CLASH TRANSPORTATION STUDY

(Camp Hill/Lower Allen/Shiremanstown/Hampden)

Completed For:
Tri-County Regional Planning Commission
112 Market Street, 2nd Floor
Harrisburg, PA 17101-2015

Completed By:

McCormick Taylor
Engineers & Planners
Since 1946

75 Shannon Road
Harrisburg, PA 17112

December 2008

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF APPENDICES

TECHNICAL FILES

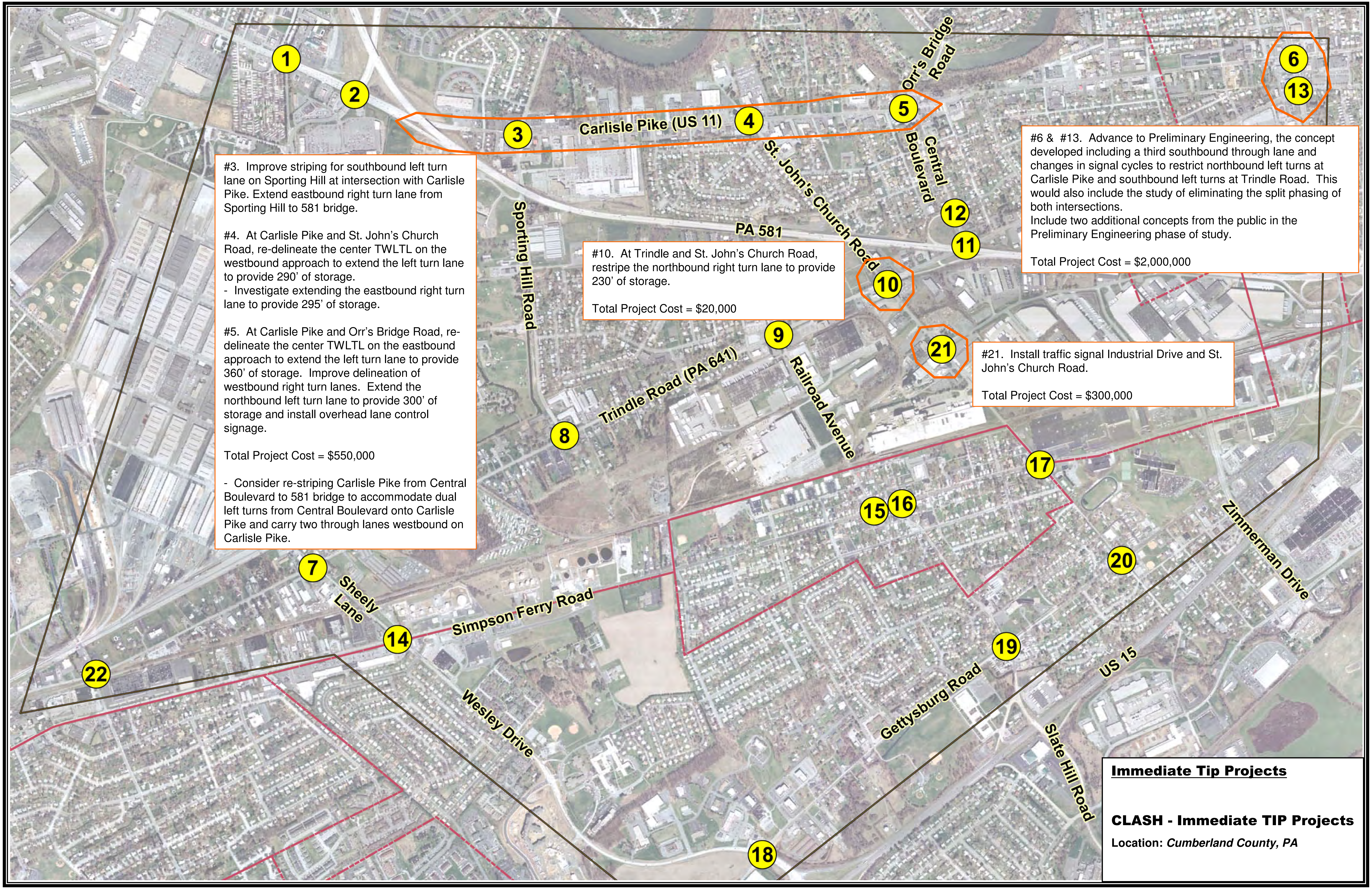
EXECUTIVE SUMMARY

The Tri-County Regional Planning Commission (TCRPC) initiated the Borough of Camp Hill/Lower Allen/Shiremanstown/Hampden Township (CLASH) Circulation Study to identify transportation alternatives to improve circulation within the study area and to the nearby limited-access highways of US 15 and PA 581. The study area includes a mix of land uses including residential, commercial, and industrial types which require the local roadway network to support a significant amount of local, commuter, and truck traffic.

The study involved a significant data collection and analysis program, a public involvement and outreach effort, and the development of intersection improvements and packages of improvements that could be utilized in future planning and Long Range Transportation Plan updates. The focus of the study was to identify system and corridor improvements that would be beneficial to the 22 intersection study area. The study also evaluated the impact of completing the interchange at PA 581 and St. John's Church Road as well as network and system improvements for pedestrians, bicyclists and transit users.

The product of this study includes this final report which documents the existing conditions and analysis completed for the base condition as well as 2020 and 2030 transportation network analysis and improvements to be considered in the future. Another product of this study is a Microsoft Excel tool (included on the CD) that can be utilized in future planning and programming efforts if year of expenditure for improvements change or item unit costs change. This tool includes cost estimates and quantity back-up for each series of transportation improvements at each intersection for the immediate, 2020, and 2030 design years. This allows interactive selection of projects and groups of projects into one package of improvements and for changes in unit prices and year of expenditure costs. In this way, the document can be a living readily useable tool for the future of transportation planning in the CLASH area. The intersection summary figures also include relevant environmental and right-of-way issues that may be encountered for each set of improvements.

The initial series of projects for consideration on the current TIP are shown in the figure on the following page. Projects for future year considerations are shown in the 2020 and 2030 sections of the report and are shown in detail in the intersection improvement graphics in the Appendix.


1
2
3
4
5
6
13
Orr's Bridge Road
Carlisle Pike (US 11)
St. John's Church Road
Central Boulevard
#3. Improve striping for southbound left turn lane on Sporting Hill at intersection with Carlisle Pike. Extend eastbound right turn lane from Sporting Hill to 581 bridge.
#4. At Carlisle Pike and St. John's Church Road, re-delineate the center TWLTL on the westbound approach to extend the left turn lane to provide 290' of storage.
- Investigate extending the eastbound right turn lane to provide 295' of storage.
#5. At Carlisle Pike and Orr's Bridge Road, re-delineate the center TWLTL on the eastbound approach to extend the left turn lane to provide 360' of storage. Improve delineation of westbound right turn lanes. Extend the northbound left turn lane to provide 300' of storage and install overhead lane control signage.
Total Project Cost = $550,000
- Consider re-striping Carlisle Pike from Central Boulevard to 581 bridge to accommodate dual left turns from Central Boulevard onto Carlisle Pike and carry two through lanes westbound on Carlisle Pike.
#6 & #13. Advance to Preliminary Engineering, the concept developed including a third southbound through lane and changes in signal cycles to restrict northbound left turns at Carlisle Pike and southbound left turns at Trindle Road. This would also include the study of eliminating the split phasing of both intersections.
Include two additional concepts from the public in the Preliminary Engineering phase of study.
Total Project Cost = $2,000,000
Sporting Hill Road
PA 581
12
11
#10. At Trindle and St. John's Church Road, restripe the northbound right turn lane to provide 230' of storage.
Total Project Cost = $20,000
10
9
21
#21. Install traffic signal Industrial Drive and St. John's Church Road.
Total Project Cost = $300,000
Trindle Road (PA 641)
Railroad Avenue
8
17
15
16
20
Zimmerman Drive
7
Sheely Lane
Simpson Ferry Road
14
22
19
US 15
Gettysburg Road
Wesley Drive
Slate Hill Road
18
Immediate Tip Projects
CLASH - Immediate TIP Projects
Location: Cumberland County, PA

I. INTRODUCTION

A. Background

The Tri-County Regional Planning Commission (TCRPC) initiated the Borough of Camp Hill/Lower Allen/Shiremanstown/Hampden Township (CLASH) Circulation Study to identify transportation alternatives to improve circulation within the study area and to the nearby limited-access highways of US 15 and PA 581. The study area includes a mix of land uses including residential, commercial, and industrial types which require the local roadway network to support a significant amount of local, commuter, and truck traffic.

Major roadways including US 15 and PA 581 provide the study area access to the Capital Beltway and high speed connections to other destinations. Localized within the study area is the partial interchange at Trindle Road and PA 581. This interchange provides access to westbound exiting traffic and eastbound entering traffic. Vehicles wishing to enter westbound or exit eastbound are forced to other interchanges or to utilize the local roadway network. This leads to a heavy volume of truck traffic on local roadways and to additional congestion on the local roadway network.

In its current configuration, the US 15/PA 581 interchange is severely congested and encourages motorists, including trucks, to use other, local and regional roads to avoid the interchange. This diversion of traffic, compounds the circulation issues within the study area. The US 15/PA 581 interchange is proposed to be redesigned and is scheduled to be under construction in March of 2008. It is anticipated that the reconfiguration of the US 15/PA 581 interchange will reduce the diversion of traffic onto the study area's roadways. This impact was reviewed as part of the CLASH study.

Several of the roadways and intersections in the study area are becoming increasingly congested which hinders the flow of traffic volume and limits mobility to motorists. The primary goal of this study is to establish the best means to improve circulation and ease congestion within the study area, including access between the study area and nearby US 15 and PA 581.

Six coordination meetings were held with the Study Review Committee (SRC) throughout the study. The meetings were held to review project progress, exchange information, and to obtain consensus. The project kick-off meeting was held April 16, 2007. At the meeting, the project stakeholders were established, the study area was reviewed, the scope of work and project goals were identified, the data collection efforts were summarized, the analysis methodology was determined, and the project scheduled outlined. A status meeting was held June 18, 2007 to summarize the traffic count and truck origin and destination study results, to review the employee zip code information, and to reach an agreement on the next steps of the project. Land use, existing traffic conditions, modifications to the regional traffic model, and the method of summarizing improvement concepts were also discussed. On October 24, 2007, a status meeting was held to discuss future traffic volumes, initial alternatives for 2020 and 2030 projects, and pedestrian and transit options. A dry-run for the public meeting was held on December 18, 2007, and the layout and displays for the public meeting were discussed. On January 23, 2008, the public meeting was held. A semi-final meeting was conducted on May 15, 2008 and a final meeting held on September 4, 2008 to review the presentation and final report. A presentation to HATS was completed on September 12, 2008.

B. Project Location

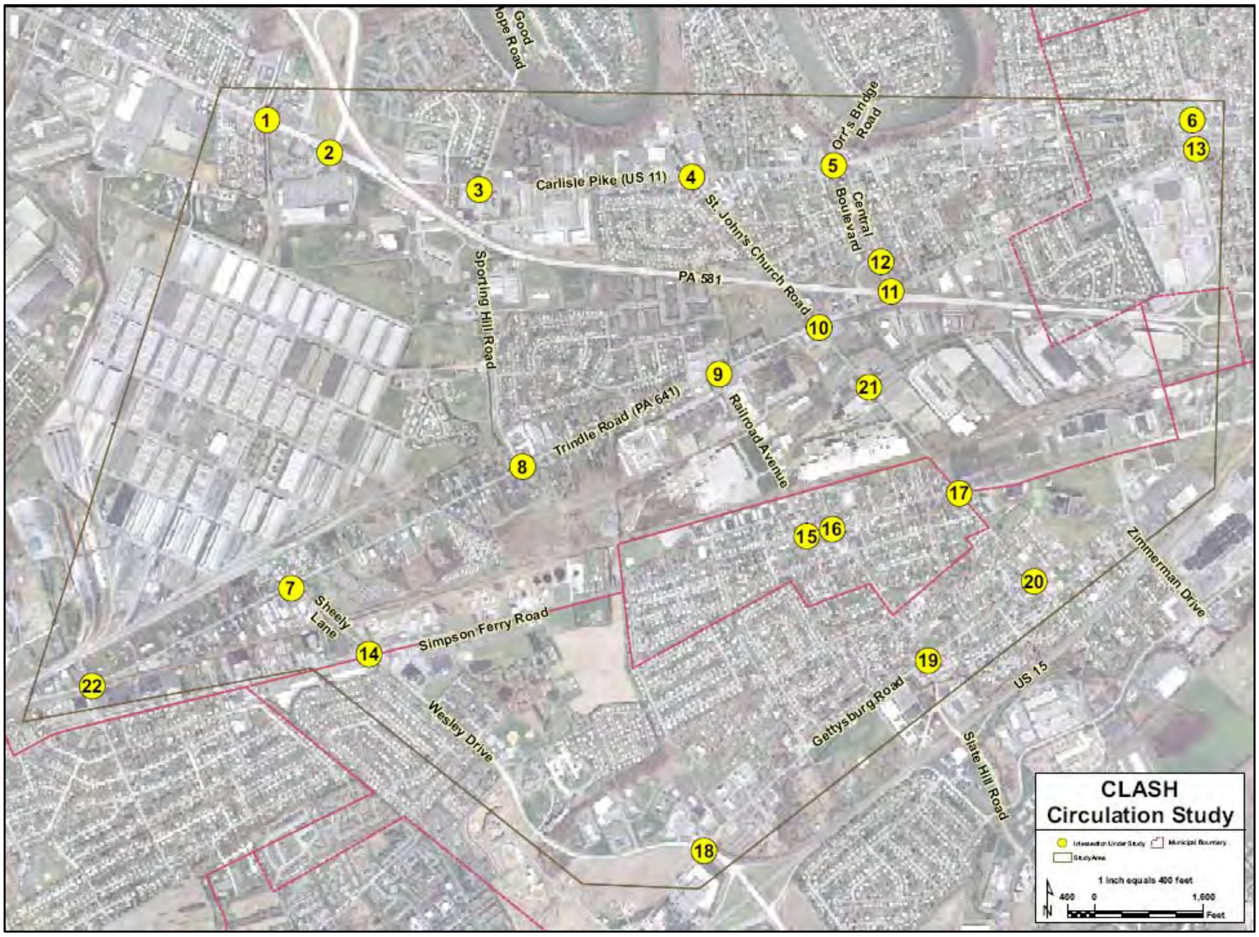
The CLASH study area is located in eastern Cumberland County, Pennsylvania and includes all of Shiremanstown Borough and parts of Borough of Camp Hill Borough, East Pennsboro Township, Hampden Township, and Lower Allen Township. The study area is bounded by the following roadways and is shown in **Figure 1.1**:

- North – Carlisle Pike/Market Street between Van Patton Drive and 32nd Street
- Southeast – US 15 between Carlisle Pike/Market Street and Wesley Drive
- Southwest – Wesley Drive/Sheely Lane between US 15 and Trindle Road/PA 641
- Northwest – Trindle Road/PA 641, Sporting Hill Road, and PA 581 between Sheely Lane and Carlisle Pike

Twenty-two (22) intersections were included in the study area and are indicated by the numbered circles shown on **Figure 1.1**.

The CLASH study area also supports several employment centers which in addition to attracting commuter traffic, generates significant truck traffic. The employment centers include the Naval Inventory Control Point (NAVICP) which employs over 5,000 people, Shaffer Trucking and ABF Freight Systems each employing over 800 people. Several other truck generating businesses also exist within the study area, primarily centered along Industrial Road and Railroad Avenue. Such businesses include Arnold Logistics, Arnold Transportation, New Penn Trucking, Eastern Consolidating and Distributing, Ward Trucking, and Carlisle Carriers. These businesses all create a significant volume of freight in the range of 10 to 150 trucks per day per business.

Figure 1.1 – Site Map and Traffic Count Locations



C. Major Area Transportation Projects

In addition to this study and its recommendations, there is one major transportation project that will affect the CLASH study area, the US 15/PA 581 Improvements Project. PennDOT set forth the US 15/PA 581 Improvements Project to design and construct highway improvements that will improve safety and alleviate traffic congestion. The project involves major reconfiguration of the US 15/PA 581 interchange and a relocation of a local interchange on US 15, **Figure 1.2** gives an overview of the project improvements.

Mainline roadway improvements include:

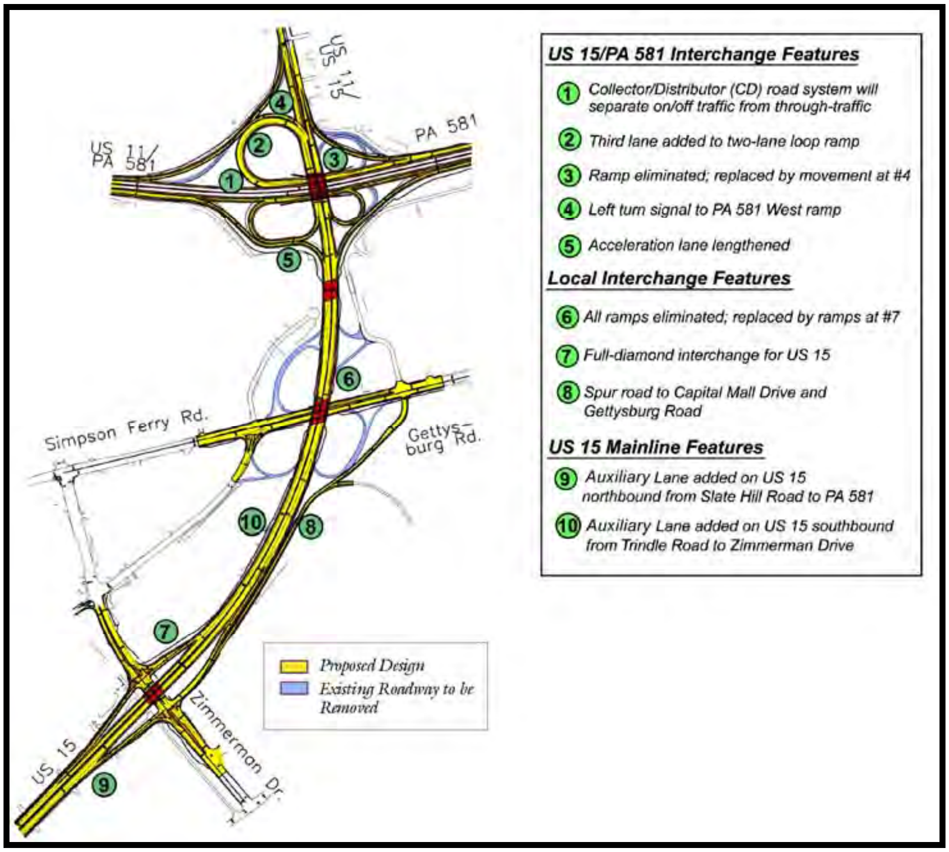
- The reconfiguration of the existing US 15/PA 581 interchange to improve traffic flow via a new collector-distributor system which will separate ramp movements from through traffic.
- The relocation of the existing US 15 interchange at Gettysburg Road to a new urban diamond interchange at Zimmerman Drive (to be renamed Lower Allen Drive) which will improve acceleration and deceleration lane lengths and eliminate substandard weave conditions.
- Widening for new auxiliary lanes on both US 15 between the Slate Hill Road interchange and Harvard Avenue, and on PA 581 eastbound between US 15 and the I-83 interchange.

Local network improvements include:
Roadway improvements will be made on the following local roads: Simpson Ferry Road (SR 2014), Gettysburg Road (SR 2027), Hartzdale Drive, Zimmerman Drive (Lower Allen Drive), and Capital City Mall Drive.

Simpson Ferry Road will have an added westbound lane between Zimmerman Drive (Lower Allen Drive) and St. John's Church Road to accommodate the dual left turning moving from northbound Zimmerman Drive (Lower Allen Drive) and to alleviate congestion along Simpson Ferry Road. Due to the new interchange with US 15 at Zimmerman Road (Lower Allen Drive), the entire cross-section of Zimmerman Drive (Lower Allen Drive) will be updated. At the intersection of Gettysburg Road and Slate Hill Road/Locust Street, left turn lanes will be added to Gettysburg Road to improve the operation of the intersection. Lastly, at the intersection of Hartzdale Drive and Slate Hill Road improvements include turn lane reconfiguration and the addition of new turn lanes. The traffic signals along the Zimmerman Drive (Lower Allen Drive) corridor and the traffic signals along the Gettysburg Road will be interconnected.

Due to the roadway improvements and the interchange relocation, traffic patterns and volumes within the project area are expected to change. These changes were addressed in the CLASH Circulation Study future volume development.

Figure 1.2 – US 15/PA 581 Project Improvements



D. Data Reviewed

In order to complete a thorough analysis of the corridor, the following data was collected and reviewed:

- Signal plans for the 16 signalized study intersections.
- Field sketches of each of the 22 intersections.
- Corridor characteristics taken from field visits, including sidewalk and curb locations, speed limits, number of lanes and turning lanes, and any other noteworthy features.
- Peak hour turning movement count data for all of the intersections collected between April 24 and April 26 2007 and on May 3, 2007 between 7:00-8:00AM and 4:00-5:00PM.
- Traffic signal equipment inventory collected May 3, 2007.
- Truck Following O-D study performed from 7:00AM to 12:00 PM and 1:00 PM to 6:00 PM on May 31, 2007 to capture commercial vehicle travel patterns.
- Phone interviews with several trucking firms in and around the study area.
- Transit information from the Capital Area Transit.
- Zip code information obtained from the West Shore Tax Bureau that links local residents to their employers and local employers to their employee's place of residence.
- Cumberland County zoning/land use maps.

In addition to these data sources, several field visits were conducted to identify and document existing conditions. During these visits, photographs along with visual information on intersection and signal characteristics were obtained. Photographs of the study intersections and roadways can be found on a CD located in Appendix B.

II. EXISTING CONDITIONS

A. *Description of Roadway Network*

This section describes the existing conditions found within the study area and will consist of two parts. The first section is a general description of the various corridors found within the study area. The second section is a description of each of the 22 intersections that were studied.

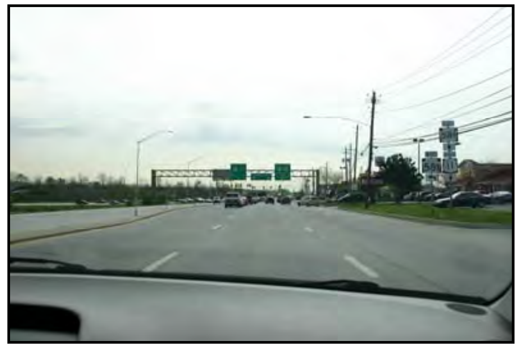
1. Corridors

According to the County Functional Class Map, the corridors of interest within the study area can be defined and classified as shown in **Table 2.1**. Following the table are descriptions of each of the main corridors. It should be noted that there are currently no formal bicycle routes or Intelligent Transportation Systems (ITS) located within the study area.

Table 2.1 – Classification of CLASH Corridors

Corridor	SR	Intersecting Roadways		Classification
		Start	End	
Carlisle Pike	1010	Van Patton Road	32nd Street (US 11/15)	Other Principal Arterial Highway
Trindle Road	641	Gilmore Road	32nd Street (US 11/15)	Other Principal Arterial Highway
Simpson Ferry Road	2014	Sheely Lane/ Wesley Drive	St. John's Church Road	Minor Arterial
Gettysburg Road	2027	Wesley Drive	St. John's Church Road	Urban Collector
St. John's Church Road	2029	Gettysburg Road	Simpson Ferry Road	Urban Collector
St. John's Church Road	2029	Simpson Ferry Road	Carlisle Pike	Minor Arterial
Sporting Hill Road	1013	Trindle Road	Carlisle Pike	Minor Arterial
Sheely Lane/ Wesley Drive	2021	Gettysburg Road	Trindle Road	Minor Arterial
Central Boulevard	1021	Trindle Road	Carlisle Pike	Urban Collector
Railroad Ave	2025	Simpson Ferry Road	Trindle Road	Urban Collector

Carlisle Pike: Van Patton Road to 32nd Street (US11/15)



EB Carlisle Pike – PA581 Ramps

Carlisle Pike is located at the northern-most edge of the study area and can be found in Hampden Township and the Borough of Camp Hill. Traveling eastbound from the intersection with Van Patton Drive, the roadway has a varying cross-section with three eastbound and two westbound through lanes in each direction along with designated left and right turn lanes at the intersections. Beginning on the eastern side of Sporting Hill Road, the roadway has a single lane in each direction with a center two-way-left-turn-lane. On the eastern side of 34th Street (within the Borough of Camp Hill) to the intersection with 32nd Street (US11/15), a single westbound and two eastbound through lanes are present. The shoulder widths vary from 4' to 10' when traveling from west to east. Curbs are located intermittently on either one or both sides of the roadway throughout the section. In Hampden Township, sidewalk is non-existent except for a short stretch near the border with the Borough of Camp Hill, while the Borough of Camp Hill has sidewalk on both sides of Carlisle Pike. For specific locations of sidewalk, see **Figure 2.3**. On-street parking is not permissible along the corridor and the posted speed is 40 miles per hour (MPH). The surrounding area includes a mix of residential and commercial land uses. There are eight signalized intersections within the section, with several of the traffic signals currently utilizing time based coordination.

EB Carlisle Pike – 36th Street

Trindle Road: Gilmore Road to 32nd Street (US11/15)

WB Trindle Road – Approaching PA581

Trindle Road is located in the central portion of the study area within Hampden Township and the Borough of Camp Hill. Traveling westbound from the intersection with 32nd Street, the roadway has a single eastbound and westbound through lane. From 34th Street to June Drive, the roadway has the same cross-section with the addition of a center two-way-left-turn-lane. Finally, from June Drive to Gilmore Road (Navy Gate), a single westbound and eastbound through lane exist. The shoulder widths vary from 4' to 12'. Curbs are located intermittently on either one or both sides of the roadway throughout the section. Sidewalk exists primarily in the Borough of Camp Hill with only intermittent short stretches through Hampden Township. For specific locations where sidewalk is present, see **Figure 2.3**. On-street parking is only permissible between 34th Street and the approach to Central Boulevard. The posted speed is 40 MPH for the entire section. The surrounding area includes a mix of residential and commercial land uses. There are seven signalized intersections within the section; several of the traffic signals currently utilize time based coordination.

Simpson Ferry Road: Sheely Lane/Wesley Drive to St. John's Church Road

Simpson Ferry Road is located in the central portion of the study area and serves as the municipal border between Hampden Township and Lower Allen Township as well as becoming Main Street in Shiremanstown Borough. Traveling eastbound from the intersection with Sheely Lane/Wesley Drive, the roadway has one lane in both the eastbound and westbound direction, with a center two-way-left-turn-lane in front of the businesses. In Shiremanstown Borough, single eastbound and westbound lanes continue, while the lane widths increase significantly (~30' lanes). Shoulder widths are narrow outside of the Borough, and widen to become on street parking within the Borough. Curbing exists on the eastbound lane for nearly the entire length of the corridor and only on the westbound lane in the Shiremanstown Borough. Sidewalk is present almost exclusively within Shiremanstown Borough, except for a short stretch in front of some of the businesses near the intersection with Sheely Lane/Wesley Drive. For specific locations where sidewalk is present, see **Figure** 2.3. On-street parking is only permissible within Shiremanstown Borough. The posted speed is 40 MPH and transitions to 35 MPH in the Borough. The surrounding area includes a mix of residential and commercial land uses. There are two signalized intersections within the corridor and the traffic signals are currently uncoordinated.

WB Simpson Ferry Road Approaching Sheely Lane/Wesley Drive

WB Simpson Ferry Road – Shiremanstown Borough

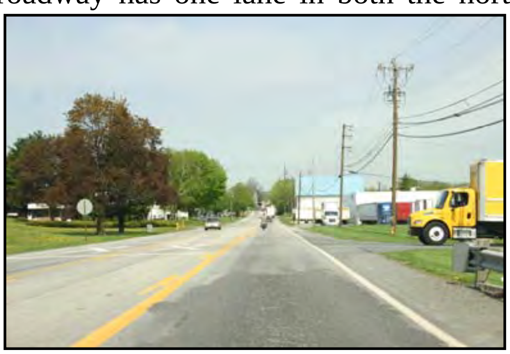
Gettysburg Road: Sheely Lane/Wesley Drive to St. John's Church Road

EB Gettysburg Road – Near Wesley Drive

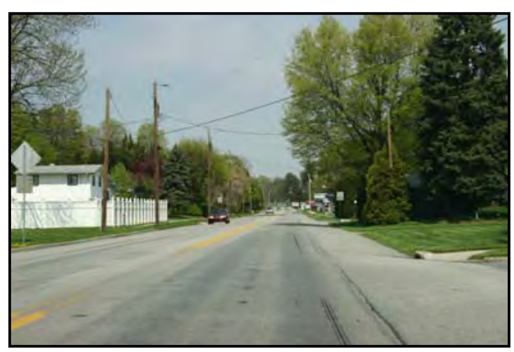
EB Gettysburg Road – Approaching St. John's Church Road

Gettysburg Road is located in the southern portion of the study area and lies entirely in Lower Allen Township. Traveling eastbound from the intersection with Sheely Lane/Wesley Drive, the roadway has one lane in both the eastbound and westbound direction. Approximately 500' from the intersection, the cross-section narrows significantly and shoulder widths range from two feet to four feet. Curbing exists intermittently and sidewalk is more prevalent along the western half of the alignment. For specific locations where sidewalk is present, see **Figure 2.3**. On-street parking is not permitted. The posted speed is 35 MPH, with a 15 MPH zone near the school. The surrounding area includes a mix of residential and commercial land uses. There are three signalized intersections within the corridor and the traffic signals are currently uncoordinated.

St John's Church Road: Gettysburg Road to Carlisle Pike



NB St. John's Church Road – Industrial Drive



NB St. John's Church Road – North of the PA 581 Overpass

St. John's Church Road is located in the center of the study area and lies in both Lower Allen and Hampden Township. Traveling northbound from the intersection with Gettysburg Road, the roadway has one lane in both the northbound and southbound direction with a narrow cross-section and shoulder widths ranging from 0'-2'. The cross-section changes significantly at the intersection with Simpson Ferry Road where the lane widths increase from 10' to 12' and a center two-way-left-turn-lane begins. At the intersection with Trindle Road, the turn lane ends, and the cross-section widens again. Curbing and sidewalk exist sporadically and are more prevalent on the northern half of the corridor. For specific locations where sidewalk is present, see **Figure 2.3**. On-street parking is permitted north of the PA 581 overpass. The posted speed is 35 MPH and transitions to 45 MPH at the intersection with Simpson Ferry Road and down to

40 MPH at the intersection with Trindle Road. The surrounding area includes a mix of residential and commercial, and industrial land uses, with the industrial area centered primarily between Simpson Ferry Road and Trindle Road. There are four signalized intersections within the corridor and the traffic signals are currently uncoordinated.

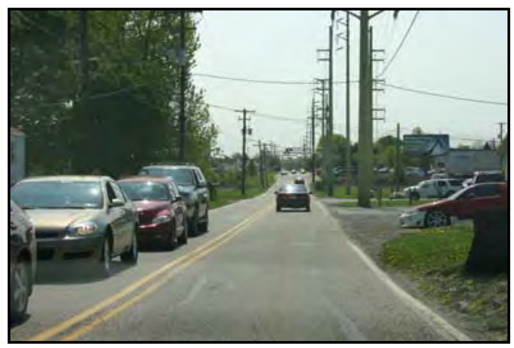
Sporting Hill Road: Carlisle Pike to Trindle Road

Sporting Hill Road is located in the western portion of the study area and lies entirely in Hampden Township. Traveling southbound from the intersection with Carlisle Pike, the roadway has one lane in both the northbound and southbound direction. The shoulder widths vary from 4' to 6'. Curbing exists intermittently and sidewalk is concentrated near the residential neighborhood on the eastern side of the roadway. For specific locations where sidewalk is present, see **Figure** 2.3. On-street parking is not permitted and the posted speed is 35 MPH. The surrounding area includes a mix of residential and commercial land uses. There are five signalized intersections within the corridor and the traffic signals are currently uncoordinated.

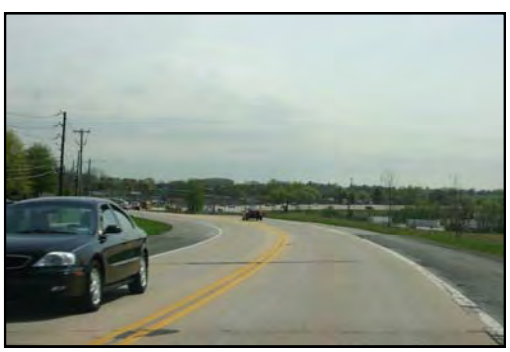
NB Sporting Hill Road – East Naval Gate

Sheely Lane/Wesley Drive: Trindle Road to Gettysburg Road

Sheely Lane and Wesley Drive are located in the western portion of the study area. Sheely Lane lies north of Simpson Ferry Road in Hampden Township. Wesley Drive lies south of Simpson Ferry Road in Lower Allen Township. Traveling southbound from the intersection with Trindle Road, the roadway has one lane in both the northbound and southbound directions with a narrow cross-section. The shoulder widths vary from zero feet to two feet. This corridor has no curbing or sidewalks. Beginning at the intersection with Simpson Ferry Road, single northbound and southbound lanes still exist, with shoulder widths varying from 2' to 12'. Curbing exists intermittently and sidewalk is concentrated near the residential neighborhood, mainly on the eastern side of the roadway. For specific locations where sidewalk is present, see **Figure 2.3**. On-street parking is not permitted and the posted speed is 40 MPH. The surrounding area includes a mix of residential and commercial land uses. There are five signalized intersections within the corridor and the traffic signals are currently uncoordinated.



SB Sheely Lane – Trindle Road



SB Wesley Drive – Approaching Gettysburg Road

Central Boulevard: Trindle Road to Carlisle Pike

Central Boulevard is located in the central portion of the study area and lies in Hampden Township. Traveling northbound from the intersection with Trindle Road, there is one lane in both the northbound and southbound directions. The cross-section is wide, with 12’ lanes and 20’ shoulders and decreases significantly after the intersection with the PA 581 off-ramp where the shoulder widths are two feet to four feet. This corridor has intermittent curbing with the sidewalks being located primarily on the eastern side. For specific locations where sidewalk is present, see **Figure 2.3**. On-street parking is permitted along the eastern side, and the posted speed is 35 MPH. The surrounding area is primarily residential. There is only one signalized intersection within the corridor and it lies at the intersection with the Carlisle Pike.

SB Central Boulevard – PA 581 Off-ramp

Railroad Avenue: Simpson Ferry Road to Trindle Road

Railroad Avenue is located in the central portion of the study area and lies in both Hampden Township and Shiremanstown Borough. Traveling southbound from the intersection with Trindle Road, there is one lane in both the northbound and southbound directions. Shoulder widths vary from zero feet to four feet. This corridor has intermittent curbing and sidewalk located primarily in the Shiremanstown Borough. On-street parking is not permitted, and the posted speed is 35 MPH. The surrounding area is primarily commercial and industrial land uses. There is only one signalized intersection within the corridor and it lies at the intersection with Trindle Road.

SB Railroad Avenue – Trindle Road

2. Intersections

A total of 22 intersections were studied, varying from stop-controlled intersections to multi-lane, custom-phased signal controlled intersections. A list of the 22 intersections can be found below, followed by brief descriptions of each. A photo log of the intersections can be found on the CD in Appendix B. In addition, graphics detailing the intersection lane configuration can be found in **Figures 2.1a** and **2.1b**, the location of sidewalks is in **Figure 2.3**, and bus routes/bus stops are located in **Figure 2.4**.

1. Carlisle Pike (US 11) and Van Patton Road
2. Carlisle Pike (US 11) and Gateway Drive/PA 581 off-ramps

3. Carlisle Pike and Sporting Hill Road
4. Carlisle Pike and St. John's Church Road
5. Carlisle Pike and Orr's Bridge Road/Central Boulevard
6. Carlisle Pike/Market Street and 32nd Street (US 11/15)
7. Trindle Road (PA 641) and Sheely Lane
8. Trindle Road (PA 641) and Sporting Hill Road
9. Trindle Road (PA 641) and Railroad Avenue
10. Trindle Road (PA 641) and St. John's Church Road
11. Trindle Road (PA 641) and Central Boulevard
12. Central Boulevard and PA 581 westbound off-ramp
13. Trindle Road (PA 641) and 32nd Street (US 15)
14. Simpson Ferry Road and Sheely Lane/Wesley Drive
15. Main Street (Simpson Ferry Road) and Railroad Avenue
16. Main Street (Simpson Ferry Road) and Locust Street
17. Simpson Ferry Road and St. John's Church Road
18. Gettysburg Road and Wesley Drive
19. Gettysburg Road and Slate Hill Road/Locust Street
20. Gettysburg Road and St. John's Church Road
21. Industrial Road and St. John's Church Road
22. Trindle Road and Gilmore Road (Navy Gate)

Signalized Intersections

On May 3rd, 2007 a field view of the traffic signal equipment within the CLASH study area was completed. The review included a visual investigation of the controller assembly and the traffic signal installation. The inventory of the controller assemblies included documenting the type of controller, conflict monitor, and detector amplifiers as well as the number of positions available on the back panel. The review of the traffic signal installation included documenting the general condition of the mast arms, pedestrian accommodations, and the pavement marking condition. A good/fair/poor rating was applied to both the traffic signal installation and the controller assembly. These Equipment Inventory Sheets can be found in Appendix C.

- *Carlisle Pike (US 11) and Van Patton Road (1)*

  The intersection has a wide cross-section with right and left turn lanes from the eastbound, northbound, and westbound approaches. The southbound approach is a driveway from a hotel/bar with faded pavement markings. Pedestrian crossing is permitted only on the westbound, northbound, and southbound approaches; however, dedicated pedestrian signals are not provided. The signal is fully actuated and coordinated with the other signals along Carlisle Pike.

- *Carlisle Pike (US11) and Gateway Drive/PA 581 off-ramps (2)*

  The intersection has a wide cross-section with multiple approach lanes from each direction. Left turn lanes exist in each direction while channelized right turn lanes are present on the southbound, eastbound, and westbound approaches. Pedestrian movements are not permitted or accommodated for on any of the approaches. The signal is fully actuated and coordinated with the other signals along Carlisle Pike.

- *Carlisle Pike and Sporting Hill Road (3)*

  This four way intersection has a smaller cross-section than the previous two. Left turn lanes are provided for each approach with recent upgrades including the addition of a second left turn lane on the northbound approach. Pedestrian movements are permitted and accommodated for each approach with the appropriate crosswalks, signalization, and push-buttons for actuation.

- *Carlisle Pike and St. John's Church Road (4)*

  This four way intersection is on a skew with St. John's Church Road approaching Carlisle Pike at a steep angle. Left and right turn lanes exist on the eastbound and westbound approaches with the northbound approach having a right turn lane only. There is a high volume of truck traffic on the eastbound and northbound approaches while the southbound approach and northbound through movements see minimal traffic. There are no pedestrian accommodations at this intersection.

- *Carlisle Pike and Orr's Bridge Road/Central Boulevard (5)*

  This is an offset intersection combining a T-intersection and a four way intersection into one signal. The southbound, eastbound, and westbound approaches have left turn lanes with the westbound approach having an extended right turn lane that is broken by the southbound approach of the Central Boulevard intersection. This southbound approach is a driveway. Pedestrians are not accommodated at the intersection.

- *Carlisle Pike/Market Street and 32nd Street (US 11/15) (6)*

  This is a wide four way intersection with left turn lanes on each approach. The southbound approach has a right turn lane while the northbound approach has a channelized right lane. Pedestrian movements are permitted and accommodated on each approach with the appropriate crosswalks, signalization, and push-buttons for actuation.

- *Trindle Road (PA 641) and Sheely Lane (7)*

  This four way intersection has a relatively small cross-section, but has left turn lanes on the eastbound and westbound approaches. The northbound approach has several restrictive roadside elements and as such has no turn lanes. The southbound approach carries a low volume and is in need of improved delineation. Pedestrian movements are only permitted and provided for on the eastbound and southbound approaches.

- *Trindle Road (PA 641) and Sporting Hill Road (8)*

  This T-intersection has a wide cross-section and includes a left turn lane on the eastbound approach, a right turn lane on the westbound approach, and both a right and left turn lane on the southbound approach. There are no crosswalks at this intersection; however, pedestrians are permitted to cross the eastbound and southbound approaches where signals and pushbuttons are present.

- *Trindle Road (PA 641) and Railroad Avenue (9)*

  The eastbound, westbound, and northbound approaches of this intersection have left turn lanes provided. The southbound approach to the intersection is a driveway with minimal delineation. Pedestrian movements are accommodated on each approach. The northbound approach is wide as it sees a significant percentage of truck traffic from the industrial area to the south of the intersection.

- *Trindle Road (PA 641) and St. John's Church Road (10)*

  This four way intersection has a high volume with a large percentage of truck traffic. As such, left and right turn lanes exist at each approach. Due to the high volume of truck traffic, the turn lanes are long. Pedestrians are not accommodated on any approach.

- *Trindle Road (PA 641) and 32nd Street (US 15) (13)*

  Trindle Road intersects 32nd Street (US 15) at a skew. Left turn lanes are provided for on all approaches with right turn lanes existing on only the southbound and eastbound approaches. Pedestrian movements are permitted and accommodated on each approach with the appropriate crosswalks, signalization, and push-buttons for actuation.

- *Simpson Ferry Road and Sheely Lane/Wesley Drive (14)*

  This intersection is on a skew. Left turn lanes are provided on all approaches, with the northbound and southbound approaches having channelized right turn movements. Pedestrians are permitted to cross on each approach. Pushbuttons are provided however pedestrian specific signals are not provided and crosswalks are not present.

- *Simpson Ferry Road and St. John's Church Road (17)*

  Left turn lanes are present on each approach, with right turn lanes being provided on the westbound and southbound approaches. Pedestrians are provided for and accommodated on each approach. This intersection sees a high volume of truck traffic traveling into and out of the industrial area to the north of the intersection. In addition, this intersection will have updates to the westbound approach as part of the 15/581 Interchange Project. See

Chapter 4, 2020 Projections and Improvements, for a detailed description of the 15/581 Project updates.

- *Gettysburg Road and Wesley Drive (18)*

  This four way intersection has left turn lanes in both the eastbound and westbound direction. In addition, it has a right turn lane in the southbound direction and a channelized right turn lane in the westbound direction. The northbound approach has a narrower cross-section than the other three approaches. Pedestrians are only permitted and accommodated on the eastbound approach.

- *Gettysburg Road and Slate Hill Road/Locust Street (19)*

  This intersection has a narrow cross-section and no turn lanes on any approach. Pedestrians are provided for and accommodated on each approach with crosswalks, signals and push buttons. This intersection will have several updates as part of the 15-581 Interchange Project. See Chapter 4, 2020 Projections and Improvements, for a detailed description of the 15/581 Project updates.

Unsignalized Intersections

- *Trindle Road (PA 641) and Central Boulevard (11)*

  The intersection is a stop-controlled T-intersection. Trindle Road has a free movement in both the eastbound and westbound directions, while southbound Central Boulevard is stop-controlled. There are no pedestrian crosswalks, and the only sidewalk is located in the northeast corner of the intersection.

- *Central Boulevard and PA 581 westbound off-ramp (12)*

  The intersection is stop-controlled with the eastbound approach being a one-way off-ramp from PA 581. Central Boulevard has a free movement in both the northbound and southbound directions while the eastbound and westbound approaches are stop-ontrolled. The eastbound approach also has a channelized right turn to accommodate the high volume of traffic exiting PA 581.

- *Main Street (Simpson Ferry Road) and Railroad Avenue (15)*

  The intersection is a stop-controlled T-intersection with free movements on the eastbound and westbound approaches. There are pedestrian crosswalks located on the eastbound and southbound approach with a sidewalk running along the entire southern edge of Main Street.

- *Main Street (Simpson Ferry Road) and Locust Street (16)*

  The intersection is stop-controlled with free movements on the eastbound and westbound approaches. The northbound approach is narrow, and there are pedestrian crosswalks located on the westbound, northbound, and southbound approaches.

- *Gettysburg Road and St. John's Church Road (20)*

  The intersection is stop-controlled with free movements on the eastbound and westbound approaches. Crosswalks are present on the northbound and southbound approaches only.

- *Industrial Drive and St. John's Church Road (21)*

  The intersection is a stop-controlled T-intersection with free movements on the northbound and southbound approaches. A center two-way-left-turn-lane exists to accommodate traffic turning from the northbound and southbound approaches. A crosswalk is not present at this intersection.

- *Trindle Road (PA 641) and Gilmore Road (Navy Gate) (22)*

  The intersection is a stop-controlled T-intersection with free movements on the eastbound and westbound approaches. It is used mainly by employees of the Navy Depot. There are no crosswalks present at this intersection.

LEGEND

- Study Intersection Signalized
- Study Intersection Unsignalized

McCormick Taylor
Engineers & Planners Since 1946

FIGURE # 2.1a

Existing Conditions

Location: *Cumberland County, Pennsylvania*

MATCH TO PREVIOUS SHEET

McCormick Taylor
Engineers & Planners Since 1946

LEGEND

- Study Intersection Signalized
- Study Intersection Unsignalized

N

FIGURE # 2.1b
Existing Conditions

Location: *Cumberland County, Pennsylvania*

B. Pedestrian Network

As part of the overall project goals, an in-depth evaluation of the existing pedestrian network was undertaken to develop recommendations for construction of sidewalks to better facilitate the interaction between pedestrians and transit and also to create a walk-able community. A walk-able community can be defined in various ways, but generally it is where people of all ages and ability have access to their community "on foot" and there is not a reliance on the automobile.

Characteristics of a walk-able community can be as follows:

- Continuous Systems/Connectivity. Provide a complete system of interconnected streets, pedestrian walkways, and other pedestrian facilities to increase pedestrian travel.
- Shortened Trips and Convenient Access. Provide connections between popular origins and destinations, between dead-end streets or cul-de-sacs, or as shortcuts through open spaces.
- Linkages to a Variety of Land Uses/Regional Connectivity. Provide pedestrian circulation and access to shopping malls, transit, downtown, schools, parks, offices, mixed-use developments, and other communities within the region.
- Coordination between Jurisdictions – put pedestrian facilities in place to meet current and future needs by ensuring close coordination between jurisdictions and other modes of transportation. Maintain close coordination and cooperation with the state transportation department.
- Pedestrian-Supportive Land-Use Patterns. Use a grid street layout with short blocks in business districts and downtowns to enhance pedestrian mobility.
- Well-Functioning Facilities. Ensure adequate width and sight distance, accessible grades, and alignment to avoid blind corners for all pedestrian facilities. Make sure common problems, such as poor drainage, are avoided.
- Designated Space. Delineate, sign, and mark pedestrian facilities, as appropriate.
- Security and Visibility. Design walkways to ensure a secure environment for pedestrians. Lighting, increased visibility, open sight-lines, and access to police and emergency vehicles are important considerations.
- Automobiles are Not the Only Consideration. Design streets to accommodate all modes of transportation. Reduce or manage parking supply using methods that encourage walking.
- Accessible and Appropriately Located Transit. Situate transit facilities adjacent to work, residential areas, shopping, and recreational facilities to encourage pedestrian trips. Transit stops and centers should typically be located in areas of supporting densities. Providing adequate pedestrian facilities to access transit is essential to its success as an alternate mode of travel.
- Pedestrian Furnishings. Provide furnishings, such as benches, restrooms, drinking fountains, artwork, architectural fountains (especially for play!), and other similar elements to create more attractive and functional environments for pedestrians.
- Proper Maintenance. Provide frequent cleanup and repair on a regular basis to ensure continued use of areas by pedestrians.

To evaluate the walk-able community concepts and to provide guidance for making the decisions for planned sidewalk, data regarding the location of existing sidewalks was gathered. Information regarding the local transit system and existing land-uses for the region was also obtained to define the community and to determine where additional sidewalk connections would be best served. This data was used to target sub-areas where further sidewalk construction would be beneficial in creating a walk-able community. These sub-areas are shown in **Figure 2.2**.

Figure 2.2 – Walk-able Community Sub-Areas

Existing sidewalk was mapped using both field data and aerial imagery. The sidewalk mapped in the field together with the aerial imagery allowed the development of an existing sidewalk network. The existing sidewalk network is shown in **Figure 2.3**.

Figure 2.3 – Existing Sidewalk Locations

In addition to the existing sidewalk locations, the existing transit service location has a large influence on the walk-able community concept. Lastly, existing land-use also contributes to the development of recommendations for proposed sidewalk locations in the area. The area is a mix of commercial, industrial, residential, and retail that can all be linked via sidewalk. By linking these various land-uses with sidewalk, a walk-able community can be achieved. A completed sidewalk network for each of the three zones would link the residential areas with places of work, to grocery stores, retail locations, restaurants, and transit.

C. Transit Service

Within the study area, the local transit service is provided by the Cumberland-Dauphin-Harrisburg Transit Authority (a.k.a. Capital Area Transit, or CAT). CAT currently has two divisions – a Fixed Route Bus Division and a Shared Ride/Paratransit Division. CAT operates numerous routes throughout the Capital Area, which provide weekday, and Saturday services. Within the study area, there are five CAT bus routes. These routes are mapped in **Figure 2.4**:

- Route 81 (shown in purple)
- Route B (shown in red)
- Route C (shown in orange)
- Route D (shown in green)
- Route M (shown in blue)
- Route MX (shown in yellow)

The routes provide service Monday through Friday from about 6:00AM to 7:00PM and Saturdays from about 7:30AM to 5:30PM. The bus stop locations in **Figure 2.4** are represented by orange circles with an orange triangle representing a transfer location between bus routes. The location of the bus routes and their individual stops in relation to the existing sidewalk infrastructure was an important consideration as locations for future sidewalk where developed.
For specific information on a particular bus route, refer to the CAT westbound site at **www.cattransit.com**.

Figure 2.4 – Existing Bus Routes and Bus Stops

D. *Traffic Data*

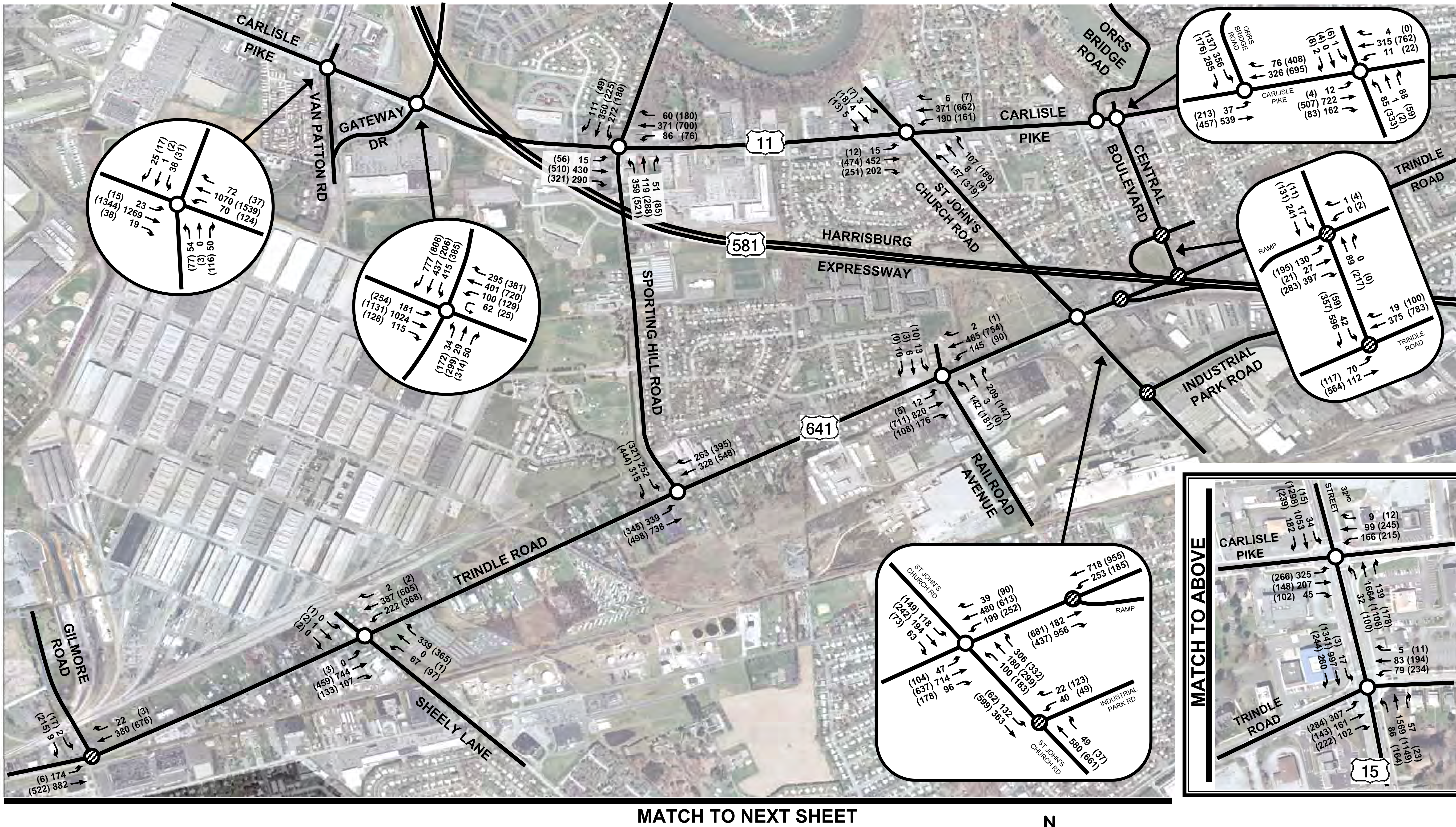
In order to determine the overall quality of current traffic operations, traffic data was collected including, intersection counts, a truck-following O-D study, and interviews with trucking companies.

1. Intersection Counts

Manual intersection turning movement counts were collected at twenty-two (22) locations (the study intersections from Section A) during one hour of the AM and PM peak periods.

Peak AM Hour:	*7:00AM – 8:00 AM*
Peak PM Hour:	*4:00PM – 5:00 PM*

The manual counts summarized automobile, truck, and pedestrian movements by approach. The traffic data collection was performed by a sub consultant, Design Support Services. This task also included summarizing the count data to develop the truck percentages, the peak hour factor, and the existing base year AM and PM peak hour volumes. Volume figures (**Figure 2.5** and **Figure 2.6**) were developed for the existing weekday AM and PM peak hour turning movements. Additionally, the existing Level of Service (LOS) is included in **Figures 2.7** and **2.8**. The intersection count sheets are included in Technical Files, Section 1.



LEGEND

- Study Intersection Signalized
- Study Intersection Unsignalized
- AM (PM) Turning Movement Traffic Volume

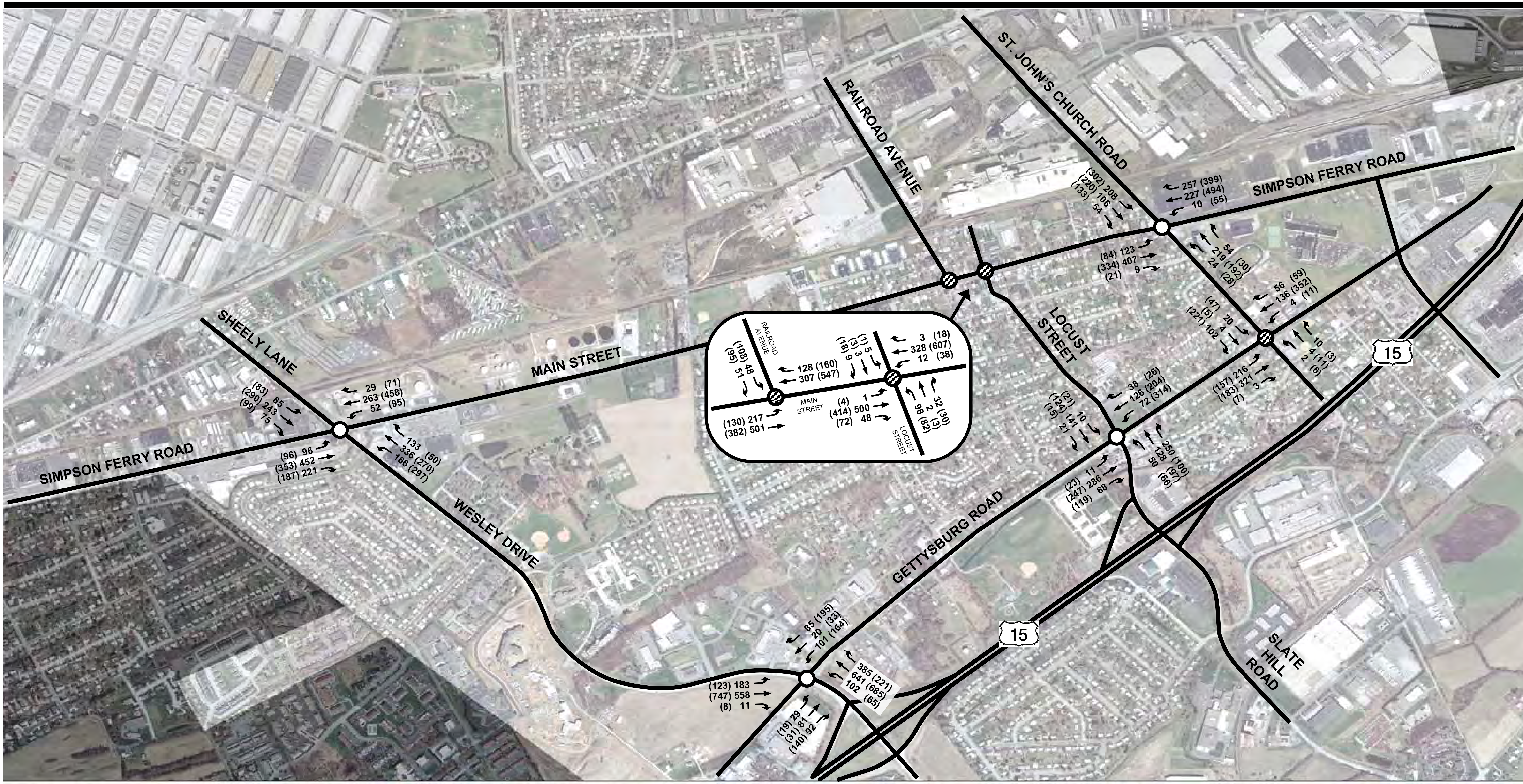
McCormick Taylor
Engineers & Planners Since 1946

FIGURE # 2.5 Turning Movements Total Vehicles

Existing Conditions

Location: ***Cumberland County, Pennsylvania***

MATCH TO PREVIOUS SHEET



LEGEND

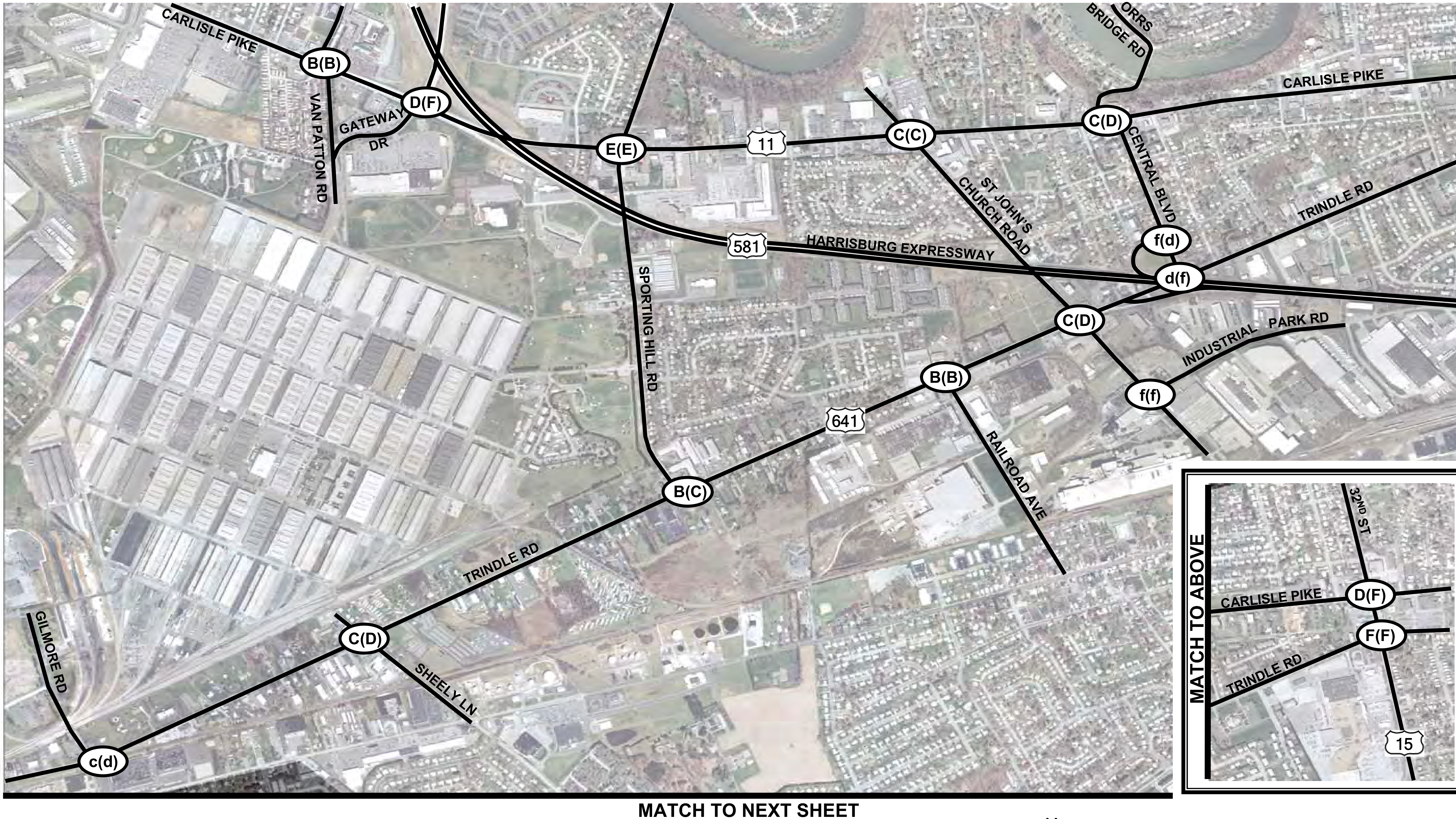
- Study Intersection Signalized
- Study Intersection Unsignalized
- AM (PM) Turning Movement Traffic Volume

McCormick Taylor
Engineers & Planners Since 1946

FIGURE # 2.6 Turning Movements Total Vehicles

Existing Conditions

Location: *Cumberland County, Pennsylvania*



MATCH TO NEXT SHEET

LEGEND

- A(B) Signalized Intersection Overall Level of Service AM (PM)
- d(e) Unsignalized Intersection Lowest Approach Level of Service am (pm)

N

FIGURE # 2.7 Level of Service – Existing Conditions

Location: *Cumberland County, PA*

McCormick Taylor
Engineers & Planners Since 1946

MATCH TO PREVIOUS SHEET

McCormick Taylor
Engineers & Planners Since 1946

LEGEND

(A) Signalized Intersection Overall Level of Service

(d) Unsignalized Intersection Lowest Approach Level of Service

N

FIGURE # 2.8 Level of Service –

Existing Conditions

Location: *Cumberland County, PA*

2. O-D Study

An Origin–Destination (O-D) study was conducted within the CLASH study area to better understand the existing travel patterns.

Initially, the O-D study was to be conducted at a limited number of signalized intersections (namely Trindle Road and St. John's Church Road (#9) and Simpson Ferry Road and St. John's Church Road (#15)) to be cost-effective and to assure the safety of the motorist and surveyors. It was also assumed that the survey would be conducted from 6:00AM to 10:00AM and 2:00PM to 6:00PM to capture both commuter and commercial vehicle travel.

In planning the O-D study, several concerns arose.

- Concern with the quality of data obtained. Often drivers do not know street the address, roadway names, or travel information to directly answer the survey questions.
- Minimal room available to stop vehicles along the shoulder; in some cases no shoulder is available.
- Safety concerns over having surveyors along the roadway with the combination of narrow lanes and high truck traffic.
- Concern with driver frustration and in-cooperation; as the study area is already congested people may view the survey as an intolerable delay.
- Minimum survey capture rate. It was estimated even if each surveyor interviewed 4 vehicles an hour, not even 1% of the traffic volume would be captured.
- Minimum survey capture rate for truck traffic. Due to the constrained survey locations, driver cooperation, and survey rate; only a small fraction of truck traffic data would be complied.

In working with the West Shore Tax Bureau, zip code information was obtained that linked local residence to their employers and local employees to their residence. This data was applied using GIS to determine how commuters, generally automobile traffic, are accessing the study area. The percent of employees traveling into the CLASH study area based on their home zip code is shown in **Figure 2.9**.

With this additional information, a new approach was proposed to complete the O-D study. As sufficient information was known for the automobile travel patterns (significantly more information than could have been obtained in the original interview O-D study proposed) the revised approach for the O-D focused on truck travel patterns. In order to collect this data, a vehicle following method was proposed. Data collectors from McCormick Taylor and Design Support Services followed trucks throughout the network, including trucks entering and exiting Industrial Park Drive and Railroad Avenue. The data collection process took place on Thursday May 31, 2007 from 7:00AM to 12:00 PM and 1:00 PM to 6:00 PM. The trucks were followed from the point that they entered the network (from US 15 or PA 581) until they reached their destination. Vehicles were also followed from Industrial Park Drive and Railroad Avenue to the point where they exited the network onto

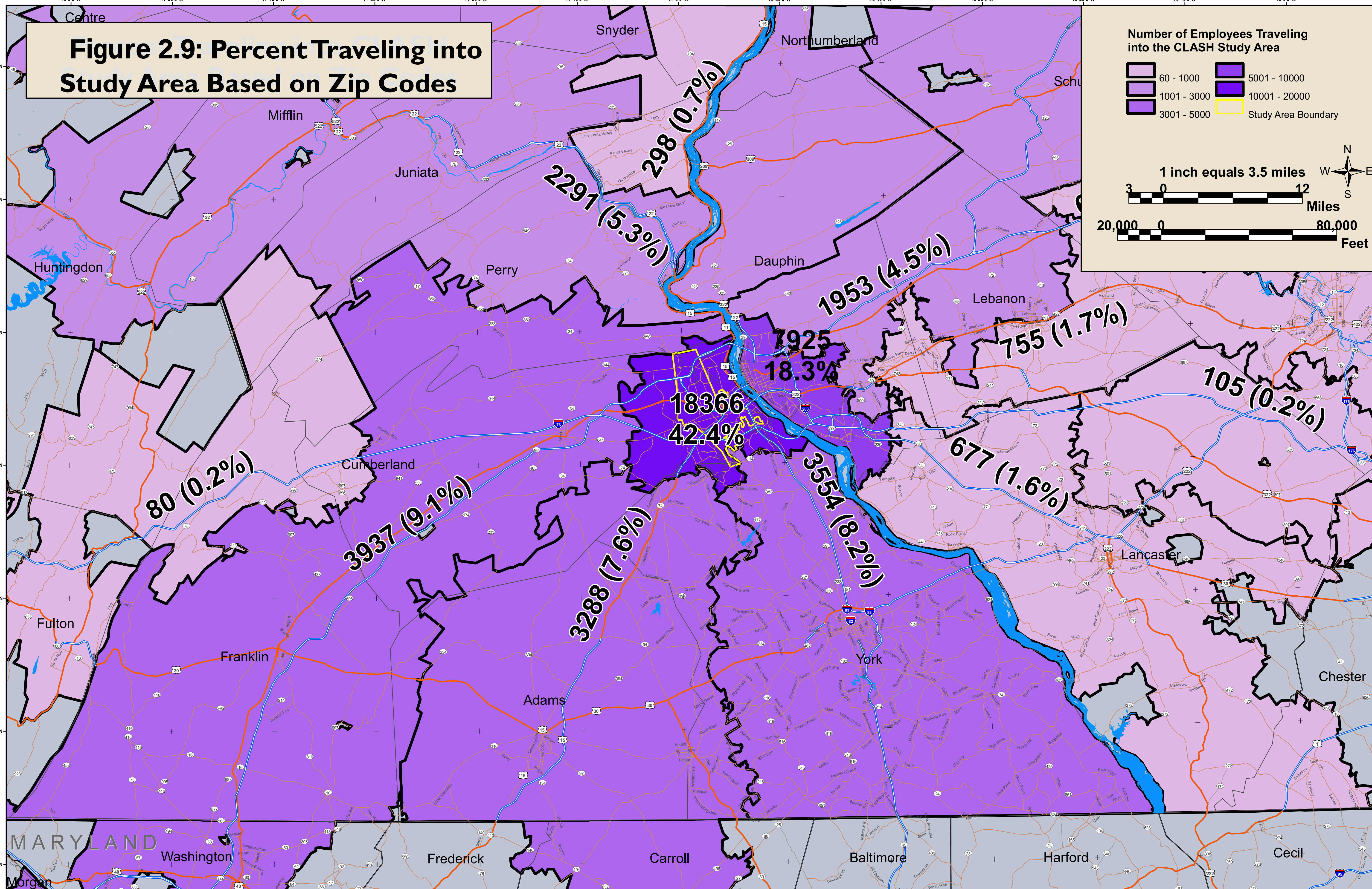


Figure 2.9: Percent Traveling into Study Area Based on Zip Codes

US 15 or PA 581. In both cases, their direction along US 15 and PA 581 was noted. In addition to noting the truck travel path, general information about the truck was noted and approximate travel times were recorded.

Using a survey of this type, a large quantity of detailed information about the movement of freight within the study area and their destinations outside the study area was obtained without causing a large disruption to traffic flow. In the end, almost 300 truck paths were recorded; with around 260 being deemed "usable" (the truck was not "lost" in the network or the truck did not turn into a destination such as a shopping center). The excel tables containing the raw truck data that was collected as well as summary tab sheets can all be found in Appendix D. The quantity of trucks which used a specific link throughout the course of the study is shown on **Figures 2.10** and **2.11**.

3. Truck Company Interviews

The interview process consisted of calling several of the large trucking firms within the study area and ascertaining their freight travel patterns for a typical day. The interview was designed to gain a better understanding of the quantity of vehicles traveling through the study area and their ultimate destination outside of the study area. A total of 5 trucking firms were called. Information was only obtained from 3 out of the 5 firms. The results of each survey can be found in Appendix E. This is only a cross-section of the businesses which ship freight in the study area. The remaining large trucking firms, local deliveries, smaller businesses with loading docks, and several others also increase the amount of freight traveling within the study area.

LEGEND

- Study Intersection Signalized
- Study Intersection Unsignalized

McCormick Taylor
Engineers & Planners Since 1946

FIGURE #2.10 O-D Link Volumes

Existing Conditions

Location: *Cumberland County, PA*

MATCH TO PREVIOUS SHEET

LEGEND

Study Intersection Signalized

Study Intersection Unsignalized

McCormick Taylor
Engineers & Planners Since 1946

FIGURE #2.11 O-D Link Volumes

Existing Conditions

Location: *Cumberland County, PA*

E. Capacity Analysis and Methodology

The intersection analysis utilized the methodology established in the 2000 Highway Capacity Manual (HCM) that describes the operation of intersections controlled by traffic signals. Synchro 6.0 (Build 614) software was used to apply the general HCM methodology and to derive the Level of Service (LOS) and intersection delay that is provided to traffic at the intersection. As per PennDOT Strike-Off Letter 470-04-02, Synchro software is recognized and supported by the Department. The study team discussed the use of this analytical tool and agreed that the software was appropriate to analyze the corridor as Synchro can effectively analyze and model (through SimTraffic) the affects of vehicles queuing, the interaction between closely spaced intersections, and traffic signals operating in coordination.

The LOS at signalized intersections is defined in terms of delay. Delay is a measure of the drivers' discomfort and frustration, fuel consumption, and lost travel time. LOS criteria are stated in terms of delay per vehicle for the peak 15-minute analysis period.

The LOS at signalized intersections ranges from A to F. An overall intersection LOS of D or better is generally desirable for a signalized intersection in an urban area. Although LOS of D is desirable, a LOS of E is acceptable for areas that experience heavily congested peak periods. Intersections with an overall LOS below D indicate that during the peak 15-minute travel period at the intersection, the average stopped delay per vehicle will exceed 55 seconds.

The 16 signalized intersections in the corridor were analyzed. **Table 2.2** summarizes the overall intersection results.

Table 2.2 – Existing Overall Intersection LOS and Delay Summary

Intersections		2007 Existing Conditions			
		AM		PM	
Node	Name	Delay	LOS	Delay	LOS
1	Carlisle Pike & Van Patton Rd.	19.7	B	18.5	B
2	Carlisle Pike & PA 581 off-ramp	36.8	D	126.6	F
3	Carlisle Pike & Sporting Hill Rd.	55.7	E	63.1	E
4	Carlisle Pike & St. John's Church Rd.	24.3	C	26.7	C
5	Carlisle Pike & Orr's Bridge Rd.	27.7	C	26.7	C
51	Carlisle Pike & Central Blvd.	22.8	C	38.2	D
6	Carlisle Pike & 32nd St.	52.6	D	182.7	F
7	Trindle Rd. & Sheely Lane	35.0	C	36.1	D
8	Trindle Rd. & Sporting Hill Rd.	18.3	B	21.2	C
9	Trindle Rd. & Railroad Ave.	19.3	B	15.0	B
10	Trindle Rd. & St. John's Church Rd.	31.3	C	34.5	C
13	Trindle Rd. & 32nd St.	198.5	F	206.9	F
14	Simpson Ferry Rd. & Sheely Ln./Wesley Dr.	42.3	D	48.9	D
17	Simpson Ferry Rd. & St. John's Church Rd.	27.9	C	30.2	C
18	Gettysburg Rd. & Wesley Dr.	23.6	C	26.6	C
19	Gettysburg Rd. & Locust St.	16.7	B	22.2	C

Notes:

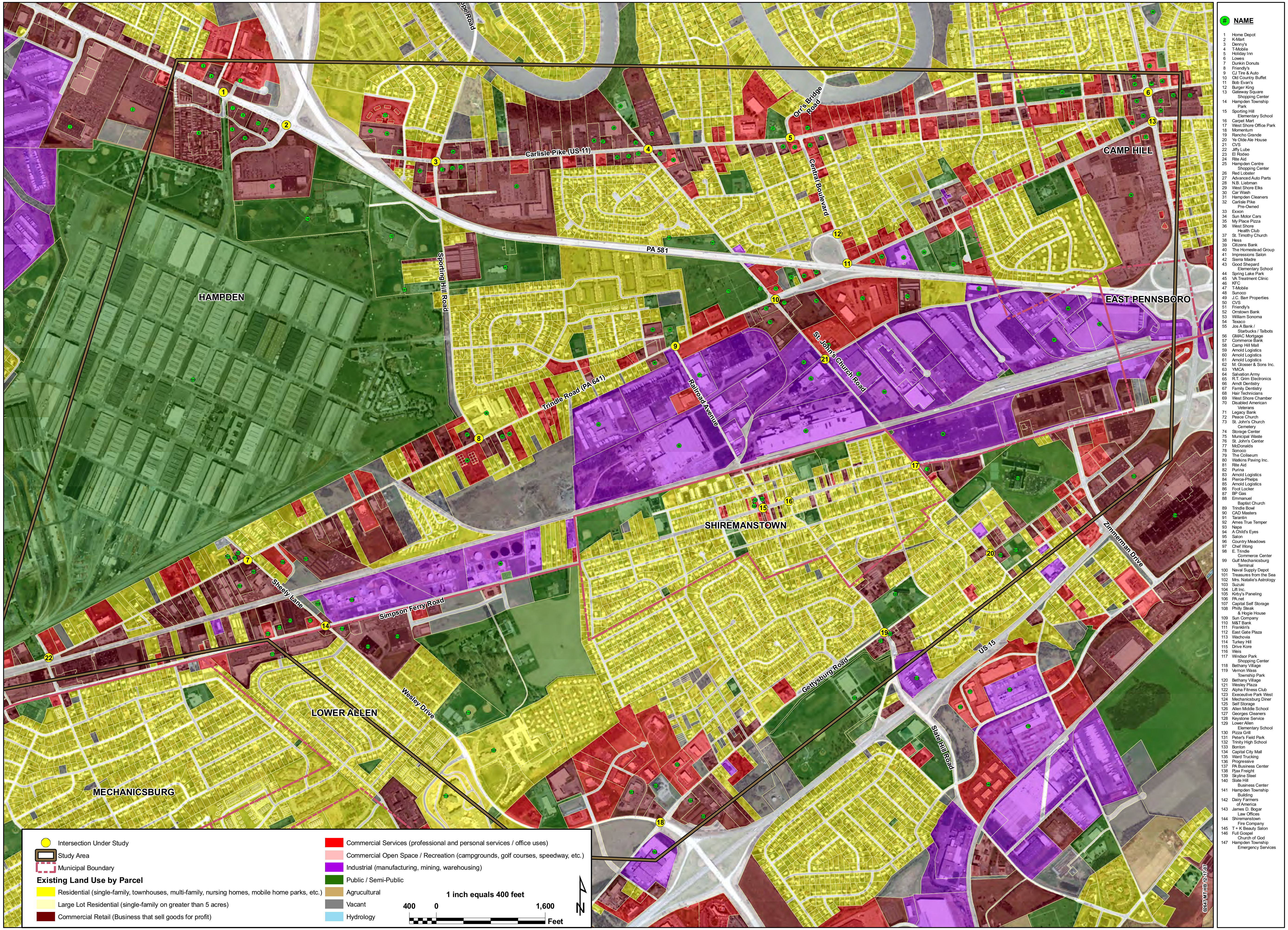
- HCM Delay and Level-of-Service values are for the overall intersection, as generated by Synchro v.6, Build 614.
- Delay is expressed in terms of "seconds per vehicle".

The Synchro files used to generate the LOS and capacity analysis are included on the CD in the Technical Files, Section 2.

F. Local Business and Environmental Characteristics

1. Land Use

The existing land use information is based on the land use GIS mapping obtained from Cumberland County. The land use within the study area was verified in the field and a Land Use map was prepared (**Figure 2.12**). Land use categories that exist within the study area, and which have been mapped include Residential, Commercial Retail, Commercial Services, Commercial Open Space/Recreation, Industrial, Public/Semi-Public, Agricultural and Vacant land.



Carlisle Pike (US 11)
Orr's Bridge Road
Central Boulevard
PA 581
Sporting Hill Road
Trindle Road (PA 641)
Railroad Avenue
St. John's Church Road
Simpson Ferry Road
Sheely Lane
Wesley Drive
Gettysburg Road
US 15
Slate Hill Road
Zimmerman Drive
HAMPDEN
CAMP HILL
EAST PENNSBORO
SHIREMANSTOWN
LOWER ALLEN
MECHANICSBURG
Intersection Under Study
Study Area
Municipal Boundary
Existing Land Use by Parcel
Residential (single-family, townhouses, multi-family, nursing homes, mobile home parks, etc.)
Large Lot Residential (single-family on greater than 5 acres)
Commercial Retail (Business that sell goods for profit)
Commercial Services (professional and personal services / office uses)
Commercial Open Space / Recreation (campgrounds, golf courses, speedway, etc.)
Industrial (manufacturing, mining, warehousing)
Public / Semi-Public
Agricultural
Vacant
Hydrology
1 inch equals 400 feet
400 0 1,600
Feet
N
NAME
1 Home Depot
2 K-Mart
3 Denny's
4 T-Mobile
5 Holiday Inn
6 Lowes
7 Dunkin Donuts
8 Friendly's
9 CJ Tire & Auto
10 Old Country Buffet
11 Bob Evan's
12 Burger King
13 Gateway Square Shopping Center
14 Hampden Township Park
15 Sporting Hill Elementary School
16 Carpet Mart
17 West Shore Office Park
18 Momentum
19 Rancho Grande
20 Ye Olde Ale House
21 CVS
22 Jiffy Lube
23 El Rodeo
24 Rite Aid
25 Hampden Centre Shopping Center
26 Red Lobster
27 Advanced Auto Parts
28 N.B. Liebman
29 West Shore Elks
30 Car Wash
31 Hampden Cleaners
32 Carlisle Pike Pre-Owned
33 Exxon
34 Sun Motor Cars
35 My Place Pizza
36 West Shore Health Club
37 St. Timothy Church
38 Hess
39 Citizens Bank
40 The Homestead Group
41 Impressions Salon
42 Sierra Madre
43 Good Shepard Elementary School
44 Spring Lake Park
45 VA Treatment Clinic
46 KFC
47 T-Mobile
48 Sunoco
49 J.C. Barr Properties
50 CVS
51 Friendly's
52 Orrstown Bank
53 William Sonoma
54 Texaco
55 Jos A Bank / Starbucks / Talbots
56 GMAC Mortgage
57 Commerce Bank
58 Camp Hill Mall
59 Arnold Logistics
60 Arnold Logistics
61 Arnold Logistics
62 M. Glosser & Sons Inc.
63 YMCA
64 Salvation Army
65 R.T. Grim Electronics
66 Arndt Dentistry
67 Family Dentistry
68 Hair Technicians
69 West Shore Chamber
70 Disabled American Veterans
71 Legacy Bank
72 Peace Church
73 St. John's Church Cemetery
74 Storage Center
75 Municipal Waste
76 St. John's Center
77 McDonalds
78 Sonoco
79 The Coliseum
80 Watkins Paving Inc.
81 Rite Aid
82 Purina
83 Arnold Logistics
84 Pierce-Phelps
85 Arnold Logistics
86 Foot Locker
87 BP Gas
88 Emmanuel Baptist Church
89 Trindle Bowl
90 CAD Masters
91 Tarantin
92 Ames True Temper
93 Napa
94 A Child's Eyes
95 Salon
96 Country Meadows
97 Chef Wong
98 E. Trindle Commerce Center
99 Gulf Mechanicsburg Terminal
100 Naval Supply Depot
101 Treasures from the Sea
102 Mrs. Natalie's Astrology
103 Suzuki
104 Lift Inc.
105 Kirby's Paneling
106 PA.net
107 Capital Self Storage
108 Philly Steak & Hogie House
109 Sun Company
110 M&T Bank
111 Franklin's
112 East Gate Plaza
113 Wachovia
114 Turkey Hill
115 Drive Kore
116 Weis
117 Windsor Park Shopping Center
118 Bethany Village
119 Vernon Wass Township Park
120 Bethany Village
121 Wesley Plaza
122 Alpha Fitness Club
123 Execeutive Park West
124 Mechanicsburg Diner
125 Self Storage
126 Allen Middle School
127 Georges Cleaners
128 Keystone Service
129 Lower Allen Elementary School
130 Pizza Grill
131 Peter's Field Park
132 Trinity High School
133 Bonton
134 Capital City Mall
135 Ward Trucking
136 Progressive
137 PA Business Center
138 Pjax Freight
139 Skyline Steel
140 Slate Hill Business Center
141 Hampden Township Building
142 Dairy Farmers of America
143 James D. Bogar Law Offices
144 Shiremanstown Fire Company
145 T + K Beauty Salon
146 Full Gospel Church of God
147 Hampden Township Emergency Services

Residential and industrial land uses comprise most of the study area. The residential land use is scattered throughout the area with many large neighborhoods. The industrial land use is centered around St. John's Church Road and Railroad Avenue. The industrial center generates a large amount of truck traffic which utilizes various routes within the study area to access major roadways such as US 15 and PA 581. The Naval Supply Depot occupies a large area in the western section of the study area and is a major employer. Commercial Retail and Commercial Services are generally located along the major corridors of the Carlisle Pike and Trindle Road. Overall, the study area is essentially built out with little area for any large scale future development.

2. Environmental Features

The existing environmental features within the study area include natural, cultural and socioeconomic resources. Natural resources consist of streams and wetlands. The cultural resources are comprised of National Register of Historic Places listed, eligible, and potentially eligible historic structures and historic districts. Socioeconomic resources include potential hazardous waste sites. The existing environmental features within the study area were mapped in greater detail around the intersections studied, in order to estimate the impacts that proposed improvement concepts may have. The overall environmental features are shown in **Figure 2.13**.

Natural Resources

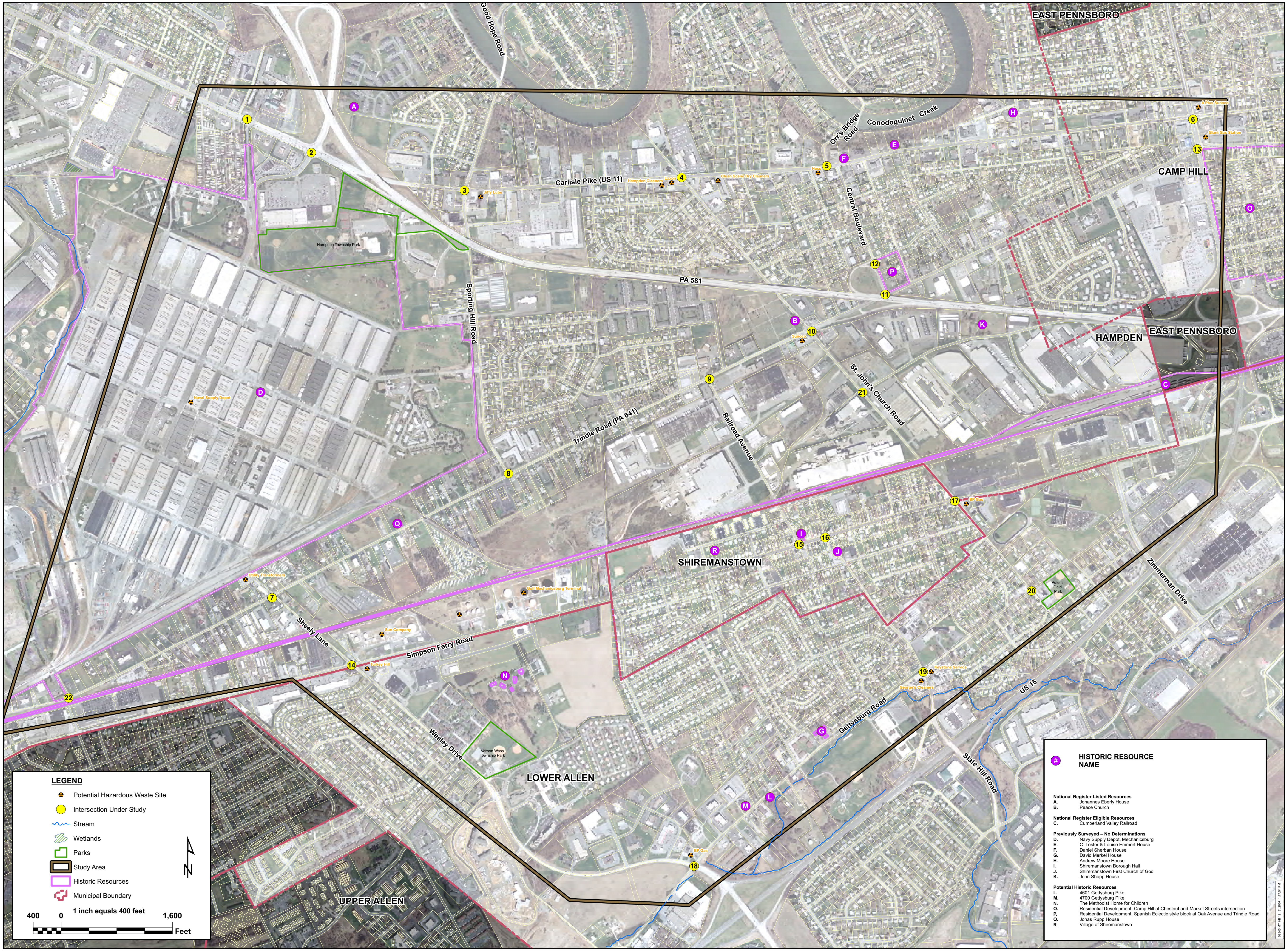
Two streams are located within the study area, the Conodoguinet Creek which encroaches on the northern boundary of the study and Cedar Run which is located in the southeastern portion of the study area. Within the study area, the Conodoguinet Creek is listed as a Warm Water Fishery, and Cedar Run is listed as a Cold Water Fishery, according to the Pennsylvania Code, Title 25. Environmental Protection, Chapter 93. Water Quality Standards.

The 100-year floodplains of the streams within the study area were reviewed, using existing Federal Emergency Management Agency data. Cedar Run has a designated 100-year floodplain however; the Conodoguinet Creek floodplain does not extend beyond the creek bank within the study area.

The National Wetlands Inventory database, maintained by the U.S. Fish & Wildlife Service, was reviewed to determine if any wetlands existed within the study area. No wetlands are located within the study area.

Within the study area, there are two National Register of Historic Places listed resources and one National Register eligible resource. This information was obtained from the Pennsylvania Cultural Resource Geographic Information System, which is a partnership between the Pennsylvania Historical & Museum Commission and PennDOT.

The National Register listed resources include the Joannes Eastbounderly House which is located adjacent to the Carlisle Pike/PA 581 interchange and the Peace Church which is located in the northwest quadrant of the St. John's Church Road/Trindle Road intersection. The Cumberland Valley Railroad is the only National Register eligible resource located in the study area and


EAST PENNSBORO
Good Hope Road
Conodoguinet Creek
Orr's Bridge Road
Carlisle Pike (US 11)
Central Boulevard
CAMP HILL
Hampden Township Park
PA 581
Sporting Hill Road
HAMPDEN
EAST PENNSBORO
St. John's Church Road
Railroad Avenue
Trindle Road (PA 641)
Naval Supply Depot
SHIREMANSTOWN
Sheely Lane
Simpson Ferry Road
Zimmerman Drive
Gettysburg Road
US 15
Slate Hill Road
Wesley Drive
Vernon Wass Township Park
LOWER ALLEN
UPPER ALLEN
LEGEND
Potential Hazardous Waste Site
Intersection Under Study
Stream
Wetlands
Parks
Study Area
Historic Resources
Municipal Boundary
400 0 1,600
1 inch equals 400 feet
Feet
N
#
HISTORIC RESOURCE NAME
National Register Listed Resources
A. Johannes Eberly House
B. Peace Church
National Register Eligible Resources
C. Cumberland Valley Railroad
Previously Surveyed – No Determinations
D. Navy Supply Depot, Mechanicsburg
E. C. Lester & Louise Emmert House
F. Daniel Sherban House
G. David Merkel House
H. Andrew Moore House
I. Shiremanstown Borough Hall
J. Shiremanstown First Church of God
K. John Shopp House
Potential Historic Resources
L. 4601 Gettysburg Pike
M. 4700 Gettysburg Pike
N. The Methodist Home for Children
O. Residential Development, Camp Hill at Chestnut and Market Streets intersection
P. Residential Development, Spanish Eclectic style block at Oak Avenue and Trindle Road
Q. Johas Rupp House
R. Village of Shiremanstown
02845 MT HB 12 17, 2007 1:47:54 PM

extends in an east-west direction between Trindle Road and Simpson Ferry Road. The National Register listed and eligible resources have been identified on the Environmental Features mapping. Historic resources that are potentially eligible for the National Register (i.e. older than 50 years) have also been mapped for the study area. These resources will need to be evaluated further however; this information was beneficial while developing the improvement concepts.

Socioeconomic Resources

Socioeconomic resources within the study area consist of potential hazardous waste sites and community facilities and emergency services.

Due to the largely developed nature of the study area, several potential hazardous waste sites exist. This information was obtained through field investigations. Potential sites range from gas stations, car dealerships, dry cleaners, the Naval Supply Depot and bulk storage facilities. The potential sites have been identified and located on the Environmental Features mapping.

Community facilities and emergency services within the project area include educational facilities and police, fire and ambulance services. Various elementary, middle and high schools are within the project limits. Various fire services are within the project limits, including fire companies that serve Hampden Township and Shiremanstown Borough.

G. Immediate Term Improvements

After analyzing the network under existing conditions, it was determined that changes could be made immediately to the corridor to improve existing conditions. In order to have minimal impact and cost, the improvements were limited to adjusting cycle lengths, signal splits and offsets, re-striping, and adding minimal turn-lanes only where absolutely necessary. These minimal impact and cost improvements were labeled "Immediate Term Improvements." **Table 2.3** summarizes the immediate term improvements.

Table 2.3 – Summary of Immediate Term Improvements

Intersection	Improvements
Carlisle Pike & Sporting Hill Road	Improve striping for southbound left turn lane on Sporting Hill.
	Extend eastbound right turn lane from Sporting Hill to 581 Bridge.
Carlisle Pike & St. John's Church Road	Re-delineate the center TWLTL on the westbound approach to extend the left turn lane to provide 290' of storage.
Carlisle Pike & Orr's Bridge Road/Central Boulevard.	Re-delineate the center TWLTL on the eastbound approach to extend the left turn lane to provide 360' of storage.
	Improve delineation of westbound right turn lanes.
	Extend the northbound left turn lane to provide 300' of storage and install overhead lane control signage.
32nd Street (US15) & Carlisle Pike -AND- 32nd Street (US15) and Trindle Road	Advance to Preliminary Engineering, the concept developed including a third southbound through lane and changes in signal cycles to restrict northbound left turns at Carlisle Pike and southbound left turns at Trindle Road. This would also include the study of eliminating the split phasing of both intersections.
Trindle Road & St. John's Church Road	Restripe the northbound right turn lane to provide 230' of storage.
St. John's Church Road and Industrial Drive	Install traffic signal.

III. TRAVEL DEMAND MODEL

A. The Harrisburg Area Travel Demand Model

The Harrisburg Area Travel Demand Model (HATDM) was developed by the Tri-County Regional Planning Commission (TCRPC) for use as a tool in transportation planning and air-quality evaluation. TCRPC serves as the metropolitan planning organization for the Harrisburg Metropolitan area, which includes Dauphin, Cumberland, and Perry Counties.

The HATDM is a regional, trip-based demand model that is implemented in the Citilabs CUBE TP Plus software platform. A four-step modeling process is used and includes trip generation, trip distribution, mode choice, and trip assignment. The model forecasts passenger car and truck trips, as well as mode shares of travel (highway, transit, carpool, etc.). The model region is divided into 489 traffic analysis zones (TAZs). Each TAZ contains current and projected data used to predict trip generation data. The model's roadway network represents all state roadways and some significant city and township roadways.

The most current version of the HATDM had been calibrated and validated according to 2002 travel data, and 2002 was considered the model's "base year". The ultimate horizon year for the model was 2030. Interim year scenarios and alternatives can be created and tested, by varying input assumptions, then evaluated to help determine a preferred transportation improvement or program and its priority.[1]

B. CLASH Project Travel Demand Model

The TCRPC agreed to provide runs of the HATDM for use in the CLASH Project. Model runs were requested on a scenario-by-scenario basis, and McCormick and the TCRPC collaborated to develop the input roadway networks and land use assumptions for each scenario. TCRPC provided McCormick Taylor with model output files, including loaded network files, turning movement files, and trip matrices.

1. Base Year Model

McCormick Taylor reviewed the HATDM Base Year (2002) roadway network and model parameters. A few revisions to the roadway network were made to improve the model's accuracy within the CLASH study area. In some cases, the demand modeling software could not be coded to specifically reflect the operational conditions of study area intersections. These locations were noted for "post-model" examination, when traffic volume adjustments might be applied to compensate for the model coding. Minor revisions to the external station data files and the zonal demographic and employment data files were implemented, mostly to correct

[1] Harrisburg Area Transportation Study, 2030 Regional Transportation Plan – 2007 Update, p. IV-11. Adopted on December 15, 2006; Approved on May 15, 2007.

apparent errors. Otherwise, no major revisions to the model's input files or coding scheme were implemented.

2. *Model Calibration and Validation*

Since the revisions to the roadway network and zonal data files were deemed to be minor and highly localized, it was assumed that the original calibration and validation of the HATDM remained valid. Therefore, a re-calibration and validation of the model was not completed as a part of the CLASH Study.

3. *Traffic Forecasting Methodology and Adjustments*

The various, future conditions to be modeled were grouped into "scenarios", and each scenario consisted of a land use/growth component and a roadway network component. The land use/growth component, as prepared by TCRPC, is forecasted to a specific "horizon" year as an estimation of future population and employment within the TAZs and external growth outside of the HATDM Area. The roadway network component contained assumptions about the future condition of the roadway network. For all scenarios, even the "No-Build" scenarios, the roadway network includes the transportation improvement program (TIP) projects and other "developer" projects that are scheduled for completion before the specified horizon year.

The HATDM produces traffic forecasts for four distinct periods during a given weekday: AM Peak (6:00 AM to 9:00 AM), Midday (9:00 AM to 3:00 PM), PM Peak (3:00 PM to 6:00 PM), and Night (6:00 PM to 6:00 AM). The sum of the traffic volumes for all periods represents the daily/24-hour traffic volume. For the purposes of the CLASH Study, peak hour traffic volumes were required as input to the traffic analysis.

Initial Forecasts

Output from the HATDM provided peak <u>period</u> (as opposed to peak <u>hour</u>) turning movement volumes. The AM Peak period was 6:00 AM to 9:00 AM, and the PM Peak period was 3:00 PM to 6:00 PM. According to the model's documentation, 40 percent of the AM peak period volume occurred in the AM Peak hour, and 35 percent of the PM Peak period volume occurred in the PM peak hour. The peak period volumes were factored to obtain the peak hour volumes.

To account for limitations in traffic forecasting at the turning movement level of detail, NCHRP 255 establishes forecasting procedures that minimize these limitations. The NCHRP procedures use the relationships among base year traffic counts and the model volumes (base year and future year) to calculate volume forecasts based on the volume <u>changes</u> observed between the base year model and the future year model runs. Depending on the extent of the volume changes and the original count volumes, different routines are used to calculate the initial peak hour volume forecasts.

Missing Roadways & Intersections

The CLASH study area contains roadways and intersections that were not represented in the travel demand model. The initial peak hour volume forecasts at these locations were estimated by growing the traffic volume counts by a linear growth rate—1.20 percent per year on thoroughfares and 0.20 percent per year on driveways and neighborhood streets for established land uses.

Traffic Pattern Adjustments

The initial peak hour volume forecasts were evaluated for consistency on both a corridor and intersection basis. The following two types of traffic pattern adjustments were made:

- Intersection-to-Intersection Imbalances – Volume imbalances between the study area intersections are expected, since traffic accesses the roadway network at many points along the network. However, the travel forecasting techniques and the location of traffic loading points in the model can exaggerate these imbalances, and it is necessary to reconcile the imbalances. For the CLASH forecasts, these imbalances were evaluated according to the following:

    - *Location of Traffic Loading Points in the Model Network* – The model loads traffic onto the roadway network at a limited number of points—typically one to four points per traffic analysis zone (TAZ). If the TAZs are larger than the grain of the roadway network, the volume forecasts at intersections near the model's traffic loading points can be overly-influenced by the loaded volumes. Knowledge of the traffic loading points and trip distribution patterns in the CLASH study area helped to identify locations where the forecasted volumes would be most affected and in need of adjustment.

    - *Differences observed in the 2007 traffic count volumes* – Since these differences provide an estimate of the traffic entering/exiting the roadway between intersections, the forecasted volumes were adjusted to replicate the differences observed in the traffic counts. Minimal adjustments were applied at most intersections. However, some larger adjustments were made along the Trindle Road corridor.

- Parallel Route Adjustments – The travel demand model assigns traffic to parallel routes according to simplified comparisons of travel time and distance. Occasionally, these estimates are over-simplified, since they do not reflect subtle network details, driver perceptions, and other dynamic elements of the transportation system. In these cases, the model may over-assign a certain route because of the over-simplifications, and it is necessary to manually shift volumes from one route to another. For the CLASH forecasts, the 2007 traffic count data and local knowledge of the study area roadways were referenced in the process of shifting volumes among parallel corridors. Traffic on only one set of parallel routes—PA 581, Sporting Hill Road, and Orr's Bridge Road—was adjusted using this method.

Final Traffic Forecasts

The final AM and PM Peak hour forecast volumes represent the output from this Traffic Volume Forecasting Methodology. These volumes can be found in their corresponding specific 2020 and 2030 sections of the report.

C. Additional Analysis

1. Trindle Road Interchange Traffic Pattern Analysis

Currently, the interchange of PA 581 at Trindle Road is a partial interchange that only provides ramps to and from the east on PA 581. Completing the interchange by adding ramps to and from the west on PA 581 has been suggested as a way to reduce unnecessary traffic circulation on the street network. To assess the traffic pattern and volume effects of such a project, TCRPC conducted a supplemental travel model run for the future year, 2030, which included the completed interchange. Based on the methodology described previously, McCormick Taylor prepared future year 2030 turning movement volume forecasts with the full interchange.

The land use/growth forecasts for 2030, as completed by TCRPC for their long-range planning efforts, were used in the model.

The roadway network for this supplemental 2030 model run was identical to the 2030 "No-Build" run, except for the completed interchange. The additional interchange ramps—to and from the west on PA 581—were generically added to the roadway network at the point where PA 581 crosses St. John's Church Road. As such, they do not represent any specific design or ramp locations, since the analysis was to evaluate only the generalized effects of the completed interchange.

2. 15/581 Project Traffic Diversion Analysis

As identified previously, the US 15/PA 581 Improvement Project is a major interchange relocation and improvement project that, when completed, will cause area-wide changes in traffic patterns and volumes on roadways in the CLASH Study Area. It was suggested by the Study Team that the HATDM be used to estimate some of the anticipated traffic pattern changes.

Rather creating additional model runs, a rough assessment of the traffic pattern differences was obtained by comparing results from the 2002 Base Year model (prior to the improvement project) with those from the 2020 Future Year model (after the improvement project). Specifically, the evaluation identified shifts in volumes among the PA 581 and US 15 interchanges that provided access to the CLASH Study Area. The following interchanges were considered:

- PA 581 & Carlisle Pike (Gateway)
- PA 581 & Trindle Road
- US 15 & Simpson Ferry Road (2002)
- US 15 & Zimmerman Drive (2020)
- US 15 & Slate Hill Road
- US 15 & Wesley Drive/Rossmoyne Road

A series of "select link" analyses were used to screen traffic accessing the study area TAZs using certain pathways and directions of approach. To minimize the impact of the different model years (2002 vs. 2020), the results were summarized as percentages, according to the total study area TAZ traffic volumes that accessed the study area at each interchange.

3. Traffic Diversion – Proposed Trindle Road Interchange

In analyzing the Trindle Road Interchange, the diversion of traffic from the existing roadway network to the proposed full interchange was evaluated. The following three graphics show the current and projected overall traffic traveling into the Trindle Road area, as well as the diversion to the proposed full interchange. The traffic volumes shown on the graphics do not represent total ramp volumes, but rather the volume of traffic from eastbound PA 581 that is using each interchange to enter the 8 TAZs that comprise the CLASH Study Area.

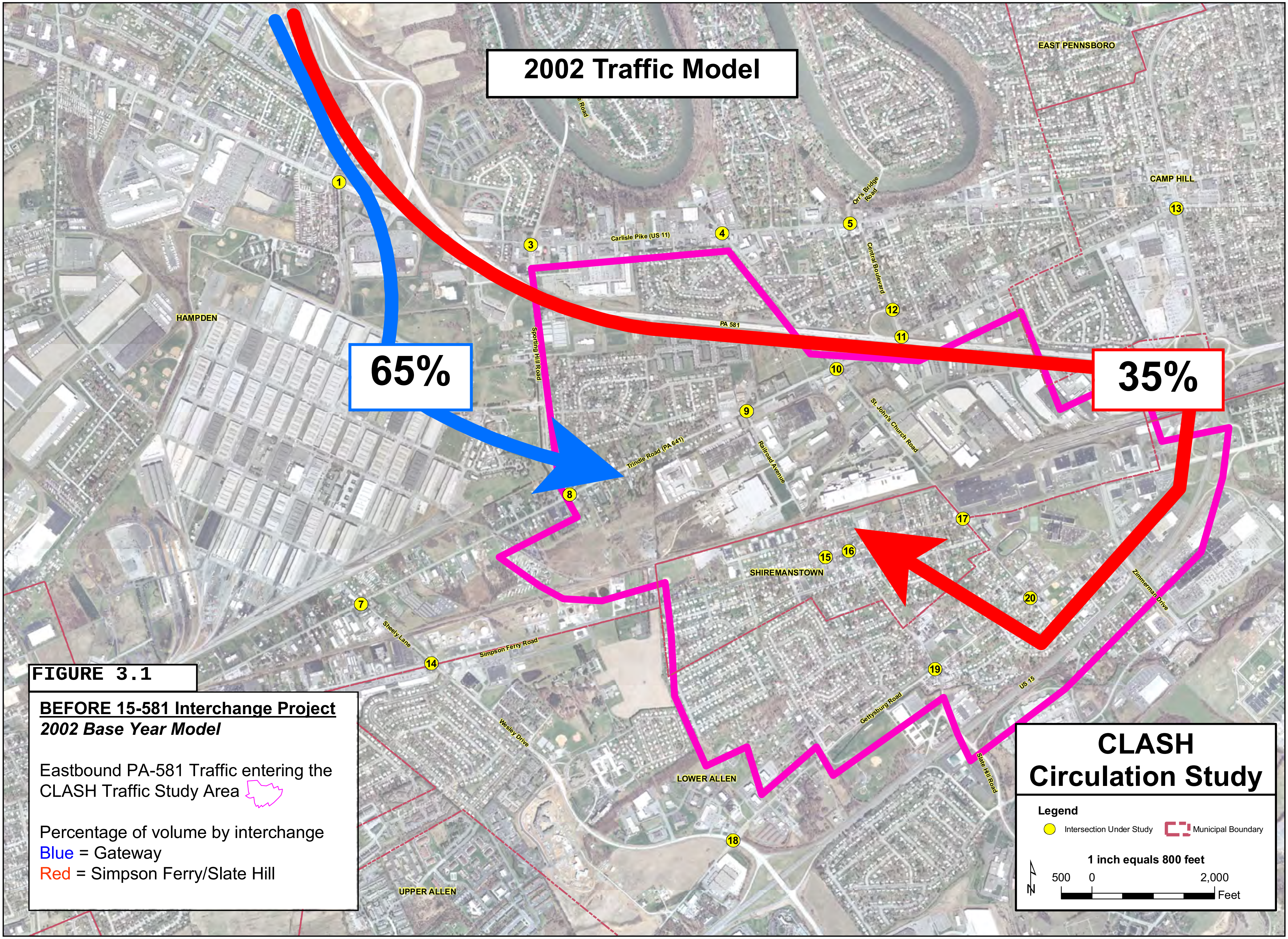
Figure 3.1 is derived from the 2002 Base Year Traffic Volumes.

Figure 3.2 is derived from the 2020 Future Year Traffic Volumes with the completed 15-581 Interchange Project and without the completed full Trindle Road Interchange. The differences in the traffic volumes between 2002 and 2020 are due mainly to the changes in the access roadways to the area. In 2002, a greater percentage of traffic is using I-81 and PA 581 as compared to I-83 and US 15. In 2020 after the completion of the 15-581 Interchange Project, the percentage shifts slightly and the use of I-83/US 15 increases.

Figure 3.3 is derived from the 2020 Future Year Traffic Volumes and includes the completed 15-581 Interchange Project and the completed full Trindle Road Interchange with PA 581. The increase in total vehicles per day represents a further shift in traffic access patterns. Improved access from PA 581 to the area increases the likelihood for traffic to use PA 581 rather than the existing surface street network. Although the completion of the interchange is likely to only attract about 2,300 vehicles per day in 2020 from the surface street system or about 230 in the peak hour. This would have little impact to the overall surface street network but would create some issues at the terminals of the new interchange with St. Johns Church Road or Trindle Road.

The large increase in traffic on the surface streets in the area of the completed Trindle Road Interchange with PA 581 would create additional problems for a system that is near capacity. Improvements to the local network would need to be in place prior to the completion of the Trindle Road Interchange and would greatly increase the cost of the overall project. It was felt that the money required for construction and implementation of the completed Trindle Road

Interchange could be more effectively utilized in the various intersection and corridor improvements that were the result of the CLASH study. This concept may warrant future consideration to address system continuity concerns but the benefit cost ratio does not warrant its completion at this time.


2002 Traffic Model
65%
35%
EAST PENNSBORO
CAMP HILL
HAMPDEN
SHIREMANSTOWN
LOWER ALLEN
UPPER ALLEN
Carlisle Pike (US 11)
PA 581
Orr's Bridge Road
Central Boulevard
Sporting Hill Road
Trindle Road (PA 641)
Railroad Avenue
St. John's Church Road
Zimmerman Drive
Sheely Lane
Simpson Ferry Road
Wesley Drive
Gettysburg Road
US 15
Slate Hill Road
1
2
3
4
5
7
8
9
10
11
12
13
14
15
16
17
18
19
20
FIGURE 3.1
BEFORE 15-581 Interchange Project
2002 Base Year Model
Eastbound PA-581 Traffic entering the CLASH Traffic Study Area
Percentage of volume by interchange
Blue = Gateway
Red = Simpson Ferry/Slate Hill
CLASH Circulation Study
Legend
Intersection Under Study
Municipal Boundary
1 inch equals 800 feet
500
0
2,000
Feet
N

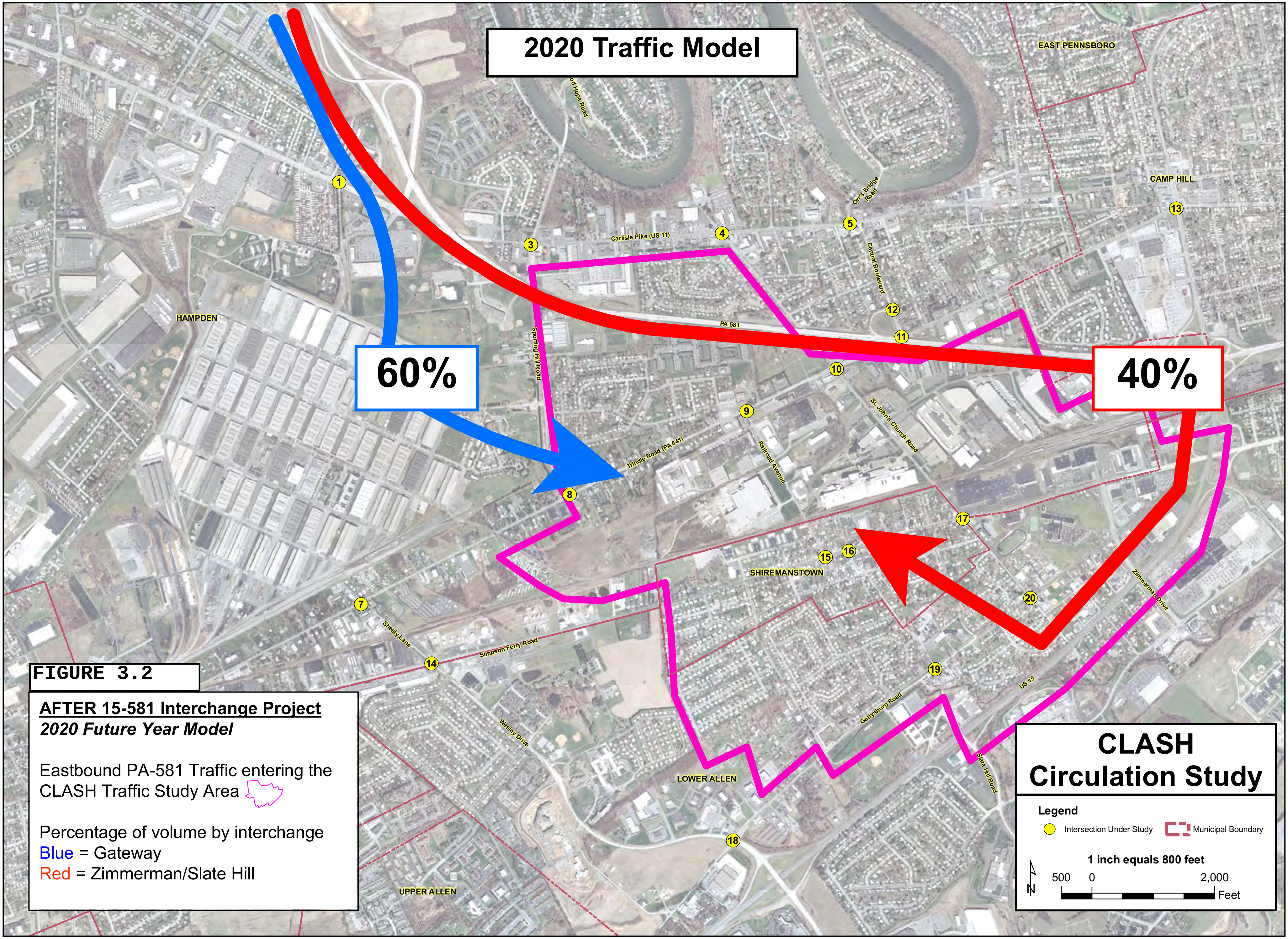


FIGURE 3.2

AFTER 15-581 Interchange Project

2020 Future Year Model

Eastbound PA-581 Traffic entering the CLASH Traffic Study Area

Percentage of volume by interchange
Blue = Gateway
Red = Zimmerman/Slate Hill

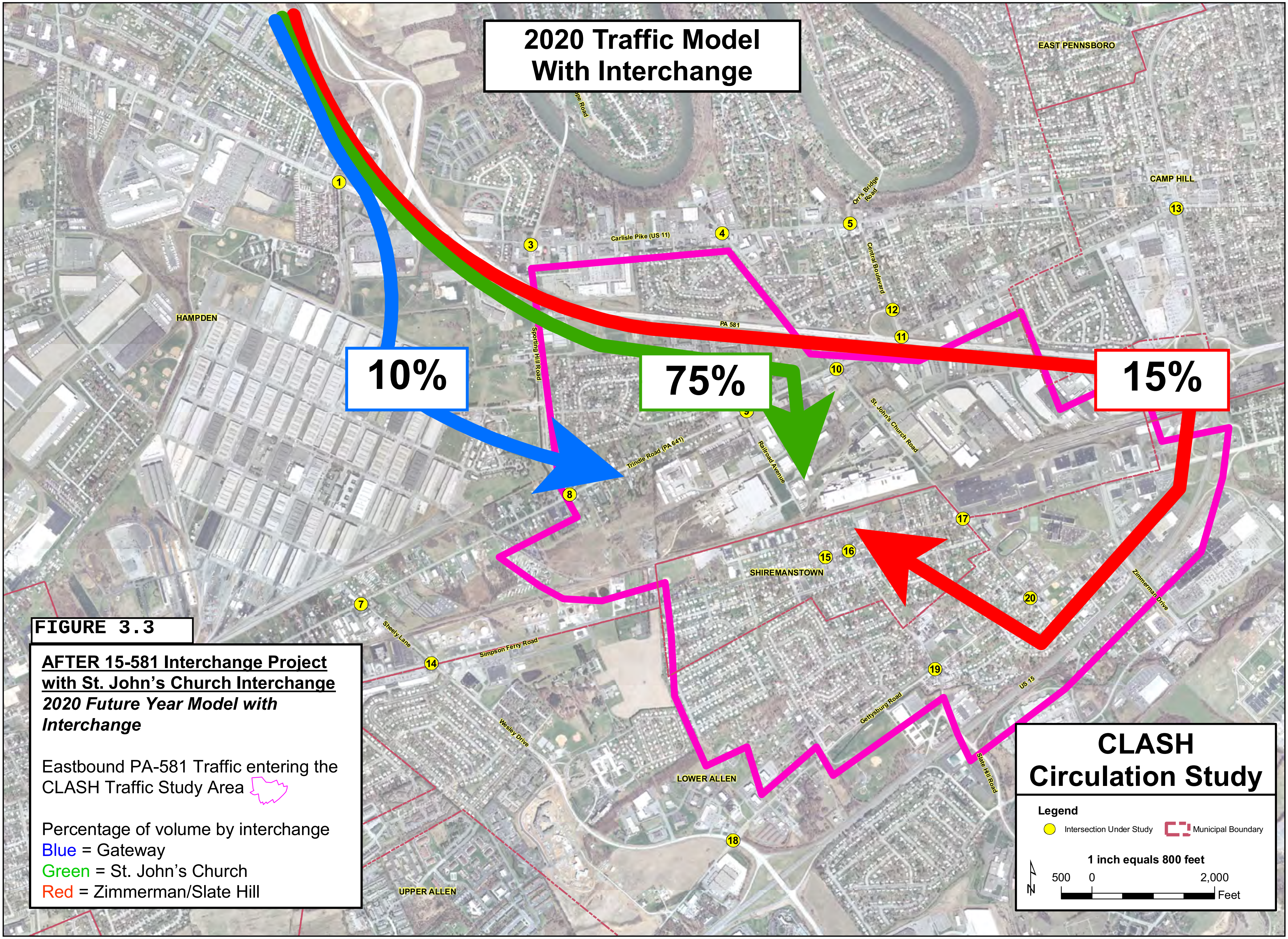


FIGURE 3.3

AFTER 15-581 Interchange Project with St. John's Church Interchange
2020 Future Year Model with Interchange

Eastbound PA-581 Traffic entering the CLASH Traffic Study Area

Percentage of volume by interchange
Blue = Gateway
Green = St. John's Church
Red = Zimmerman/Slate Hill

IV. 2020 PROJECTIONS AND IMPROVEMENTS

A. Network Modifications, Assumptions, and Traffic Projections

TCRPC conducted a travel model run for the future year, 2020, and provided McCormick Taylor with the associated loaded roadway networks and intersection turning movement files. Based on the methodology described previously, McCormick Taylor prepared the future year 2020 "No-Build" turning movement volume forecasts.

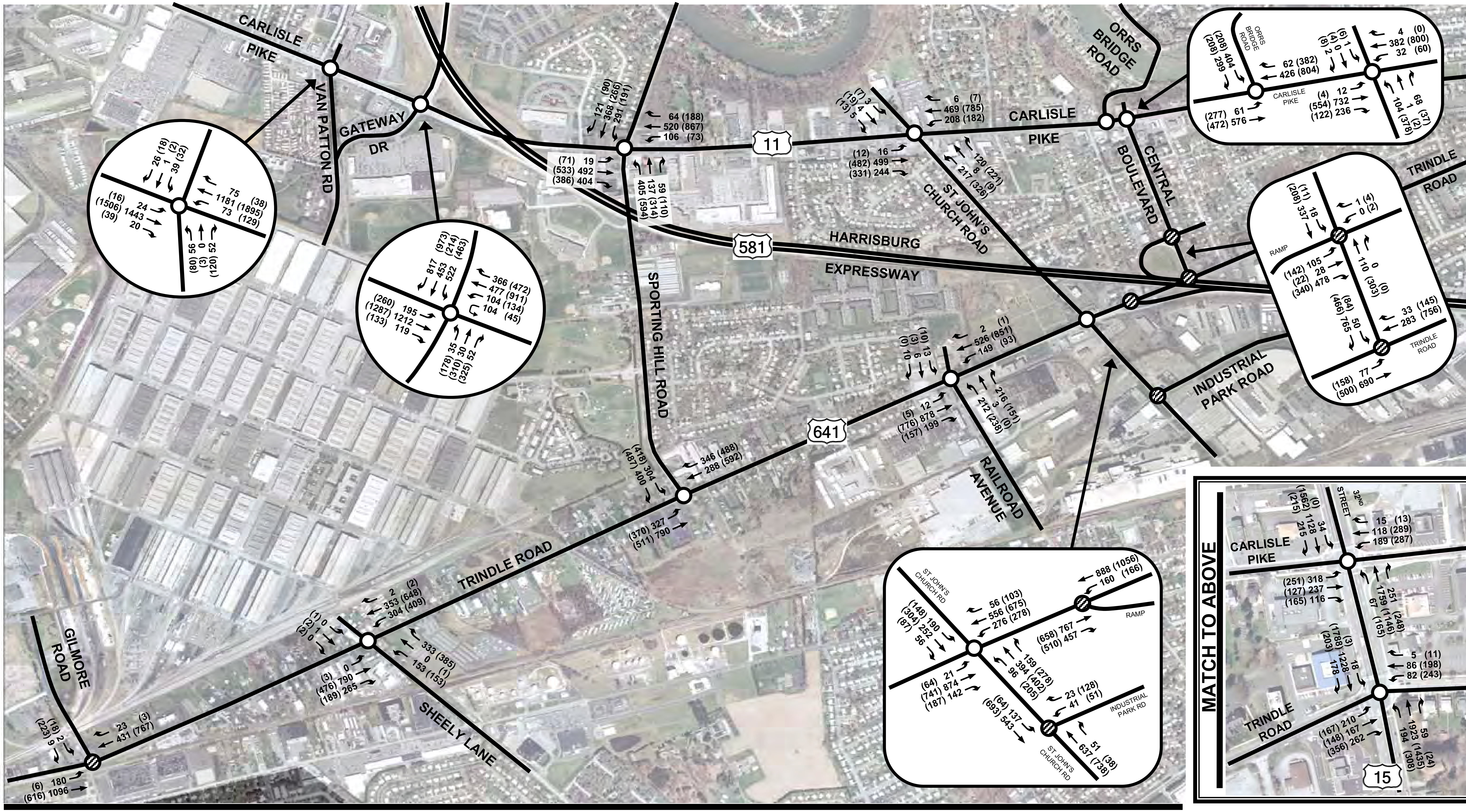
The land use/growth forecasts for 2020, as completed by TCRPC for their long-range planning efforts, were used in the model.

The roadway network for 2020 assumed that the following roadway improvement projects were completed:

- 15/581 Interchange Project
  - Reconfiguration of the existing US 15/PA 581 interchange.
  - Construction of a collector-distributor system.
  - Relocation of the existing US 15 interchange at Gettysburg Road to a new urban diamond interchange at Zimmerman Drive (Lower Allen Drive).
  - Widening for new auxiliary lanes on US 15 between the Slate Hill Road interchange and Harvard Avenue in Borough of Camp Hill, and
  - Widening for new auxiliary lanes on PA 581 eastbound between US 15 and the I-83 interchange.

- "Off-Site" Improvement Projects associated with the 15/581 Interchange Project
  - Addition of a westbound lane on Simpson Ferry Road between Zimmerman Drive (Lower Allen Drive) and St. John's Church Road
  - Updating the cross-section of Zimmerman Drive (Lower Allen Drive).
  - Addition of northbound and southbound left-turn lanes on Gettysburg Road at the intersection of Gettysburg Road and Slate Hill Road/Locust Street.
  - Reconfiguration and addition of turn lanes at the intersection of Hartzdale Drive and Slate Hill Road.
  - Interconnection of the traffic signals along Zimmerman Drive (Lower Allen Drive) and Gettysburg Road.

The Traffic Volume Forecasting Methodology for 2020 resulted in the 2020 No Build Volumes that are shown in **Figures 4.1** and **4.2**.



MATCH TO NEXT SHEET

LEGEND

- Study Intersection Signalized
- Study Intersection Unsignalized
- AM (PM) Turning Movement Traffic Volume

McCormick Taylor
Engineers & Planners Since 1946

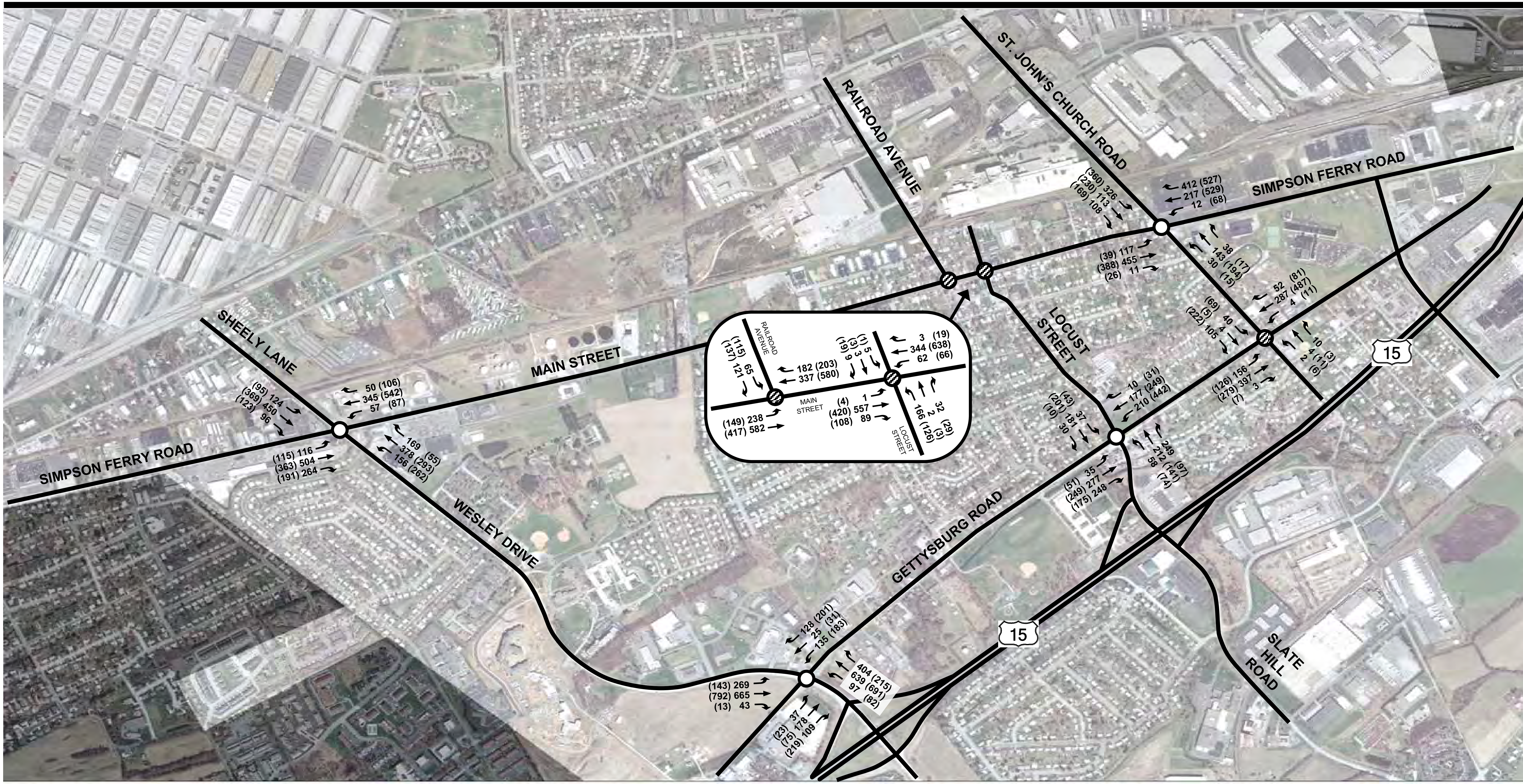
N

FIGURE # 4.1 Turning Movements

2020 No-Build Conditions

Location: *Cumberland County, PA*

MATCH TO PREVIOUS SHEET



McCormick Taylor
Engineers & Planners Since 1946

LEGEND

- Study Intersection Signalized
- Study Intersection Unsignalized
- AM (PM) Turning Movement Traffic Volume

N

FIGURE # 4.2 Turning Movements

2020 No-Build Conditions

Location: *Cumberland County, PA*

B. *Future No-Build Capacity Analysis*

Intersections		2020 AM				2020 PM			
		No-Build		Build		No-Build		Build	
Node	Name	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
1	Carlisle Pike & Van Patton Rd.	17.7	B	13.7	B	23.0	C	15.3	B
2	Carlisle Pike & PA 581 off-ramp	47.0	D	37.6	D	140.3	F	45.0	D
3	Carlisle Pike & Sporting Hill Rd.	55.1	E	37.6	D	54.0	D	41.2	D
4	Carlisle Pike & St. John's Church Rd.	23.8	C	21.4	C	28.8	C	21.4	C
5	Carlisle Pike & Orr's Bridge Rd.	28.3	C	21.9	C	45.2	D	37.1	D
51	Carlisle Pike & Central Blvd.	23.0	C	19.7	B	46.1	D	50.7	D
6	Carlisle Pike & 32nd St.	67.7	E	120.9	F	125.0	F	120.5	F
7	Trindle Rd. & Sheely Lane	125.8	F	28.8	C	75.2	E	15.4	B
8	Trindle Rd. & Sporting Hill Rd.	20.1	C	35.4	D	30.7	C	55.7	E
9	Trindle Rd. & Railroad Ave.	25.1	C	25.6	C	19.5	B	19.2	B
10	Trindle Rd. & St. John's Church Rd.	65.2	E	61.8	E	34.1	C	35.3	D
11	Trindle Rd. & Central Blvd.	64.6	f	11.2	B	167.2	f	19.1	B
12	Church St. & Central Blvd.	162.4	f	30.9	C	67.1	f	16.6	B
13	Trindle Rd. & 32nd St.	155.9	F	111.3	F	214.4	F	138.4	F
14	Simpson Ferry Rd. & Sheely Ln./Wesley Dr.	68.4	E	34.6	C	61.5	E	51.7	D
15	Simpson Ferry Rd. & Railroad Ave.	309.6	f	20.0	C	303.3	f	12.6	B
16	Simpson Ferry Rd. & Locust St.	586.2	f	12.3	B	338.5	f	9.1	A
17	Simpson Ferry Rd. & St. John's Church Rd.	28.6	C	25.5	C	30.5	C	28.9	C
18	Gettysburg Rd. & Wesley Dr.	153.3	F	19.5	B	53.4	D	14.1	B
19	Gettysburg Rd. & Locust St.	66.1	E	46.9	D	32.6	C	29.3	C
20	Gettysburg Rd. & St. John's Church Rd.	98.6	f	15.4	B	144.0	f	14.9	B
21	Industrial Rd. & St. John's Church Rd.	308.7	f	10.6	B	273.8	f	14.4	B
22	Trindle Rd. & Gilmore Rd.	27.8	d	27.8	d	40.6	e	40.6	e

1). HCM Delay and Level-of-Service values are for the overall intersection, as generated by Synchro v.6, Build 614.

2). Delay is expressed in terms of "seconds per vehicle".

3). UPPERCASE levels of service for signalized intersections; lowercase levels of service for unsignalized intersections.

C. Roadway Improvements

The roadway improvements which correspond to the build conditions and the corresponding delay and LOS outlined in the table above can be found on the Roadway Improvement Graphics which are located in Appendix F. The major improvements have been summarized in **Figure 4.3**. Environmental impacts, costs, and right-of-way impacts are summarized on the figures in Appendix F and a cost estimate tool has been included on the CD with this report. It should be noted that the figures in Appendix F include pedestrian and bicycle recommendations as well as transit considerations of each project and should be consulted at the time of project initiation. The cost estimate matrix which has been included on the CD with this report should also be reviewed and modified for unit costs and year of expenditure prior to project programming.

FIGURE 4.3 – 2020 Projects

CLASH - 2020 Projects

Location: *Cumberland County, PA*

V. 2030 PROJECTIONS AND IMPROVEMENTS

A. Network Modifications, Assumptions, and Traffic Projections

TCRPC conducted a travel model run for the future year, 2030, and provided McCormick Taylor with the associated loaded roadway networks and intersection turning movement files. Based on the methodology described previously, McCormick Taylor prepared the future year 2030 "No-Build" turning movement volume forecasts.

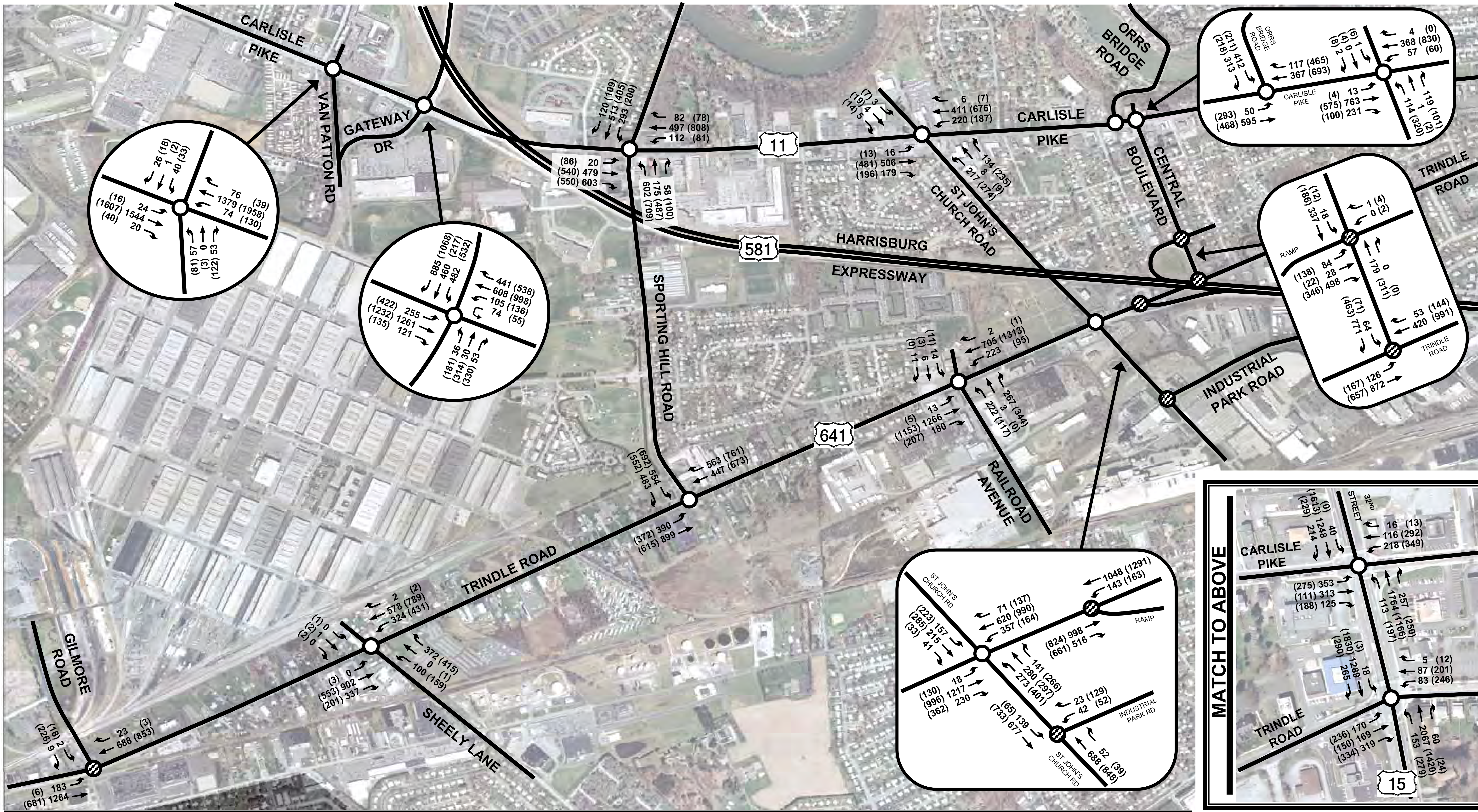
The land use/growth forecasts for 2030, as completed by TCRPC for their long-range planning efforts, were used in the model.

The roadway network for 2030 assumed that the following roadway improvement projects were completed in addition to the improvement assumed for the 2020 network:

- Widening of Sporting Hill Road to a 5-lane cross-section between Carlisle Pike and Trindle Road.

- Widening of Trindle Road to a 5-lane cross-section between Sporting Hill Road and St. John's Church Road.

The Traffic Volume Forecasting Methodology for 2030 resulted in the 2030 No Build Volumes that are shown in **Figures 5.1** and **5.2**.



MATCH TO NEXT SHEET

LEGEND

- Study Intersection Signalized
- Study Intersection Unsignalized
- AM (PM) Turning Movement Traffic Volume

McCormick Taylor
Engineers & Planners
Since 1946

N

FIGURE # 5.1 Turning Movements

2030 No-Build Conditions

Location: *Cumberland County, PA*

MATCH TO PREVIOUS SHEET

N

LEGEND

- Study Intersection Signalized
- Study Intersection Unsignalized
- AM (PM) Turning Movement Traffic Volume

McCormick Taylor
Engineers & Planners Since 1946

FIGURE # 5.2 Turning Movements

2030 No-Build Conditions

Location: *Cumberland County, PA*

B. *Future No-Build Capacity Analysis*

Intersections		2030 AM				2030 PM			
		No-Build		Build		No-Build		Build	
Node	Name	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
1	Carlisle Pike & Van Patton Rd.	17.3	B	15.1	B	29.6	C	16.8	B
2	Carlisle Pike & PA 581 off-ramp	55.4	E	39.4	D	197.0	F	71.1	E
3	Carlisle Pike & Sporting Hill Rd.	94.9	F	63.3	E	90.4	F	54.6	D
4	Carlisle Pike & St. John's Church Rd.	23.6	C	27.1	C	24.9	C	33.6	C
5	Carlisle Pike & Orr's Bridge Rd.	29.1	C	24.6	C	40.1	D	48.0	D
51	Carlisle Pike & Central Blvd.	34.8	C	19.6	B	38.4	D	59.9	E
6	Carlisle Pike & 32nd St.	212.4	F	160.2	F	215.8	F	143.7	F
7	Trindle Rd. & Sheely Lane	140.7	F	29.0	C	98.9	F	22.4	C
8	Trindle Rd. & Sporting Hill Rd.	23.2	C	46.4	D	32.8	C	33.1	C
9	Trindle Rd. & Railroad Ave.	25.2	C	22.4	C	14.6	B	15.1	B
10	Trindle Rd. & St. John's Church Rd.	119.2	F	116.8	F	40.3	D	35.8	D
11	Trindle Rd. & Central Blvd.	122.0	f	15.8	B	346.4	f	23.3	C
12	Church St. & Central Blvd.	172.5	f	37.2	D	58.0	f	14.2	B
13	Trindle Rd. & 32nd St.	162.2	F	164.5	F	223.1	F	154.2	F
14	Simpson Ferry Rd. & Sheely Ln./Wesley Dr.	70.9	E	45.3	D	79.2	E	61.1	E
15	Simpson Ferry Rd. & Railroad Ave.	ERR	f	14.7	B	523.9	f	17.0	B
16	Simpson Ferry Rd. & Locust St.	716.5	f	18.5	B	906.9	f	15.3	B
17	Simpson Ferry Rd. & St. John's Church Rd.	48.7	D	45.4	D	41.9	D	46.6	D
18	Gettysburg Rd. & Wesley Dr.	2000.4	F	20.3	C	1353.9	F	26.0	C
19	Gettysburg Rd. & Locust St.	117.1	F	51.4	D	26.3	C	28.2	C
20	Gettysburg Rd. & St. John's Church Rd.	611.1	f	35.8	D	666.5	f	22.0	C
21	Industrial Rd. & St. John's Church Rd.	926.5	f	12.0	B	400.1	f	17.1	B
22	Trindle Rd. & Gilmore Rd.	56.8	f	10.2	B	79.7	f	19.6	B

1). HCM Delay and Level-of-Service values are for the overall intersection, as generated by Synchro v.6, Build 614.

2). Delay is expressed in terms of "seconds per vehicle".

3). UPPERCASE levels of service for signalized intersections; lowercase levels of service for unsignalized intersections.

C. Roadway Improvements

The roadway improvements which correspond to the build conditions and the corresponding delay and LOS outlined in the table above can be found on the Roadway Improvement Graphics which are located in Appendix F. The major improvements have been summarized on **Figure 5.3**. Environmental impacts, costs, and right-of-way impacts are summarized on the figures in Appendix F and a cost estimate tool has been included on the CD with this report. It should be noted that the figures in Appendix F include pedestrian and bicycle recommendations as well as transit considerations of each project and should be consulted at the time of project initiation. The cost estimate matrix which has been included on the CD with this report should also be reviewed and modified for unit costs and year of expenditure prior to project programming.

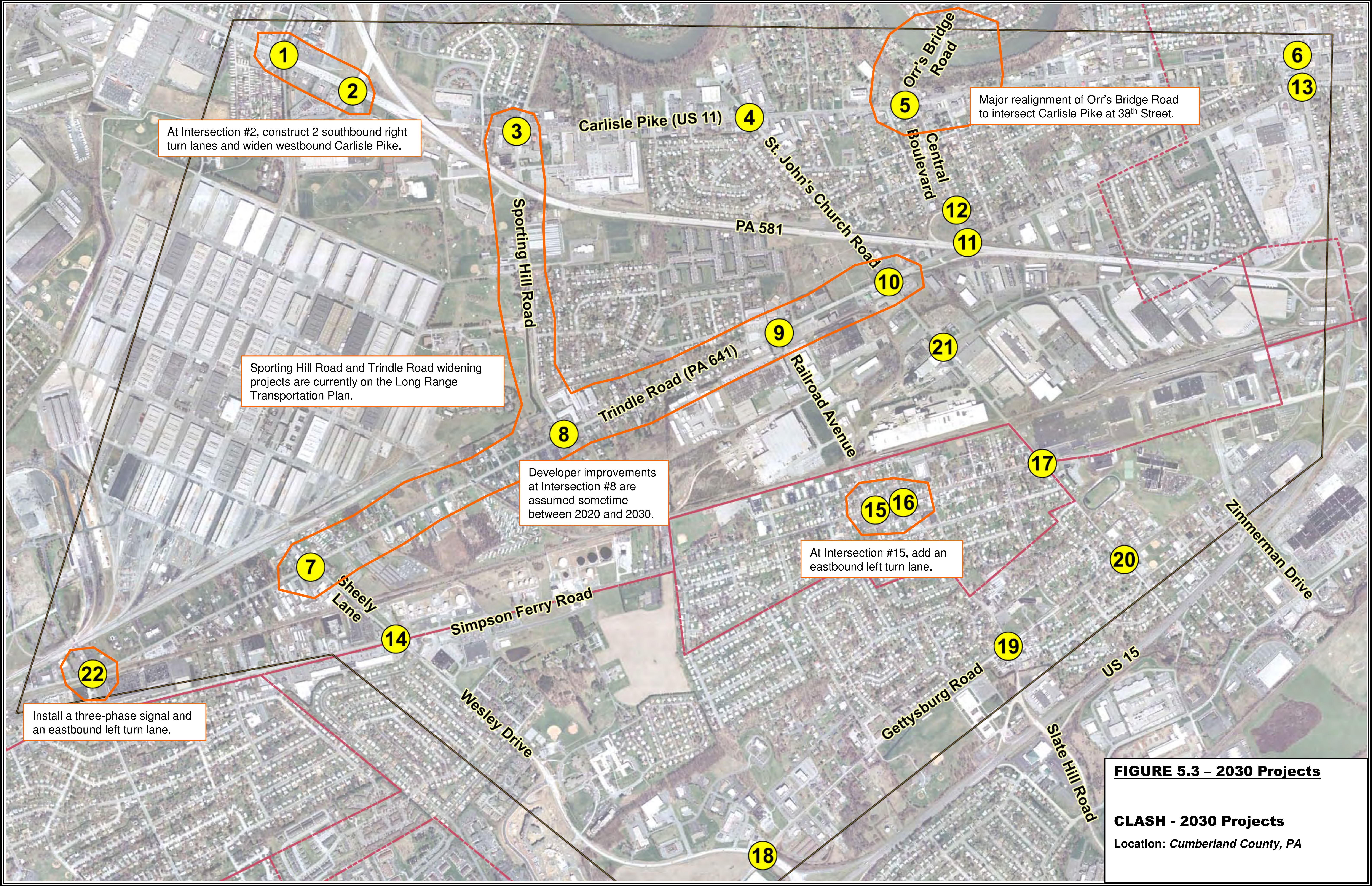


FIGURE 5.3 – 2030 Projects

CLASH - 2030 Projects

Location: *Cumberland County, PA*

VI. PUBLIC AWARENESS

On January 23, 2008, approximately forty-six members of the public attended the public meeting for the CLASH Circulation Study held at the Hampden Township Emergency Service Building, 295 S. Sporting Hill Road. Prior to the public meeting, ten public officials participated in a public officials briefing.

The meeting was held to introduce the project to the public, display traffic and environmental information gathered in reference to the study area and present the various concepts developed for twenty-two (22) intersections and the potential completion of the PA 581/St. John's Church Road Interchange.

Study area maps and surveys were distributed to the meeting attendees. Twenty-seven of the forty-six attendees completed the survey. The survey results are below. In addition to the survey responses, several roadway and intersection configurations were brought up at the public meeting. These are included in the Technical Files, Section 3.

Survey Responses

1. Where do you live? (Please check)

1	Borough of Camp Hill Borough	1	East Pennsboro Township
2	Lower Allen Township	1	Mechanicsburg Borough
0	Shiremanstown Borough	0	Upper Allen Township
19	Hampden Township	3	Other municipality (Fairview, Silver Springs, Carroll Township)

2. How often do you drive through the CLASH study area?

22 Often (at least one time per day)
4 Occasionally (at least once per week)
1 Rarely (less than once per week)
0 Never

3. Please indicate routine problems you encounter in the study area (check all that apply).

26 Traffic congestion (back-ups)

19 Delays at traffic signals

8 Difficulty pulling out onto roadway (from stop sign)

13 Difficulty making left turns

4. Please circle the top 5 intersections/interchange you feel should receive priority attention for improvements. (see attached map for numbered intersection locations)

The highest priority intersection was noted as Carlisle Pike, Orr's Bridge Road and Central Boulevard with 12 indications on the survey, Carlisle Pike and St. John's Church Road was next with 11 and Trindle Road and Central Boulevard received 10 indications. The intersection of Carlisle Pike, Market Street and 32nd Street received 9 indications as did the intersection of Carlisle Pike and St. John's Church Road. Several of the other intersections received 7 or less indications on the survey.

Several specific comments and some suggestions were also indicated on the survey responses. Those can be found in the Technical Files for this report.

VII. TIP PACKAGES

Information from various sources was considered when developing the TIP Packages. This information included the Improvement Graphics and the Cost Estimates. An example of a typical Improvement Graphic can be found in **Figure 7.1**. The improvement graphics contain information relating to the various planned and recommended improvements that should be considered in the immediate, short, and long term conditions. Immediate improvements are those that should be implemented in the current year, short term improvements are those that should be implemented for 2020, and long term improvements should be implemented for 2030. In addition to the improvement listing and the graphic which details the specific improvements, a table comparing the No-Build and Build Levels-of-Service exists as well as documentation of any environmental or right-of-way issues and concerns.

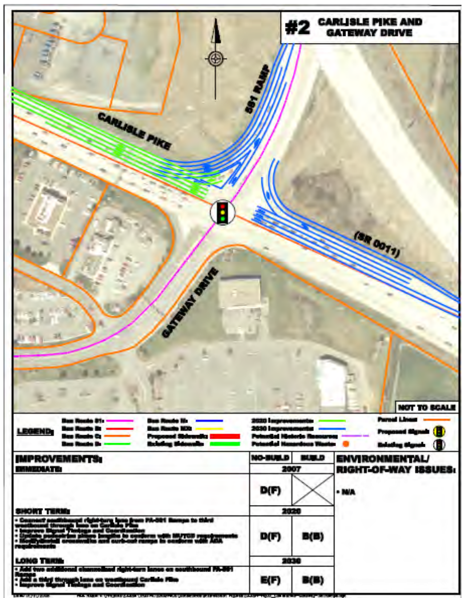


Figure 7.1 – Improvement Graphic

In addition to the Improvement Graphics, cost estimates were developed for both the 2020 and 2030 improvements. The cost estimates took into account the required pavement, guiderail, drainage, E&S, signage, pavement markings, signals, and MPT. A typical cost estimate for 2020 and 2030 can be found in **Figure 7.2**.

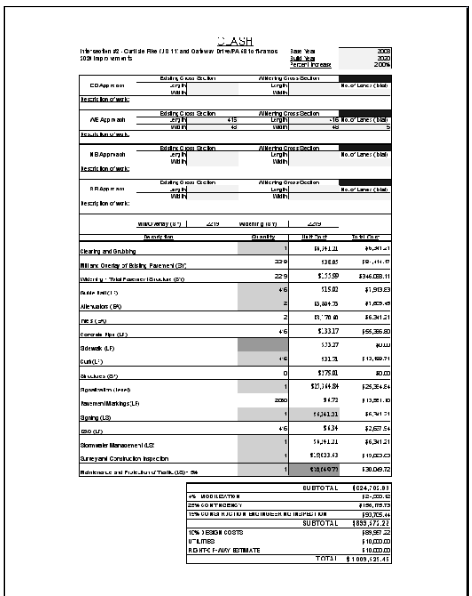


Figure 7.2 – Typical Cost Estimate

Two comparison tables were also developed in order to assist in the determination of the specific improvements as well as the order in which these improvements should be implemented. These tables are an Intersection LOS table, a Cost Estimate Comparison table, and also a relative Cost-Benefit table. The B/C table was used to help develop the TIP packages discussed below.

For inclusion on the TIP, several packages and groups of packages are recommended for consideration based on a combination of factors including their overall benefit-to-cost ratio, accommodation of both public and private business concerns, the safety enhancement to the area, and traffic flow throughout the entire study area as an entire network.

The following four improvement packages are recommended for advancement to the TIP for immediate implementation and further study.

1. Implement the immediate recommendations for Intersections 3, 4, and 5. These are the intersections of Sporting Hill Road, St. John's Church Road, and Orr's Bridge Road/Central Boulevard with the Carlisle Pike. The specific improvements to each intersection can be found on the Improvement Graphics in Appendix F. These improvements include re-striping and re-delineating the lane configurations in the existing pavement cross-section as well as some signal updates. Since these improvements are adding additional travel lanes and turning lanes without constructing a new pavement cross-section, the cost is minimal in comparison to a full intersection re-construction.

2. Install a three-phase signal at Intersection 21, St. John's Church Road and Industrial Drive. Much interest by both the local commuters and the businesses in the industrial area has been expressed concerning the signalization of this intersection. By combining township and developer funding, this improvement could be initiated immediately.

3. Restripe the northbound right turn lane to provide 230' of storage at Intersection 10, Trindle Road and St. John's Church Road. The cost is minimal, and the existing cross-section will support the additional turn lane length.

4. Advance a detailed study of Intersections 6 and 13. These intersections are Carlisle Pike, Market Street and 32nd Street and Trindle Road, Chestnut Street and 32nd Street. Some items to consider in this study would be signal phasing, pedestrian accommodations and their influence on the signal operations and the possibility of adding an additional north/south through lane. In addition, the concepts from the Public Meeting should be considered. These can be found in Technical Files section on the CD.

In addition to the TIP Packages suggested above, the 2020 and 2030 recommendations from the Improvements Graphics should be considered for inclusion on the next Long Range Transportation Plan update. All of these improvement graphics can be found in Appendix F. They have also been summarized on **Figure 7.3** (Immediate) as well as **Figure 4.3** (2020 improvements) and **Figure 5.3** (2030 improvements).

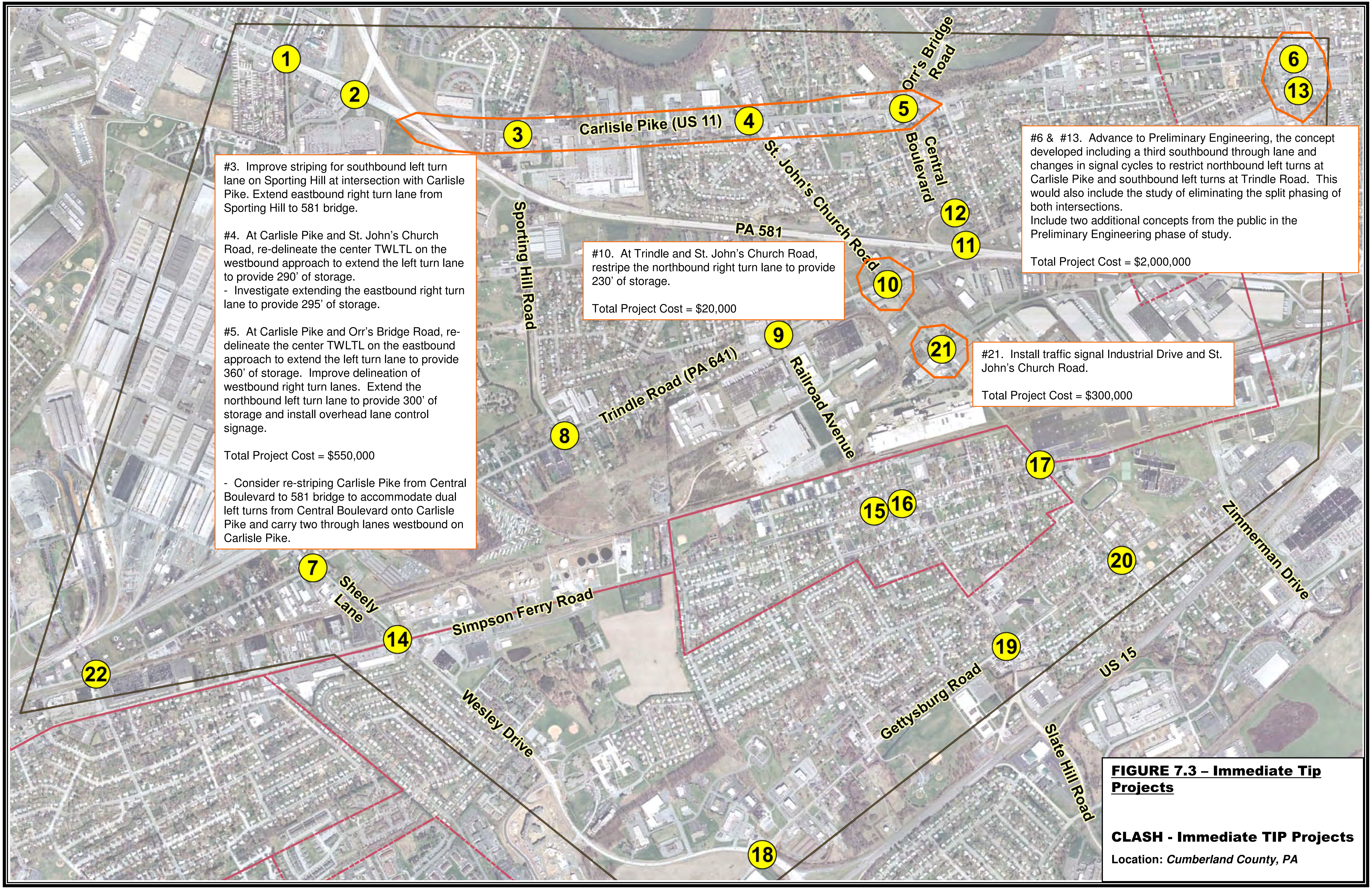


FIGURE 7.3 – Immediate Tip Projects

CLASH - Immediate TIP Projects

Location: *Cumberland County, PA*

CLASH Circulation Study
Kick-Off Meeting

Date: April 16, 2007
Time: 1:00 PM
Location: Hampden Township Building

ATTENDEES	REPRESENTING	PHONE	EMAIL
Terry Adams	PennDOT District 8-0	717-787-7144	teadams@state.pa.us
Kirk Stoner	Cumberland County	717-240-5381	kstoner@ccpa.net
John Eby	Lower Allen Township	717-975-7575	john_eby@lower-allenpa.us
Chip Millard	TCRPC/HATS	717-234-2638	cmillard@tcrpc-pa.org
Michael Gossert	Hampden Township	717-761-0119	mgossert@hampdentownship.us
Jerry Spease	Hampden Township	717-761-0119	jspease@hampdentownship.us
John Bradley	Hampden Township	717-761-0119	jebradjr@comcast.net
Robert Gill	East Pennsboro Township	717-732-0711	admin@eastpennsboro.net
Jim Willshier	HRC/CREDC	717-213-5081	jwillshier@hbgrc.org
Brian St. John	McCormick Taylor	717-540-6040	bstjohn@mtmail.biz
Melody Caron	McCormick Taylor	717-540-6040	macaron@mtmail.biz
Laura Montgomery	McCormick Taylor	717-540-6040	lamontgomery@mtmail.biz

ATTACHMENTS
Attachment A – Agenda
Attachment B – OD survey
Attachment C – Revised Schedule

MEETING DISCUSSION

The meeting was held as a kick-off meeting to the CLASH Circulation Study.

1. The meeting began with brief introductions.
2. The meeting attendees were considered project stakeholders. Several potential stakeholder originally identified did not attend the meeting. The general consensus was to include all original stakeholders on project correspondence and meeting minutes whether or not they attended the meeting. The only other group identified as a potential stakeholder was the Pennsylvania Motor Trucking Association (PMTA). It was decided that special meetings would occur with PMTA but they did not need to be considered a project stakeholder and attend status meetings.
3. Brian St. John requested the attendees to share their concerns with transportation issues within the study area and what they hoped to see as an outcome of the CLASH Study.
   - Terry Adams was concerned that stakeholders felt that a complete interchange at PA 581/Trindle Road would reduce traffic on the Carlisle Pike, which he did not believe would be the case. He also noted funding will be an issue for any potential project or package of projects which result from the study.

- Kirk Stoner would like to see the problems quantified and solutions offered.
- John Eby indicated he was a proponent of the full interchange at PA 581/Trindle Road but was also concerned with the Wesley Drive/ Lisburn Road area and the development that is occurring and projected to occur. He was concerned with “dump off” traffic cutting through the township to avoid PA 581.
- Chip Millard was concerned about the lack of a good north/south corridor and suburban traffic moving to other suburban areas. He also noted concerns with the amount of truck traffic Shiremanstown is experiencing. Pedestrian and bicycle facilities are also a concern within the study area, especially around Sporting Hill Road and St. John’s Church Road.
- Mike Gossert wanted the study to determine if the PA 581/Trindle Road interchange should stay on the TIP, as well as, to address truck traffic traveling to and from the industrial parks along St. John’s Church Road.
- Rob Gill indicated that East Pennsboro has a vested interest in the project and hopes to see an improvement in the level of service of the various intersections.
- John Bradley noted his concern with truck traffic traveling from Carlisle to the industrial parks along St. John’s Church Road. He would also like the project team to study whether the signal timing could be optimized on the Carlisle Pike, if a Sporting Hill Road connection to Simpson Ferry Road would be helpful, a potential bike path along PA 581, and a possible extension of the service road behind the Carlisle Pike to St. John’s Church Road.

4. Brian St. John indicated that in addition to the interchange at PA 581/Trindle Road the study team will also be studying each corridor to develop corridor specific recommendations and packages of solutions.
5. Chip Millard stated that coordination between the municipalities would be essential.
6. Terry Adams noted there will likely be benefits experienced once the PA 15/PA 581 Interchange Project is complete.
7. Brian St. John stated a simple, cost effective way to improve traffic flow is to coordinate the signal timing along the corridors. This will be evaluated as a short-term improvement scenario as part of the study.
8. Brian St. John reviewed some of the major truck generators located along St. John’s Church Road and Railroad Avenue. Brian indicated the study team will contact PMTA, Jim Runk, to discuss dispatch information to determine where a majority of the trucks are traveling to and from. The team would like to send letters to the larger trucking companies so they are aware they will be contacted for an interview and the purpose of the CLASH study. The group felt a letter sent from TRCPC would be appropriate. Chip Millard also noted the Goods Movement Study that was completed may have pertinent information on employers and trucking. The team will contact Chip to obtain available information and coordinate drafting a letter to the trucking companies.
9. In order to get an understanding of major employers in the area and where residents are traveling to, the team will attempt to obtain zip code information from the major employers to incorporate into GIS mapping. It was suggested that the West Shore Tax Bureau be contacted for zip code information as they have current information from wage taxes. The team will obtain contact information from Mike Gossert.
10. Melody Caron gave a briefing on the traffic counts. The counts will begin the week of April 23rd between peak hours, 7-8 am and 4-5 pm. Twenty one intersections will be counted. John Bradley questioned whether the south gate of the Navy Depot will be counted. Melody indicated that it was not part of the initial 21 intersections, however, it could be accommodated. The team will contact the Commanding Officer of Naval Support to determine when the gates are open and therefore when the counts should occur.

11. The origin and destination study will be conducted after the traffic counts are complete at the intersections of St. John's Church Road with Trindle Road and Simpson Ferry Road. A draft survey was distributed to the stakeholders for comment. (Attachment B)
12. Brian anticipated status meetings to be held in June, August, October and January with a public meeting in November. It was determined afternoon meetings would work best for the stakeholders. The status meeting dates decided on were June 18th, August 20th and October 15th at 1:00pm at the Hampden Township Building..
13. The proposed project schedule was presented and agreed upon. It is anticipated the study will be complete in March 2008. (Attachment C)

Follow up Items

Action :	**To be completed by:**
1. Contact Jim Runk of PMTA	McCormick Taylor
2. Coordinate with TCRPC on pertinent results of Goods Movement Study	McCormick Taylor
3. Draft letter and coordinate with TCRPC to send letters to major area trucking companies	McCormick Taylor
4. Contact the West Shore Tax Bureau for employee zip code information	McCormick Taylor
5. Contact Navy Depot to determine when the South Gate is open.	McCormick Taylor-**Complete**

Prepared by:

McCORMICK TAYLOR, INC.

Laura Montgomery

CLASH CIRCULATION STUDY

KICK-OFF MEETING AGENDA

April 16, 2007
1:00 p.m.
Hampden Township Building

1. Introductions
2. Project Stakeholders
3. Project Study Area
4. Major Area Employers/Truck Generators
   - Information letter
5. Traffic Counts
   - Locations
   - Schedule
6. Origin and Destination Study
   - Questionnaire
   - Survey locations
7. Traffic Analysis Tools
   - Synchro
8. Traffic Model
   - Tri-County
9. Schedule
10. Public Involvement Plan
    - Public Meeting
11. Status Meetings
    - Every other month

Attachment A

CLASH - Origin/Destination Survey

Survey #: ____ Location: ____ Time ______ Initials: __

A. Type of vehicle (circle one): car / medium truck / heavy truck

B. How many people are in the vehicle: ______

1. Where are you traveling to?

Establishment Address ______

Town ______ State ______ Zip ______

Is it a: ☐ Home ☐ Work ☐ Other ______

2. Where are you traveling from?

Establishment Address ______

Town ______ State ______ Zip ______

Is it a: ☐ Home ☐ Work ☐ Other ______

3. How long does it take you to make this trip?

☐ Less than 10 minutes ☐ 10-20 minutes ☐ 20+ minutes

4. How often do you make this trip?

☐ Once a day ☐ Once a week ☐ Less than once a week

☐ More than once a day ☐ 2-3 Times a week

5. For this trip, what roads did you travel?

☐ Route 15 ☐ Route 581

☐ Carlisle Pike ☐ Trindle Road

☐ Sporting Hill Road ☐ Simpson Ferry Road

☐ Slate Hill Road ☐ Sheely Road

☐ Gettysburg Road ☐ Other ______

6. What alternate routes do you use to make this same trip?

☐ Route 15 ☐ Route 581

☐ Carlisle Pike ☐ Trindle Road

☐ Sporting Hill Road ☐ Simpson Ferry Road

☐ Slate Hill Road ☐ Sheely Road

☐ Gettysburg Road ☐ None

☐ Other ______

7. How often do you use this alternate route?

☐ Once a day ☐ Once a week ☐ Less than once a week

☐ More than once a day ☐ 2-3 Times a week

Attachment B

ANTICIPATED SCHEDULE
CLASH Circulation Study

2007 → 2008

NTP - March 29, 2007	April 2007	May 2007	June 2007	July 2007	Aug 2007	Sept 2007	Oct 2007	Nov 2007	Dec 2007	Jan 2008	Feb 2008	March 2008
TASK 1: PROJECT MANAGEMENT			X		X		X			X		
TASK 2: KICK-OFF MEETING	●											
TASK 3: ESTABLISH BASE-MAPPING												
TASK 4: ID STAKEHOLDERS												
TASK 5: DELINEATE STUDY AREA												
TASK 6: DOCUMENT EXISTING CONDITIONS:												
Review Available Data												
Existing Traffic Conditions (Data Collection)												
Traffic Patterns												
Analysis of Existing Conditions												
Land Use Review												
TASK 7: FUTURE CONDITIONS:												
Volume Projection												
Analysis of Future Conditions												
TASK 8: PURPOSE & NEED:												
Documentation												
TASK 9: CONCEPT DEVELOPMENT:												
Corridor Concepts and/or Interchange Concepts												
Intersection Concepts												
TASK 10: PUBLIC INVOLVEMENT:												
Public Meeting(s)								*				
Business/Stakeholder Meeting(s)												
TASK 11: CONCEPT SELECTION PACKAGE												
TASK 12: TIP UPDATE PACKAGE												

LEGEND:
- Task Duration
- X Status Meeting
- * Public Meetings

Attachment C.

CLASH Circulation Study
Kick-Off Meeting

Date: June 18, 2007
Time: 1:00 PM
Location: Hampden Township Building

ATTENDEES	REPRESENTING	PHONE	EMAIL
Terry Adams	PennDOT District 8-0	717-787-7144	teadams@state.pa.us
Kirk Stoner	Cumberland County	717-240-5381	kstoner@ccpa.net
Dan Flint	Lower Allen Township	717-975-7575	daniel_flint@lower-allen.pa.us
Chip Millard	TCRPC/HATS	717-234-2638	cmillard@tcrpc-pa.org
Michael Gossert	Hampden Township	717-761-0119	mgossert@hampdentownship.us
Jim Willshier	HRC/CREDC	717-213-5081	jwillshier@hbgrc.org
Brian St. John	McCormick Taylor	717-540-6040	bstjohn@mtmail.biz
Melody Caron	McCormick Taylor	717-540-6040	macaron@mtmail.biz
Brandon Stodart	McCormick Taylor	717-540-6040	bpstodart@mtmail.biz

MEETING DISCUSSION

The meeting was held as a status meeting on the progress of work for the CLASH Circulation Study.

1. The meeting began with brief introductions and the distribution of handouts.
2. Brian St. John explained that the purpose of the meeting was to share the results of the data collection efforts and to discuss how that data will be applied in the next steps of the project.
3. Turning movement traffic volume counts for the 22 study intersections were collected during the study peak hour of 7:00-8:00am and 4:00-5:00pm. Melody Caron pointed out that the total volumes and the truck volumes collected during these time periods were shown in Figures 1-4 of the handouts. These traffic volumes were utilized to complete an intersection capacity analysis to determine intersection Level of Service (LOS). The intersection capacity analysis was performed utilizing the Highway Capacity Manual (HCM) results from Synchro software. Figures 5-8 of the handouts summarized the overall signalized intersection LOS and the lowest approach LOS for unsignalized intersections. Melody noted that the existing LOS results reflected the traffic conditions observed in the field; indicating the Synchro network reflects the field conditions.
4. Brian explained that an Origin–Destination (O-D) study was proposed to be completed within the CLASH study area to better understand the number of potential trips that would be attracted to a complete interchange at Trindle Road and PA 581. Originally, the O-D study was to be an interview survey conducted at a two signalized intersections. In planning the O-D study, several concerns arose including: the quality of data obtained, limited area to stop vehicles, safety of surveyors and motorists, minimum survey capture rate, and minimum survey capture rate for truck traffic.

5. Brian explained that in working with the West Shore Tax Bureau, zip code information was obtained that linked local residents to their employers and local employees to their place of residence. This data was imported into GIS to determine how commuters, namely automobile traffic, accessed the study area. With this additional information now made readily available, McCormick Taylor proposed a new approach to completing the O-D study. The approach was outlined in a memo dated May 18, 2007 and was distributed to the project stakeholders via email on May 23, 2007.
6. As sufficient information was now known for the automobile travel patterns (significantly more information than could have been obtained in the original interview O-D study proposed) the revised approach for the O-D focused on truck travel patterns. In order to collect this data, a vehicle following method was proposed where data collectors followed trucks entering and exiting the study area from pre-determined locations.
7. Brandon Stodart discussed the results from the O-D study. During the 10 hour study period, over 300 trucks were followed and their travel paths were noted; of those trucks, over 250 surveys were deemed usable. Brandon noted that based on field observations, trucks were most prevalent in the northern section of the project (i.e. north of Simpson Ferry Road). Brandon explained the next step would be to further refine the study data to determine the type and frequency of use of truck paths. Brian noted that the truck O-D data will be utilized to further refine the regional traffic demand model.
8. As discussed in relation to the O-D study, the West Shore Tax Bureau provided zip code information that linked local residents to their employers and local employees to their place of residence. Brian explained that the local employees to their place of residence data was used to determine where people were traveling from to enter the study area. Once the location of where local employees lived was plotted, general travel paths along major arterials were established. Brian noted that approximately 60% of the trips traveling to employers within the study area could be considered a trip from the local area; 42.4% west shore areas and 18.3% east shore areas. Mike Gossert requested that the zip codes for the areas that were considered the "local area" be provided; Action Item. The study team discussed the need to show the reverse travel pattern data (i.e. local residents traveling to their employers). The general consensus of the group was the public may request this information, therefore these travel patterns will also be summarized; Action Item. Chip Millard noted the map legend on the map should be modified to describe the grey shading; Action Item. The study team requested the zip code maps to be attached to the meeting minute distribution email, Action Item. Brian concluded the travel pattern discussion by adding that this data will be coupled with the regional traffic demand model to verify O-D patterns and to further refine Traffic Analysis Zones (TAZ).
9. Melody noted that the existing roadway conditions for the intersections and corridors were documented through field sketches and photographs. Figures were also generated to depict the bus route and sidewalk locations within the study area.
10. General land use of the area was also documented. Brian pointed out that understanding the existing land use will assist in determining the future improvements.
11. Brian explained that Rob Watts from McCormick Taylor has been working with Al Sundara from Tri-County Regional Planning Commission (TCRPC) to further refine the regional traffic model to better represent the study area. A sub area of the regional model was extracted and additional detail was included. Based on roadways within the study area and land use information, additional TAZs were added to enhance the centroid connectors. Originally the sub area was general and included only 37 TAZs, now the sub area includes 205 TAZs.

12. The next steps of the project include developing future traffic volumes for the future conditions. Terry Adams questioned the basis of growth for the external stations. Brian explained that the growth would be based on TCRPC demand model, which in turn is based on historic data collected. Brian stated that he would verify this for accuracy; Action Item.
13. Brian noted that the study years for the project would include a base year, short-term year, mid-term year, and long-term year. The exact years for these scenarios are being coordinated with TCRPC and will be verified with the project stakeholders.
14. Once future traffic volumes are established, preliminary concepts will be developed for both short-term and long term improvements. The last figure in the handouts provided an example of how the intersection improvements would be summarized. Brian noted that the preliminary concepts developed would provide all of the information that would be needed for the forms to include the projects on the TIP.
15. Dan Flint questioned if it would be beneficial to note the original deficiency and the benefit that the improvements are providing on the figure. The study team discussed and agreed if there was enough room to include the information on the figure otherwise a separate summary would suffice.
16. Brian concluded the meeting by summarizing the decision and noted the next status meeting would be Monday August 20th, 2007 at 1:00pm.

<u>Follow up Items</u>

Action :	**To be completed by:**
1.Provide Zip Codes for the area that was considered local	McCormick Taylor – **Completed** (included in meeting minute distribution email)
2. Map local residence traveling to their employers	McCormick Taylor
3. Modify map legend for zip codes	McCormick Taylor
4. Attach zip code maps to meeting minute distribution email	McCormick Taylor – **Completed** (attached in meeting minute distribution email)
5. Verify external station growth for travel demand model	McCormick Taylor – **Completed** (included in meeting minute distribution email)

Prepared by:
McCORMICK TAYLOR, INC.
Melody Caron

CLASH Circulation Study
Status Meeting

Date: October 24, 2007
Time: 2:00 PM
Location: Hampden Township Building

ATTENDEES	REPRESENTING	PHONE	EMAIL
Terry Adams	PennDOT District 8-0	717-787-7144	teadams@state.pa.us
John Kennedy	PennDOT District 8-0	717-783-5119	johnkenned@state.pa.us
Chip Millard	TCRPC/HATS	717-234-2638	cmillard@tcrpc-pa.org
Kirk Stoner	Cumberland County	717-240-5381	kstoner@ccpa.net
Michael Gossert	Hampden Township	717-761-0119	mgossert@hampdentownship.us
Jerry Spease	Hampden Township	717-761-0119	jspease@hampdentownship.us
Dorota Shirska	Hampden Township	717-761-0119	
Keith Metts	Hampden Township	717-761-0119	kmetts@hampdentownship.us
Dan Flint	Lower Allen Township	717-975-7575	daniel_flint@lower-allen.pa.us
Tom Helm	Harrisburg Bicycle Club	717-975-0925	tomhelm@paonline.com
Brian St. John	McCormick Taylor	717-540-6040	bstjohn@mccormicktaylor.com
Rob Watts	McCormick Taylor	717-540-6040	rjwatts@mccormicktaylor.com
Doug Maneval	McCormick Taylor	717-540-6040	demaneval@mccormicktaylor.com
Brandon Stodart	McCormick Taylor	717-540-6040	bpstodart@mccormicktaylor.com

ATTACHMENTS

The following items were presented/distributed at the meeting and are included in the attachment section at the end of the meeting minutes:

1. 2020 No-Build Improvements
2. 2030 No-Build Improvements
3. Truck O-D Graphic
4. Truck O-D Results
5. 2007 Existing Intersection Conditions
6. 2020 No-Build Intersection Conditions
7. 2030 No-Build Intersection Conditions
8. Improvements Graphic*

* Due to the size of the Improvement Graphic, it has been uploaded to a project specific ftp site. To access the site, please use the following link and input the supplied username and password when prompted. The file can then be copied/downloaded from the site.

ftp://clash:project@ftp.mccormicktaylor.com

Username: clash
Password: project

MEETING DISCUSSION

The meeting was held as a status meeting on the progress of work for the CLASH Circulation Study.

Future Traffic Volumes

1. The meeting began with brief introductions and the distribution of handouts. Brian St. John explained that the purpose of the meeting was to share the results of the of the truck O-D study, the No-Build Volume Projections for 2020 and 2030, initial alternatives for improvement for both 2020 and 2030, pedestrian and bicycle improvements, and also to discuss the next steps for analysis as well as the public meeting.

Truck O-D Results

2. Brian explained that the truck O-D study results were based on a random sample of truck data collected for a 10 hour day. This information can be found in Attachments 3 and 4. Mike Gossert questioned the number of trucks traveling EB and WB onto the Carlisle Pike at the Gateway intersection and asked that the number of trucks at this intersection be verified and provided; **Action Item #1**.

3. The group discussed the equality of inbound and outbound trucks as well as the consistency of the observed "truck routes" being within the general perception of traffic flow in the study area. All were in agreement that the truck routes were effectively represented. Chip Millard asked for the original graphic containing the intersection numbers to be attached to the minutes so that the results of the O-D study can be compared and the travel paths can be more easily visualized; **Action Item #2**.

2020 No-Build Volumes

4. Figures illustrating the 2020 No Build traffic volumes for the morning and afternoon peak hours were distributed, Attachment 6. Rob Watts described the modeling/forecasting process and the refinements that were used in order to arrive at the final anticipated volumes. The group's main concerns dealt with the effect of the completed 15-581 Interchange project on the local CLASH study area network. The improvements associated with the 15-581 Interchange Project can be found in Attachment 1 and are labeled 2020 No-Build Improvements. At the request of the group, if possible a check of the O-D's in the model should be performed to help determine the specific effects of the 15-581 Interchange Project on the CLASH study area; **Action Item #3**.

5. There was significant discussion on the causes of the volume increases throughout the study area. The group also discussed the influence of the at-grade rail crossings and possible remedies to the congestion created when trains completely block some of the major roadways in the area (i.e. St. John's Church Road).

2030 No-Build Volumes

6. Figures illustrating the 2030 No Build traffic volumes for the morning and afternoon peak hours were distributed, Attachment 7. Rob Watts detailed the assumptions that were used in creating the 2030 projections, including the improvements on the Long Range Transportation Plan (LRTP) to Trindle Road and Sporting Hill Road. A complete list of these assumptions can be found in Attachment 2 and is labeled 2030 No-Build Improvements. Discussion followed concerning what

improvements were on the LRTP and which of these improvements are likely to be built by 2020 and/or 2030 projection years.

7. Mike Gossert added that one of the improvements on the LRTP is to complete the connection along Sporting Hill Road between Trindle Road and Simpson Ferry Road, and to include a bridge over the rail-crossing. The group discussed the impacts, constraints, and limitations of such a project and concluded that the Sporting Hill Road bridge should be added into the 2030 Build Option analysis and not included in the current No Build projections; **Action Item #4**.

8. Mike added that significant improvements are planned within the next 5 years for the intersection of Sporting Hill Road and Trindle Road. These improvements would include the re-zoning of the property south of Trindle Road. This area will be built by 2020 and as such should be included in the 2020 No Build Analysis; **Action Item #5**. The group agreed upon the following improvements to be included in the model:
    - the development of the property south of Trindle Road in the 2020 No-Build Analysis.
    - the connection along Sporting Hill in the 2030 Build Analysis.
    - the bridge project over the rail crossing in the 2030 Build Analysis.

<u>Initial Alternatives for 2020 and 2030 Projects</u>

9. Brian initiated the discussion concerning the suggested improvements for 2020 and 2030 by informing the group that the main focus was on signalized intersections with Level of Service "F" in the 2020 and 2030 No Build. Unsignalized intersections with LOS of "f" had recommendations such as signalizing and adding turn lanes. The 2020 No-Build and 2030 No-Build Attachments detail the intersection LOS in both the AM and PM peak periods.

10. The discussion began with the 2020 Build Alternatives for the intersections of US 15 and the Carlisle Pike and US 15 and Trindle Road. Note: All improvement suggestions are illustrated in Attachment 8.

    - The basic improvements included adding turn lanes and lengthening the existing turn lanes. One of the improvement suggestions included removing the US 15 NB left turn onto the Carlisle Pike and the US 15 SB left turn onto Trindle Road. This would allow for a more efficient use of the signal cycle time to incorporate the pedestrian phases and allow more green time for the thru movements on US 15.

    - In the discussion that followed, the main concerns focused on the high volume of school children which use these intersections, the ease of breaking the normal pedestrian flow at these two intersections, and the future impacts of the current 15-581 project on these intersections. The discussion continued with suggestions ranging from improving the signal timing/coordination along US 15 to connecting the parking lots of CVS and Starbucks to improve the movement of vehicles off-street.

    - The question of ROW acquisition involved with the addition of turn lanes was raised, but the main thought of the group was to improve the signal timings, further investigate the influences of the new 15-581 project on these two intersections, and to investigate the ability to improve off-street traffic flow and its influence on the operations of the intersections. Significant projects outside of the ROW should not be investigated in detail.

11. Two 2020 Build Alternatives for the intersection of Orr's Bridge/Central Boulevard and Carlisle Pike were provided.

    - The first alternative was to improve the existing intersection configuration by adding turn lanes with the second alternative being to completely re-route Orr's Bridge Road. It was noted in the meeting that Orr's Bridge is on the list of bridges to be replaced. The initial proposed re-alignment was to the west of the current alignment, but after discussion with the group it was dropped due to the problems that would be faced with the public concerns in the neighborhood north of Carlisle Pike.

    - During the discussion, other alternatives such as tunneling under Carlisle Pike or re-routing Orr's Bridge to the east were also discussed. The general consensus of the group was that further analysis and investigation of the effects on Central Boulevard and the possible future ramps at PA581 and Central Boulevard should be studied to determine the most appropriate intersection configuration of Orr's Bridge/Central Boulevard and Carlisle Pike.

12. For the intersection of Sporting Hill and Carlisle Pike, lengthening the NB double left at Sporting Hill is being considered and it is under total group agreement that this should be carried out. In addition it is the general thought that the addition/lengthening of the EB right turn lane should be carried under the PA 581 Bridge.

13. The alternatives for the Carlisle Pike/PA 581 Off-ramp/Gateway included a slight reconfiguration and new signal timings. The southbound movement along the PA 581 Off-ramp was suggested to be changed to triple right-turn lanes and signalized rather than a channelized yield condition. This would improve operations of the entire signal, improve safety, and improve the current lane utilization.

14. An alternative for Sporting Hill Road was also discussed involving the realignment of Sporting Hill to coincide with the PA 581 Off-ramps. This idea was put aside until further information can be gathered on the future plans for Naval occupancy of the base.

15. The 2020 Build Alternative for the intersection of Gettysburg Road and Wesley Drive included realigning eastbound Gettysburg to Century Drive, and removing all access to the intersection from eastbound Gettysburg, thus turning the intersection into a "T." This should be included in the 2020 and 2030 improvements. This is part of a development that is occurring on the west side of Wesley Drive.

16. Minor improvements were suggested for Gettysburg Road and Slate Hill Road, since this intersection will be updated as part of the 15-581 Project. The intersection of Sheely Lane and Trindle Road will require a property displacement on the southeastern corner of the intersection in order to add the necessary turn lanes and intersection improvements. The intersection of St. John's Church Road and Trindle Road has a limited amount of improvement choices based on the current

operations and configuration. This intersection will need to be addressed by the interchange options.

New Interchange

17. The new proposed ramp alignment for the completion of the interchange at Trindle Road/Central Boulevard and PA 581 was presented to the committee.

    - The design benefits from it's avoidance of all historic resources, but the fact that the entry/exit ramps are at different locations is detrimental to its acceptance. There was significant discussion concerning the ramp, including the interchange spacing along PA 581 and whether or not it meets FHWA requirements as well as the specific location of the entrance and exit ramps.
    - Questions were raised concerning the feasibility of putting the ramp on St. John's Church Road and the ROW requirements that would be associated with such an alignment. Chip Millard questioned the influence of the ramp configuration on the Central Boulevard/Orr's Bridge Road corridor and raised concern on any proposed re-alignment of Orr's Bridge and its effects not only on this corridor but on the adjacent neighborhood and the movement of traffic to and from the Carlisle Pike from Trindle Road.

Pedestrian and Transit Options for Initial Alternatives

18. The current sidewalk locations were presented to the group along with the proposed connections to complete the sidewalk "network" in Attachment 8. Chip Millard requested a copy of the current sidewalk locations for Tri-County; **Action Item #6**. Chip also questioned the presence of sidewalk and/or the traffic volumes within the neighborhood bounded by the Carlisle Pike, US 15, Trindle Road, and St. John's Church Road. It was noted that traffic volumes are low enough within these neighborhoods to allow pedestrian movements along the shoulders.

19. There was some discussion over the proposed sidewalk locations and the need to prioritize these locations based on the following criteria: transit routes, proximity to various shopping areas, and proximity of various neighborhoods. It was noted that at each intersection where improvements were proposed, ADA and push-buttons will all be brought up to current requirements.

Additional Options for Analysis

20. Terry Adams noted that with the increased interest in improving the existing roadways and addressing Structurally Deficient bridges, it will be necessary to identify and quantify the need/benefit for the full interchange at the PA 581/Central Boulevard/Trindle Road area.

21. There was a lengthy discussion dealing with the need for a thorough analysis of the effects of the 15-581 Interchange Project on the CLASH network, and what suggested alternatives from the CLASH project will have the best result on the improvement of the overall area. The committee requested that the analysis of the 15-581 interchange effects on the CLASH network including the diverted traffic from the CLASH network and the relief to the network created by the 15-581 improvements be documented.

Next Steps

22. In preparing for the public meeting, no cost estimates should be shown, and the basic improvement concepts should be presented. It was determined that the public meeting should be held after the holiday season with a tentative date during the week of January 14th and a snow date during the week of January 21st. A write-up advertising the public meeting is needed for the December 1st newsletter; **Action Item #7**.

23. Brian concluded the meeting and noted the dry-run for the public meeting would be scheduled between Thanksgiving and Christmas. The meeting ended at approximately 5:00 PM.

24. Subsequent to the meeting, the Public Meeting was scheduled for Wednesday, January 23rd with a snow date of January 24th in the Hampden Township Emergency Services Building, 295 S. Sporting Hill Road, directly across from the Township building. The meeting will likely be between 5-8pm

Follow up Items

Action :	To be completed by:	Date Completed:
1. Verify and Provide the EB and WB truck volumes at Carlisle Pike/PA581 Off-ramp/Gateway	McCormick Taylor	
2. Attach the overview map with intersection numbers.	McCormick Taylor	11/30/07
3. Determine the specific effect of the 15-581 Interchange Project on the CLASH study area.	McCormick Taylor	
4. Add the Sporting Hill Road bridge to the 2030 Build Options	McCormick Taylor	
5. Include the re-zoned and built-out area south of Trindle at Sporting Hill Road in 2020/2030 No-Build Analysis	McCormick Taylor	
6. Send Tri-County a copy of the current Sidewalk Locations Map. (In Attachment 8)	McCormick Taylor	11/30/07
7. Provide a write-up advertising the public meeting the week of January 14th	McCormick Taylor	11/7/07

Prepared by:
McCORMICK TAYLOR, INC.
Brandon P. Stodart

CLASH Circulation Study
Status Meeting

Date: December 18, 2007
Time: 9:00 AM
Location: Hampden Township Building

ATTENDEES	REPRESENTING	PHONE	EMAIL
Chip Millard	TCRPC/HATS	717-234-2638	cmillard@tcrpc-pa.org
Kirk Stoner	Cumberland County	717-240-5381	kstoner@ccpa.net
Michael Gossert	Hampden Township	717-761-0119	mgossert@hampdentownship.us
Dan Flint	Lower Allen Township	717-975-7575	daniel_flint@lower-allen.pa.us
Jerry Spease	Hampden Township	717-761-0119	jspease@hampdentownship.us
Scott Akens	Shiremanstown Borough	717-975-9933	scott@akensengineering.com
Gary Kline	Borough of Camp Hill	717-737-3456	camphillmanager@comcast.net
Robert Gill	East Pennsboro Township	717-732-011	admin@eastpennsboro.net
Ryan Murray	East Pennsboro Township	717-571-4978	rmmurray@msmary.edu
Brian St. John	McCormick Taylor	717-540-6040	bstjohn@mccormicktaylor.com
Laura Montgomery	McCormick Taylor	717-540-6040	lamontgomery@mccormicktaylor.com
Melody Matter	McCormick Taylor	717-540-6040	mamatter@mccormicktaylor.com

MEETING DISCUSSION

The meeting was held as a dry-run for the CLASH Circulation Study Public Meeting to be held on January 23, 2008.

1. The meeting began with brief introductions and the distribution of handouts. Brian St. John explained that the purpose of the meeting was to discuss the progress in determining vehicle attraction to improved US 15/PA 581 Interchange and a completed PA 581/Central Boulevard Interchange, review the public meeting layout and displays, and to discuss the contents of the CLASH Circulation Study report.

Attraction of 15/581 Improvements and Full 581/Central Boulevard Interchange

2. At the last status meeting, the committee requested the analysis of the effects the US 15/PA 581 interchange improvements and the effects of a completed PA 581/Central Boulevard Interchange on the CLASH network. Brian St. John explained that determining the attraction and diversion shifts has been delayed due to revisions that needed to be made to the regional model. When reviewing the model some errors were noted in the vehicle path and trip assignments. These errors did not affect the traffic volumes on a macro scale, but on a micro scale, such as trip diversion, these errors need to be addressed to achieve reliable results. Brian noted that Rob Watts is working with Tri-County to address the noted errors and Tri-County will be providing an updated model run later in the week. Once the effects of the interchanges are determined the results will be distributed to the committee. **Action #1**.

Public Meeting Display (Power Point and Handouts)

3. The public meeting will be held at Hampden Township's Emergency Service building which is located across the street from the Township's building. The meeting will be opened to the general public from 5:00-8:00 PM. Laura Montgomery questioned if a public officials meeting should be held prior to the general public meeting. The committee discussed and agreed that a public officials meeting should be held from 4:00-5:00 PM. Laura agreed to generate a list of potential public officials to invite for the committee to review and also agreed to draft a letter inviting them to the meeting. **Action Item #2 and #3**. The committee noted that the letter to the public officials should be from Tri-County.
4. The setup and layout of the public meeting displays were shown to the committee in a power point format. Each slide/board set was reviewed and as the committee provided comments the text was updated accordingly. As the size of the mapping that could be shown of the power point slides was limited, larger examples were rolled out for review. Chip Millard requested that the intersection numbers be shown larger on the area map and that a list of intersections with their associated numbers be provided on the map, **Action Item #4 and #5**.
5. In discussing the truck travel displays, Brian St. John noted that as a follow-up item to the last status meeting, the number of trucks traveling eastbound and westbound onto the Carlisle Pike at the Gateway intersection was added to the truck origin and destination result figure.
6. An example figure of the intersection improvement displays was shown to the committee. Brian St. John explained that the level of service and environmental information that would be added to the text boxes at the bottom of the figures was included in the handouts that were distributed.
7. The committee suggested that a "Next Steps" board be added to the public meeting displays; **Action Item #6**.

Public Meeting Presentation

8. Brian St. John gave an overview of the presentation that he will give at the public meeting. It was determined that the presentation would only be given once at 6:00 PM, and the time of the presentation would be noted in the meeting advertisements.
9. Within the presentation Brian St. John will discuss some of the study intersections and will direct the public to visit the display boards for more detailed information about intersection improvements.

Public Meeting Survey

10. To assist in prioritizing projects and gauging public concern, a survey will be distributed at the public meeting. Laura Montgomery reviewed the survey with the committee. Chip Millard suggested that a study area map be attached to the survey and be on a display board adjacent to the survey area. The committee suggested that a mailing address be address be added on the back of the survey so the public would not feel rushed to complete it and could mail it in; **Action Item #7**.

Advertisements for Public Meeting

11. Laura Montgomery noted that the Carlisle Sentinel and the Patriot News would be contacted about placing an advertisement in the papers. In addition, Kirk Stoner suggested that Laura contact both

newspapers to have a full article ran on the project and the up coming public meeting; **Action Item #8**.

12. The committee also suggested that a press release be given to PennDOT, have an announcement on the associated Municipality's websites, and try to include an announcement in the associated Municipality's up coming newsletters. **Action Item #9**.

Set-up for Final Report

13. The table of contents of the CLASH Circulation Study report was circulated to the committee. Brian St. John explained that the report will be set-up based on the outline shown. It was recommended that the final report be posted on Tri-County's and the associated Municipality's website. Once the report is finalized, Brian agreed to provide a PDF so the report can be posted on the websites; **Action Item #10**.

Next Steps

14. As several items were presented in a draft format, the graphics that will be displayed at the public meeting including all intersection improvements will posted on McCormick Taylor's website for the committee to review and provide comments. Laura Montgomery noted so there is time for the boards to be prepared, comments would need to be received by Wednesday January 16th.

This concludes these meeting minutes. Any revisions or additions to these meeting minutes should be sent within seven (7) working days of their receipt. At that time, they will become part of the official minutes of the meeting.

Minutes Prepared by:
McCormick Taylor, Inc.

Melody Matter, P.E., PTOE
CC: All attendees, T. Adams, A. Wrightstone, J. Bradley, J. Eby

Follow up Items

Action :	To be completed by:
1. Distribute to the committee the results of the effects of the US 15/PA 581 Interchange improvements and the completion of the PA 581/Central Boulevard Interchange.	McCormick Taylor
2. Generate a list of potential public officials to be invited to the public officials meeting.	McCormick Taylor
3. Draft a letter inviting the public officials to the public officials meeting.	McCormick Taylor
4. Show intersection numbers on the study area map.	McCormick Taylor
5. Provide a list of intersections with their associated numbers on the study area map.	McCormick Taylor
6. Add a "Next Steps" board to the public meeting displays.	McCormick Taylor
7. Add a mailing address on the back of the public meeting survey.	McCormick Taylor
8. Contact the local newspapers about running a full article ran on the project and the up coming public meeting.	McCormick Taylor
9. Give PennDOT a press release, have an announcement on the associated Municipality's websites, and try to include an announcement in the associated Municipality's up coming newsletters.	McCormick Taylor/Municipalities
10. Provide a PDF of the final report so it can be posted on Tri-County's and the associated Municipality's websites.	McCormick Taylor

CLASH Circulation Study
Status Meeting

Date: May 15, 2008
Time: 1:00 PM
Location: Hampden Township Building

ATTENDEES	REPRESENTING	PHONE	EMAIL
Michael Gossert	Hampden Township	717-761-0119	mgossert@hampdentownship.us
Greg Creasy	Grove Miller	717-564-6146	gcreasy@grovemiller.com
Jerry Spease	Hampden Township	717-761-0119	jspease@hampdentownship.us
John Eby	Lower Allen Township	717-975-7575	john_eby@lower-allen.pa.us
Al Sundara	Tri-County RPC	717-234-2639	asundara@tcrcp-pa.org
Terry Adams	PennDOT District 8	717-787-7149	teadams@state.pa.us
Brian St. John	McCormick Taylor	717-540-6040	bstjohn@mccormicktaylor.com
Melody Matter	McCormick Taylor	717-540-6040	mamatter@mccormicktaylor.com
Brandon Stodart	McCormick Taylor	717-540-6040	bpstodart@mccormicktaylor.com

MEETING DISCUSSION

The meeting was held as the Final Meeting for the CLASH Circulation Study Project.

The meeting began with brief introductions and the distribution of handouts. Brian St. John explained that the purpose of the meeting was to review the Public Meeting and to discuss the Intersection Improvement Packages as developed by McCormick Taylor.

1. *Review of Public Meeting*

Based on the Public Meeting Survey Responses, the following intersections were listed as the top problem locations in the CLASH Study Area:

- Carlisle Pike and Orr's Bridge Road/Central Boulevard
- Carlisle Pike and St. John's Church Road
- Trindle Road (PA 641) and Central Boulevard
- Carlisle Pike and Sporting Hill Road
- Carlisle Pike/Market Street and 32nd Street (US 11/15)

Terry Adams reminded the group that the intersections should be looked at in their relationship to the entire corridor rather than as a specific location. A general discussion concerning accident history in relation to a properly timed corridor ensued and everyone was in agreement that properly timed signals are safer and more efficient.

Brian reviewed the public's suggestions for possible new routes and new lane configurations at several locations throughout the study area. Most of these did not occur at the specific study intersections.

The committee discussed Intersection #21 Industrial Drive and St. John's Road and how a signal is needed ASAP. Requests for a signal have been received from some of the trucking companies and it is thought that the 15-581 Project will increase the number of motorists looking for alternative routes and consequently the traffic volume on St. John's Church Road.

2. *Review of Interchange traffic impacts*

Brian handed out all of the intersection and interchange improvement packages. The committee expressed the most interest in the Interchange Concepts, including the cost and impacts. Brian revealed the advantages and costs of each of the two concepts, including what was considered during the concept development and what was not considered. Mike Gossart expressed significant interest in the Interchange and directed the discussion to the right-of-way impacts as shown in the developed concepts as well as what engineering would be involved in the concepts. The group discussed the cost/benefit of the interchange concept versus the intersection improvements.

Terry Adams informed the committee that there is potential funding available for some of the projects under different groupings. Mike expressed concern over further delay in proceeding forward with any of the projects due to the availability of funding in the current TIP process. Terry reminded the committee that PennDOT's primary concern is with replacing bridges and upgrading existing facilities, rather than with programming new interchange projects and that it would be beneficial to move forward with the intersection improvements in place of pushing for the interchange concept development.

3. *Concept Packages Development*

Brian brought up the need to prioritize the intersection improvement packages and group them together into project packages. He introduced a spreadsheet to the committee (for their use) to come up with overall project cost estimates for specific groupings.

The committee discussed and agreed that more time was needed to look over and talk through all of the information that was presented. In addition, due to the absence of some of the CLASH Project Stakeholders, it was advised that all members have adequate time to digest the improvement packages and associated cost estimates (and the public's concerns as voiced at the Public Meeting). Brian will email the spreadsheet cost estimates and packages to the entire committee; **Action Item 1**.

Al Sundara talked through the general HATS prioritization process and advised that HATS would look favorably on recommendations from a committee such as CLASH. Al will research how the results of the planning study from CLASH would be used by Tri-County RCP and what format would be best for the committee to provide; **Action Item 2**.

At the request of the committee, the number of vehicles through each intersection (or some similar and adequate measure) should be used to develop a cost-benefit comparison; **Action Item 3**. This will be used in addition to the information currently provided to assist in determining the priority of intersection improvements based partly on the number of people that will benefit from a specific improvement.

4. *Final Report Schedule*

The final report was not discussed at the current meeting and as such will not be presented to HATS on June 13, 2008. The draft version of the final report should be sent via email to the committee members for their review; **Action Item 4**.

5. *Next Steps*

The next steps will be discussed via email after all committee members have had time to review the information provided at this meeting.

This concludes these meeting minutes. Any revisions or additions to these meeting minutes should be sent within seven (7) working days of their receipt. At that time, they will become part of the official minutes of the meeting.

Minutes Prepared by:
McCormick Taylor, Inc.

Brandon P. Stodart, MS, EIT
CC: All attendees

Follow up Items

Action :	**To be completed by:**
1. Email the spreadsheets cost estimates and improvement packages along with the overall cost estimate spreadsheet to all committee members.	McCormick Taylor
2. Research how the results of the planning study from CLASH would be used by Tri-County RCP.	Al Sundara
3. Develop a cost-benefit comparison for each intersection improvement.	McCormick Taylor
4. Email a draft version of the final report to all committee members.	McCormick Taylor

CLASH Circulation Study
Appendix B: Photo Log
Corridors – Carlisle Pike


581
11


RIGHT
LANE
ENDS


HOLLYWOOD


EXXON


DO NOT BLOCK


40


M


CAMP
HILL
LEASE


Chestnut
11
15

CLASH Circulation Study
Appendix B: Photo Log
Corridors – Central Blvd.

CLASH Circulation Study
Appendix B: Photo Log
Corridors – Gettysburg Road


AmeriGas


CRESTON


KEYSTONE

CLASH Circulation Study
Appendix B: Photo Log
Corridors –
Sheely Lane & Wesley Drive


SPEED
LIMIT
35

CLASH Circulation Study
Appendix B: Photo Log
Corridors –
Simpson Ferry Road


35
CHEVROLET


35


40
JEM


LEFT LANE
MUST
TURN LEFT

CLASH Circulation Study
Appendix B: Photo Log
Corridors –
Sporting Hill Road


SPEED
LIMIT
35


SPEED
LIMIT
35


PARK
CLEARANCE
14 FT 2 IN

CLASH Circulation Study
Appendix B: Photo Log
Corridors –
St. John’s Church Road


DO
NOT
PASS


SPEED
LIMIT
35


ATM
INSIDE


BEGIN

IT'S 30 SHRIMP


RIGHT TURN SIGNAL
14-0
40


40


ENTER


TO
WEST
581

CLASH Circulation Study
Appendix B: Photo Log
Corridors – Trindle Road


CHESTNUT
WEST
641


TRINDLE
PROFESSIONAL
MAGNET.

LEASE
MUST


SPEED LIMIT
40


LEASE
TAMANINI REALTY

CLASH Circulation Study

Appendix B: Photo Log

Intersections –

Carlisle Pike/32nd St./Market St.


CVS
pharmacy
DRIVE THRU
PIZZA
& SUBS

11
15


KFC
VA

OFFICIAL FIRE
ONLY


EWE·1452


Market
SUNOCO


SUNOCO


SUNOCO

CLASH Circulation Study
Appendix B: Photo Log
Intersections –
Carlisle Pike/Central Blvd./Orr’s Bridge Rd.


HESS


MEYER


BRIDGE
WEIGHT LIMIT
35
TONS
MEYER


HESS


WEIGHT
LIMIT
35
TONS


NO


OFFICE SUITES
FOR LEASE


NO
TURN
ON
RED
35


Citizens
Bank
ATM

CLASH Circulation Study
Appendix B: Photo Log
Intersections –
Carlisle Pike/Gateway Dr./581 Ramp


EAST
11
581


LEFT TURN SIGNAL


Naval Support
Activity


Naval Support
Activity

CLASH Circulation Study
Appendix B: Photo Log
Intersections –
Carlisle Pike/Sporting Hill Rd.


RiteAid
RiteAid


RiteAid
CVS


CVS
CVS
CVS

CLASH Circulation Study
Appendix B: Photo Log
Intersections –
Carlisle Pike/St. John’s Church Rd.


IMPREZA


EXXON


EXXON


EXXON


PREOWNED

CLASH Circulation Study Appendix B: Photo Log Intersections – Carlisle Pike/Van Patten Dr.


Holiday Inn


LOWE'S


Holiday Inn


LOWE'S

CLASH Circulation Study
Appendix B: Photo Log
Intersections –
Central Blvd./581 Ramp


ONE WAY

CLASH Circulation Study
Appendix B: Photo Log
Intersections –
Gettysburg Rd./Slate Hill Rd.


BIODIESEL


ALLEN
SCHOOL


KEYSTONE


KEYSTONE


DO
NOT
PASS


KEYSTONE
279
289
299
308


15
40

CLASH Circulation Study
Appendix B: Photo Log
Intersections –
Gettysburg Rd./St. John's Church Rd.


Chic


STOP

CLASH Circulation Study
Appendix B: Photo Log
Intersections –
Gettysburg Rd./Wesley Dr.


Gettysburg Rd


U-HAUL


SWIFT

CLASH Circulation Study
Appendix B: Photo Log
Intersections –
Main St./Locust St.


STOP
STOP


STATE
LAW
TO


STOP

CLASH Circulation Study
Appendix B: Photo Log
Intersections –
Main St./Railroad St.


6 West Main


STATE
LAW
YIELD
TO
WITHIN
CROSSWALK


35


6 West Main


35


STOP

CLASH Circulation Study
Appendix B: Photo Log
Intersections –
Simpson Ferry Rd./St. John's Church Rd.


DO
NOT
PASS


ATM

CLASH Circulation Study
Appendix B: Photo Log
Intersections –
Simpson Ferry Rd./Wesley Dr.


40


3.98

CLASH Circulation Study
Appendix B: Photo Log
Intersections –
St. John's Church Rd./Industrial Park Rd.


25


STOP


RITE AID

CLASH Circulation Study
Appendix B: Photo Log
Intersections –
Trindle Rd./32nd St.


TEXACO


TEXACO


NEXTEL

CLASH Circulation Study
Appendix B: Photo Log
Intersections –
Trindle Rd./Ball Rd. (Navy Depot Entrance)


STOP
STOP
STOP
ONLY
ONLY


GIANT

CLASH Circulation Study
Appendix B: Photo Log
Intersections –
Trindle Rd./Central Blvd.


SOLD
LEASE


35


STOP

CLASH Circulation Study
Appendix B: Photo Log
Intersections –
Trindle Rd./Railroad Ave.


lle Bowl


TRINDLE
BOWL
TURN OFF TV WEEK
AMF


Trindle Rd


40

CLASH Circulation Study
Appendix B: Photo Log
Intersections –
Trindle Rd./Sheely Ln.


KIRBY'S


KIRBY'S
PANELING CENTER
BUILDING SUPPLIES


POLICE


PA.net


LANE


SUZUKI

CLASH Circulation Study
Appendix B: Photo Log
Intersections –
Trindle Rd./Sporting Hill Rd.


35


5010
641


ASE

CLASH Circulation Study
Appendix B: Photo Log
Intersections –
Trindle Rd./St. John’s Church Rd.


McDonald's


McDONALD'S


40


CARLISLE
MUST
MUST


Legacy Bank

Equipment Inventory Sheet

Intersection: Carlisle Pk, Van Patten & Holiday Inn
Date: May 3, 2007
Performed by: DEM/WSB/BPS

Controller Assembly Information:

Controller:	Multisonics 820A
Conflict Monitor:	EDI NSM-12
Detector Amps:	Detector Systems 913A-SS & 921-2
Detector Amps Number:	5; 4
Phase Assembly:	12 position backpanel
Detectors Working?:	yes
General Assembly Condition: (Good/Fair/Poor)	good
Notes:	All 12 phase positions used

Intersection Installation Information:

Signal Head Size:	
Mast Arm Condition:	good
Pedestrian Accommodations:	Ped xings all legs - ramps on 2 corners - curb on 2 others
Pavement Marking Condition:	good
General Assembly Condition: (Good/Fair/Poor)	good
Notes:	

Equipment Inventory Sheet

Intersection: Carlisle Pk, Gateway & Ramps
Date: May 3, 2007
Performed by: DEM/WSB/BPS

Controller Assembly Information:

Controller: Multisonics 820A
Conflict Monitor: EDI NSM-12
Detector Amps: EDI LM301
Detector Amps Number: 14
Phase Assembly: 12 position backpanel
Detectors Working?: yes
General Assembly Condition: (Good/Fair/Poor) good

Notes: 6 phase positions used
EVP on all approaches

Intersection Installation Information:

Signal Head Size:

Mast Arm Condition: good

Pedestrian Accommodations: No crossings on all legs

Pavement Marking Condition: good

General Assembly Condition: (Good/Fair/Poor) good

Notes:

Equipment Inventory Sheet

Intersection: Carlisle Pk & Sporting Hill
Date: May 3, 2007
Performed by: DEM/WSB/BPS

Controller Assembly Information:

Controller:	Multisonics 820A
Conflict Monitor:	EDI NSM-12
Detector Amps:	Sarasota 515T; 515B & 535T
Detector Amps Number:	5; 1; 1
Phase Assembly:	12 position backpanel
Detectors Working?:	yes
General Assembly Condition: (Good/Fair/Poor)	good
Notes:	All 12 phase positions used EVP on all approaches

Intersection Installation Information:

Signal Head Size:	
Mast Arm Condition:	good
Pedestrian Accommodations:	H/M ped signals & marked crosswalks on all legs - curb but no ramps
Pavement Marking Condition:	good
General Assembly Condition: (Good/Fair/Poor)	good
Notes:	

Equipment Inventory Sheet

Intersection: Carlisle Pk & St. John's Church
Date: May 3, 2007
Performed by: DEM/WSB/BPS

Controller Assembly Information:

Controller: Multisonics 820A
Conflict Monitor: Guardian NP12
Detector Amps: EDI LM301 & 301T
Detector Amps Number: 2; 3
Phase Assembly: 12 position backpanel
Detectors Working?: yes
General Assembly Condition:
(Good/Fair/Poor) good

Notes: 5 phase positions used
EVP on all approaches

Intersection Installation Information:

Signal Head Size:

Mast Arm Condition: 2 strain poles & 2 utility poles

Pedestrian Accommodations: no ped xings on all legs

Pavement Marking Condition: good

General Assembly Condition:
(Good/Fair/Poor) good

Notes:

Equipment Inventory Sheet

Intersection: Carlisle Pk, Central & Orr's Bridge
Date: May 3, 2007
Performed by: DEM/WSB/BPS

Controller Assembly Information:

Controller:	Multisonics 820A
Conflict Monitor:	EDI NSM-12
Detector Amps:	Sarasota 512B & 512T. EDI LM301
Detector Amps Number:	2; 4. 2
Phase Assembly:	8 position backpanel
Detectors Working?:	yes
General Assembly Condition: (Good/Fair/Poor)	good
Notes:	6 phase positions used
	EVP on 4 approaches

Intersection Installation Information:

Signal Head Size:	
Mast Arm Condition:	4 strain poles - (two diagonal spans)
Pedestrian Accommodations:	no ped xings
Pavement Marking Condition:	good
General Assembly Condition: (Good/Fair/Poor)	good
Notes:	

Equipment Inventory Sheet

Intersection: Carlisle Pk, Market & 32nd
Date: May 3, 2007
Performed by: DEM/WSB/BPS

Controller Assembly Information:

Controller: ____________________
Conflict Monitor: ____________________
Detector Amps: ____________________
Detector Amps Number: ________
Phase Assembly: ____________________
Detectors Working?: ____________________
General Assembly Condition:
(Good/Fair/Poor) ________

Notes: ____________________

Intersection Installation Information:

Signal Head Size: ____________________

Mast Arm Condition: ____________________

Pedestrian Accommodations: ____________________

Pavement Marking Condition: ____________________

General Assembly Condition:
(Good/Fair/Poor) ____________________

Notes: ____________________

Equipment Inventory Sheet

Intersection: Gettysburg & Wesley
Date: May 3, 2007
Performed by: DEM/WSB/BPS

Controller Assembly Information:

Controller: Econolite ASC/2S-2100 & ASC/2M-1(
Conflict Monitor: EDI NSM-12L
Detector Amps: EDI LM301& 301T. Sarasota
Detector Amps Number: 3; 1; 1; 1 515B & 515T
Phase Assembly: 12 position backpanel
Detectors Working?: yes
General Assembly Condition: (Good/Fair/Poor) good

Notes: 7 phase positions used
NO EVP

Intersection Installation Information:

Signal Head Size:

Mast Arm Condition: good

Pedestrian Accommodations: H/M across one approach

Pavement Marking Condition: fair

General Assembly Condition: (Good/Fair/Poor) good

Notes: Closed Loop master at this location - in system with other signals along Wesley/Rossmoyne

Equipment Inventory Sheet

Intersection: Gettysburg, Slate Hill & Locust
Date: May 3, 2007
Performed by: DEM/WSB/BPS

Controller Assembly Information:

Controller:	Econolite ASC/2S-2100
Conflict Monitor:	EDI NSM-6L
Detector Amps:	Detector Systems 810 & 813
Detector Amps Number:	2; 1; 1 EDI LM301T
Phase Assembly:	9 position backpanel
Detectors Working?:	yes
General Assembly Condition: (Good/Fair/Poor)	good
Notes:	4 phase positions used

Intersection Installation Information:

Signal Head Size:	
Mast Arm Condition:	good
Pedestrian Accommodations:	W/DW on all legs - marked xwalks - ramps & curb cuts
Pavement Marking Condition:	fair
General Assembly Condition: (Good/Fair/Poor)	good
Notes:	

Equipment Inventory Sheet

Intersection: Simpson Ferry, Wesley & Sheely
Date: May 3, 2007
Performed by: DEM/WSB/BPS

Controller Assembly Information:

Controller:	Multisonics 820
Conflict Monitor:	Guardian NM12
Detector Amps:	Sarasota 515B; 515T& 535T
Detector Amps Number:	1; 5; 1; 1 EDI LM301
Phase Assembly:	12 position backpanel
Detectors Working?:	yes
General Assembly Condition: (Good/Fair/Poor)	good
Notes:	All 12 phase positions used NO EVP

Intersection Installation Information:

Signal Head Size:	
Mast Arm Condition:	good, except pole on NW corner damaged
Pedestrian Accommodations:	Ped xings on all approaches - RYG signals No marked xwalks - No curb ramps
Pavement Marking Condition:	good
General Assembly Condition: (Good/Fair/Poor)	good
Notes:	

Equipment Inventory Sheet

Intersection: Simpson Ferry & St. John's Church
Date: May 3, 2007
Performed by: DEM/WSB/BPS

Controller Assembly Information:

Controller:	Eagle EPAC 300
Conflict Monitor:	EDI SSM-12
Detector Amps:	EDI LM301
Detector Amps Number:	8
Phase Assembly:	12 position backpanel
Detectors Working?:	yes
General Assembly Condition: (Good/Fair/Poor)	good
Notes:	12 phase positions used

Intersection Installation Information:

Signal Head Size:	
Mast Arm Condition:	good
Pedestrian Accommodations:	Ped xings on all legs two with ramps & two with no curb
Pavement Marking Condition:	good
General Assembly Condition: (Good/Fair/Poor)	good
Notes:	

Equipment Inventory Sheet

Intersection: Trindle & Sheely
Date: May 3, 2007
Performed by: DEM/WSB/BPS

Controller Assembly Information:

Controller:	Multisonics 820A
Conflict Monitor:	EDI NSM-12
Detector Amps:	Detector Systems 910A-SS
Detector Amps Number:	5
Phase Assembly:	12 position backpanel
Detectors Working?:	yes
General Assembly Condition: (Good/Fair/Poor)	good
Notes:	7 phase positions used
	EVP on all 4 legs

Intersection Installation Information:

Signal Head Size:	
Mast Arm Condition:	good
Pedestrian Accommodations:	Ped xings on 2 legs - no curbing where peds cross
Pavement Marking Condition:	good
General Assembly Condition: (Good/Fair/Poor)	good
Notes:	

Equipment Inventory Sheet

Intersection: Trindle & Sporting Hill
Date: May 3, 2007
Performed by: DEM/WSB/BPS

Controller Assembly Information:

Controller: Multisonics 820A
Conflict Monitor: Guardian NP12
Detector Amps: EDI LM301 & LM301T Detector Systems
Detector Amps Number: 2; 1; 1; 1 910A-SS & 913A-SS
Phase Assembly: 12 position backpanel
Detectors Working?: yes
General Assembly Condition:
(Good/Fair/Poor) good

Notes: 8 phase positions used
EVP on all 3 legs

Intersection Installation Information:

Signal Head Size:

Mast Arm Condition: good

Pedestrian Accommodations: Ped xings EB & SB approaches - no marked xwalks - no ramps
two short barrier curbs

Pavement Marking Condition: good

General Assembly Condition:
(Good/Fair/Poor) good

Notes:

Equipment Inventory Sheet

Intersection: Trindle & Railroad
Date: May 3, 2007
Performed by: DEM/WSB/BPS

Controller Assembly Information:

Controller:	Multisonics 820A
Conflict Monitor:	EDI NSM-12
Detector Amps:	Naztec 710-TX/I; EDI LM301 & 301
Detector Amps Number:	5; 1; 1
Phase Assembly:	12 position backpanel
Detectors Working?:	yes
General Assembly Condition: (Good/Fair/Poor)	good
Notes:	9 phase positions used

Intersection Installation Information:

Signal Head Size:	
Mast Arm Condition:	good
Pedestrian Accommodations:	H/M and marked xwalks on all legs - curb on two corners, ramp on one corner
Pavement Marking Condition:	good
General Assembly Condition: (Good/Fair/Poor)	good
Notes:	

Equipment Inventory Sheet

Intersection: Trindle & St. John's Church
Date: May 3, 2007
Performed by: DEM/WSB/BPS

Controller Assembly Information:

Controller: Multisonics 820A
Conflict Monitor: EDI NSM-12L
Detector Amps: Sarasota 515T EDI LM301 & 301T
Detector Amps Number: 8; 2 & 2
Phase Assembly: 16 position backpanel
Detectors Working?: yes
General Assembly Condition: (Good/Fair/Poor) good

Notes: 11 phase positions used
EVP on all approaches

Intersection Installation Information:

Signal Head Size:

Mast Arm Condition: good, except damage on NW corner

Pedestrian Accommodations: No xings on all legs

Pavement Marking Condition: good

General Assembly Condition: (Good/Fair/Poor) good

Notes:

Equipment Inventory Sheet

Intersection: Trindle, Chestnut & 32nd
Date: May 3, 2007
Performed by: DEM/WSB/BPS

Controller Assembly Information:

Controller: __________
Conflict Monitor: __________
Detector Amps: __________
Detector Amps Number: __________
Phase Assembly: __________
Detectors Working?: __________
General Assembly Condition:
(Good/Fair/Poor) __________

Notes: __________

Intersection Installation Information:

Signal Head Size: __________

Mast Arm Condition: __________

Pedestrian Accommodations: __________

Pavement Marking Condition: __________

General Assembly Condition:
(Good/Fair/Poor) __________

Notes: __________

Date: May 18, 2007

To: Carl (Chip) Millard

From: Brian St. John

Subject: Origin-Destination (O-D) Study – Revised Approach

An Origin–Destination (O-D) study was proposed to be completed within the CLASH study area to better understand the number of potential trips that would be attracted to a complete interchange at Trindle Road and PA 581.

Originally, the O-D study was to be conducted at a limited number of signalized intersections (namely Trindle Road and St. John's Church Road (#9) and Simpson Ferry Road and St. John's Church Road (#15)) to be cost-effective and to assure the safety of the motorist and surveyors. In order to capture a representative survey sample for the O-D study, it was assumed that 16 staff would be stationed at the intersections of Trindle Road and St. John's Church Road (#9) and St. John's Church Road and Simpson Ferry Road (#15) to capture the turning movements off of and on to St. John's Church Road. It was also assumed that the survey would be conducted from 6:00AM to 10:00AM and 2:00PM to 6:00PM to capture both commuter and commercial vehicle travel.

In planning the O-D study, several problems arose.

- Concern with the quality of data obtained. Often drivers do not know street address, roadway names or travel information to directly answer the survey questions.
- Minimal room available to stop vehicles along the shoulder; in some cases no shoulder is available.
- Safety concerns over having surveyors along the roadway with the combination of narrow lanes and high truck traffic.
- Concern with driver frustration and incorporation; as the study area is already congested people may view the survey as an intolerable delay.
- Minimum survey capture rate. It was estimated even if each surveyor interviewed 4 vehicles an hour, not even 1% of the traffic volume would be captured.
- Minimum survey capture rate for truck traffic. Due to the constrained survey locations, driver cooperation, and survey rate; only a very small fraction of truck traffic data would be complied.

In working with the West Shore Tax Bureau, zip code information was obtained that linked local residence to their employers and local employees to their residence. This data will be applied to GIS to determine how commuters, generally automobile traffic, are accessing the study area.

With this additional information now made readily available, McCormick Taylor has proposed a new approach to completing the O-D study. As sufficient information is now known for the automobile travel patterns (significantly more information than could have been obtained in the original interview O-D study proposed) the revised approach for the O-D will focus on truck travel patterns. In order to collect this data, a vehicle following method is proposed. Data collectors from McCormick Taylor and Design Support Services will follow trucks throughout the network, and include trucks entering and exiting Industrial Park Drive and Railroad Avenue. The trucks will be followed from the point that they enter the network (from Route 15 or PA 581) until they reach their destination. Vehicles will also be followed from Industrial Park Drive and Railroad Avenue to the point where they exit the network onto Route 15 or PA 581. In both cases, their direction along Route 15 and PA 581 will be noted. In addition to noting the truck travel path, general information about the truck will be noted and approximate travel time will be recorded.

A survey of this type will provide a large quantity of detailed information about the movement of freight within the study area and their destination outside the study area. This approach will allow a cost effective data collection and will not cause major disruption to traffic flow.

Truck O-D Data

Truck O-D Links TOTAL		
	Link	Number
1	1-2	6
2	2-1	10
3	2-3	32
4	3-2	55
5	3-4	24
6	3-8	8
7	4-3	42
8	4-5	1
9	5-4	3
10	5-6	1
11	6-5	2
12	7-8	10
13	8-3	13
14	8-7	11
15	8-9	14
16	9-8	21
17	10-4	39
18	10-9	21
19	12-5	1
20	13-6	0
21	14-7	3
22	15-9	1
23	4-10	23
24	5-12	0
25	6-13	1
26	7-14	5
27	9-10	22
28	9-15	1
29	10-11	3
30	10-21	60
31	11-10	51
32	11-12	0
33	11-13	4
34	12-11	41
35	13-11	11
36	14-15	3
37	14-18	5
38	15-14	1
39	15-16	5
40	16-15	6
41	16-17	5
42	16-19	0
43	17-16	6
44	17-20	8
45	17-21	13
46	18-14	11
47	18-19	3
48	19-16	0
49	19-18	5
50	19-20	3
51	20-17	3
52	20-19	6
53	21-10	72
54	21-17	12
55	10-50	57
56	2-60	31
57	17-40	0
58	17-30	2
59	50-40	0
60	50-30	0

Truck O-D Links			Truck O-D Links Modified			Truck O-D Links TOTAL		
	Truck Path	Number		Truck Path	Number		Truck Path	Number
1	1-2-3-4-10-21	4	1	1-2-3-4-10-21	0	1	1-2-3-4-10-21	4
2	1-2-3-4-10-9	0	2	1-2-3-4-10-9	0	2	1-2-3-4-10-9	0
3	50-2-3-4-10-9	0	3	50-2-3-4-10-9	0	3	50-2-3-4-10-9	0
4	50-2-3-4-10-21	0	4	50-2-3-4-10-21	0	4	50-2-3-4-10-21	0
5	10-4-3-2-1	4	5	10-4-3-2-1	0	5	10-4-3-2-1	4
6	10-4-3-2-60	5	6	10-4-3-2-60	0	6	10-4-3-2-60	5
7	12-11-10-9	8	7	12-11-10-9	1	7	12-11-10-9	9
8	12-11-10-21	26	8	12-11-10-21	4	8	12-11-10-21	30
9	9-8-3-2-1	1	9	9-8-3-2-1	0	9	9-8-3-2-1	1
10	9-8-3-2-60	2	10	9-8-3-2-60	0	10	9-8-3-2-60	2
11	1-2-3-8-9	0	11	1-2-3-8-9	0	11	1-2-3-8-9	0
12	50-2-3-8-9	0	12	50-2-3-8-9	0	12	50-2-3-8-9	0
13	9-10-4-3-2-1	0	13	9-10-4-3-2-1	0	13	9-10-4-3-2-1	0
14	9-10-4-3-2-60	0	14	9-10-4-3-2-60	0	14	9-10-4-3-2-60	0
15	30-17-21	0	15	30-17-21	0	15	30-17-21	0
16	40-17-21	0	16	40-17-21	0	16	40-17-21	0
17	10-4-3-2	15	17	10-4-3-2	0	17	10-4-3-2	15
18	2-3-4-10	17	18	2-3-4-10	2	18	2-3-4-10	19
19	12-11-10	34	19	12-11-10	6	19	12-11-10	40
20	2-3-8	6	20	2-3-8	1	20	2-3-8	7
Starting Points			Starting Points			Starting Points		
21	2	24	20	2	3	20	2	27
22	10	18	21	10	0	21	10	18
23	17	12	22	17	2	22	17	14
24	21	69	23	21	7	23	21	76
Additional Links			Additional Links			Additional Links		
25	21-17	9	25	21-17	0	25	21-17	9
26	21-10	60	26	21-10	7	26	21-10	67

*See the map for the definition of which intersection corresponds to which number.

15 NB	30
15 SB	40
581 EB	50
581 WB	60

TOTAL RUNS : 258

27	9-10-50	14	27	9-10-50	0	27	9-10-50	14
28	9-10-4	0	28	9-10-4	0	28	9-10-4	0
29	9-8-3	6	29	9-8-3	0	29	9-8-3	6
30	10-4-3	15	30	10-4-3	0	30	10-4-3	15
31	21-10-50	29	31	21-10-50	4	31	21-10-50	33
32	21-10-4	20	32	21-10-4	2	32	21-10-4	22
33	21-10-9	4	33	21-10-9	0	33	21-10-9	4
34	21-10-11	2	34	21-10-11	1	34	21-10-11	3

Truck O-D Data

Truck O-D Links TOTAL		
	Link	Number
1	1-2	2
2	2-1	3
3	2-3	18
4	3-2	23
5	3-4	13
6	3-8	5
7	4-3	16
8	4-5	1
9	5-4	0
10	5-6	1
11	6-5	0
12	7-8	7
13	8-3	7
14	8-7	7
15	8-9	10
16	9-8	13
17	10-4	16
18	10-9	15
19	12-5	0
20	13-6	0
21	14-7	2
22	15-9	0
23	4-10	12
24	5-12	0
25	6-13	1
26	7-14	2
27	9-10	13
28	9-15	1
29	10-11	1
30	10-21	27
31	11-10	25
32	11-12	0
33	11-13	2
34	12-11	20
35	13-11	6
36	14-15	0
37	14-18	3
38	15-14	1
39	15-16	2
40	16-15	4
41	16-17	2
42	16-19	0
43	17-16	4
44	17-20	4
45	17-21	7
46	18-14	6
47	18-19	2
48	19-16	0
49	19-18	3
50	19-20	2
51	20-17	2
52	20-19	2
53	21-10	31
54	21-17	7
55	10-50	28
56	2-60	16
57	17-40	0
58	17-30	0
59	50-40	0
60	50-30	0

Truck O-D Links		
	Truck Path	Number
1	1-2-3-4-10-21	1
2	1-2-3-4-10-9	0
3	50-2-3-4-10-9	0
4	50-2-3-4-10-21	0
5	10-4-3-2-1	1
6	10-4-3-2-60	5
7	12-11-10-9	5
8	12-11-10-21	10
9	9-8-3-2-1	1
10	9-8-3-2-60	0
11	1-2-3-8-9	0
12	50-2-3-8-9	0
13	9-10-4-3-2-1	0
14	9-10-4-3-2-60	0
15	30-17-21	0
16	40-17-21	0
17	10-4-3-2	8
18	2-3-4-10	9
19	12-11-10	15
20	2-3-8	4
Starting Points		
21	2	14
22	10	10
23	17	5
24	21	29
Additional Links		
25	21-17	5
26	21-10	24
27	9-10-50	8
28	9-10-4	0
29	9-8-3	2
30	10-4-3	8
31	21-10-50	10
32	21-10-4	7
33	21-10-9	3
34	21-10-11	1

*See the map for the definition of which intersection corresponds to which number.

15 NB	30
15 SB	40
581 EB	50
581 WB	60

TOTAL RUNS : AM

Truck O-D Links Modified		
	Truck Path	Number
1	1-2-3-4-10-21	0
2	1-2-3-4-10-9	0
3	50-2-3-4-10-9	0
4	50-2-3-4-10-21	0
5	10-4-3-2-1	0
6	10-4-3-2-60	0
7	12-11-10-9	0
8	12-11-10-21	3
9	9-8-3-2-1	0
10	9-8-3-2-60	0
11	1-2-3-8-9	0
12	50-2-3-8-9	0
13	9-10-4-3-2-1	0
14	9-10-4-3-2-60	0
15	30-17-21	0
16	40-17-21	0
17	10-4-3-2	0
18	2-3-4-10	2
19	12-11-10	4
20	2-3-8	1
Starting Points		
20	2	3
21	10	0
22	17	2
23	21	4
Additional Links		
25	21-17	0
26	21-10	4
27	9-10-50	0
28	9-10-4	0
29	9-8-3	0
30	10-4-3	0
31	21-10-50	3
32	21-10-4	1
33	21-10-9	0
34	21-10-11	0

Truck O-D Links TOTAL		
	Truck Path	Number
1	1-2-3-4-10-21	1
2	1-2-3-4-10-9	0
3	50-2-3-4-10-9	0
4	50-2-3-4-10-21	0
5	10-4-3-2-1	1
6	10-4-3-2-60	5
7	12-11-10-9	5
8	12-11-10-21	13
9	9-8-3-2-1	1
10	9-8-3-2-60	0
11	1-2-3-8-9	0
12	50-2-3-8-9	0
13	9-10-4-3-2-1	0
14	9-10-4-3-2-60	0
15	30-17-21	0
16	40-17-21	0
17	10-4-3-2	8
18	2-3-4-10	11
19	12-11-10	19
20	2-3-8	5
Starting Points		
20	2	17
21	10	10
22	17	7
23	21	33
Additional Links		
25	21-17	5
26	21-10	28
27	9-10-50	8
28	9-10-4	0
29	9-8-3	2
30	10-4-3	8
31	21-10-50	13
32	21-10-4	8
33	21-10-9	3
34	21-10-11	1

Truck O-D Data

Truck O-D Links TOTAL		
	Link	Number
1	1-2	4
2	2-1	7
3	2-3	14
4	3-2	32
5	3-4	11
6	3-8	3
7	4-3	26
8	4-5	0
9	5-4	3
10	5-6	0
11	6-5	2
12	7-8	3
13	8-3	6
14	8-7	4
15	8-9	4
16	9-8	8
17	10-4	23
18	10-9	6
19	12-5	1
20	13-6	0
21	14-7	1
22	15-9	1
23	4-10	11
24	5-12	0
25	6-13	0
26	7-14	3
27	9-10	9
28	9-15	0
29	10-11	2
30	10-21	33
31	11-10	26
32	11-12	0
33	11-13	2
34	12-11	21
35	13-11	5
36	14-15	3
37	14-18	2
38	15-14	0
39	15-16	3
40	16-15	2
41	16-17	3
42	16-19	0
43	17-16	2
44	17-20	4
45	17-21	6
46	18-14	5
47	18-19	1
48	19-16	0
49	19-18	2
50	19-20	1
51	20-17	1
52	20-19	4
53	21-10	41
54	21-17	5
55	10-50	29
56	2-60	15
57	17-40	0
58	17-30	2
59	50-40	0
60	50-30	0

Truck O-D Links		
	Truck Path	Number
1	1-2-3-4-10-21	3
2	1-2-3-4-10-9	0
3	50-2-3-4-10-9	0
4	50-2-3-4-10-21	0
5	10-4-3-2-1	3
6	10-4-3-2-60	0
7	12-11-10-9	3
8	12-11-10-21	16
9	9-8-3-2-1	0
10	9-8-3-2-60	2
11	1-2-3-8-9	0
12	50-2-3-8-9	0
13	9-10-4-3-2-1	0
14	9-10-4-3-2-60	0
15	30-17-21	0
16	40-17-21	0
17	10-4-3-2	7
18	2-3-4-10	8
19	12-11-10	19
20	2-3-8	2
Starting Points		
21	2	10
22	10	8
23	17	7
24	21	40
Additional Links		
25	21-17	4
26	21-10	36
27	9-10-50	6
28	9-10-4	0
29	9-8-3	4
30	10-4-3	7
31	21-10-50	19
32	21-10-4	13
33	21-10-9	1
34	21-10-11	1

Truck O-D Links Modified		
	Truck Path	Number
1	1-2-3-4-10-21	0
2	1-2-3-4-10-9	0
3	50-2-3-4-10-9	0
4	50-2-3-4-10-21	0
5	10-4-3-2-1	0
6	10-4-3-2-60	0
7	12-11-10-9	1
8	12-11-10-21	1
9	9-8-3-2-1	0
10	9-8-3-2-60	0
11	1-2-3-8-9	0
12	50-2-3-8-9	0
13	9-10-4-3-2-1	0
14	9-10-4-3-2-60	0
15	30-17-21	0
16	40-17-21	0
17	10-4-3-2	0
18	2-3-4-10	0
19	12-11-10	2
20	2-3-8	0
Starting Points		
20	2	0
21	10	0
22	17	0
23	21	3
Additional Links		
25	21-17	0
26	21-10	3
27	9-10-50	0
28	9-10-4	0
29	9-8-3	0
30	10-4-3	0
31	21-10-50	1
32	21-10-4	1
33	21-10-9	0
34	21-10-11	1

Truck O-D Links TOTAL		
	Truck Path	Number
1	1-2-3-4-10-21	3
2	1-2-3-4-10-9	0
3	50-2-3-4-10-9	0
4	50-2-3-4-10-21	0
5	10-4-3-2-1	3
6	10-4-3-2-60	0
7	12-11-10-9	4
8	12-11-10-21	17
9	9-8-3-2-1	0
10	9-8-3-2-60	2
11	1-2-3-8-9	0
12	50-2-3-8-9	0
13	9-10-4-3-2-1	0
14	9-10-4-3-2-60	0
15	30-17-21	0
16	40-17-21	0
17	10-4-3-2	7
18	2-3-4-10	8
19	12-11-10	21
20	2-3-8	2
Starting Points		
20	2	10
21	10	8
22	17	7
23	21	43
Additional Links		
25	21-17	4
26	21-10	39
27	9-10-50	6
28	9-10-4	0
29	9-8-3	4
30	10-4-3	7
31	21-10-50	20
32	21-10-4	14
33	21-10-9	1
34	21-10-11	2

*See the map for the definition of which intersection corresponds to which number.

15 NB	30
15 SB	40
581 EB	50
581 WB	60

TOTAL RUNS : PM

MATCH TO NEXT SHEET

LEGEND

- Study Intersection Signalized
- Study Intersection Unsignalized

N

McCormick Taylor
Engineers & Planners
Since 1946

CLASH FIGURE #1 O-D Link Volumes

Location

Camp Hill/Lower Allen/Shiremanstown/ Hampden Townships, Cumberland County, PA

MATCH TO PREVIOUS SHEET

LEGEND

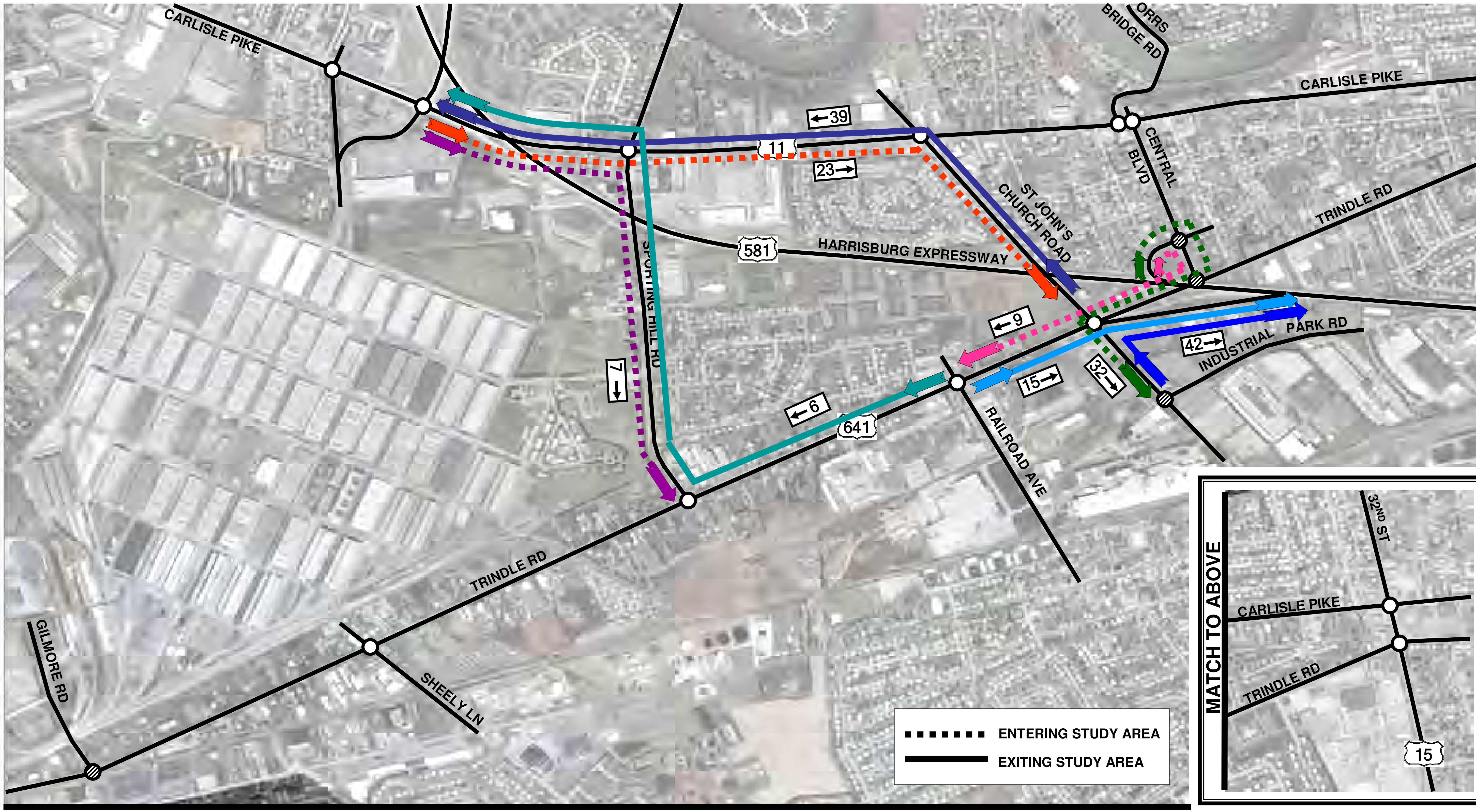
- Study Intersection Signalized
- Study Intersection Unsignalized

McCormick Taylor
Engineers & Planners
Since 1946

CLASH FIGURE #2 O-D Link Volumes

Location

Camp Hill/Lower Allen/Shiremanstown/ Hampden Townships, Cumberland County, PA



MATCH TO NEXT SHEET

LEGEND

- Study Intersection Signalized
- Study Intersection Unsignalized

McCormick Taylor
Engineers & Planners Since 1946

N

CLASH FIGURE #3 Truck O-D Paths

Location

Camp Hill/Lower Allen/Shiremanstown/ Hampden Townships, Cumberland County, PA

MATCH TO PREVIOUS SHEET

McCormick Taylor
Engineers & Planners
Since 1946

LEGEND

- Study Intersection Signalized
- Study Intersection Unsignalized

N

CLASH FIGURE #4 Truck OD Paths

Location

Camp Hill/Lower Allen/Shiremanstown/
Hampden Townships, Cumberland County, PA

Motorcarrier Interview

Company:	Carlisle Carriers	**Phone #**	717-691-8600
Contact:	Joe Feldish	**Interviewer:**	BPS

Notes:

One of the terminals is on Rt. 11, west of the Study Area. Trucks use the Carlisle Pike frequently when traveling into the study area or to 581.

~50% of their trucks travel EB on PA 581, exit onto the Carlisle Pike, and travel WB on the Carlisle Pike.

~15-20 trucks/day (as high as 40/day) travel EB on the Carlisle Pike to St. Johns Church Rd, and SB to Industrial Drive.

~5 trucks per day travel the same route to Trindle Rd, turn Rt onto Trindle and then Lt onto Railroad Ave.

~20 trucks/day travel EB on Simpson Ferry Rd to Wesley Drive, and then SB to US 15

A full interchange at PA 581 and Trindle Rd would be beneficial. Many of their trucks travel through the Study Area network to avoid the 15/581 Interchange when leaving Industrial Drive.

Motorcarrier Interview

Company:	ARLO Transportation, Inc.	**Phone #**	717-730-5212, ext. 5331
Contact:	Bob Buffington	**Interviewer:**	BPS

Notes:

Industrial Drive Building:
~35 trucks/day leaving Industrial Drive, generally traveling NB on St. John's Church Rd to the Carlisle Pike, WB on the Carlisle Pike to PA 581. Primarily shipping on I-81 South to Virginia.

Up to 100 trucks/day inbound to Industrial Rd, most follow the reverse of the route mentioned above.

Building near Intersection of Gettysburg Rd and Wesley Dr:
Up to 40 trucks/day traveling toward Carlisle by way of US 15 NB to PA 581 WB to I-81 SB. The 15/581 interchange is a dangerous movement for the drivers.

During busy hours, the route will change to US 15 SB to the Pennsylvania Turnpike.

Motorcarrier Interview

Company:	Arnold Logistics	**Phone #**	717-731-4374
Contact:		**Interviewer:**	BPS

Notes:

All traffic originates from the St. Johns Church Road area.

Overall outbound routes:

~5-10 trucks/day to PA Turnpike, Maryland, Virginia by way of US 15 SB

~50 trucks/day to the Reading area by way of PA 581 EB

~50 trucks/day to the Carlisle area by way of PA 581 EB to I-81 SB

Motorcarrier Interview

Company:	Ward Trucking	**Phone #**	717-761-1334
Contact:	Chuck Dunlap	**Interviewer:**	BPS

Notes:

Initiated contact several times. Was informed that the contact would call back.
Each time, received no call back.

Motorcarrier Interview

Company:	New Penn	**Phone #**	717-821-0003
Contact:	Tom Gerhold	**Interviewer:**	BPS
	Brenton Lavelle		

Notes:

No contact was made.

#1 CARLISLE PIKE AND VAN PATTEN DRIVE

LEGEND:

Proposed Sidewalk:	2020 Improvements:	Potential Hazardous Waste:
Existing Sidewalk:	2030 Improvements:	Proposed Signal:
Parcel Lines:	Potential Historic Resource:	Existing Signal:

IMPROVEMENTS:	NO-BUILD	BUILD
IMMEDIATE:	2007	
	B (B)	
SHORT TERM:	2020	
• Add third through lane on westbound Carlisle Pike • Add 200' right-turn lane on westbound Carlisle Pike • Improve Signal Timings and Coordination • Update pedestrian phase lengths to conform with MUTCD requirements • Modify/install crosswalks and curb-cut ramps to conform with ADA requirements	B (C)	B (B)
LONG TERM:	2030	
• Improve Signal Timings and Coordination	B (C)	B (B)

ENVIRONMENTAL/ RIGHT-OF-WAY ISSUES:

No environmental issues of note.

Right-of-way will be required from hotel and businesses along north side of US 11

DATE: $DATE$ FILE NAME: $FILE$

#2 CARLISLE PIKE AND GATEWAY DRIVE

LEGEND:

Proposed Sidewalk:	2020 Improvements:	Potential Hazardous Waste:
Existing Sidewalk:	2030 Improvements:	Proposed Signal:
Parcel Lines:	Potential Historic Resource:	Existing Signal:

IMPROVEMENTS:	NO-BUILD	BUILD
IMMEDIATE:	2007	
	D(F)	
SHORT TERM:	2020	
• Connect southbound right-turn lane from PA-581 Ramps to third westbound through lane on Carlisle Pike • Improve Signal Timings and Coordination • Update pedestrian phase lengths to conform with MUTCD requirements • Modify/install crosswalks and curb-cut ramps to conform with ADA requirements	D(F)	B(B)
LONG TERM:	2030	
• Add two additional channelized right-turn lanes on southbound PA-581 Ramps • Add a third through lane on westbound Carlisle Pike • Improve Signal Timings and Coordination	E(F)	B(B)

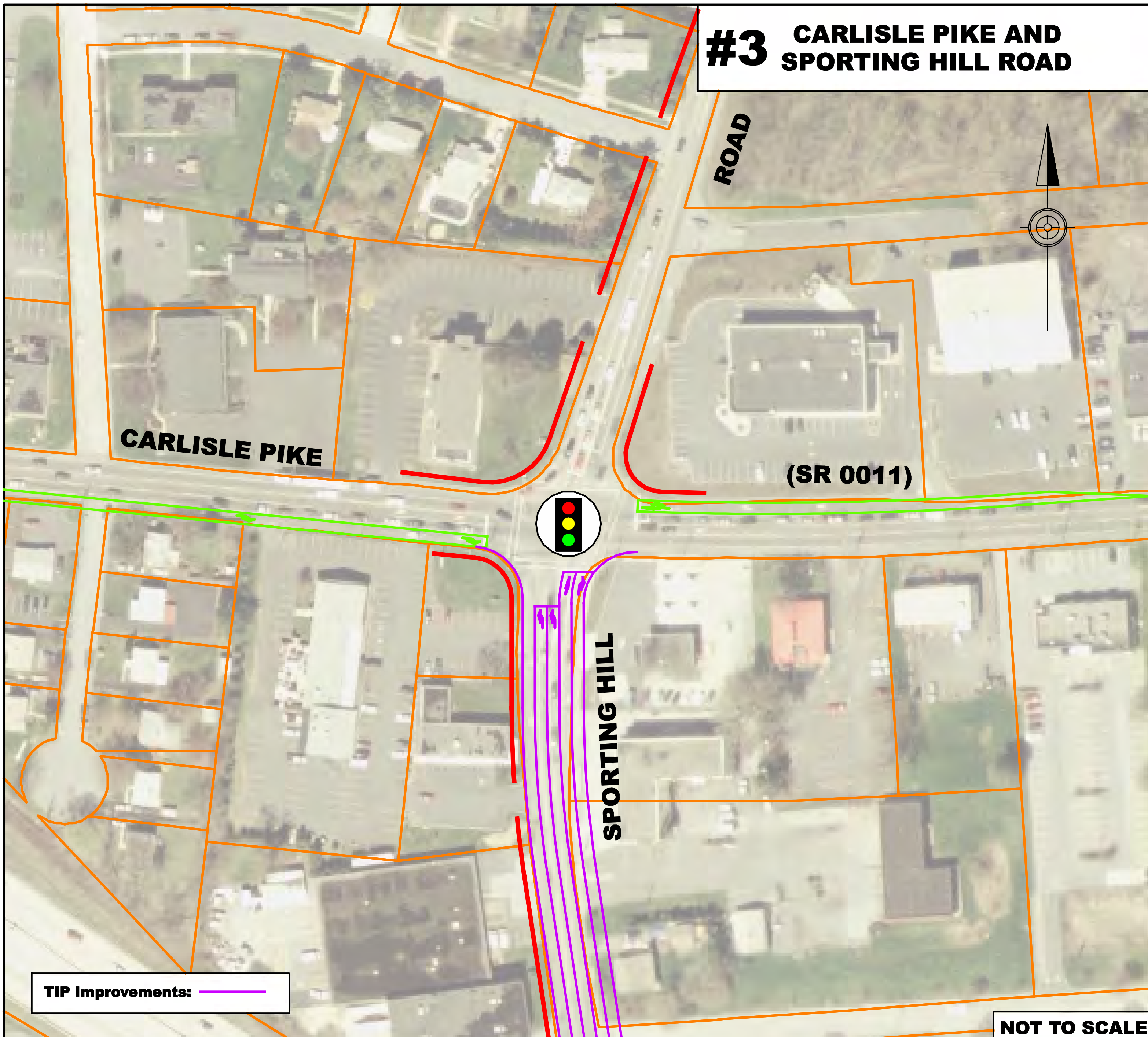
ENVIRONMENTAL/ RIGHT-OF-WAY ISSUES:

No significant environmental issues to note

Most work will be completed within existing ramp areas and within PennDOT right-of-way

DATE: $DATE$ FILE NAME:$FILE$

#3 CARLISLE PIKE AND SPORTING HILL ROAD



LEGEND:

- Proposed Sidewalk:
- Existing Sidewalk:
- Parcel Lines:
- 2020 Improvements:
- 2030 Improvements:
- Potential Historic Resource:
- Potential Hazardous Waste:
- Proposed Signal:
- Existing Signal:

IMPROVEMENTS:	NO-BUILD	BUILD
IMMEDIATE:	2007	
• Improve striping for the southbound left turn	E(E)	
SHORT TERM:	2020	
• Extend right-turn lane on eastbound Carlisle Pike to create two through lanes from Gateway Drive to Sporting Hill Road • Extend shared through/right-turn lane on westbound Carlisle Pike to 400' • Improve Signal Timings and Coordination • Update pedestrian phase lengths to conform with MUTCD requirements • Modify/install crosswalks and curb-cut ramps to conform with ADA requirements	B(D)	B(D)
LONG TERM:	2030	
• TIP Improvements: Widen Sporting Hill Road south of Carlisle Pike for 5-lane cross-section • Improve Signal Timings and Coordination • Assess feasibility of coordinating signal with adjacent signals along Sporting Hill Road, which were not a part of this study	B(F)	E(D)

ENVIRONMENTAL/ RIGHT-OF-WAY ISSUES:

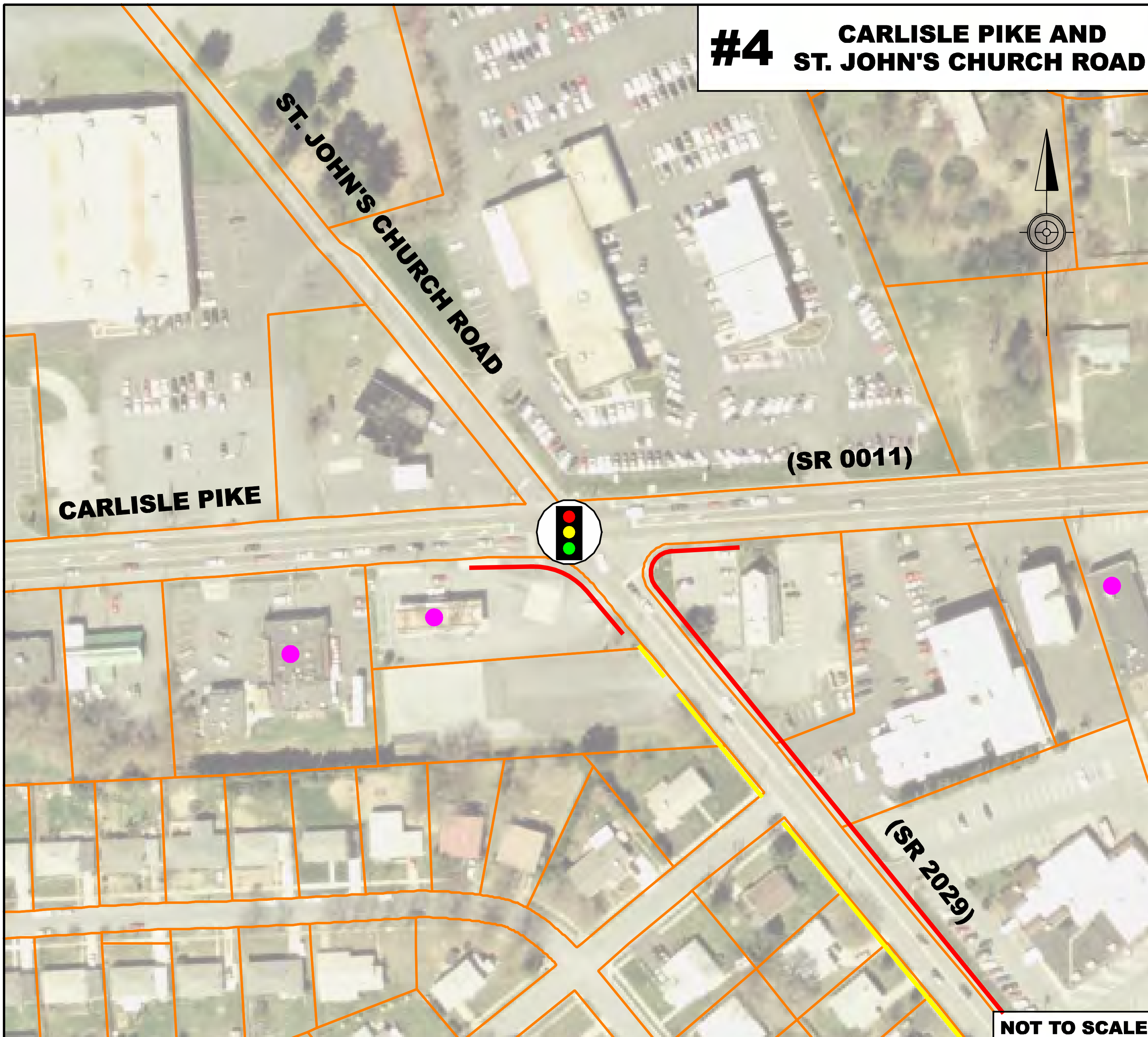
No significant environmental issues to note

Right-of-way will be required to complete TIP improvements along Sporting Hill Road. This may require some commercial impacts as well

Work along Carlisle Pike will be mostly within right-of-way but will require some driveway adjustments and modifications to commercial properties

DATE: $DATE$ FILE NAME: $FILE$

#4 CARLISLE PIKE AND ST. JOHN'S CHURCH ROAD



LEGEND:

- Proposed Sidewalk
- Existing Sidewalk
- Parcel Lines
- 2020 Improvements
- 2030 Improvements
- Potential Historic Resource
- Potential Hazardous Waste
- Proposed Signal
- Existing Signal

IMPROVEMENTS:	NO-BUILD	BUILD
IMMEDIATE:	2007	
• Re-delineate the continuous center left turn lane on the westbound approach to extend left turn lane to provide 290' of storage • Investigate extending the eastbound right turn lane to provide 295' of storage	C(C)	
SHORT TERM:	2020	
• Improve Signal Timings and Coordination • Update pedestrian phase lengths to conform with MUTCD requirements • Modify/install crosswalks and curb-cut ramps to conform with ADA requirements	C(C)	C(C)
LONG TERM:	2030	
• Improve Signal Timings and Coordination	C(C)	C(C)

ENVIRONMENTAL/ RIGHT-OF-WAY ISSUES:

Potential hazardous waste site
Exxon Gas Station

No significant right-of-way impacts for these improvements

DATE: $DATE$ FILE NAME: $FILE$

#5 CARLISLE PIKE, ORR'S BRIDGE ROAD AND CENTRAL BOULEVARD

LEGEND:

- Proposed Sidewalk:
- Existing Sidewalk:
- Parcel Lines:
- 2020 Improvements:
- 2030 Improvements:
- Potential Historic Resource:
- Potential Hazardous Waste:
- Proposed Signal:
- Existing Signal:

IMPROVEMENTS:

IMMEDIATE:

- Re-delineate the continuous center left turn lane on the eastbound approach to extend the left turn lane to provide 360' of storage
- Improve delineation of westbound right turn lanes
- Extend the northbound left turn lane to provide 300' of storage and install an overhead lane control sign

SHORT TERM:

- Develop the eastbound right-turn lane for Central Blvd 150' west of the Orr's Bridge Road intersection with Carlisle Pike
- Lengthen right-turn lane on southbound Orr's Bridge Road to 300'
- Lengthen right-turn lane on westbound Carlisle Pike at Central Blvd to approx. 380'
- Improve Signal Timings and Coordination
- Update pedestrian phase lengths to conform with MUTCD requirements
- Modify/install crosswalks and curb-cut ramps to conform with ADA requirements

LONG TERM:

- Improve Signal Timings and Coordination

	NO-BUILD	BUILD
2007	C(C)	
2020	C(D)	C(D)
2030	C(D)	C(D)

ENVIRONMENTAL/ RIGHT-OF-WAY ISSUES:

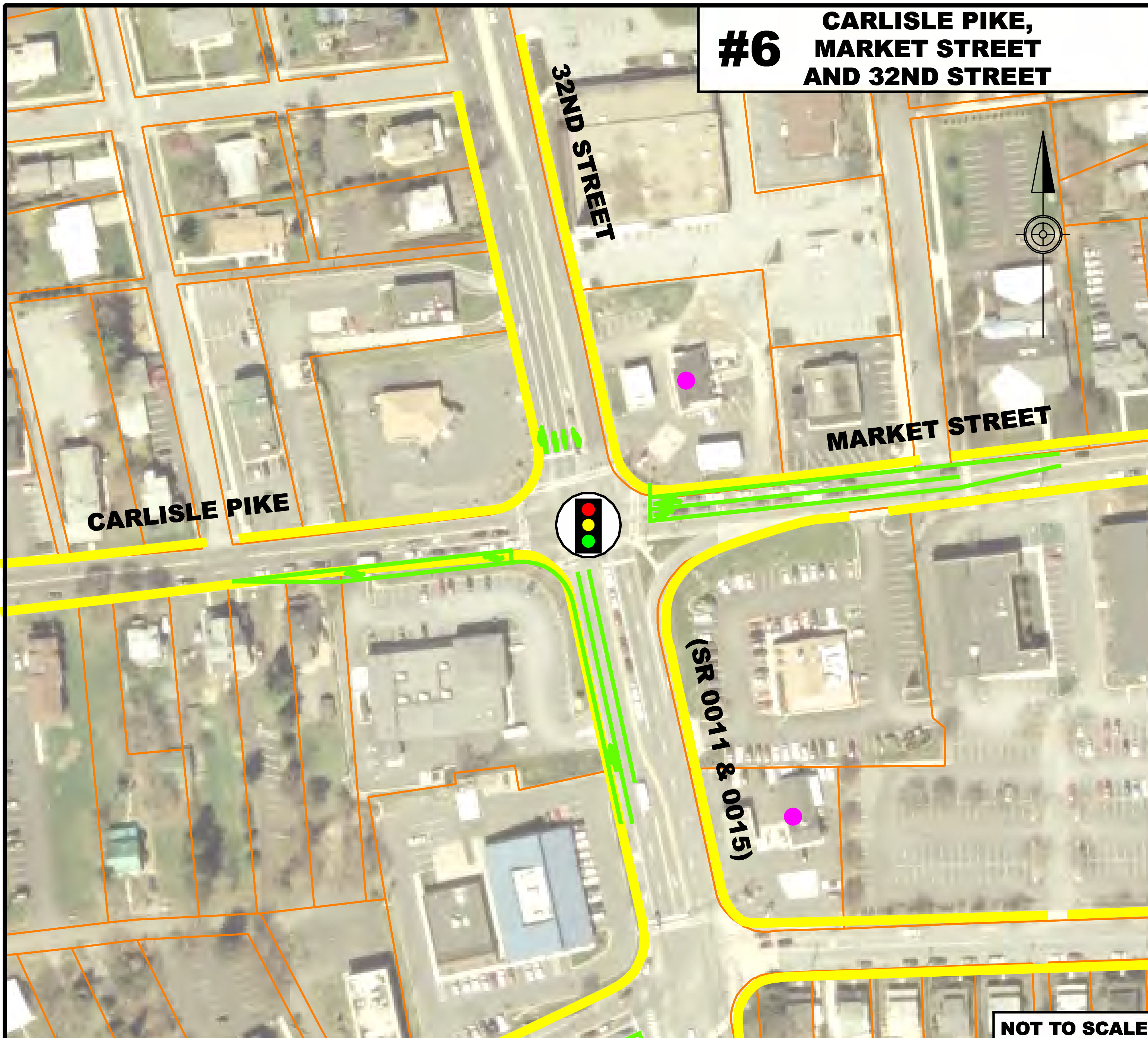
Potential hazardous waste- Hess Gas

Potential historic resource- Andrew Moore House

Right-of-way would be required for the 2020 improvements.
Right-of-way along the north side of US 11 would require commercial driveway adjustments. Right-of-way on the south side of US 11 would require commercial and environmental interaction.

DATE: $DATE$ FILE NAME: $FILE$

#6 CARLISLE PIKE, MARKET STREET AND 32ND STREET



LEGEND:

Proposed Sidewalk:	2020 Improvements:	Potential Hazardous Waste:
Existing Sidewalk:	2030 Improvements:	Proposed Signal:
Parcel Lines:	Potential Historic Resource:	Existing Signal:

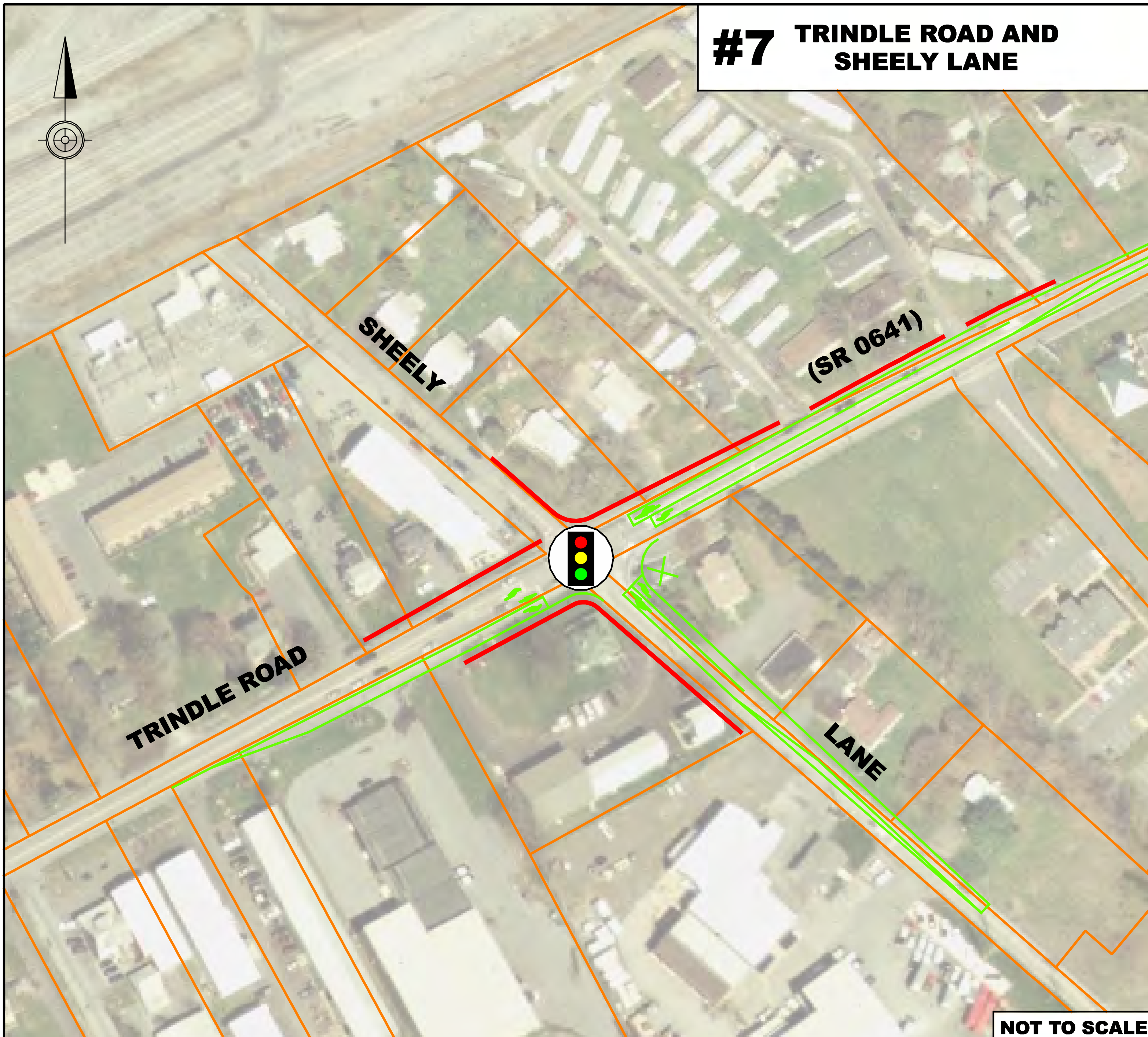
IMPROVEMENTS:	NO-BUILD	BUILD
IMMEDIATE:	2007	
	D(F)	
SHORT TERM:	2020	
• Create a third through lane on southbound 32nd Street (US 15) • Add a 170' exclusive right-turn lane on eastbound Carlisle Pike • Lengthen the left-turn lane on westbound Market Street to 300' • Improve Signal Timings and Coordination • Update pedestrian phase lengths to conform with MUTCD requirements • Modify/install crosswalks and curb-cut ramps to conform with ADA requirements	E(F)	F(F)
LONG TERM:	2030	
• Improve Signal Timings and Coordination	F(F)	F(F)

ENVIRONMENTAL/ RIGHT-OF-WAY ISSUES:

A Plus Sunoco Gas

Right-of-way would be required from a commercial property and a commercial driveway adjustment on the south side of the Carlisle Pike

#7 TRINDLE ROAD AND SHEELY LANE



LEGEND:

Proposed Sidewalk:	2020 Improvements:	Potential Hazardous Waste:
Existing Sidewalk:	2030 Improvements:	Proposed Signal:
Parcel Lines:	Potential Historic Resource:	Existing Signal:

IMPROVEMENTS:

IMMEDIATE:

SHORT TERM:

- Add a 150' shared through/left-turn lane on northbound Sheely Lane
- Add a 265' exclusive right-turn lane on eastbound Trindle Road
- Lengthen the left-turn lane on westbound Trindle Road to approx. 400'
- Improve Signal Timings and Coordination
- Update pedestrian phase lengths to conform with MUTCD requirements
- Modify/install crosswalks and curb-cut ramps to conform with ADA requirements

LONG TERM:

- Improve Signal Timings and Coordination

	NO-BUILD	BUILD
2007	C(D)	
2020	F(E)	C(B)
2030	F(F)	C(C)

ENVIRONMENTAL/ RIGHT-OF-WAY ISSUES:

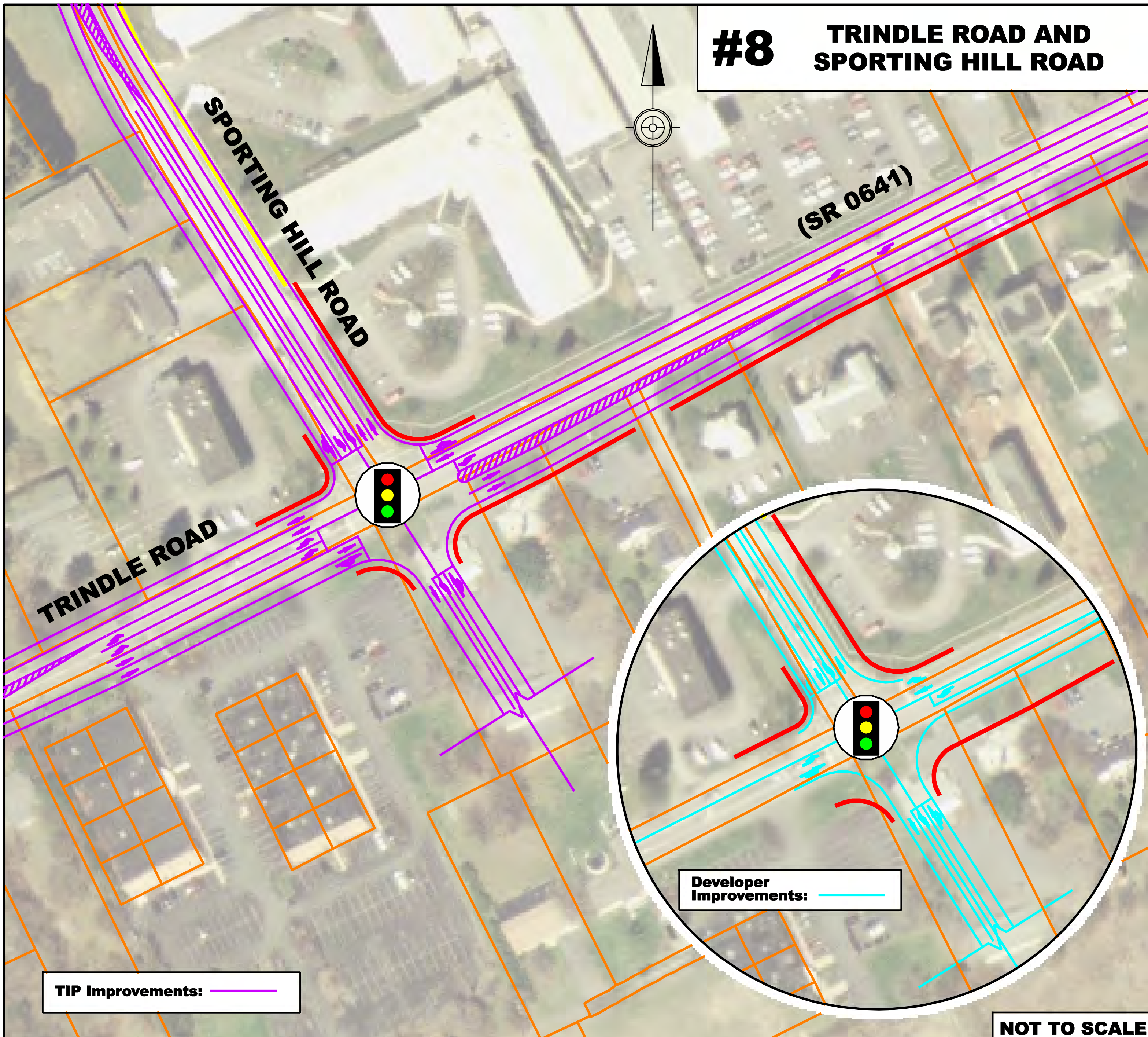
Acquire Property on Southeast Quadrant

Driveway modifications and minor right-of-way will be required on the north side of Trindle Road

Driveway modifications and some commercial property will be required on the southwest quadrant

DATE: $DATE$ FILE NAME: $FILE$

#8 TRINDLE ROAD AND SPORTING HILL ROAD



LEGEND:

- Proposed Sidewalk:
- Existing Sidewalk:
- Parcel Lines:
- 2020 Improvements:
- 2030 Improvements:
- Potential Historic Resource:
- Potential Hazardous Waste:
- Proposed Signal:
- Existing Signal:

IMPROVEMENTS:	NO-BUILD	BUILD
IMMEDIATE:	2007	
	B(C)	X
SHORT TERM:	2020	
• Developer Improvements: Add a fourth, northbound leg to the intersection to provide access to planned development parcel south of Trindle Road • Improve Signal Timings and Coordination • Evaluate existing signal coordination and update coordination plans as necessary	C(C)	D(E)
LONG TERM:	2030	
• TIP Improvements: Widen Trindle Road approaches for 5-Lane cross-section • Improve Signal Timings and Coordination	C(C)	D(D)

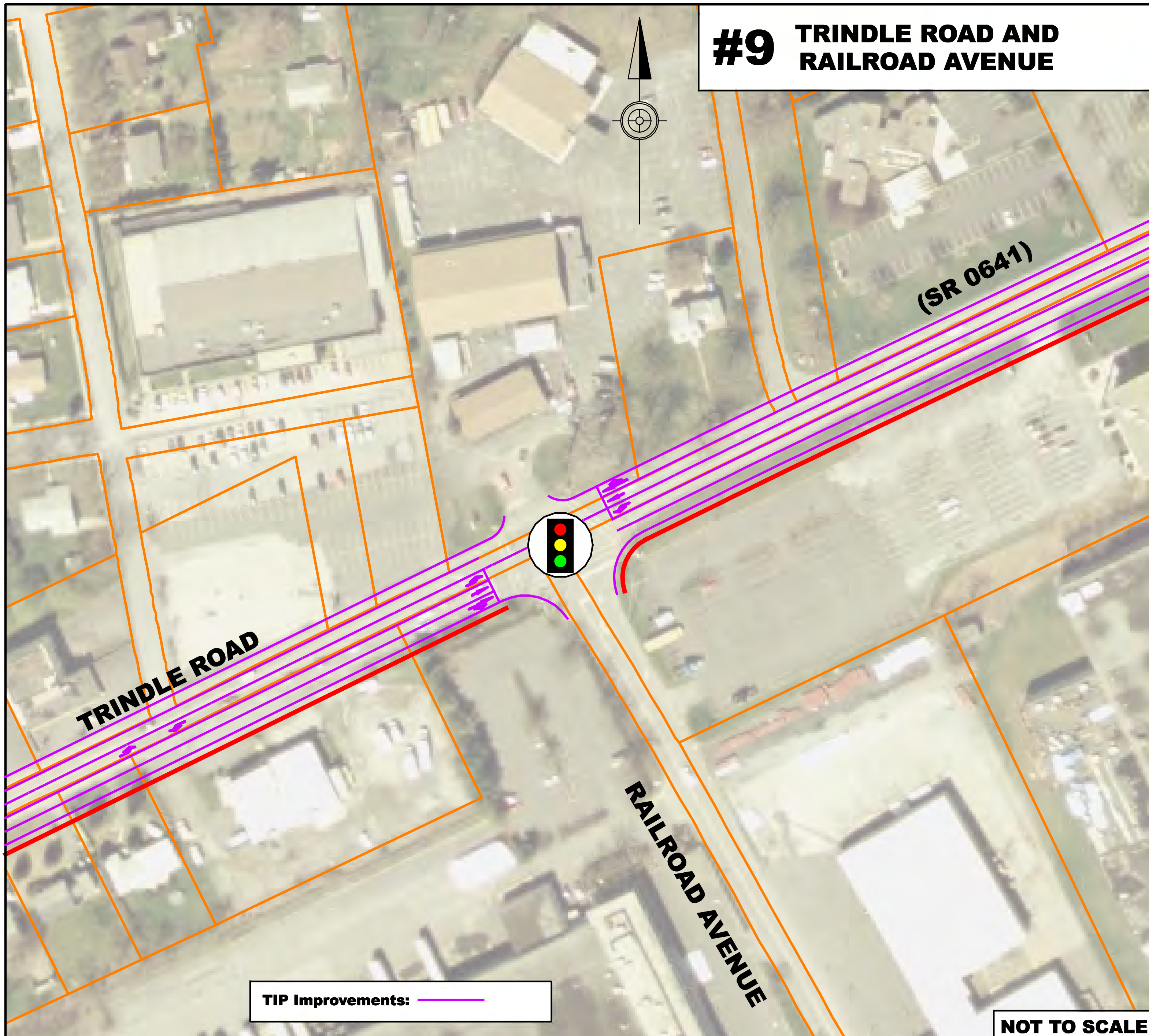
ENVIRONMENTAL/ RIGHT-OF-WAY ISSUES:

No environmental issues of note

Significant right-of-way will be required for both the TIP improvements and the developer improvements.

DATE: $DATE$ FILE NAME: $FILE$

#9 TRINDLE ROAD AND RAILROAD AVENUE

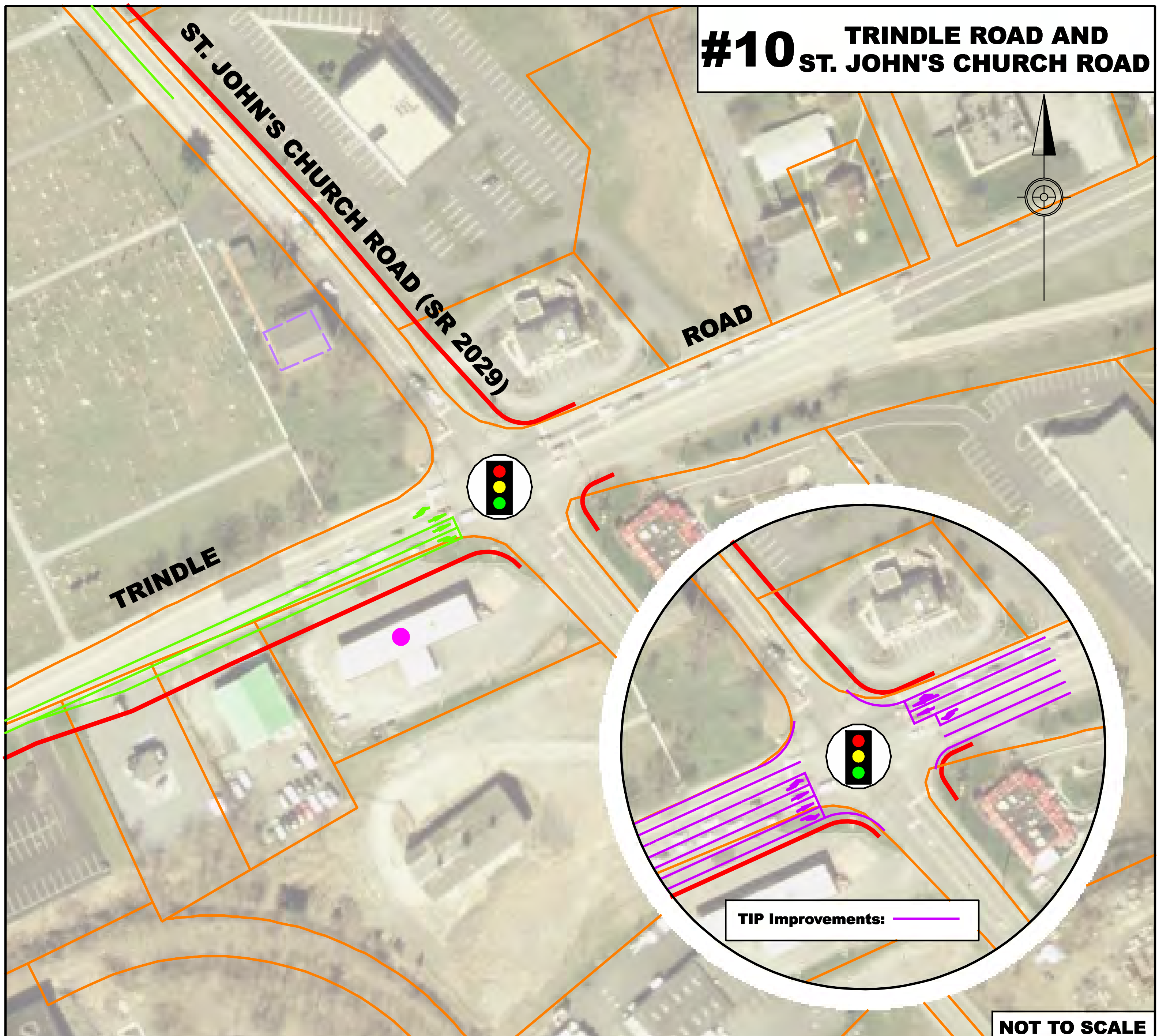


LEGEND:

Proposed Sidewalk:	2020 Improvements:	Potential Hazardous Waste:
Existing Sidewalk:	2030 Improvements:	Proposed Signal:
Parcel Lines:	Potential Historic Resource:	Existing Signal:

IMPROVEMENTS:	NO-BUILD	BUILD	ENVIRONMENTAL/ RIGHT-OF-WAY ISSUES:
IMMEDIATE:	2007		No environmental issues of note TIP widening will require significant right-of-way and driveway modifications
	B(B)		
SHORT TERM:	2020		
• Improve Signal Timings and Coordination • Update pedestrian phase lengths to conform with MUTCD requirements • Modify/install crosswalks and curb-cut ramps to conform with ADA requirements	C(B)	C(B)	
LONG TERM:	2030		
• TIP Improvements: Widen Trindle Road approaches for 5-Lane cross-section • Improve Signal Timings and Coordination	C(B)	C(C)	

#10 TRINDLE ROAD AND ST. JOHN'S CHURCH ROAD



LEGEND:

- Proposed Sidewalk:
- Existing Sidewalk:
- Parcel Lines:
- 2020 Improvements:
- 2030 Improvements:
- Potential Historic Resource:
- Potential Hazardous Waste:
- Proposed Signal:
- Existing Signal:

IMPROVEMENTS:	NO-BUILD	BUILD
IMMEDIATE:	2007	
• Re-stripe the northbound right turn lane to provide 230' of storage	C(C)	
SHORT TERM:	2020	
• Lengthen the right-turn lane on eastbound Trindle Road to 365' • Lengthen the through lane taper on eastbound Trindle Road • Improve Signal Timings and Coordination • Update pedestrian phase lengths to conform with MUTCD requirements • Modify/install crosswalks and curb-cut ramps to conform with ADA requirements	E(C)	E(D)
LONG TERM:	2030	
• TIP Improvements: Widen Trindle Road approaches for 5-Lane cross-section • Improve Signal Timings and Coordination	F(D)	F(D)

ENVIRONMENTAL/ RIGHT-OF-WAY ISSUES:

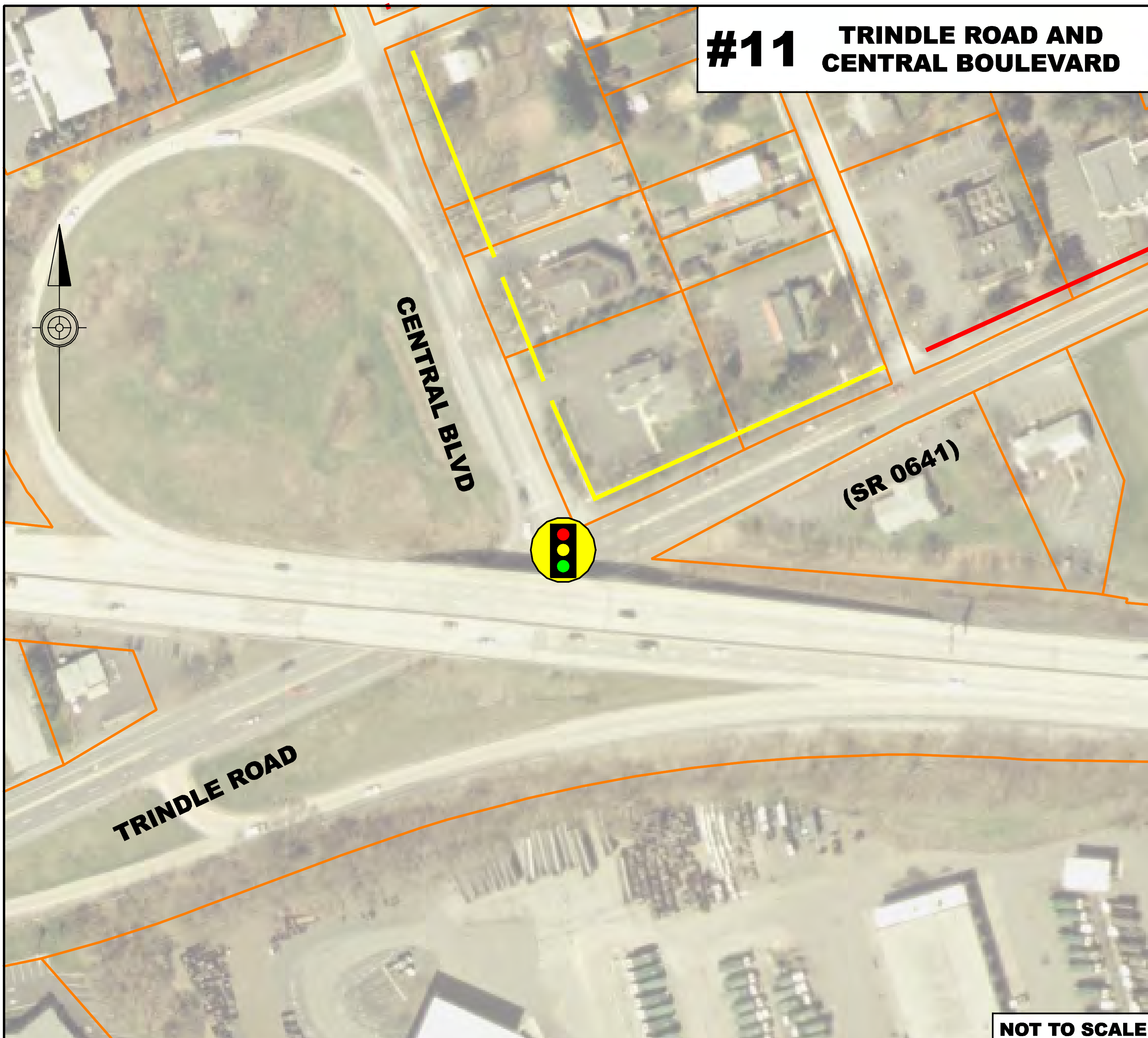
Potential hazardous waste site - Sunoco Gas

National Register listed Resource- Peace Church

2020 Improvements will require driveway adjustments and some commercial property on south side of Trindle Road

DATE: $DATE$ FILE NAME: $FILE$

#11 TRINDLE ROAD AND CENTRAL BOULEVARD



LEGEND:

- Proposed Sidewalk: (red line)
- Existing Sidewalk: (yellow line)
- Parcel Lines: (orange line)
- 2020 Improvements: (green line)
- 2030 Improvements: (blue line)
- Potential Historic Resource: (purple dashed line)
- Potential Hazardous Waste: (magenta dot)
- Proposed Signal:
- Existing Signal:

IMPROVEMENTS:	NO-BUILD	BUILD
IMMEDIATE:	2007	
	D(F)	
SHORT TERM:	2020	
• Install three-phase traffic signal • Improve Signal Timings and Coordination • Program pedestrian phase lengths to conform with MUTCD requirements • Install crosswalks and curb-cut ramps to conform with ADA requirements	F(F)	B(B)
LONG TERM:	2030	
• Improve Signal Timings and Coordination	F(F)	B(C)

ENVIRONMENTAL/ RIGHT-OF-WAY ISSUES:

No environmental issues of note

Signal work would be mostly within existing right-of-way. Minor encroachments with signal hardware.

#12 CENTRAL BOULEVARD, 581 RAMP AND CHURCH STREET

LEGEND:

- Proposed Sidewalk:
- Existing Sidewalk:
- Parcel Lines:
- 2020 Improvements:
- 2030 Improvements:
- Potential Historic Resource:
- Potential Hazardous Waste:
- Proposed Signal:
- Existing Signal:

IMPROVEMENTS:	NO-BUILD	BUILD
IMMEDIATE:	2007	
	F(D)	
SHORT TERM:	2020	
• Install two-phase traffic signal • Improve Signal Timings and Coordination • Program pedestrian phase lengths to conform with MUTCD requirements • Install crosswalks and curb-cut ramps to conform with ADA requirements	F(F)	C(B)
LONG TERM:	2030	
• Improve Signal Timings and Coordination	F(F)	D(B)

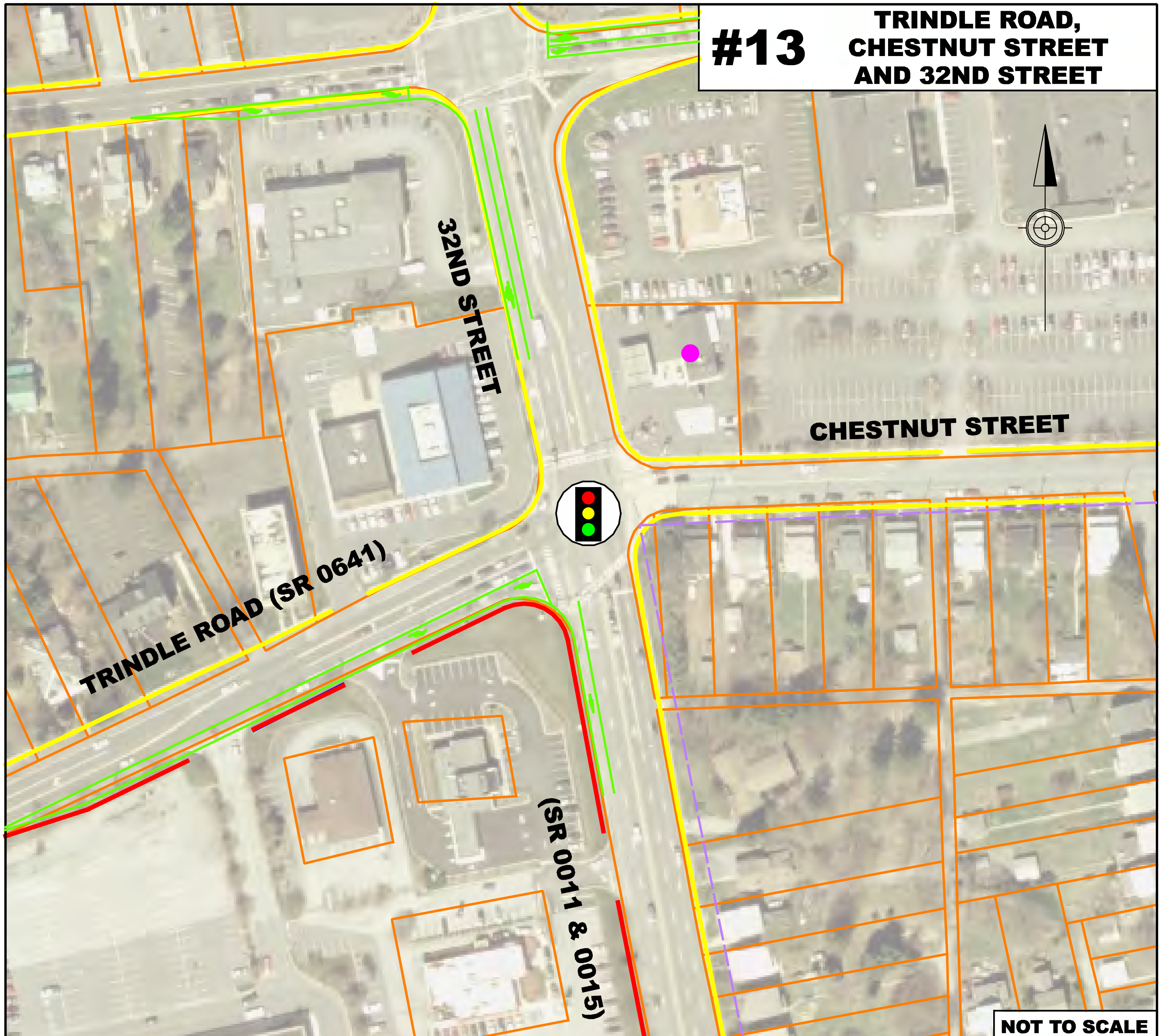
ENVIRONMENTAL/ RIGHT-OF-WAY ISSUES:

No environmental issues of note

Signal work would be mostly within existing right-of-way. Minor encroachments with signal hardware.

DATE: $DATE$ FILE NAME: $FILE$

#13 TRINDLE ROAD, CHESTNUT STREET AND 32ND STREET



LEGEND:

- Proposed Sidewalk:
- Existing Sidewalk:
- Parcel Lines:
- 2020 Improvements:
- 2030 Improvements:
- Potential Historic Resource:
- Potential Hazardous Waste:
- Proposed Signal:
- Existing Signal:

IMPROVEMENTS:	NO-BUILD	BUILD
IMMEDIATE:	2007	
	F(F)	
SHORT TERM:	2020	
• Create a third through lane on southbound 32nd Street • Widen to south of Trindle/Chestnut to continue third through lane to PA-581 interchange • Lengthen the right-turn lane on eastbound Trindle Road to 500' • Improve Signal Timings and Coordination 32ND STREET PEDESTRIAN OPTION A: • Maintain exclusive pedestrian phases 32ND STREET PEDESTRIAN OPTION B: • Replace exclusive pedestrian phases with semi-exclusive pedestrian phasing • Modify crosswalk configurations	F(F)	F(F)
LONG TERM:	2030	
• Improve Signal Timings and Coordination	F(F)	F(F)

ENVIRONMENTAL/ RIGHT-OF-WAY ISSUES:

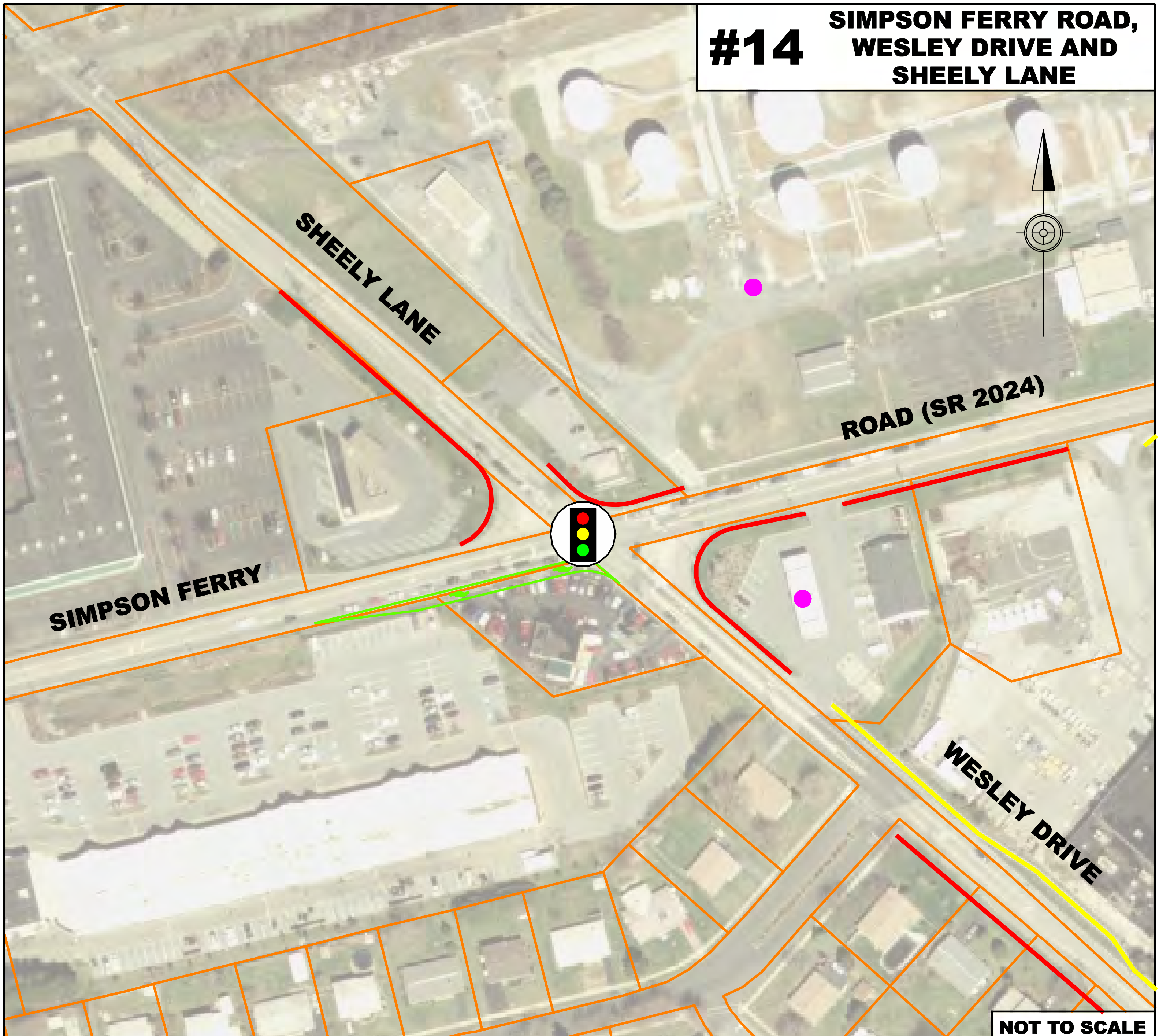
Potential hazardous waste - Giant Gas

Potential historic resource - Residential Development

Minor right-of-way impacts and driveway modifications to the properties on the southwest quadrant of the intersection

DATE: $DATE$ FILE NAME: $FILE$

#14 SIMPSON FERRY ROAD, WESLEY DRIVE AND SHEELY LANE



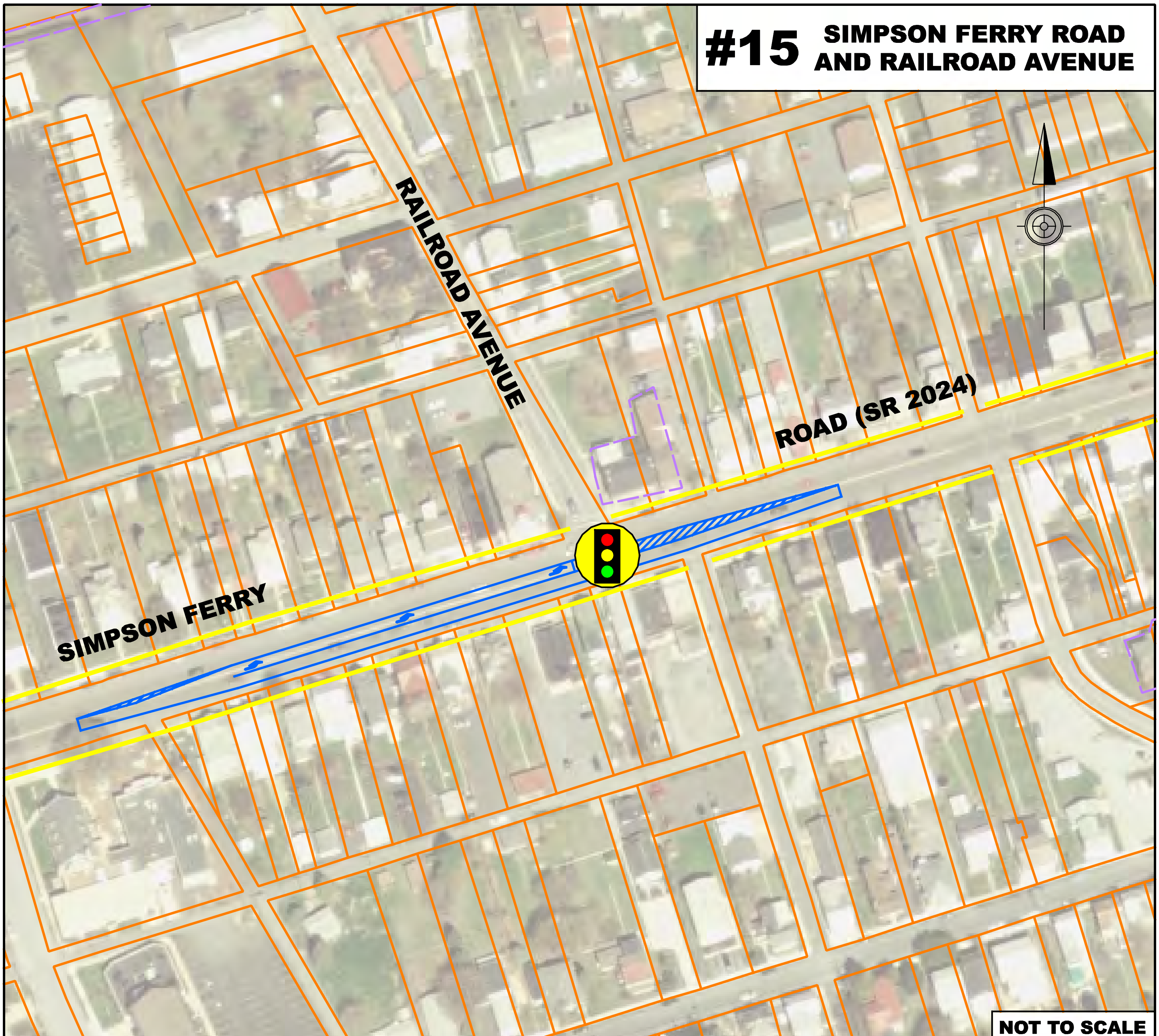
LEGEND:

- Proposed Sidewalk:
- Existing Sidewalk:
- Parcel Lines:
- 2020 Improvements:
- 2030 Improvements:
- Potential Historic Resource:
- Potential Hazardous Waste:
- Proposed Signal:
- Existing Signal:

IMPROVEMENTS:	NO-BUILD	BUILD	ENVIRONMENTAL/ RIGHT-OF-WAY ISSUES:
IMMEDIATE:	2007		
	D(D)		Potential hazardous waste - Turkey Hill Gas & Sun Company Bulk Storage
SHORT TERM:	2020		
• Add 150' right-turn lane on eastbound Simpson Ferry Road • Improve Signal Timings and Coordination • Update pedestrian phase lengths to conform with MUTCD requirements • Modify/install crosswalks and curb-cut ramps to conform with ADA requirements	E(E)	C(D)	Right-of-way will be required from property on southwest quadrant of the intersection. Parking and driveway adjustments may be problematic
LONG TERM:	2030		
• Improve Signal Timings and Coordination	E(E)	D(E)	

DATE: $DATE$ FILE NAME:$FILE$

#15 SIMPSON FERRY ROAD AND RAILROAD AVENUE



LEGEND:

Proposed Sidewalk:	2020 Improvements:	Potential Hazardous Waste:
Existing Sidewalk:	2030 Improvements:	Proposed Signal:
Parcel Lines:	Potential Historic Resource:	Existing Signal:

IMPROVEMENTS:	NO-BUILD	BUILD
IMMEDIATE:	2007	
	F(F)	
SHORT TERM:	2020	
• Install a two-phase traffic signal • Improve Signal Timings and Coordination • Program pedestrian phase lengths to conform with MUTCD requirements • Install crosswalks and curb-cut ramps to conform with ADA requirements	F(F)	C(B)
LONG TERM:	2030	
• Add 350' left-turn lane on eastbound Simpson Ferry Road • Improve Signal Timings and Coordination	F(F)	B(B)

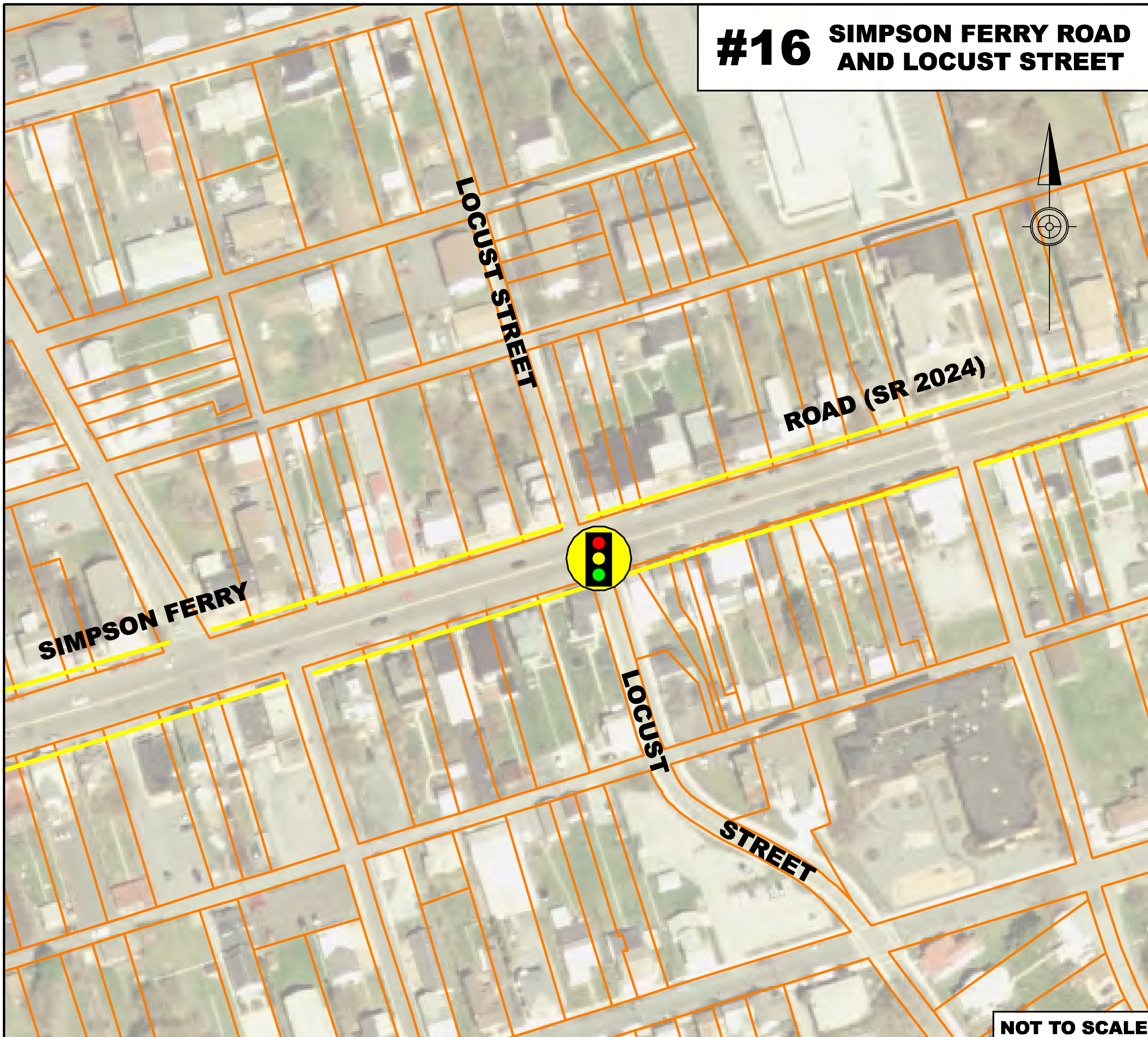
ENVIRONMENTAL/ RIGHT-OF-WAY ISSUES:

Potential Historic Resource - Shiremanstown Borough Hall

2030 widening can most likely be completed within existing right-of-way. Some driveway adjustments may be required.

DATE: $DATE$ FILE NAME: $FILE$

#16 SIMPSON FERRY ROAD AND LOCUST STREET



LEGEND:

Proposed Sidewalk:	2020 Improvements:	Potential Hazardous Waste:
Existing Sidewalk:	2030 Improvements:	Proposed Signal:
Parcel Lines:	Potential Historic Resource:	Existing Signal:

IMPROVEMENTS:	NO-BUILD	BUILD
IMMEDIATE:	2007	
	F(F)	
SHORT TERM:	2020	
• Install a two-phase traffic signal • Improve Signal Timings and Coordination • Program pedestrian phase lengths to conform with MUTCD requirements • Install crosswalks and curb-cut ramps to conform with ADA requirements	F(F)	B(A)
LONG TERM:	2030	
• Improve Signal Timings and Coordination	F(F)	B(B)

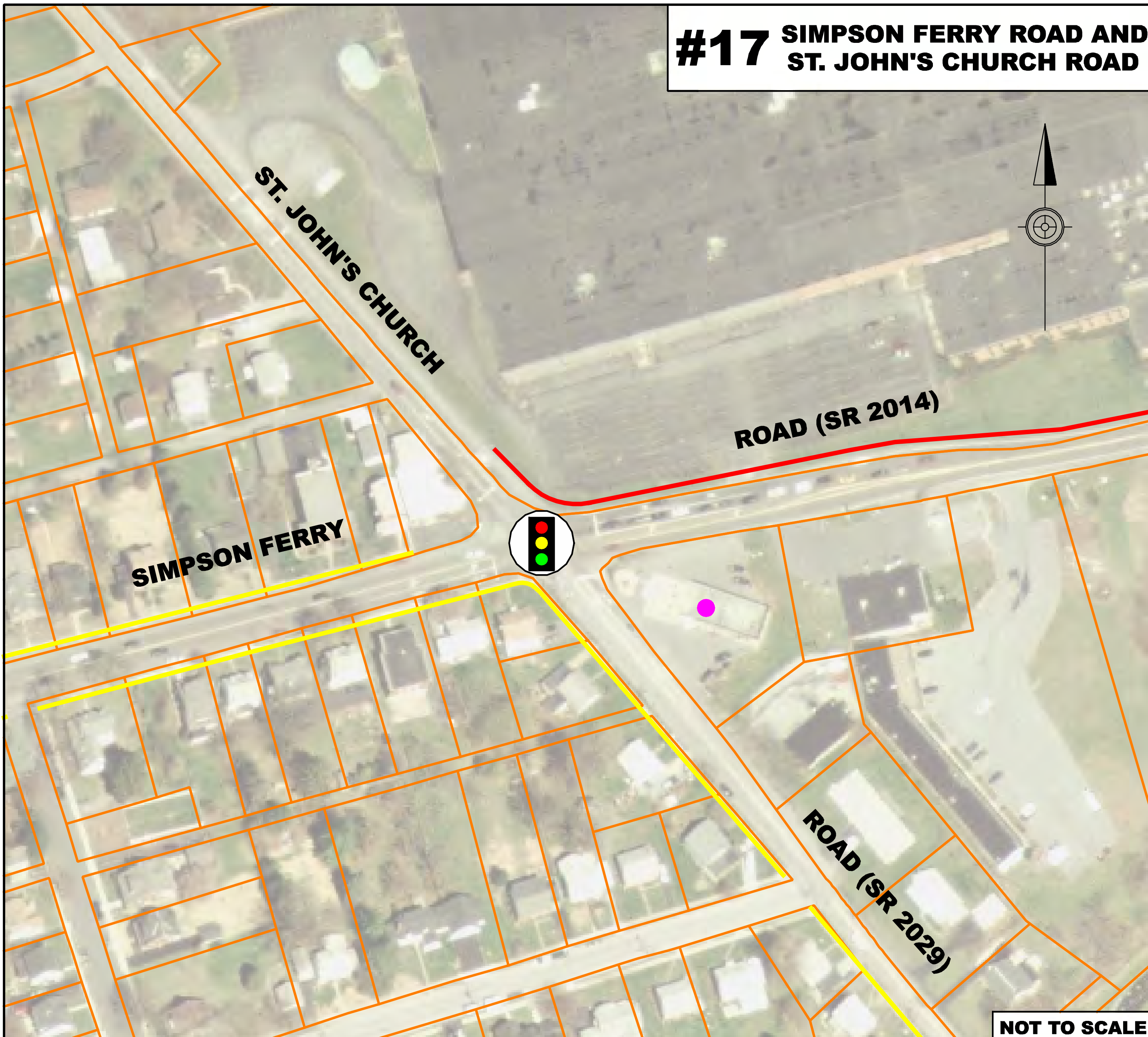
ENVIRONMENTAL/ RIGHT-OF-WAY ISSUES:

No significant environmental issues of note

Right-of-way needs would be limited to that required to install signal hardware. No significant issues expected.

DATE: $DATE$ FILE NAME:$FILE$

#17 SIMPSON FERRY ROAD AND ST. JOHN'S CHURCH ROAD

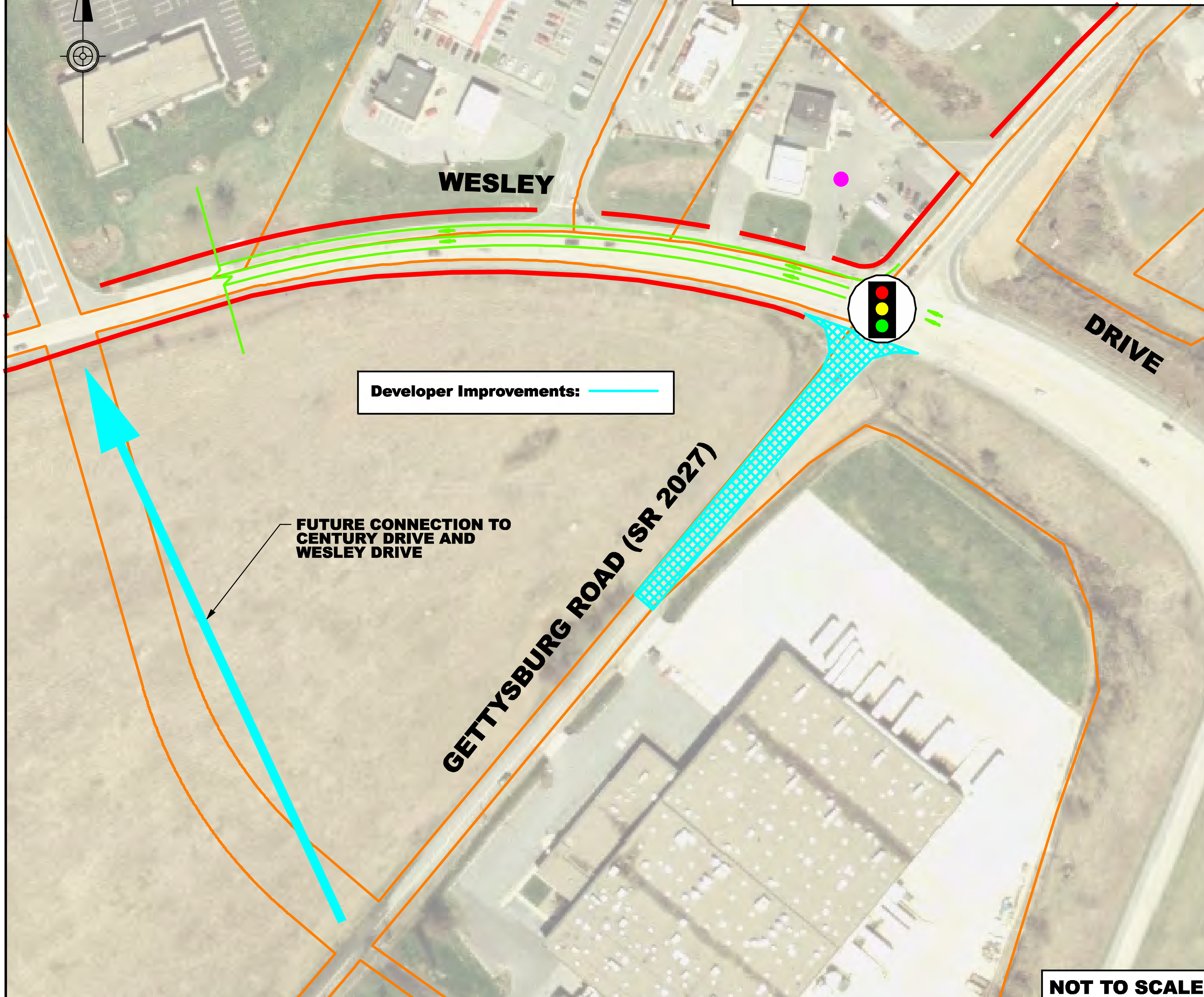


LEGEND:

Proposed Sidewalk:	2020 Improvements:	Potential Hazardous Waste:
Existing Sidewalk:	2030 Improvements:	Proposed Signal:
Parcel Lines:	Potential Historic Resource:	Existing Signal:

IMPROVEMENTS:	NO-BUILD	BUILD	ENVIRONMENTAL/ RIGHT-OF-WAY ISSUES:
IMMEDIATE:	2007		
	C(C)		Potential hazardous waste - BP Gas
SHORT TERM:	2020		No right-of-way anticipated
• 15 / 581 Improvement Project: Widen westbound Simpson Ferry Road east of St. John's Church Road • Improve Signal Timings and Coordination • Update pedestrian phase lengths to conform with MUTCD requirements • Modify/install crosswalks and curb-cut ramps to conform with ADA requirements	C(C)	C(C)	
LONG TERM:	2030		
• Improve Signal Timings and Coordination	D(D)	D(D)	

#18 GETTYSBURG ROAD AND WESLEY DRIVE

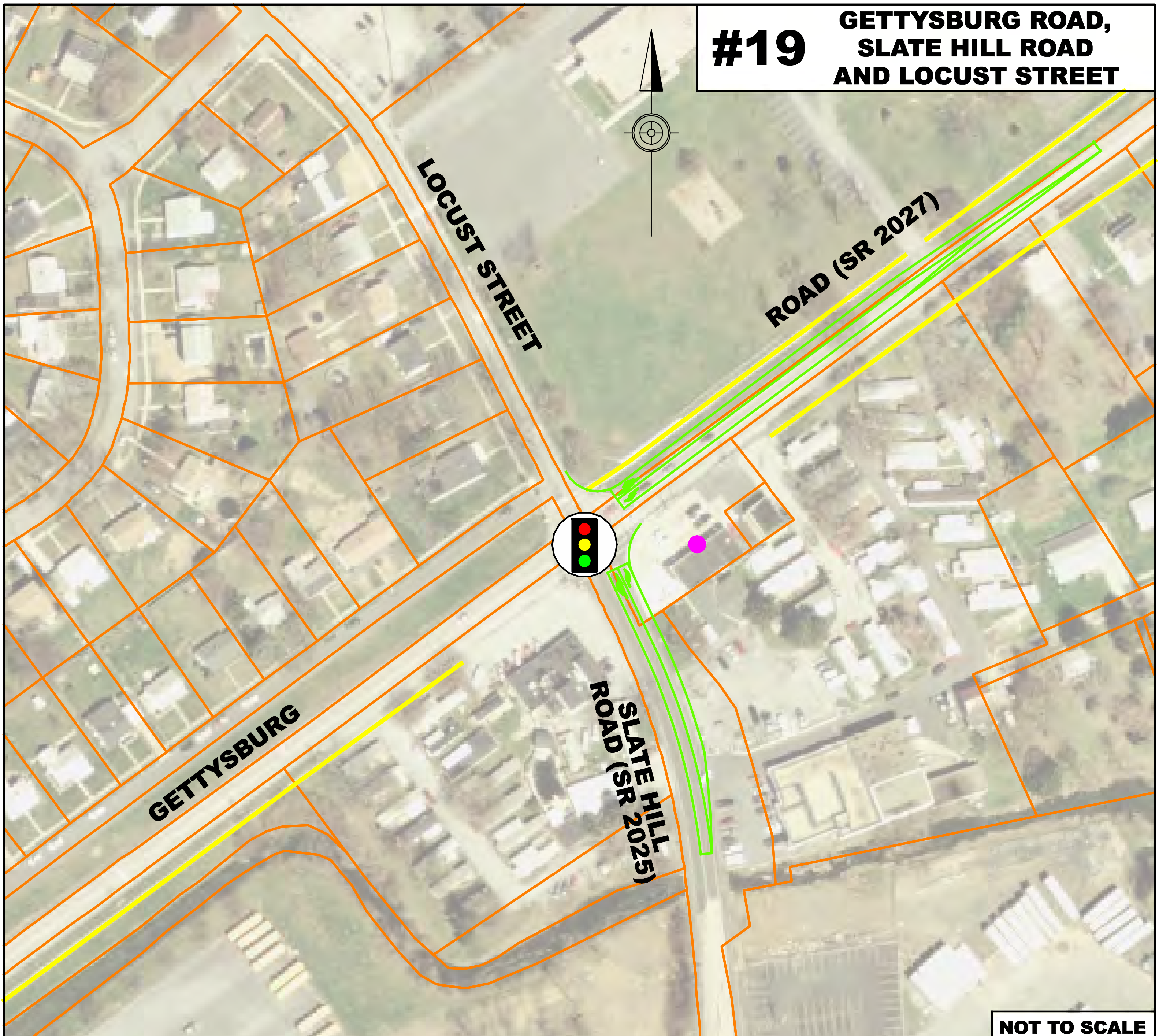


LEGEND:

Proposed Sidewalk:	2020 Improvements:	Potential Hazardous Waste:
Existing Sidewalk:	2030 Improvements:	Proposed Signal:
Parcel Lines:	Potential Historic Resource:	Existing Signal:

IMPROVEMENTS:	NO-BUILD	BUILD	ENVIRONMENTAL/ RIGHT-OF-WAY ISSUES:
IMMEDIATE:	2007		
	C(C)	X	Potential hazardous waste - BP Gas
SHORT TERM:	2020		
• Developer Improvements: Eliminate eastbound Gettysburg Road approach at Wesley Drive to create a T-intersection realign Gettysburg Rd with Century Drive • In conjunction with developer improvements create two through lanes on northbound Wesley Dr and change designation of Wesley Dr westbound approach • Improve Signal Timings and Coordination • Update pedestrian phase lengths to conform with MUTCD requirements • Modify/install crosswalks and curb-cut ramps to conform with ADA requirements	F(D)	B(B)	Right-of-way would be required for widening of Wesley Drive and driveway modification to existing shopping center.
LONG TERM:	2030		
• Improve Signal Timings and Coordination	F(F)	C(C)	

#19 GETTYSBURG ROAD, SLATE HILL ROAD AND LOCUST STREET



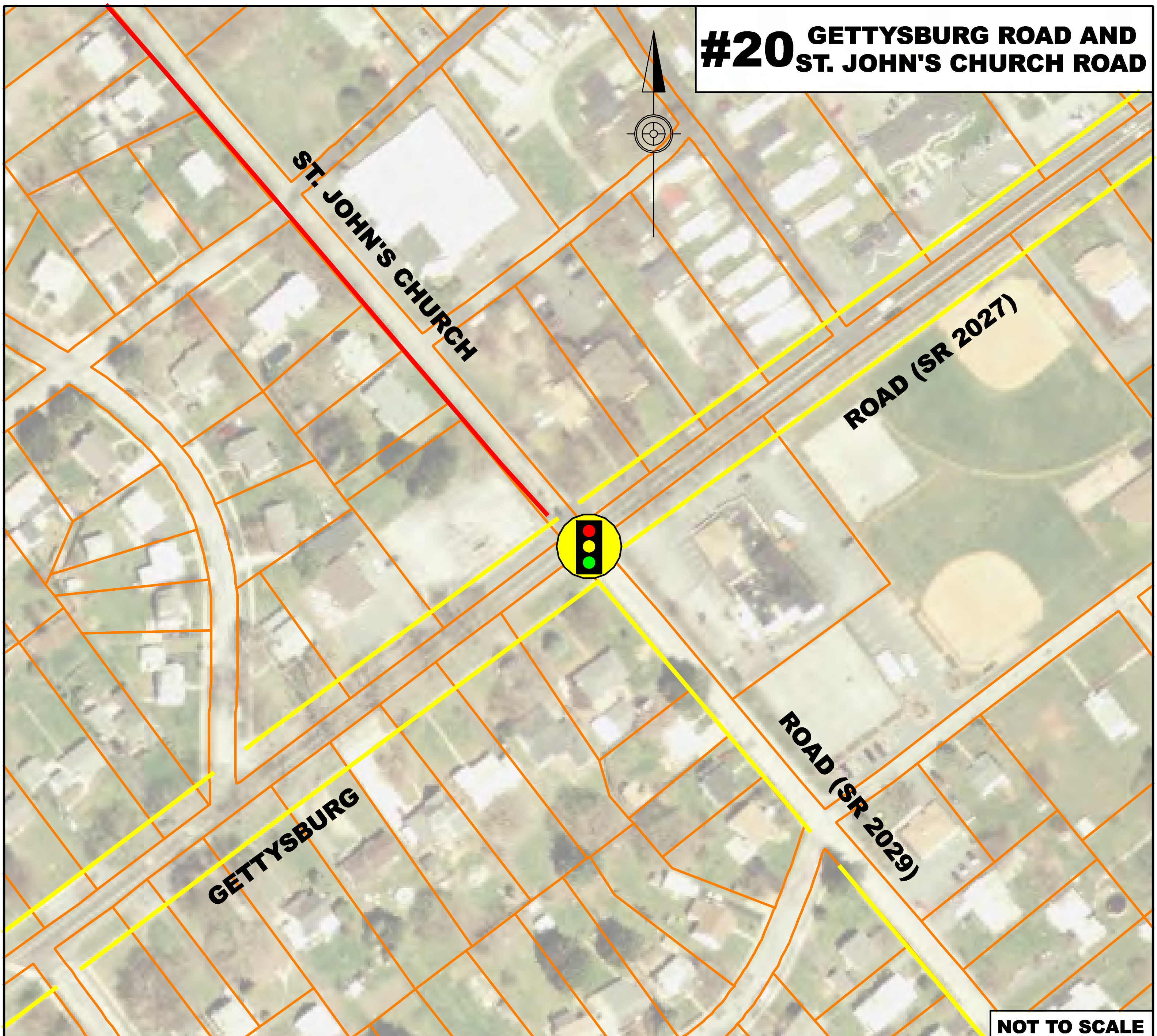
LEGEND:

Proposed Sidewalk:
Existing Sidewalk:
Parcel Lines:
2020 Improvements:
2030 Improvements:
Potential Historic Resource:
Potential Hazardous Waste:
Proposed Signal:
Existing Signal:

IMPROVEMENTS:	NO-BUILD	BUILD	ENVIRONMENTAL/ RIGHT-OF-WAY ISSUES:
IMMEDIATE:	2007		Potential hazardous waste-Keystone Service 2020 widening would require right-of-way on the north side of Gettysburg Road and potential displacement of the service station on the southeast quadrant of the intersection.
	B(C)		
SHORT TERM:	2020		
• Lengthen left-turn lane on westbound Gettysburg Road to 340' • Add 200' right-turn lane on northbound Slate Hill Road • Improve Signal Timings and Coordination • Update pedestrian phase lengths to conform with MUTCD requirements • Modify/install crosswalks and curb-cut ramps to conform with ADA requirements	E(C)	E(C)	
LONG TERM:	2030		
• Improve Signal Timings and Coordination	F(C)	D(C)	

DATE: $DATE$ FILE NAME: $FILE$

#20 GETTYSBURG ROAD AND ST. JOHN'S CHURCH ROAD



LEGEND:

Proposed Sidewalk:	2020 Improvements:	Potential Hazardous Waste:
Existing Sidewalk:	2030 Improvements:	Proposed Signal:
Parcel Lines:	Potential Historic Resource:	Existing Signal:

IMPROVEMENTS:

	NO-BUILD	BUILD
IMMEDIATE:	2007	
	D(E)	
SHORT TERM:	2020	
• Install two-phase traffic signal • Improve Signal Timings and Coordination • Program pedestrian phase lengths to conform with MUTCD requirements • Install crosswalks and curb-cut ramps to conform with ADA requirements	F(F)	B(B)
LONG TERM:	2030	
• Improve Signal Timings and Coordination	F(F)	D(C)

ENVIRONMENTAL/ RIGHT-OF-WAY ISSUES:

No environmental issues of note

No right-of-way issues anticipated

DATE: $DATE$ FILE NAME:$FILE$

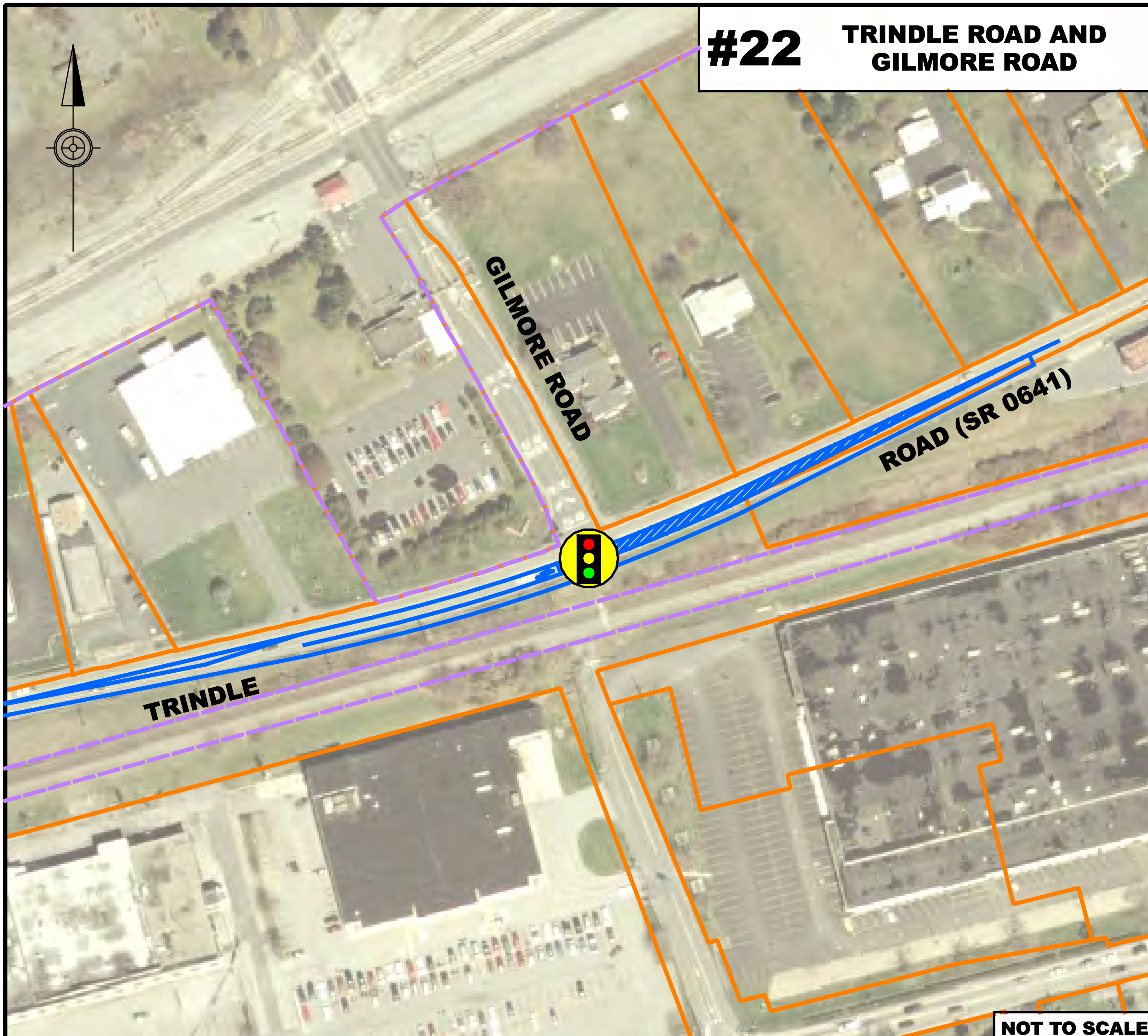
#21 ST. JOHN'S CHURCH ROAD AND INDUSTRIAL ROAD

LEGEND:

- Proposed Sidewalk:
- Existing Sidewalk:
- Parcel Lines:
- 2020 Improvements:
- 2030 Improvements:
- Potential Historic Resource:
- Potential Hazardous Waste:
- Proposed Signal:
- Existing Signal:

IMPROVEMENTS:	NO-BUILD	BUILD	ENVIRONMENTAL/ RIGHT-OF-WAY ISSUES:
IMMEDIATE:	2007		
	F(F)		No environmental issues of note No right-of-way required expect for signal hardware requirements.
SHORT TERM:	2020		
• Install three-phase traffic signal • Improve Signal Timings and Coordination • Program pedestrian phase lengths to conform with MUTCD requirements • Install crosswalks and curb-cut ramps to conform with ADA requirements	F(F)	B(B)	
LONG TERM:	2030		
• Improve Signal Timings and Coordination	F(F)	B(B)	

#22 TRINDLE ROAD AND GILMORE ROAD

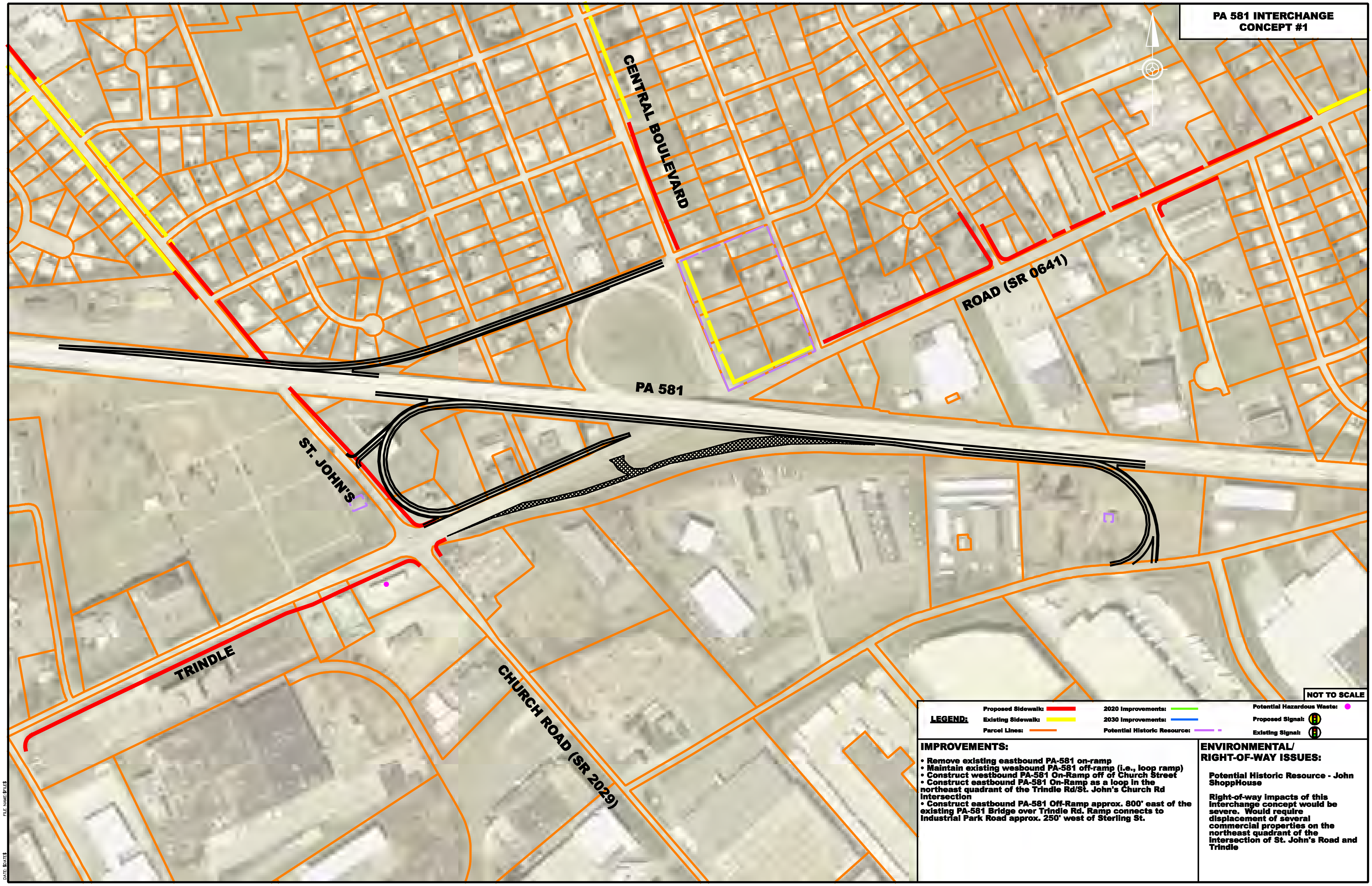


LEGEND:

- Proposed Sidewalk:
- Existing Sidewalk:
- Parcel Lines:
- 2020 Improvements:
- 2030 Improvements:
- Potential Historic Resource:
- Potential Hazardous Waste:
- Proposed Signal:
- Existing Signal:

IMPROVEMENTS:	NO-BUILD	BUILD	ENVIRONMENTAL/ RIGHT-OF-WAY ISSUES:
IMMEDIATE:	2007		Potential Historic Resource - Navy Depot National Register Eligible Resource - Cumberland Valley Railroad Right-of-way would be required for 2030 improvements which would require interaction with the railroad which might be problematic. Clearance requirements of the RR should be incorporated early in the design process.
	C(D)		
SHORT TERM:	2020		
• Consider signalizing to mitigate PM Peak level-of-service deficiencies (LOS E) on stop-controlled approach	D(E)	D(E)	
LONG TERM:	2030		
• Install three-phase traffic signal • Add 260' left-turn lane on eastbound Trindle Road • Improve Signal Timings and Coordination	F(F)	B(B)	

PA 581 INTERCHANGE CONCEPT #1



LEGEND:

- Proposed Sidewalk
- Existing Sidewalk
- Parcel Lines
- 2020 Improvements
- 2030 Improvements
- Potential Historic Resource
- Potential Hazardous Waste
- Proposed Signal
- Existing Signal

IMPROVEMENTS:

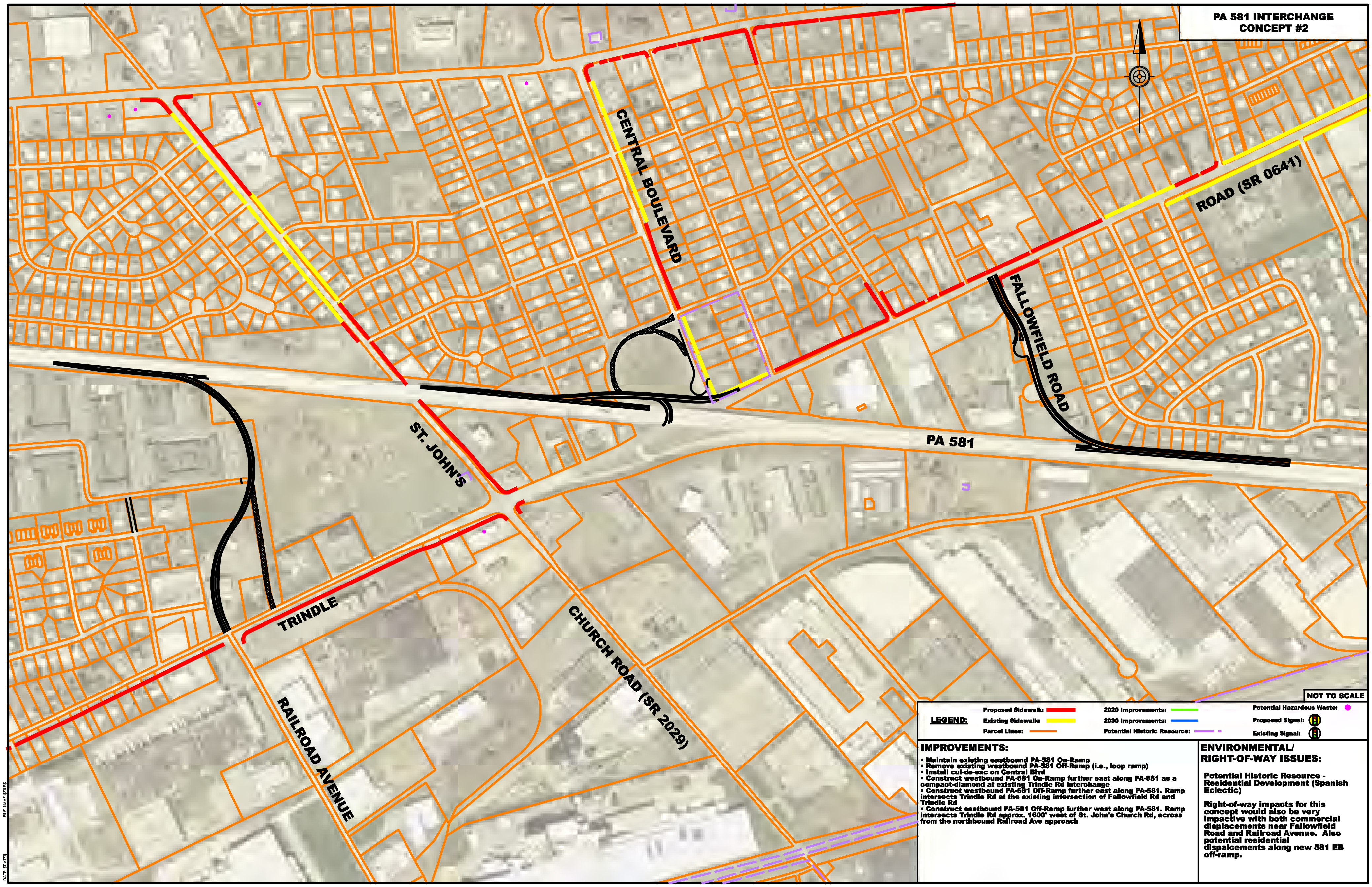
- Remove existing eastbound PA-581 on-ramp
- Maintain existing wesbound PA-581 off-ramp (i.e., loop ramp)
- Construct westbound PA-581 On-Ramp off of Church Street
- Construct eastbound PA-581 On-Ramp as a loop in the northeast quadrant of the Trindle Rd/St. John's Church Rd intersection
- Construct eastbound PA-581 Off-Ramp approx. 800' east of the existing PA-581 Bridge over Trindle Rd. Ramp connects to Industrial Park Road approx. 250' west of Sterling St.

ENVIRONMENTAL/ RIGHT-OF-WAY ISSUES:

Potential Historic Resource - John ShoppHouse

Right-of-way impacts of this interchange concept would be severe. Would require displacement of several commercial properties on the northeast quadrant of the intersection of St. John's Road and Trindle

PA 581 INTERCHANGE CONCEPT #2



LEGEND:

- Proposed Sidewalk
- Existing Sidewalk
- Parcel Lines
- 2020 Improvements
- 2030 Improvements
- Potential Historic Resource
- Potential Hazardous Waste
- Proposed Signal
- Existing Signal

IMPROVEMENTS:

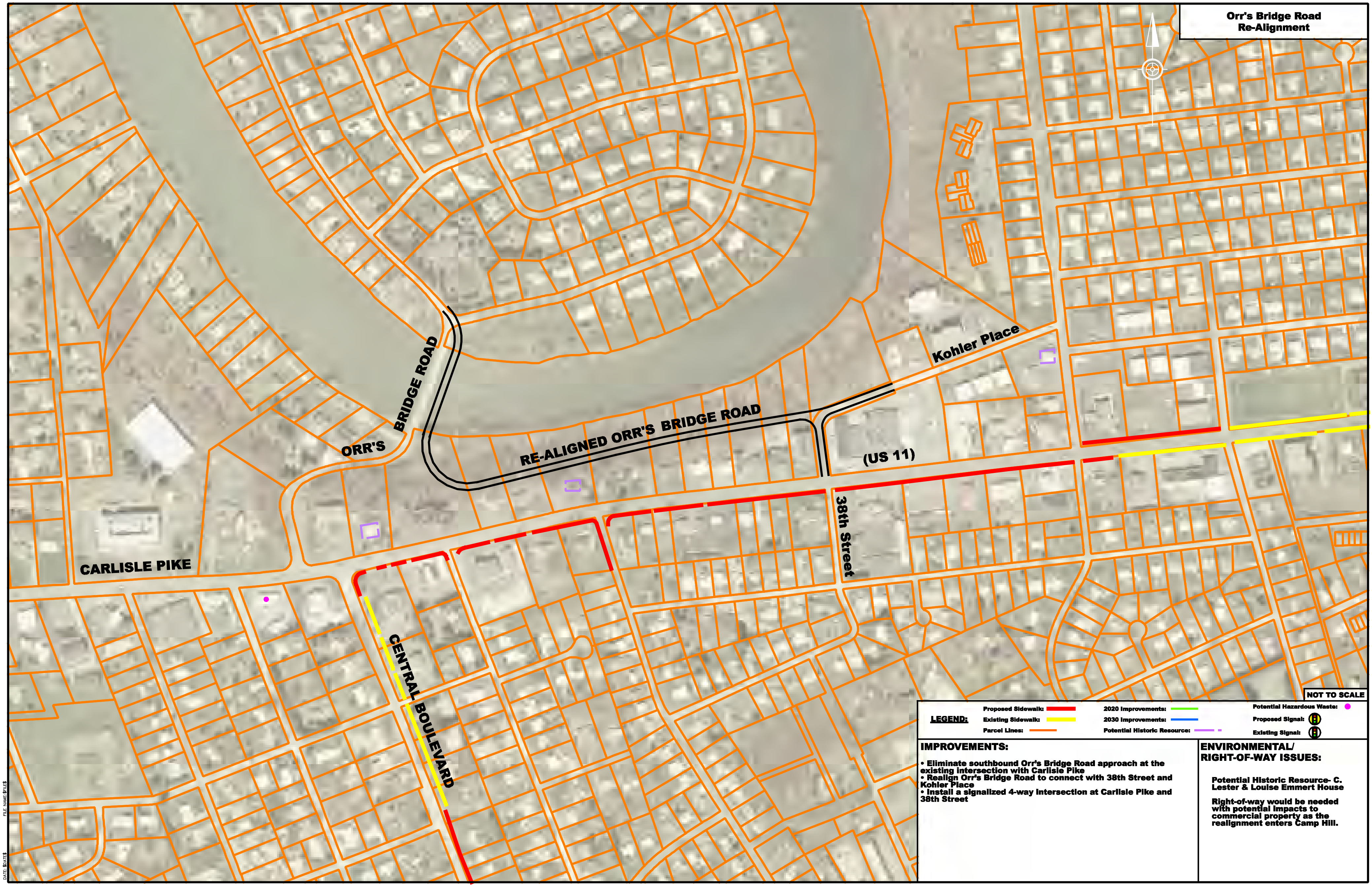
- Maintain existing eastbound PA-581 On-Ramp
- Remove existing westbound PA-581 Off-Ramp (i.e., loop ramp)
- Install cul-de-sac on Central Blvd
- Construct westbound PA-581 On-Ramp further east along PA-581 as a compact-diamond at existing Trindle Rd interchange
- Construct westbound PA-581 Off-Ramp further east along PA-581. Ramp intersects Trindle Rd at the existing intersection of Fallowfield Rd and Trindle Rd
- Construct eastbound PA-581 Off-Ramp further west along PA-581. Ramp intersects Trindle Rd approx. 1600' west of St. John's Church Rd, across from the northbound Railroad Ave approach

ENVIRONMENTAL/ RIGHT-OF-WAY ISSUES:

Potential Historic Resource - Residential Development (Spanish Eclectic)

Right-of-way impacts for this concept would also be very impactive with both commercial displacements near Fallowfield Road and Railroad Avenue. Also potential residential dispalcements along new 581 EB off-ramp.

Orr's Bridge Road Re-Alignment



IMPROVEMENTS:

- Eliminate southbound Orr's Bridge Road approach at the existing intersection with Carlisle Pike
- Realign Orr's Bridge Road to connect with 38th Street and Kohler Place
- Install a signalized 4-way intersection at Carlisle Pike and 38th Street

ENVIRONMENTAL/ RIGHT-OF-WAY ISSUES:

Potential Historic Resource- C. Lester & Louise Emmert House

Right-of-way would be needed with potential impacts to commercial property as the realignment enters Camp Hill.