TRANSPORTATION IMPACT ANALYSIS

Bethlehem Landfill Evaluation
Applebutter Road, Lower Saucon Township
Northampton County, Pennsylvania

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Pennoni

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1. EXECUTIVE SUMMARY

This Traffic Impact Assessment has been completed to determine if the current and proposed roadway system surrounding the Bethlehem Landfill Company (BLC) is adequate to accommodate the current permitted daily tonnages of an average 1,375 tons per day and a maximum of 1,800 tons per day. BLC asked Pennoni to complete this assessment in connection with a proposed expansion of the existing landfill ("Phase V Expansion").

The landfill is situated on a tract of land on the northern side of Applebutter Road (SR 2012), east of Shimersville Road (SR 2014), in Lower Saucon Township, Northampton County (Figure 1). The site operates with an average daily volume (ADV) intake of 1,375 tons with a maximum daily volume (MDV) of 1,800 tons. The landfill is currently open to receive waste from 7 AM to 4 PM. No change in these hours, or in the ADV/MDV, is being sought in connection with the Phase V Expansion. By maintaining the hours/days of operation and the ADV and MDV, the vehicle trips to and from the site are expected to remain the same. Access to the site is provided via the existing full access driveway on Applebutter Road (SR 2012) and will not change with the Phase V Expansion.

For the purposes of this analysis, the Bethlehem Landfill scenarios are assumed to be 2022 & 2032.

The scope of this Transportation Impact Analysis includes the following intersections:

- Applebutter Road (SR 2012) and Landfill Site Driveway
- Applebutter Road (SR 2012) and Shimersville Road (SR 2014)

Manual traffic turning movement counts were conducted from 6:00 AM until 6:00 PM to capture the entire time period the site is operational.

Trip generation for the maximum daily volume in landfill activity was estimated by comparing existing traffic and tonnage data with the current maximum daily tonnage and resulted in a total of 102 new weekday trips, 12 new AM peak hour trips and 2 new PM peak hour trips.

Three (3) study periods were evaluated: 2022 Existing Conditions (1,414 tons), 2022 Existing Conditions at the existing Maximum Daily Volume of 1,800 tons and 2032 Future Conditions at the Maximum Daily Volume of 1,800 tons. **Table 1** summarizes the Levels of Service for the study area intersections for both study periods.

As can be seen in **Table 1**, all movements at all intersections are expected to operate at no worse than no-build levels of service, even with the additional traffic from the development at maximum daily intake (current levels are no worse than maximum intake levels of service). The westbound left at the Shimersville Road & Applebutter Road operates at LOS E in existing conditions and

continues to operate at LOS E at the current landfill maximum intake. Signalizing the intersection is the only way to mitigate the deficient levels of service. However, due to the low minor street volumes not satisfying the minor street thresholds, signal warrants are not anticipated to be satisfied for the 2022 analyses.

All movements at the site driveway are expected to operate at Level of Service B or better.

Table 2 summarizes the existing and proposed auxiliary lane storage lengths and the 95th percentile queue lengths for the auxiliary lanes and through movement at all study intersections. **Table 2** illustrates that the Bethlehem Landfill traffic at maximum intake does not create any auxiliary lane deficiencies.

This study shows that the Bethlehem Landfill traffic can be adequately accommodated by the surrounding roadway network.

Table 1 – Level of Service & Delay Comparison

		AM Peak Hour						PM Peak Hour					
Intersection	Movement	2022 Existing		2022 Existing (1,800 MDV)		2032 Future (1,800 MDV)		2022 Existing		2022 Existing (1,800 MDV)		2032 Future (1,800 MDV)	
Applebutter Road (SR 2012) & Site Driveway	EB LT	A	9.4	A	9.5	A	9.5	A	0	A	0	A	0
	WB TR	A	0	A	0	A	0	A	0	A	0	A	0
	SB LR	B	10.1	B	10.1	B	10.1	A	8.6	A	8.6	A	8.6
Overall Intersection		A	2.4	A	2.9	A	2.8	A	0.3	A	0.4	A	0.4
Applebutter Road (SR 2012) & Shimersville Road (SR 2014)	WB L	C	17.3	C	17.4	C	18.5	E	40.1	E	40.9	E	48.2
	WB R	B	10.6	B	10.6	B	10.8	C	15.6	C	15.6	C	16.4
	NB T	A	0	A	0	A	0	A	0	A	0	A	0
	NB R	A	0	A	0	A	0	A	0	A	0	A	0
	SB LT	A	8.3	A	8.3	A	8.3	A	9.6	A	9.6	A	9.7
	SB T	A	0.1	A	0.1	A	0.2	A	0.4	A	0.4	A	0.4
Overall Intersection		A	2.6	A	2.6	A	2.7	A	3	A	3.1	A	3.4

Table 2 – 95th Percentile Queue Summary (feet)

			AM Peak Hour			PM Peak Hour		
Intersection	Movement	Queue Storage (feet)*	2022 Existing	2022 Existing (1,800 MDV)	2032 Future (1,800 MDV)	2022 Existing	2022 Existing (1,800 MDV)	2032 Future (1,800 MDV)
Applebutter Road (SR 2012) & Site Driveway	EB LT	100+	3	5	5	0	0	0
	WB TR	100+	0	0	0	0	0	0
	SB LR	100+	3	3	3	0	0	0
Applebutter Road (SR 2012) & Shimersville Road (SR 2014)	WB L	500+	13	15	15	25	28	35
	WB R	50	13	13	13	15	15	18
	NB T	500+	0	0	0	0	0	0
	NB R	500	0	0	0	0	0	0
	SB LT	500+	3	3	3	10	10	10
	SB T	500+	0	0	0	0	0	0

2. PROJECT DESCRIPTION

This Traffic Impact Assessment has been completed to determine if the current and proposed roadway system surrounding the Bethlehem Landfill Company (BLC) is adequate to accommodate the current permitted daily tonnages of an average 1,375 tons per day and a maximum of 1,800 tons per day. BLC asked Pennoni to complete this assessment in connection with a proposed expansion of the existing landfill ("Phase V Expansion").

The landfill is situated on a tract of land on the northern side of Applebutter Road (SR 2012), east of Shimersville Road (SR 2014), in Lower Saucon Township, Northampton County (Figure 1). The site operates with an average daily volume (ADV) intake of 1,375 tons with a maximum daily volume (MDV) of 1,800 tons. The landfill is currently open to receive waste from 7 AM to 4 PM. No change in these hours, or in the ADV/MDV, is being sought in connection with the Phase V Expansion. By maintaining the hours/days of operation and the ADV and MDV, the vehicle trips to and from the site are expected to remain the same. Access to the site is provided via the existing full access driveway on Applebutter Road (SR 2012) and will not change with the Phase V Expansion.

For the purposes of this analysis, the Bethlehem Landfill scenarios are assumed to be 2022 & 2032.

3. EXISTING ROADWAY CHARACTERISTICS

Applebutter Road (SR 2012) is an east-west State Road extending from Shimersville Road (SR 2014) to the west toward Lower Saucon Road to the east. The road has one travel lane in each direction within the study area. Applebutter Road (SR 2012) is classified as an urban collector according to PennDOT's Northampton County Federal Functional Class Map and has a roadway typology of neighborhood collector. The roadway is under PennDOT jurisdiction and is posted with a speed limit of 40 MPH, but advisory speeds of 20 MPH are posted due to horizontal and vertical curvature of the roadway. The intersection of Applebutter Road (SR 2012) and Shimersville Road (SR 2014) is an unsignalized T-shaped intersection with stop control for the Applebutter Road (SR 2012) approach. This approach includes a stop-controlled channelized right turn lane.

Shimersville Road (SR 2014) is a north-south State Road west of the site. The road has one travel lane in each direction near East 4th Street/Hellertown Road (SR 0412) and widens to a four-lane roadway in the vicinity of Applebutter Road (SR 2012). Shimersville Road (SR 2014) is classified as an urban collector according to PennDOT's Northampton County Federal Functional Class Map and has a roadway typology of community collector. The roadway is under PennDOT jurisdiction and is posted with a speed limit of 40 MPH. Shimersville Road (SR 2014) terminates at East 4th Street/Hellertown Road (SR 0412).

4. LAND USES ALONG APPROACH ROUTE

The land uses along the approach route vary dramatically, including residential and agricultural, but are primarily commercial and industrial. The East Branch of the Saucon Creek and its tributary run along Applebutter Road (SR 2012), which is also the outfall for a sewage treatment plant at the intersection of Applebutter Road (SR 2012) and Shimersville Road (SR 2014). No other cultural, historic, environmental or recreational sensitive areas exist along the approach route.

Lower Saucon Township has previously expressed concern for potential stream pollution should a trash hauling vehicle fail to properly negotiate a sharp curve in Applebutter Road (SR 2012). No incidents of stream pollution attributable to landfill traffic have occurred since the opening of the landfill.

5. EXISTING TRAFFIC VOLUMES

Manual turning movement counts were conducted on Tuesday, November 1, 2022 for the weekday AM and PM peak hours at the following intersections:

- Applebutter Road (SR 2012) and Landfill Site Driveway
- Applebutter Road (SR 2012) and Shimersville Road (SR 2014)

Manual traffic turning movement counts were conducted from 6:00 AM until 6:00 PM to capture the entire time period the site is operational. Volume data obtained from the manual turning movement counts are located in **Appendix A**.

The Existing 2022 traffic volumes are illustrated in **Figure 2**.

The current (2022) Average Daily Traffic (ADT) for each study roadway as obtained from the PENNDOT iTMS Website is shown in **Table 3** below. This data can be found in **Appendix B**. It should be noted that the Current Average Daily Traffic data listed in the iTMS reports is current information. Even though the base year might be listed as 2019 or 2020, the ADT listed in the report has been grown by the appropriate growth factor to the current year.

TABLE 3 – ADT OF STUDY ROADWAYS

Roadway	Current ADT (vehicles per day)
Applebutter Road (SR 2012)	1,293
Shimersville Road (SR 2014)	9,998

Analysis and discussion of existing operations follow in the Operational Analysis section of the report.

6. SIGHT DISTANCE

The following table shows the required and available sight distances from the existing driveway location and potential secondary driveway location. The purpose of the second access is for access to proposed leachate storage tanks in the event that trucking of leachate to a Publicly Owned Treatment Works (POTW) in emergency situations is needed. In the rare situation that the second access is needed for this purpose, a maximum of 10 trucks per day would utilize this access over the course of a few days. This secondary access is not proposed for delivery of landfill waste. The potential secondary access is located east of the existing landfill driveway, approximately 1,340 feet west of Sherry Hill Road.

TABLE 4 – SIGHT DISTANCE

Driveway Location	Required Stopping Sight Distance[1]		Preferred Intersection Sight Distance		Available (Current) Stopping Sight Distance		Proposed Sight Distance	
	Looking Left	Looking Right	Looking Left[2]	Looking Right[3]	Looking Left	Looking Right	Looking Left	Looking Right
Existing Driveway	314’	304’	445’	385’	450+’	400+’	450+’	400+’
Potential Eastern Driveway	345’	280’	445’	385’	450+’	300’	450+’	300’

[1] PA Code Title 67 Chapter 441 §441.8(h)(2) as calculated on back of form M-950S

[2] AASHTO *A Policy on Geometric Design of Highways and Streets,* 2018 Intersection Sight Distance Case B2

[3] AASHTO *A Policy on Geometric Design of Highways and Streets,* 2018 Intersection Sight Distance Case B1

As shown in **Table 4**, the site Driveway Location to SR 2012 (Applebutter Road) meets or exceeds the minimum required and preferred Safe Stopping Sight Distance criteria.

7. PLANNED ROADWAY IMPROVEMENTS

Based upon a review of the PennDOT Transportation Improvement Program (TIP), SR 2012 (Applebutter Road) is listed to be resurfaced along the entire project limits with a tentative let date of April 2029.

8. TRIP GENERATION AND DISTRIBUTION

8.1. TRIP GENERATION

Trip Generation is the method of determining the amount of future traffic associated with a proposed land use. The Institute of Transportation Engineers' (ITE) *Trip Generation*, 11th Edition, is typically used to determine anticipated trips generated by a particular development. However, since there is no ITE Land Use Code applicable for this use, trip generation for the proposed increase in landfill activity was estimated by comparing existing traffic and tonnage data with the proposed maximum daily tonnage. The current daily maximum volume (1,800 tons) is 1.27 times higher than the tonnage delivered on the day of the count (1,414.9 tons). Based upon the truck weight intake data for the same day, the average intake per vehicle is 12.63 tons/vehicle, however, this does not account for other vehicles entering and exiting the site not delivering waste, including landfill employees. Therefore, the existing driveway traffic volumes was increased by a factor of 1.27 to account for an estimate of the additional future peak hour activity at the landfill. Weight intake and delivery truck data is located in **Appendix D**.

Table 5 illustrates the total trips that are currently generated by the Bethlehem Landfill and those that are anticipated to be generated at maximum daily volume intake.

TABLE 5 – BETHLEHEM LANDFILL TRIP GENERATION

	Size (tonnage)	AM Peak Hour			PM Peak Hour			Weekday		
		Enter	Exit	Total	Enter	Exit	Total	Enter	Exit	Total
Existing Landfill	1,414.9	36	10	46	0	7	7	189	189	378
Landfill at MDV	1,800 MDV	46	12	58	0	9	9	240	240	480
Net Increase at MDV		**10**	**2**	**12**	**0**	**2**	**2**	**51**	**51**	**102**

As shown in **Table 5**, the landfill at the maximum permitted intake is anticipated to result in the addition of 102 new weekday trips, 12 new AM peak hour trips and 2 new PM peak hour trips.

8.2. TRIP DISTRIBUTION

Trips for the Bethlehem Landfill at maximum daily intake were assigned to the intersections by examination of current volume distributions and the roadway network in the vicinity of the site. It is expected that traffic will arrive and depart the site via the following distribution:

- 100% to/from the south via Shimersville Road

Figure 3 illustrates the trip generation distribution and assignments, and traffic volume projection spreadsheets are located in **Appendix C**.

8.3. 2022 MAXIMUM INTAKE TRAFFIC CONDITIONS

Maximum intake volumes were derived by adding the site generated traffic volumes to the Existing 2022 traffic volumes. Maximum intake traffic volumes for the 2022 Existing Conditions are shown in **Figure 4.**

8.4. 2032 MAXIMUM INTAKE TRAFFIC CONDITIONS

A growth rate of 4.8% (0.47% compounded for 10 years) was used to calculate future traffic for the 2032 Future Conditions year. The rate was obtained from the current PennDOT Table, "Growth Factors for August 2022 to July 2023" for an urban non-interstate in Northampton County. Maximum intake volumes for the 2032 Future (1,800 MDV) conditions were derived by adding the additional site generated traffic volumes to the 2032 Future traffic volumes. Maximum intake traffic volumes for the 2032 Future Conditions are shown in **Figure 4A**.

9. AUXILIARY LANE WARRANT ANALYSIS

Auxiliary lane warrant analyses were performed per Publication 46, Traffic Engineering Manual, published by PennDOT, for the site driveway. Based on the auxiliary lane warrant analysis, neither a left turn lane nor a right turn lane is warranted at this location for the maximum intake scenario.

The auxiliary lane warrant analysis printouts are included in **Appendix E**.

10. TRAFFIC SIGNAL WARRANT ANALYSIS

Traffic signal warrant analyses were performed per Publication 46, Traffic Engineering Manual, published by PennDOT, for the intersection of SR 2014 (Shimersville Road) & SR 2012 (Applebutter Road). Based on the signal warrant analyses, traffic signals are not warranted at this location.

The traffic signal warrant analysis information is included in **Appendix F**.

11. OPERATIONAL ANALYSIS

11.1. METHODOLOGY

Operations were evaluated at the study intersections. The analyses were performed in accordance with the procedures outlined in the *Highway Capacity Manual (HCM) 6th Edition*, published by the Transportation Research Board, as implemented by Trafficware's Synchro 11 software package and its HCM 6th Edition module. In addition, this study incorporates the Pennsylvania Default Values as prescribed in PennDOT's Publication 46, Traffic Engineering Manual, Section 10.4.

The Synchro software does not have fields to enter base critical headway and base follow-up headway, which are the defaults provided in PennDOT's Publication 46. The Synchro software has fields that are editable for the critical headway for movement and follow-up headway for movement as calculated by HCM equations 19-30 and 19-31, respectively. The equations are calculated in spreadsheets in **Appendix G**.

The results of the Synchro HCM analyses provide Level of Service (LOS), average seconds of vehicle delay experienced by motorists for each intersection and critical lane group, and 95th percentile queue values.

LOS is a qualitative measure of vehicle operator satisfaction with the overall driving experience through a particular facility, and in most cases, signalized and unsignalized intersections. Performance is quantified with designations of LOS 'A' through 'F' based on the average control delay (given in seconds per vehicle) per lane group and the overall intersection. These LOS designations describe the performance of the intersection from the motorist's perspective; with LOS 'A' representing the best or most ideal, free-flowing conditions and LOS 'F' representing congested conditions. Delay is the additional travel time experienced by a driver, passenger, or pedestrian. Control delay results when a control device causes a lane group to reduce speed or to stop; it is measured in comparison with an uncontrolled condition. Any estimate of the average travel speed on a street implies the effects of control delay.

By utilizing models to evaluate the flow of traffic at intersections, the delay experienced by vehicles at intersections can be estimated. These models consider such factors as traffic volume, roadway geometry, traffic control, and driver behavior. Levels of Service designations are based on comparisons of average delays calculated by models with perceived acceptable delays.

The definitions of Levels of Service "A" through "F" for both signalized and unsignalized intersections are contained in **Appendix H**. The values in these tables were used to derive the performance measures of the study intersections.

The analyses were conducted for the weekday AM and PM peak hours. **Figures 5 through 6A** illustrate the levels of service for all study conditions. Synchro reports are included in **Appendix I**.

11.2. LEVELS OF SERVICE FOR STUDY INTERSECTIONS

The results of the Synchro analyses provide Level of Service (LOS) and average seconds of vehicle delay experienced by motorists for each intersection and critical lane group are presented in **Table 1**. Synchro reports are included in **Appendix I**.

As can be seen in **Table 1**, all movements at all intersections are expected to operate at no worse than existing levels of service, even with the additional traffic from operating at the maximum daily intake volume. The westbound left at the Shimersville Road & Applebutter Road operates at LOS E in existing conditions and continues to operate at LOS E with the landfill operating at permitted maximum.

11.3. QUEUE ANALYSIS

The 95th percentile queues were analyzed in accordance with the procedures outlined in the *HCM 6th Edition* as implemented by Trafficware's Synchro software package. In addition, this study incorporates the Pennsylvania Default Values as prescribed in PennDOT's Publication 46, Traffic Engineering Manual, Section 10.4. **Table 2** summarizes the existing and maximum intake auxiliary lane storage lengths and the 95th percentile queue lengths for the auxiliary lanes and through movements at all study intersections. Synchro reports are included in **Appendix I**.

As can be seen in **Table 2**, all queues that currently stay within the available storage length are projected to remain within the available or proposed storage bay lengths. As a result, no queue storage problems are expected as a result of operating at the maximum permitted intake volume.

12. CRASH ANALYSIS

Crash data was obtained from PennDOT for the last five years (2016 through 2021) for Applebutter Road (SR 2012), from the intersection with Shimersville Road to the eastern property limits of the existing site.

The crash data includes 16 crashes along SR 2012 and 12 crashes at intersections along Applebutter Road. There is a combined total of 28 reportable crashes in the study area.

Of all the crashes within the project limits, 43 percent of the crashes (12 total) occurred at intersections or were related to an intersection (i.e. a rear end crash at the end of a queue approaching an intersection), these crashes are summarized in **Table 6** on the following page.

TABLE 6
REPORTABLE CRASH SUMMARY

Intersection	Total	Severity	Collision Type
Applebutter Road (SR 2012) & Shimersville Road (SR 2014)	11	PDO – 5 Injury – 6 Fatal – 0 Unknown – 0	Angle – 5 Non-Collision – 2 Hit Fixed Object – 3 Rear End – 1
Applebutter Road (SR 2012) & N. Easton Road	1	PDO – 1 Injury – 0 Fatal – 0 Unknown – 0	Hit Fixed Object – 1
Applebutter Road (Midblock)	16	PDO – 13 Injury – 1 Fatal – 0 Unknown – 2	Angle – 1 Rear End – 1 Hit Fixed Object – 9 Head-on – 1 Same-direction Sideswipe – 2 Non-collision – 2

As shown in **Table 6**, there were a total of 13 Hit Fixed object crashes (46% of total crashes) along Applebutter Road in the last 5 years. Based upon a detailed review of the crash data, all of these crashes were a result of improper driving errors or other factors such as deer in the road.

13. ROADWAY CONDITION REVIEW

A field review of the existing SR 2012 (Applebutter Road) was conducted to evaluate roadway conditions, pavement markings, painted legend markings, sign location/conditions and proximity of roadside obstructions.

Applebutter Road is primarily comprised of 11-foot-wide travel lanes with variable width shoulders ranging from 0’ to 5’. The pavement is generally in good condition within the study limits. Two localized areas were noted where roadside drainage appears to be causing minor settling and

pavement cracking at the shoulder limits. Roadside obstructions are located 2-8 feet from the edge of pavement. It was noted that several utility lines have been relocated to new utility poles farther from the roadway. There are several abandoned poles remaining close to the roadway that were not removed after the last utility was relocated.

Regulatory and advisory signage is posted along Applebutter Road within the study limits. Horizontal curves are signed in advance with advisory speed plaques and chevrons through the curves for increased visibility.

Pavement markings are visible and maintained within the study limits. Applebutter Road is striped with 4" white edge lines and 4" double yellow center line. Painted legends on the roadway supplement advance signage on approaches to horizontal curves.

A detailed summary of existing signs and painted legends are contained in **Appendix J**.

14. CONCLUSION

There are no notable increases (greater than 10 seconds) in delay for the overall intersection Level of Service at the study area intersections.

All queues that currently stay within the available storage length are projected to remain within the available storage bay lengths. No queue storage problems are expected as a result of this development.

The landfill operating at the maximum permitted daily intake volume is anticipated to result in the addition of 102 new weekday trips, 12 new AM peak hour trips and 2 new PM peak hour trips based upon weigh intake data and traffic counts at the existing site.

As can be seen in **Table 1**, all movements at all intersections are expected to operate at no worse than existing levels of service, even with the additional traffic from the development at maximum daily intake (current levels are no worse than maximum intake levels of service). The westbound left at the Shimersville Road & Applebutter Road operates at LOS E in existing conditions and continues to operate at LOS E at the current landfill maximum intake.

All movements at the existing site driveway are expected to operate at Level of Service B or better.

This study shows that traffic for the Bethlehem Landfill can be adequately accommodated by the surrounding roadway network.

FIGURES

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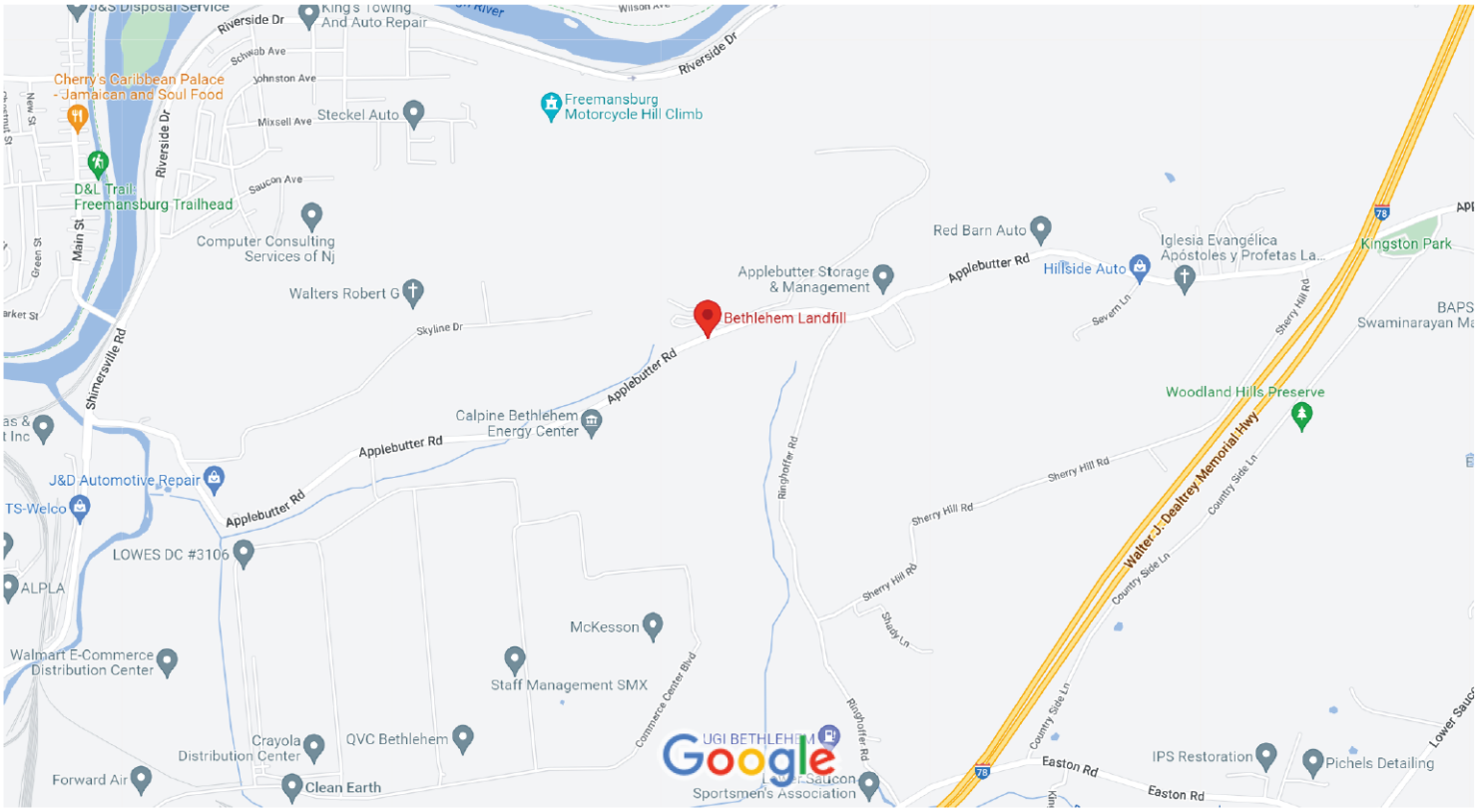

SITE LOCATION MAP

BETHLEHEM LANDFILL EVALUATION

FIGURE 1

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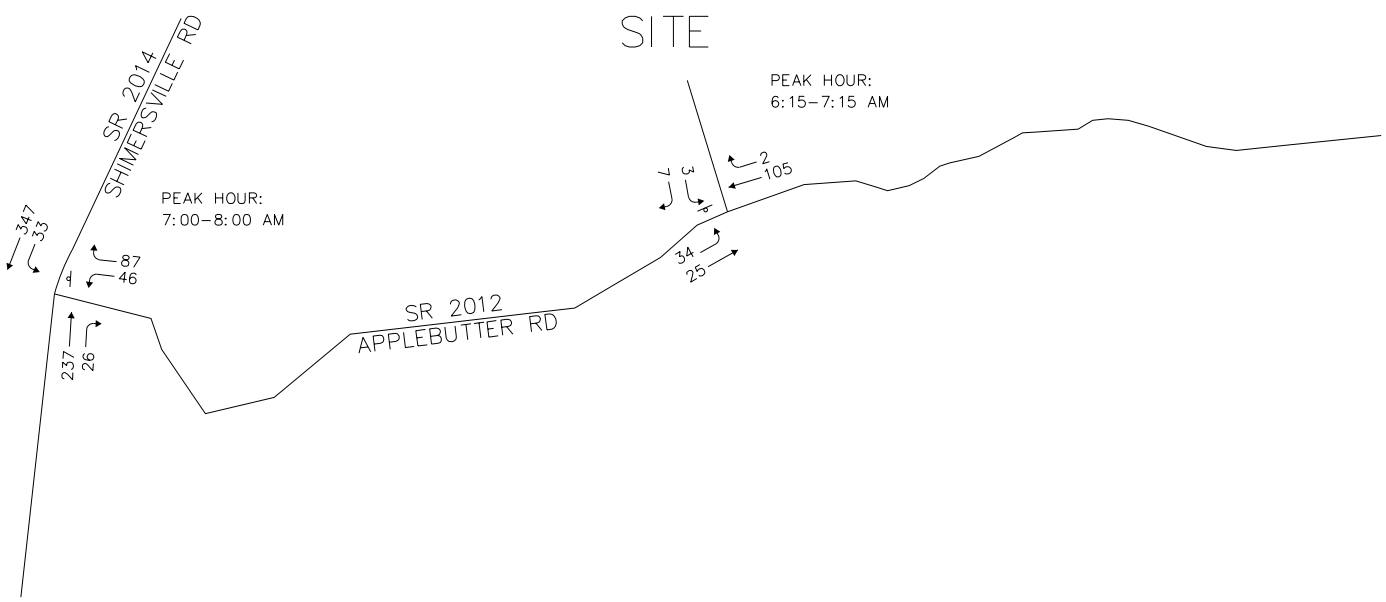
PENNONI ASSOCIATES INC.
CONSULTING ENGINEERS
81 HIGHLAND AVENUE
SUITE 230
BETHLEHEM, PA 18017

MRMTN22001

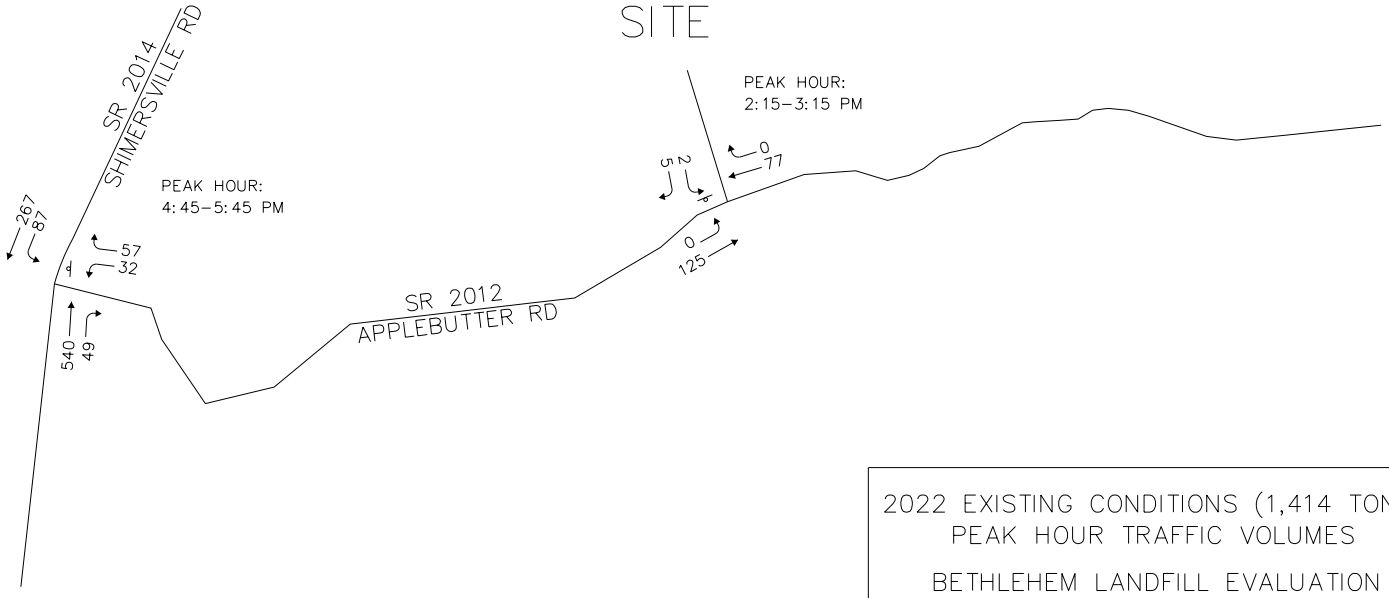
WEEKDAY AM PEAK HOUR

N

NOT TO SCALE



WEEKDAY PM PEAK HOUR



LEGEND:

– STOP SIGN

2022 EXISTING CONDITIONS (1,414 TONS)
PEAK HOUR TRAFFIC VOLUMES

BETHLEHEM LANDFILL EVALUATION

FIGURE 2

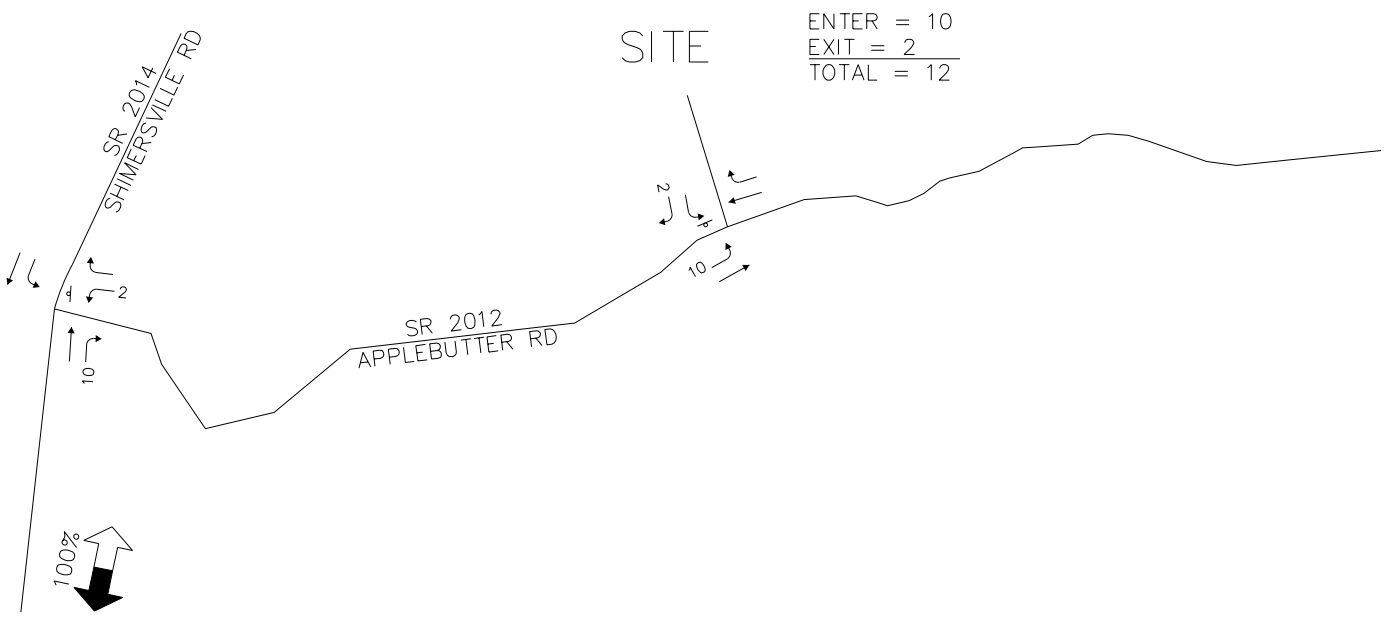
PENNONI ASSOCIATES INC.
CONSULTING ENGINEERS
81 HIGHLAND AVENUE
SUITE 230
BETHLEHEM, PA 18017

MRMTN22001

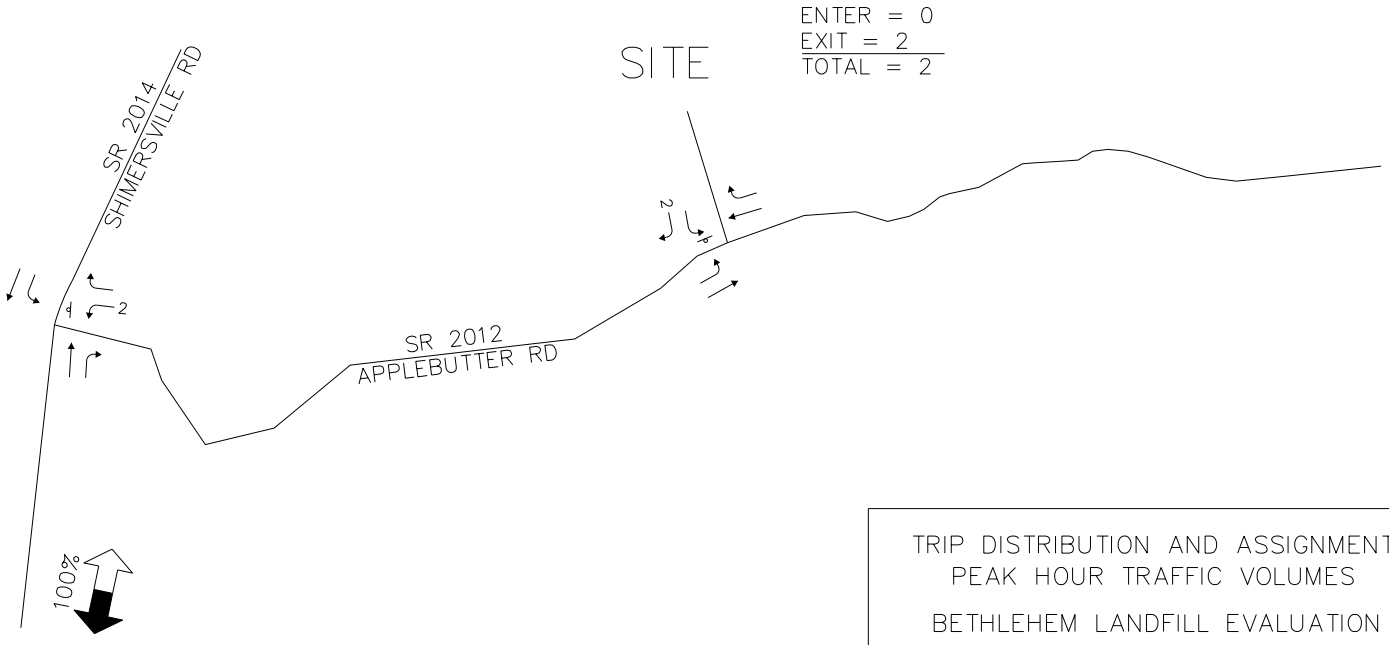
WEEKDAY AM PEAK HOUR

N

NOT TO SCALE



WEEKDAY PM PEAK HOUR



LEGEND:

4 – STOP SIGN

TRIP DISTRIBUTION AND ASSIGNMENT
PEAK HOUR TRAFFIC VOLUMES

BETHLEHEM LANDFILL EVALUATION

FIGURE 3

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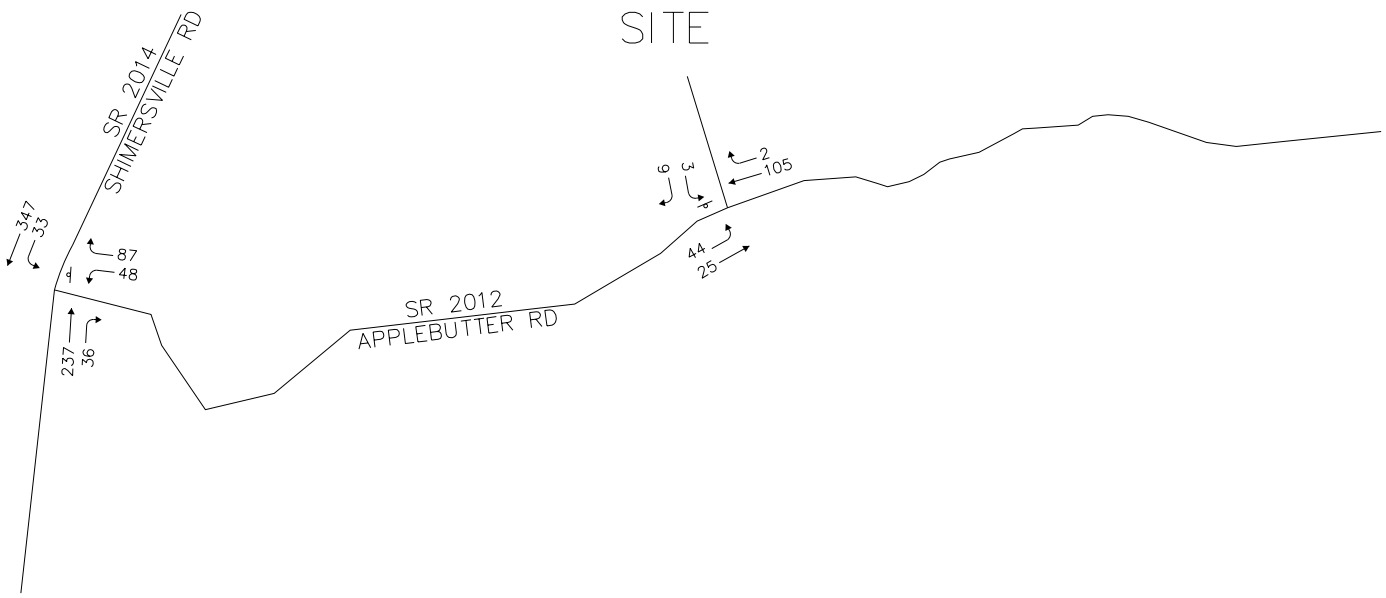
PENNONI ASSOCIATES INC.
CONSULTING ENGINEERS
81 HIGHLAND AVENUE
SUITE 230
BETHLEHEM, PA 18017

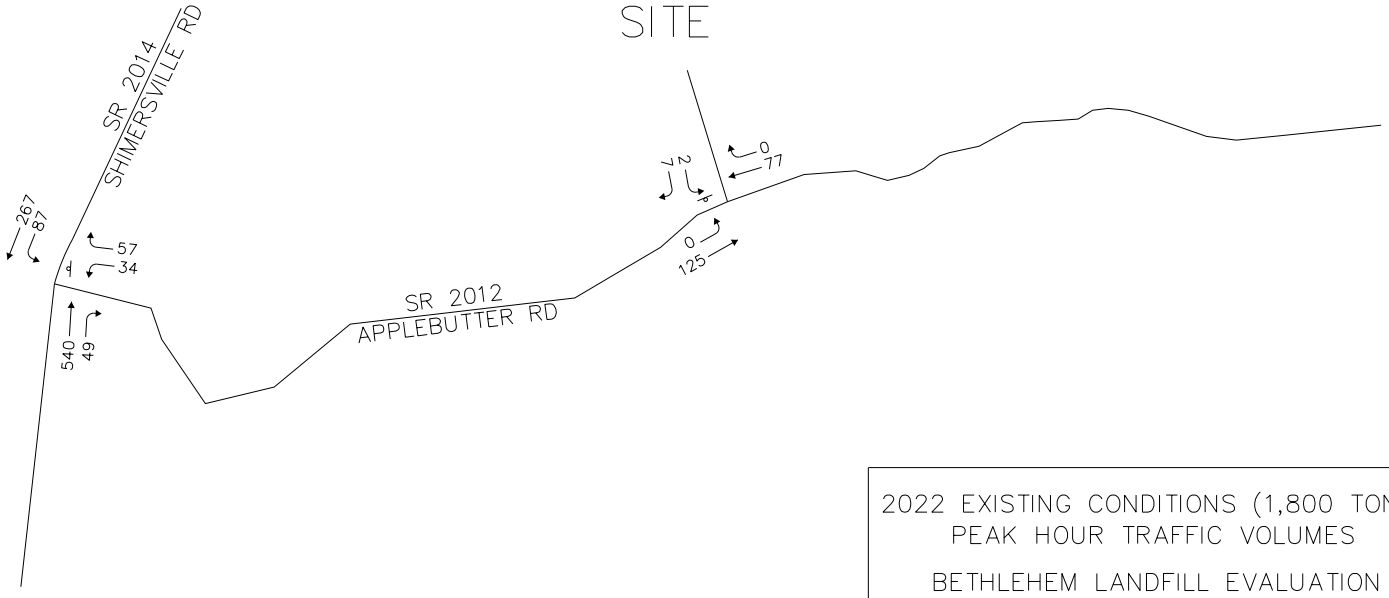
MRMTN22001

WEEKDAY AM PEAK HOUR

NOT TO SCALE



WEEKDAY PM PEAK HOUR



LEGEND:

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2022 EXISTING CONDITIONS (1,800 TONS)
PEAK HOUR TRAFFIC VOLUMES

BETHLEHEM LANDFILL EVALUATION

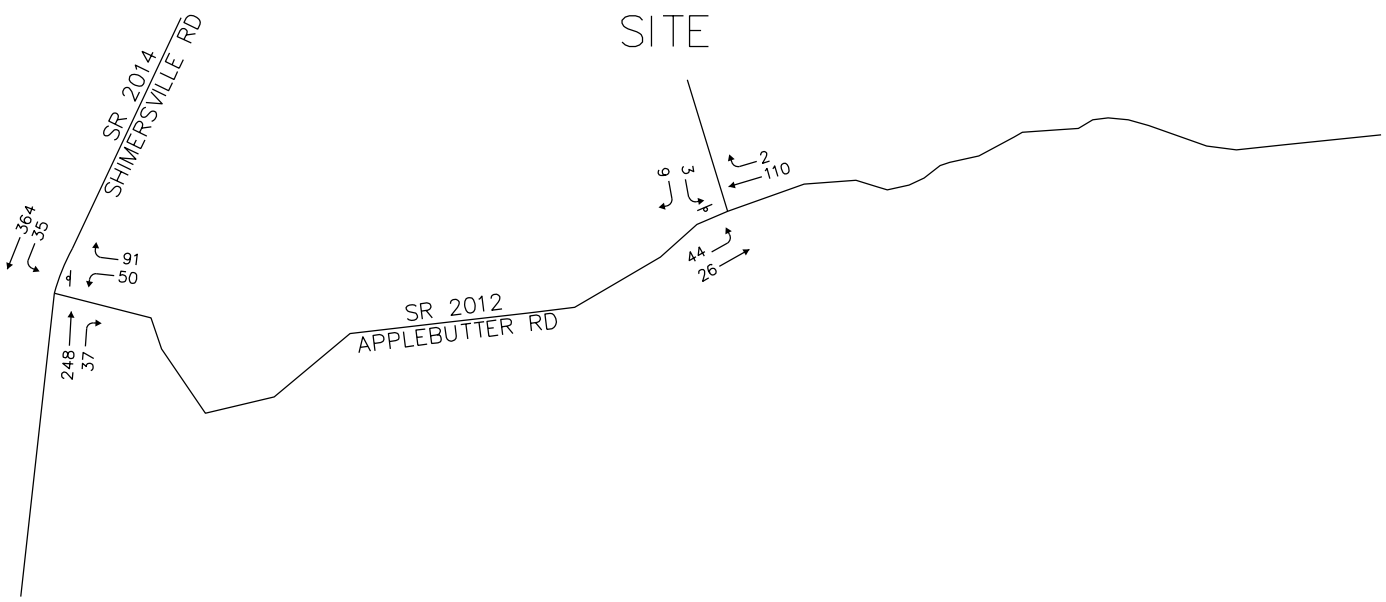
FIGURE 4

PENNONI ASSOCIATES INC.
CONSULTING ENGINEERS
81 HIGHLAND AVENUE
SUITE 230
BETHLEHEM, PA 18017

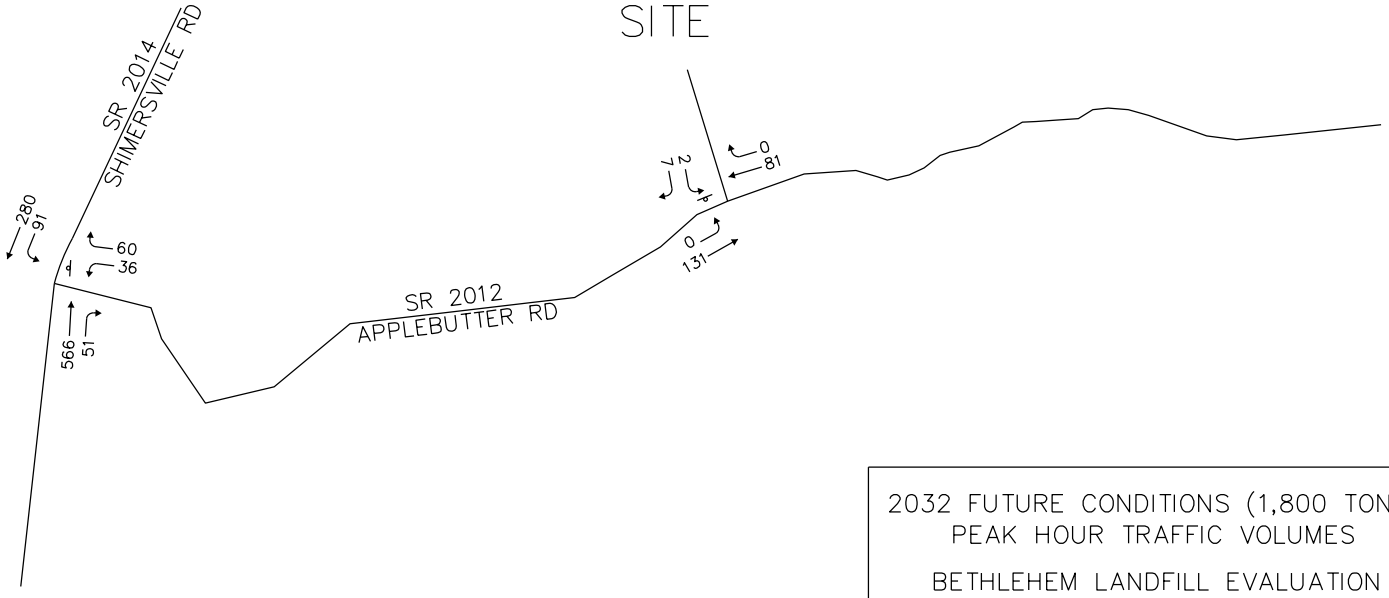
MRMTN22001

WEEKDAY AM PEAK HOUR

NOT TO SCALE



WEEKDAY PM PEAK HOUR



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2032 FUTURE CONDITIONS (1,800 TONS)
PEAK HOUR TRAFFIC VOLUMES

BETHLEHEM LANDFILL EVALUATION

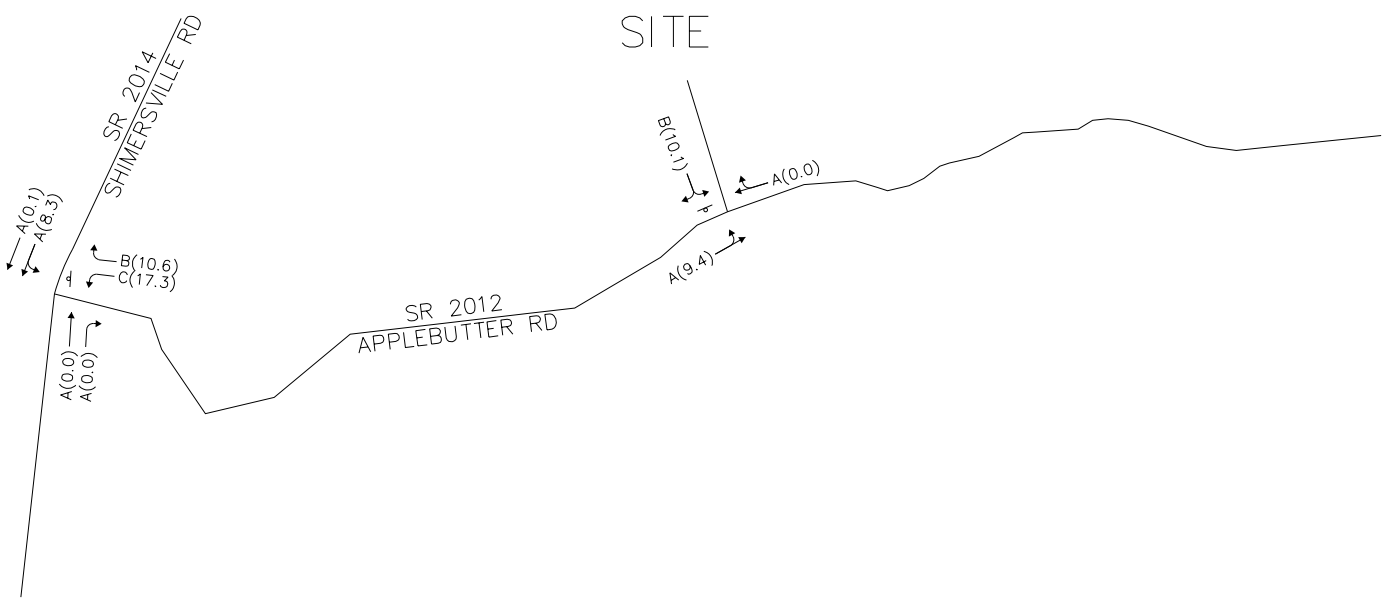
FIGURE 4A

PENNONI ASSOCIATES INC.
CONSULTING ENGINEERS
81 HIGHLAND AVENUE
SUITE 230
BETHLEHEM, PA 18017

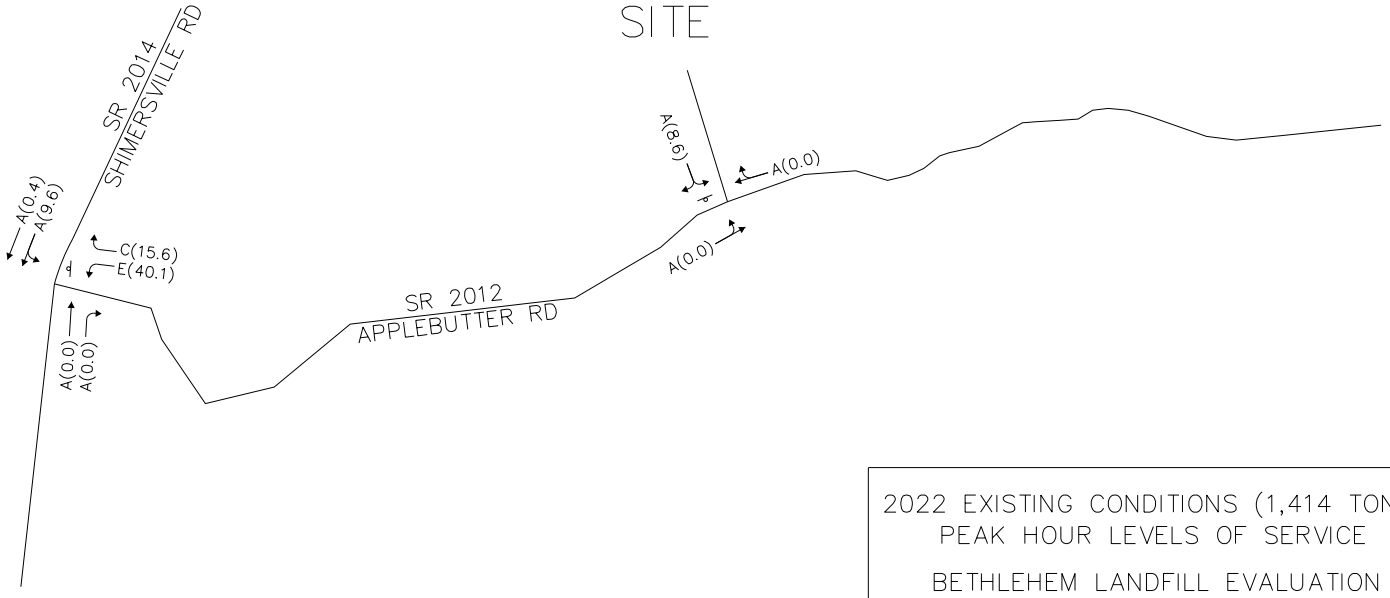
MRMTN22001

WEEKDAY AM PEAK HOUR

NOT TO SCALE



WEEKDAY PM PEAK HOUR



LEGEND:

A(9.8) – LEVEL OF SERVICE (DELAY)

– STOP SIGN

2022 EXISTING CONDITIONS (1,414 TONS)
PEAK HOUR LEVELS OF SERVICE

BETHLEHEM LANDFILL EVALUATION

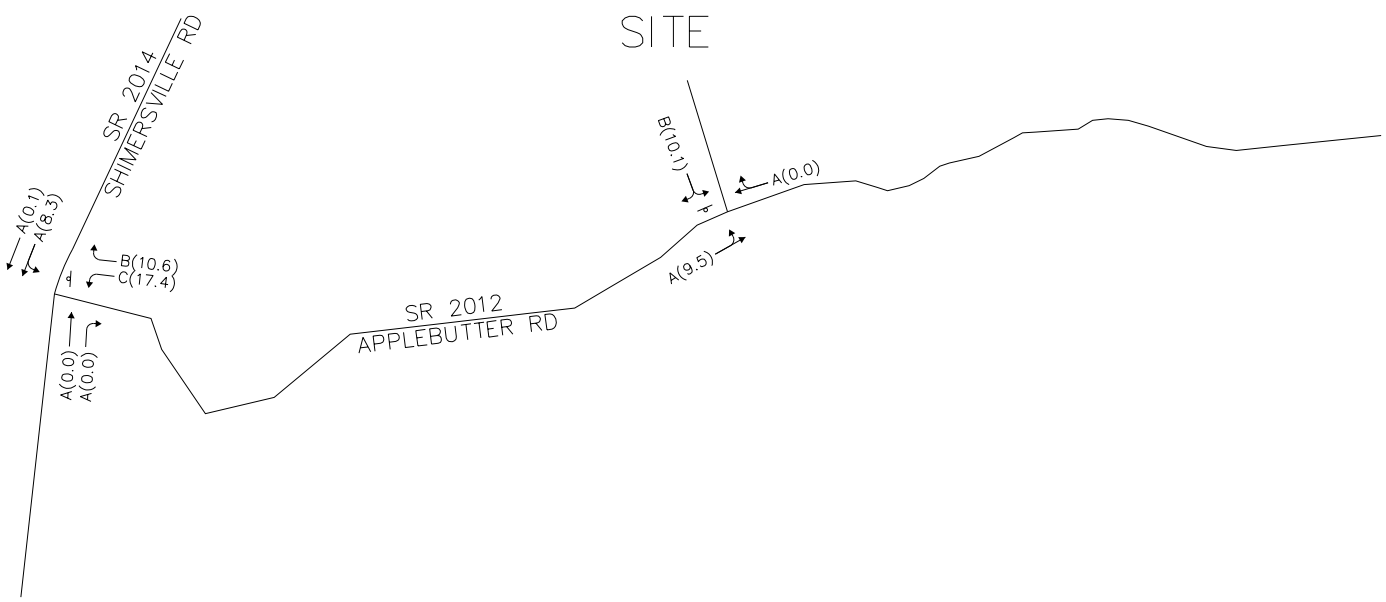
FIGURE 5

PENNONI ASSOCIATES INC.
CONSULTING ENGINEERS
81 HIGHLAND AVENUE
SUITE 230
BETHLEHEM, PA 18017

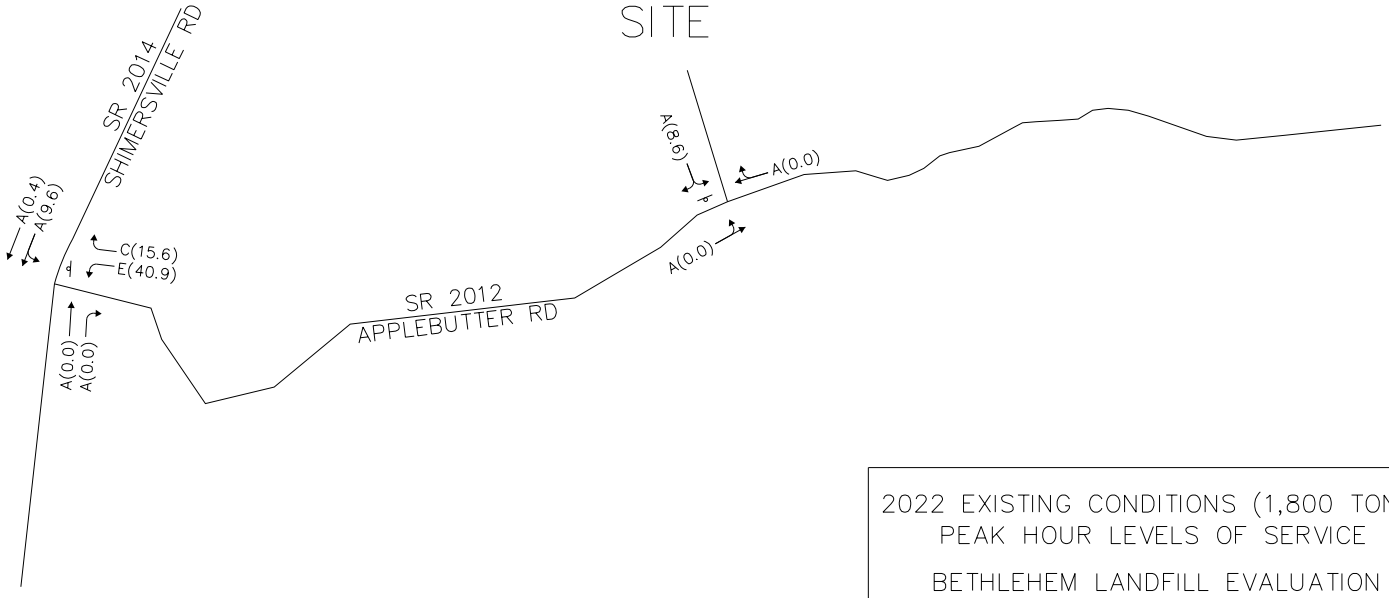
MRMTN22001

WEEKDAY AM PEAK HOUR

NOT TO SCALE



WEEKDAY PM PEAK HOUR



LEGEND:

A(9.8) – LEVEL OF SERVICE (DELAY)

– STOP SIGN

2022 EXISTING CONDITIONS (1,800 TONS)
PEAK HOUR LEVELS OF SERVICE

BETHLEHEM LANDFILL EVALUATION

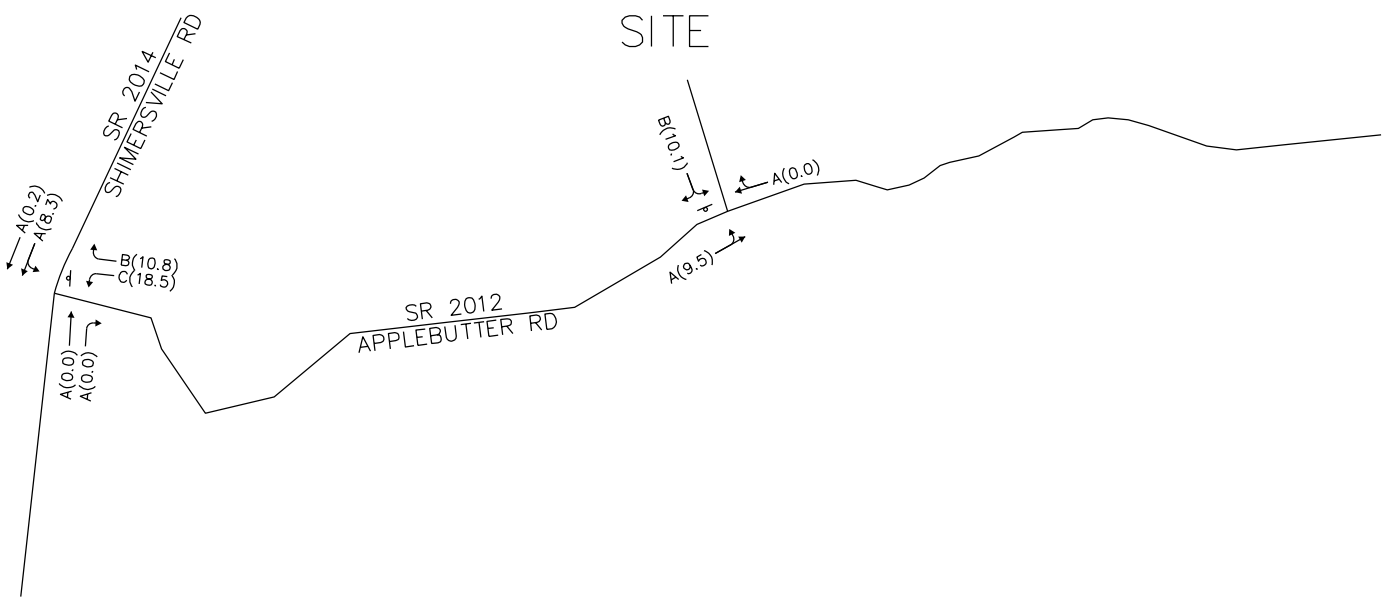
FIGURE 6

PENNONI ASSOCIATES INC.
CONSULTING ENGINEERS
81 HIGHLAND AVENUE
SUITE 230
BETHLEHEM, PA 18017

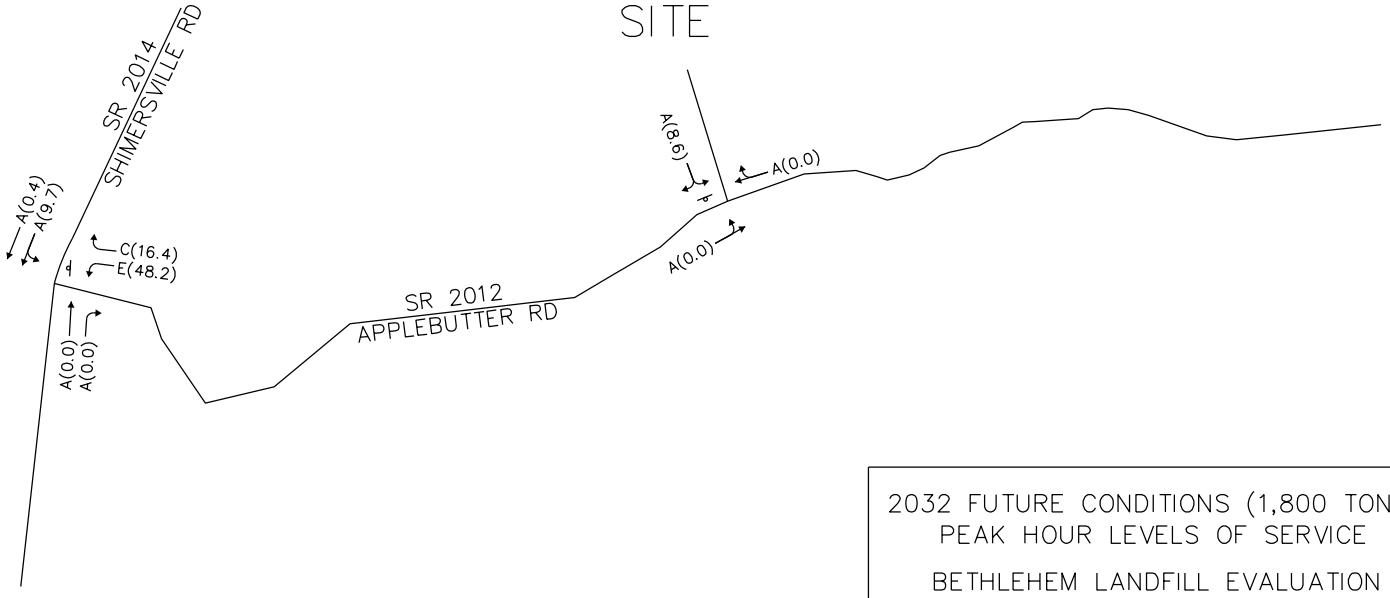
MRMTN22001

WEEKDAY AM PEAK HOUR

NOT TO SCALE



WEEKDAY PM PEAK HOUR



LEGEND:

A(9.8) – LEVEL OF SERVICE (DELAY)

– STOP SIGN

2032 FUTURE CONDITIONS (1,800 TONS)
PEAK HOUR LEVELS OF SERVICE

BETHLEHEM LANDFILL EVALUATION

FIGURE 6A

PENNONI ASSOCIATES INC.
CONSULTING ENGINEERS
81 HIGHLAND AVENUE
SUITE 230
BETHLEHEM, PA 18017

MRMTN22001

APPENDICES

APPENDIX A - TRAFFIC COUNT DATA

Project: Applebutter
Municipality: Bethlehem, Northampton County, PA
Setup: GP
Location: 40.621562, -75.309086

Imperial Traffic & Data Collection
www.imperialtdc.com
PO BOX 4637
Cherry Hill, New Jersey, United States 08034
609-706-6100 hfurey@imperialtdc.com

Count Name: 1. Applebutter Road & Bethlehem Landfill Driveway
Site Code: 1
Start Date: 11/01/2022

Turning Movement Data

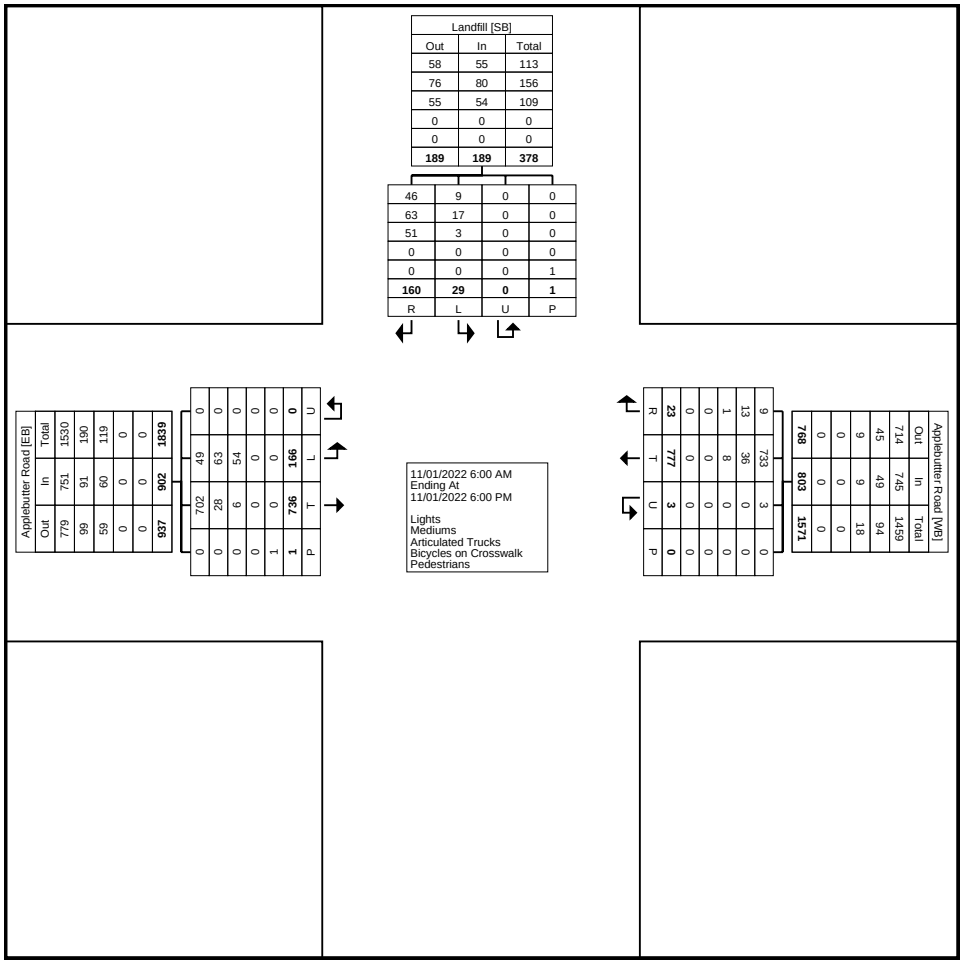
Start Time	Applebutter Road Eastbound					Applebuttter Road Westbound					Landfill Southbound					
	U-Turn	Left	Thru	Peds	App. Total	U-Turn	Thru	Right	Peds	App. Total	U-Turn	Left	Right	Peds	App. Total	Int. Total
6:00 AM	0	3	3	0	6	0	8	0	0	8	0	0	1	0	1	15
6:15 AM	0	8	3	0	11	0	10	1	0	11	0	0	1	0	1	23
6:30 AM	0	8	10	0	18	0	19	0	0	19	0	0	1	0	1	38
6:45 AM	0	6	17	0	23	0	8	0	0	8	0	1	1	0	2	33
Hourly Total	0	25	33	0	58	0	45	1	0	46	0	1	4	0	5	109
7:00 AM	0	22	7	0	29	0	15	0	0	15	0	2	0	0	2	46
7:15 AM	0	5	6	0	11	0	25	1	0	26	0	1	1	0	2	39
7:30 AM	0	2	4	0	6	0	26	0	0	26	0	0	2	0	2	34
7:45 AM	0	5	8	0	13	0	39	1	0	40	0	0	4	0	4	57
Hourly Total	0	34	25	0	59	0	105	2	0	107	0	3	7	0	10	176
8:00 AM	0	0	7	0	7	0	27	0	0	27	0	1	2	0	3	37
8:15 AM	0	6	11	0	17	0	26	0	0	26	0	0	1	0	1	44
8:30 AM	0	2	10	0	12	0	15	1	0	16	0	1	5	0	6	34
8:45 AM	0	4	16	0	20	0	20	0	0	20	0	1	3	0	4	44
Hourly Total	0	12	44	0	56	0	88	1	0	89	0	3	11	0	14	159
9:00 AM	0	2	11	0	13	0	10	0	0	10	0	0	7	0	7	30
9:15 AM	0	3	9	0	12	0	17	1	0	18	0	0	2	0	2	32
9:30 AM	0	3	14	1	17	0	6	1	0	7	0	0	4	0	4	28
9:45 AM	0	2	8	0	10	0	8	0	0	8	0	0	8	0	8	26
Hourly Total	0	10	42	1	52	0	41	2	0	43	0	0	21	0	21	116
10:00 AM	0	1	16	0	17	0	15	1	0	16	0	0	4	0	4	37
10:15 AM	0	7	6	0	13	0	16	0	0	16	0	1	2	0	3	32
10:30 AM	0	5	7	0	12	0	15	0	0	15	0	0	3	0	3	30
10:45 AM	0	4	14	0	18	0	7	0	0	7	0	1	4	0	5	30
Hourly Total	0	17	43	0	60	0	53	1	0	54	0	2	13	0	15	129
11:00 AM	0	3	12	0	15	0	16	2	0	18	0	0	5	0	5	38
11:15 AM	0	5	5	0	10	0	10	0	0	10	0	1	5	0	6	26
11:30 AM	0	3	15	0	18	0	15	1	0	16	0	2	5	0	7	41
11:45 AM	0	7	14	0	21	0	12	0	0	12	0	1	9	0	10	43
Hourly Total	0	18	46	0	64	0	53	3	0	56	0	4	24	0	28	148
12:00 PM	0	4	12	0	16	0	17	1	0	18	0	2	4	0	6	40
12:15 PM	0	10	20	0	30	0	8	1	0	9	0	0	6	0	6	45
12:30 PM	0	5	17	0	22	0	14	0	0	14	0	0	7	0	7	43
12:45 PM	0	4	11	0	15	0	12	0	0	12	0	0	4	1	4	31
Hourly Total	0	23	60	0	83	0	51	2	0	53	0	2	21	1	23	159
1:00 PM	0	4	8	0	12	0	20	2	0	22	0	0	5	0	5	39

1:15 PM	0	4	8	0	12	0	9	0	0	9	0	2	1	0	3	24
1:30 PM	0	3	19	0	22	0	19	0	0	19	0	0	4	0	4	45
1:45 PM	0	2	14	0	16	0	11	2	0	13	0	2	3	0	5	34
Hourly Total	0	13	49	0	62	0	59	4	0	63	0	4	13	0	17	142
2:00 PM	0	5	11	0	16	0	5	1	0	6	0	1	4	0	5	27
2:15 PM	0	3	17	0	20	1	14	1	0	16	0	0	6	0	6	42
2:30 PM	0	2	22	0	24	0	17	0	0	17	0	2	2	0	4	45
2:45 PM	0	0	24	0	24	0	17	1	0	18	0	1	6	0	7	49
Hourly Total	0	10	74	0	84	1	53	3	0	57	0	4	18	0	22	163
3:00 PM	0	2	27	0	29	0	14	1	0	15	0	0	10	0	10	54
3:15 PM	0	2	24	0	26	0	18	0	0	18	0	0	3	0	3	47
3:30 PM	0	0	23	0	23	0	20	0	0	20	0	2	2	0	4	47
3:45 PM	0	0	22	0	22	0	20	0	0	20	0	0	2	0	2	44
Hourly Total	0	4	96	0	100	0	72	1	0	73	0	2	17	0	19	192
4:00 PM	0	0	34	0	34	0	24	0	0	24	0	1	2	0	3	61
4:15 PM	0	0	21	0	21	0	20	2	0	22	0	1	2	0	3	46
4:30 PM	0	0	26	0	26	0	21	0	0	21	0	0	2	0	2	49
4:45 PM	0	0	36	0	36	0	13	0	0	13	0	1	2	0	3	52
Hourly Total	0	0	117	0	117	0	78	2	0	80	0	3	8	0	11	208
5:00 PM	0	0	32	0	32	1	26	0	0	27	0	1	1	0	2	61
5:15 PM	0	0	31	0	31	0	17	0	0	17	0	0	0	0	0	48
5:30 PM	0	0	25	0	25	0	20	0	0	20	0	0	0	0	0	45
5:45 PM	0	0	19	0	19	1	16	1	0	18	0	0	2	0	2	39
Hourly Total	0	0	107	0	107	2	79	1	0	82	0	1	3	0	4	193
Grand Total	0	166	736	1	902	3	777	23	0	803	0	29	160	1	189	1894
Approach %	0.0	18.4	81.6	-	-	0.4	96.8	2.9	-	-	0.0	15.3	84.7	-	-	-
Total %	0.0	8.8	38.9	-	47.6	0.2	41.0	1.2	-	42.4	0.0	1.5	8.4	-	10.0	-
Lights	0	49	702	-	751	3	733	9	-	745	0	9	46	-	55	1551
% Lights	-	29.5	95.4	-	83.3	100.0	94.3	39.1	-	92.8	-	31.0	28.8	-	29.1	81.9
Mediums	0	63	28	-	91	0	36	13	-	49	0	17	63	-	80	220
% Mediums	-	38.0	3.8	-	10.1	0.0	4.6	56.5	-	6.1	-	58.6	39.4	-	42.3	11.6
Articulated Trucks	0	54	6	-	60	0	8	1	-	9	0	3	51	-	54	123
% Articulated Trucks	-	32.5	0.8	-	6.7	0.0	1.0	4.3	-	1.1	-	10.3	31.9	-	28.6	6.5
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	1	-	-	-	-	0	-	-	-	-	1	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	-	-	-	-	-	100.0	-	-

Project: Applebutter
Municipality: Bethlehem, Northampton County, PA
Setup: GP
Location: 40.621562, -75.309086

Imperial Traffic & Data Collection
www.imperialtdc.com
PO BOX 4637
Cherry Hill, New Jersey, United States 08034
609-706-6100 hfurey@imperialtdc.com

Count Name: 1. Applebutter Road & Bethlehem Landfill Driveway
Site Code: 1
Start Date: 11/01/2022



Turning Movement Data Plot

Project: Applebutter
Municipality: Bethlehem, Northampton County, PA
Setup: GP
Location: 40.621562, -75.309086

Imperial Traffic & Data Collection
www.imperialtdc.com
PO BOX 4637
Cherry Hill, New Jersey, United States 08034
609-706-6100 hfurey@imperialtdc.com

Count Name: 1. Applebutter Road & Bethlehem Landfill Driveway
Site Code: 1
Start Date: 11/01/2022

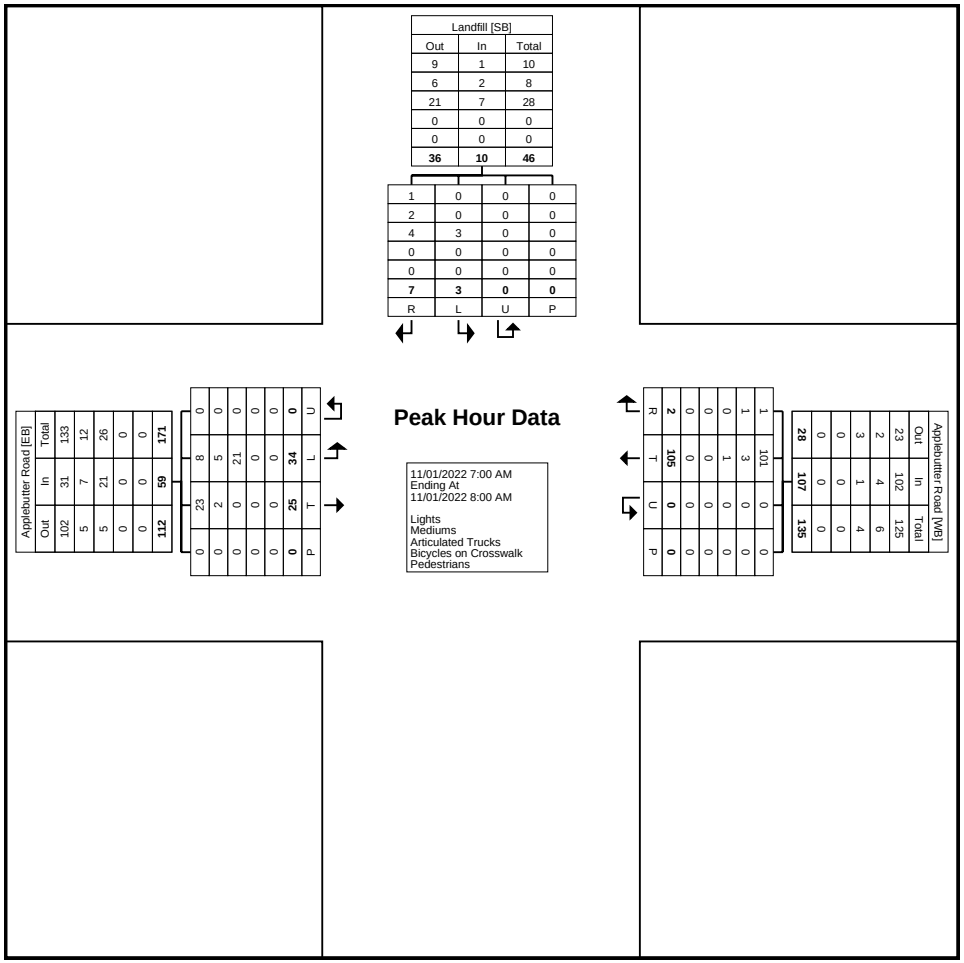
Turning Movement Peak Hour Data (7:00 AM)

Start Time	Applebutter Road Eastbound					Applebuttter Road Westbound					Landfill Southbound					
	U-Turn	Left	Thru	Peds	App. Total	U-Turn	Thru	Right	Peds	App. Total	U-Turn	Left	Right	Peds	App. Total	Int. Total
7:00 AM	0	22	7	0	29	0	15	0	0	15	0	2	0	0	2	46
7:15 AM	0	5	6	0	11	0	25	1	0	26	0	1	1	0	2	39
7:30 AM	0	2	4	0	6	0	26	0	0	26	0	0	2	0	2	34
7:45 AM	0	5	8	0	13	0	39	1	0	40	0	0	4	0	4	57
Total	0	34	25	0	59	0	105	2	0	107	0	3	7	0	10	176
Approach %	0.0	57.6	42.4	-	-	0.0	98.1	1.9	-	-	0.0	30.0	70.0	-	-	-
Total %	0.0	19.3	14.2	-	33.5	0.0	59.7	1.1	-	60.8	0.0	1.7	4.0	-	5.7	-
PHF	0.000	0.386	0.781	-	0.509	0.000	0.673	0.500	-	0.669	0.000	0.375	0.438	-	0.625	0.772
Lights	0	8	23	-	31	0	101	1	-	102	0	0	1	-	1	134
% Lights	-	23.5	92.0	-	52.5	-	96.2	50.0	-	95.3	-	0.0	14.3	-	10.0	76.1
Mediums	0	5	2	-	7	0	3	1	-	4	0	0	2	-	2	13
% Mediums	-	14.7	8.0	-	11.9	-	2.9	50.0	-	3.7	-	0.0	28.6	-	20.0	7.4
Articulated Trucks	0	21	0	-	21	0	1	0	-	1	0	3	4	-	7	29
% Articulated Trucks	-	61.8	0.0	-	35.6	-	1.0	0.0	-	0.9	-	100.0	57.1	-	70.0	16.5
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Project: Applebutter
Municipality: Bethlehem, Northampton County, PA
Setup: GP
Location: 40.621562, -75.309086

Imperial Traffic & Data Collection
www.imperialtdc.com
PO BOX 4637
Cherry Hill, New Jersey, United States 08034
609-706-6100 hfurey@imperialtdc.com

Count Name: 1. Applebutter Road & Bethlehem Landfill Driveway
Site Code: 1
Start Date: 11/01/2022



Turning Movement Peak Hour Data Plot (7:00 AM)

Project: Applebutter
Municipality: Bethlehem, Northampton County, PA
Setup: GP
Location: 40.621562, -75.309086

Imperial Traffic & Data Collection
www.imperialtdc.com
PO BOX 4637
Cherry Hill, New Jersey, United States 08034
609-706-6100 hfurey@imperialtdc.com

Count Name: 1. Applebutter Road & Bethlehem Landfill Driveway
Site Code: 1
Start Date: 11/01/2022

Turning Movement Peak Hour Data (11:45 AM)

Start Time	Applebutter Road Eastbound					Applebuttter Road Westbound					Landfill Southbound					
	U-Turn	Left	Thru	Peds	App. Total	U-Turn	Thru	Right	Peds	App. Total	U-Turn	Left	Right	Peds	App. Total	Int. Total
11:45 AM	0	7	14	0	21	0	12	0	0	12	0	1	9	0	10	43
12:00 PM	0	4	12	0	16	0	17	1	0	18	0	2	4	0	6	40
12:15 PM	0	10	20	0	30	0	8	1	0	9	0	0	6	0	6	45
12:30 PM	0	5	17	0	22	0	14	0	0	14	0	0	7	0	7	43
Total	0	26	63	0	89	0	51	2	0	53	0	3	26	0	29	171
Approach %	0.0	29.2	70.8	-	-	0.0	96.2	3.8	-	-	0.0	10.3	89.7	-	-	-
Total %	0.0	15.2	36.8	-	52.0	0.0	29.8	1.2	-	31.0	0.0	1.8	15.2	-	17.0	-
PHF	0.000	0.650	0.788	-	0.742	0.000	0.750	0.500	-	0.736	0.000	0.375	0.722	-	0.725	0.950
Lights	0	9	55	-	64	0	48	0	-	48	0	1	6	-	7	119
% Lights	-	34.6	87.3	-	71.9	-	94.1	0.0	-	90.6	-	33.3	23.1	-	24.1	69.6
Mediums	0	14	8	-	22	0	3	2	-	5	0	2	16	-	18	45
% Mediums	-	53.8	12.7	-	24.7	-	5.9	100.0	-	9.4	-	66.7	61.5	-	62.1	26.3
Articulated Trucks	0	3	0	-	3	0	0	0	-	0	0	0	4	-	4	7
% Articulated Trucks	-	11.5	0.0	-	3.4	-	0.0	0.0	-	0.0	-	0.0	15.4	-	13.8	4.1
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Project: Applebutter
Municipality: Bethlehem, Northampton County, PA
Setup: GP
Location: 40.621562, -75.309086

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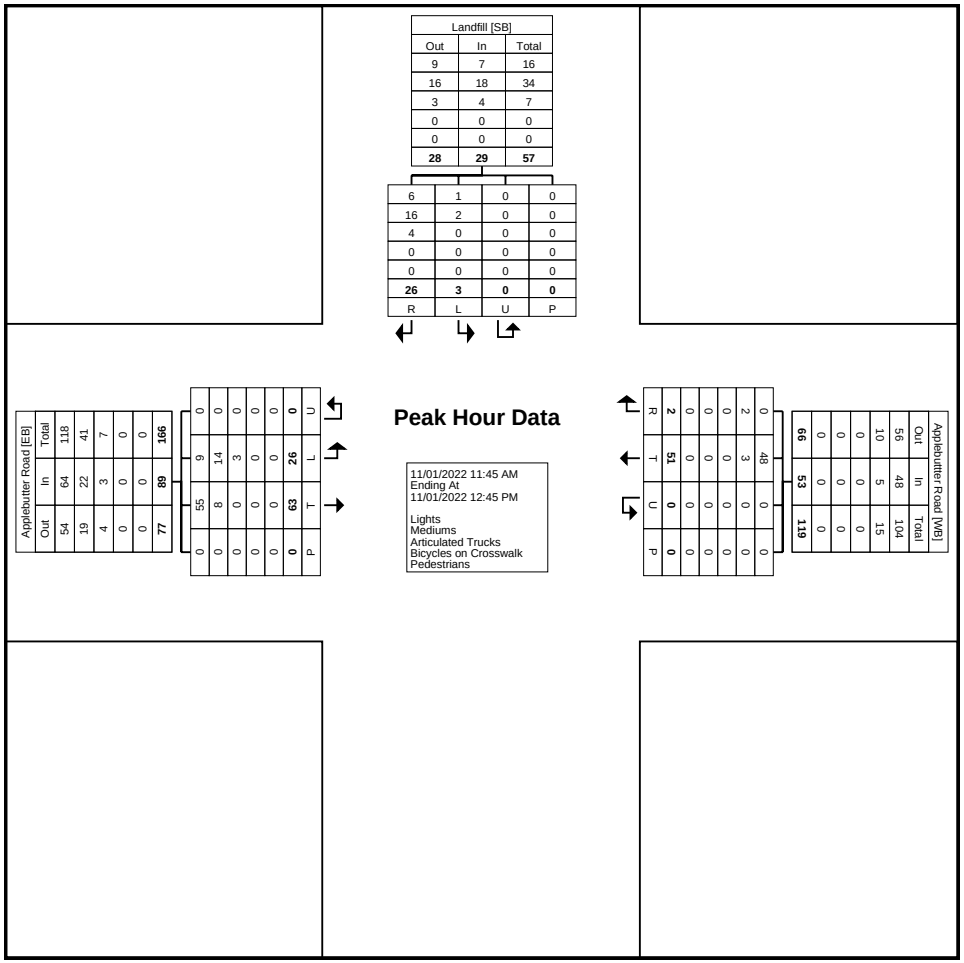
Count Name: 1. Applebutter Road & Bethlehem Landfill Driveway
Site Code: 1
Start Date: 11/01/2022



Turning Movement Peak Hour Data Plot (11:45 AM)

Project: Applebutter
Municipality: Bethlehem, Northampton County, PA
Setup: GP
Location: 40.621562, -75.309086

Imperial Traffic & Data Collection
www.imperialtdc.com
PO BOX 4637
Cherry Hill, New Jersey, United States 08034
609-706-6100 hfurey@imperialtdc.com

Count Name: 1. Applebutter Road & Bethlehem Landfill Driveway
Site Code: 1
Start Date: 11/01/2022

Turning Movement Peak Hour Data (4:30 PM)

Start Time	Applebutter Road Eastbound					Applebuttter Road Westbound					Landfill Southbound					
	U-Turn	Left	Thru	Peds	App. Total	U-Turn	Thru	Right	Peds	App. Total	U-Turn	Left	Right	Peds	App. Total	Int. Total
4:30 PM	0	0	26	0	26	0	21	0	0	21	0	0	2	0	2	49
4:45 PM	0	0	36	0	36	0	13	0	0	13	0	1	2	0	3	52
5:00 PM	0	0	32	0	32	1	26	0	0	27	0	1	1	0	2	61
5:15 PM	0	0	31	0	31	0	17	0	0	17	0	0	0	0	0	48
Total	0	0	125	0	125	1	77	0	0	78	0	2	5	0	7	210
Approach %	0.0	0.0	100.0	-	-	1.3	98.7	0.0	-	-	0.0	28.6	71.4	-	-	-
Total %	0.0	0.0	59.5	-	59.5	0.5	36.7	0.0	-	37.1	0.0	1.0	2.4	-	3.3	-
PHF	0.000	0.000	0.868	-	0.868	0.250	0.740	0.000	-	0.722	0.000	0.500	0.625	-	0.583	0.861
Lights	0	0	124	-	124	1	74	0	-	75	0	2	5	-	7	206
% Lights	-	-	99.2	-	99.2	100.0	96.1	-	-	96.2	-	100.0	100.0	-	100.0	98.1
Mediums	0	0	1	-	1	0	3	0	-	3	0	0	0	-	0	4
% Mediums	-	-	0.8	-	0.8	0.0	3.9	-	-	3.8	-	0.0	0.0	-	0.0	1.9
Articulated Trucks	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Articulated Trucks	-	-	0.0	-	0.0	0.0	0.0	-	-	0.0	-	0.0	0.0	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Project: Applebutter
Municipality: Bethlehem, Northampton County, PA
Setup: GP
Location: 40.621562, -75.309086

Imperial Traffic & Data Collection
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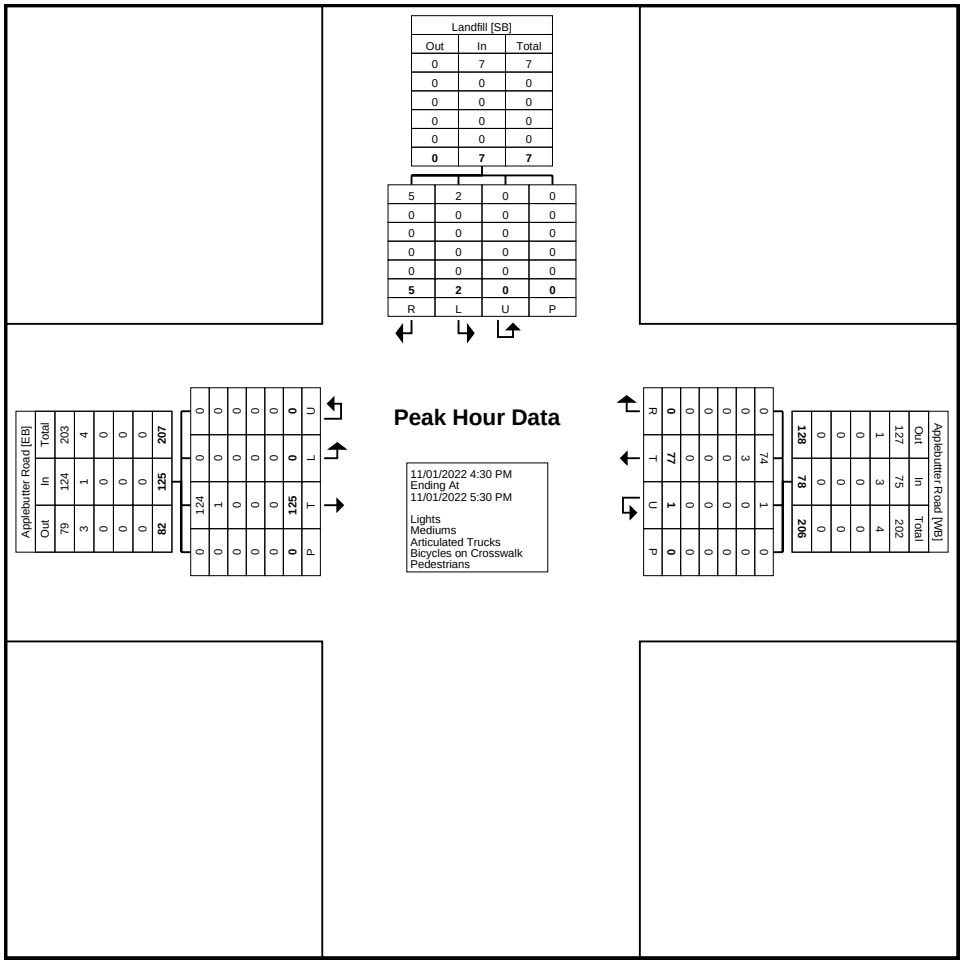
PO BOX 4637
Cherry Hill, New Jersey, United States 08034
609-706-6100 hfurey@imperialtdc.com

Count Name: 1. Applebutter Road & Bethlehem Landfill Driveway
Site Code: 1
Start Date: 11/01/2022



Turning Movement Peak Hour Data Plot (4:30 PM)

Project: Applebutter
Municipality: Bethlehem, Northampton County, PA
Setup: GP
Location: 40.618875, -75.334647

Imperial Traffic & Data Collection
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PO BOX 4637
Cherry Hill, New Jersey, United States 08034
609-706-6100 hfurey@imperialtdc.com

Count Name: 2. Applebutter Road and Shimersville Road
Site Code: 2
Start Date: 11/01/2022

Turning Movement Data

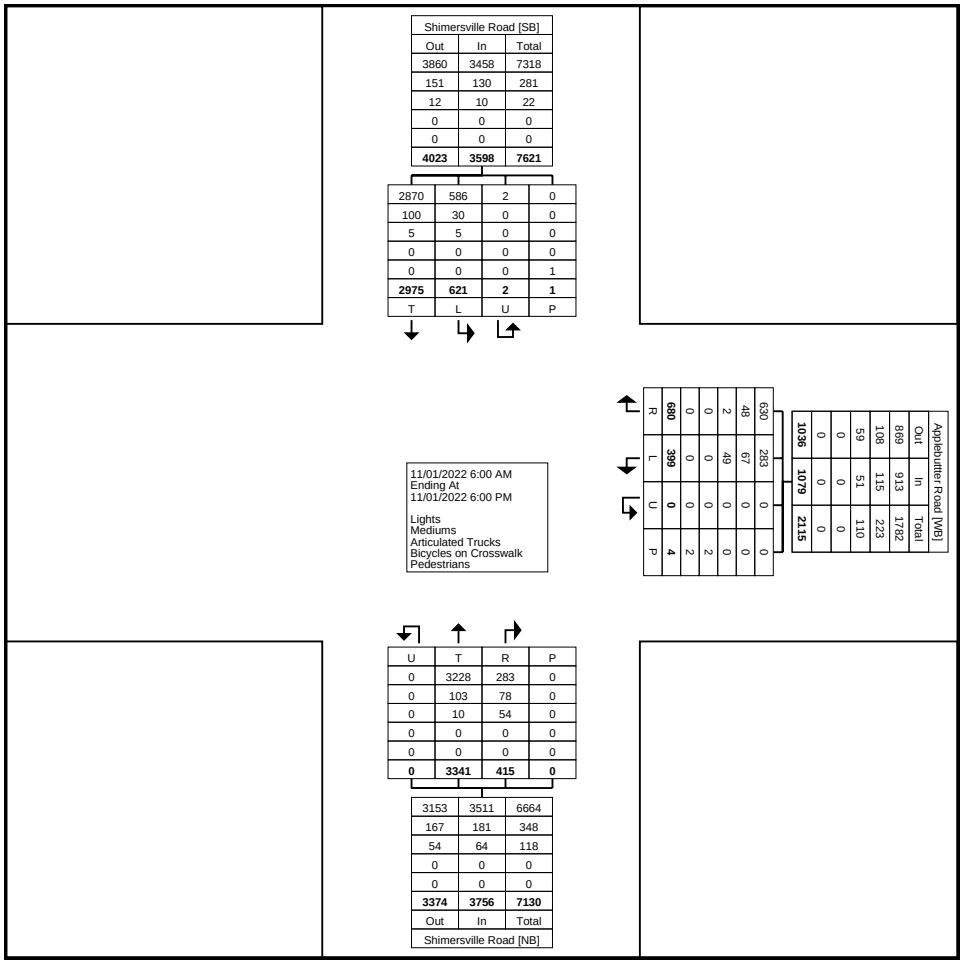
Start Time	Applebuttter Road Westbound					Shimersville Road Northbound					Shimersville Road Southbound					
	U-Turn	Left	Right	Peds	App. Total	U-Turn	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Peds	App. Total	Int. Total
6:00 AM	0	4	11	0	15	0	27	3	0	30	0	8	63	0	71	116
6:15 AM	0	3	6	0	9	0	41	9	0	50	0	5	78	0	83	142
6:30 AM	0	14	23	0	37	0	20	19	0	39	0	14	93	0	107	183
6:45 AM	0	6	7	0	13	0	52	12	0	64	0	21	81	0	102	179
Hourly Total	0	27	47	0	74	0	140	43	0	183	0	48	315	0	363	620
7:00 AM	0	6	8	0	14	0	53	16	0	69	0	13	76	0	89	172
7:15 AM	0	12	14	0	26	0	55	8	0	63	0	5	78	0	83	172
7:30 AM	0	10	20	0	30	0	73	8	0	81	0	2	104	0	106	217
7:45 AM	0	16	27	0	43	0	60	7	0	67	0	13	85	0	98	208
Hourly Total	0	44	69	0	113	0	241	39	0	280	0	33	343	0	376	769
8:00 AM	0	12	20	0	32	0	59	5	0	64	0	5	68	0	73	169
8:15 AM	0	8	20	1	28	0	45	6	0	51	0	13	90	0	103	182
8:30 AM	0	10	13	0	23	0	55	7	0	62	0	8	79	0	87	172
8:45 AM	0	7	18	0	25	0	57	4	0	61	0	12	65	0	77	163
Hourly Total	0	37	71	1	108	0	216	22	0	238	0	38	302	0	340	686
9:00 AM	0	11	10	0	21	0	55	5	0	60	0	12	65	0	77	158
9:15 AM	0	8	14	0	22	0	39	6	0	45	0	12	52	0	64	131
9:30 AM	0	9	8	0	17	0	39	5	0	44	0	13	42	0	55	116
9:45 AM	0	5	12	0	17	0	34	5	0	39	0	11	50	0	61	117
Hourly Total	0	33	44	0	77	0	167	21	0	188	0	48	209	0	257	522
10:00 AM	0	10	10	0	20	0	45	7	0	52	0	6	44	0	50	122
10:15 AM	0	5	11	0	16	0	41	7	0	48	0	11	48	0	59	123
10:30 AM	0	10	13	0	23	0	32	10	0	42	0	6	35	0	41	106
10:45 AM	0	5	7	0	12	0	67	5	0	72	0	15	49	0	64	148
Hourly Total	0	30	41	0	71	0	185	29	0	214	0	38	176	0	214	499
11:00 AM	0	7	11	0	18	0	44	7	0	51	0	10	39	0	49	118
11:15 AM	0	11	11	0	22	0	55	6	0	61	0	8	47	0	55	138
11:30 AM	0	9	15	0	24	0	43	9	0	52	0	11	46	0	57	133
11:45 AM	0	11	12	0	23	0	45	14	0	59	0	8	44	0	52	134
Hourly Total	0	38	49	0	87	0	187	36	0	223	0	37	176	0	213	523
12:00 PM	0	7	18	0	25	0	57	8	0	65	0	9	50	0	59	149
12:15 PM	0	6	10	0	16	0	71	13	0	84	0	15	40	0	55	155
12:30 PM	0	6	14	0	20	0	57	9	0	66	0	13	59	0	72	158
12:45 PM	0	11	14	0	25	0	56	8	0	64	0	11	53	0	64	153
Hourly Total	0	30	56	0	86	0	241	38	0	279	0	48	202	0	250	615
1:00 PM	0	5	19	0	24	0	40	9	0	49	0	4	46	0	50	123

1:15 PM	0	3	12	0	15	0	49	10	0	59	0	8	54	0	62	136
1:30 PM	0	11	11	0	22	0	68	10	0	78	0	15	60	0	75	175
1:45 PM	0	7	11	0	18	0	63	3	0	66	0	14	44	0	58	142
Hourly Total	0	26	53	0	79	0	220	32	0	252	0	41	204	0	245	576
2:00 PM	0	5	9	2	14	0	63	5	0	68	1	12	62	1	75	157
2:15 PM	0	7	11	0	18	0	73	9	0	82	0	16	42	0	58	158
2:30 PM	0	14	13	1	27	0	84	12	0	96	0	14	59	0	73	196
2:45 PM	0	11	13	0	24	0	86	2	0	88	0	23	72	0	95	207
Hourly Total	0	37	46	3	83	0	306	28	0	334	1	65	235	1	301	718
3:00 PM	0	8	20	0	28	0	95	15	0	110	0	16	69	0	85	223
3:15 PM	0	3	18	0	21	0	96	11	0	107	1	21	72	0	94	222
3:30 PM	0	9	16	0	25	0	101	8	0	109	0	18	85	0	103	237
3:45 PM	0	7	22	0	29	0	122	10	0	132	0	19	73	0	92	253
Hourly Total	0	27	76	0	103	0	414	44	0	458	1	74	299	0	374	935
4:00 PM	0	12	23	0	35	0	124	12	0	136	0	19	61	0	80	251
4:15 PM	0	9	17	0	26	0	149	4	0	153	0	13	48	0	61	240
4:30 PM	0	12	21	0	33	0	114	13	0	127	0	15	69	0	84	244
4:45 PM	0	3	10	0	13	0	137	14	0	151	0	21	56	0	77	241
Hourly Total	0	36	71	0	107	0	524	43	0	567	0	68	234	0	302	976
5:00 PM	0	11	13	0	24	0	167	18	0	185	0	16	75	0	91	300
5:15 PM	0	14	17	0	31	0	126	7	0	133	0	26	56	0	82	246
5:30 PM	0	4	17	0	21	0	110	10	0	120	0	24	80	0	104	245
5:45 PM	0	5	10	0	15	0	97	5	0	102	0	17	69	0	86	203
Hourly Total	0	34	57	0	91	0	500	40	0	540	0	83	280	0	363	994
Grand Total	0	399	680	4	1079	0	3341	415	0	3756	2	621	2975	1	3598	8433
Approach %	0.0	37.0	63.0	-	-	0.0	89.0	11.0	-	-	0.1	17.3	82.7	-	-	-
Total %	0.0	4.7	8.1	-	12.8	0.0	39.6	4.9	-	44.5	0.0	7.4	35.3	-	42.7	-
Lights	0	283	630	-	913	0	3228	283	-	3511	2	586	2870	-	3458	7882
% Lights	-	70.9	92.6	-	84.6	-	96.6	68.2	-	93.5	100.0	94.4	96.5	-	96.1	93.5
Mediums	0	67	48	-	115	0	103	78	-	181	0	30	100	-	130	426
% Mediums	-	16.8	7.1	-	10.7	-	3.1	18.8	-	4.8	0.0	4.8	3.4	-	3.6	5.1
Articulated Trucks	0	49	2	-	51	0	10	54	-	64	0	5	5	-	10	125
% Articulated Trucks	-	12.3	0.3	-	4.7	-	0.3	13.0	-	1.7	0.0	0.8	0.2	-	0.3	1.5
Bicycles on Crosswalk	-	-	-	2	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	50.0	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	2	-	-	-	-	0	-	-	-	-	1	-	-
% Pedestrians	-	-	-	50.0	-	-	-	-	-	-	-	-	-	100.0	-	-

Project: Applebutter
Municipality: Bethlehem, Northampton County, PA
Setup: GP
Location: 40.618875, -75.334647

Imperial Traffic & Data Collection
www.imperialtdc.com
PO BOX 4637
Cherry Hill, New Jersey, United States 08034
609-706-6100 hfurey@imperialtdc.com

Count Name: 2. Applebutter Road and Shimersville Road
Site Code: 2
Start Date: 11/01/2022



Turning Movement Data Plot

Project: Applebutter
Municipality: Bethlehem, Northampton County, PA
Setup: GP
Location: 40.618875, -75.334647

Imperial Traffic & Data Collection
www.imperialtdc.com
PO BOX 4637
Cherry Hill, New Jersey, United States 08034
609-706-6100 hfurey@imperialtdc.com

Count Name: 2. Applebutter Road and Shimersville Road
Site Code: 2
Start Date: 11/01/2022

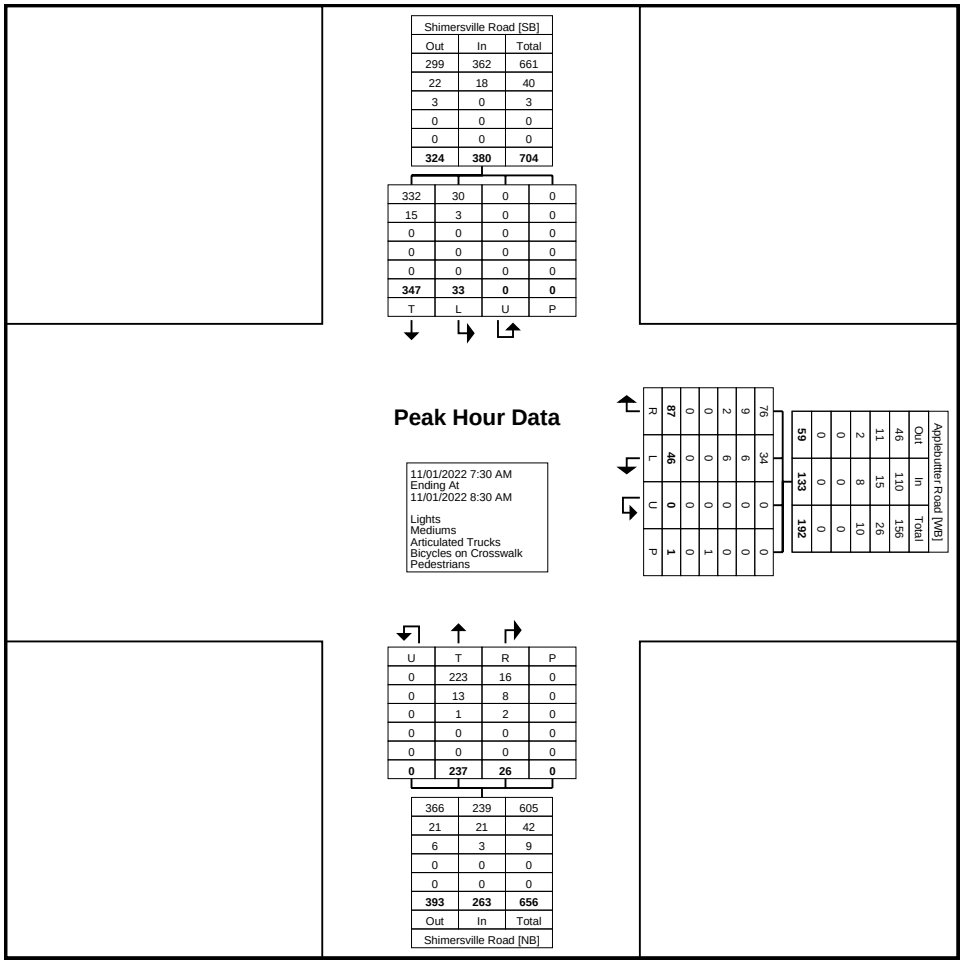
Turning Movement Peak Hour Data (7:30 AM)

Start Time	Applebuttter Road Westbound					Shimersville Road Northbound					Shimersville Road Southbound					
	U-Turn	Left	Right	Peds	App. Total	U-Turn	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Peds	App. Total	Int. Total
7:30 AM	0	10	20	0	30	0	73	8	0	81	0	2	104	0	106	217
7:45 AM	0	16	27	0	43	0	60	7	0	67	0	13	85	0	98	208
8:00 AM	0	12	20	0	32	0	59	5	0	64	0	5	68	0	73	169
8:15 AM	0	8	20	1	28	0	45	6	0	51	0	13	90	0	103	182
Total	0	46	87	1	133	0	237	26	0	263	0	33	347	0	380	776
Approach %	0.0	34.6	65.4	-	-	0.0	90.1	9.9	-	-	0.0	8.7	91.3	-	-	-
Total %	0.0	5.9	11.2	-	17.1	0.0	30.5	3.4	-	33.9	0.0	4.3	44.7	-	49.0	-
PHF	0.000	0.719	0.806	-	0.773	0.000	0.812	0.813	-	0.812	0.000	0.635	0.834	-	0.896	0.894
Lights	0	34	76	-	110	0	223	16	-	239	0	30	332	-	362	711
% Lights	-	73.9	87.4	-	82.7	-	94.1	61.5	-	90.9	-	90.9	95.7	-	95.3	91.6
Mediums	0	6	9	-	15	0	13	8	-	21	0	3	15	-	18	54
% Mediums	-	13.0	10.3	-	11.3	-	5.5	30.8	-	8.0	-	9.1	4.3	-	4.7	7.0
Articulated Trucks	0	6	2	-	8	0	1	2	-	3	0	0	0	-	0	11
% Articulated Trucks	-	13.0	2.3	-	6.0	-	0.4	7.7	-	1.1	-	0.0	0.0	-	0.0	1.4
Bicycles on Crosswalk	-	-	-	1	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	-

Project: Applebutter
Municipality: Bethlehem, Northampton County, PA
Setup: GP
Location: 40.618875, -75.334647

Imperial Traffic & Data Collection
www.imperialtdc.com
PO BOX 4637
Cherry Hill, New Jersey, United States 08034
609-706-6100 hfurey@imperialtdc.com

Count Name: 2. Applebutter Road and Shimersville Road
Site Code: 2
Start Date: 11/01/2022



Turning Movement Peak Hour Data Plot (7:30 AM)

Project: Applebutter
Municipality: Bethlehem, Northampton County, PA
Setup: GP
Location: 40.618875, -75.334647

Imperial Traffic & Data Collection
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PO BOX 4637
Cherry Hill, New Jersey, United States 08034
609-706-6100 hfurey@imperialtdc.com

Count Name: 2. Applebutter Road and Shimersville Road
Site Code: 2
Start Date: 11/01/2022

Turning Movement Peak Hour Data (12:00 PM)

Start Time	Applebuttter Road Westbound					Shimersville Road Northbound					Shimersville Road Southbound					
	U-Turn	Left	Right	Peds	App. Total	U-Turn	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Peds	App. Total	Int. Total
12:00 PM	0	7	18	0	25	0	57	8	0	65	0	9	50	0	59	149
12:15 PM	0	6	10	0	16	0	71	13	0	84	0	15	40	0	55	155
12:30 PM	0	6	14	0	20	0	57	9	0	66	0	13	59	0	72	158
12:45 PM	0	11	14	0	25	0	56	8	0	64	0	11	53	0	64	153
Total	0	30	56	0	86	0	241	38	0	279	0	48	202	0	250	615
Approach %	0.0	34.9	65.1	-	-	0.0	86.4	13.6	-	-	0.0	19.2	80.8	-	-	-
Total %	0.0	4.9	9.1	-	14.0	0.0	39.2	6.2	-	45.4	0.0	7.8	32.8	-	40.7	-
PHF	0.000	0.682	0.778	-	0.860	0.000	0.849	0.731	-	0.830	0.000	0.800	0.856	-	0.868	0.973
Lights	0	16	49	-	65	0	236	23	-	259	0	44	192	-	236	560
% Lights	-	53.3	87.5	-	75.6	-	97.9	60.5	-	92.8	-	91.7	95.0	-	94.4	91.1
Mediums	0	12	7	-	19	0	5	9	-	14	0	4	10	-	14	47
% Mediums	-	40.0	12.5	-	22.1	-	2.1	23.7	-	5.0	-	8.3	5.0	-	5.6	7.6
Articulated Trucks	0	2	0	-	2	0	0	6	-	6	0	0	0	-	0	8
% Articulated Trucks	-	6.7	0.0	-	2.3	-	0.0	15.8	-	2.2	-	0.0	0.0	-	0.0	1.3
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Project: Applebutter
Municipality: Bethlehem, Northampton County, PA
Setup: GP
Location: 40.618875, -75.334647

Imperial Traffic & Data Collection
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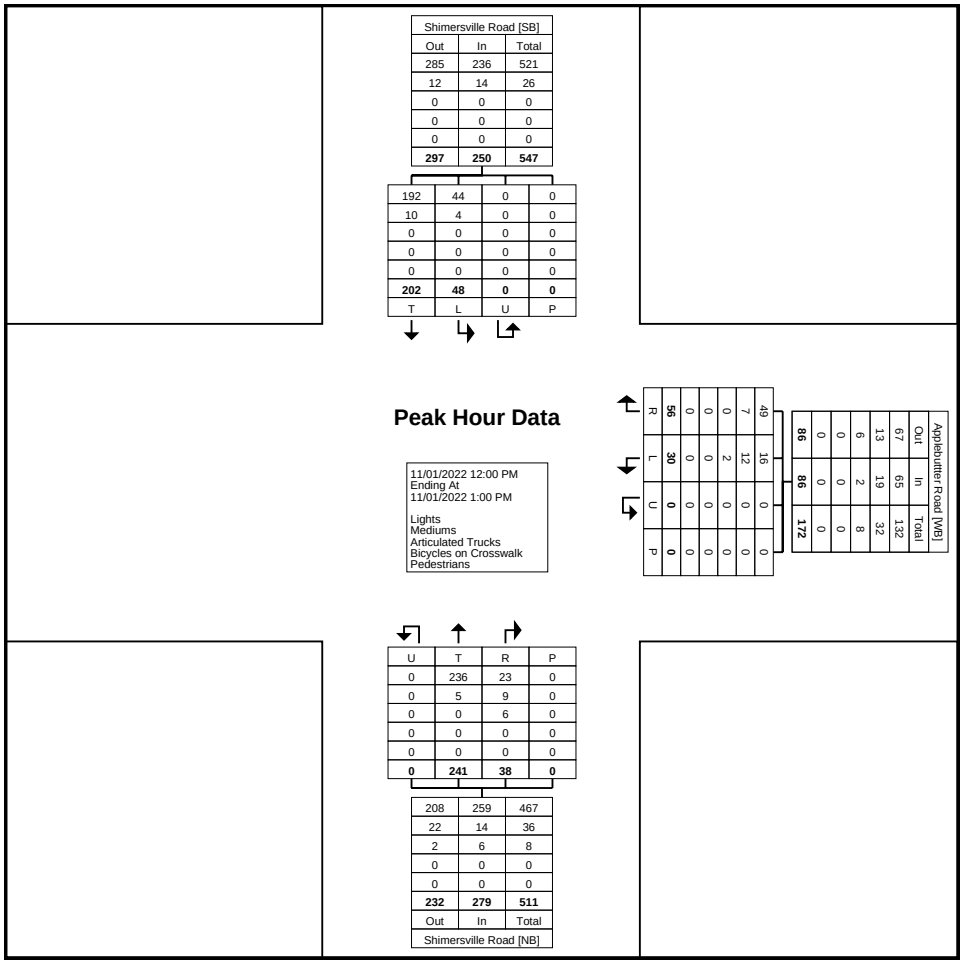
PO BOX 4637
Cherry Hill, New Jersey, United States 08034
609-706-6100 hfurey@imperialtdc.com

Count Name: 2. Applebutter Road and Shimersville Road
Site Code: 2
Start Date: 11/01/2022



Turning Movement Peak Hour Data Plot (12:00 PM)

Project: Applebutter
Municipality: Bethlehem, Northampton County, PA
Setup: GP
Location: 40.618875, -75.334647

Imperial Traffic & Data Collection
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609-706-6100 hfurey@imperialtdc.com

Count Name: 2. Applebutter Road and Shimersville Road
Site Code: 2
Start Date: 11/01/2022

Turning Movement Peak Hour Data (4:45 PM)

Start Time	Applebuttter Road Westbound					Shimersville Road Northbound					Shimersville Road Southbound					
	U-Turn	Left	Right	Peds	App. Total	U-Turn	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Peds	App. Total	Int. Total
4:45 PM	0	3	10	0	13	0	137	14	0	151	0	21	56	0	77	241
5:00 PM	0	11	13	0	24	0	167	18	0	185	0	16	75	0	91	300
5:15 PM	0	14	17	0	31	0	126	7	0	133	0	26	56	0	82	246
5:30 PM	0	4	17	0	21	0	110	10	0	120	0	24	80	0	104	245
Total	0	32	57	0	89	0	540	49	0	589	0	87	267	0	354	1032
Approach %	0.0	36.0	64.0	-	-	0.0	91.7	8.3	-	-	0.0	24.6	75.4	-	-	-
Total %	0.0	3.1	5.5	-	8.6	0.0	52.3	4.7	-	57.1	0.0	8.4	25.9	-	34.3	-
PHF	0.000	0.571	0.838	-	0.718	0.000	0.808	0.681	-	0.796	0.000	0.837	0.834	-	0.851	0.860
Lights	0	32	56	-	88	0	535	48	-	583	0	86	263	-	349	1020
% Lights	-	100.0	98.2	-	98.9	-	99.1	98.0	-	99.0	-	98.9	98.5	-	98.6	98.8
Mediums	0	0	1	-	1	0	5	0	-	5	0	1	4	-	5	11
% Mediums	-	0.0	1.8	-	1.1	-	0.9	0.0	-	0.8	-	1.1	1.5	-	1.4	1.1
Articulated Trucks	0	0	0	-	0	0	0	1	-	1	0	0	0	-	0	1
% Articulated Trucks	-	0.0	0.0	-	0.0	-	0.0	2.0	-	0.2	-	0.0	0.0	-	0.0	0.1
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Project: Applebutter
Municipality: Bethlehem, Northampton County, PA
Setup: GP
Location: 40.618875, -75.334647

Imperial Traffic & Data Collection
www.imperialtdc.com
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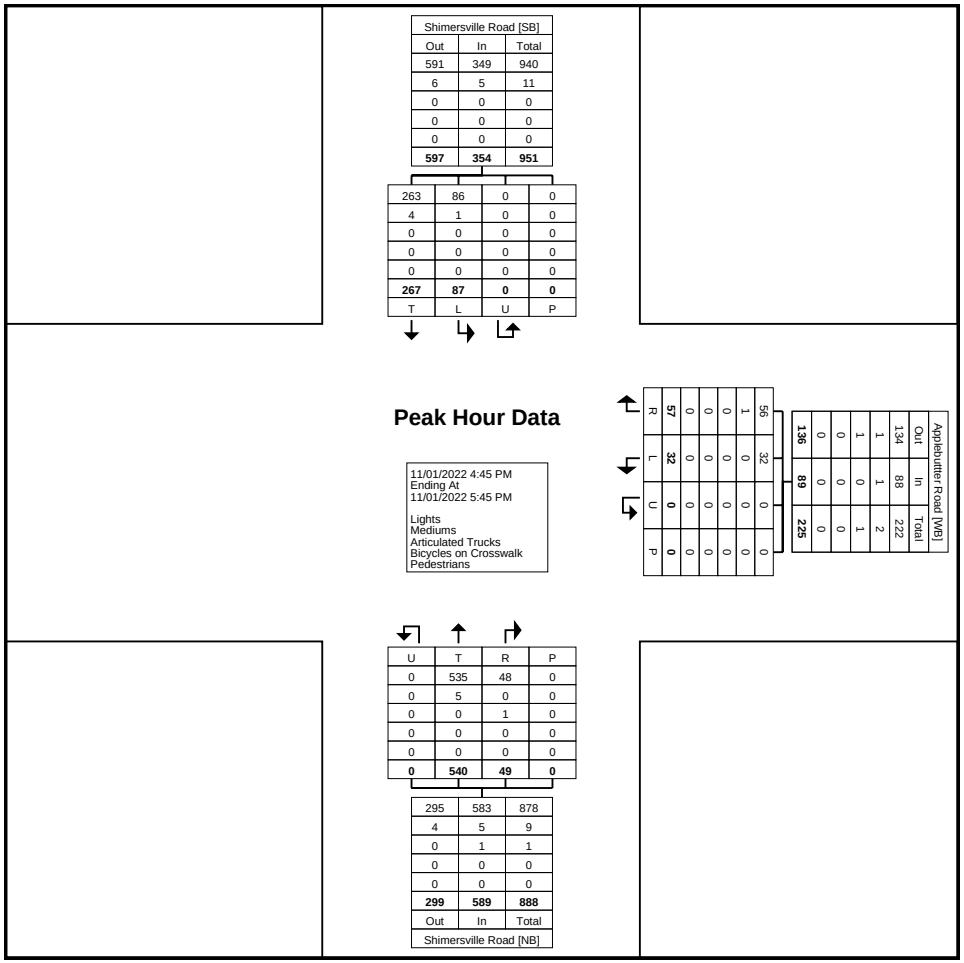
609-706-6100 hfurey@imperialtdc.com



Turning Movement Peak Hour Data Plot (4:45 PM)

APPENDIX B - PENNDOT ITMS WEBSITE DATA

TMS Site 17809: Traffic Monitoring Report

Location Description: Between Severn Lane and Sherry Hill Road

Details

Type of Count	MACHINE CLASS
Type of Site	Portable
Schedule	1 TIME/YR
Duration	24 HRS
Frequency Cycle	05
Cycle Year	01

Location

County	NORTHAMPTON (48)
Route	2012
Segment	0050
Offset	1911
Latitude	40.62327
Longitude	-75.28884

Map

Traffic Data

Date	Volume	Truck Volume	Truck %	Volume Graph
Oct 30, 2019	1,293	99	7.7	[redacted]
Sep 25, 2014	1,269			[redacted]
Aug 11, 2009	886			[redacted]
Aug 03, 2004	1,153			[redacted]

TMS Site 17947: Traffic Monitoring Report

Location Description: 0.35 MILE NORTH OF SR 0412

Details

Type of Count	MACHINE CLASS
Type of Site	Portable
Schedule	1 TIME/YR
Duration	24 HRS
Frequency Cycle	05
Cycle Year	01

Location

County	NORTHAMPTON (48)
Route	2014
Segment	0020
Offset	1619
Latitude	40.61371
Longitude	-75.33529

Map

Traffic Data

Date	Volume	Truck Volume	Truck %	Volume Graph
July 31, 2019	9,998	764	7.6	
Apr 24, 2014	7,943			
Oct 20, 2009	8,385			
Aug 07, 2007	7,577			
Aug 01, 2000	13,630			
Oct 23, 1990	7,511	352	4.7	

APPENDIX C – TRAFFIC VOLUME SPREADSHEETS

Weekday AM Peak Hour

Int. No.	Street	Movement	2022 Existing (Raw)	2032 No-Build	Site Traffic (To 1,800 Tons)	2022 Existing (1,800 Tons)	2032 Future (1,800 Tons)
1	SR 2012 (Applebutter Road)	WB L	46	48	2	48	50
		WB R	87	91		87	91
	SR 2014 (Shimersville Road)	NB T	237	248		237	248
		NB R	26	27	10	36	37
	SR 2014 (Shimersville Road)	SB L	33	35		33	35
		SB T	347	364		347	364
2	SR 2012 (Applebutter Road)	EB L	34	34	10	44	44
		EB T	25	26		25	26
	SR 2012 (Applebutter Road)	WB T	105	110		105	110
		WB R	2	2		2	2
	Landfill Driveway	SB L	3	3		3	3
		SB R	7	7	2	9	9

Weekday PM Peak Hour

Int. No.	Street	Movement	2022 Existing (Raw)	2032 No-Build	Site Traffic (To 1,800 Tons)	2022 Existing (1,800 Tons)	2032 Future (1,800 Tons)
1	SR 2012 (Applebutter Road)	WB L	32	34	2	34	36
		WB R	57	60		57	60
	SR 2014 (Shimersville Road)	NB T	540	566		540	566
		NB R	49	51		49	51
	SR 2014 (Shimersville Road)	SB L	87	91		87	91
		SB T	267	280		267	280
2	SR 2012 (Applebutter Road)	EB L	0	0		0	0
		EB T	125	131		125	131
	SR 2012 (Applebutter Road)	WB T	77	81		77	81
		WB R	0	0		0	0
	Landfill Driveway	SB L	2	2		2	2
		SB R	5	5	2	7	7

APPENDIX D – WEIGHT INTAKE AND DELIVERY TRUCK DATA

# of Tks	CUSTNU	CUSTOMER	DATEIN	TIMEIN	TIMEOUT	MATERIAL	QUANTITY	ORIGIN	VEHICLE
1	1014	REPUBLIC SVS - RARITAN VALLEY	2022-11-01	07:01:21	07:01:21	MSW	11.95	LEHIGH	REP1229
2	1014	REPUBLIC SVS - RARITAN VALLEY	2022-11-01	07:02:48	07:31:05	MSW	0.19	NORTHAMPTON	REP3376
3	1141	YOST HAULING	2022-11-01	07:09:27	07:52:53	MSW	19.00	NORTHAMPTON	JMC201
4	1019	WASTE CONNECTIONS-50TH ST	2022-11-01	07:11:20	07:55:32	ICMSW	23.28	NEW YORK	JOY107
5	1018	WASTE CONNECTIONS-COURT ST	2022-11-01	07:12:34	07:12:34	ICMSW	23.95	NEW YORK	CH2809-76
6	1019	WASTE CONNECTIONS-50TH ST	2022-11-01	07:14:35	07:14:35	ICMSW	22.19	NEW YORK	WIL245-115
7	1019	WASTE CONNECTIONS-50TH ST	2022-11-01	07:17:23	07:17:23	ICMSW	20.58	NEW YORK	WIL145-263
8	1019	WASTE CONNECTIONS-50TH ST	2022-11-01	07:18:54	07:18:54	ICMSW	22.15	NEW YORK	WIL1258-20
9	1019	WASTE CONNECTIONS-50TH ST	2022-11-01	07:20:57	08:37:23	ICMSW	22.60	NEW YORK	WIL45
10	1048	SAKOUTIS BROTHERS DISPOSAL	2022-11-01	07:22:20	08:38:34	CD	23.06	NEW JERSEY	ALE44
11	1019	WASTE CONNECTIONS-50TH ST	2022-11-01	07:25:10	07:25:10	ICMSW	21.98	NEW YORK	CHE2093-28
12	1019	WASTE CONNECTIONS-50TH ST	2022-11-01	07:27:52	07:27:52	ICMSW	23.71	NEW YORK	ANT712-951
13	1018	WASTE CONNECTIONS-COURT ST	2022-11-01	07:30:24	09:07:55	ICMSW	23.51	NEW YORK	ROG916
14	1018	WASTE CONNECTIONS-COURT ST	2022-11-01	07:32:27	07:32:27	ICMSW	23.55	NEW YORK	ROG420-44
15	1018	WASTE CONNECTIONS-COURT ST	2022-11-01	07:34:02	07:34:02	ICMSW	23.60	NEW YORK	IP216-46
16	1019	WASTE CONNECTIONS-50TH ST	2022-11-01	07:37:01	09:38:20	ICMSW	23.69	NEW YORK	AZ2028
17	1048	SAKOUTIS BROTHERS DISPOSAL	2022-11-01	07:38:35	07:38:35	CD	24.69	NEW JERSEY	EVO104-533
18	1018	WASTE CONNECTIONS-COURT ST	2022-11-01	07:41:58	07:41:58	ICMSW	24.09	NEW YORK	MES525-12
19	1018	WASTE CONNECTIONS-COURT ST	2022-11-01	07:44:19	07:44:19	ICMSW	23.69	NEW YORK	MES513-42
20	1048	SAKOUTIS BROTHERS DISPOSAL	2022-11-01	07:45:43	07:45:43	CD	22.36	NEW JERSEY	HT2481-427
21	1216	SYNAGRO - EPIC	2022-11-01	07:47:10	08:39:38	ADCSOIL	19.78	NEW JERSEY	RTL71
22	1216	SYNAGRO - EPIC	2022-11-01	07:48:39	08:04:45	ADCSOIL	21.29	NEW JERSEY	RTL40
23	1271	514 WASHINGTON AVE LLC	2022-11-01	07:49:51	07:49:51	CD	23.47	NEW JERSEY	BH3076-103
24	1048	SAKOUTIS BROTHERS DISPOSAL	2022-11-01	07:51:36	07:51:36	CD	21.84	NEW JERSEY	HT2100-351
25	1169	MONTECALVO DISPOSAL SERVICES I	2022-11-01	07:54:27	07:54:27	MSW	19.85	NEW JERSEY	MONT517-68
26	1008	DELGUIERICO WRECKING & SALVAGE	2022-11-01	07:58:34	09:10:08	MSW	6.01	BUCKS	DEL208
27	1216	SYNAGRO - EPIC	2022-11-01	08:00:08	08:34:24	ADCSOIL	21.30	NEW JERSEY	RTL74
28	0	CASH	2022-11-01	08:03:01	08:03:01	MSWLD	0.00	LEHIGH	
29	1017	LANDFILLCONTAINER	2022-11-01	08:20:44	08:20:44	CD	2.60	NORTHAMPTON	RO1-5
30	1014	REPUBLIC SVS - RARITAN VALLEY	2022-11-01	08:22:38	08:54:19	ICIWASTE	17.96	NORTHAMPTON	REP3716
31	1090	AFFORDABLE HAULING AND DUMPST	2022-11-01	08:24:25	09:04:44	CD	8.53	LEHIGH	SRS17
32	1052	RIZZ CONTAINER & DISPOSAL	2022-11-01	08:28:55	09:01:12	CD	1.48	NORTHAMPTON	RIZZ15
33	1014	REPUBLIC SVS - RARITAN VALLEY	2022-11-01	08:32:08	09:11:38	MSW	2.15	NORTHAMPTON	REP3376
34	1052	RIZZ CONTAINER & DISPOSAL	2022-11-01	08:52:53	09:22:38	MSW	0.43	NORTHAMPTON	RIZZ21
35	1005	CITY OF BETH - PARKS	2022-11-01	08:58:40	08:58:40	MSW	4.81	NORTHAMPTON	BET160
36	1005	CITY OF BETH - PARKS	2022-11-01	09:00:08	09:00:08	MSW	2.24	NORTHAMPTON	BET087
37	1018	WASTE CONNECTIONS-COURT ST	2022-11-01	09:06:29	09:06:29	ICMSW	25.16	NEW YORK	TUF148-619
38	1087	WHITETAIL DISPOSAL	2022-11-01	09:14:47	09:14:47	MSW	10.66	NORTHAMPTON	WHITE5399
39	1019	WASTE CONNECTIONS-50TH ST	2022-11-01	09:19:27	09:19:27	ICMSW	24.29	NEW YORK	JEY720-875
40	1169	MONTECALVO DISPOSAL SERVICES I	2022-11-01	09:21:02	09:21:02	MSW	19.92	NEW JERSEY	MONT505-17
41	1017	LANDFILLCONTAINER	2022-11-01	09:28:27	09:28:27	CD	1.65	NORTHAMPTON	RO1-6
42	0	CASH	2022-11-01	09:30:59	09:54:07	CD	1.79	NORTHAMPTON	SCARTELLI
43	1019	WASTE CONNECTIONS-50TH ST	2022-11-01	09:33:55	09:33:55	ICMSW	24.49	NEW YORK	CAN413-56
44	1009	EAST PENN SANITATION	2022-11-01	09:36:07	10:05:19	ICIWASTE	3.25	NORTHAMPTON	HER810
45	1009	EAST PENN SANITATION	2022-11-01	09:57:07	11:22:56	MSW	23.58	NORTHAMPTON	JV353
46	1266	DANIELS HEALTH	2022-11-01	09:59:21	11:52:07	MSW	18.85	NORTHAMPTON	DAN580155
47	1087	WHITETAIL DISPOSAL	2022-11-01	10:03:56	10:27:34	MSW	2.87	LEHIGH	WHITE5342
48	1016	SYMONS SANITATION	2022-11-01	10:20:05	10:20:05	MSW	8.11	NORTHAMPTON	SYM308
49	0	CASH	2022-11-01	10:25:21	10:25:21	MSWLD	0.00	LEHIGH	
50	0	CASH	2022-11-01	10:29:24	10:29:24	MSWLD	0.00	NORTHAMPTON	
51	1009	EAST PENN SANITATION	2022-11-01	10:31:17	11:32:23	MSW	23.75	NORTHAMPTON	JMC201
52	1089	AMERICAN WASTE MANAGEMENT SV	2022-11-01	10:32:48	11:24:23	SLUDGE	16.38	NEW YORK	LUZ229
53	1052	RIZZ CONTAINER & DISPOSAL	2022-11-01	10:34:22	11:22:00	CD	2.45	NORTHAMPTON	RIZZ15
54	1019	WASTE CONNECTIONS-50TH ST	2022-11-01	10:38:59	10:38:59	ICMSW	23.96	NEW YORK	AUA1924-39
55	1021	BOROUGH OF HELLERTOWN	2022-11-01	10:41:01	10:41:01	MSW	8.36	NORTHAMPTON	HTOWN11
56	1009	EAST PENN SANITATION	2022-11-01	10:42:31	11:30:21	ICIWASTE	4.34	NORTHAMPTON	HER810
57	1052	RIZZ CONTAINER & DISPOSAL	2022-11-01	10:44:35	11:31:25	MSW	2.37	NORTHAMPTON	RIZZ21
58	1169	MONTECALVO DISPOSAL SERVICES I	2022-11-01	10:47:21	10:47:21	MSW	19.84	NEW JERSEY	MONT504-26
59	1005	CITY OF BETH - PARKS	2022-11-01	10:49:31	10:49:31	MSW	2.23	NORTHAMPTON	BET106
60	1087	WHITETAIL DISPOSAL	2022-11-01	10:54:03	10:54:03	MSW	11.98	LEHIGH	WHITE169

61	1014	REPUBLIC SVS - RARITAN VALLEY	2022-11-01	11:00:04	11:00:04	MSW	10.54	LEHIGH	REP2024
62	1014	REPUBLIC SVS - RARITAN VALLEY	2022-11-01	11:10:36	11:10:36	MSW	12.25	NORTHAMPTON	REP2026
63	1087	WHITETAIL DISPOSAL	2022-11-01	11:13:12	11:13:12	MSW	3.95	NORTHAMPTON	WHITE56
64	1014	REPUBLIC SVS - RARITAN VALLEY	2022-11-01	11:14:29	11:14:29	MSW	12.28	LEHIGH	REP1229
65	1048	SAKOUTIS BROTHERS DISPOSAL	2022-11-01	11:17:01	11:17:01	CD	21.59	NEW JERSEY	ALE44-528
66	1014	REPUBLIC SVS - RARITAN VALLEY	2022-11-01	11:20:07	11:20:07	MSW	4.65	LEHIGH	REP1262
67	1008	DELGUIERICO WRECKING & SALVAGE	2022-11-01	11:26:26	11:26:26	MSW	9.51	BUCKS	DEL231
68	1193	LECK WASTE SERVICES	2022-11-01	11:43:52	12:14:11	MSW	0.98	NORTHAMPTON	LECK188
69	1014	REPUBLIC SVS - RARITAN VALLEY	2022-11-01	11:47:25	11:47:25	ICIWASTE	0.91	LEHIGH	REP1230
70	1014	REPUBLIC SVS - RARITAN VALLEY	2022-11-01	11:47:25	11:47:25	MSWGEO	6.09	LEHIGH	REP1230
71	1090	AFFORDABLE HAULING AND DUMPST	2022-11-01	11:50:31	12:36:13	MSW	1.81	LEHIGH	SRS17
72	1008	DELGUIERICO WRECKING & SALVAGE	2022-11-01	11:55:50	11:55:50	MSW	3.21	BUCKS	DEL214
73	1052	RIZZ CONTAINER & DISPOSAL	2022-11-01	11:57:08	12:29:00	CD	1.16	NORTHAMPTON	RIZZ15
74	1018	WASTE CONNECTIONS-COURT ST	2022-11-01	11:59:38	11:59:38	ICMSW	25.62	NEW YORK	HDG247-663
75	1137	J.P. MASCARO & SONS	2022-11-01	12:03:04	12:41:37	ICIWASTE	2.40	NORTHAMPTON	MASRO161
76	1014	REPUBLIC SVS - RARITAN VALLEY	2022-11-01	12:05:07	12:55:27	ICIWASTE	6.04	NORTHAMPTON	REP3716
77	1023	WM - TELFORD (ADS)	2022-11-01	12:07:16	12:50:59	ICIWASTE	5.14	BUCKS	WM412944
78	0	CASH	2022-11-01	12:10:54	12:10:54	C&DLD	0.00	LEHIGH	
79	1009	EAST PENN SANITATION	2022-11-01	12:12:41	13:00:17	ICIWASTE	2.05	NORTHAMPTON	HER810
80	1048	SAKOUTIS BROTHERS DISPOSAL	2022-11-01	12:20:01	12:20:01	CD	23.59	NEW JERSEY	EVO104-521
81	1008	DELGUIERICO WRECKING & SALVAGE	2022-11-01	12:25:55	12:25:55	MSW	8.34	BUCKS	DEL215
82	1008	DELGUIERICO WRECKING & SALVAGE	2022-11-01	12:27:31	13:10:45	MSW	2.21	BUCKS	DEL204
83	1216	SYNAGRO - EPIC	2022-11-01	12:30:29	12:53:57	ADCSOIL	20.29	NEW JERSEY	RTL30
84	1194	AMERICAN CONTAINER SERVICE	2022-11-01	12:46:20	13:21:30	MSW	6.05	NORTHAMPTON	AM1
85	1019	WASTE CONNECTIONS-50TH ST	2022-11-01	12:46:48	12:46:48	ICMSW	21.57	NEW YORK	WIL245-115
86	1048	SAKOUTIS BROTHERS DISPOSAL	2022-11-01	12:52:35	12:52:35	CD	22.88	NEW JERSEY	HT2481-146
87	1019	WASTE CONNECTIONS-50TH ST	2022-11-01	12:56:54	12:56:54	ICMSW	24.45	NEW YORK	CH2809-76
88	1018	WASTE CONNECTIONS-COURT ST	2022-11-01	12:58:40	12:58:40	ICMSW	23.29	NEW YORK	JOY107-48
89	1137	J.P. MASCARO & SONS	2022-11-01	13:02:32	13:02:32	MSW	11.54	LEHIGH	MASFE162
90	1019	WASTE CONNECTIONS-50TH ST	2022-11-01	13:17:31	13:17:31	ICMSW	21.74	NEW YORK	WIL145-263
91	1087	WHITETAIL DISPOSAL	2022-11-01	13:19:10	13:19:10	MSW	6.45	NORTHAMPTON	WHITE5749
92	1218	BOROUGH OF QUAKERTOWN	2022-11-01	13:20:18	13:20:18	MSW	7.97	BUCKS	QTOWNT55
93	1090	AFFORDABLE HAULING AND DUMPST	2022-11-01	13:27:55	13:54:38	CD	3.66	LEHIGH	SRS17
94	1048	SAKOUTIS BROTHERS DISPOSAL	2022-11-01	13:41:06	13:41:06	CD	23.50	NEW JERSEY	HT2100-522
95	1019	WASTE CONNECTIONS-50TH ST	2022-11-01	13:43:06	13:43:06	ICMSW	22.65	NEW YORK	WIL1258-20
96	0	CASH	2022-11-01	13:45:28	14:13:22	CD	1.28	LEHIGH	
97	1018	WASTE CONNECTIONS-COURT ST	2022-11-01	13:48:32	13:48:32	ICMSW	24.37	NEW YORK	ROG916-02
98	1087	WHITETAIL DISPOSAL	2022-11-01	13:57:17	14:20:09	MSW	1.47	LEHIGH	WHITE5342
99	1052	RIZZ CONTAINER & DISPOSAL	2022-11-01	13:59:52	14:21:00	MSW	2.20	NORTHAMPTON	RIZZ15
100	0	CASH	2022-11-01	14:04:25	14:26:45	CD	0.70	LEHIGH	
101	1087	WHITETAIL DISPOSAL	2022-11-01	14:05:24	14:05:24	MSW	14.11	NORTHAMPTON	WHITE166
102	1217	SWINT HAULING & DISPOSAL	2022-11-01	14:06:32	14:31:48	CD	1.79	NORTHAMPTON	SWINT50
103	1018	WASTE CONNECTIONS-COURT ST	2022-11-01	14:11:46	14:11:46	ICMSW	24.21	NEW YORK	ROG420-44
104	1019	WASTE CONNECTIONS-50TH ST	2022-11-01	14:18:24	14:18:24	ICMSW	23.59	NEW YORK	WIL45-09
105	1023	WM - TELFORD (ADS)	2022-11-01	14:22:13	14:45:24	ICIWASTE	7.71	BUCKS	WM412944
106	1052	RIZZ CONTAINER & DISPOSAL	2022-11-01	14:25:56	14:46:43	MSW	5.18	NORTHAMPTON	RIZZ21
107	1052	RIZZ CONTAINER & DISPOSAL	2022-11-01	14:33:02	14:54:44	MSW	9.15	LEHIGH	RIZZ17
108	1087	WHITETAIL DISPOSAL	2022-11-01	14:34:23	14:34:23	MSW	8.47	NORTHAMPTON	WHITE72
109	1087	WHITETAIL DISPOSAL	2022-11-01	15:08:17	15:08:17	MSW	14.36	NORTHAMPTON	WHITE199
110	1052	RIZZ CONTAINER & DISPOSAL	2022-11-01	15:18:40	15:36:59	CD	1.47	NORTHAMPTON	RIZZ15
111	1032	J&S DISPOSAL	2022-11-01	15:28:55	15:28:55	MSW	10.97	NORTHAMPTON	JS12
112	1087	WHITETAIL DISPOSAL	2022-11-01	15:35:10	15:35:10	MSW	5.70	NORTHAMPTON	WHITE201
							1414.93	Tons	
							12.63	Avg. Tons/Vehicle	

APPENDIX E – AUXILIARY LANE WARRANT ANALYSIS

Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality:	Lower Saucon Township	**Analysis Date:**	12/19/2022
County:	Northampton County	**Conducted By:**	TMK
PennDOT Engineering District:	5	**Checked By:**	SMH
		Agency/Company Name:	Pennoni

Intersection & Approach Description: Applebutter Road (SR 2012) & Landfill Driveway - EB SR 2012 Approach

Analysis Period:	2032 Future Year (1,800 MDV)	**Number of Approach Lanes:**	1
Design Hour:	AM Peak Hour	**Undivided or Divided Highway:**	Undivided
Intersection Control:	Unsignalized		
Posted Speed Limit (MPH):	40	**Type of Analysis**	
Type of Terrain:	Rolling	**Left or Right-Turn Lane Analysis?:**	Left Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	44	76.0%	95
	Through	-	26	8.0%	30
	Right	No	0	0.0%	N/A
Opposing	Left	No	0	0.0%	N/A
	Through	-	110	4.0%	117
	Right	Yes	2	50.0%	4

Advancing Volume:	125
Opposing Volume:	121
Left Turn Volume:	95
% Left Turns in Advancing Volume:	76.00%

Right Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	No	0	0.0%	N/A
	Through	-	110	4.0%	N/A
	Right	-	2	50.0%	N/A

Advancing Volume:	N/A
Right Turn Volume:	N/A

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings

Applicable Warrant Figure: Figure 2

Warrant Met?: No

Right Turn Lane Warrant Findings

Applicable Warrant Figure: N/A

Warrant Met?: N/A

TURN LANE LENGTH CALCULATIONS

Intersection Control:	Unsignalized
Design Hour Volume of Turning Lane:	95
Cycles Per Hour (Assumed):	60
Cycles Per Hour (If Known):	60

Average # of Vehicles/Cycle: N/A

PennDOT Publication 46, Exhibit 11-6

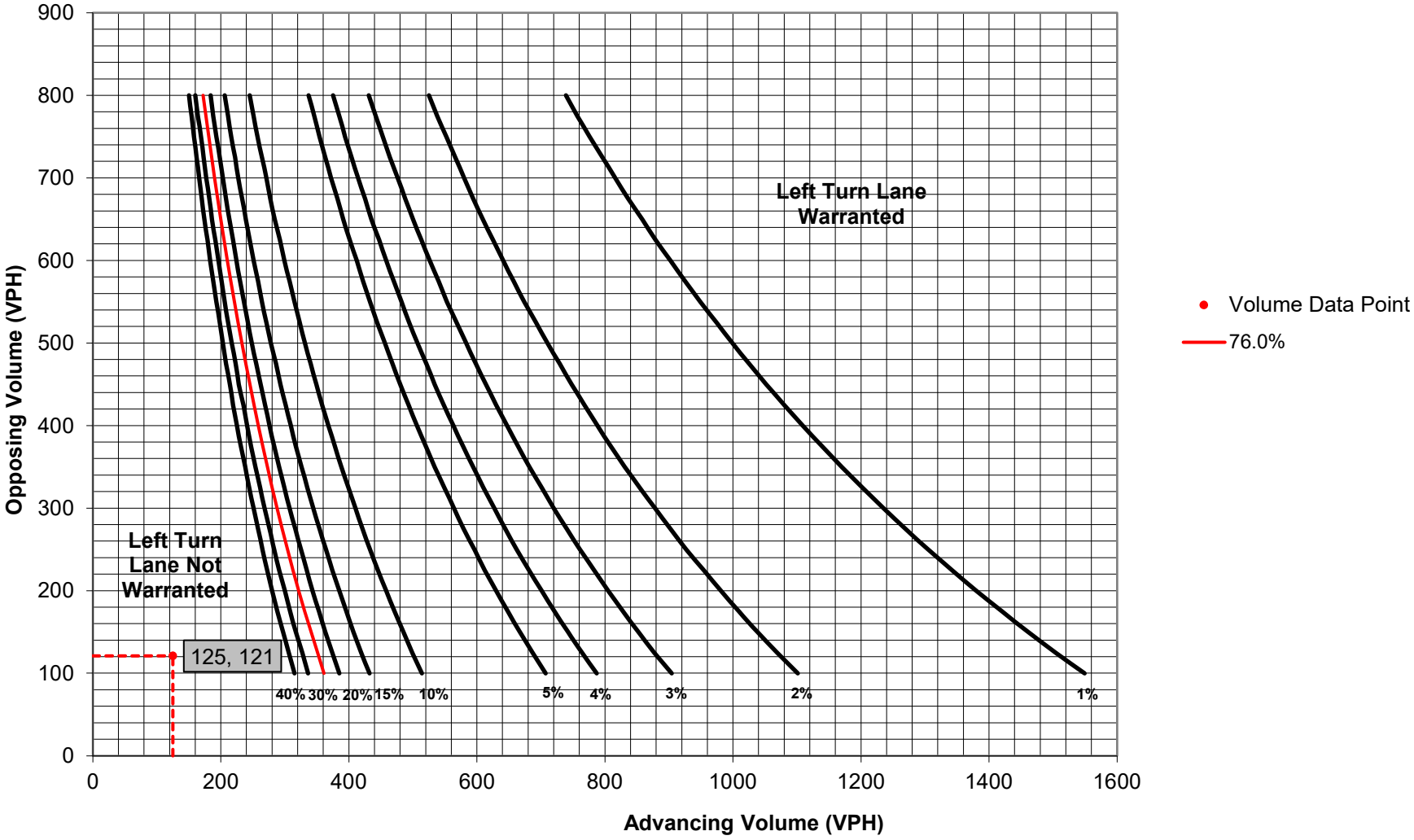
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Left Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Left Turn Lane Storage Length:	N/A	Feet

Additional Findings: N/A

Additional Comments / Justifications:

Figure 2. Warrant for left turn lanes on two-lane highways (40 mph speed, unsignalized and signalized intersections)
(L = % Left Turns in Advancing Volume)



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality:	Lower Saucon Township	**Analysis Date:**	12/19/2022
County:	Northampton County	**Conducted By:**	TMK
PennDOT Engineering District:	5	**Checked By:**	SMH
		Agency/Company Name:	Pennoni

Intersection & Approach Description: Applebutter Road (SR 2012) & Landfill Driveway - EB SR 2012 Approach

Analysis Period:	2032 Future Year (1,800 MDV)	**Number of Approach Lanes:**	1
Design Hour:	AM Peak Hour	**Undivided or Divided Highway:**	Undivided
Intersection Control:	Unsignalized		
Posted Speed Limit (MPH):	40		**Type of Analysis**
Type of Terrain:	Rolling	**Left or Right-Turn Lane Analysis?:**	Right Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	44	76.0%	N/A
	Through	-	26	8.0%	N/A
	Right	No	0	0.0%	N/A
Opposing	Left	No	0	0.0%	N/A
	Through	-	110	4.0%	N/A
	Right	Yes	2	50.0%	N/A

Advancing Volume:	N/A
Opposing Volume:	N/A
Left Turn Volume:	N/A
% Left Turns in Advancing Volume:	N/A

Right Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	No	0	0.0%	N/A
	Through	-	110	4.0%	117
	Right	-	2	50.0%	4

Advancing Volume:	121
Right Turn Volume:	4

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings

Applicable Warrant Figure: N/A

Warrant Met?: N/A

Right Turn Lane Warrant Findings

Applicable Warrant Figure: Figure 9

Warrant Met?: No

TURN LANE LENGTH CALCULATIONS

Intersection Control:	Unsignalized
Design Hour Volume of Turning Lane:	4
Cycles Per Hour (Assumed):	60
Cycles Per Hour (If Known):	60

Average # of Vehicles/Cycle: N/A

PennDOT Publication 46, Exhibit 11-6

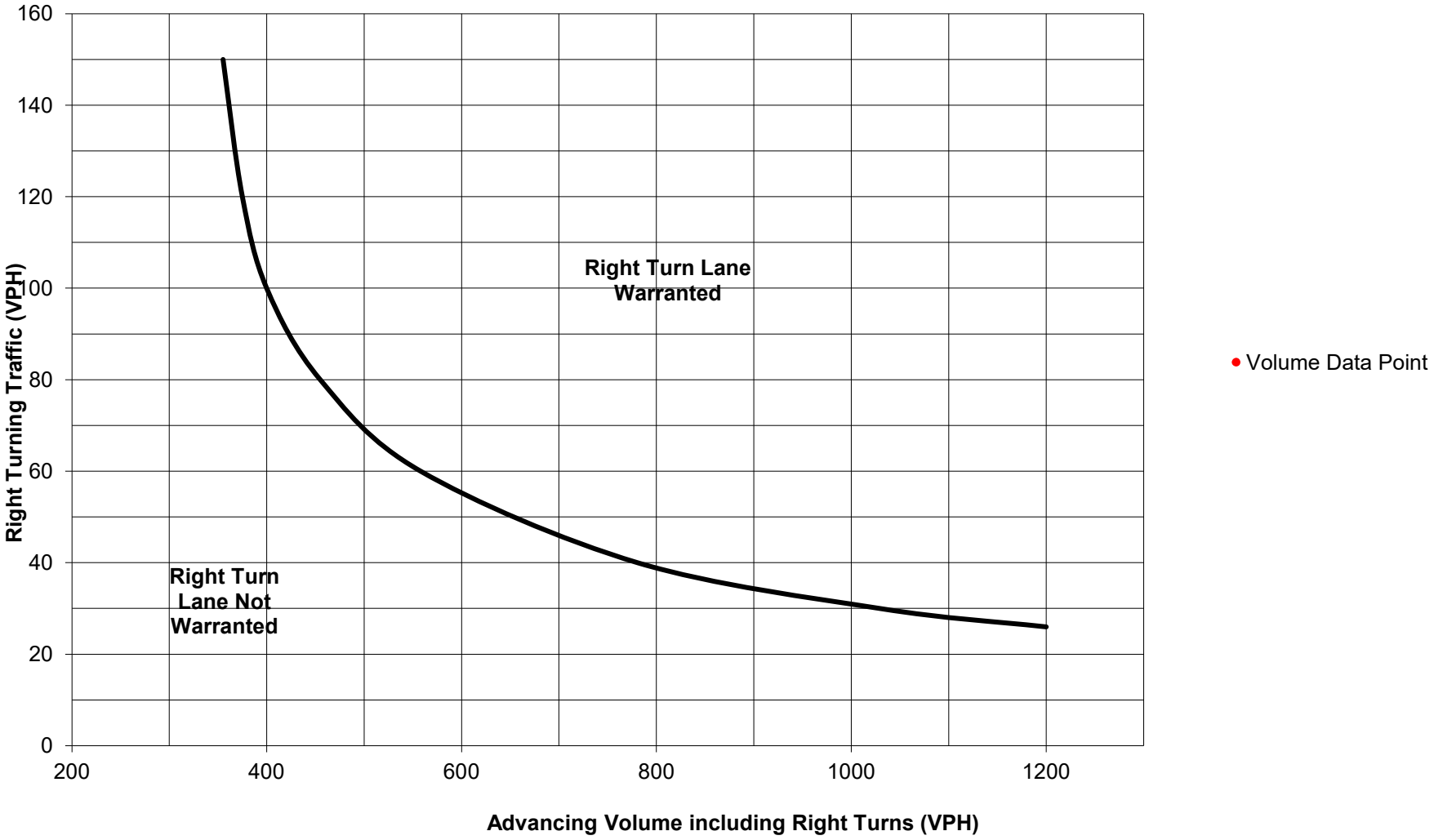
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Right Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Right Turn Lane Storage Length:	N/A	Feet

Additional Findings: N/A

Additional Comments / Justifications:

Figure 9. Warrant for right turn lanes on two-lane roadways
(40 mph or lower speeds, unsignalized and signalized intersections)



APPENDIX F – SIGNAL WARRANT ANALYSIS

Traffic Signal Warrant Analysis Workbook

1/17/2023

STUDY AND ANALYSIS INFORMATION

Municipality:	Lower Saucon Township	**Analysis Date:**	11/9/2022
County:	Northampton County	**Conducted By:**	TMK
PennDOT Engineering District:	5	**Agency/Company Name:**	Pennoni

Analysis Information

Data Collection Date:	11/1/2022
Day of the Week:	Tuesday

Is the intersection in a built-up area of an isolated community of <10,000 population? No

Major Street Information

Major Street Name and Route Number:	Shimersville Road (SR 2014)
Major Street Approach #1 Direction:	N-Bound
Major Street Approach #2 Direction:	S-Bound

Number of Lanes for Moving Traffic on Each Major Street Approach:	2	**LANE(S)**
Speed Limit or 85th Percentile Speed on the Major Street:	40	**MPH**

Minor Street Information

Minor Street Name and Route Number:	Applebutter Road (SR 2012)
Minor Street Approach #1 Direction:	W-Bound
Minor Street Approach #2 Direction:	N/A

Number of Lanes for Moving Traffic on Each Minor Street Approach:	1	**LANE(S)**

TRAFFIC SIGNAL WARRANT ANALYSIS FINDINGS

	Applicable?	Warrant Met?
Warrant 1, Eight-Hour Vehicular Volume	**No**	**N/A**
Warrant 2, Four-Hour Vehicular Volume	**No**	**N/A**
Warrant 3, Peak Hour	**Yes**	**No**
Warrant 4, Pedestrian Volume	**Yes**	**No**
Warrant 5, School Crossing	**Yes**	**No**
Warrant 6, Coordinated Signal System	**Yes**	**No**
Warrant 7, Crash Experience	**Yes**	**No**
Warrant 8, Roadway Network	**Yes**	**No**
Warrant 9, Intersection Near a Grade Crossing	**No**	**N/A**
Warrant PA-1, ADT Volume Warrant	**Yes**	**No**
Warrant PA-2, Midblock and Trail Crossings	**Yes**	**No**

ENTER VOLUME DATA PER 15 MINUTE INTERVAL, PER APPROACH						
Time Interval		Major Street Approach #1 (N-Bound)	Major Street Approach #2 (S-Bound)	Major Street Combined	Minor Street Approach #1 (W-Bound)	Minor Street Approach #2 (N/A)
Begin At	End Of	Volume	Volume	Total Volume	Volume	Volume
12:00 AM	12:14 AM			0		
12:15 AM	12:29 AM			0		
12:30 AM	12:44 AM			0		
12:45 AM	12:59 AM			0		
1:00 AM	1:14 AM			0		
1:15 AM	1:29 AM			0		
1:30 AM	1:44 AM			0		
1:45 AM	1:59 AM			0		
2:00 AM	2:14 AM			0		
2:15 AM	2:29 AM			0		
2:30 AM	2:44 AM			0		
2:45 AM	2:59 AM			0		
3:00 AM	3:14 AM			0		
3:15 AM	3:29 AM			0		
3:30 AM	3:44 AM			0		
3:45 AM	3:59 AM			0		
4:00 AM	4:14 AM			0		
4:15 AM	4:29 AM			0		
4:30 AM	4:44 AM			0		
4:45 AM	4:59 AM			0		
5:00 AM	5:14 AM			0		
5:15 AM	5:29 AM			0		
5:30 AM	5:44 AM			0		
5:45 AM	5:59 AM			0		
6:00 AM	6:14 AM			0		
6:15 AM	6:29 AM			0		
6:30 AM	6:44 AM			0		
6:45 AM	6:59 AM			0		
7:00 AM	7:14 AM	285	399	684	141	
7:15 AM	7:29 AM			0		
7:30 AM	7:44 AM			0		
7:45 AM	7:59 AM			0		
8:00 AM	8:14 AM			0		
8:15 AM	8:29 AM			0		
8:30 AM	8:44 AM			0		
8:45 AM	8:59 AM			0		
9:00 AM	9:14 AM			0		
9:15 AM	9:29 AM			0		
9:30 AM	9:44 AM			0		
9:45 AM	9:59 AM			0		
10:00 AM	10:14 AM			0		
10:15 AM	10:29 AM			0		
10:30 AM	10:44 AM			0		
10:45 AM	10:59 AM			0		
11:00 AM	11:14 AM			0		
11:15 AM	11:29 AM			0		
11:30 AM	11:44 AM			0		
11:45 AM	11:59 AM			0		
12:00 PM	12:14 PM			0		
12:15 PM	12:29 PM			0		
12:30 PM	12:44 PM			0		
12:45 PM	12:59 PM			0		
1:00 PM	1:14 PM			0		
1:15 PM	1:29 PM			0		
1:30 PM	1:44 PM			0		
1:45 PM	1:59 PM			0		
2:00 PM	2:14 PM			0		
2:15 PM	2:29 PM			0		
2:30 PM	2:44 PM			0		
2:45 PM	2:59 PM			0		
3:00 PM	3:14 PM			0		
3:15 PM	3:29 PM			0		
3:30 PM	3:44 PM			0		
3:45 PM	3:59 PM			0		
4:00 PM	4:14 PM	617	371	988	96	
4:15 PM	4:29 PM			0		
4:30 PM	4:44 PM			0		
4:45 PM	4:59 PM			0		
5:00 PM	5:14 PM			0		
5:15 PM	5:29 PM			0		
5:30 PM	5:44 PM			0		
5:45 PM	5:59 PM			0		
6:00 PM	6:14 PM			0		
6:15 PM	6:29 PM			0		
6:30 PM	6:44 PM			0		
6:45 PM	6:59 PM			0		
7:00 PM	7:14 PM			0		
7:15 PM	7:29 PM			0		
7:30 PM	7:44 PM			0		
7:45 PM	7:59 PM			0		
8:00 PM	8:14 PM			0		
8:15 PM	8:29 PM			0		
8:30 PM	8:44 PM			0		
8:45 PM	8:59 PM			0		
9:00 PM	9:14 PM			0		
9:15 PM	9:29 PM			0		
9:30 PM	9:44 PM			0		
9:45 PM	9:59 PM			0		
10:00 PM	10:14 PM			0		
10:15 PM	10:29 PM			0		
10:30 PM	10:44 PM			0		
10:45 PM	10:59 PM			0		
11:00 PM	11:14 PM			0		
11:15 PM	11:29 PM			0		
11:30 PM	11:44 PM			0		
11:45 PM	11:59 PM			0		
Approach Totals:		902	770	1672	237	0

MUTCD WARRANT 3, PEAK HOUR

Number of Lanes for Moving Traffic on Each Approach	
Major Street:	2 or More Lanes
Minor Street:	1 Lane

Built-up Isolated Community With Less Than 10,000 Population or Above 40 MPH on Major Street?	No
Is this signal warrant being applied for an unusual case, such as office complexes, manufacturing plants, industrial complexes, or high-occupancy vehicle facilities that attract or discharge large numbers of vehicles over a short time?	No

Indicate whether all three of the following conditions for the same 1 hour (any four consecutive 15-minute periods) of an average day are present*	
Does the total stopped time delay experienced by the traffic on one minor-street approach (one direction only) controlled by a STOP sign equal or exceed 4 vehicle-hours for a one-lane approach or 5 vehicle-hours for a two-lane approach?	No
Does the volume on the same minor-street approach (one direction only) equal or exceed 100 vehicles per hour for one moving lane of traffic or 150 vehicles per hour for two moving lanes?	Yes
Does the total entering volume serviced during the hour equal or exceed 650 vehicles per hour for intersection with three approaches or 800 vehicles per hour for intersections with four or more approaches?	Yes
**If applicable, attach all supporting calculations and documentation.*	

Total Number of Unique Hours Met On Figure 4C-3
0

Hourly Vehicular Volume			
Hour Interval Beginning At	Major Street Combined Vehicles Per Hour (VPH)	Highest Minor Street Approach Vehicles Per Hour (VPH)	Hour Met?
12:00 AM	0	0	
12:15 AM	0	0	
12:30 AM	0	0	
12:45 AM	0	0	
1:00 AM	0	0	
1:15 AM	0	0	
1:30 AM	0	0	
1:45 AM	0	0	
2:00 AM	0	0	
2:15 AM	0	0	
2:30 AM	0	0	
2:45 AM	0	0	
3:00 AM	0	0	
3:15 AM	0	0	
3:30 AM	0	0	
3:45 AM	0	0	
4:00 AM	0	0	
4:15 AM	0	0	
4:30 AM	0	0	
4:45 AM	0	0	
5:00 AM	0	0	
5:15 AM	0	0	
5:30 AM	0	0	
5:45 AM	0	0	
6:00 AM	0	0	
6:15 AM	684	141	
6:30 AM	684	141	
6:45 AM	684	141	
7:00 AM	684	141	
7:15 AM	0	0	
7:30 AM	0	0	
7:45 AM	0	0	
8:00 AM	0	0	
8:15 AM	0	0	
8:30 AM	0	0	
8:45 AM	0	0	
9:00 AM	0	0	
9:15 AM	0	0	
9:30 AM	0	0	
9:45 AM	0	0	
10:00 AM	0	0	
10:15 AM	0	0	
10:30 AM	0	0	
10:45 AM	0	0	
11:00 AM	0	0	
11:15 AM	0	0	
11:30 AM	0	0	
11:45 AM	0	0	
12:00 PM	0	0	
12:15 PM	0	0	
12:30 PM	0	0	
12:45 PM	0	0	
1:00 PM	0	0	
1:15 PM	0	0	
1:30 PM	0	0	
1:45 PM	0	0	
2:00 PM	0	0	
2:15 PM	0	0	
2:30 PM	0	0	
2:45 PM	0	0	
3:00 PM	0	0	
3:15 PM	988	96	
3:30 PM	988	96	
3:45 PM	988	96	
4:00 PM	988	96	
4:15 PM	0	0	
4:30 PM	0	0	
4:45 PM	0	0	
5:00 PM	0	0	
5:15 PM	0	0	
5:30 PM	0	0	
5:45 PM	0	0	
6:00 PM	0	0	
6:15 PM	0	0	
6:30 PM	0	0	
6:45 PM	0	0	
7:00 PM	0	0	
7:15 PM	0	0	
7:30 PM	0	0	
7:45 PM	0	0	
8:00 PM	0	0	
8:15 PM	0	0	
8:30 PM	0	0	
8:45 PM	0	0	
9:00 PM	0	0	
9:15 PM	0	0	
9:30 PM	0	0	
9:45 PM	0	0	
10:00 PM	0	0	
10:15 PM	0	0	
10:30 PM	0	0	
10:45 PM	0	0	
11:00 PM	0	0	

MUTCD WARRANT 4, PEDESTRIAN VOLUME

Built-up Isolated Community With Less Than 10,000 Population or Above 35 MPH on Major Street?	Yes
15th Percentile Pedestrian Crossing Speed Less than 3.5 f/s?*	No
**If applicable, attach all supporting calculations, documentation, and findings.*	
Is the distance to the nearest traffic control signal or STOP sign controlling the major street that pedestrians desire to cross less than 300 feet?	No
If the distance to the nearest traffic control signal or STOP sign controlling the major street that pedestrians desire to cross is less than 300 feet, will the proposed traffic control signal restrict the progressive movement of traffic?*	N/A
**If applicable, attach supporting justification.*	
Total Number of Unique Hours Met for Criterion A:	**0**
Total Number of Unique Hours Met for Criterion B:	**0**

Hourly Vehicular & Pedestrian Volume				
Hour Interval Beginning At	**Major Street Combined Vehicles Per Hour (VPH)**	**Total of All Pedestrians Crossing Major Street Pedestrians Per Hour (PPH)**	**Criterion A: 4-Hour Hour Met on Figure 4C-6?**	**Criterion B: 1-Hour Hour Met on Figure 4C-8?**
12:00 AM	0			
12:15 AM	0			
12:30 AM	0			
12:45 AM	0			
1:00 AM	0			
1:15 AM	0			
1:30 AM	0			
1:45 AM	0			
2:00 AM	0			
2:15 AM	0			
2:30 AM	0			
2:45 AM	0			
3:00 AM	0			
3:15 AM	0			
3:30 AM	0			
3:45 AM	0			
4:00 AM	0			
4:15 AM	0			
4:30 AM	0			
4:45 AM	0			
5:00 AM	0			
5:15 AM	0	0		
5:30 AM	0	0		
5:45 AM	0	0		
6:00 AM	0	0		
6:15 AM	684	0		
6:30 AM	684	0		
6:45 AM	684	0		
7:00 AM	684	0		
7:15 AM	0	0		
7:30 AM	0	0		
7:45 AM	0	0		
8:00 AM	0	0		
8:15 AM	0	0		
8:30 AM	0	0		
8:45 AM	0	0		
9:00 AM	0	0		
9:15 AM	0	0		
9:30 AM	0	0		
9:45 AM	0	0		
10:00 AM	0	0		
10:15 AM	0	0		
10:30 AM	0	0		
10:45 AM	0	0		
11:00 AM	0	0		
11:15 AM	0	0		
11:30 AM	0	0		
11:45 AM	0	0		
12:00 PM	0	0		
12:15 PM	0	0		
12:30 PM	0	0		
12:45 PM	0	0		
1:00 PM	0	0		
1:15 PM	0	1		
1:30 PM	0	0		
1:45 PM	0	0		
2:00 PM	0	0		
2:15 PM	0	0		
2:30 PM	0	0		
2:45 PM	0	0		
3:00 PM	0	0		
3:15 PM	988	0		
3:30 PM	988	0		
3:45 PM	988	0		
4:00 PM	988	0		
4:15 PM	0	0		
4:30 PM	0	0		
4:45 PM	0	0		
5:00 PM	0	0		
5:15 PM	0			
5:30 PM	0			
5:45 PM	0			
6:00 PM	0			
6:15 PM	0			
6:30 PM	0			
6:45 PM	0			
7:00 PM	0			
7:15 PM	0			
7:30 PM	0			
7:45 PM	0			
8:00 PM	0			
8:15 PM	0			
8:30 PM	0			
8:45 PM	0			
9:00 PM	0			
9:15 PM	0			
9:30 PM	0			
9:45 PM	0			
10:00 PM	0			
10:15 PM	0			
10:30 PM	0			
10:45 PM	0			
11:00 PM	0			

MUTCD WARRANT 5, SCHOOL CROSSING

Do schoolchildren (elementary through high school students) cross the major street?	No
Has consideration been given to implement other remedial measures, such as warning signs and flashers, school speed zones, school crossing guards, or a grade-separated crossing?	No
Is the distance to the nearest traffic control signal along the major street less than 300 feet?	No
If the distance to the nearest traffic control signal along the major street is less than 300 feet, will the proposed traffic control signal restrict the progressive movement of traffic?	No
Minimum of 20 schoolchildren during the highest crossing hour?	No
Has a traffic engineering study been conducted to determine the adequacy and frequency of gaps in the vehicular traffic stream as related to the number and size of groups of schoolchildren at an established school crossing across the major street?	No

Pedestrian Gap Acceptance Engineering and Traffic Study Evaluation*

Data Collection Date:	7/25/2012	Sufficient median for major street Crossing 1?	No
Day of the Week:	Monday	Sufficient median for major street Crossing 2?	No

Study Period		Study Duration (mins)	Crossing 1 (Stage 1)		Crossing 1 (Stage 2)		Crossing 2 (Stage 1)		Crossing 2 (Stage 2)	
			Total Adequate Gaps	Met?	Total Adequate Gaps	Met?	Total Adequate Gaps	Met?	Total Adequate Gaps	Met?
1	Morning			N/A		N/A		N/A		N/A
2	Afternoon			N/A		N/A		N/A		N/A
3				N/A		N/A		N/A		N/A
4				N/A		N/A		N/A		N/A
5				N/A		N/A		N/A		N/A
			Summary:	Not Met		Not Met		Not Met		Not Met

**Refer to Section 4.3 of PennDOT Publication 46 (Traffic Engineering Manual) for specific study requirements and additional Department documentation requirements to justify the installation of a signal under Warrant 5. Refer to ITE's Manual of Transportation Engineering Studies for specific details related to conducting a pedestrian gap acceptance engineering and traffic study. Attach all supplementary documentation and calculations.*

MUTCD WARRANT 6, COORDINATED SIGNAL SYSTEM*

On a one-way street or a street that has traffic predominantly in one direction, the adjacent traffic control signals are so far apart that they do not provide the necessary degree of vehicular platooning.	No
On a two-way street, adjacent traffic control signals do not provide the necessary degree of platooning and the proposed and adjacent traffic control signals will collectively provide a progressive operation.	No

**Warrant 6 should not be applied where the resultant spacing of traffic control signals would be less than 1,000 feet.*

MUTCD WARRANT 7, CRASH EXPERIENCE

Built-up Isolated Community With Less Than 10,000 Population or Above 40 MPH on Major Street?	No

Number of Lanes for Moving Traffic on Each Approach	
Major Street:	2 or More Lanes
Minor Street:	1 Lane

Has adequate trial of alternatives with satisfactory observance and enforcement failed to reduce the crash frequency? N/A

Five or more reportable and/or non-reportable crashes, of types susceptible to correction by a traffic control signal, have occurred within a 12-month period during the most recent 3 years of available crash data.* N/A

**If applicable, attach a summary of the crash data analysis used for this criterion.*

For each of any 8 hours of an average day, the vehicles per hour given in both the 80% columns of Condition A in Table 4C-1 exists on the major-street and the higher-volume minor-street approach, respectively, to the intersection. **No**

For each of any 8 hours of an average day, the vehicles per hour given in both the 80% columns of Condition B in Table 4C-1 exists on the major-street and the higher-volume minor-street approach, respectively, to the intersection. **No**

The volume of pedestrian traffic is not less than 80% of the requirements specified in Warrant 4, the Pedestrian Volume warrant.* N/A

**If applicable, attach all supporting calculations and documentation.*

MUTCD WARRANT 8, ROADWAY NETWORK*

Is the major street classified as an Urban Extension, Principal Arterial, or Minor Arterial that is a reasonable connection between two Principal Arterials and/or Urban Extensions as shown on the official Functional Classification Map? No

Does the intersection have a total existing, or immediately projected, entering volume of at least 1,000 vehicles per hour during the peak hour of a typical weekday and has 5-year projected traffic volumes, based on an engineering study, that meet one or more of Warrants 1,2, and 3 during an average weekday? Yes

Does the intersection have a total existing or immediately projected entering volume of at least 1,000 vehicles per hour for each of any 5 hours of a non-normal business day (Saturday or Sunday)? No

Is the major street part of the street or highway system that serves as the principal roadway network for through traffic flow? Yes

Does the major street include rural or suburban highways outside, entering, or traversing a city? No

Does the major street appear as a major route on an official plan, such as a major street plan in an urban area traffic and transportation study? No

**Refer to Section 4.3 of PennDOT Publication 46 (Traffic Engineering Manual) for additional Department documentation requirements to justify the installation of a signal under Warrant 8. Attach all supplementary documentation and calculations, especially those relating to traffic volume projections and subsequent Warrant analyses.*

Traffic Signal Warrant Analysis Workbook

WARRANT PA-1, ADT VOLUME WARRANT

Number of Lanes for Moving Traffic on Each Approach	
Major Street:	2 or More Lanes
Minor Street:	1 Lane

Built-up Isolated Community With Less Than 10,000 Population or Above 40 MPH on Major Street?	No

Estimated ADT of Major Street (Both Approaches)*: 9998 vpd

**If applicable, attach all supporting calculations and documentation.*

Estimated ADT of Higher-Volume Minor Street (One Direction Only)*: 1505 vpd

**If applicable, attach all supporting calculations and documentation.*

Condition A - ADT Volume Warrant

Number of lanes for moving traffic on each approach		Estimated ADT*			
		Major Street (Both Approaches)		Higher-Volume Minor Street Approach (One Direction Only)	
Major Street	Minor Street	100%	70%	100%	70%
1	1	10,000	7,000	3,000	2,100
2 or More	1	12,000	8,400	3,000	2,100
2 or More	2 or More	12,000	8,400	4,000	2,800
1	2 or More	10,000	7,000	4,000	2,800

Condition B - ADT Volume Warrant

Number of lanes for moving traffic on each approach		Estimated ADT*			
		Major Street (Both Approaches)		Higher-Volume Minor Street Approach (One Direction Only)	
Major Street	Minor Street	100%	70%	100%	70%
1	1	15,000	10,500	1,500	1,050
2 or More	1	18,000	12,600	1,500	1,050
2 or More	2 or More	18,000	12,600	2,000	1,400
1	2 or More	15,000	10,500	2,000	1,400

Condition A Met?	**No**
Condition B Met?	**No**

WARRANT PA-2, OPTIONAL TRAFFIC SIGNAL WARRANT FOR MIDBLOCK CROSSINGS AND TRAIL CROSSINGS

Has District Traffic Engineer approval been acquired to conduct this analysis? N/A

Will the proposed traffic signal be at least 100' from adjacent intersections? N/A

85th Percentile Speed on the Major Street: 40 MPH

Length of Uncontrolled Crossing: 50 feet

Data Collection Date: 7/27/2012

Day of the Week: Monday

Hourly Vehicular & Pedestrian Volume			
Hour Interval		Major Street Combined	Total of All Pedestrians Crossing Major Street
#	Beginning At	Vehicles Per Hour (VPH)	Pedestrians Per Hour (PPH)
1	2:00 PM	634	1
2		0	0
3		0	0
4		0	0
5		0	0
6		0	0
7		0	0
8		0	0
9		0	0
10		0	0

Applicable Exhibit for Comparison: Exhibit 4-7

Does at least one hour plot above the applicable line for the appropriate exhibit? N/A

APPENDIX G – HEADWAY CALCULATIONS

Two Way Stop Control Headway Calculations

Intersection: Applebutter Road & Site Driveway

Major Direction: East - West
Area Type: Suburban
Intersection Type: T Intersection

HCM2010 Equation 19-30: $t_{c,x} = t_{c,base} + t_{c,HV}P_{HV} + t_{c,G}G - t_{3,LT}$
HCM2010 Equation 19-31: $t_{f,x} = t_{f,base} + t_{f,HV}P_{HV}$

AM Peak Hour

Approach	Movement	Type	Major Street Lanes (2 or 4)	$t_{c,base,46}$ PennDOT Base Critical Headway	$t_{c,HV}$ Adjust for Heavy Veh	P_{HV} Percent Heavy Veh (decimal)	$t_{c,G}$ Adjust for Grade	G Grade (integer)	T-intersection? (Y or N)	$t_{3,LT}$	$t_{f,base,46}$ PennDOT Base Follow-up Headway	$t_{c,HV}$ Adjust for Heavy Veh	**$t_{c,x}$ Critical Headway for Movement**	**$t_{c,x}$ Follow-up Headway for Movement**
EB	L	Major Left	2	4.3	1.0	0.76	0.0	2	Y	0	3.0	0.9	**5.1**	**3.7**
SB	L	Minor Left	2	7.1	1.0	1	0.2	-5	Y	0.7	3.0	0.9	**6.4**	**3.9**
SB	R	Minor Right	2	6.2	1.0	0.86	0.1	-5	Y	0	3.1	0.9	**6.6**	**3.9**

PM Peak Hour

Approach	Movement	Type	Major Street Lanes (2 or 4)	$t_{c,base,46}$ PennDOT Base Critical Headway	$t_{c,HV}$ Adjust for Heavy Veh	P_{HV} Percent Heavy Veh (decimal)	$t_{c,G}$ Adjust for Grade	G Grade (integer)	T-intersection? (Y or N)	$t_{3,LT}$	$t_{f,base,46}$ PennDOT Base Follow-up Headway	$t_{c,HV}$ Adjust for Heavy Veh	**$t_{c,x}$ Critical Headway for Movement**	**$t_{c,x}$ Follow-up Headway for Movement**
EB	L	Major Left	2	4.3	1.0	0	0.0	2	Y	0	3.0	0.9	**4.3**	**3.0**
SB	L	Minor Left	2	7.1	1.0	0	0.2	-5	Y	0.7	3.0	0.9	**5.4**	**3.0**
SB	R	Minor Right	2	6.2	1.0	0	0.1	-5	Y	0	3.1	0.9	**5.7**	**3.1**

Two Way Stop Control Headway Calculations

Intersection: Shimersville Road & Applebutter Road

Major Direction: North - South
Area Type: Suburban
Intersection Type: T Intersection

HCM2010 Equation 19-30: $t_{c,x} = t_{c,base} + t_{c,HV}P_{HV} + t_{c,G}G - t_{3,LT}$
HCM2010 Equation 19-31: $t_{f,x} = t_{f,base} + t_{f,HV}P_{HV}$

AM Peak Hour

Approach	Movement	Type	Major Street Lanes (2 or 4)	$t_{c,base,46}$ PennDOT Base Critical Headway	$t_{c,HV}$ Adjust for Heavy Veh	P_{HV} Percent Heavy Veh (decimal)	$t_{c,G}$ Adjust for Grade	G Grade (integer)	T-intersection? (Y or N)	$t_{3,LT}$	$t_{f,base,46}$ PennDOT Base Follow-up Headway	$t_{c,HV}$ Adjust for Heavy Veh	**$t_{c,x}$ Critical Headway for Movement**	**$t_{c,x}$ Follow-up Headway for Movement**
WB	L	Minor Left	4	8.4	2.0	0.26	0.2	6	Y	0.7	2.8	1.0	**9.4**	**3.1**
WB	R	Minor Right	4	7.2	2.0	0.13	0.1	6	Y	0	2.9	1.0	**8.1**	**3.0**
SB	L	Major Left	4	3.9	2.0	0.09	0.0	-4	Y	0	2.4	1.0	**4.1**	**2.5**

PM Peak Hour

Approach	Movement	Type	Major Street Lanes (2 or 4)	$t_{c,base,46}$ PennDOT Base Critical Headway	$t_{c,HV}$ Adjust for Heavy Veh	P_{HV} Percent Heavy Veh (decimal)	$t_{c,G}$ Adjust for Grade	G Grade (integer)	T-intersection? (Y or N)	$t_{3,LT}$	$t_{f,base,46}$ PennDOT Base Follow-up Headway	$t_{c,HV}$ Adjust for Heavy Veh	**$t_{c,x}$ Critical Headway for Movement**	**$t_{c,x}$ Follow-up Headway for Movement**
WB	L	Minor Left	4	8.4	2.0	0	0.2	6	Y	0.7	2.8	1.0	**8.9**	**2.8**
WB	R	Minor Right	4	7.2	2.0	0.02	0.1	6	Y	0	2.9	1.0	**7.8**	**2.9**
SB	L	Major Left	4	3.9	2.0	0.01	0.0	-4	Y	0	2.4	1.0	**3.9**	**2.4**

APPENDIX H – LEVEL OF SERVICE DEFINITIONS

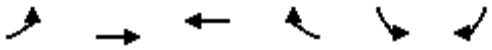
Signalized Intersection Level of Service (HCM 2010)

Control Delay Per Vehicle (sec)	LOS by Volume to Capacity Ratio	
	≤1	>1
≤10	A	F
>10 and ≤20	B	F
>20 and ≤35	C	F
>35 and ≤55	D	F
>55 and ≤80	E	F
>80	F	F

Unsignalized Intersection Level of Service (HCM 2010)

Control Delay Per Vehicle (sec)	LOS by Volume to Capacity Ratio	
	≤1	>1
≤10	A	F
>10 and ≤15	B	F
>15 and ≤25	C	F
>25 and ≤35	D	F
>35 and ≤50	E	F
>50	F	F

APPENDIX I – CAPACITY ANALYSES



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	34	25	105	2	3	7
Future Volume (vph)	34	25	105	2	3	7
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	11	11	12	15	12
Grade (%)		2%	-2%		-5%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.997		0.907	
Flt Protected		0.972			0.985	
Satd. Flow (prot)	0	1136	1669	0	953	0
Flt Permitted		0.972			0.985	
Satd. Flow (perm)	0	1136	1669	0	953	0
Link Speed (mph)		40	40		25	
Link Distance (ft)		240	235		256	
Travel Time (s)		4.1	4.0		7.0	
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77
Heavy Vehicles (%)	76%	8%	4%	50%	100%	86%
Adj. Flow (vph)	44	32	136	3	4	9
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	76	139	0	13	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		15	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.09	1.13	1.11	1.06	0.92	1.04
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 20.0%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	34	25	105	2	3	7
Future Vol, veh/h	34	25	105	2	3	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	2	-2	-	-5	-
Peak Hour Factor	77	77	77	77	77	77
Heavy Vehicles, %	76	8	4	50	100	86
Mvmt Flow	44	32	136	3	4	9

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	139	0	-	0	258	138
Stage 1	-	-	-	-	138	-
Stage 2	-	-	-	-	120	-
Critical Hdwy	5.1	-	-	-	6.4	6.56
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	3.7	-	-	-	3.9	3.9
Pot Cap-1 Maneuver	857	-	-	-	669	773
Stage 1	-	-	-	-	808	-
Stage 2	-	-	-	-	822	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	857	-	-	-	634	773
Mov Cap-2 Maneuver	-	-	-	-	634	-
Stage 1	-	-	-	-	766	-
Stage 2	-	-	-	-	822	-

Approach	EB	WB	SB
HCM Control Delay, s	5.4	0	10.1
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	857	-	-	-	725
HCM Lane V/C Ratio	0.052	-	-	-	0.018
HCM Control Delay (s)	9.4	0	-	-	10.1
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.2	-	-	-	0.1

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	46	87	237	26	33	347
Future Volume (vph)	46	87	237	26	33	347
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	11	11	11
Grade (%)	6%		4%			-4%
Storage Length (ft)	0	50		0	0	
Storage Lanes	1	1		1	0	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95
Frt		0.850		0.850		
Flt Protected	0.950					0.996
Satd. Flow (prot)	1273	1270	1609	1050	0	3216
Flt Permitted	0.950					0.996
Satd. Flow (perm)	1273	1270	1609	1050	0	3216
Link Speed (mph)	40		40			40
Link Distance (ft)	398		593			396
Travel Time (s)	6.8		10.1			6.8
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	26%	13%	6%	38%	9%	4%
Adj. Flow (vph)	52	98	266	29	37	390
Shared Lane Traffic (%)						
Lane Group Flow (vph)	52	98	266	29	0	427
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	11		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.16	1.16	1.15	1.15	1.09	1.09
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 37.6%		ICU Level of Service A	
Analysis Period (min) 15			

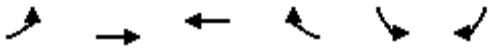
Intersection	
Int Delay, s/veh	2.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	46	87	237	26	33	347
Future Vol, veh/h	46	87	237	26	33	347
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop	-	None	-	None
Storage Length	0	50	-	0	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	6	-	4	-	-	-4
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	26	13	6	38	9	4
Mvmt Flow	52	98	266	29	37	390

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	535	266	0	0	295	0
Stage 1	266	-	-	-	-	-
Stage 2	269	-	-	-	-	-
Critical Hdwy	9.4	8.1	-	-	4.1	-
Critical Hdwy Stg 1	6.99	-	-	-	-	-
Critical Hdwy Stg 2	7.39	-	-	-	-	-
Follow-up Hdwy	3.1	3	-	-	2.5	-
Pot Cap-1 Maneuver	358	735	-	-	1138	-
Stage 1	775	-	-	-	-	-
Stage 2	749	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	343	735	-	-	1138	-
Mov Cap-2 Maneuver	343	-	-	-	-	-
Stage 1	775	-	-	-	-	-
Stage 2	718	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.9	0	0.8
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	343	735	1138	-
HCM Lane V/C Ratio	-	-	0.151	0.133	0.033	-
HCM Control Delay (s)	-	-	17.3	10.6	8.3	0.1
HCM Lane LOS	-	-	C	B	A	A
HCM 95th %tile Q(veh)	-	-	0.5	0.5	0.1	-



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	125	77	0	2	5
Future Volume (vph)	0	125	77	0	2	5
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	11	11	12	15	12
Grade (%)		2%	-2%		-5%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.899	
Flt Protected					0.988	
Satd. Flow (prot)	0	1706	1690	0	1803	0
Flt Permitted					0.988	
Satd. Flow (perm)	0	1706	1690	0	1803	0
Link Speed (mph)		40	40		25	
Link Distance (ft)		240	235		256	
Travel Time (s)		4.1	4.0		7.0	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles (%)	0%	1%	4%	0%	0%	0%
Adj. Flow (vph)	0	145	90	0	2	6
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	145	90	0	8	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		15	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.09	1.13	1.11	1.06	0.92	1.04
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 16.9%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	125	77	0	2	5
Future Vol, veh/h	0	125	77	0	2	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	2	-2	-	-5	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	0	1	4	0	0	0
Mvmt Flow	0	145	90	0	2	6

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	90	0	-	0	235	90
Stage 1	-	-	-	-	90	-
Stage 2	-	-	-	-	145	-
Critical Hdwy	4.3	-	-	-	5.4	5.7
Critical Hdwy Stg 1	-	-	-	-	4.4	-
Critical Hdwy Stg 2	-	-	-	-	4.4	-
Follow-up Hdwy	3	-	-	-	3	3.1
Pot Cap-1 Maneuver	1119	-	-	-	929	1047
Stage 1	-	-	-	-	1116	-
Stage 2	-	-	-	-	1067	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1119	-	-	-	929	1047
Mov Cap-2 Maneuver	-	-	-	-	929	-
Stage 1	-	-	-	-	1116	-
Stage 2	-	-	-	-	1067	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	8.6
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1119	-	-	-	1010
HCM Lane V/C Ratio	-	-	-	-	0.008
HCM Control Delay (s)	0	-	-	-	8.6
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	32	57	540	49	87	267
Future Volume (vph)	32	57	540	49	87	267
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	11	11	11
Grade (%)	6%		4%			-4%
Storage Length (ft)	0	50		0	0	
Storage Lanes	1	1		1	0	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95
Frt		0.850		0.850		
Flt Protected	0.950					0.988
Satd. Flow (prot)	1603	1406	1688	1421	0	3299
Flt Permitted	0.950					0.988
Satd. Flow (perm)	1603	1406	1688	1421	0	3299
Link Speed (mph)	40		40			40
Link Distance (ft)	398		593			396
Travel Time (s)	6.8		10.1			6.8
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles (%)	0%	2%	1%	2%	1%	1%
Adj. Flow (vph)	37	66	628	57	101	310
Shared Lane Traffic (%)						
Lane Group Flow (vph)	37	66	628	57	0	411
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	11		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.16	1.16	1.15	1.15	1.09	1.09
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 53.8%		ICU Level of Service A	
Analysis Period (min) 15			

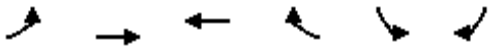
Intersection	
Int Delay, s/veh	3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	32	57	540	49	87	267
Future Vol, veh/h	32	57	540	49	87	267
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop	-	None	-	None
Storage Length	0	50	-	0	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	6	-	4	-	-	-4
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	0	2	1	2	1	1
Mvmt Flow	37	66	628	57	101	310

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	985	628	0	0	685	0
Stage 1	628	-	-	-	-	-
Stage 2	357	-	-	-	-	-
Critical Hdwy	8.9	7.8	-	-	3.9	-
Critical Hdwy Stg 1	6.6	-	-	-	-	-
Critical Hdwy Stg 2	7	-	-	-	-	-
Follow-up Hdwy	2.8	2.9	-	-	2.4	-
Pot Cap-1 Maneuver	161	406	-	-	890	-
Stage 1	514	-	-	-	-	-
Stage 2	735	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	139	406	-	-	890	-
Mov Cap-2 Maneuver	139	-	-	-	-	-
Stage 1	514	-	-	-	-	-
Stage 2	634	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	24.4	0	2.7
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	139	406	890	-
HCM Lane V/C Ratio	-	-	0.268	0.163	0.114	-
HCM Control Delay (s)	-	-	40.1	15.6	9.6	0.4
HCM Lane LOS	-	-	E	C	A	A
HCM 95th %tile Q(veh)	-	-	1	0.6	0.4	-



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	44	25	105	2	3	9
Future Volume (vph)	44	25	105	2	3	9
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	11	11	12	15	12
Grade (%)		2%	-2%		-5%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.997		0.899	
Flt Protected		0.969			0.988	
Satd. Flow (prot)	0	1101	1669	0	951	0
Flt Permitted		0.969			0.988	
Satd. Flow (perm)	0	1101	1669	0	951	0
Link Speed (mph)		40	40		25	
Link Distance (ft)		240	235		256	
Travel Time (s)		4.1	4.0		7.0	
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77
Heavy Vehicles (%)	76%	8%	4%	50%	100%	86%
Adj. Flow (vph)	57	32	136	3	4	12
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	89	139	0	16	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		15	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.09	1.13	1.11	1.06	0.92	1.04
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 20.6%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	2.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	44	25	105	2	3	9
Future Vol, veh/h	44	25	105	2	3	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	2	-2	-	-5	-
Peak Hour Factor	77	77	77	77	77	77
Heavy Vehicles, %	76	8	4	50	100	86
Mvmt Flow	57	32	136	3	4	12

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	139	0	-	0	284	138
Stage 1	-	-	-	-	138	-
Stage 2	-	-	-	-	146	-
Critical Hdwy	5.1	-	-	-	6.4	6.56
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	3.7	-	-	-	3.9	3.9
Pot Cap-1 Maneuver	857	-	-	-	647	773
Stage 1	-	-	-	-	808	-
Stage 2	-	-	-	-	802	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	857	-	-	-	603	773
Mov Cap-2 Maneuver	-	-	-	-	603	-
Stage 1	-	-	-	-	753	-
Stage 2	-	-	-	-	802	-

Approach	EB	WB	SB
HCM Control Delay, s	6.1	0	10.1
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	857	-	-	-	722
HCM Lane V/C Ratio	0.067	-	-	-	0.022
HCM Control Delay (s)	9.5	0	-	-	10.1
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.2	-	-	-	0.1

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	48	87	237	36	33	347
Future Volume (vph)	48	87	237	36	33	347
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	11	11	11
Grade (%)	6%		4%			-4%
Storage Length (ft)	0	50		0	0	
Storage Lanes	1	1		1	0	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95
Frt		0.850		0.850		
Flt Protected	0.950					0.996
Satd. Flow (prot)	1273	1270	1609	1050	0	3216
Flt Permitted	0.950					0.996
Satd. Flow (perm)	1273	1270	1609	1050	0	3216
Link Speed (mph)	40		40			40
Link Distance (ft)	398		593			396
Travel Time (s)	6.8		10.1			6.8
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	26%	13%	6%	38%	9%	4%
Adj. Flow (vph)	54	98	266	40	37	390
Shared Lane Traffic (%)						
Lane Group Flow (vph)	54	98	266	40	0	427
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	11		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.16	1.16	1.15	1.15	1.09	1.09
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 37.6%		ICU Level of Service A	
Analysis Period (min) 15			

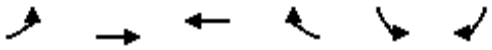
Intersection	
Int Delay, s/veh	2.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	48	87	237	36	33	347
Future Vol, veh/h	48	87	237	36	33	347
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop	-	None	-	None
Storage Length	0	50	-	0	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	6	-	4	-	-	-4
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	26	13	6	38	9	4
Mvmt Flow	54	98	266	40	37	390

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	535	266	0	0	306	0
Stage 1	266	-	-	-	-	-
Stage 2	269	-	-	-	-	-
Critical Hdwy	9.4	8.1	-	-	4.1	-
Critical Hdwy Stg 1	6.99	-	-	-	-	-
Critical Hdwy Stg 2	7.39	-	-	-	-	-
Follow-up Hdwy	3.1	3	-	-	2.5	-
Pot Cap-1 Maneuver	358	735	-	-	1128	-
Stage 1	775	-	-	-	-	-
Stage 2	749	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	343	735	-	-	1128	-
Mov Cap-2 Maneuver	343	-	-	-	-	-
Stage 1	775	-	-	-	-	-
Stage 2	718	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13	0	0.8
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	343	735	1128	-
HCM Lane V/C Ratio	-	-	0.157	0.133	0.033	-
HCM Control Delay (s)	-	-	17.4	10.6	8.3	0.1
HCM Lane LOS	-	-	C	B	A	A
HCM 95th %tile Q(veh)	-	-	0.6	0.5	0.1	-



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	125	77	0	2	7
Future Volume (vph)	0	125	77	0	2	7
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	11	11	12	15	12
Grade (%)		2%	-2%		-5%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.892	
Flt Protected					0.990	
Satd. Flow (prot)	0	1706	1690	0	1792	0
Flt Permitted					0.990	
Satd. Flow (perm)	0	1706	1690	0	1792	0
Link Speed (mph)		40	40		25	
Link Distance (ft)		240	235		256	
Travel Time (s)		4.1	4.0		7.0	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles (%)	0%	1%	4%	0%	0%	0%
Adj. Flow (vph)	0	145	90	0	2	8
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	145	90	0	10	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		15	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.09	1.13	1.11	1.06	0.92	1.04
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 16.9%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	125	77	0	2	7
Future Vol, veh/h	0	125	77	0	2	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	2	-2	-	-5	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	0	1	4	0	0	0
Mvmt Flow	0	145	90	0	2	8

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	90	0	-	0	235	90
Stage 1	-	-	-	-	90	-
Stage 2	-	-	-	-	145	-
Critical Hdwy	4.3	-	-	-	5.4	5.7
Critical Hdwy Stg 1	-	-	-	-	4.4	-
Critical Hdwy Stg 2	-	-	-	-	4.4	-
Follow-up Hdwy	3	-	-	-	3	3.1
Pot Cap-1 Maneuver	1119	-	-	-	929	1047
Stage 1	-	-	-	-	1116	-
Stage 2	-	-	-	-	1067	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1119	-	-	-	929	1047
Mov Cap-2 Maneuver	-	-	-	-	929	-
Stage 1	-	-	-	-	1116	-
Stage 2	-	-	-	-	1067	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	8.6
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1119	-	-	-	1018
HCM Lane V/C Ratio	-	-	-	-	0.01
HCM Control Delay (s)	0	-	-	-	8.6
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	34	57	540	49	87	267
Future Volume (vph)	34	57	540	49	87	267
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	11	11	11
Grade (%)	6%		4%			-4%
Storage Length (ft)	0	50		0	0	
Storage Lanes	1	1		1	0	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95
Frt		0.850		0.850		
Flt Protected	0.950					0.988
Satd. Flow (prot)	1603	1406	1688	1421	0	3299
Flt Permitted	0.950					0.988
Satd. Flow (perm)	1603	1406	1688	1421	0	3299
Link Speed (mph)	40		40			40
Link Distance (ft)	398		593			396
Travel Time (s)	6.8		10.1			6.8
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles (%)	0%	2%	1%	2%	1%	1%
Adj. Flow (vph)	40	66	628	57	101	310
Shared Lane Traffic (%)						
Lane Group Flow (vph)	40	66	628	57	0	411
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	11		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.16	1.16	1.15	1.15	1.09	1.09
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 53.8%		ICU Level of Service A	
Analysis Period (min) 15			

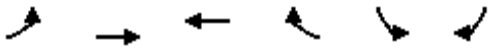
Intersection	
Int Delay, s/veh	3.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	34	57	540	49	87	267
Future Vol, veh/h	34	57	540	49	87	267
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop	-	None	-	None
Storage Length	0	50	-	0	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	6	-	4	-	-	-4
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	0	2	1	2	1	1
Mvmt Flow	40	66	628	57	101	310

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	985	628	0	0	685	0
Stage 1	628	-	-	-	-	-
Stage 2	357	-	-	-	-	-
Critical Hdwy	8.9	7.8	-	-	3.9	-
Critical Hdwy Stg 1	6.6	-	-	-	-	-
Critical Hdwy Stg 2	7	-	-	-	-	-
Follow-up Hdwy	2.8	2.9	-	-	2.4	-
Pot Cap-1 Maneuver	161	406	-	-	890	-
Stage 1	514	-	-	-	-	-
Stage 2	735	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	139	406	-	-	890	-
Mov Cap-2 Maneuver	139	-	-	-	-	-
Stage 1	514	-	-	-	-	-
Stage 2	634	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	25.1	0	2.7
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	139	406	890	-
HCM Lane V/C Ratio	-	-	0.284	0.163	0.114	-
HCM Control Delay (s)	-	-	40.9	15.6	9.6	0.4
HCM Lane LOS	-	-	E	C	A	A
HCM 95th %tile Q(veh)	-	-	1.1	0.6	0.4	-



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	44	26	110	2	3	9
Future Volume (vph)	44	26	110	2	3	9
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	11	11	12	15	12
Grade (%)		2%	-2%		-5%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.997		0.899	
Flt Protected		0.970			0.988	
Satd. Flow (prot)	0	1110	1670	0	951	0
Flt Permitted		0.970			0.988	
Satd. Flow (perm)	0	1110	1670	0	951	0
Link Speed (mph)		40	40		25	
Link Distance (ft)		240	235		256	
Travel Time (s)		4.1	4.0		7.0	
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77
Heavy Vehicles (%)	76%	8%	4%	50%	100%	86%
Adj. Flow (vph)	57	34	143	3	4	12
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	91	146	0	16	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		15	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.09	1.13	1.11	1.06	0.92	1.04
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 20.7%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	2.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	44	26	110	2	3	9
Future Vol, veh/h	44	26	110	2	3	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	2	-2	-	-5	-
Peak Hour Factor	77	77	77	77	77	77
Heavy Vehicles, %	76	8	4	50	100	86
Mvmt Flow	57	34	143	3	4	12

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	146	0	-	0	293	145
Stage 1	-	-	-	-	145	-
Stage 2	-	-	-	-	148	-
Critical Hdwy	5.1	-	-	-	6.4	6.56
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	3.7	-	-	-	3.9	3.9
Pot Cap-1 Maneuver	852	-	-	-	640	766
Stage 1	-	-	-	-	802	-
Stage 2	-	-	-	-	800	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	852	-	-	-	596	766
Mov Cap-2 Maneuver	-	-	-	-	596	-
Stage 1	-	-	-	-	747	-
Stage 2	-	-	-	-	800	-

Approach	EB	WB	SB
HCM Control Delay, s	6	0	10.1
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	852	-	-	-	715
HCM Lane V/C Ratio	0.067	-	-	-	0.022
HCM Control Delay (s)	9.5	0	-	-	10.1
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.2	-	-	-	0.1

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	50	91	248	37	35	364
Future Volume (vph)	50	91	248	37	35	364
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	11	11	11
Grade (%)	6%		4%			-4%
Storage Length (ft)	0	50		0	0	
Storage Lanes	1	1		1	0	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95
Frt		0.850		0.850		
Flt Protected	0.950					0.996
Satd. Flow (prot)	1273	1270	1609	1050	0	3216
Flt Permitted	0.950					0.996
Satd. Flow (perm)	1273	1270	1609	1050	0	3216
Link Speed (mph)	40		40			40
Link Distance (ft)	398		593			396
Travel Time (s)	6.8		10.1			6.8
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	26%	13%	6%	38%	9%	4%
Adj. Flow (vph)	56	102	279	42	39	409
Shared Lane Traffic (%)						
Lane Group Flow (vph)	56	102	279	42	0	448
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	11		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.16	1.16	1.15	1.15	1.09	1.09
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 38.8%		ICU Level of Service A	
Analysis Period (min) 15			

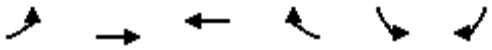
Intersection	
Int Delay, s/veh	2.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	50	91	248	37	35	364
Future Vol, veh/h	50	91	248	37	35	364
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop	-	None	-	None
Storage Length	0	50	-	0	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	6	-	4	-	-	-4
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	26	13	6	38	9	4
Mvmt Flow	56	102	279	42	39	409

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	562	279	0	0	321	0
Stage 1	279	-	-	-	-	-
Stage 2	283	-	-	-	-	-
Critical Hdwy	9.4	8.1	-	-	4.1	-
Critical Hdwy Stg 1	6.99	-	-	-	-	-
Critical Hdwy Stg 2	7.39	-	-	-	-	-
Follow-up Hdwy	3.1	3	-	-	2.5	-
Pot Cap-1 Maneuver	338	718	-	-	1115	-
Stage 1	760	-	-	-	-	-
Stage 2	732	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	323	718	-	-	1115	-
Mov Cap-2 Maneuver	323	-	-	-	-	-
Stage 1	760	-	-	-	-	-
Stage 2	699	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.5	0	0.9
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	323	718	1115	-
HCM Lane V/C Ratio	-	-	0.174	0.142	0.035	-
HCM Control Delay (s)	-	-	18.5	10.8	8.3	0.2
HCM Lane LOS	-	-	C	B	A	A
HCM 95th %tile Q(veh)	-	-	0.6	0.5	0.1	-



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	131	81	0	2	7
Future Volume (vph)	0	131	81	0	2	7
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	11	11	12	15	12
Grade (%)		2%	-2%		-5%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.892	
Flt Protected					0.990	
Satd. Flow (prot)	0	1706	1690	0	1792	0
Flt Permitted					0.990	
Satd. Flow (perm)	0	1706	1690	0	1792	0
Link Speed (mph)		40	40		25	
Link Distance (ft)		240	235		256	
Travel Time (s)		4.1	4.0		7.0	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles (%)	0%	1%	4%	0%	0%	0%
Adj. Flow (vph)	0	152	94	0	2	8
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	152	94	0	10	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		15	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.09	1.13	1.11	1.06	0.92	1.04
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	17.3%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	131	81	0	2	7
Future Vol, veh/h	0	131	81	0	2	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	2	-2	-	-5	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	0	1	4	0	0	0
Mvmt Flow	0	152	94	0	2	8

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	94	0	-	0	246	94
Stage 1	-	-	-	-	94	-
Stage 2	-	-	-	-	152	-
Critical Hdwy	4.3	-	-	-	5.4	5.7
Critical Hdwy Stg 1	-	-	-	-	4.4	-
Critical Hdwy Stg 2	-	-	-	-	4.4	-
Follow-up Hdwy	3	-	-	-	3	3.1
Pot Cap-1 Maneuver	1115	-	-	-	918	1042
Stage 1	-	-	-	-	1112	-
Stage 2	-	-	-	-	1061	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1115	-	-	-	918	1042
Mov Cap-2 Maneuver	-	-	-	-	918	-
Stage 1	-	-	-	-	1112	-
Stage 2	-	-	-	-	1061	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	8.6
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1115	-	-	-	1012
HCM Lane V/C Ratio	-	-	-	-	0.01
HCM Control Delay (s)	0	-	-	-	8.6
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	36	60	566	51	91	280
Future Volume (vph)	36	60	566	51	91	280
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	11	11	11
Grade (%)	6%		4%			-4%
Storage Length (ft)	0	50		0	0	
Storage Lanes	1	1		1	0	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95
Frt		0.850		0.850		
Flt Protected	0.950					0.988
Satd. Flow (prot)	1603	1406	1688	1421	0	3299
Flt Permitted	0.950					0.988
Satd. Flow (perm)	1603	1406	1688	1421	0	3299
Link Speed (mph)	40		40			40
Link Distance (ft)	398		593			396
Travel Time (s)	6.8		10.1			6.8
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles (%)	0%	2%	1%	2%	1%	1%
Adj. Flow (vph)	42	70	658	59	106	326
Shared Lane Traffic (%)						
Lane Group Flow (vph)	42	70	658	59	0	432
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	11		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.16	1.16	1.15	1.15	1.09	1.09
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 55.7%		ICU Level of Service B	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	3.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	36	60	566	51	91	280
Future Vol, veh/h	36	60	566	51	91	280
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop	-	None	-	None
Storage Length	0	50	-	0	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	6	-	4	-	-	-4
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	0	2	1	2	1	1
Mvmt Flow	42	70	658	59	106	326

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1033	658	0	0	717	0
Stage 1	658	-	-	-	-	-
Stage 2	375	-	-	-	-	-
Critical Hdwy	8.9	7.8	-	-	3.9	-
Critical Hdwy Stg 1	6.6	-	-	-	-	-
Critical Hdwy Stg 2	7	-	-	-	-	-
Follow-up Hdwy	2.8	2.9	-	-	2.4	-
Pot Cap-1 Maneuver	146	384	-	-	868	-
Stage 1	492	-	-	-	-	-
Stage 2	715	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	124	384	-	-	868	-
Mov Cap-2 Maneuver	124	-	-	-	-	-
Stage 1	492	-	-	-	-	-
Stage 2	608	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	28.3	0	2.7
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	124	384	868	-
HCM Lane V/C Ratio	-	-	0.338	0.182	0.122	-
HCM Control Delay (s)	-	-	48.2	16.4	9.7	0.4
HCM Lane LOS	-	-	E	C	A	A
HCM 95th %tile Q(veh)	-	-	1.4	0.7	0.4	-

APPENDIX J – APPLEBUTTER ROAD SIGN INVENTORY

SIGN		SERIES	DESCRIPTION	SIZE	STATION			STATUS OF NOV. 28, 2022 FIELD VIEW
1	A		SR 2012 SEG 0030 AHEAD	12 X 12	A	0	L	IN PLACE
1	B	R4-1	DO NOT PASS	24 X 30	A	104	R	IN PLACE
1	C	R2-1	35 MPH SPEED LIMIT	24 X 30	A	104	R	IN PLACE
1	D	W3-1	STOP AHEAD	30 X 30	D	140	L	Pub 236 minimum distance is 250ft fro Stop sign IN PLACE
1	E	W1-5R	RIGHT WINDING ROAD	30 X 30	A	256	R	IN PLACE
1	F	W13-1P	20MPH ADVISORY SPEED	24 X 24	A	256	R	IN PLACE
1	G	D1-3	BETHLEHEM LEFT/ FREEMANSBURG RIGHT/ STEEL CITY RIGHT	72 X 36	D	419	L	IN PLACE
1	H	W1-6	LARGE SINGLE ARROW (LEFT)	48 X 24	D	962	L	IN PLACE
1	I	W13-1P	20MPH ADVISORY SPEED	24 X 24	D	962	L	IN PLACE
1	J	W1-6	LARGE SINGLE ARROW (RIGHT)	48 X 24	A	969	L	IN PLACE
1	K	W13-1P	20MPH ADVISORY SPEED	24 X 24	A	969	L	IN PLACE
1	L	W1-8	CHEVRON ALIGNMENT (LEFT)	18 X 24	A	1256	R	IN PLACE
		W1-8	CHEVRON ALIGNMENT (RIGHT)	18 X 24	D	1256	R	IN PLACE
1	M		EASTON RD (INTERSECTION)			1268	L	IN PLACE
1	N	W1-8	CHEVRON ALIGNMENT (LEFT)	18 X 24	A	1294	R	IN PLACE
1	O	W1-8	CHEVRON ALIGNMENT (RIGHT)	18 X 24	D	1294	R	IN PLACE
1	P	W1-8	CHEVRON ALIGNMENT (LEFT)	18 X 24	A	1326	R	IN PLACE
1	Q	W1-8	CHEVRON ALIGNMENT (RIGHT)	18 X 24	D	1326	R	IN PLACE
1	R	W1-8	CHEVRON ALIGNMENT (LEFT)	18 X 24	A	1361	R	IN PLACE
1	S	W1-8	CHEVRON ALIGNMENT (RIGHT)	18 X 24	D	1361	R	IN PLACE
1	T	W1-8	CHEVRON ALIGNMENT (LEFT)	18 X 24	A	1413	R	IN PLACE
1	U	W1-8	CHEVRON ALIGNMENT (RIGHT)	18 X 24	D	1413	R	IN PLACE
1	V	W1-1L	LEFT TURN	30 X 30	A	1695	R	IN PLACE
1	W	W13-1P	15MPH ADVISORY SPEED	24 X 24	A	1695	R	IN PLACE
			W/24"		A	1900	R	NEW
			SLOW		A	1909	R	NEW
			LEFT TURN ARROW		A	1918	R	NEW
			W/24"		A	1927	R	NEW
1	X	W1-8	CHEVRON ALIGNMENT (LEFT)	18 X 24	A	1974	R	IN PLACE
1	Y	W1-8	CHEVRON ALIGNMENT (RIGHT)	18 X 24	D	1974	R	IN PLACE
1	Z	W1-8	CHEVRON ALIGNMENT (LEFT)	18 X 24	A	2002	R	IN PLACE
2	A	W1-8	CHEVRON ALIGNMENT (RIGHT)	18 X 24	D	2002	R	IN PLACE
2	B	W1-8	CHEVRON ALIGNMENT (LEFT)	18 X 24	A	2029	R	IN PLACE
2	C	W1-8	CHEVRON ALIGNMENT (RIGHT)	18 X 24	D	2029	R	IN PLACE
2	D	W1-6	LARGE SINGLE ARROW (LEFT)	48 X 24	A	2104	R	IN PLACE
2	E	W13-1P	15MPH ADVISORY SPEED	24 X 24	A	2104	R	IN PLACE
2	F	W1-8	CHEVRON ALIGNMENT (LEFT)	18 X 24	A	2116	R	IN PLACE
2	G	W1-8	CHEVRON ALIGNMENT (RIGHT)	18 X 24	D	2116	R	IN PLACE
2	H	W1-6	LARGE SINGLE ARROW (RIGHT)	48 X 24	D	2136	R	IN PLACE
2	I	W13-1P	15MPH ADVISORY SPEED	24 X 24	D	2136	R	IN PLACE
2	J	W1-8	CHEVRON ALIGNMENT (LEFT)	18 X 24	A	2154	R	MISSING
2	K	W1-8	CHEVRON ALIGNMENT (RIGHT)	18 X 24	D	2154	R	MISSING
2	L	W1-8	CHEVRON ALIGNMENT (LEFT)	18 X 24	A	2175	R	MISSING
2	M	W1-8	CHEVRON ALIGNMENT (RIGHT)	18 X 24	D	2175	R	MISSING
		R3-2	NO LEFT TURN	24 X 24	A	2242	R	NEW
2	N	R2-1	35 MPH SPEED LIMIT	24 X 30	A	2252	R	*Should be a minimum 200' from nearest advisory sign. PUB 46, 2-12 IN PLACE
2	O		W/24"		D	2326	L	IN PLACE
2	P		RIGHT TURN ARROW		D	2343	L	IN PLACE
2	Q		SLOW		D	2354	L	IN PLACE
2	R		W/24"		D	2362	L	IN PLACE
		R3-2	NO LEFT TURN		A	2362	L	NEW
2	S	W1-1R	RIGHT TURN	30 X 30	D	2440	L	IN PLACE
2	T	W13-1P	15MPH ADVISORY SPEED	24 X 24	D	2440	L	IN PLACE
2	U	W1-2L	LEFT CURVE SIGN	30 X 30	A	2464	R	IN PLACE
2	V	W13-1P	35MPH ADVISORY SPEED	24 X 24	A	2464	R	IN PLACE
		W1-8	CHEVRON ALIGNMENT (LEFT)	18 X 24	A	2597	R	NEW
		W1-8	CHEVRON ALIGNMENT (RIGHT)	18 X 24	D	2597	R	NEW
		W1-8	CHEVRON ALIGNMENT (LEFT)	18 X 24	A	2703	R	NEW
		W1-8	CHEVRON ALIGNMENT (RIGHT)	18 X 24	D	2703	R	NEW
2	W	R2-1	35 MPH SPEED LIMIT	24 X 30	D	2727	L	*Should not be placed within 350 in advance of Advisory speed sign Pub 246, 2-12 APPEARS TO HAVE BEEN REMOVED
2	X		SR 2012 SEG 0020 AHEAD	12 X 12	A	2852	L	Lower Saucon Township IN PLACE
2	Y		SR 2012 SEG 0010 BACK	12 X 12	D	2852	L	City of Bethlehem IN PLACE
		W1-8	CHEVRON ALIGNMENT (LEFT)	18 X 24	A	2888	R	NEW
		W1-8	CHEVRON ALIGNMENT (RIGHT)	18 X 24	D	2888	R	NEW
		W1-8	CHEVRON ALIGNMENT (LEFT)	18 X 24	A	2973	R	NEW
		W1-8	CHEVRON ALIGNMENT (RIGHT)	18 X 24	D	2973	R	NEW
2	Z	W11-103	DRIVEWAY AHEAD	30 X 30	D	3141	L	IN POOR CONDITION, NEEDS REPLACING
		W1-2R	RIGHT CURVE SIGN	30 X 30	D	3184	L	NEW
		W13-1P	35MPH ADVISORY SPEED	24 X 24	D	3184	L	NEW
		W1-2R	RIGHT CURVE SIGN	30 X 30	D	3184	R	NEW
		W13-1P	35MPH ADVISORY SPEED	24 X 24	D	3184	R	NEW
3	A	R2-1	40 MPH SPEED LIMIT	24 X 30	A	3220	R	*Should not be placed within 400ft in advance of Advisory speed sign Pub 246, 2-12 IN PLACE
3	B	W1-2R	RIGHT CURVE SIGN	30 X 30	D	3313	L	APPEARS TO HAVE BEEN REMOVED AND
3	C	W13-1P	35MPH ADVISORY SPEED	24 X 24	D	3313	L	APPEARS TO HAVE BEEN REMOVED AND
3	D	W1-1R	RIGHT TURN	30 X 30	A	3382	R	MISSING
3	E	W13-1P	15MPH ADVISORY SPEED	24 X 24	A	3382	R	MISSING
		W1-1R	RIGHT TURN	30 X 30	A	3464	R	NEW
		W13-1P	30MPH ADVISORY SPEED	24 X 24	A	3464	R	NEW
		W1-1R	RIGHT TURN	30 X 30	A	3464	L	NEW
		W13-1P	30MPH ADVISORY SPEED	24 X 24	A	3464	L	NEW
3	F	S3-1	SCHOOL BUS STOP AHEAD	30 X 30	A	3688	R	IN PLACE
3	G	W7-3AP	NEXT 3/4 MILES PLAQUE	24 X 18	A	3688	R	IN PLACE
		W1-8	CHEVRON ALIGNMENT (RIGHT)	18 X 24	A	3696	L	NEW
		W1-8	CHEVRON ALIGNMENT (LEFT)	18 X 24	D	3696	L	NEW
		W1-8	CHEVRON ALIGNMENT (RIGHT)	18 X 24	A	3802	L	NEW
		W1-8	CHEVRON ALIGNMENT (LEFT)	18 X 24	D	3802	L	NEW
		W1-8	CHEVRON ALIGNMENT (RIGHT)	18 X 24	A	3950	L	NEW
		W1-8	CHEVRON ALIGNMENT (LEFT)	18 X 24	D	3950	L	NEW
		W1-1L	LEFT TURN	30 X 30	D	4076	L	NEW
		W13-1P	30MPH ADVISORY SPEED	24 X 24	D	4076	L	NEW
		W1-1L	LEFT TURN	30 X 30	D	4076	R	NEW
		W13-1P	30MPH ADVISORY SPEED	24 X 24	D	4076	R	NEW
3	H	OM-3R	RIGHT CLEARANCE MARKER	12 X 36	A	4248	R	IN PLACE
3	I	OM-3L	LEFT CLEARANCE MARKER	12 X 36	D	4252	R	IN PLACE
3	J	OM-3L	LEFT CLEARANCE MARKER	12 X 36	A	4259	L	IN PLACE
3	K	OM-3R	RIGHT CLEARANCE MARKER	12 X 36	D	4271	L	IN PLACE
3	L	W1-1L	LEFT TURN	30 X 30	D	4353	L	APPEARS TO HAVE BEEN REMOVED AND
3	M	W13-1P	30MPH ADVISORY SPEED	24 X 24	D	4353	L	APPEARS TO HAVE BEEN REMOVED AND
3	N	R2-1	40 MPH SPEED LIMIT	24 X 30	A	4617	R	IN PLACE
3	O	R2-1	40 MPH SPEED LIMIT	24 X 30	D	5164	L	IN PLACE
3	P		SR 2012 SEG 0030 AHEAD	12 X 12	A	6370	R	IN PLACE
3	Q		SR 2012 SEG 0020 BACK	12 X 12	D	6370	R	IN PLACE
3	R	R2-1	40 MPH SPEED LIMIT	24 X 30	D	6561	L	IN PLACE
3	S	R2-1	40 MPH SPEED LIMIT	24 X 30	A	6630	R	IN PLACE
3	T	OM-3R	RIGHT CLEARANCE MARKER	12 X 36	A	7903	R	IN PLACE
		OM-3R	RIGHT CLEARANCE MARKER	12 X 36	D	7913	R	NEW
3	U	OM-3L	LEFT CLEARANCE MARKER	12 X 36	D	7920	R	IN PLACE
3	V	OM-3L	LEFT CLEARANCE MARKER	12 X 36	A	7938	L	IN PLACE
3	W	S3-1	SCHOOL BUS STOP AHEAD	30 X 30	D	7981	L	IN PLACE
3	X	W7-3AP	NEXT 3/4 MILES PLAQUE	24 X 18	D	7981	L	IN PLACE
3	Y	R2-1	40 MPH SPEED LIMIT	24 X 30	A	8112	R	*Should not be placed within 400ft in advance of Advisory speed sign Pub 246, 2-12 IN PLACE
3	Z		BETHLEHEM LANDFILL DRIVEWAY			8112	L	
4	A	W1-1R	RIGHT TURN	30 X 30	A	8420	R	IN PLACE
4	B	W13-1P	30MPH ADVISORY SPEED	24 X 24	A	8420	R	IN PLACE
4	C	R2-1	40 MPH SPEED LIMIT	24 X 30	D	8658	L	IN PLACE
4	D	W1-1L	LEFT TURN	30 X 30	D	9126	L	IN PLACE
4	E	W13-1P	30MPH ADVISORY SPEED	24 X 24	D	9126	L	IN PLACE
4	F	W1-3R	RIGHT REVERSE TURN	30 X 30	A	9160	R	IN PLACE
4	G	W13-1P	20MPH ADVISORY SPEED	24 X 24	A	9160	R	IN PLACE
		W1-3R	RIGHT REVERSE TURN	30 X 30	A	9160	L	NEW
		W13-1P	20MPH ADVISORY SPEED	24 X 24	A	9160	L	NEW
		W1-8	CHEVRON ALIGNMENT (RIGHT)	18 X 24	A	9369	L	NEW
		W1-8	CHEVRON ALIGNMENT (LEFT)	18 X 24	D	9369	L	NEW
		W1-8	CHEVRON ALIGNMENT (RIGHT)	18 X 24	A	9453	L	NEW
		W1-8	CHEVRON ALIGNMENT (LEFT)	18 X 24	D	9453	L	NEW
		W1-8	CHEVRON ALIGNMENT (RIGHT)	18 X 24	A	9559	L	NEW
		W1-8	CHEVRON ALIGNMENT (LEFT)	18 X 24	D	9559	L	NEW
		W1-8	CHEVRON ALIGNMENT (RIGHT)	18 X 24	A	9622	L	NEW
		W1-8	CHEVRON ALIGNMENT (LEFT)	18 X 24	D	9622	L	NEW
			W/24"		A	9643	R	NEW
			SLOW		A	9652	R	NEW
			LEFT TURN ARROW		A	9661	R	NEW
			W/24"		A	9670	R	NEW
4	H	W1-8	CHEVRON ALIGNMENT (LEFT)	18 X 24	A	9730	R	IN PLACE
4	I	W1-8	CHEVRON ALIGNMENT (RIGHT)	18 X 24	D	9730	R	IN PLACE
4	J		SR 2012 SEG 0040 AHEAD	12 X 12	A	9730	R	IN PLACE
4	K		SR 2012 SEG 0030 BACK	12 X 12	D	9730	R	IN PLACE
4	L		RINGHOFFER ROAD (INTERSECTION)			9763	R	IN PLACE
4	M	W1-8	CHEVRON ALIGNMENT (LEFT)	18 X 24	A	9795	R	IN PLACE
4	N	W1-8	CHEVRON ALIGNMENT (RIGHT)	18 X 24	D	9795	R	IN PLACE

NOV. 28, 2022 - EXPANDED LIMITS - FIELD VIEW OF EXISTING SIGNS

		I40-1	ADOPT A HIGHWAY	36 X 18	A	9835	R		IN PLACE
		W1-8	CHEVRON ALIGNMENT (LEFT)	18 X 24	A	9877	R		IN PLACE
		W1-8	CHEVRON ALIGNMENT (RIGHT)	18 X 24	D	9877	R		IN PLACE
			W/24"		D	9965	L		IN PLACE
			RIGHT TURN ARROW		D	9974	L		IN PLACE
			SLOW		D	9983	L		IN PLACE
		W1-3L	LEFT REVERSE TURN	30 X 30	A	9983	R		IN PLACE
		W13-1P	25MPH ADVISORY SPEED	24 X 24	A	9983	R		IN PLACE
		W1-3L	LEFT REVERSE TURN	30 X 30	A	9983	L		IN PLACE
		W13-1P	25MPH ADVISORY SPEED	24 X 24	A	9983	L		IN PLACE
		W1-3R	RIGHT REVERSE TURN	30 X 30	D	9983	L		IN PLACE
		W13-1P	20MPH ADVISORY SPEED	24 X 24	D	9983	L		IN PLACE
		W1-3R	RIGHT REVERSE TURN	30 X 30	D	9983	R		IN PLACE
		W13-1P	20MPH ADVISORY SPEED	24 X 24	D	9983	R		IN PLACE
			W/24"		D	9992	L		IN PLACE
			CABIN LANE (INTERSECTION)		A	10046	R		IN PLACE
		W1-8	CHEVRON ALIGNMENT (LEFT)	18 X 24	A	10173	R		IN PLACE
		W1-8	CHEVRON ALIGNMENT (RIGHT)	18 X 24	D	10173	R		IN PLACE
		W1-8	CHEVRON ALIGNMENT (LEFT)	18 X 24	A	10215	R		IN PLACE
		W1-8	CHEVRON ALIGNMENT (RIGHT)	18 X 24	D	10215	R		IN PLACE
		OM-3R	RIGHT CLEARANCE MARKER	12 X 36	A	10236	R		IN PLACE
		W1-8	CHEVRON ALIGNMENT (LEFT)	18 X 24	A	10258	R		IN PLACE
		W1-8	CHEVRON ALIGNMENT (RIGHT)	18 X 24	D	10258	R		IN PLACE
		OM-3L	LEFT CLEARANCE MARKER	12 X 36	D	10258	R		IN PLACE
		W1-8	CHEVRON ALIGNMENT (RIGHT)	18 X 24	A	10405	L		IN PLACE
		W1-8	CHEVRON ALIGNMENT (LEFT)	18 X 24	D	10405	L		IN PLACE
		W1-8	CHEVRON ALIGNMENT (RIGHT)	18 X 24	A	10490	L		IN PLACE
		W1-8	CHEVRON ALIGNMENT (LEFT)	18 X 24	D	10490	L		IN PLACE
		W1-8	CHEVRON ALIGNMENT (RIGHT)	18 X 24	A	10553	L		IN PLACE
		W1-8	CHEVRON ALIGNMENT (LEFT)	18 X 24	D	10553	L		IN PLACE
		W1-8	CHEVRON ALIGNMENT (RIGHT)	18 X 24	A	10638	L		IN PLACE
		W1-8	CHEVRON ALIGNMENT (LEFT)	18 X 24	D	10638	L		IN PLACE
		W1-5L	LEFT WINDING ROAD	30 X 30	A	10743	R		IN PLACE
		W13-1P	30MPH ADVISORY SPEED	24 X 24	A	10743	R		IN PLACE
		W1-5L	LEFT WINDING ROAD	30 X 30	A	10743	L		IN PLACE
		W13-1P	30MPH ADVISORY SPEED	24 X 24	A	10743	L		IN PLACE
		W1-3L	LEFT REVERSE TURN	30 X 30	D	10743	L		IN PLACE
		W13-1P	25MPH ADVISORY SPEED	24 X 24	D	10743	L		IN PLACE
		W1-3L	LEFT REVERSE TURN	30 X 30	D	10743	R		IN PLACE
		W13-1P	25MPH ADVISORY SPEED	24 X 24	D	10743	R		IN PLACE
		W1-8	CHEVRON ALIGNMENT (LEFT)	18 X 24	A	10870	R		IN PLACE
		W1-8	CHEVRON ALIGNMENT (RIGHT)	18 X 24	D	10870	R		IN PLACE
		W1-8	CHEVRON ALIGNMENT (LEFT)	18 X 24	A	10954	R		IN PLACE
		W1-8	CHEVRON ALIGNMENT (RIGHT)	18 X 24	D	10954	R		IN PLACE
		W1-8	CHEVRON ALIGNMENT (LEFT)	18 X 24	A	11039	R		IN PLACE
		W1-8	CHEVRON ALIGNMENT (RIGHT)	18 X 24	D	11039	R		IN PLACE
		W1-8	CHEVRON ALIGNMENT (LEFT)	18 X 24	A	11039	R		IN PLACE
		W1-8	CHEVRON ALIGNMENT (RIGHT)	18 X 24	D	11039	R		IN PLACE
		W1-8	CHEVRON ALIGNMENT (RIGHT)	18 X 24	A	11145	L		IN PLACE
		W1-8	CHEVRON ALIGNMENT (LEFT)	18 X 24	D	11145	L		IN PLACE
		W1-8	CHEVRON ALIGNMENT (RIGHT)	18 X 24	A	11208	L		IN PLACE
		W1-8	CHEVRON ALIGNMENT (LEFT)	18 X 24	D	11208	L		IN PLACE
		W1-8	CHEVRON ALIGNMENT (RIGHT)	18 X 24	A	11292	L		IN PLACE
		W1-8	CHEVRON ALIGNMENT (LEFT)	18 X 24	D	11292	L		IN PLACE
		W1-8	CHEVRON ALIGNMENT (RIGHT)	18 X 24	A	11377	L		IN PLACE
		W1-8	CHEVRON ALIGNMENT (LEFT)	18 X 24	D	11377	L		IN PLACE
		W1-8	CHEVRON ALIGNMENT (RIGHT)	18 X 24	A	11461	L		IN PLACE
		W1-8	CHEVRON ALIGNMENT (LEFT)	18 X 24	D	11461	L		IN PLACE
		W1-8	CHEVRON ALIGNMENT (RIGHT)	18 X 24	A	11525	L		IN PLACE
		W1-8	CHEVRON ALIGNMENT (LEFT)	18 X 24	D	11525	L		IN PLACE
		W1-8	CHEVRON ALIGNMENT (LEFT)	18 X 24	A	11736	R		IN PLACE
		W1-8	CHEVRON ALIGNMENT (RIGHT)	18 X 24	D	11736	R		IN PLACE
		W1-8	CHEVRON ALIGNMENT (LEFT)	18 X 24	A	11820	R		IN PLACE
		W1-8	CHEVRON ALIGNMENT (RIGHT)	18 X 24	D	11820	R		IN PLACE
		W1-8	CHEVRON ALIGNMENT (LEFT)	18 X 24	A	11905	R		IN PLACE
		W1-8	CHEVRON ALIGNMENT (RIGHT)	18 X 24	D	11905	R		IN PLACE
		W1-1R	RIGHT TURN SIGN	30 X 30	A	12074	R		IN PLACE
		W13-1P	30MPH ADVISORY SPEED	18 X 18	A	12074	R		IN PLACE
		W1-5R	RIGHT WINDING ROAD	36 X 36	D	12074	L		IN PLACE
		W13-1P	30MPH ADVISORY SPEED	24 X 24	D	12074	L		IN PLACE
		W1-5R	RIGHT WINDING ROAD	36 X 36	D	12074	R		IN PLACE
		W13-1P	30MPH ADVISORY SPEED	24 X 24	D	12074	R		IN PLACE
			SR 2012 SEG 0050 AHEAD	12 X 12	A	12221	R		IN PLACE
			SR 2012 SEG 0040 BACK	12 X 12	D	12221	R		IN PLACE
		W1-1L	LEFT TURN SIGN	30 X 30	D	12981	L		IN PLACE
		W13-1P	30MPH ADVISORY SPEED	18 X 18	D	12981	L		IN PLACE
		R2-1	40 MPH SPEED LIMIT	24 X 30	A	13065	R		IN PLACE
		W1-2L	LEFT CURVE SIGN	30 X 30	A	13192	R		IN PLACE
		W13-1P	35MPH ADVISORY SPEED	18 X 18	A	13192	R		IN PLACE
		R2-1	40 MPH SPEED LIMIT	24 X 30	D	13234	L		IN PLACE
			SEVERN LANE (INTERSECTION)		A	13340	R		IN PLACE
			SR 2012 SEG 0060 AHEAD	12 X 12	A	14181	L		IN PLACE
			SR 2012 SEG 0050 BACK	12 X 12	D	14181	L		IN PLACE
		W1-2R	RIGHT CURVE SIGN	30 X 30	D	14181	L		IN PLACE
		W13-1P	35MPH ADVISORY SPEED	18 X 18	D	14181	L		IN PLACE
			SHERRY HILL ROAD (INTERSECTION)			15152	R		IN PLACE