

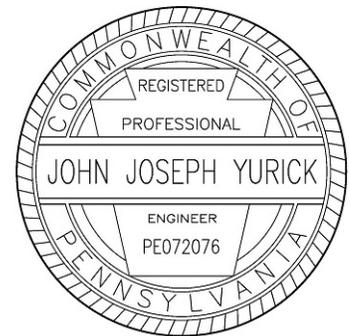
Transportation Impact Study

Paradise Village Mixed-Use Development

Phoenixville Borough, Chester County, PA



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Executive Summary

Paradise Street, LLC proposes a mixed-use development consisting of 200 apartments, a 4,500 square foot restaurant, a 3,670 square foot coffee shop, and 4,500 square feet of office space, to be located on the east side of Paradise Street, just north of Wheatland Street in the Borough of Phoenixville, Chester County, Pennsylvania (**Figure 1**). In conjunction with the proposed development, Hall Street will be extended between Bridge Street (S.R. 0113) and Paradise Street, and access to the site is proposed to be provided via two unsignalized access along the Hall Street Extension and one unsignalized access along Paradise Street. At Bridge Street, the Hall Street connection will align opposite the existing Hall Street approach to create a four-leg intersection and the intersection will be signalized in conjunction with another the development. A site plan, prepared by Bercek & Associates is shown in **Figure 2**.

A copy of a scoping memo between the applicant and the Borough is included in **Appendix A**. The scope of this Transportation Impact Study is generally based on PennDOT's guidelines, per the Department's Publication 282, Appendix A Policies and Procedures for Transportation Impact Studies Related to Highway Occupancy Permits, dated July 2017, and the requirements of the Borough's Subdivision and Land Development Ordinance (Section 22-602).

The purpose of this transportation impact study is to evaluate the traffic impacts of the proposed redevelopment. The scope of this study includes an evaluation of the existing weekday morning, weekday afternoon, and Saturday midday peak hours, as well as the future 2022 build-out year and future 2027 design year, five years beyond the anticipated build-out year, both without and with the development at the following study intersections:

- Nutt Road (S.R. 0023) and Paradise Street
- Main Street and Smithworks Boulevard
- Bridge Street (S.R. 0113) and Hall Street

Based on trip generation data compiled for Multifamily Housing (Mid-Rise) (ITE Land Use Code 221), High-Turn (Sit-Down) Restaurant (ITE Land Use Code 932), and Small Office Building (ITE Land Use Code 712) contained in the Institute of Transportation Engineers (ITE) publication entitled, Trip Generation Manual, 11th Edition, the proposed development will generate a total of approximately **115 "new" trips during the weekday morning peak hour and 108 "new" trips during the weekday afternoon peak hour**.

The following improvements and considerations are recommended in conjunction with the Paradise Village development:

- The applicant should design the Hall Street Extension to provide access to the site and to adjacent properties. As such, we recommend the following design elements along this roadway:
 - The Hall Street Extension should be designed as a two-way, 22-foot wide roadway along its entire length between Paradise Street and the connect with the portion of the Hall Street extension within the Steelworks development.

- The proposed sidewalk along Hall Street extension should connect with the sidewalk proposed in conjunction with the Steelworks development to the east.

These improvements will support the Borough’s overall vision for this area to provide additional pedestrian and vehicle connections on the west side of the Borough, including the Hall Street extension, signalization of the Bridge/Street Hall Street intersection, and the reconstruction of Paradise Street. The roadway connection will also serve as a critical route for emergency vehicles based at the new Fire House.

- Signalization of the Nutt Road/Paradise Street should be pursued in order to provide adequate operations at this intersection, in conjunction with the completion of the Paradise Street reconstruction, the Hall Street Extension, and the completion of the Steelpointe, Steelworks, and Paradise Village developments. PennDOT traffic volume warrant criteria will be satisfied.
- A parking management plan should be provided for the site to document parking regulations/restrictions, etc. As part of the plan, the applicant should explore the feasibility of providing a pick-up/drop-off area for ride share and delivery services.
- The applicant should consider bicycle parking/storage to further encourage alternative modes of transportation for its residents and visitors.
- The site accesses along the Hall Street Extension and Paradise Street should be designed to provide adequate sight distance. The access and sight distance lines and values should be depicted on the land development plans, as required by the Borough. The proposed accesses should consist of the following features:

Proposed Site Access and Paradise Street

- Provide one ingress lane and one egress lane for the site access.
- Auxiliary turn lanes are not warranted per PennDOT criteria.
- Provide stop control on the site access approach.
- Provide ADA compliant pedestrian facilities to cross the access approach.

Proposed Enter-only Site Access along Hall Street Extension

- Provide one ingress lane for the site access.
- Auxiliary turn lanes are not warranted per PennDOT criteria.
- Provide ADA compliant pedestrian facilities and crosswalks.

Proposed Exit-only Site Access along Hall Street Extension

- Provide one egress lane for the site access.
- Provide stop control on the site access approach.
- Provide ADA compliant pedestrian facilities to cross the access approach.

The following items are noted for the consideration of the Borough as it reviews the Paradise Village project:

- Pending submission and review of a parking management plan by the applicant, the on-site parking supply appears sufficient for the proposed land uses.
- The proposed redevelopment results in some movements at the study intersections degrading to below LOS C, and therefore, are considered deficient based on Borough guidelines.
- Maneuverability of trash and recycling vehicles as well as resident loading areas should be further reviewed. In addition, the site access intersections should be evaluated using the Borough's largest emergency service vehicle.

Existing Transportation Settings and Conditions

The proposed development will be located along the east side of Paradise Street, north of Wheatland Street in the Borough of Phoenixville, Chester County, Pennsylvania (**Figure 1**). The existing roadways and intersections in the vicinity of the site, which comprise the study area roadway network, are described in this section.

Roadway Characteristics

The study area roadway network and characteristics are summarized below in **Table 1**.

Table 1. Existing Roadway Characteristics

Roadway Name (Jurisdiction)	Average Daily Traffic Volumes (vehicles per day)	Roadway Classification		Travel Lanes (per direction)	Posted Speed Limit (mph)
		Smart Transportation ⁽¹⁾	PennDOT/ Borough ⁽²⁾		
Bridge Street (S.R. 0113 – State)	<i>East of SR 0023</i> 9,969 ⁽³⁾	Regional Arterial	Other Principal Arterial Highways	1	25
Nutt Road (S.R. 0023 – State)	22,726 ⁽³⁾	Regional Arterial	Minor Arterials	1	35
Main Street (Borough)	6,457 ⁽³⁾	Community Collector	Major Collector	1	25
Hall Street (Borough)	n/a	Local	Local	1	25
Paradise Street (Borough)	n/a	Local	Local	1	25

(1) Based on Table 1.2 – Roadway Typologies in the PennDOT *Publication 13M, Design Manual Part 2*.

(2) Based on the roadway classifications provided on PennDOT’s Traffic Information Repository (TIRe) website.

(3) Based on traffic data from PennDOT’s Traffic Information Repository (TIRe) website.

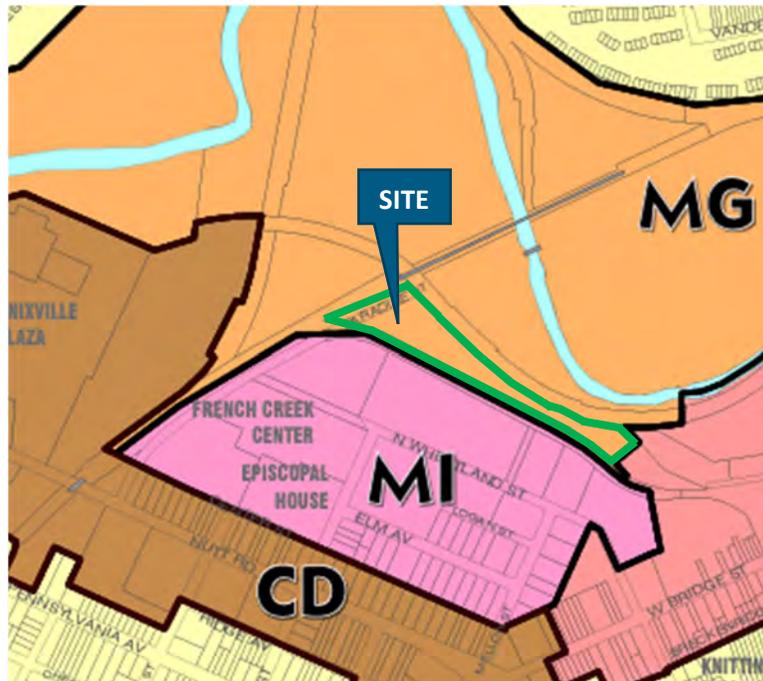
The following key intersections in the vicinity of the site comprise the study area:

- Nutt Road (S.R. 0023) and Paradise Street
- Main Street and Smithworks Boulevard
- Bridge Street (S.R. 0113) and Hall Street

The existing characteristics of the study intersections including field sketches and signal permit plans are provided in **Appendix B**.

Land Use Context

The proposed development is located in the Borough of Phoenixville, within the MG – Mixed Use Growth Zoning District as seen in the Borough of Phoenixville Zoning Map below.



Source: Borough of Phoenixville Zoning Map, last amended December 10, 2019

Area Transit Services

SEPTA Bus Route 99 – Phoenixville to Norristown Transportation Center runs along Bridge Street (S.R. 0113) in the westbound direction and Church Street in the eastbound direction. The closest bus stop to the proposed redevelopment is located at the intersection of Bridge Street (S.R. 0113) and Church Street. SEPTA Bus Route 139 is also nearby with a bus stop at the intersection of Church Street and Main Street at the Nutt Road/Kimberton (PA Route 113)/Phoenixville Plaza intersection.

Pedestrian-Bicycle Facilities

Sidewalk is currently provided along both sides of Bridge Street (S.R. 0113), Nutt Road (S.R. 0023), and Hall Street within the study area, as well as on the west side of Main Street in the vicinity of the Main Street/Smithworks Boulevard. Presently, there are no dedicated on-road bicycle facilities in the immediate study area. The Schuylkill River Trail is located on the other side of the French Creek near Smithworks Boulevard for pedestrian and bicycle travel.

Traffic Count Data

Daily traffic counts were obtained from PennDOT’s Traffic Information Repository (TIRe) website. The traffic count data is provided in **Appendix C**.

Continuous turning movement traffic counts, , were conducted in May 2022 between 6:00 AM and 7:00 PM at the study intersections. In order to evaluate the weekday morning and weekday afternoon commuter peak periods, the peak one-hour periods during the weekday morning (6 AM to 10 AM) and weekday afternoon (3 PM to 7 PM) were evaluated. The results of these traffic counts are tabulated by 15-minute intervals in **Appendix D**. The four highest consecutive 15-minute peak intervals during these traffic count periods constitute the peak hours that are the basis of this traffic analysis. The resultant weekday morning and weekday afternoon peak hour traffic counts are shown in **Figure 3A**.

Crash Summary

Reportable crash data for the five-year period between January 1, 2017 and December 31, 2021 was obtained from PennDOT at the study intersections. PennDOT defines a reportable crash as any crash that involves the following:

1. Injury to or death of any person, or
2. Damage to any vehicle involved to the extent that it cannot be driven under its own power in its customary manner without further damage or hazard to the vehicle, other traffic elements, or the roadway, and therefore requires towing.

In addition, PennDOT considers a crash occurrence of five reportable, correctable crashes over a continuous 12-month period to be a threshold value. If there are five or more reportable, correctable crashes, PennDOT criteria indicates the intersection should be examined to determine whether corrective improvements are necessary to reduce the crash occurrence. A summary of the reportable crash data, based on available PennDOT data, is provided in **Table 2**, below.

**Table 2. Reportable Crash Summary
January 2017 to December 2021**

Location	Crash Frequency Per Year					Total	Average Per Year
	2017	2018	2019	2020	2021		
Nutt Road (S.R. 0023) and Paradise Street	0	0	1	0	2	3	0.6
Bridge Street (S.R. 0113) and Hall Street	1	0	0	0	0	1	0.2
Total	1	0	1	0	2	4	0.8

As there are no crash occurrence of five reportable, correctable crashes over a continuous 12-month period, no further corrective improvements are necessary to reduce the crash occurrence.

The intersection of Main Street and Smithworks Boulevard was not included in the Crash Summary because the Pennsylvania Crash Information Tool (PCIT) can only be used to obtain data regarding state roads.

Site Characteristics

This section presents the details regarding the proposed site, including the incremental increase in traffic volumes generated by the development during the peak hours and the distribution of site traffic to the study area roadways, as well as the proposed site access configuration, traffic control, and sight distance requirements.

Trip Generation

Traffic volumes generated by the proposed development were prepared based on trip generation data compiled from numerous studies contained in the Institute of Transportation Engineers (ITE) publication, *Trip Generation, 11th Edition*. **Table 3** presents the anticipated vehicular trip generation for the proposed development. Detailed trip generation calculations are provided in **Appendix E**.

Table 3. Vehicular Trip Generation

Land Use	Trip Type	Daily	Weekday Morning Peak Hour			Weekday Afternoon Peak Hour		
			In	Out	Total	In	Out	Total
Proposed Development	Total	1,849	67	95	162	96	66	162
	-Internal	-150	-12	-13	-25	-13	-14	-27
	-Pass-by	-267	-11	-11	-22	-17	-10	-27
	New	1,432	44	71	115	66	42	108

The restaurant space (4,500 square feet) and coffee shop (3,670 square feet) space were combined (8,170 square feet total) and applied to the High Turnover Sit-down Restaurant land use (ITE Land Use Code 932) for the purposes of this evaluation. In discussion with the applicant’s engineer, it is anticipated that coffee shop will primarily serve building residents and nearby neighbors, unlike a national chain shop that would be situated along a suburban arterial road or within a shopping center. Also, the restaurant and coffee shop may likely have alternating peak hours of operations. If these commercial tenants change or operating hours change significantly, an updated traffic impact analysis may be needed. Furthermore, the traffic generation methodology accounts for internalized trip generation between residents and the non-residential uses on site.

Trip Distribution and Assignment

Site-generated traffic will approach and depart the site via different routes depending on factors such as the existing traffic patterns, location of major roadways, and the location of the development’s site access. The distribution percentages for the anticipated directions of approach and departure and traffic assignment

percentages for new site traffic are illustrated in **Figure 4A**, and application of these percentages to the new peak hour trips contained in Table 3 result the provides an estimate of site traffic to be added to the study area shown in **Figure 4B**. The new site-generated traffic is also shown in **Figure 4B** for the weekday morning and weekday afternoon peak hours. **Figure 4C** illustrates the pass-by trip distribution percentages for the site, and application of these percentages to the pass-by peak hour trips contained in Table 3 result the provides an estimate of site traffic to be added to the study area shown in **Figure 4D**.

Site Access Configuration and Traffic Control

Access to the site is proposed via one unsignalized driveway located along Paradise Street, one unsignalized full-movement driveway located along the proposed Hall Street Extension, one unsignalized exit-only driveway located along the proposed Hall Street Extension, and one unsignalized enter-only driveway located along the proposed Hall Street Extension. The recommendations for the proposed access designs, including auxiliary turn lanes, traffic control, and geometric design, were based on industry accepted criteria and guidelines.

The need for left- and right-turn deceleration lanes was based on the current PennDOT guidelines in accordance with *Publication 46, Chapter 11 – Traffic Studies*. **Table 4** summarizes the results of the auxiliary turn lane warrants for the site access intersections along Bridge Street (S.R. 0113). The various warrant/guideline analysis worksheets are contained in **Appendix F**.

Table 4 – Turn Lane Warrant Summary

Intersection	Auxiliary Lane Warrant	Warrant Satisfied? ⁽¹⁾	Required Lane Length ⁽¹⁾	Proposed Lane Length
Site Access and Paradise Street	Southbound Left	NO	Not Required	-
	Northbound Right	NO	Not Required	-
Enter Only Access and Hall Street Extension	Eastbound Left	NO	Not Required	-
	Westbound Right	NO	Not Required	-

(1) Based on PennDOT Publication 46, *Traffic Engineering Manual*, Chapter 11.16

Additionally, the geometric designs of the proposed site accesses were preliminarily evaluated based on guidelines contained in the *Pennsylvania Code, Chapter 441, Access to and Occupancy of Highways by Driveways and Local Roads*, as well as local PennDOT District policies.

Based on the results of this evaluation, the following access configurations and traffic controls are recommended, subject to the detailed engineering of the site accesses:

Proposed Site Access and Paradise Street

- Provide one ingress lane and one egress lane for the site access.
- Auxiliary turn lanes are not warranted per PennDOT criteria.
- Provide stop control on the site access approach.
- Provide ADA compliant pedestrian facilities to cross the access approach.

Proposed Enter-only Site Access along Hall Street Extension

- Provide one ingress lane for the site access.
- Auxiliary turn lanes are not warranted per PennDOT criteria.
- Provide ADA compliant pedestrian facilities and crosswalks.

Proposed Exit-only Site Access along Hall Street Extension

- Provide one egress lane for the site access.
- Provide stop control on the site access approach.
- Provide ADA compliant pedestrian facilities to cross the access approach.

This development will provide the connection of the Hall Street Extension through to Paradise Street. The section of the Hall Street Extension between the Steelworks development and Paradise Street should be designed follows:

- The Hall Street Extension should be designed as a two-way, 22-foot wide roadway along its entire length between Paradise Street and the connection with the portion of the Hall Street extension within the Steelworks development.
- The proposed sidewalk along Hall Street extension, which should connect with the sidewalk proposed in conjunction with the Steelworks development to the east.
- These improvements will support the Borough's overall vision for this area to provide additional pedestrian and vehicle connections on the west side of the Borough, including the Hall Street extension, signalization of the Bridge/Street Hall Street intersection, and the reconstruction of Paradise Street. The new roadway will also serve emergency vehicles based at the nearby Fire Department firehouse that was recently constructed along Paradise Street.

Sight Distance

Sight distance measurements and an evaluation were performed at the proposed access along Paradise Street, as well as at the Paradise Street/Hall Street Extension. Generally, the travel speed, roadway grades and profiles, and the number of travel lanes play a role in determining if safe sight distances are available for egress and ingress at the proposed accesses. The existing sight distances at the proposed access intersection were measured and compared to PennDOT's sight distance requirements. These sight distance requirements are contained in *Pennsylvania Code, Chapter 441, Access to and Occupancy of Highways by Driveways and Local Roads*.

Table 6 summarizes the available sight distance measurements, as well as PennDOT's sight distance requirements at the proposed access and intersection locations along Paradise Street. As shown in Table 5, all of the existing available sight distances at the site access intersection meet PennDOT's desirable sight distance criteria or AASHTO's intersection sight distance criteria. The applicant should ensure that elements of the site design, such as signage, streetscaping, and parking, do not introduce a sight distance obstruction for each of the

proposed access locations. Furthermore, the site access along the new Hall Street Extension should be designed to provide adequate sight distance in accordance with the aforementioned requirements.

The actual available sight distances should be verified during detailed engineering of the site accesses.

**Table 5. Sight Distance Evaluation
Site Access and Paradise Street**

Movement	Direction	Posted Speed (mph)	Approximate Grade	PennDOT Requirements (feet)		Available Sight Distance (feet)
				Desirable ⁽¹⁾	Acceptable ⁽²⁾	
Exiting	Looking Left	25	-7.3%	250	184	280'+
	Looking Right	25	+2.3%	195	157	280'+
Left turn Entering	Looking Ahead	25	-7.3%	190	184	280'+
	From the Rear	25	+2.3%	n/a	157	280'+

- (1) Based on the desirable sight distance requirements contained in the *Pennsylvania Code, Chapter 441, Access to and Occupancy of Highways by Driveways and Local Roads* and the posted speed limit, unless otherwise noted.
- (2) Based on the safe stopping sight distance requirements contained in the *Pennsylvania Code, Chapter 441, Access to and Occupancy of Highways by Driveways and Local Roads* and the posted speed limit.

Hall Street Extension and Paradise Street

Movement	Direction	Posted Speed (mph)	Approximate Grade	PennDOT Requirements (feet)		Available Sight Distance (feet)
				AASHTO Intersection ⁽¹⁾	Acceptable ⁽²⁾	
Exiting	Looking Left	25	-4.2%	240	173	285'
	Looking Right	25	+7.3%	280	148	280'+
Left turn Entering	Looking Ahead	25	-4.2%	205	173	285'
	From the Rear	25	+7.3%	n/a	148	280'+

- (1) Based on the Intersection Sight Distance Criteria contained in the AASHTO publication *A Policy on Geometric Design of Highways and Streets*, Section 9.5.3.
- (2) Based on the safe stopping sight distance requirements contained in the *Pennsylvania Code, Chapter 441, Access to and Occupancy of Highways by Driveways and Local Roads* and the posted speed limit.

Future Traffic Conditions

This section presents the future build-out year 2024 traffic conditions, both without and with the proposed development, which is anticipated to be completed and occupied by 2024. The future 2024 build-out year without-development traffic volumes were estimated by increasing the existing traffic volumes to account for regional growth, as described below. The incremental increase due to the anticipated trip generation for the site was then added, resulting in the future 2024 build-out year with development traffic volumes.

Regional Traffic Growth

To account for regional traffic growth, the existing traffic volumes were increased by an annual traffic growth rate of 0.54 percent per year compounded for two years to 2024, or 1.08 percent total. This growth rate is consistent with the traffic growth rate recommended by the PennDOT Bureau of Planning and Research Growth Factors for August 2022 to July 2023 for similar, Urban Non-Interstate roadways in Chester County.

Local Traffic Growth

To account for local traffic growth, Phoenixville Borough, Schuylkill Township, and East Pikeland Township were contacted to identify any other nearby future developments. Based upon coordination with these municipalities, the existing traffic volumes were also increased to include traffic to be generated by nearby approved developments. A total of 20 nearby developments were included in the future traffic projections.

Information regarding the nearby approved developments, obtained from Phoenixville Borough, Schuylkill Township, and East Pikeland Township, and detailed traffic volume projection worksheets are provided in **Appendix G**.

Paradise Street Connection

As part of the Steelpointe development, Paradise Street has been extended from its existing terminus north of Wheatland Street across the French Creek to N. Main Street. This bridge over the French Creek will be opened to the public traffic once the Borough takes dedication of Smithworks Boulevard in the near future. This connection was assumed in future without- and with-development conditions in which existing traffic will be diverted from Bridge Street (S.R. 0113) to this new connection. By providing this connection, it was assumed that approximately 50 percent of the eastbound left-turn, 15 percent of the eastbound through movement, and 40 percent of the southbound right-turn movement at Bridge Street (S.R. 0113) and Main Street would divert to the new connection.

Hall Street Connection

Based on coordination with the Borough, the applicant will construct a portion of the Hall Street connection which will extend Hall Street from Bridge Street (S.R. 0113) to Paradise Street. This connection will provide relief to the Bridge Street (S.R. 0113) and Nutt Road (S.R. 0023) intersection by providing a new local road connection

between Nutt Road (S.R. 0023) and the Phoenixville Borough downtown area. By providing this connection, it was assumed that five percent of southbound Nutt Road (S.R. 0023) left-turns and five percent of westbound Bridge Street (S.R. 0113) right-turns would divert from the intersection of Bridge Street (S.R. 0113) and Nutt Road (S.R. 0023) and utilize the new connection.

Bridge Street and Hall Street Intersection

As part of the Steelworks mixed-use development, it is proposed to install a traffic signal at the Bridge Street/Hall Street intersection, as well as installation of a northbound Bridge Street left-turn lane.

Future Traffic Conditions

The total background growth and nearby approved development traffic volumes were then added to the existing traffic volumes, resulting in the future 2024 without-development traffic volumes. Next, the site generated traffic volumes, as shown in Figures 4B and 4D, were added to the future 2024 without-development traffic volumes, resulting in the future 2024 with-development traffic volumes.

The resultant future 2024 peak hour traffic volumes without-development are illustrated in **Figure 5A**, and the future 2024 with-development peak hour traffic volumes are illustrated in **Figure 5B** for the weekday morning and weekday afternoon peak hours. These traffic volumes were then analyzed to determine the future 2022 without- and with-development traffic operating conditions, and the results of this analysis are shown in **Figures 5C and 5D**.

Capacity/Level-of-Service Results

The peak hour traffic volumes were analyzed to determine the existing and future traffic operating conditions, both without and with the proposed redevelopment, in accordance with the standard techniques contained in the current *Highway Capacity Manual (6th Edition)* for both signalized and unsignalized intersections. The HCM 6th Edition Methodology within Synchro 10.3 (build 151, rev. 0) traffic analysis software was utilized in the traffic analyses.

These standard capacity/level-of-service analysis techniques, which calculate total control delay, are described in **Appendix H** for both signalized and unsignalized intersections, as well as the correlation between average total control delay and the respective level-of-service (LOS) criteria for each intersection type.

According to PennDOT's *Policies and Procedures for Transportation Impact Studies Related to Highway Occupancy Permit Plans*, the following procedures and assumptions were utilized:

- For signalized intersections, the Pennsylvania base saturation flow rate (Exhibit 10-9) and Pennsylvania traffic signal control calibration parameters (Exhibit 10-10) outlined in PennDOT's *Publication 46, Traffic Engineering Manual*, were used.
- For unsignalized intersections, the base critical headways at TWSC intersections (Exhibit 10-11) and base follow-up headways at TWSC intersections (Exhibit 10-12) outlined in PennDOT's *Publication 46, Traffic Engineering Manual*, were used.
- All traffic signal timings at signalized intersections were optimized in without-development conditions.
- If the evaluation of without-development to with-development conditions indicates that the overall intersection level-of-service has dropped, mitigation will be required if the increase in delay is greater than 10 seconds. If the overall intersection delay increase is less than or equal to 10 seconds, mitigation of the intersection will not be required.

The existing, future build-out year 2024 traffic conditions, both without and with the proposed development, are summarized in **Figures 3B, 5C, and 5D**, respectively while the detailed capacity/level-of-service analysis worksheets are provided in **Appendices I, J, and K**.

As illustrated in **Figures 3B, 5C, and 5D**, with the proposed site and with the site related improvement recommendations, the overall levels-of-service at the study intersections are LOS C or better, and meet the Borough's level-of-service criteria. However, the westbound left-turn movement at the Main Street/Smithworks Boulevard intersection operates at LOS E without and with the proposed development, and the southbound Paradise Street approach to Nutt Road (S.R. 0023) operates at LOS D during the weekday morning peak hour and increased LOS F during the weekday afternoon peak hour as an unsignalized intersection. The detailed results of the level-of-service analysis are contained in the matrices provided in **Table 6** and the 95th percentile queue matrices are provided in **Table 7**.

Queuing Analysis

A queuing analysis was completed at the study intersections based on the HCM 6th Edition methodology. Based on the queuing analysis, queues are accommodated within the existing and proposed intersection spacing and lane storages.

Matrices summarizing the results of the queuing analysis are provided in **Table 7**.

Hall Street One-Way Evaluation

The current plan proposed by the applicant shows a 12-foot wide, one-way eastbound section of the Hall Street Extension between the enter-only driveway and the eastern property line with the adjacent Steelworks development. This section provides an evaluation of this one-way operation of the Hall Street Extension, as well as a comparison between the two-way operation (as shown in the preceding analysis) and the potential one-way operation. In order to complete this analysis, Hall Street Extension diversions entering Hall Street at Bridge Street were removed from the analysis, and the Steelworks and Paradise Village traffic volumes were reassigned to the study area intersections to account for the one-way traffic flow on the Hall Street Extension. Furthermore, the intersection of Bridge Street and Nutt Road was included in as part of this analysis, based on traffic projections prepared as part of the Steelworks traffic study. The detailed analysis for the one-way option is provided in **Appendix L**.

Based on the results of this evaluation, the traffic conditions at many of the study intersections are generally the same whether one-way or two-operation of the Hall Street Extension is proposed. However, several turning movements will operate with delay (LOS E and F) with the one-way operation of the Hall Street Extension and LOS D with the two-way operation of the Hall Street extension. These movements include:

- Nutt Road/Paradise Street intersection - The eastbound Nutt Road left-turn movement and the westbound Nutt Road through movement)
- Main Street and Smithworks Boulevard - The westbound left-turn movement operates at LOS E and F without and with the proposed development. In addition, the eastbound Smithworks Boulevard left-turn movement operates at LOS E during the weekday morning peak hour.
- Nutt Road/Bridge Street intersection – The overall intersection operates at LOS F during the weekday afternoon peak hour. In addition, the eastbound and westbound Nutt Road left-turn movements, the westbound Nutt Road through movement, the northbound Bridge Street left-turn movement, and the southbound Bridge Street shared through/left-turn movement operate at LOS E or F during at least one peak hour.

Due to these increased delays, as well as the need to provide full access to the new Phoenixville Fire Department firehouse located along Paradise Street north of the Hall Street Extension and improved traffic circulation, we recommend the Hall Street Extension should provide for two-way traffic flow along its entire length.

Traffic Signal Warrant Evaluation

A traffic signal warrant analysis was conducted at the Nutt Road/Paradise Street and Bridge Street/Smithworks Boulevard intersections in accordance with PennDOT criteria contained in the Department’s *Publication 212, Official Traffic Control Devices*, for the Four-Hour and Eight-Hour Vehicular Volume Warrants, which is based on the guidelines contained in the Federal Highway Administration’s, *Manual on Uniform Traffic Control Devices (MUTCD)*.

This traffic signal warrant analysis includes an evaluation of the existing weekday traffic counts (between 6:00 AM and 7:00 PM) assuming no background traffic growth other than assigning the traffic volumes associated with the remaining build-out of Steelpointe, as well as the proposed Steelworks and Paradise Village developments. **Table 8** summarizes the results of the traffic signal warrant analysis.

Table 8 – Traffic Signal Warrant Analysis Summary

Intersection	Warrant Evaluated	Warrant Met?
Nutt Road (S.R. 0023) and Paradise Street	Four-Hour Vehicular Volume	YES
	Eight-Hour Vehicular Volume	YES
Main Street and Smithworks Boulevard	Four-Hour Vehicular Volume	NO
	Eight-Hour Vehicular Volume	NO

As shown in Table 8 above, a traffic signal will ultimately be warranted at the Nutt Road/Paradise Street intersection, and therefore, we recommend that future signalization at the intersection be prioritized, pending PennDOT review and approval. It is anticipated that signalization will occur as Phase 2 of the Paradise Street reconstruction project. This later phase is anticipated to complete the reconstruction of Paradise Street, west of Center Avenue and include realignment/widening of Paradise Street at Nutt Road, driveway consolidations on the west side of Paradise Street to create a fourth leg opposite Paradise Street and signalization. With signalization, the intersection will operate at acceptable level-of-service and all vehicular queues can be accommodated within the proposed lane storages and intersection spacings.

Traffic signal warrant analysis worksheets and traffic volume projections are provided in **Appendix M**. As shown in the Transportation Impact Study for the Steelworks redevelopment project, traffic signal warrants will also be satisfied for the Bridge Street/Hall Street intersection.

Multimodal and Parking Considerations

As traffic and congestion increase throughout the region, it is critical that Phoenixville plan to encourage non-vehicular travel within the borough. As such, the section discusses existing multimodal conditions, potential impacts due to the proposed development, and recommendations to maintain a highly walkable environment, encourage non-vehicular travel, and provide access to nearby transit. In addition, parking for the site is also addressed below.

Pedestrian Facilities

The site plans indicate sidewalk along the site frontage. The proposed sidewalk should connect to the proposed sidewalk network within the Steelworks development to the east and to the proposed Paradise Steet sidewalk. These sidewalk connections will provide walkable routes to the downtown, shopping, transit routes, access to the Schuylkill River Trail, and other neighborhood destinations.

Transit Facilities

As SEPTA bus stops are currently located at the Bridge Street (S.R. 0113)/Church Street intersection and the Nutt Road/Kimberton Road/Phoenixville Plaza intersection, the applicant should ensure pedestrian connectivity between the site and the existing bus stops.

Parking Evaluation

The proposed on-site parking supply appears sufficient for the proposed land uses and may provide more parking than would be required by the estimated peak parking demand based on the ITE publication *Parking Generation Manual, Fifth Edition*. A parking management plan should be submitted by the applicant that details if/how the parking within proposed on-site parking garage and surface lots will be reserved for residents or available for use by customers/employees of the commercial space (or if other downtown parking can be accommodated on site). The plan should document any parking regulations/restrictions/fares, etc. As part of the plan, the applicant should explore the feasibility of providing a pick-up/drop-off area for ride share and delivery services within the parking areas. A shared parking evaluation of the site is provided in **Appendix N**.

The applicant should consider bicycle parking/storage to further encourage alternative modes of transportation for its residents and visitors.

Conclusions and Recommendations

The following improvements and considerations are recommended in conjunction with the Paradise Village development:

- The applicant should design the Hall Street Extension to provide access to the site and to adjacent properties. As such, we recommend the following design elements along this roadway:
 - The Hall Street Extension should be designed as a two-way, 22-foot wide roadway along its entire length between Paradise Street and the connection with the portion of the Hall Street extension within the Steelworks development.
 - The proposed sidewalk along Hall Street extension, which should connect with the sidewalk proposed in conjunction with the Steelworks development to the east and the proposed Paradise Street sidewalk.
 - These improvements will support the Borough's overall vision for this area to provide additional pedestrian and vehicle connections on the west side of the Borough, including the Hall Street extension, signalization of the Bridge/Street Hall Street intersection, and the reconstruction of Paradise Street. The improvements will also provide efficient emergency access for the new Fire Department firehouse located along Paradise Street.
- Signalization of the Nutt Road/Paradise Street should be pursued in order to provide adequate operations at this intersection, in conjunction with the completion of the Paradise Street reconstruction, the Hall Street Extension, and the completion of the Steelpointe, Steelworks, and Paradise Village developments.
- A parking management plan should be provided for the site to document parking regulations/restrictions, etc. As part of the plan, the applicant should explore the feasibility of providing a pick-up/drop-off area for ride share and delivery services.
- The applicant should consider bicycle parking/storage to further encourage alternative modes of transportation for its residents and visitors.
- The site accesses along the Hall Street Extension and Paradise Street should be designed to provide adequate sight distance. The access and sight distance lines and values should be depicted on the land development plans, as required by the Borough. The proposed accesses should consist of the following features:

Proposed Site Access and Paradise Street

- Provide one ingress lane and one egress lane for the site access.
- Auxiliary turn lanes are not warranted per PennDOT criteria.
- Provide stop control on the site access approach.

- Provide ADA compliant pedestrian facilities to cross the access approach.

Proposed Enter-only Site Access along Hall Street Extension

- Provide one ingress lane for the site access.
- Auxiliary turn lanes are not warranted per PennDOT criteria.
- Provide ADA compliant pedestrian facilities and crosswalks.

Proposed Exit-only Site Access along Hall Street Extension

- Provide one egress lane for the site access.
- Provide stop control on the site access approach.
- Provide ADA compliant pedestrian facilities to cross the access approach.

The following items are noted for the consideration of the Borough as it reviews the Paradise Village development project:

- Pending submission and review of a parking management plan by the applicant, the on-site parking supply appears sufficient for the proposed land uses.
- The proposed redevelopment results in some movements at the study intersections degrading to below LOS C, and therefore, are considered deficient based on Borough guidelines.
- Maneuverability of trash and recycling vehicles as well as resident loading areas should be further reviewed. In addition, the site access intersections should be evaluated using the Borough's largest emergency service vehicle.

Table 6 - Level of Service Matrices

1. Nutt Road (S.R. 0023) and Paradise Street

Time Period		Weekday Morning Peak Hour				Weekday Afternoon Peak Hour			
Year		2022	2024 Build-Out Year			2022	2024 Build-Out Year		
Development Condition		Existing	w/o Dev	w/ Dev	w/Dev Imps	Existing	w/o Dev	w/ Dev	w/Dev Imps
Nutt Road (S.R. 0023)	Left	B 10.6	B 11.4	B 11.8	A 8.9	B 13.4	C 17.4	C 19.6	D 54.2
	EB Thru	(1)	(1)	(1)	B	(1)	(1)	(1)	A
	Right	(2)	(2)	(2)		14.8	(2)	(2)	(2)
	Left	(2)	(2)	(2)	C 25.0	(2)	(2)	(2)	B 12.0
	WB Thru	(1)	(1)	(1)	B	(1)	(1)	(1)	D
	Right				13.0				38.7
Paradise Street	Left				D				D
	NB Thru	(2)	(2)	(2)	44.2	(2)	(2)	(2)	49.5
	Right								
	Left	C	E	E	D	C	F	F	D
SB Thru	15.7	39.5	45.7	45.2	23.1	141.6	163.5	49.8	
Right				D 49.9				D 49.5	
Overall		A 0.2	A 4.1	A 5.8	B 17.8	A 0.2	B 10.8	B 14.8	C 28.3

(1) Movement operates at free-flow conditions.

(2) Movement does not exist.

Table 6 - Level of Service Matrices
 2. Smithworks Boulevard and Main Street

Time Period		Weekday Morning Peak Hour			Weekday Afternoon Peak Hour		
Year		2022	2024 Build-Out Year		2022	2024 Build-Out Year	
Development Condition		Existing	w/o Dev	w/ Dev	Existing	w/o Dev	w/ Dev
Smithworks Boulevard	Left	B 13.8	C 18.2	C 18.5	C 15.1	D 30.6	D 31.3
	EB Thru	B	B	B	B	B	B
	Right	10.8	12.6	12.6	10.2	11.1	11.1
	Left	C 18.1	E 38.7	E 39.0	C 16.2	E 37.0	E 37.3
	WB Thru	A	B	B	B	B	B
	Right	9.6	12.7	12.8	10.2	11.8	11.8
Main Street	Left	A	A	A	A	A	A
	NB Thru	9.4	9.8	9.9	8.7	9.6	9.6
	Right						
	Left	A	A	A	A	A	A
SB Thru	8.3	8.4	8.4	9.2	9.2	9.2	
	Right						
Overall		A 4.0	A 7.5	A 7.6	A 1.9	A 5.3	A 5.3

Table 6 - Level of Service Matrices
3. Hall Street and Bridge Street (S.R. 0113)

Time Period		Weekday Morning Peak Hour			Weekday Afternoon Peak Hour		
Year		2022	2024 Build-Out Year		2022	2024 Build-Out Year	
Development Condition		Existing	w/o Dev	w/ Dev	Existing	w/o Dev	w/ Dev
Hall Street	Left EB Right	A 0.0	C 28.0	C 26.5	C 22.4	D 38.9	D 37.4
	Left WB Thru Right	C 16.8	C 26.4	C 23.4	C 17.9	D 38.6	C 34.9
	Left NB Thru	A 0.0	A 4.2	A 6.3	A 9.8	A 3.2	A 5.2
			A 3.9	A 5.2		A 2.9	A 3.9
Thru SB Right	(1) 3.9	A 5.5	(1) 2.9	A 4.2			
Overall		A 0.7	A 6.3	A 8.4	A 0.5	A 4.5	A 6.7

(1) Movement operates at free-flow conditions.

Table 6 - Level of Service Matrices
4. West Site Access and Paradise Street

Time Period		Weekday Morning Peak Hour	Weekday Afternoon Peak Hour
Year		2024 Build-Out Year	2024 Build-Out Year
Development Condition		w/ Dev	w/ Dev
West Site Access	Left WB Right	A 9.5	B 10.1
	Thru NB Right	(1)	(1)
Paradise Street	Left SB Thru	A 8.3	A 8.5
	Overall	A 0.9	A 0.5

(1) Movement operates at free-flow conditions.

Table 6 - Level of Service Matrices

5. Hall Street and Center Site Access

Time Period		Weekday Morning Peak Hour	Weekday Afternoon Peak Hour
Year		2024 Build-Out Year	2024 Build-Out Year
Development Condition		w/ Dev	w/ Dev
Hall Street	Left EB Thru	A 8.2	A 8.2
	Thru WB Right	(1)	(1)
Center Site Access	Left SB Right	A 8.6	A 8.5
Overall		A 3.0	A 2.7

(1) Movement operates at free-flow conditions.

Table 6 - Level of Service Matrices
 6. Hall Street and East Exit Site Access

Time Period		Weekday Morning Peak Hour	Weekday Afternoon Peak Hour
Year		2024 Build-Out Year	2024 Build-Out Year
Development Condition		w/ Dev	w/ Dev
Hall Street	EB Thru	(1)	(1)
	WB Thru	(1)	(1)
East Exit Site Access	Left	A	A
	SB Right	8.6	8.6
Overall		A 1.8	A 1.2

(1) Movement operates at free-flow conditions.

Table 6 - Level of Service Matrices
6. Hall Street and East Enter Site Access

Time Period		Weekday Morning Peak Hour	Weekday Afternoon Peak Hour
Year		2024 Build-Out Year	2024 Build-Out Year
Development Condition		w/ Dev	w/ Dev
Hall Street	Left EB Thru	A 0.0	A 0.0
	Thru WB Right	(1)	(1)
Overall		A 0.0	A 0.0

(1) Movement operates at free-flow conditions.

Table 6 - Level of Service Matrices

7. Hall Street and Paradise Street

Time Period		Weekday Morning Peak Hour	Weekday Afternoon Peak Hour
Year		2024 Build-Out Year	2024 Build-Out Year
Development Condition		w/ Dev	w/ Dev
Hall Street	Left WB Thru Right	B 10.5	B 11.3
	Paradise Street		
Paradise Street	Left NB Thru Right	(1)	(1)
	Left SB Thru Right	A 8.4	A 8.7
Overall		A 1.5	A 0.9

(1) Movement operates at free-flow conditions.

Table 7 - 95th Percentile Queue Matrices

1. Nutt Road (S.R. 0023) and Paradise Street

Time Period		Weekday Morning Peak Hour				Weekday Afternoon Peak Hour			
Year		2022	2024 Build-Out Year			2022	2024 Build-Out Year		
Development Condition		Existing	w/o Dev	w/ Dev	w/Dev Imps	Existing	w/o Dev	w/ Dev	w/Dev Imps
Nutt Road (S.R. 0203)	Left ⁽³⁾	0	25	25	40	25	38	58	273
	EB Thru	(1)	(1)	(1)	578	(1)	(1)	345	
		Right	(2)	(2)		(2)			
	WB Thru	Left	(2)	(2)	(2)	25	(2)	(2)	25
		Right	(1)	(1)	(1)	400	(1)	(1)	1113
		Right	(2)	(2)	(2)	25	(2)	(2)	25
Paradise Street	NB Thru	(2)	(2)	(2)	25	(2)	(2)	(2)	25
	SB Thru	25	115	153	63	25	228	280	35
					Right				248

(1) Movement operates at free-flow conditions.

(2) Movement does not exist.

(3) Proposed 175-foot left turn lane with additional storage available from center left-turn lane in 2024 with development conditions.

Table 7 - 95th Percentile Queue Matrices

2. Smithworks Boulevard and Main Street

Time Period		Weekday Morning Peak Hour			Weekday Afternoon Peak Hour		
Year		2022	2024 Build-Out Year		2022	2024 Build-Out Year	
Development Condition		Existing	w/o Dev	w/ Dev	Existing	w/o Dev	w/ Dev
Smithworks Boulevard	Left	0	25	25	25	25	25
	EB Thru	25	33	33	25	25	25
	Right						
	Left	25	50	50	25	25	25
	WB Thru	0	25	25	0	25	25
	Right						
Main Street	Left	25	25	25	25	25	25
	NB Thru						
	Right						
	Left	0	0	0	0	0	0
SB Thru							
Right							

Table 7 - 95th Percentile Queue Matrices

3. Hall Street and Bridge Street (S.R. 0113)

Time Period		Weekday Morning Peak Hour			Weekday Afternoon Peak Hour		
Year		2022	2024 Build-Out Year		2022	2024 Build-Out Year	
Development Condition		Existing	w/o Dev	w/Dev	Existing	w/o Dev	w/Dev
Hall Street	Left EB Right	0	53	95	0	33	78
	Left WB Thru Right	25	25	25	25	28	25
	Left ⁽²⁾ NB Thru	0	25	25	0	25	25
			73	95		83	120
Thru SB Right	(1)	75	110	(1)	75	125	

(1) Movement operates at free-flow conditions.

(2) 125-foot left turn lane in 2024 without development conditions.

Table 7 - 95th Percentile Queue Matrices

4. West Site Access and Paradise Street

Time Period		Weekday Morning Peak Hour	Weekday Afternoon Peak Hour
Year		2024 Build-Out Year	2024 Build-Out Year
Development Condition		w/ Dev	w/ Dev
West Site Access	Left WB Right	25	25
	Thru NB Right	(1)	(1)
Paradise Street	Left SB Thru	0	0

(1) Movement operates at free-flow conditions.

Table 7 - 95th Percentile Queue Matrices

5. Hall Street and Center Site Access

Time Period		Weekday Morning Peak Hour	Weekday Afternoon Peak Hour
Year		2024 Build-Out Year	2024 Build-Out Year
Development Condition		w/ Dev	w/ Dev
Hall Street	Left WB Thru	0	0
	Thru NB Right	(1)	(1)
Center Site Access	Left SB Right	25	25

(1) Movement operates at free-flow conditions.

Table 7 - 95th Percentile Queue Matrices

6. Hall Street and East Exit Site Access

Time Period		Weekday Morning Peak Hour	Weekday Afternoon Peak Hour
Year		2024 Build-Out Year	2024 Build-Out Year
Development Condition		w/ Dev	w/ Dev
Hall Street	EB Thru	0	0
	WB Thru	(1)	(1)
East Exit Site Access	Left SB Right	25	0

(1) Movement operates at free-flow conditions.

Table 7 - 95th Percentile Queue Matrices

6. Hall Street and East Enter Site Access

Time Period		Weekday Morning Peak Hour	Weekday Afternoon Peak Hour
Year		2024 Build-Out Year	2024 Build-Out Year
Development Condition		w/ Dev	w/ Dev
Hall Street	Left EB Thru	0	0
	Thru WB Right	(1)	(1)

(1) Movement operates at free-flow conditions.

Table 7 - 95th Percentile Queue Matrices

7. Hall Street and Paradise Street

Time Period		Weekday Morning Peak Hour	Weekday Afternoon Peak Hour
Year		2024 Build-Out Year	2024 Build-Out Year
Development Condition		w/ Dev	w/ Dev
Hall Street	Left WB Thru Right	25	25
	Left NB Thru Right	(1)	(1)
Paradise Street	Left SB Thru Right	0	0

(1) Movement operates at free-flow conditions.

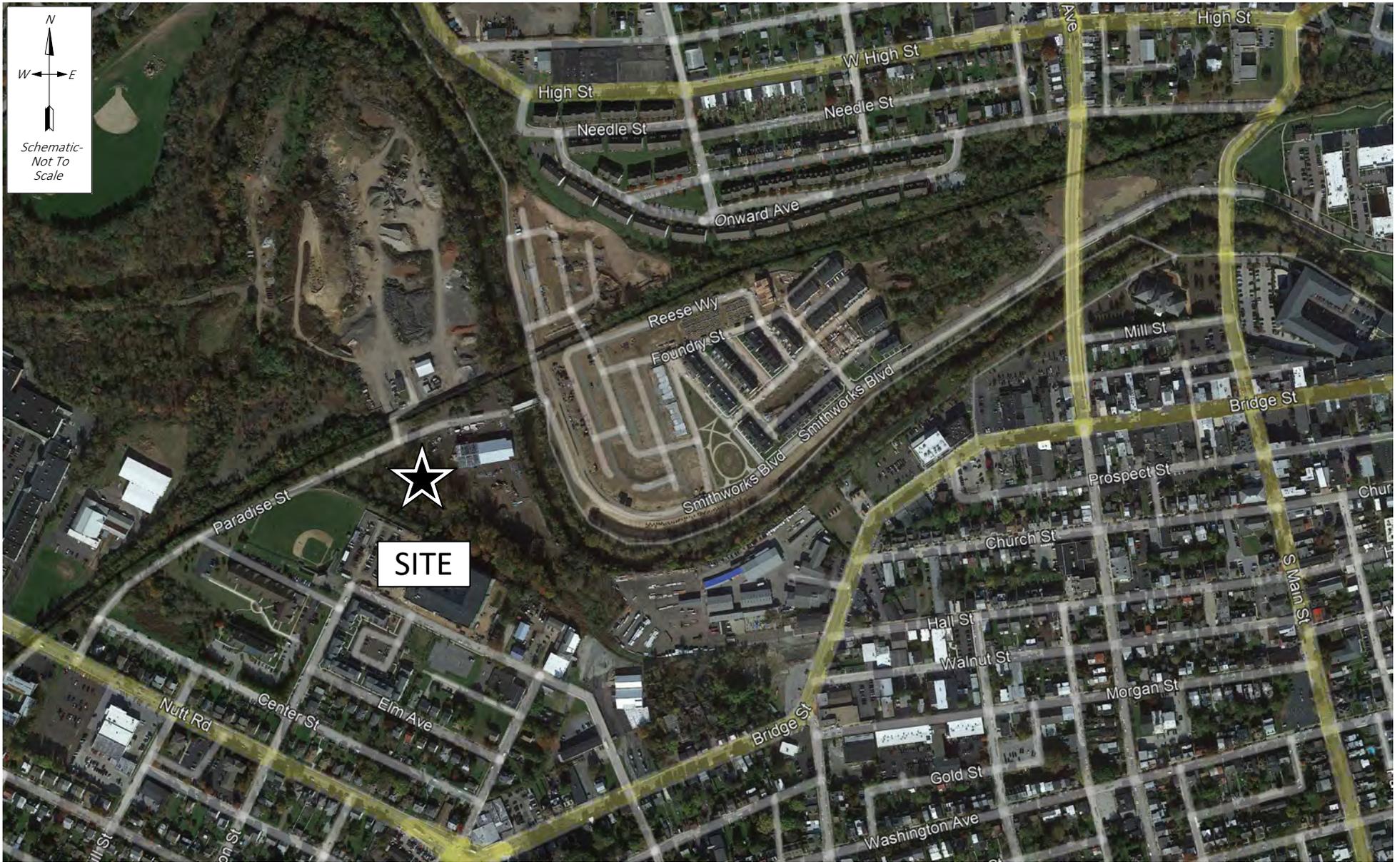


FIGURE 1

Location Map

PARADISE VILLAGE

BOROUGH OF PHOENIXVILLE, CHESTER COUNTY, PA



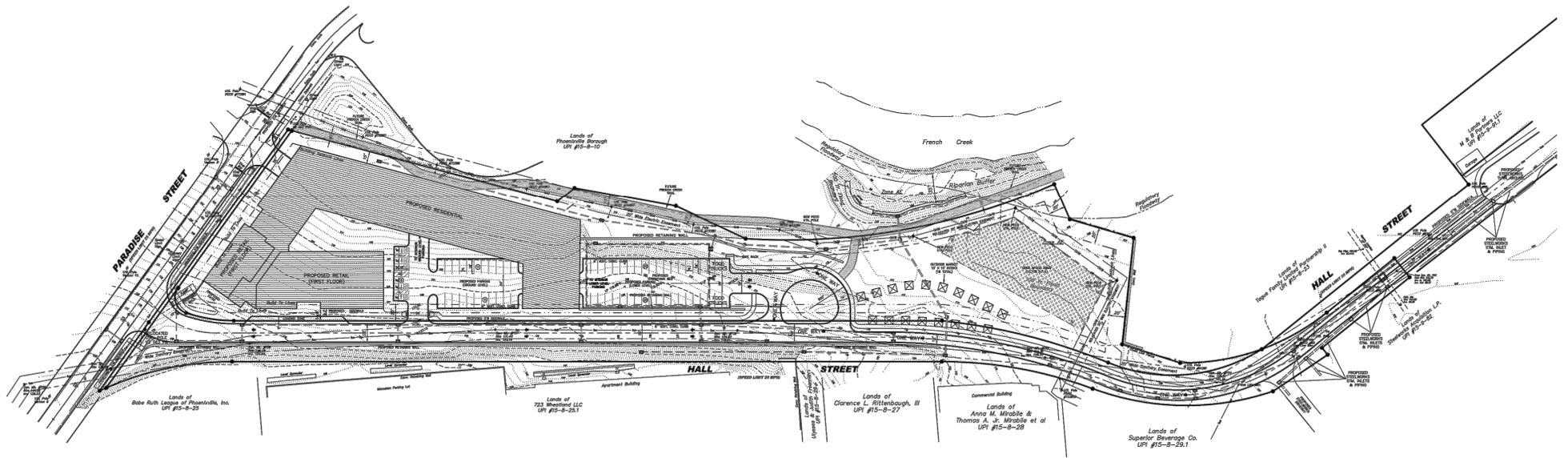
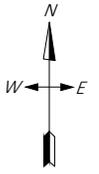


FIGURE 2
 Site Plan
PARADISE VILLAGE
 BOROUGH OF PHOENIXVILLE, CHESTER COUNTY, PA





LEGEND
 5 WEEKDAY MORNING
 (5) WEEKDAY AFTERNOON

Schematic-
 Not To
 Scale

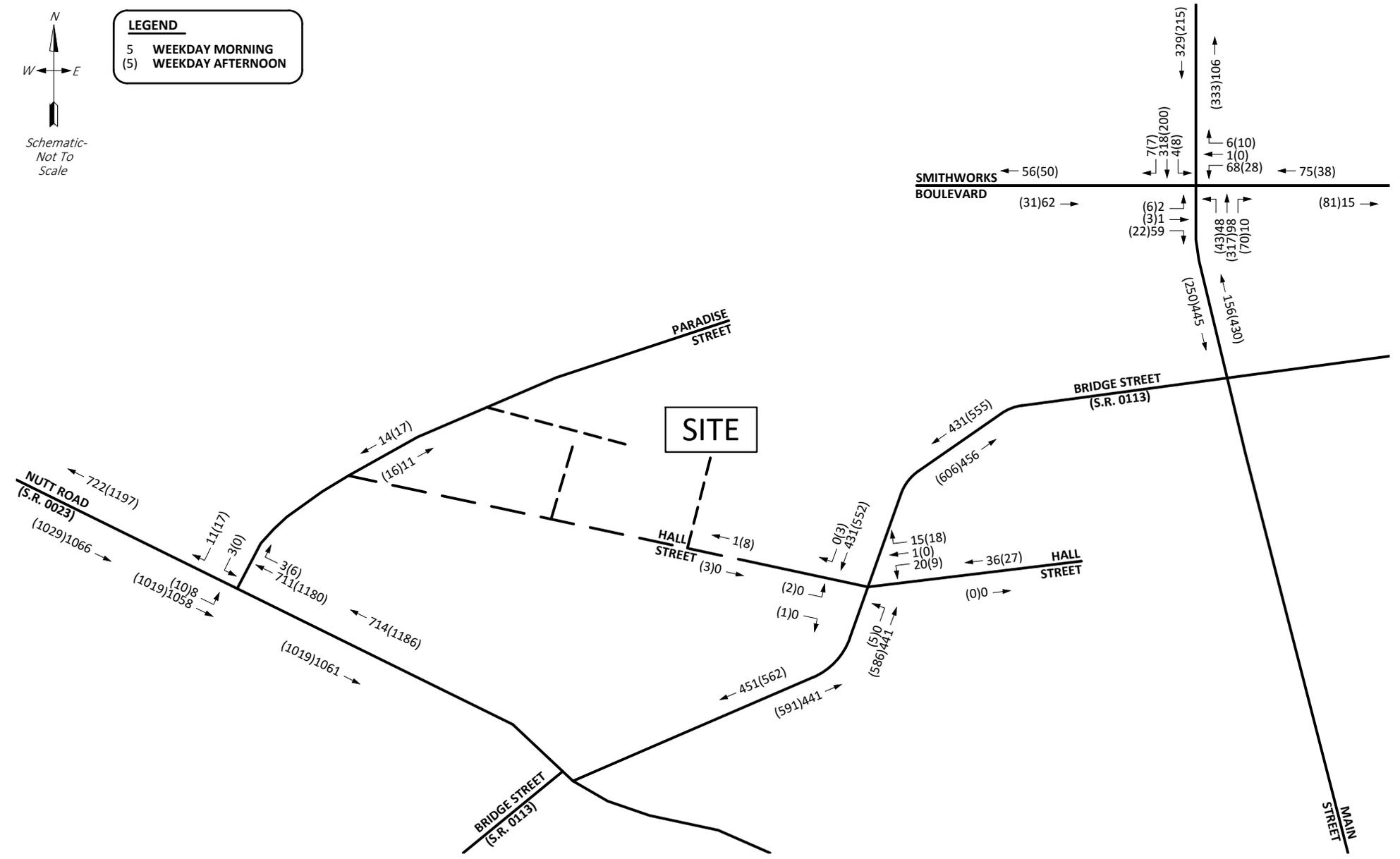


FIGURE 3A
 Existing Peak Hour Traffic Volumes
PARADISE VILLAGE
 BOROUGH OF PHOENIXVILLE, CHESTER COUNTY, PA



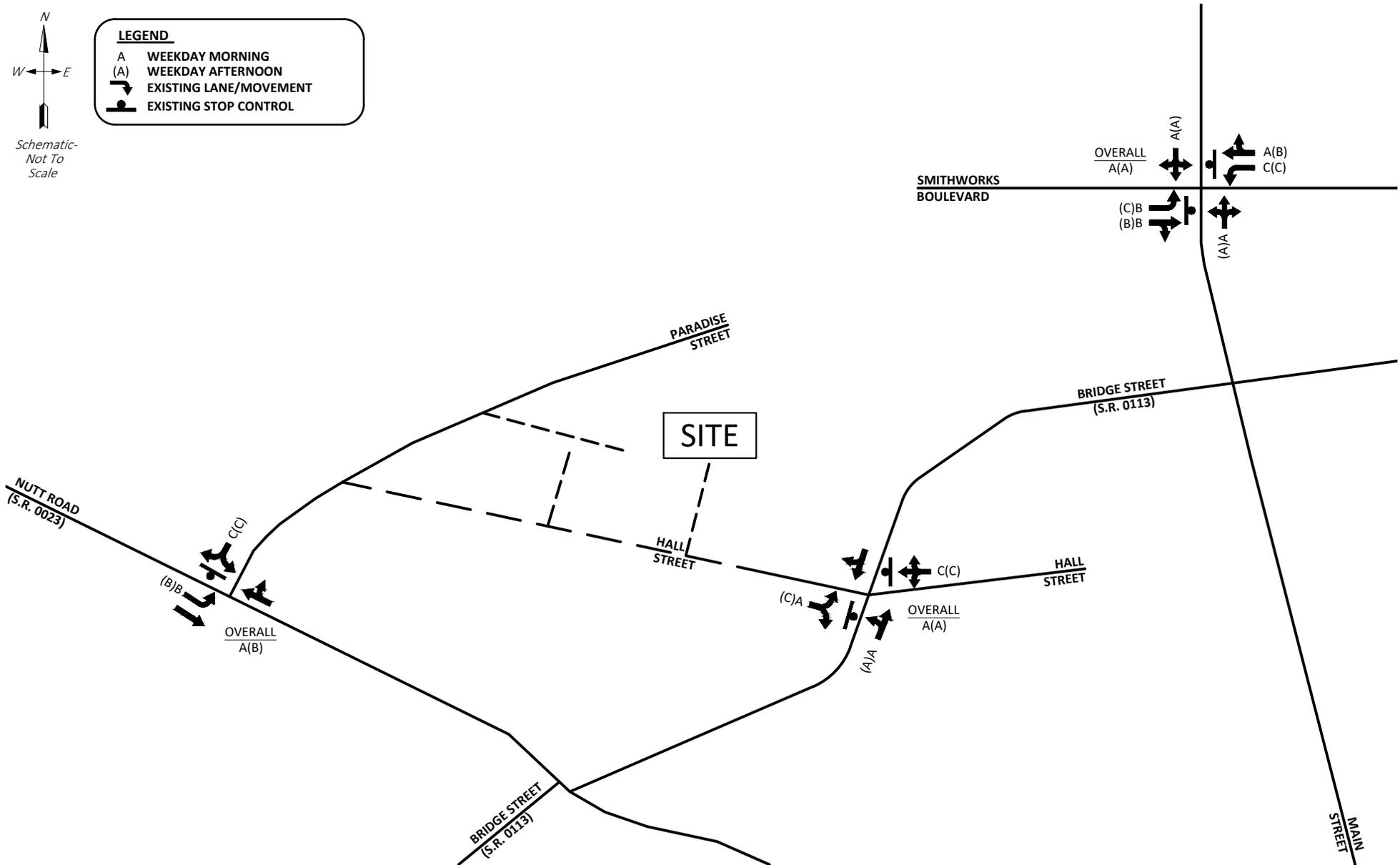
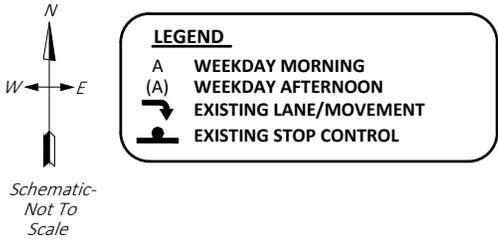


FIGURE 3B
Existing Peak Hour Levels of Service
PARADISE VILLAGE
BOROUGH OF PHOENIXVILLE, CHESTER COUNTY, PA



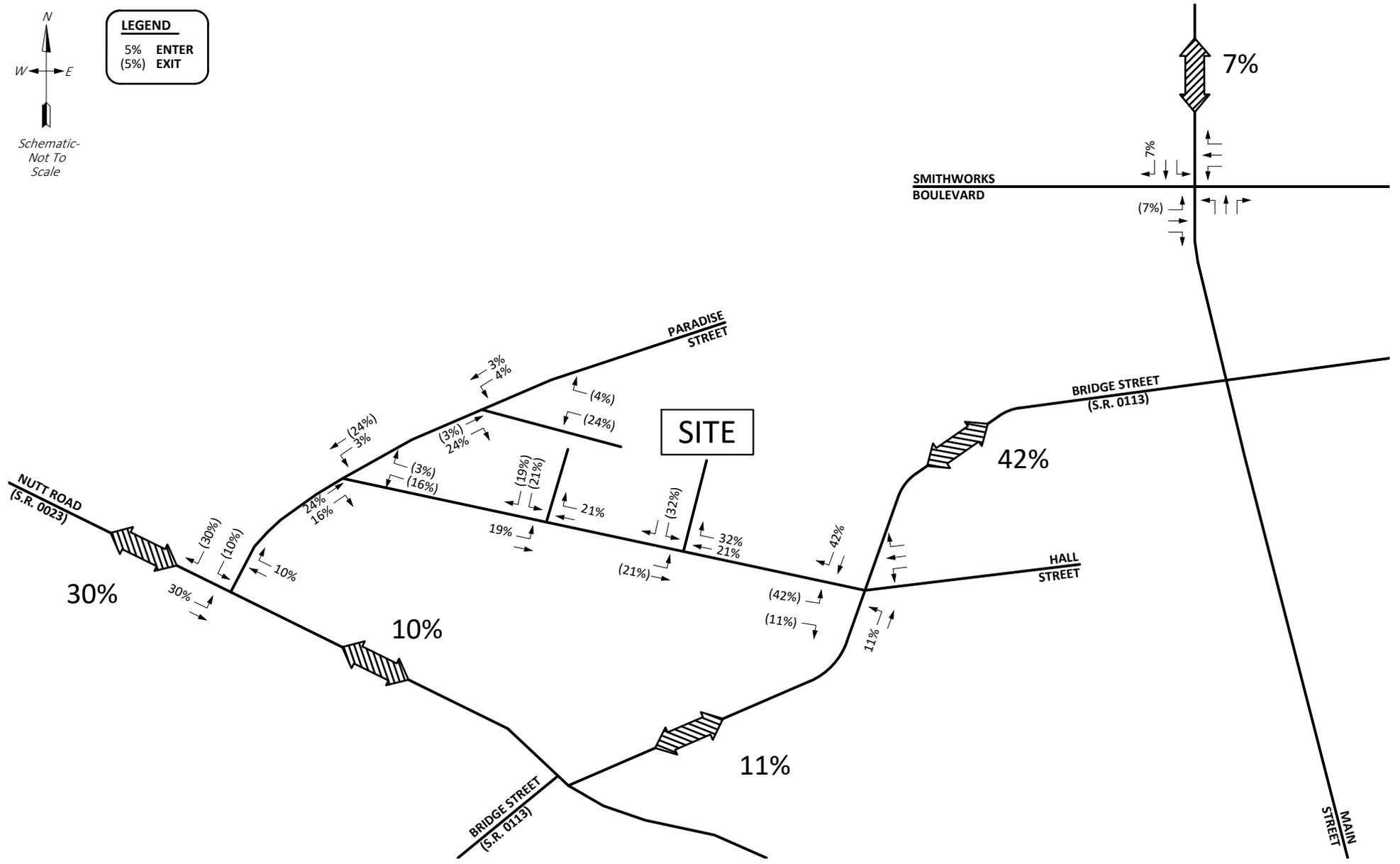
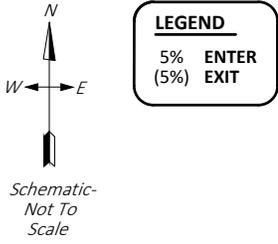
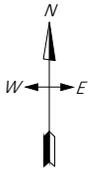


FIGURE 4A
 New Trip Distribution
PARADISE VILLAGE
 BOROUGH OF PHOENIXVILLE, CHESTER COUNTY, PA





LEGEND
 5 WEEKDAY MORNING
 (5) WEEKDAY AFTERNOON

Schematic-
 Not To
 Scale

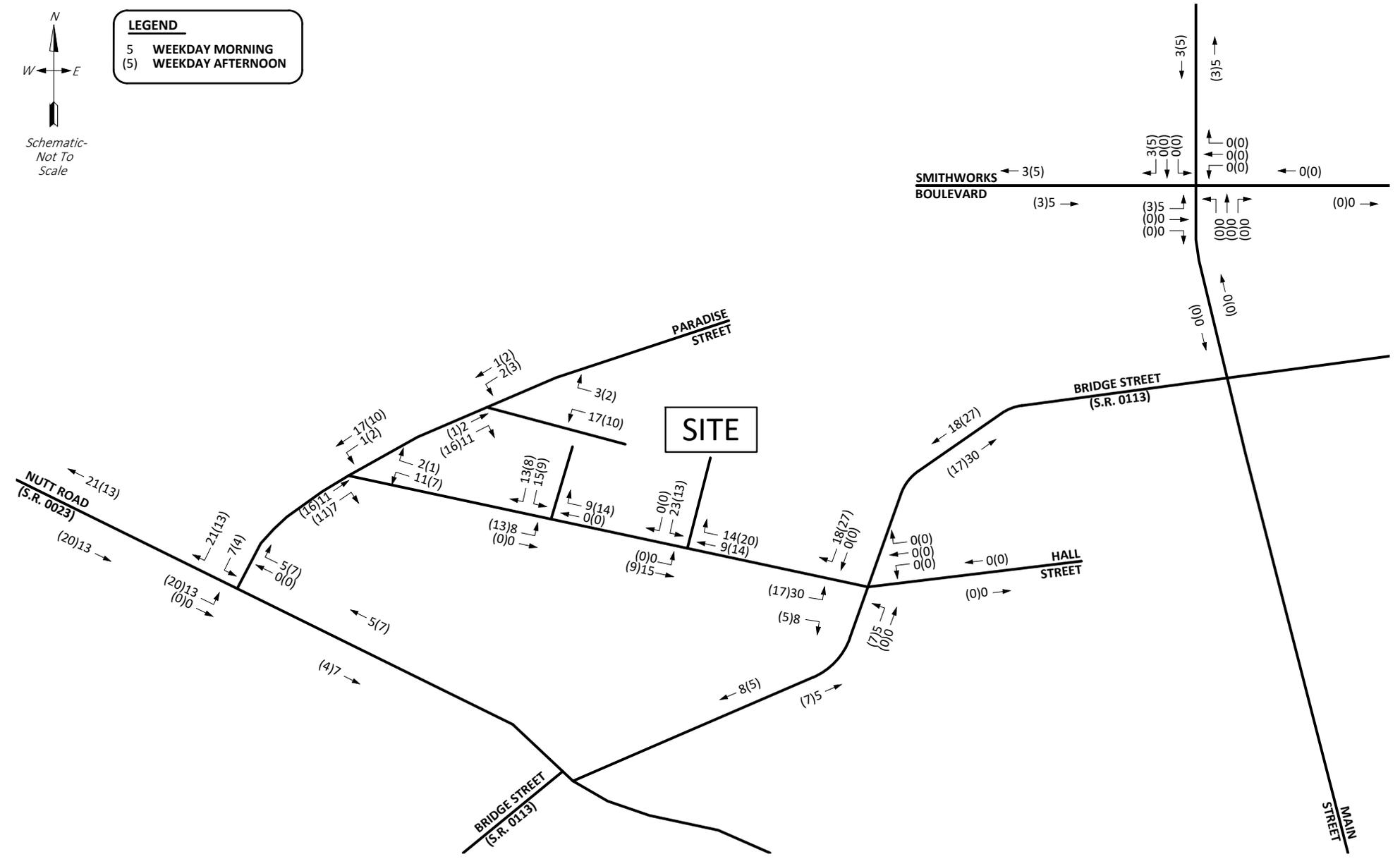
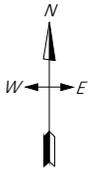


FIGURE 4B
 New Trip Assignment
PARADISE VILLAGE
 BOROUGH OF PHOENIXVILLE, CHESTER COUNTY, PA





LEGEND
 5 WEEKDAY MORNING
 (5) WEEKDAY AFTERNOON

Schematic-
 Not To
 Scale

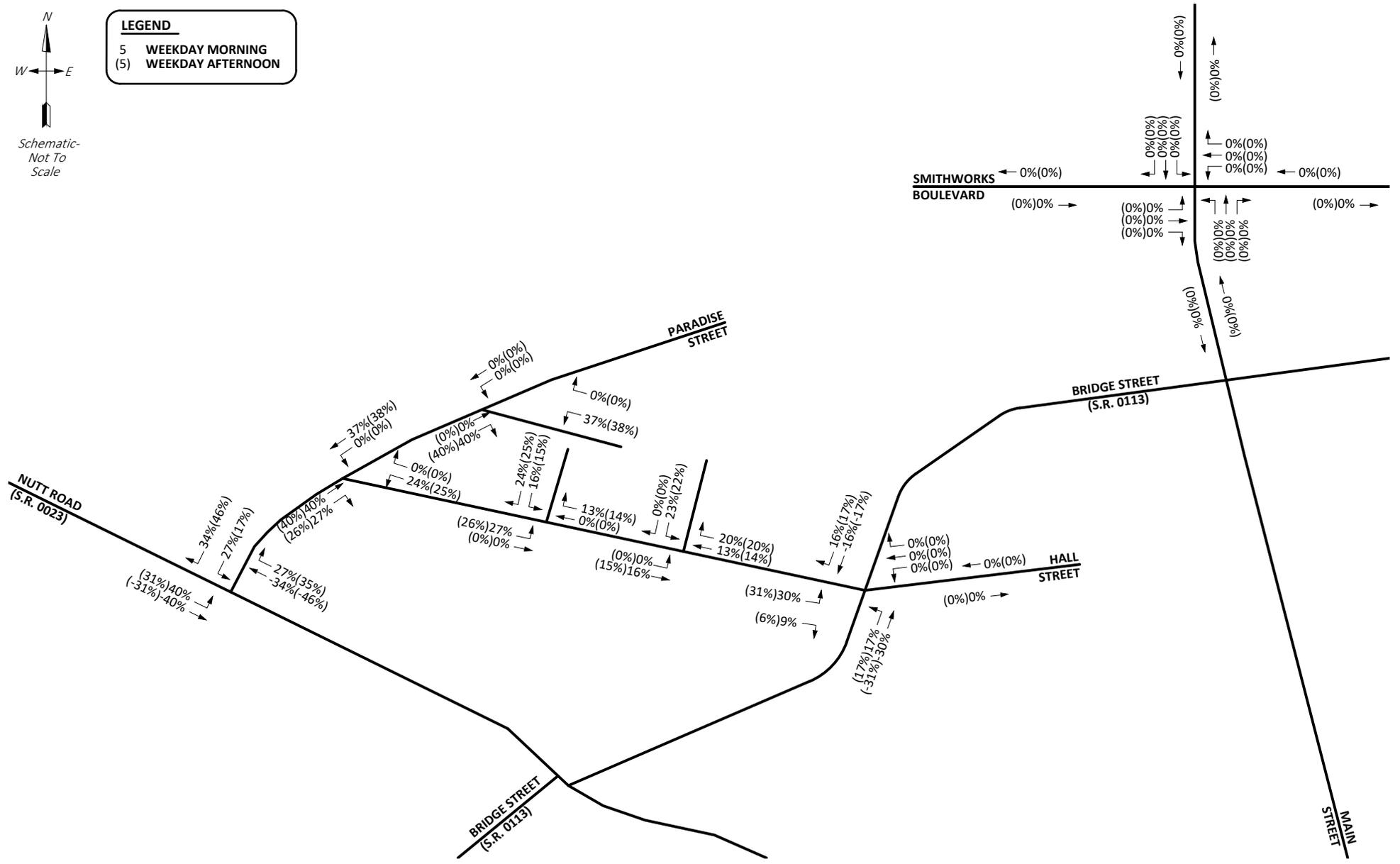
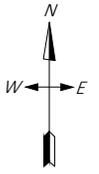


FIGURE 4C
 Pass-By Trip Distribution
PARADISE VILLAGE
 BOROUGH OF PHOENIXVILLE, CHESTER COUNTY, PA





LEGEND
5 WEEKDAY MORNING
(5) WEEKDAY AFTERNOON

Schematic
Not To
Scale

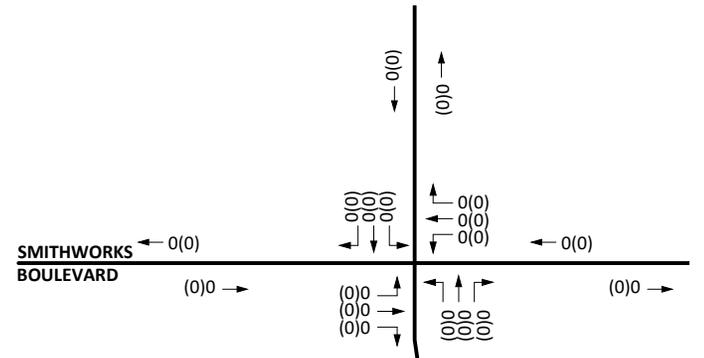
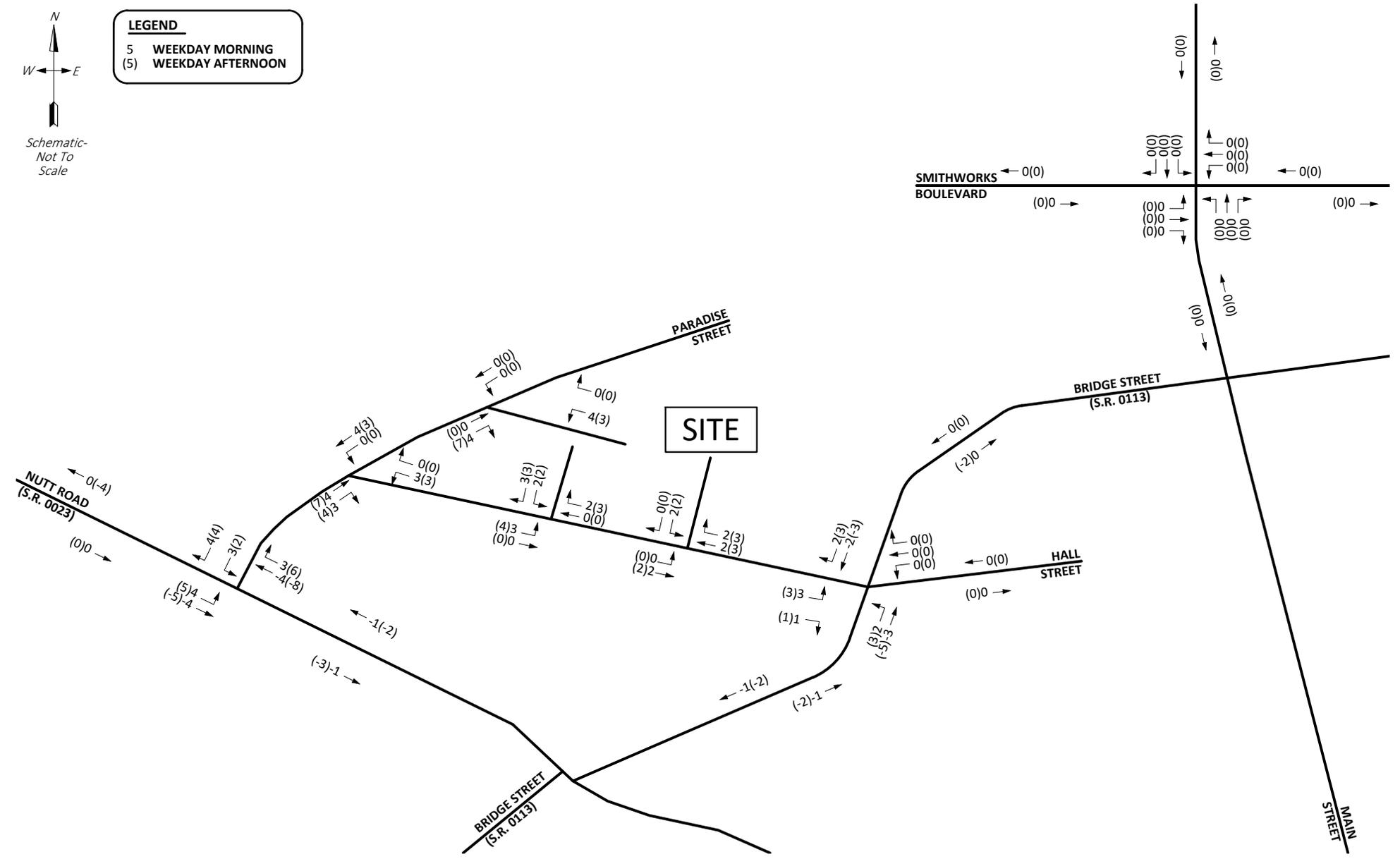
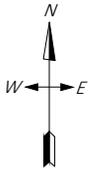


FIGURE 4D
Pass-By Trip Assignment
PARADISE VILLAGE
BOROUGH OF PHOENIXVILLE, CHESTER COUNTY, PA





LEGEND
 5 WEEKDAY MORNING
 (5) WEEKDAY AFTERNOON

Schematic-
 Not To
 Scale

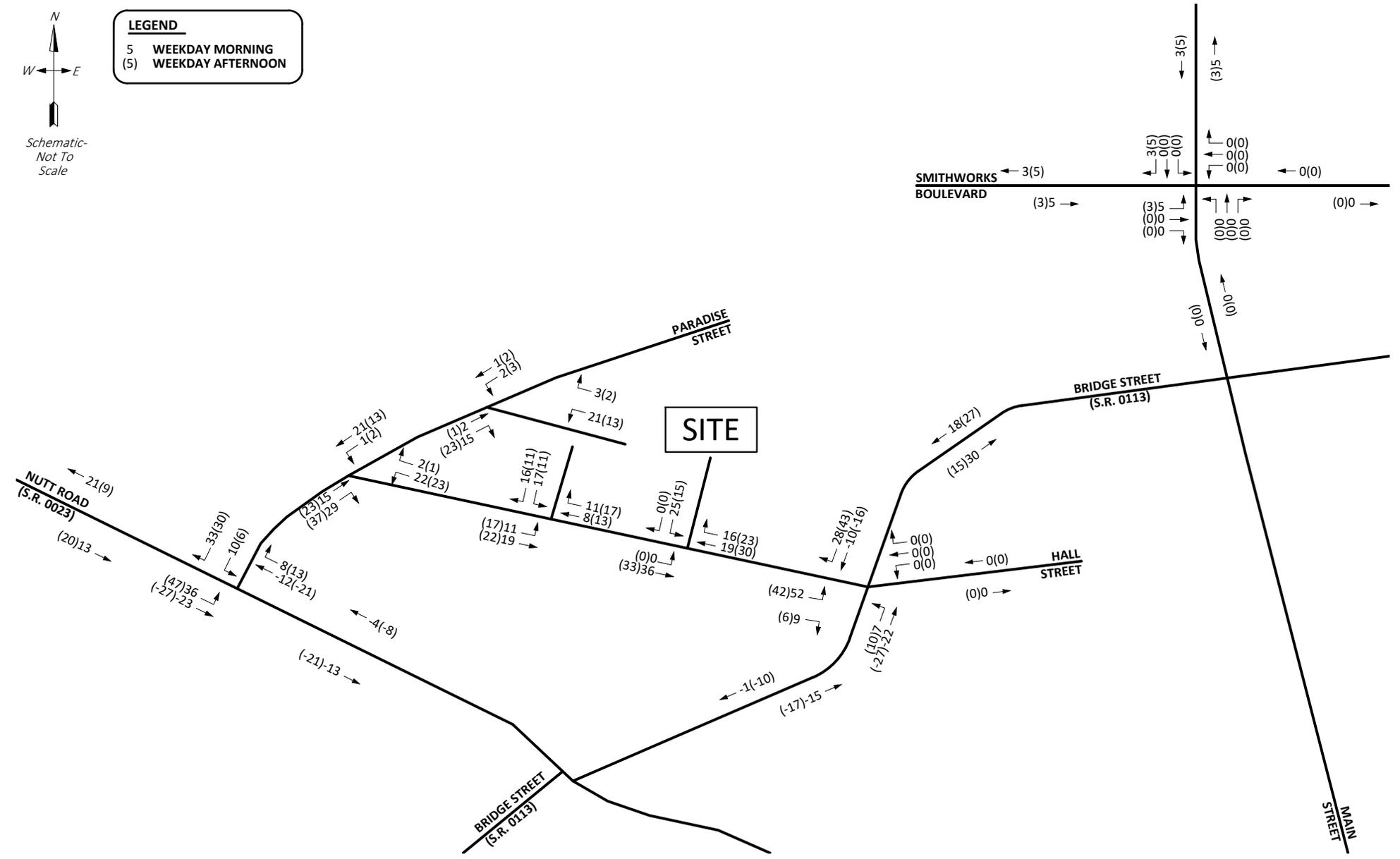
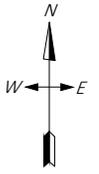


FIGURE 4E
 Net Trip Assignment
PARADISE VILLAGE
 BOROUGH OF PHOENIXVILLE, CHESTER COUNTY, PA





LEGEND

5 WEEKDAY MORNING
 (5) WEEKDAY AFTERNOON

Schematic-
 Not To
 Scale

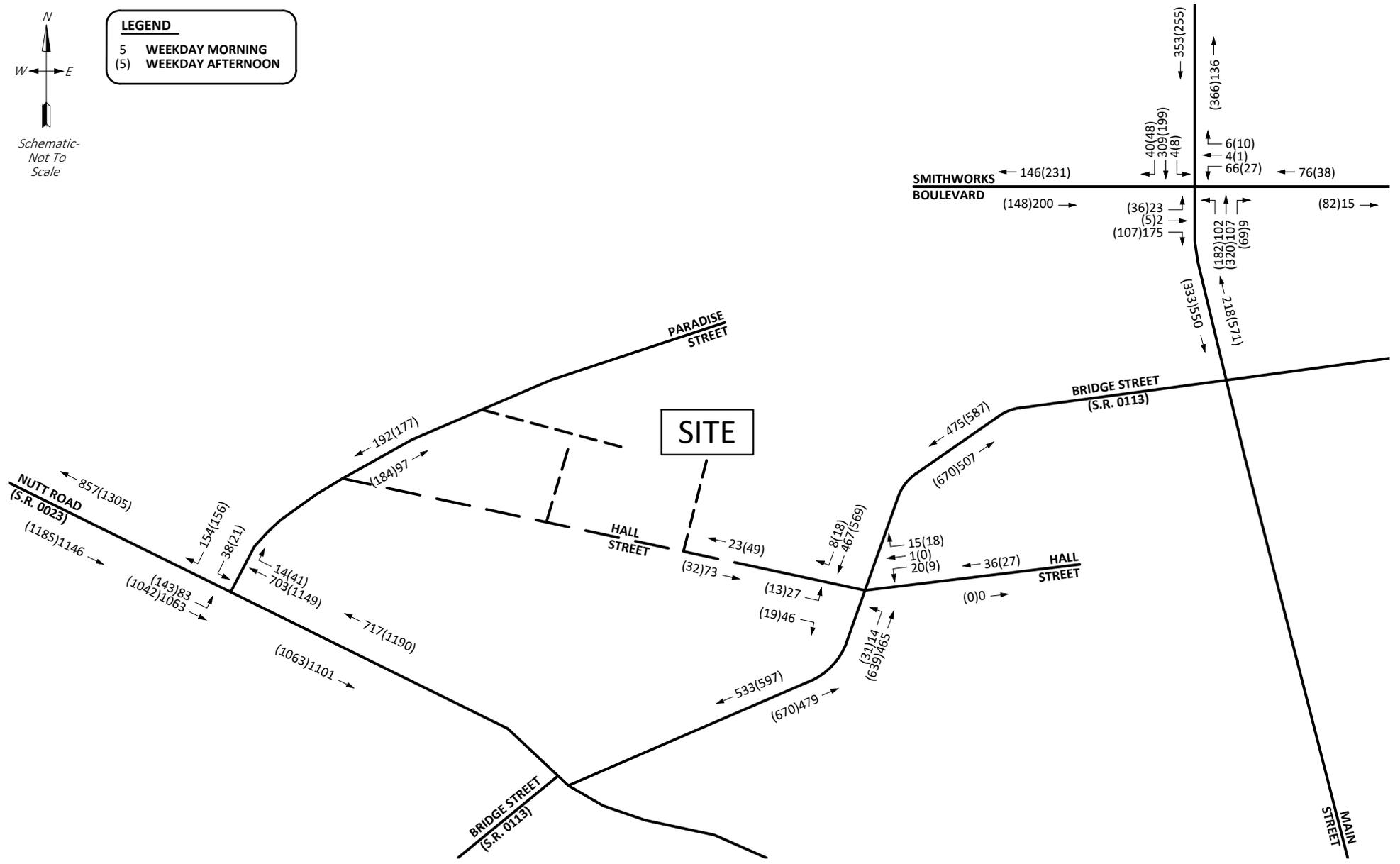
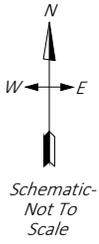


FIGURE 5A
 2024 Future Peak Hour Traffic Volumes - without Development
PARADISE VILLAGE
 BOROUGH OF PHOENIXVILLE, CHESTER COUNTY, PA





LEGEND
 5 WEEKDAY MORNING
 (5) WEEKDAY AFTERNOON

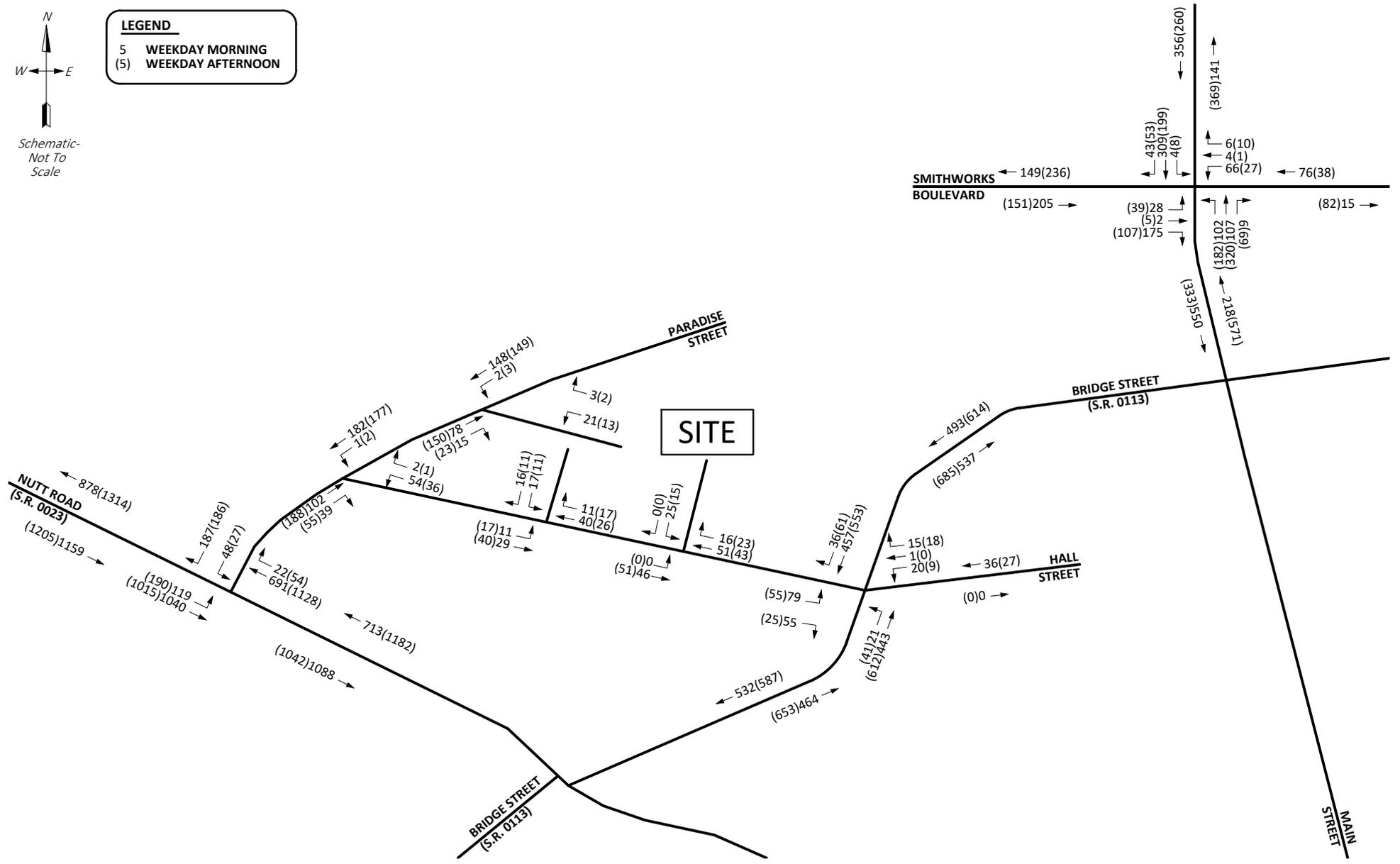
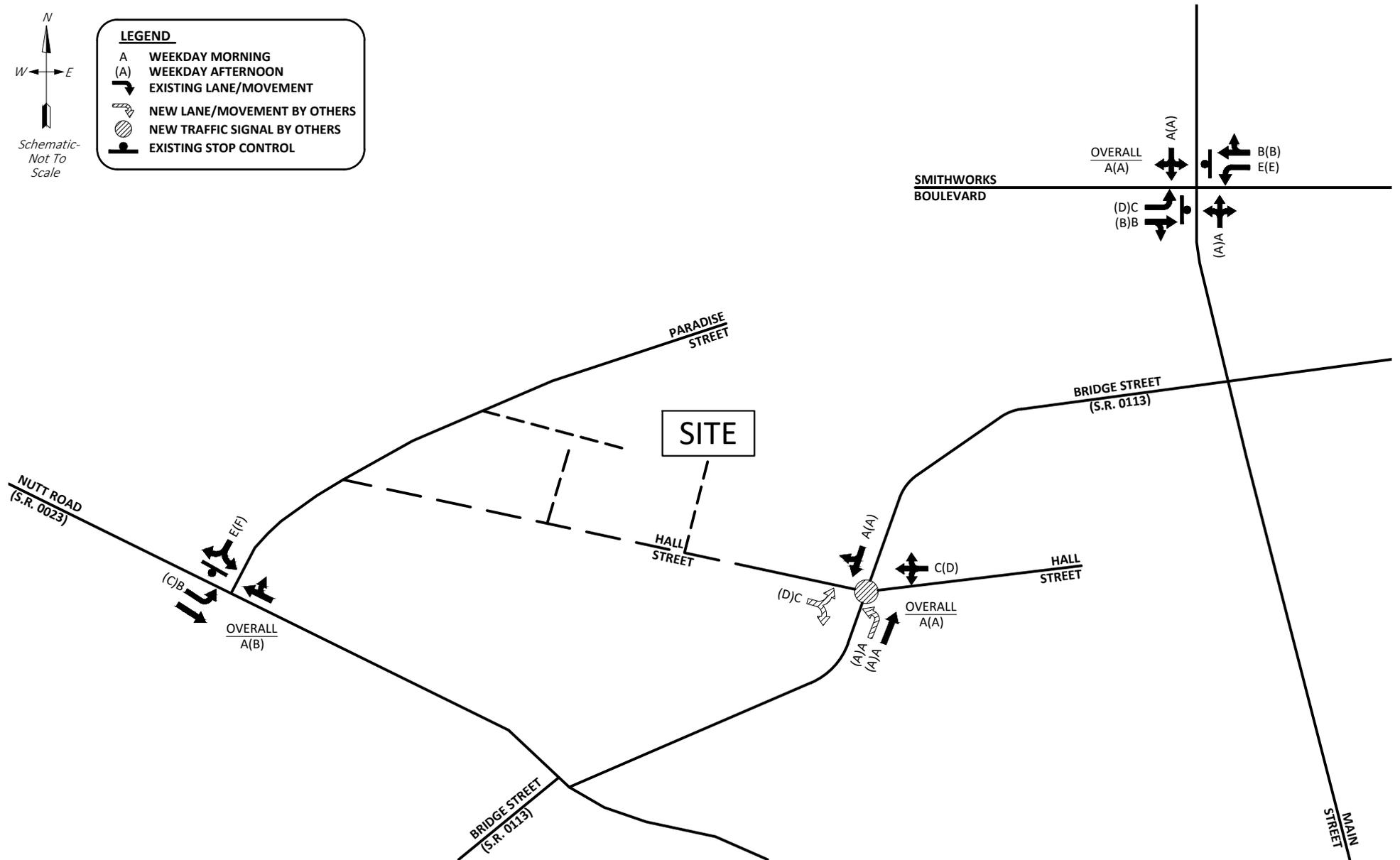
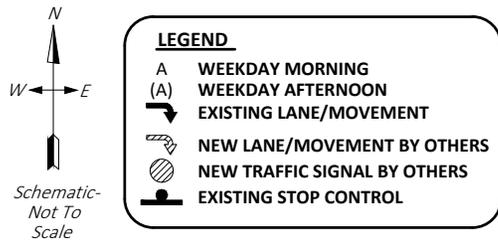


FIGURE 5B
 2024 Future Peak Hour Traffic Volumes - with Development
PARADISE VILLAGE
 BOROUGH OF PHOENIXVILLE, CHESTER COUNTY, PA





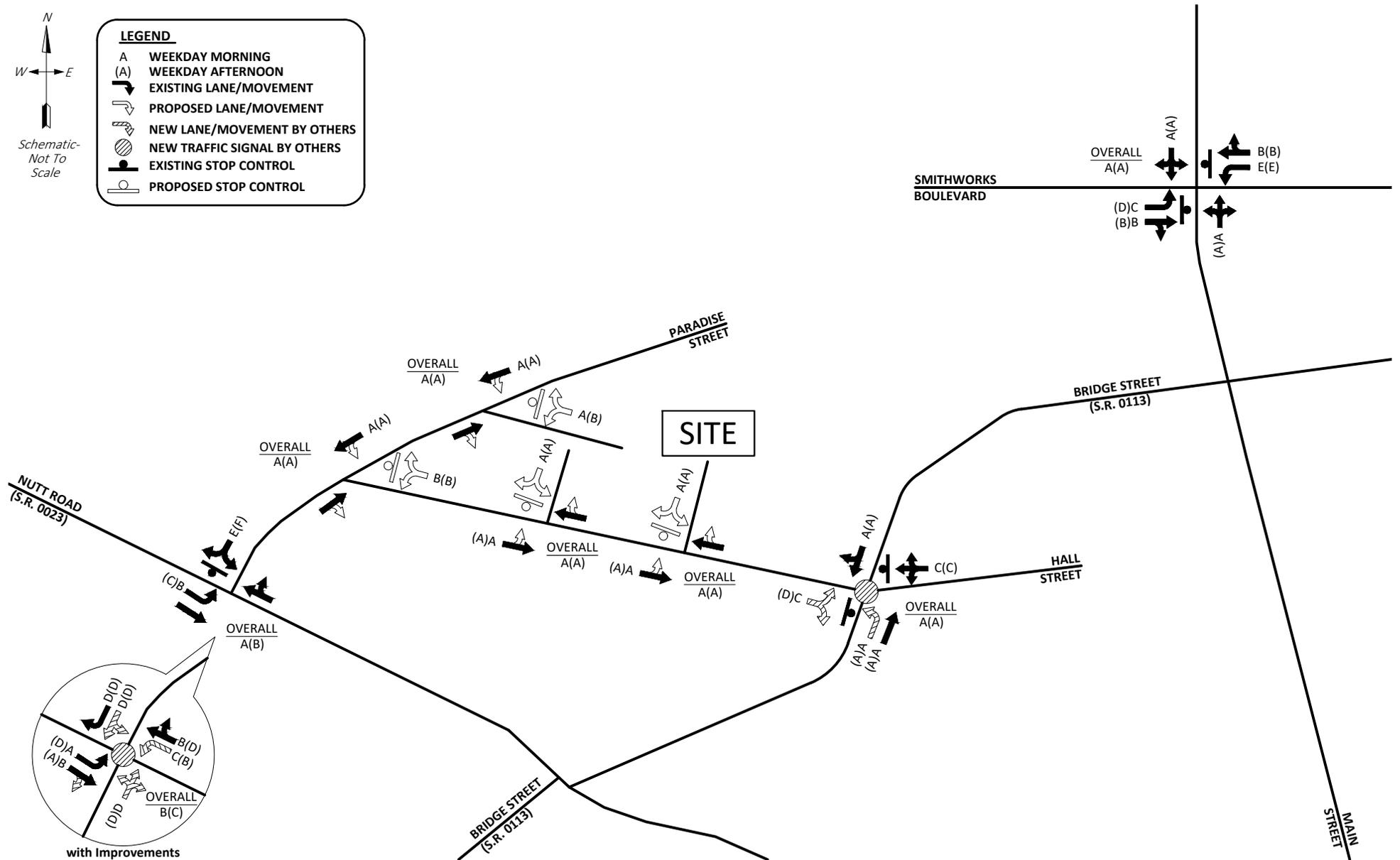
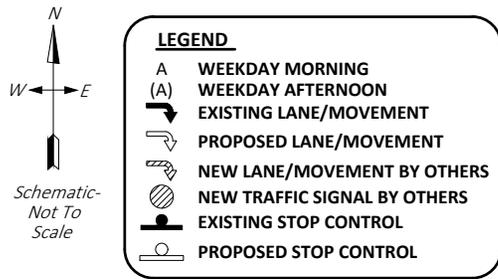


FIGURE 5D
 2024 Future Peak Hour Levels of Service - with Development
PARADISE VILLAGE
 BOROUGH OF PHOENIXVILLE, CHESTER COUNTY, PA



Appendix A

Correspondence

MEMORANDUM

TO: Jean Krack, Manager
 Phoenixville Borough

FROM: John J. Yurick, P.E., PTOE, PTP, Borough Traffic Engineer
 McMahon Associates, Inc.

SUBJECT: Paradise Village
 Traffic Impact Study Scoping Memorandum

DATE: April 14, 2022

McMahon Associates, Inc. has prepared this transportation impact study scoping memorandum for the proposed Paradise Village mixed-use development of approximately 200 apartment units with retail, located on the northeast corner of the future Paradise Street/Hall Street intersection in Phoenixville Borough, Chester County. The purpose of the study will be to evaluate the traffic impact of the site on surrounding roadways, as well as determine appropriate access to the redeveloped property.

In order to complete the transportation impact study and satisfy Borough requirements, we propose the scope described herein, which satisfies the Borough requirements (SALDO Section 22-602).

Site Trip Generation

Preliminary traffic volumes to be generated by the proposed residential development of 68 apartment units were prepared based on trip generation data compiled from numerous studies contained in the Institute of Transportation Engineers (ITE) publication, *Trip Generation, 11th Edition*. **Table 1** presents the anticipated vehicular trip generation for the proposed development based on our preliminary evaluation.

Table 1. Preliminary Vehicular Trip Generation⁽¹⁾

Land Use	Size	Daily ²⁾	Weekday Morning Peak Hour ⁽³⁾			Weekday Afternoon Peak Hour ⁽³⁾		
			In	Out	Total	In	Out	Total
Apartments ²⁾	195 Units	906	17	59	76	48	30	78
Retail	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD

(1) Based on the ITE publication, *Trip Generation Manual, 11th Edition*.
 (2) ITE Land Use Code 221 Multi-Family Housing (Mid-Rise).

These trip generation assumptions are preliminary and will be refined and updated, as necessary, upon further review of the development plan and identification of the size of the retail space and intended tenant type.

Transportation Impact Study Scope

In order to evaluate the transportation impacts of the proposed redevelopment project and address the study requirements of the borough and PennDOT, the following scope is proposed:

Study Intersections

- Paradise Street and Nutt Road (S.R. 0023)
- Main Street and Smithworks Boulevard
- Hall Street and Bridge Street (S.R. 0113)

Traffic Data Collection

Eleven-hour traffic counts will be conducted at the study intersection to evaluate future traffic signal warrants and to conduct peak hour traffic operational analyses.

Study Peak Periods

- Weekday morning commuter peak period (6:00 AM to 10:00 AM)
- Weekday afternoon commuter peak period (3:00 PM to 7:00 PM)

1. Establish existing traffic volumes utilizing recent traffic count data and other resources, if necessary for the above study intersections during both peak periods.
2. Identify existing or proposed pedestrian facilities, bicycle facilities, and public transit facilities within the study area, and any potential development impacts to such facilities.
3. Evaluate the existing traffic operating conditions, including detailed capacity/level-of-service and queuing analysis for the two peak hours for the study intersections.
4. Review available crash data from PennDOT and/or the Borough Police Department for the study area intersections and summarize any potential trends or appropriate countermeasures to address any adverse conditions.
5. Forecast peak hour traffic volumes without-development for the future build-out year based upon PennDOT traffic growth data for the study area roadways and traffic generated by any other proposed developments located within the vicinity of the study area. Borough staff will provide information regarding area developments for consideration in the traffic study. The applicant must verify the anticipated build-out year for this project prior to commencement of the study.
6. Identify area roadway improvements proposed in conjunction with other developments or by PennDOT, if any.
7. Evaluate future build-out design year traffic conditions without-development, including detailed capacity/level-of-service and queuing analysis at the study intersections for both peak hours.
8. Estimate the daily and peak hour site trip generation based on the new Institute of Transportation Engineers publication, *Trip Generation, 11th Edition*, as shown above in Table 1.

Note: Our office will confirm the specific characteristics of the site with the applicant in order to confirm the appropriate trip generation assumptions.

9. Prepare site trip distributions based on existing traffic patterns and the locations of the site accesses, and assign the development-generated traffic to the study area roadway network for the three peak hours, resulting in future with-development traffic volumes.
10. Evaluate future build-out traffic conditions with-development, including detailed capacity/level-of-service and queuing analysis at the study intersections and site accesses for both peak hours. Identify recommended improvements to achieve acceptable levels of service or mitigate the traffic impact of the development at the study intersection, per Borough requirements.
11. Evaluate the site access intersections and provide design recommendations (in narrative format), including auxiliary turn lane analyses and sight distance requirements. It is noted that the study will evaluate one site access scenario, and that additional scenarios can be evaluated as an additional service.
12. Complete a review of the internal site layout with regard to traffic operations and parking supply.
13. Prepare a transportation impact study containing our analysis results, major findings, conclusions/recommendations in accordance with Section 22-602 of the borough's Subdivision and Land Development Ordinance. The report, inclusive of traffic count data and other technical appendices, will be provided in electronic format to all parties. The applicant will be responsible to make submissions to outside agencies, as necessary.

It is noted that traffic analyses and assumptions completed for recent developments that previously evaluated the above study intersections will be utilized to the extent possible in order to reduce the level of effort and cost for this report.

Exclusions

Supplemental services not specifically described above, including but not limited to, additional data collection, additional traffic analysis, study scope changes, changes to the traffic study assumptions, development staging, response to review comments, conceptual improvements plans and cost estimates, and meetings/ hearings, etc. are not included in the scope, but will be provided, as necessary and as authorized, on a time-and-materials basis, as necessary and as authorized based on our attached *Standard Provisions for Professional Services*. It is reminded that the applicant will also be responsible for all electronic submissions to PennDOT, if necessary, and addressing agency review comments are not part of this scope or fee.

Schedule

At this time, we are ready to begin field work upon written notice to proceed by the borough. We anticipate that the study can be completed within five to six weeks from notice to proceed, assuming all necessary information is provided in a timely manner and there are no weather interruptions to the data collection effort.

Please contact our office if you have any questions regarding this scoping memorandum.

cc: Owen Hyne, P.E., CEA, Remington & Vernick

Appendix B

Traffic Signal Permit Plans and Intersection Sketches

MOVEMENT, SEQUENCE, AND TIMING DIAGRAM

		T				FLASH				
PHASE	INTERVAL	1	2	3	4	5	6	7	8	
1,2	G	G	Y	R	R	R	R	R	R	Y
3,4	G	G	Y	R	R	R	R	R	R	Y
5,6	R	R	R	R	G	G	Y	R	R	
7,8	R	R	R	R	G	G	Y	R	R	
9,10,11,12	M	FH	H	H	H	H	H	H	H	OFF
13,14	H	H	H	H	M	FH	H	H	H	OFF

FIXED		3	3		3	4
MINIMUM	15			3		
PASSAGE	3			3		
MAX 1	47			20		
MAX 2	47			20		
PEDESTRIAN *	7	12		7	12	
MEMORY	SVR			NL		

REFER TO SYSTEM PERMIT #1-0105 FOR PROGRAM TIMINGS AND WEEKLY PROGRAM CHART

- * UPON PEDESTRIAN ACTUATION, OTHERWISE HAND SYMBOL AT ALL TIMES
- PEDESTRIAN COUNTDOWN TIMER TO COUNT DOWN DURING FLASHING HAND INTERVAL
- CONTROLLER TO DWELL IN PHASE 2+6 UNTIL ACTUATED BY PHASE 4+8

EMERGENCY PRE-EMPTION PHASING
MOVEMENT, SEQUENCE, AND TIMING DIAGRAM

		T				T				T				T			
PHASE	INTERVAL	9	10	11		12	13	14		15	16	17		18	19	20	
1,2	G	Y	R			R	R	R		R	R	R		R	R	R	
3,4	R	R	R			R	R	R		G	Y	R		R	R	R	
5,6	R	R	R			G	Y	R		R	R	R		R	R	R	
7,8	R	R	R			R	R	R		R	R	R		G	Y	R	
9,10,11,12	H	H	H			H	H	H		H	H	H		H	H	H	
13,14	H	H	H			H	H	H		H	H	H		H	H	H	
FIXED		3	3			3	4			3	3			3	4		

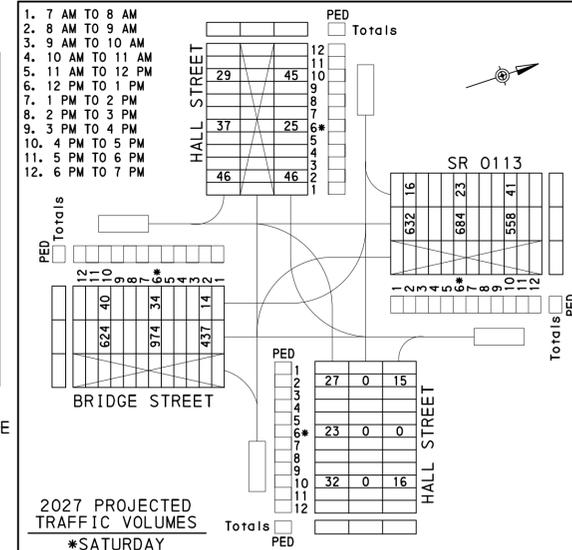
▲ FOR DURATION OF PRE-EMPTION
NOTE: IF PRE-EMPTION EQUIPMENT HAS ENCODING CAPABILITIES FOR VEHICLE IDENTIFICATION, IT IS RECOMMENDED TO HAVE THE ZERO "00" FEATURE ON, TO GIVE UNCODED EMITTERS THE ABILITY TO ACTIVATE THE EMERGENCY PRE-EMPTION.

EMERGENCY PRE-EMPTION OPERATION NOTES

Ⓞ SIGNAL TO INDICATE G WHEN RETURNING TO NORMAL OPERATION

EMERGENCY PRE-EMPTION NOTES:

- CONTROLLER TO BE EQUIPPED WITH EMERGENCY PRE-EMPTION FOR THE NORTHBOUND AND SOUTHBOUND APPROACHES OF BRIDGE STREET AND THE EASTBOUND AND WESTBOUND APPROACHES OF HALL STREET WITH A FAIL SAFE DEVICE FOR EACH DIRECTION OF OPERATION. THIS EMERGENCY BEACON SHALL CONSIST OF A FLASHING WHITE FLOOD LIGHT, AND SHALL FLASH WHEN THE EMERGENCY VEHICLE HAS CONTROL OF THE INTERSECTION FOR THE APPROPRIATE APPROACH.
- THE SIGNALS, WHEN ACTIVATED BY EMERGENCY VEHICLE, SHALL TERMINATE ALL GREEN INDICATIONS IMMEDIATELY, FOLLOWED BY THE COMPLETE YELLOW AND RED CLEARANCE INTERVALS, ACCORDINGLY. THEN THE GREEN INTERVAL FOR THE PRE-EMPTION PHASE SHALL FOLLOW.
- THE SIGNALS, WHEN ACTIVATED BY EMERGENCY VEHICLE, SHALL TIME OUT ALL YELLOW AND RED INDICATIONS, FOLLOWED BY THE GREEN INTERVAL OF THE PRE-EMPTION PHASE GOVERNED BY THE APPROACHING EMERGENCY VEHICLE.



GENERAL NOTES

NO MODIFICATIONS OF THIS INSTALLATION ARE PERMITTED UNLESS PRIOR APPROVAL IS GRANTED IN WRITING BY A REPRESENTATIVE OF THE DEPARTMENT OF TRANSPORTATION.

ALL MAINTENANCE WORK INCLUDING TRIMMING OF TREES, NECESSARY FOR PROPER VISIBILITY OF THE SIGNALS IS THE RESPONSIBILITY OF THE PERMITTEE.

ALL SIGNS AND PAVEMENT MARKINGS INDICATED ON THIS DRAWING ARE CONSIDERED PART OF THE PERMIT AND SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH PUBLICATION NO. 212.

POST MOUNTED SIGNALS SHALL BE INSTALLED WITH THE SIGNAL HEADS A MINIMUM OF 2 FEET BEHIND THE FACE OF CURB OR THE EDGE OF THE SHOULDER. SUPPORT POLES FOR OVERHEAD SIGNALS SHALL ALSO HAVE A MINIMUM CLEARANCE HORIZONTALLY OF 2 FEET.

SIGNALS ERECTED OVER THE ROADWAY SHALL HAVE A MINIMUM VERTICAL CLEARANCE OF 16 FT. ABOVE THE ROADWAY. POST MOUNTED SIGNALS SHALL BE A MINIMUM OF 8 FT. ABOVE THE SIDEWALK OR PAVEMENT.

ALL OVERHEAD SIGNALS MUST BE RIGIDLY MOUNTED, TOP AND BOTTOM, AND EQUIPPED WITH BACKPLATES.

THE MINIMUM HORIZONTAL DISTANCE BETWEEN SIGNALS MEASURED AT RIGHT ANGLES TO THE APPROACH SHALL BE 8 FEET.

EXACT LOCATION OF DETECTORS SHALL BE DETERMINED PRIOR TO INSTALLATION BY A REPRESENTATIVE OF PENNDOT.

CURBING TO BE INSTALLED BY MUNICIPALITY AND WHERE NOTED, SHALL BE PLAIN CEMENT CONCRETE CURB OR GRANITE CURB, INSTALLED IN ACCORDANCE WITH DEPARTMENT SPECIFICATIONS FORM 408.

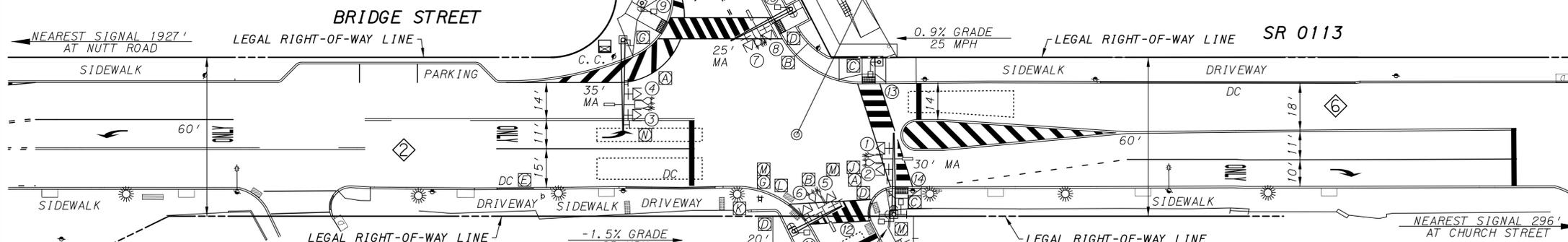
PRIOR TO INSTALLATION THE CONTRACTOR SHALL CONSULT WITH THE LOCAL OFFICIALS AND UTILITY COMPANIES TO RESOLVE ANY PROBLEMS WHICH MAY BE CREATED DUE TO THE LOCATION OF UTILITIES.

THIS DRAWING CANNOT BE USED AS A CONSTRUCTION DRAWING UNLESS THE PERMITTEE COMPLIES WITH THE PROVISIONS OF THE LATEST AMENDMENT TO ACT 287, PREVENTION OF DAMAGE TO UNDERGROUND UTILITIES, DATED DECEMBER 20, 1974.

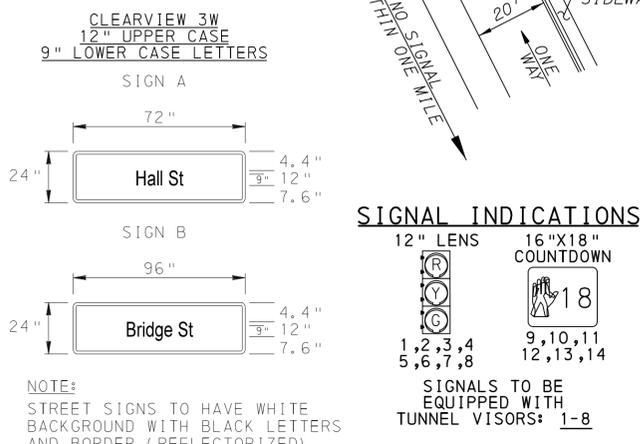
WHEN LIQUID FUELS MONEY IS USED, SIGNAL INSTALLATION MUST CONFORM TO FORM 408 AND A COPY OF THE PROPOSED SPECIFICATIONS MUST BE SUBMITTED TO THE DISTRICT TRAFFIC UNIT FOR REVIEW PRIOR TO BIDDING.

PERMITTEE SHALL OBTAIN A HIGHWAY OCCUPANCY PERMIT FOR ANY CHANGES IN INTERSECTION GEOMETRY REGARDING EXCAVATION.

CONDUIT INSTALLED IN BITUMINOUS ROADWAY LESS THAN 5 YEARS OLD, OR CONCRETE ROADWAY REGARDLESS OF AGE, MUST BE BORED OR JACKED UNDER THE ROADWAY. INSTALL IN ACCORDANCE WITH TRAFFIC SIGNAL STANDARDS TC-8800 SERIES.



PLAN SYMBOL	SERIES	SIZE	DESCRIPTION
Ⓐ	D3-4	72"x24"	SINGLE-LINE OVERHEAD STREET NAME SIGN "Hall St"
Ⓑ	D3-4	96"x24"	SINGLE-LINE OVERHEAD STREET NAME SIGN "Bridge St"
Ⓒ	R10-3E(R)	9"x15"	EDUCATIONAL PUSH BUTTON FOR WALK SIGNAL WITH COUNTDOWN TIMER SIGN
Ⓓ	R10-3E(L)	9"x15"	EDUCATIONAL PUSH BUTTON FOR WALK SIGNAL WITH COUNTDOWN TIMER SIGN
Ⓔ	R3-7L	30"x30"	LEFT LANE MUST TURN LEFT
Ⓕ	SPECIAL	30"x36"	LANE USE CONTROL SIGN
Ⓖ	R9-3	18"x18"	NO PEDESTRIAN CROSSING SIGN
Ⓗ	R3-1	30"x30"	NO RIGHT TURN SIGN
Ⓘ	R6-1L	36"x12"	HORIZONTAL LEFT ONE-WAY SIGN
Ⓚ	R6-1R	36"x12"	HORIZONTAL RIGHT ONE-WAY SIGN
Ⓛ	R5-1	30"x30"	DO NOT ENTER
Ⓜ	R3-2	30"x30"	NO LEFT TURN SIGN



EMERGENCY PRE-EMPTION NOTES:

- IF THE SIGNAL HAS BEEN ACTUATED BY A PEDESTRIAN PUSH BUTTON AND THE SIGNAL IS PRE-EMPTED DURING THE "MAN" INTERVAL, THE MAN INTERVAL SHALL TERMINATE IMMEDIATELY FOLLOWED BY THE "FLASHING HAND AND COUNTDOWN TIMER" INDICATION IN ITS ENTIRETY, FOLLOWED BY THE APPROPRIATE SELECTIVE CLEARANCES BEFORE PROCEEDING TO THE PRE-EMPTION PHASE.
- IF THE SIGNALS, WHEN ACTIVATED BY AN EMERGENCY VEHICLE, ARE FLASHING, ALL SIGNALS SHALL REMAIN FLASHING.
- IF ADDITIONAL PRE-EMPTION PHASES ARE ACTIVATED WHILE IN PRE-EMPTION, THE ORIGINAL PRE-EMPTION PHASE SHALL TIME OUT BEFORE PROCEEDING TO THE NEXT PRE-EMPTION PHASE.
- UPON COMPLETION OF PRE-EMPTION PHASE 2,4,6 OR 8, IN RETURNING TO NORMAL OPERATION, PHASE 2+6 INTERVAL 1 SHALL FOLLOW.
- IN EMERGENCY PRE-EMPTION, NO PRIORITY SHALL BE ESTABLISHED. PRE-EMPTION SHALL BE A "FIRST COME, FIRST SERVE" OPERATION.
- LOCATION OF EMERGENCY VEHICLE DETECTORS ARE TO BE FIELD ADJUSTED TO ACHIEVE MAXIMUM OPERATION.

LEGEND

25' MA	MAST ARM/IDENTIFYING LENGTH
Ⓞ	PEDESTAL POLE
Ⓞ	PUSHBUTTON POLE
Ⓞ	VEHICULAR SIGNAL HEAD/BACKPLATE/TUNNEL VISOR/DIRECTIONAL ARROW/IDENTIFYING NUMBER
Ⓞ	PEDESTRIAN SIGNAL HEAD/IDENTIFYING NUMBER
Ⓞ	PEDESTRIAN PUSHBUTTON AND SIGN/IDENTIFYING LETTER
Ⓞ	AREA OF DETECTION
Ⓞ	DETECTABLE WARNING SURFACE
Ⓞ	EMERGENCY PRE-EMPTION DETECTOR
Ⓞ	EMERGENCY PRE-EMPTION FLASHING BEACON
Ⓞ	CONTROLLER CABINET
Ⓞ	DEPRESSED CURB
Ⓞ	LUMINAIRE/IDENTIFYING LENGTH
Ⓞ	VIDEO DETECTOR
Ⓞ	UTILITY POLE
Ⓞ	PHASE NUMBER

SYSTEM PERMIT # 1-0053

PENNSYLVANIA DEPARTMENT OF TRANSPORTATION
ENGINEERING DISTRICT 6-0

COUNTY: CHESTER
MUNICIPALITY: PHOENIXVILLE BOROUGH
INTERSECTION: BRIDGE STREET (SR 0113) AND HALL STREET

REVIEWED: **NOT FOR CONSTRUCTION**
CONTRACTOR TO OBTAIN SIGNED SIGNAL PLANS

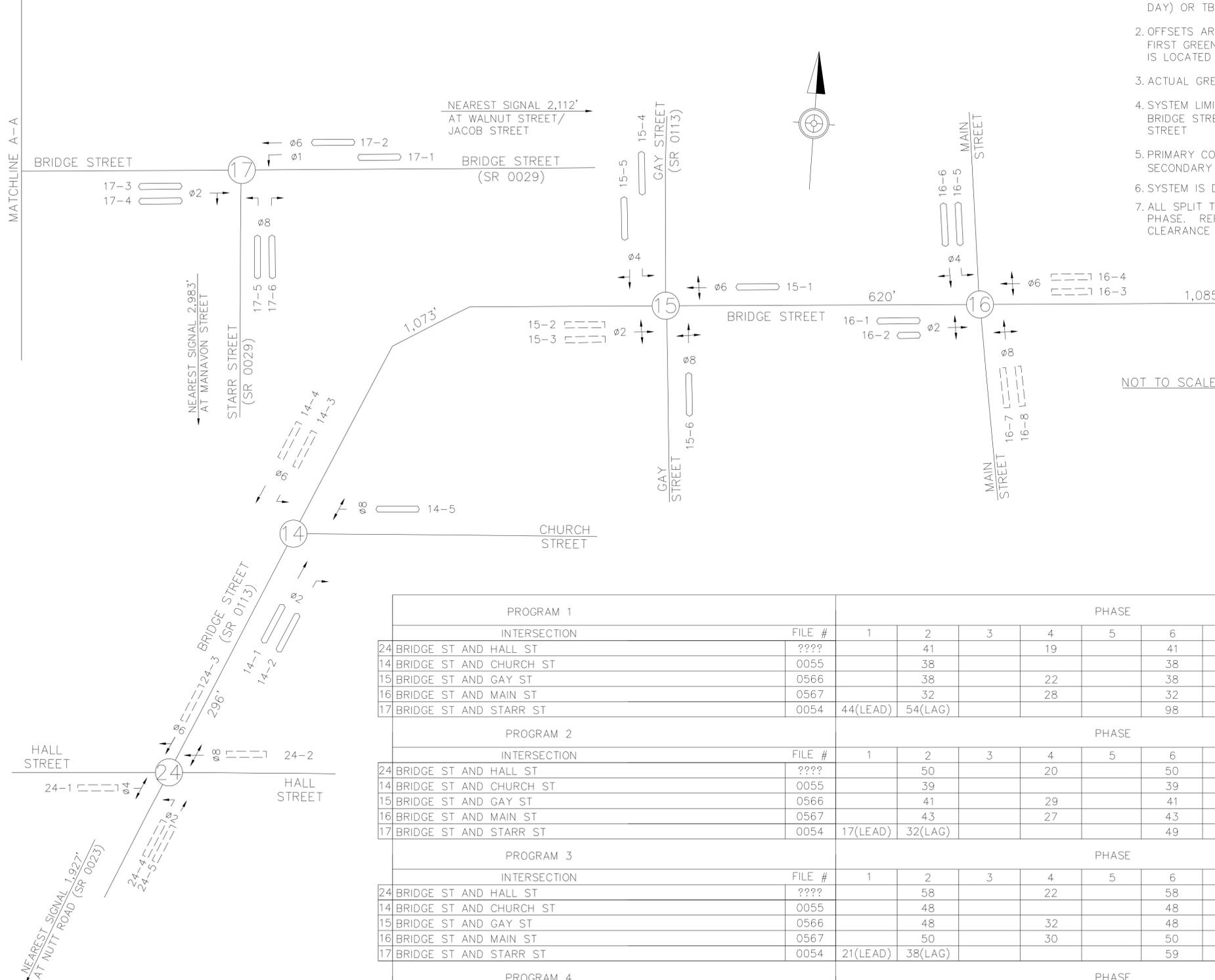
RECOMMENDED: _____ DATE _____

DISTRICT TRAFFIC ENGINEER _____ DATE _____

NO	REVISION	DES/REVW	DATE	REVW	DATE	RECOM	DATE
1							
2							
3							
4							
5							
6							
7							
8							

SHEET 2 OF 2 PERMIT # 62-???? FILE # ???? 0 25 50 FEET

SUBSYSTEM 5



SYSTEM NOTES

- PROGRAM TO BE SELECTED BY CLOSED LOOP SYSTEM (TIME OF DAY) OR TBC BACKUP.
- OFFSETS ARE REFERENCED TO THE BEGINNING OF TS2 - GREEN FIRST GREEN) ON BRIDGE STREET. THE MASTER CONTROLLER IS LOCATED AT BRIDGE STREET AND STARR STREET.
- ACTUAL GREEN TIME DETERMINED BY CYCLE LENGTH.
- SYSTEM LIMITS : BRIDGE STREET (5 INTERSECTIONS) - HALL STREET TO STARR STREET
- PRIMARY COORDINATION: FIBER OPTIC
SECONDARY COORDINATION: TBC (DEFAULT TO BACKUP TBC)
- SYSTEM IS DESIGNED FOR THE SYSTEM SOFTWARE: SIEMENS TACTICS
- ALL SPLIT TIMES INCLUDE YELLOW AND RED TIMES FOR A GIVEN PHASE. REFER TO SIGNAL PERMIT PLAN FOR MAX 1, CLEARANCE AND PEDESTRIAN TIMES.

NOT TO SCALE

WEEKLY PROGRAM CHART				
EVENT	DAY	TIME	PROGRAM	REMARKS
1	6,7	09:00	4	WEEKEND
2	6,7	19:00	4	WEEKEND
3	6,7	22:00	-	FREE
4	1-5	06:00	1	WEEKDAY AM
5	1-5	10:00	2	WEEKDAY MID
6	1-5	15:00	3	WEEKDAY PM
7	1-5	19:00	2	WEEKDAY EVENING
8	1-5	22:00	-	FREE

MONDAY = DAY 1

PROGRAM 1		PHASE									CYCLE	OFFSET 1
INTERSECTION	FILE #	1	2	3	4	5	6	7	8	9		
24 BRIDGE ST AND HALL ST	????		41		19		41		19		60	5
14 BRIDGE ST AND CHURCH ST	0055		38				38		22		60	0
15 BRIDGE ST AND GAY ST	0566		38		22		38		22		60	30
16 BRIDGE ST AND MAIN ST	0567		32		28		32		28		60	34
17 BRIDGE ST AND STARR ST	0054	44(LEAD)	54(LAG)				98		22		120	61
PROGRAM 2		PHASE									CYCLE	OFFSET 1
INTERSECTION	FILE #	1	2	3	4	5	6	7	8	9		
24 BRIDGE ST AND HALL ST	????		50		20		50		20		70	0
14 BRIDGE ST AND CHURCH ST	0055		39				39		31		70	16
15 BRIDGE ST AND GAY ST	0566		41		29		41		29		70	48
16 BRIDGE ST AND MAIN ST	0567		43		27		43		27		70	46
17 BRIDGE ST AND STARR ST	0054	17(LEAD)	32(LAG)				49		21		70	6
PROGRAM 3		PHASE									CYCLE	OFFSET 1
INTERSECTION	FILE #	1	2	3	4	5	6	7	8	9		
24 BRIDGE ST AND HALL ST	????		58				58		22		80	0
14 BRIDGE ST AND CHURCH ST	0055		48		22		48		32		80	46
15 BRIDGE ST AND GAY ST	0566		48		32		48		32		80	12
16 BRIDGE ST AND MAIN ST	0567		50		30		50		30		80	5
17 BRIDGE ST AND STARR ST	0054	21(LEAD)	38(LAG)				59		21		80	39
PROGRAM 4		PHASE									CYCLE	OFFSET 1
INTERSECTION	FILE #	1	2	3	4	5	6	7	8	9		
24 BRIDGE ST AND HALL ST	????		50		20		50		20		70	0
14 BRIDGE ST AND CHURCH ST	0055		39				39		31		70	16
15 BRIDGE ST AND GAY ST	0566		41		29		41		29		70	48
16 BRIDGE ST AND MAIN ST	0567		43		27		43		27		70	46
17 BRIDGE ST AND STARR ST	0054	17(LEAD)	32(LAG)				49		21		70	6
PROGRAM 5		PHASE									CYCLE	OFFSET 1
INTERSECTION	FILE #	1	2	3	4	5	6	7	8	9		
24 BRIDGE ST AND HALL ST	????		50		20		50		20		70	0
14 BRIDGE ST AND CHURCH ST	0055		39				39		31		70	16
15 BRIDGE ST AND GAY ST	0566		41		29		41		29		70	48
16 BRIDGE ST AND MAIN ST	0567		43		27		43		27		70	48
17 BRIDGE ST AND STARR ST	0054	17(LEAD)	32(LAG)				49		21		70	6

GENERAL NOTES

- NO MODIFICATIONS OF THIS INSTALLATION ARE PERMITTED UNLESS PRIOR APPROVAL IS GRANTED IN WRITING BY A REPRESENTATIVE OF THE DEPARTMENT OF TRANSPORTATION.
- REFER TO TRAFFIC SIGNAL PERMIT DRAWING FOR INDIVIDUAL INTERSECTION OPERATION, GEOMETRY, PHASING AND CRITICAL TIMES.
- FOR CONSTRUCTION AND INSPECTION THE SYSTEM PERMIT SHOULD ALWAYS BE ACCOMPANIED WITH TRAFFIC SIGNAL PERMIT DRAWING.
- TEST THE SYSTEM AT LOCAL INTERSECTION LEVEL, SUBSYSTEM LEVEL MASTER CONTROLLER LEVEL AND PERSONAL COMPUTER REMOTE DIAL UP LEVEL.
- GATHER THE SYSTEM FAILURE CRITICAL ALARMS REPORT AND ARCHIVE THEM WHERE APPLICABLE.
- SET UP PENNDOT DISTRICT 6-0 COMPUTER WITH THE SYSTEM DATABASE AND GRAPHICS. MODIFY THE DATABASE AND GRAPHICS FOR SYSTEMS REVISIONS.
- ASSIGN LOOP DETECTORS AND PROGRAM THE CONTROLLERS TO GATHER TRAFFIC VOLUMES IN 15 MINUTE INTERVAL, WHERE APPLICABLE.
- EXACT LOCATION OF DETECTORS SHALL BE DETERMINED PRIOR TO INSTALLATION BY A REPRESENTATIVE OF PENNDOT.
- OBTAIN POLE ATTACHMENT PERMIT FOR AERIAL FIBER OPTIC INSTALLATION.
- MAINTAIN MASTER CONTROLLER COMMUNICATION SUCH AS PHONE DROPS.
- PRIOR TO INSTALLATION THE CONTRACTOR SHALL CONSULT WITH THE LOCAL OFFICIALS AND UTILITY COMPANIES TO RESOLVE ANY PROBLEMS WHICH MAY BE CREATED DUE TO THE LOCATION OF UTILITIES.

THIS DRAWING CANNOT BE USED AS A CONSTRUCTION DRAWING UNLESS THE PERMITTEE COMPLIES WITH THE LATEST PROVISIONS OF ACT 287, PREVENTION OF DAMAGE TO UNDERGROUND UTILITIES EFFECTIVE DATE DECEMBER 20, 1974.

WHEN LIQUID FUELS MONEY IS USED, SIGNAL INSTALLATION MUST CONFORM TO FORM 408 AND A COPY OF THE PROPOSED SPECIFICATIONS MUST BE SUBMITTED TO THE DISTRICT TRAFFIC UNIT FOR REVIEW PRIOR TO BIDDING.

PERMITTEE SHALL OBTAIN A HIGHWAY OCCUPANCY PERMIT FOR ANY CHANGES IN INTERSECTION GEOMETRY REGARDING EXCAVATION.

CONDUIT INSTALLED IN BITUMINOUS ROADWAY LESS THAN 5 YEARS OLD, OR CONCRETE ROADWAY REGARDLESS OF AGE, MUST BE BORED OR JACKED UNDER THE ROADWAY. INSTALL IN ACCORDANCE WITH TRAFFIC SIGNAL STANDARDS TC-7800 SERIES.

PENNSYLVANIA DEPARTMENT OF TRANSPORTATION
ENGINEERING DISTRICT 6-0

COUNTY: CHESTER
MUNICIPALITY: PHOENIXVILLE BOROUGH

INTERSECTION: BRIDGE STREET (SR 0113/SR 1040)
TRAFFIC SIGNAL SYSTEM, SUBSYSTEM #5

REVIEWED: **NOT FOR CONSTRUCTION**
CONTRACTOR TO OBTAIN SIGNED SIGNAL PLANS

RECOMMENDED:
PAUL LUTZ 12/8/2010
MUNICIPAL SIGNALS ENGINEER DATE
LOUIS BELMONTE 12/8/2010
DISTRICT TRAFFIC ENGINEER DATE

NO.	REVISION	DES. REVW.	DATE	REVW.	DATE	RECOM.	DATE
1	REV INT #1 LANE CONFIG & TIMINGS	McM	3/4/16	LUTZ	3/4/16	APatel	3/7/16
2	ADDITION OF INTER. #22, 23	McM	4/19/16	LUTZ	6/13/16	APatel	6/13/16
3	ADD. INTERSECTION 1a	BURNS	4/19/16	LUTZ	6/13/16	APatel	6/13/16
4	REV. INT. #22 FOR PHASES 1,5,7	McM	1/18/17	LUTZ	4/9/18	APatel	4/11/18
5	AS-BUILT RETIMING, ADD PHASE FOR INT #1	McM	11/8/19	LUTZ	11/25/19	APatel	11/25/19
6	REVISE INTERSECTION #9	McM	4/22/22			LUTZ	7/19/22
7	ADD INTERSECTION #24	TPD	9/8/22				
8							

Appendix C

PennDOT TIRe Data

Bridge Street (S.R. 0113)

Nutt Road (S.R. 0023)

AAADT >= 10,000 < 25,000

AAADT >= 10,000 < 25,000

Result: 1 of 1

Result: 1 of 1

Objectid: 2837148

Objectid: 2836735

Route: 0113

Route: 0023

County: 15

County: 15

District: 06

District: 06

Jurisdiction: 1

Jurisdiction: 1

Segment: 0280

Segment: 0420

Length: 1577

Length: 1723

Sequence Number: 3000

Sequence Number: 12400

Sub Route: 10

Sub Route: 0

Year Built: 1923

Year Built: 1928

Year Resurfaced Last: 2016

Year Resurfaced Last: 2002

Direction: B

Direction: B

Facility Type: 2

Facility Type: 2

Roadway Width: 32

Roadway Width: 33

Surface Type: 61

Surface Type: 62

Lane Count: 2

Lane Count: 3

Parking Lanes:

Parking Lanes:

Divisor Type: 0

Divisor Type: 0

Divisor Width: 0

Divisor Width: 0

Condition Date: 2022 - 05 - 17

Condition Date: 2022 - 05 - 18

Iri: 164

Iri: 237

Pavement Condition Rate:

Pavement Condition Rate:

Avg. Daily Traffic: 10847

Avg. Daily Traffic: 22762

Access Control: 3

Access Control: 3

Toll Indicator: 0

Toll Indicator: 0

Street Name: BRIDGE ST

Street Name: NUTT RD

Main Street

AADT >= 2,000 < 10,000

Result: 1 of 1

Objectid: 2895356

Route: G649

County: 15

District: 06

Jurisdiction: 5

Segment: 0010

Length: 844

Sequence Number: 1

Sub Route: 0

Year Built: 0

Year Resurfaced Last: 0

Direction: B

Facility Type: 2

Roadway Width: 34

Surface Type: 52

Lane Count: 2

Parking Lanes:

Divisor Type: 0

Divisor Width: 0

Condition Date:

Iri: 252

Pavement Condition Rate:

Avg. Daily Traffic: 6457

Access Control: 3

Toll Indicator: 0

Street Name: MAIN ST

Appendix D

Manual Turning Movement Counts



Transportation Engineers & Planners
425 Commerce Drive, Suite 200

Fort Washington, Pennsylvania, United States 19034
215-283-9444

Count Name: 822349.22 Phoenixville
Site Code:
Start Date: 05/17/2022
Page No: 1

Turning Movement Data

Start Time	Main St Southbound						Smithworks Blvd Westbound						Main St Northbound						Paradise St Eastbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
6:00	0	25	0	0	0	25	5	0	0	0	0	5	2	13	0	0	0	15	0	0	2	0	0	2	47
6:15	1	28	1	0	0	30	16	0	0	0	1	16	3	5	0	0	0	8	0	0	2	0	0	2	56
6:30	0	49	4	0	0	53	11	0	2	0	0	13	5	9	0	0	0	14	0	0	3	0	1	3	83
6:45	0	58	3	0	0	61	6	0	0	0	0	6	12	18	1	0	0	31	0	0	3	0	1	3	101
Hourly Total	1	160	8	0	0	169	38	0	2	0	1	40	22	45	1	0	0	68	0	0	10	0	2	10	287
7:00	0	71	0	0	0	71	12	0	0	1	1	13	8	20	3	0	0	31	1	0	14	0	3	15	130
7:15	1	65	3	0	0	69	17	0	2	0	0	19	10	16	3	0	0	29	0	1	16	0	3	17	134
7:30	0	91	2	0	0	93	13	0	3	0	4	16	13	27	1	1	2	42	1	0	11	0	2	12	163
7:45	0	93	1	0	1	94	22	0	1	0	3	23	13	38	4	0	3	55	1	0	12	0	0	13	185
Hourly Total	1	320	6	0	1	327	64	0	6	1	8	71	44	101	11	1	5	157	3	1	53	0	8	57	612
8:00	2	69	1	1	0	73	16	1	0	0	3	17	11	17	2	0	6	30	0	0	20	0	0	20	140
8:15	2	61	2	0	1	65	14	1	2	0	2	17	5	22	6	0	1	33	0	0	3	0	4	3	118
8:30	1	65	2	0	0	68	16	0	3	0	0	19	7	25	4	0	0	36	0	0	11	0	1	11	134
8:45	2	58	2	0	0	62	10	2	2	0	1	14	10	33	8	0	2	51	1	0	10	0	5	11	138
Hourly Total	7	253	7	1	1	268	56	4	7	0	6	67	33	97	20	0	9	150	1	0	44	0	10	45	530
9:00	2	39	1	0	0	42	8	0	1	0	3	9	7	24	3	0	3	34	1	0	11	0	4	12	97
9:15	0	32	0	0	0	32	12	0	0	0	1	12	9	18	4	0	3	31	0	0	12	0	3	12	87
9:30	1	33	1	0	0	35	6	0	2	0	3	8	10	30	5	0	0	45	0	0	12	0	3	12	100
9:45	1	25	1	0	0	27	3	0	1	0	2	4	16	26	2	0	1	44	2	0	12	0	6	14	89
Hourly Total	4	129	3	0	0	136	29	0	4	0	9	33	42	98	14	0	7	154	3	0	47	0	16	50	373
10:00	1	19	3	0	0	23	9	0	0	0	1	9	8	17	3	0	0	28	0	0	11	0	6	11	71
10:15	1	31	1	0	0	33	7	1	2	0	0	10	4	17	8	0	0	29	3	0	9	0	9	12	84
10:30	1	25	1	0	1	27	5	0	2	0	1	7	15	25	9	2	0	51	1	0	15	0	5	16	101
10:45	0	36	0	0	0	36	11	0	3	0	7	14	6	29	5	0	4	40	2	0	8	0	6	10	100
Hourly Total	3	111	5	0	1	119	32	1	7	0	9	40	33	88	25	2	4	148	6	0	43	0	26	49	356
11:00	1	36	2	0	0	39	6	0	2	0	1	8	6	29	3	0	1	38	1	0	10	0	2	11	96
11:15	1	25	1	0	0	27	7	0	1	0	3	8	8	28	7	0	5	43	3	0	11	1	4	15	93
11:30	0	31	0	0	0	31	9	0	3	0	1	12	12	21	5	0	5	38	2	0	5	0	3	7	88
11:45	4	40	2	0	0	46	14	0	1	0	1	15	11	27	7	0	2	45	1	0	14	0	2	15	121
Hourly Total	6	132	5	0	0	143	36	0	7	0	6	43	37	105	22	0	13	164	7	0	40	1	11	48	398
12:00	1	35	2	0	0	38	6	0	2	0	1	8	13	38	8	0	1	59	0	0	14	0	13	14	119
12:15	3	33	1	0	0	37	4	0	4	0	2	8	16	29	8	0	1	53	0	0	10	0	10	10	108
12:30	3	39	2	0	2	44	10	0	2	0	6	12	9	33	9	0	6	51	2	0	10	0	9	12	119
12:45	3	48	0	0	2	51	4	0	1	0	3	5	8	47	5	0	6	60	3	1	11	1	10	16	132
Hourly Total	10	155	5	0	4	170	24	0	9	0	12	33	46	147	30	0	14	223	5	1	45	1	42	52	478

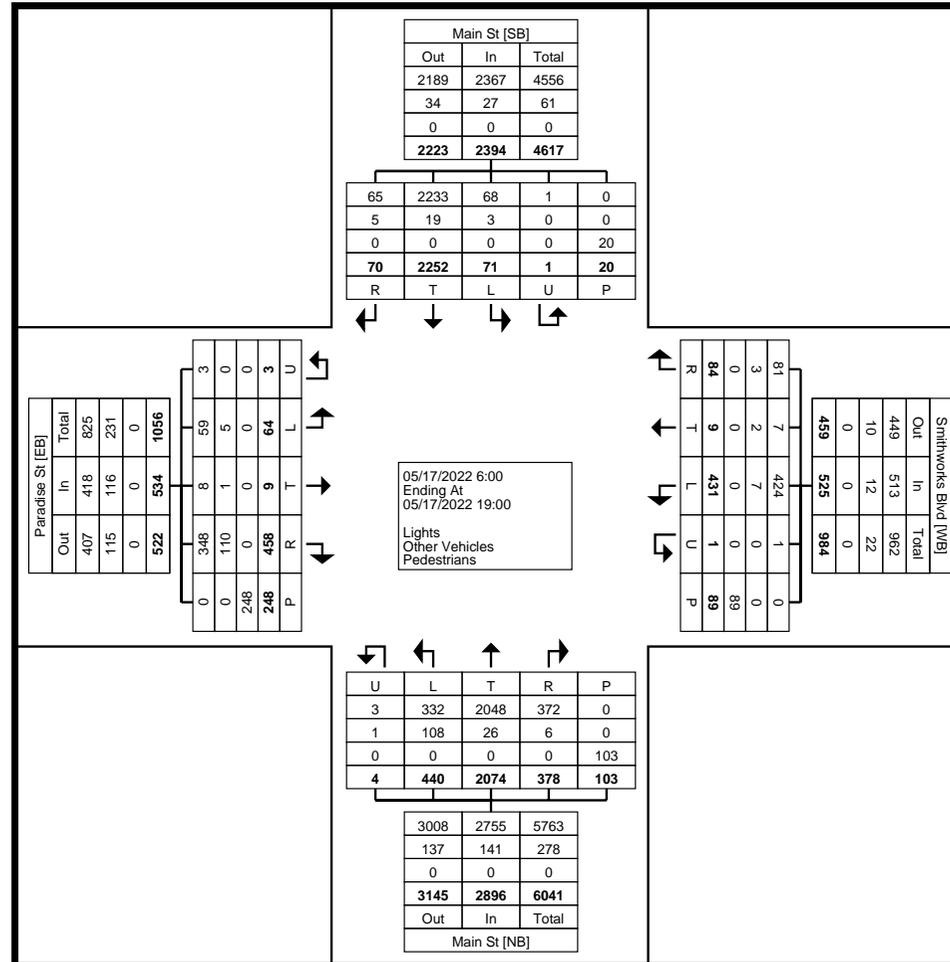
13:00	4	35	0	0	0	39	5	0	3	0	1	8	12	51	8	0	1	71	2	0	10	0	6	12	130
13:15	2	32	3	0	0	37	10	1	0	0	4	11	3	30	5	0	1	38	1	0	10	0	3	11	97
13:30	0	32	1	0	0	33	8	0	1	0	2	9	8	36	5	0	2	49	3	0	7	1	3	11	102
13:45	1	41	2	0	0	44	8	1	1	0	0	10	7	27	6	0	2	40	2	0	8	0	3	10	104
Hourly Total	7	140	6	0	0	153	31	2	5	0	7	38	30	144	24	0	6	198	8	0	35	1	15	44	433
14:00	1	33	3	0	0	37	4	0	1	0	0	5	13	30	2	0	0	45	2	0	4	0	3	6	93
14:15	1	32	0	0	0	33	4	0	1	0	3	5	11	41	8	0	4	60	2	0	10	0	4	12	110
14:30	2	46	0	0	1	48	3	0	1	0	1	4	1	25	14	0	0	40	0	0	11	0	4	11	103
14:45	1	36	1	0	1	38	8	0	3	0	0	11	4	51	9	0	1	64	0	1	11	0	6	12	125
Hourly Total	5	147	4	0	2	156	19	0	6	0	4	25	29	147	33	0	5	209	4	1	36	0	17	41	431
15:00	1	41	0	0	3	42	4	0	0	0	1	4	5	57	6	0	6	68	1	0	12	0	8	13	127
15:15	1	32	3	0	0	36	5	0	0	0	1	5	5	47	6	0	0	58	0	0	4	0	4	4	103
15:30	1	47	1	0	0	49	7	0	1	0	1	8	5	60	8	0	1	73	3	0	11	0	5	14	144
15:45	1	37	1	0	0	39	4	1	1	0	2	6	5	56	8	0	3	69	3	0	9	0	5	12	126
Hourly Total	4	157	5	0	3	166	20	1	2	0	5	23	20	220	28	0	10	268	7	0	36	0	22	43	500
16:00	3	46	3	0	0	52	5	0	2	0	1	7	6	76	7	0	2	89	1	1	10	0	3	12	160
16:15	0	31	2	0	0	33	3	0	1	0	0	4	4	77	18	0	3	99	5	0	6	0	5	11	147
16:30	2	46	1	0	0	49	5	0	4	0	1	9	6	77	13	0	0	96	2	1	6	0	5	9	163
16:45	2	46	3	0	0	51	6	0	2	0	0	8	4	82	15	0	2	101	4	1	3	0	5	8	168
Hourly Total	7	169	9	0	0	185	19	0	9	0	2	28	20	312	53	0	7	385	12	3	25	0	18	40	638
17:00	1	52	1	0	0	54	6	0	5	0	2	11	9	86	27	1	4	123	2	0	3	0	7	5	193
17:15	4	51	1	0	1	56	6	0	1	0	0	7	17	70	11	0	0	98	0	2	6	0	0	8	169
17:30	1	51	2	0	1	54	10	0	2	0	5	12	12	79	17	0	6	108	0	0	10	0	7	10	184
17:45	3	54	0	0	3	57	11	0	2	0	1	13	8	71	10	0	4	89	0	0	5	0	3	5	164
Hourly Total	9	208	4	0	5	221	33	0	10	0	8	43	46	306	65	1	14	418	2	2	24	0	17	28	710
18:00	2	46	1	0	2	49	6	0	4	0	3	10	15	70	16	0	1	101	2	0	4	0	6	6	166
18:15	1	51	1	0	1	53	9	1	5	0	3	15	10	66	12	0	1	88	2	1	10	0	4	13	169
18:30	3	35	0	0	0	38	7	0	1	0	3	8	9	66	12	0	4	87	1	0	4	0	11	5	138
18:45	1	39	1	0	0	41	8	0	0	0	3	8	4	62	12	0	3	78	1	0	2	0	23	3	130
Hourly Total	7	171	3	0	3	181	30	1	10	0	12	41	38	264	52	0	9	354	6	1	20	0	44	27	603
Grand Total	71	2252	70	1	20	2394	431	9	84	1	89	525	440	2074	378	4	103	2896	64	9	458	3	248	534	6349
Approach %	3.0	94.1	2.9	0.0	-	-	82.1	1.7	16.0	0.2	-	-	15.2	71.6	13.1	0.1	-	-	12.0	1.7	85.8	0.6	-	-	-
Total %	1.1	35.5	1.1	0.0	-	37.7	6.8	0.1	1.3	0.0	-	8.3	6.9	32.7	6.0	0.1	-	45.6	1.0	0.1	7.2	0.0	-	8.4	-
Lights	68	2233	65	1	-	2367	424	7	81	1	-	513	332	2048	372	3	-	2755	59	8	348	3	-	418	6053
% Lights	95.8	99.2	92.9	100.0	-	98.9	98.4	77.8	96.4	100.0	-	97.7	75.5	98.7	98.4	75.0	-	95.1	92.2	88.9	76.0	100.0	-	78.3	95.3
Other Vehicles	3	19	5	0	-	27	7	2	3	0	-	12	108	26	6	1	-	141	5	1	110	0	-	116	296
% Other Vehicles	4.2	0.8	7.1	0.0	-	1.1	1.6	22.2	3.6	0.0	-	2.3	24.5	1.3	1.6	25.0	-	4.9	7.8	11.1	24.0	0.0	-	21.7	4.7
Pedestrians	-	-	-	-	20	-	-	-	-	-	89	-	-	-	-	-	103	-	-	-	-	-	248	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-



Transportation Engineers & Planners
425 Commerce Drive, Suite 200

Fort Washington, Pennsylvania, United States 19034
215-283-9444

Count Name: 822349.22 Phoenixville
Site Code:
Start Date: 05/17/2022
Page No: 3



Turning Movement Data Plot



Transportation Engineers & Planners
425 Commerce Drive, Suite 200

Fort Washington, Pennsylvania, United States 19034
215-283-9444

Count Name: 822349.22 Phoenixville
Site Code:
Start Date: 05/17/2022
Page No: 4

Turning Movement Peak Hour Data (7:15)

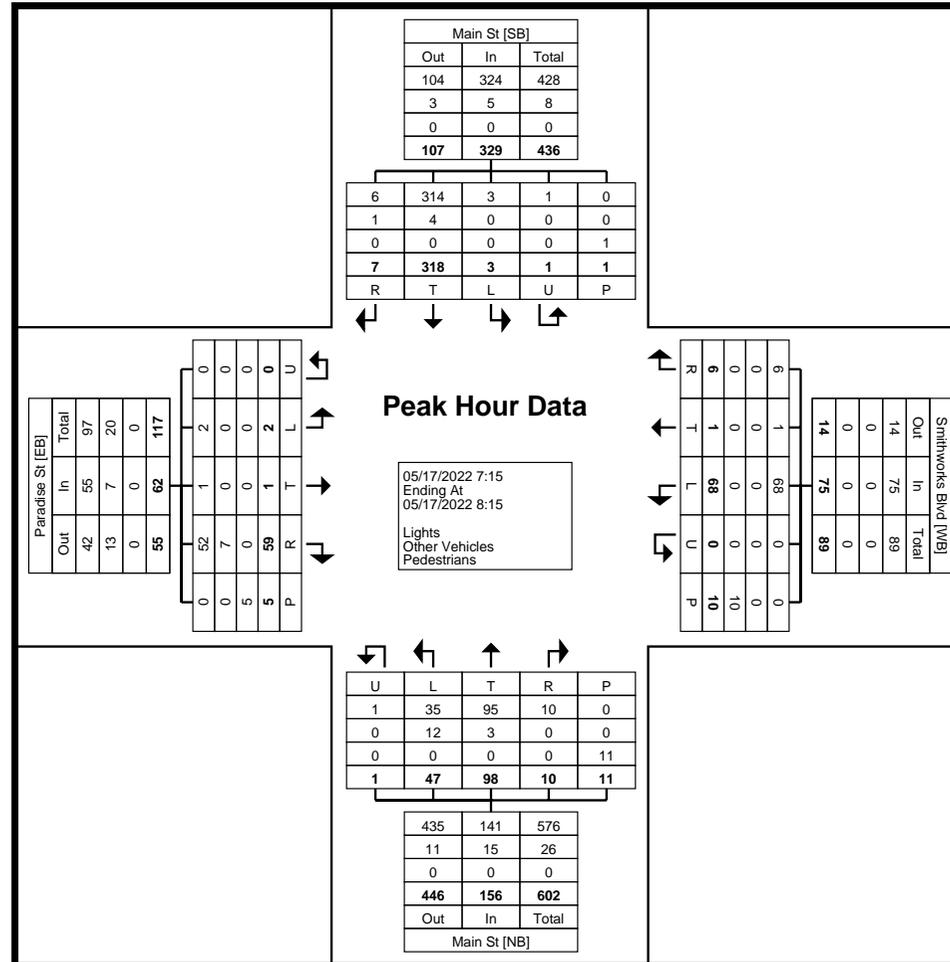
Start Time	Main St Southbound						Smithworks Blvd Westbound						Main St Northbound						Paradise St Eastbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
7:15	1	65	3	0	0	69	17	0	2	0	0	19	10	16	3	0	0	29	0	1	16	0	3	17	134
7:30	0	91	2	0	0	93	13	0	3	0	4	16	13	27	1	1	2	42	1	0	11	0	2	12	163
7:45	0	93	1	0	1	94	22	0	1	0	3	23	13	38	4	0	3	55	1	0	12	0	0	13	185
8:00	2	69	1	1	0	73	16	1	0	0	3	17	11	17	2	0	6	30	0	0	20	0	0	20	140
Total	3	318	7	1	1	329	68	1	6	0	10	75	47	98	10	1	11	156	2	1	59	0	5	62	622
Approach %	0.9	96.7	2.1	0.3	-	-	90.7	1.3	8.0	0.0	-	-	30.1	62.8	6.4	0.6	-	-	3.2	1.6	95.2	0.0	-	-	-
Total %	0.5	51.1	1.1	0.2	-	52.9	10.9	0.2	1.0	0.0	-	12.1	7.6	15.8	1.6	0.2	-	25.1	0.3	0.2	9.5	0.0	-	10.0	-
PHF	0.375	0.855	0.583	0.250	-	0.875	0.773	0.250	0.500	0.000	-	0.815	0.904	0.645	0.625	0.250	-	0.709	0.500	0.250	0.738	0.000	-	0.775	0.841
Lights	3	314	6	1	-	324	68	1	6	0	-	75	35	95	10	1	-	141	2	1	52	0	-	55	595
% Lights	100.0	98.7	85.7	100.0	-	98.5	100.0	100.0	100.0	-	-	100.0	74.5	96.9	100.0	100.0	-	90.4	100.0	100.0	88.1	-	-	88.7	95.7
Other Vehicles	0	4	1	0	-	5	0	0	0	0	-	0	12	3	0	0	-	15	0	0	7	0	-	7	27
% Other Vehicles	0.0	1.3	14.3	0.0	-	1.5	0.0	0.0	0.0	-	-	0.0	25.5	3.1	0.0	0.0	-	9.6	0.0	0.0	11.9	-	-	11.3	4.3
Pedestrians	-	-	-	-	1	-	-	-	-	-	10	-	-	-	-	-	11	-	-	-	-	-	5	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-



Transportation Engineers & Planners
425 Commerce Drive, Suite 200

Fort Washington, Pennsylvania, United States 19034
215-283-9444

Count Name: 822349.22 Phoenixville
Site Code:
Start Date: 05/17/2022
Page No: 5



Turning Movement Peak Hour Data Plot (7:15)



Transportation Engineers & Planners
425 Commerce Drive, Suite 200

Fort Washington, Pennsylvania, United States 19034
215-283-9444

Count Name: 822349.22 Phoenixville
Site Code:
Start Date: 05/17/2022
Page No: 6

Turning Movement Peak Hour Data (16:45)

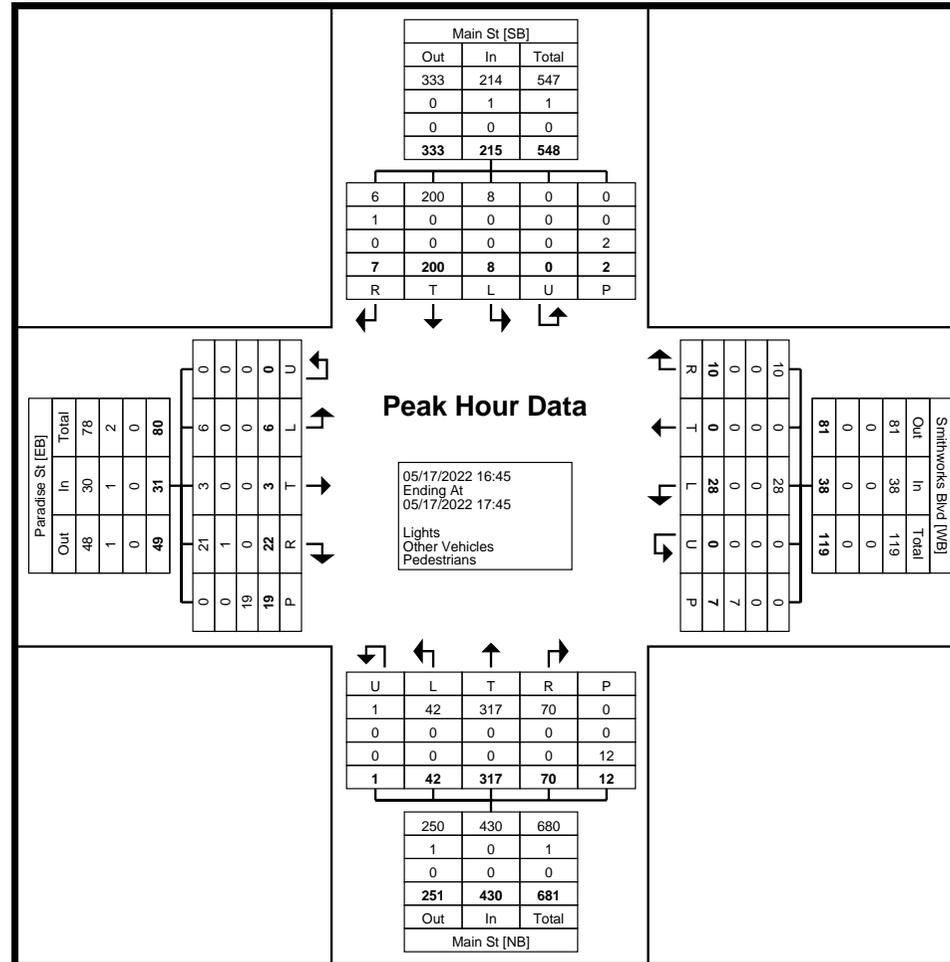
Start Time	Main St Southbound						Smithworks Blvd Westbound						Main St Northbound						Paradise St Eastbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
16:45	2	46	3	0	0	51	6	0	2	0	0	8	4	82	15	0	2	101	4	1	3	0	5	8	168
17:00	1	52	1	0	0	54	6	0	5	0	2	11	9	86	27	1	4	123	2	0	3	0	7	5	193
17:15	4	51	1	0	1	56	6	0	1	0	0	7	17	70	11	0	0	98	0	2	6	0	0	8	169
17:30	1	51	2	0	1	54	10	0	2	0	5	12	12	79	17	0	6	108	0	0	10	0	7	10	184
Total	8	200	7	0	2	215	28	0	10	0	7	38	42	317	70	1	12	430	6	3	22	0	19	31	714
Approach %	3.7	93.0	3.3	0.0	-	-	73.7	0.0	26.3	0.0	-	-	9.8	73.7	16.3	0.2	-	-	19.4	9.7	71.0	0.0	-	-	-
Total %	1.1	28.0	1.0	0.0	-	30.1	3.9	0.0	1.4	0.0	-	5.3	5.9	44.4	9.8	0.1	-	60.2	0.8	0.4	3.1	0.0	-	4.3	-
PHF	0.500	0.962	0.583	0.000	-	0.960	0.700	0.000	0.500	0.000	-	0.792	0.618	0.922	0.648	0.250	-	0.874	0.375	0.375	0.550	0.000	-	0.775	0.925
Lights	8	200	6	0	-	214	28	0	10	0	-	38	42	317	70	1	-	430	6	3	21	0	-	30	712
% Lights	100.0	100.0	85.7	-	-	99.5	100.0	-	100.0	-	-	100.0	100.0	100.0	100.0	100.0	-	100.0	100.0	100.0	95.5	-	-	96.8	99.7
Other Vehicles	0	0	1	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	0	0	1	0	-	1	2
% Other Vehicles	0.0	0.0	14.3	-	-	0.5	0.0	-	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	4.5	-	-	3.2	0.3
Pedestrians	-	-	-	-	2	-	-	-	-	-	7	-	-	-	-	-	12	-	-	-	-	-	19	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-



Transportation Engineers & Planners
425 Commerce Drive, Suite 200

Fort Washington, Pennsylvania, United States 19034
215-283-9444

Count Name: 822349.22 Phoenixville
Site Code:
Start Date: 05/17/2022
Page No: 7



Turning Movement Peak Hour Data Plot (16:45)



Transportation Engineers & Planners
425 Commerce Drive, Suite 200

Fort Washington, Pennsylvania, United States 19034
215-283-9444

Count Name: 822349.11 Phoenixville
Site Code:
Start Date: 05/17/2022
Page No: 1

Turning Movement Data

Start Time	Paradise St Southbound					Nutt Rd (Rt 23) Westbound					Nutt Rd (Rt 23) Eastbound					Int. Total
	Left	Right	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	
6:00	0	1	0	0	1	75	1	0	0	76	1	134	0	0	135	212
6:15	0	3	0	0	3	92	1	0	0	93	2	158	0	0	160	256
6:30	0	0	0	1	0	125	2	0	0	127	3	199	0	0	202	329
6:45	0	2	0	0	2	130	4	0	0	134	2	206	0	0	208	344
Hourly Total	0	6	0	1	6	422	8	0	0	430	8	697	0	0	705	1141
7:00	0	1	0	0	1	149	1	0	0	150	5	235	0	0	240	391
7:15	0	1	0	0	1	168	1	0	0	169	3	242	0	0	245	415
7:30	1	2	0	1	3	164	0	0	0	164	4	284	0	0	288	455
7:45	2	2	0	2	4	196	0	0	0	196	2	274	0	0	276	476
Hourly Total	3	6	0	3	9	677	2	0	0	679	14	1035	0	0	1049	1737
8:00	0	2	0	0	2	192	2	0	0	194	2	248	0	0	250	446
8:15	0	5	0	0	5	159	1	0	0	160	0	252	0	0	252	417
8:30	0	0	0	0	0	175	2	0	0	177	2	250	0	0	252	429
8:45	1	2	0	2	3	171	0	0	0	171	3	256	0	0	259	433
Hourly Total	1	9	0	2	10	697	5	0	0	702	7	1006	0	0	1013	1725
9:00	1	3	0	1	4	187	1	0	0	188	1	207	0	0	208	400
9:15	1	2	0	0	3	171	2	0	0	173	3	198	0	0	201	377
9:30	2	4	0	3	6	168	3	0	0	171	2	203	0	0	205	382
9:45	3	8	0	2	11	159	2	0	1	161	4	192	0	0	196	368
Hourly Total	7	17	0	6	24	685	8	0	1	693	10	800	0	0	810	1527
10:00	1	5	0	1	6	192	1	0	0	193	1	163	0	0	164	363
10:15	0	2	0	1	2	179	0	0	0	179	4	168	0	0	172	353
10:30	3	4	0	2	7	183	1	0	0	184	6	205	0	0	211	402
10:45	1	5	0	0	6	169	1	0	0	170	2	200	0	0	202	378
Hourly Total	5	16	0	4	21	723	3	0	0	726	13	736	0	0	749	1496
11:00	0	2	0	0	2	189	3	0	0	192	5	185	0	0	190	384
11:15	0	3	0	2	3	226	2	0	0	228	0	198	0	0	198	429
11:30	4	6	0	1	10	207	1	0	0	208	4	182	0	0	186	404
11:45	1	5	0	1	6	205	1	0	0	206	2	195	0	0	197	409
Hourly Total	5	16	0	4	21	827	7	0	0	834	11	760	0	0	771	1626
12:00	2	3	0	6	5	236	1	0	0	237	4	220	0	0	224	466
12:15	2	7	0	4	9	224	2	0	0	226	4	213	0	0	217	452
12:30	1	2	0	4	3	210	2	0	0	212	6	213	1	0	220	435
12:45	0	9	0	2	9	251	5	0	0	256	3	220	0	0	223	488
Hourly Total	5	21	0	16	26	921	10	0	0	931	17	866	1	0	884	1841
13:00	0	8	0	1	8	226	0	0	1	226	9	233	0	0	242	476

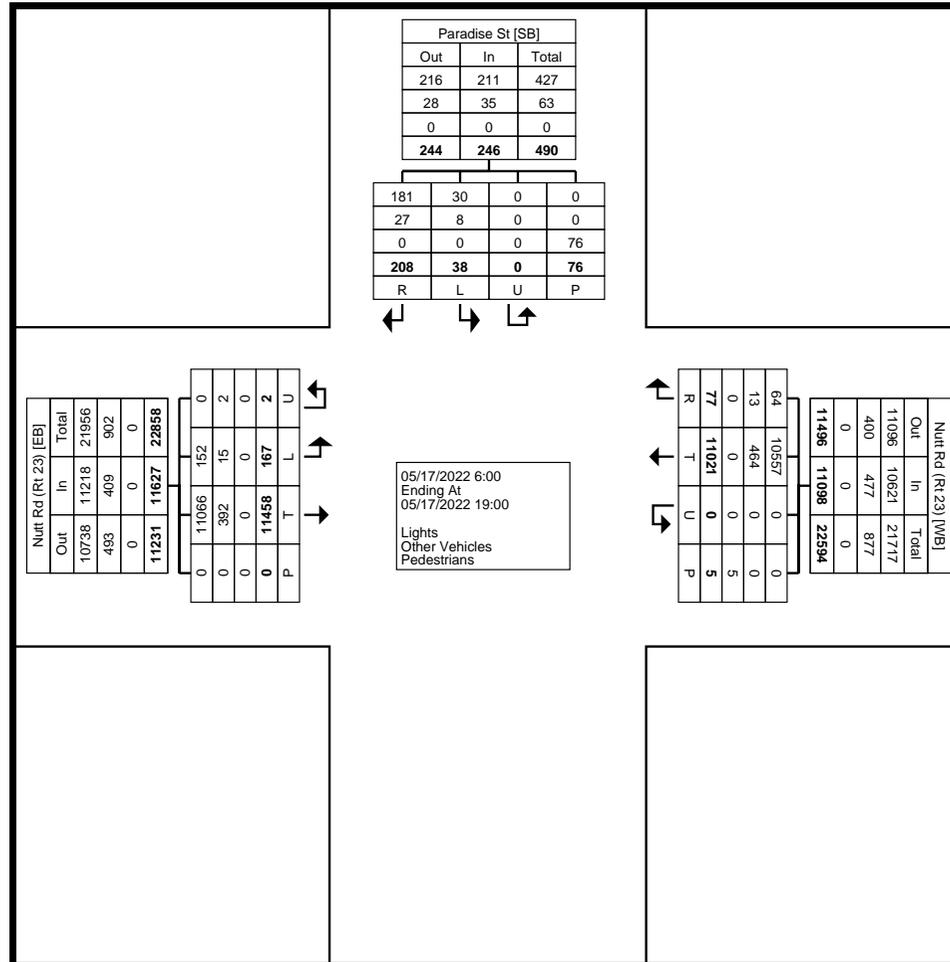
13:15	1	4	0	2	5	207	2	0	1	209	3	234	0	0	237	451
13:30	1	6	0	1	7	203	0	0	0	203	4	209	1	0	214	424
13:45	0	4	0	0	4	225	1	0	0	226	1	207	0	0	208	438
Hourly Total	2	22	0	4	24	861	3	0	2	864	17	883	1	0	901	1789
14:00	0	2	0	2	2	228	1	0	0	229	3	225	0	0	228	459
14:15	1	9	0	4	10	232	5	0	0	237	10	224	0	0	234	481
14:30	1	4	0	0	5	235	3	0	0	238	4	243	0	0	247	490
14:45	0	1	0	3	1	247	0	0	1	247	3	214	0	0	217	465
Hourly Total	2	16	0	9	18	942	9	0	1	951	20	906	0	0	926	1895
15:00	2	6	0	1	8	244	2	0	0	246	4	221	0	0	225	479
15:15	0	4	0	0	4	258	1	0	0	259	2	206	0	0	208	471
15:30	0	7	0	1	7	293	1	0	0	294	3	239	0	0	242	543
15:45	0	4	0	0	4	284	2	0	0	286	0	230	0	0	230	520
Hourly Total	2	21	0	2	23	1079	6	0	0	1085	9	896	0	0	905	2013
16:00	0	6	0	4	6	230	3	0	0	233	1	246	0	0	247	486
16:15	0	8	0	1	8	276	0	0	0	276	5	247	0	0	252	536
16:30	0	5	0	0	5	300	0	0	0	300	2	235	0	0	237	542
16:45	0	5	0	0	5	298	0	0	0	298	2	253	0	0	255	558
Hourly Total	0	24	0	5	24	1104	3	0	0	1107	10	981	0	0	991	2122
17:00	0	5	0	4	5	294	0	0	0	294	1	263	0	0	264	563
17:15	0	4	0	1	4	283	4	0	0	287	5	236	0	0	241	532
17:30	0	3	0	1	3	305	2	0	0	307	2	267	0	0	269	579
17:45	0	8	0	1	8	249	2	0	0	251	6	232	0	0	238	497
Hourly Total	0	20	0	7	20	1131	8	0	0	1139	14	998	0	0	1012	2171
18:00	1	3	0	1	4	250	2	0	0	252	5	239	0	0	244	500
18:15	4	7	0	5	11	226	1	0	1	227	3	241	0	0	244	482
18:30	1	1	0	4	2	235	2	0	0	237	6	201	0	0	207	446
18:45	0	3	0	3	3	241	0	0	0	241	3	213	0	0	216	460
Hourly Total	6	14	0	13	20	952	5	0	1	957	17	894	0	0	911	1888
Grand Total	38	208	0	76	246	11021	77	0	5	11098	167	11458	2	0	11627	22971
Approach %	15.4	84.6	0.0	-	-	99.3	0.7	0.0	-	-	1.4	98.5	0.0	-	-	-
Total %	0.2	0.9	0.0	-	1.1	48.0	0.3	0.0	-	48.3	0.7	49.9	0.0	-	50.6	-
Lights	30	181	0	-	211	10557	64	0	-	10621	152	11066	0	-	11218	22050
% Lights	78.9	87.0	-	-	85.8	95.8	83.1	-	-	95.7	91.0	96.6	0.0	-	96.5	96.0
Other Vehicles	8	27	0	-	35	464	13	0	-	477	15	392	2	-	409	921
% Other Vehicles	21.1	13.0	-	-	14.2	4.2	16.9	-	-	4.3	9.0	3.4	100.0	-	3.5	4.0
Pedestrians	-	-	-	76	-	-	-	-	5	-	-	-	-	0	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	100.0	-	-	-	-	-	-	-



Transportation Engineers & Planners
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Count Name: 822349.11 Phoenixville
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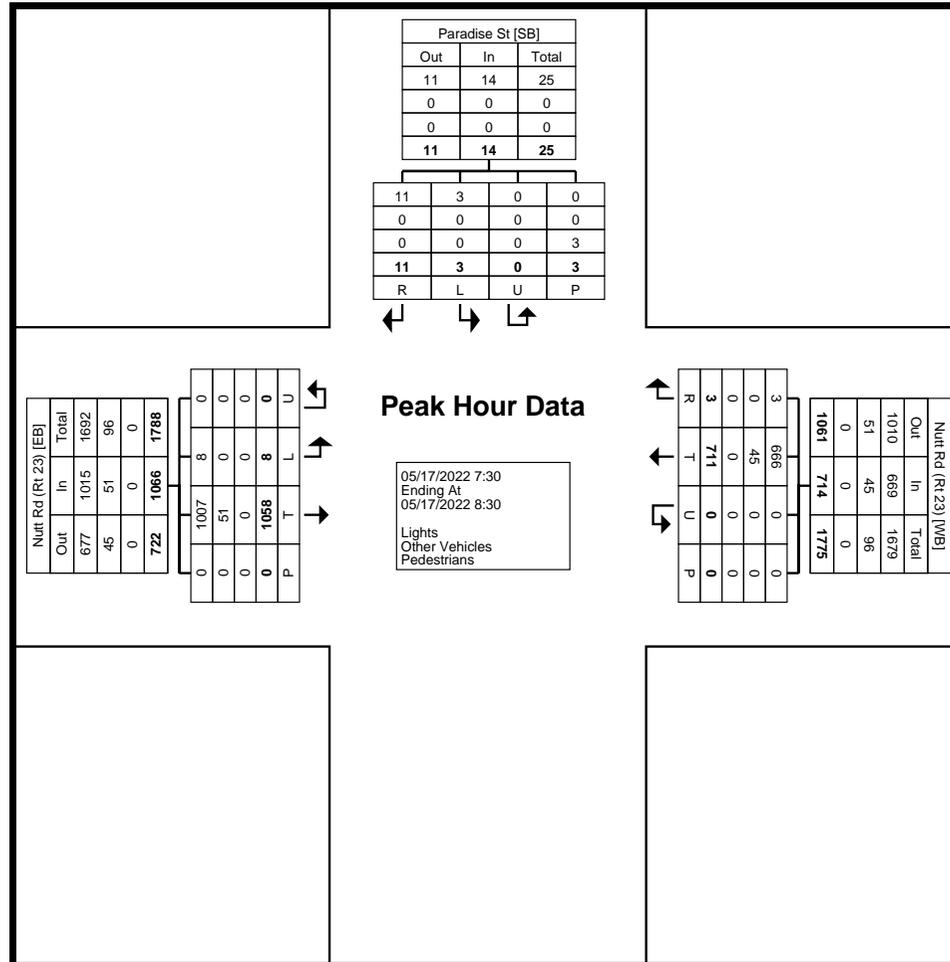
Turning Movement Data Plot



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Turning Movement Peak Hour Data Plot (7:30)



Transportation Engineers & Planners
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 Fort Washington, Pennsylvania, United States 19034
 215-283-9444

Count Name: 822349.11 Phoenixville
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Turning Movement Data

Start Time	Bridge St Southbound					Hall St Westbound					Bridge St Northbound					Access Eastbound					Int. Total
	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	
6:00	40	0	0	0	40	3	0	1	2	4	0	46	0	0	46	0	0	0	1	0	90
6:15	41	0	0	0	41	4	0	1	2	5	0	52	0	0	52	0	0	0	1	0	98
6:30	63	0	0	0	63	8	0	1	2	9	1	56	0	0	57	0	0	0	0	0	129
6:45	67	0	0	0	67	9	0	1	2	10	0	69	0	0	69	0	0	0	1	0	146
Hourly Total	211	0	0	0	211	24	0	4	8	28	1	223	0	0	224	0	0	0	3	0	463
7:00	77	0	0	0	77	8	0	1	2	9	0	75	0	0	75	1	0	0	0	1	162
7:15	93	0	0	1	93	7	0	0	3	7	0	100	0	0	100	0	0	0	1	0	200
7:30	104	0	0	0	104	5	0	3	0	8	0	92	0	0	92	0	0	0	1	0	204
7:45	119	0	0	0	119	3	0	1	0	4	0	102	0	0	102	0	0	0	1	0	225
Hourly Total	393	0	0	1	393	23	0	5	5	28	0	369	0	0	369	1	0	0	3	1	791
8:00	136	0	0	0	136	3	0	4	0	7	0	107	0	0	107	0	0	0	1	0	250
8:15	92	0	0	0	92	4	0	5	2	9	0	106	0	0	106	0	0	0	2	0	207
8:30	107	0	0	0	107	7	0	0	0	7	0	110	0	0	110	0	0	0	0	0	224
8:45	96	0	0	1	96	6	1	6	2	13	0	118	0	0	118	0	0	0	2	0	227
Hourly Total	431	0	0	1	431	20	1	15	4	36	0	441	0	0	441	0	0	0	5	0	908
9:00	92	0	0	0	92	6	0	4	2	10	1	93	0	0	94	0	2	0	0	2	198
9:15	86	0	0	0	86	7	0	1	2	8	0	93	0	0	93	0	0	0	1	0	187
9:30	91	0	0	0	91	8	0	3	3	11	0	81	0	0	81	0	0	0	1	0	183
9:45	82	1	0	0	83	3	0	6	8	9	0	98	0	0	98	0	0	0	0	0	190
Hourly Total	351	1	0	0	352	24	0	14	15	38	1	365	0	0	366	0	2	0	2	2	758
10:00	93	0	0	0	93	15	0	2	9	17	0	99	0	0	99	1	0	0	2	1	210
10:15	90	0	0	0	90	3	0	2	4	5	0	75	0	0	75	0	0	0	1	0	170
10:30	90	0	0	0	90	12	0	3	0	15	0	88	0	0	88	0	0	0	2	0	193
10:45	81	0	0	0	81	7	0	4	2	11	0	111	0	0	111	0	0	0	2	0	203
Hourly Total	354	0	0	0	354	37	0	11	15	48	0	373	0	0	373	1	0	0	7	1	776
11:00	73	1	0	0	74	10	0	4	2	14	0	91	0	0	91	1	0	0	1	1	180
11:15	98	0	0	0	98	3	0	1	6	4	0	89	0	0	89	0	0	0	0	0	191
11:30	102	0	0	0	102	8	0	2	1	10	1	103	0	0	104	1	0	0	3	1	217
11:45	113	0	0	0	113	8	0	4	3	12	0	103	0	0	103	0	0	0	1	0	228
Hourly Total	386	1	0	0	387	29	0	11	12	40	1	386	0	0	387	2	0	0	5	2	816
12:00	114	0	0	0	114	8	0	3	4	11	0	118	0	0	118	0	0	0	2	0	243
12:15	104	0	0	0	104	11	0	2	7	13	2	111	0	0	113	0	0	0	1	0	230
12:30	106	1	0	0	107	9	0	4	10	13	0	103	0	1	103	0	1	0	9	1	224
12:45	118	0	0	0	118	13	0	5	5	18	0	125	0	0	125	0	0	0	1	0	261
Hourly Total	442	1	0	0	443	41	0	14	26	55	2	457	0	1	459	0	1	0	13	1	958
13:00	106	0	0	0	106	3	0	1	1	4	1	110	0	1	111	1	1	0	11	2	223

13:15	117	0	0	0	117	4	0	6	0	10	1	134	0	0	135	1	0	0	4	1	263
13:30	92	1	0	0	93	7	0	1	10	8	0	110	0	0	110	1	0	0	7	1	212
13:45	96	0	0	0	96	8	0	2	7	10	0	111	0	0	111	0	0	0	1	0	217
Hourly Total	411	1	0	0	412	22	0	10	18	32	2	465	0	1	467	3	1	0	23	4	915
14:00	120	0	0	0	120	8	0	1	4	9	1	102	0	0	103	0	0	0	5	0	232
14:15	94	1	0	0	95	6	0	8	4	14	0	108	0	0	108	0	1	0	7	1	218
14:30	119	0	0	0	119	12	0	1	3	13	2	106	0	0	108	2	2	0	4	4	244
14:45	126	0	0	0	126	8	1	4	0	13	0	114	0	0	114	1	0	0	2	1	254
Hourly Total	459	1	0	0	460	34	1	14	11	49	3	430	0	0	433	3	3	0	18	6	948
15:00	114	1	0	0	115	6	0	3	5	9	1	108	0	0	109	0	0	0	8	0	233
15:15	115	2	0	0	117	5	0	3	1	8	0	105	0	0	105	0	1	0	5	1	231
15:30	142	0	0	0	142	7	0	3	3	10	1	123	0	0	124	0	0	0	6	0	276
15:45	126	1	0	1	127	11	0	4	8	15	0	130	0	0	130	0	1	0	4	1	273
Hourly Total	497	4	0	1	501	29	0	13	17	42	2	466	0	0	468	0	2	0	23	2	1013
16:00	146	0	0	0	146	6	0	7	4	13	0	125	0	0	125	1	0	0	1	1	285
16:15	126	0	0	0	126	9	0	5	3	14	2	141	0	0	143	1	1	0	2	2	285
16:30	153	0	0	0	153	8	0	3	0	11	2	147	0	0	149	0	0	0	6	0	313
16:45	120	1	0	0	121	4	0	5	2	9	1	147	0	0	148	0	0	0	13	0	278
Hourly Total	545	1	0	0	546	27	0	20	9	47	5	560	0	0	565	2	1	0	22	3	1161
17:00	138	1	0	0	139	3	0	0	4	3	2	151	0	1	153	1	0	0	7	1	296
17:15	141	1	0	0	142	3	0	1	5	4	0	141	0	0	141	1	1	0	5	2	289
17:30	137	5	0	2	142	1	0	2	5	3	2	138	0	0	140	1	1	0	6	2	287
17:45	126	1	0	2	127	10	0	5	2	15	5	138	0	0	143	2	1	0	8	3	288
Hourly Total	542	8	0	4	550	17	0	8	16	25	9	568	0	1	577	5	3	0	26	8	1160
18:00	115	3	0	0	118	8	1	6	8	15	2	127	0	0	129	0	0	0	6	0	262
18:15	99	2	0	0	101	6	1	3	5	10	4	157	0	0	161	2	1	0	6	3	275
18:30	112	2	0	1	114	5	0	3	7	8	2	139	0	0	141	0	4	0	2	4	267
18:45	127	3	0	0	130	8	0	2	4	10	2	94	0	0	96	2	2	0	7	4	240
Hourly Total	453	10	0	1	463	27	2	14	24	43	10	517	0	0	527	4	7	0	21	11	1044
Grand Total	5475	28	0	8	5503	354	4	153	180	511	36	5620	0	3	5656	21	20	0	171	41	11711
Approach %	99.5	0.5	0.0	-	-	69.3	0.8	29.9	-	-	0.6	99.4	0.0	-	-	51.2	48.8	0.0	-	-	-
Total %	46.8	0.2	0.0	-	47.0	3.0	0.0	1.3	-	4.4	0.3	48.0	0.0	-	48.3	0.2	0.2	0.0	-	0.4	-
Lights	5242	28	0	-	5270	351	4	149	-	504	34	5396	0	-	5430	19	20	0	-	39	11243
% Lights	95.7	100.0	-	-	95.8	99.2	100.0	97.4	-	98.6	94.4	96.0	-	-	96.0	90.5	100.0	-	-	95.1	96.0
Other Vehicles	233	0	0	-	233	3	0	4	-	7	2	224	0	-	226	2	0	0	-	2	468
% Other Vehicles	4.3	0.0	-	-	4.2	0.8	0.0	2.6	-	1.4	5.6	4.0	-	-	4.0	9.5	0.0	-	-	4.9	4.0
Pedestrians	-	-	-	8	-	-	-	-	180	-	-	-	-	3	-	-	-	-	171	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	100.0	-	-	-	-	100.0	-	-	-	-	100.0	-	-



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Count Name: 822349.11 Phoenixville
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Turning Movement Peak Hour Data (8:00)

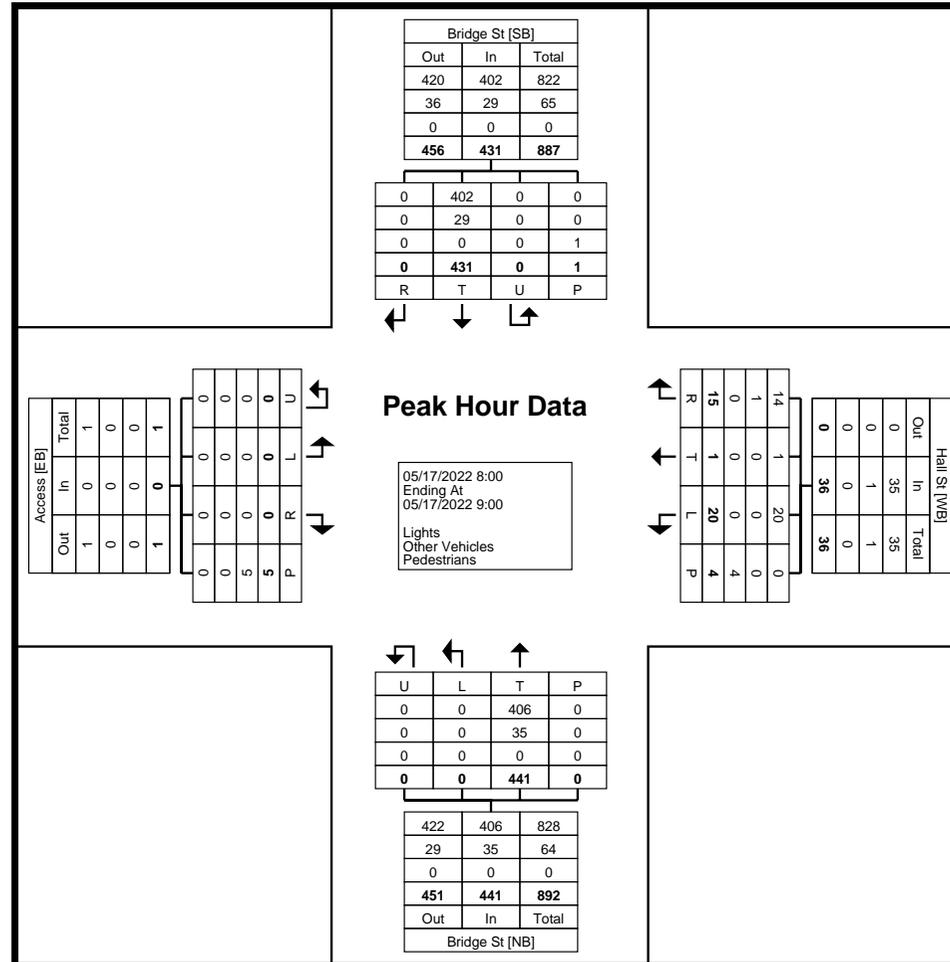
Start Time	Bridge St Southbound					Hall St Westbound					Bridge St Northbound					Access Eastbound					Int. Total
	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	
8:00	136	0	0	0	136	3	0	4	0	7	0	107	0	0	107	0	0	0	1	0	250
8:15	92	0	0	0	92	4	0	5	2	9	0	106	0	0	106	0	0	0	2	0	207
8:30	107	0	0	0	107	7	0	0	0	7	0	110	0	0	110	0	0	0	0	0	224
8:45	96	0	0	1	96	6	1	6	2	13	0	118	0	0	118	0	0	0	2	0	227
Total	431	0	0	1	431	20	1	15	4	36	0	441	0	0	441	0	0	0	5	0	908
Approach %	100.0	0.0	0.0	-	-	55.6	2.8	41.7	-	-	0.0	100.0	0.0	-	-	0.0	0.0	0.0	-	-	-
Total %	47.5	0.0	0.0	-	47.5	2.2	0.1	1.7	-	4.0	0.0	48.6	0.0	-	48.6	0.0	0.0	0.0	-	0.0	-
PHF	0.792	0.000	0.000	-	0.792	0.714	0.250	0.625	-	0.692	0.000	0.934	0.000	-	0.934	0.000	0.000	0.000	-	0.000	0.908
Lights	402	0	0	-	402	20	1	14	-	35	0	406	0	-	406	0	0	0	-	0	843
% Lights	93.3	-	-	-	93.3	100.0	100.0	93.3	-	97.2	-	92.1	-	-	92.1	-	-	-	-	-	92.8
Other Vehicles	29	0	0	-	29	0	0	1	-	1	0	35	0	-	35	0	0	0	-	0	65
% Other Vehicles	6.7	-	-	-	6.7	0.0	0.0	6.7	-	2.8	-	7.9	-	-	7.9	-	-	-	-	-	7.2
Pedestrians	-	-	-	1	-	-	-	-	4	-	-	-	-	0	-	-	-	-	5	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	100.0	-	-



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Turning Movement Peak Hour Data Plot (8:00)



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Turning Movement Peak Hour Data (16:30)

Start Time	Bridge St Southbound					Hall St Westbound					Bridge St Northbound					Access Eastbound					Int. Total
	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	
16:30	153	0	0	0	153	8	0	3	0	11	2	147	0	0	149	0	0	0	6	0	313
16:45	120	1	0	0	121	4	0	5	2	9	1	147	0	0	148	0	0	0	13	0	278
17:00	138	1	0	0	139	3	0	0	4	3	2	151	0	1	153	1	0	0	7	1	296
17:15	141	1	0	0	142	3	0	1	5	4	0	141	0	0	141	1	1	0	5	2	289
Total	552	3	0	0	555	18	0	9	11	27	5	586	0	1	591	2	1	0	31	3	1176
Approach %	99.5	0.5	0.0	-	-	66.7	0.0	33.3	-	-	0.8	99.2	0.0	-	-	66.7	33.3	0.0	-	-	-
Total %	46.9	0.3	0.0	-	47.2	1.5	0.0	0.8	-	2.3	0.4	49.8	0.0	-	50.3	0.2	0.1	0.0	-	0.3	-
PHF	0.902	0.750	0.000	-	0.907	0.563	0.000	0.450	-	0.614	0.625	0.970	0.000	-	0.966	0.500	0.250	0.000	-	0.375	0.939
Lights	548	3	0	-	551	18	0	9	-	27	5	583	0	-	588	2	1	0	-	3	1169
% Lights	99.3	100.0	-	-	99.3	100.0	-	100.0	-	100.0	100.0	99.5	-	-	99.5	100.0	100.0	-	-	100.0	99.4
Other Vehicles	4	0	0	-	4	0	0	0	-	0	0	3	0	-	3	0	0	0	-	0	7
% Other Vehicles	0.7	0.0	-	-	0.7	0.0	-	0.0	-	0.0	0.0	0.5	-	-	0.5	0.0	0.0	-	-	0.0	0.6
Pedestrians	-	-	-	0	-	-	-	-	11	-	-	-	-	1	-	-	-	-	31	-	-
% Pedestrians	-	-	-	-	-	-	-	-	100.0	-	-	-	-	100.0	-	-	-	-	100.0	-	-

Appendix E

Site Trip Generation

PROJECT INFORMATION	
PROJECT NAME	Paradise Village
MCMAHON PROJECT NUMBER	822349
DATE	2/6/2023
CITY/MUNICIPALITY	Phoenixville Boro
STATE	PA
CLIENT	Phoenixville Boro
ANALYST	VSA
SOURCE	ITE - TGM 11th Edition

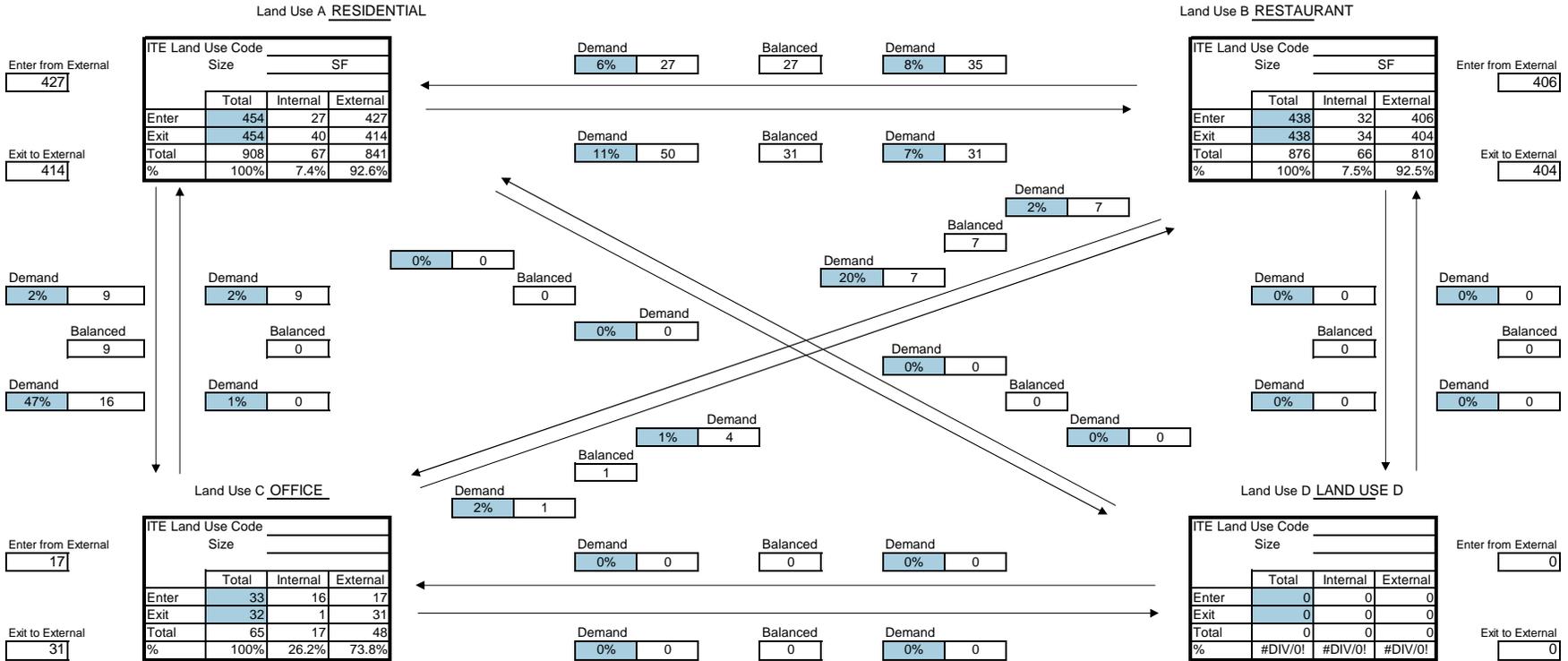
TRIP GENERATION FOR PARADISE VILLAGE

Land Use	Size	Daily			Weekday Morning Peak Hour			Weekday Afternoon Peak Hour		
		In	Out	Total	In	Out	Total	In	Out	Total
Multifamily Housing (Mid-Rise)		454	454	908	18	58	76	48	30	78
Vehicle Occupancy	200 units	1.00	1.00	-	1.00	1.00	-	1.00	1.00	-
Person Trips		454	454	908	18	58	76	48	30	78
Internal Person Trips	Land Use Code: 221	27	40	67	1	9	10	5	7	12
External Person Trips	<u>PASS-BY</u>	427	414	841	17	49	66	43	23	66
Vehicle Occupancy	Weekday: 0%	1.00	1.00	-	1.00	1.00	-	1.00	1.00	-
External Vehicle Trips	AM: 0%	427	414	841	17	49	66	43	23	66
External Pass-By Trips	PM: 0%	0	0	0	0	0	0	0	0	0
"New" External Trips	SAT: 0%	427	414	841	17	49	66	43	23	66
High-Turnover (Sit-Down) Restaurant		438	438	876	43	35	78	45	29	74
Vehicle Occupancy	8170 s.f.	1.00	1.00	-	1.00	1.00	-	1.00	1.00	-
Person Trips		438	438	876	43	35	78	45	29	74
Internal Person Trips	Land Use Code: 932	32	34	66	10	2	12	6	6	12
External Person Trips	<u>PASS-BY</u>	406	404	810	33	33	66	39	23	62
Vehicle Occupancy	Weekday: 33%	1.00	1.00	-	1.00	1.00	-	1.00	1.00	-
External Vehicle Trips	AM: 33%	406	404	810	33	33	66	39	23	62
External Pass-By Trips	PM: 43%	134	133	267	11	11	22	17	10	27
"New" External Trips	SAT: 33%	272	271	543	22	22	44	22	13	35
Small Office Building		33	32	65	6	2	8	3	7	10
Vehicle Occupancy	4500 s.f.	1.00	1.00	-	1.00	1.00	-	1.00	1.00	-
Person Trips		33	32	65	6	2	8	3	7	10
Internal Person Trips	Land Use Code: 712	16	1	17	1	2	3	2	1	3
External Person Trips	<u>PASS-BY</u>	17	31	48	5	0	5	1	6	7
Vehicle Occupancy	Weekday: 0%	1.00	1.00	-	1.00	1.00	-	1.00	1.00	-
External Vehicle Trips	AM: 0%	17	31	48	5	0	5	1	6	7
External Pass-By Trips	PM: 0%	0	0	0	0	0	0	0	0	0
"New" External Trips	SAT: 0%	17	31	48	5	0	5	1	6	7
Total Trips		925	924	1,849	67	95	162	96	66	162
Total Person Trips		925	924	1,849	67	95	162	96	66	162
Total Internal Person Trips		75	75	150	12	13	25	13	14	27
Total External Person Trips		850	849	1,699	55	82	137	83	52	135
Total External Vehicle Trips		850	849	1,699	55	82	137	83	52	135
Total External Pass-by Trips		134	133	267	11	11	22	17	10	27
Total "New" External Trips		716	716	1,432	44	71	115	66	42	108

Analyst VSA
 Date 2/6/2023

Mixed-Use Development Trip Generation and Internal Capture Summary

Name of Devlpt Paradise Village
 Time Period Weekday

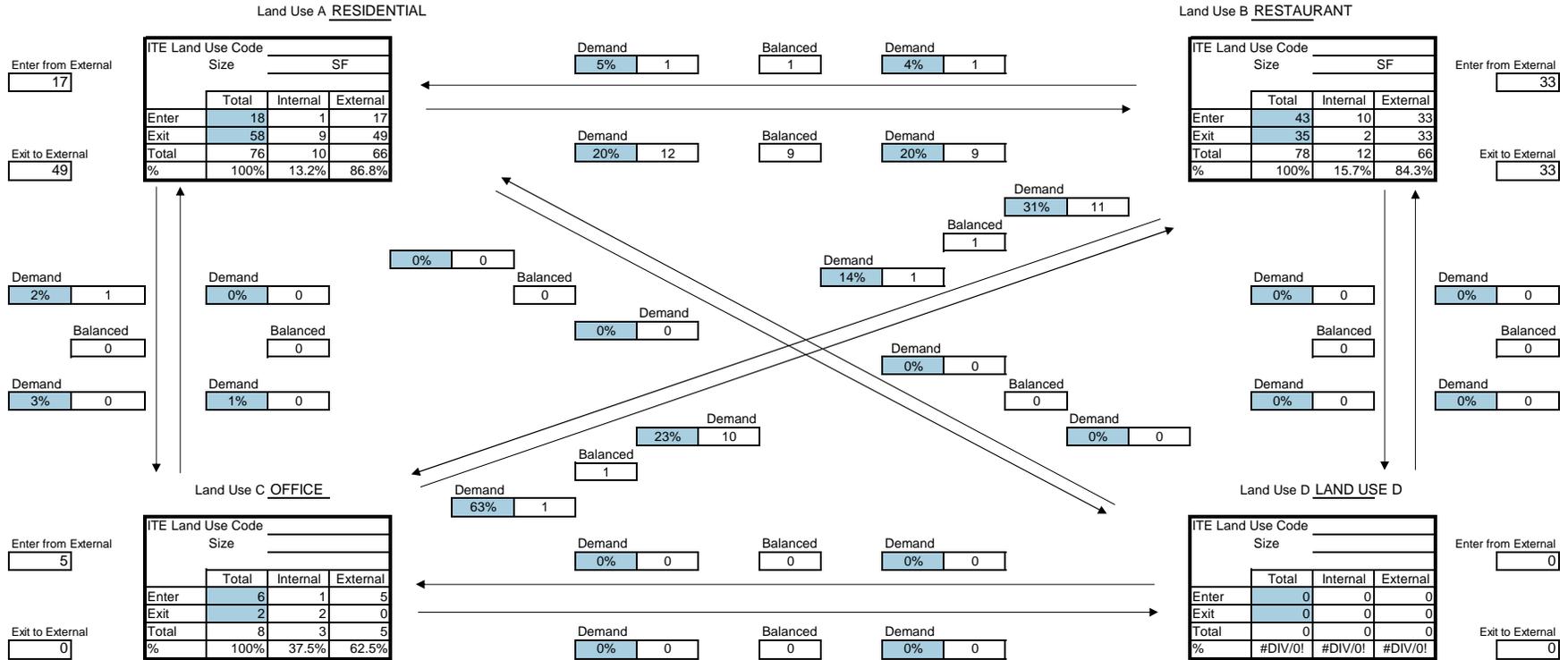


NOTE: Based on recommended procedure outlined in NCHRP Report 684: *Enhancing Internal Trip Capture Estimation for Mixed-Use Developments* and templates provided in the ITE Publication *Trip Generation Handbook, Third Edition*.

Analyst VSA
 Date 2/6/2023

Mixed-Use Development Trip Generation and Internal Capture Summary

Name of Devlpt Paradise Village
 Time Period Weekday AM

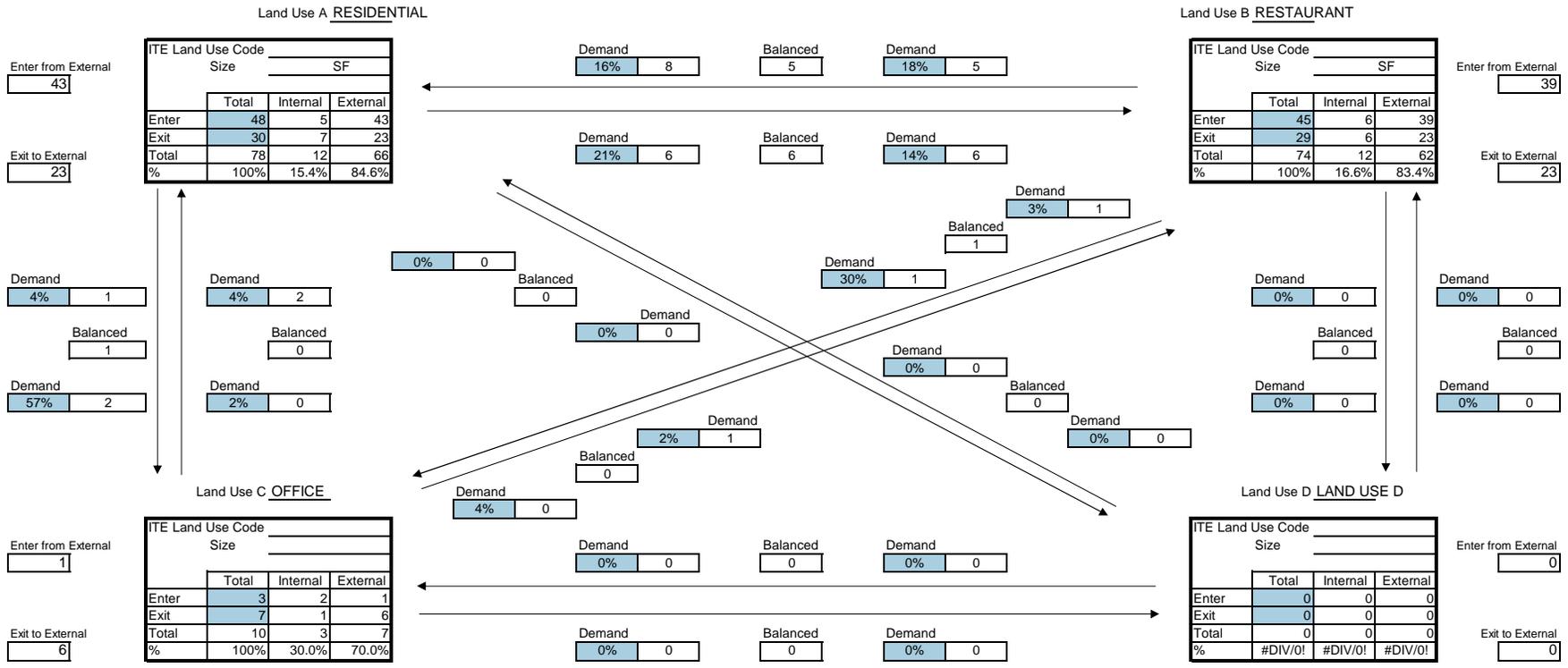


NOTE: Based on recommended procedure outlined in NCHRP Report 684: *Enhancing Internal Trip Capture Estimation for Mixed-Use Developments* and templates provided in the ITE Publication *Trip Generation Handbook, Third Edition*.

Analyst VSA
 Date 2/6/2023

Mixed-Use Development Trip Generation and Internal Capture Summary

Name of Devlpt Paradise Village
 Time Period Weekday PM



NOTE: Based on recommended procedure outlined in NCHRP Report 684: *Enhancing Internal Trip Capture Estimation for Mixed-Use Developments* and templates provided in the ITE Publication *Trip Generation Handbook, Third Edition*.

Appendix F

Warrant Analysis Worksheets

**Paradise Street and
West Site Access**

Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input type="text" value="Phoenixville Borough"/>	Analysis Date: <input type="text" value="2/8/2023"/>
County: <input type="text" value="Chester County"/>	Conducted By: <input type="text" value="VSA"/>
PennDOT Engineering District: <input type="text" value="6"/>	Checked By: <input type="text" value="JDG"/>
	Agency/Company Name: <input type="text" value="McMahon, a Bowman Company"/>
Intersection & Approach Description: <input type="text" value="Paradise Street and West Site Access, Northbound Right"/>	
Analysis Period: <input type="text" value="2024"/>	Number of Approach Lanes: <input type="text" value="1"/>
Design Hour: <input type="text" value="AM Peak Hour"/>	Undivided or Divided Highway: <input type="text" value="Undivided"/>
Intersection Control: <input type="text" value="Unsignalized"/>	
Posted Speed Limit (MPH): <input type="text" value="25"/>	Type of Analysis: <input type="text" value="Right Turn Lane"/>
Type of Terrain: <input type="text" value="Rolling"/>	Left or Right-Turn Lane Analysis?: <input type="text" value="Right Turn Lane"/>

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes			N/A
	Through	-			N/A
	Right	Yes			N/A
Opposing	Left	Yes			N/A
	Through	-			N/A
	Right	Yes			N/A

Advancing Volume:	N/A
Opposing Volume:	N/A
Left Turn Volume:	N/A
% Left Turns in Advancing Volume: <input style="width: 100px;" type="text" value="N/A"/>	

Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	0	0.0%	0
	Through	-	78	2.0%	81
	Right	-	15	2.0%	16

Advancing Volume:	97
Right Turn Volume:	16

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: <input style="width: 100px;" type="text" value="N/A"/>	Applicable Warrant Figure: <input style="width: 100px;" type="text" value="Figure 9"/>
Warrant Met?: <input style="width: 100px;" type="text" value="N/A"/>	Warrant Met?: <input style="width: 100px;" type="text" value="No"/>

TURN LANE LENGTH CALCULATIONS

Intersection Control: <input style="width: 100px;" type="text" value="Unsignalized"/>	
Design Hour Volume of Turning Lane: <input style="width: 100px;" type="text" value="16"/>	
Cycles Per Hour (Assumed): <input style="width: 100px;" type="text" value="60"/>	
Cycles Per Hour (If Known): <input style="width: 100px;" type="text"/>	Average # of Vehicles/Cycle: <input style="width: 100px;" type="text" value="N/A"/>

PennDOT Publication 46, Exhibit 11-6

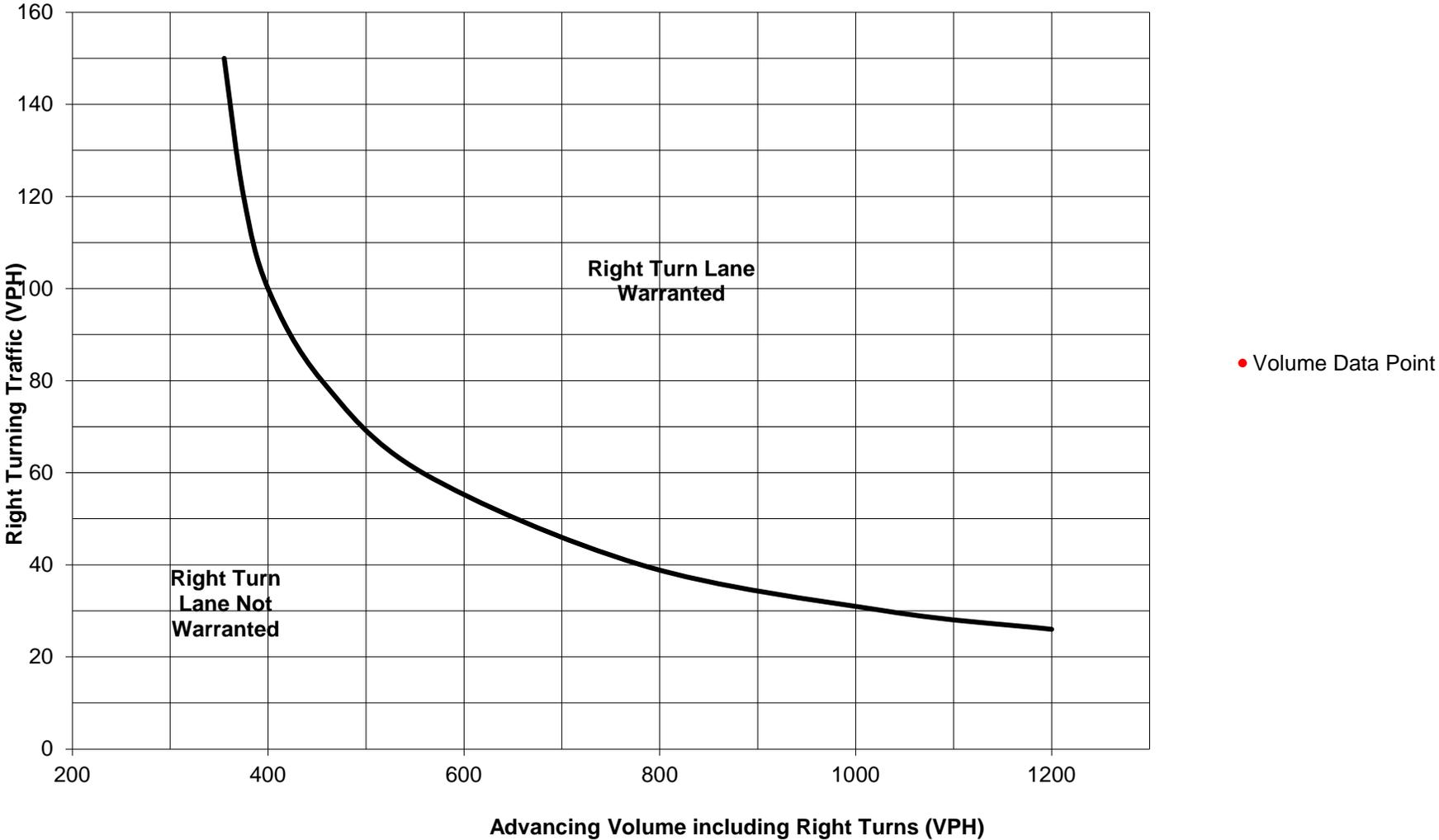
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

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:

Additional Comments / Justifications:

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



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input type="text" value="Phoenixville Borough"/>	Analysis Date: <input type="text" value="2/8/2023"/>
County: <input type="text" value="Chester County"/>	Conducted By: <input type="text" value="VSA"/>
PennDOT Engineering District: <input type="text" value="6"/>	Checked By: <input type="text" value="JDG"/>
	Agency/Company Name: <input type="text" value="McMahon, a Bowman Company"/>
Intersection & Approach Description: <input type="text" value="Paradise Street and West Site Access, Northbound Right"/>	
Analysis Period: <input type="text" value="2024"/>	Number of Approach Lanes: <input type="text" value="1"/>
Design Hour: <input type="text" value="PM Peak Hour"/>	Undivided or Divided Highway: <input type="text" value="Undivided"/>
Intersection Control: <input type="text" value="Unsignalized"/>	
Posted Speed Limit (MPH): <input type="text" value="25"/>	Type of Analysis: <input type="text" value="Right Turn Lane"/>
Type of Terrain: <input type="text" value="Rolling"/>	Left or Right-Turn Lane Analysis?: <input type="text" value="Right Turn Lane"/>

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes			N/A
	Through	-			N/A
	Right	Yes			N/A
Opposing	Left	Yes			N/A
	Through	-			N/A
	Right	Yes			N/A

Advancing Volume:	<input type="text" value="N/A"/>
Opposing Volume:	<input type="text" value="N/A"/>
Left Turn Volume:	<input type="text" value="N/A"/>
% Left Turns in Advancing Volume:	<input type="text" value="N/A"/>

Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	0	0.0%	0
	Through	-	150	2.0%	155
	Right	-	23	2.0%	24

Advancing Volume:	<input type="text" value="179"/>
Right Turn Volume:	<input type="text" value="24"/>

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: <input type="text" value="N/A"/>	Applicable Warrant Figure: <input type="text" value="Figure 9"/>
Warrant Met?: <input type="text" value="N/A"/>	Warrant Met?: <input type="text" value="No"/>

TURN LANE LENGTH CALCULATIONS

Intersection Control: <input type="text" value="Unsignalized"/>	Average # of Vehicles/Cycle: <input type="text" value="N/A"/>
Design Hour Volume of Turning Lane: <input type="text" value="24"/>	
Cycles Per Hour (Assumed): <input type="text" value="60"/>	
Cycles Per Hour (If Known): <input type="text"/>	

PennDOT Publication 46, Exhibit 11-6

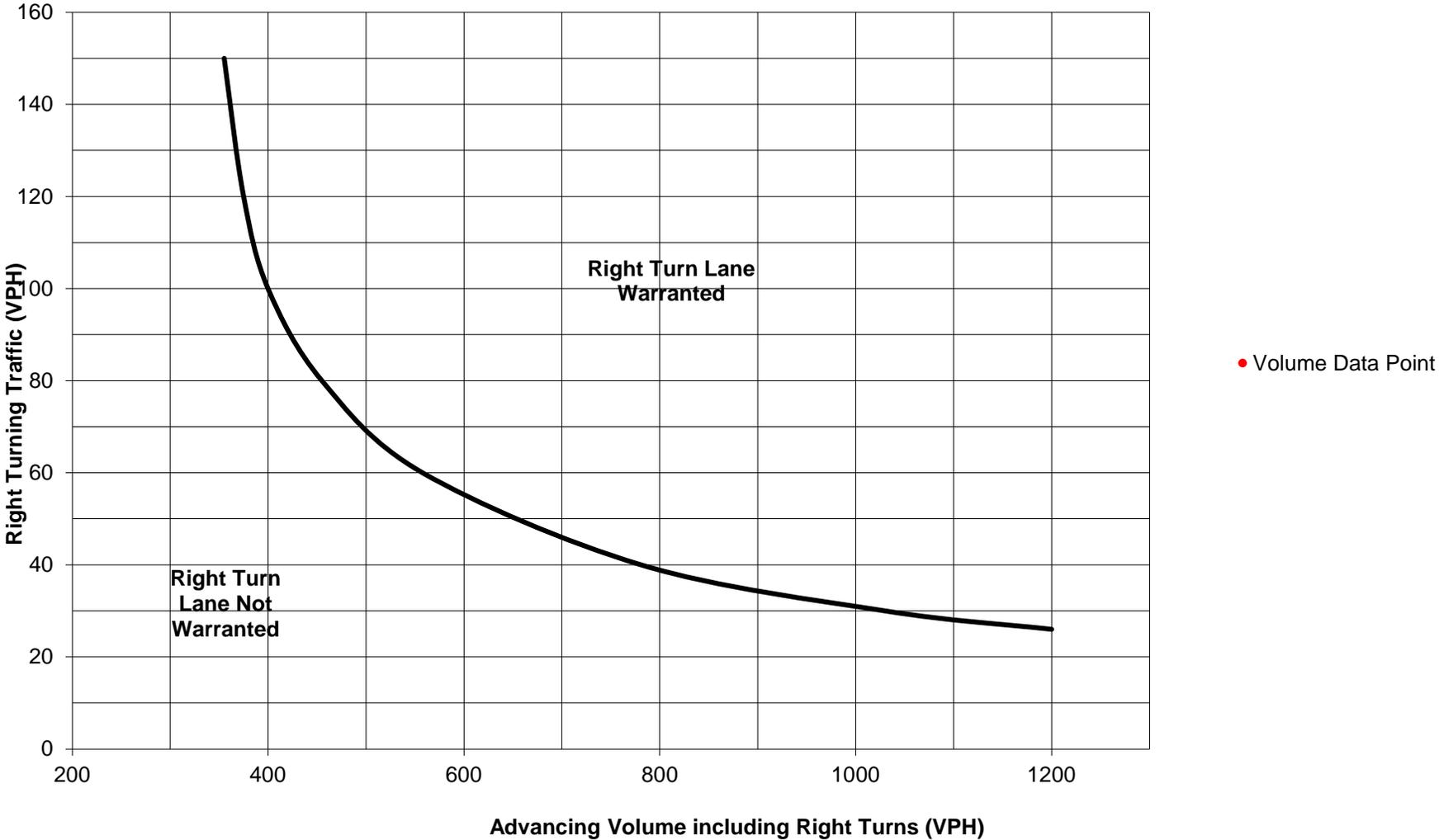
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Right Turn Lane Storage Length, Condition A:	<input type="text" value="N/A"/>	Feet
Condition B:	<input type="text" value="N/A"/>	Feet
Condition C:	<input type="text" value="N/A"/>	Feet
Required Right Turn Lane Storage Length:	<input type="text" value="N/A"/>	Feet

Additional Findings:

Additional Comments / Justifications:

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



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input type="text" value="Phoenixville Borough"/>	Analysis Date: <input type="text" value="2/8/2023"/>
County: <input type="text" value="Chester County"/>	Conducted By: <input type="text" value="VSA"/>
PennDOT Engineering District: <input type="text" value="6"/>	Checked By: <input type="text" value="JDG"/>
	Agency/Company Name: <input type="text" value="McMahon, a Bowman Company"/>
Intersection & Approach Description: <input type="text" value="Paradise Street and West Site Access, Southbound Left"/>	
Analysis Period: <input type="text" value="2024"/>	Number of Approach Lanes: <input type="text" value="1"/>
Design Hour: <input type="text" value="AM Peak Hour"/>	Undivided or Divided Highway: <input type="text" value="Undivided"/>
Intersection Control: <input type="text" value="Unsignalized"/>	
Posted Speed Limit (MPH): <input type="text" value="25"/>	Type of Analysis
Type of Terrain: <input type="text" value="Rolling"/>	Left or Right-Turn Lane Analysis?: <input type="text" value="Left Turn Lane"/>

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations							
Movement	Include?	Volume	% Trucks	PCEV			
Advancing	Left	Yes	2	2.0%	3	Advancing Volume: <input type="text" value="156"/>	
	Through	-	148	2.0%	153		Opposing Volume: <input type="text" value="97"/>
	Right	Yes	0	2.0%	0		Left Turn Volume: <input type="text" value="3"/>
Opposing	Left	Yes	0	2.0%	0	% Left Turns in Advancing Volume: <input type="text" value="1.92%"/>	
	Through	-	78	2.0%	81		
	Right	Yes	15	2.0%	16		

Right Turn Lane Volume Calculations							
Movement	Include?	Volume	% Trucks	PCEV			
Advancing	Left	Yes			N/A	Advancing Volume: <input type="text" value="N/A"/>	
	Through	-			N/A		Right Turn Volume: <input type="text" value="N/A"/>
	Right	-			N/A		

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: <input type="text" value="Figure 1"/>	Applicable Warrant Figure: <input type="text" value="N/A"/>
Warrant Met?: <input type="text" value="No"/>	Warrant Met?: <input type="text" value="N/A"/>

TURN LANE LENGTH CALCULATIONS

Intersection Control: <input type="text" value="Unsignalized"/>	
Design Hour Volume of Turning Lane: <input type="text" value="3"/>	
Cycles Per Hour (Assumed): <input type="text" value="60"/>	
Cycles Per Hour (If Known): <input type="text" value=""/>	Average # of Vehicles/Cycle: <input type="text" value="N/A"/>

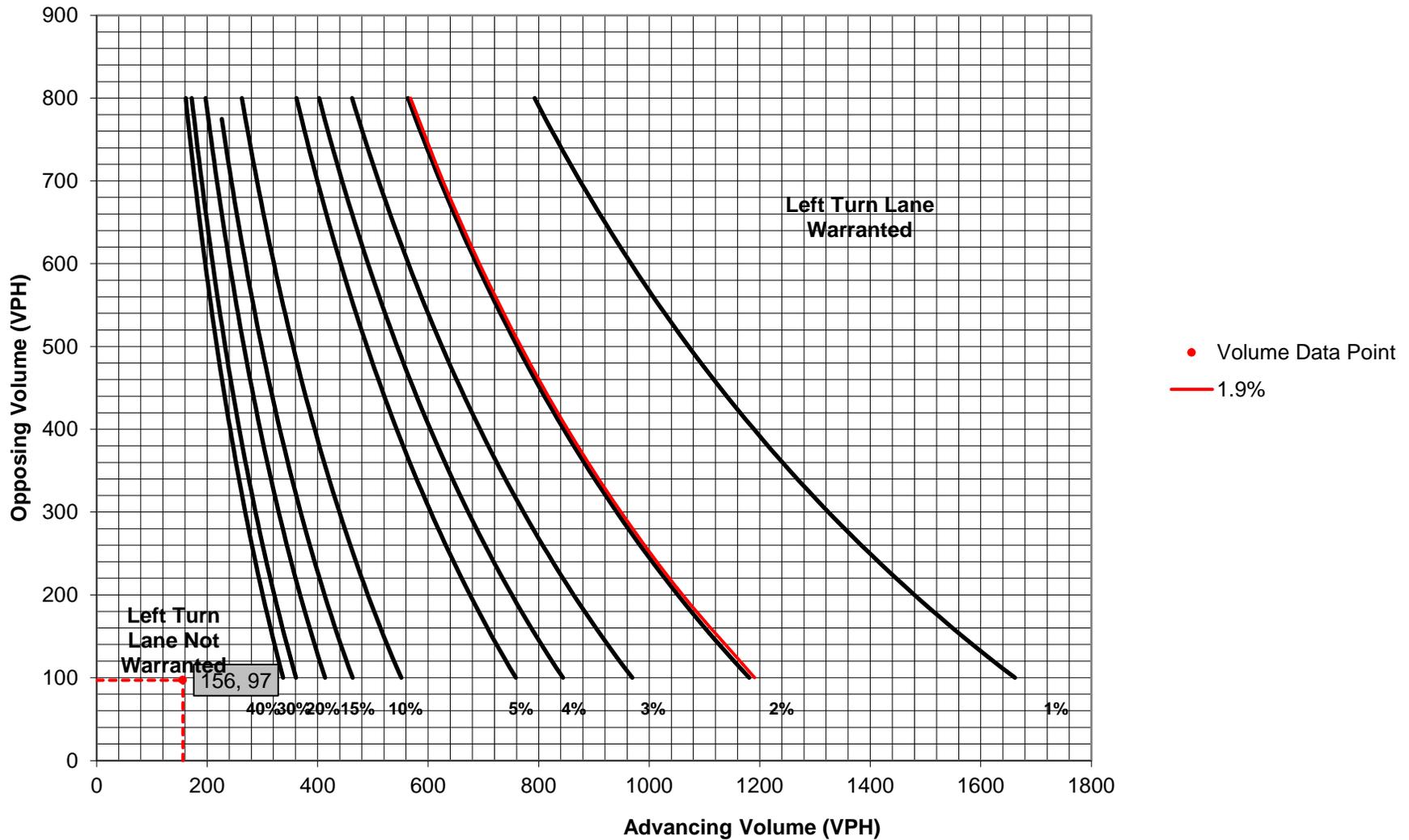
PennDOT Publication 46, Exhibit 11-6						
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Left Turn Lane Storage Length, Condition A:	<input type="text" value="N/A"/>	Feet
Condition B:	<input type="text" value="N/A"/>	Feet
Condition C:	<input type="text" value="N/A"/>	Feet
Required Left Turn Lane Storage Length:	<input type="text" value="N/A"/>	Feet

Additional Findings:

Additional Comments / Justifications:

Figure 1. Warrant for left turn lanes on two-lane roadways
 (speeds to 35 mph, unsignalized and signalized intersections)
 (L = % Left Turns in Advancing Volume)



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input type="text" value="Phoenixville Borough"/>	Analysis Date: <input type="text" value="2/8/2023"/>
County: <input type="text" value="Chester County"/>	Conducted By: <input type="text" value="VSA"/>
PennDOT Engineering District: <input type="text" value="6"/>	Checked By: <input type="text" value="JDG"/>
	Agency/Company Name: <input type="text" value="McMahon, a Bowman Company"/>
Intersection & Approach Description: <input type="text" value="Paradise Street and West Site Access, Southbound Left"/>	
Analysis Period: <input type="text" value="2024"/>	Number of Approach Lanes: <input type="text" value="1"/>
Design Hour: <input type="text" value="PM Peak Hour"/>	Undivided or Divided Highway: <input type="text" value="Undivided"/>
Intersection Control: <input type="text" value="Unsignalized"/>	
Posted Speed Limit (MPH): <input type="text" value="25"/>	Type of Analysis
Type of Terrain: <input type="text" value="Rolling"/>	Left or Right-Turn Lane Analysis?: <input type="text" value="Left Turn Lane"/>

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations							
Movement	Include?	Volume	% Trucks	PCEV			
Advancing	Left	Yes	3	2.0%	4	Advancing Volume: <input type="text" value="158"/>	
	Through	-	149	2.0%	154		Opposing Volume: <input type="text" value="179"/>
	Right	Yes	0	2.0%	0		Left Turn Volume: <input type="text" value="4"/>
Opposing	Left	Yes	0	2.0%	0	% Left Turns in Advancing Volume: <input type="text" value="2.53%"/>	
	Through	-	150	2.0%	155		
	Right	Yes	23	2.0%	24		

Right Turn Lane Volume Calculations							
Movement	Include?	Volume	% Trucks	PCEV			
Advancing	Left	Yes			N/A	Advancing Volume: <input type="text" value="N/A"/>	
	Through	-			N/A		Right Turn Volume: <input type="text" value="N/A"/>
	Right	-			N/A		

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: <input type="text" value="Figure 1"/>	Applicable Warrant Figure: <input type="text" value="N/A"/>
Warrant Met?: <input type="text" value="No"/>	Warrant Met?: <input type="text" value="N/A"/>

TURN LANE LENGTH CALCULATIONS

Intersection Control: <input type="text" value="Unsignalized"/>	
Design Hour Volume of Turning Lane: <input type="text" value="4"/>	
Cycles Per Hour (Assumed): <input type="text" value="60"/>	
Cycles Per Hour (If Known): <input type="text" value=""/>	Average # of Vehicles/Cycle: <input type="text" value="N/A"/>

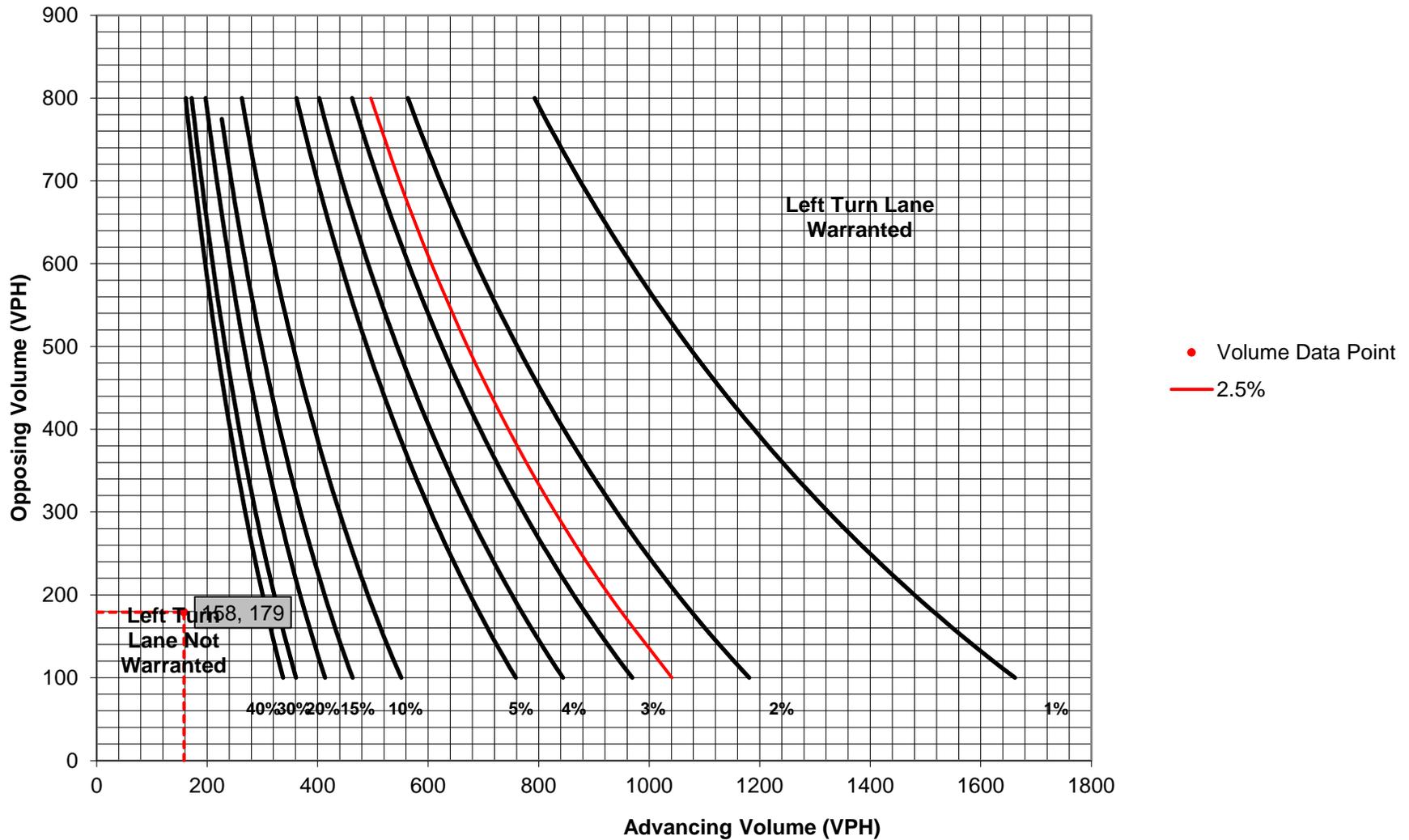
Type of Traffic Control	PennDOT Publication 46, Exhibit 11-6					
	Speed (MPH)					
	25-35		40-45		50-60	
Turn Demand Volume						
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Left Turn Lane Storage Length, Condition A:	<input type="text" value="N/A"/>	Feet
Condition B:	<input type="text" value="N/A"/>	Feet
Condition C:	<input type="text" value="N/A"/>	Feet
Required Left Turn Lane Storage Length:	<input type="text" value="N/A"/>	Feet

Additional Findings:

Additional Comments / Justifications:

Figure 1. Warrant for left turn lanes on two-lane roadways
 (speeds to 35 mph, unsignalized and signalized intersections)
 (L = % Left Turns in Advancing Volume)



**Hall Street and
Center Site Access**

Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input type="text" value="Phoenixville Borough"/>	Analysis Date: <input type="text" value="2/8/2023"/>
County: <input type="text" value="Chester County"/>	Conducted By: <input type="text" value="VSA"/>
PennDOT Engineering District: <input type="text" value="6"/>	Checked By: <input type="text" value="JDG"/>
	Agency/Company Name: <input type="text" value="McMahon, a Bowman Company"/>
Intersection & Approach Description: <input type="text" value="Hall Street and Center Site Access, Eastbound Left"/>	
Analysis Period: <input type="text" value="2024"/>	Number of Approach Lanes: <input type="text" value="1"/>
Design Hour: <input type="text" value="AM Peak Hour"/>	Undivided or Divided Highway: <input type="text" value="Undivided"/>
Intersection Control: <input type="text" value="Unsignalized"/>	
Posted Speed Limit (MPH): <input type="text" value="25"/>	Type of Analysis
Type of Terrain: <input type="text" value="Rolling"/>	Left or Right-Turn Lane Analysis?: <input type="text" value="Left Turn Lane"/>

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations						
Movement	Include?	Volume	% Trucks	PCEV		
Advancing	Left	Yes	11	2.0%	12	Advancing Volume: <input type="text" value="42"/> Opposing Volume: <input type="text" value="54"/> Left Turn Volume: <input type="text" value="12"/>
	Through	-	29	2.0%	30	
	Right	Yes	0	2.0%	0	
Opposing	Left	Yes	0	2.0%	0	% Left Turns in Advancing Volume: <input type="text" value="28.57%"/>
	Through	-	40	2.0%	42	
	Right	Yes	11	2.0%	12	

Right Turn Lane Volume Calculations						
Movement	Include?	Volume	% Trucks	PCEV		
Advancing	Left	Yes			N/A	Advancing Volume: <input type="text" value="N/A"/> Right Turn Volume: <input type="text" value="N/A"/>
	Through	-			N/A	
	Right	-			N/A	

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: <input type="text" value="Figure 1"/>	Applicable Warrant Figure: <input type="text" value="N/A"/>
Warrant Met?: <input type="text" value="No"/>	Warrant Met?: <input type="text" value="N/A"/>

TURN LANE LENGTH CALCULATIONS

Intersection Control: <input type="text" value="Unsignalized"/>	Average # of Vehicles/Cycle: <input type="text" value="N/A"/>
Design Hour Volume of Turning Lane: <input type="text" value="12"/>	
Cycles Per Hour (Assumed): <input type="text" value="60"/>	
Cycles Per Hour (If Known): <input type="text"/>	

PennDOT Publication 46, Exhibit 11-6

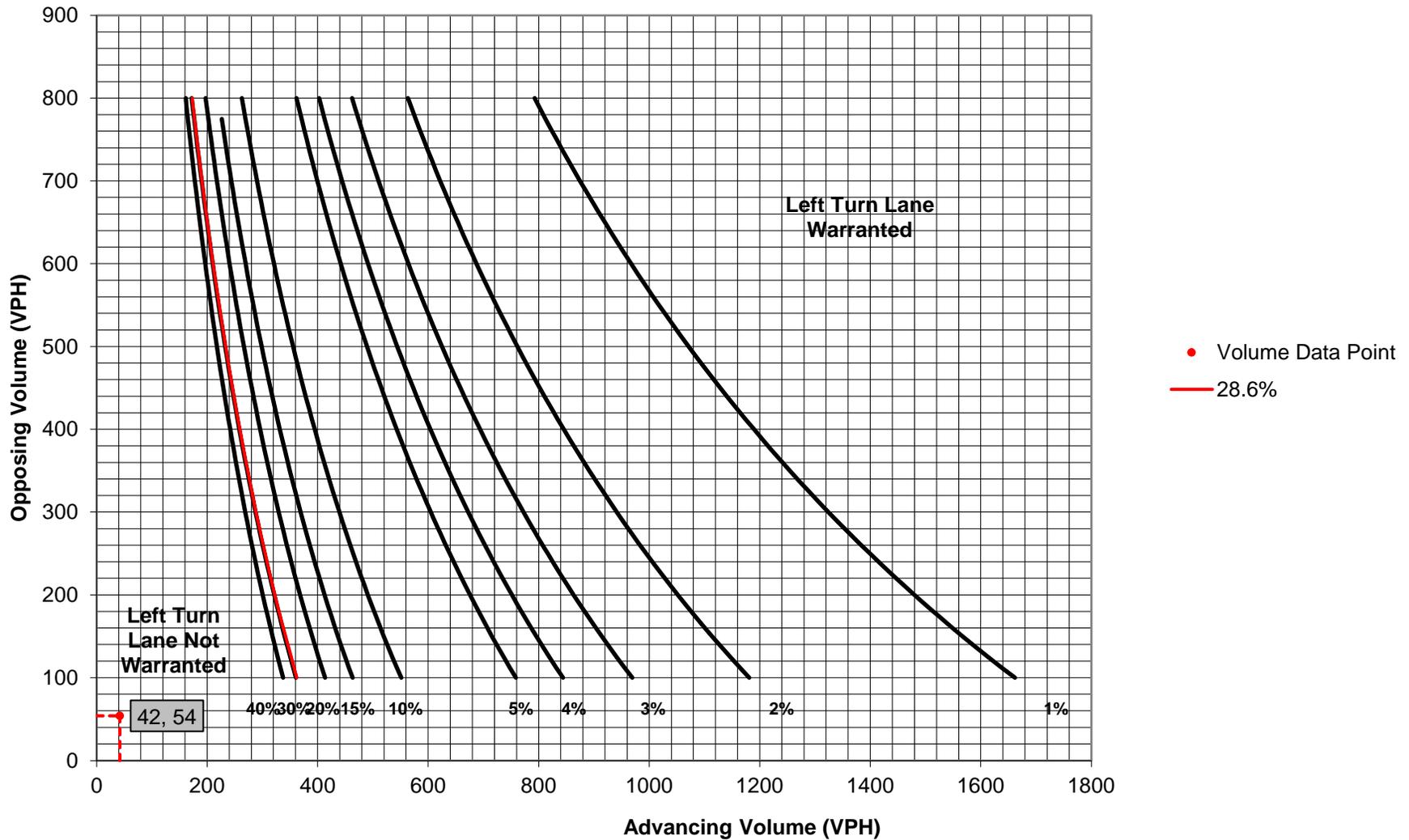
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Left Turn Lane Storage Length, Condition A:	<input type="text" value="N/A"/>	Feet
Condition B:	<input type="text" value="N/A"/>	Feet
Condition C:	<input type="text" value="N/A"/>	Feet
Required Left Turn Lane Storage Length:	<input type="text" value="N/A"/>	Feet

Additional Findings:

Additional Comments / Justifications:

Figure 1. Warrant for left turn lanes on two-lane roadways
 (speeds to 35 mph, unsignalized and signalized intersections)
 (L = % Left Turns in Advancing Volume)



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input type="text" value="Phoenixville Borough"/>	Analysis Date: <input type="text" value="2/8/2023"/>
County: <input type="text" value="Chester County"/>	Conducted By: <input type="text" value="VSA"/>
PennDOT Engineering District: <input type="text" value="6"/>	Checked By: <input type="text" value="JDG"/>
	Agency/Company Name: <input type="text" value="McMahon, a Bowman Company"/>
Intersection & Approach Description: <input type="text" value="Hall Street and Center Site Access, Eastbound Left"/>	
Analysis Period: <input type="text" value="2024"/>	Number of Approach Lanes: <input type="text" value="1"/>
Design Hour: <input type="text" value="PM Peak Hour"/>	Undivided or Divided Highway: <input type="text" value="Undivided"/>
Intersection Control: <input type="text" value="Unsignalized"/>	
Posted Speed Limit (MPH): <input type="text" value="25"/>	Type of Analysis: <input type="text" value="Left Turn Lane"/>
Type of Terrain: <input type="text" value="Rolling"/>	Left or Right-Turn Lane Analysis?: <input type="text" value="Left Turn Lane"/>

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations							
Movement	Include?	Volume	% Trucks	PCEV			
Advancing	Left	Yes	17	2.0%	18	Advancing Volume: <input type="text" value="60"/>	
	Through	-	40	2.0%	42		Opposing Volume: <input type="text" value="45"/>
	Right	Yes	0	2.0%	0		Left Turn Volume: <input type="text" value="18"/>
Opposing	Left	Yes	0	2.0%	0	% Left Turns in Advancing Volume: <input type="text" value="30.00%"/>	
	Through	-	26	2.0%	27		
	Right	Yes	17	2.0%	18		

Right Turn Lane Volume Calculations							
Movement	Include?	Volume	% Trucks	PCEV			
Advancing	Left	Yes			N/A	Advancing Volume: <input type="text" value="N/A"/>	
	Through	-			N/A		Right Turn Volume: <input type="text" value="N/A"/>
	Right	-			N/A		

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: <input type="text" value="Figure 1"/>	Applicable Warrant Figure: <input type="text" value="N/A"/>
Warrant Met?: <input type="text" value="No"/>	Warrant Met?: <input type="text" value="N/A"/>

TURN LANE LENGTH CALCULATIONS

Intersection Control: <input type="text" value="Unsignalized"/>	Average # of Vehicles/Cycle: <input type="text" value="N/A"/>
Design Hour Volume of Turning Lane: <input type="text" value="18"/>	
Cycles Per Hour (Assumed): <input type="text" value="60"/>	
Cycles Per Hour (If Known): <input type="text" value=""/>	

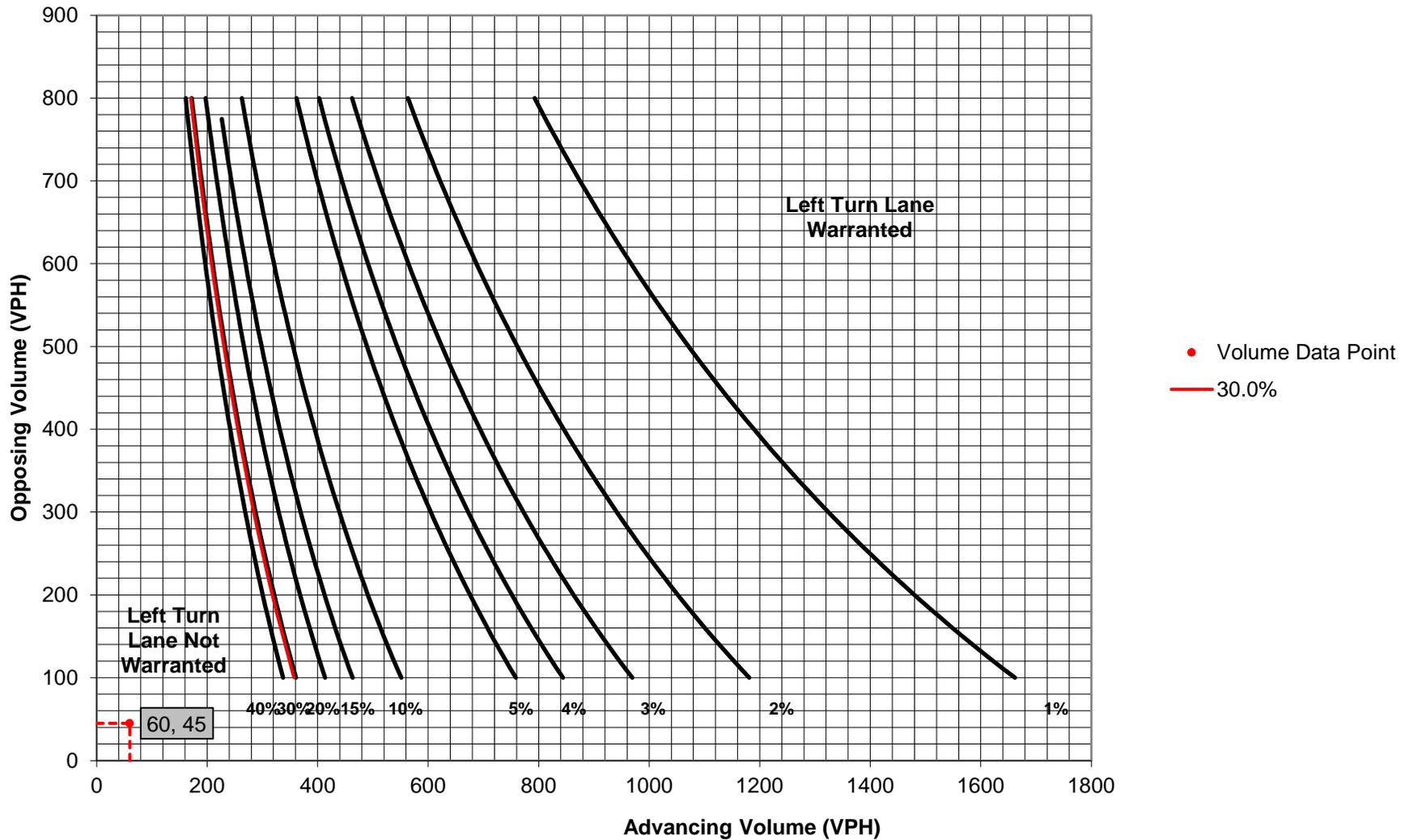
Type of Traffic Control	PennDOT Publication 46, Exhibit 11-6					
	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Left Turn Lane Storage Length, Condition A:	<input type="text" value="N/A"/>	Feet
Condition B:	<input type="text" value="N/A"/>	Feet
Condition C:	<input type="text" value="N/A"/>	Feet
Required Left Turn Lane Storage Length:	<input type="text" value="N/A"/>	Feet

Additional Findings:

Additional Comments / Justifications:

Figure 1. Warrant for left turn lanes on two-lane roadways
 (speeds to 35 mph, unsignalized and signalized intersections)
 (L = % Left Turns in Advancing Volume)



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input type="text" value="Phoenixville Borough"/> County: <input type="text" value="Chester County"/> PennDOT Engineering District: <input type="text" value="6"/>	Analysis Date: <input type="text" value="2/8/2023"/> Conducted By: <input type="text" value="VSA"/> Checked By: <input type="text" value="JDG"/> Agency/Company Name: <input type="text" value="McMahon, a Bowman Company"/>
Intersection & Approach Description: <input type="text" value="Hall Street and Center Site Access, Westbound Right"/>	
Analysis Period: <input type="text" value="2024"/> Design Hour: <input type="text" value="AM Peak Hour"/> Intersection Control: <input type="text" value="Unsignalized"/> Posted Speed Limit (MPH): <input type="text" value="25"/> Type of Terrain: <input type="text" value="Rolling"/>	Number of Approach Lanes: <input type="text" value="1"/> Undivided or Divided Highway: <input type="text" value="Undivided"/> Type of Analysis: Type of Analysis Left or Right-Turn Lane Analysis?: <input type="text" value="Right Turn Lane"/>

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes			N/A
	Through	-			N/A
	Right	Yes			N/A
Opposing	Left	Yes			N/A
	Through	-			N/A
	Right	Yes			N/A

Advancing Volume:	<input type="text" value="N/A"/>
Opposing Volume:	<input type="text" value="N/A"/>
Left Turn Volume:	<input type="text" value="N/A"/>
% Left Turns in Advancing Volume: <input type="text" value="N/A"/>	

Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	0	0.0%	0
	Through	-	40	2.0%	42
	Right	-	11	2.0%	12

Advancing Volume:	<input type="text" value="54"/>
Right Turn Volume:	<input type="text" value="12"/>

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: <input type="text" value="N/A"/> Warrant Met?: <input type="text" value="N/A"/>	Applicable Warrant Figure: <input type="text" value="Figure 9"/> Warrant Met?: <input type="text" value="No"/>

TURN LANE LENGTH CALCULATIONS

Intersection Control: <input type="text" value="Unsignalized"/> Design Hour Volume of Turning Lane: <input type="text" value="12"/> Cycles Per Hour (Assumed): <input type="text" value="60"/> Cycles Per Hour (If Known): <input type="text"/>	Average # of Vehicles/Cycle: <input type="text" value="N/A"/>
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PennDOT Publication 46, Exhibit 11-6

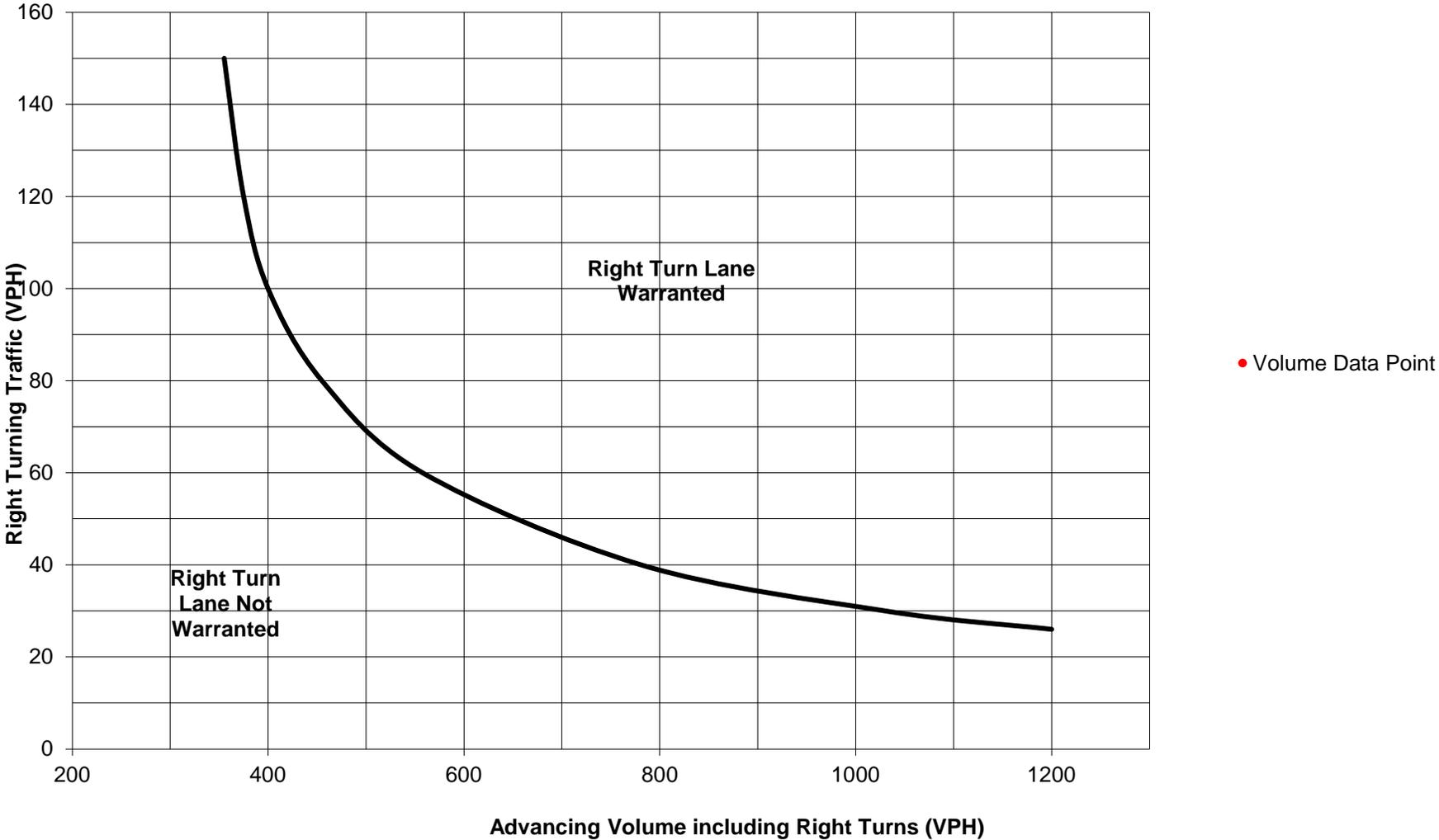
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Right Turn Lane Storage Length, Condition A:	<input type="text" value="N/A"/>	Feet
Condition B:	<input type="text" value="N/A"/>	Feet
Condition C:	<input type="text" value="N/A"/>	Feet
Required Right Turn Lane Storage Length:	<input type="text" value="N/A"/>	Feet

Additional Findings:

Additional Comments / Justifications:

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



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input type="text" value="Phoenixville Borough"/>	Analysis Date: <input type="text" value="2/8/2023"/>
County: <input type="text" value="Chester County"/>	Conducted By: <input type="text" value="VSA"/>
PennDOT Engineering District: <input type="text" value="6"/>	Checked By: <input type="text" value="JDG"/>
	Agency/Company Name: <input type="text" value="McMahon, a Bowman Company"/>
Intersection & Approach Description: <input type="text" value="Hall Street and Center Site Access, Westbound Right"/>	
Analysis Period: <input type="text" value="2024"/>	Number of Approach Lanes: <input type="text" value="1"/>
Design Hour: <input type="text" value="PM Peak Hour"/>	Undivided or Divided Highway: <input type="text" value="Undivided"/>
Intersection Control: <input type="text" value="Unsignalized"/>	
Posted Speed Limit (MPH): <input type="text" value="25"/>	Type of Analysis: <input type="text" value="Right Turn Lane"/>
Type of Terrain: <input type="text" value="Rolling"/>	Left or Right-Turn Lane Analysis?: <input type="text" value="Right Turn Lane"/>

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes			N/A
	Through	-			N/A
	Right	Yes			N/A
Opposing	Left	Yes			N/A
	Through	-			N/A
	Right	Yes			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	Yes	0	0.0%	0
	Through	-	26	2.0%	27
	Right	-	17	2.0%	18

Advancing Volume:	45
Right Turn Volume:	18

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: <input style="width: 100%;" type="text" value="N/A"/>	Applicable Warrant Figure: <input style="width: 100%;" type="text" value="Figure 9"/>
Warrant Met?: <input style="width: 100%;" type="text" value="N/A"/>	Warrant Met?: <input style="width: 100%;" type="text" value="No"/>

TURN LANE LENGTH CALCULATIONS

Intersection Control: <input style="width: 100%;" type="text" value="Unsignalized"/>	
Design Hour Volume of Turning Lane: <input style="width: 100%;" type="text" value="18"/>	
Cycles Per Hour (Assumed): <input style="width: 100%;" type="text" value="60"/>	
Cycles Per Hour (If Known): <input style="width: 100%;" type="text" value=""/>	Average # of Vehicles/Cycle: <input style="width: 100%;" type="text" value="N/A"/>

PennDOT Publication 46, Exhibit 11-6

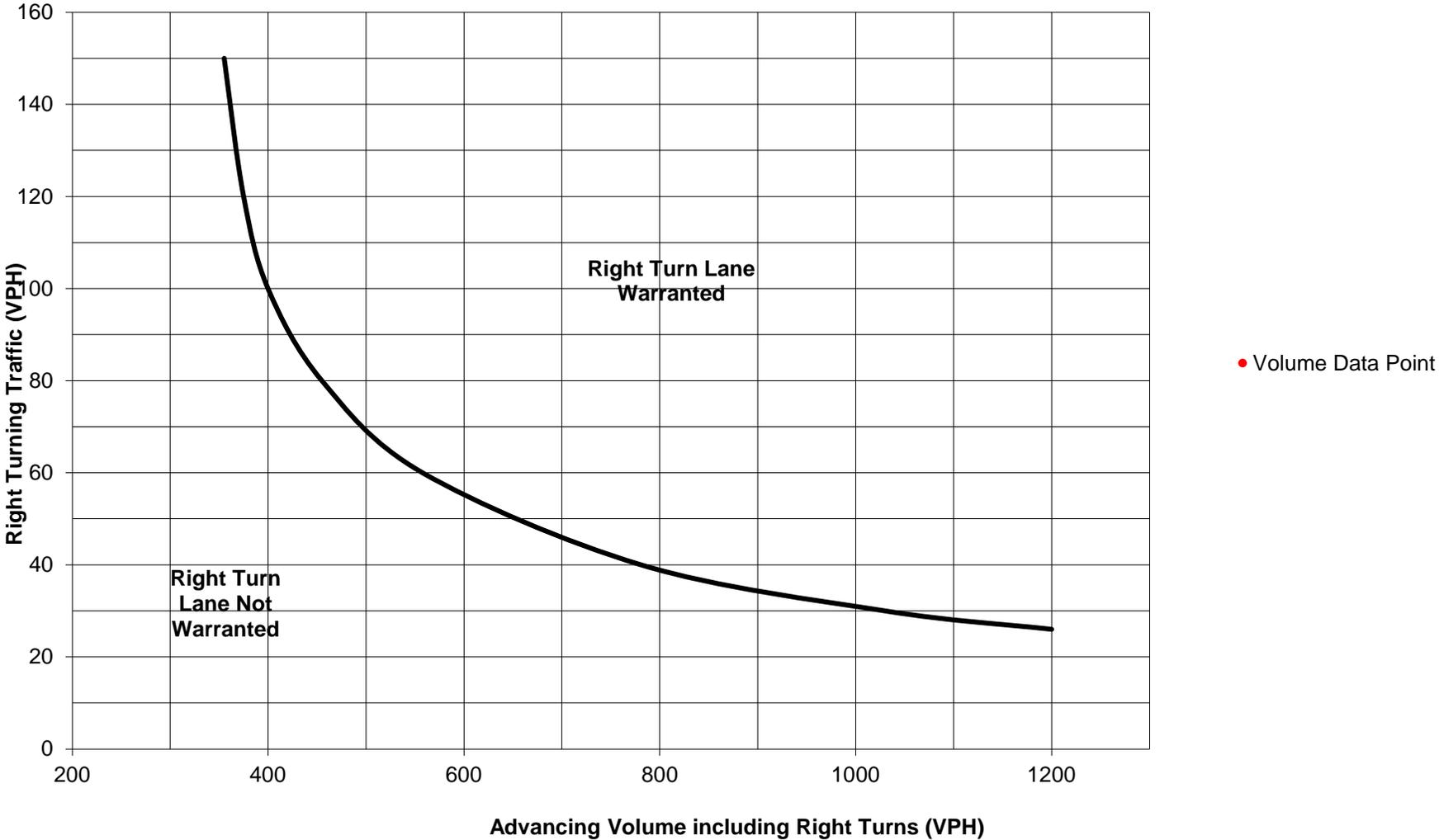
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

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:

Additional Comments / Justifications:

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



**Hall Street and
East Site Access**

Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input type="text" value="Phoenixville Borough"/>	Analysis Date: <input type="text" value="2/8/2023"/>
County: <input type="text" value="Chester County"/>	Conducted By: <input type="text" value="VSA"/>
PennDOT Engineering District: <input type="text" value="6"/>	Checked By: <input type="text" value="JDG"/>
	Agency/Company Name: <input type="text" value="McMahon, a Bowman Company"/>
Intersection & Approach Description: <input type="text" value="Hall Street and East Site Access, Westbound Right"/>	
Analysis Period: <input type="text" value="2024"/>	Number of Approach Lanes: <input type="text" value="1"/>
Design Hour: <input type="text" value="AM Peak Hour"/>	Undivided or Divided Highway: <input type="text" value="Undivided"/>
Intersection Control: <input type="text" value="Unsignalized"/>	
Posted Speed Limit (MPH): <input type="text" value="25"/>	Type of Analysis: <input type="text" value="Right Turn Lane"/>
Type of Terrain: <input type="text" value="Rolling"/>	Left or Right-Turn Lane Analysis?: <input type="text" value="Right Turn Lane"/>

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes			N/A
	Through	-			N/A
	Right	Yes			N/A
Opposing	Left	Yes			N/A
	Through	-			N/A
	Right	Yes			N/A

Advancing Volume:	N/A
Opposing Volume:	N/A
Left Turn Volume:	N/A
% Left Turns in Advancing Volume: <input style="width: 100px;" type="text" value="N/A"/>	

Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	0	0.0%	0
	Through	-	51	2.0%	53
	Right	-	16	2.0%	17

Advancing Volume:	70
Right Turn Volume:	17

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: <input style="width: 100px;" type="text" value="N/A"/>	Applicable Warrant Figure: <input style="width: 100px;" type="text" value="Figure 9"/>
Warrant Met?: <input style="width: 100px;" type="text" value="N/A"/>	Warrant Met?: <input style="width: 100px;" type="text" value="No"/>

TURN LANE LENGTH CALCULATIONS

Intersection Control: <input style="width: 100px;" type="text" value="Unsignalized"/>	
Design Hour Volume of Turning Lane: <input style="width: 100px;" type="text" value="17"/>	
Cycles Per Hour (Assumed): <input style="width: 100px;" type="text" value="60"/>	
Cycles Per Hour (If Known): <input style="width: 100px;" type="text"/>	Average # of Vehicles/Cycle: <input style="width: 100px;" type="text" value="N/A"/>

PennDOT Publication 46, Exhibit 11-6

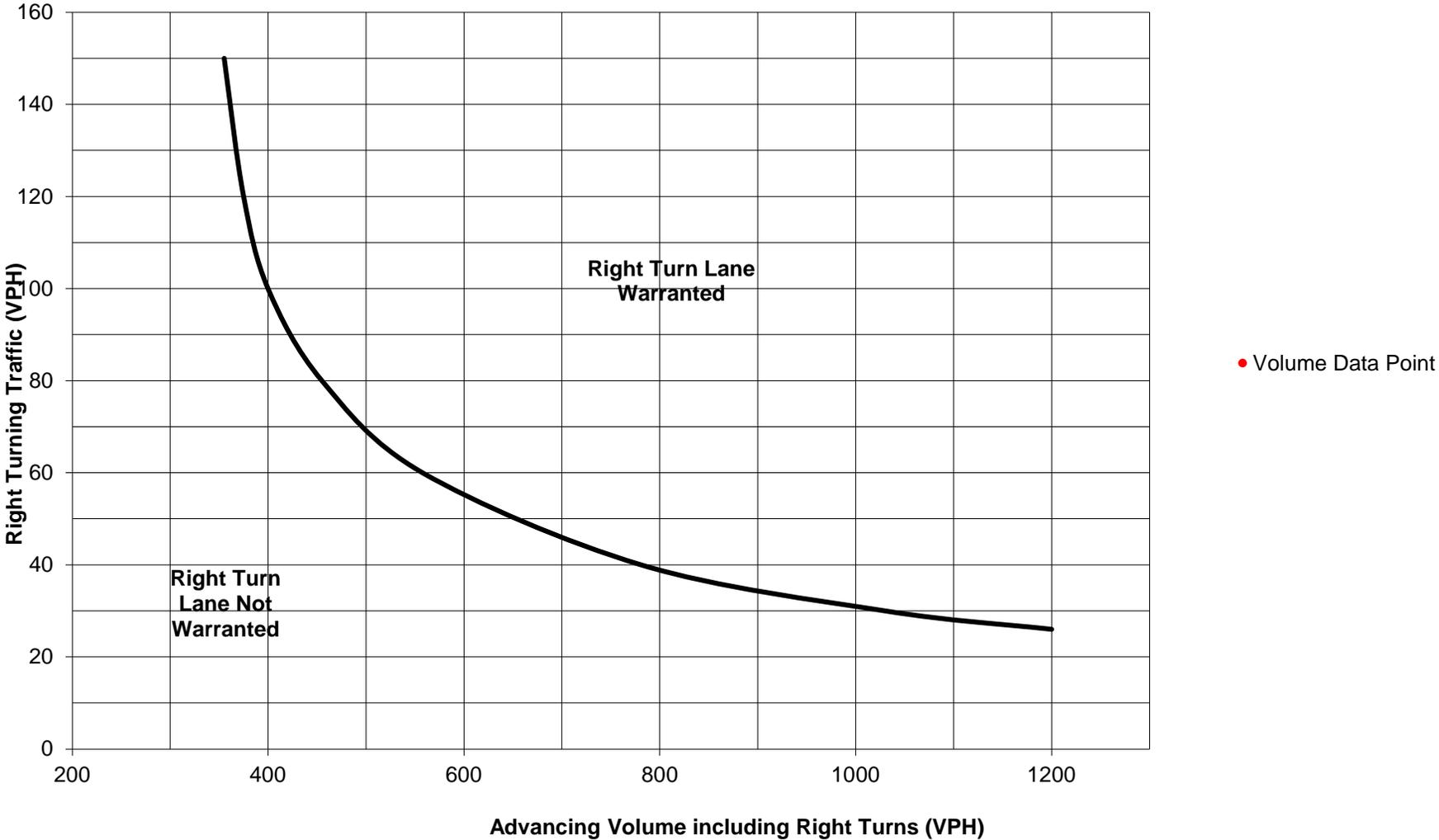
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

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:

Additional Comments / Justifications:

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



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input type="text" value="Phoenixville Borough"/>	Analysis Date: <input type="text" value="2/8/2023"/>
County: <input type="text" value="Chester County"/>	Conducted By: <input type="text" value="VSA"/>
PennDOT Engineering District: <input type="text" value="6"/>	Checked By: <input type="text" value="JDG"/>
	Agency/Company Name: <input type="text" value="McMahon, a Bowman Company"/>
Intersection & Approach Description: <input type="text" value="Hall Street and East Site Access, Westbound Right"/>	
Analysis Period: <input type="text" value="2024"/>	Number of Approach Lanes: <input type="text" value="1"/>
Design Hour: <input type="text" value="PM Peak Hour"/>	Undivided or Divided Highway: <input type="text" value="Undivided"/>
Intersection Control: <input type="text" value="Unsignalized"/>	
Posted Speed Limit (MPH): <input type="text" value="25"/>	Type of Analysis: <input type="text" value="Right Turn Lane"/>
Type of Terrain: <input type="text" value="Rolling"/>	Left or Right-Turn Lane Analysis?: <input type="text" value="Right Turn Lane"/>

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes			N/A
	Through	-			N/A
	Right	Yes			N/A
Opposing	Left	Yes			N/A
	Through	-			N/A
	Right	Yes			N/A

Advancing Volume:	<input type="text" value="N/A"/>
Opposing Volume:	<input type="text" value="N/A"/>
Left Turn Volume:	<input type="text" value="N/A"/>
% Left Turns in Advancing Volume:	<input type="text" value="N/A"/>

Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	0	0.0%	0
	Through	-	43	2.0%	45
	Right	-	23	2.0%	24

Advancing Volume:	<input type="text" value="69"/>
Right Turn Volume:	<input type="text" value="24"/>

TURN LANE WARRANT FINDINGS

<table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="background-color: #D3D3D3;">Left Turn Lane Warrant Findings</th> </tr> </thead> <tbody> <tr> <td>Applicable Warrant Figure:</td> <td><input type="text" value="N/A"/></td> </tr> <tr> <td>Warrant Met?:</td> <td><input type="text" value="N/A"/></td> </tr> </tbody> </table>	Left Turn Lane Warrant Findings		Applicable Warrant Figure:	<input type="text" value="N/A"/>	Warrant Met?:	<input type="text" value="N/A"/>	<table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="background-color: #D3D3D3;">Right Turn Lane Warrant Findings</th> </tr> </thead> <tbody> <tr> <td>Applicable Warrant Figure:</td> <td><input type="text" value="Figure 9"/></td> </tr> <tr> <td>Warrant Met?:</td> <td><input type="text" value="No"/></td> </tr> </tbody> </table>	Right Turn Lane Warrant Findings		Applicable Warrant Figure:	<input type="text" value="Figure 9"/>	Warrant Met?:	<input type="text" value="No"/>
Left Turn Lane Warrant Findings													
Applicable Warrant Figure:	<input type="text" value="N/A"/>												
Warrant Met?:	<input type="text" value="N/A"/>												
Right Turn Lane Warrant Findings													
Applicable Warrant Figure:	<input type="text" value="Figure 9"/>												
Warrant Met?:	<input type="text" value="No"/>												

TURN LANE LENGTH CALCULATIONS

Intersection Control: <input type="text" value="Unsignalized"/>	Average # of Vehicles/Cycle: <input type="text" value="N/A"/>
Design Hour Volume of Turning Lane: <input type="text" value="24"/>	
Cycles Per Hour (Assumed): <input type="text" value="60"/>	
Cycles Per Hour (If Known): <input type="text"/>	

PennDOT Publication 46, Exhibit 11-6

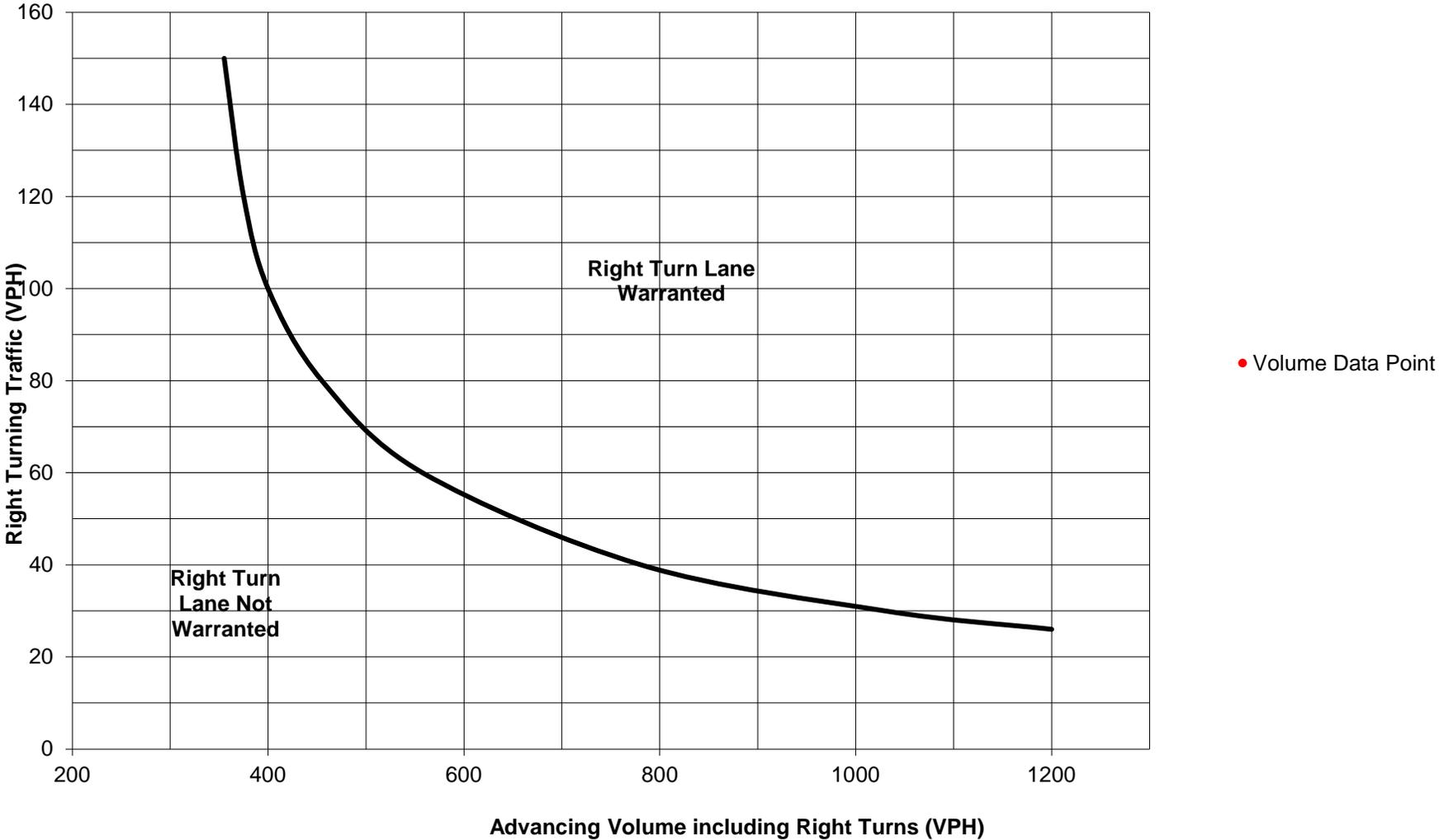
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Right Turn Lane Storage Length, Condition A:	<input type="text" value="N/A"/>	Feet
Condition B:	<input type="text" value="N/A"/>	Feet
Condition C:	<input type="text" value="N/A"/>	Feet
Required Right Turn Lane Storage Length:	<input type="text" value="N/A"/>	Feet

Additional Findings:

Additional Comments / Justifications:

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



**Paradise Street
and Hall Street**

Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input type="text" value="Phoenixville Borough"/> County: <input type="text" value="Chester County"/> PennDOT Engineering District: <input type="text" value="6"/>	Analysis Date: <input type="text" value="2/14/2023"/> Conducted By: <input type="text" value="VSA"/> Checked By: <input type="text" value="JDG"/> Agency/Company Name: <input type="text" value="McMahon, a Bowman Company"/>
Intersection & Approach Description: <input type="text" value="Paradise Street and Hall Street, Northbound Right"/>	
Analysis Period: <input type="text" value="2024"/> Design Hour: <input type="text" value="AM Peak Hour"/> Intersection Control: <input type="text" value="Unsignalized"/> Posted Speed Limit (MPH): <input type="text" value="25"/> Type of Terrain: <input type="text" value="Rolling"/>	Number of Approach Lanes: <input type="text" value="1"/> Undivided or Divided Highway: <input type="text" value="Undivided"/> <div style="border: 2px solid red; padding: 2px; display: inline-block;">Type of Analysis</div> Left or Right-Turn Lane Analysis?: <input type="text" value="Right Turn Lane"/>

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes			N/A
	Through	-			N/A
	Right	Yes			N/A
Opposing	Left	Yes			N/A
	Through	-			N/A
	Right	Yes			N/A

Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	0	0.0%	0
	Through	-	91	2.0%	94
	Right	-	39	2.0%	41

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

Advancing Volume:	135
Right Turn Volume:	41

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: <input type="text" value="N/A"/>	Applicable Warrant Figure: <input type="text" value="Figure 9"/>
Warrant Met?: <input type="text" value="N/A"/>	Warrant Met?: <input type="text" value="No"/>

TURN LANE LENGTH CALCULATIONS

Intersection Control: <input type="text" value="Unsignalized"/> Design Hour Volume of Turning Lane: <input type="text" value="41"/> Cycles Per Hour (Assumed): <input type="text" value="60"/> Cycles Per Hour (If Known): <input type="text"/>	Average # of Vehicles/Cycle: <input type="text" value="N/A"/>
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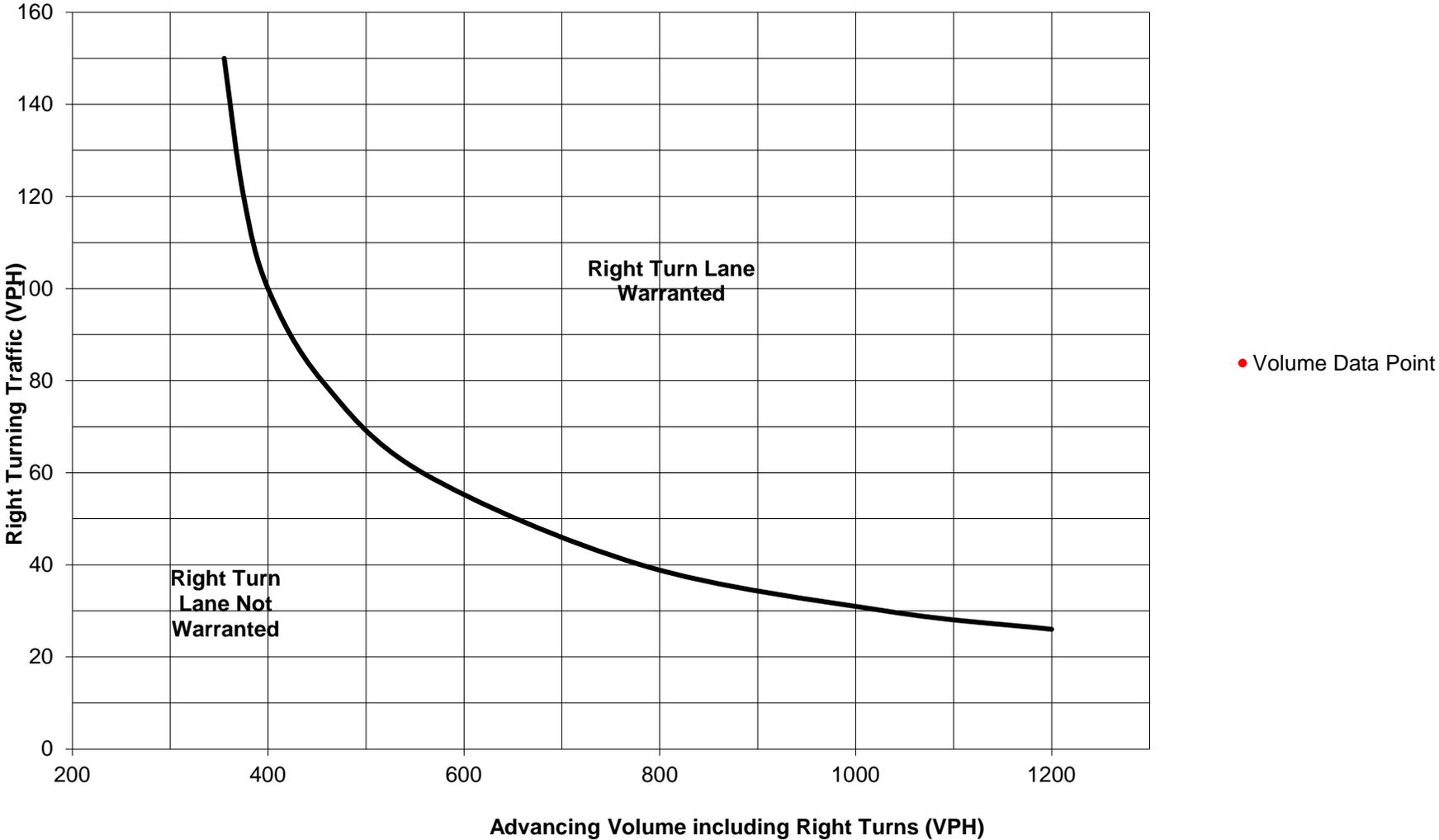
Type of Traffic Control	PennDOT Publication 46, Exhibit 11-6					
	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Right Turn Lane Storage Length, Condition A:	<input type="text" value="N/A"/>	Feet
Condition B:	<input type="text" value="N/A"/>	Feet
Condition C:	<input type="text" value="N/A"/>	Feet
Required Right Turn Lane Storage Length:	<input type="text" value="N/A"/>	Feet

Additional Findings:

Additional Comments / Justifications:

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



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input type="text" value="Phoenixville Borough"/> County: <input type="text" value="Chester County"/> PennDOT Engineering District: <input type="text" value="6"/>	Analysis Date: <input type="text" value="2/14/2023"/> Conducted By: <input type="text" value="VSA"/> Checked By: <input type="text" value="JDG"/> Agency/Company Name: <input type="text" value="McMahon, a Bowman Company"/>
Intersection & Approach Description: <input type="text" value="Paradise Street and Hall Street, Northbound Right"/>	
Analysis Period: <input type="text" value="2024"/> Design Hour: <input type="text" value="PM Peak Hour"/> Intersection Control: <input type="text" value="Unsignalized"/> Posted Speed Limit (MPH): <input type="text" value="25"/> Type of Terrain: <input type="text" value="Rolling"/>	Number of Approach Lanes: <input type="text" value="1"/> Undivided or Divided Highway: <input type="text" value="Undivided"/> <div style="border: 2px solid red; padding: 2px; display: inline-block;">Type of Analysis</div> Left or Right-Turn Lane Analysis?: <input type="text" value="Right Turn Lane"/>

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes			N/A
	Through	-			N/A
	Right	Yes			N/A
Opposing	Left	Yes			N/A
	Through	-			N/A
	Right	Yes			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	Yes	0	0.0%	0
	Through	-	172	2.0%	178
	Right	-	55	2.0%	57

Advancing Volume:	235
Right Turn Volume:	57

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: <input style="width: 80px;" type="text" value="N/A"/>	Applicable Warrant Figure: <input style="width: 80px;" type="text" value="Figure 9"/>
Warrant Met?: <input style="width: 80px;" type="text" value="N/A"/>	Warrant Met?: <input style="width: 80px;" type="text" value="No"/>

TURN LANE LENGTH CALCULATIONS

Intersection Control:	Unsignalized
Design Hour Volume of Turning Lane:	57
Cycles Per Hour (Assumed):	60
Cycles Per Hour (If Known):	
Average # of Vehicles/Cycle:	N/A

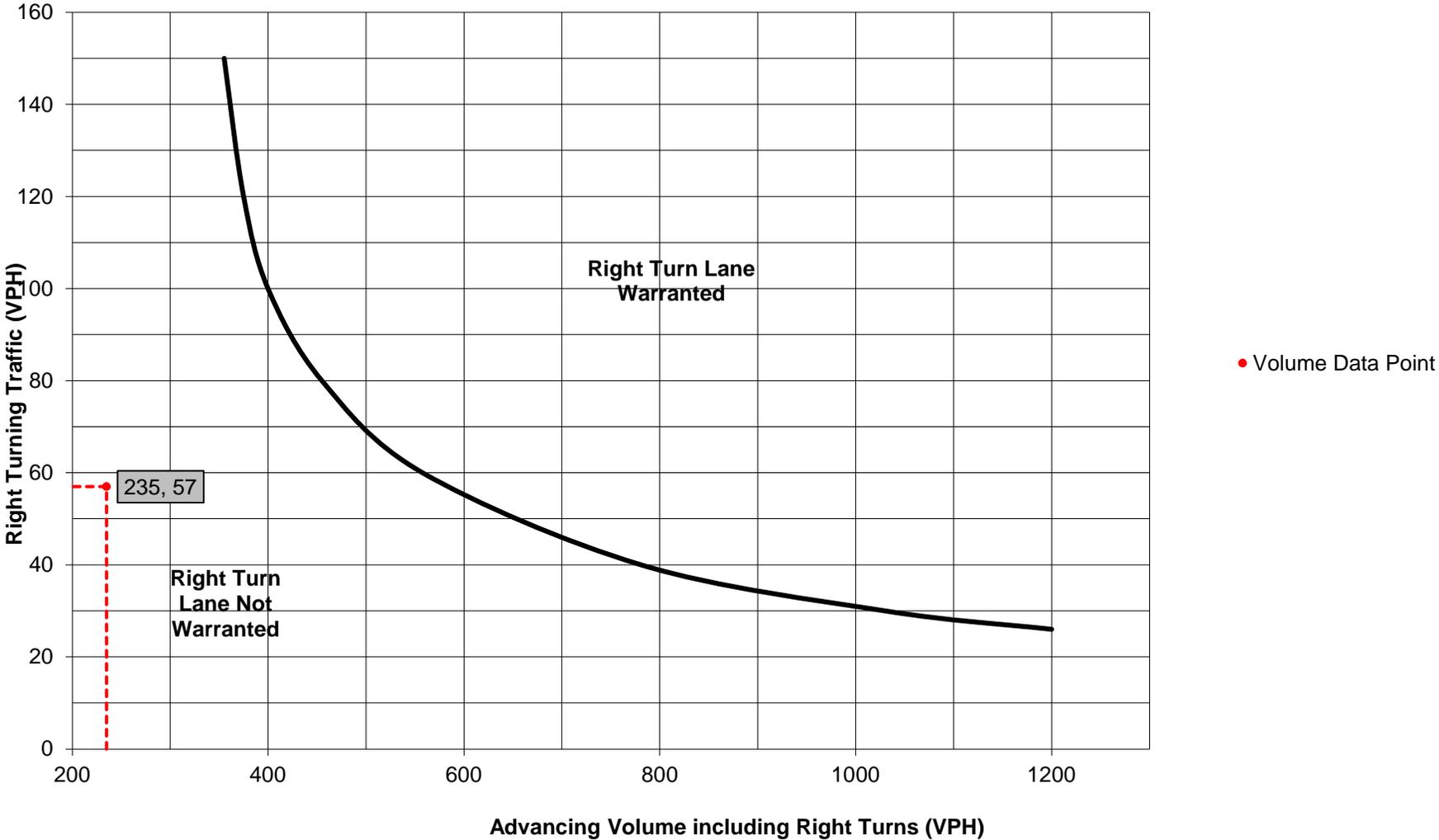
Type of Traffic Control	PennDOT Publication 46, Exhibit 11-6					
	Speed (MPH)					
	25-35		40-45		50-60	
Turn Demand Volume						
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

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:

Additional Comments / Justifications:

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



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input type="text" value="Phoenixville Borough"/> County: <input type="text" value="Chester County"/> PennDOT Engineering District: <input type="text" value="6"/>	Analysis Date: <input type="text" value="2/14/2023"/> Conducted By: <input type="text" value="VSA"/> Checked By: <input type="text" value="JDG"/> Agency/Company Name: <input type="text" value="McMahon, a Bowman Company"/>
Intersection & Approach Description: <input type="text" value="Paradise Street and Hall Street, Southbound Left"/>	
Analysis Period: <input type="text" value="2024"/> Design Hour: <input type="text" value="AM Peak Hour"/> Intersection Control: <input type="text" value="Unsignalized"/> Posted Speed Limit (MPH): <input type="text" value="25"/> Type of Terrain: <input type="text" value="Rolling"/>	Number of Approach Lanes: <input type="text" value="1"/> Undivided or Divided Highway: <input type="text" value="Undivided"/> <div style="border: 2px solid red; padding: 2px; display: inline-block;">Type of Analysis</div> Left or Right-Turn Lane Analysis?: <input type="text" value="Left Turn Lane"/>

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations						
Movement	Include?	Volume	% Trucks	PCEV		
Advancing	Left	Yes	1	2.0%	2	Advancing Volume: <input type="text" value="176"/> Opposing Volume: <input type="text" value="135"/> Left Turn Volume: <input type="text" value="2"/>
	Through	-	168	2.0%	174	
	Right	Yes	0	2.0%	0	
Opposing	Left	Yes	0	2.0%	0	% Left Turns in Advancing Volume: <input type="text" value="1.14%"/>
	Through	-	91	2.0%	94	
	Right	Yes	39	2.0%	41	

Right Turn Lane Volume Calculations						
Movement	Include?	Volume	% Trucks	PCEV		
Advancing	Left	Yes			N/A	Advancing Volume: <input type="text" value="N/A"/> Right Turn Volume: <input type="text" value="N/A"/>
	Through	-			N/A	
	Right	-			N/A	

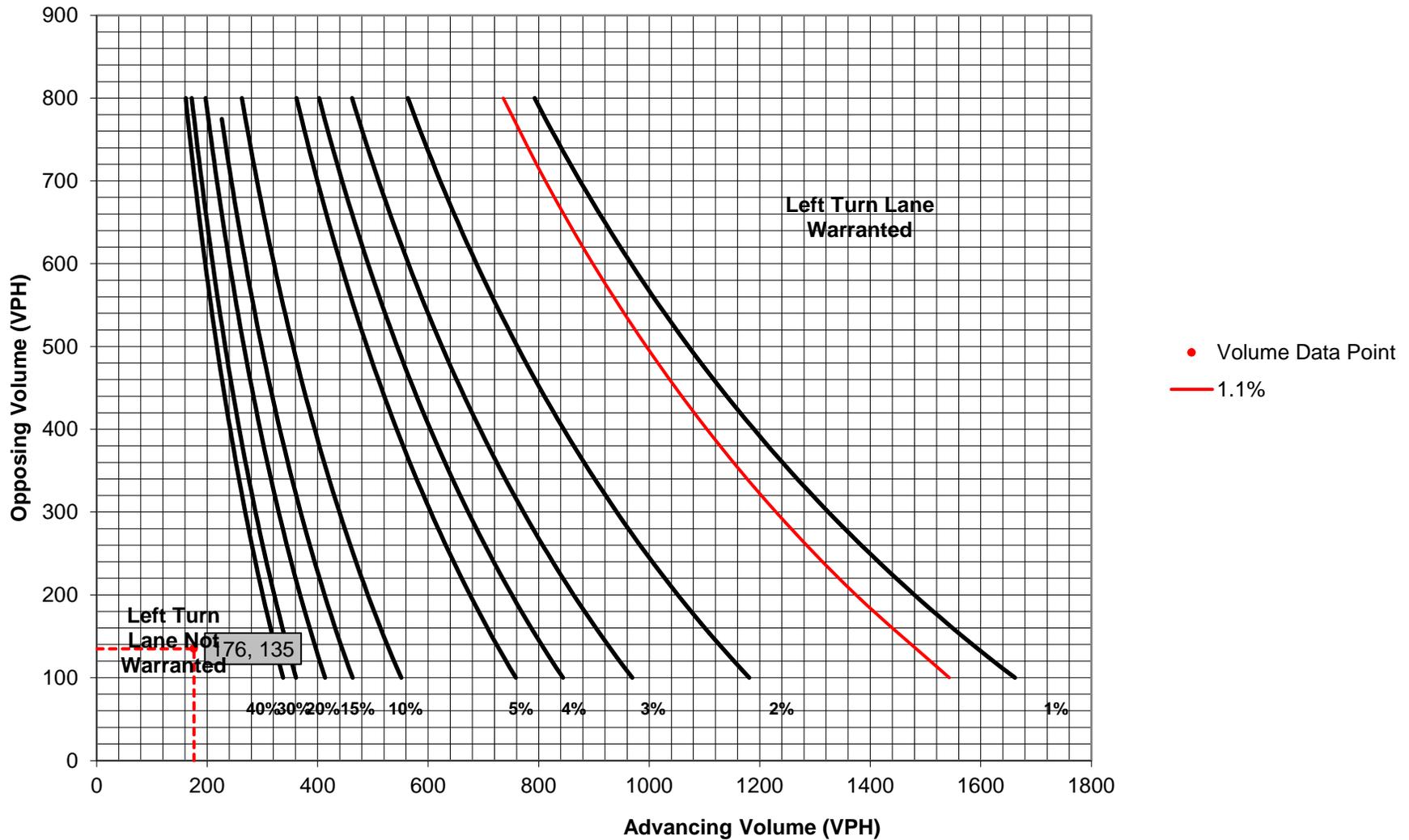
TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: <input type="text" value="Figure 1"/> Warrant Met?: <input type="text" value="No"/>	Applicable Warrant Figure: <input type="text" value="N/A"/> Warrant Met?: <input type="text" value="N/A"/>

TURN LANE LENGTH CALCULATIONS

Intersection Control: <input type="text" value="Unsignalized"/> Design Hour Volume of Turning Lane: <input type="text" value="2"/> Cycles Per Hour (Assumed): <input type="text" value="60"/> Cycles Per Hour (If Known): <input type="text"/>	Average # of Vehicles/Cycle: <input type="text" value="N/A"/>																																								
PennDOT Publication 46, Exhibit 11-6																																									
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr style="background-color: #FFDAB9;"> <th rowspan="3" style="text-align: left;">Type of Traffic Control</th> <th colspan="6" style="text-align: center;">Speed (MPH)</th> </tr> <tr style="background-color: #FFDAB9;"> <th colspan="2" style="text-align: center;">25-35</th> <th colspan="2" style="text-align: center;">40-45</th> <th colspan="2" style="text-align: center;">50-60</th> </tr> <tr style="background-color: #FFDAB9;"> <th colspan="6" style="text-align: center;">Turn Demand Volume</th> </tr> <tr> <th></th> <th style="text-align: center;">High</th> <th style="text-align: center;">Low</th> <th style="text-align: center;">High</th> <th style="text-align: center;">Low</th> <th style="text-align: center;">High</th> <th style="text-align: center;">Low</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">Signalized</td> <td style="text-align: center;">A</td> <td style="text-align: center;">A</td> <td style="text-align: center;">B or C</td> </tr> <tr> <td style="text-align: center;">Unsignalized</td> <td style="text-align: center;">A</td> <td style="text-align: center;">A</td> <td style="text-align: center;">C</td> <td style="text-align: center;">B</td> <td style="text-align: center;">B or C</td> <td style="text-align: center;">B</td> </tr> </tbody> </table>		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
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: <input type="text" value="N/A"/> Feet Condition B: <input type="text" value="N/A"/> Feet Condition C: <input type="text" value="N/A"/> Feet Required Left Turn Lane Storage Length: <input type="text" value="N/A"/> Feet																																									
Additional Findings: <input type="text" value="N/A"/>																																									
Additional Comments / Justifications: <div style="border: 1px solid black; height: 40px; width: 100%;"></div>																																									

Figure 1. Warrant for left turn lanes on two-lane roadways
 (speeds to 35 mph, unsignalized and signalized intersections)
 (L = % Left Turns in Advancing Volume)



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input type="text" value="Phoenixville Borough"/> County: <input type="text" value="Chester County"/> PennDOT Engineering District: <input type="text" value="6"/>	Analysis Date: <input type="text" value="2/14/2023"/> Conducted By: <input type="text" value="VSA"/> Checked By: <input type="text" value="JDG"/> Agency/Company Name: <input type="text" value="McMahon, a Bowman Company"/>
Intersection & Approach Description: <input type="text" value="Paradise Street and Hall Street, Southbound Left"/>	
Analysis Period: <input type="text" value="2024"/> Design Hour: <input type="text" value="PM Peak Hour"/> Intersection Control: <input type="text" value="Unsignalized"/> Posted Speed Limit (MPH): <input type="text" value="25"/> Type of Terrain: <input type="text" value="Rolling"/>	Number of Approach Lanes: <input type="text" value="1"/> Undivided or Divided Highway: <input type="text" value="Undivided"/> <div style="border: 2px solid red; padding: 2px; display: inline-block;">Type of Analysis</div> Left or Right-Turn Lane Analysis?: <input type="text" value="Left Turn Lane"/>

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations						
Movement	Include?	Volume	% Trucks	PCEV		
Advancing	Left	Yes	2	2.0%	3	Advancing Volume: <input type="text" value="168"/> Opposing Volume: <input type="text" value="235"/> Left Turn Volume: <input type="text" value="3"/>
	Through	-	160	2.0%	165	
	Right	Yes	0	2.0%	0	
Opposing	Left	Yes	0	2.0%	0	% Left Turns in Advancing Volume: <input type="text" value="1.79%"/>
	Through	-	172	2.0%	178	
	Right	Yes	55	2.0%	57	

Right Turn Lane Volume Calculations						
Movement	Include?	Volume	% Trucks	PCEV		
Advancing	Left	Yes			N/A	Advancing Volume: <input type="text" value="N/A"/> Right Turn Volume: <input type="text" value="N/A"/>
	Through	-			N/A	
	Right	-			N/A	

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: <input type="text" value="Figure 1"/> Warrant Met?: <input type="text" value="No"/>	Applicable Warrant Figure: <input type="text" value="N/A"/> Warrant Met?: <input type="text" value="N/A"/>

TURN LANE LENGTH CALCULATIONS

Intersection Control: <input type="text" value="Unsignalized"/> Design Hour Volume of Turning Lane: <input type="text" value="3"/> Cycles Per Hour (Assumed): <input type="text" value="60"/> Cycles Per Hour (If Known): <input type="text"/>	Average # of Vehicles/Cycle: <input type="text" value="N/A"/>
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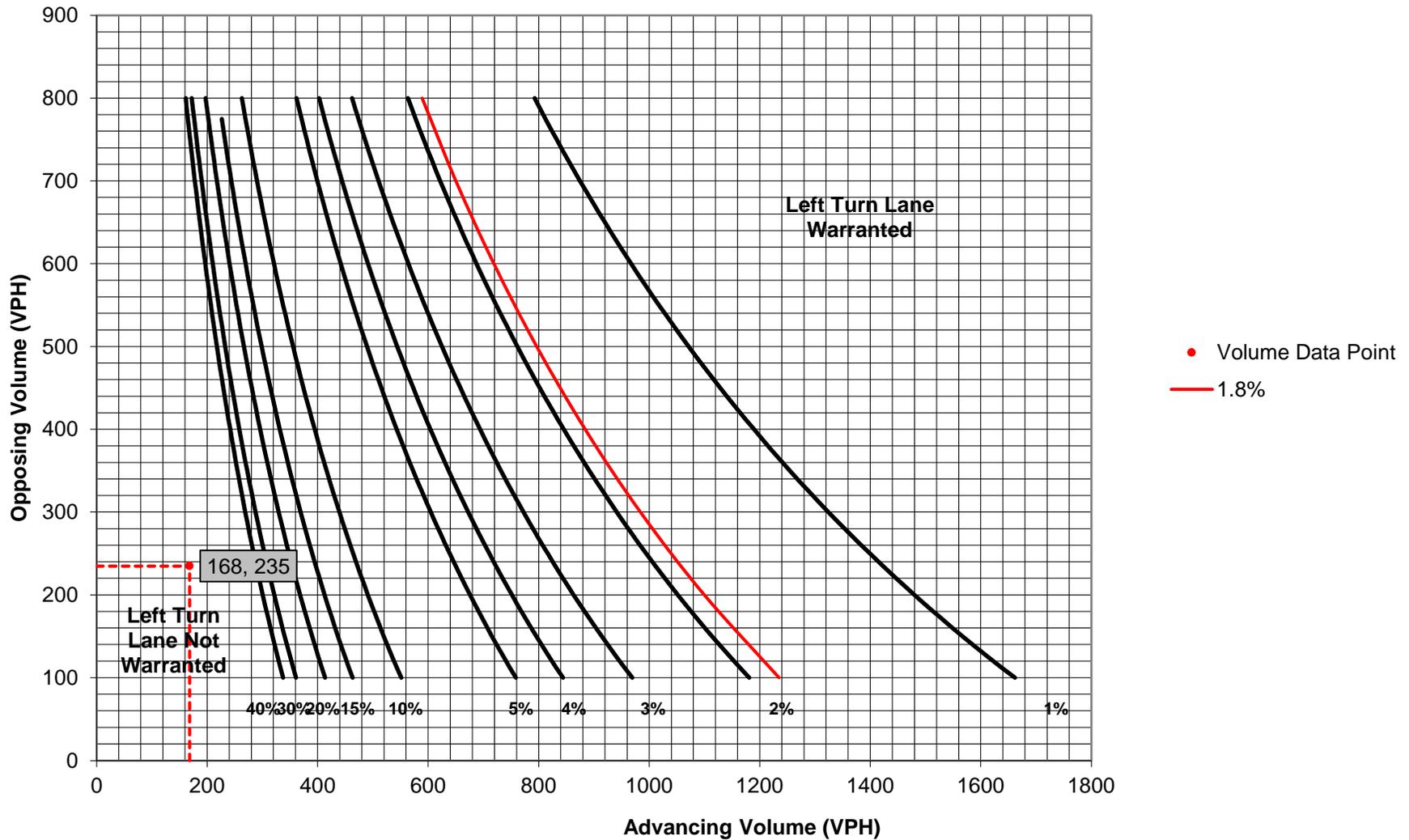
Type of Traffic Control	PennDOT Publication 46, Exhibit 11-6					
	Speed (MPH)					
	25-35		40-45		50-60	
Turn Demand Volume						
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Left Turn Lane Storage Length, Condition A:	<input type="text" value="N/A"/>	Feet
Condition B:	<input type="text" value="N/A"/>	Feet
Condition C:	<input type="text" value="N/A"/>	Feet
Required Left Turn Lane Storage Length:	<input type="text" value="N/A"/>	Feet

Additional Findings:

Additional Comments / Justifications:

Figure 1. Warrant for left turn lanes on two-lane roadways
 (speeds to 35 mph, unsignalized and signalized intersections)
 (L = % Left Turns in Advancing Volume)



Appendix G

Traffic Volume Projections

Paradise Street & Nutt Road (S.R. 0023)
INTERSECTION VOLUME PROJECTION SUMMARY
Weekday 6 AM - 10 AM

		EASTBOUND			WESTBOUND			NORTHBOUND			SOUTHBOUND		
		Nutt Road (S.R. 0023)			Nutt Road (S.R. 0023)			Paradise Street			Paradise Street		
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
EXISTING VOLUMES													
Seasonal Adjustment Factor	1.000	8	1058	0	0	711	3	0	0	0	3	0	11
Balancing Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
Additional Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING VOLUMES		8	1058	0	0	711	3	0	0	0	3	0	11
Background Growth to 2024	1.08%	0	11	0	0	8	0	0	0	0	0	0	0
Steelworks (Residential)	DIST IN	30%									(30%)		
	DIST OUT												
	ASSIGN	10	0	0	0	0	0	0	0	0	0	0	32
Steelworks (Commercial)	DIST IN	20%			(20%)								
	DIST OUT												
	ASSIGN	0	10	0	0	8	0	0	0	0	0	0	0
115 Buchanan Street	DIST IN	30%			(30%)								
	DIST OUT												
	ASSIGN	0	1	0	0	2	0	0	0	0	0	0	0
723 Wheatland Street	DIST IN	32%									22%		32%
	DIST OUT												
	ASSIGN	0	6	0	0	0	0	0	0	0	4	0	6
Bridge Street Residential	DIST IN	30%			(30%)								
	DIST OUT												
	ASSIGN	0	2	0	0	6	0	0	0	0	0	0	0
PHOENIXVILLE GROUP 3	DIST IN	30%			(30%)								
	DIST OUT												
	ASSIGN	0	2	0	0	8	0	0	0	0	0	0	0
PHOENIXVILLE GROUP 4	DIST IN	30%			(30%)								
	DIST OUT												
	ASSIGN	0	3	0	0	10	0	0	0	0	0	0	0
PHOENIXVILLE GROUP 5	DIST IN	30%									(30%)		
	DIST OUT												
	ASSIGN	0	0	0	0	0	0	0	0	0	0	0	1
PHOENIXVILLE GROUP 6	DIST IN												
	DIST OUT												
	ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
PHOENIXVILLE GROUP 8	DIST IN				63%								
	DIST OUT	(63%)											
	ASSIGN	0	17	0	0	6	0	0	0	0	0	0	0
PHOENIXVILLE GROUP 9	DIST IN	32%			(32%)								
	DIST OUT												
	ASSIGN	0	0	0	0	2	0	0	0	0	0	0	0
French Creek West	DIST IN	30%			21%						(21%)		(30%)
	DIST OUT												
	ASSIGN	16	0	0	0	0	11	0	0	0	.	0	50
Bridge Street Retail	DIST IN	30%			(30%)								
	DIST OUT												
	ASSIGN	0	2	0	0	2	0	0	0	0	0	0	0
Paradise Street Diversions	DIST IN												
	DIST OUT												
	ASSIGN	49	-49	0	0	-60	0	0	0	0	0	0	60
<i>Total Other Development New Trip Assignments</i>		75	-6	0	0	-16	11	0	0	0	4	0	149
<i>Total Other Development Pass-by Trip Assignments</i>		0	0	0	0	0	0	0	0	0	0	0	0
2024 WITHOUT DEVELOPMENT VOLUMES		83	1063	0	0	703	14	0	0	0	7	0	160
Site	DIST IN	30%			10%						(10%)		(30%)
	DIST OUT												
	ASSIGN	13	0	0	0	0	5	0	0	0	7	0	21
	PB IN	40%	-40%		-34%	27%							
	PB OUT										(27%)		(34%)
	PB ASSIGN	4	-4	0	0	-4	3	0	0	0	3	0	4
Hall Street Diversions	DIST IN												
	DIST OUT												
	ASSIGN	19	-19	0	0	-8	0	0	0	0	0	0	8
Total New Site Trip Assignment		32	-19	0	0	-8	5	0	0	0	7	0	29
Total Pass-by Site Trip Assignment		4	-4	0	0	-4	3	0	0	0	3	0	4
2024 WITH DEVELOPMENT VOLUMES		119	1040	0	0	691	22	0	0	0	17	0	193

Paradise Street & Nutt Road (S.R. 0023)

INTERSECTION VOLUME PROJECTION SUMMARY

Weekday 3 PM - 7 PM

		EASTBOUND			WESTBOUND			NORTHBOUND			SOUTHBOUND				
		Nutt Road (S.R. 0023)			Nutt Road (S.R. 0023)			Paradise Street			Paradise Street				
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
EXISTING VOLUMES															
Seasonal Adjustment Factor	1.000	10	1019	0	0	1180	6	0	0	0	0	0	17		
Balancing Adjustment		0	0	0	0	0	0	0	0	0	0	0	0		
Additional Adjustment		0	0	0	0	0	0	0	0	0	0	0	0		
ADJUSTED EXISTING VOLUMES															
Background Growth to 2024	1.08%	0	11	0	0	13	0	0	0	0	0	0	0		
Steelworks (Residential)	DIST IN DIST OUT ASSIGN	30%									(30%)				
Steelworks (Commercial)	DIST IN DIST OUT ASSIGN	20%			(20%)										
115 Buchanan Street	DIST IN DIST OUT ASSIGN	30%			(30%)										
723 Wheatland Street	DIST IN DIST OUT ASSIGN	32%									22%		32%		
Bridge Street Residential	DIST IN DIST OUT ASSIGN	30%			(30%)										
PHOENIXVILLE GROUP 3	DIST IN DIST OUT ASSIGN	30%			(30%)										
PHOENIXVILLE GROUP 4	DIST IN DIST OUT ASSIGN	30%			(30%)										
PHOENIXVILLE GROUP 5	DIST IN DIST OUT ASSIGN	30%									(30%)				
PHOENIXVILLE GROUP 6	DIST IN DIST OUT ASSIGN				0			0			0				
PHOENIXVILLE GROUP 8	DIST IN DIST OUT ASSIGN	(63%)			63%										
PHOENIXVILLE GROUP 9	DIST IN DIST OUT ASSIGN	32%			(32%)										
French Creek West	DIST IN DIST OUT ASSIGN	30%						21%					(21%)		(30%)
Bridge Street Retail	DIST IN DIST OUT ASSIGN	30%			(30%)										
Paradise Street Diversions	DIST IN DIST OUT ASSIGN														
<i>Total Other Development New Trip Assignments</i>		133	12	0	0	-44	35	0	0	0	33	0	156		
<i>Total Other Development Pass-by Trip Assignments</i>		0	0	0	0	0	0	0	0	0	0	0	0		
2024 WITHOUT DEVELOPMENT VOLUMES		143	1042	0	0	1149	41	0	0	0	33	0	173		
Site	DIST IN DIST OUT ASSIGN PB IN PB OUT PB ASSIGN	30%			10%						(10%)		(30%)		
		20	0	0	0	0	7	0	0	0	4	0	13		
		31%	-31%		-46%		35%				(17%)		(46%)		
		5	-5	0	0	-8	6	0	0	0	2	0	4		
Hall Street Diversions	DIST IN DIST OUT ASSIGN														
		22	-22	0	0	-13	0	0	0	0	0	0	13		
Total New Site Trip Assignment		42	-22	0	0	-13	7	0	0	0	4	0	26		
Total Pass-by Site Trip Assignment		5	-5	0	0	-8	6	0	0	0	2	0	4		
2024 WITH DEVELOPMENT VOLUMES		190	1015	0	0	1128	54	0	0	0	39	0	203		

Main Street & Smithworks Boulevard
INTERSECTION VOLUME PROJECTION SUMMARY
Weekday 6 AM - 10 AM

		EASTBOUND			WESTBOUND			NORTHBOUND			SOUTHBOUND		
		Smithworks Boulevard			Smithworks Boulevard			Main Street			Main Street		
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
EXISTING VOLUMES		2	1	59	68	1	6	48	98	10	4	318	7
Seasonal Adjustment Factor	1.000	0	0	0	0	0	0	0	0	0	0	0	0
Balancing Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
Additional Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING VOLUMES		2	1	59	68	1	6	48	98	10	4	318	7
Background Growth to 2024	1.08%	0	0	1	1	0	0	1	1	0	0	3	0
Steelworks (Residential)	DIST IN DIST OUT ASSIGN	(2%) 2	0	0	0	0	0	0	0	0	0	0	1
Steelworks (Commercial)	DIST IN DIST OUT ASSIGN	 0	0	0	0	0	0	0	3	0	0	4	0
115 Buchanan Street	DIST IN DIST OUT ASSIGN	 0	0	0	0	0	0	0	0	0	0	0	0
723 Wheatland Street	DIST IN DIST OUT ASSIGN	(5%) 3	0	0	0	0	0	0	1	0	0	0	1
Bridge Street Residential	DIST IN DIST OUT ASSIGN	 0	0	0	0	0	0	0	0	0	0	1	0
PHOENIXVILLE GROUP 3	DIST IN DIST OUT ASSIGN	 0	0	0	0	0	0	0	0	0	0	2	0
PHOENIXVILLE GROUP 4	DIST IN DIST OUT ASSIGN	 0	0	0	0	0	0	0	1	0	0	2	0
PHOENIXVILLE GROUP 5	DIST IN DIST OUT ASSIGN	30% 0	0	0	0	0	0	0	0	0	0	0	1
PHOENIXVILLE GROUP 6	DIST IN DIST OUT ASSIGN	 0	0	0	0	0	0	0	1	0	0	2	0
PHOENIXVILLE GROUP 8	DIST IN DIST OUT ASSIGN	 0	0	0	0	0	0	0	5	0	0	2	0
PHOENIXVILLE GROUP 9	DIST IN DIST OUT ASSIGN	 0	0	0	0	0	0	0	1	0	0	0	0
French Creek West	DIST IN DIST OUT ASSIGN	(7%) 12	0	71	0	0	0	22	0	0	0	0	4
Bridge Street Retail	DIST IN DIST OUT ASSIGN	 0	0	0	0	0	0	0	0	0	0	1	0
Paradise Street Diversions	DIST IN DIST OUT ASSIGN	 4	1	44	-3	3	0	31	-4	-1	0	-26	26
Total Other Development New Trip Assignments		21	1	115	-3	3	0	53	8	-1	0	-12	33
Total Other Development Pass-by Trip Assignments		0	0	0	0	0	0	0	0	0	0	0	0
2024 WITHOUT DEVELOPMENT VOLUMES		23	2	175	66	4	6	102	107	9	4	309	40
Site	DIST IN DIST OUT ASSIGN PB IN PB OUT PB ASSIGN	 (7%) 5	0	0	0	0	0	0	0	0	0	0	3
Hall Street Diversions	DIST IN DIST OUT ASSIGN	 0	0	0	0	0	0	0	0	0	0	0	0
Total New Site Trip Assignment		5	0	0	0	0	0	0	0	0	0	0	3
Total Pass-by Site Trip Assignment		0	0	0	0	0	0	0	0	0	0	0	0
2024 WITH DEVELOPMENT VOLUMES		28	2	175	66	4	6	102	107	9	4	309	43

Main Street & Smithworks Boulevard INTERSECTION VOLUME PROJECTION SUMMARY Weekday 3 PM - 7 PM

		EASTBOUND			WESTBOUND			NORTHBOUND			SOUTHBOUND		
		Smithworks Boulevard			Smithworks Boulevard			Main Street			Main Street		
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
EXISTING VOLUMES													
Seasonal Adjustment Factor	1.000	6	3	22	28	0	10	43	317	70	8	200	7
Balancing Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
Additional Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING VOLUMES		6	3	22	28	0	10	43	317	70	8	200	7
Background Growth to 2024	1.08%	0	0	0	0	0	0	0	3	1	0	2	0
Steelworks (Residential)	DIST IN DIST OUT ASSIGN	(2%) 1	0	0	0	0	0	0	0	0	0	0	1
Steelworks (Commercial)	DIST IN DIST OUT ASSIGN								(7%) 3	0	0	4	0
115 Buchanan Street	DIST IN DIST OUT ASSIGN								(7%) 0	0	0	1	0
723 Wheatland Street	DIST IN DIST OUT ASSIGN	(5%) 2	0	0	0	0	0	0	(2%) 1	0	0	1	3
Bridge Street Residential	DIST IN DIST OUT ASSIGN								7% 1	0	0	1	0
PHOENIXVILLE GROUP 3	DIST IN DIST OUT ASSIGN								6% 1	0	0	1	0
PHOENIXVILLE GROUP 4	DIST IN DIST OUT ASSIGN								6% 2	0	0	1	0
PHOENIXVILLE GROUP 5	DIST IN DIST OUT ASSIGN	30% 2	0	0	0	0	0	0	1% 0	0	0	0	1
PHOENIXVILLE GROUP 6	DIST IN DIST OUT ASSIGN								1% 3	0	0	2	0
PHOENIXVILLE GROUP 8	DIST IN DIST OUT ASSIGN								(20%) 4	0	0	6	0
PHOENIXVILLE GROUP 9	DIST IN DIST OUT ASSIGN								(25%) 1	0	0	2	0
French Creek West	DIST IN DIST OUT ASSIGN	(7%) 7	0	42	0	0	0	42% 69	0	0	0	0	12
Bridge Street Retail	DIST IN DIST OUT ASSIGN								(7%) 2	0	0	2	0
Paradise Street Diversions	DIST IN DIST OUT ASSIGN												
<i>Total Other Development New Trip Assignments</i>		30	2	85	-1	1	0	139	0	-2	0	-3	41
<i>Total Other Development Pass-by Trip Assignments</i>		0	0	0	0	0	0	0	0	0	0	0	0
2024 WITHOUT DEVELOPMENT VOLUMES		36	5	107	27	1	10	182	320	69	8	199	48
Site	DIST IN DIST OUT ASSIGN PB IN PB OUT PB ASSIGN												7%
		(7%) 3	0	0	0	0	0	0	0	0	0	0	5
Hall Street Diversions	DIST IN DIST OUT ASSIGN												
		0	0	0	0	0	0	0	0	0	0	0	0
Total New Site Trip Assignment		3	0	0	0	0	0	0	0	0	0	0	5
Total Pass-by Site Trip Assignment		0	0	0	0	0	0	0	0	0	0	0	0
2024 WITH DEVELOPMENT VOLUMES		39	5	107	27	1	10	182	320	69	8	199	53

Bridge Street (S.R. 0113) & Hall Street INTERSECTION VOLUME PROJECTION SUMMARY

Weekday 6 AM - 10 AM

		EASTBOUND			WESTBOUND			NORTHBOUND			SOUTHBOUND		
		Hall Street			Hall Street			Bridge Street (S.R. 0113)			Bridge Street (S.R. 0113)		
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
EXISTING VOLUMES													
Seasonal Adjustment Factor	1.000	0	0	0	20	1	15	0	441	0	0	431	0
Balancing Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
Additional Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING VOLUMES													
Background Growth to 2024	1.08%	0	0	0	0	0	0	0	5	0	0	5	0
Steelworks (Residential)	DIST IN							43%				25%	
	DIST OUT	(25%)		(43%)									
	ASSIGN	27	0	46	0	0	0	14	0	0	0	0	8
Steelworks (Commercial)	DIST IN											50%	
	DIST OUT							(50%)					
	ASSIGN	0	0	0	0	0	0	0	21	0	0	26	0
115 Buchanan Street	DIST IN											40%	
	DIST OUT							(60%)					
	ASSIGN	0	0	0	0	0	0	0	4	0	0	1	0
723 Wheatland Street	DIST IN											20%	
	DIST OUT							(20%)					
	ASSIGN	0	0	0	0	0	0	0	10	0	0	4	0
Bridge Street Residential	DIST IN											50%	
	DIST OUT											(50%)	
	ASSIGN	0	0	0	0	0	0	0	4	0	0	10	0
PHOENIXVILLE GROUP 3	DIST IN											40%	
	DIST OUT											(40%)	
	ASSIGN	0	0	0	0	0	0	0	3	0	0	11	0
PHOENIXVILLE GROUP 4	DIST IN											40%	
	DIST OUT											(40%)	
	ASSIGN	0	0	0	0	0	0	0	4	0	0	13	0
PHOENIXVILLE GROUP 5	DIST IN											10%	
	DIST OUT											(10%)	
	ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
PHOENIXVILLE GROUP 6	DIST IN											10%	
	DIST OUT											(10%)	
	ASSIGN	0	0	0	0	0	0	0	12	0	0	21	0
PHOENIXVILLE GROUP 8	DIST IN											20%	
	DIST OUT											(20%)	
	ASSIGN	0	0	0	0	0	0	0	5	0	0	2	0
PHOENIXVILLE GROUP 9	DIST IN											25%	
	DIST OUT											(25%)	
	ASSIGN	0	0	0	0	0	0	0	1	0	0	0	0
French Creek West	DIST IN											0	0
	DIST OUT											0	0
	ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
Bridge Street Retail	DIST IN											50%	
	DIST OUT											(50%)	
	ASSIGN	0	0	0	0	0	0	0	4	0	0	3	0
Paradise Street Diversions	DIST IN												
	DIST OUT												
	ASSIGN	0	0	0	0	0	0	0	-49	0	0	-60	0
<i>Total Other Development New Trip Assignments</i>		27	0	46	0	0	0	14	19	0	0	31	8
<i>Total Other Development Pass-by Trip Assignments</i>		0	0	0	0	0	0	0	0	0	0	0	0
2024 WITHOUT DEVELOPMENT VOLUMES													
Site	DIST IN							11%				42%	
	DIST OUT	(42%)		(11%)									
	ASSIGN	30	0	8	0	0	0	5	0	0	0	0	18
	PB IN							17%	-30%			-16%	16%
	PB OUT	(30%)		(9%)									
	PB ASSIGN	3	0	1	0	0	0	2	-3	0	0	-2	2
Hall Street Diversions	DIST IN												
	DIST OUT												
	ASSIGN	19	0	0	0	0	0	0	-19	0	0	-8	8
Total New Site Trip Assignment		49	0	8	0	0	0	5	-19	0	0	-8	26
Total Pass-by Site Trip Assignment		3	0	1	0	0	0	2	-3	0	0	-2	2
2024 WITH DEVELOPMENT VOLUMES													
		79	0	55	20	1	15	21	443	0	0	457	36

Bridge Street (S.R. 0113) & Hall Street INTERSECTION VOLUME PROJECTION SUMMARY

Weekday 3 PM - 7 PM

		EASTBOUND			WESTBOUND			NORTHBOUND			SOUTHBOUND		
		Hall Street			Hall Street			Bridge Street (S.R. 0113)			Bridge Street (S.R. 0113)		
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
EXISTING VOLUMES													
Seasonal Adjustment Factor	1.000	2	0	1	9	0	18	5	586	0	0	552	3
Balancing Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
Additional Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING VOLUMES													
Background Growth to 2024	1.08%	0	0	0	0	0	0	0	6	0	0	6	0
Steelworks (Residential)	DIST IN DIST OUT ASSIGN	(25%) 11	0	18	0	0	0	43% 26	0	0	25% 0	0	15
Steelworks (Commercial)	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	(50%) 0	21	0	50% 0	32	0
115 Buchanan Street	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	(60%) 0	4	0	40% 0	3	0
723 Wheatland Street	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	(20%) 0	7	0	20% 0	11	0
Bridge Street Residential	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	50% 0	11	0	(50%) 0	7	0
PHOENIXVILLE GROUP 3	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	40% 0	9	0	(40%) 0	5	0
PHOENIXVILLE GROUP 4	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	40% 0	12	0	(40%) 0	8	0
PHOENIXVILLE GROUP 5	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	10% 0	1	0	(10%) 0	0	0
PHOENIXVILLE GROUP 6	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	10% 0	28	0	(10%) 0	19	0
PHOENIXVILLE GROUP 8	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	(20%) 0	4	0	20% 0	6	0
PHOENIXVILLE GROUP 9	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	(25%) 0	1	0	25% 0	2	0
French Creek West	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
Bridge Street Retail	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	50% 0	12	0	(50%) 0	13	0
Paradise Street Diversions	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	0	-63	0	0	-95	0
<i>Total Other Development New Trip Assignments</i>		11	0	18	0	0	0	26	47	0	0	11	15
<i>Total Other Development Pass-by Trip Assignments</i>		0	0	0	0	0	0	0	0	0	0	0	0
2024 WITHOUT DEVELOPMENT VOLUMES		13	0	19	9	0	18	31	639	0	0	569	18
Site	DIST IN DIST OUT ASSIGN PB IN PB OUT PB ASSIGN	(42%) 17	0	5	0	0	0	11% 7	0	0	42% 0	0	27
		(31%) 3	0	1	0	0	0	17% 3	-31%	0	-17% 0	17%	3
Hall Street Diversions	DIST IN DIST OUT ASSIGN	22	0	0	0	0	0	0	-22	0	0	-13	13
Total New Site Trip Assignment		39	0	5	0	0	0	7	-22	0	0	-13	40
Total Pass-by Site Trip Assignment		3	0	1	0	0	0	3	-5	0	0	-3	3
2024 WITH DEVELOPMENT VOLUMES		55	0	25	9	0	18	41	612	0	0	553	61

Paradise Street & West Site Access INTERSECTION VOLUME PROJECTION SUMMARY

Weekday 6 AM - 10 AM

		EASTBOUND			WESTBOUND West Site Access			NORTHBOUND Paradise Street			SOUTHBOUND Paradise Street		
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
EXISTING VOLUMES													
Seasonal Adjustment Factor	1.000	0	0	0	0	0	0	0	0	0	0	0	0
Balancing Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
Additional Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING VOLUMES		0	0	0	0	0	0	0	0	0	0	0	0
Background Growth to 2024	1.08%	0	0	0	0	0	0	0	0	0	0	0	0
Steelworks (Residential)	DIST IN DIST OUT ASSIGN												
Steelworks (Commercial)	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
115 Buchanan Street	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
723 Wheatland Street	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
Bridge Street Residential	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
PHOENIXVILLE GROUP 3	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
PHOENIXVILLE GROUP 4	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
PHOENIXVILLE GROUP 5	DIST IN DIST OUT ASSIGN							30%			(30%)		
PHOENIXVILLE GROUP 6	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	0	0	0	0	1	0
PHOENIXVILLE GROUP 8	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
PHOENIXVILLE GROUP 9	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
French Creek West	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	0	27	0	0	86	0
Bridge Street Retail	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
Paradise Street Diversions	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	0	49	0	0	60	0
<i>Total Other Development New Trip Assignments</i>		0	0	0	0	0	0	0	76	0	0	147	0
<i>Total Other Development Pass-by Trip Assignments</i>		0	0	0	0	0	0	0	0	0	0	0	0
2024 WITHOUT DEVELOPMENT VOLUMES		0	0	0	0	0	0	0	76	0	0	147	0
Site	DIST IN									24%	4%	3%	
	DIST OUT				(24%)		(4%)	(3%)					
	ASSIGN	0	0	0	17	0	3	0	2	11	2	1	0
	PB IN									40%			
Hall Street Diversions	PB OUT				(37%)								
	PB ASSIGN	0	0	0	4	0	0	0	0	4	0	0	0
Total New Site Trip Assignment		0	0	0	17	0	3	0	2	11	2	1	0
Total Pass-by Site Trip Assignment		0	0	0	4	0	0	0	0	4	0	0	0
2024 WITH DEVELOPMENT VOLUMES		0	0	0	21	0	3	0	78	15	2	148	0

Paradise Street & West Site Access INTERSECTION VOLUME PROJECTION SUMMARY

Weekday 3 PM - 7 PM

		EASTBOUND			WESTBOUND West Site Access			NORTHBOUND Paradise Street			SOUTHBOUND Paradise Street		
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
EXISTING VOLUMES													
Seasonal Adjustment Factor	1.000	0	0	0	0	0	0	0	0	0	0	0	0
Balancing Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
Additional Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING VOLUMES		0	0	0	0	0	0	0	0	0	0	0	0
Background Growth to 2024	1.08%	0	0	0	0	0	0	0	0	0	0	0	0
Steelworks (Residential)	DIST IN DIST OUT ASSIGN												
Steelworks (Commercial)	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
115 Buchanan Street	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
723 Wheatland Street	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
Bridge Street Residential	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
PHOENIXVILLE GROUP 3	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
PHOENIXVILLE GROUP 4	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
PHOENIXVILLE GROUP 5	DIST IN DIST OUT ASSIGN							30%			(30%)		
PHOENIXVILLE GROUP 6	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	0	2	0	0	1	0
PHOENIXVILLE GROUP 8	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
PHOENIXVILLE GROUP 9	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
French Creek West	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	51%			(51%)		
Bridge Street Retail	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	0	84	0	0	51	0
Paradise Street Diversions	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	0	63	0	0	95	0
<i>Total Other Development New Trip Assignments</i>		0	0	0	0	0	0	0	149	0	0	147	0
<i>Total Other Development Pass-by Trip Assignments</i>		0	0	0	0	0	0	0	0	0	0	0	0
2024 WITHOUT DEVELOPMENT VOLUMES		0	0	0	0	0	0	0	149	0	0	147	0
Site	DIST IN									24%	4%	3%	
	DIST OUT				(24%)		(4%)	(3%)					
	ASSIGN	0	0	0	10	0	2	0	1	16	3	2	0
	PB IN									40%			
Hall Street Diversions	PB OUT				(38%)								
	PB ASSIGN	0	0	0	3	0	0	0	0	7	0	0	0
2024 WITH DEVELOPMENT VOLUMES		0	0	0	13	0	2	0	150	23	3	149	0

Middle Site Access & Hall Street
INTERSECTION VOLUME PROJECTION SUMMARY
Weekday 6 AM - 10 AM

		EASTBOUND Hall Street			WESTBOUND Hall Street			NORTHBOUND			SOUTHBOUND Middle Site Access		
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
		EXISTING VOLUMES		0	0	0	0	0	0	0	0	0	0
Seasonal Adjustment Factor	1.000	0	0	0	0	0	0	0	0	0	0	0	0
Balancing Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
Additional Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING VOLUMES		0	0	0	0	0	0	0	0	0	0	0	0
Background Growth to 2024	1.08%	0	0	0	0	0	0	0	0	0	0	0	0
Steelworks (Residential)	DIST IN DIST OUT ASSIGN	30%			(30%)								
		0	10	0	0	32	0	0	0	0	0	0	0
Steelworks (Commercial)	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
115 Buchanan Street	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
723 Wheatland Street	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
Bridge Street Residential	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
PHOENIXVILLE GROUP 3	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
PHOENIXVILLE GROUP 4	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
PHOENIXVILLE GROUP 5	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
PHOENIXVILLE GROUP 6	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
PHOENIXVILLE GROUP 8	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
PHOENIXVILLE GROUP 9	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
French Creek West	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
Bridge Street Retail	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
Paradise Street Diversions	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
Total Other Development New Trip Assignments		0	10	0	0	32	0	0	0	0	0	0	0
Total Other Development Pass-by Trip Assignments		0	0	0	0	0	0	0	0	0	0	0	0
2024 WITHOUT DEVELOPMENT VOLUMES		0	10	0	0	32	0	0	0	0	0	0	0
Site	DIST IN DIST OUT ASSIGN PB IN PB OUT PB ASSIGN	19%			21%						(21%)	(19%)	
		8	0	0	0	0	9	0	0	0	15	0	13
		27%			13%						(16%)	(24%)	
		3	0	0	0	0	2	0	0	0	2	0	3
Hall Street Diversions	DIST IN DIST OUT ASSIGN	0	19	0	0	8	0	0	0	0	0	0	0
Total New Site Trip Assignment		8	19	0	0	8	9	0	0	0	15	0	13
Total Pass-by Site Trip Assignment		3	0	0	0	0	2	0	0	0	2	0	3
2024 WITH DEVELOPMENT VOLUMES		11	29	0	0	40	11	0	0	0	17	0	16

Middle Site Access & Hall Street
INTERSECTION VOLUME PROJECTION SUMMARY
Weekday 3 PM - 7 PM

		EASTBOUND			WESTBOUND			NORTHBOUND			SOUTHBOUND		
		Hall Street			Hall Street						Middle Site Access		
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
EXISTING VOLUMES		0	0	0	0	0	0	0	0	0	0	0	0
Seasonal Adjustment Factor	1.000	0	0	0	0	0	0	0	0	0	0	0	0
Balancing Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
Additional Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING VOLUMES		0	0	0	0	0	0	0	0	0	0	0	0
Background Growth to 2024	1.08%	0	0	0	0	0	0	0	0	0	0	0	0
Steelworks (Residential)	DIST IN DIST OUT ASSIGN	30%			(30%)								
Steelworks (Commercial)	DIST IN DIST OUT ASSIGN	0	18	0	0	13	0	0	0	0	0	0	0
115 Buchanan Street	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
723 Wheatland Street	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
Bridge Street Residential	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
PHOENIXVILLE GROUP 3	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
PHOENIXVILLE GROUP 4	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
PHOENIXVILLE GROUP 5	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
PHOENIXVILLE GROUP 6	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
PHOENIXVILLE GROUP 8	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
PHOENIXVILLE GROUP 9	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
French Creek West	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
Bridge Street Retail	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
Paradise Street Diversions	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
<i>Total Other Development New Trip Assignments</i>		0	18	0	0	13	0	0	0	0	0	0	0
<i>Total Other Development Pass-by Trip Assignments</i>		0	0	0	0	0	0	0	0	0	0	0	0
2024 WITHOUT DEVELOPMENT VOLUMES		0	18	0	0	13	0	0	0	0	0	0	0
Site	DIST IN	19%			21%								
	DIST OUT										(21%)	(19%)	
	ASSIGN	13	0	0	0	0	14	0	0	0	9	0	8
	PB IN	26%			14%								
	PB OUT										(15%)	(25%)	
Hall Street Diversions	PB ASSIGN	4	0	0	0	0	3	0	0	0	2	0	3
	DIST IN DIST OUT ASSIGN	0	22	0	0	13	0	0	0	0	0	0	0
Total New Site Trip Assignment		13	22	0	0	13	14	0	0	0	9	0	8
Total Pass-by Site Trip Assignment		4	0	0	0	0	3	0	0	0	2	0	3
2024 WITH DEVELOPMENT VOLUMES		17	40	0	0	26	17	0	0	0	11	0	11

East Site Access & Hall Street
INTERSECTION VOLUME PROJECTION SUMMARY
Weekday 6 AM - 10 AM

		EASTBOUND			WESTBOUND			NORTHBOUND			SOUTHBOUND		
		Hall Street			Hall Street						East Site Access		
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
EXISTING VOLUMES		0	0	0	0	0	0	0	0	0	0	0	0
Seasonal Adjustment Factor	1.000	0	0	0	0	0	0	0	0	0	0	0	0
Balancing Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
Additional Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING VOLUMES		0	0	0	0	0	0	0	0	0	0	0	0
Background Growth to 2024	1.08%	0	0	0	0	0	0	0	0	0	0	0	0
Steelworks (Residential)	DIST IN DIST OUT ASSIGN	30%			(30%)								
Steelworks (Commercial)	DIST IN DIST OUT ASSIGN	0	10	0	0	32	0	0	0	0	0	0	0
115 Buchanan Street	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
723 Wheatland Street	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
Bridge Street Residential	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
PHOENIXVILLE GROUP 3	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
PHOENIXVILLE GROUP 4	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
PHOENIXVILLE GROUP 5	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
PHOENIXVILLE GROUP 6	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
PHOENIXVILLE GROUP 8	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
PHOENIXVILLE GROUP 9	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
French Creek West	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
Bridge Street Retail	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
Paradise Street Diversions	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
<i>Total Other Development New Trip Assignments</i>		0	10	0	0	32	0	0	0	0	0	0	0
<i>Total Other Development Pass-by Trip Assignments</i>		0	0	0	0	0	0	0	0	0	0	0	0
2024 WITHOUT DEVELOPMENT VOLUMES		0	10	0	0	32	0	0	0	0	0	0	0
Site	DIST IN				21%		32%						
	DIST OUT	(21%)						(32%)					
	ASSIGN	0	15	0	0	9	14	0	0	0	23	0	0
	PB IN				13%		20%						
	PB OUT	(15%)						(23%)					
PB ASSIGN	0	2	0	0	2	2	0	0	0	2	0	0	
Hall Street Diversions	DIST IN DIST OUT ASSIGN	0	19	0	0	8	0	0	0	0	0	0	0
Total New Site Trip Assignment		0	34	0	0	17	14	0	0	0	23	0	0
Total Pass-by Site Trip Assignment		0	2	0	0	2	2	0	0	0	2	0	0
2024 WITH DEVELOPMENT VOLUMES		0	46	0	0	51	16	0	0	0	25	0	0

East Site Access & Hall Street
INTERSECTION VOLUME PROJECTION SUMMARY
Weekday 3 PM - 7 PM

		EASTBOUND			WESTBOUND			NORTHBOUND			SOUTHBOUND		
		Hall Street			Hall Street						East Site Access		
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
EXISTING VOLUMES		0	0	0	0	0	0	0	0	0	0	0	0
Seasonal Adjustment Factor	1.000	0	0	0	0	0	0	0	0	0	0	0	0
Balancing Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
Additional Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING VOLUMES		0	0	0	0	0	0	0	0	0	0	0	0
Background Growth to 2024	1.08%	0	0	0	0	0	0	0	0	0	0	0	0
Steelworks (Residential)	DIST IN DIST OUT ASSIGN	30%			(30%)								
Steelworks (Commercial)	DIST IN DIST OUT ASSIGN	0	18	0	0	13	0	0	0	0	0	0	0
115 Buchanan Street	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
723 Wheatland Street	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
Bridge Street Residential	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
PHOENIXVILLE GROUP 3	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
PHOENIXVILLE GROUP 4	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
PHOENIXVILLE GROUP 5	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
PHOENIXVILLE GROUP 6	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
PHOENIXVILLE GROUP 8	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
PHOENIXVILLE GROUP 9	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
French Creek West	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
Bridge Street Retail	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
Paradise Street Diversions	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
<i>Total Other Development New Trip Assignments</i>		0	18	0	0	13	0	0	0	0	0	0	0
<i>Total Other Development Pass-by Trip Assignments</i>		0	0	0	0	0	0	0	0	0	0	0	0
2024 WITHOUT DEVELOPMENT VOLUMES		0	18	0	0	13	0	0	0	0	0	0	0
Site	DIST IN				21%		32%						
	DIST OUT	(21%)						(32%)					
	ASSIGN	0	9	0	0	14	20	0	0	0	13	0	0
	PB IN				14%		20%						
	PB OUT	(16%)						(22%)					
PB ASSIGN	0	2	0	0	3	3	0	0	0	2	0	0	
Hall Street Diversions	DIST IN DIST OUT ASSIGN	0	22	0	0	13	0	0	0	0	0	0	0
Total New Site Trip Assignment		0	31	0	0	27	20	0	0	0	13	0	0
Total Pass-by Site Trip Assignment		0	2	0	0	3	3	0	0	0	2	0	0
2024 WITH DEVELOPMENT VOLUMES		0	51	0	0	43	23	0	0	0	15	0	0

Paradise Street & Hall Street
INTERSECTION VOLUME PROJECTION SUMMARY
Weekday 6 AM - 10 AM

		EASTBOUND Hall Street			WESTBOUND Hall Street			NORTHBOUND Paradise Street			SOUTHBOUND Paradise Street		
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
EXISTING VOLUMES													
Seasonal Adjustment Factor	1.000	0	0	0	0	0	0	0	0	0	0	0	0
Balancing Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
Additional Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING VOLUMES													
Background Growth to 2024	1.08%	0	0	0	0	0	0	0	0	0	0	0	0
Steelworks (Residential)	DIST IN DIST OUT ASSIGN				(30%)				30%				
Steelworks (Commercial)	DIST IN DIST OUT ASSIGN	0	0	0	32	0	0	0	0	10	0	0	0
115 Buchanan Street	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
723 Wheatland Street	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
Bridge Street Residential	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
PHOENIXVILLE GROUP 3	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
PHOENIXVILLE GROUP 4	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
PHOENIXVILLE GROUP 5	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	0	0	0	0	1	0
PHOENIXVILLE GROUP 6	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
PHOENIXVILLE GROUP 8	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
PHOENIXVILLE GROUP 9	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
French Creek West	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	0	27	0	0	86	0
Bridge Street Retail	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
Paradise Street Diversions	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	0	49	0	0	60	0
Total Other Development New Trip Assignments		0	0	0	32	0	0	0	76	10	0	147	0
Total Other Development Pass-by Trip Assignments		0	0	0	0	0	0	0	0	0	0	0	0
2024 WITHOUT DEVELOPMENT VOLUMES		0	0	0	32	0	0	0	76	10	0	147	0
Site	DIST IN DIST OUT ASSIGN PB IN PB OUT PB ASSIGN				(16%)		(3%)		24%	16%	3%	(24%)	
		0	0	0	11	0	2	0	11	7	1	17	0
					(24%)				40%	27%		(37%)	
		0	0	0	3	0	0	0	4	3	0	4	0
Hall Street Diversions	DIST IN DIST OUT ASSIGN	0	0	0	8	0	0	0	0	19	0	0	0
Total New Site Trip Assignment		0	0	0	19	0	2	0	11	26	1	17	0
Total Pass-by Site Trip Assignment		0	0	0	3	0	0	0	4	3	0	4	0
2024 WITH DEVELOPMENT VOLUMES		0	0	0	54	0	2	0	91	39	1	168	0

Paradise Street & Hall Street
INTERSECTION VOLUME PROJECTION SUMMARY
Weekday 3 PM - 7 PM

		EASTBOUND Hall Street			WESTBOUND Hall Street			NORTHBOUND Paradise Street			SOUTHBOUND Paradise Street		
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
EXISTING VOLUMES													
Seasonal Adjustment Factor	1.000	0	0	0	0	0	0	0	0	0	0	0	0
Balancing Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
Additional Adjustment		0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING VOLUMES													
Background Growth to 2024	1.08%	0	0	0	0	0	0	0	0	0	0	0	0
Steelworks (Residential)	DIST IN DIST OUT ASSIGN				(30%)				30%				
Steelworks (Commercial)	DIST IN DIST OUT ASSIGN	0	0	0	13	0	0	0	0	18	0	0	0
115 Buchanan Street	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
723 Wheatland Street	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
Bridge Street Residential	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
PHOENIXVILLE GROUP 3	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
PHOENIXVILLE GROUP 4	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
PHOENIXVILLE GROUP 5	DIST IN DIST OUT ASSIGN							30%			(30%)		
PHOENIXVILLE GROUP 6	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
PHOENIXVILLE GROUP 8	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
PHOENIXVILLE GROUP 9	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	0	0	0	0	0	0
French Creek West	DIST IN DIST OUT ASSIGN							51%			(51%)		
Bridge Street Retail	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	0	84	0	0	51	0
Paradise Street Diversions	DIST IN DIST OUT ASSIGN	0	0	0	0	0	0	0	63	0	0	95	0
<i>Total Other Development New Trip Assignments</i>		0	0	0	13	0	0	0	149	18	0	147	0
<i>Total Other Development Pass-by Trip Assignments</i>		0	0	0	0	0	0	0	0	0	0	0	0
2024 WITHOUT DEVELOPMENT VOLUMES		0	0	0	13	0	0	0	149	18	0	147	0
Site	DIST IN DIST OUT ASSIGN PB IN PB OUT PB ASSIGN				(16%)		(3%)		24%	16%		3%	(24%)
		0	0	0	7	0	1	0	16	11	2	10	0
					(25%)			40%	26%		(38%)		
		0	0	0	3	0	0	0	7	4	0	3	0
Hall Street Diversions	DIST IN DIST OUT ASSIGN	0	0	0	13	0	0	0	0	22	0	0	0
Total New Site Trip Assignment		0	0	0	20	0	1	0	16	33	2	10	0
Total Pass-by Site Trip Assignment		0	0	0	3	0	0	0	7	4	0	3	0
2024 WITH DEVELOPMENT VOLUMES		0	0	0	36	0	1	0	172	55	2	160	0

Appendix H

Capacity / Level-of-Service Methodology

CAPACITY/LEVEL-OF-SERVICE ANALYSIS METHODOLOGY

The detailed capacity/level-of-service analysis contained in this transportation impact study was performed in accordance with the standard techniques contained in the *Highway Capacity Manual 6th Edition*. By definition, capacity represents “the maximum sustainable hourly flow rate at which persons or vehicles reasonably can be expected to traverse a point or a uniform section of a lane or roadway during a given time period under prevailing roadway, environmental, traffic, and control conditions.” The level at which an intersection or a uniform section of a lane or roadway function can be expressed in terms of a level of service. Level of service (LOS) is defined as “a quantitative stratification of a performance measure or measures that represent quality of service, measured on an A-F scale, with LOS A representing the best operating conditions from the traveler’s perspective and LOS F the worst.”

Stop-Controlled Intersections

At unsignalized stop-controlled intersections, such as two-way stop-controlled (TWSC) or all-way stop-controlled (AWSC), a methodology for evaluating the relative functioning of these intersections is based upon the control delay. For these types of unsignalized intersections, the analysis of the control delay is based upon the following data:

- Number and configuration of lanes on each approach;
- Percentage of heavy vehicles on each approach;
- Demand flow rate for each entering vehicular movement and pedestrian crossing movement;
- Unique geometric factors such as, channelization aspects; two-way left-turn lanes, raised or striped median storage; approach grades, flared approaches on the minor street; and upstream signals within 0.25 miles.

At TWSC intersections, only drivers on the minor street approaches are required to stop before proceeding into the intersection and left-turning drivers from the major street may have to yield to on-coming major street through or right-turning traffic, but are not required to stop in the absence of on-coming traffic. The capacity at stop-controlled legs is based primarily on three factors: the distribution of gaps in the major stream, driver judgment in selecting the gaps, and the follow-up headways required by each driver in a queue.

At AWSC intersections, every vehicle is required to stop at the intersection before proceeding, and as a result, the decision to proceed is a function of the traffic conditions on the other approaches. Each driver proceeds only after determining that no vehicles are currently in the intersection and that it is the driver’s turn to proceed. Capacity at an AWSC intersection is described by the saturation headway or time between departures of successive vehicles on a given approach for a particular case assuming a continuous queue; departure headway or the average time between departures of successive vehicles on a given approach accounting for the probability of each possible case; and service time or the average time sent by a vehicle in first position waiting to depart.

At both TWSC and AWSC intersections, the level of service is based upon the control delay, as well as the corresponding volume-to-capacity ratio for each movement/lane group. For TWSC intersections, the level of service is not calculated for major-street approaches or for the intersection as a whole; however, the intersection-wide level of service is calculated for AWSC intersections. The following table provides a summary of the relationship between the level of service, control delay, and volume-to-capacity ratio for TWSC and AWSC intersections.

Control Delay (Sec/Veh)	<u>LOS by Volume-to-Capacity Ratio</u>	
	$v/c \leq 1.0$	$v/c > 1.0$
≤ 10	A	F
> 10 – 15	B	F
> 15 – 25	C	F
> 25 – 35	D	F
> 35 – 50	E	F
> 50	F	F

Signalized Intersections

At three or four-legged signalized intersections, a methodology for evaluating the capacity and quality of service provided to road users traveling through the signalized intersection. For signalized intersections, the level of service can be characterized for the entire intersection, each approach, and each lane group. The level of service is based upon the control delay and volume-to-capacity ratio. The delay quantifies the increase in travel time due to the traffic signal control and is a surrogate measure of driver discomfort and fuel consumption, while the volume-to-capacity ratio quantifies the degree to which a phase's capacity is utilized by a lane group. Input data in determining the delay and volume-to-capacity ratio include:

- Demand flow rate for each entering vehicular movement and pedestrian crossing movement, including right-turn on red volumes and percent of heavy vehicles;
- Initial queue for each lane group;
- Number and configuration of lanes on each approach;
- Type of signal control and phase sequence;
- Allocation of minimum/maximum green times and clearance intervals (Yellow plus All Red phases); and
- Phase recall.

At signalized intersections, the level of service is based upon the control delay, as well as the corresponding volume-to-capacity ratio for each movement/lane group. The following table provides a summary of the relationship between the level of service, control delay, and volume-to-capacity ratio for signalized intersections.

Control Delay (Sec/Veh)	<u>LOS by Volume-to-Capacity Ratio</u>	
	$v/c \leq 1.0$	$v/c > 1.0$
≤ 10	A	F
> 10 – 20	B	F
> 20 – 35	C	F
> 35 – 55	D	F
> 55 – 80	E	F
> 80	F	F

Appendix I

Existing Capacity/Level-of-Service Analysis Worksheets

Weekday Morning Peak Hour

McMahon
 1: Nutt Road (S.R. 0023) & Paradise Street

2022 Existing Conditions
 Weekday Morning Peak Hour



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	8	1058	711	3	3	11
Future Volume (vph)	8	1058	711	3	3	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	50			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.999		0.892	
Flt Protected	0.950				0.990	
Satd. Flow (prot)	1805	1810	1791	0	1678	0
Flt Permitted	0.950				0.990	
Satd. Flow (perm)	1805	1810	1791	0	1678	0
Link Speed (mph)		35	35		25	
Link Distance (ft)		711	1189		504	
Travel Time (s)		13.9	23.2		13.7	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	5%	6%	0%	0%	0%
Adj. Flow (vph)	9	1126	756	3	3	12
Shared Lane Traffic (%)						
Lane Group Flow (vph)	9	1126	759	0	15	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other
 Control Type: Unsignalized

McMahon
1: Nutt Road (S.R. 0023) & Paradise Street

2022 Existing Conditions
Weekday Morning Peak Hour

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	8	1058	711	3	3	11
Future Vol, veh/h	8	1058	711	3	3	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	50	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	5	6	0	0	0
Mvmt Flow	9	1126	756	3	3	12

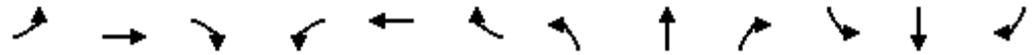
Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	759	0	-	0	1902 758
Stage 1	-	-	-	-	758 -
Stage 2	-	-	-	-	1144 -
Critical Hdwy	4.3	-	-	-	7.1 6.2
Critical Hdwy Stg 1	-	-	-	-	5.4 -
Critical Hdwy Stg 2	-	-	-	-	5.4 -
Follow-up Hdwy	3	-	-	-	3 3.1
Pot Cap-1 Maneuver	654	-	-	-	56 429
Stage 1	-	-	-	-	519 -
Stage 2	-	-	-	-	335 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	654	-	-	-	55 429
Mov Cap-2 Maneuver	-	-	-	-	209 -
Stage 1	-	-	-	-	512 -
Stage 2	-	-	-	-	335 -

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	15.7
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	654	-	-	-	350
HCM Lane V/C Ratio	0.013	-	-	-	0.043
HCM Control Delay (s)	10.6	-	-	-	15.7
HCM Lane LOS	B	-	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.1

McMahon
2: Main Street & Smithworks Boulevard

2022 Existing Conditions
Weekday Morning Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	1	59	68	1	6	48	98	10	4	318	7
Future Volume (vph)	2	1	59	68	1	6	48	98	10	4	318	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	13	13	13	11	11	11	12	12	12
Storage Length (ft)	100		0	125		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.852			0.869			0.991			0.997	
Flt Protected	0.950			0.950				0.985			0.999	
Satd. Flow (prot)	1685	1351	0	1865	1706	0	0	1632	0	0	1869	0
Flt Permitted	0.950			0.950				0.985			0.999	
Satd. Flow (perm)	1685	1351	0	1865	1706	0	0	1632	0	0	1869	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		375			308			441			191	
Travel Time (s)		10.2			8.4			12.0			5.2	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	0%	0%	12%	0%	0%	0%	26%	3%	0%	0%	1%	14%
Adj. Flow (vph)	2	1	70	81	1	7	57	117	12	5	379	8
Shared Lane Traffic (%)												
Lane Group Flow (vph)	2	71	0	81	8	0	0	186	0	0	392	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized

McMahon
2: Main Street & Smithworks Boulevard

2022 Existing Conditions
Weekday Morning Peak Hour

Intersection												
Int Delay, s/veh	4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↵	↵		↵	↵			↕			↕	
Traffic Vol, veh/h	2	1	59	68	1	6	48	98	10	4	318	7
Future Vol, veh/h	2	1	59	68	1	6	48	98	10	4	318	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	100	-	-	125	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	0	0	12	0	0	0	26	3	0	0	1	14
Mvmt Flow	2	1	70	81	1	7	57	117	12	5	379	8

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	634	636	383	666	634	123	387	0	0	129	0	0
Stage 1	393	393	-	237	237	-	-	-	-	-	-	-
Stage 2	241	243	-	429	397	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.3	-	-	4.3	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3	4	3.1	3	4	3.1	3	-	-	3	-	-
Pot Cap-1 Maneuver	442	398	705	420	399	990	884	-	-	1085	-	-
Stage 1	723	609	-	885	713	-	-	-	-	-	-	-
Stage 2	880	708	-	690	607	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	412	368	705	355	369	990	884	-	-	1085	-	-
Mov Cap-2 Maneuver	412	368	-	355	369	-	-	-	-	-	-	-
Stage 1	672	605	-	823	663	-	-	-	-	-	-	-
Stage 2	811	658	-	616	603	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB			
HCM Control Delay, s	10.9		17.3		2.9		0.1			
HCM LOS	B		C							

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	884	-	-	412	694	355	798	1085	-	-
HCM Lane V/C Ratio	0.065	-	-	0.006	0.103	0.228	0.01	0.004	-	-
HCM Control Delay (s)	9.4	0	-	13.8	10.8	18.1	9.6	8.3	0	-
HCM Lane LOS	A	A	-	B	B	C	A	A	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0	0.3	0.9	0	0	-	-

McMahon
3: Bridge Street (S.R. 0113) & Hall Street

2022 Existing Conditions
Weekday Morning Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	20	1	15	0	441	0	0	431	0
Future Volume (vph)	0	0	0	20	1	15	0	441	0	0	431	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	16	16	16	16	16	16	16	16	16	16
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.945							
Flt Protected					0.973							
Satd. Flow (prot)	0	2153	0	0	1925	0	0	1994	0	0	2153	0
Flt Permitted					0.973							
Satd. Flow (perm)	0	2153	0	0	1925	0	0	1994	0	0	2153	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		454			464			342			483	
Travel Time (s)		12.4			12.7			9.3			13.2	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	0%	0%	0%	0%	0%	7%	0%	8%	0%	7%	0%	0%
Adj. Flow (vph)	0	0	0	22	1	16	0	485	0	0	474	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	39	0	0	485	0	0	474	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

McMahon
3: Bridge Street (S.R. 0113) & Hall Street

2022 Existing Conditions
Weekday Morning Peak Hour

Intersection												
Int Delay, s/veh	0.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	0	0	20	1	15	0	441	0	0	431	0
Future Vol, veh/h	0	0	0	20	1	15	0	441	0	0	431	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	0	0	7	0	8	0	7	0	0
Mvmt Flow	0	0	0	22	1	16	0	485	0	0	474	0

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	968	959	474	959	959	485	474	0	-	-	-	0
Stage 1	474	474	-	485	485	-	-	-	-	-	-	-
Stage 2	494	485	-	474	474	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.3	-	-	-	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3	4	3.1	3	4	3.1	3	-	-	-	-	-
Pot Cap-1 Maneuver	259	259	625	263	259	616	825	-	0	0	-	-
Stage 1	651	561	-	641	555	-	-	-	0	0	-	-
Stage 2	634	555	-	651	561	-	-	-	0	0	-	-
Platoon blocked, %								-			-	
Mov Cap-1 Maneuver	251	259	625	263	259	616	825	-	-	-	-	-
Mov Cap-2 Maneuver	251	259	-	263	259	-	-	-	-	-	-	-
Stage 1	651	561	-	641	555	-	-	-	-	-	-	-
Stage 2	616	555	-	651	561	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB			
HCM Control Delay, s	0		16.8		0		0			
HCM LOS	A		C							

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	WBLn1	SBT	SBR
Capacity (veh/h)	825	-	-	345	-	-
HCM Lane V/C Ratio	-	-	-	0.115	-	-
HCM Control Delay (s)	0	-	0	16.8	-	-
HCM Lane LOS	A	-	A	C	-	-
HCM 95th %tile Q(veh)	0	-	-	0.4	-	-

Weekday Afternoon Peak Hour

McMahon
1: Nutt Road (S.R. 0023) & Paradise Street

2022 Existing Conditions
Weekday Afternoon Peak Hour



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	10	1019	1180	6	0	17
Future Volume (vph)	10	1019	1180	6	0	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	50			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.999		0.865	
Flt Protected	0.950					
Satd. Flow (prot)	1805	1881	1878	0	1467	0
Flt Permitted	0.950					
Satd. Flow (perm)	1805	1881	1878	0	1467	0
Link Speed (mph)		35	35		25	
Link Distance (ft)		711	1189		504	
Travel Time (s)		13.9	23.2		13.7	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	1%	1%	17%	0%	12%
Adj. Flow (vph)	10	1061	1229	6	0	18
Shared Lane Traffic (%)						
Lane Group Flow (vph)	10	1061	1235	0	18	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized

McMahon
1: Nutt Road (S.R. 0023) & Paradise Street

2022 Existing Conditions
Weekday Afternoon Peak Hour

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	10	1019	1180	6	0	17
Future Vol, veh/h	10	1019	1180	6	0	17
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	50	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	1	1	17	0	12
Mvmt Flow	10	1061	1229	6	0	18

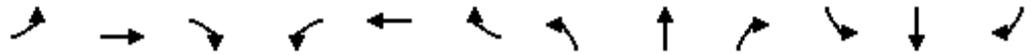
Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	1235	0	0 2313 1232
Stage 1	-	-	- 1232 -
Stage 2	-	-	- 1081 -
Critical Hdwy	4.3	-	- 7.1 6.32
Critical Hdwy Stg 1	-	-	- 5.4 -
Critical Hdwy Stg 2	-	-	- 5.4 -
Follow-up Hdwy	3	-	- 3 3.1
Pot Cap-1 Maneuver	440	-	- 28 217
Stage 1	-	-	- 302 -
Stage 2	-	-	- 360 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	440	-	- 27 217
Mov Cap-2 Maneuver	-	-	- 160 -
Stage 1	-	-	- 295 -
Stage 2	-	-	- 360 -

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	23.1
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	440	-	-	-	217
HCM Lane V/C Ratio	0.024	-	-	-	0.082
HCM Control Delay (s)	13.4	-	-	-	23.1
HCM Lane LOS	B	-	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	0.3

McMahon
2: Main Street & Smithworks Boulevard

2022 Existing Conditions
Weekday Afternoon Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	3	22	28	0	10	43	317	70	8	200	7
Future Volume (vph)	6	3	22	28	0	10	43	317	70	8	200	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	13	13	13	11	11	11	12	12	12
Storage Length (ft)	100		0	125		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.867			0.850			0.978			0.995	
Flt Protected	0.950			0.950				0.995			0.998	
Satd. Flow (prot)	1685	1472	0	1865	1669	0	0	1787	0	0	1878	0
Flt Permitted	0.950			0.950				0.995			0.998	
Satd. Flow (perm)	1685	1472	0	1865	1669	0	0	1787	0	0	1878	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		375			308			441			191	
Travel Time (s)		10.2			8.4			12.0			5.2	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	0%	5%	0%	0%	0%	0%	0%	0%	0%	0%	14%
Adj. Flow (vph)	6	3	24	30	0	11	46	341	75	9	215	8
Shared Lane Traffic (%)												
Lane Group Flow (vph)	6	27	0	30	11	0	0	462	0	0	232	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized

McMahon
2: Main Street & Smithworks Boulevard

2022 Existing Conditions
Weekday Afternoon Peak Hour

Intersection												
Int Delay, s/veh	1.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↶	↷		↶	↷			↕			↕	
Traffic Vol, veh/h	6	3	22	28	0	10	43	317	70	8	200	7
Future Vol, veh/h	6	3	22	28	0	10	43	317	70	8	200	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	100	-	-	125	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	0	5	0	0	0	0	0	0	0	0	14
Mvmt Flow	6	3	24	30	0	11	46	341	75	9	215	8

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	713	745	219	722	712	379	223	0	0	416	0	0
Stage 1	237	237	-	471	471	-	-	-	-	-	-	-
Stage 2	476	508	-	251	241	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.3	-	-	4.3	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3	4	3.1	3	4	3.1	3	-	-	3	-	-
Pot Cap-1 Maneuver	390	345	874	384	360	709	1007	-	-	864	-	-
Stage 1	885	713	-	653	563	-	-	-	-	-	-	-
Stage 2	649	542	-	869	710	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	363	321	874	351	334	709	1007	-	-	864	-	-
Mov Cap-2 Maneuver	363	321	-	351	334	-	-	-	-	-	-	-
Stage 1	832	704	-	614	529	-	-	-	-	-	-	-
Stage 2	601	509	-	832	701	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	11.1		14.6		0.9		0.3	
HCM LOS	B		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1007	-	-	363	724	351	709	864	-	-
HCM Lane V/C Ratio	0.046	-	-	0.018	0.037	0.086	0.015	0.01	-	-
HCM Control Delay (s)	8.7	0	-	15.1	10.2	16.2	10.2	9.2	0	-
HCM Lane LOS	A	A	-	C	B	C	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.1	0.1	0.3	0	0	-	-

McMahon
3: Bridge Street (S.R. 0113) & Hall Street

2022 Existing Conditions
Weekday Afternoon Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	0	1	9	0	18	5	586	0	0	552	3
Future Volume (vph)	2	0	1	9	0	18	5	586	0	0	552	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	16	16	16	16	16	16	16	16	16	16
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.955			0.912						0.999	
Flt Protected		0.968			0.983							
Satd. Flow (prot)	0	1991	0	0	1930	0	0	2132	0	0	2151	0
Flt Permitted		0.968			0.983							
Satd. Flow (perm)	0	1991	0	0	1930	0	0	2132	0	0	2151	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		454			464			342			483	
Travel Time (s)		12.4			12.7			9.3			13.2	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	1%	0%	1%	0%	0%
Adj. Flow (vph)	2	0	1	10	0	19	5	623	0	0	587	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	3	0	0	29	0	0	628	0	0	590	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

McMahon
3: Bridge Street (S.R. 0113) & Hall Street

2022 Existing Conditions
Weekday Afternoon Peak Hour

Intersection												
Int Delay, s/veh	0.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	2	0	1	9	0	18	5	586	0	0	552	3
Future Vol, veh/h	2	0	1	9	0	18	5	586	0	0	552	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	0	0	0	0	1	0	1	0	0
Mvmt Flow	2	0	1	10	0	19	5	623	0	0	587	3

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1232	1222	589	1222	1223	623	590	0	-	-	-	0
Stage 1	589	589	-	633	633	-	-	-	-	-	-	-
Stage 2	643	633	-	589	590	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.3	-	-	-	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3	4	3.1	3	4	3.1	3	-	-	-	-	-
Pot Cap-1 Maneuver	169	181	537	172	181	513	751	-	0	0	-	-
Stage 1	560	499	-	528	476	-	-	-	0	0	-	-
Stage 2	521	476	-	560	498	-	-	-	0	0	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	161	179	537	170	179	513	751	-	-	-	-	-
Mov Cap-2 Maneuver	161	179	-	170	179	-	-	-	-	-	-	-
Stage 1	554	499	-	523	471	-	-	-	-	-	-	-
Stage 2	497	471	-	559	498	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB			
HCM Control Delay, s	22.4		17.9		0.1		0			
HCM LOS	C		C							

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	WBLn1	SBT	SBR
Capacity (veh/h)	751	-	210	307	-	-
HCM Lane V/C Ratio	0.007	-	0.015	0.094	-	-
HCM Control Delay (s)	9.8	0	22.4	17.9	-	-
HCM Lane LOS	A	A	C	C	-	-
HCM 95th %tile Q(veh)	0	-	0	0.3	-	-

Appendix J

2024 Future without Development Capacity/Level-of-Service Analysis Worksheets

Weekday Morning Peak Hour



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	83	1063	703	14	38	154
Future Volume (vph)	83	1063	703	14	38	154
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Grade (%)		2%	-2%		3%	
Storage Length (ft)	50			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.997		0.891	
Flt Protected	0.950				0.990	
Satd. Flow (prot)	1693	1697	1712	0	1564	0
Flt Permitted	0.950				0.990	
Satd. Flow (perm)	1693	1697	1712	0	1564	0
Link Speed (mph)		35	35		25	
Link Distance (ft)		711	1189		314	
Travel Time (s)		13.9	23.2		8.6	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	5%	6%	0%	0%	0%
Adj. Flow (vph)	88	1131	748	15	40	164
Shared Lane Traffic (%)						
Lane Group Flow (vph)	88	1131	763	0	204	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

McMahon
1: Nutt Road (S.R. 0023) & Paradise Street

2024 Future without Development with Improvements Conditions

Weekday Morning Peak Hour

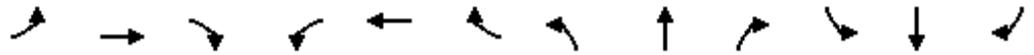
Intersection						
Int Delay, s/veh	4.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	83	1063	703	14	38	154
Future Vol, veh/h	83	1063	703	14	38	154
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	50	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	2	-2	-	3	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	5	6	0	0	0
Mvmt Flow	88	1131	748	15	40	164

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	763	0	0 2063 756
Stage 1	-	-	- - 756 -
Stage 2	-	-	- - 1307 -
Critical Hdwy	4.3	-	- - 7.1 6.5
Critical Hdwy Stg 1	-	-	- - 6 -
Critical Hdwy Stg 2	-	-	- - 6 -
Follow-up Hdwy	3	-	- - 3 3.1
Pot Cap-1 Maneuver	652	-	- - 43 404
Stage 1	-	-	- - 459 -
Stage 2	-	-	- - 223 -
Platoon blocked, %		-	- -
Mov Cap-1 Maneuver	652	-	- - 37 404
Mov Cap-2 Maneuver	-	-	- - 146 -
Stage 1	-	-	- - 397 -
Stage 2	-	-	- - 223 -

Approach	EB	WB	SB
HCM Control Delay, s	0.8	0	39.5
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	652	-	-	-	299
HCM Lane V/C Ratio	0.135	-	-	-	0.683
HCM Control Delay (s)	11.4	-	-	-	39.5
HCM Lane LOS	B	-	-	-	E
HCM 95th %tile Q(veh)	0.5	-	-	-	4.6

Notes
 -: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	2	175	66	4	6	102	107	9	4	309	40
Future Volume (vph)	23	2	175	66	4	6	102	107	9	4	309	40
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	13	13	13	11	11	11	12	12	12
Storage Length (ft)	100		0	125		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.851			0.912			0.994				0.985
Flt Protected	0.950			0.950				0.977				0.999
Satd. Flow (prot)	1685	1349	0	1865	1791	0	0	1570	0	0	1825	0
Flt Permitted	0.950			0.950				0.977				0.999
Satd. Flow (perm)	1685	1349	0	1865	1791	0	0	1570	0	0	1825	0
Link Speed (mph)		25			25			25				25
Link Distance (ft)		375			308			441				191
Travel Time (s)		10.2			8.4			12.0				5.2
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	0%	0%	12%	0%	0%	0%	26%	3%	0%	0%	1%	14%
Adj. Flow (vph)	27	2	208	79	5	7	121	127	11	5	368	48
Shared Lane Traffic (%)												
Lane Group Flow (vph)	27	210	0	79	12	0	0	259	0	0	421	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection												
Int Delay, s/veh	7.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	23	2	175	66	4	6	102	107	9	4	309	40
Future Vol, veh/h	23	2	175	66	4	6	102	107	9	4	309	40
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	100	-	-	125	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	0	0	12	0	0	0	26	3	0	0	1	14
Mvmt Flow	27	2	208	79	5	7	121	127	11	5	368	48

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	783	782	392	882	801	133	416	0	0	138	0	0
Stage 1	402	402	-	375	375	-	-	-	-	-	-	-
Stage 2	381	380	-	507	426	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.3	-	-	4.3	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3	4	3.1	3	4	3.1	3	-	-	3	-	-
Pot Cap-1 Maneuver	349	328	697	298	320	977	864	-	-	1077	-	-
Stage 1	715	604	-	740	621	-	-	-	-	-	-	-
Stage 2	734	617	-	623	589	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	301	277	697	183	270	977	864	-	-	1077	-	-
Mov Cap-2 Maneuver	301	277	-	183	270	-	-	-	-	-	-	-
Stage 1	606	600	-	628	527	-	-	-	-	-	-	-
Stage 2	612	523	-	432	585	-	-	-	-	-	-	-

Approach	EB		WB		NB			SB		
HCM Control Delay, s	13.2		35.3		4.6			0.1		
HCM LOS	B		E							

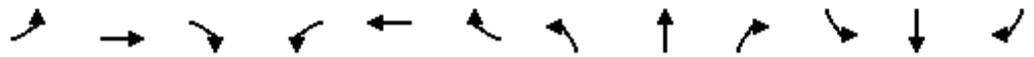
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	864	-	-	301	685	183	477	1077	-	-
HCM Lane V/C Ratio	0.141	-	-	0.091	0.308	0.429	0.025	0.004	-	-
HCM Control Delay (s)	9.8	0	-	18.2	12.6	38.7	12.7	8.4	0	-
HCM Lane LOS	A	A	-	C	B	E	B	A	A	-
HCM 95th %tile Q(veh)	0.5	-	-	0.3	1.3	2	0.1	0	-	-

McMahon

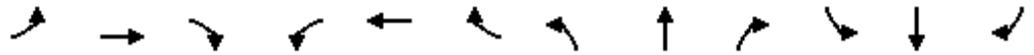
2024 Future without Development with Improvements Conditions

3: Bridge Street (S.R. 0113) & Hall Street

Weekday Morning Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↖			↖	↗
Traffic Volume (vph)	27	0	46	20	1	15	14	465	0	0	467	8
Future Volume (vph)	27	0	46	20	1	15	14	465	0	0	467	8
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	16	16	16	13	13	13	11	15	15	14	14	14
Grade (%)		-1%			0%			-2%			1%	
Storage Length (ft)	0		0	0		0	125		0	0		0
Storage Lanes	0		0	0		0	1		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.915			0.945							0.998
Flt Protected		0.982			0.973		0.950					
Satd. Flow (prot)	0	1842	0	0	1662	0	1670	1852	0	0	1907	0
Flt Permitted		0.862			0.780		0.450					
Satd. Flow (perm)	0	1617	0	0	1333	0	791	1852	0	0	1907	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		55			16							3
Link Speed (mph)		25			25			25				25
Link Distance (ft)		675			464			342				483
Travel Time (s)		18.4			12.7			9.3				13.2
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	0%	0%	0%	0%	0%	7%	0%	8%	0%	7%	0%	0%
Adj. Flow (vph)	30	0	51	22	1	16	15	511	0	0	513	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	81	0	0	39	0	15	511	0	0	522	0
Number of Detectors	1	1		1	1		1	1			1	
Detector Template	Left			Left								
Leading Detector (ft)	20	50		20	37		37	37			37	
Trailing Detector (ft)	0	-10		0	-3		-3	-3			-3	
Detector 1 Position(ft)	0	-10		0	-3		-3	-3			-3	
Detector 1 Size(ft)	20	60		20	40		40	40			40	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex			Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA			NA	
Protected Phases		4			8			2				6
Permitted Phases	4			8			2					
Detector Phase	4	4		8	8		2	2				6
Switch Phase												
Minimum Initial (s)	3.0	3.0		3.0	3.0		15.0	15.0				15.0
Minimum Split (s)	10.0	10.0		10.0	10.0		21.0	21.0				21.0
Total Split (s)	19.0	19.0		19.0	19.0		41.0	41.0				41.0
Total Split (%)	31.7%	31.7%		31.7%	31.7%		68.3%	68.3%				68.3%
Maximum Green (s)	12.0	12.0		12.0	12.0		35.0	35.0				35.0
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0				3.0
All-Red Time (s)	4.0	4.0		4.0	4.0		3.0	3.0				3.0
Lost Time Adjust (s)		-1.0			-1.0		-1.0	-1.0				-1.0



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Lost Time (s)		6.0			6.0		5.0	5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0				3.0
Recall Mode	None	None		None	None		C-Max	C-Max				C-Max
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0				7.0
Flash Dont Walk (s)	12.0	12.0		12.0	12.0		12.0	12.0				12.0
Pedestrian Calls (#/hr)	0	0		0	0		0	0				0

Intersection Summary

Area Type: Other

Cycle Length: 60

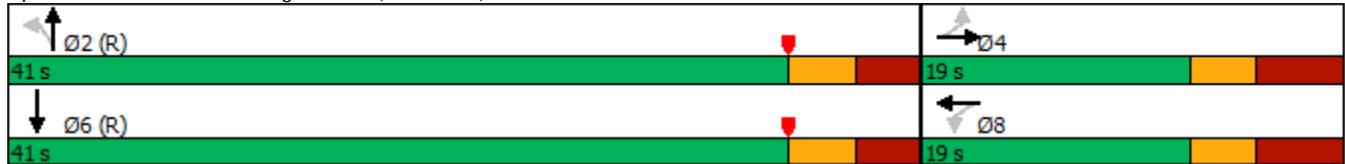
Actuated Cycle Length: 60

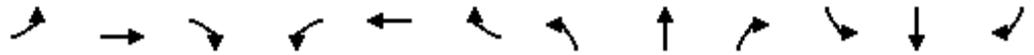
Offset: 5 (8%), Referenced to phase 2:NBTL and 6:SBT, Start of Yellow

Natural Cycle: 40

Control Type: Actuated-Coordinated

Splits and Phases: 3: Bridge Street (S.R. 0113) & Hall Street





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↖			↕	
Traffic Volume (veh/h)	27	0	46	20	1	15	14	465	0	0	467	8
Future Volume (veh/h)	27	0	46	20	1	15	14	465	0	0	467	8
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1911	1911	1911	1872	1872	1770	1875	1831	0	0	1866	1866
Adj Flow Rate, veh/h	30	0	51	22	1	16	15	511	0	0	513	9
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	0	0	0	0	0	7	0	8	0	0	0	0
Cap, veh/h	129	6	90	163	18	61	676	1334	0	0	1332	23
Arrive On Green	0.07	0.00	0.07	0.07	0.09	0.07	0.73	0.73	0.00	0.00	0.73	0.71
Sat Flow, veh/h	532	69	1021	785	208	691	882	1831	0	0	1828	32
Grp Volume(v), veh/h	81	0	0	39	0	0	15	511	0	0	0	522
Grp Sat Flow(s),veh/h/ln	1622	0	0	1684	0	0	882	1831	0	0	0	1860
Q Serve(g_s), s	1.6	0.0	0.0	0.0	0.0	0.0	0.4	6.3	0.0	0.0	0.0	6.4
Cycle Q Clear(g_c), s	2.9	0.0	0.0	1.3	0.0	0.0	6.2	6.3	0.0	0.0	0.0	6.4
Prop In Lane	0.37		0.63	0.56		0.41	1.00		0.00	0.00		0.02
Lane Grp Cap(c), veh/h	198	0	0	214	0	0	676	1334	0	0	0	1355
V/C Ratio(X)	0.41	0.00	0.00	0.18	0.00	0.00	0.02	0.38	0.00	0.00	0.00	0.39
Avail Cap(c_a), veh/h	396	0	0	401	0	0	676	1334	0	0	0	1355
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	26.7	0.0	0.0	26.0	0.0	0.0	4.2	3.1	0.0	0.0	0.0	3.1
Incr Delay (d2), s/veh	1.3	0.0	0.0	0.4	0.0	0.0	0.1	0.8	0.0	0.0	0.0	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.1	0.0	0.0	1.0	0.0	0.0	0.1	2.9	0.0	0.0	0.0	3.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	28.0	0.0	0.0	26.4	0.0	0.0	4.2	3.9	0.0	0.0	0.0	3.9
LnGrp LOS	C	A	A	C	A	A	A	A	A	A	A	A
Approach Vol, veh/h		81			39			526				522
Approach Delay, s/veh		28.0			26.4			3.9				3.9
Approach LOS		C			C			A				A
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		48.7		11.3		48.7		11.3				
Change Period (Y+Rc), s		6.0		7.0		6.0		7.0				
Max Green Setting (Gmax), s		35.0		12.0		35.0		12.0				
Max Q Clear Time (g_c+I1), s		8.8		4.9		8.4		3.3				
Green Ext Time (p_c), s		2.2		0.1		2.1		0.0				

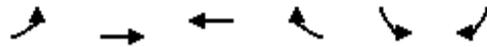
Intersection Summary

HCM 6th Ctrl Delay	6.3
HCM 6th LOS	A

Notes

User approved pedestrian interval to be less than phase max green.

Weekday Afternoon Peak Hour



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	143	1042	1149	41	21	156
Future Volume (vph)	143	1042	1149	41	21	156
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Grade (%)		2%	-2%		3%	
Storage Length (ft)	50			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.995		0.881	
Flt Protected	0.950				0.994	
Satd. Flow (prot)	1693	1764	1781	0	1404	0
Flt Permitted	0.950				0.994	
Satd. Flow (perm)	1693	1764	1781	0	1404	0
Link Speed (mph)		35	35		25	
Link Distance (ft)		711	1189		314	
Travel Time (s)		13.9	23.2		8.6	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	1%	1%	17%	0%	12%
Adj. Flow (vph)	149	1085	1197	43	22	163
Shared Lane Traffic (%)						
Lane Group Flow (vph)	149	1085	1240	0	185	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

McMahon
1: Nutt Road (S.R. 0023) & Paradise Street

2024 Future without Development with Improvements Conditions

Weekday Afternoon Peak Hour

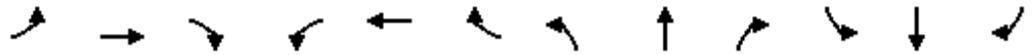
Intersection						
Int Delay, s/veh	10.8					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	143	1042	1149	41	21	156
Future Vol, veh/h	143	1042	1149	41	21	156
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	50	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	2	-2	-	3	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	1	1	17	0	12
Mvmt Flow	149	1085	1197	43	22	163

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	1240	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.3	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	3	-	-
Pot Cap-1 Maneuver	438	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	438	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	2.1	0	141.6
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	438	-	-	-	173
HCM Lane V/C Ratio	0.34	-	-	-	1.066
HCM Control Delay (s)	17.4	-	-	-	141.6
HCM Lane LOS	C	-	-	-	F
HCM 95th %tile Q(veh)	1.5	-	-	-	9.1

Notes
 -: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	36	5	107	27	1	10	182	320	69	8	199	48
Future Volume (vph)	36	5	107	27	1	10	182	320	69	8	199	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	13	13	13	11	11	11	12	12	12
Storage Length (ft)	100		0	125		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.856			0.862			0.984				0.974
Flt Protected	0.950			0.950				0.984				0.998
Satd. Flow (prot)	1685	1449	0	1865	1692	0	0	1778	0	0	1799	0
Flt Permitted	0.950			0.950				0.984				0.998
Satd. Flow (perm)	1685	1449	0	1865	1692	0	0	1778	0	0	1799	0
Link Speed (mph)		25			25			25				25
Link Distance (ft)		375			308			441				191
Travel Time (s)		10.2			8.4			12.0				5.2
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	0%	5%	0%	0%	0%	0%	0%	0%	0%	0%	14%
Adj. Flow (vph)	39	5	115	29	1	11	196	344	74	9	214	52
Shared Lane Traffic (%)												
Lane Group Flow (vph)	39	120	0	29	12	0	0	614	0	0	275	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection												
Int Delay, s/veh	5.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	36	5	107	27	1	10	182	320	69	8	199	48
Future Vol, veh/h	36	5	107	27	1	10	182	320	69	8	199	48
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	100	-	-	125	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	0	5	0	0	0	0	0	0	0	0	14
Mvmt Flow	39	5	115	29	1	11	196	344	74	9	214	52

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1037	1068	240	1091	1057	381	266	0	0	418	0	0
Stage 1	258	258	-	773	773	-	-	-	-	-	-	-
Stage 2	779	810	-	318	284	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.3	-	-	4.3	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3	4	3.1	3	4	3.1	3	-	-	3	-	-
Pot Cap-1 Maneuver	232	223	850	212	227	707	974	-	-	863	-	-
Stage 1	861	698	-	439	412	-	-	-	-	-	-	-
Stage 2	436	396	-	797	680	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	179	162	850	141	165	707	974	-	-	863	-	-
Mov Cap-2 Maneuver	179	162	-	141	165	-	-	-	-	-	-	-
Stage 1	633	690	-	323	303	-	-	-	-	-	-	-
Stage 2	314	291	-	676	672	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	15.8		29.7		3.1		0.3	
HCM LOS	C		D					

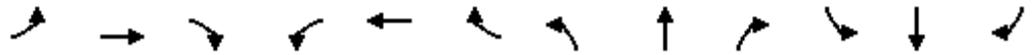
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	974	-	-	179	715	141	544	863	-	-
HCM Lane V/C Ratio	0.201	-	-	0.216	0.168	0.206	0.022	0.01	-	-
HCM Control Delay (s)	9.6	0	-	30.6	11.1	37	11.8	9.2	0	-
HCM Lane LOS	A	A	-	D	B	E	B	A	A	-
HCM 95th %tile Q(veh)	0.7	-	-	0.8	0.6	0.7	0.1	0	-	-

McMahon

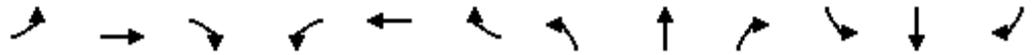
2024 Future without Development with Improvements Conditions

3: Bridge Street (S.R. 0113) & Hall Street

Weekday Afternoon Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↖			↖	↗
Traffic Volume (vph)	13	0	19	9	0	18	31	639	0	0	569	18
Future Volume (vph)	13	0	19	9	0	18	31	639	0	0	569	18
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	16	16	16	13	13	13	11	15	15	14	14	14
Grade (%)		-1%			0%			-2%				1%
Storage Length (ft)	0		0	0		0	125		0	0		0
Storage Lanes	0		0	0		0	1		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.921			0.912							0.996
Flt Protected		0.980			0.983		0.950					
Satd. Flow (prot)	0	1850	0	0	1667	0	1670	1980	0	0	1903	0
Flt Permitted		0.853			0.872		0.405					
Satd. Flow (perm)	0	1611	0	0	1479	0	712	1980	0	0	1903	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		41			41							4
Link Speed (mph)		25			25			25				25
Link Distance (ft)		675			464			342				483
Travel Time (s)		18.4			12.7			9.3				13.2
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	1%	0%	1%	0%	0%
Adj. Flow (vph)	14	0	20	10	0	19	33	680	0	0	605	19
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	34	0	0	29	0	33	680	0	0	624	0
Number of Detectors	1	1		1	1		1	1			1	
Detector Template	Left			Left								
Leading Detector (ft)	20	50		20	37		37	37			37	
Trailing Detector (ft)	0	-10		0	-3		-3	-3			-3	
Detector 1 Position(ft)	0	-10		0	-3		-3	-3			-3	
Detector 1 Size(ft)	20	60		20	40		40	40			40	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex			Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA			NA	
Protected Phases		4			8			2				6
Permitted Phases	4			8			2					
Detector Phase	4	4		8	8		2	2				6
Switch Phase												
Minimum Initial (s)	3.0	3.0		3.0	3.0		15.0	15.0			15.0	
Minimum Split (s)	10.0	10.0		10.0	10.0		21.0	21.0			21.0	
Total Split (s)	22.0	22.0		22.0	22.0		58.0	58.0			58.0	
Total Split (%)	27.5%	27.5%		27.5%	27.5%		72.5%	72.5%			72.5%	
Maximum Green (s)	15.0	15.0		15.0	15.0		52.0	52.0			52.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	
All-Red Time (s)	4.0	4.0		4.0	4.0		3.0	3.0			3.0	
Lost Time Adjust (s)		-1.0			-1.0		-1.0	-1.0			-1.0	

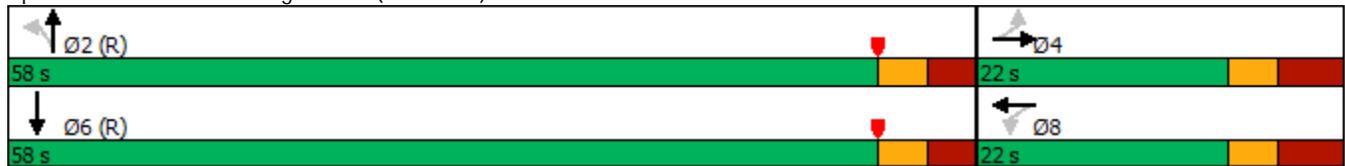


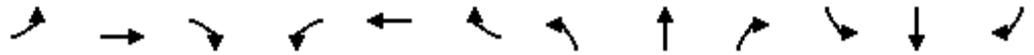
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Lost Time (s)		6.0			6.0		5.0	5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0				3.0
Recall Mode	None	None		None	None		C-Max	C-Max				C-Max
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0				7.0
Flash Dont Walk (s)	12.0	12.0		12.0	12.0		12.0	12.0				12.0
Pedestrian Calls (#/hr)	0	0		0	0		0	0				0

Intersection Summary

Area Type:	Other
Cycle Length:	80
Actuated Cycle Length:	80
Offset:	52 (65%), Referenced to phase 2:NBTL and 6:SBT, Start of Yellow
Natural Cycle:	40
Control Type:	Actuated-Coordinated

Splits and Phases: 3: Bridge Street (S.R. 0113) & Hall Street





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↖			↖	↗
Traffic Volume (veh/h)	13	0	19	9	0	18	31	639	0	0	569	18
Future Volume (veh/h)	13	0	19	9	0	18	31	639	0	0	569	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1911	1911	1911	1872	1872	1872	1875	1935	0	0	1866	1866
Adj Flow Rate, veh/h	14	0	20	10	0	19	33	680	0	0	605	19
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	0	0	0	0	0	0	1	0	0	0	0
Cap, veh/h	95	0	45	87	0	51	676	1580	0	0	1470	46
Arrive On Green	0.03	0.00	0.03	0.03	0.00	0.03	0.82	0.82	0.00	0.00	0.82	0.80
Sat Flow, veh/h	696	0	995	585	0	1111	803	1935	0	0	1800	57
Grp Volume(v), veh/h	34	0	0	29	0	0	33	680	0	0	0	624
Grp Sat Flow(s),veh/h/ln	1691	0	0	1695	0	0	803	1935	0	0	0	1856
Q Serve(g_s), s	0.2	0.0	0.0	0.0	0.0	0.0	0.9	7.9	0.0	0.0	0.0	7.4
Cycle Q Clear(g_c), s	1.5	0.0	0.0	1.2	0.0	0.0	7.9	7.9	0.0	0.0	0.0	7.4
Prop In Lane	0.41		0.59	0.34		0.66	1.00		0.00	0.00		0.03
Lane Grp Cap(c), veh/h	120	0	0	117	0	0	676	1580	0	0	0	1516
V/C Ratio(X)	0.28	0.00	0.00	0.25	0.00	0.00	0.05	0.43	0.00	0.00	0.00	0.41
Avail Cap(c_a), veh/h	356	0	0	350	0	0	676	1580	0	0	0	1516
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	37.6	0.0	0.0	37.5	0.0	0.0	3.0	2.1	0.0	0.0	0.0	2.0
Incr Delay (d2), s/veh	1.3	0.0	0.0	1.1	0.0	0.0	0.1	0.9	0.0	0.0	0.0	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.3	0.0	0.0	1.1	0.0	0.0	0.3	3.3	0.0	0.0	0.0	3.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.9	0.0	0.0	38.6	0.0	0.0	3.2	2.9	0.0	0.0	0.0	2.9
LnGrp LOS	D	A	A	D	A	A	A	A	A	A	A	A
Approach Vol, veh/h		34			29			713				624
Approach Delay, s/veh		38.9			38.6			2.9				2.9
Approach LOS		D			D			A				A
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		70.3		9.7		70.3		9.7				
Change Period (Y+Rc), s		6.0		7.0		6.0		7.0				
Max Green Setting (Gmax), s		52.0		15.0		52.0		15.0				
Max Q Clear Time (g_c+I1), s		10.4		3.5		9.4		3.2				
Green Ext Time (p_c), s		3.4		0.0		2.7		0.0				

Intersection Summary

HCM 6th Ctrl Delay	4.5
HCM 6th LOS	A

Notes

User approved pedestrian interval to be less than phase max green.

Appendix K

2024 Future with Development Capacity/Level-of-Service Analysis Worksheets

Weekday Morning Peak Hour

McMahon
1: Nutt Road (S.R. 0023) & Paradise Street

2024 Future with Development Conditions
Weekday Morning Peak Hour



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	119	1040	691	22	48	187
Future Volume (vph)	119	1040	691	22	48	187
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	50			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.996		0.893	
Flt Protected	0.950				0.990	
Satd. Flow (prot)	1805	1810	1788	0	1680	0
Flt Permitted	0.950				0.990	
Satd. Flow (perm)	1805	1810	1788	0	1680	0
Link Speed (mph)		35	35		25	
Link Distance (ft)		711	1189		314	
Travel Time (s)		13.9	23.2		8.6	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	5%	6%	0%	0%	0%
Adj. Flow (vph)	127	1106	735	23	51	199
Shared Lane Traffic (%)						
Lane Group Flow (vph)	127	1106	758	0	250	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection						
Int Delay, s/veh	5.8					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↙	↑	↘		↙	
Traffic Vol, veh/h	119	1040	691	22	48	187
Future Vol, veh/h	119	1040	691	22	48	187
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	50	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	5	6	0	0	0
Mvmt Flow	127	1106	735	23	51	199

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	758	0	-	0	2107 747
Stage 1	-	-	-	-	747 -
Stage 2	-	-	-	-	1360 -
Critical Hdwy	4.3	-	-	-	7.1 6.2
Critical Hdwy Stg 1	-	-	-	-	5.4 -
Critical Hdwy Stg 2	-	-	-	-	5.4 -
Follow-up Hdwy	3	-	-	-	3 3.1
Pot Cap-1 Maneuver	655	-	-	-	~ 40 435
Stage 1	-	-	-	-	526 -
Stage 2	-	-	-	-	261 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	655	-	-	-	~ 32 435
Mov Cap-2 Maneuver	-	-	-	-	161 -
Stage 1	-	-	-	-	424 -
Stage 2	-	-	-	-	261 -

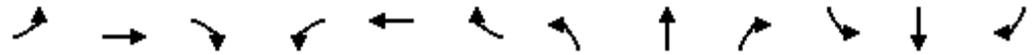
Approach	EB	WB	SB
HCM Control Delay, s	1.2	0	45.7
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	655	-	-	-	323
HCM Lane V/C Ratio	0.193	-	-	-	0.774
HCM Control Delay (s)	11.8	-	-	-	45.7
HCM Lane LOS	B	-	-	-	E
HCM 95th %tile Q(veh)	0.7	-	-	-	6.1

Notes
 -: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

McMahon
2: Main Street & Smithworks Boulevard

2024 Future with Development Conditions
Weekday Morning Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	28	2	175	66	4	6	102	107	9	4	309	43
Future Volume (vph)	28	2	175	66	4	6	102	107	9	4	309	43
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	13	13	13	11	11	11	12	12	12
Storage Length (ft)	100		0	125		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.851			0.912			0.994			0.984	
Flt Protected	0.950			0.950				0.977			0.999	
Satd. Flow (prot)	1685	1349	0	1865	1791	0	0	1570	0	0	1821	0
Flt Permitted	0.950			0.950				0.977			0.999	
Satd. Flow (perm)	1685	1349	0	1865	1791	0	0	1570	0	0	1821	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		375			308			441			191	
Travel Time (s)		10.2			8.4			12.0			5.2	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	0%	0%	12%	0%	0%	0%	26%	3%	0%	0%	1%	14%
Adj. Flow (vph)	33	2	208	79	5	7	121	127	11	5	368	51
Shared Lane Traffic (%)												
Lane Group Flow (vph)	33	210	0	79	12	0	0	259	0	0	424	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

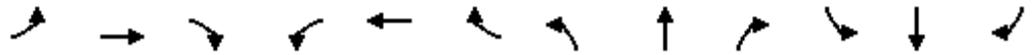
Area Type: Other
Control Type: Unsignalized

Intersection												
Int Delay, s/veh	7.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	28	2	175	66	4	6	102	107	9	4	309	43
Future Vol, veh/h	28	2	175	66	4	6	102	107	9	4	309	43
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	100	-	-	125	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	0	0	12	0	0	0	26	3	0	0	1	14
Mvmt Flow	33	2	208	79	5	7	121	127	11	5	368	51

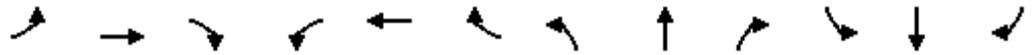
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	785	784	394	884	804	133	419	0	0	138	0	0
Stage 1	404	404	-	375	375	-	-	-	-	-	-	-
Stage 2	381	380	-	509	429	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.3	-	-	4.3	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3	4	3.1	3	4	3.1	3	-	-	3	-	-
Pot Cap-1 Maneuver	348	327	695	297	319	977	862	-	-	1077	-	-
Stage 1	713	603	-	740	621	-	-	-	-	-	-	-
Stage 2	734	617	-	622	587	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	300	276	695	182	269	977	862	-	-	1077	-	-
Mov Cap-2 Maneuver	300	276	-	182	269	-	-	-	-	-	-	-
Stage 1	605	599	-	628	527	-	-	-	-	-	-	-
Stage 2	612	523	-	431	583	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB			
HCM Control Delay, s	13.4		35.6		4.6		0.1			
HCM LOS	B		E							

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	862	-	-	300	683	182	476	1077	-	-
HCM Lane V/C Ratio	0.141	-	-	0.111	0.309	0.432	0.025	0.004	-	-
HCM Control Delay (s)	9.9	0	-	18.5	12.6	39	12.8	8.4	0	-
HCM Lane LOS	A	A	-	C	B	E	B	A	A	-
HCM 95th %tile Q(veh)	0.5	-	-	0.4	1.3	2	0.1	0	-	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↖			↖	↗
Traffic Volume (vph)	79	0	55	20	1	15	21	443	0	0	457	36
Future Volume (vph)	79	0	55	20	1	15	21	443	0	0	457	36
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	16	16	16	13	13	13	11	15	15	14	14	14
Grade (%)		-1%			0%			-2%				1%
Storage Length (ft)	0		0	0		0	125		0	0		0
Storage Lanes	0		0	0		0	1		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.945			0.945							0.990
Flt Protected		0.971			0.973		0.950					
Satd. Flow (prot)	0	1881	0	0	1662	0	1670	1852	0	0	1891	0
Flt Permitted		0.796			0.799		0.421					
Satd. Flow (perm)	0	1542	0	0	1365	0	740	1852	0	0	1891	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		55			16							12
Link Speed (mph)		25			25			25				25
Link Distance (ft)		675			464			342				483
Travel Time (s)		18.4			12.7			9.3				13.2
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	0%	0%	0%	0%	0%	7%	0%	8%	0%	7%	0%	0%
Adj. Flow (vph)	87	0	60	22	1	16	23	487	0	0	502	40
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	147	0	0	39	0	23	487	0	0	542	0
Number of Detectors	1	1		1	1		1	1			1	
Detector Template	Left			Left								
Leading Detector (ft)	20	50		20	37		37	37			37	
Trailing Detector (ft)	0	-10		0	-3		-3	-3			-3	
Detector 1 Position(ft)	0	-10		0	-3		-3	-3			-3	
Detector 1 Size(ft)	20	60		20	40		40	40			40	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex			Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA			NA	
Protected Phases		4			8			2				6
Permitted Phases	4			8			2					
Detector Phase	4	4		8	8		2	2				6
Switch Phase												
Minimum Initial (s)	3.0	3.0		3.0	3.0		15.0	15.0				15.0
Minimum Split (s)	10.0	10.0		10.0	10.0		21.0	21.0				21.0
Total Split (s)	19.0	19.0		19.0	19.0		41.0	41.0				41.0
Total Split (%)	31.7%	31.7%		31.7%	31.7%		68.3%	68.3%				68.3%
Maximum Green (s)	12.0	12.0		12.0	12.0		35.0	35.0				35.0
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0				3.0
All-Red Time (s)	4.0	4.0		4.0	4.0		3.0	3.0				3.0
Lost Time Adjust (s)		-1.0			-1.0		-1.0	-1.0				-1.0



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Lost Time (s)		6.0			6.0		5.0	5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0				3.0
Recall Mode	None	None		None	None		C-Max	C-Max				C-Max
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0				7.0
Flash Dont Walk (s)	12.0	12.0		12.0	12.0		12.0	12.0				12.0
Pedestrian Calls (#/hr)	0	0		0	0		0	0				0

Intersection Summary

Area Type: Other

Cycle Length: 60

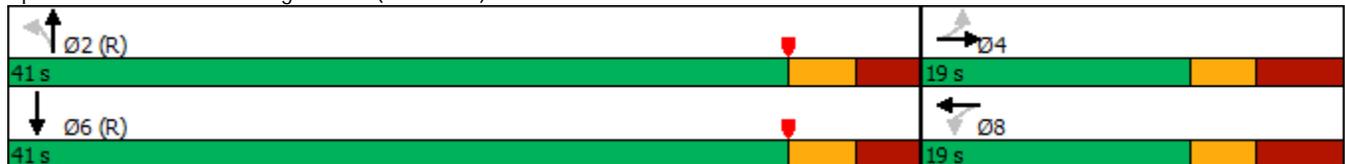
Actuated Cycle Length: 60

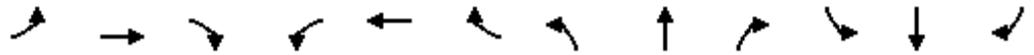
Offset: 5 (8%), Referenced to phase 2:NBTL and 6:SBT, Start of Yellow

Natural Cycle: 40

Control Type: Actuated-Coordinated

Splits and Phases: 3: Bridge Street (S.R. 0113) & Hall Street





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↑			↖	
Traffic Volume (veh/h)	79	0	55	20	1	15	21	443	0	0	457	36
Future Volume (veh/h)	79	0	55	20	1	15	21	443	0	0	457	36
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1911	1911	1911	1872	1872	1770	1875	1831	0	0	1866	1866
Adj Flow Rate, veh/h	87	0	60	22	1	16	23	487	0	0	502	40
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	0	0	0	0	0	7	0	8	0	0	0	0
Cap, veh/h	213	9	88	199	33	97	598	1242	0	0	1157	92
Arrive On Green	0.12	0.00	0.12	0.12	0.14	0.12	0.68	0.68	0.00	0.00	0.68	0.66
Sat Flow, veh/h	853	66	634	763	242	699	866	1831	0	0	1706	136
Grp Volume(v), veh/h	147	0	0	39	0	0	23	487	0	0	0	542
Grp Sat Flow(s),veh/h/ln	1553	0	0	1704	0	0	866	1831	0	0	0	1842
Q Serve(g_s), s	4.2	0.0	0.0	0.0	0.0	0.0	0.7	7.0	0.0	0.0	0.0	8.1
Cycle Q Clear(g_c), s	5.4	0.0	0.0	1.2	0.0	0.0	8.3	7.0	0.0	0.0	0.0	8.1
Prop In Lane	0.59		0.41	0.56		0.41	1.00		0.00	0.00		0.07
Lane Grp Cap(c), veh/h	284	0	0	301	0	0	598	1242	0	0	0	1250
V/C Ratio(X)	0.52	0.00	0.00	0.13	0.00	0.00	0.04	0.39	0.00	0.00	0.00	0.43
Avail Cap(c_a), veh/h	402	0	0	414	0	0	598	1242	0	0	0	1250
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	25.0	0.0	0.0	23.2	0.0	0.0	6.2	4.2	0.0	0.0	0.0	4.4
Incr Delay (d2), s/veh	1.5	0.0	0.0	0.2	0.0	0.0	0.1	0.9	0.0	0.0	0.0	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.8	0.0	0.0	0.9	0.0	0.0	0.2	3.8	0.0	0.0	0.0	4.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	26.5	0.0	0.0	23.4	0.0	0.0	6.3	5.2	0.0	0.0	0.0	5.5
LnGrp LOS	C	A	A	C	A	A	A	A	A	A	A	A
Approach Vol, veh/h		147			39			510				542
Approach Delay, s/veh		26.5			23.4			5.2				5.5
Approach LOS		C			C			A				A
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		45.7		14.3		45.7		14.3				
Change Period (Y+Rc), s		6.0		7.0		6.0		7.0				
Max Green Setting (Gmax), s		35.0		12.0		35.0		12.0				
Max Q Clear Time (g_c+I1), s		10.8		7.4		10.1		3.2				
Green Ext Time (p_c), s		2.1		0.2		2.2		0.0				

Intersection Summary

HCM 6th Ctrl Delay	8.4
HCM 6th LOS	A

Notes

User approved pedestrian interval to be less than phase max green.

McMahon
4: Paradise Street & West Site Access

2024 Future with Development Conditions
Weekday Morning Peak Hour



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	21	3	78	15	2	148
Future Volume (vph)	21	3	78	15	2	148
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.984		0.979			
Flt Protected	0.958					0.999
Satd. Flow (prot)	1756	0	1824	0	0	1861
Flt Permitted	0.958					0.999
Satd. Flow (perm)	1756	0	1824	0	0	1861
Link Speed (mph)	25		25			25
Link Distance (ft)	350		323			890
Travel Time (s)	9.5		8.8			24.3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	23	3	85	16	2	161
Shared Lane Traffic (%)						
Lane Group Flow (vph)	26	0	101	0	0	163
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other
Control Type: Unsignalized

McMahon
4: Paradise Street & West Site Access

2024 Future with Development Conditions
Weekday Morning Peak Hour

Intersection						
Int Delay, s/veh	0.9					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	21	3	78	15	2	148
Future Vol, veh/h	21	3	78	15	2	148
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	23	3	85	16	2	161

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	258	93	0	0	101	0
Stage 1	93	-	-	-	-	-
Stage 2	165	-	-	-	-	-
Critical Hdwy	7.1	6.22	-	-	4.3	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3	3.1	-	-	3	-
Pot Cap-1 Maneuver	802	1029	-	-	1109	-
Stage 1	1084	-	-	-	-	-
Stage 2	1002	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	800	1029	-	-	1109	-
Mov Cap-2 Maneuver	800	-	-	-	-	-
Stage 1	1084	-	-	-	-	-
Stage 2	1000	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.5	0	0.1
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	823	1109
HCM Lane V/C Ratio	-	-	0.032	0.002
HCM Control Delay (s)	-	-	9.5	8.3
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0

McMahon
5: Hall Street & Center Site Access

2024 Future with Development Conditions
Weekday Morning Peak Hour



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↔		↙	↘
Traffic Volume (vph)	11	29	40	11	17	16
Future Volume (vph)	11	29	40	11	17	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.971		0.934	
Flt Protected		0.987			0.975	
Satd. Flow (prot)	0	1839	1809	0	1696	0
Flt Permitted		0.987			0.975	
Satd. Flow (perm)	0	1839	1809	0	1696	0
Link Speed (mph)		25	25		25	
Link Distance (ft)		511	236		162	
Travel Time (s)		13.9	6.4		4.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	12	32	43	12	18	17
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	44	55	0	35	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized

McMahon
5: Hall Street & Center Site Access

2024 Future with Development Conditions
Weekday Morning Peak Hour

Intersection						
Int Delay, s/veh	3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	11	29	40	11	17	16
Future Vol, veh/h	11	29	40	11	17	16
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, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	12	32	43	12	18	17

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	55	0	-	0	105 49
Stage 1	-	-	-	-	49 -
Stage 2	-	-	-	-	56 -
Critical Hdwy	4.3	-	-	-	7.1 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	3	-	-	-	3 3.1
Pot Cap-1 Maneuver	1150	-	-	-	1019 1090
Stage 1	-	-	-	-	1138 -
Stage 2	-	-	-	-	1129 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1150	-	-	-	1008 1090
Mov Cap-2 Maneuver	-	-	-	-	1008 -
Stage 1	-	-	-	-	1125 -
Stage 2	-	-	-	-	1129 -

Approach	EB	WB	SB
HCM Control Delay, s	2.2	0	8.6
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1150	-	-	-	1046
HCM Lane V/C Ratio	0.01	-	-	-	0.034
HCM Control Delay (s)	8.2	0	-	-	8.6
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

McMahon
6: Hall Street & East Site Access IN

2024 Future with Development Conditions
Weekday Morning Peak Hour



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	
Traffic Volume (vph)	0	46	51	16	0	0
Future Volume (vph)	0	46	51	16	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.968				
Flt Protected						
Satd. Flow (prot)	0	1863	1803	0	1863	0
Flt Permitted						
Satd. Flow (perm)	0	1863	1803	0	1863	0
Link Speed (mph)		25	25		25	
Link Distance (ft)		213	574		328	
Travel Time (s)		5.8	15.7		8.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	50	55	17	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	50	72	0	0	0
Sign Control		Free	Free		Stop	

Intersection Summary
 Area Type: Other
 Control Type: Unsignalized

McMahon
6: Hall Street & East Site Access IN

2024 Future with Development Conditions
Weekday Morning Peak Hour

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↶	↷		↶	
Traffic Vol, veh/h	0	46	51	16	0	0
Future Vol, veh/h	0	46	51	16	0	0
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, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	50	55	17	0	0

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	72	0	-	0	114 64
Stage 1	-	-	-	-	64 -
Stage 2	-	-	-	-	50 -
Critical Hdwy	4.3	-	-	-	7.1 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	3	-	-	-	3 3.1
Pot Cap-1 Maneuver	1134	-	-	-	1005 1069
Stage 1	-	-	-	-	1119 -
Stage 2	-	-	-	-	1136 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1134	-	-	-	1005 1069
Mov Cap-2 Maneuver	-	-	-	-	1005 -
Stage 1	-	-	-	-	1119 -
Stage 2	-	-	-	-	1136 -

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

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1134	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	-	0
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	-

McMahon
7: Paradise Street & Hall Street

2024 Future with Development Conditions
Weekday Morning Peak Hour



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	54	2	102	39	1	182
Future Volume (vph)	54	2	102	39	1	182
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.996		0.963			
Flt Protected	0.954					
Satd. Flow (prot)	1770	0	1794	0	0	1863
Flt Permitted	0.954					
Satd. Flow (perm)	1770	0	1794	0	0	1863
Link Speed (mph)	25		25			25
Link Distance (ft)	511		864			323
Travel Time (s)	13.9		23.6			8.8
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	59	2	111	42	1	198
Shared Lane Traffic (%)						
Lane Group Flow (vph)	61	0	153	0	0	199
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection						
Int Delay, s/veh	1.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		T			T
Traffic Vol, veh/h	54	2	102	39	1	182
Future Vol, veh/h	54	2	102	39	1	182
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	59	2	111	42	1	198

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	332	132	0	0	153	0
Stage 1	132	-	-	-	-	-
Stage 2	200	-	-	-	-	-
Critical Hdwy	7.1	6.22	-	-	4.3	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3	3.1	-	-	3	-
Pot Cap-1 Maneuver	714	978	-	-	1065	-
Stage 1	1039	-	-	-	-	-
Stage 2	964	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	713	978	-	-	1065	-
Mov Cap-2 Maneuver	713	-	-	-	-	-
Stage 1	1039	-	-	-	-	-
Stage 2	963	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.5	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	720	1065
HCM Lane V/C Ratio	-	-	0.085	0.001
HCM Control Delay (s)	-	-	10.5	8.4
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.3	0

McMahon
24: Hall Street & East Site Access OUT

2024 Future with Development Conditions
Weekday Morning Peak Hour



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↘	
Traffic Volume (vph)	0	46	51	0	25	0
Future Volume (vph)	0	46	51	0	25	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr						
Flt Protected					0.950	
Satd. Flow (prot)	0	1863	1863	0	1770	0
Flt Permitted					0.950	
Satd. Flow (perm)	0	1863	1863	0	1770	0
Link Speed (mph)		25	25		25	
Link Distance (ft)		236	213		354	
Travel Time (s)		6.4	5.8		9.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	50	55	0	27	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	50	55	0	27	0
Sign Control		Free	Free		Stop	

Intersection Summary
 Area Type: Other
 Control Type: Unsignalized

McMahon
24: Hall Street & East Site Access OUT

2024 Future with Development Conditions
Weekday Morning Peak Hour

Intersection						
Int Delay, s/veh	1.8					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↓	
Traffic Vol, veh/h	0	46	51	0	25	0
Future Vol, veh/h	0	46	51	0	25	0
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, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	50	55	0	27	0

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	-	0	-	0	105 55
Stage 1	-	-	-	-	55 -
Stage 2	-	-	-	-	50 -
Critical Hdwy	-	-	-	-	7.1 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	-	-	-	-	3 3.1
Pot Cap-1 Maneuver	0	-	-	0	1019 1081
Stage 1	0	-	-	0	1130 -
Stage 2	0	-	-	0	1136 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	1019 1081
Mov Cap-2 Maneuver	-	-	-	-	1019 -
Stage 1	-	-	-	-	1130 -
Stage 2	-	-	-	-	1136 -

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

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	1019
HCM Lane V/C Ratio	-	-	0.027
HCM Control Delay (s)	-	-	8.6
HCM Lane LOS	-	-	A
HCM 95th %tile Q(veh)	-	-	0.1

With Improvements

McMahon

2024 Future with Development with Improvements Conditions

1: Nutt Road (S.R. 0023) & Paradise Street

Weekday Morning Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	119	1040	2	2	691	22	7	0	7	48	0	187
Future Volume (vph)	119	1040	2	2	691	22	7	0	7	48	0	187
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	14	14	12	12	11	11	12	12	12	12	12	12
Grade (%)		2%			-2%			0%				3%
Storage Length (ft)	175		0	75		0	0		0	75		0
Storage Lanes	1		0	1		0	0		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.995			0.932				0.850
Flt Protected	0.950			0.950				0.976			0.950	
Satd. Flow (prot)	1806	1810	0	1693	1652	0	0	1605	0	0	1684	1507
Flt Permitted	0.290			0.224				0.863			0.747	
Satd. Flow (perm)	551	1810	0	399	1652	0	0	1419	0	0	1324	1507
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					2			68				199
Link Speed (mph)		35			35			30				25
Link Distance (ft)		711			1189			368				314
Travel Time (s)		13.9			23.2			8.4				8.6
Peak Hour Factor	0.94	0.94	0.92	0.92	0.94	0.94	0.92	0.92	0.92	0.94	0.92	0.94
Heavy Vehicles (%)	0%	5%	2%	2%	6%	0%	2%	2%	2%	0%	2%	0%
Adj. Flow (vph)	127	1106	2	2	735	23	8	0	8	51	0	199
Shared Lane Traffic (%)												
Lane Group Flow (vph)	127	1108	0	2	758	0	0	16	0	0	51	199
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100		20	100		20	100		20	100	20
Trailing Detector (ft)	0	0		0	0		0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94				94
Detector 2 Size(ft)		6			6			6				6
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	pm+ov
Protected Phases	5	2			6			8				4
Permitted Phases	2			6			8			4		4
Detector Phase	5	2		6	6		8	8		4	4	5
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	9.5	24.0		24.0	24.0		22.5	22.5		24.0	24.0	9.5
Total Split (s)	12.0	89.0		77.0	77.0		31.0	31.0		31.0	31.0	12.0

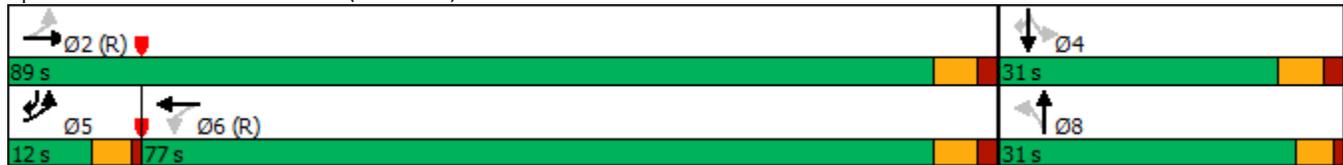


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Split (%)	10.0%	74.2%		64.2%	64.2%		25.8%	25.8%		25.8%	25.8%	10.0%
Maximum Green (s)	7.5	83.0		71.0	71.0		26.5	26.5		25.0	25.0	7.5
Yellow Time (s)	3.5	4.0		4.0	4.0		3.5	3.5		4.0	4.0	3.5
All-Red Time (s)	1.0	2.0		2.0	2.0		1.0	1.0		2.0	2.0	1.0
Lost Time Adjust (s)	-1.0	-1.0		0.0	-1.0			0.0			0.0	0.0
Total Lost Time (s)	3.5	5.0		6.0	5.0			4.5			6.0	4.5
Lead/Lag	Lead			Lag								Lead
Lead-Lag Optimize?	Yes			Yes								Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	C-Min		C-Min	C-Min		None	None		None	None	None
Walk Time (s)		7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)		0		0	0		0	0		0	0	

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 45 (38%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated

Splits and Phases: 1: Nutt Road (S.R. 0023) & Paradise Street

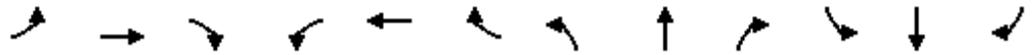


McMahon

2024 Future with Development with Improvements Conditions

1: Nutt Road (S.R. 0023) & Paradise Street

Weekday Morning Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	119	1040	2	2	691	22	7	0	7	48	0	187
Future Volume (veh/h)	119	1040	2	2	691	22	7	0	7	48	0	187
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1849	1776	1750	1846	1789	1875	1772	1772	1772	1750	1722	1750
Adj Flow Rate, veh/h	127	1106	2	2	735	23	8	0	8	51	0	199
Peak Hour Factor	0.94	0.94	0.92	0.92	0.94	0.94	0.92	0.92	0.92	0.94	0.92	0.94
Percent Heavy Veh, %	0	5	2	2	6	0	2	2	2	0	2	0
Cap, veh/h	462	1349	2	239	1178	37	141	14	109	252	0	279
Arrive On Green	0.05	0.76	0.75	0.67	0.68	0.67	0.15	0.00	0.15	0.16	0.00	0.15
Sat Flow, veh/h	1761	1772	3	502	1725	54	651	92	743	1305	0	1483
Grp Volume(v), veh/h	127	0	1108	2	0	758	16	0	0	51	0	199
Grp Sat Flow(s),veh/h/ln	1761	0	1775	502	0	1779	1486	0	0	1305	0	1483
Q Serve(g_s), s	2.3	0.0	47.6	0.3	0.0	28.3	0.0	0.0	0.0	3.5	0.0	15.1
Cycle Q Clear(g_c), s	2.3	0.0	47.6	38.5	0.0	28.3	1.0	0.0	0.0	4.0	0.0	15.1
Prop In Lane	1.00		0.00	1.00		0.03	0.50		0.50	1.00		1.00
Lane Grp Cap(c), veh/h	462	0	1351	239	0	1215	264	0	0	263	0	279
V/C Ratio(X)	0.27	0.00	0.82	0.01	0.00	0.62	0.06	0.00	0.00	0.19	0.00	0.71
Avail Cap(c_a), veh/h	500	0	1351	239	0	1215	368	0	0	342	0	370
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	8.6	0.0	9.1	25.0	0.0	10.5	44.1	0.0	0.0	44.9	0.0	45.7
Incr Delay (d2), s/veh	0.3	0.0	5.7	0.1	0.0	2.4	0.1	0.0	0.0	0.4	0.0	4.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.6	0.0	23.1	0.1	0.0	16.0	0.8	0.0	0.0	2.5	0.0	9.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	8.9	0.0	14.8	25.0	0.0	13.0	44.2	0.0	0.0	45.2	0.0	49.9
LnGrp LOS	A	A	B	C	A	B	D	A	A	D	A	D
Approach Vol, veh/h		1235			760			16				250
Approach Delay, s/veh		14.2			13.0			44.2				49.0
Approach LOS		B			B			D				D
Timer - Assigned Phs		2		4	5	6		8				
Phs Duration (G+Y+Rc), s		96.3		23.7	9.4	86.9		23.7				
Change Period (Y+Rc), s		6.0		6.0	4.5	6.0		* 6				
Max Green Setting (Gmax), s		83.0		25.0	7.5	71.0		* 27				
Max Q Clear Time (g_c+I1), s		49.6		17.1	4.8	40.5		3.0				
Green Ext Time (p_c), s		12.1		0.6	0.1	6.1		0.0				

Intersection Summary

HCM 6th Ctrl Delay	17.8
HCM 6th LOS	B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Weekday Afternoon Peak Hour

McMahon
1: Nutt Road (S.R. 0023) & Paradise Street

2024 Future with Development Conditions
Weekday Afternoon Peak Hour



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	190	1015	1128	54	27	186
Future Volume (vph)	190	1015	1128	54	27	186
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	50			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.994		0.882	
Flt Protected	0.950				0.994	
Satd. Flow (prot)	1805	1881	1857	0	1508	0
Flt Permitted	0.950				0.994	
Satd. Flow (perm)	1805	1881	1857	0	1508	0
Link Speed (mph)		35	35		25	
Link Distance (ft)		711	1189		314	
Travel Time (s)		13.9	23.2		8.6	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	1%	1%	17%	0%	12%
Adj. Flow (vph)	198	1057	1175	56	28	194
Shared Lane Traffic (%)						
Lane Group Flow (vph)	198	1057	1231	0	222	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection						
Int Delay, s/veh	14.8					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	190	1015	1128	54	27	186
Future Vol, veh/h	190	1015	1128	54	27	186
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	50	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	1	1	17	0	12
Mvmt Flow	198	1057	1175	56	28	194

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	1231	0	0 2656 1203
Stage 1	-	-	- 1203 -
Stage 2	-	-	- 1453 -
Critical Hdwy	4.3	-	- 7.1 6.32
Critical Hdwy Stg 1	-	-	- 5.4 -
Critical Hdwy Stg 2	-	-	- 5.4 -
Follow-up Hdwy	3	-	- 3 3.1
Pot Cap-1 Maneuver	441	-	- ~ 16 226
Stage 1	-	-	- 313 -
Stage 2	-	-	- 234 -
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	441	-	- ~ 9 226
Mov Cap-2 Maneuver	-	-	- 94 -
Stage 1	-	-	- 172 -
Stage 2	-	-	- 234 -

Approach	EB	WB	SB
HCM Control Delay, s	3.1	0	163.5
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	441	-	-	-	192
HCM Lane V/C Ratio	0.449	-	-	-	1.156
HCM Control Delay (s)	19.6	-	-	-	163.5
HCM Lane LOS	C	-	-	-	F
HCM 95th %tile Q(veh)	2.3	-	-	-	11.2

Notes
 -: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

McMahon
2: Main Street & Smithworks Boulevard

2024 Future with Development Conditions
Weekday Afternoon Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	39	5	107	27	1	10	182	320	69	8	199	53
Future Volume (vph)	39	5	107	27	1	10	182	320	69	8	199	53
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	13	13	13	11	11	11	12	12	12
Storage Length (ft)	100		0	125		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.856			0.862			0.984				0.973
Flt Protected	0.950			0.950				0.984				0.998
Satd. Flow (prot)	1685	1449	0	1865	1692	0	0	1778	0	0	1794	0
Flt Permitted	0.950			0.950				0.984				0.998
Satd. Flow (perm)	1685	1449	0	1865	1692	0	0	1778	0	0	1794	0
Link Speed (mph)		25			25			25				25
Link Distance (ft)		375			308			441				191
Travel Time (s)		10.2			8.4			12.0				5.2
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	0%	5%	0%	0%	0%	0%	0%	0%	0%	0%	14%
Adj. Flow (vph)	42	5	115	29	1	11	196	344	74	9	214	57
Shared Lane Traffic (%)												
Lane Group Flow (vph)	42	120	0	29	12	0	0	614	0	0	280	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection												
Int Delay, s/veh	5.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↶	↷		↶	↷			↕			↕	
Traffic Vol, veh/h	39	5	107	27	1	10	182	320	69	8	199	53
Future Vol, veh/h	39	5	107	27	1	10	182	320	69	8	199	53
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	100	-	-	125	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	0	5	0	0	0	0	0	0	0	0	14
Mvmt Flow	42	5	115	29	1	11	196	344	74	9	214	57

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1040	1071	243	1094	1062	381	271	0	0	418	0	0
Stage 1	261	261	-	773	773	-	-	-	-	-	-	-
Stage 2	779	810	-	321	289	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.3	-	-	4.3	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3	4	3.1	3	4	3.1	3	-	-	3	-	-
Pot Cap-1 Maneuver	231	223	847	211	225	707	970	-	-	863	-	-
Stage 1	858	696	-	439	412	-	-	-	-	-	-	-
Stage 2	436	396	-	794	677	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	178	162	847	140	163	707	970	-	-	863	-	-
Mov Cap-2 Maneuver	178	162	-	140	163	-	-	-	-	-	-	-
Stage 1	630	688	-	322	302	-	-	-	-	-	-	-
Stage 2	314	291	-	673	669	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	16.3	29.9	3.1	0.3
HCM LOS	C	D		

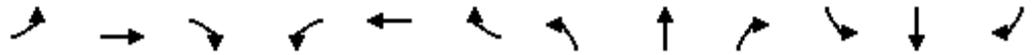
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	970	-	-	178	713	140	542	863	-	-
HCM Lane V/C Ratio	0.202	-	-	0.236	0.169	0.207	0.022	0.01	-	-
HCM Control Delay (s)	9.6	0	-	31.3	11.1	37.3	11.8	9.2	0	-
HCM Lane LOS	A	A	-	D	B	E	B	A	A	-
HCM 95th %tile Q(veh)	0.8	-	-	0.9	0.6	0.7	0.1	0	-	-

McMahon

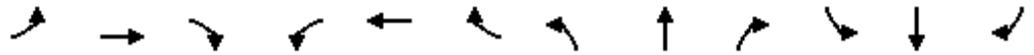
2024 Future with Development with Improvements Conditions

3: Bridge Street (S.R. 0113) & Hall Street

Weekday Afternoon Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↖			↖	↗
Traffic Volume (vph)	55	0	25	9	0	18	41	612	0	0	553	61
Future Volume (vph)	55	0	25	9	0	18	41	612	0	0	553	61
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	16	16	16	13	13	13	11	15	15	14	14	14
Grade (%)		-1%			0%			-2%				1%
Storage Length (ft)	0		0	0		0	125		0	0		0
Storage Lanes	0		0	0		0	1		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.958			0.912							0.987
Flt Protected		0.967			0.983		0.950					
Satd. Flow (prot)	0	1899	0	0	1667	0	1670	1980	0	0	1886	0
Flt Permitted		0.777			0.888		0.376					
Satd. Flow (perm)	0	1526	0	0	1506	0	661	1980	0	0	1886	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		41			41							15
Link Speed (mph)		25			25			25				25
Link Distance (ft)		675			464			342				483
Travel Time (s)		18.4			12.7			9.3				13.2
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	1%	0%	1%	0%	0%
Adj. Flow (vph)	59	0	27	10	0	19	44	651	0	0	588	65
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	86	0	0	29	0	44	651	0	0	653	0
Number of Detectors	1	1		1	1		1	1			1	
Detector Template	Left			Left								
Leading Detector (ft)	20	50		20	37		37	37			37	
Trailing Detector (ft)	0	-10		0	-3		-3	-3			-3	
Detector 1 Position(ft)	0	-10		0	-3		-3	-3			-3	
Detector 1 Size(ft)	20	60		20	40		40	40			40	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex			Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA			NA	
Protected Phases		4			8			2				6
Permitted Phases	4			8			2					
Detector Phase	4	4		8	8		2	2				6
Switch Phase												
Minimum Initial (s)	3.0	3.0		3.0	3.0		15.0	15.0				15.0
Minimum Split (s)	10.0	10.0		10.0	10.0		21.0	21.0				21.0
Total Split (s)	22.0	22.0		22.0	22.0		58.0	58.0				58.0
Total Split (%)	27.5%	27.5%		27.5%	27.5%		72.5%	72.5%				72.5%
Maximum Green (s)	15.0	15.0		15.0	15.0		52.0	52.0				52.0
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0				3.0
All-Red Time (s)	4.0	4.0		4.0	4.0		3.0	3.0				3.0
Lost Time Adjust (s)		-1.0			-1.0		-1.0	-1.0				-1.0

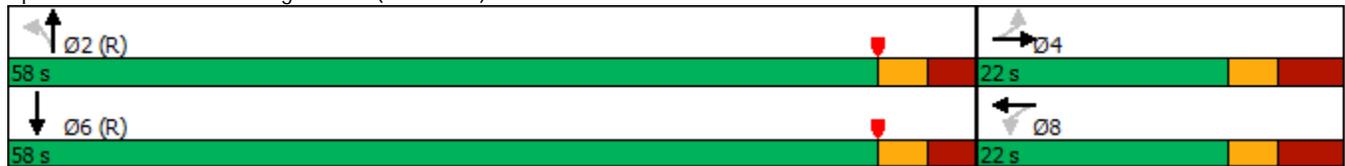


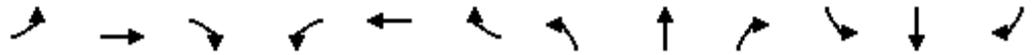
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Lost Time (s)		6.0			6.0		5.0	5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0				3.0
Recall Mode	None	None		None	None		C-Max	C-Max				C-Max
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0				7.0
Flash Dont Walk (s)	12.0	12.0		12.0	12.0		12.0	12.0				12.0
Pedestrian Calls (#/hr)	0	0		0	0		0	0				0

Intersection Summary

Area Type:	Other
Cycle Length:	80
Actuated Cycle Length:	80
Offset:	52 (65%), Referenced to phase 2:NBTL and 6:SBT, Start of Yellow
Natural Cycle:	40
Control Type:	Actuated-Coordinated

Splits and Phases: 3: Bridge Street (S.R. 0113) & Hall Street





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↑			↖	
Traffic Volume (veh/h)	55	0	25	9	0	18	41	612	0	0	553	61
Future Volume (veh/h)	55	0	25	9	0	18	41	612	0	0	553	61
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1911	1911	1911	1872	1872	1872	1875	1935	0	0	1866	1866
Adj Flow Rate, veh/h	59	0	27	10	0	19	44	651	0	0	588	65
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	0	0	0	0	0	0	1	0	0	0	0
Cap, veh/h	166	2	42	92	19	95	604	1502	0	0	1282	142
Arrive On Green	0.07	0.00	0.07	0.07	0.00	0.07	0.78	0.78	0.00	0.00	0.78	0.76
Sat Flow, veh/h	1045	26	490	364	217	1104	781	1935	0	0	1651	182
Grp Volume(v), veh/h	86	0	0	29	0	0	44	651	0	0	0	653
Grp Sat Flow(s),veh/h/ln	1560	0	0	1685	0	0	781	1935	0	0	0	1833
Q Serve(g_s), s	2.9	0.0	0.0	0.0	0.0	0.0	1.6	9.1	0.0	0.0	0.0	9.9
Cycle Q Clear(g_c), s	4.2	0.0	0.0	1.3	0.0	0.0	11.1	9.1	0.0	0.0	0.0	9.9
Prop In Lane	0.69		0.31	0.34		0.66	1.00		0.00	0.00		0.10
Lane Grp Cap(c), veh/h	191	0	0	184	0	0	604	1502	0	0	0	1424
V/C Ratio(X)	0.45	0.00	0.00	0.16	0.00	0.00	0.07	0.43	0.00	0.00	0.00	0.46
Avail Cap(c_a), veh/h	359	0	0	357	0	0	604	1502	0	0	0	1424
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	35.7	0.0	0.0	34.5	0.0	0.0	4.9	3.0	0.0	0.0	0.0	3.1
Incr Delay (d2), s/veh	1.7	0.0	0.0	0.4	0.0	0.0	0.2	0.9	0.0	0.0	0.0	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.1	0.0	0.0	1.0	0.0	0.0	0.5	4.8	0.0	0.0	0.0	5.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	37.4	0.0	0.0	34.9	0.0	0.0	5.2	3.9	0.0	0.0	0.0	4.2
LnGrp LOS	D	A	A	C	A	A	A	A	A	A	A	A
Approach Vol, veh/h		86			29			695				653
Approach Delay, s/veh		37.4			34.9			4.0				4.2
Approach LOS		D			C			A				A
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		67.1		12.9		67.1		12.9				
Change Period (Y+Rc), s		6.0		7.0		6.0		7.0				
Max Green Setting (Gmax), s		52.0		15.0		52.0		15.0				
Max Q Clear Time (g_c+I1), s		13.6		6.2		11.9		3.3				
Green Ext Time (p_c), s		3.3		0.1		3.0		0.0				

Intersection Summary

HCM 6th Ctrl Delay	6.7
HCM 6th LOS	A

Notes

User approved pedestrian interval to be less than phase max green.

McMahon
4: Paradise Street & West Site Access

2024 Future with Development Conditions
Weekday Afternoon Peak Hour



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	13	2	150	23	3	149
Future Volume (vph)	13	2	150	23	3	149
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.983		0.982			
Flt Protected	0.958					0.999
Satd. Flow (prot)	1754	0	1829	0	0	1861
Flt Permitted	0.958					0.999
Satd. Flow (perm)	1754	0	1829	0	0	1861
Link Speed (mph)	25		25			25
Link Distance (ft)	350		323			890
Travel Time (s)	9.5		8.8			24.3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	14	2	163	25	3	162
Shared Lane Traffic (%)						
Lane Group Flow (vph)	16	0	188	0	0	165
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other
Control Type: Unsignalized

McMahon
4: Paradise Street & West Site Access

2024 Future with Development Conditions
Weekday Afternoon Peak Hour

Intersection						
Int Delay, s/veh	0.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W	R	T	R	L	T
Traffic Vol, veh/h	13	2	150	23	3	149
Future Vol, veh/h	13	2	150	23	3	149
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	14	2	163	25	3	162

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	344	176	0	0	188	0
Stage 1	176	-	-	-	-	-
Stage 2	168	-	-	-	-	-
Critical Hdwy	7.1	6.22	-	-	4.3	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3	3.1	-	-	3	-
Pot Cap-1 Maneuver	700	923	-	-	1036	-
Stage 1	990	-	-	-	-	-
Stage 2	999	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	698	923	-	-	1036	-
Mov Cap-2 Maneuver	698	-	-	-	-	-
Stage 1	990	-	-	-	-	-
Stage 2	996	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.1	0	0.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	721	1036
HCM Lane V/C Ratio	-	-	0.023	0.003
HCM Control Delay (s)	-	-	10.1	8.5
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.1	0

McMahon
5: Hall Street & Center Site Access

2024 Future with Development Conditions
Weekday Afternoon Peak Hour



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↔		↕	
Traffic Volume (vph)	17	40	26	17	11	11
Future Volume (vph)	17	40	26	17	11	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.947		0.932	
Flt Protected		0.985			0.976	
Satd. Flow (prot)	0	1835	1764	0	1694	0
Flt Permitted		0.985			0.976	
Satd. Flow (perm)	0	1835	1764	0	1694	0
Link Speed (mph)		25	25		25	
Link Distance (ft)		511	236		162	
Travel Time (s)		13.9	6.4		4.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	18	43	28	18	12	12
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	61	46	0	24	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection						
Int Delay, s/veh	2.7					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↶	↷		↶	↷
Traffic Vol, veh/h	17	40	26	17	11	11
Future Vol, veh/h	17	40	26	17	11	11
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, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	18	43	28	18	12	12

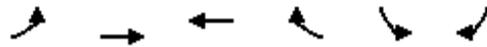
Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	46	0	-	0	116 37
Stage 1	-	-	-	-	37 -
Stage 2	-	-	-	-	79 -
Critical Hdwy	4.3	-	-	-	7.1 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	3	-	-	-	3 3.1
Pot Cap-1 Maneuver	1158	-	-	-	1001 1107
Stage 1	-	-	-	-	1153 -
Stage 2	-	-	-	-	1101 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1158	-	-	-	985 1107
Mov Cap-2 Maneuver	-	-	-	-	985 -
Stage 1	-	-	-	-	1135 -
Stage 2	-	-	-	-	1101 -

Approach	EB	WB	SB
HCM Control Delay, s	2.4	0	8.5
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1158	-	-	-	1042
HCM Lane V/C Ratio	0.016	-	-	-	0.023
HCM Control Delay (s)	8.2	0	-	-	8.5
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

McMahon
6: Hall Street & East Site Access IN

2024 Future with Development Conditions
Weekday Afternoon Peak Hour



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Volume (vph)	0	51	43	23	0	0
Future Volume (vph)	0	51	43	23	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.953				
Flt Protected						
Satd. Flow (prot)	0	1863	1775	0	1863	0
Flt Permitted						
Satd. Flow (perm)	0	1863	1775	0	1863	0
Link Speed (mph)		25	25		25	
Link Distance (ft)		213	574		328	
Travel Time (s)		5.8	15.7		8.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	55	47	25	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	55	72	0	0	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized

McMahon
6: Hall Street & East Site Access IN

2024 Future with Development Conditions
Weekday Afternoon Peak Hour

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↶	↷		↶	
Traffic Vol, veh/h	0	51	43	23	0	0
Future Vol, veh/h	0	51	43	23	0	0
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, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	55	47	25	0	0

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	72	0	-	0	115 60
Stage 1	-	-	-	-	60 -
Stage 2	-	-	-	-	55 -
Critical Hdwy	4.3	-	-	-	7.1 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	3	-	-	-	3 3.1
Pot Cap-1 Maneuver	1134	-	-	-	1003 1074
Stage 1	-	-	-	-	1124 -
Stage 2	-	-	-	-	1130 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1134	-	-	-	1003 1074
Mov Cap-2 Maneuver	-	-	-	-	1003 -
Stage 1	-	-	-	-	1124 -
Stage 2	-	-	-	-	1130 -

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

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1134	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	-	0
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	-

McMahon
7: Paradise Street & Hall Street

2024 Future with Development Conditions
Weekday Afternoon Peak Hour



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	36	1	188	55	2	177
Future Volume (vph)	36	1	188	55	2	177
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.997		0.969			
Flt Protected	0.954					0.999
Satd. Flow (prot)	1772	0	1805	0	0	1861
Flt Permitted	0.954					0.999
Satd. Flow (perm)	1772	0	1805	0	0	1861
Link Speed (mph)	25		25			25
Link Distance (ft)	511		864			323
Travel Time (s)	13.9		23.6			8.8
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	39	1	204	60	2	192
Shared Lane Traffic (%)						
Lane Group Flow (vph)	40	0	264	0	0	194
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection						
Int Delay, s/veh	0.9					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	36	1	188	55	2	177
Future Vol, veh/h	36	1	188	55	2	177
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	39	1	204	60	2	192

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	430	234	0	0	264
Stage 1	234	-	-	-	-
Stage 2	196	-	-	-	-
Critical Hdwy	7.1	6.22	-	-	4.3
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3	3.1	-	-	3
Pot Cap-1 Maneuver	611	856	-	-	975
Stage 1	929	-	-	-	-
Stage 2	968	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	610	856	-	-	975
Mov Cap-2 Maneuver	610	-	-	-	-
Stage 1	929	-	-	-	-
Stage 2	966	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.3	0	0.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	615	975
HCM Lane V/C Ratio	-	-	0.065	0.002
HCM Control Delay (s)	-	-	11.3	8.7
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.2	0

McMahon
24: Hall Street & East Site Access OUT

2024 Future with Development Conditions
Weekday Afternoon Peak Hour



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↕	
Traffic Volume (vph)	0	51	43	0	15	0
Future Volume (vph)	0	51	43	0	15	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr						
Flt Protected					0.950	
Satd. Flow (prot)	0	1863	1863	0	1770	0
Flt Permitted					0.950	
Satd. Flow (perm)	0	1863	1863	0	1770	0
Link Speed (mph)		25	25		25	
Link Distance (ft)		236	213		354	
Travel Time (s)		6.4	5.8		9.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	55	47	0	16	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	55	47	0	16	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection						
Int Delay, s/veh	1.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↓	
Traffic Vol, veh/h	0	51	43	0	15	0
Future Vol, veh/h	0	51	43	0	15	0
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, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	55	47	0	16	0

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	-	0	-	0	102 47
Stage 1	-	-	-	-	47 -
Stage 2	-	-	-	-	55 -
Critical Hdwy	-	-	-	-	7.1 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	-	-	-	-	3 3.1
Pot Cap-1 Maneuver	0	-	-	0	1024 1093
Stage 1	0	-	-	0	1140 -
Stage 2	0	-	-	0	1130 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	1024 1093
Mov Cap-2 Maneuver	-	-	-	-	1024 -
Stage 1	-	-	-	-	1140 -
Stage 2	-	-	-	-	1130 -

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

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	1024
HCM Lane V/C Ratio	-	-	0.016
HCM Control Delay (s)	-	-	8.6
HCM Lane LOS	-	-	A
HCM 95th %tile Q(veh)	-	-	0

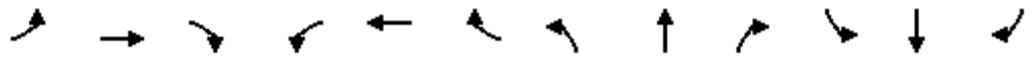
With Improvements

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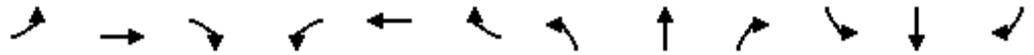
2024 Future with Development with Improvements Conditions

1: Nutt Road (S.R. 0023) & Paradise Street

Weekday Afternoon Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	190	1015	9	9	1128	54	5	0	5	27	0	186
Future Volume (vph)	190	1015	9	9	1128	54	5	0	5	27	0	186
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	14	14	12	12	11	11	12	12	12	12	12	12
Grade (%)		2%			-2%			0%				3%
Storage Length (ft)	175		0	75		0	0		0	75		0
Storage Lanes	1		0	1		0	0		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.999			0.993			0.932				0.850
Flt Protected	0.950			0.950				0.976			0.950	
Satd. Flow (prot)	1806	1880	0	1693	1715	0	0	1605	0	0	1684	1346
Flt Permitted	0.044			0.278				0.827			0.751	
Satd. Flow (perm)	84	1880	0	495	1715	0	0	1360	0	0	1332	1346
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2			4			82				102
Link Speed (mph)		35			35			30				25
Link Distance (ft)		711			1189			368				314
Travel Time (s)		13.9			23.2			8.4				8.6
Peak Hour Factor	0.96	0.96	0.92	0.92	0.96	0.96	0.92	0.92	0.92	0.96	0.92	0.96
Heavy Vehicles (%)	0%	1%	2%	2%	1%	17%	2%	2%	2%	0%	2%	12%
Adj. Flow (vph)	198	1057	10	10	1175	56	5	0	5	28	0	194
Shared Lane Traffic (%)												
Lane Group Flow (vph)	198	1067	0	10	1231	0	0	10	0	0	28	194
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100		20	100		20	100		20	100	20
Trailing Detector (ft)	0	0		0	0		0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94				94
Detector 2 Size(ft)		6			6			6				6
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	pm+ov
Protected Phases	5	2			6			8				4
Permitted Phases	2			6			8			4		4
Detector Phase	5	2		6	6		8	8		4	4	5
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	12.0	25.0		25.0	25.0		24.0	24.0		24.0	24.0	12.0
Total Split (s)	19.0	103.0		84.0	84.0		17.0	17.0		17.0	17.0	19.0

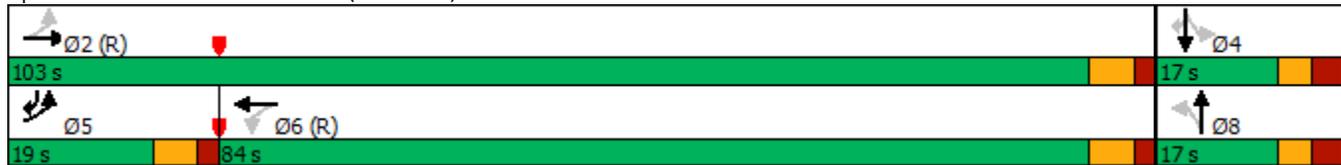


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Split (%)	15.8%	85.8%		70.0%	70.0%		14.2%	14.2%		14.2%	14.2%	15.8%
Maximum Green (s)	13.0	97.0		78.0	78.0		11.0	11.0		11.0	11.0	13.0
Yellow Time (s)	4.0	4.0		4.0	4.0		3.0	3.0		3.0	3.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		3.0	3.0		3.0	3.0	2.0
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0			-1.0			-1.0	-1.0
Total Lost Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	5.0
Lead/Lag	Lead			Lag		Lag						Lead
Lead-Lag Optimize?	Yes			Yes		Yes						Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	C-Min		C-Min	C-Min		None	None		None	None	None
Walk Time (s)		7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)		0		0	0		0	0		0	0	

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 50 (42%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 150
 Control Type: Actuated-Coordinated

Splits and Phases: 1: Nutt Road (S.R. 0023) & Paradise Street

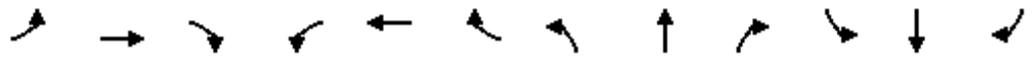


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2024 Future with Development with Improvements Conditions

1: Nutt Road (S.R. 0023) & Paradise Street

Weekday Afternoon Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	190	1015	9	9	1128	54	5	0	5	27	0	186
Future Volume (veh/h)	190	1015	9	9	1128	54	5	0	5	27	0	186
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1849	1834	1750	1846	1860	1633	1772	1772	1772	1750	1722	1581
Adj Flow Rate, veh/h	198	1057	10	10	1175	56	5	0	5	28	0	163
Peak Hour Factor	0.96	0.96	0.92	0.92	0.96	0.96	0.92	0.92	0.92	0.96	0.92	0.96
Percent Heavy Veh, %	0	1	2	2	1	17	2	2	2	0	2	12
Cap, veh/h	245	1481	14	353	1202	57	96	14	66	195	0	258
Arrive On Green	0.09	0.82	0.81	0.68	0.68	0.67	0.09	0.00	0.09	0.10	0.00	0.10
Sat Flow, veh/h	1761	1814	17	522	1761	84	513	145	657	1352	0	1340
Grp Volume(v), veh/h	198	0	1067	10	0	1231	10	0	0	28	0	163
Grp Sat Flow(s),veh/h/ln	1761	0	1831	522	0	1845	1314	0	0	1352	0	1340
Q Serve(g_s), s	7.5	0.0	30.7	1.0	0.0	76.4	0.0	0.0	0.0	0.0	0.0	12.0
Cycle Q Clear(g_c), s	7.5	0.0	30.7	15.7	0.0	76.4	2.4	0.0	0.0	1.9	0.0	12.0
Prop In Lane	1.00		0.01	1.00		0.05	0.50		0.50	1.00		1.00
Lane Grp Cap(c), veh/h	245	0	1495	353	0	1259	165	0	0	195	0	258
V/C Ratio(X)	0.81	0.00	0.71	0.03	0.00	0.98	0.06	0.00	0.00	0.14	0.00	0.63
Avail Cap(c_a), veh/h	288	0	1495	353	0	1259	165	0	0	195	0	258
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	40.7	0.0	4.8	11.8	0.0	18.2	49.4	0.0	0.0	49.4	0.0	44.5
Incr Delay (d2), s/veh	13.5	0.0	2.9	0.1	0.0	20.5	0.2	0.0	0.0	0.3	0.0	4.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	10.9	0.0	13.8	0.2	0.0	44.5	0.5	0.0	0.0	1.4	0.0	8.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	54.2	0.0	7.8	12.0	0.0	38.7	49.5	0.0	0.0	49.8	0.0	49.5
LnGrp LOS	D	A	A	B	A	D	D	A	A	D	A	D
Approach Vol, veh/h		1265			1241			10				191
Approach Delay, s/veh		15.0			38.5			49.5				49.5
Approach LOS		B			D			D				D
Timer - Assigned Phs		2		4	5	6		8				
Phs Duration (G+Y+Rc), s		103.0		17.0	16.1	86.9		17.0				
Change Period (Y+Rc), s		6.0		6.0	6.0	6.0		6.0				
Max Green Setting (Gmax), s		97.0		11.0	13.0	78.0		11.0				
Max Q Clear Time (g_c+I1), s		32.7		14.0	10.0	78.4		4.4				
Green Ext Time (p_c), s		12.8		0.0	0.2	0.0		0.0				

Intersection Summary

HCM 6th Ctrl Delay	28.3
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

Appendix L

Hall Street One-Way Evaluation

Table 1 - Level of Service Matrices

1. Nutt Road (S.R. 0023) and Paradise Street

Time Period		Weekday Morning Peak Hour		Weekday Afternoon Peak Hour	
Year		2024 Build-Out Year		2024 Build-Out Year	
Development Condition		Hall Street Two-Way	Hall Street One-Way	Hall Street Two-Way	Hall Street One-Way
Nutt Road (S.R. 0203)	Left	A 9.1	A 8.7	D 54.2	E 55.6
	EB Thru	B	B	A	A
	Right	15.1	12.7	7.8	8.1
	Left	C 25.6	C 21.5	B 12.0	B 12.6
	WB Thru	B	B	D	F (V/C>1)
	Right	13.2	12.3	38.7	53.1
Paradise Street	Left	D	D	D	D
	NB Thru	43.9	46.7	49.5	49.5
	Right				
	Left	D	D	D	D
	SB Thru	43.5	46.4	50.4	50.4
	Right	D 50.4	D 50.3	D 53.2	D 47.7
Overall		C 17.8	C 15.6	D 28.8	D 35.1

Table 1 - Level of Service Matrices
 2. Smithworks Boulevard and Main Street

Time Period		Weekday Morning Peak Hour		Weekday Afternoon Peak Hour	
Year		2024 Build-Out Year		2024 Build-Out Year	
Development Condition		Hall Street Two-Way	Hall Street One-Way	Hall Street Two-Way	Hall Street One-Way
Smithworks Boulevard	Left	C 18.5	C 22.1	D 31.3	E 38.0
	EB Thru	B	B	B	B
	Right	12.6	12.7	11.1	11.4
	Left	E 39.0	F 55.2	E 37.3	E 45.6
	WB Thru	B	B	B	B
	Right	12.8	14.1	11.8	12.2
Main Street	Left	A	B	A	A
	NB Thru	9.9	10.2	9.6	9.9
	Right	A	A	A	A
	SB Thru	8.4	8.4	9.2	9.2
Overall		A 7.6	A 9.0	A 5.3	A 6.0

Table 1 - Level of Service Matrices
3. Hall Street and Bridge Street (S.R. 0113)

Time Period		Weekday Morning Peak Hour		Weekday Afternoon Peak Hour	
Year		2024 Build-Out Year		2024 Build-Out Year	
Development Condition		Hall Street Two-Way	Hall Street One-Way	Hall Street Two-Way	Hall Street One-Way
Hall Street	Left EB	C	C	D	D
	Right	26.5	26.4	37.4	38.0
	Left WB	C	C	C	D
	Thru Right	23.4	23.0	34.9	35.7
Bridge Street (S.R. 0113)	Left NB	A 6.3	(1)	A 5.2	(1)
	Thru	A 5.2	A 5.3	A 3.9	A 3.5
	Thru SB	A	A 5.2	A	A 3.3
	Right	5.5	(1)	4.2	(1)
Overall		A 8.4	A 8.6	A 6.7	A 6.0

(1) Movement does not exist.

Table 1 - Level of Service Matrices

7. Hall Street and Paradise Street

Time Period		Weekday Morning Peak Hour		Weekday Afternoon Peak Hour	
Year		2024 Build-Out Year		2024 Build-Out Year	
Development Condition		Hall Street Two-Way	Hall Street One-Way	Hall Street Two-Way	Hall Street One-Way
Hall Street	Left WB Thru Right	B 10.2	B 10.2	B 10.9	B 11.4
	Left NB Thru Right	(1)	(1)	(1)	(1)
Paradise Street	Left SB Thru Right	A 8.4	A 8.4	A 8.6	A 8.8
	Overall	A 1.6	A 1.0	A 1.0	A 0.9

(1) Movement operates at free-flow conditions.

Table 1 - Level of Service Matrices

8. Nutt Road (S.R. 0023) and Bridge Street (S.R. 0113)

Time Period		Weekday Morning Peak Hour		Weekday Afternoon Peak Hour	
Year		2024 Build-Out Year		2024 Build-Out Year	
Development Condition		Hall Street Two-Way	Hall Street One-Way	Hall Street Two-Way	Hall Street One-Way
Nutt Road (S.R. 0023)	Left	B 19.7	B 19.3	F 162.7	F 163.7
	EB Thru	B	B	C	C
	Right	18.9	18.9	23.9	22.7
	Left	E 65.0	E 65.0	E 58.5	E 59.1
	WB Thru	E	E	F	F
	Right	64.8	71.0	152.6	149.7
Bridge Street (S.R. 0113)	Left	F 104.7	F 124.3	F 519.1	F 585.8
	NB Thru	C	C	D	D
	Right	29.7	29.6	41.9	43.0
	Left	F	F	F	F
	SB Thru	123.7	119.5	165.3	189.4
	Right	A 2.6	A 2.5	C 21.4	C 22.6
Overall		D 46.4	D 46.3	F 110.6	F 116.4

Table 2 - 95th Percentile Queue Matrices

1. Nutt Road (S.R. 0023) and Paradise Street

Time Period		Weekday Morning Peak Hour		Weekday Afternoon Peak Hour	
Year		2024 Build-Out Year		2024 Build-Out Year	
Development Condition		Hall Street Two-Way	Hall Street One-Way	Hall Street Two-Way	Hall Street One-Way
Nutt Road (S.R. 0203)	Left ⁽¹⁾	40	38	273	248
	EB Thru	588	518	345	358
	Right				
	Left	25	25	25	25
	WB Thru	405	418	1113	1338
	Right				
Paradise Street	Left	25	25	25	25
	NB Thru				
	Right				
	Left	25	25	53	53
	SB Thru	255	210	235	195
	Right				

(1) Proposed 175-foot left turn lane with additional storage available from center left-turn lane in 2024 Hall Street Two-Way conditions.

Table 2 - 95th Percentile Queue Matrices

2. Smithworks Boulevard and Main Street

Time Period		Weekday Morning Peak Hour		Weekday Afternoon Peak Hour	
Year		2024 Build-Out Year		2024 Build-Out Year	
Development Condition		Hall Street Two-Way	Hall Street One-Way	Hall Street Two-Way	Hall Street One-Way
Smithworks Boulevard	Left	25	25	25	28
	EB Thru	33	33	25	25
	Right				
	Left	50	68	25	25
	WB Thru	25	25	25	25
	Right				
Main Street	Left	25	25	25	25
	NB Thru				
	Right				
	Left	0	0	0	0
SB Thru					
Right					

Table 2 - 95th Percentile Queue Matrices

3. Hall Street and Bridge Street (S.R. 0113)

Time Period		Weekday Morning Peak Hour		Weekday Afternoon Peak Hour	
Year		2024 Build-Out Year		2024 Build-Out Year	
Development Condition		Hall Street Two-Way	Hall Street One-Way	Hall Street Two-Way	Hall Street One-Way
Hall Street	EB Left Right	95	105	78	70
	WB Thru Right	25	25	25	25
Bridge Street (S.R. 0113)	Left ⁽²⁾	25	(1)	25	(1)
	NB Thru	95	103	120	110
	SB Thru Right	110	100 (1)	125	95 (1)

(1) Movement does not exist.

(2) 125-foot left turn lane in 2024 Hall Street Two-Way conditions.

Table 2 - 95th Percentile Queue Matrices

7. Hall Street and Paradise Street

Time Period		Weekday Morning Peak Hour		Weekday Afternoon Peak Hour	
Year		2024 Build-Out Year		2024 Build-Out Year	
Development Condition		Hall Street Two-Way	Hall Street One-Way	Hall Street Two-Way	Hall Street One-Way
Hall Street	Left				
	WB Thru	25	25	25	25
	Right				
Paradise Street	Left				
	NB Thru	(1)	(1)	(1)	(1)
	Right				
	Left				
	SB Thru	0	25	0	25
	Right				

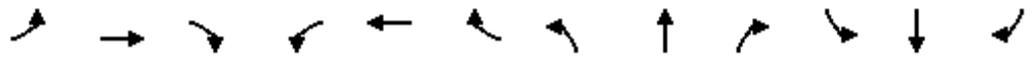
(1) Movement operates at free-flow conditions.

Table 2 - 95th Percentile Queue Matrices
8. Nutt Road (S.R. 0023) and Bridge Street (S.R. 0113)

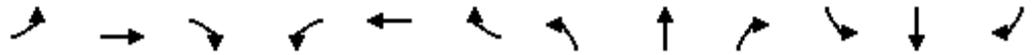
Time Period		Storage	Weekday Morning Peak Hour		Weekday Afternoon Peak Hour	
Year			2024 Build-Out Year		2024 Build-Out Year	
Development Condition			Hall Street Two-Way	Hall Street One-Way	Hall Street Two-Way	Hall Street One-Way
Nutt Road (S.R. 0023)	Left	350'	268	278	843	880
	EB Thru		580	580	525	513
	Right					
	Left	725'	128	128	95	95
	WB Thru		548	570	1433	1415
	Right					
Bridge Street (S.R. 0113)	Left	100'	125	150	530	590
	NB Thru		228	223	390	385
	Right					
	Left		845	833	658	703
	SB Thru					
	Right	235'	53	58	348	375

Hall Street Two-Way

Weekday Morning Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	354	744	131	78	366	54	56	175	53	67	402	259
Future Volume (vph)	354	744	131	78	366	54	56	175	53	67	402	259
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	14	14	10	12	12	10	11	11	10	10	10
Grade (%)		1%			1%			-2%			1%	
Storage Length (ft)	350		0	725		0	100		0	0		235
Storage Lanes	1		0	1		0	1		0	0		1
Taper Length (ft)	25			25			60			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00		1.00				0.99			1.00	
Frt		0.978			0.981			0.965				0.850
Flt Protected	0.950			0.950			0.950				0.993	
Satd. Flow (prot)	1572	1816	0	1588	1681	0	1580	1630	0	0	1646	1353
Flt Permitted	0.950			0.950			0.135				0.820	
Satd. Flow (perm)	1572	1816	0	1587	1681	0	225	1630	0	0	1359	1353
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		11			7			15				178
Link Speed (mph)		35			35			25				25
Link Distance (ft)		1179			856			630				1439
Travel Time (s)		23.0			16.7			17.2				39.2
Confl. Peds. (#/hr)			1	1					1	1		
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	1%	3%	0%	0%	4%	8%	2%	4%	2%	0%	1%	5%
Adj. Flow (vph)	389	818	144	86	402	59	62	192	58	74	442	285
Shared Lane Traffic (%)												
Lane Group Flow (vph)	389	962	0	86	461	0	62	250	0	0	516	285
Number of Detectors	1	1		1	1		1	1		1	3	0
Detector Template										Left		
Leading Detector (ft)	35	35		35	35		35	35		20	55	0
Trailing Detector (ft)	-5	-5		-5	-5		-5	-5		0	-3	0
Detector 1 Position(ft)	-5	-5		-5	-5		-5	-5		0	-3	0
Detector 1 Size(ft)	40	40		40	40		40	40		20	5	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)											15	
Detector 2 Size(ft)											5	
Detector 2 Type											Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)											0.0	
Detector 3 Position(ft)											30	
Detector 3 Size(ft)											25	
Detector 3 Type											Cl+Ex	
Detector 3 Channel												
Detector 3 Extend (s)											0.0	
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	pm+ov

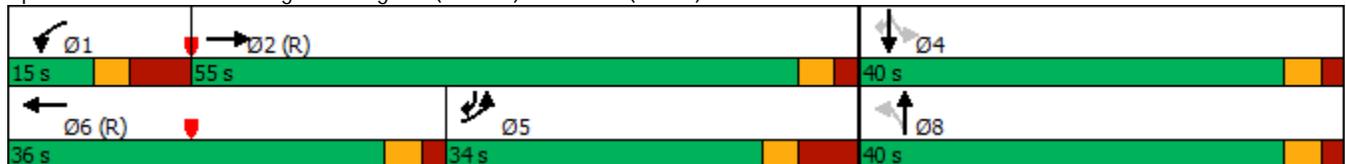


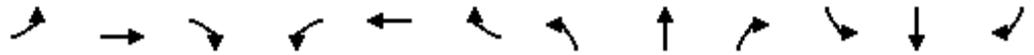
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	5	2		1	6			8			4	5
Permitted Phases							8			4		4
Detector Phase	5	2		1	6		8	8		4	4	5
Switch Phase												
Minimum Initial (s)	7.0	15.0		7.0	15.0		7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	15.0	26.0		15.0	26.0		30.0	30.0		30.0	30.0	15.0
Total Split (s)	34.0	55.0		15.0	36.0		40.0	40.0		40.0	40.0	34.0
Total Split (%)	30.9%	50.0%		13.6%	32.7%		36.4%	36.4%		36.4%	36.4%	30.9%
Maximum Green (s)	26.0	50.0		7.0	31.0		35.0	35.0		35.0	35.0	26.0
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	5.0	2.0		5.0	2.0		2.0	2.0		2.0	2.0	5.0
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0			-1.0	-1.0
Total Lost Time (s)	7.0	4.0		7.0	4.0		4.0	4.0			4.0	7.0
Lead/Lag	Lag	Lag		Lead	Lead							Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	C-Min		None	C-Min		None	None		None	None	None
Walk Time (s)		10.0			10.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		11.0			11.0		18.0	18.0		18.0	18.0	
Pedestrian Calls (#/hr)		0			0		0	0		0	0	

Intersection Summary

Area Type: Other
 Cycle Length: 110
 Actuated Cycle Length: 110
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green, Master Intersection
 Natural Cycle: 140
 Control Type: Actuated-Coordinated

Splits and Phases: 8: Bridge St/Bridge St (SR 113) & Nutt Rd (SR 23)





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	354	744	131	78	366	54	56	175	53	67	402	259
Future Volume (veh/h)	354	744	131	78	366	54	56	175	53	67	402	259
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1780	1822	1866	1794	1738	1682	1846	1818	1846	1794	1780	1724
Adj Flow Rate, veh/h	389	818	144	86	402	59	62	192	58	74	442	285
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	1	3	0	0	4	8	2	4	2	0	1	5
Cap, veh/h	816	1014	178	124	431	63	75	438	132	87	381	1180
Arrive On Green	0.48	0.67	0.66	0.07	0.29	0.28	0.33	0.33	0.32	0.32	0.33	0.33
Sat Flow, veh/h	1696	1509	266	1709	1481	217	718	1339	405	151	1164	1459
Grp Volume(v), veh/h	389	0	962	86	0	461	62	0	250	516	0	285
Grp Sat Flow(s),veh/h/ln	1696	0	1774	1709	0	1699	718	0	1744	1314	0	1459
Q Serve(g_s), s	17.0	0.0	42.8	5.4	0.0	29.1	1.5	0.0	12.4	22.6	0.0	0.0
Cycle Q Clear(g_c), s	17.0	0.0	42.8	5.4	0.0	29.1	36.0	0.0	12.4	35.0	0.0	0.0
Prop In Lane	1.00		0.15	1.00		0.13	1.00		0.23	0.14		1.00
Lane Grp Cap(c), veh/h	816	0	1192	124	0	494	75	0	571	456	0	1180
V/C Ratio(X)	0.48	0.00	0.81	0.69	0.00	0.93	0.82	0.00	0.44	1.13	0.00	0.24
Avail Cap(c_a), veh/h	816	0	1192	124	0	494	75	0	571	456	0	1180
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	19.2	0.0	13.0	49.8	0.0	38.0	54.9	0.0	29.2	40.0	0.0	2.5
Incr Delay (d2), s/veh	0.4	0.0	5.9	15.2	0.0	26.8	49.8	0.0	0.5	83.8	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	10.7	0.0	23.2	5.1	0.0	21.9	5.0	0.0	9.1	33.8	0.0	2.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	19.7	0.0	18.9	65.0	0.0	64.8	104.7	0.0	29.7	123.7	0.0	2.6
LnGrp LOS	B	A	B	E	A	E	F	A	C	F	A	A
Approach Vol, veh/h		1351			547			312				801
Approach Delay, s/veh		19.1			64.9			44.6				80.6
Approach LOS		B			E			D				F
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	15.0	80.9		40.0	59.9	36.0		40.0				
Change Period (Y+Rc), s	8.0	* 8		5.0	8.0	5.0		5.0				
Max Green Setting (Gmax), s	7.0	* 50		35.0	26.0	31.0		35.0				
Max Q Clear Time (g_c+I1), s	7.9	44.8		37.0	19.5	31.1		38.5				
Green Ext Time (p_c), s	0.0	2.2		0.0	0.8	0.0		0.0				

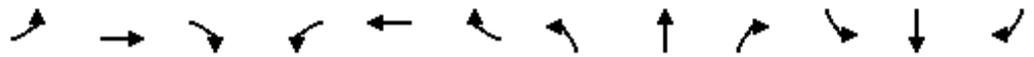
Intersection Summary

HCM 6th Ctrl Delay	46.4
HCM 6th LOS	D

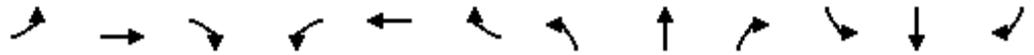
Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Weekday Afternoon Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	419	599	74	64	687	74	132	323	28	49	250	430
Future Volume (vph)	419	599	74	64	687	74	132	323	28	49	250	430
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	14	14	10	12	12	10	11	11	10	10	10
Grade (%)		1%			1%			-2%			1%	
Storage Length (ft)	350		0	725		0	100		0	0		235
Storage Lanes	1		0	1		0	1		0	0		1
Taper Length (ft)	25			25			60			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00		1.00				1.00			1.00	
Frt		0.984			0.985			0.988				0.850
Flt Protected	0.950			0.950			0.950				0.992	
Satd. Flow (prot)	1572	1826	0	1588	1690	0	1580	1669	0	0	1644	1353
Flt Permitted	0.950			0.950			0.311				0.554	
Satd. Flow (perm)	1572	1826	0	1586	1690	0	517	1669	0	0	918	1353
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		9			6			4				86
Link Speed (mph)		35			35			25				25
Link Distance (ft)		1179			856			630				1439
Travel Time (s)		23.0			16.7			17.2				39.2
Confl. Peds. (#/hr)			1	1					1	1		
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	1%	3%	0%	0%	4%	8%	2%	4%	2%	0%	1%	5%
Adj. Flow (vph)	460	658	81	70	755	81	145	355	31	54	275	473
Shared Lane Traffic (%)												
Lane Group Flow (vph)	460	739	0	70	836	0	145	386	0	0	329	473
Number of Detectors	1	1		1	1		1	1		1	3	0
Detector Template										Left		
Leading Detector (ft)	35	35		35	35		35	35		20	55	0
Trailing Detector (ft)	-5	-5		-5	-5		-5	-5		0	-3	0
Detector 1 Position(ft)	-5	-5		-5	-5		-5	-5		0	-3	0
Detector 1 Size(ft)	40	40		40	40		40	40		20	5	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)												15
Detector 2 Size(ft)												5
Detector 2 Type												Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)												0.0
Detector 3 Position(ft)												30
Detector 3 Size(ft)												25
Detector 3 Type												Cl+Ex
Detector 3 Channel												
Detector 3 Extend (s)												0.0
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	pm+ov

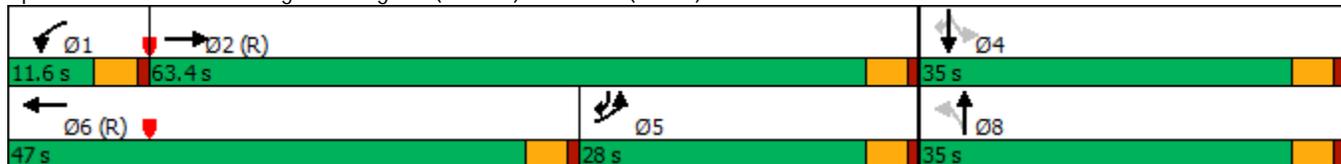


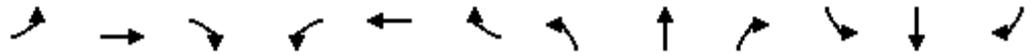
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	5	2		1	6			8			4	5
Permitted Phases							8			4		4
Detector Phase	5	2		1	6		8	8		4	4	5
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	9.5	22.5		9.5	22.5		22.5	22.5		22.5	22.5	9.5
Total Split (s)	28.0	63.4		11.6	47.0		35.0	35.0		35.0	35.0	28.0
Total Split (%)	25.5%	57.6%		10.5%	42.7%		31.8%	31.8%		31.8%	31.8%	25.5%
Maximum Green (s)	23.5	58.9		7.1	42.5		30.5	30.5		30.5	30.5	23.5
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0			-1.0	-1.0
Total Lost Time (s)	3.5	3.5		3.5	3.5		3.5	3.5			3.5	3.5
Lead/Lag	Lag	Lag		Lead	Lead							Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	None
Walk Time (s)		7.0			7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		11.0			11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)		0			0		0	0		0	0	

Intersection Summary

Area Type: Other
 Cycle Length: 110
 Actuated Cycle Length: 110
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green, Master Intersection
 Natural Cycle: 110
 Control Type: Actuated-Coordinated

Splits and Phases: 8: Bridge St/Bridge St (SR 113) & Nutt Rd (SR 23)



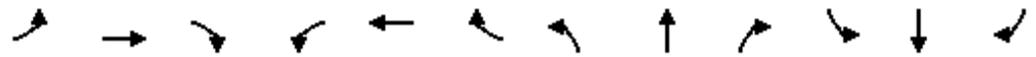


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	419	599	74	64	687	74	132	323	28	49	250	430
Future Volume (veh/h)	419	599	74	64	687	74	132	323	28	49	250	430
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1780	1822	1866	1794	1738	1682	1846	1818	1846	1794	1780	1724
Adj Flow Rate, veh/h	460	658	81	70	755	81	145	355	31	54	275	473
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	1	3	0	0	4	8	2	4	2	0	1	5
Cap, veh/h	378	881	108	110	610	65	75	472	41	60	220	743
Arrive On Green	0.22	0.55	0.54	0.06	0.40	0.39	0.29	0.29	0.28	0.28	0.29	0.29
Sat Flow, veh/h	1696	1591	196	1709	1543	166	704	1648	144	75	768	1459
Grp Volume(v), veh/h	460	0	739	70	0	836	145	0	386	329	0	473
Grp Sat Flow(s),veh/h/ln	1696	0	1787	1709	0	1708	704	0	1791	843	0	1459
Q Serve(g_s), s	24.5	0.0	34.6	4.4	0.0	43.5	1.5	0.0	21.6	8.9	0.0	1.4
Cycle Q Clear(g_c), s	24.5	0.0	34.6	4.4	0.0	43.5	31.5	0.0	21.6	30.5	0.0	1.4
Prop In Lane	1.00		0.11	1.00		0.10	1.00		0.08	0.16		1.00
Lane Grp Cap(c), veh/h	378	0	990	110	0	676	75	0	513	272	0	743
V/C Ratio(X)	1.22	0.00	0.75	0.64	0.00	1.24	1.93	0.00	0.75	1.21	0.00	0.64
Avail Cap(c_a), veh/h	378	0	990	126	0	676	75	0	513	272	0	743
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	42.7	0.0	18.7	50.2	0.0	33.3	54.9	0.0	35.7	41.4	0.0	19.6
Incr Delay (d2), s/veh	119.9	0.0	5.1	8.3	0.0	119.3	464.2	0.0	6.2	123.9	0.0	1.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	33.7	0.0	21.0	3.8	0.0	57.3	21.2	0.0	15.6	26.3	0.0	13.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	162.7	0.0	23.9	58.5	0.0	152.6	519.1	0.0	41.9	165.3	0.0	21.4
LnGrp LOS	F	A	C	E	A	F	F	A	D	F	A	C
Approach Vol, veh/h		1199			906			531				802
Approach Delay, s/veh		77.1			145.4			172.2				80.4
Approach LOS		E			F			F				F
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.6	64.4		35.0	28.0	47.0		35.0				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	7.1	58.9		30.5	23.5	42.5		30.5				
Max Q Clear Time (g_c+I1), s	6.9	36.6		32.5	27.0	45.5		34.0				
Green Ext Time (p_c), s	0.0	3.1		0.0	0.0	0.0		0.0				
Intersection Summary												
HCM 6th Ctrl Delay			110.6									
HCM 6th LOS			F									

Hall Street One-Way

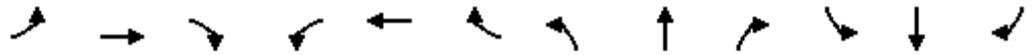
Weekday Morning Peak Hour

McMahon 2024 Future with Development with Improvements Conditions (One Way)
 1: Nutt Road (S.R. 0023) & Paradise Street Weekday Morning Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	102	1057	0	0	731	41	0	0	0	48	0	147
Future Volume (vph)	102	1057	0	0	731	41	0	0	0	48	0	147
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	14	14	12	12	11	11	12	12	12	12	12	12
Grade (%)		2%			-2%			0%				3%
Storage Length (ft)	175		0	75		0	0		0	75		0
Storage Lanes	1		0	1		0	0		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.992							0.850
Flt Protected	0.950										0.950	
Satd. Flow (prot)	1806	1810	0	1782	1650	0	0	1765	0	0	1684	1507
Flt Permitted	0.261										0.757	
Satd. Flow (perm)	496	1810	0	1782	1650	0	0	1765	0	0	1342	1507
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					4							156
Link Speed (mph)		35			35			30				25
Link Distance (ft)		711			509			368				314
Travel Time (s)		13.9			9.9			8.4				8.6
Peak Hour Factor	0.94	0.94	0.92	0.92	0.94	0.94	0.92	0.92	0.92	0.94	0.92	0.94
Heavy Vehicles (%)	0%	5%	2%	2%	6%	0%	2%	2%	2%	0%	2%	0%
Adj. Flow (vph)	109	1124	0	0	778	44	0	0	0	51	0	156
Shared Lane Traffic (%)												
Lane Group Flow (vph)	109	1124	0	0	822	0	0	0	0	0	51	156
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100		20	100		20	100		20	100	20
Trailing Detector (ft)	0	0		0	0		0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		Perm	NA					Perm	NA	pm+ov
Protected Phases	5	2			6			8			4	5
Permitted Phases	2			6			8			4		4
Detector Phase	5	2		6	6		8	8		4	4	5
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	9.5	24.0		24.0	24.0		22.5	22.5		24.0	24.0	9.5
Total Split (s)	12.0	89.0		77.0	77.0		31.0	31.0		31.0	31.0	12.0

McMahon 2024 Future with Development with Improvements Conditions (One Way)
 1: Nutt Road (S.R. 0023) & Paradise Street Weekday Morning Peak Hour

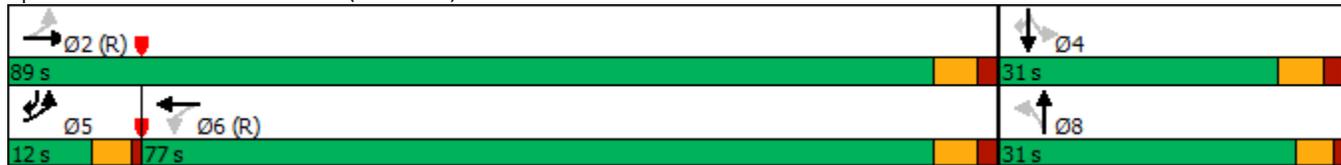


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Split (%)	10.0%	74.2%		64.2%	64.2%		25.8%	25.8%		25.8%	25.8%	10.0%
Maximum Green (s)	7.5	83.0		71.0	71.0		26.5	26.5		25.0	25.0	7.5
Yellow Time (s)	3.5	4.0		4.0	4.0		3.5	3.5		4.0	4.0	3.5
All-Red Time (s)	1.0	2.0		2.0	2.0		1.0	1.0		2.0	2.0	1.0
Lost Time Adjust (s)	-1.0	-1.0		0.0	-1.0			0.0			0.0	0.0
Total Lost Time (s)	3.5	5.0		6.0	5.0			4.5			6.0	4.5
Lead/Lag	Lead			Lag						Lead		
Lead-Lag Optimize?	Yes			Yes						Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	C-Min		C-Min	C-Min		None	None		None	None	None
Walk Time (s)		7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)		0		0	0		0	0		0	0	

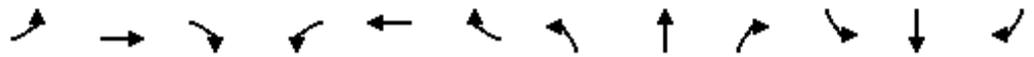
Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 45 (38%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated

Splits and Phases: 1: Nutt Road (S.R. 0023) & Paradise Street



McMahon 2024 Future with Development with Improvements Conditions (One Way)
 1: Nutt Road (S.R. 0023) & Paradise Street Weekday Morning Peak Hour



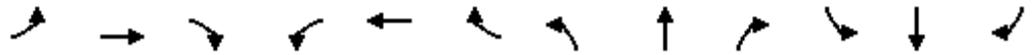
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	102	1057	0	0	731	41	0	0	0	48	0	147
Future Volume (veh/h)	102	1057	0	0	731	41	0	0	0	48	0	147
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1849	1776	1750	1846	1789	1875	1772	1772	1772	1750	1722	1750
Adj Flow Rate, veh/h	109	1124	0	0	778	44	0	0	0	51	0	156
Peak Hour Factor	0.94	0.94	0.92	0.92	0.94	0.94	0.92	0.92	0.92	0.94	0.92	0.94
Percent Heavy Veh, %	0	5	2	2	6	0	2	2	2	0	2	0
Cap, veh/h	451	1400	0	60	1191	67	0	212	0	216	0	238
Arrive On Green	0.05	0.79	0.00	0.00	0.71	0.70	0.00	0.00	0.00	0.13	0.00	0.12
Sat Flow, veh/h	1761	1776	0	495	1677	95	0	1772	0	1305	0	1483
Grp Volume(v), veh/h	109	1124	0	0	0	822	0	0	0	51	0	156
Grp Sat Flow(s),veh/h/ln	1761	1776	0	495	0	1772	0	1772	0	1305	0	1483
Q Serve(g_s), s	1.7	43.8	0.0	0.0	0.0	30.1	0.0	0.0	0.0	4.3	0.0	11.8
Cycle Q Clear(g_c), s	1.7	43.8	0.0	0.0	0.0	30.1	0.0	0.0	0.0	4.3	0.0	11.8
Prop In Lane	1.00		0.00	1.00		0.05	0.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	451	1400	0	60	0	1259	0	212	0	227	0	238
V/C Ratio(X)	0.24	0.80	0.00	0.00	0.00	0.65	0.00	0.00	0.00	0.22	0.00	0.66
Avail Cap(c_a), veh/h	490	1400	0	60	0	1259	0	391	0	343	0	369
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	8.2	7.3	0.0	0.0	0.0	9.4	0.0	0.0	0.0	47.9	0.0	47.3
Incr Delay (d2), s/veh	0.3	5.0	0.0	0.0	0.0	2.6	0.0	0.0	0.0	0.5	0.0	3.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.4	20.1	0.0	0.0	0.0	16.4	0.0	0.0	0.0	2.6	0.0	8.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	8.5	12.3	0.0	0.0	0.0	12.1	0.0	0.0	0.0	48.4	0.0	50.3
LnGrp LOS	A	B	A	A	A	B	A	A	A	D	A	D
Approach Vol, veh/h		1233			822			0			207	
Approach Delay, s/veh		11.9			12.1			0.0			49.8	
Approach LOS		B			B						D	
Timer - Assigned Phs		2		4	5	6		8				
Phs Duration (G+Y+Rc), s		99.6		20.4	9.4	90.2		20.4				
Change Period (Y+Rc), s		6.0		6.0	4.5	6.0		* 6				
Max Green Setting (Gmax), s		83.0		25.0	7.5	71.0		* 27				
Max Q Clear Time (g_c+I1), s		46.3		13.8	4.2	32.1		0.0				
Green Ext Time (p_c), s		12.9		0.6	0.1	7.2		0.0				

Intersection Summary

HCM 6th Ctrl Delay	15.4
HCM 6th LOS	B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	2	175	66	4	6	130	109	9	4	309	43
Future Volume (vph)	26	2	175	66	4	6	130	109	9	4	309	43
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	13	13	13	11	11	11	12	12	12
Storage Length (ft)	100		0	125		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.851			0.912			0.995				0.984
Flt Protected	0.950			0.950				0.974				0.999
Satd. Flow (prot)	1685	1349	0	1865	1791	0	0	1549	0	0	1821	0
Flt Permitted	0.950			0.950				0.974				0.999
Satd. Flow (perm)	1685	1349	0	1865	1791	0	0	1549	0	0	1821	0
Link Speed (mph)		25			25			25				25
Link Distance (ft)		375			308			441				191
Travel Time (s)		10.2			8.4			12.0				5.2
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	0%	0%	12%	0%	0%	0%	26%	3%	0%	0%	1%	14%
Adj. Flow (vph)	31	2	208	79	5	7	155	130	11	5	368	51
Shared Lane Traffic (%)												
Lane Group Flow (vph)	31	210	0	79	12	0	0	296	0	0	424	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

McMahon 2024 Future with Development with Improvements Conditions (One Way)
 2: Main Street & Smithworks Boulevard Weekday Morning Peak Hour

Intersection												
Int Delay, s/veh	8.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	26	2	175	66	4	6	130	109	9	4	309	43
Future Vol, veh/h	26	2	175	66	4	6	130	109	9	4	309	43
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	100	-	-	125	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	0	0	12	0	0	0	26	3	0	0	1	14
Mvmt Flow	31	2	208	79	5	7	155	130	11	5	368	51

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	856	855	394	955	875	136	419	0	0	141	0	0
Stage 1	404	404	-	446	446	-	-	-	-	-	-	-
Stage 2	452	451	-	509	429	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.3	-	-	4.3	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3	4	3.1	3	4	3.1	3	-	-	3	-	-
Pot Cap-1 Maneuver	310	298	695	265	290	974	862	-	-	1075	-	-
Stage 1	713	603	-	675	577	-	-	-	-	-	-	-
Stage 2	670	574	-	622	587	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	256	238	695	156	232	974	862	-	-	1075	-	-
Mov Cap-2 Maneuver	256	238	-	156	232	-	-	-	-	-	-	-
Stage 1	574	599	-	543	464	-	-	-	-	-	-	-
Stage 2	530	462	-	431	583	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	13.8	44.7	5.3	0.1
HCM LOS	B	E		

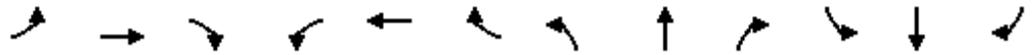
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	862	-	-	256	680	156	427	1075	-	-
HCM Lane V/C Ratio	0.18	-	-	0.121	0.31	0.504	0.028	0.004	-	-
HCM Control Delay (s)	10.1	0	-	21	12.7	49.4	13.7	8.4	0	-
HCM Lane LOS	B	A	-	C	B	E	B	A	A	-
HCM 95th %tile Q(veh)	0.7	-	-	0.4	1.3	2.4	0.1	0	-	-

McMahon 2024 Future with Development with Improvements Conditions (One Way)
 3: Bridge Street (S.R. 0113) & Hall Street Weekday Morning Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↑			↕	
Traffic Volume (vph)	62	0	87	20	1	15	0	462	0	0	465	0
Future Volume (vph)	62	0	87	20	1	15	0	462	0	0	465	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	16	13	13	13	11	15	15	14	14	14
Grade (%)		-1%			0%			-2%			1%	
Storage Length (ft)	0		0	0		0	125		0	0		0
Storage Lanes	0		0	0		0	1		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.921			0.945							
Flt Protected		0.980			0.973							
Satd. Flow (prot)	0	1953	0	0	1755	0	1855	1955	0	0	2017	0
Flt Permitted		0.848			0.772							
Satd. Flow (perm)	0	1690	0	0	1392	0	1855	1955	0	0	2017	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		96			16							
Link Speed (mph)		25			25			25				25
Link Distance (ft)		675			464			342				483
Travel Time (s)		18.4			12.7			9.3				13.2
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	0%	0%	0%	0%	0%	7%	0%	8%	0%	7%	0%	0%
Adj. Flow (vph)	68	0	96	22	1	16	0	508	0	0	511	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	164	0	0	39	0	0	508	0	0	511	0
Number of Detectors	1	1		1	1		1	1			1	
Detector Template	Left			Left								
Leading Detector (ft)	20	50		20	37		37	37			37	
Trailing Detector (ft)	0	-10		0	-3		-3	-3			-3	
Detector 1 Position(ft)	0	-10		0	-3		-3	-3			-3	
Detector 1 Size(ft)	20	60		20	40		40	40			40	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex			Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA			NA	
Protected Phases		4			8			2				6
Permitted Phases	4			8			2					
Detector Phase	4	4		8	8		2	2				6
Switch Phase												
Minimum Initial (s)	3.0	3.0		3.0	3.0		15.0	15.0				15.0
Minimum Split (s)	10.0	10.0		10.0	10.0		21.0	21.0				21.0
Total Split (s)	19.0	19.0		19.0	19.0		41.0	41.0				41.0
Total Split (%)	31.7%	31.7%		31.7%	31.7%		68.3%	68.3%				68.3%
Maximum Green (s)	12.0	12.0		12.0	12.0		35.0	35.0				35.0
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0				3.0
All-Red Time (s)	4.0	4.0		4.0	4.0		3.0	3.0				3.0
Lost Time Adjust (s)		-1.0			-1.0		-1.0	-1.0				-1.0

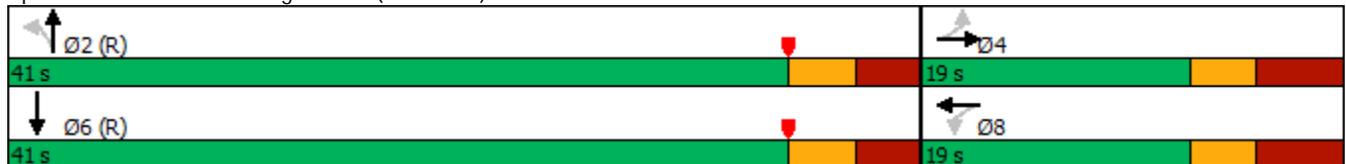
McMahon 2024 Future with Development with Improvements Conditions (One Way)
 3: Bridge Street (S.R. 0113) & Hall Street Weekday Morning Peak Hour



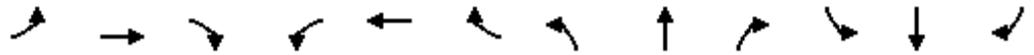
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Lost Time (s)		6.0			6.0		5.0	5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0				3.0
Recall Mode	None	None		None	None		C-Max	C-Max				C-Max
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0				7.0
Flash Dont Walk (s)	12.0	12.0		12.0	12.0		12.0	12.0				12.0
Pedestrian Calls (#/hr)	0	0		0	0		0	0				0

Intersection Summary
 Area Type: Other
 Cycle Length: 60
 Actuated Cycle Length: 60
 Offset: 5 (8%), Referenced to phase 2:NBTL and 6:SBT, Start of Yellow
 Natural Cycle: 40
 Control Type: Actuated-Coordinated

Splits and Phases: 3: Bridge Street (S.R. 0113) & Hall Street



McMahon 2024 Future with Development with Improvements Conditions (One Way)
 3: Bridge Street (S.R. 0113) & Hall Street Weekday Morning Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↖			↖	↗
Traffic Volume (veh/h)	62	0	87	20	1	15	0	462	0	0	465	0
Future Volume (veh/h)	62	0	87	20	1	15	0	462	0	0	465	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	2017	2017	2017	1976	1976	1868	1979	1933	0	0	1970	1970
Adj Flow Rate, veh/h	68	0	96	22	1	16	0	508	0	0	511	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	0	0	0	0	0	7	0	8	0	0	0	0
Cap, veh/h	169	15	140	208	35	104	120	1299	0	0	1324	0
Arrive On Green	0.13	0.00	0.13	0.13	0.14	0.13	0.00	0.67	0.00	0.00	0.67	0.00
Sat Flow, veh/h	583	101	966	789	245	719	940	1933	0	0	1970	0
Grp Volume(v), veh/h	164	0	0	39	0	0	0	508	0	0	511	0
Grp Sat Flow(s),veh/h/ln	1651	0	0	1753	0	0	940	1933	0	0	1970	0
Q Serve(g_s), s	4.6	0.0	0.0	0.0	0.0	0.0	0.0	7.0	0.0	0.0	6.9	0.0
Cycle Q Clear(g_c), s	5.7	0.0	0.0	1.1	0.0	0.0	0.0	7.0	0.0	0.0	6.9	0.0
Prop In Lane	0.41		0.59	0.56		0.41	1.00		0.00	0.00		0.00
Lane Grp Cap(c), veh/h	296	0	0	318	0	0	120	1299	0	0	1324	0
V/C Ratio(X)	0.55	0.00	0.00	0.12	0.00	0.00	0.00	0.39	0.00	0.00	0.39	0.00
Avail Cap(c_a), veh/h	413	0	0	426	0	0	120	1299	0	0	1324	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	24.8	0.0	0.0	22.9	0.0	0.0	0.0	4.4	0.0	0.0	4.4	0.0
Incr Delay (d2), s/veh	1.6	0.0	0.0	0.2	0.0	0.0	0.0	0.9	0.0	0.0	0.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	4.2	0.0	0.0	0.9	0.0	0.0	0.0	4.1	0.0	0.0	4.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	26.4	0.0	0.0	23.0	0.0	0.0	0.0	5.3	0.0	0.0	5.2	0.0
LnGrp LOS	C	A	A	C	A	A	A	A	A	A	A	A
Approach Vol, veh/h		164			39			508			511	
Approach Delay, s/veh		26.4			23.0			5.3			5.2	
Approach LOS		C			C			A			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		45.3		14.7		45.3		14.7				
Change Period (Y+Rc), s		6.0		7.0		6.0		7.0				
Max Green Setting (Gmax), s		35.0		12.0		35.0		12.0				
Max Q Clear Time (g_c+I1), s		9.5		7.7		9.4		3.1				
Green Ext Time (p_c), s		2.0		0.2		2.0		0.0				
Intersection Summary												
HCM 6th Ctrl Delay				8.6								
HCM 6th LOS				A								
Notes												
User approved pedestrian interval to be less than phase max green.												



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	21	3	78	17	13	166
Future Volume (vph)	21	3	78	17	13	166
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.984		0.976			
Flt Protected	0.958					0.996
Satd. Flow (prot)	1756	0	1818	0	0	1855
Flt Permitted	0.958					0.996
Satd. Flow (perm)	1756	0	1818	0	0	1855
Link Speed (mph)	25		25			25
Link Distance (ft)	350		323			890
Travel Time (s)	9.5		8.8			24.3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	23	3	85	18	14	180
Shared Lane Traffic (%)						
Lane Group Flow (vph)	26	0	103	0	0	194
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other

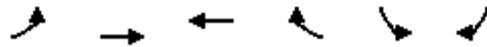
Control Type: Unsignalized

Intersection						
Int Delay, s/veh	1.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		B			A
Traffic Vol, veh/h	21	3	78	17	13	166
Future Vol, veh/h	21	3	78	17	13	166
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	23	3	85	18	14	180

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	302	94	0	0	103	0
Stage 1	94	-	-	-	-	-
Stage 2	208	-	-	-	-	-
Critical Hdwy	7.1	6.22	-	-	4.3	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3	3.1	-	-	3	-
Pot Cap-1 Maneuver	748	1028	-	-	1107	-
Stage 1	1083	-	-	-	-	-
Stage 2	956	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	738	1028	-	-	1107	-
Mov Cap-2 Maneuver	738	-	-	-	-	-
Stage 1	1083	-	-	-	-	-
Stage 2	943	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.9	0	0.6
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	765	1107	-
HCM Lane V/C Ratio	-	-	0.034	0.013	-
HCM Control Delay (s)	-	-	9.9	8.3	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↔		↕	
Traffic Volume (vph)	20	33	0	0	17	16
Future Volume (vph)	20	33	0	0	17	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.934	
Flt Protected		0.981			0.975	
Satd. Flow (prot)	0	1827	1863	0	1696	0
Flt Permitted		0.981			0.975	
Satd. Flow (perm)	0	1827	1863	0	1696	0
Link Speed (mph)		25	25		25	
Link Distance (ft)		511	236		162	
Travel Time (s)		13.9	6.4		4.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	22	36	0	0	18	17
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	58	0	0	35	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

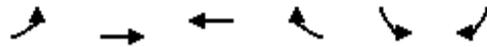
Control Type: Unsignalized

Intersection						
Int Delay, s/veh	5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	20	33	0	0	17	16
Future Vol, veh/h	20	33	0	0	17	16
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, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	22	36	0	0	18	17

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	1	0	-	0	81
Stage 1	-	-	-	-	1
Stage 2	-	-	-	-	80
Critical Hdwy	4.3	-	-	-	7.1
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	3	-	-	-	3
Pot Cap-1 Maneuver	1199	-	-	-	1058
Stage 1	-	-	-	-	1199
Stage 2	-	-	-	-	1100
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1199	-	-	-	1038
Mov Cap-2 Maneuver	-	-	-	-	1038
Stage 1	-	-	-	-	1176
Stage 2	-	-	-	-	1100

Approach	EB	WB	SB
HCM Control Delay, s	3	0	8.4
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1199	-	-	-	1094
HCM Lane V/C Ratio	0.018	-	-	-	0.033
HCM Control Delay (s)	8.1	0	-	-	8.4
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.1



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Volume (vph)	0	50	0	0	25	0
Future Volume (vph)	0	50	0	0	25	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr						
Flt Protected					0.950	
Satd. Flow (prot)	0	1863	1863	0	1770	0
Flt Permitted					0.950	
Satd. Flow (perm)	0	1863	1863	0	1770	0
Link Speed (mph)		25	25		25	
Link Distance (ft)		213	574		328	
Travel Time (s)		5.8	15.7		8.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	54	0	0	27	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	54	0	0	27	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

McMahon 2024 Future with Development with Improvements Conditions (One Way)
 6: Hall Street & East Site Access IN Weekday Morning Peak Hour

Intersection						
Int Delay, s/veh	2.7					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↶	↷		↶	
Traffic Vol, veh/h	0	50	0	0	25	0
Future Vol, veh/h	0	50	0	0	25	0
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, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	54	0	0	27	0

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	1	0	-	0	55
Stage 1	-	-	-	-	1
Stage 2	-	-	-	-	54
Critical Hdwy	4.3	-	-	-	7.1
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	3	-	-	-	3
Pot Cap-1 Maneuver	1199	-	-	-	1102
Stage 1	-	-	-	-	1199
Stage 2	-	-	-	-	1131
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1199	-	-	-	1102
Mov Cap-2 Maneuver	-	-	-	-	1102
Stage 1	-	-	-	-	1199
Stage 2	-	-	-	-	1131

Approach	EB	WB	SB
HCM Control Delay, s	0	0	8.3
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1199	-	-	-	1102
HCM Lane V/C Ratio	-	-	-	-	0.025
HCM Control Delay (s)	0	-	-	-	8.3
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

McMahon 2024 Future with Development with Improvements Conditions (One Way)
 7: Paradise Street & Hall Street Weekday Morning Peak Hour



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	14	2	104	34	19	182
Future Volume (vph)	14	2	104	34	19	182
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.984		0.967			
Flt Protected	0.958					0.995
Satd. Flow (prot)	1756	0	1801	0	0	1853
Flt Permitted	0.958					0.995
Satd. Flow (perm)	1756	0	1801	0	0	1853
Link Speed (mph)	25		25			25
Link Distance (ft)	511		864			323
Travel Time (s)	13.9		23.6			8.8
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	15	2	113	37	21	198
Shared Lane Traffic (%)						
Lane Group Flow (vph)	17	0	150	0	0	219
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other
 Control Type: Unsignalized

Intersection						
Int Delay, s/veh	0.9					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		T			T
Traffic Vol, veh/h	14	2	104	34	19	182
Future Vol, veh/h	14	2	104	34	19	182
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	15	2	113	37	21	198

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	372	132	0	0	150	0
Stage 1	132	-	-	-	-	-
Stage 2	240	-	-	-	-	-
Critical Hdwy	7.1	6.22	-	-	4.3	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3	3.1	-	-	3	-
Pot Cap-1 Maneuver	670	978	-	-	1067	-
Stage 1	1039	-	-	-	-	-
Stage 2	922	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	655	978	-	-	1067	-
Mov Cap-2 Maneuver	655	-	-	-	-	-
Stage 1	1039	-	-	-	-	-
Stage 2	902	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.4	0	0.8
HCM LOS	B		

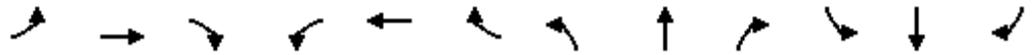
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	683	1067	-
HCM Lane V/C Ratio	-	-	0.025	0.019	-
HCM Control Delay (s)	-	-	10.4	8.4	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0.1	-

McMahon 2024 Future with Development with Improvements Conditions (One Way)
 8: Bridge St/Bridge St (SR 113) & Nutt Rd (SR 23) Weekday Morning Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	371	744	131	78	380	40	61	170	53	67	402	299
Future Volume (vph)	371	744	131	78	380	40	61	170	53	67	402	299
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	14	14	10	12	12	10	11	11	10	10	10
Grade (%)		1%			1%			-2%			1%	
Storage Length (ft)	350		0	725		0	100		0	0		235
Storage Lanes	1		0	1		0	1		0	0		1
Taper Length (ft)	25			25			60			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00		1.00				0.99			1.00	
Frt		0.978			0.986			0.964				0.850
Flt Protected	0.950			0.950			0.950				0.993	
Satd. Flow (prot)	1572	1816	0	1588	1692	0	1580	1628	0	0	1646	1353
Flt Permitted	0.950			0.950			0.135				0.828	
Satd. Flow (perm)	1572	1816	0	1587	1692	0	225	1628	0	0	1372	1353
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		11			5			15				155
Link Speed (mph)		35			35			25				25
Link Distance (ft)		1179			856			630				1439
Travel Time (s)		23.0			16.7			17.2				39.2
Confl. Peds. (#/hr)			1	1					1	1		
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	1%	3%	0%	0%	4%	8%	2%	4%	2%	0%	1%	5%
Adj. Flow (vph)	408	818	144	86	418	44	67	187	58	74	442	329
Shared Lane Traffic (%)												
Lane Group Flow (vph)	408	962	0	86	462	0	67	245	0	0	516	329
Number of Detectors	1	1		1	1		1	1		1	3	0
Detector Template										Left		
Leading Detector (ft)	35	35		35	35		35	35		20	55	0
Trailing Detector (ft)	-5	-5		-5	-5		-5	-5		0	-3	0
Detector 1 Position(ft)	-5	-5		-5	-5		-5	-5		0	-3	0
Detector 1 Size(ft)	40	40		40	40		40	40		20	5	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)												15
Detector 2 Size(ft)												5
Detector 2 Type												Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)												0.0
Detector 3 Position(ft)												30
Detector 3 Size(ft)												25
Detector 3 Type												Cl+Ex
Detector 3 Channel												
Detector 3 Extend (s)												0.0
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	pm+ov

McMahon 2024 Future with Development with Improvements Conditions (One Way)
 8: Bridge St/Bridge St (SR 113) & Nutt Rd (SR 23) Weekday Morning Peak Hour

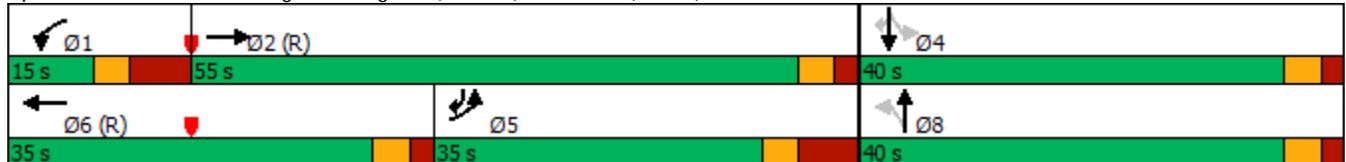


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	5	2		1	6			8			4	5
Permitted Phases							8			4		4
Detector Phase	5	2		1	6		8	8		4	4	5
Switch Phase												
Minimum Initial (s)	7.0	15.0		7.0	15.0		7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	15.0	26.0		15.0	26.0		30.0	30.0		30.0	30.0	15.0
Total Split (s)	35.0	55.0		15.0	35.0		40.0	40.0		40.0	40.0	35.0
Total Split (%)	31.8%	50.0%		13.6%	31.8%		36.4%	36.4%		36.4%	36.4%	31.8%
Maximum Green (s)	27.0	50.0		7.0	30.0		35.0	35.0		35.0	35.0	27.0
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	5.0	2.0		5.0	2.0		2.0	2.0		2.0	2.0	5.0
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0			-1.0	-1.0
Total Lost Time (s)	7.0	4.0		7.0	4.0		4.0	4.0			4.0	7.0
Lead/Lag	Lag	Lag		Lead	Lead							Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	C-Min		None	C-Min		None	None		None	None	None
Walk Time (s)		10.0			10.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		11.0			11.0		18.0	18.0		18.0	18.0	
Pedestrian Calls (#/hr)		0			0		0	0		0	0	

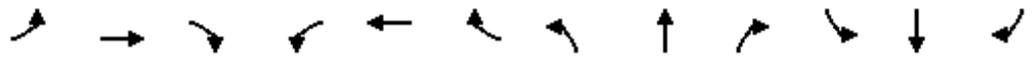
Intersection Summary

Area Type: Other
 Cycle Length: 110
 Actuated Cycle Length: 110
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green, Master Intersection
 Natural Cycle: 140
 Control Type: Actuated-Coordinated

Splits and Phases: 8: Bridge St/Bridge St (SR 113) & Nutt Rd (SR 23)



McMahon 2024 Future with Development with Improvements Conditions (One Way)
 8: Bridge St/Bridge St (SR 113) & Nutt Rd (SR 23) Weekday Morning Peak Hour



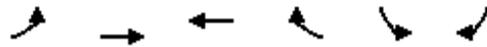
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	371	744	131	78	380	40	61	170	53	67	402	299
Future Volume (veh/h)	371	744	131	78	380	40	61	170	53	67	402	299
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1780	1822	1866	1794	1738	1682	1846	1818	1846	1794	1780	1724
Adj Flow Rate, veh/h	408	818	144	86	418	44	67	187	58	74	442	329
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	1	3	0	0	4	8	2	4	2	0	1	5
Cap, veh/h	831	1014	178	124	436	46	75	435	135	87	385	1194
Arrive On Green	0.49	0.67	0.66	0.07	0.28	0.27	0.33	0.33	0.32	0.32	0.33	0.33
Sat Flow, veh/h	1696	1509	266	1709	1546	163	689	1330	413	153	1175	1459
Grp Volume(v), veh/h	408	0	962	86	0	462	67	0	245	516	0	329
Grp Sat Flow(s),veh/h/ln	1696	0	1774	1709	0	1709	689	0	1743	1328	0	1459
Q Serve(g_s), s	17.8	0.0	42.8	5.4	0.0	29.3	1.5	0.0	12.1	22.9	0.0	0.0
Cycle Q Clear(g_c), s	17.8	0.0	42.8	5.4	0.0	29.3	36.0	0.0	12.1	35.0	0.0	0.0
Prop In Lane	1.00		0.15	1.00		0.10	1.00		0.24	0.14		1.00
Lane Grp Cap(c), veh/h	831	0	1192	124	0	482	75	0	570	460	0	1194
V/C Ratio(X)	0.49	0.00	0.81	0.69	0.00	0.96	0.90	0.00	0.43	1.12	0.00	0.28
Avail Cap(c_a), veh/h	831	0	1192	124	0	482	75	0	570	460	0	1194
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	18.8	0.0	13.0	49.8	0.0	38.9	54.9	0.0	29.1	39.9	0.0	2.4
Incr Delay (d2), s/veh	0.5	0.0	5.9	15.2	0.0	32.1	69.4	0.0	0.5	79.6	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	11.1	0.0	23.2	5.1	0.0	22.8	6.0	0.0	8.9	33.3	0.0	2.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	19.3	0.0	18.9	65.0	0.0	71.0	124.3	0.0	29.6	119.5	0.0	2.5
LnGrp LOS	B	A	B	E	A	E	F	A	C	F	A	A
Approach Vol, veh/h		1370			548			312				845
Approach Delay, s/veh		19.0			70.1			49.9				74.0
Approach LOS		B			E			D				E
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	15.0	80.9		40.0	60.9	35.0		40.0				
Change Period (Y+Rc), s	8.0	* 8		5.0	8.0	5.0		5.0				
Max Green Setting (Gmax), s	7.0	* 50		35.0	27.0	30.0		35.0				
Max Q Clear Time (g_c+I1), s	7.9	44.8		37.0	20.3	31.3		38.5				
Green Ext Time (p_c), s	0.0	2.2		0.0	0.9	0.0		0.0				

Intersection Summary												
HCM 6th Ctrl Delay				46.3								
HCM 6th LOS				D								

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

McMahon 2024 Future with Development with Improvements Conditions (One Way)
 24: Hall Street & East Site Access OUT Weekday Morning Peak Hour



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↔	
Traffic Volume (vph)	0	46	0	0	25	0
Future Volume (vph)	0	46	0	0	25	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr						
Flt Protected					0.950	
Satd. Flow (prot)	0	1863	1863	0	1770	0
Flt Permitted					0.950	
Satd. Flow (perm)	0	1863	1863	0	1770	0
Link Speed (mph)		25	25		25	
Link Distance (ft)		236	213		354	
Travel Time (s)		6.4	5.8		9.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	50	0	0	27	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	50	0	0	27	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other
 Control Type: Unsignalized

Intersection

Int Delay, s/veh 2.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↓	
Traffic Vol, veh/h	0	46	0	0	25	0
Future Vol, veh/h	0	46	0	0	25	0
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, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	50	0	0	27	0

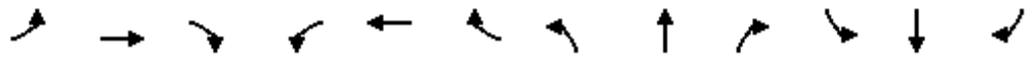
Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	-	0	-	0	51
Stage 1	-	-	-	-	1
Stage 2	-	-	-	-	50
Critical Hdwy	-	-	-	-	7.1
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	-	-	3
Pot Cap-1 Maneuver	0	-	-	0	1108
Stage 1	0	-	-	0	1199
Stage 2	0	-	-	0	1136
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	1108
Mov Cap-2 Maneuver	-	-	-	-	1108
Stage 1	-	-	-	-	1199
Stage 2	-	-	-	-	1136

Approach	EB	WB	SB
HCM Control Delay, s	0	0	8.3
HCM LOS			A

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	1108
HCM Lane V/C Ratio	-	-	0.025
HCM Control Delay (s)	-	-	8.3
HCM Lane LOS	-	-	A
HCM 95th %tile Q(veh)	-	-	0.1

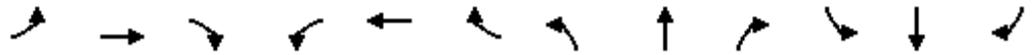
Weekday Afternoon Peak Hour

McMahon 2024 Future with Development with Improvements Conditions (One Way)
 1: Nutt Road (S.R. 0023) & Paradise Street Weekday Afternoon Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	171	1034	0	0	1154	87	0	0	0	27	0	160
Future Volume (vph)	171	1034	0	0	1154	87	0	0	0	27	0	160
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	14	14	12	12	11	11	12	12	12	12	12	12
Grade (%)		2%			-2%			0%				3%
Storage Length (ft)	175		0	75		0	0		0	75		0
Storage Lanes	1		0	1		0	0		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.989							0.850
Flt Protected	0.950										0.950	
Satd. Flow (prot)	1806	1882	0	1782	1702	0	0	1765	0	0	1684	1346
Flt Permitted	0.044										0.757	
Satd. Flow (perm)	84	1882	0	1782	1702	0	0	1765	0	0	1342	1346
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					7							97
Link Speed (mph)		35			35			30				25
Link Distance (ft)		711			509			368				314
Travel Time (s)		13.9			9.9			8.4				8.6
Peak Hour Factor	0.96	0.96	0.92	0.92	0.96	0.96	0.92	0.92	0.92	0.96	0.92	0.96
Heavy Vehicles (%)	0%	1%	2%	2%	1%	17%	2%	2%	2%	0%	2%	12%
Adj. Flow (vph)	178	1077	0	0	1202	91	0	0	0	28	0	167
Shared Lane Traffic (%)												
Lane Group Flow (vph)	178	1077	0	0	1293	0	0	0	0	0	28	167
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100		20	100		20	100		20	100	20
Trailing Detector (ft)	0	0		0	0		0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		Perm	NA					Perm	NA	pm+ov
Protected Phases	5	2			6			8			4	5
Permitted Phases	2			6			8			4		4
Detector Phase	5	2		6	6		8	8		4	4	5
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	12.0	25.0		25.0	25.0		24.0	24.0		24.0	24.0	12.0
Total Split (s)	19.0	103.0		84.0	84.0		17.0	17.0		17.0	17.0	19.0

McMahon 2024 Future with Development with Improvements Conditions (One Way)
 1: Nutt Road (S.R. 0023) & Paradise Street Weekday Afternoon Peak Hour

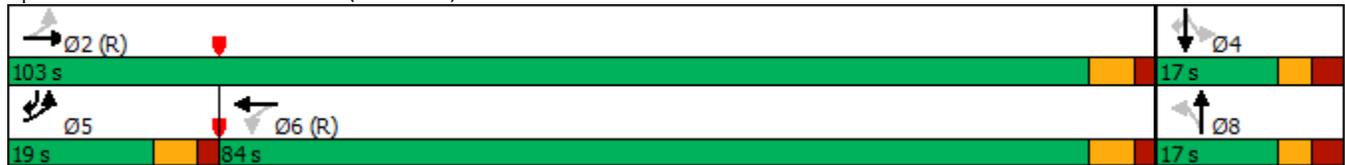


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Split (%)	15.8%	85.8%		70.0%	70.0%		14.2%	14.2%		14.2%	14.2%	15.8%
Maximum Green (s)	13.0	97.0		78.0	78.0		11.0	11.0		11.0	11.0	13.0
Yellow Time (s)	4.0	4.0		4.0	4.0		3.0	3.0		3.0	3.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		3.0	3.0		3.0	3.0	2.0
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0			-1.0			-1.0	-1.0
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0			5.0	5.0	5.0
Lead/Lag	Lead			Lag								Lead
Lead-Lag Optimize?	Yes			Yes								Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	C-Min		C-Min	C-Min		None	None		None	None	None
Walk Time (s)	7.0			7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0			11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0			0	0		0	0		0	0	

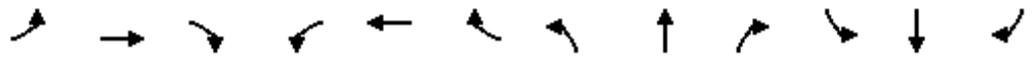
Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 50 (42%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 150
 Control Type: Actuated-Coordinated

Splits and Phases: 1: Nutt Road (S.R. 0023) & Paradise Street



McMahon 2024 Future with Development with Improvements Conditions (One Way)
 1: Nutt Road (S.R. 0023) & Paradise Street Weekday Afternoon Peak Hour



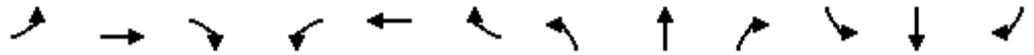
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↶	↷		↶	↷			↕			↕	↷
Traffic Volume (veh/h)	171	1034	0	0	1154	87	0	0	0	27	0	160
Future Volume (veh/h)	171	1034	0	0	1154	87	0	0	0	27	0	160
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1849	1834	1750	1846	1860	1633	1772	1772	1772	1750	1722	1581
Adj Flow Rate, veh/h	178	1077	0	0	1202	91	0	0	0	28	0	136
Peak Hour Factor	0.96	0.96	0.92	0.92	0.96	0.96	0.92	0.92	0.92	0.96	0.92	0.96
Percent Heavy Veh, %	0	1	2	2	1	17	2	2	2	0	2	12
Cap, veh/h	225	1498	0	60	1165	88	0	177	0	190	0	259
Arrive On Green	0.09	0.82	0.00	0.00	0.68	0.67	0.00	0.00	0.00	0.10	0.00	0.10
Sat Flow, veh/h	1761	1834	0	517	1708	129	0	1772	0	1305	0	1340
Grp Volume(v), veh/h	178	1077	0	0	0	1293	0	0	0	28	0	136
Grp Sat Flow(s),veh/h/ln	1761	1834	0	517	0	1837	0	1772	0	1305	0	1340
Q Serve(g_s), s	7.6	31.3	0.0	0.0	0.0	81.8	0.0	0.0	0.0	2.4	0.0	10.9
Cycle Q Clear(g_c), s	7.6	31.3	0.0	0.0	0.0	81.8	0.0	0.0	0.0	2.4	0.0	10.9
Prop In Lane	1.00		0.00	1.00		0.07	0.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	225	1498	0	60	0	1253	0	177	0	190	0	259
V/C Ratio(X)	0.79	0.72	0.00	0.00	0.00	1.03	0.00	0.00	0.00	0.15	0.00	0.53
Avail Cap(c_a), veh/h	267	1498	0	60	0	1253	0	177	0	190	0	259
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	43.0	4.9	0.0	0.0	0.0	19.1	0.0	0.0	0.0	49.7	0.0	43.5
Incr Delay (d2), s/veh	12.6	3.0	0.0	0.0	0.0	34.0	0.0	0.0	0.0	0.4	0.0	2.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	9.9	14.0	0.0	0.0	0.0	53.5	0.0	0.0	0.0	1.4	0.0	6.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	55.6	7.9	0.0	0.0	0.0	53.1	0.0	0.0	0.0	50.0	0.0	45.5
LnGrp LOS	E	A	A	A	A	F	A	A	A	D	A	D
Approach Vol, veh/h		1255			1293			0				164
Approach Delay, s/veh		14.7			53.1			0.0				46.2
Approach LOS		B			D							D
Timer - Assigned Phs		2		4	5	6		8				
Phs Duration (G+Y+Rc), s		103.0		17.0	16.2	86.8		17.0				
Change Period (Y+Rc), s		6.0		6.0	6.0	6.0		6.0				
Max Green Setting (Gmax), s		97.0		11.0	13.0	78.0		11.0				
Max Q Clear Time (g_c+I1), s		33.8		12.9	10.1	83.8		0.0				
Green Ext Time (p_c), s		13.1		0.0	0.1	0.0		0.0				

Intersection Summary

HCM 6th Ctrl Delay	34.9
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	38	5	107	27	1	10	228	321	69	8	199	53
Future Volume (vph)	38	5	107	27	1	10	228	321	69	8	199	53
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	13	13	13	11	11	11	12	12	12
Storage Length (ft)	100		0	125		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.856			0.862			0.985				0.973
Flt Protected	0.950			0.950				0.982				0.998
Satd. Flow (prot)	1685	1449	0	1865	1692	0	0	1777	0	0	1794	0
Flt Permitted	0.950			0.950				0.982				0.998
Satd. Flow (perm)	1685	1449	0	1865	1692	0	0	1777	0	0	1794	0
Link Speed (mph)		25			25			25				25
Link Distance (ft)		375			308			441				191
Travel Time (s)		10.2			8.4			12.0				5.2
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	0%	5%	0%	0%	0%	0%	0%	0%	0%	0%	14%
Adj. Flow (vph)	41	5	115	29	1	11	245	345	74	9	214	57
Shared Lane Traffic (%)												
Lane Group Flow (vph)	41	120	0	29	12	0	0	664	0	0	280	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

McMahon 2024 Future with Development with Improvements Conditions (One Way)
 2: Main Street & Smithworks Boulevard Weekday Afternoon Peak Hour

Intersection												
Int Delay, s/veh	6.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗			↕			↕	
Traffic Vol, veh/h	38	5	107	27	1	10	228	321	69	8	199	53
Future Vol, veh/h	38	5	107	27	1	10	228	321	69	8	199	53
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	100	-	-	125	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	0	5	0	0	0	0	0	0	0	0	14
Mvmt Flow	41	5	115	29	1	11	245	345	74	9	214	57

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1139	1170	243	1193	1161	382	271	0	0	419	0	0
Stage 1	261	261	-	872	872	-	-	-	-	-	-	-
Stage 2	878	909	-	321	289	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.3	-	-	4.3	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3	4	3.1	3	4	3.1	3	-	-	3	-	-
Pot Cap-1 Maneuver	197	195	847	180	197	706	970	-	-	862	-	-
Stage 1	858	696	-	385	371	-	-	-	-	-	-	-
Stage 2	382	357	-	794	677	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	142	129	847	111	130	706	970	-	-	862	-	-
Mov Cap-2 Maneuver	142	129	-	111	130	-	-	-	-	-	-	-
Stage 1	572	688	-	257	247	-	-	-	-	-	-	-
Stage 2	250	238	-	673	669	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	18.8	38	3.7	0.3
HCM LOS	C	E		

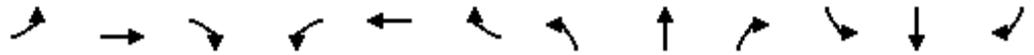
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	970	-	-	142	678	111	503	862	-	-
HCM Lane V/C Ratio	0.253	-	-	0.288	0.178	0.262	0.024	0.01	-	-
HCM Control Delay (s)	10	0	-	40.3	11.5	48.5	12.3	9.2	0	-
HCM Lane LOS	A	A	-	E	B	E	B	A	A	-
HCM 95th %tile Q(veh)	1	-	-	1.1	0.6	1	0.1	0	-	-

McMahon 2024 Future with Development with Improvements Conditions (One Way)
 3: Bridge Street (S.R. 0113) & Hall Street Weekday Afternoon Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↖			↖	↗
Traffic Volume (vph)	33	0	38	9	0	18	0	634	0	0	566	0
Future Volume (vph)	33	0	38	9	0	18	0	634	0	0	566	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	16	13	13	13	11	15	15	14	14	14
Grade (%)		-1%			0%			-2%			1%	
Storage Length (ft)	0		0	0		0	125		0	0		0
Storage Lanes	0		0	0		0	1		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.928			0.912							
Flt Protected		0.977			0.983							
Satd. Flow (prot)	0	1962	0	0	1760	0	1855	2090	0	0	2017	0
Flt Permitted		0.837			0.888							
Satd. Flow (perm)	0	1681	0	0	1590	0	1855	2090	0	0	2017	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		41			41			25			25	
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		675			464			342			483	
Travel Time (s)		18.4			12.7			9.3			13.2	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	1%	0%	1%	0%	0%
Adj. Flow (vph)	35	0	40	10	0	19	0	674	0	0	602	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	75	0	0	29	0	0	674	0	0	602	0
Number of Detectors	1	1		1	1		1	1			1	
Detector Template	Left			Left								
Leading Detector (ft)	20	50		20	37		37	37			37	
Trailing Detector (ft)	0	-10		0	-3		-3	-3			-3	
Detector 1 Position(ft)	0	-10		0	-3		-3	-3			-3	
Detector 1 Size(ft)	20	60		20	40		40	40			40	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex			Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA			NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2					
Detector Phase	4	4		8	8		2	2			6	
Switch Phase												
Minimum Initial (s)	3.0	3.0		3.0	3.0		15.0	15.0			15.0	
Minimum Split (s)	10.0	10.0		10.0	10.0		21.0	21.0			21.0	
Total Split (s)	22.0	22.0		22.0	22.0		58.0	58.0			58.0	
Total Split (%)	27.5%	27.5%		27.5%	27.5%		72.5%	72.5%			72.5%	
Maximum Green (s)	15.0	15.0		15.0	15.0		52.0	52.0			52.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	
All-Red Time (s)	4.0	4.0		4.0	4.0		3.0	3.0			3.0	
Lost Time Adjust (s)		-1.0			-1.0		-1.0	-1.0			-1.0	

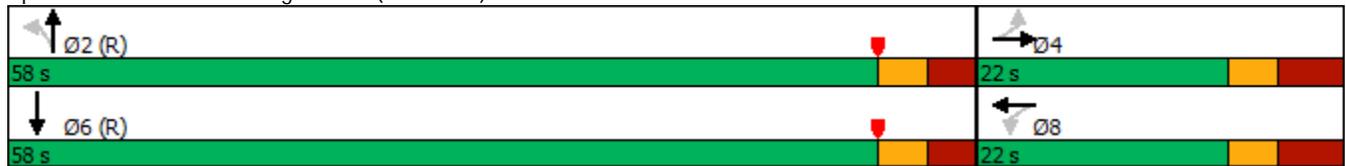
McMahon 2024 Future with Development with Improvements Conditions (One Way)
 3: Bridge Street (S.R. 0113) & Hall Street Weekday Afternoon Peak Hour



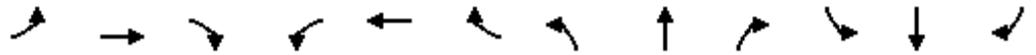
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Lost Time (s)		6.0			6.0		5.0	5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0				3.0
Recall Mode	None	None		None	None		C-Max	C-Max				C-Max
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0				7.0
Flash Dont Walk (s)	12.0	12.0		12.0	12.0		12.0	12.0				12.0
Pedestrian Calls (#/hr)	0	0		0	0		0	0				0

Intersection Summary
 Area Type: Other
 Cycle Length: 80
 Actuated Cycle Length: 80
 Offset: 52 (65%), Referenced to phase 2:NBTL and 6:SBT, Start of Yellow
 Natural Cycle: 40
 Control Type: Actuated-Coordinated

Splits and Phases: 3: Bridge Street (S.R. 0113) & Hall Street



McMahon 2024 Future with Development with Improvements Conditions (One Way)
 3: Bridge Street (S.R. 0113) & Hall Street Weekday Afternoon Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↖			↖	↗
Traffic Volume (veh/h)	33	0	38	9	0	18	0	634	0	0	566	0
Future Volume (veh/h)	33	0	38	9	0	18	0	634	0	0	566	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	2017	2017	2017	1976	1976	1976	1979	2042	0	0	1970	1970
Adj Flow Rate, veh/h	35	0	40	10	0	19	0	674	0	0	602	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	0	0	0	0	0	0	1	0	0	0	0
Cap, veh/h	120	5	67	92	14	87	90	1608	0	0	1551	0
Arrive On Green	0.06	0.00	0.06	0.06	0.00	0.06	0.00	0.79	0.00	0.00	0.79	0.00
Sat Flow, veh/h	719	68	900	420	192	1163	865	2042	0	0	1970	0
Grp Volume(v), veh/h	75	0	0	29	0	0	0	674	0	0	602	0
Grp Sat Flow(s),veh/h/ln	1687	0	0	1775	0	0	865	2042	0	0	1970	0
Q Serve(g_s), s	2.2	0.0	0.0	0.0	0.0	0.0	0.0	8.4	0.0	0.0	7.5	0.0
Cycle Q Clear(g_c), s	3.4	0.0	0.0	1.3	0.0	0.0	0.0	8.4	0.0	0.0	7.5	0.0
Prop In Lane	0.47		0.53	0.34		0.66	1.00		0.00	0.00		0.00
Lane Grp Cap(c), veh/h	171	0	0	171	0	0	90	1608	0	0	1551	0
V/C Ratio(X)	0.44	0.00	0.00	0.17	0.00	0.00	0.00	0.42	0.00	0.00	0.39	0.00
Avail Cap(c_a), veh/h	372	0	0	370	0	0	90	1608	0	0	1551	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	36.2	0.0	0.0	35.3	0.0	0.0	0.0	2.7	0.0	0.0	2.6	0.0
Incr Delay (d2), s/veh	1.8	0.0	0.0	0.5	0.0	0.0	0.0	0.8	0.0	0.0	0.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.8	0.0	0.0	1.0	0.0	0.0	0.0	4.4	0.0	0.0	3.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.0	0.0	0.0	35.7	0.0	0.0	0.0	3.5	0.0	0.0	3.3	0.0
LnGrp LOS	D	A	A	D	A	A	A	A	A	A	A	A
Approach Vol, veh/h		75			29			674			602	
Approach Delay, s/veh		38.0			35.7			3.5			3.3	
Approach LOS		D			D			A			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		68.0		12.0		68.0		12.0				
Change Period (Y+Rc), s		6.0		7.0		6.0		7.0				
Max Green Setting (Gmax), s		52.0		15.0		52.0		15.0				
Max Q Clear Time (g_c+I1), s		10.9		5.4		10.0		3.3				
Green Ext Time (p_c), s		3.0		0.1		2.6		0.0				
Intersection Summary												
HCM 6th Ctrl Delay				6.0								
HCM 6th LOS				A								
Notes												
User approved pedestrian interval to be less than phase max green.												



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	13	2	150	26	20	178
Future Volume (vph)	13	2	150	26	20	178
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.983		0.980			
Flt Protected	0.958					0.995
Satd. Flow (prot)	1754	0	1825	0	0	1853
Flt Permitted	0.958					0.995
Satd. Flow (perm)	1754	0	1825	0	0	1853
Link Speed (mph)	25		25			25
Link Distance (ft)	350		323			890
Travel Time (s)	9.5		8.8			24.3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	14	2	163	28	22	193
Shared Lane Traffic (%)						
Lane Group Flow (vph)	16	0	191	0	0	215
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other

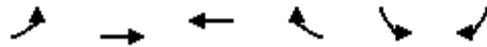
Control Type: Unsignalized

Intersection						
Int Delay, s/veh	0.9					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	13	2	150	26	20	178
Future Vol, veh/h	13	2	150	26	20	178
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	14	2	163	28	22	193

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	414	177	0	0	191	0
Stage 1	177	-	-	-	-	-
Stage 2	237	-	-	-	-	-
Critical Hdwy	7.1	6.22	-	-	4.3	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3	3.1	-	-	3	-
Pot Cap-1 Maneuver	627	922	-	-	1033	-
Stage 1	989	-	-	-	-	-
Stage 2	926	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	612	922	-	-	1033	-
Mov Cap-2 Maneuver	612	-	-	-	-	-
Stage 1	989	-	-	-	-	-
Stage 2	904	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.8	0	0.9
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	641	1033	-
HCM Lane V/C Ratio	-	-	0.025	0.021	-
HCM Control Delay (s)	-	-	10.8	8.6	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0.1	-



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	31	60	0	0	11	11
Future Volume (vph)	31	60	0	0	11	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.932	
Flt Protected		0.983			0.976	
Satd. Flow (prot)	0	1831	1863	0	1694	0
Flt Permitted		0.983			0.976	
Satd. Flow (perm)	0	1831	1863	0	1694	0
Link Speed (mph)		25	25		25	
Link Distance (ft)		511	236		162	
Travel Time (s)		13.9	6.4		4.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	34	65	0	0	12	12
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	99	0	0	24	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

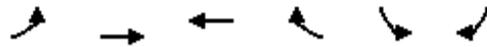
Intersection						
Int Delay, s/veh	3.9					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	
Traffic Vol, veh/h	31	60	0	0	11	11
Future Vol, veh/h	31	60	0	0	11	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	34	65	0	0	12	12

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	1	0	-	0	134
Stage 1	-	-	-	-	1
Stage 2	-	-	-	-	133
Critical Hdwy	4.3	-	-	-	7.1
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	3	-	-	-	3
Pot Cap-1 Maneuver	1199	-	-	-	974
Stage 1	-	-	-	-	1199
Stage 2	-	-	-	-	1038
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1199	-	-	-	946
Mov Cap-2 Maneuver	-	-	-	-	946
Stage 1	-	-	-	-	1164
Stage 2	-	-	-	-	1038

Approach	EB	WB	SB
HCM Control Delay, s	2.8	0	8.5
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1199	-	-	-	1042
HCM Lane V/C Ratio	0.028	-	-	-	0.023
HCM Control Delay (s)	8.1	0	-	-	8.5
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.1

McMahon 2024 Future with Development with Improvements Conditions (One Way)
 6: Hall Street & East Site Access IN Weekday Afternoon Peak Hour



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Volume (vph)	0	71	0	0	15	0
Future Volume (vph)	0	71	0	0	15	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr						
Flt Protected					0.950	
Satd. Flow (prot)	0	1863	1863	0	1770	0
Flt Permitted					0.950	
Satd. Flow (perm)	0	1863	1863	0	1770	0
Link Speed (mph)		25	25		25	
Link Distance (ft)		213	574		328	
Travel Time (s)		5.8	15.7		8.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	77	0	0	16	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	77	0	0	16	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other
 Control Type: Unsignalized

Intersection						
Int Delay, s/veh	1.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↶	↷		↶	
Traffic Vol, veh/h	0	71	0	0	15	0
Future Vol, veh/h	0	71	0	0	15	0
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, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	77	0	0	16	0

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	1	0	-	0	78
Stage 1	-	-	-	-	1
Stage 2	-	-	-	-	77
Critical Hdwy	4.3	-	-	-	7.1
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	3	-	-	-	3
Pot Cap-1 Maneuver	1199	-	-	-	1063
Stage 1	-	-	-	-	1199
Stage 2	-	-	-	-	1103
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1199	-	-	-	1063
Mov Cap-2 Maneuver	-	-	-	-	1063
Stage 1	-	-	-	-	1199
Stage 2	-	-	-	-	1103

Approach	EB	WB	SB
HCM Control Delay, s	0	0	8.4
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1199	-	-	-	1063
HCM Lane V/C Ratio	-	-	-	-	0.015
HCM Control Delay (s)	0	-	-	-	8.4
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)	10	1	191	59	31	177
Future Volume (vph)	10	1	191	59	31	177
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.989		0.968			
Flt Protected	0.956					0.993
Satd. Flow (prot)	1761	0	1803	0	0	1850
Flt Permitted	0.956					0.993
Satd. Flow (perm)	1761	0	1803	0	0	1850
Link Speed (mph)	25		25			25
Link Distance (ft)	511		864			323
Travel Time (s)	13.9		23.6			8.8
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	11	1	208	64	34	192
Shared Lane Traffic (%)						
Lane Group Flow (vph)	12	0	272	0	0	226
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other

Control Type: Unsignalized

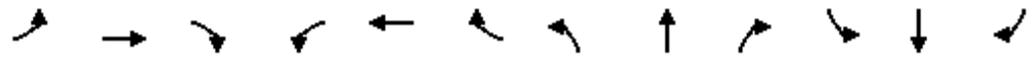
Intersection						
Int Delay, s/veh	0.9					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		T			T
Traffic Vol, veh/h	10	1	191	59	31	177
Future Vol, veh/h	10	1	191	59	31	177
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	1	208	64	34	192

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	500	240	0	0	272	0
Stage 1	240	-	-	-	-	-
Stage 2	260	-	-	-	-	-
Critical Hdwy	7.1	6.22	-	-	4.3	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3	3.1	-	-	3	-
Pot Cap-1 Maneuver	547	849	-	-	969	-
Stage 1	922	-	-	-	-	-
Stage 2	902	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	526	849	-	-	969	-
Mov Cap-2 Maneuver	526	-	-	-	-	-
Stage 1	922	-	-	-	-	-
Stage 2	867	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.8	0	1.3
HCM LOS	B		

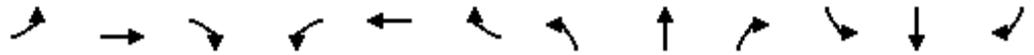
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	545	969
HCM Lane V/C Ratio	-	-	0.022	0.035
HCM Control Delay (s)	-	-	11.8	8.8
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.1	0.1

McMahon 2024 Future with Development with Improvements Conditions (One Way)
 8: Bridge St/Bridge St (SR 113) & Nutt Rd (SR 23) Weekday Afternoon Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	438	599	74	64	711	50	142	314	28	49	250	456
Future Volume (vph)	438	599	74	64	711	50	142	314	28	49	250	456
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	14	14	10	12	12	10	11	11	10	10	10
Grade (%)		1%			1%			-2%			1%	
Storage Length (ft)	350		0	725		0	100		0	0		235
Storage Lanes	1		0	1		0	1		0	0		1
Taper Length (ft)	25			25			60			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00		1.00				1.00			1.00	
Frt		0.984			0.990			0.988				0.850
Flt Protected	0.950			0.950			0.950				0.992	
Satd. Flow (prot)	1572	1826	0	1588	1701	0	1580	1669	0	0	1644	1353
Flt Permitted	0.950			0.950			0.299				0.548	
Satd. Flow (perm)	1572	1826	0	1586	1701	0	497	1669	0	0	908	1353
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		9			4			4				78
Link Speed (mph)		35			35			25				25
Link Distance (ft)		1179			856			630				1439
Travel Time (s)		23.0			16.7			17.2				39.2
Confl. Peds. (#/hr)			1	1					1	1		
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	1%	3%	0%	0%	4%	8%	2%	4%	2%	0%	1%	5%
Adj. Flow (vph)	481	658	81	70	781	55	156	345	31	54	275	501
Shared Lane Traffic (%)												
Lane Group Flow (vph)	481	739	0	70	836	0	156	376	0	0	329	501
Number of Detectors	1	1		1	1		1	1		1	3	0
Detector Template										Left		
Leading Detector (ft)	35	35		35	35		35	35		20	55	0
Trailing Detector (ft)	-5	-5		-5	-5		-5	-5		0	-3	0
Detector 1 Position(ft)	-5	-5		-5	-5		-5	-5		0	-3	0
Detector 1 Size(ft)	40	40		40	40		40	40		20	5	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)												15
Detector 2 Size(ft)												5
Detector 2 Type												Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)												0.0
Detector 3 Position(ft)												30
Detector 3 Size(ft)												25
Detector 3 Type												Cl+Ex
Detector 3 Channel												
Detector 3 Extend (s)												0.0
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	pm+ov

McMahon 2024 Future with Development with Improvements Conditions (One Way)
 8: Bridge St/Bridge St (SR 113) & Nutt Rd (SR 23) Weekday Afternoon Peak Hour

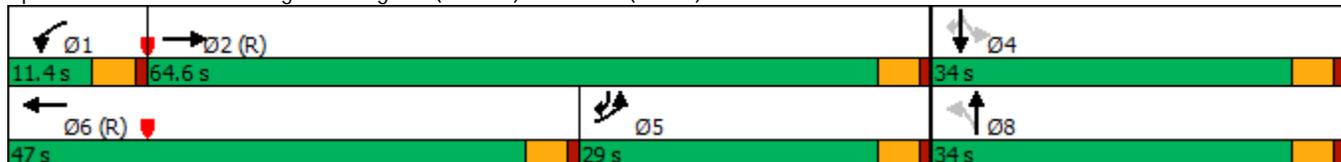


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	5	2		1	6			8			4	5
Permitted Phases							8			4		4
Detector Phase	5	2		1	6		8	8		4	4	5
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	9.5	22.5		9.5	22.5		22.5	22.5		22.5	22.5	9.5
Total Split (s)	29.0	64.6		11.4	47.0		34.0	34.0		34.0	34.0	29.0
Total Split (%)	26.4%	58.7%		10.4%	42.7%		30.9%	30.9%		30.9%	30.9%	26.4%
Maximum Green (s)	24.5	60.1		6.9	42.5		29.5	29.5		29.5	29.5	24.5
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	3.5
Lead/Lag	Lag	Lag		Lead	Lead							Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	None
Walk Time (s)		7.0			7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		11.0			11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)		0			0		0	0		0	0	

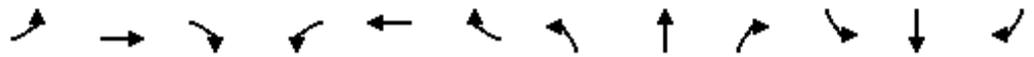
Intersection Summary

Area Type: Other
 Cycle Length: 110
 Actuated Cycle Length: 110
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green, Master Intersection
 Natural Cycle: 120
 Control Type: Actuated-Coordinated

Splits and Phases: 8: Bridge St/Bridge St (SR 113) & Nutt Rd (SR 23)



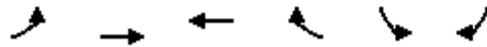
McMahon 2024 Future with Development with Improvements Conditions (One Way)
 8: Bridge St/Bridge St (SR 113) & Nutt Rd (SR 23) Weekday Afternoon Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	438	599	74	64	711	50	142	314	28	49	250	456
Future Volume (veh/h)	438	599	74	64	711	50	142	314	28	49	250	456
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1780	1822	1866	1794	1738	1682	1846	1818	1846	1794	1780	1724
Adj Flow Rate, veh/h	481	658	81	70	781	55	156	345	31	54	275	501
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	1	3	0	0	4	8	2	4	2	0	1	5
Cap, veh/h	393	896	110	110	635	45	75	456	41	58	209	743
Arrive On Green	0.23	0.56	0.55	0.06	0.40	0.39	0.28	0.28	0.27	0.27	0.28	0.28
Sat Flow, veh/h	1696	1591	196	1709	1605	113	686	1643	148	73	753	1459
Grp Volume(v), veh/h	481	0	739	70	0	836	156	0	376	329	0	501
Grp Sat Flow(s),veh/h/ln	1696	0	1787	1709	0	1718	686	0	1791	825	0	1459
Q Serve(g_s), s	25.5	0.0	33.9	4.4	0.0	43.5	1.5	0.0	21.1	8.4	0.0	2.7
Cycle Q Clear(g_c), s	25.5	0.0	33.9	4.4	0.0	43.5	30.5	0.0	21.1	29.5	0.0	2.7
Prop In Lane	1.00		0.11	1.00		0.07	1.00		0.08	0.16		1.00
Lane Grp Cap(c), veh/h	393	0	1006	110	0	679	75	0	497	259	0	743
V/C Ratio(X)	1.22	0.00	0.73	0.64	0.00	1.23	2.09	0.00	0.76	1.27	0.00	0.67
Avail Cap(c_a), veh/h	393	0	1006	123	0	679	75	0	497	259	0	743
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	42.2	0.0	18.0	50.2	0.0	33.3	54.9	0.0	36.4	41.9	0.0	20.2
Incr Delay (d2), s/veh	121.4	0.0	4.8	8.9	0.0	116.4	530.9	0.0	6.6	147.5	0.0	2.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	35.2	0.0	20.5	3.8	0.0	56.6	23.6	0.0	15.4	28.1	0.0	15.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	163.7	0.0	22.7	59.1	0.0	149.7	585.8	0.0	43.0	189.4	0.0	22.6
LnGrp LOS	F	A	C	E	A	F	F	A	D	F	A	C
Approach Vol, veh/h		1220			906			532				830
Approach Delay, s/veh		78.3			142.7			202.2				88.7
Approach LOS		E			F			F				F
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.6	65.4		34.0	29.0	47.0		34.0				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	6.9	60.1		29.5	24.5	42.5		29.5				
Max Q Clear Time (g_c+I1), s	6.9	35.9		31.5	28.0	45.5		33.0				
Green Ext Time (p_c), s	0.0	3.1		0.0	0.0	0.0		0.0				

Intersection Summary		
HCM 6th Ctrl Delay		116.4
HCM 6th LOS		F

McMahon 2024 Future with Development with Improvements Conditions (One Way)
 24: Hall Street & East Site Access OUT Weekday Afternoon Peak Hour



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↑	
Traffic Volume (vph)	0	51	0	0	15	0
Future Volume (vph)	0	51	0	0	15	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr						
Flt Protected					0.950	
Satd. Flow (prot)	0	1863	1863	0	1770	0
Flt Permitted					0.950	
Satd. Flow (perm)	0	1863	1863	0	1770	0
Link Speed (mph)		25	25		25	
Link Distance (ft)		236	213		354	
Travel Time (s)		6.4	5.8		9.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	55	0	0	16	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	55	0	0	16	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other
 Control Type: Unsignalized

Intersection						
Int Delay, s/veh	1.9					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↓	
Traffic Vol, veh/h	0	51	0	0	15	0
Future Vol, veh/h	0	51	0	0	15	0
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, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	55	0	0	16	0

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	-	0	-	0	56
Stage 1	-	-	-	-	1
Stage 2	-	-	-	-	55
Critical Hdwy	-	-	-	-	7.1
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	-	-	3
Pot Cap-1 Maneuver	0	-	-	0	1100
Stage 1	0	-	-	0	1199
Stage 2	0	-	-	0	1130
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	1100
Mov Cap-2 Maneuver	-	-	-	-	1100
Stage 1	-	-	-	-	1199
Stage 2	-	-	-	-	1130

Approach	EB	WB	SB
HCM Control Delay, s	0	0	8.3
HCM LOS			A

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	1100
HCM Lane V/C Ratio	-	-	0.015
HCM Control Delay (s)	-	-	8.3
HCM Lane LOS	-	-	A
HCM 95th %tile Q(veh)	-	-	0

Appendix M

Traffic Signal Warrant Evaluation

Paradise Street and Nutt Road (S.R. 0023)

ENTER VOLUME DATA PER 15 MINUTE INTERVAL, PER APPROACH						
Time Interval		Major Street Approach #1 (E-Bound)	Major Street Approach #2 (W-Bound)	Major Street Combined	Minor Street Approach #1 (S-Bound)	Minor Street Approach #2 (N-Bound)
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	725	441	1166	110	
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	1091	700	1791	205	
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	1060	728	1788	179	
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	852	717	1569	119	
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	801	754	1555	88	
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	843	871	1714	86	
11:15 AM	11:29 AM			0		
11:30 AM	11:44 AM			0		
11:45 AM	11:59 AM			0		

ENTER VOLUME DATA PER 15 MINUTE INTERVAL, PER APPROACH						
Time Interval		Major Street Approach #1 (E-Bound)	Major Street Approach #2 (W-Bound)	Major Street Combined	Minor Street Approach #1 (S-Bound)	Minor Street Approach #2 (N-Bound)
Begin At	End Of	Volume	Volume	Total Volume	Volume	Volume
12:00 PM	12:14 PM	968	977	1945	110	
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	973	913	1886	100	
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	989	993	1982	75	
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	983	1134	2117	81	
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	1107	1171	2278	99	
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	1169	1223	2392	109	
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	1058	1035	2093	112	
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:		12619	11657	24276	1473	0

MUTCD WARRANT 1, EIGHT-HOUR VEHICULAR VOLUME

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

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

Combination of Conditions A and B Necessary?*: No

**Only applicable for Warrant 1 if after an adequate trial of other alternatives that could cause less delay and inconvenience to traffic has failed to solve the traffic problems. See Section 4C.02 of the 2009 MUTCD for application.*

Condition A - Minimum Vehicular Volume									
Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)				Vehicles per hour on higher-volume minor street approach (one direction only)			
Major Street	Minor Street	100%	80%	70%	56%	100%	80%	70%	56%
1	1	500	400	350	280	150	120	105	84
2 or More	1	600	480	420	336	150	120	105	84
2 or More	2 or More	600	480	420	336	200	160	140	112
1	2 or More	500	400	350	280	200	160	140	112

Condition B - Interruption of Continuous Traffic									
Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)				Vehicles per hour on higher-volume minor street approach (one direction only)			
Major Street	Minor Street	100%	80%	70%	56%	100%	80%	70%	56%
1	1	750	600	525	420	75	60	53	42
2 or More	1	900	720	630	504	75	60	53	42
2 or More	2 or More	900	720	630	504	100	80	70	56
1	2 or More	750	600	525	420	100	80	70	56

Condition A Evaluation

Number of Unique Hours Met: 2 Condition A Satisfied? No

Condition B Evaluation

Number of Unique Hours Met: 13 Condition B Satisfied? Yes

Combination of Condition A and Condition B Evaluation

Number of Unique Hours Met for Condition A: N/A

Number of Unique Hours Met for Condition B: N/A

Combination of Condition A and Condition B Satisfied? N/A

MUTCD WARRANT 2, FOUR-HOUR VEHICULAR VOLUME

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

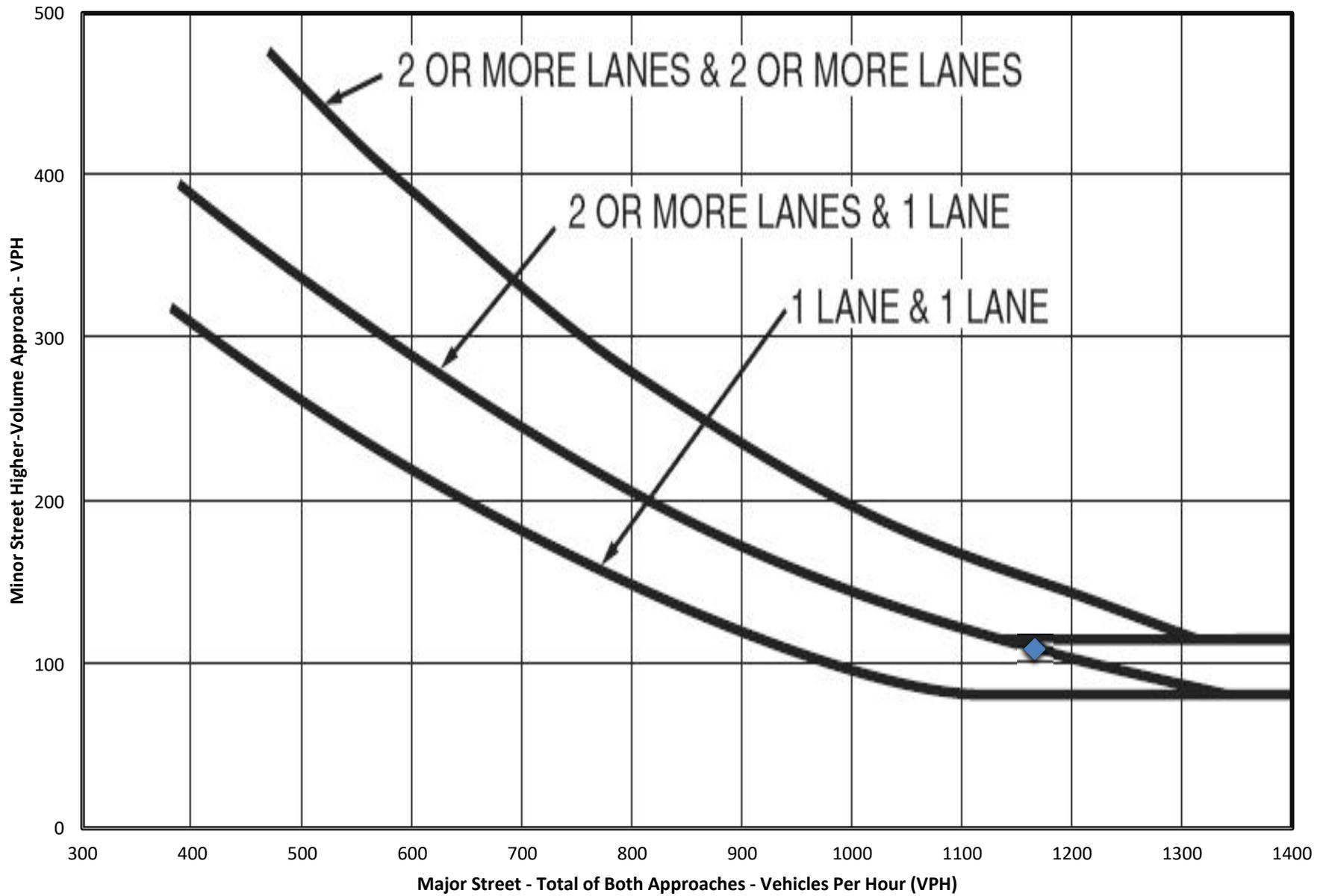
Total Number of Unique Hours Met On Figure 4C-1
12

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

Hourly Vehicular Volume			
Hour Interval	Major Street Combined	Highest Minor Street Approach	Hour Met?
Beginning At	Vehicles Per Hour (VPH)	Vehicles Per Hour (VPH)	
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	1166	110	Met
5:30 AM	1166	110	Met
5:45 AM	1166	110	Met
6:00 AM	1166	110	Met
6:15 AM	1791	205	Met
6:30 AM	1791	205	Met
6:45 AM	1791	205	Met
7:00 AM	1791	205	Met
7:15 AM	1788	179	Met
7:30 AM	1788	179	Met
7:45 AM	1788	179	Met
8:00 AM	1788	179	Met
8:15 AM	1569	119	Met
8:30 AM	1569	119	Met
8:45 AM	1569	119	Met
9:00 AM	1569	119	Met
9:15 AM	1555	88	Met
9:30 AM	1555	88	Met
9:45 AM	1555	88	Met
10:00 AM	1555	88	Met
10:15 AM	1714	86	Met
10:30 AM	1714	86	Met
10:45 AM	1714	86	Met
11:00 AM	1714	86	Met
11:15 AM	1945	110	Met
11:30 AM	1945	110	Met
11:45 AM	1945	110	Met

Hourly Vehicular Volume			
Hour Interval	Major Street Combined	Highest Minor Street Approach	Hour Met?
Beginning At	Vehicles Per Hour (VPH)	Vehicles Per Hour (VPH)	
12:00 PM	1945	110	Met
12:15 PM	1886	100	Met
12:30 PM	1886	100	Met
12:45 PM	1886	100	Met
1:00 PM	1886	100	Met
1:15 PM	1982	75	
1:30 PM	1982	75	
1:45 PM	1982	75	
2:00 PM	1982	75	
2:15 PM	2117	81	Met
2:30 PM	2117	81	Met
2:45 PM	2117	81	Met
3:00 PM	2117	81	Met
3:15 PM	2278	99	Met
3:30 PM	2278	99	Met
3:45 PM	2278	99	Met
4:00 PM	2278	99	Met
4:15 PM	2392	109	Met
4:30 PM	2392	109	Met
4:45 PM	2392	109	Met
5:00 PM	2392	109	Met
5:15 PM	2093	112	Met
5:30 PM	2093	112	Met
5:45 PM	2093	112	Met
6:00 PM	2093	112	Met
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 Figure 4C-1. Warrant 2, Four-Hour Vehicular Volume



Main Street and Smithworks Boulevard

Traffic Signal Warrant Analysis Workbook

2/16/2023

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 (E-Bound)	Minor Street Approach #2 (W-Bound)
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	76	174	250	83	40
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	179	337	516	195	72
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	175	278	453	163	68
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	175	145	320	116	33
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	173	129	302	95	40
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	195	161	356	88	43
11:15 AM	11:29 AM			0		
11:30 AM	11:44 AM			0		
11:45 AM	11:59 AM			0		

Traffic Signal Warrant Analysis Workbook

2/16/2023

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 (E-Bound)	Minor Street Approach #2 (W-Bound)
Begin At	End Of	Volume	Volume	Total Volume	Volume	Volume
12:00 PM	12:14 PM	263	190	453	102	33
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	240	170	410	89	38
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	247	170	417	78	25
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	320	183	503	80	23
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	463	210	673	89	28
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	527	255	782	84	43
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	455	212	667	85	41
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:		3488	2614	6102	1347	527

MUTCD WARRANT 1, EIGHT-HOUR VEHICULAR VOLUME

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

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

Combination of Conditions A and B Necessary?*: No

**Only applicable for Warrant 1 if after an adequate trial of other alternatives that could cause less delay and inconvenience to traffic has failed to solve the traffic problems. See Section 4C.02 of the 2009 MUTCD for application.*

Condition A - Minimum Vehicular Volume									
Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)				Vehicles per hour on higher-volume minor street approach (one direction only)			
Major Street	Minor Street	100%	80%	70%	56%	100%	80%	70%	56%
1	1	500	400	350	280	150	120	105	84
2 or More	1	600	480	420	336	150	120	105	84
2 or More	2 or More	600	480	420	336	200	160	140	112
1	2 or More	500	400	350	280	200	160	140	112

Condition B - Interruption of Continuous Traffic									
Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)				Vehicles per hour on higher-volume minor street approach (one direction only)			
Major Street	Minor Street	100%	80%	70%	56%	100%	80%	70%	56%
1	1	750	600	525	420	75	60	53	42
2 or More	1	900	720	630	504	75	60	53	42
2 or More	2 or More	900	720	630	504	100	80	70	56
1	2 or More	750	600	525	420	100	80	70	56

Condition A Evaluation

Number of Unique Hours Met: 1 Condition A Satisfied? No

Condition B Evaluation

Number of Unique Hours Met: 1 Condition B Satisfied? No

Combination of Condition A and Condition B Evaluation

Number of Unique Hours Met for Condition A: N/A

Number of Unique Hours Met for Condition B: N/A

Combination of Condition A and Condition B Satisfied? N/A

MUTCD WARRANT 2, FOUR-HOUR VEHICULAR VOLUME

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

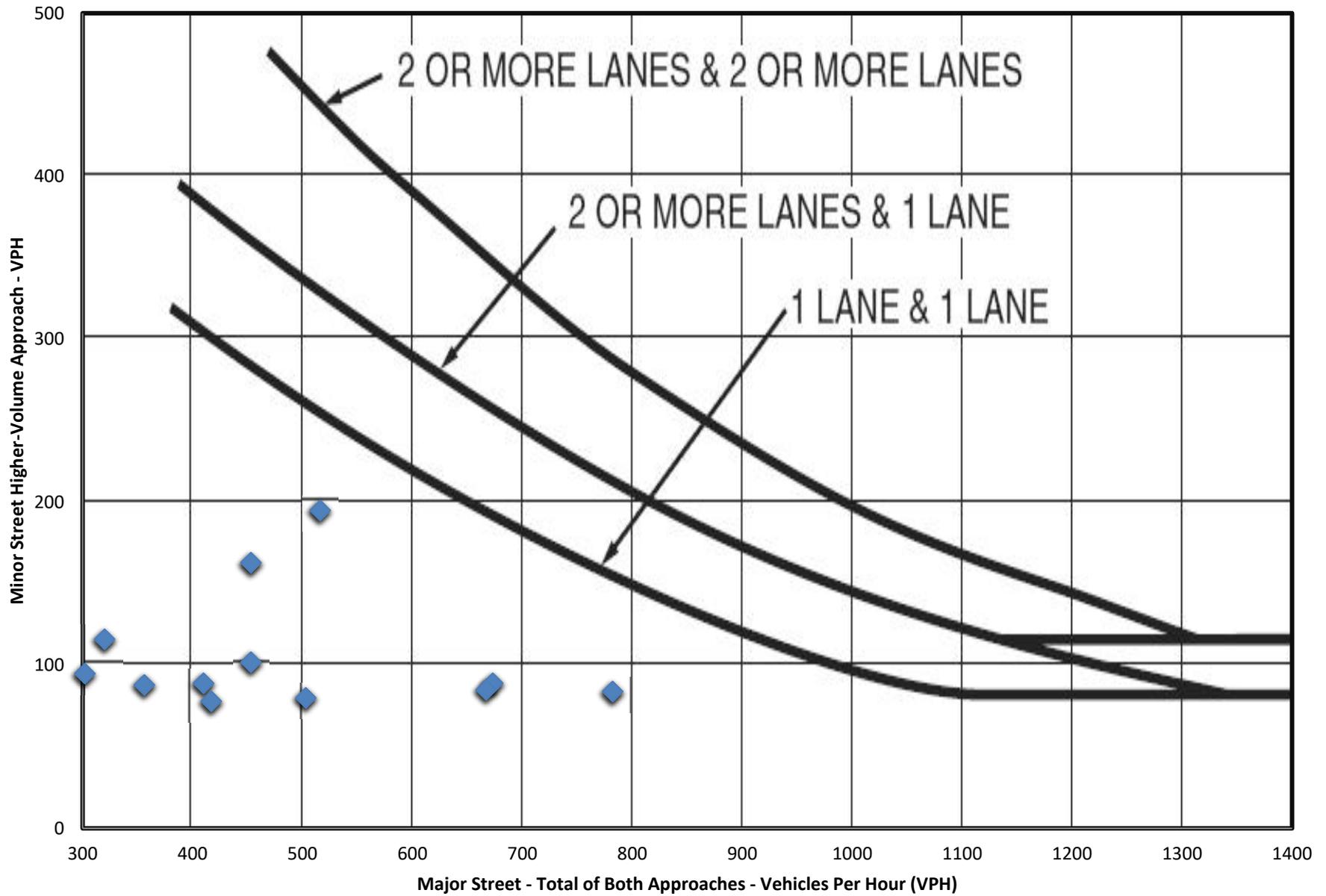
Total Number of Unique Hours Met On Figure 4C-1
0

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

Hourly Vehicular Volume			
Hour Interval	Major Street Combined	Highest Minor Street Approach	Hour Met?
Beginning At	Vehicles Per Hour (VPH)	Vehicles Per Hour (VPH)	
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	250	83	
5:30 AM	250	83	
5:45 AM	250	83	
6:00 AM	250	83	
6:15 AM	516	195	
6:30 AM	516	195	
6:45 AM	516	195	
7:00 AM	516	195	
7:15 AM	453	163	
7:30 AM	453	163	
7:45 AM	453	163	
8:00 AM	453	163	
8:15 AM	320	116	
8:30 AM	320	116	
8:45 AM	320	116	
9:00 AM	320	116	
9:15 AM	302	95	
9:30 AM	302	95	
9:45 AM	302	95	
10:00 AM	302	95	
10:15 AM	356	88	
10:30 AM	356	88	
10:45 AM	356	88	
11:00 AM	356	88	
11:15 AM	453	102	
11:30 AM	453	102	
11:45 AM	453	102	

Hourly Vehicular Volume			
Hour Interval	Major Street Combined	Highest Minor Street Approach	Hour Met?
Beginning At	Vehicles Per Hour (VPH)	Vehicles Per Hour (VPH)	
12:00 PM	453	102	
12:15 PM	410	89	
12:30 PM	410	89	
12:45 PM	410	89	
1:00 PM	410	89	
1:15 PM	417	78	
1:30 PM	417	78	
1:45 PM	417	78	
2:00 PM	417	78	
2:15 PM	503	80	
2:30 PM	503	80	
2:45 PM	503	80	
3:00 PM	503	80	
3:15 PM	673	89	
3:30 PM	673	89	
3:45 PM	673	89	
4:00 PM	673	89	
4:15 PM	782	84	
4:30 PM	782	84	
4:45 PM	782	84	
5:00 PM	782	84	
5:15 PM	667	85	
5:30 PM	667	85	
5:45 PM	667	85	
6:00 PM	667	85	
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 Figure 4C-1. Warrant 2, Four-Hour Vehicular Volume



Appendix N

Parking Evaluation

Weekday

	Apartments (Based on Borough Parking Data)		Restaurant (ITE Land Use Code 932)		Coffee Sop (ITE Land Use Code 936)		Small Office (ITE Land Use Code 712)		
Peak Parking Demand	217		64		38		12		
Time	% Of Peak Parking Demand ⁽¹⁾	Parked Vehicles	% Of Peak Parking Demand ⁽²⁾	Parked Vehicles	% Of Peak Parking Demand ⁽³⁾	Parked Vehicles	% Of Peak Parking Demand ⁽⁴⁾	Parked Vehicles	Total
12:00 AM	100	217	0	0		0		0	217
1:00 AM	100	217	0	0		0		0	217
2:00 AM	100	217	0	0		0		0	217
3:00 AM	100	217	0	0		0		0	217
4:00 AM	100	217	0	0		0		0	217
5:00 AM	94	204	0	0		0		0	204
6:00 AM	83	180	10	6		0		0	186
7:00 AM	71	154	25	16	73	28	0	0	198
8:00 AM	61	132	68	44	100	38	27	3	217
9:00 AM	55	119	72	46	63	24	69	8	197
10:00 AM	54	117	77	49	57	22	88	11	199
11:00 AM	53	115	83	53	42	16	100	12	196
12:00 PM	50	109	100	64	39	15	81	10	198
1:00 PM	49	106	81	52	27	10	81	10	178
2:00 PM	49	106	54	35		0	84	10	151
3:00 PM	50	109	33	21		0	86	10	140
4:00 PM	58	126	26	17		0	92	11	154
5:00 PM	64	139	29	19		0	85	10	168
6:00 PM	67	145	58	37		0	4	0	182
7:00 PM	70	152	70	45		0	0	0	197
8:00 PM	76	165	77	49		0		0	214
9:00 PM	83	180	61	39		0		0	219
10:00 PM	90	195	41	26		0		0	221
11:00 PM	93	202		0		0		0	202

(1) Based on ITE data for Multifamily Housing (Mid-Rise), ITE Land Use Code 221.

(2) Based on ITE data for High Turnover (Sit-Down) Restaurant, ITE Land Use Code 932.

(3) Based on ITE data for Coffee/Donut Shop without Drive-Through Window, ITE Land Use Code 936.

(4) Based on ITE data for Small Office Building, ITE Land Use Code 712.

Saturday

	Apartments (Based on Borough Parking Data)		Restaurant (ITE Land Use Code 932)		Coffee Sop (ITE Land Use Code 936)		Small Office (ITE Land Use Code 712)		
Peak Parking Demand	217		63		53		0		
Time	% Of Peak Parking Demand ⁽¹⁾	Parked Vehicles	% Of Peak Parking Demand ⁽²⁾	Parked Vehicles	% Of Peak Parking Demand ⁽³⁾	Parked Vehicles	% Of Peak Parking Demand ⁽⁴⁾	Parked Vehicles	Total
12:00 AM	100	217	0	0		0		0	217
1:00 AM	100	217	0	0		0		0	217
2:00 AM	100	217	0	0		0		0	217
3:00 AM	100	217	0	0		0		0	217
4:00 AM	100	217	0	0		0		0	217
5:00 AM	99	215	0	0		0		0	215
6:00 AM	97	210	15	9		0		0	219
7:00 AM	95	206	28	18	100	53	0	0	277
8:00 AM	88	191	52	33	90	48	27	0	272
9:00 AM	83	180	75	47	80	42	69	0	269
10:00 AM	75	163	91	57	65	34	88	0	254
11:00 AM	71	154	100	63	62	33	100	0	250
12:00 PM	68	148	90	57	40	21	81	0	226
1:00 PM	66	143	50	32	32	17	81	0	192
2:00 PM	70	152	44	28		0	84	0	180
3:00 PM	69	150	37	23		0	86	0	173
4:00 PM	72	156	48	30		0	92	0	186
5:00 PM	74	161	64	40		0	85	0	201
6:00 PM	74	161	90	57		0	4	0	218
7:00 PM	73	158	100	63		0	0	0	221
8:00 PM	75	163	89	56		0		0	219
9:00 PM	78	169	71	45		0		0	214
10:00 PM	82	178	56	35		0		0	213
11:00 PM	88	191		0		0		0	191

(1) Based on ITE data for Multifamily Housing (Mid-Rise), ITE Land Use Code 221.

(2) Based on ITE data for High Turnover (Sit-Down) Restaurant, ITE Land Use Code 932.

(3) Based on ITE data for Coffee/Donut Shop without Drive-Through Window, ITE Land Use Code 936.

(4) Based on ITE data for Small Office Building, ITE Land Use Code 712.