# **REPORT**

Fern Valley Commerce Center 4500 Fern Valley Road Louisville, KY

**Traffic Impact Study** 

Louisville Metro Planning Kentucky Transportation Cabinet

February 9, 2016



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# Introduction

Summit Construction is proposing a warehouse on Fern Valley Road (KY 1747) in Louisville, KY. The building is proposed as 332,500 square foot warehouse. **Figure 1** displays a map of the site. Access to the site will be from an entrance on Fern Valley Road and on Jefferson Boulevard. The purpose of this study is to examine the traffic impacts of the proposed development upon the adjacent highway system. For this study the impact area was defined to be the intersections of Fern Valley Road and Jefferson Boulevard.

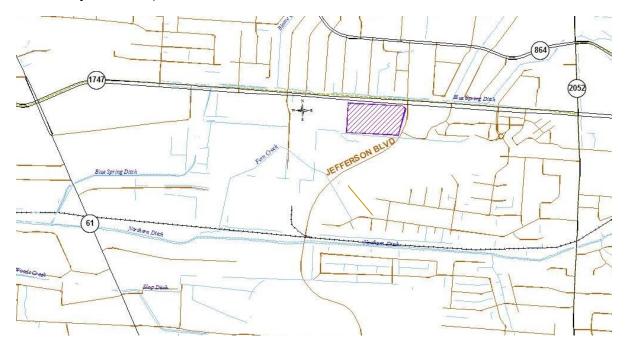


Figure 1
Site Location

### **Existing Conditions**

Fern Valley Road, KY 1747, is maintained by the Kentucky Transportation Cabinet (KYTC) with an estimated 2016 ADT of 32,400 vehicles per day between I 65 and Preston Highway (KY 61), as estimated from the Kentucky Transportation Cabinet count at station 606. The road is a six-lane road with twelve-foot lanes and curbs. The posted speed limit is 45 mph. There is a sidewalk on the north side. The intersection with Jefferson Boulevard is controlled with a traffic signal. All four approaches have dual left turn lanes. Three of the approaches have right turn lanes; westbound Fern Valley does not.

Jefferson Boulevard is maintained by Metro Louisville with an estimated 2016 ADT of 11,000 vehicles per day, as estimated from the turning movement count. The road is a four-lane road with twelve-foot lanes, curb and gutter. The posted speed limit is 35 mph. There are sidewalks on both sides.



A.m. and p.m. peak hour traffic counts were obtained at the intersection on January 7, 2016. The a.m. peak hour occurred between 7:15 and 8:15 and the p.m. peak hour occurred between 4:45 and 5:45 p.m. **Figure 2** illustrates the existing peak hour traffic volumes.

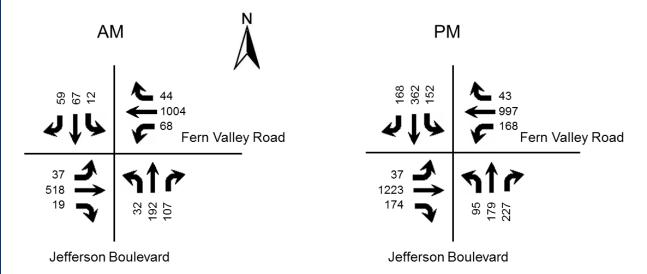


Figure 2 2016 Peak Hour Counts

### **Future Conditions**

The projected completion year for this development is 2017, so the analysis year for this study is 2017. To predict traffic conditions in 2017, one percent annual growth in traffic was added as determined by reviewing historical trends. **Figure 3** displays the 2017 No Build volumes.

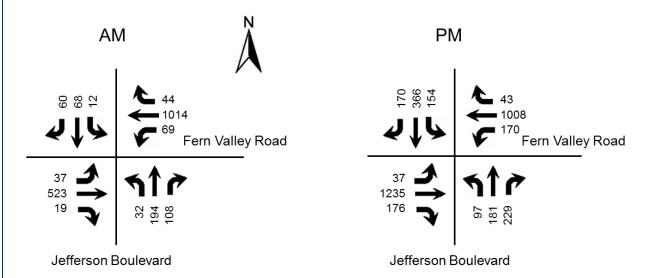


Figure 3 2017 No Build Peak Hour Volumes



### **Trip Generation**

The Institute of Transportation Engineers <u>Trip Generation Manual</u>, 9th Edition contains trip generation rates for a wide range of developments. The land use of "Warehouse (150)" best describes this development. The access point on Fern Valley Road (KY 1747) will be a shared driveway. For this analysis, the adjacent property was assumed to be "Business Park (770)" with 58,250 square feet. The trip generation results are listed in **Table 1**. The results of the trip generation analysis are that this development will generate 244 a.m. peak hour trips and 220 p.m. peak hour trips. The trips were assigned to the highway network with 40 percent to/from the west, 20 percent to/from the east, 20 percent to/from the north and 20 percent to/from the south. **Figure 5** displays the individual turning movements for the year 2017 for the peak hours when the development is completed.

Table 1 - Trip Generation

	AM	Peak Ho	ur	PM	PM Peak Hour				
	Total	Enter	Exit	Total	Enter	Exit			
Warehouse (332,500 sq. ft.)	160	126	34	129	32	97			
Business Park (58,250 sq. ft.)	84	71	13	91	24	67			
TOTAL	244	197	47	220	56	164			

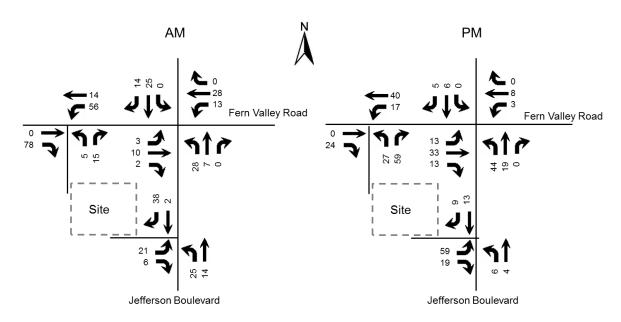


Figure 4
Trip Distribution for Site



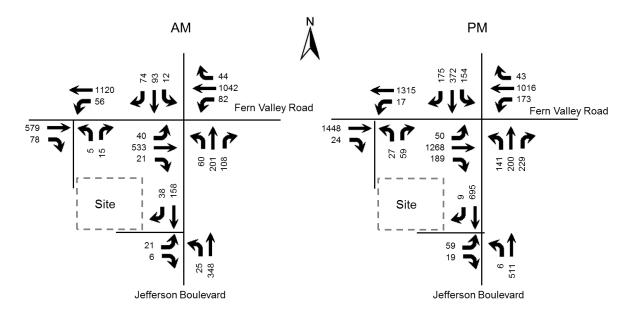


Figure 5 2017 Build Peak Hour Volumes

## **Analysis**

The qualitative measure of operation for a roadway facility or intersection is evaluated by assigning a "Level of Service" or LOS. Level of Service is a ranking scale from A through F with each level representing a range. LOS results depend upon the type of facility that is analyzed. In this case, the LOS is based upon the average vehicle delay each movement experiences at an intersection.

To evaluate the impact of the proposed development, the vehicle delays at the intersection were determined using procedures detailed in the <u>Highway Capacity Manual</u>, 2010 edition. Future delay and Level of Service were determined for the intersection using HCS 2010 Streets and TWSC (version 6.70) and software. **Table 2** shows the results of the analysis for the three scenarios analyzed. The full printouts are included in Appendix B.

Using the Kentucky Transportation Cabinet <u>Auxiliary Turn Lane</u> Policy dated 7/20/2009 and the volumes in **Figure 5**, the volumes do not meet the warrants for an eastbound right turn lane on Fern Valley Road.



**Table 2 - Level of Service Results** 

	Α	M Peak Ho	ır	PM Peak Hour							
	2016 Existing	2017 No Build	2017 Build	2016 Existing	2017 No Build	2017 Build					
Fern Valley Road at	С	С	С	D	D	D					
Jefferson Boulevard	27.4	27.5	29.4	38.9	39.8	40.8					
Fern Valley Road	В	В	В	D	D	D					
Eastbound	19.5	19.6	21.7	37.0	38.3	39.3					
Fern Valley Road	С	С	С	D	D	D					
Westbound	20.3	20.4	23.1	33.4	34.2	35.7					
Jefferson Boulevard	D	D	D	D	D	D					
Northbound	53.7	53.6	49.8	47.9	48.1	48.5					
Jefferson Boulevard	D	D	D	D	D	D					
Southbound	54.5	54.5	54.0	46.5	46.7	46.8					
Fern Valley Road at											
Entrance											
Fern Valley Road			В			С					
Westbound			12.6			24.3					
Entrance Northbound			В			D					
			13.6			34.8					
Jefferson Boulevard at											
Entrance											
Entrance Eastbound			В			С					
			10.7			16.8					
Jefferson Boulevard			Α			Α					
Northbound			7.7			9.3					

Note: Level of Service, delay in seconds

## **Conclusions**

Based upon the volume of traffic generated by the development and the amount of traffic forecasted for the year 2017, there will be manageable impacts to the existing highway network. The existing westbound left turn lane on Fern Valley Road will need to meet KYTC requirements.



# Appendix A<br/>Traffic Counts

### Study Name Fern Valley Rd & Jefferson Blvd Start Date 01/07/2016 Start Time 7:00 AM Site Code

	Southbo	•	proach	Westbo			Northbo Northbo	-	proach	Eastboo		roach	
Start Time	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Total
7:00 AM	12	9	10	7	182	14	17	30	6	9	95	7	398
7:15 AM	17	14	0	13	215	7	22	42	5	1	137	9	482
7:30 AM	11	22	5	11	256	21	33	49	10	4	140	7	569
7:45 AM	16	18	1	10	258	24	30	71	15	7	133	13	596
8:00 AM	15	13	6	10	275	16	22	30	2	7	108	8	512
8:15 AM	14	18	4	18	217	9	28	27	10	7	99	12	463
8:30 AM	18	16	3	9	194	11	26	20	6	10	89	8	410
8:45 AM	16	27	6	12	224	15	21	20	11	21	120	7	500
4:00 PM	22	63	23	11	185	37	46	51	27	35	238	12	750
4:15 PM	30	73	16	10	192	50	53	41	28	46	272	14	825
4:30 PM	28	63	21	12	211	53	60	43	19	46	250	10	816
4:45 PM	53	90	39	10	234	38	56	45	31	45	270	7	918
5:00 PM	37	105	26	12	235	61	47	50	26	45	304	10	958
5:15 PM	48	99	35	10	250	47	52	49	28	42	348	8	1016
5:30 PM	30	68	25	11	278	22	62	35	10	42	301	12	896
5:45 PM	29	72	16	11	234	28	59	51	25	54	278	7	864

		•	•	Westbo	•		Northbo	ound Ap	proach	Eastbo			
	Sc	outhbour	nd	W	estbour	nd	N	orthbour	nd	Е			
Start Time	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Total
7:15 AM	17	14	0	13	215	7	22	42	5	1	137	9	482
7:30 AM	11	22	5	11	256	21	33	49	10	4	140	7	569
7:45 AM	16	18	1	10	258	24	30	71	15	7	133	13	596
8:00 AM	15	13	6	10	275	16	22	30	2	7	108	8	512
TOTAL	59	67	12	44	1004	68	107	192	32	19	518	37	2159
4:45 PM	53	90	39	10	234	38	56	45	31	45	270	7	918
5:00 PM	37	105	26	12	235	61	47	50	26	45	304	10	958
5:15 PM	48	99	35	10	250	47	52	49	28	42	348	8	1016
5:30 PM	30	68	25	11	278	22	62	35	10	42	301	12	896
TOTAL	168	362	125	43	997	168	217	179	95	174	1223	37	3788



# Appendix B HCS Reports

		HCS 2	010 S	ignali	ized l	nters	ection	Res	sults S	umm	ary				
General Inforn	nation	T						$\rightarrow$	Intersec		_	on	- 6	1111	
Agency		CDM Smith				I=		$\rightarrow$	Duration		0.25		- 10		
Analyst		DBZ		-		e Feb 9		$\rightarrow$	Area Typ	e	Other				===
Jurisdiction				Time F		AM P	eak	$\rightarrow$	PHF		0.91			₩ <del>]</del> F	===
Urban Street		Fern Valley Road		_	sis Yea	$\overline{}$			Analysis	Period	1> 7:	15	×		
Intersection		Jefferson Boulevar		File Name AM 16.xus										1111	r
Project Descrip	tion	Jefferson Commerc	ce Cente	er							ħ	বাক্স	k (1		
Demand Inform	nation				EB			WE	3		NB		1	SB	
Approach Move	ement			L	Т	R	L	Т	R	L	Т	R	L	Т	R
Demand (v), v				37	518		68	100		32	192	107	12	67	59
Signal Informa		D ( D)			La .	_ 8	∃ :	ן וּ	2	2		_		χ .	4
Cycle, s	120.0	Reference Phase	2			.	➡ 📑	12	1 5	M	17	1	<b>▼</b> 2	3	4
Offset, s	0	Reference Point	End	Green	11.1	2.6	59.7	3.6	3.3	10.2	2		<u> </u>		
Uncoordinated	No	Simult. Gap E/W	On	Yellow		0.0	4.3	3.5		3.6		<b>~</b>		<b>&gt;</b>	T V
Force Mode	Fixed	Simult. Gap N/S	On	Red	4.2	0.0	2.3	4.0	0.0	4.0		5	6	7	8
Timer Results				EBI		EBT	WB		WBT	NB		NBT	SBI		SBT
Assigned Phas	e			5		2	1	-	6	3		8	7		4
Case Number				2.0		3.0	2.0	+	4.0	2.0		3.0	2.0		3.0
Phase Duration	1, S			18.8		66.3	21.5	-	68.9	14.4	-	21.2	11.1	-	17.8
Change Period, ( Y+R c), s				7.7		6.6	7.7		6.6	7.5		7.6	7.5		7.6
Max Allow Headway ( MAH ), s				5.0		0.0	5.0		0.0	5.1		5.2	5.1		5.2
Queue Clearan	Queue Clearance Time ( g s ), s			3.4			4.4			3.2		10.7	2.5		7.0
Green Extension	n Time	(ge), s		0.2		0.0	0.4		0.0	0.1		2.9	0.0		2.9
Phase Call Pro	bability			0.74	1		0.92	2		0.69	9	1.00	0.36	3	1.00
Max Out Proba	bility			0.00	)		0.00	)		0.00	)	0.00	0.00	)	0.00
Movement Gro	oup Res	sults			EB			WB			NB			SB	
Approach Move	_			L T		R	L	Т	R	L	Т	R	L	Т	R
Assigned Move	ment			5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow I	Rate ( v	), veh/h		41	569	21	75	773	378	35	211	118	13	74	65
Adjusted Satura	ation Flo	ow Rate ( s ), veh/h/	ln	1583	1597	1220	1673	1827	1786	1740	1773	1563	1528	1756	1491
Queue Service	Time (	g ₅), s		1.4	8.1	1.1	2.4	15.5	15.5	1.2	6.7	8.7	0.5	2.4	5.0
Cycle Queue C	learanc	e Time ( <i>g c</i> ), s		1.4	8.1	1.1	2.4	15.5	15.5	1.2	6.7	8.7	0.5	2.4	5.0
Green Ratio ( g	/C)			0.09	0.50	0.50	0.11	0.52	0.52	0.06	0.11	0.11	0.03	0.09	0.09
Capacity ( c ), v	/eh/h			294	2384	607	384	1898	928	200	402	177	91	300	127
Volume-to-Cap				0.138	0.239	_	0.195	0.408		0.176	0.525	0.664	0.146	0.246	0.510
Available Capa		,,		1109	2384	_	1173	1898	_	507	1133	499	446	1024	435
		eh/ln (50 th percent		0.6	2.9	0.3	1.0	6.3	6.3	0.5	3.1	3.7	0.2	1.1	2.0
		RQ) (50 th percent	tile)	0.08	0.06	0.03	0.08	0.20		0.05	0.16	0.29	0.03	0.05	0.27
Uniform Delay				0.3	17.2 0.2	15.4	48.1 0.3	17.6 0.7	17.6	53.8 0.6	50.2 1.5	51.0 6.0	56.7 1.0	51.3 0.6	52.5 4.4
	Incremental Delay ( d 2 ), s/veh Initial Queue Delay ( d 3 ), s/veh			0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (		•••		50.3	17.4	15.5	48.5	18.2		54.4	51.7	57.0	57.8	51.9	56.9
Level of Service	71			D	B	B	D D	B	B	D	D D	E	57.6 E	D	E
Approach Dela				19.5		В	20.3		C	53.7		D	54.5		D
Intersection De						2	7.4						С		
										_					
Multimodal Re		/1.00			EB			WB			NB	0	3.5	SB	
Pedestrian LOS				3.0	-	C	3.0	-	C	3.4		С		_	C
Bicycle LOS So	ore / LC	75		0.8		Α	1.2		Α	0.8		Α	0.6		Α

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		HCS 2	010 S	ignali	zed l	nters	ection	ı Res	ults S	umm	ary				
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General Inform	ation	ODM 0:#-						$\overline{}$	Intersection Information  Duration. h 0.25					TITL	
Agency		CDM Smith				TE L O	0040	$\overline{}$	Duration				- 5		. :
Analyst		DBZ				Feb 9	,	$\rightarrow$	Area Typ	е	Other				-
Jurisdiction		5 1/11 5 1		Time F		AM P		$\rightarrow$	PHF	<b>.</b>	0.91	15	- 3	7,5	
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Intersection		Jefferson Boulevard		File Na	ame	AM 1	NB.xu	S					_	<u> </u>	٢
Project Descript	tion	Jefferson Commerc	e Cente	er										1147	r n
Demand Inforn	nation				EB			WE	3		NB			SB	
Approach Move	ment			L	Т	R	L	Т	R	L	Т	R	L	Т	R
Demand (v), v				37	523	19	69	101	_	32	194		12	68	60
						1		101				100			
Signal Informa	tion					1 8	<u> </u>	<u> </u>	,					_	I
Cycle, s	120.0	Reference Phase	2	1	P 6	- 2	<b>₹</b>	7	- 1	12	↑2 <b>×</b>	<u> </u>	→	` <b>`</b>	4
Offset, s	0	Reference Point	End	Green	11 1	2.7	59.5	3.6	3.3	10.4	1	1	2	3	4
Uncoordinated	No	Simult. Gap E/W	On	Yellow	-	0.0	4.3	3.5	0.0	3.6	<u>-</u>	, l	4	( I	Ťz
Force Mode	Fixed	Simult. Gap N/S	On	Red	4.2	0.0	2.3	4.0	0.0	4.0		5	6	7	8
Timer Results				EBI	-	EBT	WB	L	WBT	NBI		NBT	SBI	-	SBT
Assigned Phase	•			5		2	1		6	3		8	7		4
Case Number				2.0		3.0	2.0		4.0	2.0		3.0	2.0		3.0
Phase Duration	, s			18.8	3	66.1	21.5	5	68.8	14.4	1	21.3	11.1		18.0
Change Period,	hange Period, ( Y+R <sub>o</sub> ), s			7.7		6.6	7.7		6.6	7.5		7.6	7.5		7.6
Max Allow Headway ( MAH ), s				5.0		0.0	5.0		0.0	5.1		5.2	5.1		5.2
Queue Clearand	Queue Clearance Time ( q s ), s			3.4			4.5			3.2		10.7	2.5		7.1
Green Extensio	n Time	(ge), s		0.2		0.0	0.4		0.0	0.1		3.0	0.0		3.0
Phase Call Prob	ability			0.74	1		0.92	2		0.69	9 1.00		0.36		1.00
Max Out Probat	oility			0.00			0.00	0				0.00	0.00		0.00
Manager Con	D				ED			WD			ND			CD	
Movement Gro	•	suits			EB			WB	I D		NB	_ D		SB	I D
Approach Move					T 2	12	1	6	16		T 8	R 18	7	T 4	R
Assigned Move		L /L		_	_	-	_	_		_	_		_		14
Adjusted Flow F			-	41	575	21	76	781	382	35	213	119	13	75	66
		ow Rate ( s ), veh/h/l	n	1583	1597	1220	1673	1827	1786	1740	1773	1563	1528	1756	1491
Queue Service				1.4	8.2	1.1	2.5	15.7	15.7	1.2	6.8	8.7 8.7	0.5	2.4	5.1 5.1
Cycle Queue Cl		e fille (g s), s		-		1.1	_	15.7	15.7	_	_		_	_	_
Green Ratio ( g				0.09	0.50	0.50	0.12	0.52	0.52	0.06	0.11 405	0.11	0.03	0.09	0.09
Capacity ( c ), v		-ti- / V)		294	2378	605	385	1894	_	200		178	91	303	129
Volume-to-Capa				0.138 1106	0.242	0.034	0.197	0.412 1894	_	0.176 507	0.526	0.665 499	0.146 446	0.247 1024	0.513 435
Available Capac			1-1	_		-	_	_	_	_	_		_	_	_
		eh/ln ( 50 th percent		0.6	2.9 0.06	0.3	1.0 0.08	0.21	0.21	0.5	3.1 0.16	3.7 0.29	0.2	1.1 0.05	0.27
		RQ) (50 th percent	lile)	_		_	_	_	_		_	_	_		_
Uniform Delay (				50.0	17.3	15.5	48.1	17.7	17.7	53.8	50.1	50.9	56.7	51.2	52.4
Incremental Del				0.3	0.2	0.1	0.4	0.7	1.4	0.6	1.5	5.9	1.0	0.6	4.4
Initial Queue De		•••		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (				50.3	17.5	15.6	48.4	18.4		54.4	51.6	56.9	57.8	51.8	56.8
Level of Service				D 40.6	В	B	D 20.4	B	B	D 52.6	D	E	E	D -	E
Approach Delay				19.6	)	В	20.4	4	С	53.6		D	54.5	)	D
Intersection Del	ay, s/ve	en / LOS				2	7.5						С		
Multimedal De	eult-				ED			MD			NID			CD.	
Multimodal Res		/1.06		2.0	EB	C	2.0	WB	C	2.4	NB	C	2.5	SB	C
Pedestrian LOS				3.0	-	C	3.0	_	C	3.4	_	C	3.5	-	C
Bicycle LOS Sc	ore / LC			0.8		Α	1.2		Α	8.0		Α	0.6		Α

HCS 2010™ Streets Version 6.70

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		HCS 2	010 S	ignali	zed l	nters	ection	ı Res	ults S	umm	ary				
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General Inforn	nation								Intersec	- i	기타다				
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Analyst		DBZ				Feb 9		$\rightarrow$	Area Typ	е	Other	-	_ = = ·		≑
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Urban Street		Fern Valley Road		_	sis Year	-			Analysis	Period	1> 7:	15	×		٠,
Intersection		Jefferson Boulevard	d	File Name AM 17 B.xus										1111	r
Project Descrip	tion	Jefferson Commerc	ce Cente	er									1	বাক্স	7 (
Demand Inform	nation				EB		$\overline{}$	WE	3	Т	NB			SB	
Approach Move	ement			L	T	R	L	T	R	L	Т	R	L	T	R
Demand (v), v	eh/h			40	533	21	82	104	2 44	60	201	108	12	93	74
Signal Informa	tion					5		•							_
Cycle, s	120.0	Reference Phase	2	1	7 2	- 2	╡		2		N21	<u>_</u> _	→	5	4
Offset, s	0	Reference Point	End	Grace	11 5	27	E0.0	20		11.5	II .	1	¥ 2	3	4
Uncoordinated	No	Simult. Gap E/W	On	Green Yellow		0.0	56.0 4.3	3.6	5.3 0.0	11.5 3.6		7	4		t,
Force Mode	Fixed	Simult. Gap N/S	On	Red	4.2	0.0	2.3	4.0	0.0	4.0		5	6	7	
Timer Results				EBI	-	EBT	WB	L	WBT	NBI	-	NBT	SBI	-	SBT
Assigned Phas	е			5		2	1		6	3		8	7		4
Case Number				2.0		3.0	2.0		4.0	2.0		3.0	2.0		3.0
Phase Duration, s			19.2 6		62.6	22.0		65.3	16.4		24.4	11.1	I	19.1	
Change Period, ( Y+R ∘ ), s			7.7		6.6	7.7		6.6	7.5		7.6	7.5		7.6	
Max Allow Headway ( MAH ), s			5.0		0.0	5.0		0.0	5.1		5.2	5.1		5.2	
Queue Clearance Time ( g s ), s			3.5			4.9			4.1		10.5	2.5		8.3	
Green Extension	Green Extension Time ( $g_e$ ), s			0.2		0.0	0.5		0.0	0.2		3.3	0.0		3.2
Phase Call Pro	bability			0.77	7		0.95	5		0.89	)	1.00	0.36	3	1.00
Max Out Proba	bility			0.00	)		0.00	)		0.00	)	0.00	0.00	)	0.01
Movement Gro	oup Res	ults			EB			WB			NB			SB	
Approach Move	_			L	Т	R	L	Т	R	L	Т	R	L	Т	R
Assigned Move				5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow	Rate ( v	), veh/h		44	586	23	90	801	392	66	221	119	13	102	81
		ow Rate ( s ), veh/h/	ln	1583	1597	1220	1673	1827	1787	1740	1773	1563	1528	1756	1491
Queue Service				1.5	8.9	1.2	2.9	17.2		2.1	6.9	8.5	0.5	3.3	6.3
Cycle Queue C				1.5	8.9	1.2	2.9	17.2		2.1	6.9	8.5	0.5	3.3	6.3
Green Ratio ( g	/C )			0.10	0.47	0.47	0.12	0.49	0.49	0.07	0.14	0.14	0.03	0.10	0.10
Capacity ( c ), v				304	2235	569	398	1787	874	258	497	219	91	337	143
Volume-to-Cap	acity Ra	tio (X)		0.144	0.262	0.041	0.227	0.448	0.449	0.256	0.444	0.541	0.146	0.304	0.569
Available Capa	city ( c a	), veh/h		1024	2235	569	1082	1787	874	507	1133	499	446	966	410
Back of Queue	(Q), ve	eh/ln ( 50 th percent	ile)	0.6	3.2	0.4	1.2	7.1	7.2	1.0	3.1	3.5	0.2	1.5	0.2
	` ''	RQ) (50 th percen		0.08	0.07	0.03	0.09	0.23		0.09	0.16	0.27	0.03	0.07	0.03
Uniform Delay				49.7	19.5	17.4	47.9	20.1	20.1	52.4	47.3	48.0	56.7	50.5	51.9
Incremental De				0.3	0.3	0.1	0.4	0.8	1.7	0.7	0.9	2.9	1.0	0.7	5.0
Initial Queue D				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (		•••		50.0	19.8	17.6	48.3	20.9	21.7	53.2	48.2	50.9	57.8	51.2	56.9
Level of Service	evel of Service (LOS)			D	В	В	D	С	С	D	D	D	E	D	E
Approach Dela				21.7	7	С	23.1	1	С	49.8	3	D	54.0		D
Intersection De						29	9.4						С		
					ED			WB	WD NO					SB	
Multimodal Results				EB			WH			NB					
Multimodal Re Pedestrian LOS		/1.00		3.0	_	С	3.0	_	С	3.4		С	3.5	_	С

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	HCS 2	010 S	ignali	ized l	nters	ection	n Res	ults S	umm	ary				
Company Information								l4	4: I£	4! .		T t	14741	K U
General Information							$\overline{}$	Intersec		_	on	- 1	TIT	
Agency	CDM Smith				Te i o	0040	$\rightarrow$	Duration	,	0.25				. :
Analyst	DBZ		-		Feb 9	,	$\overline{}$	Area Typ	e	Other		- <u> </u>		-
Jurisdiction			Time F		PM P	eak	$\rightarrow$	PHF		0.93			***	- 7
Urban Street	Fern Valley Road		-	sis Yea	$\overline{}$			Analysis	Period	1> 4:4	45	×		×
Intersection	Jefferson Boulevar	d	File Na	ame	PM 16	3.xus						╛╗	1111	r
Project Description	Jefferson Commerc	ce Cente	er									1	বাক্শ	14
Demand Information	on			EB			WE	3		NB		Ĭ	SB	
Approach Movemer			L	T	R	L	T	R	L	T	R	L	T	R
Demand ( v ), veh/h			37	1223		168	997	_	95	179	217	125	362	168
						1						1		
Signal Information				2	8	= 7	וְש	2 211			_		K	
Cycle, s 120	0.0 Reference Phase	2		L, 6	7 2	T⊫ <b>:</b> `	15	.	-   -	↑2 <b>Ľ</b>		<b>→</b> 』	``] . ˈ	<b>*</b>
Offset, s	Reference Point	End	Green	11.0	3.9	41.9	9.7	0.2	23.8	2		<b>H</b> -	1 1	-
Uncoordinated N	o Simult. Gap E/W	On	Yellow	-	0.0	4.3	3.5	0.0	3.6		<i>&gt;</i>	<b>←</b>		∱z.
Force Mode Fix	ed Simult. Gap N/S	On	Red	4.2	0.0	2.3	4.0	0.0	4.0		5	6	7	8
							-							
Timer Results			EBI	-	EBT	WB	L	WBT	NB	L	NBT	SBI	-	SBT
Assigned Phase			5		2	1		6	3		8	7	_	4
Case Number			2.0	-	3.0	2.0	-	4.0	2.0	-	3.0	2.0	-	3.0
Phase Duration, s			18.7	-	48.5	22.7	-	52.5	17.2	-	31.4	17.4	_	31.7
Change Period, ( Y			7.7	-	6.6	7.7	-	6.6	7.5	$\overline{}$	7.6	7.5	$\overline{}$	7.6
Max Allow Headway			5.0	-	0.0	5.0	-	0.0	5.1	$\overline{}$	5.2	5.1	$\overline{}$	5.2
Queue Clearance T	īme ( <i>g</i> ₃ ), s		3.3			7.8	-		5.4	-	18.7	7.0	-	14.7
Green Extension Ti			0.1	-	0.0	0.9	-	0.0	0.3	-	5.2	0.5	-	5.9
Phase Call Probabi	lity		0.73	3		1.00	)		0.97	7	1.00	0.99	9	1.00
Max Out Probability	•		0.00	)		0.00	)		0.00		0.35	0.03	3	0.20
Movement Group	Recults			EB			WB			NB			SB	
Approach Movemen			L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movemen			5	2	12	1	6	16	3	8	18	7	4	14
			40	1315	187	181	751	368	102	192	233	134	389	181
Adjusted Flow Rate	1 11	ln.	1740	1675	1388	1723	1827	_	1723	1809	1579	1555	1809	1548
Queue Service Time	Flow Rate (s), veh/h/	111	1.3	27.7	12.2	5.8	19.2	_	3.4	5.4	16.7	5.0	11.6	12.7
Cycle Queue Clear			1.3	27.7	12.2	5.8	19.2		3.4	5.4	16.7	5.0	11.6	12.7
	ance nine ( g a ), s			_	-	_	_	_	_	_		_		_
Green Ratio (g/C)	-		0.09	0.35	0.35	0.12	0.38		0.08	0.20	0.20	0.08	0.20	0.20
Capacity ( c ), veh/h			319	1755	485	430	1396	_	278	718	314	256	725	310
Volume-to-Capacity  Available Capacity	· · ·		0.125 739	0.749 1755	0.386	732	0.538		0.368 502	0.268 965	0.744 421	0.525 454	0.537 972	0.582 416
	), veh/ln ( 50 th percent	امان	0.5	11.2	4.2	2.5	8.3	8.5	1.5	2.4	7.0	2.0	5.2	5.0
	io(RQ)(50 th percen		0.07	0.24	0.37	0.18	0.27		0.14	0.12	0.55	0.28	0.26	0.65
Uniform Delay ( d 1		uic)	50.1	34.4	29.4	48.5	28.8	_	52.3	40.7	45.2	52.8	43.0	43.4
Incremental Delay (	··		0.2	3.0	2.3	0.9	1.5	3.0	1.2	0.3	6.1	2.4	0.9	2.5
Initial Queue Delay			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay ( d ),	• • • • • • • • • • • • • • • • • • • •		50.3	37.4	31.7	49.4	30.3	_	53.4	41.0	51.3	55.2	43.9	45.9
Level of Service (LC			D	D D	C C	D D	C	C	D D	D 41.0	D D	55.2 E	43.9 D	D D
Approach Delay, s/v	·		37.0		D	33.4		C	47.9		D	46.5		D
Intersection Delay,			07.0			3.9			17.0			D 40.0		
Multimodal Result	s			EB			WB			NB			SB	
Pedestrian LOS Sco	ore / LOS		3.1		С	3.1		С	3.4		С	3.5		С
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		HCS 2	010 S	ignali	zed l	nterse	ection	Res	ults S	umm	ary				
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General Inform	nation	lanua :						$\rightarrow$	Intersec		_	on	- 1	JIII	
Agency		CDM Smith				Te	2012	_	Duration		0.25		- 8 - 8		
Analyst		DBZ		-		Feb 9		$\rightarrow$	Area Typ	e	Other		- <b>8</b> ≓		-
Jurisdiction				Time F		PM P		$\overline{}$	PHF		0.93		- ₹	₩ <del>‡</del> F	= =
Urban Street		Fern Valley Road		-	is Yea	-		_	Analysis	Period	1> 4:4	45	×		
Intersection		Jefferson Boulevard		File Na	ame	PM 17	NB.xu	S						<u> </u>	r
Project Descrip	tion	Jefferson Commerc	e Cente	er									ħ	বাক্স	r n
Demand Inform	nation				EB			WE	3		NB			SB	
Approach Move	ement			L	Т	R	L	Т	R	L	Т	R	L	Т	R
Demand (v), v	eh/h			37	1235	176	170	100	8 43	97	181	229	154	366	170
6:	41			1					1 111						
Signal Informa Cycle, s	120.0	Reference Phase	2	-	L .	- 3	<b></b>	<b>\</b>	2   AM			_	_,	<b>~</b>	4
Offset, s	0	Reference Point	End				-3	1		- '		1	<b>∑</b> 2	3	4
				Green		3.9	41.0	9.7	0.3	24.7	7			l	
Uncoordinated Force Mode	No Fixed	Simult. Gap N/S	On	Yellow Red	3.5 4.2	0.0	2.3	3.5 4.0	0.0	3.6 4.0		<b>^</b> [		``	P
r orce wode	rixed	Simult. Gap N/S	On	ixeu	14.Z	0.0	2.3	14.0	10.0	4.0		3	6	- '	8
Timer Results				EBI	. T	EBT	WB	L	WBT	NBI	L	NBT	SBI	- T	SBT
Assigned Phase	е			5		2	1		6	3		8	7		4
Case Number				2.0		3.0	2.0		4.0	2.0		3.0	2.0		3.0
Phase Duration	, S			18.7	<u> </u>	47.6	22.7	7	51.6	17.2	2	32.3	17.5	5	32.5
Change Period,	( Y+R	c), S		7.7		6.6	7.7		6.6	7.5		7.6	7.5		7.6
Max Allow Head	dway ( /	MAH ), s		5.0		0.0	5.0		0.0	5.1		5.2	5.1		5.2
Queue Clearan	ce Time	e ( g s ), s		3.3			7.9			5.4		19.6	8.2		14.7
Green Extensio	n Time	(ge), s		0.1		0.0	0.9		0.0	0.4		5.0	0.6		6.0
Phase Call Prol	bability			0.73	3		1.00	)		0.97	7	1.00	1.00	)	1.00
Max Out Proba	bility			0.00	)		0.00	)		0.00	)	0.41	0.08	3	0.22
Movement Gro	un Res	sults			EB			WB			NB			SB	
Approach Move	_			L	T	R	L	Т	R	L	T	R	L	T	R
Assigned Move				5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow F		) veh/h		40	1328	189	183	759	371	104	195	246	166	394	183
		ow Rate ( s ), veh/h/l	n	1740	1675	1388	1723	1827	_	1723	1809	1579	1555	1809	1548
Queue Service				1.3	28.4	12.5	5.9	19.7	19.7	3.4	5.4	17.6	6.2	11.6	12.7
Cycle Queue C				1.3	28.4	12.5	5.9	19.7	19.7	3.4	5.4	17.6	6.2	11.6	12.7
Green Ratio ( g		(3 //		0.09	0.34	0.34	0.12	0.37	0.37	0.08	0.21	0.21	0.08	0.21	0.21
Capacity ( c ), v				319	1718	474	430	1369	_	278	743	324	258	751	322
Volume-to-Capa		atio (X)		0.125	0.773	_	0.425	0.554	_	0.375	0.262	0.759	0.642	0.524	0.568
Available Capa				713	1718	474	706	1369	_	502	963	420	454	971	416
		eh/ln ( 50 th percent	ile)	0.5	11.6	4.4	2.5	8.6	8.7	1.5	2.4	7.4	2.5	5.2	5.0
Queue Storage	Ratio (	RQ) (50 th percent	tile)	0.07	0.25	0.38	0.18	0.28	0.28	0.14	0.12	0.58	0.35	0.26	0.65
Uniform Delay (	( d 1 ), s	/veh		50.1	35.3	30.1	48.5	29.6	29.6	52.3	40.0	44.9	53.3	42.3	42.7
Incremental De	lay ( d a	), s/veh		0.2	3.5	2.5	1.0	1.6	3.3	1.2	0.3	7.0	3.8	0.8	2.2
Initial Queue De	elay ( d	з ), 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
Control Delay (				50.3	38.8	32.6	49.5	31.2	32.9	53.5	40.3	51.9	57.0	43.1	44.9
Level of Service				D	D	С	D	C	С	D	D	D	E	D	D
Approach Delay				38.3	3	D	34.2	2	С	48.1	1	D	46.7	<u> </u>	D
Intersection Del	lay, s/ve	eh / LOS				39	9.8						D		
Multimodal Re	sulte				EB			WB			NB			SB	
Pedestrian LOS		/1.0S		3.1	1	С	3.1	_	С	3.4	_	С	3.5	_	С
Bicycle LOS Sc				1.3		A	1.2	-	A	0.9	_	A	1.1	_	A
Dicycle LOS SC	OIC / LC			1.3		_	1.2		_	0.9		_	1.1		^

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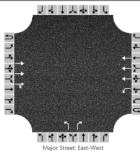
General Inforn	nation							Т	Intersec	tion Inf	ormatic	n	Į.	<u>ৰি</u> ১৯ চি	
Agency		CDM Smith						$\rightarrow$	Duration		0.25			וזוור	٠ _
Analyst		DBZ		Analys	sis Date	Feb 9	2016	$\overline{}$	Area Typ		Other				
Jurisdiction				Time F		PM P		$\rightarrow$	PHF		0.93		÷ =	v‡e	÷
Urban Street		Fern Valley Road		-	sis Year	-		$\rightarrow$	Analysis	Period	1> 4:4	15	7		
Intersection		Jefferson Boulevard	d	File Na		_	B.xus		a lary old	· cnou	11. 11		-		, _
Project Descrip	tion	Jefferson Commerc			41110		D.AGO						- 7	4147	11
							Y	100		Y					
Demand Inform					EB			WE	_		NB			SB	_
Approach Move				L	T	R	L	T	R	L	Т	R	L	T	R
Demand (v), v	eh/h		_	50	1268	189	173	101	6 43	141	200	229	154	372	17
Signal Informa	tion					1 5	_ 5	<u> </u>	<u> </u>	$\overline{}$				_	T
Cycle, s	120.0	Reference Phase	2	1	P 6	- 2	<b>₹</b> , '			12	×	<b>~</b> _	<b>→</b>		4
Offset, s	0	Reference Point	End	Green	10.5	2 5	40.9	100	24.8	0.0		1	Y 2	3	
Uncoordinated	No	Simult. Gap E/W	On	Yellow		0.0	4.3	9.9	3.6	0.0		7	4		1
Force Mode	Fixed	Simult. Gap N/S	On	Red	4.2	0.0	2.3	4.0	4.0	0.0		5	6	7	
Timer Results				EBI	-	EBT	WB	L	WBT	NBI	-	NBT	SBI	-	SBT
Assigned Phase	е			5		2	1		6	3		8	7		4
Case Number				2.0	-	3.0	2.0	-	4.0	2.0	-	3.0	2.0	-	3.0
Phase Duration				20.2	-	47.5	22.7	-	49.9	17.4	-	32.4	17.5	-	32.4
Change Period	, ( Y+R	c), S		7.7	$\perp$	6.6	7.7		6.6	7.5		7.6	7.5		7.6
Max Allow Head				5.0	$\perp$	0.0	5.0		0.0	5.1		5.2	5.1	$\perp$	5.2
Queue Clearan	ce Time	e (g s), s		3.7			8.0	_		7.1		19.6	8.2	$\perp$	15.2
Green Extension	n Time	(ge), s		0.2		0.0	0.9		0.0	0.5		5.2	0.6	$\perp$	6.1
Phase Call Pro	bability			0.83	3		1.00			0.99		1.00	1.00	)	1.00
Max Out Proba	bility			0.00	)		0.00	)		0.03	3	0.42	0.08	}	0.25
Movement Gro	oup Res	sults			EB			WB			NB			SB	
Approach Move	_			L	Т	R	L	Т	R	L	T	R	L	Т	ΓR
Assigned Move				5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow I		) veh/h		54	1363	203	186	764	374	152	215	246	166	400	18
		ow Rate ( s ), veh/h/l	ln	1740	1675	1388	1723	1827	_	1723	1809	1579	1555	1809	154
Queue Service				1.7	29.5	13.6	6.0	20.3		5.1	6.0	17.6	6.2	11.8	13.
Cycle Queue C				1.7	29.5	13.6	6.0	20.3		5.1	6.0	17.6	6.2	11.8	13.
Green Ratio ( g		(3-71-		0.10	0.34	0.34	0.12	0.36	_	0.08	0.21	0.21	0.08	0.21	0.2
Capacity ( c ), v				362	1712	473	430	1320	_	285	747	326	258	748	32
Volume-to-Cap		atio (X)		0.148	0.797	0.430	0.433	0.579	_	0.531	0.288	0.755	0.642	0.535	-
Available Capa				709	1712	473	702	1320		502	963	420	454	964	41
		eh/ln (50 th percent	ile)	0.7	12.1	4.8	2.6	8.9	9.1	2.3	2.7	7.4	2.5	5.3	5.2
		RQ) (50 th percent		0.09	0.26	_	0.19	0.29		0.21	0.14	0.58	0.35	0.27	0.6
Uniform Delay			,	48.9	35.8	30.6	48.6	31.0		52.8	40.2	44.7	53.3	42.4	43.
Incremental De	` //			0.3	3.9	2.8	1.0	1.9	3.8	2.2	0.3	6.8	3.8	0.8	2.4
Initial Queue De				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (		•••		49.2	39.7	33.4	49.6	32.8	_	55.0	40.5	51.6	57.0	43.3	45.
Level of Service				D	D	С	D	С	С	D	D	D	Е	D	D
Approach Delay				39.3		D	35.7		D	48.5		D	46.8		D
Intersection De							).8						D		
Multimodal Re					EB			WB			NB			SB	
Pedestrian LOS				3.1	-	С	3.1	-	С	3.4		С	3.5		С
Bicycle LOS Sc	ore / LC	OS		1.4		Α	1.2		Α	1.0		Α	1.1		Α

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General Information         Site Information           Analyst         DBZ         Intersection         Fern Valley Entrance           Agency/Co.         CDM Smith         Jurisdiction           Date Performed         2/11/2016         East/West Street         Fern Valley Road           Analysis Year         2017         North/South Street         Entrance           Time Analyzed         AM Peak         Peak Hour Factor         0.91           Intersection Orientation         East-West         Analysis Time Period (hrs)         0.25           Project Description         Fern Valley Commerce Center		HCS 2010 Two-Way St	<del>op control</del> summary R	ероге
Agency/Co. CDM Smith Jurisdiction  Date Performed 2/11/2016 East/West Street Fern Valley Road  Analysis Year 2017 North/South Street Entrance  Time Analyzed AM Peak Peak Hour Factor 0.91  Intersection Orientation East-West Analysis Time Period (hrs) 0.25	General Information		Site Information	
Date Performed 2/11/2016 East/West Street Fern Valley Road  Analysis Year 2017 North/South Street Entrance  Time Analyzed AM Peak Peak Hour Factor 0.91  Intersection Orientation East-West Analysis Time Period (hrs) 0.25	Analyst	DBZ	Intersection	Fern Valley Entrance
Analysis Year 2017 North/South Street Entrance Time Analyzed AM Peak Peak Hour Factor 0.91 Intersection Orientation East-West Analysis Time Period (hrs) 0.25	Agency/Co.	CDM Smith	Jurisdiction	
Time Analyzed AM Peak Peak Hour Factor 0.91 Intersection Orientation East-West Analysis Time Period (hrs) 0.25	Date Performed	2/11/2016	East/West Street	Fern Valley Road
Intersection Orientation East-West Analysis Time Period (hrs) 0.25	Analysis Year	2017	North/South Street	Entrance
	Time Analyzed	AM Peak	Peak Hour Factor	0.91
Project Description Fern Valley Commerce Center	Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
	Project Description	Fern Valley Commerce Center		



### **Vehicle Volumes and Adjustments**

Approach		Eastb	ound			West	bound			North	bound			South	bound	
Movement	U	L	Т	R	U	L	Т	R	U	L	T	R	U	L	Т	R
Priority	10	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	3	0	0	1	3	0		1	0	1		0	0	0
Configuration			Т	TR		L	Т			L		R				
Volume (veh/h)			579	78		56	1120			5		15				
Percent Heavy Vehicles						1				1		1				
Proportion Time Blocked																
Right Turn Channelized		Ν	lo			١	lo			N	0			٨	lo	
Median Type								Left	Only							
Median Storage									1							

### Delay, Queue Length, and Level of Service

Flow Rate (veh/h)			62			5		16		
Capacity			535			254		545		
v/c Ratio			0.12			0.02		0.03		
95% Queue Length			0.4			0.1		0.1		
Control Delay (s/veh)			12.6			19.4		11.8		
Level of Service (LOS)			В			С		В		
Approach Delay (s/veh)			0	.6		13	3.6			
Approach LOS			,	4			В			

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Control   Cont		HC:	5 20]	LO Tw	o-W	ay St	op C	01111	JI SUI	IIIIIIa	ry Ke	port					
Agency/Co.    Date Performed   2/11/2016	General Information							Site I	inforn	nation							
Date   Performed   2/11/2016	Analyst	DBZ						Inters	ection			Fern \	/alley En	trance			
Analysis Year   2017	Agency/Co.	CDM	Smith					Jurisd	iction								
Project Description   Project Description	Date Performed	2/11/2	2016					East/V	Vest Stre	et		Fern \	/alley Ro	ad			
East-West	Analysis Year	2017						North	/South S	treet		Entrar	nce				
Project Description   Fern Valley Commerce Center	Time Analyzed	PM Pe	eak					Peak l	Hour Fac	tor		0.93					
Vehicle Volumes and Adjustments	Intersection Orientation	East-V	Vest					Analys	sis Time	Period (h	rs)	0.25					
Vehicle Volumes and Adjustments	Project Description	Fern V	/alley Co	mmerce	Center												
Vehicle Volumes and Adjustments	Lanes																
Movement		djustmen			1144717		r Street: Ea		1110		No all				South		
Priority         1U         1         2         3         4U         4         5         6         7         8         9         10         11           Number of Lanes         0         0         3         0         0         1         3         0         1         0         1         0<					n		_		l n				n		_		_ n
Number of Lanes         0         0         3         0         0         1         3         0         1         0         1         0         0         0         0         1         3         0         1         0         1         0		_	_				_			J			_	J	_	_	R 12
Configuration         T         TR         L         T         R         L         R         S         No         No<		_	_			_	_						_			_	0
Volume (veh/h)         1448         24         17         1315         27         59         Image: control of the law of	Number of Lanes	"		1 -	"	١ ٠	1 +	1 2	L		1	Ů	1			_ ·	
Percent Heavy Vehicles         1				7	TD		<u> </u>	7					Ιp			ı	۳
Proportion Time Blocked         No	Configuration																0
Right Turn Channelized         No         No<	Configuration Volume (veh/h)						17				27		59				
Median Type         Left Only           Median Storage         1           Delay, Queue Length, and Level of Service           Flow Rate (veh/h)         18         29         63         8           Capacity         205         88         287         8           v/c Ratio         0.09         0.33         0.22         0.3           95% Queue Length         0.3         1.3         0.8         0.8           Control Delay (s/veh)         24.3         64.7         21.1         0.3	Configuration  Volume (veh/h)  Percent Heavy Vehicles						17				27		59				
Median Storage         1           Delay, Queue Length, and Level of Service           Flow Rate (veh/h)         18         29         63         8           Capacity         205         88         287         8           v/c Ratio         0.09         0.33         0.22         0.3           95% Queue Length         0.3         1.3         0.8         0.8           Control Delay (s/veh)         24.3         64.7         21.1         0.3	Configuration Volume (veh/h) Percent Heavy Vehicles Proportion Time Blocked			1448			17 1	1315			27 1		59				
Delay, Queue Length, and Level of Service           Flow Rate (veh/h)         18         29         63	Configuration  Volume (veh/h)  Percent Heavy Vehicles  Proportion Time Blocked  Right Turn Channelized		1	1448			17 1	1315	Left	Only	27 1	o	59			lo	
Flow Rate (veh/h)	Configuration Volume (veh/h) Percent Heavy Vehicles Proportion Time Blocked Right Turn Channelized Median Type		1	1448			17 1	1315			27 1	o	59		N	lo	
Capacity         205         88         287         95% Queue Length         0.09         0.33         0.22         0.23           Control Delay (s/veh)         24.3         64.7         21.1         0.3	Configuration  Volume (veh/h)  Percent Heavy Vehicles  Proportion Time Blocked  Right Turn Channelized  Median Type  Median Storage			1448			17 1	1315			27 1	0	59		N	lo	
v/c Ratio         0.09         0.33         0.22           95% Queue Length         0.3         1.3         0.8           Control Delay (s/veh)         24.3         64.7         21.1	Configuration Volume (veh/h) Percent Heavy Vehicles Proportion Time Blocked Right Turn Channelized Median Type Median Storage	nd Level		1448			17 1	1315			27 1	do .	59		N	lo	
95% Queue Length     0.3     1.3     0.8       Control Delay (s/veh)     24.3     64.7     21.1	Configuration Volume (veh/h) Percent Heavy Vehicles Proportion Time Blocked Right Turn Channelized Median Type Median Storage Delay, Queue Length, a	nd Level		1448			17 1	1315			27 1	0	59		N	lo	
Control Delay (s/veh)         24.3         64.7         21.1	Configuration Volume (veh/h) Percent Heavy Vehicles Proportion Time Blocked Right Turn Channelized Median Type Median Storage Delay, Queue Length, a	ind Level		1448			17 1	1315			27 1 N	lo	59 1		N.	lo	
	Configuration Volume (veh/h) Percent Heavy Vehicles Proportion Time Blocked Right Turn Channelized Median Type Median Storage Delay, Queue Length, a Flow Rate (veh/h) Capacity	and Level		1448			17 1 1 N	1315			27 1 N	do	59 1 63 287		N N	lo	
Level of Service (LOS) C F C	Configuration Volume (veh/h) Percent Heavy Vehicles Proportion Time Blocked Right Turn Channelized Median Type Median Storage Delay, Queue Length, a Flow Rate (veh/h) Capacity v/c Ratio	and Level		1448			17 1 1 8 205 0.09	1315			27 1 N 29 88 0.33	lo .	59 1 63 287 0.22			lo	
	Configuration Volume (veh/h) Percent Heavy Vehicles Proportion Time Blocked Right Turn Channelized Median Type Median Storage Delay, Queue Length, a Flow Rate (veh/h) Capacity v/c Ratio 95% Queue Length	ind Level		1448			17 1 1 8 205 0.09 0.3	1315			27 1 N 29 88 0.33 1.3	0	63 287 0.22			lo	

Approach LOS

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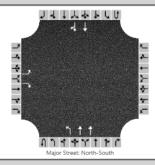
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	HCS 2010 Two-Way Stop C	ontrol Summary Re	eport
General Information		Site Information	
Analyst	DBZ	Intersection	Jefferson Boulevard Entra
Agency/Co.	CDM Smith	Jurisdiction	
Date Performed	2/11/2016	East/West Street	Entrance
Analysis Year	2017	North/South Street	Jefferson Boulevard
Time Analyzed	AM Peak	Peak Hour Factor	0.91
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Fern Valley Commerce Center		

#### Lanes



#### **Vehicle Volumes and Adjustments**

Approach		Eastb	ound			West	bound			North	bound			South	bound	
Movement	U	L	Т	R	U	L	Т	R	U	L	Т	R	U	L	Т	R
Priority		10	11	12		7	8	9	10	1	2	3	4U	4	5	6
Number of Lanes		1	0	1		0	0	0	0	1	2	0	0	0	2	0
Configuration		L		R						L	Т				Т	TR
Volume (veh/h)		21		6						25	348				158	38
Percent Heavy Vehicles		1		1						1						
Proportion Time Blocked																
Right Turn Channelized		N	lo			N	lo			Ν	lo			1	lo	
Median Type								Left	Only							
Median Storage									1							

### Delay, Queue Length, and Level of Service

Flow Rate (veh/h)	23		7			27				
Capacity	598		928			1359				
v/c Ratio	0.04		0.01			0.02				
95% Queue Length	0.1		0.0			0.1				
Control Delay (s/veh)	11.3		8.9			7.7				
Level of Service (LOS)	В		А			А				
Approach Delay (s/veh)	10	0.7				0	.5			
Approach LOS		В				,	Д			

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	пс	5 201	LOTW		,	_										
General Information							Site 1	Inforn	nation	ı						
Analyst	DBZ						Inters	ection			Jeffer	on Boul	evard En	tra		
Agency/Co.	CDM	Smith					Jurisd	iction								
Date Performed	2/11/2	2016					East/\	West Stre	et		Entrar	nce				
Analysis Year	2017						North	/South S	treet		Jeffer:	on Boul	evard			
Time Analyzed	PM Pe	ak					Peak	Hour Fac	tor		0.91					
Intersection Orientation	North	-South					Analy	sis Time	Period (h	ırs)	0.25					
Project Description	Fern V	alley Co	mmerce	Center												
Lanes																
				744477												
Vehicle Volumes and A	djustmen	ts				ጎ <b>†</b> <b>† ቀ ሃ</b> Street: No		, r								
Vehicle Volumes and A	djustmen		pound			Street: No		, r		North	bound			South	bound	
	<b>djustmen</b>		oound T	R		Street: No	rth-South	, r	U	North L	bound T	R	U	South	bound	R
Approach		Eastb	_	R 12	Major	Street: No	bound		U 1U			R 3	U 4U	_	_	-
Approach Movement		Eastb	Т	-	Major	Westl	bound T	R		L	Т			L	Т	R 6
Approach Movement Priority		Eastb L 10	T 11	12	Major	Westl	bound T	R 9	10	L 1	T 2	3	4U	L 4	T 5	6
Approach Movement Priority Number of Lanes		Eastb L 10	T 11	12	Major	Westl	bound T	R 9	10	1 1	T 2 2	3	4U	L 4	T 5	6
Approach Movement Priority Number of Lanes Configuration		Eastb L 10 1	T 11	12 1 R	Major	Westl	bound T	R 9	10	1 1 L	T 2 2 T	3	4U	L 4	T 5 2 T	6 0
Approach Movement Priority Number of Lanes Configuration Volume (veh/h)		Eastb  L  10  1  L  59	T 11	12 1 R 19	Major	Westl	bound T	R 9	10	L 1 1 L 6	T 2 2 T	3	4U	L 4	T 5 2 T	6 0
Approach  Movement  Priority  Number of Lanes  Configuration  Volume (veh/h)  Percent Heavy Vehicles		L 10 1 L 59 1	T 11	12 1 R 19	Major	Westi	bound T	R 9	10	1 1 1 L 6	T 2 2 T	3	4U	4 0	T 5 2 T	6 0
Approach Movement Priority Number of Lanes Configuration Volume (veh/h) Percent Heavy Vehicles Proportion Time Blocked		L 10 1 L 59 1	T 11 0	12 1 R 19	Major	Westi	bound T 8	R 9 0	10	1 1 1 L 6	T 2 2 T 511	3	4U	4 0	T 5 2 T 695	6 0
Approach  Movement  Priority  Number of Lanes  Configuration  Volume (veh/h)  Percent Heavy Vehicles  Proportion Time Blocked  Right Turn Channelized		L 10 1 L 59 1	T 11 0	12 1 R 19	Major	Westi	bound T 8	R 9 0	10 0	1 1 1 L 6	T 2 2 T 511	3	4U	4 0	T 5 2 T 695	6 0
Approach  Movement  Priority  Number of Lanes  Configuration  Volume (veh/h)  Percent Heavy Vehicles  Proportion Time Blocked  Right Turn Channelized  Median Type  Median Storage	U	Eastb L 10 1 L 59 1	T 11 0	12 1 R 19	Major	Westi	bound T 8	R 9 0	1U 0	1 1 1 L 6	T 2 2 T 511	3	4U	4 0	T 5 2 T 695	6 0
Approach  Movement  Priority  Number of Lanes  Configuration  Volume (veh/h)  Percent Heavy Vehicles  Proportion Time Blocked  Right Turn Channelized  Median Type  Median Storage	U	Eastb L 10 1 L 59 1	T 11 0	12 1 R 19	Major	Westi	bound T 8	R 9 0	1U 0	1 1 1 L 6	T 2 2 T 511	3	4U	4 0	T 5 2 T 695	( T
Approach  Movement  Priority  Number of Lanes  Configuration  Volume (veh/h)  Percent Heavy Vehicles  Proportion Time Blocked  Right Turn Channelized  Median Type  Median Storage  Delay, Queue Length, a	U	Eastb  L  10  1  L  59  1	T 11 0	12 1 R 19 1	Major	Westi	bound T 8	R 9 0	1U 0	L 1 1 L 6 1	T 2 2 T 511	3	4U	4 0	T 5 2 T 695	( T
Approach  Movement  Priority  Number of Lanes  Configuration  Volume (veh/h)  Percent Heavy Vehicles  Proportion Time Blocked  Right Turn Channelized  Median Type  Median Storage  Delay, Queue Length, a  Flow Rate (veh/h)	U	Eastb  L 10 1 L 59 1 N  Of Ser 65	T 11 0	12 1 R 19 1	Major	Westi	bound T 8	R 9 0	1U 0	L 1 1 L 6 1 1	T 2 2 T 511	3	4U	4 0	T 5 2 T 695	( T
Approach  Movement  Priority  Number of Lanes  Configuration  Volume (veh/h)  Percent Heavy Vehicles  Proportion Time Blocked  Right Turn Channelized  Median Type  Median Storage  Delay, Queue Length, a  Flow Rate (veh/h)  Capacity	U	Eastbt  L  10  1  L  59  1  N  N  65  329	T 11 0	12 1 R 19 1	Major	Westi	bound T 8	R 9 0	1U 0	L 1 1 1 L 6 1 1 N N N N N N N N N N N N N N N N N	T 2 2 T 511	3	4U	4 0	T 5 2 T 695	( T
Approach Movement Priority Number of Lanes Configuration Volume (veh/h) Percent Heavy Vehicles Proportion Time Blocked Right Turn Channelized Median Type Median Storage Delay, Queue Length, a Flow Rate (veh/h) Capacity v/c Ratio	U	Eastbt L 10 1 1 L 59 1 N N N N N N N N N N N N N N N N N N	T 11 0	12 1 R 19 1 1	Major	Westi	bound T 8	R 9 0	1U 0	L 1 1 L 6 6 1 1 7 7 844 0.01	T 2 2 T 511	3	4U	4 0	T 5 2 T 695	6 0

16.8

Approach Delay (s/veh)

Approach LOS

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