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US 150 and Traffic Impact Study Addendum— Knobs Landing

Report

Floyd County Commissioners

Floyd County, Indiana

December 2024



Report for Floyd County, Indiana

US 150 and Traffic Impact Study Addendum—Knobs Landing



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TABLE OF CONTENTS

Page No.
or Following

US 150 TRAFFIC IMPACT STUDY ADDENDUM–KNOTS LANDING

Introduction	1
Proposed Development.....	2
Area Conditions	3
Projected Traffic.....	4
Traffic Analysis.....	8
Recommendations and Conclusions	9

TABLES

Table 1	Future Projects	3
Table 2	AM Peak-Hour Trip Generation	4
Table 3	PM Peak-Hour Trip Generation	5
Table 4	AM Peak Trip Distribution.....	5
Table 5	PM Peak Trip Distribution.....	5
Tables 6-15	Traffic Results	11
Table 16	Proposed Roadway Improvements.....	11

FIGURES

Figure 1	Study Area	1
Figure 2	Site Plan.....	2
Figure 3	2048 Background Traffic	6
Figure 4	Development Traffic	7
Figure 5	2048 Total Traffic	8

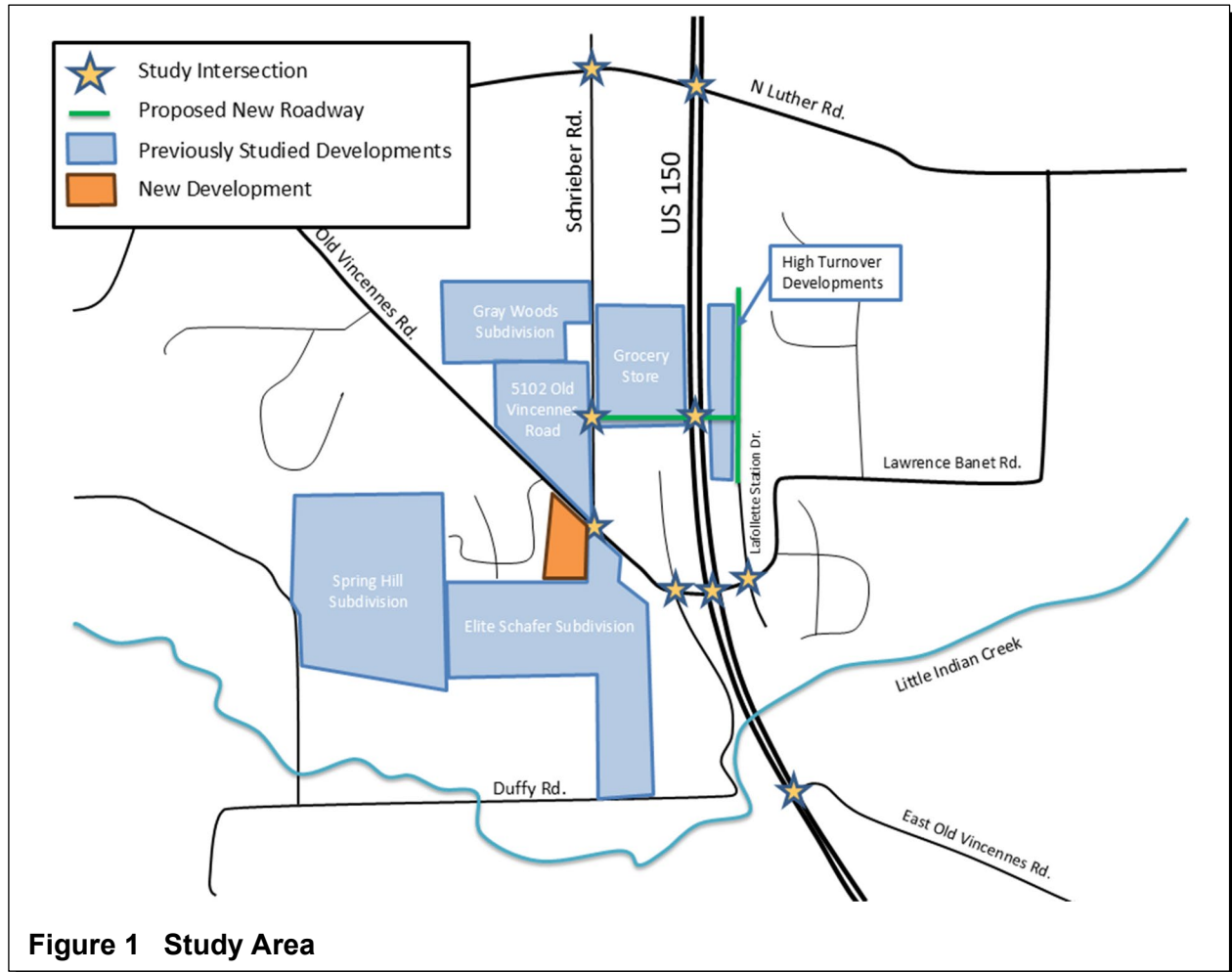
APPENDICES

APPENDIX A–TRIP GENERATION DATA
APPENDIX B–2048 TRAFFIC ANALYSIS
APPENDIX C–US 150 TIS (June 2024)

This report is intended to serve as an addendum to the United States (US) 150 Limited Access Right-of-Way Break Traffic Impact Study completed by Strand Associates, Inc.® (Strand) in June 2024. That report studied the effects of four separate developments in the area of US 150 and Old Vincennes Road, the largest of which was a grocery store approximately one-half mile north of the intersection that would warrant a new access point with US 150. This addendum study uses the recommended alternative from that report as a baseline and studies the impacts of another new development at the southwest corner of Old Vincennes and Schrieber Roads; hereafter referred to as Knobs Landing.

INTRODUCTION

Strand has been hired by Floyd County Commissioners, Indiana (County) to perform a traffic impact study for the proposed Knobs Landing development near the intersection of Old Vincennes and Schrieber Roads. This area is approximately 0.9 miles north of the US 150 and Interstate 64 interchange. The location of the new development relative to the previously studied developments is shown in Figure 1.



This study recommends improvements to the proposed roadway network to accommodate the total traffic generated by the developments in 2048, including required traffic control or roadway geometry changes, such as traffic signals and the number and length of turn lanes.

PROPOSED DEVELOPMENT

A. Land Use and Intensity

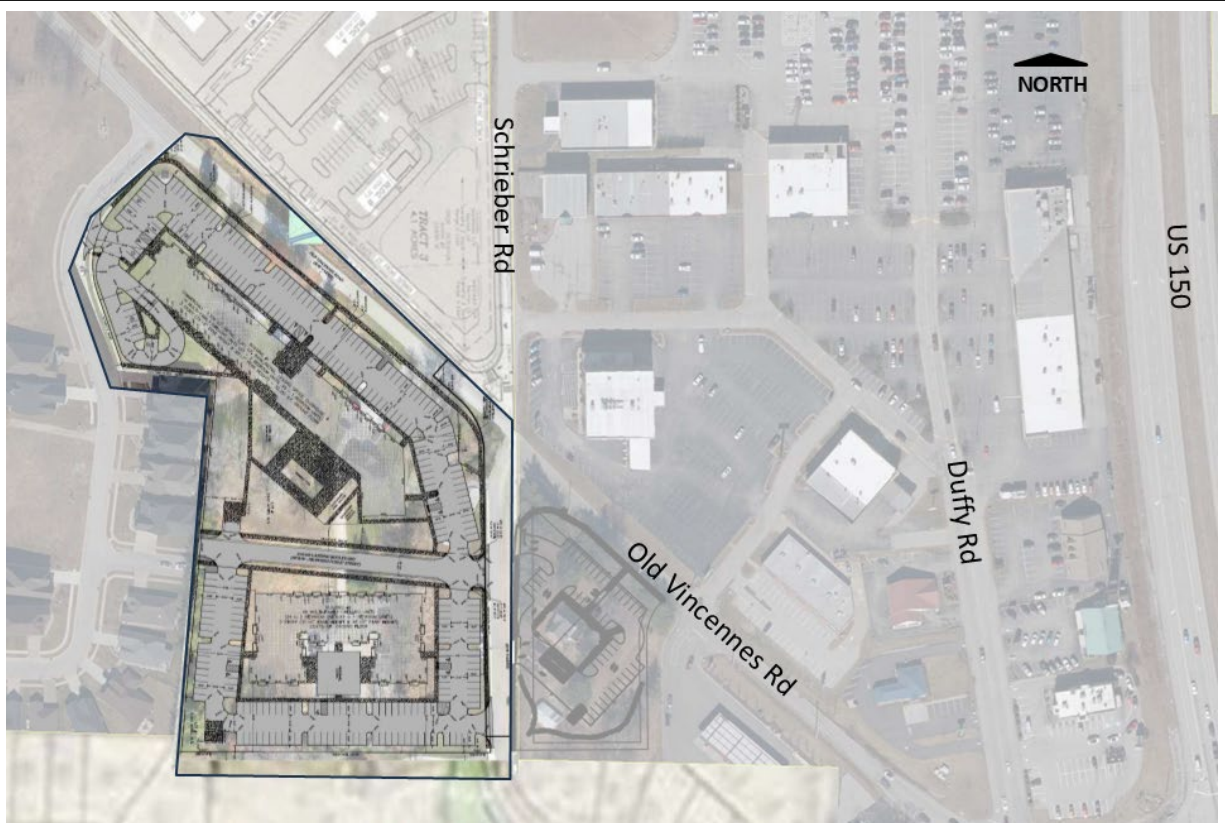
The land on which the development is proposed is a formerly residential property currently used as an office for a local home construction company. The proposed land use will be more intense as it is a combination of commercial and multifamily.

B. Location

The development is generally located near the intersection of US 150 and Old Vincennes Road in the County. Specifically, the development is located in the southeast quadrant of the intersection of Old Vincennes and Schrieber Roads, approximately 0.2 mile west of US 150.

C. Site Plan

Figure 2 shows the proposed site plan for the developments created by the developers.



Source: Indiana Spatial Data Portal

Figure 2 Site Plan

The proposed land uses and building square footages are:

- 146 multifamily housing units
- A drive-through bank with 3,200 gross square footage (GSF)
- A hair salon with 1,800 GSF
- A fast-food restaurant with 1,600 GSF
- A fast casual restaurant with 1,700 GSF
- A yoga studio with 2,600 GSF

Schrieber Road has recently been extended to the south to provide access to a single-family housing development. This new development will use Schrieber and Old Vincennes Roads as the primary access points.

AREA CONDITIONS

A. Existing Conditions

The study area already experiences high traffic volumes, especially on US 150, given the proximity of Interstate 64 as well as on Old Vincennes Road. The existing conventional intersection operates at level of service (LOS F) in the design year.

Other existing land uses in the project area include highway service and commercial, residential, and agricultural. Other than the developments previously studied, there are no other specific developments currently proposed that would affect this intersection. There is no transit service in this area.

B. Other Projects

Several area improvements were determined to be required as a result of the original traffic study. They are shown in Table 1, along with the sponsor. This study assumes these projects are completed by the design year.

Intersection/Road	Improvements	Sponsor
US 150 and Old Vincennes Road	▪ Convert to RCUT + mainline left configuration ▪ Install dual-lane, signalized U-turns on each side of the primary intersection ▪ Install dual U-turn lanes in the median north and south of the primary intersection	INDOT
US 150 and New Road	▪ Construct east-west road between US 150 and Schrieber Road ▪ Convert intersection to traffic signal control	County
Old Vincennes and Duffy Roads	▪ Convert intersection to RIRO	County
Lawrence Banet Road and Lafollette Station Drive	▪ Convert intersection to RIRO ▪ Install roundabout approximately 650 feet east on Lawrence Banet Road	County
Schrieber Road	▪ Extend road south to connect with Duffy Road	County

Note: INDOT=Indiana Department of Transportation
RCUT=restricted crossing U-turn
RIRO=right-in/right-out

Table 1 Future Projects

PROJECTED TRAFFIC**A. Trip Generation**

Trips were estimated for the proposed development using the Institute of Transportation Engineers (ITE) Trip Generation Manual, 11th Edition. The total number of trips generated by the developments are shown in Tables 2 and 3. A 5 percent reduction for linked trips was assumed for this development. Refer to Appendix A for the trip generation data.

The following assumptions were made to convert tenants to ITE codes:

- Paul's Deli—Fast Casual Restaurant
- Smoothie King—Fast-food Restaurant
- Yoga Studio—Medical/Dental Office Building

ITE Land Use Code	ITE Land Use	Units		AM Peak Hour Rate	AM Directional Distribution		2048 AM Peak Hour Trips		
					Entering	Exiting	Total	Entering	Exiting
220	Multi-Family Housing	146 Dwelling Units		0.40	24%	76%	59	14	45
912	Bank	3.2	1,000 GSF	9.95	58%	42%	32	19	13
918	Hair Salon	2	1,000 GSF	1.21	50%	50%	3	2	1
933	Fast Food Restaurant	1.6	1,000 GSF	43.18	58%	42%	70	41	29
930	Fast Casual Restaurant	2	1,000 GSF	1.43	50%	50%	3	2	1
720	Medical/Dental Office Building	3	1,000 GSF	3.10	79%	21%	9	7	2
					New Auto Trips		176	85	91

Table 2 AM Peak-Hour Trip Generation

ITE Land Use Code	ITE Land Use	Units		PM Peak Hour Rate	PM Directional Distribution		2048 AM Peak Hour Trips		
					Entering	Exiting	Total	Entering	Exiting
220	Multi-Family Housing	146 Dwelling Units		0.51	63%	37%	75	47	28
912	Bank	3.2	1,000 GSF	21.01	50%	50%	68	34	34
918	Hair Salon	1.8	1,000 GSF	1.45	17%	83%	3	1	2
933	Fast Food Restaurant	1.6	1,000 GSF	33.21	50%	50%	54	27	27
930	Fast Casual Restaurant	1.7	1,000 GSF	12.55	55%	45%	22	12	10
720	Medical/Dental Office Building	2.6	1,000 GSF	0.97	12%	88%	431	52	379
					New Auto Trips		233	124	109

Table 3 PM Peak-Hour Trip Generation**B. Trip Distribution and Assignment**

The trip distribution follows that of a typical commuter corridor. Network distribution percentages were established based on existing traffic patterns. Because of the southeastern skew of Old Vincennes Road and the conversion of the intersection of Old Vincennes Road and US 150 to a RCUT intersection, any northbound traffic was assigned to travel north along Schrieber Road and east on New Road proposed in the original study. Tables 4 and 5 show the assumed trip distribution percentages by direction, and Figures 3 through 5 show the volumes of background traffic, development traffic, and total traffic, respectively.

Direction of Travel	Entering Trip %	Exiting Trip %
North	20	15
South	60	70
East	5	5
West	15	10

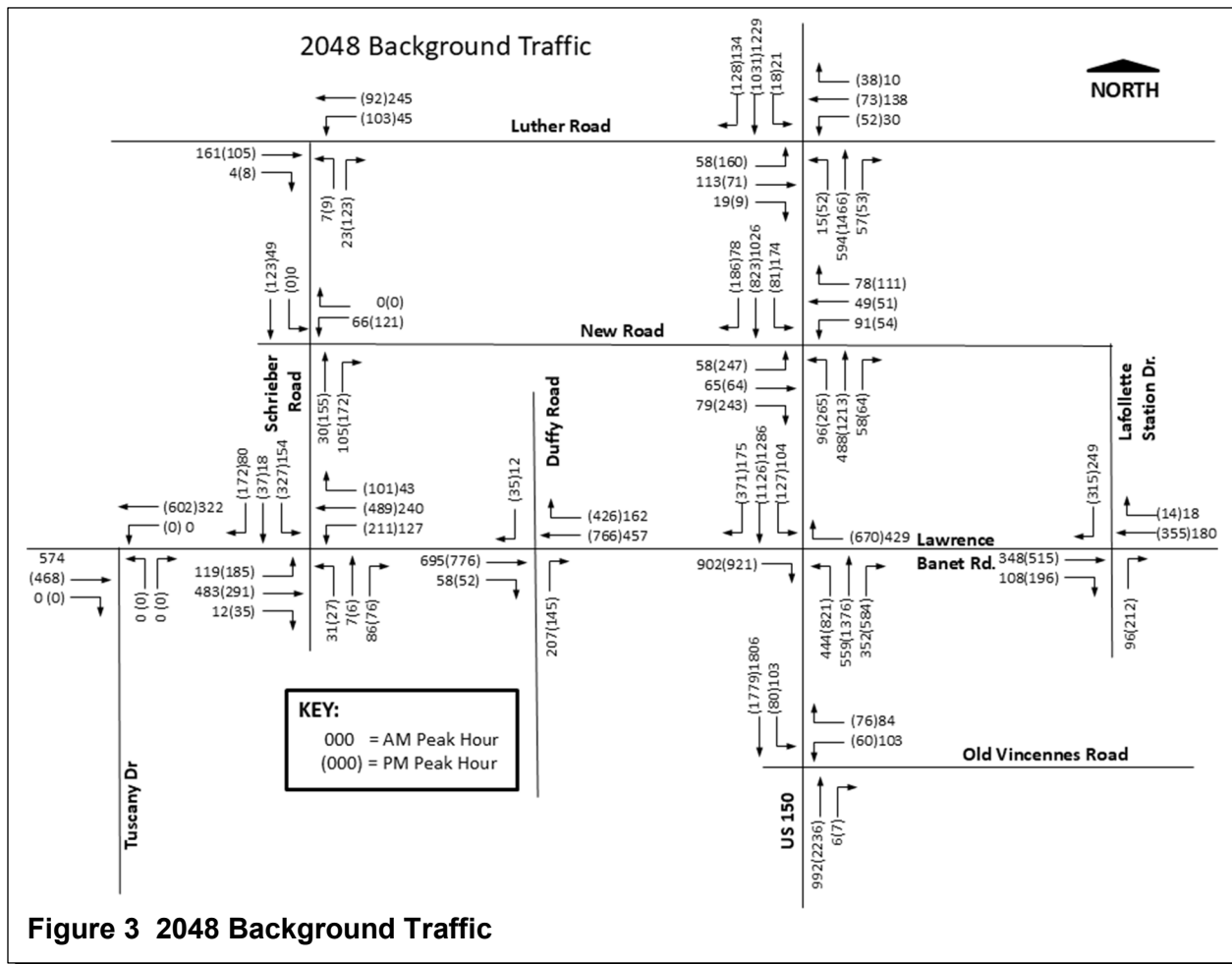
Table 4 AM Peak Trip Distribution

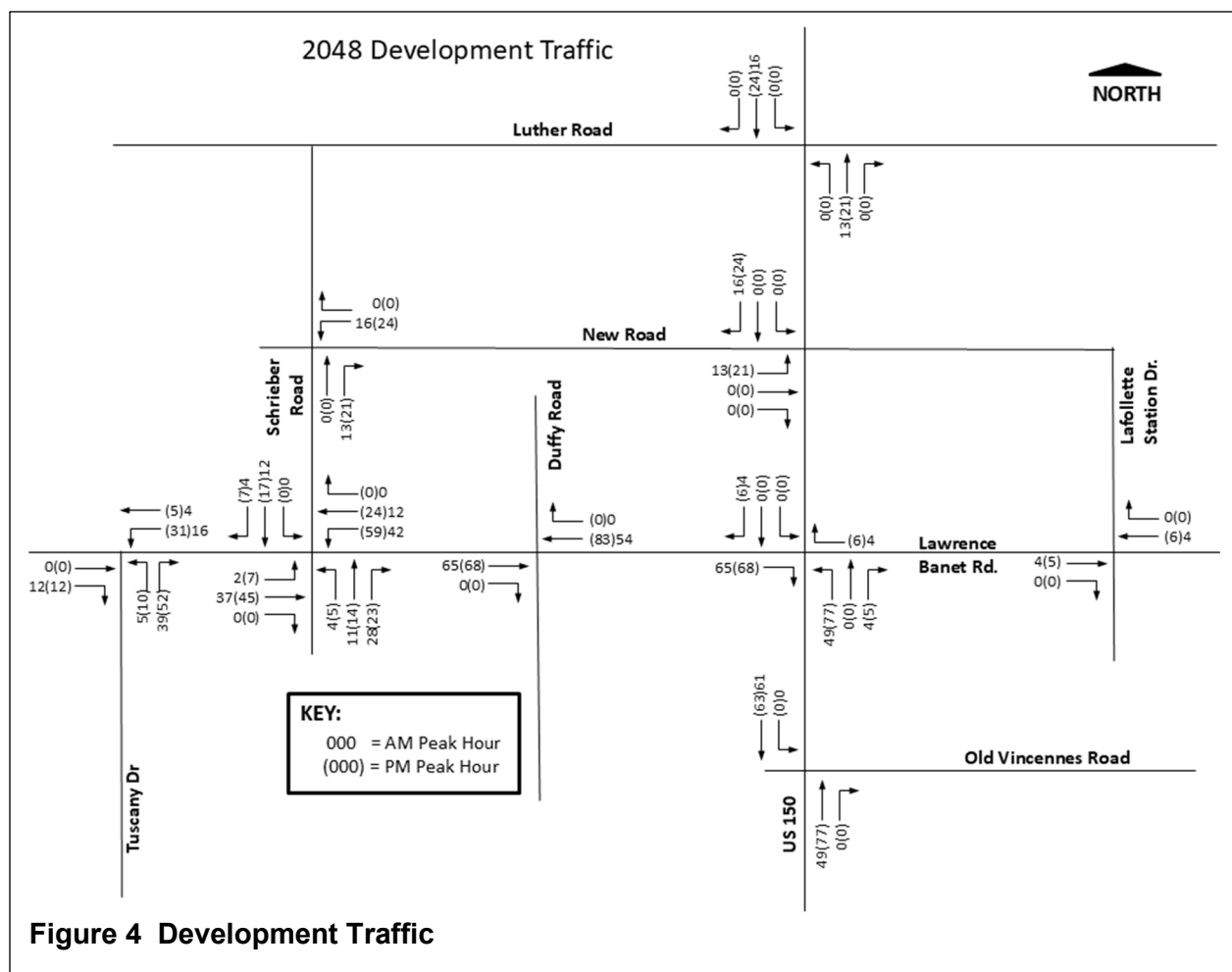
Direction of Travel	Entering Trip %	Exiting Trip %
North	20	20
South	65	60
East	5	5
West	10	15

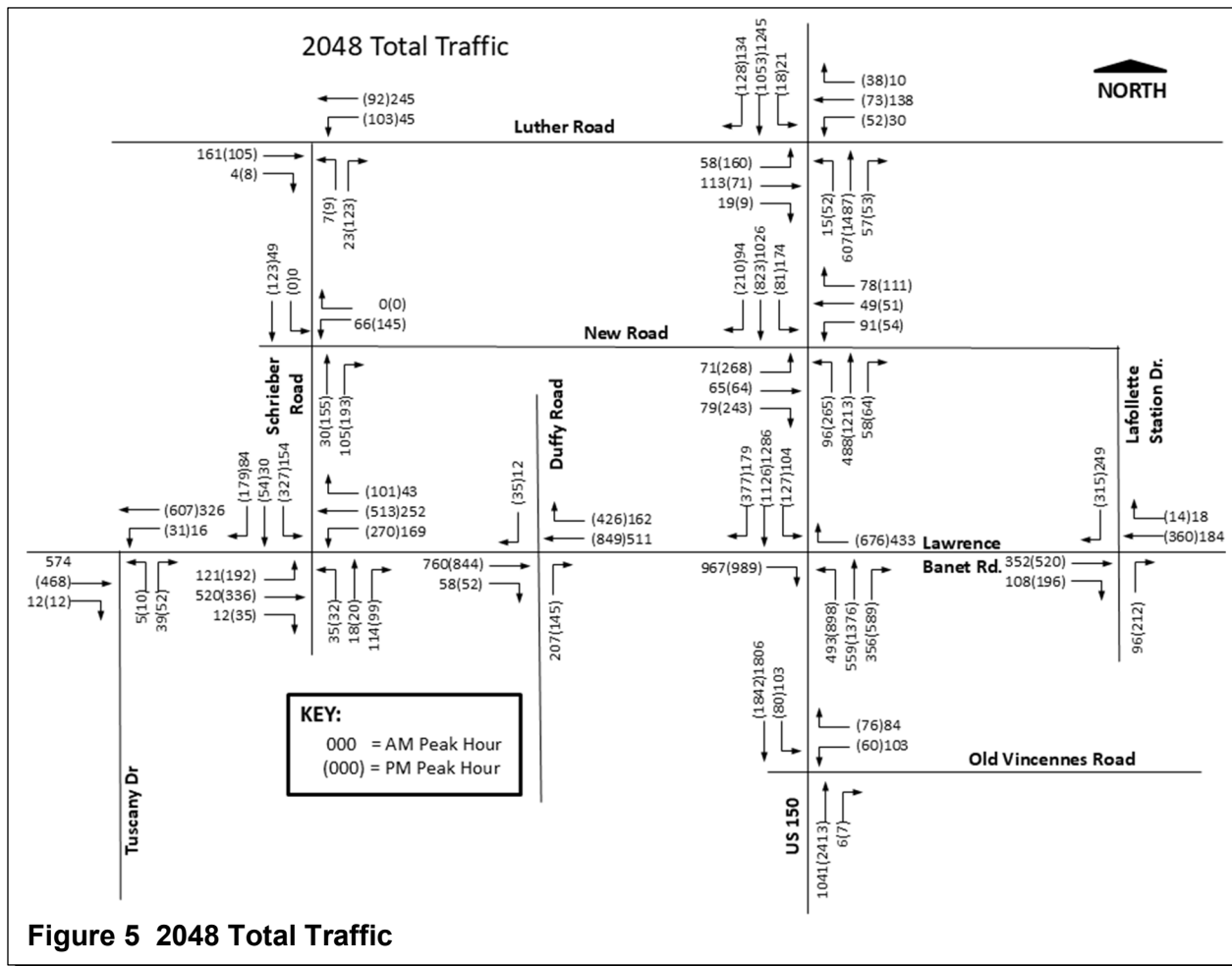
Table 5 PM Peak Trip Distribution

Within the development, the following assumptions were made:

- The entering traffic from the west, half the traffic exiting to the west, and half the traffic exiting east uses the Tuscany Road entrance.
- The other trips and 75 percent of the residential trips use the development's northern entrance on Schrieber Road.
- Remaining 25 percent of residential trips use the development's southern entrance on Schrieber Road.







C. Nonsite Traffic

In accordance with direction from INDOT–Seymour District Traffic, growth rates of 1.5 and 0.7 percent per year were used for traffic on US 150 and Old Vincennes Road, respectively.

TRAFFIC ANALYSIS

Motor vehicle operations were analyzed using the Synchro 11/SimTraffic 11 software program (Synchro). See Appendix B for the original report for more details on Synchro methodology and LOS calculations.

LOS E is often considered to be the limit of acceptable delay, and LOS F indicates a facility where improvements are needed. Many communities establish LOS D as the minimum acceptable condition.

The proposed roadway network was simulated in the 2048 design year with and without the development traffic to establish the operating conditions of the proposed roadway conditions at that time and determine the improvements required to accommodate the development traffic.

A. Traffic Results

The baseline condition, or the recommended alternative from the previous study, was compared to the model with traffic from the proposed development. These results are shown in Tables 6 through 15.

In general, the intersections will still operate at an acceptable level with the additional traffic generated by the development. Signal timing will need to be adjusted at some intersections. The traffic signal at the intersection of Old Vincennes Road and Schrieber Road was designed to operate with eight phases. Although it may currently need four phases, all eight phases will eventually be needed to operate at an acceptable LOS.

While the LOS values are acceptable, queue lengths should be observed as the traffic increases over time, as some of the queue lengths are potentially problematic. For example, the northbound left-turn movement at US 150 and Old Vincennes Road is known locally to have long queues. While the RCUT project drastically improves this movement's LOS and queue length, the additional northbound left turns expected to be generated by the development do extend the queue length past the U-turn signal. The queue lengths at Old Vincennes and Schrieber Roads also extend much farther past the intersection.

B. Proposed Improvements

Proposed improvements are shown in Table 16. No other improvements to the roadway network, such as left- or right-turn lanes, are anticipated, based on figures in Chapter 46 of the Indiana Design Manual.

Intersection	Improvements
US 150 and New Road	▪ Convert EBR phasing to permitted + overlap
US 150 RCUT intersections	▪ Adjust signal timing
Old Vincennes and Schrieber Roads	▪ Add protected left turn phases if not already implemented

Note: EBR=

Table 16 Proposed Roadway Improvements

RECOMMENDATIONS AND CONCLUSIONS

In conclusion, the intersections as proposed in the design year for original traffic study will also operate at an acceptable level with the additional traffic from this proposed development.

There has been a considerable amount of development studied in this area, and very little of it has been constructed so far. The given growth rates may not fully come to fruition; as more of this area is developed, less future growth would be expected. However, if the future model is fairly accurate, added travel lanes may be needed on US 150 and/or Old Vincennes Road at some point in the future. Coordination with INDOT may be required.

Project: US 150
Client: Floyd County
Route: US 150
Date: 12/18/2024
Intersection Level of Service Results



AM Peak Hour						
RCUT+Mainline Lefts+New Road- 2048 (Baseline)	NB & SB = Schrieber Rd; EB & WB = Old Vincennes Rd					
	Old Vincennes Road and Schrieber Road					
	Approach and Movement	Delay (s)	LOS (Sig)	v/c	95th Queue (veh)	(ft)
	EB L	13.0	B	0.34	2.8	70
	EB T/R	12.9	B	0.73	10.5	265
	WB L	26.6	C	0.62	4.9	125
	WB T/R	8.2	A	0.41	4.7	120
	NB L	21.6	C	0.14	1.0	25
	NB T/R	19.2	B	0.35	2.7	70
SB L	30.4	C	0.68	6.3	160	
SB T/R	19.3	B	0.37	2.9	75	
Intersection	16.2	B				
NB and SB=Schrieber Road; EB and WB=Old Vincennes Road						
Added Development Traffic - 2048 No-Build	Old Vincennes Road and Schrieber Road					
	Approach and Movement	Delay (s)	LOS (Sig)	v/c	95th Queue (veh)	(ft)
	EB L	12.4	B	0.33	3.0	75
	EB T/R	12.2	B	0.72	11.9	300
	WB L	40.7	D	0.80	9.1	230
	WB T/R	7.7	A	0.40	5.2	130
	NB L	27.7	C	0.19	1.4	35
	NB T/R	25.6	C	0.54	5.1	130
SB L	75.8	E	0.95	10.8	270	
SB T/R	24.3	C	0.46	4.3	110	
Intersection	23.1	C				
NB and SB=Schrieber Road; EB and WB=Old Vincennes Road						

PM Peak Hour					
NB & SB = Schrieber Rd; EB & WB = Old Vincennes Rd					
Old Vincennes Road and Schrieber Road					
Approach and Movement	Delay (s)	LOS (Sig)	v/c	95th Queue (veh)	95th Queue (ft)
EB L	51.3	D	0.86	8.4	210
EB T/R	10.0	B	0.43	5.0	125
WB L	17.4	B	0.52	4.9	125
WB T/R	16.5	B	0.77	11.7	295
NB L	21.4	C	0.10	0.7	20
NB T/R	16.0	B	0.20	1.7	45
SB L	39.7	D	0.87	11.7	295
SB T/R	18.4	B	0.51	4.9	125
Intersection	22.9	C			
NB and SB=Schrieber Road; EB and WB=Old Vincennes Road					
Old Vincennes Road and Schrieber Road					
Approach and Movement	Delay (s)	LOS (Sig)	v/c	95th Queue (veh)	95th Queue (ft)
EB L	52.9	D	0.89	9.4	235
EB T/R	29.8	C	0.62	15.2	380
WB L	22.7	C	0.68	9.0	225
WB T/R	52.6	D	0.95	31.3	785
NB L	45.1	D	0.17	1.8	45
**NB T/R	75.0	E	0.83	8.3	210
SB L	60.0	E	0.91	18.2	455
SB T/R	41.9	D	0.66	11.8	295
Intersection	45.9	D			
NB and SB=Schrieber Road; EB and WB=Old Vincennes Road					

*uses HCM 2000 because of non-NEMA phasing
**10 veh (10%) assumed RTOR
***uses Synchro because of program issue with progression factor

Table 6

Project: US 150
Client: Floyd County
Route: US 150
Date: 12/18/2024
Intersection Level of Service Results



AM Peak Hour						
	NB and SB=Duffy Road; EB and WB=Old Vincennes Road					
RCUT+Mainline Lefts+New Road- 2048 (Baseline)	Old Vincennes Road and Duffy Road (RIRO)					
	Approach and Movement	LOS Delay (s)	(Unsig)	v/c	95th Queue (veh)	(ft)
	EB T	0.0	A	0.00	0.0	0
	EB T/R	0.0	A	0.00	0.0	0
	WB T	0.0	A	0.00	0.0	0
	WB R	0.0	A	0.00	0.0	0
	NB R	18.0	C	0.49	2.6	65
	SB R	12.1	B	0.03	0.1	5
	Intersection	18.0	C			
	NB and SB=Duffy Road; EB and WB= Old Vincennes Road					
Added Development Traffic - 2048 No-Build	Old Vincennes Road and Duffy Road (RIRO)					
	Approach and Movement	LOS Delay (s)	(Unsig)	v/c	95th Queue (veh)	(ft)
	EB T	0.0	A	0.00	0.0	0
	EB T/R	0.0	A	0.00	0.0	0
	WB T	0.0	A	0.00	0.0	0
	WB R	0.0	A	0.00	0.0	0
	NB R	19.6	C	0.52	2.1	55
	SB R	12.8	B	0.03	0.1	5
Intersection	19.6	C				
	NB and SB=Duffy Road; EB and WB=Old Vincennes Road					

PM Peak Hour					
NB and SB=Duffy Road; EB and WB=Old Vincennes Road					
Old Vincennes Road and Duffy Road (RIRO)					
Approach and Movement	LOS	95th Queue			
	Delay (s)	(Unsig)	v/c	(veh)	(ft)
EB T	0.0	A	0.00	0.0	0
EB T/R	0.0	A	0.00	0.0	0
WB T	0.0	A	0.00	0.0	0
WB R	0.0	A	0.00	0.0	0
NB R	16.3	C	0.37	1.7	45
SB R	18.4	C	0.14	0.5	15
Intersection	18.4	C			
NB and SB=Duffy Road; EB and WB= Old Vincennes Road					
Old Vincennes Road and Duffy Road (RIRO)					
Approach and Movement	LOS	95th Queue			
	Delay (s)	(Unsig)	v/c	(veh)	(ft)
EB T	0.0	A	0.00	0.0	0
EB T/R	0.0	A	0.00	0.0	0
WB T	0.0	A	0.00	0.0	0
WB R	0.0	A	0.00	0.0	0
NB R	17.6	C	0.39	1.8	45
SB R	20.7	C	0.16	0.6	15
Intersection	20.7	C			
NB and SB=Duffy Road; EB and WB=Old Vincennes Road					

*uses HCM 2000 because of non-NEMA phasing
 **10 veh (10%) assumed RTOR
 ***uses Synchro because of program issue with progression factor

Table 7

Project: US 150
Client: Floyd County
Route: US 150
Date: 12/18/2024
Intersection Level of Service Results



AM Peak Hour					
RCUT+Mainline Lefts+New Road- 2048 (Baseline)	NB and SB=US 150; EB and WB=Old Vincennes Road				
	*Old Vincennes Road and US 150				
	Approach and Movement	Delay (s)	LOS (Sig)	v/c	95th Queue (veh) (ft)
	-	-	-	-	-
	EB R	29.8	C	0.89	13.1 330
	-	-	-	-	-
	WB R	28.8	C	0.72	5.8 145
	NB L	22.4	C	0.71	12.4 315
	NB T	6.3	A	0.28	3.5 90
	***NB R	8.0	A	0.24	4.4 115
	SB L	26.1	C	0.28	3.3 85
	SB T	19.9	B	0.87	15.5 390
	SB R	55.9	E	0.12	3.7 95
	Intersection	21.9	C	-	-
Added Development Traffic - 2048 No-Build	NB and SB=US 150; EB and WB=Old Vincennes Road				
	*Old Vincennes Road and US 150				
	Approach and Movement	Delay (s)	LOS (Sig)	v/c	95th Queue (veh) (ft)
	-	-	-	-	-
	EB R	34.7	C	0.94	14.6 365
	-	-	-	-	-
	WB R	28.8	C	0.72	5.8 150
	NB L	22.8	C	0.77	14.2 360
	NB T	7.2	A	0.28	4.5 115
	***NB R	7.4	A	0.24	4.8 120
	SB L	26.0	C	0.27	3.3 85
	SB T	21.6	C	0.89	15.5 390
	SB R	58.2	E	0.12	3.8 95
	Intersection	26.8	C	-	-
NB and SB=US 150; EB and WB=Old Vincennes Road					

PM Peak Hour					
NB and SB=US 150; EB and WB=Old Vincennes Road					
*Old Vincennes Road and US 150					
Approach and Movement	Delay (s)	LOS (Sig)	v/c	95th Queue (veh)	(ft)
-	-	-	-	-	-
EB R	18.2	B	0.68	11.8	300
-	-	-	-	-	-
WB R	41.7	D	0.88	12.4	310
NB L	22.7	C	0.97	18.2	455
NB T	7.2	A	0.69	8.3	210
***NB R	9.2	A	0.39	4.8	120
SB L	15.3	B	0.27	2.7	70
SB T	30.6	C	0.93	18.1	455
SB R	42.3	D	0.55	10.7	270
Intersection	25.1	C	-	-	-
NB and SB=US 150; EB and WB=Old Vincennes Road					
*Old Vincennes Road and US 150					
Approach and Movement	Delay (s)	LOS (Sig)	v/c	95th Queue (veh)	(ft)
-	-	-	-	-	-
EB R	20.8	C	0.68	15.7	395
-	-	-	-	-	-
WB R	48.3	D	0.85	14.0	355
NB L	25.2	C	0.98	32.1	805
NB T	20.8	C	0.67	20.0	500
NB R	16.9	B	0.39	2.5	65
SB L	30.9	C	0.26	5.5	140
SB T	42.2	D	0.95	23.7	595
SB R	33.0	C	0.58	13.4	340
Intersection	28.9	C	-	-	-
NB and SB=US 150; EB and WB= Old Vincennes Road					

*uses HCM 2000 because of non-NEMA phasing
**10 veh (10%) assumed RTOR
***uses Synchro because of program issue with progression factor

Table 8

Project: US 150
Client: Floyd County
Route: US 150
Date: 12/18/2024
Intersection Level of Service Results



AM Peak Hour						
RCUT+Mainline Lefts+New Road- 2048 (Baseline)	NB and SB=US 150					
	*US 150 and NB U-Turn					
	Approach and Movement	Delay (s)	LOS (Sig)	v/c	95th Queue (veh)	95th Queue (ft)
	NB U	33.3	C	0.59	1.8	45
	SB T	7.9	A	0.57	8.7	220
Intersection		9.6	A			
NB and SB=US 150						
Added Development Traffic - 2048 No-Build	*US 150 and NB U-Turn					
	Approach and Movement	Delay (s)	LOS (Sig)	v/c	95th Queue (veh)	95th Queue (ft)
	NB U	33.2	C	0.60	1.8	45
	SB T	7.9	A	0.57	8.8	220
Intersection		9.7	A			
NB and SB=US 150						

PM Peak Hour					
NB and SB=US 150					
*US 150 and NB U-Turn					
Approach and Movement	Delay (s)	LOS (Sig)	v/c	95th Queue (veh)	95th Queue (ft)
NB U	31.8	C	0.73	7.4	190
SB T	4.2	A	0.51	14.5	365
Intersection	6.7	A			
NB and SB=US 150					
*US 150 and NB U-Turn					
Approach and Movement	Delay (s)	LOS (Sig)	v/c	95th Queue (veh)	95th Queue (ft)
NB U	42.2	D	0.78	10.3	260
SB T	4.7	A	0.48	2.0	50
Intersection	8.6	A			
NB and SB=US 150					

*uses HCM 2000 because of non-NEMA phasing
**10 veh (10%) assumed RTOR
***uses Synchro because of program issue with progression factor

Table 9

Project: US 150
Client: Floyd County
Route: US 150
Date: 12/18/2024
Intersection Level of Service Results



AM Peak Hour						
RCUT+Mainline Lefts+New Road- 2048 (Baseline)	NB and SB=US 150					
	*US 150 and SB U-Turn					
	Approach and Movement	Delay (s)	LOS (Sig)	v/c	95th Queue (veh)	95th Queue (ft)
	NB T	10.2	B	0.49	6.0	155
	SB U	34.8	C	0.52	2.7	70
	Intersection	6.5	A			
Added Development Traffic - 2048 No-Build	NB and SB=US 150					
	*US 150 and SB U-Turn					
	Approach and Movement	Delay (s)	LOS (Sig)	v/c	95th Queue (veh)	95th Queue (ft)
	NB T	9.9	A	0.52	4.3	110
	SB U	33.5	C	0.52	2.1	55
	Intersection	6.3	A			

PM Peak Hour						
	NB and SB=US 150					
	*US 150 and SB U-Turn					
	Approach and Movement	Delay (s)	LOS (Sig)	v/c	95th Queue (veh)	95th Queue (ft)
	NB T	4.1	A	0.96	0.7	20
	SB U	51.1	D	0.93	7.2	180
	Intersection	6.5	A			
	NB and SB=US 150					
	*US 150 and SB U-Turn					
	Approach and Movement	Delay (s)	LOS (Sig)	v/c	95th Queue (veh)	95th Queue (ft)
	NB T	3.8	A	0.95	1.0	30
	SB U	63.2	E	0.91	9.4	235
	Intersection	6.5	A			

*uses HCM 2000 because of non-NEMA phasing
**10 veh (10%) assumed RTOR
***uses Synchro because of program issue with progression factor

Table 10

Project: US 150
Client: Floyd County
Route: US 150
Date: 12/18/2024
Intersection Level of Service Results



AM Peak Hour						
RCUT+Mainline Lefts+New Road- 2048 (Baseline)	NB and SB=Lafollette Station Drive; EB and WB=Lawrence Banet Road					
	Lawrence Banet Road and LafolletteStation Drive (RIRO)					
	Approach and Movement	Delay (s)	LOS (Unsig)	v/c	95th Queue (veh)	(ft)
	EB T/R	0.0	A	0.00	0.0	0
	WB T	0.0	A	0.00	0.0	0
	WB T/R	0.0	A	0.00	0.0	0
	NB R	12.5	B	0.19	0.7	20
SB R	10.8	B	0.32	1.4	35	
Intersection	12.5	B				
NB and SB Lafollette Station Drive; EB and WB=Lawrence Banet Road						
Added Development Traffic - 2048 No-Build	Lawrence Banet Road and LafolletteStation Drive (RIRO)					
	Approach and Movement	Delay (s)	LOS (Unsig)	v/c	95th Queue (veh)	(ft)
	EB T/R	0.0	A	0.00	0.0	0
	WB T	0.0	A	0.00	0.0	0
	WB T/R	0.0	A	0.00	0.0	0
	NB R	12.5	B	0.19	0.7	20
	SB R	10.9	B	0.32	1.4	35
Intersection	12.5	B				
NB and SB=Lafollette Station Drive; EB and WB=Lawrence Banet Road						

PM Peak Hour					
NB and SB=Lafollette Station Drive; EB and WB=Lawrence Banet Road					
Lawrence Banet Road and LafolletteStation Drive (RIRO)					
Approach and Movement	Delay (s)	LOS (Unsig)	v/c	95th Queue (veh)	(ft)
EB T/R	0.0	A	0.00	0.0	0
WB T	0.0	A	0.00	0.0	0
WB T/R	0.0	A	0.00	0.0	0
NB R	24.1	C	0.58	3.5	90
SB R	13.6	B	0.47	2.5	65
Intersection	24.1	C			
NB and SB=Lafollette Station Drive; EB and WB=Lawrence Banet Road					
Lawrence Banet Road and LafolletteStation Drive (RIRO)					
Approach and Movement	Delay (s)	LOS (Unsig)	v/c	95th Queue (veh)	(ft)
EB T/R	0.0	A	0.00	0.0	0
WB T	0.0	A	0.00	0.0	0
WB T/R	0.0	A	0.00	0.0	0
NB R	24.5	C	0.58	3.6	90
SB R	13.7	B	0.47	2.6	65
Intersection	24.5	C			
NB and SB=Lafollette Station Drive; EB and WB=Lawrence Banet Road					

*uses HCM 2000 because of non-NEMA phasing
**10 veh (10%) assumed RTOR
***uses Synchro because of program issue with progression factor

Table 11

Project: US 150
Client: Floyd County
Route: US 150
Date: 12/18/2024
Intersection Level of Service Results



AM Peak Hour						
RCUT+Mainline Lefts+New Road- 2048 (Baseline)	NB and SB=Schrieber Road; EB and WB=New Road					
	Schrieber Road and New Road (TWSC)					
	Approach and Movement	LOS Delay (s)	(Unsig)	v/c	95th Queue (veh)	(ft)
	WB L/R	9.6	A	0.09	0.3	10
	NB T/R	0.0	A	0.00	0.0	0
	SB T/L	0.0	A	0.00	0.0	0
Intersection		9.6	A			
Added Development Traffic - 2048 No-Build	NB and SB=Schrieber Road; EB and WB=New Road					
	Schrieber Road and New Road (TWSC)					
	Approach and Movement	LOS Delay (s)	(Unsig)	v/c	95th Queue (veh)	(ft)
	WB L/R	9.8	A	0.09	0.3	10
	NB T/R	0.0	A	0.00	0.0	0
	SB T/L	0.0	A	0.00	0.0	0
Intersection		9.8	A			
NB and SB=Schrieber Road; EB and WB=New Road						

PM Peak Hour					
NB and SB=Schrieber Road; EB and WB=New Road					
Schrieber Road and New Road (TWSC)					
Approach and Movement	Delay (s)	LOS (Unsig)	v/c	95th Queue (veh)	(ft)
WB L/R	12.5	B	0.22	0.8	20
NB T/R	0.0	A	0.00	0.0	0
SB T/L	0.0	A	0.00	0.0	0
Intersection	12.5	B			
NB and SB=Schrieber Road; EB and WB=New Road					
Schrieber Road and New Road (TWSC)					
Approach and Movement	Delay (s)	LOS (Unsig)	v/c	95th Queue (veh)	(ft)
WB L/R	13.0	B	0.26	1.0	25
NB T/R	0.0	A	0.00	0.0	0
SB T/L	0.0	A	0.00	0.0	0
Intersection	13.0	B			
NB and SB=Schrieber Road; EB and WB=New Road					

*uses HCM 2000 because of non-NEMA phasing
 **10 veh (10%) assumed RTOR
 ***uses Synchro because of program issue with progression factor

Table 12

Project: US 150
Client: Floyd County
Route: US 150
Date: 12/18/2024
Intersection Level of Service Results



AM Peak Hour						
RCUT+Mainline Lefts+New Road- 2048 (Baseline)	US 150 and New Road					
	Approach and Movement	Delay (s)	LOS (Sig)	v/c	95th Queue (veh)	(ft)
	EB L	21.8	C	0.17	1.4	35
	EB T	25.9	C	0.28	1.7	45
	EB R	22.4	C	0.27	1.9	50
	WB L	23.1	C	0.28	2.3	60
	WB T	26.2	C	0.23	1.3	35
	WB R	27.9	C	0.43	2.2	55
	NB L	16.5	B	0.41	1.5	40
	NB T	18.4	B	0.46	5.0	125
	NB R	15.6	B	0.12	1.2	30
	SB L	12.9	B	0.41	2.6	65
SB T	25.8	C	0.87	1.2	30	
SB R	14.3	B	0.15	1.5	40	
Intersection		22.0	C			
NB and SB=US 150; EB and WB=New Road						
Added Development Traffic - 2048 No-Build	US 150 and New Road					
	Approach and Movement	Delay (s)	LOS (Sig)	v/c	95th Queue (veh)	(ft)
	EB L	21.8	C	0.21	1.7	45
	EB T	25.9	C	0.28	1.7	45
	EB R	22.4	C	0.27	1.9	50
	WB L	23.1	C	0.28	2.3	60
	WB T	26.2	C	0.23	1.3	35
	WB R	27.9	C	0.43	2.2	55
	NB L	16.5	B	0.41	1.5	40
	NB T	18.4	B	0.46	5.0	125
	NB R	15.6	B	0.12	1.2	30
	SB L	12.9	B	0.41	2.6	65
SB T	25.8	C	0.87	11.2	280	
SB R	14.6	B	0.18	1.8	45	
Intersection		22.0	C			
NB and SB=US 150; EB and WB=New Road						

*uses HCM 2000 because of non-NEMA phasing
**10 veh (10%) assumed RTOR
***uses Synchro because of program issue with progression factor

Table 13

PM Peak Hour					
US 150 and New Road					
Approach and Movement	Delay (s)	LOS (Sig)	v/c	95th Queue (veh)	(ft)
EB L	39.5	D	0.73	9.8	245
EB T	33.0	C	0.22	2.4	60
EB R	27.1	C	0.54	8.2	205
WB L	35.6	D	0.23	2.1	55
WB T	39.6	D	0.33	2.1	55
WB R	56.3	E	0.84	6.9	175
NB L	38.4	D	0.86	8.9	225
NB T	30.7	C	0.88	17.9	450
NB R	8.0	A	0.10	1.6	40
SB L	39.4	D	0.33	3.2	80
SB T	35.8	D	0.66	15.1	380
SB R	30.1	C	0.33	7.7	195
Intersection	33.8	C			
NB and SB=US 150; EB and WB=New Road					
US 150 and New Road					
Approach and Movement	Delay (s)	LOS (Sig)	v/c	95th Queue (veh)	(ft)
EB L	71.7	E	0.91	15.7	395
EB T	47.3	D	0.28	3.4	85
EB R	28.7	C	0.73	9.3	235
WB L	52.3	D	0.28	3.0	75
WB T	56.3	E	0.44	3.0	75
WB R	39.2	D	0.71	5.9	150
NB L	19.0	B	0.72	6.4	160
NB T	39.6	D	0.66	26.5	665
NB R	9.4	A	0.08	2.9	75
SB L	20.3	C	0.41	1.9	50
SB T	19.9	B	0.49	11.7	295
SB R	5.5	A	0.28	6.1	155
Intersection	32.5	C			
NB and SB=US 150; EB and WB=New Road					

Project: US 150
Client: Floyd County
Route: US 150
Date: 12/18/2024
Intersection Level of Service Results



AM Peak Hour						
RCUT+Mainline Lefts+New Road - 2048 (Baseline)	NB=Schrieber Road; EB and WB=Luther Road					
	Schrieber Road and Luther Road (TWSC)					
	Approach and Movement	Delay (s)	LOS (Unsig)	v/c	95th Queue (veh)	95th Queue (ft)
	EB T/R	0.0	A	0.00	0.0	0
	WB T/L	1.2	A	0.05	0.1	5
	NB R/L	10.7	B	0.06	0.2	5
	Intersection	10.7	B			
NB=Schrieber Road; EB and WB=Luther Road						
Added Development Traffic - 2048 No-Build	Schrieber Road and Luther Road (TWSC)					
	Approach and Movement	Delay (s)	LOS (Unsig)	v/c	95th Queue (veh)	95th Queue (ft)
	EB T/R	0.0	A	0.00	0.0	0
	WB T/L	1.2	A	0.05	0.1	5
	NB R/L	10.7	B	0.06	0.2	5
	Intersection	10.7	B			
NB=Schrieber Road; EB and WB=Luther Road						

PM Peak Hour						
NB=Schrieber Road; EB and WB=Luther Road						
Schrieber Road and Luther Road (TWSC)						
Approach and Movement	Delay (s)	LOS (Unsig)	v/c	95th Queue (veh)	95th Queue (ft)	
EB T/R	0.0	A	0.00	0.0	0	
WB T/L	4.1	A	0.10	0.3	10	
NB R/L	10.3	B	0.21	0.7	20	
Intersection	10.3	B				
NB=Schrieber Road; EB and WB=Luther Road						
Schrieber Road and Luther Road (TWSC)						
Approach and Movement	Delay (s)	LOS (Unsig)	v/c	95th Queue (veh)	95th Queue (ft)	
EB T/R	0.0	A	0.00	0.0	0	
WB T/L	7.8	A	0.09	0.3	10	
NB R/L	10.3	B	0.20	0.7	20	
Intersection	10.3	B				
NB=Schrieber Road; EB and WB=Luther Road						

*uses HCM 2000 because of non-NEMA phasing
**10 veh (10%) assumed RTOR
***uses Synchro because of program issue with progression factor

Table 14

Project: US 150
Client: Floyd County
Route: US 150
Date: 12/18/2024
Intersection Level of Service Results



AM Peak Hour						
	NB and SB=US 150; EB and WB=Luther Road					
RCUT+Mainline Lefts+New Road- 2048 (Baseline)	US 150 and Luther Road					
	Approach and Movement	Delay (s)	LOS (Sig)	v/c	95th Queue (veh)	95th Queue (ft)
	EB T/R/L	31.4	C	0.64	6.0	150
	WB T/R/L	30.2	C	0.58	5.4	135
	NB L	44.4	D	0.49	0.6	15
	NB T	8.6	A	0.33	3.5	90
	NB R	7.1	A	0.07	0.6	15
	SB L	42.3	D	0.50	0.8	20
	SB T	11.9	B	0.65	8.9	225
	SB R	7.5	A	0.16	1.5	40
	Intersection	14.1	B			
	NB and SB=US 150; EB and WB=Luther Road					
Added Development Traffic - 2048 No-Build	US 150 and Luther Road					
	Approach and Movement	Delay (s)	LOS (Sig)	v/c	95th Queue (veh)	95th Queue (ft)
	EB T/R/L	31.4	C	0.64	6.0	150
	WB T/R/L	30.1	C	0.58	5.4	135
	NB L	44.3	D	0.49	0.6	15
	NB T	8.7	A	0.33	3.5	90
	NB R	7.1	A	0.07	0.6	15
	SB L	42.3	D	0.50	0.8	20
	SB T	12.1	B	0.65	9.1	230
	SB R	7.5	A	0.16	1.5	40
	Intersection	14.1	B			
	NB and SB=US 150; EB and WB=Luther Road					

PM Peak Hour					
NB and SB=US 150; EB and WB=Luther Road					
US 150 and Luther Road					
Approach and Movement	Delay (s)	LOS (Sig)	v/c	95th Queue (veh)	95th Queue (ft)
EB T/R/L	41.0	D	0.71	9.5	240
WB T/R/L	32.6	C	0.43	5.8	145
NB L	49.4	D	0.74	2.2	55
NB T	10.3	B	0.93	5.0	125
NB R	2.1	A	0.08	0.2	5
SB L	35.1	D	0.08	0.6	15
SB T	14.0	B	0.54	9.8	245
SB R	10.2	B	0.15	2.1	55
Intersection	15.6	B			
NB and SB=US 150; EB and WB=Luther Road					
US 150 and Luther Road					
Approach and Movement	Delay (s)	LOS (Sig)	v/c	95th Queue (veh)	95th Queue (ft)
EB T/R/L	41.0	D	0.71	9.5	240
WB T/R/L	32.6	C	0.43	5.8	145
NB L	52.5	D	0.74	2.3	60
NB T	27.4	C	0.90	15.7	395
NB R	12.7	B	0.07	1.0	25
SB L	37.0	D	0.10	0.6	15
SB T	14.1	B	0.55	10.1	255
SB R	10.2	B	0.15	2.1	55
Intersection	23.8	C			
NB and SB=US 150; EB and WB=Luther Road					

*uses HCM 2000 because of non-NEMA phasing
**10 veh (10%) assumed RTOR
***uses Synchro because of program issue with progression factor

Table 15

Multifamily Housing (Low-Rise) Not Close to Rail Transit (220)

Vehicle Trip Ends vs: Dwelling Units
On a: Weekday

Setting/Location: General Urban/Suburban

Number of Studies: 22

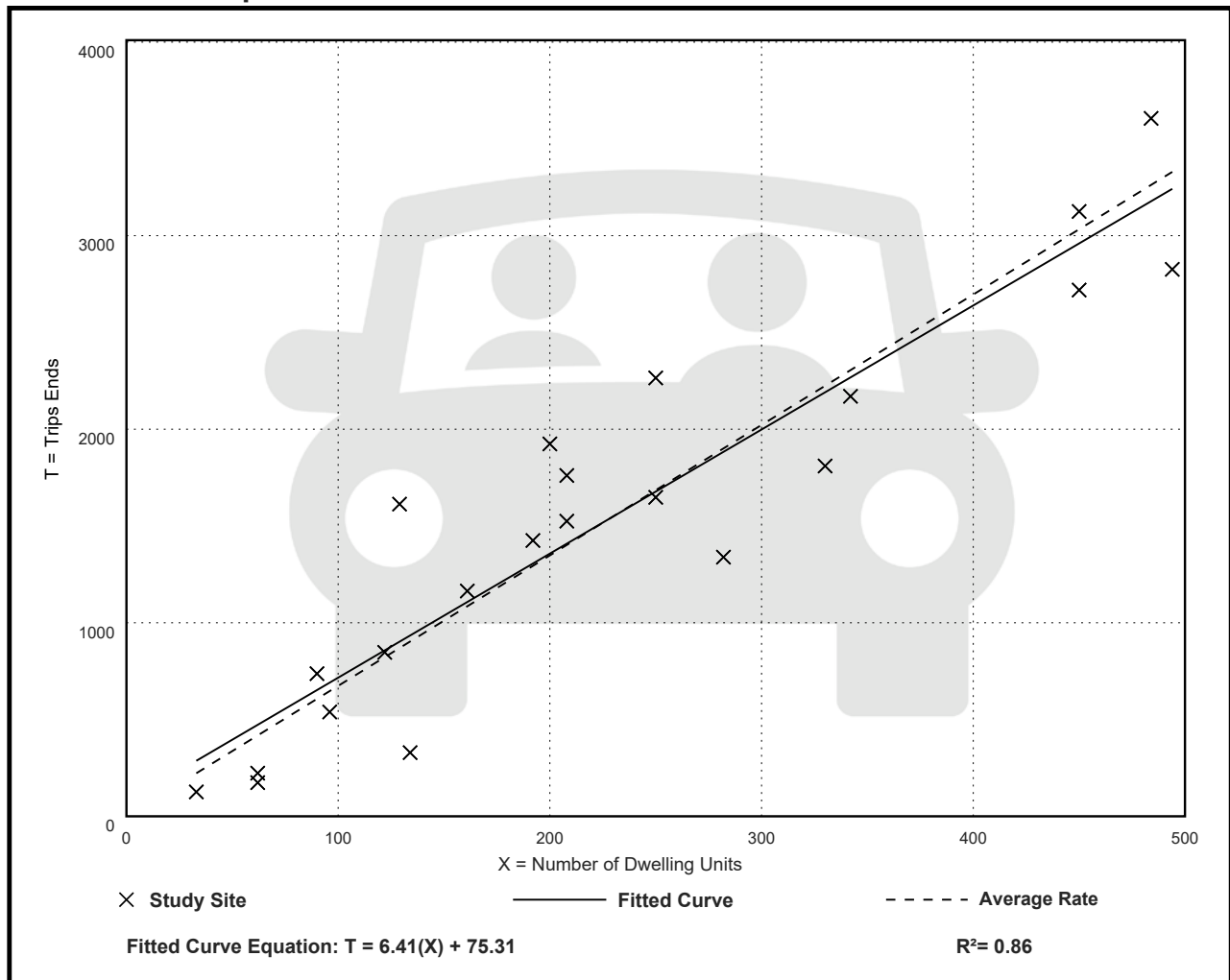
Avg. Num. of Dwelling Units: 229

Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
6.74	2.46 - 12.50	1.79

Data Plot and Equation



Multifamily Housing (Low-Rise) Not Close to Rail Transit (220)

Vehicle Trip Ends vs: Dwelling Units

On a: Weekday,

Peak Hour of Adjacent Street Traffic,

One Hour Between 7 and 9 a.m.

Setting/Location: General Urban/Suburban

Number of Studies: 49

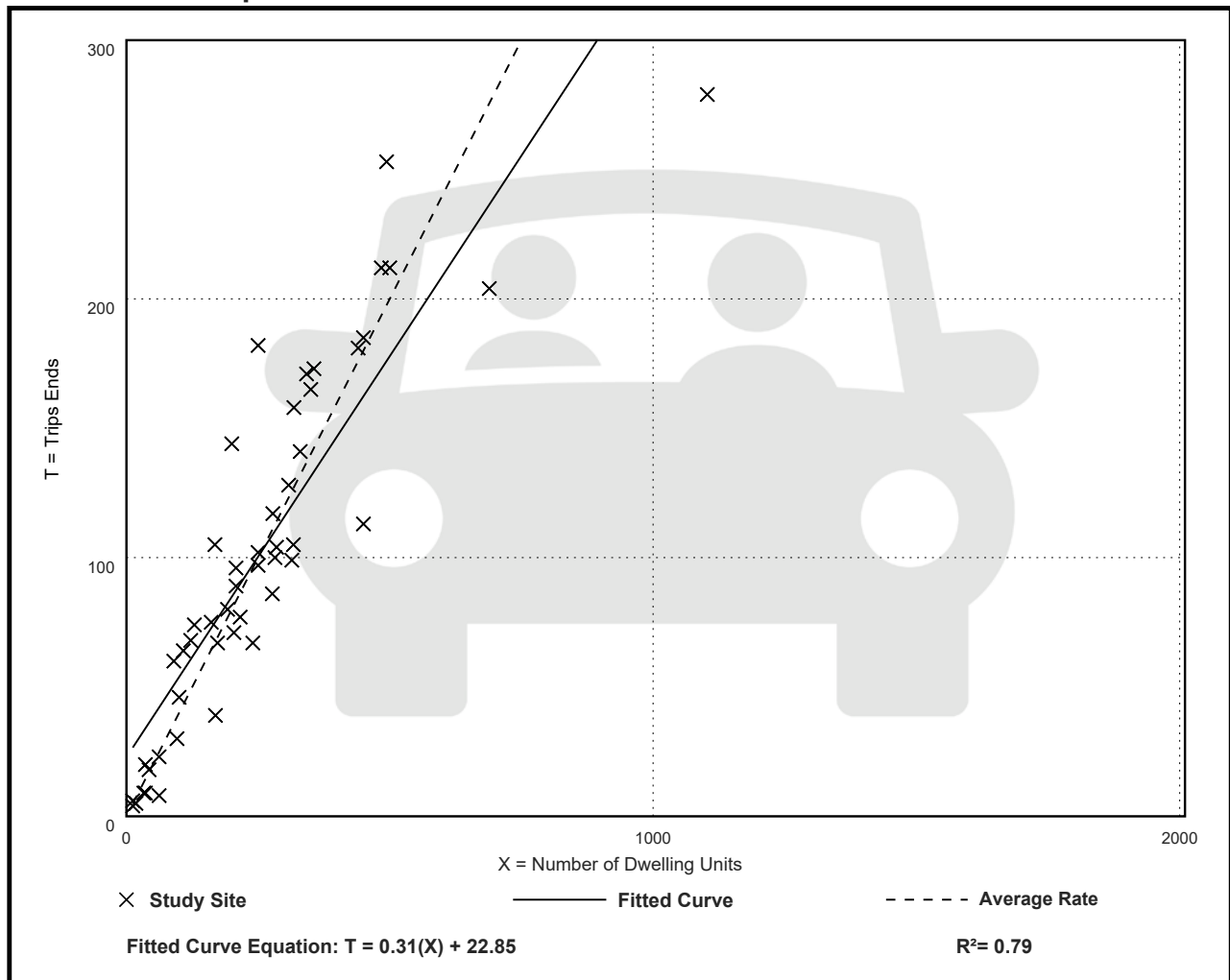
Avg. Num. of Dwelling Units: 249

Directional Distribution: 24% entering, 76% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.40	0.13 - 0.73	0.12

Data Plot and Equation



Multifamily Housing (Low-Rise) Not Close to Rail Transit (220)

Vehicle Trip Ends vs: Dwelling Units

On a: Weekday,

Peak Hour of Adjacent Street Traffic,

One Hour Between 4 and 6 p.m.

Setting/Location: General Urban/Suburban

Number of Studies: 59

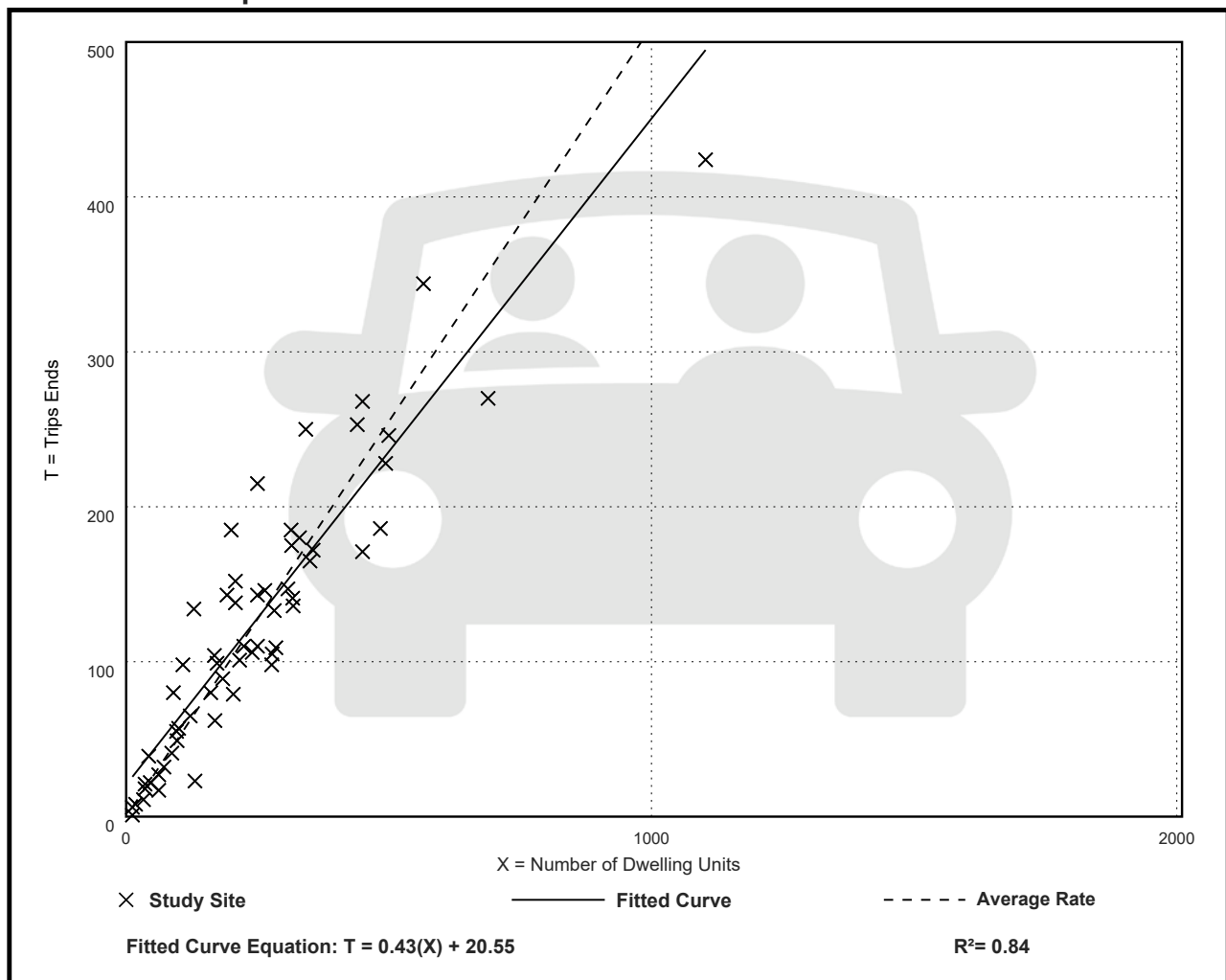
Avg. Num. of Dwelling Units: 241

Directional Distribution: 63% entering, 37% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.51	0.08 - 1.04	0.15

Data Plot and Equation



Medical-Dental Office Building - Stand-Alone (720)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Weekday

Setting/Location: General Urban/Suburban

Number of Studies: 18

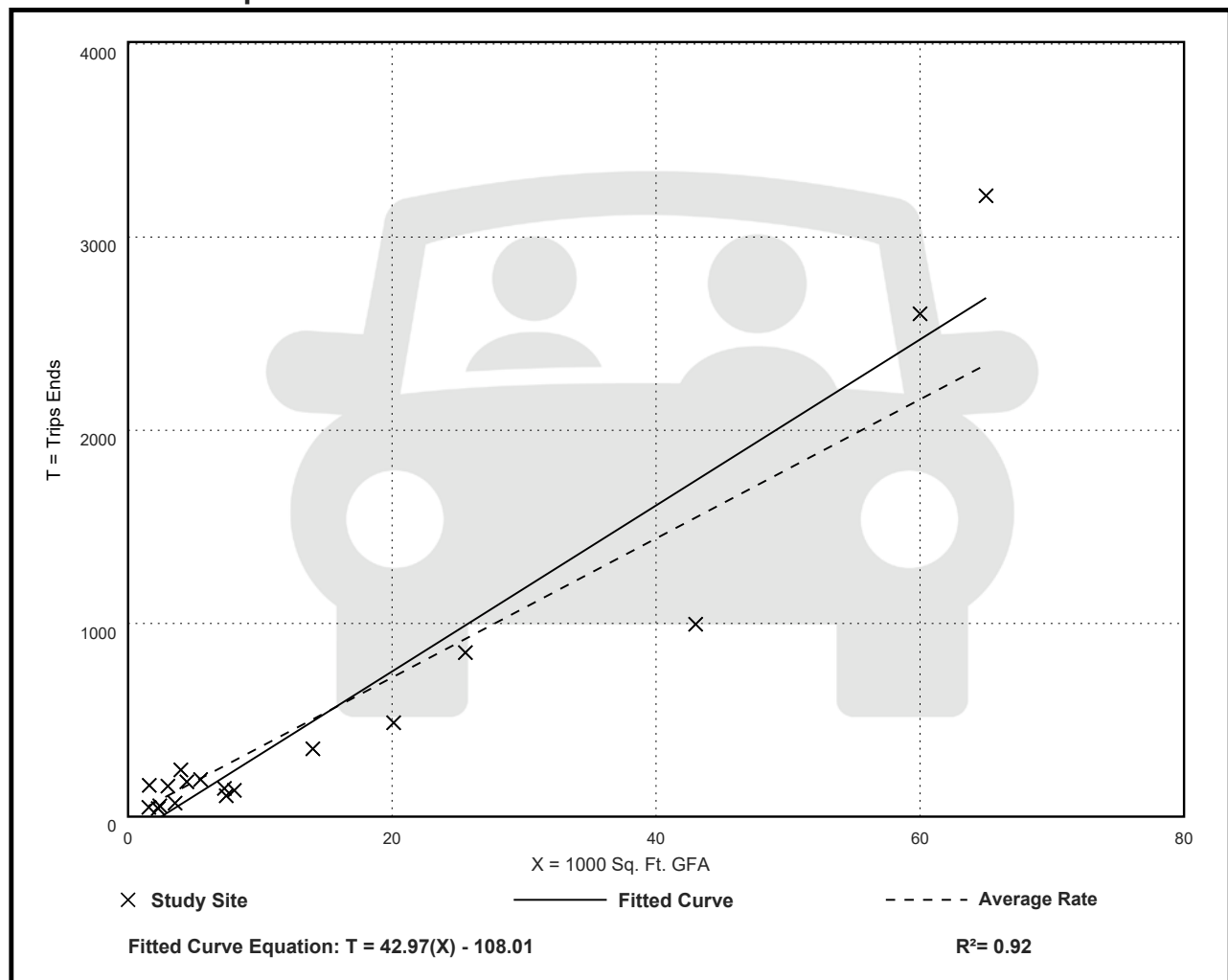
Avg. 1000 Sq. Ft. GFA: 15

Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
36.00	14.52 - 100.75	13.38

Data Plot and Equation



Medical-Dental Office Building - Stand-Alone (720)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA

On a: Weekday,

Peak Hour of Adjacent Street Traffic,

One Hour Between 7 and 9 a.m.

Setting/Location: General Urban/Suburban

Number of Studies: 24

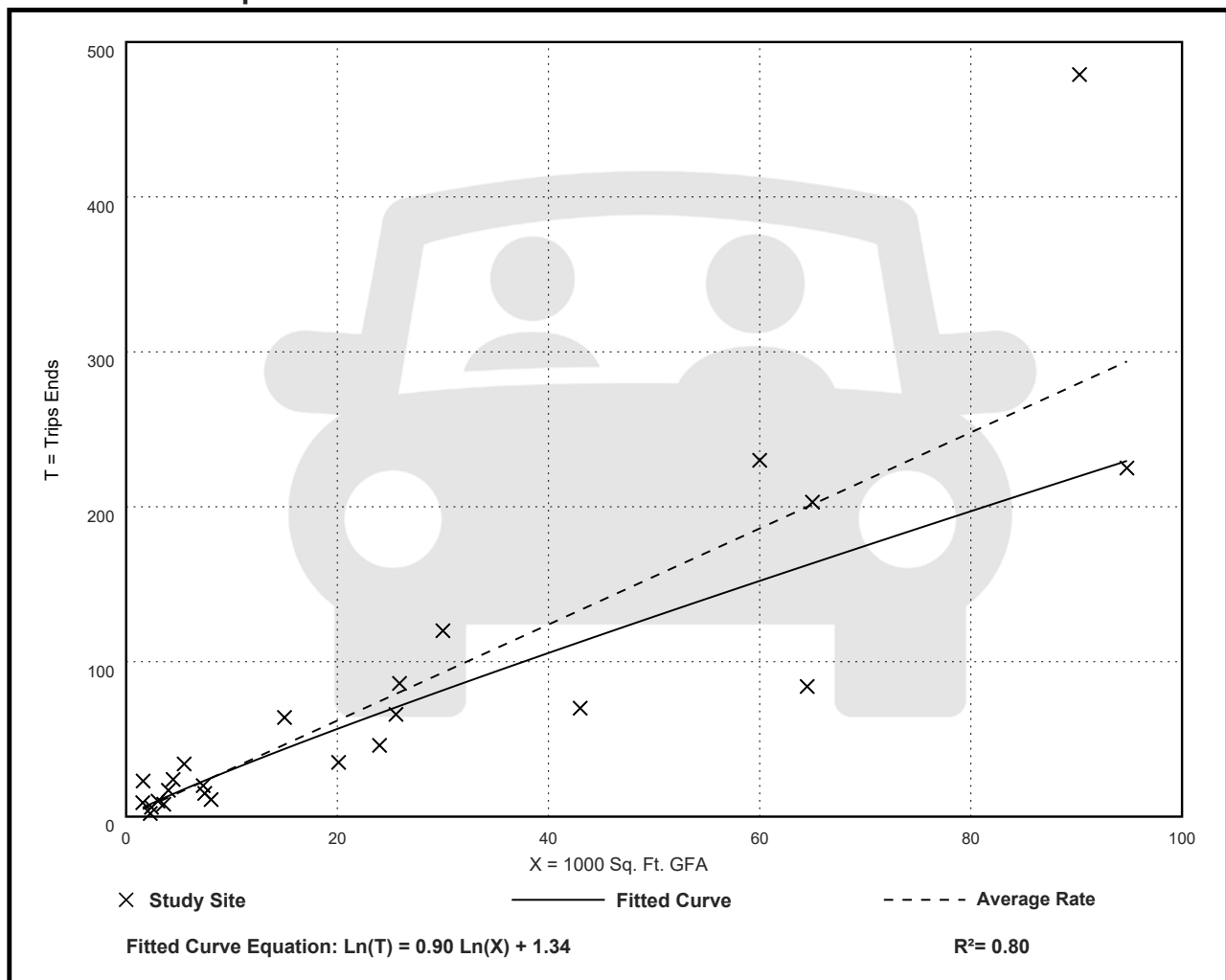
Avg. 1000 Sq. Ft. GFA: 25

Directional Distribution: 79% entering, 21% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
3.10	0.87 - 14.30	1.49

Data Plot and Equation



Medical-Dental Office Building - Stand-Alone (720)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA

On a: Weekday,

Peak Hour of Adjacent Street Traffic,

One Hour Between 4 and 6 p.m.

Setting/Location: General Urban/Suburban

Number of Studies: 30

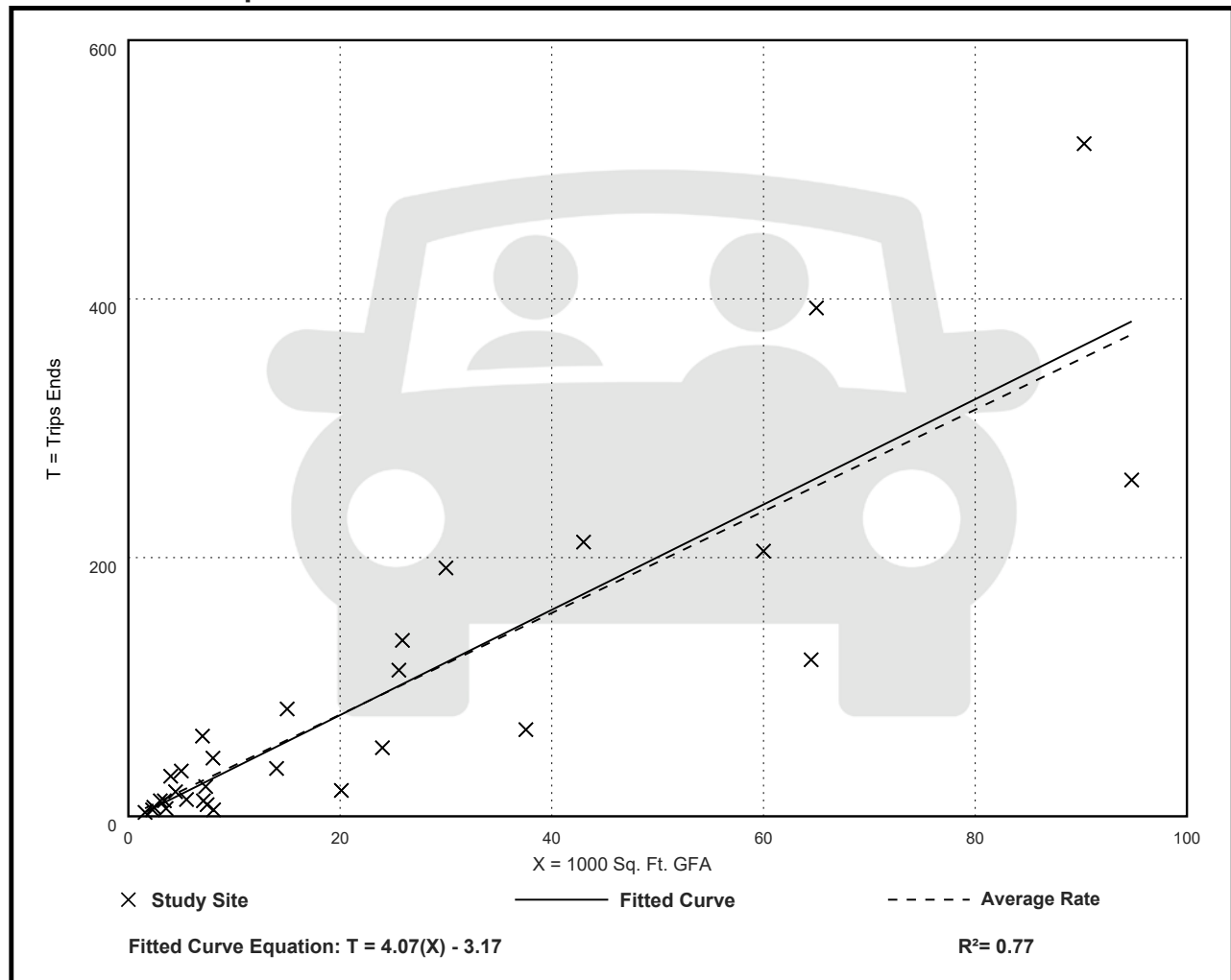
Avg. 1000 Sq. Ft. GFA: 23

Directional Distribution: 30% entering, 70% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
3.93	0.62 - 8.86	1.86

Data Plot and Equation



Drive-in Bank (912)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Weekday

Setting/Location: General Urban/Suburban

Number of Studies: 19

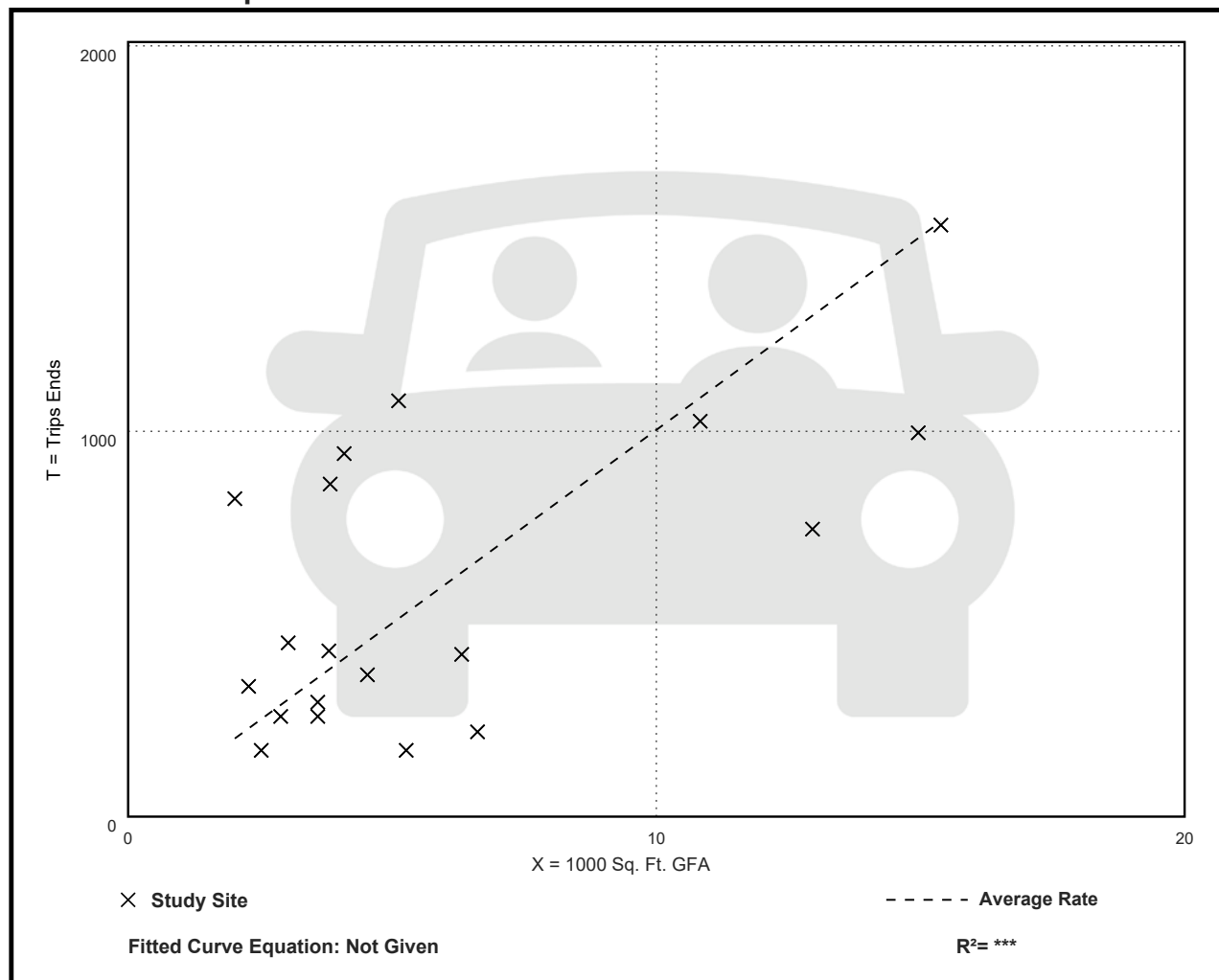
Avg. 1000 Sq. Ft. GFA: 6

Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
100.35	32.67 - 408.42	68.62

Data Plot and Equation



Drive-in Bank (912)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA

On a: Weekday,

Peak Hour of Adjacent Street Traffic,

One Hour Between 7 and 9 a.m.

Setting/Location: General Urban/Suburban

Number of Studies: 44

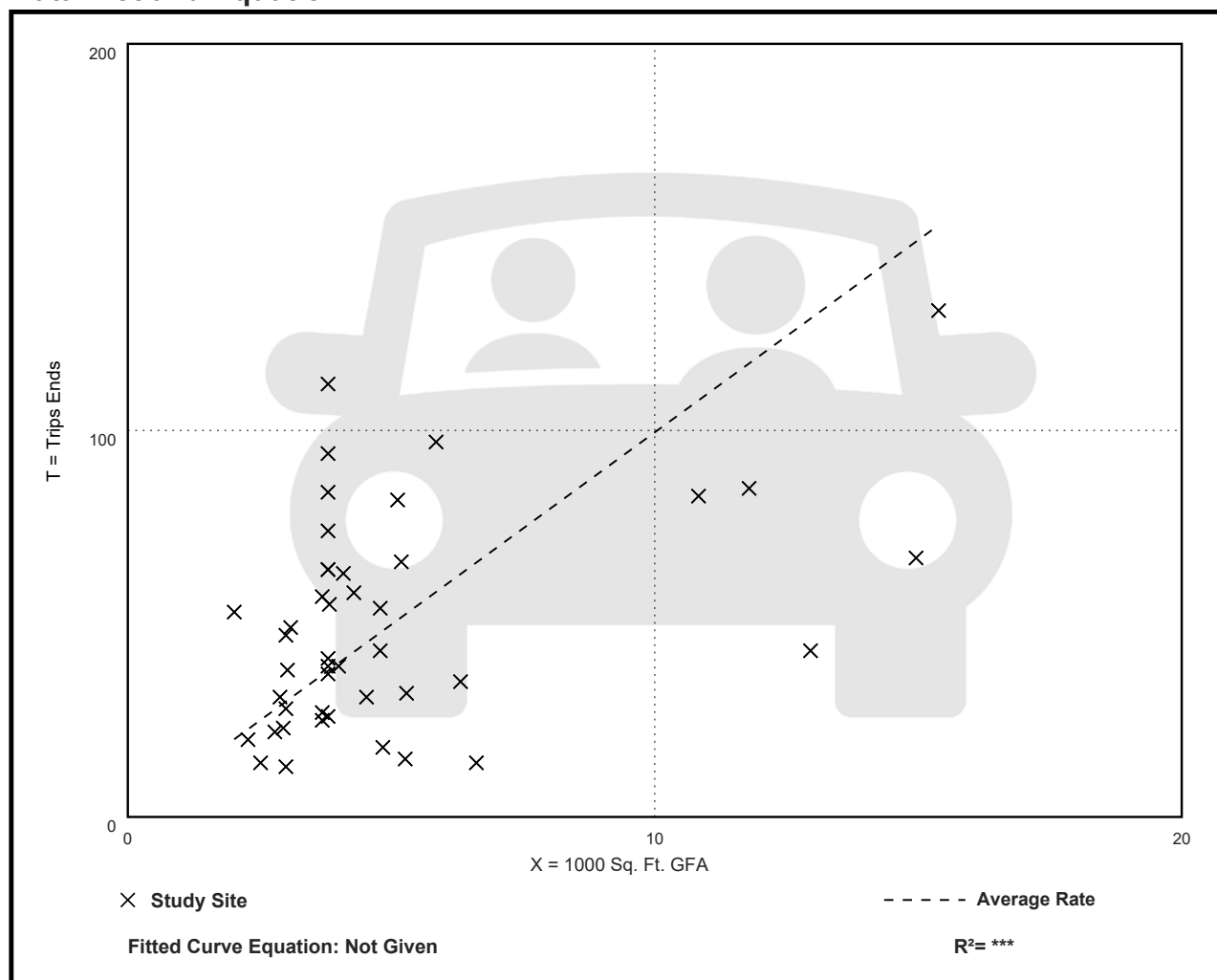
Avg. 1000 Sq. Ft. GFA: 5

Directional Distribution: 58% entering, 42% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
9.95	2.12 - 29.47	6.00

Data Plot and Equation



Drive-in Bank (912)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA

On a: Weekday,

Peak Hour of Adjacent Street Traffic,

One Hour Between 4 and 6 p.m.

Setting/Location: General Urban/Suburban

Number of Studies: 114

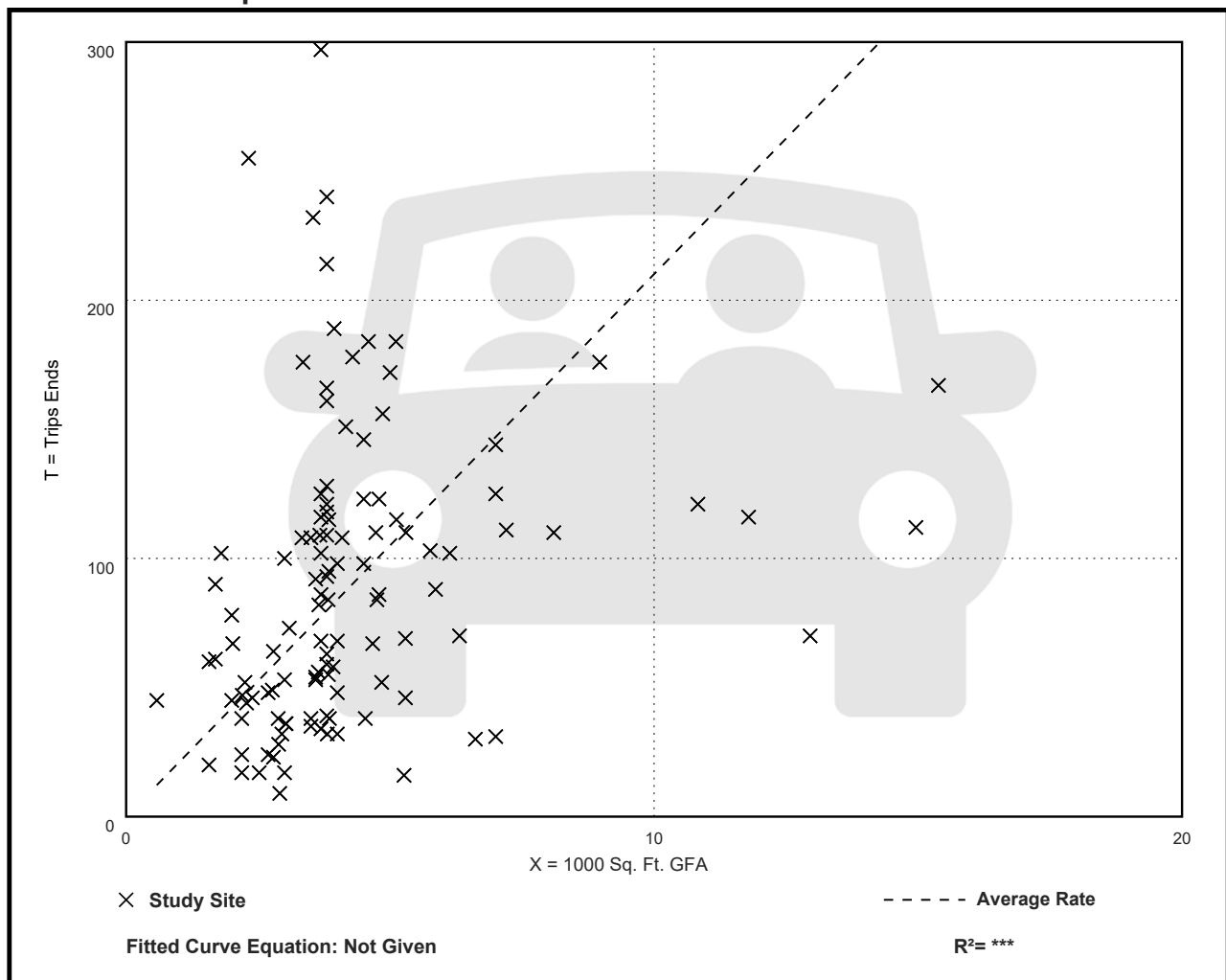
Avg. 1000 Sq. Ft. GFA: 4

Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
21.01	3.04 - 109.91	15.13

Data Plot and Equation



Hair Salon (918)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA

On a: Weekday,

Peak Hour of Adjacent Street Traffic,

One Hour Between 7 and 9 a.m.

Setting/Location: General Urban/Suburban

Number of Studies: 1

Avg. 1000 Sq. Ft. GFA: 4

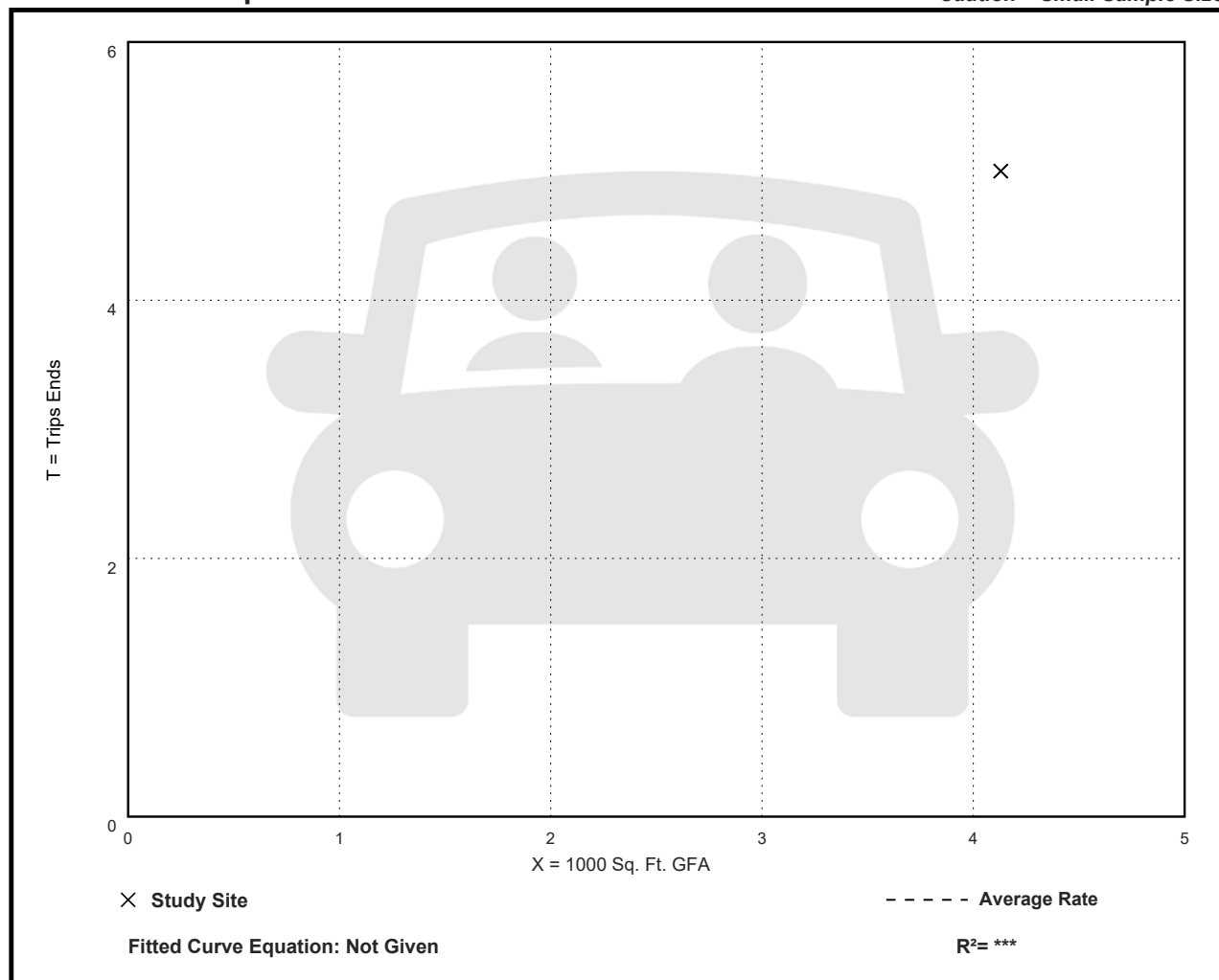
Directional Distribution: Not Available

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
1.21	1.21 - 1.21	***

Data Plot and Equation

Caution – Small Sample Size



Hair Salon (918)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA

On a: Weekday,

Peak Hour of Adjacent Street Traffic,

One Hour Between 4 and 6 p.m.

Setting/Location: General Urban/Suburban

Number of Studies: 1

Avg. 1000 Sq. Ft. GFA: 4

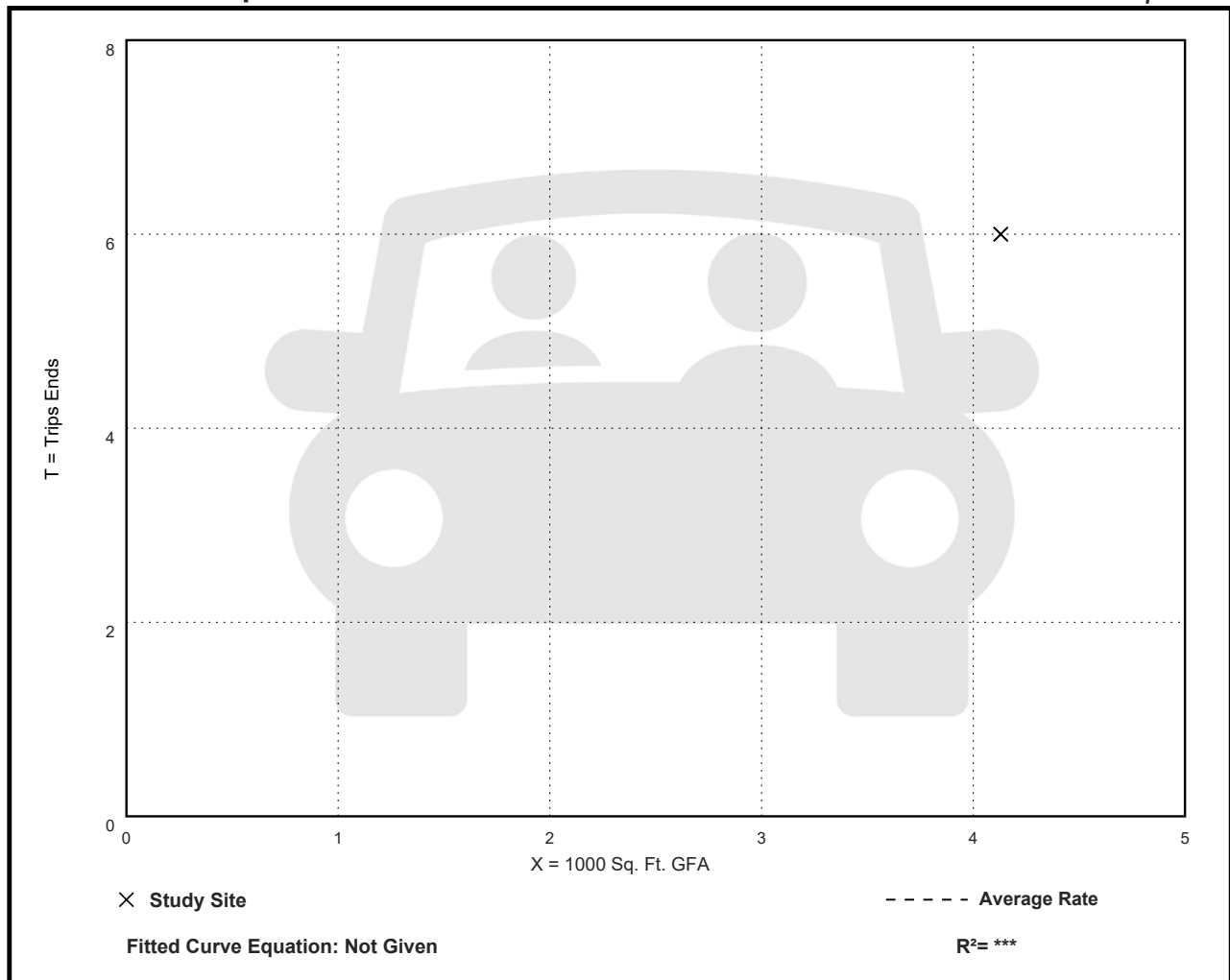
Directional Distribution: 17% entering, 83% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
1.45	1.45 - 1.45	***

Data Plot and Equation

Caution – Small Sample Size



Clinic (630)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Weekday

Setting/Location: General Urban/Suburban

Number of Studies: 9

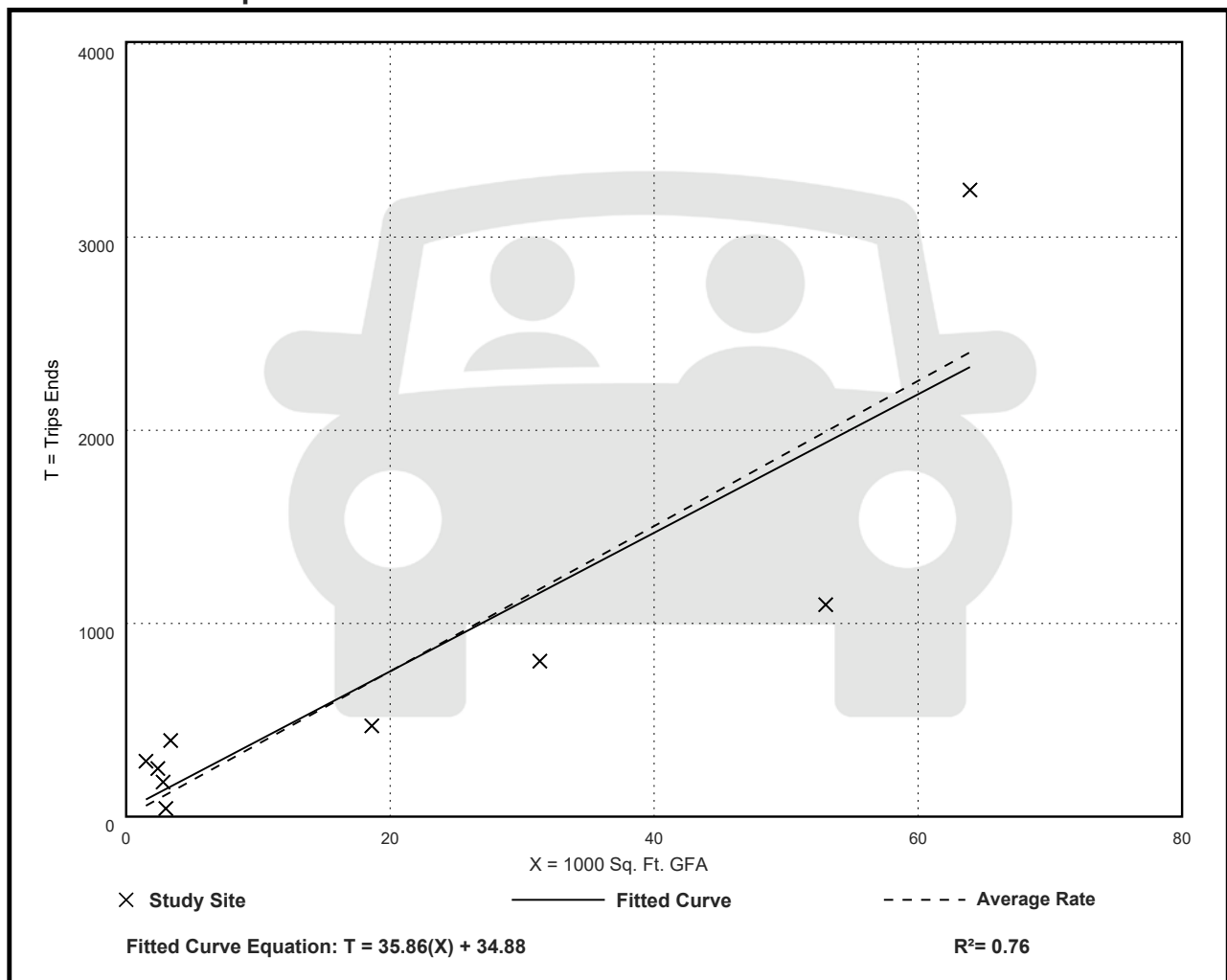
Avg. 1000 Sq. Ft. GFA: 20

Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
37.60	13.96 - 191.33	25.52

Data Plot and Equation



Clinic (630)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA

On a: Weekday,

Peak Hour of Adjacent Street Traffic,

One Hour Between 7 and 9 a.m.

Setting/Location: General Urban/Suburban

Number of Studies: 9

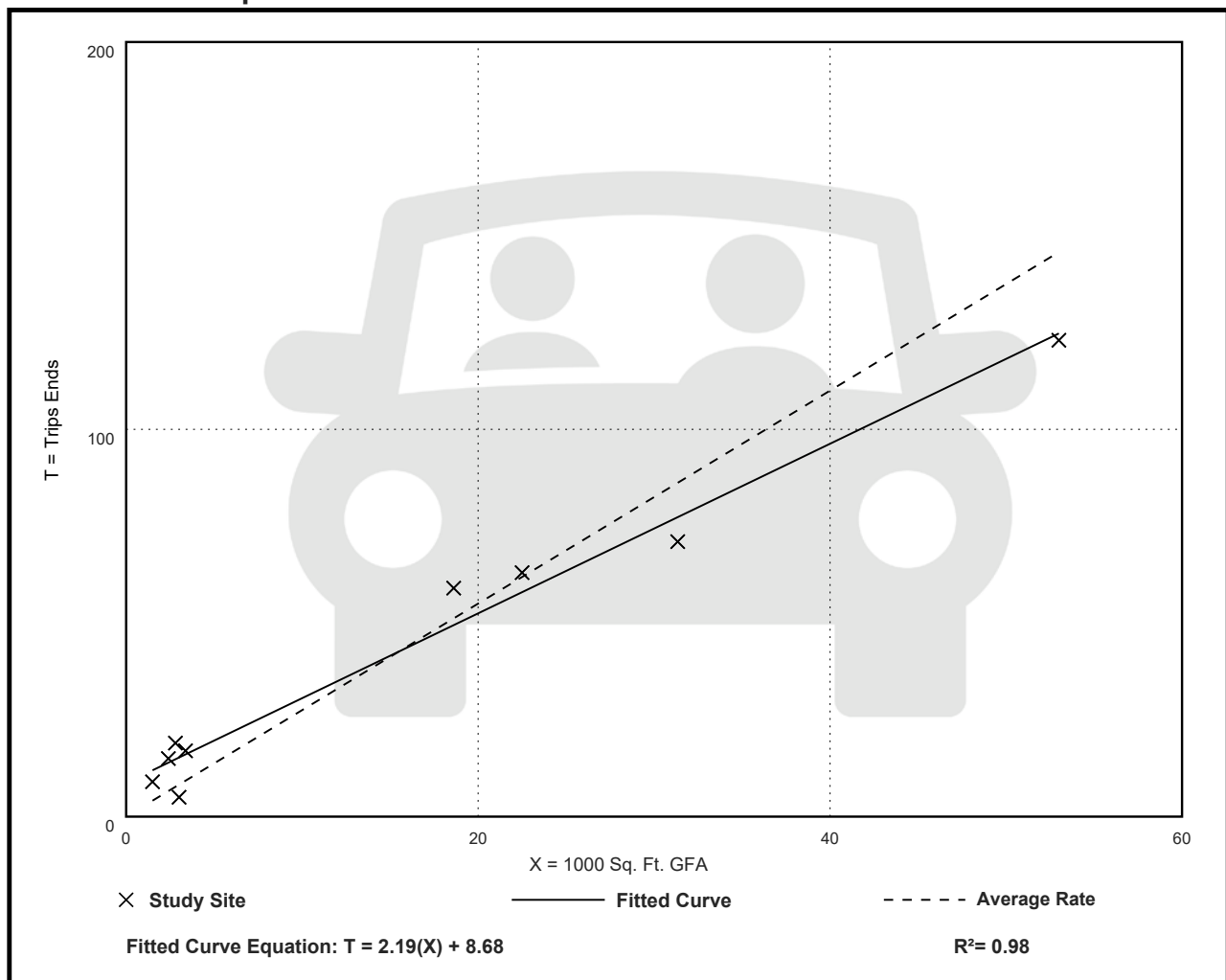
Avg. 1000 Sq. Ft. GFA: 15

Directional Distribution: 81% entering, 19% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
2.75	1.66 - 6.79	1.04

Data Plot and Equation



Clinic (630)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA

On a: Weekday,

Peak Hour of Adjacent Street Traffic,

One Hour Between 4 and 6 p.m.

Setting/Location: General Urban/Suburban

Number of Studies: 11

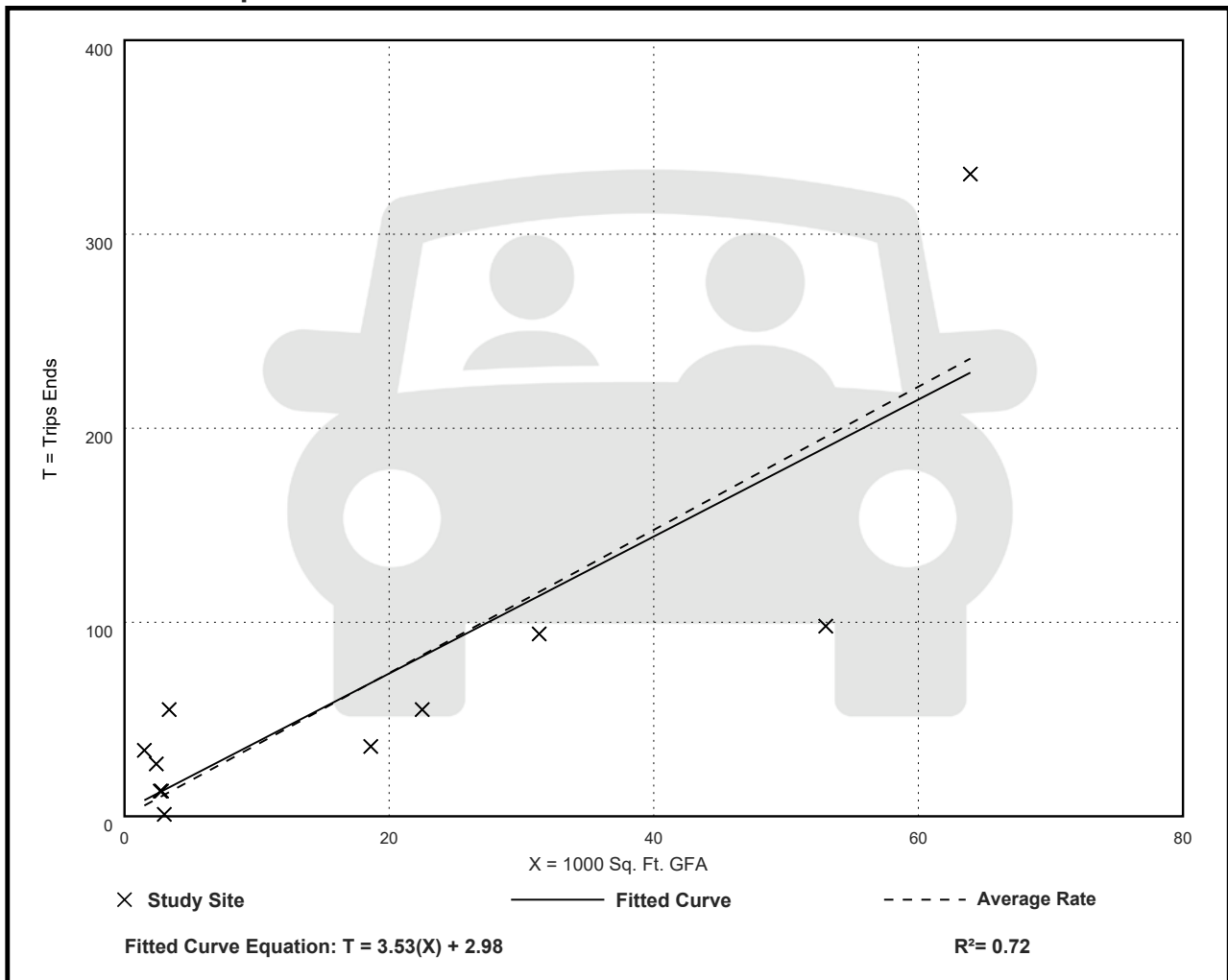
Avg. 1000 Sq. Ft. GFA: 19

Directional Distribution: 30% entering, 70% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
3.69	0.33 - 22.67	3.00

Data Plot and Equation



Clinic (630)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA

On a: Weekday,

AM Peak Hour of Generator

Setting/Location: General Urban/Suburban

Number of Studies: 8

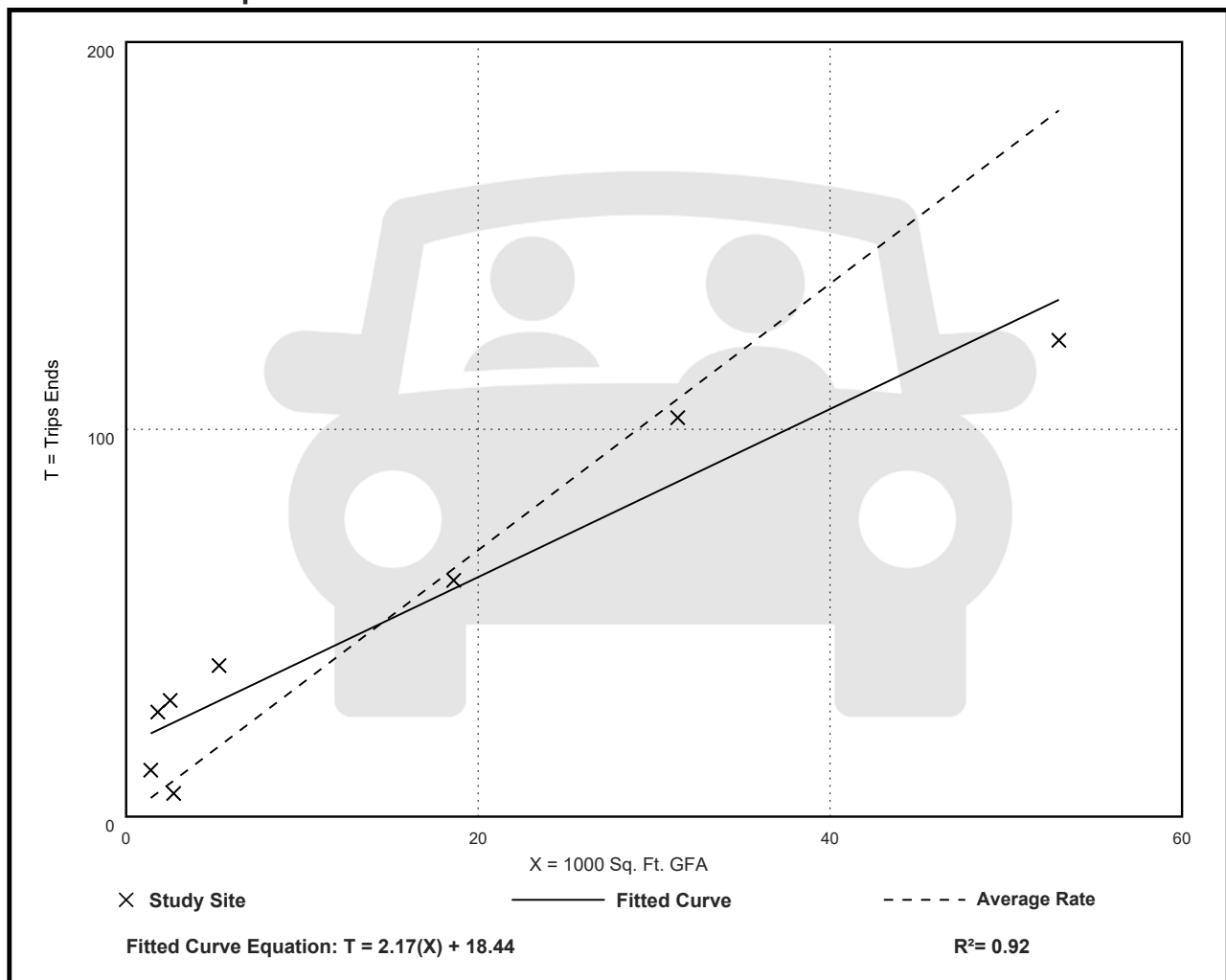
Avg. 1000 Sq. Ft. GFA: 15

Directional Distribution: 60% entering, 40% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
3.44	2.22 - 15.00	2.45

Data Plot and Equation



Clinic (630)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA

On a: Weekday,
PM Peak Hour of Generator

Setting/Location: General Urban/Suburban

Number of Studies: 13

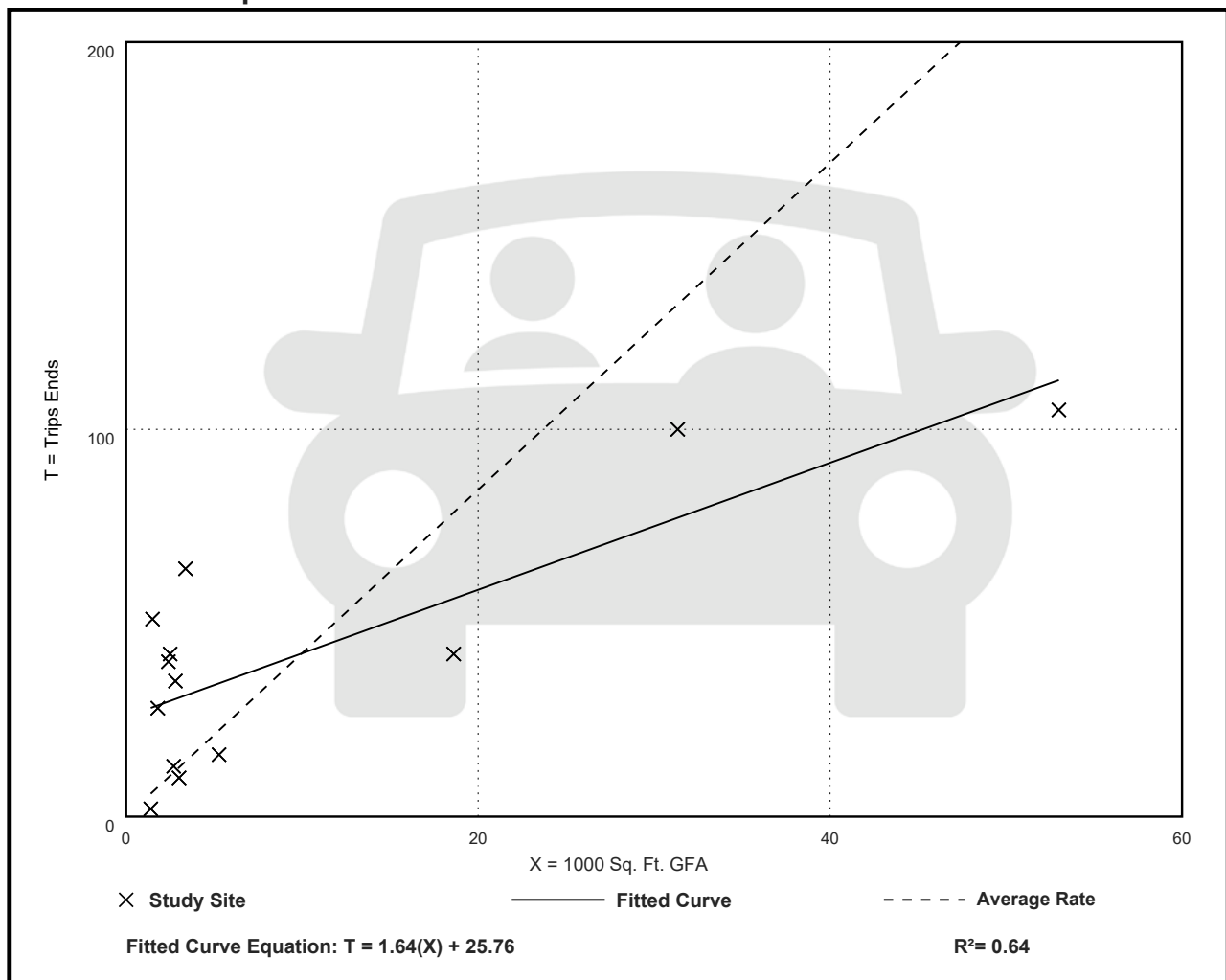
Avg. 1000 Sq. Ft. GFA: 10

Directional Distribution: 46% entering, 54% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
4.22	1.43 - 34.00	5.52

Data Plot and Equation



Clinic (630)

Vehicle Trip Ends vs: Employees On a: Weekday

Setting/Location: General Urban/Suburban

Number of Studies: 8

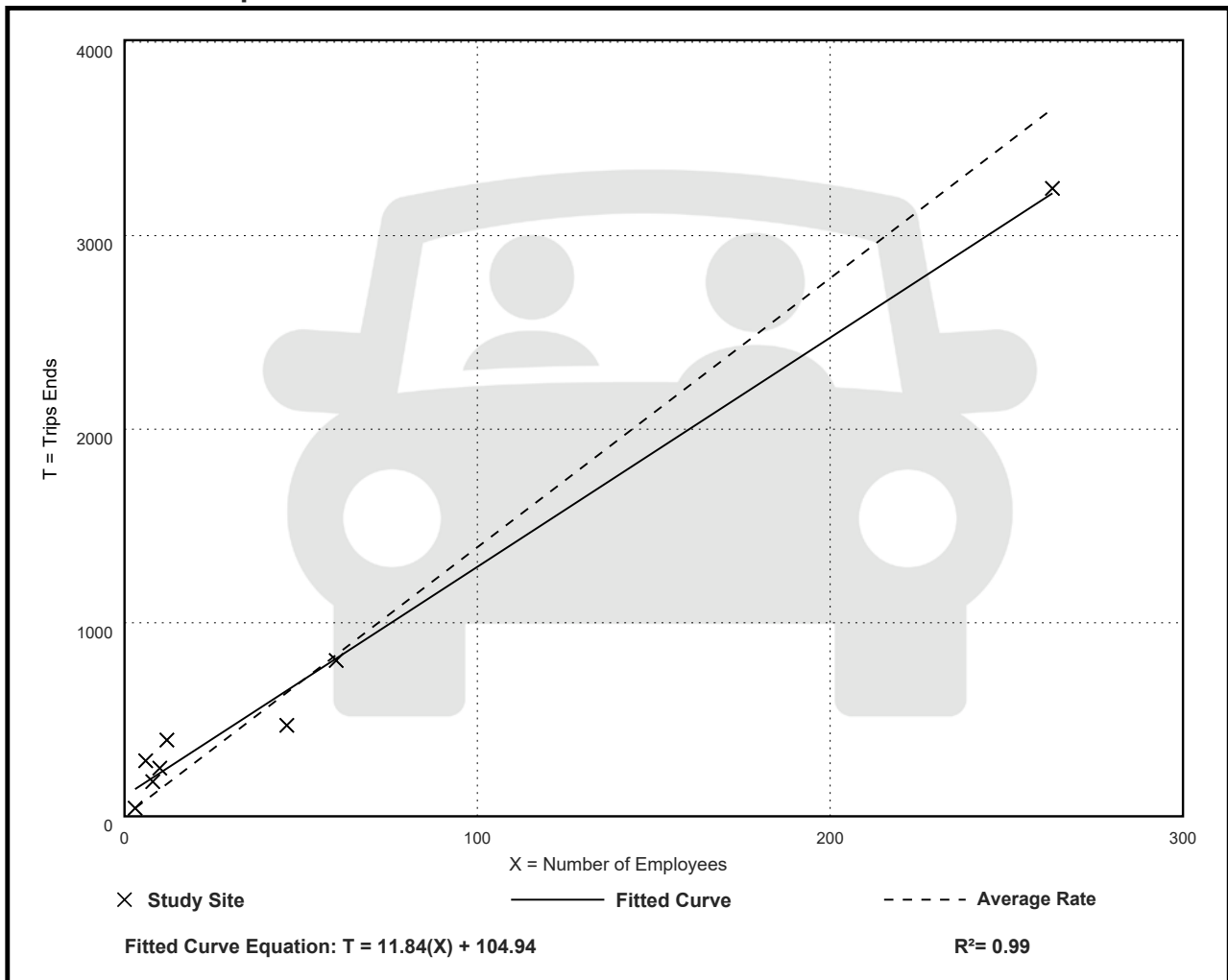
Avg. Num. of Employees: 51

Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
13.90	10.22 - 47.83	6.32

Data Plot and Equation



Clinic (630)

Vehicle Trip Ends vs: Employees

On a: Weekday,

Peak Hour of Adjacent Street Traffic,

One Hour Between 7 and 9 a.m.

Setting/Location: General Urban/Suburban

Number of Studies: 7

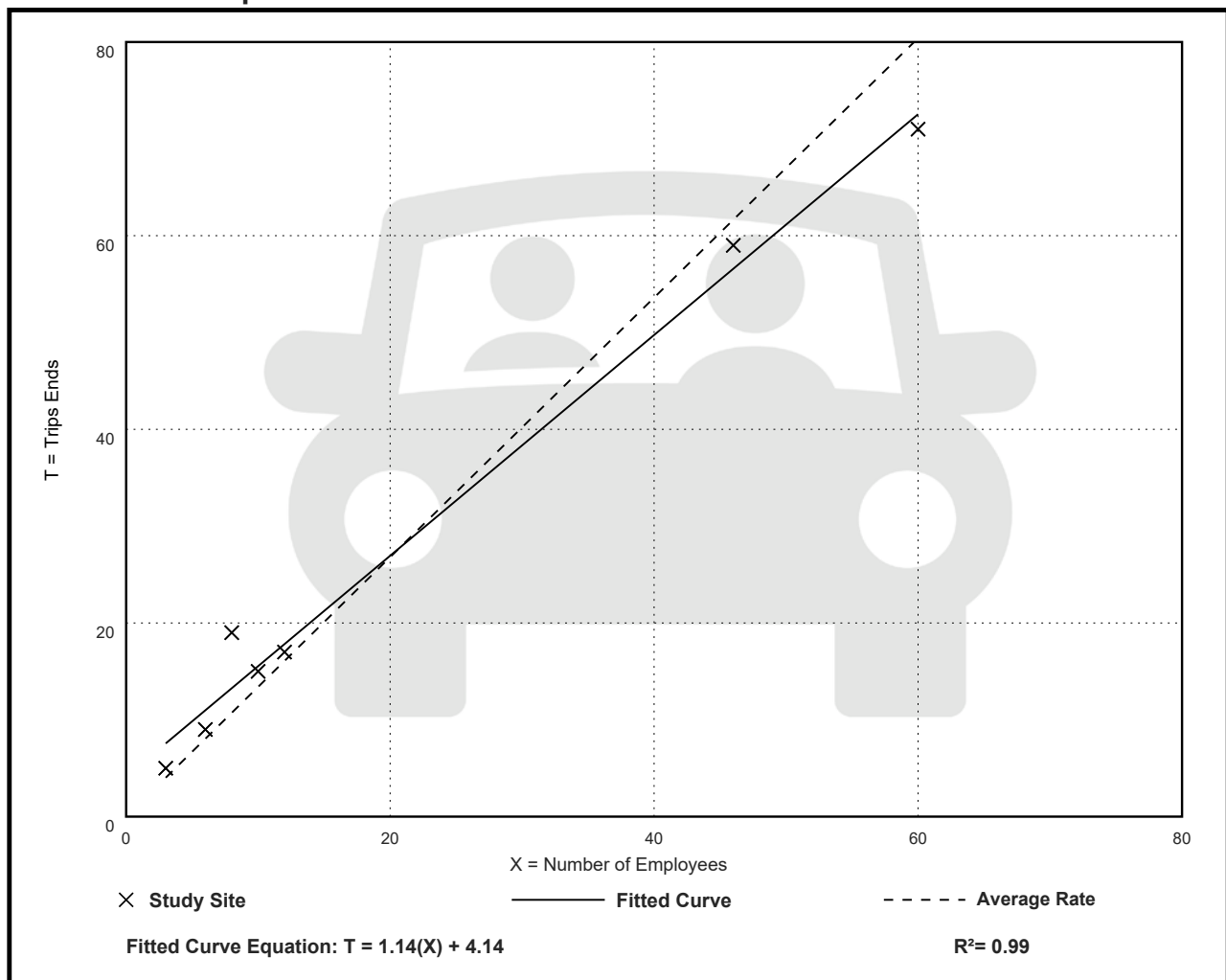
Avg. Num. of Employees: 21

Directional Distribution: 82% entering, 18% exiting

Vehicle Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
1.34	1.18 - 2.38	0.30

Data Plot and Equation



Clinic (630)

Vehicle Trip Ends vs: Employees

On a: Weekday,

Peak Hour of Adjacent Street Traffic,

One Hour Between 4 and 6 p.m.

Setting/Location: General Urban/Suburban

Number of Studies: 9

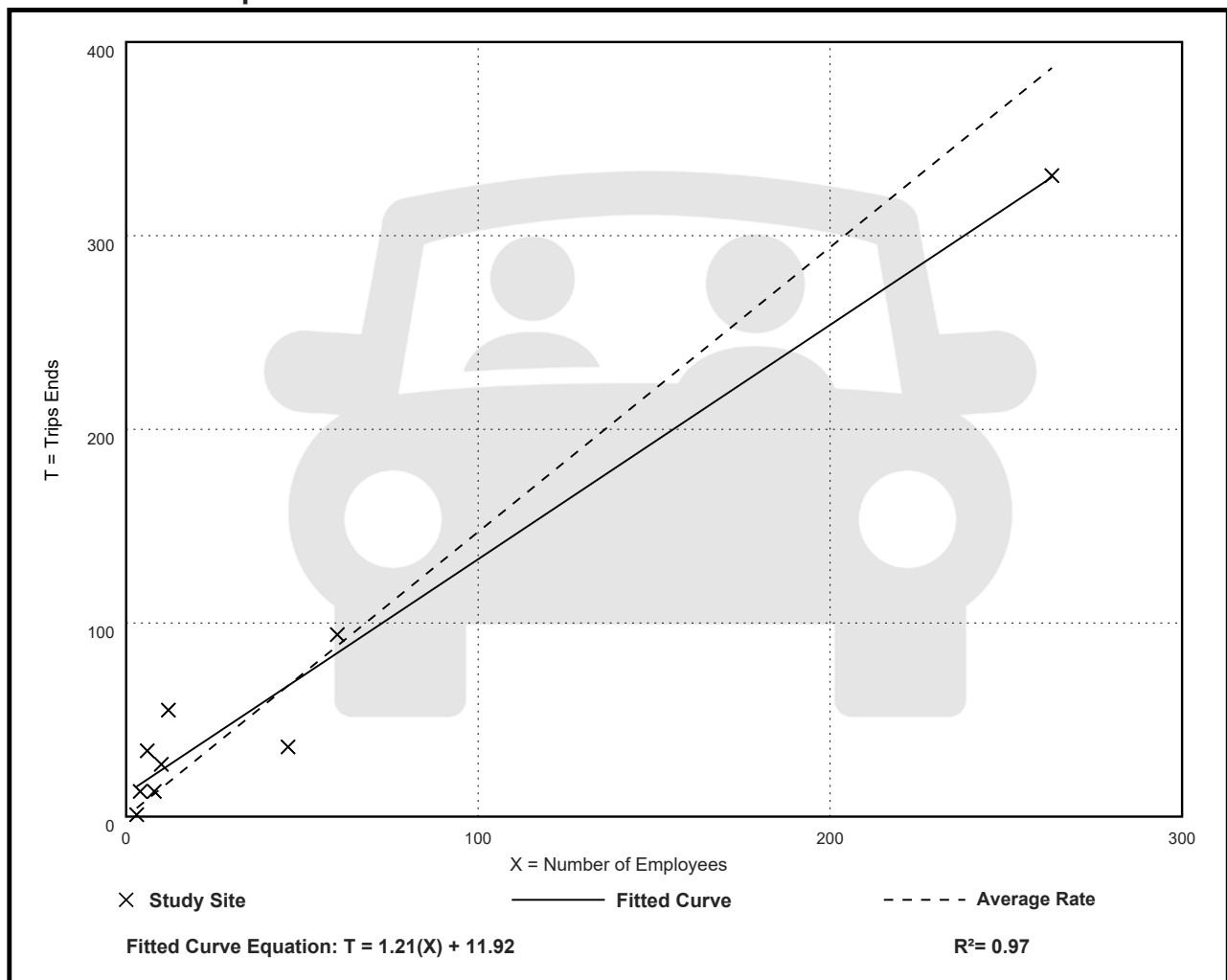
Avg. Num. of Employees: 46

Directional Distribution: 39% entering, 61% exiting

Vehicle Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
1.47	0.33 - 5.67	0.89

Data Plot and Equation



Fast-Food Restaurant without Drive-Through Window (933)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA

On a: Weekday

Setting/Location: General Urban/Suburban

Number of Studies: 6

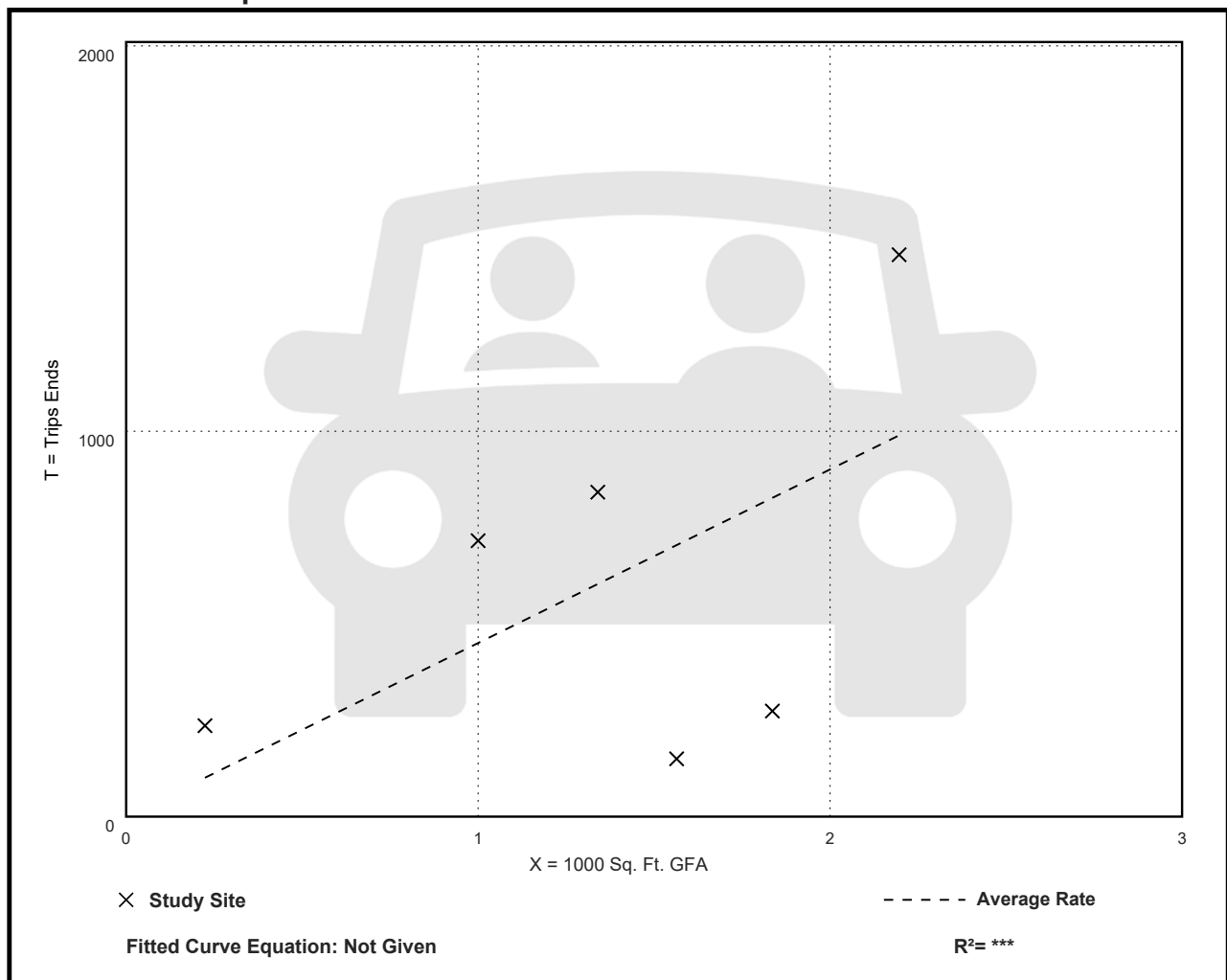
Avg. 1000 Sq. Ft. GFA: 1

Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
450.49	95.91 - 1053.57	310.99

Data Plot and Equation



Fast-Food Restaurant without Drive-Through Window (933)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA

On a: Weekday,

Peak Hour of Adjacent Street Traffic,

One Hour Between 7 and 9 a.m.

Setting/Location: General Urban/Suburban

Number of Studies: 3

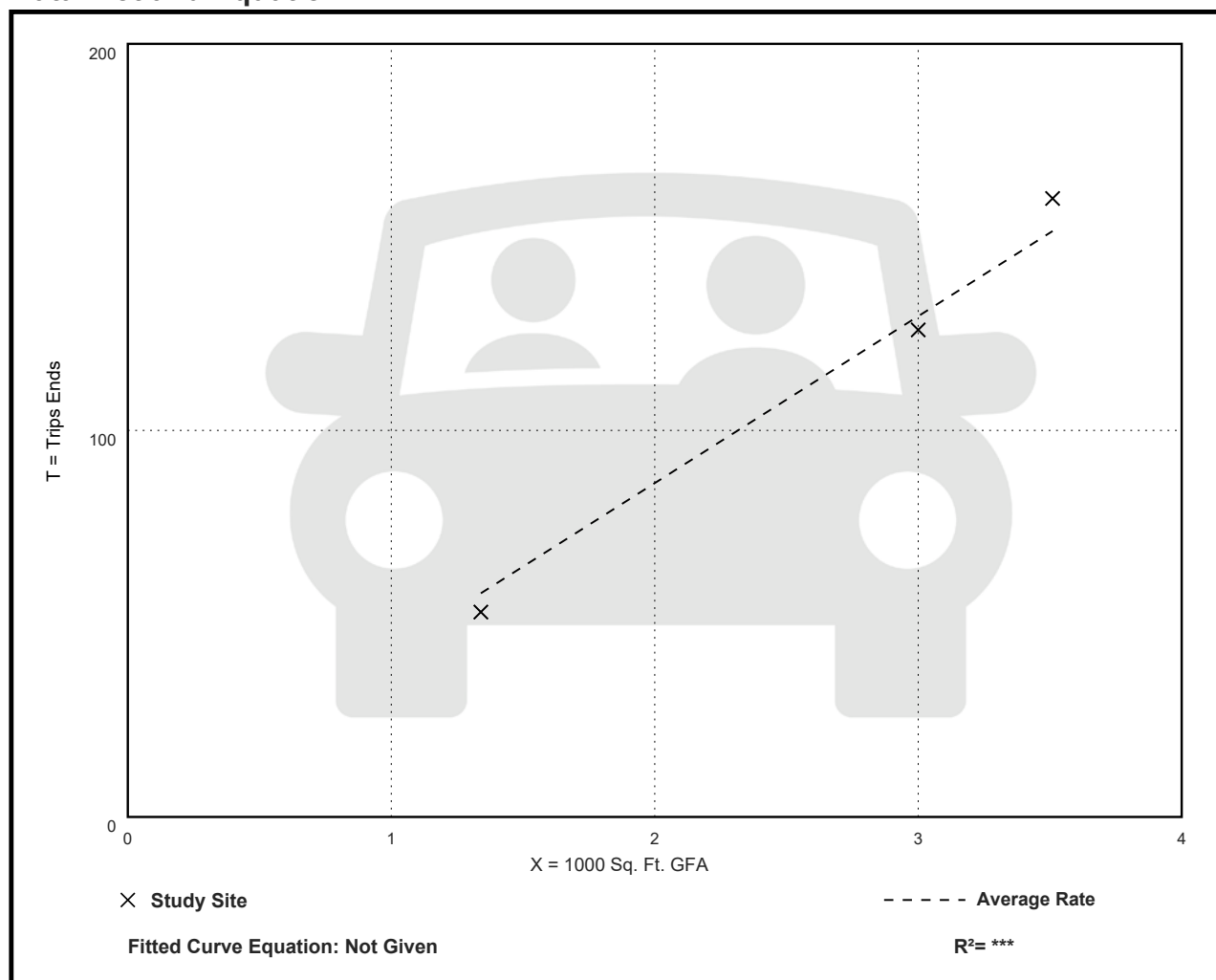
Avg. 1000 Sq. Ft. GFA: 3

Directional Distribution: 58% entering, 42% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
43.18	39.55 - 45.58	2.84

Data Plot and Equation



Fast-Food Restaurant without Drive-Through Window (933)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA

On a: Weekday,

Peak Hour of Adjacent Street Traffic,

One Hour Between 4 and 6 p.m.

Setting/Location: General Urban/Suburban

Number of Studies: 8

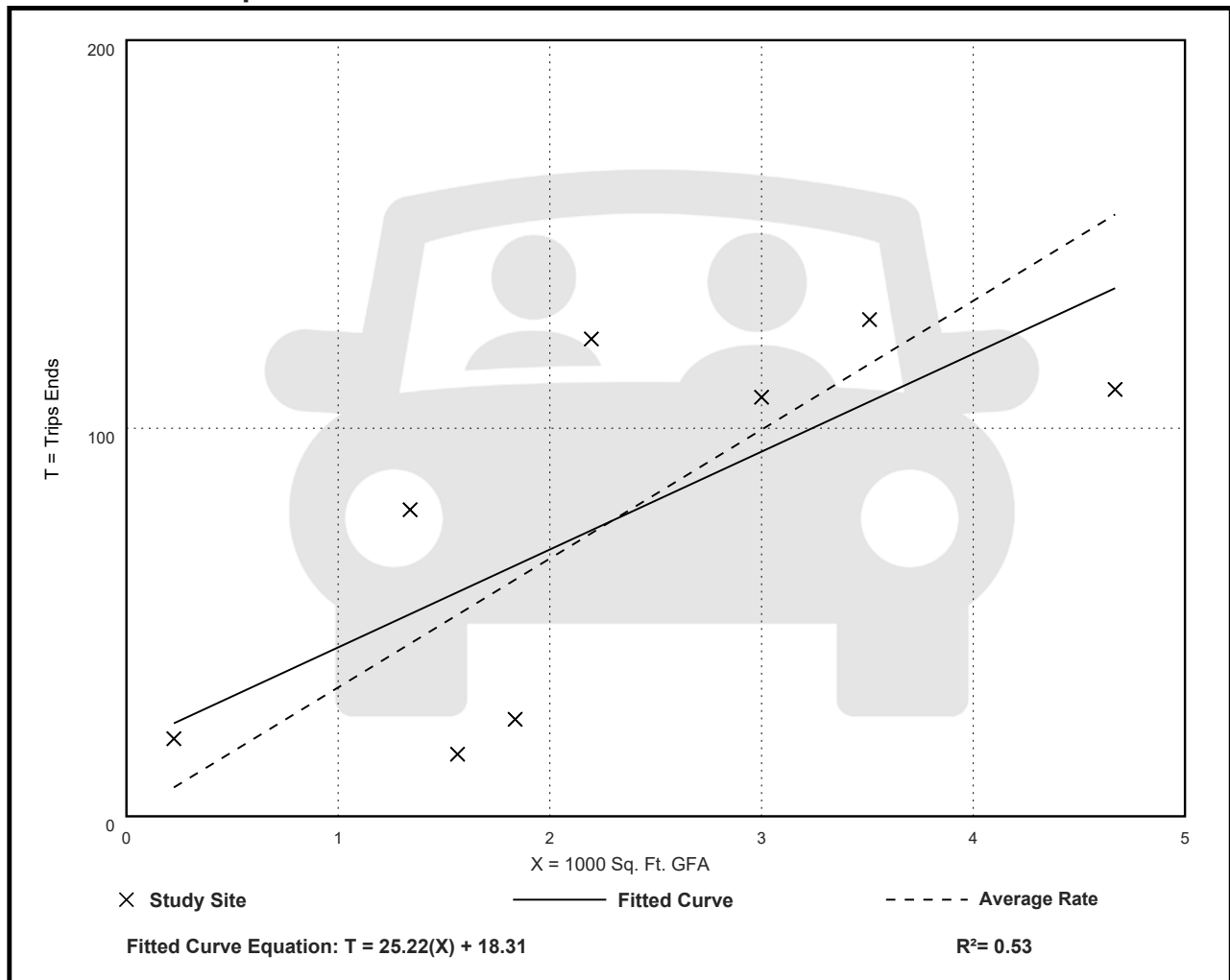
Avg. 1000 Sq. Ft. GFA: 2

Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
33.21	10.23 - 89.29	17.22

Data Plot and Equation



Intersection												
Int Delay, s/veh	3.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↱			↱↲				↱			↱
Traffic Vol, veh/h	0	352	108	0	184	18	0	0	96	0	0	249
Future Vol, veh/h	0	352	108	0	184	18	0	0	96	0	0	249
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	400	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	3	3	3	4	4	4	3	3	3	6	6	6
Mvmt Flow	0	409	126	0	214	21	0	0	112	0	0	290

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	-	-	0	-	-	472	-	-	118
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	-	-	-	6.245	-	-	6.99
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	-	-	-	-3.3285	-	-	3.357
Pot Cap-1 Maneuver	0	-	-	0	-	-	0	0	589	0	0	901
Stage 1	0	-	-	0	-	-	0	0	-	0	0	-
Stage 2	0	-	-	0	-	-	0	0	-	0	0	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	-	-	-	-	589	-	-	901
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0			12.5			10.9		
HCM LOS							B			B		

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT	WBR	SBLn1
Capacity (veh/h)	589	-	-	-	-	901
HCM Lane V/C Ratio	0.19	-	-	-	-	0.321
HCM Control Delay (s)	12.5	-	-	-	-	10.9
HCM Lane LOS	B	-	-	-	-	B
HCM 95th %tile Q(veh)	0.7	-	-	-	-	1.4

Intersection												
Int Delay, s/veh	5.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↗			↖				↗			↖
Traffic Vol, veh/h	0	520	196	0	361	14	0	0	212	0	0	315
Future Vol, veh/h	0	520	196	0	361	14	0	0	212	0	0	315
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	400	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	3	3	3	4	4	4	3	3	3	6	6	6
Mvmt Flow	0	605	228	0	420	16	0	0	247	0	0	366

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	-	-	0	-	-	719	-	-	218
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	-	-	-	6.245	-	-	6.99
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	-	-	-	-3.3285	-	-	3.357
Pot Cap-1 Maneuver	0	-	-	0	-	-	0	0	425	0	0	776
Stage 1	0	-	-	0	-	-	0	0	-	0	0	-
Stage 2	0	-	-	0	-	-	0	0	-	0	0	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	-	-	-	-	425	-	-	776
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0			24.5			13.7		
HCM LOS							C			B		

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT	WBR	SBLn1
Capacity (veh/h)	425	-	-	-	-	776
HCM Lane V/C Ratio	0.58	-	-	-	-	0.472
HCM Control Delay (s)	24.5	-	-	-	-	13.7
HCM Lane LOS	C	-	-	-	-	B
HCM 95th %tile Q(veh)	3.6	-	-	-	-	2.6

Intersection												
Int Delay, s/veh	2.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑	↗			↗			↗
Traffic Vol, veh/h	0	760	58	0	511	162	0	0	207	0	0	12
Future Vol, veh/h	0	760	58	0	511	162	0	0	207	0	0	12
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	250	-	-	-	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	4	4	4	2	2	2	5	5	5	1	1	1
Mvmt Flow	0	950	73	0	639	203	0	0	259	0	0	15
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	-	-	0	-	-	512	-	-	639
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	-	-	-	6.975	-	-	6.215
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	-	-	-	3.3475	-	-	3.3095
Pot Cap-1 Maneuver	0	-	-	0	-	-	0	0	501	0	0	477
Stage 1	0	-	-	0	-	-	0	0	-	0	0	-
Stage 2	0	-	-	0	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	-	-	-	-	-	-	-	-	501	-	-	477
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0			19.6			12.8		
HCM LOS							C			B		
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT	WBR	SBLn1						
Capacity (veh/h)	501	-	-	-	-	477						
HCM Lane V/C Ratio	0.516	-	-	-	-	0.031						
HCM Control Delay (s)	19.6	-	-	-	-	12.8						
HCM Lane LOS	C	-	-	-	-	B						
HCM 95th %tile Q(veh)	2.9	-	-	-	-	0.1						

Intersection												
Int Delay, s/veh	1.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑	↑			↑			↑
Traffic Vol, veh/h	0	844	52	0	849	426	0	0	145	0	0	35
Future Vol, veh/h	0	844	52	0	849	426	0	0	145	0	0	35
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	250	-	-	-	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	4	4	4	2	2	2	5	5	5	1	1	1
Mvmt Flow	0	1055	65	0	1061	533	0	0	181	0	0	44
Major/Minor	Major1		Major2			Minor1			Minor2			
Conflicting Flow All	-	0	0	-	-	0	-	-	560	-	-	1061
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	-	-	-	6.975	-	-	6.215
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	-	-	-	-3.3475	-	-	-3.3095
Pot Cap-1 Maneuver	0	-	-	0	-	-	0	0	466	0	0	273
Stage 1	0	-	-	0	-	-	0	0	-	0	0	-
Stage 2	0	-	-	0	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	-	-	-	-	-	-	-	-	466	-	-	273
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Approach	EB		WB			NB			SB			
HCM Control Delay, s	0		0			17.6			20.7			
HCM LOS						C			C			
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT	WBR	SBLn1						
Capacity (veh/h)	466	-	-	-	-	273						
HCM Lane V/C Ratio	0.389	-	-	-	-	0.16						
HCM Control Delay (s)	17.6	-	-	-	-	20.7						
HCM Lane LOS	C	-	-	-	-	C						
HCM 95th %tile Q(veh)	1.8	-	-	-	-	0.6						

HCM 6th Signalized Intersection Summary

1: Schrieber Rd & Old Vincennes Rd

OVR/Schrieber PUD - No Build AM Peak

12/11/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	121	520	12	169	252	43	35	18	114	154	30	84
Future Volume (veh/h)	121	520	12	169	252	43	35	18	114	154	30	84
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1841	1841	1841	1885	1885	1885	1826	1826	1826	1826	1826	1826
Adj Flow Rate, veh/h	178	765	18	249	371	63	51	26	168	226	44	124
Peak Hour Factor	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68
Percent Heavy Veh, %	4	4	4	1	1	1	5	5	5	5	5	5
Cap, veh/h	547	1069	25	309	938	159	264	48	309	239	95	269
Arrive On Green	0.60	0.60	0.60	0.60	0.60	0.60	0.23	0.23	0.23	0.23	0.23	0.23
Sat Flow, veh/h	939	1791	42	696	1570	267	1188	212	1368	1161	422	1190
Grp Volume(v), veh/h	178	0	783	249	0	434	51	0	194	226	0	168
Grp Sat Flow(s),veh/h/ln	939	0	1833	696	0	1837	1188	0	1580	1161	0	1612
Q Serve(g_s), s	8.6	0.0	21.0	20.8	0.0	8.7	2.7	0.0	7.6	8.2	0.0	6.3
Cycle Q Clear(g_c), s	17.4	0.0	21.0	41.8	0.0	8.7	9.0	0.0	7.6	15.8	0.0	6.3
Prop In Lane	1.00		0.02	1.00		0.15	1.00		0.87	1.00		0.74
Lane Grp Cap(c), veh/h	547	0	1095	309	0	1097	264	0	357	239	0	364
V/C Ratio(X)	0.33	0.00	0.72	0.80	0.00	0.40	0.19	0.00	0.54	0.95	0.00	0.46
Avail Cap(c_a), veh/h	547	0	1095	309	0	1097	264	0	357	239	0	364
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	12.0	0.0	9.9	26.4	0.0	7.4	27.3	0.0	23.9	32.5	0.0	23.4
Incr Delay (d2), s/veh	0.3	0.0	2.2	14.3	0.0	0.2	0.4	0.0	1.7	43.3	0.0	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.0	0.0	11.9	9.1	0.0	5.2	1.4	0.0	5.1	10.8	0.0	4.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	12.4	0.0	12.2	40.7	0.0	7.7	27.7	0.0	25.6	75.8	0.0	24.3
LnGrp LOS	B	A	B	D	A	A	C	A	C	E	A	C
Approach Vol, veh/h	961			683			245			394		
Approach Delay, s/veh	12.2			19.7			26.1			53.8		
Approach LOS	B			B			C			D		
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	22.0			48.0			22.0			48.0		
Change Period (Y+Rc), s	* 6.2			6.2			* 6.2			6.2		
Max Green Setting (Gmax), s	* 16			41.8			* 16			41.8		
Max Q Clear Time (g_c+I1), s	11.0			23.0			17.8			43.8		
Green Ext Time (p_c), s	0.5			6.7			0.0			0.0		
Intersection Summary												
HCM 6th Ctrl Delay	23.1											
HCM 6th LOS	C											
Notes												

HCM 6th Signalized Intersection Summary

1: Schrieber Rd & Old Vincennes Rd

OVR/Schrieber PUD - No Build PM Peak

12/13/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	192	336	35	270	513	101	32	20	99	327	54	179
Future Volume (veh/h)	192	336	35	270	513	101	32	20	99	327	54	179
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1856	1856	1856	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	229	400	42	321	611	120	38	24	106	389	64	213
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	3	3	3	1	1	1	1	1	1	1	1	1
Cap, veh/h	257	644	68	475	642	126	224	29	128	427	98	325
Arrive On Green	0.10	0.39	0.39	0.13	0.42	0.42	0.03	0.10	0.10	0.19	0.26	0.26
Sat Flow, veh/h	1767	1651	173	1795	1530	301	1795	303	1340	1795	383	1273
Grp Volume(v), veh/h	229	0	442	321	0	731	38	0	130	389	0	277
Grp Sat Flow(s),veh/h/ln	1767	0	1824	1795	0	1831	1795	0	1644	1795	0	1656
Q Serve(g_s), s	8.9	0.0	22.4	12.1	0.0	44.3	2.2	0.0	8.9	21.8	0.0	17.2
Cycle Q Clear(g_c), s	8.9	0.0	22.4	12.1	0.0	44.3	2.2	0.0	8.9	21.8	0.0	17.2
Prop In Lane	1.00		0.10	1.00		0.16	1.00		0.82	1.00		0.77
Lane Grp Cap(c), veh/h	257	0	712	475	0	768	224	0	157	427	0	422
V/C Ratio(X)	0.89	0.00	0.62	0.68	0.00	0.95	0.17	0.00	0.83	0.91	0.00	0.66
Avail Cap(c_a), veh/h	281	0	721	524	0	804	254	0	177	427	0	422
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	26.6	0.0	28.2	19.6	0.0	32.2	44.8	0.0	51.0	36.4	0.0	38.3
Incr Delay (d2), s/veh	26.3	0.0	1.6	3.0	0.0	20.4	0.4	0.0	24.0	23.6	0.0	3.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	9.4	0.0	15.2	9.0	0.0	31.3	1.8	0.0	8.3	18.2	0.0	11.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	52.9	0.0	29.8	22.7	0.0	52.6	45.1	0.0	75.0	60.0	0.0	41.9
LnGrp LOS	D	A	C	C	A	D	D	A	E	E	A	D
Approach Vol, veh/h	671		1052			168			666			
Approach Delay, s/veh	37.7		43.5			68.3			52.5			
Approach LOS	D		D			E			D			
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	27.0	17.2	19.6	51.0	8.7	35.5	16.3	54.4				
Change Period (Y+Rc), s	5.2	* 6.2	5.2	6.2	5.2	* 6.2	5.2	6.2				
Max Green Setting (Gmax), s	21.8	* 12	17.6	45.4	5.4	* 29	12.6	50.4				
Max Q Clear Time (g_c+I1), s	23.8	10.9	14.1	24.4	4.2	19.2	10.9	46.3				
Green Ext Time (p_c), s	0.0	0.1	0.4	2.8	0.0	1.2	0.1	1.9				
Intersection Summary												
HCM 6th Ctrl Delay			45.9									
HCM 6th LOS			D									
Notes												

Intersection						
Int Delay, s/veh	1.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	161	4	45	245	7	23
Future Vol, veh/h	161	4	45	245	7	23
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	77	77	77	77	77	77
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	209	5	58	318	9	30
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	214	0	646	212
Stage 1	-	-	-	-	212	-
Stage 2	-	-	-	-	434	-
Critical Hdwy	-	-	4.11	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	-	-	2.209	-	3.509	3.309
Pot Cap-1 Maneuver	-	-	1362	-	438	831
Stage 1	-	-	-	-	826	-
Stage 2	-	-	-	-	655	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1362	-	415	831
Mov Cap-2 Maneuver	-	-	-	-	415	-
Stage 1	-	-	-	-	826	-
Stage 2	-	-	-	-	621	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		1.2		10.7	
HCM LOS					B	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	673	-	-	1362	-	
HCM Lane V/C Ratio	0.058	-	-	0.043	-	
HCM Control Delay (s)	10.7	-	-	7.8	0	
HCM Lane LOS	B	-	-	A	A	
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-	

Intersection						
Int Delay, s/veh	4.9					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	105	8	103	92	9	123
Future Vol, veh/h	105	8	103	92	9	123
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	77	77	77	77	77	77
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	136	10	134	119	12	160
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	146	0	528	141
Stage 1	-	-	-	-	141	-
Stage 2	-	-	-	-	387	-
Critical Hdwy	-	-	4.11	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	-	-	2.209	-	3.509	3.309
Pot Cap-1 Maneuver	-	-	1442	-	513	910
Stage 1	-	-	-	-	888	-
Stage 2	-	-	-	-	688	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1442	-	462	910
Mov Cap-2 Maneuver	-	-	-	-	462	-
Stage 1	-	-	-	-	888	-
Stage 2	-	-	-	-	619	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		4.1		10.3	
HCM LOS					B	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	854	-	-	1442	-	
HCM Lane V/C Ratio	0.201	-	-	0.093	-	
HCM Control Delay (s)	10.3	-	-	7.8	0	
HCM Lane LOS	B	-	-	A	A	
HCM 95th %tile Q(veh)	0.7	-	-	0.3	-	

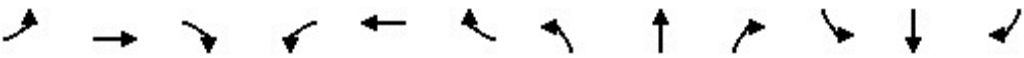
Intersection						
Int Delay, s/veh	2.9					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	82	0	30	118	0	49
Future Vol, veh/h	82	0	30	118	0	49
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	88	0	32	127	0	53
Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	149	96	0	0	159	0
Stage 1	96	-	-	-	-	-
Stage 2	53	-	-	-	-	-
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	843	960	-	-	1420	-
Stage 1	928	-	-	-	-	-
Stage 2	970	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	843	960	-	-	1420	-
Mov Cap-2 Maneuver	843	-	-	-	-	-
Stage 1	928	-	-	-	-	-
Stage 2	970	-	-	-	-	-
Approach	WB		NB		SB	
HCM Control Delay, s	9.8		0		0	
HCM LOS	A					
Minor Lane/Major Mvmt			NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)			-	- 843	1420	-
HCM Lane V/C Ratio			-	- 0.105	-	-
HCM Control Delay (s)			-	- 9.8	0	-
HCM Lane LOS			-	- A	A	-
HCM 95th %tile Q(veh)			-	- 0.3	0	-

Intersection						
Int Delay, s/veh	3.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	145	0	155	193	0	123
Future Vol, veh/h	145	0	155	193	0	123
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	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	156	0	167	208	0	132
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	403	271	0	0	375	0
Stage 1	271	-	-	-	-	-
Stage 2	132	-	-	-	-	-
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	603	768	-	-	1183	-
Stage 1	775	-	-	-	-	-
Stage 2	894	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	603	768	-	-	1183	-
Mov Cap-2 Maneuver	603	-	-	-	-	-
Stage 1	775	-	-	-	-	-
Stage 2	894	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	13	0		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1		SBL	SBT	
Capacity (veh/h)	-	- 603		1183	-	
HCM Lane V/C Ratio	-	- 0.259		-	-	
HCM Control Delay (s)	-	- 13		0	-	
HCM Lane LOS	-	- B		A	-	
HCM 95th %tile Q(veh)	-	- 1		0	-	

HCM 6th Signalized Intersection Summary 10: US 150 & Luther Road

OVR/Schrieber PUD - No Build AM Peak

12/11/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↗	↗	↗	↗	↗	↗
Traffic Volume (veh/h)	58	113	19	30	138	10	15	607	57	21	1245	134
Future Volume (veh/h)	58	113	19	30	138	10	15	607	57	21	1245	134
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1885	1885	1885	1796	1796	1796	1856	1856	1856
Adj Flow Rate, veh/h	61	119	20	32	145	11	16	639	60	22	1311	141
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	1	1	1	7	7	7	3	3	3
Cap, veh/h	127	161	25	90	219	15	33	1921	857	44	2004	894
Arrive On Green	0.15	0.15	0.15	0.15	0.15	0.15	0.02	0.56	0.56	0.02	0.57	0.57
Sat Flow, veh/h	411	1112	169	204	1505	106	1711	3413	1522	1767	3526	1572
Grp Volume(v), veh/h	200	0	0	188	0	0	16	639	60	22	1311	141
Grp Sat Flow(s),veh/h/ln	1692	0	0	1815	0	0	1711	1706	1522	1767	1763	1572
Q Serve(g_s), s	1.1	0.0	0.0	0.0	0.0	0.0	0.6	7.1	1.3	0.9	17.9	3.0
Cycle Q Clear(g_c), s	7.9	0.0	0.0	6.8	0.0	0.0	0.6	7.1	1.3	0.9	17.9	3.0
Prop In Lane	0.30		0.10	0.17		0.06	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	313	0	0	324	0	0	33	1921	857	44	2004	894
V/C Ratio(X)	0.64	0.00	0.00	0.58	0.00	0.00	0.49	0.33	0.07	0.50	0.65	0.16
Avail Cap(c_a), veh/h	380	0	0	396	0	0	137	1921	857	141	2004	894
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.94	0.94	0.94	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.8	0.0	0.0	28.5	0.0	0.0	34.0	8.2	7.0	33.7	10.4	7.2
Incr Delay (d2), s/veh	2.6	0.0	0.0	1.7	0.0	0.0	10.3	0.4	0.1	8.6	1.7	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	6.0	0.0	0.0	5.4	0.0	0.0	0.6	3.5	0.6	0.8	9.1	1.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	31.4	0.0	0.0	30.1	0.0	0.0	44.3	8.7	7.1	42.3	12.1	7.5
LnGrp LOS	C	A	A	C	A	A	D	A	A	D	B	A
Approach Vol, veh/h		200			188			715			1474	
Approach Delay, s/veh		31.4			30.1			9.3			12.1	
Approach LOS		C			C			A			B	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.1	45.8		17.1	6.7	46.2		17.1				
Change Period (Y+Rc), s	5.4	* 6.4		* 6.9	5.4	* 6.4		* 6.9				
Max Green Setting (Gmax), s	5.6	* 33		* 13	5.6	* 33		* 13				
Max Q Clear Time (g_c+I1), s	2.9	9.1		9.9	2.6	19.9		8.8				
Green Ext Time (p_c), s	0.0	4.1		0.3	0.0	7.1		0.4				

Intersection Summary

HCM 6th Ctrl Delay 14.1

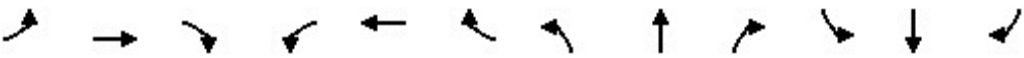
HCM 6th LOS B

Notes

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

HCM 6th Signalized Intersection Summary 10: US 150 & Luther Road

OVR/Schrieber PUD - No Build PM Peak
12/13/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↗	↗	↗	↗	↗	↗
Traffic Volume (veh/h)	160	71	9	52	73	38	52	1487	53	18	1053	128
Future Volume (veh/h)	160	71	9	52	73	38	52	1487	53	18	1053	128
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885	1841	1841	1841	1856	1856	1856
Adj Flow Rate, veh/h	163	72	9	53	74	39	53	1517	54	18	1074	131
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	1	1	1	1	1	1	4	4	4	3	3	3
Cap, veh/h	247	84	10	133	176	79	72	1681	750	178	1946	868
Arrive On Green	0.20	0.20	0.20	0.20	0.20	0.20	0.04	0.48	0.48	0.10	0.55	0.55
Sat Flow, veh/h	903	423	51	403	881	394	1753	3497	1560	1767	3526	1572
Grp Volume(v), veh/h	244	0	0	166	0	0	53	1517	54	18	1074	131
Grp Sat Flow(s),veh/h/ln	1376	0	0	1678	0	0	1753	1749	1560	1767	1763	1572
Q Serve(g_s), s	8.0	0.0	0.0	0.0	0.0	0.0	2.7	35.8	1.7	0.8	17.7	3.7
Cycle Q Clear(g_c), s	15.6	0.0	0.0	7.6	0.0	0.0	2.7	35.8	1.7	0.8	17.7	3.7
Prop In Lane	0.67		0.04	0.32		0.23	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	341	0	0	388	0	0	72	1681	750	178	1946	868
V/C Ratio(X)	0.71	0.00	0.00	0.43	0.00	0.00	0.74	0.90	0.07	0.10	0.55	0.15
Avail Cap(c_a), veh/h	375	0	0	426	0	0	129	1772	790	178	1946	868
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.68	0.68	0.68	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.3	0.0	0.0	31.8	0.0	0.0	42.7	21.4	12.6	36.7	13.0	9.9
Incr Delay (d2), s/veh	5.7	0.0	0.0	0.7	0.0	0.0	9.8	5.9	0.1	0.2	1.1	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	9.5	0.0	0.0	5.8	0.0	0.0	2.3	18.7	1.0	0.6	10.1	2.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	41.0	0.0	0.0	32.6	0.0	0.0	52.5	27.4	12.7	37.0	14.1	10.2
LnGrp LOS	D	A	A	C	A	A	D	C	B	D	B	B
Approach Vol, veh/h		244			166			1624			1223	
Approach Delay, s/veh		41.0			32.6			27.7			14.0	
Approach LOS		D			C			C			B	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	15.5	49.7		24.9	9.1	56.1		24.9				
Change Period (Y+Rc), s	* 6.4	* 6.4		* 6.9	5.4	* 6.4		* 6.9				
Max Green Setting (Gmax), s	* 5.6	* 46		* 20	6.6	* 45		* 20				
Max Q Clear Time (g_c+l1), s	2.8	37.8		17.6	4.7	19.7		9.6				
Green Ext Time (p_c), s	0.0	5.4		0.3	0.0	8.0		0.6				

Intersection Summary

HCM 6th Ctrl Delay	23.8
HCM 6th LOS	C

Notes

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

HCM Signalized Intersection Capacity Analysis 4: US 150 & NB U-Turn

OVR/Schrieber PUD - No Build AM Peak
12/11/2024

							
Movement	EBL	EBR	NBU	NBL	NBT	SBT	SBR
Lane Configurations			AA		↑↑	↑↑	
Traffic Volume (vph)	0	0	350	0	642	1219	0
Future Volume (vph)	0	0	350	0	642	1219	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			5.9		5.7	5.7	
Lane Util. Factor			0.97		0.95	0.95	
Frt			1.00		1.00	1.00	
Flt Protected			0.95		1.00	1.00	
Satd. Flow (prot)			3303		3406	3438	
Flt Permitted			0.95		1.00	1.00	
Satd. Flow (perm)			3303		3406	3438	
Peak-hour factor, PHF	0.90	0.90	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	365	0	669	1270	0
RTOR Reduction (vph)	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	365	0	669	1270	0
Heavy Vehicles (%)	2%	2%	6%	6%	6%	5%	5%
Turn Type			Prot		NA	NA	
Protected Phases			5		2	6	
Permitted Phases							
Actuated Green, G (s)			13.0		70.0	45.4	
Effective Green, g (s)			13.0		70.0	45.4	
Actuated g/C Ratio			0.19		1.00	0.65	
Clearance Time (s)			5.9		5.7	5.7	
Vehicle Extension (s)			3.0		3.0	3.0	
Lane Grp Cap (vph)			613		3406	2229	
v/s Ratio Prot			c0.11		0.20	c0.37	
v/s Ratio Perm							
v/c Ratio			0.60		0.20	0.57	
Uniform Delay, d1			26.1		0.0	6.9	
Progression Factor			1.22		1.00	1.00	
Incremental Delay, d2			1.4		0.1	1.1	
Delay (s)			33.2		0.1	7.9	
Level of Service			C		A	A	
Approach Delay (s)	0.0				11.8	7.9	
Approach LOS	A				B	A	
Intersection Summary							
HCM 2000 Control Delay			9.7		HCM 2000 Level of Service		A
HCM 2000 Volume to Capacity ratio			0.58				
Actuated Cycle Length (s)			70.0		Sum of lost time (s)		11.6
Intersection Capacity Utilization			53.3%		ICU Level of Service		A
Analysis Period (min)			15				
c Critical Lane Group							

HCM Signalized Intersection Capacity Analysis

4: US 150 & NB U-Turn

OVR/Schrieber PUD - No Build PM Peak

12/13/2024



Movement	EBL	EBR	NBU	NBL	NBT	SBT	SBR
Lane Configurations			AA		↑↑	↑↑	
Traffic Volume (vph)	0	0	510	0	1542	1120	0
Future Volume (vph)	0	0	510	0	1542	1120	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			5.9		5.7	5.7	
Lane Util. Factor			0.97		0.95	0.95	
Frt			1.00		1.00	1.00	
Flt Protected			0.95		1.00	1.00	
Satd. Flow (prot)			3400		3505	3471	
Flt Permitted			0.95		1.00	1.00	
Satd. Flow (perm)			3400		3505	3471	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	531	0	1606	1167	0
RTOR Reduction (vph)	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	531	0	1606	1167	0
Heavy Vehicles (%)	2%	2%	3%	3%	3%	4%	4%
Turn Type			Prot		NA	NA	
Protected Phases			5		2	6	
Permitted Phases							
Actuated Green, G (s)			24.1		120.0	84.3	
Effective Green, g (s)			24.1		120.0	84.3	
Actuated g/C Ratio			0.20		1.00	0.70	
Clearance Time (s)			5.9		5.7	5.7	
Vehicle Extension (s)			3.0		3.0	3.0	
Lane Grp Cap (vph)			682		3505	2438	
v/s Ratio Prot			c0.16		c0.46	0.34	
v/s Ratio Perm							
v/c Ratio			0.78		0.46	0.48	
Uniform Delay, d1			45.4		0.0	8.0	
Progression Factor			0.84		1.00	0.52	
Incremental Delay, d2			3.9		0.3	0.6	
Delay (s)			42.2		0.3	4.7	
Level of Service			D		A	A	
Approach Delay (s)	0.0				10.7	4.7	
Approach LOS	A				B	A	
Intersection Summary							
HCM 2000 Control Delay			8.6		HCM 2000 Level of Service		A
HCM 2000 Volume to Capacity ratio			0.55				
Actuated Cycle Length (s)			120.0		Sum of lost time (s)		11.6
Intersection Capacity Utilization			55.2%		ICU Level of Service		B
Analysis Period (min)			15				
c Critical Lane Group							

HCM 6th Signalized Intersection Summary 8: US 150 & New Road

OVR/Schrieber PUD - No Build AM Peak

12/11/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	71	65	79	91	49	78	96	488	58	174	1026	94
Future Volume (veh/h)	71	65	79	91	49	78	96	488	58	174	1026	94
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1811	1811	1811	1826	1826	1826
Adj Flow Rate, veh/h	76	70	85	98	53	84	103	525	62	187	1103	101
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
Percent Heavy Veh, %	2	2	2	2	2	2	6	6	6	5	5	5
Cap, veh/h	369	252	317	351	230	195	254	1142	510	452	1265	564
Arrive On Green	0.08	0.13	0.13	0.06	0.12	0.12	0.06	0.33	0.33	0.10	0.36	0.36
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1725	3441	1535	1739	3469	1547
Grp Volume(v), veh/h	76	70	85	98	53	84	103	525	62	187	1103	101
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1725	1721	1535	1739	1735	1547
Q Serve(g_s), s	2.3	2.2	2.9	3.1	1.7	3.2	2.5	7.8	1.8	4.5	19.3	2.9
Cycle Q Clear(g_c), s	2.3	2.2	2.9	3.1	1.7	3.2	2.5	7.8	1.8	4.5	19.3	2.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	369	252	317	351	230	195	254	1142	510	452	1265	564
V/C Ratio(X)	0.21	0.28	0.27	0.28	0.23	0.43	0.41	0.46	0.12	0.41	0.87	0.18
Avail Cap(c_a), veh/h	386	252	317	389	233	198	290	1142	510	512	1265	564
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.99	0.99	0.99	0.75	0.75	0.75
Uniform Delay (d), s/veh	21.8	25.3	22.0	22.7	25.7	26.4	15.5	17.1	15.1	12.5	19.2	14.0
Incr Delay (d2), s/veh	0.3	0.6	0.5	0.4	0.5	1.5	1.0	1.3	0.5	0.5	6.5	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.7	1.7	1.9	2.3	1.3	2.2	1.5	5.0	1.2	2.6	11.2	1.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.0	25.9	22.4	23.1	26.2	27.9	16.5	18.4	15.6	12.9	25.8	14.6
LnGrp LOS	C	C	C	C	C	C	B	B	B	B	C	B
Approach Vol, veh/h	231			235			690			1391		
Approach Delay, s/veh	23.3			25.5			17.9			23.2		
Approach LOS	C			C			B			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.7	28.0	9.6	15.7	9.6	30.1	10.4	14.9				
Change Period (Y+Rc), s	5.4	* 6.4	5.4	* 6.9	5.4	* 6.4	5.4	* 6.9				
Max Green Setting (Gmax), s	8.6	* 19	5.6	* 8.1	5.6	* 22	5.6	* 8.1				
Max Q Clear Time (g_c+I1), s	6.5	9.8	5.1	4.9	4.5	21.3	4.3	5.2				
Green Ext Time (p_c), s	0.1	2.2	0.0	0.2	0.0	0.2	0.0	0.1				
Intersection Summary												
HCM 6th Ctrl Delay			22.0									
HCM 6th LOS			C									
Notes												

HCM 6th Signalized Intersection Summary 8: US 150 & New Road

OVR/Schrieber PUD - No Build PM Peak
12/13/2024

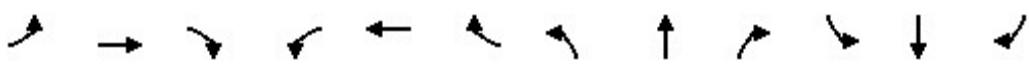
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	268	64	243	54	51	111	265	1213	64	81	823	210
Future Volume (veh/h)	268	64	243	54	51	111	265	1213	64	81	823	210
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1856	1856	1856	1841	1841	1841
Adj Flow Rate, veh/h	288	69	261	58	55	119	285	1304	69	87	885	226
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
Percent Heavy Veh, %	2	2	2	2	2	2	3	3	3	4	4	4
Cap, veh/h	317	251	356	206	125	168	395	1986	886	215	1791	799
Arrive On Green	0.13	0.13	0.13	0.06	0.07	0.07	0.03	0.19	0.19	0.04	0.51	0.51
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1767	3526	1572	1753	3497	1560
Grp Volume(v), veh/h	288	69	261	58	55	119	285	1304	69	87	885	226
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1767	1763	1572	1753	1749	1560
Q Serve(g_s), s	13.2	4.0	13.4	0.0	3.4	6.0	8.3	41.2	2.7	2.8	19.8	5.3
Cycle Q Clear(g_c), s	13.2	4.0	13.4	0.0	3.4	6.0	8.3	41.2	2.7	2.8	19.8	5.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	317	251	356	206	125	168	395	1986	886	215	1791	799
V/C Ratio(X)	0.91	0.28	0.73	0.28	0.44	0.71	0.72	0.66	0.08	0.41	0.49	0.28
Avail Cap(c_a), veh/h	377	344	436	206	126	169	538	1986	886	271	1791	799
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.89	0.89	0.89	0.81	0.81	0.81
Uniform Delay (d), s/veh	49.1	46.7	23.8	51.5	53.8	26.7	16.3	38.1	9.2	19.3	19.1	4.7
Incr Delay (d2), s/veh	22.7	0.6	5.0	0.7	2.4	12.6	2.7	1.5	0.2	1.0	0.8	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	15.7	3.4	9.3	3.0	3.0	5.9	6.4	26.5	2.9	1.9	11.7	6.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	71.7	47.3	28.7	52.3	56.3	39.2	19.0	39.6	9.4	20.3	19.9	5.5
LnGrp LOS	E	D	C	D	E	D	B	D	A	C	B	A
Approach Vol, veh/h	618			232			1658			1198		
Approach Delay, s/veh	50.9			46.5			34.8			17.2		
Approach LOS	D			D			C			B		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.1	74.0	12.9	23.0	16.3	67.9	21.0	14.9				
Change Period (Y+Rc), s	5.4	* 6.4	* 5.4	6.9	5.4	* 6.4	* 5.4	6.9				
Max Green Setting (Gmax), s	8.6	* 60	* 5.6	22.1	20.6	* 48	* 20	8.1				
Max Q Clear Time (g_c+I1), s	4.8	43.2	2.0	15.4	10.3	21.8	15.2	8.0				
Green Ext Time (p_c), s	0.1	8.1	0.0	0.7	0.6	6.8	0.4	0.0				
Intersection Summary												
HCM 6th Ctrl Delay	32.5											
HCM 6th LOS	C											
Notes												

HCM Signalized Intersection Capacity Analysis

3: US 150 & Old Vincennes Rd/Lawrence Banet Rd

OVR/Schrieber PUD - No Build AM Peak

12/11/2024

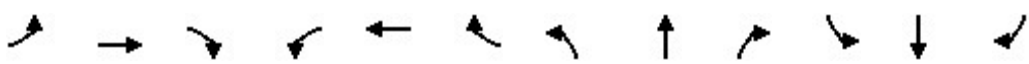
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↔↔			↔↔	↔	↕↕	↔	↔	↕↕	↔
Traffic Volume (vph)	0	0	967	0	0	433	493	559	356	104	1286	179
Future Volume (vph)	0	0	967	0	0	433	493	559	356	104	1286	179
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			5.2			5.2	5.2	6.4	6.4	5.2	6.4	6.4
Lane Util. Factor			0.88			0.88	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.85			0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected			1.00			1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)			2733			2733	1703	3406	1524	1719	3438	1538
Flt Permitted			1.00			1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)			2733			2733	1703	3406	1524	1719	3438	1538
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	1007	0	0	451	514	582	371	108	1340	186
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	147	0	0	104
Lane Group Flow (vph)	0	0	1007	0	0	451	514	582	224	108	1340	82
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	6%	6%	6%	5%	5%	5%
Turn Type			Over			Over	Prot	NA	Perm	Prot	NA	Perm
Protected Phases			5			1	5	2		1	6	
Permitted Phases									2			6
Actuated Green, G (s)			27.6			16.1	27.6	42.3	42.3	16.1	30.8	30.8
Effective Green, g (s)			27.6			16.1	27.6	42.3	42.3	16.1	30.8	30.8
Actuated g/C Ratio			0.39			0.23	0.39	0.60	0.60	0.23	0.44	0.44
Clearance Time (s)			5.2			5.2	5.2	6.4	6.4	5.2	6.4	6.4
Vehicle Extension (s)			3.0			3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)			1077			628	671	2058	920	395	1512	676
v/s Ratio Prot			c0.37			0.17	0.30	0.17		0.06	c0.39	
v/s Ratio Perm									0.15			0.05
v/c Ratio			0.94			0.72	0.77	0.28	0.24	0.27	0.89	0.12
Uniform Delay, d1			20.3			24.9	18.4	6.6	6.4	22.1	18.0	11.6
Progression Factor			1.00			1.00	0.99	1.04	6.51	1.16	0.82	4.99
Incremental Delay, d2			14.3			3.9	4.6	0.3	0.6	0.3	6.9	0.3
Delay (s)			34.7			28.8	22.8	7.2	42.4	26.0	21.6	58.2
Level of Service			C			C	C	A	D	C	C	E
Approach Delay (s)		34.7			28.8			21.6			26.1	
Approach LOS		C			C			C			C	
Intersection Summary												
HCM 2000 Control Delay			26.8			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.91									
Actuated Cycle Length (s)			70.0			Sum of lost time (s)			11.6			
Intersection Capacity Utilization			79.0%			ICU Level of Service				D		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

3: US 150 & Old Vincennes Rd/Lawrence Banet Rd

OVR/Schrieber PUD - No Build PM Peak

12/18/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↔↔			↔↔	↔	↕↕	↔	↔	↕↕	↔
Traffic Volume (vph)	0	0	989	0	0	676	898	1376	589	127	1126	377
Future Volume (vph)	0	0	989	0	0	676	898	1376	589	127	1126	377
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			5.2			5.2	5.2	6.4	6.4	5.2	6.4	6.4
Lane Util. Factor			0.88			0.88	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.85			0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected			1.00			1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)			2787			2814	1752	3505	1568	1736	3471	1553
Flt Permitted			1.00			1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)			2787			2814	1752	3505	1568	1736	3471	1553
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	1030	0	0	704	935	1433	614	132	1173	393
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	240	0	0	73
Lane Group Flow (vph)	0	0	1030	0	0	704	935	1433	374	132	1173	320
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	3%	3%	3%	4%	4%	4%
Turn Type			Over			Over	Prot	NA	Perm	Prot	NA	Perm
Protected Phases			5			1	5	2		1	6	
Permitted Phases									2			6
Actuated Green, G (s)			65.6			35.3	65.6	73.1	73.1	35.3	42.8	42.8
Effective Green, g (s)			65.6			35.3	65.6	73.1	73.1	35.3	42.8	42.8
Actuated g/C Ratio			0.55			0.29	0.55	0.61	0.61	0.29	0.36	0.36
Clearance Time (s)			5.2			5.2	5.2	6.4	6.4	5.2	6.4	6.4
Vehicle Extension (s)			3.0			3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)			1523			827	957	2135	955	510	1237	553
v/s Ratio Prot			0.37			0.25	c0.53	0.41		0.08	c0.34	
v/s Ratio Perm									0.24			0.21
v/c Ratio			0.68			0.85	0.98	0.67	0.39	0.26	0.95	0.58
Uniform Delay, d1			19.6			39.9	26.5	15.5	12.0	32.4	37.5	31.3
Progression Factor			1.00			1.00	0.52	1.31	1.37	0.95	0.74	0.93
Incremental Delay, d2			1.2			8.4	11.5	0.6	0.4	0.2	14.6	3.8
Delay (s)			20.8			48.3	25.2	20.8	16.9	30.9	42.2	33.0
Level of Service			C			D	C	C	B	C	D	C
Approach Delay (s)		20.8			48.3			21.4			39.2	
Approach LOS		C			D			C			D	
Intersection Summary												
HCM 2000 Control Delay			28.9			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.96									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)				11.6		
Intersection Capacity Utilization			90.5%			ICU Level of Service				E		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

5: US 150 & SB U-Turn

OVR/Schrieber PUD - No Build AM Peak

12/11/2024

Movement	WBL	WBR	NBT	NBR	SBU	SBL	SBT
Lane Configurations			↑↑		↓↓		↑↑
Traffic Volume (vph)	0	0	1125	0	283	0	1970
Future Volume (vph)	0	0	1125	0	283	0	1970
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			5.7		5.9		5.7
Lane Util. Factor			0.95		0.97		0.95
Frt			1.00		1.00		1.00
Flt Protected			1.00		0.95		1.00
Satd. Flow (prot)			3406		3335		3438
Flt Permitted			1.00		0.95		1.00
Satd. Flow (perm)			3406		3335		3438
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	1172	0	295	0	2052
RTOR Reduction (vph)	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	1172	0	295	0	2052
Heavy Vehicles (%)	6%	6%	6%	6%	5%	5%	5%
Turn Type			NA		Prot		NA
Protected Phases			2		1		6
Permitted Phases							
Actuated Green, G (s)			46.6		11.8		70.0
Effective Green, g (s)			46.6		11.8		70.0
Actuated g/C Ratio			0.67		0.17		1.00
Clearance Time (s)			5.7		5.9		5.7
Vehicle Extension (s)			3.0		3.0		3.0
Lane Grp Cap (vph)			2267		562		3438
v/s Ratio Prot			0.34		0.09		0.60
v/s Ratio Perm							
v/c Ratio			0.52		0.52		0.60
Uniform Delay, d1			6.0		26.5		0.0
Progression Factor			1.54		1.25		1.00
Incremental Delay, d2			0.7		0.3		0.3
Delay (s)			9.9		33.5		0.3
Level of Service			A		C		A
Approach Delay (s)	0.0		9.9				4.5
Approach LOS	A		A				A
Intersection Summary							
HCM 2000 Control Delay			6.3		HCM 2000 Level of Service		A
HCM 2000 Volume to Capacity ratio			0.72				
Actuated Cycle Length (s)			70.0		Sum of lost time (s)		11.6
Intersection Capacity Utilization			59.2%		ICU Level of Service		B
Analysis Period (min)			15				
c Critical Lane Group							

HCM Signalized Intersection Capacity Analysis

5: US 150 & SB U-Turn

OVR/Schrieber PUD - No Build PM Peak

12/13/2024

							
Movement	WBL	WBR	NBT	NBR	SBU	SBL	SBT
Lane Configurations			↑↑		↓↓		↑↑
Traffic Volume (vph)	0	0	2489	0	374	0	1741
Future Volume (vph)	0	0	2489	0	374	0	1741
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			5.7		5.9		5.7
Lane Util. Factor			0.95		0.97		0.95
Frt			1.00		1.00		1.00
Flt Protected			1.00		0.95		1.00
Satd. Flow (prot)			3505		3367		3471
Flt Permitted			1.00		0.95		1.00
Satd. Flow (perm)			3505		3367		3471
Peak-hour factor, PHF	0.90	0.90	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	2593	0	390	0	1814
RTOR Reduction (vph)	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	2593	0	390	0	1814
Heavy Vehicles (%)	2%	2%	3%	3%	4%	4%	4%
Turn Type			NA		Prot		NA
Protected Phases			2		1		6
Permitted Phases							
Actuated Green, G (s)			93.1		15.3		120.0
Effective Green, g (s)			93.1		15.3		120.0
Actuated g/C Ratio			0.78		0.13		1.00
Clearance Time (s)			5.7		5.9		5.7
Vehicle Extension (s)			3.0		3.0		3.0
Lane Grp Cap (vph)			2719		429		3471
v/s Ratio Prot			c0.74		c0.12		0.52
v/s Ratio Perm							
v/c Ratio			0.95		0.91		0.52
Uniform Delay, d1			11.6		51.7		0.0
Progression Factor			0.08		0.90		1.00
Incremental Delay, d2			2.9		16.7		0.3
Delay (s)			3.8		63.2		0.3
Level of Service			A		E		A
Approach Delay (s)	0.0		3.8				11.4
Approach LOS	A		A				B
Intersection Summary							
HCM 2000 Control Delay			7.3		HCM 2000 Level of Service		A
HCM 2000 Volume to Capacity ratio			0.95				
Actuated Cycle Length (s)			120.0		Sum of lost time (s)		11.6
Intersection Capacity Utilization			89.1%		ICU Level of Service		E
Analysis Period (min)			15				
c Critical Lane Group							

Professional

Engineering

Services

Old Vincennes Road Traffic Impact Study

Report

Floyd County

Commissioners of

Floyd County, IN

June 2024



Report for Floyd County Commissioners, Indiana

Old Vincennes Road Traffic Impact Study



Andrea Bland

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June 2024



TABLE OF CONTENTS

Page No.
or Following

EXECUTIVE SUMMARY

SECTION 1–SUMMARY AND INTRODUCTION

1.01 Purpose of Report and Study Objectives	1-1
1.02 Definitions	1-2

SECTION 2–PROPOSED DEVELOPMENT

2.01 Subject Site	2-1
2.02 Off-Site Developments	2-3

SECTION 3–AREA CONDITIONS

3.01 Study Area Limits	3-1
3.02 Study Area Land Use	3-2
3.03 Other Projects	3-2
3.03 Site Accessibility	3-3

SECTION 4–PROJECTED TRAFFIC

4.01 2023 and 2048 Site Traffic	4-1
4.02 2048 Non-site Traffic	4-8
4.03 2048 Total Traffic	4-9

SECTION 5–TRAFFIC ANALYSIS

5.01 Existing Capacity and LOS	5-1
5.02 Alternatives Analysis for US 150 at Old Vincennes Road	5-2
5.03 Roadway Improvements to Improve Capacity and LOS	5-4

SECTION 6–RECOMMENDATIONS AND CONCLUSIONS

6.01 Site Access and Circulation Plan	6-1
6.02 Roadway Improvements	6-1
6.03 Adequacy of Proposed Plan Including Recommended Improvements	6-2

TABLE OF CONTENTS Continued

Page No.
or Following

TABLES

3.03-1	Other Projects	3-2
4.01-1	2048 AM Peak-Hour Trip Distribution–South Development	4-1
4.01-2	2048 PM Peak-Hour Trip Distribution–South Development	4-1
4.01-3	2048 AM Peak-Hour Trip Distribution–North Development.....	4-2
4.01-4	2048 PM Peak-Hour Trip Distribution–North Development.....	4-2
4.01-5	2048 AM Peak-Hour Trip Distribution–East Development	4-2
4.01-6	2048 PM Peak-Hour Trip Distribution–East Development	4-3
4.01-7	2048 AM Peak-Hour Trip Distribution–Grocery Development.....	4-3
4.01-8	2048 PM Peak-Hour Trip Distribution–Grocery Development.....	4-3
4.01-9	AM Peak Residential Development Trip Distribution at Schrieber Road ...	4-4
4.01-10	AM Peak Residential Development Trip Distribution at US 150	4-4
4.01-11	PM Peak Residential Development Trip Distribution at Schrieber Road ...	4-4
4.01-12	PM Peak Residential Development Trip Distribution at US 150	4-4
4.01-13	AM Peak Commercial Development Trip Distribution	4-5
4.01-14	PM Peak Commercial Development Trip Distribution	4-5
4.01-15	Pass-by Development Trip Distribution.....	4-5
5.01-1	2048 Background Traffic Operations	5-2
5.03-1	Recommended Roadway Improvements: Short-Term	5-7
5.03-2	Recommended Roadway Improvements: Long-Term.....	5-7
6.02-1	Recommended Roadway Improvements: Short-Term	6-1
6.02-2	Recommended Roadway Improvements: Long-Term.....	6-2

FIGURES

1.01-1	Old Vincennes Road TIS Study Area.....	1-1
2.01-1	Development Location.....	2-2
2.01-2	Proposed Site Plan.....	2-3
3.01-1	Study Area Intersections	3-1
3.03-1	2023 Intersection Turning Movements.....	3-5
4.01-1	2048 Residential Development Traffic	4-6
4.01-2	2048 Commercial Development Traffic.....	4-7
4.01-3	2048 Pass-by Development Traffic.....	4-8
4.02-1	2048 Background Traffic	4-9
4.03-1	2048 Total Roadway Traffic.....	4-10
5.02-1	Hybrid SB Alternative Layout.....	5-4
5.03-1	Measures of Effectiveness for Alternatives Analysis	5-8

APPENDICES

APPENDIX A–EXHIBITS
APPENDIX B–TRIP GENERATION DATA
APPENDIX C–TRAFFIC ANALYSIS

EXECUTIVE SUMMARY

Strand Associates, Inc.[®] (Strand) completed a traffic impact study (TIS) evaluating the impacts of several proposed developments in Floyd County, Indiana (County) with the desired goal of obtaining approval for a break in the limited-access right-of-way (LARW) along US 150. This Executive Summary includes descriptions of the study area, the development, the results of the traffic operations analysis, and the recommendations based on the findings of the TIS.

A. Site Location and Study Area

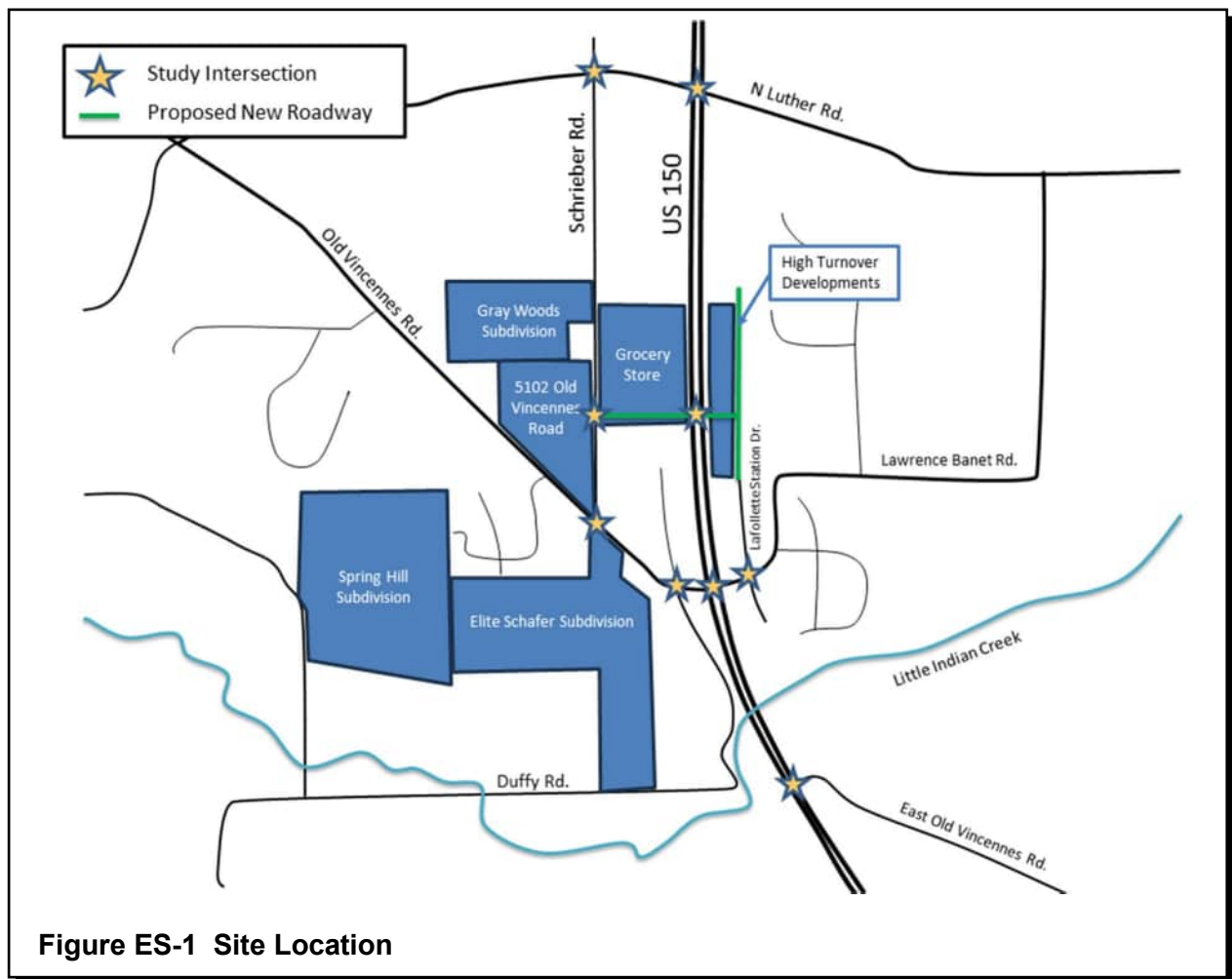
This study focuses on the area near the intersection of US 150 and Old Vincennes Road. A previous study by Strand in 2021 analyzed the impact of developments southwest of Old Vincennes Road near the intersection with Schrieber Road, which included two single-family residence subdivisions, a bank, and a small retail store. This study includes those developments because they are not built out and are not included in traffic counts, in addition to the following new areas of development:

1. A grocery store, located along US 150 approximately halfway between Old Vincennes and Luther Roads.
2. A mixed-use site consisting of multi-family residences, senior living, and retail, along with a separate single-family residence development, proposed on the northwest corner of Old Vincennes and Schrieber Roads.
3. Several high trip generator developments, such as quick-serve restaurants, gas stations, and coffee shops, located northeast of US 150 and Old Vincennes Road off Lafollette Station Drive.

The study area focused on the following intersections:

- US 150 and Old Vincennes Road
- Old Vincennes and Schrieber Roads
- Old Vincennes and Duffy Roads
- Lawrence Banet Road and Lafollette Station Drive
- US 150 and Luther Road
- Luther and Schrieber Roads
- US 150 and a new access point between Old Vincennes and Luther Roads
- US 150 and East Old Vincennes Road to the south (unsignalized)

The location of the proposed development and study area intersections are shown in ES-1.



B. Development Description

Figure ES-2 shows the proposed site plan for the developments created by the developers.



Source: Indiana Spatial Data Portal

Figure ES-2 Proposed Site Plan

The developments southwest of US 150 and Old Vincennes Road were previously studied. The proposed land uses and building square footages are:

- 213 single-family homes
- One bank with two drive-through lanes
- 2,000 square feet of general retail gross floor area

Northwest of US 150 and Old Vincennes Road, the proposed land uses and building square footages are:

- 122,000-gross square feet (gsf) grocery store
- 41 single-family homes
- 228 multifamily housing units
- 94 senior living units
- 22,850-gsf retail (assumed strip retail plaza)

Northeast of US 150 and Old Vincennes Road, the proposed land uses and building square footages are:

- 1,350-gsf oil change facility
- 12-pump gas station
- 2,240-gsf coffee shop with drive-through
- Two, 4,200-gsf quick-serve restaurants
- 7,230-gsf retail (assumed variety store)

The existing roadway network will provide access to the development on the northwest corner of Old Vincennes and Schrieber Roads. An extension of Schrieber Road to the south of Old Vincennes Road will provide access to the single-family developments, as it is currently a T-intersection. Lastly, the primary access to both development sites along US 150 north of Old Vincennes Road is proposed via a new public road and a break in the LARW.

C. Principal Findings

A horizon year of 2048 was used for this analysis. While the buildout of these developments is expected to occur well before then, Indiana Department of Transportation (INDOT) uses a 20-year design life from the construction year (assumed to be 2028), and it is assumed that INDOT will be involved in some level of improvements in this area given the poor existing Level of Service (LOS).

Motor vehicle operations were analyzed using the Synchro 11/SimTraffic 11 software program (Synchro). The overall intersection operations are reported using the Highway Capacity Manual (HCM) overall intersection delay calculated in Synchro. Operations are evaluated based on conditions at the intersections. An intersection's LOS is based on average delay in seconds per vehicle for traffic entering the intersection. LOS A indicates travelers will experience minimal average delay at an intersection (less than 10 seconds). LOS F indicates that average delay is quite high (more than 50 seconds at an unsignalized intersection and 80 seconds at a signalized intersection).

Traffic modeling indicated that several intersections will require improvements to accommodate the projected background traffic and traffic from the developments. The traffic models were also used to determine the design for the access points, including turn lane lengths and a required signal. Table ES-1 shows the no-build traffic operations at the study intersections with the future 2048 traffic. The baseline model is INDOT's current plan for US 150 at Old Vincennes Road, which is an restricted crossing U-turn (RCUT) with no mainline left turns allowed and roundabouts at the intersections of Old Vincennes Road with Duffy Road and Lawrence Banet Road with Lafollette Station Drive. The operations of this baseline model are shown in the left-most columns in Table ES-3.

Because several intersections operate at LOS E or F in the peak hours, roadway improvements are recommended and discussed in the following section.

D. Conclusion and Recommendations

The improvements listed in Table ES-1 are recommended in the near future to improve operations at the study intersections. Table ES-2 lists possible improvements for the 2048 horizon year. Other improvements that should be prioritized by the County to improve the roadway network include:

1. Connecting Duffy Road to Schrieber Road south of Old Vincennes Road
2. Extending New Road all the way through beyond Schrieber Road to tee into Old Vincennes Road.

Intersection	Improvements
Old Vincennes Road & New Road	▪ Install 610-foot northbound left-turn bay.* ▪ Install 425-foot northbound right-turn bay.* ▪ Install 250-foot eastbound left-turn bay. ▪ Install 210-foot eastbound right-turn bay. ▪ Install 465-foot southbound left-turn bay.* ▪ Install 580-foot southbound right-turn bay.* ▪ Install 100-foot westbound left-turn bay. ▪ Install 180-foot westbound right-turn bay. ▪ Convert intersection to traffic signal control.
Old Vincennes Road & Duffy Road	▪ Convert intersection to RIRO. ▪ Convert gas station driveway to entrance only.
Old Vincennes Road & US 150	▪ Convert EBR phasing to permitted+overlap.

*includes 385' of deceleration per IDM Ch. 46 at 45 mph, based on discussions about lowering speed limit with INDOT Seymour District.

Table ES-1 Recommended Roadway Improvements: Short Term

Intersection	Improvements
US 150 & New Road	Possible conversion to RCUT; discuss with INDOT
Old Vincennes Road & US 150	▪ Convert to RCUT + Mainline Left configuration ▪ Install dual-lane, signalized U-turns on each side of the primary intersection
Lawrence Banet Road & Lafollette Station Drive	▪ Convert intersection to RIRO. ▪ Install roundabout approximately 650 feet east on Lawrence Banet Road

Table ES-2 Recommended Roadway Improvements: Long Term

Table ES-3 shows a summary of the traffic operations at the study intersections with the post-development 2048 traffic for the various alternatives. More detailed results, including delay, volume to capacity ratio, and 95th percentile queue lengths can be found in the Traffic Analysis chapter. Although the main intersection of US 150 and Old Vincennes Road has capacity to accommodate the additional development, other areas of the roadway network operate poorly without an additional access point to US 150. Without the additional access point, the following improvements would be required:

1. Roundabout at New and Schrieber Roads
2. Roundabout at Schrieber Road and Highlander Point/5102 Old Vincennes entrance
3. Roundabout at Schrieber/Old Vincennes Roads and/or converting Old Vincennes Road to a 5-lane section between Schrieber Road and US 150.

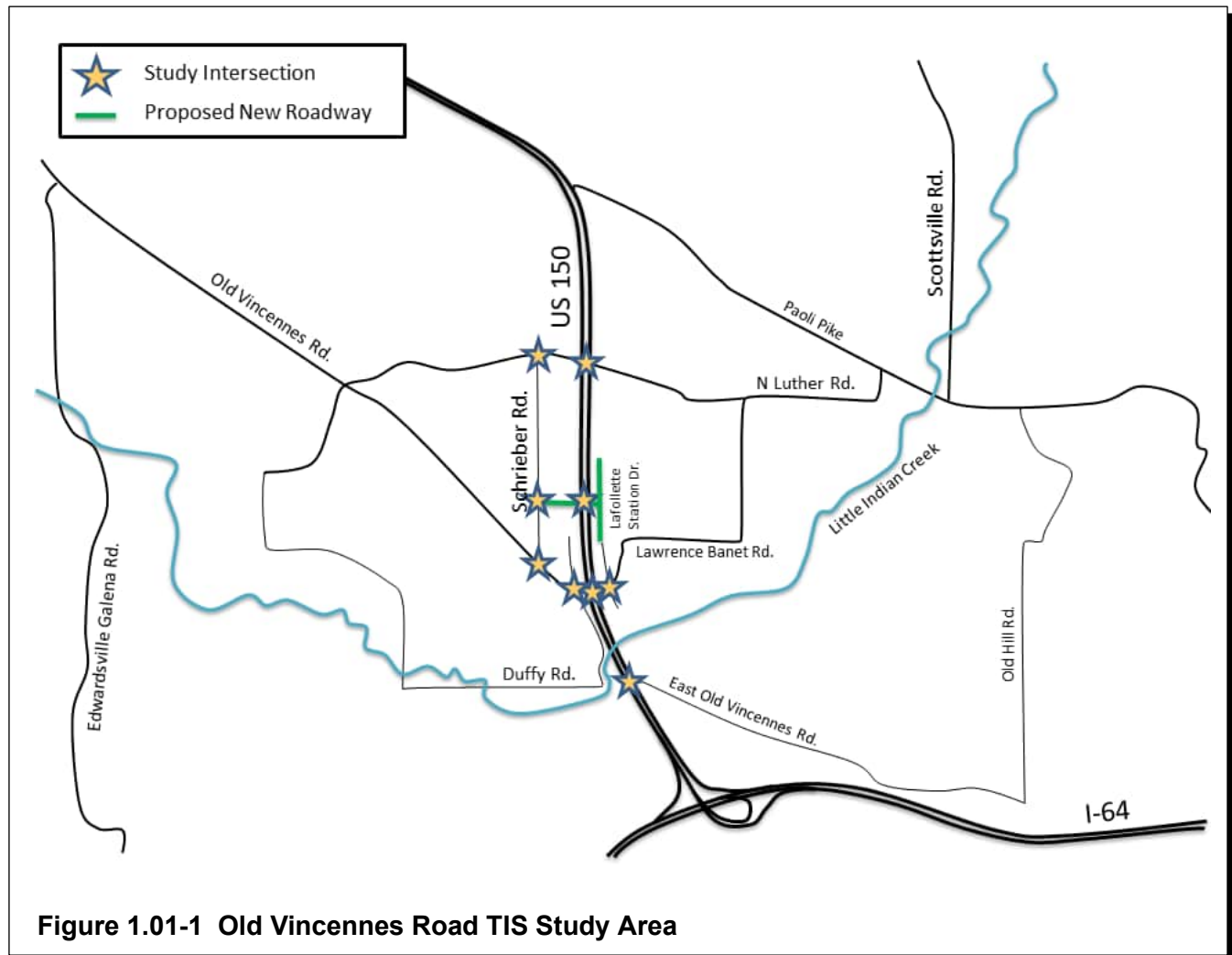
Location	Overall Intersection LOS					
	RCUT		RCUT + Mainline Lefts		RCUT + Mainline Lefts + New Road	
	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
Old Vincennes and Schrieber Road s(S)	LOS B	LOS E	LOS C	LOS F	LOS B	LOS C
Old Vincennes and Duffy Roads R/RIRO)*	LOS A	LOS C	LOS C	LOS D	LOS C	LOS C
Old Vincennes Road and US 150 (S)*	LOS C	LOS E	LOS C	LOS D	LOS C	LOS C
US 150 and NB U-Turn (S)*	LOS C	LOS B	LOS B	LOS A	LOS A	LOS A
US 150 and SB U-Turn (S)*	LOS A	LOS B	LOS A	LOS A	LOS A	LOS A
Lawrence Banet Road and Lafollette Station Drive (R/RIRO)*	LOS A	LOS B	LOS C	LOS E	LOS B	LOS C
New and Schrieber Roads (R/U)**	LOS A	LOS A	LOS A	LOS A	LOS A	LOS B
US 150 and New Road (S)	--	--	--	--	LOS C	LOS C
Schrieber and Luther Roads (U)	LOS B	LOS C	LOS B	LOS C	LOS B	LOS B
US 150 and Luther Road (S)	LOS B	LOS C	LOS B	LOS D	LOS B	LOS B

*Roundabout for RCUT baseline condition; RIRO for other two alternatives
 **Roundabout for first two alternatives; unsignalized for third alternative

Table ES-3 2048 Total Traffic Operations

1.01 PURPOSE OF REPORT AND STUDY OBJECTIVES

Strand Associates, Inc.® (Strand) has been hired by Floyd County Commissioners, Indiana (County) to perform a traffic impact study (TIS) for the proposed developments near the intersections of Old Vincennes Road with United States (US) 150 and of Schrieber Road. This area is approximately 0.9 miles north of the US 150 and Interstate 64 (I-64) interchange. The study area is shown in Figure 1.01-1.



This study:

1. Identifies the existing traffic volumes and analyzes the intersections and the proposed roadway network changes with background traffic during the 2048 weekday A.M. and P.M. peak hours.
2. Recommends improvements to the proposed roadway network to accommodate the total traffic generated by the developments in 2048, including required traffic control or roadway geometry changes, such as traffic signals and the number and length of turn lanes.

1.02 DEFINITIONS

AADT	annual average daily traffic
AWSC	All-way stop control intersection
County	Floyd County, Indiana
DLT	Displaced Left Turn
EBR	Eastbound Right
EBT	Eastbound Through
FHWA	Federal Highway Administration
gsf	gross square feet
HCM	Highway Capacity Manual
I-64	Interstate 64
INDOT	Indiana Department of Transportation
ITE	Institute of Transportation Engineers
LARW	Limited Access Right-of-Way
LOS	Level of Service
NB	Northbound
NBL	Northbound Left
NBT	Northbound Through
R	Roundabout intersection
RCUT	Restricted Crossing U-Turn
RIRO	Right-in and Right-out Only
S	Signalized intersection
SB	Southbound
SBL	Southbound Left
SBT	Southbound Through
SR	State Route
Strand	Strand Associates, Inc.®
TIS	Traffic Impact Study
TWSC	Two-way stop control intersection
U	Unsignalized intersection
US	United States
vpd	vehicles per day
WB	Westbound
WBL	Westbound Left
WBT	Westbound Through

2.01 SUBJECT SITE

A. Land Use and Intensity

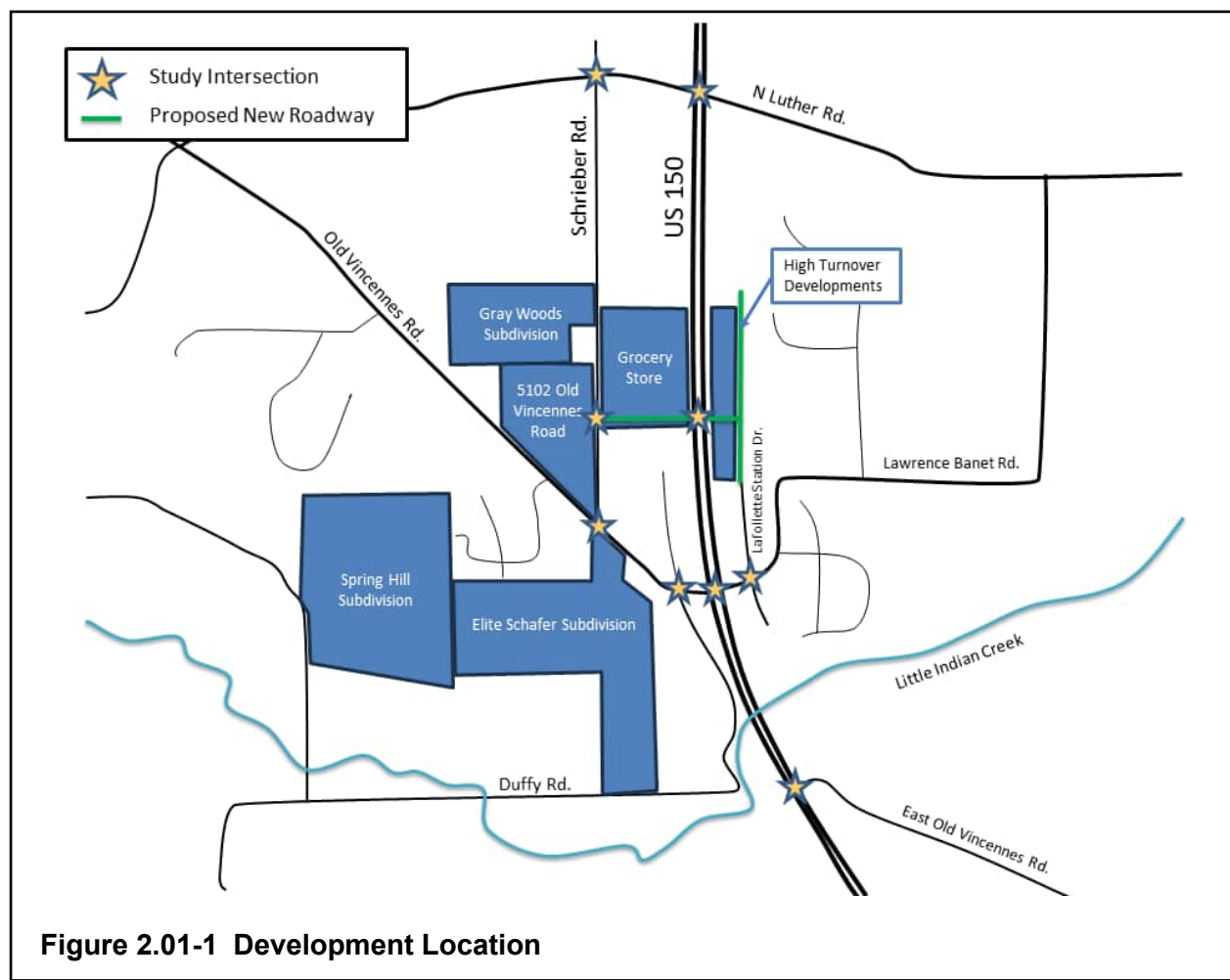
The land on which the developments are proposed is primarily wooded. The proposed land uses vary in intensity, from single-family and multifamily residential to commercial.

B. Location

The developments are generally located near the intersection of US 150 and Old Vincennes Road in the County. More specifically, there are four different development areas:

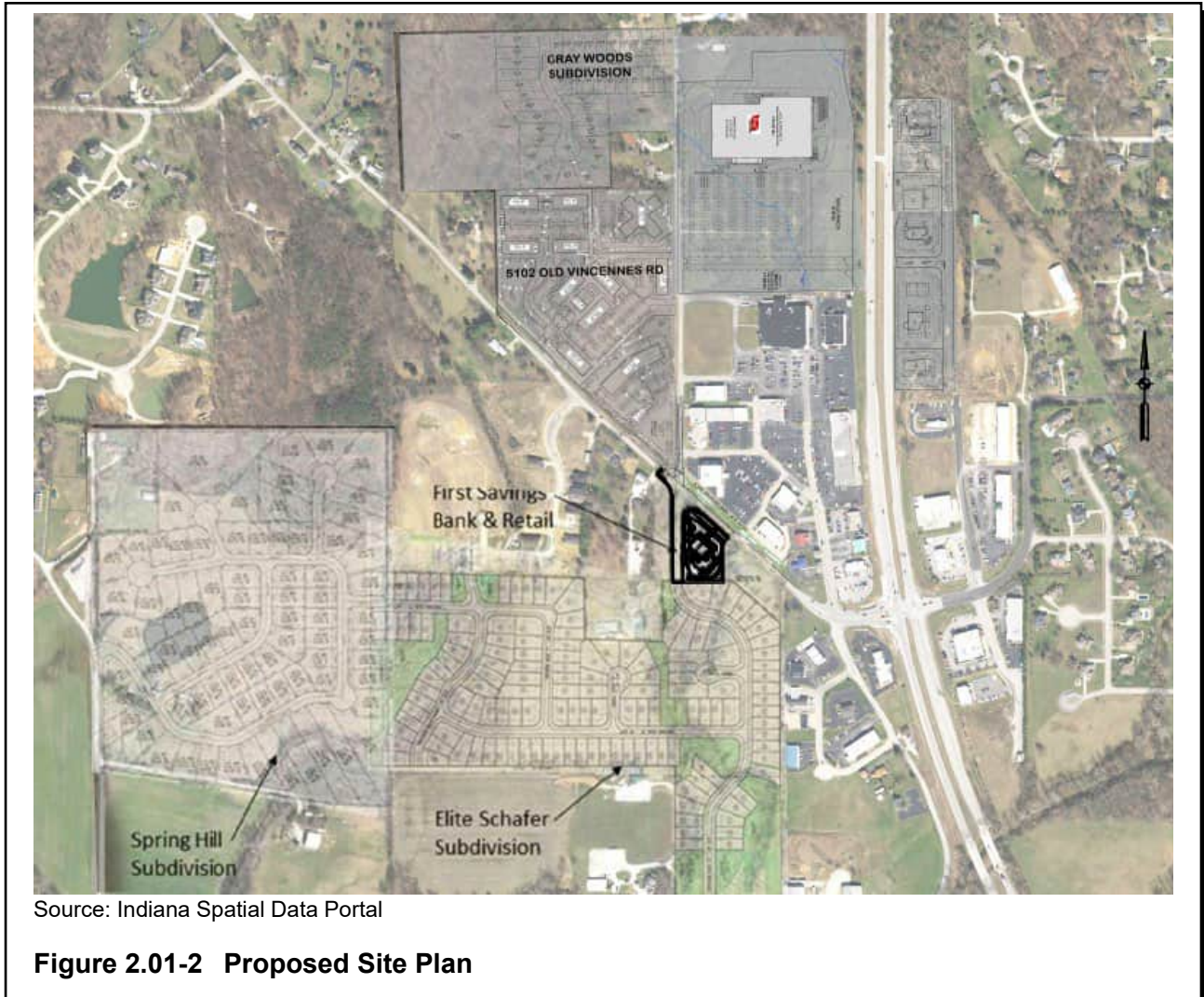
1. A south development area consisting of single-family residential subdivisions, on the south side of the intersection of Schrieber and Old Vincennes Roads.
2. A north development area consisting of a single-family residential subdivision and a mixed-use site with multifamily residential, senior living, and retail located at the northwest corner of the intersection of Schrieber and Old Vincennes Roads.
3. An east development area anticipated to consist of quick-serve restaurants, coffee shops, gas stations, and similar located along US 150 and Lafollette Station Drive north of Lawrence Banet Road.
4. A grocery store located along US 150 approximately halfway between Old Vincennes Road and Luther Road.

This area is a suburb of the City of Louisville, Kentucky, and traffic patterns on the roadways near the site reflect that of a commuter area. There is also a high school approximately 2 miles west of the study area that affects traffic patterns. The location of the proposed development is shown in Figure 2.01-1.



C. Site Plan

Figure 2.01-2 shows the proposed site plan for the developments created by the developers.



The developments southwest of US 150 and Old Vincennes Road were previously studied. The proposed land uses and building square footages are:

- 213 single-family homes
- One bank with two drive-through lanes
- 2,000 square feet of general retail gross floor area

Northwest of US 150 and Old Vincennes Road, the proposed land uses and building square footages are:

- 122,000 gross square feet (gsf) grocery store
- 41 single-family homes

- 228 multifamily housing units
- 94 senior living units
- 22,850 gsf retail (assumed strip retail plaza)

Northeast of US 150 and Old Vincennes Road, the proposed land uses and building square footages are:

- 1,350 gsf oil change facility
- 12-pump gas station
- 2,240 gsf coffee shop with drive-through
- Two 4,200 gsf quick-serve restaurants
- 7,230 gsf retail (assumed variety store)

The existing roadway network will provide access to the development on the northwest corner of Old Vincennes and Schrieber Roads. An extension of Schrieber Road to the south of Old Vincennes Road will provide access to the single-family developments, as it is currently a T-intersection. Lastly, the primary access to both development sites along US 150 north of Old Vincennes Road is proposed via a new public road and a break in the limited-access right-of-way (LARW). The intersections will require improvements to accommodate the projected traffic from the sites as discussed in Section 5.

D. Phasing and Timing

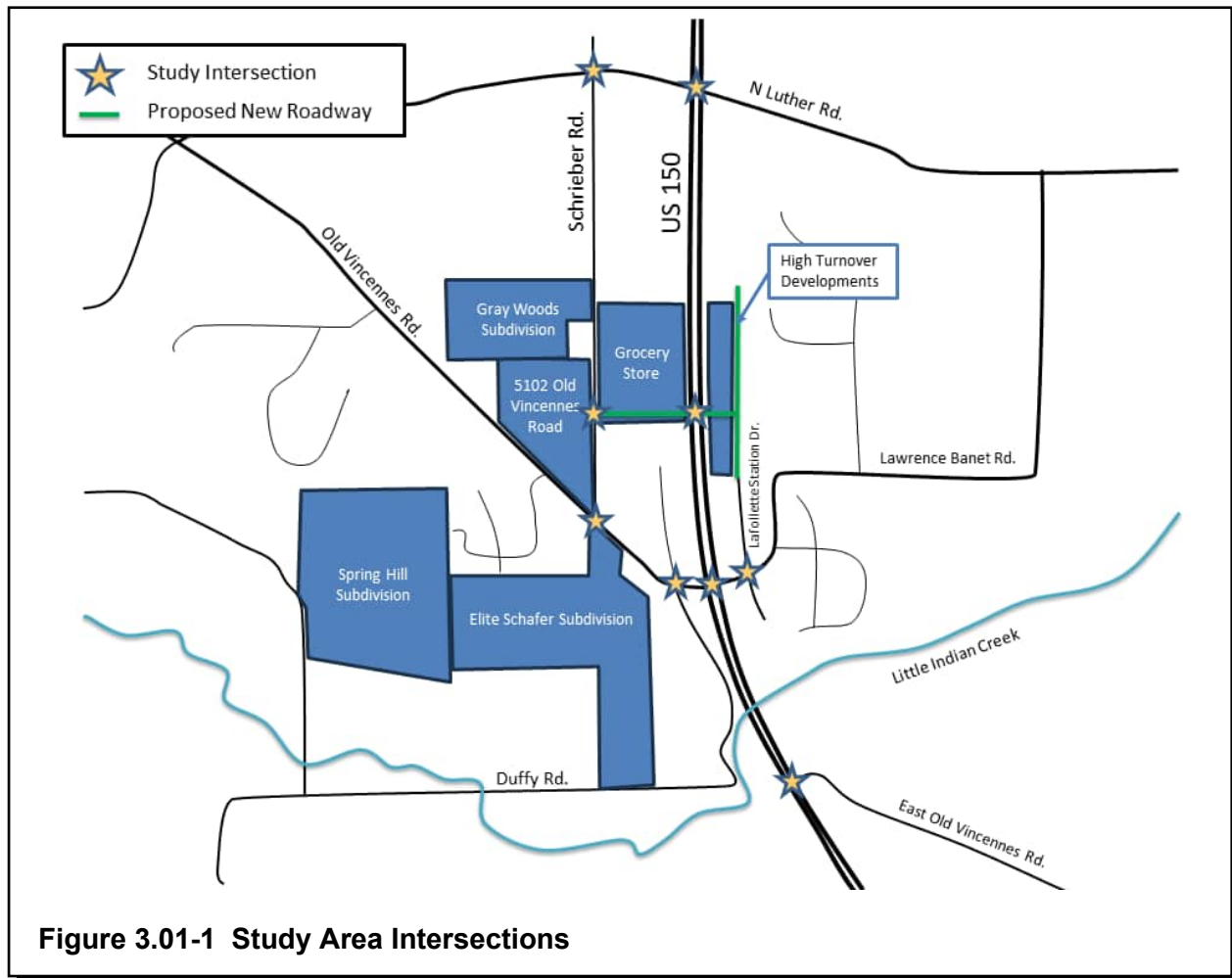
The Elite Schafer and Spring Hill subdivisions are currently under development, and the bank and retail sites there are expected to be fully occupied by the end of 2026. The grocery store could open in 2025. No specific tenants have been identified for the lots east of US 150, but that could change if a new road and signal is installed for the grocery store.

2.02 OFF-SITE DEVELOPMENTS

More development in the area has been discussed, particularly farther north on Schrieber Road, but there were no official plans at the time of this study. Therefore, the only off-site traffic that was considered was background traffic. Indiana Department of Transportation (INDOT) provided a linear growth rate of 1.5 percent per year for US 150 traffic and 0.7 percent for all side street traffic.

3.01 STUDY AREA LIMITS

This development will primarily impact the intersections in the vicinity of US 150 and Old Vincennes Road. The proposed new access to US 150 is approximately halfway between the intersections of Old Vincennes and Luther Roads, so these surrounding intersections were included in the traffic analysis of the proposed development. The study area intersections are shown in Figure 3.01-1.



The proposed new access is shown near the south end of the grocery store property. Constructing a roadway connecting US 150 and Schrieber Road along the north end of the grocery store property has topographical challenges.

3.02 STUDY AREA LAND USE

A. Existing Land Use

The existing land uses in the project area include highway service and commercial, residential, and agricultural. Within the study area are gas stations, banks, fast food and sit-down restaurants, salons, pharmacies, medical buildings, commercial buildings, homes, and farm operations.

B. Anticipated Future Developments

Although development farther north on Schrieber Road has been discussed, there are no specific future developments currently proposed that would affect the study intersections.

3.03 OTHER PROJECTS

Coordination with INDOT and the County will be required regarding other planned projects. The current planned scope of work along with a construction timeline are listed in Table 3.03-01.

Owner	Project Area	Scope of Work	Construction Year
Floyd County	Old Vincennes Road from US 150 to Schrieber Road	Convert to a three-lane section (two through lanes and two-way left-turn lane) and install a signal at Schrieber and Old Vincennes Roads.	2024
INDOT	US 150 at East Old Vincennes Road (U)	Intersection Improvement–Convert to Reduced Conflict Intersection.	2025
INDOT	US 150 at Old Vincennes Road (S)	Intersection Improvement–Convert to a signalized RCUT and Duffy Road and Lafollette Station Drive to roundabouts.	2030

U=unsignalized intersection, S= signalized intersection, RCUT=restricted crossing U-turn

Table 3.03-01 Other Projects

INDOT has indicated that the project at the signalized intersection of US 150 and Old Vincennes Road is early enough in project development that there is the potential to amend the project and partner with the County. Therefore, the traffic analysis in Section 5 of this report will address the operations of the currently proposed project, and evaluations of other alternatives.

3.04 SITE ACCESSIBILITY

A. Area Roadway System

1. Existing

Interstate 64 (I-64) provides access from the local area to the greater Louisville Metropolitan area. US 150 merges with I-64 less than 1 mile south of the study area and provides access to the nearby rural communities of Galena and Greenville. Old Vincennes Road intersects with US 150 and provides access to many residential communities as well as Floyd Central High School.

Schrieber Road extends from its T-intersection with Old Vincennes Road at the south end to a T-intersection with Luther Road at the north end. Old Vincennes and Luther Roads are the only access points to US 150 in the area. Duffy Road provides access to commercial developments immediately north and south of Old Vincennes Road and connects to the local street network to the west of this area; however, it is approximately 300 feet from the intersection with US 150 and is locally known as an unsafe intersection. East of US 150, Lafollette Station Drive intersects Lawrence Banet Road, approximately 300 feet from the intersection. Lawrence Banet Road connects the study area with the community of Floyds Knob to the northeast. Lastly, a separate intersection of US 150 and East Old Vincennes Road is near the south end of the study area but was not studied as part of this report.

2. Proposed

A new county road will be added between US 150 and Schrieber Road, approximately halfway between the intersections of Old Vincennes Road and US 150. Additionally, access to the east side of US 150 will be provided by extending Lafollette Station Drive north to this new intersection. The new county road will provide access to the grocery store and improve connectivity in the area, and the Lafollette Station Drive extension will provide access to the many new businesses proposed on the east side of US 150. This new intersection will require an application for a break in the LARW along US 150.

The Elite Schafer and Spring Hill subdivisions are already under construction. The Gray Woods development and 5012 Old Vincennes Road will have access on existing roadways.

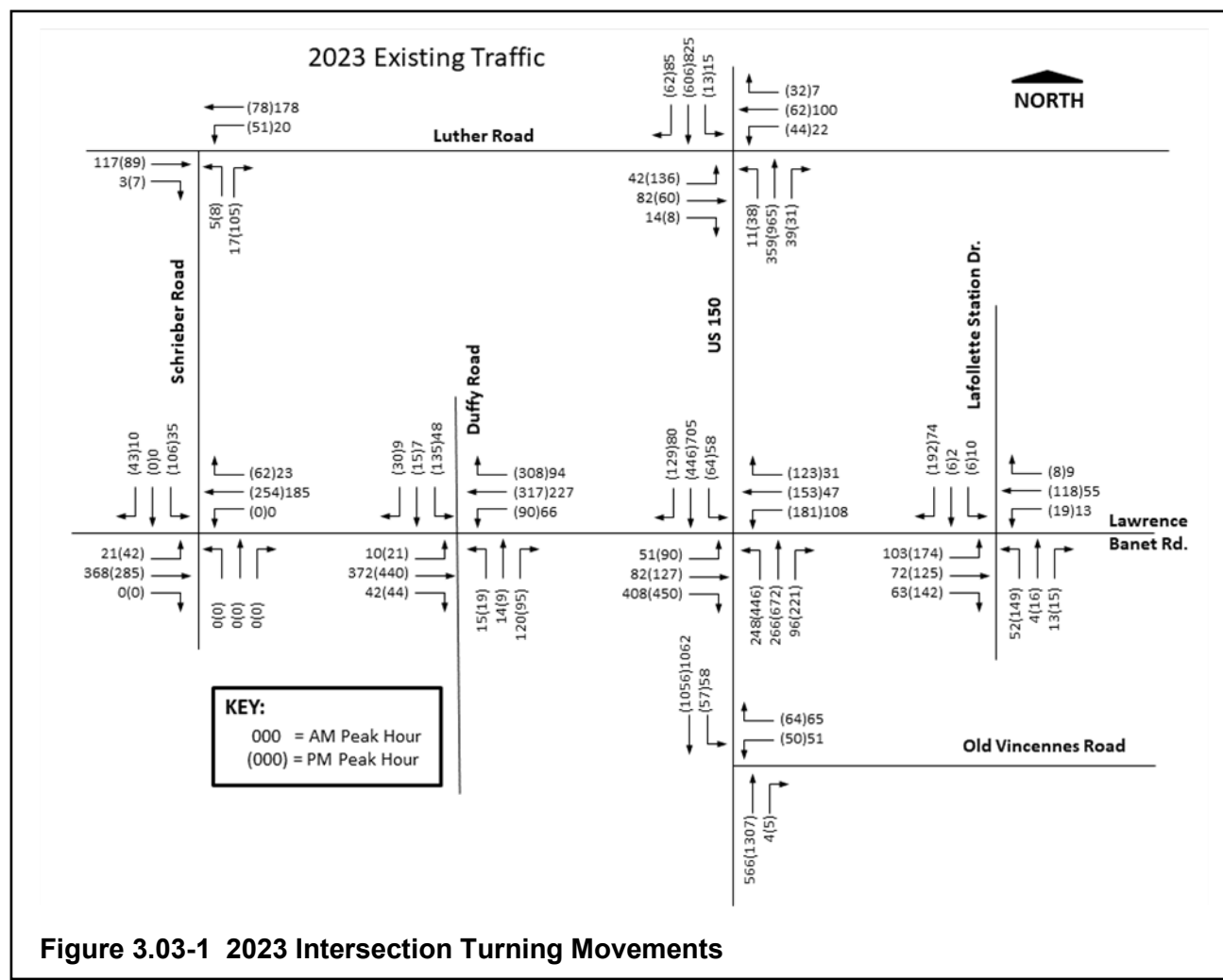
As part of this study, several additional alternatives will be analyzed for future operations at US 150 and Old Vincennes Road:

- A RCUT (currently planned), where left turns from the mainline and through and left movements from the side streets are not permitted at the main intersection and must use U-turns downstream to complete the desired movement.

- A RCUT where left turns from the mainline are permitted at the main intersection, but through and left movements from the side street are not and must use the U-turns downstream to complete the desired movement.
- A Partial Displaced Left Turn (DLT), where mainline left turns cross over to the outside of the through traffic in the opposing direction at an intersection upstream of the primary intersection, allowing through movements and left turns to operate concurrently.
- Grade separation of northbound (NB) US 150 at Old Vincennes Road, with those turning movements provided at the new intersection of US 150 with the county road, and an extension of the county road over to Old Vincennes Road.
- Grade separation of southbound (SB) US 150 at Old Vincennes Road, with those turning movements provided at the new intersection of US 150 with the county road, and an extension of the county road over to Old Vincennes Road.

B. Traffic Volumes

According to the 2022 count data from the INDOT, the annual average daily traffic (AADT) along US 150 just north of Old Vincennes Road is 16,963 vehicles per day (vpd), and just south of this intersection the AADT is 25,737. A significant amount of this daily traffic along US 150 is destined for the I-64 corridor. Old Vincennes Road northwest of the study area (north of Luther Road) had an AADT of 6,283 in 2022. Turning movement counts were conducted at the intersections of US 150 and Luther Road and Schrieber and Luther Roads in January 2022. The remaining study area intersections were counted in May 2021. These were annualized and adjusted to current year (2023). The 2023 annualized traffic counts for the study area intersections are shown in Figure 3.03-1.



C. Transit Service

There are currently no regularly scheduled transit services that serve the project area.

4.01 2023 AND 2048 SITE TRAFFIC

A. Trip Generation

Trips were estimated for the proposed development using the Institute of Transportation Engineers (ITE) *Trip Generation Manual, 11th Edition*. The total number of trips generated by the developments are shown in Tables 4.01-1 through 4.01-8. Refer to Appendix B for the trip generation data.

ITE Land Use Code	ITE Land Use	Units		AM Peak Hour Rate	AM Directional Distribution		2048 AM Peak Hour Trips		
					Entering	Exiting	Entering	Exiting	Total
210	Single-Family Housing	137	# of Dwelling Units	0.70	25%	75%	24	72	96
210	Single-Family Housing	76	# of Dwelling Units	0.70	25%	75%	14	40	54
912	Drive-in Bank	3	1000 GSF	9.50	58%	42%	14	10	24
822	Strip Retail Plaza	2	1000 GSF	2.36	60%	40%	3	2	5

New Auto Trips 55 124 179

Table 4.01-1 2048 AM Peak-Hour Trip Generation—South Development

ITE Land Use Code	ITE Land Use	Units		PM Peak Hour Rate	PM Directional Distribution		2048 PM Peak Hour Trips		
					Entering	Exiting	Entering	Exiting	Total
210	Single-Family Housing	137	# of Dwelling Units	0.94	63%	37%	81	48	129
210	Single-Family Housing	76	# of Dwelling Units	0.94	63%	37%	45	27	72
912	Drive-in Bank	3	1000 GSF	20.45	50%	50%	26	26	52
822	Strip Retail Plaza	2	1000 GSF	6.59	50%	50%	7	7	14

New Auto Trips 159 108 267

Table 4.01-2 2048 PM Peak-Hour Trip Generation—South Development

ITE Land Use Code	ITE Land Use	Units		AM Peak Hour Rate	AM Directional Distribution		2048 AM Peak Hour Trips		
					Entering	Exiting	Entering	Exiting	Total
822	Strip Retail Plaza	23	1000 GSF	2.36	60%	40%	32	22	54
220	Multi-Family Housing	228	# of Dwelling Units	0.40	24%	76%	22	70	92
255	Assisted/Senior Living	94	# of Dwelling Units	0.15	65%	35%	10	5	15
210	Single-Family Housing	41	# of Dwelling Units	0.70	25%	75%	7	22	29

New Auto Trips 71 119 190

Table 4.01-3 2048 AM Peak-Hour Trip Generation—North Development

ITE Land Use Code	ITE Land Use	Units		PM Peak Hour Rate	PM Directional Distribution		2048 PM Peak Hour Trips		
					Entering	Exiting	Entering	Exiting	Total
822	Strip Retail Plaza	23	1000 GSF	6.59	50%	50%	76	75	151
220	Multi-Family Housing	228	# of Dwelling Units	0.51	63%	37%	74	43	117
255	Assisted/Senior Living	94	# of Dwelling Units	0.19	39%	61%	7	11	18
210	Single-Family Housing	41	# of Dwelling Units	0.94	63%	37%	25	14	39

New Auto Trips 182 143 325

Table 4.01-4 2048 PM Peak-Hour Trip Generation - North Development

ITE Land Use Code	ITE Land Use	Units		AM Peak Hour Rate	AM Directional Distribution		2048 AM Peak Hour Trips		
					Entering	Exiting	Entering	Exiting	Total
814	Variety Store	7.23	1000 GSF	3.04	55%	45%	12	10	22
941	Quick Lubrication	1.35	1000 GSF	5.80	75%	25%	6	2	8
937	Coffee/Donut Shop w/ Drive	2.24	1000 GSF	85.88	51%	49%	98	95	193
934	Fast Food Restaurant w/	4.20	1000 GSF	44.61	51%	49%	96	92	188
945	Convenience Store/ Gas	12.00	VFP	16.06	50%	50%	97	96	193
934	Fast Food Restaurant w/	4.20	1000 GSF	44.61	51%	49%	96	92	188

New Auto Trips 405 387 792

Table 4.01-5 2048 AM Peak-Hour Trip Generation - East Development

ITE Land Use Code	ITE Land Use	Units		PM Peak Hour Rate	PM Directional Distribution		2048 PM Peak Hour Trips		
					Entering	Exiting	Entering	Exiting	Total
814	Variety Store	7.23	1000 GSF	6.70	51%	49%	25	24	49
941	Quick Lubrication	1.35	1000 GSF	8.70	42%	58%	5	7	12
937	Coffee/Donut Shop w/ Drive	2.24	1000 GSF	38.99	50%	50%	44	44	88
934	Fast Food Restaurant w/	4.20	1000 GSF	33.03	52%	48%	72	67	139
945	Convenience Store/ Gas	12.00	VFP	18.42	50%	50%	111	111	222
934	Fast Food Restaurant w/	4.20	1000 GSF	33.03	52%	48%	72	67	139

New Auto Trips 329 320 649

Table 4.01-6 2048 PM Peak-Hour Trip Generation—East Development

ITE Land Use Code	ITE Land Use	Units		AM Peak Hour Rate	AM Directional Distribution		2048 AM Peak Hour Trips		
					Entering	Exiting	Entering	Exiting	Total
850	Supermarket	122	1000 GSF	2.86	59%	41%	206	143	349

New Auto Trips 206 143 349

Table 4.01-7 2048 AM Peak-Hour Trip Generation—Grocery Development

ITE Land Use Code	ITE Land Use	Units		PM Peak Hour Rate	PM Directional Distribution		2048 PM Peak Hour Trips		
					Entering	Exiting	Entering	Exiting	Total
850	Supermarket	122	1000 GSF	8.95	50%	50%	546	546	1092

New Auto Trips 546 546 1,092

Table 4.01-8 2048 PM Peak-Hour Trip Generation—Grocery Development

Linked and pass-by trip reductions were applied for the grocery store and the development on the east side of US 150. A 5 percent reduction for linked trips was assumed for these developments. Pass-by percentages were obtained from the ITE *Trip Generation Manual* and are discussed in the following section.

B. Trip Distribution

Several patterns were used to distribute the development trips to the roadway network: one each for residential, commercial, and pass-by trips.

1. Residential Trips

The residential development trip distribution follows that of a typical commuter corridor. The entering and exiting residential development trips were distributed to the roadway network based on patterns shown in Tables 4.01-9 and 4.01-10 for the AM Peak hour. The same are shown for the PM peak hour in Tables 4.01-11 and 4.01-12. The directionality has most of the traffic coming from and going to the east, assuming most trips are related to commuting patterns on US 150. Turning distribution at the development generally follows existing patterns at the Schrieber Road and Old Vincennes Road intersection. Trips generated from the development were carried through the US 150 and Old Vincennes Road intersection according to existing turning movement patterns for incoming and outgoing trips.

Direction of Travel	Entering Trip %	Exiting Trip %
North	5	5
South	0	0
East	70	70
West	25	25

Table 4.01-9 AM Peak Residential Development Trip Distribution at Schrieber Road

Direction of Travel	Entering Trip %	Exiting Trip %
North	20	10
South	70	75
East	10	15
West	0	0

Table 4.01-10 AM Peak Residential Development Trip Distribution at US 150

Direction of Travel	Entering Trip %	Exiting Trip %
North	5	5
South	0	0
East	70	70
West	25	25

Table 4.01-11 PM Peak Residential Development Trip Distribution at Schrieber Road

Direction of Travel	Entering Trip %	Exiting Trip %
North	20	15
South	60	65
East	20	20
West	0	0

Table 4.01-12 PM Peak Residential Development Trip Distribution at US 150

2. Commercial Trips

Commercial trip distribution is anticipated to attract trips more evenly across the area rather than primarily to and from the Louisville area. The assumed distributions are shown in Tables 4.01-13 and 14.

Direction of Travel	Entering Trip %	Exiting Trip %
North	35	35
South	50	50
East	5	5
West	10	10

Table 4.01-13 AM Peak Commercial Development Trip Distribution

Direction of Travel	Entering Trip %	Exiting Trip %
North	40	40
South	45	45
East	5	5
West	10	10

Table 4.01-14 PM Peak Commercial Development Trip Distribution

3. Pass-by Trips

Pass-by trips were distributed among the four most major movements at the primary intersection, as shown in Table 4.01-15.

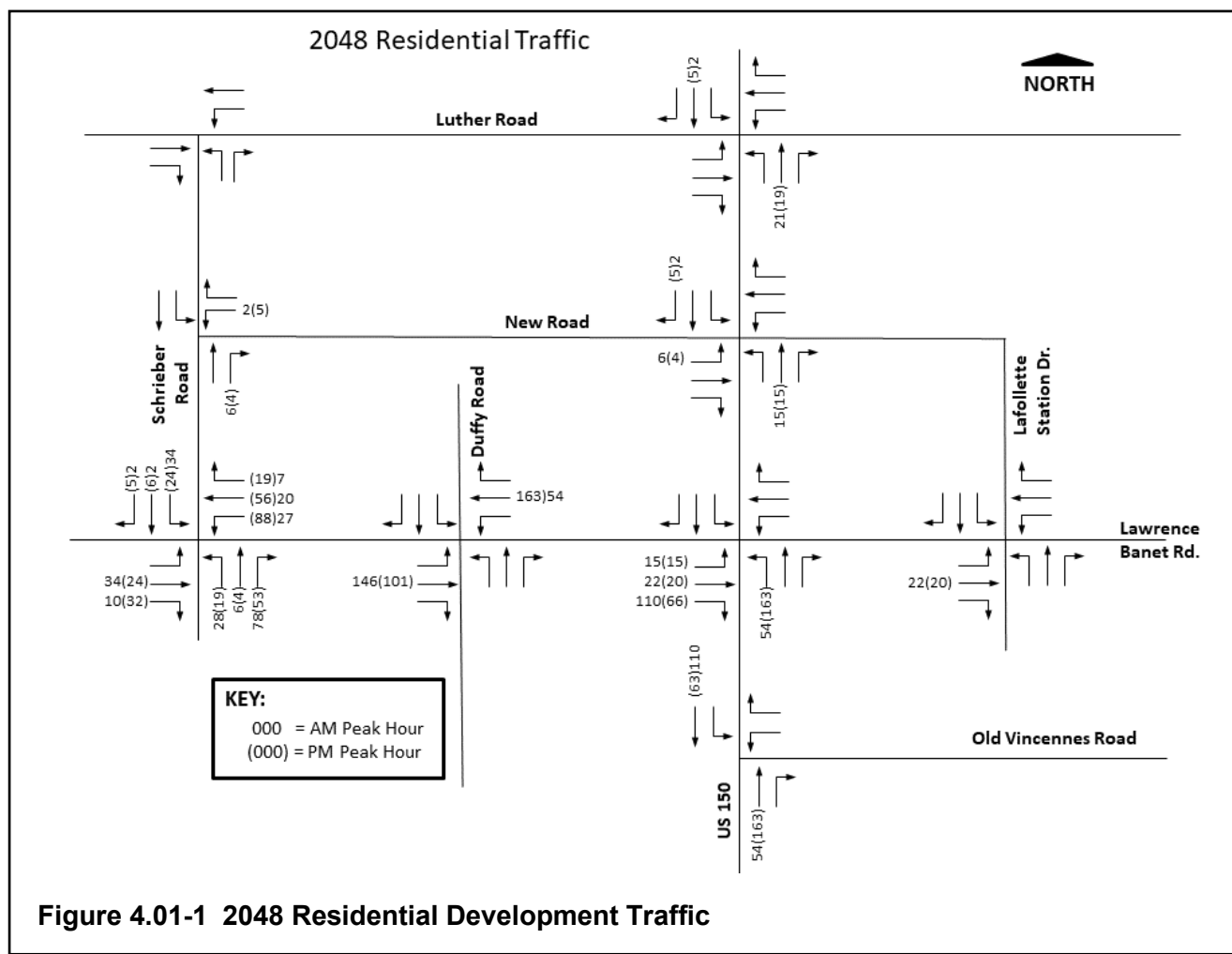
Direction of Travel	AM Peak Hour %	PM Peak Hour %
SBT	50	20
EBR	20	25
NBL	15	20
NBT	15	35

SBT=southbound through NBT=northbound through
EBR=eastbound right NBL=northbound left

Table 4.01-15 Pass-by Development Trip Distribution

C. Traffic Assignment

The development traffic was assigned to the roadway system according to the previously listed distribution and the proposed layout of the site access points. Because the intersection of US 150 and Old Vincennes Road already operates at a poor level of service (LOS), it is assumed that the intersection would not be able to handle the additional traffic generated by the grocery store or the high trip generator developments proposed on the east side of US 150. Therefore, a break in the LARW has been proposed that would provide for a new public road to connect from US 150 to Schrieber Road and extend Lafollette Station Drive to the north. The residential development traffic, commercial development traffic, and pass-by for the sites in the study area are shown in Figures 4.01-1 through 4.01-3. To justify the break in the LARW, trips were also distributed on the existing roadway network, forcing nearly all the generated trips through the US 150 and Old Vincennes Road intersection. This alternate distribution was used to create the baseline model without the additional access point on US 150.



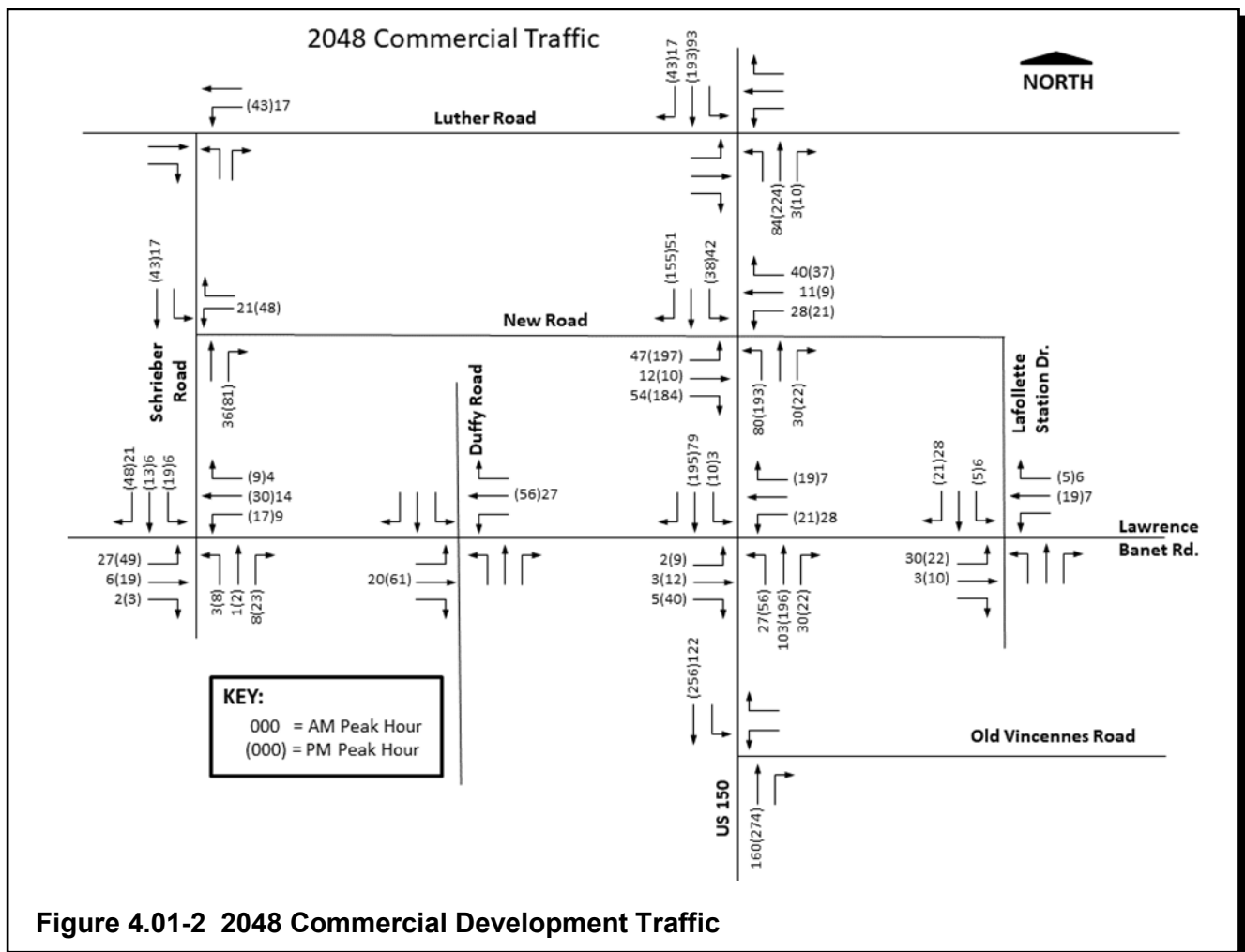


Figure 4.01-2 2048 Commercial Development Traffic

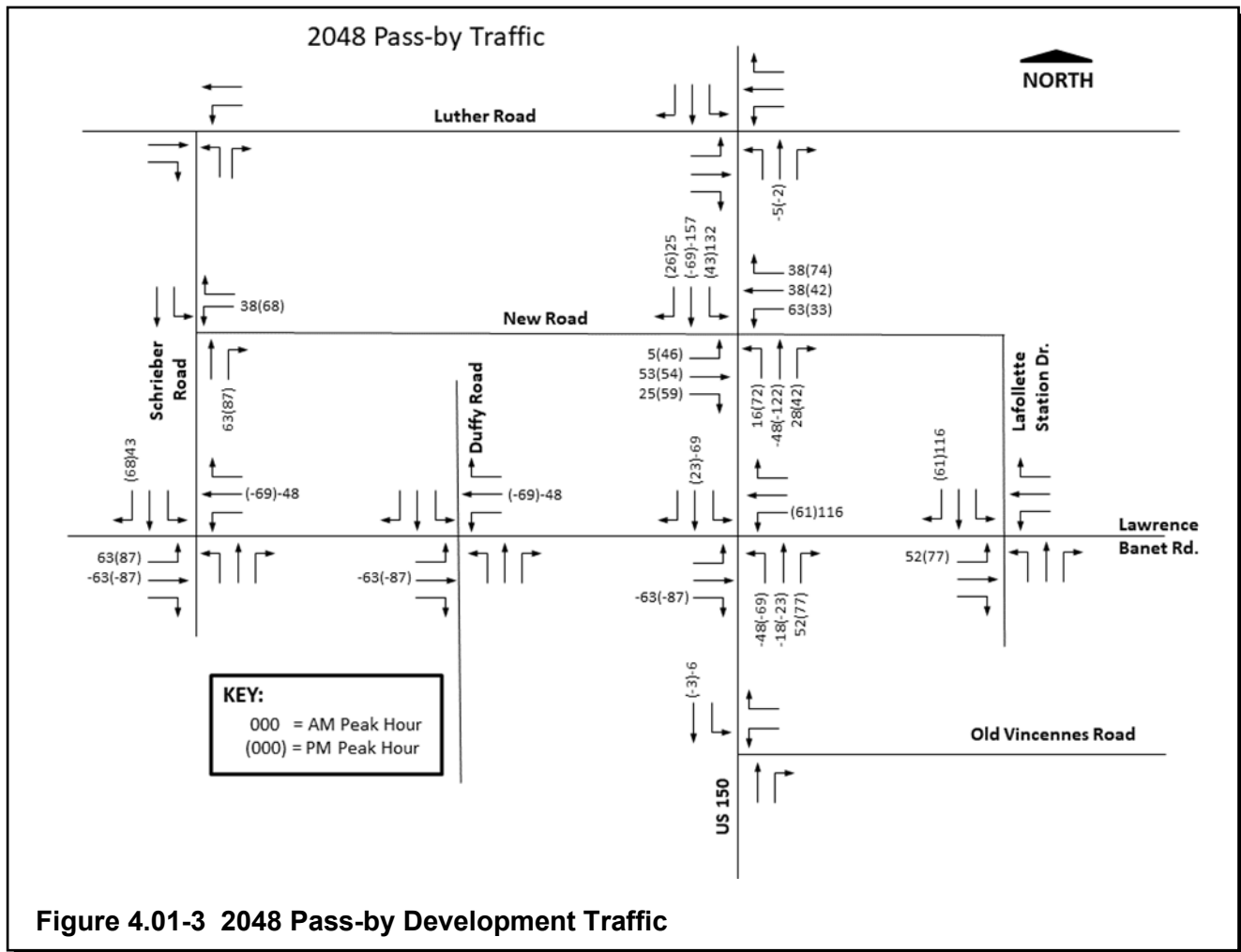


Figure 4.01-3 2048 Pass-by Development Traffic

4.02 2048 NON-SITE TRAFFIC

A. Method of Projection

Development farther north and west of this study area is expected, but an exact timeline is unknown. Non-site traffic for this analysis is comprised of the existing traffic that has been grown to the 2048 horizon year. According to direction from INDOT Seymour District Traffic, the existing traffic has grown at an assumed 1.5 percent per year rate for US 150 and 0.7 percent for the side streets, applied linearly, from the existing year to the 2048 horizon year for this analysis.

B. Trip Generation

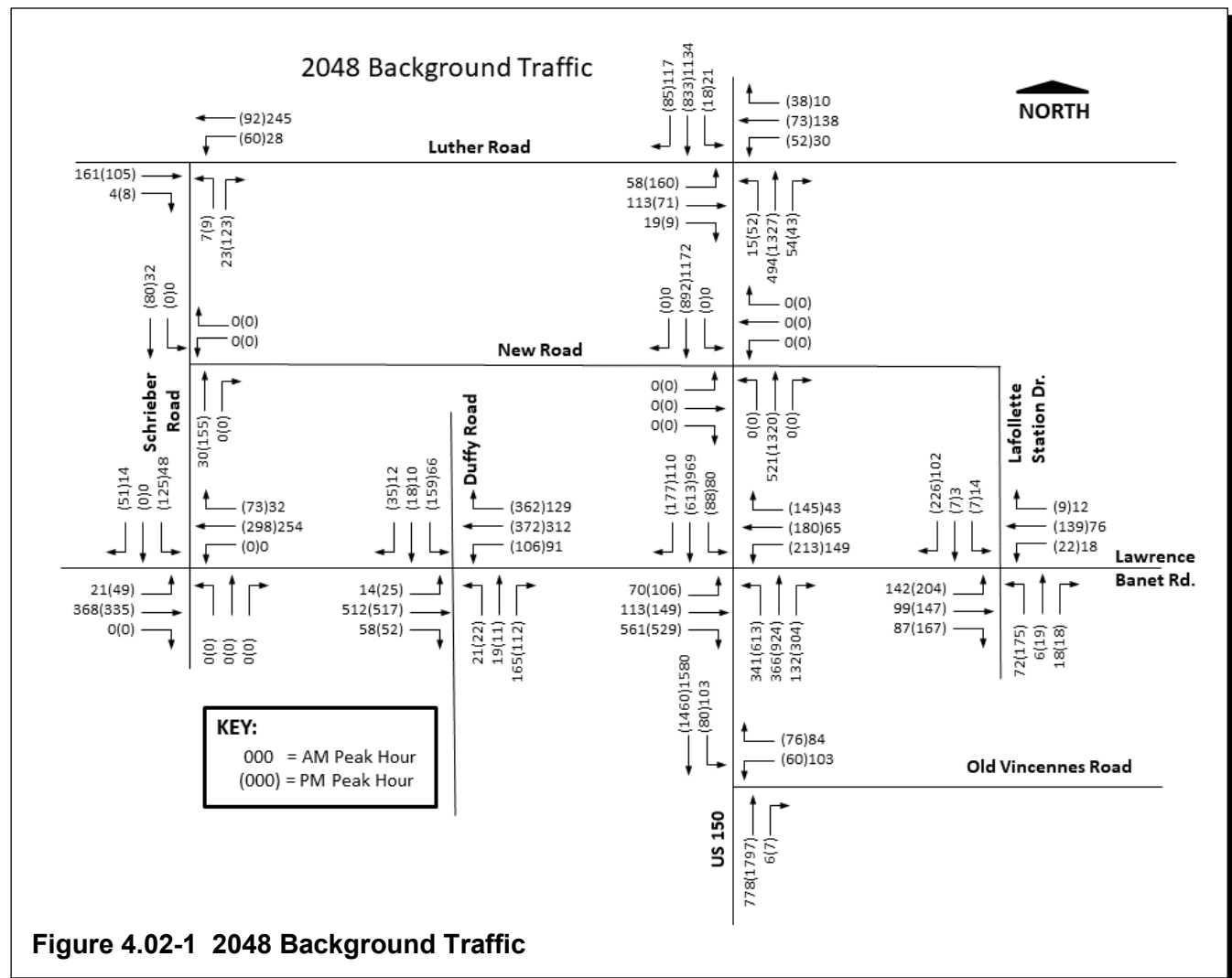
No additional developments are known at this time, so no additional trips were generated for land uses outside the proposed development.

C. Trip Distribution

The background traffic patterns were assumed to remain the same from the existing to the 2026 horizon year. The growth rate was applied to the movements equally.

D. Traffic Assignment

Because the background traffic was forecasted with an overall growth rate, the traffic assignments will follow the existing patterns. The 2048 background traffic is shown in Figure 4.02-1.



4.03 2048 TOTAL TRAFFIC

The 2048 traffic estimates the horizon year traffic volumes once the developments are complete. The 2048 total traffic is shown in Figure 4.03-1.

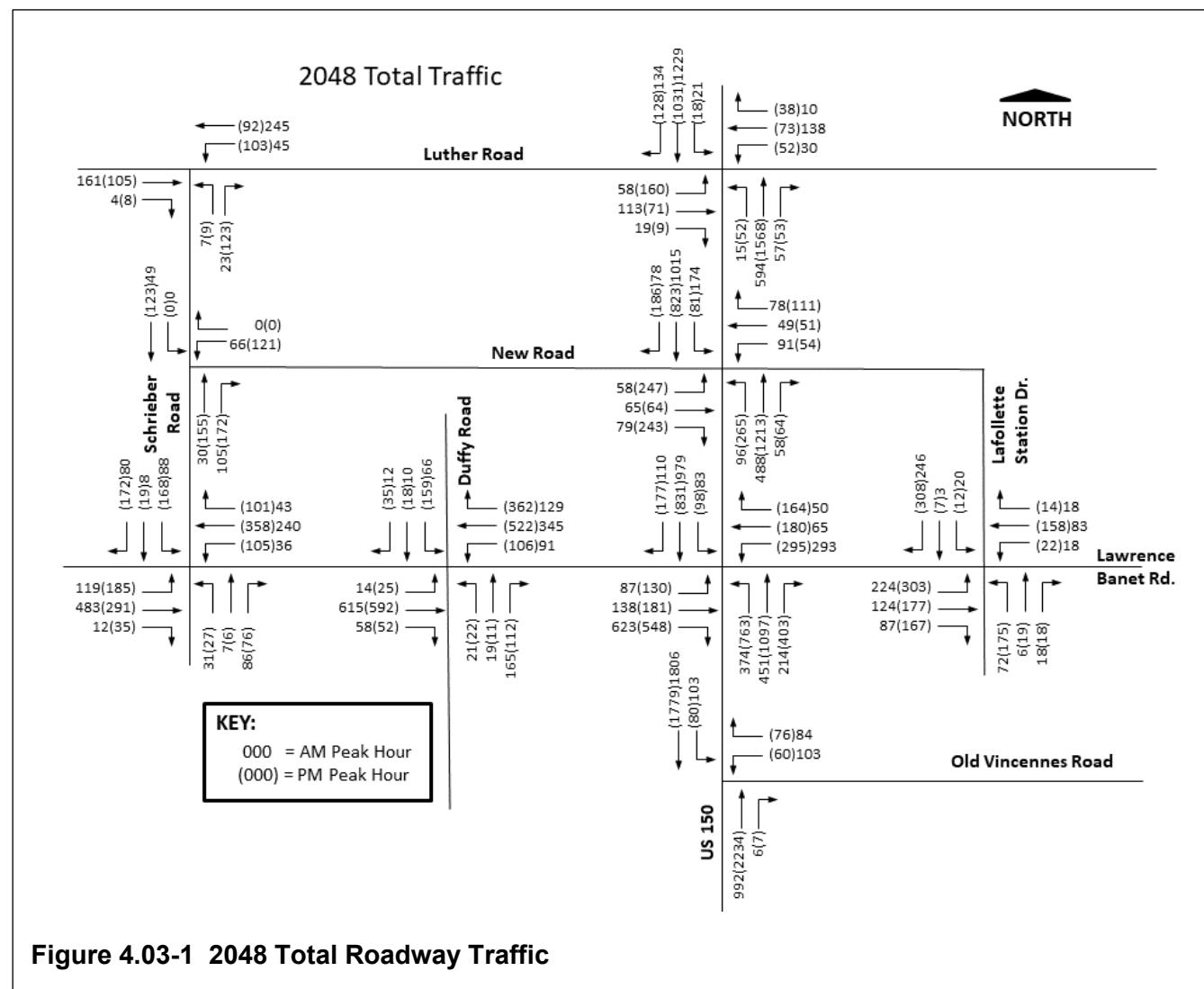


Figure 4.03-1 2048 Total Roadway Traffic

5.01 EXISTING CAPACITY AND LOS

Motor vehicle operations were analyzed using the Synchro 11/SimTraffic 11 software program (Synchro). Synchro is a macroscopic program that uses equations outlined in the Highway Capacity Manual (HCM) developed by the Federal Highway Administration (FHWA). SimTraffic is a microsimulation program that models individual vehicles on a simulated network that represents existing or proposed street conditions. SIDRA, a software typically only used for roundabout analysis, was used to model roundabouts in isolation where recommended. These vehicles are assigned routings based on turning-movement counts at each individual intersection.

Operations are evaluated based on conditions at the intersections. An intersection's LOS is based on average delay in seconds per vehicle for traffic entering the intersection. LOS A indicates travelers will experience minimal average delay at an intersection (less than 10 seconds). LOS F indicates that average delay is quite high (more than 50 seconds at an unsignalized intersection and 80 seconds at a signalized intersection).

For signalized intersections, the overall intersection operations are reported using the HCM overall intersection delay calculated in Synchro. For unsignalized intersections, the highest delay for yielding movement is used to report the overall intersection operations. This is done because the intersection average delay for an unsignalized intersection tends to be skewed to lower delays as the through movements that receive zero delay are factored into the overall average. Roundabout operations are reported using SIDRA methodology, and the LOS is categorized by signalized intersections.

LOS E is often considered to be the limit of acceptable delay, and LOS F indicates a facility where improvements are needed. Many communities establish LOS D as their minimum acceptable condition.

The existing roadway was simulated with and without the development traffic to establish the operating conditions of the existing roadway and determine the improvements required to accommodate the development traffic. The HCM6 traffic operations from the Synchro models at the study intersections with the base traffic is shown in Table 5.01-1. Efforts were focused on future alternatives analysis rather than a no-build because it has been established that the intersection of US 150 and Old Vincennes Road operates at a failing LOS in both peak hours.

Location	Intersection Operations			
	AM Peak Hour		PM Peak Hour	
	Overall Intersection Operation	LOS F Movement	Overall Intersection Operation	LOS F Movements
Old Vincennes and Schrieber Roads (U)	LOS C	--	LOS C	--
Old Vincennes Road and Duffy Road (U)	LOS F	NBT/L, SBT/L	LOS F	NBT/L, SBT/L
Old Vincennes Road and US 150 (S)	LOS F	EBR, NBL, SBL	LOS F	EBR, WBL, WBT, WBR, NBL, SBL
Lawrence Banet Road and Lafollette Station Drive (U)	LOS C	--	LOS F	NBL
Schrieber and Luther Roads (U)	LOS B	--	LOS B	--
US 150 and Luther Road (S)	LOS B	--	LOS C	--

SBL=southbound left WBL=westbound left WBT=westbound through

Table 5.01-1 2048 Background Traffic Operations

5.02 ALTERNATIVES ANALYSIS FOR US 150 AT OLD VINCENNES ROAD

A. Conventional

Conventional intersection alternatives consist of more common configurations and may include items like signal retiming or added turn lanes. While some small conventional improvements can be made here, this intersection has traffic volumes so that a conventional alternative no longer operates well. Adding a second NBL lane was not considered due to the short length of the second receiving lane and the right-of-way impacts that would result by extending it. Conventional recommendations include adding an overlap signal phase for the EBR movement.

B. RCUT–No Mainline Lefts

INDOT has currently proposed this alternative at the intersection of US 150 and Old Vincennes Road and is early in the plan development process. It consists of removing the mainline left turns and the side street through movements and left turns. These movements would be completed via the U-turns on US 150 approximately 600 to 700 feet on either side of the intersection. The main intersection is signalized, as are the dual-lane U-turns. Roundabouts are recommended at the intersections of Old Vincennes Road with Duffy Road and Lawrence Banet Road with Lafollette Station Drive.

When adding the development traffic to this alternative, the operations become very poor, with many movements at LOS F. In order to protect the through movements on US 150 and keep the queues from reaching I-64, side street traffic is even more affected and queues through the proposed roundabouts.

This alternative will likely perform well in the short-term, but not if the developments come to fruition. INDOT may choose to move forward with this project, with the idea that the existing conditions are poor and that it would provide some improvement over the existing conditions. However, the following alternative should be strongly considered, given the relatively small additional cost. INDOT has also indicated that it is willing to discuss other alternatives with the County and possibly reallocate the project funding in a different manner if the County was willing to financially participate as well.

C. RCUT–Mainline Lefts

This alternative is a modification of INDOT’s current proposal. Rather than the mainline left turns completing a downstream U-turn and right-turn, mainline left turns would be allowed. This improves overall intersection operations because these two movements (particularly the high-volume NBL movement) do not have to travel through the primary intersection twice. These movements can also be programmed to overlap with the dual-lane right-turn movements on Old Vincennes and Lawrence Banet Roads.

In some places, this would require the addition of two U-turn lanes next to an existing left-turn lane. There are 36 feet between the existing left-turn lane and the opposing travel lanes; therefore, accommodating two U-turn lanes and some curb is feasible.

D. DLT

A partial DLT consists of crossing mainline left turns to the outside of the opposing mainline through traffic at a signal in advance of the intersection. This allows mainline left turns and through traffic to run concurrently at the primary intersection. This configuration is often beneficial at locations with high through and left-turning movements such as this one.

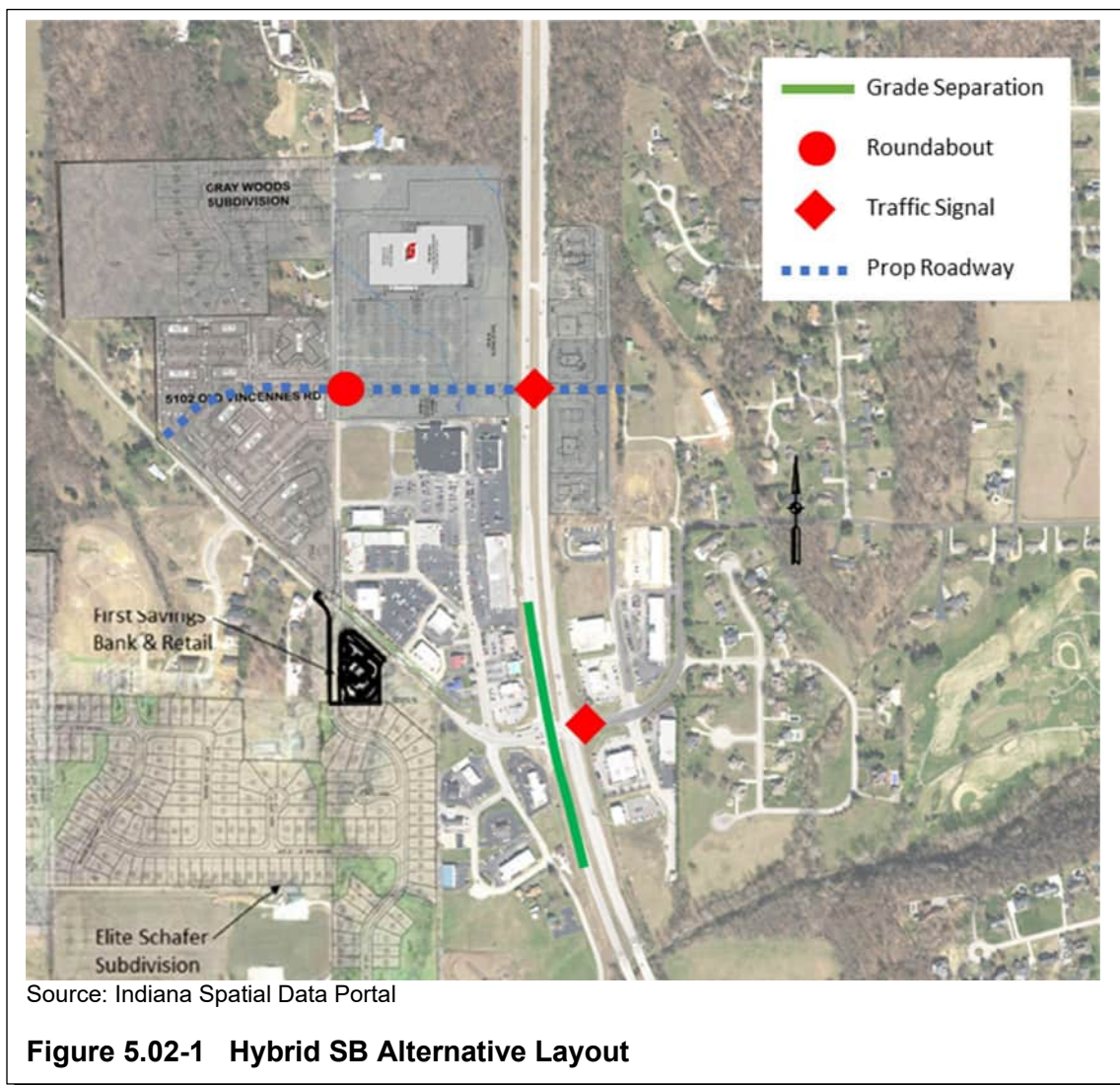
Although this configuration operates well, the added turn lanes in the southwest quadrant of the intersection push the EB stop bar farther to the west. There is not room for an EB left-turn lane at US 150 and WB left turn lane at Duffy Road. Assuming a roundabout would need to be installed at Duffy Road to maintain access to those residences and the gas station, there would be less than 100 feet between the roundabout and that stop bar. This would likely result in a poor interaction between the signal and roundabout. For that reason, this alternative is not recommended.

E. Hybrid NB

The Hybrid NB alternative involves grade separating the US 150 NB travel lanes at the Old Vincennes Road intersection and providing for those movements at the New Road intersection. The high volume of NB left-turning vehicles at Old Vincennes Road will be rerouted to this intersection, and access to the new grocery store will be provided there as well. This results in a very high volume of left-turning vehicles at the new intersection. Even providing dual left-turn lanes still results in a poor intersection LOS, and there is no benefit of the Hybrid NB alternative over the Hybrid SB alternative. Therefore, this alternative was discarded.

F. Hybrid SB

The Hybrid SB alternative involves grade separating the US 150 SB travel lanes at the Old Vincennes Road intersection and providing for those movements at the New Road intersection. The high volume of EB right-turning vehicles at Old Vincennes Road will be rerouted to this intersection, and access to the new grocery store will be provided there as well.



5.03 ROADWAY IMPROVEMENTS TO IMPROVE CAPACITY AND LOS

Three alternatives were carried forward for analysis: RCUT without mainline lefts as the baseline alternatives, RCUT with mainline lefts and no new access, and RCUT with mainline lefts and a new access point on US 150. The Hybrid SB alternative is not preferred by INDOT due to speeding concerns through the area; it will also be more expensive to construct relative to the other alternatives.

A. US 150 at Old Vincennes Road

1. Conventional: An overlap phase should be considered for the EB right-turn movement at the intersection of Old Vincennes Road with US 150. A dedicated right-turn bay already exists, therefore, the change in signal timing would be minor. However, several movements still operate at LOS F.
2. RCUT with Left Turns: An RCUT intersection is recommended here in the long term. At this location, left-turns from US 150 would be allowed. Through and left-turn movements from the side street would be restricted, instead using dual right-turn lanes to downstream U-turns to complete their desired movement.

B. US 150 at New Road

The recommendations at this intersection are contingent upon the selected alternative at the Old Vincennes Road intersection. However, an alternative at that intersection would likely not be constructed for several years. For this reason, it is recommended to construct an intersection layout here that corresponds with the existing and conventional alternative at Old Vincennes Road and expand this intersection in the future, if required. Specific improvements are shown in Table 5.03-1.

An RCUT intersection was also explored at this intersection. Consistency may be a consideration if or when the US 150 and Old Vincennes Road intersection is converted to a RCUT. LOS is also improved when compared to a conventional alternative. This should be discussed further with INDOT.

A three-lane section is recommended for New Road, at minimum. The roadway cross section may include curb and gutter, storm sewer, and sidewalks. The final configuration should be discussed with the County.

C. Old Vincennes and Duffy Roads

Conversion of the north approach of Duffy Road to a right-in and right-out only (RIRO) layout is recommended in the short-term. This intersection has previously been identified as a high-crash location and operates at LOS F in both peak hours. Eliminating through and left-turn movements from Duffy Road has also been discussed; however, this was not the preference of the County due to limited access points for residents and businesses to the south. If an agreement is reached to extend Schrieber Road farther south to intersect with Duffy Road, this intersection should be fully converted to RIRO. Converting the driveway to the gas station at the southwest corner of Old Vincennes and Duffy Roads to entrance only should also be considered because of the proximity of the driveway to the intersection.

The baseline model from INDOT shows this intersection as a roundabout. However, the SIDRA analysis shows that a single-lane roundabout will not operate well, particularly in the PM peak hour. A westbound (WB) right-turn slip lane into Highlander Point would be

required so that the roundabout does not queue back into the intersection of US 150 and Old Vincennes Road, and EB Old Vincennes Road would require two entrance lanes to operate at an acceptable LOS. Both of those modifications would have significant real estate impacts; therefore, the RIRO alternative is recommended here.

D. Old Vincennes and Schrieber Roads

A signal will be constructed at this intersection later in 2024. The need for this is supported with the traffic modeling for the additional developments. However, the Hybrid SB alternative may not actually warrant a signal here, because a significant portion of the traffic would bypass this intersection if the new road is connected to Old Vincennes Road north of this intersection. However, this signal would likely already be constructed at that time and would not make sense to remove.

If New Road is not constructed, this intersection will fail. Conversion to a single-lane roundabout was also explored, but it operates at LOS E in the peak hour, with southbound queuing approximately 1900 feet. A dual-lane roundabout would require additional improvements to the roadway network.

E. Schrieber and New Roads

If New Road is constructed, this intersection can operate as two-way stop-controlled (TWSC). If New Road is not constructed, a roundabout will be required here because movements in and out of the grocery store would use this intersection.

F. Lafollette Station Drive and Lawrence Banet Road

This intersection no longer functions well as an unsignalized intersection, and it is too close to the signal at US 150 to install another signal. The preferred alternative is to convert this intersection to a RIRO configuration and install a roundabout at the other entrance to this development on Lawrence Banet Road, between Augusta National Drive and the 90-degree curve in the road. Allowing a left-in option for WB vehicles may also be considered. These access options should be discussed with the County. Installing a roundabout at this intersection was also considered, but there are concerns about its proximity to the signal and queuing through the roundabout.

G. Development Entrances

1. Grocery Store

Separate left- and right-turn bays should be provided at each parking lot exit. A right-turn bay should be constructed between US 150 and the easternmost parking lot entrance. Right-turn bays may also be recommended at other entrances based on the final site plan. Because a three-lane section is recommended for the New Road at minimum, left-turn lanes will be available to enter the parking lot.

2. 5012 Old Vincennes

The access point on Old Vincennes Road meets right-turn and left-turn lane warrants according to the IDM. The access point on Schrieber Road does not meet either turn lane warrant. Consideration should be given to placing the entrance across from the Highlander Point entrance approximately 480 feet north of Old Vincennes Road, in case any intersection control would be warranted in the future. In the alternatives without New Road, an additional roundabout would be required here because of the increased traffic from the Duffy Road conversion to RIRO as well as all the grocery traffic using Schrieber Road.

The proposed conventional and short-term improvements are summarized in Table 5.03-1. Long-term improvements are summarized in Table 5.03-2 but should be discussed further with INDOT Seymour District and the County. Other improvements that should be prioritized by the County to improve the roadway network include:

1. Connecting Duffy Road to Schrieber Road south of Old Vincennes Road.
2. Extending New Road all the way through beyond Schrieber Road to tee into Old Vincennes Road.

Intersection	Improvements
Old Vincennes Road and New Road	▪ Install 610-foot NB left-turn bay.* ▪ Install 425-foot NB right-turn bay.* ▪ Install 250-foot EB left-turn bay. ▪ Install 210-foot EB right-turn bay. ▪ Install 465-foot SB left-turn bay.* ▪ Install 580-foot SB right-turn bay.* ▪ Install 100-foot WB left-turn bay. ▪ Install 180-foot WB right-turn bay. ▪ Convert intersection to traffic signal control.
Old Vincennes Road and Duffy Road	▪ Convert intersection to RIRO. ▪ Convert gas station driveway to entrance only.
Old Vincennes Road and US 150	▪ Convert EBR phasing to permitted+overlap.

*Includes 385 feet of deceleration per IDM Ch. 46 at 45 mph, based on discussions about lowering speed limit with INDOT Seymour District.

Table 5.03-1 Recommended Roadway Improvements: Short-Term

Intersection	Improvements
US 150 and New Road	▪ Possible conversion to RCUT; discuss with INDOT
Old Vincennes Road and US 150	▪ Convert to RCUT + Mainline Left configuration ▪ Install dual-lane, signalized U-turns on each side of the primary intersection
Lawrence Banet Road and Lafollette Station Drive	▪ Convert intersection to RIRO. ▪ Install roundabout approximately 650 feet east on Lawrence Banet Road

Table 5.03-2 Recommended Roadway Improvements: Long-Term

In summary, while the US 150 and Old Vincennes Road intersection itself has the capacity to accommodate development traffic, it overburdens other parts of the roadway network, particularly the section of Old Vincennes Road from Schrieber Road to US 150, as well as Schrieber Road from Old Vincennes Road north to the grocery store. In addition to the roundabout east on Lawrence Banet Road that would need to be constructed regardless of alternative, improvements would also be necessary at the following locations if New Road does not have access to US 150:

- Roundabout at New Road and Schrieber Road
- Roundabout at Schrieber Road and Highlander Point/5102 Old Vincennes entrance
- Roundabout at Schrieber Road/Old Vincennes Road or converting Old Vincennes Road to a 5-lane section between Schrieber Road and US 150.

Therefore, because of the bottleneck created without the new access onto US 150, it is recommended that an additional access point along US 150 be granted to improve traffic flow for future development in this area. Figure 5.03-1 contains tables detailing the intersection LOS, delay, volume to capacity ratio, and 95th percentile queue lengths are shown in the following.

Figure 5.03-1 Measures of Effectiveness for Alternatives Analysis

Project: US 150

Client: INDOT

Route: US 150

Date: 5/31/2024

Intersection Level of Service Results



AM Peak Hour							PM Peak Hour						
Baseline RCUT- 2048	Old Vincennes Road & Schrieber Road						Old Vincennes Road & Schrieber Road						
	Approach & Movement	Delay (s)	LOS (Sig)	v/c	95th Queue (veh)	95th Queue (ft)	Approach & Movement	Delay (s)	LOS (Sig)	v/c	95th Queue (veh)	95th Queue (ft)	
	EB L	16.7	B	0.23	1.4	35	EB L	175.6	F	1.20	11.7	295	
	EB T/R	16.6	B	0.84	12.7	320	EB T/R	14.3	B	0.59	7.8	195	
	WB L	22.4	C	0.23	1.1	30	WB L	20.9	C	0.37	2.7	70	
	WB T/R	10.8	B	0.66	8.2	205	EB T/R	109.2	F	1.17	40.4	1010	
	NB L	17.9	B	0.11	0.8	20	NB L	15.4	B	0.07	0.5	15	
	NB T/R	18.1	B	0.35	2.5	65	NB T/R	13.1	B	0.17	1.5	40	
	SB L	31.7	C	0.73	7.0	175	SB L	43.6	D	0.92	15.3	385	
	SB T/R	16.7	B	0.14	0.9	25	SB T/R	13.7	B	0.27	2.6	65	
Intersection		16.9	B				Intersection		64.9	E			
NB & SB = Schrieber Rd; EB & WB = Old Vincennes Rd							NB & SB = Schrieber Rd; EB & WB = Old Vincennes Rd						
RCUT+Mainline Lefts - 2048	Old Vincennes Road & Schrieber Road						Old Vincennes Road & Schrieber Road						
	Approach & Movement	Delay (s)	LOS (Sig)	v/c	95th Queue (veh)	95th Queue (ft)	Approach & Movement	Delay (s)	LOS (Sig)	v/c	95th Queue (veh)	95th Queue (ft)	
	EB L	18.1	B	0.24	1.5	40	EB L	175.6	F	1.20	11.7	295	
	EB T/R	19.2	B	0.85	14.3	360	EB T/R	21.6	C	0.73	9.7	245	
	WB L	54.8	D	0.86	7.6	190	WB L	105.5	F	1.07	13.5	340	
	WB T/R	12.1	B	0.67	9.1	230	WB T/R	306.0	F	1.62	86.5	2165	
	NB L	18.5	B	0.11	0.9	25	NB L	11.9	B	0.06	0.5	15	
	NB T/R	18.3	B	0.33	2.6	65	NB T/R	9.9	A	0.13	1.2	30	
	SB L	65.8	E	0.97	13.5	340	SB L	68.3	E	1.05	25.7	645	
	SB T/R	17.2	B	0.16	1.3	35	SB T/R	10.5	B	0.25	2.4	60	
Intersection		26.9	C				Intersection		145.0	F			
NB & SB = Schrieber Rd; EB & WB = Old Vincennes Rd							NB & SB = Schrieber Rd; EB & WB = Old Vincennes Rd						
RCUT+Mainline Lefts+New Road- 2048	Old Vincennes Road & Schrieber Road						Old Vincennes Road & Schrieber Road						
	Approach & Movement	Delay (s)	LOS (Sig)	v/c	95th Queue (veh)	95th Queue (ft)	Approach & Movement	Delay (s)	LOS (Sig)	v/c	95th Queue (veh)	95th Queue (ft)	
	EB L	13.0	B	0.34	2.8	70	EB L	51.3	D	0.86	8.4	210	
	EB T/R	12.9	B	0.73	10.5	265	EB T/R	10.0	B	0.43	5.0	125	
	WB L	26.6	C	0.62	4.9	125	WB L	17.4	B	0.52	4.9	125	
	WB T/R	8.2	A	0.41	4.7	120	WB T/R	16.5	B	0.77	11.7	295	
	NB L	21.6	C	0.14	1.0	25	NB L	21.4	C	0.10	0.7	20	
	NB T/R	19.2	B	0.35	2.7	70	NB T/R	16.0	B	0.20	1.7	45	
	SB L	30.4	C	0.68	6.3	160	SB L	39.7	D	0.87	11.7	295	
	SB T/R	19.3	B	0.37	2.9	75	SB T/R	18.4	B	0.51	4.9	125	
Intersection		16.2	B				Intersection		22.9	C			
NB & SB = Schrieber Rd; EB & WB = Old Vincennes Rd							NB & SB = Schrieber Rd; EB & WB = Old Vincennes Rd						
2 RCUTS+Mainline Lefts+New Road- 2048	Old Vincennes Road & Schrieber Road						Old Vincennes Road & Schrieber Road						
	Approach & Movement	Delay (s)	LOS (Sig)	v/c	95th Queue (veh)	95th Queue (ft)	Approach & Movement	Delay (s)	LOS (Sig)	v/c	95th Queue (veh)	95th Queue (ft)	
	EB L	13.0	B	0.34	2.8	70	EB L	51.3	D	0.86	8.4	210	
	EB T/R	12.9	B	0.73	10.5	265	EB T/R	10.0	B	0.43	5.0	125	
	WB L	26.6	C	0.62	4.9	125	WB L	17.4	B	0.52	4.9	125	
	WB T/R	8.2	A	0.41	4.7	120	WB T/R	16.5	B	0.77	11.7	295	
	NB L	21.6	C	0.14	1.0	25	NB L	21.4	C	0.10	0.7	20	
	NB T/R	19.2	B	0.35	2.7	70	NB T/R	16.0	B	0.20	1.7	45	
	SB L	30.4	C	0.68	6.3	160	SB L	39.7	D	0.87	11.7	295	
	SB T/R	19.3	B	0.37	2.9	75	SB T/R	18.4	B	0.51	4.9	125	
Intersection		16.2	B				Intersection		22.9	C			
NB & SB = Schrieber Rd; EB & WB = Old Vincennes Rd							NB & SB = Schrieber Rd; EB & WB = Old Vincennes Rd						

*uses HCM 2000 because of non-NEMA phasing

**uses SIDRA for roundabout analysis

***uses Synchro because of program issue with progression factor

Project: US 150

Client: INDOT

Route: US 150

Date: 5/31/2024

Intersection Level of Service Results



AM Peak Hour

PM Peak Hour

Baseline RCUT- 2048	**Old Vincennes Road & Duffy Road					
	Approach & Movement	Delay (s)	LOS (RAB)	v/c	95th Queue (veh)	95th Queue (ft)
	EB T/R/L	6.2	A	0.73	7.6	190
	WB T/R/L	4.9	A	0.57	5.3	135
	NB T/R/L	11.2	B	0.39	2.6	65
	SB T/R/L	11.3	B	0.11	0.6	15
	Intersection	6.5	A			
NB & SB = Duffy Rd; EB & WB = Old Vincennes Rd						
RCUT+Mainline Lefts - 2048	Old Vincennes Road & Duffy Road (RIRO)					
	Approach & Movement	Delay (s)	LOS (Unsig)	v/c	95th Queue (veh)	95th Queue (ft)
	EB T	0.0	A	0.00	0.0	0
	EB T/R	0.0	A	0.00	0.0	0
	WB T	0.0	A	0.00	0.0	0
	WB R	0.0	A	0.00	0.0	0
	Intersection	21.8	C			
NB & SB = Duffy Rd; EB & WB = Old Vincennes Rd						
RCUT+Mainline Lefts+New Road- 2048	Old Vincennes Road & Duffy Road (RIRO)					
	Approach & Movement	Delay (s)	LOS (Unsig)	v/c	95th Queue (veh)	95th Queue (ft)
	EB T	0.0	A	0.00	0.0	0
	EB T/R	0.0	A	0.00	0.0	0
	WB T	0.0	A	0.00	0.0	0
	WB R	0.0	A	0.00	0.0	0
	Intersection	18.0	C			
NB & SB = Duffy Rd; EB & WB = Old Vincennes Rd						
2 RCUTS+Mainline Lefts+New Road- 2048	Old Vincennes Road & Duffy Road (RIRO)					
	Approach & Movement	Delay (s)	LOS (Unsig)	v/c	95th Queue (veh)	95th Queue (ft)
	EB T	0.0	A	0.00	0.0	0
	EB T/R	0.0	A	0.00	0.0	0
	WB T	0.0	A	0.00	0.0	0
	WB R	0.0	A	0.00	0.0	0
	Intersection	16.4	C			
NB & SB = Duffy Rd; EB & WB = Old Vincennes Rd						

Baseline RCUT- 2048	**Old Vincennes Road & Duffy Road					
	Approach & Movement	Delay (s)	LOS (RAB)	v/c	95th Queue (veh)	95th Queue (ft)
	EB T/R/L	20.1	C	0.96	27.3	685
	WB T/R/L	32.5	C	1.05	84.3	2110
	NB T/R/L	20.6	C	0.49	3.9	100
	SB T/R/L	19.5	B	0.51	4.6	115
	Intersection	26.2	C			
NB & SB = Duffy Rd; EB & WB = Old Vincennes Rd						
RCUT+Mainline Lefts - 2048	Old Vincennes Road & Duffy Road (RIRO)					
	Approach & Movement	Delay (s)	LOS (Unsig)	v/c	95th Queue (veh)	95th Queue (ft)
	EB T	0.0	A	0.00	0.0	0
	EB T/R	0.0	A	0.00	0.0	0
	WB T	0.0	A	0.00	0.0	0
	WB R	0.0	A	0.00	0.0	0
	Intersection	29.5	D			
NB & SB = Duffy Rd; EB & WB = Old Vincennes Rd						
RCUT+Mainline Lefts+New Road- 2048	Old Vincennes Road & Duffy Road (RIRO)					
	Approach & Movement	Delay (s)	LOS (Unsig)	v/c	95th Queue (veh)	95th Queue (ft)
	EB T	0.0	A	0.00	0.0	0
	EB T/R	0.0	A	0.00	0.0	0
	WB T	0.0	A	0.00	0.0	0
	WB R	0.0	A	0.00	0.0	0
	Intersection	18.4	C			
NB & SB = Duffy Rd; EB & WB = Old Vincennes Rd						
2 RCUTS+Mainline Lefts+New Road- 2048	Old Vincennes Road & Duffy Road (RIRO)					
	Approach & Movement	Delay (s)	LOS (Unsig)	v/c	95th Queue (veh)	95th Queue (ft)
	EB T	0.0	A	0.00	0.0	0
	EB T/R	0.0	A	0.00	0.0	0
	WB T	0.0	A	0.00	0.0	0
	WB R	0.0	A	0.00	0.0	0
	Intersection	18.4	C			
NB & SB = Duffy Rd; EB & WB = Old Vincennes Rd						

*uses HCM 2000 because of non-NEMA phasing

**uses SIDRA for roundabout analysis

***uses Synchro because of program issue with progression factor

Project: US 150
Client: INDOT
Route: US 150
Date: 5/31/2024
Intersection Level of Service Results



AM Peak Hour

Baseline RCUT- 2048	*Old Vincennes Road & US 150					
	Approach & Movement	Delay (s)	LOS (Sig)	v/c	95th Queue (veh)	(ft)
	EB R	53.1	D	1.02	14.96	375
	WB R	18.1	B	0.64	6.88	175
	NB T	14.9	B	0.60	7.64	195
	***NB R	4.9	A	0.50	2.20	55
	SB T	40.5	D	1.00	18.92	475
	SB R	14.7	B	0.48	2.16	55
	Intersection	27.9	C			
NB & SB = US 150; EB & WB = Old Vincennes Rd						
RCUT+Mainline Lefts - 2048	*Old Vincennes Road & US 150					
	Approach & Movement	Delay (s)	LOS (Sig)	v/c	95th Queue (veh)	(ft)
	EB R	34.3	C	0.94	15.6	390
	WB R	26.6	C	0.78	8.0	200
	NB L	22.6	C	0.75	14.2	360
	NB T	10.3	B	0.25	3.6	90
	***NB R	12.9	B	0.40	7.5	190
	SB L	23.8	C	0.53	7.5	190
	SB T	26.0	C	0.92	15.9	400
	SB R	51.1	D	0.17	5.0	125
	Intersection	25.9	C			
NB & SB = US 150; EB & WB = Old Vincennes Rd						
RCUT+Mainline Lefts+New Road- 2048	*Old Vincennes Road & US 150					
	Approach & Movement	Delay (s)	LOS (Sig)	v/c	95th Queue (veh)	(ft)
	EB R	29.8	C	0.89	13.1	330
	WB R	28.8	C	0.72	5.8	145
	NB L	22.4	C	0.71	12.4	315
	NB T	6.3	A	0.28	3.5	90
	***NB R	8.0	A	0.24	4.4	115
	SB L	26.1	C	0.28	3.3	85
	SB T	19.9	B	0.87	15.5	390
	SB R	55.9	E	0.12	3.7	95
	Intersection	21.9	C			
NB & SB = US 150; EB & WB = Old Vincennes Rd						
2 RCUTS+Mainline Lefts+New Road- 2048	*Old Vincennes Road & US 150					
	Approach & Movement	Delay (s)	LOS (Sig)	v/c	95th Queue (veh)	(ft)
	EB R	29.8	C	0.89	13.1	330
	WB R	28.8	C	0.72	5.8	145
	NB L	22.4	C	0.71	12.4	315
	NB T	6.3	A	0.28	3.5	90
	***NB R	8.0	A	0.24	4.4	115
	SB L	26.9	C	0.28	3.6	90
	SB T	19.8	B	0.87	15.5	390
	SB R	51.0	D	0.12	3.9	100
	Intersection	21.8	C			
NB & SB = US 150; EB & WB = Old Vincennes Rd						

PM Peak Hour

Baseline RCUT- 2048	*Old Vincennes Road & US 150					
	Approach & Movement	Delay (s)	LOS (Sig)	v/c	95th Queue (veh)	(ft)
	EB R	110.8	F	1.16	24.56	615
	WB R	31.2	C	0.84	14.20	355
	NB T	102.4	F	1.18	30.04	755
	***NB R	9.0	A	0.71	9.88	250
	SB T	13.1	B	0.75	6.76	170
	***SB R	47.9	D	1.06	27.64	695
	Intersection	61.0	E			
NB & SB = US 150; EB & WB = Old Vincennes Rd						
RCUT+Mainline Lefts - 2048	*Old Vincennes Road & US 150					
	Approach & Movement	Delay (s)	LOS (Sig)	v/c	95th Queue (veh)	(ft)
	EB R	17.8	B	0.80	16.2	405
	WB R	36.8	D	0.89	15.5	390
	NB L	76.0	E	1.14	33.3	835
	NB T	8.9	A	0.54	5.9	150
	***NB R	12.4	B	0.58	7.4	185
	SB L	11.8	B	0.29	3.0	80
	SB T	48.8	D	1.00	17.2	435
	SB R	47.3	D	0.75	12.8	320
	Intersection	36.3	D			
NB & SB = US 150; EB & WB = Old Vincennes Rd						
RCUT+Mainline Lefts+New Road- 2048	*Old Vincennes Road & US 150					
	Approach & Movement	Delay (s)	LOS (Sig)	v/c	95th Queue (veh)	(ft)
	EB R	18.2	B	0.68	11.8	300
	WB R	41.7	D	0.88	12.4	310
	NB L	22.7	C	0.97	18.2	455
	NB T	7.2	A	0.69	8.3	210
	***NB R	9.2	A	0.39	4.8	120
	SB L	15.3	B	0.27	2.7	70
	SB T	30.6	C	0.93	18.1	455
	SB R	42.3	D	0.55	10.7	270
	Intersection	25.1	C			
NB & SB = US 150; EB & WB = Old Vincennes Rd						
2 RCUTS+Mainline Lefts+New Road- 2048	*Old Vincennes Road & US 150					
	Approach & Movement	Delay (s)	LOS (Sig)	v/c	95th Queue (veh)	(ft)
	EB R	18.2	B	0.68	11.8	300
	WB R	45.0	D	0.90	12.8	325
	NB L	23.6	C	0.97	19.0	480
	NB T	5.7	A	0.69	7.7	195
	***NB R	8.2	A	0.39	4.8	120
	SB L	21.4	C	0.28	4.0	100
	SB T	32.3	C	0.93	18.1	455
	SB R	32.9	C	0.55	10.4	260
	Intersection	22.5	C			
NB & SB = US 150; EB & WB = Old Vincennes Rd						

*uses HCM 2000 because of non-NEMA phasing

**uses SIDRA for roundabout analysis

***uses Synchro because of program issue with progression factor

Project: US 150

Client: INDOT

Route: US 150

Date: 5/31/2024

Intersection Level of Service Results



AM Peak Hour

Baseline RCUT- 2048	*US 150 & NB U-Turn					
	Approach & Movement	Delay (s)	LOS (Sig)	v/c	95th Queue (veh)	95th Queue (ft)
	NB U	28.6	C	0.88	12.4	310
	NB T	0.1	A	0.16	0.0	0
	SB T	26.1	C	0.78	15.3	385
Intersection						22.1 C
RCUT+Mainline Lefts - 2048	*US 150 & NB U-Turn					
	Approach & Movement	Delay (s)	LOS (Sig)	v/c	95th Queue (veh)	95th Queue (ft)
	NB U	29.6	C	0.71	2.4	60
	NB T	0.1	A	0.16	0.0	0
	SB T	10.4	B	0.61	10.0	250
Intersection						12.6 B
RCUT+Mainline Lefts+New Road- 2048	*US 150 & NB U-Turn					
	Approach & Movement	Delay (s)	LOS (Sig)	v/c	95th Queue (veh)	95th Queue (ft)
	NB U	33.3	C	0.59	1.8	45
	NB T	0.1	A	0.20	0.0	0
	SB T	7.9	A	0.57	8.7	220
Intersection						9.6 A
2 RCUTS+Mainline Lefts+New Road- 2048	*US 150 & NB U-Turn					
	Approach & Movement	Delay (s)	LOS (Sig)	v/c	95th Queue (veh)	95th Queue (ft)
	NB U	33.1	C	0.61	2.3	60
	NB T	0.1	A	0.20	0.0	0
	SB U	3.1	A	0.28	0.8	20
Intersection						7.1 A

PM Peak Hour

Baseline RCUT- 2048	*US 150 & NB U-Turn					
	Approach & Movement	Delay (s)	LOS (Sig)	v/c	95th Queue (veh)	95th Queue (ft)
	NB U	16.1	B	0.92	14.8	375
	NB T	0.0	A	0.35	0.0	0
	SB T	44.8	D	0.84	15.5	390
Intersection						18.0 B
RCUT+Mainline Lefts - 2048	*US 150 & NB U-Turn					
	Approach & Movement	Delay (s)	LOS (Sig)	v/c	95th Queue (veh)	95th Queue (ft)
	NB U	31.9	C	0.62	9.5	240
	NB T	0.2	A	0.00	0.0	0
	SB T	5.5	A	0.43	14.5	365
Intersection						9.3 A
RCUT+Mainline Lefts+New Road- 2048	*US 150 & NB U-Turn					
	Approach & Movement	Delay (s)	LOS (Sig)	v/c	95th Queue (veh)	95th Queue (ft)
	NB U	31.8	C	0.73	7.4	190
	NB T	0.3	A	0.46	0.0	0
	SB T	4.2	A	0.51	14.5	365
Intersection						6.7 A
2 RCUTS+Mainline Lefts+New Road- 2048	*US 150 & NB U-Turn					
	Approach & Movement	Delay (s)	LOS (Sig)	v/c	95th Queue (veh)	95th Queue (ft)
	NB U	37.5	D	0.76	7.7	195
	NB T	13.2	B	0.68	12.2	305
	SB U	19.4	B	0.70	5.7	145
Intersection						16.3 B

*uses HCM 2000 because of non-NEMA phasing

**uses SIDRA for roundabout analysis

***uses Synchro because of program issue with progression factor

Project: US 150
Client: INDOT
Route: US 150
Date: 5/31/2024
Intersection Level of Service Results



AM Peak Hour

Baseline RCUT- 2048	*US 150 & SB U-Turn					
	Approach & Movement	Delay (s)	LOS (Sig)	v/c	95th Queue (veh)	95th Queue (ft)
	NB T	10.5	B	0.56	3.9	100
	SB U	27.4	C	0.71	6.2	155
	SB T	0.8	A	0.59	0.0	0
	Intersection	7.8	A			
NB & SB = US 150						
RCUT+Mainline Lefts - 2048	*US 150 & SB U-Turn					
	Approach & Movement	Delay (s)	LOS (Sig)	v/c	95th Queue (veh)	95th Queue (ft)
	NB T	10.5	B	0.51	5.4	140
	SB U	33.7	C	0.59	2.6	65
	SB T	0.3	A	0.59	0.0	0
	Intersection	7.0	A			
NB & SB = US 150						
RCUT+Mainline Lefts+New Road- 2048	*US 150 & SB U-Turn					
	Approach & Movement	Delay (s)	LOS (Sig)	v/c	95th Queue (veh)	95th Queue (ft)
	NB T	10.2	B	0.49	6.0	155
	SB U	34.8	C	0.52	2.7	70
	SB T	0.3	A	0.58	0.0	0
	Intersection	6.5	A			
NB & SB = US 150						
2 RCUTS+Mainline Lefts+New Road- 2048	*US 150 & SB U-Turn					
	Approach & Movement	Delay (s)	LOS (Sig)	v/c	95th Queue (veh)	95th Queue (ft)
	NB T	10.2	B	0.49	6.0	155
	SB U	34.7	C	0.52	2.7	70
	SB T	0.3	A	0.58	0.0	0
	Intersection	6.5	A			
NB & SB = US 150						

PM Peak Hour

Baseline RCUT- 2048	*US 150 & SB U-Turn					
	Approach & Movement	Delay (s)	LOS (Sig)	v/c	95th Queue (veh)	95th Queue (ft)
	NB T	14.8	B	0.99	9.0	230
	SB U	33.8	C	0.95	5.2	130
	SB T	0.3	A	0.56	0.0	0
	Intersection	11.3	B			
NB & SB = US 150						
RCUT+Mainline Lefts - 2048	*US 150 & SB U-Turn					
	Approach & Movement	Delay (s)	LOS (Sig)	v/c	95th Queue (veh)	95th Queue (ft)
	NB T	5.8	A	0.96	1.6	45
	SB U	43.2	D	0.87	6.6	165
	SB T	0.3	A	0.56	0.0	0
	Intersection	7.2	A			
NB & SB = US 150						
RCUT+Mainline Lefts+New Road- 2048	*US 150 & SB U-Turn					
	Approach & Movement	Delay (s)	LOS (Sig)	v/c	95th Queue (veh)	95th Queue (ft)
	NB T	4.1	A	0.96	0.7	20
	SB U	51.1	D	0.93	7.2	180
	SB T	0.3	A	0.50	0.0	0
	Intersection	6.5	A			
NB & SB = US 150						
2 RCUTS+Mainline Lefts+New Road- 2048	*US 150 & SB U-Turn					
	Approach & Movement	Delay (s)	LOS (Sig)	v/c	95th Queue (veh)	95th Queue (ft)
	NB T	4.1	A	0.96	0.7	20
	SB U	50.8	D	0.93	7.2	180
	SB T	0.3	A	0.50	0.0	0
	Intersection	6.5	A			
NB & SB = US 150						

*uses HCM 2000 because of non-NEMA phasing
**uses SIDRA for roundabout analysis
***uses Synchro because of program issue with progression factor

Project: US 150

Client: INDOT

Route: US 150

Date: 5/31/2024

Intersection Level of Service Results



AM Peak Hour

Baseline RCUT- 2048	**Lawrence Banet Road & LafolletteStation Drive					
	Approach & Movement	Delay (s)	LOS (RAB)	v/c	95th Queue (veh)	(ft)
	EB T/R/L	8.4	A	0.60	5.3	135
	WB T/R/L	8.2	A	0.15	0.8	20
	NB T/R/L	12.4	B	0.13	0.8	20
	SB T/R/L	5.4	A	0.46	3.1	80
	Intersection	9.4	A			
RCUT+Mainline Lefts - 2048	NB & SB = Lafollette Station Dr; EB & WB = Lawrence Banet Rd					
	Lawrence Banet Road & LafolletteStation Drive (RIRO)					
	Approach & Movement	Delay (s)	LOS (Unsig)	v/c	95th Queue (veh)	(ft)
	EB T/R	0.0	A	0.00	0.0	0
	WB T	0.0	A	0.00	0.0	0
	WB T/R	0.0	A	0.00	0.0	0
	Intersection	18.8	C			
RCUT+Mainline Lefts+New Road- 2048	NB & SB = Lafollette Station Dr; EB & WB = Lawrence Banet Rd					
	Lawrence Banet Road & LafolletteStation Drive (RIRO)					
	Approach & Movement	Delay (s)	LOS (Unsig)	v/c	95th Queue (veh)	(ft)
	EB T/R	0.0	A	0.00	0.0	0
	WB T	0.0	A	0.00	0.0	0
	WB T/R	0.0	A	0.00	0.0	0
	Intersection	12.5	B			
2 RCUTS+Mainline Lefts+New Road- 2048	NB & SB = Lafollette Station Dr; EB & WB = Lawrence Banet Rd					
	Lawrence Banet Road & LafolletteStation Drive (RIRO)					
	Approach & Movement	Delay (s)	LOS (Unsig)	v/c	95th Queue (veh)	(ft)
	EB T/R	0.0	A	0.00	0.0	0
	WB T	0.0	A	0.00	0.0	0
	WB T/R	0.0	A	0.00	0.0	0
	Intersection	12.5	B			

PM Peak Hour

Baseline RCUT- 2048	**Lawrence Banet Road & LafolletteStation Drive					
	Approach & Movement	Delay (s)	LOS (RAB)	v/c	95th Queue (veh)	(ft)
	EB T/R/L	7.8	A	0.72	8.9	225
	WB T/R/L	9.3	A	0.28	1.7	45
	NB T/R/L	14.2	B	0.33	2.2	55
	SB T/R/L	7.9	A	0.60	5.2	130
	Intersection	14.3	B			
RCUT+Mainline Lefts - 2048	NB & SB = Lafollette Station Dr; EB & WB = Lawrence Banet Rd					
	Lawrence Banet Road & LafolletteStation Drive (RIRO)					
	Approach & Movement	Delay (s)	LOS (Unsig)	v/c	95th Queue (veh)	(ft)
	EB T/R	0.0	A	0.00	0.0	0
	WB T	0.0	A	0.00	0.0	0
	WB T/R	0.0	A	0.00	0.0	0
	Intersection	45.3	E			
RCUT+Mainline Lefts+New Road- 2048	NB & SB = Lafollette Station Dr; EB & WB = Lawrence Banet Rd					
	Lawrence Banet Road & LafolletteStation Drive (RIRO)					
	Approach & Movement	Delay (s)	LOS (Unsig)	v/c	95th Queue (veh)	(ft)
	EB T/R	0.0	A	0.00	0.0	0
	WB T	0.0	A	0.00	0.0	0
	WB T/R	0.0	A	0.00	0.0	0
	Intersection	24.1	C			
2 RCUTS+Mainline Lefts+New Road- 2048	NB & SB = Lafollette Station Dr; EB & WB = Lawrence Banet Rd					
	Lawrence Banet Road & LafolletteStation Drive (RIRO)					
	Approach & Movement	Delay (s)	LOS (Unsig)	v/c	95th Queue (veh)	(ft)
	EB T/R	0.0	A	0.00	0.0	0
	WB T	0.0	A	0.00	0.0	0
	WB T/R	0.0	A	0.00	0.0	0
	Intersection	24.1	C			

*uses HCM 2000 because of non-NEMA phasing

**uses SIDRA for roundabout analysis

***uses Synchro because of program issue with progression factor

Project: US 150

Client: INDOT

Route: US 150

Date: 5/31/2024

Intersection Level of Service Results



AM Peak Hour

Baseline RCUT- 2048	**Schrieber Road & New Road					
	Approach & Movement	Delay (s)	LOS (RAB)	v/c	95th Queue (veh)	95th Queue (ft)
	WB T/R/L	8.0	A	0.11	0.5	15
	NB T/R/L	4.7	A	0.15	0.7	20
	SB T/R/L	7.7	A	0.11	0.5	15
	Intersection	6.6	A			
NB & SB = Schrieber Rd; EB & WB = New Road						
RCUT+Mainline Lefts - 2048	**Schrieber Road & New Road					
	Approach & Movement	Delay (s)	LOS (Unsig)	v/c	95th Queue (veh)	95th Queue (ft)
	WB T/R/L	8.0	A	0.11	0.5	15
	NB T/R/L	4.7	A	0.15	0.7	20
	SB T/R/L	7.7	A	0.11	0.5	15
	Intersection	6.6	A			
NB & SB = Schrieber Rd; EB & WB = New Road						
RCUT+Mainline Lefts+New Road- 2048	Schrieber Road & New Road (TWSC)					
	Approach & Movement	Delay (s)	LOS (Unsig)	v/c	95th Queue (veh)	95th Queue (ft)
	WB L/R	9.6	A	0.09	0.3	10
	NB T/R	0.0	A	0.00	0.0	0
	SB T/L	0.0	A	0.00	0.0	0
	Intersection	9.6	A			
NB & SB = Schrieber Rd; EB & WB = New Road						
2 RCUTS+Mainline Lefts+New Road- 2048	Schrieber Road & New Road (TWSC)					
	Approach & Movement	Delay (s)	LOS (Unsig)	v/c	95th Queue (veh)	95th Queue (ft)
	WB L/R	9.6	A	0.09	0.3	10
	NB T/R	0.0	A	0.00	0.0	0
	SB T/L	0.0	A	0.00	0.0	0
	Intersection	9.6	A			
NB & SB = Schrieber Rd; EB & WB = New Road						

PM Peak Hour

Baseline RCUT- 2048	**Schrieber Road & New Road					
	Approach & Movement	Delay (s)	LOS (RAB)	v/c	95th Queue (veh)	95th Queue (ft)
	WB T/R/L	8.8	A	0.51	3.7	95
	NB T/R/L	5.7	A	0.51	3.8	95
	SB T/R/L	9.2	A	0.34	2.1	55
	Intersection	7.7	A			
NB & SB = Schrieber Rd; EB & WB = New Road						
RCUT+Mainline Lefts - 2048	**Schrieber Road & New Road					
	Approach & Movement	Delay (s)	LOS (Unsig)	v/c	95th Queue (veh)	95th Queue (ft)
	WB T/R/L	8.8	A	0.51	3.7	95
	NB T/R/L	5.7	A	0.51	3.8	95
	SB T/R/L	9.2	A	0.34	2.1	55
	Intersection	7.7	A			
NB & SB = Schrieber Rd; EB & WB = New Road						
RCUT+Mainline Lefts+New Road- 2048	Schrieber Road & New Road (TWSC)					
	Approach & Movement	Delay (s)	LOS (Unsig)	v/c	95th Queue (veh)	95th Queue (ft)
	WB L/R	12.5	B	0.22	0.8	20
	NB T/R	0.0	A	0.00	0.0	0
	SB T/L	0.0	A	0.00	0.0	0
	Intersection	12.5	B			
NB & SB = Schrieber Rd; EB & WB = New Road						
2 RCUTS+Mainline Lefts+New Road- 2048	Schrieber Road & New Road (TWSC)					
	Approach & Movement	Delay (s)	LOS (Unsig)	v/c	95th Queue (veh)	95th Queue (ft)
	WB L/R	12.5	B	0.22	0.8	20
	NB T/R	0.0	A	0.00	0.0	0
	SB T/L	0.0	A	0.00	0.0	0
	Intersection	12.5	B			
NB & SB = Schrieber Rd; EB & WB = New Road						

*uses HCM 2000 because of non-NEMA phasing

**uses SIDRA for roundabout analysis

***uses Synchro because of program issue with progression factor

Client: INDOT
Route: US 150
Date: 5/31/2024
Intersection Level of Service Results



PM Peak Hour

Baseline RCUT - 2048	N/A (No Access Road Connection)					
	Intersection					
RCUT+Mainline Lefts - 2048	N/A (No Access Road Connection)					
	Intersection					
RCUT+Mainline Lefts+New Road - 2048	US 150 & New Road					
	Approach & Movement	Delay (s)	LOS (Sig)	v/c	95th Queue (veh)	(ft)
	EB L	21.8	C	0.17	1.4	35
	EB T	25.9	C	0.28	1.7	45
	EB R	22.4	C	0.27	1.9	50
	WB L	23.1	C	0.28	2.3	60
	WB T	26.2	C	0.23	1.3	35
	WB R	27.9	C	0.43	2.2	55
	NB L	16.5	B	0.41	1.5	40
	NB T	18.4	B	0.46	5.0	125
	NB R	15.6	B	0.12	1.2	30
	SB L	12.9	B	0.41	2.6	65
SB T	25.8	C	0.87	1.2	30	
SB R	14.3	B	0.15	1.5	40	
Intersection	22.0	C				
NB & SB = US 150; EB & WB = New Road						
2 RCUTS+Mainline Lefts+New Road - 2048	*US 150 & New Road					
	Approach & Movement	Delay (s)	LOS (Sig)	v/c	95th Queue (veh)	(ft)
	EB R	28.2	C	0.51	3.2	80
	WB R	26.2	C	0.46	3.1	80
	NB L	25.6	C	0.40	3.5	90
	NB T	3.0	A	0.26	1.3	35
	NB R	1.0	A	0.09	0.0	5
	SB L	24.2	C	0.60	3.3	85
	SB T	12.7	B	0.51	13.9	350
	SB R	16.7	B	0.09	2.0	50
Intersection	13.9	B				
NB & SB = US 150; EB & WB = New Road						

N/A (No Access Road Connection)					
Intersection					
N/A (No Access Road Connection)					
Intersection					
US 150 & New Road					
Approach & Movement	Delay (s)	LOS (Sig)	v/c	95th Queue (veh)	(ft)
EB L	39.5	D	0.73	9.8	245
EB T	33.0	C	0.22	2.4	60
EB R	27.1	C	0.54	8.2	205
WB L	35.6	D	0.23	2.1	55
WB T	39.6	D	0.33	2.1	55
WB R	56.3	E	0.84	6.9	175
NB L	38.4	D	0.86	8.9	225
NB T	30.7	C	0.88	17.9	450
NB R	8.0	A	0.10	1.6	40
SB L	39.4	D	0.33	3.2	80
SB T	35.8	D	0.66	15.1	380
SB R	30.1	C	0.33	7.7	195
Intersection	33.8	C			
NB & SB = US 150; EB & WB = New Road					
*US 150 & New Road					
Approach & Movement	Delay (s)	LOS (Sig)	v/c	95th Queue (veh)	(ft)
EB R	33.4	C	0.75	8.6	215
WB R	36.0	D	0.53	4.2	110
NB L	26.9	C	0.57	8.3	210
NB T	11.9	B	0.63	17.5	440
NB R	14.4	B	0.09	1.0	30
SB L	45.4	D	0.32	4.1	105
SB T	17.2	B	0.46	14.2	360
SB R	43.0	D	0.16	5.8	145
Intersection	21.3	C			
NB & SB = US 150; EB & WB = New Road					

***uses Synchro because of program issue with progression factor

Project: US 150

Client: INDOT

Route: US 150

Date: 5/31/2024

Intersection Level of Service Results



AM Peak Hour

Baseline RCUT- 2048	Schrieber Road & Luther Road (TWSC)					
	Approach & Movement	Delay (s)	LOS (Unsig)	v/c	95th Queue (veh)	(ft)
	EB T/R	0.0	A	0.00	0.0	0
	WB T/L	2.7	A	0.12	0.4	10
	NB R/L	10.9	B	0.17	0.6	15
	Intersection	10.9	B			
NB = Schrieber Road; EB & WB = Luther Road						
RCUT+Mainline Lefts - 2048	Schrieber Road & Luther Road (TWSC)					
	Approach & Movement	Delay (s)	LOS (Unsig)	v/c	95th Queue (veh)	(ft)
	EB T/R	0.0	A	0.00	0.0	0
	WB T/L	2.7	A	0.12	0.4	10
	NB R/L	10.9	B	0.17	0.6	15
	Intersection	10.9	B			
NB = Schrieber Road; EB & WB = Luther Road						
RCUT+Mainline Lefts+New Road- 2048	Schrieber Road & Luther Road (TWSC)					
	Approach & Movement	Delay (s)	LOS (Unsig)	v/c	95th Queue (veh)	(ft)
	EB T/R	0.0	A	0.00	0.0	0
	WB T/L	1.2	A	0.05	0.1	5
	NB R/L	10.7	B	0.06	0.2	5
	Intersection	10.7	B			
NB = Schrieber Road; EB & WB = Luther Road						
2 RCUTS+Mainline Lefts+New Road- 2048	Schrieber Road & Luther Road (TWSC)					
	Approach & Movement	Delay (s)	LOS (Unsig)	v/c	95th Queue (veh)	(ft)
	EB T/R	0.0	A	0.00	0.0	0
	WB T/L	1.2	A	0.05	0.1	5
	NB R/L	10.7	B	0.06	0.2	5
	Intersection	10.7	B			
NB = Schrieber Road; EB & WB = Luther Road						

PM Peak Hour

Baseline RCUT- 2048	Schrieber Road & Luther Road (TWSC)					
	Approach & Movement	Delay (s)	LOS (Unsig)	v/c	95th Queue (veh)	(ft)
	EB T/R	0.0	A	0.00	0.0	0
	WB T/L	6.4	A	0.27	1.1	30
	NB R/L	15.1	C	0.59	3.8	95
	Intersection	15.1	C			
NB = Schrieber Road; EB & WB = Luther Road						
RCUT+Mainline Lefts - 2048	Schrieber Road & Luther Road (TWSC)					
	Approach & Movement	Delay (s)	LOS (Unsig)	v/c	95th Queue (veh)	(ft)
	EB T/R	0.0	A	0.00	0.0	0
	WB T/L	6.4	A	0.27	1.1	30
	NB R/L	15.1	C	0.59	3.8	95
	Intersection	15.1	C			
NB = Schrieber Road; EB & WB = Luther Road						
RCUT+Mainline Lefts+New Road- 2048	Schrieber Road & Luther Road (TWSC)					
	Approach & Movement	Delay (s)	LOS (Unsig)	v/c	95th Queue (veh)	(ft)
	EB T/R	0.0	A	0.00	0.0	0
	WB T/L	4.1	A	0.10	0.3	10
	NB R/L	10.3	B	0.21	0.7	20
	Intersection	10.3	B			
NB = Schrieber Road; EB & WB = Luther Road						
2 RCUTS+Mainline Lefts+New Road- 2048	Schrieber Road & Luther Road (TWSC)					
	Approach & Movement	Delay (s)	LOS (Unsig)	v/c	95th Queue (veh)	(ft)
	EB T/R	0.0	A	0.00	0.0	0
	WB T/L	7.8	A	0.10	0.3	10
	NB R/L	10.3	B	0.21	0.7	20
	Intersection	10.3	B			
NB = Schrieber Road; EB & WB = Luther Road						

*uses HCM 2000 because of non-NEMA phasing

**uses SIDRA for roundabout analysis

***uses Synchro because of program issue with progression factor

Project: US 150

Client: INDOT

Route: US 150

Date: 5/31/2024

Intersection Level of Service Results



AM Peak Hour

Baseline RCUT - 2048	US 150 & Luther Road					
	Approach & Movement	Delay (s)	LOS (Sig)	v/c	95th Queue (veh)	95th Queue (ft)
	EB T/R/L	31.0	C	0.69	7.9	200
	WB T/R/L	25.9	C	0.45	5.0	125
	NB L	44.8	D	0.49	0.6	15
	NB T	10.1	B	0.27	3.0	75
	NB R	8.9	A	0.07	0.7	20
	SB L	42.3	D	0.50	0.8	20
RCUT+Mainline Lefts - 2048	SB T	14.6	B	0.68	9.8	245
	SB R	10.4	B	0.28	3.0	75
	Intersection	16.3	B			
	NB & SB = US 150; EB & WB = Luther Road					
	US 150 & Luther Road					
	Approach & Movement	Delay (s)	LOS (Sig)	v/c	95th Queue (veh)	95th Queue (ft)
	EB T/R/L	28.4	C	0.68	7.2	180
	WB T/R/L	24.1	C	0.45	4.5	115
	NB L	42.0	D	0.48	0.6	15
RCUT+Mainline Lefts+New Road - 2048	NB T	10.2	B	0.29	2.9	75
	NB R	8.9	A	0.08	0.6	15
	SB L	39.5	D	0.49	0.7	20
	SB T	14.8	B	0.69	9.3	235
	SB R	10.5	B	0.29	2.8	70
	Intersection	15.9	B			
	NB & SB = US 150; EB & WB = Luther Road					
	US 150 & Luther Road					
	Approach & Movement	Delay (s)	LOS (Sig)	v/c	95th Queue (veh)	95th Queue (ft)
	EB T/R/L	31.4	C	0.64	6.0	150
2 RCUTS+Mainline Lefts+New Road - 2048						
	WB T/R/L	30.2	C	0.58	5.4	135
	NB L	44.4	D	0.49	0.6	15
	NB T	8.6	A	0.33	3.5	90
	NB R	7.1	A	0.07	0.6	15
	SB L	42.3	D	0.50	0.8	20
	SB T	11.9	B	0.65	8.9	225
	SB R	7.5	A	0.16	1.5	40
	Intersection	14.1	B			
2 RCUTS+Mainline Lefts+New Road - 2048	NB & SB = US 150; EB & WB = Luther Road					
	US 150 & Luther Road					
	Approach & Movement	Delay (s)	LOS (Sig)	v/c	95th Queue (veh)	95th Queue (ft)
	EB T/R/L	31.4	C	0.64	6.0	150
	WB T/R/L	30.1	C	0.58	5.4	135
	NB L	44.1	D	0.49	0.6	15
	NB T	0.4	A	0.33	0.2	5
	NB R	0.2	A	0.07	0.1	5
	SB L	42.3	D	0.50	0.8	20
2 RCUTS+Mainline Lefts+New Road - 2048	SB T	11.9	B	0.65	8.9	225
	SB R	7.5	A	0.16	1.5	40
	Intersection	11.9	B			
	NB & SB = US 150; EB & WB = Luther Road					
	US 150 & Luther Road					
	Approach & Movement	Delay (s)	LOS (Sig)	v/c	95th Queue (veh)	95th Queue (ft)
	EB T/R/L	41.0	D	0.71	9.5	240
	WB T/R/L	32.6	C	0.43	5.8	145
	NB L	53.0	D	0.74	2.3	60
2 RCUTS+Mainline Lefts+New Road - 2048	NB T	13.0	B	0.93	6.2	155
	NB R	2.2	A	0.08	0.2	5
	SB L	35.1	D	0.08	0.6	15
	SB T	14.0	B	0.54	9.8	245
	SB R	10.2	B	0.15	2.1	55
	Intersection	16.9	B			
	NB & SB = US 150; EB & WB = Luther Road					
	US 150 & Luther Road					
	Approach & Movement	Delay (s)	LOS (Sig)	v/c	95th Queue (veh)	95th Queue (ft)
	EB T/R/L	41.0	D	0.71	9.5	240
2 RCUTS+Mainline Lefts+New Road - 2048						
	WB T/R/L	32.6	C	0.43	5.8	145
	NB L	53.0	D	0.74	2.3	60
	NB T	13.0	B	0.93	6.2	155
	NB R	2.2	A	0.08	0.2	5
	SB L	35.1	D	0.08	0.6	15
	SB T	14.0	B	0.54	9.8	245
	SB R	10.2	B	0.15	2.1	55
	Intersection	16.9	B			
2 RCUTS+Mainline Lefts+New Road - 2048	NB & SB = US 150; EB & WB = Luther Road					
	US 150 & Luther Road					
	Approach & Movement	Delay (s)	LOS (Sig)	v/c	95th Queue (veh)	95th Queue (ft)
	EB T/R/L	41.0	D	0.71	9.5	240
	WB T/R/L	32.6	C	0.43	5.8	145
	NB L	53.0	D	0.74	2.3	60
	NB T	13.0	B	0.93	6.2	155
	NB R	2.2	A	0.08	0.2	5
	SB L	35.1	D	0.08	0.6	15
2 RCUTS+Mainline Lefts+New Road - 2048	SB T	14.0	B	0.54	9.8	245
	SB R	10.2	B	0.15	2.1	55
	Intersection	16.9	B			
	NB & SB = US 150; EB & WB = Luther Road					
	US 150 & Luther Road					
	Approach & Movement	Delay (s)	LOS (Sig)	v/c	95th Queue (veh)	95th Queue (ft)
	EB T/R/L	41.0	D	0.71	9.5	240
	WB T/R/L	32.6	C	0.43	5.8	145
	NB L	53.0	D	0.74	2.3	60
2 RCUTS+Mainline Lefts+New Road - 2048	NB T	13.0	B	0.93	6.2	155
	NB R	2.2	A	0.08	0.2	5
	SB L	35.1	D	0.08	0.6	15
	SB T	14.0	B	0.54	9.8	245
	SB R	10.2	B	0.15	2.1	55
	Intersection	16.9	B			
	NB & SB = US 150; EB & WB = Luther Road					
	US 150 & Luther Road					
	Approach & Movement	Delay (s)	LOS (Sig)	v/c	95th Queue (veh)	95th Queue (ft)
	EB T/R/L	41.0	D	0.71	9.5	240

*uses HCM 2000 because of non-NEMA phasing

**uses SIDRA for roundabout analysis

***uses Synchro because of program issue with progression factor

PM Peak Hour

US 150 & Luther Road					
Approach & Movement	Delay (s)	LOS (Sig)	v/c	95th Queue (veh)	95th Queue (ft)
EB T/R/L	37.6	D	0.84	16.9	425
WB T/R/L	19.5	B	0.23	4.3	110
NB L	56.0	E	0.74	2.5	65
NB T	31.4	C	0.86	16.9	425
NB R	17.0	B	0.07	1.0	25
SB L	54.3	D	0.51	0.9	25
SB T	25.6	C	0.65	11.6	290
SB R	25.8	C	0.55	9.3	235
Intersection	29.9	C			
NB & SB = US 150; EB & WB = Luther Road					
US 150 & Luther Road					
Approach & Movement	Delay (s)	LOS (Sig)	v/c	95th Queue (veh)	95th Queue (ft)
EB T/R/L	37.6	D	0.84	16.9	425
WB T/R/L	19.5	B	0.23	4.3	110
NB L	56.0	E	0.74	2.5	65
NB T	47.4	D	0.97	20.5	515
NB R	19.8	B	0.08	1.1	30
SB L	41.5	D	0.18	0.7	20
SB T	26.1	C	0.67	12.0	300
SB R	25.8	C	0.55	9.3	235
Intersection	36.0	D			
NB & SB = US 150; EB & WB = Luther Road					
US 150 & Luther Road					
Approach & Movement	Delay (s)	LOS (Sig)	v/c	95th Queue (veh)	95th Queue (ft)
EB T/R/L	41.0	D	0.71	9.5	240
WB T/R/L	32.6	C	0.43	5.8	145
NB L	49.4	D	0.74	2.2	55
NB T	10.3	B	0.93	5.0	125
NB R	2.1	A	0.08	0.2	5
SB L	35.1	D	0.08	0.6	15
SB T	14.0	B	0.54	9.8	245
SB R	10.2	B	0.15	2.1	55
Intersection	15.6	B			
NB & SB = US 150; EB & WB = Luther Road					
US 150 & Luther Road					
Approach & Movement	Delay (s)	LOS (Sig)	v/c	95th Queue (veh)	95th Queue (ft)
EB T/R/L	41.0	D	0.71	9.5	240
WB T/R/L	32.6	C	0.43	5.8	145
NB L	53.0	D	0.74	2.3	60
NB T	13.0	B	0.93	6.2	155
NB R	2.2	A	0.08	0.2	5
SB L	35.1	D	0.08	0.6	15
SB T	14.0	B	0.54	9.8	245
SB R	10.2	B	0.15	2.1	55
Intersection	16.9	B			
NB & SB = US 150; EB & WB = Luther Road					

Project: US 150

Client: INDOT

Route: US 150

Date: 5/31/2024

Intersection Level of Service Results



AM Peak Hour

Baseline RCUT- 2048	N/A (No US 150 & New Road North U-Turn)					
	Intersection					
RCUT+Mainline Lefts - 2048	N/A (No US 150 & New Road North U-Turn)					
	Intersection					
RCUT+Mainline Lefts+New Road- 2048	N/A (No US 150 & New Road North U-Turn)					
	Intersection					
2 RCUTS+Mainline Lefts+New Road- 2048	*US 150 & New Road North U-Turn					
	Approach & Movement	Delay (s)	LOS (Sig)	v/c	95th Queue (veh)	95th Queue (ft)
	NB U	3.7	A	0.43	1.2	30
	NB T	0.1	A	0.20	0.0	0
	SB T	0.3	A	0.40	0.0	0
	Intersection	0.5	A			
	NB & SB = US 150					

PM Peak Hour

N/A (No US 150 & New Road North U-Turn)					
Intersection					
N/A (No US 150 & New Road North U-Turn)					
Intersection					
N/A (No US 150 & New Road North U-Turn)					
Intersection					
*US 150 & New Road North U-Turn					
Approach & Movement	Delay (s)	LOS (Sig)	v/c	95th Queue (veh)	95th Queue (ft)
NB U	1.2	A	0.26	0.0	0
NB T	0.4	A	0.50	0.0	0
SB T	0.2	A	0.34	0.0	0
Intersection	0.4	A			
NB & SB = US 150					

*uses HCM 2000 because of non-NEMA phasing

**uses SIDRA for roundabout analysis

***uses Synchro because of program issue with progression factor

6.01 SITE ACCESS AND CIRCULATION PLAN

The proposed developments will have their primary site access from the proposed New Road via the intersection with US 150. The residential developments will also have site access from Old Vincennes Road via US 150. Some additional local trips may use Luther Road to access the development from the north or Lawrence Banet Road to access the development from the east. Improving Schrieber Road between Old Vincennes and Luther Roads should be considered to improve the LOS because of the additional traffic on this segment. Additionally, extending Lafollette Station Drive up to Luther Road would also improve connectivity in the area.

6.02 ROADWAY IMPROVEMENTS

The results from this analysis were used to determine the design of the New Road and US 150, as well as other improvements to the surrounding roadway network. When the developments are fully built, a signal will be required at New Road and US 150 to operate at an acceptable LOS. Left- and right-turn bays are required along US 150 and left- and right-turn bays are required on New Road.

Conversion of the southbound approach of Duffy Road to RIRO is recommended in the short-term. This movement operates at LOS F and is a high-crash location. Conversion of the intersection of Lawrence Banet Road and Lafollette Station Drive to RIRO is also recommended. A roundabout was considered for both intersections; however, there are concerns about the roundabout queues based on the proximity to the US 150 signal and right-of-way concerns if the roundabout had additional lanes.

US 150 at Old Vincennes Road will also require improvements beyond what was initially anticipated. In the short-term, the EBR phasing should be converted to permitted+overlap; however, a conventional alternative no longer provides an acceptable LOS. This can be accomplished by adding mainline left turns to the RCUT alternative. Short term improvements are listed in Table 6.02-01. Long-term improvements are shown in Table 6.02-02 and will require coordination with INDOT and the County.

Intersection	Improvements
Old Vincennes Road and New Road	▪ Install 610-foot NB left-turn bay.* ▪ Install 425-foot NB right-turn bay.* ▪ Install 250-foot EB left-turn bay. ▪ Install 210-foot EB right-turn bay. ▪ Install 465-foot SB left-turn bay.* ▪ Install 580-foot SB right-turn bay.* ▪ Install 100-foot WB left-turn bay. ▪ Install 180-foot WB right-turn bay. ▪ Convert intersection to traffic signal control.
Old Vincennes Road & Duffy Road	▪ Convert intersection to RIRO. ▪ Convert gas station driveway to entrance only.
Old Vincennes Road & US 150	▪ Convert EBR phasing to permitted+overlap.

*Includes 385 feet of deceleration per IDM Ch. 46 at 45 mph, based on discussions about lowering speed limit with INDOT Seymour District.

Table 6.02-01 Recommended Roadway Improvements: Short-Term

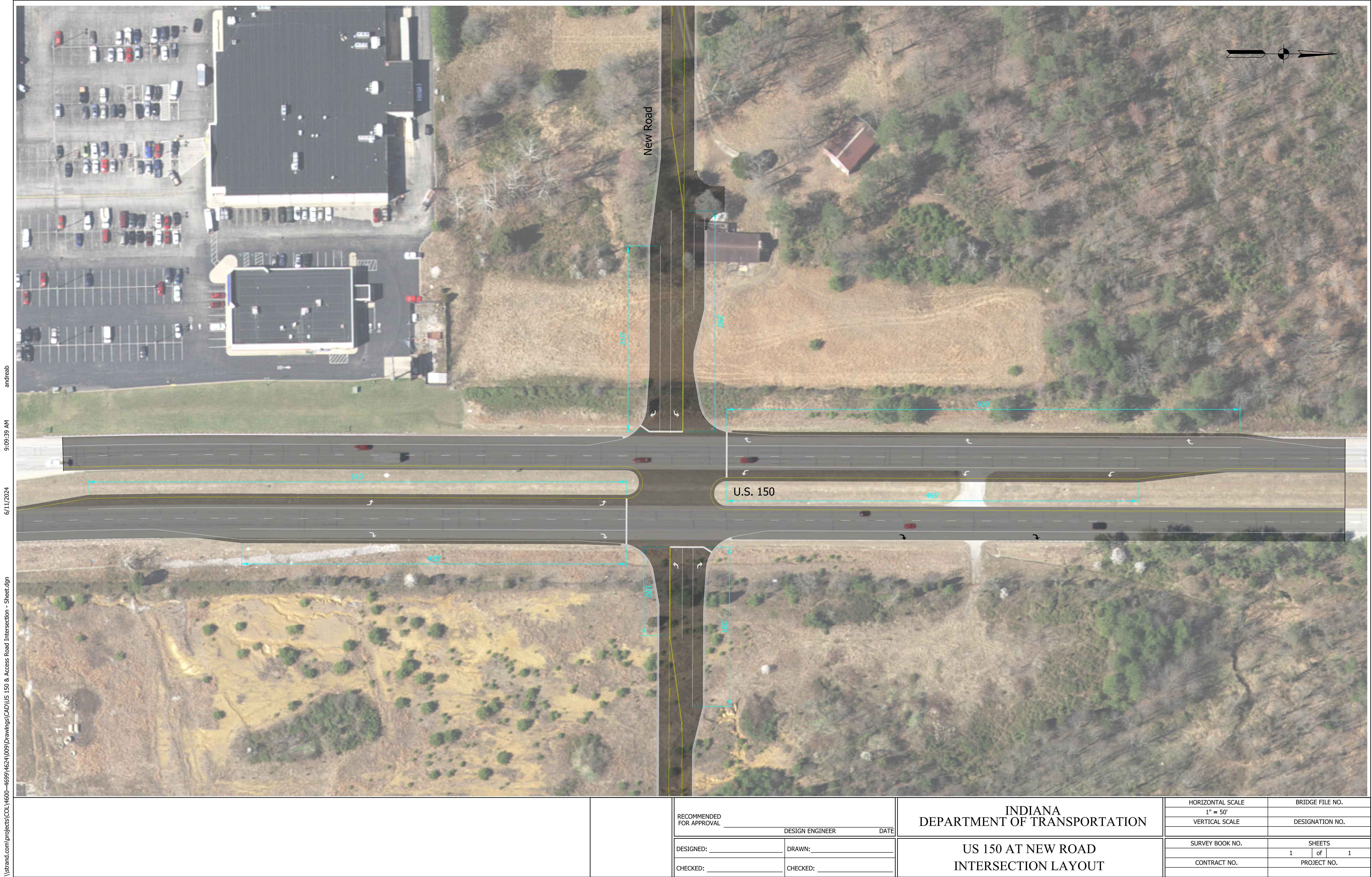
Intersection	Improvements
US 150 and New Road	Possible conversion to RCUT; discuss with INDOT
Old Vincennes Road and US 150	▪ Convert to RCUT + Mainline Left configuration ▪ Install dual-lane, signalized U-turns on each side of the primary intersection
Lawrence Banet Road and Lafollette Station Drive	▪ Convert intersection to RIRO. ▪ Install a roundabout approximately 650 feet east on Lawrence Banet Road

Table 6.02-02 Recommended Roadway Improvements: Long-Term

An exhibit showing the proposed intersection layout for US 150 and New Road is located in Appendix A.

6.03 ADEQUACY OF PROPOSED PLAN INCLUDING RECOMMENDED IMPROVEMENTS

The proposed long-term roadway improvements will provide acceptable overall operations at most intersections according to HCM output throughout the study area in the 2048 horizon year.



\\stand.com\projects\COL\4600-4699\4624\009\Drawings\CAD\US 150 & Access Road Intersection - Sheet.dgn 6/11/2024 9:05:39 AM andreab

		RECOMMENDED FOR APPROVAL	INDIANA DEPARTMENT OF TRANSPORTATION		HORIZONTAL SCALE	BRIDGE FILE NO.
			US 150 AT NEW ROAD INTERSECTION LAYOUT		1" = 50'	DESIGNATION NO.
					VERTICAL SCALE	
		DESIGNED: _____	DRAWN: _____		SURVEY BOOK NO.	SHEETS
		CHECKED: _____	CHECKED: _____		CONTRACT NO.	1 of 1
						PROJECT NO.

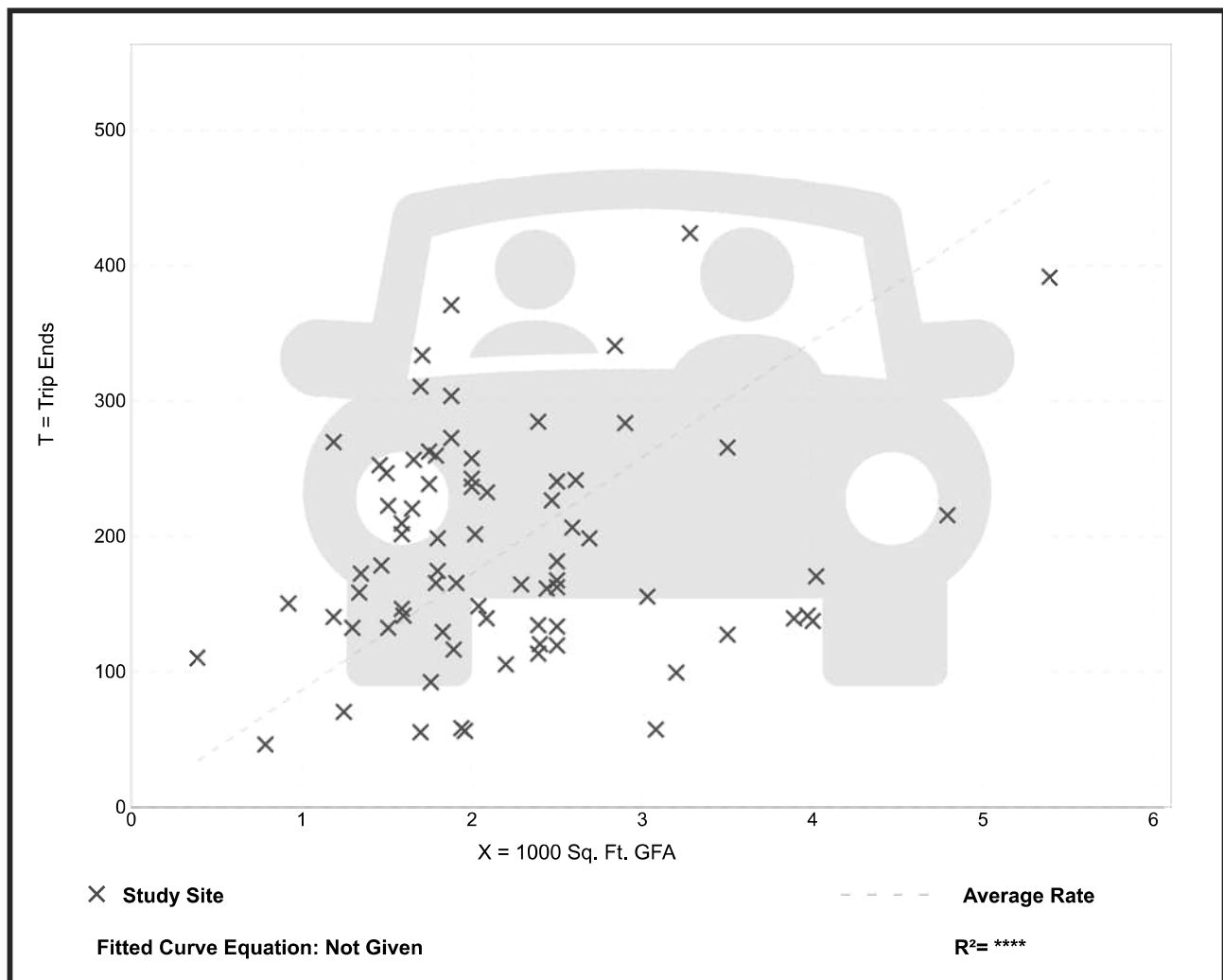
Coffee/Donut Shop with Drive-Through Window (937)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
 On a: Weekday,
 Peak Hour of Adjacent Street Traffic,
 One Hour Between 7 and 9 a.m.
 Setting/Location: General Urban/Suburban
 Number of Studies: 78
 Avg. 1000 Sq. Ft. GFA: 2
 Directional Distribution: 51% entering, 49% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
85.88	18.51 - 282.05	44.92

Data Plot and Equation



Coffee/Donut Shop with Drive-Through Window (937)

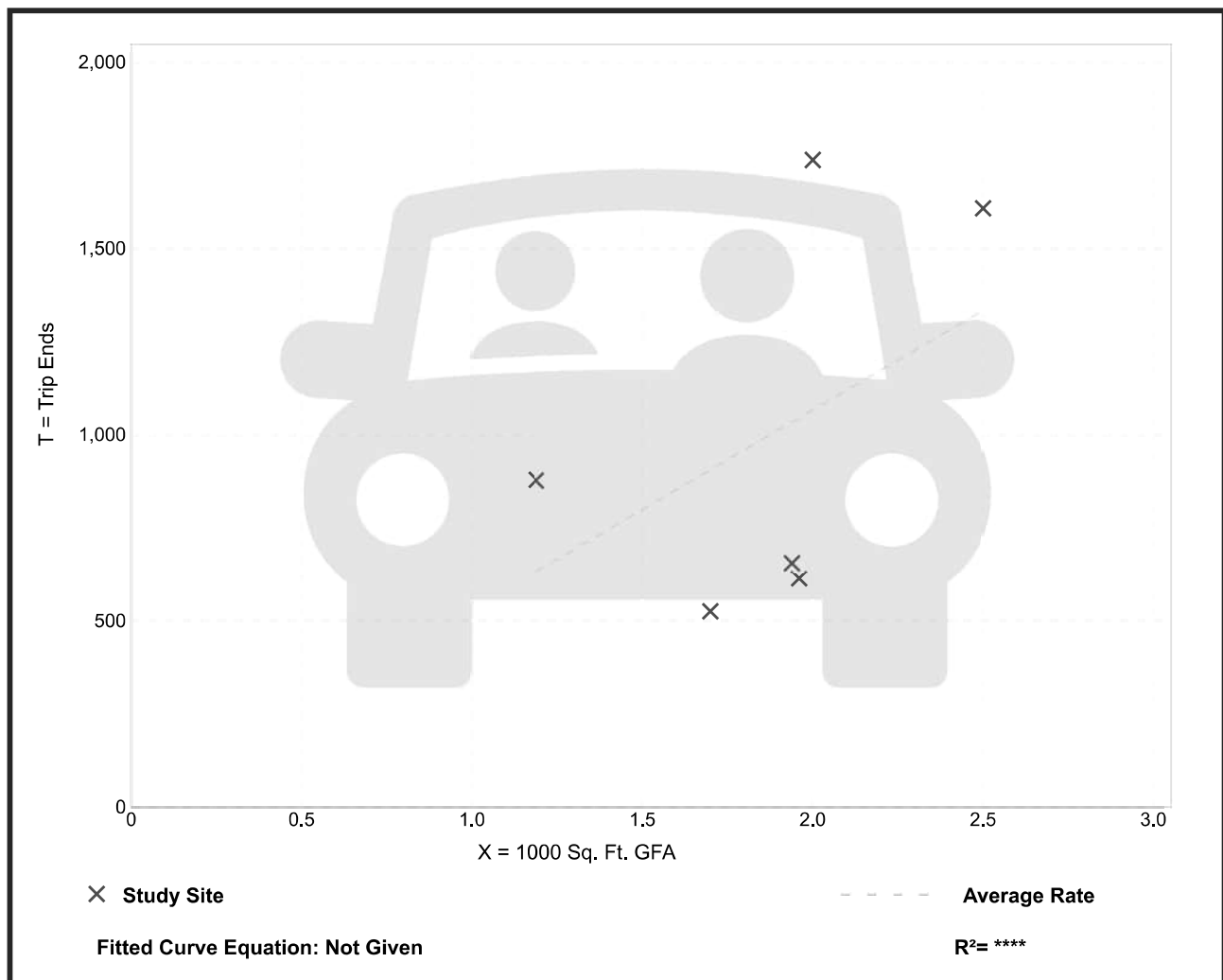
Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Weekday

Setting/Location: General Urban/Suburban
Number of Studies: 6
Avg. 1000 Sq. Ft. GFA: 2
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
533.57	309.41 - 869.00	243.65

Data Plot and Equation



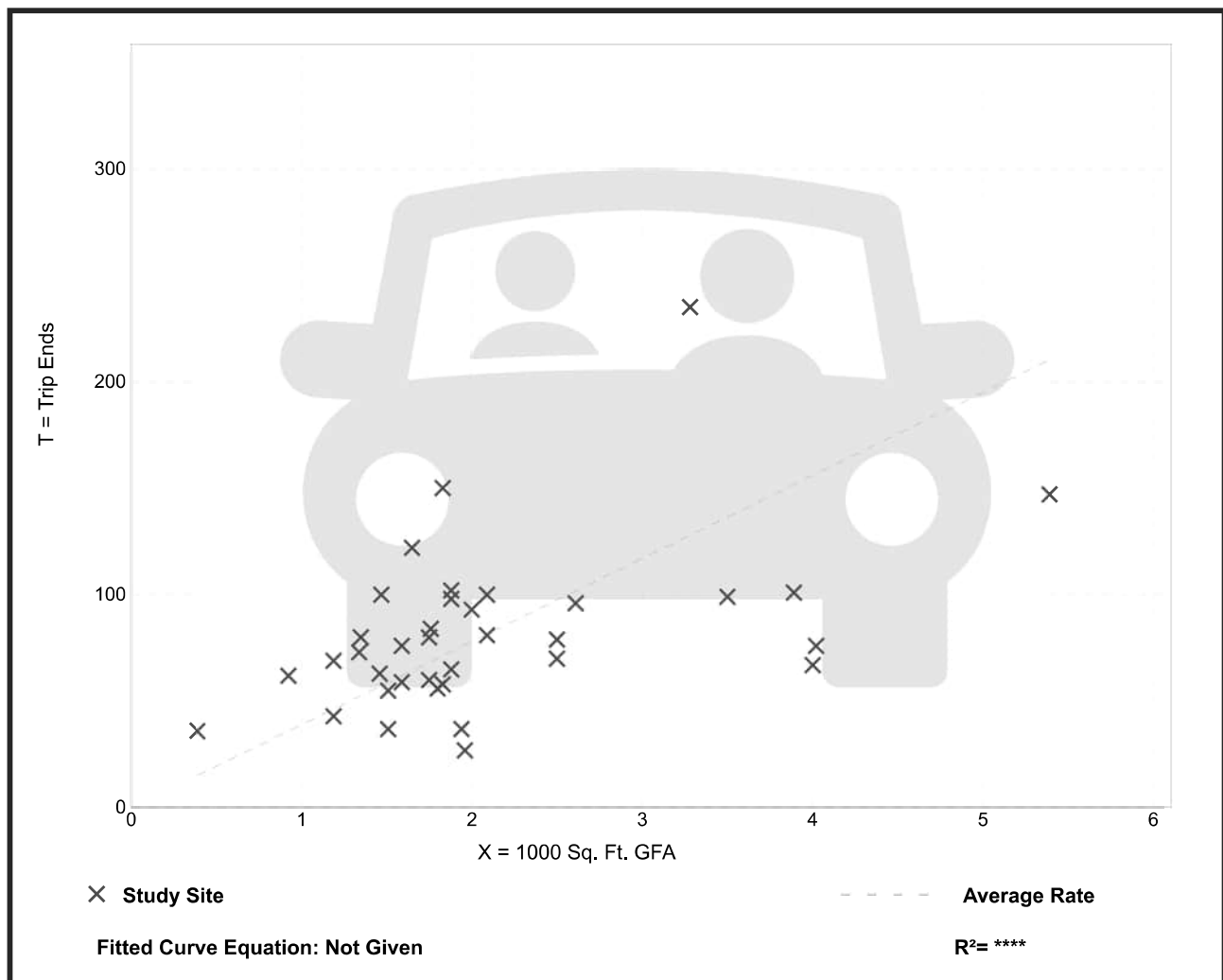
Coffee/Donut Shop with Drive-Through Window (937)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
 On a: Weekday,
 Peak Hour of Adjacent Street Traffic,
 One Hour Between 4 and 6 p.m.
 Setting/Location: General Urban/Suburban
 Number of Studies: 36
 Avg. 1000 Sq. Ft. GFA: 2
 Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
38.99	13.78 - 92.31	17.79

Data Plot and Equation



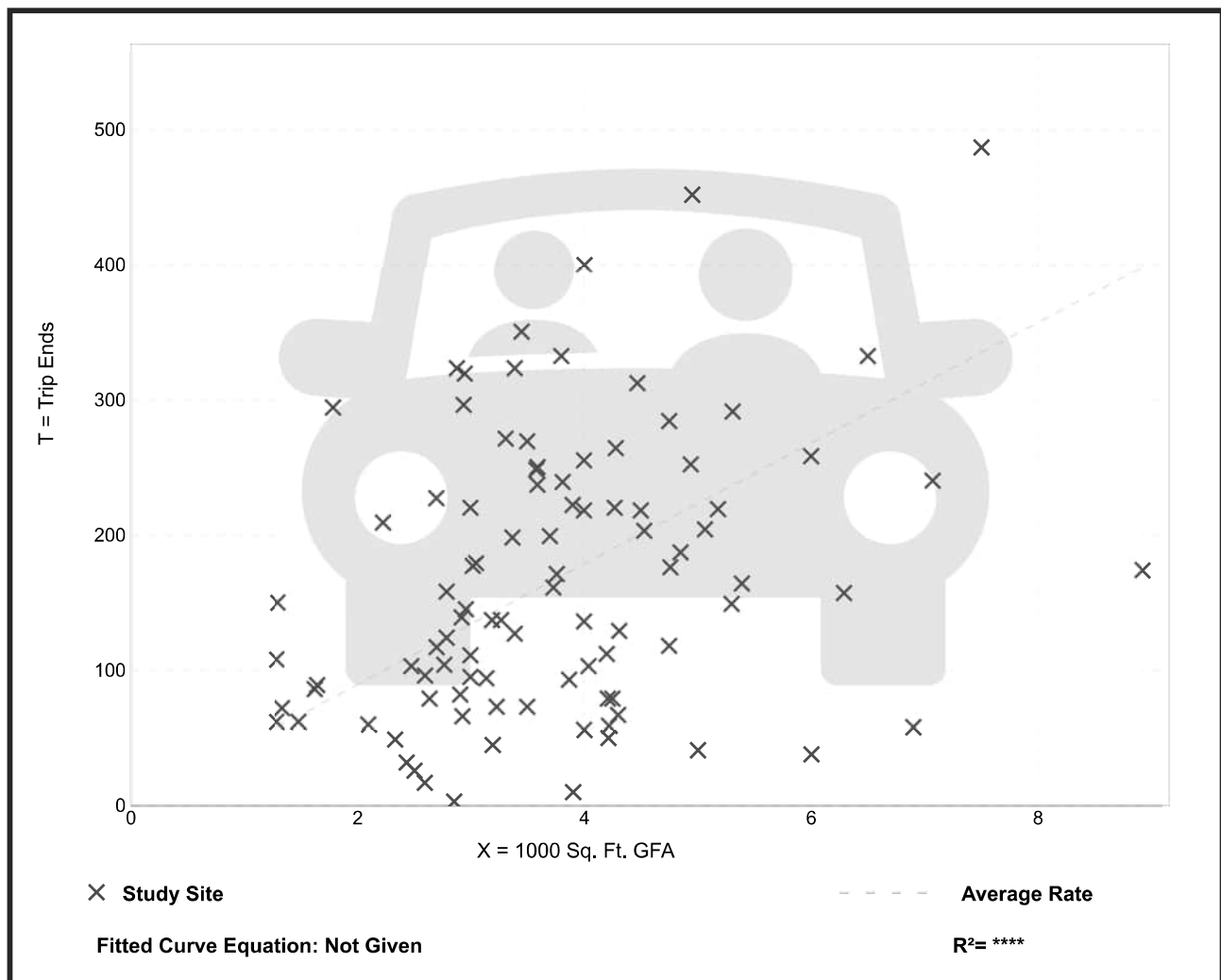
Fast-Food Restaurant with Drive-Through Window (934)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
 On a: Weekday,
 Peak Hour of Adjacent Street Traffic,
 One Hour Between 7 and 9 a.m.
 Setting/Location: General Urban/Suburban
 Number of Studies: 96
 Avg. 1000 Sq. Ft. GFA: 4
 Directional Distribution: 51% entering, 49% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
44.61	1.05 - 164.25	27.14

Data Plot and Equation



Fast-Food Restaurant with Drive-Through Window (934)

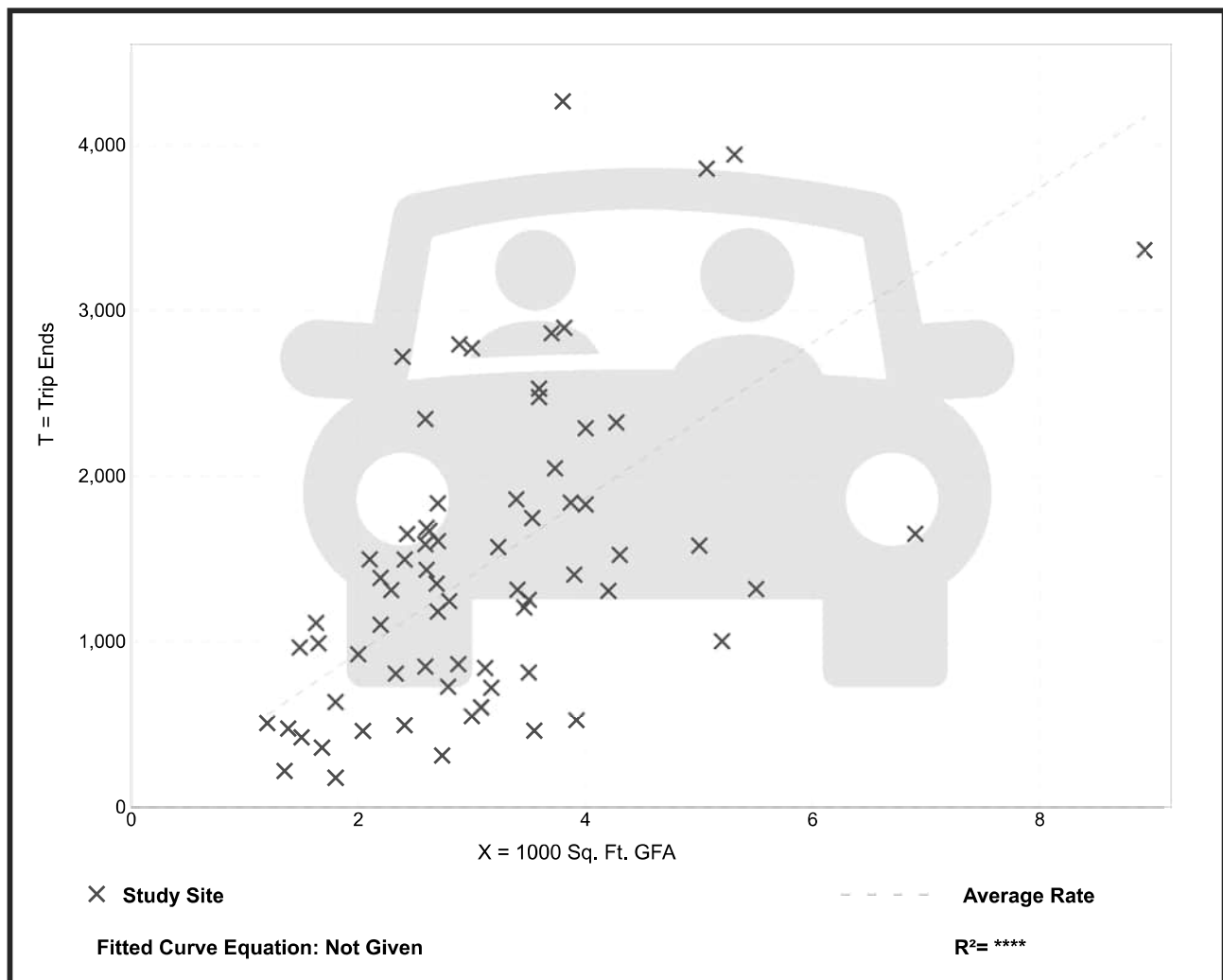
Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Weekday

Setting/Location: General Urban/Suburban
Number of Studies: 71
Avg. 1000 Sq. Ft. GFA: 3
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
467.48	98.89 - 1137.66	238.62

Data Plot and Equation



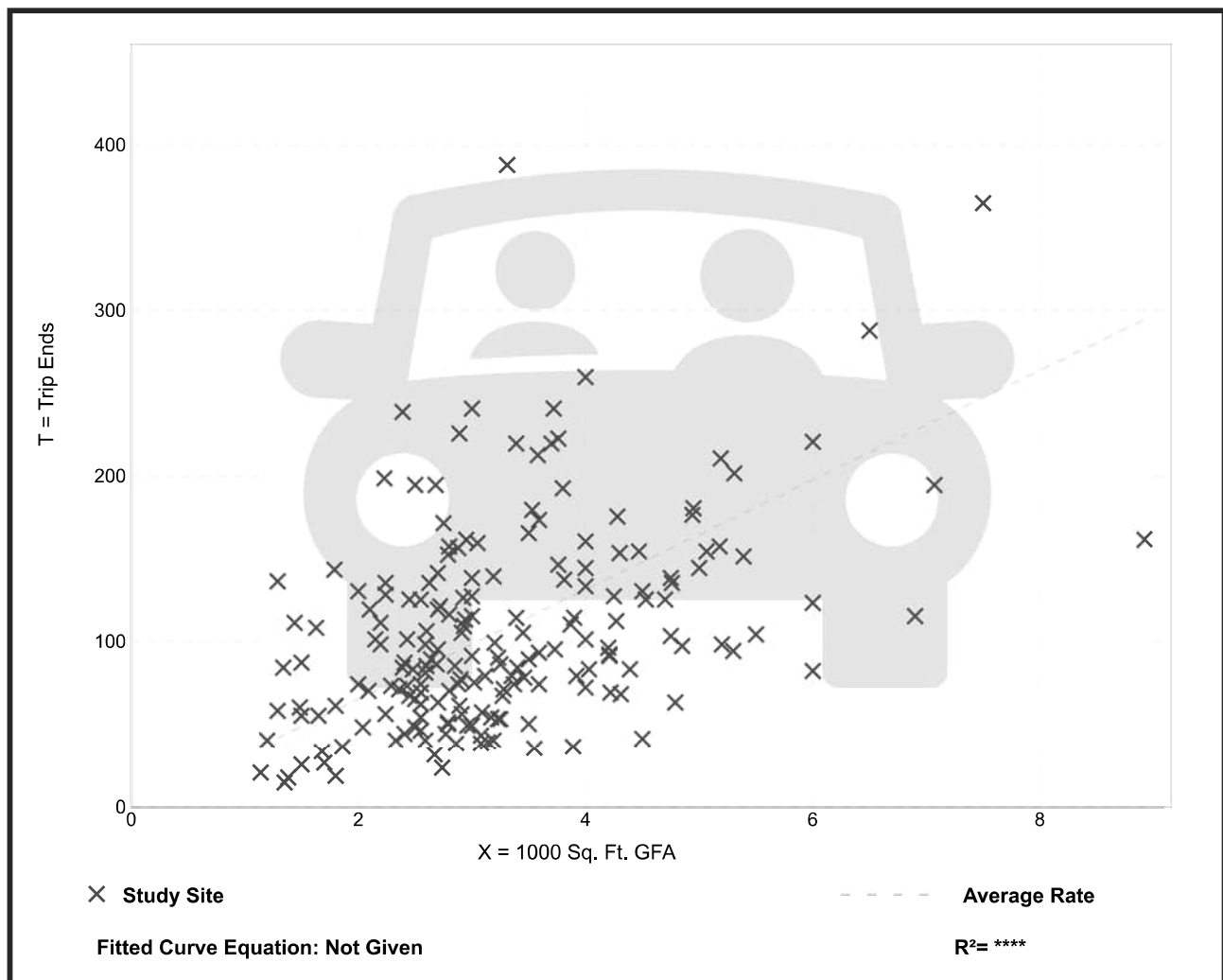
Fast-Food Restaurant with Drive-Through Window (934)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
 On a: Weekday,
 Peak Hour of Adjacent Street Traffic,
 One Hour Between 4 and 6 p.m.
 Setting/Location: General Urban/Suburban
 Number of Studies: 190
 Avg. 1000 Sq. Ft. GFA: 3
 Directional Distribution: 52% entering, 48% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
33.03	8.77 - 117.22	17.59

Data Plot and Equation



Convenience Store/Gas Station - GFA (2-4k) (945)

Vehicle Trip Ends vs: Vehicle Fueling Positions

On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.

Setting/Location: General Urban/Suburban

Number of Studies: 76

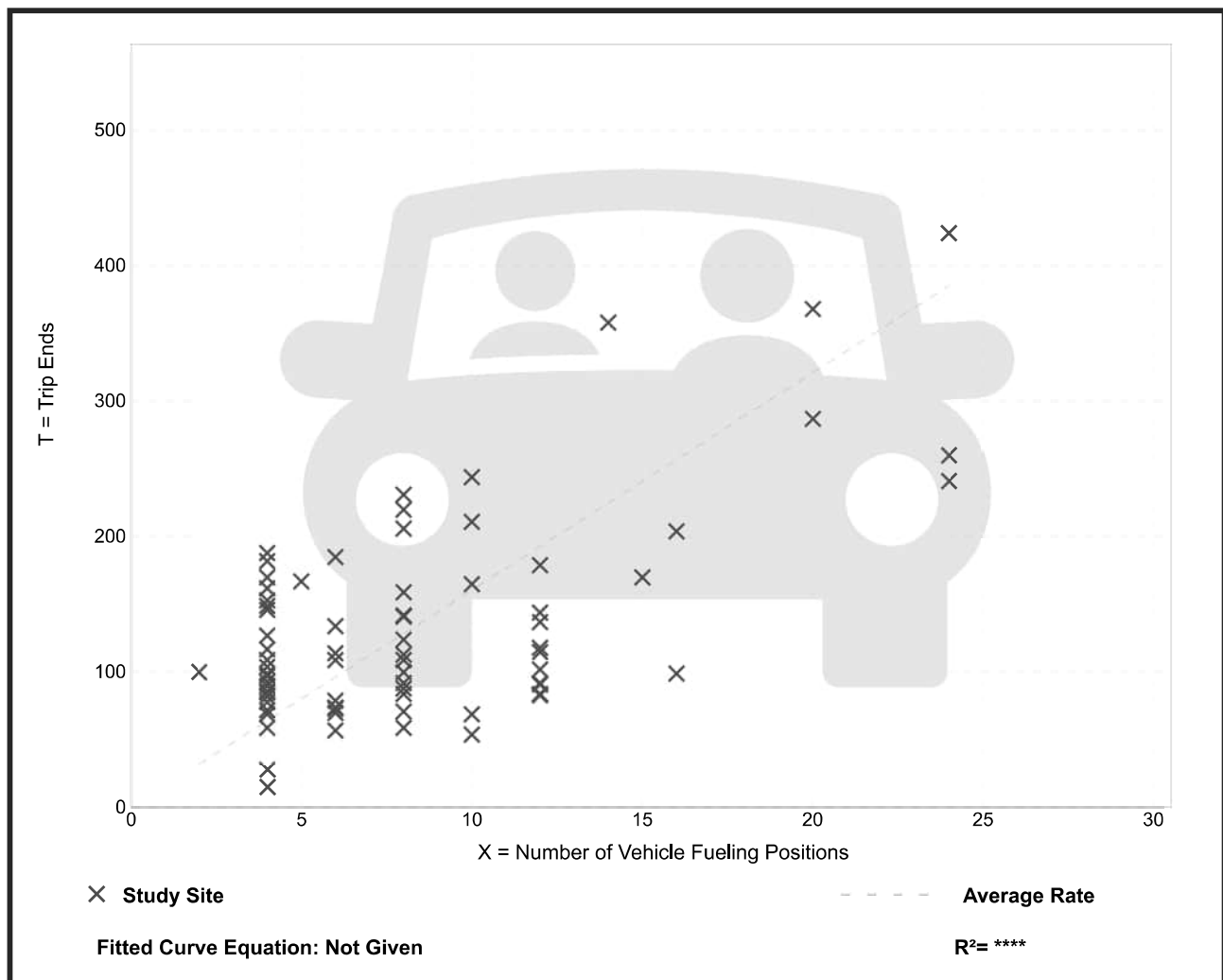
Avg. Num. of Vehicle Fueling Positions: 8

Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Vehicle Fueling Position

Average Rate	Range of Rates	Standard Deviation
16.06	3.75 - 50.00	8.79

Data Plot and Equation



Convenience Store/Gas Station - GFA (2-4k) (945)

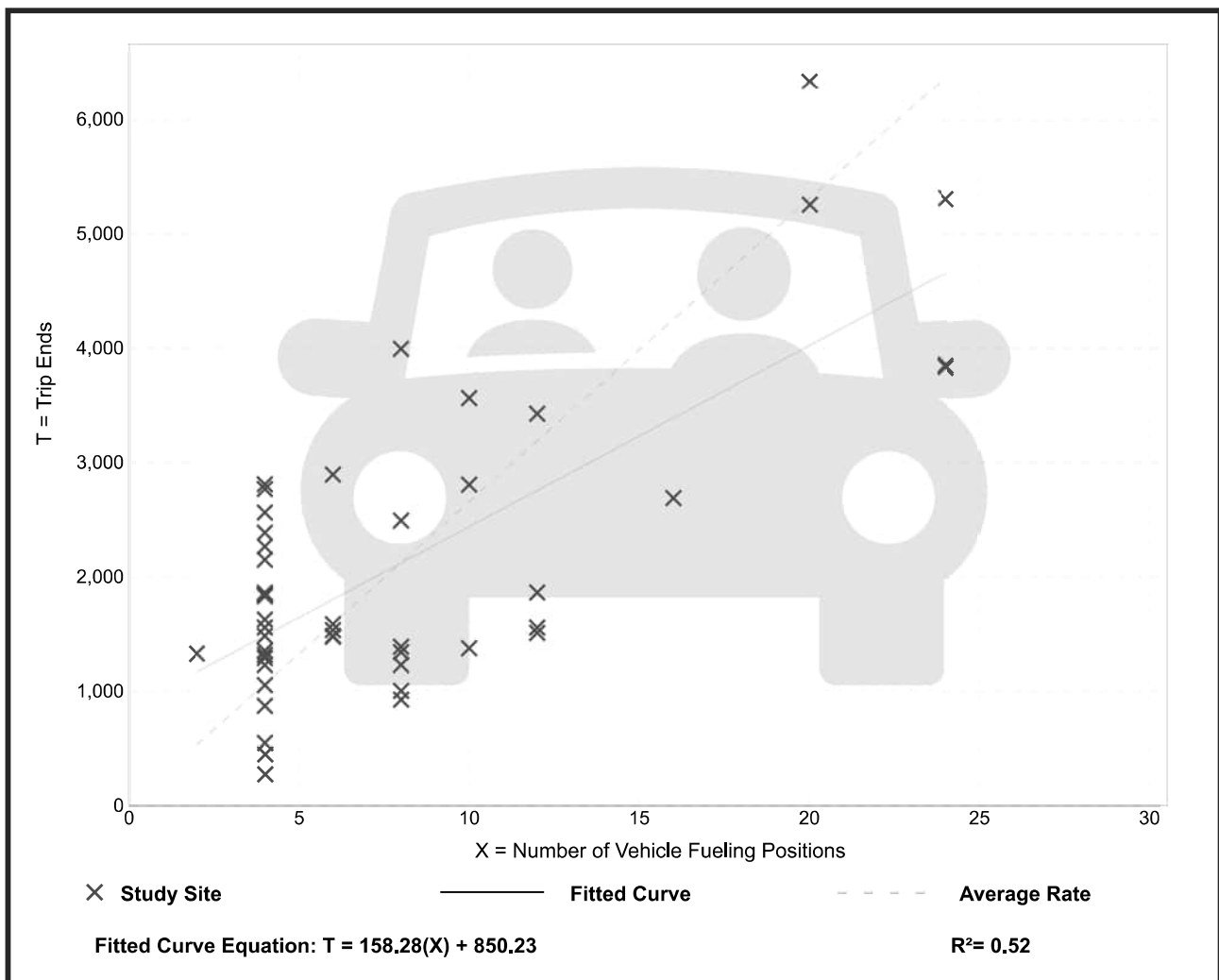
Vehicle Trip Ends vs: Vehicle Fueling Positions
On a: Weekday

Setting/Location: General Urban/Suburban
Number of Studies: 48
Avg. Num. of Vehicle Fueling Positions: 8
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Vehicle Fueling Position

Average Rate	Range of Rates	Standard Deviation
265.12	68.50 - 701.00	142.37

Data Plot and Equation



Convenience Store/Gas Station - GFA (2-4k) (945)

Vehicle Trip Ends vs: Vehicle Fueling Positions

On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.

Setting/Location: General Urban/Suburban

Number of Studies: 93

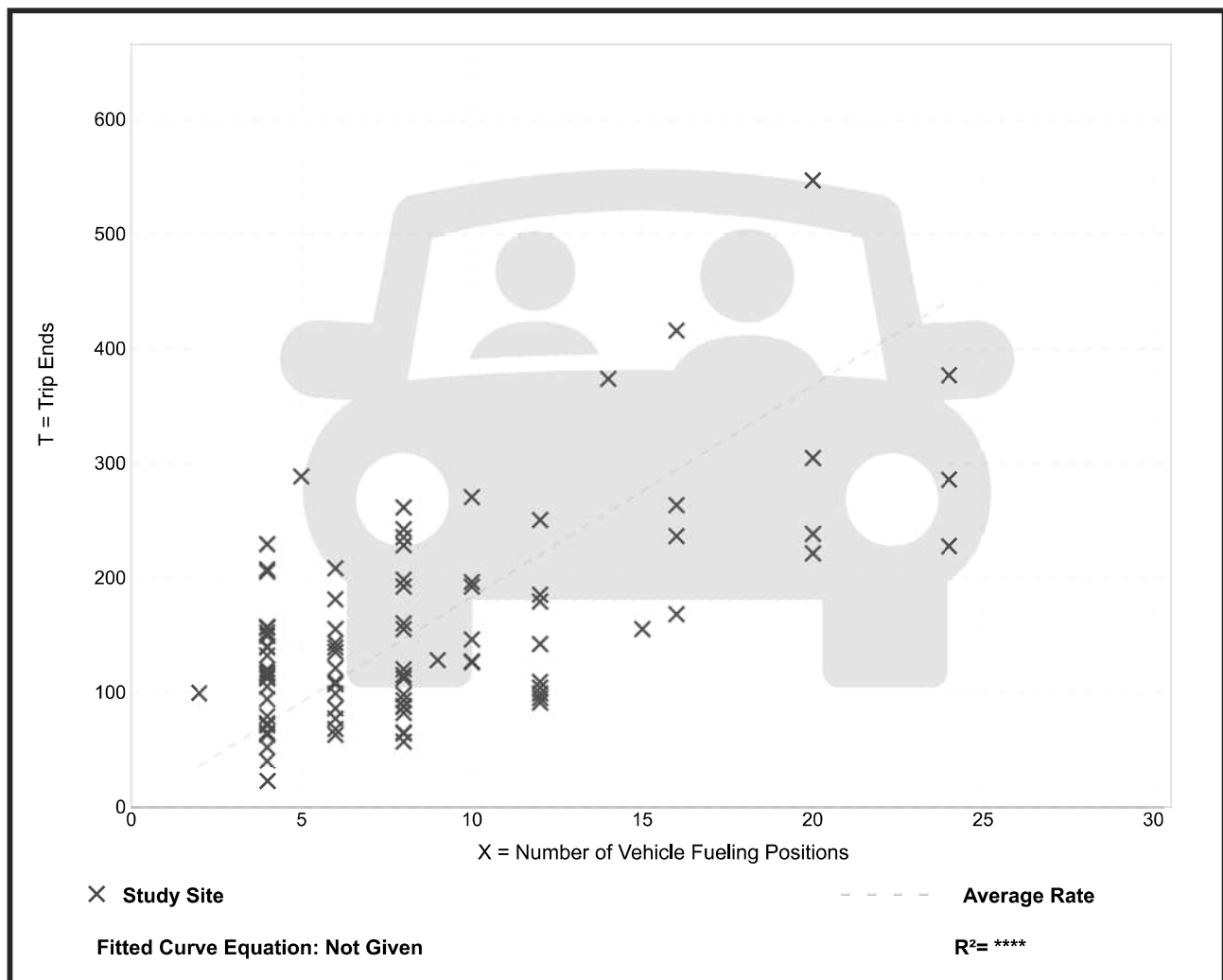
Avg. Num. of Vehicle Fueling Positions: 8

Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Vehicle Fueling Position

Average Rate	Range of Rates	Standard Deviation
18.42	5.75 - 57.80	10.16

Data Plot and Equation



Multifamily Housing (Low-Rise) Not Close to Rail Transit (220)

Vehicle Trip Ends vs: Dwelling Units

On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.

Setting/Location: General Urban/Suburban

Number of Studies: 49

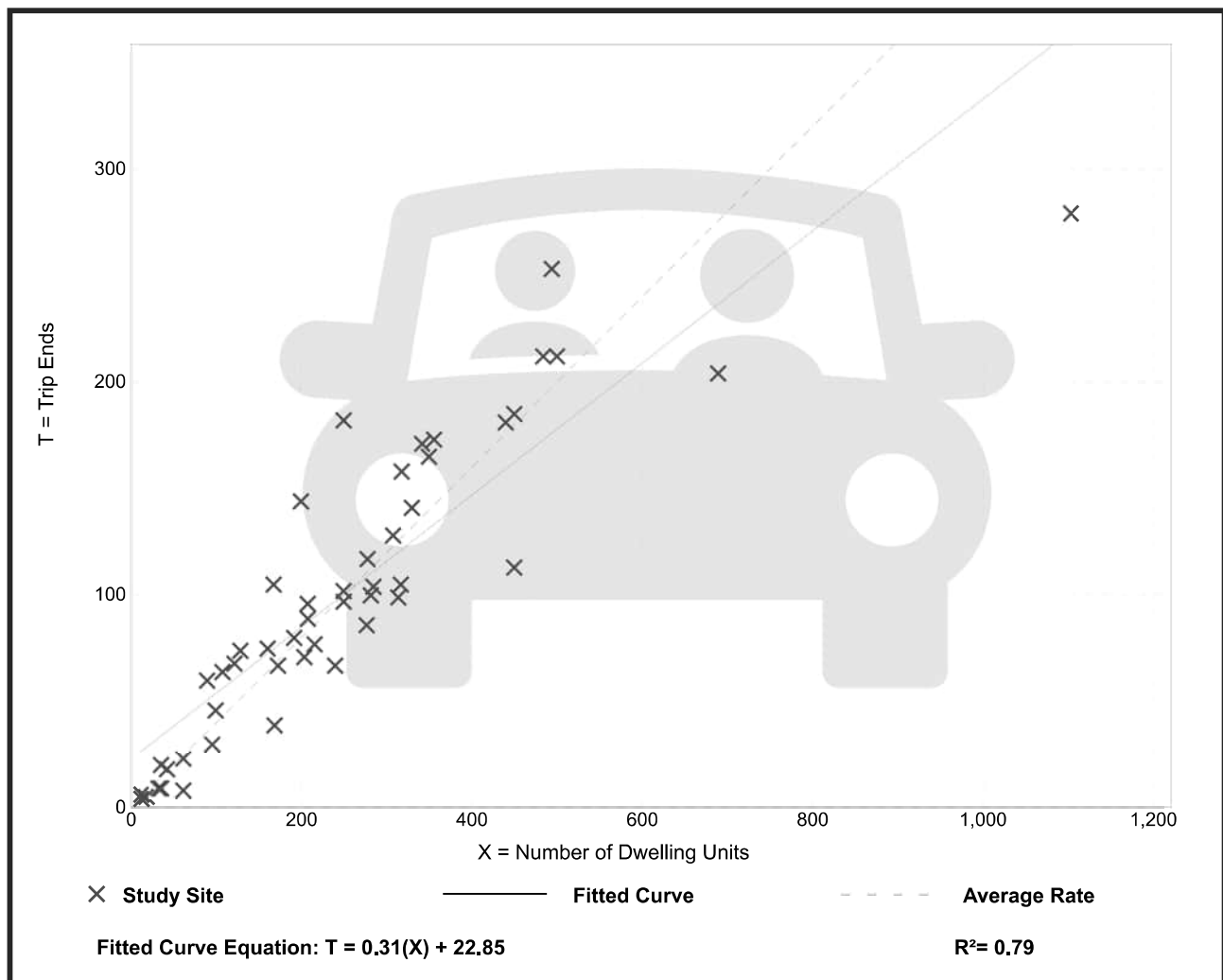
Avg. Num. of Dwelling Units: 249

Directional Distribution: 24% entering, 76% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.40	0.13 - 0.73	0.12

Data Plot and Equation



Multifamily Housing (Low-Rise) Not Close to Rail Transit (220)

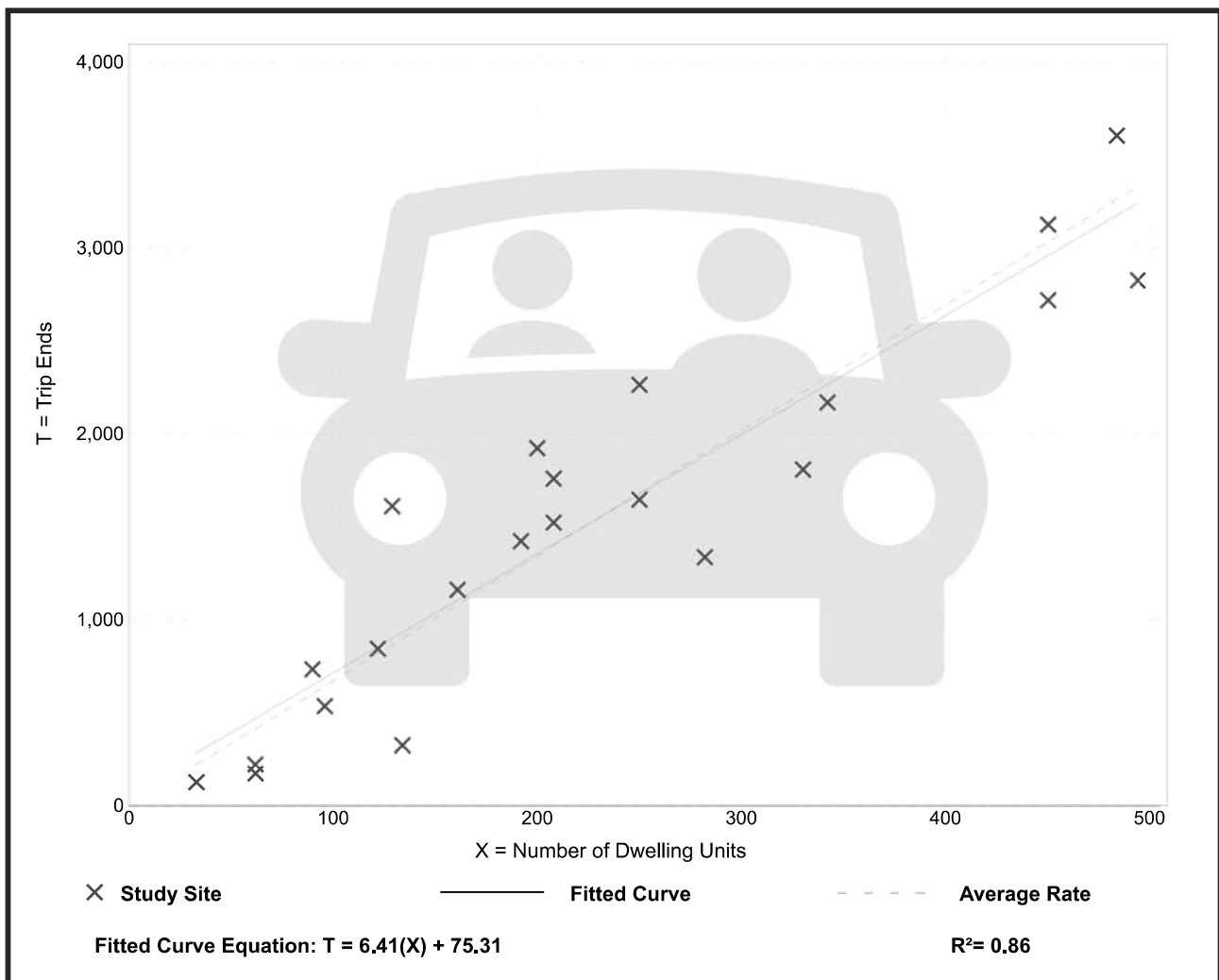
Vehicle Trip Ends vs: Dwelling Units
On a: Weekday

Setting/Location: General Urban/Suburban
Number of Studies: 22
Avg. Num. of Dwelling Units: 229
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
6.74	2.46 - 12.50	1.79

Data Plot and Equation



Multifamily Housing (Low-Rise) Not Close to Rail Transit (220)

Vehicle Trip Ends vs: Dwelling Units

On a: Weekday,

Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.

Setting/Location: General Urban/Suburban

Number of Studies: 59

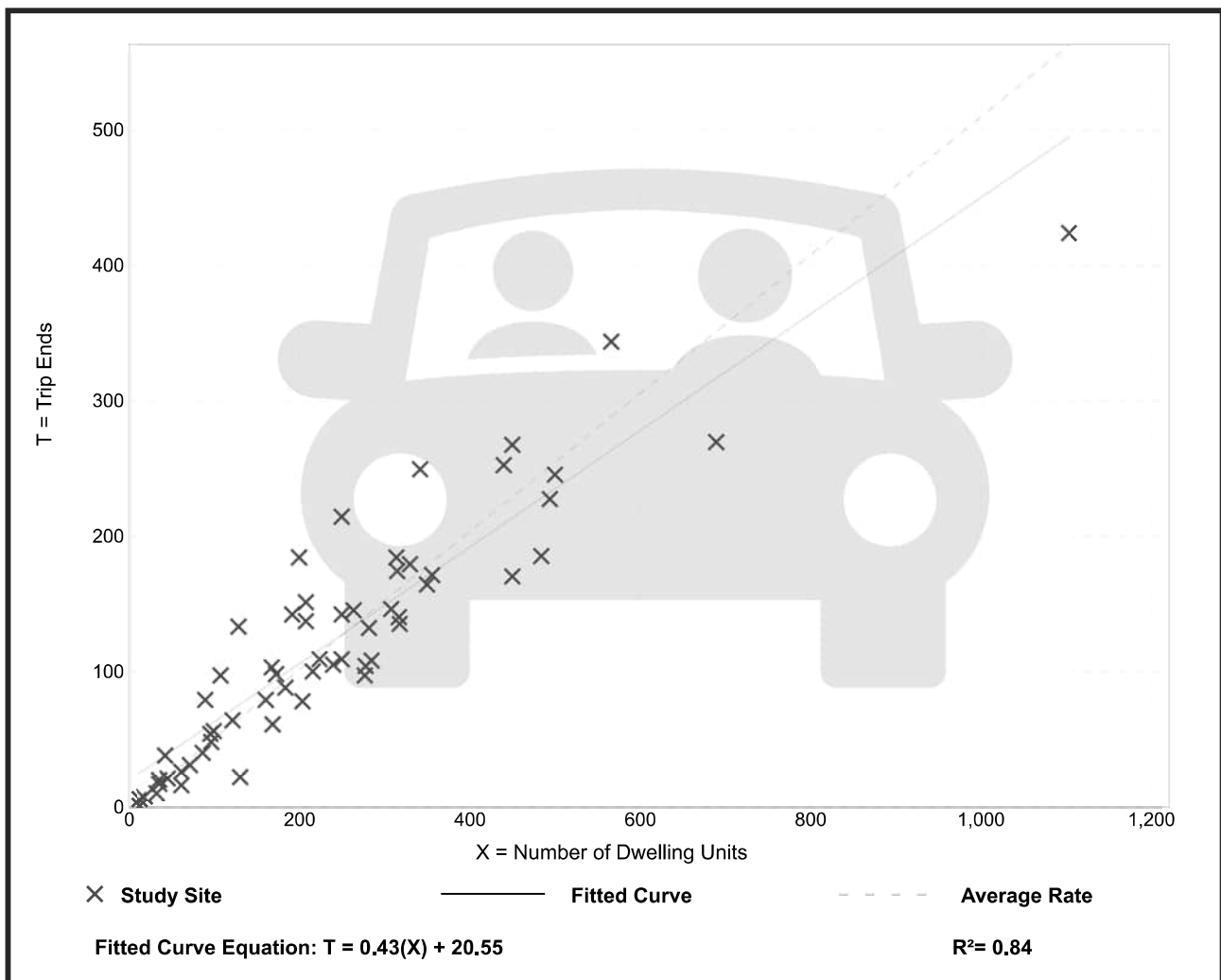
Avg. Num. of Dwelling Units: 241

Directional Distribution: 63% entering, 37% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.51	0.08 - 1.04	0.15

Data Plot and Equation



Quick Lubrication Vehicle Shop (941)

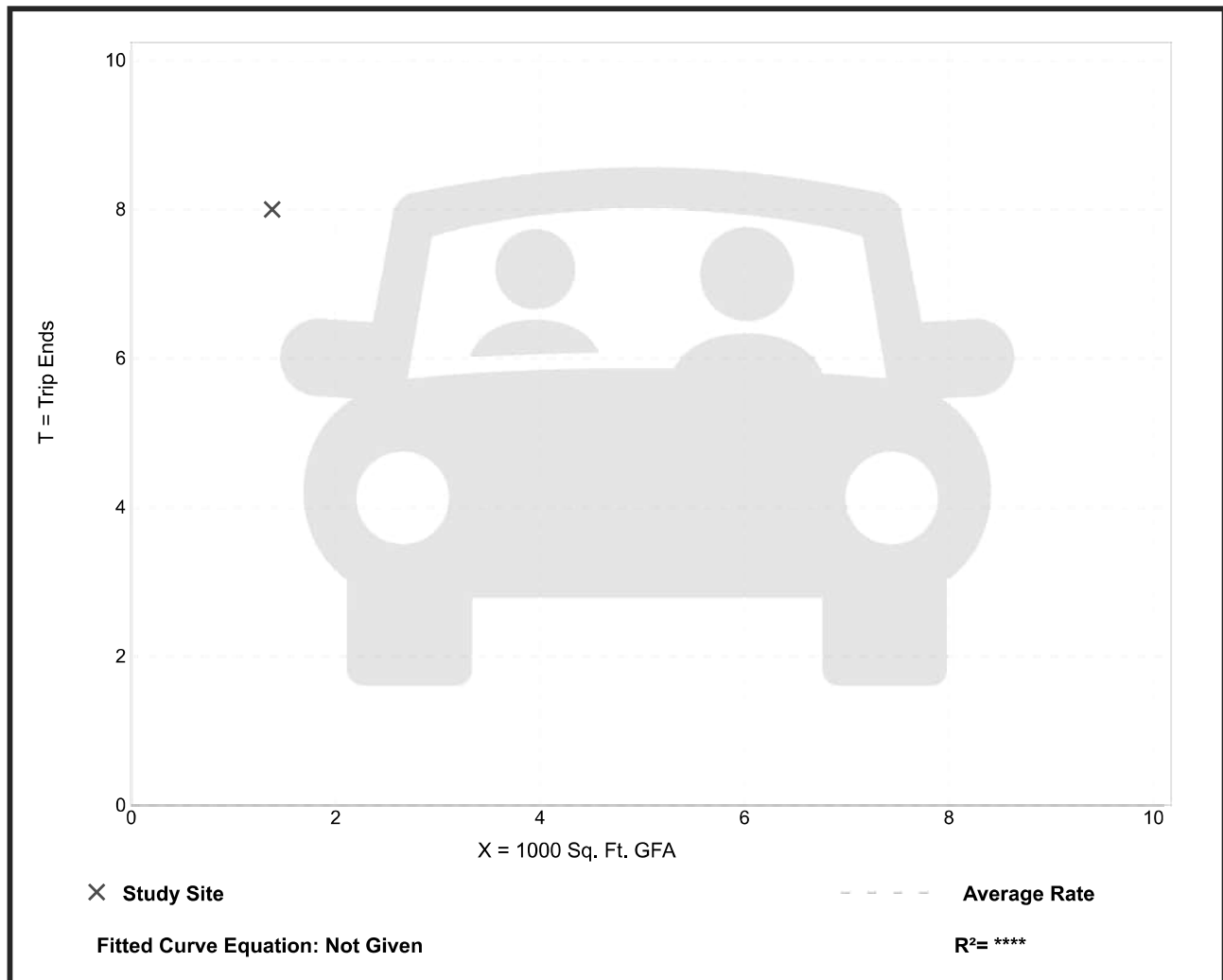
Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: General Urban/Suburban
Number of Studies: 1
Avg. 1000 Sq. Ft. GFA: 1
Directional Distribution: 75% entering, 25% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
5.80	5.80 - 5.80	*

Data Plot and Equation

Caution – Small Sample Size



Quick Lubrication Vehicle Shop (941)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Weekday

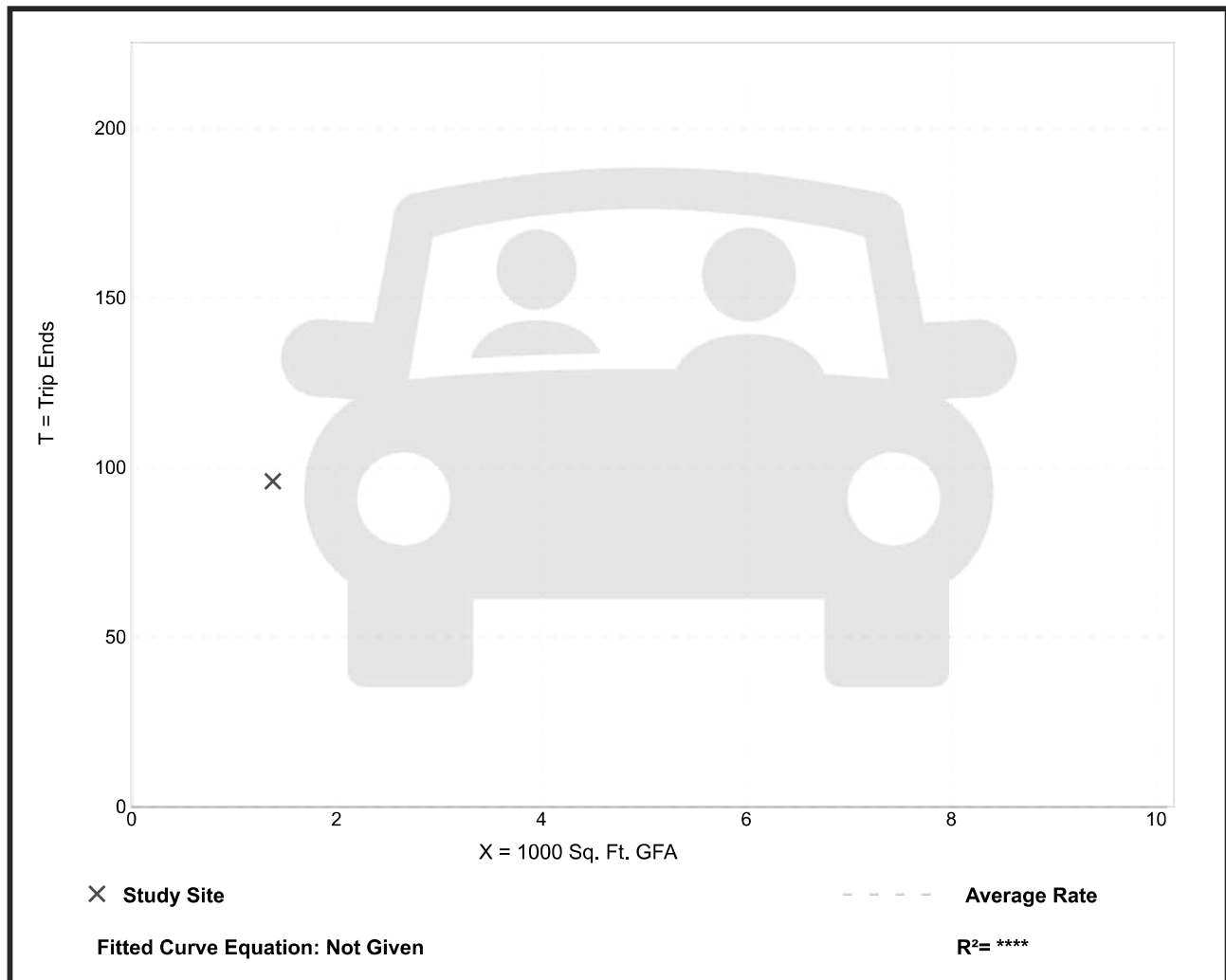
Setting/Location: General Urban/Suburban
Number of Studies: 1
Avg. 1000 Sq. Ft. GFA: 1
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
69.57	69.57 - 69.57	*

Data Plot and Equation

Caution – Small Sample Size



Quick Lubrication Vehicle Shop (941)

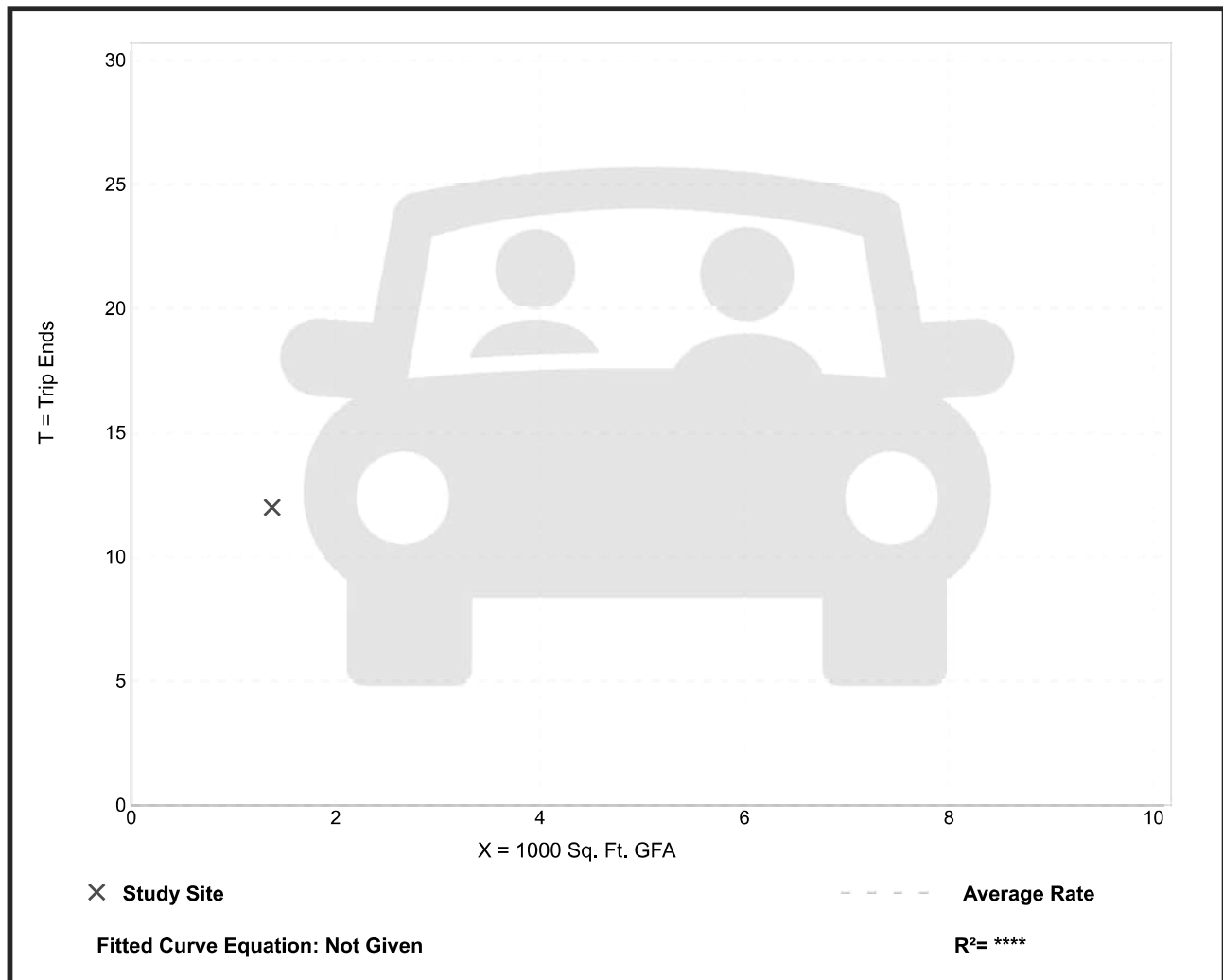
Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: General Urban/Suburban
Number of Studies: 1
Avg. 1000 Sq. Ft. GFA: 1
Directional Distribution: 42% entering, 58% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
8.70	8.70 - 8.70	*

Data Plot and Equation

Caution – Small Sample Size



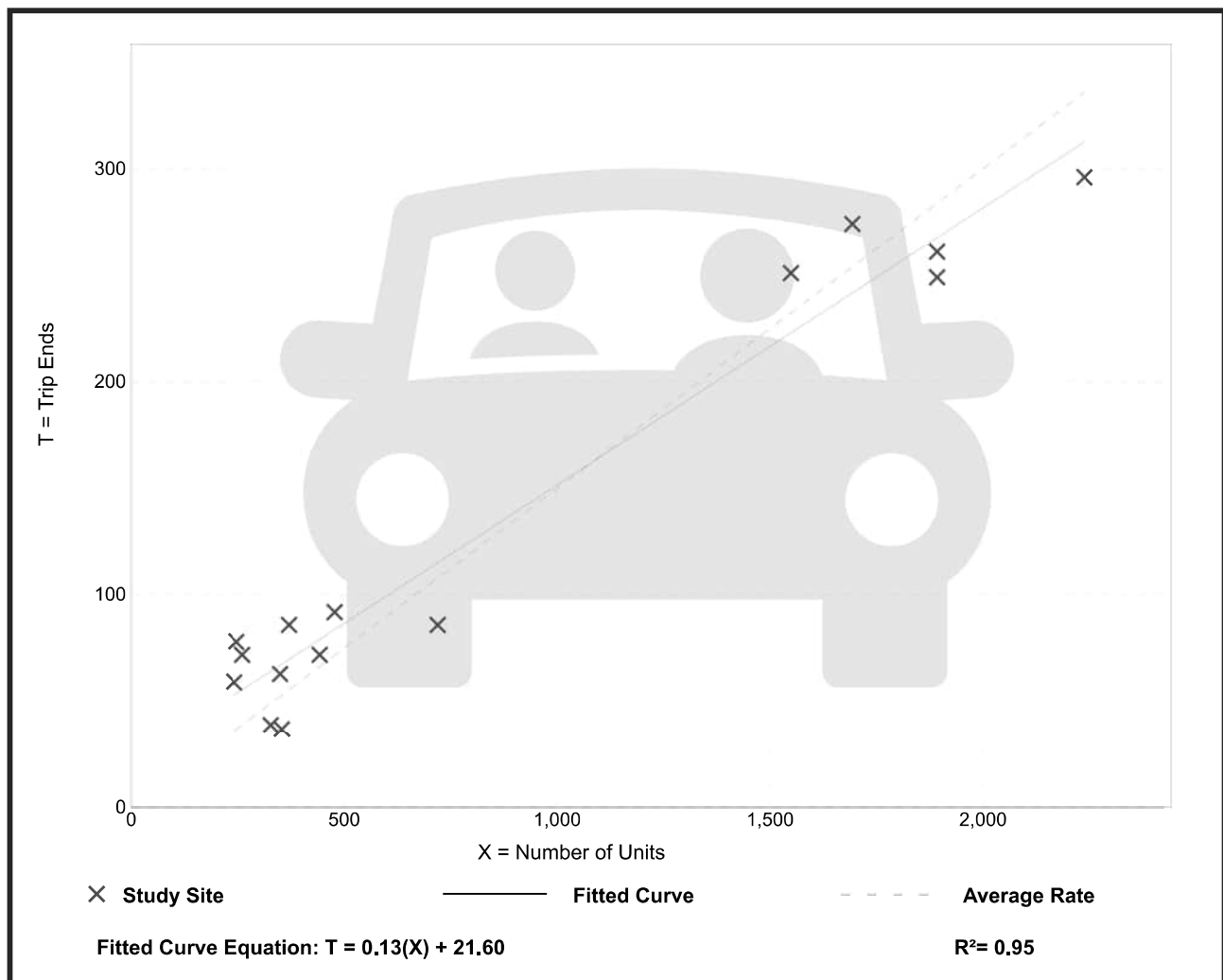
Continuing Care Retirement Community (255)

Vehicle Trip Ends vs: Units
 On a: Weekday,
 Peak Hour of Adjacent Street Traffic,
 One Hour Between 7 and 9 a.m.
 Setting/Location: General Urban/Suburban
 Number of Studies: 15
 Avg. Num. of Units: 871
 Directional Distribution: 65% entering, 35% exiting

Vehicle Trip Generation per Unit

Average Rate	Range of Rates	Standard Deviation
0.15	0.10 - 0.32	0.04

Data Plot and Equation



Continuing Care Retirement Community (255)

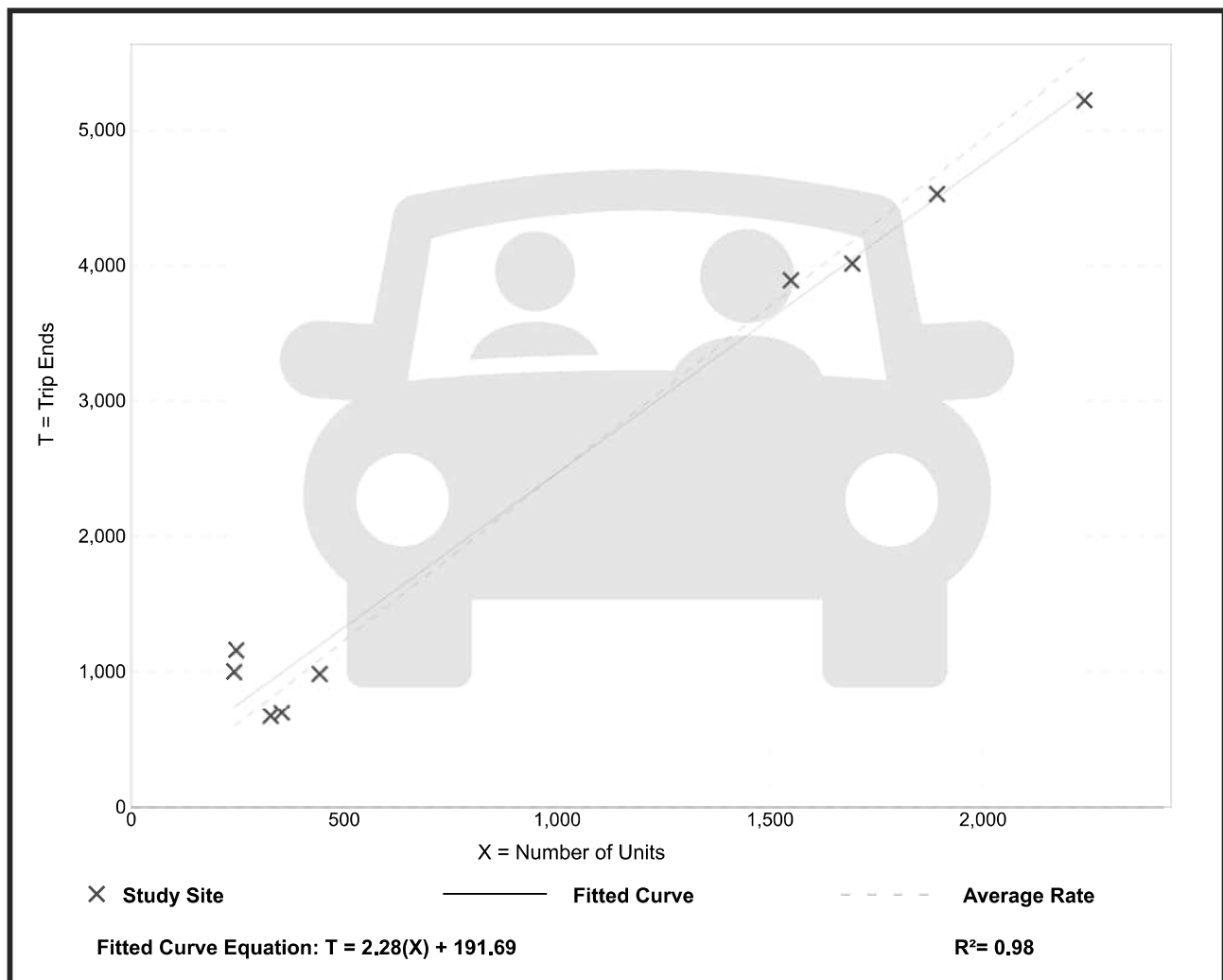
Vehicle Trip Ends vs: Units
On a: Weekday

Setting/Location: General Urban/Suburban
Number of Studies: 9
Avg. Num. of Units: 998
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Unit

Average Rate	Range of Rates	Standard Deviation
2.47	1.98 - 4.71	0.52

Data Plot and Equation



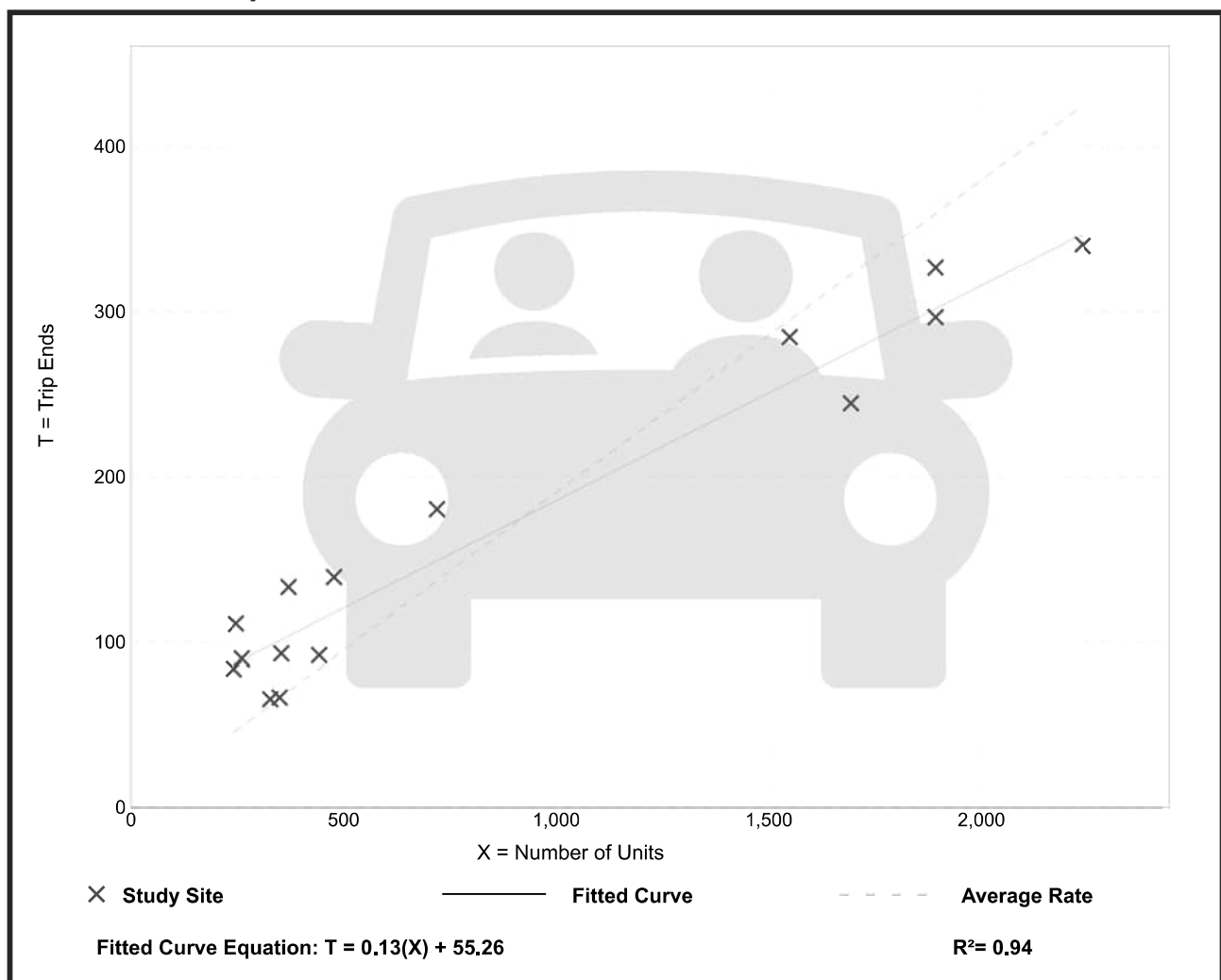
Continuing Care Retirement Community (255)

Vehicle Trip Ends vs: Units
 On a: Weekday,
 Peak Hour of Adjacent Street Traffic,
 One Hour Between 4 and 6 p.m.
 Setting/Location: General Urban/Suburban
 Number of Studies: 15
 Avg. Num. of Units: 871
 Directional Distribution: 39% entering, 61% exiting

Vehicle Trip Generation per Unit

Average Rate	Range of Rates	Standard Deviation
0.19	0.14 - 0.45	0.07

Data Plot and Equation



Single-Family Detached Housing (210)

Vehicle Trip Ends vs: Dwelling Units

On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.

Setting/Location: General Urban/Suburban

Number of Studies: 192

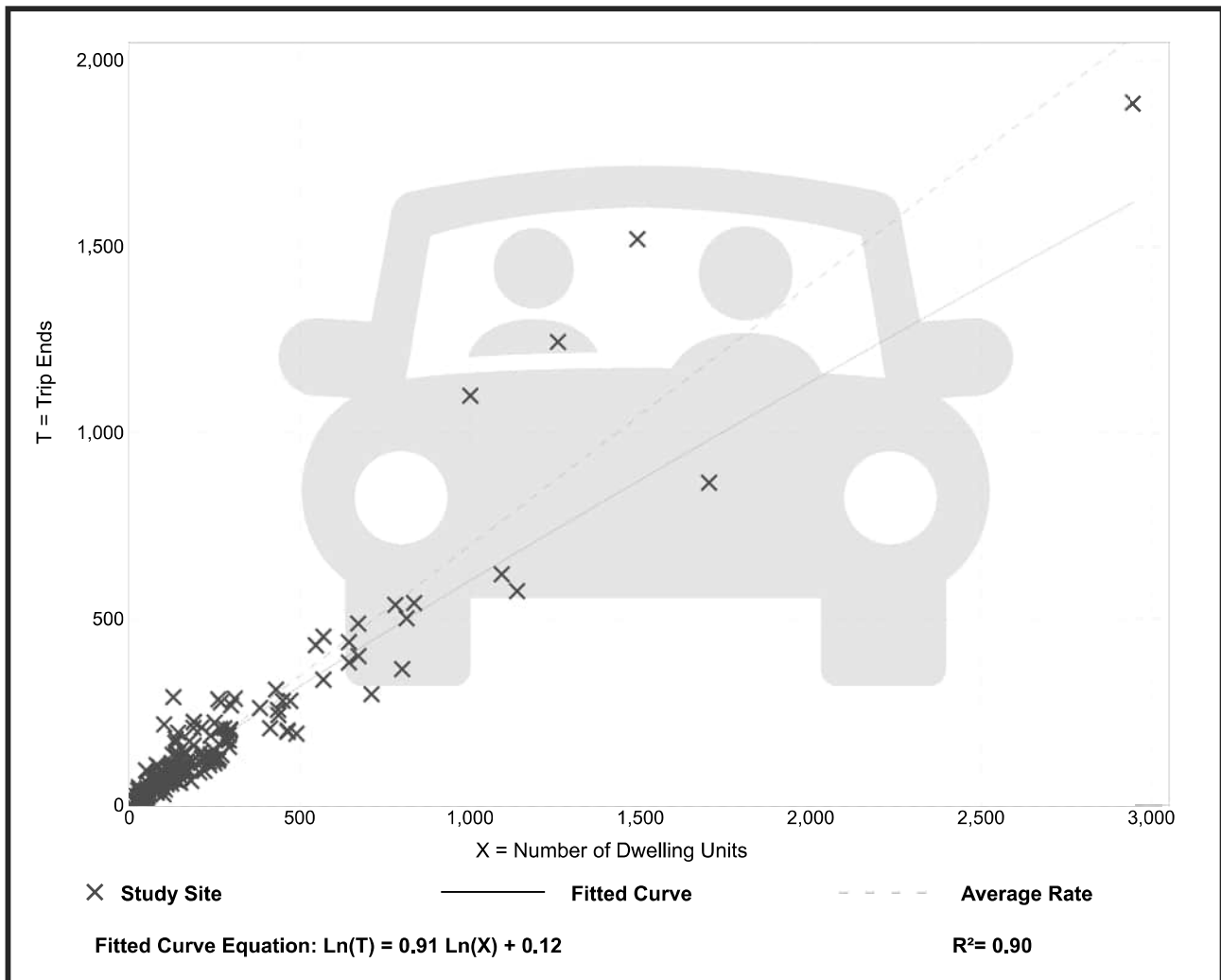
Avg. Num. of Dwelling Units: 226

Directional Distribution: 25% entering, 75% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.70	0.27 - 2.27	0.24

Data Plot and Equation



Single-Family Detached Housing (210)

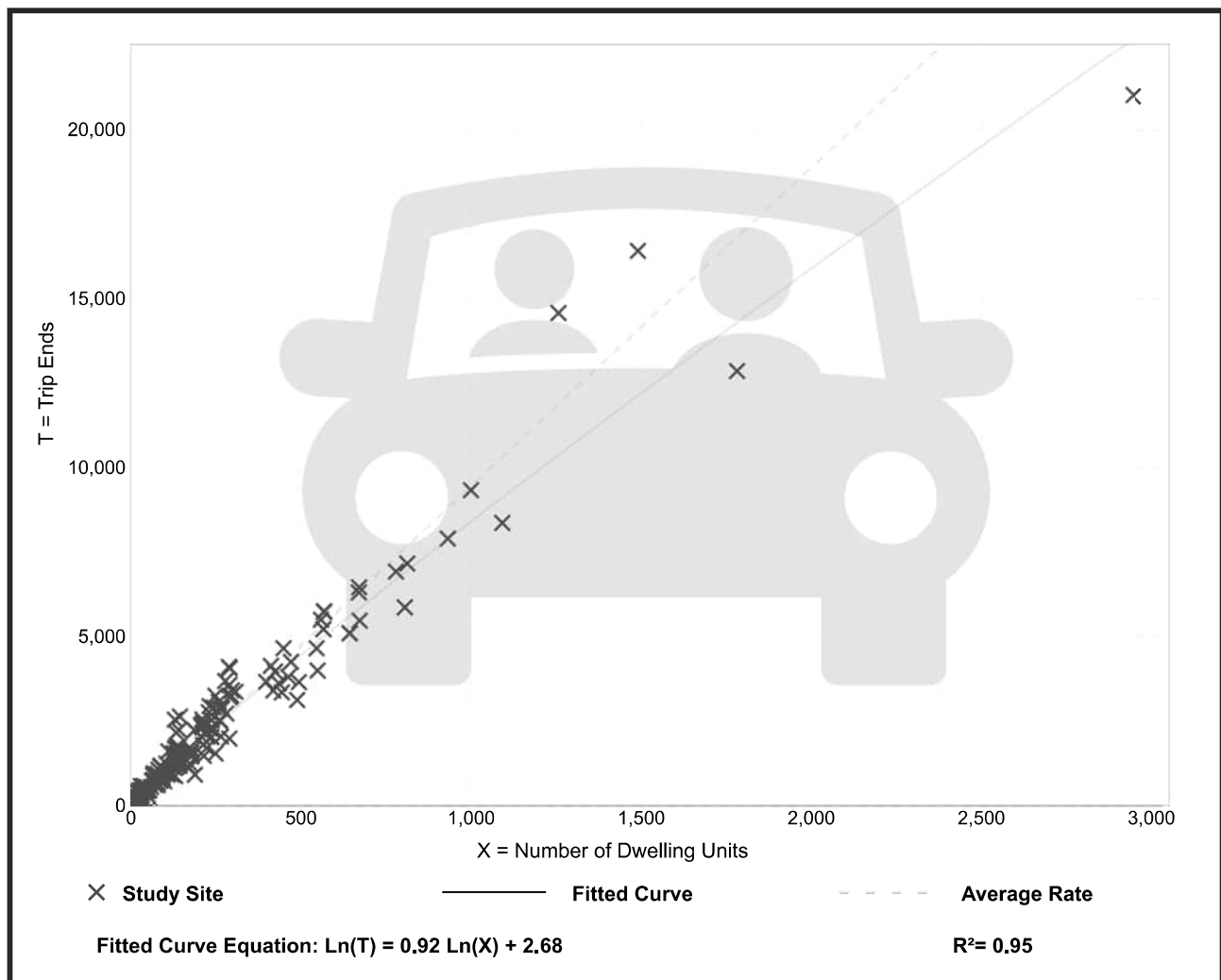
Vehicle Trip Ends vs: Dwelling Units
On a: Weekday

Setting/Location: General Urban/Suburban
Number of Studies: 174
Avg. Num. of Dwelling Units: 246
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
9.43	4.45 - 22.61	2.13

Data Plot and Equation



Single-Family Detached Housing (210)

Vehicle Trip Ends vs: Dwelling Units

On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.

Setting/Location: General Urban/Suburban

Number of Studies: 208

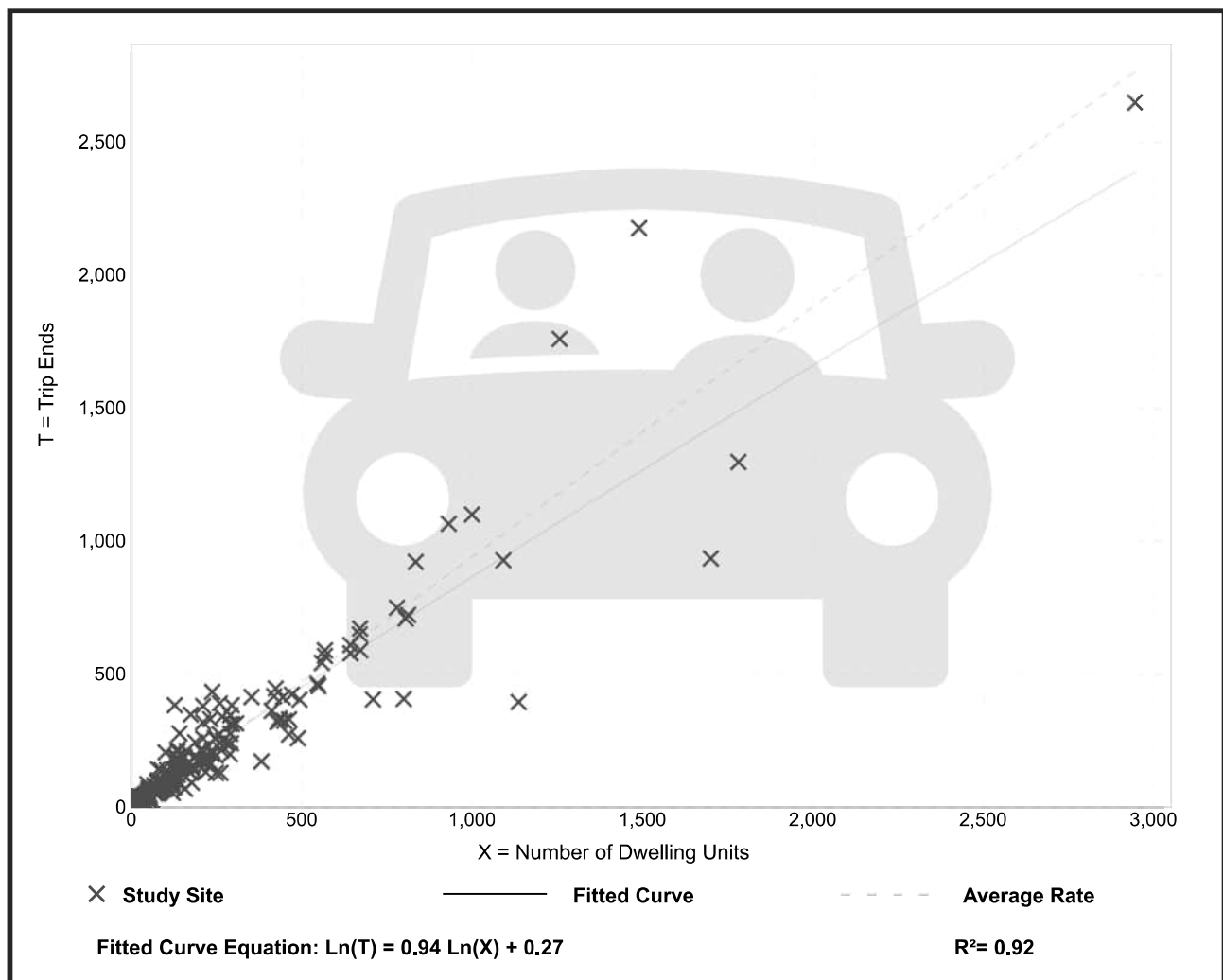
Avg. Num. of Dwelling Units: 248

Directional Distribution: 63% entering, 37% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.94	0.35 - 2.98	0.31

Data Plot and Equation



Strip Retail Plaza (<40k) (822)

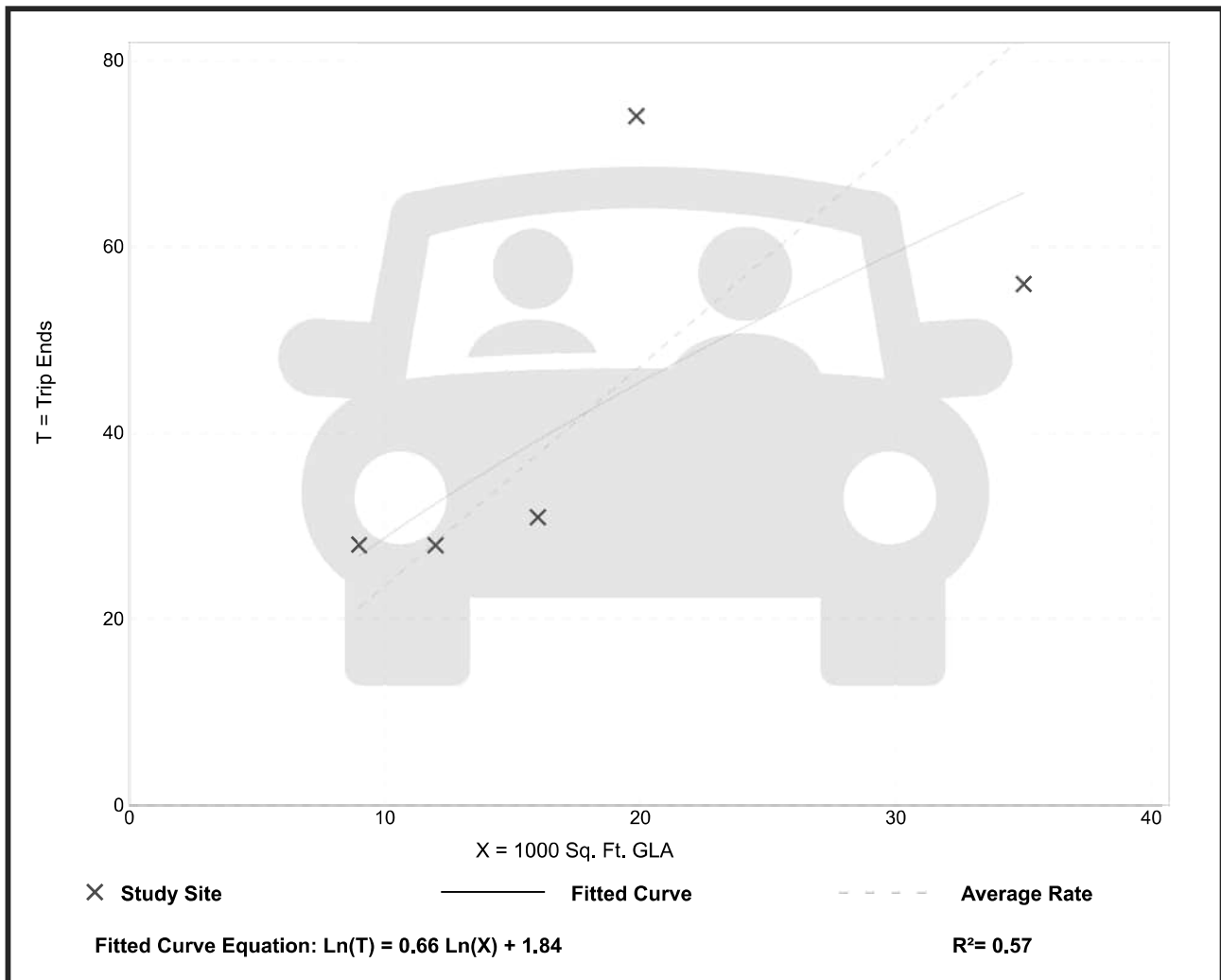
Vehicle Trip Ends vs: 1000 Sq. Ft. GLA
 On a: Weekday,
 Peak Hour of Adjacent Street Traffic,
 One Hour Between 7 and 9 a.m.
 Setting/Location: General Urban/Suburban
 Number of Studies: 5
 Avg. 1000 Sq. Ft. GLA: 18
 Directional Distribution: 60% entering, 40% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
2.36	1.60 - 3.73	0.94

Data Plot and Equation

Caution – Small Sample Size



Strip Retail Plaza (<40k) (822)

Vehicle Trip Ends vs: 1000 Sq. Ft. GLA
On a: Weekday

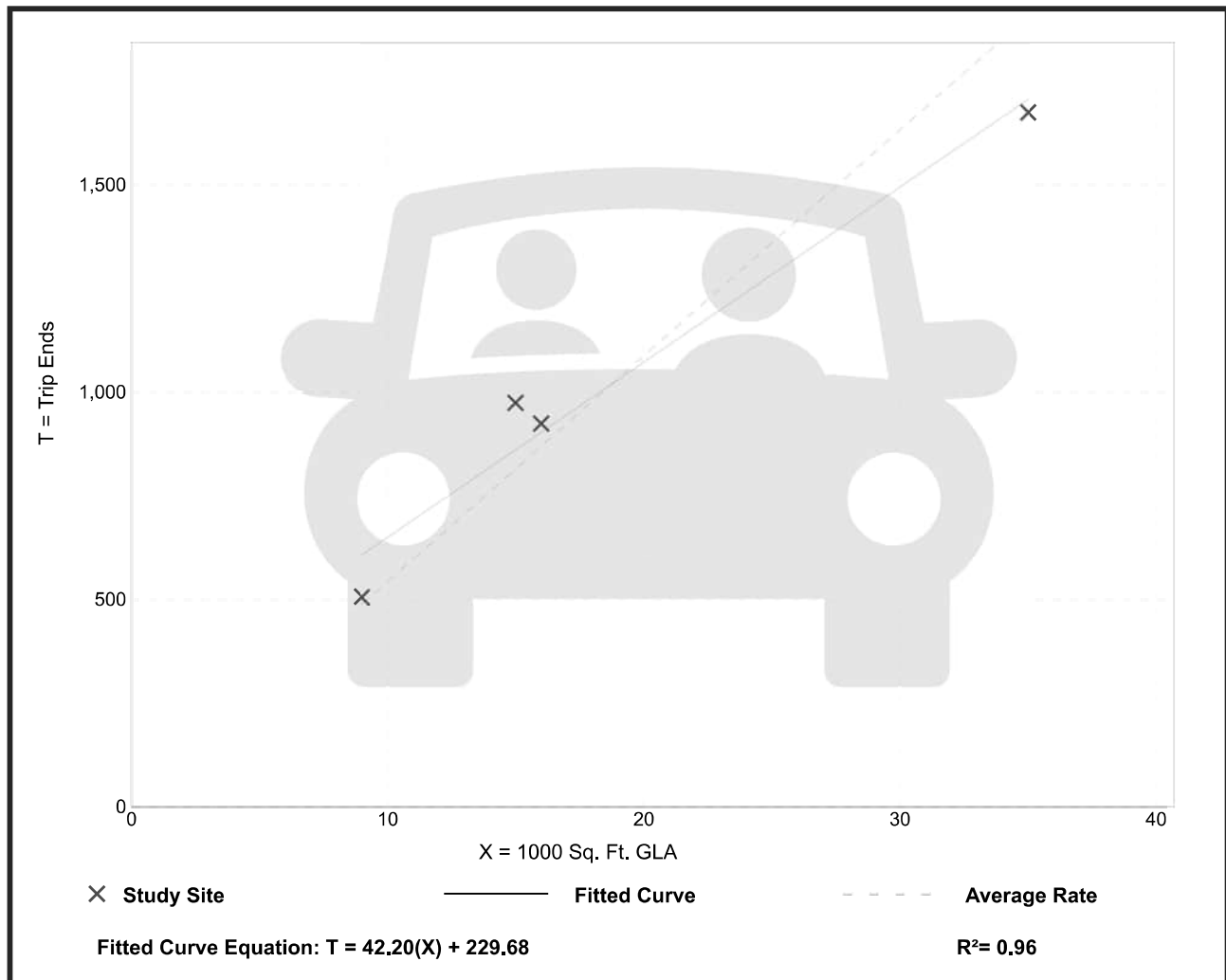
Setting/Location: General Urban/Suburban
Number of Studies: 4
Avg. 1000 Sq. Ft. GLA: 19
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
54.45	47.86 - 65.07	7.81

Data Plot and Equation

Caution – Small Sample Size



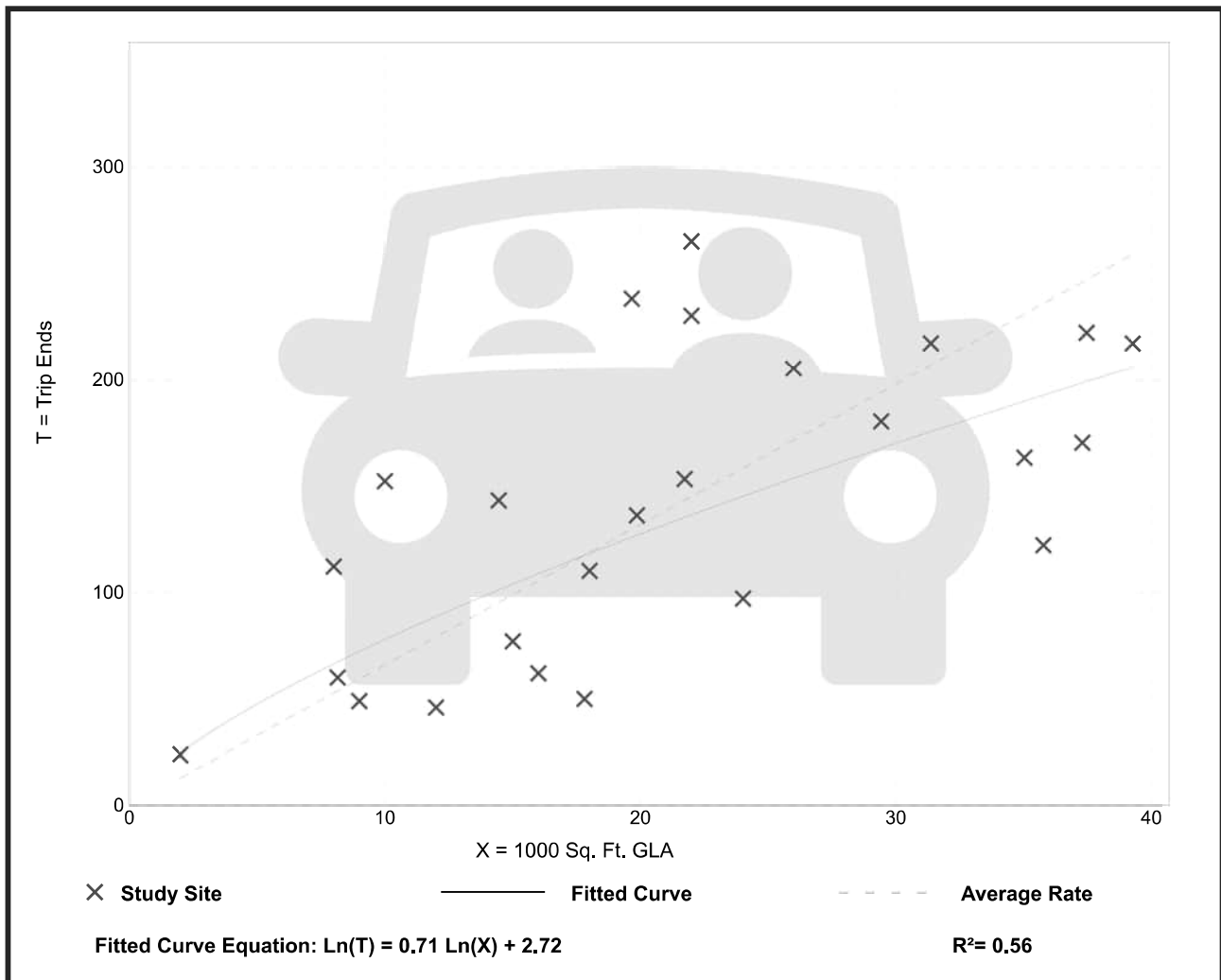
Strip Retail Plaza (<40k) (822)

Vehicle Trip Ends vs: 1000 Sq. Ft. GLA
 On a: Weekday,
 Peak Hour of Adjacent Street Traffic,
 One Hour Between 4 and 6 p.m.
 Setting/Location: General Urban/Suburban
 Number of Studies: 25
 Avg. 1000 Sq. Ft. GLA: 21
 Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
6.59	2.81 - 15.20	2.94

Data Plot and Equation



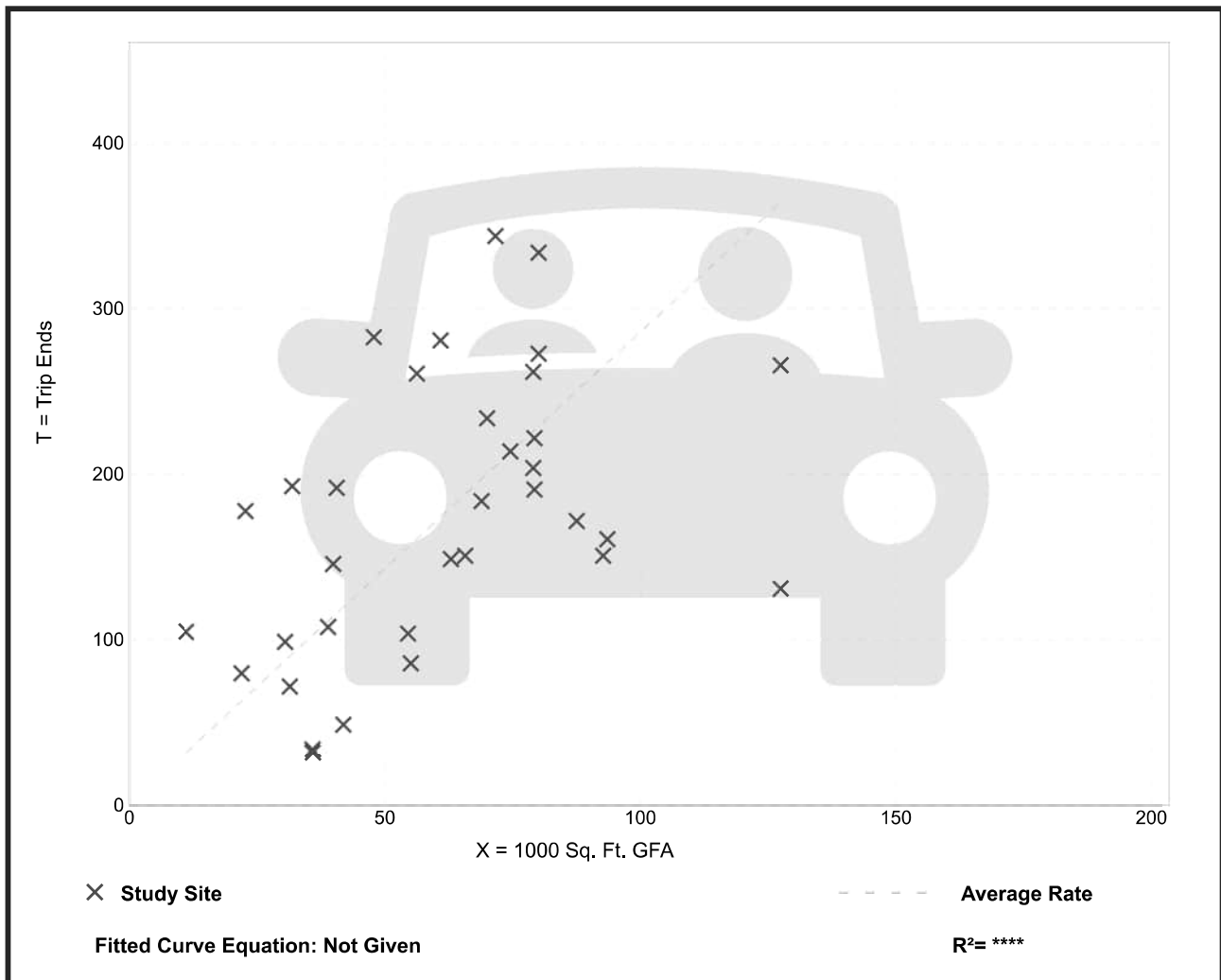
Supermarket (850)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
 On a: Weekday,
 Peak Hour of Adjacent Street Traffic,
 One Hour Between 7 and 9 a.m.
 Setting/Location: General Urban/Suburban
 Number of Studies: 34
 Avg. 1000 Sq. Ft. GFA: 61
 Directional Distribution: 59% entering, 41% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
2.86	0.89 - 9.35	1.45

Data Plot and Equation



Supermarket (850)

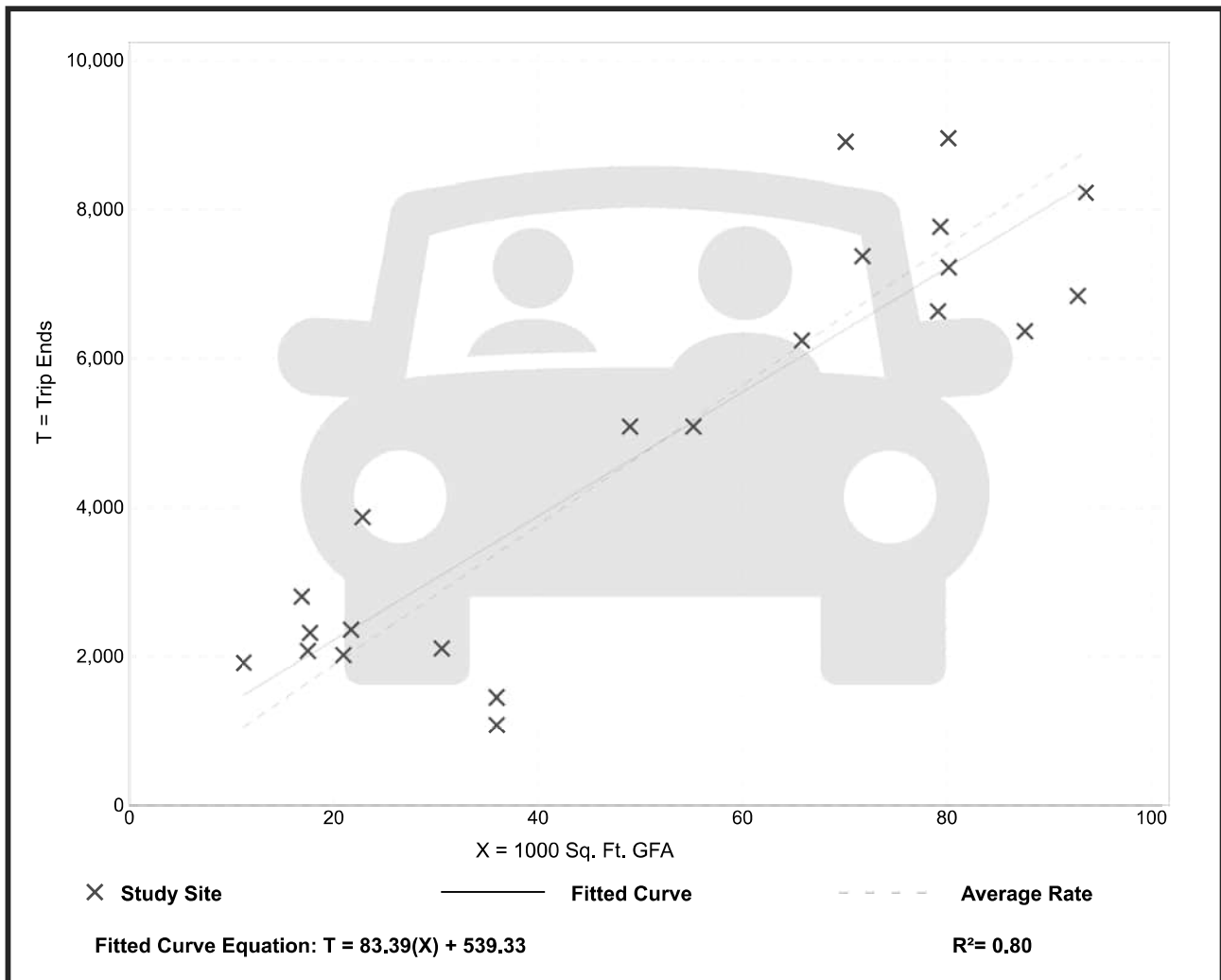
Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Weekday

Setting/Location: General Urban/Suburban
Number of Studies: 22
Avg. 1000 Sq. Ft. GFA: 52
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
93.84	30.09 - 170.24	27.05

Data Plot and Equation



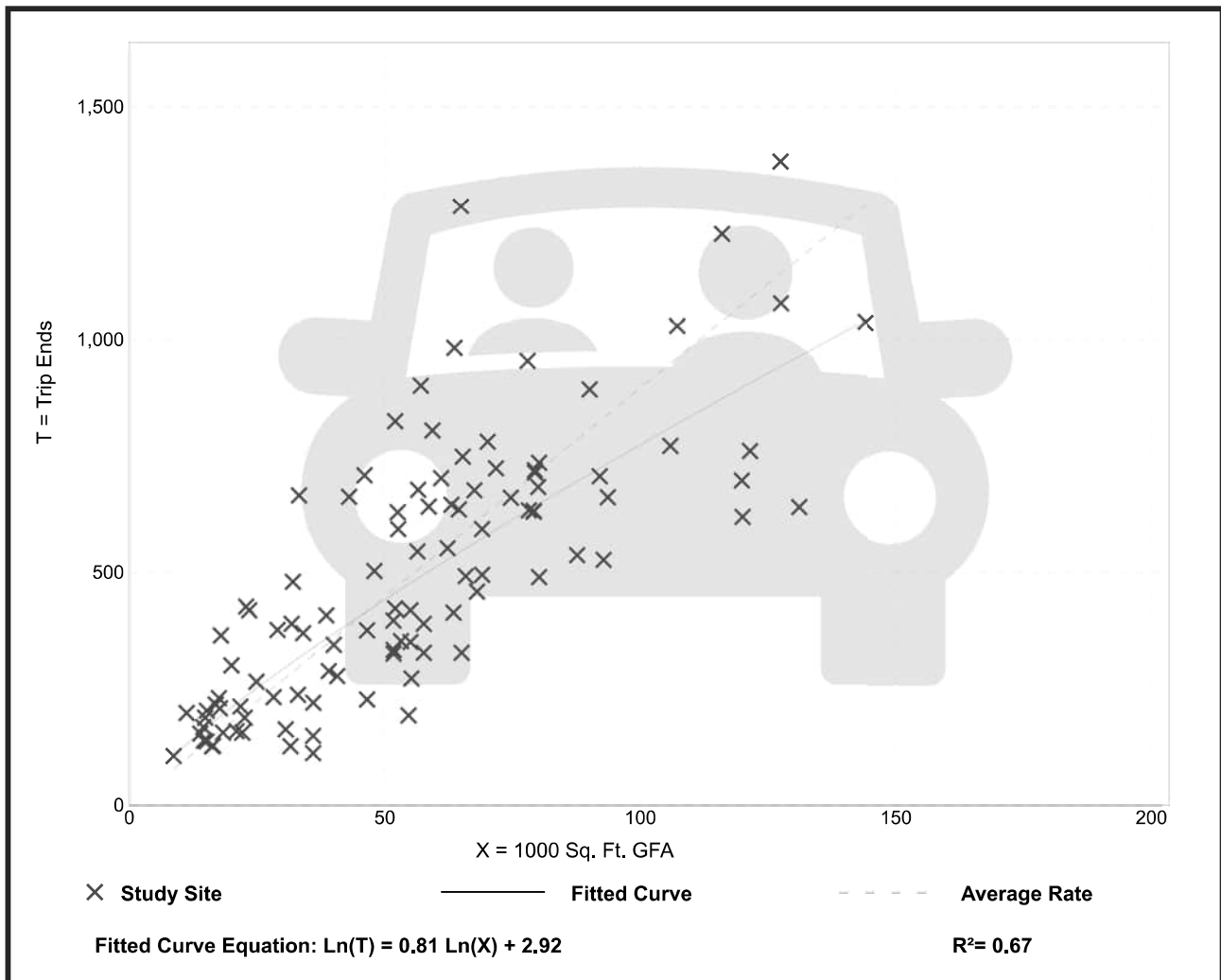
Supermarket (850)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
 On a: Weekday,
 Peak Hour of Adjacent Street Traffic,
 One Hour Between 4 and 6 p.m.
 Setting/Location: General Urban/Suburban
 Number of Studies: 104
 Avg. 1000 Sq. Ft. GFA: 55
 Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
8.95	3.11 - 20.30	3.32

Data Plot and Equation



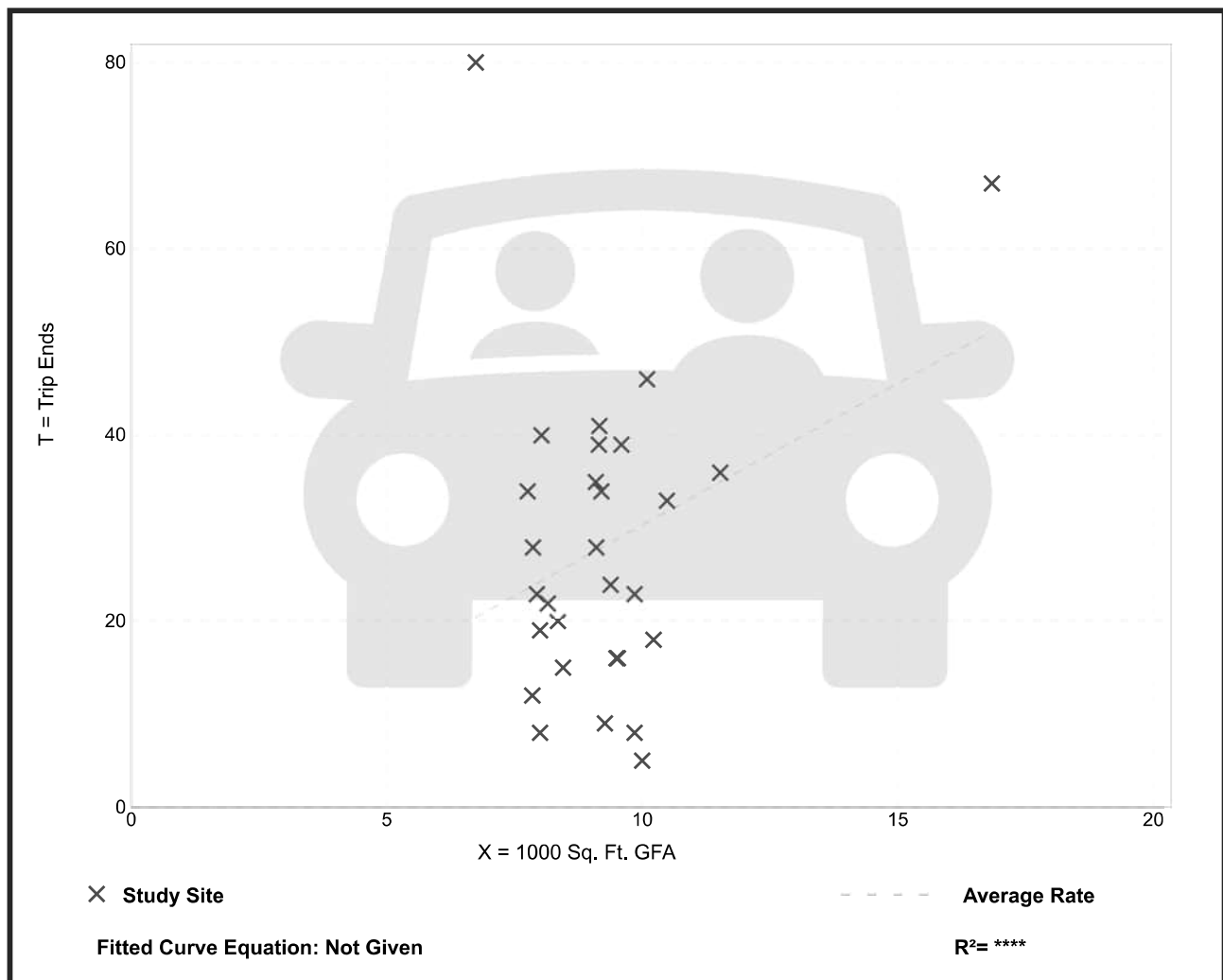
Variety Store (814)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
 On a: Weekday,
 Peak Hour of Adjacent Street Traffic,
 One Hour Between 7 and 9 a.m.
 Setting/Location: General Urban/Suburban
 Number of Studies: 29
 Avg. 1000 Sq. Ft. GFA: 9
 Directional Distribution: 55% entering, 45% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
3.04	0.50 - 11.87	1.91

Data Plot and Equation



Variety Store (814)

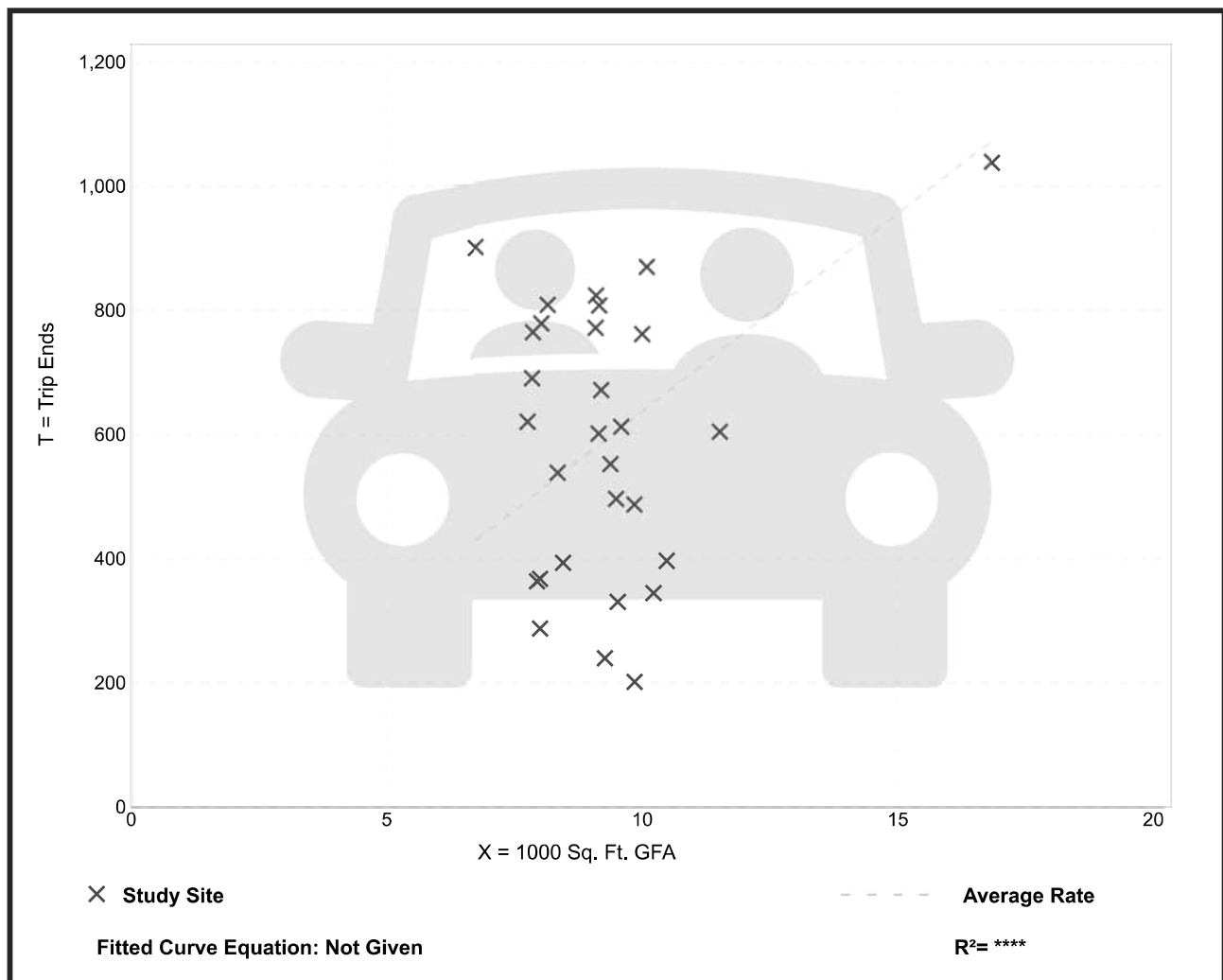
Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Weekday

Setting/Location: General Urban/Suburban
Number of Studies: 29
Avg. 1000 Sq. Ft. GFA: 9
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
63.66	20.51 - 133.68	25.23

Data Plot and Equation



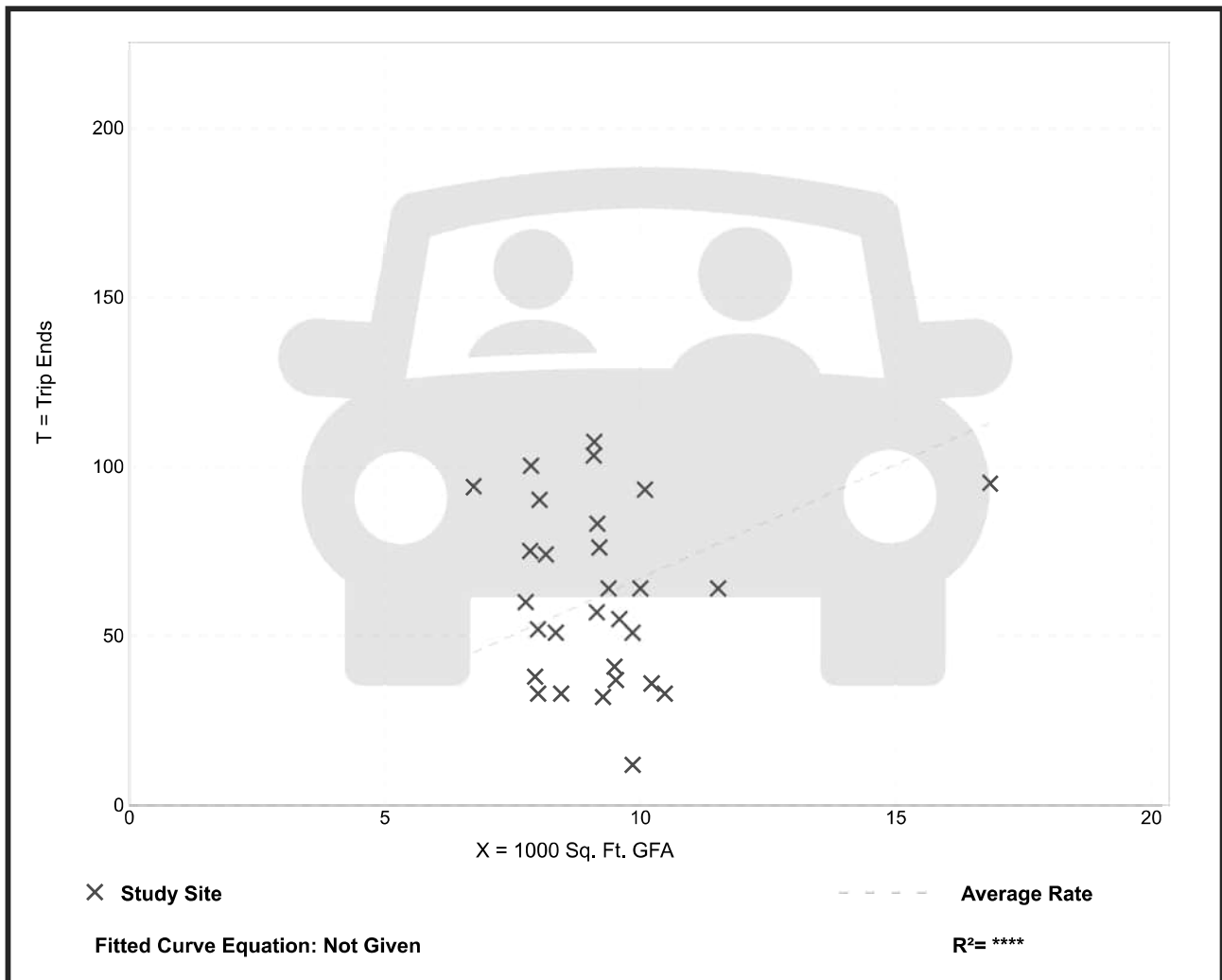
Variety Store (814)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
 On a: Weekday,
 Peak Hour of Adjacent Street Traffic,
 One Hour Between 4 and 6 p.m.
 Setting/Location: General Urban/Suburban
 Number of Studies: 29
 Avg. 1000 Sq. Ft. GFA: 9
 Directional Distribution: 51% entering, 49% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
6.70	1.22 - 13.95	3.08

Data Plot and Equation



HCM 6th Signalized Intersection Summary

1: Schrieber Rd & Old Vincennes Rd

Baseline 2048 AM Peak

06/04/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	54	548	12	36	291	139	31	7	86	169	8	29
Future Volume (veh/h)	54	548	12	36	291	139	31	7	86	169	8	29
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1841	1841	1841	1885	1885	1885	1826	1826	1826	1826	1826	1826
Adj Flow Rate, veh/h	79	806	18	53	428	204	46	10	126	249	12	43
Peak Hour Factor	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68
Percent Heavy Veh, %	4	4	4	1	1	1	5	5	5	5	5	5
Cap, veh/h	345	957	21	231	644	307	416	28	356	341	86	307
Arrive On Green	0.53	0.53	0.53	0.53	0.53	0.53	0.25	0.25	0.25	0.25	0.25	0.25
Sat Flow, veh/h	782	1793	40	670	1207	575	1317	115	1450	1223	349	1251
Grp Volume(v), veh/h	79	0	824	53	0	632	46	0	136	249	0	55
Grp Sat Flow(s),veh/h/ln	782	0	1834	670	0	1782	1317	0	1565	1223	0	1601
Q Serve(g_s), s	4.6	0.0	21.4	4.1	0.0	14.4	1.6	0.0	4.0	9.8	0.0	1.5
Cycle Q Clear(g_c), s	19.0	0.0	21.4	25.5	0.0	14.4	3.1	0.0	4.0	13.8	0.0	1.5
Prop In Lane	1.00		0.02	1.00		0.32	1.00		0.93	1.00		0.78
Lane Grp Cap(c), veh/h	345	0	978	231	0	951	416	0	384	341	0	393
V/C Ratio(X)	0.23	0.00	0.84	0.23	0.00	0.66	0.11	0.00	0.35	0.73	0.00	0.14
Avail Cap(c_a), veh/h	398	0	1103	276	0	1072	416	0	384	341	0	393
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	16.3	0.0	11.1	21.9	0.0	9.5	17.8	0.0	17.5	23.9	0.0	16.6
Incr Delay (d2), s/veh	0.3	0.0	5.5	0.5	0.0	1.3	0.1	0.0	0.6	7.8	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.4	0.0	12.7	1.1	0.0	8.2	0.8	0.0	2.5	7.0	0.0	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	16.7	0.0	16.6	22.4	0.0	10.8	17.9	0.0	18.1	31.7	0.0	16.7
LnGrp LOS	B	A	B	C	A	B	B	A	B	C	A	B
Approach Vol, veh/h	903			685			182			304		
Approach Delay, s/veh	16.6			11.7			18.0			29.0		
Approach LOS	B			B			B			C		
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	20.0			36.2			20.0			36.2		
Change Period (Y+Rc), s	* 6.2			6.2			* 6.2			6.2		
Max Green Setting (Gmax), s	* 14			33.8			* 14			33.8		
Max Q Clear Time (g_c+I1), s	6.0			23.4			15.8			27.5		
Green Ext Time (p_c), s	0.5			4.7			0.0			2.5		
Intersection Summary												
HCM 6th Ctrl Delay			16.9									
HCM 6th LOS			B									
Notes												

Intersection				
Intersection Delay, s/veh	26.6			
Intersection LOS	D			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	1041	890	259	109
Demand Flow Rate, veh/h	1083	907	271	110
Vehicles Circulating, veh/h	211	71	1091	770
Vehicles Exiting, veh/h	669	1291	203	208
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	41.1	13.0	22.9	7.9
Approach LOS	E	B	C	A
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	1083	907	271	110
Cap Entry Lane, veh/h	1113	1283	454	629
Entry HV Adj Factor	0.961	0.981	0.955	0.990
Flow Entry, veh/h	1041	890	259	109
Cap Entry, veh/h	1069	1259	433	623
V/C Ratio	0.973	0.707	0.598	0.175
Control Delay, s/veh	41.1	13.0	22.9	7.9
LOS	E	B	C	A
95th %tile Queue, veh	18	6	4	1

HCM Signalized Intersection Capacity Analysis

3: US 150 & Old Vincennes Rd/Lawrence Banet Rd

Baseline 2048 AM Peak

06/04/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			TT			TT		TT	T		TT	T
Traffic Volume (vph)	0	0	994	0	0	620	0	889	738	0	1502	712
Future Volume (vph)	0	0	994	0	0	620	0	889	738	0	1502	712
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			4.8			4.8		6.4	6.4		6.4	6.4
Lane Util. Factor			0.88			0.88		0.95	1.00		0.95	1.00
Frt			0.85			0.85		1.00	0.85		1.00	0.85
Flt Protected			1.00			1.00		1.00	1.00		1.00	1.00
Satd. Flow (prot)			2733			2733		3406	1524		3438	1538
Flt Permitted			1.00			1.00		1.00	1.00		1.00	1.00
Satd. Flow (perm)			2733			2733		3406	1524		3438	1538
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	1035	0	0	646	0	926	769	0	1565	742
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	419	0	0	404
Lane Group Flow (vph)	0	0	1035	0	0	646	0	926	350	0	1565	338
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	6%	6%	6%	5%	5%	5%
Turn Type			Prot			Prot		NA	Perm		NA	Perm
Protected Phases			7			3		2			6	
Permitted Phases									2			6
Actuated Green, G (s)			24.2			24.2		29.6	29.6		29.6	29.6
Effective Green, g (s)			24.2			24.2		29.6	29.6		29.6	29.6
Actuated g/C Ratio			0.37			0.37		0.46	0.46		0.46	0.46
Clearance Time (s)			4.8			4.8		6.4	6.4		6.4	6.4
Vehicle Extension (s)			3.0			3.0		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)			1017			1017		1551	694		1565	700
v/s Ratio Prot			c0.38			0.24		0.27			c0.46	
v/s Ratio Perm									0.23			0.22
v/c Ratio			1.02			0.64		0.60	0.50		1.00	0.48
Uniform Delay, d1			20.4			16.8		13.2	12.5		17.7	12.4
Progression Factor			1.00			1.00		1.00	1.00		1.00	1.00
Incremental Delay, d2			32.7			1.3		1.7	2.6		22.8	2.4
Delay (s)			53.1			18.1		14.9	15.1		40.5	14.7
Level of Service			D			B		B	B		D	B
Approach Delay (s)		53.1			18.1			15.0			32.2	
Approach LOS		D			B			B			C	
Intersection Summary												
HCM 2000 Control Delay			29.3			HCM 2000 Level of Service			C			
HCM 2000 Volume to Capacity ratio			1.01									
Actuated Cycle Length (s)			65.0			Sum of lost time (s)			11.2			
Intersection Capacity Utilization			85.6%			ICU Level of Service			E			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

4: US 150 & NB U-Turn

Baseline 2048 AM Peak
06/04/2024



Movement	EBL	EBR	NBU	NBL	NBT	SBT	SBR
Lane Configurations			AA		↑↑	↑↑	
Traffic Volume (vph)	0	0	992	0	517	1222	0
Future Volume (vph)	0	0	992	0	517	1222	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			5.9		5.7	5.7	
Lane Util. Factor			0.97		0.95	0.95	
Frt			1.00		1.00	1.00	
Flt Protected			0.95		1.00	1.00	
Satd. Flow (prot)			3303		3406	3438	
Flt Permitted			0.95		1.00	1.00	
Satd. Flow (perm)			3303		3406	3438	
Peak-hour factor, PHF	0.90	0.90	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	1033	0	539	1273	0
RTOR Reduction (vph)	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	1033	0	539	1273	0
Heavy Vehicles (%)	2%	2%	6%	6%	6%	5%	5%
Turn Type			Prot		NA	NA	
Protected Phases			5		2	6	
Permitted Phases							
Actuated Green, G (s)			25.0		70.0	33.4	
Effective Green, g (s)			25.0		70.0	33.4	
Actuated g/C Ratio			0.36		1.00	0.48	
Clearance Time (s)			5.9		5.7	5.7	
Vehicle Extension (s)			3.0		3.0	3.0	
Lane Grp Cap (vph)			1179		3406	1640	
v/s Ratio Prot			c0.31		0.16	c0.37	
v/s Ratio Perm							
v/c Ratio			0.88		0.16	0.78	
Uniform Delay, d1			21.1		0.0	15.2	
Progression Factor			1.00		1.00	1.53	
Incremental Delay, d2			7.5		0.1	2.9	
Delay (s)			28.6		0.1	26.1	
Level of Service			C		A	C	
Approach Delay (s)	0.0				18.8	26.1	
Approach LOS	A				B	C	
Intersection Summary							
HCM 2000 Control Delay			22.1		HCM 2000 Level of Service		C
HCM 2000 Volume to Capacity ratio			0.82				
Actuated Cycle Length (s)			70.0		Sum of lost time (s)		11.6
Intersection Capacity Utilization			71.6%		ICU Level of Service		C
Analysis Period (min)			15				
c Critical Lane Group							

HCM Signalized Intersection Capacity Analysis

5: US 150 & SB U-Turn

Baseline 2048 AM Peak

06/03/2024

Movement	WBL	WBR	NBT	NBR	SBU	SBL	SBT
Lane Configurations			↑↑		↓↓		↑↑
Traffic Volume (vph)	0	0	1080	0	547	0	1949
Future Volume (vph)	0	0	1080	0	547	0	1949
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			5.7		5.9		5.7
Lane Util. Factor			0.95		0.97		0.95
Frt			1.00		1.00		1.00
Flt Protected			1.00		0.95		1.00
Satd. Flow (prot)			3406		3335		3438
Flt Permitted			1.00		0.95		1.00
Satd. Flow (perm)			3406		3335		3438
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	1125	0	570	0	2030
RTOR Reduction (vph)	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	1125	0	570	0	2030
Heavy Vehicles (%)	6%	6%	6%	6%	5%	5%	5%
Turn Type			NA		Prot		NA
Protected Phases			2		1		6
Permitted Phases							
Actuated Green, G (s)			41.6		16.8		70.0
Effective Green, g (s)			41.6		16.8		70.0
Actuated g/C Ratio			0.59		0.24		1.00
Clearance Time (s)			5.7		5.9		5.7
Vehicle Extension (s)			3.0		3.0		3.0
Lane Grp Cap (vph)			2024		800		3438
v/s Ratio Prot			0.33		0.17		0.59
v/s Ratio Perm							
v/c Ratio			0.56		0.71		0.59
Uniform Delay, d1			8.6		24.4		0.0
Progression Factor			1.12		1.00		1.00
Incremental Delay, d2			0.9		3.0		0.8
Delay (s)			10.5		27.4		0.8
Level of Service			B		C		A
Approach Delay (s)	0.0		10.5				6.6
Approach LOS	A		B				A
Intersection Summary							
HCM 2000 Control Delay			7.8		HCM 2000 Level of Service		A
HCM 2000 Volume to Capacity ratio			0.71				
Actuated Cycle Length (s)			70.0		Sum of lost time (s)		11.6
Intersection Capacity Utilization			58.6%		ICU Level of Service		B
Analysis Period (min)			15				
c Critical Lane Group							

Intersection				
Intersection Delay, s/veh	10.7			
Intersection LOS	B			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	858	139	112	567
Demand Flow Rate, veh/h	883	145	116	600
Vehicles Circulating, veh/h	49	720	803	210
Vehicles Exiting, veh/h	761	199	129	655
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	11.8	8.3	8.5	10.0
Approach LOS	B	A	A	B
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	883	145	116	600
Cap Entry Lane, veh/h	1313	662	608	1114
Entry HV Adj Factor	0.971	0.959	0.964	0.945
Flow Entry, veh/h	858	139	112	567
Cap Entry, veh/h	1275	635	586	1052
V/C Ratio	0.673	0.219	0.191	0.539
Control Delay, s/veh	11.8	8.3	8.5	10.0
LOS	B	A	A	B
95th %tile Queue, veh	6	1	1	3

Intersection			
Intersection Delay, s/veh	4.0		
Intersection LOS	A		
Approach	WB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	151	190	143
Demand Flow Rate, veh/h	154	194	146
Vehicles Circulating, veh/h	57	86	109
Vehicles Exiting, veh/h	223	169	102
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	3.8	4.2	4.0
Approach LOS	A	A	A
Lane	Left	Left	Left
Designated Moves	LR	TR	LT
Assumed Moves	LR	TR	LT
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	154	194	146
Cap Entry Lane, veh/h	1302	1264	1235
Entry HV Adj Factor	0.981	0.979	0.978
Flow Entry, veh/h	151	190	143
Cap Entry, veh/h	1277	1237	1208
V/C Ratio	0.118	0.153	0.118
Control Delay, s/veh	3.8	4.2	4.0
LOS	A	A	A
95th %tile Queue, veh	0	1	0

Intersection						
Int Delay, s/veh	3.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	161	4	125	245	7	83
Future Vol, veh/h	161	4	125	245	7	83
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	77	77	77	77	77	77
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	209	5	162	318	9	108

Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	214	0	854	212
Stage 1	-	-	-	-	212	-
Stage 2	-	-	-	-	642	-
Critical Hdwy	-	-	4.11	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	-	-	2.209	-	3.509	3.309
Pot Cap-1 Maneuver	-	-	1362	-	330	831
Stage 1	-	-	-	-	826	-
Stage 2	-	-	-	-	526	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1362	-	282	831
Mov Cap-2 Maneuver	-	-	-	-	282	-
Stage 1	-	-	-	-	826	-
Stage 2	-	-	-	-	450	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.7	10.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	722	-	-	1362	-
HCM Lane V/C Ratio	0.162	-	-	0.119	-
HCM Control Delay (s)	10.9	-	-	8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.6	-	-	0.4	-

HCM 6th Signalized Intersection Summary

9: US 150 & Luther Road

Baseline 2048 AM Peak
06/03/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	118	113	19	30	138	10	15	448	54	21	1173	214
Future Volume (veh/h)	118	113	19	30	138	10	15	448	54	21	1173	214
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1885	1885	1885	1796	1796	1796	1856	1856	1856
Adj Flow Rate, veh/h	124	119	20	32	145	11	16	472	57	22	1235	225
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	1	1	1	7	7	7	3	3	3
Cap, veh/h	206	151	23	96	297	21	33	1744	778	44	1822	813
Arrive On Green	0.20	0.20	0.20	0.20	0.20	0.20	0.02	0.51	0.51	0.02	0.52	0.52
Sat Flow, veh/h	660	769	118	184	1507	105	1711	3413	1522	1767	3526	1572
Grp Volume(v), veh/h	263	0	0	188	0	0	16	472	57	22	1235	225
Grp Sat Flow(s),veh/h/ln	1547	0	0	1796	0	0	1711	1706	1522	1767	1763	1572
Q Serve(g_s), s	5.0	0.0	0.0	0.0	0.0	0.0	0.6	5.5	1.3	0.9	18.2	5.6
Cycle Q Clear(g_c), s	11.4	0.0	0.0	6.4	0.0	0.0	0.6	5.5	1.3	0.9	18.2	5.6
Prop In Lane	0.47		0.08	0.17		0.06	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	380	0	0	414	0	0	33	1744	778	44	1822	813
V/C Ratio(X)	0.69	0.00	0.00	0.45	0.00	0.00	0.49	0.27	0.07	0.50	0.68	0.28
Avail Cap(c_a), veh/h	429	0	0	471	0	0	137	1744	778	141	1822	813
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.99	0.99	0.99	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.0	0.0	0.0	25.1	0.0	0.0	34.0	9.7	8.7	33.7	12.6	9.5
Incr Delay (d2), s/veh	4.0	0.0	0.0	0.8	0.0	0.0	10.8	0.4	0.2	8.6	2.1	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	7.9	0.0	0.0	5.0	0.0	0.0	0.6	3.0	0.7	0.8	9.8	3.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	31.0	0.0	0.0	25.9	0.0	0.0	44.8	10.1	8.9	42.3	14.6	10.4
LnGrp LOS	C	A	A	C	A	A	D	B	A	D	B	B
Approach Vol, veh/h	263		188			545			1482			
Approach Delay, s/veh	31.0		25.9			11.0			14.4			
Approach LOS	C		C			B			B			
Timer - Assigned Phs	1	2	4		5	6	8					
Phs Duration (G+Y+Rc), s	7.1	42.2	20.7		6.7	42.6	20.7					
Change Period (Y+Rc), s	5.4	* 6.4	* 6.9		5.4	* 6.4	* 6.9					
Max Green Setting (Gmax), s	5.6	* 30	* 16		5.6	* 30	* 16					
Max Q Clear Time (g_c+I1), s	2.9	7.5	13.4		2.6	20.2	8.4					
Green Ext Time (p_c), s	0.0	2.9	0.4		0.0	5.6	0.6					
Intersection Summary												
HCM 6th Ctrl Delay			16.3									
HCM 6th LOS			B									
Notes												

HCM 6th Signalized Intersection Summary

1: Schrieber Rd & Old Vincennes Rd

Baseline 2048 PM Peak

06/04/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	121	355	35	105	367	366	27	6	76	421	19	116
Future Volume (veh/h)	121	355	35	105	367	366	27	6	76	421	19	116
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1856	1856	1856	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	144	423	42	125	437	436	32	7	90	501	23	138
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	3	3	3	1	1	1	1	1	1	1	1	1
Cap, veh/h	120	714	71	340	372	371	483	42	545	542	85	509
Arrive On Green	0.43	0.43	0.43	0.43	0.43	0.43	0.36	0.36	0.36	0.36	0.36	0.36
Sat Flow, veh/h	630	1661	165	935	866	864	1235	117	1499	1309	233	1400
Grp Volume(v), veh/h	144	0	465	125	0	873	32	0	97	501	0	161
Grp Sat Flow(s),veh/h/ln	630	0	1826	935	0	1730	1235	0	1615	1309	0	1633
Q Serve(g_s), s	0.0	0.0	11.7	7.1	0.0	25.8	1.1	0.0	2.4	19.4	0.0	4.2
Cycle Q Clear(g_c), s	25.8	0.0	11.7	18.8	0.0	25.8	5.3	0.0	2.4	21.8	0.0	4.2
Prop In Lane	1.00		0.09	1.00		0.50	1.00		0.93	1.00		0.86
Lane Grp Cap(c), veh/h	120	0	785	340	0	744	483	0	587	542	0	593
V/C Ratio(X)	1.20	0.00	0.59	0.37	0.00	1.17	0.07	0.00	0.17	0.92	0.00	0.27
Avail Cap(c_a), veh/h	120	0	785	340	0	744	483	0	587	542	0	593
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	30.0	0.0	13.1	20.3	0.0	17.1	15.4	0.0	12.9	21.8	0.0	13.5
Incr Delay (d2), s/veh	145.6	0.0	1.2	0.7	0.0	92.1	0.1	0.0	0.1	21.7	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	11.7	0.0	7.8	2.7	0.0	40.4	0.5	0.0	1.5	15.3	0.0	2.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	175.6	0.0	14.3	20.9	0.0	109.2	15.4	0.0	13.1	43.6	0.0	13.7
LnGrp LOS	F	A	B	C	A	F	B	A	B	D	A	B
Approach Vol, veh/h	609			998			129			662		
Approach Delay, s/veh	52.4			98.1			13.7			36.3		
Approach LOS	D			F			B			D		
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	28.0			32.0			28.0			32.0		
Change Period (Y+Rc), s	* 6.2			6.2			* 6.2			6.2		
Max Green Setting (Gmax), s	* 22			25.8			* 22			25.8		
Max Q Clear Time (g_c+I1), s	7.3			27.8			23.8			27.8		
Green Ext Time (p_c), s	0.5			0.0			0.0			0.0		
Intersection Summary												
HCM 6th Ctrl Delay	64.9											
HCM 6th LOS	E											
Notes												

Intersection				
Intersection Delay, s/veh	146.7			
Intersection LOS	F			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	1232	1636	182	265
Demand Flow Rate, veh/h	1281	1669	191	267
Vehicles Circulating, veh/h	358	76	1414	1237
Vehicles Exiting, veh/h	1146	1529	225	508
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	174.9	157.4	29.6	30.5
Approach LOS	F	F	D	D
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	1281	1669	191	267
Cap Entry Lane, veh/h	958	1277	326	391
Entry HV Adj Factor	0.961	0.980	0.954	0.992
Flow Entry, veh/h	1232	1636	182	265
Cap Entry, veh/h	921	1252	311	388
V/C Ratio	1.337	1.307	0.585	0.683
Control Delay, s/veh	174.9	157.4	29.6	30.5
LOS	F	F	D	D
95th %tile Queue, veh	48	59	3	5

HCM Signalized Intersection Capacity Analysis

3: US 150 & Old Vincennes Rd/Lawrence Banet Rd

Baseline 2048 PM Peak

06/04/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			TT			TT		TT	T		TT	T
Traffic Volume (vph)	0	0	1180	0	0	858	0	1964	893	0	1236	1310
Future Volume (vph)	0	0	1180	0	0	858	0	1964	893	0	1236	1310
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			4.8			4.8		6.4	6.4		6.4	6.4
Lane Util. Factor			0.88			0.88		0.95	1.00		0.95	1.00
Frt			0.85			0.85		1.00	0.85		1.00	0.85
Flt Protected			1.00			1.00		1.00	1.00		1.00	1.00
Satd. Flow (prot)			2787			2814		3505	1568		3471	1553
Flt Permitted			1.00			1.00		1.00	1.00		1.00	1.00
Satd. Flow (perm)			2787			2814		3505	1568		3471	1553
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	1229	0	0	894	0	2046	930	0	1288	1365
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	380	0	0	550
Lane Group Flow (vph)	0	0	1229	0	0	894	0	2046	550	0	1288	815
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	3%	3%	3%	4%	4%	4%
Turn Type			Prot			Prot		NA	Perm		NA	Perm
Protected Phases			7			3		2			6	
Permitted Phases									2			6
Actuated Green, G (s)			34.2			34.2		44.6	44.6		44.6	44.6
Effective Green, g (s)			34.2			34.2		44.6	44.6		44.6	44.6
Actuated g/C Ratio			0.38			0.38		0.50	0.50		0.50	0.50
Clearance Time (s)			4.8			4.8		6.4	6.4		6.4	6.4
Vehicle Extension (s)			3.0			3.0		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)			1059			1069		1736	777		1720	769
v/s Ratio Prot			c0.44			0.32		c0.58			0.37	
v/s Ratio Perm									0.35			0.52
v/c Ratio			1.16			0.84		1.18	0.71		0.75	1.06
Uniform Delay, d1			27.9			25.4		22.7	17.6		18.2	22.7
Progression Factor			1.00			1.00		0.90	1.68		0.64	6.74
Incremental Delay, d2			82.9			5.8		82.0	1.6		1.5	38.9
Delay (s)			110.8			31.2		102.4	31.2		13.1	191.8
Level of Service			F			C		F	C		B	F
Approach Delay (s)		110.8			31.2			80.2			105.0	
Approach LOS		F			C			F			F	
Intersection Summary												
HCM 2000 Control Delay			87.9			HCM 2000 Level of Service			F			
HCM 2000 Volume to Capacity ratio			1.17									
Actuated Cycle Length (s)			90.0			Sum of lost time (s)			11.2			
Intersection Capacity Utilization			93.6%			ICU Level of Service			F			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

4: US 150 & NB U-Turn

Baseline 2048 PM Peak
06/04/2024



Movement	EBL	EBR	NBU	NBL	NBT	SBT	SBR
Lane Configurations			AA		↑↑	↑↑	
Traffic Volume (vph)	0	0	1641	0	1181	905	0
Future Volume (vph)	0	0	1641	0	1181	905	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			5.9		5.7	5.7	
Lane Util. Factor			0.97		0.95	0.95	
Frt			1.00		1.00	1.00	
Flt Protected			0.95		1.00	1.00	
Satd. Flow (prot)			3400		3505	3471	
Flt Permitted			0.95		1.00	1.00	
Satd. Flow (perm)			3400		3505	3471	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	1709	0	1230	943	0
RTOR Reduction (vph)	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	1709	0	1230	943	0
Heavy Vehicles (%)	2%	2%	3%	3%	3%	4%	4%
Turn Type			Prot		NA	NA	
Protected Phases			5		2	6	
Permitted Phases							
Actuated Green, G (s)			49.3		90.0	29.1	
Effective Green, g (s)			49.3		90.0	29.1	
Actuated g/C Ratio			0.55		1.00	0.32	
Clearance Time (s)			5.9		5.7	5.7	
Vehicle Extension (s)			3.0		3.0	3.0	
Lane Grp Cap (vph)			1862		3505	1122	
v/s Ratio Prot			c0.50		0.35	c0.27	
v/s Ratio Perm							
v/c Ratio			0.92		0.35	0.84	
Uniform Delay, d1			18.5		0.0	28.3	
Progression Factor			0.83		1.00	1.36	
Incremental Delay, d2			0.8		0.0	6.3	
Delay (s)			16.1		0.0	44.8	
Level of Service			B		A	D	
Approach Delay (s)	0.0				9.4	44.8	
Approach LOS	A				A	D	
Intersection Summary							
HCM 2000 Control Delay			18.0		HCM 2000 Level of Service		B
HCM 2000 Volume to Capacity ratio			0.89				
Actuated Cycle Length (s)			90.0		Sum of lost time (s)		11.6
Intersection Capacity Utilization			81.3%		ICU Level of Service		D
Analysis Period (min)			15				
c Critical Lane Group							

HCM Signalized Intersection Capacity Analysis

5: US 150 & SB U-Turn

Baseline 2048 PM Peak
06/03/2024

Movement	WBL	WBR	NBT	NBR	SBU	SBL	SBT
Lane Configurations			↑↑		↑↑		↑↑
Traffic Volume (vph)	0	0	2309	0	548	0	1868
Future Volume (vph)	0	0	2309	0	548	0	1868
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			5.7		5.9		5.7
Lane Util. Factor			0.95		0.97		0.95
Frt			1.00		1.00		1.00
Flt Protected			1.00		0.95		1.00
Satd. Flow (prot)			3505		3367		3471
Flt Permitted			1.00		0.95		1.00
Satd. Flow (perm)			3505		3367		3471
Peak-hour factor, PHF	0.90	0.90	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	2405	0	571	0	1946
RTOR Reduction (vph)	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	2405	0	571	0	1946
Heavy Vehicles (%)	2%	2%	3%	3%	4%	4%	4%
Turn Type			NA		Prot		NA
Protected Phases			2		1		6
Permitted Phases							
Actuated Green, G (s)			62.3		16.1		90.0
Effective Green, g (s)			62.3		16.1		90.0
Actuated g/C Ratio			0.69		0.18		1.00
Clearance Time (s)			5.7		5.9		5.7
Vehicle Extension (s)			3.0		3.0		3.0
Lane Grp Cap (vph)			2426		602		3471
v/s Ratio Prot			c0.69		c0.17		0.56
v/s Ratio Perm							
v/c Ratio			0.99		0.95		0.56
Uniform Delay, d1			13.6		36.5		0.0
Progression Factor			0.53		0.82		1.00
Incremental Delay, d2			7.5		3.8		0.3
Delay (s)			14.8		33.8		0.3
Level of Service			B		C		A
Approach Delay (s)	0.0		14.8				7.9
Approach LOS	A		B				A
Intersection Summary							
HCM 2000 Control Delay			11.3		HCM 2000 Level of Service		B
HCM 2000 Volume to Capacity ratio			0.98				
Actuated Cycle Length (s)			90.0		Sum of lost time (s)		11.6
Intersection Capacity Utilization			89.1%		ICU Level of Service		E
Analysis Period (min)			15				
c Critical Lane Group							

Intersection				
Intersection Delay, s/veh	17.5			
Intersection LOS	C			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	1038	226	246	632
Demand Flow Rate, veh/h	1070	235	254	670
Vehicles Circulating, veh/h	50	844	885	427
Vehicles Exiting, veh/h	1047	295	235	652
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	18.0	12.7	14.3	19.7
Approach LOS	C	B	B	C
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	1070	235	254	670
Cap Entry Lane, veh/h	1311	583	560	893
Entry HV Adj Factor	0.971	0.960	0.970	0.943
Flow Entry, veh/h	1038	226	246	632
Cap Entry, veh/h	1273	560	543	841
V/C Ratio	0.816	0.403	0.454	0.751
Control Delay, s/veh	18.0	12.7	14.3	19.7
LOS	C	B	B	C
95th %tile Queue, veh	10	2	2	7

Intersection			
Intersection Delay, s/veh	9.3		
Intersection LOS	A		
Approach	WB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	576	590	351
Demand Flow Rate, veh/h	587	601	358
Vehicles Circulating, veh/h	220	206	360
Vehicles Exiting, veh/h	587	512	447
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	9.7	9.7	8.0
Approach LOS	A	A	A
Lane	Left	Left	Left
Designated Moves	LR	TR	LT
Assumed Moves	LR	TR	LT
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	587	601	358
Cap Entry Lane, veh/h	1103	1118	956
Entry HV Adj Factor	0.981	0.981	0.981
Flow Entry, veh/h	576	590	351
Cap Entry, veh/h	1082	1097	937
V/C Ratio	0.532	0.537	0.375
Control Delay, s/veh	9.7	9.7	8.0
LOS	A	A	A
95th %tile Queue, veh	3	3	2

Intersection						
Int Delay, s/veh	9.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	105	8	296	92	9	363
Future Vol, veh/h	105	8	296	92	9	363
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	77	77	77	77	77	77
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	136	10	384	119	12	471
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	146	0	1028	141
Stage 1	-	-	-	-	141	-
Stage 2	-	-	-	-	887	-
Critical Hdwy	-	-	4.11	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	-	-	2.209	-	3.509	3.309
Pot Cap-1 Maneuver	-	-	1442	-	260	910
Stage 1	-	-	-	-	888	-
Stage 2	-	-	-	-	404	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1442	-	186	910
Mov Cap-2 Maneuver	-	-	-	-	186	-
Stage 1	-	-	-	-	888	-
Stage 2	-	-	-	-	289	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		6.4		15.1	
HCM LOS	C					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	832	-	-	1442	-	
HCM Lane V/C Ratio	0.581	-	-	0.267	-	
HCM Control Delay (s)	15.1	-	-	8.4	0	
HCM Lane LOS	C	-	-	A	A	
HCM 95th %tile Q(veh)	3.8	-	-	1.1	-	

HCM 6th Signalized Intersection Summary

9: US 150 & Luther Road

Baseline 2048 PM Peak
06/03/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↔	↕	↔	↔	↕	↔
Traffic Volume (veh/h)	400	71	9	52	73	38	52	1166	43	18	844	321
Future Volume (veh/h)	400	71	9	52	73	38	52	1166	43	18	844	321
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885	1841	1841	1841	1856	1856	1856
Adj Flow Rate, veh/h	408	72	9	53	74	39	53	1190	44	18	861	328
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	1	1	1	1	1	1	4	4	4	3	3	3
Cap, veh/h	499	75	9	237	322	155	72	1390	620	36	1329	593
Arrive On Green	0.37	0.37	0.37	0.37	0.37	0.37	0.04	0.40	0.40	0.02	0.38	0.38
Sat Flow, veh/h	1137	201	25	491	860	415	1753	3497	1560	1767	3526	1572
Grp Volume(v), veh/h	489	0	0	166	0	0	53	1190	44	18	861	328
Grp Sat Flow(s),veh/h/ln	1363	0	0	1766	0	0	1753	1749	1560	1767	1763	1572
Q Serve(g_s), s	25.8	0.0	0.0	0.0	0.0	0.0	2.7	28.0	1.6	0.9	18.1	14.8
Cycle Q Clear(g_c), s	31.5	0.0	0.0	5.7	0.0	0.0	2.7	28.0	1.6	0.9	18.1	14.8
Prop In Lane	0.83		0.02	0.32		0.23	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	584	0	0	714	0	0	72	1390	620	36	1329	593
V/C Ratio(X)	0.84	0.00	0.00	0.23	0.00	0.00	0.74	0.86	0.07	0.51	0.65	0.55
Avail Cap(c_a), veh/h	590	0	0	721	0	0	129	1390	620	110	1329	593
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.95	0.95	0.95	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.4	0.0	0.0	19.4	0.0	0.0	42.7	24.8	16.8	43.7	23.1	22.1
Incr Delay (d2), s/veh	10.2	0.0	0.0	0.2	0.0	0.0	13.3	6.6	0.2	10.7	2.5	3.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	16.9	0.0	0.0	4.3	0.0	0.0	2.5	16.9	1.0	0.9	11.6	9.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	37.6	0.0	0.0	19.5	0.0	0.0	56.0	31.4	17.0	54.3	25.6	25.8
LnGrp LOS	D	A	A	B	A	A	E	C	B	D	C	C
Approach Vol, veh/h		489			166			1287			1207	
Approach Delay, s/veh		37.6			19.5			31.9			26.1	
Approach LOS		D			B			C			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.2	42.2		40.6	9.1	40.3		40.6				
Change Period (Y+Rc), s	5.4	* 6.4		* 6.9	5.4	* 6.4		* 6.9				
Max Green Setting (Gmax), s	5.6	* 32		* 34	6.6	* 31		* 34				
Max Q Clear Time (g_c+I1), s	2.9	30.0		33.5	4.7	20.1		7.7				
Green Ext Time (p_c), s	0.0	1.1		0.2	0.0	4.7		1.0				
Intersection Summary												
HCM 6th Ctrl Delay				29.9								
HCM 6th LOS				C								
Notes												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

HCM 6th Signalized Intersection Summary

1: Schrieber Rd & Old Vincennes Rd

RCUT 2048 AM Peak
06/04/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	54	548	12	127	291	139	31	7	86	235	18	29
Future Volume (veh/h)	54	548	12	127	291	139	31	7	86	235	18	29
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1841	1841	1841	1885	1885	1885	1826	1826	1826	1826	1826	1826
Adj Flow Rate, veh/h	79	806	18	187	428	204	46	10	126	346	26	43
Peak Hour Factor	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68
Percent Heavy Veh, %	4	4	4	1	1	1	5	5	5	5	5	5
Cap, veh/h	332	951	21	218	639	305	420	30	382	356	163	269
Arrive On Green	0.53	0.53	0.53	0.53	0.53	0.53	0.26	0.26	0.26	0.26	0.26	0.26
Sat Flow, veh/h	782	1793	40	670	1207	575	1300	115	1450	1223	619	1023
Grp Volume(v), veh/h	79	0	824	187	0	632	46	0	136	346	0	69
Grp Sat Flow(s),veh/h/ln	782	0	1834	670	0	1782	1300	0	1565	1223	0	1642
Q Serve(g_s), s	4.9	0.0	23.0	8.8	0.0	15.5	1.7	0.0	4.2	11.6	0.0	1.9
Cycle Q Clear(g_c), s	20.4	0.0	23.0	31.8	0.0	15.5	3.6	0.0	4.2	15.8	0.0	1.9
Prop In Lane	1.00		0.02	1.00		0.32	1.00		0.93	1.00		0.62
Lane Grp Cap(c), veh/h	332	0	972	218	0	944	420	0	412	356	0	432
V/C Ratio(X)	0.24	0.00	0.85	0.86	0.00	0.67	0.11	0.00	0.33	0.97	0.00	0.16
Avail Cap(c_a), veh/h	332	0	972	218	0	944	420	0	412	356	0	432
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	17.7	0.0	12.0	27.7	0.0	10.3	18.4	0.0	17.8	26.0	0.0	17.0
Incr Delay (d2), s/veh	0.4	0.0	7.1	27.1	0.0	1.8	0.1	0.0	0.5	39.8	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.5	0.0	14.3	7.6	0.0	9.1	0.9	0.0	2.6	13.5	0.0	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	18.1	0.0	19.2	54.8	0.0	12.1	18.5	0.0	18.3	65.8	0.0	17.2
LnGrp LOS	B	A	B	D	A	B	B	A	B	E	A	B
Approach Vol, veh/h	903			819			182			415		
Approach Delay, s/veh	19.1			21.9			18.3			57.7		
Approach LOS	B			C			B			E		
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	22.0			38.0			22.0			38.0		
Change Period (Y+Rc), s	* 6.2			6.2			* 6.2			6.2		
Max Green Setting (Gmax), s	* 16			31.8			* 16			31.8		
Max Q Clear Time (g_c+I1), s	6.2			25.0			17.8			33.8		
Green Ext Time (p_c), s	0.6			3.5			0.0			0.0		
Intersection Summary												
HCM 6th Ctrl Delay	26.9											
HCM 6th LOS	C											
Notes												

Intersection												
Int Delay, s/veh	2.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑	↗			↗			↗
Traffic Vol, veh/h	0	841	58	0	575	162	0	0	205	0	0	12
Future Vol, veh/h	0	841	58	0	575	162	0	0	205	0	0	12
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	250	-	-	-	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	4	4	4	2	2	2	5	5	5	1	1	1
Mvmt Flow	0	1051	73	0	719	203	0	0	256	0	0	15
Major/Minor	Major1		Major2			Minor1			Minor2			
Conflicting Flow All	-	0	0	-	-	0	-	-	562	-	-	719
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	-	-	-	6.975	-	-	6.215
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	-	-	-	-3.3475	-	-	-3.3095
Pot Cap-1 Maneuver	0	-	-	0	-	-	0	0	465	0	0	430
Stage 1	0	-	-	0	-	-	0	0	-	0	0	-
Stage 2	0	-	-	0	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	-	-	-	-	-	-	-	-	465	-	-	430
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Approach	EB		WB			NB			SB			
HCM Control Delay, s	0		0			21.8			13.7			
HCM LOS						C			B			
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT	WBR	SBLn1						
Capacity (veh/h)	465	-	-	-	-	430						
HCM Lane V/C Ratio	0.551	-	-	-	-	0.035						
HCM Control Delay (s)	21.8	-	-	-	-	13.7						
HCM Lane LOS	C	-	-	-	-	B						
HCM 95th %tile Q(veh)	3.3	-	-	-	-	0.1						

HCM Signalized Intersection Capacity Analysis

3: US 150 & Old Vincennes Rd/Lawrence Banet Rd

RCUT 2048 AM Peak

06/03/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↔↔			↔↔	↔	↕↕	↔	↔	↕↕	↔
Traffic Volume (vph)	0	0	1046	0	0	641	517	426	484	275	1248	220
Future Volume (vph)	0	0	1046	0	0	641	517	426	484	275	1248	220
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			5.2			5.2	5.2	6.4	6.4	5.2	6.4	6.4
Lane Util. Factor			0.88			0.88	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.85			0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected			1.00			1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)			2733			2733	1703	3406	1524	1719	3438	1538
Flt Permitted			1.00			1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)			2733			2733	1703	3406	1524	1719	3438	1538
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	1090	0	0	668	539	444	504	286	1300	229
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	184	0	0	122
Lane Group Flow (vph)	0	0	1090	0	0	668	539	444	320	286	1300	107
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	6%	6%	6%	5%	5%	5%
Turn Type			Over			Over	Prot	NA	Perm	Prot	NA	Perm
Protected Phases			5			1	5	2		1	6	
Permitted Phases									2			6
Actuated Green, G (s)			29.6			21.9	29.6	36.5	36.5	21.9	28.8	28.8
Effective Green, g (s)			29.6			21.9	29.6	36.5	36.5	21.9	28.8	28.8
Actuated g/C Ratio			0.42			0.31	0.42	0.52	0.52	0.31	0.41	0.41
Clearance Time (s)			5.2			5.2	5.2	6.4	6.4	5.2	6.4	6.4
Vehicle Extension (s)			3.0			3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)			1155			855	720	1775	794	537	1414	632
v/s Ratio Prot			c0.40			0.24	0.32	0.13		0.17	c0.38	
v/s Ratio Perm									0.21			0.07
v/c Ratio			0.94			0.78	0.75	0.25	0.40	0.53	0.92	0.17
Uniform Delay, d1			19.4			21.9	17.1	9.2	10.1	19.8	19.5	13.0
Progression Factor			1.00			1.00	1.11	1.09	3.52	1.16	0.86	3.89
Incremental Delay, d2			14.9			4.7	3.8	0.3	1.4	0.8	9.2	0.5
Delay (s)			34.3			26.6	22.6	10.3	37.0	23.8	26.0	51.1
Level of Service			C			C	C	B	D	C	C	D
Approach Delay (s)		34.3			26.6			23.8			28.8	
Approach LOS		C			C			C			C	
Intersection Summary												
HCM 2000 Control Delay			28.2			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.93									
Actuated Cycle Length (s)			70.0			Sum of lost time (s)				11.6		
Intersection Capacity Utilization			80.8%			ICU Level of Service				D		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

4: US 150 & NB U-Turn

RCUT 2048 AM Peak
06/03/2024



Movement	EBL	EBR	NBU	NBL	NBT	SBT	SBR
Lane Configurations			AA		↑↑	↑↑	
Traffic Volume (vph)	0	0	543	0	524	1200	0
Future Volume (vph)	0	0	543	0	524	1200	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			5.9		5.7	5.7	
Lane Util. Factor			0.97		0.95	0.95	
Frt			1.00		1.00	1.00	
Flt Protected			0.95		1.00	1.00	
Satd. Flow (prot)			3303		3406	3438	
Flt Permitted			0.95		1.00	1.00	
Satd. Flow (perm)			3303		3406	3438	
Peak-hour factor, PHF	0.90	0.90	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	566	0	546	1250	0
RTOR Reduction (vph)	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	566	0	546	1250	0
Heavy Vehicles (%)	2%	2%	6%	6%	6%	5%	5%
Turn Type			Prot		NA	NA	
Protected Phases			5		2	6	
Permitted Phases							
Actuated Green, G (s)			16.8		70.0	41.6	
Effective Green, g (s)			16.8		70.0	41.6	
Actuated g/C Ratio			0.24		1.00	0.59	
Clearance Time (s)			5.9		5.7	5.7	
Vehicle Extension (s)			3.0		3.0	3.0	
Lane Grp Cap (vph)			792		3406	2043	
v/s Ratio Prot			c0.17		0.16	c0.36	
v/s Ratio Perm							
v/c Ratio			0.71		0.16	0.61	
Uniform Delay, d1			24.4		0.0	9.1	
Progression Factor			1.11		1.00	1.00	
Incremental Delay, d2			2.5		0.1	1.4	
Delay (s)			29.6		0.1	10.4	
Level of Service			C		A	B	
Approach Delay (s)	0.0				15.1	10.4	
Approach LOS	A				B	B	
Intersection Summary							
HCM 2000 Control Delay			12.6		HCM 2000 Level of Service		B
HCM 2000 Volume to Capacity ratio			0.64				
Actuated Cycle Length (s)			70.0		Sum of lost time (s)		11.6
Intersection Capacity Utilization			58.2%		ICU Level of Service		B
Analysis Period (min)			15				
c Critical Lane Group							

HCM Signalized Intersection Capacity Analysis

5: US 150 & SB U-Turn

RCUT 2048 AM Peak
06/03/2024

							
Movement	WBL	WBR	NBT	NBR	SBU	SBL	SBT
Lane Configurations			↑↑		↓↓		↑↑
Traffic Volume (vph)	0	0	1080	0	347	0	1947
Future Volume (vph)	0	0	1080	0	347	0	1947
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			5.7		5.9		5.7
Lane Util. Factor			0.95		0.97		0.95
Frt			1.00		1.00		1.00
Flt Protected			1.00		0.95		1.00
Satd. Flow (prot)			3406		3335		3438
Flt Permitted			1.00		0.95		1.00
Satd. Flow (perm)			3406		3335		3438
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	1125	0	361	0	2028
RTOR Reduction (vph)	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	1125	0	361	0	2028
Heavy Vehicles (%)	6%	6%	6%	6%	5%	5%	5%
Turn Type			NA		Prot		NA
Protected Phases			2		1		6
Permitted Phases							
Actuated Green, G (s)			45.5		12.9		70.0
Effective Green, g (s)			45.5		12.9		70.0
Actuated g/C Ratio			0.65		0.18		1.00
Clearance Time (s)			5.7		5.9		5.7
Vehicle Extension (s)			3.0		3.0		3.0
Lane Grp Cap (vph)			2213		614		3438
v/s Ratio Prot			0.33		0.11		0.59
v/s Ratio Perm							
v/c Ratio			0.51		0.59		0.59
Uniform Delay, d1			6.4		26.1		0.0
Progression Factor			1.54		1.27		1.00
Incremental Delay, d2			0.7		0.5		0.3
Delay (s)			10.5		33.7		0.3
Level of Service			B		C		A
Approach Delay (s)	0.0		10.5				5.3
Approach LOS	A		B				A
Intersection Summary							
HCM 2000 Control Delay			7.0		HCM 2000 Level of Service		A
HCM 2000 Volume to Capacity ratio			0.71				
Actuated Cycle Length (s)			70.0		Sum of lost time (s)		11.6
Intersection Capacity Utilization			58.6%		ICU Level of Service		B
Analysis Period (min)			15				
c Critical Lane Group							

Intersection												
Int Delay, s/veh	5.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰			↱↱				↱			↱
Traffic Vol, veh/h	0	651	108	0	173	18	0	0	96	0	0	468
Future Vol, veh/h	0	651	108	0	173	18	0	0	96	0	0	468
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	400	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	3	3	3	4	4	4	3	3	3	6	6	6
Mvmt Flow	0	757	126	0	201	21	0	0	112	0	0	544
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	-	-	0	-	-	820	-	-	111
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	-	-	-	6.245	-	-	6.99
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	-	-	-	3.3285	-	-	3.357
Pot Cap-1 Maneuver	0	-	-	0	-	-	0	0	372	0	0	910
Stage 1	0	-	-	0	-	-	0	0	-	0	0	-
Stage 2	0	-	-	0	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	-	-	-	-	-	-	-	-	372	-	-	910
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0			18.8			14.7		
HCM LOS							C			B		
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT	WBR	SBLn1						
Capacity (veh/h)	372	-	-	-	-	910						
HCM Lane V/C Ratio	0.3	-	-	-	-	0.598						
HCM Control Delay (s)	18.8	-	-	-	-	14.7						
HCM Lane LOS	C	-	-	-	-	B						
HCM 95th %tile Q(veh)	1.2	-	-	-	-	4.1						

Intersection			
Intersection Delay, s/veh	4.0		
Intersection LOS	A		
Approach	WB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	151	190	143
Demand Flow Rate, veh/h	154	194	146
Vehicles Circulating, veh/h	57	86	109
Vehicles Exiting, veh/h	223	169	102
Ped Vol Crossing Leg, #/h	0	96	0
Ped Cap Adj	1.000	0.987	1.000
Approach Delay, s/veh	3.8	4.3	4.0
Approach LOS	A	A	A
Lane	Left	Left	Left
Designated Moves	LR	TR	LT
Assumed Moves	LR	TR	LT
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	154	194	146
Cap Entry Lane, veh/h	1302	1264	1235
Entry HV Adj Factor	0.981	0.979	0.978
Flow Entry, veh/h	151	190	143
Cap Entry, veh/h	1277	1221	1208
V/C Ratio	0.118	0.156	0.118
Control Delay, s/veh	3.8	4.3	4.0
LOS	A	A	A
95th %tile Queue, veh	0	1	0

Intersection						
Int Delay, s/veh	3.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	161	4	125	245	7	83
Future Vol, veh/h	161	4	125	245	7	83
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	77	77	77	77	77	77
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	209	5	162	318	9	108

Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	214	0	854	212
Stage 1	-	-	-	-	212	-
Stage 2	-	-	-	-	642	-
Critical Hdwy	-	-	4.11	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	-	-	2.209	-	3.509	3.309
Pot Cap-1 Maneuver	-	-	1362	-	330	831
Stage 1	-	-	-	-	826	-
Stage 2	-	-	-	-	526	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1362	-	282	831
Mov Cap-2 Maneuver	-	-	-	-	282	-
Stage 1	-	-	-	-	826	-
Stage 2	-	-	-	-	450	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.7	10.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	722	-	-	1362	-
HCM Lane V/C Ratio	0.162	-	-	0.119	-
HCM Control Delay (s)	10.9	-	-	8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.6	-	-	0.4	-

HCM 6th Signalized Intersection Summary

9: US 150 & Luther Road

RCUT 2048 AM Peak
06/03/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↔	↕	↔	↔	↕	↔
Traffic Volume (veh/h)	118	113	19	30	138	10	15	455	54	21	1151	214
Future Volume (veh/h)	118	113	19	30	138	10	15	455	54	21	1151	214
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1885	1885	1885	1796	1796	1796	1856	1856	1856
Adj Flow Rate, veh/h	124	119	20	32	145	11	16	479	57	22	1212	225
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	1	1	1	7	7	7	3	3	3
Cap, veh/h	213	153	23	101	297	21	33	1676	748	45	1753	782
Arrive On Green	0.20	0.20	0.20	0.20	0.20	0.20	0.02	0.49	0.49	0.03	0.50	0.50
Sat Flow, veh/h	669	783	120	185	1516	106	1711	3413	1522	1767	3526	1572
Grp Volume(v), veh/h	263	0	0	188	0	0	16	479	57	22	1212	225
Grp Sat Flow(s),veh/h/ln	1572	0	0	1807	0	0	1711	1706	1522	1767	1763	1572
Q Serve(g_s), s	4.4	0.0	0.0	0.0	0.0	0.0	0.6	5.4	1.3	0.8	17.1	5.5
Cycle Q Clear(g_c), s	10.3	0.0	0.0	5.9	0.0	0.0	0.6	5.4	1.3	0.8	17.1	5.5
Prop In Lane	0.47		0.08	0.17		0.06	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	390	0	0	419	0	0	33	1676	748	45	1753	782
V/C Ratio(X)	0.68	0.00	0.00	0.45	0.00	0.00	0.48	0.29	0.08	0.49	0.69	0.29
Avail Cap(c_a), veh/h	444	0	0	481	0	0	147	1676	748	152	1753	782
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.99	0.99	0.99	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.0	0.0	0.0	23.4	0.0	0.0	31.6	9.8	8.7	31.3	12.5	9.6
Incr Delay (d2), s/veh	3.4	0.0	0.0	0.8	0.0	0.0	10.5	0.4	0.2	8.2	2.3	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	7.2	0.0	0.0	4.5	0.0	0.0	0.6	2.9	0.6	0.7	9.3	2.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	28.4	0.0	0.0	24.1	0.0	0.0	42.0	10.2	8.9	39.5	14.8	10.5
LnGrp LOS	C	A	A	C	A	A	D	B	A	D	B	B
Approach Vol, veh/h		263			188			552			1459	
Approach Delay, s/veh		28.4			24.1			11.0			14.5	
Approach LOS		C			C			B			B	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.0	38.3		19.6	6.7	38.7		19.6				
Change Period (Y+Rc), s	5.4	* 6.4		* 6.9	5.4	* 6.4		* 6.9				
Max Green Setting (Gmax), s	5.6	* 26		* 15	5.6	* 26		* 15				
Max Q Clear Time (g_c+I1), s	2.8	7.4		12.3	2.6	19.1		7.9				
Green Ext Time (p_c), s	0.0	2.8		0.4	0.0	4.2		0.5				

Intersection Summary

HCM 6th Ctrl Delay	15.9
HCM 6th LOS	B

Notes

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

HCM 6th Signalized Intersection Summary

1: Schrieber Rd & Old Vincennes Rd

RCUT 2048 PM Peak
06/04/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	121	355	35	211	457	366	27	6	76	580	37	116
Future Volume (veh/h)	121	355	35	211	457	366	27	6	76	580	37	116
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1856	1856	1856	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	144	423	42	251	544	436	32	7	90	690	44	138
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	3	3	3	1	1	1	1	1	1	1	1	1
Cap, veh/h	120	576	57	235	336	269	579	52	669	658	179	562
Arrive On Green	0.35	0.35	0.35	0.35	0.35	0.35	0.45	0.45	0.45	0.45	0.45	0.45
Sat Flow, veh/h	570	1661	165	935	969	777	1211	117	1499	1309	401	1258
Grp Volume(v), veh/h	144	0	465	251	0	980	32	0	97	690	0	182
Grp Sat Flow(s),veh/h/ln	570	0	1826	935	0	1745	1211	0	1615	1309	0	1659
Q Serve(g_s), s	0.0	0.0	13.4	7.4	0.0	20.8	1.0	0.0	2.1	24.7	0.0	4.1
Cycle Q Clear(g_c), s	20.8	0.0	13.4	20.8	0.0	20.8	5.1	0.0	2.1	26.8	0.0	4.1
Prop In Lane	1.00		0.09	1.00		0.44	1.00		0.93	1.00		0.76
Lane Grp Cap(c), veh/h	120	0	633	235	0	605	579	0	722	658	0	741
V/C Ratio(X)	1.20	0.00	0.73	1.07	0.00	1.62	0.06	0.00	0.13	1.05	0.00	0.25
Avail Cap(c_a), veh/h	120	0	633	235	0	605	579	0	722	658	0	741
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	30.0	0.0	17.2	28.2	0.0	19.6	11.9	0.0	9.8	19.9	0.0	10.3
Incr Delay (d2), s/veh	145.6	0.0	4.4	77.3	0.0	286.4	0.0	0.0	0.1	48.3	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	11.7	0.0	9.7	13.5	0.0	86.5	0.5	0.0	1.2	25.7	0.0	2.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	175.6	0.0	21.6	105.5	0.0	306.0	11.9	0.0	9.9	68.3	0.0	10.5
LnGrp LOS	F	A	C	F	A	F	B	A	A	F	A	B
Approach Vol, veh/h	609			1231			129			872		
Approach Delay, s/veh	58.0			265.1			10.4			56.2		
Approach LOS	E			F			B			E		
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	33.0			27.0			33.0			27.0		
Change Period (Y+Rc), s	* 6.2			6.2			* 6.2			6.2		
Max Green Setting (Gmax), s	* 27			20.8			* 27			20.8		
Max Q Clear Time (g_c+I1), s	7.1			22.8			28.8			22.8		
Green Ext Time (p_c), s	0.6			0.0			0.0			0.0		
Intersection Summary												
HCM 6th Ctrl Delay	145.0											
HCM 6th LOS	F											
Notes												

Intersection												
Int Delay, s/veh	1.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑	↑			↑			↑
Traffic Vol, veh/h	0	1093	52	0	1063	438	0	0	135	0	0	35
Future Vol, veh/h	0	1093	52	0	1063	438	0	0	135	0	0	35
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	250	-	-	-	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	4	4	4	2	2	2	5	5	5	1	1	1
Mvmt Flow	0	1366	65	0	1329	548	0	0	169	0	0	44
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	-	-	0	-	-	716	-	-	1329
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	-	-	-	6.975	-	-	6.215
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	-	-	-	3.3475	-	-	3.3095
Pot Cap-1 Maneuver	0	-	-	0	-	-	0	0	368	0	0	190
Stage 1	0	-	-	0	-	-	0	0	-	0	0	-
Stage 2	0	-	-	0	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	-	-	-	-	-	-	-	-	368	-	-	190
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0			22.8			29.5		
HCM LOS							C			D		
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT	WBR	SBLn1						
Capacity (veh/h)	368	-	-	-	-	190						
HCM Lane V/C Ratio	0.459	-	-	-	-	0.23						
HCM Control Delay (s)	22.8	-	-	-	-	29.5						
HCM Lane LOS	C	-	-	-	-	D						
HCM 95th %tile Q(veh)	2.3	-	-	-	-	0.9						

HCM Signalized Intersection Capacity Analysis

3: US 150 & Old Vincennes Rd/Lawrence Banet Rd

RCUT 2048 PM Peak
06/03/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	1228	0	0	887	1099	923	724	175	987	402
Future Volume (vph)	0	0	1228	0	0	887	1099	923	724	175	987	402
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			5.2			5.2	5.2	6.4	6.4	5.2	6.4	6.4
Lane Util. Factor			0.88			0.88	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.85			0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected			1.00			1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)			2787			2814	1752	3505	1568	1736	3471	1553
Flt Permitted			1.00			1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)			2787			2814	1752	3505	1568	1736	3471	1553
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	1279	0	0	924	1145	961	754	182	1028	419
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	297	0	0	73
Lane Group Flow (vph)	0	0	1279	0	0	924	1145	961	457	182	1028	346
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	3%	3%	3%	4%	4%	4%
Turn Type			Over			Over	Prot	NA	Perm	Prot	NA	Perm
Protected Phases			5			1	5	2		1	6	
Permitted Phases									2			6
Actuated Green, G (s)			51.8			33.1	51.8	45.3	45.3	33.1	26.6	26.6
Effective Green, g (s)			51.8			33.1	51.8	45.3	45.3	33.1	26.6	26.6
Actuated g/C Ratio			0.58			0.37	0.58	0.50	0.50	0.37	0.30	0.30
Clearance Time (s)			5.2			5.2	5.2	6.4	6.4	5.2	6.4	6.4
Vehicle Extension (s)			3.0			3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)			1604			1034	1008	1764	789	638	1025	458
v/s Ratio Prot			0.46			0.33	0.65	0.27		0.10	0.30	
v/s Ratio Perm									0.29			0.22
v/c Ratio			0.80			0.89	1.14	0.54	0.58	0.29	1.00	0.75
Uniform Delay, d1			15.0			26.8	19.1	15.3	15.7	20.1	31.7	28.7
Progression Factor			1.00			1.00	0.54	0.56	2.80	0.58	0.68	1.31
Incremental Delay, d2			2.9			10.0	65.6	0.4	1.2	0.2	27.3	9.7
Delay (s)			17.8			36.8	76.0	8.9	45.1	11.8	48.8	47.3
Level of Service			B			D	E	A	D	B	D	D
Approach Delay (s)		17.8			36.8			45.3			44.3	
Approach LOS		B			D			D			D	
Intersection Summary												
HCM 2000 Control Delay			38.6			HCM 2000 Level of Service				D		
HCM 2000 Volume to Capacity ratio			1.10									
Actuated Cycle Length (s)			90.0			Sum of lost time (s)				11.6		
Intersection Capacity Utilization			97.8%			ICU Level of Service				F		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

4: US 150 & NB U-Turn

RCUT 2048 PM Peak
06/03/2024



Movement	EBL	EBR	NBU	NBL	NBT	SBT	SBR
Lane Configurations			AA		↑↑	↑↑	
Traffic Volume (vph)	0	0	631	0	1179	933	0
Future Volume (vph)	0	0	631	0	1179	933	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			5.9		5.7	5.7	
Lane Util. Factor			0.97		0.95	0.95	
Frt			1.00		1.00	1.00	
Flt Protected			0.95		1.00	1.00	
Satd. Flow (prot)			3400		3505	3471	
Flt Permitted			0.95		1.00	1.00	
Satd. Flow (perm)			3400		3505	3471	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	657	0	1228	972	0
RTOR Reduction (vph)	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	657	0	1228	972	0
Heavy Vehicles (%)	2%	2%	3%	3%	3%	4%	4%
Turn Type			Prot		NA	NA	
Protected Phases			5		2	6	
Permitted Phases							
Actuated Green, G (s)			23.0		90.0	55.4	
Effective Green, g (s)			23.0		90.0	55.4	
Actuated g/C Ratio			0.26		1.00	0.62	
Clearance Time (s)			5.9		5.7	5.7	
Vehicle Extension (s)			3.0		3.0	3.0	
Lane Grp Cap (vph)			868		3505	2136	
v/s Ratio Prot			c0.19		0.35	c0.28	
v/s Ratio Perm							
v/c Ratio			0.76		0.35	0.46	
Uniform Delay, d1			30.9		0.0	9.2	
Progression Factor			0.95		1.00	0.54	
Incremental Delay, d2			2.4		0.2	0.5	
Delay (s)			31.9		0.2	5.5	
Level of Service			C		A	A	
Approach Delay (s)	0.0				11.3	5.5	
Approach LOS	A				B	A	
Intersection Summary							
HCM 2000 Control Delay			9.3		HCM 2000 Level of Service		A
HCM 2000 Volume to Capacity ratio			0.54				
Actuated Cycle Length (s)			90.0		Sum of lost time (s)		11.6
Intersection Capacity Utilization			53.5%		ICU Level of Service		A
Analysis Period (min)			15				
c Critical Lane Group							

HCM Signalized Intersection Capacity Analysis

5: US 150 & SB U-Turn

RCUT 2048 PM Peak
06/03/2024

Movement	WBL	WBR	NBT	NBR	SBU	SBL	SBT
Lane Configurations			↑↑		↓↓		↑↑
Traffic Volume (vph)	0	0	2309	0	437	0	1858
Future Volume (vph)	0	0	2309	0	437	0	1858
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			5.7		5.9		5.7
Lane Util. Factor			0.95		0.97		0.95
Frt			1.00		1.00		1.00
Flt Protected			1.00		0.95		1.00
Satd. Flow (prot)			3505		3367		3471
Flt Permitted			1.00		0.95		1.00
Satd. Flow (perm)			3505		3367		3471
Peak-hour factor, PHF	0.90	0.90	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	2405	0	455	0	1935
RTOR Reduction (vph)	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	2405	0	455	0	1935
Heavy Vehicles (%)	2%	2%	3%	3%	4%	4%	4%
Turn Type			NA		Prot		NA
Protected Phases			2		1		6
Permitted Phases							
Actuated Green, G (s)			64.4		14.0		90.0
Effective Green, g (s)			64.4		14.0		90.0
Actuated g/C Ratio			0.72		0.16		1.00
Clearance Time (s)			5.7		5.9		5.7
Vehicle Extension (s)			3.0		3.0		3.0
Lane Grp Cap (vph)			2508		523		3471
v/s Ratio Prot			c0.69		c0.14		0.56
v/s Ratio Perm							
v/c Ratio			0.96		0.87		0.56
Uniform Delay, d1			11.6		37.1		0.0
Progression Factor			0.19		0.92		1.00
Incremental Delay, d2			3.6		9.2		0.3
Delay (s)			5.8		43.2		0.3
Level of Service			A		D		A
Approach Delay (s)	0.0		5.8				8.5
Approach LOS	A		A				A
Intersection Summary							
HCM 2000 Control Delay			7.2		HCM 2000 Level of Service		A
HCM 2000 Volume to Capacity ratio			0.94				
Actuated Cycle Length (s)			90.0		Sum of lost time (s)		11.6
Intersection Capacity Utilization			86.0%		ICU Level of Service		E
Analysis Period (min)			15				
c Critical Lane Group							

Intersection												
Int Delay, s/veh	11.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰			↑↑				↱			↱
Traffic Vol, veh/h	0	703	196	0	355	14	0	0	212	0	0	532
Future Vol, veh/h	0	703	196	0	355	14	0	0	212	0	0	532
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	400	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	3	3	3	4	4	4	3	3	3	6	6	6
Mvmt Flow	0	817	228	0	413	16	0	0	247	0	0	619

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	-	-	0	-	-	931	-	-	215
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	-	-	-	6.245	-	-	6.99
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	-	-	-	-3.3285	-	-	3.357
Pot Cap-1 Maneuver	0	-	-	0	-	-	0	0	321	0	0	780
Stage 1	0	-	-	0	-	-	0	0	-	0	0	-
Stage 2	0	-	-	0	-	-	0	0	-	0	0	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	-	-	-	-	321	-	-	780
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0			45.3			24.8		
HCM LOS							E			C		

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT	WBR	SBLn1
Capacity (veh/h)	321	-	-	-	-	780
HCM Lane V/C Ratio	0.768	-	-	-	-	0.793
HCM Control Delay (s)	45.3	-	-	-	-	24.8
HCM Lane LOS	E	-	-	-	-	C
HCM 95th %tile Q(veh)	6	-	-	-	-	8.2

Intersection			
Intersection Delay, s/veh	9.3		
Intersection LOS	A		
Approach	WB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	576	590	351
Demand Flow Rate, veh/h	587	601	358
Vehicles Circulating, veh/h	220	206	360
Vehicles Exiting, veh/h	587	512	447
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	9.7	9.7	8.0
Approach LOS	A	A	A
Lane	Left	Left	Left
Designated Moves	LR	TR	LT
Assumed Moves	LR	TR	LT
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	587	601	358
Cap Entry Lane, veh/h	1103	1118	956
Entry HV Adj Factor	0.981	0.981	0.981
Flow Entry, veh/h	576	590	351
Cap Entry, veh/h	1082	1097	937
V/C Ratio	0.532	0.537	0.375
Control Delay, s/veh	9.7	9.7	8.0
LOS	A	A	A
95th %tile Queue, veh	3	3	2

Intersection						
Int Delay, s/veh	9.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	105	8	296	92	9	363
Future Vol, veh/h	105	8	296	92	9	363
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	77	77	77	77	77	77
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	136	10	384	119	12	471

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	146
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.11
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.209
Pot Cap-1 Maneuver	-	-	1442
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1442
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

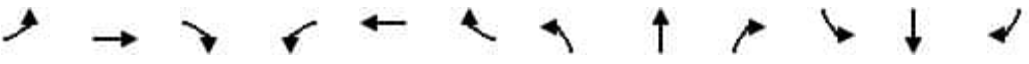
Approach	EB	WB	NB
HCM Control Delay, s	0	6.4	15.1
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	832	-	-	1442	-
HCM Lane V/C Ratio	0.581	-	-	0.267	-
HCM Control Delay (s)	15.1	-	-	8.4	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	3.8	-	-	1.1	-

HCM 6th Signalized Intersection Summary

9: US 150 & Luther Road

RCUT 2048 PM Peak
06/03/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↗	↗	↗	↗	↗	↗
Traffic Volume (veh/h)	400	71	9	52	73	38	52	1166	43	18	872	321
Future Volume (veh/h)	400	71	9	52	73	38	52	1166	43	18	872	321
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885	1841	1841	1841	1856	1856	1856
Adj Flow Rate, veh/h	408	72	9	53	74	39	53	1190	44	18	890	328
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	1	1	1	1	1	1	4	4	4	3	3	3
Cap, veh/h	499	75	9	237	322	155	72	1228	548	98	1329	593
Arrive On Green	0.37	0.37	0.37	0.37	0.37	0.37	0.04	0.35	0.35	0.06	0.38	0.38
Sat Flow, veh/h	1137	201	25	491	860	415	1753	3497	1560	1767	3526	1572
Grp Volume(v), veh/h	489	0	0	166	0	0	53	1190	44	18	890	328
Grp Sat Flow(s),veh/h/ln	1363	0	0	1766	0	0	1753	1749	1560	1767	1763	1572
Q Serve(g_s), s	25.8	0.0	0.0	0.0	0.0	0.0	2.7	30.1	1.7	0.9	18.9	14.8
Cycle Q Clear(g_c), s	31.5	0.0	0.0	5.7	0.0	0.0	2.7	30.1	1.7	0.9	18.9	14.8
Prop In Lane	0.83		0.02	0.32		0.23	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	584	0	0	714	0	0	72	1228	548	98	1329	593
V/C Ratio(X)	0.84	0.00	0.00	0.23	0.00	0.00	0.74	0.97	0.08	0.18	0.67	0.55
Avail Cap(c_a), veh/h	590	0	0	721	0	0	129	1228	548	110	1329	593
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.95	0.95	0.95	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.4	0.0	0.0	19.4	0.0	0.0	42.7	28.7	19.5	40.6	23.4	22.1
Incr Delay (d2), s/veh	10.2	0.0	0.0	0.2	0.0	0.0	13.3	18.6	0.3	0.9	2.7	3.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	16.9	0.0	0.0	4.3	0.0	0.0	2.5	20.5	1.1	0.7	12.0	9.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	37.6	0.0	0.0	19.5	0.0	0.0	56.0	47.4	19.8	41.5	26.1	25.8
LnGrp LOS	D	A	A	B	A	A	E	D	B	D	C	C
Approach Vol, veh/h		489			166			1287			1236	
Approach Delay, s/veh		37.6			19.5			46.8			26.2	
Approach LOS		D			B			D			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	11.4	38.0		40.6	9.1	40.3		40.6				
Change Period (Y+Rc), s	* 6.4	* 6.4		* 6.9	5.4	* 6.4		* 6.9				
Max Green Setting (Gmax), s	* 5.6	* 32		* 34	6.6	* 31		* 34				
Max Q Clear Time (g_c+I1), s	2.9	32.1		33.5	4.7	20.9		7.7				
Green Ext Time (p_c), s	0.0	0.0		0.2	0.0	4.6		1.0				
Intersection Summary												
HCM 6th Ctrl Delay				36.0								
HCM 6th LOS				D								
Notes												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

HCM 6th Signalized Intersection Summary

1: Schrieber Rd & Old Vincennes Rd

RCUT+New Road 2048 AM Peak

06/03/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	119	483	12	127	240	43	31	7	86	154	18	80
Future Volume (veh/h)	119	483	12	127	240	43	31	7	86	154	18	80
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1841	1841	1841	1885	1885	1885	1826	1826	1826	1826	1826	1826
Adj Flow Rate, veh/h	175	710	18	187	353	63	46	10	126	226	26	118
Peak Hour Factor	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68
Percent Heavy Veh, %	4	4	4	1	1	1	5	5	5	5	5	5
Cap, veh/h	515	977	25	302	851	152	329	28	358	334	71	322
Arrive On Green	0.55	0.55	0.55	0.55	0.55	0.55	0.25	0.25	0.25	0.25	0.25	0.25
Sat Flow, veh/h	955	1787	45	733	1557	278	1215	115	1450	1223	287	1304
Grp Volume(v), veh/h	175	0	728	187	0	416	46	0	136	226	0	144
Grp Sat Flow(s),veh/h/ln	955	0	1833	733	0	1835	1215	0	1565	1223	0	1591
Q Serve(g_s), s	7.9	0.0	17.9	14.9	0.0	8.0	2.0	0.0	4.3	10.5	0.0	4.5
Cycle Q Clear(g_c), s	15.9	0.0	17.9	32.8	0.0	8.0	6.5	0.0	4.3	14.8	0.0	4.5
Prop In Lane	1.00		0.02	1.00		0.15	1.00		0.93	1.00		0.82
Lane Grp Cap(c), veh/h	515	0	1002	302	0	1003	329	0	386	334	0	392
V/C Ratio(X)	0.34	0.00	0.73	0.62	0.00	0.41	0.14	0.00	0.35	0.68	0.00	0.37
Avail Cap(c_a), veh/h	515	0	1002	302	0	1003	329	0	386	334	0	392
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	12.6	0.0	10.2	22.8	0.0	8.0	21.4	0.0	18.6	25.0	0.0	18.7
Incr Delay (d2), s/veh	0.4	0.0	2.7	3.8	0.0	0.3	0.2	0.0	0.5	5.4	0.0	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.8	0.0	10.5	4.9	0.0	4.7	1.0	0.0	2.7	6.3	0.0	2.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.0	0.0	12.9	26.6	0.0	8.2	21.6	0.0	19.2	30.4	0.0	19.3
LnGrp LOS	B	A	B	C	A	A	C	A	B	C	A	B
Approach Vol, veh/h	903			603			182			370		
Approach Delay, s/veh	12.9			13.9			19.8			26.1		
Approach LOS	B			B			B			C		
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	21.0			39.0			21.0			39.0		
Change Period (Y+Rc), s	* 6.2			6.2			* 6.2			6.2		
Max Green Setting (Gmax), s	* 15			32.8			* 15			32.8		
Max Q Clear Time (g_c+I1), s	8.5			19.9			16.8			34.8		
Green Ext Time (p_c), s	0.4			5.0			0.0			0.0		
Intersection Summary												
HCM 6th Ctrl Delay	16.2											
HCM 6th LOS	B											
Notes												

Intersection												
Int Delay, s/veh	2.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑	↑			↑			↑
Traffic Vol, veh/h	0	841	58	0	575	162	0	0	205	0	0	12
Future Vol, veh/h	0	841	58	0	575	162	0	0	205	0	0	12
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	250	-	-	-	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	4	4	4	2	2	2	5	5	5	1	1	1
Mvmt Flow	0	1051	73	0	719	203	0	0	256	0	0	15
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	-	-	0	-	-	562	-	-	719
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	-	-	-	6.975	-	-	6.215
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	-	-	-	-3.3475	-	-	-3.3095
Pot Cap-1 Maneuver	0	-	-	0	-	-	0	0	465	0	0	430
Stage 1	0	-	-	0	-	-	0	0	-	0	0	-
Stage 2	0	-	-	0	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	-	-	-	-	-	-	-	-	465	-	-	430
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0			21.8			13.7		
HCM LOS							C			B		
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT	WBR	SBLn1						
Capacity (veh/h)	465	-	-	-	-	430						
HCM Lane V/C Ratio	0.551	-	-	-	-	0.035						
HCM Control Delay (s)	21.8	-	-	-	-	13.7						
HCM Lane LOS	C	-	-	-	-	B						
HCM 95th %tile Q(veh)	3.3	-	-	-	-	0.1						

HCM Signalized Intersection Capacity Analysis

3: US 150 & Old Vincennes Rd/Lawrence Banet Rd

RCUT+New Road 2048 AM Peak

06/03/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			TT			TT	T	TT	T	T	TT	T
Traffic Volume (vph)	0	0	902	0	0	429	444	559	352	104	1286	175
Future Volume (vph)	0	0	902	0	0	429	444	559	352	104	1286	175
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			5.2			5.2	5.2	6.4	6.4	5.2	6.4	6.4
Lane Util. Factor			0.88			0.88	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.85			0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected			1.00			1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)			2733			2733	1703	3406	1524	1719	3438	1538
Flt Permitted			1.00			1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)			2733			2733	1703	3406	1524	1719	3438	1538
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	940	0	0	447	462	582	367	108	1340	182
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	145	0	0	100
Lane Group Flow (vph)	0	0	940	0	0	447	463	582	222	108	1340	82
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	6%	6%	6%	5%	5%	5%
Turn Type			Over			Over	Prot	NA	Perm	Prot	NA	Perm
Protected Phases			5			1	5	2		1	6	
Permitted Phases								2				6
Actuated Green, G (s)			27.0			16.0	27.0	42.4	42.4	16.0	31.4	31.4
Effective Green, g (s)			27.0			16.0	27.0	42.4	42.4	16.0	31.4	31.4
Actuated g/C Ratio			0.39			0.23	0.39	0.61	0.61	0.23	0.45	0.45
Clearance Time (s)			5.2			5.2	5.2	6.4	6.4	5.2	6.4	6.4
Vehicle Extension (s)			3.0			3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)			1054			624	656	2063	923	392	1542	689
v/s Ratio Prot			c0.34			0.16	0.27	0.17		0.06	c0.39	
v/s Ratio Perm									0.15			0.05
v/c Ratio			0.89			0.72	0.71	0.28	0.24	0.28	0.87	0.12
Uniform Delay, d1			20.1			24.9	18.1	6.6	6.4	22.2	17.4	11.2
Progression Factor			1.00			1.00	1.06	0.91	7.07	1.16	0.80	4.95
Incremental Delay, d2			9.7			3.9	3.1	0.3	0.6	0.3	5.9	0.3
Delay (s)			29.8			28.8	22.4	6.3	45.6	26.1	19.9	55.9
Level of Service			C			C	C	A	D	C	B	E
Approach Delay (s)		29.8			28.8			21.8			24.3	
Approach LOS		C			C			C			C	
Intersection Summary												
HCM 2000 Control Delay			25.1			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.88									
Actuated Cycle Length (s)			70.0			Sum of lost time (s)				11.6		
Intersection Capacity Utilization			76.8%			ICU Level of Service				D		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

4: US 150 & NB U-Turn

RCUT+New Road 2048 AM Peak

06/03/2024



Movement	EBL	EBR	NBU	NBL	NBT	SBT	SBR
Lane Configurations			AA		↑↑	↑↑	
Traffic Volume (vph)	0	0	346	0	642	1219	0
Future Volume (vph)	0	0	346	0	642	1219	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			5.9		5.7	5.7	
Lane Util. Factor			0.97		0.95	0.95	
Frt			1.00		1.00	1.00	
Flt Protected			0.95		1.00	1.00	
Satd. Flow (prot)			3303		3406	3438	
Flt Permitted			0.95		1.00	1.00	
Satd. Flow (perm)			3303		3406	3438	
Peak-hour factor, PHF	0.90	0.90	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	360	0	669	1270	0
RTOR Reduction (vph)	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	360	0	669	1270	0
Heavy Vehicles (%)	2%	2%	6%	6%	6%	5%	5%
Turn Type			Prot		NA	NA	
Protected Phases			5		2	6	
Permitted Phases							
Actuated Green, G (s)			12.9		70.0	45.5	
Effective Green, g (s)			12.9		70.0	45.5	
Actuated g/C Ratio			0.18		1.00	0.65	
Clearance Time (s)			5.9		5.7	5.7	
Vehicle Extension (s)			3.0		3.0	3.0	
Lane Grp Cap (vph)			608		3406	2234	
v/s Ratio Prot			c0.11		0.20	c0.37	
v/s Ratio Perm							
v/c Ratio			0.59		0.20	0.57	
Uniform Delay, d1			26.1		0.0	6.8	
Progression Factor			1.22		1.00	1.00	
Incremental Delay, d2			1.4		0.1	1.1	
Delay (s)			33.3		0.1	7.9	
Level of Service			C		A	A	
Approach Delay (s)	0.0				11.7	7.9	
Approach LOS	A				B	A	
Intersection Summary							
HCM 2000 Control Delay			9.6		HCM 2000 Level of Service		A
HCM 2000 Volume to Capacity ratio			0.57				
Actuated Cycle Length (s)			70.0		Sum of lost time (s)		11.6
Intersection Capacity Utilization			53.2%		ICU Level of Service		A
Analysis Period (min)			15				
c Critical Lane Group							

HCM Signalized Intersection Capacity Analysis

5: US 150 & SB U-Turn

RCUT+New Road 2048 AM Peak

06/03/2024

							
Movement	WBL	WBR	NBT	NBR	SBU	SBL	SBT
Lane Configurations			↑↑		↓↓		↑↑
Traffic Volume (vph)	0	0	1076	0	279	0	1909
Future Volume (vph)	0	0	1076	0	279	0	1909
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			5.7		5.9		5.7
Lane Util. Factor			0.95		0.97		0.95
Frt			1.00		1.00		1.00
Flt Protected			1.00		0.95		1.00
Satd. Flow (prot)			3406		3335		3438
Flt Permitted			1.00		0.95		1.00
Satd. Flow (perm)			3406		3335		3438
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	1121	0	291	0	1989
RTOR Reduction (vph)	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	1121	0	291	0	1989
Heavy Vehicles (%)	6%	6%	6%	6%	5%	5%	5%
Turn Type			NA		Prot		NA
Protected Phases			2		1		6
Permitted Phases							
Actuated Green, G (s)			46.7		11.7		70.0
Effective Green, g (s)			46.7		11.7		70.0
Actuated g/C Ratio			0.67		0.17		1.00
Clearance Time (s)			5.7		5.9		5.7
Vehicle Extension (s)			3.0		3.0		3.0
Lane Grp Cap (vph)			2272		557		3438
v/s Ratio Prot			0.33		0.09		0.58
v/s Ratio Perm							
v/c Ratio			0.49		0.52		0.58
Uniform Delay, d1			5.8		26.6		0.0
Progression Factor			1.66		1.29		1.00
Incremental Delay, d2			0.6		0.4		0.3
Delay (s)			10.2		34.8		0.3
Level of Service			B		C		A
Approach Delay (s)	0.0		10.2				4.7
Approach LOS	A		B				A
Intersection Summary							
HCM 2000 Control Delay			6.5		HCM 2000 Level of Service		A
HCM 2000 Volume to Capacity ratio			0.69				
Actuated Cycle Length (s)			70.0		Sum of lost time (s)		11.6
Intersection Capacity Utilization			57.5%		ICU Level of Service		B
Analysis Period (min)			15				
c Critical Lane Group							

Intersection												
Int Delay, s/veh	3.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰			↱↰				↱			↱
Traffic Vol, veh/h	0	348	108	0	180	18	0	0	96	0	0	249
Future Vol, veh/h	0	348	108	0	180	18	0	0	96	0	0	249
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	400	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	3	3	3	4	4	4	3	3	3	6	6	6
Mvmt Flow	0	405	126	0	209	21	0	0	112	0	0	290
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	-	-	0	-	-	468	-	-	115
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	-	-	-	6.245	-	-	6.99
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	-	-	-	3.3285	-	-	3.357
Pot Cap-1 Maneuver	0	-	-	0	-	-	0	0	592	0	0	905
Stage 1	0	-	-	0	-	-	0	0	-	0	0	-
Stage 2	0	-	-	0	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	-	-	-	-	-	-	-	-	592	-	-	905
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0			12.5			10.8		
HCM LOS							B			B		
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT	WBR	SBLn1						
Capacity (veh/h)	592	-	-	-	-	905						
HCM Lane V/C Ratio	0.189	-	-	-	-	0.32						
HCM Control Delay (s)	12.5	-	-	-	-	10.8						
HCM Lane LOS	B	-	-	-	-	B						
HCM 95th %tile Q(veh)	0.7	-	-	-	-	1.4						

Intersection						
Int Delay, s/veh	2.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	66	0	30	105	0	49
Future Vol, veh/h	66	0	30	105	0	49
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	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	71	0	32	113	0	53
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	142	89	0	0	145	0
Stage 1	89	-	-	-	-	-
Stage 2	53	-	-	-	-	-
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	851	969	-	-	1437	-
Stage 1	934	-	-	-	-	-
Stage 2	970	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	851	969	-	-	1437	-
Mov Cap-2 Maneuver	851	-	-	-	-	-
Stage 1	934	-	-	-	-	-
Stage 2	970	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	9.6	0		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBT	NBRWBLn1		SBL	SBT	
Capacity (veh/h)	-	- 851		1437	-	
HCM Lane V/C Ratio	-	- 0.083		-	-	
HCM Control Delay (s)	-	- 9.6		0	-	
HCM Lane LOS	-	- A		A	-	
HCM 95th %tile Q(veh)	-	- 0.3		0	-	

HCM 6th Signalized Intersection Summary 8: US 150 & New Road

RCUT+New Road 2048 AM Peak
06/03/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	58	65	79	91	49	78	96	488	58	174	1026	78
Future Volume (veh/h)	58	65	79	91	49	78	96	488	58	174	1026	78
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1811	1811	1811	1826	1826	1826
Adj Flow Rate, veh/h	62	70	85	98	53	84	103	525	62	187	1103	84
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
Percent Heavy Veh, %	2	2	2	2	2	2	6	6	6	5	5	5
Cap, veh/h	369	252	317	351	230	195	254	1143	510	452	1265	564
Arrive On Green	0.08	0.13	0.13	0.06	0.12	0.12	0.06	0.33	0.33	0.10	0.36	0.36
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1725	3441	1535	1739	3469	1547
Grp Volume(v), veh/h	62	70	85	98	53	84	103	525	62	187	1103	84
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1725	1721	1535	1739	1735	1547
Q Serve(g_s), s	1.9	2.2	2.9	3.1	1.7	3.2	2.5	7.8	1.8	4.5	19.3	2.4
Cycle Q Clear(g_c), s	1.9	2.2	2.9	3.1	1.7	3.2	2.5	7.8	1.8	4.5	19.3	2.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	369	252	317	351	230	195	254	1143	510	452	1265	564
V/C Ratio(X)	0.17	0.28	0.27	0.28	0.23	0.43	0.41	0.46	0.12	0.41	0.87	0.15
Avail Cap(c_a), veh/h	386	252	317	389	233	198	291	1143	510	512	1265	564
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.99	0.99	0.99	0.75	0.75	0.75
Uniform Delay (d), s/veh	21.6	25.3	22.0	22.7	25.7	26.4	15.5	17.1	15.1	12.5	19.2	13.9
Incr Delay (d2), s/veh	0.2	0.6	0.5	0.4	0.5	1.5	1.0	1.3	0.5	0.5	6.5	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.4	1.7	1.9	2.3	1.3	2.2	1.5	5.0	1.2	2.6	11.2	1.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.8	25.9	22.4	23.1	26.2	27.9	16.5	18.4	15.6	12.9	25.8	14.3
LnGrp LOS	C	C	C	C	C	C	B	B	B	B	C	B
Approach Vol, veh/h	217					235		690		1374		
Approach Delay, s/veh	23.4					25.5		17.9		23.3		
Approach LOS	C					C		B		C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.7	28.0	9.6	15.7	9.6	30.1	10.4	14.9				
Change Period (Y+Rc), s	5.4	* 6.4	5.4	* 6.9	5.4	* 6.4	5.4	* 6.9				
Max Green Setting (Gmax), s	8.6	* 19	5.6	* 8.1	5.6	* 22	5.6	* 8.1				
Max Q Clear Time (g_c+l1), s	6.5	9.8	5.1	4.9	4.5	21.3	3.9	5.2				
Green Ext Time (p_c), s	0.1	2.2	0.0	0.2	0.0	0.2	0.0	0.1				
Intersection Summary												
HCM 6th Ctrl Delay	22.0											
HCM 6th LOS	C											
Notes												

Intersection						
Int Delay, s/veh	1.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	161	4	45	245	7	23
Future Vol, veh/h	161	4	45	245	7	23
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	77	77	77	77	77	77
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	209	5	58	318	9	30

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	214
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.11
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.209
Pot Cap-1 Maneuver	-	-	1362
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1362
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.2	10.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	673	-	-	1362	-
HCM Lane V/C Ratio	0.058	-	-	0.043	-
HCM Control Delay (s)	10.7	-	-	7.8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-

HCM 6th Signalized Intersection Summary 10: US 150 & Luther Road

RCUT+New Road 2048 AM Peak
06/03/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	58	113	19	30	138	10	15	594	57	21	1229	134
Future Volume (veh/h)	58	113	19	30	138	10	15	594	57	21	1229	134
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1885	1885	1885	1796	1796	1796	1856	1856	1856
Adj Flow Rate, veh/h	61	119	20	32	145	11	16	625	60	22	1294	141
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	1	1	1	7	7	7	3	3	3
Cap, veh/h	127	161	25	90	219	15	33	1921	857	44	2004	894
Arrive On Green	0.15	0.15	0.15	0.15	0.15	0.15	0.02	0.56	0.56	0.02	0.57	0.57
Sat Flow, veh/h	411	1112	169	204	1505	106	1711	3413	1522	1767	3526	1572
Grp Volume(v), veh/h	200	0	0	188	0	0	16	625	60	22	1294	141
Grp Sat Flow(s),veh/h/ln	1692	0	0	1815	0	0	1711	1706	1522	1767	1763	1572
Q Serve(g_s), s	1.1	0.0	0.0	0.0	0.0	0.0	0.6	6.9	1.3	0.9	17.5	3.0
Cycle Q Clear(g_c), s	7.9	0.0	0.0	6.8	0.0	0.0	0.6	6.9	1.3	0.9	17.5	3.0
Prop In Lane	0.30		0.10	0.17		0.06	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	313	0	0	324	0	0	33	1921	857	44	2004	894
V/C Ratio(X)	0.64	0.00	0.00	0.58	0.00	0.00	0.49	0.33	0.07	0.50	0.65	0.16
Avail Cap(c_a), veh/h	380	0	0	396	0	0	137	1921	857	141	2004	894
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.95	0.95	0.95	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.8	0.0	0.0	28.5	0.0	0.0	34.0	8.2	7.0	33.7	10.3	7.2
Incr Delay (d2), s/veh	2.6	0.0	0.0	1.7	0.0	0.0	10.4	0.4	0.2	8.6	1.6	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	6.0	0.0	0.0	5.4	0.0	0.0	0.6	3.5	0.6	0.8	8.9	1.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	31.4	0.0	0.0	30.1	0.0	0.0	44.4	8.6	7.1	42.3	11.9	7.5
LnGrp LOS	C	A	A	C	A	A	D	A	A	D	B	A
Approach Vol, veh/h	200		188			701			1457			
Approach Delay, s/veh	31.4		30.1			9.3			11.9			
Approach LOS	C		C			A			B			
Timer - Assigned Phs	1	2	4		5	6	8					
Phs Duration (G+Y+Rc), s	7.1	45.8	17.1		6.7	46.2	17.1					
Change Period (Y+Rc), s	5.4	* 6.4	* 6.9		5.4	* 6.4	* 6.9					
Max Green Setting (Gmax), s	5.6	* 33	* 13		5.6	* 33	* 13					
Max Q Clear Time (g_c+I1), s	2.9	8.9	9.9		2.6	19.5	8.8					
Green Ext Time (p_c), s	0.0	4.0	0.3		0.0	7.1	0.4					
Intersection Summary												
HCM 6th Ctrl Delay			14.1									
HCM 6th LOS			B									
Notes												

HCM 6th Signalized Intersection Summary

1: Schrieber Rd & Old Vincennes Rd

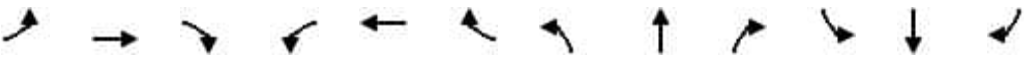
RCUT+New Road 2048 PM Peak
06/03/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	185	291	35	211	489	101	27	6	76	327	37	172
Future Volume (veh/h)	185	291	35	211	489	101	27	6	76	327	37	172
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1856	1856	1856	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	220	346	42	251	582	120	32	7	90	389	44	205
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	3	3	3	1	1	1	1	1	1	1	1	1
Cap, veh/h	255	806	98	482	753	155	315	35	445	449	86	401
Arrive On Green	0.50	0.50	0.50	0.50	0.50	0.50	0.30	0.30	0.30	0.30	0.30	0.30
Sat Flow, veh/h	739	1623	197	1004	1516	313	1140	117	1499	1309	290	1352
Grp Volume(v), veh/h	220	0	388	251	0	702	32	0	97	389	0	249
Grp Sat Flow(s),veh/h/ln	739	0	1820	1004	0	1829	1140	0	1615	1309	0	1642
Q Serve(g_s), s	11.0	0.0	8.2	12.8	0.0	18.8	1.4	0.0	2.7	15.1	0.0	7.5
Cycle Q Clear(g_c), s	29.8	0.0	8.2	21.0	0.0	18.8	9.0	0.0	2.7	17.8	0.0	7.5
Prop In Lane	1.00		0.11	1.00		0.17	1.00		0.93	1.00		0.82
Lane Grp Cap(c), veh/h	255	0	904	482	0	908	315	0	479	449	0	487
V/C Ratio(X)	0.86	0.00	0.43	0.52	0.00	0.77	0.10	0.00	0.20	0.87	0.00	0.51
Avail Cap(c_a), veh/h	255	0	904	482	0	908	315	0	479	449	0	487
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	26.6	0.0	9.7	16.4	0.0	12.3	21.2	0.0	15.8	23.6	0.0	17.5
Incr Delay (d2), s/veh	24.7	0.0	0.3	1.0	0.0	4.2	0.1	0.0	0.2	16.1	0.0	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	8.4	0.0	5.0	4.9	0.0	11.7	0.7	0.0	1.7	11.7	0.0	4.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	51.3	0.0	10.0	17.4	0.0	16.5	21.4	0.0	16.0	39.7	0.0	18.4
LnGrp LOS	D	A	A	B	A	B	C	A	B	D	A	B
Approach Vol, veh/h	608			953			129			638		
Approach Delay, s/veh	24.9			16.7			17.3			31.4		
Approach LOS	C			B			B			C		
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	24.0			36.0			24.0			36.0		
Change Period (Y+Rc), s	* 6.2			6.2			* 6.2			6.2		
Max Green Setting (Gmax), s	* 18			29.8			* 18			29.8		
Max Q Clear Time (g_c+I1), s	11.0			31.8			19.8			23.0		
Green Ext Time (p_c), s	0.3			0.0			0.0			3.4		
Intersection Summary												
HCM 6th Ctrl Delay	22.9											
HCM 6th LOS	C											
Notes												

Intersection												
Int Delay, s/veh	1.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑	↑			↑			↑
Traffic Vol, veh/h	0	1093	52	0	1063	438	0	0	135	0	0	35
Future Vol, veh/h	0	1093	52	0	1063	438	0	0	135	0	0	35
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	250	-	-	-	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	4	4	4	2	2	2	5	5	5	1	1	1
Mvmt Flow	0	1366	65	0	1329	548	0	0	169	0	0	44
Major/Minor	Major1		Major2			Minor1			Minor2			
Conflicting Flow All	-	0	0	-	-	0	-	-	716	-	-	1329
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	-	-	-	6.975	-	-	6.215
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	-	-	-	3.3475	-	-	3.3095
Pot Cap-1 Maneuver	0	-	-	0	-	-	0	0	368	0	0	190
Stage 1	0	-	-	0	-	-	0	0	-	0	0	-
Stage 2	0	-	-	0	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	-	-	-	-	-	-	-	-	368	-	-	190
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Approach	EB		WB			NB			SB			
HCM Control Delay, s	0		0			22.8			29.5			
HCM LOS						C			D			
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT	WBR	SBLn1						
Capacity (veh/h)	368	-	-	-	-	190						
HCM Lane V/C Ratio	0.459	-	-	-	-	0.23						
HCM Control Delay (s)	22.8	-	-	-	-	29.5						
HCM Lane LOS	C	-	-	-	-	D						
HCM 95th %tile Q(veh)	2.3	-	-	-	-	0.9						

HCM Signalized Intersection Capacity Analysis 3: US 150 & Old Vincennes Rd/Lawrence Banet Rd

RCUT+New Road 2048 PM Peak
06/03/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			TT			TT	T	TT	T	T	TT	T
Traffic Volume (vph)	0	0	921	0	0	670	821	1376	584	127	1126	371
Future Volume (vph)	0	0	921	0	0	670	821	1376	584	127	1126	371
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			5.2			5.2	5.2	6.4	6.4	5.2	6.4	6.4
Lane Util. Factor			0.88			0.88	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.85			0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected			1.00			1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)			2787			2814	1752	3505	1568	1736	3471	1553
Flt Permitted			1.00			1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)			2787			2814	1752	3505	1568	1736	3471	1553
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	959	0	0	698	855	1433	608	132	1173	386
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	250	0	0	75
Lane Group Flow (vph)	0	0	959	0	0	698	855	1433	358	132	1173	311
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	3%	3%	3%	4%	4%	4%
Turn Type			Over			Over	Prot	NA	Perm	Prot	NA	Perm
Protected Phases			5			1	5	2		1	6	
Permitted Phases									2			6
Actuated Green, G (s)			45.5			25.4	45.5	53.0	53.0	25.4	32.9	32.9
Effective Green, g (s)			45.5			25.4	45.5	53.0	53.0	25.4	32.9	32.9
Actuated g/C Ratio			0.51			0.28	0.51	0.59	0.59	0.28	0.37	0.37
Clearance Time (s)			5.2			5.2	5.2	6.4	6.4	5.2	6.4	6.4
Vehicle Extension (s)			3.0			3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)			1408			794	885	2064	923	489	1268	567
v/s Ratio Prot			0.34			0.25	c0.49	0.41		0.08	c0.34	
v/s Ratio Perm									0.23			0.20
v/c Ratio			0.68			0.88	0.97	0.69	0.39	0.27	0.93	0.55
Uniform Delay, d1			16.8			30.8	21.5	12.9	9.9	25.1	27.4	22.7
Progression Factor			1.00			1.00	0.59	0.44	8.27	0.60	0.70	1.72
Incremental Delay, d2			1.4			10.9	10.0	0.6	0.4	0.3	11.4	3.3
Delay (s)			18.2			41.7	22.7	6.2	81.9	15.3	30.6	42.3
Level of Service			B			D	C	A	F	B	C	D
Approach Delay (s)		18.2			41.7			27.0			32.1	
Approach LOS		B			D			C			C	
Intersection Summary												
HCM 2000 Control Delay			28.6			HCM 2000 Level of Service			C			
HCM 2000 Volume to Capacity ratio			0.95									
Actuated Cycle Length (s)			90.0			Sum of lost time (s)			11.6			
Intersection Capacity Utilization			86.3%			ICU Level of Service			E			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

4: US 150 & NB U-Turn

RCUT+New Road 2048 PM Peak

06/03/2024



Movement	EBL	EBR	NBU	NBL	NBT	SBT	SBR
Lane Configurations			AA		↑↑	↑↑	
Traffic Volume (vph)	0	0	504	0	1542	1120	0
Future Volume (vph)	0	0	504	0	1542	1120	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			5.9		5.7	5.7	
Lane Util. Factor			0.97		0.95	0.95	
Frt			1.00		1.00	1.00	
Flt Protected			0.95		1.00	1.00	
Satd. Flow (prot)			3400		3505	3471	
Flt Permitted			0.95		1.00	1.00	
Satd. Flow (perm)			3400		3505	3471	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	525	0	1606	1167	0
RTOR Reduction (vph)	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	525	0	1606	1167	0
Heavy Vehicles (%)	2%	2%	3%	3%	3%	4%	4%
Turn Type			Prot		NA	NA	
Protected Phases			5		2	6	
Permitted Phases							
Actuated Green, G (s)			19.1		90.0	59.3	
Effective Green, g (s)			19.1		90.0	59.3	
Actuated g/C Ratio			0.21		1.00	0.66	
Clearance Time (s)			5.9		5.7	5.7	
Vehicle Extension (s)			3.0		3.0	3.0	
Lane Grp Cap (vph)			721		3505	2287	
v/s Ratio Prot			c0.15		0.46	c0.34	
v/s Ratio Perm							
v/c Ratio			0.73		0.46	0.51	
Uniform Delay, d1			33.0		0.0	7.9	
Progression Factor			0.89		1.00	0.44	
Incremental Delay, d2			2.3		0.3	0.7	
Delay (s)			31.8		0.3	4.2	
Level of Service			C		A	A	
Approach Delay (s)	0.0				8.0	4.2	
Approach LOS	A				A	A	
Intersection Summary							
HCM 2000 Control Delay			6.7		HCM 2000 Level of Service		A
HCM 2000 Volume to Capacity ratio			0.56				
Actuated Cycle Length (s)			90.0		Sum of lost time (s)		11.6
Intersection Capacity Utilization			55.0%		ICU Level of Service		B
Analysis Period (min)			15				
c Critical Lane Group							

HCM Signalized Intersection Capacity Analysis

5: US 150 & SB U-Turn

RCUT+New Road 2048 PM Peak

06/03/2024

							
Movement	WBL	WBR	NBT	NBR	SBU	SBL	SBT
Lane Configurations			↑↑		□□		↑↑
Traffic Volume (vph)	0	0	2412	0	369	0	1678
Future Volume (vph)	0	0	2412	0	369	0	1678
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			5.7		5.9		5.7
Lane Util. Factor			0.95		0.97		0.95
Frt			1.00		1.00		1.00
Flt Protected			1.00		0.95		1.00
Satd. Flow (prot)			3505		3367		3471
Flt Permitted			1.00		0.95		1.00
Satd. Flow (perm)			3505		3367		3471
Peak-hour factor, PHF	0.90	0.90	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	2512	0	384	0	1748
RTOR Reduction (vph)	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	2513	0	384	0	1748
Heavy Vehicles (%)	2%	2%	3%	3%	4%	4%	4%
Turn Type			NA		Prot		NA
Protected Phases			2		1		6
Permitted Phases							
Actuated Green, G (s)			67.3		11.1		90.0
Effective Green, g (s)			67.3		11.1		90.0
Actuated g/C Ratio			0.75		0.12		1.00
Clearance Time (s)			5.7		5.9		5.7
Vehicle Extension (s)			3.0		3.0		3.0
Lane Grp Cap (vph)			2620		415		3471
v/s Ratio Prot			c0.72		c0.11		0.50
v/s Ratio Perm							
v/c Ratio			0.96		0.93		0.50
Uniform Delay, d1			10.1		39.0		0.0
Progression Factor			0.27		0.80		1.00
Incremental Delay, d2			1.4		19.6		0.3
Delay (s)			4.1		51.1		0.3
Level of Service			A		D		A
Approach Delay (s)	0.0		4.1				9.4
Approach LOS	A		A				A
Intersection Summary							
HCM 2000 Control Delay			6.5		HCM 2000 Level of Service		A
HCM 2000 Volume to Capacity ratio			0.95				
Actuated Cycle Length (s)			90.0		Sum of lost time (s)		11.6
Intersection Capacity Utilization			86.9%		ICU Level of Service		E
Analysis Period (min)			15				
c Critical Lane Group							

Intersection												
Int Delay, s/veh	5.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰			↱↱				↱			↱
Traffic Vol, veh/h	0	515	196	0	355	14	0	0	212	0	0	315
Future Vol, veh/h	0	515	196	0	355	14	0	0	212	0	0	315
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	400	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	3	3	3	4	4	4	3	3	3	6	6	6
Mvmt Flow	0	599	228	0	413	16	0	0	247	0	0	366
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	-	-	0	-	-	713	-	-	215
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	-	-	-	6.245	-	-	6.99
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	-	-	-	-3.3285	-	-	3.357
Pot Cap-1 Maneuver	0	-	-	0	-	-	0	0	429	0	0	780
Stage 1	0	-	-	0	-	-	0	0	-	0	0	-
Stage 2	0	-	-	0	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	-	-	-	-	-	-	-	-	429	-	-	780
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0			24.1			13.6		
HCM LOS							C			B		
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT	WBR	SBLn1						
Capacity (veh/h)	429	-	-	-	-	780						
HCM Lane V/C Ratio	0.575	-	-	-	-	0.47						
HCM Control Delay (s)	24.1	-	-	-	-	13.6						
HCM Lane LOS	C	-	-	-	-	B						
HCM 95th %tile Q(veh)	3.5	-	-	-	-	2.5						

Intersection						
Int Delay, s/veh	2.6					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	121	0	155	172	0	123
Future Vol, veh/h	121	0	155	172	0	123
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	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	130	0	167	185	0	132
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	392	260	0	0	352	0
Stage 1	260	-	-	-	-	-
Stage 2	132	-	-	-	-	-
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	612	779	-	-	1207	-
Stage 1	783	-	-	-	-	-
Stage 2	894	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	612	779	-	-	1207	-
Mov Cap-2 Maneuver	612	-	-	-	-	-
Stage 1	783	-	-	-	-	-
Stage 2	894	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	12.5	0		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1		SBL	SBT	
Capacity (veh/h)	-	-	612	1207	-	-
HCM Lane V/C Ratio	-	-	0.213	-	-	-
HCM Control Delay (s)	-	-	12.5	0	-	-
HCM Lane LOS	-	-	B	A	-	-
HCM 95th %tile Q(veh)	-	-	0.8	0	-	-

HCM 6th Signalized Intersection Summary 8: US 150 & New Road

RCUT+New Road 2048 PM Peak
06/03/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	247	64	243	54	51	111	265	1213	64	81	823	186
Future Volume (veh/h)	247	64	243	54	51	111	265	1213	64	81	823	186
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1856	1856	1856	1841	1841	1841
Adj Flow Rate, veh/h	266	69	261	58	55	119	285	1304	69	87	885	200
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
Percent Heavy Veh, %	2	2	2	2	2	2	3	3	3	4	4	4
Cap, veh/h	364	307	486	249	166	141	332	1487	663	266	1340	598
Arrive On Green	0.12	0.16	0.16	0.04	0.09	0.09	0.14	0.42	0.42	0.03	0.13	0.13
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1767	3526	1572	1753	3497	1560
Grp Volume(v), veh/h	266	69	261	58	55	119	285	1304	69	87	885	200
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1767	1763	1572	1753	1749	1560
Q Serve(g_s), s	10.6	2.9	12.3	2.6	2.5	4.9	10.7	30.5	1.7	0.0	21.7	10.5
Cycle Q Clear(g_c), s	10.6	2.9	12.3	2.6	2.5	4.9	10.7	30.5	1.7	0.0	21.7	10.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	364	307	486	249	166	141	332	1487	663	266	1340	598
V/C Ratio(X)	0.73	0.22	0.54	0.23	0.33	0.84	0.86	0.88	0.10	0.33	0.66	0.33
Avail Cap(c_a), veh/h	364	307	486	284	168	143	367	1630	727	266	1340	598
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.89	0.89	0.89	0.82	0.82	0.82
Uniform Delay (d), s/veh	32.2	32.6	25.9	35.1	38.5	21.9	23.0	23.9	7.7	38.9	33.7	28.8
Incr Delay (d2), s/veh	7.3	0.4	1.2	0.5	1.2	34.4	15.4	6.8	0.3	0.6	2.1	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	9.8	2.4	8.2	2.1	2.1	6.9	8.9	17.9	1.6	3.2	15.1	7.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	39.5	33.0	27.1	35.6	39.6	56.3	38.4	30.7	8.0	39.4	35.8	30.1
LnGrp LOS	D	C	C	D	D	E	D	C	A	D	D	C
Approach Vol, veh/h		596			232			1658			1172	
Approach Delay, s/veh		33.3			47.2			31.1			35.1	
Approach LOS		C			D			C			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	14.7	44.4	9.2	21.7	18.2	40.9	16.0	14.9				
Change Period (Y+Rc), s	* 6.4	* 6.4	5.4	* 6.9	5.4	* 6.4	5.4	* 6.9				
Max Green Setting (Gmax), s	* 5.6	* 42	5.6	* 13	14.6	* 33	10.6	* 8.1				
Max Q Clear Time (g_c+I1), s	2.0	32.5	4.6	14.3	12.7	23.7	12.6	6.9				
Green Ext Time (p_c), s	0.0	5.4	0.0	0.0	0.2	4.0	0.0	0.1				
Intersection Summary												
HCM 6th Ctrl Delay			33.8									
HCM 6th LOS			C									
Notes												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

Intersection						
Int Delay, s/veh	4.9					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	105	8	103	92	9	123
Future Vol, veh/h	105	8	103	92	9	123
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	77	77	77	77	77	77
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	136	10	134	119	12	160
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	146	0	528	141
Stage 1	-	-	-	-	141	-
Stage 2	-	-	-	-	387	-
Critical Hdwy	-	-	4.11	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	-	-	2.209	-	3.509	3.309
Pot Cap-1 Maneuver	-	-	1442	-	513	910
Stage 1	-	-	-	-	888	-
Stage 2	-	-	-	-	688	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1442	-	462	910
Mov Cap-2 Maneuver	-	-	-	-	462	-
Stage 1	-	-	-	-	888	-
Stage 2	-	-	-	-	619	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		4.1		10.3	
HCM LOS					B	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	854	-	-	1442	-	
HCM Lane V/C Ratio	0.201	-	-	0.093	-	
HCM Control Delay (s)	10.3	-	-	7.8	0	
HCM Lane LOS	B	-	-	A	A	
HCM 95th %tile Q(veh)	0.7	-	-	0.3	-	

HCM 6th Signalized Intersection Summary 10: US 150 & Luther Road

RCUT+New Road 2048 PM Peak
06/03/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↔	↑↑	↔	↔	↑↑	↔
Traffic Volume (veh/h)	160	71	9	52	73	38	52	1466	53	18	1029	128
Future Volume (veh/h)	160	71	9	52	73	38	52	1466	53	18	1029	128
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885	1841	1841	1841	1856	1856	1856
Adj Flow Rate, veh/h	163	72	9	53	74	39	53	1496	54	18	1050	131
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	1	1	1	1	1	1	4	4	4	3	3	3
Cap, veh/h	247	84	10	133	176	79	72	1604	715	217	1946	868
Arrive On Green	0.20	0.20	0.20	0.20	0.20	0.20	0.08	0.92	0.92	0.12	0.55	0.55
Sat Flow, veh/h	903	423	51	403	881	394	1753	3497	1560	1767	3526	1572
Grp Volume(v), veh/h	244	0	0	166	0	0	53	1496	54	18	1050	131
Grp Sat Flow(s),veh/h/ln	1376	0	0	1678	0	0	1753	1749	1560	1767	1763	1572
Q Serve(g_s), s	8.0	0.0	0.0	0.0	0.0	0.0	2.7	22.1	0.3	0.8	17.1	3.7
Cycle Q Clear(g_c), s	15.6	0.0	0.0	7.6	0.0	0.0	2.7	22.1	0.3	0.8	17.1	3.7
Prop In Lane	0.67		0.04	0.32		0.23	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	341	0	0	388	0	0	72	1604	715	217	1946	868
V/C Ratio(X)	0.71	0.00	0.00	0.43	0.00	0.00	0.74	0.93	0.08	0.08	0.54	0.15
Avail Cap(c_a), veh/h	375	0	0	426	0	0	129	1772	790	217	1946	868
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.59	0.59	0.59	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.3	0.0	0.0	31.8	0.0	0.0	40.9	2.9	2.0	35.0	12.9	9.9
Incr Delay (d2), s/veh	5.7	0.0	0.0	0.7	0.0	0.0	8.6	7.4	0.1	0.2	1.1	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	9.5	0.0	0.0	5.8	0.0	0.0	2.2	5.0	0.2	0.6	9.8	2.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	41.0	0.0	0.0	32.6	0.0	0.0	49.4	10.3	2.1	35.1	14.0	10.2
LnGrp LOS	D	A	A	C	A	A	D	B	A	D	B	B
Approach Vol, veh/h		244			166			1603			1199	
Approach Delay, s/veh		41.0			32.6			11.3			13.9	
Approach LOS		D			C			B			B	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	20.6	44.5		24.9	9.1	56.1		24.9				
Change Period (Y+Rc), s	* 6.4	* 6.4		* 6.9	5.4	* 6.4		* 6.9				
Max Green Setting (Gmax), s	* 5.6	* 46		* 20	6.6	* 45		* 20				
Max Q Clear Time (g_c+I1), s	2.8	24.1		17.6	4.7	19.1		9.6				
Green Ext Time (p_c), s	0.0	11.0		0.3	0.0	7.8		0.6				
Intersection Summary												
HCM 6th Ctrl Delay				15.6								
HCM 6th LOS				B								
Notes												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

HCM 6th Signalized Intersection Summary

1: Schrieber Rd & Old Vincennes Rd

2 RCUTS+ New Road 2048 AM Peak

05/31/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	119	483	12	127	240	43	31	7	86	154	18	80
Future Volume (veh/h)	119	483	12	127	240	43	31	7	86	154	18	80
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1841	1841	1841	1885	1885	1885	1826	1826	1826	1826	1826	1826
Adj Flow Rate, veh/h	175	710	18	187	353	63	46	10	126	226	26	118
Peak Hour Factor	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68
Percent Heavy Veh, %	4	4	4	1	1	1	5	5	5	5	5	5
Cap, veh/h	515	977	25	302	851	152	329	28	358	334	71	322
Arrive On Green	0.55	0.55	0.55	0.55	0.55	0.55	0.25	0.25	0.25	0.25	0.25	0.25
Sat Flow, veh/h	955	1787	45	733	1557	278	1215	115	1450	1223	287	1304
Grp Volume(v), veh/h	175	0	728	187	0	416	46	0	136	226	0	144
Grp Sat Flow(s),veh/h/ln	955	0	1833	733	0	1835	1215	0	1565	1223	0	1591
Q Serve(g_s), s	7.9	0.0	17.9	14.9	0.0	8.0	2.0	0.0	4.3	10.5	0.0	4.5
Cycle Q Clear(g_c), s	15.9	0.0	17.9	32.8	0.0	8.0	6.5	0.0	4.3	14.8	0.0	4.5
Prop In Lane	1.00		0.02	1.00		0.15	1.00		0.93	1.00		0.82
Lane Grp Cap(c), veh/h	515	0	1002	302	0	1003	329	0	386	334	0	392
V/C Ratio(X)	0.34	0.00	0.73	0.62	0.00	0.41	0.14	0.00	0.35	0.68	0.00	0.37
Avail Cap(c_a), veh/h	515	0	1002	302	0	1003	329	0	386	334	0	392
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	12.6	0.0	10.2	22.8	0.0	8.0	21.4	0.0	18.6	25.0	0.0	18.7
Incr Delay (d2), s/veh	0.4	0.0	2.7	3.8	0.0	0.3	0.2	0.0	0.5	5.4	0.0	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.8	0.0	10.5	4.9	0.0	4.7	1.0	0.0	2.7	6.3	0.0	2.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.0	0.0	12.9	26.6	0.0	8.2	21.6	0.0	19.2	30.4	0.0	19.3
LnGrp LOS	B	A	B	C	A	A	C	A	B	C	A	B
Approach Vol, veh/h	903			603			182			370		
Approach Delay, s/veh	12.9			13.9			19.8			26.1		
Approach LOS	B			B			B			C		
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	21.0			39.0			21.0			39.0		
Change Period (Y+Rc), s	* 6.2			6.2			* 6.2			6.2		
Max Green Setting (Gmax), s	* 15			32.8			* 15			32.8		
Max Q Clear Time (g_c+I1), s	8.5			19.9			16.8			34.8		
Green Ext Time (p_c), s	0.4			5.0			0.0			0.0		
Intersection Summary												
HCM 6th Ctrl Delay	16.2											
HCM 6th LOS	B											
Notes												

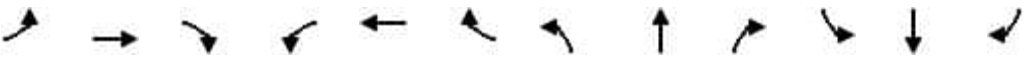
Intersection												
Int Delay, s/veh	2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑	↑			↑			↑
Traffic Vol, veh/h	0	695	58	0	457	162	0	0	207	0	0	12
Future Vol, veh/h	0	695	58	0	457	162	0	0	207	0	0	12
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	250	-	-	-	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	90	90	80	80	90	90	90	80	90	80
Heavy Vehicles, %	4	4	2	2	2	2	2	2	2	1	2	1
Mvmt Flow	0	869	64	0	571	203	0	0	230	0	0	15
Major/Minor	Major1		Major2			Minor1			Minor2			
Conflicting Flow All	-	0	0	-	-	0	-	-	467	-	-	571
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	-	-	-	6.93	-	-	6.215
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	-	-	-	3.319	-	-	3.3095
Pot Cap-1 Maneuver	0	-	-	0	-	-	0	0	543	0	0	522
Stage 1	0	-	-	0	-	-	0	0	-	0	0	-
Stage 2	0	-	-	0	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	-	-	-	-	-	-	-	-	543	-	-	522
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Approach	EB		WB			NB			SB			
HCM Control Delay, s	0		0			16.4			12.1			
HCM LOS						C			B			
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT	WBR	SBLn1						
Capacity (veh/h)	543	-	-	-	-	522						
HCM Lane V/C Ratio	0.424	-	-	-	-	0.029						
HCM Control Delay (s)	16.4	-	-	-	-	12.1						
HCM Lane LOS	C	-	-	-	-	B						
HCM 95th %tile Q(veh)	2.1	-	-	-	-	0.1						

HCM Signalized Intersection Capacity Analysis

3: US 150 & Old Vincennes Rd/Lawrence Banet Rd

2 RCUTS+ New Road 2048 AM Peak

05/31/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			TT			TT	T	TT	T	T	TT	T
Traffic Volume (vph)	0	0	902	0	0	429	444	559	352	104	1286	175
Future Volume (vph)	0	0	902	0	0	429	444	559	352	104	1286	175
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			5.2			5.2	5.2	6.4	6.4	5.2	6.4	6.4
Lane Util. Factor			0.88			0.88	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.85			0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected			1.00			1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)			2733			2733	1703	3406	1524	1719	3438	1538
Flt Permitted			1.00			1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)			2733			2733	1703	3406	1524	1719	3438	1538
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	940	0	0	447	462	582	367	108	1340	182
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	145	0	0	100
Lane Group Flow (vph)	0	0	940	0	0	447	463	582	222	108	1340	82
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	6%	6%	6%	5%	5%	5%
Turn Type			Over			Over	Prot	NA	Perm	Prot	NA	Perm
Protected Phases			5			1	5	2		1	6	
Permitted Phases									2			6
Actuated Green, G (s)			27.0			16.0	27.0	42.4	42.4	16.0	31.4	31.4
Effective Green, g (s)			27.0			16.0	27.0	42.4	42.4	16.0	31.4	31.4
Actuated g/C Ratio			0.39			0.23	0.39	0.61	0.61	0.23	0.45	0.45
Clearance Time (s)			5.2			5.2	5.2	6.4	6.4	5.2	6.4	6.4
Vehicle Extension (s)			3.0			3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)			1054			624	656	2063	923	392	1542	689
v/s Ratio Prot			c0.34			0.16	0.27	0.17		0.06	c0.39	
v/s Ratio Perm									0.15			0.05
v/c Ratio			0.89			0.72	0.71	0.28	0.24	0.28	0.87	0.12
Uniform Delay, d1			20.1			24.9	18.1	6.6	6.4	22.2	17.4	11.2
Progression Factor			1.00			1.00	1.06	0.91	7.07	1.20	0.79	4.51
Incremental Delay, d2			9.7			3.9	3.1	0.3	0.6	0.3	5.9	0.3
Delay (s)			29.8			28.8	22.4	6.3	45.6	26.9	19.8	51.0
Level of Service			C			C	C	A	D	C	B	D
Approach Delay (s)		29.8			28.8			21.8			23.7	
Approach LOS		C			C			C			C	
Intersection Summary												
HCM 2000 Control Delay			24.9			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.88									
Actuated Cycle Length (s)			70.0			Sum of lost time (s)			11.6			
Intersection Capacity Utilization			76.8%			ICU Level of Service			D			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

4: US 150 & NB U-Turn

2 RCUTS+ New Road 2048 AM Peak

06/03/2024



Movement	EBL	EBR	NBU	NBL	NBT	SBU	SBT	SBR
Lane Configurations			AA		↑↑	A	↑↑	
Traffic Volume (vph)	0	0	346	0	642	123	1219	0
Future Volume (vph)	0	0	346	0	642	123	1219	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			5.9		5.7	5.7	5.7	
Lane Util. Factor			0.97		0.95	1.00	0.95	
Frt			1.00		1.00	1.00	1.00	
Flt Protected			0.95		1.00	0.95	1.00	
Satd. Flow (prot)			3303		3406	1770	3438	
Flt Permitted			0.95		1.00	0.40	1.00	
Satd. Flow (perm)			3303		3406	740	3438	
Peak-hour factor, PHF	0.90	0.90	0.96	0.96	0.96	0.90	0.96	0.96
Adj. Flow (vph)	0	0	360	0	669	137	1270	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	360	0	669	137	1270	0
Heavy Vehicles (%)	2%	2%	6%	6%	6%	2%	5%	5%
Turn Type			Prot		NA	Perm	NA	
Protected Phases			5		2		6	
Permitted Phases						6		
Actuated Green, G (s)			12.5		70.0	45.9	45.9	
Effective Green, g (s)			12.5		70.0	45.9	45.9	
Actuated g/C Ratio			0.18		1.00	0.66	0.66	
Clearance Time (s)			5.9		5.7	5.7	5.7	
Vehicle Extension (s)			3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)			589		3406	485	2254	
v/s Ratio Prot			c0.11		0.20		c0.37	
v/s Ratio Perm						0.19		
v/c Ratio			0.61		0.20	0.28	0.56	
Uniform Delay, d1			26.5		0.0	5.1	6.6	
Progression Factor			1.19		1.00	0.36	0.45	
Incremental Delay, d2			1.6		0.1	1.3	0.9	
Delay (s)			33.1		0.1	3.1	3.9	
Level of Service			C		A	A	A	
Approach Delay (s)	0.0				11.7		3.8	
Approach LOS	A				B		A	
Intersection Summary								
HCM 2000 Control Delay			7.1	HCM 2000 Level of Service			A	
HCM 2000 Volume to Capacity ratio			0.57					
Actuated Cycle Length (s)			70.0	Sum of lost time (s)			11.6	
Intersection Capacity Utilization			53.2%	ICU Level of Service			A	
Analysis Period (min)			15					
c Critical Lane Group								

HCM Signalized Intersection Capacity Analysis

5: US 150 & SB U-Turn

2 RCUTS+ New Road 2048 AM Peak

06/03/2024

							
Movement	WBL	WBR	NBT	NBR	SBU	SBL	SBT
Lane Configurations			↑↑		↑↑		↑↑
Traffic Volume (vph)	0	0	1076	0	279	0	1909
Future Volume (vph)	0	0	1076	0	279	0	1909
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			5.7		5.9		5.7
Lane Util. Factor			0.95		0.97		0.95
Frt			1.00		1.00		1.00
Flt Protected			1.00		0.95		1.00
Satd. Flow (prot)			3406		3335		3438
Flt Permitted			1.00		0.95		1.00
Satd. Flow (perm)			3406		3335		3438
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	1121	0	291	0	1989
RTOR Reduction (vph)	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	1121	0	291	0	1989
Heavy Vehicles (%)	6%	6%	6%	6%	5%	5%	5%
Turn Type			NA		Prot		NA
Protected Phases			2		1		6
Permitted Phases							
Actuated Green, G (s)			46.7		11.7		70.0
Effective Green, g (s)			46.7		11.7		70.0
Actuated g/C Ratio			0.67		0.17		1.00
Clearance Time (s)			5.7		5.9		5.7
Vehicle Extension (s)			3.0		3.0		3.0
Lane Grp Cap (vph)			2272		557		3438
v/s Ratio Prot			0.33		0.09		c0.58
v/s Ratio Perm							
v/c Ratio			0.49		0.52		0.58
Uniform Delay, d1			5.8		26.6		0.0
Progression Factor			1.66		1.29		1.00
Incremental Delay, d2			0.6		0.4		0.3
Delay (s)			10.2		34.7		0.3
Level of Service			B		C		A
Approach Delay (s)	0.0		10.2				4.7
Approach LOS	A		B				A
Intersection Summary							
HCM 2000 Control Delay			6.5		HCM 2000 Level of Service		A
HCM 2000 Volume to Capacity ratio			0.69				
Actuated Cycle Length (s)			70.0		Sum of lost time (s)		11.6
Intersection Capacity Utilization			57.5%		ICU Level of Service		B
Analysis Period (min)			15				
c Critical Lane Group							

Intersection												
Int Delay, s/veh	3.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰			↱↰				↱			↱
Traffic Vol, veh/h	0	348	108	0	180	18	0	0	96	0	0	249
Future Vol, veh/h	0	348	108	0	180	18	0	0	96	0	0	249
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	400	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	3	3	3	4	4	4	3	3	3	6	6	6
Mvmt Flow	0	405	126	0	209	21	0	0	112	0	0	290
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	-	-	0	-	-	468	-	-	115
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	-	-	-	6.245	-	-	6.99
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	-	-	-	3.3285	-	-	3.357
Pot Cap-1 Maneuver	0	-	-	0	-	-	0	0	592	0	0	905
Stage 1	0	-	-	0	-	-	0	0	-	0	0	-
Stage 2	0	-	-	0	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	-	-	-	-	-	-	-	-	592	-	-	905
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0			12.5			10.8		
HCM LOS							B			B		
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT	WBR	SBLn1						
Capacity (veh/h)	592	-	-	-	-	905						
HCM Lane V/C Ratio	0.189	-	-	-	-	0.32						
HCM Control Delay (s)	12.5	-	-	-	-	10.8						
HCM Lane LOS	B	-	-	-	-	B						
HCM 95th %tile Q(veh)	0.7	-	-	-	-	1.4						

Intersection						
Int Delay, s/veh	2.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	66	0	30	105	0	49
Future Vol, veh/h	66	0	30	105	0	49
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	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	71	0	32	113	0	53
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	142	89	0	0	145	0
Stage 1	89	-	-	-	-	-
Stage 2	53	-	-	-	-	-
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	851	969	-	-	1437	-
Stage 1	934	-	-	-	-	-
Stage 2	970	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	851	969	-	-	1437	-
Mov Cap-2 Maneuver	851	-	-	-	-	-
Stage 1	934	-	-	-	-	-
Stage 2	970	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	9.6	0	0			
HCM LOS	A					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	851	1437	-	
HCM Lane V/C Ratio	-	-	0.083	-	-	
HCM Control Delay (s)	-	-	9.6	0	-	
HCM Lane LOS	-	-	A	A	-	
HCM 95th %tile Q(veh)	-	-	0.3	0	-	

HCM Signalized Intersection Capacity Analysis

8: US 150 & New Road

2 RCUTS+ New Road 2048 AM Peak

06/03/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			TT			TT	T	TT	T	T	TT	T
Traffic Volume (vph)	0	0	202	0	0	218	96	546	123	174	1117	127
Future Volume (vph)	0	0	202	0	0	218	96	546	123	174	1117	127
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			5.2			5.2	5.2	6.4	6.4	5.2	6.4	6.4
Lane Util. Factor			0.88			0.88	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.85			0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected			1.00			1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)			2787			2787	1703	3406	1524	1719	3438	1538
Flt Permitted			1.00			1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)			2787			2787	1703	3406	1524	1719	3438	1538
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	0	0	217	0	0	234	103	587	132	187	1201	137
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	46	0	0	44
Lane Group Flow (vph)	0	0	217	0	0	234	103	587	86	187	1201	93
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	6%	6%	5%	5%	5%
Turn Type			Over			Over	Prot	NA	Perm	Prot	NA	Perm
Protected Phases			5			1	5	2		1	6	
Permitted Phases									2			6
Actuated Green, G (s)			10.7			12.8	10.7	45.6	45.6	12.8	47.7	47.7
Effective Green, g (s)			10.7			12.8	10.7	45.6	45.6	12.8	47.7	47.7
Actuated g/C Ratio			0.15			0.18	0.15	0.65	0.65	0.18	0.68	0.68
Clearance Time (s)			5.2			5.2	5.2	6.4	6.4	5.2	6.4	6.4
Vehicle Extension (s)			3.0			3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)			426			509	260	2218	992	314	2342	1048
v/s Ratio Prot			0.08			0.08	0.06	0.17		c0.11	c0.35	
v/s Ratio Perm									0.06			0.06
v/c Ratio			0.51			0.46	0.40	0.26	0.09	0.60	0.51	0.09
Uniform Delay, d1			27.2			25.5	26.7	5.1	4.5	26.2	5.5	3.8
Progression Factor			1.00			1.00	0.92	0.52	0.19	0.82	2.19	4.38
Incremental Delay, d2			1.0			0.7	1.0	0.3	0.2	2.8	0.8	0.2
Delay (s)			28.2			26.2	25.6	3.0	1.0	24.2	12.7	16.7
Level of Service			C			C	C	A	A	C	B	B
Approach Delay (s)		28.2			26.2			5.5			14.5	
Approach LOS		C			C			A			B	
Intersection Summary												
HCM 2000 Control Delay			13.9			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.55									
Actuated Cycle Length (s)			70.0			Sum of lost time (s)				11.6		
Intersection Capacity Utilization			47.6%			ICU Level of Service				A		
Analysis Period (min)			15									
c Critical Lane Group												

Intersection						
Int Delay, s/veh	1.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	161	4	45	245	7	23
Future Vol, veh/h	161	4	45	245	7	23
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	77	77	77	77	77	77
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	209	5	58	318	9	30

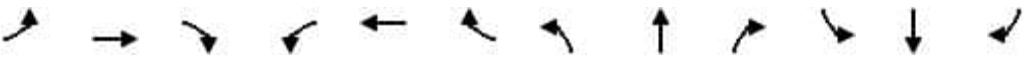
Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	214
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.11
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.209
Pot Cap-1 Maneuver	-	-	1362
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1362
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.2	10.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	673	-	-	1362	-
HCM Lane V/C Ratio	0.058	-	-	0.043	-
HCM Control Delay (s)	10.7	-	-	7.8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-

HCM 6th Signalized Intersection Summary 10: US 150 & Luther Road

2 RCUTS+ New Road 2048 AM Peak
06/03/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↗	↗	↗	↗	↗	↗
Traffic Volume (veh/h)	58	113	19	30	138	10	15	594	57	21	1229	134
Future Volume (veh/h)	58	113	19	30	138	10	15	594	57	21	1229	134
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1885	1885	1885	1796	1796	1796	1856	1856	1856
Adj Flow Rate, veh/h	61	119	20	32	145	11	16	625	60	22	1294	141
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	1	1	1	7	7	7	3	3	3
Cap, veh/h	127	161	25	90	219	15	33	1921	857	44	2004	894
Arrive On Green	0.15	0.15	0.15	0.15	0.15	0.15	0.04	1.00	1.00	0.02	0.57	0.57
Sat Flow, veh/h	411	1112	169	204	1505	106	1711	3413	1522	1767	3526	1572
Grp Volume(v), veh/h	200	0	0	188	0	0	16	625	60	22	1294	141
Grp Sat Flow(s),veh/h/ln	1692	0	0	1815	0	0	1711	1706	1522	1767	1763	1572
Q Serve(g_s), s	1.1	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.9	17.5	3.0
Cycle Q Clear(g_c), s	7.9	0.0	0.0	6.8	0.0	0.0	0.6	0.0	0.0	0.9	17.5	3.0
Prop In Lane	0.30		0.10	0.17		0.06	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	313	0	0	324	0	0	33	1921	857	44	2004	894
V/C Ratio(X)	0.64	0.00	0.00	0.58	0.00	0.00	0.49	0.33	0.07	0.50	0.65	0.16
Avail Cap(c_a), veh/h	380	0	0	396	0	0	137	1921	857	141	2004	894
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.99	0.99	0.99	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.8	0.0	0.0	28.5	0.0	0.0	33.3	0.0	0.0	33.7	10.3	7.2
Incr Delay (d2), s/veh	2.6	0.0	0.0	1.7	0.0	0.0	10.8	0.4	0.2	8.6	1.6	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	6.0	0.0	0.0	5.4	0.0	0.0	0.6	0.2	0.1	0.8	8.9	1.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	31.4	0.0	0.0	30.1	0.0	0.0	44.1	0.4	0.2	42.3	11.9	7.5
LnGrp LOS	C	A	A	C	A	A	D	A	A	D	B	A
Approach Vol, veh/h		200			188			701			1457	
Approach Delay, s/veh		31.4			30.1			1.4			11.9	
Approach LOS		C			C			A			B	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.1	45.8		17.1	6.7	46.2		17.1				
Change Period (Y+Rc), s	5.4	* 6.4		* 6.9	5.4	* 6.4		* 6.9				
Max Green Setting (Gmax), s	5.6	* 33		* 13	5.6	* 33		* 13				
Max Q Clear Time (g_c+I1), s	2.9	2.0		9.9	2.6	19.5		8.8				
Green Ext Time (p_c), s	0.0	4.2		0.3	0.0	7.1		0.4				
Intersection Summary												
HCM 6th Ctrl Delay				11.9								
HCM 6th LOS				B								
Notes												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

HCM Signalized Intersection Capacity Analysis

11: US 150

2 RCUTS+ New Road 2048 AM Peak

06/03/2024



Movement	EBL	EBR	NBU	NBL	NBT	SBT	SBR
Lane Configurations			RL		↑↑	↑↑	
Traffic Volume (vph)	0	0	140	0	624	1278	0
Future Volume (vph)	0	0	140	0	624	1278	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			7.4		7.4	5.7	
Lane Util. Factor			1.00		0.95	0.95	
Frt			1.00		1.00	1.00	
Flt Protected			0.95		1.00	1.00	
Satd. Flow (prot)			1703		3406	3438	
Flt Permitted			0.20		1.00	1.00	
Satd. Flow (perm)			353		3406	3438	
Peak-hour factor, PHF	0.90	0.90	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	0	0	151	0	671	1374	0
RTOR Reduction (vph)	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	151	0	671	1374	0
Heavy Vehicles (%)	2%	2%	6%	6%	6%	5%	5%
Turn Type			Perm		NA	NA	
Protected Phases					2	6	
Permitted Phases			2				
Actuated Green, G (s)			70.0		70.0	70.0	
Effective Green, g (s)			70.0		70.0	70.0	
Actuated g/C Ratio			1.00		1.00	1.00	
Clearance Time (s)			7.4		7.4	5.7	
Vehicle Extension (s)			3.0		3.0	3.0	
Lane Grp Cap (vph)			353		3406	3438	
v/s Ratio Prot					0.20	0.40	
v/s Ratio Perm			c0.43				
v/c Ratio			0.43		0.20	0.40	
Uniform Delay, d1			0.0		0.0	0.0	
Progression Factor			1.00		1.00	1.00	
Incremental Delay, d2			3.7		0.1	0.3	
Delay (s)			3.7		0.1	0.3	
Level of Service			A		A	A	
Approach Delay (s)	0.0				0.8	0.3	
Approach LOS	A				A	A	
Intersection Summary							
HCM 2000 Control Delay			0.5		HCM 2000 Level of Service		A
HCM 2000 Volume to Capacity ratio			0.48				
Actuated Cycle Length (s)			70.0		Sum of lost time (s)		7.4
Intersection Capacity Utilization			54.0%		ICU Level of Service		A
Analysis Period (min)			15				
c Critical Lane Group							

HCM 6th Signalized Intersection Summary

1: Schrieber Rd & Old Vincennes Rd

2 RCUTS+ New Road 2048 PM Peak

05/31/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	185	291	35	211	489	101	27	6	76	327	37	172
Future Volume (veh/h)	185	291	35	211	489	101	27	6	76	327	37	172
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1856	1856	1856	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	220	346	42	251	582	120	32	7	90	389	44	205
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	3	3	3	1	1	1	1	1	1	1	1	1
Cap, veh/h	255	806	98	482	753	155	315	35	445	449	86	401
Arrive On Green	0.50	0.50	0.50	0.50	0.50	0.50	0.30	0.30	0.30	0.30	0.30	0.30
Sat Flow, veh/h	739	1623	197	1004	1516	313	1140	117	1499	1309	290	1352
Grp Volume(v), veh/h	220	0	388	251	0	702	32	0	97	389	0	249
Grp Sat Flow(s),veh/h/ln	739	0	1820	1004	0	1829	1140	0	1615	1309	0	1642
Q Serve(g_s), s	11.0	0.0	8.2	12.8	0.0	18.8	1.4	0.0	2.7	15.1	0.0	7.5
Cycle Q Clear(g_c), s	29.8	0.0	8.2	21.0	0.0	18.8	9.0	0.0	2.7	17.8	0.0	7.5
Prop In Lane	1.00		0.11	1.00		0.17	1.00		0.93	1.00		0.82
Lane Grp Cap(c), veh/h	255	0	904	482	0	908	315	0	479	449	0	487
V/C Ratio(X)	0.86	0.00	0.43	0.52	0.00	0.77	0.10	0.00	0.20	0.87	0.00	0.51
Avail Cap(c_a), veh/h	255	0	904	482	0	908	315	0	479	449	0	487
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	26.6	0.0	9.7	16.4	0.0	12.3	21.2	0.0	15.8	23.6	0.0	17.5
Incr Delay (d2), s/veh	24.7	0.0	0.3	1.0	0.0	4.2	0.1	0.0	0.2	16.1	0.0	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	8.4	0.0	5.0	4.9	0.0	11.7	0.7	0.0	1.7	11.7	0.0	4.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	51.3	0.0	10.0	17.4	0.0	16.5	21.4	0.0	16.0	39.7	0.0	18.4
LnGrp LOS	D	A	A	B	A	B	C	A	B	D	A	B
Approach Vol, veh/h	608			953			129			638		
Approach Delay, s/veh	24.9			16.7			17.3			31.4		
Approach LOS	C			B			B			C		
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	24.0			36.0			24.0			36.0		
Change Period (Y+Rc), s	* 6.2			6.2			* 6.2			6.2		
Max Green Setting (Gmax), s	* 18			29.8			* 18			29.8		
Max Q Clear Time (g_c+l1), s	11.0			31.8			19.8			23.0		
Green Ext Time (p_c), s	0.3			0.0			0.0			3.4		
Intersection Summary												
HCM 6th Ctrl Delay	22.9											
HCM 6th LOS	C											
Notes												

Intersection												
Int Delay, s/veh	1.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑	↑			↑			↑
Traffic Vol, veh/h	0	776	52	0	766	426	0	0	145	0	0	35
Future Vol, veh/h	0	776	52	0	766	426	0	0	145	0	0	35
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	250	-	-	-	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	90	90	80	80	90	90	90	80	90	80
Heavy Vehicles, %	4	4	2	2	2	2	2	2	2	1	2	1
Mvmt Flow	0	970	58	0	958	533	0	0	161	0	0	44
Major/Minor	Major1		Major2			Minor1			Minor2			
Conflicting Flow All	-	0	0	-	-	0	-	-	514	-	-	958
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	-	-	-	6.93	-	-	6.215
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	-	-	-	3.319	-	-	3.3095
Pot Cap-1 Maneuver	0	-	-	0	-	-	0	0	506	0	0	313
Stage 1	0	-	-	0	-	-	0	0	-	0	0	-
Stage 2	0	-	-	0	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	-	-	-	-	-	-	-	-	506	-	-	313
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Approach	EB		WB			NB			SB			
HCM Control Delay, s	0		0			15.4			18.4			
HCM LOS						C			C			
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT	WBR	SBLn1						
Capacity (veh/h)	506	-	-	-	-	313						
HCM Lane V/C Ratio	0.318	-	-	-	-	0.14						
HCM Control Delay (s)	15.4	-	-	-	-	18.4						
HCM Lane LOS	C	-	-	-	-	C						
HCM 95th %tile Q(veh)	1.4	-	-	-	-	0.5						

HCM Signalized Intersection Capacity Analysis

3: US 150 & Old Vincennes Rd/Lawrence Banet Rd

2 RCUTS+ New Road 2048 PM Peak

05/31/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			TT			TT	T	TT	T	T	TT	T
Traffic Volume (vph)	0	0	921	0	0	670	821	1376	584	127	1126	371
Future Volume (vph)	0	0	921	0	0	670	821	1376	584	127	1126	371
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			5.2			5.2	5.2	6.4	6.4	5.2	6.4	6.4
Lane Util. Factor			0.88			0.88	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.85			0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected			1.00			1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)			2787			2814	1752	3505	1568	1736	3471	1553
Flt Permitted			1.00			1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)			2787			2814	1752	3505	1568	1736	3471	1553
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	959	0	0	698	855	1433	608	132	1173	386
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	245	0	0	75
Lane Group Flow (vph)	0	0	959	0	0	698	855	1433	363	132	1173	311
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	3%	3%	3%	4%	4%	4%
Turn Type			Over			Over	Prot	NA	Perm	Prot	NA	Perm
Protected Phases			5			1	5	2		1	6	
Permitted Phases									2			6
Actuated Green, G (s)			45.5			24.8	45.5	53.6	53.6	24.8	32.9	32.9
Effective Green, g (s)			45.5			24.8	45.5	53.6	53.6	24.8	32.9	32.9
Actuated g/C Ratio			0.51			0.28	0.51	0.60	0.60	0.28	0.37	0.37
Clearance Time (s)			5.2			5.2	5.2	6.4	6.4	5.2	6.4	6.4
Vehicle Extension (s)			3.0			3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)			1408			775	885	2087	933	478	1268	567
v/s Ratio Prot			0.34			0.25	c0.49	0.41		0.08	c0.34	
v/s Ratio Perm									0.23			0.20
v/c Ratio			0.68			0.90	0.97	0.69	0.39	0.28	0.93	0.55
Uniform Delay, d1			16.8			31.4	21.5	12.5	9.6	25.6	27.4	22.7
Progression Factor			1.00			1.00	0.63	0.41	8.55	0.83	0.77	1.32
Incremental Delay, d2			1.4			13.6	10.0	0.6	0.4	0.3	11.3	3.0
Delay (s)			18.2			45.0	23.6	5.7	82.3	21.4	32.3	32.9
Level of Service			B			D	C	A	F	C	C	C
Approach Delay (s)		18.2			45.0			27.1			31.6	
Approach LOS		B			D			C			C	
Intersection Summary												
HCM 2000 Control Delay			28.9			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.95									
Actuated Cycle Length (s)			90.0			Sum of lost time (s)				11.6		
Intersection Capacity Utilization			86.3%			ICU Level of Service				E		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis 4: US 150 & NB U-Turn

2 RCUTS+ New Road 2048 PM Peak

06/03/2024



Movement	EBL	EBR	NBU	NBL	NBT	SBU	SBT	SBR
Lane Configurations			AA		↑↑	A	↑↑	
Traffic Volume (vph)	0	0	504	0	1542	311	1120	0
Future Volume (vph)	0	0	504	0	1542	311	1120	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			5.9		5.7	5.2	5.7	
Lane Util. Factor			0.97		0.95	1.00	0.95	
Frt			1.00		1.00	1.00	1.00	
Flt Protected			0.95		1.00	0.95	1.00	
Satd. Flow (prot)			3400		3505	1770	3471	
Flt Permitted			0.95		1.00	0.10	1.00	
Satd. Flow (perm)			3400		3505	196	3471	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.90	0.96	0.96
Adj. Flow (vph)	0	0	525	0	1606	346	1167	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	525	0	1606	346	1167	0
Heavy Vehicles (%)	2%	2%	3%	3%	3%	2%	4%	4%
Turn Type			Prot		NA	pm+pt	NA	
Protected Phases			5		2	1	6	
Permitted Phases						6		
Actuated Green, G (s)			18.4		60.7	78.4	60.0	
Effective Green, g (s)			18.4		60.7	78.4	60.0	
Actuated g/C Ratio			0.20		0.67	0.87	0.67	
Clearance Time (s)			5.9		5.7	5.2	5.7	
Vehicle Extension (s)			3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)			695		2363	492	2314	
v/s Ratio Prot			c0.15		0.46	0.14	0.34	
v/s Ratio Perm						c0.47		
v/c Ratio			0.76		0.68	0.70	0.50	
Uniform Delay, d1			33.7		8.8	14.5	7.5	
Progression Factor			1.03		1.38	1.06	1.27	
Incremental Delay, d2			2.8		1.1	4.0	0.7	
Delay (s)			37.5		13.2	19.4	10.3	
Level of Service			D		B	B	B	
Approach Delay (s)	0.0				19.2		12.4	
Approach LOS	A				B		B	
Intersection Summary								
HCM 2000 Control Delay			16.3	HCM 2000 Level of Service			B	
HCM 2000 Volume to Capacity ratio			0.71					
Actuated Cycle Length (s)			90.0	Sum of lost time (s)			11.6	
Intersection Capacity Utilization			68.9%	ICU Level of Service			C	
Analysis Period (min)			15					
c Critical Lane Group								

HCM Signalized Intersection Capacity Analysis

5: US 150 & SB U-Turn

2 RCUTS+ New Road 2048 PM Peak

06/03/2024

							
Movement	WBL	WBR	NBT	NBR	SBU	SBL	SBT
Lane Configurations			↑↑		↓↓		↑↑
Traffic Volume (vph)	0	0	2412	0	369	0	1678
Future Volume (vph)	0	0	2412	0	369	0	1678
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			5.7		5.9		5.7
Lane Util. Factor			0.95		0.97		0.95
Frt			1.00		1.00		1.00
Flt Protected			1.00		0.95		1.00
Satd. Flow (prot)			3505		3367		3471
Flt Permitted			1.00		0.95		1.00
Satd. Flow (perm)			3505		3367		3471
Peak-hour factor, PHF	0.90	0.90	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	2512	0	384	0	1748
RTOR Reduction (vph)	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	2513	0	384	0	1748
Heavy Vehicles (%)	2%	2%	3%	3%	4%	4%	4%
Turn Type			NA		Prot		NA
Protected Phases			2		1		6
Permitted Phases							
Actuated Green, G (s)			67.3		11.1		90.0
Effective Green, g (s)			67.3		11.1		90.0
Actuated g/C Ratio			0.75		0.12		1.00
Clearance Time (s)			5.7		5.9		5.7
Vehicle Extension (s)			3.0		3.0		3.0
Lane Grp Cap (vph)			2620		415		3471
v/s Ratio Prot			c0.72		c0.11		0.50
v/s Ratio Perm							
v/c Ratio			0.96		0.93		0.50
Uniform Delay, d1			10.1		39.0		0.0
Progression Factor			0.27		0.80		1.00
Incremental Delay, d2			1.4		19.6		0.3
Delay (s)			4.1		50.8		0.3
Level of Service			A		D		A
Approach Delay (s)	0.0		4.1				9.4
Approach LOS	A		A				A
Intersection Summary							
HCM 2000 Control Delay			6.5		HCM 2000 Level of Service		A
HCM 2000 Volume to Capacity ratio			0.95				
Actuated Cycle Length (s)			90.0		Sum of lost time (s)		11.6
Intersection Capacity Utilization			86.9%		ICU Level of Service		E
Analysis Period (min)			15				
c Critical Lane Group							

Intersection												
Int Delay, s/veh	5.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰			↱↰				↱			↱
Traffic Vol, veh/h	0	515	196	0	355	14	0	0	212	0	0	315
Future Vol, veh/h	0	515	196	0	355	14	0	0	212	0	0	315
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	400	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	3	3	3	4	4	4	3	3	3	6	6	6
Mvmt Flow	0	599	228	0	413	16	0	0	247	0	0	366
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	-	-	0	-	-	713	-	-	215
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	-	-	-	6.245	-	-	6.99
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	-	-	-	3.3285	-	-	3.357
Pot Cap-1 Maneuver	0	-	-	0	-	-	0	0	429	0	0	780
Stage 1	0	-	-	0	-	-	0	0	-	0	0	-
Stage 2	0	-	-	0	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	-	-	-	-	-	-	-	-	429	-	-	780
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0			24.1			13.6		
HCM LOS							C			B		
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT	WBR	SBLn1						
Capacity (veh/h)	429	-	-	-	-	780						
HCM Lane V/C Ratio	0.575	-	-	-	-	0.47						
HCM Control Delay (s)	24.1	-	-	-	-	13.6						
HCM Lane LOS	C	-	-	-	-	B						
HCM 95th %tile Q(veh)	3.5	-	-	-	-	2.5						

Intersection						
Int Delay, s/veh	2.6					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	121	0	155	172	0	123
Future Vol, veh/h	121	0	155	172	0	123
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	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	130	0	167	185	0	132

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	392	260	0
Stage 1	260	-	-
Stage 2	132	-	-
Critical Hdwy	6.42	6.22	-
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	-
Pot Cap-1 Maneuver	612	779	-
Stage 1	783	-	-
Stage 2	894	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	612	779	-
Mov Cap-2 Maneuver	612	-	-
Stage 1	783	-	-
Stage 2	894	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.5	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	612	1207
HCM Lane V/C Ratio	-	-	0.213	-
HCM Control Delay (s)	-	-	12.5	0
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.8	0

HCM Signalized Intersection Capacity Analysis 8: US 150 & New Road

2 RCUTS+ New Road 2048 PM Peak
06/03/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			TT			TT	T	TT	T	T	TT	T
Traffic Volume (vph)	0	0	554	0	0	216	265	1460	128	81	877	237
Future Volume (vph)	0	0	554	0	0	216	265	1460	128	81	877	237
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			5.2			5.2	5.2	6.4	6.4	5.2	6.4	6.4
Lane Util. Factor			0.88			0.88	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.85			0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected			1.00			1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)			2787			2787	1752	3505	1568	1736	3471	1553
Flt Permitted			1.00			1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)			2787			2787	1752	3505	1568	1736	3471	1553
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	0	0	596	0	0	232	285	1570	138	87	943	255
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	40	0	0	105
Lane Group Flow (vph)	0	0	596	0	0	232	285	1570	98	87	943	150
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	4%	4%	4%
Turn Type			Over			Over	Prot	NA	Perm	Prot	NA	Perm
Protected Phases			5			1	5	2		1	6	
Permitted Phases									2			6
Actuated Green, G (s)			25.6			14.2	25.6	64.2	64.2	14.2	52.8	52.8
Effective Green, g (s)			25.6			14.2	25.6	64.2	64.2	14.2	52.8	52.8
Actuated g/C Ratio			0.28			0.16	0.28	0.71	0.71	0.16	0.59	0.59
Clearance Time (s)			5.2			5.2	5.2	6.4	6.4	5.2	6.4	6.4
Vehicle Extension (s)			3.0			3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)			792			439	498	2500	1118	273	2036	911
v/s Ratio Prot			c0.21			c0.08	0.16	c0.45		0.05	0.27	
v/s Ratio Perm									0.06			0.10
v/c Ratio			0.75			0.53	0.57	0.63	0.09	0.32	0.46	0.16
Uniform Delay, d1			29.3			34.8	27.5	6.7	3.9	33.6	10.6	8.5
Progression Factor			1.00			1.00	0.94	1.64	3.61	1.33	1.56	5.01
Incremental Delay, d2			4.1			1.2	1.2	0.9	0.1	0.6	0.7	0.4
Delay (s)			33.4			36.0	26.9	11.9	14.4	45.4	17.2	43.0
Level of Service			C			D	C	B	B	D	B	D
Approach Delay (s)		33.4			36.0			14.2			24.2	
Approach LOS		C			D			B			C	
Intersection Summary												
HCM 2000 Control Delay			21.3			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.63									
Actuated Cycle Length (s)			90.0			Sum of lost time (s)			11.6			
Intersection Capacity Utilization			57.6%			ICU Level of Service			B			
Analysis Period (min)			15									
c Critical Lane Group												

Intersection						
Int Delay, s/veh	4.9					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	105	8	103	92	9	123
Future Vol, veh/h	105	8	103	92	9	123
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	77	77	77	77	77	77
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	136	10	134	119	12	160
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	146	0	528	141
Stage 1	-	-	-	-	141	-
Stage 2	-	-	-	-	387	-
Critical Hdwy	-	-	4.11	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	-	-	2.209	-	3.509	3.309
Pot Cap-1 Maneuver	-	-	1442	-	513	910
Stage 1	-	-	-	-	888	-
Stage 2	-	-	-	-	688	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1442	-	462	910
Mov Cap-2 Maneuver	-	-	-	-	462	-
Stage 1	-	-	-	-	888	-
Stage 2	-	-	-	-	619	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		4.1		10.3	
HCM LOS					B	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	854	-	-	1442	-	
HCM Lane V/C Ratio	0.201	-	-	0.093	-	
HCM Control Delay (s)	10.3	-	-	7.8	0	
HCM Lane LOS	B	-	-	A	A	
HCM 95th %tile Q(veh)	0.7	-	-	0.3	-	

HCM 6th Signalized Intersection Summary 10: US 150 & Luther Road

2 RCUTS+ New Road 2048 PM Peak
06/03/2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↔	↕	↔	↔	↕	↔
Traffic Volume (veh/h)	160	71	9	52	73	38	52	1466	53	18	1029	128
Future Volume (veh/h)	160	71	9	52	73	38	52	1466	53	18	1029	128
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885	1841	1841	1841	1856	1856	1856
Adj Flow Rate, veh/h	163	72	9	53	74	39	53	1496	54	18	1050	131
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	1	1	1	1	1	1	4	4	4	3	3	3
Cap, veh/h	247	84	10	133	176	79	72	1604	715	217	1946	868
Arrive On Green	0.20	0.20	0.20	0.20	0.20	0.20	0.08	0.92	0.92	0.12	0.55	0.55
Sat Flow, veh/h	903	423	51	403	881	394	1753	3497	1560	1767	3526	1572
Grp Volume(v), veh/h	244	0	0	166	0	0	53	1496	54	18	1050	131
Grp Sat Flow(s),veh/h/ln	1376	0	0	1678	0	0	1753	1749	1560	1767	1763	1572
Q Serve(g_s), s	8.0	0.0	0.0	0.0	0.0	0.0	2.7	22.1	0.3	0.8	17.1	3.7
Cycle Q Clear(g_c), s	15.6	0.0	0.0	7.6	0.0	0.0	2.7	22.1	0.3	0.8	17.1	3.7
Prop In Lane	0.67		0.04	0.32		0.23	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	341	0	0	388	0	0	72	1604	715	217	1946	868
V/C Ratio(X)	0.71	0.00	0.00	0.43	0.00	0.00	0.74	0.93	0.08	0.08	0.54	0.15
Avail Cap(c_a), veh/h	375	0	0	426	0	0	129	1772	790	217	1946	868
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.86	0.86	0.86	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.3	0.0	0.0	31.8	0.0	0.0	40.9	2.9	2.0	35.0	12.9	9.9
Incr Delay (d2), s/veh	5.7	0.0	0.0	0.7	0.0	0.0	12.1	10.0	0.2	0.2	1.1	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	9.5	0.0	0.0	5.8	0.0	0.0	2.3	6.2	0.2	0.6	9.8	2.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	41.0	0.0	0.0	32.6	0.0	0.0	53.0	13.0	2.2	35.1	14.0	10.2
LnGrp LOS	D	A	A	C	A	A	D	B	A	D	B	B
Approach Vol, veh/h	244			166			1603			1199		
Approach Delay, s/veh	41.0			32.6			13.9			13.9		
Approach LOS	D			C			B			B		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	20.6	44.5		24.9	9.1	56.1		24.9				
Change Period (Y+Rc), s	* 6.4	* 6.4		* 6.9	5.4	* 6.4		* 6.9				
Max Green Setting (Gmax), s	* 5.6	* 46		* 20	6.6	* 45		* 20				
Max Q Clear Time (g_c+l1), s	2.8	24.1		17.6	4.7	19.1		9.6				
Green Ext Time (p_c), s	0.0	11.0		0.3	0.0	7.8		0.6				

Intersection Summary

HCM 6th Ctrl Delay	16.9
HCM 6th LOS	B

Notes

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

HCM Signalized Intersection Capacity Analysis

11: US 150

2 RCUTS+ New Road 2048 PM Peak

06/03/2024



Movement	EBL	EBR	NBU	NBL	NBT	SBT	SBR
Lane Configurations			RL		↑↑	↑↑	
Traffic Volume (vph)	0	0	105	0	1571	1090	0
Future Volume (vph)	0	0	105	0	1571	1090	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			7.4		7.4	5.7	
Lane Util. Factor			1.00		0.95	0.95	
Frt			1.00		1.00	1.00	
Flt Protected			0.95		1.00	1.00	
Satd. Flow (prot)			1703		3406	3438	
Flt Permitted			0.24		1.00	1.00	
Satd. Flow (perm)			433		3406	3438	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	0	0	113	0	1689	1172	0
RTOR Reduction (vph)	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	113	0	1689	1172	0
Heavy Vehicles (%)	2%	2%	6%	6%	6%	5%	5%
Turn Type			Perm		NA	NA	
Protected Phases					2	6	
Permitted Phases			2				
Actuated Green, G (s)			90.0		90.0	90.0	
Effective Green, g (s)			90.0		90.0	90.0	
Actuated g/C Ratio			1.00		1.00	1.00	
Clearance Time (s)			7.4		7.4	5.7	
Vehicle Extension (s)			3.0		3.0	3.0	
Lane Grp Cap (vph)			433		3406	3438	
v/s Ratio Prot					0.50	0.34	
v/s Ratio Perm			0.26				
v/c Ratio			0.26		0.50	0.34	
Uniform Delay, d1			0.0		0.0	0.0	
Progression Factor			1.00		1.00	1.00	
Incremental Delay, d2			1.2		0.4	0.2	
Delay (s)			1.2		0.4	0.2	
Level of Service			A		A	A	
Approach Delay (s)	0.0				0.5	0.2	
Approach LOS	A				A	A	
Intersection Summary							
HCM 2000 Control Delay			0.4		HCM 2000 Level of Service		A
HCM 2000 Volume to Capacity ratio			0.54				
Actuated Cycle Length (s)			90.0		Sum of lost time (s)		7.4
Intersection Capacity Utilization			49.6%		ICU Level of Service		A
Analysis Period (min)			15				
c Critical Lane Group							

Lanes, Volumes, Timings
3: US 150 & Old Vincennes Rd/Lawrence Banet Rd

Baseline 2048 AM Peak
06/05/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	994	0	0	620	0	889	738	0	1502	712
Future Volume (vph)	0	0	994	0	0	620	0	889	738	0	1502	712
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.88	1.00	1.00	0.88	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected												
Satd. Flow (prot)	0	0	2733	0	0	2733	0	3406	1524	0	3438	1538
Flt Permitted												
Satd. Flow (perm)	0	0	2733	0	0	2733	0	3406	1524	0	3438	1538
Right Turn on Red			No			No			Yes			Yes
Satd. Flow (RTOR)									769			742
Link Speed (mph)		30			30			50			50	
Link Distance (ft)		327			343			682			655	
Travel Time (s)		7.4			7.8			9.3			8.9	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	6%	6%	6%	5%	5%	5%
Adj. Flow (vph)	0	0	1035	0	0	646	0	926	769	0	1565	742
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	1035	0	0	646	0	926	769	0	1565	742
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			48			48	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors			1			1		2	1		2	1
Detector Template			Right			Right		Thru	Right		Thru	Right
Leading Detector (ft)			20			20		100	20		100	20
Trailing Detector (ft)			0			0		0	0		0	0
Detector 1 Position(ft)			0			0		0	0		0	0
Detector 1 Size(ft)			20			20		6	20		6	20
Detector 1 Type			Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)			0.0			0.0		0.0	0.0		0.0	0.0
Detector 1 Queue (s)			0.0			0.0		0.0	0.0		0.0	0.0
Detector 1 Delay (s)			0.0			0.0		0.0	0.0		0.0	0.0
Detector 2 Position(ft)								94			94	
Detector 2 Size(ft)								6			6	
Detector 2 Type								Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)								0.0			0.0	
Turn Type			Prot			Prot		NA	Perm		NA	Perm
Protected Phases			7			3		2			6	
Permitted Phases									2			6
Detector Phase			7			3		2	2		6	6
Switch Phase												

Lanes, Volumes, Timings
3: US 150 & Old Vincennes Rd/Lawrence Banet Rd

Baseline 2048 AM Peak
06/05/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)			15.0			15.0		15.0	15.0		15.0	15.0
Minimum Split (s)			20.0			20.0		22.0	22.0		22.0	22.0
Total Split (s)			29.0			29.0		36.0	36.0		36.0	36.0
Total Split (%)			44.6%			44.6%		55.4%	55.4%		55.4%	55.4%
Maximum Green (s)			24.2			24.2		29.6	29.6		29.6	29.6
Yellow Time (s)			3.2			3.2		4.7	4.7		4.7	4.7
All-Red Time (s)			1.6			1.6		1.7	1.7		1.7	1.7
Lost Time Adjust (s)			0.0			0.0		0.0	0.0		0.0	0.0
Total Lost Time (s)			4.8			4.8		6.4	6.4		6.4	6.4
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)			3.0			3.0		3.0	3.0		3.0	3.0
Minimum Gap (s)			3.0			3.0		3.0	3.0		3.0	3.0
Time Before Reduce (s)			0.0			0.0		20.0	20.0		20.0	20.0
Time To Reduce (s)			0.0			0.0		20.0	20.0		20.0	20.0
Recall Mode			None			None		C-Min	C-Min		C-Min	C-Min
Act Effect Green (s)			24.2			24.2		29.6	29.6		29.6	29.6
Actuated g/C Ratio			0.37			0.37		0.46	0.46		0.46	0.46
v/c Ratio			1.02			0.64		0.60	0.69		1.00	0.67
Control Delay			55.8			20.2		15.2	4.9		42.6	4.6
Queue Delay			0.0			0.0		0.0	0.0		0.0	0.0
Total Delay			55.8			20.2		15.2	4.9		42.6	4.6
LOS			E			C		B	A		D	A
Approach Delay		55.8			20.2			10.5			30.4	
Approach LOS		E			C			B			C	

Intersection Summary

Area Type: Other

Cycle Length: 65

Actuated Cycle Length: 65

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.02

Intersection Signal Delay: 27.9

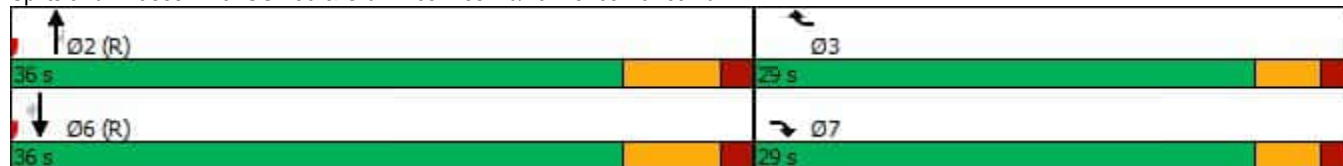
Intersection LOS: C

Intersection Capacity Utilization 85.6%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 3: US 150 & Old Vincennes Rd/Lawrence Banet Rd



Lanes, Volumes, Timings
3: US 150 & Old Vincennes Rd/Lawrence Banet Rd

RCUT 2048 AM Peak

06/05/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↑↑			↑↑	↑	↑↑	↑	↑	↑↑	↑
Traffic Volume (vph)	0	0	1046	0	0	641	517	426	484	275	1248	220
Future Volume (vph)	0	0	1046	0	0	641	517	426	484	275	1248	220
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	500		0	500		0
Storage Lanes	0		2	0		2	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	0.88	1.00	1.00	0.88	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected							0.950			0.950		
Satd. Flow (prot)	0	0	2733	0	0	2733	1703	3406	1524	1719	3438	1538
Flt Permitted							0.950			0.950		
Satd. Flow (perm)	0	0	2733	0	0	2733	1703	3406	1524	1719	3438	1538
Right Turn on Red			No			No			Yes			Yes
Satd. Flow (RTOR)									385			208
Link Speed (mph)		30			30			50			50	
Link Distance (ft)		312			343			682			655	
Travel Time (s)		7.1			7.8			9.3			8.9	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	6%	6%	6%	5%	5%	5%
Adj. Flow (vph)	0	0	1090	0	0	668	539	444	504	286	1300	229
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	1090	0	0	668	539	444	504	286	1300	229
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			48			48	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors			1			1	1	2	1	1	2	1
Detector Template			Right			Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)			20			20	20	100	20	20	100	20
Trailing Detector (ft)			0			0	0	0	0	0	0	0
Detector 1 Position(ft)			0			0	0	0	0	0	0	0
Detector 1 Size(ft)			20			20	20	6	20	20	6	20
Detector 1 Type			Cl+Ex			Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)			0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)			0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)			0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)								94			94	
Detector 2 Size(ft)								6			6	
Detector 2 Type								Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)								0.0			0.0	
Turn Type			Over			Over	Prot	NA	Perm	Prot	NA	Perm
Protected Phases			5			1	5	2		1	6	

Lanes, Volumes, Timings
3: US 150 & Old Vincennes Rd/Lawrence Banet Rd

RCUT 2048 AM Peak
06/05/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases									2			6
Detector Phase			5			1	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)			5.0			5.0	5.0	15.0	15.0	5.0	15.0	15.0
Minimum Split (s)			11.0			11.0	11.0	22.0	22.0	11.0	22.0	22.0
Total Split (s)			35.0			30.0	35.0	40.0	40.0	30.0	35.0	35.0
Total Split (%)			50.0%			42.9%	50.0%	57.1%	57.1%	42.9%	50.0%	50.0%
Maximum Green (s)			29.8			24.8	29.8	33.6	33.6	24.8	28.6	28.6
Yellow Time (s)			4.2			4.2	4.2	4.7	4.7	4.2	4.7	4.7
All-Red Time (s)			1.0			1.0	1.0	1.7	1.7	1.0	1.7	1.7
Lost Time Adjust (s)			0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)			5.2			5.2	5.2	6.4	6.4	5.2	6.4	6.4
Lead/Lag			Lead			Lead	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?			Yes			Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)			3.0			3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)			3.0			3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)			0.0			0.0	0.0	20.0	20.0	0.0	20.0	20.0
Time To Reduce (s)			0.0			0.0	0.0	20.0	20.0	0.0	20.0	20.0
Recall Mode			None			None	None	C-Min	C-Min	None	C-Min	C-Min
Act Effect Green (s)			29.6			21.9	29.6	36.5	36.5	21.9	28.8	28.8
Actuated g/C Ratio			0.42			0.31	0.42	0.52	0.52	0.31	0.41	0.41
v/c Ratio			0.94			0.78	0.75	0.25	0.51	0.53	0.92	0.30
Control Delay			36.9			28.8	26.1	11.1	12.9	25.6	27.7	12.7
Queue Delay			0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay			36.9			28.8	26.1	11.1	12.9	25.6	27.7	12.7
LOS			D			C	C	B	B	C	C	B
Approach Delay		36.9			28.8			17.2			25.5	
Approach LOS		D			C			B			C	

Intersection Summary

Area Type: Other

Cycle Length: 70

Actuated Cycle Length: 70

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 70

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.94

Intersection Signal Delay: 25.9

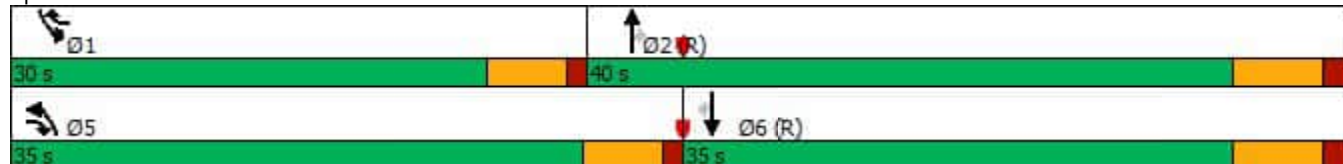
Intersection LOS: C

Intersection Capacity Utilization 80.8%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 3: US 150 & Old Vincennes Rd/Lawrence Banet Rd



Lanes, Volumes, Timings
3: US 150 & Old Vincennes Rd/Lawrence Banet Rd

RCUT+New Road 2048 AM Peak

06/05/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	902	0	0	429	444	559	352	104	1286	175
Future Volume (vph)	0	0	902	0	0	429	444	559	352	104	1286	175
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	500		0	500		0
Storage Lanes	0		2	0		2	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	0.88	1.00	1.00	0.88	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected							0.950			0.950		
Satd. Flow (prot)	0	0	2733	0	0	2733	1703	3406	1524	1719	3438	1538
Flt Permitted							0.950			0.950		
Satd. Flow (perm)	0	0	2733	0	0	2733	1703	3406	1524	1719	3438	1538
Right Turn on Red			No			No			Yes			Yes
Satd. Flow (RTOR)									367			182
Link Speed (mph)		30			30			50			50	
Link Distance (ft)		312			343			682			655	
Travel Time (s)		7.1			7.8			9.3			8.9	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	6%	6%	6%	5%	5%	5%
Adj. Flow (vph)	0	0	940	0	0	447	463	582	367	108	1340	182
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	940	0	0	447	463	582	367	108	1340	182
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			48			48	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors			1			1	1	2	1	1	2	1
Detector Template			Right			Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)			20			20	20	100	20	20	100	20
Trailing Detector (ft)			0			0	0	0	0	0	0	0
Detector 1 Position(ft)			0			0	0	0	0	0	0	0
Detector 1 Size(ft)			20			20	20	6	20	20	6	20
Detector 1 Type			Cl+Ex			Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)			0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)			0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)			0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)								94			94	
Detector 2 Size(ft)								6			6	
Detector 2 Type								Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)								0.0			0.0	
Turn Type			Over			Over	Prot	NA	Perm	Prot	NA	Perm
Protected Phases			5			1	5	2		1	6	

Lanes, Volumes, Timings
3: US 150 & Old Vincennes Rd/Lawrence Banet Rd

RCUT+New Road 2048 AM Peak

06/05/2024

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases									2			6
Detector Phase			5			1	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)			5.0			5.0	5.0	15.0	15.0	5.0	15.0	15.0
Minimum Split (s)			11.0			11.0	11.0	22.0	22.0	11.0	22.0	22.0
Total Split (s)			33.0			24.0	33.0	46.0	46.0	24.0	37.0	37.0
Total Split (%)			47.1%			34.3%	47.1%	65.7%	65.7%	34.3%	52.9%	52.9%
Maximum Green (s)			27.8			18.8	27.8	39.6	39.6	18.8	30.6	30.6
Yellow Time (s)			4.2			4.2	4.2	4.7	4.7	4.2	4.7	4.7
All-Red Time (s)			1.0			1.0	1.0	1.7	1.7	1.0	1.7	1.7
Lost Time Adjust (s)			0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)			5.2			5.2	5.2	6.4	6.4	5.2	6.4	6.4
Lead/Lag			Lead			Lead	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?			Yes			Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)			3.0			3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)			3.0			3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)			0.0			0.0	0.0	20.0	20.0	0.0	20.0	20.0
Time To Reduce (s)			0.0			0.0	0.0	20.0	20.0	0.0	20.0	20.0
Recall Mode			None			None	None	C-Min	C-Min	None	C-Min	C-Min
Act Effect Green (s)			27.0			16.0	27.0	42.4	42.4	16.0	31.4	31.4
Actuated g/C Ratio			0.39			0.23	0.39	0.61	0.61	0.23	0.45	0.45
v/c Ratio			0.89			0.72	0.71	0.28	0.34	0.28	0.87	0.23
Control Delay			32.6			31.5	25.3	6.7	8.0	26.4	21.3	12.0
Queue Delay			0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay			32.6			31.5	25.3	6.7	8.0	26.4	21.3	12.0
LOS			C			C	C	A	A	C	C	B
Approach Delay		32.6			31.5			13.2			20.6	
Approach LOS		C			C			B			C	

Intersection Summary

Area Type: Other

Cycle Length: 70

Actuated Cycle Length: 70

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.89

Intersection Signal Delay: 21.9

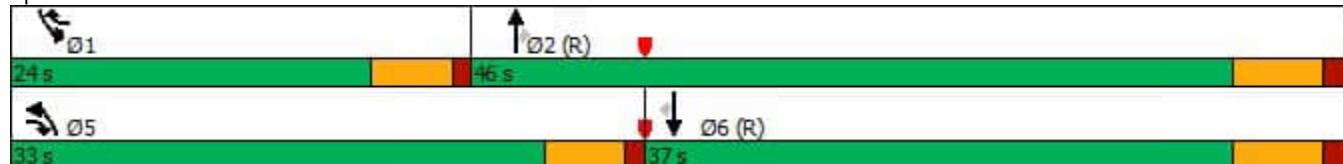
Intersection LOS: C

Intersection Capacity Utilization 76.8%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 3: US 150 & Old Vincennes Rd/Lawrence Banet Rd



Lanes, Volumes, Timings
3: US 150 & Old Vincennes Rd/Lawrence Banet Rd

2 RCUTS+ New Road 2048 AM Peak

06/05/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			FF			FF	F	FF	F	F	FF	F
Traffic Volume (vph)	0	0	902	0	0	429	444	559	352	104	1286	175
Future Volume (vph)	0	0	902	0	0	429	444	559	352	104	1286	175
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	500		0	500		0
Storage Lanes	0		2	0		2	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	0.88	1.00	1.00	0.88	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected							0.950			0.950		
Satd. Flow (prot)	0	0	2733	0	0	2733	1703	3406	1524	1719	3438	1538
Flt Permitted							0.950			0.950		
Satd. Flow (perm)	0	0	2733	0	0	2733	1703	3406	1524	1719	3438	1538
Right Turn on Red			No			No			Yes			Yes
Satd. Flow (RTOR)									367			182
Link Speed (mph)		30			30			50			50	
Link Distance (ft)		312			343			682			655	
Travel Time (s)		7.1			7.8			9.3			8.9	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	6%	6%	6%	5%	5%	5%
Adj. Flow (vph)	0	0	940	0	0	447	463	582	367	108	1340	182
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	940	0	0	447	463	582	367	108	1340	182
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			48			48	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors			1			1	1	2	1	1	2	1
Detector Template			Right			Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)			20			20	20	100	20	20	100	20
Trailing Detector (ft)			0			0	0	0	0	0	0	0
Detector 1 Position(ft)			0			0	0	0	0	0	0	0
Detector 1 Size(ft)			20			20	20	6	20	20	6	20
Detector 1 Type			Cl+Ex			Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)			0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)			0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)			0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)								94			94	
Detector 2 Size(ft)								6			6	
Detector 2 Type								Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)								0.0			0.0	
Turn Type			Over			Over	Prot	NA	Perm	Prot	NA	Perm
Protected Phases			5			1	5	2		1	6	

Lanes, Volumes, Timings
3: US 150 & Old Vincennes Rd/Lawrence Banet Rd

2 RCUTS+ New Road 2048 AM Peak

06/05/2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases									2			6
Detector Phase			5			1	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)			5.0			5.0	5.0	15.0	15.0	5.0	15.0	15.0
Minimum Split (s)			11.0			11.0	11.0	22.0	22.0	11.0	22.0	22.0
Total Split (s)			33.0			24.0	33.0	46.0	46.0	24.0	37.0	37.0
Total Split (%)			47.1%			34.3%	47.1%	65.7%	65.7%	34.3%	52.9%	52.9%
Maximum Green (s)			27.8			18.8	27.8	39.6	39.6	18.8	30.6	30.6
Yellow Time (s)			4.2			4.2	4.2	4.7	4.7	4.2	4.7	4.7
All-Red Time (s)			1.0			1.0	1.0	1.7	1.7	1.0	1.7	1.7
Lost Time Adjust (s)			0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)			5.2			5.2	5.2	6.4	6.4	5.2	6.4	6.4
Lead/Lag			Lead			Lead	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?			Yes			Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)			3.0			3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)			3.0			3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)			0.0			0.0	0.0	20.0	20.0	0.0	20.0	20.0
Time To Reduce (s)			0.0			0.0	0.0	20.0	20.0	0.0	20.0	20.0
Recall Mode			None			None	None	C-Min	C-Min	None	C-Min	C-Min
Act Effect Green (s)			27.0			16.0	27.0	42.4	42.4	16.0	31.4	31.4
Actuated g/C Ratio			0.39			0.23	0.39	0.61	0.61	0.23	0.45	0.45
v/c Ratio			0.89			0.72	0.71	0.28	0.34	0.28	0.87	0.23
Control Delay			32.6			31.5	25.3	6.7	8.0	27.1	21.2	11.0
Queue Delay			0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay			32.6			31.5	25.3	6.7	8.0	27.1	21.2	11.0
LOS			C			C	C	A	A	C	C	B
Approach Delay	32.6			31.5				13.2			20.4	
Approach LOS	C			C				B			C	
Queue Length 50th (ft)			205			100	125	17	78	45	328	42
Queue Length 95th (ft)			#327			144	311	87	111	m89	#387	98
Internal Link Dist (ft)	232			263				602			575	
Turn Bay Length (ft)							500			500		
Base Capacity (vph)			1085			734	676	2063	1067	461	1542	790
Starvation Cap Reductn			0			0	0	0	0	0	0	0
Spillback Cap Reductn			0			0	0	0	0	0	0	0
Storage Cap Reductn			0			0	0	0	0	0	0	0
Reduced v/c Ratio			0.87			0.61	0.68	0.28	0.34	0.23	0.87	0.23

Intersection Summary

Area Type: Other

Cycle Length: 70

Actuated Cycle Length: 70

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.89

Intersection Signal Delay: 21.8

Intersection LOS: C

Intersection Capacity Utilization 76.8%

ICU Level of Service D

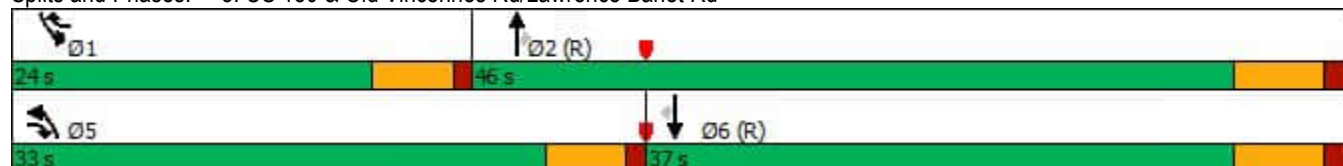
Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

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

Splits and Phases: 3: US 150 & Old Vincennes Rd/Lawrence Banet Rd



Lanes, Volumes, Timings
3: US 150 & Old Vincennes Rd/Lawrence Banet Rd

Baseline 2048 PM Peak
06/05/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	1180	0	0	858	0	1964	893	0	1236	1310
Future Volume (vph)	0	0	1180	0	0	858	0	1964	893	0	1236	1310
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.88	1.00	1.00	0.88	1.00	0.95	1.00	1.00	0.95	1.00
Fr't			0.850			0.850			0.850			0.850
Flt Protected												
Satd. Flow (prot)	0	0	2787	0	0	2814	0	3505	1568	0	3471	1553
Flt Permitted												
Satd. Flow (perm)	0	0	2787	0	0	2814	0	3505	1568	0	3471	1553
Right Turn on Red			No			No			Yes			Yes
Satd. Flow (RTOR)									753			1091
Link Speed (mph)		30			30			50			50	
Link Distance (ft)		327			343			682			655	
Travel Time (s)		7.4			7.8			9.3			8.9	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	3%	3%	3%	4%	4%	4%
Adj. Flow (vph)	0	0	1229	0	0	894	0	2046	930	0	1288	1365
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	1229	0	0	894	0	2046	930	0	1288	1365
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			48			48	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors			1			1		2	1		2	1
Detector Template			Right			Right		Thru	Right		Thru	Right
Leading Detector (ft)			20			20		100	20		100	20
Trailing Detector (ft)			0			0		0	0		0	0
Detector 1 Position(ft)			0			0		0	0		0	0
Detector 1 Size(ft)			20			20		6	20		6	20
Detector 1 Type			Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)			0.0			0.0		0.0	0.0		0.0	0.0
Detector 1 Queue (s)			0.0			0.0		0.0	0.0		0.0	0.0
Detector 1 Delay (s)			0.0			0.0		0.0	0.0		0.0	0.0
Detector 2 Position(ft)								94			94	
Detector 2 Size(ft)								6			6	
Detector 2 Type								Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)								0.0			0.0	
Turn Type			Prot			Prot		NA	Perm		NA	Perm
Protected Phases			7			3		2			6	
Permitted Phases									2			6
Detector Phase			7			3		2	2		6	6
Switch Phase												

Lanes, Volumes, Timings
3: US 150 & Old Vincennes Rd/Lawrence Banet Rd

Baseline 2048 PM Peak

06/05/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)			15.0			15.0		15.0	15.0		15.0	15.0
Minimum Split (s)			20.0			20.0		22.0	22.0		22.0	22.0
Total Split (s)			39.0			39.0		51.0	51.0		51.0	51.0
Total Split (%)			43.3%			43.3%		56.7%	56.7%		56.7%	56.7%
Maximum Green (s)			34.2			34.2		44.6	44.6		44.6	44.6
Yellow Time (s)			3.2			3.2		4.7	4.7		4.7	4.7
All-Red Time (s)			1.6			1.6		1.7	1.7		1.7	1.7
Lost Time Adjust (s)			0.0			0.0		0.0	0.0		0.0	0.0
Total Lost Time (s)			4.8			4.8		6.4	6.4		6.4	6.4
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)			3.0			3.0		3.0	3.0		3.0	3.0
Minimum Gap (s)			3.0			3.0		3.0	3.0		3.0	3.0
Time Before Reduce (s)			0.0			0.0		20.0	20.0		20.0	20.0
Time To Reduce (s)			0.0			0.0		20.0	20.0		20.0	20.0
Recall Mode			None			None		C-Min	C-Min		C-Min	C-Min
Act Effect Green (s)			34.2			34.2		44.6	44.6		44.6	44.6
Actuated g/C Ratio			0.38			0.38		0.50	0.50		0.50	0.50
v/c Ratio			1.16			0.84		1.18	0.80		0.75	1.03
Control Delay			111.1			33.9		104.5	8.4		13.3	47.9
Queue Delay			0.0			1.7		0.0	0.6		0.0	0.0
Total Delay			111.1			35.6		104.5	9.0		13.3	47.9
LOS			F			D		F	A		B	D
Approach Delay		111.1			35.6			74.6			31.1	
Approach LOS		F			D			E			C	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 120

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.18

Intersection Signal Delay: 61.0

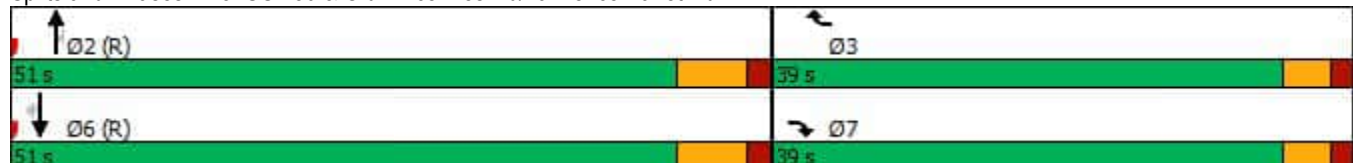
Intersection LOS: E

Intersection Capacity Utilization 93.6%

ICU Level of Service F

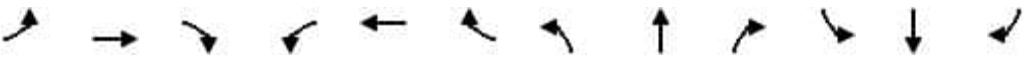
Analysis Period (min) 15

Splits and Phases: 3: US 150 & Old Vincennes Rd/Lawrence Banet Rd



Lanes, Volumes, Timings
3: US 150 & Old Vincennes Rd/Lawrence Banet Rd

RCUT 2048 PM Peak
06/05/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			FF			FF	FF	FF	FF	FF	FF	FF
Traffic Volume (vph)	0	0	1228	0	0	887	1099	923	724	175	987	402
Future Volume (vph)	0	0	1228	0	0	887	1099	923	724	175	987	402
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	500		0	500		0
Storage Lanes	0		2	0		2	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	0.88	1.00	1.00	0.88	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected							0.950			0.950		
Satd. Flow (prot)	0	0	2787	0	0	2814	1752	3505	1568	1736	3471	1553
Flt Permitted							0.950			0.950		
Satd. Flow (perm)	0	0	2787	0	0	2814	1752	3505	1568	1736	3471	1553
Right Turn on Red			No			No			Yes			Yes
Satd. Flow (RTOR)									597			104
Link Speed (mph)		30			30			50			50	
Link Distance (ft)		312			343			682			655	
Travel Time (s)		7.1			7.8			9.3			8.9	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	3%	3%	3%	4%	4%	4%
Adj. Flow (vph)	0	0	1279	0	0	924	1145	961	754	182	1028	419
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	1279	0	0	924	1145	961	754	182	1028	419
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			48			48	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors			1			1	1	2	1	1	2	1
Detector Template			Right			Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)			20			20	20	100	20	20	100	20
Trailing Detector (ft)			0			0	0	0	0	0	0	0
Detector 1 Position(ft)			0			0	0	0	0	0	0	0
Detector 1 Size(ft)			20			20	20	6	20	20	6	20
Detector 1 Type			Cl+Ex			Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)			0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)			0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)			0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)								94			94	
Detector 2 Size(ft)								6			6	
Detector 2 Type								Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)								0.0			0.0	
Turn Type			Over			Over	Prot	NA	Perm	Prot	NA	Perm
Protected Phases			5			1	5	2		1	6	

Lanes, Volumes, Timings
3: US 150 & Old Vincennes Rd/Lawrence Banet Rd

RCUT 2048 PM Peak
06/05/2024

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases									2			6
Detector Phase			5			1	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)			5.0			5.0	5.0	15.0	15.0	5.0	15.0	15.0
Minimum Split (s)			11.0			11.0	11.0	22.0	22.0	11.0	22.0	22.0
Total Split (s)			57.0			40.0	57.0	50.0	50.0	40.0	33.0	33.0
Total Split (%)			63.3%			44.4%	63.3%	55.6%	55.6%	44.4%	36.7%	36.7%
Maximum Green (s)			51.8			34.8	51.8	43.6	43.6	34.8	26.6	26.6
Yellow Time (s)			4.2			4.2	4.2	4.7	4.7	4.2	4.7	4.7
All-Red Time (s)			1.0			1.0	1.0	1.7	1.7	1.0	1.7	1.7
Lost Time Adjust (s)			0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)			5.2			5.2	5.2	6.4	6.4	5.2	6.4	6.4
Lead/Lag			Lag			Lead	Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?			Yes			Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)			3.0			3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)			3.0			3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)			0.0			0.0	0.0	20.0	20.0	0.0	20.0	20.0
Time To Reduce (s)			0.0			0.0	0.0	20.0	20.0	0.0	20.0	20.0
Recall Mode			None			None	None	C-Min	C-Min	None	C-Min	C-Min
Act Effect Green (s)			51.8			33.1	51.8	45.3	45.3	33.1	26.6	26.6
Actuated g/C Ratio			0.58			0.37	0.58	0.50	0.50	0.37	0.30	0.30
v/c Ratio			0.80			0.89	1.14	0.55	0.69	0.29	1.00	0.79
Control Delay			19.8			38.8	80.8	9.3	12.2	12.5	51.1	39.1
Queue Delay			0.0			0.0	0.0	0.0	0.2	0.0	0.0	0.0
Total Delay			19.8			38.8	80.8	9.3	12.4	12.5	51.1	39.1
LOS			B			D	F	A	B	B	D	D
Approach Delay		19.8			38.8			38.7			43.7	
Approach LOS		B			D			D			D	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 26 (29%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 120

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.14

Intersection Signal Delay: 36.3

Intersection LOS: D

Intersection Capacity Utilization 97.8%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 3: US 150 & Old Vincennes Rd/Lawrence Banet Rd



Lanes, Volumes, Timings
3: US 150 & Old Vincennes Rd/Lawrence Banet Rd

RCUT+New Road 2048 PM Peak

06/05/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			FF			FF	F	FF	F	F	FF	F
Traffic Volume (vph)	0	0	921	0	0	670	821	1376	584	127	1126	371
Future Volume (vph)	0	0	921	0	0	670	821	1376	584	127	1126	371
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	500		0	500		0
Storage Lanes	0		2	0		2	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	0.88	1.00	1.00	0.88	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected							0.950			0.950		
Satd. Flow (prot)	0	0	2787	0	0	2814	1752	3505	1568	1736	3471	1553
Flt Permitted							0.950			0.950		
Satd. Flow (perm)	0	0	2787	0	0	2814	1752	3505	1568	1736	3471	1553
Right Turn on Red			No			No			Yes			Yes
Satd. Flow (RTOR)									605			118
Link Speed (mph)		30			30			50			50	
Link Distance (ft)		312			343			682			655	
Travel Time (s)		7.1			7.8			9.3			8.9	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	3%	3%	3%	4%	4%	4%
Adj. Flow (vph)	0	0	959	0	0	698	855	1433	608	132	1173	386
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	959	0	0	698	855	1433	608	132	1173	386
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			48			48	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors			1			1	1	2	1	1	2	1
Detector Template			Right			Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)			20			20	20	100	20	20	100	20
Trailing Detector (ft)			0			0	0	0	0	0	0	0
Detector 1 Position(ft)			0			0	0	0	0	0	0	0
Detector 1 Size(ft)			20			20	20	6	20	20	6	20
Detector 1 Type			Cl+Ex			Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)			0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)			0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)			0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)								94			94	
Detector 2 Size(ft)								6			6	
Detector 2 Type								Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)								0.0			0.0	
Turn Type			Over			Over	Prot	NA	Perm	Prot	NA	Perm
Protected Phases			5			1	5	2		1	6	

Lanes, Volumes, Timings
3: US 150 & Old Vincennes Rd/Lawrence Banet Rd

RCUT+New Road 2048 PM Peak

06/05/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases									2			6
Detector Phase			5			1	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)			5.0			5.0	5.0	15.0	15.0	5.0	15.0	15.0
Minimum Split (s)			11.0			11.0	11.0	22.0	22.0	11.0	22.0	22.0
Total Split (s)			51.0			31.0	51.0	59.0	59.0	31.0	39.0	39.0
Total Split (%)			56.7%			34.4%	56.7%	65.6%	65.6%	34.4%	43.3%	43.3%
Maximum Green (s)			45.8			25.8	45.8	52.6	52.6	25.8	32.6	32.6
Yellow Time (s)			4.2			4.2	4.2	4.7	4.7	4.2	4.7	4.7
All-Red Time (s)			1.0			1.0	1.0	1.7	1.7	1.0	1.7	1.7
Lost Time Adjust (s)			0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)			5.2			5.2	5.2	6.4	6.4	5.2	6.4	6.4
Lead/Lag			Lag			Lead	Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?			Yes			Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)			3.0			3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)			3.0			3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)			0.0			0.0	0.0	20.0	20.0	0.0	20.0	20.0
Time To Reduce (s)			0.0			0.0	0.0	20.0	20.0	0.0	20.0	20.0
Recall Mode			None			None	None	C-Min	C-Min	None	C-Min	C-Min
Act Effect Green (s)			45.5			24.8	45.5	53.6	53.6	24.8	32.9	32.9
Actuated g/C Ratio			0.51			0.28	0.51	0.60	0.60	0.28	0.37	0.37
v/c Ratio			0.68			0.90	0.97	0.69	0.52	0.28	0.93	0.60
Control Delay			19.2			47.5	28.6	10.3	9.2	15.7	36.7	38.9
Queue Delay			0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay			19.2			47.5	28.6	10.3	9.2	15.7	36.7	38.9
LOS			B			D	C	B	A	B	D	D
Approach Delay		19.2			47.5			15.5			35.5	
Approach LOS		B			D			B			D	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 31 (34%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.97

Intersection Signal Delay: 25.1

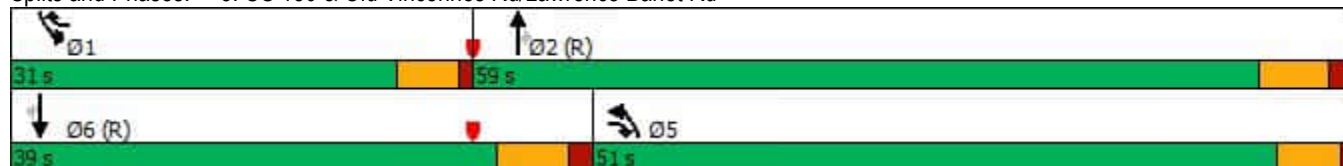
Intersection LOS: C

Intersection Capacity Utilization 86.3%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 3: US 150 & Old Vincennes Rd/Lawrence Banet Rd



Lanes, Volumes, Timings
3: US 150 & Old Vincennes Rd/Lawrence Banet Rd

2 RCUTS+ New Road 2048 PM Peak

06/05/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	921	0	0	670	821	1376	584	127	1126	371
Future Volume (vph)	0	0	921	0	0	670	821	1376	584	127	1126	371
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	500		0	500		0
Storage Lanes	0		2	0		2	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	0.88	1.00	1.00	0.88	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected							0.950			0.950		
Satd. Flow (prot)	0	0	2787	0	0	2814	1752	3505	1568	1736	3471	1553
Flt Permitted							0.950			0.950		
Satd. Flow (perm)	0	0	2787	0	0	2814	1752	3505	1568	1736	3471	1553
Right Turn on Red			No			No			Yes			Yes
Satd. Flow (RTOR)									605			118
Link Speed (mph)		30			30			50			50	
Link Distance (ft)		312			343			682			655	
Travel Time (s)		7.1			7.8			9.3			8.9	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	3%	3%	3%	4%	4%	4%
Adj. Flow (vph)	0	0	959	0	0	698	855	1433	608	132	1173	386
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	959	0	0	698	855	1433	608	132	1173	386
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			48			48	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors			1			1	1	2	1	1	2	1
Detector Template			Right			Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)			20			20	20	100	20	20	100	20
Trailing Detector (ft)			0			0	0	0	0	0	0	0
Detector 1 Position(ft)			0			0	0	0	0	0	0	0
Detector 1 Size(ft)			20			20	20	6	20	20	6	20
Detector 1 Type			Cl+Ex			Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)			0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)			0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)			0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)								94			94	
Detector 2 Size(ft)								6			6	
Detector 2 Type								Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)								0.0			0.0	
Turn Type			Over			Over	Prot	NA	Perm	Prot	NA	Perm
Protected Phases			5			1	5	2		1	6	

Lanes, Volumes, Timings
3: US 150 & Old Vincennes Rd/Lawrence Banet Rd

2 RCUTS+ New Road 2048 PM Peak

06/05/2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases									2			6
Detector Phase			5			1	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)			5.0			5.0	5.0	15.0	15.0	5.0	15.0	15.0
Minimum Split (s)			11.0			11.0	11.0	22.0	22.0	11.0	22.0	22.0
Total Split (s)			51.0			31.0	51.0	59.0	59.0	31.0	39.0	39.0
Total Split (%)			56.7%			34.4%	56.7%	65.6%	65.6%	34.4%	43.3%	43.3%
Maximum Green (s)			45.8			25.8	45.8	52.6	52.6	25.8	32.6	32.6
Yellow Time (s)			4.2			4.2	4.2	4.7	4.7	4.2	4.7	4.7
All-Red Time (s)			1.0			1.0	1.0	1.7	1.7	1.0	1.7	1.7
Lost Time Adjust (s)			0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)			5.2			5.2	5.2	6.4	6.4	5.2	6.4	6.4
Lead/Lag			Lag			Lead	Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?			Yes			Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)			3.0			3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)			3.0			3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)			0.0			0.0	0.0	20.0	20.0	0.0	20.0	20.0
Time To Reduce (s)			0.0			0.0	0.0	20.0	20.0	0.0	20.0	20.0
Recall Mode			None			None	None	C-Min	C-Min	None	C-Min	C-Min
Act Effect Green (s)			45.5			24.8	45.5	53.6	53.6	24.8	32.9	32.9
Actuated g/C Ratio			0.51			0.28	0.51	0.60	0.60	0.28	0.37	0.37
v/c Ratio			0.68			0.90	0.97	0.69	0.52	0.28	0.93	0.60
Control Delay			19.8			47.5	26.4	6.0	8.2	22.3	33.7	24.7
Queue Delay			0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay			19.8			47.5	26.4	6.0	8.2	22.3	33.7	24.7
LOS			B			D	C	A	A	C	C	C
Approach Delay	19.8			47.5				12.5			30.8	
Approach LOS	B			D				B			C	
Queue Length 50th (ft)			220			213	394	149	115	20	377	184
Queue Length 95th (ft)			296			#321	m#476	m192	m120	m100	#453	259
Internal Link Dist (ft)	232			263				602			575	
Turn Bay Length (ft)							500			500		
Base Capacity (vph)			1418			806	891	2085	1177	497	1268	642
Starvation Cap Reductn			0			0	0	0	0	0	0	0
Spillback Cap Reductn			0			0	0	0	0	0	0	0
Storage Cap Reductn			0			0	0	0	0	0	0	0
Reduced v/c Ratio			0.68			0.87	0.96	0.69	0.52	0.27	0.93	0.60

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 26 (29%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.97

Intersection Signal Delay: 22.5

Intersection LOS: C

Intersection Capacity Utilization 86.3%

ICU Level of Service E

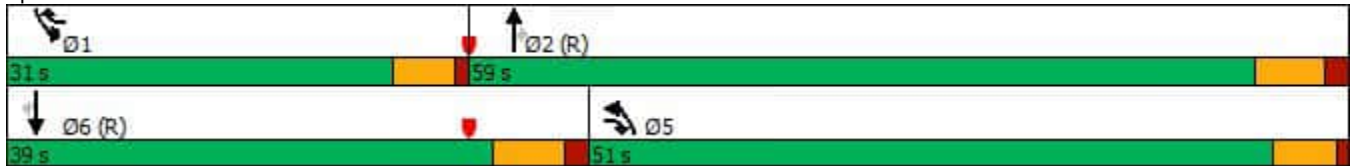
Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

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

Splits and Phases: 3: US 150 & Old Vincennes Rd/Lawrence Banet Rd



MOVEMENT SUMMARY

 **Site: 101 [Lawrence Banet Rd at Lafollette Station Dr - 2048 AM**
- single lane (Site Folder: Baseline)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
 Site Category: (None)
 Roundabout

Vehicle Movement Performance																
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed	
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist]					mph
South: NB Lafollette Station Dr																
3	L2	All MCs	80	4.0	80	4.0	0.134	13.9	LOS B	0.8	19.7	0.69	0.73	0.69		31.7
8	T1	All MCs	7	4.0	7	4.0	0.134	7.9	LOS A	0.8	19.7	0.69	0.73	0.69		32.4
18	R2	All MCs	20	4.0	20	4.0	0.134	8.0	LOS A	0.8	19.7	0.69	0.73	0.69		32.1
Approach			107	4.0	107	4.0	0.134	12.4	LOS B	0.8	19.7	0.69	0.73	0.69		31.8
East: WB Lawrence Banet Rd																
1	L2	All MCs	20	3.0	20	3.0	0.152	13.2	LOS B	0.8	21.6	0.65	0.65	0.65		33.4
6	T1	All MCs	92	3.0	92	3.0	0.152	7.2	LOS A	0.8	21.6	0.65	0.65	0.65		34.2
16	R2	All MCs	20	3.0	20	3.0	0.152	7.3	LOS A	0.8	21.6	0.65	0.65	0.65		33.8
Approach			132	3.0	132	3.0	0.152	8.2	LOS A	0.8	21.6	0.65	0.65	0.65		34.0
North: SB Lafollette Station Dr																
7	L2	All MCs	22	6.0	22	6.0	0.460	11.1	LOS B	3.1	80.6	0.48	0.53	0.48		34.4
4	T1	All MCs	3	6.0	3	6.0	0.460	5.1	LOS A	3.1	80.6	0.48	0.53	0.48		35.3
14	R2	All MCs	517	6.0	517	6.0	0.460	5.2	LOS A	3.1	80.6	0.48	0.53	0.48		34.9
Approach			542	6.0	542	6.0	0.460	5.4	LOS A	3.1	80.6	0.48	0.53	0.48		34.9
West: EB Lawrence Banet Rd																
5	L2	All MCs	581	3.0	581	3.0	0.597	10.2	LOS B	5.3	135.3	0.28	0.55	0.28		33.2
2	T1	All MCs	142	3.0	142	3.0	0.597	4.2	LOS A	5.3	135.3	0.28	0.55	0.28		33.9
12	R2	All MCs	97	3.0	97	3.0	0.597	4.3	LOS A	5.3	135.3	0.28	0.55	0.28		33.6
Approach			820	3.0	820	3.0	0.597	8.4	LOS A	5.3	135.3	0.28	0.55	0.28		33.4
All Vehicles			1601	4.1	1601	4.1	0.597	7.6	LOS A	5.3	135.3	0.41	0.56	0.41		33.8

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Roundabout LOS Method: Same as Signalised Intersections.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

Intersection and Approach LOS values are based on average delay for all movements (v/c not used).

Roundabout Capacity Model: SIDRA HCM.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

 **Site: 101 [Lawrence Banet Rd at Lafollette Station Dr - 2048 PM**
- single lane (Site Folder: Baseline)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%				[Veh. veh	Dist]				
			veh/h		veh/h					ft					mph
South: NB Lafollette Station Dr															
3	L2	All MCs	194	4.0	194	4.0	0.328	15.2	LOS B	2.2	55.6	0.81	0.77	0.81	31.0
8	T1	All MCs	21	4.0	21	4.0	0.328	9.3	LOS A	2.2	55.6	0.81	0.77	0.81	31.6
18	R2	All MCs	20	4.0	20	4.0	0.328	9.3	LOS A	2.2	55.6	0.81	0.77	0.81	31.4
Approach			236	4.0	236	4.0	0.328	14.2	LOS B	2.2	55.6	0.81	0.77	0.81	31.1
East: WB Lawrence Banet Rd															
1	L2	All MCs	24	3.0	24	3.0	0.276	14.6	LOS B	1.7	44.2	0.76	0.70	0.76	33.1
6	T1	All MCs	176	3.0	176	3.0	0.276	8.7	LOS A	1.7	44.2	0.76	0.70	0.76	33.8
16	R2	All MCs	16	3.0	16	3.0	0.276	8.7	LOS A	1.7	44.2	0.76	0.70	0.76	33.5
Approach			216	3.0	216	3.0	0.276	9.3	LOS A	1.7	44.2	0.76	0.70	0.76	33.7
North: SB Lafollette Station Dr															
7	L2	All MCs	13	6.0	13	6.0	0.600	13.7	LOS B	5.2	136.3	0.73	0.70	0.82	33.6
4	T1	All MCs	8	6.0	8	6.0	0.600	7.7	LOS A	5.2	136.3	0.73	0.70	0.82	34.4
14	R2	All MCs	583	6.0	583	6.0	0.600	7.8	LOS A	5.2	136.3	0.73	0.70	0.82	34.0
Approach			604	6.0	604	6.0	0.600	7.9	LOS A	5.2	136.3	0.73	0.70	0.82	34.0
West: EB Lawrence Banet Rd															
5	L2	All MCs	568	3.0	568	3.0	0.723	10.3	LOS B	8.9	227.4	0.39	0.51	0.39	33.3
2	T1	All MCs	239	3.0	239	3.0	0.723	4.4	LOS A	8.9	227.4	0.39	0.51	0.39	34.0
12	R2	All MCs	186	3.0	186	3.0	0.723	4.4	LOS A	8.9	227.4	0.39	0.51	0.39	33.7
Approach			992	3.0	992	3.0	0.723	7.8	LOS A	8.9	227.4	0.39	0.51	0.39	33.6
All Vehicles			2048	4.0	2048	4.0	0.723	8.7	LOS A	8.9	227.4	0.58	0.62	0.61	33.4

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Roundabout LOS Method: Same as Signalised Intersections.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

Intersection and Approach LOS values are based on average delay for all movements (v/c not used).

Roundabout Capacity Model: SIDRA HCM.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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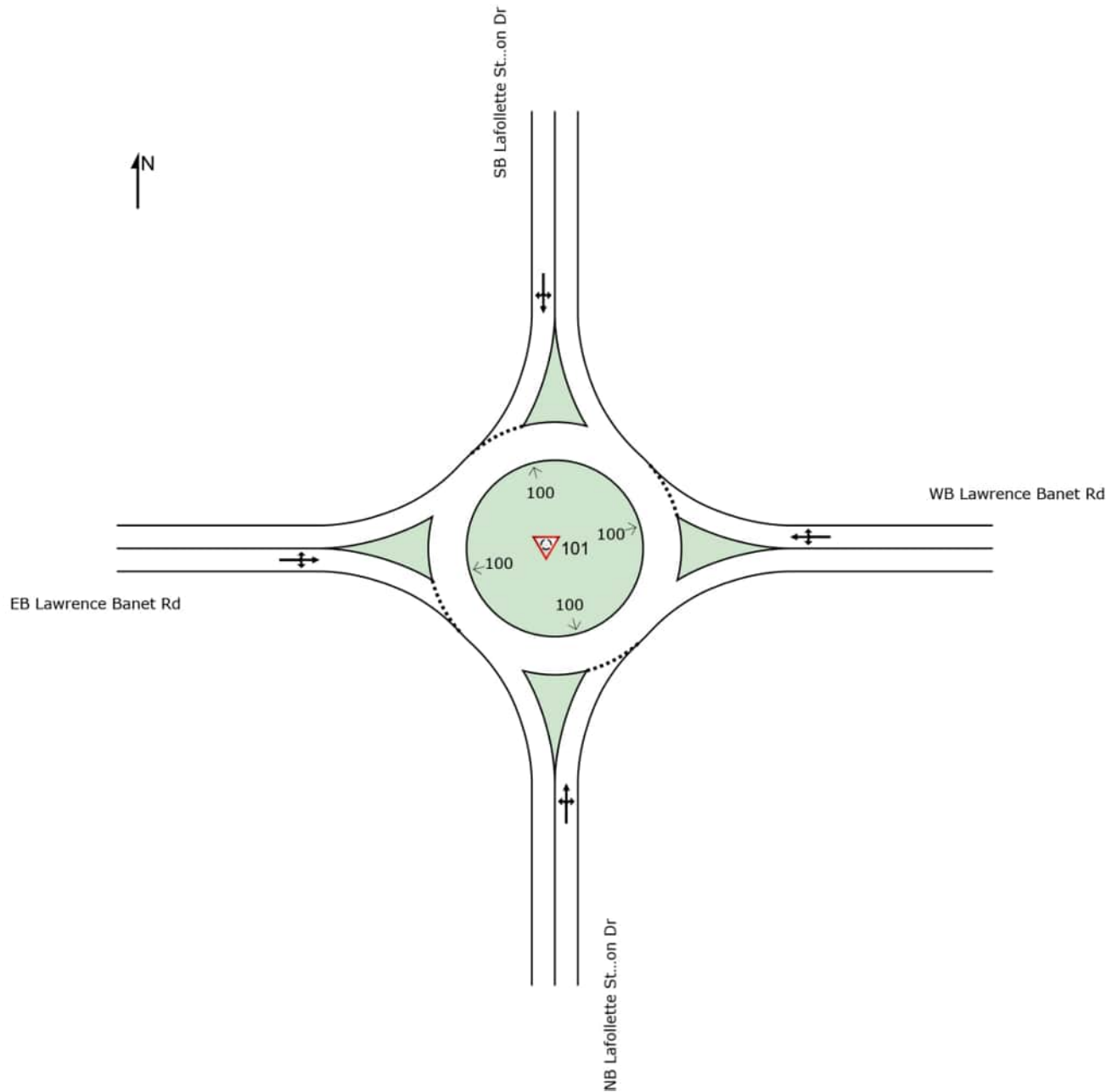
Project: S:\COL\4600-4699\4624\009\Designs-Studies-Reports\Traffic\SIDRA\US 150 at OVR.sip9

SITE LAYOUT

 **Site: 101 [Lawrence Banet Rd at Lafollette Station Dr - 2048 AM
- single lane (Site Folder: Baseline)]**

New Site
Site Category: (None)
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

 **Site: 101 [Lawrence Banet Rd at Lafollette Station Dr - 2048 AM - Relocated (Site Folder: Future Conditions)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%				[Veh. veh	Dist]				
			veh/h	%	veh/h	%	v/c	sec			ft				mph
South: NB Lawrence Banet Road															
3u	U	All MCs	78	3.0	78	3.0	0.375	5.7	LOS A	2.4	61.6	0.15	0.04	0.15	31.2
3	L2	All MCs	256	3.0	256	3.0	0.375	5.7	LOS A	2.4	61.6	0.15	0.04	0.15	31.2
8	T1	All MCs	158	3.0	158	3.0	0.375	5.7	LOS A	2.4	61.6	0.15	0.04	0.15	31.8
Approach			492	3.0	492	3.0	0.375	5.7	LOS A	2.4	61.6	0.15	0.04	0.15	31.4
North: SB Lawrence Banet Rd															
4	T1	All MCs	140	4.0	140	4.0	0.153	5.3	LOS A	0.6	16.7	0.47	0.33	0.47	33.9
14	R2	All MCs	1	4.0	1	4.0	0.153	5.3	LOS A	0.6	16.7	0.47	0.33	0.47	33.6
Approach			141	4.0	141	4.0	0.153	5.3	LOS A	0.6	16.7	0.47	0.33	0.47	33.9
West: EB Lafollette Station Entrance															
5	L2	All MCs	22	2.0	22	2.0	0.022	3.5	LOS A	0.1	2.2	0.35	0.19	0.35	31.6
12	R2	All MCs	1	2.0	1	2.0	0.022	3.5	LOS A	0.1	2.2	0.35	0.19	0.35	31.9
Approach			23	2.0	23	2.0	0.022	3.5	LOS A	0.1	2.2	0.35	0.19	0.35	31.6
All Vehicles			656	3.2	656	3.2	0.375	5.5	LOS A	2.4	61.6	0.22	0.11	0.22	31.9

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

 **Site: 101 [Lawrence Banet Rd at Lafollette Station Dr - 2048 AM
- Relocated (Site Folder: Future Conditions)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	[Total HV]	[Veh. veh	Dist]									
			veh/h	%	veh/h	%	v/c	sec			ft				mph
South: NB Lawrence Banet Road															
3u	U	All MCs	78	3.0	78	3.0	0.350	12.3	LOS B	2.2	55.4	0.13	0.58	0.13	33.4
3	L2	All MCs	256	3.0	256	3.0	0.350	9.9	LOS A	2.2	55.4	0.13	0.58	0.13	33.4
8	T1	All MCs	158	3.0	158	3.0	0.350	3.9	LOS A	2.2	55.4	0.13	0.58	0.13	34.2
Approach			492	3.0	492	3.0	0.350	8.4	LOS A	2.2	55.4	0.13	0.58	0.13	33.7
North: SB Lawrence Banet Rd															
4	T1	All MCs	140	4.0	140	4.0	0.126	5.2	LOS A	0.6	15.3	0.43	0.49	0.43	35.3
14	R2	All MCs	1	4.0	1	4.0	0.126	5.3	LOS A	0.6	15.3	0.43	0.49	0.43	34.9
Approach			141	4.0	141	4.0	0.126	5.2	LOS A	0.6	15.3	0.43	0.49	0.43	35.3
West: EB Lafollette Station Entrance															
5	L2	All MCs	22	2.0	22	2.0	0.019	10.5	LOS B	0.1	2.1	0.33	0.61	0.33	32.5
12	R2	All MCs	1	2.0	1	2.0	0.019	4.6	LOS A	0.1	2.1	0.33	0.61	0.33	32.8
Approach			23	2.0	23	2.0	0.019	10.2	LOS B	0.1	2.1	0.33	0.61	0.33	32.5
All Vehicles			656	3.2	656	3.2	0.350	7.8	LOS A	2.2	55.4	0.20	0.56	0.20	33.9

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Roundabout LOS Method: Same as Signalised Intersections.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

Intersection and Approach LOS values are based on average delay for all movements (v/c not used).

Roundabout Capacity Model: SIDRA HCM.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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SITE LAYOUT

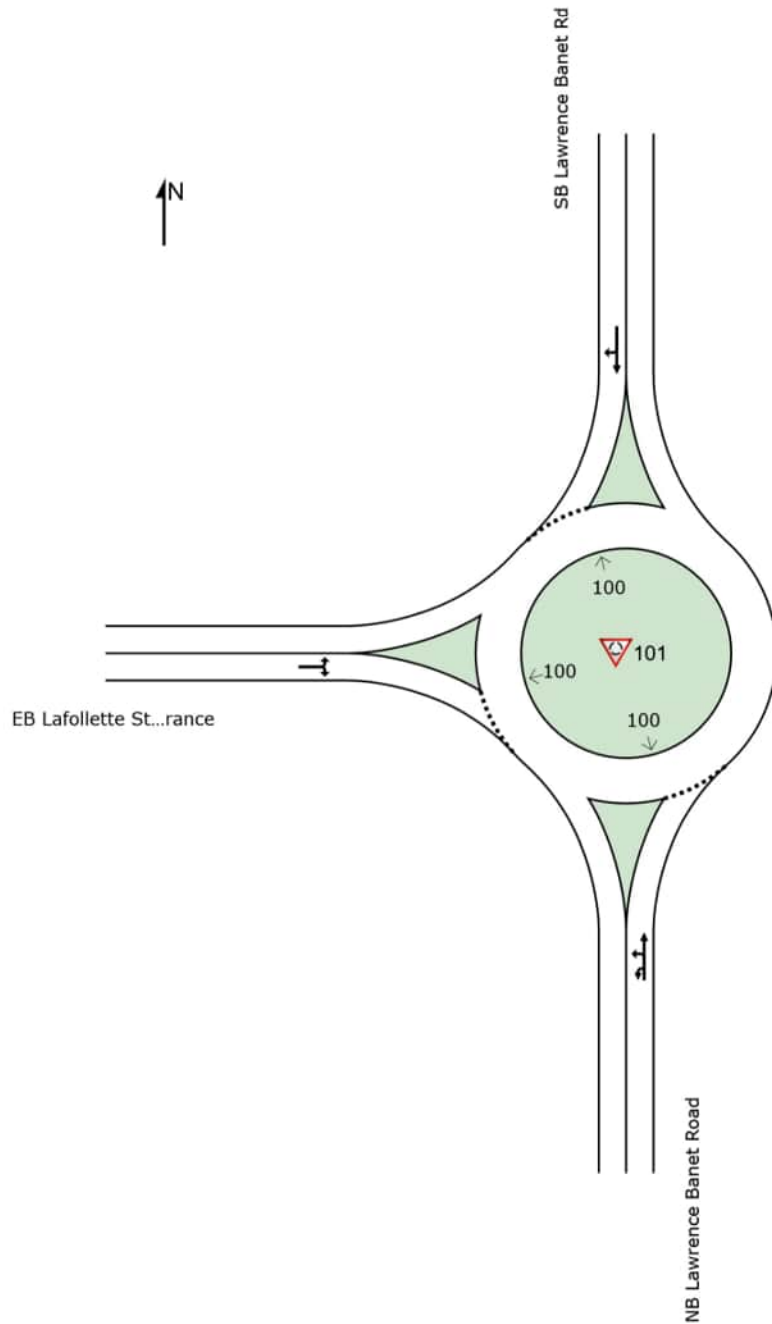
 **Site: 101 [Lawrence Banet Rd at Lafollette Station Dr - 2048 AM
- Relocated (Site Folder: Future Conditions)]**

New Site

Site Category: (None)

Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

 **Site: 101 [OVR at Duffy Rd - 2048 AM - single lane (Site Folder: Baseline)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]		[Total HV]					[Veh. veh	Dist]				
			veh/h	%	veh/h	%	v/c	sec			ft				mph
South: NB Duffy Rd															
3	L2	All MCs	23	2.0	23	2.0	0.391	16.3	LOS B	2.6	66.5	0.86	0.81	0.91	32.1
8	T1	All MCs	21	2.0	21	2.0	0.391	10.6	LOS B	2.6	66.5	0.86	0.81	0.91	32.7
18	R2	All MCs	182	2.0	182	2.0	0.391	10.6	LOS B	2.6	66.5	0.86	0.81	0.91	32.5
Approach			225	2.0	225	2.0	0.391	11.2	LOS B	2.6	66.5	0.86	0.81	0.91	32.5
East: WB OVR															
1	L2	All MCs	99	2.0	99	2.0	0.570	10.3	LOS B	5.3	134.1	0.34	0.42	0.34	34.7
6	T1	All MCs	535	2.0	535	2.0	0.570	4.0	LOS A	5.3	134.1	0.34	0.42	0.34	35.5
16	R2	All MCs	140	2.0	140	2.0	0.570	4.3	LOS A	5.3	134.1	0.34	0.42	0.34	35.1
Approach			774	2.0	774	2.0	0.570	4.9	LOS A	5.3	134.1	0.34	0.42	0.34	35.3
North: SB Duffy Rd															
7	L2	All MCs	72	2.0	72	2.0	0.105	12.8	LOS B	0.6	15.0	0.64	0.70	0.64	32.3
4	T1	All MCs	11	2.0	11	2.0	0.105	6.6	LOS A	0.6	15.0	0.64	0.70	0.64	33.0
14	R2	All MCs	13	2.0	13	2.0	0.105	6.7	LOS A	0.6	15.0	0.64	0.70	0.64	32.7
Approach			96	2.0	96	2.0	0.105	11.3	LOS B	0.6	15.0	0.64	0.70	0.64	32.4
West: EB OVR															
5	L2	All MCs	15	2.0	15	2.0	0.727	11.7	LOS B	7.6	192.6	0.66	0.55	0.67	33.6
2	T1	All MCs	827	2.0	827	2.0	0.727	6.2	LOS A	7.6	192.6	0.66	0.55	0.67	34.2
12	R2	All MCs	63	2.0	63	2.0	0.727	5.9	LOS A	7.6	192.6	0.66	0.55	0.67	34.0
Approach			905	2.0	905	2.0	0.727	6.2	LOS A	7.6	192.6	0.66	0.55	0.67	34.2
All Vehicles			2000	2.0	2000	2.0	0.727	6.5	LOS A	7.6	192.6	0.55	0.53	0.57	34.3

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Roundabout LOS Method: Same as Signalised Intersections.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

Intersection and Approach LOS values are based on average delay for all movements (v/c not used).

Roundabout Capacity Model: SIDRA HCM.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

 Site: 101 [OVR at Duffy Rd - 2048 PM - single lane (Site Folder: Baseline)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist]				mph
South: NB Duffy Rd															
3	L2	All MCs	24	2.0	24	2.0	0.486	25.4	LOS C	3.9	98.8	1.00	0.95	1.20	28.3
8	T1	All MCs	12	2.0	12	2.0	0.486	19.7	LOS B	3.9	98.8	1.00	0.95	1.20	28.8
18	R2	All MCs	122	2.0	122	2.0	0.486	19.7	LOS B	3.9	98.8	1.00	0.95	1.20	28.6
Approach			158	2.0	158	2.0	0.486	20.6	LOS C	3.9	98.8	1.00	0.95	1.20	28.6
East: WB OVR															
1	L2	All MCs	115	2.0	115	2.0	1.052	38.1	LOS F	84.3	2141.2	1.00	1.18	1.37	24.7
6	T1	All MCs	915	2.0	915	2.0	1.052	31.9	LOS F	84.3	2141.2	1.00	1.18	1.37	25.2
16	R2	All MCs	393	2.0	393	2.0	1.052	32.2	LOS F	84.3	2141.2	1.00	1.18	1.37	24.9
Approach			1424	2.0	1424	2.0	1.052	32.5	LOS C	84.3	2141.2	1.00	1.18	1.37	25.1
North: SB Duffy Rd															
7	L2	All MCs	173	2.0	173	2.0	0.507	21.1	LOS C	4.6	118.0	1.00	0.91	1.17	29.0
4	T1	All MCs	20	2.0	20	2.0	0.507	14.8	LOS B	4.6	118.0	1.00	0.91	1.17	29.5
14	R2	All MCs	38	2.0	38	2.0	0.507	15.0	LOS B	4.6	118.0	1.00	0.91	1.17	29.3
Approach			230	2.0	230	2.0	0.507	19.5	LOS B	4.6	118.0	1.00	0.91	1.17	29.1
West: EB OVR															
5	L2	All MCs	27	2.0	27	2.0	0.962	25.5	LOS E	27.3	692.8	1.00	1.26	1.71	28.6
2	T1	All MCs	988	2.0	988	2.0	0.962	20.0	LOS E	27.3	692.8	1.00	1.26	1.71	29.1
12	R2	All MCs	57	2.0	57	2.0	0.962	19.7	LOS E	27.3	692.8	1.00	1.26	1.71	28.9
Approach			1072	2.0	1072	2.0	0.962	20.1	LOS C	27.3	692.8	1.00	1.26	1.71	29.1
All Vehicles			2884	2.0	2884	2.0	1.052	26.2	LOS C	84.3	2141.2	1.00	1.18	1.47	26.9

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Roundabout LOS Method: Same as Signalised Intersections.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

Intersection and Approach LOS values are based on average delay for all movements (v/c not used).

Roundabout Capacity Model: SIDRA HCM.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Project: S:\COL\4600--4699\4624\009\Designs-Studies-Reports\Traffic\SIDRA\US 150 at OVR.sip9

SITE LAYOUT

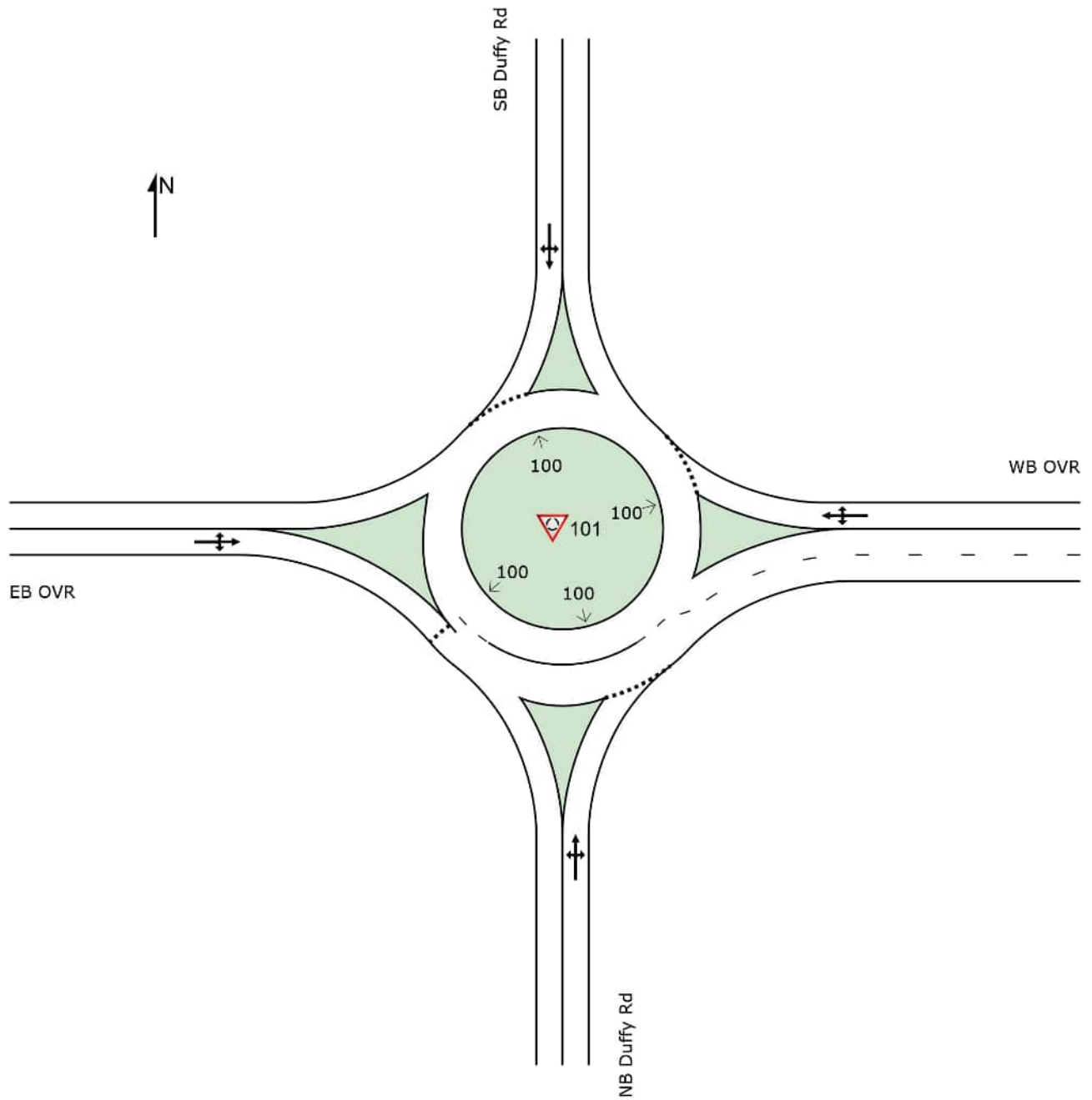
 **Site: 101 [OVR at Duffy Rd - 2048 AM - single lane (Site Folder: Baseline)]**

New Site

Site Category: (None)

Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

 **Site: 101 [OVR at Schrieber Rd - 2048 AM (Site Folder: Future Conditions)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist]				mph
South: NB Schrieber Rd															
3	L2	All MCs	34	2.0	34	2.0	0.211	15.6	LOS B	1.4	36.6	0.85	0.75	0.85	32.2
8	T1	All MCs	8	2.0	8	2.0	0.211	9.6	LOS A	1.4	36.6	0.85	0.75	0.85	32.9
18	R2	All MCs	93	2.0	93	2.0	0.211	9.7	LOS A	1.4	36.6	0.85	0.75	0.85	32.6
Approach			135	2.0	135	2.0	0.211	11.1	LOS B	1.4	36.6	0.85	0.75	0.85	32.5
East: WB OVR															
1	L2	All MCs	138	2.0	138	2.0	0.457	10.4	LOS B	3.3	82.6	0.35	0.48	0.35	34.3
6	T1	All MCs	316	2.0	316	2.0	0.457	4.4	LOS A	3.3	82.6	0.35	0.48	0.35	35.1
16	R2	All MCs	151	2.0	151	2.0	0.457	4.5	LOS A	3.3	82.6	0.35	0.48	0.35	34.7
Approach			605	2.0	605	2.0	0.457	5.8	LOS A	3.3	82.6	0.35	0.48	0.35	34.8
North: SB Schrieber Rd															
7	L2	All MCs	255	2.0	255	2.0	0.304	12.2	LOS B	1.8	45.4	0.61	0.69	0.61	32.2
4	T1	All MCs	20	2.0	20	2.0	0.304	6.3	LOS A	1.8	45.4	0.61	0.69	0.61	32.9
14	R2	All MCs	32	2.0	32	2.0	0.304	6.3	LOS A	1.8	45.4	0.61	0.69	0.61	32.6
Approach			307	2.0	307	2.0	0.304	11.2	LOS B	1.8	45.4	0.61	0.69	0.61	32.3
West: EB OVR															
5	L2	All MCs	59	2.0	59	2.0	0.632	13.8	LOS B	6.0	151.4	0.76	0.70	0.87	33.3
2	T1	All MCs	596	2.0	596	2.0	0.632	7.9	LOS A	6.0	151.4	0.76	0.70	0.87	34.0
12	R2	All MCs	13	2.0	13	2.0	0.632	7.9	LOS A	6.0	151.4	0.76	0.70	0.87	33.7
Approach			667	2.0	667	2.0	0.632	8.4	LOS A	6.0	151.4	0.76	0.70	0.87	33.9
All Vehicles			1714	2.0	1714	2.0	0.632	8.2	LOS A	6.0	151.4	0.59	0.63	0.64	33.8

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Roundabout LOS Method: Same as Signalised Intersections.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

Intersection and Approach LOS values are based on average delay for all movements (v/c not used).

Roundabout Capacity Model: SIDRA HCM.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

 **Site: 101 [OVR at Schrieber Rd - 2048 PM (Site Folder: Future Conditions)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist]				mph
South: NB Schrieber Rd															
3	L2	All MCs	29	2.0	29	2.0	0.219	17.6	LOS B	1.5	38.7	0.91	0.78	0.91	31.3
8	T1	All MCs	7	2.0	7	2.0	0.219	11.6	LOS B	1.5	38.7	0.91	0.78	0.91	31.9
18	R2	All MCs	83	2.0	83	2.0	0.219	11.7	LOS B	1.5	38.7	0.91	0.78	0.91	31.6
Approach			118	2.0	118	2.0	0.219	13.2	LOS B	1.5	38.7	0.91	0.78	0.91	31.6
East: WB OVR															
1	L2	All MCs	229	2.0	229	2.0	0.908	15.5	LOS D	20.4	519.1	1.00	0.76	1.14	32.3
6	T1	All MCs	497	2.0	497	2.0	0.908	9.5	LOS D	20.4	519.1	1.00	0.76	1.14	33.0
16	R2	All MCs	398	2.0	398	2.0	0.908	9.6	LOS D	20.4	519.1	1.00	0.76	1.14	32.7
Approach			1124	2.0	1124	2.0	0.908	10.7	LOS B	20.4	519.1	1.00	0.76	1.14	32.7
North: SB Schrieber Rd															
7	L2	All MCs	630	2.0	630	2.0	1.206	119.5	LOS F	58.3	1481.9	1.00	2.72	5.34	13.0
4	T1	All MCs	40	2.0	40	2.0	1.206	113.5	LOS F	58.3	1481.9	1.00	2.72	5.34	13.1
14	R2	All MCs	126	2.0	126	2.0	1.206	113.6	LOS F	58.3	1481.9	1.00	2.72	5.34	13.0
Approach			797	2.0	797	2.0	1.206	118.2	LOS F	58.3	1481.9	1.00	2.72	5.34	13.0
West: EB OVR															
5	L2	All MCs	132	2.0	132	2.0	0.808	25.7	LOS C	11.5	292.8	1.00	1.14	1.67	28.3
2	T1	All MCs	386	2.0	386	2.0	0.808	19.7	LOS B	11.5	292.8	1.00	1.14	1.67	28.8
12	R2	All MCs	38	2.0	38	2.0	0.808	19.8	LOS B	11.5	292.8	1.00	1.14	1.67	28.6
Approach			555	2.0	555	2.0	0.808	21.1	LOS C	11.5	292.8	1.00	1.14	1.67	28.7
All Vehicles			2595	2.0	2595	2.0	1.206	46.1	LOS D	58.3	1481.9	1.00	1.45	2.53	21.7

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Roundabout LOS Method: Same as Signalised Intersections.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

Intersection and Approach LOS values are based on average delay for all movements (v/c not used).

Roundabout Capacity Model: SIDRA HCM.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Project: S:\COL\4600--4699\4624\009\Designs-Studies-Reports\Traffic\SIDRA\US 150 at OVR.sip9

SITE LAYOUT

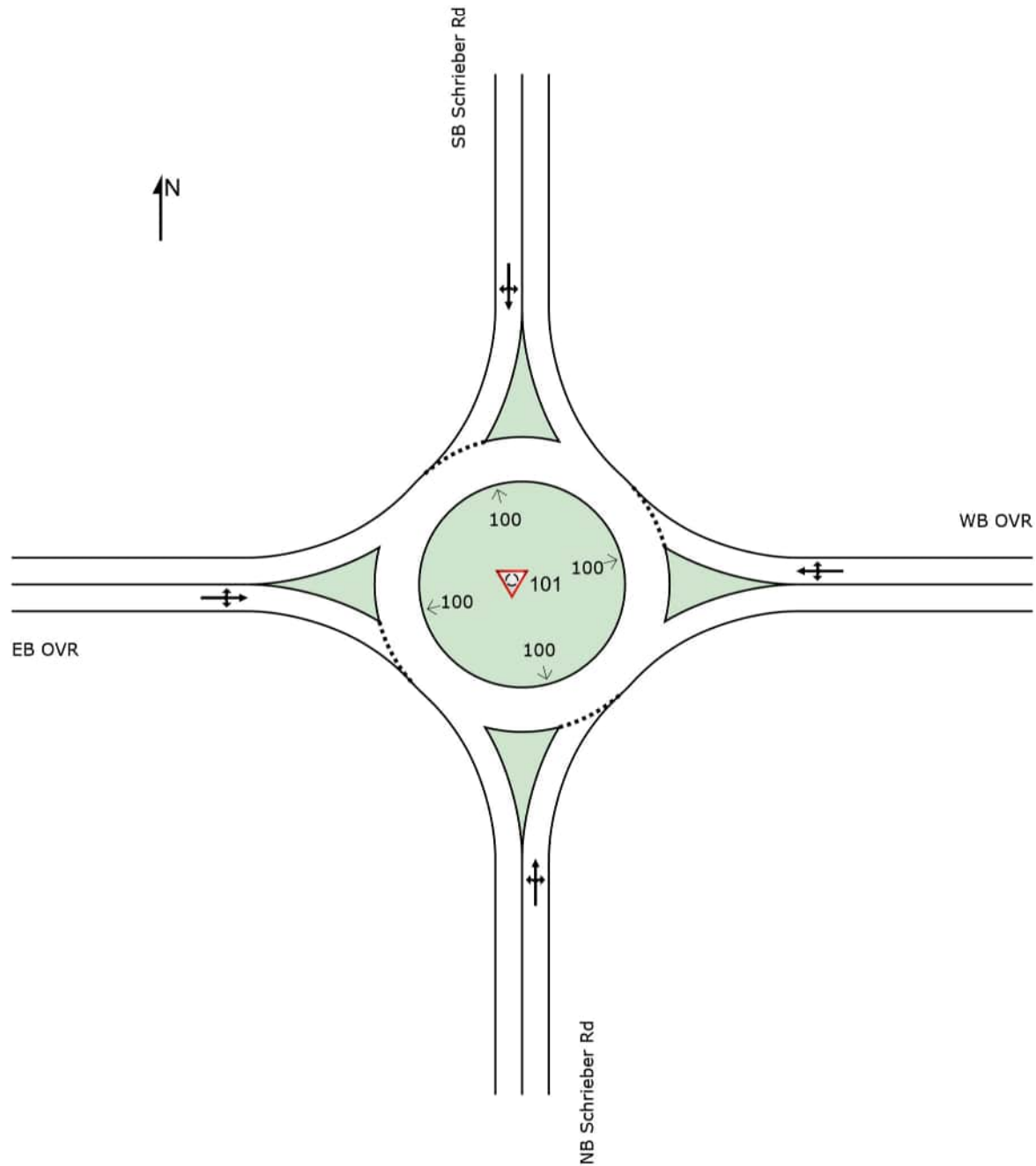
 **Site: 101 [OVR at Schrieber Rd - 2048 AM (Site Folder: Future Conditions)]**

New Site

Site Category: (None)

Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

 **Site: 101 [New CR and Schrieber - 2048 AM (Site Folder: CR and Schrieber)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%				[Veh. veh	Dist]				
			veh/h		veh/h		v/c	sec			ft				mph
South: NB Schrieber Rd															
8	T1	All MCs	54	3.0	54	3.0	0.146	4.8	LOS A	0.7	17.7	0.22	0.47	0.22	35.6
18	R2	All MCs	132	3.0	132	3.0	0.146	4.6	LOS A	0.7	17.7	0.22	0.47	0.22	35.2
Approach			186	3.0	186	3.0	0.146	4.7	LOS A	0.7	17.7	0.22	0.47	0.22	35.3
East: WB New Road															
1	L2	All MCs	104	3.0	104	3.0	0.114	9.5	LOS A	0.5	13.2	0.17	0.59	0.17	33.3
16	R2	All MCs	43	3.0	43	3.0	0.114	4.5	LOS A	0.5	13.2	0.17	0.59	0.17	33.7
Approach			148	3.0	148	3.0	0.114	8.0	LOS A	0.5	13.2	0.17	0.59	0.17	33.4
North: SB Schrieber Rd															
7	L2	All MCs	83	3.0	83	3.0	0.112	9.7	LOS A	0.5	12.8	0.24	0.57	0.24	33.4
4	T1	All MCs	58	3.0	58	3.0	0.112	4.9	LOS A	0.5	12.8	0.24	0.57	0.24	34.1
Approach			140	3.0	140	3.0	0.112	7.7	LOS A	0.5	12.8	0.24	0.57	0.24	33.7
All Vehicles			474	3.0	474	3.0	0.146	6.6	LOS A	0.7	17.7	0.21	0.54	0.21	34.2

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Roundabout LOS Method: Same as Signalised Intersections.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

Intersection and Approach LOS values are based on average delay for all movements (v/c not used).

Roundabout Capacity Model: SIDRA HCM.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

 **Site: 101 [New CR and Schrieber - 2048 PM (Site Folder: CR and Schrieber)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%				[Veh. veh	Dist]				
			veh/h		veh/h		v/c	sec			ft				mph
South: NB Schrieber Rd															
8	T1	All MCs	211	3.0	211	3.0	0.513	5.9	LOS A	3.8	97.4	0.54	0.54	0.54	34.7
18	R2	All MCs	366	3.0	366	3.0	0.513	5.7	LOS A	3.8	97.4	0.54	0.54	0.54	34.4
Approach			577	3.0	577	3.0	0.513	5.7	LOS A	3.8	97.4	0.54	0.54	0.54	34.5
East: WB New Road															
1	L2	All MCs	346	3.0	346	3.0	0.506	10.8	LOS B	3.7	94.1	0.54	0.62	0.54	32.8
16	R2	All MCs	218	3.0	218	3.0	0.506	5.8	LOS A	3.7	94.1	0.54	0.62	0.54	33.2
Approach			564	3.0	564	3.0	0.506	8.8	LOS A	3.7	94.1	0.54	0.62	0.54	33.0
North: SB Schrieber Rd															
7	L2	All MCs	198	3.0	198	3.0	0.344	11.3	LOS B	2.1	53.4	0.57	0.65	0.57	32.7
4	T1	All MCs	146	3.0	146	3.0	0.344	6.4	LOS A	2.1	53.4	0.57	0.65	0.57	33.3
Approach			343	3.0	343	3.0	0.344	9.2	LOS A	2.1	53.4	0.57	0.65	0.57	33.0
All Vehicles			1485	3.0	1485	3.0	0.513	7.7	LOS A	3.8	97.4	0.55	0.60	0.55	33.5

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Roundabout LOS Method: SIDRA Roundabout LOS.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

Intersection and Approach LOS values are based on average delay for all movements (v/c not used).

Roundabout Capacity Model: SIDRA HCM.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

SITE LAYOUT

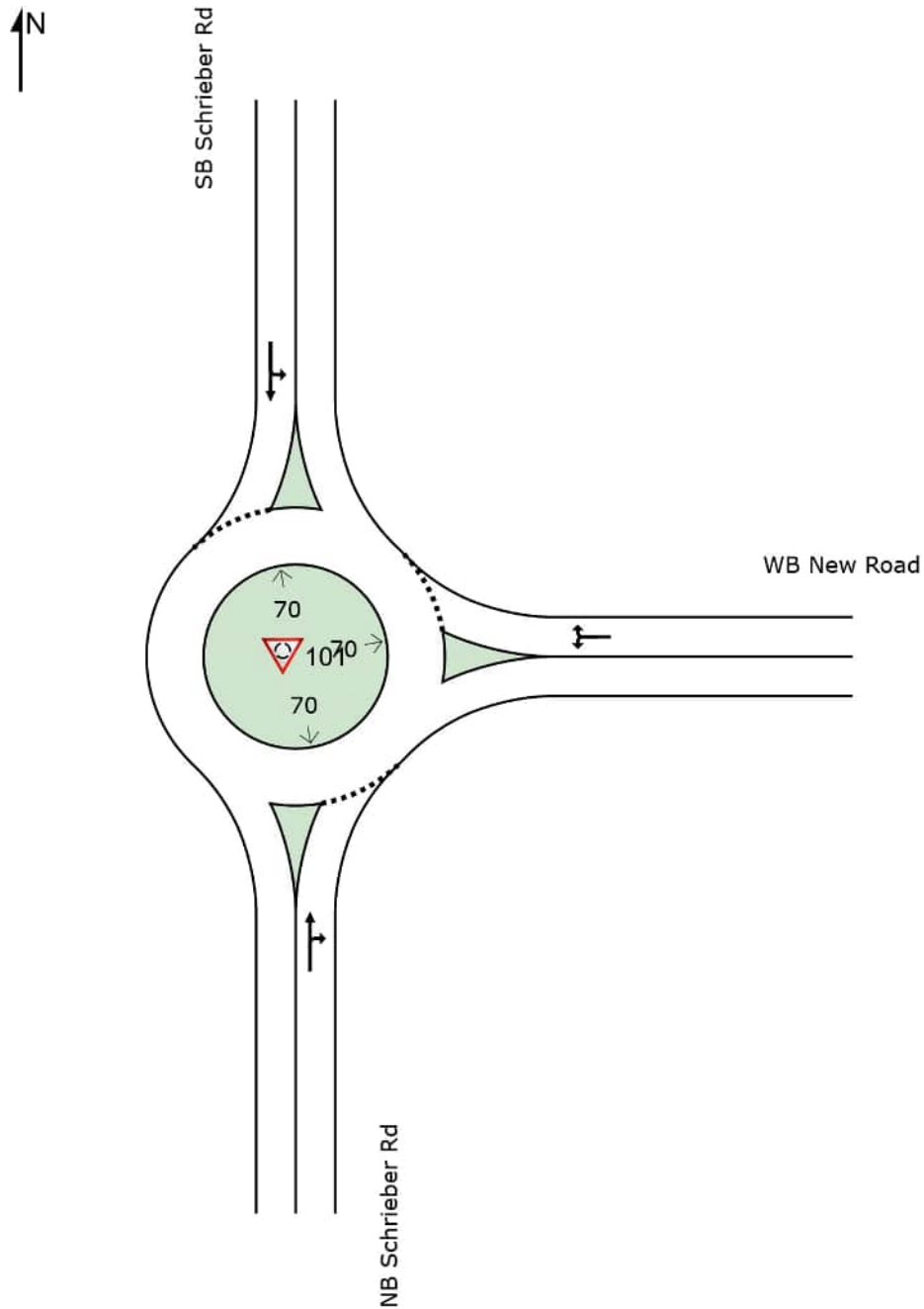
 **Site: 101 [New CR and Schrieber - 2048 PM (Site Folder: CR and Schrieber)]**

New Site

Site Category: (None)

Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



Operating Speed (mph)	Opposing Volume (veh/h)	Advancing Volume (veh/h)			
		5% Left Turns	10% Left Turns	20% Left Turns	30% Left Turns
40	800	330	240	180	160
	600	410	305	225	200
	400	510	380	275	245
	200	640	470	350	305
	100	720	515	390	340
50	800	280	210	165	135
	600	350	260	195	170
	400	430	320	240	210
	200	550	400	300	270
	100	615	445	335	295
60	800	230	170	125	115
	600	290	210	160	140
	400	365	270	200	175
	200	450	330	250	215
	100	505	370	275	240

**VOLUME GUIDELINES FOR LEFT-TURN LANE
ON TWO-LANE HIGHWAY**

Figure 46-4C

5102 Old Vincennes:
opp volume = 429
adv volume = 503
LT volume = 35 (7%)

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