

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)

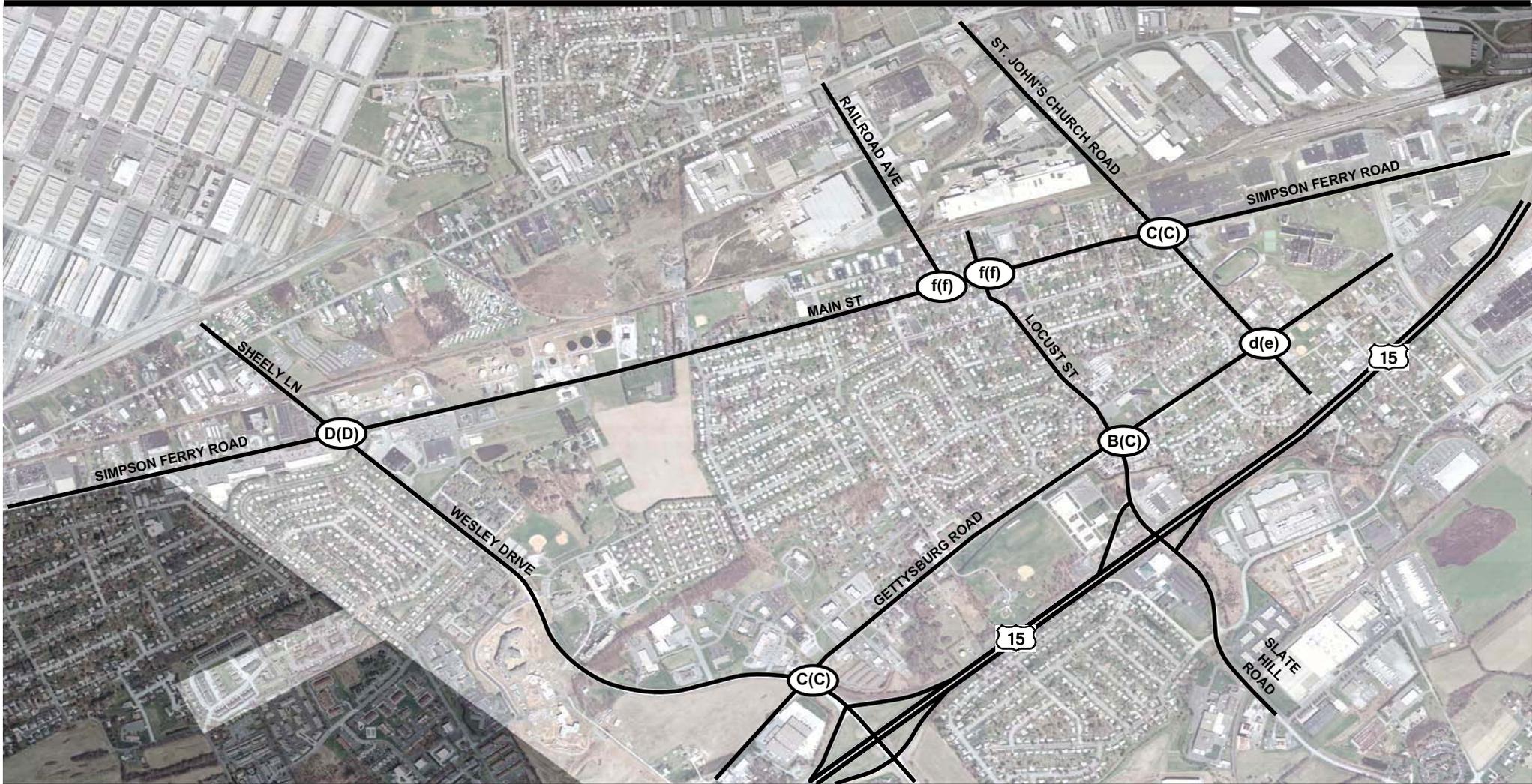


FIGURE # 2.7 Level of Service –

Existing Conditions

Location: Cumberland County, PA

MATCH TO PREVIOUS SHEET



LEGEND

- (A) Signalized Intersection Overall Level of Service
- (d) Unsignalized Intersection Lowest Approach Level of Service



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.

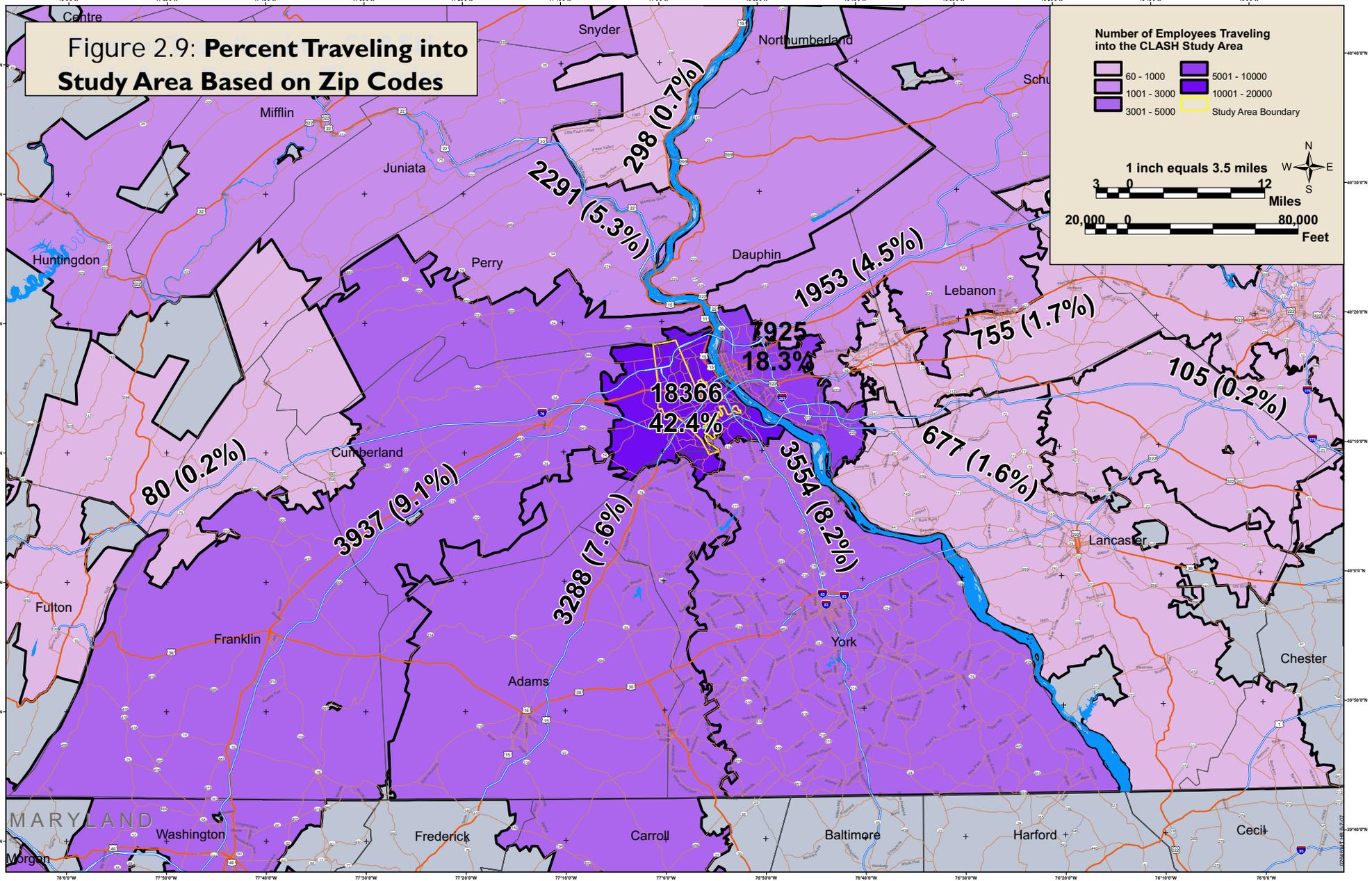
In planning the O-D study, several concerns arose.

- 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 compiled.

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.

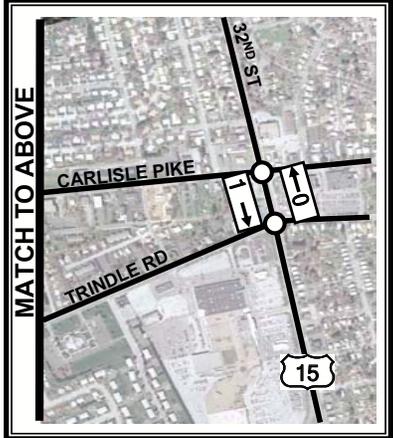
Using a survey of this type, a large quantity of detailed information about the movement of freight within the study area and their destinations outside the study area was obtained without causing a large disruption to traffic flow. In the end, almost 300 truck paths were recorded; with around 260 being 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.



MATCH TO INSET



MATCH TO NEXT SHEET

LEGEND	
	Study Intersection Signalized
	Study Intersection Unsignalized



FIGURE #2.10 O-D Link Volumes

Existing Conditions

Location: Cumberland County, PA

MATCH TO PREVIOUS SHEET



LEGEND

- Study Intersection Signalized
- Study Intersection Unsignalized



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:

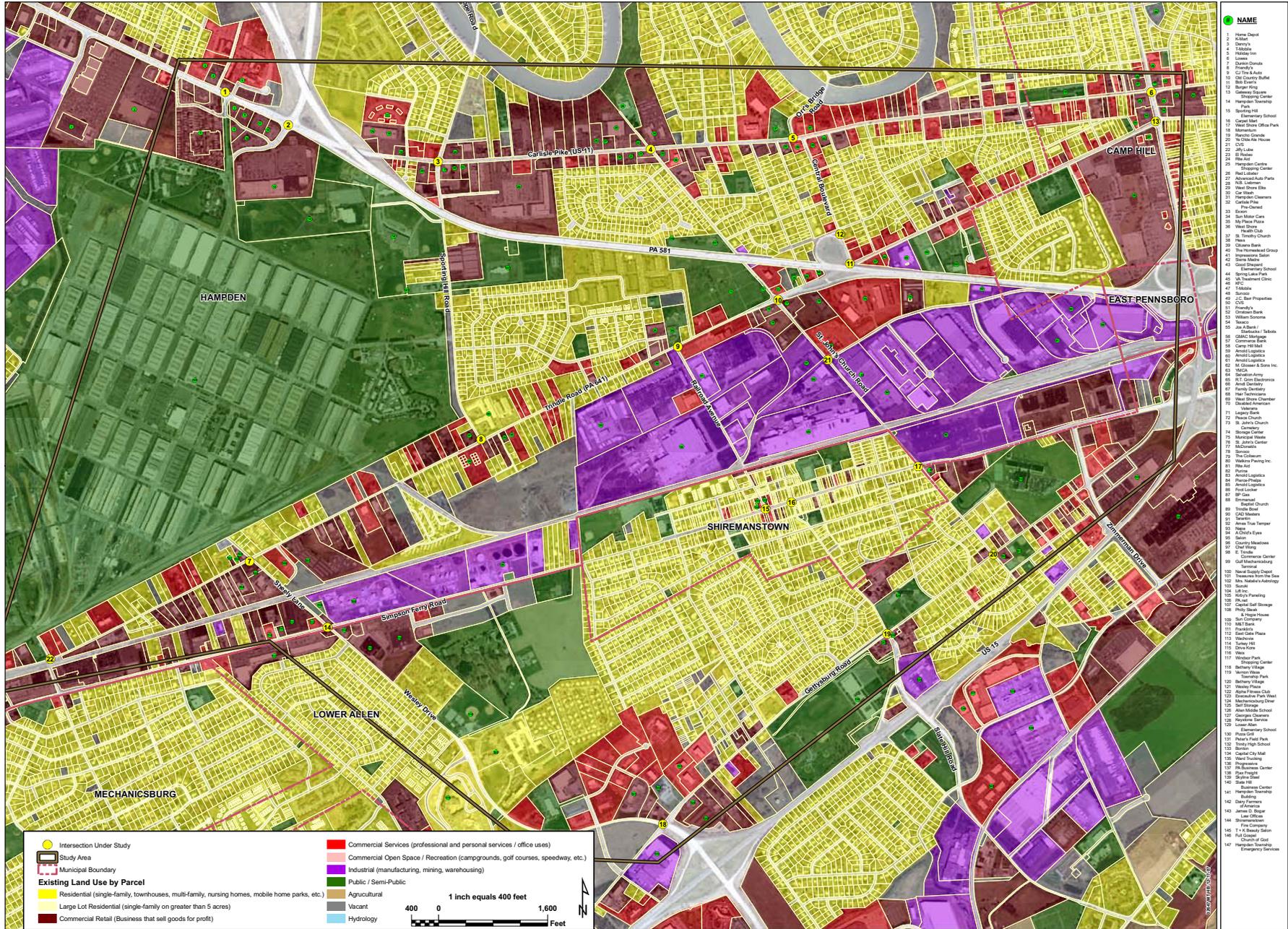
- HCM Delay and Level-of-Service values are for the overall intersection, as generated by Synchro v.6, Build 614.
- Delay is expressed in terms of "seconds per vehicle".

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.



- NAME**
- 1 Home Depot
 - 2 K&M
 - 3 Dairy's
 - 4 T&B
 - 5 Lowe's
 - 6 Home Depot
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Existing Land Use by Parcel

Intersection Under Study	Commercial Services (professional and personal services / office uses)
Study Area	Commercial Open Space / Recreation (campgrounds, golf courses, speedway, etc.)
Municipal Boundary	Industrial (manufacturing, mining, warehousing)
Residential (single-family, townhouses, multi-family, nursing homes, mobile home parks, etc.)	Public / Semi-Public
Large Lot Residential (single-family on greater than 5 acres)	Agricultural
Commercial Retail (Business that sell goods for profit)	Vacant
	Hydrology

1 inch equals 400 feet

400 0 1,600 Feet

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

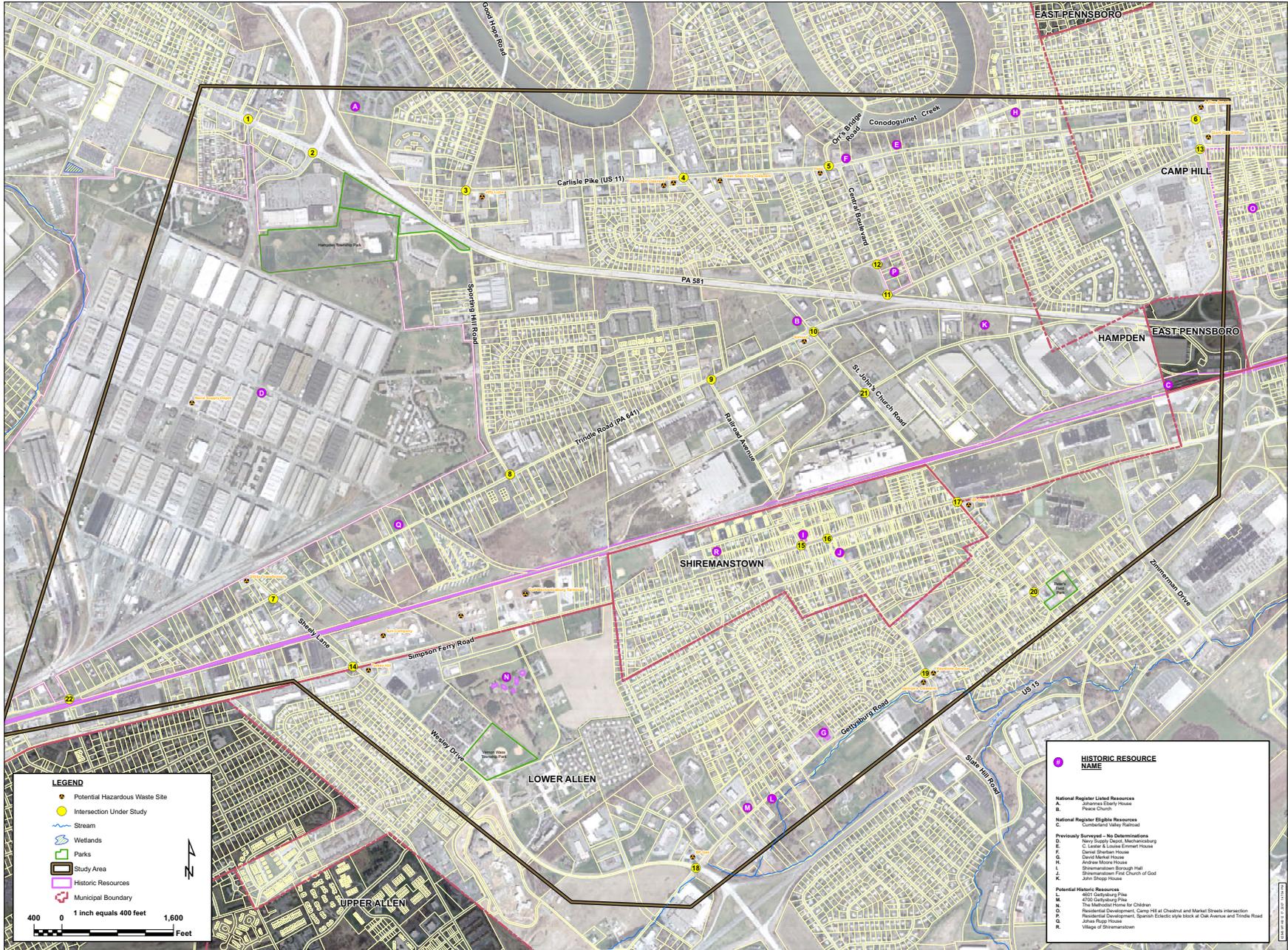
Two streams are located within the study area, the Conodoguinet Creek which encroaches on the northern boundary of the study and Cedar Run which is located in the southeastern portion of the study area. Within the study area, the Conodoguinet Creek is listed as a Warm Water Fishery, and Cedar Run is 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 Eastboulderly 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



LEGEND

- Potential Hazardous Waste Site
- Intersection Under Study
- ~ Stream
- ~ Wetlands
- Parks
- Study Area
- Historic Resources
- Municipal Boundary

400 0 1 inch equals 400 feet 1,600 Feet

N

HISTORIC RESOURCE NAME

National Register Listed Resources	A- Juliana's Birth House
	B- Peace Church
National Register Eligible Resources	C- Cumberland Valley Railroad
Previously Surveyed - No Determinations	D- New School District, Mearnsburg
	E- C. Lester & Louisa Emmert House
	F- Daniel Stricker House
	G- David Meikel House
	H- Andrew Moore House
	I- Shiremanstown Borough Hall
	J- Shiremanstown First Church of God
	K- John Shopp House
Potential Historic Resources	L- 4801 Gettysburg Pike
	M- 4700 Gettysburg Pike
	N- The Multistoried 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- Johna Ross House
	R- Village of Shiremanstown

DATE: 05/13/2019

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 period (as opposed to peak hour) 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 changes 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%

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

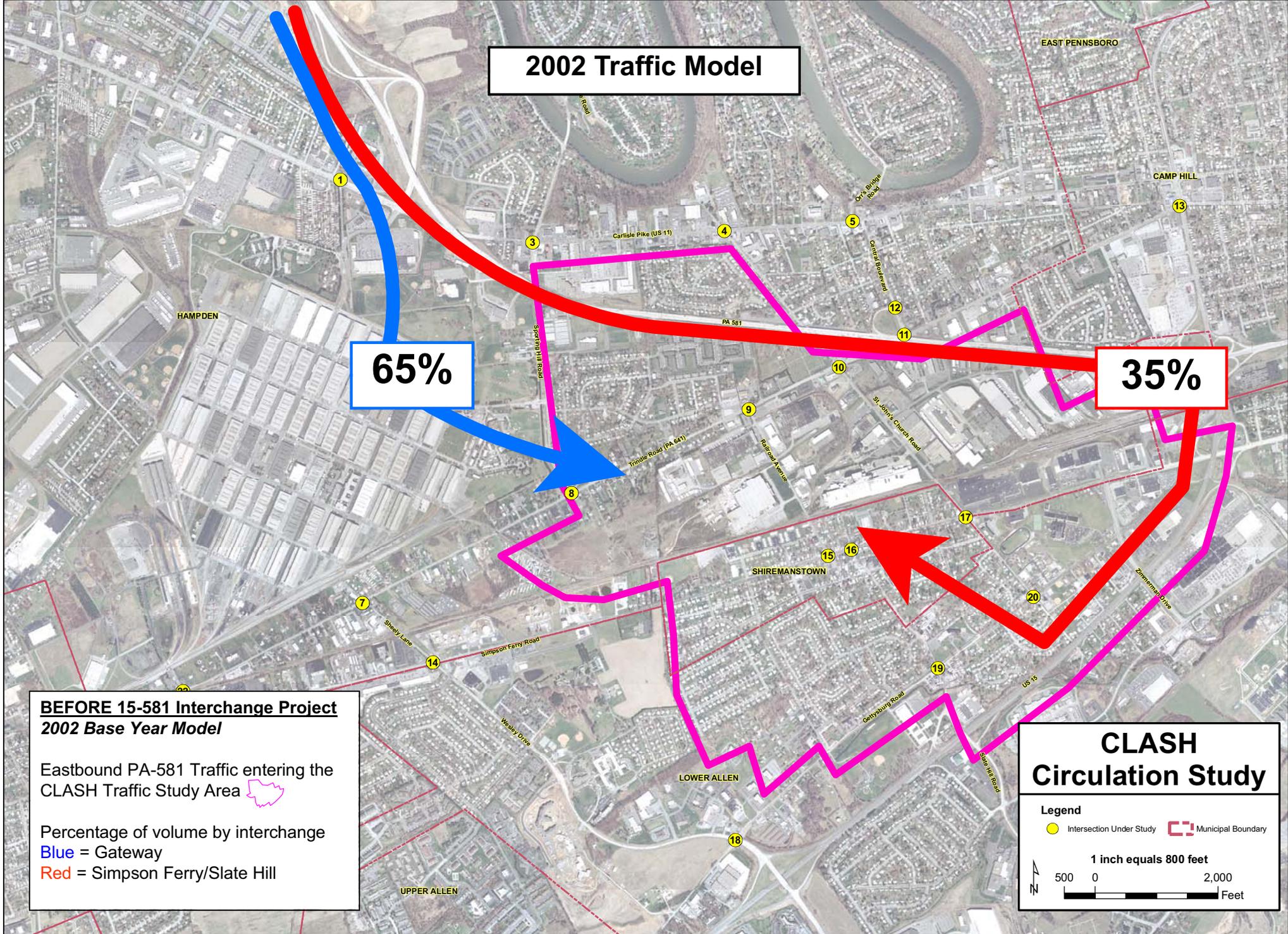
CLASH Circulation Study

Legend

-  Intersection Under Study
-  Municipal Boundary

1 inch equals 800 feet

500 0 2,000 Feet



2020 Traffic Model

60%

40%

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

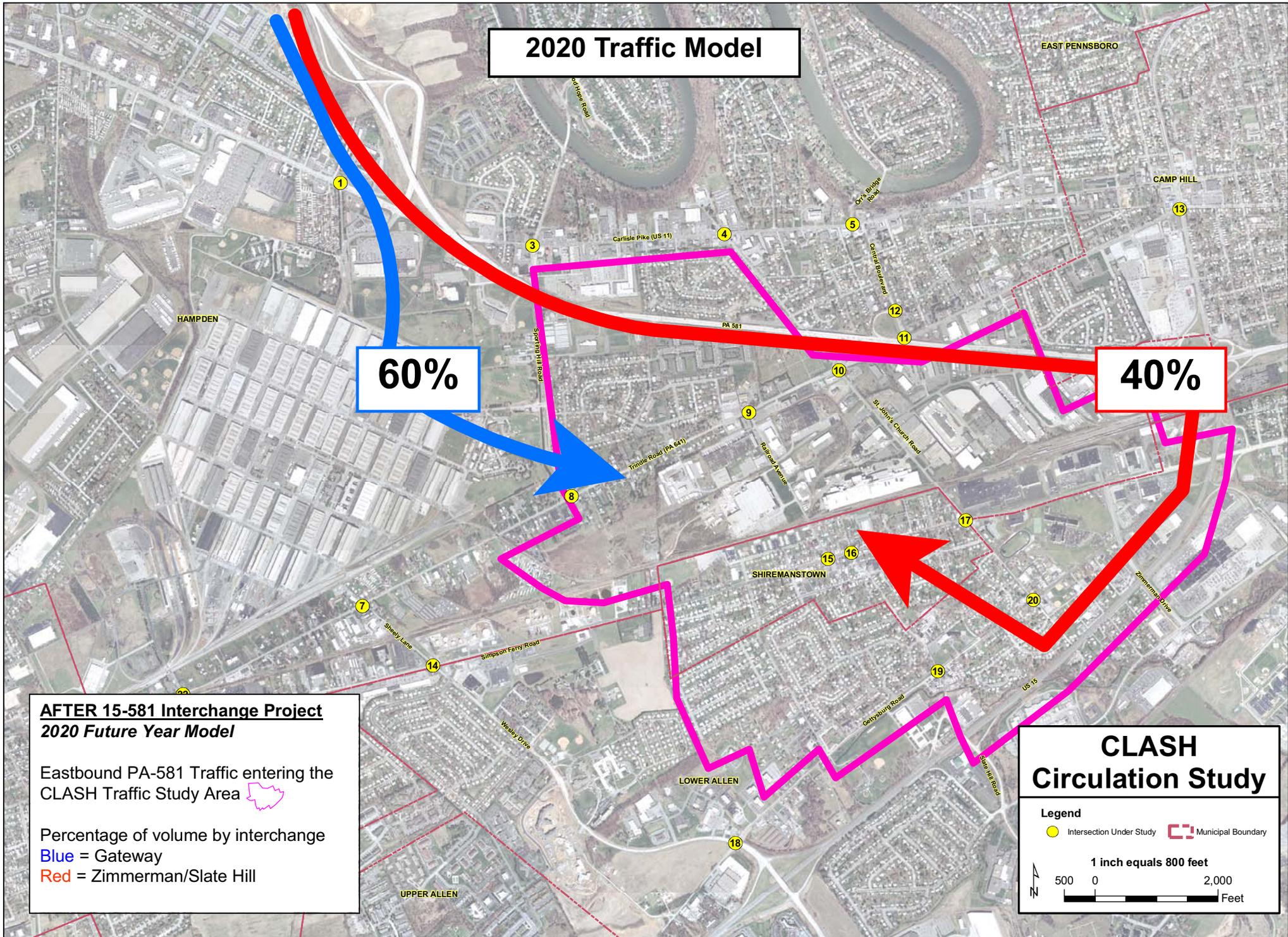
CLASH Circulation Study

Legend

● Intersection Under Study ▭ Municipal Boundary

1 inch equals 800 feet

500 0 2,000
Feet



2020 Traffic Model With Interchange

10%

75%

15%

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

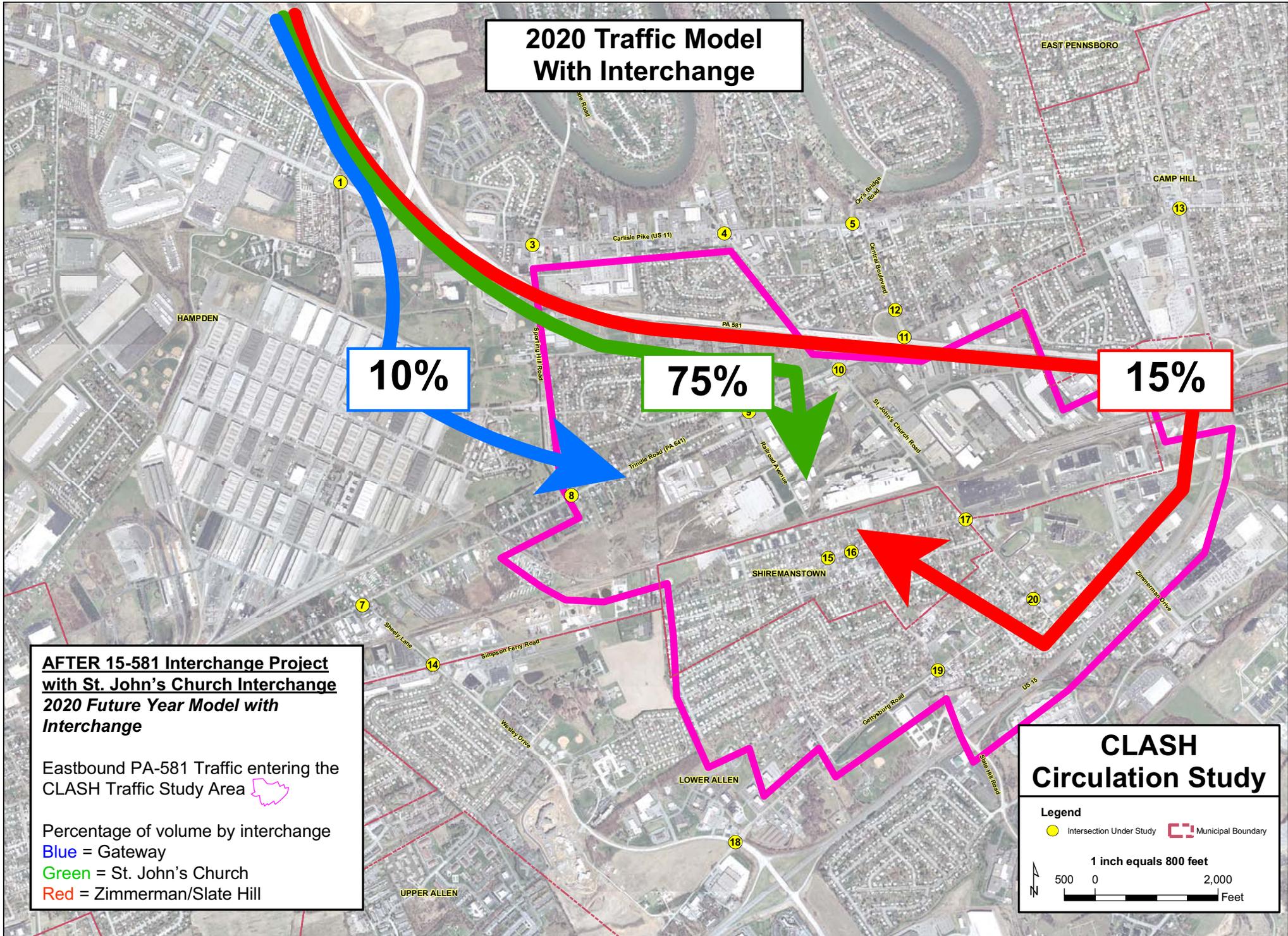
CLASH Circulation Study

Legend

● Intersection Under Study ▭ Municipal Boundary

1 inch equals 800 feet

500 0 2,000
Feet



IV. 2020 PROJECTIONS AND IMPROVEMENTS

A. *Network Modifications, Assumptions, and Traffic Projections*

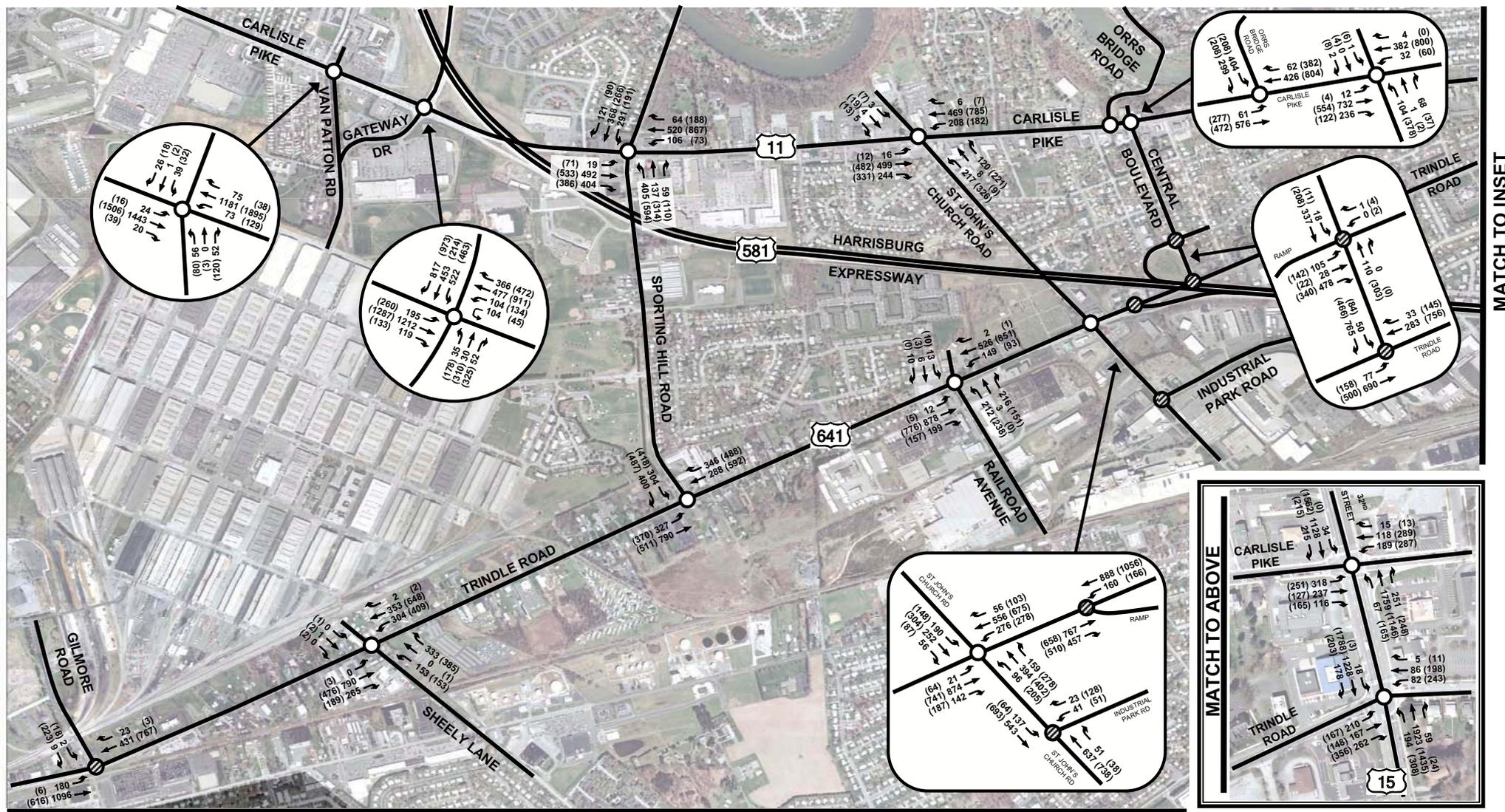
TCRPC conducted a travel model run for the future year, 2020, and provided McCormick Taylor with the associated loaded roadway networks and intersection turning movement files. Based on the methodology described previously, McCormick Taylor prepared the future year 2020 “No-Build” turning movement volume 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 Zimmermann 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 Zimmermann Drive (Lower Allen Drive) and St. John’s Church Road
 - Updating the cross-section of Zimmermann 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 Zimmermann 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

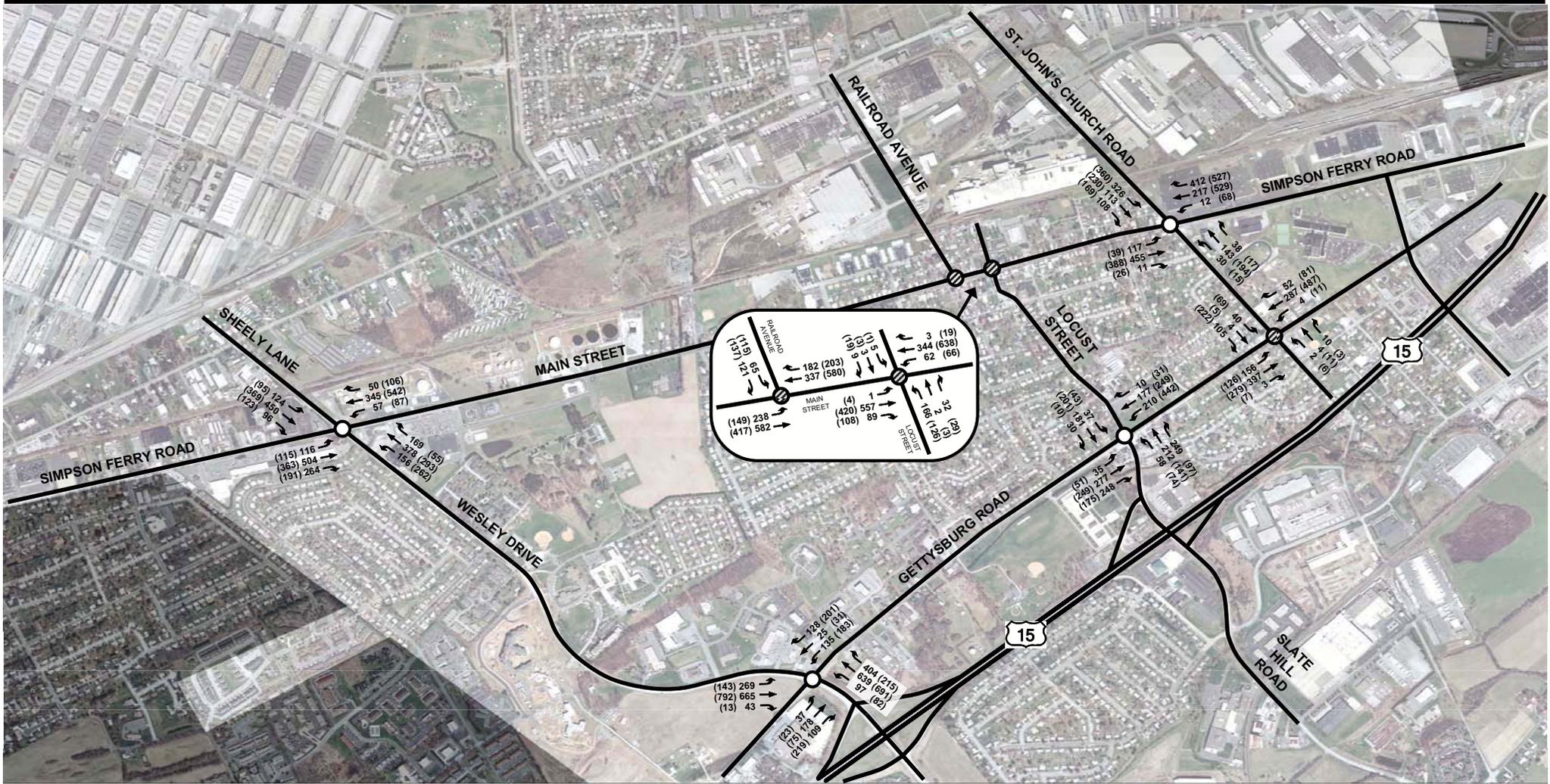
LEGEND

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



FIGURE # 4.1 Turning Movements
2020 No-Build Conditions
 Location: Cumberland County, PA

MATCH TO PREVIOUS SHEET



LEGEND

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



FIGURE # 4.2 Turning Movements
2020 No-Build Conditions
 Location: Cumberland County, PA

B. Future No-Build Capacity Analysis

Node	Intersections Name	2020 AM				2020 PM			
		No-Build		Build		No-Build		Build	
		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

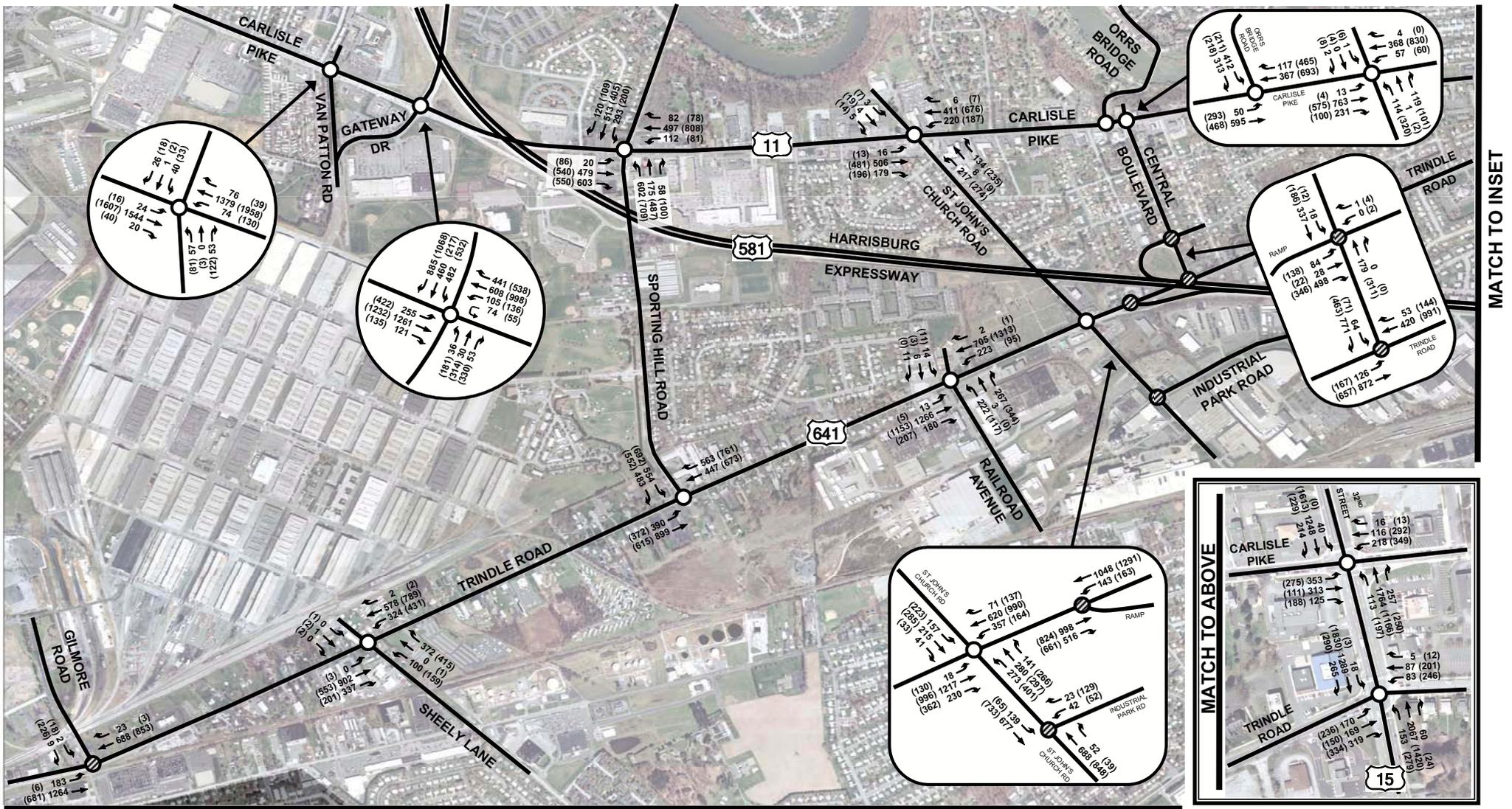
TCRPC conducted a travel model run for the future year, 2030, and provided McCormick Taylor with the associated loaded roadway networks and intersection turning movement files. Based on the methodology described previously, McCormick Taylor prepared the future year 2030 “No-Build” turning movement volume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

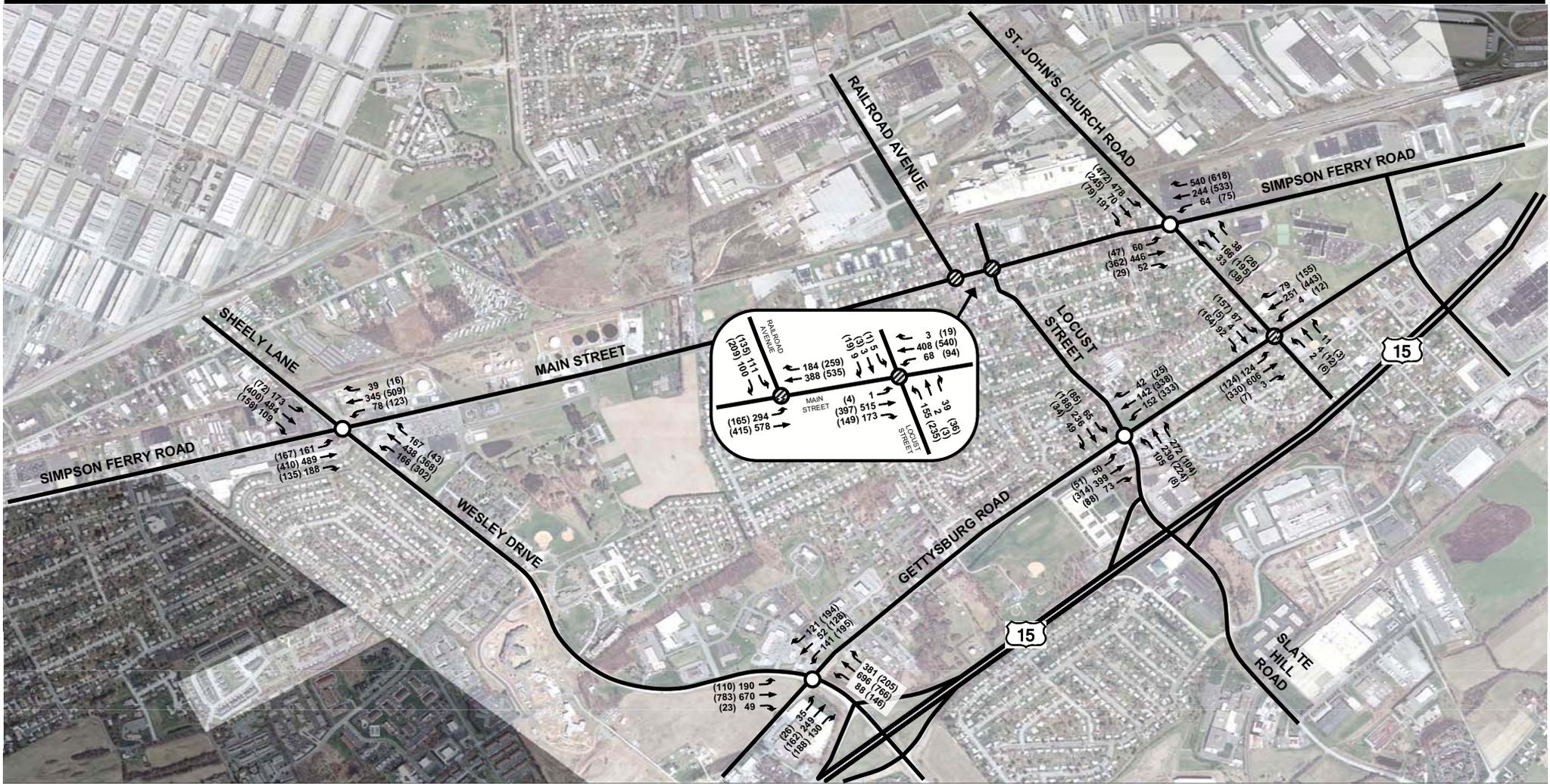


FIGURE # 5.1 Turning Movements

2030 No-Build Conditions

Location: Cumberland County, PA

MATCH TO PREVIOUS SHEET



LEGEND

- Study Intersection Signalized
- ⊗ Study Intersection Unsignalized

↔ AM (PM) Turning Movement Traffic Volume



FIGURE # 5.2 Turning Movements

2030 No-Build Conditions

Location: Cumberland County, PA

B. Future No-Build Capacity Analysis

Node	Intersections Name	2030 AM				2030 PM			
		No-Build		Build		No-Build		Build	
		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

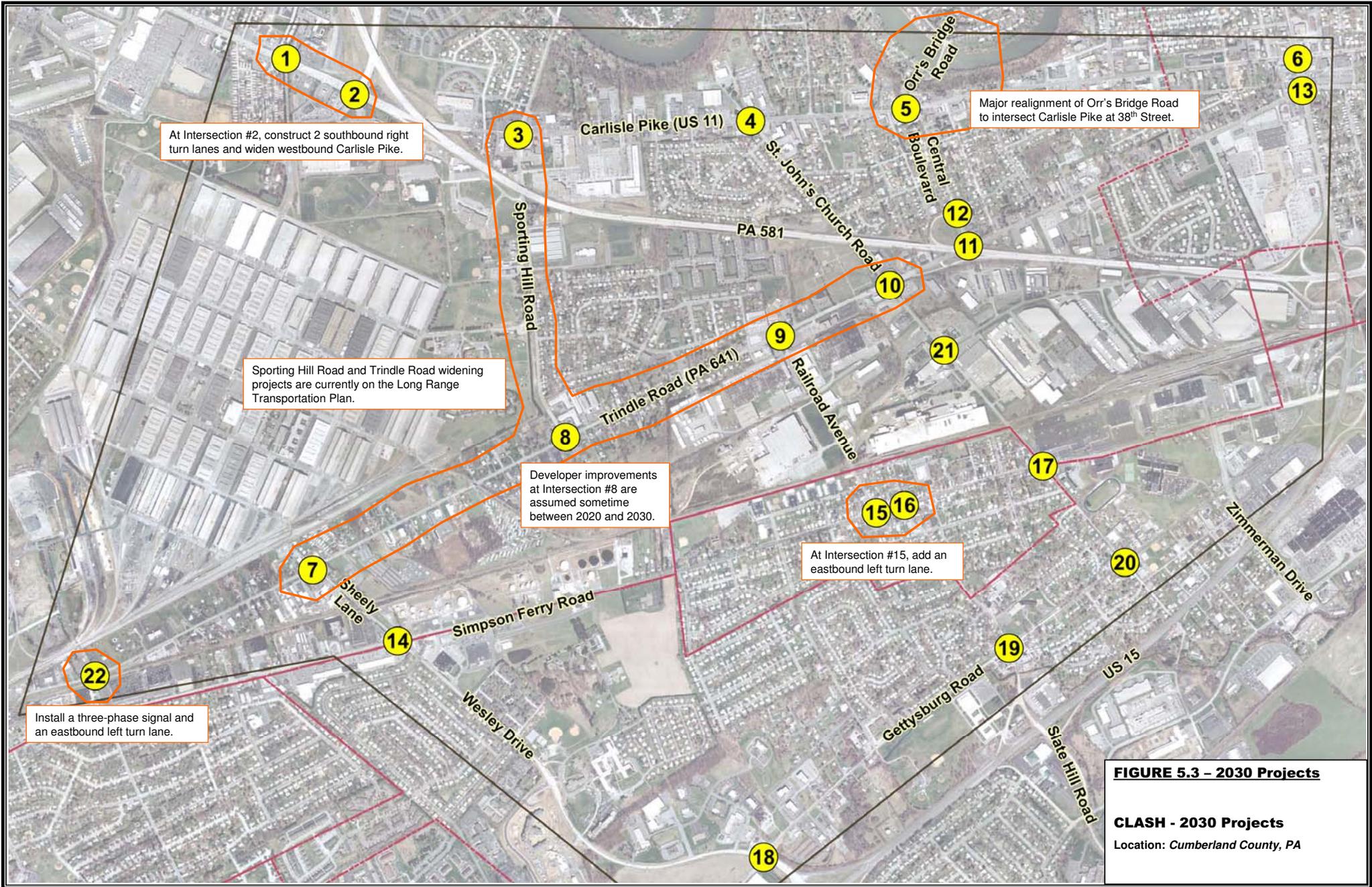
1) HCM Delay and Level-of-Service values are for the overall intersection, as generated by Synchro v.6, Build 614.

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.



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)

<u>1</u> _____ Borough of Camp Hill Borough	<u>1</u> _____ East Pennsboro Township
<u>2</u> _____ Lower Allen Township	<u>1</u> _____ Mechanicsburg Borough
<u>0</u> _____ Shiremanstown Borough	<u>0</u> _____ Upper Allen Township
<u>19</u> _____ Hampden Township	<u>3</u> _____ 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.

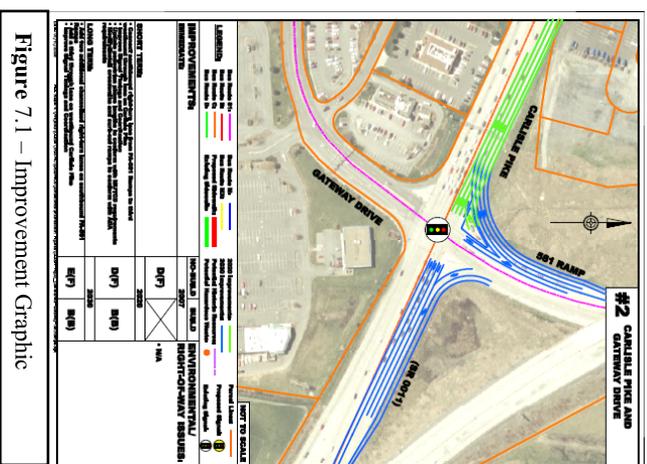


Figure 7.1 – Improvement Graphic

In addition to the Improvement Graphics, cost estimates were developed for both the 2020 and 2030 improvements. The cost estimates 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**.

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

NO-BUILD		2020		2030	
CONSTRUCTION	OPERATION	CONSTRUCTION	OPERATION	CONSTRUCTION	OPERATION
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
2.0000	2.0000	2.0000	2.0000	2.0000	2.0000
3.0000	3.0000	3.0000	3.0000	3.0000	3.0000
4.0000	4.0000	4.0000	4.0000	4.0000	4.0000
5.0000	5.0000	5.0000	5.0000	5.0000	5.0000
6.0000	6.0000	6.0000	6.0000	6.0000	6.0000
7.0000	7.0000	7.0000	7.0000	7.0000	7.0000
8.0000	8.0000	8.0000	8.0000	8.0000	8.0000
9.0000	9.0000	9.0000	9.0000	9.0000	9.0000
10.0000	10.0000	10.0000	10.0000	10.0000	10.0000
11.0000	11.0000	11.0000	11.0000	11.0000	11.0000
12.0000	12.0000	12.0000	12.0000	12.0000	12.0000
13.0000	13.0000	13.0000	13.0000	13.0000	13.0000
14.0000	14.0000	14.0000	14.0000	14.0000	14.0000
15.0000	15.0000	15.0000	15.0000	15.0000	15.0000
16.0000	16.0000	16.0000	16.0000	16.0000	16.0000
17.0000	17.0000	17.0000	17.0000	17.0000	17.0000
18.0000	18.0000	18.0000	18.0000	18.0000	18.0000
19.0000	19.0000	19.0000	19.0000	19.0000	19.0000
20.0000	20.0000	20.0000	20.0000	20.0000	20.0000
21.0000	21.0000	21.0000	21.0000	21.0000	21.0000
22.0000	22.0000	22.0000	22.0000	22.0000	22.0000
23.0000	23.0000	23.0000	23.0000	23.0000	23.0000
24.0000	24.0000	24.0000	24.0000	24.0000	24.0000
25.0000	25.0000	25.0000	25.0000	25.0000	25.0000
26.0000	26.0000	26.0000	26.0000	26.0000	26.0000
27.0000	27.0000	27.0000	27.0000	27.0000	27.0000
28.0000	28.0000	28.0000	28.0000	28.0000	28.0000
29.0000	29.0000	29.0000	29.0000	29.0000	29.0000
30.0000	30.0000	30.0000	30.0000	30.0000	30.0000
31.0000	31.0000	31.0000	31.0000	31.0000	31.0000
32.0000	32.0000	32.0000	32.0000	32.0000	32.0000
33.0000	33.0000	33.0000	33.0000	33.0000	33.0000
34.0000	34.0000	34.0000	34.0000	34.0000	34.0000
35.0000	35.0000	35.0000	35.0000	35.0000	35.0000
36.0000	36.0000	36.0000	36.0000	36.0000	36.0000
37.0000	37.0000	37.0000	37.0000	37.0000	37.0000
38.0000	38.0000	38.0000	38.0000	38.0000	38.0000
39.0000	39.0000	39.0000	39.0000	39.0000	39.0000
40.0000	40.0000	40.0000	40.0000	40.0000	40.0000
41.0000	41.0000	41.0000	41.0000	41.0000	41.0000
42.0000	42.0000	42.0000	42.0000	42.0000	42.0000
43.0000	43.0000	43.0000	43.0000	43.0000	43.0000
44.0000	44.0000	44.0000	44.0000	44.0000	44.0000
45.0000	45.0000	45.0000	45.0000	45.0000	45.0000
46.0000	46.0000	46.0000	46.0000	46.0000	46.0000
47.0000	47.0000	47.0000	47.0000	47.0000	47.0000
48.0000	48.0000	48.0000	48.0000	48.0000	48.0000
49.0000	49.0000	49.0000	49.0000	49.0000	49.0000
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54.0000	54.0000	54.0000	54.0000	54.0000	54.0000
55.0000	55.0000	55.0000	55.0000	55.0000	55.0000
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65.0000	65.0000	65.0000	65.0000	65.0000	65.0000
66.0000	66.0000	66.0000	66.0000	66.0000	66.0000
67.0000	67.0000	67.0000	67.0000	67.0000	67.0000
68.0000	68.0000	68.0000	68.0000	68.0000	68.0000
69.0000	69.0000	69.0000	69.0000	69.0000	69.0000
70.0000	70.0000	70.0000	70.0000	70.0000	70.0000
71.0000	71.0000	71.0000	71.0000	71.0000	71.0000
72.0000	72.0000	72.0000	72.0000	72.0000	72.0000
73.0000	73.0000	73.0000	73.0000	73.0000	73.0000
74.0000	74.0000	74.0000	74.0000	74.0000	74.0000
75.0000	75.0000	75.0000	75.0000	75.0000	75.0000
76.0000	76.0000	76.0000	76.0000	76.0000	76.0000
77.0000	77.0000	77.0000	77.0000	77.0000	77.0000
78.0000	78.0000	78.0000	78.0000	78.0000	78.0000
79.0000	79.0000	79.0000	79.0000	79.0000	79.0000
80.0000	80.0000	80.0000	80.0000	80.0000	80.0000
81.0000	81.0000	81.0000	81.0000	81.0000	81.0000
82.0000	82.0000	82.0000	82.0000	82.0000	82.0000
83.0000	83.0000	83.0000	83.0000	83.0000	83.0000
84.0000	84.0000	84.0000	84.0000	84.0000	84.0000
85.0000	85.0000	85.0000	85.0000	85.0000	85.0000
86.0000	86.0000	86.0000	86.0000	86.0000	86.0000
87.0000	87.0000	87.0000	87.0000	87.0000	87.0000
88.0000	88.0000	88.0000	88.0000	88.0000	88.0000
89.0000	89.0000	89.0000	89.0000	89.0000	89.0000
90.0000	90.0000	90.0000	90.0000	90.0000	90.0000
91.0000	91.0000	91.0000	91.0000	91.0000	91.0000
92.0000	92.0000	92.0000	92.0000	92.0000	92.0000
93.0000	93.0000	93.0000	93.0000	93.0000	93.0000
94.0000	94.0000	94.0000	94.0000	94.0000	94.0000
95.0000	95.0000	95.0000	95.0000	95.0000	95.0000
96.0000	96.0000	96.0000	96.0000	96.0000	96.0000
97.0000	97.0000	97.0000	97.0000	97.0000	97.0000
98.0000	98.0000	98.0000	98.0000	98.0000	98.0000
99.0000	99.0000	99.0000	99.0000	99.0000	99.0000
100.0000	100.0000	100.0000	100.0000	100.0000	100.0000

Figure 7.2 – Typical Cost Estimate

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).

#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.

#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

#21. Install traffic signal Industrial Drive and St. John's Church Road.

Total Project Cost = \$300,000

#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

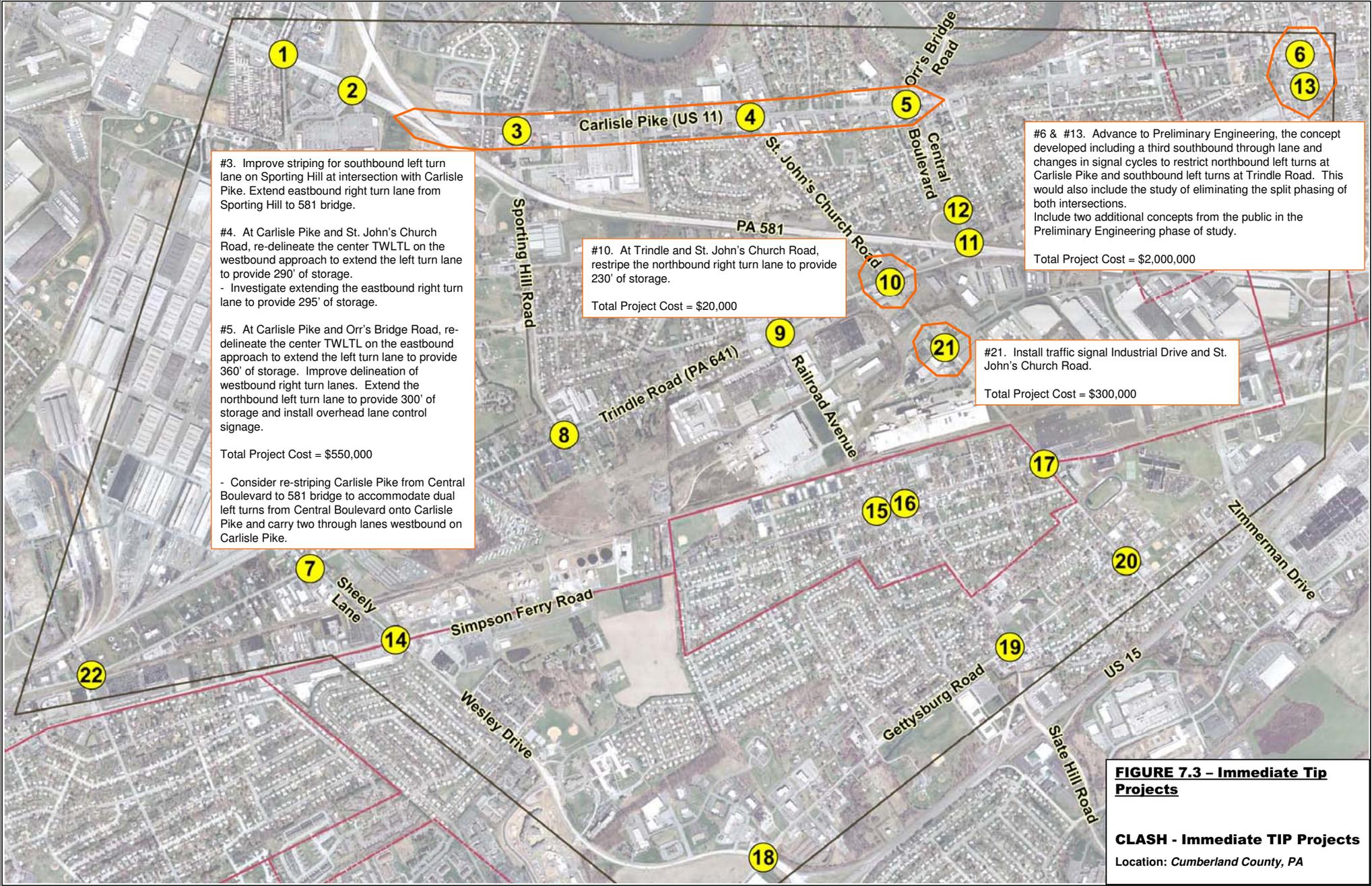


FIGURE 7.3 - Immediate Tip Projects

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	theadams@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 Gossett	Hampden Township	717-761-0119	mgossett@hampdentownship.us
Jerry Spease	Hampden Township	717-761-0119	jspease@hampdentownship.us
John Bradley	Hampden Township	717-761-0119	jebradir@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 Gossett 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 Gossett.
 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 10-30 minutes 30+ 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?

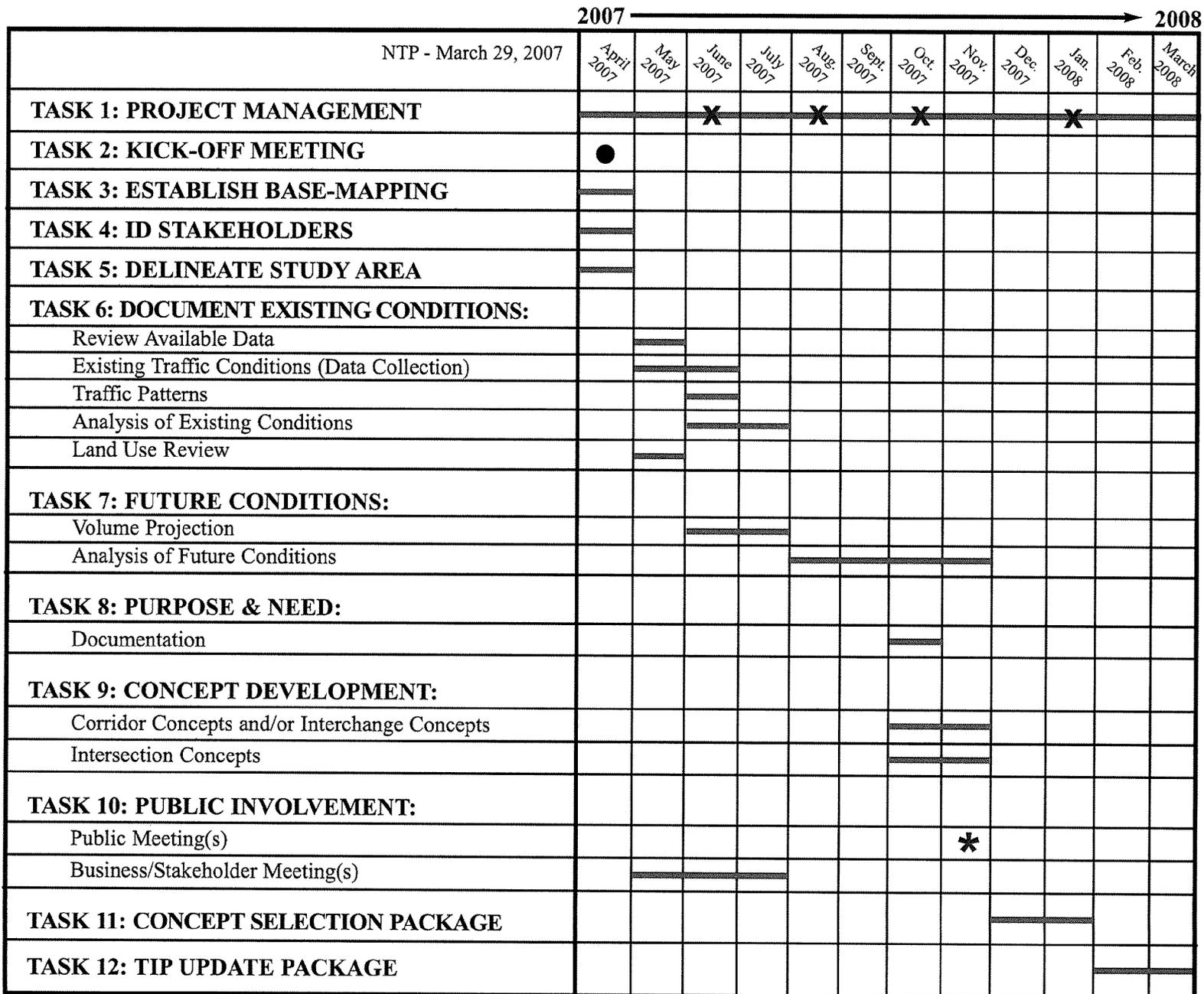
Once a day Once a week Less than once a week

More than once a day 2-3 Times a week

Attachment B

ANTICIPATED SCHEDULE

CLASH Circulation Study



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@tcrc-pa.org
Michael Gossett	Hampden Township	717-761-0119	mgossett@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.

Follow up Items

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	leadams@state.pa.us
John Kennedy	PennDOT District 8-0	717-783-5119	johnkenned@state.pa.us
Chip Millard	TCRPC/HATS	717-234-2638	cmillard@trpc-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	riwatts@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 Gossett 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 Gossett 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.

Initial Alternatives for 2020 and 2030 Projects

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 its 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 14 th	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@tcpc-pa.org
Kirk Stoner	Cumberland County	717-240-5381	kstoner@ccpa.net
Michael Gossett	Hampden Township	717-761-0119	mgossett@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	717-732-0111	admin@eastpennsboro.net
Ryan Murray	East Pennsboro Township	717-571-4978	rmurray@msmarv.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.

- 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

- 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 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 Gosser	Hampden Township	717-761-0119	mgosser@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@trcp-pa.org
Terry Adams	PennDOT District 8	717-787-7149	teadams@state.pa.us
Brian St. John	McCormick Taylor	717-540-6040	bsjohn@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

Equipment Inventory Sheet

Intersection: Carlisle Pk, Van Patten & Holiday Inn

Date: May 3, 2007

Performed by: DEM/WWSB/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

(Good/Fair/Poor)

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
(Good/Fair/Poor)

Notes: _____

Equipment Inventory Sheet

Intersection: Carlisle Pk, Gateway & Ramps

Date: May 3, 2007

Performed by: DEM/WUSB/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

(Good/Fair/Poor)

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

(Good/Fair/Poor)

Notes: _____

