Traffic Impact Analysis
520 Patrick Henry Drive
Blacksburg, Virginia
June 2019

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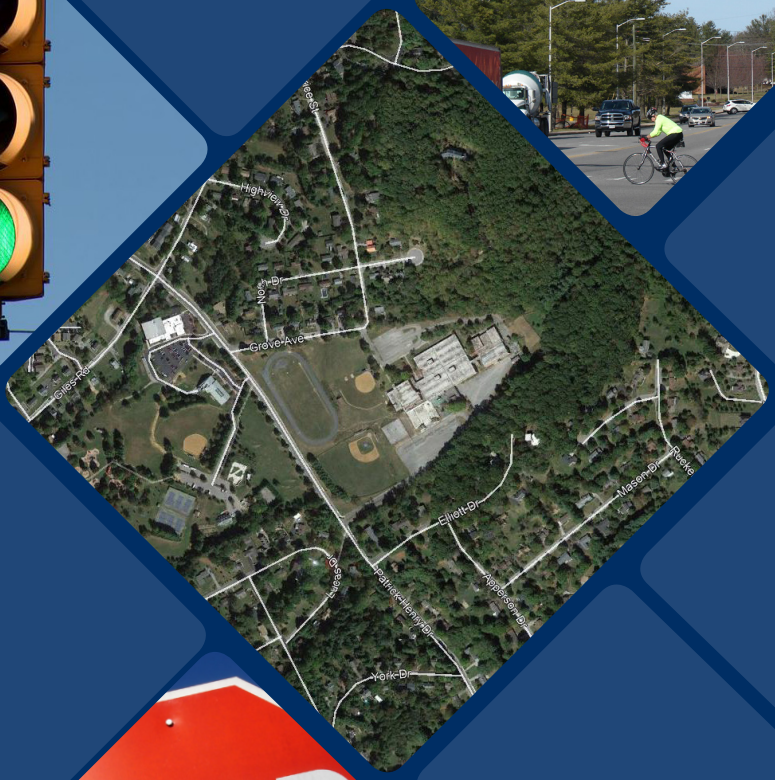

RAMEY KEMP & ASSOCIATES

TRAFFIC IMPACT ANALYSIS

FOR

520 PATRICK HENRY DRIVE

LOCATED
IN
BLACKSBURG, VIRGINIA

Prepared for:
Parker Design Group, Inc.
2122 Carolina Avenue SW
Roanoke, Virginia 24014

Prepared by:
Ramey Kemp & Associates, Inc.
621 Jonestown Road
Suite 221
Winston-Salem, North Carolina 27103

COMMONWEALTH OF VIRGINIA
JAYSON B. CLAPP JR.
Lic. No. 044355
6-26-19
PROFESSIONAL ENGINEER

June 2019

RKA Project – 19117

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TRAFFIC IMPACT ANALYSIS REPORT
520 PATRICK HENRY DRIVE
BLACKSBURG, VIRGINIA

1. INTRODUCTION

This report summarizes the findings of the Traffic Impact Analysis (TIA) that was performed for the proposed redevelopment of the old Blacksburg High School property located at 520 Patrick Henry Drive in Blacksburg, Virginia. The purpose of this study is to evaluate the current traffic conditions at the study intersections, estimate the trip generation potential of the proposed development, and determine what mitigation measures, if any, are needed to accommodate the projected traffic volumes.

1.1. Executive Summary

The proposed redevelopment is to be located on the east side of Patrick Henry Drive [south of Grove Avenue] in Blacksburg, Virginia. At build out, the proposed site could consist of up 112 townhomes. If approved, the development is expected to be complete by the year 2022. Direct access to/from Patrick Henry Drive is to be provided via Grove Avenue and the existing school access.

The study area developed through coordination with the Town consists of the following intersections:

- North Main Street and Patrick Henry Drive - Signalized
- Harding Avenue and Patrick Henry Drive – Unsignalized
- Patrick Henry Drive and Grove Avenue - Unsignalized
- Patrick Henry Drive and Full Access - Unsignalized

The study intersections were analyzed during the weekday AM and PM peak hours under the following traffic scenarios:

- Existing (2019) traffic conditions
- Future (2022) 'No-Build' traffic conditions
- Future (2022) 'Build' traffic conditions

Based on the results of the traffic impact analysis, no mitigation measures were identified as the traffic generated by the proposed development is not expected to have a significant impact on the study area.

1.2. Site Location and Study Area

The proposed redevelopment is to be located on the east side of Patrick Henry Drive [south of Grove Avenue] in Blacksburg, Virginia. Through coordination with the Town, it was determined that the study area would consist of the following intersections:

- North Main Street and Patrick Henry Drive - Signalized
- Harding Avenue and Patrick Henry Drive – Unsignalized
- Patrick Henry Drive and Grove Avenue - Unsignalized
- Patrick Henry Drive and Full Access - Unsignalized

Refer to Figure 1 for the site location map.

1.3. Existing Land Uses

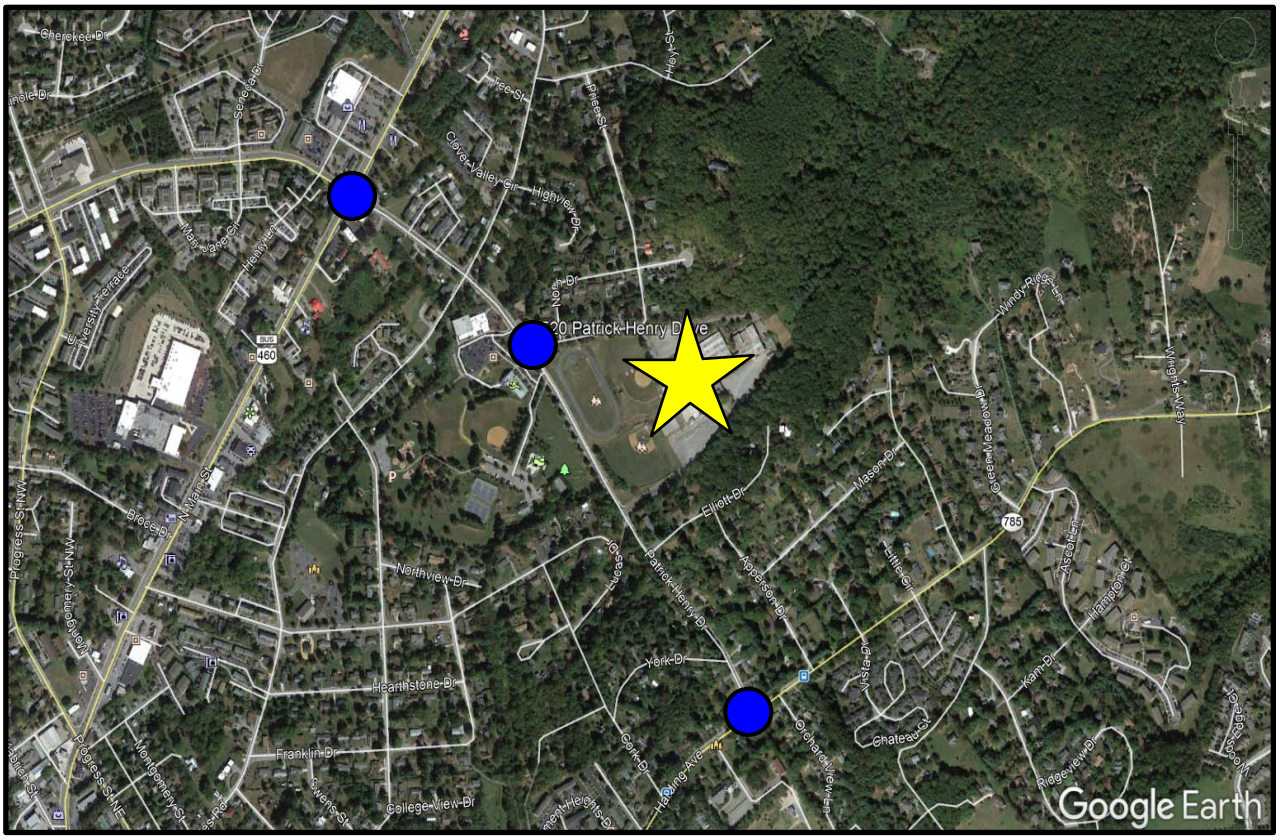
The old Blacksburg High School currently exists on the site with two (2) access connections; one (1) on Patrick Henry Drive and one (1) on Grove Avenue.

1.4. Proposed Land Uses and Access

At build out, the proposed site could consist of up to 112 townhome units. If approved, the development is expected to be complete by the year 2022. Direct access to/from Patrick Henry Drive is to be provided via Grove Avenue and the existing school access. Refer to Figure 2 for the preliminary site plan.

1.5. Existing Roadway Network

North Main Street is a four-lane facility with a posted speed limit of 35 miles per hour (mph) within the study area. Based on 2017 VDOT Annual Average Daily Traffic (AADT) estimates, North Main Street carries approximately 16,000 vehicles per day (vpd) between Progress Street and Patrick Henry Drive.



LEGEND

Site Location

Existing Study Intersection

N

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520 Patrick Henry Drive
Blacksburg, Virginia

Site Location Map

	Not to Scale	Figure 1

UNIT SUMMARY

Building Type	Number of Buildings	Number of Units per Building
BUILDING TYPE 1 - 6 PLEX BUILDINGS	**5**	**30 Units Total**
Unit Type A - 2/bldg.		10
Unit Type B - 2/bldg.		10
Unit Type C - 2/bldg.		10
BUILDING TYPE 2 - 5 PLEX BUILDING	**3**	**15 Units Total**
Unit Type A - 2/bldg.		6
Unit Type B - 2/bldg.		6
Unit Type C - 1/bldg.		3
BUILDING TYPE 3 - 4 PLEX BUILDINGS	**4**	**16 Units Total**
Unit Type A - 2/bldg.		8
Unit Type B - 2/bldg.		8
BUILDING TYPE 4 - 3 PLEX BUILDING	**2**	**6 Units Total**
Unit Type A - 2/bldg.		4
Unit Type B- 1/bldg.		2
BUILDING TYPE 5 - 3 PLEX BUILDINGS	**2**	**6 Units Total**
Unit Type D1 - 2/bldg.		4
Unit Type E1 - 1/bldg.		2
BUILDING TYPE 6 - 3 PLEX BUILDING	**2**	**6 Units Total**
Unit Type D1 - 2/bldg.		6
BUILDING TYPE 7 - 4 PLEX BUILDINGS	**2**	**8 Units Total**
Unit Type D1 - 3/bldg.		6
Unit Type E1 - 1/bldg.		2
BUILDING TYPE 8 - 4 PLEX BUILDING	**1**	**4 Units Total**
Unit Type D1 - 4/bldg.		4
BUILDING TYPE 9 - 4 PLEX BUILDINGS	**2**	**8 Units Total**
Unit Type D2 - 3/bldg.		6
Unit Type E2 - 1/bldg.		2
BUILDING TYPE 10- 3 PLEX BUILDING	**4**	**12 Units Total**
Unit Type D2 - 2/bldg.		8
Unit Type E2 – 1/bldg.		4
		111 Total Units

UNIT MIX

Unit	Townhome Type	Stories	Unit Size	Number of Units
Unit A	3 BD/2 ½ BA, Master Down	2 Story	1,948 SF	28
Unit B	3 BD/2 ½ BA	2 Story	1,728 SF	26
Unit C	2 BD/ 2 ½ BA, 2 Masters	2 Story	1,440 SF	13
Unit D1	3 BD/ 2 ½ BA, Front Loaded	3 story	1,478 SF	20
Unit D2	3 BD/2 ½ BA, Alley Loaded	3 story	1,478 SF	14
Unit E1	3 BD/2 ½ BA, Front Loaded,	2 story	1,532 SF	4
Unit E2	3 BD/2 ½ BA, Alley Loaded,	2 story	1,532 SF	6
				111 Total Uni

Parking Summary

Garages	222 Stalls
Driveways	222 Stalls
Street Parking	50 Stalls
Total Parking	**494 Stalls**

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SITE PLAN

BLACKSBURG HIGH SCHOOL SITE

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520 Patrick Henry Drive
Blacksburg, Virginia

Site Plan

Scale: Not to Scale | Figure 2

N

Patrick Henry Drive is a four-lane facility [west of North Main Street] and a two-lane facility [east of North Main Street] with a posted speed limit of 25 mph within the study area. Based on 2017 VDOT AADT estimates, Patrick Henry Drive carries approximately 3,800 vpd between North Main Street and Harding Avenue.

Harding Avenue is a two-lane facility with a posted speed limit of 25 mph within the study area. Based on 2017 VDOT AADT estimates, Harding Avenue carries approximately 3,800 vpd within the vicinity of Patrick Henry Drive.

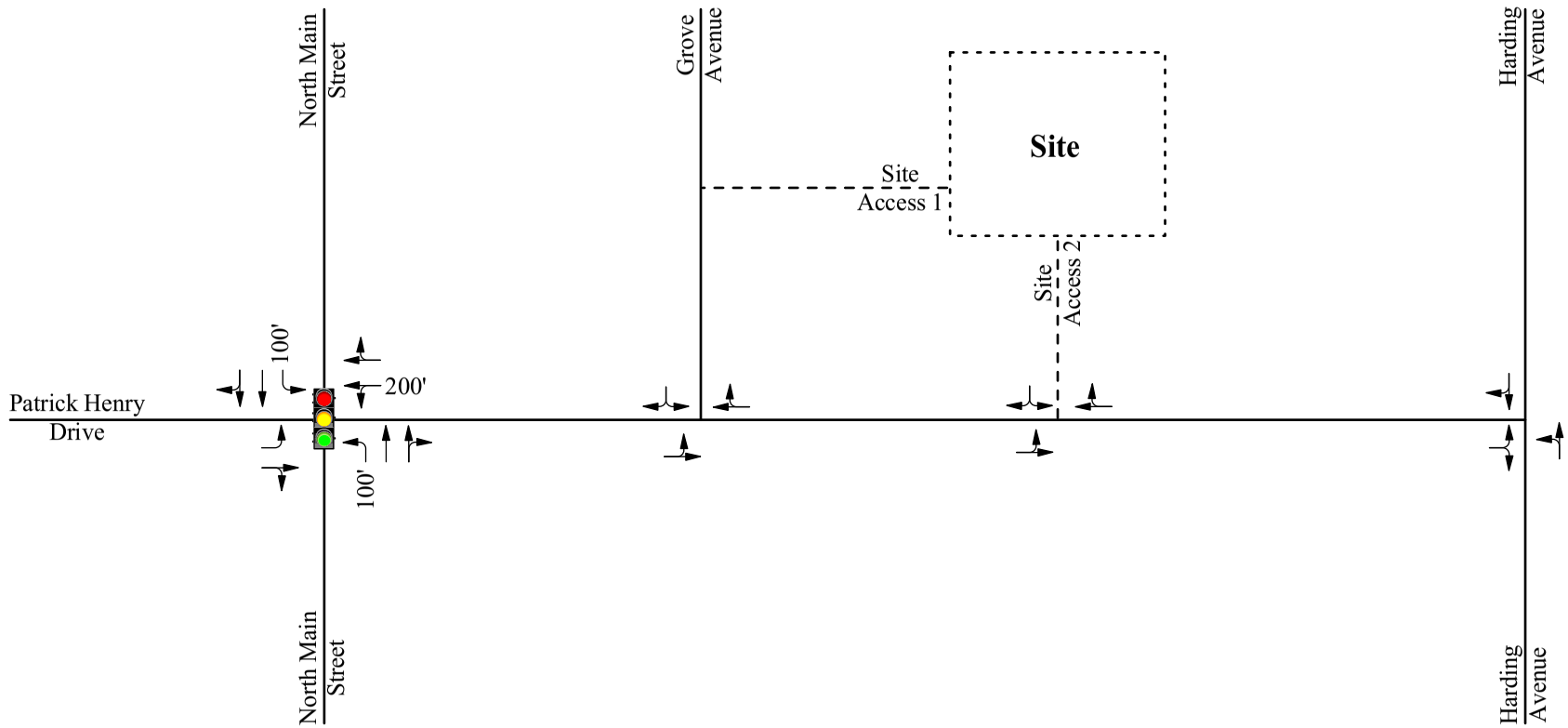
Refer to Figure 3 for an illustration of the existing geometrics and traffic control at the study intersections.

2. TRAFFIC ANALYSIS PROCEDURE

All study intersections were analyzed using the methodology outlined in the Highway Capacity Manual (HCM) published by the Transportation Research Board. The computer software package, Synchro (Version 10.2), was used to complete all analyses. Synchro was developed by Trafficware Corporation and allows the user to input data into the Synchro software and calculate the output based on methodologies in the HCM.

The HCM defines capacity as "the maximum hourly rate at which persons or vehicles can reasonably be expected to traverse a point or uniform section of a lane or roadway during a given time period under prevailing roadway, traffic, and control condition." Level of service (LOS) is a term used to represent different driving conditions, and is defined as a "qualitative measure describing operational conditions within a traffic stream, and their perception by motorists and/or passenger." Level of service varies from Level "A", representing free flow, to Level "F", where greater vehicle delays are evident.

For signalized intersections, Synchro calculates the average control delay and LOS for each lane group as well as the overall intersection. For unsignalized intersections, Synchro calculates the average control delay for stop-controlled movements, but does not provide an overall LOS for the intersection.



LEGEND

Signalized Intersection

X' Lane Configuration and Storage Length (in feet)

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520 Patrick Henry Drive
Blacksburg, Virginia

Existing Geometrics
and Traffic Control

Not to Scale | Figure 3

Refer to Table 1 for HCM levels of service and related average control delay per vehicle. Control delay as defined by the HCM includes "initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay." As shown in Table 1, an average control delay of 40 seconds at a signalized intersection results in LOS D operation.

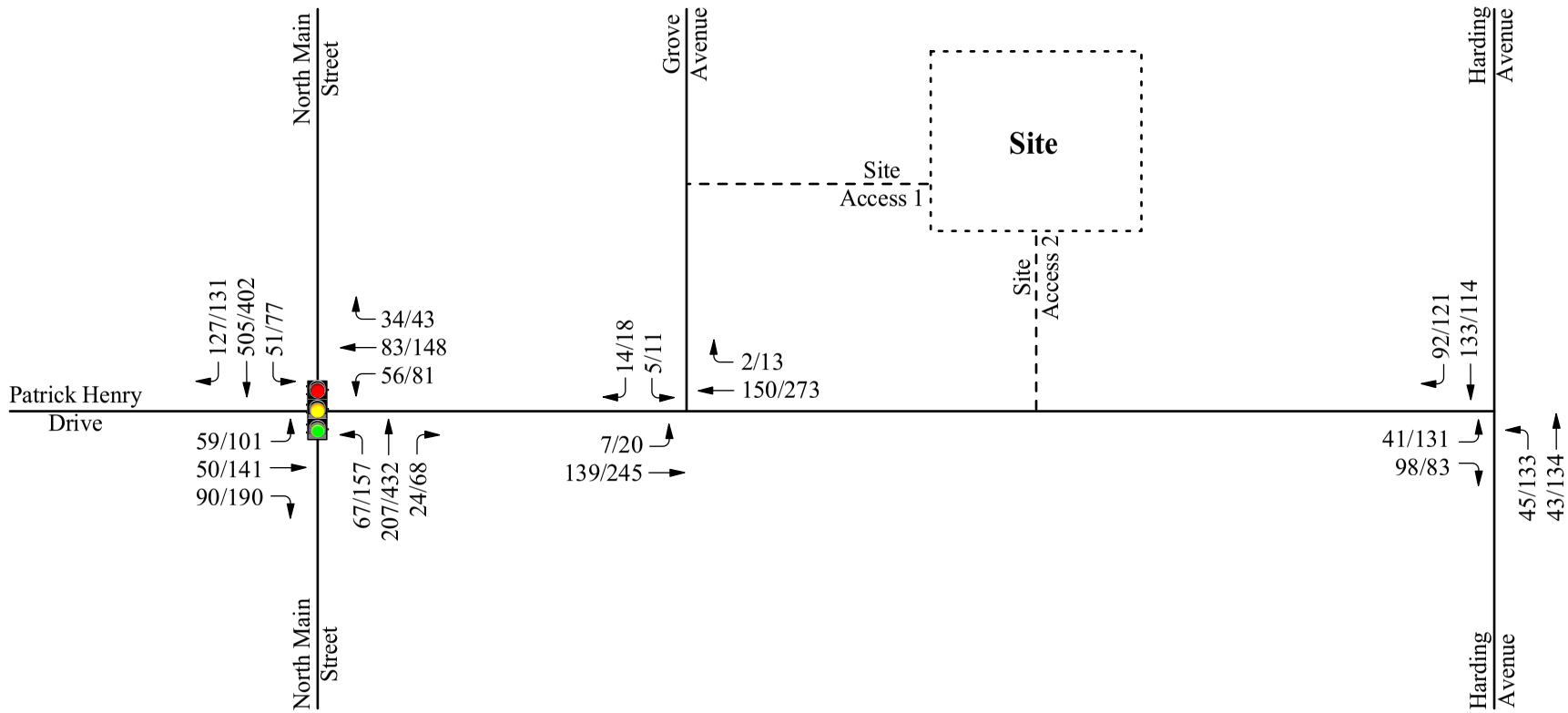
TABLE 1
HIGHWAY CAPACITY MANUAL – LEVELS OF SERVICE AND DELAY

SIGNALIZED INTERSECTION		UNSIGNALIZED INTERSECTION	
LEVEL OF SERVICE	CONTROL DELAY PER VEHICLE (SECONDS)	LEVEL OF SERVICE	CONTROL DELAY PER VEHICLE (SECONDS)
A	0-10	A	0-10
B	10-20	B	10-15
C	20-35	C	15-25
D	35-55	D	25-35
E	55-80	E	35-50
F	>80	F	>50

In order to identify potential storage deficiencies for existing turn lanes at the study intersections and determine the minimum storage required for newly warranted turn lanes, the queue lengths at the intersections were evaluated under future traffic conditions. The queue lengths reported at the study intersections are the maximum queue lengths calculated by SimTraffic and are based on an average of ten (10) simulation runs.

3. EXISTING TRAFFIC CONDTIONS

Existing traffic volumes were obtained from 12-hour turning movement counts that were conducted at the study intersections on a Tuesday and Wednesday from 7:00 AM to 7:00 PM while Virginia Tech and other schools were in session, with the higher peak hour intersection count of the two days utilized for the traffic analysis. Please note that the existing traffic volumes on Patrick Henry Drive were not balanced between study intersections due to the number of driveway connections located between them. Refer to Figure 4 for an illustration of the existing traffic volumes. A copy of the traffic count data can be found in Appendix A.



LEGEND

Signalized Intersection

X/Y AM/PM Peak Hour Traffic

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520 Patrick Henry Drive
Blacksburg, Virginia

Existing (2019)
Traffic Volumes

Not to Scale | Figure 4

3.1. Analysis of Existing (2019) Peak Hour Traffic Conditions

In order to determine the current delays and operating levels of service at the study intersections, the existing (2019) traffic volumes (Figure 4) were analyzed under existing lane configurations and traffic control conditions. The peak hour factor (PHF) of each intersection was obtained from the traffic counts and were utilized for the AM and PM peak hour analyses. In addition, heavy vehicle percentages (HV%) were calculated for each movement (refer to Appendix A) for a table summarizing the heavy vehicle percentages) and utilized for the peak hour analyses. The calculated PHFs and HV% for the intersections are illustrated in Figure 5. Under all traffic conditions, the signalized intersection of North Main Street and Patrick Henry Drive was analyzed utilizing the signal phasing and timing data obtained from the Town and their consultant, and are located in Appendix B. Cycle lengths were optimized for the six-phase signal and may vary between existing and future traffic conditions. The results of the analysis are presented in Section 8 of this report.

4. 'NO-BUILD' TRAFFIC CONDITIONS

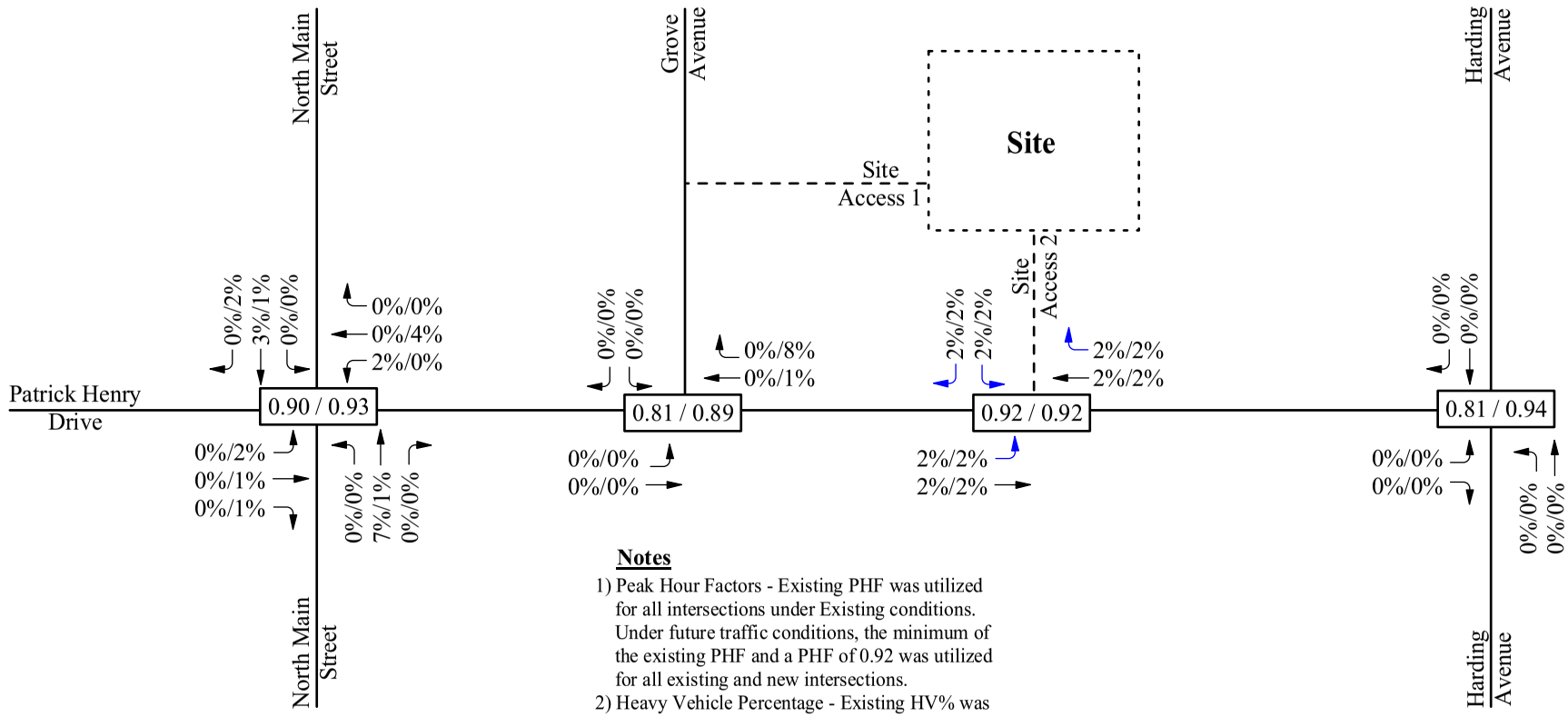
In order to determine the traffic impact of the proposed redevelopment, a comparison of the future conditions of the study intersections must be made. This is done by analyzing the future build out year (2022) without and with the traffic generated by the proposed redevelopment. The future year condition without the development is referred to as the 'no-build' condition and is determined by projecting the existing traffic to the build out year using a compounded annual growth rate.

4.1. Background Traffic Growth

In order to account for the growth of traffic and subsequent traffic conditions at a future year, background traffic projections are needed. Background traffic is the component of traffic due to the growth of the community and surrounding area that is anticipated to occur regardless of whether the site is developed. An annual growth rate of 0.5% was applied to the existing traffic volumes. Refer to Figure 6 for an illustration of the projected (2022) peak hour traffic volumes.

4.2. Adjacent Development Traffic

Based on coordination with the Town, it is understood that there is one (1) approved development in the vicinity of the site that is expected to affect the study area: 1222 Patrick



Notes

1) Peak Hour Factors - Existing PHF was utilized for all intersections under Existing conditions. Under future traffic conditions, the minimum of the existing PHF and a PHF of 0.92 was utilized for all existing and new intersections.
2) Heavy Vehicle Percentage - Existing HV% was utilized under all conditions for all movements with the exception of the movements at the Site Access 2 under future 'build' conditions. Under these conditions, a HV% of 2% was used.

LEGEND

→ Movement
- Existing
- New under 'Build' traffic conditions

[X / Y] Intersection Peak Hour Factor

X% / Y% Heavy Vehicle Percentage

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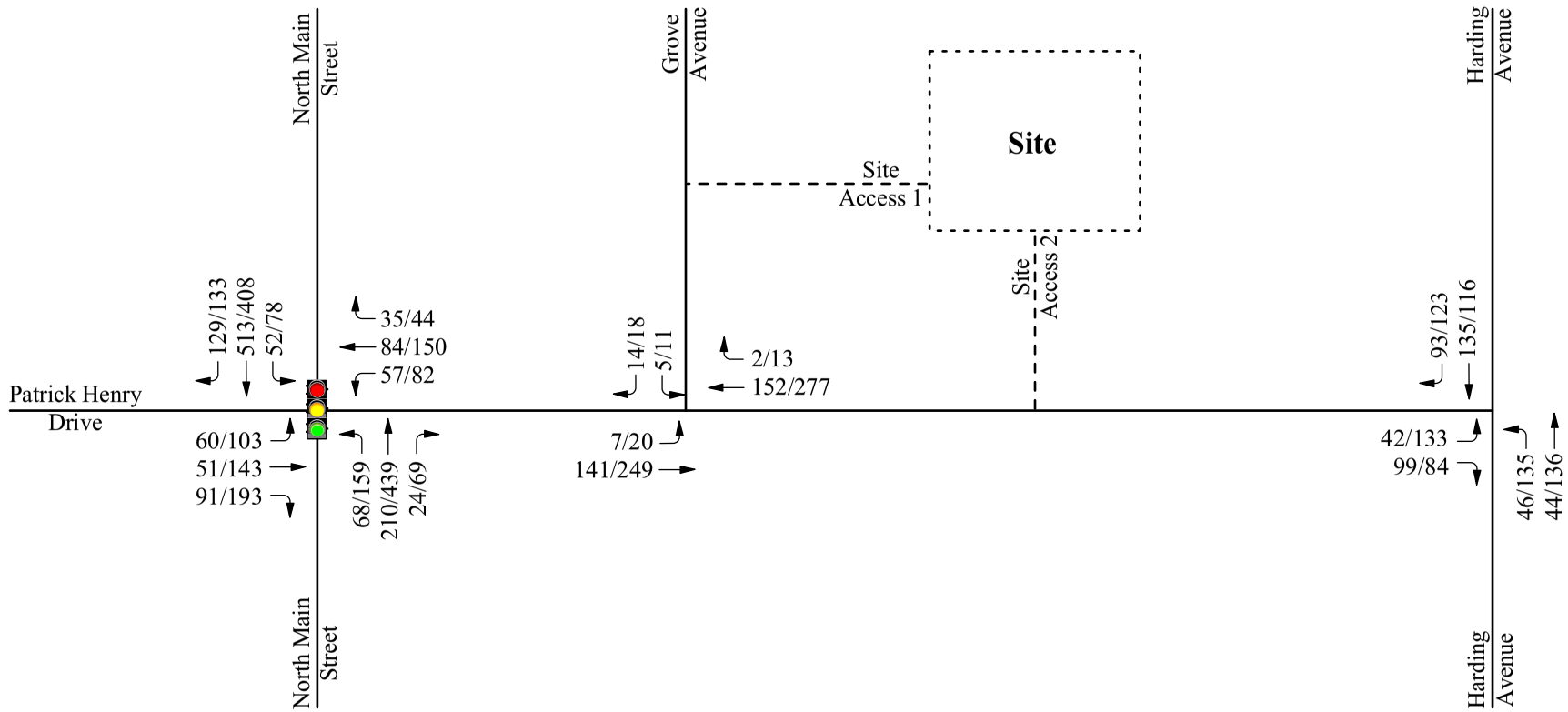
520 Patrick Henry Drive
Blacksburg, Virginia

Calculated Peak Hour Factors
& Heavy Vehicle Percentages

Not to Scale | Figure 5



LEGEND

Signalized Intersection

X/Y AM/PM Peak Hour Traffic

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520 Patrick Henry Drive
Blacksburg, Virginia

Projected (2022)
Traffic Volumes

Not to Scale | Figure 6

Henry PRD. The site generated traffic from the traffic study that was sealed and submitted by Balzer & Associates on November 20, 2018 was included under all future traffic conditions. Refer to Figure 7 for an illustration of the approved development traffic volumes. Refer to Appendix C for the approved development information.

4.3. Future (2022) 'No-Build' Peak Hour Traffic Conditions

The future (2022) 'no-build' peak hour traffic volumes were determined by adding the approved development traffic volumes (Figure 7) and the projected (2022) traffic volumes (Figure 6). Refer to Figure 8 for an illustration of the future (2022) 'no-build' peak hour traffic volumes.

4.4. Analysis of Future (2022) 'No-Build' Peak Hour Traffic Conditions

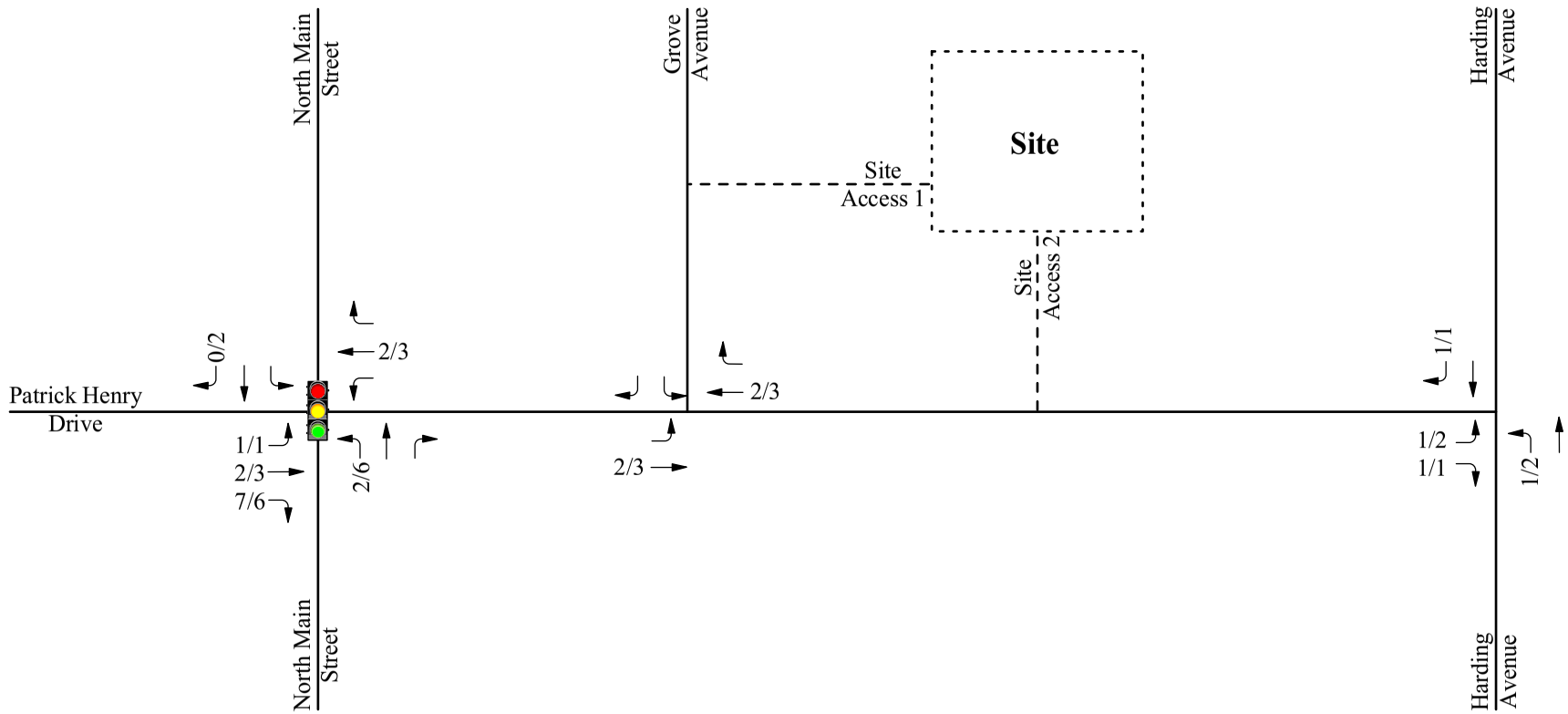
Utilizing the future (2022) 'no-build' traffic volumes (Figure 8), the study intersections were analyzed using the same methodology as previously discussed for the existing traffic conditions. The results of the future (2022) 'no-build' analysis are presented in Section 8 of this report.

5. PROJECT TRAFFIC

5.1. Trip Generation

At build out, the proposed site could consist of up to 112 townhome units. The average weekday daily trips as well as AM and PM peak hour peak hour site trips for this analysis were calculated utilizing the 10th Edition of the Institute of Transportation Engineers (ITE) *Trip Generation* Manual. Traffic was generated for the land use of low-rise [two-story] multi-family housing according to the peak hour of adjacent street traffic utilizing the number of dwelling units as the independent variable. Trips were generated utilizing equations for the weekday daily and peak hour traffic.

It is estimated that the proposed redevelopment could generate up to 741 trips (entering and exiting) during a typical weekday. The development could generate up to 50 trips (12 entering and 38 exiting) during the AM peak hour and 63 trips (40 entering and 23 exiting) during the PM peak hour. Refer to Table 2 for a breakdown of the trip generation results for the proposed redevelopment.



LEGEND

Signalized Intersection

X/Y AM/PM Peak Hour Traffic

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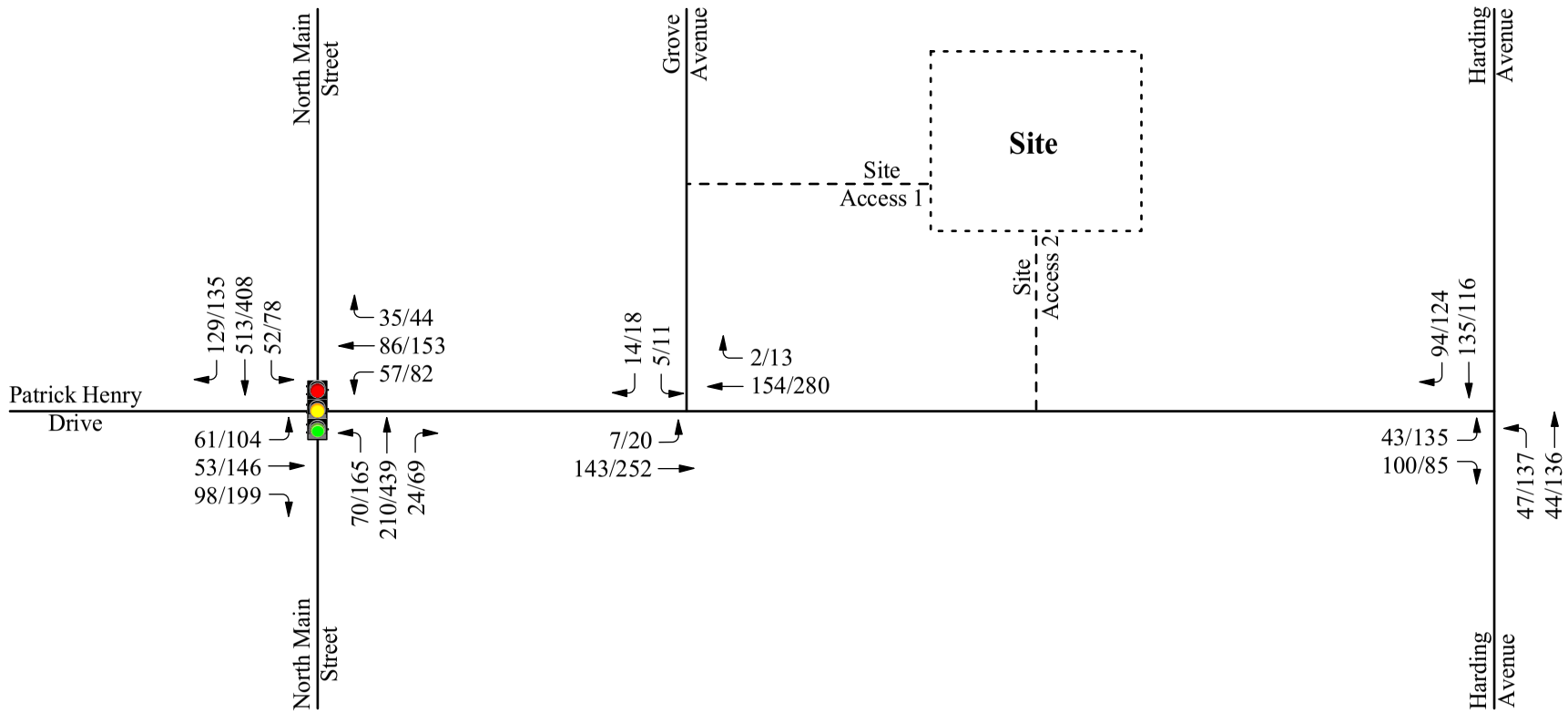
520 Patrick Henry Drive
Blacksburg, Virginia

Approved Development
Traffic Volumes

Not to Scale | Figure 7



LEGEND

Signalized Intersection

X/Y AM/PM Peak Hour Traffic

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520 Patrick Henry Drive
Blacksburg, Virginia

No-Build (2022)
Traffic Volumes

Not to Scale | Figure 8

TABLE 2
TRIP GENERATION

ITE LAND USE (ITE Code)	DENSITY	DAILY VOLUME	AM PEAK HOUR (vph)		PM PEAK HOUR (vph)	
			Enter	Exit	Enter	Exit
Multi-Family Housing (Low-Rise) (220)	82 D.U.	579	9	30	31	18

6. SITE TRIP DISTRIBUTION AND ASSIGNMENT

The primary site trip distribution for the proposed development was determined based on a review of the existing traffic patterns and engineering judgment, and is summarized below:

- 15% to/from the north via North Main Street
- 20% to/from the south via North Main Street
- 30% to/from the west via Patrick Henry Drive
- 15% to/from the north via Harding Avenue
- 20% to/from the south via Harding Avenue

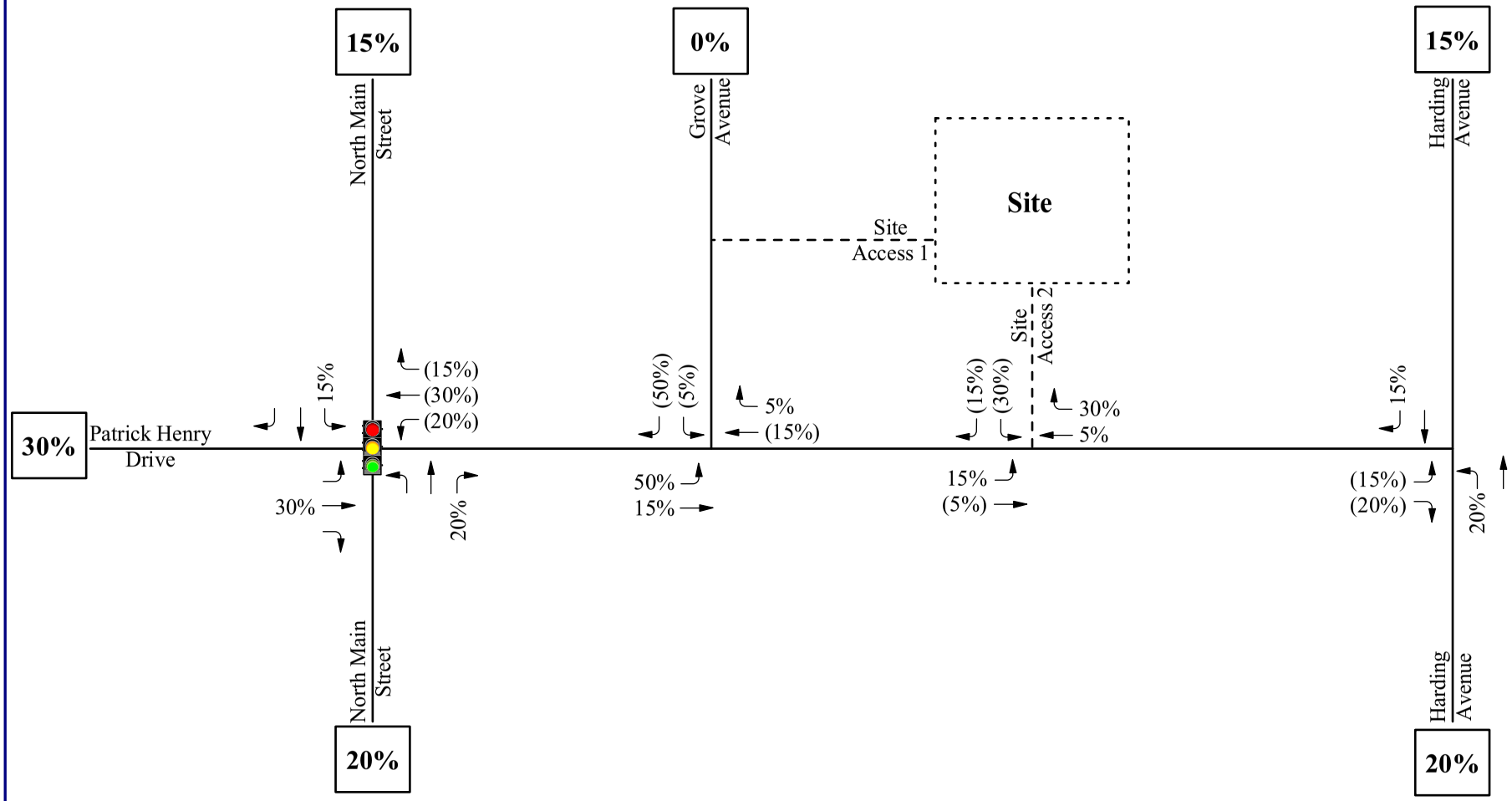
Refer to Figures 9 and 10 for illustrations of the site trip distribution and the site trip assignment.

7. 'BUILD' TRAFFIC CONDITIONS

'Build' traffic represents the future build out year of a development. It is typically determined by combining the 'no-build' and site traffic.

7.1. Proposed 'Build' (2022) Peak Hour Traffic Conditions

Future (2022) 'build' conditions were determined by adding the site-generated traffic volumes (Figure 10) and the future (2022) 'no-build' traffic volumes (Figure 8). Refer to Figure 11 for an illustration of the future (2022) 'build' traffic volumes with the development built-out.



LEGEND

Signalized Intersection

X% (Y%) Entering (Exiting) Peak Hour Site Traffic

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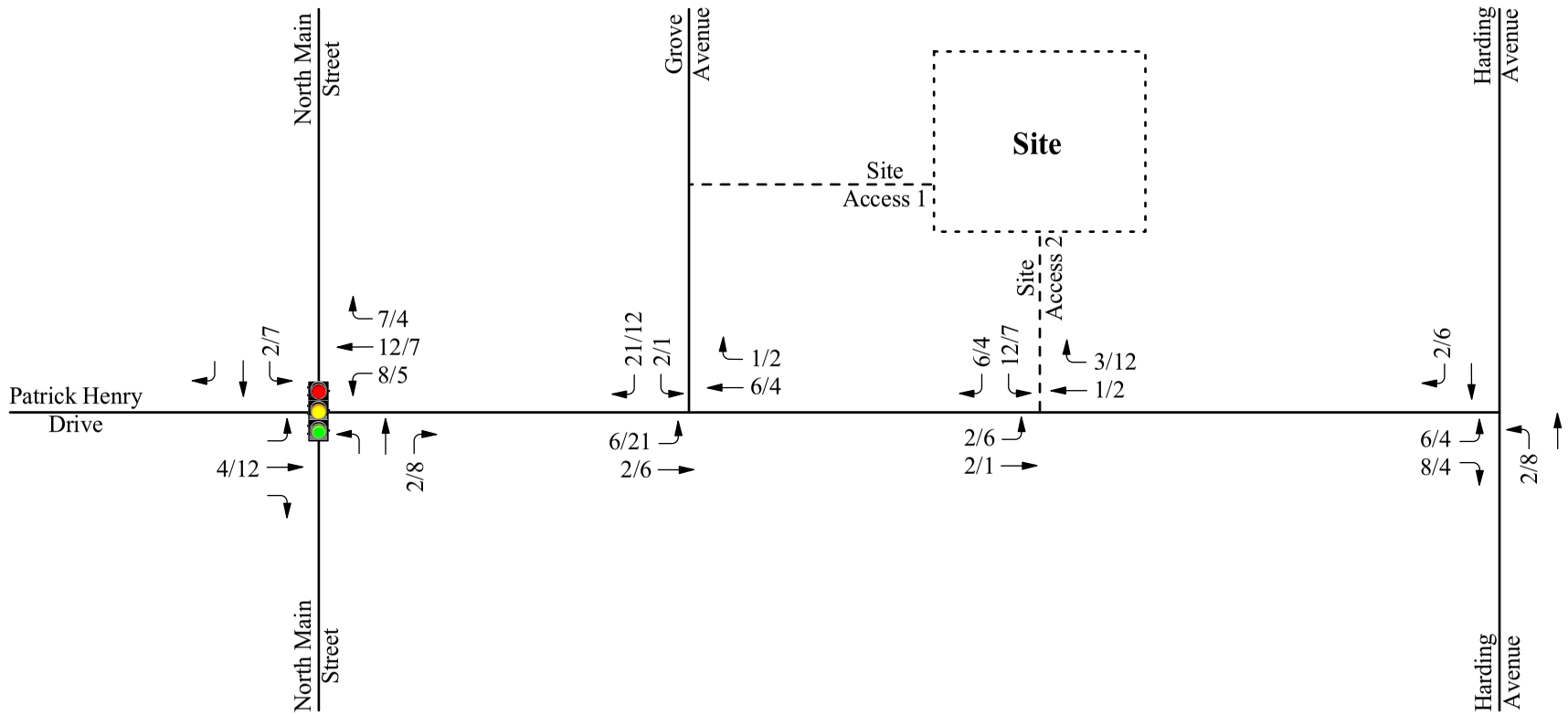
520 Patrick Henry Drive
Blacksburg, Virginia

Site Trip Distribution

Not to Scale | Figure 9



LEGEND

Signalized Intersection

X/Y AM/PM Peak Hour Site Traffic

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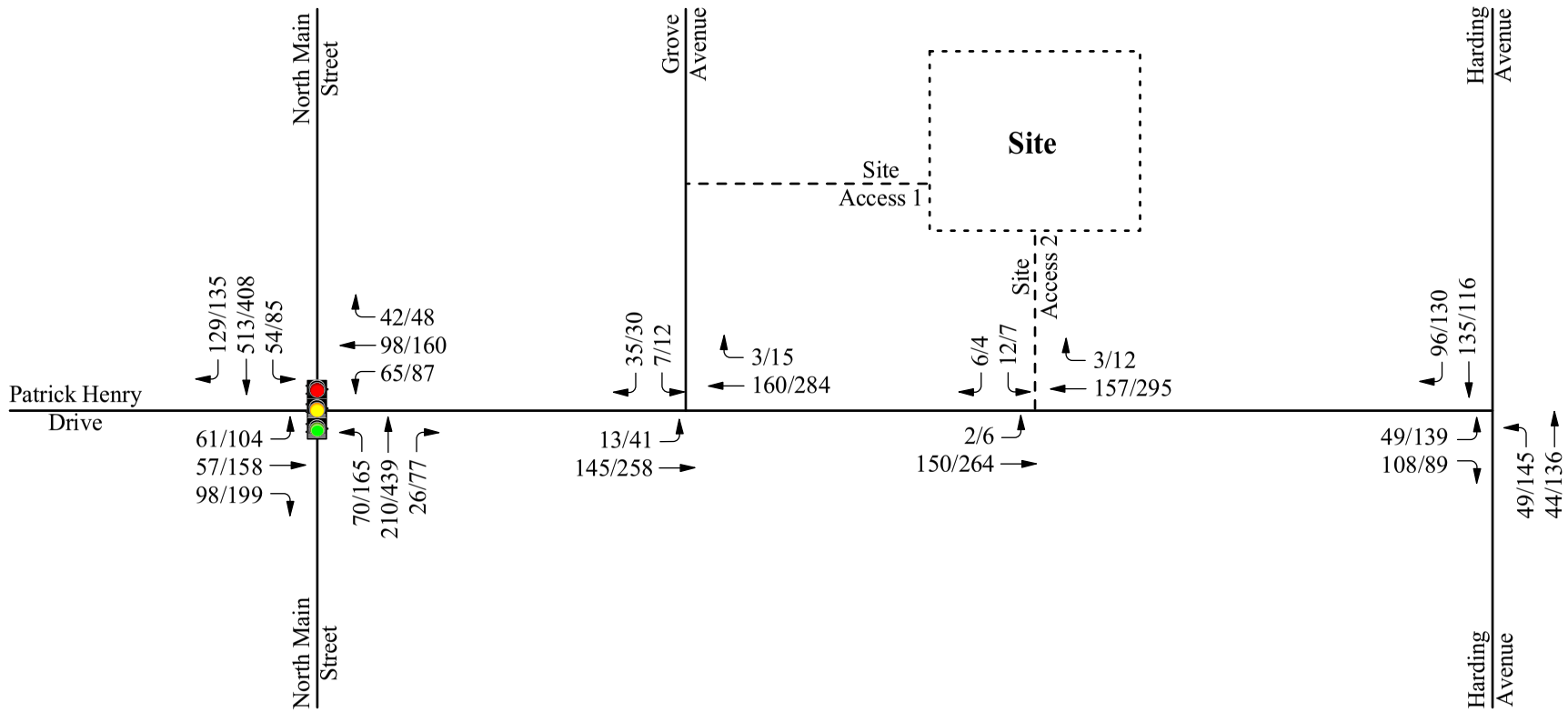
520 Patrick Henry Drive
Blacksburg, Virginia

Site Trip Assignment

Not to Scale | Figure 10



LEGEND

Signalized Intersection

X/Y AM/PM Peak Hour Traffic

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TRANSPORTATION ENGINEERS

520 Patrick Henry Drive
Blacksburg, Virginia

Build (2022)
Traffic Volumes

Not to Scale | Figure 11

7.2. Analysis of Future (2022) 'Build' Peak Hour Traffic Conditions

The study intersections were analyzed with the future (2022) 'build' traffic volumes (Figure 11), using the same methodology as previously discussed for existing and 'no-build' traffic conditions. The results are presented in Section 8 of this report.

8. CAPACITY ANALYSIS

8.1. North Main Street and Patrick Henry Drive

Under existing traffic conditions, capacity analysis indicates that the intersection operates at an overall LOS B during the AM peak hour and LOS C during the PM peak hour. In addition, all lane groups operate at LOS D or better. Under future traffic conditions, capacity analysis indicates that the intersection is expected to operate at an overall LOS C or better during the peak hours. In addition, all lane groups are expected to operate at LOS D or better. Refer to Table 3 for a summary of the capacity analysis results for this signalized intersection. Copies of the Synchro capacity analysis reports are located in Appendix E.

TABLE 3
ANALYSIS SUMMARY OF NORTH MAIN STREET & PATRICK HENRY DRIVE [SIGNALIZED]

TRAFFIC SCENARIO	LANE GROUP	AM PEAK HOUR			PM PEAK HOUR		
		Lane LOS	Delay (s)	Overall LOS (Delay)	Lane LOS	Delay (s)	Overall LOS (Delay)
Existing (2019) Conditions	NBL	B	14.7	C (22.3)	C	23.4	C (28.8)
	NBT/R	B	18.6		C	26.5	
	SBL	B	13.7		B	18.2	
	SBT/R	C	24.1		C	27.6	
	EBL	C	29.6		C	28.4	
	EBT/R	B	19.2		D	36.8	
	WBL/T/R	C	26.5		C	32.2	
No-Build (2022) Conditions	NBL	B	14.8	C (22.4)	C	24.8	C (29.5)
	NBT/R	B	18.7		C	26.8	
	SBL	B	13.8		B	18.4	
	SBT/R	C	24.1		C	28.0	
	EBL	C	29.6		C	28.6	
	EBT/R	B	19.7		D	38.3	
	WBL/T/R	C	26.5		C	32.8	
Build (2022) Conditions	NBL	B	15.0	C (22.8)	C	25.5	C (30.2)
	NBT/R	B	18.8		C	27.3	
	SBL	B	14.0		B	19.0	
	SBT/R	C	24.3		C	28.4	
	EBL	C	29.8		C	28.6	
	EBT/R	C	21.0		D	40.1	
	WBL/T/R	C	27.0		C	33.2	

Based on a review of the maximum queuing results that are based on the average results of ten (10) simulation runs, no queuing problems were identified. When compared to the 'no-build' traffic conditions, the queue lengths under 'build' conditions are not expected to increase by more than 80 feet [or approximately 3 vehicles]. Refer to Table 3A for a summary of the queuing analysis results for this signalized intersection. Copies of the SimTraffic queuing analysis reports are located in Appendix F.

TABLE 3A
QUEUING SUMMARY OF NORTH MAIN STREET & PATRICK HENRY DRIVE

LANES	EXISTING		NO-BUILD		BUILD		DIFFERENCE	
	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
EBL	95	151	88	168	96	221	8	53
EBTR	122	350	127	431	151	508	24	77
WBLT	96	146	106	136	117	165	11	29
WBTR	104	141	102	155	110	161	8	6
NBL	78	149	91	149	92	149	1	0
NBT	136	225	134	252	130	253	-4	1
NBTR	91	187	109	210	102	201	-7	-9
SBL	91	100	72	108	77	128	5	20
SBT	214	189	211	217	216	228	5	11
SBTR	224	199	219	226	218	240	-1	14

Based on the capacity and queuing analysis results, no mitigation measures are recommended to accommodate the proposed development traffic at this intersection.

8.2. Harding Avenue and Patrick Henry Drive

Under existing traffic conditions, capacity analysis indicates that major street shared left-through movement [on Harding Avenue] experiences minor delays and operates at LOS A during the AM and PM peak hours. The stop-controlled approach [of Patrick Henry Drive] experiences minor to moderate overall delays and operates at LOS C or better. Under future traffic conditions, capacity analysis indicates that major street shared left-through movement is expected to experience minor delays and operate at LOS A during the AM and PM peak hours. The stop-controlled approach is expected to experience minor to moderate overall delays and operate at LOS C or better. Refer to Table 4 for a summary of the capacity analysis results for this unsignalized intersection. Copies of the Synchro capacity analysis reports are located in Appendix E.

TABLE 4
ANALYSIS SUMMARY OF HARDING AVENUE AND PATRICK HENRY DRIVE [UNSIGNALIZED]

TRAFFIC SCENARIO	LANE GROUP	AM PEAK HOUR		PM PEAK HOUR	
		Lane LOS	Delay (s)	Lane LOS	Delay (s)
Existing (2019) Conditions	EBL/T[2] WBT/R SBL/R[1]	A A B	8.0 0.0 11.6	A A C	8.1 0.0 18.4
No-Build (2022) Conditions	EBL/T[2] WBT/R SBL/R[1]	A A B	7.9 0.0 11.1	A A C	8.1 0.0 19.3
Build (2022) Conditions	EBL/T[2] WBT/R SBL/R[1]	A A B	7.9 0.0 11.3	A A C	8.2 0.0 20.5

Note: HCM methodology does not provide a level of service for a main street through movement or shared through-right turn movement at unsignalized intersections
1. Level of service for stop-controlled minor approach
2. Level of service for major street shared left turn and through movement

Based on a review of the maximum queuing results that are based on the average results of ten (10) simulation runs, no queuing problems were identified. When compared to the 'no-build' traffic conditions, the queue lengths under 'build' conditions are not expected to increase by more than 10 feet [or less than 1 vehicle]. Refer to Table 4A for a summary of the queuing analysis results for this unsignalized intersection. Copies of the SimTraffic queuing analysis reports are located in Appendix F.

TABLE 4A
QUEUING SUMMARY OF HARDING AVENUE AND PATRICK HENRY DRIVE

LANES	EXISTING		NO-BUILD		BUILD		DIFFERENCE	
	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
EBLT	54	99	54	89	46	86	-8	-3
WBTR	8	22	14	28	10	32	-4	4
SBLR	89	136	98	138	101	147	3	9

Based on a review of VDOT left and right turn lane warrants, exclusive eastbound left and westbound right turn lanes are warranted [on Harding Avenue at Patrick Henry Drive] under future 'build' conditions (refer to Appendix D). While turn lanes are warranted under 'build' traffic conditions, it was also determined that they are warranted under existing traffic conditions. Considering that the proposed development is not expected to add more than 10

vehicles per hour to the turning movements on Harding Avenue, with an anticipated increase in delay of less than a half-a-second and increase in queue of less than 10 feet, no mitigation measures are recommended to accommodate the proposed development traffic at this intersection.

8.3. Patrick Henry Drive and Grove Avenue

Under existing traffic conditions, capacity analysis indicates that major street shared left-through movement [on Patrick Henry Drive] experiences minor delays and operates at LOS A during the AM and PM peak hours. The stop-controlled approach [of Grove Avenue] experiences minor overall delays and operates at LOS B or better. Under future traffic conditions, capacity analysis indicates that major street shared left-through movement is expected to experience minor delays and operate at LOS A during the AM and PM peak hours. The stop-controlled approach is expected to experience minor overall delays and operate at LOS B or better. Refer to Table 5 for a summary of the capacity analysis results for this unsignalized intersection. Copies of the Synchro capacity analysis reports are located in Appendix E.

TABLE 5
ANALYSIS SUMMARY OF PATRICK HENRY DRIVE AND GROVE AVENUE [UNSIGNALIZED]

TRAFFIC SCENARIO	LANE GROUP	AM PEAK HOUR		PM PEAK HOUR	
		Lane LOS	Delay (s)	Lane LOS	Delay (s)
Existing (2019) Conditions	NBT/R SBL/T[2] WBL/R[1]	A A A	0.0 7.6 9.7	A A B	0.0 8.0 11.8
No-Build (2022) Conditions	NBT/R SBL/T[2] WBL/R[1]	A A A	0.0 7.5 9.6	A A B	0.0 8.0 11.7
Build (2022) Conditions	NBT/R SBL/T[2] WBL/R[1]	A A A	0.0 7.6 9.6	A A B	0.0 8.1 11.9

Note: HCM methodology does not provide a level of service for a main street through movement or shared through-right turn movement at unsignalized intersections
1. Level of service for stop-controlled minor approach
2. Level of service for major street shared left turn and through movement

Based on a review of the maximum queuing results that are based on the average results of ten (10) simulation runs, no queuing problems were identified. When compared to the 'no-build'

traffic conditions, the queue lengths under 'build' conditions are not expected to increase by more than 25 feet [or approximately 1 vehicle] for existing movements. Refer to Table 5A for a summary of the queuing analysis results for this unsignalized intersection. Copies of the SimTraffic queuing analysis reports are located in Appendix F.

TABLE 5A
QUEUING SUMMARY OF PATRICK HENRY DRIVE AND GROVE AVENUE

LANES	EXISTING		NO-BUILD		BUILD		DIFFERENCE	
	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
WBLR	23	27	29	29	34	40	5	11
NBTR	0	6	0	0	0	21	0	21
SBLT	28	60	30	80	41	76	11	-4

Based on a review of the VDOT left and right turn lane warrants (refer to Appendix D), no exclusive turn lanes are warranted at the study intersection. Under future 'build' traffic conditions, the left turn traffic on Patrick Henry Drive is expected to make up approximately 13.7% (41 lefts compared to 299 lefts and throughs) of the advancing volume during the PM peak hour. When compared to the warrant line in Figure 3-7, a left turn lane is not warranted. Per the Town of Blacksburg, a turn lane is required if the warrant analysis is within 10% of the threshold. Based on Figure 3-7, it appears that the threshold for an equal number of advancing and opposing volumes is approximately 335 to 340 vehicles per hour (vph). With an additional 10% applied the advancing and opposing volumes during the PM peak hour, the new traffic volumes (advancing and opposing) would be 329 vph, which is still outside of the warrant line. Because of this, and the fact that the intersection is expected to experience similar capacity and queuing conditions when comparing future 'build' to 'no-build' conditions, no mitigation measures are recommended to accommodate the proposed development traffic at this intersection.

8.4. Patrick Henry Drive and Site Access

Under future traffic conditions, capacity analysis indicates that major street shared left-through movement [on Patrick Henry Drive] is expected to experience minor delays and operate at LOS A during the AM and PM peak hours. The stop-controlled approach [of the proposed site access] is expected to experience minor overall delays and operate at LOS B or better. Refer

to Table 6 for a summary of the capacity analysis results for this unsignalized intersection. Copies of the Synchro capacity analysis reports are located in Appendix E.

TABLE 6
ANALYSIS SUMMARY OF PATRICK HENRY DRIVE AND SITE ACCESS
[UNSIGNALIZED]

TRAFFIC SCENARIO	LANE GROUP	AM PEAK HOUR		PM PEAK HOUR	
		Lane LOS	Delay (s)	Lane LOS	Delay (s)
Build (2022) Conditions	NBT/R	A	0.0	A	0.0
	SBL/T[2]	A	7.6	A	8.0
	WBL/R[1]	B	10.2	B	12.2

Note: HCM methodology does not provide a level of service for a main street through movement or shared through-right turn movement at unsignalized intersections
1. Level of service for stop-controlled minor approach
2. Level of service for major street shared left turn and through movement

Based on a review of the maximum queuing results that are based on the average results of ten (10) simulation runs, no queuing problems were identified. The queue lengths under 'build' conditions are not expected to exceed 40 feet [or approximately 2 vehicles]. Refer to Table 6A for a summary of the queuing analysis results for this unsignalized intersection. Copies of the SimTraffic queuing analysis reports are located in Appendix F.

TABLE 6A
QUEUING SUMMARY OF PATRICK HENRY DRIVE AND SITE ACCESS

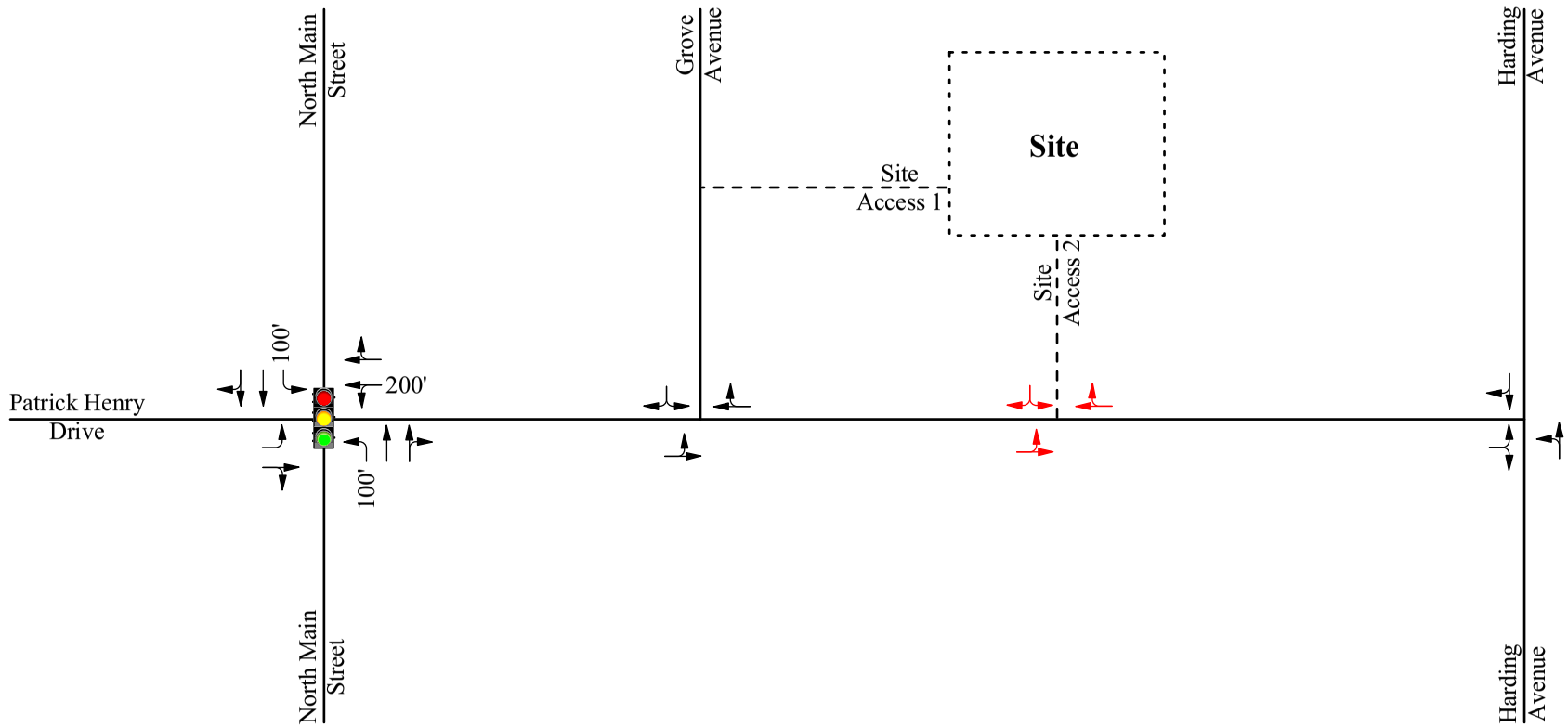
LANES	BUILD	
	AM Peak	PM Peak
WBLR	35	30
NBTR	0	0
SBLT	18	38

Based on a review of VDOT left and right turn lane warrants (refer to Appendix D), no exclusive turns lanes are warranted at the study intersection. Based on the capacity and queuing analysis results, no mitigation measures are recommended to accommodate the proposed development traffic at this intersection.

10. CONCLUSIONS AND RECOMMENDATIONS

Based on the results of this traffic impact analysis, the proposed development is not expected to have a significant impact to the study area. Under the proposed redevelopment plan, the existing access connections for the old Blacksburg High School [on Patrick Henry Drive and Grove Avenue] are to be utilized as the access connections for the proposed development. Finally, the proposed development traffic is expected to be accommodated without any additional lanes or traffic control measures.

Figure 12 shows the proposed lane configurations.



LEGEND

Signalized Intersection

X' → Existing Lane Configuration and Storage Length (in feet)

→ Proposed Lane Configuration

RAMEY KEMP & ASSOCIATES
TRANSPORTATION ENGINEERS

520 Patrick Henry Drive
Blacksburg, Virginia

Proposed Lane Configurations

Not to Scale | Figure 12

TECHNICAL APPENDIX

APPENDIX A

TRAFFIC COUNT DATA

DAY 1

File Name : Blacksburg(Main and Patrick Henry)
Site Code :
Start Date : 11/27/2018
Page No : 1

Groups Printed- Cars + - Trucks

	Main Street Southbound					Patrick Henry Drive Westbound					Main Street Northbound					Patrick Henry Drive Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
06:00 AM	5	27	5	0	37	4	1	5	0	10	1	7	2	0	10	5	2	3	0	10	67
06:15 AM	9	46	2	0	57	2	1	0	0	3	1	15	1	0	17	9	1	12	0	22	99
06:30 AM	13	59	2	0	74	0	4	4	0	8	2	13	2	0	17	6	3	4	0	13	112
06:45 AM	9	47	4	0	60	5	9	5	0	19	2	16	2	0	20	5	4	12	1	22	121
Total	36	179	13	0	228	11	15	14	0	40	6	51	7	0	64	25	10	31	1	67	399
07:00 AM	22	55	3	2	82	3	5	10	0	18	4	14	3	6	27	3	4	15	2	24	151
07:15 AM	24	86	10	0	120	4	14	13	0	31	3	10	2	7	22	24	7	15	0	46	219
07:30 AM	32	163	14	3	212	4	22	23	1	50	5	19	2	5	31	43	16	13	1	73	366
07:45 AM	28	145	9	0	182	7	19	19	0	45	5	19	3	2	29	36	8	17	2	63	319
Total	106	449	36	5	596	18	60	65	1	144	17	62	10	20	109	106	35	60	5	206	1055
08:00 AM	21	92	12	2	127	2	15	7	0	24	11	35	11	2	59	10	13	7	1	31	241
08:15 AM	25	79	8	1	113	8	21	8	1	38	6	18	2	2	28	17	11	10	1	39	218
08:30 AM	37	119	15	4	175	7	22	10	1	40	3	30	9	4	46	12	9	18	2	41	302
08:45 AM	30	127	18	1	176	11	21	11	0	43	3	30	11	5	49	21	20	13	1	55	323
Total	113	417	53	8	591	28	79	36	2	145	23	113	33	13	182	60	53	48	5	166	1084
09:00 AM	37	137	10	1	185	10	23	21	0	54	3	38	7	9	57	30	15	13	1	59	355
09:15 AM	23	110	8	1	142	6	17	13	0	36	7	42	19	6	74	25	6	15	2	48	300
09:30 AM	16	70	9	1	96	1	19	5	2	27	8	51	21	2	82	8	17	13	1	39	244
09:45 AM	22	63	10	0	95	3	14	9	0	26	10	25	14	0	49	12	14	15	0	41	211
Total	98	380	37	3	518	20	73	48	2	143	28	156	61	17	262	75	52	56	4	187	1110
10:00 AM	18	61	13	3	95	8	22	6	0	36	6	31	12	1	50	10	7	13	1	31	212
10:15 AM	26	66	6	0	98	8	17	7	0	32	5	40	7	6	58	17	7	18	0	42	230
10:30 AM	18	79	4	2	103	5	9	12	1	27	6	36	20	12	74	33	22	13	1	69	273
10:45 AM	19	76	9	0	104	8	11	15	0	34	12	51	22	3	88	31	16	17	1	65	291
Total	81	282	32	5	400	29	59	40	1	129	29	158	61	22	270	91	52	61	3	207	1006
11:00 AM	11	54	9	0	74	8	20	17	0	45	14	48	21	4	87	13	19	21	0	53	259
11:15 AM	19	85	15	1	120	7	13	6	0	26	10	42	22	1	75	7	12	19	1	39	260
11:30 AM	16	65	5	0	86	4	20	15	1	40	7	44	22	2	75	15	16	9	1	41	242
11:45 AM	14	76	8	2	100	9	18	4	1	32	10	57	20	6	93	17	17	22	0	56	281
Total	60	280	37	3	380	28	71	42	2	143	41	191	85	13	330	52	64	71	2	189	1042
12:00 PM	15	93	10	2	120	5	21	10	2	38	10	59	23	6	98	33	13	13	1	60	316
12:15 PM	12	91	10	0	113	9	15	12	0	36	8	64	26	3	101	13	12	24	0	49	299
12:30 PM	13	60	14	1	88	10	18	8	2	38	12	76	21	1	110	18	16	15	0	49	285
12:45 PM	21	78	11	0	110	8	13	10	1	32	10	63	23	0	96	20	20	13	0	53	291
Total	61	322	45	3	431	32	67	40	5	144	40	262	93	10	405	84	61	65	1	211	1191
01:00 PM	28	70	5	1	104	11	20	12	1	44	15	59	18	2	94	17	15	12	0	44	286
01:15 PM	16	62	8	0	86	6	18	12	0	36	9	48	12	2	71	16	24	23	1	64	257
01:30 PM	16	91	9	1	117	10	21	16	1	48	19	55	20	8	102	29	13	19	1	62	329
01:45 PM	16	69	3	4	92	3	20	11	6	40	13	55	32	3	103	26	14	11	1	52	287
Total	76	292	25	6	399	30	79	51	8	168	56	217	82	15	370	88	66	65	3	222	1159
02:00 PM	25	38	5	2	70	3	25	10	3	41	8	69	31	0	108	14	11	21	0	46	265
02:15 PM	18	47	12	6	83	9	16	9	1	35	9	51	17	1	78	23	16	14	2	55	251
02:30 PM	25	39	5	1	70	4	13	11	2	30	8	50	24	0	82	17	12	19	0	48	230
02:45 PM	14	47	10	3	74	9	17	7	1	34	8	61	17	0	86	23	15	18	0	56	250
Total	82	171	32	12	297	25	71	37	7	140	33	231	89	1	354	77	54	72	2	205	996
03:00 PM	20	67	4	2	93	8	16	14	0	38	11	54	24	7	96	24	16	15	0	55	282
03:15 PM	19	64	13	0	96	11	22	6	0	39	21	85	28	1	135	25	21	24	0	70	340
03:30 PM	30	76	17	2	125	12	23	8	1	44	10	109	47	5	171	10	19	26	4	59	399
03:45 PM	30	64	12	2	108	11	25	4	0	40	11	64	37	0	112	18	25	29	4	76	336
Total	99	271	46	6	422	42	86	32	1	161	53	312	136	13	514	77	81	94	8	260	1357

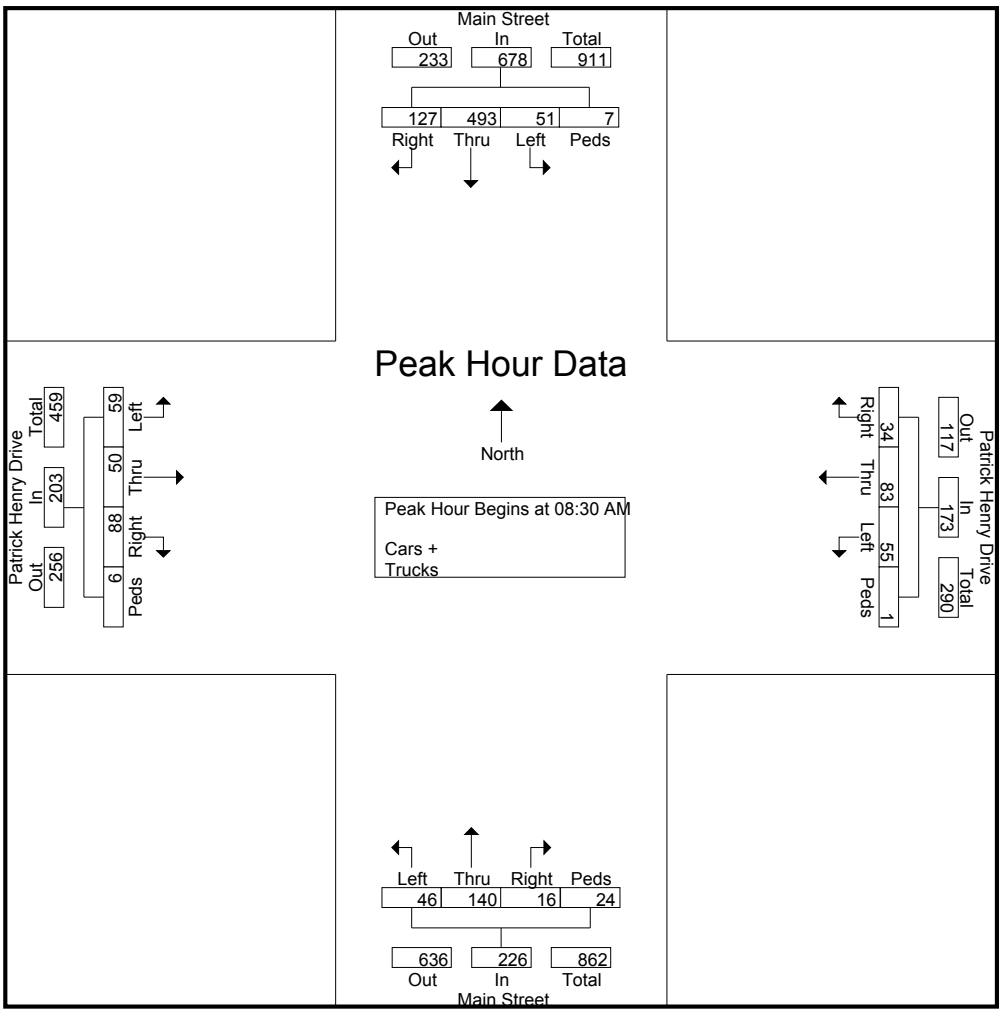
File Name : Blacksburg(Main and Patrick Henry)
Site Code :
Start Date : 11/27/2018
Page No : 2

Groups Printed- Cars + - Trucks

	Main Street Southbound					Patrick Henry Drive Westbound					Main Street Northbound					Patrick Henry Drive Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	48	58	14	3	123	6	25	9	3	43	15	98	30	1	144	26	17	18	0	61	371
04:15 PM	34	78	16	2	130	10	18	15	0	43	14	81	25	5	125	20	20	27	0	67	365
04:30 PM	53	83	8	4	148	14	24	18	2	58	14	88	24	2	128	31	31	26	3	91	425
04:45 PM	27	91	15	1	134	10	29	17	0	56	20	99	42	3	164	52	38	22	0	112	466
Total	162	310	53	10	535	40	96	59	5	200	63	366	121	11	561	129	106	93	3	331	1627
05:00 PM	35	64	24	1	124	12	58	8	0	78	20	123	36	3	182	29	29	27	1	86	470
05:15 PM	29	81	19	1	130	12	35	15	4	66	20	122	30	6	178	38	23	20	1	82	456
05:30 PM	31	68	22	0	121	12	21	11	3	47	11	88	30	2	131	28	32	29	0	89	388
05:45 PM	31	74	21	4	130	15	21	19	0	55	14	90	39	1	144	43	37	31	0	111	440
Total	126	287	86	6	505	51	135	53	7	246	65	423	135	12	635	138	121	107	2	368	1754
06:00 PM	22	72	14	2	110	11	28	11	0	50	13	73	34	0	120	44	37	31	0	112	392
06:15 PM	13	79	11	0	103	4	35	24	0	63	14	91	33	2	140	41	29	26	0	96	402
06:30 PM	14	57	4	1	76	2	19	7	0	28	16	82	49	0	147	33	22	23	1	79	330
06:45 PM	17	53	11	12	93	4	20	16	0	40	19	70	27	1	117	31	28	28	0	87	337
Total	66	261	40	15	382	21	102	58	0	181	62	316	143	3	524	149	116	108	1	374	1461
Grand Total	1166	3901	535	82	5684	375	993	575	41	1984	516	2858	1056	150	4580	1151	871	931	40	2993	15241
Apprch %	20.5	68.6	9.4	1.4		18.9	50.1	29	2.1		11.3	62.4	23.1	3.3		38.5	29.1	31.1	1.3		
Total %	7.7	25.6	3.5	0.5	37.3	2.5	6.5	3.8	0.3	13	3.4	18.8	6.9	1	30.1	7.6	5.7	6.1	0.3	19.6	
Cars +	1162	3881	534	82	5659	375	964	572	41	1952	515	2846	1055	150	4566	1151	869	929	40	2989	15166
% Cars +	99.7	99.5	99.8	100	99.6	100	97.1	99.5	100	98.4	99.8	99.6	99.9	100	99.7	100	99.8	99.8	100	99.9	99.5
Trucks	4	20	1	0	25	0	29	3	0	32	1	12	1	0	14	0	2	2	0	4	75
% Trucks	0.3	0.5	0.2	0	0.4	0	2.9	0.5	0	1.6	0.2	0.4	0.1	0	0.3	0	0.2	0.2	0	0.1	0.5

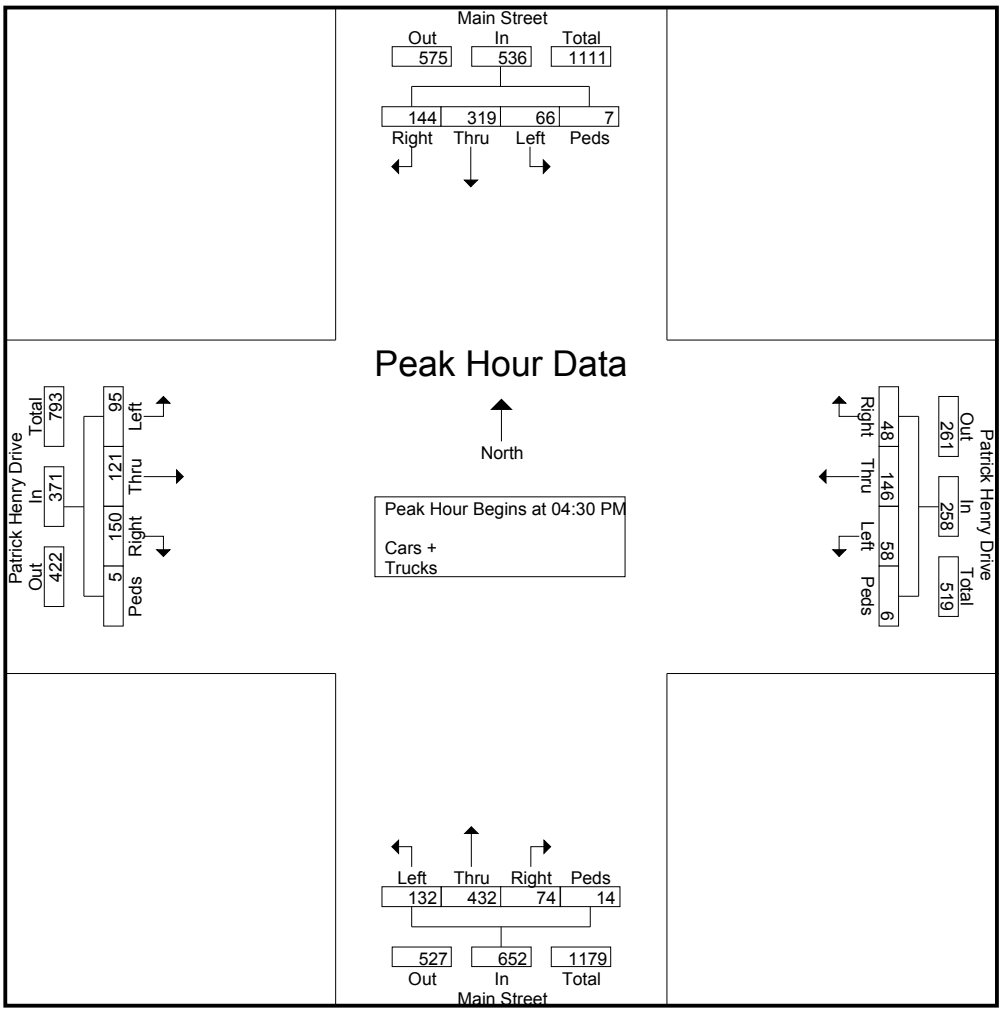
File Name : Blacksburg(Main and Patrick Henry)
Site Code :
Start Date : 11/27/2018
Page No : 3

	Main Street Southbound					Patrick Henry Drive Westbound					Main Street Northbound					Patrick Henry Drive Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 06:00 AM to 11:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:30 AM																					
08:30 AM	37	119	15	4	175	7	22	10	1	40	3	30	9	4	46	12	9	18	2	41	302
08:45 AM	30	127	18	1	176	11	21	11	0	43	3	30	11	5	49	21	20	13	1	55	323
09:00 AM	37	137	10	1	185	10	23	21	0	54	3	38	7	9	57	30	15	13	1	59	355
09:15 AM	23	110	8	1	142	6	17	13	0	36	7	42	19	6	74	25	6	15	2	48	300
Total Volume	127	493	51	7	678	34	83	55	1	173	16	140	46	24	226	88	50	59	6	203	1280
% App. Total																					
PHF	.858	.900	.708	.438	.916	.773	.902	.655	.250	.801	.571	.833	.605	.667	.764	.733	.625	.819	.750	.860	.901



File Name : Blacksburg(Main and Patrick Henry)
Site Code :
Start Date : 11/27/2018
Page No : 4

	Main Street Southbound					Patrick Henry Drive Westbound					Main Street Northbound					Patrick Henry Drive Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 12:00 PM to 07:00 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:30 PM																					
04:30 PM	53	83	8	4	148	14	24	18	2	58	14	88	24	2	128	31	31	26	3	91	425
04:45 PM	27	91	15	1	134	10	29	17	0	56	20	99	42	3	164	52	38	22	0	112	466
05:00 PM	35	64	24	1	124	12	58	8	0	78	20	123	36	3	182	29	29	27	1	86	470
05:15 PM	29	81	19	1	130	12	35	15	4	66	20	122	30	6	178	38	23	20	1	82	456
Total Volume	144	319	66	7	536	48	146	58	6	258	74	432	132	14	652	150	121	95	5	371	1817
% App. Total																					
PHF	.679	.876	.688	.438	.905	.857	.629	.806	.375	.827	.925	.878	.786	.583	.896	.721	.796	.880	.417	.828	.966



TRAFFIC DATA COLLECTION

File Name : Blacksburg(Main and Patrick Henry)
Site Code :
Start Date : 11/27/2018
Page No : 1

Groups Printed- Trucks

	Main Street Southbound				Patrick Henry Drive Westbound				Main Street Northbound				Patrick Henry Drive Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
06:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
06:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	1	0	0	0	0	0	1	0	1	0	0	0	0	2
09:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:15 AM	0	1	0	1	0	0	1	1	0	0	0	0	0	0	0	0	2
09:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:45 AM	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	1
Total	0	1	0	1	0	0	1	1	1	0	0	1	0	0	0	0	3
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30 AM	0	0	0	0	0	0	1	1	0	2	0	2	0	0	0	0	3
10:45 AM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	1	0	1	0	0	1	1	0	2	0	2	0	0	0	0	4
11:00 AM	2	6	0	8	0	1	0	1	0	1	0	1	0	0	0	0	10
11:15 AM	0	2	0	2	0	1	0	1	0	0	0	0	0	0	0	0	3
11:30 AM	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1	2
11:45 AM	0	2	0	2	0	1	0	1	0	1	0	1	0	0	0	0	4
Total	2	10	0	12	0	4	0	4	0	2	0	2	0	1	0	1	19
12:00 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
12:15 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
12:30 PM	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	2
12:45 PM	0	1	0	1	0	0	0	0	0	0	1	1	0	0	0	0	2
Total	0	1	0	1	0	4	0	4	0	0	1	1	0	0	0	0	6
01:00 PM	0	0	0	0	0	2	0	2	0	1	0	1	0	0	0	0	3
01:15 PM	0	0	0	0	0	1	1	2	0	1	0	1	0	0	0	0	3
01:30 PM	1	1	0	2	0	1	0	1	0	1	0	1	0	0	0	0	4
01:45 PM	0	1	0	1	0	1	0	1	0	0	0	0	0	0	0	0	2
Total	1	2	0	3	0	5	1	6	0	3	0	3	0	0	0	0	12

TRAFFIC DATA COLLECTION

File Name : Blacksburg(Main and Patrick Henry)
Site Code :
Start Date : 11/27/2018
Page No : 2

Groups Printed- Trucks

	Main Street Southbound				Patrick Henry Drive Westbound				Main Street Northbound				Patrick Henry Drive Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
02:00 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
02:15 PM	0	1	0	1	0	1	0	1	0	0	0	0	0	0	0	0	2
02:30 PM	0	1	0	1	0	1	0	1	0	1	0	1	0	0	0	0	3
02:45 PM	0	0	1	1	0	1	0	1	0	0	0	0	0	0	1	1	3
Total	0	2	1	3	0	3	0	3	0	2	0	2	0	0	1	1	9
03:00 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
03:15 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
03:30 PM	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	2
03:45 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
Total	0	0	0	0	0	5	0	5	0	0	0	0	0	0	0	0	5
04:00 PM	0	0	0	0	0	1	0	1	0	1	0	1	0	0	0	0	2
04:15 PM	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
04:30 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
Total	1	0	0	1	0	2	0	2	0	1	0	1	0	0	1	1	5
05:00 PM	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	2
05:15 PM	0	2	0	2	0	1	0	1	0	1	0	1	0	0	0	0	4
05:30 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
05:45 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
Total	0	2	0	2	0	5	0	5	0	1	0	1	0	0	0	0	8
06:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:30 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
06:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
Grand Total	4	20	1	25	0	29	3	32	1	12	1	14	0	2	2	4	75
Apprch %	16	80	4		0	90.6	9.4		7.1	85.7	7.1		0	50	50		
Total %	5.3	26.7	1.3	33.3	0	38.7	4	42.7	1.3	16	1.3	18.7	0	2.7	2.7	5.3	

File Name : Blacksburg(Harding and Patrick Henry)
Site Code :
Start Date : 4/9/2019
Page No : 1

Groups Printed- Cars + - Trucks

	Patrick Henry Drive Southbound				Harding Avenue Westbound				Harding Avenue Eastbound				
Start Time	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	4	5	1	10	13	12	0	25	5	3	0	8	43
07:15 AM	4	4	5	13	14	25	0	39	4	2	0	6	58
07:30 AM	14	11	2	27	21	54	0	75	6	3	0	9	111
07:45 AM	20	14	0	34	23	62	0	85	7	4	0	11	130
Total	42	34	8	84	71	153	0	224	22	12	0	34	342
08:00 AM	14	13	1	28	16	17	0	33	9	5	0	14	75
08:15 AM	16	13	2	31	21	21	0	42	4	5	0	9	82
08:30 AM	21	10	2	33	19	23	0	42	15	9	0	24	99
08:45 AM	23	7	4	34	30	37	0	67	11	19	0	30	131
Total	74	43	9	126	86	98	0	184	39	38	0	77	387
09:00 AM	33	13	1	47	22	38	0	60	8	13	0	21	128
09:15 AM	10	10	4	24	11	22	0	33	10	14	0	24	81
09:30 AM	15	9	1	25	13	22	0	35	15	7	0	22	82
09:45 AM	10	8	1	19	23	22	1	46	6	9	0	15	80
Total	68	40	7	115	69	104	1	174	39	43	0	82	371
10:00 AM	12	18	0	30	12	16	0	28	14	10	0	24	82
10:15 AM	15	12	0	27	12	18	0	30	10	10	0	20	77
10:30 AM	13	12	3	28	17	21	0	38	14	8	0	22	88
10:45 AM	6	14	3	23	13	21	0	34	15	6	0	21	78
Total	46	56	6	108	54	76	0	130	53	34	0	87	325
11:00 AM	11	16	0	27	12	12	0	24	18	14	0	32	83
11:15 AM	8	20	0	28	9	12	0	21	18	7	0	25	74
11:30 AM	7	11	0	18	14	17	0	31	17	10	0	27	76
11:45 AM	21	16	2	39	16	16	0	32	24	14	0	38	109
Total	47	63	2	112	51	57	0	108	77	45	0	122	342
12:00 PM	15	14	1	30	16	16	0	32	19	14	0	33	95
12:15 PM	11	20	0	31	18	15	0	33	22	10	0	32	96
12:30 PM	12	16	1	29	13	17	0	30	19	21	0	40	99
12:45 PM	10	14	1	25	16	22	0	38	13	9	0	22	85
Total	48	64	3	115	63	70	0	133	73	54	0	127	375
01:00 PM	12	14	0	26	9	23	0	32	17	19	0	36	94
01:15 PM	4	12	0	16	18	20	0	38	19	12	0	31	85
01:30 PM	10	15	0	25	15	25	0	40	16	12	0	28	93
01:45 PM	10	16	0	26	11	17	1	29	20	11	0	31	86
Total	36	57	0	93	53	85	1	139	72	54	0	126	358
02:00 PM	12	16	1	29	19	15	0	34	20	14	0	34	97
02:15 PM	18	17	0	35	20	16	0	36	15	20	0	35	106
02:30 PM	10	9	0	19	17	16	0	33	19	12	0	31	83
02:45 PM	10	13	1	24	21	14	0	35	23	18	0	41	100
Total	50	55	2	107	77	61	0	138	77	64	0	141	386
03:00 PM	15	17	3	35	20	20	0	40	14	14	0	28	103
03:15 PM	18	34	0	52	26	25	0	51	22	11	0	33	136
03:30 PM	26	23	1	50	23	20	0	43	22	18	0	40	133
03:45 PM	25	28	0	53	23	17	0	40	34	37	0	71	164
Total	84	102	4	190	92	82	0	174	92	80	0	172	536
04:00 PM	8	26	1	35	18	14	0	32	24	20	0	44	111
04:15 PM	12	22	1	35	17	17	0	34	18	25	0	43	112
04:30 PM	21	29	0	50	22	23	0	45	19	24	0	43	138
04:45 PM	15	22	0	37	23	26	0	49	40	19	0	59	145
Total	56	99	2	157	80	80	0	160	101	88	0	189	506

File Name : Blacksburg(Harding and Patrick Henry)
Site Code :
Start Date : 4/9/2019
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Groups Printed- Cars + - Trucks

	Patrick Henry Drive Southbound				Harding Avenue Westbound				Harding Avenue Eastbound				
Start Time	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Int. Total
05:00 PM	17	36	1	54	18	25	0	43	33	43	0	76	173
05:15 PM	19	38	1	58	20	20	0	40	35	35	0	70	168
05:30 PM	19	28	2	49	28	16	0	44	32	25	0	57	150
05:45 PM	26	21	6	53	26	36	0	62	28	31	0	59	174
Total	81	123	10	214	92	97	0	189	128	134	0	262	665
06:00 PM	21	28	0	49	17	19	0	36	33	22	0	55	140
06:15 PM	26	16	0	42	18	19	0	37	30	13	0	43	122
06:30 PM	29	33	1	63	12	24	0	36	24	17	0	41	140
06:45 PM	18	24	5	47	20	16	0	36	30	16	0	46	129
Total	94	101	6	201	67	78	0	145	117	68	0	185	531
Grand Total	726	837	59	1622	855	1041	2	1898	890	714	0	1604	5124
Apprch %	44.8	51.6	3.6		45	54.8	0.1		55.5	44.5	0		
Total %	14.2	16.3	1.2	31.7	16.7	20.3	0	37	17.4	13.9	0	31.3	
Cars +	725	833	59	1617	852	1016	2	1870	863	712	0	1575	5062
% Cars +	99.9	99.5	100	99.7	99.6	97.6	100	98.5	97	99.7	0	98.2	98.8
Trucks	1	4	0	5	3	25	0	28	27	2	0	29	62
% Trucks	0.1	0.5	0	0.3	0.4	2.4	0	1.5	3	0.3	0	1.8	1.2

File Name : Blacksburg(Harding and Patrick Henry)
Site Code :
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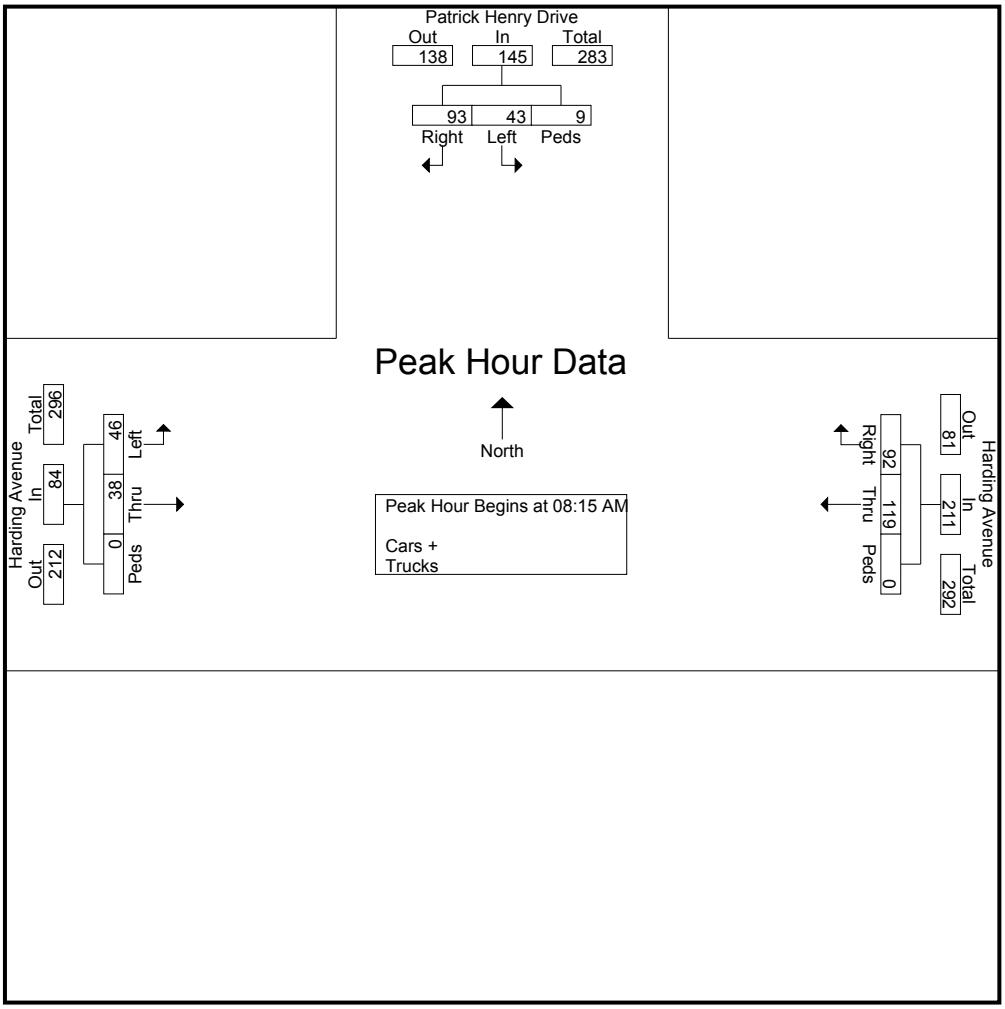
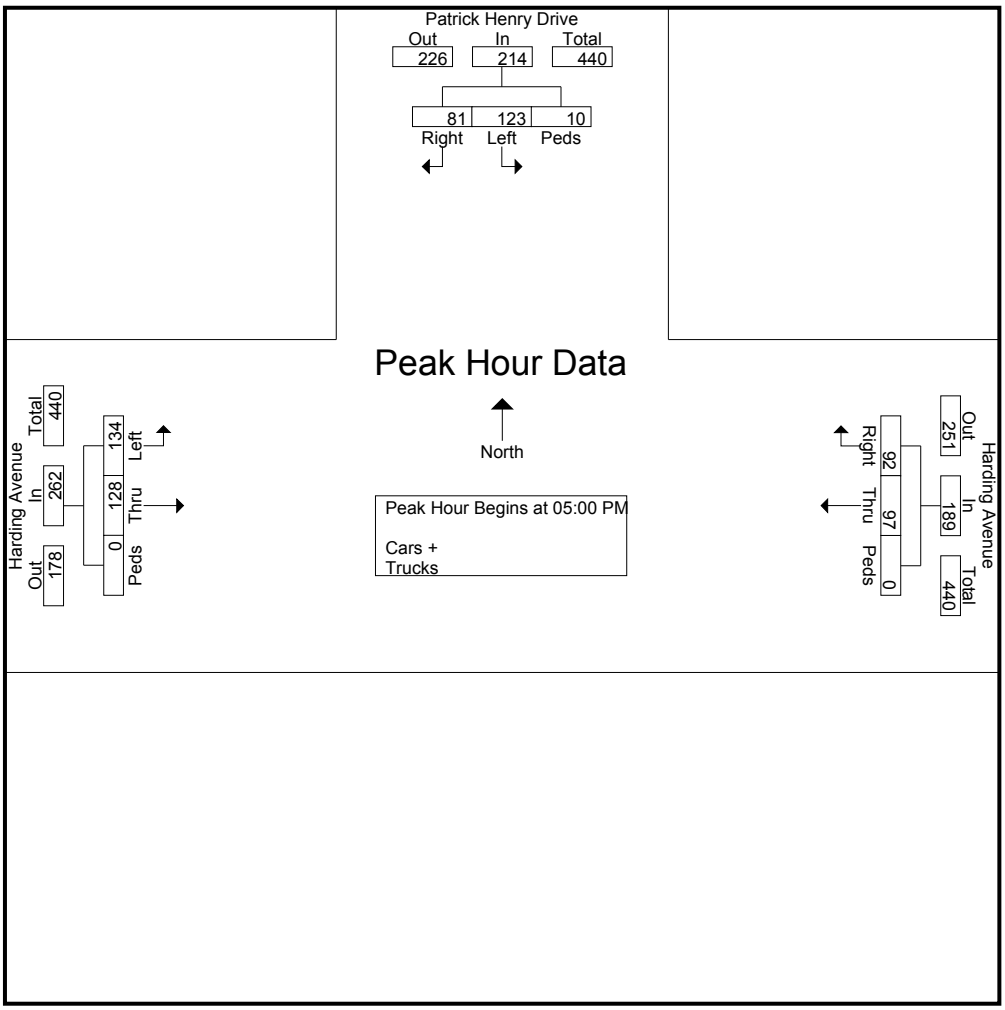
	Patrick Henry Drive Southbound				Harding Avenue Westbound				Harding Avenue Eastbound				
Start Time	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 06:30 AM to 11:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 08:15 AM													
08:15 AM	16	13	2	31	21	21	0	42	4	5	0	9	82
08:30 AM	21	10	2	33	19	23	0	42	15	9	0	24	99
08:45 AM	23	7	4	34	30	37	0	67	11	19	0	30	131
09:00 AM	33	13	1	47	22	38	0	60	8	13	0	21	128
Total Volume	93	43	9	145	92	119	0	211	38	46	0	84	440
% App. Total	64.1	29.7	6.2		43.6	56.4	0		45.2	54.8	0		
PHF	.705	.827	.563	.771	.767	.783	.000	.787	.633	.605	.000	.700	.840



File Name : Blacksburg(Harding and Patrick Henry)
Site Code :
Start Date : 4/9/2019
Page No : 4

	Patrick Henry Drive Southbound				Harding Avenue Westbound				Harding Avenue Eastbound				
Start Time	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 12:00 PM to 06:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 05:00 PM													
05:00 PM	17	36	1	54	18	25	0	43	33	43	0	76	173
05:15 PM	19	38	1	58	20	20	0	40	35	35	0	70	168
05:30 PM	19	28	2	49	28	16	0	44	32	25	0	57	150
05:45 PM	26	21	6	53	26	36	0	62	28	31	0	59	174
Total Volume	81	123	10	214	92	97	0	189	128	134	0	262	665
% App. Total	37.9	57.5	4.7		48.7	51.3	0		48.9	51.1	0		
PHF	.779	.809	.417	.922	.821	.674	.000	.762	.914	.779	.000	.862	.955



TRAFFIC DATA COLLECTION

File Name : Blacksburg(Harding and Patrick Henry)
Site Code :
Start Date : 4/9/2019
Page No : 1

Groups Printed- Trucks

	Patrick Henry Drive Southbound				Harding Avenue Westbound				Harding Avenue Eastbound				
Start Time	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Int. Total
06:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
06:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
09:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
09:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
09:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
09:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00 AM	0	0	0	0	0	0	0	0	0	1	0	1	1
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	1	0	1	1
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	1	0	1	0	0	0	0	1
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	1	1	0	2	1	0	0	1	3
Total	0	0	0	0	1	2	0	3	1	0	0	1	4
01:00 PM	0	0	0	0	0	1	0	1	1	0	0	1	2
01:15 PM	0	2	0	2	0	1	0	1	1	0	0	1	4
01:30 PM	0	0	0	0	0	1	0	1	2	0	0	2	3
01:45 PM	0	0	0	0	0	1	0	1	1	0	0	1	2
Total	0	2	0	2	0	4	0	4	5	0	0	5	11

TRAFFIC DATA COLLECTION

File Name : Blacksburg(Harding and Patrick Henry)
Site Code :
Start Date : 4/9/2019
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Groups Printed- Trucks

	Patrick Henry Drive Southbound				Harding Avenue Westbound				Harding Avenue Eastbound				
Start Time	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Int. Total
02:00 PM	0	0	0	0	0	1	0	1	1	0	0	1	2
02:15 PM	0	0	0	0	0	1	0	1	1	0	0	1	2
02:30 PM	0	0	0	0	0	1	0	1	1	0	0	1	2
02:45 PM	0	0	0	0	0	1	0	1	1	0	0	1	2
Total	0	0	0	0	0	4	0	4	4	0	0	4	8
03:00 PM	0	0	0	0	0	1	0	1	1	0	0	1	2
03:15 PM	0	1	0	1	1	1	0	2	3	0	0	3	6
03:30 PM	0	0	0	0	0	0	0	0	1	0	0	1	1
03:45 PM	1	0	0	1	0	3	0	3	1	1	0	2	6
Total	1	1	0	2	1	5	0	6	6	1	0	7	15
04:00 PM	0	1	0	1	0	1	0	1	1	0	0	1	3
04:15 PM	0	0	0	0	0	0	0	0	1	0	0	1	1
04:30 PM	0	0	0	0	1	2	0	3	1	0	0	1	4
04:45 PM	0	0	0	0	0	1	0	1	1	0	0	1	2
Total	0	1	0	1	1	4	0	5	4	0	0	4	10
05:00 PM	0	0	0	0	0	0	0	0	1	0	0	1	1
05:15 PM	0	0	0	0	0	1	0	1	1	0	0	1	2
05:30 PM	0	0	0	0	0	2	0	2	1	0	0	1	3
05:45 PM	0	0	0	0	0	0	0	0	1	0	0	1	1
Total	0	0	0	0	0	3	0	3	4	0	0	4	7
06:00 PM	0	0	0	0	0	2	0	2	1	0	0	1	3
06:15 PM	0	0	0	0	0	0	0	0	1	0	0	1	1
06:30 PM	0	0	0	0	0	1	0	1	0	0	0	0	1
06:45 PM	0	0	0	0	0	0	0	0	1	0	0	1	1
Total	0	0	0	0	0	3	0	3	3	0	0	3	6
Grand Total	1	4	0	5	3	25	0	28	27	2	0	29	62
Apprch %	20	80	0		10.7	89.3	0		93.1	6.9	0		
Total %	1.6	6.5	0	8.1	4.8	40.3	0	45.2	43.5	3.2	0	46.8	

File Name : Blacksburg(Grove and Patrick Henry)
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Groups Printed- Cars + - Trucks

	Patrick Henry Drive Southbound				Grove Avenue Westbound				Patrick Henry Drive Northbound				
Start Time	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Int. Total
07:00 AM	12	1	0	13	1	0	2	3	1	14	0	15	31
07:15 AM	11	1	0	12	3	1	5	9	0	18	0	18	39
07:30 AM	27	0	0	27	3	1	1	5	0	25	0	25	57
07:45 AM	33	0	0	33	4	1	2	7	0	25	0	25	65
Total	83	2	0	85	11	3	10	24	1	82	0	83	192
08:00 AM	27	0	0	27	0	1	3	4	0	24	0	24	55
08:15 AM	28	1	0	29	3	1	0	4	0	24	0	24	57
08:30 AM	33	0	0	33	5	2	2	9	0	28	0	28	70
08:45 AM	33	2	0	35	3	0	2	5	0	49	0	49	89
Total	121	3	0	124	11	4	7	22	0	125	0	125	271
09:00 AM	43	2	0	45	1	1	0	2	2	41	0	43	90
09:15 AM	25	1	0	26	2	5	4	11	1	27	0	28	65
09:30 AM	20	1	0	21	1	1	3	5	1	16	0	17	43
09:45 AM	22	1	0	23	1	0	1	2	1	33	0	34	59
Total	110	5	0	115	5	7	8	20	5	117	0	122	257
10:00 AM	31	3	0	34	2	0	1	3	1	30	0	31	68
10:15 AM	22	5	0	27	3	4	2	9	0	21	0	21	57
10:30 AM	25	1	0	26	2	0	2	4	0	23	0	23	53
10:45 AM	22	0	0	22	1	1	0	2	0	21	0	21	45
Total	100	9	0	109	8	5	5	18	1	95	0	96	223
11:00 AM	31	1	0	32	2	0	0	2	1	25	0	26	60
11:15 AM	31	1	0	32	0	1	0	1	2	19	0	21	54
11:30 AM	21	1	0	22	3	2	0	5	1	28	0	29	56
11:45 AM	39	4	0	43	1	2	1	4	0	30	0	30	77
Total	122	7	0	129	6	5	1	12	4	102	0	106	247
12:00 PM	34	2	0	36	2	1	0	3	1	35	0	36	75
12:15 PM	30	2	0	32	4	2	0	6	0	35	0	35	73
12:30 PM	40	1	0	41	2	0	1	3	5	33	0	38	82
12:45 PM	16	0	0	16	3	2	3	8	2	28	0	30	54
Total	120	5	0	125	11	5	4	20	8	131	0	139	284
01:00 PM	35	4	0	39	4	1	6	11	1	30	0	31	81
01:15 PM	20	0	0	20	4	0	1	5	1	34	0	35	60
01:30 PM	22	1	0	23	3	2	2	7	2	27	0	29	59
01:45 PM	31	5	0	36	1	1	2	4	0	23	0	23	63
Total	108	10	0	118	12	4	11	27	4	114	0	118	263
02:00 PM	30	4	0	34	2	1	2	5	3	33	0	36	75
02:15 PM	37	0	0	37	2	0	1	3	4	32	0	36	76
02:30 PM	19	2	0	21	3	1	2	6	2	29	0	31	58
02:45 PM	23	2	0	25	3	2	1	6	3	37	0	40	71
Total	109	8	0	117	10	4	6	20	12	131	0	143	280
03:00 PM	40	2	0	42	2	0	1	3	1	37	0	38	83
03:15 PM	51	3	0	54	3	1	3	7	2	34	0	36	97
03:30 PM	52	2	0	54	1	5	3	9	1	30	0	31	94
03:45 PM	50	4	0	54	3	3	2	8	2	75	0	77	139
Total	193	11	0	204	9	9	9	27	6	176	0	182	413
04:00 PM	47	3	0	50	0	1	5	6	2	40	0	42	98
04:15 PM	39	3	0	42	3	2	4	9	3	44	0	47	98
04:30 PM	53	2	0	55	4	3	7	14	2	44	0	46	115
04:45 PM	42	2	0	44	4	2	3	9	0	45	0	45	98
Total	181	10	0	191	11	8	19	38	7	173	0	180	409

File Name : Blacksburg(Grove and Patrick Henry)
Site Code :
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Groups Printed- Cars + - Trucks

	Patrick Henry Drive Southbound				Grove Avenue Westbound				Patrick Henry Drive Northbound				
Start Time	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Int. Total
05:00 PM	51	6	0	57	1	1	2	4	4	69	0	73	134
05:15 PM	57	4	0	61	3	5	2	10	4	54	0	58	129
05:30 PM	54	8	0	62	3	2	4	9	4	54	0	58	129
05:45 PM	61	5	0	66	1	2	2	5	4	58	0	62	133
Total	223	23	0	246	8	10	10	28	16	235	0	251	525
06:00 PM	49	5	0	54	3	0	2	5	1	37	0	38	97
06:15 PM	48	6	0	54	3	2	3	8	1	34	0	35	97
06:30 PM	57	2	0	59	2	3	1	6	5	29	0	34	99
06:45 PM	43	3	0	46	4	1	5	10	0	39	0	39	95
Total	197	16	0	213	12	6	11	29	7	139	0	146	388
Grand Total	1667	109	0	1776	114	70	101	285	71	1620	0	1691	3752
Apprch %	93.9	6.1	0		40	24.6	35.4		4.2	95.8	0		
Total %	44.4	2.9	0	47.3	3	1.9	2.7	7.6	1.9	43.2	0	45.1	
Cars +	1666	109	0	1775	114	70	101	285	71	1620	0	1691	3751
% Cars +	99.9	100	0	99.9	100	100	100	100	100	100	0	100	100
Trucks	1	0	0	1	0	0	0	0	0	0	0	0	1
% Trucks	0.1	0	0	0.1	0	0	0	0	0	0	0	0	0

File Name : Blacksburg(Grove and Patrick Henry)
Site Code :
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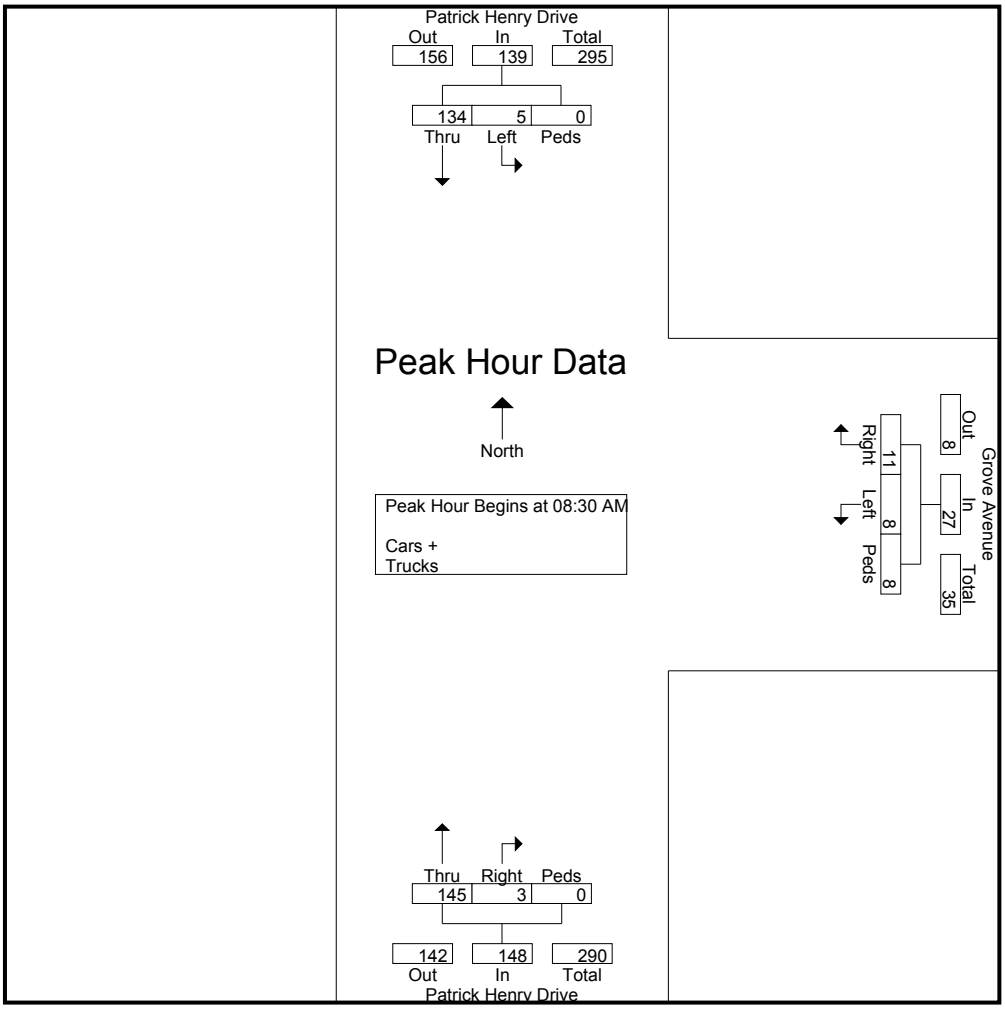
	Patrick Henry Drive Southbound				Grove Avenue Westbound				Patrick Henry Drive Northbound				
Start Time	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 08:30 AM													
08:30 AM	33	0	0	33	5	2	2	9	0	28	0	28	70
08:45 AM	33	2	0	35	3	0	2	5	0	49	0	49	89
09:00 AM	43	2	0	45	1	1	0	2	2	41	0	43	90
09:15 AM	25	1	0	26	2	5	4	11	1	27	0	28	65
Total Volume	134	5	0	139	11	8	8	27	3	145	0	148	314
% App. Total	96.4	3.6	0		40.7	29.6	29.6		2	98	0		
PHF	.779	.625	.000	.772	.550	.400	.500	.614	.375	.740	.000	.755	.872



File Name : Blacksburg(Grove and Patrick Henry)
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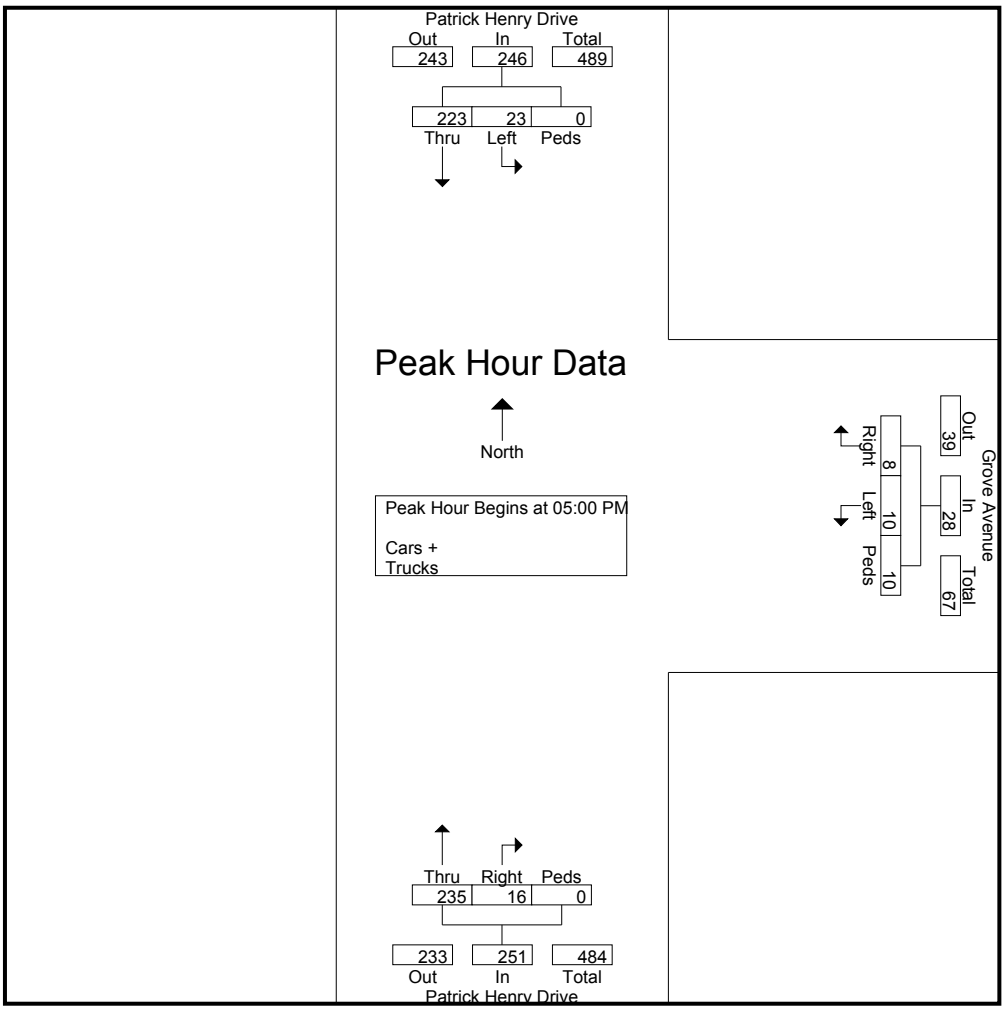
	Patrick Henry Drive Southbound				Grove Avenue Westbound				Patrick Henry Drive Northbound				
Start Time	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Int. Total
Peak Hour Analysis From 12:00 PM to 06:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 05:00 PM													
05:00 PM	51	6	0	57	1	1	2	4	4	69	0	73	134
05:15 PM	57	4	0	61	3	5	2	10	4	54	0	58	129
05:30 PM	54	8	0	62	3	2	4	9	4	54	0	58	129
05:45 PM	61	5	0	66	1	2	2	5	4	58	0	62	133
Total Volume	223	23	0	246	8	10	10	28	16	235	0	251	525
% App. Total	90.7	9.3	0		28.6	35.7	35.7		6.4	93.6	0		
PHF	.914	.719	.000	.932	.667	.500	.625	.700	1.00	.851	.000	.860	.979



TRAFFIC DATA COLLECTION

File Name : Blacksburg(Grove and Patrick Henry)
Site Code :
Start Date : 4/9/2019
Page No : 1

Groups Printed- Trucks

	Patrick Henry Drive Southbound				Grove Avenue Westbound				Patrick Henry Drive Northbound				
Start Time	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
09:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
09:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
09:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
09:45 AM	1	0	0	1	0	0	0	0	0	0	0	0	1
Total	1	0	0	1	0	0	0	0	0	0	0	0	1
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
02:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
02:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
02:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0

TRAFFIC DATA COLLECTION

File Name : Blacksburg(Grove and Patrick Henry)
Site Code :
Start Date : 4/9/2019
Page No : 2

Groups Printed- Trucks

	Patrick Henry Drive Southbound				Grove Avenue Westbound				Patrick Henry Drive Northbound				
Start Time	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Int. Total
03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
03:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
03:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
03:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
06:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
06:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
06:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
06:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	1	0	0	1	0	0	0	0	0	0	0	0	1
Apprch %	100	0	0		0	0	0		0	0	0		
Total %	100	0	0	100	0	0	0	0	0	0	0	0	

DAY 2

File Name : Blacksburg(Main and Patrick Henry) 2
Site Code :
Start Date : 11/28/2018
Page No : 1

Groups Printed- Cars + - Trucks

	Main Street Southbound					Patrick Henry Drive Westbound					Main Street Northbound					Patrick Henry Drive Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
06:00 AM	4	32	5	0	41	3	3	2	0	8	1	10	1	0	12	7	4	9	0	20	81
06:15 AM	9	35	1	0	45	1	1	4	0	6	1	11	1	0	13	9	3	10	0	22	86
06:30 AM	11	51	4	0	66	2	8	3	0	13	3	15	2	0	20	4	3	8	1	16	115
06:45 AM	17	56	3	0	76	3	7	12	0	22	3	14	1	0	18	7	9	17	0	33	149
Total	41	174	13	0	228	9	19	21	0	49	8	50	5	0	63	27	19	44	1	91	431
07:00 AM	18	65	3	2	88	4	7	6	0	17	2	12	5	3	22	10	6	9	1	26	153
07:15 AM	27	87	5	0	119	3	16	13	0	32	5	21	4	0	30	12	6	13	0	31	212
07:30 AM	37	140	8	2	187	2	19	14	1	36	1	22	2	3	28	18	12	16	1	47	298
07:45 AM	32	123	12	0	167	5	29	16	0	50	4	22	4	0	30	27	10	12	1	50	297
Total	114	415	28	4	561	14	71	49	1	135	12	77	15	6	110	67	34	50	3	154	960
08:00 AM	19	96	3	2	120	4	28	13	0	45	9	22	5	0	36	18	10	12	2	42	243
08:15 AM	23	79	9	0	111	9	13	8	0	30	5	24	9	5	43	12	13	10	0	35	219
08:30 AM	26	128	10	0	164	2	20	10	1	33	3	25	7	6	41	21	9	10	1	41	279
08:45 AM	35	124	15	1	175	8	17	18	1	44	3	37	11	1	52	34	12	17	1	64	335
Total	103	427	37	3	570	23	78	49	2	152	20	108	32	12	172	85	44	49	4	182	1076
09:00 AM	30	90	12	0	132	8	21	13	0	42	3	46	18	1	68	10	17	11	0	38	280
09:15 AM	19	90	6	0	115	3	12	8	0	23	7	45	6	3	61	16	15	11	0	42	241
09:30 AM	18	69	11	2	100	7	16	8	0	31	8	25	6	8	47	20	8	10	2	40	218
09:45 AM	14	87	6	1	108	6	10	12	2	30	6	33	7	9	55	35	17	19	1	72	265
Total	81	336	35	3	455	24	59	41	2	126	24	149	37	21	231	81	57	51	3	192	1004
10:00 AM	12	67	10	0	89	6	8	11	0	25	14	40	20	4	78	14	10	8	0	32	224
10:15 AM	16	53	12	0	81	4	17	11	0	32	10	37	16	5	68	15	14	18	0	47	228
10:30 AM	21	59	10	0	90	6	19	7	1	33	8	30	6	5	49	12	18	8	0	38	210
10:45 AM	20	67	14	1	102	2	17	14	0	33	6	32	14	8	60	21	23	16	1	61	256
Total	69	246	46	1	362	18	61	43	1	123	38	139	56	22	255	62	65	50	1	178	918
11:00 AM	18	70	6	2	96	7	19	13	0	39	10	41	32	6	89	19	8	8	0	35	259
11:15 AM	20	75	8	2	105	6	24	6	1	37	7	42	24	0	73	18	12	16	0	46	261
11:30 AM	24	68	3	2	97	2	25	8	1	36	13	55	23	4	95	12	20	9	2	43	271
11:45 AM	26	64	10	1	101	13	24	8	0	45	7	57	18	7	89	24	19	17	2	62	297
Total	88	277	27	7	399	28	92	35	2	157	37	195	97	17	346	73	59	50	4	186	1088
12:00 PM	23	81	12	0	116	4	25	14	0	43	14	58	20	3	95	21	27	17	0	65	319
12:15 PM	20	55	5	1	81	15	12	7	1	35	9	60	33	6	108	19	8	21	0	48	272
12:30 PM	16	80	10	0	106	6	14	12	0	32	10	56	25	1	92	19	23	19	0	61	291
12:45 PM	20	70	7	0	97	3	26	13	0	42	7	55	22	5	89	24	32	20	1	77	305
Total	79	286	34	1	400	28	77	46	1	152	40	229	100	15	384	83	90	77	1	251	1187
01:00 PM	16	91	9	2	118	8	18	9	0	35	12	54	15	3	84	38	25	20	3	86	323
01:15 PM	15	82	11	0	108	7	19	16	0	42	22	83	31	4	140	24	14	9	0	47	337
01:30 PM	16	56	7	0	79	7	16	9	0	32	12	45	14	2	73	21	18	16	0	55	239
01:45 PM	23	63	8	3	97	8	14	9	1	32	8	56	18	8	90	19	19	22	2	62	281
Total	70	292	35	5	402	30	67	43	1	141	54	238	78	17	387	102	76	67	5	250	1180
02:00 PM	18	74	12	0	104	5	26	14	0	45	10	48	19	3	80	22	10	14	0	46	275
02:15 PM	20	56	6	2	84	8	19	9	1	37	10	49	25	0	84	24	21	18	0	63	268
02:30 PM	16	52	16	2	86	2	24	8	0	34	11	62	30	1	104	17	17	13	1	48	272
02:45 PM	18	54	13	0	85	8	20	4	1	33	9	58	26	1	94	21	18	17	0	56	268
Total	72	236	47	4	359	23	89	35	2	149	40	217	100	5	362	84	66	62	1	213	1083
03:00 PM	24	48	9	2	83	5	22	7	0	34	12	56	25	1	94	16	11	19	0	46	257
03:15 PM	24	61	10	1	96	15	16	10	0	41	6	81	18	2	107	26	29	18	3	76	320
03:30 PM	37	94	19	3	153	7	19	13	0	39	5	106	22	2	135	19	15	15	1	50	377
03:45 PM	30	76	9	3	118	11	25	8	1	45	14	77	37	4	132	23	18	21	0	62	357
Total	115	279	47	9	450	38	82	38	1	159	37	320	102	9	468	84	73	73	4	234	1311

File Name : Blacksburg(Main and Patrick Henry) 2
Site Code :
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Groups Printed- Cars + - Trucks

	Main Street Southbound					Patrick Henry Drive Westbound					Main Street Northbound					Patrick Henry Drive Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	43	55	11	3	112	12	24	6	2	44	18	96	28	2	144	13	16	22	1	52	352
04:15 PM	34	52	12	1	99	12	32	17	0	61	13	94	32	1	140	24	25	17	0	66	366
04:30 PM	28	66	16	1	111	8	31	13	4	56	17	88	28	0	133	22	23	18	2	65	365
04:45 PM	32	70	19	1	122	5	30	16	0	51	18	75	34	0	127	38	25	20	0	83	383
Total	137	243	58	6	444	37	117	52	6	212	66	353	122	3	544	97	89	77	3	266	1466
05:00 PM	40	93	14	1	148	13	43	20	0	76	15	102	32	9	158	44	35	19	0	98	480
05:15 PM	34	91	25	1	151	11	36	16	0	63	22	104	52	2	180	35	35	27	1	98	492
05:30 PM	37	81	17	3	138	12	38	14	1	65	15	110	41	3	169	29	33	29	0	91	463
05:45 PM	20	59	21	2	102	7	31	15	0	53	13	96	25	5	139	45	38	26	1	110	404
Total	131	324	77	7	539	43	148	65	1	257	65	412	150	19	646	153	141	101	2	397	1839
06:00 PM	27	70	14	2	113	17	30	14	0	61	15	84	33	0	132	25	30	26	0	81	387
06:15 PM	16	62	10	0	88	9	20	13	1	43	17	75	29	4	125	37	32	19	2	90	346
06:30 PM	16	71	14	0	101	10	28	18	0	56	12	63	33	0	108	29	38	21	0	88	353
06:45 PM	13	74	11	10	108	6	32	14	0	52	22	84	28	2	136	47	24	20	2	93	389
Total	72	277	49	12	410	42	110	59	1	212	66	306	123	6	501	138	124	86	4	352	1475
Grand Total	1172	3812	533	62	5579	357	1070	576	21	2024	507	2793	1017	152	4469	1136	937	837	36	2946	15018
Apprch %	21	68.3	9.6	1.1		17.6	52.9	28.5	1		11.3	62.5	22.8	3.4		38.6	31.8	28.4	1.2		
Total %	7.8	25.4	3.5	0.4	37.1	2.4	7.1	3.8	0.1	13.5	3.4	18.6	6.8	1	29.8	7.6	6.2	5.6	0.2	19.6	
Cars +	1136	3746	531	61	5474	355	999	570	21	1945	498	2733	1006	152	4389	1131	933	809	30	2903	14711
% Cars +	96.9	98.3	99.6	98.4	98.1	99.4	93.4	99	100	96.1	98.2	97.9	98.9	100	98.2	99.6	99.6	96.7	83.3	98.5	98
Trucks	36	66	2	1	105	2	71	6	0	79	9	60	11	0	80	5	4	28	6	43	307
% Trucks	3.1	1.7	0.4	1.6	1.9	0.6	6.6	1	0	3.9	1.8	2.1	1.1	0	1.8	0.4	0.4	3.3	16.7	1.5	2

File Name : Blacksburg(Main and Patrick Henry) 2
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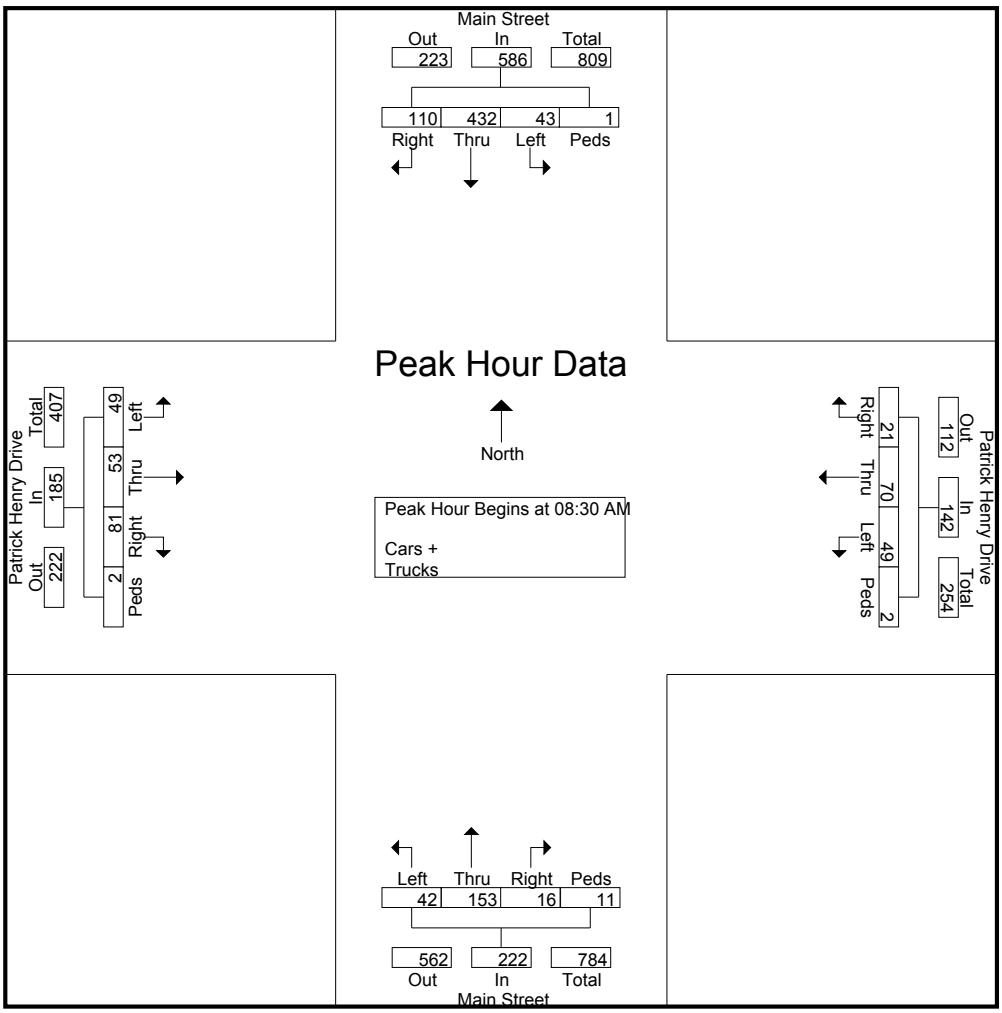
	Main Street Southbound					Patrick Henry Drive Westbound					Main Street Northbound					Patrick Henry Drive Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 06:00 AM to 11:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:30 AM																					
08:30 AM	26	128	10	0	164	2	20	10	1	33	3	25	7	6	41	21	9	10	1	41	279
08:45 AM	35	124	15	1	175	8	17	18	1	44	3	37	11	1	52	34	12	17	1	64	335
09:00 AM	30	90	12	0	132	8	21	13	0	42	3	46	18	1	68	10	17	11	0	38	280
09:15 AM	19	90	6	0	115	3	12	8	0	23	7	45	6	3	61	16	15	11	0	42	241
Total Volume	110	432	43	1	586	21	70	49	2	142	16	153	42	11	222	81	53	49	2	185	1135
% App. Total																					
PHF	.786	.844	.717	.250	.837	.656	.833	.681	.500	.807	.571	.832	.583	.458	.816	.596	.779	.721	.500	.723	.847



File Name : Blacksburg(Main and Patrick Henry) 2
Site Code :
Start Date : 11/28/2018
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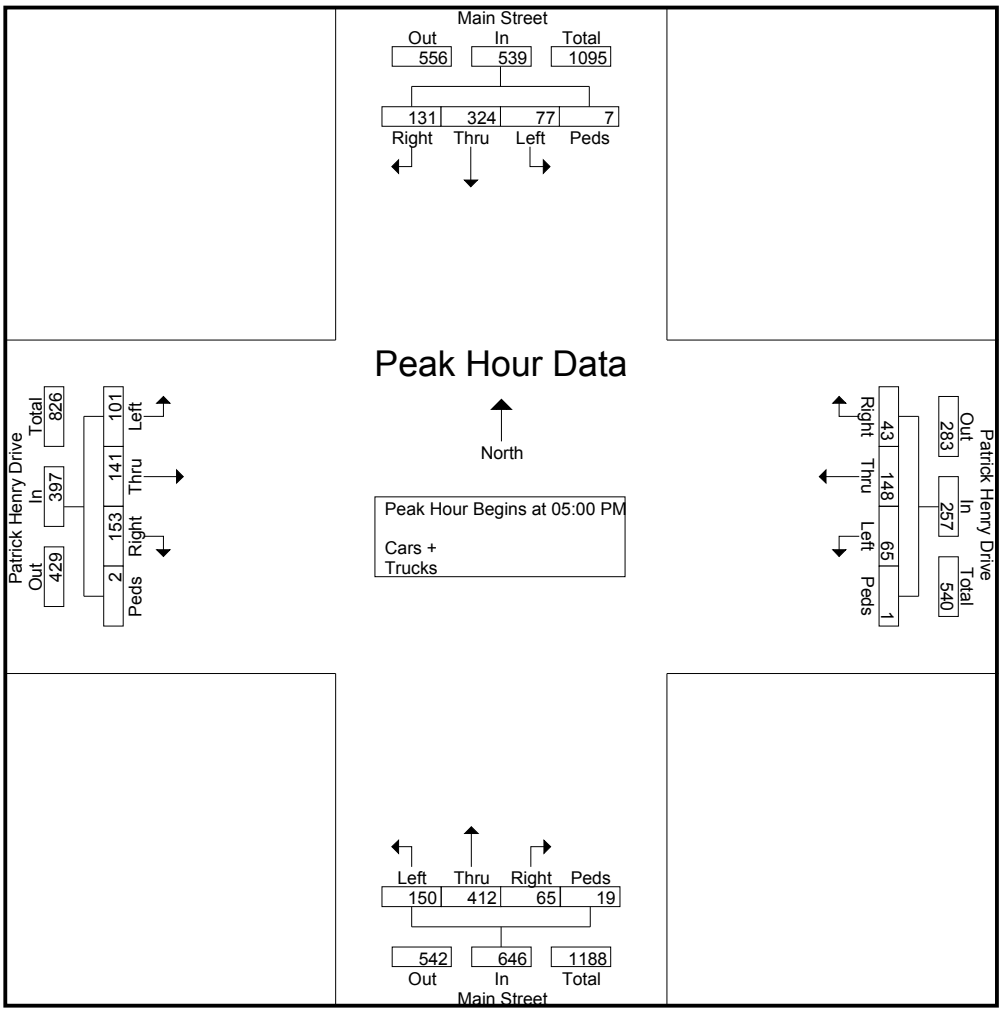
	Main Street Southbound					Patrick Henry Drive Westbound					Main Street Northbound					Patrick Henry Drive Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 12:00 PM to 06:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	40	93	14	1	148	13	43	20	0	76	15	102	32	9	158	44	35	19	0	98	480
05:15 PM	34	91	25	1	151	11	36	16	0	63	22	104	52	2	180	35	35	27	1	98	492
05:30 PM	37	81	17	3	138	12	38	14	1	65	15	110	41	3	169	29	33	29	0	91	463
05:45 PM	20	59	21	2	102	7	31	15	0	53	13	96	25	5	139	45	38	26	1	110	404
Total Volume	131	324	77	7	539	43	148	65	1	257	65	412	150	19	646	153	141	101	2	397	1839
% App. Total																					
PHF	.819	.871	.770	.583	.892	.827	.860	.813	.250	.845	.739	.936	.721	.528	.897	.850	.928	.871	.500	.902	.934



TRAFFIC DATA COLLECTION

File Name : Blacksburg(Main and Patrick Henry) 2
Site Code :
Start Date : 11/28/2018
Page No : 1

Groups Printed- Trucks

	Main Street Southbound				Patrick Henry Drive Westbound				Main Street Northbound				Patrick Henry Drive Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
06:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:30 AM	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	1
06:45 AM	0	0	0	0	0	0	1	1	0	1	1	2	0	0	0	0	3
Total	0	0	0	0	0	0	1	1	1	1	1	3	0	0	0	0	4
07:00 AM	1	2	0	3	0	0	0	0	0	1	3	4	0	0	1	1	8
07:15 AM	1	3	0	4	0	1	1	2	0	1	0	1	0	0	1	1	8
07:30 AM	1	5	0	6	0	2	2	4	0	1	0	1	0	0	0	0	11
07:45 AM	0	1	0	1	0	1	0	1	0	1	0	1	0	1	1	2	5
Total	3	11	0	14	0	4	3	7	0	4	3	7	0	1	3	4	32
08:00 AM	1	1	0	2	0	2	1	3	0	1	0	1	0	1	1	2	8
08:15 AM	0	1	0	1	0	1	0	1	0	1	0	1	0	0	1	1	4
08:30 AM	2	3	0	5	0	2	0	2	1	1	0	2	0	0	0	0	9
08:45 AM	0	3	1	4	0	0	0	0	0	1	0	1	0	0	2	2	7
Total	3	8	1	12	0	5	1	6	1	4	0	5	0	1	4	5	28
09:00 AM	1	0	0	1	0	3	0	3	0	1	0	1	0	0	0	0	5
09:15 AM	1	2	0	3	0	2	0	2	0	1	0	1	1	0	1	2	8
09:30 AM	1	0	0	1	0	2	1	3	1	1	1	3	0	0	0	0	7
09:45 AM	0	1	0	1	0	1	0	1	0	1	0	1	0	0	1	1	4
Total	3	3	0	6	0	8	1	9	1	4	1	6	1	0	2	3	24
10:00 AM	2	2	0	4	0	1	0	1	0	2	2	4	0	0	0	0	9
10:15 AM	0	1	0	1	0	2	0	2	0	1	0	1	0	0	1	1	5
10:30 AM	1	0	0	1	0	2	0	2	0	1	0	1	0	0	0	0	4
10:45 AM	0	3	0	3	0	1	0	1	0	2	0	2	2	0	1	3	9
Total	3	6	0	9	0	6	0	6	0	6	2	8	2	0	2	4	27
11:00 AM	1	0	0	1	0	1	0	1	0	1	0	1	0	0	0	0	3
11:15 AM	0	3	0	3	0	2	0	2	0	1	0	1	0	0	1	1	7
11:30 AM	1	0	0	1	0	3	0	3	2	1	1	4	0	0	0	0	8
11:45 AM	0	1	0	1	0	1	0	1	0	1	0	1	0	0	1	1	4
Total	2	4	0	6	0	7	0	7	2	4	1	7	0	0	2	2	22
12:00 PM	1	2	0	3	0	2	0	2	1	1	0	2	0	0	0	0	7
12:15 PM	0	3	0	3	0	2	0	2	0	1	0	1	0	0	1	1	7
12:30 PM	1	2	0	3	0	1	0	1	0	2	0	2	0	0	0	0	6
12:45 PM	0	0	0	0	0	2	0	2	0	1	0	1	0	0	1	1	4
Total	2	7	0	9	0	7	0	7	1	5	0	6	0	0	2	2	24
01:00 PM	1	1	0	2	0	2	0	2	0	1	0	1	1	0	0	1	6
01:15 PM	0	1	0	1	0	2	0	2	0	3	0	3	0	0	1	1	7
01:30 PM	1	2	0	3	0	1	0	1	0	1	0	1	0	0	0	0	5
01:45 PM	1	1	0	2	0	2	0	2	0	2	0	2	0	0	1	1	7
Total	3	5	0	8	0	7	0	7	0	7	0	7	1	0	2	3	25

TRAFFIC DATA COLLECTION

File Name : Blacksburg(Main and Patrick Henry) 2
Site Code :
Start Date : 11/28/2018
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Groups Printed- Trucks

	Main Street Southbound				Patrick Henry Drive Westbound				Main Street Northbound				Patrick Henry Drive Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
02:00 PM	1	2	0	3	0	1	0	1	0	1	0	1	0	0	0	0	5
02:15 PM	0	2	0	2	0	2	0	2	0	2	0	2	0	0	1	1	7
02:30 PM	1	1	0	2	0	2	0	2	0	1	0	1	0	0	0	0	5
02:45 PM	0	1	0	1	0	1	0	1	0	1	1	2	0	0	1	1	5
Total	2	6	0	8	0	6	0	6	0	5	1	6	0	0	2	2	22
03:00 PM	1	0	0	1	0	2	0	2	3	2	0	5	0	0	0	0	8
03:15 PM	1	3	0	4	0	1	0	1	0	2	0	2	0	1	1	2	9
03:30 PM	2	0	0	2	0	1	0	1	0	2	0	2	0	0	0	0	5
03:45 PM	0	2	1	3	0	1	0	1	0	4	0	4	0	0	2	2	10
Total	4	5	1	10	0	5	0	5	3	10	0	13	0	1	3	4	32
04:00 PM	4	0	0	4	1	3	0	4	0	1	0	1	0	0	1	1	10
04:15 PM	0	3	0	3	0	2	0	2	0	1	1	2	0	0	1	1	8
04:30 PM	2	0	0	2	0	1	0	1	0	1	0	1	0	0	0	0	4
04:45 PM	1	2	0	3	0	2	0	2	0	1	0	1	0	0	1	1	7
Total	7	5	0	12	1	8	0	9	0	4	1	5	0	0	3	3	29
05:00 PM	1	0	0	1	0	1	0	1	0	1	0	1	0	1	0	1	4
05:15 PM	0	1	0	1	0	1	0	1	0	1	0	1	0	0	1	1	4
05:30 PM	1	1	0	2	0	2	0	2	0	1	0	1	1	0	0	1	6
05:45 PM	0	1	0	1	0	2	0	2	0	1	0	1	0	0	1	1	5
Total	2	3	0	5	0	6	0	6	0	4	0	4	1	1	2	4	19
06:00 PM	1	1	0	2	0	1	0	1	0	1	0	1	0	0	0	0	4
06:15 PM	0	2	0	2	0	1	0	1	0	1	1	2	0	0	1	1	6
06:30 PM	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
06:45 PM	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	1
Total	2	3	0	5	1	2	0	3	0	2	1	3	0	0	1	1	12
Grand Total	36	66	2	104	2	71	6	79	9	60	11	80	5	4	28	37	300
Apprch %	34.6	63.5	1.9		2.5	89.9	7.6		11.2	75	13.8		13.5	10.8	75.7		
Total %	12	22	0.7	34.7	0.7	23.7	2	26.3	3	20	3.7	26.7	1.7	1.3	9.3	12.3	

File Name : Blacksburg(Patrick Henry and Harding) 2
Site Code :
Start Date : 4/10/2019
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Groups Printed- Cars + - Trucks

	Patrick Henry Drive Southbound				Grove Avenue Westbound				Grove Avenue Eastbound				
Start Time	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	7	3	0	10	11	13	0	24	5	0	0	5	39
07:15 AM	8	6	5	19	13	36	0	49	4	4	0	8	76
07:30 AM	15	10	2	27	24	53	0	77	11	4	0	15	119
07:45 AM	15	8	1	24	25	49	0	74	7	4	0	11	109
Total	45	27	8	80	73	151	0	224	27	12	0	39	343
08:00 AM	16	17	2	35	13	21	0	34	10	9	0	19	88
08:15 AM	22	13	6	41	12	25	0	37	10	7	0	17	95
08:30 AM	16	9	3	28	29	34	0	63	5	10	0	15	106
08:45 AM	32	13	5	50	23	45	0	68	11	14	0	25	143
Total	86	52	16	154	77	125	0	202	36	40	0	76	432
09:00 AM	32	8	2	42	16	28	0	44	11	8	0	19	105
09:15 AM	18	11	1	30	24	26	0	50	16	13	0	29	109
09:30 AM	13	18	3	34	11	21	0	32	11	10	0	21	87
09:45 AM	13	9	1	23	12	16	0	28	10	5	0	15	66
Total	76	46	7	129	63	91	0	154	48	36	0	84	367
10:00 AM	11	9	2	22	12	11	0	23	20	5	0	25	70
10:15 AM	14	19	3	36	23	19	0	42	17	13	0	30	108
10:30 AM	15	17	1	33	22	18	0	40	9	13	0	22	95
10:45 AM	12	16	1	29	15	23	0	38	12	14	0	26	93
Total	52	61	7	120	72	71	0	143	58	45	0	103	366
11:00 AM	16	10	2	28	17	19	0	36	10	13	0	23	87
11:15 AM	13	12	2	27	17	11	0	28	14	10	0	24	79
11:30 AM	11	17	0	28	16	13	0	29	15	9	0	24	81
11:45 AM	17	12	2	31	12	20	0	32	24	20	0	44	107
Total	57	51	6	114	62	63	0	125	63	52	0	115	354
12:00 PM	15	16	2	33	15	15	0	30	21	16	0	37	100
12:15 PM	16	9	1	26	12	19	0	31	24	18	0	42	99
12:30 PM	11	18	0	29	18	28	0	46	19	8	0	27	102
12:45 PM	13	24	0	37	14	15	0	29	20	13	0	33	99
Total	55	67	3	125	59	77	0	136	84	55	0	139	400
01:00 PM	13	27	2	42	11	17	0	28	18	16	0	34	104
01:15 PM	11	20	1	32	13	16	0	29	20	8	0	28	89
01:30 PM	13	21	0	34	16	22	0	38	17	11	0	28	100
01:45 PM	10	15	1	26	24	32	0	56	18	15	0	33	115
Total	47	83	4	134	64	87	0	151	73	50	0	123	408
02:00 PM	13	19	0	32	16	12	0	28	20	10	0	30	90
02:15 PM	5	18	2	25	14	18	0	32	12	10	0	22	79
02:30 PM	15	17	4	36	21	21	0	42	19	17	0	36	114
02:45 PM	14	17	1	32	19	18	0	37	20	12	0	32	101
Total	47	71	7	125	70	69	0	139	71	49	0	120	384
03:00 PM	23	18	1	42	6	14	0	20	14	10	0	24	86
03:15 PM	16	19	2	37	17	27	1	45	18	19	0	37	119
03:30 PM	29	23	1	53	25	27	0	52	24	24	0	48	153
03:45 PM	15	12	3	30	14	15	0	29	23	33	0	56	115
Total	83	72	7	162	62	83	1	146	79	86	0	165	473
04:00 PM	10	29	0	39	23	13	0	36	30	26	0	56	131
04:15 PM	8	28	0	36	18	18	0	36	20	30	0	50	122
04:30 PM	15	18	2	35	21	11	0	32	22	15	0	37	104
04:45 PM	23	24	5	52	27	25	0	52	28	26	0	54	158
Total	56	99	7	162	89	67	0	156	100	97	0	197	515

File Name : Blacksburg(Patrick Henry and Harding) 2
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Groups Printed- Cars + - Trucks

	Patrick Henry Drive Southbound				Grove Avenue Westbound				Grove Avenue Eastbound				
Start Time	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Int. Total
05:00 PM	22	28	2	52	33	31	0	64	30	35	0	65	181
05:15 PM	22	41	3	66	31	30	0	61	37	30	0	67	194
05:30 PM	19	31	4	54	28	26	0	54	42	39	0	81	189
05:45 PM	20	31	3	54	29	27	0	56	25	29	0	54	164
Total	83	131	12	226	121	114	0	235	134	133	0	267	728
06:00 PM	18	32	6	56	22	19	0	41	31	22	0	53	150
06:15 PM	21	29	2	52	21	20	0	41	24	22	0	46	139
06:30 PM	24	28	1	53	22	21	0	43	30	19	0	49	145
06:45 PM	18	35	0	53	14	22	0	36	28	24	0	52	141
Total	81	124	9	214	79	82	0	161	113	87	0	200	575
Grand Total	768	884	93	1745	891	1080	1	1972	886	742	0	1628	5345
Apprch %	44	50.7	5.3		45.2	54.8	0.1		54.4	45.6	0		
Total %	14.4	16.5	1.7	32.6	16.7	20.2	0	36.9	16.6	13.9	0	30.5	
Cars +	767	881	93	1741	890	1080	1	1971	886	741	0	1627	5339
% Cars +	99.9	99.7	100	99.8	99.9	100	100	99.9	100	99.9	0	99.9	99.9
Trucks	1	3	0	4	1	0	0	1	0	1	0	1	6
% Trucks	0.1	0.3	0	0.2	0.1	0	0	0.1	0	0.1	0	0.1	0.1

File Name : Blacksburg(Patrick Henry and Harding) 2
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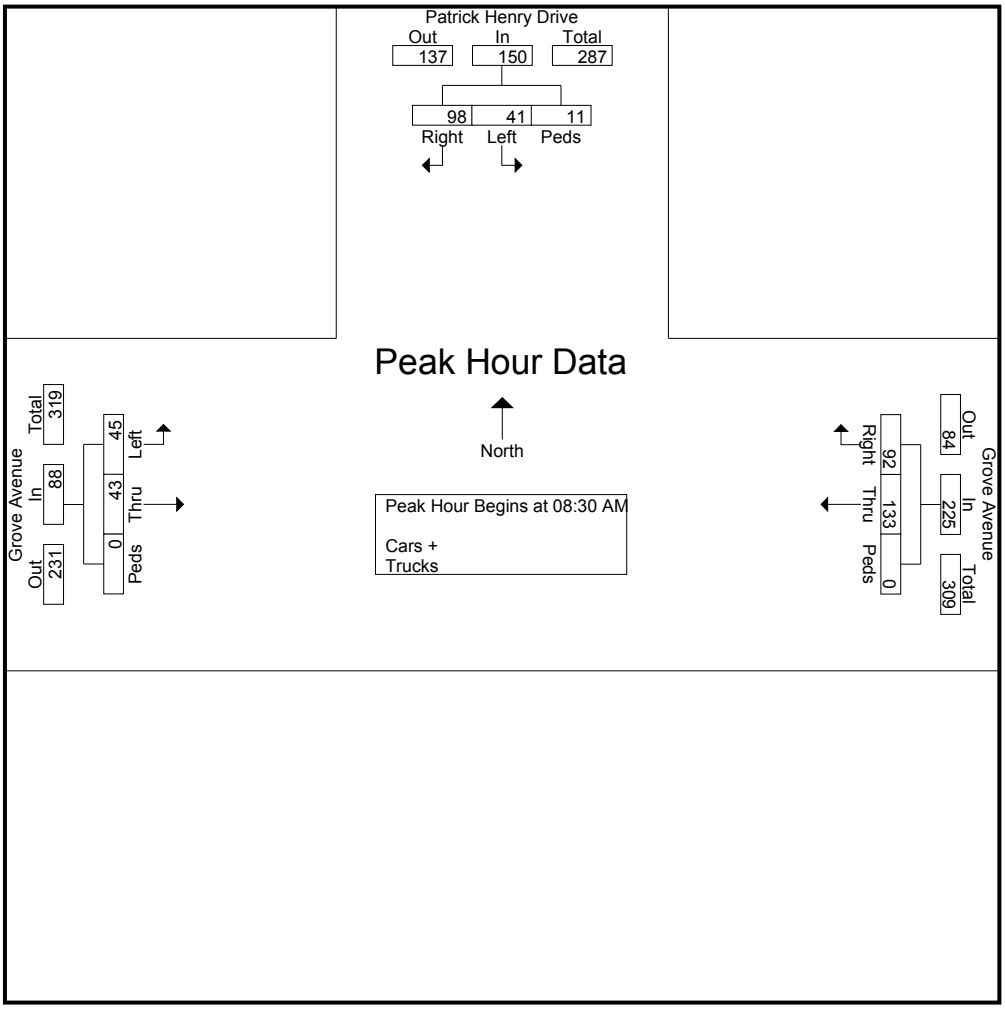
	Patrick Henry Drive Southbound				Grove Avenue Westbound				Grove Avenue Eastbound				
Start Time	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 08:30 AM													
08:30 AM	16	9	3	28	29	34	0	63	5	10	0	15	106
08:45 AM	32	13	5	50	23	45	0	68	11	14	0	25	143
09:00 AM	32	8	2	42	16	28	0	44	11	8	0	19	105
09:15 AM	18	11	1	30	24	26	0	50	16	13	0	29	109
Total Volume	98	41	11	150	92	133	0	225	43	45	0	88	463
% App. Total	65.3	27.3	7.3		40.9	59.1	0		48.9	51.1	0		
PHF	.766	.788	.550	.750	.793	.739	.000	.827	.672	.804	.000	.759	.809



File Name : Blacksburg(Patrick Henry and Harding) 2
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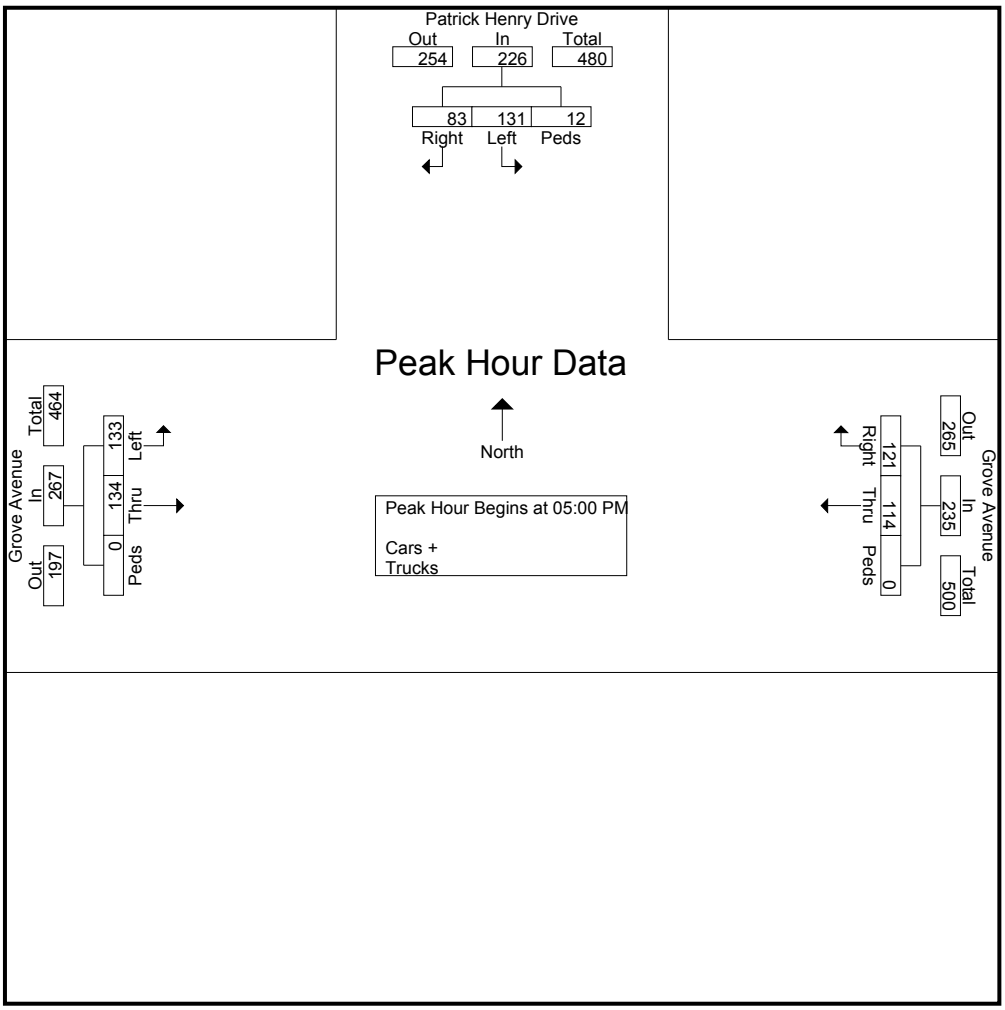
	Patrick Henry Drive Southbound				Grove Avenue Westbound				Grove Avenue Eastbound				
Start Time	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 12:00 PM to 06:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 05:00 PM													
05:00 PM	22	28	2	52	33	31	0	64	30	35	0	65	181
05:15 PM	22	41	3	66	31	30	0	61	37	30	0	67	194
05:30 PM	19	31	4	54	28	26	0	54	42	39	0	81	189
05:45 PM	20	31	3	54	29	27	0	56	25	29	0	54	164
Total Volume	83	131	12	226	121	114	0	235	134	133	0	267	728
% App. Total	36.7	58	5.3		51.5	48.5	0		50.2	49.8	0		
PHF	.943	.799	.750	.856	.917	.919	.000	.918	.798	.853	.000	.824	.938



TRAFFIC DATA COLLECTION

File Name : Blacksburg(Patrick Henry and Harding) 2
Site Code :
Start Date : 4/15/2019
Page No : 1

Groups Printed- Trucks

	Patrick Henry Drive Southbound				Grove Avenue Westbound				Grove Avenue Eastbound				
Start Time	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	1	0	1	0	0	0	0	0	0	0	0	1
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	1	0	0	0	0	0	0	0	0	1
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
09:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
09:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
09:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
09:45 AM	0	1	0	1	0	0	0	0	0	0	0	0	1
Total	0	1	0	1	0	0	0	0	0	0	0	0	1
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 AM	1	1	0	2	0	0	0	0	0	0	0	0	2
Total	1	1	0	2	0	0	0	0	0	0	0	0	2
11:00 AM	0	0	0	0	0	0	0	0	0	1	0	1	1
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	1	0	1	1
12:00 PM	0	0	0	0	1	0	0	1	0	0	0	0	1
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	1	0	0	1	0	0	0	0	1
01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
02:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
02:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
02:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0

TRAFFIC DATA COLLECTION

File Name : Blacksburg(Patrick Henry and Harding) 2
Site Code :
Start Date : 4/15/2019
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Groups Printed- Trucks

	Patrick Henry Drive Southbound				Grove Avenue Westbound				Grove Avenue Eastbound				
Start Time	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Int. Total
03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
03:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
03:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
03:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
06:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
06:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
06:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
06:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	1	3	0	4	1	0	0	1	0	1	0	1	6
Apprch %	25	75	0		100	0	0		0	100	0		
Total %	16.7	50	0	66.7	16.7	0	0	16.7	0	16.7	0	16.7	

File Name : Blacksburg(Patrick Henry and Grove) 2
Site Code :
Start Date : 4/10/2019
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Groups Printed- Cars + - Trucks

	Patrick Henry Drive Southbound				Grove Avenue Westbound				Patrick Henry Drive Northbound				
Start Time	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Int. Total
07:00 AM	11	3	0	14	2	0	1	3	0	10	1	11	28
07:15 AM	13	4	0	17	5	4	0	9	0	17	0	17	43
07:30 AM	23	1	0	24	2	1	0	3	1	31	0	32	59
07:45 AM	25	1	0	26	5	0	0	5	0	29	0	29	60
Total	72	9	0	81	14	5	1	20	1	87	1	89	190
08:00 AM	33	2	0	35	1	3	0	4	2	19	0	21	60
08:15 AM	37	0	0	37	1	1	0	2	0	19	0	19	58
08:30 AM	27	1	0	28	7	0	0	7	0	36	0	36	71
08:45 AM	50	3	0	53	1	2	0	3	0	42	0	42	98
Total	147	6	0	153	10	6	0	16	2	116	0	118	287
09:00 AM	35	2	0	37	5	2	0	7	0	32	0	32	76
09:15 AM	27	1	0	28	1	1	0	2	2	40	0	42	72
09:30 AM	30	1	0	31	1	4	1	6	2	19	0	21	58
09:45 AM	24	6	0	30	0	3	1	4	0	19	0	19	53
Total	116	10	0	126	7	10	2	19	4	110	0	114	259
10:00 AM	25	3	0	28	1	0	1	2	1	16	1	18	48
10:15 AM	28	0	0	28	1	3	2	6	0	42	0	42	76
10:30 AM	26	1	1	28	0	3	0	3	1	32	0	33	64
10:45 AM	28	1	0	29	1	0	1	2	2	33	0	35	66
Total	107	5	1	113	3	6	4	13	4	123	1	128	254
11:00 AM	20	1	0	21	1	0	1	2	0	33	0	33	56
11:15 AM	24	0	0	24	1	1	1	3	0	30	0	30	57
11:30 AM	30	3	0	33	1	1	1	3	1	27	0	28	64
11:45 AM	29	1	0	30	2	2	1	5	3	33	0	36	71
Total	103	5	0	108	5	4	4	13	4	123	0	127	248
12:00 PM	31	1	0	32	0	4	1	5	1	34	0	35	72
12:15 PM	26	0	0	26	3	1	1	5	2	28	0	30	61
12:30 PM	38	0	0	38	4	1	2	7	0	29	0	29	74
12:45 PM	41	2	0	43	1	1	0	2	1	29	0	30	75
Total	136	3	0	139	8	7	4	19	4	120	0	124	282
01:00 PM	45	0	0	45	0	0	0	0	0	30	0	30	75
01:15 PM	36	2	0	38	1	1	3	5	4	21	0	25	68
01:30 PM	34	2	0	36	1	2	1	4	1	29	0	30	70
01:45 PM	23	3	0	26	2	2	0	4	3	41	0	44	74
Total	138	7	0	145	4	5	4	13	8	121	0	129	287
02:00 PM	37	6	0	43	3	1	0	4	5	21	1	27	74
02:15 PM	24	0	0	24	2	0	2	4	5	29	0	34	62
02:30 PM	29	0	0	29	1	3	1	5	2	42	0	44	78
02:45 PM	33	2	0	35	3	2	1	6	1	30	0	31	72
Total	123	8	0	131	9	6	4	19	13	122	1	136	286
03:00 PM	43	3	0	46	1	1	1	3	1	16	0	17	66
03:15 PM	35	2	0	37	3	1	1	5	3	36	0	39	81
03:30 PM	51	1	0	52	3	0	1	4	3	41	0	44	100
03:45 PM	35	1	0	36	2	0	3	5	1	48	0	49	90
Total	164	7	0	171	9	2	6	17	8	141	0	149	337
04:00 PM	42	3	0	45	1	2	3	6	2	43	0	45	96
04:15 PM	29	3	0	32	2	6	3	11	3	48	0	51	94
04:30 PM	39	4	0	43	0	1	5	6	3	43	0	46	95
04:45 PM	63	3	0	66	3	2	5	10	5	51	0	56	132
Total	173	13	0	186	6	11	16	33	13	185	0	198	417

File Name : Blacksburg(Patrick Henry and Grove) 2
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Groups Printed- Cars + - Trucks

	Patrick Henry Drive Southbound				Grove Avenue Westbound				Patrick Henry Drive Northbound				
Start Time	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Int. Total
05:00 PM	65	5	0	70	7	3	3	13	3	82	0	85	168
05:15 PM	68	3	0	71	5	5	4	14	1	65	1	67	152
05:30 PM	49	9	1	59	3	1	3	7	4	75	0	79	145
05:45 PM	55	7	0	62	1	3	5	9	1	57	0	58	129
Total	237	24	1	262	16	12	15	43	9	279	1	289	594
06:00 PM	51	4	0	55	3	0	1	4	1	52	0	53	112
06:15 PM	52	3	1	56	2	1	3	6	3	55	0	58	120
06:30 PM	45	3	1	49	1	0	2	3	2	45	0	47	99
06:45 PM	47	3	0	50	3	2	5	10	2	42	1	45	105
Total	195	13	2	210	9	3	11	23	8	194	1	203	436
Grand Total	1711	110	4	1825	100	77	71	248	78	1721	5	1804	3877
Apprch %	93.8	6	0.2		40.3	31	28.6		4.3	95.4	0.3		
Total %	44.1	2.8	0.1	47.1	2.6	2	1.8	6.4	2	44.4	0.1	46.5	
Cars +	1700	110	4	1814	99	76	71	246	77	1713	5	1795	3855
% Cars +	99.4	100	100	99.4	99	98.7	100	99.2	98.7	99.5	100	99.5	99.4
Trucks	11	0	0	11	1	1	0	2	1	8	0	9	22
% Trucks	0.6	0	0	0.6	1	1.3	0	0.8	1.3	0.5	0	0.5	0.6

File Name : Blacksburg(Patrick Henry and Grove) 2
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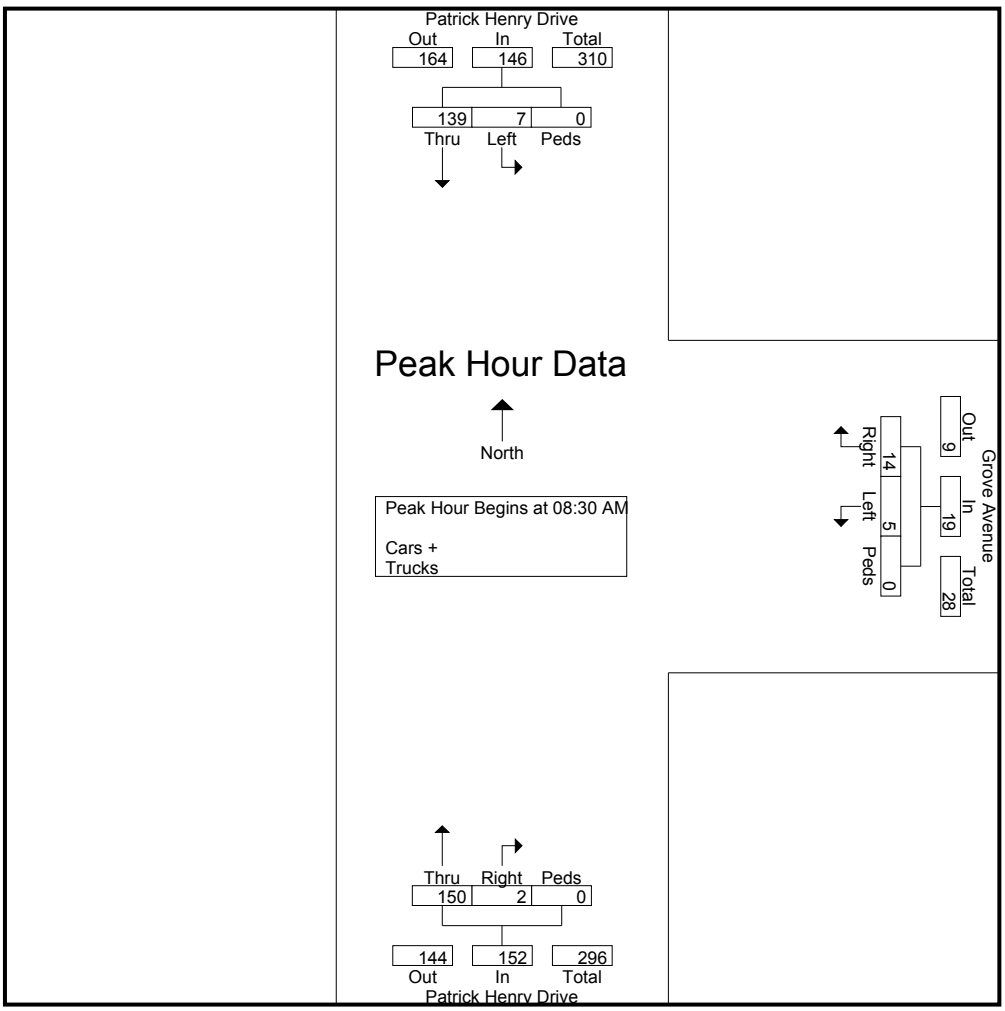
Page No : 3

	Patrick Henry Drive Southbound				Grove Avenue Westbound				Patrick Henry Drive Northbound				
Start Time	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 08:30 AM													
08:30 AM	27	1	0	28	7	0	0	7	0	36	0	36	71
08:45 AM	50	3	0	53	1	2	0	3	0	42	0	42	98
09:00 AM	35	2	0	37	5	2	0	7	0	32	0	32	76
09:15 AM	27	1	0	28	1	1	0	2	2	40	0	42	72
Total Volume	139	7	0	146	14	5	0	19	2	150	0	152	317
% App. Total	95.2	4.8	0		73.7	26.3	0		1.3	98.7	0		
PHF	.695	.583	.000	.689	.500	.625	.000	.679	.250	.893	.000	.905	.809



File Name : Blacksburg(Patrick Henry and Grove) 2
Site Code :
Start Date : 4/10/2019
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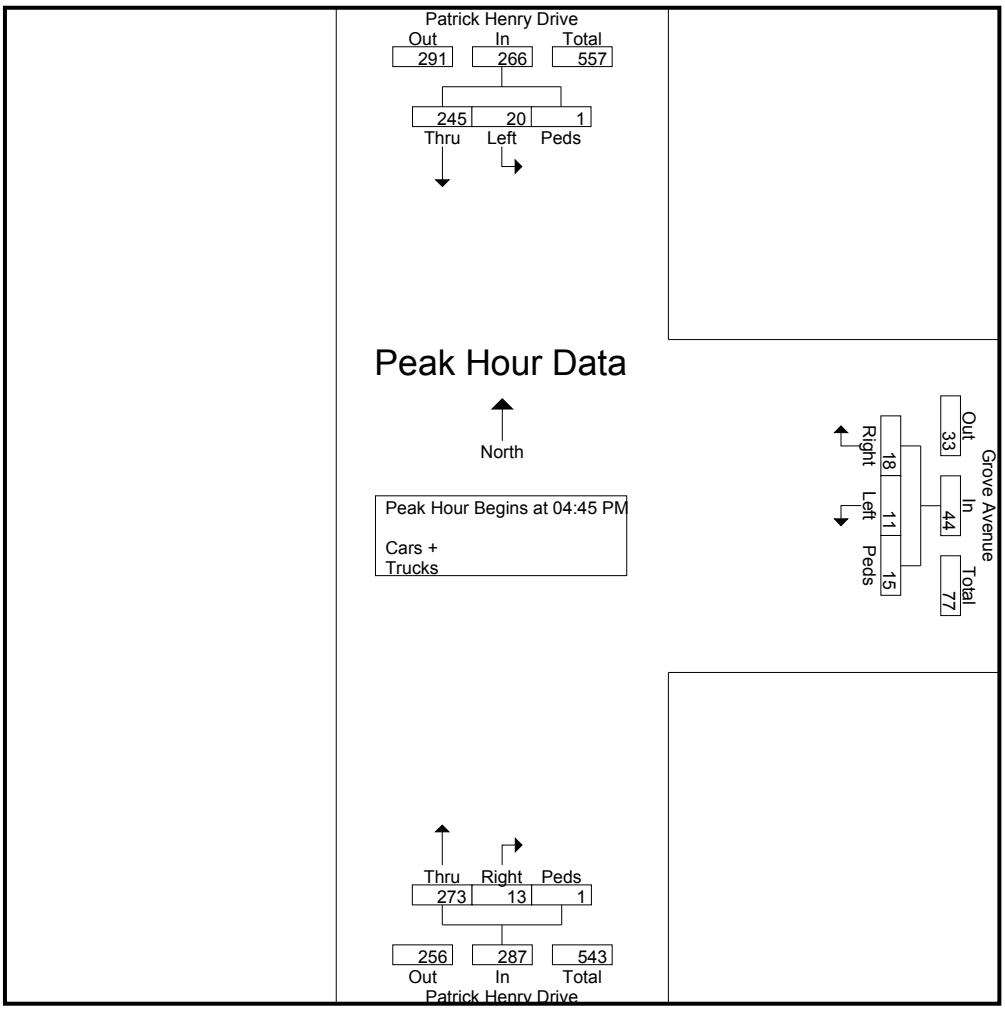
	Patrick Henry Drive Southbound				Grove Avenue Westbound				Patrick Henry Drive Northbound				
Start Time	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Int. Total
Peak Hour Analysis From 12:00 PM to 06:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 04:45 PM													
04:45 PM	63	3	0	66	3	2	5	10	5	51	0	56	132
05:00 PM	65	5	0	70	7	3	3	13	3	82	0	85	168
05:15 PM	68	3	0	71	5	5	4	14	1	65	1	67	152
05:30 PM	49	9	1	59	3	1	3	7	4	75	0	79	145
Total Volume	245	20	1	266	18	11	15	44	13	273	1	287	597
% App. Total	92.1	7.5	0.4		40.9	25	34.1		4.5	95.1	0.3		
PHF	.901	.556	.250	.937	.643	.550	.750	.786	.650	.832	.250	.844	.888



TRAFFIC DATA COLLECTION

File Name : Blacksburg(Patrick Henry and Grove) 2
Site Code :
Start Date : 4/10/2019
Page No : 1

Groups Printed- Trucks

	Patrick Henry Drive Southbound				Grove Avenue Westbound				Patrick Henry Drive Northbound				
Start Time	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00 AM	1	0	0	1	0	0	0	0	0	1	0	1	2
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1	0	0	1	0	0	0	0	0	1	0	1	2
09:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
09:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
09:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
09:45 AM	1	0	0	1	0	0	0	0	0	0	0	0	1
Total	1	0	0	1	0	0	0	0	0	0	0	0	1
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 AM	1	0	0	1	0	0	0	0	0	0	0	0	1
Total	1	0	0	1	0	0	0	0	0	0	0	0	1
11:00 AM	0	0	0	0	0	0	0	0	0	3	0	3	3
11:15 AM	2	0	0	2	0	0	0	0	0	0	0	0	2
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	1	0	0	1	0	0	0	0	0	0	0	0	1
Total	3	0	0	3	0	0	0	0	0	3	0	3	6
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
02:15 PM	0	0	0	0	1	0	0	1	0	1	0	1	2
02:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
02:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	1	0	0	1	0	1	0	1	2

TRAFFIC DATA COLLECTION

File Name : Blacksburg(Patrick Henry and Grove) 2
Site Code :
Start Date : 4/10/2019
Page No : 2

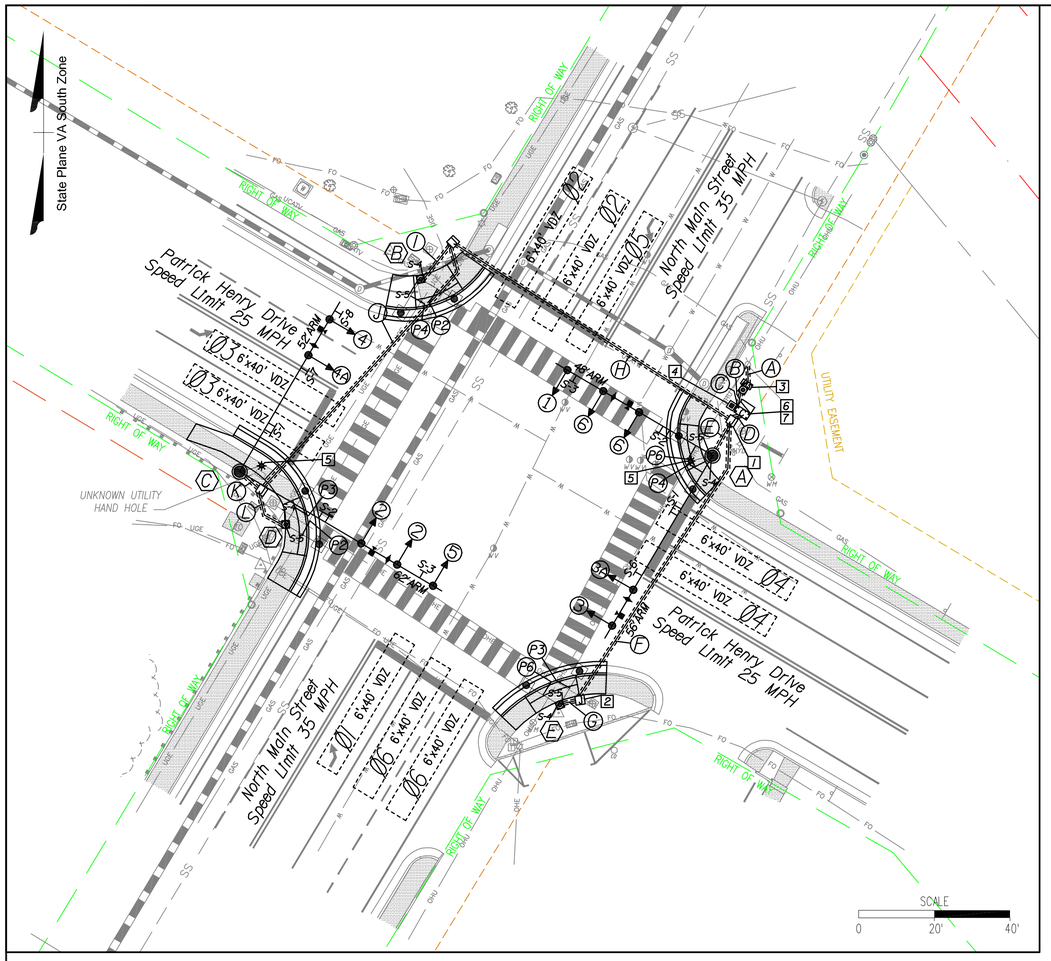
Groups Printed- Trucks

	Patrick Henry Drive Southbound				Grove Avenue Westbound				Patrick Henry Drive Northbound				
Start Time	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Int. Total
03:00 PM	2	0	0	2	0	0	0	0	0	0	0	0	2
03:15 PM	1	0	0	1	0	0	0	0	0	0	0	0	1
03:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
03:45 PM	1	0	0	1	0	0	0	0	0	1	0	1	2
Total	4	0	0	4	0	0	0	0	0	1	0	1	5
04:00 PM	0	0	0	0	0	1	0	1	0	0	0	0	1
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	1	0	1	0	0	0	0	1
05:00 PM	1	0	0	1	0	0	0	0	0	1	0	1	2
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	1	1	0	2	2
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1	0	0	1	0	0	0	0	1	2	0	3	4
06:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
06:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
06:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
06:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	11	0	0	11	1	1	0	2	1	8	0	9	22
Apprch %	100	0	0		50	50	0		11.1	88.9	0		
Total %	50	0	0	50	4.5	4.5	0	9.1	4.5	36.4	0	40.9	

	Existing (2019)		Trucks		Truck %	
	AM	PM	AM	PM	AM	PM
Intersection 1: North Main Street & Patrick Henry Drive						
SBR	127	131	0	2	0.0%	1.5%
SBT	493	324	13	3	2.6%	0.9%
SBL	51	77	0	0	0.0%	0.0%
WBR	34	43	0	0	0.0%	0.0%
WBT	83	148	0	6	0.0%	4.1%
WBL	55	65	1	0	1.8%	0.0%
NBR	16	65	0	0	0.0%	0.0%
NBT	140	412	10	4	7.1%	1.0%
NBL	46	150	0	0	0.0%	0.0%
EBR	88	153	0	1	0.0%	0.7%
EBT	50	141	0	1	0.0%	0.7%
EBL	59	101	0	2	0.0%	2.0%
Intersection 2: Patrick Henry Drive & Harding Avenue						
SBR	98	83	0	0	0.0%	0.0%
SBL	41	131	0	0	0.0%	0.0%
WBR	92	121	0	0	0.0%	0.0%
WBT	133	114	0	0	0.0%	0.0%
EBT	43	134	0	0	0.0%	0.0%
EBL	45	133	0	0	0.0%	0.0%
Intersection 3: Patrick Henry Drive & Grove Avenue (Site Access 1)						
SBT	139	245	0	1	0.0%	0.4%
SBL	7	20	0	0	0.0%	0.0%
WBR	14	18	0	0	0.0%	0.0%
WBL	5	11	0	0	0.0%	0.0%
NBR	2	13	0	1	0.0%	7.7%
NBT	150	273	0	2	0.0%	0.7%

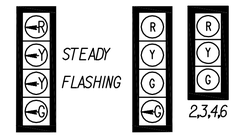
APPENDIX B

SIGNAL DATA



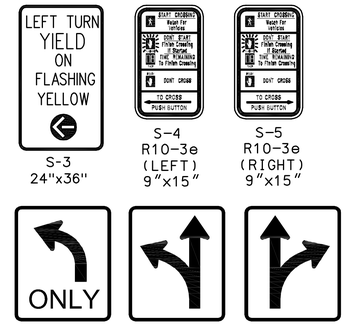
SIGNALS

ALL SIGNALS SHALL BE 12" LED & EQUIPPED WITH BACKPLATES



P2,P3,P4,P6
VDOT STD SP-8
COUNTDOWN PED SIGNAL

PROPOSED SIGNS
SEE SHEET T-2 FOR S-1, S-2



POLE DETAILS

Ⓑ Ⓓ Ⓔ VDOT Standard PF-2 Pedestal Poles (10')

Ⓐ MAST ARM POLE w/ LUMINAIRE
Luminaire 235° to North Main Street
48' Arm 270° to North Main Street
Signal Placement: 22', 33', 44'
Sign Placement: 14', 41'
Camera Placement: 26'
EVP Placement: 30'

56' Arm 180° to North Main Street
Signal Placement: 41', 52'
Sign Placement: 17', 37'
Camera Placement: 49'
EVP Placement: 44'

Ⓒ MAST ARM POLE w/ LUMINAIRE
Luminaire 45° to North Main Street
62' Arm 90° to North Main Street
Signal Placement: 37', 48', 59'
Sign Placement: 25', 55'
Camera Placement: 41'
EVP Placement: 45'

52' Arm 0° to North Main Street
Signal Placement: 36', 47'
Sign Placement: 14', 32', 50'
Camera Placement: 43'
EVP Placement: 39'

CONSTRUCTION NOTES

1. Install VDOT Std JB-S3 Junction Box
2. Install VDOT Std JB-S1 Junction Box
3. Install SE-5 Underground Electrical Service, Connect to Existing Electrical Service Location
4. Construct 26"x24" Concrete Foundation for Natural Gas-Powered Back-up Generator
5. Install 250 Watt High Pressure Sodium Decorative Luminaire on 6-foot Decorative Arm with 25-foot Mounting Height
6. Install VDOT Std CF-1 Controller Foundation
7. Install 16"x12"x6" Shaefer Elec. Enclosure for IT Purposes, to be Mounted on the Side of the Signal Controller Cabinet. CAT# SPN 4SS-16126

CONDUIT RUN DETAILS

Ⓐ 1 - 2" Conduit
3 - #6 AWG Cables for Electrical Service Cable

Ⓑ 1 - 1.25" Metal Conduit
3 - #6 AWG Cables for Electrical Service

Ⓒ 1 - 2" Conduit
3 - #6 AWG Cables for Electrical Service Backup

Ⓓ 3 - 4" Conduits (One as Spare)
4 - 14-4 Conductor Cable for Heads 2,3,4,6
4 - 14-7 Conductor Cable for Heads 1,3A,4A,5
8 - 14-5 Conductor Cable for Heads P2(2),P3(2),P4(2),P6(2)
8 - 14-3 Conductor Cable for Push Buttons P2(2),P3(2),P4(2),P6(2)
4 - 16-3 Conductor Cable for Video Detection
4 - Coaxial Cable for Video Detection
4 - 20-3c Emergency Preemption Detection Cable
4 - 14-4 Conductor Cable for Preemption Confirmation Lights
2 - 12-2 Conductor Cable for Lighting
3 - #6 AWG (EGC)

Ⓔ 1 - 4" Conduit
2 - 14-4 Conductor Cable for Heads 3,6
2 - 14-7 Conductor Cable for Head 1,3A
2 - 14-5 Conductor Cable for Heads P4,P6
2 - 14-3 Conductor Cable for Push Buttons P4,P6
2 - 16-3 Conductor Cable for Video Detection
2 - Coaxial Cable for Video Detection
2 - 20-3c Emergency Preemption Detection Cable
2 - 14-4 Conductor Cable for Preemption Confirmation Lights
1 - 12-2c Conductor Cable for Lighting
2 - #6 AWG (EGC)

Ⓕ 2 - 2" Bored Conduit (One as Spare)
2 - 14-5 Conductor Cable for Heads P3,P6
2 - 14-3 Conductor Cable for Push Buttons P3,P6
1 - #6 AWG (EGC)

Ⓖ 1 - 2" Conduit
2 - 14-5 Conductor Cable for Heads P3,P6
2 - 14-3 Conductor Cable for Push Buttons P3,P6
1 - #6 AWG (EGC)

Ⓗ 2 - 4" Bored Conduit (One as Spare)
2 - 14-4 Conductor Cable for Heads 2,4
2 - 14-7 Conductor Cable for Heads 4A,5
4 - 14-5 Conductor Cable for Heads P2(2),P3,P4
4 - 14-3 Conductor Cable for Push Buttons P2(2),P3,P4
2 - 16-3 Conductor Cable for Video Detection
2 - Coaxial Cable for Video Detection
2 - 20-3c Emergency Preemption Detection Cable
2 - 14-4 Conductor Cable for Preemption Confirmation Lights
1 - 12-2c Conductor Cable for Lighting
2 - #6 AWG (EGC)

Ⓘ 1 - 2" Conduit
2 - 14-5 Conductor Cable for Heads P2,P4
2 - 14-3 Conductor Cable for Push Buttons P2,P4
1 - #6 AWG (EGC)

Ⓙ 1 - 4" Bored Conduit
1 - 2" Conduit (As Spare)
2 - 14-4 Conductor Cable for Heads 2,4
2 - 14-7 Conductor Cable for Heads 4A,5
2 - 14-5 Conductor Cable for Heads P2,P3
2 - 14-3 Conductor Cable for Push Buttons P2,P3
2 - 16-3 Conductor Cable for Video Detection
2 - Coaxial Cable for Video Detection
2 - 20-3c Emergency Preemption Detection Cable
2 - 14-4 Conductor Cable for Preemption Confirmation Lights
1 - 12-2c Conductor Cable for Lighting
1 - #6 AWG (EGC)

Ⓚ 1 - 4" Conduit
2 - 14-4 Conductor Cable for Heads 2,4
2 - 14-7 Conductor Cable for Heads 4A,5
2 - 16-3 Conductor Cable for Video Detection
2 - Coaxial Cable for Video Detection
2 - 20-3c Emergency Preemption Detection Cable
2 - 14-4 Conductor Cable for Preemption Confirmation Lights
1 - 12-2c Conductor Cable for Lighting
1 - #6 AWG (EGC)

Ⓛ 1 - 2" Conduit
2 - 14-5 Conductor Cable for Heads P2,P3
2 - 14-3 Conductor Cable for Push Buttons P2,P3
1 - #6 AWG (EGC)

COLOR SEQUENCE CHART

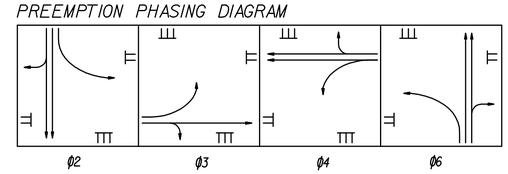
SIGNAL	PHASES						COMBINATIONS				PRE-EMPTION				FLASH
	1	2	3	4	5	6	1-5	1-6	2-5	2-6	2	3	4	6	
1	~~G~~					~~FY~~	~~G~~	~~G~~	~~FY~~	~~FY~~				~~G~~	
2		G							G	G	G				Y
3			G									G			
3A			~~G~~/G									~~G~~/G			
4				G									G		
4A				~~G~~/G									~~G~~/G		
5		~~FY~~			~~G~~		~~G~~	~~FY~~	~~G~~	~~FY~~	~~G~~				
6						G		G		G				G	Y
P2		W							W	W					BLANK
P3			W												BLANK
P4				W											BLANK
P6						W		W		W					BLANK

BLANK SPACES DENOTE RED OR DON'T WALK SIGNAL INDICATIONS
FY DENOTES FLASHING YELLOW

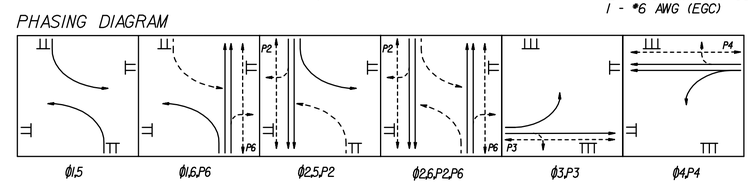
INITIAL TIMING CHART

PHASE	1	2	3	4	5	6	7	8
MOVEMENT	NB LEFT	SB THRU-RIGHT	EB	WB	SB LEFT	NB THRU-RIGHT		
PHASE ON	X	X	X	X	X	X		
PHASE OFF							X	X
MIN GR	5.0	15.0	5.0	8.0	5.0	15.0		
PASSAGE	3.0	3.0	3.0	3.0	3.0	3.0		
AMBER	3.5	4.5	3.0	3.0	3.5	4.5		
RED	2.5	2.0	3.0	3.0	2.5	2.0		
MAX 1	25.0	45.0	35.0	35.0	25.0	45.0		
MIN GAP	3.0	3.0	3.0	3.0	3.0	3.0		
PED WALK		7.0	7.0	7.0		7.0		
PED CLEARANCE		20.0	22.0	21.0		20.0		
MODE	NON LOCK LEAD	MIN-RECALL	10-SEC DELAY	10-SEC DELAY	NON LOCK LEAD	MIN-RECALL		

PREEMPTION PHASING DIAGRAM



PHASING DIAGRAM



Rev	Date	Description
#1	10-03-16	Addressed Pre-Bid Meeting comments

Whitman, Requardt & Associates, LLP
1700 Kraft Drive, Suite 1200, Blacksburg, Virginia 24060

Town of Blacksburg
300 South Main Street
Blacksburg, VA 24062

North Main Street at Patrick Henry Drive
Intersection Improvements

Work Order
45825-000

Drawing
Traffic Signal Plan

Sheet
T-4

North Main & Patrick Henry

Check/reset time clock
Check/verify standard Ring Structure
Input Traffic Events
Input Equate Data
Vehicle Recalls - Min for Phases 2 & 6
Lock/Non-Lock - Check settings
Check Dual Entry settings - 2, 6
Switch Phase: None
Detector Delay - 10 sec Phases 1,3,4,5

Coordination Settings							
OPER	MODE	MAX	CORR	OFST	FRCE	MX DWLL	YIELD
0 - FREE	0	0	0	0	0	0	0

	Clearance Intervals							
Phase	1 - NBL	2 - SBT	3 - WB	4 - EB	5 - SBL	6 - NBT	7 -	8 -
Min Green	5	15	8	8	5	15	X	X
Max1	25	45	35	35	25	45	X	X
Yellow	4.4	4.4	3.1	3.0	4.4	4.4	X	X
Red	2.6	2.6	2.4	2.6	2.6	2.6	X	X

	Pedestrian Clearance Intervals							
Phase	1 - NBL	2 - SBT	3 - WB	4 - EB	5 - SBL	6 - NBT	7 -	8 -
Walk	X	5	5	5	X	5	X	X
Flash D/W	X	15	15	17	X	15	X	X

APPENDIX C

APPROVED DEVELOPMENT DATA

4. Trip Generation

Trip generation for this study was based on the concept plan created by Balzer and Associates, Inc. (please see Appendix B) and information provided by the developer regarding the expected uses of the property. The policies and procedures found in the Institute of Transportation Engineers (ITE) *Trip Generation Manual, 10th Edition*, were employed to determine the potential site generated traffic volumes for the proposed development in the AM and PM peak hours.

For the off-campus student apartment use, trips were based on the total number of bedrooms. The projected trips were calculated using the equations and directional splits provided in the ITE Manual for student apartments over ½ mile from campus. The equations and directional splits are listed below:

Time Period:	Equation:	% Entering / % Exiting:
Weekday	T = 4.09(X) – 78.98	50% Enter / 50% Exit
AM Peak Hr of Adj. Traffic	T = 0.15(X) + 10.64	28% Enter / 72% Exit
PM Peak Hr of Adj. Traffic	T = 0.31(X) – 1.81	52% Enter / 48% Exit

			Trip Generation						
Land Use			AM Peak Hour			PM Peak Hour			Weekday
Proposed Development	ITE Code	Independent Variable	Enter	Exit	Total	Enter	Exit	Total	Total
Off Campus Student Apartments	225	215 Bedrooms	12	31	43	34	31	65	800

Table 4: Site-Generated Traffic

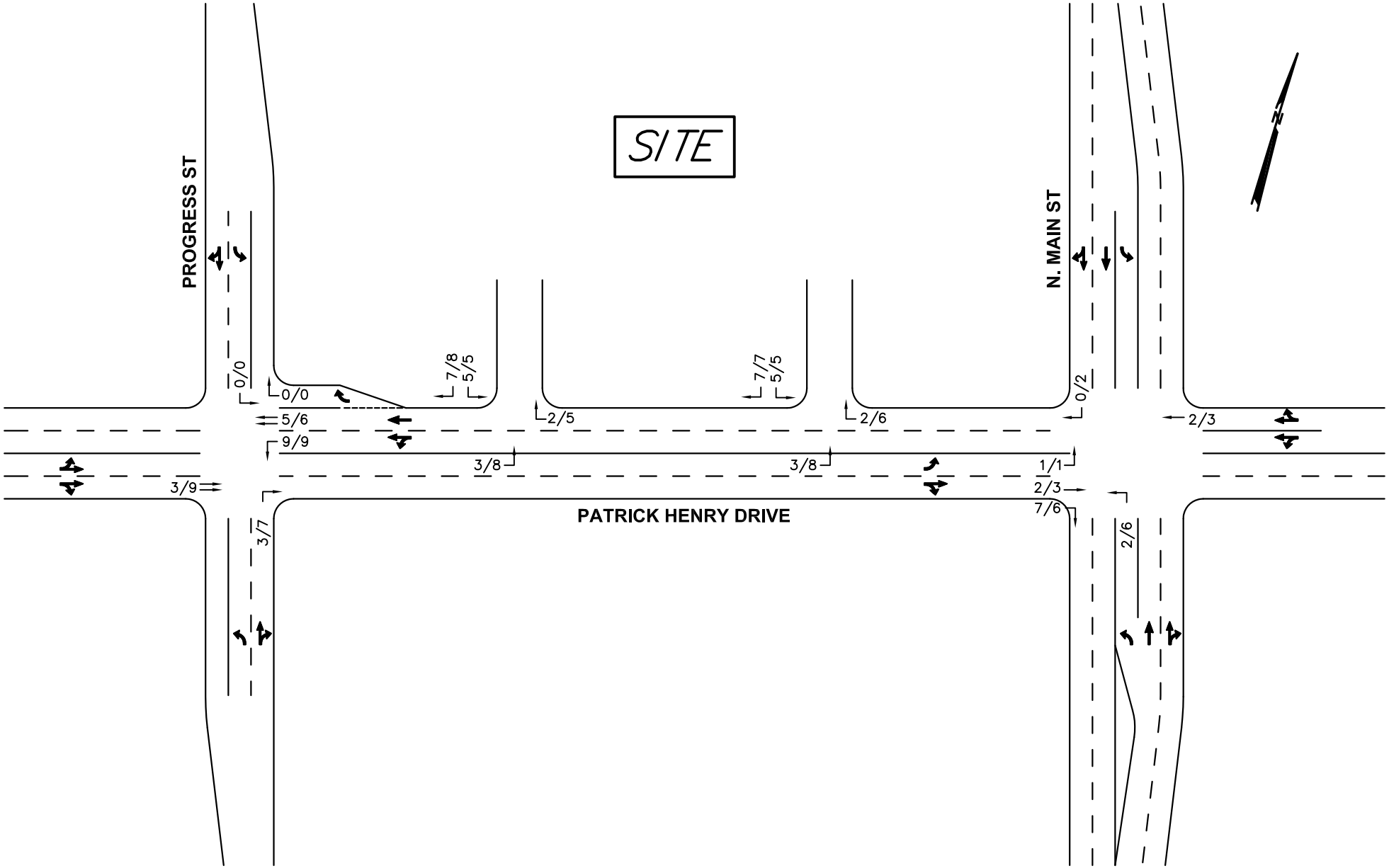
Based on knowledge of the area, it is anticipated that there will be significant usage of alternate means of transportation by residents of this development, including walking, bicycling, and bus via the Blacksburg Transit (BT). The BT is a particularly heavily used form of transportation, especially for trips to and from the Virginia Tech campus.

Based on discussions with the Town of Blacksburg, a 20% reduction has been applied to account for bus, pedestrian, and bicycle trips. Table 5 shows the site-generated trips with the 20% reduction.

			Trip Generation						
Land Use			AM Peak Hour			PM Peak Hour			Weekday
Proposed Development	ITE Code	Independent Variable	Enter	Exit	Total	Enter	Exit	Total	Total
Off Campus Student Apartments - Proposed	225	215 Bedrooms	10	24	34	27	25	52	640

Table 5: Site-Generated Traffic (With 20% Reduction)

FIGURE 4: SITE-GENERATED TRAFFIC



LEGEND

xx/xx: AM/PM Peak Hour Traffic

xx/xx: AM/PM Peak Hour Pedestrians

APPENDIX D

VDOT TURN LANE WARRANT CHARTS

HARDING AVENUE

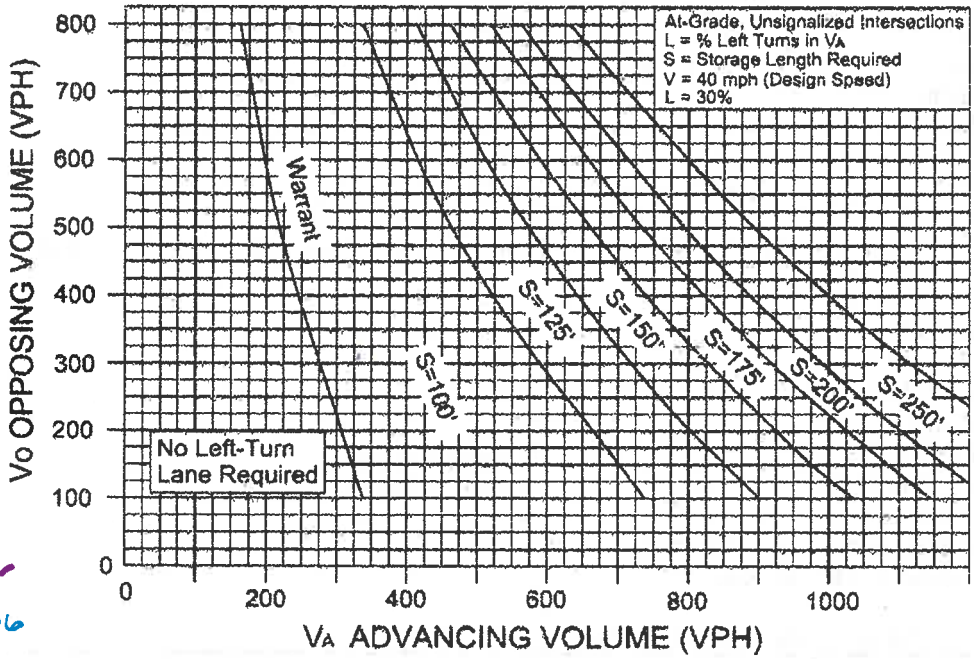
AT

PATRICK HENRY DRIVE

Harding Avenue

[EBL]

WARRANT FOR LEFT-TURN STORAGE LANES ON TWO-LANE HIGHWAY



AM EXISTING
PM EXISTING
AM BUILD
PM BUILD

FIGURE 3-9

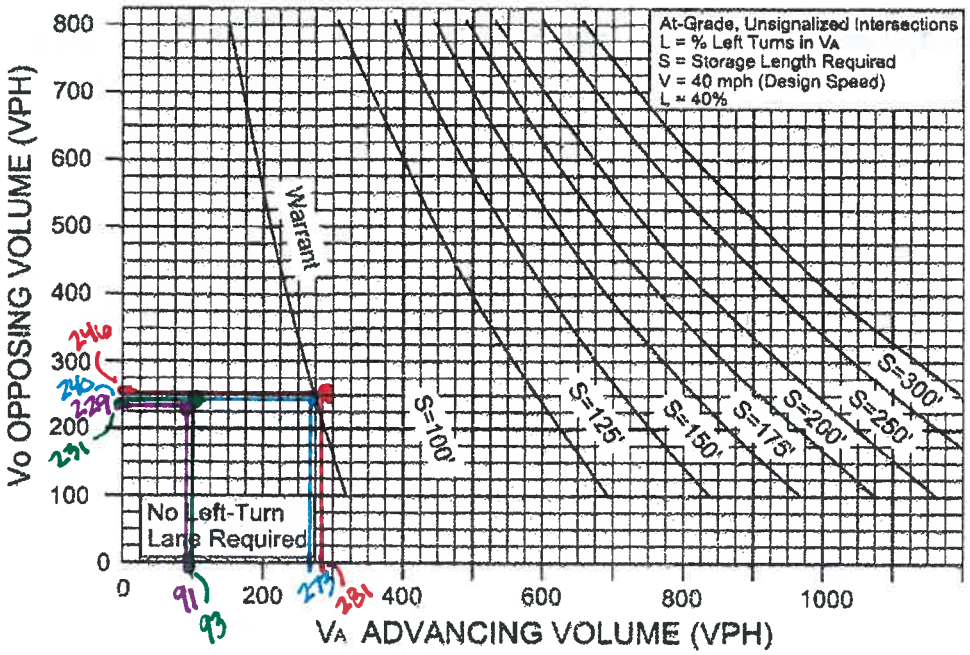
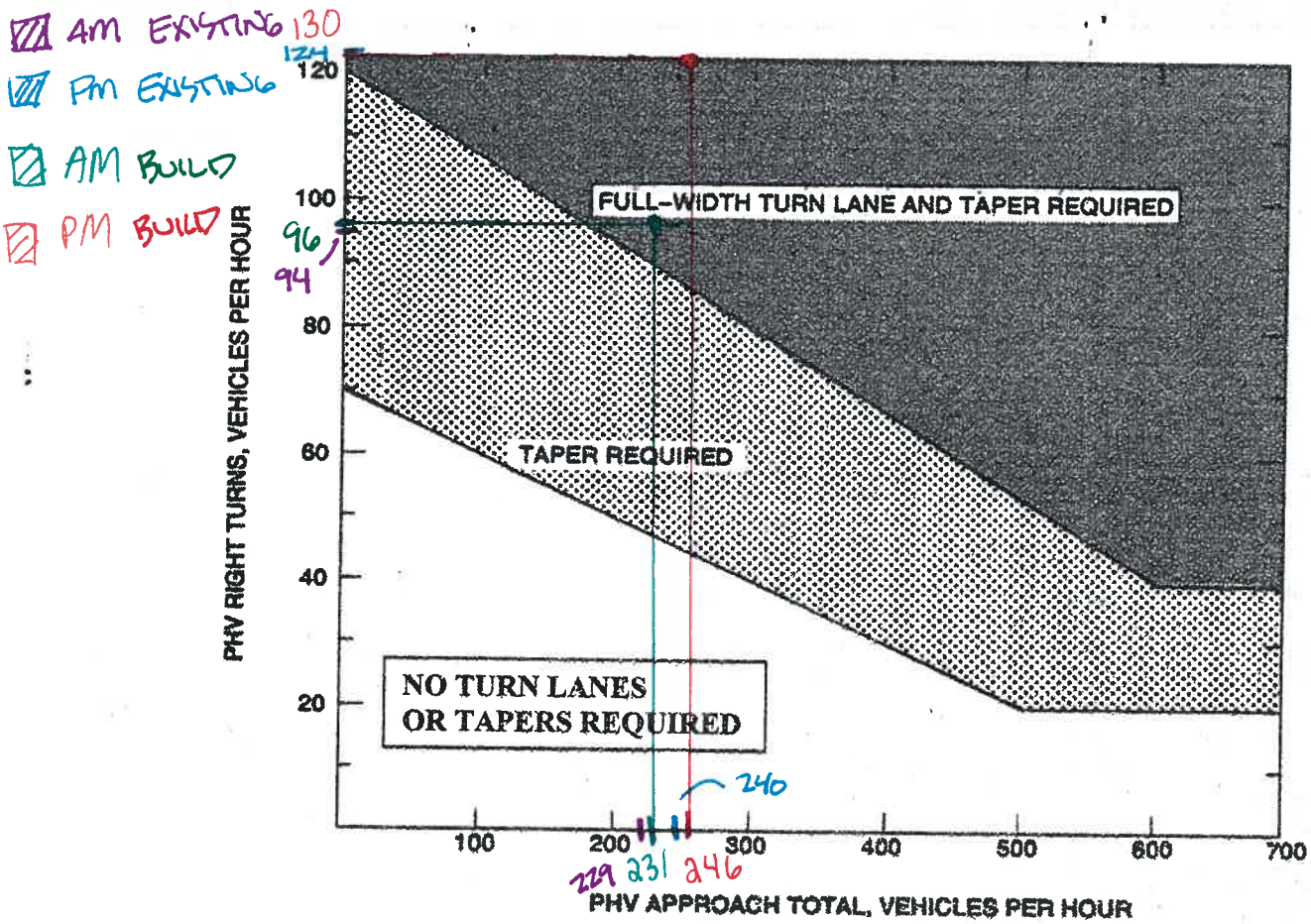


FIGURE 3-10

Harding Avenue

[WBR]



Appropriate Radius required at all Intersections and Entrances (Commercial or Private).

LEGEND

PHV - Peak Hour Volume (also Design Hourly Volume equivalent)

Adjustment for Right Turns

For posted speeds at or under 45 mph, PHV right turns > 40, and PHV total < 300.
Adjusted right turns = PHV Right Turns - 20
If PHV is not known use formula: PHV = ADT x K x D

K = the percent of AADT occurring in the peak hour
D = the percent of traffic in the peak direction of flow

Note: An average of 11% for K x D will suffice.

When right turn facilities are warranted, see Figure 3-1 for design criteria.

FIGURE 3-26 WARRANTS FOR RIGHT TURN TREATMENT (2-LANE HIGHWAY)

PATRICK HENRY DRIVE

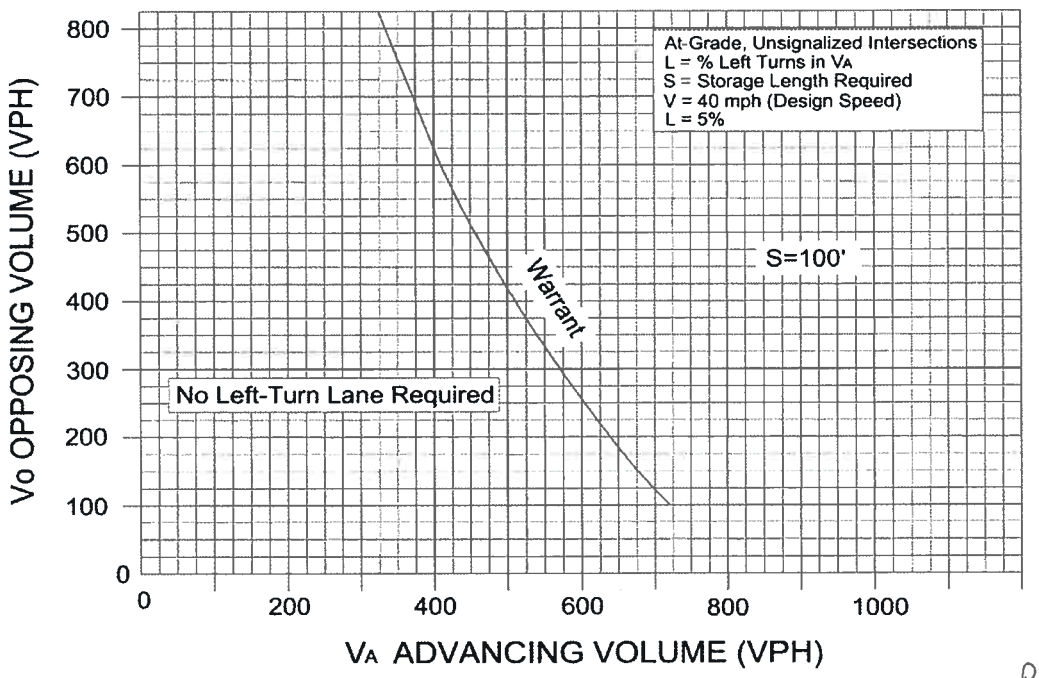
AT

GROVE AVENUE

GROVE AVENUE

[SBL]

WARRANT FOR LEFT-TURN STORAGE LANES ON TWO-LANE HIGHWAY

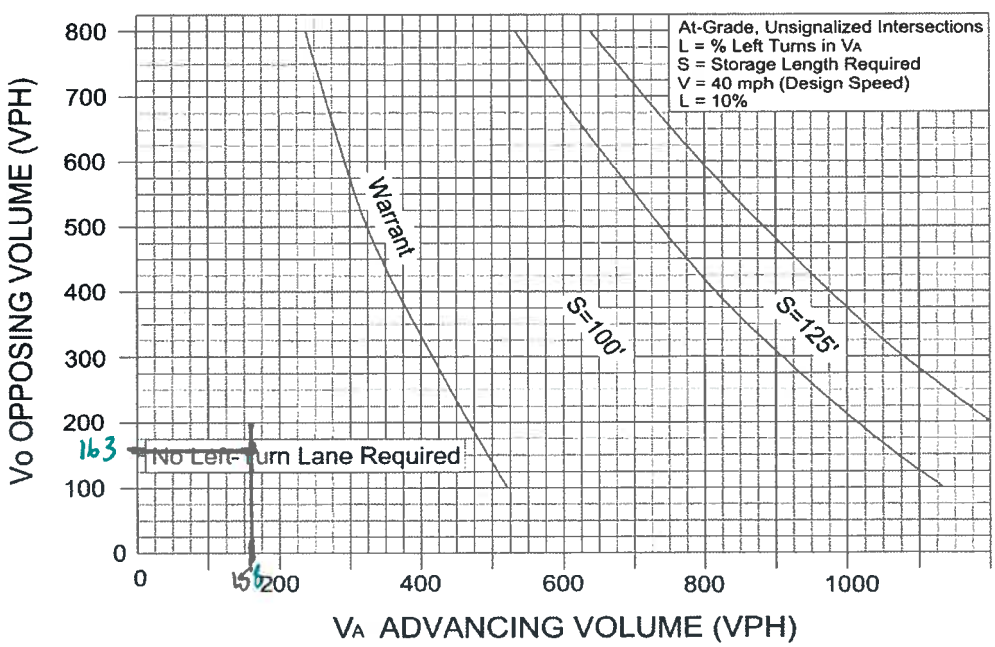


BUILD VOLUMES

FIGURE 3-5

AM

PM



13/158 = 8%

FIGURE 3-6

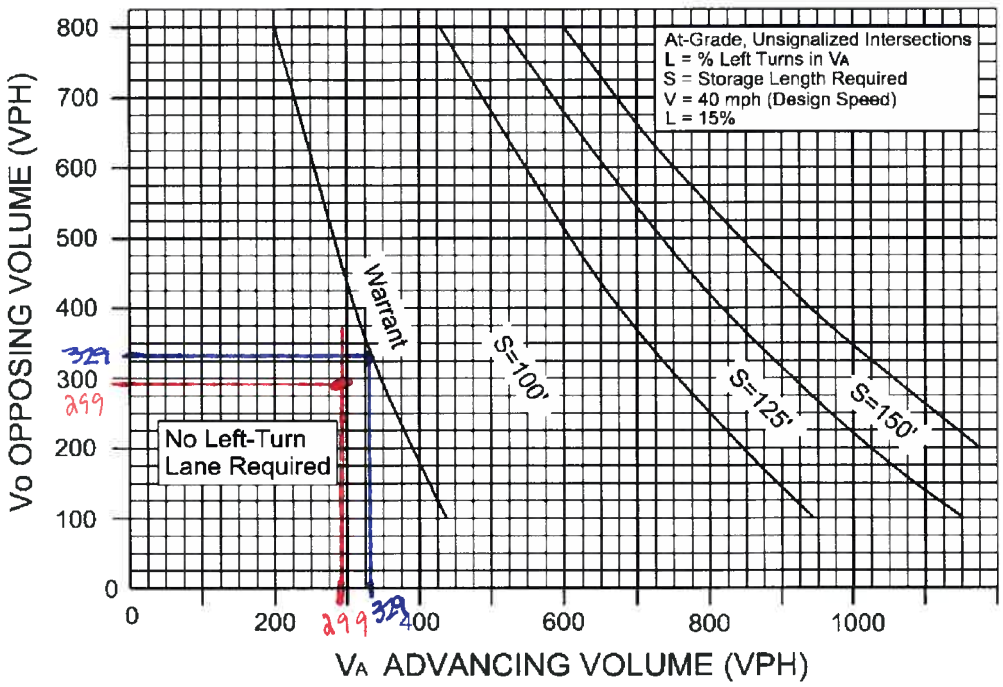
GROVE AVENUE

[SBL]

WARRANT FOR LEFT-TURN STORAGE LANES ON TWO-LANE HIGHWAY

PM

PM (with 10% added)



BUILD VOLUMES

41/299 = 14%

FIGURE 3-7

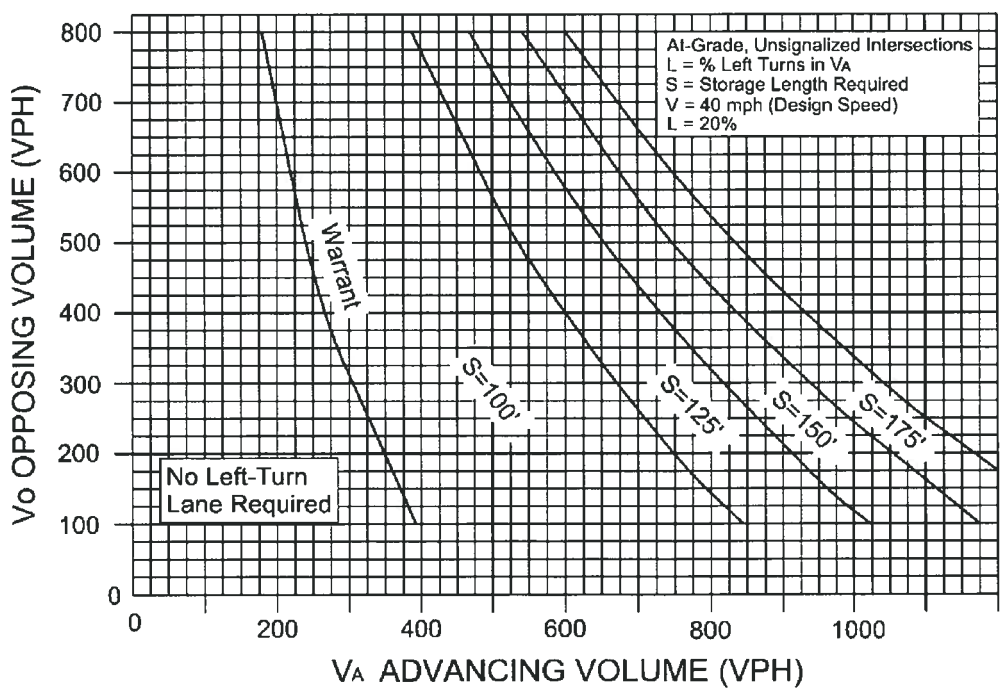
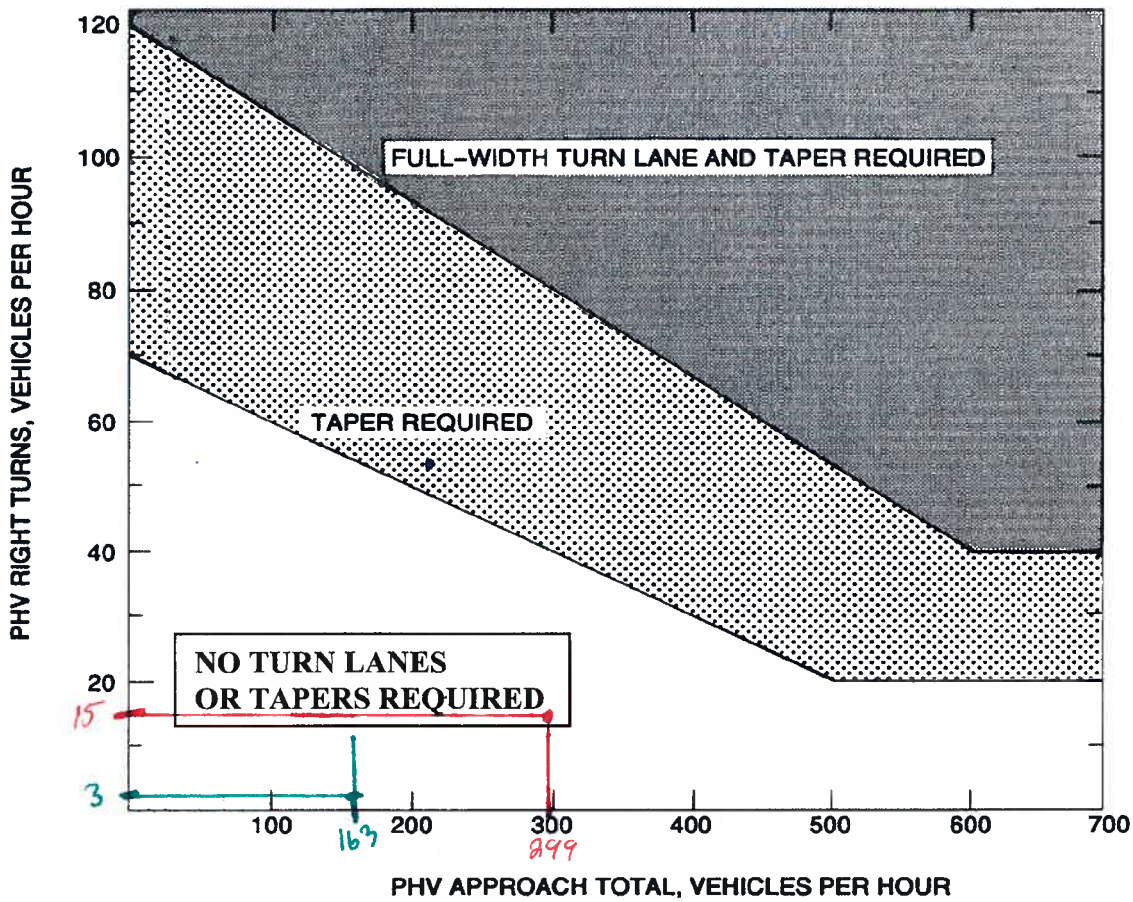


FIGURE 3-8

GROVE AVENUE

[NBR]

AM
PM



BUILD VOLUMES

Appropriate Radius required at all Intersections and Entrances (Commercial or Private).

LEGEND

PHV - Peak Hour Volume (also Design Hourly Volume equivalent)

Adjustment for Right Turns

For posted speeds at or under 45 mph, PHV right turns > 40, and PHV total < 300.
Adjusted right turns = PHV Right Turns - 20
If PHV is not known use formula: PHV = ADT x K x D

K = the percent of AADT occurring in the peak hour
D = the percent of traffic in the peak direction of flow

Note: An average of 11% for K x D will suffice.

When right turn facilities are warranted, see Figure 3-1 for design criteria.*

FIGURE 3-26 WARRANTS FOR RIGHT TURN TREATMENT (2-LANE HIGHWAY)

* Rev. 1/15

PATRICK HENRY DRIVE

AT

SITE ACCESS

SITE ACCESS

[SBL].

WARRANT FOR LEFT-TURN STORAGE LANES ON TWO-LANE HIGHWAY

AM
PM

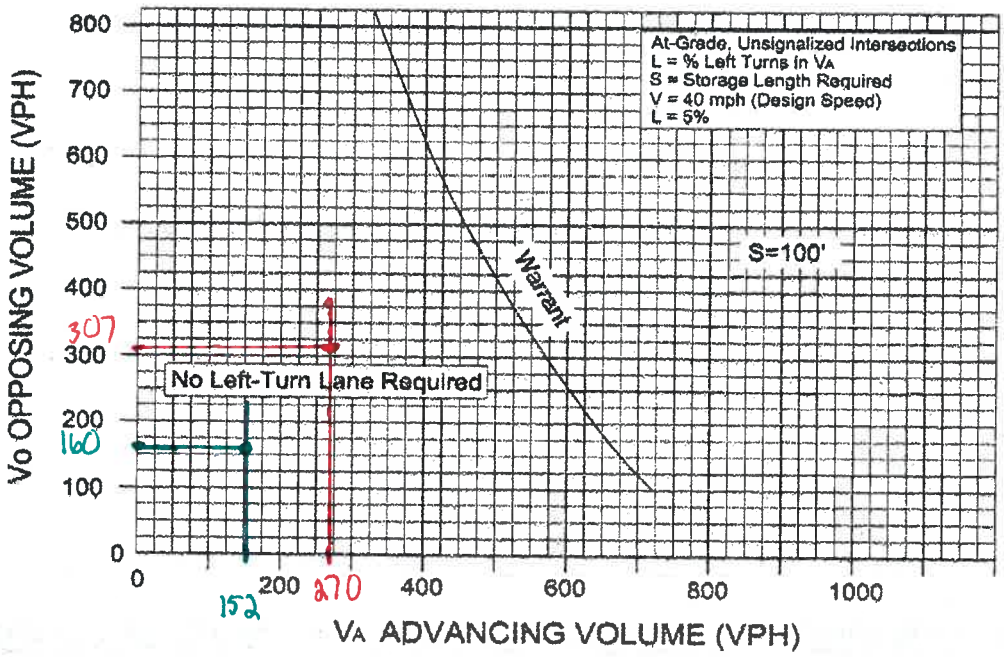


FIGURE 3-5

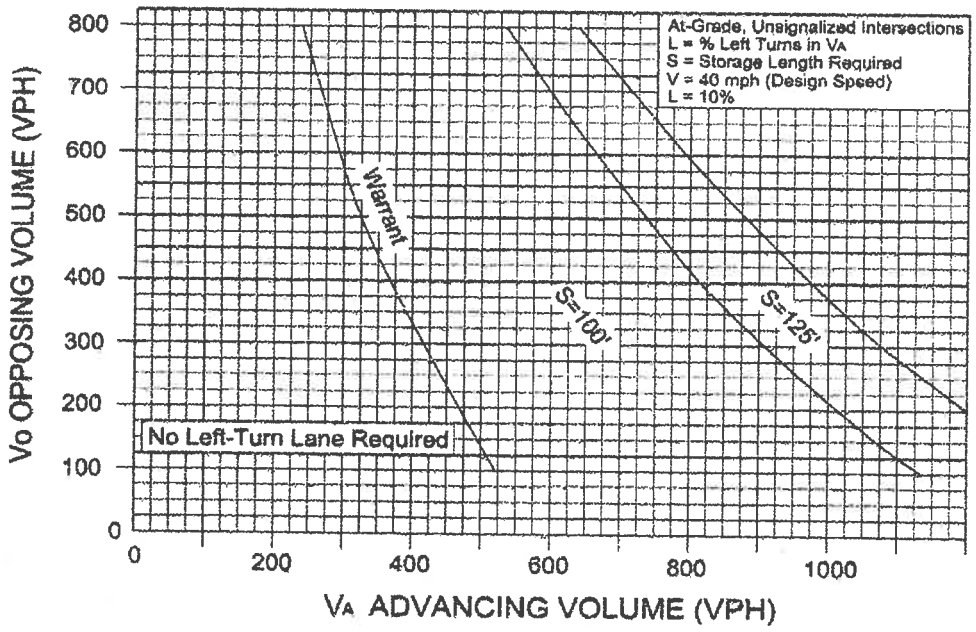
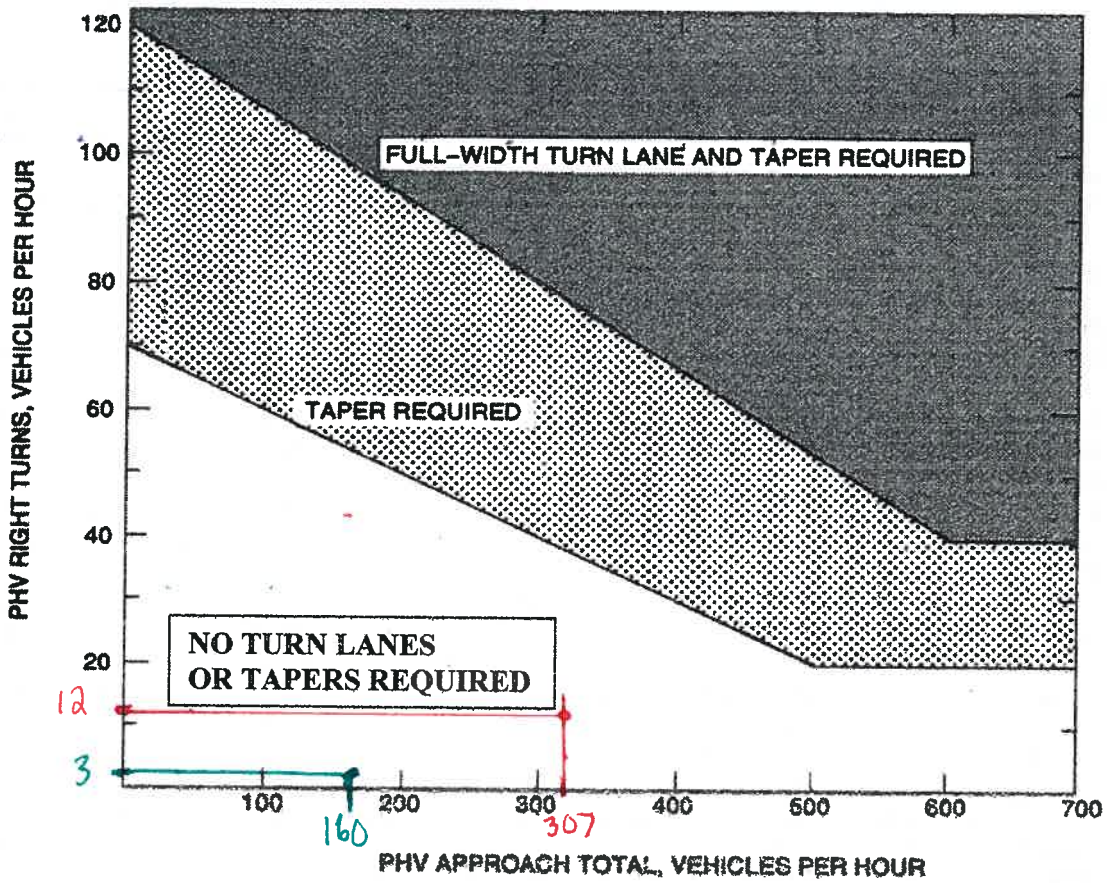


FIGURE 3-6

SITE ACCESS

[NBR]

☒ AM
☒ PM



Appropriate Radius required at all Intersections and Entrances (Commercial or Private).

LEGEND

PHV - Peak Hour Volume (also Design Hourly Volume equivalent)

Adjustment for Right Turns

For posted speeds at or under 45 mph, PHV right turns > 40, and PHV total < 300.
Adjusted right turns = PHV Right Turns - 20
If PHV is not known use formula: PHV = ADT x K x D

K = the percent of AADT occurring in the peak hour
D = the percent of traffic in the peak direction of flow

Note: An average of 11% for K x D will suffice.

When right turn facilities are warranted, see Figure 3-1 for design criteria.

FIGURE 3-26 WARRANTS FOR RIGHT TURN TREATMENT (2-LANE HIGHWAY)

APPENDIX E

CAPACITY ANALYSIS REPORTS

NORTH MAIN STREET

&

PATRICK HENRY DRIVE

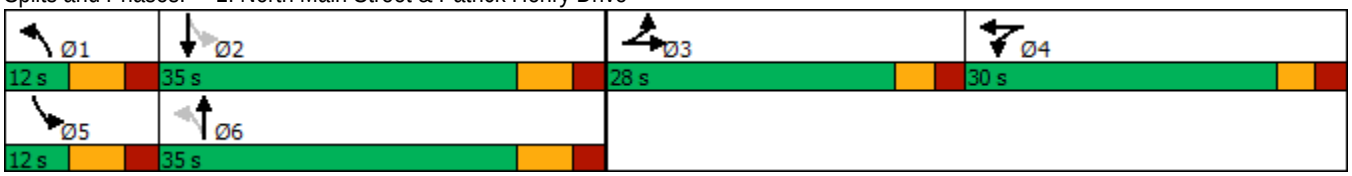
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	59	50	90	56	83	34	67	207	24	51	505	127
Future Volume (vph)	59	50	90	56	83	34	67	207	24	51	505	127
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	250		0	150		0	250		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			0			0			0		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor		0.97			1.00			1.00			1.00	
Frt		0.904			0.970			0.984			0.970	
Flt Protected	0.950				0.984		0.950			0.950		
Satd. Flow (prot)	1805	1664	0	0	3409	0	1805	3335	0	1805	3405	0
Flt Permitted	0.950				0.984		0.244			0.593		
Satd. Flow (perm)	1805	1664	0	0	3409	0	464	3335	0	1127	3405	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		79			27			12			30	
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		1843			1545			1034			1701	
Travel Time (s)		50.3			42.1			20.1			33.1	
Confl. Peds. (#/hr)			24			7			1			6
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%	0%	0%	2%	0%	0%	0%	7%	0%	0%	3%	0%
Adj. Flow (vph)	66	56	100	62	92	38	74	230	27	57	561	141
Shared Lane Traffic (%)												
Lane Group Flow (vph)	66	156	0	0	192	0	74	257	0	57	702	0
Turn Type	Split	NA		Split	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	3	3		4	4		1	6		5	2	
Permitted Phases							6			2		
Detector Phase	3	3		4	4		1	6		5	2	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		5.0	15.0		5.0	15.0	
Minimum Split (s)	28.0	28.0		30.0	30.0		12.0	35.0		12.0	35.0	
Total Split (s)	28.0	28.0		30.0	30.0		12.0	35.0		12.0	35.0	
Total Split (%)	26.7%	26.7%		28.6%	28.6%		11.4%	33.3%		11.4%	33.3%	
Yellow Time (s)	3.1	3.1		3.0	3.0		4.4	4.4		4.4	4.4	
All-Red Time (s)	2.4	2.4		2.6	2.6		2.6	2.6		2.6	2.6	
Lost Time Adjust (s)	-1.5	-1.5			-1.6		-3.0	-3.0		-3.0	-3.0	
Total Lost Time (s)	4.0	4.0			4.0		4.0	4.0		4.0	4.0	
Lead/Lag	Lead	Lead		Lag	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	Min		None	Min	
Act Effct Green (s)	14.1	14.1			12.9		31.5	27.2		30.6	24.5	
Actuated g/C Ratio	0.19	0.19			0.18		0.43	0.37		0.42	0.33	
v/c Ratio	0.19	0.41			0.31		0.21	0.21		0.10	0.61	
Control Delay	29.6	19.2			26.5		14.7	18.6		13.7	24.1	
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay	29.6	19.2			26.5		14.7	18.6		13.7	24.1	
LOS	C	B			C		B	B		B	C	
Approach Delay		22.3			26.5			17.7			23.3	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		C			C			B			C	
Queue Length 50th (ft)	25	29			33		15	37		11	120	
Queue Length 95th (ft)	71	98			75		55	93		45	257	
Internal Link Dist (ft)		1763			1465			954			1621	
Turn Bay Length (ft)							150			250		
Base Capacity (vph)	627	629			1299		354	1512		547	1544	
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	0.11	0.25			0.15		0.21	0.17		0.10	0.45	

Intersection Summary

Area Type: Other
Cycle Length: 105
Actuated Cycle Length: 73.4
Natural Cycle: 105
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.61
Intersection Signal Delay: 22.3 — Intersection LOS: C
Intersection Capacity Utilization 58.2% — ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 1: North Main Street & Patrick Henry Drive



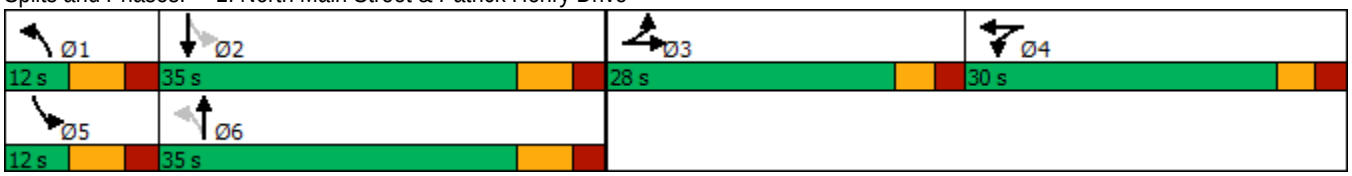
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	101	141	190	81	148	43	157	432	68	77	402	131
Future Volume (vph)	101	141	190	81	148	43	157	432	68	77	402	131
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	250		0	150		0	250		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			0			0			0		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor		0.98			1.00			1.00			1.00	
Frt		0.914			0.976			0.980			0.963	
Flt Protected	0.950				0.985		0.950			0.950		
Satd. Flow (prot)	1770	1679	0	0	3385	0	1805	3497	0	1805	3421	0
Flt Permitted	0.950				0.985		0.280			0.346		
Satd. Flow (perm)	1770	1679	0	0	3385	0	532	3497	0	657	3421	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		60			19			17			43	
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		1843			1545			1034			1701	
Travel Time (s)		50.3			42.1			20.1			33.1	
Confl. Peds. (#/hr)			19			7			1			2
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	2%	1%	1%	0%	4%	0%	0%	1%	0%	0%	1%	2%
Adj. Flow (vph)	109	152	204	87	159	46	169	465	73	83	432	141
Shared Lane Traffic (%)												
Lane Group Flow (vph)	109	356	0	0	292	0	169	538	0	83	573	0
Turn Type	Split	NA		Split	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	3	3		4	4		1	6		5	2	
Permitted Phases							6			2		
Detector Phase	3	3		4	4		1	6		5	2	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		5.0	15.0		5.0	15.0	
Minimum Split (s)	28.0	28.0		30.0	30.0		12.0	35.0		12.0	35.0	
Total Split (s)	28.0	28.0		30.0	30.0		12.0	35.0		12.0	35.0	
Total Split (%)	26.7%	26.7%		28.6%	28.6%		11.4%	33.3%		11.4%	33.3%	
Yellow Time (s)	3.1	3.1		3.0	3.0		4.4	4.4		4.4	4.4	
All-Red Time (s)	2.4	2.4		2.6	2.6		2.6	2.6		2.6	2.6	
Lost Time Adjust (s)	-1.5	-1.5			-1.6		-3.0	-3.0		-3.0	-3.0	
Total Lost Time (s)	4.0	4.0			4.0		4.0	4.0		4.0	4.0	
Lead/Lag	Lead	Lead		Lag	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	Min		None	Min	
Act Effct Green (s)	21.0	21.0			14.7		31.9	25.7		30.9	22.7	
Actuated g/C Ratio	0.25	0.25			0.18		0.38	0.31		0.37	0.27	
v/c Ratio	0.24	0.76			0.48		0.51	0.49		0.23	0.59	
Control Delay	28.4	36.8			32.2		23.4	26.5		18.2	27.6	
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay	28.4	36.8			32.2		23.4	26.5		18.2	27.6	
LOS	C	D			C		C	C		B	C	
Approach Delay		34.9			32.2			25.7			26.4	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		C			C			C			C	
Queue Length 50th (ft)	44	138			69		57	125		27	128	
Queue Length 95th (ft)	107	#334			119		116	200		63	206	
Internal Link Dist (ft)		1763			1465			954			1621	
Turn Bay Length (ft)							150			250		
Base Capacity (vph)	524	539			1099		330	1348		358	1335	
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	0.21	0.66			0.27		0.51	0.40		0.23	0.43	

Intersection Summary

Area Type: Other
Cycle Length: 105
Actuated Cycle Length: 82.9
Natural Cycle: 105
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.76
Intersection Signal Delay: 28.8 — Intersection LOS: C
Intersection Capacity Utilization 67.7% — ICU Level of Service C
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: North Main Street & Patrick Henry Drive



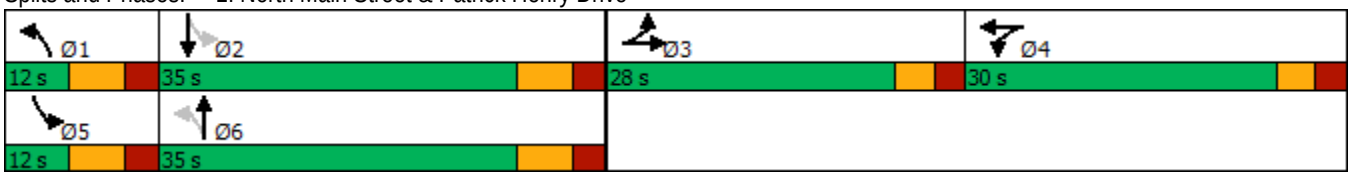
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	61	53	98	57	86	35	70	210	24	52	513	129
Future Volume (vph)	61	53	98	57	86	35	70	210	24	52	513	129
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	250		0	150		0	250		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			0			0			0		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor		0.97			1.00			1.00			1.00	
Frt		0.903			0.970			0.985			0.970	
Flt Protected	0.950				0.984		0.950			0.950		
Satd. Flow (prot)	1805	1661	0	0	3409	0	1805	3338	0	1805	3405	0
Flt Permitted	0.950				0.984		0.245			0.595		
Satd. Flow (perm)	1805	1661	0	0	3409	0	466	3338	0	1130	3405	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		82			27			12			30	
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		1843			1545			1034			1701	
Travel Time (s)		50.3			42.1			20.1			33.1	
Confl. Peds. (#/hr)			24			7			1			6
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	2%	0%	0%	0%	7%	0%	0%	3%	0%
Adj. Flow (vph)	66	58	107	62	93	38	76	228	26	57	558	140
Shared Lane Traffic (%)												
Lane Group Flow (vph)	66	165	0	0	193	0	76	254	0	57	698	0
Turn Type	Split	NA		Split	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	3	3		4	4		1	6		5	2	
Permitted Phases							6			2		
Detector Phase	3	3		4	4		1	6		5	2	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		5.0	15.0		5.0	15.0	
Minimum Split (s)	28.0	28.0		30.0	30.0		12.0	35.0		12.0	35.0	
Total Split (s)	28.0	28.0		30.0	30.0		12.0	35.0		12.0	35.0	
Total Split (%)	26.7%	26.7%		28.6%	28.6%		11.4%	33.3%		11.4%	33.3%	
Yellow Time (s)	3.1	3.1		3.0	3.0		4.4	4.4		4.4	4.4	
All-Red Time (s)	2.4	2.4		2.6	2.6		2.6	2.6		2.6	2.6	
Lost Time Adjust (s)	-1.5	-1.5			-1.6		-3.0	-3.0		-3.0	-3.0	
Total Lost Time (s)	4.0	4.0			4.0		4.0	4.0		4.0	4.0	
Lead/Lag	Lead	Lead		Lag	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	Min		None	Min	
Act Effct Green (s)	14.2	14.2			13.0		31.5	27.2		30.5	24.4	
Actuated g/C Ratio	0.19	0.19			0.18		0.43	0.37		0.41	0.33	
v/c Ratio	0.19	0.43			0.31		0.21	0.20		0.10	0.61	
Control Delay	29.6	19.7			26.5		14.8	18.7		13.8	24.1	
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay	29.6	19.7			26.5		14.8	18.7		13.8	24.1	
LOS	C	B			C		B	B		B	C	
Approach Delay		22.5			26.5			17.8			23.3	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		C			C			B			C	
Queue Length 50th (ft)	25	32			33		15	37		11	120	
Queue Length 95th (ft)	71	104			75		56	92		45	256	
Internal Link Dist (ft)		1763			1465			954			1621	
Turn Bay Length (ft)							150			250		
Base Capacity (vph)	626	630			1298		354	1511		547	1543	
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	0.11	0.26			0.15		0.21	0.17		0.10	0.45	

Intersection Summary

Area Type: Other
Cycle Length: 105
Actuated Cycle Length: 73.5
Natural Cycle: 105
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.61
Intersection Signal Delay: 22.4 — Intersection LOS: C
Intersection Capacity Utilization 58.8% — ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 1: North Main Street & Patrick Henry Drive



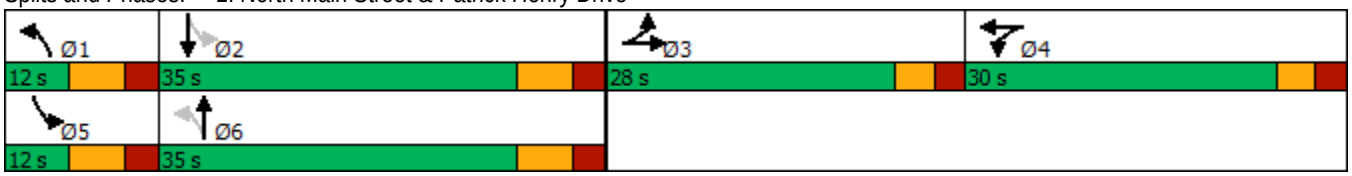
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	104	146	199	82	153	44	165	439	69	78	408	135
Future Volume (vph)	104	146	199	82	153	44	165	439	69	78	408	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	250		0	150		0	250		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			0			0			0		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor		0.98			1.00			1.00			1.00	
Frt		0.913			0.976			0.980			0.963	
Flt Protected	0.950				0.986		0.950			0.950		
Satd. Flow (prot)	1770	1677	0	0	3388	0	1805	3497	0	1805	3421	0
Flt Permitted	0.950				0.986		0.272			0.339		
Satd. Flow (perm)	1770	1677	0	0	3388	0	517	3497	0	644	3421	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		61			19			17			44	
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		1843			1545			1034			1701	
Travel Time (s)		50.3			42.1			20.1			33.1	
Confl. Peds. (#/hr)			19			7			1			2
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	2%	1%	1%	0%	4%	0%	0%	1%	0%	0%	1%	2%
Adj. Flow (vph)	112	157	214	88	165	47	177	472	74	84	439	145
Shared Lane Traffic (%)												
Lane Group Flow (vph)	112	371	0	0	300	0	177	546	0	84	584	0
Turn Type	Split	NA		Split	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	3	3		4	4		1	6		5	2	
Permitted Phases							6			2		
Detector Phase	3	3		4	4		1	6		5	2	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		5.0	15.0		5.0	15.0	
Minimum Split (s)	28.0	28.0		30.0	30.0		12.0	35.0		12.0	35.0	
Total Split (s)	28.0	28.0		30.0	30.0		12.0	35.0		12.0	35.0	
Total Split (%)	26.7%	26.7%		28.6%	28.6%		11.4%	33.3%		11.4%	33.3%	
Yellow Time (s)	3.1	3.1		3.0	3.0		4.4	4.4		4.4	4.4	
All-Red Time (s)	2.4	2.4		2.6	2.6		2.6	2.6		2.6	2.6	
Lost Time Adjust (s)	-1.5	-1.5			-1.6		-3.0	-3.0		-3.0	-3.0	
Total Lost Time (s)	4.0	4.0			4.0		4.0	4.0		4.0	4.0	
Lead/Lag	Lead	Lead		Lag	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	Min		None	Min	
Act Effct Green (s)	21.7	21.7			14.9		32.3	26.1		31.3	23.1	
Actuated g/C Ratio	0.26	0.26			0.18		0.38	0.31		0.37	0.27	
v/c Ratio	0.25	0.78			0.49		0.55	0.50		0.24	0.60	
Control Delay	28.6	38.3			32.8		24.8	26.8		18.4	28.0	
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay	28.6	38.3			32.8		24.8	26.8		18.4	28.0	
LOS	C	D			C		C	C		B	C	
Approach Delay		36.0			32.8			26.3			26.8	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		D			C			C			C	
Queue Length 50th (ft)	45	147			72		60	127		27	132	
Queue Length 95th (ft)	110	#357			122		121	203		64	210	
Internal Link Dist (ft)		1763			1465			954			1621	
Turn Bay Length (ft)							150			250		
Base Capacity (vph)	514	531			1080		323	1324		352	1312	
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	0.22	0.70			0.28		0.55	0.41		0.24	0.45	

Intersection Summary

Area Type: Other
Cycle Length: 105
Actuated Cycle Length: 84.1
Natural Cycle: 105
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.78
Intersection Signal Delay: 29.5 — Intersection LOS: C
Intersection Capacity Utilization 69.4% — ICU Level of Service C
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: North Main Street & Patrick Henry Drive



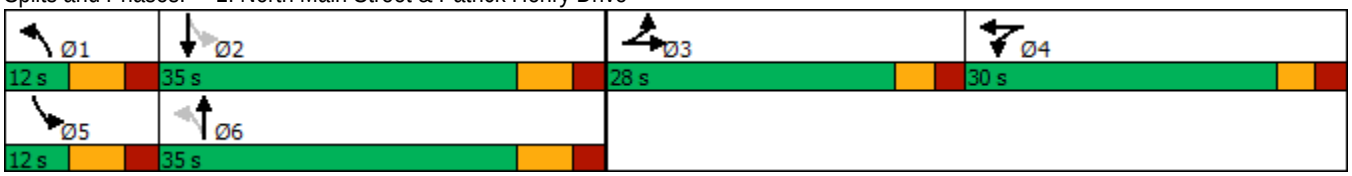
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	61	57	98	65	98	42	70	210	26	54	513	129
Future Volume (vph)	61	57	98	65	98	42	70	210	26	54	513	129
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	250		0	150		0	250		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			0			0			0		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor		0.97			1.00			1.00			1.00	
Frt		0.905			0.969			0.984			0.970	
Flt Protected	0.950				0.984		0.950			0.950		
Satd. Flow (prot)	1805	1666	0	0	3405	0	1805	3336	0	1805	3405	0
Flt Permitted	0.950				0.984		0.243			0.593		
Satd. Flow (perm)	1805	1666	0	0	3405	0	462	3336	0	1127	3405	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		77			29			13			30	
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		1843			1545			1034			1701	
Travel Time (s)		50.3			42.1			20.1			33.1	
Confl. Peds. (#/hr)			24			7			1			6
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	2%	0%	0%	0%	7%	0%	0%	3%	0%
Adj. Flow (vph)	66	62	107	71	107	46	76	228	28	59	558	140
Shared Lane Traffic (%)												
Lane Group Flow (vph)	66	169	0	0	224	0	76	256	0	59	698	0
Turn Type	Split	NA		Split	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	3	3		4	4		1	6		5	2	
Permitted Phases							6			2		
Detector Phase	3	3		4	4		1	6		5	2	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		5.0	15.0		5.0	15.0	
Minimum Split (s)	28.0	28.0		30.0	30.0		12.0	35.0		12.0	35.0	
Total Split (s)	28.0	28.0		30.0	30.0		12.0	35.0		12.0	35.0	
Total Split (%)	26.7%	26.7%		28.6%	28.6%		11.4%	33.3%		11.4%	33.3%	
Yellow Time (s)	3.1	3.1		3.0	3.0		4.4	4.4		4.4	4.4	
All-Red Time (s)	2.4	2.4		2.6	2.6		2.6	2.6		2.6	2.6	
Lost Time Adjust (s)	-1.5	-1.5			-1.6		-3.0	-3.0		-3.0	-3.0	
Total Lost Time (s)	4.0	4.0			4.0		4.0	4.0		4.0	4.0	
Lead/Lag	Lead	Lead		Lag	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	Min		None	Min	
Act Effct Green (s)	14.3	14.3			13.4		31.6	27.4		30.6	24.6	
Actuated g/C Ratio	0.19	0.19			0.18		0.43	0.37		0.41	0.33	
v/c Ratio	0.19	0.44			0.35		0.22	0.21		0.11	0.61	
Control Delay	29.8	21.0			27.0		15.0	18.8		14.0	24.3	
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay	29.8	21.0			27.0		15.0	18.8		14.0	24.3	
LOS	C	C			C		B	B		B	C	
Approach Delay		23.5			27.0			17.9			23.5	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		C			C			B			C	
Queue Length 50th (ft)	25	36			40		16	38		12	124	
Queue Length 95th (ft)	71	110			86		56	93		46	256	
Internal Link Dist (ft)		1763			1465			954			1621	
Turn Bay Length (ft)							150			250		
Base Capacity (vph)	621	623			1288		351	1501		543	1531	
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	0.11	0.27			0.17		0.22	0.17		0.11	0.46	

Intersection Summary

Area Type: Other
Cycle Length: 105
Actuated Cycle Length: 74.1
Natural Cycle: 105
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.61
Intersection Signal Delay: 22.8 — Intersection LOS: C
Intersection Capacity Utilization 58.9% — ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 1: North Main Street & Patrick Henry Drive



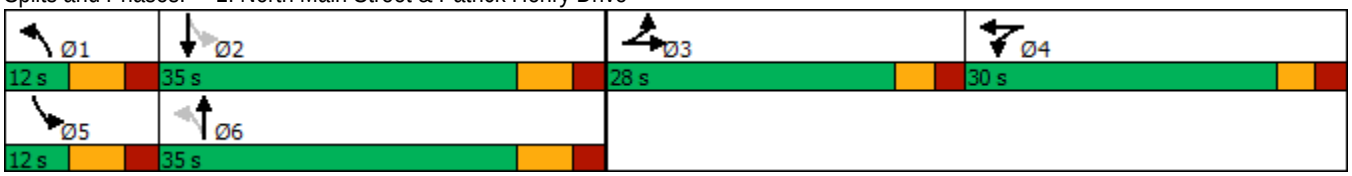
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	104	158	199	87	160	48	165	439	77	85	408	135
Future Volume (vph)	104	158	199	87	160	48	165	439	77	85	408	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	250		0	150		0	250		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			0			0			0		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor		0.98			1.00			1.00			1.00	
Frt		0.916			0.975			0.978			0.963	
Flt Protected	0.950				0.985		0.950			0.950		
Satd. Flow (prot)	1770	1683	0	0	3381	0	1805	3489	0	1805	3421	0
Flt Permitted	0.950				0.985		0.268			0.328		
Satd. Flow (perm)	1770	1683	0	0	3381	0	509	3489	0	623	3421	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		56			21			19			44	
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		1843			1545			1034			1701	
Travel Time (s)		50.3			42.1			20.1			33.1	
Confl. Peds. (#/hr)			19			7			1			2
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	2%	1%	1%	0%	4%	0%	0%	1%	0%	0%	1%	2%
Adj. Flow (vph)	112	170	214	94	172	52	177	472	83	91	439	145
Shared Lane Traffic (%)												
Lane Group Flow (vph)	112	384	0	0	318	0	177	555	0	91	584	0
Turn Type	Split	NA		Split	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	3	3		4	4		1	6		5	2	
Permitted Phases							6			2		
Detector Phase	3	3		4	4		1	6		5	2	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		5.0	15.0		5.0	15.0	
Minimum Split (s)	28.0	28.0		30.0	30.0		12.0	35.0		12.0	35.0	
Total Split (s)	28.0	28.0		30.0	30.0		12.0	35.0		12.0	35.0	
Total Split (%)	26.7%	26.7%		28.6%	28.6%		11.4%	33.3%		11.4%	33.3%	
Yellow Time (s)	3.1	3.1		3.0	3.0		4.4	4.4		4.4	4.4	
All-Red Time (s)	2.4	2.4		2.6	2.6		2.6	2.6		2.6	2.6	
Lost Time Adjust (s)	-1.5	-1.5			-1.6		-3.0	-3.0		-3.0	-3.0	
Total Lost Time (s)	4.0	4.0			4.0		4.0	4.0		4.0	4.0	
Lead/Lag	Lead	Lead		Lag	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	Min		None	Min	
Act Effct Green (s)	22.4	22.4			15.2		32.3	26.1		31.3	23.2	
Actuated g/C Ratio	0.26	0.26			0.18		0.38	0.31		0.37	0.27	
v/c Ratio	0.24	0.80			0.51		0.56	0.51		0.27	0.61	
Control Delay	28.6	40.1			33.2		25.5	27.3		19.0	28.4	
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay	28.6	40.1			33.2		25.5	27.3		19.0	28.4	
LOS	C	D			C		C	C		B	C	
Approach Delay		37.5			33.2			26.8			27.2	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		D			C			C			C	
Queue Length 50th (ft)	46	159			76		61	131		30	133	
Queue Length 95th (ft)	110	#382			128		121	206		68	210	
Internal Link Dist (ft)		1763			1465			954			1621	
Turn Bay Length (ft)							150			250		
Base Capacity (vph)	506	521			1063		316	1302		341	1292	
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	0.22	0.74			0.30		0.56	0.43		0.27	0.45	

Intersection Summary

Area Type: Other
Cycle Length: 105
Actuated Cycle Length: 85.2
Natural Cycle: 105
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.80
Intersection Signal Delay: 30.2 — Intersection LOS: C
Intersection Capacity Utilization 70.3% — ICU Level of Service C
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: North Main Street & Patrick Henry Drive



HARDING AVENUE

&

PATRICK HENRY DRIVE

Intersection	
Int Delay, s/veh	4.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	45	43	133	92	41	98
Future Vol, veh/h	45	43	133	92	41	98
Conflicting Peds, #/hr	11	0	0	11	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	81	81	81	81	81	81
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	56	53	164	114	51	121

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	289	0	-	0	397	232
Stage 1	-	-	-	-	232	-
Stage 2	-	-	-	-	165	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1284	-	-	-	612	812
Stage 1	-	-	-	-	811	-
Stage 2	-	-	-	-	869	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1271	-	-	-	573	803
Mov Cap-2 Maneuver	-	-	-	-	573	-
Stage 1	-	-	-	-	766	-
Stage 2	-	-	-	-	860	-

Approach	EB	WB	SB
HCM Control Delay, s	4.1	0	11.6
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1271	-	-	-	718
HCM Lane V/C Ratio	0.044	-	-	-	0.239
HCM Control Delay (s)	8	0	-	-	11.6
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.9

Intersection	
Int Delay, s/veh	7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	133	134	114	121	131	83
Future Vol, veh/h	133	134	114	121	131	83
Conflicting Peds, #/hr	12	0	0	12	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	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	141	143	121	129	139	88

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	262	0	-	0	623	198
Stage 1	-	-	-	-	198	-
Stage 2	-	-	-	-	425	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1314	-	-	-	453	848
Stage 1	-	-	-	-	840	-
Stage 2	-	-	-	-	664	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1299	-	-	-	391	838
Mov Cap-2 Maneuver	-	-	-	-	391	-
Stage 1	-	-	-	-	732	-
Stage 2	-	-	-	-	657	-

Approach	EB	WB	SB
HCM Control Delay, s	4	0	18.4
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1299	-	-	-	493
HCM Lane V/C Ratio	0.109	-	-	-	0.462
HCM Control Delay (s)	8.1	0	-	-	18.4
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.4	-	-	-	2.4

Intersection						
Int Delay, s/veh	4.2					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	47	44	135	94	43	100
Future Vol, veh/h	47	44	135	94	43	100
Conflicting Peds, #/hr	11	0	0	11	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	51	48	147	102	47	109

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	260	0	-	0	359	209
Stage 1	-	-	-	-	209	-
Stage 2	-	-	-	-	150	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1316	-	-	-	644	836
Stage 1	-	-	-	-	831	-
Stage 2	-	-	-	-	883	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1302	-	-	-	606	827
Mov Cap-2 Maneuver	-	-	-	-	606	-
Stage 1	-	-	-	-	789	-
Stage 2	-	-	-	-	874	-

Approach	EB	WB	SB
HCM Control Delay, s	4.1	0	11.1
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1302	-	-	-	745
HCM Lane V/C Ratio	0.039	-	-	-	0.209
HCM Control Delay (s)	7.9	0	-	-	11.1
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.8

Intersection						
Int Delay, s/veh	7.3					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	137	136	116	124	135	85
Future Vol, veh/h	137	136	116	124	135	85
Conflicting Peds, #/hr	12	0	0	12	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	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	146	145	123	132	144	90

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	267	0	-	0	638	201
Stage 1	-	-	-	-	201	-
Stage 2	-	-	-	-	437	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1308	-	-	-	444	845
Stage 1	-	-	-	-	838	-
Stage 2	-	-	-	-	655	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1293	-	-	-	381	835
Mov Cap-2 Maneuver	-	-	-	-	381	-
Stage 1	-	-	-	-	727	-
Stage 2	-	-	-	-	648	-

Approach	EB	WB	SB
HCM Control Delay, s	4.1	0	19.3
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1293	-	-	-	482
HCM Lane V/C Ratio	0.113	-	-	-	0.486
HCM Control Delay (s)	8.1	0	-	-	19.3
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.4	-	-	-	2.6

Intersection	
Int Delay, s/veh	4.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	49	44	135	96	49	108
Future Vol, veh/h	49	44	135	96	49	108
Conflicting Peds, #/hr	11	0	0	11	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	53	48	147	104	53	117

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	262	0	-	0	364	210
Stage 1	-	-	-	-	210	-
Stage 2	-	-	-	-	154	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1314	-	-	-	639	835
Stage 1	-	-	-	-	830	-
Stage 2	-	-	-	-	879	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1300	-	-	-	600	826
Mov Cap-2 Maneuver	-	-	-	-	600	-
Stage 1	-	-	-	-	787	-
Stage 2	-	-	-	-	870	-

Approach	EB	WB	SB
HCM Control Delay, s	4.2	0	11.3
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1300	-	-	-	739
HCM Lane V/C Ratio	0.041	-	-	-	0.231
HCM Control Delay (s)	7.9	0	-	-	11.3
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.9

Intersection	
Int Delay, s/veh	7.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	145	136	116	130	139	89
Future Vol, veh/h	145	136	116	130	139	89
Conflicting Peds, #/hr	12	0	0	12	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	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	154	145	123	138	148	95

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	273	0	-	0	657	204
Stage 1	-	-	-	-	204	-
Stage 2	-	-	-	-	453	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1302	-	-	-	433	842
Stage 1	-	-	-	-	835	-
Stage 2	-	-	-	-	645	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1287	-	-	-	368	832
Mov Cap-2 Maneuver	-	-	-	-	368	-
Stage 1	-	-	-	-	718	-
Stage 2	-	-	-	-	638	-

Approach	EB	WB	SB
HCM Control Delay, s	4.2	0	20.5
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1287	-	-	-	470
HCM Lane V/C Ratio	0.12	-	-	-	0.516
HCM Control Delay (s)	8.2	0	-	-	20.5
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.4	-	-	-	2.9

PATRICK HENRY DRIVE

&

GROVE AVENUE

Intersection						
Int Delay, s/veh	0.8					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	14	150	2	7	139
Future Vol, veh/h	5	14	150	2	7	139
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	81	81	81	81	81	81
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	6	17	185	2	9	172

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	376	186	0	0	187	0
Stage 1	186	-	-	-	-	-
Stage 2	190	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	629	861	-	-	1399	-
Stage 1	851	-	-	-	-	-
Stage 2	847	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	625	861	-	-	1399	-
Mov Cap-2 Maneuver	625	-	-	-	-	-
Stage 1	845	-	-	-	-	-
Stage 2	847	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.7	0	0.4
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	783	1399	-
HCM Lane V/C Ratio	-	-	0.03	0.006	-
HCM Control Delay (s)	-	-	9.7	7.6	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	0.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	11	18	273	13	20	245
Future Vol, veh/h	11	18	273	13	20	245
Conflicting Peds, #/hr	0	1	0	15	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	0	0	1	8	0	0
Mvmt Flow	12	20	307	15	22	275

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	649	331	0	0	337	0
Stage 1	330	-	-	-	-	-
Stage 2	319	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	438	715	-	-	1234	-
Stage 1	733	-	-	-	-	-
Stage 2	741	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	423	704	-	-	1216	-
Mov Cap-2 Maneuver	423	-	-	-	-	-
Stage 1	707	-	-	-	-	-
Stage 2	741	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.8	0	0.6
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	562	1216	-
HCM Lane V/C Ratio	-	-	0.058	0.018	-
HCM Control Delay (s)	-	-	11.8	8	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0.1	-

Intersection						
Int Delay, s/veh	0.7					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	14	154	2	7	143
Future Vol, veh/h	5	14	154	2	7	143
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	5	15	167	2	8	155

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	339	168	0	0	169	0
Stage 1	168	-	-	-	-	-
Stage 2	171	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	661	881	-	-	1421	-
Stage 1	867	-	-	-	-	-
Stage 2	864	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	657	881	-	-	1421	-
Mov Cap-2 Maneuver	657	-	-	-	-	-
Stage 1	862	-	-	-	-	-
Stage 2	864	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.6	0	0.4
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	808	1421	-
HCM Lane V/C Ratio	-	-	0.026	0.005	-
HCM Control Delay (s)	-	-	9.6	7.5	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection						
Int Delay, s/veh	0.8					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	11	18	280	13	20	252
Future Vol, veh/h	11	18	280	13	20	252
Conflicting Peds, #/hr	0	1	0	15	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	1	8	0	0
Mvmt Flow	12	20	304	14	22	274

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	644	327	0	0	333	0
Stage 1	326	-	-	-	-	-
Stage 2	318	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	440	719	-	-	1238	-
Stage 1	736	-	-	-	-	-
Stage 2	742	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	425	708	-	-	1220	-
Mov Cap-2 Maneuver	425	-	-	-	-	-
Stage 1	710	-	-	-	-	-
Stage 2	742	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.7	0	0.6
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	565	1220	-
HCM Lane V/C Ratio	-	-	0.056	0.018	-
HCM Control Delay (s)	-	-	11.7	8	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0.1	-

Intersection						
Int Delay, s/veh	1.4					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	7	35	160	3	13	145
Future Vol, veh/h	7	35	160	3	13	145
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	8	38	174	3	14	158

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	362	176	0	0	177	0
Stage 1	176	-	-	-	-	-
Stage 2	186	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	641	872	-	-	1411	-
Stage 1	859	-	-	-	-	-
Stage 2	851	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	634	872	-	-	1411	-
Mov Cap-2 Maneuver	634	-	-	-	-	-
Stage 1	850	-	-	-	-	-
Stage 2	851	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.6	0	0.6
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	821	1411	-
HCM Lane V/C Ratio	-	-	0.056	0.01	-
HCM Control Delay (s)	-	-	9.6	7.6	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0	-

Intersection	
Int Delay, s/veh	1.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	12	30	284	15	41	258
Future Vol, veh/h	12	30	284	15	41	258
Conflicting Peds, #/hr	0	1	0	15	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	1	8	0	0
Mvmt Flow	13	33	309	16	45	280

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	702	333	0	0	340	0
Stage 1	332	-	-	-	-	-
Stage 2	370	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	407	713	-	-	1230	-
Stage 1	731	-	-	-	-	-
Stage 2	703	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	384	702	-	-	1212	-
Mov Cap-2 Maneuver	384	-	-	-	-	-
Stage 1	689	-	-	-	-	-
Stage 2	703	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.9	0	1.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	568	1212	-
HCM Lane V/C Ratio	-	-	0.08	0.037	-
HCM Control Delay (s)	-	-	11.9	8.1	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.3	0.1	-

PATRICK HENRY DRIVE

&

SITE ACCESS

Intersection						
Int Delay, s/veh	0.6					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	12	6	157	3	2	150
Future Vol, veh/h	12	6	157	3	2	150
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	13	7	171	3	2	163

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	340	173	0	0	174	0
Stage 1	173	-	-	-	-	-
Stage 2	167	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	656	871	-	-	1403	-
Stage 1	857	-	-	-	-	-
Stage 2	863	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	655	871	-	-	1403	-
Mov Cap-2 Maneuver	655	-	-	-	-	-
Stage 1	855	-	-	-	-	-
Stage 2	863	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.2	0	0.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	714	1403	-
HCM Lane V/C Ratio	-	-	0.027	0.002	-
HCM Control Delay (s)	-	-	10.2	7.6	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection						
Int Delay, s/veh	0.3					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	7	4	295	12	6	264
Future Vol, veh/h	7	4	295	12	6	264
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	4	321	13	7	287

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	629	328	0	0	334	0
Stage 1	328	-	-	-	-	-
Stage 2	301	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	446	713	-	-	1225	-
Stage 1	730	-	-	-	-	-
Stage 2	751	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	443	713	-	-	1225	-
Mov Cap-2 Maneuver	443	-	-	-	-	-
Stage 1	725	-	-	-	-	-
Stage 2	751	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.2	0	0.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	514	1225	-
HCM Lane V/C Ratio	-	-	0.023	0.005	-
HCM Control Delay (s)	-	-	12.2	8	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

APPENDIX F

QUEUING ANALYSIS REPORTS

EXISTING (2019) CONDITIONS

Intersection: 1: North Main Street & Patrick Henry Drive

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	LT	TR	L	T	TR	L	T	TR
Maximum Queue (ft)	95	122	96	104	78	136	91	91	214	224
Average Queue (ft)	34	51	43	52	35	59	29	28	112	109
95th Queue (ft)	77	94	80	90	62	109	69	69	184	189
Link Distance (ft)	1792	1792		1477		1003	1003		1650	1650
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)			250		150			250		
Storage Blk Time (%)						0			0	
Queuing Penalty (veh)						0			0	

Intersection: 2: Harding Avenue & Patrick Henry Drive

Movement	EB	WB	SB
Directions Served	LT	TR	LR
Maximum Queue (ft)	54	8	89
Average Queue (ft)	13	0	50
95th Queue (ft)	43	6	77
Link Distance (ft)	1515	1364	2502
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 3: Patrick Henry Drive & Grove Avenue

Movement	WB	SB
Directions Served	LR	LT
Maximum Queue (ft)	23	28
Average Queue (ft)	7	1
95th Queue (ft)	22	13
Link Distance (ft)	1494	1477
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 0

Intersection: 1: North Main Street & Patrick Henry Drive

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	LT	TR	L	T	TR	L	T	TR
Maximum Queue (ft)	151	350	146	141	149	225	187	100	189	199
Average Queue (ft)	59	175	71	80	82	120	95	40	113	111
95th Queue (ft)	119	304	124	127	145	191	165	78	175	182
Link Distance (ft)	1792	1792		1477		1003	1003		1650	1650
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)			250		150			250		
Storage Blk Time (%)					0	3			0	
Queuing Penalty (veh)					1	4			0	

Intersection: 2: Harding Avenue & Patrick Henry Drive

Movement	EB	WB	SB
Directions Served	LT	TR	LR
Maximum Queue (ft)	99	22	136
Average Queue (ft)	32	1	66
95th Queue (ft)	78	12	109
Link Distance (ft)	1515	1364	2502
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 3: Patrick Henry Drive & Grove Avenue

Movement	WB	NB	SB
Directions Served	LR	TR	LT
Maximum Queue (ft)	27	6	60
Average Queue (ft)	11	0	8
95th Queue (ft)	26	4	36
Link Distance (ft)	1494	2502	1477
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 5

FUTURE (2022) ‘NO-BUILD’ CONDITIONS

Intersection: 1: North Main Street & Patrick Henry Drive

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	LT	TR	L	T	TR	L	T	TR
Maximum Queue (ft)	88	127	106	102	91	134	109	72	211	219
Average Queue (ft)	35	55	44	53	38	61	33	25	123	118
95th Queue (ft)	73	103	88	87	72	114	77	56	188	193
Link Distance (ft)	1792	1792		1477		1003	1003		1650	1650
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)			250		150			250		
Storage Blk Time (%)						0			0	
Queuing Penalty (veh)						0			0	

Intersection: 2: Harding Avenue & Patrick Henry Drive

Movement	EB	WB	SB
Directions Served	LT	TR	LR
Maximum Queue (ft)	54	14	98
Average Queue (ft)	12	1	48
95th Queue (ft)	41	7	76
Link Distance (ft)	1515	1364	2502
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 3: Patrick Henry Drive & Grove Avenue

Movement	WB	SB
Directions Served	LR	LT
Maximum Queue (ft)	29	30
Average Queue (ft)	8	2
95th Queue (ft)	24	15
Link Distance (ft)	1494	1477
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 0

Intersection: 1: North Main Street & Patrick Henry Drive

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	LT	TR	L	T	TR	L	T	TR
Maximum Queue (ft)	168	431	136	155	149	252	210	108	217	226
Average Queue (ft)	62	216	69	82	85	124	101	42	123	126
95th Queue (ft)	130	404	117	133	152	204	178	84	191	200
Link Distance (ft)	1792	1792		1477		1003	1003		1650	1650
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)			250		150			250		
Storage Blk Time (%)					1	3			0	
Queuing Penalty (veh)					2	6			0	

Intersection: 2: Harding Avenue & Patrick Henry Drive

Movement	EB	WB	SB
Directions Served	LT	TR	LR
Maximum Queue (ft)	89	28	138
Average Queue (ft)	29	2	69
95th Queue (ft)	71	14	110
Link Distance (ft)	1515	1364	2502
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 3: Patrick Henry Drive & Grove Avenue

Movement	WB	SB
Directions Served	LR	LT
Maximum Queue (ft)	29	80
Average Queue (ft)	12	9
95th Queue (ft)	27	43
Link Distance (ft)	1494	1477
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 8

FUTURE (2022) ‘BUILD’ CONDITIONS

Intersection: 1: North Main Street & Patrick Henry Drive

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	LT	TR	L	T	TR	L	T	TR
Maximum Queue (ft)	96	151	117	110	92	130	102	77	216	218
Average Queue (ft)	35	65	50	58	35	61	33	28	123	119
95th Queue (ft)	74	123	92	96	72	110	76	62	189	194
Link Distance (ft)	1792	1792		1477		1003	1003		1650	1650
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)			250		150			250		
Storage Blk Time (%)						0			0	
Queuing Penalty (veh)						0			0	

Intersection: 2: Harding Avenue & Patrick Henry Drive

Movement	EB	WB	SB
Directions Served	LT	TR	LR
Maximum Queue (ft)	46	10	101
Average Queue (ft)	11	0	52
95th Queue (ft)	37	6	83
Link Distance (ft)	1515	1365	1270
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 3: Patrick Henry Drive & Grove Avenue

Movement	WB	SB
Directions Served	LR	LT
Maximum Queue (ft)	34	41
Average Queue (ft)	14	3
95th Queue (ft)	30	22
Link Distance (ft)	1494	1477
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 4: Patrick Henry Drive & Site Access

Movement	WB	SB
Directions Served	LR	LT
Maximum Queue (ft)	35	18
Average Queue (ft)	14	1
95th Queue (ft)	37	12
Link Distance (ft)	1286	1175
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 0

Intersection: 1: North Main Street & Patrick Henry Drive

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	LT	TR	L	T	TR	L	T	TR
Maximum Queue (ft)	221	508	165	161	149	253	201	128	228	240
Average Queue (ft)	65	239	82	91	89	126	107	48	126	130
95th Queue (ft)	150	480	137	141	153	210	181	94	194	208
Link Distance (ft)	1792	1792		1477		1003	1003		1650	1650
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)			250		150			250		
Storage Blk Time (%)					0	3			0	
Queuing Penalty (veh)					1	5			0	

Intersection: 2: Harding Avenue & Patrick Henry Drive

Movement	EB	WB	SB
Directions Served	LT	TR	LR
Maximum Queue (ft)	86	32	147
Average Queue (ft)	35	1	71
95th Queue (ft)	76	12	119
Link Distance (ft)	1515	1365	1270
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 3: Patrick Henry Drive & Grove Avenue

Movement	WB	NB	SB
Directions Served	LR	TR	LT
Maximum Queue (ft)	40	21	76
Average Queue (ft)	15	1	15
95th Queue (ft)	33	16	57
Link Distance (ft)	1494	1175	1477
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 4: Patrick Henry Drive & Site Access

Movement	WB	SB
Directions Served	LR	LT
Maximum Queue (ft)	30	38
Average Queue (ft)	9	2
95th Queue (ft)	30	18
Link Distance (ft)	1286	1175
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 6

RAMEY KEMP & ASSOCIATES

Charleston, SC - Charlotte, NC - Columbia, SC - Raleigh, NC - Richmond, VA - Winston-Salem, NC