final report

November 25, 2019

Traffic Impact Study Addendum

Fischer Farm
Schuler Lane
Prospect, KY 40059

Prepared for

Louisville Metro Planning Commission
Oldham County Planning Commission

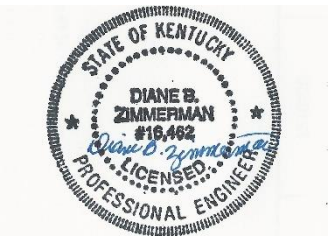

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Table of Contents

INTRODUCTION

This addendum has been prepared to address a concern of Norton Commons about trip generation of Norton Commons in the Traffic Impact Study for the Fischer Farm, dated November 8, 2019. The preliminary subdivision plan for the Fischer Farm on Schuler Lane in Louisville, KY shows 58 single-family lots and 115 garden-style lots. **Figure 1** displays a map of the site. Access to the subdivision will be from an entrance on Schuler Lane. The purpose of this study is to examine the traffic impacts of the development upon the adjacent highway system. For this study, the impact area was defined to be the intersections of KY 1694 with Schuler Lane, Worthington Lane/YMCA entrance, and Stone School Road/Norton Commons Boulevard.

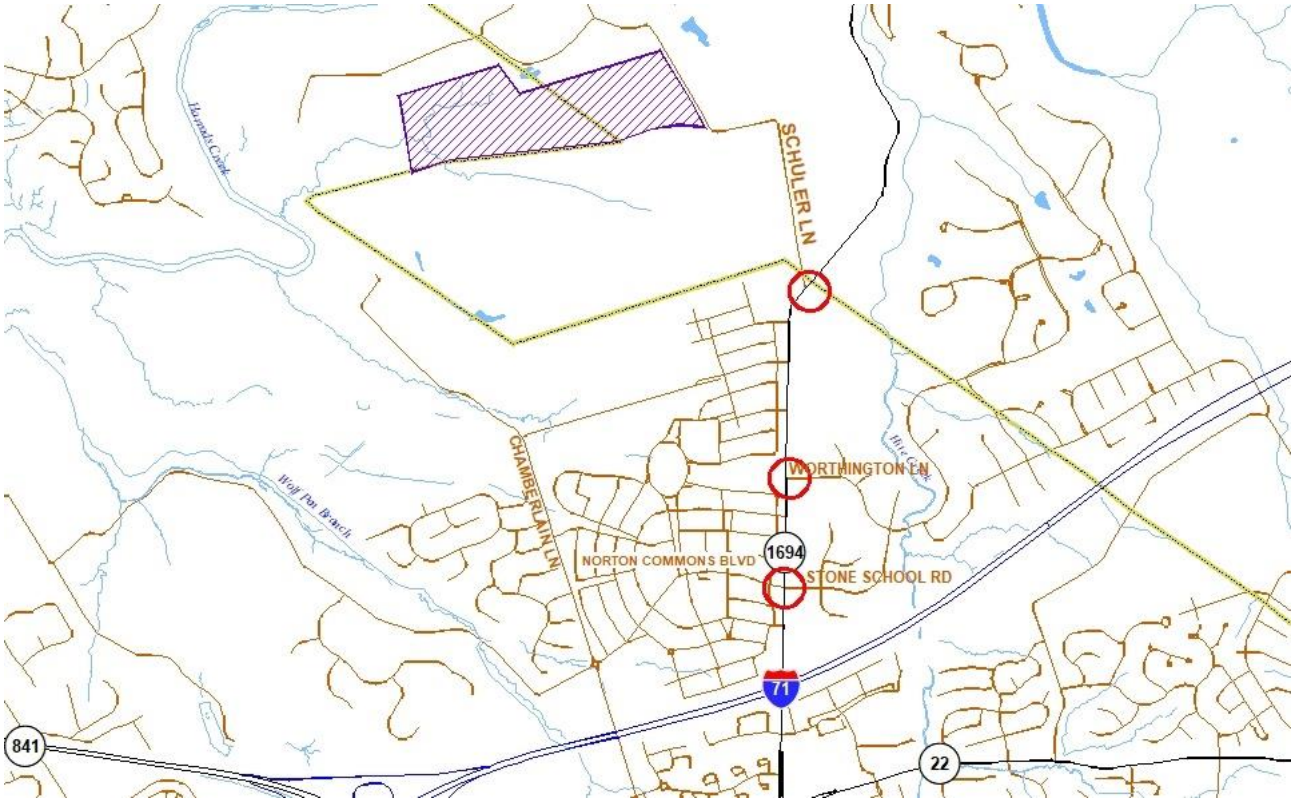


Figure 1. Site Map

FUTURE CONDITIONS

The project completion date of Fischer Farm is 2024. An annual growth rate of 2.0 percent was applied to the through volumes on KY 1694. The based upon the timing of Norton Commons between 2015 and 2019, the current estimated completion of Norton Commons is 2029. Norton Commons has provided the information below as the status of the development for 2019. 50% of the available future development was included in 2024. **Figure 2** displays the Norton Commons traffic distribution. **Figure 3** displays the 2024 No Build peak hour volumes.

Norton Commons
Summary of Entitlements and Current Completion as of October 1, 2019

Entitlements at Full Completion

- 2880 Dwelling Units
- 560,000 Square Feet of Retail, Commercial plus Civic Uses

Current Completion of Entitlements

- 1432 Dwelling Units (291 rental MF, 91 for sale MF, 1050 single family)
- 260,712 SF Retail Office Service
- Civic Uses 278,269 SF
  St. Mary Academy K-8. 600 students at capacity, 62,226 SF
  Norton Commons Elementary PreSch-5, 650 student capacity, 85,420 SF
  Vanguard Early Learning Academy, 443 students, 30,608 SF
  St. Bernadette Church, 1200 seats, 33,172 SF
  YMCA, 47,013 SF, 2000 visits daily, 47,063 SF
  Worthington Fire Station, 19,750 SF fire headquarters

Remain to Completion of Entitlements

- 1448 Dwelling Units (660 MF, 788 single family)
- 131,832 SF Retail
- 167,456 SF Office and Service

Trip Generation was calculated using ITE Trip Generation Manual, 10th Edition. The internal capture percentages were calculated for the entire Norton Commons development and applied to the remaining land to be developed. For the external trips 5% will go north toward Schuler Lane and 38% will go south toward KY 22 using the existing seven access points along KY 1694. The remaining trips will utilize Chamberlain Lane. This distribution is derived from the Traffic and Air Quality Impact Study for Norton Commons, dated December 1999.

Table 1. Peak Hour Trips Generated by Norton Commons for 2024

AM Peak Hour

Land use	ITE Code	Intensity	Rate/EQ	% IN	% Out	Total Trips			Internal Trips				External Trips		
						In	Out	Total	In	Out	Total	%	In	Out	Total
Multi-Family	220	330 units	Ln(T) = 0.95Ln(X) - 0.51	0.23	0.77	34	114	148	1	1	2	1.4%	33	113	146
Shopping Center	820	68,168 sf	T = 0.50(X)+151.78	0.62	0.38	115	71	186	9	7	16	8.8%	106	64	170
Single Family	210	394 units	T = 0.71(X)+4.80	0.25	0.75	72	213	285	1	2	3	1.1%	71	211	281
Office	710	192,544 sf	T = 0.94(X) + 26.49	0.86	0.14	178	29	207	2	5	7	3.2%	176	24	201
Total						399	427	826	13	15	28	3.4%	385	412	798

PM Peak Hour

Land use	ITE Code	Intensity				Total Trips			Internal Trips				External Trips		
						In	Out	Total	In	Out	Total	%	In	Out	Total
Multi-Family	220	330 units	Ln(T) = 0.89Ln(X) - 0.02	0.63	0.37	108	63	171	17	7	24	14.0%	91	56	147
Shopping Center	820	65,916 sf	Ln(T) = 0.74Ln(X) + 2.89	0.48	0.52	192	207	399	35	58	93	23.2%	157	149	307
Single Family	210	394 units	Ln(T) = 0.96Ln(X) + 0.20	0.63	0.37	239	140	379	38	15	54	14.2%	201	125	325
Office	710	83,728 sf	Ln(T) = 0.95Ln(X) + 0.36	0.16	0.84	15	81	96	10	11	21	21.4%	5	70	76
Total						554	491	1,045	100	91	191	18.2%	454	400	855

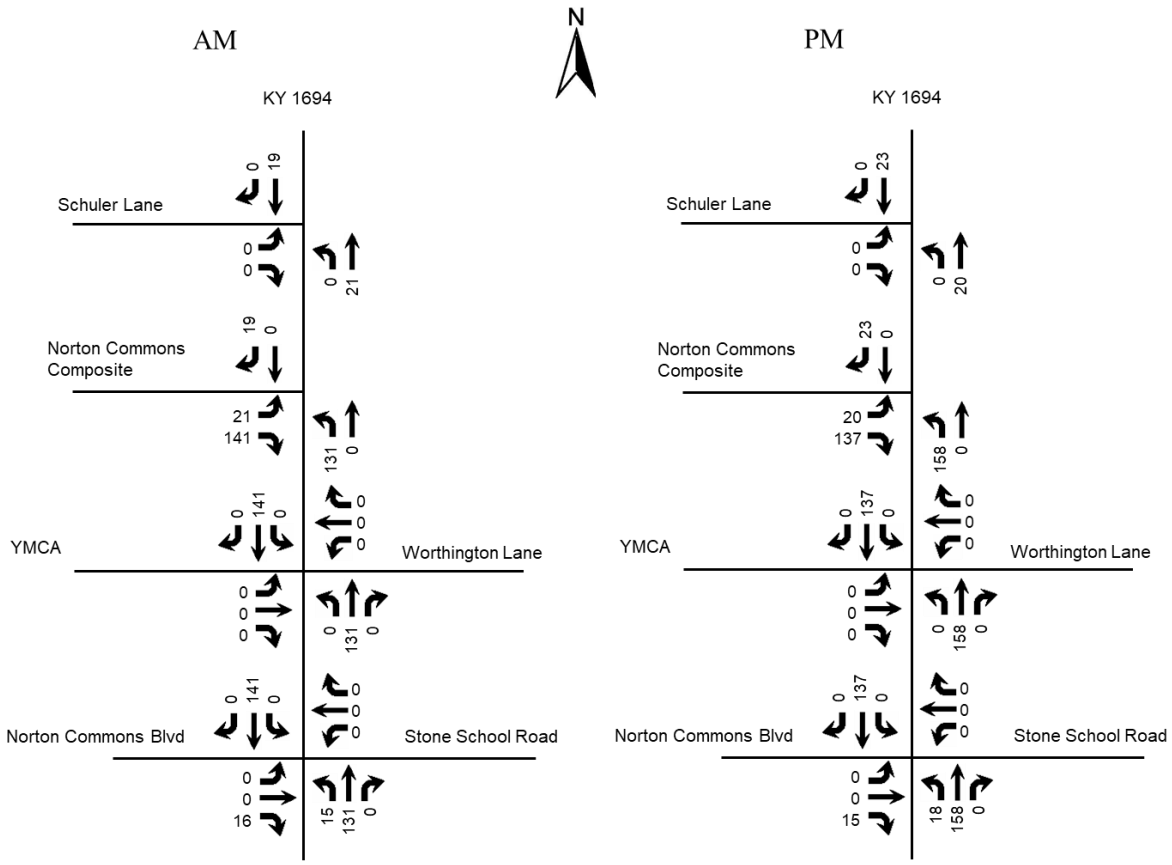


Figure 2. 2024 Norton Commons Peak Hour Volumes

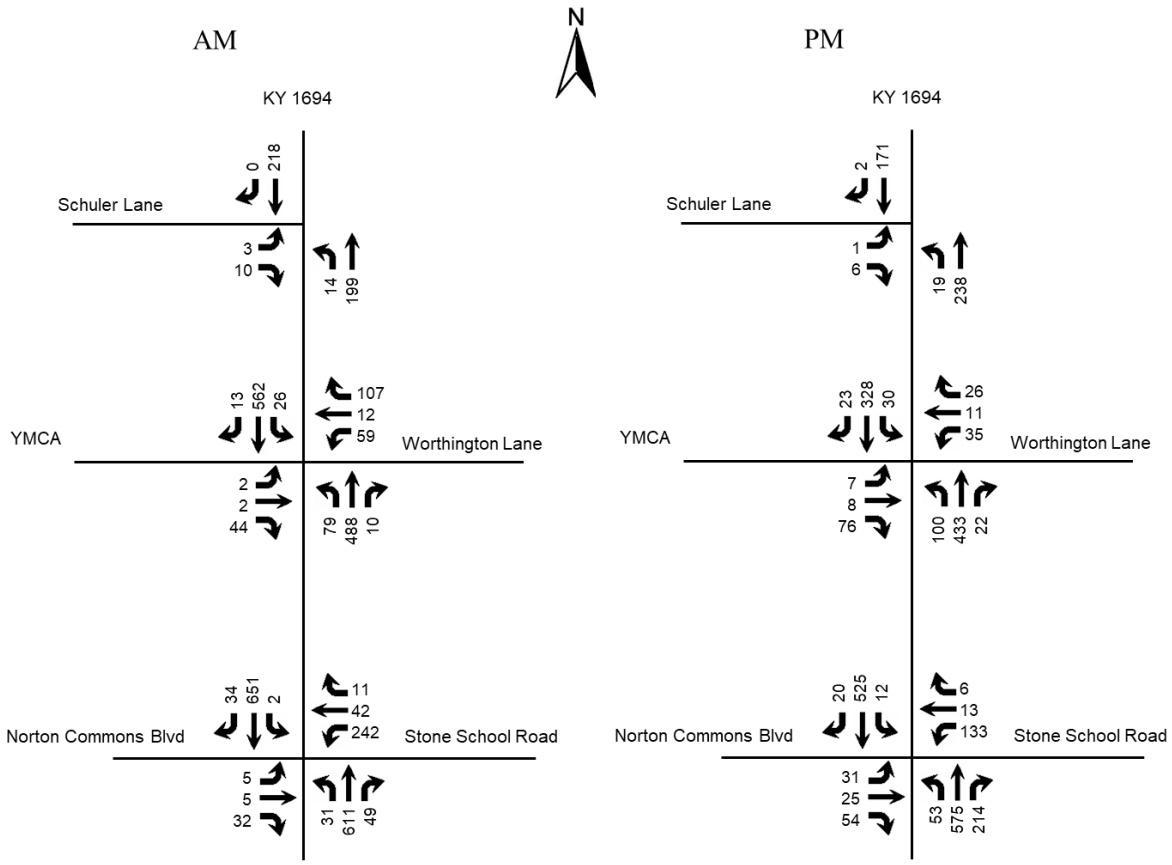


Figure 3. 2024 No Build Peak Hour Volumes

TRIP GENERATION

The Institute of Transportation Engineers Trip Generation Manual, 10th Edition contains trip generation rates for a wide range of developments. The land uses of "Single-Family Detached (210)" and "Senior Adult Housing – Detached (251)" were reviewed and determined to be the best match for the housing product proposed. The "Senior Adult Housing – Detached" has a trip generation similar to the local trip generation data for small-lots, as was studied by Neel-Shaffer, Inc in June, 2016. The trip generation results are listed in **Table 1**. The trips were assigned to the highway network with the percentages shown in **Figure 4**. **Figure 5** shows the trips generated by this development and distributed throughout the road network during the peak hours. **Figure 6** displays the individual turning movements for the peak hours when the development is completed.

Table 2. Peak Hour Trips Generated by Site

	A.M. Peak Hour			P.M. Peak Hour		
Land Use	Trips	In	Out	Trips	In	Out
Single-Family Detached (58 units)	46	12	34	60	38	22
Senior Adult Housing – Detached (115 units)	45	15	30	54	33	21
TOTAL	**91**	**27**	**64**	**114**	**71**	**43**

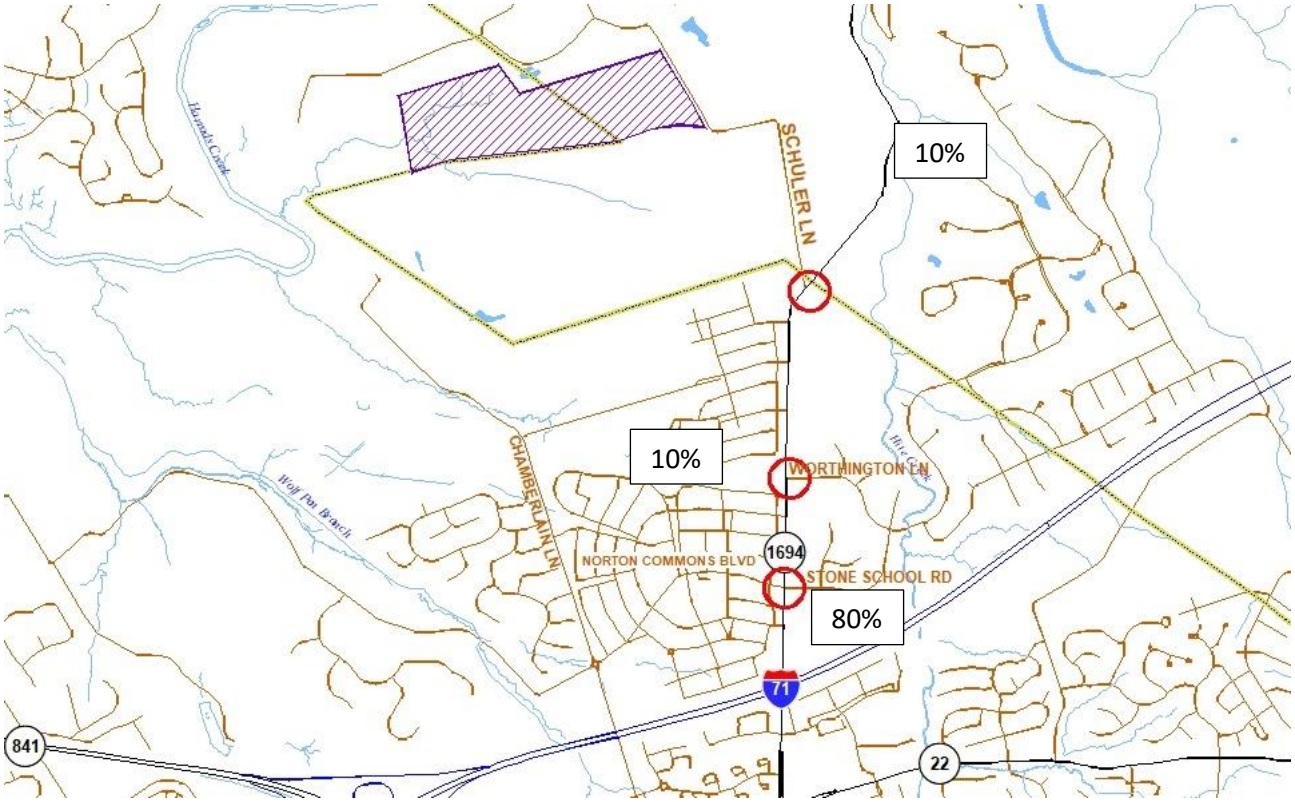


Figure 4. Trip Distribution Percentages

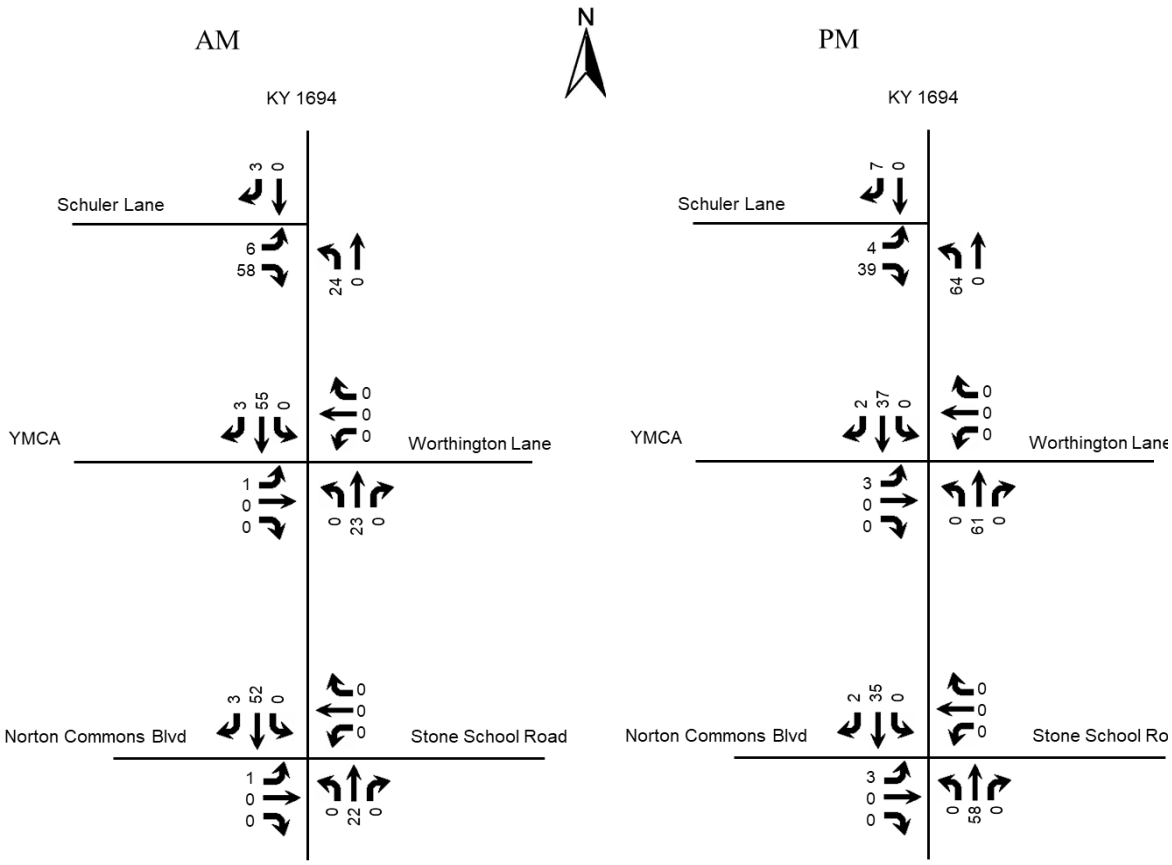


Figure 5. Peak Hour Trips Generated by Site

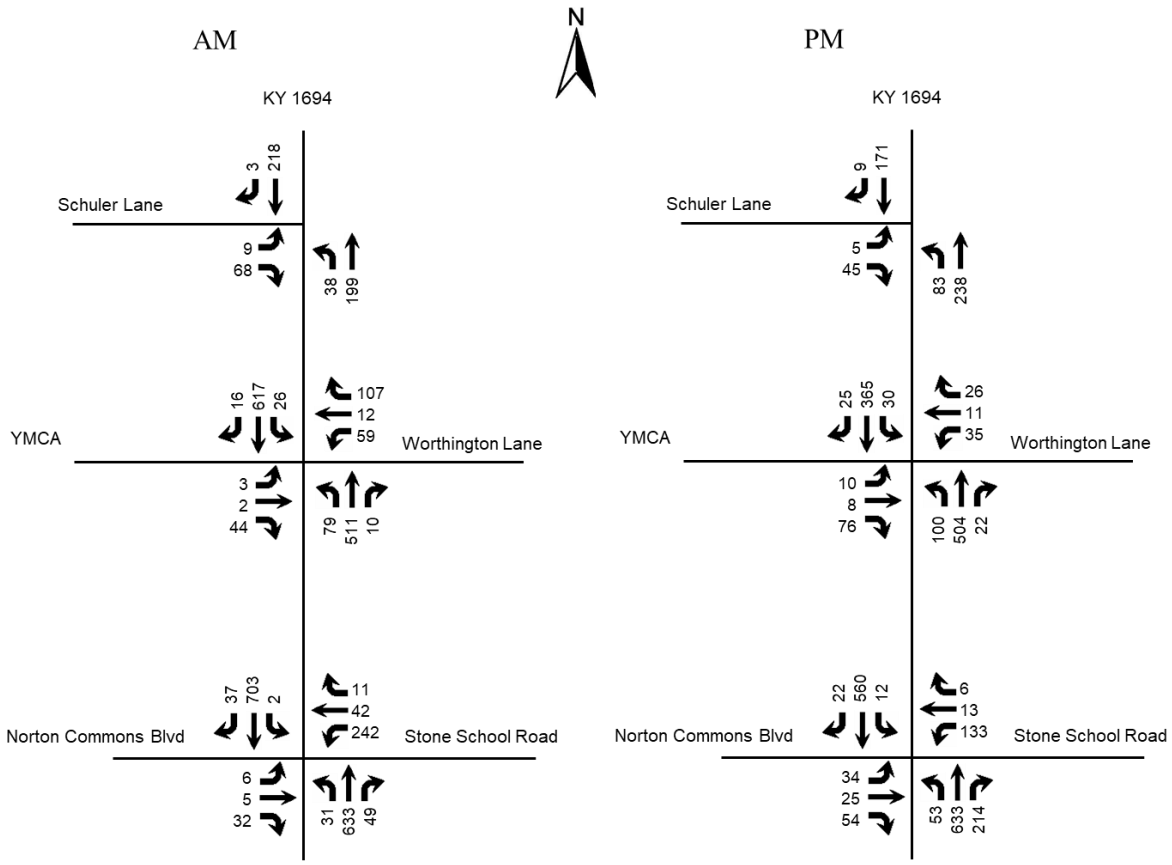


Figure 6. 2024 Build Peak Hour Volumes

ANALYSIS

The qualitative measure of operation for a roadway facility or intersection is evaluated by assigning a "Level of Service". Level of Service is a ranking scale from A through F, "A" is the best operating condition and "F" is the worst. Level of Service results depend upon the facility that is analyzed. In this case, the Level of Service is based upon the total delay experienced for lanes at stop-controlled intersections.

To evaluate the impact of the proposed development, the vehicle delays at the intersections were determined using procedures detailed in the Highway Capacity Manual, 6th edition. Future delays and Level of Service were determined for the intersections using the HCS Streets (version 7.8) software. The delays and Level of Service are summarized in **Table 2**.

Table 3. Peak Hour Level of Service

Approach	A.M.			P.M.		
	2019 Existing	2024 No Build	2024 Build	2019 Existing	2024 No Build	2024 Build
KY 1694 at Schuler Lane						
Schuler Lane Eastbound	A 9.9	B 10.3	B 10.5	A 9.4	A 9.7	B 10.1
KY 1694 Northbound (Left turn)	A 7.7	A 7.8	A 7.9	A 7.5	A 7.6	A 7.8
KY 1694 at Worthington Lane/YMCA						
YMCA Eastbound	B 13.7	C 18.8	C 22.0	B 11.7	C 15.0	C 17.2
Worthington Lane Westbound	C 21.7	E 41.4	F 54.7	C 16.0	C 22.1	D 25.3
KY 1694 Northbound (Left turn)	A 8.8	A 9.7	B 10.1	A 7.9	A 8.4	A 8.6
KY 1694 Southbound (Left turn)	A 8.4	A 9.1	A 9.2	A 8.0	A 8.5	A 8.8
KY 1694 at Stone School Road/Norton Commons						
Norton Commons Boulevard Eastbound	C 15.9	C 19.4	C 21.8	C 16.7	C 17.6	C 19.3
Stone School Road Westbound	F 147.6	F 397.5	F 473.9	D 28.9	F 70.1	F 96.7
KY 1694 Northbound (Left turn)	A 8.6	A 9.5	A 9.7	A 8.2	A 8.8	A 8.9
KY 1694 Southbound (Left turn)	A 8.5	A 9.2	A 9.3	A 8.9	A 9.6	A 9.9

Key: Level of Service, Delay in seconds per vehicle

A traffic shed analysis of this project shows that the traffic from this development will utilize in Oldham County KY 1694. The Major Thoroughfare Plan reported that in 2003 KY 1694 was operating at Level of Service C or better. The 2003 volume was shown on KY 1694 as 1,260 and the 2019 ADT is estimated at 3,200 vehicles per day.

The intersection of KY 1694 at Schuler Lane was evaluated for turn lanes using the Kentucky Transportation Cabinet Highway Design Guidance Manual dated March, 2017. Using the volumes in Figure 6, a no turn lanes will be required at the intersection. The KYTC worksheet is included in the appendix. The capacity analysis demonstrates a single exit lane provides desirable levels of service (B) for Shuler Lane.

CONCLUSIONS

At the Stone School Road approach to KY 1694, drivers are experiencing significant delays currently and those delays will increase in 2024. The four hours of data collected for this study indicate there is sufficient traffic to meet the traffic signal warrant. Louisville Metro Public Works should evaluate with the Kentucky Transportation Cabinet installing a traffic signal at this intersection to reduce the delay. Schuler Lane will be widened to meet the Oldham County road standard of 22 feet.

Based upon the volume of traffic generated by the development and the amount of traffic forecasted for the year 2024, there will be an impact to the existing highway network. The only improvement required is the widening of Schuler Lane to 22 feet.

APPENDIX

HCS REPORTS

HCS7 Two-Way Stop-Control Report

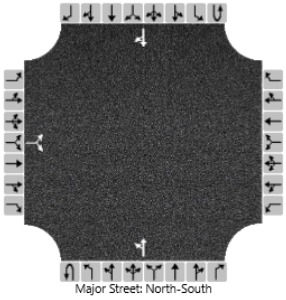
General Information

Analyst	DBZ
Agency/Co.	Diane B Zimmerman Traffic Engineering
Date Performed	10/29/2019
Analysis Year	2019
Time Analyzed	AM Peak
Intersection Orientation	North-South
Project Description	Fischer Farm

Site Information

Intersection	Schuler Ln at KY 1694
Jurisdiction	
East/West Street	Schuler Lane
North/South Street	KY 1694
Peak Hour Factor	0.90
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		3		10						14	161				180	0
Percent Heavy Vehicles (%)		33		0						7						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.73		6.20						4.17						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.80		3.30						2.26						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			14							16						
Capacity, c (veh/h)			746							1343						
v/c Ratio			0.02							0.01						
95% Queue Length, Q_{95} (veh)			0.1							0.0						
Control Delay (s/veh)			9.9							7.7						
Level of Service (LOS)			A							A						
Approach Delay (s/veh)		9.9								0.7						
Approach LOS		A														

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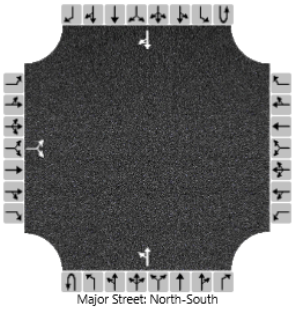
HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DBZ	Intersection	Schuler Ln at KY 1694
Agency/Co.	Diane B Zimmerman Traffic Engineering	Jurisdiction	
Date Performed	11/25/19	East/West Street	Schuler Lane
Analysis Year	2024	North/South Street	KY 1694
Time Analyzed	AM Peak No Build	Peak Hour Factor	0.90
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Fischer Farm Addendum		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		3		10						14	199				218	0
Percent Heavy Vehicles (%)		33		0						7						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.73		6.20						4.17						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.80		3.30						2.26						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			14							16						
Capacity, c (veh/h)			692							1295						
v/c Ratio			0.02							0.01						
95% Queue Length, Q_{95} (veh)			0.1							0.0						
Control Delay (s/veh)			10.3							7.8						
Level of Service (LOS)			B							A						
Approach Delay (s/veh)		10.3								0.6						
Approach LOS		B														

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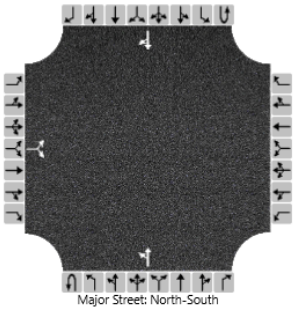
HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DBZ	Intersection	Schuler Ln at KY 1694
Agency/Co.	Diane B Zimmerman Traffic Engineering	Jurisdiction	
Date Performed	11/25/19	East/West Street	Schuler Lane
Analysis Year	2024	North/South Street	KY 1694
Time Analyzed	AM Peak Build	Peak Hour Factor	0.90
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Fischer Farm Addendum		

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		9		68						38	199				218	3
Percent Heavy Vehicles (%)		11		1						5						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.51		6.21						4.15						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.60		3.31						2.25						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			86							42						
Capacity, c (veh/h)			735							1303						
v/c Ratio			0.12							0.03						
95% Queue Length, Q_{95} (veh)			0.4							0.1						
Control Delay (s/veh)			10.5							7.9						
Level of Service (LOS)			B							A						
Approach Delay (s/veh)		10.5								1.5						
Approach LOS		B														

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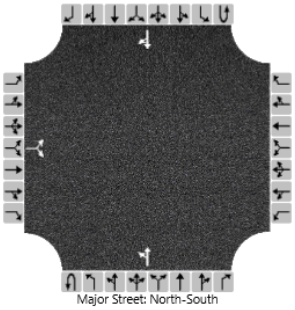
HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DBZ	Intersection	Schuler Ln at KY 1694
Agency/Co.	Diane B Zimmerman Traffic Engineering	Jurisdiction	
Date Performed	10/29/2019	East/West Street	Schuler Lane
Analysis Year	2019	North/South Street	KY 1694
Time Analyzed	PM Peak	Peak Hour Factor	0.87
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Fischer Farm		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		1		6						19	197				134	2
Percent Heavy Vehicles (%)		0		0						0						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.40		6.20						4.10						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.50		3.30						2.20						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			8							22						
Capacity, c (veh/h)			831							1436						
v/c Ratio			0.01							0.02						
95% Queue Length, Q_{95} (veh)			0.0							0.0						
Control Delay (s/veh)			9.4							7.5						
Level of Service (LOS)			A							A						
Approach Delay (s/veh)		9.4								0.8						
Approach LOS		A														

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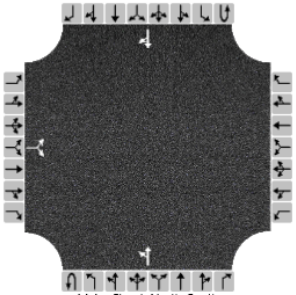
HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DBZ	Intersection	Schuler Ln at KY 1694
Agency/Co.	Diane B Zimmerman Traffic Engineering	Jurisdiction	
Date Performed	11/25/19	East/West Street	Schuler Lane
Analysis Year	2024	North/South Street	KY 1694
Time Analyzed	PM Peak No Build	Peak Hour Factor	0.87
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Fischer Farm Addendum		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		1		6						19	238				171	2
Percent Heavy Vehicles (%)		0		0						0						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.40		6.20						4.10						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.50		3.30						2.20						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			8							22						
Capacity, c (veh/h)			776							1386						
v/c Ratio			0.01							0.02						
95% Queue Length, Q_{95} (veh)			0.0							0.0						
Control Delay (s/veh)			9.7							7.6						
Level of Service (LOS)			A							A						
Approach Delay (s/veh)		9.7								0.7						
Approach LOS		A														

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HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DBZ	Intersection	Schuler Ln at KY 1694
Agency/Co.	Diane B Zimmerman Traffic Engineering	Jurisdiction	
Date Performed	11/25/19	East/West Street	Schuler Lane
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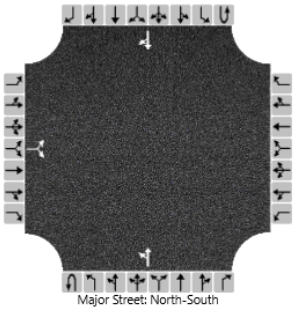
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Fischer Farm Addendum		

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		5		45						83	238				171	9
Percent Heavy Vehicles (%)		0		0						0						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.40		6.20						4.10						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.50		3.30						2.20						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			57							95						
Capacity, c (veh/h)			757							1376						
v/c Ratio			0.08							0.07						
95% Queue Length, Q_{95} (veh)			0.2							0.2						
Control Delay (s/veh)			10.1							7.8						
Level of Service (LOS)			B							A						
Approach Delay (s/veh)		10.1								2.5						
Approach LOS		B														

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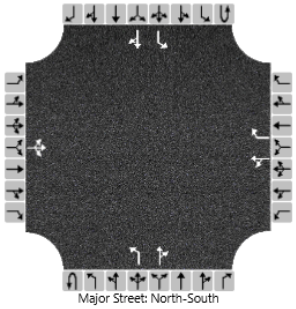
HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DBZ	Intersection	Worthington at KY 1694
Agency/Co.	Diane B Zimmerman Traffic Engineering	Jurisdiction	
Date Performed	10/29/2019	East/West Street	Worthington/YMCA
Analysis Year	2019	North/South Street	KY 1694
Time Analyzed	AM Peak	Peak Hour Factor	0.77
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Fischer Farm		

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	1	0	1	1	0	0	1	1	0
Configuration			LTR			LT		R		L		TR		L		TR
Volume (veh/h)		2	2	44		59	12	107		79	323	10		26	381	13
Percent Heavy Vehicles (%)		0	0	2		2	0	2		1				8		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized					No											
Median Type | Storage	Left Only								1							

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.10	6.50	6.22		7.12	6.50	6.22		4.11				4.18		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.50	4.00	3.32		3.52	4.00	3.32		2.21				2.27		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			62			92		139		103				34		
Capacity, c (veh/h)			476			207		628		1059				1096		
v/c Ratio			0.13			0.45		0.22		0.10				0.03		
95% Queue Length, Q_{95} (veh)			0.4			2.1		0.8		0.3				0.1		
Control Delay (s/veh)			13.7			35.7		12.3		8.8				8.4		
Level of Service (LOS)			B			E		B		A				A		
Approach Delay (s/veh)	13.7				21.7				1.7				0.5			
Approach LOS	B				C											

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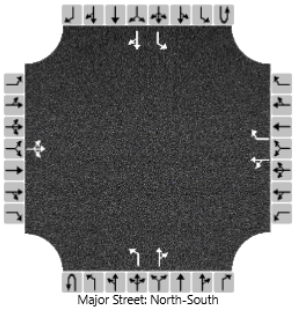
HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DBZ	Intersection	Worthington at KY 1694
Agency/Co.	Diane B Zimmerman Traffic Engineering	Jurisdiction	
Date Performed	11/25/19	East/West Street	Worthington/YMCA
Analysis Year	2024	North/South Street	KY 1694
Time Analyzed	AM Peak No Build	Peak Hour Factor	0.77
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Fischer Farm Addendum		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	1	0	1	1	0	0	1	1	0
Configuration			LTR			LT		R		L		TR		L		TR
Volume (veh/h)		2	2	44		59	12	107		79	488	10		26	562	13
Percent Heavy Vehicles (%)		0	0	2		2	0	2		1				8		
Proportion Time Blocked																
Percent Grade (%)		0				0										
Right Turn Channelized						No										
Median Type | Storage		Left Only								1						

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.10	6.50	6.22		7.12	6.50	6.22		4.11				4.18		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.50	4.00	3.32		3.52	4.00	3.32		2.21				2.27		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			62			92		139		103				34		
Capacity, c (veh/h)			322			131		475		866				911		
v/c Ratio			0.19			0.70		0.29		0.12				0.04		
95% Queue Length, Q_{95} (veh)			0.7			3.9		1.2		0.4				0.1		
Control Delay (s/veh)			18.8			80.3		15.7		9.7				9.1		
Level of Service (LOS)			C			F		C		A				A		
Approach Delay (s/veh)		18.8				41.4				1.3				0.4		
Approach LOS		C				E										

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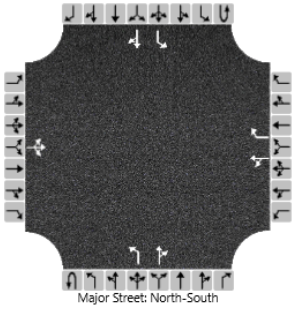
HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DBZ	Intersection	Worthington at KY 1694
Agency/Co.	Diane B Zimmerman Traffic Engineering	Jurisdiction	
Date Performed	11/25/19	East/West Street	Worthington/YMCA
Analysis Year	2024	North/South Street	KY 1694
Time Analyzed	AM Peak Build	Peak Hour Factor	0.77
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Fischer Farm Addendum		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	1	0	1	1	0	0	1	1	0
Configuration			LTR			LT		R		L		TR		L		TR
Volume (veh/h)		3	2	44		59	12	107		79	511	10		26	617	16
Percent Heavy Vehicles (%)		0	0	2		2	0	2		1				8		
Proportion Time Blocked																
Percent Grade (%)		0				0										
Right Turn Channelized						No										
Median Type | Storage		Left Only								1						

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.10	6.50	6.22		7.12	6.50	6.22		4.11				4.18		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.50	4.00	3.32		3.52	4.00	3.32		2.21				2.27		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			64			92		139		103				34		
Capacity, c (veh/h)			275			112		457		812				887		
v/c Ratio			0.23			0.82		0.30		0.13				0.04		
95% Queue Length, Q_{95} (veh)			0.9			4.8		1.3		0.4				0.1		
Control Delay (s/veh)			22.0			112.7		16.3		10.1				9.2		
Level of Service (LOS)			C			F		C		B				A		
Approach Delay (s/veh)		22.0				54.7				1.3				0.4		
Approach LOS		C				F										

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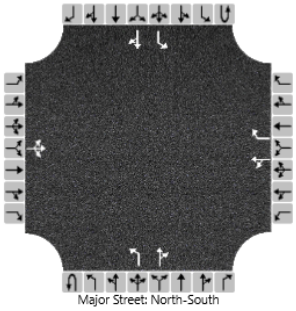
HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DBZ	Intersection	Worthington at KY 1694
Agency/Co.	Diane B Zimmerman Traffic Engineering	Jurisdiction	
Date Performed	10/29/2019	East/West Street	Worthington/YMCA
Analysis Year	2019	North/South Street	KY 1694
Time Analyzed	PM Peak	Peak Hour Factor	0.87
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Fischer Farm		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	1	0	1	1	0	0	1	1	0
Configuration			LTR			LT		R		L		TR		L		TR
Volume (veh/h)		7	8	76		35	11	26		100	258	22		30	173	23
Percent Heavy Vehicles (%)		0	0	0		0	0	0		0				0		
Proportion Time Blocked																
Percent Grade (%)		0				0										
Right Turn Channelized						No										
Median Type | Storage		Left Only								1						

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.10	6.50	6.20		7.10	6.50	6.20		4.10				4.10		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.50	4.00	3.30		3.50	4.00	3.30		2.20				2.20		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			105			53		30		115				34		
Capacity, c (veh/h)			641			305		736		1355				1249		
v/c Ratio			0.16			0.17		0.04		0.08				0.03		
95% Queue Length, Q_{95} (veh)			0.6			0.6		0.1		0.3				0.1		
Control Delay (s/veh)			11.7			19.3		10.1		7.9				8.0		
Level of Service (LOS)			B			C		B		A				A		
Approach Delay (s/veh)		11.7				16.0				2.1				1.1		
Approach LOS		B				C										

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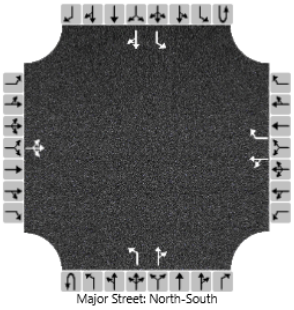
HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DBZ	Intersection	Worthington at KY 1694
Agency/Co.	Diane B Zimmerman Traffic Engineering	Jurisdiction	
Date Performed	11/25/19	East/West Street	Worthington/YMCA
Analysis Year	2024	North/South Street	KY 1694
Time Analyzed	PM Peak No Build	Peak Hour Factor	0.87
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Fischer Farm Addendum		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	1	0	1	1	0	0	1	1	0
Configuration			LTR			LT		R		L		TR		L		TR
Volume (veh/h)		7	8	76		35	11	26		100	433	22		30	328	23
Percent Heavy Vehicles (%)		0	0	0		0	0	0		0				0		
Proportion Time Blocked																
Percent Grade (%)		0				0										
Right Turn Channelized						No										
Median Type | Storage		Left Only								1						

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.10	6.50	6.20		7.10	6.50	6.20		4.10				4.10		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.50	4.00	3.30		3.50	4.00	3.30		2.20				2.20		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			105			53		30		115				34		
Capacity, c (veh/h)			463			209		567		1166				1054		
v/c Ratio			0.23			0.25		0.05		0.10				0.03		
95% Queue Length, Q_{95} (veh)			0.9			1.0		0.2		0.3				0.1		
Control Delay (s/veh)			15.0			28.0		11.7		8.4				8.5		
Level of Service (LOS)			C			D		B		A				A		
Approach Delay (s/veh)		15.0				22.1				1.5				0.7		
Approach LOS		C				C										

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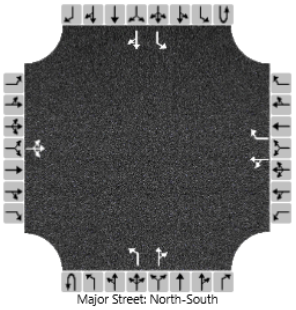
HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DBZ	Intersection	Worthington at KY 1694
Agency/Co.	Diane B Zimmerman Traffic Engineering	Jurisdiction	
Date Performed	11/25/19	East/West Street	Worthington/YMCA
Analysis Year	2024	North/South Street	KY 1694
Time Analyzed	PM Peak Build	Peak Hour Factor	0.87
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Fischer Farm Addendum		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	1	0	1	1	0	0	1	1	0
Configuration			LTR			LT		R		L		TR		L		TR
Volume (veh/h)		10	8	76		35	11	26		100	504	22		30	365	25
Percent Heavy Vehicles (%)		0	0	0		0	0	0		0				0		
Proportion Time Blocked																
Percent Grade (%)		0				0										
Right Turn Channelized						No										
Median Type | Storage		Left Only								1						

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.10	6.50	6.20		7.10	6.50	6.20		4.10				4.10		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.50	4.00	3.30		3.50	4.00	3.30		2.20				2.20		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			108			53		30		115				34		
Capacity, c (veh/h)			402			182		510		1123				983		
v/c Ratio			0.27			0.29		0.06		0.10				0.04		
95% Queue Length, Q_{95} (veh)			1.1			1.1		0.2		0.3				0.1		
Control Delay (s/veh)			17.2			32.6		12.5		8.6				8.8		
Level of Service (LOS)			C			D		B		A				A		
Approach Delay (s/veh)		17.2				25.3				1.4				0.6		
Approach LOS		C				D										

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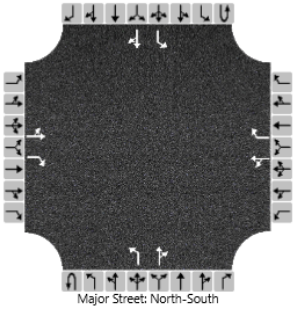
HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DBZ	Intersection	Stone School/Norton Commo
Agency/Co.	Diane B Zimmerman Traffic Engineering	Jurisdiction	
Date Performed	10/29/2019	East/West Street	Stone School/Norton Commo
Analysis Year	2019	North/South Street	KY 1694
Time Analyzed	AM Peak	Peak Hour Factor	0.87
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Fischer Farm		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	1		0	1	1	0	1	1	0	0	1	1	0
Configuration		LT		R		LT		R		L		TR		L		TR
Volume (veh/h)		5	5	16		242	42	11		16	435	49		2	462	34
Percent Heavy Vehicles (%)		0	0	0		1	0	0		0				0		
Proportion Time Blocked																
Percent Grade (%)		0				0										
Right Turn Channelized		No				No										
Median Type | Storage		Left Only								1						

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.10	6.50	6.20		7.11	6.50	6.20		4.10				4.10		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.50	4.00	3.30		3.51	4.00	3.30		2.20				2.20		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		11		18		326		13		18				2		
Capacity, c (veh/h)		221		538		276		554		1012				1024		
v/c Ratio		0.05		0.03		1.18		0.02		0.02				0.00		
95% Queue Length, Q_{95} (veh)		0.2		0.1		14.7		0.1		0.1				0.0		
Control Delay (s/veh)		22.2		11.9		152.9		11.6		8.6				8.5		
Level of Service (LOS)		C		B		F		B		A				A		
Approach Delay (s/veh)		15.9				147.6				0.3				0.0		
Approach LOS		C				F										

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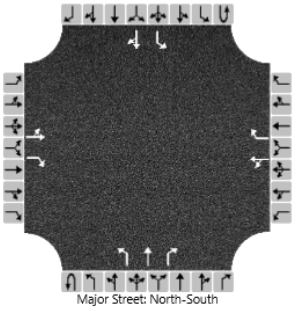
HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DBZ	Intersection	Stone School/Norton Commo
Agency/Co.	Diane B Zimmerman Traffic Engineering	Jurisdiction	
Date Performed	11/25/19	East/West Street	Stone School/Norton Commo
Analysis Year	2024	North/South Street	KY 1694
Time Analyzed	AM Peak No Build	Peak Hour Factor	0.87
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Fischer Farm Addendum		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	1		0	1	1	0	1	1	1	0	1	1	0
Configuration		LT		R		LT		R		L	T	R		L		TR
Volume (veh/h)		5	5	32		242	42	11		31	611	49		2	651	34
Percent Heavy Vehicles (%)		0	0	0		1	0	0		0				0		
Proportion Time Blocked																
Percent Grade (%)		0				0										
Right Turn Channelized		No				No				No						
Median Type | Storage		Left Only								1						

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.10	6.50	6.20		7.11	6.50	6.20		4.10				4.10		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.50	4.00	3.30		3.51	4.00	3.30		2.20				2.20		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		11		37		326		13		36				2		
Capacity, c (veh/h)		135		405		184		441		841				862		
v/c Ratio		0.09		0.09		1.77		0.03		0.04				0.00		
95% Queue Length, Q_{95} (veh)		0.3		0.3		23.1		0.1		0.1				0.0		
Control Delay (s/veh)		34.1		14.8		412.3		13.4		9.5				9.2		
Level of Service (LOS)		D		B		F		B		A				A		
Approach Delay (s/veh)		19.4				397.5				0.4				0.0		
Approach LOS		C				F										

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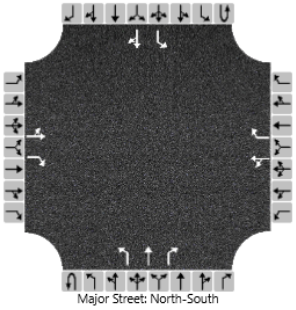
HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DBZ	Intersection	Stone School/Norton Commo
Agency/Co.	Diane B Zimmerman Traffic Engineering	Jurisdiction	
Date Performed	11/25/19	East/West Street	Stone School/Norton Commo
Analysis Year	2024	North/South Street	KY 1694
Time Analyzed	AM Peak Build	Peak Hour Factor	0.87
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Fischer Farm Addendum		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	1		0	1	1	0	1	1	1	0	1	1	0
Configuration		LT		R		LT		R		L	T	R		L		TR
Volume (veh/h)		6	5	32		242	42	11		31	633	49		2	703	37
Percent Heavy Vehicles (%)		0	0	0		1	0	0		0				0		
Proportion Time Blocked																
Percent Grade (%)		0				0										
Right Turn Channelized		No				No				No						
Median Type | Storage		Left Only								1						

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.10	6.50	6.20		7.11	6.50	6.20		4.10				4.10		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.50	4.00	3.30		3.51	4.00	3.30		2.20				2.20		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		13		37		326		13		36				2		
Capacity, c (veh/h)		116		373		168		427		796				843		
v/c Ratio		0.11		0.10		1.94		0.03		0.04				0.00		
95% Queue Length, Q_{95} (veh)		0.4		0.3		24.8		0.1		0.1				0.0		
Control Delay (s/veh)		39.6		15.7		491.7		13.7		9.7				9.3		
Level of Service (LOS)		E		C		F		B		A				A		
Approach Delay (s/veh)		21.8				473.9				0.4				0.0		
Approach LOS		C				F										

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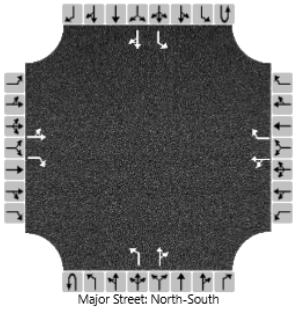
HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DBZ	Intersection	Stone School/Norton Commo
Agency/Co.	Diane B Zimmerman Traffic Engineering	Jurisdiction	
Date Performed	10/29/2019	East/West Street	Stone School/Norton Commo
Analysis Year	2019	North/South Street	KY 1694
Time Analyzed	PM Peak	Peak Hour Factor	0.97
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Fischer Farm		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	1		0	1	1	0	1	1	0	0	1	1	0
Configuration		LT		R		LT		R		L		TR		L		TR
Volume (veh/h)		11	25	39		133	13	6		35	378	214		12	351	20
Percent Heavy Vehicles (%)		0	3	4		1	0	0		3				7		
Proportion Time Blocked																
Percent Grade (%)		0				0										
Right Turn Channelized		No				No										
Median Type | Storage		Left Only								1						

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.10	6.53	6.24		7.11	6.50	6.20		4.13				4.17		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.50	4.03	3.34		3.51	4.00	3.30		2.23				2.26		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		37		40		151		6		36				12		
Capacity, c (veh/h)		234		669		293		575		1171				945		
v/c Ratio		0.16		0.06		0.51		0.01		0.03				0.01		
95% Queue Length, Q_{95} (veh)		0.6		0.2		2.7		0.0		0.1				0.0		
Control Delay (s/veh)		23.2		10.7		29.6		11.3		8.2				8.9		
Level of Service (LOS)		C		B		D		B		A				A		
Approach Delay (s/veh)		16.7				28.9				0.5				0.3		
Approach LOS		C				D										

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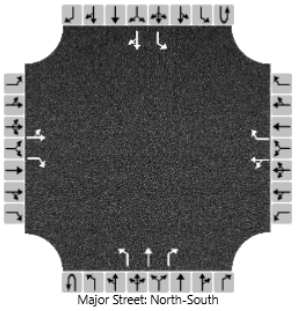
HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DBZ	Intersection	Stone School/Norton Commo
Agency/Co.	Diane B Zimmerman Traffic Engineering	Jurisdiction	
Date Performed	11/25/19	East/West Street	Stone School/Norton Commo
Analysis Year	2024	North/South Street	KY 1694
Time Analyzed	PM Peak No Build	Peak Hour Factor	0.97
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Fischer Farm Addendum		

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	1		0	1	1	0	1	1	1	0	1	1	0
Configuration		LT		R		LT		R		L	T	R		L		TR
Volume (veh/h)		11	25	54		133	13	6		53	575	214		12	525	20
Percent Heavy Vehicles (%)		0	3	4		1	0	0		3				7		
Proportion Time Blocked																
Percent Grade (%)		0				0										
Right Turn Channelized		No				No				No						
Median Type | Storage		Left Only								1						

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.10	6.53	6.24		7.11	6.50	6.20		4.13				4.17		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.50	4.03	3.34		3.51	4.00	3.30		2.23				2.26		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		37		56		151		6		55				12		
Capacity, c (veh/h)		216		530		189		509		1004				792		
v/c Ratio		0.17		0.11		0.80		0.01		0.05				0.02		
95% Queue Length, Q_{95} (veh)		0.6		0.4		5.5		0.0		0.2				0.0		
Control Delay (s/veh)		25.1		12.6		72.5		12.2		8.8				9.6		
Level of Service (LOS)		D		B		F		B		A				A		
Approach Delay (s/veh)		17.6				70.1				0.6				0.2		
Approach LOS		C				F										

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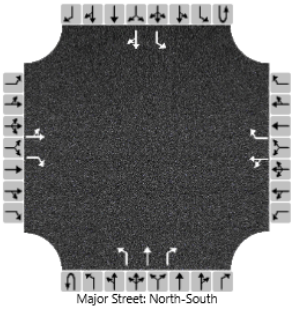
HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DBZ	Intersection	Stone School/Norton Commo
Agency/Co.	Diane B Zimmerman Traffic Engineering	Jurisdiction	
Date Performed	11/25/19	East/West Street	Stone School/Norton Commo
Analysis Year	2024	North/South Street	KY 1694
Time Analyzed	PM Peak Build	Peak Hour Factor	0.97
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Fischer Farm Addendum		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	1		0	1	1	0	1	1	1	0	1	1	0
Configuration		LT		R		LT		R		L	T	R		L		TR
Volume (veh/h)		14	25	54		133	13	6		53	633	214		12	560	22
Percent Heavy Vehicles (%)		0	3	4		1	0	0		3				7		
Proportion Time Blocked																
Percent Grade (%)		0				0										
Right Turn Channelized		No				No				No						
Median Type | Storage		Left Only								1						

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.10	6.53	6.24		7.11	6.50	6.20		4.13				4.17		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.50	4.03	3.34		3.51	4.00	3.30		2.23				2.26		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		40		56		151		6		55				12		
Capacity, c (veh/h)		196		505		167		471		972				752		
v/c Ratio		0.21		0.11		0.90		0.01		0.06				0.02		
95% Queue Length, Q_{95} (veh)		0.7		0.4		6.5		0.0		0.2				0.1		
Control Delay (s/veh)		28.1		13.0		100.2		12.7		8.9				9.9		
Level of Service (LOS)		D		B		F		B		A				A		
Approach Delay (s/veh)		19.3				96.7				0.5				0.2		
Approach LOS		C				F										

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Left Turn Lane Warrants

Input Fields

Left Turn Volume (vph)	83	Speed Limit (mph)	45
Advancing Volume (vph)	321	No. of through lanes	1
Opposing Volume (vph)	180	Percent Heavy Vehicles (decimal percent)	0.02

Note: This spreadsheet is intended to supplement the guidance provided in the Auxiliary Turn Lane policy outlined in the KYTC Highway Design Manual. This policy should be fully reviewed and understood prior to using this application.