvement project			X
SR 54 HSIP project is needed	X		
Implement recommendations from study/PE, construct ASAP	X		
PA 642 to be closed except for right off of PA 54, diverted left	X		
Roundabout proposed; residents were not happy		X	
Roundabout would have been a good solution		X	
Rezoned for commercial on eastern side	X	X	X
Access to trails on west, pool on east	X		
Pinch Point 9: Montour Street Corridor			

Comments/Observations	Study Area Tour	Stakeholder Interviews	Municipal Roundtables
Traffic issues are with Street A rather than Montour Street; most drivers use Street A as a through street rather than Montour Street		X	X
No signals at either end	X	X	
Single lane access	X	X	
Bridge concerns - Is it possible to limit to cars and buses only as tractor trailers get stuck at new bridge on Meadow Lane/Montour Street?		X	X
Problems with making left turn from Montour Street onto Street A		X	
School access, school children walk through corridor, lack of signal, detour for US 11/SR 54 intersection	X	X	
Access to convent and Geisinger offices on left, 400+ parking, haven't seen much development	X		
Proposed Geisinger development will pose access issues; ensure that TIS results in needed improvements	X		
A traffic light would be required at US 11 (Continental Blvd.)/Montour Street if Geisinger expands in this location	X	X	
At present, Geisinger has no additional expansion plans in this area (Geisinger Holy Name)		X	
Trailhead located along corridor; trail connections would be beneficial	X	X	X
Trail connections needed to complete Monkey Drift Trail: sidewalk or pedestrian markings on Montour Street by the new bridge and along Meadow Lane to Hess Park		X	
Trail connection was proposed along US 11 as part of the 2012 Montour Area Recreation Commission (MARC) recreation plan; pedestrian safety concerns for this alternative		X	
Pinch Point 10: Spruce Street/Red Lane between PA 54 and Red Oak Drive			
Historical (2 decade) effort to provide road access to Geisinger	X		
Geisinger employee parking area; high parking demands	X	X	X
Spruce Street/Red Lane is very narrow; changing Spruce Street to one way has helped alleviate congestion; LTAP project	X	X	
Center Street now sees some issues	X		
Employees come up Chamber Street, exit traffic on Spruce, Chamber, Ferry, and Kaseville	X	X	
Accidents at the Red Lane/Cherry Street intersection due to no stop on Cherry Street		X	X

Comments/Observations	Study Area Tour	Stakeholder Interviews	Municipal Roundtables
Tight turn at the Cherry Street/Red Lane intersection, specifically for vehicles turning left onto Red Lane. Move utilities and widen the road between Cherry Street and Line Avenue.			X
Residential properties adjacent to Red Lane have had poor stormwater management leading to flooding.			X
Vehicles travel Spruce Street and Cherry Street to avoid US 11 congestion. Parking should be eliminated on Cherry Street.			X
High pedestrian crossing area, motorists don't yield	X		
Evacuation route for Geisinger	X		
Speeding issues	X	X	
No sidewalks	X		
Making it two-way has helped	X		
How can access be improved near Geisinger employee parking lots ('improve Geisinger's back door')? Need to find a better way to get Geisinger employees into/out of parking lots.		X	
Can traffic be two lanes in during AM commute and two lanes out during PM commute from Geisinger?		X	
Could Chamber Street be used to access Geisinger parking lots?		X	
Need for shuttle between Geisinger Main and Woodbine Lane offices	X		
Need for shared ride hub for trips to Geisinger (transit center meeting point for shared ride or fixed route); in planning stage	X	X	
Pinch Point 11: PA 54/PA 487 Intersection (Elysburg)			
Re-signalization at the intersection is in final PennDOT design; anticipated construction 2020. An adaptive signal and pedestrian crossing apparatus to be installed. Dedicated left turn lane on PA 487 WB from Knoebels. All directions at the intersection will now have a dedicated left turn lane. Green Light-Go grant was received ($490,000) to construct the left tune lane.			X
Continual problem intersection for rabbittransit. Located about one mile west of Sheetz. Use Sheetz to refuel buses. At least every other week small accident with a bus due to motorists not paying attention		X	
A roundabout has been discussed for this intersection in the past.	X		
More turning lanes needed	X	X	X

Comments/Observations	Study Area Tour	Stakeholder Interviews	Municipal Roundtables
Congestion in Elysburg due to Knoebels; traffic backs up from all different directions	X	X	X
Two lanes on PA 487 towards Knoebels would be helpful			X
Additional congestion would be added to PA 487 if there is a bridge closure in the area. Three bridges serve the area: Danville, Sunbury, Catawissa.			X
Ralpho Township police will notify Knoebels when traffic begins to back up on PA 487. Knoebels will respond by directing traffic off of PA 487 into parking as quickly as possible.		X	
Parking will be directed into the campground parking, located west of Knoebels main entrance, if needed		X	
Knoebels can control the light at the front entrance on PA 487, if needed		X	
For larger events such as the annual Covered Bridge Festival in October, Knoebels arranges for offsite parking with Valley Gun & Country Club (106 Gun Club Rd, Elysburg, PA 17824) and Southern Columbia Middle School (810 Southern Drive, Catawissa, PA 17820). Shuttles bring Knoebels visitors to/from the park.		X	X
Area residents avoid the intersection on weekends when Knoebels is open		X	
Knoebels works with PennDOT on message boards on I-80. Improved signage along PA 487 (electronic message boards) would be helpful during peak season to improve customer service, direct customers to parking areas.		X	
Knoebels works with Lower Anthracite Transit System (LATS) to transport seasonal employees from the Mt. Carmel area.		X	
Potential PA 487 improvements: Better pavement markings/lines, improved signage and communications, pedestrian and bicycle amenities along PA 487 (visitors will walk along PA 487 to offsite parking areas; some employees bicycle to work)		X	
Pinch Point 12: PA 42/PA 487 Intersection (Catawissa)			
Intersection is extremely dangerous; poor visibility at intersections; controlled only by stop signs; multiple access points; high speeds	X	X	X
Examine options to improve safety at intersections	X	X	X
Numerous crashes at this location	X		
Backups on PA 487, PA 42, and all of 5-points intersection when Knoebels is open and when Southern Columbia football games are played		X	X

Comments/Observations	Study Area Tour	Stakeholder Interviews	Municipal Roundtables
Drainage issues; flooding; creek parallel to PA 42			X
Backups do not usually occur on Mount Zion Road		X	
Knoebels visitors coming off of I-80 at the Mifflinville exit travel PA 339 south to Mainville and backroads to Sycamore Drive into Catawissa. Directions per Google Maps. Sycamore Drive cannot handle the traffic volume.			X
Vehicles traveling from Shamokin/Kulpmont normally take PA 54 but are now taking PA 487 to PA 42 and going across river to take US 11 just to avoid going through Danville.			X
Pinch Point 13: Bloom Road/Woodbine Lane & Kaseville Road Intersections			
Woodbine Lane/Bloom Road intersection has been improved and traffic flows well		X	
Improvements have been made but the intersection is still not wide enough. Turning left onto Woodbine Lane is difficult for trucks and buses.		X	X
Constrained ROW exit onto Geisinger traffic, poor turning movements, utility conflicts, closely spaced all-way stops	X		
4 way stop at the Kaseville Road/Bloom Road intersection has improved safety		X	
Line of sight issues with the building (red roof) at the Kaseville Road/Bloom Road intersection	X	X	X
Try to acquire porch and remove it - this will help with the turns and sight distance	X		
Visibility concern for rabbittransit. Bus drivers have reported small fender benders.		X	
Flooding has been an ongoing issue and causes detours onto roads which aren't able to handle large traffic flows; detour concerns	X		X
New residential development: Bloom Road between Prosseda Drive and Mahoning Terrace Apartments (Mahoning Township); 145 additional units (40.968766, -76.581841)		X	X
Heavy pedestrian traffic along Bloom Road. Mahoning Township has applied for a Multimodal grant for dual bike and pedestrian lanes. Geisinger working with Township on a RACP for pedestrian improvements.		X	X
Frosty Valley Road/Kaseville Road intersection may be signalized.		X	X
Pinch Point 14: Railroad Street between US 11 and Bloom Road			
Railroad Street backed up during AM/PM peak hours; pass-through traffic to/from Geisinger	X	X	X
The road is too tight for school buses due to on-street parking		X	

Comments/Observations	Study Area Tour	Stakeholder Interviews	Municipal Roundtables
Narrow roadway with on-street parking and sections of roads in poor condition make travel difficult	X	X	
The entire length of the road needs repairs and pedestrian improvements		X	X
Saint Cyril doesn't add much traffic	X		
Improved access management	X		
If Railroad Street could be improved to support the Bloom Street traffic, it could greatly improve the 5-points intersection. This could then become the quickest and easiest route to Geisinger; the entrance to Geisinger needs improvement.			X
The intersection with US 11 needs to be addressed; difficult getting into/out of the Dunkin' Donuts		X	
Trucks enter the DRIVE Industrial Complex from US 11 at Railroad Street; issues with truck delivery	X	X	
Railroad Street/Market Street intersection needs to be addressed. Trucks have difficulty making turns at the intersection (*potential Pinch Point*)		X	
Due to Sechler Run and railroad tracks along Railroad Street, trucks accessing industrial property west of Railroad Street and south of the rail tracks, need to travel south on Railroad Street to East Market Street, turn left, and then turn left onto Wall Street		X	
New rail siding to cross Wall Street; new signals; anticipate 6 railcars per week; post-consumer plastics recycler		X	
Trains cross 1-2 times per day	X		
New police station and county offices to be developed on Front Street	X		
Box culvert and grade crossing improvements	X		
ARLE grant to upgrade signal heads	X		
Diversity of land use types (residential, commercial, industrial)	X		
No width for bicycles on Bicycle Route V	X		
Pinch Point 15: Wall Street and State Hospital Drive Corridor			
Vehicles travel Wall Street to avoid intersections along US 11 and Bloom Street.		X	X
Traffic would increase if more schools are added to the area in the future			X
Tight winding roadways, not many options for alternative routes	X	X	

Comments/Observations	Study Area Tour	Stakeholder Interviews	Municipal Roundtables
Cemetery on both sides constraining widening of road	X	X	
Danville Borough does not want school buses on the newly paved portion of Wall Street (from curve to railroad tracks)		X	
Curve is tight and buses are in the other lane as they make the turn; telephone pole is an issue		X	
School buses, trucks using upper end of Wall Street get stuck; tight 90-degree intersection with a culvert and ditch at the side of the road; open ditch swale	X	X	
Posted truck restrictions		X	
Motorists also travel through DASD property to access Wall Street. From State Hospital Drive to DASD entry road, past DACC on Liberty Street to connect with Wall Street.		X	
New residential development: Townhouses under construction at the corner of Alton Street & Franklin Street (Danville Borough)		X	
DRIVE Industrial Complex expanding; increased freight	X	X	
New rail siding and signals into DRIVE Industrial Complex will cross Wall Street – North Shore RR; estimated 6 cars per week for plastics recycler at industrial park. Trucks enter/exit from Wall Street (*refer to Pinch Point 14*).		X	
New apartments cause increased trips, could see more freight traffic on corridor with former Metso Minerals site	X	X	
Pinch Point 16: Bloom Street between Ferry Street and Jade Avenue			
Includes Geisinger's main entrance; improvements needed to Bloom Street, Geisinger's 'front door'	X	X	
Geisinger employee/patient flows result in congestion for AM/PM peaks, particularly on side streets; school buses as well	X	X	X
Pinch point should be adjusted: between Ferry Street and Academy Avenue, not Jade Avenue			X
Signals need to be optimized/staggered; turn arrows	X		
Parking on street poses safety problems	X		
Multi-municipal pinch point	X		
Mahoning Township has applied for a Green Light-Go and ARLE grant to modernize the intersection. Deteriorated culvert at the intersection; cost greater than $1M. Flood impacts at the intersection could potentially make an intersection reconstruction project eligible for EDA			X

Comments/Observations	Study Area Tour	Stakeholder Interviews	Municipal Roundtables
funding under the Additional Supplemental Appropriations for Disaster Relief Act, 2019 (Public Law 116-20) (*see Coordination with Hazard Mitigation Planning section below*).			
Significant rainfall events cause flooding on US 11, Railroad Street, and East Market Street; leaving Danville Borough landlocked from a transportation perspective.	X		
Timing of light at 5-points intersection by Ferry Street is an issue. Queuing in peak PM. Same issue as US 11.		X	
Enforcement needed to discourage vehicles from running red lights at the 5-point intersection.		X	
Parking on Bloom Street causes congestion		X	
Heavily walked road; needs sidewalk improvements		X	
Intersection of Ferry Street/Bloom Street by St. Joseph School is a concern; school children drop off/pick up.		X	
Ferry Street can't handle additional traffic		X	
Motorists park on the sidewalk on Ferry Street; lack of curbs in some areas; no standards		X	
Higher pedestrian volumes to accommodate safely	X		
Danville Business Alliance Design Committee working with Geisinger representatives on a pedestrian plan to connect downtown Danville to Geisinger.		X	
Pinch Point 17: Red Lane/Kaseville Road Intersection			
A rear entrance to Geisinger; Geisinger traffic travels over mountain to/from PA 642	X	X	X
Traffic from Bloomsburg area using access to the Geisinger facility	X		
Site distance, speed, and slope issues	X	X	X
Dangerous left-turns from Red Lane onto Kaseville Road	X	X	X
Solution - clear trees		X	
Solution - change to a 4 way stop; stop signs on Red Lane but not on Kaseville Road		X	
Solution - add turn lanes on Kaseville Road			X
Turning movements for larger trucks appears to be an issue	X		X
Commuters from Hemlock Township via Frosty Valley Road add to AADT	X		

Note: Municipal Roundtables includes discussion from 09/27/19 meetings and follow-up telephone conversations with Northumberland County, Catawissa Borough, Danville Borough, Ralpho Township, Riverside Borough, and Rush Township.

Locations not Identified in Pinch Points

Several stakeholders identified areas of transportation concern not included as part of the 17 pinch points. This information is summarized by location in the following table.

Location	Comments/Observations
SR 54 (Riverside Borough) – Danville Bridge to Boyd Station	On Riverside Borough side of Danville Bridge, traffic backs up in the morning; often to Boyd Station on SR 54 (Elysburg Road); vehicular/train congestion AM/PM
US 11/SR 54 Intersection West	Backups of 1 mile in the AM west to Bald Top Road (currently closed)
Railroad Street/Market Street intersection	Improvements needed at intersection to accommodate tractor trailers turning into/out of DRIVE Industrial Complex. Intersection not wide enough; trucks run over existing curbs. In the afternoon, traffic on Railroad Street waiting to turn right onto Market Street can back up to the DRIVE office (close to the railroad tracks).
SR 54/SR 254 Intersection	Flooding at the intersection in Washingtonville (Derry Township); 3-day event; impacted operations at US Gypsum; use alternate routes to/from plant
Upper/Lower/Middle Street Corridor	Significant Geisinger traffic flow into/out of employee parking lots. Congestion on local roads. Consider adding the area around Upper Street to Becker Street to Leighow Street, and Middle and Lower Streets to Chamber Street. Converting to one-way streets may increase speed.

Anticipated/Planned Development

Development is anticipated and planned in several locations throughout the study area. Anticipated and planned development is summarized by municipality in the following table.

Municipality	Description/Location
Cooper Township	Installed sewer on US 11; anticipated growth along corridor. Property between Bloom Road and US 11 (Montour Boulevard) rezoned to Commercial-Highway (C-H)
Danville Borough	Future DRIVE Industrial Complex expansion (*near Pinch Point 15*)
Danville Borough	New residential development at corner of Alton Street & Franklin Streets; townhomes (*near Pinch Point 15*)
Danville Borough	Potential building modifications or building new building near the Primary School (*Pinch Point 5*)
Mahoning Township	Future DASD Planning – Potentially relocate both Liberty Valley Intermediate School (*near Pinch Point 8*) and Danville Middle School (*Pinch Point 2*) to Ironmen Lane campus (*Pinch Point 5*).

Municipality	Description/Location
Mahoning Township	New residential development along Bloom Road between Prosseda Drive and Mahoning Terrace Apartments; 139-unit apartment complex (40.968766, -76.581841) (*near Pinch Point 13*)
Mahoning Township	New pediatric hospital planned; Stearns Lane adjacent to Woodbine Lane; employ approximately 200 plus patients (*Pinch Point 3*)
Mahoning Township	Potential to rezone property south of the US 11/Woodbine Lane intersection from Agricultural/Forest (A/F); developer dependent; area currently includes a small park and trails. (40.959380, -76.575431) (*Pinch Point 3*)
Mahoning Township	Frosty Valley Country Club renovations and expansion.
Mahoning Township	Geisinger planning for new building/redevelopment on existing campus as part of long-range plan. Need for increased parking; vertical development.
Valley Township	Property along US 11 north and south of US 11 is zoned Commercial Highway (C-H)
Valley Township	Along PA 642; 130-acre parcel currently farmed; zoning overlay for commercial development (*Pinch Point 8*)
Valley Township/ Montour County	Discussions to revitalize properties around the I-80 interchange; an overlay zone has been approved around the interchange. Potential Sheetz across from McDonalds (40.996157, -76.639710). Sewer installation will facilitate development.

- Geisinger Anticipated/Planned Development
  - Current conditions
    - 7,000 - 8,000 – patients and visitors per day
    - 5,000 employees working multiple shifts daily
  - Future development per long range plan
    - Assume approximately 3 percent growth per year
    - Construct new facilities on the Geisinger Danville campus; redevelop the existing campus
    - Surface parking is a constraining factor; may need to construct vertical
    - Construct new facilities at the Woodbine Lane Campus
    - No additional expansion planned for the Geisinger Holy Name facility on Montour Street
    - Expansion in Cooper Township is not currently included in the long-range plan.
    - Growth will not result in a significant increase in trips as new facilities might not necessarily bring in new business. For example, a new bed tower will be single occupancy rooms which are the current trend. Single occupancy rooms will not increase trips.

Pedestrian Comments/Studies

Several stakeholders identified locations where pedestrian access requires improvement and existing studies or efforts underway to improve pedestrian access. This information is summarized below.

- Address pedestrian crossings at US 11 & SR 54
- Sidewalks needed near Danville Primary School and Danville High School; specifically, Gulick's Addition and the Highlands
- Danville Business Alliance Design Committee just began working on a project to improve pedestrian access and safety from downtown Danville to Geisinger Hospital, and pedestrian connections and safety from Hess Field and Danville Middle School to downtown Danville. MARC is working with the committee to identify the safest routes.
- Geisinger completed a Crosswalk Evaluation in 2010. A copy of the report was provided.
- Geisinger working with Mahoning Township on RACP grant for bicycle/pedestrian access along Bloom Road.
- 2012 Danville Riverfront Plan – Montour Area Recreation Commission (MARC) priorities: North Branch Canal Trail Connections from Catawissa to Danville and the Monkey Drift Trail
- North Branch Canal Trail - Applied for funding on the River Road segment; 1.15 miles on River Road; land owned by Montour County. Danville Borough working with Livic Civil Working on levee project in the area; raise levee for flood protection. Difficult to add pedestrian access on levee.
- Danville Master Plan Phase II 2009 revitalization study completed by Penn State; Mill Street Corridor.

Public Transportation Comments/Studies

Stakeholders identified ideas to improve access to public transportation as well as public transportation pilot projects underway.

- Geisinger is working on three pilot projects along with partners to address patient and employee transportation.
    - 5-County Fixed Route Pilot – Partnership between the Greater Susquehanna Valley United Way, River Valley Transit, and PennDOT.
        - Geisinger and Bucknell University are also participants with Bucknell providing research to identify the best route.
        - The pilot is focused on providing fixed route public transportation at major hubs in five counties (Columbia, Montour, Northumberland, Union, Snyder) for transportation to healthcare and jobs in a financially feasible way.
        - The route would originate and terminate in Williamsport and is anticipated to travel through Lewisburg, Northumberland, Danville, Bloomsburg, Berwick, Selinsgrove, and Sunbury.
        - A goal of the potential pilot is to increase mobility options for people with medical needs, disabilities, seniors, and workforce. The pilot would also focus on reducing the number of shared ride trips for medical services by shifting to a

fixed route system and address workforce transportation in the area. This would require willingness and flexibility from industry.
        - An application for pilot project funding will be submitted to PennDOT. An application submission date has not been determined.
    - Health and Wellness Pilot – Partnership between rabbittransit and Geisinger.
        - A 2-year patient focused pilot to improve overall patient health and wellness to help reduce instances of missed medical appointments and reduce instances of emergency room visits for those who do not have reliable transportation.
        - The pilot began in April 2018; an additional year was added in 2019. Approximately 13,000 trips are estimated for 2019.
        - rabbittransit coordinates all logistics for patients within a 50-mile radius of Danville and 25-mile radius of Scranton.
        - Patients are transported to medical appointments, pharmacy, fresh food farmacy, and grocery stores.
        - To show the greatest ROI the pilot needs to demonstrate it positively impacts the cost of health care by demonstrating improved health outcomes for participants.
    - Emergency Transportation Pilot – Geisinger working on a pilot to transport patients home after hospital and emergency room visits.
        - This pilot is for individuals who do not have transportation home. The goal is to decrease the length of patient hospital stay for those patients who do not have transportation access.
- Weis Grocery store manager suggests a Danville shuttle service available to take people to/from locations such as grocery stores, downtown, Geisinger facilities, etc.
    - Run on a continual loop
    - Not income dependent like rabbittransit; for all residents and visitors
    - Could be beneficial for older citizens, students, workers
    - Maybe there is a partnership with Geisinger and other employers to keep cost low or free
    - E.g. Susquehanna University has a shuttle running students to/from locations within the community

General Transportation Comments

- Motorists try to find the path of least resistance and avoid the US 11/PA 54 intersection and 5-points intersection.
- DASD: Better mobility needed through Danville. Traffic backups add an extra 15 minutes to bus travel time due to traffic delays. Impacts public/parent impression of school system so parents drive students to school due to increasing traffic.
- Most interviewees commented that the increase in parents dropping off/picking up children adds to traffic congestion
- Improving signal timing and improved signage and deploying intelligent transportation technology throughout the area would be a quick win

- Need to address Geisinger's front door and back door for both patients and employees. Largest employer in the area, entry needs improvement.
- Bald Top Road is closed due to a partial road collapse. This is impacting traffic in the short term.
- Construction in Northumberland is impacting commuting EB to Danville in the short term.
- Residential development increasing to address Geisinger employees/ residency programs.

Coordination with Hazard Mitigation Planning

Hazards such as floods and rockslides/subsidence were identified during stakeholder outreach. Locations identified included:

Municipality	Location/Description
Flooding	
Catawissa Township	Flooding at the PA 42/PA 487 Intersection impacting area travel.
Danville Borough	Significant rainfall events cause flooding on US 11, Railroad Street, and East Market Street. This leaves Danville Borough landlocked from a transportation perspective.
Derry Township (Washingtonville)	Flooding at the intersection of SR 54/SR 254; 3-day impacts affecting manufacturing plant operations. Montour County working on home buyouts. Natural rise of the creek near the intersection.
Mahoning Township	Flooding at the Bloom Road/Academy Avenue intersection impacts the primary entrance to Geisinger.
Mahoning Township	Flooding at the Bloom Road/Woodbine Lane/Kaseville Road intersection is an ongoing issue during periods of heavy rain; resulting in road detours.
Mahoning Township	Residential properties adjacent to Red Lane have had poor stormwater management leading to flooding.
Rockslides/Subsidence	
Danville Borough	Rockslides on US 11 west of Danville Borough.
Mahoning Township	Bald Top Road closed due to road subsidence caused by severe storm event and steep slopes.
Rush Township	Rockslides on US 54 south of Riverside Borough.

Potential Flood Mitigation Funding

Based on a telephone discussion with SEDA-COG's Director of Housing Rehabilitation and Flood Resiliency, the Federal Emergency Management Agency (FEMA) declared a Major Disaster Declaration on November 27, 2018 for severe storms and flooding in specified Pennsylvania counties between August 10, 2018 to August 15, 2018 (DR-4408). Both Columbia and Montour counties are referenced in the disaster recovery declaration.

In September 2019, the U.S. Economic Development Administration (EDA) announced a Notice of Funding Availability (NOFA) under the Additional Supplemental Appropriations for Disaster Relief Act, 2019 (Public Law 116-20). As part of this act, EDA will award $587M in grants to communities experiencing economic distress or economic harm resulting from several identified disasters including *Federally declared natural disasters occurring in calendar year 2018.* This would include DR-4408 with EDA's Philadelphia office in charge of administering $50M of the NOFA grant awards. This disaster supplemental funding might be potentially available to address flooding at the Geisinger main entrance at the intersection of Bloom Street and Academy Avenue. An EDA presentation providing additional details on applicant and project eligibility is included in the following link:

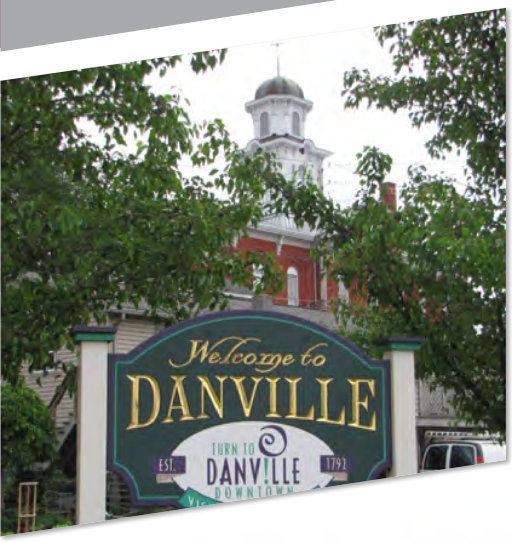
https://www.eda.gov/files/programs/disaster-recovery/supplemental/2019/NOFO_EDA-Disaster-Supplemental-Webinar_External.pdf .

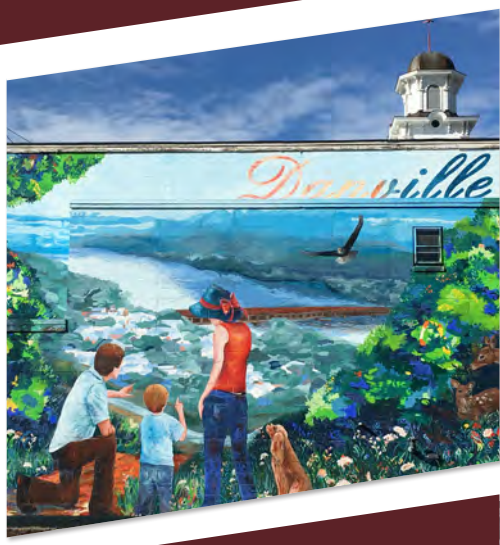
Follow Up

Information pertaining to flooding and subsidence hazards is beneficial to forward to county hazard mitigation planners and emergency management officials as part of updating each county's hazard mitigation plan. It is helpful to update not only hazard incidents in each county but also to update the capability assessment section of the county hazard mitigation plan. The capability assessment section of the plan cross references studies and planning efforts that identify natural or man-made hazards. Documenting occurrences of floods and rockslides will not only keep the county hazard mitigation plans up to date but could help leverage funding sources in the future.

APPENDIX B

Traffic Data Collection and Analysis Figures





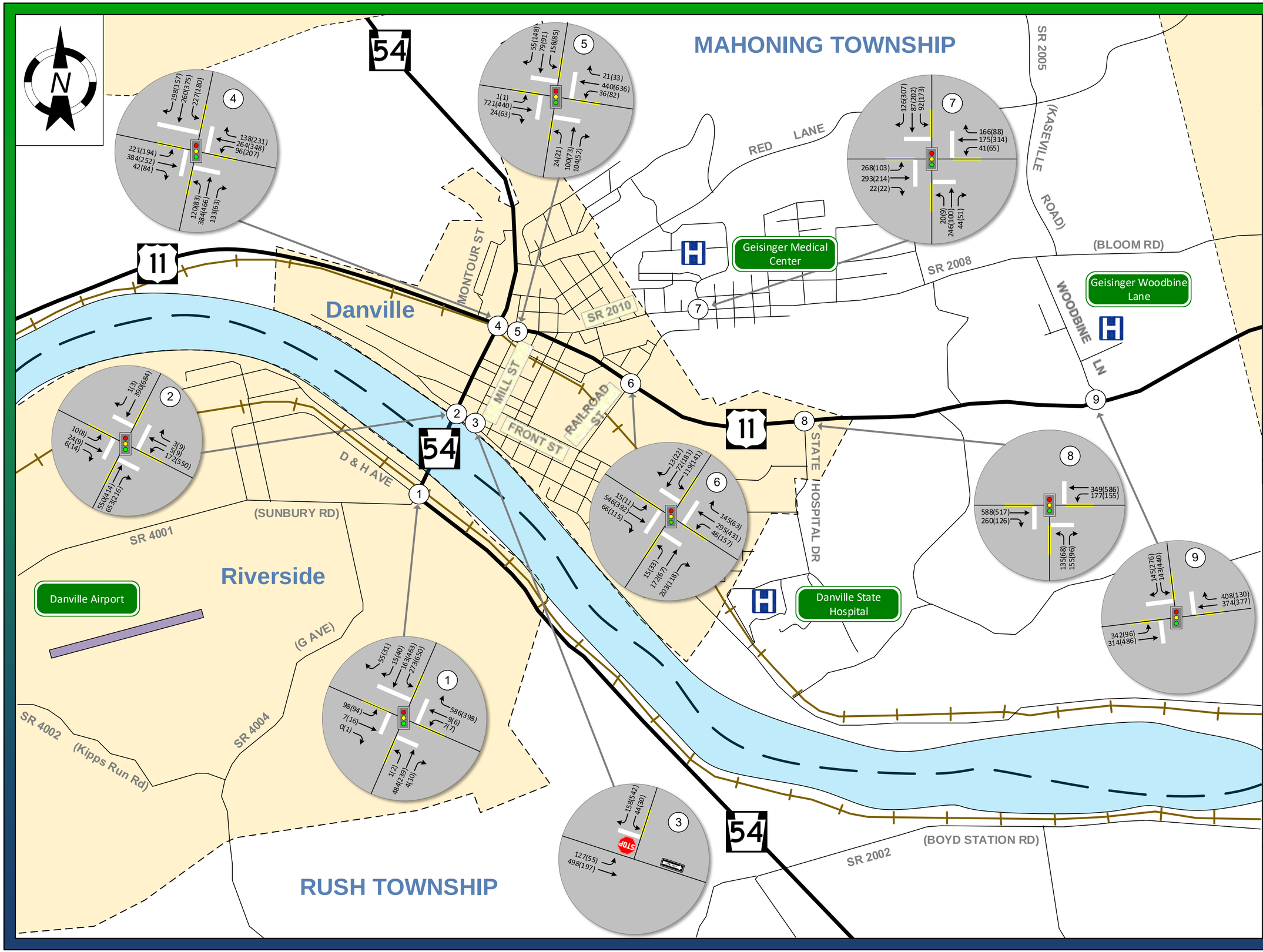


EXHIBIT 1A

PEAK HOUR TRAFFIC VOLUMES

Existing Conditions

(2019)

Weekday AM Peak Hour

Weekday PM Peak Hour

Danville Area Transportation Study

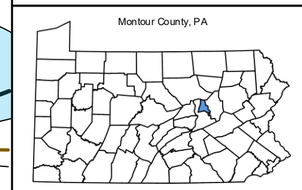
Baker Project No.: 172353

Date: June 2020

LEGEND

- Turning Movement
- Signalized Intersection
- Stop Control Approach
- One Way Street
- Railroad
- Medical Facility
- ##(##) AM (PM) Peak Hour Turning Movement Counts

REGIONAL SETTING



Michael Baker INTERNATIONAL

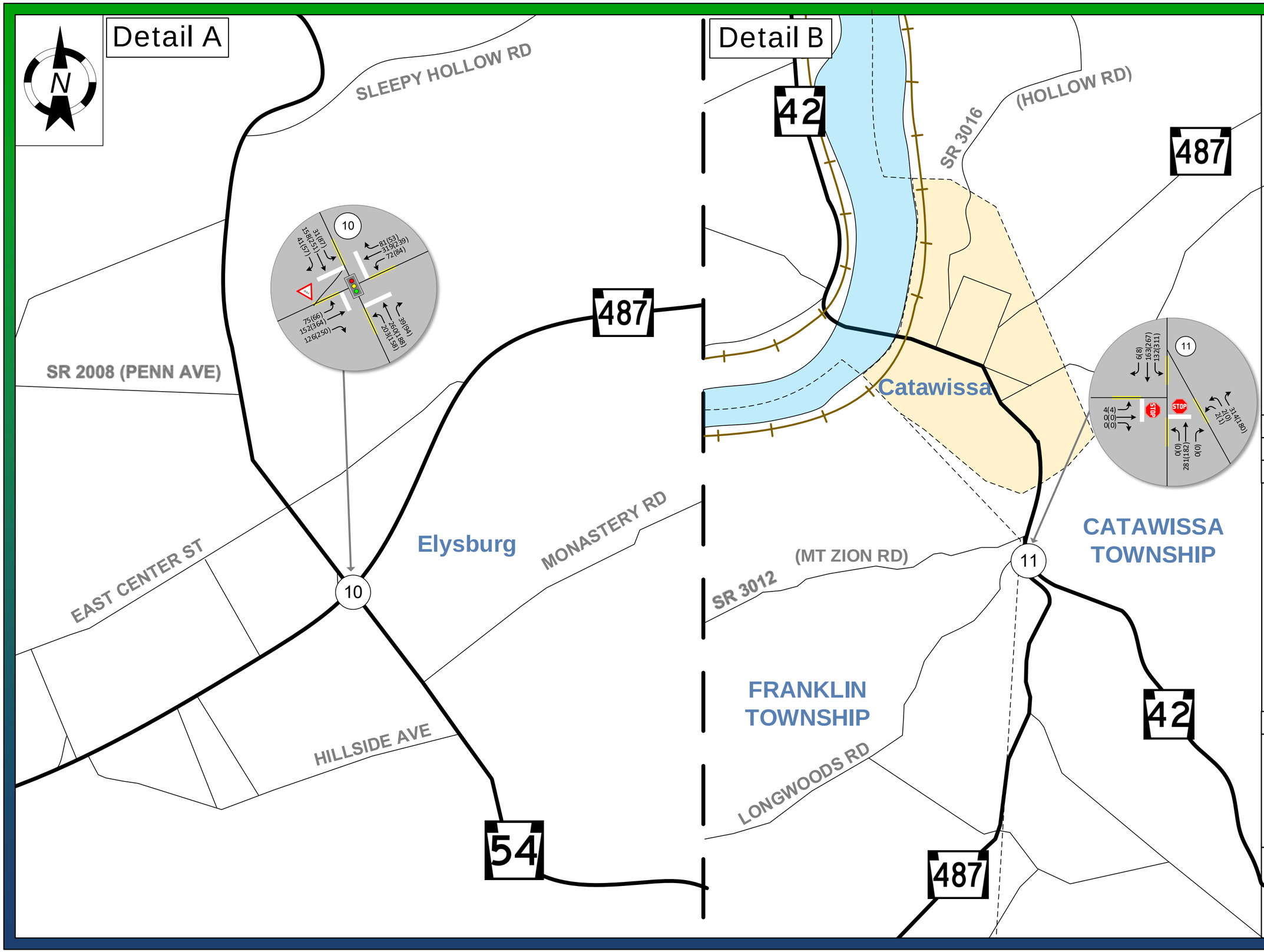


EXHIBIT 1B

PEAK HOUR TRAFFIC VOLUMES

Existing Conditions

(2019)

Weekday AM Peak Hour

Weekday PM Peak Hour

Danville Area Transportation Study

Baker Project No.: 172353

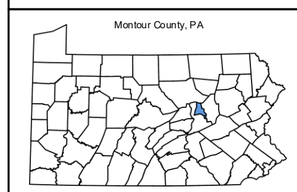
Date: June 2020

LEGEND

- Turning Movement
- Signalized Intersection
- Stop Control Approach
- Yield Control Approach
- One Way Street
- Railroad
- ##(##) AM (PM) Peak Hour Turning Movement Counts

REGIONAL SETTING

Montour County, PA



Michael Baker INTERNATIONAL

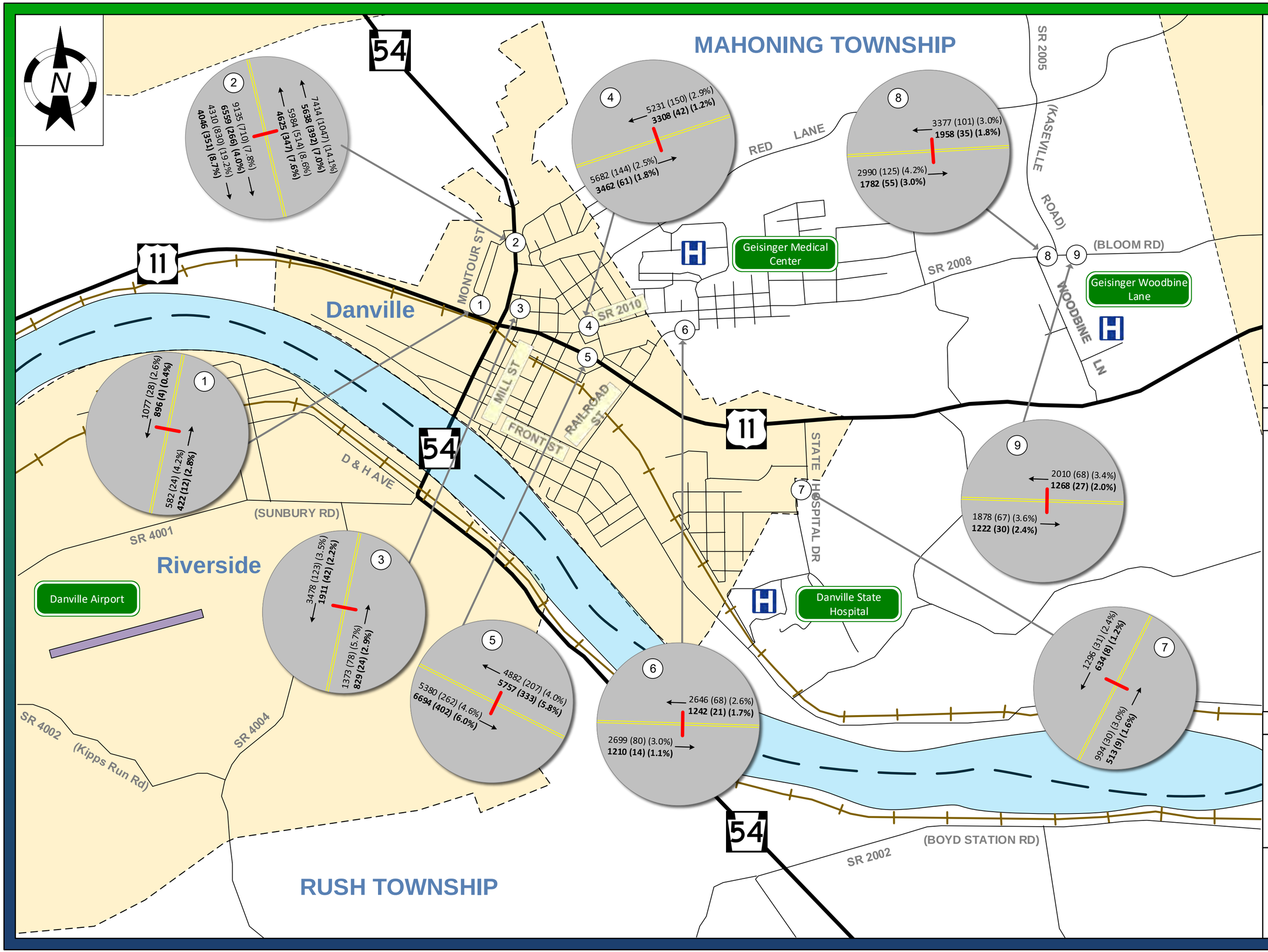


EXHIBIT 2

AVERAGE DAILY TRAFFIC VOLUMES

Existing Conditions

(2019)

Weekday
(12:00 A.M. – 11:59 P.M.)

Weekend
(12:00 A.M. – 11:59 P.M.)

Danville Area Transportation Study

Baker Project No.: 172353

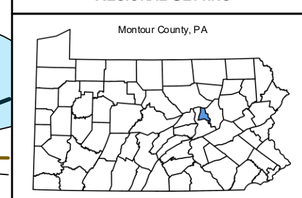
Date: June 2020

LEGEND

- Directional Flow
- Signalized Intersection
- Stop Control Approach
- One Way Street
- Railroad
- Medical Facility
- Automatic Traffic Recorder
- ## (##) (##%) — Weekday Daily Traffic (Heavy Vehicle Daily Traffic) (Weekday Heavy Vehicle%)
- **## (##) (##%)** — Weekend Daily Traffic (Heavy Vehicle Daily Traffic) (Weekend Heavy Vehicle%)

REGIONAL SETTING

Montour County, PA



Michael Baker INTERNATIONAL

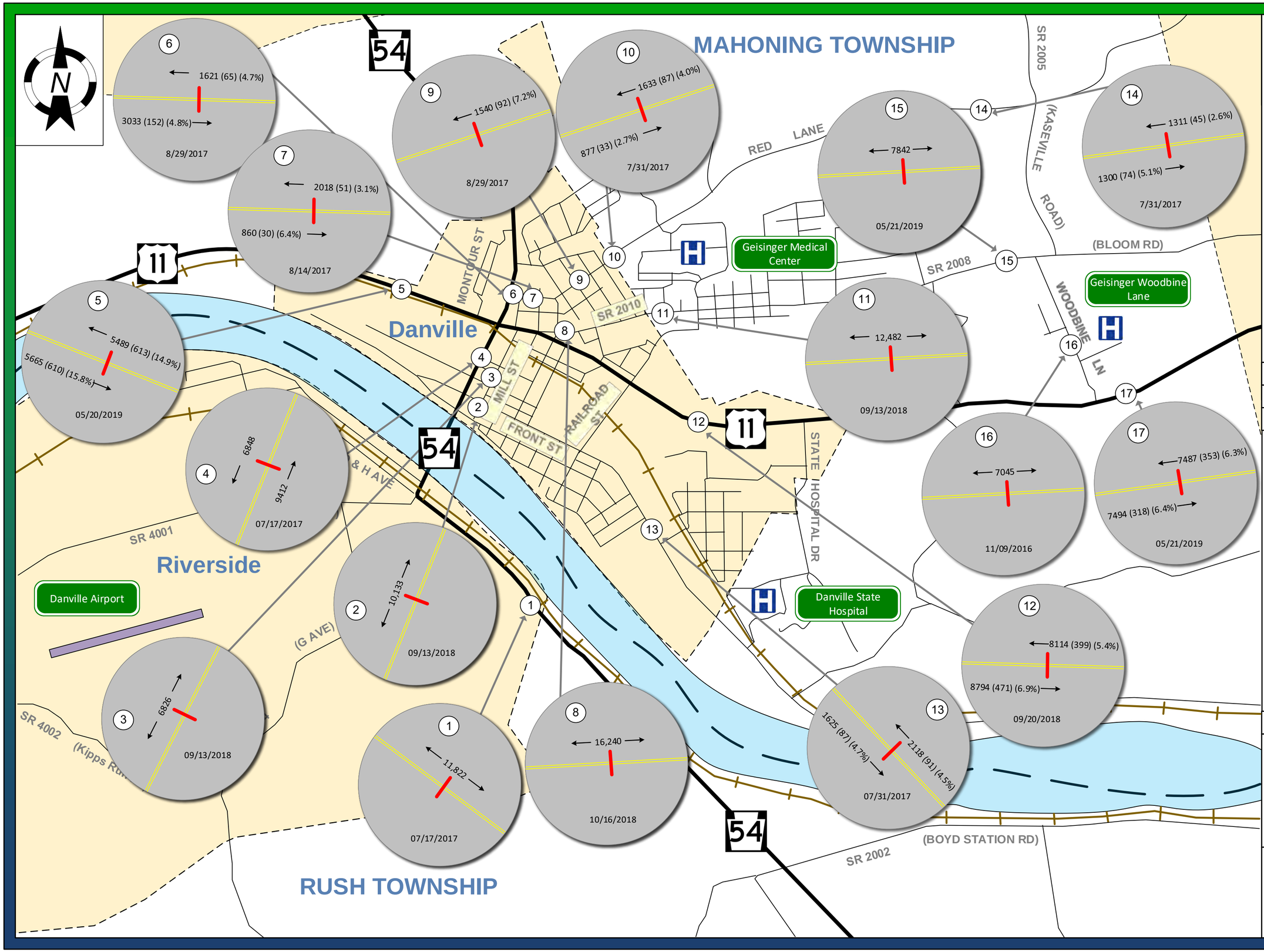


EXHIBIT 3

HISTORICAL AVERAGE DAILY TRAFFIC VOLUMES

Existing Conditions

(2019)

Weekday
(12:00 A.M. – 11:59 P.M.)

Danville Area Transportation Study

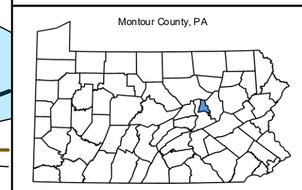
Baker Project No.: 172353

Date: June 2020

LEGEND

- Directional Flow
- Signalized Intersection
- Stop Control Approach
- One Way Street
- Railroad
- Medical Facility
- Automatic Traffic Recorder
- ## (##) (##%) — Weekday Daily Traffic (Heavy Vehicle Daily Traffic) (Weekday Heavy Vehicle%)

REGIONAL SETTING



Michael Baker INTERNATIONAL

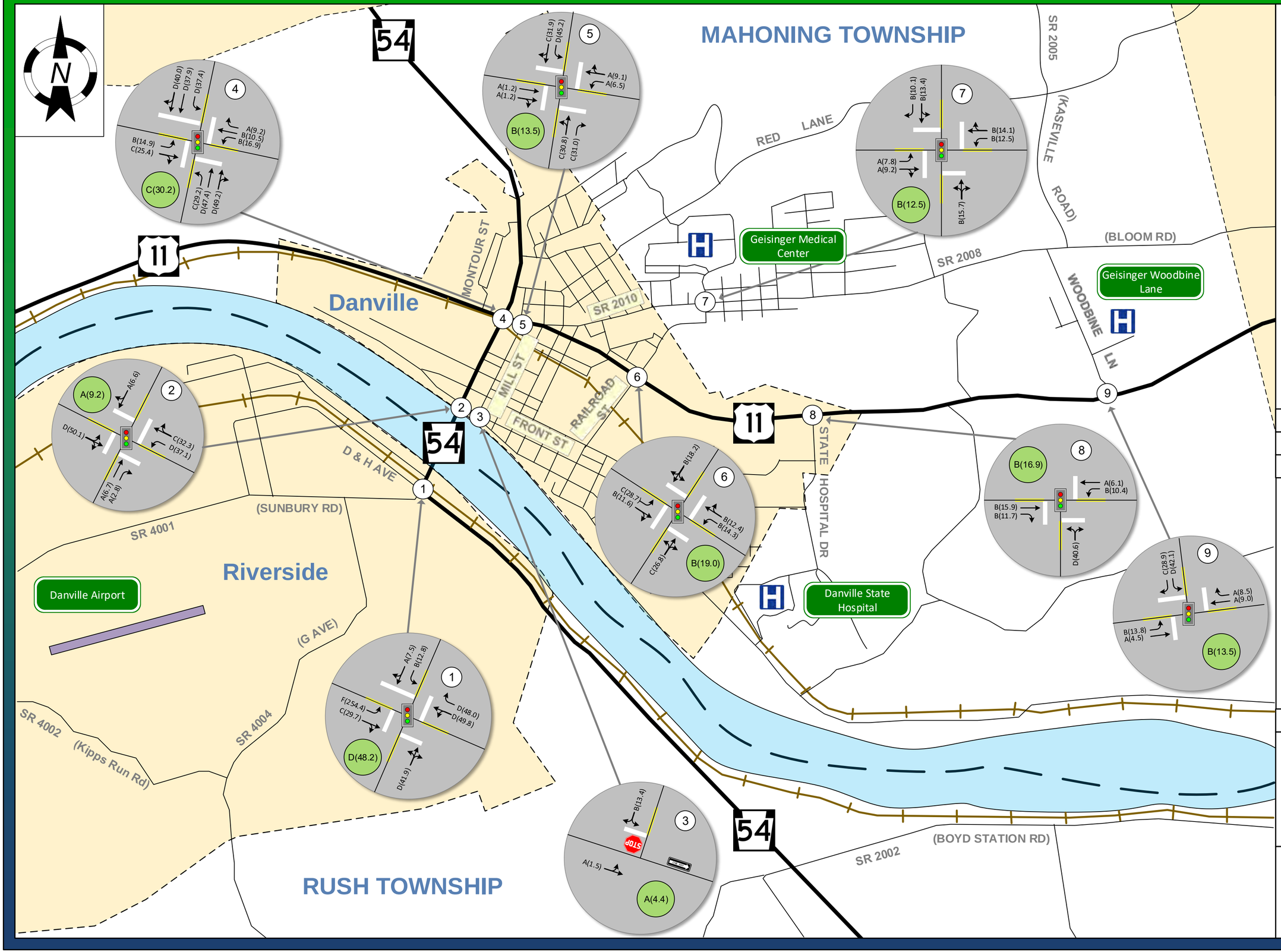


EXHIBIT 4A

LEVELS OF SERVICE

Existing Conditions

(2019)

Weekday AM Peak Hour

Danville Area Transportation Study

Baker Project No.: 172353

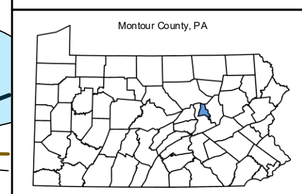
Date: June 2020

LEGEND

- Turning Movement
- Signalized Intersection
- Stop Control Approach
- One Way Street
- Railroad
- Medical Facility
- ##(##) AM Level of Service (Delay) (seconds)

REGIONAL SETTING

Montour County, PA



Michael Baker INTERNATIONAL

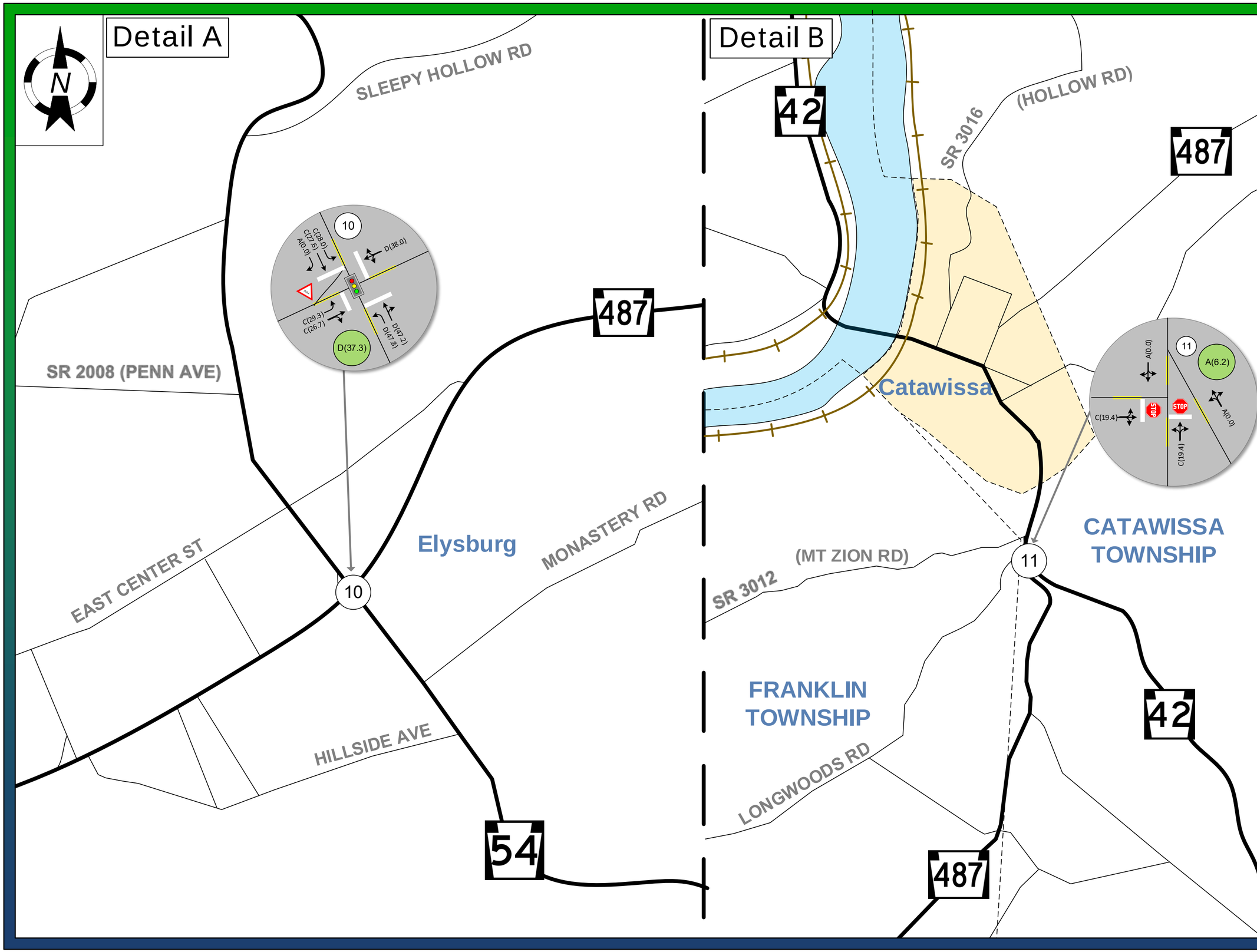


EXHIBIT 4B

LEVELS OF SERVICE

Existing Conditions

(2019)

Weekday AM Peak Hour

Danville Area Transportation Study

Baker Project No.: 172353

Date: June 2020

LEGEND

- Turning Movement
- Signalized Intersection
- Stop Control Approach
- Yield Control Approach
- One Way Street
- Railroad
- ##(##) AM Level of Service (Delay) (seconds)

REGIONAL SETTING

Montour County, PA

Michael Baker INTERNATIONAL

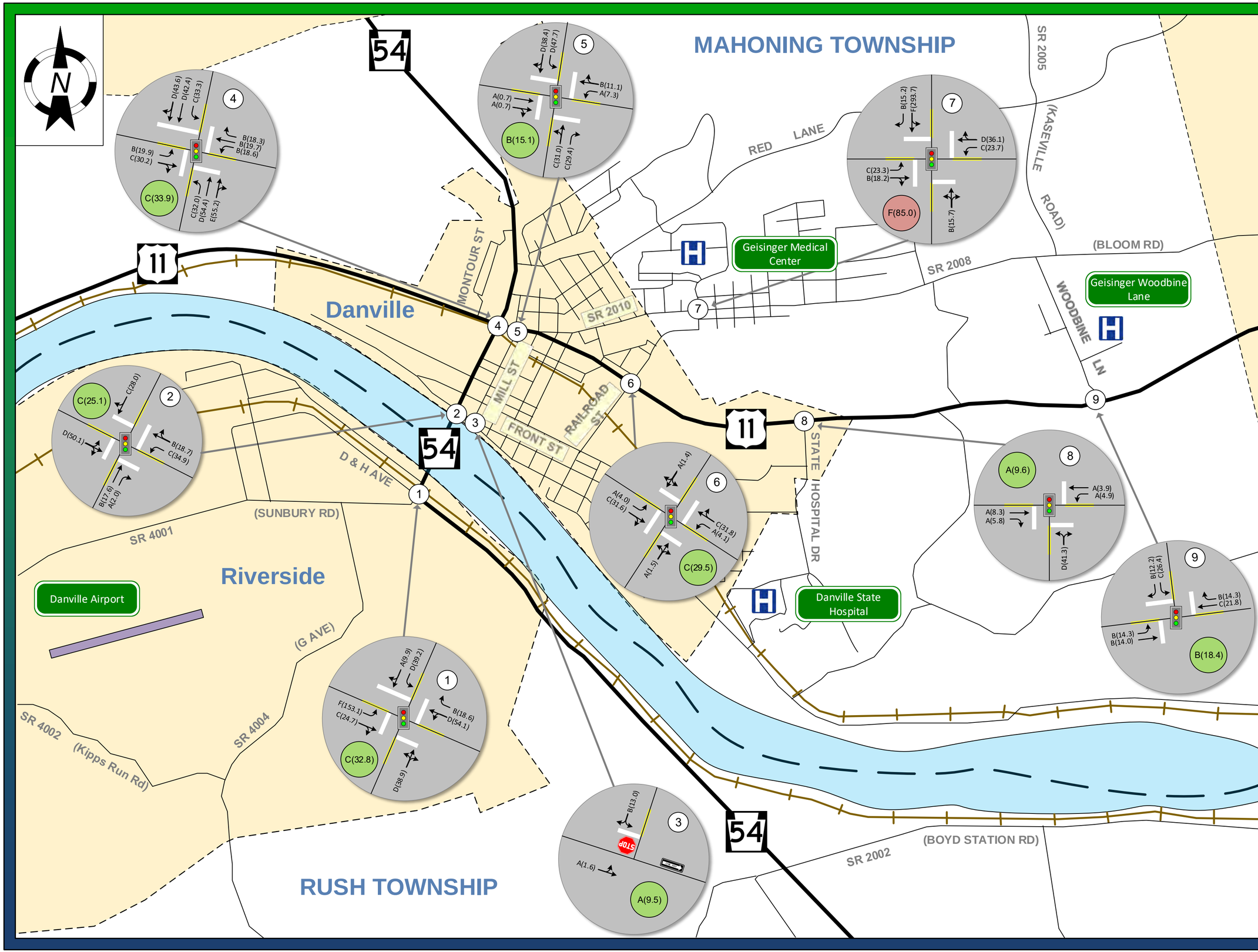


EXHIBIT 5A

LEVELS OF SERVICE

Existing Conditions

(2019)

Weekday PM Peak Hour

Danville Area Transportation Study

Baker Project No.: 172353

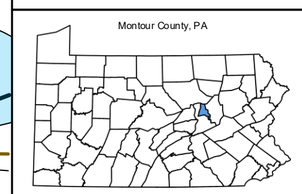
Date: June 2020

LEGEND

- Turning Movement
- Signalized Intersection
- Stop Control Approach
- One Way Street
- Railroad
- Medical Facility
- ##(##) PM Level of Service (Delay) (seconds)

REGIONAL SETTING

Montour County, PA



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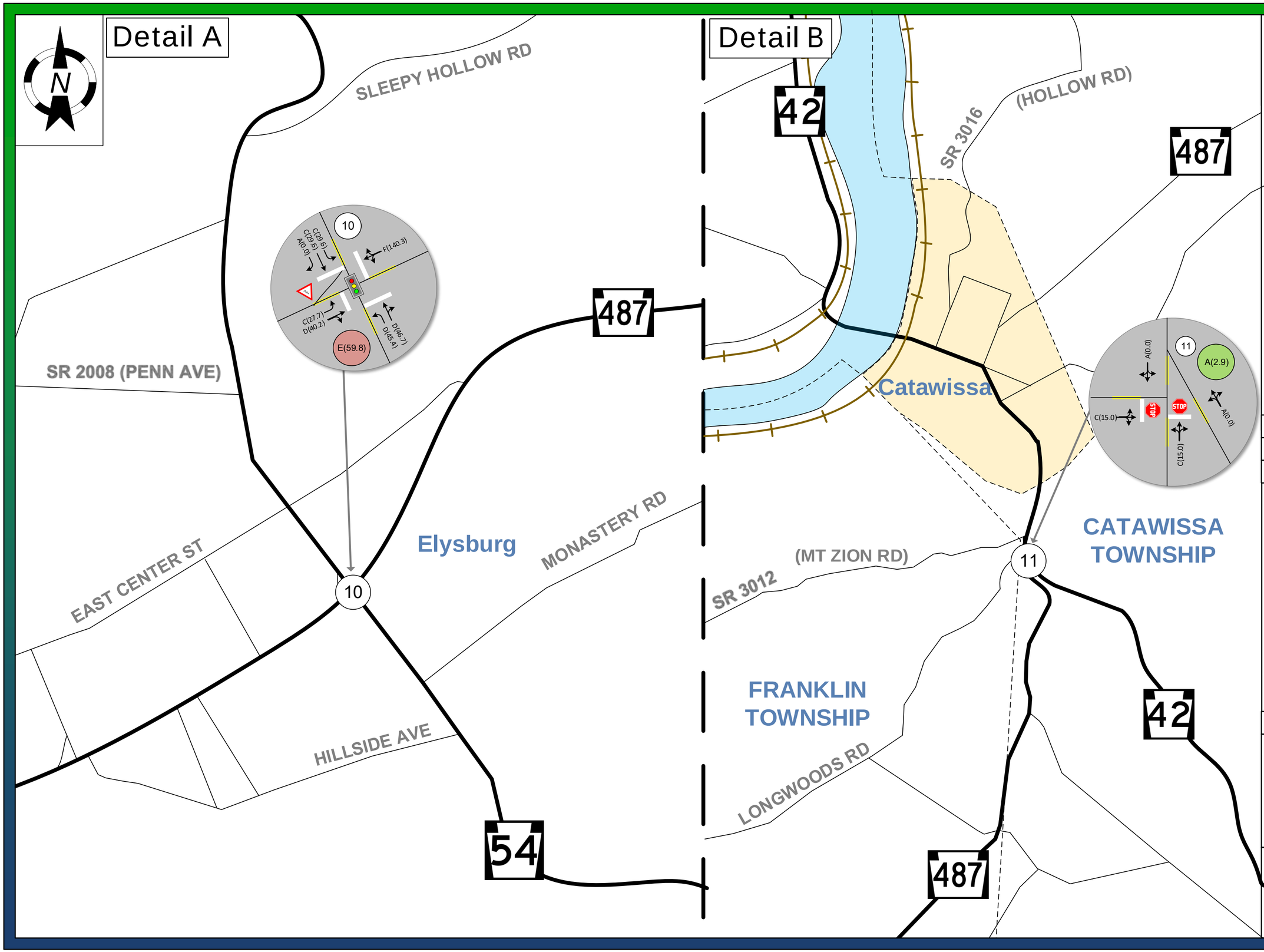


EXHIBIT 5B

LEVELS OF SERVICE

Existing Conditions

(2019)

Weekday PM Peak Hour

Danville Area Transportation Study

Baker Project No.: 172353

Date: June 2020

LEGEND

- Turning Movement
- Signalized Intersection
- Stop Control Approach
- Yield Control Approach
- One Way Street
- Railroad
- ##(##) PM Level of Service (Delay) (seconds)

REGIONAL SETTING

Montour County, PA

Michael Baker INTERNATIONAL

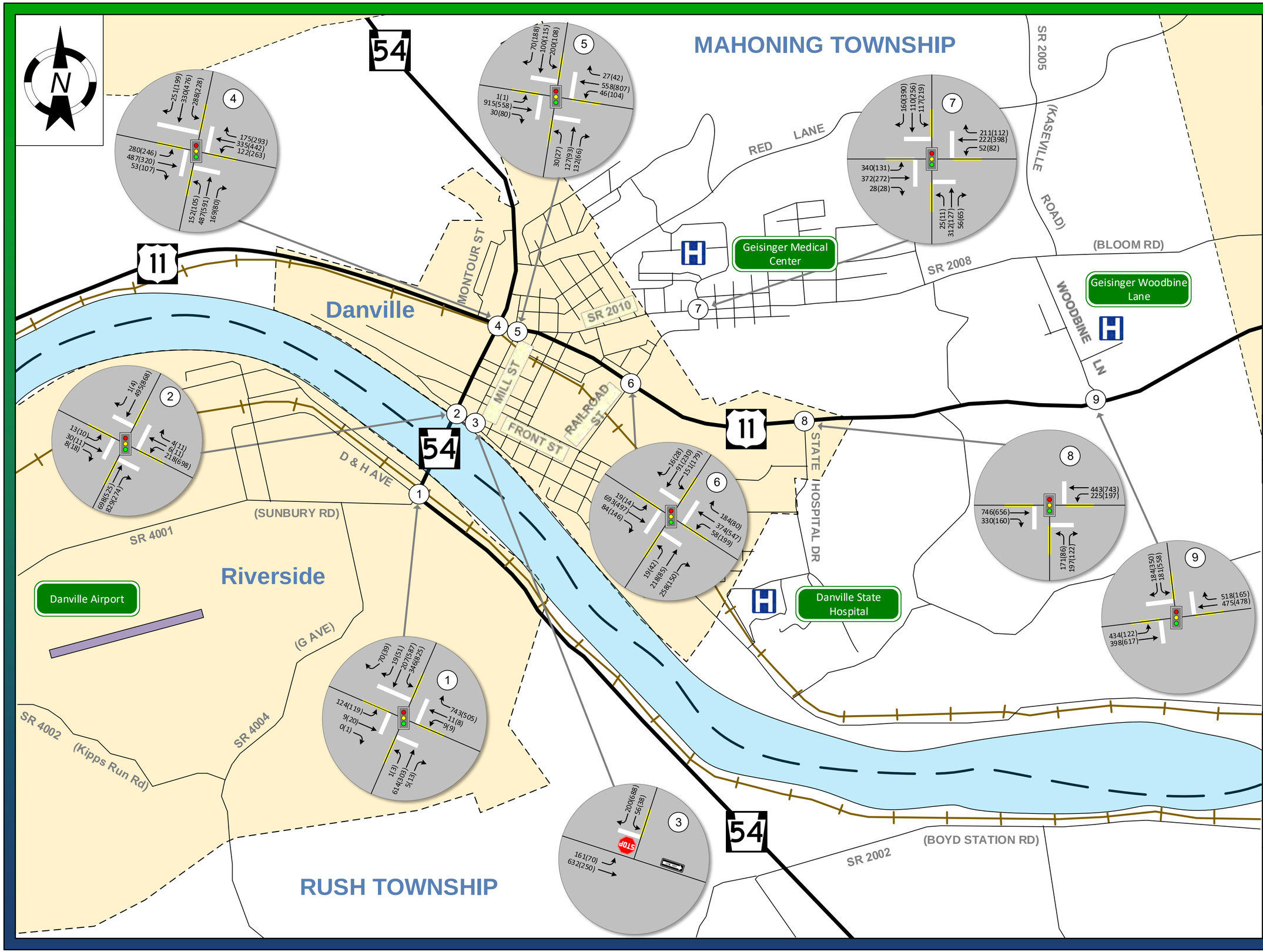


EXHIBIT 6A

PEAK HOUR TRAFFIC VOLUMES

Future Conditions

No Improvements

(2040)

Weekday AM Peak Hour

Weekday PM Peak Hour

Danville Area Transportation Study

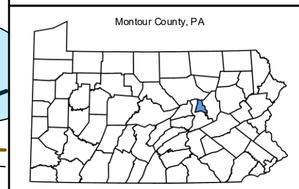
Baker Project No.: 172353

Date: June 2020

LEGEND

- Turning Movement
- Signalized Intersection
- Stop Control Approach
- One Way Street
- Railroad
- Medical Facility
- ##(##) AM (PM) Peak Hour Turning Movement Counts

REGIONAL SETTING



Michael Baker INTERNATIONAL

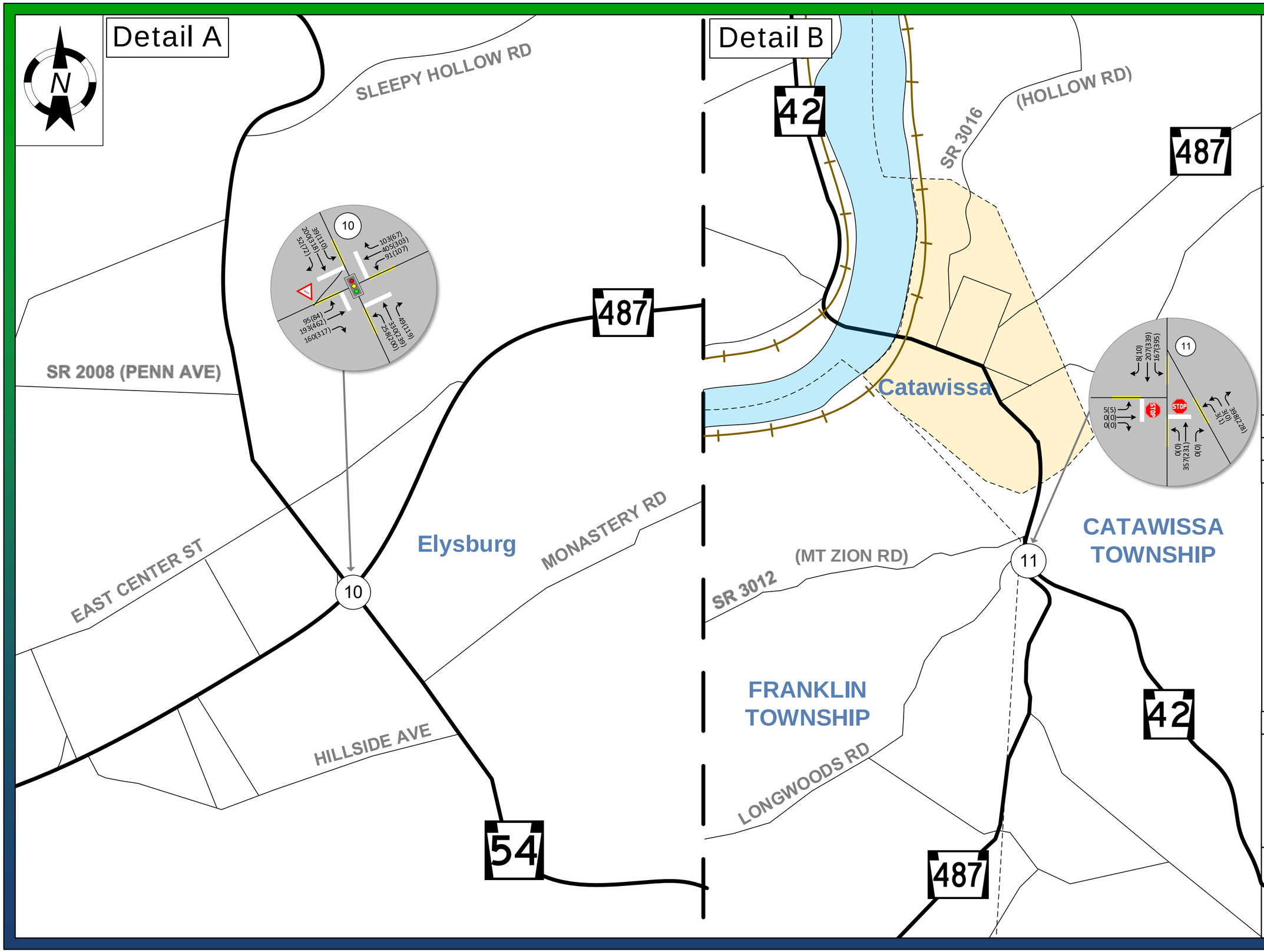


Exhibit 6B

Peak Hour Traffic Volumes

Future Conditions

No Improvements

(2040)

Weekday AM Peak Hour

Weekday PM Peak Hour

Danville Area Transportation Study

Baker Project No.: 172353

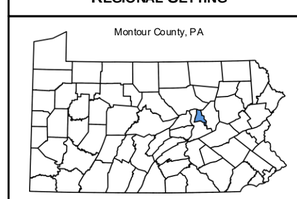
Date: June 2020

Legend

- Turning Movement
- Signalized Intersection
- Stop Control Approach
- Yield Control Approach
- One Way Street
- Railroad
- ##(##) AM (PM) Peak Hour Turning Movement Counts

Regional Setting

Montour County, PA



Michael Baker INTERNATIONAL

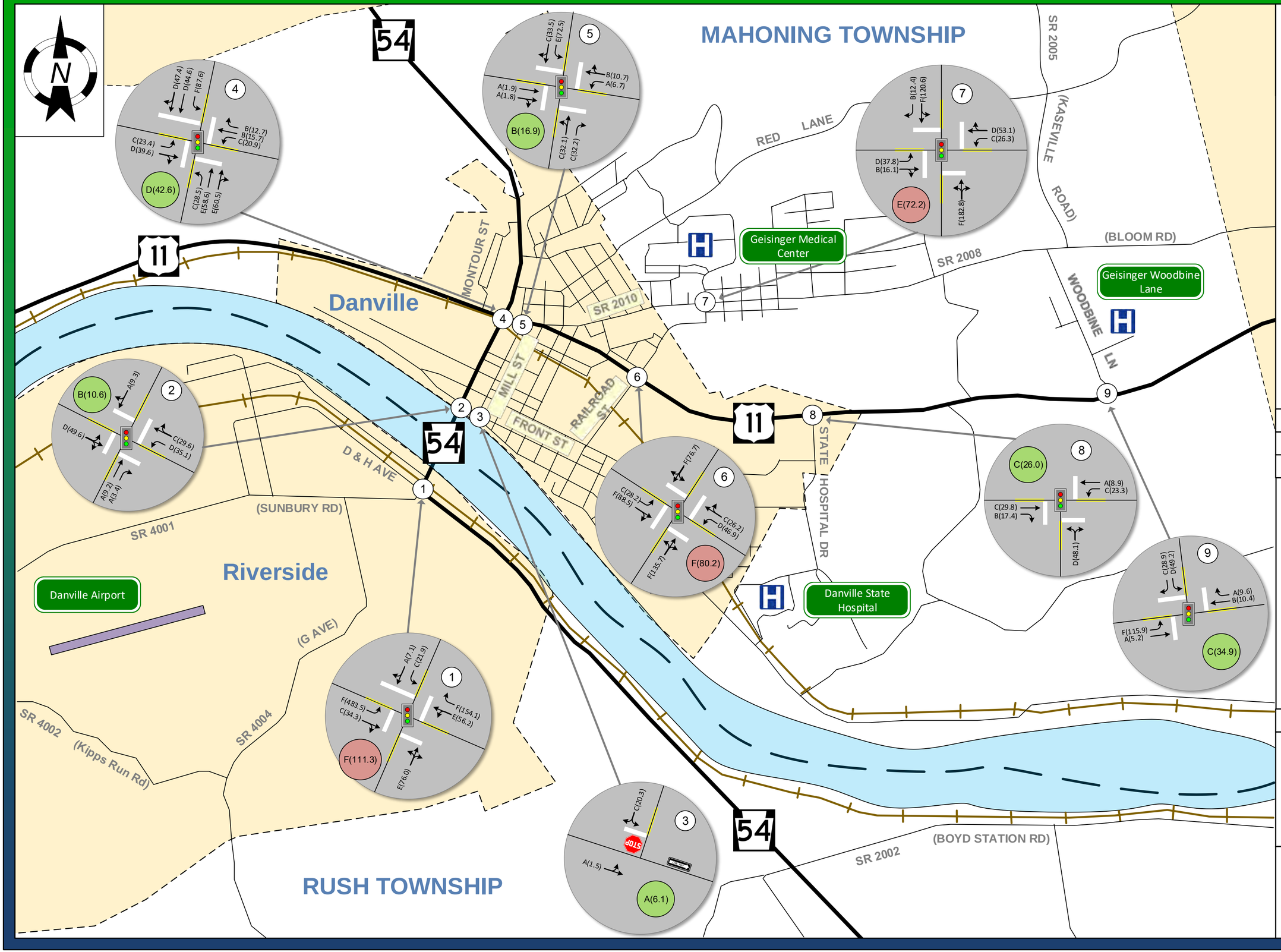


EXHIBIT 7A

LEVELS OF SERVICE

Future Conditions

No Improvements

(2040)

Weekday AM Peak Hour

Danville Area Transportation Study

Baker Project No.: 172353

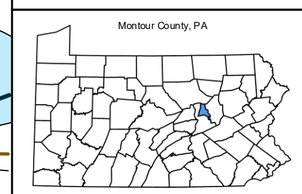
Date: June 2020

LEGEND

- Turning Movement
- Signalized Intersection
- Stop Control Approach
- One Way Street
- Railroad
- Medical Facility
- ##(##) AM Level of Service (Delay) (seconds)

REGIONAL SETTING

Montour County, PA



Michael Baker INTERNATIONAL

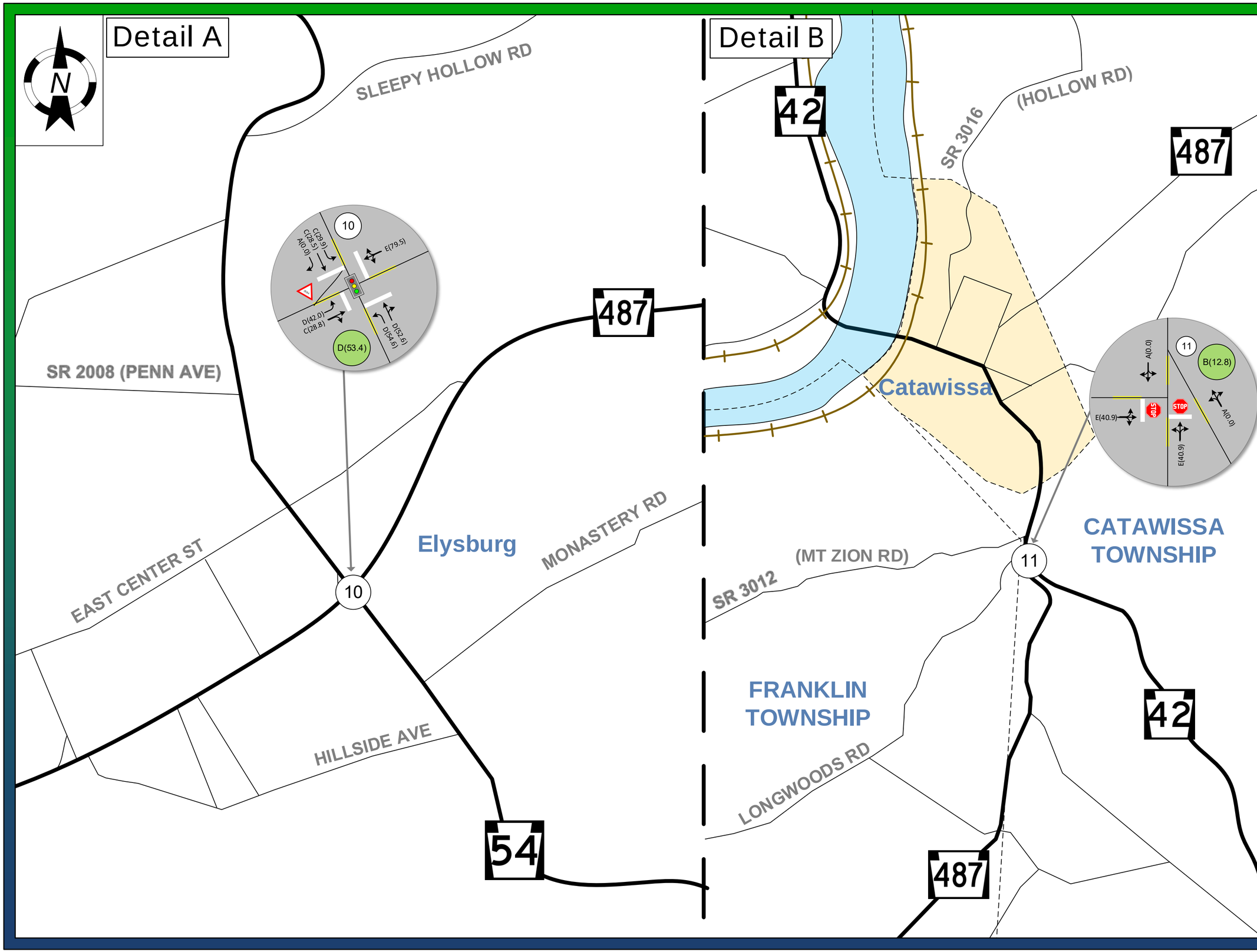


EXHIBIT 7B

LEVELS OF SERVICE

Future Conditions

No Improvements

(2040)

Weekday AM Peak Hour

Danville Area Transportation Study

Baker Project No.: 172353

Date: June 2020

LEGEND

- Turning Movement
- Signalized Intersection
- Stop Control Approach
- Yield Control Approach
- One Way Street
- Railroad
- ##(##) AM Level of Service (Delay) (seconds)

REGIONAL SETTING

Montour County, PA

Michael Baker INTERNATIONAL

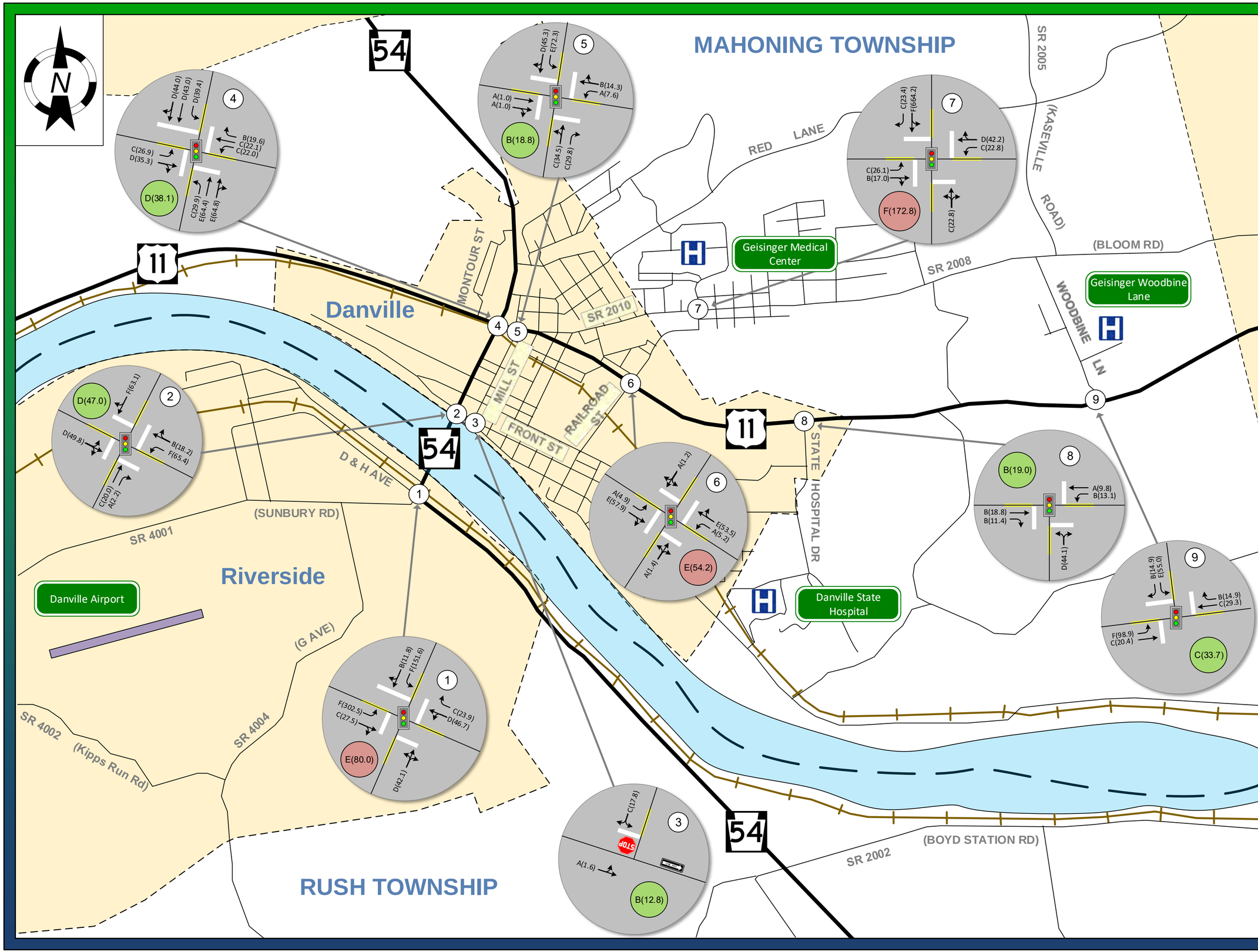


EXHIBIT 8A

LEVELS OF SERVICE

Future Conditions

No Improvements

(2019)

Weekday PM Peak Hour

Danville Area Transportation Study

Baker Project No.: 172353

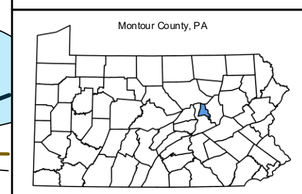
Date: June 2020

LEGEND

- Turning Movement
- Signalized Intersection
- Stop Control Approach
- One Way Street
- Railroad
- Medical Facility
- ##(##) PM Level of Service (Delay) (seconds)

REGIONAL SETTING

Montour County, PA



Michael Baker INTERNATIONAL

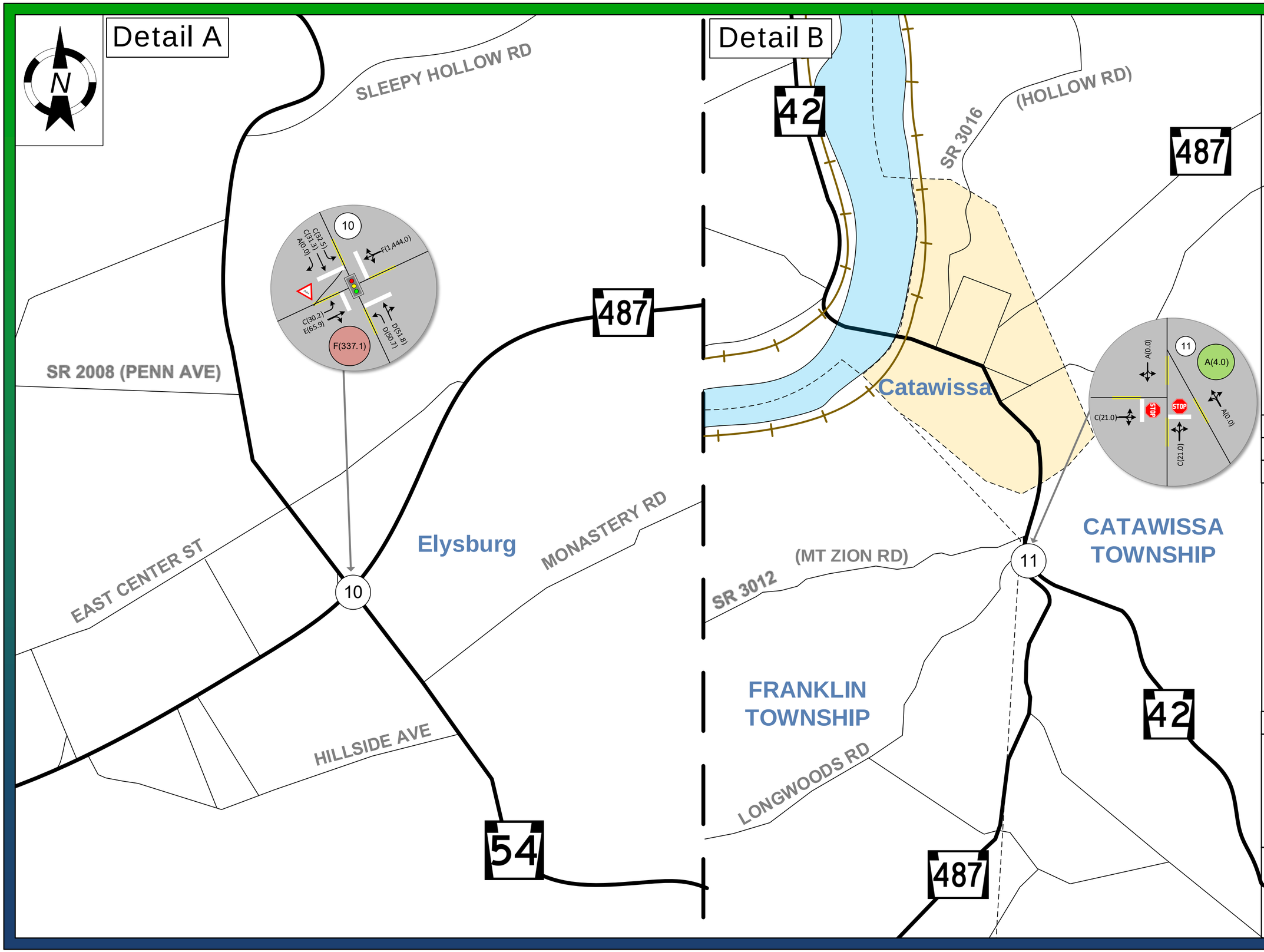


EXHIBIT 8B

LEVELS OF SERVICE

Future Conditions

No Improvements

(2040)

Weekday PM Peak Hour

Danville Area Transportation Study

Baker Project No.: 172353

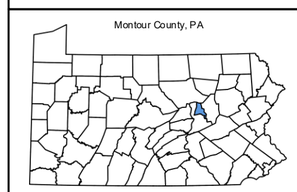
Date: June 2020

LEGEND

- Turning Movement
- Signalized Intersection
- Stop Control Approach
- Yield Control Approach
- One Way Street
- Railroad
- ##(##) PM Level of Service (Delay) (seconds)

REGIONAL SETTING

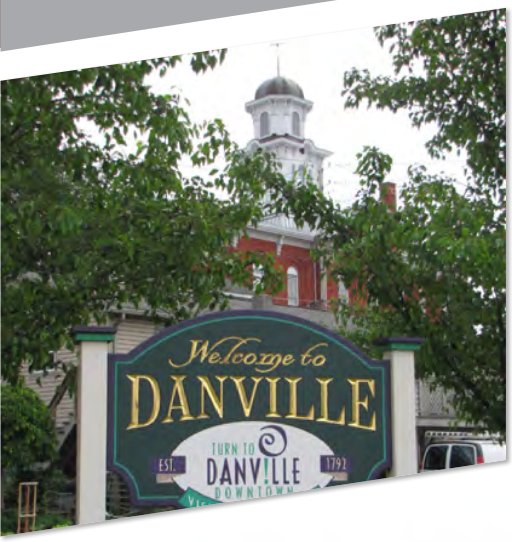
Montour County, PA

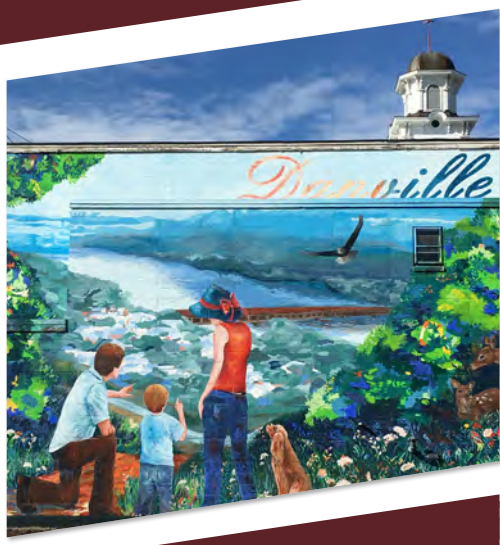


Michael Baker INTERNATIONAL

APPENDIX C

Location-Specific Transportation Profiles





Location 1. US 11 Between Bloom Street & State Hospital Drive

Transportation Concern

The US 11 corridor between Bloom Street and State Hospital Drive experiences high congestion during peak hours as a result of commuters traveling to/from Geisinger's Woodbine Lane Clinic and Bloomsburg Borough.

Purpose & Need

The desired end state is to create a more efficient traffic flow to ease access to Geisinger's Woodbine Clinic and improve congestion during A.M. and P.M. peak hours, as well as increase safety for bicyclists, pedestrians, and motorists along the corridor.

Stakeholder Input – Qualitative Insight

- The corridor experiences congestion during the A.M./P.M. peak hours at the Bloom Street, Railroad Street, and State Hospital Drive intersections as a result of commuters destined to Geisinger's Woodbine Lane Clinic.
- The intersections within this corridor are unconventional and confusing.
- The corridor is unsafe for bicyclists and pedestrians.
- Traffic resulting from Geisinger's Woodbine Lane Clinic causes congestion issues along the corridor during the evening peak hour which leads to backups on US 11 between 4:00 P.M. and 4:30 P.M.
- A high proportion of the AADT along the corridor is destined towards/from Geisinger's Woodbine Lane Clinic and the Danville Area School District campus.

- There is interest in extending Liberty Street and creating a new intersection with US 11 to ease traffic flows to/from the Danville Area School District campus.

Supporting Analysis – Quantitative Information

Safety Assessment

- This roadway section experienced 56 crashes, including 22 angle crashes, 17 rear end crashes, four head on crashes, four unknown crashes, three hit fixed objects, three pedestrian crashes, and three same direction sideswipes. Of the 56 crashes, there were 35 property damage only (PDO) crashes, seven unknown severity crashes, seven possible injury crashes, three suspected serious injury crashes, three suspected minor injury crashes, and one unknown if injured crash. All three pedestrian crashes took place at the intersection of US 11 and Railroad Street. The areas along the segment experiencing the highest number of crashes included the intersection of US 11 & Bloom Street (SR 2010) (seven crashes), intersection of US 11 and Church Street (nine crashes), and the intersection of US 11 and Railroad Street (14 crashes). All rear end crashes occurred along US 11, with three taking place along the northbound US 11 approach and two taking place along the southbound approach. 41 of the crashes took place during daylight hours while three crashes took place at dusk, and 12 more took place at night, with nine under street lights. 54 crashes took place under dry and clear weather conditions, while one crash took place during a fog event, and another during a snow event.
- Seven angle crashes were observed at the intersection of US 11 & Church Street, with five of the crashes involving vehicles running red lights.
- At the intersection of US 11 and Railroad Street there were six angle crashes, along with three pedestrian crashes. The angle crashes were caused by improper/careless left turns and vehicles proceeding without clearance.

Operational Assessment

The typical cross-section along this US 11 corridor is a single lane in each direction, along with a center turn lane between Railroad Street and State Hospital Drive.

Segment Start	Segment End	AADT (vehicles)				Heavy Vehicle %			
		Eastbound		Westbound		Eastbound		Westbound	
		Mon. – Fri.	Sat. – Sun.	Mon. – Fri.	Week end	Mon. – Fri.	Week end	Mon. – Fri.	Sat. – Sun.
Bloom Road	Railroad Street	5,380	6,694	4,882	5,757	4.6%	6.0%	4.0%	5.8%

LOS SUMMARY		Peak Hour			
Intersection	Lane Group/ Approach	2019 Existing Conditions		2040 Future Conditions	
		A.M.	P.M.	A.M.	P.M.
6) US 11 & Railroad Street	EBL	C (28.7)	A (4.0)	C (28.2)	A (4.9)
	EB T/R	B (11.6)	C (31.6)	F (88.5)	E (57.9)
	EB	B (19.4)	C (30.4)	F (87.1)	E (55.1)
	WBL	B (14.3)	A (4.1)	D (46.9)	A (5.2)
	WB T/R	B (12.4)	C (31.8)	C (26.2)	E (53.5)
	WB	B (12.6)	C (30.2)	C (28.2)	E (52.3)
	NB L/T/R	C (26.8)	A (1.5)	F (135.7)	A (1.4)
	SB L/T/R	B (18.2)	A (1.4)	F (76.7)	A (1.2)
	Intersection	**B (19.0)**	**C (29.5)**	**F (80.2)**	**E (54.2)**
8) US 11 & State Hospital Drive	EBT	B (15.9)	A (8.3)	C (29.8)	B (18.8)
	EBR	B (11.7)	A (5.8)	B (17.4)	B (11.4)
	EB	B (14.6)	A (7.8)	C (25.9)	B (17.3)
	WBL	B (10.4)	A (4.9)	C (23.3)	B (13.1)
	WBT	A (6.1)	A (3.9)	A (8.9)	A (9.8)
	WB	A (7.6)	A (4.1)	B (13.8)	B (10.5)
	NB L/R	D (40.6)	D (41.3)	D (48.1)	D (44.1)
	Intersection	**B (16.9)**	**A (9.6)**	**C (26.0)**	**B (19.0)**

Intersection	Lane Group	Existing Storage Length (feet)	Queue Length (feet)							
			2019 Existing Conditions				2040 Future Conditions			
			AM		PM		AM		PM	
			50th	95th	50th	95th	50th	95th	50th	95th
(6) US 11 & Railroad Street	EB L	120	125	218	0	0	8	15	0	0
	EB TR	700	75	138	1600	1930	670	955	2060	2433
	WB L	200	10	20	0	3	38	65	3	3
	WB TR	3400	88	158	1555	1880	248	378	2008	2375
	NB LTR	720	145	243	0	3	578	878	3	3
	SB LTR	850	110	198	0	3	240	368	3	3
(8) US 11 & State Hospital Drive	EB T	3450	213	333	98	175	438	610	263	395
	EB R	175	75	135	18	33	133	228	45	80
	WB L	225	28	50	13	23	83	148	38	68
	WB T	3000	60	108	53	93	113	200	190	303
	NB L/R	300	193	305	95	170	285	423	250	380

Location 2. US 11 & PA 54 Intersection

Transportation Concern

The intersection of two major routes through the area, the intersection of US 11 & PA 54 experiences heavy congestion during all times of the day, but even more so during the morning and evening peak hours. The close proximity to the intersection of US 11 & Mill Street adds additional queuing issues at the intersection as well. The high delay experienced by vehicles contributes to the crash history, with frequent occurrences of vehicles making improper/careless turns or running red lights.

Purpose & Need

- With this intersection being the main entrance/exit to the borough, the intersection experiences heavy congestion. The intersection should provide a progressive movement of traffic to efficiently move traffic during the morning and evening peak hours.
- The desired end state is a safe and efficient intersection that allows for progressive traffic movements through the area.

Stakeholder Input – Qualitative Insight

- Development near the intersection (Danville Middle School, Wendy's) combined with heavy through traffic, causes congestion and unsafe conditions during A.M./P.M. peak hours.

- The configuration of the US 11/Bloom Street & Ferry Street five-legged intersection adds to traffic congestion at the US 11 & PA 54 intersection.
- The intersection is unsafe for bicyclists/pedestrians.
- High speeds are present on the southbound PA 54 approach.
- The closely spaced intersections pose queuing problems and make it hard for vehicles to turn.
- The train passes through the intersection once per day, causing pedestrian and motorist conflicts; an increase in railcars is likely due to expanding industrial park. There are safety impacts and congestion issues.
- The intersection is located in close proximity to commercial properties and an increase in commercial development is expected in the future.
- Access management to adjacent commercial driveways, such as Wendy's, is a problem due to queues.
- The US 11/PA 54 intersection has high amounts of traffic during peak hours. The intersection experiences heavy through movements.
- Truck turning movements are an issue at the intersection.
- Flood control constraints exist at the intersection.
- Queuing along PA 54 can extend from the intersection south to the south side of the Danville River Bridge.
- Pedestrian crossings are an issue at the intersection, with students trespassing on train tracks to avoid crossing the intersection.

Supporting Analysis – Quantitative Information

Safety Assessment

The intersection experienced 39 crashes, including 21 angle crashes, eight rear end crashes, six head on crashes, two hit fixed objects, one non collision, and one same direction sideswipe. Of the 39 crashes, there were 27 PDO crashes, eight possible injury crashes, three suspected minor injury crashes, and one unknown severity crash. Common driver actions responsible for the crashes include improper/careless turns (17 crashes), distracted drivers (six crashes), proceeding without clearance (five crashes), and running red light (three crashes). The angle crashes can be attributed to high turning movements and through traffic, along with vehicle queuing. 27 of the crashes took place during daylight hours while two crashes took place at dawn, and 10 more took place at night under street lights. 32 crashes took place under dry and clear weather conditions, while six took place during a rain event and one during a snow event.

Operational Assessment

Existing Conditions

- 135 pedestrians were identified during the 24-hour count period.
- During the A.M. peak hour, the approach experiencing the highest number of movements is the southbound approach, with 685 vehicles. Along the southbound approach, most (260) are through movements, traveling south on PA 54. The predominant movement at this intersection during this time period are vehicles traveling eastbound, with 744 vehicles. Queuing is an issue at the eastbound and northbound approaches, which are approximately 350 feet and 325 feet,

respectively. The intersection operates at a LOS C during this time period, with the northbound and southbound approaches experiencing the highest average delay. The northbound PA 54 through and through/right lanes all experience LOS D, as well as all lanes on the southbound PA 54 approach.

- During the P.M. peak hour, the approach experiencing the highest number of movements is the westbound approach, with 786 vehicles. Along the westbound approach, most (348) are through movements, traveling west on US 11. The predominant movement at this intersection during this time period are vehicles traveling northbound, with 891 vehicles. Queuing is an issue at the eastbound and northbound approaches, which are approximately 300 feet and 325 feet, respectively. The intersection operates at a LOS C during this time period, with the northbound and southbound approaches experiencing the highest average delay. The northbound PA 54 through lane experiences LOS D and the through/right lane experiences LOS E. The southbound PA 54 through lane and through/right lane experiences LOS D.

Future Conditions

- Future conditions anticipate the intersection LOS dropping to LOS D during the A.M. and P.M. peak hours. During the A.M. and P.M. peak hours the northbound PA 54 through and through/right lanes experience LOS E. The southbound left turn lane experiences a LOS F during the A.M. peak hour.
- Queuing is an issue during both future A.M. and P.M. peak hours. During the A.M. peak hour, the eastbound US 11 95th percentile queues reach 525 feet, and the northbound PA 54 queues reach approximately 425 feet. During the P.M. peak hour, the eastbound US 11 95th percentile queues reach 400 feet, and the northbound PA 54 queues reach approximately 425 feet.

Location 3. US 11 & Woodbine Lane Intersection

Transportation Concern

During the morning and evening peak hours congestion issues are present at the intersection of US 11 and Woodbine Lane (T-372) as vehicles access the Geisinger's Woodbine Lane Clinic and Sheetz gas station.

Purpose & Need

- With Geisinger anticipating expanding the Woodbine Lane facilities, creating a more efficient intersection is important to accommodate the expected increase in traffic as a result of the expanded facilities.
- The desired end state is an intersection with a more efficient traffic flow to ease access to the Geisinger's Woodbine Lane Clinic and improve intersection congestion and safety.

Stakeholder Input – Qualitative Insight

- Conflicts from turns to/from Sheetz and Geisinger's Woodbine Lane Clinic cause congestion issues during A.M./P.M. peak hours; 1 of 2 top locations for Mahoning Township EMS response.
- There is an increasing level of traffic on Woodbine Lane due to the increasing number of Geisinger facilities.
- Industrial tenant trucks avoid accessing Woodbine Lane during the A.M. and P.M. peak hours.
- US 11 traffic stops too quickly, at times for a lone vehicle on Woodbine Lane (T-372).
- Geisinger access and Sheetz driveways cause traffic issues during the A.M. and P.M. peak hours.
- Left turns out of Sheetz have been dangerous due to vehicle queuing and grade issues.

- Grade issues along Woodbine Lane – vehicles can bottom out if moving.

Supporting Analysis – Quantitative Information

Safety Assessment

- The intersection experienced 11 crashes, including six rear end crashes, three angle crashes, one head on crash, and one hit fixed object. Of the 11 crashes, there were five PDO crashes, three possible injury crashes, one fatal crash, one suspected serious injury crash, and one suspected minor injury crash. The fatal crash was a head on crash in which a vehicle traveling south on US 11 was affected by the physical conditions and hit another vehicle. The crash took place at night under street lights with clear conditions. The suspected serious injury crash took place at the Sheetz driveway along Woodbine Lane, in which a vehicle exiting the driveway and turning left proceeding without clearance and hit a southbound-traveling vehicle. The crash took place at night under street lights during a rain event. All rear end crashes took place along US 11, with four crashes occurring along the southbound approach, and two occurring along the northbound approach. The crashes were the result of distracted drivers and driving too fast for conditions. six of the crashes took place during daylight hours while one crash took place at dusk, and four more took place at night, with three under street lights. Nine crashes took place under clear and dry weather conditions, while two took place during a rain event.

Operational Assessment

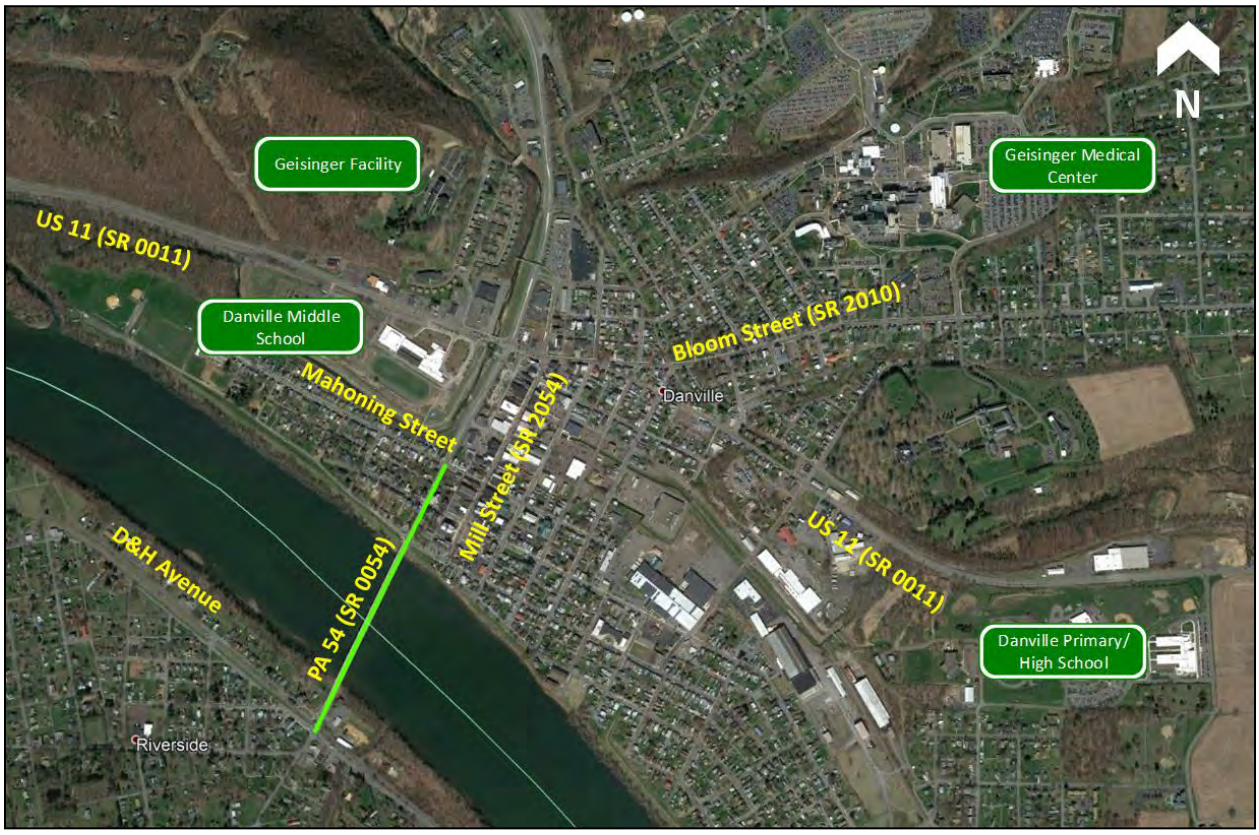
Existing Conditions

- During the A.M. peak hour, the approach experiencing the highest number of entering vehicles is the westbound US 11 approach, with 782 vehicles. The predominant movement at this intersection are vehicles turning onto Woodbine Lane from US 11. The number of left-turning (342) and right-turning vehicles (408) along US 11 outnumber the number of through vehicles (691). Along Woodbine Lane, the number of vehicles turning onto US 11 are nearly equal in both directions. The intersection experiences a LOS B during this time period, with the Woodbine Lane left and right turning movements experiencing a LOS D and C, respectively.
- During the P.M. peak hour, the approach experiencing the highest number of entering vehicles is the southbound Woodbine Lane approach, with 716 vehicles. Of the 716 vehicles entering the intersection via Woodbine Lane, 440 are turning left onto US 11, with 276 turning right. The predominant movement at this intersection are vehicles traveling east on US 11. The intersection experiences a LOS B during this time period. Queuing is an issue for the southbound left lane, with 95th percentile queuing of approximately 350 feet.

Future Conditions

- Future conditions anticipate the intersection LOS dropping to LOS C during the A.M. and P.M. peak hours. During the A.M. peak hour, all movements are expected to experience a LOS D or better, except for the eastbound US 11 left-turn lane, which is anticipated to experience LOS F. During the P.M. peak hour, the eastbound US 11 left-turn lane is anticipated to experience LOS F and the southbound Woodbine Lane left-turn lane is anticipated to experience LOS E.
- Queuing is an issue during the future P.M. peak hour, with an anticipated 95th percentile queue length of 450 feet for the southbound Woodbine Lane left-turn lane.

Location 4. PA 54/Danville River Bridge



Transportation Concern

The PA 54 river bridge is one of the few river crossings in the area and, as a result, the Danville river bridge experiences high congestion during the morning and evening peak hours. Due to the high level of congestion, queuing is an issue that affects adjacent intersections.

Purpose & Need

- Currently the corridor experiences high congestion and delays due to the high number of vehicles entering and exiting the borough.
- The desired end state for this corridor is an efficient movement of traffic entering and exiting the borough, reducing delay and queue lengths.

Stakeholder Input – Qualitative Insight

- The intersection of PA 54 & Front Street to cross the Danville River Bridge backs up significantly during P.M. peak hours, with vehicles stacking from Front Street to Mill Street, Market Street, and Railroad Street. Only 4 vehicles per cycle travel over bridge.

- The pedestrian cross walk buttons at the PA 54/US 11 intersection impacts traffic signal timing along the PA 54 corridor; requires hours to reset.
- On the Riverside Borough side of Danville Bridge the traffic backs up in the morning, often to Boyd Station on PA 54 (Elysburg Road).
- Traffic signals on the Riverside Borough side of bridge function better than the Danville side of the bridge; the signals are disconnected from one another.
- Backs up from Front Street due to Geisinger traffic
- The tunnel restricts traffic on PA 54.
- The Class 1 railroad on the south side of the bridge experiences 5-6 crossings per day and causes major congestion issues.
- Knoebels traffic, particularly from Knoebels Grove, increases congestion across the bridge.
- The Danville River Bridge is one of very few river crossings in the area.

Supporting Analysis – Quantitative Information

Safety Assessment

The corridor experienced 16 crashes, including 12 rear end crashes and four angle crashes. Of the 16 crashes, there were nine PDO crashes, four possible injury crashes, two unknown severity crashes, and one suspected minor injury crash. No crashes occurred on the bridge itself; nine crashes took place at the intersection of PA 54 & D&H Avenue and seven crashes took place at the intersection of PA 54 & Front Street. At the intersection of PA 54 & Front Street, the rear end crashes occurred primarily in the eastbound, westbound, and southbound approaches and was caused by queuing and distracted drivers. At the intersection of PA 54 & D&H Avenue, there were seven rear end crashes that took place along all approaches. 13 of the crashes took place during daylight hours while one crash took place at dusk, and two more took place at night under street lights. 14 crashes took place under dry and clear weather conditions, while two took place during a rain event.

Operational Assessment

Existing Conditions

- At the intersection of PA 54 & D&H Avenue the predominant movement during the A.M. peak hour is traveling north over the PA 54 river bridge, with 586 westbound right turns and 484 northbound through movements. During the P.M. peak hour the predominant movement is traveling east along PA 54, with the main movement being the southbound PA 54 left-turn movement. Queuing is an issue along the northbound approach during the A.M. peak hour (525 feet) and the southbound approach during the P.M. peak hour (600 feet). The intersection operates at a LOS D in the A.M. peak hour and LOS C during the P.M. peak hour. The eastbound left-turning movements experience a LOS F during both time periods.
- At the intersection of PA 54 & Front Street the predominant movement during the A.M. peak hour is the northbound right turn from PA 54 to Front Street, with 653 vehicles. During the P.M. peak hour the predominant movement is traveling south on PA 54 over the river bridge, with 684 southbound through movements and 550 westbound left-turn movements. Queuing is an issue along the westbound and southbound approaches during the P.M. peak hour, with the HCM 95th

percentile queues being approximately 500 feet and 550 feet, respectively. The intersection operates at a LOS A in the A.M. peak hour and LOS C during the P.M. peak hour.

Future Conditions

- Future conditions anticipate the PA 54/D&H Avenue intersection LOS dropping to LOS F during the A.M. peak hour and LOS E during the P.M. peak hour. During the A.M. peak hour the westbound PA 54 left/through lane and northbound Mill Street approach experience LOS E and the eastbound D&H Avenue left-turn lane and westbound PA 54 right-turn lane experience LOS F. During the P.M. peak hour the westbound D&H Avenue left-turn lane and southbound PA 54 left-turn lane both experience LOS F.
- Queuing is an issue during both future A.M. and P.M. peak hours at the PA 54 & D&H Avenue intersection. During the A.M. peak hour the westbound PA 54 right-turn lane 95th percentile queues reach 750 feet, and the northbound Mill Street approach queues reach 750 feet. During the P.M. peak hour the PA 54 southbound left-turn lane 95th percentile queues reach 950 feet.
- Future conditions anticipate the PA 54/Front Street intersection LOS dropping to LOS B during the A.M. peak hour and LOS D during the P.M. peak hour. During the A.M. peak hour all lanes and approaches operate at LOS D or better. During the P.M. peak hour the westbound Front Street left-turn lane and southbound PA 54 through/right lane both experience LOS F.
- Queuing is an issue during both future A.M. and P.M. peak hours at the PA 54 & Front Street intersection. During the A.M. peak hour the northbound PA 54 through lane 95th percentile queues reach 650 feet. During the P.M. peak hour the Front Street westbound left-turn lane 95th percentile queues reach 700 feet and the southbound PA 54 through/right-turn lane 95th percentile queues reach 900 feet.

Location 5. US 11 & State Hospital Drive Intersection

Transportation Concern

The intersection of US 11 and State Hospital Drive experiences heavy through movements during the morning and evening time periods, leaving little time for vehicles along State Hospital Drive to make turns. As a result, vehicles along the northbound State Hospital Drive approach experience longer queue times and increased delay.

Purpose & Need

- With the Danville Area School District planning for future development near the intersection, it is anticipated that the intersection will experience much higher congestion in the future. Making improvements at this intersection to handle increased congestion will be beneficial to future development plans.
- The desired end state is a safe and efficient intersection that provides a progressive flow of traffic for all three approaches.

Stakeholder Input – Qualitative Insight

- Any future modification to State Hospital Drive would need to be coordinated with Danville State Hospital, the owner and maintainer of the road.
- Danville Area School District is planning for future development near the intersection. Danville Middle School and Liberty Intermediate School may potentially be relocated to the Ironmen Campus on 40 acres of property at southeast intersection of US 11/State Hospital Drive.
- Danville Area School District interested in constructing additional lanes on State Hospital Drive to accommodate increasing school district traffic.
- Danville Borough completed a traffic signal optimization study at intersection (Green Light-Go); the outcomes have not yet been implemented.
- The intersection serves as a gateway to state hospital grounds and the schools.
- Major traffic generators are located nearby, such as Geisinger's Woodbine Lane Clinic.
- The overflow parking for the schools and recreational fields extend to on-street.
- Significant school traffic exists between 2:30 P.M. and 3:30 P.M.
- No good backway to next corridor to the south
- Congestion exists during the A.M. and P.M. peak hours and during I-80 incident detours.

Supporting Analysis – Quantitative Information

Safety Assessment

The intersection experienced eight crashes, including five rear end crashes and three unknown crashes as a result of hitting deer. Of the eight crashes, there were four PDO crashes and four possible injury crashes. All three crashes involving deer resulted in PDO crashes, with two crashes occurring at night. All rear end crashes occurred along US 11, with three taking place along the northbound US 11 approach and two taking place along the southbound approach. Five of the crashes took place during daylight hours while one crash took place at dusk, and two more took place at night, with one under street lights. All crashes took place under dry and clear weather conditions.

Operational Assessment

Existing Conditions

- During the existing A.M. peak hour, the heaviest movement at the intersection of US 11 and State Hospital Drive comes from the eastbound US 11 approach, with 848 total vehicles. 437 vehicles are turning into State Hospital Drive, while 290 vehicles are exiting. The predominant movement at this intersection is traveling east along US 11. The HCM 95th percentile queuing for the intersection is 300-350 feet for the eastbound and northbound approaches. The intersection operates at a LOS B during this time period. All lanes operate at a LOS B or better, except for the northbound State Hospital Drive approach, which operates at LOS D (40.6).
- During the existing P.M. peak hour, the heaviest movement at the intersection of US 11 and State Hospital Drive comes from the westbound US 11 approach, with 741 total vehicles. 281 vehicles are turning into State Hospital Drive, while 164 are exiting. The heaviest movement during this time period is the westbound through movement, with 586 vehicles. Queuing at this intersection is an issue for the northbound approach, with the HCM 95th percentile being approximately 1,050 feet.

The intersection operates at a LOS A during this time period. All lanes operate at a LOS A or better, except for the northbound State Hospital Drive approach, which operates at LOS D (41.3).

Future Conditions

- Future conditions anticipate the intersection LOS dropping to LOS C during the A.M. peak hour and LOS B during the P.M. peak hour, with the US 11 approaches operating at LOS C or better and the State Hospital Drive approach operating at LOS during both time periods (48.1 seconds of delay during the A.M. peak hour and 44.1 seconds of delay during the P.M. peak hour).
- Queuing is an issue during both future A.M. and P.M. peak hours. During the A.M. peak hour the eastbound US 11 95th percentile queues reach 650 feet, and the State Hospital Drive approach queues reach 425 feet. During the P.M. peak hour the eastbound US 11 95th percentile queues reach 425 feet, the westbound US 11 queues are approximately 350 feet, and the State Hospital Drive approach queues reach approximately 400 feet.

Location 6. Mill Street between East Front Street & Spruce Street

Transportation Concern

The US 11 & PA 54 intersection is currently a congested intersection with queuing issues along the westbound approach due to the close proximity of commercial driveways and the intersection of US 11 & Mill Street. As a result, Mill Street is used by commuters as a bypass for the US 11 & PA 54 intersection to travel south via PA 54. Queuing issues arise along Mill Street as a result of the increased congestion during these peak hours.

Purpose & Need

- Danville Borough and Mahoning Township experience heavy congestion during the morning and evening peak hours, so it is necessary to explore alternative routes into/out of the area. This intersection provides an additional route for vehicles entering/leaving the area by avoiding the intersection of US 11 & PA 54.
- The desired end state is a safe and efficient intersection that provides drivers an additional route to travel to/from the Danville Borough.

Stakeholder Input – Qualitative Insight

- Traffic congestion exists on Mill Street from US 11 to Spruce Street in both directions during A.M./P.M. peak hours. The congestion impedes traffic into/out of Weis Markets.
- Pedestrians have difficulty crossing US 11 from Mill Street.
- Traffic issues on Mill Street between East Front Street and US 11 were not reported.
- Mill Street is an alternate route to the bridge & PA 54 to avoid the US 11/PA 54 intersection.
- Borough has CDBG funds for Mill Street – trees, signage, etc.
- Good ops by vehicles and pedestrians.

Supporting Analysis – Quantitative Information

Safety Assessment

The corridor experienced 19 crashes, including seven angle crashes, three head on crashes, three same direction sideswipes, two pedestrian crashes, 2 rear end crashes, one backing crash, and one hit fixed object. Of the 19 crashes, there 10 PDO crashes, seven possible injury crashes, and two unknown severity crashes. The intersections of Mill Street (SR 2054) & East Front Street and Mill Street (SR 2054) & East Mahoning Street each experienced three crashes, while the intersection of Bloom Street (US 11) experienced six crashes. Both pedestrian crashes took place at the intersection of Mill Street (SR 2054) & East Front Street as a result of sun glare. Five of the six crashes at the intersection of Mill Street (SR 2054) & Bloom Street (US 11) were angle crashes as the result of vehicles on US 11 running red lights (2 crashes) or left-turning vehicles on the southbound approach making improper/careless turns (3 crashes). 12 of the crashes took place during the day, while six took place at night under street lights, and one took place at night. 17 of the crashes took place under dry and clear weather conditions, while one took place during a rain event and another during a snow event.

Operational Assessment

Traffic/Roadway Characteristics

- The majority of vehicles traveling south on Mill Street to East Front Street turn right to reach PA 54 during both the A.M. and P.M. peak hours.
- During a typical weekday, there are a total of 4,851 vehicles utilizing Mill Street between Spruce Street and US 11, with the heavy vehicle percentage ranging from 3.5-5.7%.

Existing & Future Conditions

- At the intersection of Mill Street and Front Street, the heaviest movement during the existing A.M. peak hour is the Front Street eastbound through movement, while the heaviest movement during the existing P.M. peak hour is the Mill Street southbound right movement. The intersection operates at LOS A during both peak hours, with the Mill Street southbound approach operating at LOS B during both time periods. The future analysis shows the intersection operating at LOS A during the A.M. peak hour and LOS B during the P.M. peak hour, with the stop-controlled southbound Mill Street approach operating at LOS C during both time periods.
- At the intersection of US 11 and Mill Street the heaviest movement is the US 11 eastbound through movement during the existing A.M. peak hour and the US 11 westbound through movement during the existing P.M. peak hour. The intersection operates at LOS B during both peak hours, with all

approaches and lanes operating at LOS D or better. The future analysis shows the intersection operating at LOS B during both peak hours, with the southbound Mill Street left-turn lane operating at LOS E during both time periods.

- Looking at the intersection individually, queuing is not an issue at the intersection of Mill Street and Front Street under existing conditions or future conditions. Field observations show that queuing does occur during the P.M. peak hour at the southbound Mill Street approach as a result of westbound Front Street queues at the intersection of PA 54 & East Front Street.
- Queuing is not an issue at the intersection of US 11 and Mill Street under existing conditions, but future conditions shows 95th percentile queue lengths of approximately 450 feet at the westbound US 11 through/right lane.

Location 7. PA 54 between Montour Street & Spruce Street

Transportation Concern

While the PA 54 corridor between Montour Street and Spruce Street is signed for 40 MPH, speeding issues are present in both directions as a result of grade and wide roads/multiple lanes.

Purpose & Need

The desired end state of this corridor is one that has suitable speeds that allow for a progressive movement of traffic and allow for safe turns into/out of the side streets.

Stakeholder Input – Qualitative Insight

- Vehicles travelling into Danville from PA 54 avoid the US 11/PA 54 intersection by turning left onto Spruce Street. Too many cars stack on PA 54 to make left turns, causing safety concerns.
- Recent improvements to the intersection have improved safety concerns. Road upgrades, pavement markings, and double stop signs were added.
- A traffic signal would be required at US 11 (Continental Blvd.)/Montour Street if Geisinger expands in this location. Geisinger has no expansion plans in the area at this time.
- The corridor experiences a high AADT and high speeds in both directions.
- Frequent left-turns are made onto/from PA 54 for Geisinger traffic and Weis.

- Restricted left turns from Spruce & Ferry to PA 54.
- New access to Geisinger Main Complex.
- Congestion from Danville River Bridge causes backups on PA 54 to Montour St at times.

Supporting Analysis – Quantitative Information

Safety Assessment

- The corridor experienced 29 crashes, including 23 angle crashes, three rear end crashes, one head on crash, one hit fixed object, and one same direction sideswipe crash. Of the 29 crashes, there were 13 PDO crashes, seven suspected minor injury crashes, five possible injury crashes, three unknown severity crashes, and one suspected serious injury crash. 14 of the crashes took place at the intersection of PA 54 & Montour Street, four took place at the intersection of PA 54 & Ferry Street, and nine took place at the intersection of PA 54 & Spruce Street. 23 of the crashes took place during daylight, while six took place at night, five under street lights. 24 of the crashes occurred during dry and clear weather conditions, while four occurred during a rain event and one during a snow event.
- The intersection of PA 54 & Montour Street experienced 12 angle crashes, one same direction sideswipe, and one hit fixed object. All angle crashes were caused by left-turn vehicles turning into or out of Montour Street by making improper/careless turns or proceeding without clearance.
- The intersection of PA 54 & Ferry Street experienced three angle crashes and one head on crash over the five-year period. All four crashes were caused by vehicles making left-turns from both PA 54 and Ferry Street. The driver actions were proceeding without clearance and making improper/careless turns. The severity of the crashes was either possible injury (3 crashes) or PDO (1 crash).
- The intersection of PA 54 and Spruce Street experienced eight angle crashes and one rear end crash over the five-year period. Five of the eight angle crashes were caused by vehicles on Spruce Street turning onto PA 54, with four of the crashes caused by left-turning vehicles, and the fifth caused by a right-turning vehicle. These crashes were caused by improper/careless turns or proceeding without clearance. The remaining angle crashes were caused by left-turning vehicles from PA 54 onto Spruce Street. One of the angle crashes included a suspected serious injury.

Operational Assessment

Traffic/Roadway Characteristics

- During a typical weekday, approximately 13,398 vehicles travel northbound on PA 54 along this corridor, while 13,445 vehicles travel southbound. Of the 13,398 northbound-traveling vehicles, approximately 55% utilize the right lane, while the majority of southbound-traveling vehicles (68%) utilize the left lane.
- This corridor experiences frequent heavy vehicles, with the heavy vehicle percentage being 8.6% and 14.1% for the northbound left and right lanes, respectively, and the heavy vehicle percentage being 7.8% and 19.2% for the southbound left and right lanes.
- Speed is an issue along this corridor, particularly along the southbound direction. While the speed limit is 40 MPH, the 85th percentile speed at this location was 49 MPH for the northbound approach, and 53 MPH for the southbound approach.

Location 8. PA 54 & PA 642 Intersections

Transportation Concern

The PA 54 and PA 642 intersections are two highly traveled intersections that have experienced safety issues as a result of vehicles on the side roads crossing PA 54 traffic. A combination of a high number of vehicles and high speeds cause angle crashes at these two intersections. The intersections are currently being addressed and improved by PennDOT.

Purpose & Need

- Safety is an issue at this intersection as a result of the high traffic and high speeds, combined with an increasing number of vehicles from the side streets.
- The desired end state are two safe and efficient intersections that can better manage traffic.

Stakeholder Input – Qualitative Insight

- The intersections are being addressed and upgraded by PennDOT.
- The intersections experience high speeds and AADT
- Fatal crashes occur near Route 642 when drivers cut across PA 54 during A.M./P.M. peak hours.

- Safety issues exist where vehicles stack in the median to cross over PA 54 and motorists travel in the passing lane.
- The land on the eastern side of PA 54 has been rezoned for commercial.
- There are trails located on the western side of PA 54 and a pool on the eastern side.

Supporting Analysis – Quantitative Information

Safety Assessment

- The intersection of SR 0054 and Liberty Valley Drive (PA 642) experienced 11 crashes, including nine angle crashes, one same direction sideswipe, and one hit fixed object. Of the 11 crashes, there were four PDO crashes, six suspected minor injury crashes, and one possible injury crash. All angle crashes were caused by left-turning vehicles on the side streets as a result of improper/careless turns or proceeding without clearance onto SR 0054. Eight of the crashes occurred during the day, and nine crashes took place during clear weather conditions, while two crashes took place during a rain event.
- The intersection of SR 0054 and Danville Road (PA 642) experienced 16 crashes, including 14 angle crashes, one rear end crash, and one opposite direction sideswipe. Of the 16 crashes, there was one fatal crash, five suspected minor injury crashes, four possible injury crashes, three unknown severity crashes, and three PDO crashes. All angle crashes were caused by left-turning vehicles on Danville Road (PA 642) as a result of improper/careless turns or proceeding without clearance onto SR 0054. 11 of the crashes occurred during the day, while five took place at night under street lights. 15 of the crashes took place during clear weather conditions, while one took place during a snow event.

Operational Assessment

Traffic/Roadway Characteristics

- During a typical weekday, approximately 13,398 vehicles travel northbound on PA 54 along this corridor, while 13,445 vehicles travel southbound. Of the 13,398 northbound-traveling vehicles, approximately 55% utilize the right lane, while the majority of southbound-traveling vehicles (68%) utilize the left lane.
- This corridor experiences frequent heavy vehicles, with the heavy vehicle percentage being 8.6% and 14.1% for the northbound left and right lanes, respectively, and the heavy vehicle percentage being 7.8% and 19.2% for the southbound left and right lanes.

Location 9. Montour Street Corridor

Transportation Concern

A primarily residential area, the Montour Street corridor has seen an increase in the number of vehicles as a result of the new Geisinger medical facility located west of Montour Street and vehicles using the route as a detour for the PA 54 & US 11 intersection. The corridor was not meant to handle the current level of traffic. In addition, there are pedestrian/bicycle issues as a result of multiple trails being located in the area.

Purpose & Need

- It is anticipated that Geisinger will expand the medical facilities located along Montour Street, so additional road improvements will be necessary to accommodate the additional traffic generated.
- The desired end state would be a corridor that separates the Geisinger traffic from the residential areas and improves pedestrian and bicycle safety around the trail areas.

Stakeholder Input – Qualitative Insight

- Traffic issues are with Street A rather than Montour Street; most drivers use Street A as a through street rather than Montour Street.

- The corridor is used as a detour for the 54/11 intersection.
- A traffic signal would be required at US 11 (Continental Blvd.)/Montour Street if Geisinger expands in this location. Geisinger has no expansion plans in the area at this time.
- According to Montour Area Recreation Commission (MARC), trail connections are needed to complete Monkey Drift Trail. Improvements should include sidewalk or pedestrian markings on Montour Street by the new bridge and along Meadow Lane to Hess Park.

Supporting Analysis – Quantitative Information

Safety Assessment

- The corridor experienced three crashes, including two head on crashes and one opposite direction sideswipe. Of the three crashes, all were PDO crashes. The two head-on crashes involved vehicles making improper/careless turns at the intersection with Beaver Place, while the opposite direction sideswipe occurred due to a distracted driver trying to negotiate the curve.
- The intersection of US 11 & Montour Street experienced two crashes, both of which were angle PDO crashes. One involved an eastbound US 11 vehicle making a left-turn onto Montour Street, while the other was a southbound Montour Street vehicle making a left-turn onto US 11.
- The intersection of PA 54 & Montour Street experienced 12 angle crashes, one same direction sideswipe, and one hit fixed object. All angle crashes were caused by left-turn vehicles turning into or out of Montour Street by making improper/careless turns or proceeding without clearance.

Operational Assessment

Traffic/Roadway Characteristics

- During a typical weekday, approximately 582 vehicles (4.2% heavy vehicles) travel northbound on Montour Street, while 1,077 vehicles (2.6% heavy vehicles) travel southbound.
- During a typical weekend day, approximately 422 vehicles (2.8% heavy vehicles) travel northbound on Montour Street, while 896 vehicles (0.4% heavy vehicles) travel southbound.
- Speeds are not an issue along the corridor, with an 85th percentile speed of 20-23 MPH.

Location 10. Spruce Street/Red Lane between PA 54 & Red Oak Drive

Transportation Concern

The Spruce Street/Red Lane corridor between PA 54 and Red Oak Drive is a local road that experiences high levels of congestion during the morning and evening peak hours as a result of commuters accessing the Geisinger medical facilities via the Red Lane rear entrance. Commuters use this route to avoid US 11 and the US 11 & PA 54 intersection.

Purpose & Need

- Danville Borough and Mahoning Township experience heavy congestion during the morning and evening peak hours, so it is necessary to explore alternative routes into/out of the area. This corridor provides an additional route for vehicles entering/leaving the area.
- The desired end state is a safe and efficient corridor that provides drivers an additional route to travel to/from the Geisinger facilities utilizing the Red Lane rear entrances.

Stakeholder Input – Qualitative Insight

- Traffic along the corridor during the P.M. peak hour is primarily from Geisinger employee parking lots.
- Changing Spruce Street to one way has helped alleviate congestion.
- Crashes were reported at the Red Lane/Cherry Street intersection. There is no stop sign on Cherry Street.

- Access into/out of Geisinger parking lots needs to be improved. Suggestions identified included changing traffic patterns (one way in the A.M./reverse pattern in the P.M.; use Chamber Street to access Geisinger parking lots.
- There is a need for a shared ride hub for trips to Geisinger (transit center meeting point for shared ride or fixed route). Shuttle systems and fixed route transit could help alleviate parking and traffic issues.
- Employees come up Chamber Street, exit traffic on Spruce, Chamber, Ferry, and Kaseville.
- High pedestrian crossing area, motorists don't yield
- Speeding issues exist along the corridor.
- High parking demand is present for the Geisinger parking lots along Red Lane.
- No sidewalks exist near Geisinger; bike access is necessary near the employee parking areas.

Supporting Analysis – Quantitative Information

Safety Assessment

- The corridor experienced 18 crashes, including 11 angle crashes, two hit fixed objects, two pedestrian crashes, two rear end crashes, and one same direction sideswipe. Of the 18 crashes, there were nine PDO crashes, five suspected minor injury crashes, two unknown severity crashes, one suspected serious injury crash, and one possible injury crash. Nine of the 18 crashes took place at the intersection of PA 54 and Spruce Street. No other intersection along the roadway section experienced more than two crashes over the five-year period. Both pedestrian crashes took place at the intersection of Red Lane and Academy Avenue which took place during daylight hours and resulted in suspected minor injuries. These crashes were caused by distracted drivers and proceeding without clearance. 17 of the crashes took place under clear weather and dry road conditions, while one took place during a rain event. 14 of the crashes occurred during daylight hours, while four took place at night under street lights.
- The intersection of PA 54 and Spruce Street experienced eight angle crashes and one rear end crash over the five-year period. Five of the eight angle crashes were caused by vehicles on Spruce Street turning onto PA 54, with four of the crashes caused by left-turning vehicles, and the fifth caused by a right-turning vehicle. These crashes were caused by improper/careless turns or proceeding without clearance. The remaining angle crashes were caused by left-turning vehicles from PA 54 onto Spruce Street.

Operational Assessment

Traffic/Roadway Characteristics

- Between the PA 54 and Mill Street, the number of eastbound-traveling vehicles is approximately 3,033 vehicles, while there are approximately 1,621 westbound-traveling vehicles.
- Between Mill Street and Ferry Street, the number of eastbound-traveling vehicles is approximately 860 vehicles, while there are approximately 2,018 westbound-traveling vehicles.
- East of Cherry Street, the number of eastbound-traveling vehicles is approximately 877 vehicles, while there are 1,633 westbound-traveling vehicles.

Location 11. PA 54 & PA 487 Intersection

Transportation Concern

The intersection of PA 54 and PA 487 is a highly utilized intersection for commuters traveling to the north and west, and serves as an important route for tourists traveling to/from Knoebels. The intersection serves as a crossroads for commuters, creating heavy turning movements along all approaches, which causes additional vehicle delay. Congestion at this intersection increases even more when Knoebels is in operation.

Purpose & Need

- Safety is an issue at this intersection as a result of the roadway geometry and the number of vehicles utilizing this intersection.
- The desired end state is a more safe and efficient intersection that can better manage traffic and accommodate bicyclists/pedestrians, particularly during the months when Knoebels is in operation.

Stakeholder Input – Qualitative Insight

- Area residents avoid the intersection when Knoebels is open.
- Weekly accidents involving rabbittransit vehicles occur at the intersection near Sheetz.
- Knoebels and Ralpho Township police collaborate to address traffic congestion on PA 487. The focus is to move motorists into/out of Knoebels parking lots quickly.
- Improved signage and pedestrian/bicycle amenities are needed on PA 487. Employees and park visitors walk or bike along PA 487.
- Intersection is extremely dangerous, with numerous crashes occurring at this location.

Supporting Analysis – Quantitative Information

Safety Assessment

- The intersection and approaches experienced 20 crashes, including eight angle crashes, seven rear end crashes, two head on crashes, one hit fixed object, one non collision, and one opposite direction sideswipe. Of the 20 crashes, there were 10 PDO crashes, four suspected minor injury crashes, three unknown severity crashes, one suspected serious crash, one possible injury crash, and one unknown if injured crash. All rear end crashes were the result of high speeds, tailgating, and queuing issues at the intersection. 14 of the crashes occurred during the day, while the remaining six occurred at night with and without street lights. Common driver actions resulting in the crashes included improper/careless turns (9 crashes), proceeding without clearance (4 crashes), driver was distracted (2 crashes), and driving too fast for conditions (2 crashes). 18 of the crashes took place under clear weather and dry road conditions, while two took place during a rain event.

Operational Assessment

Existing Conditions

- During the existing A.M. peak hour, the heaviest movements come from the northbound PA 54 approach, with 502 total vehicles. 260 vehicles continue north on PA 54, but a significant number (203) turn left onto PA 487 westbound. Most vehicles at the intersection continue west on PA 487. The intersection operates at a LOS D during this time period. The westbound PA 487 approach operates at LOS D (38.0) and the northbound PA 54 approach operates at LOS D (47.8) and LOS D (47.2) for the left-turn and through/right lanes, respectively.
- During the existing P.M. peak hour, the heaviest movements come from the eastbound PA 487 approach, with 614 total vehicles. 364 vehicles continue east on PA 487, while 250 turn right onto PA 54. Most vehicles at the intersection continue south on PA 54. The intersection operates at a LOS E during this time period, as a result of the single-lane westbound approach and increased turning movements. The westbound PA 487 approach operates at LOS F (140.3) during this time period.
- Queuing is an issue at this intersection, particularly along the westbound PA 487 approach. During the A.M. peak hour, the HCM 95th percentile queuing is 550 feet along the westbound approach, while it increases to 825 feet during the P.M. peak hour. Queuing issues also existing along the eastbound PA 487 approach during the P.M. peak hour, with a 95th percentile queue length of 725 feet.

Future Conditions

- Future conditions anticipate the intersection LOS dropping to LOS D during the A.M. peak hour and LOS F during the P.M. peak hour. During the A.M. peak hour all approaches operate at a LOS D or better, except for the westbound PA 487 approach which operates at LOS E (79.5). During the P.M. peak hour the eastbound through/right lane operates at LOS E (65.9), while the westbound approach operates at LOS F (1,444.0).
- Queuing is an issue during both future A.M. and P.M. peak hours. During the A.M. peak hour the westbound PA 487 95th percentile queues reach 975 feet, and the southbound PA 54 left-turn lane queues reach 525 feet. During the P.M. peak hour the eastbound PA 487 through/right lane 95th

percentile queues are approximately 1,125 feet, and the westbound PA 487 95th percentile queues reach 2,175 feet.

- Future conditions show this intersection operating worse as a result of an increase in the number of left-turns, particularly along the eastbound and westbound approaches.

Location 12. PA 42 & PA 487 Intersection

Transportation Concern

The intersection of PA 42 and PA 487 is a highly utilized intersection that has poor geometry and sight distance issues, particularly along the PA 487 approach, and results in numerous crashes. The stop-controlled approach of PA 487 becomes even more congestion during the warmer months as a result of Knoebels traffic. Flooding is also an issue at this intersection due to the presence of nearby creeks/streams.

Purpose & Need

- Safety is an issue at this intersection as a result of the roadway geometry and the number of vehicles utilizing this intersection.
- The desired end state is a more safe and efficient intersection that can better manage traffic, particularly during the months when Knoebels is in operation.

Stakeholder Input – Qualitative Insight

- Poor visibility exists at the intersection.
- Traffic congestion and backups occur along PA 487 when Knoebels is open.
- Backups do not usually occur on Mount Zion Road.

- Flooding at the intersection impacts travel.
- Intersection is extremely dangerous, with numerous crashes occurring at this location.

Supporting Analysis – Quantitative Information

Safety Assessment

- The intersection and approaches experienced 12 crashes, including four hit fixed objects, two angle crashes, two rear end crashes, two unknown crashes, one head on crash, and one same direction sideswipe. Of the 12 crashes, there was one fatal crash, two possible injury crashes, one unknown severity crash, and eight PDO crashes. The fatal crash involved a motorcycle traveling south along PA 487 and hitting a deer in the roadway during the day under clear and dry conditions.
- Four total crashes occurred along the PA 487 approach, with two involving hitting deer and the other two involving hitting fixed objects as a result of driving too fast for conditions while negotiating a curve.
- Four crashes occurred at the intersection of PA 42 and PA 487, including two angle crashes, one head-on crash, and one rear end crash. All four crashes involved vehicles turning from the northbound PA 487 approach, with three crashes caused by vehicles running the stop sign or proceeding without clearance. Two crashes (rear end and hit fixed object) occurred at the intersection of PA 42/487 and Mt. Zion Road (SR 3012). Eight crashes occurred during daylight hours, with two occurring at dusk, and two others at night. 10 of the crashes took place under clear and dry conditions, while one took place during a rain event, and the other during a snow event.
- Based on field observations, sight distance at the PA 487 approach appears to be an issue, particularly at the eastbound PA 487 approach looking to the right at the northbound PA 42 approach.

Operational Assessment

Existing Conditions

- During the existing A.M. peak hour, the heaviest movements come from the northbound PA 42 approach, with 318 total vehicles. 314 vehicles continue north on PA 42. The HCM 95th percentile queuing for the PA 487 approach is approximately 40 feet. The intersection operates at a LOS A during this time period.
- During the existing P.M. peak hour, the heaviest movements come from the southbound PA 42 approach (from Catawissa), with 586 total vehicles. 311 vehicles continue south on PA 42, while 275 turn onto PA 487. The HCM 95th percentile queuing for the PA 487 approach is approximately 40 feet. The intersection operates at a LOS A during this time period.

Future Conditions

- Future conditions anticipate the intersection LOS dropping to LOS B during the A.M. peak hour. During the A.M. peak hour the eastbound PA 487 and Longwoods Road approaches operate at LOS E due to the increase in traffic. During the P.M. peak hour the eastbound PA 487 and Longwoods Road approaches operate at LOS C.
- Queuing is not an issue during both the A.M. and P.M. peak hours due to the low traffic volumes, but the vehicles on the eastbound PA 487 and Longwoods Road approaches do have a long average delay due to a decrease in vehicle gaps along the uncontrolled approaches.

Location 13. Bloom Road/Woodbine Lane & Kaseville Road Intersections

Transportation Concern

The intersections of Bloom Road (SR 2008) & Woodbine Lane (T-372) and Bloom Road (SR 2008) & Kaseville Road (SR 2005) have both had safety issues in the past involving vehicles proceeding without clearance through the intersections. The two all-way stop-controlled intersections are closely spaced and do not create an efficient movement along Bloom Road (SR 2008). Improvements have been made and reduced these issues, but the roadway can be unreliable, as this area experiences frequent flooding that pushes traffic onto the nearby residential roads.

Purpose & Need

- Frequent flooding along Bloom Road (SR 2008) makes the road unreliable and pushes the traffic onto smaller residential roads, creating safety issues and additional delay.
- The desired end state is a safe, efficient, and reliable roadway section that allows road users to continue on Bloom Road (SR 2008) or turn onto the side roads of Woodbine Lane (T-372) or Kaseville Road (SR 2005).

Stakeholder Input – Qualitative Insight

- Woodbine Lane/Bloom Road intersection has been improved and traffic flows well; 4 way stop at the Kaseville Road/Bloom Road intersection has improved safety.

- Line of sight and turning issues with the building at the northwest corner of the Kaseville Road/Bloom Road intersection.
- Visibility concern for rabbittransit. Bus drivers have reported small fender benders.
- Flooding at the intersection is an ongoing issue during periods of heavy rain; resulting in road detours onto roads that are not able to handle large traffic flows.
- Closely spaced all-way stops with utility conflicts.

Supporting Analysis – Quantitative Information

Safety Assessment

The two intersections experienced six crashes, including three angle crashes, two hit fixed objects, and one rear-end crash. Of the six crashes, three were PDO crashes, two were suspected minor injury crashes, and one possible injury. The three angle crashes occurred at the intersection of Bloom Road (SR 2008) and Woodbine Lane (T-372) and two of the crashes involved northbound vehicles turning left and proceeding without clearance. At the intersection of Bloom Road (SR 2008) and Kaseville Road (SR 2005), one crash involved a southbound-traveling vehicle hitting a fence or wall at the red-roof building. Five crashes took place in daylight, while one took place at night under street lights, and five crashes took place with clear weather and dry road conditions. One angle crash occurred during a rain event with wet road conditions. No crashes have occurred at these intersections since they were converted to all-way stop-controlled intersections.

Operational Assessment

Traffic/Roadway Characteristics

- The average number of vehicles traveling between Woodbine Lane (T-372) and Kaseville Road (SR 2005) during a typical weekday is 6,367 vehicles, with the majority (3,377) traveling westbound. During a typical weekend day, the average number of vehicles traveling between the two roads is 3,740 vehicles, with the majority (1,958) traveling westbound. Approximately 3.0-4.0% of the traffic is heavy vehicles.
- The average number of vehicles traveling along Bloom Road (SR 2008) just east of Kaseville Road (SR 2005) during a typical weekday is 3,888 vehicles, with the majority (2,010) traveling westbound. The average heavy vehicle percentage of the eastbound direction is 4.2%, while the average heavy vehicle percentage of the westbound direction is 3.0%. During a typical weekend day, the average number of vehicles traveling is 2,490 vehicles, with a slight majority (1,268) traveling westbound. The average heavy vehicle percentage of the eastbound direction is 3.0%, while the average heavy vehicle percentage of the westbound direction is 1.8%.
- The close proximity of the two all-way stop-controlled intersections control the vehicle speed. Between Woodbine Lane and Kaseville Road, the 85th percentile speed is 26-28 MPH, while the 85th percentile speeds east of Kaseville Road are 39-41 MPH. The speed limit of Bloom Road (SR 2008) is 35 MPH.

Location 14. Railroad Street between US 11 & Bloom Road

Transportation Concern

The Railroad Street corridor between US 11 and Bloom Road serves as a connection between the two roads and the Geisinger medical facilities. The segment was not designed to accommodate this additional traffic and, as a result, the road geometry needs improvements to address safety and efficiency.

Purpose & Need

- This roadway section has a crash history involving hit fixed objects as a result of the road geometry, and the segment is also included on Bicycle Route V.
- The desired end state is a more efficient corridor connecting US 11 to Bloom Road and Academy Avenue, along with improved geometry to reduce flooding/crashes and improve pedestrian/bicyclist infrastructure.

Stakeholder Input – Qualitative Insight

- Railroad Street congested during A.M./P.M. peak hours; 1 of 2 top locations for Mahoning Township EMS response.

- Narrow road; requires repairs and pedestrian improvements; no width for bicycles on Bicycle Route V.
- Flooding occurs at the Bloom Road/Railroad Street intersection; Geisinger's front door.
- Pass-through traffic to and from Geisinger.
- The configuration of the Railroad Street/US 11 intersection makes it is difficult to make turns.

Supporting Analysis – Quantitative Information

Safety Assessment

The corridor experienced five crashes, including three hit fixed objects, one same direction sideswipe, and one rear end crash. Of the five crashes, four were PDO crashes and one was a possible injury crash. The three hit fixed object crashes occurred at the first curve south of Bloom Road (SR 2008) as a result of driving too fast for conditions. Four of the crashes took place during daylight hours, with the same direction sideswipe crash occurring at night under streetlights. Four crashes occurred under clear weather, while one took place during a snow event.

Operational Assessment

Traffic/Roadway Characteristics

- During a typical weekday the number of vehicles traveling north on Railroad Street (2,699) nearly equals that of the number of vehicles traveling south (2,646). The same holds true for vehicles during a typical weekend day.
- At the intersection of US 11 and Railroad Street, the majority of vehicles traveling north on Railroad Street during the A.M. peak hour comes from the northbound Railroad Street approach. More vehicles are turning into Railroad Street (332) compared to exiting (204 vehicles). During the P.M. peak hour most vehicles traveling north on Railroad Street come from the northbound Railroad Street approach. More vehicles exit Railroad Street (344) compared to entering (141 vehicles).

Existing Conditions

- During the A.M. peak hour, the heaviest movement at the intersection of Bloom Road and Academy Avenue/Railroad Street comes from the eastbound Bloom Road approach, with 583 total vehicles, of which nearly half (268) are turning left into the Geisinger driveway. The predominant movement at this intersection is traveling northbound into the Geisinger facilities. The HCM 95th percentile queuing for the intersection is less than 200 feet for all approaches. The intersection operates at a LOS B during this time period.
- During the P.M. peak hour, the heaviest movement at the intersection of Bloom Road and Academy Avenue/Railroad Street comes from the southbound Academy Avenue approach, with 682 total vehicles, of which nearly half (307) are exiting to the right. The heaviest movement during this time period is the westbound through movement, with 314 vehicles. Queuing at this intersection is an issue, with the HCM 95th percentile queues ranging from 50 feet (westbound left) to 1,100 feet (southbound left/through). The intersection operates at a LOS F during this time period, as a result of the southbound left/through movement.

Future Conditions

- Future conditions anticipate the intersection LOS at the intersection of US 11 & Railroad Street dropping to LOS F during the A.M. peak hour and LOS E due to the increase in through volume. During the A.M. peak hour, the eastbound US 11 through/right lane drops to LOS F, along with both Railroad Street approaches. During the P.M. peak hour both US 11 through/right lanes experience LOS E.
- Future conditions anticipate the intersection LOS at the intersection of Bloom Road & Academy Avenue/Railroad Street dropping to LOS E during the A.M. peak hour and LOS F. During the A.M. peak hour, the Academy Avenue and Railroad Street approaches both experience LOS F, with both having over 120 seconds of delay. During the P.M. peak hour the southbound Academy Avenue left/through lane experiences LOS F.
- Queuing is an issue during both future A.M. and P.M. peak hours at the intersection of US 11 & Railroad Street. During the A.M. peak hour the eastbound US 11 95th percentile queues reach 975 feet, and the Railroad Street northbound approach queues reach 900 feet. During the P.M. peak hour the eastbound US 11 95th percentile queues reach 950 feet, and the westbound US 11 queues are approximately 1000 feet.
- Queues are an issue at the intersection of Bloom Road & Academy Avenue/Railroad Street along the southbound left/through lane during both the future A.M. and P.M. peak hours. During the A.M. peak, the 95th percentile queue length for this lane is approximately 850 feet, while it reaches approximately 1975 feet during the P.M. peak hour.

Location 15. Wall Street & State Hospital Drive Corridor

Transportation Concern

The Wall Street and State Hospital Drive corridor is comprised with residential roads but operates as an alternative commuter route during the peak hours for vehicles entering/exiting the area. The corridor was not designed to handle the heavy traffic it is currently experiencing. The study area has a need for additional routes into/out of the city during the peak commute times.

Purpose & Need

- Danville Borough and Mahoning Township experience heavy congestion during the morning and evening peak hours, so it is necessary to explore alternative routes into/out of the area. This corridor provides an additional route for vehicles entering/leaving the area.
- The desired end state is a safe and efficient roadway section that provides drivers an additional route to travel into/out of the area.

Stakeholder Input – Qualitative Insight

- Wall Street and other roads in the area are very narrow; cemetery on both sides constraining widening of road.
- Open swale drainage
- DRIVE pursuing development, increased freight.
- School traffic, trucks using upper end of Wall Street get stuck.
- New apartments cause increased trips, could see more freight traffic on corridor with Metso Minerals site.
- Motorists use the corridor to avoid travelling US 11 through the 5-points intersection and through the US 11/PA 54 intersection.
- Not easy for school buses to turn right onto Wall Street from State Hospital Drive. Tight 90-degree intersection with additional obstacles including a culvert, ditch, and telephone pole.
- New rail siding and signals into the eastern portion of the DRIVE Industrial Complex will cross Wall Street – North Shore RR; estimated 6 cars per week for plastics recycler at the former Metso Minerals sites. Trucks access the site from Wall Street.

Supporting Analysis – Quantitative Information

Safety Assessment

This roadway section experienced three crashes, with two at the intersection of Wall Street and Franklin Street, and one at the intersection of Wall Street and Market Street (SR 2006). The two crashes at the intersection of Wall Street and Franklin Street consisted of two angle crashes as a result of southbound-traveling vehicles proceeding without clearance and turning left. There was one suspected minor injury crash and one PDO crash and both occurred during daylight hours. One crash took place under dry and clear conditions, while another took place during a rain event. The crash at the intersection of Wall Street and Market Street (SR 2006) was a rear end crash occurring along the southbound Wall Street approach. The crash was a PDO crash and the driver was distracted. The crash took place during daylight hours under dry and clear conditions.

Operational Assessment

Traffic/Roadway Characteristics

Slightly more vehicles travel southbound on State Hospital Drive during a typical weekday (1,296) compared to northbound (994). The same holds true for vehicles during a typical weekend day (634 southbound vehicles and 513 northbound vehicles). The average heavy vehicle percentage is 2.4% for the southbound direction and 3.0% for the northbound direction during a typical weekday.

Existing Conditions

- During the existing A.M. peak hour, the heaviest movement at the intersection of US 11 and State Hospital Drive comes from the eastbound US 11 approach, with 848 total vehicles. 437 vehicles are turning into State Hospital Drive, while 290 vehicles are exiting. The predominant movement at this intersection is traveling east along US 11. The HCM 95th percentile queuing for the intersection is 300-350 feet for the eastbound and northbound approaches. The intersection operates at a LOS B

during this time period. All lanes operate at a LOS B or better, except for the northbound State Hospital Drive approach, which operates at LOS D (40.6).

- During the existing P.M. peak hour, the heaviest movement at the intersection of US 11 and State Hospital Drive comes from the westbound US 11 approach, with 741 total vehicles. 281 vehicles are turning into State Hospital Drive, while 164 are exiting. The heaviest movement during this time period is the westbound through movement, with 586 vehicles. Queuing at this intersection is an issue for the northbound approach, with the HCM 95th percentile being approximately 1,050 feet. The intersection operates at a LOS A during this time period. All lanes operate at a LOS A or better, except for the northbound State Hospital Drive approach, which operates at LOS D (41.3).

Future Conditions

- Future conditions anticipate the intersection LOS dropping to LOS C during the A.M. peak hour and LOS B during the P.M. peak hour, with the US 11 approaches operating at LOS C or better and the State Hospital Drive approach operating at LOS during both time periods (48.1 seconds of delay during the A.M. peak hour and 44.1 seconds of delay during the P.M. peak hour).
- Queuing is an issue during both future A.M. and P.M. peak hours. During the A.M. peak hour the eastbound US 11 95th percentile queues reach 650 feet, and the State Hospital Drive approach queues reach 425 feet. During the P.M. peak hour the eastbound US 11 95th percentile queues reach 425 feet, the westbound US 11 queues are approximately 350 feet, and the State Hospital Drive approach queues reach approximately 400 feet.

Location 16. Bloom Street between Ferry Street & Jade Avenue

Transportation Concern

Bloom Street between Ferry Street and Jade Avenue is a highly traveled corridor that serves as an alternate route to US 11 and includes the main entrance to the Geisinger medical facilities. The roadway section contains two signalized intersections at Ferry Street and Academy Avenue that cause major queuing and congestion during the peak hours.

Purpose & Need

- This corridor serves as the main route for vehicles entering/exiting the Geisinger medical facilities, which generates a large amount of traffic. With Geisinger constantly expanding, there is a need to create a more efficient corridor to accommodate additional traffic in the future.
- The desired end state of the corridor would be a more efficient segment that allowed more vehicles to enter/exit the area with less delay.

Stakeholder Input – Qualitative Insight

- The signal timing at the intersection of US 11/Bloom Street (SR 2010) & Ferry Street is an issue. Queuing occurs during the peak P.M. hours.

- The roadway section includes Geisinger main entrance.
- Geisinger employee/patient flows result in congestion for morning and evening peaks, particularly on side streets.
- Multi-municipal pinch point.
- Enforcement needed to discourage vehicles from running red lights at the intersection of US 11/Bloom Street (SR 2010) & Ferry Street.
- Bloom Street is heavily walked; sidewalks need improvement; parking causes congestion.
- Ferry Street cannot handle additional traffic; congestion at Ferry Street/Bloom Street intersection caused in part by pick up/drop off at St. Joseph school.

Supporting Analysis – Quantitative Information

Safety Assessment

- The corridor experienced 27 crashes, including 14 angle crashes, 10 rear end crashes, two same direction sideswipes, and one head on crash. Of the 27 crashes, 17 were PDO crashes, five unknown severity crashes, two possible injury crashes, two suspected minor injuries, and one suspected serious injury crash. Common driver actions included distracted driver (9 crashes), running red light (6 crashes), and improper/careless turns (4 crashes). 21 of the 27 crashes took place during daylight hours, while five took place at night under street lights, and one took place at dusk. 24 crashes occurred during clear weather conditions, while two crashes occurred during rain events and one during a snow event.
- All intersections within the roadway section experienced two or fewer crashes of low severity except for the intersection of Bloom Road (SR 2008) and Academy Avenue, which experienced 12 crashes. Of these 12 crashes, 10 were angle crashes and the remaining two were rear end crashes. The angle crashes were the result of either improper/careless turns or running red lights, while the rear end crashes were the result of distracted drivers and queuing issues along the approach.

Operational Assessment

Traffic/Roadway Characteristics

- Slightly more vehicles travel eastbound on Bloom Street during a typical weekday (5,682) compared to westbound (5,231). The same holds true for vehicles during a typical weekend day. The heavy vehicle percentage along this corridor ranges from 2.5-2.9%.
- At the intersection of Ferry Street and Bloom Street, there are no lane markings or signage indicating the road splits.

Existing Conditions

- During the A.M. peak hour, the heaviest movement at the intersection of Bloom Road and Academy Avenue comes from the eastbound Bloom Road approach, with 583 total vehicles, of which nearly half (268) are turning left into the Geisinger driveway. The predominant movement at this intersection is traveling northbound into the Geisinger facilities. The HCM 95th percentile queuing for the intersection is less than 200 feet for all approaches. The intersection operates at a LOS B during this time period.
- During the P.M. peak hour, the heaviest movement at the intersection of Bloom Road and Academy Avenue comes from the southbound Academy Avenue approach, with 682 total vehicles, of which

nearly half (307) are exiting to the right. The heaviest movement during this time period is the westbound through movement, with 314 vehicles. Queuing at this intersection is an issue, with the HCM 95th percentile queues ranging from 50 feet (westbound left) to 1,100 feet (southbound left/through). The intersection operates at a LOS F during this time period, as a result of the southbound left/through movement.

Future Conditions

- Future conditions anticipate the intersection LOS at the intersection of Bloom Road & Academy Avenue/Railroad Street dropping to LOS E during the A.M. peak hour and LOS F. During the A.M. peak hour, the Academy Avenue and Railroad Street approaches both experience LOS F, with both having over 120 seconds of delay. During the P.M. peak hour the southbound Academy Avenue left/through lane experiences LOS F.
- Queues are an issue at the intersection of Bloom Road & Academy Avenue/Railroad Street along the southbound left/through lane during both the future A.M. and P.M. peak hours. During the A.M. peak, the 95th percentile queue length for this lane is approximately 850 feet, while it reaches approximately 1,975 feet during the P.M. peak hour.

Location 17. Red Lane & Kaseville Road Intersection

Transportation Concern

The intersection of Kaseville Road (SR 2005) and Red Lane (T-333) is a two-way stop-controlled intersection along Red Lane (T-333) that has a crash history of angle crashes as a result of vehicles turning from Red Lane (T-333) onto Kaseville Road (SR 2005). The intersection also receives additional traffic during the peak hours as a result of vehicles destined to/from the Geisinger medical facilities.

Purpose & Need

- Danville Borough and Mahoning Township experience heavy congestion during the morning and evening peak hours, so it is necessary to explore alternative routes in to/out of the area. This intersection serves as a gateway intersection for vehicles entering the study area from the north/northeast.
- The desired end state is a safe and efficient intersection that provides drivers an additional route to travel to/from the Geisinger facilities utilizing the Red Lane rear entrances.

Stakeholder Input – Qualitative Insight

- Existing Geisinger traffic travels north along Kaseville Road to PA 642; traffic from Bloomsburg area accesses the Geisinger facilities utilizing Red Lane.
- Commuters from Hemlock Township traveling via Frosty Valley Road add to the ADT.

- Dangerous left-turns from Red Lane onto Kaseville Road.
- Line of sight needs to be addressed around Kaseville Road/ Red Lane intersection; clear trees to improve line of sight.
- Turning movements for larger trucks appears to be an issue.
- Change intersection to 4 way stop. Stop signs on Red Lane but not on Kaseville Road.

Supporting Analysis – Quantitative Information

Safety Assessment

- The intersection experienced five crashes, including four angle crashes and one rear-end crash. The four angle crashes involved vehicles turning left from the eastbound, westbound, and northbound approaches and colliding with southbound Kaseville Road vehicles. The angle crashes were the result of improper/careless turns (3 crashes) or proceeding without clearance (1 crash). All crashes took place in daylight with clear weather and dry road conditions. All angle crashes were of low severity, two possible injuries, one unknown severity, and one PDO crash.
- Field observations have shown that sight distance appears to be an issue at the intersection for vehicles along Red Lane (T-333) looking to turn. The eastbound Red Lane vehicles have sight distance issues looking to the left and right, while westbound Red Lane vehicles have sight distance issues looking to the right at the southbound Kaseville Road (SR 2005) approach.
- The southbound Kaseville Road (SR 2005) approach experiences a significant grade decrease leading into the intersection, producing higher travel speeds.

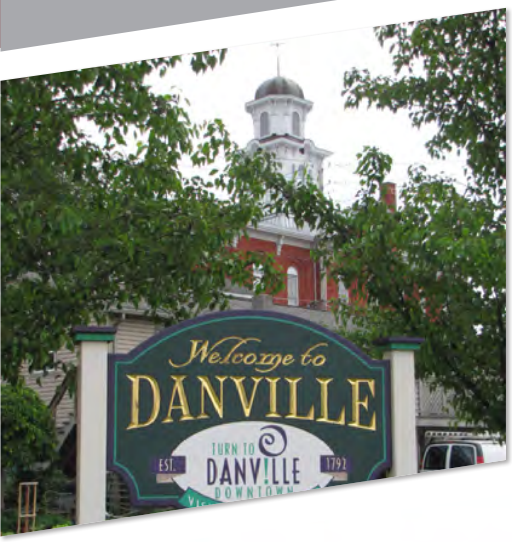
Operational Assessment

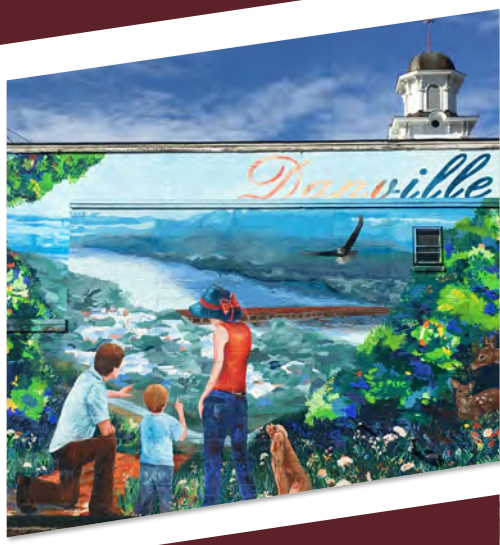
Traffic/Roadway Characteristics

The AADT along Red Lane between Welsh Road and Erin Drive during a typical weekday is approximately 2,611 vehicles, with approximately 1,300 eastbound vehicles and 1,311 westbound vehicles. The average heavy vehicle percentage is 5.1% for the eastbound direction and 2.6% for the westbound direction.

APPENDIX D

PennDOT District 3-0 Traffic Unit Comments





Danville Area Transportation Study

Appendix D – PennDOT District 3-0 Traffic Unit Comments and Implementation Considerations

Following the study's conclusion, the following points were provided by the PennDOT District 3-0 Traffic Unit as additional considerations in the study's implementation.

- Care needs to be given when adding traffic signals within the corridor, i.e., US 11/Montour St., Bloom Rd/Railroad, as this will further compound congestion issues.

- Was there any thought to remove Mill or Ferry traffic signal, change approach configurations at intersections, restrict left turns, reconfigure direction of local roads (one-way in)?

- Rather than a new I-80 interchange that connects to Kaseville Road, traffic can use the new signal at PA 54 and PA 642 and then create a new road across the ridge to tie in to Powder Mill Road behind Geisinger. A new I-80 interchange between Danville and Buckhorn may be too closely spaced to comply with federal requirements, depending on where it is located. Also, an Access Study for any proposed new interstate interchange would need to be completed, reviewed, and approved by both PennDOT and Federal Highway Administration (FHWA). Also, during the SR 54-90 project outreach meetings there were public complaints about the high traffic volume traveling up and over the mountain from the I-80 side to get to Geisinger and there were safety concerns about adding additional traffic to that network.

- Page 27 – Notes Geisinger's expected to expand 3%/year. What are their current driveways permitted as?

- Page 30 – States safe pedestrian crossing at 11/54 should be addressed. Intersection currently has push buttons and ped heads. What needs addressed?

- Page 30 – Notes several completed studies. Can we obtain access to those studies?

- Page 31 – List of developments. Are municipalities making the developers study the operations and mitigate their traffic impacts? PennDOT hasn't seen any scoping applications for any of the developments to directly access state roadways (a Department-issued permit would be needed to directly access the state-owned network).

- With the development referenced, the anticipated .34% growth seems low.

- Page 33 – PA 54/487 proposed signal is not adaptive.

- Page 34 – No signal timings will improve operations. This is a capacity issue. Need to take signals out or add lanes, or potentially add turn restrictions. Reconfigure network.

- Page 36, 39 – Roundabouts – Need to consider footprints of roundabouts, geometry (horizontal and vertical), and the ROW impacts for the circle, angled approaches, splitter islands, and pedestrian accommodations. Depending on operational analysis and traffic volumes, right slip lanes may be needed, adding to needed right-of-way. Also, since there is a fair amount of truck traffic volumes on Routes 11 and 54, the roundabouts would need to be sized to accommodate frequent large trucks.

- Page 39, SC4 – Adding another signal to Bloom Road is not ideal and operations would need to be studied and evaluated closely before moving forward. Any consideration to fixing the reverse curve?

- Page 39, SC5 – This is the main issue to solve; Geisinger needs a rear entrance.

- Page 40, SC7 – During the SR 54-090 project public involvement, we received many complaints from residents regarding the pass-through vehicles on the local roads. This will only increase the number of complaints.

- Before moving forward with a new river bridge, the traffic operational impacts should be studied so that any issues resulting from a shift in traffic to nearby critical intersections can be addressed. Example: Will the PA 54 traffic queue in Riverside now be shifted to the US 11 Southbound approach to the signalized intersection at PA 54/US 11? And will that queue impact travel times or response time to Geisinger? It may be easier for emergency vehicles to get around the traffic queue in Riverside than it would on US 11 in Danville during peak travel hours. However, it cannot be argued that the redundancy of a second river bridge would be advantageous especially during incidents and should any maintenance be required on the Danville River Bridge or the Cut & Cover (tunnel).