

February 19, 2020

Traffic Impact Study

Heritage Creel Extension 1001 Cedar Creek Road (KY 864) Louisville, KY

Prepared for

Louisville Metro Planning Commission Kentucky Transportation Cabinet



FEB 24 2020

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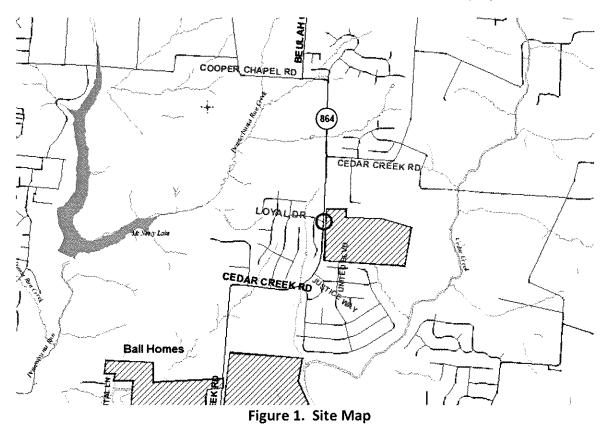
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INTRODUCTION

The site plan for the proposed Heritage Creek Extension subdivision shows 247 single-family lots on Cedar Creek Road (KY 864) in Louisville, KY. **Figure 1** displays a map of the site. Access to the site will be from an entrance on Cedar Creek Road (KY 864). A connection will be made to United Boulevard to the south. The purpose of this study is to examine the traffic impacts of the development upon the adjacent highway system. For this study, the impact area was defined to be the intersection of Cedar Creek Road with Loyal Drive and the proposed entrance.



EXISTING CONDITIONS

Cedar Creek Road, KY 864, is a state-maintained road with an estimated 2020 ADT of 2,400 vehicles per day between KY 2053 (Mt. Washington Road) and Cooper Chapel Road as estimated from the 2018 count at Kentucky Transportation Cabinet at station 279. The KYTC functional classification is Urban Major Collector. The road is a two-lane highway with ten-foot lanes with three-foot shoulders through the study area (provided by the Kentucky Transportation Cabinet). The speed limit is 35 mph. There are no sidewalks. The intersection at Loyal Drive is controlled with a stop sign on Loyal Drive.

Peak hour traffic count for the intersections was obtained on Wednesday, January 15, 2020. The a.m. peak hour occurred between 7:00 and 8:00 and the p.m. peak hour occurred between 4:45 and 5:45. **Figure 2** illustrates the existing a.m. and p.m. peak hour traffic volumes. The Appendix contains the full count data.

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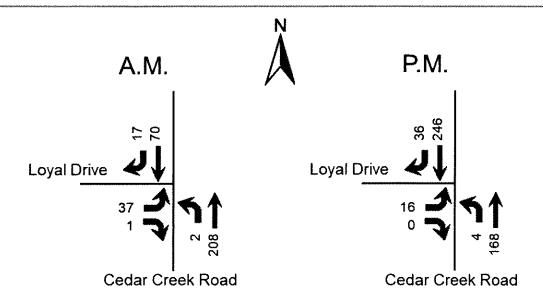
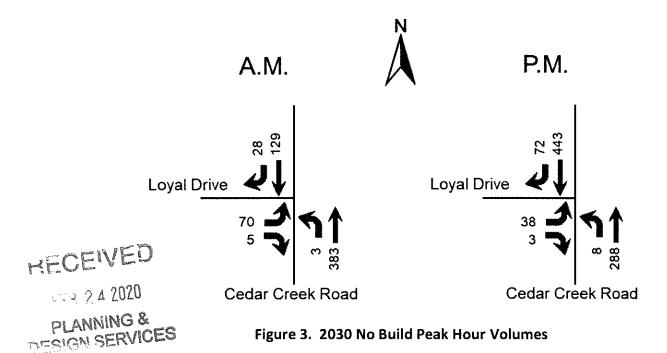


Figure 2. Existing Peak Hour Volumes

FUTURE CONDITIONS

The project completion date is 2030. An annual growth rate of 2 percent was applied to the 2020 thru volumes. This was determined by the historical growth at KYTC station 279. Trip generation for 523 lots from approved subdivisions to the south were included. Trip generation for the remaining 62 lots to be accessed from Loyal Drive have been included on Loyal Drive. **Figure 3** displays the 2030 No Build peak hour volumes.



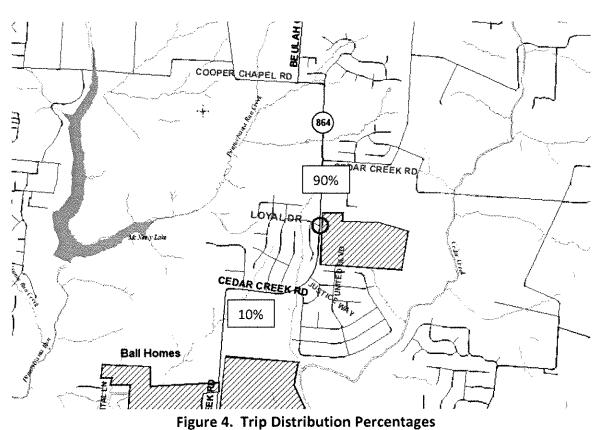
Diane B. Zimmerman Traffic Engineering, LLC.

TRIP GENERATION

The Institute of Transportation Engineers <u>Trip Generation Manual</u>, 10th Edition contains trip generation rates for a wide range of developments. The land use of "Single-Family Detached (210)" was reviewed and determined to be the best match. The trip generation results are listed in **Table 1**. The trips were assigned to the highway network with the percentages shown in **Figure 4**. **Figure 5** shows the trips generated by this development and distributed throughout the road network during the peak hours. **Figure 6** displays the individual turning movements for the peak hours when the development is completed.

	A.M. I	Peak	Hour	P.M. F	eak H	our
Land Use	Trips	In	Out	Trips	In	Out
Single-Family (247 units)	180	45	135	242	152	90

Table 1. Peak Hour Trips Generated by Site



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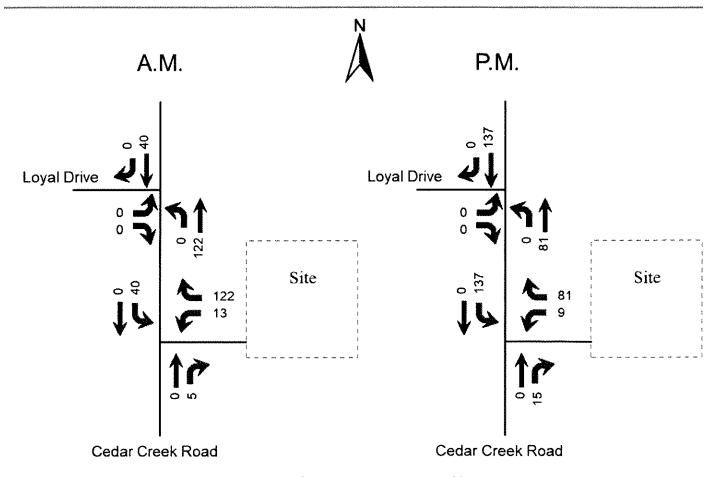


Figure 5. Peak Hour Trips Generated by Site

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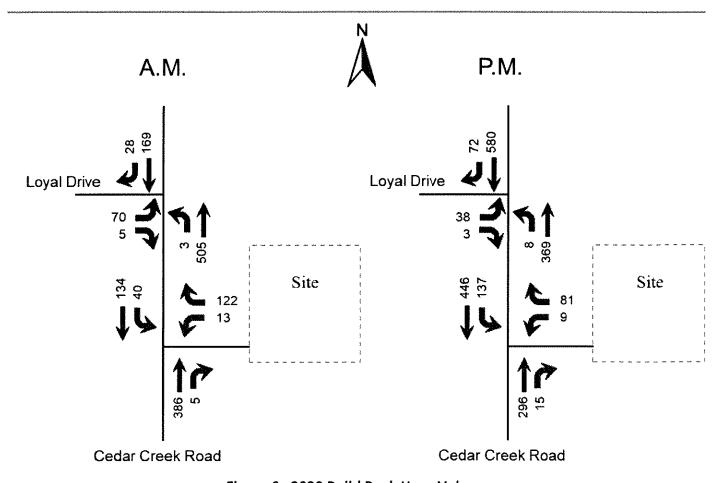


Figure 6. 2030 Build Peak Hour Volumes

ANALYSIS

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

To evaluate the impact of the proposed development, the vehicle delays at the intersections were determined using procedures detailed in the <u>Highway Capacity Manual</u>, 6th edition. Future delays and Level of Service were determined for the intersections using the HCS Streets (version 7.8.5) software. The delays and Level of Service are summarized in **Table 2**.

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Table 2. Peak Hour Level of Service

		A.M.			P.M.	
Approach	2020	2024	2024	2020	2024	2024
Approach	Existing	No Build	Build	Existing	No Build	Build
Cedar Creek Road at Loyal Drive						
Loyal Drive Eastbound	В	С	С	В	С	D
Loyal Drive Eastbound	11.0	15.2	19.3	12.3	18.6	26.8
Cedar Creek Road Northbound (left)	Α	Α	Α	Α	Α	Α
Cedar Creek Road Northbodild (left)	7.4	7.6	7.7	7.9	8.7	9.3
Cedar Creek Road at Entrance						
Entrance Westbound			В			В
Entrance westbound			14.2			13.7
Cedar Creek Road Southbound (left)			Α			Α
Cedar Creek (Coad Southbodild (left)			8.5			8.5

Key: Level of Service, Delay in seconds per vehicle

The entrances were evaluated for turn lanes using the Kentucky Transportation Cabinet <u>Highway Design Guidance</u> <u>Manual</u> dated March, 2017. The traffic impact policy requires using volumes for ten years beyond opening date, or 2030. Using the volumes in Figure 6, a southbound left-turn lane will be required at the entrance.

CONCLUSIONS

Based upon the volume of traffic generated by the development and the amount of traffic forecasted for the year 2030, there will be a slight impact to the existing highway network. A left-turn lane will be required at the entrance. No other improvements are required.

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APPENDIX

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Jefferson County, KY

Classified Turn Movement Count

Site 6 of 6

KY-864 Cedar Creek Rd (North)

KY-864 Cedar Creek Rd (South) Loyal Dr

Lat/Long

Weather

38.099388°, -85.614268°

Cloudy

51°F

Date

Wednesday, January 15, 2020

Traffic Counts



41 Peabody Street, Nashville, TN 37210
10 Glenlake Parkway, Suite 130, Atlanta, GA 30328
555 Fayetteville Street, Suite 201, Raleigh, NC 27601
1229 South Shelby Street, Louisville, KY 40203
6565 North MacArthur Boulevard, Suite 225, Dallas, TX 75039

hello@martraffic.com www.martraffic.com

1 (800) 615-3765

		5	Southbour	nd			l	Vorthbour	nd				Eastbound	d		1
	K	Y-864 Ce	dar Creek	Rd (Nort	h)	К	Y-864 Ce	dar Creek	Rd (Sou	th)			Loyal Dr			1
	U-Tum	Thru	Right	Peds	App	U-Tum	Left	Thru	Peds	Арр	U-Tum	Left	Right	Peds	Арр	Int
0700 - 0715	0	11	6	0	17	0	0	64	0	64	0	18	1	0	19	100
0715 - 0730	0	19	4	0	23	0	1	69	0	70	0	11	0	0	11	104
0730 - 0745	0	12	2	0	14	0	0	30	0	30	0	3	0	0	3	47
0745 - 0800	0	28	. 5	0	33	0	1	45	0	46	0	5	0	0	5	84
0800 - 0815	0	17	4	0	21	. 0	0	45	0	45	0	7	0	0	7	73
0815 - 0830	0	21	3	0	24	0	0	40	0	40	0	7	1	0	8	72
0830 - 0845	0	12	1	0	13	0	0	41	0	41	0	4	0	0	4	58
0845 - 0900	0	14	5	0	19	. 0	1	31	0	32	0	7	1	0	8	59
1600 - 1615	0	46	12	0	58	0	0	35	0	35	0	4	0	0	4	97
1615 - 1630	0	51	5	0	56	0	0	24	0	24	0	4	0	0	4	84
1630 - 1645	0	55	10	0	65	0	1	38	0	39	0	9	0	0	9	113
1645 - 1700	0	65	11	0	76	0	231 38	33	0	34	0	2	0	0	2	112
1700 - 1715	0	54	5	0	59	0	1	74	0	75	0	4	- 0	2	- 6	140
1715 - 1730	0	59	- 8	0	67	0	0	33	0	33	0	4	0	0	4	104
1730 - 1745	0	68	12	0.	80	0	ે.2	28	0	30	0	6	0	0	- 6	116
1745 - 1800	0	52	5	1	58	0	1	38	0	39	0	7	4	0	41	108

PM PEAK TOTAL	0	246	36	0	282	0	4	168	0	172	0	16	0	2	18	472
1730 - 1745	0	68	12	0	80	0	2	28	ଂ0 ା	30	0	6	ं 0	0	6	116
1715 - 1730	0	59	8	0	67	0	0	33	-0	33	્0 ઃ	4.0	0	00	4.	104
1700 - 1715	0	54	5	0	59	0	1	74	0	75	0	4	0	2	- 6	140
1645 - 1700	0	65	11	0	76	ಂ	1	33	0	34	0	2	0	0	2	112
AM PEAK TOTAL	0	70	17	0	87	0	2	208	0	210	0	37	1	0	38	335
0745 - 0800	0	28	5	0	33	0	1	45	0	46	0	5	0	0	5	84
0730 - 0745	0	12	2	0	14	0	0	30	0	30	0	3	0	0	3	47
0715 - 0730	0	19	4	0	23	0	1	69	0	70	0	11	0	0	11	104
0700 - 0715	0	11	6	0	17	0	0	64	0	64	0	18	1	0	19	100

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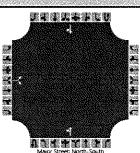
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HCS Reports

	HCS7 Two-Way Sto	pp-Control Report	
General Information		Site Information	
Analyst	DBZ	Intersection	Cedar Creek at Loyal Dr
Agency/Co.	Diane B Zimmerman Traffic Engineering	Jurisdiction	
Date Performed	2/20/2020	East/West Street	Loyal Dr
Analysis Year	2020	North/South Street	Cedar Creek Rd
Time Analyzed	AM Peak	Peak Hour Factor	0.81
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Heritage Creek Ext		

Lanes

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PLANNING &
DESIGN SERVICES



					Major	Street: Nor	th-South									
Vehicle Volumes and Adju	ıstme	nts														
Approach		Eastt	ound			West	oound		I	North	bound			South	bound	
Movement	U	%L ∭	1	R	U	L	ा	R	U	L	1	R	U	L	1	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes	VALUE (A)	0	10	0		0	0	0	∖0 े	0	*	0	0	0		0
Configuration			LR							LT						TR
Volume (veh/h)	4(24)(A)	37	NG (1875)	64130	95381651	\$400 a	1806-1808	W/378/40	1900000	.2	208	12/15/54E	260,000	45866	70	17
Percent Heavy Vehicles (%)		0		0						0						
Proportion Time Blocked	(100 A)	2000	10000000 10000000			*****										
Percent Grade (%))													
Right Turn Channelized		SiNAR			18/4/8/9		S NEW YOR	NAMES N	MACONES!	Wileson			\$30\$C			
Median Type Storage				Undi	vided											
Critical and Follow-up He	adwa	ys														
Base Critical Headway (sec)		7.1		6.2			Ī			4,1			<u> </u>			
Critical Headway (sec)	MANA	6.40	\$305	6.20	(8)(8)	\$10%	(311%)	\$\$\$\$\$\$	(35,45,55) (35,45,55)	4.10	88787	2/6/30	30000			34304X
Base Follow-Up Headway (sec)		3.5		3.3					<u> </u>	2.2				·····		
Follow-Up Headway (sec)	V25000	3.50	\$300.000 \$300.000	3.30	Vicini	VYM	90.66	000000	VisiAN)	2.20	4000	12380	8000 B	Walk	8808	949 <u>3</u> 80
Delay, Queue Length, and	Leve	of Se	rvice													
Flow Rate, v (veh/h)			47							2						
Capacity, c (veh/h)			648	1000			100 (100) 100 (100)			1496		2/12/2014 1/4/2014		(C.C.)	1200 (100 ft) 1200 (100 ft)	na Najad Podencija
v/c Ratio			0.07							0.00						
95% Queue Length, Q _{es} (veh)			0.2			\$100	\$1550 \$150 \$150 \$150 \$150 \$150 \$150 \$150	AVes 4		0.0		\$330	1800	20000		27/35/80
Control Delay (s/veh)			11.0							7.4						
Level of Service (LOS)		\$/(\$ ₀ 0)	В	13 M/M/N	4500000	02/13/04 02/13/04	VSQUAX.	VINE SE	70,000	A	108(10)	0,000	\$40.00X	\$0.05K8	19000	àv (êx)
Approach Delay (s/veh)		1	1.0							0	.1					
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General Information					CONCURS.		Site	Infori	natio	1						
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Date Performed		/2020						West Str	eet		Loyal	Dr				angeren.
Analysis Year	2030			30/30/06/8	ilinin (s	8 (78) (38) (n/South				r Creek I	₹d	100 T (12	ASSESSED ASSESSED	
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Vehicle Volumes and Adj	ustme	nts			,				,							
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Volume (veh/h)		70	-2000	35,38			\$350 (S)	0000000		3	383				129	28
Percent Heavy Vehicles (%)	<u> </u>	0		0		<u> </u>			<u></u>	0						
Proportion Time Blocked			419936 S			4998			2000 (034) 2000 (035)							
Percent Grade (%)	<u> </u>		D													
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	eadwa	ys		Undi	vided											
Median Type Storage	eadwa	ys 7.1		Undi	vided	T				4.1				Γ		
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Median Type Storage Critical and Follow-up Ho Base Critical Headway (sec) Critical Headway (sec) Base Follow-Up Headway (sec) Follow-Up Headway (sec) Pollow-Up Headway (sec) Delay, Queue Length, and Flow Rate, v (veh/h) Capacity, c (veh/h) v/c Ratio		7.1 6.40 3.5 3.50	93 446 0.21	6.2 6.20 3.3 3.30	vided					4.10 2.2 2.20 4 1391						
Median Type Storage Critical and Follow-up Ho Base Critical Headway (sec) Critical Headway (sec) Base Follow-Up Headway (sec) Follow-Up Headway (sec) Delay, Queue Length, and Flow Rate, v (veh/h) Capacity, c (veh/h) v/c Ratio 95% Queue Length, Q ₉₅ (veh)		7.1 6.40 3.5 3.50	93 446	6.2 6.20 3.3 3.30	vided					4.10 2.2 2.20 4 1391 0.00						
Median Type Storage Critical and Follow-up He Base Critical Headway (sec) Critical Headway (sec) Base Follow-Up Headway (sec) Follow-Up Headway (sec) Delay, Queue Length, and Flow Rate, v (veh/h) Capacity, c (veh/h) y/c Ratio 95% Queue Length, Q ₉₅ (veh) Control Delay (s/veh)		7.1 6.40 3.5 3.50	93 446 0.21 0.8	6.2 6.20 3.3 3.30	vided					4.10 2.2 2.20 4 1391 0.00						
Median Type Storage Critical and Follow-up Ho Base Critical Headway (sec) Critical Headway (sec) Base Follow-Up Headway (sec) Follow-Up Headway (sec) Delay, Queue Length, and Flow Rate, v (veh/h) Capacity, c (veh/h) v/c Ratio 95% Queue Length, Q ₉₅ (veh)		7.1 6.40 3.5 3.50 J of Se	93 446 0.21 0.8 15.2	6.2 6.20 3.3 3.30	vided					4.10 2.2 2.20 4 1391 0.00 0.0 7.6 A						

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Diane B. Zimmerman Traffic Engineering, LLC.

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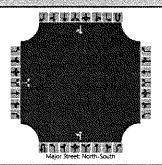
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	HCS7 Two-Way Sto	p-Control Report	
General Information		Site Information	
Analyst	DBZ	Intersection	Cedar Creek at Loyal Dr
Agency/Co.	Diane B Zimmerman Traffic Engineering	Jurisdiction	
Date Performed	2/20/2020	East/West Street	Loyal Dr
Analysis Year	2030	North/South Street	Cedar Creek Rd
Time Analyzed	AM Peak Build	Peak Hour Factor	0.81
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Heritage Creek Ext		

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PLANNING & DESIGN SERVICES



Approach		East	ound			West	bound			North	bound			South	bound	***************************************		
Movement	ับ	%1 %	7	R	U .	100 L 100	T	R	U	1	⊚τ .⊚	R	υ	L	% ⊤ ./8	R		
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6		
Number of Lanes	\$80,532,0	0	98 11 .08	0	300000	0	0	0	0	0	01	0	60 0	0	1	0		
Configuration			LR							LT		†		1,0,011,002		TR		
Volume (veh/h)	- A 4550	70	PAVESA ASS	5.	4000000	PARTES S	CALL COL	Service Co	1,327,427	3	505	1000000	40000	838 (SE)	169	28		
Percent Heavy Vehicles (%)	1	0		0	†	<u> </u>	1		†	0								
Proportion Time Blocked		88888	-0144402 1144402					80.00				1888			\$ 100 mg			
Percent Grade (%)				A		L		ł		······	A	A		L	L	J		
Right Turn Channelized	4639,660				300000													
Median Type Storage				Und	vided							***************************************				***************************************		
Critical and Follow-up He	adwa	ys																
Base Critical Headway (sec)		7,1		6.2						4.1					7016-V6000-1092	10.70.200.00		
Critical Headway (sec)		6.40		6.20	2000 (A)					4,10		0000 VOC VOCONO	13 (2) 14 (3)		311/20 A 2008/46	15 (2.5) 16 (2.5)		
Base Follow-Up Headway (sec)		3.5		3.3			1		1	2.2	1							
Follow-Up Headway (sec)		3.50	ANNA A	3.30	883803	9X19X1	19/19			2.20	500 (A)		1000		A39.9			
Delay, Queue Length, and	Leve	of S	ervice															
Flow Rate, v (veh/h)			93				I			4								
Capacity, c (veh/h)		100/186	343			\$ 10°E			(0)(0)	1335			6000000		0.5378			
v/c Ratio			0.27				1		1	0.00								
95% Queue Length, Q ₉₅ (veh)	087888990	1001110	1.1	(90.86)	50783.035	83.48833	08970000	30,410.4	10000	0.0	25.50	1,000,000	100 AV	00000000	WASSAS	(0) (A)		
Control Delay (s/veh)			19.3							7.7								
Level of Service (LOS)	107.00	COL 2 755 A 65 2 2 2 1 A 65 2 2 2 1 A 65 2 2 3 2 1	C		V 2/43 (3.0)	All Salar	2000			A	2000 2002	(22) (§3)	90.00 (c	1016.02	NAMES AN			
Approach Delay (s/veh)		19	9.3							0.1								
Approach LOS	1000000000				3000000				Swanner Verter		33,347,53.1							

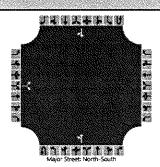
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HCS 1001 TWSC Version 7.8.5 Loyal AM 30 B.xtw

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	HCS7 Two-Way St	op-Control Report	
General Information		Site Information	
Anaiyst	DBZ	Intersection	Cedar Creek at Loyal Dr
Agency/Co.	Diane B Zimmerman Traffic Engineering	Jurisdiction	
Date Performed	2/20/2020	East/West Street	Loyal Dr
Analysis Year	2020	North/South Street	Cedar Creek Rd
Time Analyzed	PM Peak	Peak Hour Factor	0.84
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Heritage Creek Ext		

PLANNING & DESIGN SERVICES



Approach		Eastb	ound			West	oound		l	North	bound			South	bound		
Movement	ับ	NL 📎	J	R	U	1	T	R	ິນ	1	ा	∂R ∑	ិប	\(\mathbb{L}\)	ा	R	
Priority		10	11	12		7	8	9	10	1	2	3	4U	4	5	6	
Number of Lanes	1000	0	1	%0		0	0.0	0	0	0	31.00	0	0	0	1 2	0.0	
Configuration			LR							ŧΤ						TR	
Volume (veh/h)	(April 19	16	No Kala	0	2002000	30/25/3		Version	School S	4	168	100(100)0	VIA.	30.50	246	36	
Percent Heavy Vehicles (%)		0		0						0							
Proportion Time Blocked		1554 (1554) 162 (1554)					1000 (1000) 1200 (1000)	SANGEROS VANSONS						2010000 5480000			
Percent Grade (%)		()													-	
Right Turn Channelized	1000000				450000						VIII.						
Median Type Storage				Undi	vided									************	***************************************	***************************************	
Critical and Follow-up He	adwa	/5															
Base Critical Headway (sec)		7.1		6.2						4.1							
Critical Headway (sec)		6.40		6.20	NEXE.					4.10	30,000		2000 (0.00 2000 (0.00	12/3/2022 12/2/2023		14 (14 (17) 20 (14) 20 (14) 20 (14)	
Base Follow-Up Headway (sec)		3.5		3.3						2.2							
Follow-Up Headway (sec)	AVE SE	3.50	81938	3.30	23/803	\$200 K		2000		2.20		45/35		\$3.50 M			
Delay, Queue Length, and	Leve	of S	ervice														
Flow Rate, v (veh/h)			19	T T						5							
Capacity, c (veh/h)	90890	A9888	515	100	A19860	300000	8000	\$440.40	98/88/	1235	48.8004	V.53.V.32		1806	100000	\$\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	
v/c Ratio			0.04							0.00							
95% Queue Length, Q ₉₅ (veh)	(W. 60)	284.646	0.1		2,60,000	\$4500	0.634.050	14.58(0.64)	04480	0.0	\$\$ (#\$\$\$.00	1200	300000	783.VAV/	3(3)3(4)		
Control Delay (s/veh)			12.3							7.9							
Level of Service (LOS)		720 (8)	8			10 CONT.	-VS-030	300000000 300000000	1840	A	CHARAS	100 (84) 186(183)		\$ 445 hr. 655, \$57.	100000	\$100 \$100 \$100 \$100 \$100 \$100 \$100 \$100	
Approach Delay (s/veh)		12	2.3			***************************************			Ī	0	.2						
Approach LOS	1500 PV VA		3 / 1908	34 4222300	V-0.50485												

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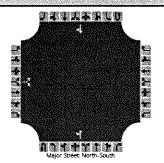
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	HCS7 Two-Way Sto	p-Control Report	
General Information		Site Information	
Analyst	DBZ	Intersection	Cedar Creek at Loyal Dr
Agency/Co.	Diane B Zimmerman Traffic Engineering	Jurisdiction	
Date Performed	2/20/2020	East/West Street	Loyal Dr
Analysis Year	2030	North/South Street	Cedar Creek Rd
Time Analyzed	PM Peak No Build	Peak Hour Factor	0.84
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Heritage Creek Ext		

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PLANNING & DESIGN SERVICES



Vehicle Volumes and Adju	ıstme	nts															
Approach		Eastb	ound	••••••••••••••••••		West	bound	***************************************	<u> </u>	North	bound		Southbound				
Movement	U	L	ा	∂R.	U	≬L"	7	R	ับ	L	ा	R	U	L.	1	R	
Priority		10	11	12		7	8	9	1U	1	2	3	4∪	4	5	6	
Number of Lanes	1880 W	0	3/3 1 ////	0	10000000	0	0	0	0.0	0 -	§ 1.88	Q .	0	0	1	0	
Configuration			LR							LT						TR	
Volume (veh/h)	900000	38	44600	3.3	(45)(45)	VV (300)	45.8189.855	4/45/06	904998X	8	268	VSPANOS	N/AVA	\$ 10 m	446	.72	
Percent Heavy Vehicles (%)		0		0						0							
Proportion Time Blocked	1000000							-1/A2000 7/157/05							Vision)		
Percent Grade (%)		()														
Right Turn Channelized	5/5/5/5				1852 7 853				\$30,684.0 \$30,684.0								
Median Type Storage		-		Undi	vided											***************************************	
Critical and Follow-up He	adwa	ys															
Base Critical Headway (sec)		7.1		6.2						4.1							
Critical Headway (sec)	- C. A. (1)	6.40		6.20					200 (200 740 (200	4.10				52/13/5/2 54/13/5/2		r (A della) Availation	
Base Follow-Up Headway (sec)		3.5		3.3						2.2							
Follow-Up Headway (sec)	NEW S	3.50		3.30		40.000			(A) (A) (A)	2.20	79.5%	4444	(A)			000	
Delay, Queue Length, and	Leve	l of S	ervice														
Flow Rate, v (veh/h)			49		F T		[l		10	T T				<u> </u>		
Capacity, c (veh/h)		ASSESSED OF	313	8000	100000000000000000000000000000000000000	\$1949	23000	\$10.00 (N)		973			\$432,000	80 (S)	10000		
v/c Ratio			0.16							0.01							
95% Queue Length, Q _{as} (veh)	37.578.67	400000	0.5	10001000	0.8888	3000000	-UNISSES	2003000	30200	0.0	40 (A) (A)	\$6.5.06A	403,636	\$\$V(\$\delta\)	100000	480000	
Control Delay (s/veh)			18.6							8.7							
Level of Service (LOS)	200000	(2000) (CA)	c	30.530	(36)(5)		10.50 AAA	ALASOS.		Α		V50005		Nei creas	10000		
Approach Delay (s/veh)		18	3.6			-		A		0	4						
Approach LOS	1000000								\$130.200 \$4.000 \$6.000 \$4.000								

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			H	CS7	Two	-Way	Sto	o-Co	ntro	Rep	ort									
	General Information			a describe	<u> </u>		<u> </u>	Site	Infor	matio	n									
	Analyst	D8Z							section			Cada	r Crook	at Loyal i) r					
ŀ	Agency/Co.		R Zimm	arman '	Traffic Fr	igineerin	. Veresea	1000000000	liction		(5), (5), (4)	Ceua	ii Cleek	at Loyal i	u Sasanas		80/00 (65/2)			
ŀ	Date Performed	2/20/		ici ii idii	nanic L	унссти:	9		West Str	cot		Lova	Loyal Dr							
-	Analysis Year	2030	LUZU		5) (2) (3) (3)	50.V55740	niski čna	200 2000	n/South	. 100000000000	(6), (6), (6), (6), (6), (6), (6), (6),		r Creek	Del Comp	XXXXXXXXX	(0) (0) (0)	2000 VIII A			
ŀ	Time Analyzed		eak Build	1					Hour Fa			0.84	II CIEEK	Nu .		de estant	XV25(X25)21			
}	Intersection Orientation		-South		NA PROPERTY.	888 888 88		ļ		Period (hec)	0.25	Service Co.	452 M. S.	49.5(49.569)	28/39/43	0892380			
ŀ	Project Description		ige Cree	k Evt	S. 1854, 1850.			(Alian)	sis Thise	reitou	niis) (200	I men	Section shape	0.0000000000000000000000000000000000000			985 mag 201			
	•	Hente	ige cree	A CAL																
	Lanes																			
EB 24	VED						1	8 AU-19												
J	7070				Ŧ				F											
ANN	ING &				53 8															
in S	ERVICES					0.5	1		7											
							Street: Nor													
	Vehicle Volumes and Adju	stme	SHAPP SHAPP			r				•										
Ĺ	Approach	300 300 3	Eastb	ound			Westi	bound	P		North	bound	N 1000 1000		South	bound				
Ļ	Movement	ับ	W L W	ा	R	U	#L	T	R	u	L	1	R	U	L	1	R			
Ļ	Priority		10	11	12		7	8	9	10	1	2	3	4U	4	5	6			
	Number of Lanes	100,000	0	1.	0	400000	00	0	0	0	0		0	0	0	1	0			
L	Configuration			LR							LT		<u> </u>				TR			
ĺ	Volume (veh/h)	W/W/05/W/	38	\$4500	3	VIQ. (8)	95.948/8	0001000		10000000	8	369	4,080,50	100000	788.000	580	72			
Ļ	Percent Heavy Vehicles (%)		0		0	ļ				<u> </u>	0									
L	Proportion Time Blocked	V60,000.0	480,000	45000.0	\$30000	WARE TO	W. 200	49.000	W/38/16	1800180		Service.	48.68	1,44,6	1000	Various.	1800(6)			
Ļ	Percent Grade (%)		(0							na na na ina na n									
L	Right Turn Channelized																			
	Median Type Storage			1750), 1750 Aco	Undi	vided									-80000000000000000000000000000000000000	5320007724	100000000000000000000000000000000000000			
	Critical and Follow-up He	adwa	/ 5									6.6			100					
ſ	Base Critical Headway (sec)		7.1		6.2						4.1									
ľ	Critical Headway (sec)	A SAN	6.40		6,20	48.55	26,500	14,50,463	2000 A		4.10	0.000	18.88	0.0878	(A) (A) (A)	2020-40	48.380.4			
Ī	Base Follow-Up Headway (sec)		3.5		3.3						2.2									
ľ	Follow-Up Headway (sec)		3.50	N/SAVE	3.30		170	(1) (1) (1) (1) (1) (1) (1) (1) (1) (1)	2/1005/10 1/2/1005/100	\$9.33°	2.20				14511636 6446874		16 \ 60 t 40 \ 162 \ 1			
	Delay, Queue Length, and	Leve	of Sc	ervice	r															
F	Flow Rate, v (veh/h)			49	l .					Γ	10		T T							
ŀ	Capacity, c (veh/h)		# # #####	214	(8,848,83)	(((4)/44/40)	-800 (800)	-(6)(6)	.550,580.5	(500.00)	849	20207		923338	(860) 8880	99999	500.000			
ŀ	v/c Ratio	400.000		0.23	10000000	31535350	20,000,000	reseptivion	newsjejvie	40000000	0.01	2103400	1 22222	10,000,000	10.53555	0.000000				
}	95% Queue Length, Q _{as} (veh)	A) A COMPAN	335533555	0.9	528,500	3,0251,051	200000	383336	\$).530.6	(02,000	0.0	95.655	3333.60	Ç. XIX SE	1738.733	500000	590000			
	Control Delay (s/veh)	69.00C0EEE	viete (C. 1965).	26.8	000000000000000000000000000000000000000	1000000	08/8/08/08/08	144,000,000,000	W-1056/50	49(00000)	9.3	10,09950	0.0000000	46.406.000	1 1083(533)	0.04693634	120.000			
ŀ	Level of Service (LOS)			D		608368	15.00.00	443,488	6.000.00		Α			3,337.6	(Alexandra)	4 (40.00)				
ŀ	Approach Delay (s/veh)	4477,4347(3)	26	5.8	- 100 Sept. (1990)	64.3078G)	5,559,838	1,000,000,00	F ***/******	# PK (58)	L).3	108255395	10010000000	1450/400V	160,600,000,000	05/00/000			
ŀ	Approach LOS	\$15 XX		5		1000														
L	operiods © 2000 University of Florida	4949449			augerephikelik	1 manysessi	AICC Var	en de reger forfaction	eraninangili. -	• enderster	as an secure	epoperatyry20060	ADQUA (ADMASSE)		s construction of the construction	Maria ang margi	ters analogicists			

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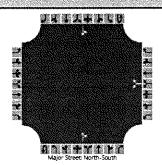
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	HCS7 Two-Way Sto	op-Control Report	
General Information		Site Information	
Analyst	DBZ	Intersection	Cedar Creek at Entrance
Agency/Co.	Diane B Zimmerman Traffic Engineering	Jurisdiction	
Date Performed	2/20/2020	East/West Street	Entrance
Analysis Year	2030	North/South Street	Cedar Creek
Time Analyzed	AM Peak	Peak Hour Factor	0.81
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Heritage Creek Ext		

FEB 2 & YOYO PLANNING & DESIGN SERVICES



Vehicle Volumes and Adju	istme	nts															
Approach		Eastt	oound			Westi	bound			North	baund		Southbound				
Movement	ິນ	1	1	R	U	1	T	R	U	L	⊗ T ⊘	R	U	L	ा	R	
Priority		10	11	12		7	8	9	10	1	2	3	4U	4	5	6	
Number of Lanes		0	0	0	188	0	81 %	∂ 0	0	0	1	0	0	0	1	0	
Configuration							LR					TR		LT			
Volume (veh/h)	3000000	400,000) 400,0000)	\$\\\ 6\\\ 6\\\\ 6\\\\ 6\\\\ 6\\\\ 6\\\\ 6\\\\ 6\\\\ 6\\\\ 6\\\\ 6\\\\ 6\\\ 6\\\ 6\\\\ 6\\\\ 6\\\\ 6\\\\ 6\\\\ 6\\\\ 6\\\\ 6\\\\ 6\\\\ 6\\\\ 6\\\ 6\\\\ 6\\\\ 6\\\\ 6\\\\ 6\\\\ 6\\\\ 6\\\\ 6\\\\ 6\\\\ 6\\\\ 6\\\ 6\\\\ 6\\\ 6\\\\ 6\\\\ 6\\\\ 6\\\\ 6\\\\ 6\\\\ 6\\\ 6\\\\ 6\\\ 6\\\\ 6\\\\ 6\\\\ 6\\\\ 6\\\\ 6\\\\ 6\\\\ 6\\\\ 6\\\\ 6\\\\ 6\\\ 6\\\\ 6\\ 6\\\ 6\\\ 6\\\ 6\\\ 6\\\ 6\\\ 6\\\ 6\\\ 6\\\ 6\\\ 6\\\ 6\\\ 6\\ 6\\\ 6\\\ 6\\\ 6\\\ 6\\\ 6\\\ 6\\\ 6\\\ 6\\\ 6\\\ 6\\\ 6\\\ 6\\ 6\\\ 6\\\ 6\\\ 6\\\ 6\\\ 6\\\ 6\\\ 6\\\ 6\\\ 6\\\ 6\\\ 6\\\ 6\\ 6\\\ 6\\\ 6\\\ 6\\\ 6\\\ 6\\\ 6\\\ 6\\\ 6\\\ 6\\\ 6\\\ 6\\\ 6\\ 6\\\ 6\\\ 6\\\ 6\\\ 6\\\ 6\\\ 6\\\ 6\\\ 6\\\ 6\\\ 6\\\ 6\\\ 6\\		100000	13	V5V)\\$\\	122	180,856		386	.5	94500	40	134	80000	
Percent Heavy Vehicles (%)						0		0						0			
Proportion Time Blocked	\$50.000 P	45.00	VIEWS	54 (A\$\$)	105000	50.588A		100000	100000000	1000 X		245 (S.2)	0.000	020/450	810/8/18	48.3	
Percent Grade (%)						(0										
Right Turn Channelized					1000 1000 1000 1000 1000 1000 1000 100								10 G0 10 G				
Median Type Storage				Undi	vided									***********	******************	***************************************	
Critical and Follow-up He	adwa	y s															
Base Critical Headway (sec)						7.1		6.2	Ī					4.1		T	
Critical Headway (sec)	1807(52)74	WW.		200		6.40	A	6.20	SALAGO.		40.00	100000	40000	4.10	100000	3000	
Base Follow-Up Headway (sec)						3 . 5		3.3						2.2			
Follow-Up Headway (sec)	(1) (1) (2) (1) (2) (3) (2) (3) (3) (3)					3.50	09/609 59/658	3.30			\$3000			2.20	ASSESS A 1994 199		
Delay, Queue Length, and	Leve	of S	ervice														
Flow Rate, v (veh/h)							167		T T			T		49		Π	
Capacity, c (vel/h)	3/200	(2)			WE WE		557	\$138XX	3501454		(0)(0)			1090	899599		
v/c Ratio							0.30							0.05			
95% Queue Length, Q _{as} (veh)	30.330	(\$800E)	3(15).33	Žia A	406048		1,2	100 (1988)	323/333	V85069	(i) (i)	1000 (000 1000 (000	038a	ି0.1	838A	8530	
Control Delay (s/veh)							14.2							8.5			
Level of Service (LOS)	98.(98.)	330,788	WANNE	48,080	V03031V	3.43.6	В	0.0000	62,759,75	10/21/19	(e.e.).	168.42		A	V.333.65		
Approach Delay (s/veh)						14	4.2							2	.3	A	
Approach LOS							8		Arto e Arti								

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		F	CS7	Two	-Way	Sto	o-Co	ntrol	Rep	ort						
General Information							Site	Inforr	natio	1						
Analyst	DBŻ						Inters	ection			Ceda	Creek a	t Entran	ce		
Agency/Co.	Diane	B Zimn	erman]	raffic En	gineerin	g	Jurisd	iction			Oracidada Arabidada		A CONTRACTOR			
Date Performed	2/20/	2020					East/\	Nest Str	et		Entrai	nce				
Analysis Year	2030			Vision			North	/South !	Street		Ceda	Creek			60.06	
Time Analyzed	PM Pe	eak				***********	Peak	Hour Fac	tor:		0.84		***************************************	••••••	***************************************	
Intersection Orientation	North	-South					Analy	sis Time	Period (hrs)	0.25					
Project Description	Herita	ige Cree	k Ext								-					
Lanes (1996) (1996) (1996)			The State													
ECEIVED FEB 2 4 2020 PLANNING & SIGN SERVICES						Street: Nor	th South									
Vehicle Volumes and Adju	stme	nts														
Approach		Eastb	ound			West	ound			North	bound			South	bound	
Movement	ิบ	1.	Т	R	U	L	T	R	(U)	L	Т	R	U	L	T	R
Priority		10	11	12		7	8	9	10	1	2	3	4U	4	5	6
Number of Lanes	30132314	୍ତ ପ	0	0	69333	0 .0	101.0	0	0.0	0	31 30	0	0	0	. 1	0
Configuration					<u> </u>	ļ	LR					TR		ĽĪ		
Volume (veh/h)	\$3000000	1000-1000	No.00076	(68/(69))		9.	1955002	81	Virginia (4.000000	296	415	\$455A19	137	446	35053
Percent Heavy Vehicles (%)		l		į.												
	25352574	48,719,734	75575000	un payatatan	Augholes	0	10.00.000	0		20000000	de California	vata na su	ALL PROPERTY.	0	297433577	29881988
Proportion Time Blocked	1000 in			2000	\$15.64	Section Sectio		0						0		9900090
Percent Grade (%)				200000		Section Sectio)	0						0		
Percent Grade (%) Right Turn Channelized						Section Sectio)	0						0		
Percent Grade (%) Right Turn Channelized Median Type Storage				Undi	vided	Section Sectio)	0						0		
Percent Grade (%) Right Turn Channelized Median Type Storage Critical and Follow-up Hea	adwa	ys.		Undi	vided)									
Percent Grade (%) Right Turn Channelized Median Type Storage Critical and Follow-up Hea Base Critical Headway (sec)	aciwa	ys		Undi	vided	7.1		6.2						4.1		
Percent Grade (%) Right Turn Channelized Median Type Storage Critical and Follow-up Heads Critical Headway (sec) Critical Headway (sec)	adwa	ys 		Undi	vided	7.1 6.40		6.2 6.20						4.1		
Percent Grade (%) Right Turn Channelized Median Type Storage Critical and Follow-up Headway (sec) Critical Headway (sec) Base Follow-Up Headway (sec)	adwa	y 5		Undi	vided	7.1 6.40 3.5		6.2 6.20 3.3						4.1 4.10 2.2		
Percent Grade (%) Right Turn Channelized Median Type Storage Critical and Follow-up Hea Base Critical Headway (sec) Critical Headway (sec) Base Follow-Up Headway (sec) Follow-Up Headway (sec)					vided	7.1 6.40		6.2 6.20						4.1		
Percent Grade (%) Right Turn Channelized Median Type Storage Critical and Follow-up Headway (sec) Critical Headway (sec) Base Follow-Up Headway (sec) Follow-Up Headway (sec) Delay, Queue Length, and			arvice		vided	7.1 6.40 3.5		6.2 6.20 3.3			Africa School			4.1 4.10 2.2 2.20		
Percent Grade (%) Right Turn Channelized Median Type Storage Critical and Follow-up Hea Base Critical Headway (sec) Critical Headway (sec) Base Follow-Up Headway (sec) Follow-Up Headway (sec) Delay, Queue Length, and Flow Rate, v (veh/h)	Leve		ervice		vided	7.1 6.40 3.5	107	6.2 6.20 3.3						4.1 4.10 2.2 2.20		
Percent Grade (%) Right Turn Channelized Median Type Storage Critical and Follow-up Headway (sec) Critical Headway (sec) Base Follow-Up Headway (sec) Follow-Up Headway (sec) Delay, Queue Length, and			ervice		vided	7.1 6.40 3.5		6.2 6.20 3.3						4.1 4.10 2.2 2.20		Santai (

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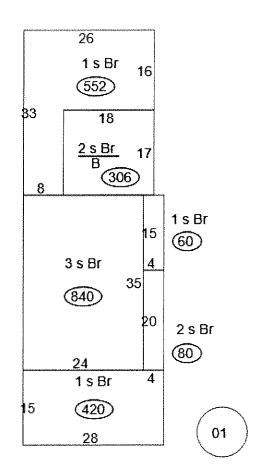
Α

Approach LOS

Control Delay (s/veh)

Level of Service (LOS)

Approach Delay (s/veh)



713 E BROADWAY

MECHIED

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