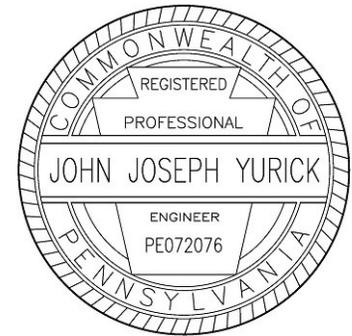


Transportation Impact Study for the French Creek West Development

Phoenixville Borough, Chester County, PA



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Executive Summary

Rockwell Custom proposes to develop the French Creek West residential development, which includes 551 multi-family units. The proposed development will be located on the west side of Main Street between Bridge Street and High Street in the Borough of Phoenixville, Chester County, Pennsylvania (**Figure 1**). Access to the site is proposed to be provided via an unsignalized full-movement access along N. Main Street and potentially a second access along Paradise Street through an extension of the existing roadway. A site plan, prepared by T&M Associates and dated March 8, 2018 is shown in **Figure 2**.

The scope of this Transportation Impact Study is 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). A copy of the scoping memo between the applicant and the Borough is included in **Appendix A**.

The purpose of this Transportation Impact Study is to evaluate the traffic impacts of the proposed development. The scope of this study includes an evaluation of the existing weekday morning and weekday afternoon peak hours, as well as the future 2025 build-out both without and with the development at the following study intersections:

- Main Street and High Street
- Main Street and Riverworks Access/Proposed Site Access
- Main Street and Bridge Street
- Bridge Street and Starr Street (S.R. 0029)
- Nutt Road (S.R. 0023) and Paradise Street
- Nutt Road (S.R. 0023) and Mason Street
- Nutt Road (S.R. 0023) and Bridge Street (S.R. 0113, S.R. 1019)
- Bridge Street (S.R. 0113) and Wheatland Street

Based on trip generation data compiled for Multifamily Housing (Mid-Rise) (ITE Land Use Code 221) and Multifamily Housing (Low-Rise) (ITE Land Use Code 220) contained in the Institute of Transportation Engineers (ITE) publication entitled, *Trip Generation Manual, 10th Edition*, the proposed development will generate a total of approximately 221 trips during the weekday morning peak hour and 265 trips during the weekday afternoon peak hour.

Based on the foregoing evaluation and conclusions, the following improvements and considerations are recommended in conjunction with the French Creek West residential development:

- Provide the roadway connection to Paradise Street in order to reduce traffic impacts throughout the study area. The actual roadway configuration and access point to Nutt Road (S.R. 0023), whether it occurs at Paradise Street or Mason Street, will need to be further considered. A traffic signal should be provided at one of these intersections, and the center left-turn lane along S.R. 0023 should be converted to a dedicated left-turn lane.

Main Street Site Access

- Provide a separate left-turn lane and a shared through/right-turn lane on the site access approach to the intersection to mirror the separate left-turn lane and a shared through/right-turn lane on the Riverworks access approach.
- Provide appropriate corner radius length, which will be verified based on the largest vehicle anticipated to utilize the driveway.
- Provide stop-control on the egress approach.
- A separate 100-foot northbound N. Main Street left-turn lane is warranted based on PennDOT's turn lane warrant criteria. However, due to the width of N. Main Street across the bridge over French Creek just south of the site, it is not feasible to provide this lane.
- A separate southbound N. Main Street right-turn lane is not warranted at this intersection.
- Based on the future traffic volumes, a traffic signal is not warranted at this intersection. However, due to the poor operating conditions in the future with the traffic generated by the development, this intersection should be monitored in the future to determine whether the intersection meets traffic signal warrants during the build-out of the development.

Internal Circulation

- Detailed review of the design and configuration of roadways, alleys, sidewalks, parking, and trail connections should be conducted during the land development phase.
- Pedestrian crossing and appropriate signing and pavement markings should be provided within the site and particularly along Road A. Connections to the Schuylkill River Trail should be considered.

Off-Site Intersections

- Existing constraints generally limit the ability to provide additional capacity at the off-site study intersections to improve existing operations and future traffic impacts by the proposed development. As such, adaptive traffic control technology should be considered to help alleviate some of the congested traffic operations.
- Continue to plan for improvements to the Nutt Road intersections that were identified in the *Nutt Road Traffic Evaluation* report, dated March 8, 2017, which included significant improvement alternatives at the Nutt Road/Bridge Street intersection as well as signalized access to Nutt Road from either Paradise Street or Mason Street.
- With a site connection to Paradise Street (Scenario 2), a traffic signal is warranted at the Nutt Road intersection with Paradise Street (or potentially to Mason Street depending on the design and configuration of the roadway connection).
- The pedestrian accommodations at the Bridge Street/S. Main Street intersection will be more thoroughly evaluated during the completion of the Borough's Walkability and ADA Study.
- Neither traffic signal nor all-way stop control is warranted at the intersection of Main Street and High Street. However, all-way stop control would improve traffic conditions at this intersection. As such, the applicant should monitor this intersection in the future to determine whether a traffic signal or all-way stop control is warranted.

Existing Transportation Settings and Conditions

The proposed development will be located on the west side of Main Street between Bridge Street and High 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 3**.

Table 3. Existing Roadway Characteristics

Roadway Name (Jurisdiction)	Average Daily Traffic Volumes (vehicles per day)	Roadway Classification		Travel Lanes (per direction)	Posted Speed Limit (mph)
		Roadway Typology ⁽¹⁾	PennDOT/ Township ⁽²⁾		
Bridge Street (S.R. 0113 – State) Between Nutt Road and Gay Street	10,953 ⁽³⁾	Community Arterial	Urban – Principal Arterial	1	25
Bridge Street (S.R. 1019 – State) South of Nutt Road	7,165 ⁽³⁾	Community Arterial	Urban – Minor Arterial	1	25
Bridge Street (Local) Between Gay Street and Starr Street	9,351 ⁽³⁾	Community Collector	Local	1	25
Nutt Road (S.R. 0023/0113 - State) north of Bridge Street	24,801 ⁽³⁾	Community Arterial	Urban – Minor Arterial	1	35
Nutt Road (S.R. 0023 - State) south of Bridge Street	11,521 ⁽³⁾	Community Arterial	Urban –Principal Arterial	1	35
Starr Street (S.R. 0029 –State)	10,014 ⁽³⁾	Community Arterial	Urban –Principal Arterial	1	25
Main Street (Local)	9,155 ⁽³⁾	Neighborhood Collector	Local	1	25
Wheatland Street (Local)	n/a	Local	Local	1	25
Paradise Street (Local)	n/a	Local	Local	1	25
Mason Street (Local)	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 Internet Traffic Monitoring System (iTMS) website.

(3) Based on traffic data from PennDOT’s Internet Traffic Monitoring System (iTMS) website.

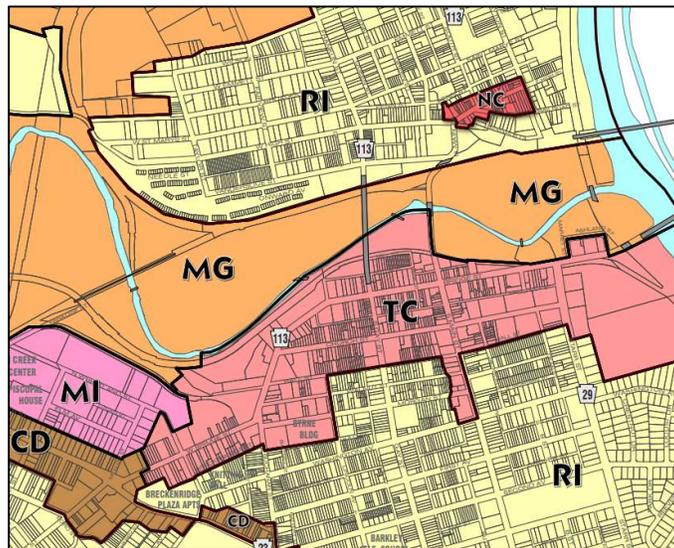
The following key intersections in the vicinity of the site comprise the study area:

- Main Street and High Street
- Main Street and Riverworks Access/Proposed Site Access
- Main Street and Bridge Street
- Bridge Street and Starr Street (S.R. 0029)
- Nutt Road (S.R. 0023) and Paradise Street
- Nutt Road (S.R. 0023) and Mason Street
- Nutt Road (S.R. 0023) and Bridge Street (S.R. 0113, S.R. 1019)
- Bridge Street (S.R. 0113) and Wheatland Street

The study intersections were reviewed and agreed upon by the Borough of Phoenixville. The existing characteristics of the study intersections, including photographs, 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 District as seen in the Borough of Phoenixville Zoning Map below.



Source: Borough of Phoenixville Zoning Map, dated July 2014

Area Transit Services

SEPTA Bus Route 99 currently runs along Bridge Street with a stop at the intersection of Prospect Street. SEPTA Bus Route 139 currently runs along Nutt Road (S.R. 0023), Bridge Street, Gay Street (S.R.

0113) and Main Street, with the stop located at Bridge Street and Main Street being the closest to the proposed development.

Pedestrian-Bicycle Facilities

The proposed development is located within the Borough of Phoenixville, which provides an extensive network of sidewalks and pedestrian facilities. Among the study area roadways, sidewalk is currently provided only on the west side of Main Street, while sidewalk is provided on both sides of High Street, Bridge Street, Wheatland Street, Mason Street, and Nutt Road (S.R. 0023). The Schuylkill River Trail, which provides a pedestrian and bicycle connection from Parker Ford to the City of Philadelphia, runs along French Creek within the proposed site.

Traffic Count Data

Daily traffic counts were obtained from PennDOT's Internet Traffic Monitoring System (iTMS) website. The traffic count data is provided in **Appendix C**.

Manual turning movement traffic counts, as well as queue observations at the signalized intersections, were conducted in May 2018 during the weekday morning (6:00 AM – 10:00 AM) and weekday afternoon (3:00 PM – 7:00 PM) peak periods at the following locations:

- Main Street and High Street
- Main Street and Bridge Street
- Bridge Street and Starr Street (S.R. 0029)
- Nutt Road (S.R. 0023) and Mason Street
- Nutt Road (S.R. 0023) and Bridge Street (S.R. 0113, S.R. 1019)

Additional traffic counts were provided by the applicant (and conducted by Heinrich & Klein Associates, Inc.) for the remaining study intersections. These traffic counts were conducted in January 2018 between 7:00 AM and 9:00 AM, as well as between 4:00 PM and 6:00 PM. This data appears to capture the commuter peak hours.

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 peak hour traffic volumes are depicted in **Figure 3A** for the weekday morning and weekday afternoon peak hours. Specific details regarding the analysis results and traffic operations are provided later in this report.

Crash Summary

Reportable crash data was obtained from PennDOT for the five year period from January 1, 2013 to December 31, 2017. A reportable crash is defined as a crash in which there was an injury and/or a vehicle needed to be towed from the scene. Table 4 below provides a summary of the reportable crashes at each of the study intersections.

**Table 4. Reportable Crash Summary
January 1, 2013 to December 31, 2017**

Location	Traffic Control	Frequency of Crashes (Number per Year)						Average Per Year
		2013	2014	2015	2016	2017	Total	
Nutt Road (S.R. 0023) and Paradise Street	TWSC	2	0	0	0	0	2	0.4
Nutt Road (S.R. 0023) and Mason Street	TWSC	0	0	0	0	1	1	0.2
Nutt Road (S.R. 0023) and Bridge Street (S.R. 1019, 0113)	Signal	0	0	3	3	0	6	1.2
Nutt Road (S.R. 0023) and Bridge Street Merge (S.R. 0113)	Yield	2	0	0	0	0	2	0.4
Bridge Street (S.R. 0113) and Wheatland Street	TWSC	0	0	0	0	0	0	0.0
Bridge Street and S. Main Street	Signal	1	3	1	2	1	8	1.6
Bridge Street and Starr Street (S.R. 0029)	Signal	2	2	0	0	1	5	1.0
N. Main Street and Riverworks Access	TWSC	0	0	0	0	0	0	0.0
N. Main Street and High Street	TWSC	0	0	1	0	0	1	0.2
Total	---	7	5	5	5	3	25	5.0

PennDOT considers five reportable, correctable crashes over a twelve month period during the past five years as a threshold value. Based on a review of the reportable crashes within the study area, none of the study intersections meet this threshold value. However, it is noted that five of the eight reportable crashes at the intersection of Bridge Street and S. Main Street involved pedestrians and resulted in injuries. The pedestrian accommodations at the Bridge Street/S. Main Street intersection will be more thoroughly evaluated during the completion of the Borough's Walkability and ADA Study.

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, 10th Edition*. **Table 5** presents the anticipated vehicular trip generation for the proposed development.

Table 5. Vehicular Trip Generation

Land Use	Size	Daily	Weekday Morning Peak Hour			Weekday Afternoon Peak Hour		
			In	Out	Total	In	Out	Total
Apartments ⁽¹⁾	240 units	1,306	21	60	81	63	40	103
Townhomes ⁽²⁾	311 units	2,310	32	108	140	102	60	162
Total	551 units	3,616	53	168	221	165	100	265

(1) ITE Land Use Code 221 for Multifamily Housing (Mid-Rise).

(2) ITE Land Use Code 220 for Multifamily Housing (Low-Rise)

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 are illustrated in **Figures 4A and 4C**. Application of the percentages illustrated in Figures 4A and 4C to the new peak hour trips contained in Table 5, provides an estimate of site traffic to be added to the study area. The site-generated traffic is also shown in **Figures 4B and 4D** for the weekday morning and weekday afternoon peak hours.

Site Access Configuration and Traffic Control

Two access scenarios were analyzed as part of the proposed development. Scenario 1 provides one access along N. Main Street directly opposite the existing Riverworks Access. Scenario 2 provides the connection to N. Main Street as well as the extension of Paradise Street that would ultimately provide a new roadway connection through the site from N. Main Street to Nutt Road (S.R. 0023).

The recommendations for the proposed access designs, including auxiliary turn lanes, traffic control, and geometric design, were based on industry accepted criteria and guidelines. Specifically, 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*.

Additionally, the geometric design 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, and Borough Ordinances.

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. It is noted that the site access improvements at the Main Street site access are the same under both scenarios.

Site Access / Riverworks Access and N. Main Street

- Provide a separate left-turn lane and a shared through/right-turn lane on the site access approach to the intersection to mirror the separate left-turn lane and a shared through/right-turn lane on the Riverworks access approach.
- Provide appropriate corner radius length, which will be verified based on the largest vehicle anticipated to utilize the driveway.
- Provide stop-control on the egress approach.
- A separate 100-foot northbound N. Main Street left-turn lane is warranted based on PennDOT's turn lane warrant criteria. However, due to the width of N. Main Street across the bridge over French Creek just south of the site, it is not feasible to provide this lane.
- A separate southbound N. Main Street right-turn lane is not warranted at this intersection.
- Based on the future traffic volumes, a traffic signal is not warranted at this intersection. However, due to the poor operating conditions in the future with the traffic generated by the development, this intersection should be monitored in the future to determine whether the intersection meets traffic signal warrants during the build-out of the development.

Sight Distance

Sight distance field measurements and an evaluation were performed at the proposed access intersection along N. Main Street. 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 locations.

**Table 6. Sight Distance Evaluation
Site Access and N. Main Street**

Movement	Direction	Posted Speed (mph)	Approximate Grade	PennDOT Requirements (feet)		Borough Requirements (feet) ⁽³⁾	Available Sight Distance (feet)
				Desirable ⁽¹⁾	Acceptable ⁽²⁾		
Exiting	Looking Left	25	-4.0%	250	172	300	344
	Looking Right	25	+1.0%	273	159	300	805
Left turn Entering	Looking Ahead	25	-4.0%	190	172	300	345
	From the Rear	25	+1.0%	n/a	159	300	576

- (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.
- (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.
- (3) Based on §22-411 of the Borough of Phoenixville Zoning Ordinance which requires a minimum sight distance of 300 feet along collector roadways.

As shown in Table 6, all of the existing available sight distances at the site access intersection meet PennDOT’s desirable sight distance criteria, where applicable, as well as Borough requirements. Vehicles entering the site access via left-turn have an available looking ahead sight distance of 345 feet which meets minimum safe stopping sight distance requirements up to 39 miles per hour. Proper landscaping must be maintained along the site frontage on N. Main Street for provision of sight distances according to the above table. The actual available sight distances should be verified during detailed engineering of the site access. The PennDOT M-950S are completed and provided in **Appendix F** for the site access intersection.

Internal Site Circulation

In terms of layout, the primary internal street, Road A (as defined on the Erosion & Sediment plan sheets), will connect from the Main Street access to the Phase 5 residential units and to the potential Paradise Street connection, will provide a “ring road” type configuration. Other internal streets serving the townhouse units (Phases 1, 2, and 5) will intersect the ring road at several locations along Road A. Access to the apartment complex (Phase 4) and parking lot (Phase 3) will also intersection Road A. Although not shown on the plans, it is assumed that the street/driveway intersections with Road A will be stop sign controlled; however, all traffic control should be shown on future plan revisions. Residential driveways will not access Road A directly, but rather throughout a series of alleys. On-street parallel parking spaces are proposed along most roadways, including portions of Road A, as well as several alleys.

The characteristics internal roadways, alleys, and pedestrian facilities are described further below:

- Road A – is proposed to provide an approximate 10-foot wide landscaped median to create a boulevard through the site. An 11-foot wide travel lane is proposed in each direction. Curbside parallel parking is proposed along both sides of the street in the vicinity of Phase 3 and proposed along adjacent to the residential units along several additional sections of the roadway. Sidewalk is proposed along the north and east sides of Road A.
- Road B – is proposed to provide a 17-foot wide cartway with one travel lane in each direction. Curbside parallel parking is proposed along one or both sides of several sections of the roadway. Also, sidewalks are also proposed along both sides of Road B. Further consideration should be given to provide a direct connection to Road A, opposite the future Paradise Street connection, in order to provide a more direct route to/from the west (Nutt Road) for the northern sections of Phase 1 and 2.
- Road C – is proposed to provide a 10-foot wide cartway with one travel lane in the southbound direction only. Curbside parallel parking is proposed along the passenger side of the street. Also, sidewalks are also proposed along both sides of Road C.
- Road D – not labeled on the current plan.
- Road E – is proposed to provide a 10-foot wide cartway with one travel lane in the northbound direction only. Curbside parallel parking is proposed along the passenger side of the street. Also, sidewalks are also proposed along both sides of Road E.
- Road F – is proposed to provide a 17-foot wide cartway with one travel lane in each direction. Curbside parallel parking is proposed along one or both sides of several sections of the roadway. Also, sidewalks are also proposed along both sides of Road B.

The proposed alleyways are generally 16 feet wide. On-street parking (seven feet wide) is proposed within most alleys as previously noted. Several alleys dead-end, and therefore, considerations should be given to providing turn-around areas for general traffic and trash removal vehicles.

The Schuylkill River Trail that extends through the site will provide additional pedestrian facility, as well as off-road bicycle accommodations. The current plan does not show connections to this regional trail other than where the future Paradise Street connection would occur. Consideration of access to the trail should be given and appropriate facilities (i.e., crosswalks, signage, etc.) should be given particularly along Road A.

Due to the configuration of Road A, it will provide a relief route to non-local traffic. As such, it is recommended that the need for a truck restriction (except local deliveries) be further evaluated.

Future Traffic Conditions

This section presents the future build-out year 2025 traffic conditions, both without and with the proposed development, which is anticipated to be completed and occupied by 2025. The future 2025 build-out year without-development traffic volumes were estimated by increasing the existing 2018 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 2025 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 0.65 percent per year compounded for seven years to 2025, or 4.64 percent total to 2025. This growth rate is consistent with the traffic growth rate recommended by the PennDOT Bureau of Planning and Research *Growth Factors for August 2017 to July 2018* 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 28 nearby approved developments.

Information regarding the nearby approved developments, obtained from Phoenixville Borough, Schuylkill Township, and East Pikeland Township, is provided in **Appendix H**.

Planned Roadway Improvements

There are no known roadway improvements within the study area.

Future Traffic Conditions

The total background growth and nearby approved development traffic volumes were then added to the existing 2018 traffic volumes, resulting in the future 2025 without-development traffic volumes. Next, the site generated traffic volumes, as shown in Figure 4B, were added to the future 2025 without-development traffic volumes, resulting in the future 2018 with-development traffic volumes.

In the previously described Access Scenario 2 (due to the potential extension of Paradise Street) the traffic volumes during with development conditions were redistributed to the major roadways. The redistribution of traffic due to the connector road will depend on factors such as the existing traffic patterns, location of major roadways, and the location of the connector road. The redistribution of

traffic is illustrated in **Figure 4E**, and in several cases were based on assumptions from prior studies complete in the area.

The resultant future 2025 peak hour traffic volumes without development are illustrated in **Figure 5A**, and the future 2025 with-development peak hour traffic volumes are illustrated in **Figures 5B and 5C** for the weekday morning and weekday afternoon peak hours.

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 development, in accordance with the standard techniques contained in the current *Highway Capacity Manual (2010)* for both signalized and unsignalized intersections. The HCM 2010 Methodology within Synchro 10.1 (build 2, rev. 20) 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 G** 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 may 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 is not required.

According to the Borough's Subdivision and Land Development Ordinance, the following procedures and assumptions were utilized:

- Any overall intersection or movement delay that is below a LOS C and/or have a volume-to-capacity ration greater than 1.0 should be considered deficient.

The detailed capacity/level-of-service analysis worksheets are provided in **Appendices I, J, K, and L**.

Tables 7 and 8 below summarize the overall levels of service for the study, and the detailed results of the level-of-service analysis are contained in the matrices provided in **Tables 9 through 17**.

**Table 7. Overall Intersection Levels-of-Service – Scenario 1
Weekday Morning Peak Hour**

Intersection	Overall Level-of-Service (Delay in Seconds)		Delay Increase	Requires PennDOT Mitigation ⁽²⁾	Requires Borough Mitigation ⁽³⁾
	Without Development	With Development ⁽¹⁾			
N. Main Street and Riverworks Access / Site Access	A (1.9)	B (12.0)	+10.1	YES	YES ⁽⁴⁾
S. Main Street and Bridge Street	B (19.9)	D (46.8)	+26.9	YES	YES
N. Main Street and High Street	F (273.7)	F (324.5)	+50.8	YES	YES
Bridge Street and Starr Street (S.R. 0029)	E (66.8)	F (81.4)	+14.6	YES	YES
Bridge Street (S.R. 0113) and Wheatland Street	A (1.2)	A (1.3)	No LOS Change	NO	YES ⁽⁴⁾
Nutt Road (S.R. 0023) and Bridge Street (S.R. 0113)	D (47.8)	D (50.7)	No LOS Change	NO	YES ⁽⁴⁾
Nutt Road (S.R. 0023) and Paradise Street	A (0.2)	A (0.2)	No LOS Change	NO	YES ⁽⁴⁾
Nutt Road (S.R. 0023) and Mason Street	A (0.5)	A (0.5)	No LOS Change	NO	YES ⁽⁴⁾

Weekday Afternoon Peak Hour

Intersection	Overall Level-of-Service (Delay in Seconds)		Delay Increase	Requires PennDOT Mitigation ⁽²⁾	Requires Borough Mitigation ⁽³⁾
	Without Development	With Development ⁽¹⁾			
N. Main Street and Riverworks Access / Site Access	A (0.3)	A (2.9)	No LOS Change	NO	YES ⁽⁴⁾
S. Main Street and Bridge Street	C (20.9)	D (39.5)	+18.6	YES	YES
N. Main Street and High Street	E (48.6)	F (67.0)	+18.4	YES	YES
Bridge Street and Starr Street (S.R. 0029)	C (32.1)	D (37.2)	+5.1	NO	YES
Bridge Street (S.R. 0113) and Wheatland Street	A (2.0)	A (2.3)	No LOS Change	NO	YES ⁽⁴⁾
Nutt Road (S.R. 0023) and Bridge Street (S.R. 0113)	F (101.8)	F (114.1)	+12.3	YES	YES ⁽⁴⁾
Nutt Road (S.R. 0023) and Paradise Street	A (0.1)	A (0.1)	No LOS Change	NO	YES ⁽⁴⁾
Nutt Road (S.R. 0023) and Mason Street	A (4.5)	A (4.7)	No LOS Change	NO	YES ⁽⁴⁾

- (1) With-development base conditions without improvements.
- (2) Based on the difference in delay from without-development to with-development conditions, in accordance with PennDOT's level of service requirements.
- (3) Based on the Borough's Subdivision and Land Development Ordinance (Section 22-602).
- (4) Borough mitigation required due to individual movement operation (see Tables 9 through 18).

**Table 8. Overall Intersection Levels-of-Service – Scenario 2
Weekday Morning Peak Hour**

Intersection	Overall Level-of-Service (Delay in Seconds)		Delay Increase	Requires PennDOT Mitigation ⁽²⁾	Requires Borough Mitigation ⁽³⁾
	Without Development	With Development ⁽¹⁾			
N. Main Street and Riverworks Access / Site Access	A (1.9)	A (8.7)	No LOS Change	NO	YES ⁽⁴⁾
S. Main Street and Bridge Street	B (19.9)	C (29.6)	+9.7	NO	YES ⁽⁴⁾
N. Main Street and High Street	F (273.7)	F (284.7)	+11.0	YES	YES
Bridge Street and Starr Street (S.R. 0029)	E (66.8)	E (79.0)	NO LOS Change	NO	YES
Bridge Street (S.R. 0113) and Wheatland Street	A (1.2)	A (1.2)	No LOS Change	NO	YES ⁽⁴⁾
Nutt Road (S.R. 0023) and Bridge Street (S.R. 0113)	D (47.8)	D (45.7)	No LOS Change	NO	YES ⁽⁴⁾
Nutt Road (S.R. 0023) and Paradise Street	A (0.2)	D (30.8)	+30.6	NO	YES
Nutt Road (S.R. 0023) and Mason Street	A (0.5)	A (0.5)	No LOS Change	NO	YES ⁽⁴⁾

Weekday Afternoon Peak Hour

Intersection	Overall Level-of-Service (Delay in Seconds)		Delay Increase	Requires PennDOT Mitigation ⁽²⁾	Requires Borough Mitigation ⁽³⁾
	Without Development	With Development ⁽¹⁾			
N. Main Street and Riverworks Access / Site Access	A (0.3)	A (3.5)	No LOS Change	NO	YES ⁽⁴⁾
S. Main Street and Bridge Street	C (20.9)	C (31.5)	No LOS Change	NO	YES ⁽⁴⁾
N. Main Street and High Street	E (48.6)	F (56.2)	+7.6	NO	YES ⁽⁴⁾
Bridge Street and Starr Street (S.R. 0029)	C (32.1)	C (34.4)	No LOS Change	NO	YES
Bridge Street (S.R. 0113) and Wheatland Street	A (2.0)	A (1.7)	No LOS Change	NO	YES
Nutt Road (S.R. 0023) and Bridge Street (S.R. 0113)	F (101.8)	F (95.7)	-6.1	NO	YES
Nutt Road (S.R. 0023) and Paradise Street	A (0.1)	C (21.6)	+21.5	NO	YES ⁽⁴⁾
Nutt Road (S.R. 0023) and Mason Street	A (4.5)	A (3.5)	-1.0	NO	YES ⁽⁴⁾

- (1) With-development base conditions without improvements.
- (2) Based on the difference in delay from without-development to with-development conditions, in accordance with PennDOT's level of service requirements.
- (3) Based on the Borough's Subdivision and Land Development Ordinance (Section 22-602).
- (4) Borough mitigation required due to individual movement operation (see Tables 9 through 18).

As shown above, none of the study intersections will satisfy the Borough's level-of-service criteria, nor will PennDOT's operational requirements be achieved, thereby, mitigation measures are necessary. The following improvements are necessary to mitigate the proposed development.

Scenario 1

Main Street and Bridge Street

- Provide a separate right-turn lane along the southbound approach of Main Street.
- Provide a separate right-turn lane along the westbound approach of Bridge Street.
- Modify signal timings.

Bridge Street and Starr Street (S.R. 0029)

- Provide a separate right-turn lane along the eastbound approach of Bridge Street.
- Modify signal timings.

Scenario 2

Main Street and Bridge Street

- Provide a separate right-turn lane along the southbound approach of Main Street.
- Provide a separate right-turn lane along the westbound approach of Bridge Street.
- Modify signal timings.

Bridge Street and Starr Street (S.R. 0029)

- Provide a separate right-turn lane along the eastbound approach of Bridge Street.
- Modify signal timings.

However, there are significant physical constraints at the study intersections that preclude additional geometric widening for added capacity. As such, in order to improve the study intersection operations, we recommend the following:

- Provide the vehicular connection to Paradise Street as this additional outlet will relieve overall delay at the study intersections during the peak hours.
- Provide adaptive traffic signal control along Bridge Street and Nutt Road (S.R. 0023) to better manage peak traffic flows. An adaptive traffic signal system can potentially alleviate some congestion during transition times before and after the peak traffic conditions, as well as improve off-peak traffic flows.
- Continue to plan for the recommendations identified in the Borough's *Nutt Road Traffic Evaluation*, dated March 8, 2017.

Queuing Analysis

A queuing analysis was completed at the study intersections based on the HCM 2010 methodology. The queue lengths will extend past the current turn lane storage length at the following intersections:

Main Street and Bridge Street

- Southbound left movement during all conditions.
- The proposed development will significantly increase this queue, especially during the weekday morning peak hour (approximately a 20 vehicle increase).
- In addition, the diversions associated with the Paradise Street connection will also increase the queuing for this movement under Scenario 2.

Bridge Street and Starr Street (S.R. 0029)

- Westbound left movement during all conditions.
- The proposed development will significantly increase this queue during the weekday afternoon peak hour (approximately a nine vehicle increase)

Nutt Road (S.R. 0023) and Bridge Street (S.R. 0113, S.R. 1019)

- Eastbound left movement during all conditions.
- Northbound left movement during all conditions.
- Southbound approach during all conditions.
- Under Scenario 1, the proposed development will significantly increase each of these queues by up to 10 vehicles. However, under Scenario 2 with the traffic diversions to the Paradise Street connection, these queues will be no worse than the without development queues, and in some cases, the queues will be reduced as compared to the without development queues.

Matrices summarizing the results of the queuing analysis are provided in **Tables 18 and 26**.

Conclusions and Recommendations

Based on the foregoing traffic evaluation, the following conclusions are noted with respect to existing and future traffic operations, as well as traffic impacts, of the surrounding roadway network and study intersections:

- Most of the study intersections currently do not satisfy the Borough's level-of-service requirement (i.e., LOS C operations for the overall intersection and individual movements) during the weekday morning and afternoon commuter peak hours. These intersections will continue to function unsatisfactorily in the future both without and with development conditions.
- When site traffic causes a future level-of-service degradation, increases to the overall intersection delay during the peak hours range between approximately 5 to 50 seconds under the single access scenario (Scenario 1).
- Mitigation of unsatisfactory level of service conditions due to additional development traffic is geometrically constrained due to a variety of factors. A second access scenario (Scenario 2) was evaluated to determine the potential benefits of also providing an access connection to Nutt Road via Paradise Street since traditional mitigation is limited. With the Paradise Street connection, the future changes to the overall intersection delay during the peak hours range between a net reduction of approximately six (6) seconds to and approximately increase of 21 seconds.
- Overall, the internal roadway network within the proposed French Creek West community is ideally configured with a neighborhood collector roadway (Road A) that will carry traffic through the development and to other internal roadways/driveways. A detailed plan review of the specific design elements of the internal roadway network is still necessary.
- Sidewalks are proposed throughout the community providing a walkable environment. Further review and consideration of pedestrian crossing locations is needed.
- The Schuylkill River Trail runs through the community providing residents with an excellent bicycling and walking amenity. Connections from the residential roads and sidewalks to the regional trail need to be further considered.
- On-street parking is provided along most internal roadways, including many segments along Road A, as well as along many alleys.

Based on the foregoing evaluation and conclusions, the following improvements and considerations are recommended in conjunction with the French Creek West residential development:

- Provide the roadway connection to Paradise Street in order to reduce traffic impacts throughout the study area. The actual roadway configuration and access point to Nutt Road (S.R. 0023),

whether it occurs at Paradise Street or Mason Street, will need to be further considered. A traffic signal should be provided at one of these intersections, and the center left-turn lane along S.R. 0023 should be converted to a dedicated left-turn lane.

Main Street Site Access

- Provide a separate left-turn lane and a shared through/right-turn lane on the site access approach to the intersection to mirror the separate left-turn lane and a shared through/right-turn lane on the Riverworks access approach.
- Provide appropriate corner radius length, which will be verified based on the largest vehicle anticipated to utilize the driveway.
- Provide stop-control on the egress approach.
- A separate 100-foot northbound N. Main Street left-turn lane is warranted based on PennDOT's turn lane warrant criteria. However, due to the width of N. Main Street across the bridge over French Creek just south of the site, it is not feasible to provide this lane.
- A separate southbound N. Main Street right-turn lane is not warranted at this intersection.
- Based on the future traffic volumes, a traffic signal is not warranted at this intersection. However, due to the poor operating conditions in the future with the traffic generated by the development, this intersection should be monitored in the future to determine whether the intersection meets traffic signal warrants during the build-out of the development.

Internal Circulation

- Detailed review of the design and configuration of roadways, alleys, sidewalks, parking, and trail connections should be conducted during the land development phase.
- Pedestrian crossing and appropriate signing and pavement markings should be provided within the site and particularly along Road A. Connections to the Schuylkill River Trail should be considered.

Off-Site Intersections

- Existing constraints generally limit the ability to provide additional capacity at the off-site study intersections to improve existing operations and future traffic impacts by the proposed development. As such, adaptive traffic control technology should be considered to help alleviate some of the congested traffic operations.
- Continue to plan for improvements to the Nutt Road intersections that were identified in the *Nutt Road Traffic Evaluation* report, dated March 8, 2017, which included significant improvement alternatives at the Nutt Road/Bridge Street intersection as well as signalized access to Nutt Road from either Paradise Street or Mason Street.
- With a site connection to Paradise Street (Scenario 2), a traffic signal is warranted at the Nutt Road intersection with Paradise Street (or potentially to Mason Street depending on the design and configuration of the roadway connection).
- The pedestrian accommodations at the Bridge Street/S. Main Street intersection will be more thoroughly evaluated during the completion of the Borough's Walkability and ADA Study.
- Neither traffic signal nor all-way stop control is warranted at the intersection of Main Street and High Street. However, all-way stop control would improve traffic conditions at this

intersection. As such, the applicant should monitor this intersection in the future to determine whether a traffic signal or all-way stop control is warranted.

The traffic analyses contained herein reveal that efficient access to and from the proposed development can be provided, and furthermore, site-generated traffic can be accommodated at the study area intersections.

Table 9 - Level of Service Matrices
N. Main Street and Site Access / Riverworks Access

Time Period		Weekday Morning Peak Hour				Weekday Afternoon Peak Hour			
Design Year		2018	2025 Build-Out Year			2018	2025 Build-Out Year		
Development Condition		Existing	w/o Dev	w/Dev Scenario 1	w/Dev Scenario 2	Existing	w/o Dev	w/Dev Scenario 1	w/Dev Scenario 2
Site Access	Left/ Thru/ Right	(2)	(2)	D	C	(2)	(2)	C	C
	Approach			26.4	21.2			C	C
Riverworks Access	Left Thru/ Right	C	C	F	F	B	C	E	E
		16.9	22.3	119.7	86.5	14.1	17.7	45.7	42.7
		A	A	A	B	B	B	B	C
N. Main Street	Left/ Thru/ Right	8.8	9.1	9.1	12.9	11.2	12.4	12.4	18.2
		C	C	F	F	B	C	E	D
		15.9	20.8	107.0	75.5	13.2	16.1	35.7	32.9
N. Main Street	Left/ Thru/ Right	(1)	(1)	B	B	(1)	(1)	A	A
				11.1	11.2			A	A
				2.2	2.6			1.7	1.8
N. Main Street	Left/ Thru/ Right	A	A	A	A	A	B	B	B
		0.0	0.0	0.0	0.0	9.7	10.3	10.3	10.2
		A	A	A	A	A	A	A	A
N. Main Street	Left/ Thru/ Right	0.0	0.0	0.0	0.0	0.6	0.5	0.5	0.5
		A	A	B	A	A	A	A	A
		0.0	0.0	12.0	8.7	0.3	0.3	2.9	3.5
Overall		A	A	B	A	A	A	A	A

(1) Movement / approach operates at free-flow conditions.

(2) Movement does not exist.

Table 10 - Level of Service Matrices
Bridge Street and S. Main Street

Time Period		Weekday Morning Peak Hour				Weekday Afternoon Peak Hour			
Design Year		2018	2025 Build-Out Year			2018	2025 Build-Out Year		
Development Condition		Existing	w/o Dev	w/Dev Scenario 1	w/Dev Scenario 2	Existing	w/o Dev	w/Dev Scenario 1	w/Dev Scenario 2
Bridge Street	Left/ Thru/ Right EB Approach	B	B	B	B	B	B	D	B
		15.6	18.6	19.3	16.9	11.1	13.7	43.6	12.3
	Left/ Thru/ Right WB Approach	B	B	B	B	B	B	D	B
		15.6	18.6	19.3	16.9	11.1	13.7	43.6	12.3
	Left/ Thru/ Right WB Approach	B	B	C	C	A	A	B	C
		14.1	18.9	23.9	24.1	3.5	9.9	18.3	22.2
Left/ Thru/ Right WB Approach	B	B	C	C	A	A	B	C	
	14.1	18.9	23.9	24.1	3.5	9.9	18.3	22.2	
S. Main Street	Left/ Thru/ Right NB Approach	B	B	B	B	C	D	E	D
		11.1	11.2	12.3	11.1	32.4	42.8	76.3	49.0
	Left/ Thru/ Right NB Approach	B	B	B	B	C	D	E	D
		11.1	11.2	12.3	11.1	32.4	42.8	76.3	49.0
	Left Thru/ Right SB Approach	C	C	F	E	C	C	D	E
		20.2	30.7	144.1	66.2	21.9	28.2	40.6	70.8
Left Thru/ Right SB Approach	B	B	C	B	B	B	B	B	
	16.1	17.5	25.6	16.7	18.6	18.6	19.6	18.1	
Left Thru/ Right SB Approach	B	C	E	D	B	C	C	D	
	17.6	22.8	73.6	39.8	19.8	22.5	28.3	46.8	
Overall		B	B	D	C	B	C	D	C
Overall		15.8	19.9	46.8	29.6	15.3	20.9	39.5	31.5

Table 11 - Level of Service Matrices
N. Main Street and High Street

Time Period		Weekday Morning Peak Hour				Weekday Afternoon Peak Hour			
Design Year		2018	2025 Build-Out Year			2018	2025 Build-Out Year		
Development Condition		Existing	w/o Dev	w/Dev Scenario 1	w/Dev Scenario 2	Existing	w/o Dev	w/Dev Scenario 1	w/Dev Scenario 2
High Street	Thru EB Right Approach	A 9.8	B 10.6	B 10.8	B 10.6	B 12.8	B 14.7	B 15.0	B 14.8
	Left WB Thru Approach	A 9.8	B 10.6	B 10.8	B 10.6	B 12.8	B 14.7	B 15.0	B 14.8
	Left WB Thru Approach	F 142.0	F 494.6	F 605.3	F 519.8	D 28.8	F 176.6	F 253.5	F 205.1
		F 142.0	F 494.6	F 605.3	F 519.8	D 28.8	F 176.6	F 253.5	F 205.1
N. Main Street	Left NB Right Approach	A 2.7	A 4.0	A 4.2	A 3.9	A 2.7	A 3.8	A 3.9	A 3.8
		A 2.7	A 4.0	A 4.2	A 3.9	A 2.7	A 3.8	A 3.9	A 3.8
Overall		F 90.4	F 273.7	F 324.5	F 284.7	B 11.5	E 48.6	F 67.0	F 56.2

Table 12 - Level of Service Matrices
Bridge Street and Starr Street (S.R. 0029)

Time Period		Weekday Morning Peak Hour				Weekday Afternoon Peak Hour			
Design Year		2018	2025 Build-Out Year			2018	2025 Build-Out Year		
Development Condition		Existing	w/o Dev	w/Dev Scenario 1	w/Dev Scenario 2	Existing	w/o Dev	w/Dev Scenario 1	w/Dev Scenario 2
Bridge Street	Thru/ EB Right Approach	A 4.3	F 124.6	F 162.3	F 156.3	B 19.7	C 23.3	C 25.3	C 22.5
	Left WB Thru Approach	A 4.3	F 124.6	F 162.3	F 156.3	B 19.7	C 23.3	C 25.3	C 22.5
		A 7.4	E 67.3	E 67.3	E 67.3	B 16.6	D 46.4	E 74.8	E 62.2
		A 4.5	A 4.9	A 5.0	A 5.0	A 8.3	B 10.4	B 11.1	B 11.1
		A 6.2	D 39.4	D 39.1	D 39.1	B 11.6	C 23.7	C 34.1	C 29.5
		D 47.2	D 47.7	D 48.1	D 48.0	C 22.4	C 22.5	C 23.0	C 22.9
Starr Street (S.R. 0029)	Left NB Right Approach	E 74.8	C 27.1	C 27.1	C 27.1	D 42.3	E 60.8	E 60.8	E 60.8
		E 70.0	C 30.6	C 31.0	C 30.9	D 39.3	E 55.1	D 53.9	D 54.3
		C 20.9	E 66.8	F 81.4	E 79.0	C 21.5	C 32.1	D 37.2	C 34.4
Overall									

Table 13 - Level of Service Matrices
Bridge Street (S.R. 0113) and Wheatland Street

Time Period		Weekday Morning Peak Hour				Weekday Afternoon Peak Hour			
Design Year		2018	2025 Build-Out Year			2018	2025 Build-Out Year		
Development Condition		Existing	w/o Dev	w/Dev Scenario 1	w/Dev Scenario 2	Existing	w/o Dev	w/Dev Scenario 1	w/Dev Scenario 2
Wheatland Street	Left/ Thru/ Right EB	C 24.2	D 31.4	E 35.4	D 26.4	D 28.6	E 47.4	F 58.2	D 34.3
	Approach	C 24.2	D 31.4	E 35.4	D 26.4	D 28.6	E 47.4	F 58.2	D 34.3
Bridge Street (S.R. 0113)	Left/ Thru/ Right NB	A 9.0	A 9.4	A 9.6	A 9.1	B 10.3	B 10.9	B 11.1	B 10.4
	Approach	A 0.1	A 0.1	A 0.1	A 0.1	A 0.2	A 0.3	A 0.3	A 0.3
	Left/ Thru/ Right SB	A 9.1	A 9.3	A 9.4	A 9.1	B 10.2	B 10.7	B 11.0	B 10.4
	Approach	A 0.3	A 0.2	A 0.2	A 0.3	A 0.3	A 0.3	A 0.3	A 0.3
	Overall	A 0.9	A 1.2	A 1.3	A 1.2	A 1.3	A 2.0	A 2.3	A 1.7

Table 14 - Level of Service Matrices
Nutt Road (S.R. 0023) and Bridge Street (S.R. 1039 & 0113)

Time Period		Weekday Morning Peak Hour				Weekday Afternoon Peak Hour				
Design Year		2018	2025 Build-Out Year			2018	2025 Build-Out Year			
Development Condition		Existing	w/o Dev	w/Dev Scenario 1	w/Dev Scenario 2	Existing	w/o Dev	w/Dev Scenario 1	w/Dev Scenario 2	
Nutt Road (S.R. 0023)	EB	Left	C	C	C	F	F	F	F	
		Thru/Right	28.8	28.7	29.3	23.8	93.4	153.9	184.9	99.2
		Approach	C	C	C	C	B	C	C	C
	WB	Left	31.4	33.0	33.0	28.8	14.8	21.9	21.9	22.9
		Thru/Right	C	C	C	C	D	E	F	D
		Approach	30.5	31.7	31.8	27.4	49.0	76.9	92.2	51.8
Bridge Street (S.R. 0113 & 1039)	NB	Left	E	E	E	E	D	D	D	
		Thru/Right	61.5	62.4	62.4	62.4	137.4	54.6	54.6	54.6
		Approach	E	E	E	E	D	F	F	F
	SB	Left/Thru	67.2	63.7	63.7	63.5	48.6	128.1	128.1	139.3
		Approach	E	E	E	E	E	F	F	F
		Overall	66.2	63.5	63.5	63.3	56.6	122.3	122.3	132.9
Overall	NB	Left	D	D	D	D	E	E	F	
		Thru/Right	45.8	47.6	47.8	49.0	57.5	69.5	70.1	90.9
		Approach	D	D	D	D	D	E	F	E
	SB	Left/Thru	44.3	43.8	44.2	43.8	54.4	72.1	84.8	72.1
		Approach	D	D	D	D	E	E	F	E
		Overall	44.6	44.6	45.0	44.9	55.3	71.3	80.8	77.9
Overall	Left/Thru	E	F	F	F	E	F	F	F	
	Approach	59.5	89.0	106.6	89.0	68.3	208.5	252.9	208.5	
	Overall	E	F	F	F	E	F	F	F	
Overall	Left/Thru	59.5	89.0	106.6	89.0	68.3	208.5	252.9	208.5	
	Approach	D	D	D	D	D	F	F	F	
	Overall	43.2	47.8	50.7	45.7	54.1	101.8	114.1	95.7	

Table 15 - Level of Service Matrices
Nutt Road (S.R. 0023) and Bridge Street (S.R. 0113) Right-Turn Yield

Time Period		Weekday Morning Peak Hour				Weekday Afternoon Peak Hour			
Design Year		2018	2025 Build-Out Year			2018	2025 Build-Out Year		
Development Condition		Existing	w/o Dev	w/Dev Scenario 1	w/Dev Scenario 2	Existing	w/o Dev	w/Dev Scenario 1	w/Dev Scenario 2
Nutt Road (S.R. 0023)	Thru EB Approach	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
	Thru WB Approach	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Bridge Street (S.R. 0113) Right-Turn Yield	Right SB	B 13.8	C 18.0	C 19.8	C 15.8	F 98.2	F 290.9	F 315.3	F 206.5
	Approach	B 13.8	C 18.0	C 19.8	C 15.8	F 98.2	F 290.9	F 315.3	F 206.5
	Overall	A 2.0	A 2.6	A 3.1	A 1.9	C 21.2	F 59.3	F 65.3	E 36.1

(1) Movement operates at free-flow conditions.

Table 16 - Level of Service Matrices
Nutt Road (S.R. 0023) and Paradise Street

Time Period		Weekday Morning Peak Hour				Weekday Afternoon Peak Hour			
Design Year		2018	2025 Build-Out Year			2018	2025 Build-Out Year		
Development Condition		Existing	w/o Dev	w/Dev Scenario 1	w/Dev Scenario 2	Existing	w/o Dev	w/Dev Scenario 1	w/Dev Scenario 2
Nutt Road (S.R. 0023)	Left EB Thru Approach	B 11.3 (1)	B 12.2 (1)	B 12.5 (1)	B 12.9 (1)	B 13.9 (1)	C 16.1 (1)	C 16.3 (1)	C 21.0 (1)
	Thru/ WB Right Approach	A 0.1	A 0.1	A 0.1	A 0.7	(1)	(1)	(1)	(1)
Paradise Street	Left SB Right Approach	C 23.3 C 23.3	D 29.5 D 29.5	D 30.6 D 30.6	F 451.6 F 451.6	D 28.0 D 28.0	E 39.1 E 39.1	E 40.4 E 40.4	F 378.7 F 378.7
	Overall	A 0.2	A 0.2	A 0.2	D 30.8	A 0.1	A 0.1	A 0.1	C 21.6

(1) Movement operates at free-flow conditions.

Table 17 - Level of Service Matrices
Nutt Road (S.R. 0023) and Mason Street

Time Period		Weekday Morning Peak Hour				Weekday Afternoon Peak Hour			
Design Year		2018	2025 Build-Out Year			2018	2025 Build-Out Year		
Development Condition		Existing	w/o Dev	w/Dev Scenario 1	w/Dev Scenario 2	Existing	w/o Dev	w/Dev Scenario 1	w/Dev Scenario 2
Nutt Road (S.R. 0023)	EB Left Thru/Right Approach	B 10.9	B 11.7	B 12.0	B 11.4	B 11.4	B 13.2	B 13.3	B 12.7
		(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
		A 0.1	A 0.1	A 0.1	A 0.1	A 0.3	A 0.4	A 0.4	A 0.4
	WB Left Thru/Right Approach	B 13.2	B 14.3	B 14.4	B 14.2	B 10.1	B 11.1	B 11.3	B 10.9
		(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
		A 0.1	A 0.1	A 0.1	A 0.1	A 0.0	A 0.0	A 0.0	A 0.0
Mason Street	NB Left/Thru/Right Approach	E 35.1	E 49.0	F 51.9	E 45.5	E 47.4	F 122.0	F 133.2	F 90.8
		E 35.1	E 49.0	F 51.9	E 45.5	E 47.4	F 122.0	F 133.2	F 90.8
	SB Left/Thru/Right Approach	D 25.7	D 32.0	D 33.9	D 29.3	F 51.0	F 141.5	F 153.1	F 104.4
		D 25.7	D 32.0	D 33.9	D 29.3	F 51.0	F 141.5	F 153.1	F 104.4
Overall		A 0.4	A 0.5	A 0.5	A 0.5	A 1.9	A 4.5	A 4.7	A 3.5

(1) Movement operates at free-flow conditions.

Table 18 - 95th Percentile Queue Matrices
N. Main Street and Site Access / Riverworks Access

Time Period		Current Storage ⁽¹⁾	Future Storage ⁽²⁾	Weekday Morning Peak Hour				Weekday Afternoon Peak Hour					
Design Year				2018	2025 Build-Out Year			2018	2025 Build-Out Year				
Development Condition					Existing	w/o Dev	w/Dev Scenario 1		w/Dev Scenario 2	Existing	w/o Dev	w/Dev Scenario 1	w/Dev Scenario 2
Riverworks Access	EB Left/Thru/Right	-	-	-	-	-	-	75	48	-	-	25	35
	Site Access	WB Left/Thru/Right	<i>55'</i>	-	-	-	25	30	115	95	25	25	25
-			-	-	-	0	0	0	25	0	0	0	0
N. Main Street	NB Left/Thru/Right	<i>750'</i>	-	-	-	-	-	25	25	-	-	25	25
	SB Left/Thru/Right	-	-	-	-	0	0	0	0	25	25	25	25

(1) Distance to adjacent signalized intersections shown in italics.

(2) Future storage/distance to adjacent intersections shown if different/improved from existing conditions.

Table 19 - 95th Percentile Queue Matrices
Bridge Street and S. Main Street

Time Period		Current Storage ⁽¹⁾	Future Storage ⁽²⁾	Weekday Morning Peak Hour				Weekday Afternoon Peak Hour					
Design Year				2018	2025 Build-Out Year			2018	2025 Build-Out Year				
Development Condition				Existing	w/o Dev	w/Dev Scenario 1	w/Dev Scenario 2	Existing	w/o Dev	w/Dev Scenario 1	w/Dev Scenario 2		
Bridge Street	EB <i>Left/Thru/Right</i>	3,825'				200	250	265	210	220	288	538	238
	WB <i>Left/Thru/Right</i>	975'				215	288	328	328	40	110	188	315
S. Main Street	NB <i>Left/Thru/Right</i>	335'				75	95	103	100	390	493	828	535
	SB <i>Left/Thru/Right</i>	135'				218	298	813	610	73	130	195	285
		-				280	323	433	315	100	138	183	125

(1) Distance to adjacent signalized intersections shown in italics.

(2) Future storage/distance to adjacent intersections shown if different/improved from existing conditions.

Table 20 - 95th Percentile Queue Matrices
N. Main Street and High Street

Time Period		Current Storage ⁽¹⁾	Future Storage ⁽²⁾	Weekday Morning Peak Hour				Weekday Afternoon Peak Hour			
Design Year				2025 Build-Out Year				2025 Build-Out Year			
Development Condition				Existing	w/o Dev	w/Dev Scenario 1	w/Dev Scenario 2	Existing	w/o Dev	w/Dev Scenario 1	w/Dev Scenario 2
High Street	EB Thru Right	-		25	36	38	37	25	37	42	38
	WB Left Thru	-		571	1118	1217	1146	102	331	400	363
N. Main Street	NB Left Right	<i>1,525'</i>		25	25	25	25	25	25	25	25

(1) Distance to adjacent signalized intersections shown in italics.

(2) Future storage/distance to adjacent intersections shown if different/improved from existing conditions.

Table 21 - 95th Percentile Queue Matrices
Bridge Street and Starr Street (S.R. 0029)

Time Period		Current Storage ⁽¹⁾	Future Storage ⁽²⁾	Weekday Morning Peak Hour				Weekday Afternoon Peak Hour					
Design Year				2018	2025 Build-Out Year			2018	2025 Build-Out Year				
Development Condition				Existing	w/o Dev	w/Dev Scenario 1	w/Dev Scenario 2	Existing	w/o Dev	w/Dev Scenario 1	w/Dev Scenario 2		
Bridge Street	EB Thru Right	975'				55	2015	2348	2298	340	418	385	408
	WB Left Thru	215'				275	835	835	835	203	468	683	643
		1,575'				190	223	233	230	280	373	403	403
Starr Street (S.R. 0029)	NB Left	320'				133	145	155	153	70	75	98	90
	Right	2,900'				663	480	480	480	485	783	783	783

(1) Distance to adjacent signalized intersections shown in italics.

(2) Future storage/distance to adjacent intersections shown if different/improved from existing conditions.

Table 22 - 95th Percentile Queues
Bridge Street (S.R. 0113) and Wheatland Street

Time Period		Current Storage ⁽¹⁾	Future Storage ⁽²⁾
Design Year			
Development Condition			
Wheatland Street	Left/Thru/Right EB	-	
	Left/Thru/Right NB	<i>700'</i>	
Bridge Street (S.R. 0113)	Left/Thru/Right SB	<i>1,325'</i>	

Weekday Morning Peak Hour			
2018	2025 Build-Out Year		
Existing	w/o Dev	w/Dev Scenario 1	w/Dev Scenario 2
25	25	28	25
0	0	0	0
25	25	25	25

Weekday Afternoon Peak Hour			
2018	2025 Build-Out Year		
Existing	w/o Dev	w/Dev Scenario 1	w/Dev Scenario 2
25	48	55	35
25	25	25	25
25	25	25	25

(1) Distance to adjacent signalized intersections shown in italics.

(2) Future storage/distance to adjacent intersections shown if different/improved from existing conditions.

Table 23 - 95th Percentile Queues

Nutt Road (S.R. 0023) and Bridge Street (S.R. 1039 & 0113)

Time Period		Current Storage ⁽¹⁾	Future Storage ⁽²⁾	Weekday Morning Peak Hour				Weekday Afternoon Peak Hour					
Design Year				2018	2025 Build-Out Year			2018	2025 Build-Out Year				
Development Condition				Existing	w/o Dev	w/Dev Scenario 1	w/Dev Scenario 2	Existing	w/o Dev	w/Dev Scenario 1	w/Dev Scenario 2		
Nutt Road (S.R. 0023)	EB	Left	350'			420	448	463	368	855	1173	1343	875
		Thru/Right	<i>2,250'</i>			873	1083	1083	1070	370	590	590	615
	WB	Left	720'			130	138	138	138	153	95	95	95
		Thru/Right	<i>2,600'</i>			523	630	630	638	700	1673	1673	1768
Bridge Street (S.R. 0113 & 1039)	NB	Left	100'			78	95	95	103	178	213	213	260
		Thru/Right	<i>3,550'</i>			260	293	303	293	345	455	510	455
	SB	Left/Thru	205'			458	618	878	618	315	678	758	678

(1) Distance to adjacent signalized intersections shown in italics.

(2) Future storage/distance to adjacent intersections shown if different/improved from existing conditions.

Table 24 - 95th Percentile Queues

Nutt Road (S.R. 0023) and Bridge Street (S.R. 1039 & 0113) Right-Turn Yield

Time Period		Current Storage ⁽¹⁾	Future Storage ⁽²⁾	Weekday Morning Peak Hour				Weekday Afternoon Peak Hour			
Design Year				2018	2025 Build-Out Year			2018	2025 Build-Out Year		
Development Condition				Existing	w/o Dev	w/Dev Scenario 1	w/Dev Scenario 2	Existing	w/o Dev	w/Dev Scenario 1	w/Dev Scenario 2
Nutt Road (S.R. 0023)	EB Thru	-				-	-	-	-		
	WB Thru	-				-	-	-	-		
Bridge St. (S.R. 0113) RT Yield	SB Right	400'	50	83	103	58	408	788	845	565	

(1) Distance to adjacent signalized intersections shown in italics.

(2) Future storage/distance to adjacent intersections shown if different/improved from existing conditions.

Table 25 - 95th Percentile Queue Matrices
Nutt Road (S.R. 0023) and Paradise Street

Time Period		Current Storage ⁽¹⁾	Future Storage ⁽²⁾	Weekday Morning Peak Hour				Weekday Afternoon Peak Hour			
Design Year				2025 Build-Out Year				2025 Build-Out Year			
Development Condition				Existing	w/o Dev	w/Dev Scenario 1	w/Dev Scenario 2	Existing	w/o Dev	w/Dev Scenario 1	w/Dev Scenario 2
Nutt Road (S.R. 0023)	EB Left	CLTL		25	25	25	25	25	25	25	40
	EB Thru	650'		-	-	-	-	-	-	-	-
	WB Thru Right	1,550'		-	-	-	-	-	-	-	-
Paradise Street	SB Left Right	-		25	25	25	333	25	25	25	308

(1) Distance to adjacent signalized intersections shown in italics.

(2) Future storage/distance to adjacent intersections shown if different/improved from existing conditions.

Table 26 - 95th Percentile Queue Matricies
Nutt Road (S.R. 0023) and Mason Street

Time Period		Current Storage ⁽¹⁾	Future Storage ⁽²⁾	Weekday Morning Peak Hour				Weekday Afternoon Peak Hour			
Design Year				2018	2025 Build-Out Year			2018	2025 Build-Out Year		
Development Condition				Existing	w/o Dev	w/Dev Scenario 1	w/Dev Scenario 2	Existing	w/o Dev	w/Dev Scenario 1	w/Dev Scenario 2
Nutt Road (S.R. 0023)	EB Left Thru/Right	CLTL		25	25	25	25	25	25	25	25
		<i>1,500'</i>		-	-	-	-	-	-	-	-
	WB Left Thru/Right	CLTL		0	0	0	0	0	0	0	0
		<i>720'</i>		-	-	-	-	-	-	-	-
Mason Street	NB Left/Thru/Right	-		25	25	25	25	25	43	45	35
	SB Left/Thru/Right	-		25	25	25	25	48	100	103	85

(1) Distance to adjacent signalized intersections shown in italics.

(2) Future storage/distance to adjacent intersections shown if different/improved from existing conditions.

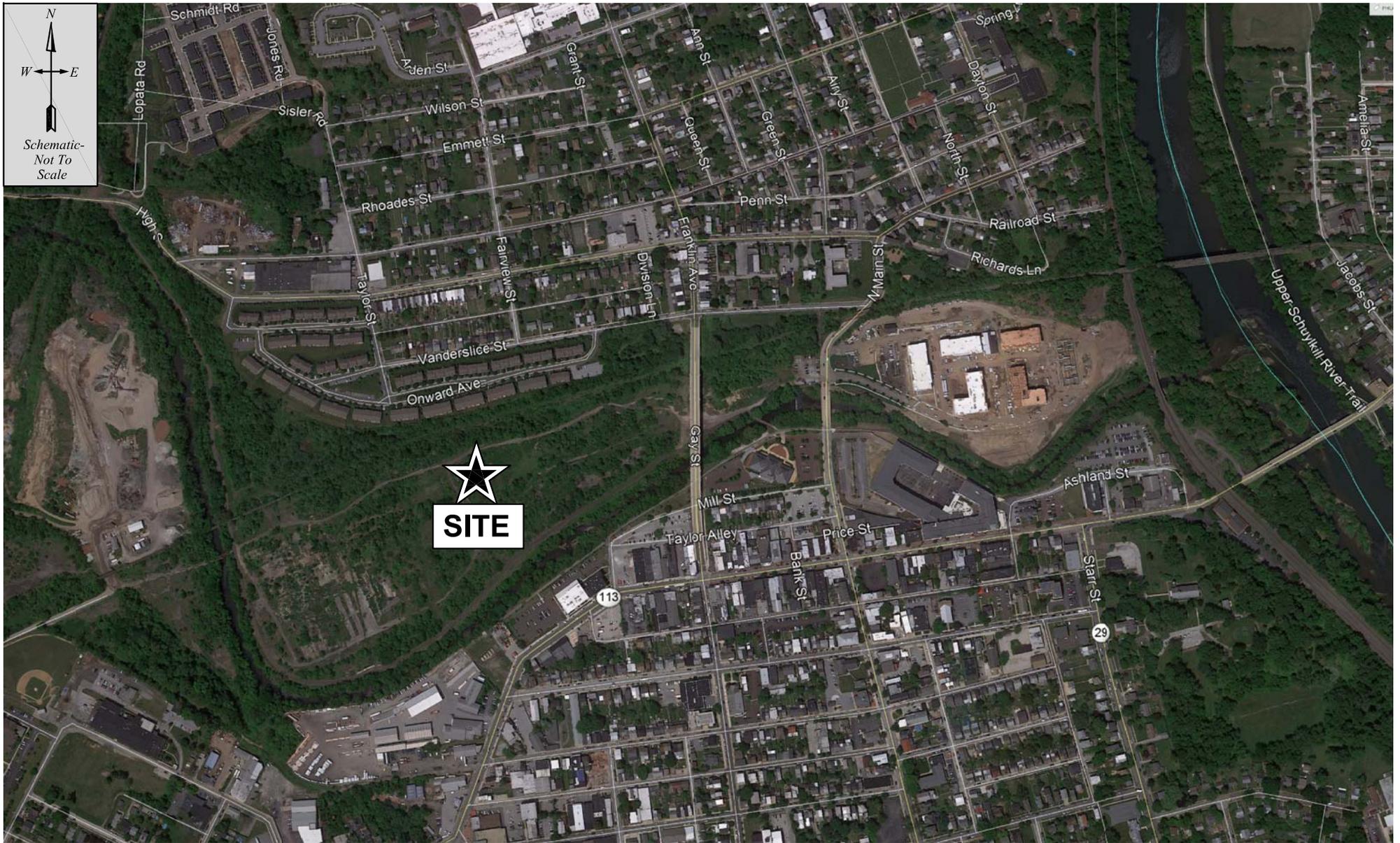
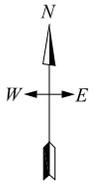


FIGURE 1
 Site Location Map
FRENCH CREEK WEST
 PHOENIXVILLE BOROUGH, CHESTER COUNTY, PA



Schematic-
Not To
Scale

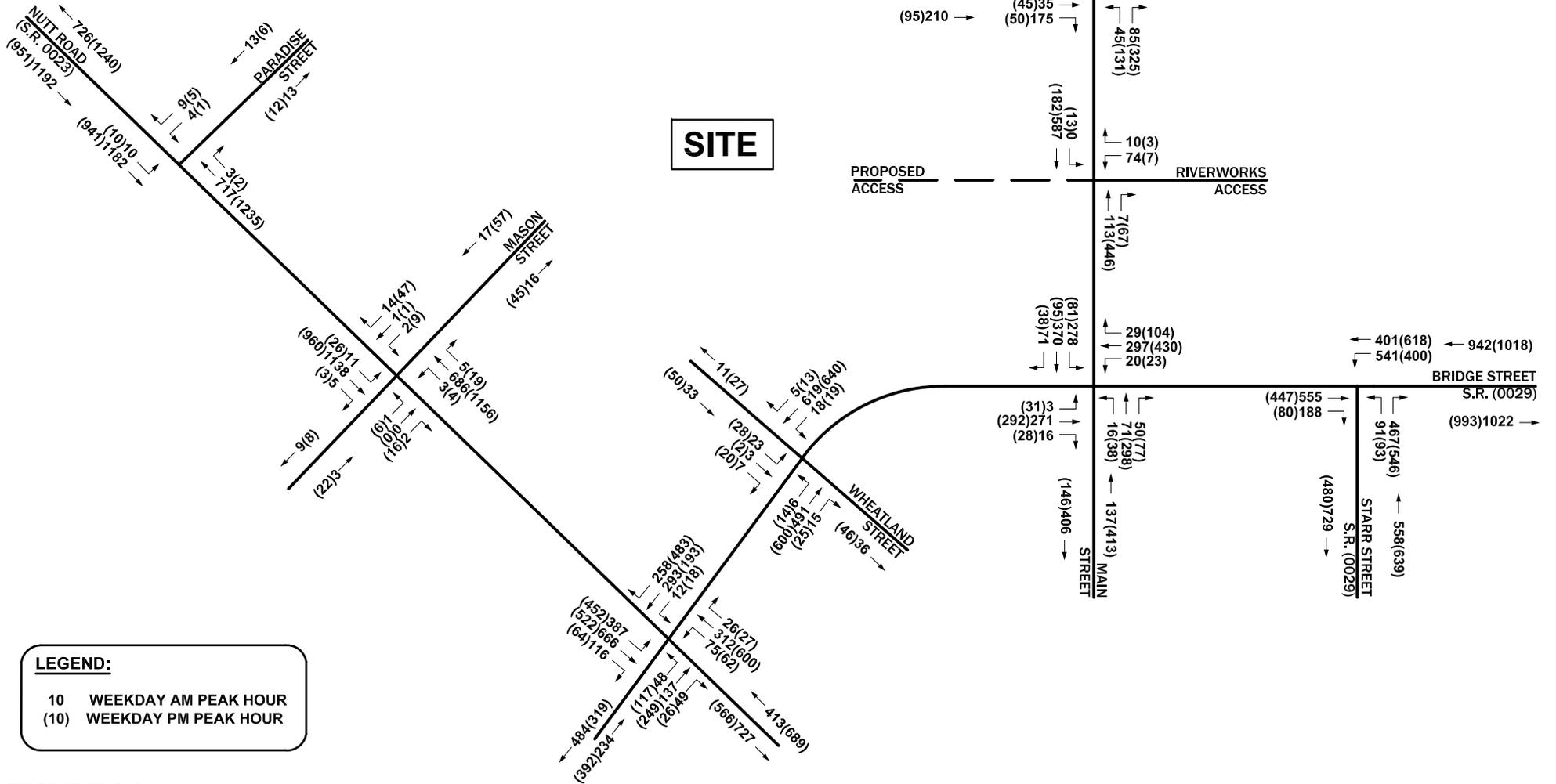
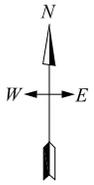


FIGURE 3A
2018 Existing Peak Hour Traffic Volumes
FRENCH CREEK WEST
PHOENIXVILLE BOROUGH, CHESTER COUNTY, PA



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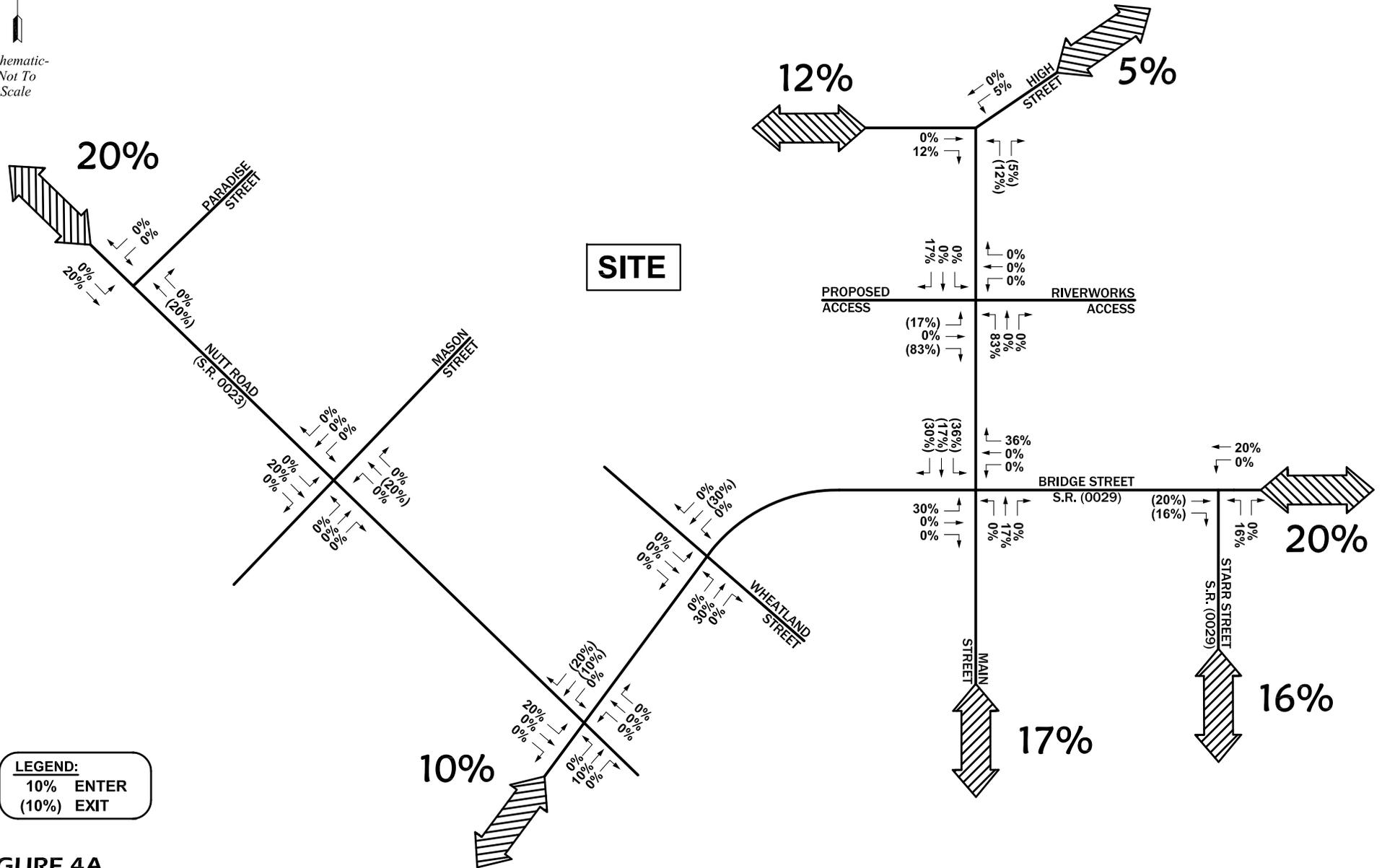
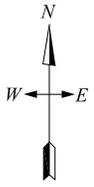
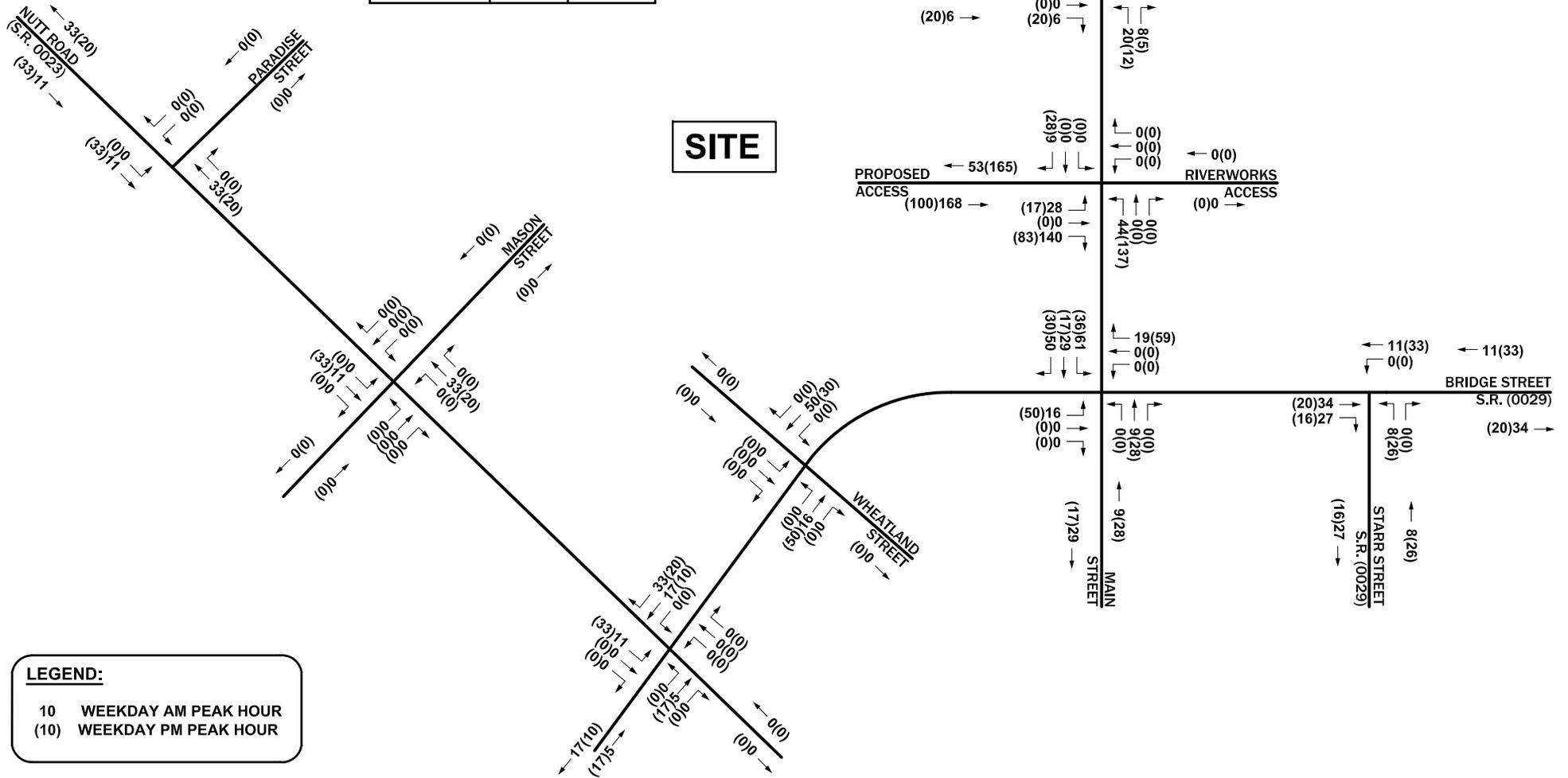


FIGURE 4A
 New Trip Distributions - Scenario 1
FRENCH CREEK WEST
 PHOENIXVILLE BOROUGH, CHESTER COUNTY, PA



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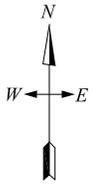
	AM	(PM)
IN	53	(165)
OUT	168	(100)



LEGEND:

- 10 WEEKDAY AM PEAK HOUR
- (10) WEEKDAY PM PEAK HOUR

FIGURE 4B
 "New" Trip Assignments - Scenario 1
FRENCH CREEK WEST
 PHOENIXVILLE BOROUGH, CHESTER COUNTY, PA



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Scale

	AM	(PM)
IN	53	(165)
OUT	168	(100)

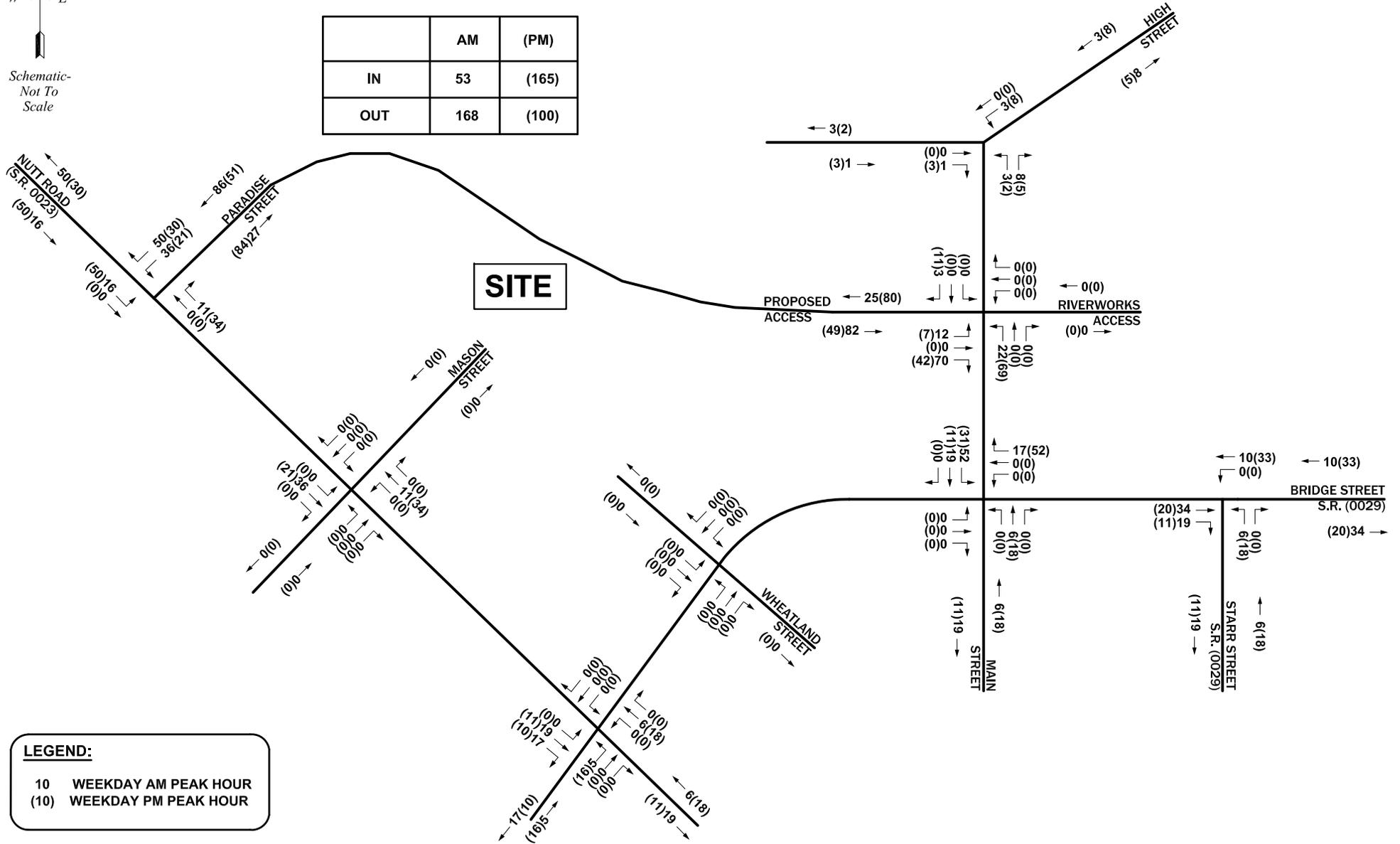
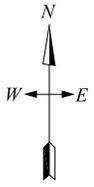


FIGURE 4D
 "New" Trip Assignments - Scenario 2
FRENCH CREEK WEST
 PHOENIXVILLE BOROUGH, CHESTER COUNTY, PA



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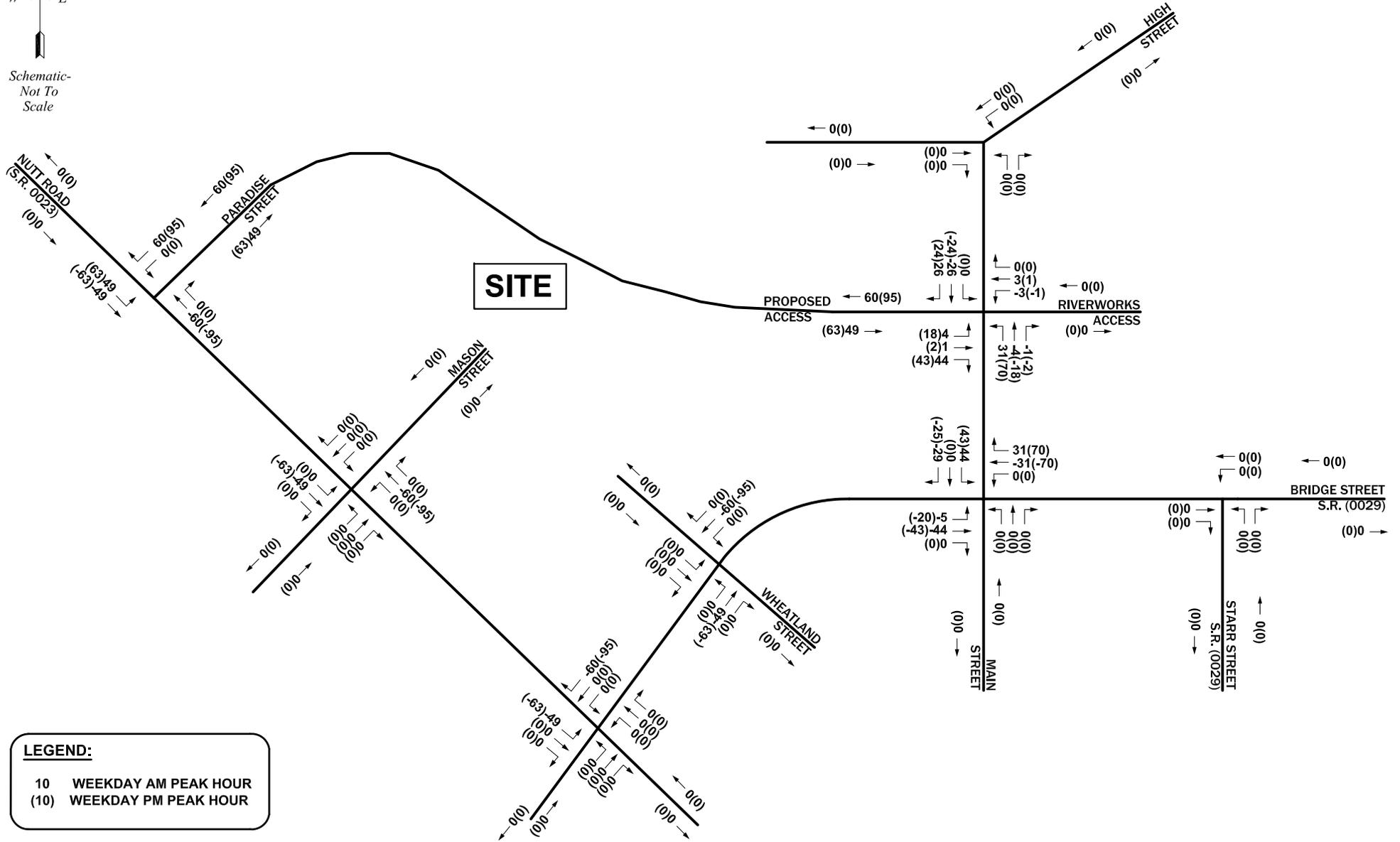
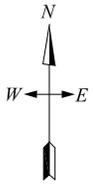


FIGURE 4E
Trip Diversions - Scenario 2
FRENCH CREEK WEST
PHOENIXVILLE BOROUGH, CHESTER COUNTY, PA



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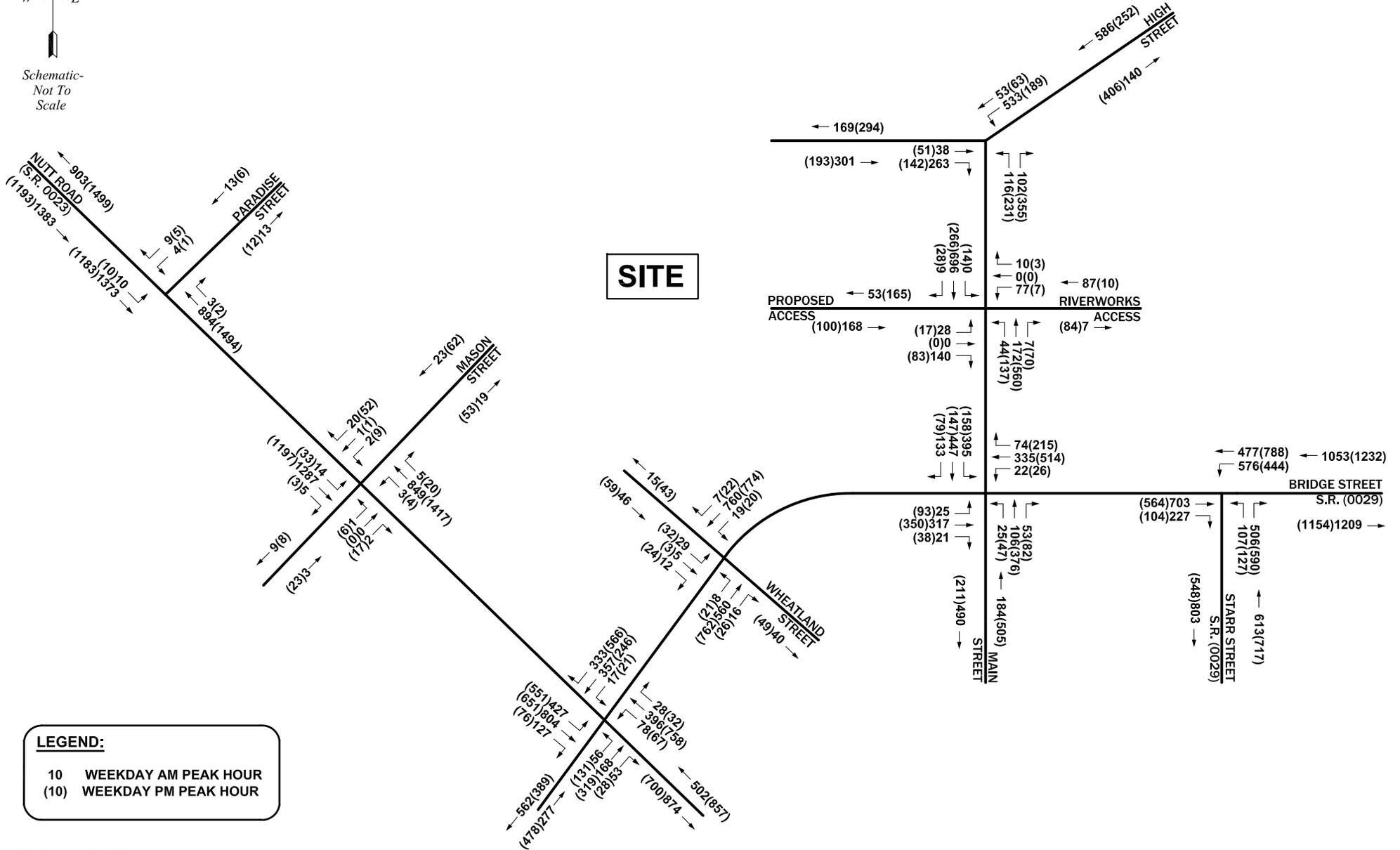
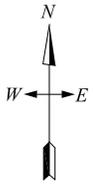


FIGURE 5B
 Future 2025 with Development Traffic Volumes - Scenario 1
FRENCH CREEK WEST
 PHOENIXVILLE BOROUGH, CHESTER COUNTY, PA



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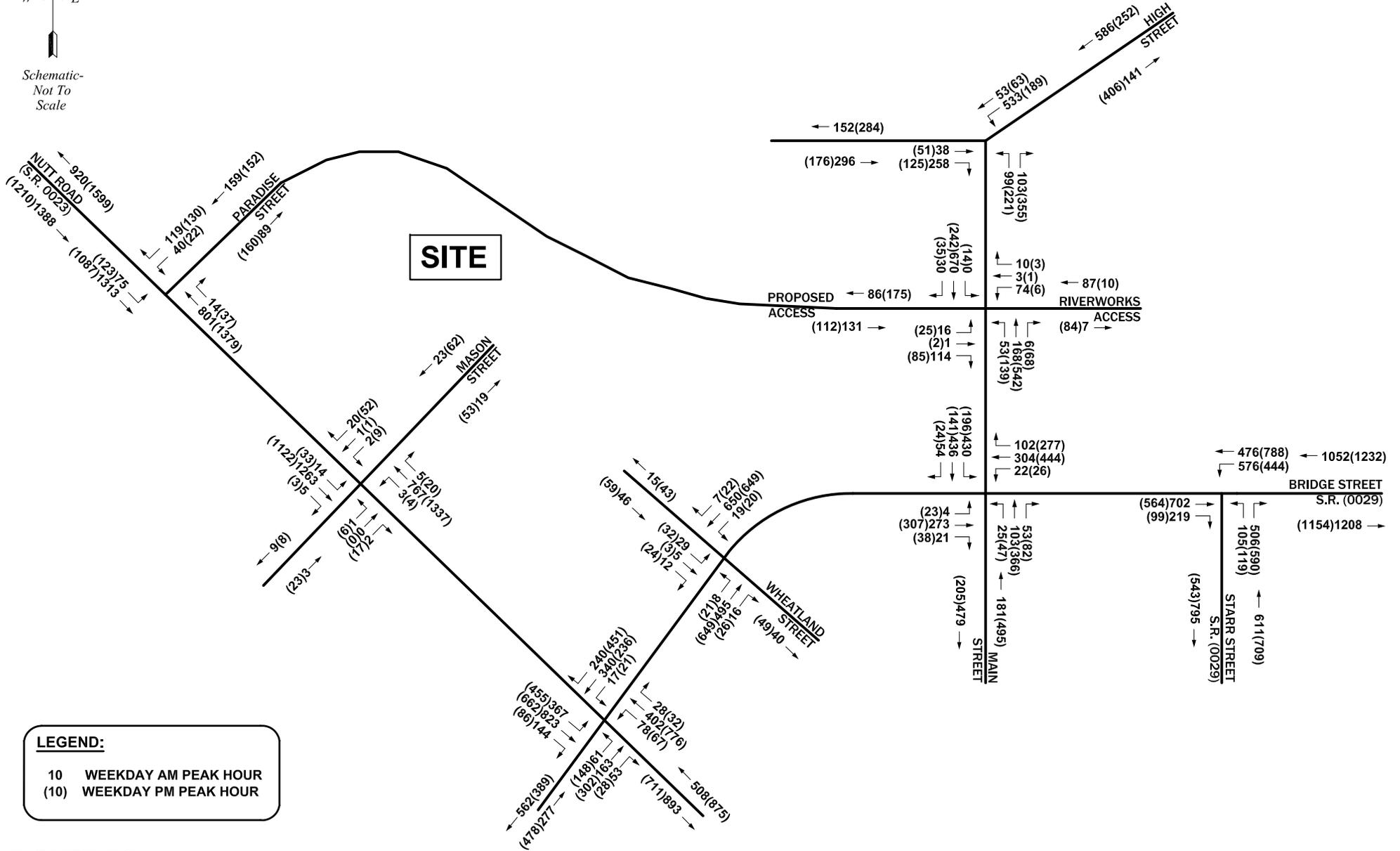


FIGURE 5C
 Future 2025 with Development Traffic Volumes - Scenario 2
FRENCH CREEK WEST
 PHOENIXVILLE BOROUGH, CHESTER COUNTY, PA

Appendix A

Borough Correspondence

PRINCIPALS
Joseph W. McMahon, P.E.
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John S. DePalma
William T. Steffens
Casey A. Moore, P.E.
Gary R. McNaughton, P.E., PTOE

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R. Trent Ebersole, P.E.
Matthew M. Kozsuch, P.E.
Maureen Chlebek, P.E., PTOE
Dean A. Carr, P.E.

MEMORANDUM

TO: Jean Krack, Manager
Phoenixville Borough

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

SUBJECT: French Creek West
Transportation Impact Study Scoping Memorandum

DATE: April 30, 2018

As requested, McMahon Associates, Inc. has prepared this transportation impact study scoping memorandum for the proposed French Creek West residential development, located on the west side of Main Street between Bridge Street and High Street in Phoenixville Borough, Chester County. The development is proposed to consist of 551 multi-family units with access provided via a new access along Main Street. 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 property. The study will also include an evaluation of an access connection to Nutt Road (S.R. 0023).

In order to complete the transportation impact study and satisfy Borough requirements, we propose the scope as outlined below. The scope of study described herein satisfies the Borough requirements (SALDO Section 22-602). To the extent feasible, McMahon will utilize available traffic data and analysis completed for the project, as long as this information meets Borough requirements or has been approved by the Borough for use.

Scope of Services

1. The proposed study intersections are noted below. Conduct manual turning movement traffic counts during the weekday morning (6:00 AM to 10:00 AM) and weekday afternoon (3:00 PM to 7:00 PM) peak periods at the following intersections. Heavy vehicles by approach and pedestrian crossings will also be counted.

- Main Street and Riverworks*
- Main Street and Bridge Street
- Main Street and High Street
- Bridge Street and Starr Street
- Bridge Street and Wheatland Street*
- Nutt Road and Bridge Street
- Nutt Road and Paradise Street*
- Nutt Road and Mason Street

*McMahon will utilize recent data provided by the applicant. It is noted that the applicant's data does not fully satisfy the required count hours but it appears that the respective peak one-hour periods have been captured.

2. Complete a field inventory of the study area roadways, including cartway and lane width measurements, intersection diagrams, estimated existing grades, posted speed limits, sight distance measurements, intersection photographs, and an inventory of traffic control devices and signing, required for the traffic analyses.
3. Prepare a general site description noting the characteristics of the site and potential residents, as related to the transportation network. Internal site vehicular and pedestrian traffic circulation and street design (cross-sections) will also be described.
4. Prepare a description of the surrounding transportation network including nearby traffic control, transit, pedestrian facilities, and bicycle facilities. A similar description of the proposed on-site facilities will also be provided.
5. Identify existing and proposed pedestrian facilities, bicycle facilities, and public transit facilities within the study area, and any potential impacts to such facilities.
6. Utilize available reportable crash data from PennDOT for the most recent three years available throughout the study area, and analyze the data to identify patterns, if any.
7. Evaluate the existing traffic conditions, including detailed capacity/level-of-service and queuing analysis for both peak hours for the study intersections.
8. 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.
9. Identify area roadway improvements proposed in conjunction with other developments or by PennDOT, if any.

10. Evaluate future build-out year traffic conditions without-development, including detailed capacity/level-of-service and queuing analysis at the study intersections for both peak hours. The development build-out year will be determined based on coordination with the applicant.
11. Estimate the daily and peak hour site trip generation based on the new Institute of Transportation Engineers publication, *Trip Generation, 10th Edition*.
12. 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 both peak hours, resulting in future with-development traffic volumes.
13. Evaluate future build-out year traffic conditions with-development for the completion of all phases, 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. Detailed level-of-service and queueing matrix tables will not be provided; however, the results will be summarized in figures for each study condition.

Note: Evaluation of interim project phases is not included as part of this proposal. If a phasing analysis is necessary, an additional scenario(s) can be provided at an additional cost.

14. Evaluate future with-development conditions to assess the traffic benefits/impacts of a roadway connection to Paradise Street. Traffic diversions will be based on evaluation of existing travel patterns and engineering judgement.
15. Evaluate the site access intersections and provide design recommendations (in narrative format), including traffic control and auxiliary turn lane analyses and sight distance requirements.
16. Prepare a transportation impact study report containing our analysis results, major findings, and conclusions. The report, inclusive of traffic count data and other technical appendices, will be provided in electronic format to all parties.

Schedule

At this time, we are ready to begin data collection for the study upon written notice to proceed by the Borough and applicant. We anticipate that the study can be completed within four to six weeks from the completion of the data collection, assuming all necessary information is provided in a timely manner.

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, 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*. Preliminary coordination relative to the scoping of this project will also be invoiced separately as a separate service. It is noted that the applicant will also be responsible for any electronic submissions to PennDOT.

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

JJY/JDG/ab

cc: Owen Hyne, P.E., CEA, Remington & Vernick
Christy Flynn, Rockwell Development Group

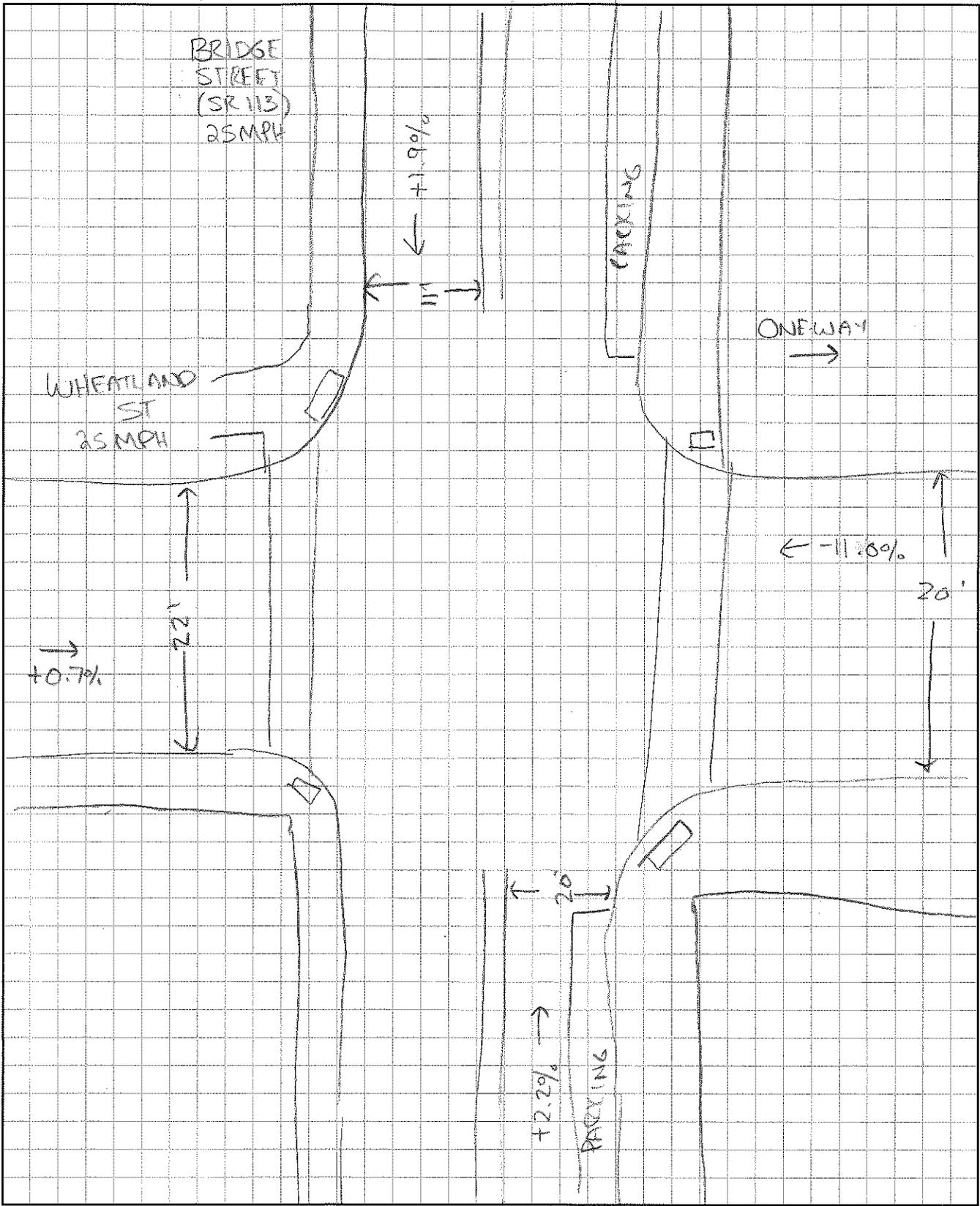
Appendix B

Field Sketches, Photographs, and Signal Permit Plans

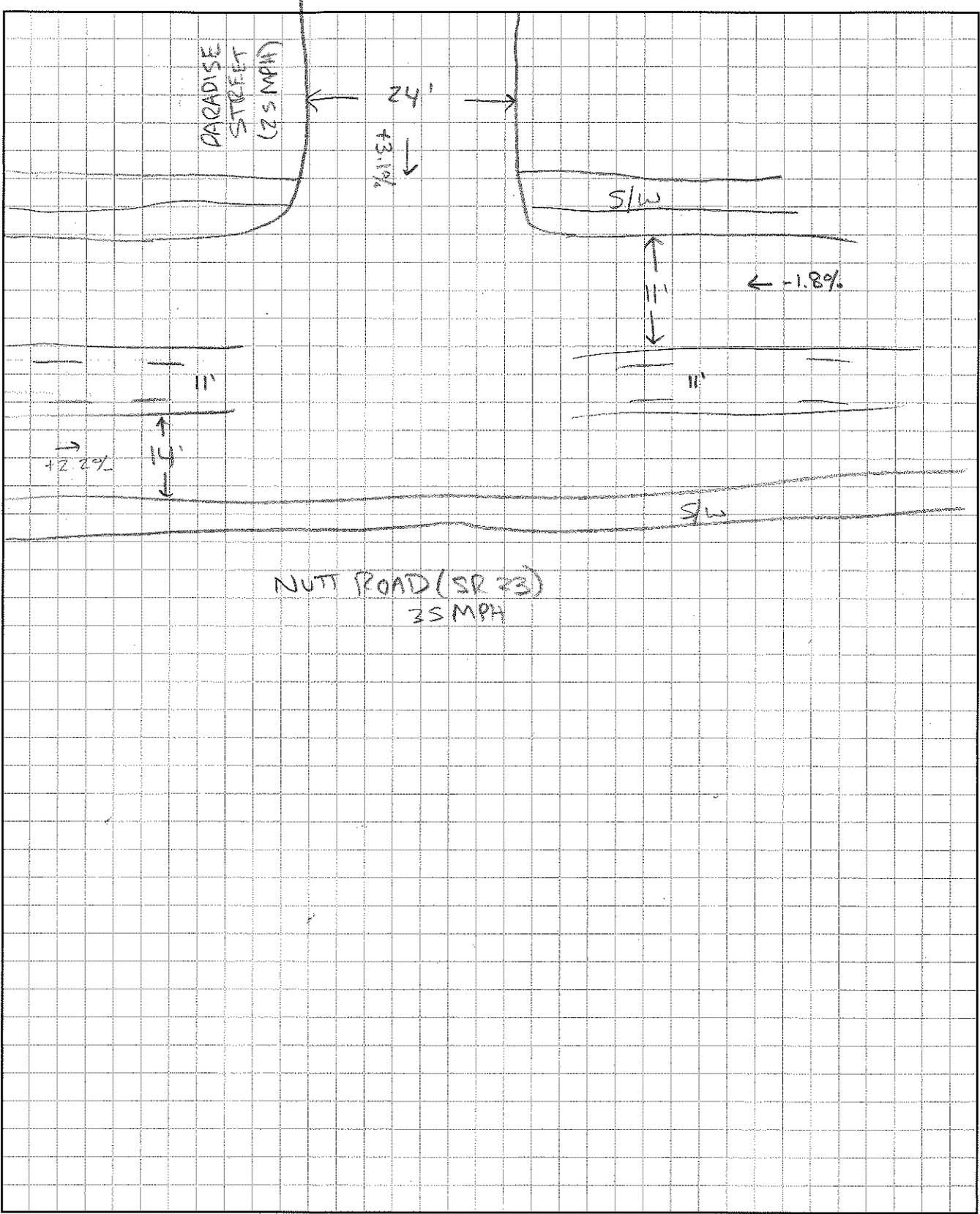
Job French Creek West
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Intersection Sketch

McMahon Project No. 818195.11
 Designed By BGG
 Checked By _____

Sheet 1 of 5
 Date 5/7/18
 Date _____



Job French Creek West McMahon Project No. 81819S11 Sheet 2 of 5
 Description Intersection Sketch Designed By BGG Date 5/7/18
 Checked By _____ Date _____



Job French Creek West

McMahon Project No. 818195.11

Sheet 3 of 5

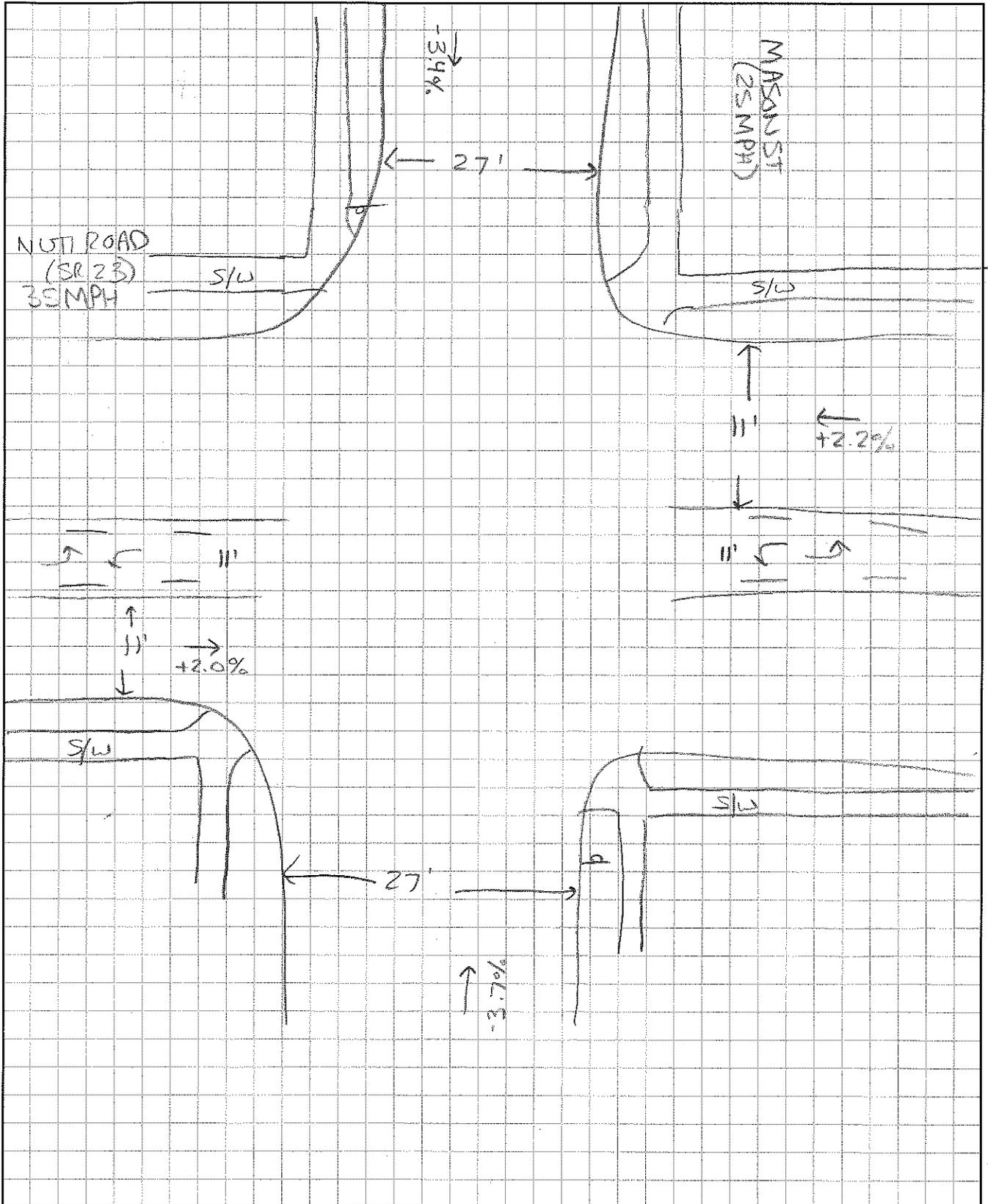
Description Intersection Sketch

Designed By BGG

Date 5/7/18

Checked By _____

Date _____



Job French Creek West

McMahon Project No. 81819511

Sheet 4 of 5

Description _____

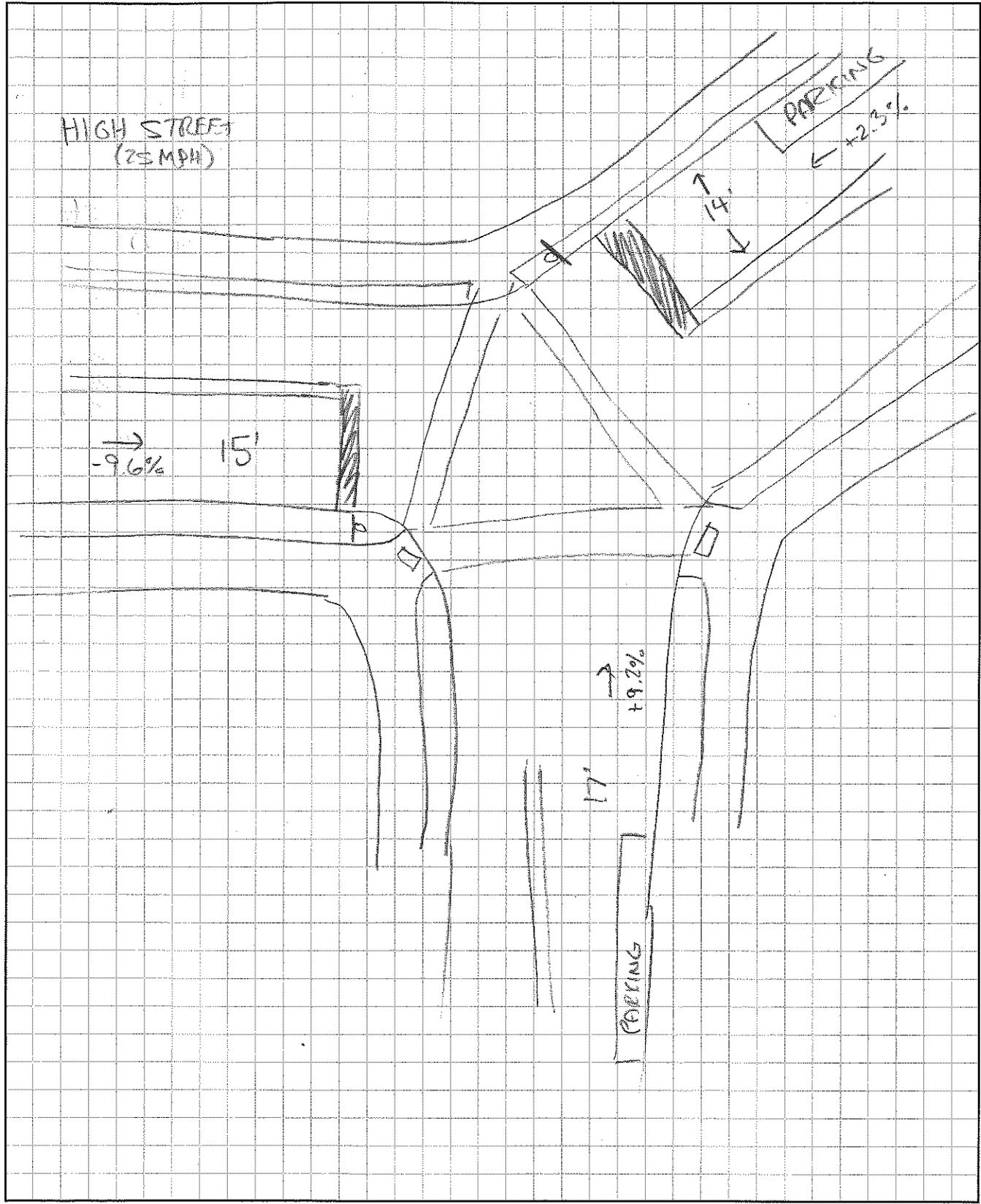
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Date 5/7/18

Intersection Sketch

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Date _____



Job French Creek West
 Description Intersection Sketch

McMahon Project No. 81819S.11

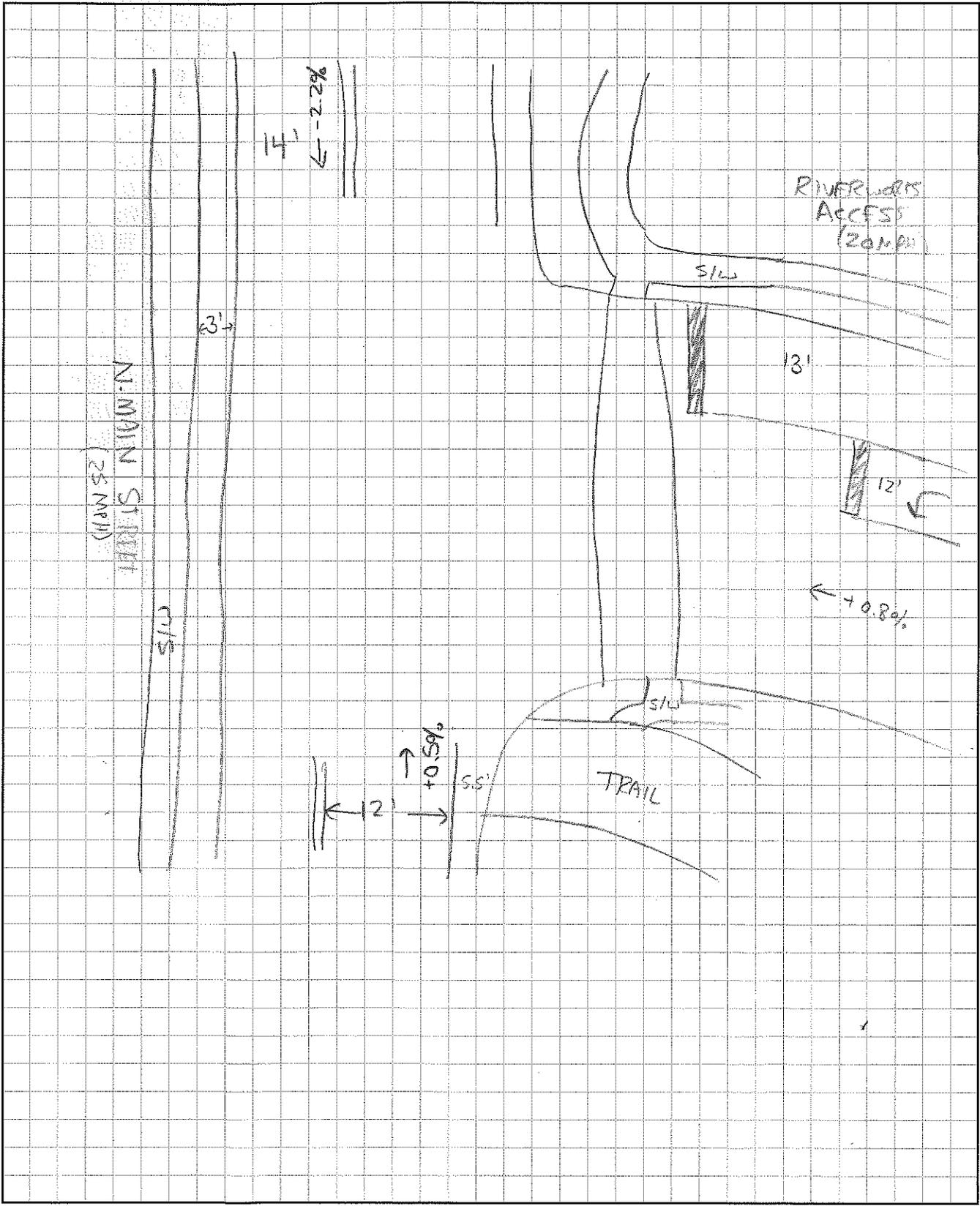
Sheet 5 of 5

Designed By BGG

Date 5/7/12

Checked By _____

Date _____



Intersection Inventory Summary

S. Main Street and Bridge Street 50 Feet

Eastbound Bridge Street



Lane Geometry

Shared
Left/Through/Right

Roadway Classification

Local

Roadway Ownership

Borough

Posted Speed Limit

25 MPH

Traffic Control

Signal

Notes

Westbound Bridge Street



Lane Geometry

Shared
Left/Through/Right

Roadway Classification

Local

Roadway Ownership

Borough

Posted Speed Limit

25 MPH

Traffic Control

Signal

Notes

Northbound Main Street



Lane Geometry

Shared
Left/Through/Right

Roadway Classification

Local

Roadway Ownership

Borough

Posted Speed Limit

25 MPH

Traffic Control

Signal

Notes

Southbound Main Street



Lane Geometry

Left
Shared Through/Right

Roadway Classification

Local

Roadway Ownership

Borough

Posted Speed Limit

25 MPH

Traffic Control

Signal

Notes

Intersection Inventory Summary

**S. Main Street and Bridge Street
200 Feet**

Eastbound Bridge Street



Lane Geometry

Shared
Left/Through/Right

Roadway Classification
Local

Roadway Ownership
Borough

Posted Speed Limit
25 MPH

Traffic Control
Signal

Notes

Westbound Bridge Street



Lane Geometry

Shared
Left/Through/Right

Roadway Classification
Local

Roadway Ownership
Borough

Posted Speed Limit
25 MPH

Traffic Control
Signal

Notes

Northbound Main Street



Lane Geometry

Shared
Left/Through/Right

Roadway Classification
Local

Roadway Ownership
Borough

Posted Speed Limit
25 MPH

Traffic Control
Signal

Notes

Southbound Main Street



Lane Geometry

Left
Shared Through/Right

Roadway Classification
Local

Roadway Ownership
Borough

Posted Speed Limit
25 MPH

Traffic Control
Signal

Notes

Intersection Inventory Summary

**N. Main Street and High Street
50 Feet**

Eastbound High Street



Lane Geometry

Shared Through/Right

Roadway Classification

Local

Roadway Ownership

Borough

Posted Speed Limit

25 MPH

Traffic Control

Stop Control

Notes

Westbound High Street



Lane Geometry

Shared Left/Through

Roadway Classification

Local

Roadway Ownership

Borough

Posted Speed Limit

25 MPH

Traffic Control

Stop Control

Notes

Northbound Main Street



Lane Geometry

Shared Left/Right

Roadway Classification

Local

Roadway Ownership

Borough

Posted Speed Limit

25 MPH

Traffic Control

None

Notes

Intersection Inventory Summary

**N. Main Street and High Street
200 Feet**

Eastbound High Street



Lane Geometry

Shared Through/Right

Roadway Classification

Local

Roadway Ownership

Borough

Posted Speed Limit

25 MPH

Traffic Control

Stop Control

Notes

Westbound High Street



Lane Geometry

Shared Left/Through

Roadway Classification

Local

Roadway Ownership

Borough

Posted Speed Limit

25 MPH

Traffic Control

Stop Control

Notes

Northbound Main Street



Lane Geometry

Shared Left/Right

Roadway Classification

Local

Roadway Ownership

Borough

Posted Speed Limit

25 MPH

Traffic Control

None

Notes

Intersection Inventory Summary

N. Main Street and Riverworks Access 50 Feet

Northbound N. Main Street



Lane Geometry

Shared Through/Right

Roadway Classification

Local

Roadway Ownership

Borough

Posted Speed Limit

25 MPH

Traffic Control

None

Notes

Southbound N. Main Street



Lane Geometry

Shared Left/Through

Roadway Classification

Local

Roadway Ownership

Borough

Posted Speed Limit

25 MPH

Traffic Control

None

Notes

Westbound Riverworks Access



Lane Geometry

Left
Right

Roadway Classification

Private

Roadway Ownership

Private

Posted Speed Limit

20 MPH

Traffic Control

Stop Control

Notes

Intersection Inventory Summary

**N. Main Street and Riverworks Access
200 Feet**

Northbound N. Main Street



Lane Geometry

Shared Through/Right

Roadway Classification

Local

Roadway Ownership

Borough

Posted Speed Limit

25 MPH

Traffic Control

None

Notes

Southbound N. Main Street



Lane Geometry

Shared Left/Through

Roadway Classification

Local

Roadway Ownership

Borough

Posted Speed Limit

25 MPH

Traffic Control

None

Notes

Westbound Riverworks Access



Lane Geometry

Left

Right

Roadway Classification

Private

Roadway Ownership

Private

Posted Speed Limit

20 MPH

Traffic Control

Stop Control

Notes

Intersection Inventory Summary

Nutt Road (S.R. 0023) and Mason Street 50 Feet

Eastbound Nutt Road (S.R. 0023)	
	<p><u>Lane Geometry</u> Center-Left-Turn-Lane Shared Through/Right</p> <p><u>Roadway Classification</u> Urban - Minor Arterial</p> <p><u>Roadway Ownership</u> State</p> <p><u>Posted Speed Limit</u> 35 MPH</p> <p><u>Traffic Control</u> None</p> <p><u>Notes</u></p>

Westbound Nutt Road (S.R. 0023)	
	<p><u>Lane Geometry</u> Center-Left-Turn-Lane Shared Through/Right</p> <p><u>Roadway Classification</u> Urban - Minor Arterial</p> <p><u>Roadway Ownership</u> State</p> <p><u>Posted Speed Limit</u> 35 MPH</p> <p><u>Traffic Control</u> None</p> <p><u>Notes</u></p>

Northbound Mason Street	
	<p><u>Lane Geometry</u> Shared Left/Through/Right</p> <p><u>Roadway Classification</u> Local</p> <p><u>Roadway Ownership</u> Borough</p> <p><u>Posted Speed Limit</u> 25 MPH</p> <p><u>Traffic Control</u> Stop Control</p> <p><u>Notes</u></p>

Southbound Mason Street	
	<p><u>Lane Geometry</u> Shared Left/Through/Right</p> <p><u>Roadway Classification</u> Local</p> <p><u>Roadway Ownership</u> Borough</p> <p><u>Posted Speed Limit</u> 25 MPH</p> <p><u>Traffic Control</u> Stop Control</p> <p><u>Notes</u></p>

Intersection Inventory Summary

Nutt Road (S.R. 0023) and Mason Street 200 Feet

Eastbound Nutt Road (S.R. 0023)	
	<p><u>Lane Geometry</u> Center-Left-Turn-Lane Shared Through/Right</p> <p><u>Roadway Classification</u> Urban - Minor Arterial</p> <p><u>Roadway Ownership</u> State</p> <p><u>Posted Speed Limit</u> 35 MPH</p> <p><u>Traffic Control</u> None</p> <p><u>Notes</u></p>

Westbound Nutt Road (S.R. 0023)	
	<p><u>Lane Geometry</u> Center-Left-Turn-Lane Shared Through/Right</p> <p><u>Roadway Classification</u> Urban - Minor Arterial</p> <p><u>Roadway Ownership</u> State</p> <p><u>Posted Speed Limit</u> 35 MPH</p> <p><u>Traffic Control</u> None</p> <p><u>Notes</u></p>

Northbound Mason Street	
	<p><u>Lane Geometry</u> Shared Left/Through/Right</p> <p><u>Roadway Classification</u> Local</p> <p><u>Roadway Ownership</u> Borough</p> <p><u>Posted Speed Limit</u> 25 MPH</p> <p><u>Traffic Control</u> Stop Control</p> <p><u>Notes</u></p>

Southbound Mason Street	
	<p><u>Lane Geometry</u> Shared Left/Through/Right</p> <p><u>Roadway Classification</u> Local</p> <p><u>Roadway Ownership</u> Borough</p> <p><u>Posted Speed Limit</u> 25 MPH</p> <p><u>Traffic Control</u> Stop Control</p> <p><u>Notes</u></p>

Intersection Inventory Summary

**Nutt Road (S.R. 0023) and Paradise Street
50 Feet**

Eastbound Nutt Road (S.R. 0023)	
	<u>Lane Geometry</u> Center-Left-Turn-Lane Through
	<u>Roadway Classification</u> Urban - Minor Arterial
	<u>Roadway Ownership</u> State
	<u>Posted Speed Limit</u> 35 MPH
	<u>Traffic Control</u> None
	<u>Notes</u>

Westbound Nutt Road (S.R. 0023)	
	<u>Lane Geometry</u> Shared Through/Right
	<u>Roadway Classification</u> Urban - Minor Arterial
	<u>Roadway Ownership</u> State
	<u>Posted Speed Limit</u> 35 MPH
	<u>Traffic Control</u> None
	<u>Notes</u>

Southbound Paradise Street	
	<u>Lane Geometry</u> Left Right
	<u>Roadway Classification</u> Local
	<u>Roadway Ownership</u> Borough
	<u>Posted Speed Limit</u> 25 MPH
	<u>Traffic Control</u> Stop Control
	<u>Notes</u>

Intersection Inventory Summary

**Nutt Road (S.R. 0023) and Paradise Street
200 Feet**

Eastbound Nutt Road (S.R. 0023)	
	<u>Lane Geometry</u>
	Center-Left-Turn-Lane Through
	<u>Roadway Classification</u>
	Urban - Minor Arterial
	<u>Roadway Ownership</u>
	State
<u>Posted Speed Limit</u>	
35 MPH	
<u>Traffic Control</u>	
None	
<u>Notes</u>	

Westbound Nutt Road (S.R. 0023)	
	<u>Lane Geometry</u>
	Shared Through/Right
	<u>Roadway Classification</u>
	Urban - Minor Arterial
	<u>Roadway Ownership</u>
	State
<u>Posted Speed Limit</u>	
35 MPH	
<u>Traffic Control</u>	
None	
<u>Notes</u>	

Southbound Paradise Street	
	<u>Lane Geometry</u>
	Left Right
	<u>Roadway Classification</u>
	Local
	<u>Roadway Ownership</u>
	Borough
<u>Posted Speed Limit</u>	
25 MPH	
<u>Traffic Control</u>	
Stop Control	
<u>Notes</u>	

Intersection Inventory Summary

**Starr Street (S.R. 0029) and Bridge Street
50 Feet**

Eastbound Bridge Street



Lane Geometry

Shared Through/Right

Roadway Classification

Local

Roadway Ownership

Borough

Posted Speed Limit

25 MPH

Traffic Control

Signal

Notes

Westbound Bridge Street (S.R. 0029)



Lane Geometry

Left
Through

Roadway Classification

Urban - Principal Arterial

Roadway Ownership

State

Posted Speed Limit

35 MPH

Traffic Control

Signal

Notes

Northbound Starr Street (S.R. 0029)



Lane Geometry

Left
Right

Roadway Classification

Urban - Principal Arterial

Roadway Ownership

State

Posted Speed Limit

25 MPH

Traffic Control

Signal

Notes

Intersection Inventory Summary

Starr Street (S.R. 0029) and Bridge Street
200 Feet

Eastbound Bridge Street



Lane Geometry

Shared Through/Right

Roadway Classification

Local

Roadway Ownership

Borough

Posted Speed Limit

25 MPH

Traffic Control

Signal

Notes

Westbound Bridge Street (S.R. 0029)



Lane Geometry

Left
Through

Roadway Classification

Urban - Principal Arterial

Roadway Ownership

State

Posted Speed Limit

35 MPH

Traffic Control

Signal

Notes

Northbound Starr Street (S.R. 0029)



Lane Geometry

Left
Right

Roadway Classification

Urban - Principal Arterial

Roadway Ownership

State

Posted Speed Limit

25 MPH

Traffic Control

Signal

Notes

Intersection Inventory Summary

**Bridge Street (S.R. 0113) and Wheatland Street
50 Feet**

Northbound Bridge Street (S.R. 0113)	
	<p><u>Lane Geometry</u></p> <p>Shared Left/Through/Right</p> <p><u>Roadway Classification</u> Urban - Principal Arterial</p> <p><u>Roadway Ownership</u> State</p> <p><u>Posted Speed Limit</u> 25 MPH</p> <p><u>Traffic Control</u> None</p> <p><u>Notes</u></p>

Southbound Bridge Street (S.R. 0113)	
	<p><u>Lane Geometry</u></p> <p>Shared Left/Through/Right</p> <p><u>Roadway Classification</u> Urban - Principal Arterial</p> <p><u>Roadway Ownership</u> State</p> <p><u>Posted Speed Limit</u> 25 MPH</p> <p><u>Traffic Control</u> None</p> <p><u>Notes</u></p>

Eastbound Wheatland Street	
	<p><u>Lane Geometry</u></p> <p>Shared Left/Through/Right</p> <p><u>Roadway Classification</u> Local</p> <p><u>Roadway Ownership</u> Borough</p> <p><u>Posted Speed Limit</u> 25 MPH</p> <p><u>Traffic Control</u> Stop Control</p> <p><u>Notes</u></p>

Westbound Wheatland Street	
	<p><u>Lane Geometry</u></p> <p>Shared Left/Through/Right</p> <p><u>Roadway Classification</u> Local</p> <p><u>Roadway Ownership</u> Borough</p> <p><u>Posted Speed Limit</u> 25 MPH</p> <p><u>Traffic Control</u> Stop Control</p> <p><u>Notes</u></p>

Intersection Inventory Summary

**Bridge Street (S.R. 0113) and Wheatland Street
200 Feet**

Northbound Bridge Street (S.R. 0113)	
	<u>Lane Geometry</u> Shared Left/Through/Right
	<u>Roadway Classification</u> Urban - Principal Arterial
	<u>Roadway Ownership</u> State
	<u>Posted Speed Limit</u> 25 MPH
	<u>Traffic Control</u> None
	<u>Notes</u>

Southbound Bridge Street (S.R. 0113)	
	<u>Lane Geometry</u> Shared Left/Through/Right
	<u>Roadway Classification</u> Urban - Principal Arterial
	<u>Roadway Ownership</u> State
	<u>Posted Speed Limit</u> 25 MPH
	<u>Traffic Control</u> None
	<u>Notes</u>

Eastbound Wheatland Street	
	<u>Lane Geometry</u> Shared Left/Through/Right
	<u>Roadway Classification</u> Local
	<u>Roadway Ownership</u> Borough
	<u>Posted Speed Limit</u> 25 MPH
	<u>Traffic Control</u> Stop Control
	<u>Notes</u>

Westbound Wheatland Street	
	<u>Lane Geometry</u>
	<u>Roadway Classification</u> Local
	<u>Roadway Ownership</u> Borough
	<u>Posted Speed Limit</u> 25 MPH
	<u>Traffic Control</u> Stop Control
	<u>Notes</u>

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SUBSYSTEM 1			PROGRAM CYCLE LENGTH			
INTERSECTION	IP ADDRESS	FILE #	1	2	3	
10 SCHUYLKILL RD (SR 0724) AND RIDGE RD (SR 0023)/CROSSOVER BLVD		3903	120	110	100	
1 SCHUYLKILL RD (SR 0023) AND RAPPS DAM RD/MOWERE RD	10.0.71.2	2441	120	110	100	
2 SCHUYLKILL RD (SR 0023) AND KIMBERTON SQ/VALLEY FORGE MALL DR	10.0.71.3	1986	120	110	100	
24 SCHUYLKILL RD (SR 0023) AND TOWNSHIP LINE ROAD	10.0.71.23	2614	120	110	100	
3 SCHUYLKILL RD (SR 0023) AND PHOENIXVILLE TOWN CTR DRIVEWAY	10.0.71.4	3216	120	110	100	
4 NUTT RD (SR 0023) AND KIMBERTON RD/SR 0113/PHOENIXVILLE TOWN CTR	10.0.71.5	0031	120	110	100	
5 NUTT RD (SR 0023) AND BRIDGE ST*	10.0.71.6	0568	120	110	100	
SUBSYSTEM 2			PROGRAM CYCLE LENGTH			
INTERSECTION	IP ADDRESS	FILE #	1	2	3	
6 NUTT RD (SR 0023) AND LINCOLN AVE/FOURTH AVE	10.0.71.7	0587	90	70	90	
7 NUTT RD (SR 0023) AND GAY ST	10.0.71.8	0584	90	70	90	
8 NUTT RD (SR 0023) AND MAIN ST/MANAVON ST*	10.0.71.10	0582	90	70	90	
9 NUTT RD (SR 0023) AND STARR ST	10.0.71.11	0279	90	70	90	
10 VALLEY FORGE RD (SR 0023) AND WHITE HORSE ROAD	10.0.71.12	0929	90	70	90	
13 STARR ST (SR 0029) AND MANAVON ST/FIFTH AVE	10.0.71.9	0019	90	70	90	
SUBSYSTEM 3			PROGRAM CYCLE LENGTH			
INTERSECTION	IP ADDRESS	FILE #	1	2	3	
11 VALLEY FORGE RD (SR 0023) AND PAWLINGS RD	10.0.71.13	3366	90	60	100	
12 VALLEY FORGE RD (SR 0023) AND FERRY LN/COUNTRY CLUB RD*	10.0.71.14	0252	90	60	100	
SUBSYSTEM 4			PROGRAM CYCLE LENGTH			
INTERSECTION	IP ADDRESS	FILE #	1	2	3	
18 KIMBERTON RD/SR 0113 AND PRIVATE DR	10.0.71.15	2952	110	100	120	
19 KIMBERTON RD/SR 0113 AND RAPPS DAM RD	10.0.71.16	2748	110	100	120	
20 KIMBERTON RD/SR 0113 AND POTHOUSE RD	10.0.71.17	2449	110	100	120	
21 KIMBERTON RD/SR 0113 AND TOWNSHIP LINE RD*	10.0.71.17	2449	110	100	120	
SUBSYSTEM 5			PROGRAM CYCLE LENGTH			
INTERSECTION	IP ADDRESS	FILE #	1	2	3	
14 BRIDGE ST AND CHURCH ST	10.0.71.18	0055	60	70	70	
15 BRIDGE ST AND GAY ST	10.0.71.19	0566	60	70	70	
16 BRIDGE ST AND MAIN ST	10.0.71.20	0567	60	70	70	
17 BRIDGE ST AND STARR ST*	10.0.71.21	0054	120	70	70	
SUBSYSTEM 6			PROGRAM CYCLE LENGTH			
INTERSECTION	IP ADDRESS	FILE #	1	2	3	4
22 W POTHOUSE RD & STATE RD/HALLOWELL AVE	2270	130	130	105	140	
23 W POTHOUSE RD & PHANTOM WAY/TROTTERS DR	3884	130	130	105	70	

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

MONDAY = DAY 1

GENERAL NOTES

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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-8800 SERIES.

PENNSYLVANIA DEPARTMENT OF TRANSPORTATION ENGINEERING DISTRICT 6-0

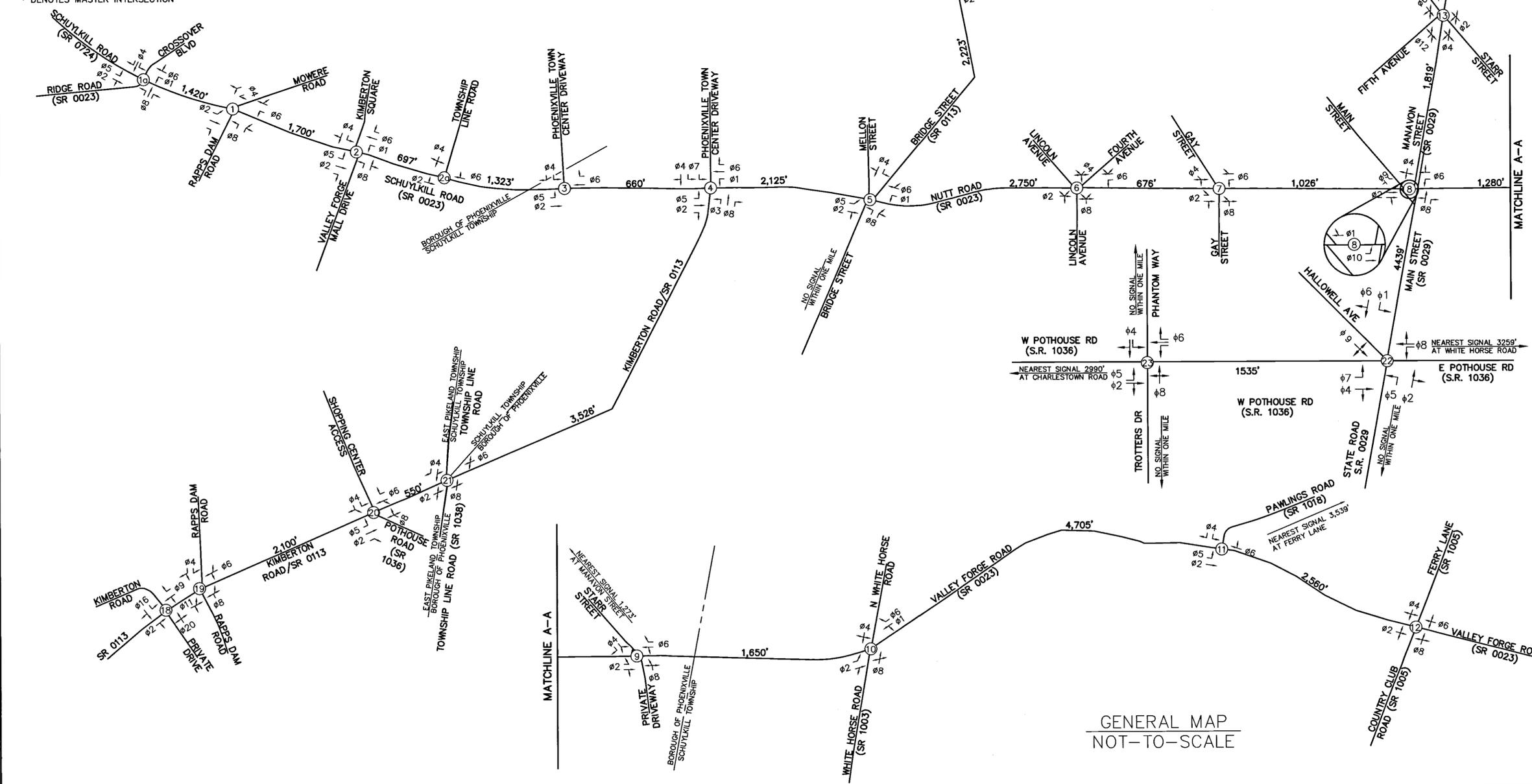
COUNTY: CHESTER
 MUNICIPALITY: PHOENIXVILLE BOROUGH,
 EAST PIKELAND TOWNSHIP & SCHUYLKILL TOWNSHIP
 INTERSECTION: SCHUYLKILL ROAD/NUTT ROAD
 (SR 0023) TRAFFIC SIGNAL SYSTEM

REVIEWED: _____ DATE _____
 MUNICIPAL OFFICIAL _____ DATE _____

RECOMMENDED: PAUL LUTZ 12/8/2010 DATE
 MUNICIPAL SIGNALS ENGINEER
L.R. BELMONTE, P.E. 12/8/2010 DATE
 DISTRICT TRAFFIC ENGINEER

NO.	REVISION	DES. REV.	DATE	REVW.	DATE	RECOM.	DATE
1	REV INT #1 LANE CONFIG & TIMINGS	McM					
2	ADDITION OF INTER. #22, 23	McM	3/4/16	LUTZ	3/4/16	APatel	3/7/16
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	McM	1/19/17	APatel	4/11/17
5							
6							
7							
8							

INTERCONNECT PERMIT # I-0053 SHEET 1 OF 9



GENERAL MAP
NOT-TO-SCALE

GENERAL NOTES

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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.

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MAINTAIN MASTER CONTROLLER COMMUNICATION SUCH AS PHONE DROPS.

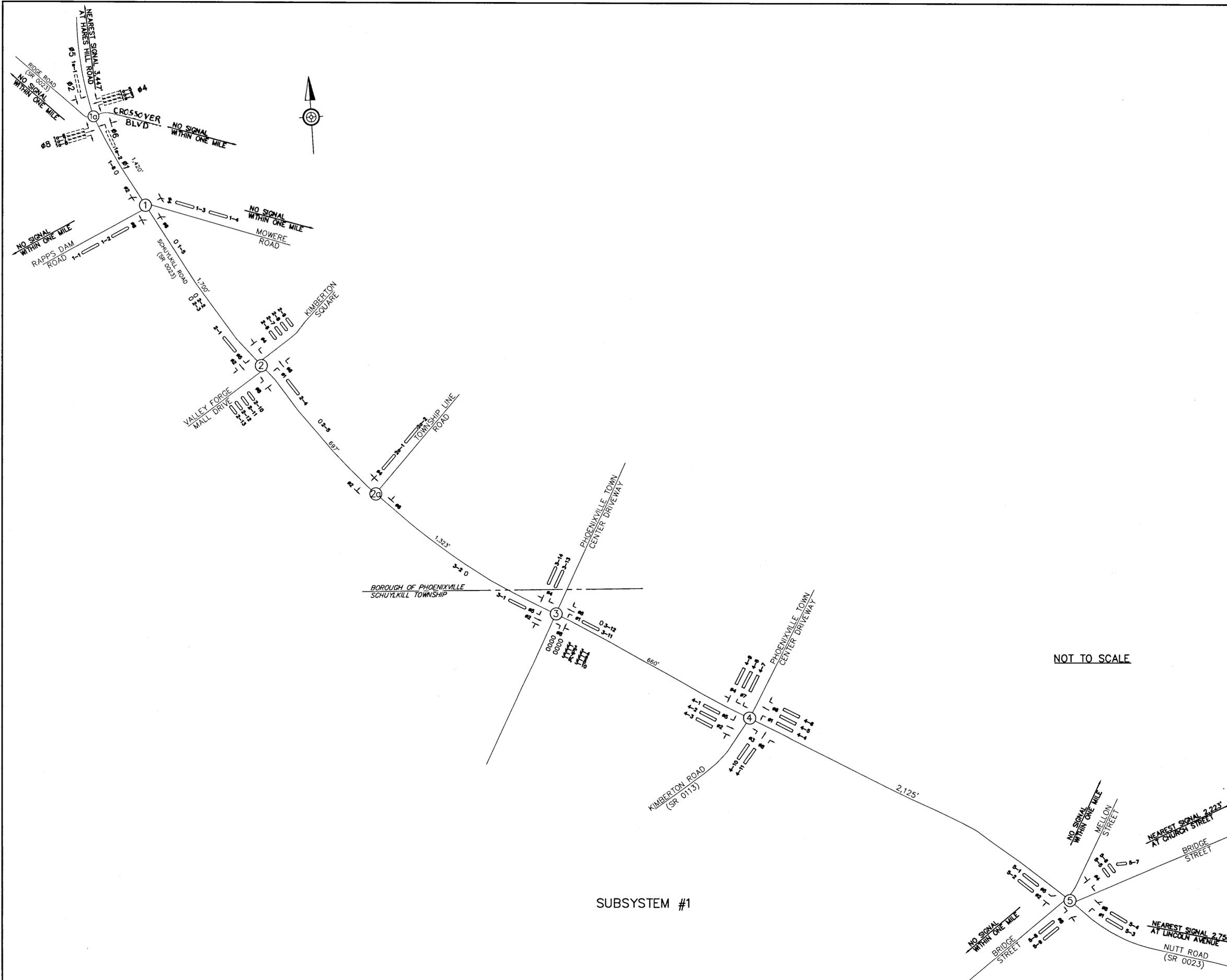
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NOT TO SCALE

SUBSYSTEM #1

PENNSYLVANIA DEPARTMENT OF TRANSPORTATION
ENGINEERING DISTRICT 6-0

COUNTY: CHESTER
MUNICIPALITY: PHOENIXVILLE BOROUGH,
EAST PIKELAND TOWNSHIP & SCHUYLKILL TOWNSHIP
INTERSECTION: SCHUYLKILL ROAD/NUTT ROAD
(SR 0023) TRAFFIC SIGNAL SYSTEM, SUBSYSTEM #1

REVIEWED:
Kimbal Moratti DATE 5/10/16
MUNICIPAL OFFICIAL

RECOMMENDED: *Paul Gutz* 6/13/16
MUNICIPAL SIGNALS ENGINEER DATE

DISTRICT TRAFFIC ENGINEER DATE

NO.	REVISION	REV.	DATE	REV.	DATE	RECOM.	DATE
1	REV INT #1 LANE CONFIG & TIMINGS	McM					
2	ADDITION OF INTER. #22, 23	McM	3/4/16	LUJZ	3/4/16	APatel	3/7/16
3	ADD. INTERSECTION 1a	BURNS	4/19/16	WPK	4/13/16	J.P.	4/20/16
4	REV. INT. #22 FOR PHASES 1, 3, 7	McM	1/24/16	WPK	2/4/16	ABP	4/11/16
5							
6							
7							
8							

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PENNSYLVANIA DEPARTMENT OF TRANSPORTATION ENGINEERING DISTRICT 6-0

COUNTY: CHESTER
MUNICIPALITY: PHOENIXVILLE BOROUGH,
EAST PIKELAND TOWNSHIP & SCHUYLKILL TOWNSHIP

INTERSECTION: SCHUYLKILL ROAD/NUTT ROAD
(SR 0023) TRAFFIC SIGNAL SYSTEM, SUBSYSTEM #1

REVIEWED: *Kimberly Moretti* DATE 5/10/16
MUNICIPAL OFFICIAL

RECOMMENDED: *Paul Jutz* 6/13/16 DATE
MUNICIPAL SIGNALS ENGINEER

DISTRICT TRAFFIC ENGINEER DATE

NO.	REVISION	REV.	DATE	REV.	DATE	RECOM.	DATE
1	REV INT #1 LANE CONFIG & TIMINGS	McM					
2	ADDITION OF INTER. #22, 23	McM	3/4/16	LUTZ	3/4/16	APatel	3/7/16
3	ADD. INTERSECTION 1a	BURNS	4/19/16	Wtz	6/13/16	APatel	6/22/16
4	REV INT #22 FOR PHASES 1, 5, 7	McM	1/18/16	LOTE	4/1/16	ABP	4/1/16
5							
6							
7							
8							

SYSTEM NOTES

- PROGRAM TO BE SELECTED BY CLOSED LOOP SYSTEM (TIME OF DAY) OR TBC BACKUP.
- OFFSETS ARE REFERENCED TO THE BEGINNING OF GREEN (PHASE 2+6) ON SCHUYLKILL ROAD/NUTT ROAD (SR 0023). THE MASTER CONTROLLER IS LOCATED AT NUTT ROAD (SR 0023) AND BRIDGE STREET.
- ACTUAL GREEN TIME DETERMINED BY CYCLE LENGTH.
- SYSTEM LIMITS :
SCHUYLKILL ROAD/NUTT ROAD (SR 0724/0023) (7 INTERSECTIONS) - RIDGE ROAD/MOWERE ROAD TO BRIDGE STREET
- PRIMARY COORDINATION: FIBER OPTIC
SECONDARY COORDINATION: TBC (DEFAULT TO BACKUP TBC)

EVENT	DAY	TIME	PROGRAM	REMARKS
1	1-5	06:00	1	AM PEAK
2	1-5	10:00	2	MIDDAY
3	1-5	15:00	3	PM PEAK
4	1-7	19:00	2	EVENING/WEEKEND
5	1-7	22:00	FREE	
6	6,7	09:00	2	EVENING/WEEKEND

MONDAY = DAY 1

PROGRAM 1		PHASE									CYCLE	OFFSET 1	REFERENCE INTERVAL 1	OFFSET 2	REFERENCE INTERVAL 2
INTERSECTION	FILE #	1	2	3	4	5	6	7	8	9					
1a SCHUYLKILL RD (SR 0724) AND RIDGE RD (SR 0023)/CROSSOVER BLVD	3903	31(LEAD)	67		22	31(LEAD)	67		22		120	108	12	48	14
1 SCHUYLKILL RD (SR 0023) AND RAPPS DAM RD/MOWERE RD	2441		82		38		82		38		120	16	1	103	3
2 SCHUYLKILL RD (SR 0023) AND KIMBERTON SQ/VALLEY FORGE MALL DR	1986	13(LEAD)	76(LAG)		31	13(LEAD)	76(LAG)		31		120	54	12	10	14
2a SCHUYLKILL RD (SR 0023) AND TOWNSHIP LINE ROAD	2614		84		16		84				120	53	1	9	3
3 SCHUYLKILL RD (SR 0023) AND PHOENIXVILLE TOWN CTR DRIVEWAY	3216		81(LAG)		39	21(LEAD)	60(LAG)		39		120	84	5	18	7
4 NUTT RD (SR 0023) AND KIMBERTON RD/SR 0113/PHOENIXVILLE TOWN CTR	0031	29(LEAD)	49(LAG)	13(LEAD)	29(LAG)	13(LEAD)	65(LAG)	13(LEAD)	29(LAG)		120	67	12	110	14
5 NUTT RD (SR 0023) AND BRIDGE ST	0568	18(LEAD)	70(LAG)		32	38(LEAD)	50(LAG)		32		120	0	12	0	14
PROGRAM 2		PHASE									CYCLE	OFFSET 1	REFERENCE INTERVAL 1	OFFSET 2	REFERENCE INTERVAL 2
INTERSECTION	FILE #	1	2	3	4	5	6	7	8	9					
1a SCHUYLKILL RD (SR 0724) AND RIDGE RD (SR 0023)/CROSSOVER BLVD	3903	22(LEAD)	57		31	22(LEAD)	57		31		110	102	12	42	14
1 SCHUYLKILL RD (SR 0023) AND RAPPS DAM RD/MOWERE RD	2441		80		30		80		30		110	34	1	26	4
2 SCHUYLKILL RD (SR 0023) AND KIMBERTON SQ/VALLEY FORGE MALL DR	1986	13(LEAD)	66(LAG)		31	15(LEAD)	66(LAG)		31		110	36	12	102	14
2a SCHUYLKILL RD (SR 0023) AND TOWNSHIP LINE ROAD	2620		81		29		81				110	48	1	19	3
3 SCHUYLKILL RD (SR 0023) AND PHOENIXVILLE TOWN CTR DRIVEWAY	3216		74(LAG)		36	18(LEAD)	56(LAG)		39		110	99	5	39	7
4 NUTT RD (SR 0023) AND KIMBERTON RD/SR 0113/PHOENIXVILLE TOWN CTR	0031	24(LEAD)	44(LAG)	13(LEAD)	29(LAG)	13(LEAD)	55(LAG)	13(LEAD)	29(LAG)		110	74	12	2	14
5 NUTT RD (SR 0023) AND BRIDGE ST	0568	12(LEAD)	75(LAG)		23	28(LEAD)	59(LAG)		23		110	0	12	0	14
PROGRAM 3		PHASE									CYCLE	OFFSET 1	REFERENCE INTERVAL 1	OFFSET 2	REFERENCE INTERVAL 2
INTERSECTION	FILE #	1	2	3	4	5	6	7	8	9					
1a SCHUYLKILL RD (SR 0724) AND RIDGE RD (SR 0023)/CROSSOVER BLVD	3903	20(LEAD)	59		21	20(LEAD)	59		21		100	71	12	23	14
1 SCHUYLKILL RD (SR 0023) AND RAPPS DAM RD/MOWERE RD	2441		69		31		69		31		100	2	1	71	3
2 SCHUYLKILL RD (SR 0023) AND KIMBERTON SQ/VALLEY FORGE MALL DR	1986	13(LEAD)	56(LAG)		31	13(LEAD)	56(LAG)		31		100	21	12	77	3
2a SCHUYLKILL RD (SR 0023) AND TOWNSHIP LINE ROAD	2620		84		16		84				100	94	1	78	14
3 SCHUYLKILL RD (SR 0023) AND PHOENIXVILLE TOWN CTR DRIVEWAY	3216		69(LAG)		31	13(LEAD)	56(LAG)		39		100	80	5	30	7
4 NUTT RD (SR 0023) AND KIMBERTON RD/SR 0113/PHOENIXVILLE TOWN CTR	0031	25(LEAD)	33(LAG)	13(LEAD)	29(LAG)	13(LEAD)	45(LAG)	13(LEAD)	29(LAG)		100	75	12	2	14
5 NUTT RD (SR 0023) AND BRIDGE ST	0568	11(LEAD)	66(LAG)		23	26(LEAD)	51(LAG)		23		100	0	12	0	14

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 PERMITEE.

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 PERMITEE COMPLIES WITH THE 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.

PERMITEE 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.

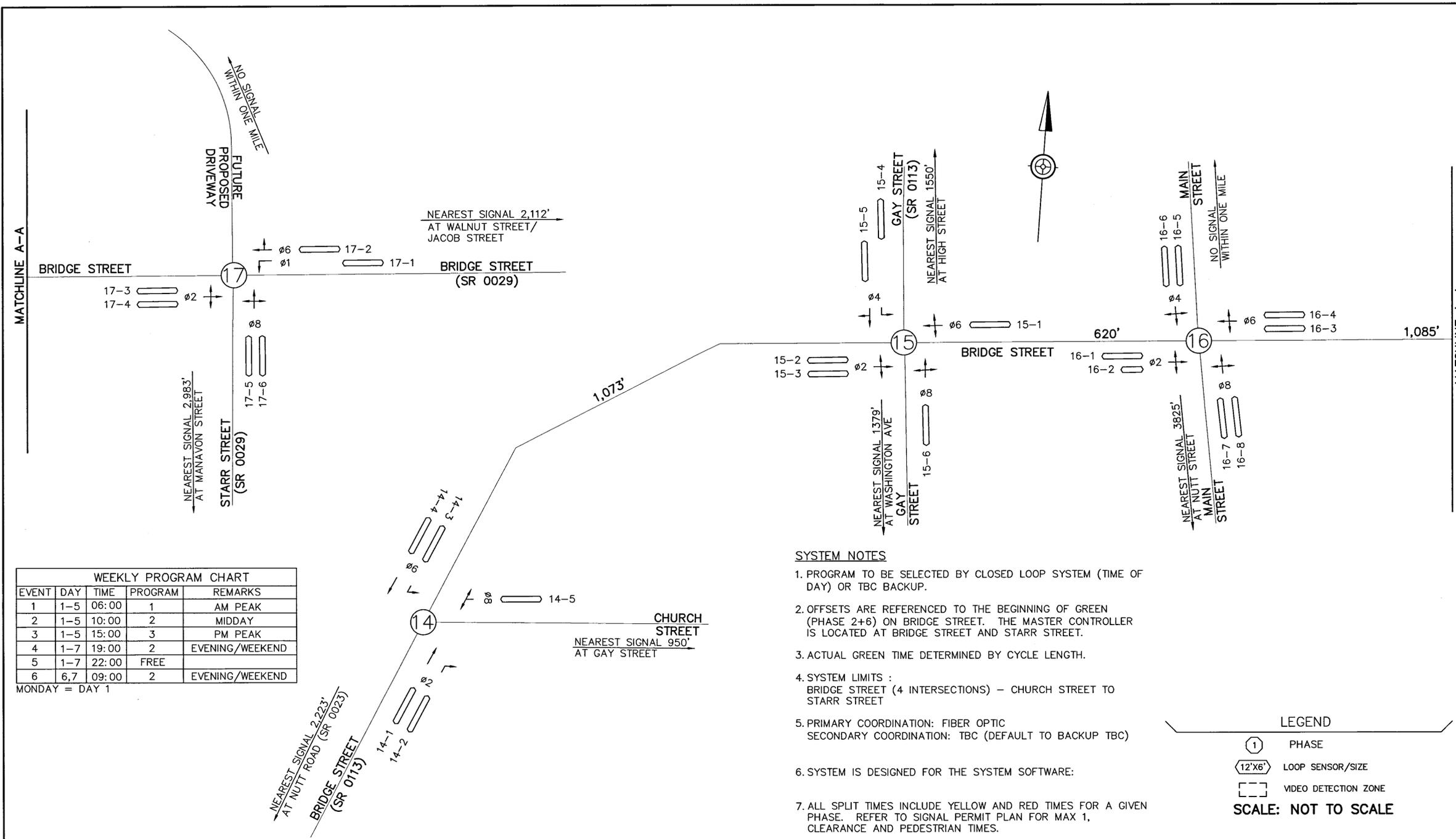
SYSTEM PERMIT PLAN

PENNSYLVANIA DEPARTMENT OF TRANSPORTATION
ENGINEERING DISTRICT 6-0

COUNTY: CHESTER
MUNICIPALITY: PHOENIXVILLE BOROUGH
INTERSECTION: BRIDGE STREET (S.R. 0113/S.R. 1040)
TRAFFIC SIGNAL SYSTEM, SUBSYSTEM #5

REVIEWED: _____ DATE _____
MUNICIPAL OFFICIAL _____ DATE _____
RECOMMENDED:
PAUL LUTZ 12/8/10
LOUIS BELMONTE 12/8/10
DISTRICT TRAFFIC ENGINEER

NO.	REVISION	DES./REV.	DATE	REV.	DATE	RECOM.	DATE
1	REVISE INT. #1 LANE CONFIG. & TIMINGS	MCM	3/4/16	WLB	3/4/16	ABP	3/7/16
2	ADDITION OF #22, 23	MCM	3/4/16	WLB	3/4/16	ABP	3/7/16
3	ADD INTERSECTION 1A	BURNS	4/1/16	LUTZ	6/1/16	ABP	6/20/16
4	REV INT# 22 FOR PHASES 1,5,7	MCM	1/18/17	LUTZ	4/9/16	ABP	4/11/16
5							
6							
7							
8							



EVENT	DAY	TIME	PROGRAM	REMARKS
1	1-5	06:00	1	AM PEAK
2	1-5	10:00	2	MIDDAY
3	1-5	15:00	3	PM PEAK
4	1-7	19:00	2	EVENING/WEEKEND
5	1-7	22:00	FREE	
6	6,7	09:00	2	EVENING/WEEKEND

MONDAY = DAY 1

SYSTEM NOTES

- PROGRAM TO BE SELECTED BY CLOSED LOOP SYSTEM (TIME OF DAY) OR TBC BACKUP.
- OFFSETS ARE REFERENCED TO THE BEGINNING OF GREEN (PHASE 2+6) 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 (4 INTERSECTIONS) - CHURCH STREET TO STARR STREET
- PRIMARY COORDINATION: FIBER OPTIC
SECONDARY COORDINATION: TBC (DEFAULT TO BACKUP TBC)
- SYSTEM IS DESIGNED FOR THE SYSTEM SOFTWARE:
- ALL SPLIT TIMES INCLUDE YELLOW AND RED TIMES FOR A GIVEN PHASE. REFER TO SIGNAL PERMIT PLAN FOR MAX 1, CLEARANCE AND PEDESTRIAN TIMES.

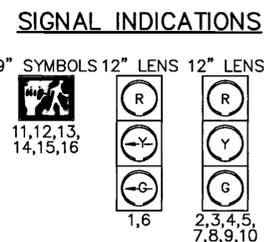
LEGEND

- 1 PHASE
 - 12'x6' LOOP SENSOR/SIZE
 - VIDEO DETECTION ZONE
- SCALE: NOT TO SCALE

PROGRAM 1		PHASE									CYCLE	OFFSET 1	REFERENCE INTERVAL 1	OFFSET 2	REFERENCE INTERVAL 2
INTERSECTION	FILE #	1	2	3	4	5	6	7	8	9					
14 BRIDGE ST AND CHURCH ST	0055		33				33		27		60	40	1	7	3
15 BRIDGE ST AND GAY ST	0566		32		28		32		28		60	10	1	37	3
16 BRIDGE ST AND MAIN ST	0567		28		32		28		32		60	42	1	4	3
17 BRIDGE ST AND STARR ST	0054	44(LEAD)	54(LAG)				98		22		120	0	5	0	7
PROGRAM 2		PHASE									CYCLE	OFFSET 1	REFERENCE INTERVAL 1	OFFSET 2	REFERENCE INTERVAL 2
INTERSECTION	FILE #	1	2	3	4	5	6	7	8	9					
14 BRIDGE ST AND CHURCH ST	0055		38				38		32		70	31	1	63	3
15 BRIDGE ST AND GAY ST	0566		39		31		39		31		70	25	1	59	3
16 BRIDGE ST AND MAIN ST	0567		39		31		39		31		70	8	1	41	3
17 BRIDGE ST AND STARR ST	0054	15(LEAD)	33(LAG)				48		22		70	0	5	0	7
PROGRAM 3		PHASE									CYCLE	OFFSET 1	REFERENCE INTERVAL 1	OFFSET 2	REFERENCE INTERVAL 2
INTERSECTION	FILE #	1	2	3	4	5	6	7	8	9					
14 BRIDGE ST AND CHURCH ST	0055		41				41		29		70	65	1	30	3
15 BRIDGE ST AND GAY ST	0566		47		23		47		23		70	18	1	60	3
16 BRIDGE ST AND MAIN ST	0567		42		28		42		28		70	6	1	42	3
17 BRIDGE ST AND STARR ST	0054	15(LEAD)	35(LAG)				50		20		70	0	5	0	7

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NO.	TIME	TOTALS
1.	7:00AM TO 8:00AM	
2.	8:00AM TO 9:00AM	
3.	9:00AM TO 10:00AM	
4.	10:00AM TO 11:00AM	
5.	11:00AM TO 12:00PM	
6.	12:00PM TO 1:00PM	
7.	1:00PM TO 2:00PM	
8.	2:00PM TO 3:00PM	
9.	3:00PM TO 4:00PM	
10.	4:00PM TO 5:00PM	
11.	5:00PM TO 6:00PM	
12.	6:00PM TO 7:00PM	



SIGNALS TO BE EQUIPPED WITH TUNNEL VISORS & LOUVERS 1,6

SIGN TABULATION

PLAN SYMBOL	SERIES NUMBER	SIZE	REMARKS
A	R10-6AL	24"x30"	STOP HERE ON RED
B	R10-11	30"x36"	NO TURN ON RED
C	R10-10L	30"x36"	LEFT TURN SIGNAL
D	R10-3B(R)	9"x12"	EDUCATIONAL PUSH BUTTON FOR WALKING PERSON SIGNAL
E	R10-3B(L)	9"x12"	EDUCATIONAL PUSH BUTTON FOR WALKING PERSON SIGNAL
F	R5-1	30"x30"	DO NOT ENTER
G	R9-3A	18"x18"	NO PEDESTRIAN CROSSING
J	R1-2	36"x36"	YIELD
K	W11-2	30"x30"	PEDESTRIAN
L	R3-7L	30"x30"	LEFT LANE MUST TURN LEFT
M	W16-7P	24"x12"	DOWNWARD DIAGONAL ARROW (PLAQUE)
P	D3-4	72"x12"	Bridge St
R	D3-4	72"x12"	Nutt Rd
S	R3-5L	30"x36"	LEFT TURN SIGN
T	R3-6SR	30"x36"	OPTIONAL RIGHT TURN SIGN
U	R3-6LS	30"x36"	OPTIONAL LEFT TURN SIGN
V	SPECIAL	35"x17"	SEE DETAIL
W	SPECIAL	30"x22"	SEE DETAIL

GENERAL NOTES

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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.

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SYSTEM PERMIT# I-0053

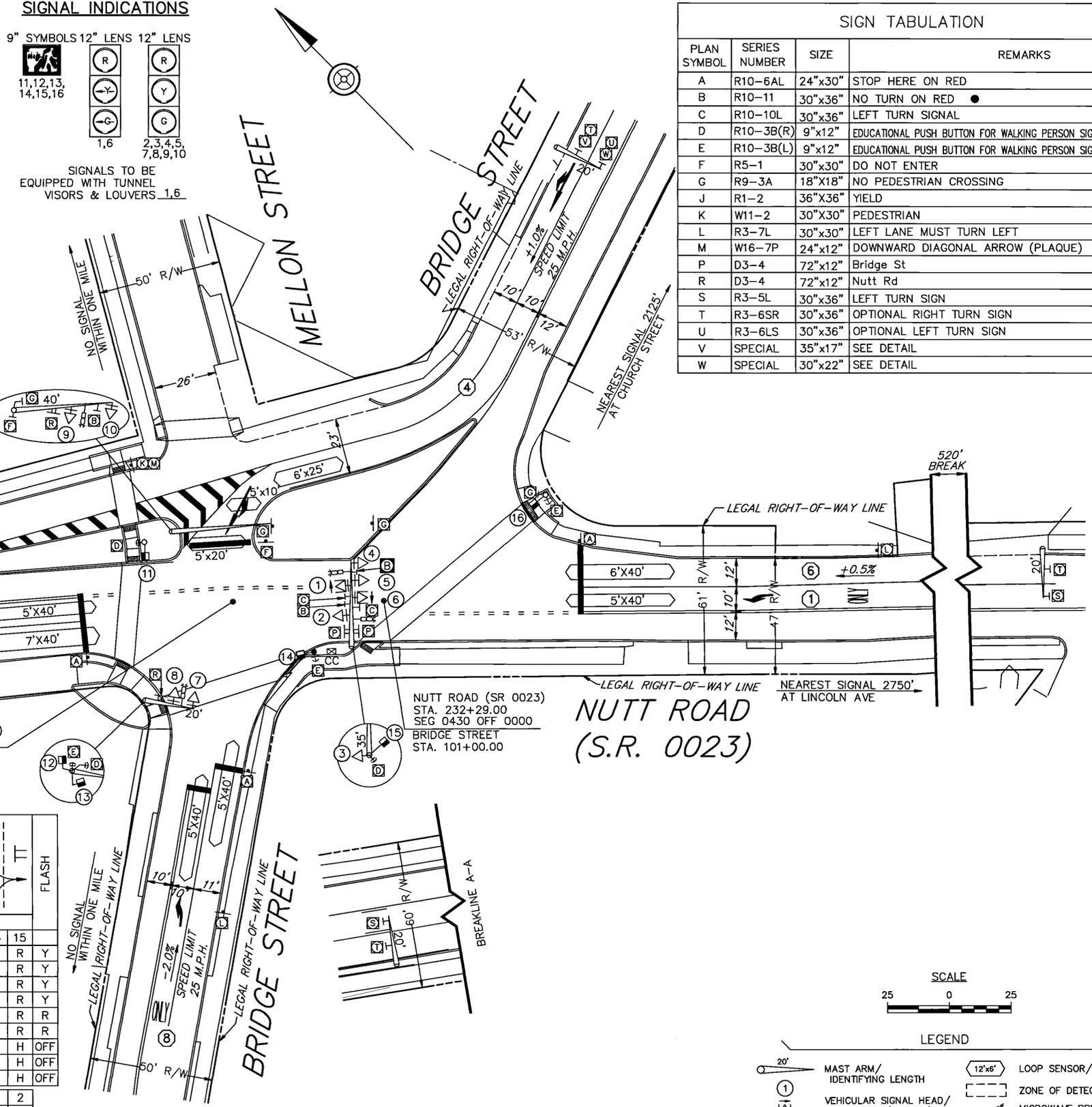
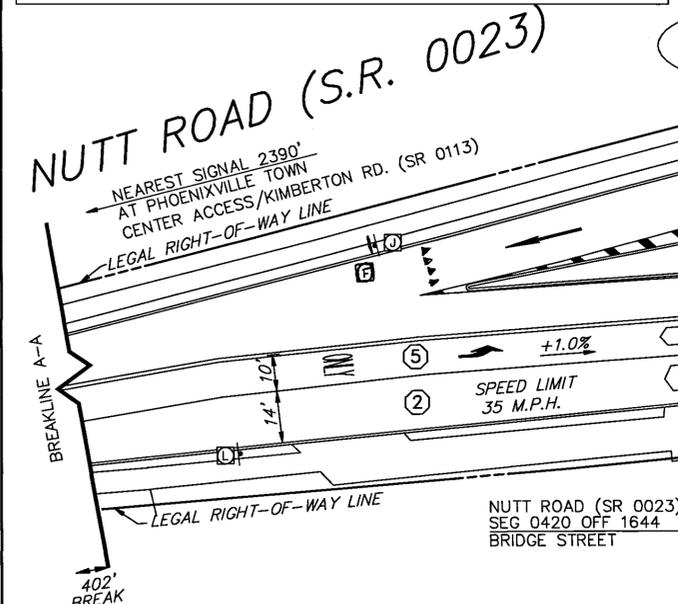
PENNSYLVANIA DEPARTMENT OF TRANSPORTATION
ENGINEERING DISTRICT 6-0

COUNTY: CHESTER
MUNICIPALITY: PHOENIXVILLE BOROUGH
INTERSECTION: NUTT ROAD (S.R. 0023)
AND BRIDGE STREET

REVIEWED: _____ DATE _____
MUNICIPAL OFFICIAL _____ DATE _____

RECOMMENDED:
PHOENIXVILLE BOROUGH OFFICIAL 5/17/07
LOUIS R. BELMONTE 5/31/07
DISTRICT TRAFFIC ENGINEER DATE

NO.	REVISION	DES./REVW.	DATE	REVW.	DATE	RECOM.	DATE
1	AS BUILT DRAWING	KMJ	11/10/10	LUTZ	12/8/10		
2	ADD SIGNS & W	MCM	7/28/16	WOLFE	8/14/16		
3							
4							
5							
6							
7							
8							



MOVEMENT, SEQUENCE AND TIMING DIAGRAM

PHASE	INTERVAL	1+6	2+6	2+5	4+8	FLASH
1		R	R	R	R	Y
2,3		R	R	G	G	Y
4,5		G	Y	R	G	Y
6		G	Y	R	R	Y
7,8		R	R	R	R	R
9,10		R	R	R	R	R
11,12		H	H	H	H	M
13,14		H	H	H	M	H
15,16		H	H	H	M	H

FIXED	3	5	3	2	3	5	3	2
MINIMUM	7	15	7	7				
PASSAGE	3	3	3					
MAX 1	15	45	20	25				
PEDESTRIAN*		10	11	4	7	18		
MEMORY	NL	MN	NL	NL				

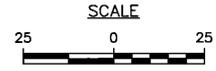
*UPON PEDESTRIAN ACTUATION ONLY, OTHERWISE HAND SYMBOL AT ALL TIMES.

OPERATION NOTES:
 ① REMAINS G IF FOLLOWED BY PHASE 2+6.
 ② REMAINS G IF FOLLOWED BY PHASE 2+5.
 ③ REMAINS G IF FOLLOWED BY PHASE 1+6.
 ④ TIMINGS SHALL BE AS SHOWN IN PHASE 2+6. IT MAY TIME OUT IN THIS PHASE OR BE COMPLETED IN PHASE 2+6.

MASTER CONTROLLER LOCATED AT THIS INTERSECTION.

THIS SIGNAL IS COORDINATED WITH ADJACENT SIGNALS ALONG NUTT ROAD (SR 0023) FROM RAPPS DAM ROAD/MOWERE ROAD TO BRIDGE STREET BY MEANS OF FIBER-OPTIC COMMUNICATION.

SEE SYSTEM PLAN I-0053 FOR SIGNAL SYSTEM PROGRAM TIMES. OFFSET REFERENCED TO PHASE 2+6 START OF GREEN (INTERVAL 4).

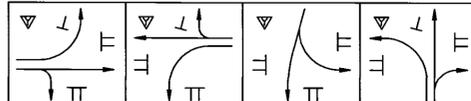


LEGEND

20'	MAST ARM/IDENTIFYING LENGTH	12'x6'	LOOP SENSOR/SIZE
12'x6'	VEHICULAR SIGNAL HEAD/BACKPLATE/VISORS/DIRECTIONAL ARROW/IDENTIFYING NUMBER	△	ZONE OF DETECTION
1	PEDESTRIAN SIGNAL HEAD/IDENTIFYING NUMBER	⊛	MICROWAVE PRESENCE DETECTOR
+	PEDESTRIAN PUSHBUTTON/SIGN	⊛	EMERGENCY PRE-EMPTION FLASHING BEACON
⊛	SIGN/IDENTIFYING LETTER	⊛	EMERGENCY PRE-EMPTION DEVICE
⊛	VIDEO DETECTOR	⊛	CURB RAMP
⊛	CONTROLLER CABINET	⊛	UTILITY POLE
		⊛	PHASE NUMBER
		⊛	INLET
		⊛	WAVETRONIX RADAR DETECTOR

11/10/10 - Nutt Rd (S.R. 0023) and Bridge St. Signal Installation. 7/28/16. 5:24 PM

EMERGENCY PRE-EMPTION PHASING



PHASE	2+5			1+6			4			8		
SIGNAL	16	17	18	19	20	21	22	23	24	25	26	27
1	G	Y	R	R	R	R	R	R	R	R	R	R
2,3	G	Y	R	R	R	R	R	R	R	R	R	R
4,5	R	R	R	G	Y	R	R	R	R	R	R	R
6	R	R	R	G	Y	R	R	R	R	R	R	R
7,8	R	R	R	R	R	R	G	Y	R	R	R	R
9,10	R	R	R	R	R	R	R	R	R	G	Y	R
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
15,16	H	H	H	H	H	H	H	H	H	H	H	H
FIXED TIME	ⓐ	3	5	ⓐ	3	5	ⓐ	3	2	ⓐ	3	2

ⓐ SIGNAL TO REMAIN G WHEN RETURNING TO PHASE 2+6
 ⓑ FOR DURATION OF OPTICAL 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 NOTES:

- CONTROLLER TO BE EQUIPPED WITH EMERGENCY PRE-EMPTION FOR THE NORTHBOUND & SOUTHBOUND APPROACHES OF NUTT ROAD (SR 0023) AND THE EASTBOUND & WESTBOUND APPROACHES OF BRIDGE 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. LOCATION OF EMERGENCY VEHICLE DETECTORS ARE TO BE FIELD ADJUSTED TO ACHIEVE MAXIMUM OPERATION.
- THE SIGNALS, WHEN ACTIVATED BY EMERGENCY VEHICLES, SHALL TERMINATE ALL GREEN INDICATIONS IMMEDIATELY, FOLLOWED BY THE COMPLETE YELLOW AND RED CLEARANCE INTERVALS, ACCORDINGLY. THEN THE GREEN INTERVAL FOR THE PRE-EMPTED 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.
- IF SIGNALS HAVE BEEN ACTUATED BY PEDESTRIAN PUSH BUTTON AND THE SIGNAL IS PRE-EMPTED, THE PEDESTRIAN TIME SHALL BE SPLIT BETWEEN PED "WALK (MAN)" AND PED "CLEAR (HAND)". THE PED "WALK (MAN)" INTERVAL SHALL TERMINATE IMMEDIATELY, FOLLOWED BY THE PED "CLEAR (HAND)" INTERVAL. THIS INTERVAL SHALL TIME OUT, FOLLOWED BY THE APPROPRIATE CLEARANCES, BEFORE GOING INTO EMERGENCY PRE-EMPTION.
- 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+5, 4, 1+6, OR 8 IN RETURNING TO NORMAL OPERATION, PHASE 2+6 INTERVAL 4 SHALL FOLLOW.
- IN EMERGENCY PRE-EMPTION, NO PRIORITY SHALL BE ESTABLISHED. PRE-EMPTION SHALL BE A "FIRST COME, FIRST SERVE" OPERATION.

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 PERMITEE.

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 PERMITEE 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.

PERMITEE 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.

SYSTEM PERMIT# I-0053

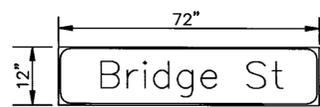
PENNSYLVANIA DEPARTMENT OF TRANSPORTATION
 ENGINEERING DISTRICT 6-0

COUNTY: CHESTER
 MUNICIPALITY: PHOENIXVILLE BOROUGH
 INTERSECTION: NUTT ROAD (S.R. 0023)
AND BRIDGE STREET

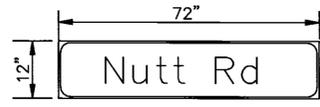
REVIEWED: _____ DATE _____
 MUNICIPAL OFFICIAL _____ DATE _____

RECOMMENDED:
 PHOENIXVILLE BOROUGH OFFICIAL 5/17/07
 LOUIS R. BELMONTE 5/31/07
 DISTRICT TRAFFIC ENGINEER DATE

NO.	REVISION	DES./REVW.	DATE	REVW.	DATE	RECOM.	DATE
1	AS BUILT DRAWING	KMJ	11/10/10	LUTZ	12/8/10		
2	ADD SIGNS V&W	MCM	7/28/16	WPC	8/24/16	ahp	8/24/16
3							
4							
5							
6							
7							
8							



DETAIL SIGN P
 N.T.S.



DETAIL SIGN R
 N.T.S.

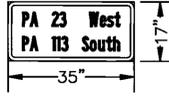
CLEARVIEWONE CD-45
 8" UPPER CASE
 6" LOWER CASE
 WHITE LEGEND ON
 GREEN BACKGROUND

SIGN DETAIL W
 N.T.S.



SERIES B
 6" UPPER CASE
 4" LOWER CASE
 WHITE LEGEND ON
 GREEN BACKGROUND

SIGN DETAIL V
 N.T.S.



SERIES B
 4" UPPER CASE
 3" LOWER CASE
 WHITE LEGEND ON
 GREEN BACKGROUND

Kemp/Strick - Nutt Rd (S.R. 0023) and Bridge Street Intersection, Phoenixville, Chester PA

DISTRICT	COUNTY	ROUTE	SECTION	SHEET
6-0	CHESTER	0023	CL2	57 OF 59
PHOENIXVILLE BOROUGH				
REVISION NUMBER	REVISIONS	DATE	BY	
1	AS-BUILT DRAWING	11/10/10	KMJ	

TRAFFIC SIGNAL NOTES

DO NOT MODIFY INSTALLATION WITHOUT PRIOR WRITTEN APPROVAL.

ALL SIGNS AND PAVEMENT MARKINGS INDICATED ARE PART OF THE PERMIT. INSTALL AND MAINTAIN IN ACCORDANCE WITH PUBLICATION 212.

POST MOUNTED SIGNALS: INSTALL WITH A MINIMUM SIGNAL HEAD CLEARANCE OF 2 FEET BEHIND FACE OF CURB OR EDGE OF SHOULDER; AND 8 FEET ABOVE SIDEWALK OR PAVEMENT GRADE.

OVERHEAD SIGNALS: INSTALL WITH A MINIMUM SIGNAL HEAD CLEARANCE OF 2 FEET BEHIND FACE OF CURB OR EDGE OF SHOULDER. PROVIDE A MINIMUM SIGNAL HEAD CLEARANCE OF 16 FEET ABOVE ROADWAY; RIGIDLY MOUNT, TOP AND BOTTOM; AND EQUIP WITH BACKPLATES. PROVIDE A MINIMUM HORIZONTAL DISTANCE OF 8 FEET BETWEEN SIGNALS AS MEASURED AT RIGHT ANGLES TO THE APPROACH.

DETERMINE WITH A PENNDOT REPRESENTATIVE, THE EXACT LOCATION OF DETECTORS PRIOR TO INSTALLATION.

CONSULT WITH LOCAL OFFICIALS AND UTILITIES TO RESOLVE CONFLICTS PRIOR TO CONSTRUCTION.

COMPLY WITH LATEST PROVISIONS OF ACT 287, FOR PREVENTION OF DAMAGE TO UNDERGROUND UTILITIES, DATED DECEMBER 20, 1974.

ALL DESIGNERS AND CONTRACTORS UTILIZING THIS PLAN AND THE INFORMATION CONTAINED THEREON ARE CAUTIONED TO COMPLY WITH THE REQUIREMENTS OF PENNSYLVANIA ACT 199, ENTITLED "UNDERGROUND UTILITY LINE PROTECTION LAW", (AMENDS PENNSYLVANIA ACT 187 & 287). ANY INFORMATION APPEARING ON THESE DRAWINGS AS TO THE UNDERGROUND LINES OF A USER, SUCH AS A PUBLIC UTILITY, HAS BEEN INCORPORATED HEREON PURSUANT TO SAID PENNSYLVANIA ACT 199. THIS INFORMATION HAS BEEN PROVIDED BY THE RESPECTIVE USERS IN RESPONSE TO THE PA ONE CALL SYSTEM REFERENCE SERIAL #1115964 PER PHONE CALL ON APRIL 21, 2005.

ALL LOCATIONS OF UNDERGROUND UTILITIES ARE APPROXIMATE ONLY AND MUST BE FIELD VERIFIED PRIOR TO CONSTRUCTION. CARROLL ENGINEERING CORP. HAS NOT MADE AN INDEPENDENT DETERMINATION WITH RESPECT TO THE ACCURACY OR COMPLETENESS OF SUCH INFORMATION AND SPECIFICALLY DISCLAIMS ANY WARRANTY OR REPRESENTATION AS TO THE ACCURACY OF SUCH INFORMATION.

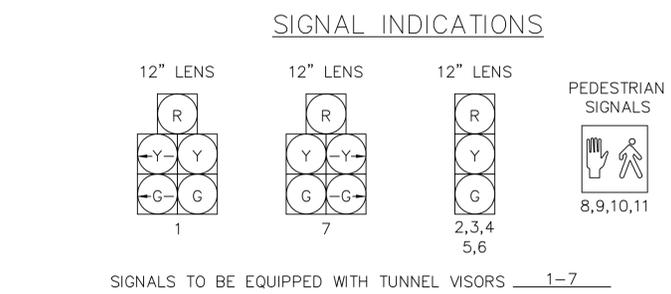
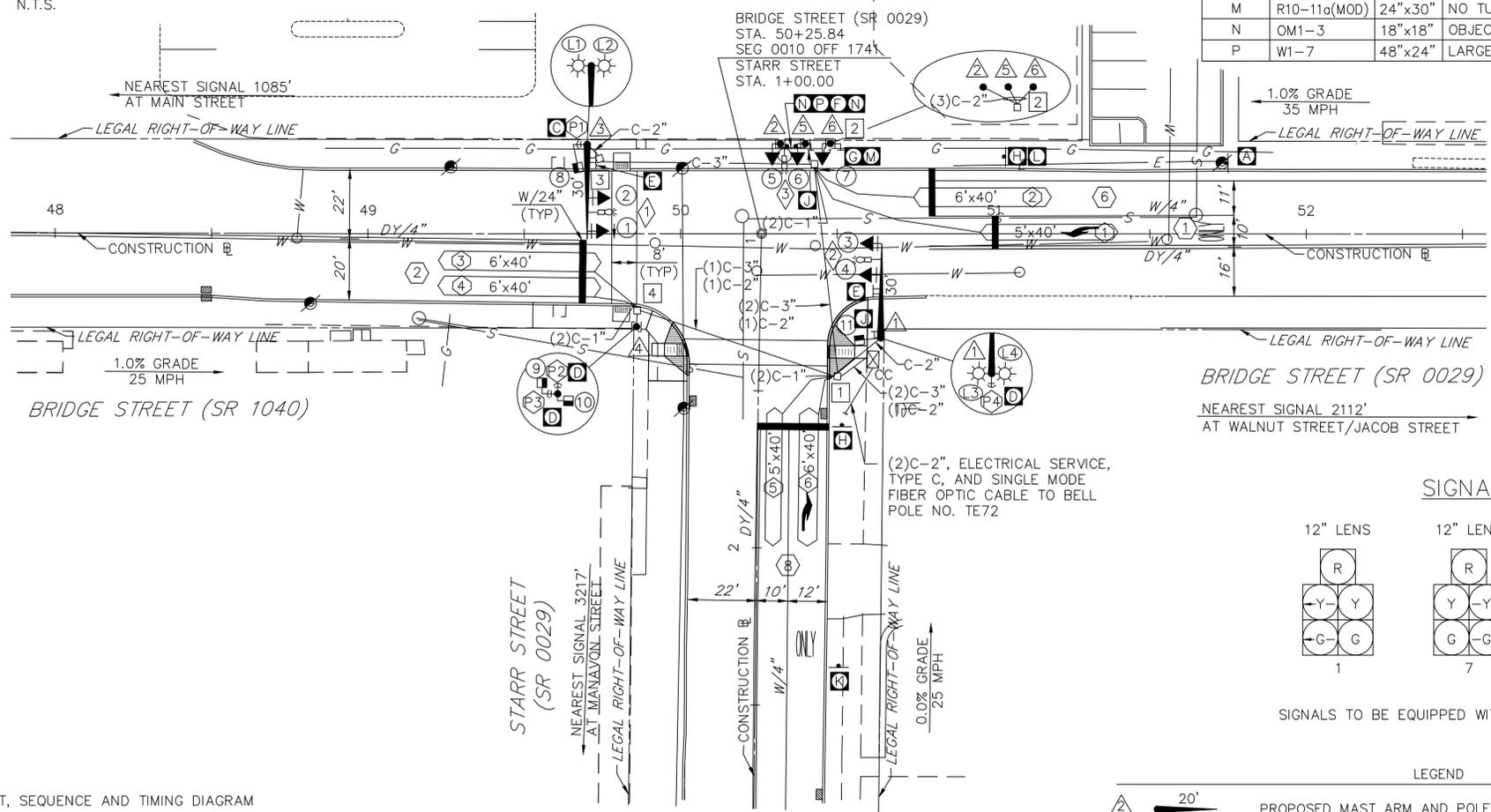
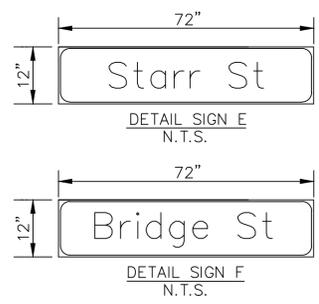
CALL BEFORE YOU DIG!
 PENNSYLVANIA LAW REQUIRES 3 WORKING DAYS NOTICE FOR CONSTRUCTION PHASE AND 10 WORKING DAYS IN DESIGN STAGE-STOP CALL
 PENNSYLVANIA ONE CALL SYSTEM, INC.
 1-800-242-1776

COUNTY : CHESTER
 MUNICIPALITY : PHOENIXVILLE BOROUGH
 INTERSECTION : BRIDGE STREET (SR 1040/SR 0029) & STARR STREET (SR 0029), FILE #0054

REVIEWED :
 PHOENIXVILLE BOROUGH OFFICIAL 5/17/07
 MUNICIPAL OFFICIAL DATE

RECOMMENDED :
 LOUIS BELMONTE 5/31/07
 DISTRICT TRAFFIC ENGINEER DATE

PLAN SYMBOL	SERIES NUMBER	SIZE	REMARKS
A	R3-7L	30"x30"	LEFT LANE MUST TURN LEFT
C	R10-3B(R)	9"x12"	EDUCATIONAL PUSH BUTTON FOR WALKING PERSON SIGNAL →
D	R10-3B(L)	9"x12"	EDUCATIONAL PUSH BUTTON FOR WALKING PERSON SIGNAL ←
E	D3-4	72"x12"	Starr St
F	D3-4	72"x12"	Bridge St
G	R10-10R	30"x36"	RIGHT TURN SIGNAL
H	R10-6AL	24"x30"	STOP HERE ON RED
J	R9-3A	18"x18"	NO PEDESTRIAN CROSSING
K	R3-7R	30"x30"	RIGHT LANE MUST TURN RIGHT
L	R10-6-1	24"x18"	LEFT LANE PLAQUE
M	R10-11a(MOD)	24"x30"	NO TURN ON RED 4 PM-6 PM
N	OM1-3	18"x18"	OBJECT MARKER
P	W1-7	48"x24"	LARGE DOUBLE ARROW



MOVEMENT, SEQUENCE AND TIMING DIAGRAM

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

FIXED	3	2		3	2		3	2
MINIMUM	7			27			7	
PASSAGE	3			3			3	
MAX 1	10			40			25	
PEDESTRIAN*				9	10		8	8
MEMORY	NL			MN			NL	

*UPON PEDESTRIAN ACTUATION ONLY.

OPERATION NOTES:
 ① G IF FOLLOWED BY PHASE 2+6.
 ② G IF FOLLOWED BY PHASE 2+6.

MASTER CONTROLLER TO BE LOCATED AT THIS INTERSECTION.

THIS SIGNAL IS TO BE COORDINATED WITH ADJACENT SIGNALS ALONG BRIDGE STREET (SR 1040/SR 0029) FROM STARR STREET (SR 0029) TO CHURCH STREET BY MEANS OF FIBER-OPTIC COMMUNICATION.

SEE SYSTEM PLAN I-0053 FOR SIGNAL SYSTEM PROGRAM TIMES. OFFSET REFERENCED TO PHASE 2+6 START OF GREEN (INTERVAL 4).

AS-BUILT PLAN



LEGEND

	20'	PROPOSED MAST ARM AND POLE		②	PROPOSED VEHICULAR SIGNAL HEAD
	20'	EXISTING MAST ARM AND POLE		②	EXISTING VEHICULAR SIGNAL HEAD
	•	PROPOSED PEDESTAL POLE		②	PROPOSED VEHICULAR SIGNAL HEAD WITH ARROW SECTION
	o	EXISTING PEDESTAL POLE		②	EXISTING VEHICULAR SIGNAL HEAD WITH ARROW SECTION
	② 6' X 40'	PROPOSED VEHICLE DETECTOR PRESENCE & DIRECTIONAL		②	PROPOSED SIGN WITH IDENTIFYING LETTER
	② 6' X 40'	EXISTING VEHICLE DETECTOR PRESENCE & DIRECTIONAL		②	EXISTING SIGN WITH IDENTIFYING LETTER
	⊕	FAIL-SAFE INDICATOR		cc	CONTROLLER ASSEMBLY
	⊖	OPTICAL PRE-EMPTION RECEIVER		②	JUNCTION BOX
	⊕	PEDESTRIAN PUSHBUTTON WITH SIGN		②	EXISTING JUNCTION BOX
	⊙ 10'	PROPOSED LUMINAIRE /ARM LENGTH		W/4"	PROPOSED PAVEMENT MARKING, TYPE/WIDTH
	⊙ 10'	EXISTING LUMINAIRE /ARM LENGTH		W/4"	EXISTING PAVEMENT MARKING, TYPE/WIDTH
	-C-1"-	PROPOSED CONDUIT/SIZE		②	PHASE NUMBER
	-C-1"-	EXISTING CONDUIT/SIZE			
	①	PROPOSED PEDESTRIAN SIGNAL HEAD			

Appendix C

PennDOT iTMS Traffic Counts

SITE NO: 289	
County	CHESTER (15)
Route	G629
Segment	0020
Dir	B
Current Avg Daily Traffic	9351
Current Avg Daily Truck Volume	707
K Factor	8
D Factor	69
T Factor	8
Truck Percent	8
Base Traffic Year	2016
Traffic Pattern Group	URBAN - OTHER PRINCIPAL ARTERIALS



SITE NO: 6422	
County	CHESTER (15)
Route	G649
Segment	0010
Dir	B
Current Avg Daily Traffic	9155
Current Avg Daily Truck Volume	165
K Factor	10
D Factor	86
T Factor	3
Truck Percent	2
Base Traffic Year	2017
Traffic Pattern Group	URBAN - MINOR ARTERIALS, COLLECTORS, LOCAL ROADS



SITE NO: 11653	
County	CHESTER (15)
Route	0023
Segment	0440
Dir	B
Current Avg Daily Traffic	11521
Current Avg Daily Truck Volume	460
K Factor	10
D Factor	55
T Factor	2
Truck Percent	4
Base Traffic Year	2016
Traffic Pattern Group	URBAN - OTHER PRINCIPAL ARTERIALS



SITE NO: 11651	
County	CHESTER (15)
Route	0023
Segment	0420
Dir	B
Current Avg Daily Traffic	24801
Current Avg Daily Truck Volume	1224
K Factor	8
D Factor	53
T Factor	4
Truck Percent	5
Base Traffic Year	2014
Traffic Pattern Group	URBAN - MINOR ARTERIALS, COLLECTORS, LOCAL ROADS



SITE NO: A Count Site could not be identified.	
County	CHESTER (15)
Route	0029
Segment	
Dir	B
Current Avg Daily Traffic	16409
Current Avg Daily Truck Volume	950
K Factor	8
D Factor	55
T Factor	4
Truck Percent	6
Base Traffic Year	2017
Traffic Pattern Group	URBAN - OTHER PRINCIPAL ARTERIALS



SITE NO: 11716	
County	CHESTER (15)
Route	0029
Segment	0170
Dir	B
Current Avg Daily Traffic	10014
Current Avg Daily Truck Volume	504
K Factor	10
D Factor	69
T Factor	3
Truck Percent	5
Base Traffic Year	2016
Traffic Pattern Group	URBAN - OTHER PRINCIPAL ARTERIALS



SITE NO: 12464	
County	CHESTER (15)
Route	0113
Segment	0290
Dir	B
Current Avg Daily Traffic	10953
Current Avg Daily Truck Volume	548
K Factor	10
D Factor	55
T Factor	3
Truck Percent	5
Base Traffic Year	2016
Traffic Pattern Group	URBAN - OTHER PRINCIPAL ARTERIALS



SITE NO: 15963	
County	CHESTER (15)
Route	1019
Segment	0080
Dir	B
Current Avg Daily Traffic	7165
Current Avg Daily Truck Volume	293
K Factor	11
D Factor	55
T Factor	3
Truck Percent	4
Base Traffic Year	2013
Traffic Pattern Group	URBAN - MINOR ARTERIALS, COLLECTORS, LOCAL ROADS



Appendix D

Manual Turning Movement Traffic Counts

McMahon Associates, Inc.

425 Commerce Drive, Suite 200
Fort Washington, PA 19034

Transportation Engineers and Planners

Municipality: Phoenixville Borough
Location: Main Street &
High Street
Counter: TB

File Name : bridge01w
Site Code : 81819501
Start Date : 5/9/2018
Page No : 1

Groups Printed- Passenger Vehicles - Heavy Vehicles

Start Time	High St Westbound		Main St Northbound		High St Eastbound		Int. Total
	Left	Thru	Left	Right	Thru	Right	
06:00	36	3	0	5	4	12	60
06:15	58	3	3	7	3	15	89
06:30	79	6	8	17	7	20	137
06:45	114	11	6	13	4	18	166
Total	287	23	17	42	18	65	452
07:00	126	11	6	26	5	37	211
07:15	124	2	10	25	6	32	199
07:30	141	6	8	19	8	27	209
07:45	131	11	13	25	10	46	236
Total	522	30	37	95	29	142	855
08:00	117	18	15	25	12	52	239
08:15	110	13	9	16	5	50	203
08:30	69	5	10	16	7	25	132
08:45	71	6	3	14	7	19	120
Total	367	42	37	71	31	146	694
09:00	50	7	6	12	4	12	91
09:15	24	5	6	12	8	13	68
09:30	24	4	3	23	6	16	76
09:45	33	6	6	12	2	15	74
Total	131	22	21	59	20	56	309
*** BREAK ***							
15:00	19	9	17	42	4	12	103
15:15	21	8	26	45	7	11	118
15:30	32	13	27	51	12	13	148
15:45	32	13	21	77	10	11	164
Total	104	43	91	215	33	47	533
16:00	44	10	23	59	4	17	157
16:15	28	6	34	72	11	15	166
16:30	61	27	17	80	7	16	208
16:45	39	11	39	68	15	10	182
Total	172	54	113	279	37	58	713
17:00	28	9	46	100	10	14	207
17:15	38	11	29	77	13	10	178
17:30	34	17	23	80	12	18	184
17:45	55	9	31	83	12	6	196
Total	155	46	129	340	47	48	765
18:00	32	8	34	60	6	13	153
18:15	30	8	22	51	8	10	129
18:30	27	7	20	50	4	13	121
18:45	27	6	24	56	8	5	126
Total	116	29	100	217	26	41	529
Grand Total	1854	289	545	1318	241	603	4850
Aprch %	86.5	13.5	29.3	70.7	28.6	71.4	
Total %	38.2	6	11.2	27.2	5	12.4	

McMahon Associates, Inc.

425 Commerce Drive, Suite 200
Fort Washington, PA 19034

Transportation Engineers and Planners

Municipality: Phoenixville Borough
Location: Main Street &
High Street
Counter: TB

File Name : bridge01w
Site Code : 81819501
Start Date : 5/9/2018
Page No : 2

Groups Printed- Passenger Vehicles - Heavy Vehicles

	High St Westbound		Main St Northbound		High St Eastbound		Int. Total
	Left	Thru	Left	Right	Thru	Right	
Passenger Vehicles	1829	262	535	1304	210	592	4732
% Passenger Vehicles	98.7	90.7	98.2	98.9	87.1	98.2	97.6
Heavy Vehicles	25	27	10	14	31	11	118
% Heavy Vehicles	1.3	9.3	1.8	1.1	12.9	1.8	2.4

McMahon Associates, Inc.

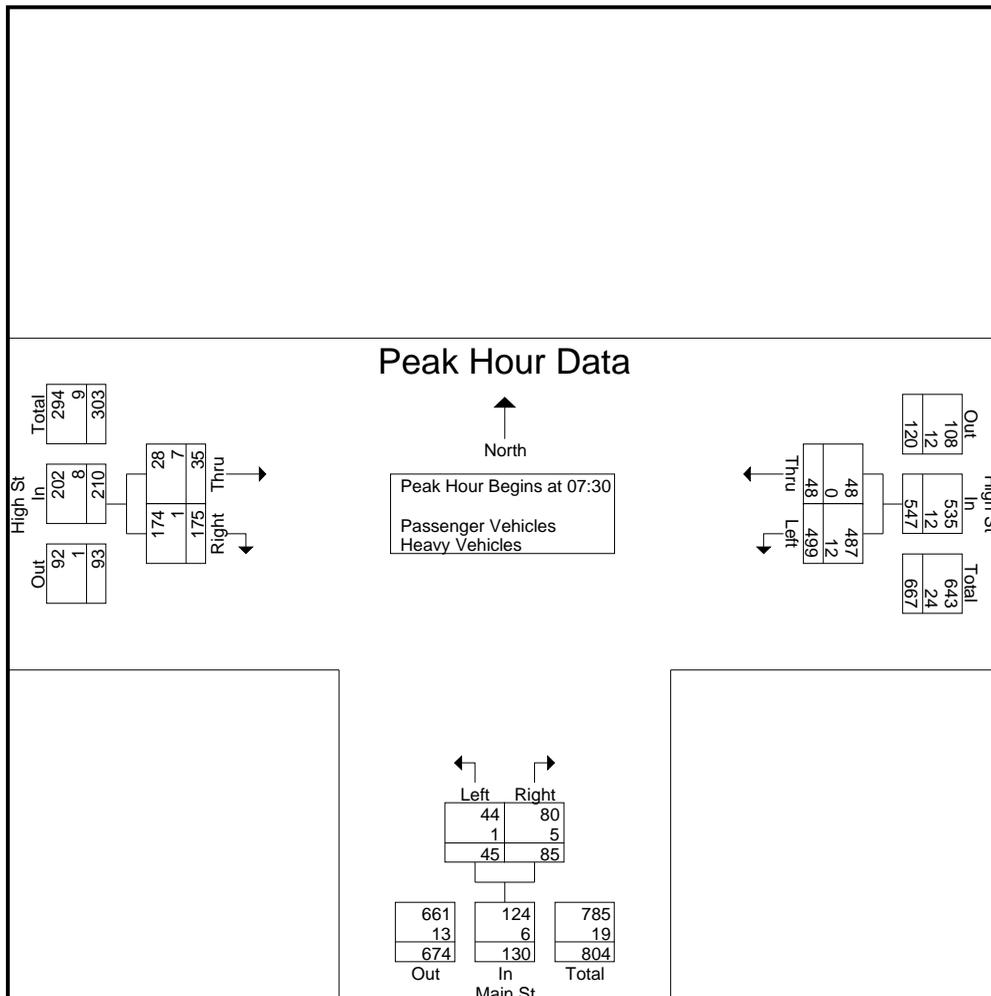
425 Commerce Drive, Suite 200
Fort Washington, PA 19034

Transportation Engineers and Planners

Municipality: Phoenixville Borough
Location: Main Street &
High Street
Counter: TB

File Name : bridge01w
Site Code : 81819501
Start Date : 5/9/2018
Page No : 3

Start Time	High St Westbound			Main St Northbound			High St Eastbound			Int. Total
	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	
Peak Hour Analysis From 06:00 to 11:45 - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:30										
07:30	141	6	147	8	19	27	8	27	35	209
07:45	131	11	142	13	25	38	10	46	56	236
08:00	117	18	135	15	25	40	12	52	64	239
08:15	110	13	123	9	16	25	5	50	55	203
Total Volume	499	48	547	45	85	130	35	175	210	887
% App. Total	91.2	8.8		34.6	65.4		16.7	83.3		
PHF	.885	.667	.930	.750	.850	.813	.729	.841	.820	.928
Passenger Vehicles	487	48	535	44	80	124	28	174	202	861
% Passenger Vehicles	97.6	100	97.8	97.8	94.1	95.4	80.0	99.4	96.2	97.1
Heavy Vehicles	12	0	12	1	5	6	7	1	8	26
% Heavy Vehicles	2.4	0	2.2	2.2	5.9	4.6	20.0	0.6	3.8	2.9



McMahon Associates, Inc.

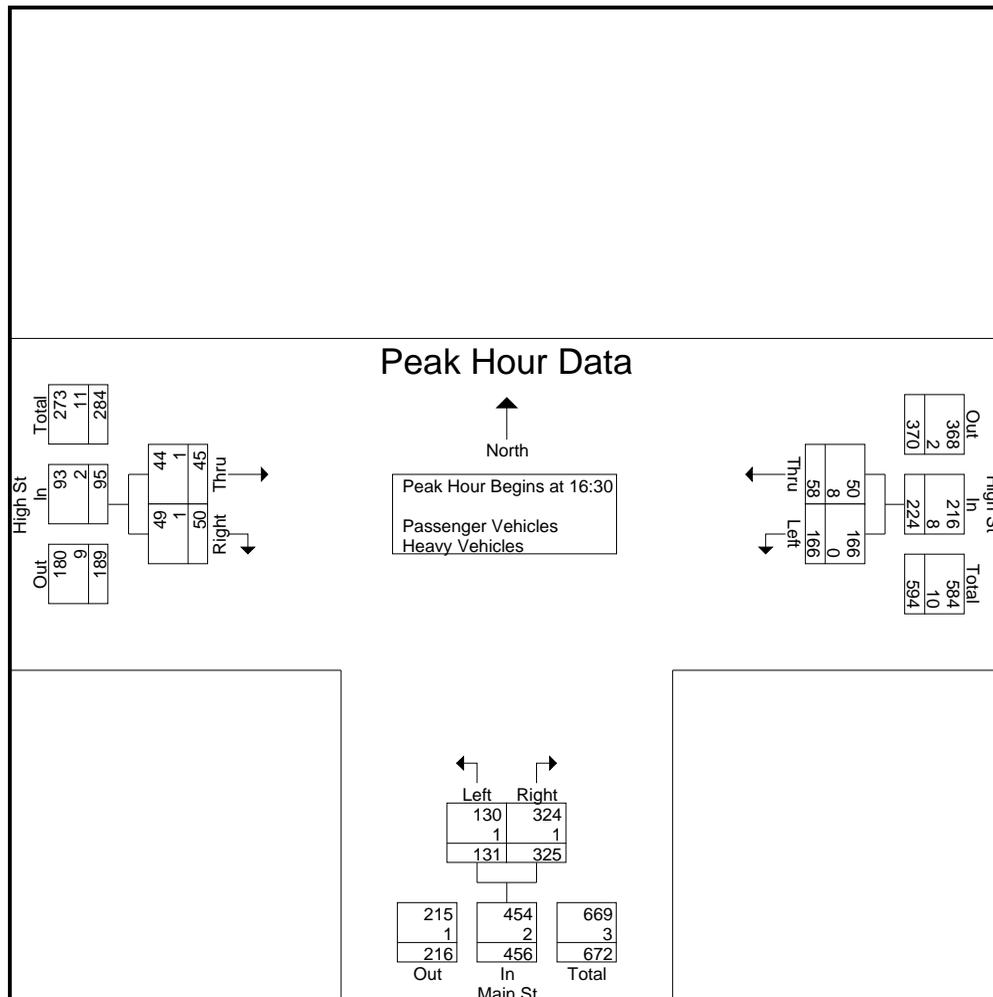
425 Commerce Drive, Suite 200
Fort Washington, PA 19034

Transportation Engineers and Planners

Municipality: Phoenixville Borough
Location: Main Street &
High Street
Counter: TB

File Name : bridge01w
Site Code : 81819501
Start Date : 5/9/2018
Page No : 4

Start Time	High St Westbound			Main St Northbound			High St Eastbound			Int. Total
	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	
Peak Hour Analysis From 12:00 to 18:45 - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 16:30										
16:30	61	27	88	17	80	97	7	16	23	208
16:45	39	11	50	39	68	107	15	10	25	182
17:00	28	9	37	46	100	146	10	14	24	207
17:15	38	11	49	29	77	106	13	10	23	178
Total Volume	166	58	224	131	325	456	45	50	95	775
% App. Total	74.1	25.9		28.7	71.3		47.4	52.6		
PHF	.680	.537	.636	.712	.813	.781	.750	.781	.950	.931
Passenger Vehicles	166	50	216	130	324	454	44	49	93	763
% Passenger Vehicles	100	86.2	96.4	99.2	99.7	99.6	97.8	98.0	97.9	98.5
Heavy Vehicles	0	8	8	1	1	2	1	1	2	12
% Heavy Vehicles	0	13.8	3.6	0.8	0.3	0.4	2.2	2.0	2.1	1.5



McMahon Associates, Inc.

425 Commerce Drive, Suite 200
Fort Washington, PA 19034

Transportation Engineers and Planners

Municipality: Phoenixville Borough
Location: Main Street &
High Street
Counter: TB

File Name : bridge01w
Site Code : 81819501
Start Date : 5/9/2018
Page No : 1

Groups Printed- Pedestrians

Start Time	High St	Main St	High St	Int. Total
	Westbound	Northbound	Eastbound	
	N/S	E/W	N/S	
*** BREAK ***				
06:15	1	0	2	3
*** BREAK ***				
06:45	2	0	1	3
Total	3	0	3	6
07:00	0	1	0	1
07:15	1	0	0	1
07:30	0	0	1	1
*** BREAK ***				
Total	1	1	1	3
08:00	1	1	0	2
08:15	0	0	1	1
08:30	1	0	0	1
*** BREAK ***				
Total	2	1	1	4
*** BREAK ***				
15:15	0	1	1	2
15:30	1	0	1	2
*** BREAK ***				
Total	1	1	2	4
*** BREAK ***				
16:15	1	1	1	3
*** BREAK ***				
16:45	0	0	1	1
Total	1	1	2	4
*** BREAK ***				
17:15	3	1	0	4
17:30	1	0	0	1
17:45	2	2	1	5
Total	6	3	1	10
18:00	1	1	0	2
18:15	0	1	2	3
18:30	2	0	0	2
18:45	0	0	1	1
Total	3	2	3	8
Grand Total	17	9	13	39
Apprch %	100	100	100	
Total %	43.6	23.1	33.3	

McMahon Associates, Inc.

425 Commerce Drive, Suite 200
Fort Washington, PA 19034

Transportation Engineers and Planners

Municipality: Phoenixville Borough
Location: Main Street &
Bridge Street
Counter: LB

File Name : bridge02w
Site Code : 81819502
Start Date : 9/8/2017
Page No : 1

Groups Printed- Passenger Vehicles - Heavy Vehicles

Start Time	Main St Southbound				Bridge St Westbound				Main St Northbound				Bridge St Eastbound				Int. Total
	Left	Thru	ROR	Right	Left	Thru	ROR	Right	Left	Thru	ROR	Right	Left	Thru	ROR	Right	
06:00	29	24	0	5	6	27	0	2	1	3	0	2	2	41	0	2	144
06:15	21	31	0	5	2	22	0	1	0	9	0	2	3	40	0	2	138
06:30	38	26	0	3	0	25	0	2	1	4	0	1	3	50	0	3	156
06:45	26	43	0	15	8	38	0	1	0	4	2	1	0	37	0	9	184
Total	114	124	0	28	16	112	0	6	2	20	2	6	8	168	0	16	622
07:00	25	60	0	10	1	47	0	6	0	8	1	5	3	64	0	6	236
07:15	42	62	0	23	4	61	0	5	3	30	0	8	8	70	0	5	321
07:30	56	66	0	20	2	57	0	6	3	17	0	9	1	58	0	2	297
07:45	73	109	0	12	8	88	0	9	8	17	0	12	2	70	0	6	414
Total	196	297	0	65	15	253	0	26	14	72	1	34	14	262	0	19	1268
08:00	71	104	0	12	5	75	0	8	2	23	0	19	0	60	0	3	382
08:15	78	91	0	27	5	77	0	6	3	14	1	9	0	83	0	5	399
08:30	34	52	0	7	2	56	0	4	5	13	0	6	0	79	0	2	260
08:45	38	52	0	14	11	70	0	12	5	7	0	10	5	95	0	9	328
Total	221	299	0	60	23	278	0	30	15	57	1	44	5	317	0	19	1369
09:00	35	29	0	6	11	66	0	5	5	11	0	9	5	78	0	7	267
09:15	23	25	0	5	3	59	0	6	4	4	1	2	3	68	0	5	208
09:30	27	18	0	2	10	62	0	13	7	18	1	12	6	73	0	6	255
09:45	24	25	0	4	7	56	0	11	7	8	0	3	3	62	0	5	215
Total	109	97	0	17	31	243	0	35	23	41	2	26	17	281	0	23	945
*** BREAK ***																	
15:00	13	12	0	5	12	68	0	10	4	27	0	5	6	66	0	4	232
15:15	14	19	0	3	12	104	0	22	10	40	0	12	8	64	0	7	315
15:30	17	20	0	5	7	77	0	26	6	37	0	9	6	65	0	6	281
15:45	15	29	0	11	7	79	0	19	10	63	0	16	7	71	0	6	333
Total	59	80	0	24	38	328	0	77	30	167	0	42	27	266	0	23	1161
16:00	28	31	0	8	8	94	0	23	8	48	2	12	12	88	0	12	374
16:15	22	23	0	11	12	106	0	31	8	86	1	11	15	61	0	8	395
16:30	20	37	0	5	3	75	0	9	1	69	0	19	5	56	0	6	305
16:45	18	26	0	10	6	101	0	18	8	63	0	23	7	60	0	3	343
Total	88	117	0	34	29	376	0	81	25	266	3	65	39	265	0	29	1417
17:00	13	24	0	0	5	66	0	12	6	57	1	12	9	36	0	4	245
17:15	30	22	0	9	6	121	0	32	8	78	2	24	7	89	0	6	434
17:30	20	24	0	8	7	103	0	23	8	82	0	19	7	84	0	8	393
17:45	16	25	0	12	5	105	0	27	12	66	0	16	9	52	0	9	354
Total	79	95	0	29	23	395	0	94	34	283	3	71	32	261	0	27	1426
18:00	15	24	0	9	5	101	0	22	10	72	1	15	8	67	0	5	354
18:15	15	25	0	8	7	100	0	28	11	78	2	15	7	70	0	7	373
18:30	17	22	0	7	5	101	0	25	9	70	1	12	6	72	0	10	357
18:45	12	23	0	6	2	94	0	25	9	68	0	11	5	68	0	6	329
Total	59	94	0	30	19	396	0	100	39	288	4	53	26	277	0	28	1413
Grand Total	925	1203	0	287	194	2381	0	449	182	1194	16	341	168	2097	0	184	9621
Apprch %	38.3	49.8	0	11.9	6.4	78.7	0	14.8	10.5	68.9	0.9	19.7	6.9	85.6	0	7.5	
Total %	9.6	12.5	0	3	2	24.7	0	4.7	1.9	12.4	0.2	3.5	1.7	21.8	0	1.9	
Passenger Vehicles	916	1178	0	278	181	2270	0	440	174	1173	16	336	164	1985	0	175	9286
% Passenger Vehicles	99	97.9	0	96.9	93.3	95.3	0	98	95.6	98.2	100	98.5	97.6	94.7	0	95.1	96.5

McMahon Associates, Inc.

425 Commerce Drive, Suite 200
Fort Washington, PA 19034

Transportation Engineers and Planners

Municipality: Phoenixville Borough
Location: Main Street &
Bridge Street
Counter: LB

File Name : bridge02w
Site Code : 81819502
Start Date : 9/8/2017
Page No : 2

Groups Printed- Passenger Vehicles - Heavy Vehicles

	Main St Southbound				Bridge St Westbound				Main St Northbound				Bridge St Eastbound				Int. Total
	Left	Thru	ROR	Right	Left	Thru	ROR	Right	Left	Thru	ROR	Right	Left	Thru	ROR	Right	
Heavy Vehicles	9	25	0	9	13	111	0	9	8	21	0	5	4	112	0	9	335
% Heavy Vehicles	1	2.1	0	3.1	6.7	4.7	0	2	4.4	1.8	0	1.5	2.4	5.3	0	4.9	3.5

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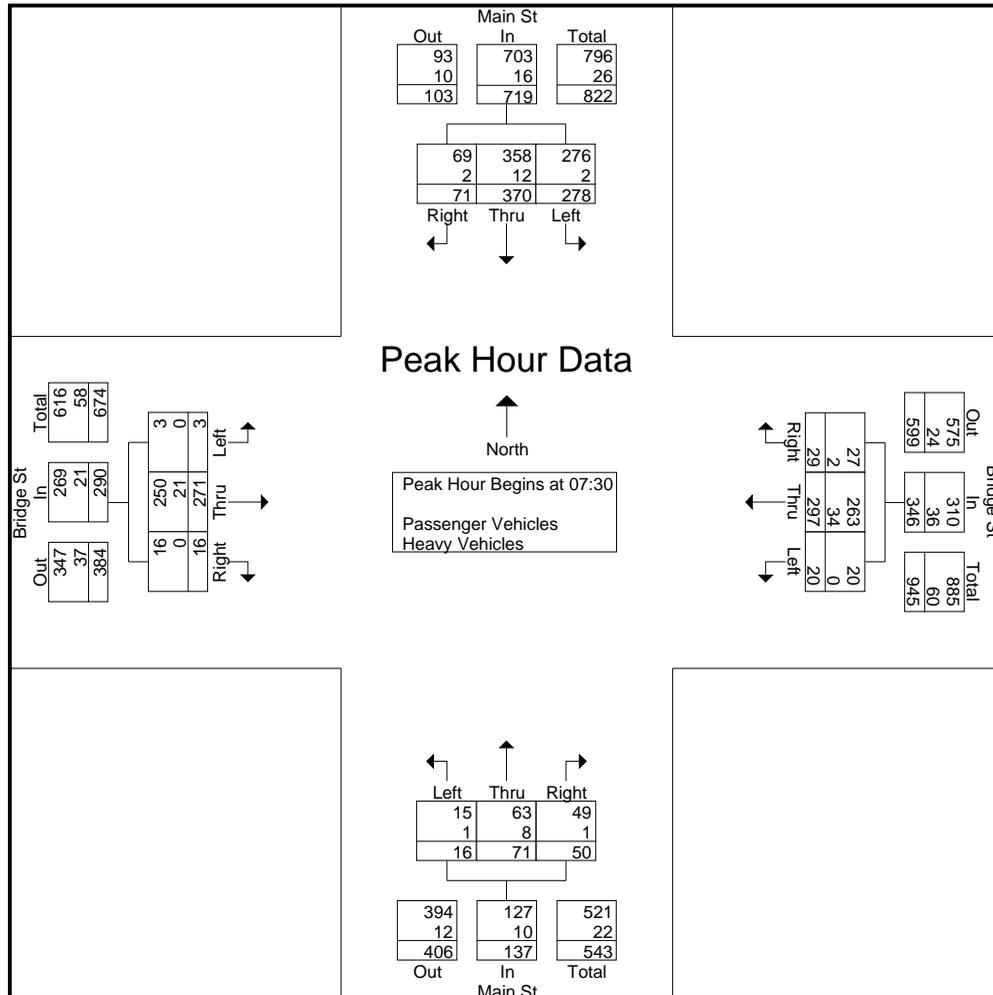
425 Commerce Drive, Suite 200
Fort Washington, PA 19034

Transportation Engineers and Planners

Municipality: Phoenixville Borough
Location: Main Street &
Bridge Street
Counter: LB

File Name : bridge02w
Site Code : 81819502
Start Date : 9/8/2017
Page No : 3

Start Time	Main St Southbound					Bridge St Westbound					Main St Northbound					Bridge St Eastbound					Int. Total
	Left	Thru	ROR	Right	App. Total	Left	Thru	ROR	Right	App. Total	Left	Thru	ROR	Right	App. Total	Left	Thru	ROR	Right	App. Total	
Peak Hour Analysis From 06:00 to 12:30 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30																					
07:30	56	66	0	20	142	2	57	0	6	65	3	17	0	9	29	1	58	0	2	61	297
07:45	73	109	0	12	194	8	88	0	9	105	8	17	0	12	37	2	70	0	6	78	414
08:00	71	104	0	12	187	5	75	0	8	88	2	23	0	19	44	0	60	0	3	63	382
08:15	78	91	0	27	196	5	77	0	6	88	3	14	1	9	27	0	83	0	5	88	399
Total Volume	278	370	0	71	719	20	297	0	29	346	16	71	1	49	137	3	271	0	16	290	1492
% App. Total	38.7	51.5	0	9.9		5.8	85.8	0	8.4		11.7	51.8	0.7	35.8		1	93.4	0	5.5		
PHF	.891	.849	.000	.657	.917	.625	.844	.000	.806	.824	.500	.772	.250	.645	.778	.375	.816	.000	.667	.824	.901
Passenger Vehicles																					
% Passenger Vehicles	99.3	96.8	0	97.2	97.8	100	88.6	0	93.1	89.6	93.8	88.7	100	98.0	92.7	100	92.3	0	100	92.8	94.4
Heavy Vehicles																					
% Heavy Vehicles	0.7	3.2	0	2.8	2.2	0	11.4	0	6.9	10.4	6.3	11.3	0	2.0	7.3	0	7.7	0	0	7.2	5.6



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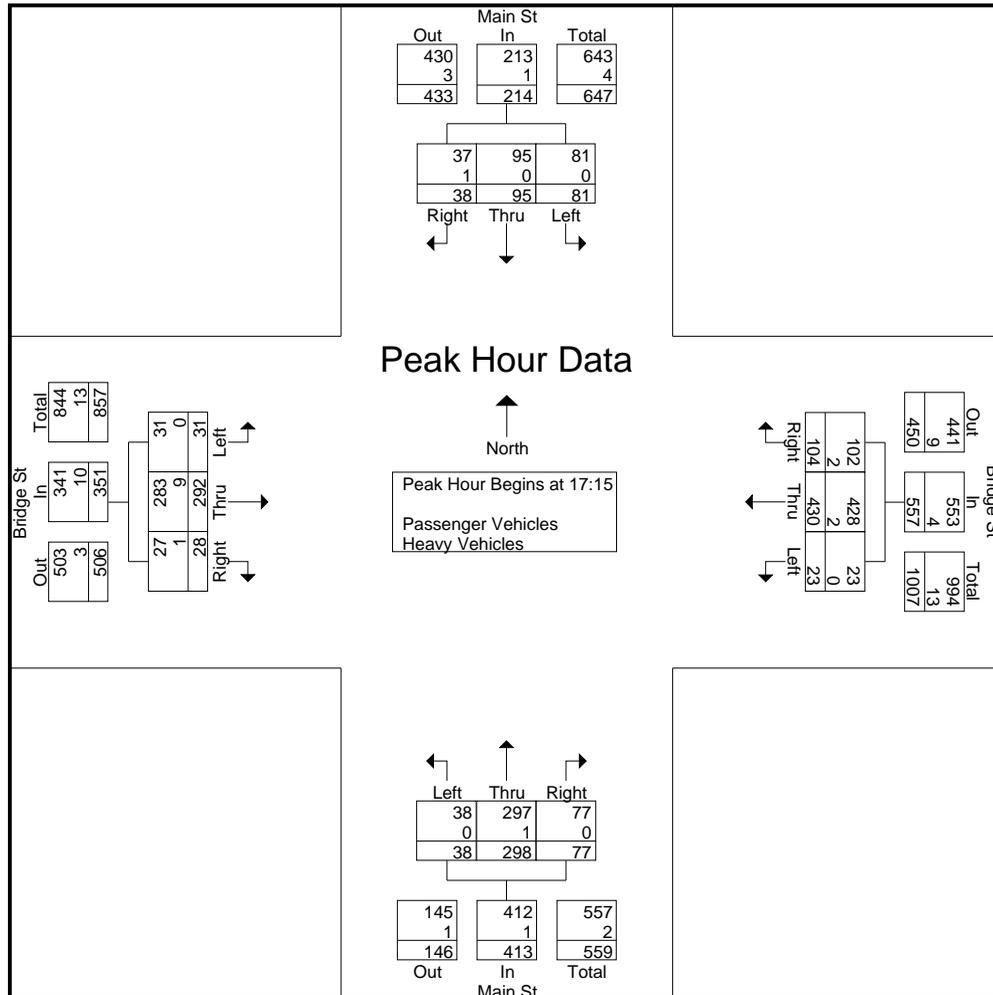
425 Commerce Drive, Suite 200
Fort Washington, PA 19034

Transportation Engineers and Planners

Municipality: Phoenixville Borough
Location: Main Street &
Bridge Street
Counter: LB

File Name : bridge02w
Site Code : 81819502
Start Date : 9/8/2017
Page No : 4

Start Time	Main St Southbound					Bridge St Westbound					Main St Northbound					Bridge St Eastbound					Int. Total
	Left	Thru	ROR	Right	App. Total	Left	Thru	ROR	Right	App. Total	Left	Thru	ROR	Right	App. Total	Left	Thru	ROR	Right	App. Total	
Peak Hour Analysis From 12:45 to 18:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 17:15																					
17:15	30	22	0	9	61	6	121	0	32	159	8	78	2	24	112	7	89	0	6	102	434
17:30	20	24	0	8	52	7	103	0	23	133	8	82	0	19	109	7	84	0	8	99	393
17:45	16	25	0	12	53	5	105	0	27	137	12	66	0	16	94	9	52	0	9	70	354
18:00	15	24	0	9	48	5	101	0	22	128	10	72	1	15	98	8	67	0	5	80	354
Total Volume	81	95	0	38	214	23	430	0	104	557	38	298	3	74	413	31	292	0	28	351	1535
% App. Total	37.9	44.4	0	17.8		4.1	77.2	0	18.7		9.2	72.2	0.7	17.9		8.8	83.2	0	8		
PHF	.675	.950	.000	.792	.877	.821	.888	.000	.813	.876	.792	.909	.375	.771	.922	.861	.820	.000	.778	.860	.884
Passenger Vehicles																					
% Passenger Vehicles	100	100	0	97.4	99.5	100	99.5	0	98.1	99.3	100	99.7	100	100	99.8	100	96.9	0	96.4	97.2	99.0
Heavy Vehicles																					
% Heavy Vehicles	0	0	0	2.6	0.5	0	0.5	0	1.9	0.7	0	0.3	0	0.2		0	3.1	0	3.6	2.8	1.0



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425 Commerce Drive, Suite 200
Fort Washington, PA 19034

Transportation Engineers and Planners

Municipality: Phoenixville Borough
Location: Main Street &
Bridge Street
Counter: LB

File Name : bridge02w
Site Code : 81819502
Start Date : 9/8/2017
Page No : 1

Groups Printed- Pedestrians

Start Time	Main St Southbound	Bridge St Westbound	Main St Northbound	Bridge St Eastbound	Int. Total
	E/W	N/S	E/W	N/S	
06:00	0	0	1	0	1
*** BREAK ***					
06:30	0	0	1	0	1
06:45	0	1	1	0	2
Total	0	1	3	0	4
07:00	0	0	4	0	4
07:15	0	1	4	0	5
07:30	0	0	1	0	1
07:45	0	0	1	0	1
Total	0	1	10	0	11
08:00	0	1	2	0	3
08:15	0	0	0	1	1
08:30	0	3	4	1	8
08:45	0	2	2	2	6
Total	0	6	8	4	18
09:00	0	1	2	0	3
09:15	0	2	7	3	12
09:30	0	0	2	5	7
09:45	0	1	4	3	8
Total	0	4	15	11	30
*** BREAK ***					
15:00	0	4	12	5	21
15:15	0	0	20	14	34
15:30	1	4	2	4	11
15:45	4	0	18	8	30
Total	5	8	52	31	96
16:00	1	4	7	10	22
16:15	1	0	10	2	13
16:30	2	3	7	1	13
16:45	2	7	11	11	31
Total	6	14	35	24	79
17:00	1	1	9	6	17
17:15	3	5	12	8	28
17:30	2	5	20	7	34
17:45	3	13	21	13	50
Total	9	24	62	34	129
18:00	5	8	17	10	40
18:15	6	7	15	8	36
18:30	0	5	16	11	32
18:45	0	8	14	10	32
Total	11	28	62	39	140
Grand Total	31	86	247	143	507
Apprch %	100	100	100	100	
Total %	6.1	17	48.7	28.2	

McMahon Associates, Inc.

425 Commerce Drive, Suite 200
Fort Washington, PA 19034

Transportation Engineers and Planners

Municipality: Phoenixville Borough
Location: Bridge Street &
Starr Street
Counter: RR

File Name : bridge03w
Site Code : 81819503
Start Date : 5/9/2018
Page No : 1

Groups Printed- Passenger Vehicles - Heavy Vehicles

Start Time	Bridge St Westbound		Starr St Northbound			Bridge St Eastbound			Int. Total
	Left	Thru	Left	ROR	Right	Thru	ROR	Right	
05:00	75	32	0	17	8	51	3	29	215
05:15	132	51	2	18	6	61	0	44	314
05:30	126	58	7	28	12	81	8	61	381
05:45	161	63	6	27	12	74	9	66	418
Total	494	204	15	90	38	267	20	200	1328
06:00	109	74	9	31	44	113	8	64	452
06:15	134	97	4	16	53	120	3	61	488
06:30	129	93	24	7	82	140	5	43	523
06:45	140	124	22	2	108	138	6	47	587
Total	512	388	59	56	287	511	22	215	2050
07:00	152	97	30	6	126	129	3	41	584
07:15	120	87	15	16	120	148	2	41	549
07:30	123	94	16	9	71	135	2	31	481
07:45	153	105	24	9	58	120	0	28	497
Total	548	383	85	40	375	532	7	141	2111
08:00	112	69	15	25	48	106	2	22	399
08:15	113	76	14	24	29	80	1	20	357
08:30	88	67	23	17	57	87	2	20	361
08:45	76	71	17	22	33	76	0	21	316
Total	389	283	69	88	167	349	5	83	1433
*** BREAK ***									
14:00	75	95	22	22	59	97	4	6	380
14:15	80	131	24	29	76	89	8	13	450
14:30	81	123	29	29	104	108	6	19	499
14:45	63	112	30	35	104	113	1	14	472
Total	299	461	105	115	343	407	19	52	1801
15:00	74	117	32	12	110	129	3	8	485
15:15	79	132	26	19	131	88	2	9	486
15:30	86	150	20	14	145	115	3	15	548
15:45	84	168	27	5	127	115	1	17	544
Total	323	567	105	50	513	447	9	49	2063
16:00	105	156	25	4	137	105	3	24	559
16:15	125	144	21	2	112	112	2	15	533
16:30	89	148	20	0	141	109	1	17	525
16:45	112	136	29	16	150	98	3	14	558
Total	431	584	95	22	540	424	9	70	2175
17:00	81	120	64	36	113	92	3	16	525
17:15	80	117	48	26	102	85	1	22	481
17:30	82	102	47	34	92	99	0	23	479
17:45	60	121	47	30	52	78	1	20	409
Total	303	460	206	126	359	354	5	81	1894
Grand Total	3299	3330	739	587	2622	3291	96	891	14855
Apprch %	49.8	50.2	18.7	14.9	66.4	76.9	2.2	20.8	
Total %	22.2	22.4	5	4	17.7	22.2	0.6	6	

McMahon Associates, Inc.

425 Commerce Drive, Suite 200
Fort Washington, PA 19034

Transportation Engineers and Planners

Municipality: Phoenixville Borough
Location: Bridge Street &
Starr Street
Counter: RR

File Name : bridge03w
Site Code : 81819503
Start Date : 5/9/2018
Page No : 2

Groups Printed- Passenger Vehicles - Heavy Vehicles

	Bridge St Westbound		Starr St Northbound			Bridge St Eastbound			Int. Total
	Left	Thru	Left	ROR	Right	Thru	ROR	Right	
Passenger Vehicles	3174	3144	719	587	2515	3153	96	876	14264
% Passenger Vehicles	96.2	94.4	97.3	100	95.9	95.8	100	98.3	96
Heavy Vehicles	125	186	20	0	107	138	0	15	591
% Heavy Vehicles	3.8	5.6	2.7	0	4.1	4.2	0	1.7	4

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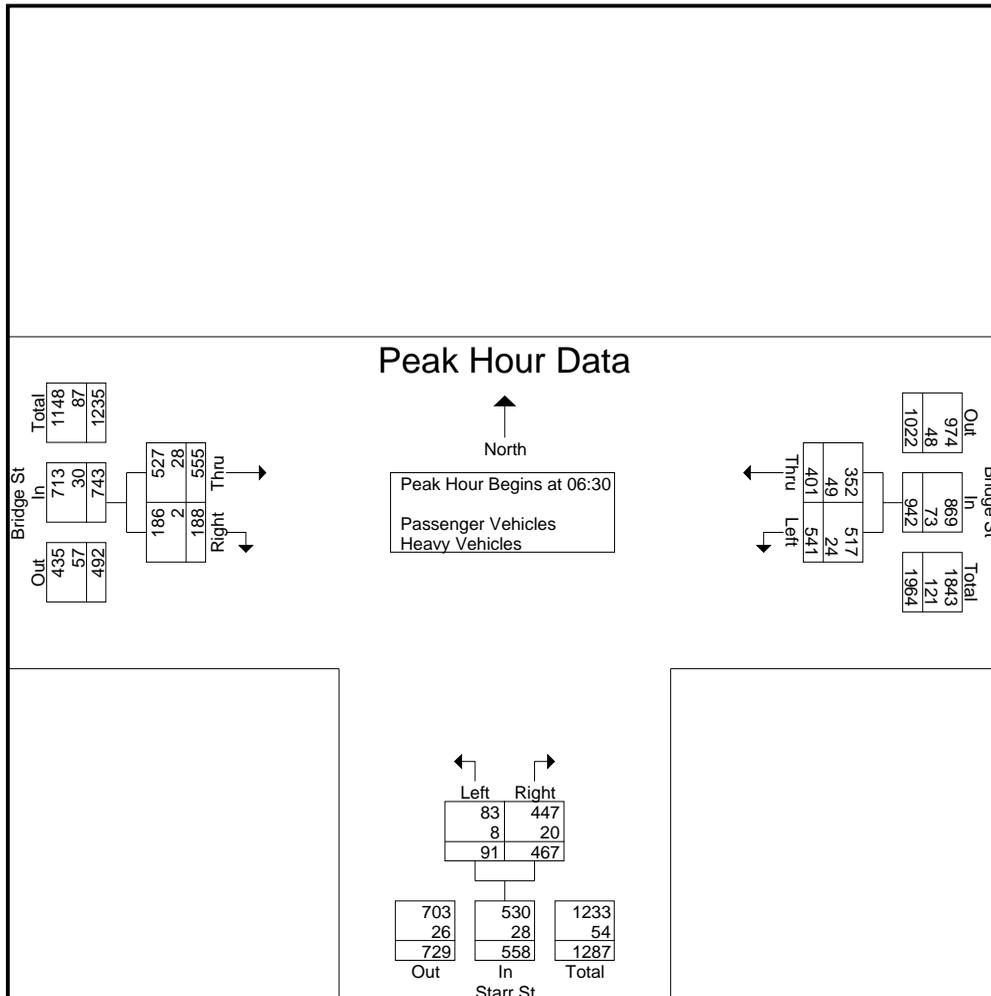
425 Commerce Drive, Suite 200
Fort Washington, PA 19034

Transportation Engineers and Planners

Municipality: Phoenixville Borough
Location: Bridge Street &
Starr Street
Counter: RR

File Name : bridge03w
Site Code : 81819503
Start Date : 5/9/2018
Page No : 3

Start Time	Bridge St Westbound			Starr St Northbound			Bridge St Eastbound				Int. Total	
	Left	Thru	App. Total	Left	ROR	Right	App. Total	Thru	ROR	Right		App. Total
Peak Hour Analysis From 05:00 to 11:45 - Peak 1 of 1												
Peak Hour for Entire Intersection Begins at 06:30												
06:30	129	93	222	24	7	82	113	140	5	43	188	523
06:45	140	124	264	22	2	108	132	138	6	47	191	587
07:00	152	97	249	30	6	126	162	129	3	41	173	584
07:15	120	87	207	15	16	120	151	148	2	41	191	549
Total Volume	541	401	942	91	31	436	558	555	16	172	743	2243
% App. Total	57.4	42.6		16.3	5.6	78.1		74.7	2.2	23.1		
PHF	.890	.808	.892	.758	.484	.865	.861	.938	.667	.915	.973	.955
Passenger Vehicles	517	352	869	83	31	416	530	527	16	170	713	2112
% Passenger Vehicles	95.6	87.8	92.3	91.2	100	95.4	95.0	95.0	100	98.8	96.0	94.2
Heavy Vehicles	24	49	73	8	0	20	28	28	0	2	30	131
% Heavy Vehicles	4.4	12.2	7.7	8.8	0	4.6	5.0	5.0	0	1.2	4.0	5.8



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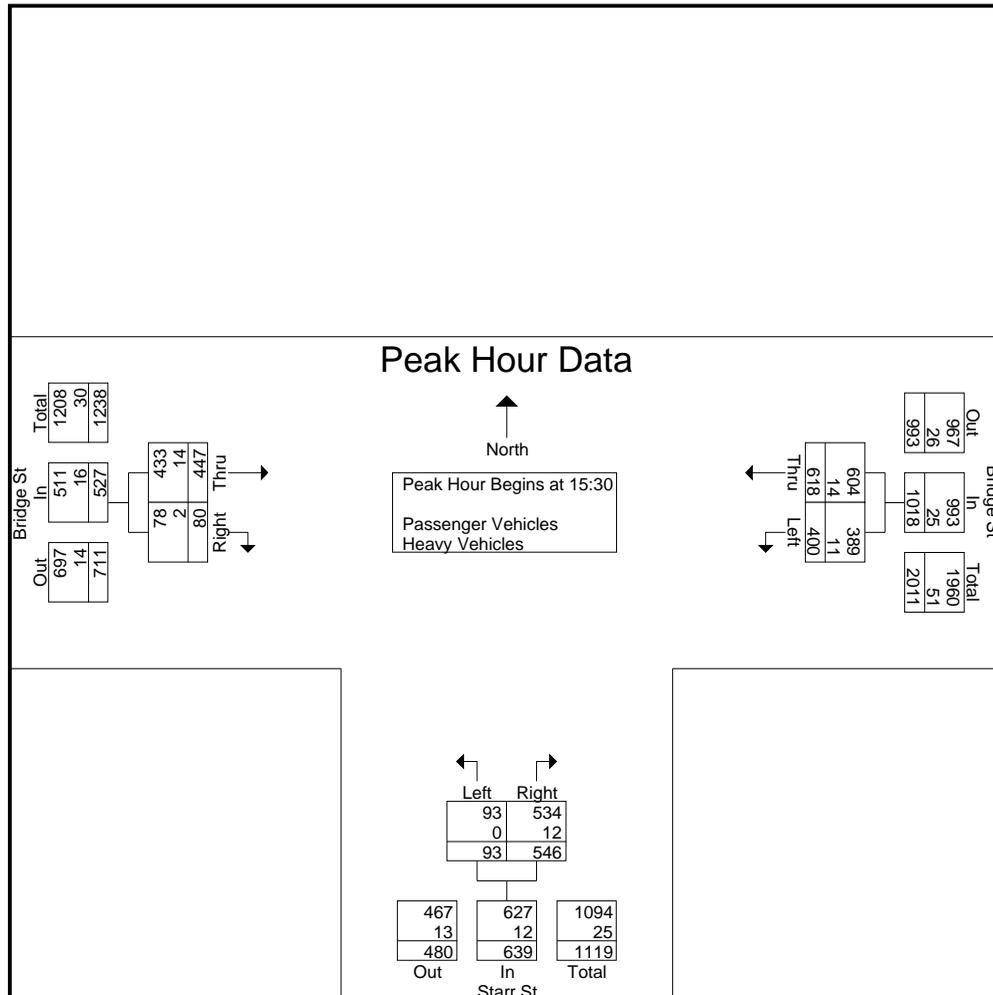
425 Commerce Drive, Suite 200
Fort Washington, PA 19034

Transportation Engineers and Planners

Municipality: Phoenixville Borough
Location: Bridge Street &
Starr Street
Counter: RR

File Name : bridge03w
Site Code : 81819503
Start Date : 5/9/2018
Page No : 4

Start Time	Bridge St Westbound			Starr St Northbound				Bridge St Eastbound				Int. Total
	Left	Thru	App. Total	Left	ROR	Right	App. Total	Thru	ROR	Right	App. Total	
Peak Hour Analysis From 12:00 to 17:45 - Peak 1 of 1												
Peak Hour for Entire Intersection Begins at 15:30												
15:30	86	150	236	20	14	145	179	115	3	15	133	548
15:45	84	168	252	27	5	127	159	115	1	17	133	544
16:00	105	156	261	25	4	137	166	105	3	24	132	559
16:15	125	144	269	21	2	112	135	112	2	15	129	533
Total Volume	400	618	1018	93	25	521	639	447	9	71	527	2184
% App. Total	39.3	60.7		14.6	3.9	81.5		84.8	1.7	13.5		
PHF	.800	.920	.946	.861	.446	.898	.892	.972	.750	.740	.991	.977
Passenger Vehicles	389	604	993	93	25	509	627	433	9	69	511	2131
% Passenger Vehicles	97.3	97.7	97.5	100	100	97.7	98.1	96.9	100	97.2	97.0	97.6
Heavy Vehicles	11	14	25	0	0	12	12	14	0	2	16	53
% Heavy Vehicles	2.8	2.3	2.5	0	0	2.3	1.9	3.1	0	2.8	3.0	2.4



McMahon Associates, Inc.

425 Commerce Drive, Suite 200
Fort Washington, PA 19034

Transportation Engineers and Planners

Municipality: Phoenixville Borough
Location: Nutt Road &
Bridge Street & Mellon Street
Counter: BW

File Name : bridge04w
Site Code : 81819502
Start Date : 5/9/2018
Page No : 1

Groups Printed- Passenger Vehicles - Heavy Vehicles

Start Time	Mellon St Southbound				Bridge St Southwestbound				Nutt Rd Westbound					Bridge St Northbound					Nutt Rd Eastbound					Int. Total
	Hard Left	Left	Thru	Right	Hard Left	Bear Left	Bear Right	Hard Right	Left	Thru	Right	ROR	Hard Right	Left	Thru	Bear Right	ROR	Right	Left	Bear Left	Thru	ROR	Right	
06:00	0	0	0	0	1	18	32	0	1	33	0	0	2	8	0	11	0	10	0	32	113	0	9	270
06:15	0	0	0	0	0	17	57	0	6	36	0	0	3	5	0	10	0	10	0	41	157	0	12	354
06:30	0	0	0	0	2	31	61	0	5	46	0	0	1	15	0	16	0	9	0	61	177	0	14	438
06:45	0	0	0	0	1	58	76	0	13	63	0	0	4	13	0	16	0	21	0	48	194	0	22	529
Total	0	0	0	0	4	124	226	0	25	178	0	0	10	41	0	53	0	50	0	182	641	0	57	1591
07:00	0	0	0	0	1	86	63	0	13	87	0	0	1	14	0	29	0	13	0	70	174	0	34	585
07:15	0	0	0	0	3	103	74	0	21	79	0	0	7	17	0	38	0	5	0	79	137	0	38	601
07:30	0	0	0	0	1	86	72	0	11	91	0	0	10	18	0	53	0	10	0	105	136	0	27	620
07:45	0	0	0	0	2	56	69	0	8	65	0	0	6	14	0	34	0	7	0	94	175	0	35	565
Total	0	0	0	0	7	331	278	0	53	322	0	0	24	63	0	154	0	35	0	348	622	0	134	2371
08:00	0	0	0	0	1	82	50	0	20	70	0	0	5	12	0	28	0	16	0	108	171	0	26	589
08:15	0	0	0	0	4	67	59	0	22	84	0	0	5	10	0	31	0	12	0	82	163	0	29	568
08:30	0	0	0	0	5	88	80	0	25	93	0	0	10	12	0	44	0	14	0	103	157	0	26	657
08:45	0	0	0	0	1	41	90	0	11	97	0	0	4	13	0	31	0	10	0	90	122	0	13	523
Total	0	0	0	0	11	278	279	0	78	344	0	0	24	47	0	134	0	52	0	383	613	0	94	2337
09:00	0	0	0	0	3	33	59	0	12	95	0	0	3	14	0	30	0	10	0	85	118	0	10	472
09:15	0	0	0	0	1	21	65	0	12	72	0	0	6	17	0	29	0	14	0	69	115	0	13	434
09:30	0	0	0	0	1	25	69	0	10	82	0	0	2	13	0	22	0	13	0	78	95	0	13	423
09:45	0	0	0	0	1	24	60	0	9	91	0	0	1	15	0	28	0	16	0	67	108	0	9	429
Total	0	0	0	0	6	103	253	0	43	340	0	0	12	59	0	109	0	53	0	299	436	0	45	1758
*** BREAK ***																								
15:00	0	0	0	0	6	31	70	0	17	134	0	0	9	22	0	44	0	10	0	78	125	0	19	565
15:15	0	0	0	0	3	38	89	0	14	150	0	0	5	26	0	56	0	16	0	88	112	0	22	619
15:30	0	0	0	0	2	38	90	0	23	145	0	0	4	27	0	65	0	13	0	81	122	0	16	626
15:45	0	0	0	0	2	31	91	1	14	145	0	0	3	25	0	55	0	11	0	96	109	0	22	605
Total	0	0	0	0	13	138	340	1	68	574	0	0	21	100	0	220	0	50	0	343	468	0	79	2415
16:00	0	0	0	0	5	36	100	1	15	129	0	0	7	32	0	55	0	11	0	81	110	0	11	593
16:15	0	0	0	0	1	41	118	1	10	150	0	0	6	23	0	54	0	12	0	81	119	0	16	632
16:30	0	0	0	0	2	45	124	0	16	153	0	0	8	25	0	72	0	8	0	108	131	0	16	708
16:45	0	0	0	0	2	54	117	0	14	140	0	0	9	27	0	58	0	9	0	113	109	0	17	669
Total	0	0	0	0	10	176	459	2	55	572	0	0	30	107	0	239	0	40	0	383	469	0	60	2602
17:00	0	0	0	0	5	49	126	1	16	146	0	0	6	23	0	60	0	7	0	113	126	0	16	694
17:15	0	0	0	0	5	57	121	0	16	149	0	0	4	29	0	66	0	7	0	113	130	0	19	716
17:30	0	0	0	0	2	45	124	0	13	151	0	0	8	34	0	55	0	8	0	113	130	0	17	700
17:45	0	0	0	0	6	42	111	0	17	154	0	0	9	31	0	68	0	4	0	113	136	0	12	703
Total	0	0	0	0	18	193	482	1	62	600	0	0	27	117	0	249	0	26	0	452	522	0	64	2813
18:00	0	0	0	0	4	39	79	0	14	158	0	0	5	32	0	52	0	4	0	109	134	0	16	646

McMahon Associates, Inc.

425 Commerce Drive, Suite 200
Fort Washington, PA 19034

Transportation Engineers and Planners

Municipality: Phoenixville Borough
Location: Nutt Road &
Bridge Street & Mellon Street
Counter: BW

File Name : bridge04w
Site Code : 81819502
Start Date : 5/9/2018
Page No : 2

Groups Printed- Passenger Vehicles - Heavy Vehicles

Start Time	Mellon St Southbound				Bridge St Southwestbound				Nutt Rd Westbound				Bridge St Northbound					Nutt Rd Eastbound					Int. Total	
	Hard Left	Left	Thru	Right	Hard Left	Bear Left	Bear Right	Hard Right	Left	Thru	Right	ROR	Hard Right	Left	Thru	Bear Right	ROR	Right	Left	Bear Left	Thru	ROR		Right
18:15	0	0	0	0	3	33	80	0	13	132	0	0	6	26	0	64	0	10	0	102	114	0	28	611
18:30	0	0	0	0	2	39	79	0	9	162	0	0	6	28	0	39	0	10	0	80	129	0	15	598
18:45	0	0	0	0	1	32	80	2	6	110	0	0	11	36	0	50	0	12	0	78	124	0	15	557
Total	0	0	0	0	10	143	318	2	42	562	0	0	28	122	0	205	0	36	0	369	501	0	74	2412
Grand Total	0	0	0	0	79	1486	2635	6	426	3492	0	0	176	656	0	1363	0	342	0	2759	4272	0	607	18299
Apprch %	0	0	0	0	1.9	35.3	62.6	0.1	10.4	85.3	0	0	4.3	27.8	0	57.7	0	14.5	0	36.1	55.9	0	7.9	
Total %	0	0	0	0	0.4	8.1	14.4	0	2.3	19.1	0	0	1	3.6	0	7.4	0	1.9	0	15.1	23.3	0	3.3	
Passenger Vehicles	0	0	0	0	78	1472	2563	6	420	3408	0	0	163	644	0	1328	0	332	0	2721	4163	0	603	17901
% Passenger Vehicles	0	0	0	0	98.7	99.1	97.3	100	98.6	97.6	0	0	92.6	98.2	0	97.4	0	97.1	0	98.6	97.4	0	99.3	97.8
Heavy Vehicles	0	0	0	0	1	14	72	0	6	84	0	0	13	12	0	35	0	10	0	38	109	0	4	398
% Heavy Vehicles	0	0	0	0	1.3	0.9	2.7	0	1.4	2.4	0	0	7.4	1.8	0	2.6	0	2.9	0	1.4	2.6	0	0.7	2.2

McMahon Associates, Inc.

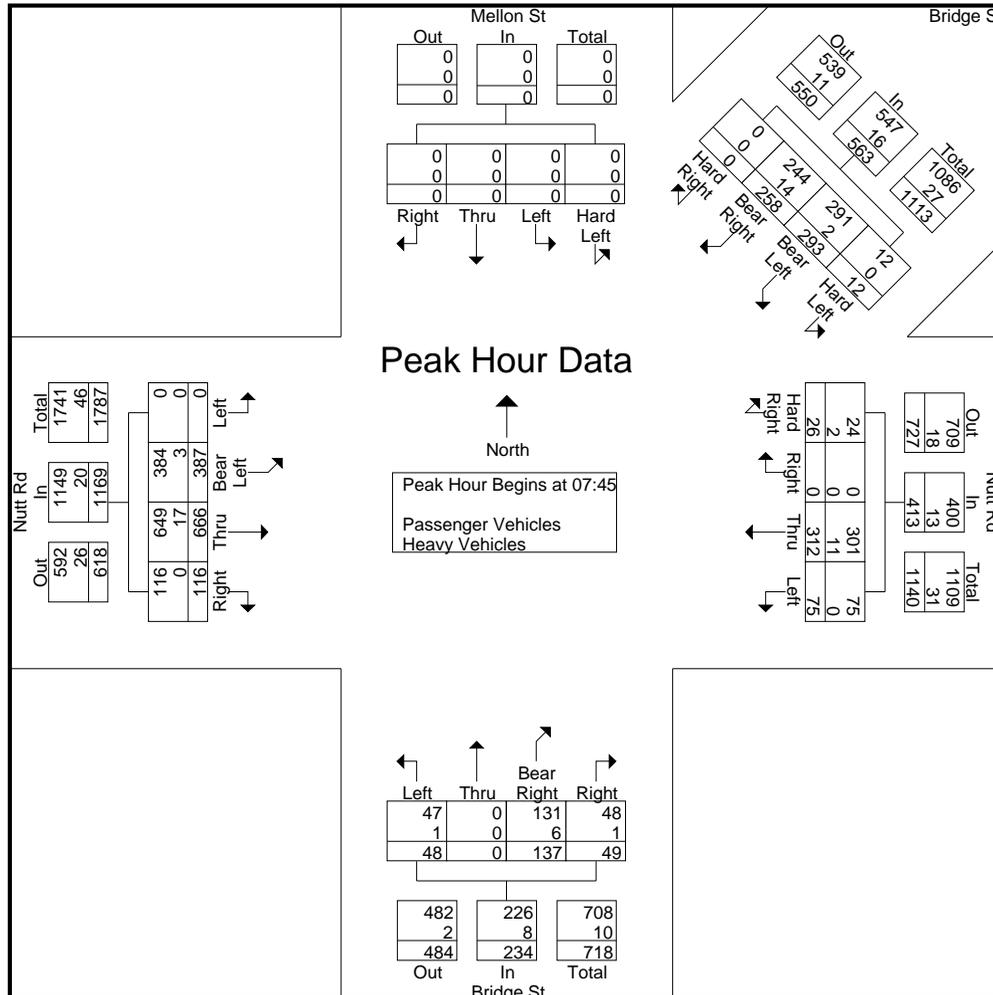
425 Commerce Drive, Suite 200
Fort Washington, PA 19034

Transportation Engineers and Planners

Municipality: Phoenixville Borough
Location: Nutt Road &
Bridge Street & Mellon Street
Counter: BW

File Name : bridge04w
Site Code : 81819502
Start Date : 5/9/2018
Page No : 3

Start Time	Mellon St Southbound					Bridge St Southwestbound					Nutt Rd Westbound					Bridge St Northbound					Nutt Rd Eastbound					Int. Total			
	Hard Left	Left	Thru	Right	App. Total	Hard Left	Bear Left	Bear Right	Hard Right	App. Total	Left	Thru	Right	ROR	Hard Right	App. Total	Left	Thru	Bear Right	ROR	Right	App. Total	Left	Bear Left	Thru		ROR	Right	App. Total
Peak Hour Analysis From 06:00 to 11:45 - Peak 1 of 1																													
Peak Hour for Entire Intersection Begins at 07:45																													
07:45	0	0	0	0	0	2	56	69	0	127	8	65	0	0	6	79	14	0	34	0	7	55	0	94	175	0	35	304	565
08:00	0	0	0	0	0	1	82	50	0	133	20	70	0	0	5	95	12	0	28	0	16	56	0	108	171	0	26	305	589
08:15	0	0	0	0	0	4	67	59	0	130	22	84	0	0	5	111	10	0	31	0	12	53	0	82	163	0	29	274	568
08:30	0	0	0	0	0	5	88	80	0	173	25	93	0	0	10	128	12	0	44	0	14	70	0	103	157	0	26	286	657
Total Volume	0	0	0	0	0	12	293	258	0	563	75	312	0	0	26	413	48	0	137	0	49	234	0	387	666	0	116	1169	2379
% App. Total	0	0	0	0	0	2.1	52	45.8	0		18.2	75.5	0	0	6.3		20.5	0	58.5	0	20.9		0	33.1	57	0	9.9		
PHF	.000	.000	.000	.000	.000	.600	.832	.806	.000	.814	.750	.839	.000	.000	.650	.807	.857	.000	.778	.000	.766	.836	.000	.896	.951	.000	.829	.958	.905
Passenger Vehicles	0	0	0	0	0	12	291	244	0	547	75	301	0	0	24	400	47	0	131	0	48	226	0	384	649	0	116	1149	2322
% Passenger Vehicles	0	0	0	0	0	100	99.3	94.6	0	97.2	100	96.5	0	0	92.3	96.9	97.9	0	95.6	0	98.0	96.6	0	99.2	97.4	0	100	98.3	97.6
Heavy Vehicles	0	0	0	0	0	0	2	14	0	16	0	11	0	0	2	13	1	0	6	0	1	8	0	3	17	0	0	20	57
% Heavy Vehicles	0	0	0	0	0	0	0.7	5.4	0	2.8	0	3.5	0	0	7.7	3.1	2.1	0	4.4	0	2.0	3.4	0	0.8	2.6	0	0	1.7	2.4



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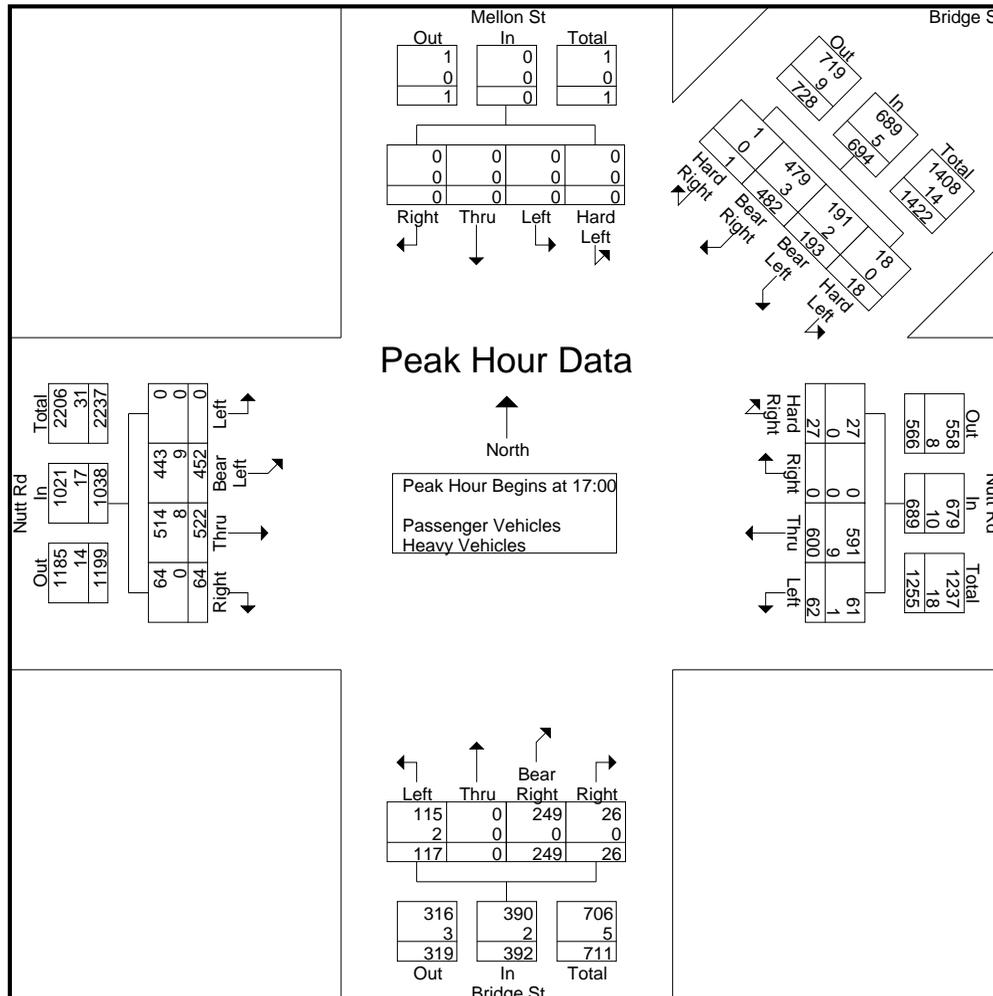
425 Commerce Drive, Suite 200
Fort Washington, PA 19034

Transportation Engineers and Planners

Municipality: Phoenixville Borough
Location: Nutt Road &
Bridge Street & Mellon Street
Counter: BW

File Name : bridge04w
Site Code : 81819502
Start Date : 5/9/2018
Page No : 4

Start Time	Mellon St Southbound					Bridge St Southwestbound					Nutt Rd Westbound					Bridge St Northbound					Nutt Rd Eastbound					Int. Total			
	Hard Left	Left	Thru	Right	App. Total	Hard Left	Bear Left	Bear Right	Hard Right	App. Total	Left	Thru	Right	ROR	Hard Right	App. Total	Left	Thru	Bear Right	ROR	Right	App. Total	Left	Bear Left	Thru		ROR	Right	App. Total
Peak Hour Analysis From 12:00 to 18:45 - Peak 1 of 1																													
Peak Hour for Entire Intersection Begins at 17:00																													
17:00	0	0	0	0	0	5	49	126	1	181	16	146	0	0	6	168	23	0	60	0	7	90	0	113	126	0	16	255	694
17:15	0	0	0	0	0	5	57	121	0	183	16	149	0	0	4	169	29	0	66	0	7	102	0	113	130	0	19	262	716
17:30	0	0	0	0	0	2	45	124	0	171	13	151	0	0	8	172	34	0	55	0	8	97	0	113	130	0	17	260	700
17:45	0	0	0	0	0	6	42	111	0	159	17	154	0	0	9	180	31	0	68	0	4	103	0	113	136	0	12	261	703
Total Volume	0	0	0	0	0	18	193	482	1	694	62	600	0	0	27	689	117	0	249	0	26	392	0	452	522	0	64	1038	2813
% App. Total	0	0	0	0	0	2.6	27.8	69.5	0.1		9	87.1	0	0	3.9		29.8	0	63.5	0	6.6		0	43.5	50.3	0	6.2		
PHF	.000	.000	.000	.000	.000	.750	.846	.956	.250	.948	.912	.974	.000	.000	.750	.957	.860	.000	.915	.000	.813	.951	.000	1.00	.960	.000	.842	.990	.982
Passenger Vehicles	0	0	0	0	0	18	191	479	1	689	61	591	0	0	27	679	115	0	249	0	26	390	0	443	514	0	64	1021	2779
% Passenger Vehicles	0	0	0	0	0	100	99.0	99.4	100	99.3	98.4	98.5	0	0	100	98.5	98.3	0	100	0	100	99.5	0	98.0	98.5	0	100	98.4	98.8
Heavy Vehicles	0	0	0	0	0	0	2	3	0	5	1	9	0	0	0	10	2	0	0	0	0	2	0	9	8	0	0	17	34
% Heavy Vehicles	0	0	0	0	0	0	1.0	0.6	0	0.7	1.6	1.5	0	0	0	1.5	1.7	0	0	0	0	0.5	0	2.0	1.5	0	0	1.6	1.2



McMahon Associates, Inc.

425 Commerce Drive, Suite 200
Fort Washington, PA 19034

Transportation Engineers and Planners

Municipality: Phoenixville Borough
Location: Nutt Road &
Bridge Street & Mellon Street
Counter: BW

File Name : bridge04w
Site Code : 81819502
Start Date : 5/9/2018
Page No : 1

Groups Printed- Pedestrians

	Mellon St Southbound	Bridge St Southwestbound	Nutt Rd Westbound	Bridge St Northbound	Nutt Rd Eastbound	Int. Total
Start Time	E/W	E/W	N/S	E/W	N/S	
*** BREAK ***						
06:15	1	0	0	0	0	1
06:30	0	0	0	1	0	1
*** BREAK ***						
Total	1	0	0	1	0	2
*** BREAK ***						
07:15	0	0	0	2	0	2
07:30	1	0	0	0	0	1
*** BREAK ***						
Total	1	0	0	2	0	3
*** BREAK ***						
08:15	2	0	1	0	0	3
08:30	0	0	0	1	0	1
*** BREAK ***						
Total	2	0	1	1	0	4
*** BREAK ***						
15:45	0	0	0	1	0	1
Total	0	0	0	1	0	1
*** BREAK ***						
16:15	1	0	0	0	0	1
*** BREAK ***						
Total	1	0	0	0	0	1
*** BREAK ***						
17:30	0	0	0	1	0	1
*** BREAK ***						
Total	0	0	0	1	0	1
18:00	3	0	0	0	0	3
*** BREAK ***						
18:30	0	0	0	2	0	2
18:45	1	0	0	0	0	1
*** BREAK ***						
Total	4	0	0	2	0	6
Grand Total	9	0	1	8	0	18
Apprch %	100	0	100	100	0	
Total %	50	0	5.6	44.4	0	

McMahon Associates, Inc.

425 Commerce Drive, Suite 200
Fort Washington, PA 19034

Transportation Engineers and Planners

Municipality: Phoenixville Borough
Location: Nutt Road &
Mason Street
Counter: HP

File Name : bridge05w
Site Code : 81819505
Start Date : 5/9/2018
Page No : 1

Groups Printed- Passenger Vehicles - Heavy Vehicles

Start Time	Mason St Southbound			Nutt Rd Westbound			Mason St Northbound			Nutt Rd Eastbound			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
06:00	0	0	1	0	75	0	0	0	0	4	164	0	244
06:15	0	1	0	1	98	1	0	0	1	2	218	0	322
06:30	1	0	4	0	132	2	0	0	0	2	241	2	384
06:45	2	0	2	0	147	2	1	0	0	3	268	4	429
Total	3	1	7	1	452	5	1	0	1	11	891	6	1379
07:00	1	0	2	2	165	3	0	0	0	2	266	4	445
07:15	0	0	4	0	187	1	0	0	1	3	257	1	454
07:30	1	0	2	0	198	0	1	0	0	3	297	2	504
07:45	0	1	2	2	151	2	0	0	0	3	298	1	460
Total	2	1	10	4	701	6	1	0	1	11	1118	8	1863
08:00	1	0	6	1	150	2	0	0	1	2	286	1	450
08:15	3	0	2	0	155	6	0	0	2	2	271	2	443
08:30	5	0	4	0	206	3	0	0	0	6	275	2	501
08:45	2	0	4	2	212	6	0	0	2	4	226	2	460
Total	11	0	16	3	723	17	0	0	5	14	1058	7	1854
09:00	1	0	2	1	174	0	0	0	1	4	203	1	387
09:15	0	0	5	1	162	4	1	0	1	2	199	1	376
09:30	2	2	1	3	167	3	2	0	0	4	182	1	367
09:45	3	0	5	0	174	5	0	0	2	1	191	0	381
Total	6	2	13	5	677	12	3	0	4	11	775	3	1511
*** BREAK ***													
15:00	0	0	2	1	214	2	0	0	1	4	240	2	466
15:15	1	0	8	2	261	8	0	0	0	6	210	1	497
15:30	0	0	4	0	256	4	1	0	0	3	224	3	495
15:45	2	0	6	0	269	6	1	0	1	6	215	2	508
Total	3	0	20	3	1000	20	2	0	2	19	889	8	1966
16:00	0	0	8	0	268	3	1	0	0	6	211	1	498
16:15	1	0	8	2	269	5	0	0	1	4	226	0	516
16:30	0	0	7	0	304	5	0	0	0	5	236	2	559
16:45	1	0	10	1	278	5	0	0	1	6	200	1	503
Total	2	0	33	3	1119	18	1	0	2	21	873	4	2076
17:00	2	1	10	0	283	7	2	0	6	6	254	1	572
17:15	2	0	8	1	308	6	1	0	6	2	226	1	561
17:30	3	0	15	1	288	4	3	0	1	8	243	0	566
17:45	2	0	14	2	277	2	0	0	3	10	237	1	548
Total	9	1	47	4	1156	19	6	0	16	26	960	3	2247
18:00	2	1	8	1	264	4	5	0	2	8	243	2	540
18:15	1	0	6	1	246	6	1	0	1	3	221	1	487
18:30	2	0	5	0	260	2	0	0	0	1	212	1	483
18:45	2	0	9	1	225	15	0	1	0	5	204	0	462
Total	7	1	28	3	995	27	6	1	3	17	880	4	1972
Grand Total	43	6	174	26	6823	124	20	1	34	130	7444	43	14868
Apprch %	19.3	2.7	78	0.4	97.8	1.8	36.4	1.8	61.8	1.7	97.7	0.6	
Total %	0.3	0	1.2	0.2	45.9	0.8	0.1	0	0.2	0.9	50.1	0.3	

McMahon Associates, Inc.

425 Commerce Drive, Suite 200
Fort Washington, PA 19034

Transportation Engineers and Planners

Municipality: Phoenixville Borough
Location: Nutt Road &
Mason Street
Counter: HP

File Name : bridge05w
Site Code : 81819505
Start Date : 5/9/2018
Page No : 2

Groups Printed- Passenger Vehicles - Heavy Vehicles

	Mason St Southbound			Nutt Rd Westbound			Mason St Northbound			Nutt Rd Eastbound			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
Passenger Vehicles	39	6	157	26	6496	115	19	1	33	125	7252	41	14310
% Passenger Vehicles	90.7	100	90.2	100	95.2	92.7	95	100	97.1	96.2	97.4	95.3	96.2
Heavy Vehicles	4	0	17	0	327	9	1	0	1	5	192	2	558
% Heavy Vehicles	9.3	0	9.8	0	4.8	7.3	5	0	2.9	3.8	2.6	4.7	3.8

McMahon Associates, Inc.

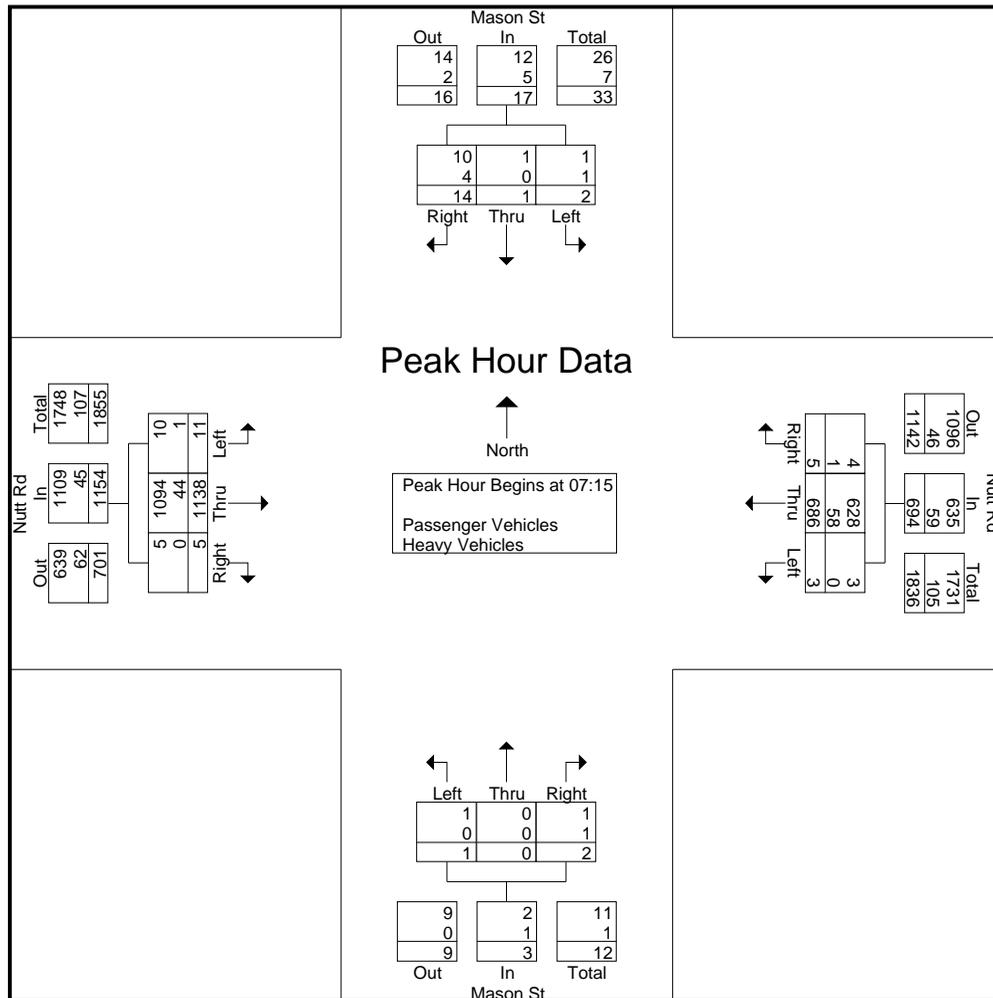
425 Commerce Drive, Suite 200
Fort Washington, PA 19034

Transportation Engineers and Planners

Municipality: Phoenixville Borough
Location: Nutt Road &
Mason Street
Counter: HP

File Name : bridge05w
Site Code : 81819505
Start Date : 5/9/2018
Page No : 3

Start Time	Mason St Southbound				Nutt Rd Westbound				Mason St Northbound				Nutt Rd Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 06:00 to 11:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15																	
07:15	0	0	4	4	0	187	1	188	0	0	1	1	3	257	1	261	454
07:30	1	0	2	3	0	198	0	198	1	0	0	1	3	297	2	302	504
07:45	0	1	2	3	2	151	2	155	0	0	0	0	3	298	1	302	460
08:00	1	0	6	7	1	150	2	153	0	0	1	1	2	286	1	289	450
Total Volume	2	1	14	17	3	686	5	694	1	0	2	3	11	1138	5	1154	1868
% App. Total	11.8	5.9	82.4	70.6	0.4	98.8	0.7	91.5	33.3	0	66.7	1	98.6	0.4			
PHF	.500	.250	.583	.607	.375	.866	.625	.876	.250	.000	.500	.750	.917	.955	.625	.955	.927
Passenger Vehicles	1	1	10	12	3	628	4	635	1	0	1	2	10	1094	5	1109	1758
% Passenger Vehicles	50.0	100	71.4	70.6	100	91.5	80.0	91.5	100	0	50.0	66.7	90.9	96.1	100	96.1	94.1
Heavy Vehicles	1	0	4	5	0	58	1	59	0	0	1	1	1	44	0	45	110
% Heavy Vehicles	50.0	0	28.6	29.4	0	8.5	20.0	8.5	0	0	50.0	33.3	9.1	3.9	0	3.9	5.9



McMahon Associates, Inc.

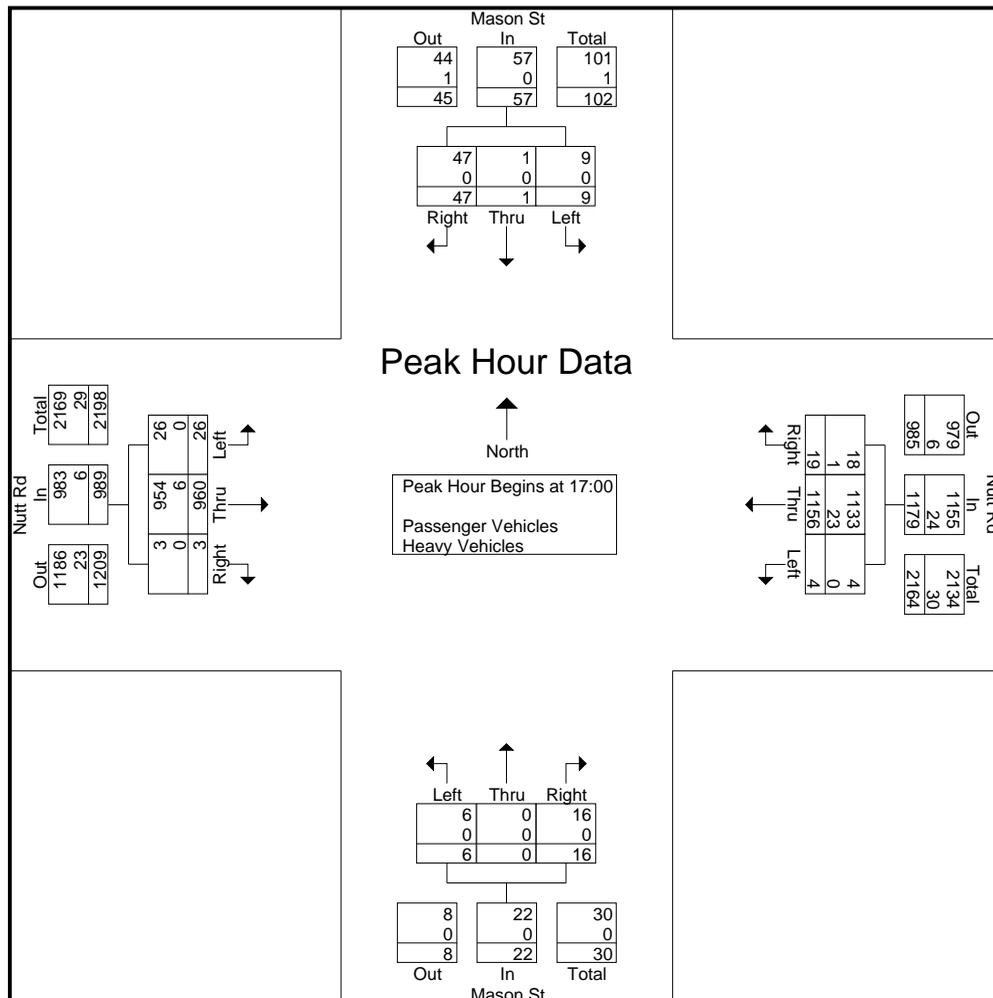
425 Commerce Drive, Suite 200
Fort Washington, PA 19034

Transportation Engineers and Planners

Municipality: Phoenixville Borough
Location: Nutt Road &
Mason Street
Counter: HP

File Name : bridge05w
Site Code : 81819505
Start Date : 5/9/2018
Page No : 4

Start Time	Mason St Southbound				Nutt Rd Westbound				Mason St Northbound				Nutt Rd Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 12:00 to 18:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 17:00																	
17:00	2	1	10	13	0	283	7	290	2	0	6	8	6	254	1	261	572
17:15	2	0	8	10	1	308	6	315	1	0	6	7	2	226	1	229	561
17:30	3	0	15	18	1	288	4	293	3	0	1	4	8	243	0	251	566
17:45	2	0	14	16	2	277	2	281	0	0	3	3	10	237	1	248	548
Total Volume	9	1	47	57	4	1156	19	1179	6	0	16	22	26	960	3	989	2247
% App. Total	15.8	1.8	82.5		0.3	98	1.6		27.3	0	72.7		2.6	97.1	0.3		
PHF	.750	.250	.783	.792	.500	.938	.679	.936	.500	.000	.667	.688	.650	.945	.750	.947	.982
Passenger Vehicles	9	1	47	57	4	1133	18	1155	6	0	16	22	26	954	3	983	2217
% Passenger Vehicles	100	100	100	100	100	98.0	94.7	98.0	100	0	100	100	100	99.4	100	99.4	98.7
Heavy Vehicles	0	0	0	0	0	23	1	24	0	0	0	0	0	6	0	6	30
% Heavy Vehicles	0	0	0	0	0	2.0	5.3	2.0	0	0	0	0	0	0.6	0	0.6	1.3



McMahon Associates, Inc.

425 Commerce Drive, Suite 200
Fort Washington, PA 19034

Transportation Engineers and Planners

Municipality: Phoenixville Borough
Location: Nutt Road &
Mason Street
Counter: HP

File Name : bridge05w
Site Code : 81819505
Start Date : 5/9/2018
Page No : 1

Groups Printed- Pedestrians

Start Time	Mason St Southbound		Nutt Rd Westbound		Mason St Northbound		Nutt Rd Eastbound		Int. Total
	E/W	N/S	E/W	N/S	E/W	N/S	E/W	N/S	
*** BREAK ***									
06:30	0	0	1	0					1
06:45	2	0	0	0					2
Total	2	0	1	0					3
07:00	0	1	2	0					3
07:15	0	0	1	0					1
07:30	1	0	0	0					1
*** BREAK ***									
Total	1	1	3	0					5
08:00	2	0	2	0					4
*** BREAK ***									
08:30	1	0	0	0					1
*** BREAK ***									
Total	3	0	2	0					5
*** BREAK ***									
15:00	2	0	1	0					3
15:15	1	0	0	0					1
15:30	0	0	1	0					1
15:45	2	0	0	1					3
Total	5	0	2	1					8
*** BREAK ***									
16:15	1	0	1	0					2
*** BREAK ***									
16:45	3	0	1	1					5
Total	4	0	2	1					7
17:00	1	0	2	0					3
*** BREAK ***									
17:30	2	0	0	0					2
17:45	1	0	1	1					3
Total	4	0	3	1					8
18:00	0	1	3	0					4
18:15	0	0	1	1					2
18:30	1	0	0	0					1
18:45	1	0	2	0					3
Total	2	1	6	1					10
Grand Total	21	2	19	4					46
Apprch %	100	100	100	100					
Total %	45.7	4.3	41.3	8.7					

Appendix E

Auxiliary Turn Lane Warrants

SCENARIO 1

Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality:	Phoenixville Borough	Analysis Date:	5/9/2018
County:	Chester County	Conducted By:	BGG
PennDOT Engineering District:	6	Checked By:	
		Agency/Company Name:	McMahon Associates, Inc.
Intersection & Approach Description: Scenario 1 - N. Main Street and Site Access / Riverworks Access Northbound N. Main Street Left-Turn Lane			
Analysis Period:	2021 Build	Number of Approach Lanes:	1
Design Hour:	AM Peak Hour	Undivided or Divided Highway:	Undivided
Intersection Control:	Unsignalized	Type of Analysis:	
Posted Speed Limit (MPH):	25	Left or Right-Turn Lane Analysis?:	Left Turn Lane
Type of Terrain:	Rolling		

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	44	2.0%	46
	Through	-	172	7.0%	191
	Right	Yes	7	0.0%	7
Opposing	Left	Yes	0	0.0%	0
	Through	-	696	1.0%	707
	Right	Yes	9	2.0%	10

Advancing Volume:	244
Opposing Volume:	717
Left Turn Volume:	46
% Left Turns in Advancing Volume: 18.85%	

Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	0	0.0%	N/A
	Through	-	0	0.0%	N/A
	Right	-	0	0.0%	N/A

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

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: Figure 1	Applicable Warrant Figure: N/A
Warrant Met?: Yes	Warrant Met?: N/A

TURN LANE LENGTH CALCULATIONS

Intersection Control:	Unsignalized	Average # of Vehicles/Cycle:	1.0
Design Hour Volume of Turning Lane:	46		
Cycles Per Hour (Assumed):	60		
Cycles Per Hour (If Known):			

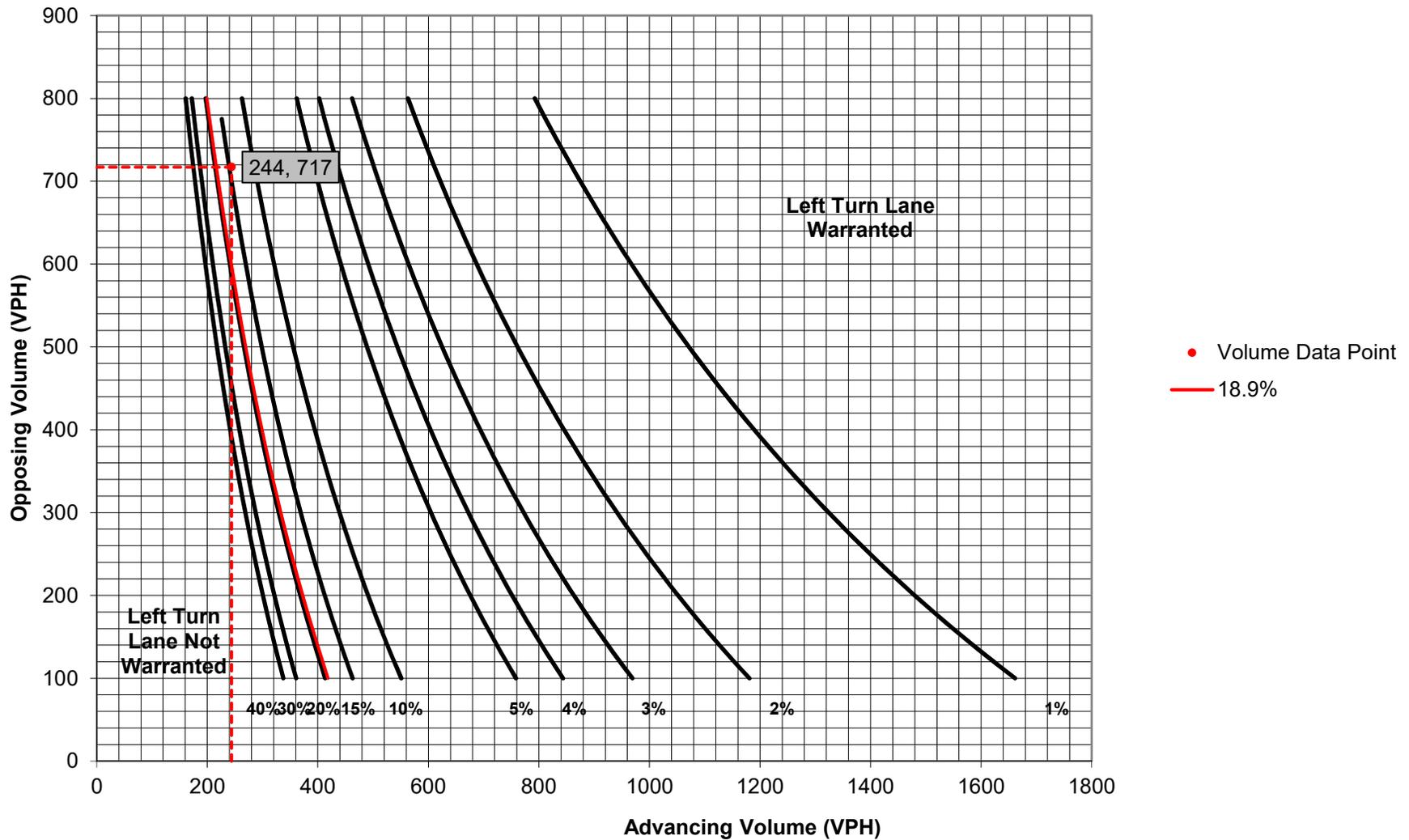
Type of Traffic Control	PennDOT Publication 46, Exhibit 11-6					
	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Left Turn Lane Storage Length, Condition A:	75	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Left Turn Lane Storage Length:	75	Feet

Additional Findings:
N/A

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:	Phoenixville Borough	Analysis Date:	5/9/2018
County:	Chester County	Conducted By:	BGG
PennDOT Engineering District:	6	Checked By:	
		Agency/Company Name:	McMahon Associates, Inc.
Intersection & Approach Description: Scenario 1 - N. Main Street and Site Access / Riverworks Access Northbound N. Main Street Left-Turn Lane			
Analysis Period:	2021 Build	Number of Approach Lanes:	1
Design Hour:	PM Peak Hour	Undivided or Divided Highway:	Undivided
Intersection Control:	Unsignalized		
Posted Speed Limit (MPH):	25	Type of Analysis	
Type of Terrain:	Rolling	Left or Right-Turn Lane Analysis?: Left Turn Lane	

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	137	2.0%	142
	Through	-	560	0.0%	560
	Right	Yes	70	0.0%	70
Opposing	Left	Yes	14	0.0%	14
	Through	-	266	0.0%	266
	Right	Yes	28	2.0%	29

Advancing Volume:	772
Opposing Volume:	309
Left Turn Volume:	142

% Left Turns in Advancing Volume: 18.39%

Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	0	0.0%	N/A
	Through	-	0	0.0%	N/A
	Right	-	0	0.0%	N/A

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

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: Figure 1 Warrant Met?: Yes	Applicable Warrant Figure: N/A Warrant Met?: N/A

TURN LANE LENGTH CALCULATIONS

Intersection Control:	Unsignalized		
Design Hour Volume of Turning Lane:	142		
Cycles Per Hour (Assumed):	60		
Cycles Per Hour (If Known):		Average # of Vehicles/Cycle:	2.0

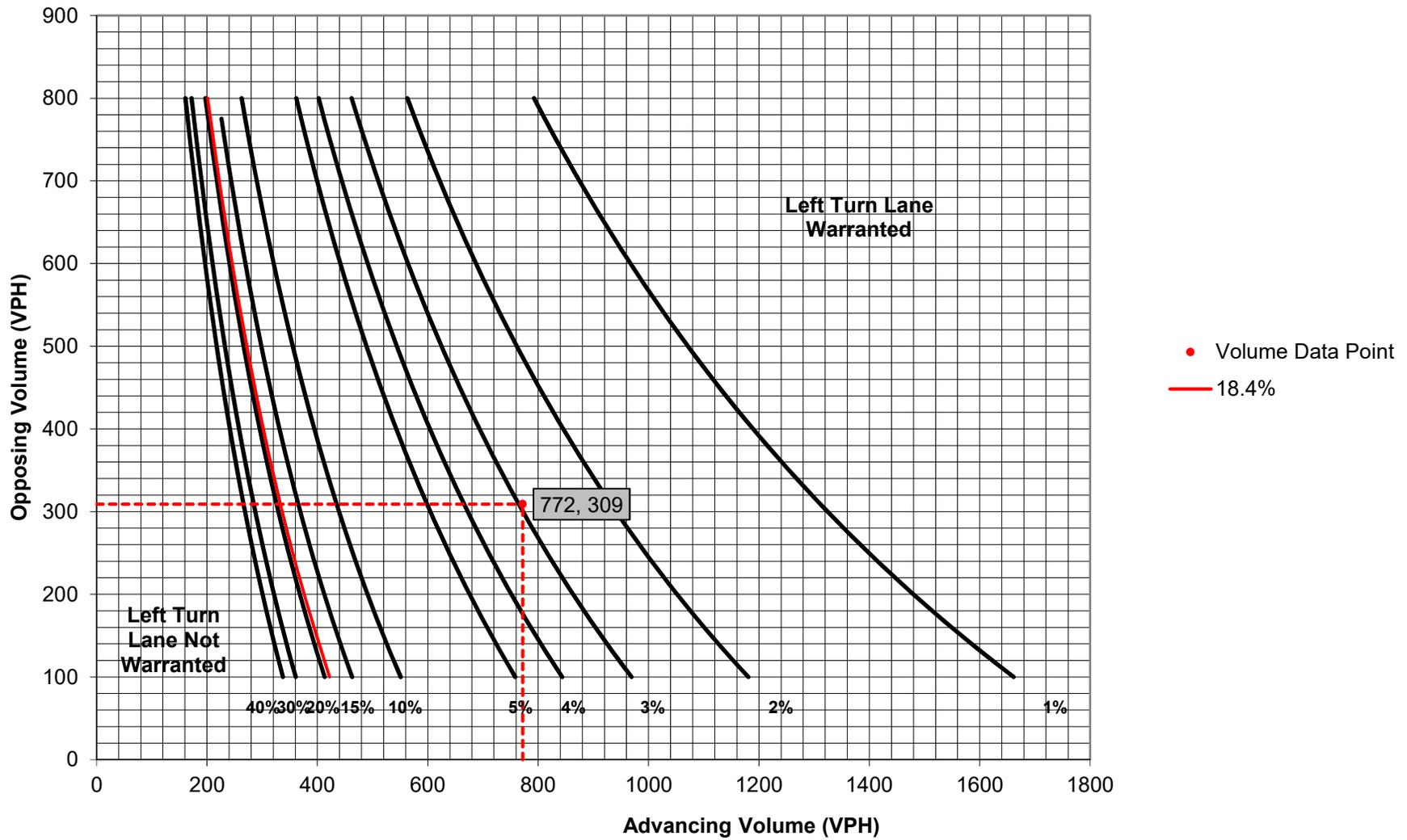
Type of Traffic Control	PennDOT Publication 46, Exhibit 11-6					
	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Left Turn Lane Storage Length, Condition A:	100	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Left Turn Lane Storage Length:	100	Feet

Additional Findings:
N/A

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:	Phoenixville Borough	Analysis Date:	5/9/2018
County:	Chester County	Conducted By:	BGG
PennDOT Engineering District:	6	Checked By:	
		Agency/Company Name:	McMahon Associates, Inc.
Intersection & Approach Description: Scenario 1 - N. Main Street and Site Access / Riverworks Access Southbound N. Main Street Right-Turn Lane			
Analysis Period:	2021 Build	Number of Approach Lanes:	1
Design Hour:	AM Peak Hour	Undivided or Divided Highway:	Undivided
Intersection Control:	Unsignalized		
Posted Speed Limit (MPH):	25	Type of Analysis:	
Type of Terrain:	Rolling	Left or Right-Turn Lane Analysis?:	Right Turn Lane

VOLUME CALCULATIONS

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

Advancing Volume:
 Opposing Volume:
 Left Turn Volume:
 % Left Turns in Advancing Volume:

Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	0	0.0%	0
	Through	-	696	1.0%	707
	Right	-	9	2.0%	10

Advancing Volume:
 Right Turn Volume:

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:	Unsignalized
Design Hour Volume of Turning Lane:	10
Cycles Per Hour (Assumed):	60
Cycles Per Hour (If Known):	
Average # of Vehicles/Cycle:	<input type="text" value="N/A"/>

PennDOT Publication 46, Exhibit 11-6

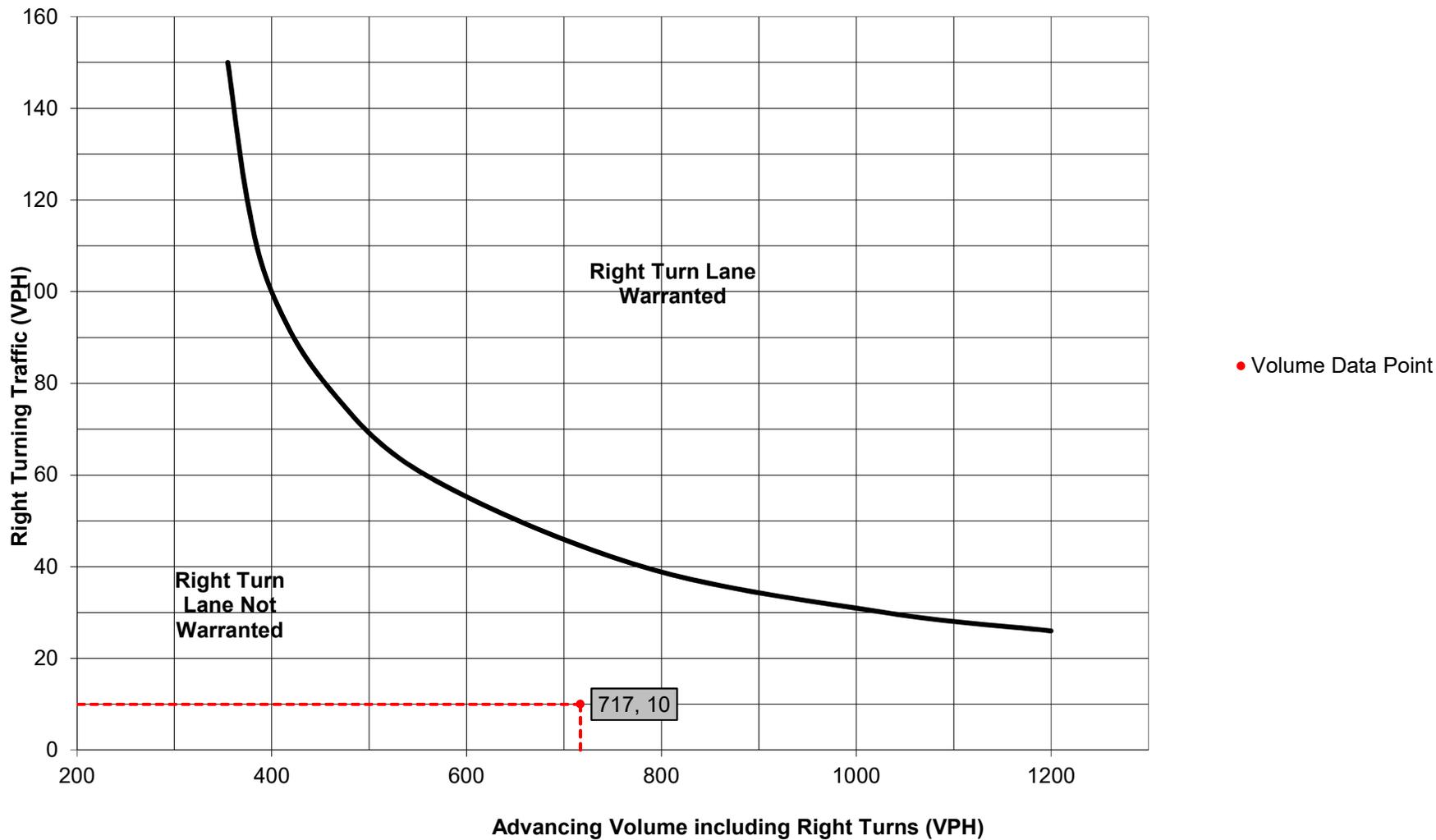
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Right Turn Lane Storage Length, Condition A: Feet
 Condition B: Feet
 Condition C: Feet
 Required Right Turn Lane Storage Length: 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:	Phoenixville Borough	Analysis Date:	5/9/2018
County:	Chester County	Conducted By:	BGG
PennDOT Engineering District:	6	Checked By:	
		Agency/Company Name:	McMahon Associates, Inc.
Intersection & Approach Description: Scenario 1 - N. Main Street and Site Access / Riverworks Access Southbound N. Main Street Right-Turn Lane			
Analysis Period:	2021 Build	Number of Approach Lanes:	1
Design Hour:	PM Peak Hour	Undivided or Divided Highway:	Undivided
Intersection Control:	Unsignalized	Type of Analysis:	
Posted Speed Limit (MPH):	25	Left or Right-Turn Lane Analysis?:	Right Turn Lane
Type of Terrain:	Rolling		

VOLUME CALCULATIONS

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

Advancing Volume:
 Opposing Volume:
 Left Turn Volume:
 % Left Turns in Advancing Volume:

Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	14	0.0%	14
	Through	-	266	0.0%	266
	Right	-	28	2.0%	29

Advancing Volume:
 Right Turn Volume:

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: <input style="width: 50px;" type="text" value="N/A"/>	Applicable Warrant Figure: <input style="width: 50px;" type="text" value="Figure 9"/>
Warrant Met?: <input style="width: 50px;" type="text" value="N/A"/>	Warrant Met?: <input style="width: 50px;" type="text" value="No"/>

TURN LANE LENGTH CALCULATIONS

Intersection Control:	Unsignalized
Design Hour Volume of Turning Lane:	29
Cycles Per Hour (Assumed):	60
Cycles Per Hour (If Known):	
Average # of Vehicles/Cycle:	<input style="width: 50px;" type="text" value="N/A"/>

PennDOT Publication 46, Exhibit 11-6

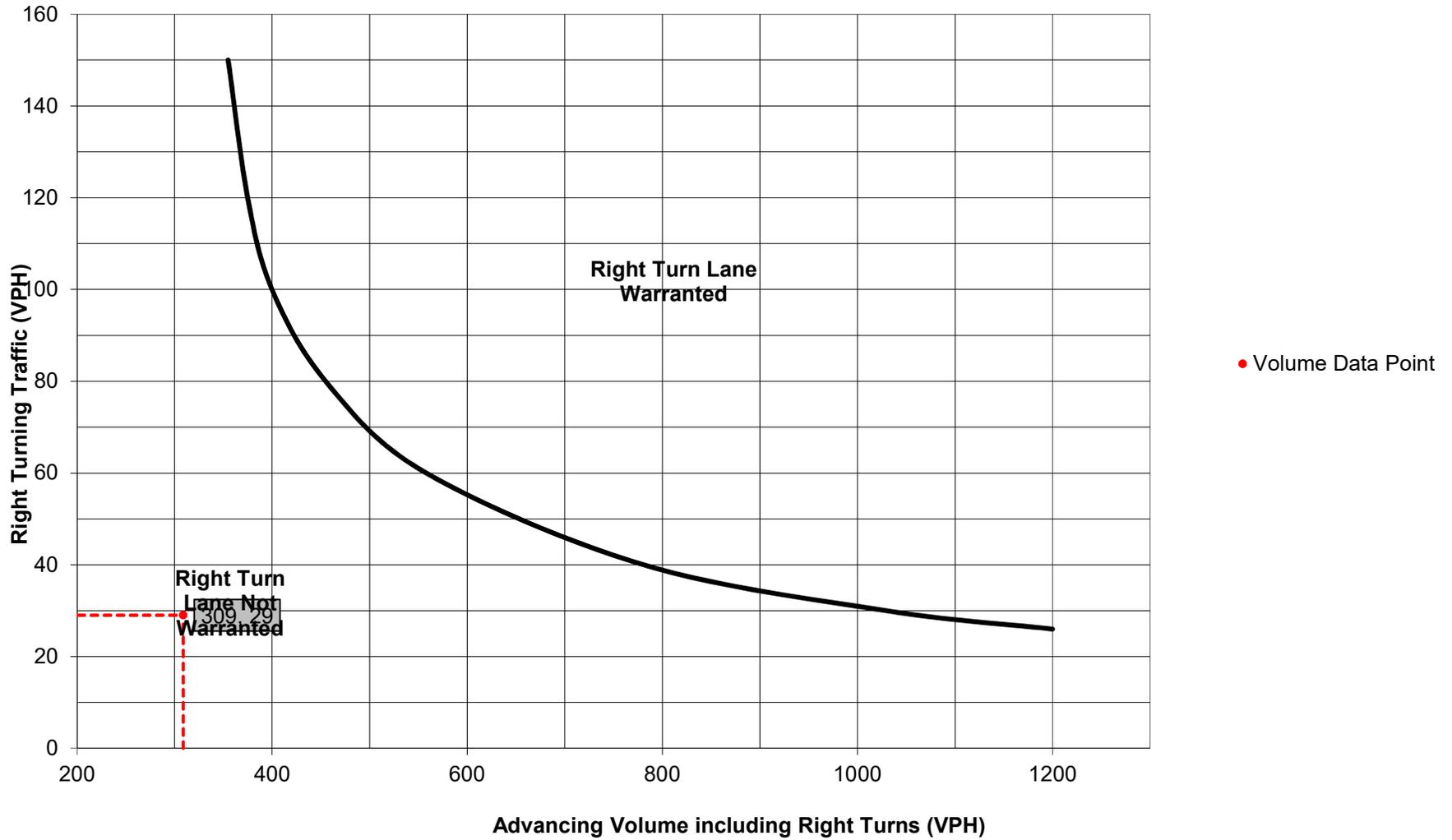
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Right Turn Lane Storage Length, Condition A: Feet
 Condition B: Feet
 Condition C: Feet
 Required Right Turn Lane Storage Length: 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)**



SCENARIO 2

Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality:	Phoenixville Borough	Analysis Date:	5/9/2018
County:	Chester County	Conducted By:	BGG
PennDOT Engineering District:	6	Checked By:	
		Agency/Company Name:	McMahon Associates, Inc.
Intersection & Approach Description: Scenario 2 - N. Main Street and Site Access / Riverworks Access Northbound N. Main Street Left-Turn Lane			
Analysis Period:	2021 Build	Number of Approach Lanes:	1
Design Hour:	AM Peak Hour	Undivided or Divided Highway:	Undivided
Intersection Control:	Unsignalized	Type of Analysis:	
Posted Speed Limit (MPH):	25	Left or Right-Turn Lane Analysis?:	Left Turn Lane
Type of Terrain:	Rolling		

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	53	2.0%	55
	Through	-	168	7.0%	186
	Right	Yes	6	0.0%	6
Opposing	Left	Yes	0	0.0%	0
	Through	-	670	1.0%	681
	Right	Yes	30	2.0%	31

Advancing Volume:	247
Opposing Volume:	712
Left Turn Volume:	55
% Left Turns in Advancing Volume: 22.27%	

Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	0	0.0%	N/A
	Through	-	0	0.0%	N/A
	Right	-	0	0.0%	N/A

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

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: Figure 1	Applicable Warrant Figure: N/A
Warrant Met?: Yes	Warrant Met?: N/A

TURN LANE LENGTH CALCULATIONS

Intersection Control:	Unsignalized	Average # of Vehicles/Cycle:	1.0
Design Hour Volume of Turning Lane:	55		
Cycles Per Hour (Assumed):	60		
Cycles Per Hour (If Known):			

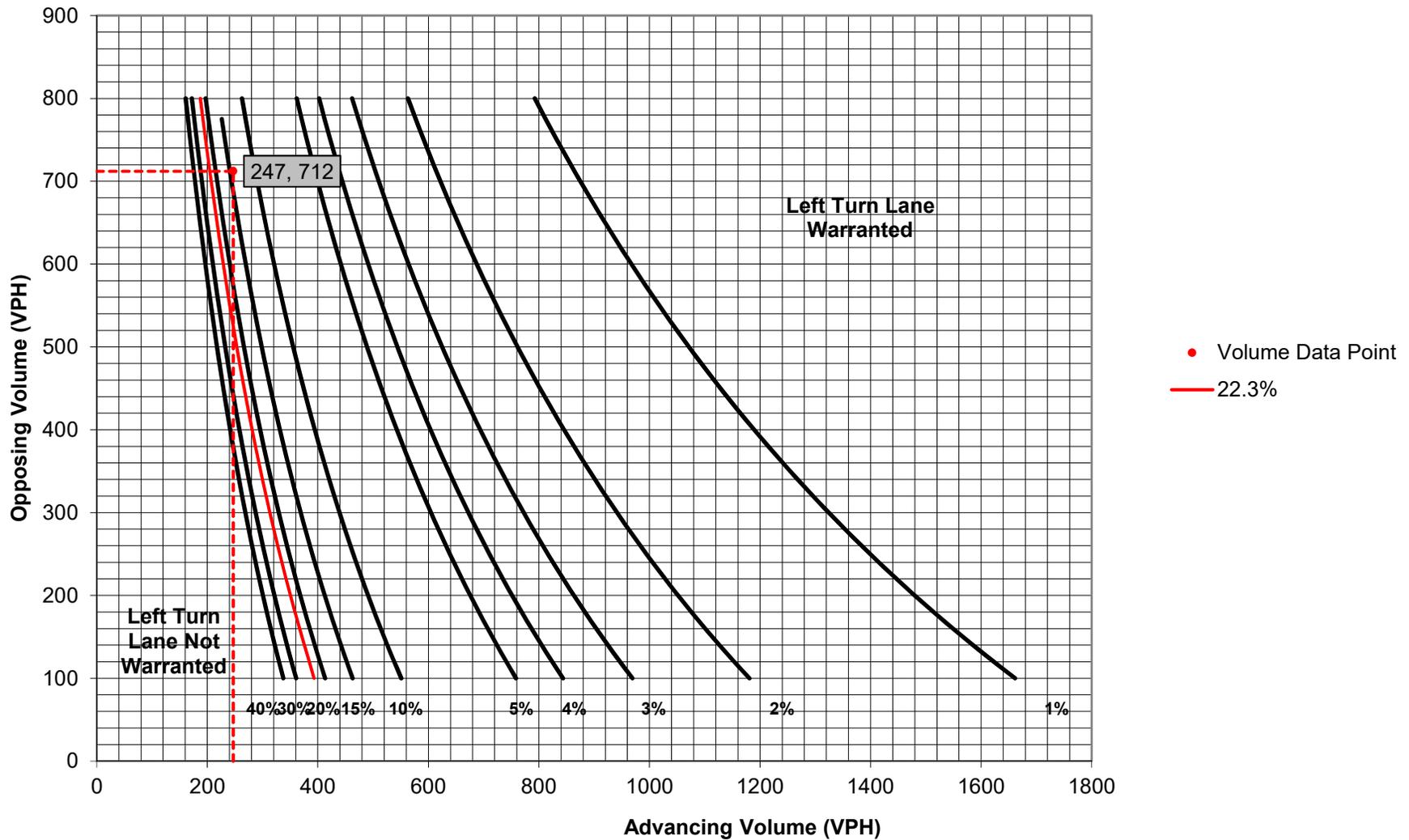
Type of Traffic Control	PennDOT Publication 46, Exhibit 11-6					
	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Left Turn Lane Storage Length, Condition A:	75	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Left Turn Lane Storage Length:	75	Feet

Additional Findings:
N/A

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:	Phoenixville Borough	Analysis Date:	5/9/2018
County:	Chester County	Conducted By:	BGG
PennDOT Engineering District:	6	Checked By:	
		Agency/Company Name:	McMahon Associates, Inc.
Intersection & Approach Description: Scenario 2 - N. Main Street and Site Access / Riverworks Access Northbound N. Main Street Left-Turn Lane			
Analysis Period:	2021 Build	Number of Approach Lanes:	1
Design Hour:	PM Peak Hour	Undivided or Divided Highway:	Undivided
Intersection Control:	Unsignalized	Type of Analysis:	
Posted Speed Limit (MPH):	25	Left or Right-Turn Lane Analysis?:	Left Turn Lane
Type of Terrain:	Rolling		

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	139	2.0%	144
	Through	-	542	0.0%	542
	Right	Yes	68	0.0%	68
Opposing	Left	Yes	14	0.0%	14
	Through	-	242	0.0%	242
	Right	Yes	35	2.0%	37

Advancing Volume:	754
Opposing Volume:	293
Left Turn Volume:	144

% Left Turns in Advancing Volume:	19.10%
-----------------------------------	--------

Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	0	0.0%	N/A
	Through	-	0	0.0%	N/A
	Right	-	0	0.0%	N/A

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

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: Figure 1	Applicable Warrant Figure: N/A
Warrant Met?: Yes	Warrant Met?: N/A

TURN LANE LENGTH CALCULATIONS

Intersection Control:	Unsignalized	Average # of Vehicles/Cycle:	2.0
Design Hour Volume of Turning Lane:	144		
Cycles Per Hour (Assumed):	60		
Cycles Per Hour (If Known):			

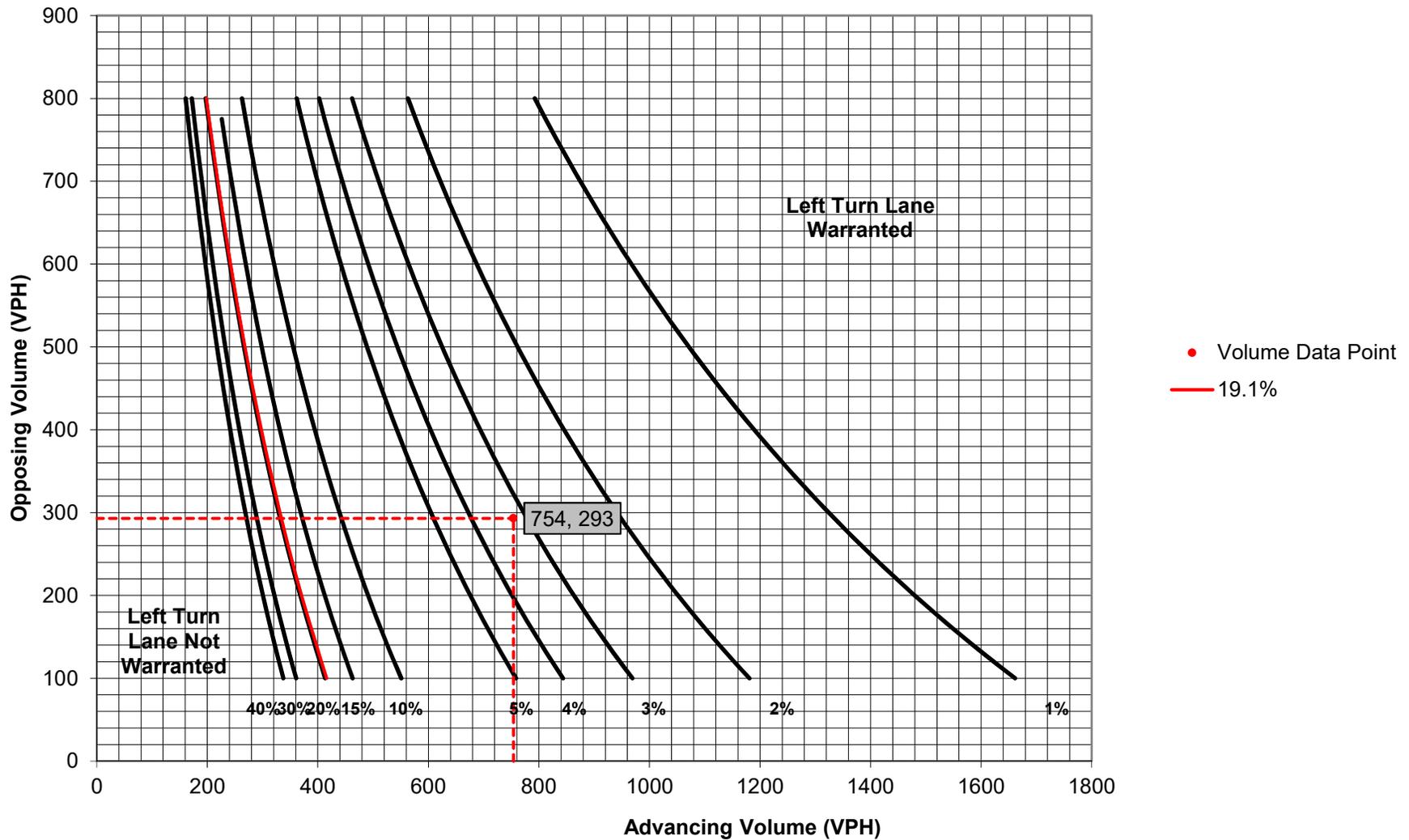
Type of Traffic Control	PennDOT Publication 46, Exhibit 11-6					
	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Left Turn Lane Storage Length, Condition A:	100	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Left Turn Lane Storage Length:	100	Feet

Additional Findings:	N/A
----------------------	-----

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:	Phoenixville Borough	Analysis Date:	5/9/2018
County:	Chester County	Conducted By:	BGG
PennDOT Engineering District:	6	Checked By:	
		Agency/Company Name:	McMahon Associates, Inc.
Intersection & Approach Description: Scenario 2 - N. Main Street and Site Access / Riverworks Access Southbound N. Main Street Right-Turn Lane			
Analysis Period:	2021 Build	Number of Approach Lanes:	1
Design Hour:	AM Peak Hour	Undivided or Divided Highway:	Undivided
Intersection Control:	Unsignalized		
Posted Speed Limit (MPH):	25	Type of Analysis	
Type of Terrain:	Rolling	Left or Right-Turn Lane Analysis?: Right Turn Lane	

VOLUME CALCULATIONS

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

Advancing Volume:
 Opposing Volume:
 Left Turn Volume:
 % Left Turns in Advancing Volume:

Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	0	0.0%	0
	Through	-	670	1.0%	681
	Right	-	30	2.0%	31

Advancing Volume:
 Right Turn Volume:

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:	Unsignalized
Design Hour Volume of Turning Lane:	31
Cycles Per Hour (Assumed):	60
Cycles Per Hour (If Known):	
Average # of Vehicles/Cycle: <input type="text" value="N/A"/>	

PennDOT Publication 46, Exhibit 11-6

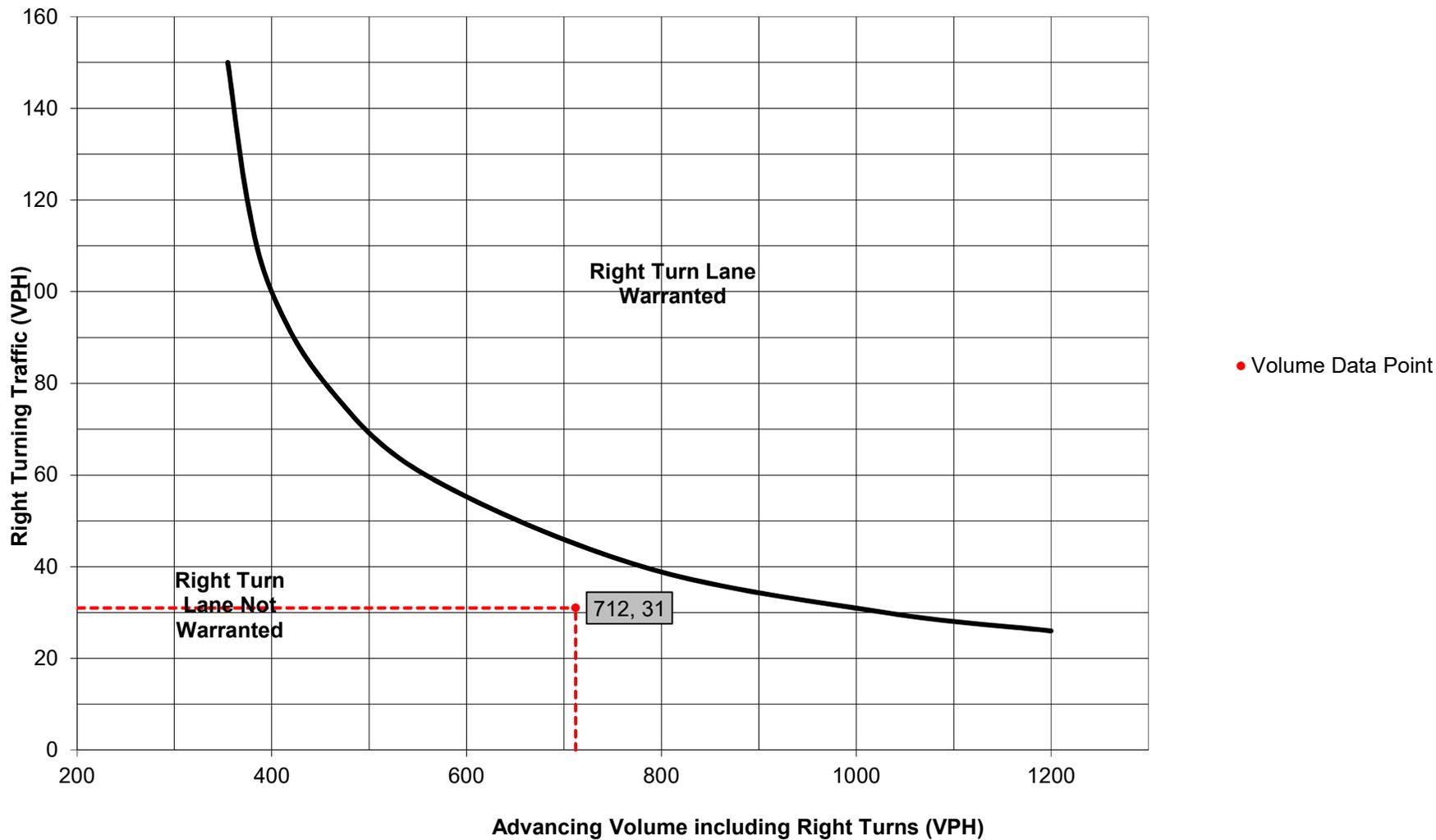
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Right Turn Lane Storage Length, Condition A: Feet
 Condition B: Feet
 Condition C: Feet
 Required Right Turn Lane Storage Length: 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:	Phoenixville Borough	Analysis Date:	5/9/2018
County:	Chester County	Conducted By:	BGG
PennDOT Engineering District:	6	Checked By:	
		Agency/Company Name:	McMahon Associates, Inc.
Intersection & Approach Description: Scenario 2 - N. Main Street and Site Access / Riverworks Access Southbound N. Main Street Right-Turn Lane			
Analysis Period:	2021 Build	Number of Approach Lanes:	1
Design Hour:	PM Peak Hour	Undivided or Divided Highway:	Undivided
Intersection Control:	Unsignalized		
Posted Speed Limit (MPH):	25	Type of Analysis	
Type of Terrain:	Rolling	Left or Right-Turn Lane Analysis?: Right Turn Lane	

VOLUME CALCULATIONS

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

Advancing Volume:
 Opposing Volume:
 Left Turn Volume:
 % Left Turns in Advancing Volume:

Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	14	0.0%	14
	Through	-	242	0.0%	242
	Right	-	35	2.0%	37

Advancing Volume:
 Right Turn Volume:

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:	Unsignalized
Design Hour Volume of Turning Lane:	37
Cycles Per Hour (Assumed):	60
Cycles Per Hour (If Known):	
Average # of Vehicles/Cycle:	<input type="text" value="N/A"/>

PennDOT Publication 46, Exhibit 11-6

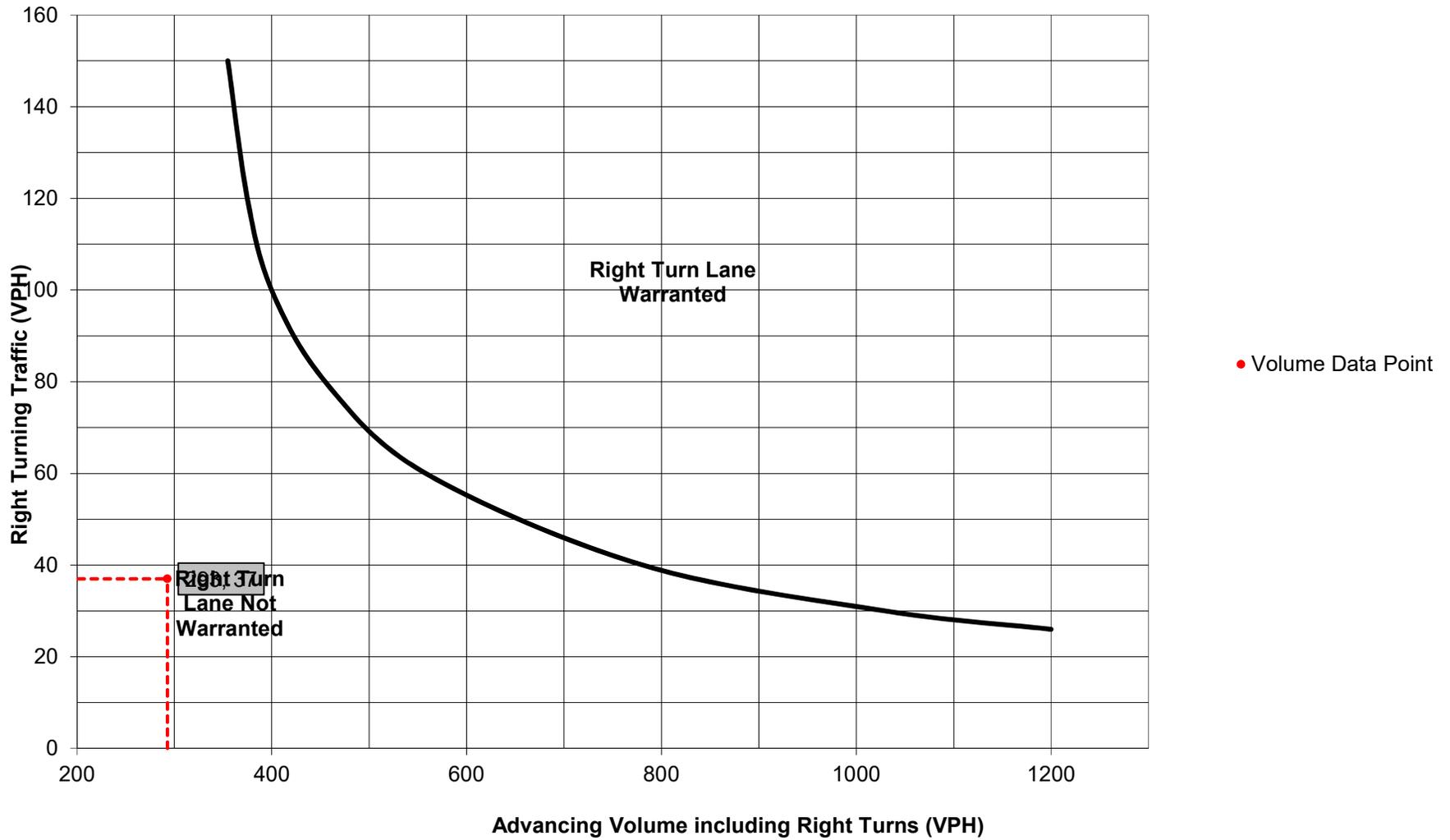
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Right Turn Lane Storage Length, Condition A: Feet
 Condition B: Feet
 Condition C: Feet
 Required Right Turn Lane Storage Length: 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)**



Appendix F

PennDOT Form M-950S

DRIVEWAY SIGHT DISTANCE MEASUREMENTS

(FOR LOCAL ROADS, USE PENNDOT PUB 70)

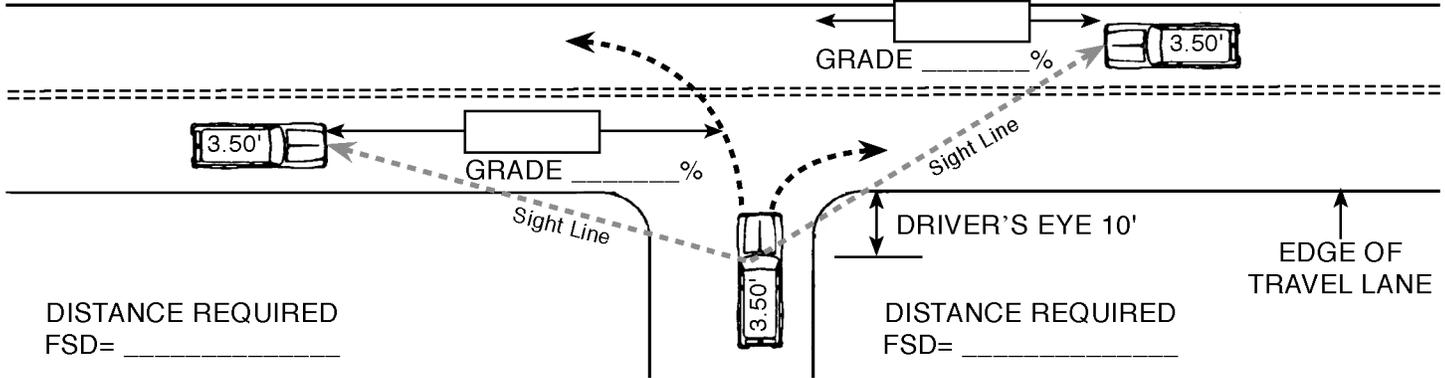
APPLICANT _____ APPLICATION NO. _____

S.R. _____ SEG. _____ OFFSET _____ LEGAL SPEED LIMIT _____

MEASURED BY _____ DATE _____

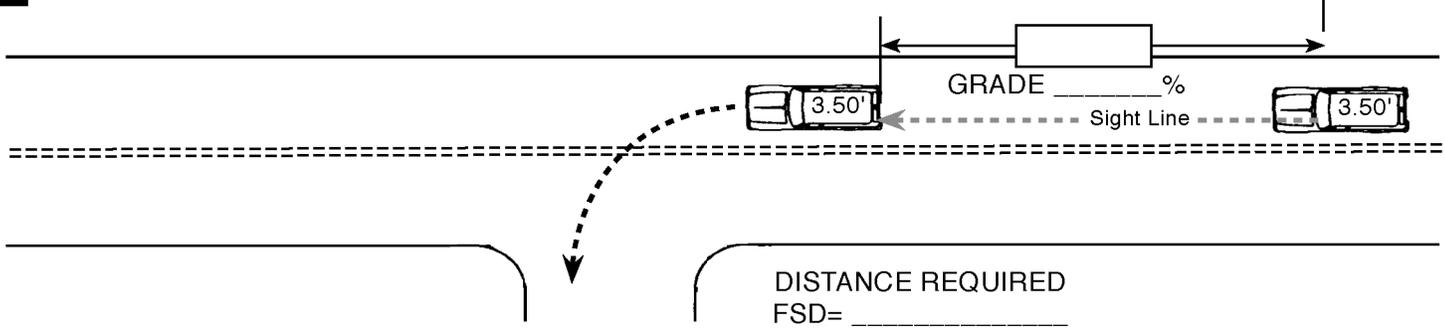
FOR DEPARTMENT USE ONLY: Safe-Running Speed _____ 85th Percentile Speed _____

A



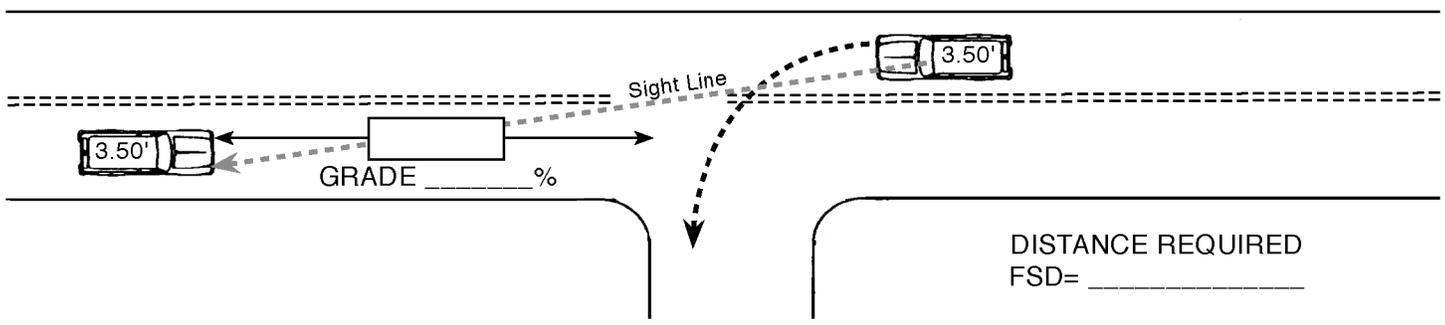
THE MAXIMUM LENGTH OF ROADWAY ALONG WHICH A DRIVER AT A DRIVEWAY LOCATION CAN CONTINUOUSLY SEE ANOTHER VEHICLE APPROACHING ON THE ROADWAY.

B



THE MAXIMUM LENGTH OF ROADWAY ALONG WHICH A DRIVER ON THE ROADWAY CAN CONTINUOUSLY SEE THE REAR OF A VEHICLE WHICH IS LOCATED IN THE DRIVER'S TRAVEL LANE AND WHICH IS POSITIONED TO MAKE A LEFT TURN INTO A DRIVEWAY.

C



THE MAXIMUM LENGTH OF ROADWAY ALONG WHICH A DRIVER OF A VEHICLE INTENDING TO MAKE A LEFT TURN INTO A DRIVEWAY CAN CONTINUOUSLY SEE A VEHICLE APPROACHING FROM THE OPPOSITE DIRECTION.

Appendix G

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 2010*. 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

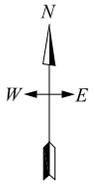
Appendix H

Nearby Approved Developments

Project Information	
Project Name:	Proposed Developments
McMahon Project No:	818195.11
Date:	5/9/2018
City/Municipality:	Phoenixville Borough
State:	PA
Client Name:	Phoenixville Borough
Analyst's Name:	BGG
ITE Edition:	ITE-TGM 10th Edition

Anticipated Major Land Development Projects
Assumed to Be Completed by 2022 within Phoenixville Borough, Schuylkill Township, and East Pikeland Township

Map ID	Property Name	Land Use Code	Trip Type	Estimated Size and Unit Type Total	Daily			Weekday Morning Peak Hour			Weekday Afternoon Peak Hour		
					In	Out	Total	In	Out	Total	In	Out	Total
01	Steelworks - Barto Property	221 - Multifamily Housing (Mid-Rise)	New Trips	336 apartments	915	914	1829	29	83	112	87	55	142
		820 - Shopping Center	Total	36,700 SF retail	693	692	1385	21	13	34	67	73	140
			- Pass-by		0	0	0	5	3	8	23	25	48
			Total "New" Trips		693	692	1385	16	10	26	44	48	92
02	Barclay Gardens Church Street Commons - Apartments	252 - Senior Adult Housing - Attached	New Trips	125 senior apartments	232	231	463	9	16	25	18	14	32
03	Fillmore Village - Townhomes	220 - Multifamily Housing (Low-Rise)	New Trips	179 townhomes	656	656	1312	19	64	83	62	37	99
07	Heckle Street	220 - Multifamily Housing (Low-Rise)	New Trips	10 apartments	18	17	35	1	4	5	5	3	8
08	Odessa	221 - Multifamily Housing (Mid-Rise)	New Trips	240 apartments	653	653	1306	21	60	81	63	40	103
		254 - Assisted Living	New Trips	260 beds	338	338	676	31	18	49	26	42	68
12	Eland Point Crossing	221 - Multifamily Housing (Mid-Rise)	New Trips	193 apartments	525	525	1050	17	48	65	51	32	83
14	116 Railroad Street	210 - Single Family Detached	New Trips	8 single family homes	38	38	76	2	4	6	5	3	8
17	191 Bridge Street	221 - Multifamily Housing (Low-Rise)	New Trips	31 apartments	97	96	193	4	12	16	13	8	21
19	240 Dayton Street	210 - Single Family Detached	New Trips	4 single family homes	19	19	38	1	2	3	3	1	4
21	345 Walnut - Apartments	220 - Multifamily Housing (Low-Rise)	New Trips	28 apartments	86	85	171	3	11	14	12	7	19
24	502 Emmett Street	210 - Single Family Detached	New Trips	4 single family homes	19	19	38	1	2	3	3	1	4
26	701 South Main Street	220 - Multifamily Housing (Low-Rise)	New Trips	22 apartments	63	62	125	3	8	11	9	6	15
29	TruMark Financial	912 - Drive-In Bank	Total	2,950 square feet	181	181	362	16	12	28	30	30	60
			- Pass-by		0	0	0	5	3	8	10	11	21
			Total "New" Trips		181	181	362	11	9	20	20	19	39
30	Bank of America	912 - Drive-In Bank	Total	3,800 square feet	216	216	432	21	15	36	39	39	78
			- Pass-by		0	0	0	6	4	10	14	13	27
			Total "New" Trips		216	216	432	15	11	26	25	26	51
31	AutoZone	943 - Automobile Parts and Service Center	New Trips	7,400 square feet	60	60	120	11	4	15	7	10	17
32	Borough Community Center 501 Franklin	495 - Recreational Community Center	New Trips	38,000 square feet	548	547	1095	44	23	67	41	47	88
33	1033 West Bridge Street	220 - Multifamily Housing (Low-Rise)	New Trips	12 apartments	25	25	50	1	5	6	6	3	9
28	Steeltown Village	220 - Multifamily Housing (Low-Rise)	New Trips	48 apartments	161	161	322	6	18	24	20	11	31
N/A	Phoenixville Crossing	220 - Multifamily Housing (Low-Rise)	New Trips	79 townhomes	278	278	556	9	29	38	30	18	48
N/A	River Valley	251 - Senior Adult Housing - Detached	New Trips	285 senior homes	707	707	1414	30	61	91	66	43	109
N/A	Kimberton Glen	210 - Single Family Detached	New Trips	168 single family homes	838	838	1676	31	93	124	105	62	167
		251 - Senior Adult Housing - Detached	New Trips	164 senior homes	435	434	869	19	40	59	43	28	71
N/A	Pawlings Road Apartments	221 - Multifamily Housing (Mid-Rise)	New Trips	72 apartments	196	195	391	7	18	25	20	12	32
N/A	Reeves Tract	210 - Single Family Detached	New Trips	94 single family homes	491	491	982	18	54	72	60	36	96
TOTAL "NEW" * TRIPS					8488	8478	16966	359	707	1066	844	612	1456



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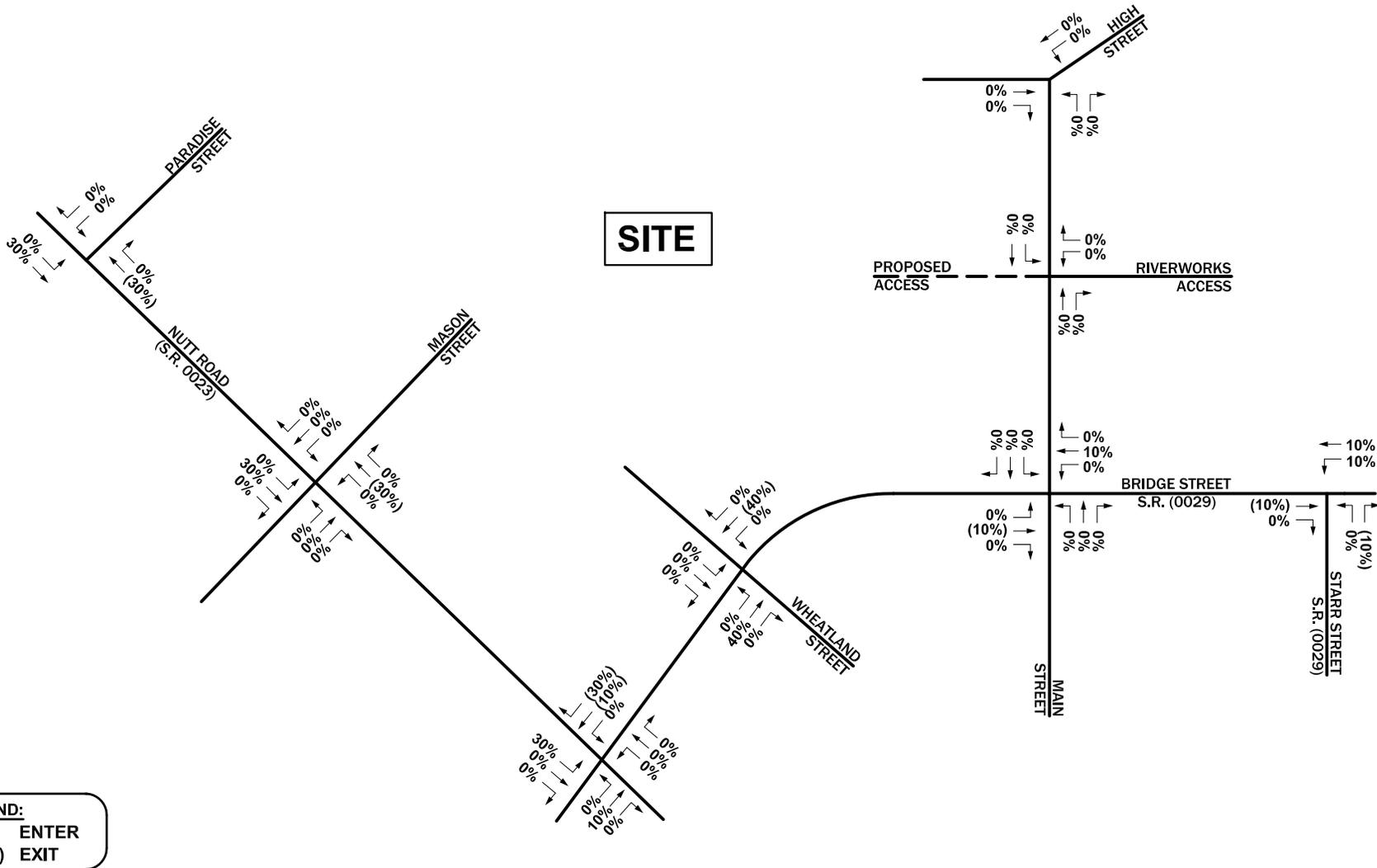
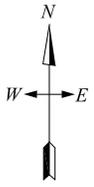


FIGURE H1
 Near-By Development - Trip Distribution (Group 3)
FRENCH CREEK WEST
 PHOENIXVILLE BOROUGH, CHESTER COUNTY, PA





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	AM	(PM)
IN	48	143
OUT	104	110

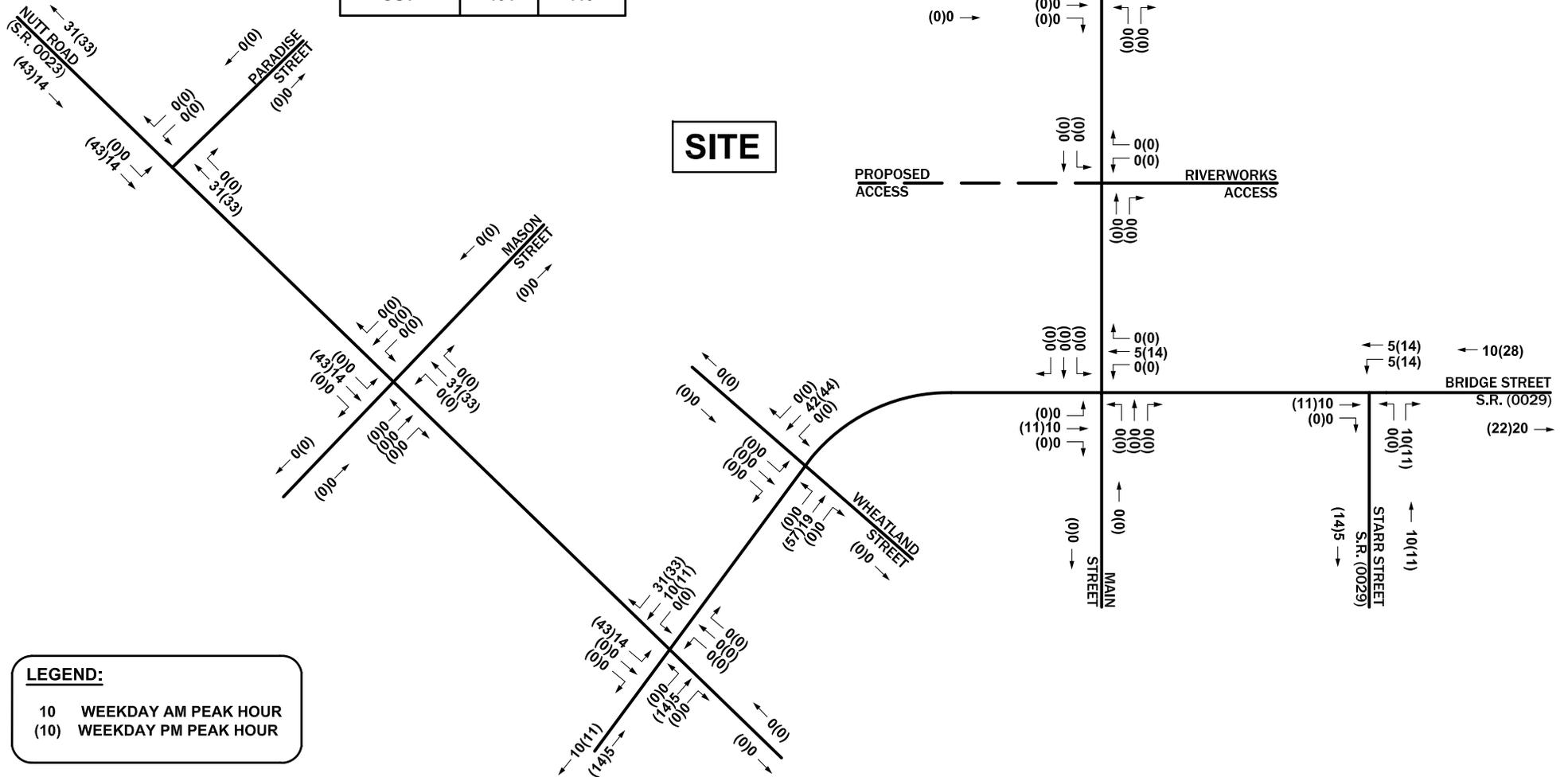
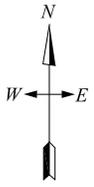


FIGURE H2
Near-By Development - Trip Assignment (Group 3)
FRENCH CREEK WEST
PHOENIXVILLE BOROUGH, CHESTER COUNTY, PA





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Scale

	AM	(PM)
IN	13	31
OUT	28	22

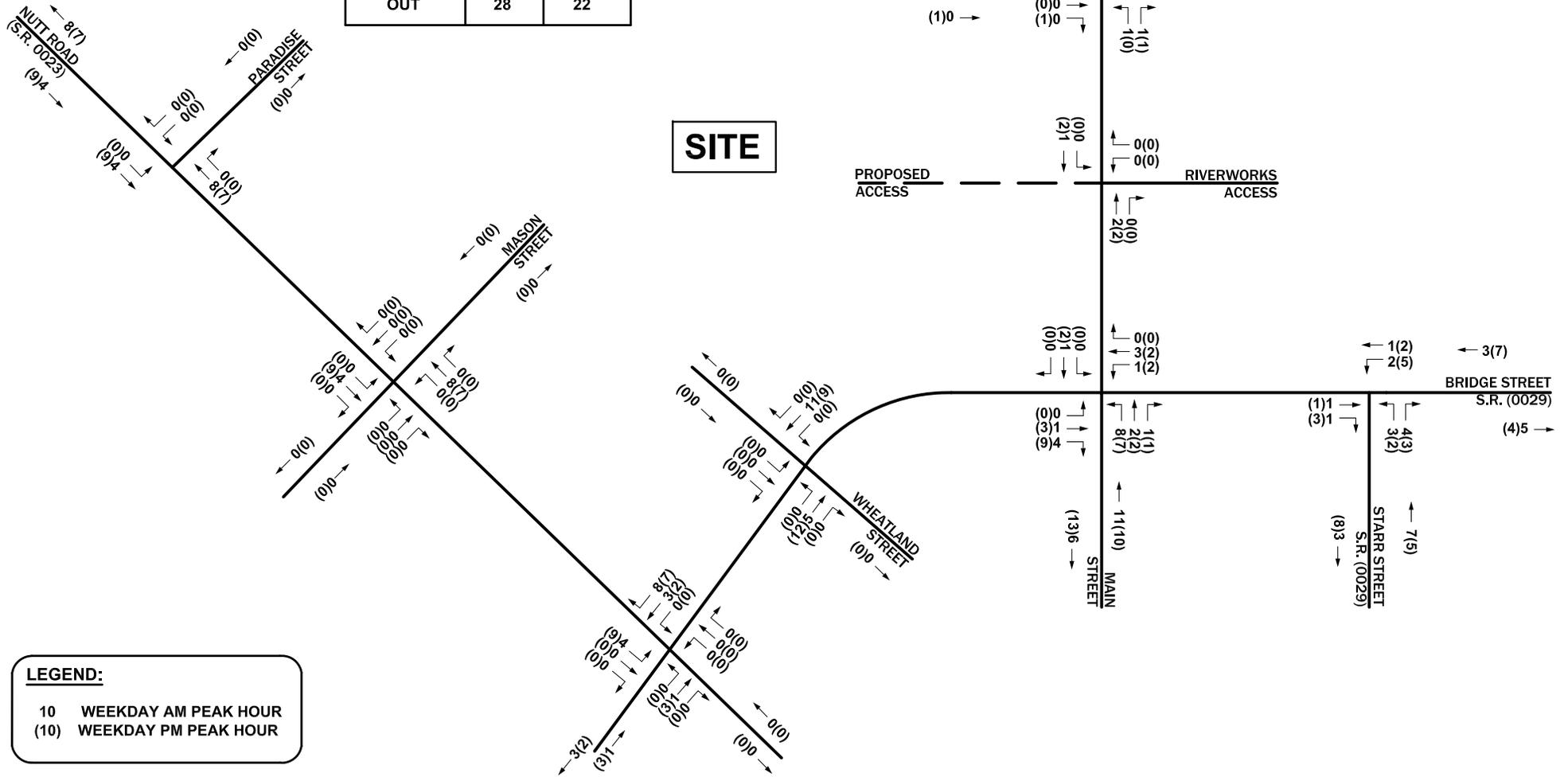
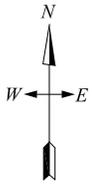


FIGURE H4
Near-By Development - Trip Assignment (Group 4)
FRENCH CREEK WEST
PHOENIXVILLE BOROUGH, CHESTER COUNTY, PA





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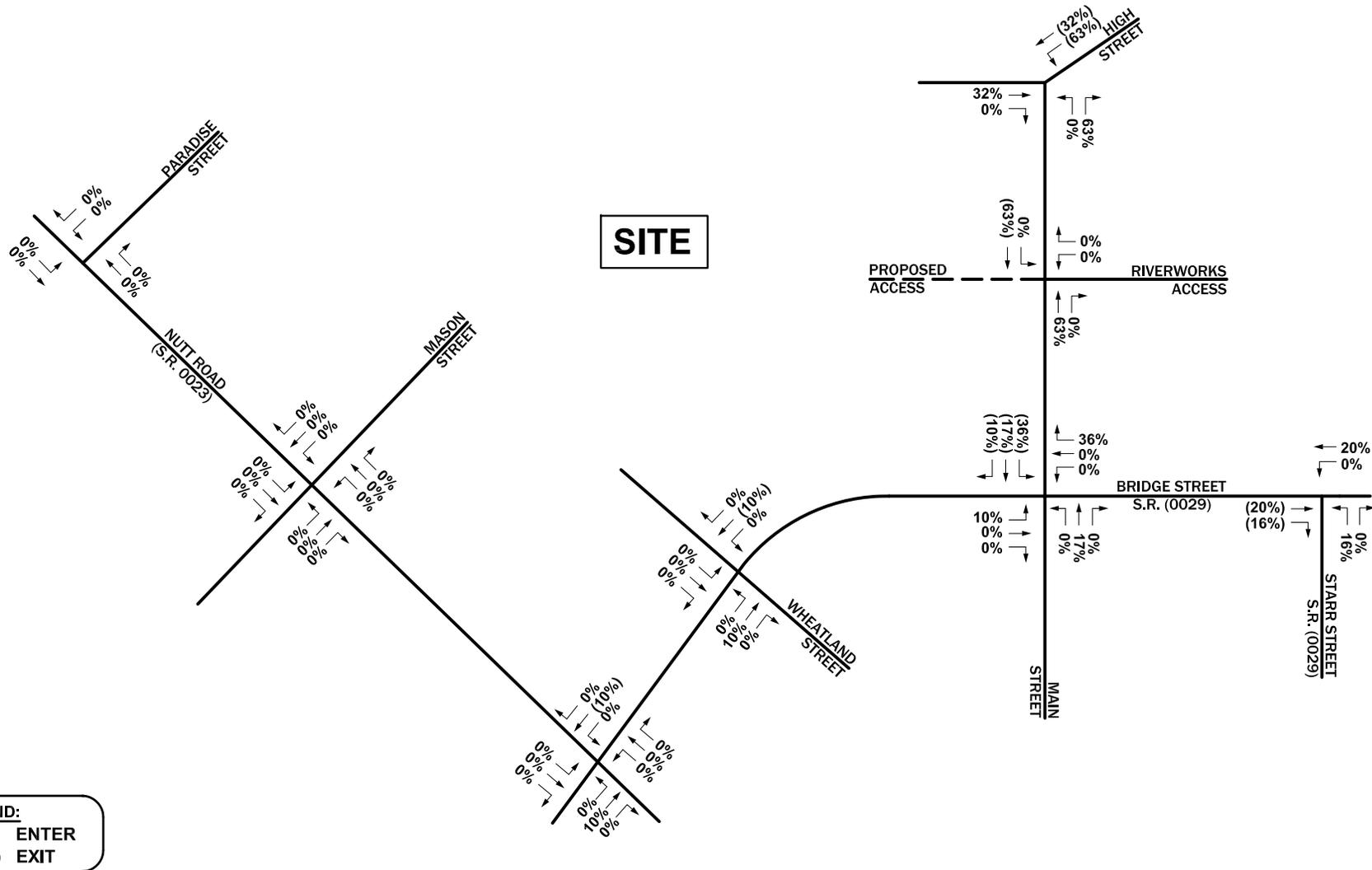
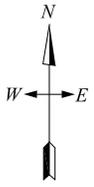


FIGURE H5
 Near-By Development - Trip Distribution (Group 5)
FRENCH CREEK WEST
 PHOENIXVILLE BOROUGH, CHESTER COUNTY, PA





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Not To
Scale

	AM	PM
IN	4	13
OUT	10	7

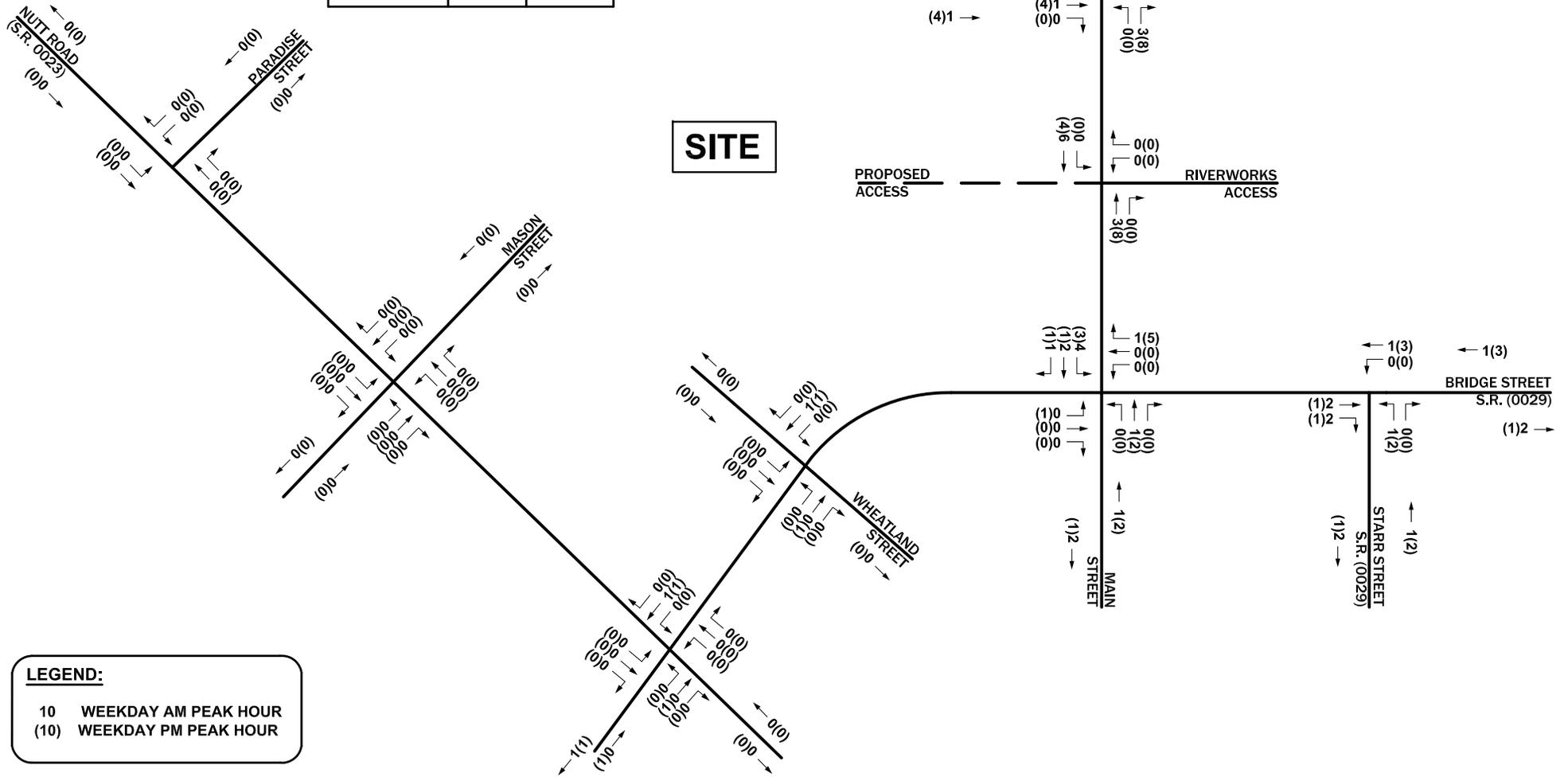
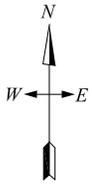


FIGURE H6
Near-By Development - Trip Assignment (Group 5)
FRENCH CREEK WEST
PHOENIXVILLE BOROUGH, CHESTER COUNTY, PA





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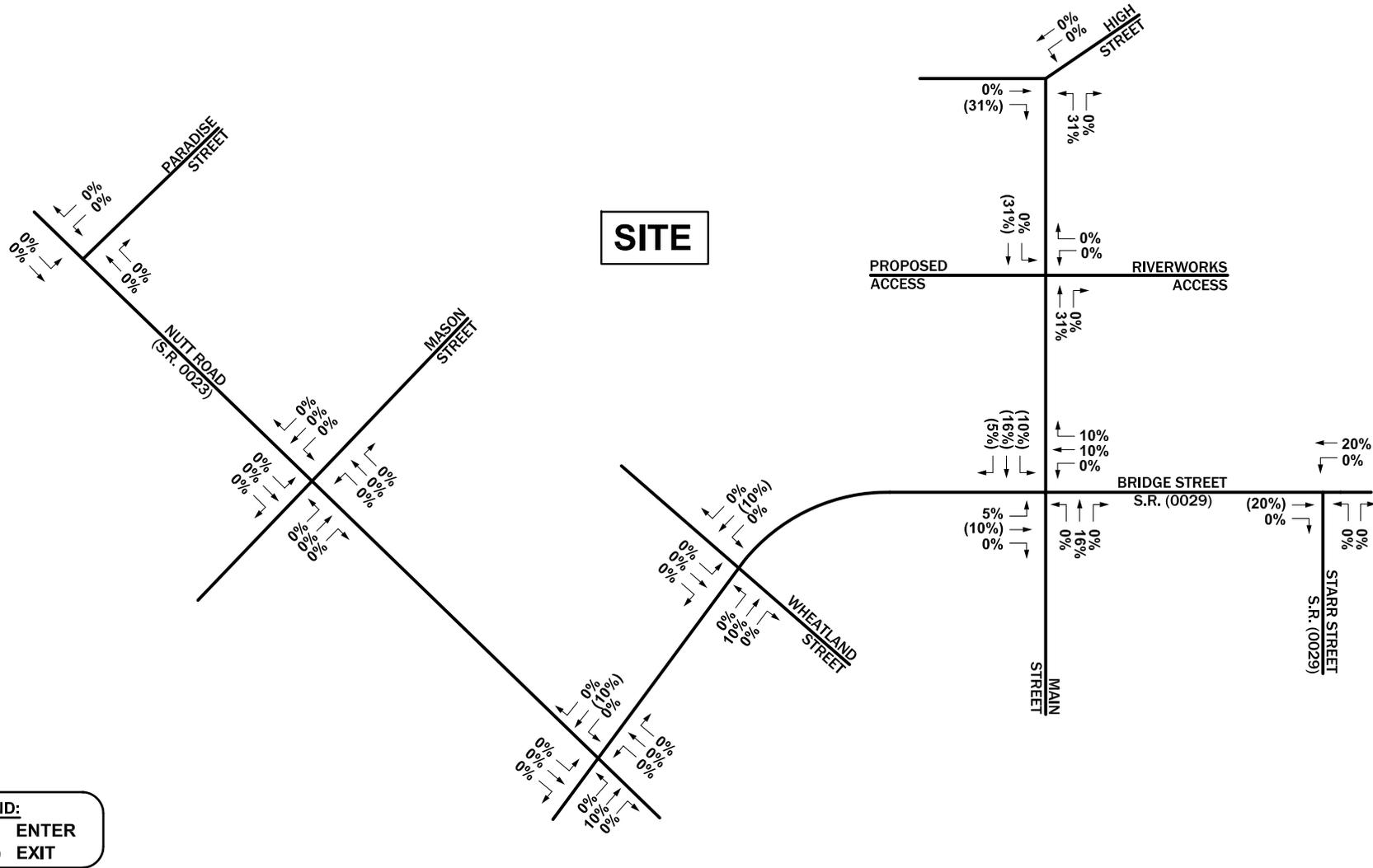
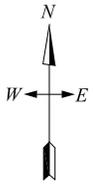


FIGURE H7
 Near-By Development - Trip Distribution (Group 6)
FRENCH CREEK WEST
 PHOENIXVILLE BOROUGH, CHESTER COUNTY, PA





Schematic-
Not To
Scale

	AM	PM
IN	116	195
OUT	167	167

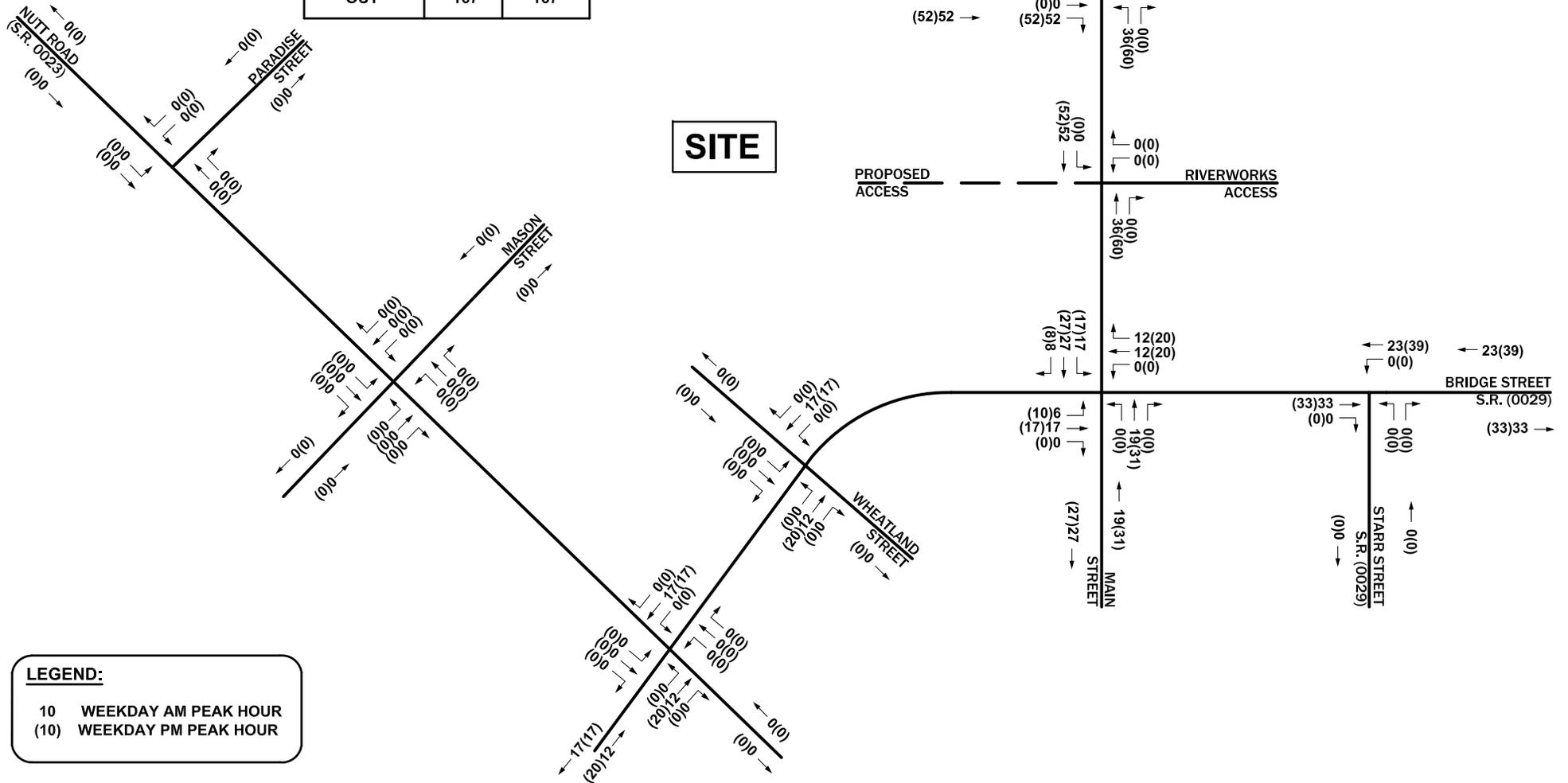
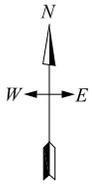


FIGURE H8
 Near-By Development - Trip Assignment (Group 6)
FRENCH CREEK WEST
 PHOENIXVILLE BOROUGH, CHESTER COUNTY, PA





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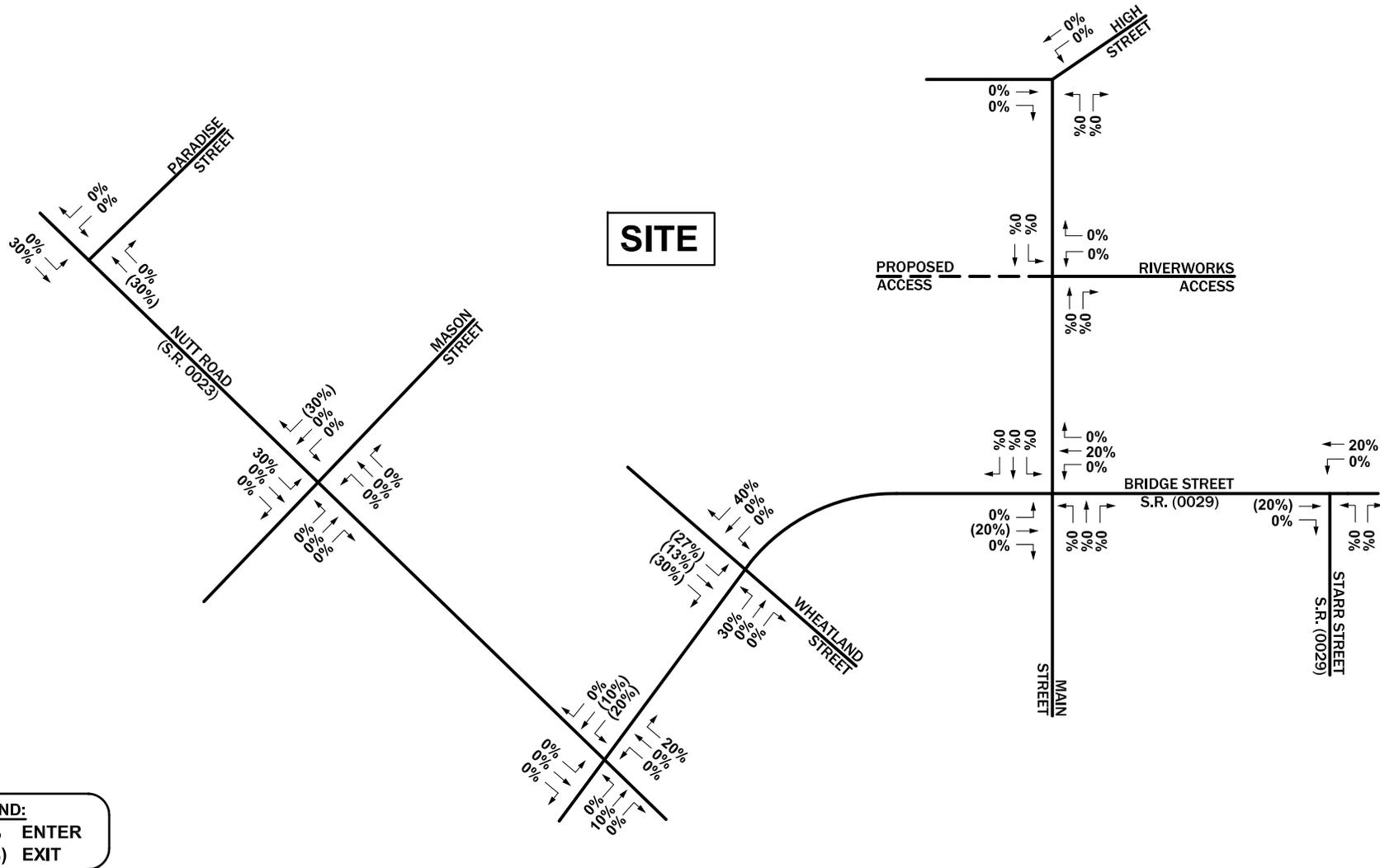
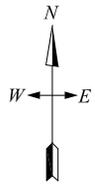


FIGURE H9
 Near-By Development - Trip Distribution (Group 7)
FRENCH CREEK WEST
 PHOENIXVILLE BOROUGH, CHESTER COUNTY, PA





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Not To
Scale

	AM	(PM)
IN	6	20
OUT	18	11

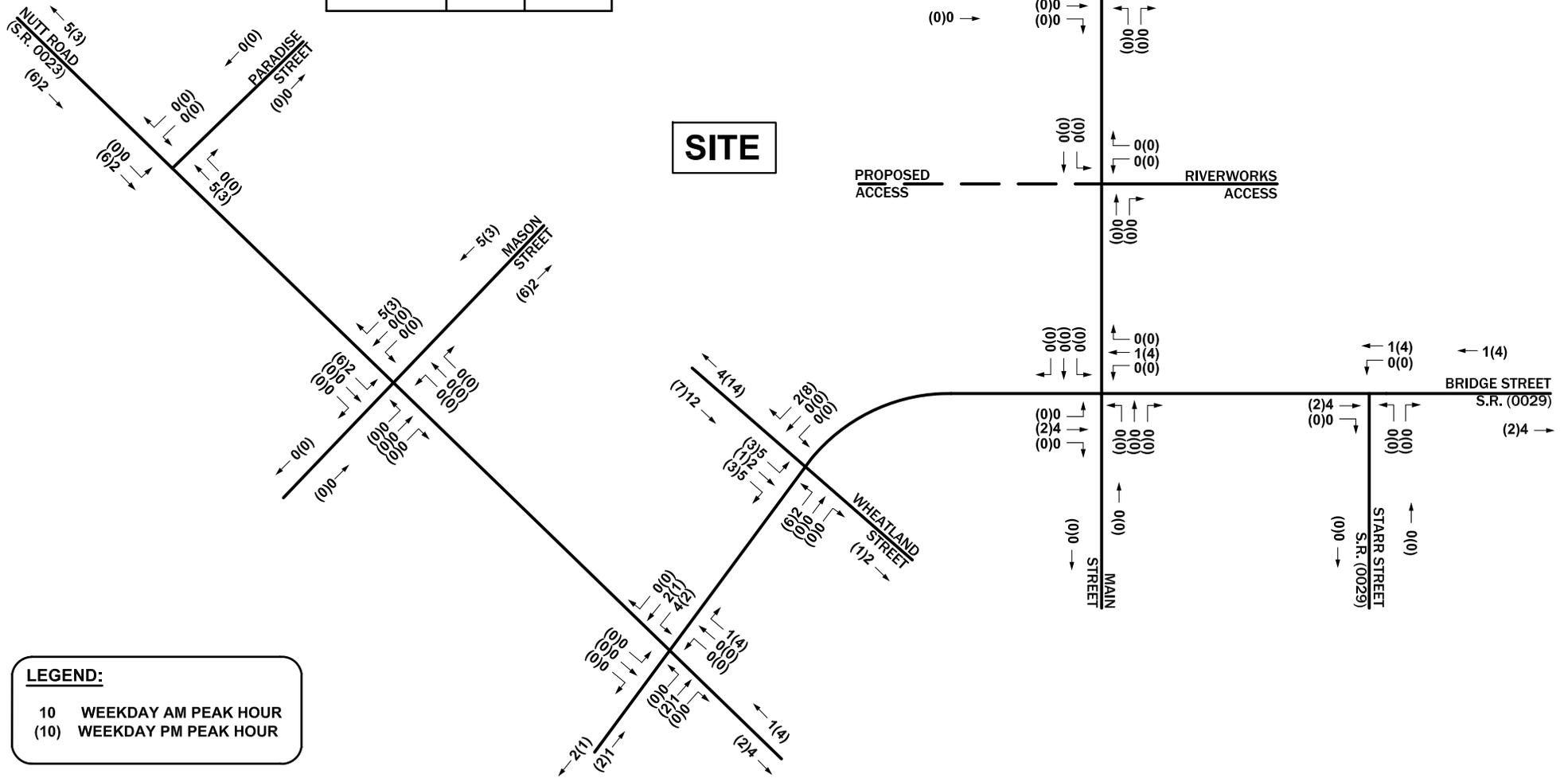
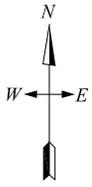


FIGURE H10
Near-By Development - Trip Assignment (Group 7)
FRENCH CREEK WEST
PHOENIXVILLE BOROUGH, CHESTER COUNTY, PA





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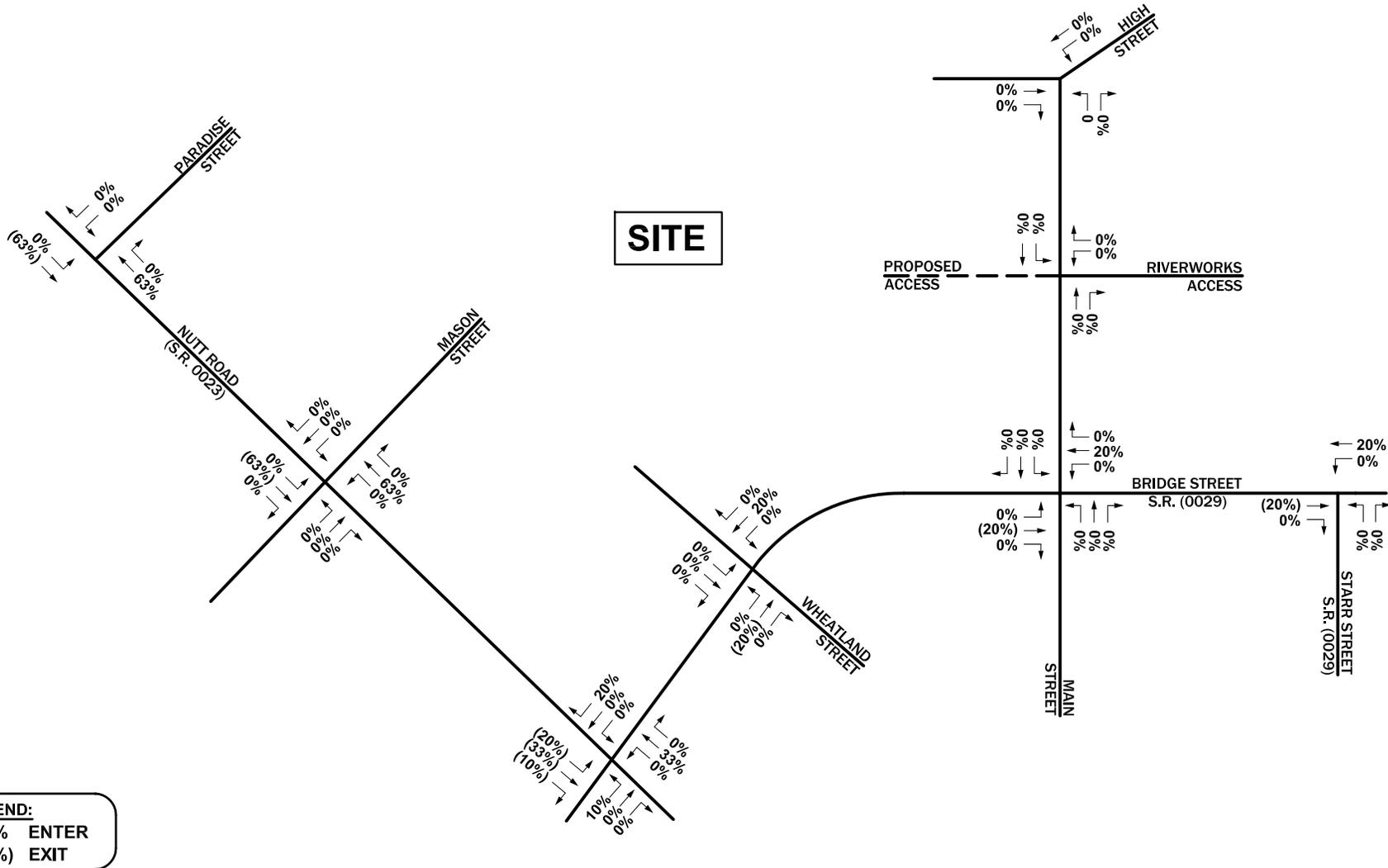
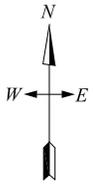


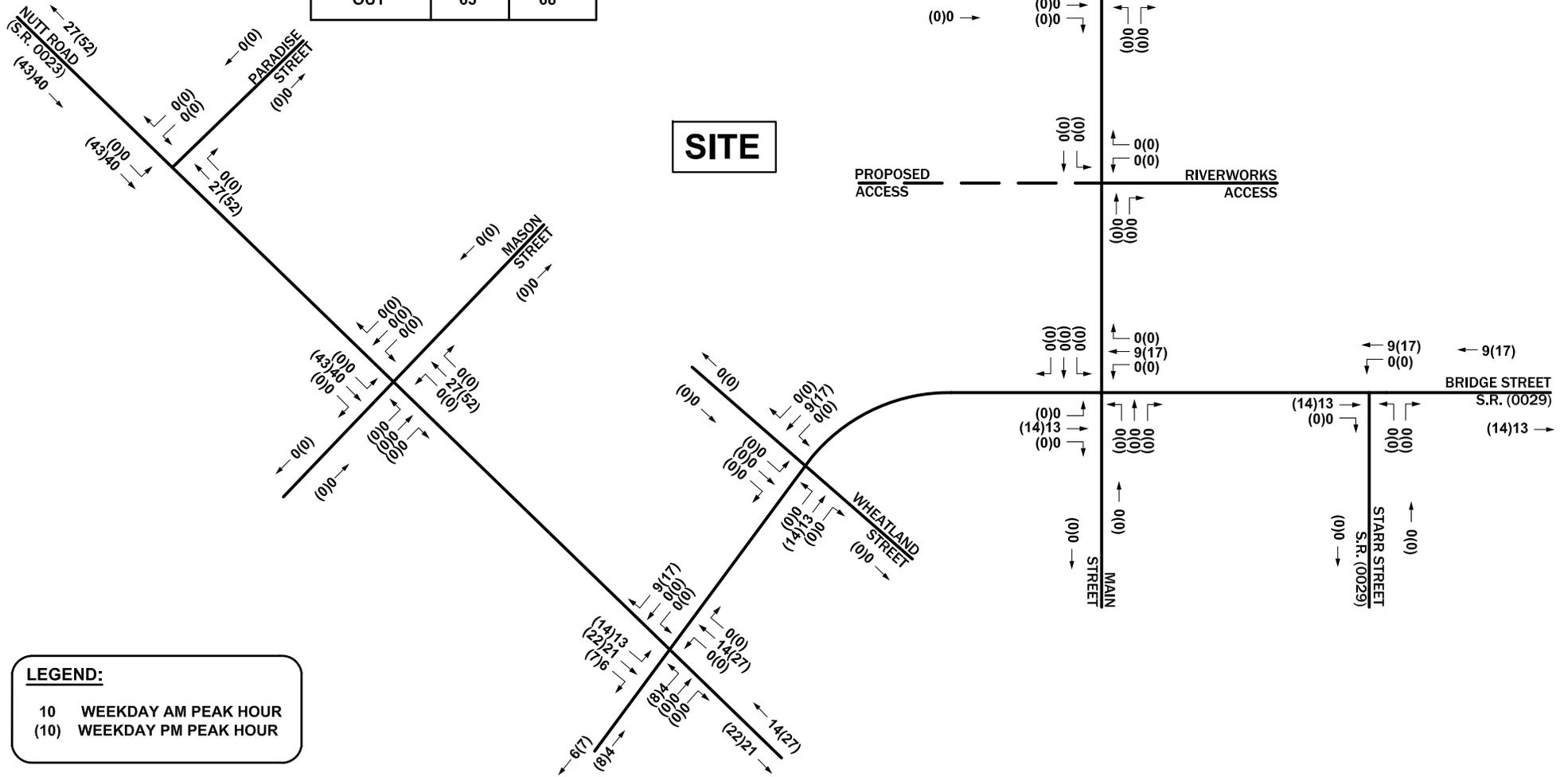
FIGURE H11
 Near-By Development - Trip Distribution (Group 8)
FRENCH CREEK WEST
 PHOENIXVILLE BOROUGH, CHESTER COUNTY, PA





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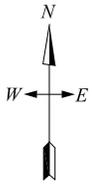
	AM	(PM)
IN	43	83
OUT	63	68



LEGEND:
 10 WEEKDAY AM PEAK HOUR
 (10) WEEKDAY PM PEAK HOUR

FIGURE H12
 Near-By Development - Trip Assignment (Group 8)
FRENCH CREEK WEST
 PHOENIXVILLE BOROUGH, CHESTER COUNTY, PA





Schematic-
Not To
Scale

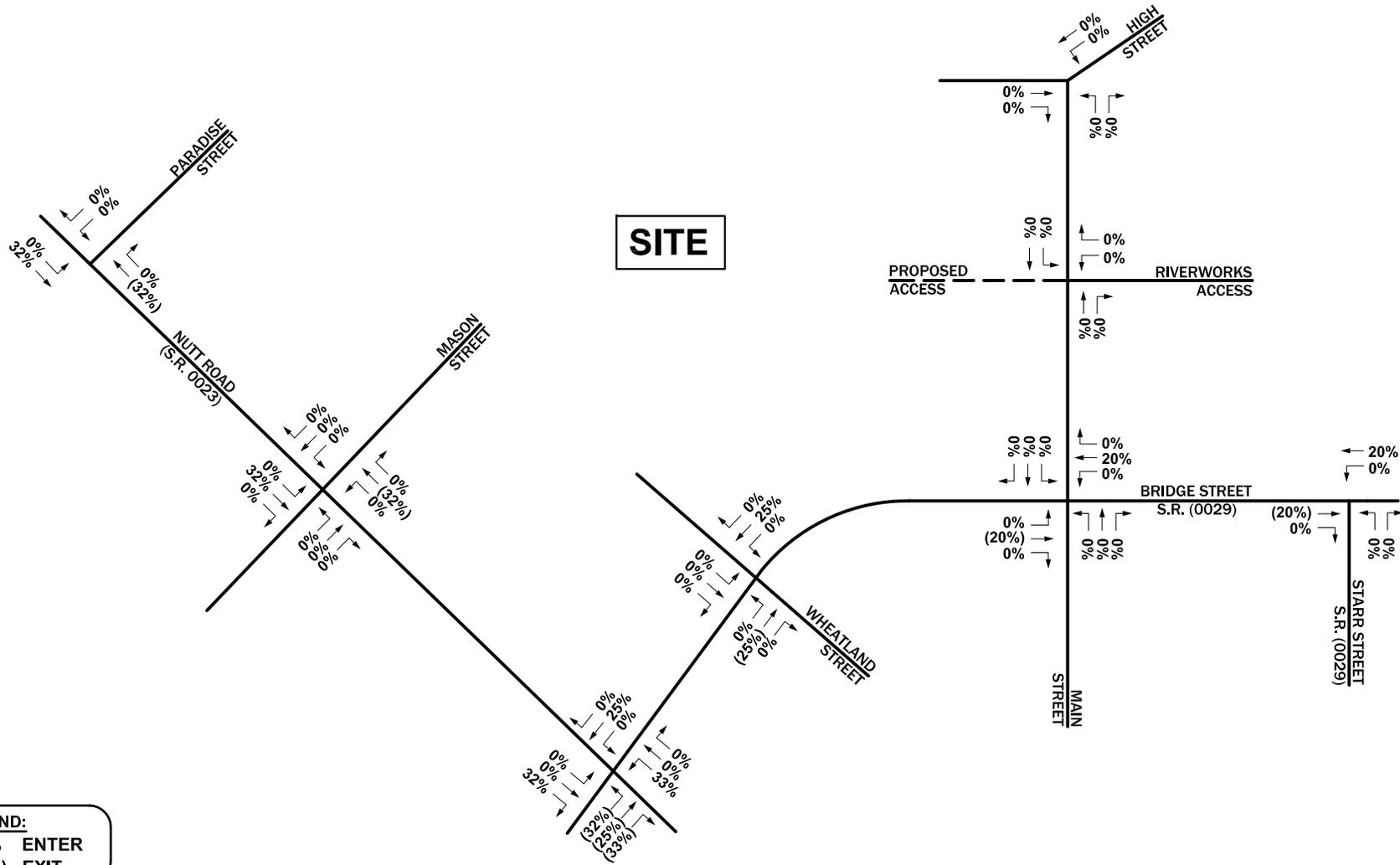
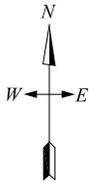


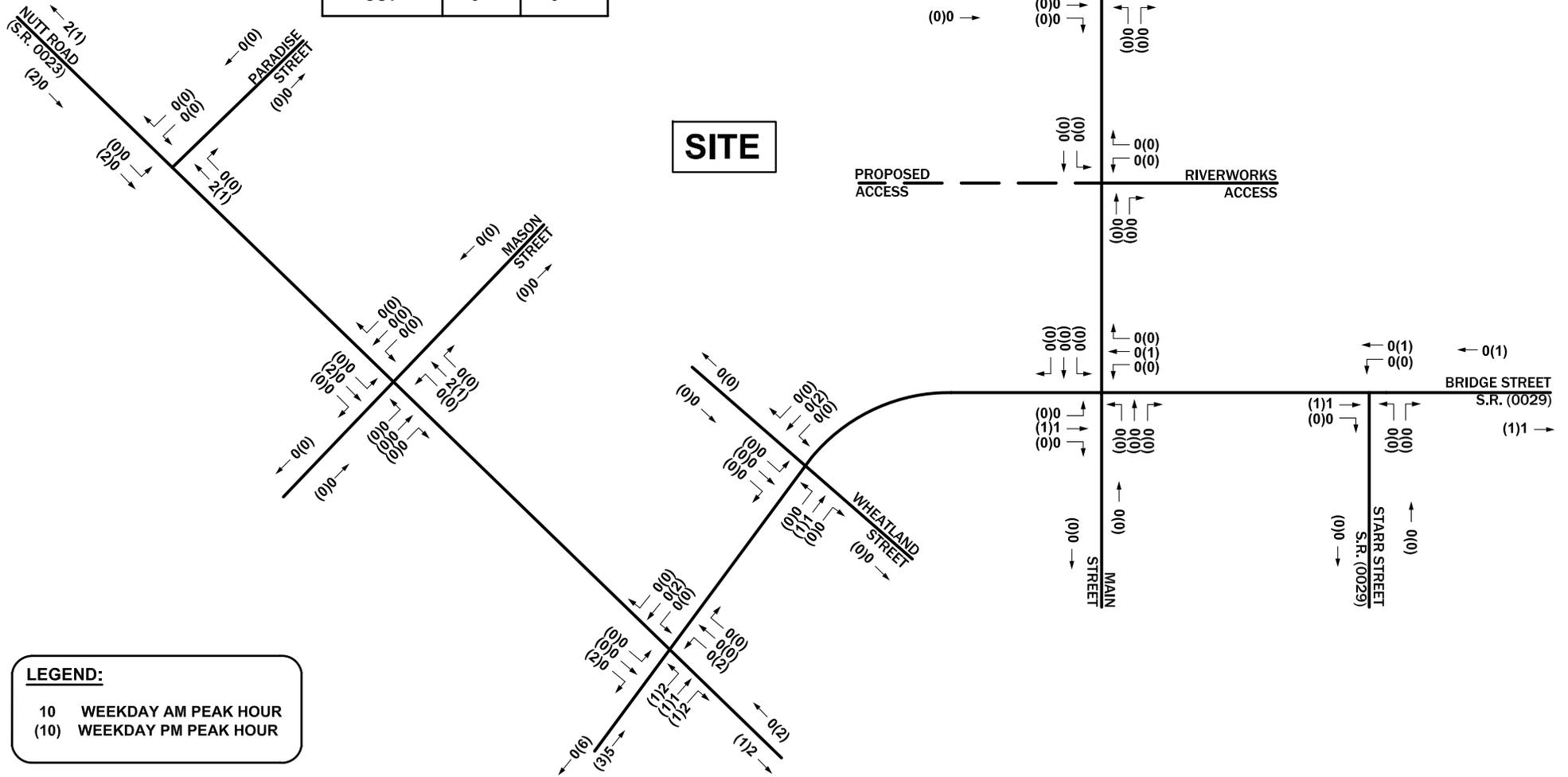
FIGURE H13
 Near-By Development - Trip Distribution (Group 9)
FRENCH CREEK WEST
 PHOENIXVILLE BOROUGH, CHESTER COUNTY, PA





Schematic-
Not To
Scale

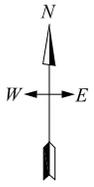
	AM	(PM)
IN	1	6
OUT	5	3



LEGEND:
 10 WEEKDAY AM PEAK HOUR
 (10) WEEKDAY PM PEAK HOUR

FIGURE H14
 Near-By Development - Trip Assignment (Group 9)
FRENCH CREEK WEST
 PHOENIXVILLE BOROUGH, CHESTER COUNTY, PA





Schematic-
Not To
Scale

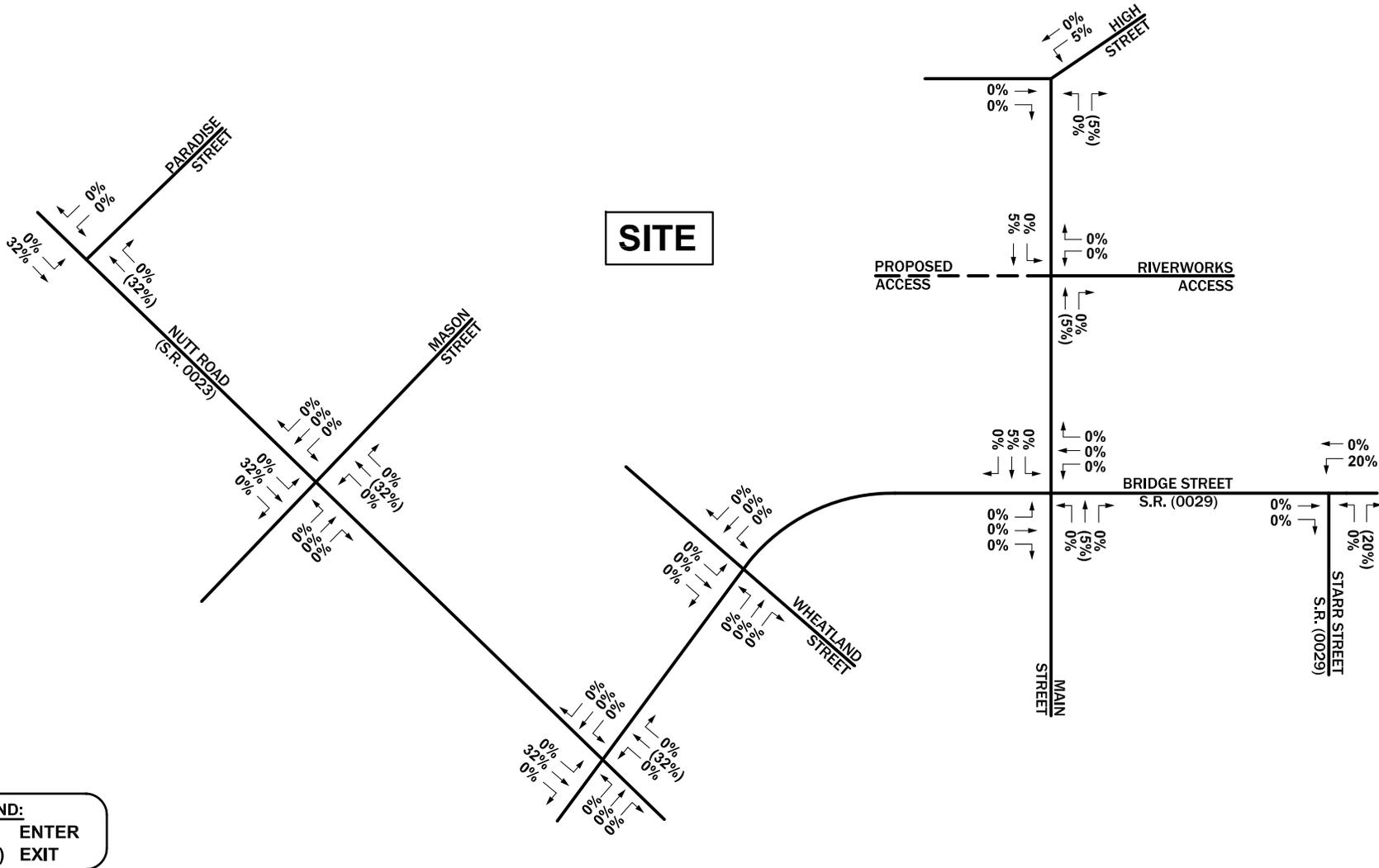
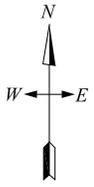


FIGURE H15
 Near-By Development - Trip Distribution (Group 10)
FRENCH CREEK WEST
 PHOENIXVILLE BOROUGH, CHESTER COUNTY, PA





Schematic-
Not To
Scale

	AM	PM
IN	14	29
OUT	17	25

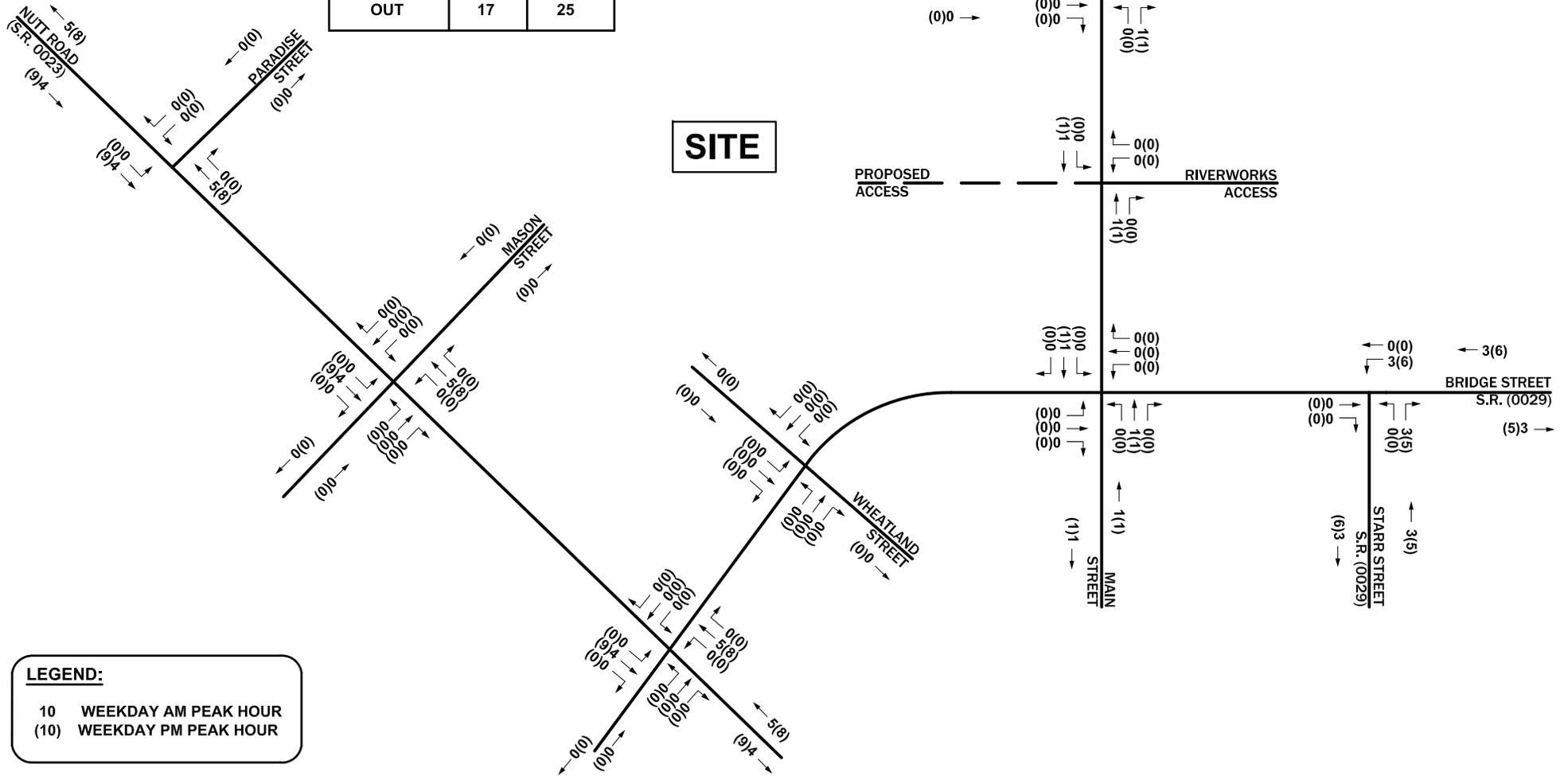
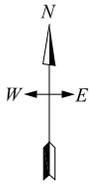


FIGURE H16
Near-By Development - Trip Assignment (Group 10)
FRENCH CREEK WEST
PHOENIXVILLE BOROUGH, CHESTER COUNTY, PA





Schematic-
Not To
Scale

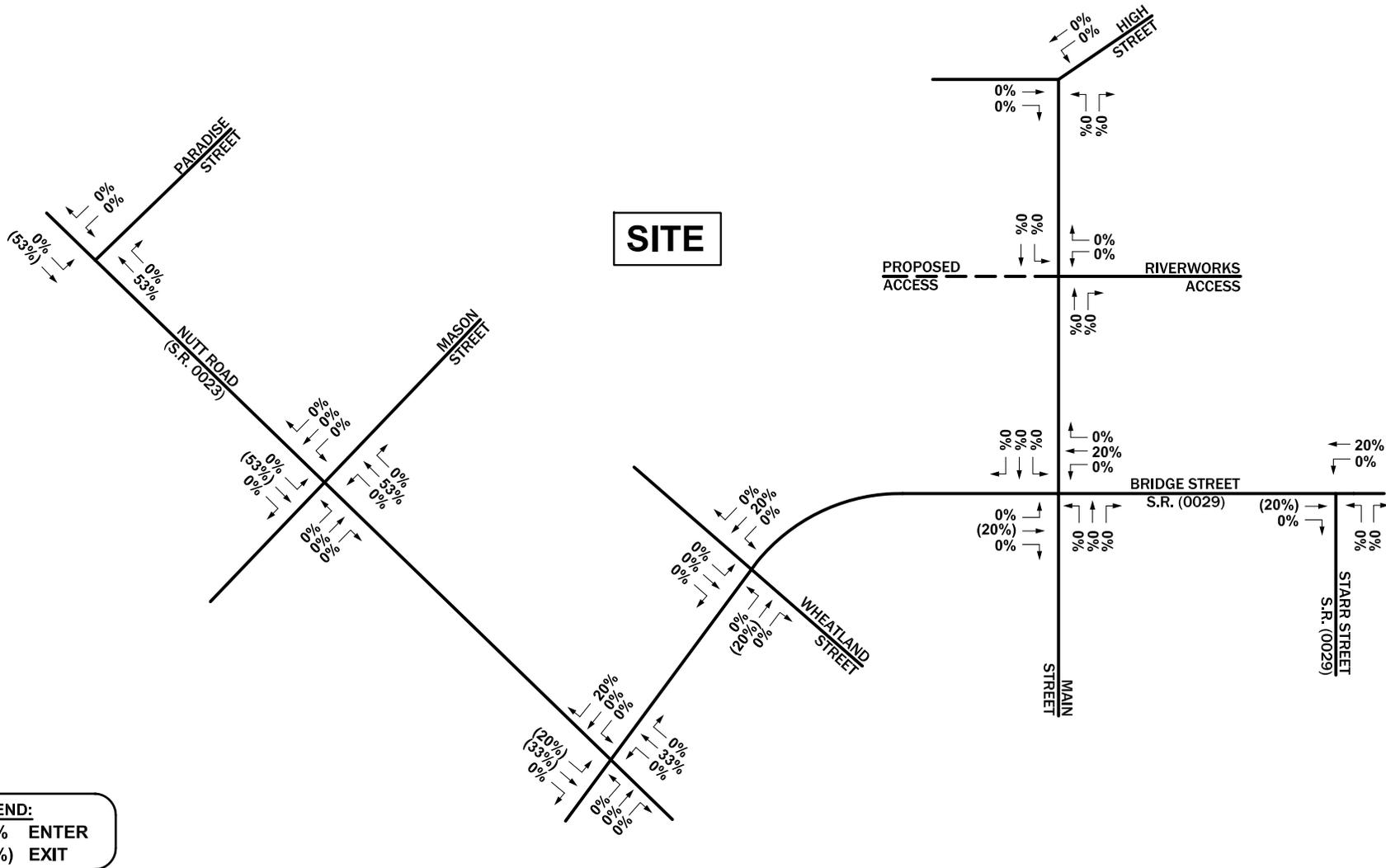
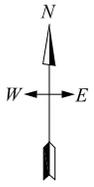


FIGURE H17
 Near-By Development - Trip Distribution (East Pikeland Township)
FRENCH CREEK WEST
 PHOENIXVILLE BOROUGH, CHESTER COUNTY, PA





Schematic-
Not To
Scale

	AM	PM
IN	89	244
OUT	223	151

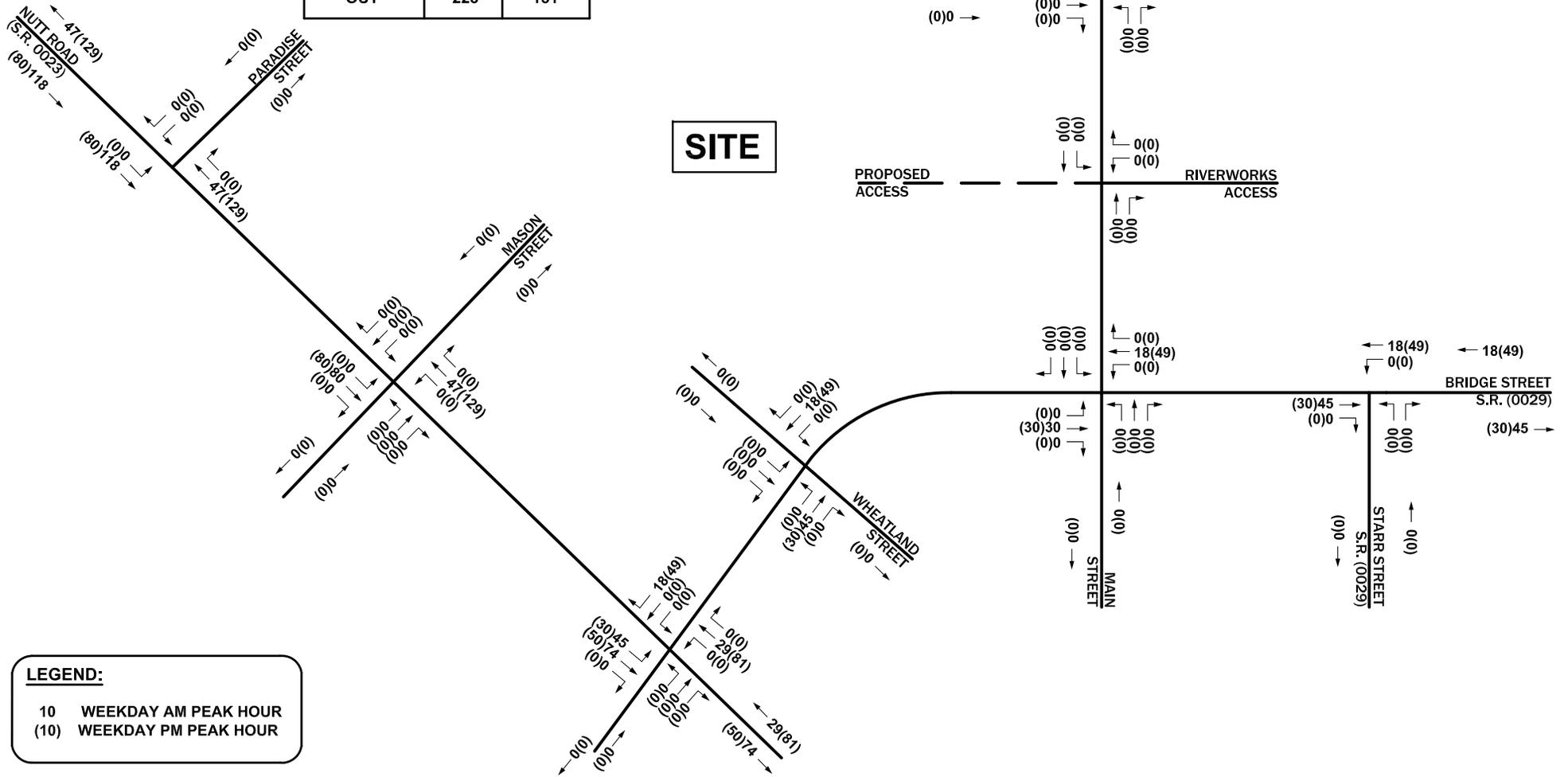
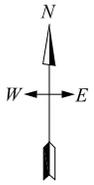


FIGURE H18
 Near-By Development - Trip Assignment (East Pikeland Township)
FRENCH CREEK WEST
 PHOENIXVILLE BOROUGH, CHESTER COUNTY, PA





Schematic-
Not To
Scale

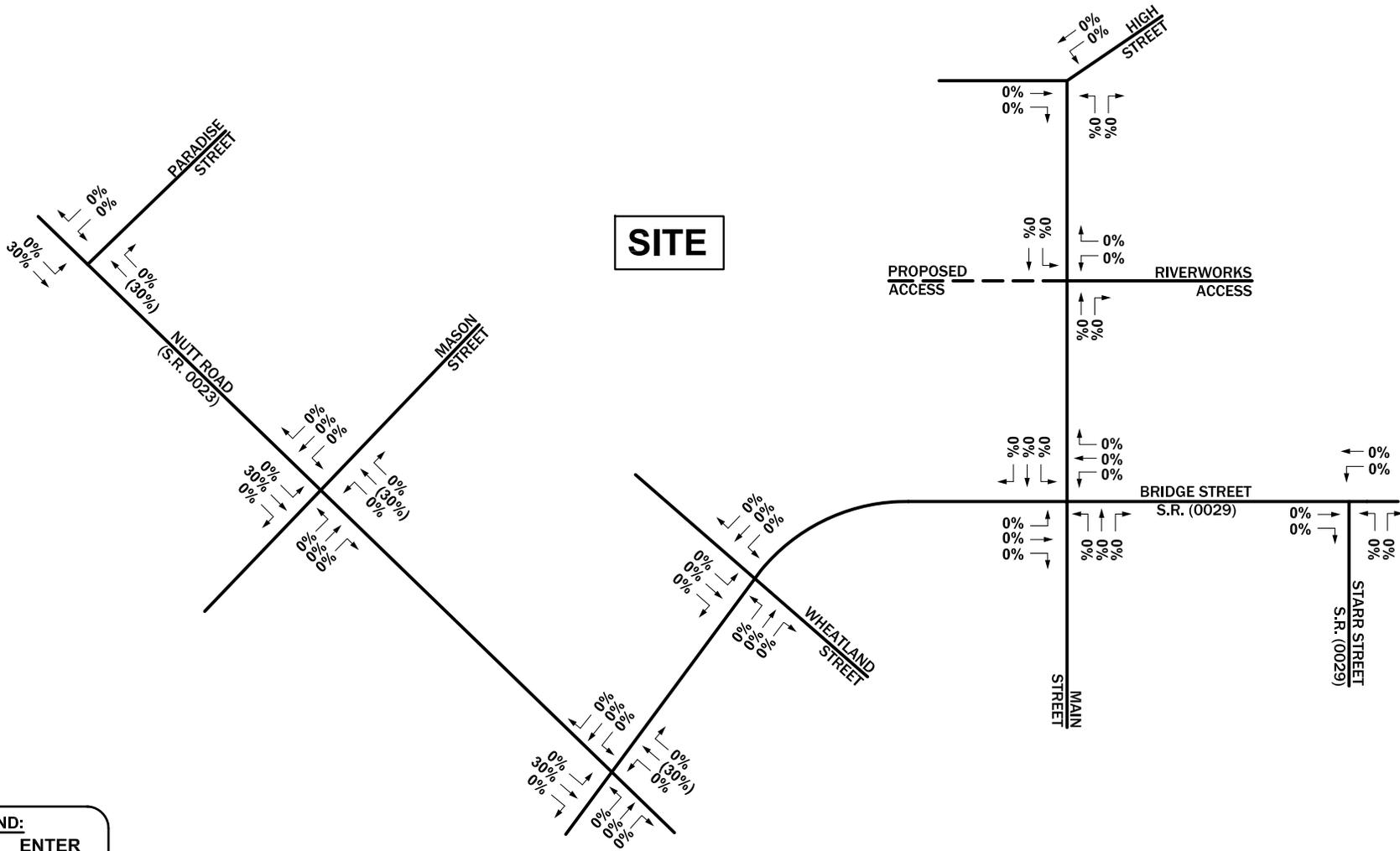
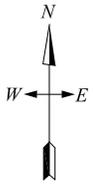


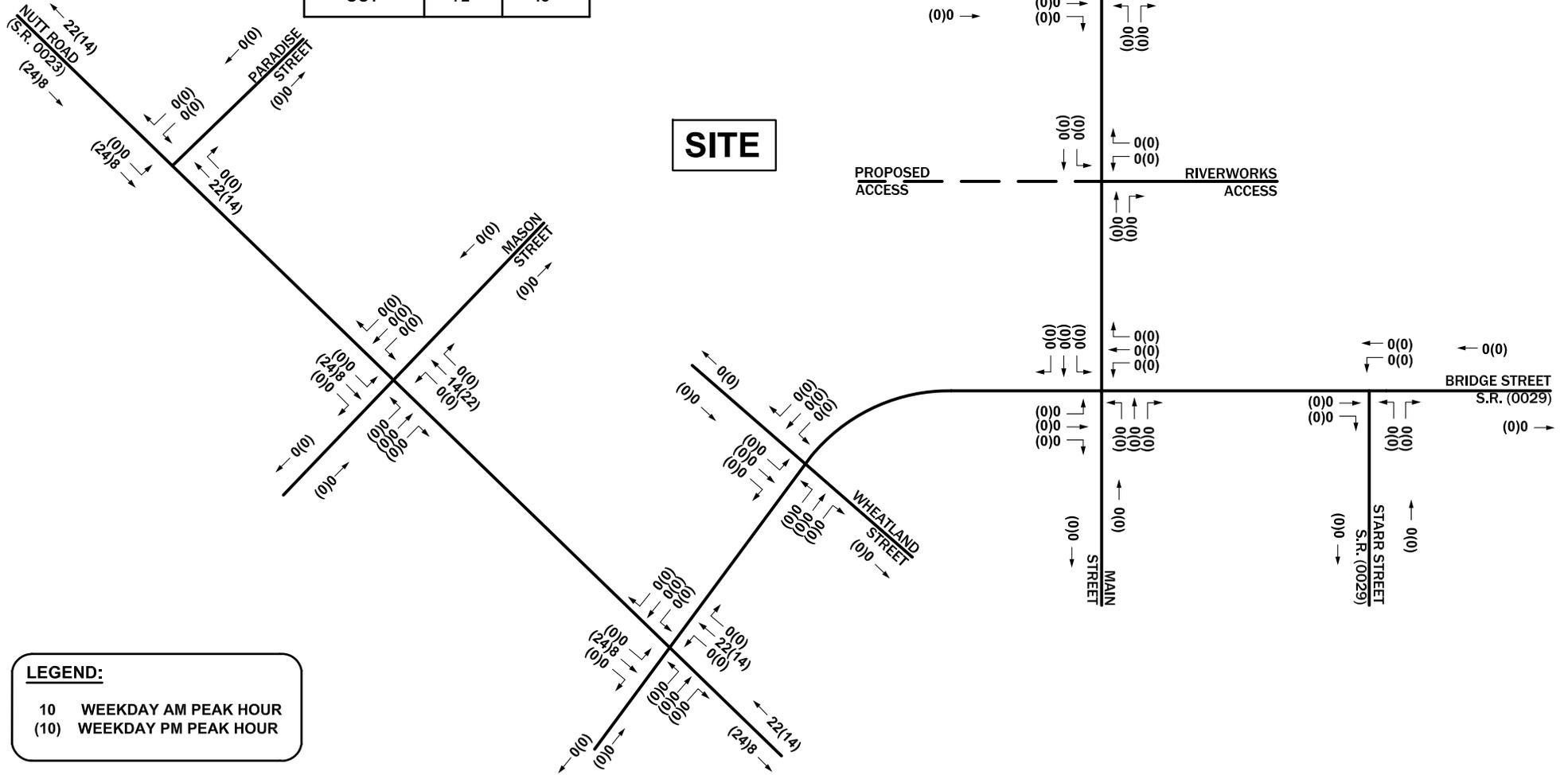
FIGURE H19
Near-By Development - Trip Distribution (Schuylkill Township)
FRENCH CREEK WEST
PHOENIXVILLE BOROUGH, CHESTER COUNTY, PA





Schematic-
Not To
Scale

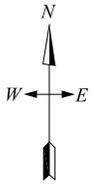
	AM	PM
IN	25	80
OUT	72	48



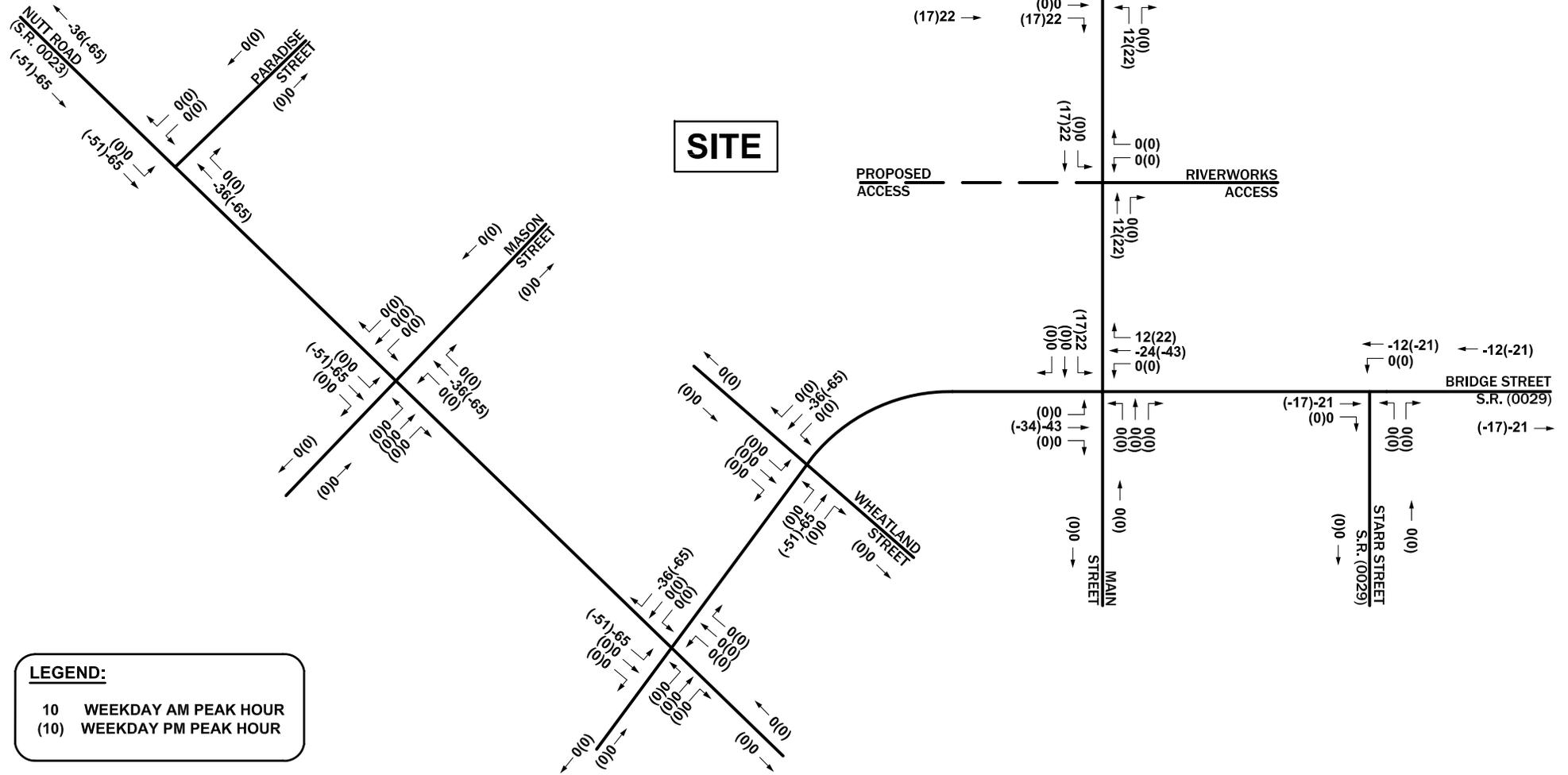
LEGEND:
 10 WEEKDAY AM PEAK HOUR
 (10) WEEKDAY PM PEAK HOUR

FIGURE H20
 Near-By Development - Trip Assignment (Schuylkill Township)
FRENCH CREEK WEST
 PHOENIXVILLE BOROUGH, CHESTER COUNTY, PA





Schematic-
Not To
Scale



LEGEND:
 10 WEEKDAY AM PEAK HOUR
 (10) WEEKDAY PM PEAK HOUR

FIGURE H21
 Near-By Kimberton Glen Diversion
FRENCH CREEK WEST
 PHOENIXVILLE BOROUGH, CHESTER COUNTY, PA



Appendix I

Existing Capacity/Level-of-Service Analysis Worksheets

	→	↖	↗	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↑	↑
Traffic Volume (vph)	35	175	499	48	45	85
Future Volume (vph)	35	175	499	48	45	85
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	15	15	14	14	16	16
Grade (%)	-10%			2%	9%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.888				0.912	
Flt Protected				0.956	0.983	
Satd. Flow (prot)	1772	0	0	1785	1669	0
Flt Permitted				0.956	0.983	
Satd. Flow (perm)	1772	0	0	1785	1669	0
Link Speed (mph)	25			25	25	
Link Distance (ft)	292			227	273	
Travel Time (s)	8.0			6.2	7.4	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	20%	1%	2%	0%	2%	6%
Adj. Flow (vph)	38	188	537	52	48	91
Shared Lane Traffic (%)						
Lane Group Flow (vph)	226	0	0	589	139	0
Sign Control	Stop			Stop	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					

	→	↖	↗	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↑	↑
Traffic Volume (veh/h)	35	175	499	48	45	85
Future Volume (Veh/h)	35	175	499	48	45	85
Sign Control	Stop			Stop	Free	
Grade	-10%			2%	9%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	38	188	537	52	48	91
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	187	0	348	142	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	187	0	348	142	0	
tC, single (s)	6.7	6.2	7.1	6.5	4.1	
tC, 2 stage (s)						
tF (s)	4.2	3.3	3.5	4.0	2.2	
p0 queue free %	94	83	0	93	97	
cM capacity (veh/h)	657	1088	468	731	1623	
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	226	589	139			
Volume Left	0	537	48			
Volume Right	188	0	91			
cSH	980	484	1623			
Volume to Capacity	0.23	1.22	0.03			
Queue Length 95th (ft)	22	571	2			
Control Delay (s)	9.8	142.0	2.7			
Lane LOS	A	F	A			
Approach Delay (s)	9.8	142.0	2.7			
Approach LOS	A	F				
Intersection Summary						
Average Delay	90.4					
Intersection Capacity Utilization	63.3%		ICU Level of Service	B		
Analysis Period (min)	15					

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔	↔	↕	↕	↔	↔
Traffic Volume (vph)	74	10	113	7	0	587
Future Volume (vph)	74	10	113	7	0	587
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	13	12	12	14	14
Grade (%)	1%		1%			-2%
Storage Length (ft)	55	0		0	0	
Storage Lanes	1	1		0	0	
Taper Length (ft)	25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850	0.992			
Frt Protected	0.950					
Satd. Flow (prot)	1701	1573	1667	0	0	1920
Frt Permitted	0.950					
Satd. Flow (perm)	1701	1573	1667	0	0	1920
Link Speed (mph)	20		25			25
Link Distance (ft)	275		478			154
Travel Time (s)	9.4		13.0			4.2
Confl. Peds. (#/hr)	3	1		2	2	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	0%	7%	0%	0%	1%
Adj. Flow (vph)	82	11	126	8	0	652
Shared Lane Traffic (%)						
Lane Group Flow (vph)	82	11	134	0	0	652
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection

Int Delay, s/veh 1.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔	↔	↕	↕	↔	↔
Traffic Vol, veh/h	74	10	113	7	0	587
Future Vol, veh/h	74	10	113	7	0	587
Conflicting Peds, #/hr	3	1	0	2	2	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	55	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	1	-	1	-	-	-2
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	0	7	0	0	1
Mvmt Flow	82	11	126	8	0	652

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	787	133	0
Stage 1	132	-	-
Stage 2	655	-	-
Critical Hdwy	6.6	6.3	-
Critical Hdwy Stg 1	5.6	-	-
Critical Hdwy Stg 2	5.6	-	-
Follow-up Hdwy	3	3.1	-
Pot Cap-1 Maneuver	387	974	-
Stage 1	1032	-	-
Stage 2	562	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	385	971	-
Mov Cap-2 Maneuver	385	-	-
Stage 1	1030	-	-
Stage 2	560	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15.9	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	385	971	1077	-
HCM Lane V/C Ratio	-	-	0.214	0.011	-	-
HCM Control Delay (s)	-	-	16.9	8.8	0	-
HCM Lane LOS	-	-	C	A	A	-
HCM 95th %tile Q(veh)	-	-	0.8	0	0	-

McMahon Associates, Inc.
3: S Main St & Bridge St

French Creek West
2018 Existing Weekday AM

	↖	→	↘	↙	←	↖	↙	↘	↙	↘	↙	↘
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕		↕		↕		↕		↕		↕	
Traffic Volume (vph)	3	271	16	20	297	29	16	71	50	278	370	71
Future Volume (vph)	3	271	16	20	297	29	16	71	50	278	370	71
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	12	11	11	11	10	10	10
Grade (%)	0%		1%		-2%		3%		3%		3%	
Storage Length (ft)	0	0	0	0	0	0	0	135	0	0	0	0
Storage Lanes	0	0	0	0	0	0	0	1	0	0	0	0
Taper Length (ft)	25	0	0	25	0	0	25	0	0	25	0	0
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		1.00		1.00	
Frt	0.992		0.989		0.951		0.976		0.976		0.976	
Flt Protected	0		0		0		0		0		0	
Satd. Flow (prot)	0	1659	0	0	1605	0	0	1538	0	1556	1563	0
Flt Permitted	0.997		0.971		0.925		0.715		0.715		0.715	
Satd. Flow (perm)	0	1654	0	0	1563	0	0	1432	0	1170	1563	0
Right Turn on Red	Yes											
Satd. Flow (RTOR)	6		9		56		20		20		20	
Link Speed (mph)	25		25		25		25		25		25	
Link Distance (ft)	1070		1069		731		346		346		346	
Travel Time (s)	29.2		29.2		19.9		9.4		9.4		9.4	
Confl. Peds. (#/hr)	4		4		1		1		1		1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	8%	0%	0%	11%	7%	6%	11%	2%	1%	3%	3%
Adj. Flow (vph)	3	301	18	22	330	32	18	79	56	309	411	79
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	322	0	0	384	0	0	153	0	309	490	0
Number of Detectors	1	1	1	1	1	1	1	1	1	1	1	1
Detector Template	Left											
Leading Detector (ft)	20	35	20	35	20	35	35	35	35	35	35	35
Trailing Detector (ft)	0	-5	0	-5	0	-5	-5	-5	-5	-5	-5	-5
Detector 1 Position(ft)	0	-5	0	-5	0	-5	-5	-5	-5	-5	-5	-5
Detector 1 Size(ft)	20	40	20	40	20	40	40	40	40	40	40	40
Detector 1 Type	CI+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	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	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	0.0	0.0	0.0
Turn Type	Perm	NA										
Protected Phases	2		6		8		4		4		4	
Permitted Phases	2		6		8		8		4		4	
Detector Phase	2	2	6	6	8	8	8	8	4	4	4	4
Switch Phase												
Minimum Initial (s)	21.0	21.0	21.0	21.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	27.0	27.0	27.0	27.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0
Total Split (s)	29.0	29.0	29.0	29.0	31.0	31.0	31.0	31.0	31.0	31.0	31.0	31.0
Total Split (%)	48.3%	48.3%	48.3%	48.3%	51.7%	51.7%	51.7%	51.7%	51.7%	51.7%	51.7%	51.7%
Maximum Green (s)	23.0	23.0	23.0	23.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Lanes, Volumes, Timings
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3: S Main St & Bridge St
Synchro 10 (10.2.20)

McMahon Associates, Inc.
3: S Main St & Bridge St

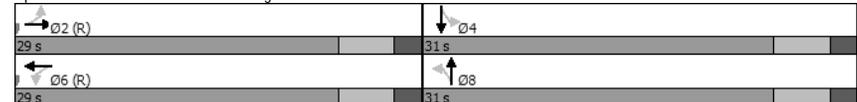
French Creek West
2018 Existing Weekday AM

	↖	→	↘	↙	←	↖	↙	↘	↙	↘	↙	↘
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-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	
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	3.0	3.0	3.0
Recall Mode	C-Min	C-Min	C-Min	C-Min	None							
Walk Time (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Flash Dont Walk (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
v/c Ratio	0.43		0.54		0.26		0.69		0.80		0.80	
Control Delay	14.5		14.7		8.6		23.6		26.3		26.3	
Queue Delay	0.0		0.0		0.0		0.0		0.0		0.0	
Total Delay	14.5		14.7		8.6		23.6		26.3		26.3	
Queue Length 50th (ft)	79		91		21		85		137		137	
Queue Length 95th (ft)	146		128		52		159		#240		#240	
Internal Link Dist (ft)	990		989		651		266		266		266	
Turn Bay Length (ft)	745		706		652		507		688		688	
Base Capacity (vph)	0		0		0		0		0		0	
Starvation Cap Reductn	0		0		0		0		0		0	
Spillback Cap Reductn	0		0		0		0		0		0	
Storage Cap Reductn	0		0		0		0		0		0	
Reduced v/c Ratio	0.43		0.54		0.23		0.61		0.71		0.71	

Intersection Summary

Area Type: Other
 Cycle Length: 60
 Actuated Cycle Length: 60
 Offset: 42 (70%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 3: S Main St & Bridge St



Lanes, Volumes, Timings
I:\eng\818195 - French Creek W\trafficAnalysis\2018-05 TIS\Existing\EX 2018 AM.syn

3: S Main St & Bridge St
Synchro 10 (10.2.20)

McMahon Associates, Inc.
3: S Main St & Bridge St

French Creek West
2018 Existing Weekday AM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔			↔			↔			↔	↔	
Traffic Volume (veh/h)	3	271	16	20	297	29	16	71	50	278	370	71
Future Volume (veh/h)	3	271	16	20	297	29	16	71	50	278	370	71
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Ob), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Ad (A pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Ad	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ad Sat Flow, veh/h/ln	1800	1675	1800	1791	1628	1791	1818	1697	1818	1755	1721	1773
Ad Flow Rate, veh/h	3	301	18	22	330	32	18	79	55	309	411	79
Ad No. of Lanes	0	1	0	0	1	0	0	1	0	1	1	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	8	8	8	11	11	11	11	11	11	11	3	3
Cap, veh/h	62	625	37	80	563	53	99	348	216	494	607	117
Arrive On Green	0.38	0.40	0.38	0.51	0.53	0.51	0.42	0.43	0.42	0.43	0.43	0.42
Sat Flow, veh/h	3	1560	93	40	1405	131	74	805	499	1244	1404	270
Grp Volume(v), veh/h	322	0	0	384	0	0	152	0	0	309	0	490
Grp Sat Flow(s), veh/h/ln	1655	0	0	1577	0	0	1378	0	0	1244	0	1673
Q Serve(g s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	7.8	0.0	14.1
Cycle Q Clear(g c), s	8.8	0.0	0.0	10.1	0.0	0.0	14.4	0.0	0.0	21.8	0.0	14.1
Prop In Lane	0.01		0.06	0.06		0.08	0.12		0.36	1.00		0.16
Lane Grp Cap(c), veh/h	697	0	0	669	0	0	640	0	0	494	0	724
V/C Ratio(X)	0.46	0.00	0.00	0.57	0.00	0.00	0.24	0.00	0.00	0.63	0.00	0.68
Avail Cap(c a), veh/h	697	0	0	669	0	0	665	0	0	516	0	753
HCM Platoon Ratio	1.00	1.00	1.00	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	0.93	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	13.4	0.0	0.0	10.8	0.0	0.0	10.9	0.0	0.0	17.9	0.0	13.7
Incr Delay (d2), s/veh	2.2	0.0	0.0	3.3	0.0	0.0	0.2	0.0	0.0	2.2	0.0	2.3
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	8.0	0.0	0.0	8.6	0.0	0.0	3.0	0.0	0.0	8.7	0.0	11.2
LnGrp Delay(d),s/veh	15.6	0.0	0.0	14.1	0.0	0.0	11.1	0.0	0.0	20.2	0.0	16.1
LnGrp LOS	B			B			B			C		B
Approach Vol, veh/h	322		384				152		799			
Approach Delay, s/veh	15.6		14.1				11.1		17.6			
Approach LOS	B		B				B		B			
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4		6		8					
Phs Duration (G Rc), s	29.0		31.0		29.0		31.0					
Change Period (Rc), s	6.0		6.0		6.0		6.0					
Max Green Setting (Gmax), s	22.0		26.0		22.0		26.0					
Max Q Clear Time (g c I1), s	10.8		24.3		12.1		16.4					
Green Ext Time (p c), s	0.9		0.7		1.1		0.3					
Intersection Summary												
HCM 2010 Ctrl Delay	15.8											
HCM 2010 LOS	B											

HCM 2010 Signalized Intersection Summary
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3: S Main St & Bridge St
Synchro 10 (10.2.20)

McMahon Associates, Inc.
4: Starr St (SR 29) & Bridge St

French Creek West
2018 Existing Weekday AM

	→	↖	↗	←	↙	↘
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔		↔	↔	↔	↔
Traffic Volume (vph)	555	188	541	401	91	467
Future Volume (vph)	555	188	541	401	91	467
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	16	16	10	11	10	12
Grade (%)	1%			1%	0%	
Storage Length (ft)		0	215		320	0
Storage Lanes		0	1		1	1
Taper Length (ft)			25		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.966					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1886	0	1527	1546	1464	1471
Flt Permitted			0.069		0.950	
Satd. Flow (perm)	1886	0	111	1546	1464	1471
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	17					176
Link Speed (mph)	25			35	25	
Link Distance (ft)	1069			499	559	
Travel Time (s)	29.2			9.7	15.2	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	5%	1%	4%	12%	9%	4%
Adj. Flow (vph)	578	196	564	418	95	486
Shared Lane Traffic (%)						
Lane Group Flow (vph)	774	0	564	418	95	486
Number of Detectors	1		1	1	1	1
Detector Template						
Leading Detector (ft)	35		35	35	35	35
Trailing Detector (ft)	-5		-5	-5	-5	-5
Detector 1 Position(ft)	-5		-5	-5	-5	-5
Detector 1 Size(ft)	40		40	40	40	40
Detector 1 Type	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
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Turn Type	NA		pm+pt	NA	Prot	pm+ov
Protected Phases	2		1	6	8	1
Permitted Phases			6			8
Detector Phase	2		1	6	8	1
Switch Phase						
Minimum Initial (s)	27.0		7.0	27.0	7.0	7.0
Minimum Split (s)	32.0		12.0	32.0	12.0	12.0
Total Split (s)	54.0		44.0	98.0	22.0	44.0
Total Split (%)	45.0%		36.7%	81.7%	18.3%	36.7%
Maximum Green (s)	49.0		39.0	93.0	17.0	39.0
Yellow Time (s)	3.0		3.0	3.0	3.0	3.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0		-1.0	-1.0	-1.0	-1.0

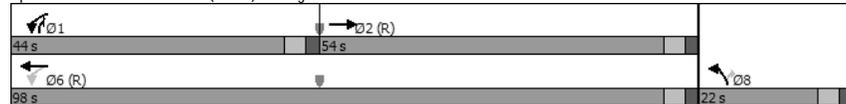
Lanes, Volumes, Timings
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4: Starr St (SR 29) & Bridge St
Synchro 10 (10.2.20)

	→	↖	↙	←	↘	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lag		Lead		Lead	
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Min	None	C-Min	None	None	None
Walk Time (s)	9.0	9.0	9.0	8.0		
Flash Dont Walk (s)	10.0		10.0	8.0		
Pedestrian Calls (#/hr)	0		0	0		
w/c Ratio	0.90	1.00	0.33	0.56	0.61	
Control Delay	43.1	72.6	3.8	62.5	17.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	43.1	72.6	3.8	62.5	17.0	
Queue Length 50th (ft)	501	-391	65	70	169	
Queue Length 95th (ft)	#838	#640	116	124	262	
Internal Link Dist (ft)	989		419	479		
Turn Bay Length (ft)		215		320		
Base Capacity (vph)	860	562	1264	219	800	
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced w/c Ratio	0.90	1.00	0.33	0.43	0.61	

Intersection Summary
 Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 - Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

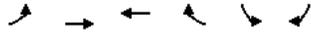
Splits and Phases: 4: Starr St (SR 29) & Bridge St



	→	↖	↙	←	↘	↗		
Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations	↔	↔	↔	↔	↔	↔		
Traffic Volume (veh/h)	555	188	541	401	91	467		
Future Volume (veh/h)	555	188	541	401	91	467		
Number	2	12	1	6	3	18		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1791	1863	1722	1599	1651	1731		
Adj Flow Rate, veh/h	578	179	564	418	95	454		
Adj No. of Lanes	1	0	1	1	1	1		
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96		
Percent Heavy Veh. %	5	5	4	12	9	4		
Cap, veh/h	765	237	735	1253	236	467		
Arrive On Green	1.00	1.00	0.17	0.78	0.15	0.15		
Sat Flow, veh/h	1313	407	1640	1599	1573	1471		
Grp Volume(v), veh/h	0	757	564	418	95	454		
Grp Sat Flow(s), veh/h/ln	0	1719	1640	1599	1573	1471		
Q Serve(g_s), s	0.0	0.0	14.4	9.2	6.6	18.0		
Cycle Q Clear(g_c), s	0.0	0.0	14.4	9.2	6.6	18.0		
Prop In Lane		0.24	1.00		1.00	1.00		
Lane Grp Cap(c), veh/h	0	1002	735	1253	236	467		
V/C Ratio(X)	0.00	0.76	0.77	0.33	0.40	0.97		
Avail Cap(c_a), veh/h	0	1002	1007	1253	236	467		
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	0.00	0.81	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	0.0	0.0	4.9	3.8	46.1	40.4		
Incr Delay (d2), s/veh	0.0	4.3	2.4	0.7	1.1	34.4		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(95%),veh/ln	0.0	2.2	11.0	7.6	5.3	26.5		
LnGrp Delay(d),s/veh	0.0	4.3	7.4	4.5	47.2	74.8		
LnGrp LOS		A	A	A	D	E		
Approach Vol, veh/h	757		982	549				
Approach Delay, s/veh	4.3		6.2	70.0				
Approach LOS	A		A	E				
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	24.1	73.9				98.0		22.0
Change Period (Y+Rc), s	5.0	5.0				5.0		5.0
Max Green Setting (Gmax), s	39.0	49.0				93.0		17.0
Max Q Clear Time (g_c+1), s	16.9	2.5				11.7		20.5
Green Ext Time (p_c), s	2.2	3.8				1.5		0.0

Intersection Summary
 HCM 2010 Ctrl Delay: 20.9
 HCM 2010 LOS: C

Notes



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↔	↑	↔		↔	
Traffic Volume (vph)	10	1182	717	3	4	9
Future Volume (vph)	10	1182	717	3	4	9
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	14	11	11	12	12
Grade (%)		2%	-2%		3%	
Storage Length (ft)	100			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		0.907	
Flt Protected	0.950				0.985	
Satd. Flow (prot)	1169	1828	1650	0	1032	0
Flt Permitted	0.950				0.985	
Satd. Flow (perm)	1169	1828	1650	0	1032	0
Link Speed (mph)		35	35		25	
Link Distance (ft)		253	844		353	
Travel Time (s)		4.9	16.4		9.6	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	40%	4%	6%	100%	75%	44%
Adj. Flow (vph)	10	1219	739	3	4	9
Shared Lane Traffic (%)						
Lane Group Flow (vph)	10	1219	742	0	13	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection

Int Delay, s/veh 0.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↔	↑	↔		↔	
Traffic Vol, veh/h	10	1182	717	3	4	9
Future Vol, veh/h	10	1182	717	3	4	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	2	-2	-	3	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	40	4	6	100	75	44
Mvmt Flow	10	1219	739	3	4	9

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	742	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.7	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	3.2	-	-
Pot Cap-1 Maneuver	583	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	583	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	23.3
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	583	-	-	-	210
HCM Lane V/C Ratio	0.018	-	-	-	0.064
HCM Control Delay (s)	11.3	-	-	-	23.3
HCM Lane LOS	B	-	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	0.2

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔		↔	↔			↔		↔	↔	
Traffic Volume (vph)	11	1138	5	3	686	5	1	0	2	2	1	14
Future Volume (vph)	11	1138	5	3	686	5	1	0	2	2	1	14
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	11	11	11	14	14	14	14	14	14
Grade (%)		2%			2%			-4%				-3%
Storage Length (ft)	100		0	100		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		0.999			0.999			0.910				0.887
Flt Protected	0.950			0.950				0.984				0.994
Satd. Flow (prot)	1501	1655	0	1636	1578	0	0	1315	0	0	1325	0
Flt Permitted	0.950			0.950				0.984				0.994
Satd. Flow (perm)	1501	1655	0	1636	1578	0	0	1315	0	0	1325	0
Link Speed (mph)		35			35			25				25
Link Distance (ft)		844			630			265				274
Travel Time (s)		16.4			12.3			7.2				7.5
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 (%)	9%	4%	0%	0%	9%	20%	0%	0%	50%	50%	0%	29%
Adj. Flow (vph)	12	1224	5	3	738	5	1	0	2	2	1	15
Shared Lane Traffic (%)												
Lane Group Flow (vph)	12	1229	0	3	743	0	0	3	0	0	18	0
Sign Control		Free			Free			Stop				Stop

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized

Intersection												
Int Delay, s/veh	0.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔		↔	↔			↔		↔	↔	
Traffic Vol, veh/h	11	1138	5	3	686	5	1	0	2	2	1	14
Future Vol, veh/h	11	1138	5	3	686	5	1	0	2	2	1	14
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None									
Storage Length	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	2	-	-	2	-	-	-4	-	-	-	-3
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	9	4	0	0	9	20	0	0	50	50	0	29
Mvmt Flow	12	1224	5	3	738	5	1	0	2	2	1	15

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	743	0	0	1229
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	4.5	-	-	4.3
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	3.1	-	-	3
Pot Cap-1 Maneuver	621	-	-	442
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	621	-	-	442
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.1	35.1	25.7
HCM LOS			E	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	123	621	-	-	442	-	-	192
HCM Lane V/C Ratio	0.026	0.019	-	-	0.007	-	-	0.095
HCM Control Delay (s)	35.1	10.9	-	-	13.2	-	-	25.7
HCM Lane LOS	E	B	-	-	B	-	-	D
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	0.3

McMahon Associates, Inc.

7: Bridge St (SR 1019)/Bridge St (SR 113) & Nutt Rd (SR 23)

French Creek West

2018 Existing Weekday AM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	387	666	116	75	312	26	48	137	49	12	293	0
Future Volume (vph)	387	666	116	75	312	26	48	137	49	12	293	0
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	13	13	10
Grade (%)		1%			1%			-2%			1%	
Storage Length (ft)	350		0	720		0	100		0	205		0
Storage Lanes	1		0	1		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
Ped Bike Factor	0.99	1.00		1.00	1.00							
Frt	0.978				0.988			0.960				
Flt Protected	0.950			0.950			0.950			0.998		
Satd. Flow (prot)	1572	1814	0	1588	1693	0	1580	1630	0	0	1829	0
Flt Permitted	0.950			0.950			0.222			0.985		
Satd. Flow (perm)	1564	1814	0	1584	1693	0	369	1630	0	0	1806	0
Right Turn on Red			No			No			No			Yes
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		265			436			378			352	
Travel Time (s)		5.2			8.5			10.3			9.6	
Confl. Peds. (#/hr)	3		3	3		3						
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%	0%
Adj. Flow (vph)	425	732	127	82	343	29	53	151	54	13	322	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	425	859	0	82	372	0	53	205	0	0	335	0
Number of Detectors	1	1		1	1		1	1		1	1	
Detector Template										Left		
Leading Detector (ft)	35	35		35	35		35	35		20	35	
Trailing Detector (ft)	-5	-5		-5	-5		-5	-5		0	-5	
Detector 1 Position(ft)	-5	-5		-5	-5		-5	-5		0	-5	
Detector 1 Size(ft)	40	40		40	40		40	40		20	40	
Detector 1 Type	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	
Detector 1 Queue (s)	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	
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Detector Phase	5	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	7.0	15.0		7.0	15.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	15.0	20.0		15.0	20.0		12.0	12.0		12.0	12.0	
Total Split (s)	38.0	70.0		18.0	50.0		32.0	32.0		32.0	32.0	
Total Split (%)	31.7%	58.3%		15.0%	41.7%		26.7%	26.7%		26.7%	26.7%	
Maximum Green (s)	30.0	65.0		10.0	45.0		27.0	27.0		27.0	27.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	

Lanes, Volumes, Timings 7: Bridge St (SR 1019)/Bridge St (SR 113) & Nutt Rd (SR 23)
 I:\eng\18195 - French Creek W\traffic\Analysis\2018-05 TIS\Existing\EX 2018 AM.syn Synchro 10 (10.2.20)

McMahon Associates, Inc.

7: Bridge St (SR 1019)/Bridge St (SR 113) & Nutt Rd (SR 23)

French Creek West

2018 Existing Weekday AM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
All-Red Time (s)	5.0	2.0		5.0	2.0		2.0	2.0		2.0	2.0	
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	4.0	
Lead/Lag	Lag	Lag		Lead	Lead							
Lead-Lag Optimize?												
Vehicle Extension (s)	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	
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	
v/c Ratio	0.90	0.79		0.60	0.62		0.66	0.58		0.85		
Control Delay	62.6	27.7		71.3	38.5		80.8	48.8		65.8		
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	62.6	27.7		71.3	38.5		80.8	48.8		65.8		
Queue Length 50th (ft)	298	544		62	256		37	140		246		
Queue Length 95th (ft)	#521	#786		#119	344		#103	221		#386		
Internal Link Dist (ft)		185			356		298			272		
Turn Bay Length (ft)	350			720			100					
Base Capacity (vph)	474	1082		145	669		86	380		421		
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.90	0.79		0.57	0.56		0.62	0.54		0.80		
Intersection Summary												
Area Type:	Other											
Cycle Length:	120											
Actuated Cycle Length:	120											
Offset:	0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green, Master Intersection											
Natural Cycle:	90											
Control Type:	Actuated-Coordinated											
#	95th percentile volume exceeds capacity, queue may be longer.											
	Queue shown is maximum after two cycles.											
Splits and Phases: 7: Bridge St (SR 1019)/Bridge St (SR 113) & Nutt Rd (SR 23)												

Lanes, Volumes, Timings 7: Bridge St (SR 1019)/Bridge St (SR 113) & Nutt Rd (SR 23)
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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	387	666	116	75	312	26	48	137	49	12	293	0
Future Volume (vph)	387	666	116	75	312	26	48	137	49	12	293	0
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Ob), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	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
Adj Sat Flow, veh/h/ln	1773	1816	1863	1791	1717	1791	1782	1757	1818	1863	1845	0
Adj Flow Rate, veh/h	425	732	127	82	343	29	53	151	54	13	322	0
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	0	1	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. %	1	3	3	0	4	4	2	4	4	1	1	0
Cap, veh/h	703	854	148	123	385	33	153	262	94	38	372	0
Arrive On Green	0.42	0.57	0.56	0.07	0.25	0.24	0.21	0.21	0.20	0.20	0.21	0.00
Sat Flow, veh/h	1689	1508	262	1706	1561	132	1064	1237	442	32	1758	0
Grp Volume(v), veh/h	425	0	859	82	0	372	53	0	205	335	0	0
Grp Sat Flow(s), veh/h/ln	1689	0	1769	1706	0	1693	1064	0	1679	1790	0	0
Q Serve(g_s), s	23.5	0.0	49.1	5.6	0.0	25.5	0.0	0.0	13.2	8.8	0.0	0.0
Cycle Q Clear(g_c), s	23.5	0.0	49.1	5.6	0.0	25.5	18.2	0.0	13.2	22.0	0.0	0.0
Prop In Lane	1.00		0.15	1.00		0.08	1.00		0.26	0.04		0.00
Lane Grp Cap(c), veh/h	703	0	1002	123	0	418	153	0	355	395	0	0
V/C Ratio(X)	0.60	0.00	0.86	0.67	0.00	0.89	0.35	0.00	0.58	0.85	0.00	0.00
Avail Cap(c_a), veh/h	703	0	1002	156	0	649	176	0	392	434	0	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	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	27.3	0.0	22.0	54.3	0.0	43.6	44.5	0.0	42.6	45.9	0.0	0.0
Incr Delay (d2), s/veh	1.5	0.0	9.4	7.2	0.0	23.6	1.3	0.0	1.7	13.6	0.0	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	16.8	0.0	34.9	5.2	0.0	20.9	3.1	0.0	10.4	18.3	0.0	0.0
LnGrp Delay(d),s/veh	28.8	0.0	31.4	61.5	0.0	67.2	45.8	0.0	44.3	59.5	0.0	0.0
LnGrp LOS	C		C	E		E	D		D	E		
Approach Vol, veh/h	1284			454			258			335		
Approach Delay, s/veh	30.5			66.2			44.6			59.5		
Approach LOS	C			E			D			E		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	15.6	75.0		29.4	57.0	33.6		29.4				
Change Period (Y+Rc), s	8.0	* 8		5.0	8.0	5.0		5.0				
Max Green Setting (Gmax), s	10.0	* 65		27.0	30.0	45.0		27.0				
Max Q Clear Time (g_c+I1), s	8.1	51.1		24.0	26.0	27.5		20.7				
Green Ext Time (p_c), s	0.0	3.4		0.4	0.6	1.2		0.5				
Intersection Summary												
HCM 2010 Ctrl Delay				43.2								
HCM 2010 LOS				D								
Notes												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	3	7	0	0	0	6	491	15	18	619	5
Future Volume (vph)	23	3	7	0	0	0	6	491	15	18	619	5
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	16	16	16	12	12	12	11	11	11
Grade (%)							-11%		2%			
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												
Frt	0.972						0.996		0.999			
Flt Protected	0.966						0.999		0.999			
Satd. Flow (prot)	0	1538	0	0	0	0	0	1677	0	0	1658	0
Flt Permitted	0.966						0.999		0.999			
Satd. Flow (perm)	0	1538	0	0	0	0	0	1677	0	0	1658	0
Link Speed (mph)	25						25		25			
Link Distance (ft)	284						281		356			
Travel Time (s)	7.7						7.7		9.7			
Confl. Peds. (#/hr)	4		1		8				8			
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	4%	0%	14%	0%	0%	0%	0%	0%	6%	0%	28%	3%
Adj. Flow (vph)	24	3	7	0	0	0	6	506	15	19	638	5
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	34	0	0	0	0	0	527	0	0	662	0
Sign Control	Stop						Stop		Free			
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											

Intersection												
Int Delay, s/veh	0.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔						↔			↔		
Traffic Vol, veh/h	23	3	7	0	0	0	6	491	15	18	619	5
Future Vol, veh/h	23	3	7	0	0	0	6	491	15	18	619	5
Conflicting Peds, #/hr	4	0	1	0	0	0	8	0	0	0	0	8
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	-
Grade, %	-	1	-	-	-11	-	-	2	-	-	2	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	4	0	14	0	0	0	0	6	0	28	3	0
Mvmt Flow	24	3	7	0	0	0	6	506	15	19	638	5

Major/Minor	Minor2			Major1			Major2					
Conflicting Flow All	1217	1220	650	651			0	0	521	0	0	
Stage 1	687	687	-	-			-	-	-	-	-	
Stage 2	530	533	-	-			-	-	-	-	-	
Critical Hdwy	6.64	6.7	6.44	4.3			-	-	4.6	-	-	
Critical Hdwy Stg 1	5.64	5.7	-	-			-	-	-	-	-	
Critical Hdwy Stg 2	5.64	5.7	-	-			-	-	-	-	-	
Follow-up Hdwy	3	4	3.2	2.2			-	-	2.452	-	-	
Pot Cap-1 Maneuver	202	170	463	911			-	-	896	-	-	
Stage 1	537	434	-	-			-	-	-	-	-	
Stage 2	647	513	-	-			-	-	-	-	-	
Platoon blocked, %	-											
Mov Cap-1 Maneuver	191	0	459	905			-	-	896	-	-	
Mov Cap-2 Maneuver	191	0	-	-			-	-	-	-	-	
Stage 1	511	0	-	-			-	-	-	-	-	
Stage 2	642	0	-	-			-	-	-	-	-	

Approach	EB	NB	SB
HCM Control Delay, s	24.2	0.1	0.3
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	SBL	SBT	SBR
Capacity (veh/h)	905	-	-	221	896	-	-
HCM Lane V/C Ratio	0.007	-	-	0.154	0.021	-	-
HCM Control Delay (s)	9	0	-	24.2	9.1	0	-
HCM Lane LOS	A	A	-	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.5	0.1	-	-

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑			↑
Traffic Volume (vph)	0	1169	360	0	0	258
Future Volume (vph)	0	1169	360	0	0	258
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	15	15
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.865					
Fit Protected						
Satd. Flow (prot)	0	1765	1748	0	0	1631
Fit Permitted						
Satd. Flow (perm)	0	1765	1748	0	0	1631
Link Speed (mph)	35		35		25	
Link Distance (ft)	630		265		329	
Travel Time (s)	12.3		5.2		9.0	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	0%	2%	3%	0%	0%	5%
Adj. Flow (vph)	0	1285	396	0	0	284
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1285	396	0	0	284
Sign Control	Free	Free	Free	Stop	Stop	Stop

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized

Intersection						
Int Delay, s/veh	2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑			↑
Traffic Vol, veh/h	0	1169	360	0	0	258
Future Vol, veh/h	0	1169	360	0	0	258
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	91	91	91	91	91	91
Heavy Vehicles, %	0	2	3	0	0	5
Mvmt Flow	0	1285	396	0	0	284

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	-	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	6.25
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	3.1
Pot Cap-1 Maneuver	0	-	0
Stage 1	0	-	0
Stage 2	0	-	0
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	689
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	13.8
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	689
HCM Lane V/C Ratio	-	-	0.411
HCM Control Delay (s)	-	-	13.8
HCM Lane LOS	-	-	B
HCM 95th %tile Q(veh)	-	-	2

	→	↖	↗	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↑	↑
Traffic Volume (vph)	45	50	166	58	131	325
Future Volume (vph)	45	50	166	58	131	325
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	15	15	14	14	16	16
Grade (%)	-10%			2%	9%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.929				0.904	
Flt Protected				0.964	0.986	
Satd. Flow (prot)	1894	0	0	1768	1732	0
Flt Permitted				0.964	0.986	
Satd. Flow (perm)	1894	0	0	1768	1732	0
Link Speed (mph)	25			25	25	
Link Distance (ft)	292			227	273	
Travel Time (s)	8.0			6.2	7.4	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	2%	2%	0%	14%	1%	0%
Adj. Flow (vph)	48	54	178	62	141	349
Shared Lane Traffic (%)						
Lane Group Flow (vph)	102	0	0	240	490	0
Sign Control	Stop			Stop	Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized

	→	↖	↗	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↑	↑
Traffic Volume (veh/h)	45	50	166	58	131	325
Future Volume (Veh/h)	45	50	166	58	131	325
Sign Control	Stop			Stop	Free	
Grade	-10%			2%	9%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	48	54	178	62	141	349
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	631	0	534	456	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	631	0	534	456	0	
tC, single (s)	6.5	6.2	7.1	6.6	4.1	
tC, 2 stage (s)						
tF (s)	4.0	3.3	3.5	4.1	2.2	
p0 queue free %	87	95	52	86	91	
cM capacity (veh/h)	365	1085	367	441	1630	

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	102	240	490
Volume Left	0	178	141
Volume Right	54	0	349
cSH	563	384	1630
Volume to Capacity	0.18	0.63	0.09
Queue Length 95th (ft)	16	102	7
Control Delay (s)	12.8	28.8	2.7
Lane LOS	B	D	A
Approach Delay (s)	12.8	28.8	2.7
Approach LOS	B	D	

Intersection Summary

Average Delay 11.5
Intersection Capacity Utilization 55.0% ICU Level of Service B
Analysis Period (min) 15



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔	↔	↕	↕	↔	↔
Traffic Volume (vph)	7	3	446	67	13	182
Future Volume (vph)	7	3	446	67	13	182
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	13	12	12	14	14
Grade (%)	1%		1%			-2%
Storage Length (ft)	55	0		0	0	
Storage Lanes	1	1		0	0	
Taper Length (ft)	25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850	0.982			
Frt Protected	0.950					0.997
Satd. Flow (prot)	1701	1573	1759	0	0	1933
Frt Permitted	0.950					0.997
Satd. Flow (perm)	1701	1573	1759	0	0	1933
Link Speed (mph)	20		25			25
Link Distance (ft)	275		478			154
Travel Time (s)	9.4		13.0			4.2
Confl. Peds. (#/hr)	2			1	1	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	8	3	480	72	14	196
Shared Lane Traffic (%)						
Lane Group Flow (vph)	8	3	552	0	0	210
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection

Int Delay, s/veh 0.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔	↔	↕	↕	↔	↔
Traffic Vol, veh/h	7	3	446	67	13	182
Future Vol, veh/h	7	3	446	67	13	182
Conflicting Peds, #/hr	2	0	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	55	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	1	-	1	-	-	-2
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	8	3	480	72	14	196

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	743	517	0
Stage 1	517	-	-
Stage 2	226	-	-
Critical Hdwy	6.6	6.3	-
Critical Hdwy Stg 1	5.6	-	-
Critical Hdwy Stg 2	5.6	-	-
Follow-up Hdwy	3	3.1	-
Pot Cap-1 Maneuver	412	582	-
Stage 1	661	-	-
Stage 2	926	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	403	581	-
Mov Cap-2 Maneuver	403	-	-
Stage 1	647	-	-
Stage 2	924	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.2	0	0.6
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	403	581	773	-
HCM Lane V/C Ratio	-	-	0.019	0.006	0.018	-
HCM Control Delay (s)	-	-	14.1	11.2	9.7	0
HCM Lane LOS	-	-	B	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	0.1	-

McMahon Associates, Inc.
3: S Main St & Bridge St

French Creek West
2018 Existing Weekday PM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔		↔		↔		↔		↔		↔	
Traffic Volume (vph)	31	292	28	23	430	104	38	298	77	81	95	38
Future Volume (vph)	31	292	28	23	430	104	38	298	77	81	95	38
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	12	11	11	11	10	10	10
Grade (%)	0%				1%			-2%			3%	
Storage Length (ft)	0		0	0		0	0		0	135		0
Storage Lanes	0		0	0		0	0		0	1		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
Ped Bike Factor	0.99				0.99			0.98			0.98	0.97
Frt	0.989				0.975			0.975			0.957	
Flt Protected	0.996				0.998			0.995			0.950	
Satd. Flow (prot)	0	1701	0	0	1708	0	0	1677	0	1572	1525	0
Flt Permitted	0.921				0.976			0.958			0.326	
Satd. Flow (perm)	0	1572	0	0	1665	0	0	1605	0	528	1525	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)	10				25			18			30	
Link Speed (mph)	25				25			25			25	
Link Distance (ft)	1070				1069			731			346	
Travel Time (s)	29.2				29.2			19.9			9.4	
Confl. Peds. (#/hr)	13		70	70		13	38		31	31		38
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	0%	3%	4%	0%	1%	2%	0%	0%	0%	0%	0%	3%
Adj. Flow (vph)	35	332	32	26	489	118	43	339	88	92	108	43
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	399	0	0	633	0	0	470	0	92	151	0
Number of Detectors	1	1		1	1		1	1		1	1	
Detector Template	Left		Left		Left		Left		Left		Left	
Leading Detector (ft)	20	35		20	35		20	35		35	35	
Trailing Detector (ft)	0	-5		0	-5		0	-5		-5	-5	
Detector 1 Position(ft)	0	-5		0	-5		0	-5		-5	-5	
Detector 1 Size(ft)	20	40		20	40		20	40		40	40	
Detector 1 Type	CI+Ex	CI+Ex										
Detector 1 Channel												
Detector 1 Extend (s)	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	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Perm	NA										
Protected Phases	2				6			8			4	
Permitted Phases	2				6			8			4	
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	21.0	21.0		21.0	21.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	27.0	27.0		27.0	27.0		11.0	11.0		11.0	11.0	
Total Split (s)	42.0	42.0		42.0	42.0		28.0	28.0		28.0	28.0	
Total Split (%)	60.0%	60.0%		60.0%	60.0%		40.0%	40.0%		40.0%	40.0%	
Maximum Green (s)	36.0	36.0		36.0	36.0		22.0	22.0		22.0	22.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	

Lanes, Volumes, Timings
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3: S Main St & Bridge St
Synchro 10 (10.2.20)

McMahon Associates, Inc.
3: S Main St & Bridge St

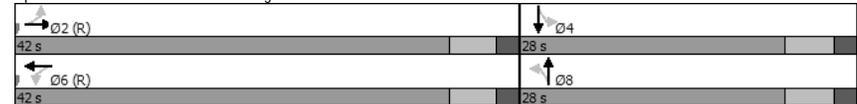
French Creek West
2018 Existing Weekday PM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0				-1.0		-1.0		-1.0		-1.0	
Total Lost Time (s)	5.0				5.0		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	3.0	
Recall Mode	C-Min	C-Min		C-Min	C-Min		None	None		None	None	
Walk Time (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Flash Dont Walk (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
v/c Ratio	0.47				0.70			0.90			0.55	0.30
Control Delay	12.2				13.3			44.9			34.0	15.8
Queue Delay	0.0				0.0			0.0			0.0	0.0
Total Delay	12.2				13.3			44.9			34.0	15.8
Queue Length 50th (ft)	97				120			181			32	37
Queue Length 95th (ft)	159				132			#336			#86	78
Internal Link Dist (ft)	990				989			651			266	
Turn Bay Length (ft)												
Base Capacity (vph)	851				908			539			173	521
Starvation Cap Reductn	0				0			0			0	0
Spillback Cap Reductn	0				0			0			0	0
Storage Cap Reductn	0				0			0			0	0
Reduced v/c Ratio	0.47				0.70			0.87			0.53	0.29

Intersection Summary

Area Type: Other
 Cycle Length: 70
 Actuated Cycle Length: 70
 Offset: 6 (9%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 55
 Control Type: Actuated-Coordinated
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 3: S Main St & Bridge St



Lanes, Volumes, Timings
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3: S Main St & Bridge St
Synchro 10 (10.2.20)

McMahon Associates, Inc.
3: S Main St & Bridge St

French Creek West
2018 Existing Weekday PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔		↔		↔		↔		↔		↔	
Traffic Volume (veh/h)	31	292	28	23	430	104	38	298	77	81	95	38
Future Volume (veh/h)	31	292	28	23	430	104	38	298	77	81	95	38
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Ob), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.97		0.93	0.99		0.93	0.96		0.94	1.00		0.94
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
Adj Sat Flow, veh/h/ln	1800	1751	1800	1791	1771	1791	1818	1818	1818	1773	1758	1773
Adj Flow Rate, veh/h	35	332	32	26	489	118	43	339	85	92	108	43
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	1	1	0
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh. %	3	3	3	1	1	1	0	0	0	0	0	0
Cap, veh/h	96	772	71	71	719	169	87	403	96	265	367	146
Arrive On Green	0.53	0.54	0.53	1.00	1.00	1.00	0.30	0.31	0.30	0.31	0.31	0.30
Sat Flow, veh/h	74	1421	130	33	1322	310	97	1287	308	964	1172	467
Grp Volume(v), veh/h	399	0	0	633	0	0	467	0	0	92	0	151
Grp Sat Flow(s), veh/h/ln	1625	0	0	1665	0	0	1691	0	0	964	0	1638
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	10.9	0.0	0.0	0.0	0.0	4.9
Cycle Q Clear(g_c), s	9.8	0.0	0.0	0.0	0.0	0.0	18.6	0.0	0.0	13.3	0.0	4.9
Prop In Lane	0.09		0.08	0.04		0.19	0.09		0.18	1.00		0.28
Lane Grp Cap(c), veh/h	916	0	0	935	0	0	562	0	0	265	0	513
V/C Ratio(X)	0.44	0.00	0.00	0.68	0.00	0.00	0.83	0.00	0.00	0.35	0.00	0.29
Avail Cap(c_a), veh/h	916	0	0	935	0	0	587	0	0	280	0	538
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	0.88	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	9.6	0.0	0.0	0.0	0.0	0.0	22.9	0.0	0.0	21.1	0.0	18.3
Incr Delay (d2), s/veh	1.5	0.0	0.0	3.5	0.0	0.0	9.5	0.0	0.0	0.8	0.0	0.3
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	8.8	0.0	0.0	1.6	0.0	0.0	15.6	0.0	0.0	2.9	0.0	4.0
LnGrp Delay(d),s/veh	11.1	0.0	0.0	3.5	0.0	0.0	32.4	0.0	0.0	21.9	0.0	18.6
LnGrp LOS	B		A		C		C		C		B	
Approach Vol, veh/h	399			633			467			243		
Approach Delay, s/veh	11.1			3.5			32.4			19.8		
Approach LOS	B			A			C			B		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	43.1		26.9		43.1		26.9					
Change Period (Y+Rc), s	6.0		6.0		6.0		6.0					
Max Green Setting (Gmax), s	36.0		22.0		36.0		22.0					
Max Q Clear Time (g_c+I1), s	11.8		15.8		2.5		20.6					
Green Ext Time (p_c), s	1.6		0.5		2.9		0.3					
Intersection Summary												
HCM 2010 Ctrl Delay	15.3											
HCM 2010 LOS	B											

HCM 2010 Signalized Intersection Summary
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3: S Main St & Bridge St
Synchro 10 (10.2.20)

McMahon Associates, Inc.
4: Starr St (SR 29) & Bridge St

French Creek West
2018 Existing Weekday PM

	→	↖	↗	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔		↔		↔	
Traffic Volume (vph)	447	80	400	618	93	546
Future Volume (vph)	447	80	400	618	93	546
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	16	16	10	11	10	12
Grade (%)	1%		1%		0%	
Storage Length (ft)	0		215		320	
Storage Lanes	0		1		1	
Taper Length (ft)			25		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.979				0.850	
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1929		0		1542	
Flt Permitted			0.310		0.950	
Satd. Flow (perm)	1929		0		503	
Right Turn on Red	Yes				Yes	
Satd. Flow (RTOR)	17				286	
Link Speed (mph)	25		35		25	
Link Distance (ft)	1069		499		559	
Travel Time (s)	29.2		9.7		15.2	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	3%	3%	3%	2%	0%	2%
Adj. Flow (vph)	456	82	408	631	95	557
Shared Lane Traffic (%)						
Lane Group Flow (vph)	538	0	408	631	95	557
Number of Detectors	1		1		1	
Detector Template						
Leading Detector (ft)	35		35		35	
Trailing Detector (ft)	-5		-5		-5	
Detector 1 Position(ft)	-5		-5		-5	
Detector 1 Size(ft)	40		40		40	
Detector 1 Type	Cl+Ex		Cl+Ex		Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0		0.0	
Detector 1 Queue (s)	0.0		0.0		0.0	
Detector 1 Delay (s)	0.0		0.0		0.0	
Turn Type	NA		pm+pt		Prot pm+ov	
Protected Phases	2		1		6	
Permitted Phases			6		8	
Detector Phase	2		1		6	
Switch Phase						
Minimum Initial (s)	27.0		7.0		27.0	
Minimum Split (s)	32.0		12.0		32.0	
Total Split (s)	35.0		15.0		50.0	
Total Split (%)	50.0%		21.4%		71.4%	
Maximum Green (s)	30.0		10.0		45.0	
Yellow Time (s)	3.0		3.0		3.0	
All-Red Time (s)	2.0		2.0		2.0	
Lost Time Adjust (s)	-1.0		-1.0		-1.0	

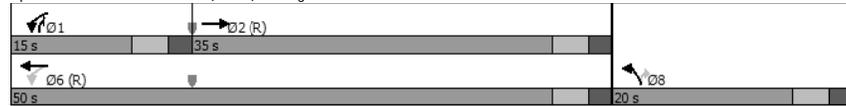
Lanes, Volumes, Timings
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4: Starr St (SR 29) & Bridge St
Synchro 10 (10.2.20)

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Total Lost Time (s)	4.0		4.0	4.0	4.0	4.0
Lead/Lag	Lag		Lead			Lead
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	C-Min		None	C-Min	None	None
Walk Time (s)	9.0		9.0	9.0	8.0	
Flash Dont Walk (s)	10.0		10.0	10.0	8.0	
Pedestrian Calls (#/hr)	0		0	0	0	
w/c Ratio	0.50		0.74	0.48	0.39	0.81
Control Delay	14.9		14.9	5.7	30.6	19.0
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	14.9		14.9	5.7	30.6	19.0
Queue Length 50th (ft)	157		49	88	37	96
Queue Length 95th (ft)	m235		#149	186	74	201
Internal Link Dist (ft)	989			419	479	
Turn Bay Length (ft)			215		320	
Base Capacity (vph)	1071		548	1318	364	691
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced w/c Ratio	0.50		0.74	0.48	0.26	0.81

Intersection Summary
 Area Type: Other
 Cycle Length: 70
 Actuated Cycle Length: 70
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Green, Master Intersection
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

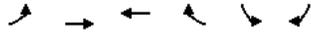
Splits and Phases: 4: Starr St (SR 29) & Bridge St



Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations	↔		↔	↔	↔	↔		
Traffic Volume (veh/h)	447	80	400	618	93	546		
Future Volume (veh/h)	447	80	400	618	93	546		
Number	2	12	1	6	3	18		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1808	1863	1739	1756	1800	1765		
Adj Flow Rate, veh/h	456	73	408	631	95	538		
Adj No. of Lanes	1	0	1	1	1	1		
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98		
Percent Heavy Veh. %	3	3	3	2	0	2		
Cap, veh/h	674	108	544	1154	392	579		
Arrive On Green	0.44	0.43	0.16	0.66	0.23	0.23		
Sat Flow, veh/h	1522	244	1656	1756	1714	1500		
Grp Volume(v), veh/h	0	529	408	631	95	538		
Grp Sat Flow(s), veh/h/ln	0	1765	1656	1756	1714	1500		
Q Serve(g_s), s	0.0	16.7	8.3	13.5	3.2	16.0		
Cycle Q Clear(g_c), s	0.0	16.7	8.3	13.5	3.2	16.0		
Prop In Lane	0.14	1.00			1.00	1.00		
Lane Grp Cap(c), veh/h	0	782	544	1154	392	579		
V/C Ratio(X)	0.00	0.68	0.75	0.55	0.24	0.93		
Avail Cap(c_a), veh/h	0	782	544	1154	392	579		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	0.00	0.87	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	0.0	15.6	10.9	6.4	22.1	20.6		
Incr Delay (d2), s/veh	0.0	4.1	5.7	1.9	0.3	21.7		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(95%),veh/ln	0.0	13.6	8.1	11.2	2.8	19.4		
LnGrp Delay(d),s/veh	0.0	19.7	16.6	8.3	22.4	42.3		
LnGrp LOS		B	B	A	C	D		
Approach Vol, veh/h	529		1039	633				
Approach Delay, s/veh	19.7		11.6	39.3				
Approach LOS	B		B	D				
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	15.0	35.0				50.0		20.0
Change Period (Y+Rc), s	5.0	5.0				5.0		5.0
Max Green Setting (Gmax), s	10.0	30.0				45.0		15.0
Max Q Clear Time (g_c+I1), s	10.8	18.7				16.0		18.5
Green Ext Time (p_c), s	0.0	1.7				2.5		0.0

Intersection Summary
 HCM 2010 Ctrl Delay 21.5
 HCM 2010 LOS C

Notes



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↔	↑	↑		↔	
Traffic Volume (vph)	10	941	1235	2	1	5
Future Volume (vph)	10	941	1235	2	1	5
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	14	11	11	12	12
Grade (%)		2%	-2%		3%	
Storage Length (ft)	100			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					0.887	
Frt Protected	0.950				0.992	
Satd. Flow (prot)	1636	1744	1722	0	1337	0
Frt Permitted	0.950				0.992	
Satd. Flow (perm)	1636	1744	1722	0	1337	0
Link Speed (mph)		35	35		25	
Link Distance (ft)		253	844		353	
Travel Time (s)		4.9	16.4		9.6	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	9%	2%	50%	0%	20%
Adj. Flow (vph)	11	991	1300	2	1	5
Shared Lane Traffic (%)						
Lane Group Flow (vph)	11	991	1302	0	6	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection

Int Delay, s/veh 0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↔	↑	↑		↔	
Traffic Vol, veh/h	10	941	1235	2	1	5
Future Vol, veh/h	10	941	1235	2	1	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	2	-2	-	3	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	9	2	50	0	20
Mvmt Flow	11	991	1300	2	1	5

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	1302	0	0 2314 1301
Stage 1	-	-	- 1301 -
Stage 2	-	-	- 1013 -
Critical Hdwy	4.3	-	- 7 6.7
Critical Hdwy Stg 1	-	-	- 6 -
Critical Hdwy Stg 2	-	-	- 6 -
Follow-up Hdwy	3	-	- 3 3.1
Pot Cap-1 Maneuver	415	-	- 30 171
Stage 1	-	-	- 225 -
Stage 2	-	-	- 328 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	415	-	- 29 171
Mov Cap-2 Maneuver	-	-	- 131 -
Stage 1	-	-	- 219 -
Stage 2	-	-	- 328 -

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	28
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	415	-	-	-	163
HCM Lane V/C Ratio	0.025	-	-	-	0.039
HCM Control Delay (s)	13.9	-	-	-	28
HCM Lane LOS	B	-	-	-	D
HCM 95th %tile Q(veh)	0.1	-	-	-	0.1



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕	↔	↔	↕	↔	↔	↕	↔	↔	↕	↔
Traffic Volume (vph)	26	960	3	4	1156	19	6	0	16	9	1	47
Future Volume (vph)	26	960	3	4	1156	19	6	0	16	9	1	47
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	11	11	11	14	14	14	14	14	14
Grade (%)	2%				2%				-4%		-3%	
Storage Length (ft)	100		0	100		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					0.998			0.902				0.888
Flt Protected	0.950			0.950				0.987				0.992
Satd. Flow (prot)	1636	1706	0	1636	1685	0	0	1744	0	0	1717	0
Flt Permitted	0.950			0.950				0.987				0.992
Satd. Flow (perm)	1636	1706	0	1636	1685	0	0	1744	0	0	1717	0
Link Speed (mph)	35				35				25		25	
Link Distance (ft)	844				630				265		274	
Travel Time (s)	16.4				12.3				7.2		7.5	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	1%	0%	0%	2%	5%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	27	980	3	4	1180	19	6	0	16	9	1	48
Shared Lane Traffic (%)												
Lane Group Flow (vph)	27	983	0	4	1199	0	0	22	0	0	58	0
Sign Control	Free				Free				Stop		Stop	

Intersection Summary
 Area Type: Other
 Control Type: Unsignalized

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	26	960	3	4	1156	19	6	0	16	9	1	47
Future Vol, veh/h	26	960	3	4	1156	19	6	0	16	9	1	47
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None									
Storage Length	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	2	-	-	2	-	-	-	4	-	-	-
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles, %	0	1	0	0	2	5	0	0	0	0	0	0
Mvmt Flow	27	980	3	4	1180	19	6	0	16	9	1	48

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	1199	0	0	983
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	4.1	-	-	4.1
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	2.2	-	-	2.2
Pot Cap-1 Maneuver	589	-	-	711
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	589	-	-	711
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0	47.4	51
HCM LOS			E	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	107	589	-	-	711	-	-	134
HCM Lane V/C Ratio	0.21	0.045	-	-	0.006	-	-	0.434
HCM Control Delay (s)	47.4	11.4	-	-	10.1	-	-	51
HCM Lane LOS	E	B	-	-	B	-	-	F
HCM 95th %tile Q(veh)	0.7	0.1	-	-	0	-	-	1.9

McMahon Associates, Inc.

7: Bridge St (SR 1019)/Bridge St (SR 113) & Nutt Rd (SR 23)

French Creek West

2018 Existing Weekday PM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	452	522	64	62	600	27	117	249	26	18	193	0
Future Volume (vph)	452	522	64	62	600	27	117	249	26	18	193	0
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	13	13	10
Grade (%)	1%		1%		-2%		1%		1%		1%	
Storage Length (ft)	350		0	720		0	100		0	205		0
Storage Lanes	1		0	1		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
Ped Bike Factor	1.00		1.00									
Frt	0.984				0.993				0.986			
Flt Protected	0.950			0.950			0.950				0.996	
Satd. Flow (prot)	1557	1842	0	1557	1745	0	1580	1733	0	0	1827	0
Flt Permitted	0.950			0.950			0.377				0.727	
Satd. Flow (perm)	1557	1842	0	1555	1745	0	627	1733	0	0	1333	0
Right Turn on Red			No				No				Yes	
Satd. Flow (RTOR)												
Link Speed (mph)	35				35				25			
Link Distance (ft)	265				436				378			
Travel Time (s)	5.2				8.5				10.3			
Confl. Peds. (#/hr)	1		1									
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	2%	2%	0%	2%	2%	0%	2%	0%	0%	0%	1%	0%
Adj. Flow (vph)	461	533	65	63	612	28	119	254	27	18	197	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	461	598	0	63	640	0	119	281	0	0	215	0
Number of Detectors	1	1		1	1		1	1		1	1	
Detector Template	Left											
Leading Detector (ft)	35	35		35	35		35	35		20	35	
Trailing Detector (ft)	-5	-5		-5	-5		-5	-5		0	-5	
Detector 1 Position(ft)	-5	-5		-5	-5		-5	-5		0	-5	
Detector 1 Size(ft)	40	40		40	40		40	40		20	40	
Detector 1 Type	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	
Detector 1 Queue (s)	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	
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Detector Phase	5	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	7.0	15.0		3.0	15.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	15.0	20.0		11.0	20.0		12.0	12.0		12.0	12.0	
Total Split (s)	26.0	66.0		11.0	51.0		23.0	23.0		23.0	23.0	
Total Split (%)	26.0%	66.0%		11.0%	51.0%		23.0%	23.0%		23.0%	23.0%	
Maximum Green (s)	18.0	61.0		3.0	46.0		18.0	18.0		18.0	18.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	

Lanes, Volumes, Timings 7: Bridge St (SR 1019)/Bridge St (SR 113) & Nutt Rd (SR 23)
 I:\eng\18195 - French Creek W\traffic\Analysis\2018-05 TIS\Existing\EX 2018 PM.syn Synchro 10 (10.2.20)

McMahon Associates, Inc.

7: Bridge St (SR 1019)/Bridge St (SR 113) & Nutt Rd (SR 23)

French Creek West

2018 Existing Weekday PM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
All-Red Time (s)	5.0	2.0		5.0	2.0		2.0	2.0		2.0	2.0	
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	4.0	
Lead/Lag	Lag	Lag		Lead	Lead							
Lead-Lag Optimize?												
Vehicle Extension (s)	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	
Walk Time (s)	10.0				10.0		7.0		7.0		7.0	
Flash Dont Walk (s)	11.0				11.0		18.0		18.0		18.0	
Pedestrian Calls (#/hr)	0				0		0		0		0	
v/c Ratio	1.56	0.52		1.02	0.78		1.00	0.85		0.85	0.85	
Control Delay	299.6	12.8		169.4	30.4		126.1	64.0		69.1	69.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	299.6	12.8		169.4	30.4		126.1	64.0		69.1	69.1	
Queue Length 50th (ft)	-418	197		-42	330		77	175		134	134	
Queue Length 95th (ft)	#611	284		#128	484		#193	#315		#263	#263	
Internal Link Dist (ft)	185				356		298				272	
Turn Bay Length (ft)	350				720		100				253	
Base Capacity (vph)	295	1142		62	820		119	329		253	253	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	1.56	0.52		1.02	0.78		1.00	0.85		0.85	0.85	
Intersection Summary												
Area Type:	Other											
Cycle Length:	100											
Actuated Cycle Length:	100											
Offset:	0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green, Master Intersection											
Natural Cycle:	90											
Control Type:	Actuated-Coordinated											
-	Volume exceeds capacity, queue is theoretically infinite.											
	Queue shown is maximum after two cycles.											
#	95th percentile volume exceeds capacity, queue may be longer.											
	Queue shown is maximum after two cycles.											
Split and Phases:	7: Bridge St (SR 1019)/Bridge St (SR 113) & Nutt Rd (SR 23)											
11 s	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
66 s	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
23 s	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
51 s	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
26 s	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
23 s	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔

Lanes, Volumes, Timings 7: Bridge St (SR 1019)/Bridge St (SR 113) & Nutt Rd (SR 23)
 I:\eng\18195 - French Creek W\traffic\Analysis\2018-05 TIS\Existing\EX 2018 PM.syn Synchro 10 (10.2.20)

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	452	522	64	62	600	27	117	249	26	18	193	0
Future Volume (vph)	452	522	64	62	600	27	117	249	26	18	193	0
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Ob), 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		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
Adj Sat Flow, veh/h/ln	1756	1830	1863	1756	1757	1791	1782	1818	1818	1863	1846	0
Adj Flow Rate, veh/h	461	533	65	63	612	28	119	254	27	18	197	0
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	0	1	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	0	0	1	1	0
Cap, veh/h	439	944	115	67	663	30	165	307	33	43	211	0
Arrive On Green	0.26	0.59	0.58	0.04	0.40	0.39	0.19	0.19	0.18	0.18	0.19	0.00
Sat Flow, veh/h	1672	1600	195	1672	1668	76	1193	1616	172	24	1112	0
Grp Volume(v), veh/h	461	0	598	63	0	640	119	0	281	215	0	0
Grp Sat Flow(s), veh/h/ln	1672	0	1795	1672	0	1744	1193	0	1788	1135	0	0
Q Serve(g_s), s	26.3	0.0	20.5	3.8	0.0	34.9	1.5	0.0	15.1	2.9	0.0	0.0
Cycle Q Clear(g_c), s	26.3	0.0	20.5	3.8	0.0	34.9	19.0	0.0	15.1	18.0	0.0	0.0
Prop In Lane	1.00		0.11	1.00		0.04	1.00		0.10	0.08		0.00
Lane Grp Cap(c), veh/h	439	0	1059	67	0	693	165	0	340	243	0	0
V/C Ratio(X)	1.05	0.00	0.56	0.94	0.00	0.92	0.72	0.00	0.83	0.88	0.00	0.00
Avail Cap(c_a), veh/h	439	0	1113	67	0	820	165	0	340	243	0	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	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	36.9	0.0	12.6	47.9	0.0	28.7	43.4	0.0	39.0	38.9	0.0	0.0
Incr Delay (d2), s/veh	56.5	0.0	2.2	89.6	0.0	19.9	14.1	0.0	15.4	29.4	0.0	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	34.2	0.0	16.2	6.1	0.0	28.0	7.1	0.0	13.8	12.6	0.0	0.0
LnGrp Delay(d),s/veh	93.4	0.0	14.8	137.4	0.0	48.6	57.5	0.0	54.4	68.3	0.0	0.0
LnGrp LOS	F		B	F		D	E		D	E		
Approach Vol, veh/h	1059			703			400			215		
Approach Delay, s/veh	49.0			56.6			55.3			68.3		
Approach LOS	D			E			E			E		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	11.0	66.0		23.0	33.3	43.7		23.0				
Change Period (Y+Rc), s	8.0	* 8		5.0	8.0	5.0		5.0				
Max Green Setting (Gmax), s	3.0	* 61		18.0	18.0	46.0		18.0				
Max Q Clear Time (g_c+I1), s	6.3	22.5		20.0	28.8	36.9		21.5				
Green Ext Time (p_c), s	0.0	2.4		0.0	0.0	1.8		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay				54.1								
HCM 2010 LOS				D								
Notes												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	28	2	20	0	0	0	14	600	25	19	640	13
Future Volume (vph)	28	2	20	0	0	0	14	600	25	19	640	13
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	16	16	16	12	12	12	11	11	11
Grade (%)							-11%		2%			
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												
Frt	0.945						0.995		0.997			
Flt Protected	0.973						0.999		0.999			
Satd. Flow (prot)	0	1592	0	0	0	0	0	1752	0	0	1700	0
Flt Permitted	0.973						0.999		0.999			
Satd. Flow (perm)	0	1592	0	0	0	0	0	1752	0	0	1700	0
Link Speed (mph)	25						25		25			
Link Distance (ft)	284						281		356			
Travel Time (s)	7.7						7.7		9.7			
Confl. Peds. (#/hr)	2		1		4		4					
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	1%	4%	0%	1%	0%
Adj. Flow (vph)	29	2	21	0	0	0	0	15	625	26	20	667
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	52	0	0	0	0	0	666	0	0	701	0
Sign Control	Stop			Stop			Free			Free		
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											

Intersection												
Int Delay, s/veh	1.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔						↔			↔		
Traffic Vol, veh/h	28	2	20	0	0	0	14	600	25	19	640	13
Future Vol, veh/h	28	2	20	0	0	0	14	600	25	19	640	13
Conflicting Peds, #/hr	2	0	1	0	0	0	4	0	0	0	0	4
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	-
Grade, %	-	1	-	-	-11	-	-	2	-	-	2	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	0	0	0	0	1	4	0	1	0
Mvmt Flow	29	2	21	0	0	0	15	625	26	20	667	14

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1388	1399	679	685	0	0
Stage 1	718	718	-	-	-	-
Stage 2	670	681	-	-	-	-
Critical Hdwy	6.6	6.7	6.3	4.3	-	4.3
Critical Hdwy Stg 1	5.6	5.7	-	-	-	-
Critical Hdwy Stg 2	5.6	5.7	-	-	-	-
Follow-up Hdwy	3	4	3.1	3	-	3
Pot Cap-1 Maneuver	159	131	467	695	-	714
Stage 1	522	419	-	-	-	-
Stage 2	552	436	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	146	0	465	693	-	714
Mov Cap-2 Maneuver	146	0	-	-	-	-
Stage 1	480	0	-	-	-	-
Stage 2	550	0	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	28.6	0.2	0.3
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	SBL	SBT	SBR
Capacity (veh/h)	693	-	-	204	714	-	-
HCM Lane V/C Ratio	0.021	-	-	0.255	0.028	-	-
HCM Control Delay (s)	10.3	0	-	28.6	10.2	0	-
HCM Lane LOS	B	A	-	D	B	A	-
HCM 95th %tile Q(veh)	0.1	-	-	1	0.1	-	-

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑			↑
Traffic Volume (vph)	0	1038	717	0	0	483
Future Volume (vph)	0	1038	717	0	0	483
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	15	15
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.865
Fit Protected						
Satd. Flow (prot)	0	1765	1765	0	0	1696
Fit Permitted						
Satd. Flow (perm)	0	1765	1765	0	0	1696
Link Speed (mph)		35	35			25
Link Distance (ft)		630	265			329
Travel Time (s)		12.3	5.2			9.0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	2%	2%	0%	0%	1%
Adj. Flow (vph)	0	1059	732	0	0	493
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1059	732	0	0	493
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized

Intersection						
Int Delay, s/veh	21.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑			↑
Traffic Vol, veh/h	0	1038	717	0	0	483
Future Vol, veh/h	0	1038	717	0	0	483
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	98	98	98	98	98	98
Heavy Vehicles, %	0	2	2	0	0	1
Mvmt Flow	0	1059	732	0	0	493

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	-	0	- 0 - 732
Stage 1	-	-	- - -
Stage 2	-	-	- - -
Critical Hdwy	-	-	- - 6.21
Critical Hdwy Stg 1	-	-	- - -
Critical Hdwy Stg 2	-	-	- - -
Follow-up Hdwy	-	-	- - 3
Pot Cap-1 Maneuver	0	-	- 0 - 453
Stage 1	0	-	- 0 -
Stage 2	0	-	- 0 -
Platoon blocked, %	-	-	- - -
Mov Cap-1 Maneuver	-	-	- - 453
Mov Cap-2 Maneuver	-	-	- - -
Stage 1	-	-	- - -
Stage 2	-	-	- - -

Approach	EB	WB	SB
HCM Control Delay, s	0	0	98.2
HCM LOS			F

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	453
HCM Lane V/C Ratio	-	-	1.088
HCM Control Delay (s)	-	-	98.2
HCM Lane LOS	-	-	F
HCM 95th %tile Q(veh)	-	-	16.3

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

Appendix J

Future (2025) without Development Capacity/Level-of-Service Analysis Worksheets

	→	↖	↗	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↑	↑
Traffic Volume (vph)	38	257	530	53	96	94
Future Volume (vph)	38	257	530	53	96	94
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	15	15	14	14	16	16
Grade (%)	-10%			2%	9%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.882			0.933		
Flt Protected				0.957	0.975	
Satd. Flow (prot)	1772	0	0	1787	1704	0
Flt Permitted				0.957	0.975	
Satd. Flow (perm)	1772	0	0	1787	1704	0
Link Speed (mph)	25			25	25	
Link Distance (ft)	292			227	273	
Travel Time (s)	8.0			6.2	7.4	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	20%	1%	2%	0%	2%	6%
Adj. Flow (vph)	41	276	570	57	103	101
Shared Lane Traffic (%)						
Lane Group Flow (vph)	317	0	0	627	204	0
Sign Control	Stop			Stop	Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized

	→	↖	↗	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↑	↑
Traffic Volume (veh/h)	38	257	530	53	96	94
Future Volume (Veh/h)	38	257	530	53	96	94
Sign Control	Stop			Stop	Free	
Grade	-10%			2%	9%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	41	276	570	57	103	101
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	307	0	553	256	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	307	0	553	256	0	
tC, single (s)	6.7	6.2	7.1	6.5	4.1	
tC, 2 stage (s)						
tF (s)	4.2	3.3	3.5	4.0	2.2	
p0 queue free %	92	75	0	91	94	
cM capacity (veh/h)	542	1088	297	609	1623	

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	317	627	204
Volume Left	0	570	103
Volume Right	276	0	101
cSH	963	311	1623
Volume to Capacity	0.33	2.01	0.06
Queue Length 95th (ft)	36	1118	5
Control Delay (s)	10.6	494.6	4.0
Lane LOS	B	F	A
Approach Delay (s)	10.6	494.6	4.0
Approach LOS	B	F	

Intersection Summary

Average Delay 273.7
Intersection Capacity Utilization 74.5% ICU Level of Service D
Analysis Period (min) 15

	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group						
Lane Configurations	↔	↔	↕	↔	↔	↕
Traffic Volume (vph)	77	10	172	7	0	696
Future Volume (vph)	77	10	172	7	0	696
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	13	12	12	14	14
Grade (%)	1%		1%			-2%
Storage Length (ft)	55	0		0	0	
Storage Lanes	1	1		0	0	
Taper Length (ft)	25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850	0.995			
Frt Protected	0.950					
Satd. Flow (prot)	1701	1573	1670	0	0	1920
Frt Permitted	0.950					
Satd. Flow (perm)	1701	1573	1670	0	0	1920
Link Speed (mph)	20		25			25
Link Distance (ft)	275		478			154
Travel Time (s)	9.4		13.0			4.2
Confl. Peds. (#/hr)	3	1		2	2	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	0%	7%	0%	0%	1%
Adj. Flow (vph)	86	11	191	8	0	773
Shared Lane Traffic (%)						
Lane Group Flow (vph)	86	11	199	0	0	773
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection						
Int Delay, s/veh	1.9					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔	↔	↕	↔	↔	↕
Traffic Vol, veh/h	77	10	172	7	0	696
Future Vol, veh/h	77	10	172	7	0	696
Conflicting Peds, #/hr	3	1	0	2	2	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	55	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	1	-	1	-	-	-2
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	0	7	0	0	1
Mvmt Flow	86	11	191	8	0	773

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	973	198	0	0	201
Stage 1	197	-	-	-	-
Stage 2	776	-	-	-	-
Critical Hdwy	6.6	6.3	-	-	4.3
Critical Hdwy Stg 1	5.6	-	-	-	-
Critical Hdwy Stg 2	5.6	-	-	-	-
Follow-up Hdwy	3	3.1	-	-	3
Pot Cap-1 Maneuver	294	893	-	-	1025
Stage 1	958	-	-	-	-
Stage 2	487	-	-	-	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	293	890	-	-	1023
Mov Cap-2 Maneuver	293	-	-	-	-
Stage 1	956	-	-	-	-
Stage 2	486	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	20.8	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	293	890	1023	-
HCM Lane V/C Ratio	-	-	0.292	0.012	-	-
HCM Control Delay (s)	-	-	22.3	9.1	0	-
HCM Lane LOS	-	-	C	A	A	-
HCM 95th %tile Q(veh)	-	-	1.2	0	0	-

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French Creek West
2025 Future Weekday AM - without Dev

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔		↔		↔		↔		↔		↔	
Traffic Volume (vph)	9	317	21	22	335	55	25	97	53	334	418	83
Future Volume (vph)	9	317	21	22	335	55	25	97	53	334	418	83
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	12	11	11	11	10	10	10
Grade (%)	0%		1%		-2%		3%		3%		3%	
Storage Length (ft)	0	0	0	0	0	0	0	135	0	0	0	0
Storage Lanes	0	0	0	0	0	0	0	1	0	0	0	0
Taper Length (ft)	25	0	0	25	0	0	25	0	0	25	0	0
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		1.00		1.00	
Frt	0.992		0.982		0.959		0.975		0.975		0.975	
Flt Protected	0.999		0.997		0.993		0.950		0.950		0.950	
Satd. Flow (prot)	0	1659	0	0	1596	0	0	1546	0	1556	1561	0
Flt Permitted	0.986		0.968		0.836		0.667		0.667		0.667	
Satd. Flow (perm)	0	1637	0	0	1549	0	0	1301	0	1091	1561	0
Right Turn on Red	Yes											
Satd. Flow (RTOR)	6		15		47		22		22		22	
Link Speed (mph)	25		25		25		25		25		25	
Link Distance (ft)	1070		1069		731		346		346		346	
Travel Time (s)	29.2		29.2		19.9		9.4		9.4		9.4	
Confl. Peds. (#/hr)	4		4		1		1		1		1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	8%	0%	0%	11%	7%	6%	11%	2%	1%	3%	3%
Adj. Flow (vph)	10	352	23	24	372	61	28	108	59	371	464	92
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	385	0	0	457	0	0	195	0	371	556	0
Number of Detectors	1	1	1	1	1	1	1	1	1	1	1	1
Detector Template	Left											
Leading Detector (ft)	20	35	20	35	20	35	35	35	35	35	35	35
Trailing Detector (ft)	0	-5	0	-5	0	-5	-5	-5	-5	-5	-5	-5
Detector 1 Position(ft)	0	-5	0	-5	0	-5	-5	-5	-5	-5	-5	-5
Detector 1 Size(ft)	20	40	20	40	20	40	40	40	40	40	40	40
Detector 1 Type	CI+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	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	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	0.0	0.0	0.0
Turn Type	Perm	NA										
Protected Phases	2		6		8		4		4		4	
Permitted Phases	2		6		8		8		4		4	
Detector Phase	2	2	6	6	8	8	8	8	4	4	4	4
Switch Phase												
Minimum Initial (s)	21.0	21.0	21.0	21.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	27.0	27.0	27.0	27.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0
Total Split (s)	28.0	28.0	28.0	28.0	32.0	32.0	32.0	32.0	32.0	32.0	32.0	32.0
Total Split (%)	46.7%	46.7%	46.7%	46.7%	53.3%	53.3%	53.3%	53.3%	53.3%	53.3%	53.3%	53.3%
Maximum Green (s)	22.0	22.0	22.0	22.0	26.0	26.0	26.0	26.0	26.0	26.0	26.0	26.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Lanes, Volumes, Timings
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3: S Main St & Bridge St
Synchro 10 (10.2.20)

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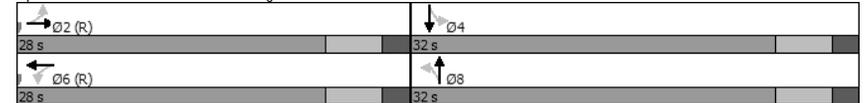
French Creek West
2025 Future Weekday AM - without Dev

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-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	
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	3.0	3.0	3.0
Recall Mode	C-Min	C-Min	C-Min	C-Min	C-Min	C-Min	None	None	None	None	None	None
Walk Time (s)	1.0	1.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Flash Dont Walk (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
v/c Ratio	0.56		0.70		0.34		0.82		0.84		0.84	
Control Delay	17.9		20.6		10.1		32.3		28.4		28.4	
Queue Delay	0.0		0.0		0.0		0.0		0.0		0.0	
Total Delay	17.9		20.6		10.1		32.3		28.4		28.4	
Queue Length 50th (ft)	107		103		31		106		154		154	
Queue Length 95th (ft)	187		199		70		#240		#318		#318	
Internal Link Dist (ft)	990		989		651		266		266		266	
Turn Bay Length (ft)					135							
Base Capacity (vph)	687		656		611		490		714		714	
Starvation Cap Reductn	0		0		0		0		0		0	
Spillback Cap Reductn	0		0		0		0		0		0	
Storage Cap Reductn	0		0		0		0		0		0	
Reduced v/c Ratio	0.56		0.70		0.32		0.76		0.78		0.78	

Intersection Summary

Area Type: Other
 Cycle Length: 60
 Actuated Cycle Length: 60
 Offset: 42 (70%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 3: S Main St & Bridge St



Lanes, Volumes, Timings
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3: S Main St & Bridge St
Synchro 10 (10.2.20)

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3: S Main St & Bridge St

French Creek West
2025 Future Weekday AM - without Dev

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔			↔			↔			↔	↔	
Traffic Volume (veh/h)	9	317	21	22	335	55	25	97	53	334	418	83
Future Volume (veh/h)	9	317	21	22	335	55	25	97	53	334	418	83
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Ob), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	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
Adj Sat Flow, veh/h/ln	1800	1677	1800	1791	1630	1791	1818	1690	1818	1755	1721	1773
Adj Flow Rate, veh/h	10	352	23	24	372	61	28	108	58	371	464	92
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	1	1	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh. %	8	8	8	11	11	11	11	11	11	1	3	3
Cap, veh/h	67	588	38	78	504	80	102	329	154	459	628	125
Arrive On Green	0.37	0.38	0.37	0.49	0.51	0.49	0.43	0.45	0.43	0.45	0.45	0.43
Sat Flow, veh/h	14	1535	98	38	1316	209	74	731	343	1208	1395	277
Grp Volume(v), veh/h	385	0	0	457	0	0	194	0	0	371	0	556
Grp Sat Flow(s), veh/h/ln	1647	0	0	1563	0	0	1148	0	0	1208	0	1672
Q Serve(g_s), s	0.0	0.0	0.0	2.7	0.0	0.0	1.0	0.0	0.0	10.0	0.0	16.5
Cycle Q Clear(g_c), s	11.3	0.0	0.0	14.3	0.0	0.0	17.5	0.0	0.0	27.0	0.0	16.5
Prop In Lane	0.03		0.06	0.05		0.13	0.14		0.30	1.00		0.17
Lane Grp Cap(c), veh/h	666	0	0	636	0	0	566	0	0	459	0	752
V/C Ratio(X)	0.58	0.00	0.00	0.72	0.00	0.00	0.34	0.00	0.00	0.81	0.00	0.74
Avail Cap(c_a), veh/h	666	0	0	636	0	0	566	0	0	459	0	752
HCM Platoon Ratio	1.00	1.00	1.00	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	0.91	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	14.9	0.0	0.0	12.6	0.0	0.0	10.9	0.0	0.0	20.4	0.0	13.7
Incr Delay (d2), s/veh	3.6	0.0	0.0	6.3	0.0	0.0	0.4	0.0	0.0	10.3	0.0	3.9
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	10.0	0.0	0.0	11.5	0.0	0.0	3.8	0.0	0.0	11.9	0.0	12.9
LnGrp Delay(d),s/veh	18.6	0.0	0.0	18.9	0.0	0.0	11.2	0.0	0.0	30.7	0.0	17.5
LnGrp LOS	B		B		B		B		C		B	
Approach Vol, veh/h	385			457			194			927		
Approach Delay, s/veh	18.6			18.9			11.2			22.8		
Approach LOS	B			B			B			C		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	28.0		32.0		28.0		32.0					
Change Period (Y+Rc), s	6.0		6.0		6.0		6.0					
Max Green Setting (Gmax), s	22.0		26.0		22.0		26.0					
Max Q Clear Time (g_c+I1), s	13.3		29.5		16.3		19.5					
Green Ext Time (p_c), s	1.0		0.0		1.0		0.4					
Intersection Summary												
HCM 2010 Ctrl Delay	19.9											
HCM 2010 LOS	B											

HCM 2010 Signalized Intersection Summary
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3: S Main St & Bridge St
Synchro 10 (10.2.20)

McMahon Associates, Inc.
4: Starr St (SR 29) & Bridge St

French Creek West
2025 Future Weekday AM - without Dev

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔		↔		↔	
Traffic Volume (vph)	669	200	576	466	99	506
Future Volume (vph)	669	200	576	466	99	506
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	16	16	10	11	10	12
Grade (%)	1%		1%		0%	
Storage Length (ft)	0		215		320	
Storage Lanes	0		1		1	
Taper Length (ft)			25		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.969				0.850	
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1890		0		1527	
Flt Permitted			0.069		0.950	
Satd. Flow (perm)	1890		0		111	
Right Turn on Red	Yes				Yes	
Satd. Flow (RTOR)	15				119	
Link Speed (mph)	25		35		25	
Link Distance (ft)	1069		499		559	
Travel Time (s)	29.2		9.7		15.2	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	5%	1%	4%	12%	9%	4%
Adj. Flow (vph)	697	208	600	485	103	527
Shared Lane Traffic (%)						
Lane Group Flow (vph)	905	0	600	485	103	527
Number of Detectors	1		1		1	
Detector Template						
Leading Detector (ft)	35		35		35	
Trailing Detector (ft)	-5		-5		-5	
Detector 1 Position(ft)	-5		-5		-5	
Detector 1 Size(ft)	40		40		40	
Detector 1 Type	Cl+Ex		Cl+Ex		Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0		0.0	
Detector 1 Queue (s)	0.0		0.0		0.0	
Detector 1 Delay (s)	0.0		0.0		0.0	
Turn Type	NA		pm+pt		Prot pm+ov	
Protected Phases	2		1		6	
Permitted Phases			6		8	
Detector Phase	2		1		6	
Switch Phase						
Minimum Initial (s)	27.0		7.0		27.0	
Minimum Split (s)	32.0		12.0		32.0	
Total Split (s)	54.0		44.0		98.0	
Total Split (%)	45.0%		36.7%		81.7%	
Maximum Green (s)	49.0		39.0		93.0	
Yellow Time (s)	3.0		3.0		3.0	
All-Red Time (s)	2.0		2.0		2.0	
Lost Time Adjust (s)	-1.0		-1.0		-1.0	

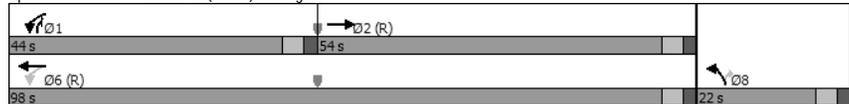
Lanes, Volumes, Timings
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4: Starr St (SR 29) & Bridge St
Synchro 10 (10.2.20)

	→	↖	↙	←	↘	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lag		Lead			Lead
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	C-Min		None	C-Min	None	None
Walk Time (s)	9.0		9.0	8.0		
Flash Dont Walk (s)	10.0		10.0	8.0		
Pedestrian Calls (#/hr)	0		0	0		
w/c Ratio	1.06		1.07	0.39	0.59	0.68
Control Delay	77.5		90.5	4.3	63.4	22.5
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	77.5		90.5	4.3	63.4	22.5
Queue Length 50th (ft)	-765		-471	83	76	236
Queue Length 95th (ft)	#1060		#704	142	133	347
Internal Link Dist (ft)	989			419	479	
Turn Bay Length (ft)			215		320	
Base Capacity (vph)	854		562	1258	219	775
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced w/c Ratio	1.06		1.07	0.39	0.47	0.68

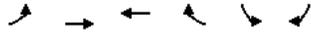
Intersection Summary
 Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 110
 Control Type: Actuated-Coordinated
 - Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 4: Starr St (SR 29) & Bridge St



	→	↖	↙	←	↘	↗		
Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations	↖		↙	↖	↙	↖		
Traffic Volume (veh/h)	669	200	576	466	99	506		
Future Volume (veh/h)	669	200	576	466	99	506		
Number	2	12	1	6	3	18		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1790	1863	1722	1599	1651	1731		
Adj Flow Rate, veh/h	697	191	600	485	103	495		
Adj No. of Lanes	1	0	1	1	1	1		
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96		
Percent Heavy Veh. %	5	5	4	12	9	4		
Cap, veh/h	564	155	609	1253	236	711		
Arrive On Green	0.83	0.82	0.33	0.78	0.15	0.15		
Sat Flow, veh/h	1353	371	1640	1599	1573	1471		
Grp Volume(v), veh/h	0	888	600	485	103	495		
Grp Sat Flow(s), veh/h/ln	0	1724	1640	1599	1573	1471		
Q Serve(g_s), s	0.0	50.0	38.9	11.3	7.1	18.0		
Cycle Q Clear(g_c), s	0.0	50.0	38.9	11.3	7.1	18.0		
Prop In Lane	0.22	1.00			1.00	1.00		
Lane Grp Cap(c), veh/h	0	718	609	1253	236	711		
V/C Ratio(X)	0.00	1.24	0.98	0.39	0.44	0.70		
Avail Cap(c_a), veh/h	0	718	609	1253	236	711		
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	0.00	0.67	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	0.0	10.2	34.7	4.0	46.4	24.1		
Incr Delay (d2), s/veh	0.0	114.3	32.5	0.9	1.3	3.0		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(95%),veh/ln	0.0	80.6	33.4	8.9	5.8	19.2		
LnGrp Delay(d),s/veh	0.0	124.6	67.3	4.9	47.7	27.1		
LnGrp LOS		F	E	A	D	C		
Approach Vol, veh/h	888			1085	598			
Approach Delay, s/veh	124.6			39.4	30.6			
Approach LOS	F			D	C			
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	44.0	54.0				98.0		22.0
Change Period (Y+Rc), s	5.0	5.0				5.0		5.0
Max Green Setting (Gmax), s	39.0	49.0				93.0		17.0
Max Q Clear Time (g_c+1), s	41.4	52.0				13.8		20.5
Green Ext Time (p_c), s	0.0	0.0				1.8		0.0

Intersection Summary
 HCM 2010 Ctrl Delay: 66.8
 HCM 2010 LOS: E



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↔	↑	↔		↔	
Traffic Volume (vph)	10	1362	861	3	4	9
Future Volume (vph)	10	1362	861	3	4	9
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	14	11	11	12	12
Grade (%)		2%	-2%		3%	
Storage Length (ft)	100			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					0.907	
Flt Protected	0.950				0.985	
Satd. Flow (prot)	1169	1828	1653	0	1032	0
Flt Permitted	0.950				0.985	
Satd. Flow (perm)	1169	1828	1653	0	1032	0
Link Speed (mph)		35	35		25	
Link Distance (ft)		253	844		353	
Travel Time (s)		4.9	16.4		9.6	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	40%	4%	6%	100%	75%	44%
Adj. Flow (vph)	10	1404	888	3	4	9
Shared Lane Traffic (%)						
Lane Group Flow (vph)	10	1404	891	0	13	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↔	↑	↔		↔	
Traffic Vol, veh/h	10	1362	861	3	4	9
Future Vol, veh/h	10	1362	861	3	4	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	2	-2	-	3	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	40	4	6	100	75	44
Mvmt Flow	10	1404	888	3	4	9

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	891	0	0 2314 890
Stage 1	-	-	- 890 -
Stage 2	-	-	- 1424 -
Critical Hdwy	4.7	-	- 7.75 6.94
Critical Hdwy Stg 1	-	-	- 6.75 -
Critical Hdwy Stg 2	-	-	- 6.75 -
Follow-up Hdwy	3.2	-	- 3.7 3.5
Pot Cap-1 Maneuver	509	-	- 18 276
Stage 1	-	-	- 280 -
Stage 2	-	-	- 128 -
Platoon blocked, %	-	-	- -
Mov Cap-1 Maneuver	509	-	- 18 276
Mov Cap-2 Maneuver	-	-	- 82 -
Stage 1	-	-	- 274 -
Stage 2	-	-	- 128 -

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	29.5
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	509	-	-	-	160
HCM Lane V/C Ratio	0.02	-	-	-	0.084
HCM Control Delay (s)	12.2	-	-	-	29.5
HCM Lane LOS	B	-	-	-	D
HCM 95th %tile Q(veh)	0.1	-	-	-	0.3



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕	↔	↔	↕	↔	↔	↕	↔	↔	↕	↔
Traffic Volume (vph)	14	1276	5	3	816	5	1	0	2	2	1	20
Future Volume (vph)	14	1276	5	3	816	5	1	0	2	2	1	20
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	11	11	11	14	14	14	14	14	14
Grade (%)	2%				2%				-4%		-3%	
Storage Length (ft)	100		0	100		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	0.999				0.999				0.910		0.881	
Flt Protected	0.950		0.950				0.984				0.996	
Satd. Flow (prot)	1501	1655	0	1636	1578	0	0	1315	0	0	1320	0
Flt Permitted	0.950		0.950				0.984				0.996	
Satd. Flow (perm)	1501	1655	0	1636	1578	0	0	1315	0	0	1320	0
Link Speed (mph)	35				35				25		25	
Link Distance (ft)	844				630				265		274	
Travel Time (s)	16.4				12.3				7.2		7.5	
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 (%)	9%	4%	0%	0%	9%	20%	0%	0%	50%	50%	0%	29%
Adj. Flow (vph)	15	1372	5	3	877	5	1	0	2	2	1	22
Shared Lane Traffic (%)												
Lane Group Flow (vph)	15	1377	0	3	882	0	0	3	0	0	25	0
Sign Control	Free				Free				Stop		Stop	

Intersection Summary
Area Type: Other
Control Type: Unsignalized

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	14	1276	5	3	816	5	1	0	2	2	1	20
Future Vol, veh/h	14	1276	5	3	816	5	1	0	2	2	1	20
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None									
Storage Length	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	2	-	-	2	-	-	-	4	-	-	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	9	4	0	0	9	20	0	0	50	50	0	29
Mvmt Flow	15	1372	5	3	877	5	1	0	2	2	1	22

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	882	0	0	1377
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	4.5	-	-	4.3
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	3.1	-	-	3
Pot Cap-1 Maneuver	550	-	-	389
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	550	-	-	389
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.1	49	32
HCM LOS			E	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	85	550	-	-	389	-	-	158
HCM Lane V/C Ratio	0.038	0.027	-	-	0.008	-	-	0.157
HCM Control Delay (s)	49	11.7	-	-	14.3	-	-	32
HCM Lane LOS	E	B	-	-	B	-	-	D
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	0.5

McMahon Associates, Inc.

French Creek West

7: Bridge St (SR 1019)/Bridge St (SR 113) & Nutt Rd (SR 23)

2025 Future Weekday AM - without Dev



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	416	804	127	78	396	28	56	163	53	17	340	0
Future Volume (vph)	416	804	127	78	396	28	56	163	53	17	340	0
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	13	13	10
Grade (%)	1%		1%		-2%		1%		1%		1%	
Storage Length (ft)	350		0	720		0	100		0	205		0
Storage Lanes	1		0	1		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
Ped Bike Factor	1.00	1.00		1.00	1.00							
Frt	0.979				0.990				0.963			
Flt Protected	0.950			0.950			0.950				0.998	
Satd. Flow (prot)	1572	1816	0	1588	1697	0	1580	1635	0	0	1830	0
Flt Permitted	0.950			0.950			0.194				0.977	
Satd. Flow (perm)	1565	1816	0	1585	1697	0	323	1635	0	0	1791	0
Right Turn on Red			No				No				es	
Satd. Flow (RTOR)												
Link Speed (mph)	35			35			25			25		
Link Distance (ft)	265			436			378			352		
Travel Time (s)	5.2			8.5			10.3			9.6		
Confl. Peds. (#/hr)	3		3		3		3					
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%	0%
Ad. Flow (vph)	457	884	140	86	435	31	62	179	58	19	374	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	457	1024	0	86	466	0	62	237	0	0	393	0
Number of Detectors	1	1		1	1		1	1		1	1	
Detector Template	Left											
Leading Detector (ft)	35	35		35	35		35	35		20	35	
Trailing Detector (ft)	-5	-5		-5	-5		-5	-5		0	-5	
Detector 1 Position(ft)	-5	-5		-5	-5		-5	-5		0	-5	
Detector 1 Size(ft)	40	40		40	40		40	40		20	40	
Detector 1 Type	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	
Detector 1 Queue (s)	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	
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8	8		4		
Detector Phase	5	2		1	6		8	8		4		
Switch Phase												
Minimum Initial (s)	7.0	15.0		7.0	15.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	15.0	20.0		15.0	20.0		12.0	12.0		12.0	12.0	
Total Split (s)	38.0	70.0		18.0	50.0		32.0	32.0		32.0	32.0	
Total Split (%)	31.7%	58.3%		15.0%	41.7%		26.7%	26.7%		26.7%	26.7%	
Maximum Green (s)	30.0	65.0		10.0	45.0		27.0	27.0		27.0	27.0	
ellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	

Lanes, Volumes, Timings

7: Bridge St (SR 1019)/Bridge St (SR 113) & Nutt Rd (SR 23)

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Synchro 10 (10.2.20)

McMahon Associates, Inc.

French Creek West

7: Bridge St (SR 1019)/Bridge St (SR 113) & Nutt Rd (SR 23)

2025 Future Weekday AM - without Dev



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
All-Red Time (s)	5.0	2.0		5.0	2.0		5.0	2.0		2.0	2.0	
Lost Time Ad ust (s)	-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
Lead/Lag	Lag	Lag		Lead	Lead							
Lead-Lag Optimize												
Vehicle Extension (s)	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	
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
v/c Ratio	0.91	1.01		0.62	0.85		0.83	0.63		0.95		
Control Delay	64.6	59.7		72.8	52.4		111.2	49.7		78.6		
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0		
Total Delay	64.6	59.7		72.8	52.4		111.2	49.7		78.6		
Queue Length 50th (ft)	343	846		65	332		46	166		301		
Queue Length 95th (ft)	#616	#1099		#129	432		#133	254		#493		
Internal Link Dist (ft)	185			356			298			272		
Turn Bay Length (ft)	350			720			100					
Base Capacity (vph)	501	1009		145	650		75	381		417		
Starvation Cap Reductn	0	0		0	0		0	0		0		
Spillback Cap Reductn	0	0		0	0		0	0		0		
Storage Cap Reductn	0	0		0	0		0	0		0		
Reduced v/c Ratio	0.91	1.01		0.59	0.72		0.83	0.62		0.94		

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green, Master Intersection

Natural Cycle: 100

Control Type: Actuated-Coordinated

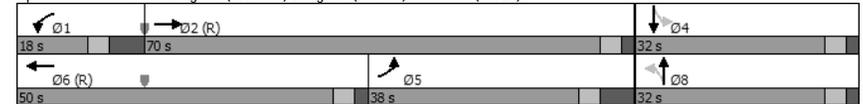
Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 7: Bridge St (SR 1019)/Bridge St (SR 113) & Nutt Rd (SR 23)



Lanes, Volumes, Timings

7: Bridge St (SR 1019)/Bridge St (SR 113) & Nutt Rd (SR 23)

I:\eng\18195 - French Creek W\traffic\Analysis\2018-05 TIS\Existing\WO 2025 AM.syn

Synchro 10 (10.2.20)

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	416	804	127	78	396	28	56	163	53	17	340	0
Future Volume (veh/h)	416	804	127	78	396	28	56	163	53	17	340	0
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Ob), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Ad (A pbT)	1.00		1.00	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Ad	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ad Sat Flow, veh/h/ln	1773	1816	1863	1791	1718	1791	1782	1756	1818	1863	1845	0
Ad Flow Rate, veh/h	457	884	140	86	435	31	62	179	58	19	374	0
Ad No. of Lanes	1	1	0	1	1	0	1	1	0	0	1	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, %	1	3	3	0	4	4	2	4	4	1	1	0
Cap, veh/h	722	962	152	127	476	34	135	297	96	40	370	0
Arrive On Green	0.43	0.63	0.62	0.07	0.30	0.29	0.23	0.23	0.22	0.22	0.23	0.00
Sat Flow, veh/h	1689	1530	242	1706	1584	113	1014	1272	412	38	1586	0
Grp Volume(v), veh/h	457	0	1024	86	0	466	62	0	237	393	0	0
Grp Sat Flow(s), veh/h/ln	1689	0	1772	1706	0	1697	1014	0	1684	1624	0	0
Q Serve(g s), s	25.5	0.0	61.0	5.9	0.0	31.8	0.0	0.0	15.1	11.9	0.0	0.0
Cycle Q Clear(g c), s	25.5	0.0	61.0	5.9	0.0	31.8	25.9	0.0	15.1	27.0	0.0	0.0
Prop In Lane	1.00		0.14	1.00		0.07	1.00		0.24	0.05		0.00
Lane Grp Cap(c), veh/h	722	0	1115	127	0	510	135	0	393	397	0	0
V/C Ratio(X)	0.63	0.00	0.92	0.68	0.00	0.91	0.46	0.00	0.60	0.99	0.00	0.00
Avail Cap(c a), veh/h	722	0	1115	156	0	651	135	0	393	397	0	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	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	26.9	0.0	19.6	54.1	0.0	40.5	45.2	0.0	41.2	46.5	0.0	0.0
Incr Delay (d2), s/veh	1.8	0.0	13.4	8.2	0.0	23.2	2.4	0.0	2.6	42.5	0.0	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	17.9	0.0	43.3	5.5	0.0	25.2	3.8	0.0	11.7	24.7	0.0	0.0
LnGrp Delay(d),s/veh	28.7	0.0	33.0	62.4	0.0	63.7	47.6	0.0	43.8	89.0	0.0	0.0
LnGrp LOS	C		C E		E		D		D F			
Approach Vol, veh/h	1481			552			299			393		
Approach Delay, s/veh	31.7			63.5			44.6			89.0		
Approach LOS	C			E			D			F		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	4		5	6	8					
Phs Duration (G Rc), s	15.9	82.5	32.0		58.3	40.1	32.0					
Change Period (Rc), s	8.0	8	5.0		8.0	5.0	5.0					
Max Green Setting (Gmax), s	10.0	65	27.0		30.0	45.0	27.0					
Max Q Clear Time (g c I1), s	8.4	63.0	29.0		28.0	33.8	28.4					
Green Ext Time (p c), s	0.0	1.1	0.0		0.4	1.3	0.0					
Intersection Summary												
HCM 2010 Ctrl Delay				47.8								
HCM 2010 LOS				D								
Notes												

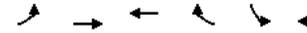
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	5	12	0	0	0	8	544	16	19	710	7
Future Volume (vph)	29	5	12	0	0	0	8	544	16	19	710	7
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	16	16	16	12	12	12	11	11	11
Grade (%)							-11%		2%			
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												
Frt	0.966						0.996		0.999			
Flt Protected	0.969						0.999		0.999			
Satd. Flow (prot)	0	1527	0	0	0	0	0	1677	0	0	1659	0
Flt Permitted	0.969						0.999		0.999			
Satd. Flow (perm)	0	1527	0	0	0	0	0	1677	0	0	1659	0
Link Speed (mph)	25						25		25			
Link Distance (ft)	284						281		356			
Travel Time (s)	7.7						7.7		9.7			
Confl. Peds. (#/hr)	4		1		8				8			
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	4%	0%	14%	0%	0%	0%	0%	0%	6%	0%	28%	3%
Adj. Flow (vph)	30	5	12	0	0	0	8	561	16	20	732	7
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	47	0	0	0	0	0	585	0	0	759	0
Sign Control	Stop			Stop			Free			Free		
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											

Intersection												
Int Delay, s/veh	1.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔						↔			↔		
Traffic Vol, veh/h	29	5	12	0	0	0	8	544	16	19	710	7
Future Vol, veh/h	29	5	12	0	0	0	8	544	16	19	710	7
Conflicting Peds, #/hr	4	0	1	0	0	0	8	0	0	0	0	8
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	-
Grade, %	-	1	-	-	-11	-	-	2	-	-	2	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	4	0	14	0	0	0	0	6	0	28	3	0
Mvmt Flow	30	5	12	0	0	0	8	561	16	20	732	7

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1373	1377	745	747	0	0
Stage 1	784	784	-	-	-	-
Stage 2	589	593	-	-	-	-
Critical Hdwy	6.64	6.7	6.44	4.3	-	4.6
Critical Hdwy Stg 1	5.64	5.7	-	-	-	-
Critical Hdwy Stg 2	5.64	5.7	-	-	-	-
Follow-up Hdwy	3	4	3.2	2.2	-	2.452
Pot Cap-1 Maneuver	160	135	406	835	-	849
Stage 1	479	390	-	-	-	-
Stage 2	603	481	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	149	0	403	829	-	849
Mov Cap-2 Maneuver	149	0	-	-	-	-
Stage 1	450	0	-	-	-	-
Stage 2	599	0	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	31.4	0.1	0.2
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	SBL	SBT	SBR
Capacity (veh/h)	829	-	-	183	849	-	-
HCM Lane V/C Ratio	0.01	-	-	0.259	0.023	-	-
HCM Control Delay (s)	9.4	0	-	31.4	9.3	0	-
HCM Lane LOS	A	A	-	D	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	1347	452	0	0	300
Future Volume (vph)	0	1347	452	0	0	300
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	15	15
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.865
Fit Protected						
Satd. Flow (prot)	0	1765	1748	0	0	1631
Fit Permitted						
Satd. Flow (perm)	0	1765	1748	0	0	1631
Link Speed (mph)		35	35			25
Link Distance (ft)		630	265			329
Travel Time (s)		12.3	5.2			9.0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	0%	2%	3%	0%	0%	5%
Adj. Flow (vph)	0	1480	497	0	0	330
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1480	497	0	0	330
Sign Control		Free	Free			Stop

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized

Intersection

Int Delay, s/veh 2.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑			↑
Traffic Vol, veh/h	0	1347	452	0	0	300
Future Vol, veh/h	0	1347	452	0	0	300
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	91	91	91	91	91	91
Heavy Vehicles, %	0	2	3	0	0	5
Mvmt Flow	0	1480	497	0	0	330

Major/Minor

	Major1	Major2	Minor2
Conflicting Flow All	-	0	- 0 - 497
Stage 1	-	-	- - -
Stage 2	-	-	- - -
Critical Hdwy	-	-	- - 6.25
Critical Hdwy Stg 1	-	-	- - -
Critical Hdwy Stg 2	-	-	- - -
Follow-up Hdwy	-	-	- - 3.1
Pot Cap-1 Maneuver	0	-	- 0 0 602
Stage 1	0	-	- 0 0 -
Stage 2	0	-	- 0 0 -
Platoon blocked, %	-	-	- - -
Mov Cap-1 Maneuver	-	-	- - 602
Mov Cap-2 Maneuver	-	-	- - -
Stage 1	-	-	- - -
Stage 2	-	-	- - -

Approach

	EB	WB	SB
HCM Control Delay, s	0	0	18
HCM LOS			C

Minor Lane/Major Mvmt

	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	602
HCM Lane V/C Ratio	-	-	0.548
HCM Control Delay (s)	-	-	18
HCM Lane LOS	-	-	C
HCM 95th %tile Q(veh)	-	-	3.3

	→	↖	↙	←	↗	↘
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↑	↑
Traffic Volume (vph)	51	122	181	63	219	350
Future Volume (vph)	51	122	181	63	219	350
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	15	15	14	14	16	16
Grade (%)	-10%			2%	9%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.905			0.917		
Fit Protected				0.964	0.981	
Satd. Flow (prot)	1845	0	0	1768	1746	0
Fit Permitted				0.964	0.981	
Satd. Flow (perm)	1845	0	0	1768	1746	0
Link Speed (mph)	25			25	25	
Link Distance (ft)	292			227	273	
Travel Time (s)	8.0			6.2	7.4	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	2%	2%	0%	14%	1%	0%
Adj. Flow (vph)	55	131	195	68	235	376
Shared Lane Traffic (%)						
Lane Group Flow (vph)	186	0	0	263	611	0
Sign Control	Stop			Stop	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					

	→	↖	↙	←	↗	↘
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↑	↑
Traffic Volume (veh/h)	51	122	181	63	219	350
Future Volume (Veh/h)	51	122	181	63	219	350
Sign Control	Stop			Stop	Free	
Grade	-10%			2%	9%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	55	131	195	68	235	376
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	846	0	816	658	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	846	0	816	658	0	
tC, single (s)	6.5	6.2	7.1	6.6	4.1	
tC, 2 stage (s)						
tF (s)	4.0	3.3	3.5	4.1	2.2	
p0 queue free %	79	88	0	78	86	
cM capacity (veh/h)	257	1085	195	316	1630	
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	186	263	611			
Volume Left	0	195	235			
Volume Right	131	0	376			
cSH	556	217	1630			
Volume to Capacity	0.33	1.21	0.14			
Queue Length 95th (ft)	37	331	13			
Control Delay (s)	14.7	176.6	3.8			
Lane LOS	B	F	A			
Approach Delay (s)	14.7	176.6	3.8			
Approach LOS	B	F				
Intersection Summary						
Average Delay			48.6			
Intersection Capacity Utilization			70.3%	ICU Level of Service	C	
Analysis Period (min)			15			



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔	↔	↕	↕	↔	↔
Traffic Volume (vph)	7	3	560	70	14	266
Future Volume (vph)	7	3	560	70	14	266
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	13	12	12	14	14
Grade (%)	1%		1%			-2%
Storage Length (ft)	55	0		0	0	
Storage Lanes	1	1		0	0	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850	0.985			
Frt Protected	0.950					0.998
Satd. Flow (prot)	1701	1573	1764	0	0	1935
Frt Permitted	0.950					0.998
Satd. Flow (perm)	1701	1573	1764	0	0	1935
Link Speed (mph)	20		25			25
Link Distance (ft)	275		478			154
Travel Time (s)	9.4		13.0			4.2
Confl. Peds. (#/hr)	2			1	1	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	8	3	602	75	15	286
Shared Lane Traffic (%)						
Lane Group Flow (vph)	8	3	677	0	0	301
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection						
Int Delay, s/veh	0.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔	↔	↕	↕	↔	↔
Traffic Vol, veh/h	7	3	560	70	14	266
Future Vol, veh/h	7	3	560	70	14	266
Conflicting Peds, #/hr	2	0	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	55	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	1	-	1	-	-	-2
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	8	3	602	75	15	286

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	959	641	0
Stage 1	641	-	-
Stage 2	318	-	-
Critical Hdwy	6.6	6.3	-
Critical Hdwy Stg 1	5.6	-	-
Critical Hdwy Stg 2	5.6	-	-
Follow-up Hdwy	3	3.1	-
Pot Cap-1 Maneuver	300	492	-
Stage 1	571	-	-
Stage 2	833	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	291	492	-
Mov Cap-2 Maneuver	291	-	-
Stage 1	556	-	-
Stage 2	831	-	-

Approach	WB	NB	SB
HCM Control Delay, s	16.1	0	0.5
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	291	492	698	-
HCM Lane V/C Ratio	-	-	0.026	0.007	0.022	-
HCM Control Delay (s)	-	-	17.7	12.4	10.3	0
HCM Lane LOS	-	-	C	B	B	A
HCM 95th %tile Q(veh)	-	-	0.1	0	0.1	-

McMahon Associates, Inc.
3: S Main St & Bridge St

French Creek West
2025 Future Weekday PM - without Dev

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔		↔		↔		↔		↔		↔	
Traffic Volume (vph)	43	350	38	26	514	156	47	348	82	122	130	49
Future Volume (vph)	43	350	38	26	514	156	47	348	82	122	130	49
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	12	11	11	11	10	10	10
Grade (%)	0%		1%		-2%		3%					
Storage Length (ft)	0	0	0	0	0	0	0	135	0	0	0	0
Storage Lanes	0	0	0	0	0	0	0	1	0	0	0	0
Taper Length (ft)	25		25		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
Ped Bike Factor	0.98		0.99		0.98		0.98		0.98		0.97	
Frt	0.988		0.970		0.977		0.959					
Flt Protected	0.995		0.998		0.995		0.950					
Satd. Flow (prot)	0	1696	0	0	1695	0	0	1683	0	1572	1530	0
Flt Permitted	0.888		0.972		0.947		0.289					
Satd. Flow (perm)	0	1513	0	0	1647	0	0	1592	0	470	1530	0
Right Turn on Red	Yes		Yes		Yes		Yes					
Satd. Flow (RTOR)	10		31		16		29					
Link Speed (mph)	25		25		25		25					
Link Distance (ft)	1070		1069		731		346					
Travel Time (s)	29.2		29.2		19.9		9.4					
Confl. Peds. (#/hr)	13	70	70	13	38	31	31	38				
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	0%	3%	4%	0%	1%	2%	0%	0%	0%	0%	0%	3%
Adj. Flow (vph)	49	398	43	30	584	177	53	395	93	139	148	56
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	490	0	0	791	0	0	541	0	139	204	0
Number of Detectors	1	1	1	1	1	1	1	1	1	1	1	1
Detector Template	Left		Left		Left		Left					
Leading Detector (ft)	20	35	20	35	20	35	20	35	20	35	20	35
Trailing Detector (ft)	0	-5	0	-5	0	-5	0	-5	0	-5	0	-5
Detector 1 Position(ft)	0	-5	0	-5	0	-5	0	-5	0	-5	0	-5
Detector 1 Size(ft)	20	40	20	40	20	40	20	40	20	40	20	40
Detector 1 Type	CI+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	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	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	0.0	0.0	0.0
Turn Type	Perm	NA										
Protected Phases	2		6		8		4					
Permitted Phases	2	2	6	6	8	8	4	4				
Detector Phase	2	2	6	6	8	8	4	4				
Switch Phase												
Minimum Initial (s)	21.0	21.0	21.0	21.0	5.0	5.0	5.0	5.0				
Minimum Split (s)	27.0	27.0	27.0	27.0	11.0	11.0	11.0	11.0				
Total Split (s)	42.0	42.0	42.0	42.0	28.0	28.0	28.0	28.0				
Total Split (%)	60.0%	60.0%	60.0%	60.0%	40.0%	40.0%	40.0%	40.0%				
Maximum Green (s)	36.0	36.0	36.0	36.0	22.0	22.0	22.0	22.0				
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				

Lanes, Volumes, Timings
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3: S Main St & Bridge St
Synchro 10 (10.2.20)

McMahon Associates, Inc.
3: S Main St & Bridge St

French Creek West
2025 Future Weekday PM - without Dev

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0			-1.0			-1.0	-1.0
Total Lost Time (s)		5.0			5.0			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	3.0	
Recall Mode	C-Min	C-Min		C-Min	C-Min		None	None		None	None	
Walk Time (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Flash Dont Walk (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
v/c Ratio	0.61		0.89		1.02		0.90		0.39			
Control Delay	15.3		25.2		68.9		79.3		18.1			
Queue Delay	0.0		0.0		0.0		0.0		0.0			
Total Delay	15.3		25.2		68.9		79.3		18.1			
Queue Length 50th (ft)	133		108		-231		56		56			
Queue Length 95th (ft)	216		#222		#413		#154		107			
Internal Link Dist (ft)	990		989		651		266					
Turn Bay Length (ft)					135							
Base Capacity (vph)	804		885		533		154		522			
Starvation Cap Reductn	0		0		0		0		0			
Spillback Cap Reductn	0		0		0		0		0			
Storage Cap Reductn	0		0		0		0		0			
Reduced v/c Ratio	0.61		0.89		1.02		0.90		0.39			

Intersection Summary

Area Type: Other
 Cycle Length: 70
 Actuated Cycle Length: 70
 Offset: 6 (9%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 - Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 3: S Main St & Bridge St

→ Ø2 (R)	↓ Ø4
42 s	28 s
← Ø6 (R)	↑ Ø8
42 s	28 s

Lanes, Volumes, Timings
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3: S Main St & Bridge St
Synchro 10 (10.2.20)

McMahon Associates, Inc.
3: S Main St & Bridge St

French Creek West
2025 Future Weekday PM - without Dev

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR				
Lane Configurations	↔		↔		↔		↔		↔		↔					
Traffic Volume (veh/h)	43	350	38	26	514	156	47	348	82	122	130	49				
Future Volume (veh/h)	43	350	38	26	514	156	47	348	82	122	130	49				
Number	5	2	12	1	6	16	3	8	18	7	4	14				
Initial Q (Ob), veh	0	0	0	0	0	0	0	0	0	0	0	0				
Ped-Bike Adj(A_pbT)	0.98		0.93	0.99		0.93	0.97		0.94	1.00		0.94				
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				
Adj Sat Flow, veh/h/ln	1800	1751	1800	1791	1770	1791	1818	1818	1818	1773	1759	1773				
Adj Flow Rate, veh/h	49	398	43	30	584	177	53	395	90	139	148	56				
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	1	1	0				
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88				
Percent Heavy Veh. %	3	3	3	1	1	1	0	0	0	0	0	0				
Cap, veh/h	105	708	73	70	659	195	93	425	93	239	392	148				
Arrive On Green	0.51	0.53	0.51	1.00	1.00	1.00	0.31	0.33	0.31	0.33	0.33	0.31				
Sat Flow, veh/h	92	1340	138	32	1246	368	110	1294	282	911	1193	451				
Grp Volume(v), veh/h	490	0	0	791	0	0	538	0	0	139	0	204				
Grp Sat Flow(s), veh/h/ln	1570	0	0	1646	0	0	1686	0	0	911	0	1645				
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	14.8	0.0	0.0	1.5	0.0	6.7				
Cycle Q Clear(g_c), s	13.4	0.0	0.0	0.0	0.0	0.0	22.0	0.0	0.0	23.0	0.0	6.7				
Prop In Lane	0.10		0.09	0.04		0.22	0.10		0.17	1.00		0.27				
Lane Grp Cap(c), veh/h	864	0	0	900	0	0	586	0	0	239	0	540				
V/C Ratio(X)	0.57	0.00	0.00	0.88	0.00	0.00	0.92	0.00	0.00	0.58	0.00	0.38				
Avail Cap(c_a), veh/h	864	0	0	900	0	0	586	0	0	239	0	540				
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00				
Upstream Filter(I)	1.00	0.00	0.00	0.80	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00				
Uniform Delay (d), s/veh	11.0	0.0	0.0	0.0	0.0	0.0	23.3	0.0	0.0	24.7	0.0	18.1				
Incr Delay (d2), s/veh	2.7	0.0	0.0	9.9	0.0	0.0	19.5	0.0	0.0	3.6	0.0	0.4				
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	11.5	0.0	0.0	4.4	0.0	0.0	19.7	0.0	0.0	5.2	0.0	5.5				
LnGrp Delay(d),s/veh	13.7	0.0	0.0	9.9	0.0	0.0	42.8	0.0	0.0	28.2	0.0	18.6				
LnGrp LOS	B		A		D		D		C		B					
Approach Vol, veh/h	490				791				538				343			
Approach Delay, s/veh	13.7				9.9				42.8				22.5			
Approach LOS	B				A				D				C			
Timer	1	2	3	4	5	6	7	8								
Assigned Phs	2		4		6		8									
Phs Duration (G+Y+Rc), s	42.0		28.0		42.0		28.0									
Change Period (Y+Rc), s	6.0		6.0		6.0		6.0									
Max Green Setting (Gmax), s	36.0		22.0		36.0		22.0									
Max Q Clear Time (g_c+I1), s	15.4		25.5		2.5		24.0									
Green Ext Time (p_c), s	2.1		0.0		4.1		0.0									
Intersection Summary																
HCM 2010 Ctrl Delay	20.9															
HCM 2010 LOS	C															

HCM 2010 Signalized Intersection Summary
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3: S Main St & Bridge St
Synchro 10 (10.2.20)

McMahon Associates, Inc.
4: Starr St (SR 29) & Bridge St

French Creek West
2025 Future Weekday PM - without Dev

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔		↔		↔	
Traffic Volume (vph)	544	88	444	755	101	590
Future Volume (vph)	544	88	444	755	101	590
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	16	16	10	11	10	12
Grade (%)	1%		1%		0%	
Storage Length (ft)	0		215		320	
Storage Lanes	0		1		1	
Taper Length (ft)			25		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.981				0.850	
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1933	0	1542	1697	1596	1500
Flt Permitted			0.234		0.950	
Satd. Flow (perm)	1933	0	380	1697	1596	1500
Right Turn on Red	Yes				Yes	
Satd. Flow (RTOR)	15		282		911	
Link Speed (mph)	25		35		25	
Link Distance (ft)	1069		499		559	
Travel Time (s)	29.2		9.7		15.2	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	3%	3%	3%	2%	0%	2%
Adj. Flow (vph)	555	90	453	770	103	602
Shared Lane Traffic (%)						
Lane Group Flow (vph)	645	0	453	770	103	602
Number of Detectors	1		1		1	
Detector Template						
Leading Detector (ft)	35		35		35	
Trailing Detector (ft)	-5		-5		-5	
Detector 1 Position(ft)	-5		-5		-5	
Detector 1 Size(ft)	40		40		40	
Detector 1 Type	Cl+Ex		Cl+Ex		Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0		0.0	
Detector 1 Queue (s)	0.0		0.0		0.0	
Detector 1 Delay (s)	0.0		0.0		0.0	
Turn Type	NA		pm+pt		Prot pm+ov	
Protected Phases	2		1 6		8 1	
Permitted Phases			6		8	
Detector Phase	2		1 6		8 1	
Switch Phase						
Minimum Initial (s)	27.0		7.0		27.0	
Minimum Split (s)	32.0		12.0		32.0	
Total Split (s)	35.0		15.0		50.0	
Total Split (%)	50.0%		21.4%		71.4%	
Maximum Green (s)	30.0		10.0		45.0	
Yellow Time (s)	3.0		3.0		3.0	
All-Red Time (s)	2.0		2.0		2.0	
Lost Time Adjust (s)	-1.0		-1.0		-1.0	

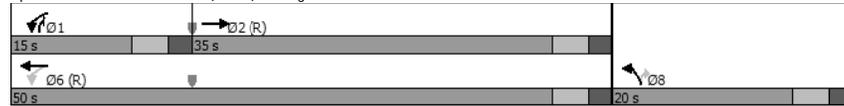
Lanes, Volumes, Timings
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4: Starr St (SR 29) & Bridge St
Synchro 10 (10.2.20)

	→	↖	↙	←	↘	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Total Lost Time (s)	4.0		4.0	4.0	4.0	4.0
Lead/Lag	Lag		Lead			Lead
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	C-Min		None	C-Min	None	None
Walk Time (s)	9.0		9.0	8.0		
Flash Dont Walk (s)	10.0		10.0	8.0		
Pedestrian Calls (#/hr)	0		0	0		
w/c Ratio	0.61		0.96	0.59	0.41	0.93
Control Delay	16.0		46.0	7.4	30.7	36.1
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	16.0		46.0	7.4	30.7	36.1
Queue Length 50th (ft)	196		86	126	41	158
Queue Length 95th (ft)	m278		#245	276	79	#329
Internal Link Dist (ft)	989		419	479		
Turn Bay Length (ft)			215	320		
Base Capacity (vph)	1064		471	1311	364	648
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced w/c Ratio	0.61		0.96	0.59	0.28	0.93

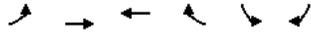
Intersection Summary
 Area Type: Other
 Cycle Length: 70
 Actuated Cycle Length: 70
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Green, Master Intersection
 Natural Cycle: 65
 Control Type: Actuated-Coordinated
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Starr St (SR 29) & Bridge St



	→	↖	↙	←	↘	↗		
Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations	↖		↙	↖	↙	↖		
Traffic Volume (veh/h)	544	88	444	755	101	590		
Future Volume (veh/h)	544	88	444	755	101	590		
Number	2	12	1	6	3	18		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1808	1863	1739	1756	1800	1765		
Adj Flow Rate, veh/h	555	81	453	770	103	583		
Adj No. of Lanes	1	0	1	1	1	1		
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98		
Percent Heavy Veh. %	3	3	3	2	0	2		
Cap, veh/h	684	100	469	1154	392	579		
Arrive On Green	0.44	0.43	0.16	0.66	0.23	0.23		
Sat Flow, veh/h	1543	225	1656	1756	1714	1500		
Grp Volume(v), veh/h	0	636	453	770	103	583		
Grp Sat Flow(s), veh/h/ln	0	1769	1656	1756	1714	1500		
Q Serve(g_s), s	0.0	21.9	10.0	18.7	3.5	16.0		
Cycle Q Clear(g_c), s	0.0	21.9	10.0	18.7	3.5	16.0		
Prop In Lane		0.13	1.00		1.00	1.00		
Lane Grp Cap(c), veh/h	0	783	469	1154	392	579		
V/C Ratio(X)	0.00	0.81	0.96	0.67	0.26	1.01		
Avail Cap(c_a), veh/h	0	783	469	1154	392	579		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	0.00	0.68	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	0.0	17.0	13.9	7.3	22.2	21.5		
Incr Delay (d2), s/veh	0.0	6.3	32.6	3.1	0.4	39.3		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(95%),veh/ln	0.0	16.7	18.7	14.9	3.0	31.3		
LnGrp Delay(d),s/veh	0.0	23.3	46.4	10.4	22.5	60.8		
LnGrp LOS		C	D	B	C	F		
Approach Vol, veh/h	636		1223	686				
Approach Delay, s/veh	23.3		23.7	55.1				
Approach LOS	C		C	E				
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	15.0	35.0				50.0		20.0
Change Period (Y+Rc), s	5.0	5.0				5.0		5.0
Max Green Setting (Gmax), s	10.0	30.0				45.0		15.0
Max Q Clear Time (g_c+1), s	12.5	23.9				21.2		18.5
Green Ext Time (p_c), s	0.0	1.5				3.2		0.0

Intersection Summary
 HCM 2010 Ctrl Delay 32.1
 HCM 2010 LOS C



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↔	↑	↑		↔	
Traffic Volume (vph)	10	1150	1474	2	1	5
Future Volume (vph)	10	1150	1474	2	1	5
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	14	11	11	12	12
Grade (%)		2%	-2%		3%	
Storage Length (ft)	100			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					0.887	
Frt Protected	0.950				0.992	
Satd. Flow (prot)	1636	1744	1722	0	1337	0
Frt Permitted	0.950				0.992	
Satd. Flow (perm)	1636	1744	1722	0	1337	0
Link Speed (mph)		35	35		25	
Link Distance (ft)		253	844		353	
Travel Time (s)		4.9	16.4		9.6	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	9%	2%	50%	0%	20%
Adj. Flow (vph)	11	1211	1552	2	1	5
Shared Lane Traffic (%)						
Lane Group Flow (vph)	11	1211	1554	0	6	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection

Int Delay, s/veh 0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↔	↑	↑		↔	
Traffic Vol, veh/h	10	1150	1474	2	1	5
Future Vol, veh/h	10	1150	1474	2	1	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	2	-2	-	3	-
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	0	9	2	50	0	20
Mvmt Flow	11	1211	1552	2	1	5

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	1554	0	0 2786 1553
Stage 1	-	-	- 1553 -
Stage 2	-	-	- 1233 -
Critical Hdwy	4.3	-	- 7 6.7
Critical Hdwy Stg 1	-	-	- 6 -
Critical Hdwy Stg 2	-	-	- 6 -
Follow-up Hdwy	3	-	- 3 3.1
Pot Cap-1 Maneuver	334	-	- 14 117
Stage 1	-	-	- 161 -
Stage 2	-	-	- 246 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	334	-	- 14 117
Mov Cap-2 Maneuver	-	-	- 92 -
Stage 1	-	-	- 156 -
Stage 2	-	-	- 246 -

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	39.1
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	334	-	-	-	112
HCM Lane V/C Ratio	0.032	-	-	-	0.056
HCM Control Delay (s)	16.1	-	-	-	39.1
HCM Lane LOS	C	-	-	-	E
HCM 95th %tile Q(veh)	0.1	-	-	-	0.2

McMahon Associates, Inc.
6: Mason St & Nutt Rd (SR 23)

French Creek West
2025 Future Weekday PM - without Dev



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔		↔	↔		↔	↔		↔	↔	
Traffic Volume (vph)	33	1164	3	4	1397	20	6	0	17	9	1	52
Future Volume (vph)	33	1164	3	4	1397	20	6	0	17	9	1	52
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	11	11	11	14	14	14	14	14	14
Grade (%)	2%				2%		-4%				-3%	
Storage Length (ft)	100		0	100		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					0.998			0.900				0.886
Flt Protected	0.950			0.950				0.987				0.993
Satd. Flow (prot)	1636	1706	0	1636	1685	0	0	1740	0	0	1715	0
Flt Permitted	0.950			0.950				0.987				0.993
Satd. Flow (perm)	1636	1706	0	1636	1685	0	0	1740	0	0	1715	0
Link Speed (mph)	35				35		25				25	
Link Distance (ft)	844				630		265				274	
Travel Time (s)	16.4				12.3		7.2				7.5	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	1%	0%	0%	2%	5%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	34	1188	3	4	1426	20	6	0	17	9	1	53
Shared Lane Traffic (%)												
Lane Group Flow (vph)	34	1191	0	4	1446	0	0	23	0	0	63	0
Sign Control	Free				Free		Stop				Stop	

Intersection Summary
Area Type: Other
Control Type: Unsignalized

McMahon Associates, Inc.
6: Mason St & Nutt Rd (SR 23)

French Creek West
2025 Future Weekday PM - without Dev

Intersection												
Int Delay, s/veh	4.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔		↔	↔		↔	↔		↔	↔	
Traffic Vol, veh/h	33	1164	3	4	1397	20	6	0	17	9	1	52
Future Vol, veh/h	33	1164	3	4	1397	20	6	0	17	9	1	52
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None									
Storage Length	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	2	-	-	2	-	-	-4	-	-	-	-3
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles, %	0	1	0	0	2	5	0	0	0	0	0	0
Mvmt Flow	34	1188	3	4	1426	20	6	0	17	9	1	53

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	1446	0	0	1191
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	4.1	-	-	4.1
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	2.2	-	-	2.2
Pot Cap-1 Maneuver	475	-	-	593
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	475	-	-	593
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0	122	141.5
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	52	475	-	-	593	-	-	79
HCM Lane V/C Ratio	0.451	0.071	-	-	0.007	-	-	0.801
HCM Control Delay (s)	122	13.2	-	-	11.1	-	-	141.5
HCM Lane LOS	F	B	-	-	B	-	-	F
HCM 95th %tile Q(veh)	1.7	0.2	-	-	0	-	-	4

McMahon Associates, Inc.

French Creek West

7: Bridge St (SR 1019)/Bridge St (SR 113) & Nutt Rd (SR 23)

2025 Future Weekday PM - without Dev



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	518	651	76	67	758	32	131	302	28	21	236	0
Future Volume (vph)	518	651	76	67	758	32	131	302	28	21	236	0
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	13	13	10
Grade (%)		1%			1%			-2%			1%	
Storage Length (ft)	350		0	720		0	100		0	205		0
Storage Lanes	1		0	1		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
Ped Bike Factor		1.00		1.00								
Frt		0.984			0.994			0.987				
Flt Protected	0.950			0.950			0.950				0.996	
Satd. Flow (prot)	1557	1842	0	1557	1747	0	1580	1735	0	0	1826	0
Flt Permitted	0.950			0.950			0.314				0.574	
Satd. Flow (perm)	1557	1842	0	1556	1747	0	522	1735	0	0	1053	0
Right Turn on Red			No			No			No			Yes
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		265			436			378			352	
Travel Time (s)		5.2			8.5			10.3			9.6	
Confl. Peds. (#/hr)			1	1								
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	2%	2%	0%	2%	2%	0%	2%	0%	0%	0%	1%	0%
Adj. Flow (vph)	529	664	78	68	773	33	134	308	29	21	241	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	529	742	0	68	806	0	134	337	0	0	262	0
Number of Detectors	1	1		1	1		1	1			1	1
Detector Template											Left	
Leading Detector (ft)	35	35		35	35		35	35			20	35
Trailing Detector (ft)	-5	-5		-5	-5		-5	-5			0	-5
Detector 1 Position(ft)	-5	-5		-5	-5		-5	-5			0	-5
Detector 1 Size(ft)	40	40		40	40		40	40			20	40
Detector 1 Type	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
Detector 1 Queue (s)	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
Turn Type	Prot	NA		Prot	NA		Perm	NA			Perm	NA
Protected Phases	5	2		1	6			8			4	4
Permitted Phases							8			4		
Detector Phase	5	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	7.0	15.0		3.0	15.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	15.0	20.0		11.0	20.0		12.0	12.0		12.0	12.0	
Total Split (s)	33.0	62.0		14.0	43.0		24.0	24.0		24.0	24.0	
Total Split (%)	33.0%	62.0%		14.0%	43.0%		24.0%	24.0%		24.0%	24.0%	
Maximum Green (s)	25.0	57.0		6.0	38.0		19.0	19.0		19.0	19.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	

Lanes, Volumes, Timings 7: Bridge St (SR 1019)/Bridge St (SR 113) & Nutt Rd (SR 23)
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French Creek West

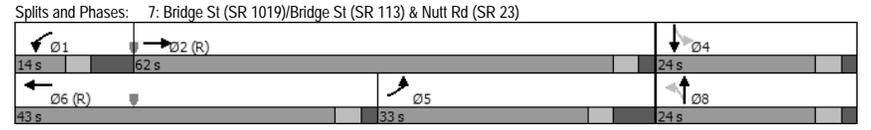
7: Bridge St (SR 1019)/Bridge St (SR 113) & Nutt Rd (SR 23)

2025 Future Weekday PM - without Dev



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
All-Red Time (s)	5.0	2.0		5.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0			-1.0	
Total Lost Time (s)	7.0	4.0		7.0	4.0		4.0	4.0			4.0	
Lead/Lag	Lag	Lag		Lead	Lead							
Lead-Lag Optimize?												
Vehicle Extension (s)	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	
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	
v/c Ratio	1.31	0.66		0.63	1.18		1.29	0.97			1.25	
Control Delay	188.6	17.5		71.4	127.0		219.9	82.9			180.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Total Delay	188.6	17.5		71.4	127.0		219.9	82.9			180.5	
Queue Length 50th (ft)	-436	311		43	-621		-109	215			-209	
Queue Length 95th (ft)	#637	450		#106	#849		#228	#390			#366	
Internal Link Dist (ft)		185			356		298				272	
Turn Bay Length (ft)	350			720			100					
Base Capacity (vph)	404	1120		108	681		104	347			210	
Starvation Cap Reductn	0	0		0	0		0	0			0	
Spillback Cap Reductn	0	0		0	0		0	0			0	
Storage Cap Reductn	0	0		0	0		0	0			0	
Reduced v/c Ratio	1.31	0.66		0.63	1.18		1.29	0.97			1.25	

Intersection Summary
 Area Type: Other
 Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green, Master Intersection
 Natural Cycle: 140
 Control Type: Actuated-Coordinated
 - Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.



Lanes, Volumes, Timings 7: Bridge St (SR 1019)/Bridge St (SR 113) & Nutt Rd (SR 23)
 I:\eng\818195 - French Creek W\traffic\Analysis\2018-05 TIS\Existing\WO 2025 PM.syn Synchro 10 (10.2.20)

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔ ↔ ↕ ↕ ↕ ↕ ↕ ↕ ↕ ↕ ↕ ↕ ↕											
Traffic Volume (vph)	518	651	76	67	758	32	131	302	28	21	236	0
Future Volume (veh/h)	518	651	76	67	758	32	131	302	28	21	236	0
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Ob), 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	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
Adj Sat Flow, veh/h/ln	1756	1830	1863	1756	1757	1791	1782	1818	1818	1863	1846	0
Adj Flow Rate, veh/h	529	664	78	68	773	33	134	308	29	21	241	0
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	0	1	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	0	1	1	0
Cap, veh/h	435	892	105	108	653	28	165	327	31	40	169	0
Arrive On Green	0.26	0.56	0.55	0.06	0.39	0.38	0.20	0.20	0.19	0.19	0.20	0.00
Sat Flow, veh/h	1672	1608	189	1672	1673	71	1146	1637	154	3	844	0
Grp Volume(v), veh/h	529	0	742	68	0	806	134	0	337	262	0	0
Grp Sat Flow(s), veh/h/ln	1672	0	1796	1672	0	1745	1146	0	1791	848	0	0
Q Serve(g_s), s	26.0	0.0	31.3	4.0	0.0	39.0	1.5	0.0	18.5	0.5	0.0	0.0
Cycle Q Clear(g_c), s	26.0	0.0	31.3	4.0	0.0	39.0	20.0	0.0	18.5	19.0	0.0	0.0
Prop In Lane	1.00	0.00	0.11	1.00	0.00	0.04	1.00	0.00	0.09	0.08	0.00	0.00
Lane Grp Cap(c), veh/h	435	0	997	108	0	680	165	0	358	200	0	0
V/C Ratio(X)	1.22	0.00	0.74	0.63	0.00	1.18	0.81	0.00	0.94	1.31	0.00	0.00
Avail Cap(c_a), veh/h	435	0	1042	117	0	680	165	0	358	200	0	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	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	37.0	0.0	16.9	45.6	0.0	30.5	43.8	0.0	39.5	37.8	0.0	0.0
Incr Delay (d2), s/veh	116.9	0.0	5.0	9.1	0.0	97.5	25.6	0.0	32.6	170.8	0.0	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	46.9	0.0	23.6	3.8	0.0	66.9	8.5	0.0	18.2	27.1	0.0	0.0
LnGrp Delay(d),s/veh	153.9	0.0	21.9	54.6	0.0	128.1	69.5	0.0	72.1	208.5	0.0	0.0
LnGrp LOS	F		C	D		F	E		E	F		
Approach Vol, veh/h	1271			874				471			262	
Approach Delay, s/veh	76.9			122.3				71.3			208.5	
Approach LOS	E			F				E			F	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	13.5	62.5		24.0	33.0	43.0		24.0				
Change Period (Y+Rc), s	8.0	* 8		5.0	8.0	5.0		5.0				
Max Green Setting (Gmax), s	6.0	* 57		19.0	25.0	38.0		19.0				
Max Q Clear Time (g_c+I1), s	6.5	33.3		21.0	28.5	41.0		22.5				
Green Ext Time (p_c), s	0.0	3.1		0.0	0.0	0.0		0.0				

Intersection Summary	
HCM 2010 Ctrl Delay	101.8
HCM 2010 LOS	F
Notes	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔ ↔ ↕ ↕ ↕ ↕ ↕ ↕ ↕ ↕ ↕ ↕ ↕											
Traffic Volume (vph)	32	3	24	0	0	0	21	712	26	20	744	22
Future Volume (vph)	32	3	24	0	0	0	21	712	26	20	744	22
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	16	16	16	12	12	12	11	11	11
Grade (%)							-11%			2%		
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												
Frt	0.945						0.995			0.996		
Flt Protected	0.974						0.999			0.999		
Satd. Flow (prot)	0	1594	0	0	0	0	0	1752	0	0	1698	0
Flt Permitted	0.974						0.999			0.999		
Satd. Flow (perm)	0	1594	0	0	0	0	0	1752	0	0	1698	0
Link Speed (mph)	25						25			25		
Link Distance (ft)	284						281			356		
Travel Time (s)	7.7						7.7			9.7		
Confl. Peds. (#/hr)	2		1		4		4		4		4	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	1%	4%	0%	1%	0%
Adj. Flow (vph)	33	3	25	0	0	0	22	742	27	21	775	23
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	61	0	0	0	0	0	791	0	0	819	0
Sign Control	Stop						Stop			Free		

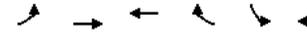
Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized

Intersection												
Int Delay, s/veh	2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔						↔			↔		
Traffic Vol, veh/h	32	3	24	0	0	0	21	712	26	20	744	22
Future Vol, veh/h	32	3	24	0	0	0	21	712	26	20	744	22
Conflicting Peds, #/hr	2	0	1	0	0	0	4	0	0	0	0	4
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	-
Grade, %	-	1	-	-	-11	-	-	2	-	-	2	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	0	0	0	0	1	4	0	1	0
Mvmt Flow	33	3	25	0	0	0	22	742	27	21	775	23

Major/Minor	Minor2			Major1			Major2		
Conflicting Flow All	1635	1646	792	802	0	0	769	0	0
Stage 1	833	833	-	-	-	-	-	-	-
Stage 2	802	813	-	-	-	-	-	-	-
Critical Hdwy	6.6	6.7	6.3	4.3	-	-	4.3	-	-
Critical Hdwy Stg 1	5.6	5.7	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.6	5.7	-	-	-	-	-	-	-
Follow-up Hdwy	3	4	3.1	3	-	-	3	-	-
Pot Cap-1 Maneuver	110	92	401	631	-	-	649	-	-
Stage 1	455	369	-	-	-	-	-	-	-
Stage 2	473	377	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	97	0	399	629	-	-	649	-	-
Mov Cap-2 Maneuver	97	0	-	-	-	-	-	-	-
Stage 1	401	0	-	-	-	-	-	-	-
Stage 2	472	0	-	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	47.4	0.3	0.3
HCM LOS	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	SBL	SBT	SBR
Capacity (veh/h)	629	-	-	144	649	-	-
HCM Lane V/C Ratio	0.035	-	-	0.427	0.032	-	-
HCM Control Delay (s)	10.9	0	-	47.4	10.7	0	-
HCM Lane LOS	B	A	-	E	B	A	-
HCM 95th %tile Q(veh)	0.1	-	-	1.9	0.1	-	-



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑			↑
Traffic Volume (vph)	0	1245	889	0	0	546
Future Volume (vph)	0	1245	889	0	0	546
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	15	15
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.865
Flt Protected						
Satd. Flow (prot)	0	1765	1765	0	0	1696
Flt Permitted						
Satd. Flow (perm)	0	1765	1765	0	0	1696
Link Speed (mph)		35	35			25
Link Distance (ft)		630	265			329
Travel Time (s)		12.3	5.2			9.0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	2%	2%	0%	0%	1%
Adj. Flow (vph)	0	1270	907	0	0	557
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1270	907	0	0	557
Sign Control		Free	Free			Stop

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized

Intersection

Int Delay, s/veh 59.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑			↑
Traffic Vol, veh/h	0	1245	889	0	0	546
Future Vol, veh/h	0	1245	889	0	0	546
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	98	98	98	98	98	98
Heavy Vehicles, %	0	2	2	0	0	1
Mvmt Flow	0	1270	907	0	0	557

Major/Minor

	Major1	Major2	Minor2
Conflicting Flow All	-	0	- 0 - 907
Stage 1	-	-	- - -
Stage 2	-	-	- - -
Critical Hdwy	-	-	- - 6.21
Critical Hdwy Stg 1	-	-	- - -
Critical Hdwy Stg 2	-	-	- - -
Follow-up Hdwy	-	-	- - 3
Pot Cap-1 Maneuver	0	-	- 0 - 358
Stage 1	0	-	- 0 -
Stage 2	0	-	- 0 -
Platoon blocked, %	-	-	- - -
Mov Cap-1 Maneuver	-	-	- - - 358
Mov Cap-2 Maneuver	-	-	- - -
Stage 1	-	-	- - -
Stage 2	-	-	- - -

Approach

	EB	WB	SB
HCM Control Delay, s	0	0	290.9
HCM LOS			F

Minor Lane/Major Mvmt

	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	358
HCM Lane V/C Ratio	-	-	1.556
HCM Control Delay (s)	-	-	290.9
HCM Lane LOS	-	-	F
HCM 95th %tile Q(veh)	-	-	31.5

Notes

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

Appendix K

Future (2025) with Development – Scenario 1 Capacity/Level-of-Service Analysis Worksheets

	→	↖	↗	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↑	↑
Traffic Volume (vph)	38	263	533	53	116	102
Future Volume (vph)	38	263	533	53	116	102
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	15	15	14	14	16	16
Grade (%)	-10%			2%	9%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.882			0.937	0.937	
Flt Protected				0.957	0.974	
Satd. Flow (prot)	1773	0	0	1787	1712	0
Flt Permitted				0.957	0.974	
Satd. Flow (perm)	1773	0	0	1787	1712	0
Link Speed (mph)	25			25	25	
Link Distance (ft)	292			227	273	
Travel Time (s)	8.0			6.2	7.4	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	20%	1%	2%	0%	2%	6%
Adj. Flow (vph)	41	283	573	57	125	110
Shared Lane Traffic (%)						
Lane Group Flow (vph)	324	0	0	630	235	0
Sign Control	Stop			Stop	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					

	→	↖	↗	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↑	↑
Traffic Volume (veh/h)	38	263	533	53	116	102
Future Volume (Veh/h)	38	263	533	53	116	102
Sign Control	Stop			Stop	Free	
Grade	-10%			2%	9%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	41	283	573	57	125	110
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	360	0	608	305	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	360	0	608	305	0	
tC, single (s)	6.7	6.2	7.1	6.5	4.1	
tC, 2 stage (s)						
tF (s)	4.2	3.3	3.5	4.0	2.2	
p0 queue free %	92	74	0	90	92	
cM capacity (veh/h)	499	1088	266	564	1623	
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	324	630	235			
Volume Left	0	573	125			
Volume Right	283	0	110			
cSH	946	279	1623			
Volume to Capacity	0.34	2.26	0.08			
Queue Length 95th (ft)	38	1217	6			
Control Delay (s)	10.8	605.3	4.2			
Lane LOS	B	F	A			
Approach Delay (s)	10.8	605.3	4.2			
Approach LOS	B	F				
Intersection Summary						
Average Delay			324.5			
Intersection Capacity Utilization			76.7%	ICU Level of Service	D	
Analysis Period (min)			15			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔		↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	28	0	140	77	0	10	44	172	7	0	696	9
Future Volume (vph)	28	0	140	77	0	10	44	172	7	0	696	9
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	13	12	12	12	14	14	12
Grade (%)	0%		1%		1%		1%		-2%		-2%	
Storage Length (ft)	0		0	55		0	0		0	0		0
Storage Lanes	0		0	1		0	0		0	0		0
Taper Length (ft)	25		25		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
Ped Bike Factor												
Frt	0.887		0.850		0.996		0.998					
Flt Protected	0.992		0.950		0.990		0.990					
Satd. Flow (prot)	0	1553	0	1701	1522	0	0	1669	0	0	1916	0
Flt Permitted	0.992		0.950		0.990		0.990					
Satd. Flow (perm)	0	1553	0	1701	1522	0	0	1669	0	0	1916	0
Link Speed (mph)	25		20		25		25					
Link Distance (ft)	305		275		478		154					
Travel Time (s)	8.3		9.4		13.0		4.2					
Confl. Peds. (#/hr)	3		1		2		2					
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	0%	2%	0%	2%	7%	0%	0%	1%	2%
Adj. Flow (vph)	31	0	156	86	0	11	49	191	8	0	773	10
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	187	0	86	11	0	0	248	0	0	783	0
Sign Control	Stop		Stop		Free		Free					

Intersection Summary

Area Type: Other
 Control Type: Unsignalized

Intersection												
Int Delay, s/veh	12											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔		↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Vol, veh/h	28	0	140	77	0	10	44	172	7	0	696	9
Future Vol, veh/h	28	0	140	77	0	10	44	172	7	0	696	9
Conflicting Peds, #/hr	0	0	0	3	0	1	0	0	2	2	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Free						
RT Channelized	-	-	None									
Storage Length	-	-	-	55	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	1	-	-	1	-	-	-2	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	0	2	0	2	7	0	0	1	2
Mvmt Flow	31	0	156	86	0	11	49	191	8	0	773	10

Major/Minor	Minor2	Minor1	Major1	Major2								
Conflicting Flow All	1078	1077	781	1154	1078	198	783	0	0	201	0	0
Stage 1	778	778	-	295	295	-	-	-	-	-	-	-
Stage 2	300	299	-	859	783	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.3	6.72	6.3	4.3	-	-	4.3	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.3	5.72	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.3	5.72	-	-	-	-	-	-	-
Follow-up Hdwy	3	4.018	3.1	3	4.018	3.1	3	-	-	3	-	-
Pot Cap-1 Maneuver	216	219	414	180	206	893	641	-	-	1025	-	-
Stage 1	434	407	-	808	658	-	-	-	-	-	-	-
Stage 2	814	666	-	374	387	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	199	200	413	104	188	890	641	-	-	1023	-	-
Mov Cap-2 Maneuver	199	200	-	104	188	-	-	-	-	-	-	-
Stage 1	397	407	-	737	600	-	-	-	-	-	-	-
Stage 2	734	607	-	232	387	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	26.4	107	2.2	0
HCM LOS	D	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	641	-	-	350	104	890	1023	-	-
HCM Lane V/C Ratio	0.076	-	-	0.533	0.823	0.012	-	-	-
HCM Control Delay (s)	11.1	0	-	26.4	119.7	9.1	0	-	-
HCM Lane LOS	B	A	-	D	F	A	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	3	4.6	0	0	-	-

McMahon Associates, Inc.
3: S Main St & Bridge St

French Creek West - Scenario 1
2025 Future Weekday AM - with Dev

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔ ↗ ↘ ↙ ↚ ↛ ↜ ↝ ↞ ↠ ↡ ↢ ↣ ↤ ↥ ↦ ↧ ↨ ↩ ↪ ↫ ↬ ↭ ↮ ↯ ↰ ↱ ↲ ↳ ↴ ↵ ↶ ↷ ↸ ↹ ↺ ↻ ↼ ↽ ↾ ↿ ↺ ↻ ↼ ↽ ↾ ↿ ↺ ↻ ↼ ↽ ↾ ↿											
Traffic Volume (vph)	25	317	21	22	335	74	25	106	53	395	447	133
Future Volume (vph)	25	317	21	22	335	74	25	106	53	395	447	133
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	12	11	11	11	10	10	10
Grade (%)	0%		1%		-2%		3%					
Storage Length (ft)	0		0	0		0	0		0	135		0
Storage Lanes	0		0	0		0	0		0	1		0
Taper Length (ft)	25		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
Ped Bike Factor	1.00		1.00		0.99		1.00		0.99			
Frt	0.992		0.977		0.961		0.966					
Flt Protected	0.997		0.997		0.993		0.950					
Satd. Flow (prot)	0	1661	0	0	1589	0	0	1547	0	1556	1544	0
Flt Permitted	0.953		0.968		0.770		0.662					
Satd. Flow (perm)	0	1588	0	0	1543	0	0	1199	0	1083	1544	0
Right Turn on Red	Yes		Yes		Yes		Yes					
Satd. Flow (RTOR)	6		20		44		32					
Link Speed (mph)	25		25		25		25					
Link Distance (ft)	1070		1069		731		346					
Travel Time (s)	29.2		29.2		19.9		9.4					
Confl. Peds. (#/hr)	4		4		1		1		1		1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	8%	0%	0%	11%	7%	6%	11%	2%	1%	3%	3%
Adj. Flow (vph)	28	352	23	24	372	82	28	118	59	439	497	148
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	403	0	0	478	0	0	205	0	439	645	0
Number of Detectors	1	1	1	1	1	1	1	1	1	1	1	1
Detector Template	Left		Left		Left		Left		Left		Left	
Leading Detector (ft)	20	35	20	35	20	35	20	35	20	35	20	35
Trailing Detector (ft)	0	-5	0	-5	0	-5	0	-5	0	-5	0	-5
Detector 1 Position(ft)	0	-5	0	-5	0	-5	0	-5	0	-5	0	-5
Detector 1 Size(ft)	20	40	20	40	20	40	20	40	20	40	20	40
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+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	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	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	0.0	0.0	0.0
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases	2		6		8		4					
Permitted Phases	2	2	6	6	8	8	4	4	4	4	4	4
Detector Phase	2	2	6	6	8	8	4	4	4	4	4	4
Switch Phase												
Minimum Initial (s)	21.0	21.0	21.0	21.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	27.0	27.0	27.0	27.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0
Total Split (s)	28.0	28.0	28.0	28.0	32.0	32.0	32.0	32.0	32.0	32.0	32.0	32.0
Total Split (%)	46.7%	46.7%	46.7%	46.7%	53.3%	53.3%	53.3%	53.3%	53.3%	53.3%	53.3%	53.3%
Maximum Green (s)	22.0	22.0	22.0	22.0	26.0	26.0	26.0	26.0	26.0	26.0	26.0	26.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Lanes, Volumes, Timings
I:\eng\18195 - French Creek W\trafficAnalysis\2018-05 TIS\Existing\WD 2025 AM - Scenario 1.syn

3: S Main St & Bridge St
Synchro 10 (10.2.20)

McMahon Associates, Inc.
3: S Main St & Bridge St

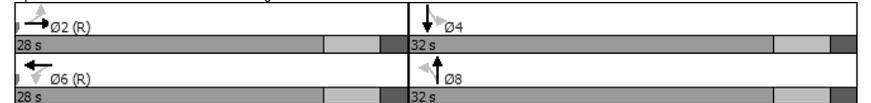
French Creek West - Scenario 1
2025 Future Weekday AM - with Dev

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0		-1.0		-1.0		-1.0					
Total Lost Time (s)	5.0		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	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Min											
Walk Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Flash Dont Walk (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
v/c Ratio	0.64		0.77		0.37		0.92		0.92			
Control Delay	20.6		25.1		10.8		44.7		37.5			
Queue Delay	0.0		0.0		0.0		0.0		0.0			
Total Delay	20.6		25.1		10.8		44.7		37.5			
Queue Length 50th (ft)	114		107		35		138		195			
Queue Length 95th (ft)	201		#252		78		#305		#399			
Internal Link Dist (ft)	990		989		651		266					
Turn Bay Length (ft)			135									
Base Capacity (vph)	626		617		563		487		712			
Starvation Cap Reductn	0		0		0		0		0			
Spillback Cap Reductn	0		0		0		0		0			
Storage Cap Reductn	0		0		0		0		0			
Reduced v/c Ratio	0.64		0.77		0.36		0.90		0.91			

Intersection Summary

Area Type: Other
 Cycle Length: 60
 Actuated Cycle Length: 60
 Offset: 42 (70%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 65
 Control Type: Actuated-Coordinated
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 3: S Main St & Bridge St



Lanes, Volumes, Timings
I:\eng\18195 - French Creek W\trafficAnalysis\2018-05 TIS\Existing\WD 2025 AM - Scenario 1.syn

3: S Main St & Bridge St
Synchro 10 (10.2.20)

McMahon Associates, Inc.
3: S Main St & Bridge St

French Creek West - Scenario 1
2025 Future Weekday AM - with Dev

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔			↔			↔			↔	↔	
Traffic Volume (veh/h)	25	317	21	22	335	74	25	106	53	395	447	133
Future Volume (veh/h)	25	317	21	22	335	74	25	106	53	395	447	133
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Ob), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	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
Adj Sat Flow, veh/h/ln	1800	1682	1800	1791	1632	1791	1818	1688	1818	1755	1721	1773
Adj Flow Rate, veh/h	28	352	23	24	372	82	28	118	58	439	497	148
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	1	1	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh. %	8	8	8	11	11	11	11	11	11	1	3	3
Cap, veh/h	86	568	36	77	481	102	84	281	118	360	573	171
Arrive On Green	0.37	0.38	0.37	0.37	0.38	0.37	0.43	0.45	0.43	0.45	0.45	0.43
Sat Flow, veh/h	56	1481	93	36	1254	267	35	624	262	1197	1274	379
Grp Volume(v), veh/h	403	0	0	478	0	0	204	0	0	439	0	645
Grp Sat Flow(s), veh/h/ln	1630	0	0	1558	0	0	921	0	0	1197	0	1654
Q Serve(g_s), s	0.0	0.0	0.0	4.5	0.0	0.0	1.9	0.0	0.0	4.5	0.0	21.1
Cycle Q Clear(g_c), s	12.0	0.0	0.0	16.6	0.0	0.0	23.0	0.0	0.0	27.0	0.0	21.1
Prop In Lane	0.07		0.06	0.05		0.17	0.14		0.28	1.00		0.23
Lane Grp Cap(c), veh/h	662	0	0	634	0	0	467	0	0	360	0	744
V/C Ratio(X)	0.61	0.00	0.00	0.75	0.00	0.00	0.44	0.00	0.00	1.22	0.00	0.87
Avail Cap(c_a), veh/h	662	0	0	634	0	0	467	0	0	360	0	744
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	0.90	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	15.2	0.0	0.0	16.6	0.0	0.0	11.6	0.0	0.0	22.9	0.0	15.0
Incr Delay (d2), s/veh	4.1	0.0	0.0	7.3	0.0	0.0	0.6	0.0	0.0	121.3	0.0	10.6
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	10.6	0.0	0.0	13.1	0.0	0.0	4.1	0.0	0.0	32.5	0.0	17.3
LnGrp Delay(d),s/veh	19.3	0.0	0.0	23.9	0.0	0.0	12.3	0.0	0.0	144.1	0.0	25.6
LnGrp LOS	B		C		B		F		C		C	
Approach Vol, veh/h	403			478			204			1084		
Approach Delay, s/veh	19.3			23.9			12.3			73.6		
Approach LOS	B			C			B			E		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	28.0		32.0		28.0		32.0					
Change Period (Y+Rc), s	6.0		6.0		6.0		6.0					
Max Green Setting (Gmax), s	22.0		26.0		22.0		26.0					
Max Q Clear Time (g_c+I1), s	14.0		29.5		18.6		25.0					
Green Ext Time (p_c), s	1.0		0.0		0.7		0.1					
Intersection Summary												
HCM 2010 Ctrl Delay	46.8											
HCM 2010 LOS	D											

HCM 2010 Signalized Intersection Summary
I:\eng\818195 - French Creek W\trafficAnalysis\2018-05 TIS\Existing\WD 2025 AM - Scenario 1.syn

3: S Main St & Bridge St
Synchro 10 (10.2.20)

McMahon Associates, Inc.
4: Starr St (SR 29) & Bridge St

French Creek West - Scenario 1
2025 Future Weekday AM - with Dev

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔		↔		↔	
Traffic Volume (vph)	703	227	576	477	107	506
Future Volume (vph)	703	227	576	477	107	506
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	16	16	10	11	10	12
Grade (%)	1%		1%		0%	
Storage Length (ft)	0		215		320	
Storage Lanes	0		1		1	
Taper Length (ft)			25		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.967				0.850	
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1887	0	1527	1546	1464	1471
Flt Permitted			0.070		0.950	
Satd. Flow (perm)	1887	0	113	1546	1464	1471
Right Turn on Red	Yes				Yes	
Satd. Flow (RTOR)	17				107	
Link Speed (mph)	25		35		25	
Link Distance (ft)	1069		499		559	
Travel Time (s)	29.2		9.7		15.2	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	5%	1%	4%	12%	9%	4%
Adj. Flow (vph)	732	236	600	497	111	527
Shared Lane Traffic (%)						
Lane Group Flow (vph)	968	0	600	497	111	527
Number of Detectors	1		1		1	
Detector Template						
Leading Detector (ft)	35		35		35	
Trailing Detector (ft)	-5		-5		-5	
Detector 1 Position(ft)	-5		-5		-5	
Detector 1 Size(ft)	40		40		40	
Detector 1 Type	Cl+Ex		Cl+Ex		Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0		0.0	
Detector 1 Queue (s)	0.0		0.0		0.0	
Detector 1 Delay (s)	0.0		0.0		0.0	
Turn Type	NA		pm+pt		Prot pm+ov	
Protected Phases	2		1 6		8 1	
Permitted Phases			6		8	
Detector Phase	2		1 6		8 1	
Switch Phase						
Minimum Initial (s)	27.0		7.0		27.0	
Minimum Split (s)	32.0		12.0		32.0	
Total Split (s)	54.0		44.0		98.0	
Total Split (%)	45.0%		36.7%		81.7%	
Maximum Green (s)	49.0		39.0		93.0	
Yellow Time (s)	3.0		3.0		3.0	
All-Red Time (s)	2.0		2.0		2.0	
Lost Time Adjust (s)	-1.0		-1.0		-1.0	

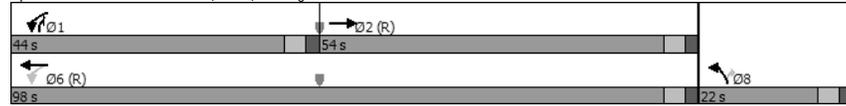
Lanes, Volumes, Timings
I:\eng\818195 - French Creek W\trafficAnalysis\2018-05 TIS\Existing\WD 2025 AM - Scenario 1.syn

4: Starr St (SR 29) & Bridge St
Synchro 10 (10.2.20)

	→	↖	↙	←	↘	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lag		Lead			Lead
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	C-Min		None	C-Min	None	None
Walk Time (s)	9.0		9.0	8.0		
Flash Dont Walk (s)	10.0		10.0	8.0		
Pedestrian Calls (#/hr)	0		0	0		
w/c Ratio	1.14		1.07	0.40	0.62	0.68
Control Delay	106.6		90.0	4.5	64.5	23.0
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	106.6		90.0	4.5	64.5	23.0
Queue Length 50th (ft)	-875		-471	89	82	241
Queue Length 95th (ft)	m#1125		#703	147	141	355
Internal Link Dist (ft)	989			419	479	
Turn Bay Length (ft)			215		320	
Base Capacity (vph)	847		562	1253	219	774
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced w/c Ratio	1.14		1.07	0.40	0.51	0.68

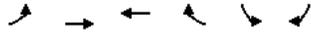
Intersection Summary
 Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 100
 Control Type: Actuated-Coordinated
 - Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Starr St (SR 29) & Bridge St



	→	↖	↙	←	↘	↗		
Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations	↔	↔	↔	↔	↔	↔		
Traffic Volume (veh/h)	703	227	576	477	107	506		
Future Volume (veh/h)	703	227	576	477	107	506		
Number	2	12	1	6	3	18		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1791	1863	1722	1599	1651	1731		
Adj Flow Rate, veh/h	732	219	600	497	111	495		
Adj No. of Lanes	1	0	1	1	1	1		
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96		
Percent Heavy Veh. %	5	5	4	12	9	4		
Cap, veh/h	552	165	609	1253	236	711		
Arrive On Green	0.83	0.82	0.33	0.78	0.15	0.15		
Sat Flow, veh/h	1324	396	1640	1599	1573	1471		
Grp Volume(v), veh/h	0	951	600	497	111	495		
Grp Sat Flow(s), veh/h/ln	0	1721	1640	1599	1573	1471		
Q Serve(g_s), s	0.0	50.0	39.0	11.7	7.7	18.0		
Cycle Q Clear(g_c), s	0.0	50.0	39.0	11.7	7.7	18.0		
Prop In Lane		0.23	1.00		1.00	1.00		
Lane Grp Cap(c), veh/h	0	717	609	1253	236	711		
V/C Ratio(X)	0.00	1.33	0.99	0.40	0.47	0.70		
Avail Cap(c_a), veh/h	0	717	609	1253	236	711		
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	0.00	0.52	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	0.0	10.2	34.8	4.1	46.6	24.1		
Incr Delay (d2), s/veh	0.0	152.0	32.6	0.9	1.5	3.0		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(95%),veh/ln	0.0	93.9	33.4	9.3	6.2	19.2		
LnGrp Delay(d),s/veh	0.0	162.3	67.3	5.0	48.1	27.1		
LnGrp LOS		F	E	A	D	C		
Approach Vol, veh/h	951			1097	606			
Approach Delay, s/veh	162.3			39.1	31.0			
Approach LOS	F			D	C			
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	44.0	54.0				98.0		22.0
Change Period (Y+Rc), s	5.0	5.0				5.0		5.0
Max Green Setting (Gmax), s	39.0	49.0				93.0		17.0
Max Q Clear Time (g_c+I1), s	41.5	52.0				14.2		20.5
Green Ext Time (p_c), s	0.0	0.0				1.9		0.0

Intersection Summary
 HCM 2010 Ctrl Delay 81.4
 HCM 2010 LOS F



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↔	↑	↑	↔	↔	↔
Traffic Volume (vph)	10	1373	894	3	4	9
Future Volume (vph)	10	1373	894	3	4	9
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	14	11	11	12	12
Grade (%)		2%	-2%		3%	
Storage Length (ft)	100			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					0.907	
Frt Protected	0.950				0.985	
Satd. Flow (prot)	1169	1828	1653	0	1032	0
Frt Permitted	0.950				0.985	
Satd. Flow (perm)	1169	1828	1653	0	1032	0
Link Speed (mph)		35	35		25	
Link Distance (ft)		253	844		353	
Travel Time (s)		4.9	16.4		9.6	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	40%	4%	6%	100%	75%	44%
Adj. Flow (vph)	10	1415	922	3	4	9
Shared Lane Traffic (%)						
Lane Group Flow (vph)	10	1415	925	0	13	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection

Int Delay, s/veh 0.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↔	↑	↑	↔	↔	↔
Traffic Vol, veh/h	10	1373	894	3	4	9
Future Vol, veh/h	10	1373	894	3	4	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	2	-2	-	3	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	40	4	6	100	75	44
Mvmt Flow	10	1415	922	3	4	9

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	925	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.7	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	3.2	-	-
Pot Cap-1 Maneuver	493	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	493	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	30.6
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	493	-	-	-	154
HCM Lane V/C Ratio	0.021	-	-	-	0.087
HCM Control Delay (s)	12.5	-	-	-	30.6
HCM Lane LOS	B	-	-	-	D
HCM 95th %tile Q(veh)	0.1	-	-	-	0.3

McMahon Associates, Inc.
6: Mason St & Nutt Rd (SR 23)

French Creek West - Scenario 1
2025 Future Weekday AM - with Dev

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕	↔	↔	↕	↔	↔	↕	↔	↔	↕	↔
Traffic Volume (vph)	14	1287	5	3	849	5	1	0	2	2	1	20
Future Volume (vph)	14	1287	5	3	849	5	1	0	2	2	1	20
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	11	11	11	14	14	14	14	14	14
Grade (%)	2%				2%				-4%		-3%	
Storage Length (ft)	100		0	100		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		0.999			0.999			0.910			0.881	
Flt Protected	0.950			0.950				0.984			0.996	
Satd. Flow (prot)	1501	1655	0	1636	1578	0	0	1315	0	0	1320	0
Flt Permitted	0.950			0.950				0.984			0.996	
Satd. Flow (perm)	1501	1655	0	1636	1578	0	0	1315	0	0	1320	0
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		844			630			265			274	
Travel Time (s)		16.4			12.3			7.2			7.5	
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 (%)	9%	4%	0%	0%	9%	20%	0%	0%	50%	50%	0%	29%
Adj. Flow (vph)	15	1384	5	3	913	5	1	0	2	2	1	22
Shared Lane Traffic (%)												
Lane Group Flow (vph)	15	1389	0	3	918	0	0	3	0	0	25	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized

McMahon Associates, Inc.
6: Mason St & Nutt Rd (SR 23)

French Creek West - Scenario 1
2025 Future Weekday AM - with Dev

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	14	1287	5	3	849	5	1	0	2	2	1	20
Future Vol, veh/h	14	1287	5	3	849	5	1	0	2	2	1	20
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None									
Storage Length	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	2	-	-	2	-	-	-	4	-	-	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	9	4	0	0	9	20	0	0	50	50	0	29
Mvmt Flow	15	1384	5	3	913	5	1	0	2	2	1	22

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	918	0	0	1389
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	4.5	-	-	4.3
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	3.1	-	-	3
Pot Cap-1 Maneuver	533	-	-	385
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	533	-	-	385
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.1	51.9	33.9
HCM LOS			F	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	80	533	-	-	385	-	-	149
HCM Lane V/C Ratio	0.04	0.028	-	-	0.008	-	-	0.166
HCM Control Delay (s)	51.9	12	-	-	14.4	-	-	33.9
HCM Lane LOS	F	B	-	-	B	-	-	D
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	0.6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	427	804	127	78	396	28	56	168	53	17	357	0
Future Volume (vph)	427	804	127	78	396	28	56	168	53	17	357	0
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	13	13	10
Grade (%)		1%			1%			-2%			1%	
Storage Length (ft)	350		0	720		0	100		0	205		0
Storage Lanes	1		0	1		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
Ped Bike Factor	1.00	1.00		1.00	1.00							
Frt		0.979			0.990			0.964				
Flt Protected	0.950			0.950			0.950				0.998	
Satd. Flow (prot)	1572	1816	0	1588	1697	0	1580	1636	0	0	1830	0
Flt Permitted	0.950			0.950			0.176				0.971	
Satd. Flow (perm)	1565	1816	0	1585	1697	0	293	1636	0	0	1780	0
Right Turn on Red			No			No			No			Yes
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		265			436			378			352	
Travel Time (s)		5.2			8.5			10.3			9.6	
Confl. Peds. (#/hr)	3		3	3		3						
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%	0%
Adj. Flow (vph)	469	884	140	86	435	31	62	185	58	19	392	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	469	1024	0	86	466	0	62	243	0	0	411	0
Number of Detectors	1	1		1	1		1	1		1	1	
Detector Template										Left		
Leading Detector (ft)	35	35		35	35		35	35		20	35	
Trailing Detector (ft)	-5	-5		-5	-5		-5	-5		0	-5	
Detector 1 Position(ft)	-5	-5		-5	-5		-5	-5		0	-5	
Detector 1 Size(ft)	40	40		40	40		40	40		20	40	
Detector 1 Type	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	
Detector 1 Queue (s)	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	
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Detector Phase	5	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	7.0	15.0		7.0	15.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	15.0	20.0		15.0	20.0		12.0	12.0		12.0	12.0	
Total Split (s)	38.0	70.0		18.0	50.0		32.0	32.0		32.0	32.0	
Total Split (%)	31.7%	58.3%		15.0%	41.7%		26.7%	26.7%		26.7%	26.7%	
Maximum Green (s)	30.0	65.0		10.0	45.0		27.0	27.0		27.0	27.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
All-Red Time (s)	5.0	2.0		5.0	2.0		5.0	2.0		2.0	2.0	2.0
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)	7.0	4.0		7.0	4.0		4.0	4.0			4.0	
Lead/Lag	Lag	Lag		Lead	Lead							
Lead-Lag Optimize?												
Vehicle Extension (s)	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	
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
v/c Ratio	0.94	1.02		0.62	0.85		0.91	0.64		0.99		
Control Delay	68.8	60.3		72.8	52.6		134.0	50.1		88.2		
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0		
Total Delay	68.8	60.3		72.8	52.6		134.0	50.1		88.2		
Queue Length 50th (ft)	356	-846		65	332		47	171		319		
Queue Length 95th (ft)	#637	#1099		#129	432		#138	261		#528		
Internal Link Dist (ft)		185			356			298			272	
Turn Bay Length (ft)	350			720			100					
Base Capacity (vph)	500	1007		145	650		68	381		415		
Starvation Cap Reductn	0	0		0	0		0	0		0		
Spillback Cap Reductn	0	0		0	0		0	0		0		
Storage Cap Reductn	0	0		0	0		0	0		0		
Reduced v/c Ratio	0.94	1.02		0.59	0.72		0.91	0.64		0.99		
Intersection Summary												
Area Type:	Other											
Cycle Length:	120											
Actuated Cycle Length:	120											
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green, Master Intersection												
Natural Cycle:	100											
Control Type:	Actuated-Coordinated											
- Volume exceeds capacity, queue is theoretically infinite.												
Queue shown is maximum after two cycles.												
# 95th percentile volume exceeds capacity, queue may be longer.												
Queue shown is maximum after two cycles.												
Splits and Phases: 7: Bridge St (SR 1019)/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 (vph)	427	804	127	78	396	28	56	168	53	17	357	0
Future Volume (vph)	427	804	127	78	396	28	56	168	53	17	357	0
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Ob), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	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
Adj Sat Flow, veh/h/ln	1773	1816	1863	1791	1718	1791	1782	1756	1818	1863	1845	0
Adj Flow Rate, veh/h	469	884	140	86	435	31	62	185	58	19	392	0
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	0	1	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. %	1	3	3	0	4	4	2	4	4	1	1	0
Cap, veh/h	722	962	152	127	476	34	134	299	94	40	364	0
Arrive On Green	0.43	0.63	0.62	0.07	0.30	0.29	0.23	0.23	0.22	0.22	0.23	0.00
Sat Flow, veh/h	1689	1530	242	1706	1584	113	998	1283	402	35	1561	0
Grp Volume(v), veh/h	469	0	1024	86	0	466	62	0	243	411	0	0
Grp Sat Flow(s), veh/h/ln	1689	0	1772	1706	0	1697	998	0	1685	1596	0	0
Q Serve(g_s), s	26.4	0.0	61.0	5.9	0.0	31.8	0.0	0.0	15.5	11.5	0.0	0.0
Cycle Q Clear(g_c), s	26.4	0.0	61.0	5.9	0.0	31.8	26.2	0.0	15.5	27.0	0.0	0.0
Prop In Lane	1.00		0.14	1.00		0.07	1.00		0.24	0.05		0.00
Lane Grp Cap(c), veh/h	722	0	1115	127	0	510	134	0	393	390	0	0
V/C Ratio(X)	0.65	0.00	0.92	0.68	0.00	0.91	0.46	0.00	0.62	1.05	0.00	0.00
Avail Cap(c_a), veh/h	722	0	1115	156	0	651	134	0	393	390	0	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	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	27.2	0.0	19.6	54.1	0.0	40.5	45.3	0.0	41.3	46.6	0.0	0.0
Incr Delay (d2), s/veh	2.1	0.0	13.4	8.2	0.0	23.2	2.5	0.0	2.9	60.0	0.0	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	18.5	0.0	43.3	5.5	0.0	25.2	3.8	0.0	12.1	35.1	0.0	0.0
LnGrp Delay(d),s/veh	29.3	0.0	33.0	62.4	0.0	63.7	47.8	0.0	44.2	106.6	0.0	0.0
LnGrp LOS	C		C E		E		D		D F			
Approach Vol, veh/h	1493			552			305			411		
Approach Delay, s/veh	31.8			63.5			45.0			106.6		
Approach LOS	C			E			D			F		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	4		5	6	8					
Phs Duration (G+Y+Rc), s	15.9	82.5	32.0		58.3	40.1	32.0					
Change Period (Y+Rc), s	8.0	* 8	5.0		8.0	5.0	5.0					
Max Green Setting (Gmax), s	10.0	* 65	27.0		30.0	45.0	27.0					
Max Q Clear Time (g_c+I1), s	8.4	63.0	29.0		28.9	33.8	28.7					
Green Ext Time (p_c), s	0.0	1.1	0.0		0.2	1.3	0.0					
Intersection Summary												
HCM 2010 Ctrl Delay				50.7								
HCM 2010 LOS				D								
Notes												

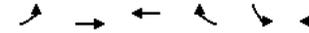
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	5	12	0	0	0	8	560	16	19	760	7
Future Volume (vph)	29	5	12	0	0	0	8	560	16	19	760	7
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	16	16	16	12	12	12	11	11	11
Grade (%)							-11%		2%			
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												
Frt	0.966						0.996		0.999			
Flt Protected	0.969						0.999		0.999			
Satd. Flow (prot)	0	1527	0	0	0	0	0	1677	0	0	1660	0
Flt Permitted	0.969						0.999		0.999			
Satd. Flow (perm)	0	1527	0	0	0	0	0	1677	0	0	1660	0
Link Speed (mph)	25						25		25			
Link Distance (ft)	284						281		356		775	
Travel Time (s)	7.7						7.7		9.7		21.1	
Confl. Peds. (#/hr)	4		1		8		8		8		8	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	4%	0%	14%	0%	0%	0%	0%	6%	0%	28%	3%	0%
Adj. Flow (vph)	30	5	12	0	0	0	8	577	16	20	784	7
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	47	0	0	0	0	0	601	0	0	811	0
Sign Control	Stop			Stop			Free			Free		
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											

Intersection												
Int Delay, s/veh	1.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔						↔			↔		
Traffic Vol, veh/h	29	5	12	0	0	0	8	560	16	19	760	7
Future Vol, veh/h	29	5	12	0	0	0	8	560	16	19	760	7
Conflicting Peds, #/hr	4	0	1	0	0	0	8	0	0	0	0	8
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	-
Grade, %	-	1	-	-	-11	-	-	2	-	-	2	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	4	0	14	0	0	0	0	6	0	28	3	0
Mvmt Flow	30	5	12	0	0	0	8	577	16	20	784	7

Major/Minor	Minor2			Major1			Major2				
Conflicting Flow All	1441	1445	797	799			0	0	593	0	0
Stage 1	836	836	-	-			-	-	-	-	-
Stage 2	605	609	-	-			-	-	-	-	-
Critical Hdwy	6.64	6.7	6.44	4.3			-	-	4.6	-	-
Critical Hdwy Stg 1	5.64	5.7	-	-			-	-	-	-	-
Critical Hdwy Stg 2	5.64	5.7	-	-			-	-	-	-	-
Follow-up Hdwy	3	4	3.2	2.2			-	-	2.452	-	-
Pot Cap-1 Maneuver	144	123	377	796			-	-	836	-	-
Stage 1	450	368	-	-			-	-	-	-	-
Stage 2	592	472	-	-			-	-	-	-	-
Platoon blocked, %											
Mov Cap-1 Maneuver	134	0	374	790			-	-	836	-	-
Mov Cap-2 Maneuver	134	0	-	-			-	-	-	-	-
Stage 1	421	0	-	-			-	-	-	-	-
Stage 2	588	0	-	-			-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	35.4	0.1	0.2
HCM LOS	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	SBL	SBT	SBR
Capacity (veh/h)	790	-	-	165	836	-	-
HCM Lane V/C Ratio	0.01	-	-	0.287	0.023	-	-
HCM Control Delay (s)	9.6	0	-	35.4	9.4	0	-
HCM Lane LOS	A	A	-	E	A	A	-
HCM 95th %tile Q(veh)	0	-	-	1.1	0.1	-	-



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑			↑
Traffic Volume (vph)	0	1358	452	0	0	333
Future Volume (vph)	0	1358	452	0	0	333
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	15	15
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.865					
Fit Protected						
Satd. Flow (prot)	0	1765	1748	0	0	1631
Fit Permitted						
Satd. Flow (perm)	0	1765	1748	0	0	1631
Link Speed (mph)	35		35		25	
Link Distance (ft)	630		265		329	
Travel Time (s)	12.3		5.2		9.0	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	0%	2%	3%	0%	0%	5%
Adj. Flow (vph)	0	1492	497	0	0	366
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1492	497	0	0	366
Sign Control	Free		Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized

Intersection						
Int Delay, s/veh	3.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑			↑
Traffic Vol, veh/h	0	1358	452	0	0	333
Future Vol, veh/h	0	1358	452	0	0	333
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	91	91	91	91	91	91
Heavy Vehicles, %	0	2	3	0	0	5
Mvmt Flow	0	1492	497	0	0	366

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	-	0	- 0 - 497
Stage 1	-	-	- - -
Stage 2	-	-	- - -
Critical Hdwy	-	-	- - 6.25
Critical Hdwy Stg 1	-	-	- - -
Critical Hdwy Stg 2	-	-	- - -
Follow-up Hdwy	-	-	- - 3.1
Pot Cap-1 Maneuver	0	-	- 0 0 602
Stage 1	0	-	- 0 0 -
Stage 2	0	-	- 0 0 -
Platoon blocked, %	-	-	- - -
Mov Cap-1 Maneuver	-	-	- - 602
Mov Cap-2 Maneuver	-	-	- - -
Stage 1	-	-	- - -
Stage 2	-	-	- - -

Approach	EB	WB	SB
HCM Control Delay, s	0	0	19.8
HCM LOS			C

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	602
HCM Lane V/C Ratio	-	-	0.608
HCM Control Delay (s)	-	-	19.8
HCM Lane LOS	-	-	C
HCM 95th %tile Q(veh)	-	-	4.1

McMahon Associates, Inc.
1: N Main St & High St

French Creek West - Scenario 1
2025 Future Weekday PM - with Dev

	→	↖	↗	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↑	↑
Traffic Volume (vph)	51	142	189	63	231	355
Future Volume (vph)	51	142	189	63	231	355
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	15	15	14	14	16	16
Grade (%)	-10%			2%	9%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.901				0.918	
Flt Protected				0.964	0.981	
Satd. Flow (prot)	1836	0	0	1770	1748	0
Flt Permitted				0.964	0.981	
Satd. Flow (perm)	1836	0	0	1770	1748	0
Link Speed (mph)	25			25	25	
Link Distance (ft)	292			227	273	
Travel Time (s)	8.0			6.2	7.4	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	2%	2%	0%	14%	1%	0%
Adj. Flow (vph)	55	153	203	68	248	382
Shared Lane Traffic (%)						
Lane Group Flow (vph)	208	0	0	271	630	0
Sign Control	Stop			Stop	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					

McMahon Associates, Inc.
1: N Main St & High St

French Creek West - Scenario 1
2025 Future Weekday PM - with Dev

	→	↖	↗	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↑	↑
Traffic Volume (veh/h)	51	142	189	63	231	355
Future Volume (Veh/h)	51	142	189	63	231	355
Sign Control	Stop			Stop	Free	
Grade	-10%			2%	9%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	55	153	203	68	248	382
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	878	0	868	687	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	878	0	868	687	0	
tC, single (s)	6.5	6.2	7.1	6.6	4.1	
tC, 2 stage (s)						
tF (s)	4.0	3.3	3.5	4.1	2.2	
p0 queue free %	77	86	0	77	85	
cM capacity (veh/h)	244	1085	173	301	1630	
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	208	271	630			
Volume Left	0	203	248			
Volume Right	153	0	382			
cSH	568	194	1630			
Volume to Capacity	0.37	1.40	0.15			
Queue Length 95th (ft)	42	400	13			
Control Delay (s)	15.0	253.5	3.9			
Lane LOS	B	F	A			
Approach Delay (s)	15.0	253.5	3.9			
Approach LOS	B	F				
Intersection Summary						
Average Delay			67.0			
Intersection Capacity Utilization			73.1%	ICU Level of Service	D	
Analysis Period (min)			15			

McMahon Associates, Inc.
2: N Main St & Riverworks Access

French Creek West - Scenario 1
2025 Future Weekday PM - with Dev



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔			↔	↔			↔			↔	↔
Traffic Volume (vph)	17	0	83	7	0	3	137	560	70	14	266	28
Future Volume (vph)	17	0	83	7	0	3	137	560	70	14	266	28
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	13	12	12	12	14	14	12
Grade (%)	0%				1%		1%				-2%	
Storage Length (ft)	0		0		55		0		0		0	
Storage Lanes	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
Ped Bike Factor												
Frt	0.888				0.850		0.988				0.988	
Frt Protected	0.992		0.950				0.991				0.998	
Satd. Flow (prot)	0	1555	0	1701	1522	0	0	1747	0	0	1909	0
Frt Permitted	0.992		0.950				0.991				0.998	
Satd. Flow (perm)	0	1555	0	1701	1522	0	0	1747	0	0	1909	0
Link Speed (mph)	25		20		25		25		25		25	
Link Distance (ft)	292		275		478		154					
Travel Time (s)	8.0		9.4		13.0		4.2					
Confl. Peds. (#/hr)			2				1		1			
Peak Hour Factor	0.93	0.93	0.94	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	2%	2%	2%	0%	2%	0%	2%	0%	0%	0%	0%	2%
Adj. Flow (vph)	18	0	88	8	0	3	147	602	75	15	286	30
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	106	0	8	3	0	0	824	0	0	331	0
Sign Control	Stop		Stop		Free		Free				Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized

McMahon Associates, Inc.
2: N Main St & Riverworks Access

French Creek West - Scenario 1
2025 Future Weekday PM - with Dev

Intersection												
Int Delay, s/veh	2.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔			↔	↔			↔			↔	↔
Traffic Vol, veh/h	17	0	83	7	0	3	137	560	70	14	266	28
Future Vol, veh/h	17	0	83	7	0	3	137	560	70	14	266	28
Conflicting Peds, #/hr	0	0	0	2	0	0	0	0	0	1	1	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Free						
RT Channelized	-	-	None									
Storage Length	-	-	-	55	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	0	-	0
Grade, %	-	0	-	-	1	-	-	1	-	-	-	-2
Peak Hour Factor	93	93	94	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	0	2	0	2	0	0	0	0	2
Mvmt Flow	18	0	88	8	0	3	147	602	75	15	286	30

Major/Minor	Minor2	Minor1	Major1	Major2								
Conflicting Flow All	1266	1303	303	1312	1281	641	316	0	0	678	0	0
Stage 1	331	331	-	935	935	-	-	-	-	-	-	-
Stage 2	935	972	-	377	346	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.3	6.72	6.3	4.3	-	-	4.3	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.3	5.72	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.3	5.72	-	-	-	-	-	-	-
Follow-up Hdwy	3	4.018	3.1	3	4.018	3.1	3	-	-	3	-	-
Pot Cap-1 Maneuver	159	161	782	138	154	492	936	-	-	699	-	-
Stage 1	782	645	-	336	327	-	-	-	-	-	-	-
Stage 2	352	331	-	723	623	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	124	117	781	96	112	492	936	-	-	698	-	-
Mov Cap-2 Maneuver	124	117	-	96	112	-	-	-	-	-	-	-
Stage 1	583	628	-	250	243	-	-	-	-	-	-	-
Stage 2	261	246	-	623	607	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	16.9	35.7	1.7	0.5
HCM LOS	C	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	936	-	-	409	96	492	698	-	-
HCM Lane V/C Ratio	0.157	-	-	0.261	0.078	0.007	0.022	-	-
HCM Control Delay (s)	9.6	0	-	16.9	45.7	12.4	10.3	0	-
HCM Lane LOS	A	A	-	C	E	B	B	A	-
HCM 95th %tile Q(veh)	0.6	-	-	1	0.2	0	0.1	-	-

McMahon Associates, Inc.
3: S Main St & Bridge St

French Creek West - Scenario 1
2025 Future Weekday PM - with Dev

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔		↔		↔		↔		↔		↔	
Traffic Volume (vph)	93	350	38	26	514	215	47	376	82	158	147	79
Future Volume (vph)	93	350	38	26	514	215	47	376	82	158	147	79
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	12	11	11	11	10	10	10
Grade (%)	0%				1%			-2%			3%	
Storage Length (ft)	0	0		0	0		0	0		135	0	
Storage Lanes	0	0		0	0		0	0		1	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
Ped Bike Factor	0.99				0.98			0.98			0.98	0.96
Frt	0.989				0.962			0.978			0.947	
Flt Protected	0.990				0.998			0.995			0.950	
Satd. Flow (prot)	0	1696	0	0	1675	0	0	1686	0	1572	1496	0
Flt Permitted	0.704				0.971			0.944			0.267	
Satd. Flow (perm)	0	1205	0	0	1627	0	0	1592	0	435	1496	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)	9				43			15			41	
Link Speed (mph)	25				25			25			25	
Link Distance (ft)	1070				1069			731			346	
Travel Time (s)	29.2				29.2			19.9			9.4	
Confl. Peds. (#/hr)	13	70		70	13		38	31		31	38	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	0%	3%	4%	0%	1%	2%	0%	0%	0%	0%	0%	3%
Adj. Flow (vph)	106	398	43	30	584	244	53	427	93	180	167	90
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	547	0	0	858	0	0	573	0	180	257	0
Number of Detectors	1	1	1		1	1		1	1		1	1
Detector Template	Left		Left		Left		Left		Left		Left	
Leading Detector (ft)	20	35	20		35	20		35	20		35	35
Trailing Detector (ft)	0	-5	0		-5	0		-5	-5		-5	-5
Detector 1 Position(ft)	0	-5	0		-5	0		-5	-5		-5	-5
Detector 1 Size(ft)	20	40	20		40	20		40	20		40	40
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+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
Turn Type	Perm	NA	Perm		NA	Perm		NA	Perm		NA	NA
Protected Phases	2				6			8			4	
Permitted Phases	2				6			8			4	
Detector Phase	2	2	6		6	8		8	4		4	4
Switch Phase												
Minimum Initial (s)	21.0	21.0	21.0		21.0	5.0		5.0	5.0		5.0	5.0
Minimum Split (s)	27.0	27.0	27.0		27.0	11.0		11.0	11.0		11.0	11.0
Total Split (s)	42.0	42.0	42.0		42.0	28.0		28.0	28.0		28.0	28.0
Total Split (%)	60.0%	60.0%	60.0%		60.0%	40.0%		40.0%	40.0%		40.0%	40.0%
Maximum Green (s)	36.0	36.0	36.0		36.0	22.0		22.0	22.0		22.0	22.0
Yellow Time (s)	4.0	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0

Lanes, Volumes, Timings
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3: S Main St & Bridge St
Synchro 10 (10.2.20)

McMahon Associates, Inc.
3: S Main St & Bridge St

French Creek West - Scenario 1
2025 Future Weekday PM - with Dev

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
All-Red Time (s)	2.0	2.0			2.0	2.0		2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0				-1.0		-1.0		-1.0		-1.0	
Total Lost Time (s)	5.0				5.0		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	3.0	
Recall Mode	C-Min	C-Min	C-Min		C-Min	None		None		None	None	
Walk Time (s)	8.0	8.0	8.0		8.0	8.0		8.0		8.0	8.0	
Flash Dont Walk (s)	8.0	8.0	8.0		8.0	8.0		8.0		8.0	8.0	
Pedestrian Calls (#/hr)	0	0	0		0	0		0		0	0	
v/c Ratio	0.85				0.97	1.08		1.27		0.50	0.50	
Control Delay	29.8				37.9	86.5		191.7		19.6	19.6	
Queue Delay	0.0				0.0	0.0		0.0		0.0	0.0	
Total Delay	29.8				37.9	86.5		191.7		19.6	19.6	
Queue Length 50th (ft)	184				324	-277		-100		72	72	
Queue Length 95th (ft)	#370				#307	#446		#207		133	133	
Internal Link Dist (ft)	990				989	651		266				
Turn Bay Length (ft)												
Base Capacity (vph)	641				880	533		142		519	519	
Starvation Cap Reductn	0				0	0		0		0	0	
Spillback Cap Reductn	0				0	0		0		0	0	
Storage Cap Reductn	0				0	0		0		0	0	
Reduced v/c Ratio	0.85				0.97	1.08		1.27		0.50	0.50	

Intersection Summary

Area Type: Other
 Cycle Length: 70
 Actuated Cycle Length: 70
 Offset: 6 (9%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated
 - Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 3: S Main St & Bridge St

→ Ø2 (R)	↓ Ø4
42 s	28 s
← Ø6 (R)	↑ Ø8
42 s	28 s

Lanes, Volumes, Timings
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3: S Main St & Bridge St
Synchro 10 (10.2.20)

McMahon Associates, Inc.
3: S Main St & Bridge St

French Creek West - Scenario 1
2025 Future Weekday PM - with Dev

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔			↔			↔			↔	↔	
Traffic Volume (veh/h)	93	350	38	26	514	215	47	376	82	158	147	79
Future Volume (veh/h)	93	350	38	26	514	215	47	376	82	158	147	79
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Ob), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.93	1.00		0.93	0.98		0.94	1.00		0.94
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
Adj Sat Flow, veh/h/ln	1800	1756	1800	1791	1769	1791	1818	1818	1818	1773	1755	1773
Adj Flow Rate, veh/h	106	398	43	30	584	244	53	427	90	180	167	90
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	1	1	0
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh. %	3	3	3	1	1	1	0	0	0	0	0	0
Cap, veh/h	127	417	41	69	604	246	86	399	80	236	344	186
Arrive On Green	0.51	0.53	0.51	1.00	1.00	1.00	0.31	0.33	0.31	0.33	0.33	0.31
Sat Flow, veh/h	125	789	78	29	1142	466	91	1215	245	885	1048	565
Grp Volume(v), veh/h	547	0	0	858	0	0	570	0	0	180	0	257
Grp Sat Flow(s), veh/h/ln	992	0	0	1637	0	0	1552	0	0	885	0	1612
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	13.0	0.0	0.0	1.5	0.0	9.0
Cycle Q Clear(g_c), s	36.0	0.0	0.0	36.0	0.0	0.0	22.0	0.0	0.0	23.0	0.0	9.0
Prop In Lane	0.19		0.08	0.03		0.28	0.09		0.16	1.00		0.35
Lane Grp Cap(c), veh/h	571	0	0	895	0	0	544	0	0	236	0	530
V/C Ratio(X)	0.96	0.00	0.00	0.96	0.00	0.00	1.05	0.00	0.00	0.76	0.00	0.49
Avail Cap(c_a), veh/h	571	0	0	895	0	0	544	0	0	236	0	530
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	0.77	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	15.1	0.0	0.0	0.3	0.0	0.0	24.5	0.0	0.0	27.1	0.0	18.9
Incr Delay (d2), s/veh	28.4	0.0	0.0	18.0	0.0	0.0	51.8	0.0	0.0	13.5	0.0	0.7
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	21.5	0.0	0.0	7.5	0.0	0.0	33.1	0.0	0.0	7.8	0.0	7.3
LnGrp Delay(d),s/veh	43.6	0.0	0.0	18.3	0.0	0.0	76.3	0.0	0.0	40.6	0.0	19.6
LnGrp LOS	D			B			F			D		B
Approach Vol, veh/h	547			858			570			437		
Approach Delay, s/veh	43.6			18.3			76.3			28.3		
Approach LOS	D			B			E			C		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	42.0		28.0		42.0		28.0					
Change Period (Y+Rc), s	6.0		6.0		6.0		6.0					
Max Green Setting (Gmax), s	36.0		22.0		36.0		22.0					
Max Q Clear Time (g_c+I1), s	38.0		25.5		38.0		24.0					
Green Ext Time (p_c), s	0.0		0.0		0.0		0.0					
Intersection Summary												
HCM 2010 Ctrl Delay	39.5											
HCM 2010 LOS	D											

HCM 2010 Signalized Intersection Summary
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3: S Main St & Bridge St
Synchro 10 (10.2.20)

McMahon Associates, Inc.
4: Starr St (SR 29) & Bridge St

French Creek West - Scenario 1
2025 Future Weekday PM - with Dev

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔		↔	↔	↔	↔
Traffic Volume (vph)	564	104	444	788	127	590
Future Volume (vph)	564	104	444	788	127	590
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	16	16	10	11	10	12
Grade (%)	1%			1%	0%	
Storage Length (ft)		0	215		320	0
Storage Lanes		0	1		1	1
Taper Length (ft)			25		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.979					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1929	0	1542	1697	1596	1500
Flt Permitted			0.200		0.950	
Satd. Flow (perm)	1929	0	325	1697	1596	1500
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	17					199
Link Speed (mph)	25			35	25	
Link Distance (ft)	1069			499	559	
Travel Time (s)	29.2			9.7	15.2	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	3%	3%	3%	2%	0%	2%
Adj. Flow (vph)	576	106	453	804	130	602
Shared Lane Traffic (%)						
Lane Group Flow (vph)	682	0	453	804	130	602
Number of Detectors	1		1	1	1	1
Detector Template						
Leading Detector (ft)	35		35	35	35	35
Trailing Detector (ft)	-5		-5	-5	-5	-5
Detector 1 Position(ft)	-5		-5	-5	-5	-5
Detector 1 Size(ft)	40		40	40	40	40
Detector 1 Type	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
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Turn Type	NA		pm+pt	NA	Prot	pm+ov
Protected Phases	2		1	6	8	1
Permitted Phases			6			8
Detector Phase	2		1	6	8	1
Switch Phase						
Minimum Initial (s)	27.0		7.0	27.0	7.0	7.0
Minimum Split (s)	32.0		12.0	32.0	12.0	12.0
Total Split (s)	35.0		15.0	50.0	20.0	15.0
Total Split (%)	50.0%		21.4%	71.4%	28.6%	21.4%
Maximum Green (s)	30.0		10.0	45.0	15.0	10.0
Yellow Time (s)	3.0		3.0	3.0	3.0	3.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0		-1.0	-1.0	-1.0	-1.0

Lanes, Volumes, Timings
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4: Starr St (SR 29) & Bridge St
Synchro 10 (10.2.20)

	→	↖	↙	←	↘	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lag		Lead			Lead
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	C-Min		None	C-Min	None	None
Walk Time (s)	9.0		9.0	8.0		
Flash Dont Walk (s)	10.0		10.0	8.0		
Pedestrian Calls (#/hr)	0		0	0		
w/c Ratio	0.66		1.04	0.62	0.48	0.92
Control Delay	14.3		71.5	8.6	31.3	34.1
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	14.3		71.5	8.6	31.3	34.1
Queue Length 50th (ft)	201		-134	149	51	159
Queue Length 95th (ft)	m220		#323	324	94	#327
Internal Link Dist (ft)	989		419	479		
Turn Bay Length (ft)			215	320		
Base Capacity (vph)	1038		434	1289	364	656
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced w/c Ratio	0.66		1.04	0.62	0.36	0.92

Intersection Summary

Area Type: Other

Cycle Length: 70

Actuated Cycle Length: 70

Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Green, Master Intersection

Natural Cycle: 65

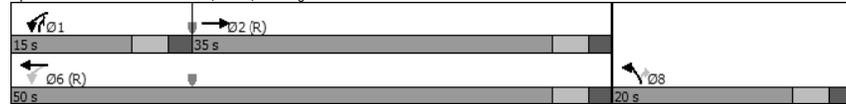
Control Type: Actuated-Coordinated

- Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Starr St (SR 29) & Bridge St



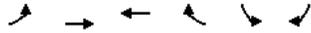
	→	↖	↙	←	↘	↗		
Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations	↔	↔	↔	↔	↔	↔		
Traffic Volume (veh/h)	564	104	444	788	127	590		
Future Volume (veh/h)	564	104	444	788	127	590		
Number	2	12	1	6	3	18		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1808	1863	1739	1756	1800	1765		
Adj Flow Rate, veh/h	576	97	453	804	130	583		
Adj No. of Lanes	1	0	1	1	1	1		
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98		
Percent Heavy Veh, %	3	3	3	2	0	2		
Cap, veh/h	668	113	430	1154	392	579		
Arrive On Green	0.30	0.29	0.16	0.66	0.23	0.23		
Sat Flow, veh/h	1509	254	1656	1756	1714	1500		
Grp Volume(v), veh/h	0	673	453	804	130	583		
Grp Sat Flow(s), veh/h/ln	0	1764	1656	1756	1714	1500		
Q Serve(g_s), s	0.0	25.3	11.0	20.3	4.4	16.0		
Cycle Q Clear(g_c), s	0.0	25.3	11.0	20.3	4.4	16.0		
Prop In Lane	0.14	1.00			1.00	1.00		
Lane Grp Cap(c), veh/h	0	781	430	1154	392	579		
V/C Ratio(X)	0.00	0.86	1.05	0.70	0.33	1.01		
Avail Cap(c_a), veh/h	0	781	430	1154	392	579		
HCM Platoon Ratio	0.67	0.67	1.00	1.00	1.00	1.00		
Upstream Filter(I)	0.00	0.19	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	0.0	22.6	16.8	7.6	22.5	21.5		
Incr Delay (d2), s/veh	0.0	2.7	58.1	3.5	0.5	39.3		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(95%),veh/ln	0.0	15.4	27.3	16.1	3.9	31.3		
LnGrp Delay(d),s/veh	0.0	25.3	74.8	11.1	23.0	60.8		
LnGrp LOS		C	F	B	C	F		
Approach Vol, veh/h	673			1257	713			
Approach Delay, s/veh	25.3			34.1	53.9			
Approach LOS	C			C	D			
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	15.0	35.0				50.0		20.0
Change Period (Y+Rc), s	5.0	5.0				5.0		5.0
Max Green Setting (Gmax), s	10.0	30.0				45.0		15.0
Max Q Clear Time (q_c+1), s	13.5	27.3				22.8		18.5
Green Ext Time (p_c), s	0.0	0.9				3.4		0.0

Intersection Summary

HCM 2010 Ctrl Delay 37.2

HCM 2010 LOS D

Notes



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↔	↑	↔		↔	
Traffic Volume (vph)	10	1183	1494	2	1	5
Future Volume (vph)	10	1183	1494	2	1	5
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	14	11	11	12	12
Grade (%)		2%	-2%		3%	
Storage Length (ft)	100			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					0.887	
Frt Protected	0.950				0.992	
Satd. Flow (prot)	1636	1744	1722	0	1337	0
Frt Permitted	0.950				0.992	
Satd. Flow (perm)	1636	1744	1722	0	1337	0
Link Speed (mph)		35	35		25	
Link Distance (ft)		253	844		353	
Travel Time (s)		4.9	16.4		9.6	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	9%	2%	50%	0%	20%
Adj. Flow (vph)	11	1245	1573	2	1	5
Shared Lane Traffic (%)						
Lane Group Flow (vph)	11	1245	1575	0	6	0
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↔	↑	↔		↔	
Traffic Vol, veh/h	10	1183	1494	2	1	5
Future Vol, veh/h	10	1183	1494	2	1	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	2	-2	-	3	-
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	0	9	2	50	0	20
Mvmt Flow	11	1245	1573	2	1	5

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	1575	0	0
Stage 1	-	-	1574
Stage 2	-	-	1267
Critical Hdwy	4.3	-	7
Critical Hdwy Stg 1	-	-	6
Critical Hdwy Stg 2	-	-	6
Follow-up Hdwy	3	-	3
Pot Cap-1 Maneuver	328	-	13
Stage 1	-	-	156
Stage 2	-	-	235
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	328	-	13
Mov Cap-2 Maneuver	-	-	88
Stage 1	-	-	151
Stage 2	-	-	235

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	40.4
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	328	-	-	-	108
HCM Lane V/C Ratio	0.032	-	-	-	0.058
HCM Control Delay (s)	16.3	-	-	-	40.4
HCM Lane LOS	C	-	-	-	E
HCM 95th %tile Q(veh)	0.1	-	-	-	0.2

McMahon Associates, Inc.
6: Mason St & Nutt Rd (SR 23)

French Creek West - Scenario 1
2025 Future Weekday PM - with Dev

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕	↔	↔	↕	↔	↔	↕	↔	↔	↕	↔
Traffic Volume (vph)	33	1197	3	4	1417	20	6	0	17	9	1	52
Future Volume (vph)	33	1197	3	4	1417	20	6	0	17	9	1	52
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	11	11	11	14	14	14	14	14	14
Grade (%)	2%				2%				-4%		-3%	
Storage Length (ft)	100		0	100		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					0.998			0.900				0.886
Flt Protected	0.950			0.950				0.987				0.993
Satd. Flow (prot)	1636	1706	0	1636	1685	0	0	1740	0	0	1715	0
Flt Permitted	0.950			0.950				0.987				0.993
Satd. Flow (perm)	1636	1706	0	1636	1685	0	0	1740	0	0	1715	0
Link Speed (mph)	35				35				25		25	
Link Distance (ft)	844				630				265		274	
Travel Time (s)	16.4				12.3				7.2		7.5	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	1%	0%	0%	2%	5%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	34	1221	3	4	1446	20	6	0	17	9	1	53
Shared Lane Traffic (%)												
Lane Group Flow (vph)	34	1224	0	4	1466	0	0	23	0	0	63	0
Sign Control	Free				Free				Stop		Stop	

Intersection Summary
Area Type: Other
Control Type: Unsignalized

McMahon Associates, Inc.
6: Mason St & Nutt Rd (SR 23)

French Creek West - Scenario 1
2025 Future Weekday PM - with Dev

Intersection												
Int Delay, s/veh	4.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕	↔	↔	↕	↔	↔	↕	↔	↔	↕	↔
Traffic Vol, veh/h	33	1197	3	4	1417	20	6	0	17	9	1	52
Future Vol, veh/h	33	1197	3	4	1417	20	6	0	17	9	1	52
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None									
Storage Length	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	2	-	-	2	-	-	-	4	-	-	-
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles, %	0	1	0	0	2	5	0	0	0	0	0	0
Mvmt Flow	34	1221	3	4	1446	20	6	0	17	9	1	53

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	1466	0	0	1224
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	4.1	-	-	4.1
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	2.2	-	-	2.2
Pot Cap-1 Maneuver	467	-	-	577
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	467	-	-	577
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0	133.2	153.1
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	49	467	-	-	577	-	-	76
HCM Lane V/C Ratio	0.479	0.072	-	-	0.007	-	-	0.832
HCM Control Delay (s)	133.2	13.3	-	-	11.3	-	-	153.1
HCM Lane LOS	F	B	-	-	B	-	-	F
HCM 95th %tile Q(veh)	1.8	0.2	-	-	0	-	-	4.1

McMahon Associates, Inc.

French Creek West - Scenario 1

7: Bridge St (SR 1019)/Bridge St (SR 113) & Nutt Rd (SR 23)

2025 Future Weekday PM - with Dev



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	551	651	76	67	758	32	131	319	28	21	246	0
Future Volume (vph)	551	651	76	67	758	32	131	319	28	21	246	0
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	13	13	10
Grade (%)		1%			1%			-2%			1%	
Storage Length (ft)	350		0	720		0	100		0	205		0
Storage Lanes	1		0	1		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
Ped Bike Factor		1.00		1.00								
Frt		0.984			0.994			0.988				
Flt Protected	0.950			0.950			0.950				0.996	
Satd. Flow (prot)	1557	1842	0	1557	1747	0	1580	1736	0	0	1826	0
Flt Permitted	0.950			0.950			0.297				0.517	
Satd. Flow (perm)	1557	1842	0	1556	1747	0	494	1736	0	0	948	0
Right Turn on Red			No			No			No			Yes
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		265			436			378			352	
Travel Time (s)		5.2			8.5			10.3			9.6	
Confl. Peds. (#/hr)			1	1								
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	2%	2%	0%	2%	2%	0%	2%	0%	0%	0%	1%	0%
Adj. Flow (vph)	562	664	78	68	773	33	134	326	29	21	251	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	562	742	0	68	806	0	134	355	0	0	272	0
Number of Detectors	1	1		1	1		1	1		1	1	
Detector Template										Left		
Leading Detector (ft)	35	35		35	35		35	35		20	35	
Trailing Detector (ft)	-5	-5		-5	-5		-5	-5		0	-5	
Detector 1 Position(ft)	-5	-5		-5	-5		-5	-5		0	-5	
Detector 1 Size(ft)	40	40		40	40		40	40		20	40	
Detector 1 Type	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	
Detector 1 Queue (s)	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	
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Detector Phase	5	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	7.0	15.0		3.0	15.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	15.0	20.0		11.0	20.0		12.0	12.0		12.0	12.0	
Total Split (s)	33.0	62.0		14.0	43.0		24.0	24.0		24.0	24.0	
Total Split (%)	33.0%	62.0%		14.0%	43.0%		24.0%	24.0%		24.0%	24.0%	
Maximum Green (s)	25.0	57.0		6.0	38.0		19.0	19.0		19.0	19.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	

Lanes, Volumes, Timings 7: Bridge St (SR 1019)/Bridge St (SR 113) & Nutt Rd (SR 23)
 I:\eng\18195 - French Creek W\trafficAnalysis\2018-05 TIS\Existing\WD 2025 PM.syn Synchro 10 (10.2.20)

McMahon Associates, Inc.

French Creek West - Scenario 1

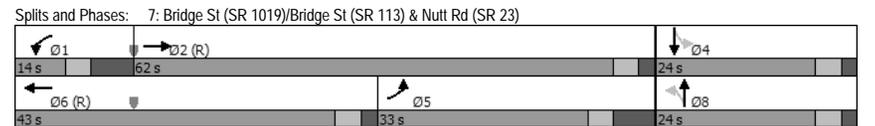
7: Bridge St (SR 1019)/Bridge St (SR 113) & Nutt Rd (SR 23)

2025 Future Weekday PM - with Dev



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
All-Red Time (s)	5.0	2.0		5.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0			-1.0	
Total Lost Time (s)	7.0	4.0		7.0	4.0		4.0	4.0			4.0	
Lead/Lag	Lag	Lag		Lead	Lead							
Lead-Lag Optimize?												
Vehicle Extension (s)	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	
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	
v/c Ratio	1.39	0.66		0.63	1.18		1.37	1.02		1.44		
Control Delay	221.9	17.5		71.4	127.0		251.4	95.3		257.3		
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0		
Total Delay	221.9	17.5		71.4	127.0		251.4	95.3		257.3		
Queue Length 50th (ft)	-480	311		43	-621		-113	-236		-236		
Queue Length 95th (ft)	#685	450		#106	#849		#232	#418		#397		
Internal Link Dist (ft)		185			356		298			272		
Turn Bay Length (ft)	350			720			100					
Base Capacity (vph)	404	1120		108	681		98	347		189		
Starvation Cap Reductn	0	0		0	0		0	0		0		
Spillback Cap Reductn	0	0		0	0		0	0		0		
Storage Cap Reductn	0	0		0	0		0	0		0		
Reduced v/c Ratio	1.39	0.66		0.63	1.18		1.37	1.02		1.44		

Intersection Summary	
Area Type:	Other
Cycle Length:	100
Actuated Cycle Length:	100
Offset:	0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green, Master Intersection
Natural Cycle:	150
Control Type:	Actuated-Coordinated
- Volume exceeds capacity, queue is theoretically infinite.	
Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	



Lanes, Volumes, Timings 7: Bridge St (SR 1019)/Bridge St (SR 113) & Nutt Rd (SR 23)
 I:\eng\18195 - French Creek W\trafficAnalysis\2018-05 TIS\Existing\WD 2025 PM.syn Synchro 10 (10.2.20)

	↖	→	↘	↙	←	↖	↗	↘	↙	↕	↖	↗	↘	↙	↕
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR			
Lane Configurations	↖	↖		↖	↖		↖	↖		↖	↖	↖			
Traffic Volume (vph)	551	651	76	67	758	32	131	319	28	21	246	0			
Future Volume (vph)	551	651	76	67	758	32	131	319	28	21	246	0			
Number	5	2	12	1	6	16	3	8	18	7	4	14			
Initial Q (Ob), 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			
Adj Sat Flow, veh/h/ln	1756	1830	1863	1756	1757	1791	1782	1818	1818	1863	1846	0			
Adj Flow Rate, veh/h	562	664	78	68	773	33	134	326	29	21	251	0			
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	0	1	0			
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98			
Percent Heavy Veh. %	2	2	2	2	2	2	2	2	0	1	1	0			
Cap, veh/h	435	892	105	108	653	28	164	329	29	39	161	0			
Arrive On Green	0.26	0.56	0.55	0.06	0.39	0.38	0.20	0.20	0.19	0.19	0.20	0.00			
Sat Flow, veh/h	1672	1608	189	1672	1673	71	1135	1646	146	0	806	0			
Grp Volume(v), veh/h	562	0	742	68	0	806	134	0	355	272	0	0			
Grp Sat Flow(s), veh/h/ln	1672	0	1796	1672	0	1745	1135	0	1792	806	0	0			
Q Serve(g_s), s	26.0	0.0	31.3	4.0	0.0	39.0	1.5	0.0	19.8	0.0	0.0	0.0			
Cycle Q Clear(g_c), s	26.0	0.0	31.3	4.0	0.0	39.0	20.0	0.0	19.8	19.0	0.0	0.0			
Prop In Lane	1.00		0.11	1.00		0.04	1.00		0.08	0.08		0.00			
Lane Grp Cap(c), veh/h	435	0	997	108	0	680	164	0	358	192	0	0			
V/C Ratio(X)	1.29	0.00	0.74	0.63	0.00	1.18	0.82	0.00	0.99	1.42	0.00	0.00			
Avail Cap(c_a), veh/h	435	0	1042	117	0	680	164	0	358	192	0	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	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	37.0	0.0	16.9	45.6	0.0	30.5	43.9	0.0	39.9	37.3	0.0	0.0			
Incr Delay (d2), s/veh	147.9	0.0	5.0	9.1	0.0	97.5	26.2	0.0	44.8	215.6	0.0	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	53.7	0.0	23.6	3.8	0.0	66.9	8.5	0.0	20.4	30.3	0.0	0.0			
LnGrp Delay(d),s/veh	184.9	0.0	21.9	54.6	0.0	128.1	70.1	0.0	84.8	252.9	0.0	0.0			
LnGrp LOS	F		C	D		F	E		F	F					
Approach Vol, veh/h	1304			874				489			272				
Approach Delay, s/veh	92.2			122.3				80.8			252.9				
Approach LOS	F			F				F			F				
Timer	1	2	3	4	5	6	7	8							
Assigned Phs	1	2		4	5	6		8							
Phs Duration (G+Y+Rc), s	13.5	62.5		24.0	33.0	43.0		24.0							
Change Period (Y+Rc), s	8.0	* 8		5.0	8.0	5.0		5.0							
Max Green Setting (Gmax), s	6.0	* 57		19.0	25.0	38.0		19.0							
Max Q Clear Time (g_c+I1), s	6.5	33.3		21.0	28.5	41.0		22.5							
Green Ext Time (p_c), s	0.0	3.1		0.0	0.0	0.0		0.0							

Intersection Summary	
HCM 2010 Ctrl Delay	114.1
HCM 2010 LOS	F

Notes

	↖	→	↘	↙	←	↖	↗	↘	↙	↕	↖	↗	↘	↙	↕
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR			
Lane Configurations	↖	↖		↖	↖		↖	↖		↖	↖	↖			
Traffic Volume (vph)	32	3	24	0	0	0	21	762	26	20	774	22			
Future Volume (vph)	32	3	24	0	0	0	21	762	26	20	774	22			
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800			
Lane Width (ft)	11	11	11	16	16	16	12	12	12	11	11	11			
Grade (%)						-11%		2%				2%			
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															
Frt		0.945						0.996			0.996				
Flt Protected		0.974						0.999			0.999				
Satd. Flow (prot)	0	1594	0	0	0	0	0	1754	0	0	1698	0			
Flt Permitted		0.974						0.999			0.999				
Satd. Flow (perm)	0	1594	0	0	0	0	0	1754	0	0	1698	0			
Link Speed (mph)		25				25		25			25				
Link Distance (ft)		284				281		356			775				
Travel Time (s)		7.7				7.7		9.7			21.1				
Confl. Peds. (#/hr)	2		1				4					4			
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96			
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	1%	4%	0%	1%	0%			
Adj. Flow (vph)	33	3	25	0	0	0	22	794	27	21	806	23			
Shared Lane Traffic (%)															
Lane Group Flow (vph)	0	61	0	0	0	0	843	0	0	0	850	0			
Sign Control		Stop				Stop		Free			Free				

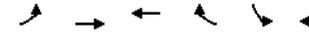
Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized

Intersection												
Int Delay, s/veh	2.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔						↔			↔		
Traffic Vol, veh/h	32	3	24	0	0	0	21	762	26	20	774	22
Future Vol, veh/h	32	3	24	0	0	0	21	762	26	20	774	22
Conflicting Peds, #/hr	2	0	1	0	0	0	4	0	0	0	0	4
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	-
Grade, %	-	1	-	-	-11	-	-	2	-	-	2	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	0	0	0	0	1	4	0	1	0
Mvmt Flow	33	3	25	0	0	0	22	794	27	21	806	23

Major/Minor	Minor2		Major1			Major2	
Conflicting Flow All	1718	1729	823	833	0	0	821
Stage 1	864	864	-	-	-	-	-
Stage 2	854	865	-	-	-	-	-
Critical Hdwy	6.6	6.7	6.3	4.3	-	-	4.3
Critical Hdwy Stg 1	5.6	5.7	-	-	-	-	-
Critical Hdwy Stg 2	5.6	5.7	-	-	-	-	-
Follow-up Hdwy	3	4	3.1	3	-	-	3
Pot Cap-1 Maneuver	97	81	384	615	-	-	621
Stage 1	439	356	-	-	-	-	-
Stage 2	444	356	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	84	0	382	613	-	-	621
Mov Cap-2 Maneuver	84	0	-	-	-	-	-
Stage 1	383	0	-	-	-	-	-
Stage 2	443	0	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	58.2	0.3	0.3
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	SBL	SBT	SBR
Capacity (veh/h)	613	-	-	126	621	-	-
HCM Lane V/C Ratio	0.036	-	-	0.488	0.034	-	-
HCM Control Delay (s)	11.1	0	-	58.2	11	0	-
HCM Lane LOS	B	A	-	F	B	A	-
HCM 95th %tile Q(veh)	0.1	-	-	2.2	0.1	-	-



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑			↑
Traffic Volume (vph)	0	1278	889	0	0	566
Future Volume (vph)	0	1278	889	0	0	566
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	15	15
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.865
Flt Protected						
Satd. Flow (prot)	0	1765	1765	0	0	1696
Flt Permitted						
Satd. Flow (perm)	0	1765	1765	0	0	1696
Link Speed (mph)		35	35			25
Link Distance (ft)		630	265			329
Travel Time (s)		12.3	5.2			9.0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	2%	2%	0%	0%	1%
Adj. Flow (vph)	0	1304	907	0	0	578
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1304	907	0	0	578
Sign Control		Free	Free			Stop

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized

Intersection

Int Delay, s/veh 65.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑			↑
Traffic Vol, veh/h	0	1278	889	0	0	566
Future Vol, veh/h	0	1278	889	0	0	566
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	98	98	98	98	98	98
Heavy Vehicles, %	0	2	2	0	0	1
Mvmt Flow	0	1304	907	0	0	578

Major/Minor

	Major1	Major2	Minor2
Conflicting Flow All	-	0	- 0 - 907
Stage 1	-	-	- - -
Stage 2	-	-	- - -
Critical Hdwy	-	-	- - 6.21
Critical Hdwy Stg 1	-	-	- - -
Critical Hdwy Stg 2	-	-	- - -
Follow-up Hdwy	-	-	- - 3
Pot Cap-1 Maneuver	0	-	- 0 - 358
Stage 1	0	-	- 0 -
Stage 2	0	-	- 0 -
Platoon blocked, %	-	-	- - -
Mov Cap-1 Maneuver	-	-	- - 358
Mov Cap-2 Maneuver	-	-	- - -
Stage 1	-	-	- - -
Stage 2	-	-	- - -

Approach

	EB	WB	SB
HCM Control Delay, s	0	0	\$ 315.3
HCM LOS			F

Minor Lane/Major Mvmt

	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	358
HCM Lane V/C Ratio	-	-	1.613
HCM Control Delay (s)	-	-	\$ 315.3
HCM Lane LOS	-	-	F
HCM 95th %tile Q(veh)	-	-	33.8

Notes

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

Appendix L

Future (2025) with Development – Scenario 2 Capacity/Level-of-Service Analysis Worksheets

	→	↖	↗	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↑	↑
Traffic Volume (vph)	38	258	533	53	99	103
Future Volume (vph)	38	258	533	53	99	103
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	15	15	14	14	16	16
Grade (%)	-10%			2%	9%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.882			0.931		
Flt Protected				0.957	0.976	
Satd. Flow (prot)	1773	0	0	1787	1701	0
Flt Permitted				0.957	0.976	
Satd. Flow (perm)	1773	0	0	1787	1701	0
Link Speed (mph)	25			25	25	
Link Distance (ft)	292			227	273	
Travel Time (s)	8.0			6.2	7.4	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	20%	1%	2%	0%	2%	6%
Adj. Flow (vph)	41	277	573	57	106	111
Shared Lane Traffic (%)						
Lane Group Flow (vph)	318	0	0	630	217	0
Sign Control	Stop			Stop	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					

	→	↖	↗	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↑	↑
Traffic Volume (veh/h)	38	258	533	53	99	103
Future Volume (Veh/h)	38	258	533	53	99	103
Sign Control	Stop			Stop	Free	
Grade	-10%			2%	9%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	41	277	573	57	106	111
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	323	0	565	268	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	323	0	565	268	0	
tC, single (s)	6.7	6.2	7.1	6.5	4.1	
tC, 2 stage (s)						
tF (s)	4.2	3.3	3.5	4.0	2.2	
p0 queue free %	92	75	0	90	93	
cM capacity (veh/h)	530	1088	290	600	1623	
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	318	630	217			
Volume Left	0	573	106			
Volume Right	277	0	111			
cSH	958	304	1623			
Volume to Capacity	0.33	2.07	0.07			
Queue Length 95th (ft)	37	1146	5			
Control Delay (s)	10.6	519.8	3.9			
Lane LOS	B	F	A			
Approach Delay (s)	10.6	519.8	3.9			
Approach LOS	B	F				
Intersection Summary						
Average Delay	284.7					
Intersection Capacity Utilization	75.5%		ICU Level of Service	D		
Analysis Period (min)	15					



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔		↘	↘	↘	↘	↔		↘	↘	↘	↘
Traffic Volume (vph)	16	1	114	74	3	10	53	168	6	0	670	30
Future Volume (vph)	16	1	114	74	3	10	53	168	6	0	670	30
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	13	12	12	12	14	14	12
Grade (%)	0%		1%		1%		1%		-2%		-2%	
Storage Length (ft)	0		0	55		0	0		0	0		0
Storage Lanes	0		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
Ped Bike Factor												
Frt	0.883		0.882		0.996		0.994					
Flt Protected	0.994		0.950		0.988		0.988					
Satd. Flow (prot)	0	1549	0	1701	1573	0	0	1668	0	0	1908	0
Flt Permitted	0.994		0.950		0.988		0.988					
Satd. Flow (perm)	0	1549	0	1701	1573	0	0	1668	0	0	1908	0
Link Speed (mph)	25		20		25		25					
Link Distance (ft)	305		275		478		154					
Travel Time (s)	8.3		9.4		13.0		4.2					
Confl. Peds. (#/hr)			3		1		2		2			
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	0%	2%	0%	2%	7%	0%	0%	1%	2%
Adj. Flow (vph)	18	1	127	82	3	11	59	187	7	0	744	33
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	146	0	82	14	0	0	253	0	0	777	0
Sign Control	Stop		Stop		Free		Free					

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection												
Int Delay, s/veh	8.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔		↘	↘	↘	↘	↔		↘	↘	↘	↘
Traffic Vol, veh/h	16	1	114	74	3	10	53	168	6	0	670	30
Future Vol, veh/h	16	1	114	74	3	10	53	168	6	0	670	30
Conflicting Peds, #/hr	0	0	0	3	0	1	0	0	2	2	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Free						
RT Channelized	-	-	None									
Storage Length	-	-	-	55	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	1	-	-	1	-	-	-2	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	0	2	0	2	7	0	0	1	2
Mvmt Flow	18	1	127	82	3	11	59	187	7	0	744	33

Major/Minor	Minor2	Minor1	Major1	Major2								
Conflicting Flow All	1078	1075	764	1139	1088	194	777	0	0	196	0	0
Stage 1	761	761	-	311	311	-	-	-	-	-	-	-
Stage 2	317	314	-	828	777	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.3	6.72	6.3	4.3	-	-	4.3	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.3	5.72	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.3	5.72	-	-	-	-	-	-	-
Follow-up Hdwy	3	4.018	3.1	3	4.018	3.1	3	-	-	3	-	-
Pot Cap-1 Maneuver	216	220	423	185	203	898	644	-	-	1029	-	-
Stage 1	444	414	-	790	647	-	-	-	-	-	-	-
Stage 2	797	656	-	390	390	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	194	197	422	118	182	895	644	-	-	1027	-	-
Mov Cap-2 Maneuver	194	197	-	118	182	-	-	-	-	-	-	-
Stage 1	398	414	-	707	579	-	-	-	-	-	-	-
Stage 2	701	587	-	271	390	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	21.2	75.5	2.6	0
HCM LOS	C	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	644	-	-	366	118	470	1027	-	-
HCM Lane V/C Ratio	0.091	-	-	0.398	0.697	0.031	-	-	-
HCM Control Delay (s)	11.2	0	-	21.2	86.5	12.9	0	-	-
HCM Lane LOS	B	A	-	C	F	B	A	-	-
HCM 95th %tile Q(veh)	0.3	-	-	1.9	3.8	0.1	0	-	-

McMahon Associates, Inc.
3: S Main St & Bridge St

French Creek West - Scenario 2
2025 Future Weekday AM - with Dev

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔		↔		↔		↔		↔		↔	
Traffic Volume (vph)	4	273	21	22	304	102	25	103	53	430	436	54
Future Volume (vph)	4	273	21	22	304	102	25	103	53	430	436	54
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	12	11	11	11	10	10	10
Grade (%)	0%		1%		-2%		3%					
Storage Length (ft)	0	0	0	0	0	0	0	135	0	0	0	0
Storage Lanes	0	0	0	0	0	0	0	1	0	0	0	0
Taper Length (ft)	25		25		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
Ped Bike Factor	1.00		1.00		0.99		1.00		1.00		1.00	
Frt	0.991		0.968		0.960		0.983					
Flt Protected	0.999		0.997		0.993		0.950					
Satd. Flow (prot)	0	1656	0	0	1579	0	0	1546	0	1556	1575	0
Flt Permitted	0.994		0.972		0.899		0.667					
Satd. Flow (perm)	0	1648	0	0	1539	0	0	1400	0	1091	1575	0
Right Turn on Red	Yes		Yes		Yes		Yes					
Satd. Flow (RTOR)	7		30		45		14					
Link Speed (mph)	25		25		25		25					
Link Distance (ft)	1070		1069		731		346					
Travel Time (s)	29.2		29.2		19.9		9.4					
Confl. Peds. (#/hr)	4		4		1		1		1		1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	8%	0%	0%	11%	7%	6%	11%	2%	1%	3%	3%
Adj. Flow (vph)	4	303	23	24	338	113	28	114	59	478	484	60
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	330	0	0	475	0	0	201	0	478	544	0
Number of Detectors	1	1	1	1	1	1	1	1	1	1	1	1
Detector Template	Left		Left		Left		Left					
Leading Detector (ft)	20	35	20	35	20	35	20	35	20	35	20	35
Trailing Detector (ft)	0	-5	0	-5	0	-5	0	-5	0	-5	0	-5
Detector 1 Position(ft)	0	-5	0	-5	0	-5	0	-5	0	-5	0	-5
Detector 1 Size(ft)	20	40	20	40	20	40	20	40	20	40	20	40
Detector 1 Type	CI+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	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	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	0.0	0.0	0.0
Turn Type	Perm	NA										
Protected Phases	2		6		8		4					
Permitted Phases	2	2	6	6	8	8	4	4	4	4		
Detector Phase	2	2	6	6	8	8	4	4	4	4		
Switch Phase												
Minimum Initial (s)	21.0	21.0	21.0	21.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	27.0	27.0	27.0	27.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0
Total Split (s)	28.0	28.0	28.0	28.0	32.0	32.0	32.0	32.0	32.0	32.0	32.0	32.0
Total Split (%)	46.7%	46.7%	46.7%	46.7%	53.3%	53.3%	53.3%	53.3%	53.3%	53.3%	53.3%	53.3%
Maximum Green (s)	22.0	22.0	22.0	22.0	26.0	26.0	26.0	26.0	26.0	26.0	26.0	26.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Lanes, Volumes, Timings

I:\eng\18195 - French Creek W\trafficAnalysis\2018-05 TIS\Existing\WD 2025 AM - Scenario 2.syn

3: S Main St & Bridge St

Synchro 10 (10.2.20)

McMahon Associates, Inc.
3: S Main St & Bridge St

French Creek West - Scenario 2
2025 Future Weekday AM - with Dev

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-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	
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	3.0	3.0	3.0
Recall Mode	C-Min	C-Min	C-Min	C-Min	None							
Walk Time (s)	1.0	1.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Flash Dont Walk (s)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
v/c Ratio	0.52		0.78		0.31		0.98		0.76			
Control Delay	17.5		25.1		9.6		55.7		22.4			
Queue Delay	0.0		0.0		0.0		0.0		0.0			
Total Delay	17.5		25.1		9.6		55.7		22.4			
Queue Length 50th (ft)	87		103		33		160		151			
Queue Length 95th (ft)	154		217		72		#339		#308			
Internal Link Dist (ft)	990		989		651		266					
Turn Bay Length (ft)			135									
Base Capacity (vph)	636		608		654		490		716			
Starvation Cap Reductn	0		0		0		0		0			
Spillback Cap Reductn	0		0		0		0		0			
Storage Cap Reductn	0		0		0		0		0			
Reduced v/c Ratio	0.52		0.78		0.31		0.98		0.76			

Intersection Summary

Area Type: Other

Cycle Length: 60

Actuated Cycle Length: 60

Offset: 42 (70%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

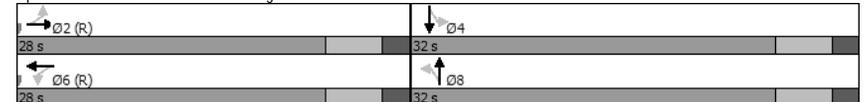
Natural Cycle: 65

Control Type: Actuated-Coordinated

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 3: S Main St & Bridge St



Lanes, Volumes, Timings

I:\eng\18195 - French Creek W\trafficAnalysis\2018-05 TIS\Existing\WD 2025 AM - Scenario 2.syn

3: S Main St & Bridge St

Synchro 10 (10.2.20)

McMahon Associates, Inc.
3: S Main St & Bridge St

French Creek West - Scenario 2
2025 Future Weekday AM - with Dev

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔		↔		↔		↔		↔		↔	
Traffic Volume (veh/h)	4	273	21	22	304	102	25	103	53	430	436	54
Future Volume (veh/h)	4	273	21	22	304	102	25	103	53	430	436	54
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Ob), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	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
Adj Sat Flow, veh/h/ln	1800	1677	1800	1791	1636	1791	1818	1689	1818	1755	1721	1773
Adj Flow Rate, veh/h	4	303	23	24	338	113	28	114	58	478	484	60
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	1	1	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh. %	8	8	8	11	11	11	11	11	11	1	3	3
Cap, veh/h	63	587	44	77	437	141	104	351	158	473	676	84
Arrive On Green	0.37	0.38	0.37	0.37	0.38	0.37	0.43	0.45	0.43	0.45	0.45	0.43
Sat Flow, veh/h	5	1532	115	36	1140	367	78	781	351	1202	1502	186
Grp Volume(v), veh/h	330	0	0	475	0	0	200	0	0	478	0	544
Grp Sat Flow(s), veh/h/ln	1652	0	0	1544	0	0	1209	0	0	1202	0	1688
Q Serve(g_s), s	0.0	0.0	0.0	5.1	0.0	0.0	0.9	0.0	0.0	10.9	0.0	15.7
Cycle Q Clear(g_c), s	9.3	0.0	0.0	16.7	0.0	0.0	16.6	0.0	0.0	27.0	0.0	15.7
Prop In Lane	0.01		0.07	0.05		0.24	0.14		0.29	1.00		0.11
Lane Grp Cap(c), veh/h	666	0	0	629	0	0	592	0	0	473	0	760
V/C Ratio(X)	0.50	0.00	0.00	0.76	0.00	0.00	0.34	0.00	0.00	1.01	0.00	0.72
Avail Cap(c_a), veh/h	666	0	0	629	0	0	592	0	0	473	0	760
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	0.90	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	14.3	0.0	0.0	16.6	0.0	0.0	10.8	0.0	0.0	22.1	0.0	13.4
Incr Delay (d2), s/veh	2.6	0.0	0.0	7.5	0.0	0.0	0.3	0.0	0.0	44.1	0.0	3.2
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	8.4	0.0	0.0	13.1	0.0	0.0	4.0	0.0	0.0	24.4	0.0	12.6
LnGrp Delay(d),s/veh	16.9	0.0	0.0	24.1	0.0	0.0	11.1	0.0	0.0	66.2	0.0	16.7
LnGrp LOS	B		C		B		F		B		B	
Approach Vol, veh/h	330			475			200			1022		
Approach Delay, s/veh	16.9			24.1			11.1			39.8		
Approach LOS	B			C			B			D		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	28.0		32.0		28.0		32.0					
Change Period (Y+Rc), s	6.0		6.0		6.0		6.0					
Max Green Setting (Gmax), s	22.0		26.0		22.0		26.0					
Max Q Clear Time (g_c+I1), s	11.3		29.5		18.7		18.6					
Green Ext Time (p_c), s	0.9		0.0		0.7		0.4					
Intersection Summary												
HCM 2010 Ctrl Delay	29.6											
HCM 2010 LOS	C											

HCM 2010 Signalized Intersection Summary
I:\eng\18195 - French Creek W\traffic\Analysis\2018-05 TIS\Existing\WD 2025 AM - Scenario 2.syn

3: S Main St & Bridge St
Synchro 10 (10.2.20)

McMahon Associates, Inc.
4: Starr St (SR 29) & Bridge St

French Creek West - Scenario 2
2025 Future Weekday AM - with Dev

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔		↔		↔	
Traffic Volume (vph)	702	219	576	476	105	506
Future Volume (vph)	702	219	576	476	105	506
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	16	16	10	11	10	12
Grade (%)	1%		1%		0%	
Storage Length (ft)	0		215		320	
Storage Lanes	0		1		1	
Taper Length (ft)			25		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.968				0.850	
Fit Protected			0.950		0.950	
Satd. Flow (prot)	1888		0		1527	
Fit Permitted			0.070		0.950	
Satd. Flow (perm)	1888		0		113	
Right Turn on Red	Yes				Yes	
Satd. Flow (RTOR)	16				107	
Link Speed (mph)	25		35		25	
Link Distance (ft)	1069		499		559	
Travel Time (s)	29.2		9.7		15.2	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	5%	1%	4%	12%	9%	4%
Adj. Flow (vph)	731	228	600	496	109	527
Shared Lane Traffic (%)						
Lane Group Flow (vph)	959	0	600	496	109	527
Number of Detectors	1		1		1	
Detector Template						
Leading Detector (ft)	35		35		35	
Trailing Detector (ft)	-5		-5		-5	
Detector 1 Position(ft)	-5		-5		-5	
Detector 1 Size(ft)	40		40		40	
Detector 1 Type	Cl+Ex		Cl+Ex		Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0		0.0	
Detector 1 Queue (s)	0.0		0.0		0.0	
Detector 1 Delay (s)	0.0		0.0		0.0	
Turn Type	NA		pm+pt		Prot pm+ov	
Protected Phases	2		1		6	
Permitted Phases			6		8	
Detector Phase	2		1		6	
Switch Phase						
Minimum Initial (s)	27.0		7.0		27.0	
Minimum Split (s)	32.0		12.0		32.0	
Total Split (s)	54.0		44.0		98.0	
Total Split (%)	45.0%		36.7%		81.7%	
Maximum Green (s)	49.0		39.0		93.0	
Yellow Time (s)	3.0		3.0		3.0	
All-Red Time (s)	2.0		2.0		2.0	
Lost Time Adjust (s)	-1.0		-1.0		-1.0	

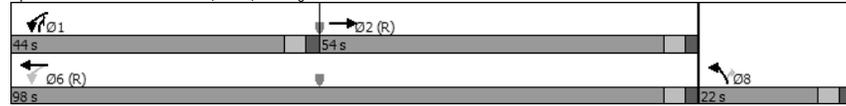
Lanes, Volumes, Timings
I:\eng\18195 - French Creek W\traffic\Analysis\2018-05 TIS\Existing\WD 2025 AM - Scenario 2.syn

4: Starr St (SR 29) & Bridge St
Synchro 10 (10.2.20)

	→	↖	↙	←	↘	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lag		Lead			Lead
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Min		None	C-Min	None	None
Walk Time (s)	9.0		9.0	8.0		
Flash Dont Walk (s)	10.0		10.0	8.0		
Pedestrian Calls (#/hr)	0		0	0		
w/c Ratio	1.13	1.07	0.40	0.61	0.68	
Control Delay	102.3	90.0	4.5	64.1	23.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	102.3	90.0	4.5	64.1	23.0	
Queue Length 50th (ft)	-859	-470	88	81	242	
Queue Length 95th (ft)	m#1041	#703	147	139	355	
Internal Link Dist (ft)	989		419	479		
Turn Bay Length (ft)		215		320		
Base Capacity (vph)	848	562	1253	219	773	
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced w/c Ratio	1.13	1.07	0.40	0.50	0.68	

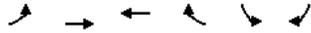
Intersection Summary
 Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
 Natural Cycle: 110
 Control Type: Actuated-Coordinated
 - Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Starr St (SR 29) & Bridge St



	→	↖	↙	←	↘	↗		
Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations	↔	↔	↔	↔	↔	↔		
Traffic Volume (veh/h)	702	219	576	476	105	506		
Future Volume (veh/h)	702	219	576	476	105	506		
Number	2	12	1	6	3	18		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1790	1863	1722	1599	1651	1731		
Adj Flow Rate, veh/h	731	211	600	496	109	495		
Adj No. of Lanes	1	0	1	1	1	1		
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96		
Percent Heavy Veh. %	5	5	4	12	9	4		
Cap, veh/h	557	161	609	1253	236	711		
Arrive On Green	0.83	0.82	0.33	0.78	0.15	0.15		
Sat Flow, veh/h	1336	386	1640	1599	1573	1471		
Grp Volume(v), veh/h	0	942	600	496	109	495		
Grp Sat Flow(s), veh/h/ln	0	1722	1640	1599	1573	1471		
Q Serve(g_s), s	0.0	50.0	38.9	11.7	7.6	18.0		
Cycle Q Clear(g_c), s	0.0	50.0	38.9	11.7	7.6	18.0		
Prop In Lane	0.22	1.00			1.00	1.00		
Lane Grp Cap(c), veh/h	0	718	609	1253	236	711		
V/C Ratio(X)	0.00	1.31	0.99	0.40	0.46	0.70		
Avail Cap(c_a), veh/h	0	718	609	1253	236	711		
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	0.00	0.52	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	0.0	10.2	34.8	4.1	46.6	24.1		
Incr Delay (d2), s/veh	0.0	146.0	32.6	0.9	1.4	3.0		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(95%),veh/ln	0.0	91.9	33.4	9.2	6.1	19.2		
LnGrp Delay(d),s/veh	0.0	156.3	67.3	5.0	48.0	27.1		
LnGrp LOS		F	E	A	D	C		
Approach Vol, veh/h	942			1096	604			
Approach Delay, s/veh	156.3			39.1	30.9			
Approach LOS	F			D	C			
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	44.0	54.0				98.0		22.0
Change Period (Y+Rc), s	5.0	5.0				5.0		5.0
Max Green Setting (Gmax), s	39.0	49.0				93.0		17.0
Max Q Clear Time (g_c+I1), s	41.4	52.0				14.2		20.5
Green Ext Time (p_c), s	0.0	0.0				1.9		0.0

Intersection Summary
 HCM 2010 Ctrl Delay 79.0
 HCM 2010 LOS E



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↔	↑	↑		↔	↔
Traffic Volume (vph)	75	1313	801	14	40	119
Future Volume (vph)	75	1313	801	14	40	119
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	14	11	11	12	12
Grade (%)		2%	-2%		3%	
Storage Length (ft)	100			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			0.998		0.899	
Flt Protected	0.950				0.988	
Satd. Flow (prot)	1169	1828	1631	0	1038	0
Flt Permitted	0.950				0.988	
Satd. Flow (perm)	1169	1828	1631	0	1038	0
Link Speed (mph)		35	35		25	
Link Distance (ft)		253	844		353	
Travel Time (s)		4.9	16.4		9.6	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	40%	4%	6%	100%	75%	44%
Adj. Flow (vph)	77	1354	826	14	41	123
Shared Lane Traffic (%)						
Lane Group Flow (vph)	77	1354	840	0	164	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection						
Int Delay, s/veh	30.8					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↔	↑	↑		↔	↔
Traffic Vol, veh/h	75	1313	801	14	40	119
Future Vol, veh/h	75	1313	801	14	40	119
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	2	-2	-	3	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	40	4	6	100	75	44
Mvmt Flow	77	1354	826	14	41	123

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	840	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.7	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	3.2	-	-
Pot Cap-1 Maneuver	533	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	533	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0.7	0	\$ 451.6
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	533	-	-	-	94
HCM Lane V/C Ratio	0.145	-	-	-	1.744
HCM Control Delay (s)	12.9	-	-	-	\$ 451.6
HCM Lane LOS	B	-	-	-	F
HCM 95th %tile Q(veh)	0.5	-	-	-	13.3

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)	14	1263	5	3	767	5	1	0	2	2	1	20
Future Volume (vph)	14	1263	5	3	767	5	1	0	2	2	1	20
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	11	11	11	14	14	14	14	14	14
Grade (%)	2%				2%				-4%		-3%	
Storage Length (ft)	100		0	100		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	0.999				0.999				0.910		0.881	
Flt Protected	0.950		0.950				0.984				0.996	
Satd. Flow (prot)	1501	1655	0	1636	1578	0	0	1315	0	0	1320	0
Flt Permitted	0.950		0.950				0.984				0.996	
Satd. Flow (perm)	1501	1655	0	1636	1578	0	0	1315	0	0	1320	0
Link Speed (mph)	35				35				25		25	
Link Distance (ft)	844				630				265		274	
Travel Time (s)	16.4				12.3				7.2		7.5	
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 (%)	9%	4%	0%	0%	9%	20%	0%	0%	50%	50%	0%	29%
Adj. Flow (vph)	15	1358	5	3	825	5	1	0	2	2	1	22
Shared Lane Traffic (%)												
Lane Group Flow (vph)	15	1363	0	3	830	0	0	3	0	0	25	0
Sign Control	Free				Free				Stop		Stop	

Intersection Summary
 Area Type: Other
 Control Type: Unsignalized

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	14	1263	5	3	767	5	1	0	2	2	1	20
Future Vol, veh/h	14	1263	5	3	767	5	1	0	2	2	1	20
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None									
Storage Length	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	2	-	-	2	-	-	-	4	-	-	-3
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	9	4	0	0	9	20	0	0	50	50	0	29
Mvmt Flow	15	1358	5	3	825	5	1	0	2	2	1	22

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	830	0	0	1363
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	4.5	-	-	4.3
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	3.1	-	-	3
Pot Cap-1 Maneuver	576	-	-	394
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	576	-	-	394
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.1	45.5	29.3
HCM LOS			E	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	92	576	-	-	394	-	-	173
HCM Lane V/C Ratio	0.035	0.026	-	-	0.008	-	-	0.143
HCM Control Delay (s)	45.5	11.4	-	-	14.2	-	-	29.3
HCM Lane LOS	E	B	-	-	B	-	-	D
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	0.5

McMahon Associates, Inc.

French Creek West - Scenario 2

7: Bridge St (SR 1019)/Bridge St (SR 113) & Nutt Rd (SR 23)

2025 Future Weekday AM - with Dev

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	367	823	144	78	402	28	61	163	53	17	340	0
Future Volume (vph)	367	823	144	78	402	28	61	163	53	17	340	0
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	13	13	10
Grade (%)		1%			1%			-2%			1%	
Storage Length (ft)	350		0	720		0	100		0	205		0
Storage Lanes	1		0	1		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
Ped Bike Factor	1.00	1.00		1.00	1.00							
Frt		0.978			0.990			0.963				
Frt Protected	0.950			0.950			0.950				0.998	
Satd. Flow (prot)	1572	1814	0	1588	1697	0	1580	1635	0	0	1830	0
Frt Permitted	0.950			0.950			0.194				0.977	
Satd. Flow (perm)	1565	1814	0	1585	1697	0	323	1635	0	0	1791	0
Right Turn on Red			No			No			No			Yes
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		265			436			378			352	
Travel Time (s)		5.2			8.5			10.3			9.6	
Confl. Peds. (#/hr)	3		3	3		3						
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%	0%
Adj. Flow (vph)	403	904	158	86	442	31	67	179	58	19	374	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	403	1062	0	86	473	0	67	237	0	0	393	0
Number of Detectors	1	1		1	1		1	1		1	1	
Detector Template										Left		
Leading Detector (ft)	35	35		35	35		35	35		20	35	
Trailing Detector (ft)	-5	-5		-5	-5		-5	-5		0	-5	
Detector 1 Position(ft)	-5	-5		-5	-5		-5	-5		0	-5	
Detector 1 Size(ft)	40	40		40	40		40	40		20	40	
Detector 1 Type	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	
Detector 1 Queue (s)	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	
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Detector Phase	5	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	7.0	15.0		7.0	15.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	15.0	20.0		15.0	20.0		12.0	12.0		12.0	12.0	
Total Split (s)	38.0	70.0		18.0	50.0		32.0	32.0		32.0	32.0	
Total Split (%)	31.7%	58.3%		15.0%	41.7%		26.7%	26.7%		26.7%	26.7%	
Maximum Green (s)	30.0	65.0		10.0	45.0		27.0	27.0		27.0	27.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	

Lanes, Volumes, Timings

7: Bridge St (SR 1019)/Bridge St (SR 113) & Nutt Rd (SR 23)

I:\eng\18195 - French Creek W\trafficAnalysis\2018-05 TIS\Existing\WD 2025 AM - Scenario 2.syn

Synchro 10 (10.2.20)

McMahon Associates, Inc.

French Creek West - Scenario 2

7: Bridge St (SR 1019)/Bridge St (SR 113) & Nutt Rd (SR 23)

2025 Future Weekday AM - with Dev

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
All-Red Time (s)	5.0	2.0		5.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0			-1.0	
Total Lost Time (s)	7.0	4.0		7.0	4.0		4.0	4.0			4.0	
Lead/Lag	Lag	Lag		Lead	Lead							
Lead-Lag Optimize?												
Vehicle Extension (s)	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	
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	
v/c Ratio	0.81	1.05		0.62	0.85		0.89	0.63		0.95		
Control Delay	53.6	71.1		72.8	52.5		125.9	49.7		78.6		
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0		
Total Delay	53.6	71.1		72.8	52.5		125.9	49.7		78.6		
Queue Length 50th (ft)	291	-908		65	336		51	166		301		
Queue Length 95th (ft)	#521	#1162		#129	440		#144	254		#493		
Internal Link Dist (ft)		185			356		298			272		
Turn Bay Length (ft)	350			720			100					
Base Capacity (vph)	496	1008		145	650		75	381		417		
Starvation Cap Reductn	0	0		0	0		0	0		0		
Spillback Cap Reductn	0	0		0	0		0	0		0		
Storage Cap Reductn	0	0		0	0		0	0		0		
Reduced v/c Ratio	0.81	1.05		0.59	0.73		0.89	0.62		0.94		
Intersection Summary												
Area Type:	Other											
Cycle Length:	120											
Actuated Cycle Length:	120											
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green, Master Intersection												
Natural Cycle:	110											
Control Type:	Actuated-Coordinated											
- Volume exceeds capacity, queue is theoretically infinite.												
Queue shown is maximum after two cycles.												
# 95th percentile volume exceeds capacity, queue may be longer.												
Queue shown is maximum after two cycles.												
Splits and Phases: 7: Bridge St (SR 1019)/Bridge St (SR 113) & Nutt Rd (SR 23)												

Lanes, Volumes, Timings

7: Bridge St (SR 1019)/Bridge St (SR 113) & Nutt Rd (SR 23)

I:\eng\18195 - French Creek W\trafficAnalysis\2018-05 TIS\Existing\WD 2025 AM - Scenario 2.syn

Synchro 10 (10.2.20)

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	367	823	144	78	402	28	61	163	53	17	340	0
Future Volume (veh/h)	367	823	144	78	402	28	61	163	53	17	340	0
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Ob), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	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
Adj Sat Flow, veh/h/ln	1773	1816	1863	1791	1718	1791	1782	1756	1818	1863	1845	0
Adj Flow Rate, veh/h	403	904	158	86	442	31	67	179	58	19	374	0
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	0	1	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. %	1	3	3	0	4	4	2	4	4	1	1	0
Cap, veh/h	772	998	174	127	483	34	135	297	96	40	370	0
Arrive On Green	0.46	0.66	0.65	0.07	0.30	0.30	0.23	0.23	0.22	0.22	0.23	0.00
Sat Flow, veh/h	1689	1506	263	1706	1586	111	1014	1272	412	38	1586	0
Grp Volume(v), veh/h	403	0	1062	86	0	473	67	0	237	393	0	0
Grp Sat Flow(s), veh/h/ln	1689	0	1769	1706	0	1697	1014	0	1684	1624	0	0
Q Serve(g_s), s	20.4	0.0	60.9	5.9	0.0	32.2	0.5	0.0	15.1	11.9	0.0	0.0
Cycle Q Clear(g_c), s	20.4	0.0	60.9	5.9	0.0	32.2	27.0	0.0	15.1	27.0	0.0	0.0
Prop In Lane	1.00		0.15	1.00		0.07	1.00		0.24	0.05		0.00
Lane Grp Cap(c), veh/h	772	0	1172	127	0	517	135	0	393	397	0	0
V/C Ratio(X)	0.52	0.00	0.91	0.68	0.00	0.91	0.50	0.00	0.60	0.99	0.00	0.00
Avail Cap(c_a), veh/h	772	0	1172	156	0	651	135	0	393	397	0	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	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	23.2	0.0	17.2	54.1	0.0	40.3	46.2	0.0	41.2	46.5	0.0	0.0
Incr Delay (d2), s/veh	0.6	0.0	11.6	8.2	0.0	23.2	2.8	0.0	2.6	42.5	0.0	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	14.7	0.0	42.8	5.5	0.0	25.5	4.1	0.0	11.7	24.7	0.0	0.0
LnGrp Delay(d),s/veh	23.8	0.0	28.8	62.4	0.0	63.5	49.0	0.0	43.8	89.0	0.0	0.0
LnGrp LOS	C		C	E		E	D		D	F		
Approach Vol, veh/h	1465			559				304			393	
Approach Delay, s/veh	27.4			63.3				44.9			89.0	
Approach LOS	C			E				D			F	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	15.9	86.5		32.0	61.9	40.6		32.0				
Change Period (Y+Rc), s	8.0	* 8		5.0	8.0	5.0		5.0				
Max Green Setting (Gmax), s	10.0	* 65		27.0	30.0	45.0		27.0				
Max Q Clear Time (g_c+I1), s	8.4	62.9		29.0	22.9	34.2		29.5				
Green Ext Time (p_c), s	0.0	1.2		0.0	0.9	1.3		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay				45.7								
HCM 2010 LOS				D								
Notes												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	5	12	0	0	0	8	495	16	19	650	7
Future Volume (vph)	29	5	12	0	0	0	8	495	16	19	650	7
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	16	16	16	12	12	12	11	11	11
Grade (%)		1%				-11%		2%				2%
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												
Frt		0.966						0.996				0.999
Flt Protected		0.969						0.999				0.999
Satd. Flow (prot)	0	1527	0	0	0	0	0	1677	0	0	1658	0
Flt Permitted		0.969						0.999				0.999
Satd. Flow (perm)	0	1527	0	0	0	0	0	1677	0	0	1658	0
Link Speed (mph)		25				25		25			25	
Link Distance (ft)		284				281		356			775	
Travel Time (s)		7.7				7.7		9.7			21.1	
Confl. Peds. (#/hr)	4		1				8					8
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	4%	0%	14%	0%	0%	0%	0%	6%	0%	28%	3%	0%
Adj. Flow (vph)	30	5	12	0	0	0	8	510	16	20	670	7
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	47	0	0	0	0	0	534	0	0	697	0
Sign Control		Stop				Stop		Free			Free	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											

McMahon Associates, Inc.
8: Bridge St (SR 113) & Wheatland St

French Creek West - Scenario 2
2025 Future Weekday AM - with Dev

Intersection												
Int Delay, s/veh	1.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔						↔			↔		
Traffic Vol, veh/h	29	5	12	0	0	0	8	495	16	19	650	7
Future Vol, veh/h	29	5	12	0	0	0	8	495	16	19	650	7
Conflicting Peds, #/hr	4	0	1	0	0	0	8	0	0	0	0	8
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	-
Grade, %	-	1	-	-	-11	-	-	2	-	-	2	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	4	0	14	0	0	0	0	6	0	28	3	0
Mvmt Flow	30	5	12	0	0	0	8	510	16	20	670	7

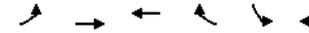
Major/Minor	Minor2			Major1			Major2				
Conflicting Flow All	1260	1264	683	685			0	0	526	0	0
Stage 1	722	722	-	-			-	-	-	-	-
Stage 2	538	542	-	-			-	-	-	-	-
Critical Hdwy	6.64	6.7	6.44	4.3			-	-	4.6	-	-
Critical Hdwy Stg 1	5.64	5.7	-	-			-	-	-	-	-
Critical Hdwy Stg 2	5.64	5.7	-	-			-	-	-	-	-
Follow-up Hdwy	3	4	3.2	2.2			-	-	2.452	-	-
Pot Cap-1 Maneuver	190	159	442	884			-	-	892	-	-
Stage 1	515	417	-	-			-	-	-	-	-
Stage 2	641	508	-	-			-	-	-	-	-
Platoon blocked, %											
Mov Cap-1 Maneuver	178	0	438	878			-	-	892	-	-
Mov Cap-2 Maneuver	178	0	-	-			-	-	-	-	-
Stage 1	487	0	-	-			-	-	-	-	-
Stage 2	637	0	-	-			-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	26.4	0.1	0.3
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	SBL	SBT	SBR
Capacity (veh/h)	878	-	-	215	892	-	-
HCM Lane V/C Ratio	0.009	-	-	0.221	0.022	-	-
HCM Control Delay (s)	9.1	0	-	26.4	9.1	0	-
HCM Lane LOS	A	A	-	D	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.8	0.1	-	-

McMahon Associates, Inc.
17: Nutt Rd (SR 23) & Bridge St (SR 113)

French Creek West - Scenario 2
2025 Future Weekday AM - with Dev



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑			↑
Traffic Volume (vph)	0	1334	463	0	0	240
Future Volume (vph)	0	1334	463	0	0	240
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	15	15
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.865					
Flt Protected						
Satd. Flow (prot)	0	1765	1748	0	0	1631
Flt Permitted						
Satd. Flow (perm)	0	1765	1748	0	0	1631
Link Speed (mph)	35		35		25	
Link Distance (ft)	630		265		329	
Travel Time (s)	12.3		5.2		9.0	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	0%	2%	3%	0%	0%	5%
Adj. Flow (vph)	0	1466	509	0	0	264
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1466	509	0	0	264
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	1334	463	0	0	240
Future Vol, veh/h	0	1334	463	0	0	240
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	91	91	91	91	91	91
Heavy Vehicles, %	0	2	3	0	0	5
Mvmt Flow	0	1466	509	0	0	264

Major/Minor

	Major1	Major2	Minor2
Conflicting Flow All	-	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	6.25
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	3.1
Pot Cap-1 Maneuver	0	-	0
Stage 1	0	-	0
Stage 2	0	-	0
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	593
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach

	EB	WB	SB
HCM Control Delay, s	0	0	15.8
HCM LOS			C

Minor Lane/Major Mvmt

	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	593
HCM Lane V/C Ratio	-	-	0.445
HCM Control Delay (s)	-	-	15.8
HCM Lane LOS	-	-	C
HCM 95th %tile Q(veh)	-	-	2.3

	→	↖	↗	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↖			↖	↗	↗
Traffic Volume (vph)	51	125	189	63	221	355
Future Volume (vph)	51	125	189	63	221	355
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	15	15	14	14	16	16
Grade (%)	-10%			2%	9%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.904				0.917	
Flt Protected				0.964	0.981	
Satd. Flow (prot)	1843	0	0	1770	1746	0
Flt Permitted				0.964	0.981	
Satd. Flow (perm)	1843	0	0	1770	1746	0
Link Speed (mph)	25			25	25	
Link Distance (ft)	292			227	273	
Travel Time (s)	8.0			6.2	7.4	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	2%	2%	0%	14%	1%	0%
Adj. Flow (vph)	55	134	203	68	238	382
Shared Lane Traffic (%)						
Lane Group Flow (vph)	189	0	0	271	620	0
Sign Control	Stop			Stop	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					

	→	↖	↗	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↖			↖	↗	↗
Traffic Volume (veh/h)	51	125	189	63	221	355
Future Volume (Veh/h)	51	125	189	63	221	355
Sign Control	Stop			Stop	Free	
Grade	-10%			2%	9%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	55	134	203	68	238	382
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	858	0	828	667	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	858	0	828	667	0	
tC, single (s)	6.5	6.2	7.1	6.6	4.1	
tC, 2 stage (s)						
tF (s)	4.0	3.3	3.5	4.1	2.2	
p0 queue free %	78	88	0	78	85	
cM capacity (veh/h)	253	1085	190	311	1630	
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	189	271	620			
Volume Left	0	203	238			
Volume Right	134	0	382			
cSH	554	211	1630			
Volume to Capacity	0.34	1.29	0.15			
Queue Length 95th (ft)	38	363	13			
Control Delay (s)	14.8	205.1	3.8			
Lane LOS	B	F	A			
Approach Delay (s)	14.8	205.1	3.8			
Approach LOS	B	F				
Intersection Summary						
Average Delay			56.2			
Intersection Capacity Utilization			71.4%	ICU Level of Service	C	
Analysis Period (min)			15			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔		↔	↔	↔	↔	↔		↔	↔	↔	↔
Traffic Volume (vph)	25	2	85	6	1	3	139	542	68	14	242	35
Future Volume (vph)	25	2	85	6	1	3	139	542	68	14	242	35
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	13	12	12	12	14	14	12
Grade (%)	0%			1%			1%		-2%			
Storage Length (ft)	0		0	55		0	0		0	0		0
Storage Lanes	0		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
Ped Bike Factor												
Frt	0.898			0.887			0.988		0.984			
Frt Protected	0.989			0.950			0.991		0.998			
Satd. Flow (prot)	0	1567	0	1701	1581	0	0	1747	0	0	1900	0
Frt Permitted	0.989			0.950			0.991		0.998			
Satd. Flow (perm)	0	1567	0	1701	1581	0	0	1747	0	0	1900	0
Link Speed (mph)	25			20			25		25			
Link Distance (ft)	292			275			478		154			
Travel Time (s)	8.0			9.4			13.0		4.2			
Confl. Peds. (#/hr)				2			1		1			
Peak Hour Factor	0.93	0.93	0.94	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	2%	2%	2%	0%	2%	0%	2%	0%	0%	0%	0%	2%
Adj. Flow (vph)	27	2	90	6	1	3	149	583	73	15	260	38
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	119	0	6	4	0	0	805	0	0	313	0
Sign Control	Stop			Stop			Free		Free			

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection												
Int Delay, s/veh	3.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔		↔	↔	↔	↔	↔		↔	↔	↔	↔
Traffic Vol, veh/h	25	2	85	6	1	3	139	542	68	14	242	35
Future Vol, veh/h	25	2	85	6	1	3	139	542	68	14	242	35
Conflicting Peds, #/hr	0	0	0	2	0	0	0	0	0	1	1	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Free						
RT Channelized	-	-	None									
Storage Length	-	-	-	55	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	0	-	0
Grade, %	-	0	-	-	1	-	-	1	-	-	-	-2
Peak Hour Factor	93	93	94	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	0	2	0	2	0	0	0	0	2
Mvmt Flow	27	2	90	6	1	3	149	583	73	15	260	38

Major/Minor	Minor2	Minor1	Major1	Major2								
Conflicting Flow All	1229	1264	281	1276	1247	621	298	0	0	657	0	0
Stage 1	309	309	-	919	919	-	-	-	-	-	-	-
Stage 2	920	955	-	357	328	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.3	6.72	6.3	4.3	-	-	4.3	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.3	5.72	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.3	5.72	-	-	-	-	-	-	-
Follow-up Hdwy	3	4.018	3.1	3	4.018	3.1	3	-	-	3	-	-
Pot Cap-1 Maneuver	169	169	805	147	162	506	949	-	-	711	-	-
Stage 1	805	660	-	344	333	-	-	-	-	-	-	-
Stage 2	360	337	-	743	635	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	132	124	803	102	118	506	949	-	-	710	-	-
Mov Cap-2 Maneuver	132	124	-	102	118	-	-	-	-	-	-	-
Stage 1	604	644	-	258	249	-	-	-	-	-	-	-
Stage 2	267	252	-	639	619	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	20	32.9	1.8	0.5
HCM LOS	C	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	949	-	-	358	102	278	710	-	-
HCM Lane V/C Ratio	0.157	-	-	0.334	0.063	0.015	0.021	-	-
HCM Control Delay (s)	9.5	0	-	20	42.7	18.2	10.2	0	-
HCM Lane LOS	A	A	-	C	E	C	B	A	-
HCM 95th %tile Q(veh)	0.6	-	-	1.4	0.2	0	0.1	-	-

McMahon Associates, Inc.
3: S Main St & Bridge St

French Creek West - Scenario 2
2025 Future Weekday PM - with Dev

	↖	→	↘	↙	←	↖	↙	↘	↗	↘	↙	↘
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕		↕		↕		↕		↕		↕	
Traffic Volume (vph)	23	307	38	26	444	277	47	366	82	196	141	24
Future Volume (vph)	23	307	38	26	444	277	47	366	82	196	141	24
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	12	11	11	11	10	10	10
Grade (%)	0%				1%				-2%		3%	
Storage Length (ft)	0		0	0		0	0		0	135		0
Storage Lanes	0		0	0		0	0		0	1		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
Ped Bike Factor	0.98				0.98				0.98		0.99	
Frt	0.986				0.950				0.978		0.978	
Flt Protected	0.997				0.998				0.950			
Satd. Flow (prot)	0	1689	0	0	1646	0	0	1686	0	1572	1588	0
Flt Permitted	0.929				0.977				0.951		0.274	
Satd. Flow (perm)	0	1574	0	0	1607	0	0	1602	0	446	1588	0
Right Turn on Red			Yes				Yes				Yes	
Satd. Flow (RTOR)	13				64				15		13	
Link Speed (mph)	25				25				25		25	
Link Distance (ft)	1070				1069				731		346	
Travel Time (s)	29.2				29.2				19.9		9.4	
Confl. Peds. (#/hr)	13		70	70		13	38		31	31		38
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	0%	3%	4%	0%	1%	2%	0%	0%	0%	0%	0%	3%
Adj. Flow (vph)	26	349	43	30	505	315	53	416	93	223	160	27
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	418	0	0	850	0	0	562	0	223	187	0
Number of Detectors	1	1		1	1		1	1		1	1	
Detector Template	Left				Left				Left			
Leading Detector (ft)	20	35		20	35		20	35		35	35	
Trailing Detector (ft)	0	-5		0	-5		0	-5		-5	-5	
Detector 1 Position(ft)	0	-5		0	-5		0	-5		-5	-5	
Detector 1 Size(ft)	20	40		20	40		20	40		40	40	
Detector 1 Type	CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	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	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	2				6				8			
Permitted Phases	2				6				8			
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	21.0	21.0		21.0	21.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	27.0	27.0		27.0	27.0		11.0	11.0		11.0	11.0	
Total Split (s)	42.0	42.0		42.0	42.0		28.0	28.0		28.0	28.0	
Total Split (%)	60.0%	60.0%		60.0%	60.0%		40.0%	40.0%		40.0%	40.0%	
Maximum Green (s)	36.0	36.0		36.0	36.0		22.0	22.0		22.0	22.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	

Lanes, Volumes, Timings
I:\eng\18195 - French Creek W\trafficAnalysis\2018-05 TIS\Existing\WD 2025 PM - Scenario 2.syn

3: S Main St & Bridge St
Synchro 10 (10.2.20)

McMahon Associates, Inc.
3: S Main St & Bridge St

French Creek West - Scenario 2
2025 Future Weekday PM - with Dev

	↖	→	↘	↙	←	↖	↙	↘	↗	↘	↙	↘
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0				-1.0				-1.0		-1.0	
Total Lost Time (s)	5.0				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	3.0	
Recall Mode	C-Min	C-Min		C-Min	C-Min		None	None		None	None	
Walk Time (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Flash Dont Walk (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
v/c Ratio	0.50				0.97				1.05		1.53	
Control Delay	12.8				35.8				78.1		293.5	
Queue Delay	0.0				0.0				0.0		0.0	
Total Delay	12.8				35.8				78.1		293.5	
Queue Length 50th (ft)	103				248				-265		-137	
Queue Length 95th (ft)	168				#295				#434		#255	
Internal Link Dist (ft)	990				989				651		266	
Turn Bay Length (ft)											135	
Base Capacity (vph)	838				879				536		146	
Starvation Cap Reductn	0				0				0		0	
Spillback Cap Reductn	0				0				0		0	
Storage Cap Reductn	0				0				0		0	
Reduced v/c Ratio	0.50				0.97				1.05		1.53	

Intersection Summary

Area Type: Other
 Cycle Length: 70
 Actuated Cycle Length: 70
 Offset: 6 (9%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 - Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 3: S Main St & Bridge St

↖ Ø2 (R)	↘ Ø4
42 s	28 s
← Ø6 (R)	↖ Ø8
42 s	28 s

Lanes, Volumes, Timings
I:\eng\18195 - French Creek W\trafficAnalysis\2018-05 TIS\Existing\WD 2025 PM - Scenario 2.syn

3: S Main St & Bridge St
Synchro 10 (10.2.20)

McMahon Associates, Inc.
3: S Main St & Bridge St

French Creek West - Scenario 2
2025 Future Weekday PM - with Dev

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔		↔		↔		↔		↔		↔	
Traffic Volume (veh/h)	23	307	38	26	444	277	47	366	82	196	141	24
Future Volume (veh/h)	23	307	38	26	444	277	47	366	82	196	141	24
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Ob), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.93	0.99		0.93	0.97		0.94	1.00		0.94
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
Adj Sat Flow, veh/h/ln	1800	1749	1800	1791	1767	1791	1818	1818	1818	1773	1765	1773
Adj Flow Rate, veh/h	26	349	43	30	505	315	53	416	90	223	160	27
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	1	1	0
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh. %	3	3	3	1	1	1	0	0	0	0	0	0
Cap, veh/h	77	723	86	68	514	311	91	432	90	237	479	81
Arrive On Green	0.51	0.53	0.51	1.00	1.00	1.00	0.31	0.33	0.31	0.33	0.33	0.31
Sat Flow, veh/h	43	1368	162	28	972	589	107	1314	273	894	1457	246
Grp Volume(v), veh/h	418	0	0	850	0	0	559	0	0	223	0	187
Grp Sat Flow(s), veh/h/ln	1573	0	0	1590	0	0	1693	0	0	894	0	1703
Q Serve(g_s), s	0.0	0.0	0.0	18.5	0.0	0.0	14.8	0.0	0.0	1.5	0.0	5.8
Cycle Q Clear(g_c), s	10.9	0.0	0.0	36.0	0.0	0.0	22.0	0.0	0.0	23.0	0.0	5.8
Prop In Lane	0.06		0.10	0.04		0.37	0.09		0.16	1.00		0.14
Lane Grp Cap(c), veh/h	864	0	0	871	0	0	588	0	0	237	0	560
V/C Ratio(X)	0.48	0.00	0.00	0.98	0.00	0.00	0.95	0.00	0.00	0.94	0.00	0.33
Avail Cap(c_a), veh/h	864	0	0	871	0	0	588	0	0	237	0	560
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	0.77	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	10.4	0.0	0.0	0.6	0.0	0.0	23.7	0.0	0.0	28.6	0.0	17.8
Incr Delay (d2), s/veh	1.9	0.0	0.0	21.6	0.0	0.0	25.3	0.0	0.0	42.2	0.0	0.3
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	9.5	0.0	0.0	12.6	0.0	0.0	21.4	0.0	0.0	11.4	0.0	5.0
LnGrp Delay(d),s/veh	12.3	0.0	0.0	22.2	0.0	0.0	49.0	0.0	0.0	70.8	0.0	18.1
LnGrp LOS	B		C		D		E		E		B	
Approach Vol, veh/h	418			850			559			410		
Approach Delay, s/veh	12.3			22.2			49.0			46.8		
Approach LOS	B			C			D			D		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	42.0		28.0		42.0		28.0					
Change Period (Y+Rc), s	6.0		6.0		6.0		6.0					
Max Green Setting (Gmax), s	36.0		22.0		36.0		22.0					
Max Q Clear Time (g_c+I1), s	12.9		25.5		38.0		24.0					
Green Ext Time (p_c), s	1.7		0.0		0.0		0.0					
Intersection Summary												
HCM 2010 Ctrl Delay	31.5											
HCM 2010 LOS	C											

HCM 2010 Signalized Intersection Summary
I:\eng\18195 - French Creek W\trafficAnalysis\2018-05 TIS\Existing\WD 2025 PM - Scenario 2.syn

3: S Main St & Bridge St
Synchro 10 (10.2.20)

McMahon Associates, Inc.
4: Starr St (SR 29) & Bridge St

French Creek West - Scenario 2
2025 Future Weekday PM - with Dev

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔		↔		↔	
Traffic Volume (vph)	564	99	444	788	119	590
Future Volume (vph)	564	99	444	788	119	590
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	16	16	10	11	10	12
Grade (%)	1%		1%		0%	
Storage Length (ft)	0		215		320	
Storage Lanes	0		1		1	
Taper Length (ft)			25		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.980				0.850	
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1931	0	1542	1697	1596	1500
Flt Permitted			0.205		0.950	
Satd. Flow (perm)	1931	0	333	1697	1596	1500
Right Turn on Red	Yes				Yes	
Satd. Flow (RTOR)	16				199	
Link Speed (mph)	25		35		25	
Link Distance (ft)	1069		499		559	
Travel Time (s)	29.2		9.7		15.2	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	3%	3%	3%	2%	0%	2%
Adj. Flow (vph)	576	101	453	804	121	602
Shared Lane Traffic (%)						
Lane Group Flow (vph)	677	0	453	804	121	602
Number of Detectors	1		1		1	
Detector Template						
Leading Detector (ft)	35		35		35	
Trailing Detector (ft)	-5		-5		-5	
Detector 1 Position(ft)	-5		-5		-5	
Detector 1 Size(ft)	40		40		40	
Detector 1 Type	Cl+Ex		Cl+Ex		Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0		0.0	
Detector 1 Queue (s)	0.0		0.0		0.0	
Detector 1 Delay (s)	0.0		0.0		0.0	
Turn Type	NA		pm+pt		NA	
Protected Phases	2		1		6	
Permitted Phases			6		8	
Detector Phase	2		1		6	
Switch Phase						
Minimum Initial (s)	27.0		7.0		27.0	
Minimum Split (s)	32.0		12.0		32.0	
Total Split (s)	35.0		15.0		50.0	
Total Split (%)	50.0%		21.4%		71.4%	
Maximum Green (s)	30.0		10.0		45.0	
Yellow Time (s)	3.0		3.0		3.0	
All-Red Time (s)	2.0		2.0		2.0	
Lost Time Adjust (s)	-1.0		-1.0		-1.0	

Lanes, Volumes, Timings
I:\eng\18195 - French Creek W\trafficAnalysis\2018-05 TIS\Existing\WD 2025 PM - Scenario 2.syn

4: Starr St (SR 29) & Bridge St
Synchro 10 (10.2.20)

	→	↖	↙	←	↘	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lag		Lead			Lead
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	C-Min		None	C-Min	None	None
Walk Time (s)	9.0		9.0	8.0		
Flash Dont Walk (s)	10.0		10.0	8.0		
Pedestrian Calls (#/hr)	0		0	0		
w/c Ratio	0.65	1.03	0.62	0.45	0.92	
Control Delay	14.7	66.9	8.5	30.9	35.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	14.7	66.9	8.5	30.9	35.2	
Queue Length 50th (ft)	177	-128	146	48	161	
Queue Length 95th (ft)	m177	#319	322	88	#328	
Internal Link Dist (ft)	989		419	479		
Turn Bay Length (ft)		215		320		
Base Capacity (vph)	1045	440	1295	364	652	
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced w/c Ratio	0.65	1.03	0.62	0.33	0.92	

Intersection Summary

Area Type: Other

Cycle Length: 70

Actuated Cycle Length: 70

Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Green, Master Intersection

Natural Cycle: 65

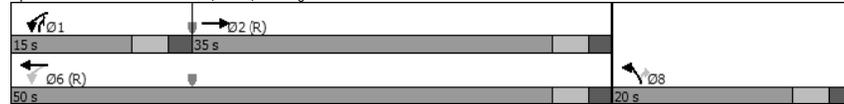
Control Type: Actuated-Coordinated

- Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Starr St (SR 29) & Bridge St



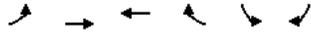
	→	↖	↙	←	↘	↗		
Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations	↔	↔	↔	↔	↔	↔		
Traffic Volume (veh/h)	564	99	444	788	119	590		
Future Volume (veh/h)	564	99	444	788	119	590		
Number	2	12	1	6	3	18		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1808	1863	1739	1756	1800	1765		
Adj Flow Rate, veh/h	576	92	453	804	121	583		
Adj No. of Lanes	1	0	1	1	1	1		
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98		
Percent Heavy Veh. %	3	3	3	2	0	2		
Cap, veh/h	674	108	447	1154	392	579		
Arrive On Green	0.44	0.43	0.16	0.66	0.23	0.23		
Sat Flow, veh/h	1522	243	1656	1756	1714	1500		
Grp Volume(v), veh/h	0	668	453	804	121	583		
Grp Sat Flow(s), veh/h/ln	0	1765	1656	1756	1714	1500		
Q Serve(g_s), s	0.0	23.8	11.0	20.3	4.1	16.0		
Cycle Q Clear(g_c), s	0.0	23.8	11.0	20.3	4.1	16.0		
Prop In Lane		0.14	1.00		1.00	1.00		
Lane Grp Cap(c), veh/h	0	782	447	1154	392	579		
V/C Ratio(X)	0.00	0.85	1.01	0.70	0.31	1.01		
Avail Cap(c_a), veh/h	0	782	447	1154	392	579		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	0.00	0.40	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	0.0	17.5	15.8	7.6	22.4	21.5		
Incr Delay (d2), s/veh	0.0	5.0	46.3	3.5	0.4	39.3		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(95%),veh/ln	0.0	16.3	25.7	16.1	3.6	31.3		
LnGrp Delay(d),s/veh	0.0	22.5	62.2	11.1	22.9	60.8		
LnGrp LOS		C	F	B	C	F		
Approach Vol, veh/h	668			1257	704			
Approach Delay, s/veh	22.5			29.5	54.3			
Approach LOS	C			C	D			
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	15.0	35.0				50.0		20.0
Change Period (Y+Rc), s	5.0	5.0				5.0		5.0
Max Green Setting (Gmax), s	10.0	30.0				45.0		15.0
Max Q Clear Time (q_c+I1), s	13.5	25.8				22.8		18.5
Green Ext Time (p_c), s	0.0	1.2				3.4		0.0

Intersection Summary

HCM 2010 Ctrl Delay 34.4

HCM 2010 LOS C

Notes



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↔	↑	↔		↔	
Traffic Volume (vph)	123	1087	1379	37	22	130
Future Volume (vph)	123	1087	1379	37	22	130
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	14	11	11	12	12
Grade (%)		2%	-2%		3%	
Storage Length (ft)	100			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		0.884	
Flt Protected	0.950				0.993	
Satd. Flow (prot)	1636	1744	1695	0	1329	0
Flt Permitted	0.950				0.993	
Satd. Flow (perm)	1636	1744	1695	0	1329	0
Link Speed (mph)		35	35		25	
Link Distance (ft)		253	844		353	
Travel Time (s)		4.9	16.4		9.6	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	9%	2%	50%	0%	20%
Adj. Flow (vph)	129	1144	1452	39	23	137
Shared Lane Traffic (%)						
Lane Group Flow (vph)	129	1144	1491	0	160	0
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized

Intersection						
Int Delay, s/veh	21.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↔	↑	↔		↔	
Traffic Vol, veh/h	123	1087	1379	37	22	130
Future Vol, veh/h	123	1087	1379	37	22	130
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	2	-2	-	3	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	9	2	50	0	20
Mvmt Flow	129	1144	1452	39	23	137

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	1491	0	0 2874 1472
Stage 1	-	-	- 1472 -
Stage 2	-	-	- 1402 -
Critical Hdwy	4.3	-	- 7 6.7
Critical Hdwy Stg 1	-	-	- 6 -
Critical Hdwy Stg 2	-	-	- 6 -
Follow-up Hdwy	3	-	- 3 3.1
Pot Cap-1 Maneuver	353	-	- - 12 - 132
Stage 1	-	-	- 179 -
Stage 2	-	-	- 197 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	353	-	- - 8 - 132
Mov Cap-2 Maneuver	-	-	- 42 -
Stage 1	-	-	- 114 -
Stage 2	-	-	- 197 -

Approach	EB	WB	SB
HCM Control Delay, s	2.1	0	\$ 378.7
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	353	-	-	-	101
HCM Lane V/C Ratio	0.367	-	-	-	1.584
HCM Control Delay (s)	21	-	-	-	\$ 378.7
HCM Lane LOS	C	-	-	-	F
HCM 95th %tile Q(veh)	1.6	-	-	-	12.3

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

McMahon Associates, Inc.
6: Mason St & Nutt Rd (SR 23)

French Creek West - Scenario 2
2025 Future Weekday PM - with Dev



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕	↔	↔	↕	↔	↔	↕	↔	↔	↕	↔
Traffic Volume (vph)	33	1122	3	4	1337	20	6	0	17	9	1	52
Future Volume (vph)	33	1122	3	4	1337	20	6	0	17	9	1	52
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	11	11	11	14	14	14	14	14	14
Grade (%)	2%				2%		-4%				-3%	
Storage Length (ft)	100		0	100		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					0.998			0.900				0.886
Flt Protected	0.950			0.950				0.987				0.993
Satd. Flow (prot)	1636	1706	0	1636	1685	0	0	1740	0	0	1715	0
Flt Permitted	0.950			0.950				0.987				0.993
Satd. Flow (perm)	1636	1706	0	1636	1685	0	0	1740	0	0	1715	0
Link Speed (mph)	35				35		25				25	
Link Distance (ft)	844				630		265				274	
Travel Time (s)	16.4				12.3		7.2				7.5	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	1%	0%	0%	2%	5%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	34	1145	3	4	1364	20	6	0	17	9	1	53
Shared Lane Traffic (%)												
Lane Group Flow (vph)	34	1148	0	4	1384	0	0	23	0	0	63	0
Sign Control	Free				Free		Stop				Stop	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized

McMahon Associates, Inc.
6: Mason St & Nutt Rd (SR 23)

French Creek West - Scenario 2
2025 Future Weekday PM - with Dev

Intersection												
Int Delay, s/veh	3.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕	↔	↔	↕	↔	↔	↕	↔	↔	↕	↔
Traffic Vol, veh/h	33	1122	3	4	1337	20	6	0	17	9	1	52
Future Vol, veh/h	33	1122	3	4	1337	20	6	0	17	9	1	52
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None									
Storage Length	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	2	-	-	2	-	-	-4	-	-	-	-3
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles, %	0	1	0	0	2	5	0	0	0	0	0	0
Mvmt Flow	34	1145	3	4	1364	20	6	0	17	9	1	53

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	1384	0	0	1148
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	4.1	-	-	4.1
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	2.2	-	-	2.2
Pot Cap-1 Maneuver	501	-	-	616
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	501	-	-	616
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0	90.8	104.4
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	64	501	-	-	616	-	-	92
HCM Lane V/C Ratio	0.367	0.067	-	-	0.007	-	-	0.688
HCM Control Delay (s)	90.8	12.7	-	-	10.9	-	-	104.4
HCM Lane LOS	F	B	-	-	B	-	-	F
HCM 95th %tile Q(veh)	1.4	0.2	-	-	0	-	-	3.4

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	455	662	86	67	776	32	148	302	28	21	236	0
Future Volume (vph)	455	662	86	67	776	32	148	302	28	21	236	0
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	13	13	10
Grade (%)		1%			1%			-2%			1%	
Storage Length (ft)	350		0	720		0	100		0	205		0
Storage Lanes	1		0	1		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
Ped Bike Factor		1.00		1.00								
Frt		0.983			0.994			0.987				
Flt Protected	0.950			0.950			0.950				0.996	
Satd. Flow (prot)	1557	1841	0	1557	1747	0	1580	1735	0	0	1826	0
Flt Permitted	0.950			0.950			0.314				0.574	
Satd. Flow (perm)	1557	1841	0	1556	1747	0	522	1735	0	0	1053	0
Right Turn on Red			No			No			No			Yes
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		265			436			378			352	
Travel Time (s)		5.2			8.5			10.3			9.6	
Confl. Peds. (#/hr)			1	1								
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	2%	2%	0%	2%	2%	0%	2%	0%	0%	0%	1%	0%
Adj. Flow (vph)	464	676	88	68	792	33	151	308	29	21	241	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	464	764	0	68	825	0	151	337	0	0	262	0
Number of Detectors	1	1		1	1		1	1		1	1	
Detector Template										Left		
Leading Detector (ft)	35	35		35	35		35	35		20	35	
Trailing Detector (ft)	-5	-5		-5	-5		-5	-5		0	-5	
Detector 1 Position(ft)	-5	-5		-5	-5		-5	-5		0	-5	
Detector 1 Size(ft)	40	40		40	40		40	40		20	40	
Detector 1 Type	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	
Detector 1 Queue (s)	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	
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Detector Phase	5	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	7.0	15.0		3.0	15.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	15.0	20.0		11.0	20.0		12.0	12.0		12.0	12.0	
Total Split (s)	33.0	62.0		14.0	43.0		24.0	24.0		24.0	24.0	
Total Split (%)	33.0%	62.0%		14.0%	43.0%		24.0%	24.0%		24.0%	24.0%	
Maximum Green (s)	25.0	57.0		6.0	38.0		19.0	19.0		19.0	19.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
All-Red Time (s)	5.0	2.0		5.0	2.0		2.0	2.0		2.0	2.0	
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	4.0	
Lead/Lag	Lag	Lag		Lead	Lead							
Lead-Lag Optimize?												
Vehicle Extension (s)	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	
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	
v/c Ratio	1.15	0.68		0.63	1.21		1.45	0.97		1.25		
Control Delay	127.3	18.1		71.4	138.1		281.3	82.9		180.5		
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0		
Total Delay	127.3	18.1		71.4	138.1		281.3	82.9		180.5		
Queue Length 50th (ft)	-349	327		43	-646		-132	215		-209		
Queue Length 95th (ft)	#542	473		#106	#876		#257	#390		#366		
Internal Link Dist (ft)		185			356		298			272		
Turn Bay Length (ft)	350			720			100					
Base Capacity (vph)	404	1119		108	681		104	347		210		
Starvation Cap Reductn	0	0		0	0		0	0		0		
Spillback Cap Reductn	0	0		0	0		0	0		0		
Storage Cap Reductn	0	0		0	0		0	0		0		
Reduced v/c Ratio	1.15	0.68		0.63	1.21		1.45	0.97		1.25		
Intersection Summary												
Area Type:	Other											
Cycle Length:	100											
Actuated Cycle Length:	100											
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green, Master Intersection												
Natural Cycle:	140											
Control Type:	Actuated-Coordinated											
- Volume exceeds capacity, queue is theoretically infinite.												
Queue shown is maximum after two cycles.												
# 95th percentile volume exceeds capacity, queue may be longer.												
Queue shown is maximum after two cycles.												
Splits and Phases: 7: Bridge St (SR 1019)/Bridge St (SR 113) & Nutt Rd (SR 23)												
14 s	62 s	24 s	43 s	33 s	24 s							
Ø1	Ø2 (R)	Ø4	Ø6 (R)	Ø5	Ø8							

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	455	662	86	67	776	32	148	302	28	21	236	0
Future Volume (vph)	455	662	86	67	776	32	148	302	28	21	236	0
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Ob), 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
Adj Sat Flow, veh/h/ln	1756	1830	1863	1756	1757	1791	1782	1818	1818	1863	1846	0
Adj Flow Rate, veh/h	464	676	88	68	792	33	151	308	29	21	241	0
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	0	1	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	0	1	1	0
Cap, veh/h	435	881	115	108	653	27	165	327	31	40	169	0
Arrive On Green	0.26	0.56	0.55	0.06	0.39	0.38	0.20	0.20	0.19	0.19	0.20	0.00
Sat Flow, veh/h	1672	1587	207	1672	1675	70	1146	1637	154	3	844	0
Grp Volume(v), veh/h	464	0	764	68	0	825	151	0	337	262	0	0
Grp Sat Flow(s), veh/h/ln	1672	0	1794	1672	0	1745	1146	0	1791	848	0	0
Q Serve(g_s), s	26.0	0.0	33.0	4.0	0.0	39.0	1.5	0.0	18.5	0.5	0.0	0.0
Cycle Q Clear(g_c), s	26.0	0.0	33.0	4.0	0.0	39.0	20.0	0.0	18.5	19.0	0.0	0.0
Prop In Lane	1.00		0.12	1.00		0.04	1.00		0.09	0.08		0.00
Lane Grp Cap(c), veh/h	435	0	996	108	0	680	165	0	358	200	0	0
V/C Ratio(X)	1.07	0.00	0.77	0.63	0.00	1.21	0.92	0.00	0.94	1.31	0.00	0.00
Avail Cap(c_a), veh/h	435	0	1040	117	0	680	165	0	358	200	0	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	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	37.0	0.0	17.3	45.6	0.0	30.5	44.5	0.0	39.5	37.8	0.0	0.0
Incr Delay (d2), s/veh	62.2	0.0	5.7	9.1	0.0	108.8	46.3	0.0	32.6	170.8	0.0	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	35.0	0.0	24.6	3.8	0.0	70.7	10.4	0.0	18.2	27.1	0.0	0.0
LnGrp Delay(d),s/veh	99.2	0.0	22.9	54.6	0.0	139.3	90.9	0.0	72.1	208.5	0.0	0.0
LnGrp LOS	F		C	D		F	F		E	F		
Approach Vol, veh/h	1228			893				488			262	
Approach Delay, s/veh	51.8			132.9				77.9			208.5	
Approach LOS	D			F				E			F	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	13.5	62.5		24.0	33.0	43.0		24.0				
Change Period (Y+Rc), s	8.0	* 8		5.0	8.0	5.0		5.0				
Max Green Setting (Gmax), s	6.0	* 57		19.0	25.0	38.0		19.0				
Max Q Clear Time (g_c+I1), s	6.5	35.0		21.0	28.5	41.0		22.5				
Green Ext Time (p_c), s	0.0	3.2		0.0	0.0	0.0		0.0				

Intersection Summary	
HCM 2010 Ctrl Delay	95.7
HCM 2010 LOS	F

Notes

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	32	3	24	0	0	0	21	649	26	20	649	22
Future Volume (vph)	32	3	24	0	0	0	21	649	26	20	649	22
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	16	16	16	12	12	12	11	11	11
Grade (%)		1%			-11%			2%				2%
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												
Frt		0.945						0.995				0.996
Flt Protected		0.974						0.998				0.999
Satd. Flow (prot)	0	1594	0	0	0	0	0	1751	0	0	0	1698
Flt Permitted		0.974						0.998				0.999
Satd. Flow (perm)	0	1594	0	0	0	0	0	1751	0	0	0	1698
Link Speed (mph)		25			25			25				25
Link Distance (ft)		284			281			356				775
Travel Time (s)		7.7			7.7			9.7				21.1
Confl. Peds. (#/hr)	2		1				4					4
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	1%	4%	0%	1%	0%
Adj. Flow (vph)	33	3	25	0	0	0	0	22	676	27	21	676
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	61	0	0	0	0	0	725	0	0	0	720
Sign Control		Stop			Stop			Free				Free

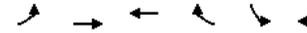
Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized

Intersection												
Int Delay, s/veh	1.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔						↔			↔		
Traffic Vol, veh/h	32	3	24	0	0	0	21	649	26	20	649	22
Future Vol, veh/h	32	3	24	0	0	0	21	649	26	20	649	22
Conflicting Peds, #/hr	2	0	1	0	0	0	4	0	0	0	0	4
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	-
Grade, %	-	1	-	-	-11	-	-	2	-	-	2	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	0	0	0	0	1	4	0	1	0
Mvmt Flow	33	3	25	0	0	0	22	676	27	21	676	23

Major/Minor	Minor2			Major1			Major2		
Conflicting Flow All	1470	1481	693	703	0	0	703	0	0
Stage 1	734	734	-	-	-	-	-	-	-
Stage 2	736	747	-	-	-	-	-	-	-
Critical Hdwy	6.6	6.7	6.3	4.3	-	-	4.3	-	-
Critical Hdwy Stg 1	5.6	5.7	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.6	5.7	-	-	-	-	-	-	-
Follow-up Hdwy	3	4	3.1	3	-	-	3	-	-
Pot Cap-1 Maneuver	141	117	459	685	-	-	685	-	-
Stage 1	512	412	-	-	-	-	-	-	-
Stage 2	511	406	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	126	0	457	683	-	-	685	-	-
Mov Cap-2 Maneuver	126	0	-	-	-	-	-	-	-
Stage 1	459	0	-	-	-	-	-	-	-
Stage 2	509	0	-	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	34.3	0.3	0.3
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	SBL	SBT	SBR
Capacity (veh/h)	683	-	-	183	685	-	-
HCM Lane V/C Ratio	0.032	-	-	0.336	0.03	-	-
HCM Control Delay (s)	10.4	0	-	34.3	10.4	0	-
HCM Lane LOS	B	A	-	D	B	A	-
HCM 95th %tile Q(veh)	0.1	-	-	1.4	0.1	-	-



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑			↑
Traffic Volume (vph)	0	1203	923	0	0	451
Future Volume (vph)	0	1203	923	0	0	451
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	15	15
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.865
Flt Protected						
Satd. Flow (prot)	0	1765	1765	0	0	1696
Flt Permitted						
Satd. Flow (perm)	0	1765	1765	0	0	1696
Link Speed (mph)		35	35			25
Link Distance (ft)		630	265			329
Travel Time (s)		12.3	5.2			9.0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	2%	2%	0%	0%	1%
Adj. Flow (vph)	0	1228	942	0	0	460
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1228	942	0	0	460
Sign Control		Free	Free			Stop

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized

Intersection						
Int Delay, s/veh	36.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑			↑
Traffic Vol, veh/h	0	1203	923	0	0	451
Future Vol, veh/h	0	1203	923	0	0	451
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	98	98	98	98	98	98
Heavy Vehicles, %	0	2	2	0	0	1
Mvmt Flow	0	1228	942	0	0	460

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	-	0	- 0 - 942
Stage 1	-	-	- - -
Stage 2	-	-	- - -
Critical Hdwy	-	-	- - 6.21
Critical Hdwy Stg 1	-	-	- - -
Critical Hdwy Stg 2	-	-	- - -
Follow-up Hdwy	-	-	- - 3
Pot Cap-1 Maneuver	0	-	- 0 - 341
Stage 1	0	-	- 0 -
Stage 2	0	-	- 0 -
Platoon blocked, %	-	-	- - -
Mov Cap-1 Maneuver	-	-	- - 341
Mov Cap-2 Maneuver	-	-	- - -
Stage 1	-	-	- - -
Stage 2	-	-	- - -

Approach	EB	WB	SB
HCM Control Delay, s	0	0	206.5
HCM LOS			F

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	341
HCM Lane V/C Ratio	-	-	1.35
HCM Control Delay (s)	-	-	206.5
HCM Lane LOS	-	-	F
HCM 95th %tile Q(veh)	-	-	22.6

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