S.R. 421/I-95 INTERCHANGE ANALYSIS Port Orange, Florida

January 2009

Prepared for:
The City of Port Orange
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# TABLE OF CONTENTS

1.0	INTRODUCTION	1
	1.1 Study Area	1
2.0	EXISTING OPERATING CONDITIONS	2
3.0	EXISTING OPERATING CONDITIONS UNDER COMMITTED  IMPROVEMENTS	11
4.0	EXISTING OPERATING CONDITIONS WITH MODIFICATIONS TO THE	
	S.R. 421/TAYLOR BRANCH ROAD INTERSECTION	14
5.0	YEAR 2025 ANALYSIS	16
	5.1 No Build Scenario	16
	5.1.1 Network Changes	16
	5.1.2 Socio-Economic Data Adjustments	17
	5.1.3 Year 2025 Traffic Volume Projections	19
	5.1.4 Year 2025 Operating Conditions	25
5.0	S.R. 421/I-95 INTERCHANGE IMPROVEMENT NEEDS	29
	6.1 Interim Improvements	29
	6.2 Ultimate Improvements	35

7.0 AL	FERNATIVE CORRIDOR EVALUATION	43
7.1	I-95/Pioneer Trail Interchange	43
	7.1.1 Year 2025 Volume Projections	43
	7.1.2 Year 2025 Operating Conditions with I-95/Pioneer Trail Interchange	46
7.2	Madeline Avenue Overpass	49
	7.2.1 Year 2025 Volume Projections	49
	7.2.2 Year 2025 Operating Conditions with Madeline Avenue Overpass	50
8.0 CO	NCLUSIONS AND RECOMMENDATIONS	53
	LIST OF FIGURES	
Figure 1	Study Area Map	2
Figure 2	Existing Volumes (2008)	4
Figure 3	Existing Geometry	5
Figure 4	Committed Geometry	12
Figure 5	Additional Geometry Changes	15
Figure 6	Year 2025 No-Build PM Peak-Hour Volumes	24
Figure 7	Interim Improvement Concept	30
Figure 8	Ultimate Improvement Concept	36
Figure 9	Year 2025 PM Peak-Hour Volume Projections	
	(With Pioneer Trail Interchange)	45
Figure 10	Year 2025 PM Peak-Hour Volume Projections	
	(With Madeline Avenue Overpass)	52

# LIST OF TABLES

Table 1	Summary of Existing Conditions	8
Table 2	Summary of Existing Queue Lengths at the Study Intersections	9
Table 3	Model Growth Rate Calculations	20
Table 4	Historical Growth Rate Calculations	21
Table 5	2025 PM Peak-Hour Volume Projections	23
Table 6	Future Intersection Conditions (With and Without	
	Improvements – Year 2025)	27
Table 7	Summary of Queue Lengths Comparison (With and Without	
	Improvements – Year 2025)	28
Table 8	Engineer's Opinion of Probable Construction Costs Interim Geometry	34
Table 9	Engineer's Opinion of Probable Construction Costs Ultimate Geometry	42
Table 10	Comparison of Intersection Conditions (with Pioneer Trail Interchange or M	Madeline
	Avenue Overpass – Year 2025)	47
Table 11	Summary of Queue Lengths (with Pioneer Trail Interchange or Madeline	Avenue
	Overpass – Year 2025)	48
	APPENDIX	
Appendix A	A Existing Turning Movement	t Counts
Appendix 1	B Existing Signal	Timings
Appendix (	C Synchro & Simtraffic Printouts (Existing V	olumes)
Appendix l	D Turning Movement Volume Pro	ojections
Appendix I	E	del Plots
Appendix I	FSynchro & Simtraffic Printouts (Future Con	nditions)

### 1.0 INTRODUCTION

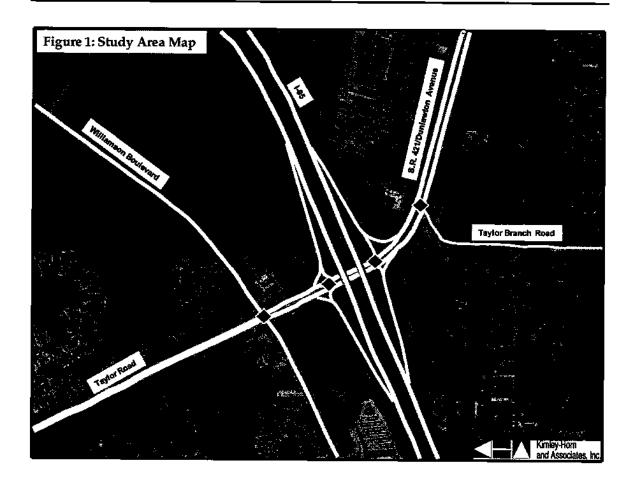
Over the past few years, the City of Port Orange has experienced increased pressure on the transportation system, particularly at the S.R. 421/I-95 interchange. S.R. 421, which carries approximately 33,000 to 37,000 vehicles per day based on 2007 traffic counts, is the primary east/west roadway through the City with the I-95 interchange effectively serving as one of the primary intersection areas along the roadway. Within the City there are only two other east/west roadways, Madeline Avenue and Willow Run Boulevard, that provide relief to S.R. 421 at the vicinity of the interchange. Given the critical nature of the interchange area and the limited number of additional east/west options, the City is currently focusing on the long-term needs of the interchange area. The objective of this report is to evaluate the future traffic operating conditions at the S.R. 421/I-95 interchange area, as shown in *Figure 1*, for the purposes of defining short-term and long-term transportation improvements needed to enhance its operating conditions. This report also evaluates the degree to which an I-95/Pioneer Trail interchange and a Madeline Avenue overpass at I-95 relieve the S.R. 421/I-95 interchange.

### 1.1 Study Area

In conducting this analysis, the following intersections and roadway were analyzed:

- Taylor Road at Williamson Boulevard
- Taylor Road/S.R. 421 at I-95 Southbound Ramps
- Taylor Road/S.R. 421 at I-95 Northbound Ramps
- S.R. 421 at Taylor Branch Road
- Williamson Boulevard from Airport Road to Taylor Road

This report defines short-term and long-term improvement needs for the interchange area as well as evaluates the benefits of two alternative improvement scenarios. One alternative improvement scenario is the construction of a new I-95 interchange at Pioneer Trail. The other is the extension of Madeline Avenue from Williamson Boulevard, across I-95 to Tomoka Farms Road.

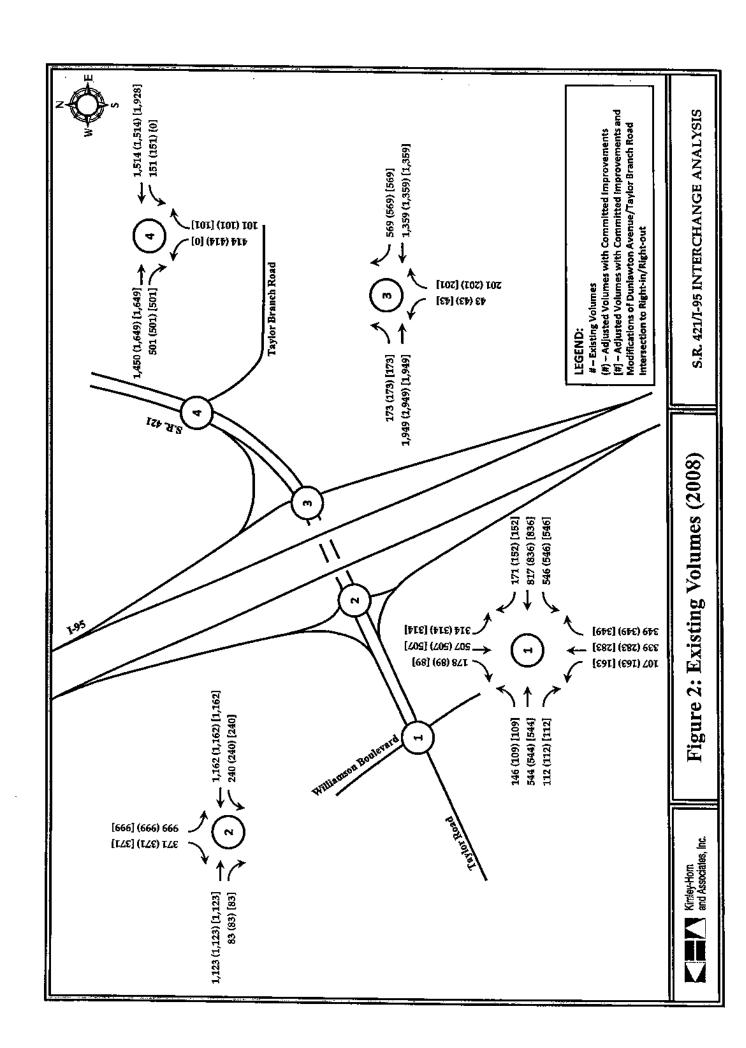


### 2.0 EXISTING OPERATING CONDITIONS

The interchange area was analyzed with Synchro Studio 7 which includes Synchro 7 and SimTraffic 7. Synchro Studio 7 was selected over the Highway Capacity Software (HCS) because it not only is based on the signalized intersection capacity analysis as specified in Chapter 16 of the Highway Capacity Manual 2000 (HCM2000), as prepared by the Transportation Research Board, it also takes into account the interaction between closely spaced intersections whereas the HCM2000 does not as conveyed on page 16-1 of the HCM2000 where it states, "The methodology does not take into account the potential impact of downstream congestion on intersection operation. Nor does the methodology detect and adjust for the impacts of turn pocket overflows on through traffic and intersection operation." Given the fact that the four study intersections are all located within a 2,000-foot section of S.R. 421, it was determined that Synchro Studio 7 was the most appropriate analysis tool for the purposes of this study.

As previously stated, Synchro Studio 7 includes Synchro 7, a macroscopic traffic software program that, like the HCM/HCS, represents traffic in terms of aggregate measures for each movement at the study intersections. Synchro 7 was selected due to the fact that it, unlike HCS, easily allows for signal coordination and has the ability to properly account for the actuation of signals. It is important to note that the traditional HCM based models, such as HCS and Synchro 7, do not account for situations where the downstream intersections could possibly back up and block the upstream intersection. Therefore, SimTraffic 7, a microscopic traffic modeling software program, was used because it is has the ability to model the impacts of queuing and blocking from both upstream and downstream intersections and also analyzes impact of queueing on adjacent intersections. Additionally, SimTraffic takes into consideration the impacts of lane assignments with respect to downstream intersections which were critical for this analysis. SimTraffic also incorporates a blend of real-world driver characteristics, such as passiveness and aggressiveness, into one model to better reflect real-world conditions. In the end, Synchro 7 and SimTraffic 7 were used as companion models. Synchro provided inputs for SimTraffic as well as the macro levels-of-service, queues, and delays; SimTraffic was used to simulate the conditions to determine any problems that may not be realized within a macro-level model.

For purposes of this analysis, existing PM peak-hour turning movement counts, as conducted in early May of 2008, were obtained for the study intersections (see *Figure 2* and *Appendix A*). The existing turning movement counts were then balanced between intersections to ensure that the approach and departure volumes between intersections were consistent. The existing geometry (see *Figure 3*) and existing signal timings as obtained from Volusia County (see *Appendix B*) were also used in evaluating the operating conditions at the study intersections. The Synchro and SimTraffic printouts are provided in *Appendix C*.



S.R. 421/I-95 INTERCHANGE ANALYSIS

Figure 3: Existing Geometry

Several methods have been developed for determining the capacity and level of service at signalized intersections. For purposes of this study, the operating conditions of the intersections are based on the HCM2000. Based on the HCM2000, the level of service is a qualitative measure with letters ranging from A to F and each representing a range of operating conditions and driver's perception of those conditions. The specific level of service for signalized intersections is defined in terms of control delay. More expansive descriptions for each level of service (LOS) grade, as obtained from the HCM2000, are provided below:

LOS A – Describes operations with low control delay, up to 10 seconds per vehicle. This LOS occurs when progression is extremely favorable and most vehicles arrive during the green phase. Many vehicles do not stop at all. Short cycle lengths may tend to contribute to low delay values.

LOS B – Describes operations with control delay greater than 10 and up to 20 seconds per vehicle. This level generally occurs with good progression, short cycle lengths, or both. More vehicles stop than with LOS A, causing higher levels of delay.

LOS C – Describes operations with control delay greater than 20 and up to 35 seconds per vehicle. These higher delays may result from only fair progression, longer cycle lengths, or both. Individual cycle failures may begin to appear at this level. Cycle failure occurs when a given green phase does not serve queued vehicles, and overflows occur. The number of vehicles stopping is significant at this level, though many still pass through the intersection without stopping.

LOS D – Describes operations with control delay greater than 35 and up to 55 seconds per vehicle. At LOS D, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, and high volume-to-capacity (v/c) ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycles failures are noticeable.

LOS E – Describes operations with control delay greater than 55 and up to 80 seconds per vehicle. These high delay values generally indicate poor progression, long cycle lengths, and high v/c ratios. Individual cycle failures are frequent.

LOS F – Describes operations with control delay in excess of 80 seconds per vehicle. This level, considered unacceptable to most drivers, often occurs with oversaturation, that is, when arrival flow rates exceed the capacity of lane groups. It may also occur at high v/c ratios with many individual cycle failures. Poor progression and long cycle lengths may also contribute significantly to high delay levels.

Another measure used in evaluating the operating conditions of signalized intersections is the volume-to-capacity (v/c) ratio. The capacity is given for each movement and is effectively defined as the maximum flow of vehicles that can be processed by the specific movement. V/c ratios in excess of 1.0 indicate that the demand exceeds the capacity. However, values below 1.0 indicate that all vehicles can be accommodated.

The existing operating conditions of the intersections, including the levels of service and v/c ratios as obtained from Synchro, are summarized in *Table 1*. For comparison purposes, the level of service was also obtained for each movement from the SimTraffic analysis.

Given that the length of turn lanes plays a critical role in the operating conditions of signalized intersections, another performance measure used to evaluate the operating conditions of signalized intersections is the back-of-queue measurement. When evaluating turn lane lengths, this analysis focused on the 95<sup>th</sup>-percentile queue length which effectively represents the length of queue that has a probability of five percent or less of being exceeded. A summary of the existing 95<sup>th</sup>-percentile queue lengths for each intersection movement is provided in *Table 2*.

Based on a review of *Tables 1* and 2, the existing conditions analysis indicates that the I-95 northbound ramps intersection and the Taylor Branch Road intersection operate well at levels of service B and C, respectively. Overall, the I-95 southbound ramps intersection operates at level of service D. However, based on the Synchro results, the westbound and southbound left-turn movements are operating poorly. The SimTraffic analysis also indicates that the westbound through movement is also not operating well. This conclusion is consistent with observations as the queue from westbound left-turn movement at the Taylor Road/Williamson Boulevard intersection spills back into the southbound ramps intersection adversely affecting the westbound through movement. The tables also indicate that the overall operating conditions for the Taylor

Table 1 - Summary of Existing Conditions S.R. 421/1-95 Interchange Analysis

				EXIST	STING GEOMETRY	RY			COMM	COMMITTED GEOMETRY	TETRY		T T	DITONAL	ADDITIONAL GEOMETRY CHANGES*	CHANGE	2
Study Interesections	Annroach	Monomine			Delay (sec/veh)/LOS	)/LOS				Delay (sec/veh)/LOS	ch)/LOS	Ī			Delay (sec/veh)/LOS	/eh//LOS	ľ
organization desired	The second	TIOY EILENIA	Λ		vencent	Approach	Total	A/C	Mov		Approach	Tota]	A/C	Mov		E	Total
				Synchro	ی	-0	(Synchro)		Synchro	£	(Synchro) (	(Synchro)		Synchro	اير	(Synchro)	(Synchro)
	Eastbound	<b>-</b> 1 F	0.70	38.8/D 42.2/D	26.0/C 54.8/D	41.6/D		0.48	63.7/E 45.5/D	72.3Æ 35.9/D	48.L/D		0.50	64.0/E 39.7/D	74.8/E 50.1/D	43.2/D	
		æ .	7/2	11/1	50.0/D			r/a	E/3	38.2/D			1/3	n/a	33.4/C		
	Westbound	J № 0	0.82	390.4/F 41.5/D	75.1/E	166.8VF		0.63 0.55	63.8/E 14.5/B	29.1/C	35.1/C		0.64	18.47B	22.5/C	29.1/C	
Williamson Boulevard at Taylor Road		4 _1	0.63	56,8/E	78.3/E		90.8/7	19.0	40.0/D	4.2/A		46.9/D	0.63	66.6/E	82.3/F		42.1/D
	Northbound	<b>⊢</b> øź	0.65	47.7/D 39.1/D	50.4/D 16.6/B	45.1/0		0.47	51.9/D 48.2/D	41.8/D 13.9/B	53.1/D		0.65	60.3/E 34.4/C	57.8/E 32.4/C	50.2/D	
	Sauthbound	Ţ	1.04	95.7/F 34.2/C	94.2/F 50.9/D	S3.1/D		0.76	66.6/E 56.8/E	54,4/D 48,5/D	60.2/E		0.57	53.7/D 56.5/E	44.6/D 43.6/D	55.5/E	
		a	0.12	32.0/C	21.8/C			n/a	g/u	π/π	+	Ī	11/2	π/2	2/3		
	Eastbound	<b>≟</b> ⊢	11/11 0.73	11/11 39.9/D	15.7/C	36.7/D		n/a 0.68	n/a 39.1/D	11/E 36.2/D	36.4/D		n/a 0.94	n/a 57.6/E	n/a 25.2/C	\$2.9/D	Ī .
		×	0.07	0.1/A	7.1/A			90.0	0.1/A	6.4/A			0,07	V/1.0	5,1/A		-
	Westbound	F- 6€	0.83 0.72 n/a	79.4/E 22.2/C n/a	75.1/E 90.6/F 11/2	32.2/C	9	0,79 0.62 n/a	72.4/E 12.1/B n/a	76.1/B 20.7/C cva	22.4/C		0.82 0.82 n/a	54.8/D 23.2/C n/a	69.7/E 24.9/C n/a	28.7/C	
Taylor Road at 1-95 SH Ramps			D/a	E/0	11/1		53,L/D	a/a	11/8	8/3		36.0/D	1/1	E/11	n/a		40.040
	Northbound	⊢ ≅	6/3 8/4	17/a 17/a	n/2 n/3	ε/α		11/3	n/a n/a	2,0 2,0	r/a		11/4 11/3	17/2 17/2	n/a n/a	в/п	
		-	60.1	103.0/P	108.4/F			0.91	54.7/D	44.3/D			0.90	d/1.72	86.6/P	Ī	•
	Sauthbound	ı f- &	1/E C	1/1 25.30	200.3/5	95.3/F		n/a 0.78	1/8	1/1 2/0 0/	\$2.2/D		n/a 0.10	1/1	14.6/	41.8/D	
	i	T	2		10000									UII	201		
	1	.d F	59'0	97.1/F	75.2/E			65'0	70.3/E	78.7/E	1		0.64	74.0/E	72.7/E	***	
	Eastbound	- ~	0,73 10/8	5.4/A 16/8	7.8/A 11/2	14.3/B		1,71 1,41	9.4/A n/a	6.8/A D/a	14.4/B		0.33 II/a	13/A 12/a	8.//A 11/1	8.6/A	
	Westbound	7 F	D/a 0.72	22.5/C	n/a 34.1/C	16.5/B		17/1 0.43	11/2 8.2/A	10.6/B	6.0/A		a/n 0.50	13.8/H	13.8/B	10.2/B	
Toulor Boad of 1.05 NB Renne		· W	0.39	0.6/A	7.0/A		86/8	0.39	0.6/A	8/A		13.4/10	0.39	0.7/A	6.2/A		17.0/0
	;	٦!	0.22	54.4/D	51.5/D			0.23	S6.8/E	57.4/E	,	1	0.22	54.4/D	51.8/10	,	916.91
	Northbound	<b>-</b> ≪	6/1 0.73	n/a 64.9/B	1√2 68.6∕E	3/7°E9		0.67	64.4/E	11/IL 64.2/IE	63.0/E		nva 0.73	11/4 64.9/E	52.8/D	63.2/E	,
	;	1	n/2	11/2	6/8			179	n/a	11/2			rv/a	n/a	E/u		
	Southbound	e≤	n/a n/a	11/2 11/3	8/8 6/0	n/a		17/8 17/3	#/U E/U	n/2 n/a	11/2		rya rya	17/3 17/8	n/a n/a	11/2	
														1			Ī
	Eastbound	u ⊢ ¤	0.66 0.40	n/a 27.7/C 0.7/A	11/a 32.2/C 14.1/B	20.7/C		n/a 0.63 0.34	n/a 25.0/C 0.5/A	1/2 22.3/C 12.8/B	19.3/C		0.36 0.37	- - - -	п/з 2.8/А 6.8/А	<b>V</b> /0	
		1	0.75	69.3/E	121.0/F			0.72	E/1'69	79.2/E			n/a	n/a	17/1		
	Westbound	H #	0.47	8.2/A D/a	24.7/C	13.9/B		0.44	7,9/A 1/4	11,3/3 E/a	13.2/B	Ç	0.33 n/a	0 e/2	3.3/A 11/2	0/A	
S.R. 421 at Fayfor Branch Road		7	0.78	60.8/E	58.8/E		22.1/C	9,78	60.9/E	51.9/D		21.9%	±/π	n/a	11/2	<u> </u>	V/7'0
	Northbound	T	n/a 0.08	n/a 47.5/D	n/a 7.1/A	58.3/E		n/a 0.07	n/a 48.0/D	11,3/B	58.6/E		n/a 0.14	n/a 9.9/A	n/a 7.3/A	9.9/A	
		T	<b>1/3</b>	u/a	17/1			n/a	<b>B/</b> 4	<b>4</b>			n/2	n/a	<b>1</b> /2		
	Southbound	⊢ ≃	e'√n n√a	6/2 2/2	Z/L	1/a		n/a n/a	17/8 17/3	17a 17a	t/a		11/2 11/4	11/2 11/3	n/a n/a	L/a	
" Right-in/Right-out and Unsignalization at S.R. 421/Taylor Branch Road Intersection	at S.R. 421/Taylo	or Branch Rose	1 Intersection	ı													

Igni-iivnight-out and Oisignatization at 3.55 + 2.77 iajiot istalich Kuan intersection

Table 2 - Summary of Existing Queue Lengths at the Study Intersections

S.R. 421/I-95 Interchange Analysis

			EXIS	TING GEOMET	RY	COMM	COMMITTED GEOMETRY	STRY	ADDITONAL	ADDITIONAL GROMETRY CHANGES*	HANGES*
Study Intersections	Approach	Movement	Storage Length	ge Length   95th Percentile Queue (feet)	Oueue (feet)	Storage Length	95th Percentile Ouene (feet)	Onene (feet)	Storage Length	95th Percentile Queue (feet)	Ouene (feet)
			(Jeet)	Synchro	StmTraffic	(feet)	_	SimTraffic	(feet)	Synchro	SimTraffic
		7	154	153	167	250	85	122	250	87	102
	Eastbound	ب		354	313	•	214	223	,	256	253
		24	n/a	11/3	n/a	n/a	n/a	n/a	n/a	ty/a	n/a
	,		435	784	546	415	359	370	415	202	306
	Westbound	<b>⊢</b> ′		640	919	. 3	981	249		293	226
Williamson Boulevard at Taylor Road		¥ .	081	383	102	081	785	\$ 5	180	3/8	7/
	177	<b>-1</b>	3	5/1	6/1	<u> </u>	121	22	55	161	961
	Northbound	<u>-</u> 6		410 134	466		16/ 44	95		081	£ 8
		4-	250	443	301	009	275	2,2	009	206	147
	Southbound	) [		546	673	,	335	430		342	232
		· Æ	675	58	108	6/8	tv/a	17/8	11/8	tv'a	r/0
									0		
		1	tv'a	17/3	17/8	n/a	n/a	rv/a	n/a	tıv'a	n/a
	Eastbound	۲	•	415	298	•	431	344	•	491	379
		æ		n/a	n/a		n/a	rv'a		n/a	n/a
-		J	370	302	289	950	292	348	950	252	295
	Westbound	⊢		478	647	•	120	281	,	47	449
Taylor Road at 1.95 SB Ranne		ĸ	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	17/2
		ا د	п/а	Tr/a	n/a	n/a	17/2 -	D/a	D/a	n/a	11/2
	Northbound	⊢r	n/a	tv/a	n/a	11/3	17/3	p/a	D/3	n/a	r/a
		¥Į,	17.2	17.2	EVB	IV.a	1/2	DV3	DVa 77,	2/II	IVa
	Counthhouse	J ₹	4/5	97,	277	4/5	40,	97.7	5/4	87G	223
	ninoamno.	- 64	<b>.</b>	180	220	\$ ,	176	168	, i	<b>*</b> 0	220
								R		,	
		1	370	611	284	376	134	136	370	122	157
	Bastbound	H	•	13	191	•	395	259	•	282	237
		₩.	17/9	п/в	п/а	n/a	n/a	n/a	n/a	n/a	n/a
	,	٦	13/8	11/3	11/2	13/3	17/2	17/3	n/a	n/a	n/a
	Westbound	<b>-</b>	,	969	655		<u>8</u> ,	247	•	328	303
Taylor Road at 1-95 NB Ranus		≃ .	,	٥	7	.	٥	<b>&gt;</b>		٥	0 5
	:	ا بـ	334	9/	. 92	334	11	g.	334	•	ED .
	Northbound	<b>-</b> :	n/a	E/2,	17/B	I/a	8/1 5/2	D/8	E/3	17/3	142
		¥.	334	140	108	45.	751	261	334	0+1	143
	Countries	4 F	n o	et s		E/17	# °,	# 0/F	P/0	4,1	* «/#
	Soumooung	- p	IV3	e	<b>1</b>	17.4	# **	# P/F	2/2	4,4	e de
		4	E A	DA I	E	rag.	BAS	#	104	807	8
		1	D/a	6/0	17/3	8/12	n/a	11/2	17/8	n/a	n/a
	Eastbound	L	•	£	551	,	657	496	,	0	0
		К	270	0	229	270	0	269	270	0	0
		1 7	265	213	273	265	212	238	n/a	r/a	υ/a
	Westbound	F	, .	276	749	, ,	258	564	, -	0 1	0 1
S.R. 421 at Taylor Branch Road		× -	17/3	17.9	8/0	17.3	8/8 3/65	245	17.8 17.0	n/a	2/2
	Marchham	-) F	107/064	ì	\$ \$	2021000	7 s/s	- F	5,72	1,0	# e/d
	Naturacular	- pz	r ,	48	349	431	4 6	236		12	103
	!		11/2	ı	D/a	n/a	R/u	11/2	B/II	17/1	n/a
	Southbound	Т	r/a		17/8	n/a	n/a	п⁄а	п/а	n/a	n/a
		ĸ	n/a		n/a	n/a	D/a	11/2	n/a	n/a	n/a
** Bestriction of toothorned and westhound left turn movements and interioralization at S.	left-furn movem	ente and imsien.	ď	421/Taylor Branch F	Road intersection				•		

<sup>\*</sup> Restriction of northbound and westbound left-turn movements and unsignalization at S.R. 421/Taylor Branch Road intersection

Road/Williamson Boulevard intersection are undesirable as the overall level of service is F. As can be observed in the field, the westbound left-turn movement is operating well over its capacity, thus the resulting queues for this movement are spilling back into the interchange area. This existing conditions analysis also suggests that several other movements at the Taylor Road/Williamson Boulevard intersection are operating near capacity. However, as discussed in the next section, several improvements are currently under construction at this intersection, including a second westbound left-turn lane, which are expected to significantly enhance the operating conditions of this intersection, thereby, also likely eliminating the spillback issue into the interchange area.

# 3.0 EXISTING OPERATING CONDITIONS UNDER COMMITTED IMPROVEMENTS

Additional analyses were conducted for the purposes of understanding how various committed roadway improvements will affect the existing operating conditions at the S.R. 421/I-95 interchange area. The following are the improvements for which construction funding is committed:

- Taylor Road four lane from Summer Trees Road to Williamson Boulevard
- Williamson Boulevard four lane from Sabal Creek Boulevard to approximately 700 feet north of the Summer Trees Road extension.
- Williamson Boulevard at Taylor Road
  - Northbound 2 left-turn lanes, 2 through lanes, 2 right-turn lanes
  - Southbound 2 left-turn lanes, 1 through lane, 1 shared through/right-turn lane
  - Eastbound 2 left-turn lanes, 2 through lanes, 1 shared through/right-turn lane
  - o Westbound 2 left-turn lanes, 2 through lanes, 1 right-turn lane
- S.R. 421 at I-95 Northbound Ramps provide 3<sup>rd</sup> westbound through lane which feeds
  the westbound left-turn lane at the I-95 southbound ramps intersection
- Williamson Boulevard at Publix driveway convert the sidestreet movements from full access to right-in/right-out operation

The committed geometry is shown in Figure 4.

For purposes of conducting the committed improvements analysis, the existing turning movement volumes at the study intersections were adjusted, as shown in Figure 2 and Appendix D, to account for the following:

Publix on the northwest corner of Williamson Boulevard/Taylor Road Intersection – The northern full-access driveway to Publix on Williamson Boulevard is proposed to be converted to right-in/right-out access. Therefore, the northbound left-turning vehicles at the northern driveway on Williamson Boulevard were re-assigned through the Williamson Boulevard/Taylor Road intersection to the driveways on Taylor Road (for example, a northbound through vehicle at the Williamson/Taylor intersection was reassigned to make a left onto Taylor Road).

Summer Trees Road Extension — Traffic patterns at the Taylor Road/Williamson Boulevard intersection are expected to change with the extension of Summer Trees Road from Taylor Road to Williamson Boulevard. More specifically, a portion of the eastbound left-turning vehicles and the southbound right-turning vehicles at the Williamson Boulevard/Taylor Road intersection will shift to Summer Trees Road to avoid traveling through this intersection. Thus, eastbound left-turn and southbound right-turn volumes were reduced by 25 and 50 percent, respectively.

The PM peak-hour operating conditions of the S.R. 421/I-95 interchange area were then analyzed based on the committed geometry and adjusted PM peak-hour turning movement counts provided in Appendix D. The Synchro and SimTraffic printouts are provided in Appendix C. The existing operating conditions of the intersections with the committed improvements, as summarized in Tables 1 and 2, effectively indicate that the interchange area will greatly benefit from the additional westbound left-turn lane at the Taylor Road/Williamson Boulevard intersection as all movements at the interchange area are projected to operate at level of service E or better and with v/c ratios of less than 1.0 based on the Synchro analyses. The overall level of service for the Taylor Road/Williamson Boulevard intersection improves from F (90.8 seconds per vehicle) to D (46.9 seconds per vehicle) and the 95th-percentile queues for the westbound left-turn movement is shown to be less than the storage length. A similar improvement is achieved at the I-95 southbound ramps intersection as the overall intersection delay is projected to drop from 53.1 seconds per vehicle to 36.0 seconds per vehicle. The I-95 northbound ramps intersection also experiences improved conditions with the addition of the third westbound through which will feed the westbound left-turn lane at the I-95 southbound ramps. Also, with the committed improvements most all of queue lengths are projected to be less than the storage lengths for the respective movements.

# 4.0 EXISTING OPERATING CONDITIONS WITH MODIFICATIONS TO THE S.R. 421/TAYLOR BRANCH ROAD INTERSECTION

The City is currently working towards extending Yorktowne Boulevard from Taylor Branch Road to S.R. 421. With this improvement, the S.R. 421/Taylor Branch Road intersection will be converted to an unsignalized intersection with the elimination of the westbound and northbound left-turn movements (see *Figure 5*). Thus, an additional evaluation of the traffic conditions at the S.R. 421/I-95 interchange area was conducted with the existing volumes to evaluate the impacts of this additional improvement.

To account for the restriction of the northbound left-turn movement at S.R. 421/Taylor Branch Road intersection due to the extension of Yorktowne Boulevard, the northbound left-turn vehicles (447 vehicles) at the S.R. 421/Taylor Branch Road intersection were re-assigned to the westbound through movement at the S.R. 421/Taylor Branch Road intersection as those vehicles will likely travel to S.R. 421 via the Yorktowne Boulevard extension. Additionally, the existing plus committed geometry was modified to remove the northbound and westbound left-turn lanes at the S.R. 421/Taylor Branch Road intersection.

The existing PM peak-hour operating conditions of the study intersections were then reevaluated with the adjusted turning movement counts as shown in Figure 2 and Appendix D. The Synchro and SimTraffic printouts are provided in Appendix C. The existing operating conditions of the intersections under this scenario are summarized in Tables 1 and 2. Based on review of the results, the modifications to the S.R. 421/Taylor Branch Road intersection eliminate the possibility of the eastbound through vehicles spilling back into the I-95 northbound ramps intersection. In fact, under the committed geometry scenario, the 95<sup>th</sup>-percentile queue is showing to be in 500 feet or greater suggesting that this may be a reality if the signal at this location is not eliminated. Additionally, the westbound left-turn queue at the S.R. 421/Taylor Branch Road intersection extends nearly the length of the turn lane without these modifications. Thus, there is the potential that without this modification the westbound left-turn queue could extend into the westbound through lanes adversely effecting westbound flow on S.R. 421.

S.R. 421/I-95 INTERCHANGE ANALYSIS

Figure 5: Additional Geometry Changes

Kimley-Horn and Associates, Inc.

### 5.0 YEAR 2025 ANALYSIS

Recognizing that S.R. 421 is an east/west roadway through the City of Port Orange, the primary purpose of this study is to understand how the interchange area will function in the future without any improvements. This analysis then utilizes these results to identify short-term and long-term improvements for the interchange area. This analysis then goes one step further to evaluate how the construction of an I-95/Pioneer Trail interchange or a Madeline Avenue overpass across I-95 will affect the operating conditions at the S.R. 421/I-95 interchange area.

For the purposes of this analysis, the traffic operating conditions for the S.R. 421/I-95 interchange area and Williamson Boulevard were evaluated for year 2025.

### 5.1 No-Build Scenario

Before defining improvement needs at the interchange area, it was first necessary to understand how the interchange will function in year 2025 without any additional improvements. The development of year 2025 volume projections for the "no-build" analysis required the assistance of the Central Florida Regional Planning Model, version 4.10. The model is an analysis tool that considers the trip generating tendencies of geographical areas and how those trips impact the roadway network by balancing trip productions and attractions and routing traffic from the production to the attraction via the most convenient path. Below is a discussion of the development of the "no build" 2025 model as utilized for this analysis.

### 5.1.1 <u>Network Changes</u>

The 2025 CFRPM roadway network, which reflects all improvements identified in the Volusia County Metropolitan Planning Organization's (MPO) 2025 long-range cost-feasible transportation plan, was modified such that in the vicinity of the study area the roadway network reflected existing lanes plus committed improvements including those identified in sections 3.0 and 4.0. The year 2025 "no build" model network included the following:

- Four-laning of Williamson Boulevard from Sabal Creek Boulevard to just north of Summer Trees Road extension
- 2. Prohibition of northbound and westbound left-turn movements at S.R. 421/Taylor Branch Road intersection (removal of signal)

- 3. Three-laning of eastbound Taylor Road from Williamson Boulevard to I-95 SB Ramps
- 4. Extension of Yorktowne Boulevard from Taylor Branch Road to Willow Run Boulevard
- 5. Extension of Summer Trees Road from Taylor Road to Williamson Boulevard
- 6. Construction of Coraci Boulevard from Taylor Road to Town West Boulevard
- 7. Replacement of the Pioneer Trail/I-95 overpass with an interchange
- 8. Four-laning of Williamson Boulevard from Pioneer Trail to Airport Road
- 9. Four-laning of Taylor Road from Summer Trees Road to Williamson Boulevard

### 5.1.2 Socio-Economic Data Adjustments

In addition to the network refinements, it was also necessary to review the development information, otherwise known as the socio-economic data, within the year 2025 "no build" model. The City of Port Orange recently participated in the development of a model for the Southeast Volusia Regional Transportation Study (SEVRTS) in which the city provided a thorough review and projection of development for year 2025. Thus, the 2025 socio-economic data for this analysis was developed starting with the SEVRTS model files. These files were then reviewed in detail and refined even further in order to appropriately reflect various new and existing developments in the vicinity of the study area. Detailed discussions of the modifications made to the socio-economic data are provided below (a TAZ map is provided in *Appendix E*):

Kohl's and Publix – Traffic Analysis Zone (TAZ) 1001 was added on the northwest corner of Taylor Road and Williamson Boulevard intersection to include 174,193 square feet of retail to represent the existing Publix and proposed Kohl's. The centroid connectors were connected to Summer Trees Road, Taylor Road, and Williamson Boulevard. It should be noted that because TAZ 2401 accounted for a portion of this development, a corresponding reduction was made to TAZ 2401 to account for the moving of this development into TAZ 1001.

Williamson Business Park — Williamson Business Park (also known as Thompson Pump) will be located on the southern quadrant of the Williamson Boulevard/I-95 overpass. TAZ 1006 was added to include 335,000 square-feet of industry and 40,000 square-feet of office. Additionally, the existing 140,000-plus square feet of existing industrial development on the east side of Williamson Boulevard was incorporated into this same TAZ. The centroid connector ties into Williamson Boulevard.

Pavilion at Port Orange and Port Orange West – Pavilion at Port Orange and Port Orange West will be located on Williamson Boulevard north of Taylor Road. Combined the two developments will total more than 845,000 square feet of retail and 45,000 square feet of office, which was added to TAZ 1006.

Altamira and Holub – A new TAZ 1002 was added on the east corner of the S.R. 421/Taylor Branch Road intersection to include 315,000 square-feet of commercial and 10,000 square-feet of office. This development did not appear to be reflected in the socio-economic for TAZ 2243, thus the socio-economic for TAZ 2243 was maintained. TAZ 1002 was connected directly to the Yorktowne Boulevard extension, S.R. 421, and Taylor Branch Road.

Target and Lowe's – These existing developments are located on S.R. 421 between Yorktowne Boulevard and I-95. Upon comparing the SEVRTS' socio-economic with the MPO's 2025 CFRPM socio-economic for TAZ 2228 located to the east of Yorktowne Boulevard, it appears that the socio-economic for this TAZ as included in the SEVRTS was refined to account for this development. However, the location of TAZ 2228 did not appear to be an appropriate location for this development. Thus, TAZ 1000 was added between I-95 and Yorktowne Boulevard to include approximately 350,000 square feet of retail uses to represent the Target, Lowe's, and Panera Bread retail area. Also, a corresponding reduction was made to the commercial data in TAZ 2228.

Woodhaven — The proposed maximum intensities as allowed by the currently proposed future land use designations for Woodhaven were included in TAZs 1003, 1005 and 2232 based on the information obtained from Ghyabi & Associates, Inc. Accordingly, 384 single-family and 1,230 multi-family units were assigned to TAZ 1003, 1,387,386 square-feet retail was assigned to TAZ 1005 and 548 single-family, 160 multi-family, and 381,150 square-feet retail was assigned to TAZ 2232.

Planned Community One – Planned Community One will be located mostly north of Town West Boulevard between Tomoka Farms Road and Williamson Boulevard. The development potential of this area was established based on information provided in the City of Port Orange's Comprehensive Plan for Planned Community One and included into TAZ 1001. Additionally, development programs proposed for Port Orange Plantation and Coquina Cove were also used to

establish the amount of development to be incorporated into TAZ 1004. It should be noted that Planned Community One also includes the Port Orange West development as previously discussed. Thus, Port Orange West was not included within TAZ 1004 as it was already included within TAZ 1006. Ultimately, TAZ 1001 included 747 single family units, 1,800 multi-family units, 245,000 square feet of industrial development, 915,000 square feet of commercial development, and 235,000 square feet of office development.

TAZ 2401 – Approximately 1,450 residential units are currently built out to the east of Tomoka Farms Road, between Taylor Road and Town West Boulevard. Thus, TAZ 2401 was adjusted to include 1,080 single-family and 370 multi-family units.

TAZ 2226 - This TAZ was modified to include Nautica Lake's single and multi-family units.

### 5.1.3 Year 2025 Traffic Volume Projections

In forecasting the future volumes for year 2025, an annual growth rate was applied to the existing PM peak-hour volumes. In identifying annual growth rates to be applied, annual growth rates were first developed by comparing the model volume projections from the year 2025 "no build" model to the model volumes from the Volusia County MPO's adopted year 2000 validation model. The resulting annual growth rates obtained from the model are summarized in *Table 3*. The model data used to calculate the model annual growth rates is summarized in *Appendix E*.

Where available, historical data was obtained for the roadway segment legs and historical annual growth rates calculated to provide a comparison between the historical and model growth rates. For purposes of calculating a historical growth rate that is appropriate for consideration in a long-term analysis, a detailed assessment of the historical data was conducted looking at all historical data dating back to 1997 and using engineering judgment. The historical data and calculated historical annual growth rates are summarized in *Table 4*.

Then, upon reviewing the model growth rates and historical growth rates, an applied annual growth rate was identified for each leg of the study intersections and applied to the existing adjusted PM peak-hour approach and departure volumes to calculate the 2025 PM peak-hour approach and departure volumes. Because the model growth rates better reflect the potential for

Table 3 - Model Growth Rate Calculations S.R. 421/I-95 Interchange Analysis

Roadway Segments	Modei v	Volumes	Volum	e Growth	Model Growth
	2000	2025	2000-2025	Vol. x MOCF*	Rate
Taylor Road					
West of Williamson Boulevard	14,587	22,297	7,710	7,325	2.1%
Williamson Boulevard to I-95 SB Ramps	26,663	76,849	50,186	47,677	7.5%
South of Dunlawton Avenue	11,890	8,509	-3,381	-3,212	-t.1%
Williamson Boulevard			1		
South of Taylor Road	12,802	41,250	28,448	27,026	8.9%
North of Taylor Road	340	25,762	25,422	24,151	299.1%
Faylor Road/I-95 Interchange					
SB Off-Ramo	13,699	16.932	3,233	3,071	0.9%
SB On-Ramp	6,964	14,110	7,146	6,789	4.1%
NB Off-Ramp	7,559	14,057	6,498	6,173	3.4%
NB On-Ramp	13,986	18,119	4,133	3,926	1.2%
Dunizwton Avenue					
I-95 NB Ramps to Taylor Road	51,139	85,795	34,656	32,923	2.7%
Taylor Road to Yorktowne Bouleyard	46,170	79,705	33,535	31,858	2.7%

<sup>\*</sup> MOCF - Model Output Conversion Factor

Table 4 - Historical Annual Growth Rate Calculations S.R. 421/I-95 Interchange Analysis

D conference Comments					H 	Historical Data*	*.					Historical Growth Rates	owth Rates
NOZUWAY SEBRICIUS	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	Annuar Growth Rate	rears Used
Taylor Road West of Williamson Boulevard	12,840	13,671	15,670	15,633	15,697	18,580	17,160	16,980	20,590	20,960	20,330	1.9%	2002-2007
Williamson Boulevard to I-95 SB Ramps South of Dunlawton Avenue	17,492 8,972	24,057 10,220	25,520 10,100	27,102 10,628	28,955 11,491	34,660 11,250	30,940 12,010	30,510 11,880	37,390 14,200	38,740 14,520	37,180 12,780	1.5% 2.7%	2002-2007 2002-2007
Williamson Boulevard South of Taylor Road North of Taylor Road	7,691	8,196 6,180	16,910 6,420	11,792	14,666 9,609	15,690 9,480	17,660	17,250	19,810	19,780 13,070	18,900 14,270	4.8%	2001-2007 2001-2007
Taylor Road/I-95 Interchange SB Off-Ramp	1	7,100	8,700	7,700	8,600	8,100	9,500	8,500	10,000	6,900	9,900	4.4%	1998-2007
SB On-Ramp NB Off-Ramp	1 1	2,900	3,600	3,800	3,900	4,400	4,700 4,300	4,200 3,600	4,600 4,200	4,200 3,900	4,400	2.8% 1.2%	1999-2007 1999-2006
NB On-Ramp	1	7,400	7,100	8,500	9,700	8,600	10,000	9,400	11,000	11,000		2.7%	2001-2006
Duniawton Avenue 1-95 NB Ramps to Taylor Road Taylor Road to Yorktowne Boulevard	25,500	24,000	28,000 28,000	23,500 23,500	27,000	26,000 26,000	33,500 33,500	34,500 34,500	37,500 37,500	35,500 35,500	36,500 36,500	2.2%	2003-2007 2003-2007
Pioneer Trail Williamson Boulevard to I-95 SB Ramps I-95 SB Ramps to I-95 NB Ramps I-95 NB Ramps to Turnbull Bay Road	2,153 2,153 2,153	2,331 2,331 2,331	3,077 3,077 3,077	2,205 2,205 2,205	2,440 2,440 2,440	1,780 1,780 1,780	3,090 3,090 3,090	3,040 3,040 3,040	3,380 3,380 3,380	3,590 3,590 3,590	2,700 2,700 2,700	2.5% 2.5% 2.5%	1997-2007 1997-2007 1997-2007

\* Traffic data obtained from Volusia County

future development/growth opportunities and also reflect a lack of growth due to the potential of certain areas being built out, in nearly all cases, the applied annual growth rate was the model annual growth rate or two percent, whichever was greater. The calculated model annual growth rates, the historical annual growth rates, the applied growth rates, and the 2025 PM peak-hour directional volumes are summarized in *Table 5*.

These PM peak-hour link volumes were then converted to 2025 PM peak-hour intersection turning movement projections using the following steps:

- The 2025 segment volumes as provided in Table 4 were compared against the existing approach and departure volumes for each intersection to calculate the growth in the approach and departure volumes.
- 2) Two different procedures (approach-based and departure-based) were then used in calculating the growth in the peak-hour turning movements. As an example,

In approach-based analysis:

In departure-based analysis:

- 3) An average of the two procedures from step 2 was used as the volume growth for each turning movement at the each intersection.
- 4) The growth for each turning movement as obtained from step 3 was added to the existing turning movement counts to obtain the future total PM peak-hour turning movement volumes.

Detailed worksheets for each intersection are contained in *Appendix D* and the resulting 2025 turning movement projections are provided in *Figure 6*.

# Table 5 - 2025 PM Peak-Hour Volume Projections S.R. 421/I-95 Interchange Analysis

	Tourseline D	M. Dack Hea	47.1	Annu	Annual Growth Rate	Rate	2025 PM I	2025 PM Peak-Hour
Roadway Segments	EALSUING F	caisting rivi reak-mour voluine	ur volume	Historical	Model	Applied	Vol	Volume
	EB/NB	WB/SB	Year	Rate	Rate	Rate	EB/NB	WB/SB
Tavlor Road								
West of Williamson Boulevard	765	1,088	2008	1.9%	2.1%	2.1%	1,040	1,479
Williamson Boulevard to I-95 SB Ramps	1,207	1,534	2008	1.5%	7.5%	7.5%	2,752	3,497
South of Dunlawton Avenue	101	501	2008	2.7%	-1.1%	2.0%	135	671
Williamson Boulevard								
South of Taylor Road	795	1,165	2008	4.8%	8.9%	8.9%	1,996	2,925
North of Taylor Road	544	910	2008	8.1%	299.1%	*	1,140	1,907
Taylor Road/I-95 Interchange								
SB Off-Ramp	ı	1,370	2008	4.4%	%6.0	2.0%	ı	1,836
SB On-Ramp	1	323	2008	2.8%	4.1%	4.1%	•	548
NB Off-Ramp	244	ı	2008	1.2%	3.4%	3.4%	387	
NB On-Ramp	742		2008	2.7%	1.2%	2.0%	994	ı
Dunlawton Avenue								_
I-95 NB Ramps to Taylor Road	2,150	1,928	2008	2.2%	2.7%	2.7%	3,141	2,816
Taylor Road to Yorktowne Boulevard	1,750	1,928	2008	2.2%	2.9%	2.9%	2,614	2,880

<sup>\*</sup> For this segment of Williamson Boulevard, model calculated growth rate was unreasonable due to a low 2000 model volume, thus 2025 Volume Projections were made using the following steps:

(Please refer to Table 3)

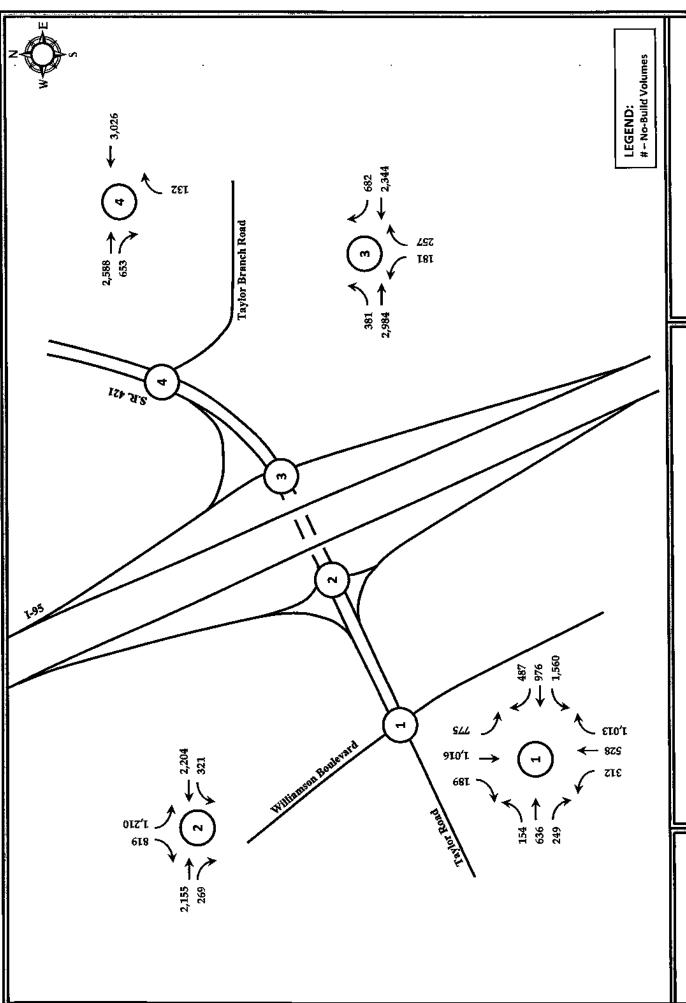
Model Volume Growth (2000-2025) = 24,151Model Volume Growth (2008-2025) = 16,423

K-Factor = 9.70%

D-Factor = 62.6% (SB)

PM Peak-Hour Volume Growth (2008-2025) = 16,423 x 0.097 x 0.626 = 997 SB

 $16,423 \times 0.097-997 = 596 \text{ NB}$ 



S.R. 421/I-95 INTERCHANGE ANALYSIS

Figure 6: Year 2025 No-Build PM Peak-Hour Volumes

Kimley-Horn and Associates, Inc.

### 5.1.4 Year 2025 Operating Conditions

The future PM peak-hour operating conditions of the S.R. 421/I-95 interchange area were evaluated for the "no build" condition with the projected turning movement counts using Synchro and SimTraffic. The Synchro and SimTraffic reports are provided in *Appendix F*. As summarized in *Tables 6* and 7, it can be seen that vehicles at the Williamson Boulevard intersection will experience excessive delays as the overall average delay is projected to be 150.1 seconds per vehicle. As a result, several movements are projected to have 95<sup>th</sup>-percentile queues that exceed the storage length. These results are not unexpected given the amount of development still anticipated to occur west of I-95 along Williamson Boulevard.

Vehicles at the I-95 southbound ramps intersection are also projected to experience excessive delays with an average overall delay of 132.8 seconds per vehicle, although the Williamson Boulevard intersection is projected to be more problematic. It should be noted that these results suggest that the extension of the westbound left-turn lane from the I-95 southbound ramps intersection back to the Taylor Branch Road intersection, as currently committed, is a beneficial improvement as the queue length for this movement is projected to extend back into the I-95 northbound ramps intersection.

Based on the Synchro analysis and in reviewing the volume projections, the I-95 northbound ramps intersection is projected to have acceptable operating conditions with an average delay of 22.3 seconds per vehicle. However, given the expected delays at the other two intersections to the west, it is highly likely that westbound vehicles will queue back through the northbound ramps intersection. In fact, this very concern is validated by the projected delays shown with the SimTraffic results. A similar affect is experienced today where the westbound left-turn movement at the Williamson Boulevard intersection spills back through the interchange area thus creating the perception that the Taylor Branch Road intersection would operate acceptably. However, the reality is that the Taylor Branch Road intersection would operate acceptably if queues from the downstream intersections did not back into the intersection.

Based on a comparison of the existing volumes to the 2025 volume projections, considering a straight-line interpolation between the two years, and considering the capacity of the intersections within the interchange area, it could generally be concluded that the interchange area should function acceptably for six to seven more years before an improvement is needed beyond the improvements defined in sections 3.0 and 4.0. However, there are numerous developments either approved or currently going through the City's development approval process. Thus, the point at which additional improvements are needed will essentially be dictated by the rate at which these developments are constructed, as well as the type (retail, residential, etc.) and size of such future developments.

### Williamson Boulevard

The PM peak-hour volumes on Williamson Boulevard between Airport Road and Taylor Road were directly obtained from the turning movement worksheets as shown in *Appendix D*. The 2025 operating conditions of the roadway segment were evaluated by comparing the volumes to a peak-hour peak-directional generalized service volume of 1,860. In 2025, the projected PM peak-hour volumes on Williamson Boulevard between Airport Road and Taylor Road will be 1,853 northbound and 2,825 southbound. This volume is expected to dissipate further south down Williamson Boulevard. However, given the magnitude of the southbound volume, there is likely to be significant congestion on Williamson Boulevard during the PM peak hour. Now, it should be noted that these volume projections account for substantial future development south of Taylor Road, including sizable retail developments. Perhaps the projected volumes are overstated in that the potential retail development along Pioneer Trial will not be of the magnitude currently anticipated in this analysis if additional access, such as an I-95 interchange at Pioneer Trail, is not provided.

Table 6 - Future Intersection Conditions (With and Without Improvements - Year 2025)
S.R.421/I-95 Interchange Analysis

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Table 7 • 9/23/2008

Table 7 - Summary of Queue Lengths Comparison (With and Without Improvements - Year 2025) S.R. 421/I-95 Interchange Analysis

			NO-B	NO-BUILD EVALUATION	TION	INTERIM IMPROVEMENTS	M IMPROVEM	TENTS	ULTIM	ULTIMATE IMPROVEMENTS	MENTS
Study Intersections	Approach	Movement	Storage Length	95th Percenti	le Queue (feet)	Storage Length	95th Percenti	e Queue (feet)	Storage Length	95th Percentile Queue (feet)	e Queue (feet)
			(feet)	Synchro	SimTraffic	(feet)	Synchro	SimTraffle	(feet)	Synchro	SimTraffic
		7	250	861	224	B/11	n/a	<b>₽/U</b>	n/a	17/3	ε/u
	Eastbound	H	F	465	1,322	•	295	1,956		240	624
		×	n/a	n/a	n/a	200	236	170	200	254	270
		7	415	11.6	487	530	086	511	530	1,128	200
	Westbound	T		400	459	•	139	495	. ;	307	999
Tariffic Daniel and an Tondon Daniel		R	180	80	110	180	10	157	180	0	104
Willemson Doulevard at Laylor Koau		Т	561	300	353	195	300	320	561	287	317
	Northbound	1	• ;	397	604	. ;	397	2,820	- 575	423	1//
		~	575	481	366	2/2	507	\$ 5	2/2	202	100
		ı	009	661	398	909	661	342	200	060	765
	Southbound	<u> </u>	•	878	2,241		767	2,273		/40	¥, 1
		R	n/a	n/a	n/a	11/3	B/0	178	th/a	10/8	17/8
			Ì								
		1	056	n/a	n/a	n/a	n/a	D/2	п/а	17,8	173
	Eastbound	H	•	823	447		921	455	,	405	800
		R	,	n/a	13/8	-	0/3	D/8	- 3	n/a	17.a
		נ	320	412	530	320	593	556	320	158	9/3
	Westbound	۳	,	1,414	199		961,1	97 <b>9</b>	. 1	ŧ %	17/
Taylor Road at I-95 SB Ramps		~	n/a	n/a	n/a	n/a	E/S	1/2	17.5	5/ <b>4</b>	P/u
column or of the same to the		<b>ы</b> .	n/a	th/a	D/a	B/U	E/U	D/2	10 t	2/H	19.4 1.6
	Northbound	<b>├</b> ₩ \$	n/a	n/a	n/a	n/a -/-	# 5,4	0/2 0/2	17 E	11/2 11/3	a s/a
		₹	17.8	0/3	10/2	R/U	168	000	475	407	80%
	;	_1	475	6/8	£07	t	201	267	9/1	(A)	200
	Southbound	p	E/E	1 120	10 <u>4</u>	kai '	1.129	196		543	732
		4	•	1,127	1						
		L	370	155	226	320	150	186	320	165	246
	Darehound	4 F	? ·	800	378	1 '	265	256	•	359	466
	Pasitioning	- 12	n/a	11/2	11/a	n/a	п/а	n/a	n/a	n/a	n/a
			n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	ın/a
	Westbound	H	١.	778	711	•	178	728		491	744
		×	•	0	542		0	533		0	n/a
Taylor Road at I-95 NB Ramps		Г	334	258	417	334	258	370	334	253	300
	Northbound	T	n/a	n/a	11/B	E/11	п/я	n/a	n/a	1/a	6/U
		ጸ	334	188	1,134	334	188	450	334	(8)	1,1
		1	B/Q	r/a	n/a	n/a	n/a	n/a	u/a	<b>6</b> /1	g/U
	Southbound	Т	e/u	n/a	n/a	n/a	17/a	173	11/2	1, t	# F/ E
		×	n/a	11/8	17/a	n/a	D/a	IV a	El/8	207	
		,	}	4	9,4	8/4	E/u	e/u	n/a	n/a	п/а
		۱ د	11/2	r c	S C	ø '	<u> </u>	ļ	¦ ·	0	14
	Eastbound	~ <u>D</u>	270	> <	• •	270	. 0	. 0	270	0	c
		4 -	6/4	n/a	n/a	1/3	17/B	n/a	n/a	11/a	n/a
	Washound	1 F		0	1.481	•	0	1,913		0	826
	211000000	· r	n/a	11/a	n/a	n/a	13/2	11/2	n/a	п/a	n/a
S.R. 421 at Taylor Branch Road		ī	n/a	n/a	n/a	n/a	n/a	п/а	rı/a	π/π	e/u
	Northbound	Т	n/a	т/а	тva	п/п	n/2	n/a	u/a	E	17.a
		Ж	ļ	50	136		50	100	, ,	272	001
		r	ri/a	n/a	π/a	17/2	D/2	17,2	4 F	4 ,7	# 6/E
	Southbound	<b>⊢</b> :	n/a	n/a	13/8	17.8	P/4	n d	#/# #/#	B/0	, ju
		¥	D/8	B/II	R/II	B ar					

### 6.0 S.R. 421/I-95 INTERCHANGE IMPROVEMENT NEEDS

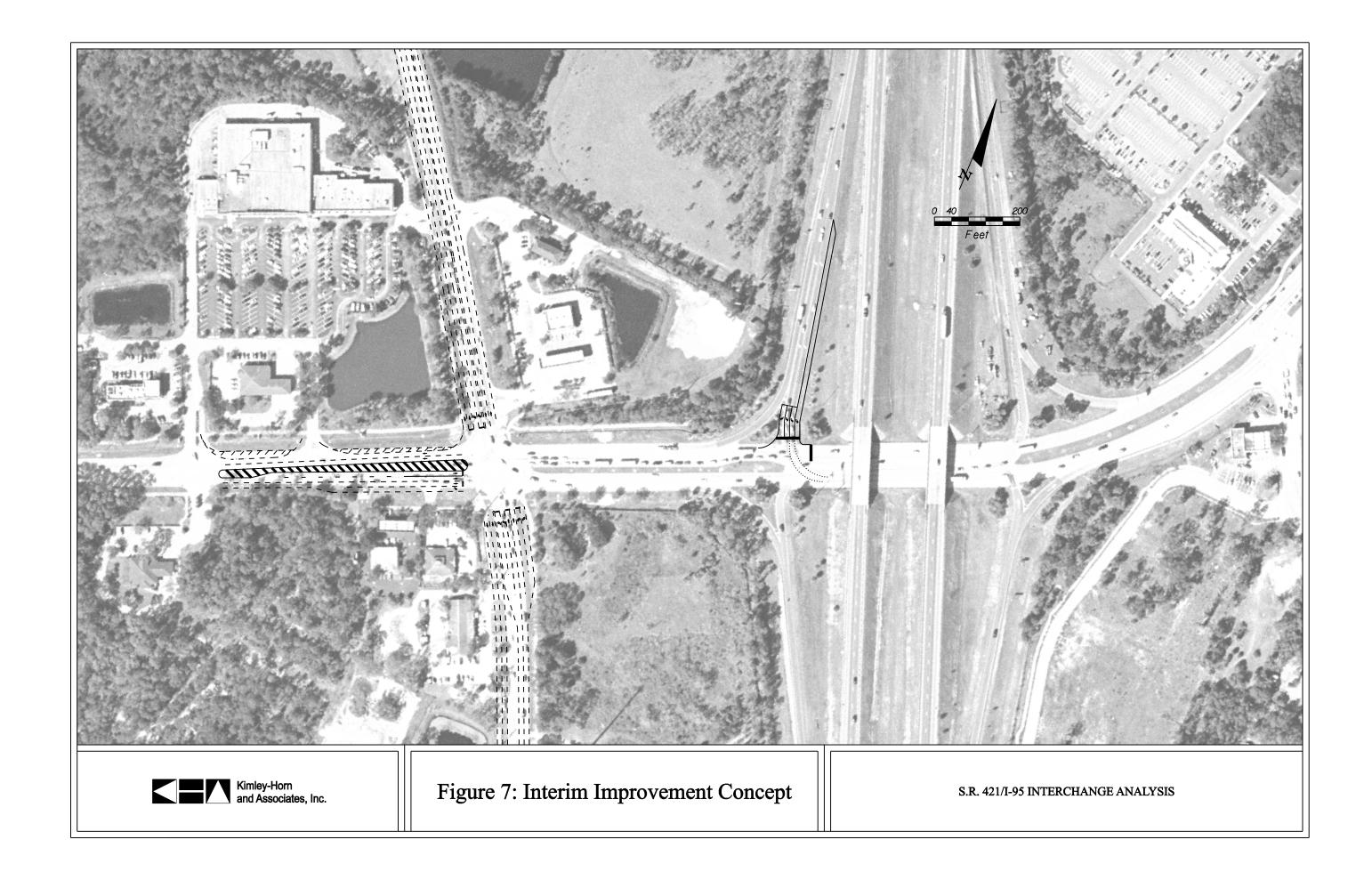
Given the projected adverse operating conditions for the S.R. 421/I-95 interchange area under the "no build" scenario, additional analyses were conducted for the purposes of identifying and evaluating improvement alternatives for year 2025. Upon conducting this analysis, interim and ultimate improvements, as shown in *Figure 7*, were identified.

### 6.1 <u>Interim Improvements</u>

The S.R. 421/I-95 interchange area was upgraded in 2007 with the construction of various improvements which essentially maximized the clearance under the existing I-95 overpass almost to the point that there are no other cost-feasible improvements left to be made. However, upon evaluating the interchange area further, two other potential modifications were identified which could provide temporary relief to the interchange area. The interim improvements are summarized below:

- Eliminate the eastbound left-turn and southbound right-turn movements at the Taylor Road/Williamson Boulevard intersection
- Provide a third southbound left-turn lane at the I-95 southbound ramps intersection

The Summer Trees Road extension, from Taylor Road to Williamson Boulevard, was recently completed. This roadway effectively provides an alternative method for vehicles to travel between Taylor Road, west of Williamson Boulevard, and Williamson Boulevard, north of Taylor Road, thereby providing limited relief to the eastbound left-turn and southbound right-turn movements at the Taylor Road/Williamson Boulevard intersection. Based on the "no build" analysis, it is clear that this intersection will be the most problematic in the future. Thus, it is recommended that these two movements, the eastbound left-turn and southbound right-turn movements, be prohibited at the Taylor Road/Williamson Boulevard intersection. This will effectively force vehicles to use Summer Trees Road to avoid this intersection. As a result, the operating conditions of the southbound through movement will be enhanced. Additionally, the elimination of the eastbound left-turn movement enables the eastbound approach to be restriped from two through lanes and one shared through/right-turn lane to three through lanes and one right-turn lane. Also, the elimination of the eastbound



left-turn movement enables additional green time to be allocated to other movements. As a result, it can be seen in *Table 6* that the overall intersection delay at the Taylor Road/Williamson Boulevard intersection decreases from 150.1 seconds per vehicle to 118.9 seconds per vehicle in 2025. In prohibiting these movements, a more detailed analysis should be conducted at the Taylor Road/Summer Trees Road and Williamson Boulevard/Summer Trees Road intersections to understand if the additional turning vehicles will require enhancements such as extending turn lanes.

In addition, consideration should be given to providing a third southbound left-turn lane at the I-95 southbound ramps intersection. This is an improvement that has been contemplated in various traffic studies prepared for both new developments as well as for the City of Port Orange. Triple left-turn lanes are gradually becoming more common, although triple left-turn lanes do not currently exist anywhere within Volusia County. With this additional southbound left-turn lane, the overall intersection delay for the I-95 southbound ramps intersection will improve from 132.8 seconds per vehicle to 120.1 seconds per vehicle in 2025 (see *Table 6*). Additionally, depending on the amount of greentime ultimately allocated to the southbound approach, this improvement could substantially reduce the potential queue length on the I-95 southbound off-ramp (see *Table 7*).

It is clear that even with these interim improvements, the Williamson Boulevard intersection and possibly the I-95 southbound ramps intersection will have undesirable operating conditions in year 2025. However, these interim improvements will provide a slight enhancement to the capacity at the S.R. 421/I-95 interchange area, possibly allowing for the interchange area to operate acceptably for an additional year or two beyond the life of the currently committed improvements.

Consideration was given in this analysis to providing a third southbound left-turn lane at the Taylor Road/Williamson Boulevard intersection. However, upon further examination of the 2025 turning movement volume projections, it was determined that this movement was not critical and thus such an improvement would provide little overall benefit to the intersection. But, as development continues west of I-95 and traffic volumes change, this movement should be monitored. In the event that this movement does become critical, then consideration should be given to providing a third southbound left-turn lane because a third receiving lane already exists.

Additionally, the treatment of the southbound right-turn lanes at the I-95 southbound offramps intersection will not be ideal in the future. As volumes increase there will ultimately
be concerns regarding the weaving between those westbound vehicles coming from east of I95 that need to turn right to go north on Williamson Boulevard and those southbound rightturning vehicles from the southbound off-ramp that wish to proceed west through the Taylor
Road/Williamson Boulevard intersection. Consideration should be given to bringing both of
the southbound right-turn lanes at the I-95 southbound ramps intersection under signalized
control and eliminate the free-flowing southbound right-turn lane. Given that this
improvement will not necessarily enhance capacity at the interchange area, but rather provide
improved operating conditions, it was deferred to the ultimate improvement in this analysis.

Design Considerations — The prohibition of the eastbound left-turn at the Taylor Road/Williamson Boulevard intersection will effectively require restriping the eastbound approach and removal of the left-turn signal heads. Similarly, the pavement marking for the southbound shared through/right-turn lane will need to be revised to eliminate the right-turn movement. These lane modifications will also likely require some milling and resurfacing such that the pavement markings are clear and the aesthetics of the intersection are not compromised.

As for the triple left-turn lanes, the Florida Department of Transportation has not adopted formal design standards for triple left-turn lanes. However, a report titled <u>Left-Turn Lanes at Signalized Intersections</u> was prepared for FDOT in December of 2002 which provides recommended minimum design standards for triple left-turn lanes. Based on this information, the interim improvement concept was prepared with the inclusion of a third southbound left-turn lane at the I-95 southbound ramps intersection. It is important to note that FDOT evaluates the design of triple left-turn lanes on a case-by-case basis taking into consideration many factors such as operational benefits, safety concerns, downstream destinations which may affect lane assignment, truck traffic, etc. Should this improvement be considered for design and construction, then additional analyses will likely be required to determine if the concept provided herein is appropriate.

Recognizing that truck traffic is an important consideration for triple left-turn lanes, it is possible that overhead signage may be requested to restrict trucks to certain lanes to enhance the flow of the triple lefts through the intersection and minimize adverse operational impacts and/or safety concerns. Similarly, overhead signage is often a consideration for any triple left-turn location as it may be very helpful for the purposes directing motorists to one of the three specific left-turn lanes taking into consideration the downstream destination. Although S.R. 421 is a six-lane facility for two miles and there are no immediate destinations immediately east of the intersection that would drastically affect lane assignment, overhead signage was included within the opinion of probable cost.

Opinion of Probable Cost – Using the improvement concept, an opinion of probable cost was developed for the interim improvement. The total cost of the improvement is estimated to be approximately \$621,165 based on *Table 8*, including engineering, surveying, permitting, construction, and post-engineering. It should be noted that this opinion of probable cost also includes costs pertaining to signalization modification as well as overhead signage for the triple southbound left-turn lanes at the I-95 southbound ramps intersection.

## TABLE 8 - ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COSTS

## S.R. 421 at I-95 INTERCHANGE IMPROVEMENTS

#### INTERIM GEOMETRY

ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNITS	UNIT COST*	TOTAL
101-1	MOBILIZATION	1	LS	\$51,037.19	\$51,037
102-1	MAINTENANCE OF TRAFFIC (15%)	1	LS	\$44,380.17	\$44,380
104-13-1	TYPE III SILT FENCE	950	LF	\$1.07	\$1,017
110-1-1	CLEARING AND GRUBBING	0.4	AC	\$19,261.29	\$7,897
110-4	REMOVAL OF EXISTING CONCRETE PAVEMENT	7	SY	\$23.93	\$160
160-4	STABILIZATION TYPE B (12")	1363	ŞY	\$4.12	\$5,616
285-709	BASE OPTIONAL (GROUP 1)	334	SY	\$10.94	\$3,654
285-709	BASE OPTIONAL (GROUP 9)	967	SY	\$17.98	\$17,381
334-1-14	SUPERPAVE ASPHALTIC CONCRETE (TRAFFIC D)	225	TN	\$101.93	\$22,934
337-7-7	ASPHALTIC CONCRETE FC-5 (RUBBER) (1")	53	ŤN	\$117.41	\$6,270
400-1-15	CONCRETE CLASS I (MISC)	5	ÇY	\$627.91	\$3,140
520 <u>-</u> 5-11	TRAFFIC SEPARATOR CONC. (TYPE I) (4' WIDE)	2	LF	\$32.64	\$65
570-1-2	PERFORMANCE TURF	833	SY	\$3.14	\$2,617
711-11-121	THERMOPLASTIC, STD., SOLID WHITE (6")	1050	LF	\$1.42	\$1,491
711-11-125	THERMOPLASTIC, STD., SOLID WHITE (24")	95	LF	\$3.77	\$358
711-11-131	THERMOPLASTIC, STA., WHITE SKIP (6")	285	LF	\$1.38	\$393
711-11-170	THERMOPLASTIC, STD., WHITE, ARROW	7	EA	\$50.22	\$352
700-44077	SGN LT'D OH TR, T 121 TO 140, S 601-700	1	AS	\$147,525.00	\$147,525
	SIGNAL MODIFICATION	1	EA	\$75,000.00	\$75,000
				SUBTOTAL	\$391,285
	AS OBTAINED FROM THE FOOT ESTIMATES OFFICE WEBSITE UNDER THE		25% C	ONTINGENCY	\$97,821
ITEM AVERAGE	UNIT COSTS FOR JANUARY 2007 - DECEMBER 31, 2007.	TOTAL (		UCTION COST	\$489,106
				DESIGN (15%)	\$73,366
				C.E.I. (12%)	\$58,693
			T	OTAL COST	\$621,165

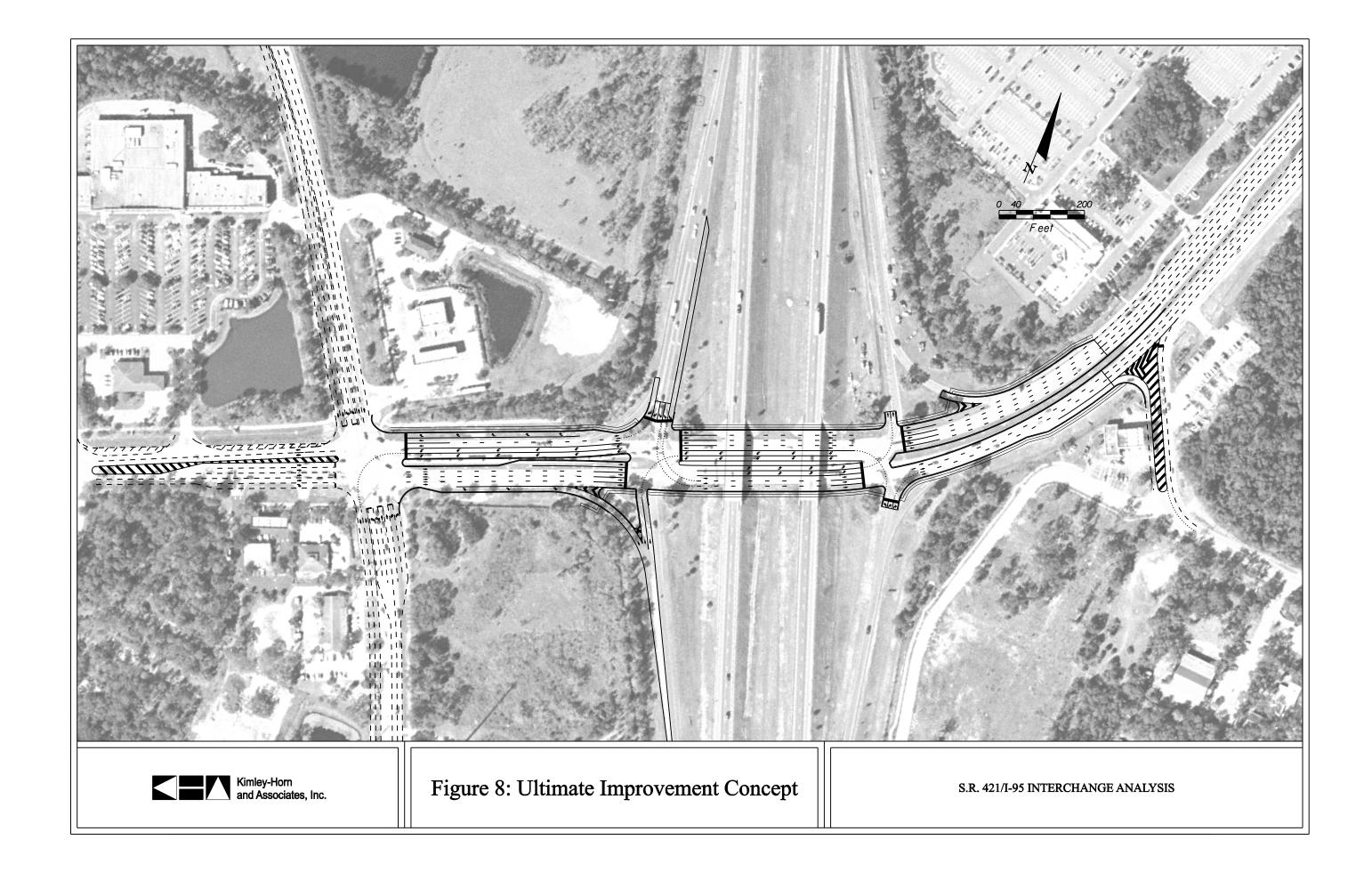
#### NOTE:

THE ENGINEER HAS NO CONTROL OVER THE COST OF LABOR, MATERIALS, EQUIPMENT, OR OVER THE CONTRACTOR'S METHODS OF DETERMINING PRICES OR OVER COMPETITIVE BIDDING OR MARKET CONDITIONS. OPINIONS OF PROBABLE COSTS PROVIDED HEREIN ARE BASED ON THE INFORMATION KNOWN TO THE ENGINEER AT THIS TIME AND REPRESENT ONLY THE ENGINEER'S JUDGMENT AS A DESIGN PROFESSIONAL FAMILIAR WITH THE CONSTRUCTION INDUSTRY. THE ENGINEER CANNOT AND DOES NOT GUARANTEE THAT PROPOSALS, BIDS, OR ACTUAL CONSTRUCTION COSTS WILL NOT VARY FROM ITS OPINIONS OF PROBABLE COSTS.

## 6.2 Ultimate Improvements

Despite the two other potential modifications identified above, a more substantial improvement will be needed for the S.R. 421/I-95 interchange area to accommodate additional growth in the area based on the 2025 volume projections. In December of 2005, URS/HNTB prepared <u>I-95 System Operational Analysis Report</u> for the Florida Department of Transportation in which was included the S.R. 421 Interchange Concept Report. This report provided a conceptual ultimate improvement layout along with an opinion of probable cost for the S.R. 421/I-95 interchange area. This resource was used as an initial guide in evaluating the long-term needs of the interchange area. However, upon evaluating the improvement needs in greater detail, it was clear there were several refinements required. Thus, the ultimate improvement identified herein, as shown in Figure 8, was effectively developed independently of the SOAR report and includes the following:

- Eliminate the eastbound left-turn and southbound right-turn movements at the Taylor Road/Williamson Boulevard intersection
- At the Taylor Road/Williamson Boulevard intersection, utilize the striped-out area from the eastbound left-turn lanes to provide an eastbound approach which includes four eastbound through lanes and one right-turn lane.
- Provide a third southbound left-turn lane at the I-95 southbound ramps intersection
- Extend one of the eastbound left-turn lanes from the I-95 northbound ramps intersection
  to the Taylor Road/Williamson Boulevard intersection. Similarly, provide a shorter
  extension of the inside eastbound left-turn from the I-95 northbound ramps intersection
  back to approximately 300 feet west of the I-95 southbound ramps intersection.
- Provide an eastbound right-turn lane at the I-95 southbound ramps intersection
- Construct a second westbound left-turn lane at the I-95 southbound ramps intersection
  and provide a second receiving lane on the I-95 southbound on-ramp to accommodate
  traffic from the second left-turn lane.
- Provide third and fourth westbound travel lanes from approximately 500 feet east of the I-95 northbound ramps intersection to the I-95 southbound ramps intersection. Then, have the two inside westbound through lanes at the I-95 southbound ramps intersection feed the dual westbound left-turn lanes at the Taylor Road/Williamson Boulevard intersection



- Modify the free-flow southbound right-turn lane at the I-95 southbound ramps intersection such that it operates under signalized control, thereby providing dual rightturn lanes under signalized control.
- Replace each single-span I-95 bridge with two steel 100-foot span bridges and construct a median on S.R. 421 to the accommodate bridge piers

The first three improvements identified above are effectively consistent with the interim improvements with the exception that the interim improvements identify three eastbound through lanes at the Taylor Road/Williamson Boulevard intersection whereas the ultimate improvement identifies four eastbound through lanes. In providing a fourth eastbound through lane, it is also necessary to provide a fourth receiving lane which is effectively the extension of the eastbound left-turn lane from the I-95 northbound ramps intersection. Additionally, the northernmost eastbound left-turn lane at the I-95 northbound ramps intersection is also extended back to approximately 300 feet west of the I-95 southbound ramps, thus effectively allowing for five eastbound through lanes at the I-95 southbound ramps intersection. Consideration was given to providing an additional eastbound lane that serve as a fourth lane through the interchange area from Williamson Boulevard to Taylor Branch Road, however it was determined that this additional lane is not required from a capacity perspective.

Relative to the westbound direction, the heaviest turning movement within the interchange area is projected to be the westbound left-turn movement at the Taylor Road/Williamson Boulevard intersection. The SimTraffic analysis was useful in determining that two westbound through lanes at the I-95 southbound ramps intersection need to feed the two westbound left-turn lanes at the Williamson Boulevard intersection. Otherwise, if the volume of traffic were consolidated into westbound through lane at the I-95 southbound ramps intersection it would substantially impact the westbound flow through the interchange area. Two additional westbound through lanes are also needed at the I-95 southbound ramps intersection, resulting in a total of four westbound through lanes at the I-95 southbound ramps intersection. In order for these lanes to be utilized effectively, they should be extended eastward to approximately 500 feet east of the I-95 northbound ramps intersection with the southernmost lane feeding the westbound left-turn lanes at the I-95 southbound ramps intersection.

Other improvements include a second westbound left-turn lane at the I-95 southbound ramps along with an additional receiving lane on the I-95 southbound on-ramp. Additionally, it is suggested to modify the southbound right-turn treatment at the I-95 southbound ramps to two right-turn lanes under signalized control. The reasoning behind this recommendation, as mentioned in the interim improvement discussion, is to eliminate potential safety issues that may result from weaving movements required under the current geometry.

Similar to the interim improvements, a third southbound left-turn lane at the Williamson Boulevard intersection was considered but was not ultimately recommended as the volume projections do not show this movement to be critical. However, should this movement become critical at a point in the future, then this improvement may be desirable particularly given that there are sufficient eastbound departing lanes on S.R. 421 to accommodate the additional left-turn lane. At the same, there are some utility constraints on the north side of Taylor Road on the west side of Williamson Boulevard that would likely cause the cost of such an improvement to be substantial.

With these improvements, it can be seen from *Tables 6* and 7 that vehicles at the Taylor Road/Williamson Boulevard intersection will still experience excessive delays despite that the overall delay drops to 107.1 seconds per vehicle as compared to 150.1 seconds per vehicle under the "no build" scenario. As a result, even with these improvements the operating conditions of this intersection by year 2025 will likely cause queues to spillback into the interchange area thus adversely affecting the flow of westbound traffic on S.R. 421 through the interchange area.

The overall intersection delays for all three other intersections show that these intersections should operate well in 2025 with the ultimate improvements. The primary concern is, again, the spillback of traffic from the Williamson Boulevard intersection. In fact, upon comparing the Synchro and SimTraffic results for these other three intersections, the SimTraffic results effectively account for these spillback effects whereas Synchro does not. As can be seen in *Table* 6, the average delay for the westbound through movements at both the I-95 southbound ramps and I-95 northbound ramps intersections is relatively high based on the SimTraffic results as compared to the Synchro results.

Given the constraints that limit opportunities for physically improving the Taylor Road/Williamson Boulevard intersection, consideration should be given to providing alternative routes such that vehicles do not need to travel through the S.R. 421/I-95 interchange area. Such alternative facilities may include but are not necessarily limited to the construction of a new interchange at Pioneer Trail and I-95, the construction of a new Madeline Avenue overpass across I-95, the extension of Coraci Boulevard from Town West Boulevard to Taylor Road, and the extension of Yorktowne Boulevard from Taylor Branch Road to Willow Run Boulevard.

It should be noted that this analysis does not take into consideration other factors that may influence the growth of traffic volumes through the interchange such as the recently increased fuel costs and/or consideration/promotion of alternative modes of transportation. Another consideration is that this analysis assumes a substantial amount of retail development along Pioneer Trail. However, without a new interchange at Pioneer Trail and I-95, there is a question of whether or not such magnitudes of retail development would actually occur.

Design Considerations — As discussed under the interim improvement, the prohibition of the eastbound left-turn at the Taylor Road/Williamson Boulevard intersection will effectively require restriping the eastbound approach. Similarly, the pavement marking for the southbound shared through/right-turn lane will need to be revised to eliminate the right-turn movement. These lane modifications will also likely require some milling and resurfacing such that the pavement markings are clear and the aesthetics of the intersection are not compromised.

As for the triple left-turn lanes at the I-95 southbound off-ramps, the improvement concept is based on recommended minimum design standards included in the Florida Department of Transportation's report titled <u>Left-Turn Lanes at Signalized Intersections</u>. As previously mentioned, FDOT evaluates the design of triple left-turn lanes on a case-by-case basis taking into consideration many factors such as operational benefits, safety concerns, downstream destinations which may affect lane assignment, truck traffic, etc. Should this improvement be considered for design and construction, then additional analyses will likely be required to determine if the concept provided herein is appropriate. Additionally, overhead signage for the I-95 southbound off-ramp was included within the opinion of probable cost.

In developing the improvement concept, the eastbound approaching and westbound departing lanes at the Taylor Road/Williamson Boulevard intersection and the eastbound departing and westbound approaching lanes at the Taylor Branch Road intersection were effectively held in place. A key consideration was the alignment of approaching lanes with the departing lanes on the opposite side of intersections. In the end, given the unique challenges of this particular interchange area, the ultimate improvement concept required that certain approaches be slightly offset from the departure lanes. However, any offsets included within the ultimate improvement concept are within typically allowable ranges.

Another critical component of the improvement concept is the I-95 bridge. The current bridge does not provide sufficient lateral clearance to accommodate the ultimate improvement concept and thus would need to be replaced. The cost of a new bridge is governed by many factors. One important factor was the fact that a single span bridge with a length of 200 feet or more that completely crosses S.R. 421 would require a bridge with a substantial structure depth (perhaps six feet or greater). Thus, the deck of the bridge would potentially be a few feet higher than the current bridge deck. As such, a considerable amount of work on mainline I-95 would be required to raise the interstate up to the elevation of the new bridge deck. For the purposes of limiting such potential costs, the improvement concept utilizes two 100-foot span bridges. The short spans reduce the overall structure depth thus marginally raising the bridge deck from its current elevation, thereby minimizing the construction costs to alter I-95. However, as reflected in the improvement concept, S.R. 421 below I-95 will require a median to accommodate bridge piers to support the bridges. It should also be noted that the current vertical clearance between S.R. 421 and the bottoms of the I-95 bridge beams is sub-standard at approximately 14.8 feet. The construction of the new bridge will bring the vertical clearance up to the minimum desirable clearance of 16.5 feet. Last, the new bridges included in the concept will accommodate the future six-laning of I-95.

Opinion of Probable Cost – Using the improvement concept, an opinion of probable cost was developed for the ultimate improvement. The total cost of the improvement is estimated to be approximately \$15,701,089 based on *Table 9*, including engineering, surveying, permitting, construction, and post-engineering. It should be noted that this opinion of probable cost also reflects costs pertaining to extensive maintenance of traffic requirements needed for constructing the new bridges, new traffic signals at the Williamson Boulevard, I-95 southbound ramps, and I-95 northbound ramps intersections, as well as overhead signage for the triple southbound left-turn lanes at the I-95 southbound ramps intersection.

## TABLE 9 - ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COSTS

## S.R. 421 at I-95 INTERCHANGE IMPROVEMENTS

#### **ULTIMATE GEOMETRY**

ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNITS	UNIT COST*	TOTAL
101-1	MOBILIZATION	I	LS	\$1,290,058.70	\$1,290,059
102-1	MAINTENANCE OF TRAFFIC	i	LS	\$1,121,790.18	\$1,121,790
104-13-1	TYPE III SILT FENCE	6000	L.F	\$1.07	\$6,420
104-16	ROCK BAGS	600	EA	\$8.32	\$4,992
110-1-1	CLEARING AND GRUBBING	6.5	AC	\$19,261.29	\$125,584
110-4	REMOVAL OF EXISTING CONCRETE PAVEMENT	1222	SY	\$23.93	\$29,248
120-1	REGULAR EXCAVATION	300	CY	\$6.35	\$1,905
120-6	EMBANKMENT	1485	CY	\$11.06	\$16,424
160-4	STABILIZATION TYPE B (12")	29410	SY	\$4.12	\$121,169
285-709	BASE OPTIONAL (GROUP 9)	29125	SY	\$17.98	\$523,668
334-1-13	SUPERPAVE ASPHALTIC CONCRETE (TRAFFIC C)	4800	TN	\$90.24	\$433,152
337-7-7	ASPHALTIC CONCRETE FC-5 (RUBBER) (1")	1600	TN	\$117.41	\$187,856
400-1-15	CONCRETE CLASS I (MISC)	5	CY	\$627.91	\$3,140
425-1-311	INLET (CURB) (TYPE P-1) (<10')	24	EA	\$4,340.95	\$104,183
425-1-321	INLET (CURB) (TYPE P-2) (<10')	. 6	EA	\$5,114.99	\$30,690
430-171-101	PIPE CULVERT OPTIONAL MATERIAL (ROUND) (0-24" SS)	3700	LF	\$72.68	\$268,916
520-1-7	CONCRETE CURB & GUTTER (TYPE E)	2940	LF	\$18.15	\$53,361
520-1-10	CONCRETE CURB & GUTTER (TYPE F)	3410	LF	\$20.69	\$70,553
520-5-11	TRAFFIC SEPARATOR CONC. (TYPE I) (4' WIDE)	1540	<u>L</u> F	\$32.64	\$50,266
522-1	CONC. SIDEWALK (4" THICK)	1910	SY	\$44.02	\$84,078
570-1-2	PERFORMANCE TURF	6500	SY	\$3.14	\$20,410
711-11-121	THERMOPLASTIC, STD., SOLID WHITE (6")	8650	LF	\$1.42	\$12,283
711-11-124	THERMOPLASTIC, STD., SOLID WHITE (18")	808	LF	\$2.77	\$2,238
711-11-125	THERMOPLASTIC, STD., SOLID WHITE (24")	420	L.F	\$3.77	\$1,583
711-11-131	THERMOPLASTIC, STA., WHITE SKIP (6")	1.9	GM	\$1,053.10	\$1,950
711-11-170	THERMOPLASTIC, STD., WHITE, ARROW	40	EÄ	\$50.22	\$2,009
700-44077	SGN LT'D OH TR, T 121 TO 140, S 601-700	1	AS	\$147,525.00	\$147,525
	BRIDGES	2	EA	\$2,250,000.00	\$4,500,000
	SIGNALS	3	EA	\$225,000.00	\$675,000
				SUBTOTAL	\$9,890,450
	AS OBTAINED FROM THE FDOT ESTIMATES OFFICE WEBSITE UNDER THE		25% C	ONTINGENCY	\$2,472,613
ITEM AVERAGE	UNIT COSTS FOR JANUARY 2007 - DECEMBER 31, 2007.	TOTAL (	CONSTR	UCTION COST	\$12,363,063
				<b>DESIGN (15%)</b>	\$1,854,459
				C.E.L (12%)	\$1,483,568
			T	OTAL COST	\$15,701,089

## NOTE:

THE ENGINEER HAS NO CONTROL OVER THE COST OF LABOR, MATERIALS, EQUIPMENT, OR OVER THE CONTRACTOR'S METHODS OF DETERMINING PRICES OR OVER COMPETITIVE BIDDING OR MARKET CONDITIONS. OPINIONS OF PROBABLE COSTS PROVIDED HEREIN ARE BASED ON THE INFORMATION KNOWN TO THE ENGINEER AT THIS TIME AND REPRESENT ONLY THE ENGINEER'S JUDGMENT AS A DESIGN PROFESSIONAL FAMILIAR WITH THE CONSTRUCTION INDUSTRY. THE ENGINEER CANNOT AND DOES NOT GUARANTÉE THAT PROPOSALS, BIDS, OR ACTUAL CONSTRUCTION COSTS WILL NOT VARY FROM ITS OPINIONS OF PROBABLE COSTS.

## 7.0 ALTERNATIVE CORRIDOR EVALUATION

Based on the previous analyses, it is clear that even with additional improvements the S.R. 421/I-95 interchange area will experience potentially undesirable levels of congestion by year 2025, particularly as it relates to the Taylor Road/Williamson Boulevard intersection. As previously mentioned, one way to enhance the operating conditions at the interchange area is to provide alternative routes. Therefore, this section evaluates how construction of a new interchange at I-95 and Pioneer Trail or the construction of a new Madeline Avenue overpass across I-95 might impact operating conditions at the S.R. 421/I-95 interchange area.

#### 7.1 I-95/Pioneer Trail Interchange

Because the next I-95 interchange south of S.R. 421 is approximately seven miles south at S.R. 44 and that there is substantially more destinations and attractions north of the City of Port Orange then south of the City, many of the trips to/from existing and future development west of I-95, between S.R. 44 and S.R. 421, are projected to travel north up Williamson Boulevard to the S.R. 421/I-95 interchange area. Pioneer Trail currently crosses over I-95 between S.R. 44 and S.R. 421 and serves as a logical location for a future interchange, particularly given potential development opportunities along Pioneer Trail. In fact, the Volusia County MPO's adopted 2025 Long Range Transportation Plan includes this interchange. Although it seems logical that such an interchange would provide a degree of relief to both Williamson Boulevard as well as the S.R. 421/I-95 interchange area, it is unclear as to just how much benefit it would provide. Therefore, an analysis was conducted to better understand how a new interchange at I-95 and Pioneer Trail impacts the S.R. 421/I-95 interchange area as well as Williamson Boulevard just south of Taylor Road.

#### 7.1.1 Year 2025 Volume Projections

Although one can assume that the addition of the Pioneer Trail/I-95 interchange will provide a more convenient access point to I-95 for developments along Pioneer Trail; the model enables the analyst to better quantify such benefits. Thus, for the first step of the analysis, it was necessary to modify the year 2025 "no build" model to include the I-95/Pioneer Trail interchange. Year 2025 model volume projections were then obtained through the S.R. 421/I-95 interchange area and compared against the model volume projections from the 2025 "no build" model. The difference between these volumes effectively represents the impact of Pioneer Trail/I-95 interchange on the

S.R. 421/I-95 interchange area and Williamson Boulevard. However, it should be noted the results of both models were reviewed thoroughly to gain an in-depth understanding as to why the model volumes changed in the manner that they did. Based on this volume comparison and the review, adjustments to the "no build" PM peak-hour turning movement projections were made to reflect the interchange at the I-95 and Pioneer Trail.

Upon reviewing the volumes from both models, it was clear that the model was suggesting that the Pioneer Trail interchange will result in two impacts to the S.R. 421/I-95 interchange area. First, many of those vehicles traveling between development near Pioneer Trail and locations north of S.R. 421 via Williamson Boulevard to I-95 will now use the new interchange in place of traveling through the S.R. 421/I-95 interchange area. Thus, based on the model volume comparisons, the eastbound left-turn PM peak-hour volume at the I-95 northbound ramps intersection was reduced by 81 vehicles. Similarly, the southbound right-turn PM peak-hour volume at the I-95 southbound ramps intersection was reduced by 150 vehicles. These volume adjustments are reflected in *Figure 9* and the volume worksheets provided in *Appendix D*.

The other impact of the Pioneer Trail interchange at the S.R. 421/I-95 interchange area pertains to those vehicles that are projected to travel between development along Pioneer Trail and areas along S.R. 421 east of I-95. Without the Pioneer Trail interchange, such trips will occur via Williamson Boulevard through the S.R. 421/I-95 interchange area. However, with the Pioneer Trail interchange, a portion of these vehicles will utilize I-95 in place of Williamson Boulevard. As a result, based on the model volume comparisons, the eastbound through PM peak-hour volume at the I-95 northbound ramps intersection was reduced by 76 vehicles. This decrease was effectively offset by the addition of 60 vehicles to the northbound right-turn movement at the I-95 northbound ramps intersection.

These two impacts are more noticeable at the Williamson Boulevard intersection as the westbound left-turn and northbound right-turn volumes were reduced by 233 vehicles and 163 vehicles, respectively. However, a corresponding increase of 125 vehicles was applied to the westbound left-turn movement at the I-95 southbound ramps intersection. These volume adjustments are reflected in *Figure 9* and the volume worksheets provided in *Appendix D*.

Other minor volume adjustments also occurred at other various movements, however, these additional adjustments had a marginal affect on the overall volume projections.

For informational purposes, year 2025 PM peak-hour turning movement projections were also calculated for the Pioneer Trail intersections with the I-95 ramps. These volume projections are provided in *Appendix D*.

### 7.1.2 Year 2025 Operating Conditions with I-95/Pioneer Trail Interchange

Using Synchro and SimTraffic, the future PM peak-hour operating conditions of the study intersections were evaluated with the projected turning movement volumes as shown in Appendix D. The Synchro and SimTraffic printouts are provided in Appendix E and the future operating conditions of the study intersections are summarized in Table 10 and Table 11. In reviewing Table 10, it can be seen that the Taylor Road/Williamson Boulevard intersection will benefit the most with a new I-95 interchange at Pioneer Trail as the overall intersection delay is reduced by nearly 15 percent from 150.1 seconds per vehicle under the year 2025 "no-build" condition to 127.7 seconds per vehicle. Although the Pioneer Trail interchange will cause volume reductions for several movements at the I-95 southbound ramps intersection, these benefits are countered by volume increases to other critical movements, particularly the westbound left-turn movement. Thus, the projected operating conditions at the I-95 southbound ramps intersection are not expected to benefit much from the Pioneer Trail interchange. Similarly, the other two intersections at the interchange area are not projected to benefit from a new I-95/Pioneer Trail interchange. However, the I-95 southbound ramps, I-95 northbound ramps, and Taylor Branch

Table 10 - Comparison of Intersection Conditions (with Pioneer Trail Interchange or Madeline Avenue Overpass - Year 2025)

S.R.421/I-95 Interchange Analysis

				NO-BU	UILD EVALUATION	VTION			IONEER TR	PIONEER TRAIL/I-95 INTERCHANGE	ERCHANG	¥		MADELINE	MADELINE AVENUE EXTENSION	KTENSION	
Study Intersections	Approach	Movement			Delay (sec/veh)/LOS	eh)/LOS				Delay (sec/veh)/LOS	ch)/LOS				Delay (sec/veh)/LOS	eb)/LOS	
Programme Programme			A/C	Mov	overnent 6: 6: 6:	Approach	Total	A/C	Mov	Movement		Total	A/C	Mov	Movement	Approach	Total
		Î	9	Synchiro	Simiratile	(Synchro)	(Synchro)	9	Synchro	Similaritic	(Synchro)	(Synchro)	3 4	Synchro 64 o/c	SURFIE FILLS	(Synchro)	Synchro)
	Facthound	1 F	1.23	54.27F	145.U/F	150 2/F		0.0	111 5/F	183.776	107.57F		S E	123.4/F	47.1/L	14.4/F	
		· ~	1,0	e,Z	S34.5/F			п/а	11/2	318.5/F			n/a	E/d	145.9/F		
		ין	1.4	214.4/F	119.0/F			1.36	196.3/F	107.6/F			1.56	Z95.8/F	583,0⁄F		
	Westbound	<b>⊢</b> α	0.76	20.1/C	34.2/C	119.8Æ		0.81	24.8/C	30.1/C	102.1/E		0.83	35.4/D	423.1/F	J/0'691	
Williamson Boulevard at Taylor Road		4	1.28	218/F	111.6/F		150.1/F	1.25	202.8/F	128.2/F		127.7/F	1.16	173.2/F	161.8/F		142.4/F
	Northbound	Т	86.0	89.6/F	112.L/F	77.6/E		96'0	87.5/F	108.8/5	78.9/E		0.93	83.2/F	87,6/F	71.7/E	•
		2	0.74	28.2/C	91.3/F			99.0	26.6/C	72.5/E			0.78	34.4/C	78.7/F		
	,		1.45	270.7/F	273.3/F	<b>6</b> 70 000		1.34	218.0/F	226.4/F	E		1.22	173.8/F	540.5/F	376 (8)	
	Soughboom	- «	( v ) (	1/C.2C2	192.2/F	1/07407		*C-1	1/11	146.6/F	16:417		(7) E/G	1/4°	146,6/F	110.501	
		1	n/a	11/3	17/3			n/a	B/#	E/II			n/a	n/a	e/u		
	Eastbound	<u></u>	13.	176.8VF	47.2/D	157.2/F		71.1	112.5/F	49.9/D	98.7/F		1,42	232.9/F	71.0/E	206.5/F	
		4 -	0.91	96.0/F	81.9/F			90'1	120.5/F	167.4/F			0.92	94.9/F	66.5/E	Ī	
	Westbound	ı F÷	1:12	80.9⁄F	72.5/E	82.9/F		1.10	56.7/E	68.8VE	65.8/E		1.19	98.2/F	151.6/F	97.8/P	
Taylor Road at 1-95 SB Ramps		æ	10/8	n/a	n/a		132.8/F	n/a	π/a	11/3		98.4/F	n/a	п/а	n/a		139.9/F
diam'r a contract of the	;	1	E/L	n/a	B/U			<u>1</u>	E/II	e/a	,		<b>4</b>	10/4	n/a	-	
	Narthboymd	α	E/II	E/1	<b>5</b> /2	E/2		e /s	2 £	et 52	ri 2		17,1 17,2	<b>2</b> 5 1	17/3 17/3	E/A	
		-		150 7/5	07.3/17			1 10	143 3/15	63.6/E			1 3	70.3/F	65.0/E		
	Southbound	1 F-	1/2 1/2	17/1	14/1	168.0/F		, e/a	E/a	E/a	145.3/F		1/1	7	12/3	111.4/F	
		×	1.31	198.4/F	3,134.3/F			1.18	149.7/F	57.8/E			1.24	168.9/F	75.8/E		
	Ē	J E	0.82	78.5/E	68.3/E	9,		0.75	27.2/C	20.3/C	60.5		0.75	37.4/D	27.2/C	200	
	Eastoound	- 24	1/8	P/0/01	₹ 8/2 1/a	9 (f) p		7.34 19/a	12.0/B	17.07E	d:0.4		1.61	n/a	14.11.D	0.7.61	
		ı	π/a	11/2	0/a			11/3	24	n/a			11/8	π/a	n/a		
	Westbound	F	0.83	25.8/C	83.6/F	20.2/C		0.87	29.5/C	69,4/E	23.1/C		0.85	30.1/C	161.4/F	23,4/C	
Taylor Road at 1-95 NB Ramps		۷,	0.46	V/0'1	7.5/A		22,3/C	0.45	0.9/A	11.4/B		21.5/C	0.46	1.0/A	11.6/B		21.7/C
,		ء د	<b>2</b> 0 1	75.1/1	411.3/1	27.6.63		0.7	3/0.00 1/1	93.U/F	E1 4/E		7/10	416.C1	334.4/F	DC 09	
	DIMOGRATION	- 24	0.69	61.7/E	137.0/F	2/5.70		0.61	58.0/E	54.6/D	35.10		0.62	65.L/E	205.9/F	37.60	
			E/3	e/1)	r/a			n/a	<b>8</b> /0	B/U			n/a	n/a	₽/u		-
	Southbound	μſ	n/a	E/U	. Ja	17/3		n/a	1/3 -/-	n/a	1/1		2	\$ 1	17/2 -/-	D/a	
		4	E/II	E/A	870		Ī	1ra	II.A	JE A			84	84	****		
		د	e/u	e,ru	E/G			n/a	n/a	11/11			D/8	E/J	<b>1</b> /u		
	Eastbound	<b>⊢</b>	0.55	0.07A	2.5/A 5.8/A	0.0/A		0.54	0.0/A	3.0/A	0.0/A		0.43	0.07A	3.6/A 6.7/A	O.U/A	
		ŗ	e/u	r./a	E/G			E/L	1/4	17/1			rva	D/a	11/11		-
	Westbound	-	0.48	A/0.0	85.9/F	0.0/A		0.47	0.0/A	197.8/F	0.0/A		0,47	0.0/A	376.6/F	0.0/A	•
S.R. 421 at Taylor Branch Road		≃ .	Ę,	1/8	n/a		0.2/A	n/a	π/a	п/а		0.3/A	n/a	D/3	IVa	Ţ	0.3/A
	1	<b>-</b> - +	, g	B, J,	11/2 -/-	E .		2 ;	<u>,</u>	14/3 14/3	B/C 57		E /2	r D/a	<b>9</b> /1	13 O/B	
	namounios:	- e	0.22	12.0/B	18.1/B	14.0/15		0.23	12.7/19	19.9/B			0.22	12.0/B	11.6/A	70.7	
			17/3	n/a	11/8			т/т	π/a	<b>8/</b> 0			n/a	tv/a	μ/π		
	Southbound	<b>⊢</b> α	<b>8</b> /G	8/G	11/4 11/4	11/3		11/2 11/3	1/2 1/4	E/E	6/0		B/B	1/3 1/3	<b>8</b> /11	E/0	

Table 11-Summary of Queue Lengths (with Pioneer Trail Interchange or Madeline Avenue Overpass - Year 2025) S.R. 421/I-95 Interchange Analysis

			NO-BL	NO-BUILD EVALUATION	TION		PIONEER TRAIL/I-95 INTERCHANGE	RCHANGE	MADELINE	MADELINE AVENUE EXTENSION	ENSION
Study Intersections	Approach	Movement	Storage Length	95th Percentl	le Queue (feet)	Storage Length	95th Percenti	95th Percentile Queue (feet)	Storage Length	95th Percentile Queue (feet)	t Queue (feet)
			╛	Synchro	SimTraffie		Synchro	SimTraffic	(feet)	Synchro	SimTraffic
		ר		138	224		8£1	340	250	141	289
	Eastbound	<b>-</b>	•	465	465 1,322	r	431	1,296	•	144	880
		~		11/8	12/8		e/a	8/11	0/3	11/4	D/2
	,	اد		126	487		727	493	415	519	484
	westbound	- c		904	459		360	452		260	514
Williamson Boulevard at Taylor Road		٤.	l	Og.	011		3 8	761	09,	07	e e
	Marthama	1 6		300	555		289	331	6	Š. 5	330
	DIMODE LINE	- 4		397	3,6,6		388	\$ £	- 36.3	205	946
				105	200		404	240	000	216	2,5
	Constituted	J F		100	398		929	393	000	828	255
	Southbound	- <i>(</i>		8/6	2,241		826	7,255		484	2,160
		¥		17/8	IV'a		D/B	n/a	D/B	17/8	10/8
		<u> </u>			,,			-1-	1,1	,,	
	10000	J F	B/B	E/3	178	B/0	870	0/B	D/B	11/8	P/a
	Eastbound			823	<b>‡</b> ‡	,	7,33	392		/65 -	300
		<u> </u>		110	2/1		DVA	8/0		B/II	PAG .
	Weethound	-1 F	320	717	060	370	976	424	320	432	340 CT.3
	HCMC H	- 0	- "	71.7	190	, ,,	ه/در. ه/د	509	4/20	81 <i>C</i> +1	110
Taylor Road at 1-95 SB Ramps		<u>,</u>	8/II	2/4	B/III	,,	*	7 . ·	4 7	\$ A	4
	N'rect hound	1 F	B/I	# ',	R ()	7/1	e de	<b>5</b> 7	7	B/II	4 .
	niznoguironi	۰.	, i	7		B/L	7 .	# 5) i	7	11/1 1-/-	# :
			347	070	17.4	367	D/4	נטר	175	RAIL	200
	Southbound	1 [-	6/4	619	50.7 CM <sup>2</sup>	C/+	1,4	202	C/+	92.	907
	n nonmon	- P	Z ,	1120	194	B 7	17.8 8.74	304	ř.	119	70°
		ļ						107		,,,,,	^^~
		.1	320	155	226	320	134	137	320	149	195
	Eastbound	H	•	298	378	•	342	381	1	238	375
		R	10/2	12/8	n/a	n/a	17/8	17/8	D/a	11/8	υ⁄a
		Ţ	6/0	n/a	n/a	п/п	D/a	10/8	E/ci	11/8	15/8
	Westbound	T	,	877	711	•	752	859		773	622
Taylor Road at I-95 NB Ramps		~		0	542	١	0	126	•	٥	8448
		٦	334	258	417	334	282	392	334	305	421
	Northbound	F	D/a	17/3	n/a	n/a	15/8	15/a	tu'a	n/a	11/3
		~	334	D00 D00	1,134	334	205	498	334	203	1,208
		اد	D/8	17/8	8/u	n/a	n/a	D/3	11/8	п/а	n/a
	Southbound	H 1	E/S	17,3	e/a	17,0	<b>8/1</b>	n/a	B/II	11/8	В/ш
		×	rva	п/а	D/a	п/а	n/a	15/a	11/8	n/a	n/a
		ļ									,
	ļ.	۱ د	E/C	B/I	e/u	,A	u/a	<u>,</u>	10/8	11/a	n/a
	Essicound	- 6	021	> 0		. ř.	> 0	> <	, ,		2 0
			2/2	> 1	9	2/2			0/7	3	
	Weethound	) F	ā '	R C	1 481	10.2	0 0	8	# A	ā	710 c
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Road intersections will experience an indirect benefit from the Pioneer Trail interchange as queues from the Taylor Road/Williamson Boulevard intersection are less likely to spillback into these intersections with the Pioneer Trail interchange as compared to the "no build" scenario. However, based on *Table 11*, the westbound queues at the Taylor Road/Williamson Boulevard intersection are still projected to be excessive and impede the westbound through movements at the other three intersections based on the westbound through delays from SimTraffic for the other three intersections as summarized in *Table 10*.

#### Williamson Boulevard

With the I-95/Pioneer Trail interchange, the PM peak-hour volume on Williamson Boulevard between Airport Road and Taylor Road is projected to decrease by more than nine percent from 4,678 (1,853 northbound and 2,825 southbound) to 4,245 (1,673 northbound and 2,572 southbound) vehicles (see *Figure 9*). Even though the Pioneer Trail interchange is projected to cause a reduction in traffic volumes on Williamson Boulevard, the southbound direction of travel is still likely to have a high degree of congestion during the PM peak-hour within the committed four-lane section.

#### 7.2 Madeline Avenue Overpass

An alternative improvement that might cause a reduction in traffic volumes at the S.R. 421/I-95 interchange area is the extension of Madeline Avenue from Williamson Boulevard across I-95 to Tomoka Farms Road. This improvement would potentially reduce volumes through the interchange area as it would provide an alternative route for those traveling between areas southwest of the interchange essentially along Tomoka Farms Road and areas northeast. Similarly, the Madeline Avenue overpass would provide an alternative route for those traveling between areas northwest of the interchange and southeast of the interchange. Therefore, an analysis was conducted to better understand how the Madeline Avenue overpass will impact the S.R. 421/I-95 interchange area as well as Williamson Boulevard just south of Taylor Road.

#### 7.2.1 Year 2025 Volume Projections

Similar to the Pioneer Trail interchange analysis, it was necessary to modify the year 2025 "no build" model to include the Madeline Avenue overpass. Year 2025 model volume projections were then obtained through the S.R. 421/I-95 interchange area and compared against the model volume projections from the 2025 "no build" model. The difference between these volumes

effectively represents the impact of Madeline Avenue overpass on the S.R. 421/I-95 interchange area and Williamson Boulevard. However, it should be noted the results of both models were reviewed thoroughly to gain an in-depth understanding as to why the model volumes changed in the manner that they did. Based on this volume comparison and the review, adjustments to the "no build" PM peak-hour turning movement projections were made to reflect the Madeline Avenue overpass.

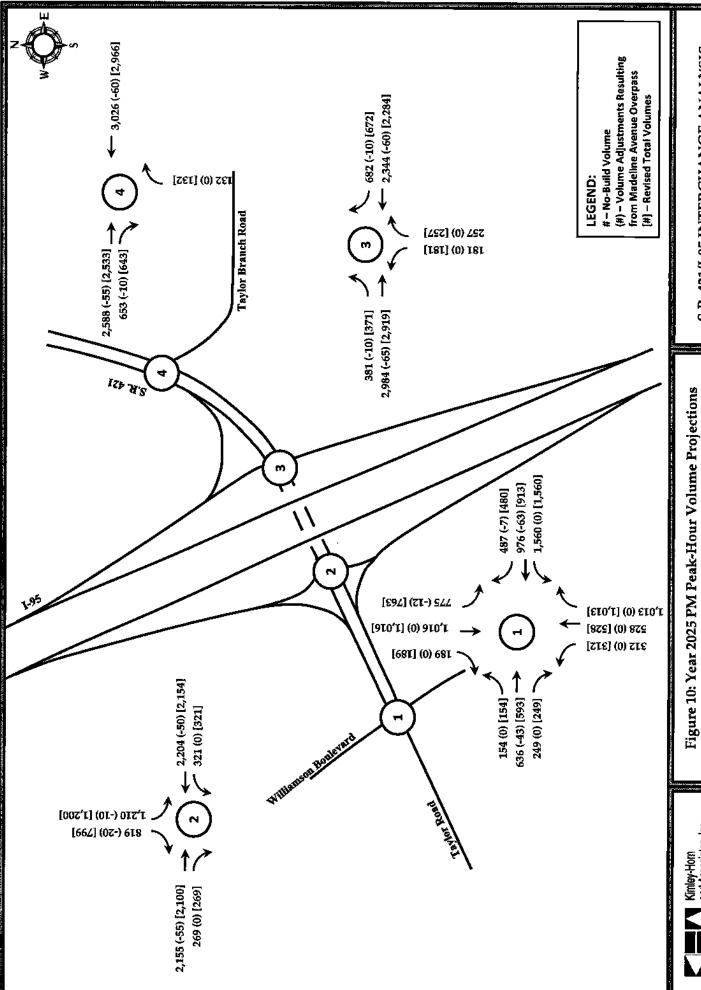
Upon reviewing the volumes from both models, it was concluded that the model was suggesting that the Madeline Avenue overpass will provide a marginal reduction in the traffic volumes through the S.R. 421/I-95 interchange area. The most evident impact, although not substantial, was the reduction of eastbound and westbound through volumes on S.R. 421. The resulting volume adjustments are reflected in *Figure 10* and the volume worksheets provided in *Appendix E*.

#### 7.2.2 Year 2025 Operating Conditions with Madeline Avenue Overpass

Using the projected turning movement volumes as shown in *Appendix D*, the S.R. 421/I-95 interchange area was again evaluated using Synchro and SimTraffic. The Synchro and SimTraffic printouts are provided in *Appendix E* and the future operating conditions of the study intersections are summarized in *Table 10* and *Table 11*. In reviewing *Table 10*, it can be seen that in comparing the resulting overall intersection delays to those under the year 2025 "no build" scenario, the Taylor Road/Williamson Boulevard intersection will benefit the most with the Madeline Avenue overpass across I-95. However, recognizing that the traffic volume reduction is relatively minor, particularly as compared to the benefit of the Pioneer Trail interchange, the overall benefit to the Taylor Road/Williamson Boulevard intersection delay is also relatively minor as it decreases from 150.1 seconds per vehicle under the "no build" scenario to 142.4 seconds per vehicle. Also, the operating conditions at the other three intersections are not projected to experience any significant benefit from the Madeline Avenue overpass.

#### Williamson Boulevard

Based on *Figure 10*, Williamson Boulevard between Airport Road and Taylor Road is not projected to benefit from the Madeline Avenue overpass as the volume on Williamson Boulevard is projected to remain the same. Thus, with the year 2025 PM peak-hour volume projections of 4,678 vehicles (1,853 northbound and 2,825 southbound), the southbound direction of travel is likely to have a high degree of congestion during the PM peak-hour within the committed fourlane section.



S.R. 421/I-95 INTERCHANGE ANALYSIS

(With Madeline Avenue Overpass)

Kimley-Horn and Associates, Inc.

#### 8.0 CONCLUSIONS AND RECOMMENDATIONS

The purpose of this analysis was to evaluate the existing and year 2025 operating conditions of the S.R. 421/I-95 interchange area as well as Williamson Boulevard between Airport Road and Taylor Road.

Based on the existing conditions analysis and the existing geometry within the interchange area, the I-95 northbound ramps intersection and the Taylor Branch Road intersection operate well. Overall, the I-95 southbound ramps intersection operates acceptably, however, the westbound and southbound left-turn movements are operating poorly. The overall operating conditions for the Taylor Road/Williamson Boulevard intersection are also undesirable and the westbound left-turn movement is operating well over its capacity. Thus the resulting queues for this movement are spilling back into the interchange area. The existing conditions analysis also suggests that several other movements at the Taylor Road/Williamson Boulevard intersection are operating near capacity.

Based on the existing PM peak-hour volumes at the interchange area, it is clear the interchange area, particularly the Taylor Road/Williamson Boulevard intersection, will experience improved operating conditions with the construction of the committed improvements. More specifically, the analysis concludes that the interchange area will greatly benefit from the additional westbound left-turn lane at the Taylor Road/Williamson Boulevard intersection. A similar improvement is achieved at the I-95 southbound ramps intersection as the overall intersection delay is reduced. The I-95 northbound ramps intersection also experiences improved conditions with the addition of the third westbound through which will feed the westbound left-turn lane at the I-95 southbound ramps. Also, with the committed improvements most all of queue lengths are projected to be less than the storage lengths for the respective movements.

This analysis also evaluated how the interchange area will benefit from extending Yorktowne Boulevard from Taylor Branch Road to S.R. 421 and converting the S.R. 421/Taylor Branch Road intersection to an unsignalized intersection with the elimination of the westbound and northbound left-turn movements. Based on this analysis, the modifications to the S.R. 421/Taylor Branch Road intersection eliminate the possibility of the eastbound through vehicles spilling back into the I-95 northbound ramps intersection. Additionally, the westbound left-turn queue at the

S.R. 421/Taylor Branch Road intersection extends nearly the length of the turn lane without these modifications. Thus, there is the potential that without this modification the westbound left-turn queue could extend into the westbound through lanes adversely effecting westbound flow on S.R. 421.

Based on the year 2025 "no build" analysis, the Williamson Boulevard intersection will operate well over capacity. As a result, several movements are projected to have 95th-percentile queues that exceed the storage length. Vehicles at the I-95 southbound ramps intersection are also projected to experience excessive delays although the Williamson Boulevard intersection is projected to be more problematic. These results suggest that the extension of the westbound leftturn lane from the I-95 southbound ramps intersection back to the Taylor Branch Road intersection, as currently committed, is a beneficial improvement as the queue length for this movement is projected to extend back into the I-95 northbound ramps intersection. The I-95 northbound ramps intersection is projected to have acceptable operating conditions however, given the expected delays at the other two intersections to the west, it is highly likely that westbound vehicles will queue back through the northbound ramps intersection. Based on a review of the projected volumes and the analyses, it could generally be concluded that the interchange area should function acceptably for six to seven more years before an improvement is needed beyond those that are currently committed. However, there are numerous developments either approved or currently going through the City's development approval process. Thus, the point at which additional improvements are needed will essentially be dictated by the rate at which these developments are constructed, as well as the type (retail, residential, etc.) and size of such future developments.

Also, in year 2025, the projected PM peak-hour volumes on Williamson Boulevard between Airport Road and Taylor Road indicate there is likely to be significant congestion on Williamson Boulevard during the PM peak hour. Now, it should be noted that these volume projections account for substantial future development south of Taylor Road, including sizable retail developments. Perhaps the projected volumes are overstated in that the potential retail development along Pioneer Trial will not be of the magnitude currently anticipated in this analysis if additional access, such as an I-95 interchange at Pioneer Trail, is not provided.

For purposes of this analysis, the following two interim improvements were identified which are projected to provide temporary relief to the interchange area:

- Eliminate the eastbound left-turn and southbound right-turn movements at the Taylor Road/Williamson Boulevard intersection
- Provide a third southbound left-turn lane at the I-95 southbound ramps intersection

The first improvement will effectively force vehicles to use Summer Trees Road to avoid the Taylor Road/Williamson Boulevard intersection. As a result, the operating conditions of the southbound through movement will be enhanced. Additionally, the elimination of the eastbound left-turn movement enables the eastbound approach to be restriped from two through lanes and one shared through/right-turn lane to three through lanes and one right-turn lane. Also, the elimination of the eastbound left-turn movement enables additional green time to be allocated to other movements. As a result, the overall intersection delay at the Taylor Road/Williamson Boulevard intersection will decrease in year 2025.

In addition, a third southbound left-turn lane is recommended at the I-95 southbound ramps intersection which will reduce the overall delay at this intersection as well as potentially result in a substantial reduction to the potential queue length on the I-95 southbound off-ramp. It is clear that even with these interim improvements, the Williamson Boulevard intersection and possibly the I-95 southbound ramps intersection will have undesirable operating conditions in year 2025. However, these interim improvements will provide a slight enhancement to the capacity at the S.R. 421/I-95 interchange area, possibly allowing for the interchange area to operate acceptably for an additional year or two beyond the life of the currently committed improvements.

The total cost of the interim improvements, including costs pertaining to engineering, surveying, permitting, construction, post-engineering, signalization modification, as well as overhead signage, is estimated to be approximately \$621,165.

This analysis also identifies an ultimate improvement concept for the S.R. 421/I-95 interchange area which includes the following:

- Eliminate the eastbound left-turn and southbound right-turn movements at the Taylor Road/Williamson Boulevard intersection
- At the Taylor Road/Williamson Boulevard intersection, utilize the striped-out area from the eastbound left-turn lanes to provide an eastbound approach which includes four eastbound through lanes and one right-turn lane.
- Provide a third southbound left-turn lane at the I-95 southbound ramps intersection
- Extend one of the eastbound left-turn lanes from the I-95 northbound ramps intersection
  to the Taylor Road/Williamson Boulevard intersection. Similarly, provide a shorter
  extension of the inside eastbound left-turn from the I-95 northbound ramps intersection
  back to approximately 300 feet west of the I-95 southbound ramps intersection.
- Provide an eastbound right-turn lane at the I-95 southbound ramps intersection
- Construct a second westbound left-turn lane at the I-95 southbound ramps intersection and provide a second receiving lane on the I-95 southbound on-ramp to accommodate traffic from the second left-turn lane.
- Provide third and fourth westbound travel lanes from approximately 500 feet east of the I-95 northbound ramps intersection to the I-95 southbound ramps intersection. Then, have the two inside westbound through lanes at the I-95 southbound ramps intersection feed the dual westbound left-turn lanes at the Taylor Road/Williamson Boulevard intersection
- Modify the free-flow southbound right-turn lane at the I-95 southbound ramps intersection such that it operates under signalized control, thereby providing dual rightturn lanes under signalized control.
- Replace each single-span I-95 bridge with two steel 100-foot span bridges and construct a median on S.R. 421 to the accommodate bridge piers

With these improvements, vehicles at the Taylor Road/Williamson Boulevard intersection will still experience excessive delays. As a result, even with these improvements the operating conditions of this intersection by year 2025 will likely cause queues to spillback from the Taylor Road/Williamson Boulevard intersection into the interchange area thus adversely affecting the flow of westbound traffic on S.R. 421 through the interchange area. The overall intersection delays for all three other intersections show that these intersections should operate well in 2025 with the ultimate improvements. The primary concern is, again, the spillback of traffic from the Williamson Boulevard intersection.

Given the constraints that limit opportunities for physically improving the Taylor Road/Williamson Boulevard intersection, consideration should be given to providing alternative routes such that vehicles do not need to travel through the S.R. 421/I-95 interchange area. Such alternative facilities may include but are not necessarily limited to the construction of a new interchange at Pioneer Trail and I-95, the construction of a new Madeline Avenue overpass across I-95, the extension of Coraci Boulevard from Town West Boulevard to Taylor Road, and the extension of Yorktowne Boulevard from Taylor Branch Road to Willow Run Boulevard.

The total cost of the improvement, including costs for engineering, surveying, permitting, construction, post-engineering, extensive maintenance of traffic requirements, new traffic signals, and overhead signage, is estimated to be approximately \$15,701,089.

Analyses were also conducted to evaluate how construction of a new interchange at I-95 and Pioneer Trail or the construction of a new Madeline Avenue overpass across I-95 might impact operating conditions at the S.R. 421/I-95 interchange area. Based on the analyses, the Taylor Road/Williamson Boulevard intersection will benefit the most with a new I-95 interchange at Pioneer Trail. The projected operating conditions at the other three intersections within the S.R. 421/I-95 interchange area are not projected to benefit from a new I-95/Pioneer Trail interchange. However, the I-95 southbound ramps, I-95 northbound ramps, and Taylor Branch Road intersections will experience an indirect benefit from the Pioneer Trail interchange as queues from the Taylor Road/Williamson Boulevard intersection are less likely to spillback into these intersections with the Pioneer Trail interchange as compared to the "no build" scenario. Additionally, with the I-95/Pioneer Trail interchange, the PM peak-hour volume on Williamson Boulevard between Airport Road and Taylor Road is projected to decrease by more than nine

percent. Even though the Pioneer Trail interchange is projected to cause a reduction in traffic volumes on Williamson Boulevard, the southbound direction of travel is still likely to have a high degree of congestion during the PM peak-hour within the committed four-lane section.

The Taylor Road/Williamson Boulevard intersection will benefit the most with the Madeline Avenue overpass across I-95. However, recognizing that the traffic volume reduction is relatively minor, particularly as compared to the benefit of the Pioneer Trail interchange, the overall benefit to the Taylor Road/Williamson Boulevard intersection delay is also relatively minor. Also, the operating conditions at the other three intersections are not projected to experience any significant benefit from the Madeline Avenue overpass. Additionally, Williamson Boulevard between Airport Road and Taylor Road is not projected to benefit from the Madeline Avenue overpass as the volume on Williamson Boulevard is projected to remain the same.

# **APPENDIX A**

## EXISTING TURNING MOVEMENT COUNTS

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DE-TRAFFIC WWW.DE-TRAFFIC.COM TAYLOR RD AT DUNLAWTON AVE VOLUSIA COUNTY, FLORIDA

File Name: 08 Taylor @ Dunlawton Site Code: 00000008 Start Date: 5/1/2008 Page No: 1

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			App. Total		998	387	<del>2</del> 53	226	1704	476	417	y	279	1508	371	425	432	88	1617	206	238	457	365	1867	9699	46.5
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DE-TRAFFIC WWW.DE-TRAFFIC.COM TAYLOR RD AT DUNLAWTON AVE VOLUSIA COUNTY, FLORIDA

File Name: 08 Taylor @ Dunlawton Site Code: 000000008 Start Date: 5/1/2008 Page No: 2

	Int. Total			3686		387	0.934						4211		1173	0.897			
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	Left	) AM to 09:00	07:30 AM	0	0.0	0		6:45:00 AM	0		) PM to 06:00	04:45 PM	0	0.0	0			0	
	Start Time	Peak Hour From 07:00 AM to 09:00 AM - Peak 1 of 1	Intersection 07:30 AM	Volume	Percent	07:45 Volume	Peak Factor	High Int. (	Volume	Peak Factor	Peak Hour From 04:00 PM to 06:00 PM - Peak 1 of 1	Intersection 04:45 PM	Volume	Percent	05:15 Volume	Peak Factor	High Int	Volume	Peak Factor

TAYLOR RD AT DUNLAWTON AVE VOLUSIA COUNTY, FLORIDA DE-TRAFFIC WWW.DE-TRAFFIC.COM

File Name: 08 Taylor @ Dunlawton Site Code: 000000008 Start Date: 5/1/2008 Page No: 3

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DE-TRAFFIC WWW.DE-TRAFFIC.COM TAYLOR RD AT DUNLAWTON AVE VOLUSIA COUNTY, FLORIDA

File Name: 08 Taylor @ Dunlawton Site Code: 000000008 Start Date: 5/1/2008 Page No: 4

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WWW.DE-TRAFFIC.COM I-95 NB RAMPS AT TAYLOR RD VOLUSIA COUNTY, FLORIDA **DE-TRAFFIC** 

File Name: 195 NBR @ Taylor Site Code: 00000003 Start Date: 5/8/2008 Page No: 1

Left Thru Right App. Total	0.1 0.1	Right App. Total Left Thru Right App. Total 1.0 1.0 1.0	Right App Total Left Thru Right App Total 1
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WWW.DE-TRAFFIC.COM I-95 NB RAMPS AT TAYLOR RD VOLUSIA COUNTY, FLORIDA DE-TRAFFIC

File Name: 195 NBR @ Taylor Site Code: 00000003 Start Date: 5/8/2008 Page No: 2

	Int. Total			3672		949	0.967						4131		1140	0.906			
	App. Total			1503		350			450	0.895			2103		581			581	0.905
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	App. Total			376		102			102	0.922			234		44			78	0.750
Ramps	E			315	83.8	88			8				193	82.5	98			89	
1-95 NB Ramps	Thr			0	0.0	0			o				0	0.0	0			0	
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	App. Total		_	1793		497				0.905			1794	•	515			515	0.871
r Rd ound	E			870	48.5	227			227				230	29.5	<del>1</del> 34			134	
Taylor Rd Westhound	Thru	i		923	51.5	270			270				1264	70.5	381			381	
	Left			0	0.0	0		07:45 AM	0				0	0.0	0		05:15 PM	O	
	D. Total			0		0			0	_			0		0			0	
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N/A Southbound	Thru	30 AM - P		0	0.0	0			0		00 PM - P		0	0.0	0			0	
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	Start Time	Peak Hour From 07:00 AM to 09:00 AM - Peak 1 of	Intersection 07:15 AM	Volume	Percent	07:45 Volume	Peak Factor	High Int. 6	Nolume	Peak Factor	Peak Hour From 04:00 PM to 06:00 PM - Peak 1 of	Intersection 04:45 PM	Volume	Percent	05:15 Volume	Peak Factor	High Int.	Volume	Peak Factor

DE-TRAFFIC WWW.DE-TRAFFIC.COM I-95 NB RAMPS AT TAYLOR RD VOLUSIA COUNTY, FLORIDA

File Name: 195 NBR @ Taylor Site Code: 00000003 Start Date: 5/8/2008 Page No: 3

		Int. Total		22	23	16	22	81	24	8	22	19	82	32	52	52	23	86	8	19	20	19	81	345		
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	Ramps	Ī	1.0	-	Ø	0	-	4	CV	0	N	-	Ω	0	-	C4	8	7	-	0	-	<del></del>	က	19	67.9	0,0
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DE-TRAFFIC WWW.DE-TRAFFIC.COM I-95 NB RAMPS AT TAYLOR RD VOLUSIA COUNTY, FLORIDA

File Name: 195 NBR @ Taylor Site Code: 00000003 Start Date: 5/8/2008 Page No: 4

			Int. Total		0	
			Right App. Total		0	
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	Taylor Rd	Eastbound	Thr	1.0	0	0.0
			Left	1.0	0	0.0
			Right App. Total		0	
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	I-95 NB Ramps	Northbound	Thru	1.0	0	0:0
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		pund	Right A	1.0	0	0.0
	N/A	Southbo	Thru	1.0	0	0.0
			Left	0.5	0	0.0
			Start Time	Factor	Grand Total	Apprch % Total %

DE-TRAFFIC WWW.DE-TRAFFIC.COM I-95 SB RAMPS AT TAYLOR RD VOLUSIA COUNTY, FLORIDA

File Name: 195 SBR @ Taylor Site Code: 00000002 Start Date: 5/8/2008 Page No: 1

			Int. Total		657	980	693	713	2743	683	685	732	637	2737	823	848	822	833	3359	988	1107	931	840	3866	i d	12/US	
		-	App. Total		332	346	325	260	1263	250	297	367	335	1249	283	303	272	295	1153	323	29-	282	310	1206	7	784 L	38.3
	r Rd	pund	) Jht	0,1	27	33	56	35	121	4	36	38	35	147	22	32	<del>6</del>	ខ	92	15	9	2	56	80	,	4 5 5	3.5
	Taylor Rd	Eastbound	Thru	1.0	305	313	53	225	1142	209	261	329	303	1102	261	271	254	272	1058	308	273	561	584	1126		97.58	34.9
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			App. Total		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	5	0:0
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ups Printed- Automobiles - Commercial			App. Total		164	506	212	596	878	292	262	239	197	066	309	319	321	286	1235	340	404	299	259	1302		85 5	34.7
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Grou	Taylor	Westbo	Thru	1.0	137	171	183	263	754	264	231	203	191	828	262	261	260	232	1015	265	338	255	213	1071	6	3636	29.1
			Left	1.0	22	88	8	g	124	58	9	36	8	131	47	88	61	72	220	75	99	4	46	33		9 4	5.6
			App. Totat		161	128	156	157	602	141	126	126	105	498	231	526	262	252	971	325	412	320	271	1358	-	3429	27.0
	Ramps	ound	Right /	_	22	ß	83	£	105	36	8	32	27	125	73	2	8	7.4	596	102	5	8	7	357	ć	28 K	7.0
	I-95 SB Ramps	Southbound	Thru	1.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	(	0 0	0.0
			Left	1.0	139	103	123	132	497	105	96	94	78	373	158	162	177	178	675	223	312	266	200	1001	į	25.55 54.55	20.0
			Start Time	Factor	07:00 AM	07:15 AM	07:30 AM	07:45 AM	Total	08:00 AM	08:15 AM	08:30 AM	08:45 AM	Total	04:00 PM	04:15 PM	04:30 PM	04:45 PM	Total	05:00 PM	05:15 PM	05:30 PM	05:45 PM	Total	- - -	Grand Lotal	Total %
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WWW.DE-TRAFFIC.COM I-95 SB RAMPS AT TAYLOR RD VOLUSIA COUNTY, FLORIDA DE-TRAFFIC

File Name: 195 SBR @ Taylor Site Code: 00000002 Start Date: 5/8/2008 Page No: 2

	Int. Total			2813		732	0.961						3866		1107	0.873			
	App. Total			1174		367		•	367	0.800			1206		291			323	0.933
r Rd ound	ᄩ			20	12.8	88			89				8	9.9	18			15	
Taylor Rd Eastbound	Thru			1024	87.2	329			359				1126	93.4	273			308	
	Left			0	0.0	0		08:30 AM	0				0	0.0	0		05:00 PM	0	
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A xound	Œ	•		٥	0.0	0			0				0	0.0	0			0	
Northbound	Thr			0	0.0	0		_	0				0	0.0	0			0	
	Left			0	0.0	0		6:45:00 AN	0				0	0.0	0			0	
	Right App. Total			1089		239			296	0.920			1302		404	_		404	0.806
P.P.d pend	Right	•		0	0.0	0			0				0	0.0	0			o	
Taylor Rd Westbound	Thru			961	88.2	203			263				1071	82.3	338			338	
	Left			128	11.8	36		07:45 AM	33				231	17.7	99		05:15 PM	99	
	App. Total			550	,	126		•	157	0.876			1358		412			412	0.824
Ramps ound	Ħ	eak 1 of 1		53	22.4	32			52		eak 1 of 1		327	26.3	100			100	
I-95 SB Ramps Southbound	Thru	:00 AM - P		0	0.0	0			0		:00 PM - P		0	0.0	0			0	
	Left	0 AM to 09	07:45 AM	427	77.6	94		07:45 AM	132		0 PM to 06:	05:00 PM	1001	73.7	312		05:15 PM	312	
	Start Time	Peak Hour From 07:00 AM to 09:00 AM - Peak 1 of 1	Intersection 07:45 AM	Volume	Percent	08:30 Volume	Peak Factor	High Int.	Volume	Peak Factor	Peak Hour From 04:00 PM to 06:00 PM - Peak 1 of 1	Intersection 05:00 PM	Volume	Percent	05:15 Volume	Peak Factor	High Int.	Volume	Peak Factor

DE-TRAFFIC WWW.DE-TRAFFIC.COM I-95 SB RAMPS AT TAYLOR RD VOLUSIA COUNTY, FLORIDA

File Name: 195 SBR @ Taylor Site Code: 000000002 Start Date: 5/8/2008 Page No: 3

			Int. Total		22	ผ	8	52	91	22	2	83	19	82	15	50	5	20	2	19	20	8	20	79		325	
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-	r Rd	ŀ	Right A	1.0	Đ	-	-	0	73	0	0	0		_	0	0	0	0	0	0	<b>,</b>	0	0	<b></b>		4.0	- F - S
) D	Taylor Rd	Eastbound	흔	1.0	6	F	10	12	42	o	- α	ထ	œ	8	ເນ	7	00	∞	28	7	∞	တ	80	32		55. 55.	41.5
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	1-95 SB Ramps	Southbound	Thru	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Q		00	0.0
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DE-TRAFFIC WWW.DE-TRAFFIC.COM I-95 SB RAMPS AT TAYLOR RD VOLUSIA COUNTY, FLORIDA

File Name : 1 95 SBR @ Taylor Site Code : 00000002 Start Date : 5/8/2008 Page No : 4

				Int. Total		ď	>	
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		Ramps	puno	Right	1.0	•	5	0.0
		I-95 SB Ramps	Southbound	Thru	1.0	•	0	0.0
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				Start Time	Factor	ŀ	Grand fotal	Apprch % Total %

# **APPENDIX B**

## **EXISTING SIGNAL TIMINGS**

VOLUSIA COUNTY TRA ENGINEERING SYSTEM WW. JRY

TD# 192 NTERSECTION NO.: LOCATION DUNIANTEN AVE & TAYLOR P.D. SYSTEM NO. 23

વ્ × 1 3 X LOCK ķ ž 7 23 FOW M WALK E-C. MAXII MAXI 2 20 Ç 53 Ž, GLR 4 Ŋ 44 CONTROLLER TIME CHART EXT M 7 Z 15 Ŋ MVMNT

4-11-07 DATE DEBIONED BY C. LESTER

Volusia County

COORDINATION	NOT.					ĵ				ĺ		Ī	L	l	ŀ
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VOLUSIA COUNTY TRU SINGINEERING SYSTEM IN ARY

TD#21

MIERSECTION NO.: g M LOCATION: DUNLANTON PYE, TAYLOR \$ I-95 SB RAMP SYSTEM NO.

REC FLASH ١ 94 KIE 315 MAKE MAXIE WALK FOW LOCK 7 Ŋζ Ŋ Ŋ 9 8 60 40 MYMNT MEN EXT CLR A.P. U. ĸ **4** 4.5 4.5 4.5 CONTROLLER TIME CHART M M 30 ત્ર M

11-14-07 PATE

DESIGNATION OF LESTER

Volusia County

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VOLUSIA COUNTY TRV ENGINEERING SYSTEM IN JRY

T0# 977

**%** INTERSECTION NO.: LOCATION: WILLIAMSON BLUD & TAYLOR RD, SYSTEMNO. 23

CONTROLLER TIME CHART
MYMMT MIN EXT CO

ď Δĺ ď **₹**/\$ XIN LOCK ž ķ 7 35 NL 1 20 30 Ē 83 KAX B WALK ~ 1 1 5 38 38 21 30 3 25 R Œ R G.R. 4 4 4 4 MW M M n M 9 Q b ø,

10-11-60

DATE

DESIGNED BY: GLESTER

Volusia County

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COORDINATION	NO.											•	NO.	Ġ	1
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VOLUSIA COUNTY TRAF"" ENGINEERING SYSTER IN RY

TA \* 417 バ ... INTERSECTION NO.: LOCATION: DUNLAWION & I-15 NB RAMP SYSTEMNO: 23

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80-60-40 OATE:

B.LESTER DESIGNED BY:

Volusia County

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# **APPENDIX C**

# SYNCHRO & SIMTRAFFIC PRINTOUTS (Existing Volumes)

## EXISTING VOLUMES AND EXISTING GEOMETRY



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No. 18 (No.	W <sup>1</sup>	ii	5.84	·	N.	1 1			- 1	• • •		
Lane Configurations	À	<b>1</b> 1	,	7	<b>*</b>	7	- 1	<u></u>	7	ሻ	<b>†</b>	7
Volume (vph)	146	544	112.	546	817	171	107	339	349	314	507	178
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.0		5.0	6.0	6.0	6.0	<b>46.0</b>	6.0	5.0	6.02	6.0
Lane Util. Factor	1.00	0.95		1.00	*0.83	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fit is a second of the second	1.00	- 0.97		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Fit Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prof)	1719	3477		1787	3123	1568	1770	1863:	1599	1787	1881	1599
Fit Permitted	0.10	1.00		0.21	1.00	1.00	0.33	1.00	1.00	0.27	1.00	1.00
Satd, Flow (perm)	176	-3477		398	3123.	: 1568	609	1863	. 1599	500	1881.	1599
Peak-hour factor, PHF	0.91	0.91	0.91	0.93	0.93	0.93	0.91	0.91	0.91	0.90	0.90	0.90
Adj. Flow (vph)	160	598	123	587	878	184	118	373	384	349	· 563 <sub>3</sub>	198
RTOR Reduction (vph)	0	12	0	0	0	85	0	0	224	0	0	130
Lane Group Flow (vph)	160	709	1172 Oc.	587.	878	× 99	118	373		349.	563	- 68
Heavy Vehicles (%)	5%	1%	2%	1%	1%	3%	2%	2%	1%	1%	1%	1%
Tum Type	pm+pt	150	**2	pm+pt		Perm	Perm		Pérm	pm+pt		custom
Protected Phases	5	2		1	6			8		7	4	
Permitted Phases	2			6	order sy.	** 6 *	8	13 50	<b>*** 8</b> ***	4		6
Actuated Green, G (s)	<del>6</del> 0.0	46.0		64.0	48.0	48.0	43.0	43.0	43.0	61.0	61.0	48.0
Effective Green, g (s)	60.0	46.0		. 64.0	48.0	48.0	43.0		43.0	61.0	61.0	48.0
Actuated g/C Ratio	0.43	0.33	, ,,	0.46	0.34	0.34	0.31	0.31	0.31	0.44	0.44	0.34
Clearance Time (s)	5.0	6.0	Addition of the	5.0	6.0	6.0	6.0	6.0	6.0	5.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	230	1142		341	1071	538	187	572	491	337	820	548
v/s Ratio Prot	0.07	0.20		c0.20	0.28			0.20	.,,	c0.10	0.30	
vis Ratio Perm	0.23	griff -	·. *:	c0.59	St. Life Colf.	0.06	0.19		0.10	c0.35		
v/c Ratio	0.70	0.62		1.72	0.82	0.18	0.63	0.65	0.32	1.04	0.69	0.12
Uniform Delay, d1	29.9	39.6		31.1	42.0	32.3	41.7	42.0	37.3	37.1	318	31.6
Progression Factor	1.00	1.00	3-354	1.80	0.85	1.56	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	8.8	<b>-/ 2.5</b>	3 <b>8</b> 8	334.5	5.8	0.8	15.1	5.7	1.8	58.5	2,4	0.5
Delay (s)	38.8	42.2	>	390.4	41.5	51.0	56.8	47.7	39.1	95.7	34.2	32.0
Level of Service	D	* D	. 40	ini.£.	D	<b>D</b>	* - <b>E</b>	D	D	F	G	C
Approach Delay (s)		41.6		production and the	166.8		7.	45.1			53.1	
Approach LOS		D		- An	<b></b> .	řite.	· ·	D	. <sup>14</sup> a		D	
14585225030 See												
HCM Average Control Dela	ÿ 🗔		90.8	HC	M Level	of Service	ê	n n	∵" F"	77 8		,.
HCM Volume to Capacity r			1.32						<del>.</del>			
Actuated Cycle Length (s)	* * * * * * * * * * * * * * * * * * *		140.0	Su	m of lost	time (s)	f		10.0			
Intersection Capacity Utiliza	ation		102.4%			of Service			G			
Analysis Period (min)			15	14 1 1 1 1 T	: 2		1 - 21				1. 1	
c Critical Lane Group											,	

	۶	<b>→</b>	•	•	<b>←</b>	•	•	†	1	<b>\</b>	<b>↓</b>	4
J. 1844.	1	1111	(44)		. 2	1. P	17	<u> </u>		1.3	A Ž	10.16
Lane Configurations		444	7	ሻ	<b>^</b>					77	. * .*	7
Volume (vph)			83	240	1162	· · · · · · · · · · · · · · · · · · ·	0	: 1 · 0	0	999	. 0	141
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.5	4.0	5.5	6.5		m danis			5.5	×1 4 1	5,5
Lane Util. Factor	wanwie	0.91	1.00	1.00	0.95	*:		A \$11.1.10	*: "-	0.97		1.00
Frt *******		1.00	0.85	1.00	1.00	(1)				1.00	gr i'	0.85
Flt Protected		1.00	1.00	0.95	1.00	•				0.95		1.00
Satd, Flow (prot)	pu tuhinda dap	5036	1599	1787	3505					3467	angiri og Sk Skart (1951	1599
Flt Permitted		1.00	1.00	0.95	1.00					0.95		1.00
Said, Flow (perm)	>	5036	1599	1787	3505			4 .		3467		1599
Peak-hour factor, PHF	0.25	0.91	0.77	0.77	0.79	0.25	0.25	0.25	0.25	0.80	0.25	0.88
Adj. Flow (vph)	<b>0</b> ••	1234	108	312	1471	0	0	0	0.	1249 -	0	160
RTOR Reduction (vph)	0	0	0	0	0	0	0	Ö	0	0	0	~~~ <u>~</u> 0
Lane Group Flow (yph)	0	1234	108	312	1471	0.	0	<b>0</b> .	0	1249	0	160
Heavy Vehicles (%)	0%	3%	1%	1%	3%	0%	0%	0%	0%	1%	0%	1%
Turn Type	11 A N. 4	7.	'Free	Prot	250:		Service 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		200	Prot		custom
Protected Phases		6		5	2					8		
Permitted Phases			Free	Maria Indian	· · · · · · · · · · · · · · · · · · ·		ey n. F n. G. S de y		443	i va interp		8
Actuated Green, G (s)		47.1	140.0	29.3	81.9					46.1		46.1
Effective Green, g (s)	.P	47.1	140.0	29.3	81.9	ne sit metr Regaringspr			l de la constant de l	46.1	are zeg ≋eeg K.V.	46.1
Actuated g/C Ratio	y	0.34	1.00	0.21	0.59					0.33		0.33
Clearance Time (s)	1 ( 1 ( 1 ( 1 ( 1 ( 1 ( 1 ( 1 ( 1 ( 1 (	6.5	: .	5.5	6.5	. O Green ik kirki u sinaliri k	age woods	gir → Salar Salar		5.5	a la seli s	5.5
Vehicle Extension (s)		3.0		3.0	3.0		· · ·-			3.0		3.0
Lane Grp Cap (vph)		1694	1699	374		i.	er seeming d	alla filosofie en pro- la filosofie en pro- de al filosofie en pro-	· · · · · · · · · · · · · · · · · · ·	1142	• •	527
v/s Ratio Prot		0.25		c0.17	c0.42					c0.36		
v/s Ratio Perm			0.07	. il . iivoudolik.	,				grand (Fr			0.10
v/c Ratio		0.73	0.07	0.83	0.72					1.09		0.30
Uniform Delay, d1		40.8	0.0	53.0	20.8				14.	47.0		35.0
Progression Factor		0.93	1.00	1.28	0.99		65 au - 50			1.00		1.00
Incremental Delay, d2	k. 1745.2	2.0	0,1	117	1.7	باري. " بايد				56.0		0.3
Delay (s)	*· ·	39.9	0.1	79.4	22.2					103.0		35.3
Level of Service		D	A	<b>.</b>	C,					₽		Ď
Approach Delay (s)		36.7			32.2			0.0			95.3	
Approach LOS		Ð			Ç			Α	\$		F	
Seria asus												
HCM Average Control Delay	334). 34 8		53.1	H	CM Lev	el of Servic	è	·	Ð	1. 4.		
HCM Volume to Capacity ratio			0.86	•			=,		_			
Actuated Cycle Length (s)		. :	140.0	S	um of lo	st time (s)		:	11.0			
Intersection Capacity Utilization	on		78.1%			of Service			D			
Analysis Period (min)		:	15		,				_			
c Critical Lane Group												

	•	<b>→</b>	•	•	<b>←</b>	•	4	<b>†</b>	<b>/</b>	<b>\</b>	<b>↓</b>	1
Alpha grant	:::	17,650			4.5		- 4			:	*	5.5.
Lane Configurations	1/1/	<del>1</del> 11			<b>^</b> ^	7	7		##			
Volume (vph)	173	1949	0	- 2 <b>0</b>	1359	569	43	0		0	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5			5.5	4.0	5,5	40-10-40 1	5.5	· · · · · · · · · · · ·	ary s	* 4.
Lane Util. Factor	0.97	0.91			0.95	1.00	1.00		0.88			
Frt	1,00	1.00	SA Min in . Un liv		1.00	0.85	1.00		0.85	ew ak	norden Granden Granden	
Flt Protected	0.95	1.00			1.00	1.00	0.95		1.00			
Satd: Flow (prot)	3467	5085	#164. # #854. #		3539	1583	1687	1. 1.8	2787		States 1 may 1	
Flt Permitted	0.95	1.00			1.00	1.00	0.95		1.00			
Setd. Flow (perm)	3467	5085			3539	1583:	1687	** 19: 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	2787		Ale de la constant	
Peak-hour factor, PHF	0.74	0.92	0.92	0.92	0.83	0.91	0.85	0.92	0.73	0.92	0.92	0.92
Adj. Flow (yph)	234	2118	0.	0	1637	625	51	. 0	275	. * O*:	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	Ō	0
Lane Group Flow (vph)	234	2118	<b>0</b>	.0	1637	625	54	0	275		163 <b>0</b>	* <b>0</b>
Heavy Vehicles (%)	1%	2%	0%	0%	2%	2%	7%	0%	2%	0%	0%	0%
Tum Type	Prot	otra (Avis-Ara 1881) in Salas		Trickes (1)	. i ni	Free	Prot		custom	y.		0.00
Protected Phases	5	2			6		8		4		, , .	•
Permitted Phases			A Same de Same again des		dani.	Free	The right being	***	A STATE OF THE STA			
Actuated Green, G (s)	14.5	110.0			90.0	140.0	19.0		19.0			
Effective Green, g (s)	14.5	110,0	15 m 16 m 19		90.0	140.0	19.0		19.0	***	. :	44
Actuated g/C Ratio	0.10	0.79			0.64	1.00	0.14		0.14			
Clearance Time (s)	5.5	5.5	n den di ini	t in & Williams Other research	5.5		5.5	n producer Significant	5.5			1.00
Vehicle Extension (s)	3.0	3.0			3.0		3.0		3.0			
Lane Grp Cap (vph)	359	3995	n de la companya de La companya de la co		2275	1583	229	8 de la della capi Combo de la combo La de Clonge	378		6 1	4 . 7
v/s Ratio Prot	c0.07	0.42			c0.46		0.03		c0.10			
vis Ratio Perm	1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -			in nggarani Sandini Sandini		0.39	ra Transper ra Tabellari ri in rake		. 4			A
v/c Ratio	0.65	0.53			0.72	0.39	0.22		0.73			
Uniform Delay, d1	60.3	5.5	2 (4 (1) (4) (4) (4) (4) (4) (4) (4) (4) (4) (4	tank .mwrm	16,6	0.0	53.9		58.0			
Progression Factor	1.56	0.95			1.25	1.00	1.00		1.00			
Incremental Delay, d2	2.9	0.2			1.7	0.6	0.5		6.8			
Delay (s)	97.0	5.4			22.5	0.6	54.4		64.9			
Level of Service	et eta eta eta eta eta eta eta eta eta e	A	:	1500	C	<b>. A</b>	, <b>D</b> ,		E			
Approach Delay (s)		14.5			16.5			63.2			0.0	
Approach LOS		В		4 4 2 3 4	В			: <b>E</b>			A	•
HCM Average Control Di	elav		18.6	H	M eve	of Servic	<b>A</b>		В			
HCM Volume to Capacity			0.71	1.2. 1.3.	an reid	. OF OCITIO	Y 770 a 10	•	ט			
Actuated Cycle Length (s			140.0	Sn.	im of los	t time (s)	1		16.5			
Intersection Capacity Util			78.1%			of Service			10.5 D			
Analysis Period (min)	and MULT		15	10	- LUTUI 1	or oor kine		er i se	D			
c Critical Lane Group			10			÷		,				

	<b>†</b>	r	4	ļ	€	*	
	÷		1 302	1997	18.31	(4 <b>)</b> }	
Lane Configurations	<u>ት</u>	7	7	<u>ት</u>	لولو	ř	<u> Alberto Maria III. In il in </u>
	1649	501	151	1514	414		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	7.0	4.0	5.0	7.0	5.0	<b>5.0</b>	And the second s
Lane Util. Factor	0.91	1.00	1.00	0.91	0.97	1.00	•
	1.00	0.85	2 67	1.00	1.00	0.85	en en karañ en
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00	
Satd. Flow (prot)	4988	1583	1671	5036	3467	1455	
Fit Permitted	1.00	1.00	0.95	1.00	0.95	1.00	in interpretable and the second of the secon
Sald: Flow (perm)	4988	1583	1671	5036	3467		The second secon
Peak-hour factor, PHF	0.91	0.79	0.84	0.87	0.83	0.88	
Adj. Flow (vph)	1812	634	180	1740	499		Baran Araban
RTOR Reduction (vph)	0	0	0	0	0	94	entral de la companya
Lane Group Flow (vph)	1812	634	17	1740	499	21	THE PROPERTY OF THE PROPERTY O
Heavy Vehicles (%)	4%	2%	8%	3%	1%	11%	
Turn Type		Free	Prot			custom	
Protected Phases	6	_	5	2	. 7	4	mana and the same
Permitted Phases	77.4	Free	00.0	400.0	05.7	05.7	A Company of the Comp
Actuated Green, G (s) Effective Green, g (s)	77.1 77.1	140.0	20.2	102.3	25.7 25.7	25.7	e aka jeje
Actuated g/C Ratio	0.55	140.0 1.00	20,2 0.14	102.3 0.73	0.18	25.7 0.18	
Clearance Time (s)	7.0	1.00	5.0	7.0	5.0		(1) (1) (1) (1) (1) (1) (1) (1) (1) (1)
Vehicle Extension (s)	3.0	.:	3.0	3.0	3.0	3.0	and the second of the second o
	2747	1583	21	3680	636		A SECTION OF THE SECT
v/s Ratio Prot	c0.36	1303	c0.11	0.35	c0.14	0.01	
v/s Ratio Perm		0.40	00.11	0.55		0.01	en de la companya de La companya de la co
v/c Ratio	0.66	0.40	0.75	0.47	0.78	0.08	en e
Uniform Delay, d1	22.2	0.0	57.4	7.8	54.5	47.0	and and the second seco
Progression Factor	1.20	1.00	1.00	1.00	1.00	1.00	ii ia i
Incremental Delay, d2	1.1	0.7	11.9	0.4	6,3	0.1	the second
Delay (s)	27.7	0.7	69.3	8.2	60.8	47.5	···
Level of Service	C	A	E	A	E	D	
Approach Delay (s)	20.7			13.9	58.3		
Approach LOS	C.			В	E		
191600000000000000000000000000000000000						:	
HCM Average Control Delay	No. 200	•	22.7	1	ICM Lov	el of Servi	Ce C
HCM Volume to Capacity ratio	" . "		0.70	£	POSTAL POAR	er ér Octivi	<b>ve</b> , <b>, u</b>
Actuated Cycle Length (s)			140.0	.9	ium of lo	st time (s)	(%) (**) (**) (**) (**) (**) (**)
Intersection Capacity Utilization	1		66.2%			of Service	
Analysis Period (min)	-		46				
c Critical Lane Group			. <del></del>				And the second s



	٠	<b>→</b>	•	<b>←</b>	•	1	<b>†</b>	<b>/</b>	<b>/</b>	<b>+</b>	∢
	N.,			345	. (/k/	<u> </u>		No. 10 No. 2 No. 20 No. 1	* . 5	2.57	. 4
Lane Group Flow (vph)	160	721	587	878	184	118	373	384	349	563	198
v/c Ratio	0.70	0.62	1.71	0.82	0.30	0.63	0.65	0.54	1.02	0.69	0.29
Control Delay	42.7	41.5	360.1	42.2	19.5	58.9	48.4	10.1	86.5	37.1	5.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.7	41.5	360.1	42.2	19.5	58.9	48.4	10.1	86.5	37.1	5.7
Queue Length 50th (ft)	84	284	<del>~</del> 589	392	85	93	295	39	~226	408	<b>100</b>
Queue Length 95th (ft)	153	354	#784	490	383	#173	410	134	#443	546	58
Internal Link Dist (ft)		1569	re Saalus s	280	11.70		2748	in the first		1756	i pri della di
Turn Bay Length (ft)						300		300	240		750
Base Capacity (vph)	405	- 1154	343	1072	623	187	572	716	341	820	678
Starvation Cap Reductn	0	0	0	0	0	0	0	0	O	0	``o ‴
Spillback Cap Reductn	0	0	O.	<b></b>	.0	0	0	. 0	0	0	0.0
Storage Cap Reductn	0	0	0	0	Ó	Ō	0	0	0	0	0
Reduced v/c Ratio	0.40	0.62	171	0.82	0.30	0.63	0.65	0,54	1.02	-0.69	0.29

Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

<sup># 95</sup>th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

		•	1	-	-	✓	
		N. J		3(.)	7. Y 2. S. Es		
Lane Group Flow (vph)	1234	108	312	1471	1249	160	
v/c Ratio	0.73	0.07	0.84	0.72	1.09	0.30	20 SQ
Control Delay	40.2	0.1	82.5	22.0	99.5	38.6	
Queue Delay	0.0	• Q.O	0.0	0.8	0.0		100
Total Delay	40.2	0.1	82.5	22.8	99.5	38.6	
Queue Length 50th (ft)	393	. 0	284	255	-666	109	
Queue Length 95th (ft)	m415	m0	302	478	#726	180	
	273			477			i .
Turn Bay Length (ft)		100					
Base Capacity (vph)	1695	1599	466	2216	. 1142		ive: Tr
Starvation Cap Reductn	0	0	0	409	0	0	
Spillback Cap Reductn	<u> </u>	1 <b>1</b> 0	0	.0	0.		Apple 1
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.73	0.07	0.67	0.81	1.09	~0.30	ast, Egir serio

Volume exceeds capacity queue is theoretically infinite:

Queue shown is maximum after two cycles.

<sup># 95</sup>th 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.

	<i>&gt;</i>	<b>→</b>	<b>—</b>	•	4	<b>/</b>	
1888 Fr. 220 Commence of the C	22.5	1.	. : '	.42.4		1111	
Lane Group Flow (vph)	234	2118	1637	625	51	275	- · · · · · · · · · · · · · · · · · · ·
v/c Ratio	0.65	0.53	0.72	0.39	0.22	0.73	A STATE OF THE STA
Control Delay	99.7	5.8	24.3	0.6	54.7	69.0	
Queue Delay	0.0	- 0.2	0.2	0.0	0.2	0.0	And the second s
Total Delay	99.7	6.0	24.5	0.6	55.0	69.0	
Queue Length 50th (ft)	116	~ 210	613	0	42	138	
Queue Length 95th (ft)	119	m13	696	0	76	146	
Internal Link Dist (ft)		477	553			# 1 (# 2 )	「「「」」「「」」「American Control of the
Turn Bay Length (ft)	650		~		330	330	
Base Capacity (vph)	399	3994	2274	1583	319	528	The state of the s
Starvation Cap Reductri	0	909	118	0	0	0	
Spillback Cap Reductn	0.	195	77	0 0	63	0 ′	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.59	0.69	-0.76	0.39	0.20	0.52	が、Time To Conference

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

### 3: SR 421 & Taylor Branch Rd.

	†	r <sup>a</sup>	Ļ	ļ	€	*		•
.3554 (5-60 )			<u> </u>	22				
Lane Group Flow (vph)	1812	634	180	1740	499	1 <b>1</b> 5		•••
v/c Ratio	0.66	0.40	0.75	0.47	0.78	0.32	Programme Services	200
Control Delay	29.9	0.7	75.4	8.7	63.3	9.9		
Queue Delay	0.1	0.0	0.0	0.1	0.0	0.0		
Total Delay	<b>30</b> .0	0.7	75.4	8.7	63.3	9.9		
Queue Length 50th (ft)	421	0	159	213	226	0		
Queue Length 95th (ft)	643	0	213	276	247	48	7. 7.1.14	
Internal Link Dist (ft)	553			1593	262	14. 30 July 18.		and the second
Turn Bay Length (ft)		200	250		500			
Base Capacity (vph)	2744	1583	313	3678	991	498	Angelon San Angelo	
Starvation Cap Reductn	209	0	0	0	0	0		
Spillback Cap Reductn	a, : 10	0.	0	473	0	0	· 1885年 - 18854 - 1885年 - 18854 - 1885年 - 18854 - 1885年 - 18854 - 1885年 - 18854 - 1885年 - 18854 - 188	
Storage Cap Reductn	. 0	0	0	D	0	0		
Reduced v/c Ratio	0.71	0.40	0.58	0.54	0:50	0.23	A Company of the Comp	
D818201 \$10 (A)			<u> </u>		· · · .			



#### Summary of All Intervals

287			
End Time	7:15	· -	
Total Time (min)	20		
Time Recorded (min)	15		
# of Intervals	2		
# of Recorded Intvls	1		
Vehs Entered	1684		
Vehs Exited	1381		
Starting Vehs	281		
Ending Vehs	584		
Denied Entry Before	6		
Denied Entry After	60		
Travel Distance (mi)	1451		
Travel Time (hr)	109.5		
Total Delay (hr)	68.4		
Total Stops	3113		
Fuel Used (gal)	624.5		

#### Interval #0 Information Seeding

Start Time 6:55
End Time 7:00
Total Time (min) 5
Volumes adjusted by Growth Factors.
No data recorded this interval.

#### Interval #1 Information Recording

Start Time	7:00
End Time	7:15
Total Time (min)	15
Volumes adjusted by Growth	Factors.

Vehs Exited	1381
Starting Vehs	281
Ending Vehs	584
Denied Entry Before	6
Denied Entry After	60
Travel Distance (mi)	1451
Travel Time (hr)	109.5
Total Delay (hr)	68.4
Total Stops	3113
Fuel Used (gal)	624.5

#### 1: SR 421 & Williamson Blvd Performance by movement

No estate	45			l Page	197	. 185	Maria La maria	3.41	i prije	λ£	#H	ng Sal
Total Delay (hr)	0.3	2.0	0.4	4.2	2.5	0.3	0.7	1.3	0.5	2.1	1.8	0.3
Delay / Veh (s)	26.0	54.8	50.0	171.8	75.1	18.6	78.3	50.4	16.6	94.2	50.9	21.8
Stop Delay (hr)	0.3	1.6	0.4	3.9	2.1	0.3	0.6	1.0	0.3	1.8	1.3	0.3
St Del/Veh (s)	23.4	44.3	45.3	160.8	64.3	17.5	68.9	40.0	10.3	79.1	36.7	16.3
Total Stops	28	116	27	197	105	43	34	70	68	146	129	47
Stop/Veh	0.70	0.89	0.93	2.24	0.89	0.78	1.06	0.78	0.67	1.80	1.03	0.84
Travel Dist (mi)	11.6	41.0	9.0	8.1	11.0	5.5	15.7	47.8	53.1	29.0	43.9	18.1
Travel Time (hr)	0.6	2.9	0.7	4.5	2.7	0.5	1.2	2.6	2.1	3.0	3.0	0.9
Avg Speed (mph)	19	14	14	2	4	10	14	18	26	10	15	20
Vehicles Entered	39	135	30	92	119	57	30	88	102	89	132	52
Vehicles Exited	40	127	28	85	118	54	33	91	101	74	118	59
Hourly Exit Rate	160	508	112	340	472	216	132	364	404	296	472	236
Input Volume	146	544	112	546	819	171	107	339	349	314	507	178
% of Volume	110	93	100	62	58	126	123	107	116	94	93	133
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

#### 1: SR 421 & Williamson Blvd Performance by movement

SOUTH TO THE	1
Total Delay (hr)	1 <del>6</del> .3
Delay / Veh (s)	62.0
Stop Delay (hr)	13.8
St Del/Veh (s)	52.3
Total Stops	1010
Stop/Veh	1.07
Travel Dist (mi)	293.7
Travel Time (hr)	24.8
Avg Speed (mph)	12
Vehicles Entered	965
Vehicles Exited	928
Hourly Exit Rate	3712
Input Volume	4132
% of Volume	90
Denied Entry Before	0
Denied Entry After	0

#### 3: SR 421 & Taylor Branch Rd. Performance by movement

	11 July 1		19 14 18 74	25.70	e n f	. dei	١.
Total Delay (hr)	3.0	0.4	1.3	2.6	2.1	0.1	9.5
Delay / Veh (s)	32.2	14.1	121.0	24.7	58.8	7.1	33.7
Stop Delay (hr)	2.2	0.2	1.3	1.8	1.9	0.1	7.5
St Del/Veh (s)	23.8	5.2	114.1	17.3	54.8	7.0	26.4
Total Stops	226	23	46	198	113	25	631
Stop/Veh	0.67	0.21	1.15	0.53	88.0	0.86	0.62
Travel Dist (mi)	37.9	11.0	14.1	120.8	6.8	1.6	192.2
Travel Time (hr)	4.0	0.8	1.7	5.3	2.4	0.1	14.3
Avg Speed (mph)	10	14	9	23	3	12	14
Vehicles Entered	366	110	46	394	125	29	1070
Vehicles Exited	313	104	34	351	130	29	961
Hourly Exit Rate	1252	416	136	1404	520	116	3844
Input Volume	1682	501	147	1629	446	98	4503
% of Volume	74	83	93	86	117	118	85
Denied Entry Before	0	0	1	2	0	0	3
Denied Entry After	2	0	0	1	0	0	3

#### 17: SR 421 & I-95 NB Ramps Performance by movement

Adams.	151			31.2%	· 🛔		
Total Delay (hr)	0.6	1.1	3.1	0.3	0.1	1.1	6.4
Delay / Veh (s)	75.2	9.8	34.1	7.0	51.5	68.6	23.5
Stop Delay (hr)	0.6	0.4	2.1	0.0	0.1	1.1	4.3
St Del/Veh (s)	71.4	3.7	23.1	0.1	47.8	65.5	15.9
Total Stops	24	95	215	0	7	56	397
Stop/Veh	0.83	0.23	0.66	0.00	0.88	0.93	0.41
Travel Dist (mi)	2.8	46.2	36.8	10.9	2.5	16.3	115.5
Travel Time (hr)	0.7	2.4	4.1	0.6	0.2	1.6	9.6
Avg Speed (mph)	4	19	9	18	15	10	12
Vehicles Entered	26	412	341	140	9	59	987
Vehicles Exited	31	412	316	136	8	60	963
Hourly Exit Rate	124	1648	1264	544	32	240	3852
Input Volume	173	1952	1506	569	43	201	4444
% of Volume	72	84	84	96	74	119	87
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

#### 18: SR 421 & I-95 SB Ramps Performance by movement

A STATE OF THE STA		18 19 14 1 1 40 14 14 1	. W.			4:23 4:33	1 BA	
Total Delay (hr)	2.0	0.0	1.0	5.6	5.1	0.0	1.5	15.2
Delay / Veh (s)	25.7	7.1	75.1	90.6	108.4	18.7	200.2	71.9
Stop Delay (hr)	1.6	0.0	0.9	4.8	4.9	0.0	1.5	13.7
St Del/Veh (s)	20.5	3.7	68.3	76.9	105.2	14.7	197.3	64.7
Total Stops	130	3	39	300	78	1	21	572
Stop/Veh	0.47	0.17	0.81	1.34	0.46	1.00	0.78	0.75
Travel Dist (mi)	18.0	1.0	4.9	24.2	5.7	0.0	1.0	54.7
Travel Time (hr)	2.4	0.1	1.2	6.2	5.4	0.0	1.6	16.7
Avg Speed (mph)	8	15	4	4	2	5	1	4
Vehicles Entered	275	18	46	246	173	2	32	792
Vehicles Exited	273	18	50	202	166	1	23	733
Hourly Exit Rate	1092	72	200	808	664	4	92	2932
Input Volume	1124	83	240	1169	999	12	141	3768
% of Volume	97	87	83	69	66	33	65	78
Denied Entry Before	0	0	0	0	3	0	0	3
Denied Entry After	0	0	0	2	8	0	0	10

#### **Total Zone Performance**

Total Delay (hr)	47.4
Delay / Veh (s)	1059.2
Stop Delay (hr)	39.2
St Del/Veh (s)	876.7
Total Stops	2610
Stop/Veh	16.21
Travel Dist (mi)	656.1
Travel Time (hr)	65.3
Avg Speed (mph)	10
Vehicles Entered	939
Vehicles Exited	47
Hourly Exit Rate	188
Input Volume	16847
% of Volume	1
Denied Entry Before	6
Denied Entry After	13

#### Intersection: 1: SR 421 & Williamson Blvd

	`	:		ž.	4			
Movement(s) Served	WBL	EBTL	SBTL	EBL	WBTL	SBL	NBTL	
Maximum Green (s)	16.0	46.0	61.0	29.0	33.0	13.0	43.0	
Minimum Green (s)	5.0	10.0	6.0	5.0	10.0	5.0	6.0	
Recall	None	C-Min	None	None	C-Min	Nопе	Max	
Avg. Green (s)	16.0	43.6	63.4	13.4	46.0	15.4	43.0	
g/C Ratio	0.11	0.31	0.45	0.10	0.33	0.11	0.31	
Cycles Skipped (%)	0	0	0	0	0	0	0	
Cycles @ Minimum (%)	0	0	0	0	0	0	0	
Cycles Maxed Out (%)	100	100	100	0	100	100	100	
Cycles with Peds (%)	0	0	0	0	0	0	0	

Average Cycle Length (s): 140.0 Number of Complete Cycles: 6

Intersection: 3: SR 421 & Taylor Branch Rd.

vere			:		574 .	 
Movement(s) Served	SBT	NWR	SBL	NBT	NWL	
Maximum Green (s)	88.0	40.0	26.0	57.0	40.0	
Minimum Green (s)	15.0	6.0	5.0	15.0	6.0	
Recall	C-Min	None	None	C-Min	None	
Avg. Green (s)	103.4	31.4	20.1	78.3	31.4	
g/C Ratio	0.74	0.22	0.11	0.56	0.22	
Cycles Skipped (%)	0	0	25	0	0	
Cycles @ Minimum (%)	0	0	0	0	0	
Cycles Maxed Out (%)	100	20	13	100	20	
Cycles with Peds (%)	0	0	0	0	0	

Average Cycle Length (s): 140.0 Number of Complete Cycles: 5

#### Intersection: 17: SR 421 & I-95 NB Ramps

Movement(s) Served         EBT         NBR         EBL         WBT         NBL           Maximum Green (s)         102.5         26.5         15.5         81.5         26.5           Minimum Green (s)         20.0         12.0         8.0         20.0         12.0           Recall         C-Min         None         None         C-Min         None           Avg. Green (s)         119.0         19.8         10.9         102.6         19.8           g/C Ratio         0.85         0.14         0.07         0.73         0.14           Cycles Skipped (%)         0         0         14         0         0
Minimum Green (s)       20.0       12.0       8.0       20.0       12.0         Recall       C-Min       None       None       C-Min       None         Avg. Green (s)       119.0       19.8       10.9       102.6       19.8         g/C Ratio       0.85       0.14       0.07       0.73       0.14
Recall         C-Min         None         None         C-Min         None           Avg. Green (s)         119.0         19.8         10.9         102.6         19.8           g/C Ratio         0.85         0.14         0.07         0.73         0.14
Avg. Green (s) 119.0 19.8 10.9 102.6 19.8 g/C Ratio 0.85 0.14 0.07 0.73 0.14
g/C Ratio 0.85 0.14 0.07 0.73 0.14
Cycles Skipped (%) 0 0 14 0 0
Cycles @ Minimum (%) 0 20 14 0 20
Cycles Maxed Out (%) 100 20 0 100 20
Cycles with Peds (%) 0 0 0 0

Average Cycle Length (s): 140.0 Number of Complete Cycles: 5

#### Intersection: 18: SR 421 & I-95 SB Ramps

No.	11	į	ŧ		 	
Movement(s) Served	WBT	WBL	EBT	SBL		
Maximum Green (s)	88.5	36.5	46.5	39.5		
Minimum Green (s)	20.0	5.0	20.0	12.0		
Recall	C-Min	None	C-Min	None		
Avg. Green (s)	88.5	19.9	63.1	39.5		
g/C Ratio	0.63	0.14	0.45	0.28		
Cycles Skipped (%)	0	0	0	0		
Cycles @ Minimum (%)	0	0	0	0		
Cycles Maxed Out (%)	100	0	100	100		
Cycles with Peds (%)	0	0	0	0		

Average Cycle Length (s): 140.0 Number of Complete Cycles: 6



#### Summary of All Intervals

	- :		4				
Start Time	6:55	6:55	6:55	6:55	6:55	6:55	
End Time	7:15	7:15	7:15	7:15	7:15	7:15	
Total Time (min)	20	20	20	20	20	20	
Time Recorded (min)	15	15	15	15	15	15	
# of Intervals	2	2	2	2	2	2	
# of Recorded Intvls	1	1	1	1	1	1	
Vehs Entered	1552	1612	1606	1665	1581	1603	
Vehs Exited	1346	1261	1438	1361	1439	1370	
Starting Vehs	284	283	381	344	306	319	
Ending Vehs	490	634	549	648	448	558	
Denied Entry Before	4	1	2	5	0	1	
Denied Entry After	38	158	63	7	12	55	
Travel Distance (mi)	1368	1333	1395	1410	1408	1383	
Travel Time (hr)	93.6	123.9	108.7	115.6	93.0	0.0	
Total Delay (hr)	54.8	86.2	69.4	75.6	53.4	67.9	
Total Stops	2482	2830	2888	3584	2814	2919	
Fuel Used (gal)	571.6	625.9	614.5	628.1	586.1	605.2	

#### Interval #0 Information Seeding

Start Time 6:55
End Time 7:00
Total Time (min) 5
Volumes adjusted by Growth Factors.

No data recorded this interval.

#### Interval #1 Information Recording

Start Time 7:00 End Time 7:15 Total Time (min) 15 Volumes adjusted by Growth Factors.

		· · · · · · · · · · · · · · · · · · ·	3.1	<u> </u>	1	7. 7.
Vehs Entered	1552	1612	1606	1665	1581	1603
Vehs Exited	1346	1261	1438	1361	1439	1370
Starting Vehs	284	283	381	344	306	319
Ending Vehs	490	634	549	648	448	558
Denied Entry Before	4	1	2	5	0	1
Denied Entry After	38	158	63	7	12	55
Travel Distance (mi)	1368	1333	1395	1410	1408	1383
Travel Time (hr)	93.6	123.9	108.7	115.6	93.0	0.0
Total Delay (hr)	54.8	86.2	69.4	75.6	53.4	67.9
Total Stops	2482	2830	2888	3584	2814	2919
Fuel Used (gal)	571.6	625.9	614.5	628.1	586.1	605.2

#### **Total Zone Performance**

Total Delay (hr)	50.0	_	
Delay / Veh (s)	1332.2		
Stop Delay (hr)	42.2		
St Del/Veh (s)	1125.5		
Total Stops	2501		
Stop/Veh	18.53		
Travel Dist (mi)	618.4		
Travel Time (hr)	0.0		
Avg Speed (mph)	-597		
Vehicles Entered	925		
Vehicles Exited	43		
Hourly Exit Rate	172		
Input Volume	16847		
% of Volume	1		
Denied Entry Before	1		
Denied Entry After	5		

#### Intersection: 1: SR 421 & Williamson Blvd

人為實金					STARTS	edalija Pradali	12.25 12.25		4.35	10	NA.	.23
Directions Served	L	Т	TR	L	T	T	R	L	Т	R	L	Т
Maximum Queue (ft)	158	255	288	521	511	436	188	169	473	278	264	642
Average Queue (ft)	92	182	240	509	448	171	63	78	258	119	228	390
95th Queue (ft)	167	274	313	546	616	430	201	179	466	284	301	673
Link Distance (ft)	1599	159 <del>9</del>	1599	278	278	278	278		2766			1751
Upstream Blk Time (%)				82	4	0						
Queuing Penalty (veh)				316	15	0						
Storage Bay Dist (ft)								300		300	240	
Storage Blk Time (%)									4	0	21	11
Queuing Penalty (veh)									20	0	142	53

#### Intersection: 1: SR 421 & Williamson Blvd

Directions Served	R		
Maximum Queue (ft)	98		
Average Queue (ft)	56		
95th Queue (ft)	108		
Link Distance (ft)			
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	750		
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 3: SR 421 & Taylor Branch Rd.

	1/4		. ;	Q (g.	juži			3.5				141
Directions Served	T	T	Т	R	L	T	T	T	L	L	R	Т
Maximum Queue (ft)	461	464	497	180	252	729	734	711	222	233	282	263
Average Queue (ft)	243	241	276	69	158	246	260	213	157	192	148	128
95th Queue (ft)	503	508	551	229	273	642	647	601	239	264	349	462
Link Distance (ft)	512	512	512			1657	1657	1657			242	645
Upstream Blk Time (%)	-2	3	4						0	7	15	2
Queuing Penalty (veh)	18	21	27						0	0	0	0
Storage Bay Dist (ft)				200	250				500	500		
Storage Blk Time (%)			13	0	2	18			0	7	15	
Queuing Penalty (veh)			65	2	11	26			0	7	65	

Intersection: 17: SR 421 & I-95 NB Ramps

la Massi	74 E. 1. 1. 44 M.	11 12 1. 1 16	7.85	· · · · · · · · · · · · · · · · · · ·	-:: }	E		1.1	Ą.	12	Ĭ.
Directions Served	L	L	T	T	Т	1	T	R	L	R	R
Maximum Queue (ft)	255	258	125	130	220	587	572	210	100	157	163
Average Queue (ft)	135	128	42	47	72	316	358	30	41	89	101
95th Queue (ft)	272	284	118	138	191	655	651	231	92	163	168
Link Distance (ft)			491	491	491	512	512	512		1439	
Upstream Blk Time (%)					0	9	18	0			
Queuing Penalty (veh)					0	62	126	1			
Storage Bay Dist (ft)	650	650							330		330
Storage Blk Time (%)											
Queuing Penalty (veh)											

Intersection: 18: SR 421 & I-95 SB Ramps

:44549 E	1.4	÷.		734	agyl		. 1	1.46	1. 17
Directions Served	T	1	Т	L	Т	Ţ	L	L	R
Maximum Queue (ft)	228	215	302	578	538	540	192	197	193
Average Queue (ft)	133	142	190	368	427	425	184	190	155
95th Queue (ft)	231	233	298	687	647	626	222	201	229
Link Distance (ft)	130	130	130	491	491	491	54	54	54
Upstream Blk Time (%)	6	8	21	9	34	16	76	79	75
Queuing Penalty (veh)	25	30	83	44	158	77	287	297	281
Storage Bay Dist (ft)									
Storage Blk Time (%)			30						
Queuing Penalty (veh)			25						

Zone wide Queuing Penalty: 2284

Zone Summary

# Intersection: 1: SR 421 & Williamson Blvd

Movement(s) Served         WBL         EBTL         SBTL         EBL         WBTL         SBL         NBTL           Maximum Green (s)         16.0         46.0         61.0         29.0         33.0         13.0         43.0           Minimum Green (s)         5.0         10.0         6.0         5.0         10.0         5.0         6.0           Recall         None         C-Min         None         C-Min         None         C-Min         None         Max           Avg. Green (s)         16.0         42.6         64.4         16.1         44.8         15.2         44.3           g/C Ratio         0.11         0.30         0.46         0.10         0.32         0.11         0.32           Cycles Skipped (%)         0         0         0         14         0         0         0           Cycles Maxed Out (%)         100         100         100         0         100         83         100           Cycles with Parts (%)         0         0         0         0         0         0         0         0         0         0							1 🐔	
Minimum Green (s)         5.0         10.0         6.0         5.0         10.0         5.0         6.0           Recall         None         C-Min         None         None         C-Min         None         Max           Avg. Green (s)         16.0         42.6         64.4         16.1         44.8         15.2         44.3           g/C Ratio         0.11         0.30         0.46         0.10         0.32         0.11         0.32           Cycles Skipped (%)         0         0         0         14         0         0         0           Cycles @ Minimum (%)         0         0         0         0         0         0         0           Cycles Maxed Out (%)         100         100         100         0         100         83         100	Movement(s) Served	WBL	EBTL	SBTL	EBL	WBTL	SBL	NBTL
Recall         None         C-Min         None         C-Min         None         Max           Avg. Green (s)         16.0         42.6         64.4         16.1         44.8         15.2         44.3           g/C Ratio         0.11         0.30         0.46         0.10         0.32         0.11         0.32           Cycles Skipped (%)         0         0         0         14         0         0         0           Cycles @ Minimum (%)         0         0         0         0         0         0         0           Cycles Maxed Out (%)         100         100         100         0         100         83         100	Maximum Green (s)	16.0	46.0	61.0	29.0	33.0	13.0	43.0
Avg. Green (s)       16.0       42.6       64.4       16.1       44.8       15.2       44.3         g/C Ratio       0.11       0.30       0.46       0.10       0.32       0.11       0.32         Cycles Skipped (%)       0       0       0       14       0       0       0         Cycles @ Minimum (%)       0       0       0       0       0       0       0         Cycles Maxed Out (%)       100       100       100       0       100       83       100	Minimum Green (s)	5.0	10.0	6.0	5.0	10.0	5.0	6.0
g/C Ratio     0.11     0.30     0.46     0.10     0.32     0.11     0.32       Cycles Skipped (%)     0     0     0     14     0     0     0       Cycles @ Minimum (%)     0     0     0     0     0     0     0       Cycles Maxed Out (%)     100     100     100     0     100     83     100	Recall	None	C-Min	None	None	C-Min	None	Max
Cycles Skipped (%)         0         0         0         14         0         0         0           Cycles @ Minimum (%)         0         0         0         0         0         0         0           Cycles Maxed Out (%)         100         100         100         0         100         83         100	Avg. Green (s)	16.0	42.6	64.4	16.1	44.8	15.2	44.3
Cycles @ Minimum (%)         0         0         0         0         0         0         0           Cycles Maxed Out (%)         100         100         100         0         100         83         100	g/C Ratio	0.11	0.30	0.46	0.10	0.32	0.11	0.32
Cycles Maxed Out (%) 100 100 100 0 100 83 100	Cycles Skipped (%)	0	0	0	14	0	0	0
,	Cycles @ Minimum (%)	0	0	0	0	0	0	0
Cycles with Pade (%) 0 0 0 0 0 0	Cycles Maxed Out (%)	100	100	100	0	100	83	100
	Cycles with Peds (%)	0	0	0	0	0	0	0

Average Cycle Length (s): 140.0 Number of Complete Cycles: 6

Intersection: 3: SR 421 & Taylor Branch Rd.

1988	. ;	:	; ·	<u>.</u>		
Movement(s) Served	ŞBT	NWR	SBL	NBT	NWL	
Maximum Green (s)	88.0	40.0	26.0	57.0	40.0	
Minimum Green (s)	15.0	6.0	5.0	15.0	6.0	
Recall	C-Min	None	None	C-Min	None	
Avg. Green (s)	118.7	34.7	22.0	91.1	34.7	
g/C Ratio	0.85	0.25	0.16	0.65	0.25	
Cycles Skipped (%)	0	0	0	0	0	
Cycles @ Minimum (%)	0	0	0	0	0	
Cycles Maxed Out (%)	100	20	20	100	20	
Cycles with Peds (%)	0	0	0	0	0	
				··· · · ·		

Average Cycle Length (s): 140.0 Number of Complete Cycles: 5

# Intersection: 17: SR 421 & I-95 NB Ramps

		" ::	1	.5		:	
Movement(s) Served	EBT	NBR	EBL	WBT	NBL		
Maximum Green (s)	102.5	26.5	15.5	81.5	26.5		
Minimum Green (s)	20.0	12.0	8.0	20.0	12.0		
Recall	C-Min	None	None	C-Min	None		
Avg. Green (s)	114.2	23.1	13.7	95.0	23.1		
g/C Ratio	0.82	0.17	0.08	86.0	0.17		
Cycles Skipped (%)	0	0	14	0	0		
Cycles @ Minimum (%)	0	0	0	0	0		
Cycles Maxed Out (%)	100	40	29	100	40		
Cycles with Peds (%)	0	0	0	0	0		

Average Cycle Length (s): 140.0 Number of Complete Cycles: 5

# Intersection: 18: SR 421 & I-95 SB Ramps

/ 18g - 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		. j				 	
Movement(s) Served	WBT	WBL	EBT	SBL			
Maximum Green (s)	88.5	36.5	46.5	39.5			
Minimum Green (s)	20.0	5.0	20.0	12.0			
Recall	C-Min	None	C-Min	None			
Avg. Green (s)	88.7	24.7	60.5	39.7			
g/C Ratio	0.63	0.18	0.43	0.28			
Cycles Skipped (%)	0	0	0	0			
Cycles @ Minimum (%)	0	0	0	0			
Cycles Maxed Out (%)	100	0	100	83			
Cycles with Peds (%)	0	0	0	0			

Average Cycle Length (s): 140.0 Number of Complete Cycles: 6

# EXISTING VOLUMES AND COMMITTED GEOMETRY



	•	<b>→</b>	*	1	<b>—</b>	4	4	†	~	<u> </u>	<del> </del>	1
	27 S			ă.		11. 1			(1800) (1800)	4,1	; lb.'	8,874
Lane Configurations	14.14	ተተቱ		44	<b>^</b>	7	44	<u></u>	77	ሻሻ	41	
Volume (vph)	109		112	546	836	152	163	283	349	314	507	89
ldeal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.0		5,0	6.0	6.0	5.0	6.0	6.0	5.0	6.0	
Lane Util. Factor	0.97	0.91		0.97	*0.95	1.00	0.97	0.95	0.88	0.97	0.95	
Fit	1.00	0.97	e ne Tayle Na See Baker	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98	
Fit Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd, Flow (prot)	3335	4996	**************************************	3467	3574	1568	3433	3539	2814	3467	3494	· 483 #1.
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	3335	4996		3467	3574	1568	3433	3539	2814	3467	3494	is Esta
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)	117	585	120	587	899	163		304	375	338	545	
RTOR Reduction (vph)	0	24	0	0	0	78	0	0	307	0	12	Ö
Lane Group Flow (vph)	117	681	· 0.	587	899	85	175	304	68	338	629	:. j
Heavy Vehicles (%)	5%	1%	2%	1%	1%	3%	2%	2%	1%	1%	1%	1%
Tum Type	Prot			Prot		Perm	Prot	ALLEY TO THE	Perm	Prot		) - 17ti
Protected Phases	5	2		1	6		3	8	. 5	7	4	
Permitted Phases	anny in industry Mariana Ny Agistra mandra ny	History	· · · · · · · · · · · · · · · · · · ·	reconstruction region	3 1 4 1 10 3 1 4 1 1 10	s 6	\$ 8 1 1 8 11 S 11 1 18 18		8	,	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
Actuated Green, G (s)	10.3	36.8		37.9	64.4	64.4	11.7	25.4	25.4	17.9	31.6	
Effective Green, g (s)	10.3	36.8		37.9	64.4	64.4	11.7	25.4	25.4	17.9	31,6	
Actuated g/C Ratio	0.07	0.26		0.27	0.46	0.46	0.08	0.18	0.18	0.13	0.23	
Clearance Time (s)	5.0	6.0		5.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	245	1313		939	1644	721	287	642	511	443	789	
v/s Ratio Prot	0.04	0.14	: -%	c0.17	c0.25	2 79	0.05	0.09	. 1 <i>19</i> 7 7 7	c0.10	c0.18	
v/s Ratio Perm			e en	i tarana a. Lagana		0.05	.: .	a 1 2 .	0.02	1 4 4 4 4	*******	٠
v/c Ratio	0.48	0.52		0.63	0.55	0.12	0.61	0.47	0.13	0.76	0.80	
Uniform Delay, d1	62.3	44.0		44.8	27.3	21,6	61.9	51.3	48.1	59.0		
Progression Factor	1.00	1.00		1.40	0.49	2.12	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.5	1.5	\$ 1845	1.2	1.2	0,3	3.6	0.6	0.1	7.6	5.6	
Delay (s)	63.7	45.5		63.8	14.5	46.0	65.6	51.9	48.2	66.6	56.8	
Level of Service	Ε	"∴ <b>∦</b> D		Ε	В	D	E.	D	D	E	E	
Approach Delay (s)		48.1			35.1			53.1	•	***	60.2	
Approach LOS	1, 1, 1,	D			D	÷.		D			E	
		· .	: '									
HCM Average Control Dela	<b>3V</b>	1 7: *** . . : 3	46.9	. Не	M Level	of Service	è	***	Ď			
HCM Volume to Capacity r	atio		0.66				-		-			
Actuated Cycle Length (s)	: •		140.0	Si	ım of lost	time (s)			16.0			
Intersection Capacity Utiliz	ation		68.4%			of Service			C			
Analysis Period (min)	in dr.		15		,,				Ū			
c Critical Lane Group												

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grade the second	12	- P. T.	\$ 2.1°	134	W.E.	14.3	:					( /
Lane Configurations		ተተተ	7	75	<b>†</b> †				_	**		#
Volume (von)		1123	83	240	1162	10.000°	00	0	0	999	Ø 0.	141
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.5	4.0	5.5	6.5			·		5.5	- 100 <b>0</b>	5.5
Lane Util. Factor	r or constant.	0.91	1.00	1.00	0.95	865 . ' see.'	300) 100 - 1	1 12		0.97		1.00
Fit :	eg i gerlêgja in Gerlêgja in	1.00	0.85	1.00	1.00		man a sagar Sagar sebelah da		5 3	1.00	and C	0.85
Flt Protected		1.00	1.00	0.95	1.00		.,	·		0.95		1.00
Satd, Flow (prot)	Section 2	5036	· 1599	1787	3505		77 fayête 2007 ligi Çergillî biyakê 10 German Yekî li	and the second of the second o	The second secon	3467		1599
Flt Permitted		1.00	1.00	0.95	1.00	m;	nerva	75111.		0.95		1.00
Satd. Flow (perm)	ububa <b>n</b>	5036	1599	1787	3505	20 m		. Baji ilia Baji iliana Baji, ilianan ma	201883 20 24 / 10 4 / 10	3467	ا روير	1599
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	1208	89	258	1249	0				1074		152
RTOR Reduction (vph)	0	0	Ō	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1208	. 89	258	1249	0	<b> </b>		0*	1074	9	152
Heavy Vehicles (%)	0%	3%	1%	1%	3%	0%	0%	0%	0%	1%	0%	1%
Turn Type			Free	Prot	) {*uk		_1 = \$ 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			Prot		custom
Protected Phases		6		5	2					8		8
Permitted Phases	100		Free			i shi qililili. Markatiya			***	15 18%		
Actuated Green, G (s)		49.4	140.0	25.5	80.4					47.6	L	47.6
Effective Green, g (s)	r ingi meleberah selah Kanpan pertambah Pasah	49,4	140.0	25.5	80.4	3455		1	. w <sub>.</sub>	47.6	i Fair	47.6
Actuated g/C Ratio	,	0.35	1.00	0.18	0.57					0.34	~	0.34
Clearance Time (s)	78 Mg 70 00	6.5	\$60 A 34	5.5	6.5			2 10 10 10 10 10 10 10 10 10 10 10 10 10		5.5	(1) 	5.5
Vehicle Extension (s)		3.0		3.0	3.0					3.0		3.0
Lane Grp Cap (vpn)	* * * * * * * * * * * * * * * * * * *	1777	1599	325	2013	NO. 3		i Applica Nasi		1179	A District	544
v/s Ratio Prot		c0.24		c0.14	0.36					c0.31		0.10
v/s Ratio Perm		9 - 2	0.06							Expression for epith on a too equi-	ss	
v/c Ratio		0.68	0.06	0.79	0.62					0.91		0.28
Uniform Delay, d1	. 6503-65	38.6	0.0	54.7	19.7	1,36-44 1,36-44 1,16-43 1,17-4				44.2		33.7
Progression Factor		0.96	1.00	1.11	0.54	Th. 1				1.00		1.00
Incremental Delay, d2	. be	1.9	0.1	11.6	1.3			100		10.6		0.3
Delay (s)		39.1	0.1	72.4	12.1	1198018	tay 10 Vol			54.7		34.0
Level of Service	ii ala	D	A	Б	В		night of the second	e de la compansión de la La compansión de la compa		D.	40.0	C
Approach Delay (s)		36.4	. a a th		22.4	2000		0.0			52.2	
Approach LOS		n D		1 6 1	C	18-18-1-15 17-18-18-18-18-18-18-18-18-18-18-18-18-18-	Så-	A		٠.	D.	
HCM Average Control Dela	Y .		36.0	HC	M Level	of Service		1.5	Ď	4.5		2
HCM Volume to Capacity n	atio		0.79				<del>-</del> 700 ii - 1	ı				•
Actuated Cycle Length (s)		11 . '. 12 3:	140.0	Su	m of lost	time (s)			17.5			
Intersection Capacity Utiliza			78.1%		J Level o				D			
Analysis Period (min)			15				n		:			
c Critical Lane Group	·											

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LANDAY .	3.7 	1 4.3.3	3 (A)	487	1.4	i giler	- 1	4.11		.34	, ; ;	
Lane Configurations	ሻሻ	<b>^</b>			<u>ት</u>	7	7		77			
Volume (vph)	173	1949	0	0	1359	569	43	0	201	Q	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	<b>5.5</b>	5.5			5.5	4.0	5.5	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	5.5			. н <sup>177</sup> 7 Эз
Lane Util. Factor	0.97	0.91			0.91	1.00	1.00		0.88			
Fit :	1.00	1.00		astraja Listraja	1.00	0.85	1.00	5 5 m	0.85	- 1880-10 - 1880-10		
Fit Protected	0.95	1.00			1.00	1.00	0.95		1.00	77.		
Sald, Flow (pict)	3467	5085	V.	10 (3) (4) (5) (4) (5) (4) (5) (6) (6) (6) (6) (6) (6) (6) (6) (6) (6	5085	1583	1687	1 2 8 N/g 1	2787		( 2 ) 8 ( 3 ) 6 ( 3 )	7.7
Flt Permitted	0.95	1.00			1.00	1.00	0.95		1.00		: : "" .	
Satd. Flow (perm)	3467	5085	3 % (4.5)	AND THE STREET	5085	1583	1687		2787			er er er
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)	186	2096	0	660	1461		46	. : O	216			0.00
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	Û	0	0
Lane Group Flow (vph)	186	2096	ů.	Ö	1461	612	46	- 0.00	_	riik Ö	ું. <b>'0</b> ~'	
Heavy Vehicles (%)	1%	2%	0%	0%	2%	2%	7%	0%	2%	0%	0%	0%
Turn Type	Prot				V 8 1 89	Free			custom			9 2 1 3
Protected Phases	5	2	. 24-4-6-1-1-1	21, 1	6		4	*	7			. : :
Permitted Phases	47 (80					Free	18:00	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		100		
Actuated Green, G (s)	12.8	112.7	<u>.</u>	V. 14.9.	94.4	140.0	16.3	1 11/1.8.1 1	16.3	7.22 aff.:	-312	•
Effective Green, g (s)	12.8	112.7	11 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	11 (17 D) 11 (17 D) 10 (17 D)	94.4	140.0	16.3	Brist of grade a	16.3			. 44
Actuated g/C Ratio	0.09	0.80	5 V4 3 1		0.67	1.00	0.12	//	0.12			uk Hirt.
Clearance Time (s)	-5.5			. 38	5.5	en la	5.5	agilla III		Paripi		. 31 1
Vehicle Extension (s)	3.0	3.0			3.0		3.0	×	3.0		· · · Ze · · 196 ·	
Lane Grp Cap (vph)	317		United States	34:	3429	1583	196	geagen i Maria Maria arabita	324	1 - 1 = 8 - 1 · · · · · · · · · · · · · · · · · ·	W 11.7	n s
v/s Ratio Prot	0.05	c0.41			0.29	: 4. <del>000</del> 0	0.03	et di distri	c0.08		.1 . 34	ર જે
v/s Ratio Perm					300	0.39			00.00		+ 1 · . ·	, x - 5,
v/c Ratio	0.59	0.51			0.43	0.39	0.23	11.	0.67	m st.	(Pr) (H)	
Uniform Delay, d1	61.1	4.5	13-10-13-13		10.4	0.0		just Sant. See to a	59.2	ig Audey.		
Progression Factor	1.12	2.02	11/2002		0.75	1.00	1.00		1.00	- 43 - 4141/ j.	# 1	
incremental Delay, d2	2.0	0.3		,	0.3	0.6			5.1	ent sort	ia ia	
Delay (s)	70.3	9.4		** **	8.2	0.6	56.8	**************************************	64.4	3 - 5. 17		
Level of Service	E	** А	14 15 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		: A,	A	. É		, , , , , , , , , , , , , , , , , , ,	256	. :	
Approach Delay (s)	<del></del>	14.4	81	***	6.0		orași in 📅	63.0	, I		0.0	2.
Approach LOS			. Her Took at	.:,	Ā		* . **	E			ŭ.ŭ	
		.,,,,,,,,			,,		_			· :	<i>1</i> 75° .	
	11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	The Electron	Loseneserss.vs.	articom in a				,				
HCM Average Control Delay		rinacia gerros Colemania Colemania	13.4	HC	M Level	of Servic	€ 4		В	i. :: -		
HCM Volume to Capacity ratio	l		0.53									
Actuated Cycle Length (s)		4 4	140,0	Su Su	m of lost	time (s)		4.24.	11.0	. 1.		
Intersection Capacity Utilizatio	n		78.1%	, ICI	J Level o	of Service			Ď			
Analysis Period (min)	8 3	4 1 1	15				 6					
c Critical Lane Group												

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	<del>                                   </del>	\.\.\.\.\.\.\.\.\.\.\.\.\.\.\.\.\.\.\.		9.5 <del>-</del>	: : : : : : : : : : : : : : : : : : :		
Lane Configurations	ተተተ	7	ሻ	ተተተ	المالم	7	and the second s
Volume (vph)	1649	501	151	1514	446	98	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		4.0	5.0	7.0	5.0	5.0	
Lane Util. Factor	0.91	1.00	1.00	0.91	0.97	1.00	The second of th
Fit	1.00	0.85	1.00	1.00	1.00	0.85	The state of the s
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00	
Said. Flow (prot)	4988	1583	1671	5036	3467	1455	The second secon
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00	
Satd. Flow.(perm)	4988	1583	1671	5036	3467	1455	the figure of the first training of the control of
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	
Adj. Flow (viph)	1773	539	162	1628	480	105	
RTOR Reduction (vph)	0	0	0	Ó	0	86	
Lane Group Flow (vph)	1773	539	162	1628	480	19	promises and the second of the
Heavy Vehicles (%)	4%	2%	8%	3%	1%	<u>1</u> 1%	" · · · · · · · · · · · · · · · · · · ·
Tun Type	in the second	Free	Prot	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		custom	
Protected Phases	6		5	2	7	4	·
Pérmitted Phases	radii. Badadania	Free			10 1	· · · · · · · · · · · · · · · · · · ·	and the second of the second o
Actuated Green, G (s)	79.2	140.0	18.8	103.0	25.0	25.0	
Effective Green, g (s)	79.2	140.0	18.8	103.0	25.0	25.0	
Actuated g/C Ratio	0.57	1.00	0.13	0.74	0.18	0.18	·
Clearance Time (s)	7.0	ria gial sir	5.0	7.0		5.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	-2822	1583	224	3705	619	260	Harris Andrews Communication (Communication Communication
v/s Ratio Prot	c0.36		c0.10	0.32	c0.14	0.01	
v/s Ratio Perm		0.34		- 1 Million	3.7		
v/c Ratio	0.63	0.34	0.72	0.44	0.78	0.07	
Uniform Delay, d1	20.5	0.0	58.1	7.2	54.8	47.8	in the state of the state of the state of
Progression Factor	1.18	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.9	0.5	11.0	1, 1, 14	6.0	0.1	
Delay (s)	25.0	0.5	69. <u>1</u>	7.6	60.9	48.0	
Level of Service	<b>C</b> .	" <b>A</b>	E	A	E.	D	
Approach Delay (s)	19.3			13.2	58.6		
Approach LOS	<b>B</b> .			- <b>B</b> ∴	. E:		
					•		
HCM Average Control Delay	Man to the		21.9	. Н	M Level	of Servic	Se de Company
HCM Volume to Capacity ratio			0.67				··· • • • • • • • • • • • • • • • • • •
Actuated Cycle Length (s)		: •	140.0	St	m of lost	time (s)	- <b>17.0</b>
Intersection Capacity Utilizatio	n		67.1%			of Service	
Analysis Period (min)	· · · .		15				- - 
c Critical Lane Group	,.						<del>"</del>



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sára ás og god a leigili a	4.3		1. 1.		724			2.1		
Lane Group Flow (vph)	117	705	587	899	163	175	304	375	338	641
v/c Ratio	0.48	0.53	0.63	0.55	0.20	0.61	0.47	0.46	0.76	0.80
Control Delay	68.4	42.7	67.0	15.3	12.4	71.4	53.0	6.0	70.6	57.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0*	0.0	0.0	0.0	0.0
Total Delay	68.4	42.7	67.0	15.3	12.4	71.4	53.0	6.0	70.6	57.7
Queue Length 50th (ft)	53	192	216	101	55	80	132	0	154	286
Queue Length 95th (ft)	85	214	#359	186	382	121	167	44	#225	335
Internal Link Dist (ft)		1569		280			2748			1756
Tum Bay Length (ft)	250					300		300	240	••••
Base Capacity (vph)	381	1663	938	1645	800	305	986	1054	456	1109
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
	0	. 0	. 0	0	0	0	0,	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	. 0	0	0	0
Reduced Wo Ratio	0,31	0.42	0.63	0.55	0.20	0.57	0.31	0.36	0.74	D.58

<sup># 95</sup>th percentile volume exceeds capacity queue may be longer.

Queue shown is maximum after two cycles.

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		12.44		1,21	4 %	N. (3) F			
Lane Group Flow (vph)	1208	89	258	1249	1074	152			
	0.68	0.06	0.79	0.62	0.91	0.28		and Si	2.50
Control Delay	39.3	0.1	76.5	11.9	56.6	37.2	72.3		"
Queue Delay	0.0	0.0	0.0	0.0		0.0	18 18 18 18 18 18 18 18 18 18 18 18 18 1		er der figer
Total Delay	39.3	0.1	76.5	11.9	56.6	37.2	::::::::::::::::::::::::::::::::::::::		source (1970)
Queue Length 50th (ff)	377	0	165	90		101	STATE OF THE STATE		ASTRONOM SEC
Queue Length 95th (ft)	431	m0	292	120	#704	176	84		
Internal Link Dist (ft)	<b>27</b> 3 .	1355		471	t tra jugan pr projekti ov projektida ov	n egge min typ trans n kalendar at at typ trans na akti typ transport och	**************************************	e ~ : : a	a jag
Tum Bay Length (ft)	The second secon	100					m market was		1. 1. 1.
Base Capacity (vph)	1777	1599	466	2216	1179	544		97 1 198 97 H 201 1 180	. 10 mg - 1038
Starvation Cap Reductn	0	0	0	0	0	O			2
Spillback Cap Reductn	0	. 0	0	. 0	. 0	<b>1</b> 0	KONER TEMPERATURA MENANTE TEMPERATURA ONESSENE TEMPERATURA		
Storage Cap Reductn	. 0	0	0	0	0	0			Control Science of
Reduced v/c Ratio	~0.68	<b>0,06</b>	0.55	0.56	0.91	0,28	TRANSPORTER TO THE PROPERTY OF	Marin al	
								**	

<sup># 95</sup>th percentile volume exceeds capacity, qualie may be larger Queue shown is maximum after two cycles.

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

	۶		<b>←</b>	4	4	<i>&gt;</i>			
	:: .		44 Z T	388		38.			
Lane Group Flow (vph)	186	2096	1461	612	46	216		· ·	
V/c Ratio	0.59	0.51	0.43	0.39	0.23	0.67	The state of the s	states are as	3.
Control Delay	73.5	9.9	8.7	0.6	57.9	69.2			
Queue Delay	0.0	0.3	0.1	0.0	0.0	0.0	A STATE OF THE STA	and the same of the same	el Tis
Total Delay	73.5	10.2	8.8	0.6	57.9	69.2			
Queue Length 50th (fi)	92	379	187	0	39	109	The second second		198
Queue Length 95th (ft)	134	395	190	0	77	152			
Internal Link Dist (ft)	4.4	477	- 553		8 3			1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
Turn Bay Length (ft)	650	FOR 1 WAS 2 1 WEST 2 W. 14			330	330		• •	
Base Capacity (vph)	388	4095	3430	1583	319	528			
Starvation Cap Reductn	0	1080	614	0	0	0			
	. O.	176	0	0	0	20			. S. S. S.
Storage Cap Reductn	0	0	0	0	0	0			
Reduced v/c Ratio	0.48	+0.70	0.52	0.39	0.14	0.41		A ROBERT SEASON TO A TO	\$ 15 mm

# 3: SR 421 & Taylor Branch Rd.

	†	P	<u>L</u>	ļ	€	*			
		1 3	\$3			N/212	×.		
Lane Group Flow (vph)	1773	539	162	1628	480	105			
v/c Ratio	0.63	0.34	0.72	0.44		0.30		age of the control of	
Control Delay	26.9	0.5	75.5	8.0	63.6	10.3			
Queue Delay	0.2	0.0	0.0	0.0	0.0	0.0	: S	*	
Total Delay	27.2	0.5	75.5	8.0	63.6	10.3		12 1	
Queue Length 50th (ft)	369	0	144	188	218	0		11 121 13121	
Queue Length 95th (ft)	657	0	212	258	265	49			ii.
Internal Link Dist (ft)	553		THE STANCES OF THE ST	1593	262	. The first of the second of t		tion an visiting in the an visiting in the pull the state of	
Turn Bay Length (ft)		200	250		500				
Base Capacity (vph)	2823	1583	310	3706	991	491	vycer in a		The state of the s
Starvation Cap Reductn	356	0	0	Λ.	0	0			
Spillback Cap Reductn	<b>0</b>	0		0	0	0		Today Parlander	. •
Storage Cap Reductn	0	0	0	0	0	0			
Reduced v/c Ratio	0.72	0,34	0.52	0.44	0.48	0.21	er en		
	· · · · · · · · · · · · · · · · · · ·		····· .						



#### Summary of All Intervals

End Time	5:	15				
Total Time (min)		<b>20</b> ja				1,867
Time Recorded (min)		15				79 11111
# of Intervals	sans, alkana	2 3 2 3 3 3 3 3			A STATE OF THE STA	
# of Recorded Intvls		1				
Vehs Entered	46	<b>52</b>		Tan Co		
Vehs Exited	16	14				
Starting Vehs		99. Tyrz (tażić), j		(1.00 m) (1.00 m) (1.00 m)		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Ending Vehs	3	37				
Denied Entry Before -	at di .	0 3 3 3 3				1997 B. B. B.
Denied Entry After	go in consideration and a second	8				
Travel Distance (mi)	15	70	Present the same	A Paragraph and the second of	A Company of the Comp	Para Espera
Travel Time (hr)	83	.0		**		
Total Delay (hr)	⇒3 <b>(</b>			ante de la constitución de la co		By the state of th
Total Stops	21	39				
Fuel Used (gal)	61(				grands Salvasta reference Hillografia	

# Interval #0 Information Seeding

Start Time 4:55				
End Time 5:00				
Total Time (min) 5	TO SERVE AND LONG OF THE PROPERTY OF THE PROPE	(1) (1) (1) (1) (1) (1) (1) (1) (1) (1)	The second secon	
Volumes adjusted by Growth Factors.				
No data recorded this interval.			1 ge. 1	

# Interval #1 Information Recording

Clad Time	EM			
State inte	5:00	The state of the s	1 - 4 - 4 - 4 - 4 - 4 - 4 - 4 - 4 - 4 -	
End Time	5:15			
Total Time (min)	<b>*15</b>	Bright of the care		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Volumes adjusted by (	Growth Factors			

	30-19-1			
Vehs Exited	1614		<del></del>	
Starting Vehs	299	* * # * * * * * * * * * * * * * * * * *	A Section 1	Programme and the second
Ending Vehs	337			
Denied Entry Before	0			
Denied Entry After	8		•	
Travel Distance (mi)	1570	and the second s	*** ***	
Travel Time (hr)	83.0			
Total Delay (hr)	38.7			
Total Stops	2189			
Fuel Used (gal)	610.4	en e	· ·	

The character of the ch

#### 1: SR 421 & Williamson Blvd Performance by movement

919 14 L		:: .	1	2.7	44-11	1.15	1.3	3.		1.12	1,000	121
Total Delay (hr)	0.7	1.4	0.3	3.7	1.6	0.1	0.7	0.6	0.4	1.1	1.9	0.3
Delay / Veh (s)	72.3	35.9	38.2	91.8	29.1	4.3	65.5	41.8	13.9	54.4	48.5	50.5
Total Stops	32	78	20	152	87	27	41	39	82	69	118	16
Travel Dist (mi)	10.2	43.8	7.3	12.8	18.4	5.8	23.8	26.2	∘51.4∞	26.3	50.0	6.3
Travel Time (hr)	1.0	2.5	0.5	4.1	2.0	0.4	1.4	1.4	1.9	2.0	3.3	0.5
Avg Speed (mph)	<b>. 11</b> .	19	17	3	ે 9	17	17	× 19	27	13	<b>15</b>	14
Vehicles Entered	33	143	24	139	198	63	45	49	99	77	147	19
Vehicles Exited	- 38	1, 147	25	150	202	' . 65	35	56	94	75	. ±133	. 18
Hourly Exit Rate	152	588	100	600	808	260	140	224	376	300	532	72
Input Volume	109	544	112	546	838	152	163	283	<b>349</b>	314	2507	89
% of Volume	139	108	89	110	96	171	86	79	108	96	105	81
Denled Entry Before	0	<b>.</b> 10 1	0,	0	0	0	0 *	. 0	0	*> 0	<b></b> 0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	Ō

#### 1: SR 421 & Williamson Blvd Performance by movement

<u>887 (8.25)</u> (2000) 1.50				
Total Delay (hr)	12.8		****	
Delay / Veh (s)	445		d to the second of the second	A STATE OF S
Total Stops	761			
Travel Dist (mi)	282.4			The second secon
Travet time (hr)	20.9			***************************************
Avg Speed (mph)	14	ing and the second seco	envisione de la companie de la comp La companie de la companie de	Free Strong Williams (1997) The Strong Stron
Vehicles Entered	1036			***
Vehicles Exited	1038		Tank gward ar unstruck. Per rwydyd new defenyd Charles y gegeneralskyw	1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1
Hourly Exit Rate	4152			
Input Volume	4006		Nago Bro Nago Bro	unite Pagings of the state of t
% of Volume	104			· · · · · · · · · · · · · · · · · · ·
Denied Entry Before	Seen O		<ul> <li>All the Control of the</li></ul>	Market Communication (Communication Communication Communic
Denied Entry After	0			· · · · · · · · · · · · · · · · · · ·

# 3: SR 421 & Taylor Branch Rd. Performance by movement

11	1.8/1	347	17.5	100			11.	
Total Delay (hr)	2.5	0.5	8.0	1.4	1.5	0.1	6.7	
Delay / Veh (s)	223	12.8	79.2	11,3	51.9	11.3	214	Amount San Commission
Total Stops	218	36	36	122	80	18	510	
Travel Dist.(mi)	44.0	14.0	11.9	135.5	5.6	12	2123	The state of the s
Travel Time (hr)	3.5	0.9	1.1	4.5	1.7	0.1	12.0	
Avg Speed (mph)	13	15	11	31.	3	**** <b>9</b>	18	
Vehicles Entered	401	132	37	428	105	22	1125	
Vehicles Exted	395	133	39	438	104	· · · · · 22	1181	The state of the s
Hourly Exit Rate	1580	532	156	1752	416	88	4524	
Input Volume	1682	501	• 147.	1629	446	98	<b>4503</b>	
% of Volume	94	106	106	108	93	90	100	
Denied Entry Before	0	. 0	-0		0	. 0	<b>0</b> 5	
Denied Entry After	1	0	0	0	0	0	1	

# 17: SR 421 & I-95 NB Ramps Performance by movement

Bolling and		1.1871	119 ×					
Total Delay (hr)	1.0	1.2	1.1	0.4	0.2	0.8	4.7	
Delay / Veh (s)	78.7	8.8	10,6	8.0	57,4	64.2	14.9	
Total Stops	48	108	90	3	9	40	298	
Travel Dist (mi)	5.2	52.8	42:4	12.5	3.0	12.3	128.2	The second second
Travel Time (hr)	1.2	2.7	2.2	0.7	0.3	1.1	8.3	
Avg Speed (mph)	4.5	19	19	. 17	12	11	16	g international and a second of the second o
Vehicles Entered	49	475	384	158	11	45	1122	
Vehicles Exited	48	484	392	159	11	42	1136	and Anti-Phone Care
Hourly Exit Rate	192	1936	1568	636	44	168	<b>4</b> 544	
Input Volume	173	1952	1506	569	43	201	4444	
% of Volume	11 <b>1</b>	99	104	112	102	84	102	
Denied Entry Before	0	. 0	0	0	0	0 .	0	### ### ### ### ### ### ### #### ######
Denied Entry After	0	0	0	0	0	1	1	

# 18: SR 421 & I-95 SB Ramps Performance by movement

Total Delay (hr)	2.9	0.0	1.4	1.7	2.9	0.0	0.4	9.4	
Delay / Veh (s)	36.2	6.4	76.1	20.7	44.2	20.9	38.9	35.4	The control of the co
Total Stops	141	3	60	106	112	2	30	454	
Travel Dist (mi)	18,6	1.3	- 6.8	31.7	7.9	0.1	1.3	67.7	700 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
Travel Time (hr)	3.3	0.1	1.6	2.5	3.3	0.0	0.5	11.3	
Avg Speed (mph)	6	16	4	13	<b>3</b> .,	<b>. 4</b>	* 3	6	The state of the s
Vehicles Entered	281	25	64	304	246	3	36	959	- ·
Vehicles Exited	296	25	4 69	302	228	3	35	958	
Hourly Exit Rate	1184	100	276	1208	912	12	140	3832	
Input Volume	1124	83	240	1169	999	12	141	3768	
% of Volume	105	120	115	103	91	100	99	102	
Denied Entry Before	. 0	0	0	0	Ô	0	* 1 <b>0</b> (	0.	
Denied Entry After	0	Ô	0	0	6	0	0	6	

#### **Total Zone Performance**

	<u>.                                    </u>					
Total Delay (hr)		33.6				
Delay / Veh (s)	orthorn of the control of the contro	37014	office AST DATA THE Seek Line Walls BAST SHOWN	**************************************	Property of the second of the	
Total Stops		2023				
Travel Dist (mi)		690.6			· 5 *** ***	i kindigi selah besah dalah Kindigi sebah dalah Kindigi sebah dalah dalah
Travel Time (hr)		52.4				
Avg Speed (mph)		<b> </b>		eri jako erii 187 eti Sir erii ile erii ile eri ilege Girektii ile erii ile jakoko ile	entre englished	The Art of the Section of the Sectio
Vehicles Entered		925				
Vehicles Exited		49			13	A BOOK OF THE STATE OF THE STAT
Hourly Exit Rate		196				•
Input Volume	2 (4) (4) (4) (4) (4) (4) (4) (4) (4) (4)	16721	righten Gebeure	The state of the s	i.	
% of Volume		1				
Denied Entry Before		0.00	um iku milikas Regionalis ir algabatikas			
Denied Entry After		8				i • :



#### Summary of All Intervals

North Control				:	.77		
Start Time	4:55	4:55	4:55	4:55	4:55	4:55	
End Time	5:15	5:15	5:15	5:15	5:15	5:15	
Total Time (min)	20	20	20	20	20	20	
Time Recorded (min)	15	15	15	15	15	15	Control Contro
# of Intervals	2	2	2	2	2	2	
# of Recorded Intvis							
Vehs Entered	1665	1700	1580	1630	1557	1624	
Vehs Exited	1616	. 1627	1537	1620	1567	1595	May to the second
Starting Vehs	294	293	296	355	300	305	h
Ending Vens	-843	366	339	365	290	340	
Denied Entry Before	4	6		0	0	. 1	
Denied Entry After				· * 6·	<b>******</b>		
Travel Distance (mi)	1562	1588	1466	1570	1490	1535	
Travel Time (hr)	85.1	94.1	75.8	∴ 86.9	75.4	0.0	
Total Delay (hr)	41.0	49.4	34.6	42.8	33.5	40.3	· · · · · · · · · · · · · · · · · · ·
Total Stops	2191	2531	2118	2239	1839	2182	
Fuel Used (gal)	613.3	645.4	569.2	621.8	571.6	604.2	

#### Interval #0 Information Seeding

Start Time 4:55
End Time 5:00
Total Time (min) 5

Volumes adjusted by Growth Factors.

No data recorded this interval.

#### Interval #1 Information Recording

Start Time

5.00

End Time

5.15

Total Time (min)

Volumes adjusted by Growth Factors.

						177	
Vehs Entered	1665	1700	1580	1630	1557	1624	
Vehs Exited	1616	1627	1537	1620	1567	1595	1 14 11 14
Starting Vehs	294	293	296	355	300	305	
Ending Vehs	343		339	365	290	340	1 to
Denied Entry Before	4	6	5	Ö	0	1	
Denied Entry After	12	12	5	6	4	7	
Travel Distance (mi)	1562	1588	1466	1570	1490	1535	
Travel Time (hr)	85.1	94.1	75.8	86.9	75.4	0.0	
Total Delay (hr)	41.0	49.4	34.6	42.8	33.5	40.3	
Total Stops	2191		2118	2239	1839	2182	1.
Fuel Used (gal)	613.3	645.4	569.2	621.8	571.6	604.2	

# Total Zone Performance

Total Delay (hr)	32.6		
Delay / Ven (s)	2606.7		() (lee)(),00 
Total Stops	1926		
Travel Dist (mi)	675.7	A STATE OF THE STA	
Travel Time (hr)	0.0		
Avg Speed (mph)	-619	Services of the service of the servi	PROBLEM CONTRACTOR
Vehicles Entered	912		
Vehicles Exited	<b>53</b>	The state of the s	
Hourly Exit Rate	212		
Input Volume	16721		Line and Section (1997). The section of the section
% of Volume	1		
Denied Entry Before			Tarine Salishang Ber Berlinda Berlinda Berlinda Berlinda
Denied Entry After	6		

# Intersection: 1: SR 421 & Williamson Blvd

		4	11.2	. Ji	17.7	6	11.75			+ 3		
Directions Served	L	L	Т	T	TR	L	L	Т	Т	R	L	L
Maximum Cuete (II)	115	120	198	208	225	309	298	256	206	59	101	110
Average Queue (ft)	58	63	125	125	161	229	226	134	133	26	61	80
95th Queue (ft)	119	122	204	205	223	370	329	249	244	64	105	120
Link Distance (ft)			1593	1593		247	247	247	247	247		
Upstream Blk Time (%)			a ha kas	13 ·		15	16	4.	0	1. 25, 22.	dishar a Jawania	
Queuing Penalty (veh)						46	49	3	1			
Storage Bay Dist (ft)	250	250		84.18	180	40 	es. Despaise i nomo.	الرابية الما			300	300
Storage Blk Time (%)			0	0	7							2 - 7 M
Queuing Penalty (veh)	- 488	1 13 18 14 18 15 1	0	0	13				Wasan Yangan			

# Intersection: 1: SR 421 & Williamson Blvd

Directions Served T	TR	R L	L	T TR	·
Maximum Queue (ft) 140	150 75	66 192	200 3	18 357	
Average Queue (ft) 93	107 50	49 124	143 2	23 247	
95th Queue (ft) 145	<b>158 86</b>	73 194	<b>226</b> 3	92 430	
Link Distance (ft) 2761	2761		17-	47 1747	
Upstream Blk Time (%)		er izere et ivise. Se enekatere			er i verden er
Queuing Penalty (veh)					
Storage Bay Dist (ft)	300	300 240	240		
Storage Blk Time (%)		0	1	5	
Queuing Penalty (veh)	elletteger Reselvere prægner i der Anemællett hælse dellettere m		3	15	A graduate of the control of the con

# Intersection: 3: SR 421 & Taylor Branch Rd.

		· · ,	. 23	J.Ä.			ija.	. (4)	1.4				
Directions Served		T	Т	Ţ	R	L	Т	Т	T	L	L	R	T
Maximum Queue (ft)	4	13	448	468	225	221	233	250	186	218	229	234	₹30
Average Queue (ft)	2	48	259	258	100	149	121	138	101	158	172	89	6
95th Queue (ft)		61	477	496	269	238	233	264	185	233	245	236	33
FILIK DISIGNOS (II)	J	12	ŲΙΖ	512			1657	1657	1657			242	645
Upstream Blk Time (%)	t symmetries.	1.00	0.	1						0	1	2	
Queuing Penalty (veh)			2	4						0	0	0	
Storage Bay Dist (ft)					200	250				500	500		
Storage Blk Time (%)				10	Ó	0	1			0	1	2	
Queuing Penalty (veh)	**			49	2	3	4			0	1	·· • • • • • • • • • • • • • • • • • •	

# Intersection: 17: SR 421 & I-95 NB Ramps

11 A 11 A	18	1. 12 2. 13 2. 13	13 U · 		¥ £	. :	:		. 1	. ;ii	2007 100
Directions Served	L	L	Т	T	T	Т	T	Ţ	L	R	R
Maximum Queue (fi)	121	94	182	185	225	113	208	252	81	141	138
Average Queue (ft)	76	63	94	94	126	46	124	151	44	80	8 <del>9</del>
95th Queue (fl)	136	115	202	204	259	82	217	247	90	148	152
Link Distance (ft)			491	491	491		512	512		1439	
Upstream Blk Time (%)	1 34 24	11 300 (q 8 (d) (3 (5) - 1			81.3 "/	•				e de la Propertie La Caracteria de la Ca	
Queuing Penalty (veh)							2				
Storage Bay Dist (fi)	650	650	erwy Johans Gall Basada			450		The second secon	330		330
Storage Blk Time (%)				21701 17							
Queuing Penalty (veh)			\$ 385	* \$1000 \$4008		7 / 78 / 5 / 6 / 7 / 5 / 6 / 7 / 5 / 6 / 7 / 5 / 6 / 7 / 7 / 7 / 7 / 7 / 7 / 7 / 7 / 7	** ***	ida et e e e	:	*	

# Intersection: 18: SR 421 & I-95 SB Ramps

The A			n.	1. 1	177		[a.k]	* :			
Directions Served	Т	Т	T	L	Т	T	L	L	R		_
Maximum Queue (ft)	272	-245	344	349	246	289	198	192	168	in filipia	
Average Queue (ft)	156	159	210	197	96	133	191	190	91		
95th Queue (ft)	265	249	344	348	259 *	281	206	195	188		3
Link Distance (ft)	130	130	130	491	491	491	54	54	54		
Upstream Blk Time (%)	22	27	- 36	1	100 mg		64	67	22		:
Queuing Penalty (veh)	90	109	147				241	251	82		
Storage Bay Dist (ft)				- s - Hy 	e Den Romald Trade A Trade De de Alas A Trade de Alas Distric	10 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1				The state of the state of	j.
Storage Blk Time (%)			43								
Queuing Penalty (veh)	an keed j	A CONTRACTOR OF THE PARTY OF TH	35				File and the second of the sec			- 12 P	

#### Zone Summary

Zone wide Queuing Penalty: 1153

# EXISTING VOLUMES, COMMITTED GEOMETRY AND RIGHT-IN/RIGHT-OUT AT S.R. 421/TAYLOR ROAD INTERSECTION



	۶	<b>→</b>	•	•	+	4	1	<b>†</b>	<b>/</b>	<b>/</b>	ļ	<b>√</b>
	: .	% % ···	98 đ	13.	15/44	51124.	i ii.		5/3	11.6	: 1	
Lane Configurations	77	ተተጉ		44	<b>^</b>	7	14.64	<b>^</b>	77	44	朴	
Volume (vph)	109	544	112	546	836	152	163	283	349	314	507	89
ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	12	12	11	12	12	- 11	12	12	10	12	12
Total Lost time (s)	5.0	6.0		5.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0	
Lane Util. Factor	0.97	0.91		0.97	*0.83	1.00	0.97		0.88	0.97	0.95	
Frt	1.00	0.97	. 1166 4	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98	
Fit Protected	0.95	1.00	4 t (Da)	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	9 69 c
Satd. Flow (prot)	3224	4996	to fit was a	3351	3123	1568	3319	3539	2814	3351	3494	
Fit Permitted	. 0.95	1.00	140 1 2 n	0.95	1,00	1.00	0.95	1.00	1.00	0.95		
Satd. Flow (perm)	3224	4996		3351	3123	1568	3319	3539	2814	3351	3494	
Peak-hour factor, PHF	0.91	+0.91	0.91	0.93	0.93	0.93	0.91	0.91	0.91	0.90		. 0.90
Adj. Flow (vph)	120	598	123	587	899	163	179	311	384	349	563	99
RTOR Reduction (vph)	. 0	21	<b>.0</b>		0		∵0.	. 0		0	11	. 0
Lane Group Flow (vph)	120	700	0	587	899	85	179	311	384	349	651	0
Heavy Vehicles (%)	5%	1%	2%	1%	. 1%	esere.	2%	2%	1%	1%	1%)	1%
Tum Type	Prot			Prot		Perm	Prot		pt+ov	Prot		
Protected Phases	5.	*_** <b>`2</b>		ozit			3	8	81	1 <b>7</b>	C* 8 4	E
Permitted Phases	90174 991 991	v: .:		,		6						
Actuated Green, G (s)	10.4	43.4	11.75	30.2	63.2	63.2	11.9	19.0	54.2	25.4		
Effective Green, g (s)	10.4	43.4		30.2	63.2	63.2	11.9	19.0	49.2	25.4	32.5	
Actuated g/C Ratio	0.07	0.31		0.22	0.45	0.45	0.08	0.14	0.35	0.18		
Clearance Time (s)	5.0	6.0		5.0	6.0	6.0	5.0	6.0		5.0	6.0	
Vehicle Extension (s)	3.0	3.0	4-	3.0	3.0	3.0	<b>∴3</b> .0 ∍	3.0	Seculiar Contract	3.0	3.0	
Lane Grp Cap (vph)	239	1549		723	1410	708	282	480	989	608	811	
v/s Ratio Prot	0.04	c0.14	11	c0.18	c0.29		0.05	c0.09	0.14	0.10	c0.19	
v/s Ratio Perm						0.05						
v/c Ratio	0.50	0.45		0.81	0.64	0,12	0.63	0.65	0.39		0.80	2 (4)
Uniform Delay, d1	62.3	38.8		52.2	29.6	22.3	61.9	57.3	34.1	52.4	50.7	
Progression Factor	1.00	1.00	See the See	0.66	0.56	2.11	1.00	1.00	1.00	1.00	1.00	1.65
Incremental Delay, d2	1.7	1.0		6.0	1.9	0.3	4.6	3.0	0.3	1.3	5.8	
Delay (s)	64.0	39.7		40.3	18.4	47.4	66.6	60.3	34.4	53.7	56.5	4.
Level of Service	E	D		D	В	D <sub>.</sub>	É	E	С	D	Ę	
Approach Delay (s)		43.2			29.1		4.	50,2			55.5	
Approach LOS		D			С			D			E	
HCM Average Control Delay			42.1		CM Leve	of Service	۵		D			<u>المديد</u>
HCM Volume to Capacity rat	ià:		0.77	!1	OIN FOAC	A OI OCIVIO			U			
Actuated Cycle Length (s)			140.0		um of los	t time (s)			29.0			
Intersection Capacity Utilizat	ion		68.4%			of Service	e		29.0 C			
Analysis Period (min)	IOTS C		15	R.	AC FCACE	OLOCIAICS		•	Ų.			
c Critical Lane Group			13									
a mornion ratio otooh												

	۶	-	•	1	<b>←</b>	•	•	<b>†</b>	<b>*</b>	<b>/</b>	ļ	4
j. Pravila	7.5	7 2 7	1778/2011	(2.95)	200				1000	387		2.V
Lane Configurations		ተተተ	7	•	ተተ			activity of the	. 9 1.5	ሻሻ		7
Volume (vph)	0	1123	83	240	1162	. 0	0	0	- 0	999	0	141
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.5	4.0	5.5	6.5			, T. T. T.	1.91	5.5		4.0
Lane Util. Factor		0.91	1.00	1.00	0.95	m. :				0.97		1.00
Frt ::		1.00	0.85	1.00	1.00			-	professional contraction	1.00		0.85
Flt Protected	ŕ	1.00	1.00	0.95	1.00					0.95		1.00
Satd, Flow (prot)		5036	1599	1787	3505	m eseiki k . Wanta is S	:\$	٠.		3467		1599
Flt Permitted		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (perm)		5036	1599	1787	3505					3467		1599
Peak-hour factor, PHF	0.25	0.91	0.77	0.77	0.79	0.25	0.25	0.25	0.25	0.80	0.25	0.88
Adj. Flow (vph)	0	1234	108	312	1471	0	0	0	0	1249	0	:160
RTOR Reduction (vph)	0	. 0	0	0	0	0	. 0	0	0	0	0	0
Lane Group Flow (vph)	. 0	1234	108	312	1471	7 0	0.	0	0	1249	0	160
Heavy Vehicles (%)	0%	3%	1%	1%	3%	0%	0%	0%	0%	1%	0%	1%
Turn Type		and dependent	Free	Prot	. *		: 1,2			Prot		Free
Protected Phases		6		5	2					8		
Permitted Phases		. 180.35	Free			19 (				4.25		Free
Actuated Green, G (s)		36.5	140.0	29.8	71.8					56.2		140.0
Effective Green, g (s)	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	36.5	140.0	29.8	71.8	e de la companya de l	. 4 .		: · · · · · · · · · · · ·	56.2	<u>:</u>	140.0
Actuated g/C Ratio		0.26	1.00	0.21	0.51					0.40		1.00
Clearance Time (s)	- Fig. 3	6.5		5.5	6.5				8 1 1 2 2	5.5		
Vehicle Extension (s)		3.0		3.0	3.0				_	3.0	_	
Lane Grp Cap (vph)	* 1	1913	1599	380	1798	· · · · · · · · · · · · · · · · · · ·	:	••		1392		1599
v/s Ratio Prot	,	c0.25		0.17	c0.42					c0.36		
v/s Ratio Perm		* : .	0.07			** :						0.10
v/c Ratio		0.94	0.07	0.82	0.82					0.90		0.10
Uniform Delay, d1		50.7	0.0	52.6	28.6					39.2		0.0
Progression Factor		0.87	1.00	0.81	0.67					1.00		1.00
	1.77											
	:		А	Đ		: .				D.	44.6	Æ
Approach EUS		υ			G			A			U	
ferinda in inger												
HCM Average Control Delay		<u> </u>	40.0	i	CM Levi	el of Service	;é: :-		D			
<b>HCM Volume to Capacity rat</b>	io		0.86									
Actuated Cycle Length (s)			140.0			st time (s)			12.0			
Intersection Capacity Utilizat	ion		78.1%	10	CU Level	of Service	)		D			
Analysis Period (min)			15		•							
c Critical Lane Group												
HGM Average Control Delay HCM Volume to Capacity rat Actuated Cycle Length (s) Intersection Capacity Utilizat	io	18.2 57.6 E 52.9 D	0.86 140.0 78.1%	S	um of lo	st time (s)	: .:	0.0 <b>A</b>	12.0	7-9 47.1 D	41.8 D	0.1 0.1 •A

	•	<b>→</b>	$\rightarrow$	•	<b>←</b>	•	•	<b>†</b>	<i>&gt;</i>	-	ļ	1
	. WY. Williams	7, 7 iv	Francis Services La Caracia	(%) ₹) \\		. 1989.		1,57838 <sup>1</sup> 3 1,351,4			<b>2</b>	97
Lane Configurations	14.64	ተተተ			ተተተ	7	ሻ		77			
Volume (vph)	173	1949	.0	0	1359	569	43	0	201	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5			5.5	4.0	5.5		5.5			
Lane Util. Factor	0.97	0.91			0.91	1.00	1.00		0.88			
Frt	1.00	1.00			1.00	0.85	1.00	100	0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95	·	1.00			
Satd. Flow (prot)	3467	5085	•	••	5085	1583	1687	:	2787		•	
Fit Permitted	0.95	1.00			1.00	1.00	0.95		1.00			
Satd, Flow (perm)	3467	5085			5085	1583	1687		2787			. 4
Peak-hour factor, PHF	0.74	0.92	0.92	0.92	0.83	0.91	0.85	0.92	0.73	0.92	0.92	0.92
Adj. Flow (vph)	234	2118	0	0	1637	625	51	Q	275	Ö	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	Ó
Lane Group Flow (vph)	234	2118	0	0	1637	625	51	0	275	0.	0	0
Heavy Vehicles (%)	1%	2%	0%	0%	2%	2%	7%	0%	2%	0%	0%	0%
Turn Type	Prot	:				Free	Prot		custom			
Protected Phases	5	2			6		3		8			•
Permitted Phases					13.	Free		4				
Actuated Green, G (s)	14.7	110.0			89.8	140.0	19.0		19.0			
Effective Green, g (s)	14.7	110.0			89.8	140.0	19.0		19.0			٠.
Actuated g/C Ratio	0.10	0.79			0.64	1.00	0.14		0.14			
Clearance Time (s)	5.5	5.5			5.5		5.5		5.5	177		
Vehicle Extension (s)	3.0	3.0			3.0		3.0		3.0			
Lane Grp Cap (vph)	364	3995			3262	1583	229		378			
v/s Ratio Prot	c0.07	c0.42			0.32	ĺ	0.03		c0.10			
v/s Ratio Perm	. : "					0.39						
v/c Ratio	0.64	0.53			0.50	0.39	0.22		0.73			
Uniform Delay, d1	60.1	5.5			13.3	0.0	53.9		58.0			
Progression Factor	1.21	0.21			1.00	1.00	1.00		1.00			
Incremental Delay, d2	1.4	0.2		:	0.6	0.7	0.5		6.8			
Delay (s)	74.0	1.3			13.8	0.7	<b>54</b> .4		64.9			
Level of Service	: <b>E</b>	Α			В	A	D		E			
Approach Delay (s)		8.6			10.2			63.2			0.0	
Approach LOS		A			B			Ε			A	
	:		:									:
HCM Average Control Delay		* in	12.9	H	CM Leve	l of Servic	e .		B.			
HCM Volume to Capacity ratio			0.56									
Actuated Cycle Length (s)			140.0	S	um of los	t time (s)			11.0			
Intersection Capacity Utilizatio	n		78.1%			of Service			D			
Analysis Period (min)			15									
c Critical Lane Group												

	<b>†</b>	ps 👢	+ •	•	
ear Bright	th. 1	Najar Lag	45 N		
Lane Configurations	<del>^</del> ^	7	titi	7	
Volume (veh/h)	1649	501 0	1928 0	101	and the second
Sign Control	Free		Free Stop		
Grade	0%		0% 0%		
Peak Hour Factor	0.91	0.79 0.84		0.88	. 1 1 128
Hourly flow rate (vph)	1812	634 0	-2216 0	115	
Pedestrians					grafia
Lane Width (ft)			e la Merca de la companya de la comp		1 2 to 1 to 2 to 2 to 1
Walking Speed (ft/s) Percent Blockage				and the second	
Right turn flare (veh)		A BANG CONTRACTOR	in land on the first of	The world and resonance in the	State of the state
Median type	None		None	भारतात्र । यहा हा । अस	A super content of the content of th
Median storage veh)			Alteres and the second		
Upstream signal (ft)	633		a i galest aprilant i i i i i i i i i i i i i i i i i i i	Nacionalina in la seconda de la companio de la comp	The second second second
pX, platoon unblocked	460400451101114	88.0	0.88	0.88	
vC, conflicting volume	i, a Serzige — — e più George de la certa i ganta de sai Paranter — e daya	1812	2366	604	
vC1, stage 1 conf vol					
vC2, stage 2 conf vol			i segivera di suari non teritori di servizioni tentanti di segivera di territori		La Company of the second
vCu, unblocked vol		1438		61	
tC, single (s)	i fi Schiqia Tarbiji Midda (1904)	4.3	6.8	7.1	* .
tC, 2 stage (s)	afa y Maa Wafi	na da minada <b>kija</b>	(alisa 180 <del>0</del> - ann ann an Sai <b>ge</b> (Lille)	i Lengging garak ng Englassia	antino de la compresa de la transferia de la compresa del compresa de la compresa de la compresa del compresa de la compresa del compresa de la compresa de la compresa de la compresa de la compresa del compresa de la compresa del compresa del compresa de la compresa de la compresa del compresa de la compresa del compre
<b>(F(6):</b>		2.3	No. 1 Company of the State of t	84	
p0 queue free % cM capacity (veh/h)	Selfine in the	100 385		86 845	man what propagation is
can capacity (veinin)	1 <b>3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3</b>	300			
Allege of the state	1,18,11	897 NG	130 M	grand to the South	\$ 1.
Volume Total	604	604 604	634 554	554 554 554	115
Volume Left	0	0 0		0 0 0	0
Volume Right	0	0 0	71.1	0 70 70 8	115
cSH	1700	1700 1700 9.36 0.36		1700 1700 1700 0.33 0.33 0.33	<b>845</b> → <b>0:14</b> - → 54 2 2 2 4 4 4 5 7 7
Volume to Capacity Queue Length 95th (ft)	0.30	0.00 0.00 0 0	for a completely for the constitution of the con-	0 0 0	
Control Delay (s)				0.0 0.0 0.0	9.9
Lane LOS		0,0	4.0	0.0	A
Approach Delay (s)	0.0	er en en e	0.0		9.9
Approach LOS		•		we stand an end of the	A
Legionari (127 de 17	·		· · · · · · · · · · · · · · · · · · ·		
Average Delay	<u></u>	0.2			
Intersection Capacity Utiliza	tion	44.8%		f Service	A
Analysis Period (min)	uwo I "	15		OUTIO	**
raisely and a various friend,					



	۶	<b>→</b>	•	<b>—</b>	•	4	<b>†</b>	<i>&gt;</i>	<b>\</b>	ţ	
	2,1	4.1	785a		48.5			1.34	ŧ.	• : :	
Lane Group Flow (vph)	120	721	587	899	163	179	311	384	349	662	
v/c Ratio	0.50	0.46	0.81	0.64	0.21	0.63	0.65	0.35	0,57	0.81	ar her og
Control Delay	69.3	40.2	42.4	19.4	12.9	72.1	63.3	30.3	56.3	57.4	
Queue Delay	- 0.0	0,0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	69.3	40.2	42.4	19.4	12.9	72.1	63.3	30.3	56.3	57.4	
Queue Length 50th (ft)	55	188	238	163	59	81	142	139	150	296	elikael H. T., Kenael
Queue Length 95th (ft)	87	256	202	293	378	#151	186	158	206	342	
Internal Link Dist (ft)	A AGENT TO THE SECOND S	1569 -		280	Total Control (1999) The Control (1999) The Control (1999)		2748		r ingrin () Sa sulvi a	1756	19 - A
Turn Bay Length (ft)	450					300		300	240		
Base Capacity (vph)	280	1601	813	1411	786	282	683	1237	614	1034	and the equation
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0.	* O.	}`\ <b>0</b> ∗	0	. 0	0	0	0	· O	. 0	
Storage Cap Reductri	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.43	0.45	0.72	0.64	0.21	0.63	0.46	0.31	0.57	0.64	

<sup># 95</sup>th percentile volume exceeds capacity queue may be longer.

Queue shown is maximum after two cycles.

# 18: SR 421 & I-95 SB Ramps

	-	*	1	<b>—</b>	-	4		
		#.D#			6397. 672	3/3/21		
Lane Group Flow (vph)	1234	108	312	1471	1249	160		
v/c Ratio	0.94	0.07	0.82	0.82	0.90	0.10		
Control Delay	57.8	0.1	58.4	23.0	49.3	0.1		
Queue Delay	0.0	0.0	0.0	0.1	0.0	0.0		
Total Delay	57.8	0.1	58.4	23.2	49.3	0.1		
Queue Length 50th (ft)	429	· · · · O	269	580	544	0		
Queue Length 95th (ft)	#491	0	252	47	#628	0		
Internal Link Dist (ft)	273			477			1 4 4	
Turn Bay Length (ft)		200				•	•	•
Base Capacity (vph)	1313	1599	517	2065	1392	1599	 The state of the s	*
Starvation Cap Reductn	0	0	0	90	0	0		
Spillback Gap Reductn	0	0	. 0	· · · · · · · · · · · · · · · · · · ·	· 0 :	0		
Storage Cap Reductn	0	0	0	0	0	0		
Reduced v/c Ratio	0.94	0.07	0.60	. 0.74	0.90	0.10		
E								

<sup># 95</sup>th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

# 17: SR 421 & I-95 NB Ramps

	•	<b>→</b>	<b>←</b>	•	1			
		3784		1 1 2 1 <u>2</u> 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1	187	4.58		
Lane Group Flow (vph)	234	2118	1637	625	51	275		· · · · · · · · · · · · · · · · · · ·
v/c Ratio	0.64	0.53	0.50	0.39	0.22	0.73	*	
Control Delay	75.2	1.4	14.7	0.7	54.7	69.0		
Queue Delay	0.0	0.5	0.1	0.0.	0.0	0.0		
Total Delay	75.2	1.9	14.8	0.7	54.7	69.0		·
Queue Length 50th (ft)	116.	0	272	0	42	138		
Queue Length 95th (ft)	m122	282	328	0	76	146		
Internal Link Dist (ft)	77 Y.D. 11	477	553					
Turn Bay Length (ft)	650		****		330	330		
Base Capacity (vph)	403	3994	3267	1583	319	528		
Starvation Cap Reductn	ก	1259	0	0	0	o o		-
Spillback Cap Reductn	Ŏ.	. 0	318	0	. 0	. 0		
Storage Cap Reductn	0	0	0	0	0	0		•
Reduced v/c Ratio	0.58	0.77	0.56	0.39	0.16	0.52	j E.	and the second second

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



#### Summary of All Intervals

the particle of the control of the c				
End Time	5:15			
Total Time (min)	20			
Time Recorded (min)	15			
# of Intervals	2		s for the base of the property of the property of	Section 19 Section 19
# of Recorded Intvis	1			
Vehs Entered	1649	The gradient and Francisco and the second		
Vehs Evited	1639			
Starting Vehs		And the second s	or o	÷ Š
Ending Vehs	304			
Denied Entry Before	6 - 6 - 3 - 3 - 3	in the state of t		Charles Kingle
Denied Entry After	10			
Travel Distance (mi)	4 <b>1592</b>	* * * * * * * * * * * * * * * * * * * *		
Travel Time (hr)	75.5			
Total Delay (hr)	31.0	1.0		
Total Stops	1731	. 8	<u>-</u>	
Fuel Used (gal)	596.4	The state of the s	L.	Programme Contraction

#### Interval #0 Information Seeding

Start Time: 1. Colored and the start of the	
End Time 5:00	
Total Time (nin)	13.4
Volumes adjusted by Growth Factors.	
No date recorded this interval:	

#### Interval #1 Information Recording

Start Time		
End Time	5:15	
Total Time (min)	Control of 15 sections in the section of the sectio	
Volumes adjusted by		

Kara Anaga			
Vehs Exited	1639		
Starting Vehs	294		
Ending Vehs	304		
Denied Entry Before			
Denied Entry After	10		
Travel Distance (mi)	1592	a a	
Travel Time (hr)	75.5		
Total Delay (hr)	31.0	•	and the second
Total Stops	1731		
Fuel Used (gal)	596.4		•

### 1: SR 421 & Williamson Blvd Performance by movement

eur (Krister)												. : 7
Total Delay (hr)	0.5	1.6	0.4	2.1	1.3	0.0	1.0	1.3	0.8	1.1	2.0	0.3
Delay / Veh (s)	74,8	50.1	33.4	52.8	22.5	3.5	82.3	57.8	32.4	44.6	43.6	43.0
Total Stops	21	84	36	130	95	25	44	73	57	63	121	20
Travel Dist (mi)	6.6	32.9	11.8	13.0	19.2	4.5	22.2	42.9	47.9	29.7	54.6	8.2
Travel Time (hr)	0.6	2.4	0.7	2.5	1.7	0.3	1.7	2.5	2.3	2.0	3.6	0.6
Avg Speed (mph)	. <b> </b>	. 14	18	. <b>5</b> ·	11	17	14	17	22	15	15	15
Vehicles Entered	23	108	39	145	210	49	41	79	94	86	159	25
Vehicles Exited	21	121	40	137	208	<b>52</b>	42	· 80 ~	76	93	r 165⊪	. 23
Hourly Exit Rate	84	484	160	548	832	208	168	320	304	372	660	92
input Volume	109	544	112	<b>546</b>	838	152	163	283	349	314	507	- 89
% of Volume	. 77	89	143	100	99	137	103	113	87	118	130	103
Denied Entry Before		. 0	1	.0	. 0	î.:::0\::.	*** <b>'0</b>	0.	`` <b>```(0</b> ``:		0	. 0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

### 1: SR 421 & Williamson Blvd Performance by movement

Ellin State State				
Total Delay (hr)	12.2			
Delay / Veh (s)	416			
Total Stops	769			
Travel Dist (mi)	293.6		(Carlo Testa Antologo estado esta Antologo estado est Antologo estado esta	
Travel Time (hr)	20.8			
Avg Speed (mph)	14	Security (1965) Security (1966) Security (1967) Security (1966) Security (1966		
Vehicles Entered	1058			
Vehicles Exited	1058	That is a second of the second	en de la companya de La companya de la co	
Hourly Exit Rate	4232			
Input Volume	4006			
% of Volume	106			
Denied Entry Before		* * * * * * * * * * * * * * * * * * *	and the state of the state of	
Denied Entry After	0			

### 3: SR 421 & Taylor Branch Rd. Performance by movement

	:	15.77	2.5		5	
Total Delay (hr)	0.3	0.2	0.5	0.1	1.1	
Delay / Veh (s)	2.8	6.8	3.3	7.3	3.6	
Total Stops	0	Ó	0	28	28	1
Travel Dist (mi)	44.1	13.0	169.2	- 15	227.9	
Travel Time (hr)	1.4	0.7	4.4	0.1	6.5	···
Avg Speed (mph)	32	20	40	12	36	
Vehicles Entered	383	118	540	28	1069	) 
Vehicles Exited	389	v 124	537	28 .	1078	
Hourly Exit Rate	1556	496	2148	112	4312	
Input Volume	√1682°	501	1928	101	4212	
% of Volume	93	99	111	111	102	
Denied Entry Before	0.	0		. 0		The state of the s
Denied Entry After	O	0	0	0	0	)

### 17: SR 421 & I-95 NB Ramps Performance by movement

. 1 111 : 1				11.7	1.0			
Total Delay (hr)	0.7	1.0	1.5	0.3	0.2	1.0	4.7	
Delay / Veh (s)	727	8.7	13,8	6.2	∘ <b>51.8</b>	52.8	15.6	
Total Stops	33	93	151	0	11	57	345	
Travel Dist (mi)	3.8	46.7	43.4	11.4	3.6	17.4	126.3	
Travel Time (hr)	0.9	2.4	2.5	0.6	0.3	1.4	8.0	
Avg Speed (mph)	4.	20	- 18	20	13	12	16	The property of the second of
Vehicles Entered	35	420	389	153	13	64	1074	
Vehicles Exited	39	425	386	153	15	65	1083	
Hourly Exit Rate	156	1700	1544	612	60	260	4332	
Input Volume	173	1952	1379	569	43	201	4317	200 - 100 -
% of Volume	90	87	112	108	140	129	100	
Denied Entry Before	0	0	0	0	0	0	0	
Denied Entry After	0	Ö	Ö	0	0	1	1	

### 18: SR 421 & I-95 SB Ramps Performance by movement

Control of the Control					.; ĝ	. All	154		
Total Delay (hr)	1.8	0.0	1.3	2.3	3.2	0.0	0.7	9.4	
Delay // Veh (s)	25:2	5.1	69:7	24.9	56.6	1.4	34.6	34.9	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Total Stops	162	5	63	150	100	0	36	516	
Travel Dist (mi)	17.3	1.3	7.4	35.2	5.7	0.0	2.3	69.1	
Travel Time (hr)	2.2	0.1	1.6	3.1	3.4	0.0	0.9	11.3	
Avg Speed (mph)	. 8	18	- <b>5</b>	11	3	23	5	7.	
Vehicles Entered	272	25	71	330	205	1	79	983	
Vehicles Exited	256	24	66	339	197		78	961	
Hourly Exit Rate	1024	96	264	1356	788	4	312	3844	
Input Volume	v1124	83	240	1169	999		371	3995	
% of Volume	91	116	110	116	79	44	84	96	
Denied Entry Before	0.	0,	0.	0	# <b>4</b> .	0	• 0	4	
Denied Entry After	0	0	0	0	6	0	3	9	

### **Total Zone Performance**

프로젝트 시민 경우를 가는 것이 되었다. 그 사람들은 그는 그를 보고 있다면 되었다고 있다.	<b>27.4</b>	
	66609	Spatial Control of
Total Stops	1658	
Travel Dist (mi):		
Fravel Time (hr)	46.7	
Avg Speed (mph)		74 (★) 71 년 동생.
Vehicles Entered	1080	
/ehicles Exited		A CONTRACT OF THE SECOND
Hourly Exit Rate	56	
nput Volume	46530	
% of Volume	0	
Denied Entry Before		
input Volume % of Volume Denied Entry Before Denied Entry After	<b>16530</b>	



### Summary of All Intervals

Bedglett in Land		л	: :::::::::::::::::::::::::::::::::::::				
Start Time	4:55	4:55	4:55	4:55	4:55	4:55	
End Time	5:15	5:15	5:15	5:15	5:15	5:15	Company of the Company
Total Time (min)	20	20	20	20	20	20	
Time Recorded (min)	45	/15	15	15	15	15	1
# of Intervals	2	2	2	2	2	2	
# of Recorded Intvits			1	4	*s   1	1	Sugar San Contract
Vehs Entered	1575	1635	1585	1541	1526	1569	
Vebs Exited	1615	1615	1574	1573	1534	1581	1.4. 1
Starting Vehs	303	296	275	317	256	288	
Ending Vehs	268	· 316	286	285		279	
Denied Entry Before	4	10	1 <b>1</b>	6	7	8	
Denied Entry After	56	. 44	31	9.	23	31	
Travel Distance (mi)	1534	1545	1487	1460	1448	1495	
Travel Distance (mi) Travel Time (fur)	79.4	78.0	72.3	74.7	68.1	0.0	
Total Delay (hr)	36.7	35.2	30.8	<b>34</b> .1	27.9	32.9	
Total Stops	1692	1712	1600	1563	1528	1619	
Fuel Used (gal)	587.9	590.2	559.8	561.1	540.6	567.9	

### Interval #0 Information Seeding

Start Time 455
End Time 5:00
Total Time (min) 5
Volumes adjusted by Growth Factors.
No data recorded this interval.

Interval #1 Information Recording

Start Time 5:15

Total Time (rain) 15

Volumes adjusted by Growth Factors.

Vehs Entered	1575	1635	1585	1541	1526	1569	
Vehs Exited	1615	1615	1574	1573	1534	1581	
Starting Vehs	303	296	275	317	256	288	
Ending Vehs	263	316	286	285	248	279	
Denied Entry Before	4	10	11	6	7	8	
Denied Entry After	56	44	31	9	23	31	8 B
Travel Distance (mi)	1534	1545	1487	1460	1448	1495	
Travel Time (hr)	79.4	78.0	72.3	<b>74.7</b>	68.1	0.0	po
Total Delay (hr)	36.7	35.2	30.8	34.1	27.9	32.9	
Total Stops	1692	1712	1600	1563	1528	1619	
Fuel Used (gal)	587.9	590.2	559.8	561.1	540.6	567.9	

### Total Zone Performance

Total Delay (hr)	29.2
Delay / Veh (s)	31456
Total Stops	1495
Travel Dist (m)	
Travel Time (hr)	0.0
Avg Speed (mph)	
Vehicles Entered	969
Hourly Exit Rate	72
toput Volume	
% of Volume	0
Denico Entry Before	
Denied Entry After	31

### Intersection: 1: SR 421 & Williamson Blvd

Markey Commencer	: :	1	My.	11.00 11.00 11.00 11.00	ää	454.4 454.4	. : .		144	;		.:.
Directions Served	L	L	T	T	TR	L	L	T	Ţ	R	L	L
Maximum Queue (ft)	93	101	224	245	226	280	273	206	198	.74	134	144
Average Queue (ft)	46	55	151	146	167	184	182	105	110	25	73	85
95th Queue (ft)	89	102	244	252	253	306	288	226	217	. 72	154	159
Link Distance (ft)			1594	1594		248	248	248	248	248		
Upstream Blk Time (%)			78:			3	3.	0	, <b>0</b>	,- '**	***************************************	
Queuing Penalty (veh)						9	9	1	1			
Storage Bay Dist (ft)	450	450		Talker Kontroller Zahlenska bar S	200	Va Para		48.27			300	300
Storage Blk Time (%)		.,		1	7				.,			
Queuing Penalty (veh):				2.5	13		(1 ± 1 ± 1 ± 1 ± 1 ± 1 ± 1 ± 1 ± 1 ± 1 ±				1.3	

### Intersection: 1: SR 421 & Williamson Blvd

And Steel			14.0	:	81 j		``.		
Directions Served	T	T	R	R	L	Ļ	T	TR	
Maximum Queue (ft)/	177	231	183	180	185	252	- 360	357	
Average Queue (ft)	118	135	98	99	110	142	217	232	
95th Queue (ft)	190	256	188	185	194	257	364		
Link Distance (ft)	2762	2762					1748	1748	
Upstream Blk Time (%)	and the	1100		pi su outo Salastania Salastania			A Car		
Queuing Penalty (veh)						***************			
Storage Bay Dist (ft)			300	300	240	240		38 TEST	The second secon
Storage Blk Time (%)		0	1	2	2	2	3		
Queuing Penalty (veh)		. 0	2	<b>2</b>	. 5	45	9	u i National designations National designations	Section 1.

### Intersection: 3: SR 421 & Taylor Branch Rd.

araen	3.5				
Directions Served	R				
Maximum Queue (ft)	95	The second second	* 1986 - 1986 Televis (* 1998) 1981 - 1986 Televis (* 1998)		
Average Queue (ft)	47				
95th Queue (ft)	103	A STATE OF THE STA	The state of the s	Sala Abrahaman Salah	
Link Distance (ft)	251				
Upstream Blk Time (%)		and the register of the control of t	And the second s	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
Queuing Penalty (veh)					
Chamma Day Dint (4)		****			
Storage Blk Time (%)			<del>-</del> -		
Queuing Penalty (veh)					

### Intersection: 17: SR 421 & I-95 NB Ramps

		# <u>-</u>		25 A	213.			1 111	77.	.37		
Directions Served	L	Ĺ	T	Ţ	T	Ţ	T	Т	L	R	R	
Maximum Queue (ft)	144	133	161	164	222	182	274	287	96	137	143	1. :
Average Queue (ft)	100	81	83	83	119	70	142	169	48	78	90	
95th Queue (ft)	157	147	182	183*	237	176	276	303	103	135	143	
Link Distance (ft)			491	491	491	545	545	545		1439		
Upstream Blk Time (%)	, c . #- 60°	સ્કૃષ્ટિલન (તુ.૧૩) સમિદ્ધાર (તુ.૧૩)					.: " · · · · · ·			selakensi Lili e		di i
Queuing Penalty (veh)												
Storage Bay Dist (ft)	650	650	. naka inga Dinagan inga					4 2 3	330	. wybła J. stady ik	330 .	*
Storage Blk Time (%)												
Queuing Penalty (veh)			de Maria		es di			\$ 500 mg		. *	· · :	

### Intersection: 18: SR 421 & I-95 SB Ramps

				* *:		*	: · ·	٧.			
Directions Served	T	Т	T	L	Т	Т	L	L	Ŕ		
Maximum Queue (ft)	307	321	354	300	409	439	190	196	192		
Average Queue (ft)	162	174	219	172	154	217	180	190	145		
95th Queue (ft)	299	310	379	295	385	449	223	200	220		.: *** 
Link Distance (ft)	130	130	130	491	491	491	54	54	54		
Upstream Blk Time (%)	10	13	20		. 1	. 2	57	65	30		*
Queuing Penalty (veh)	41	51	82		5	9	213	243	113		
Storage Bay Dist (ft)				11 - 17 - 1907 11 - 1809 11 - 1809			. ; ``i				
Storage Blk Time (%)			20			•					
Queuing Penalty (veh)		r Billian Francisco Maria Barray Nova Barray	17			oran di mili			ندي القرار ال	ile tega	1. 18:

### Zone Summary

Zone wide Queuing Penalty: 832

### **APPENDIX D**

TURNING MOVEMENT VOLUME PROJECTIONS

# PM Peak-Hour Turning Movement Projections Year: 2025 Williamson Boulevard at Taylor Road

Existing TMCs and Background Approach and Departure Volumes												
		Eastbound			Westbound			Northbound			Southbound	
	Γ	Т	R	Г	T	×	Ţ	T	R	ľ	T	ĸ
Existing Count			33	į	, , ,	ç		9	- ,,,,		ç	7
Jate 5/1/2008	147	550	601	211	Z	ec.	<u>*</u>	675	340	115	492	57.
PSF 1.03	146	555	112	526	787	164 2	107	339	356	320	207	178
Balanced Existing Volumes	146	544	112	546	817	171	107	339	349	314	507	178
Publix/Summertrees Adjustments	-37	0	0	0	19	-19	26	-56	0	0	0	6ê,
Adjusted Volumes with Committed Adjustments	109	544	112	546	836	152	163	283	349	314	507	8
Adjusted Volumes with S.R. 421/Taylor Br. Rd Modifications	109	544	112	546	836	152	163	283	349	314	507	89
Approach												
Existing Volume		765			1,534			795			910	
Bekgmd Link Vol		1,040			3,497			1,996			1,907	
Volume Growth		275			1,963			1,201			766	
Denorturo			Ī									
Existing Volume		1,207			1,088			<del>2</del> 4			1,165	
Bckgmd Link Vol		2,752			1,479			1,140			2,925	
Volume Growth		1.545			391			296			1.760	
		21.761									3	
Courte in Deterno Templan Marcanaste												
OF WALL BY FULLIF CALL HINK INTO VEHICLES		Poethound			Weethound	ľ		Northbound	ſ		Southbound	
	1	L	2		T	~	1	Т	~	1	T	×
By Approach	42	109	124	1,258	279	426	185	283	733	417	475	105
By Departure	8	172	150	1,068	184	340	113	208	750	623	542	94
Average	45	140	137	1,163	232	383	149	245	742	520	209	100
Total Enture Turning Movement Calculations												
Arrivational and Australia Andrews Array Array and Array		Easthound			Westbound			Northbound			Southbound	
	ı	H	~	T	Ħ	×	1	T	×	1	T	~
Existing TMCs + Volume Growth	154	684	249	1,709	1,068	535	312	528	1,091	834	1,016	681
Balanced TMCs	154	636	249	1,560	975	488	312	528	1,013	775	1,016	189
Total Volumes Projections with Pioneer Trail Interchange												
Adiustments	15	6		-233	1.1	30	01-	<i>t-</i>	-163	28	-13	31
Total	169	645	242	1,327	365	518	305	521	850	803	1,003	220
Total Volumes Projections with Madeline Avenue Overnass												
Adjustments	0	43	0	٥	-63	1.	0	Φ	0	-12	0	÷
Total	154	593	249	1,560	912	481	312	528	1,013	763	1,016	189
			•									

## S.R. 421/Taylor Road at I-95 SB Ramps PM Peak-Hour Turning Movement Projections Year: 2025

Existing TMCs and Background Approach and Departure Volumes												
		Eastbound			Westbound			Northbound			Southbound	
	Г	T	×	r	Ţ	~	-	Ļ	×	1	Ļ	~
Existing Count												
Date 5/8/2008	0	1,126	80	231	1,0,1	0	¢	Φ	0	1,00,1	0	357
PSF 1.04	0	1,171	83	240	1,114	0	0	0	0	1,041	0	37.1
Balanced Existing Volumes	0	1,123	83	240	1,162	0	o	٥	٥	8	0	371
Adjusted Volumes with Committed Adjustments	0	1,123	83	240	1,162	0	<b>O</b>	0	0	88	٥	371
Adjusted Volumes with S.R. 421/Taylor Br. Rd Modifications	0	1,123	83	240	1,162	0	0	0	0	666	0	371
Approach												
		1,206			1,402			0			1,370	
Bckgrnd Link Vol		2,611			n/a			0			1,836	
Volume Growth		1,405			n/a			0			994	
						Ī						
Departure Evision Meliuma		, 113			1 633			c			173	
CANADA BURGAT		4,144			0,00			> <			24.5	
Sekgrid Link Vol.		# c,			1.786			0 0			335	
YOURISE CLOWIN		•			00/1			>			3	
Growth in Future Turnine Movements												
		Eastbound			Westbound			Northbound			Southbound	
	L	Т	R	L	T	æ	Г	Т	¥	L	T	×
By Approach		1,176	229	08	733	0	0	0	0	156	0	310
By Departme	0	789	143	82	1,199	0	0	0	0	209	0	287
Average	1	982	186		996	٥	0	0	0	183	٥	448
Total Future Turning Movement Catculations												
		Eastbound			Westbound			Northbound			Southbound	
	'n	Ħ	×	1	T	×	-1	۲	~	Г	T	×
Existing TMCs + Volume Growth	0	2,105	569	321	2,128	0	0	0	0	1,182	٥	618
Balanced TMCs		2,155	269	321	2,204	0	0	0	0	1,210	0	819
Total Volumes Projections with Planer Trail Interchance												
Adjustments		-139	4	37	-35	٥	0	٥	٥	-18	0	-150
LetoT	-	2.016	283	358	2.160	c	0	c	٥	1.192	•	699
Tatal Volumes Projectime with Madeline A venue Overnass							•					į
	ı	-55	٥	0	-50	0	0	0	٥	-10	0	-20
Total	0	2,100	569	321	2,154	. 0		. 0	0	1,200	0	862

## S.R.421/Taylor Road at I-95 NB Ramps PM Peak-Hour Turning Movement Projections Year: 2025

Existing TMCs and Background Approach and Departure Volumes

Existing Tivics and Background Approach and Departure Volumes			ľ		30.	ľ		1		L		
	•	Eastbound	,	,	Westbound			Northbound	ı		Southbound	
	4	H	×	7	-	×	J	_	¥	7	T	æ
Existing Count												
Date 5/8/2008	166	1,937	o	0	1,264	530	4	0	193	0	0	0
PSF 1.04	173	2,014	0	0	1,315	551	43	0	201	0	0	0
Balanced Existing Volumes	173	1,949	0	0	1,359	569	43	0	201	0	0	٥
Adjusted Volumes with Committed Adjustments	173	1,949	0	0.	1,359	569	43	0	201	0	0	0
Adjusted Volumes with S.R. 421/Taylor Br. Rd Modifications	173	1,949	0	0	1,359	569	43	0:	201	0	0	0
Approach												
Existing Volume		2,122			1,928			244			0	
Bckgrud Link Vol		n/a			2,737			387			0	
Volume Growth		n/a			608			143			0	
			1			1						Ī
Departure Frishing Volume		2.150			1 400			747			-	
Bokernd Link Vol		3.052			11/3			984			. 0	
Volume Growth		205			17/3			252			0	
Growth in Future Turning Movements												
		Eastbound			Westbound			Northbound			Southbound	
	.,	T	R	Г	T	R	Г	T	R	Г	T	~
By Approach	257	1,075	0	0	719	06	65	0	48	0	0	0
By Departure	160	838	0	0	1,101	92	180	0	2	0	0	0
Average	208	957	0	0	910	91	138	0	56	0	0	0
Total Future Turning Movement Calculations												
		Eastbound			Westbound			Northbound			Southbound	
	ľ	Т	R	Г	T	~	1	⊢	~	۔	H	~
Existing TMCs + Volume Growth	381	2,906	0	0	2,269	099	181	0	257	0	٥	٥
Balanced TMCs	381	2,984	0	0	2,344	682	181	0	257	0	0	0
Total Volumes Projections with Ploneer Trail Interchance												
Adjustments	18-	-76	0	o	-19	-17	21	0	30	0	o	0
Total	300	2,908	0	0	2,325	999	202	0	287	0	0	.6
Total Volumes Profections with Madeline Avenue Overnass												
Adiustrants	-10	-65	۰	-	9-	017	٥	o	Ç	c	¢	c
Total	371	2,919		. 0	2,284	672	181	. 0	257	0	. 0	, <del>o</del>

# PM Peak-Hour Turning Movement Projections S.R. 421 at Taylor Branch Road Year: 2025

Existing LIMES and Background Approach and Departure Volumes												
		Eastbound			Westbound		_	Northbound			Southbound	
	ľ	Т	×	Г	Ţ	ĸ	Т	T	ĸ	Г	T	R
Existing Count												
Date 5/1/2008	0	1,450	44	147	1,629	0	446	0	86	0	0	0
PSF 1.03	0	1,494	454	151	1,678	Q	459	0	101	0	0	0
Balanced Existing Volumes	0	1,649	501	151	1,514	0	414	0	<u></u>	0	0	0
Adjusted Volumes with Committed Adjustments	0	1,649	501	151	1,514	0	414	0	101	0	0	0
Right-in/Right-out Adjustments	0	0	٥	-151	414	0	414	0	0	0	0	0
Adjusted Volumes with S.R. 421/Taylor Br. Rd Modifications	0	1,649	501	Ö	1,928	Ö	Q	0	101	0	0	0.
Approach												
Existing Volume		2,150			1,928			101			0	
Bekgrad Link Vol		3,141			2,880			135			0	
Volume Growth		166			952			34			٥	
Departure		!			1							
Existing Volume		1,750			1,928			0			501	
Bekgrad Link Vol		2,614			2,816			0			671	
Volume Growth		864			888			0			170	
Growth in Future Turning Movements												

		Eastbound			Westbound			Northbound			Southbound	
	<b>_</b>	T	2	Г	T	R	Γ	T	R	Г	T	R
By Approach	0	828	163	0	952	0	0	0	34	0	0	0
By Departure	0	835	8,	٥	888	0	0	o	29	0	0	0
Average	0.	832	125	0	920	0	0	0	31	0	0	0
Total Future Furning Movement Calculations												
		Eastbound			Westbound			Northbound			Southbound	
	1	L	×	ָר	T	×	ı	F	R	1	Т	×
Existing TMCs + Volume Growth	0	2,481	979	0	2,848	0	0	0	132	0	0	0
Balanced TMCs	0	2,588	653	0	3,026	0	0	0	132	0	0	0
Total Volumes Projections with Pioneer Trail Interchange						İ						
Adjustments	0	-26	-20	0	-36	0	0	0	-1	0	0	0
Total	0	2,562	633	0	2,990	0	0	0	131	0	0	0
Total Volumes Projections with Madeline Avenue Overpass												
			ļ		4	ļ	ļ	٠	ľ	ļ	•	٩

# PM Peak-Hour Turning Movement Projections Pioneer Trail at I-95 SB Ramps Year: 2025

SS
e Volum
Departur
oach and
ind Appr
Backgrou
MCs and
Existing T

	(A)		Eastbound			Westbound			Northbound			Southbound	
		Γ	T	R	Γ	T	~	1	Ľ	~	ų	Ţ	×
Existing Count													
Date 6/28/1905		0	1 <u>6</u>	0	0	134	0	0	0	0	0	0	0
PSF 1.00		0	164	0	0	134	0	0	0	0	0	0	0
Approach													
	Existing Volume		164			134			0			0	
	Bckgrnd Link Vol		1,238			0			0			1,439	
	Adjustment Factor		1.000			0.000			0.000			1.000	
	Intersection Specific Link		1,238			0	•		0			1,439	
	Volume Growth		1,074			-134			0			1,439	
				1			1						
Departure													
	Existing Volume		164			134			0			0	
	Bckgrnd Link Vol		0			1,013			0			631	
	Adjustment Factor		0.000			1.000			0.000			1,000	
	Intersection Specific Link		0			1,013			0			631	
	Volume Growth		-164			879			0			631	
				1			1			1			l

		Eastbound			Westbound			Northboung			Southbound	
	Γ	T	R	L	T	R	${f r}$	Т	R	Г	1	R
By Approach	0	787	287	163	485	0	0	0	0	9/9	0	763
By Departure	0	878	396	235	385	0	0	0	0	373	0	494
Average	0	833	341	199	435	0	0	0	0	524	0	629

	Eastboun	<b>D</b>		Westbound			Northbound		~*	Southbound	
T	T	R	Г	Ţ	R	Г	1	К	T	T	R
By Approach 0	929	309	187	552	0	0	0	0	693	0	746
By Departure 0	957	389	242	472	0	0	0	0	429	0	541
Average 0	943	349	214	512	0	0	0	0	561	0	643

		Eastbound			Westbound			Northbound			Southbound	
	ľ	Т	R	Г	T	R	Γ	T	R	Г	T	Я
Existing TMCs + Volume Growth	0	266	341	199	569	0	0	0	0	524	0	629
Based on Calculation #2	0	943	349	214	512	0	0	0	0	261	0	643
Average	0	970	345	207	541	0	0	0	0	543	0	636

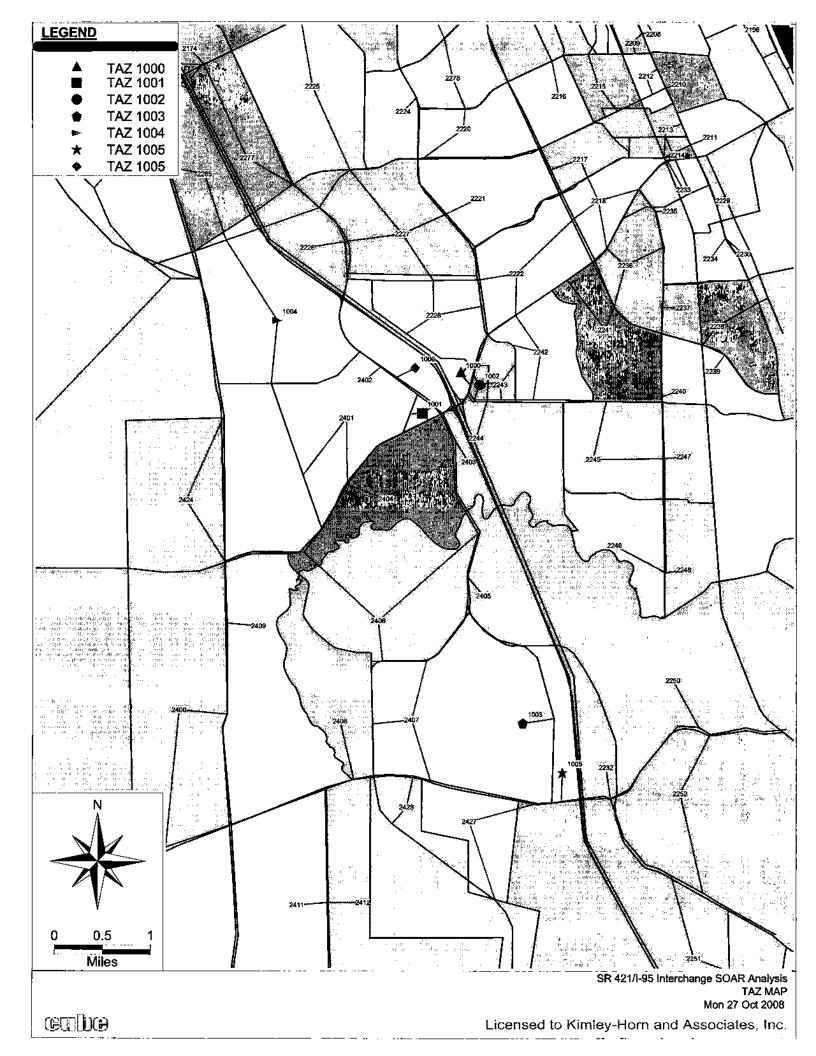
# Pioneer Trail at I-95 NB Ramps PM Peak-Hour Turning Movement Projections Year: 2025

(Or and Dasharanard Americach and Dasa-trees Valueses

Existing TMCs and Background Approach and Departure Volumes	rture Volu	ımes										
		100			Westbound			Northbound			Southbound	
	Г	T	R	Γ	Т	R	L	T	R	L	Ţ	R
Existing Count												
Date 5/8/2008	0 0	<u>2</u> 3	0 0	0 0	134	0	0	0 0	<b>O</b>	0	0 0	00
4	>	5	>	,	<u>+</u>	>		2	2	3	٥	7
Approach Existing Volume		164			134			c			c	
Bekernd Link Vol		· 0			770			486			· c	
Adjustment Factor		0.000			0001			0001			000	
Intersection Specific Link		0			770			486			2000	
Volume Growth		-164			929			486			0	
Departure												
Existing Volume		164			134			0			0	
Bekgmd Link Vol		942			955			955			Q	
Adjustment Factor		1.000			0.000			1.000			0.000	
Intersection Specific Link		942			0			955			0	
Volume Growth		778			-134			955			0	
Growth in Puture Turning Movements - Calculation #1 - PM Peak Hour	#1 - PM Po	eak Hour				i						
		Eastbound			Westhound			Northbound			Southbound	
	L	T	R	Ţ	T	R	Г	Т	R	T	1	R
By Approach	434	1,029	0	0	390	246	258	0	228	0	0	0
By Departure	900	652	O	0	453	355	167	o	126	0	0	0
Average	517	841	0	0	421	301	212	O.	177	0	0	0
Future Turning Movements - Calculation #2 - PM Peak Hour	ak Hour											
		Eastbound			Westbound			Northbound			Southbound	
	T	T	R	Г	Т	R	Г	T	R	ı	H	~
By Approach	468	1,155	0	0	487	283	252	0	234	0	0	0
By Departure	289	767	0	0	531	366	183	0	145	0	0	0
Average	528	926	0	0	509	325	217	0	189	0	0	0
Average in Future Turning Movement Calculations - PM Peak Hour	PM Peak	Hour										
		Eastbound			Westbound			Northbound			Southbound	
	L	T	R	L	T	R	Г	Т.	R	Ľ	Т	R
Existing TMCs + Volume Growth	517	1,005	0	0	555	301	212	0	141	0	0	0
Based on Calculation #2	528	926	0	0	209	325	217	0	189	Ö	0	0
Average	523	166	0	0	532	313	215	0	183	0	0	0

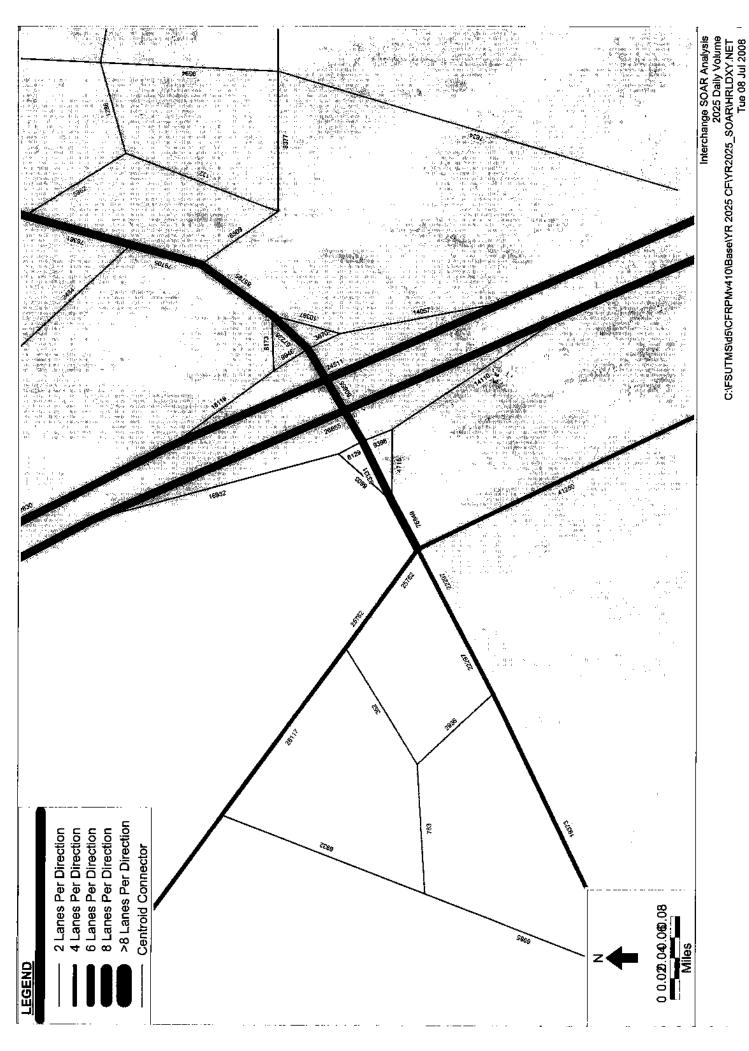
### **APPENDIX E**

MODEL PLOTS

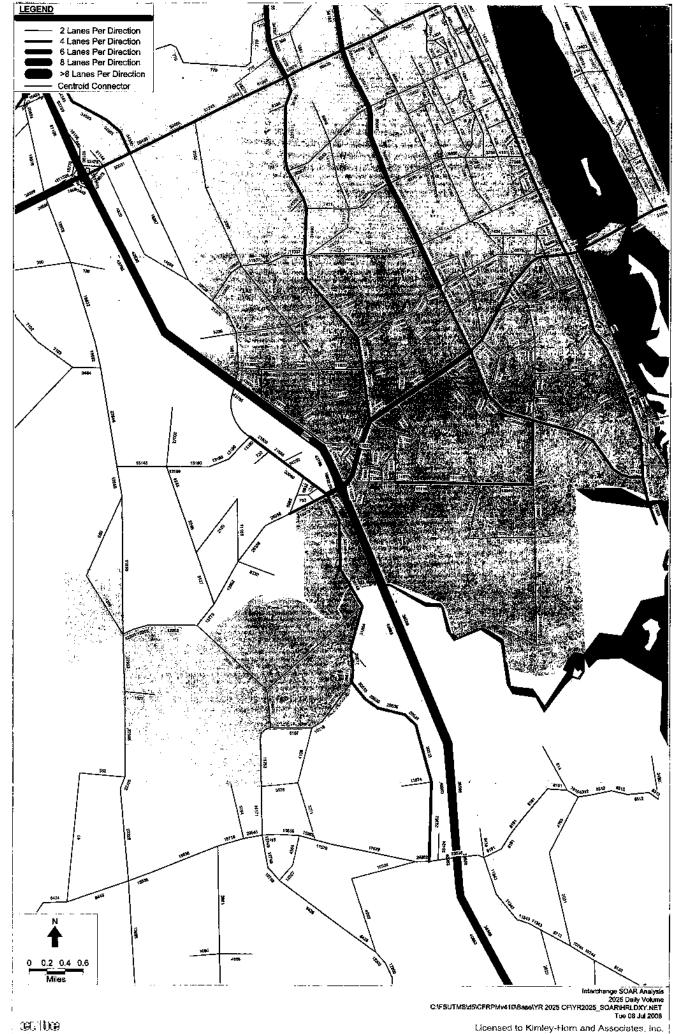


### NO BUILD EVALUATION

**Total Volume Plots** 

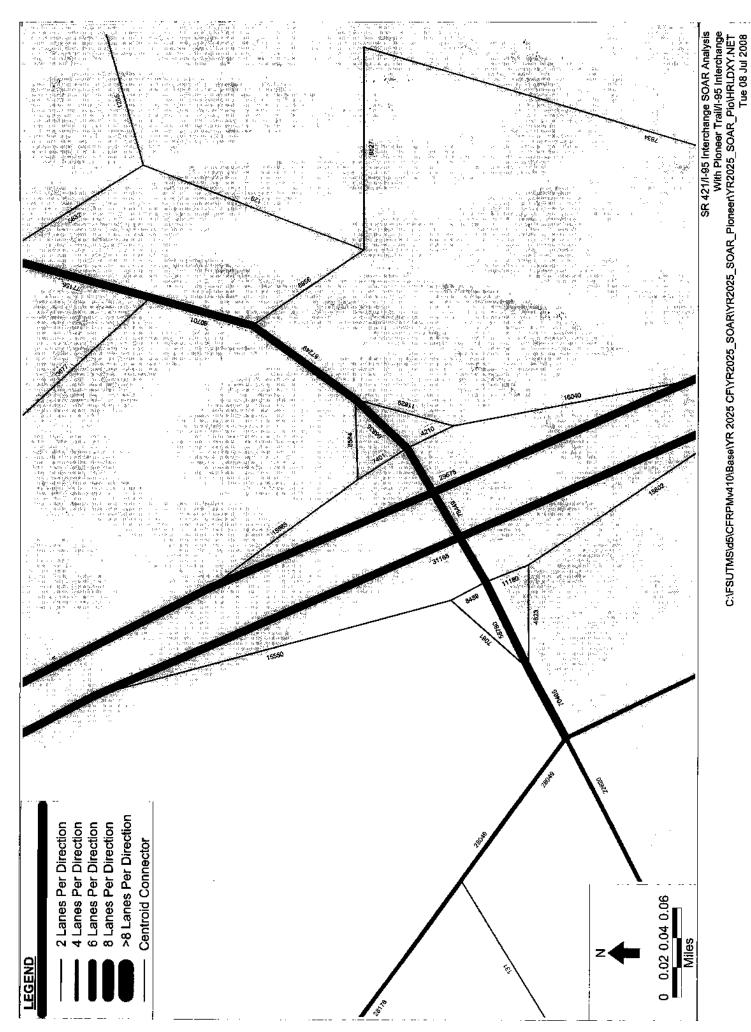


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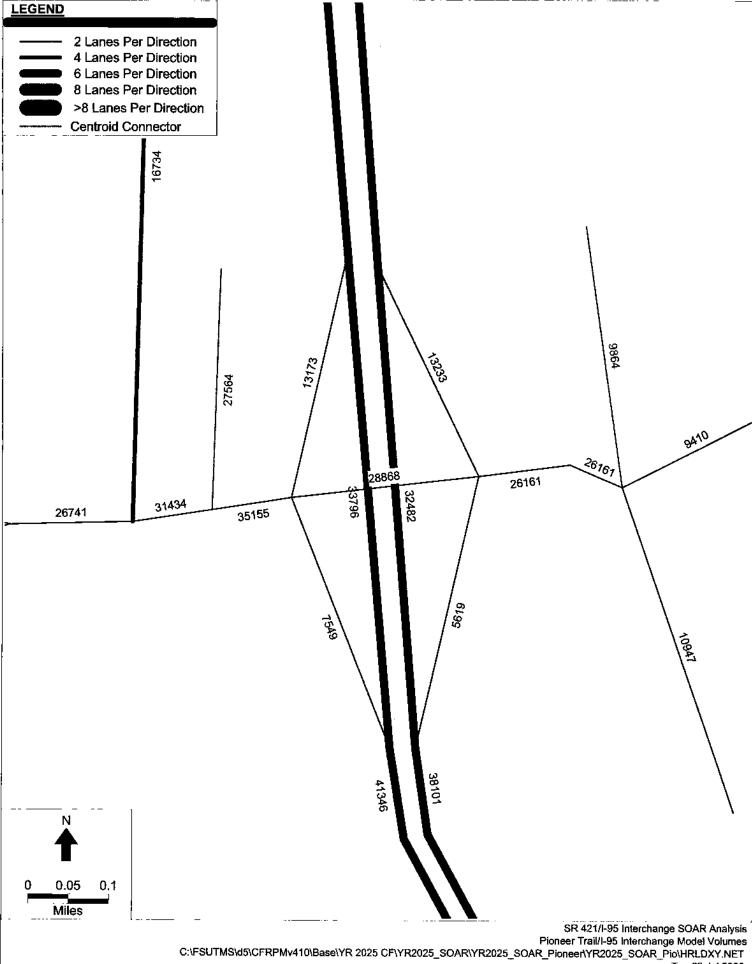


### PIONEER TRAIL/I-95 EVALUATION

### **Total Volume Plots**



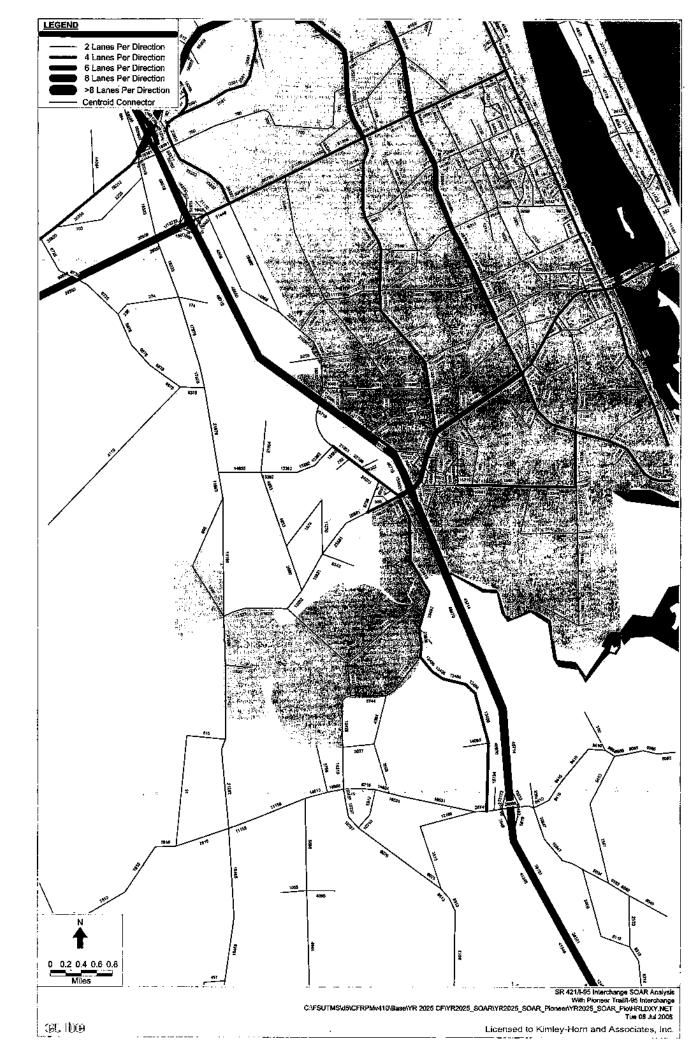
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C:\FSUTMS\d5\CFRPMv410\Base\YR 2025 CF\YR2025\_SOAR\YR2025\_SOAR\_Pioneer\YR2025\_SOAR\_Pio\HRLDXY.NET

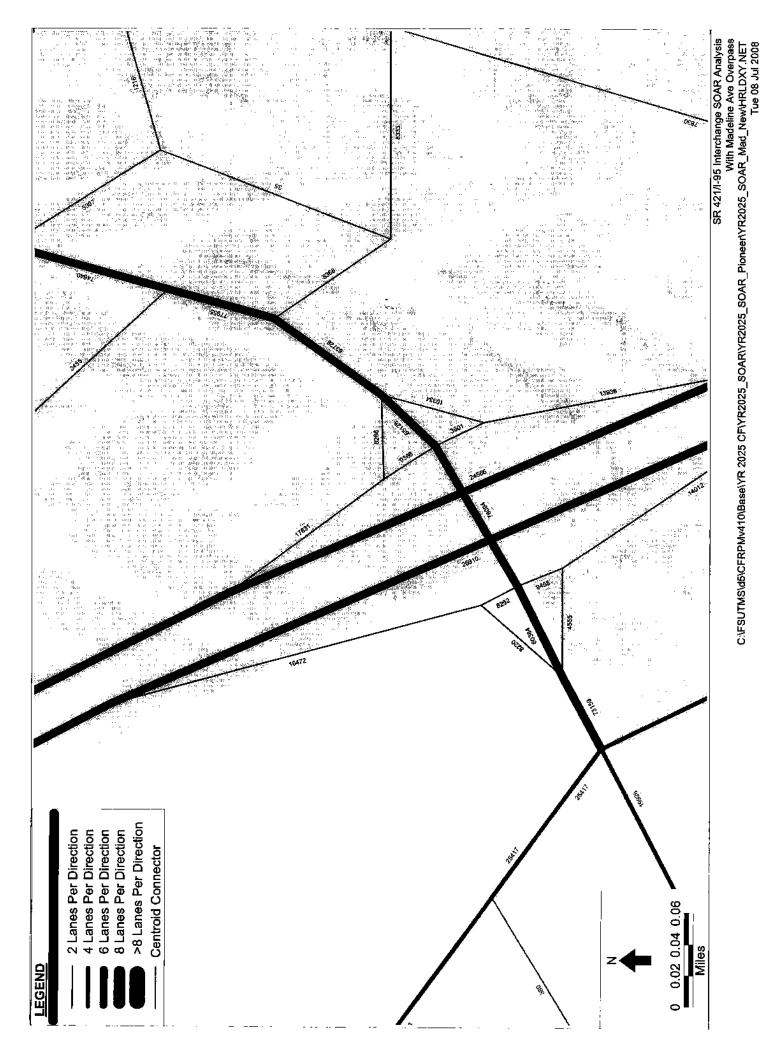
Tue 22 Jul 2008

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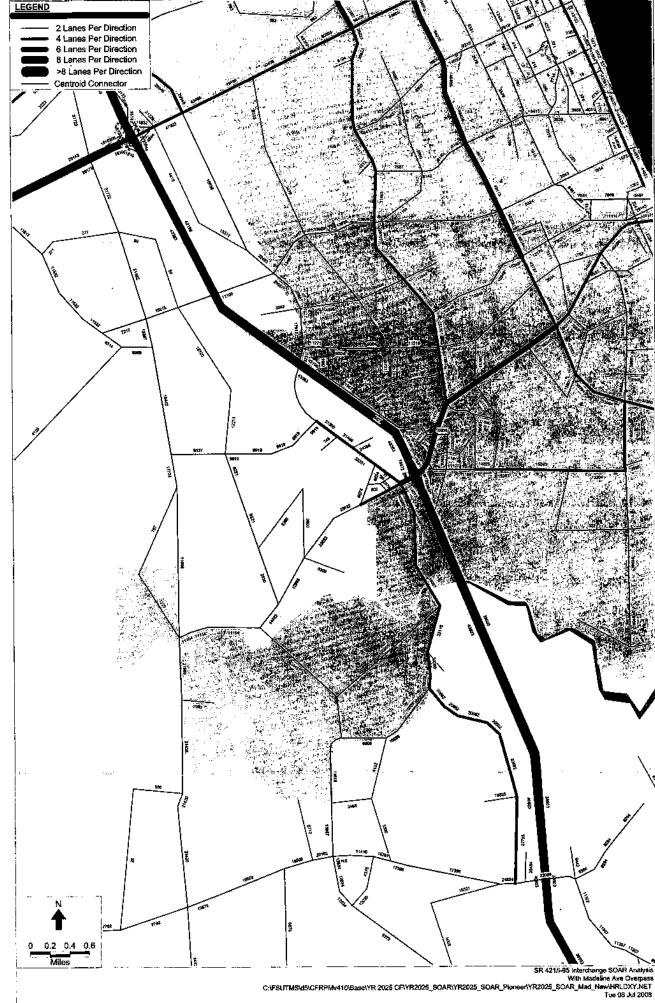


### MADELINE AVENUE EXTENSION

**Total Volume Plots** 



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### **APPENDIX F**

### SYNCHRO & SIMTRAFFIC PRINTOUTS (FUTURE CONDITIONS)

### 2025 NO-BUILD EVALUATION



	۶	<b>→</b>	•	•	<b>←</b>	*	4	†	-	<b>\</b>	ļ	4
Zenesani		1000		- S	. 2460	0.00		43.		Å4.	5 6 <sup>33 7</sup>	800
Lane Configurations	ሻሻ	<del>ተ</del> ተኈ		44	<b>^</b>	7	ሻሻ	<b>^</b>	77	ሻሻ	<b>^</b>	
Volume (vph)	154	636	249	1560	976		312	528	1013	775	1016	189
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width			12:	11	12			12	a 12	11	12	12
Total Lost time (s)	5.0	6.0	1	5.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0	
	∞0.97	0.91	elis filozofi	0.97	*0.83	1.00	0.97	0.95	0.88	0.97	0.95	1. 1.
Frt	1.00	0.96	ie	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98	. :
Fit Protected	0.95	1.00	 27 . 57	0.95	1.00	1.00	0.95	1,00	ୁ 1.00	0.95	1.00	in a
Satd. Flow (prot)	3224	4905	32*/*	3351	3123	1568	3319	3539	2814	3351	3490	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0,95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	3224	4905	٠-	3351	3123	1568	3319	3539	2814	3351	3490	
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
Adj. Flow (vph)	166	684	268	1677	1049	524	335	568	1089	833	1092	203
RTOR Reduction (vph)	0	51	0	0	0		0		0,	0	11	0
Lane Group Flow (vph)	166	901	0	1677	1049	289	335	568	1089	833	1284	Ō
Heavy Vehicles (%)	5%	1%	2%	1%	. 1%	3%	2%	2%	1%		1%	1%
Turn Type	Prot			Prot		Perm	Prot		pt+ov	Prot		
Protected Phases	5	2		22 de 1 <b>9</b> 52	6		3	8		7	4	
Permitted Phases				b		6	35 · · · · ·	et de l'Este	7	1. 1. 1.	•	•
Actuated Green, G (s)	9.0	21.0		50.0	62.0	62.0	11.0	23.0	78.0	24.0	36.0	
Effective Green, g (s)	9.0	21.0		50.0	62.0	62.0	11.0	23.0	73.0	24.0	36.0	
Actuated g/C Ratio	0.06	0.15	10 to	0.36	0.44	0.44	0.08	0.16	0.52	0.17	0.26	
Clearance Time (s)	5.0	6.0		5.0	6.0	6.0	5.0	6.0		5.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	A Marie 11	3.0	3.0	
Lane Grp Cap (vph)	207	736		1197	1383	694	261	581	1467	574	897	
v/s Platio Prot		60.18	٠	c0.50	0.34	. 757	c0.10	0.16	0.39	0.25	c0.37	
v/s Ratio Perm	- 18	,,		965 C 1		0.18	;			<del></del>		
v/c Ratio	0.80	1.22		1.40	0.76	0.42	1.28	0.98	0.74	1.45	1.43	
Uniform Delay, d1	64.6	59.5		45.0	32.7	26.7	64.5	58.2	26.2	58.0	52.0	
Progression Factor	1.00	1.00		0.72	0.57	0.56	1.00	1.00	1.00		1.00	
Incremental Delay, d2	19.6	112.8		182.0	1.2	1.3	153.5	31.3	2.1	212.7	200.5	
Delay (s)	84.2	172.3		214.2	19.9	16.3	218.0	89.6	28.2	270.7	252.5	
Level of Service	F	F		F	В	В	F	F	C	F	F	
Approach Delay (s)		159.2	i		119.6	3.44		77.6			259.6	
Approach LOS		F			F			E			F	
100000000000000000000000000000000000000					·					"		
HCM Average Control Delay			150.1	Н	CM Leve	l of Servic	· <b>Δ</b>		F			
HCM Volume to Capacity ratio	r 46.			''	OW FOAC	. J. JOI VA	···					
Actuated Cycle Length (s)			140.0	S	um of los	t time (s)	•		22.0			
Intersection Capacity Utilizatio	n		123.7%			of Service	<b>.</b>		22.0 H:			
Analysis Period (min)	n- :	•	15			-, Cortiot	•		11.			
c Critical Lane Group						\$	: ;			:		

	٠	<b>→</b>	•	•	+	4	1	<u>†</u>	<i>*</i>	<b>\</b>	ļ.	-√
	28.		700		()覆盖	7.			V 5/2	2.8	4	237
Lane Configurations		<b>ተ</b> ተተ	7	ኝ	个个					ሻሻ		7
Volume (vph)	0	2155	269	321	2204	. 0	. 0	, 0	0:	1210	0	•
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	* * * * * * * * * * * * * * * * * * *	6.5	4.0	5.5	6.5	4.		, "i		5.5		6.5
Lane Util. Factor		0.91	1.00	1.00	0.95					0.97		1.00
Frt		1.00	0.85	1.00	1.00	a Partir	1.5			1.00		0.85
Fit Protected	!! ! ! ! ! .	1.00	1.00	0.95	1.00	· · · · · · · · · · · · · · · · · · ·				0.95		1.00
Satd. Flow (prot)		5036	1599	1787	3505		2.20			3467		1599
Flt Permitted		1.00	1.00	0.95	1.00	<i>w</i>				0.95		1.00
Said, Flow (perm)	ETTT TO TO TO THE CONTROL OF THE CON	5036	1599	1787	<b>3505</b>		14 1 14		alahidi.	3467		1599
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	2317	289	345	2370	. 0			0	1301	0	
RTOR Reduction (vph)	0	0	0	0	0	0	0	Õ	0	0	Ö	0
Lane Group Flow (vph)	ing <b>O</b>	2317	289	345	2370	0	0	• 0	0	1301	0	739
Heavy Vehicles (%)	0%	3%	1%	1%	3%	0%	0%	0%	0%	1%	0%	1%
Turn Type		ar g	Free	Prot			1.00	A		Prot	H. V.	custom
Protected Phases		6		5	2					8		
Permitted Phases	on the state of th	randing or harr Paramakan sa	Free		٠.	8 9 1035 N 1088 18 8 9 44 1	438, 452 5 5 5 1 8 7 7 7 7 8 7 8 7 8 7 8 7 8 7 8 7 8 7	Services			16	6
Actuated Green, G (s)		49.3	140.0	29.7	84.5	•				43.5		49.3
Effective Green, g (s)		49.3	140.0	29.7	84.5		r de la Secreta de la Secreta Secreta de la Secreta			43.5		49.3
Actuated g/C Ratio		0.35	1.00	0.21	0.60					0.31		0.35
Clearance Time (s)		6.5		5.5	6.5					5,5		6.5
Vehicle Extension (s)		3.0		3.0	3.0					3.0		3.0
Lane Grp Cap (vph)	prokonity operació bys novo naso operació na na novo naso salem verbancio	1773	1599	379	1 129 34	Service of			. :	1077		563
v/s Ratio Prot		0.46	A. * ***	0.19	c0.68					c0.38		
v/s Ratio Perm			0.18	٠.		:		: '.	ere e	j.		c0.46
v/c Ratio		1.31	0.18	0.91	1.12					1.21		1.31
Uniform Delay, d1	The state of the s	45.4	0.0	53.8	27.8	·		1 A	- 11 - 12 - 14 - 14 - 14 - 14 - 14 - 14	48.2		45.4
Progression Factor		0.85	1.00	1.49	0.83					1.00		1.00
Incremental Delay, d2	an an angera	138.5	0.0	15.5	58.0				: 3	102.5	•	153.0
Delay (s)		176.8	0.0	96.0	80.9					150.7		198.4
Level of Service	. FA	F.	Α	·F	F					F		·F
Approach Delay (s)		157.2			82.9			0.0			168.0	
Approach LOS		F			F			A	. : .		F	
HCM Average Control D	elay		132.8	1	CM Leve	el of Servi	Ce	:	* AF			
HCM Volume to Capacit		•	1.27				. =		•			
Actuated Cycle Length (s		. 4	140.0	S	ium of los	st time (s)			18.5			
Intersection Capacity Uti			114.3%			of Service			Н			
Analysis Period (min)	101. 18.1 ·		15									
c Critical Lane Group						••						

	•	<b>→</b>	•	•	<b>←</b>	•	4	<b>†</b>	<i>&gt;</i>	<b>\</b>	<b>↓</b>	1
	12.20	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		6.91		1 1250		Y and			11 3 5 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
Lane Configurations	19.04	ተተተ			ተተተ	7	ች	· · · · · · · · · · · · · · · · · · ·	77			
Volume (vph)	381	2984	0	0	2344	682	181	. 0	257	0	.0	-0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5	. <del></del>		5.5	4.0	5.5		5.5		1411 8 10	
Lane Util. Factor	0.97	0.91		:	0.91	1.00	1.00		0.88			
Frt 1 44 3 4 3 4 3 1 1 1	1.00	1.00		, f. 3. s.	1.00	0.85	1.00		0.85	Language		
Fit Protected	0.95	1.00	•		1.00	1.00	0.95		1.00			
Satd. Flow (prot)	3467	5085	rii Ng Majara		5085	1583	1687		2787	2	* 3.54 * 5.5	•
Fit Permitted	0.95	1.00			1.00	1.00	0.95		1.00		•	
Satd. Flow (perm)	3467	5085	Huler		5085	1583	z 1687		2787		:-	
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 (vpn)	410	3209	0	0	2520	733	195	0	276	Ö	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	Ö	O	0
Lane Group Flow (vph)	410		0	0	2520	733	195	0	276	0	0	0
Heavy Vehicles (%)	1%	2%	0%	0%	2%	2%	7%	0%	2%	0%	0%	0%
Turn Type	Prot	Control of the contro	: ":	1.		Free	Prot	i di di	custom		e an early	:.
Protected Phases	5	2			6		3		8			e.··
Permitted Phases	A	7 3 11 2 3 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			.1.1	Free	art ven en e			- 1711		
Actuated Green, G (s)	20.2	108.8			83.1	140.0	20.2		20.2			
Effective Green, g (s)	20.2	108.8	nein ed de		83.1	140.0	20.2	1	20.2			
Actuated g/C Ratio	0.14	0.78			0.59	1.00	0.14		0.14			
Clearance Time (s)		- 5.5			-		5.5	E. 447	5.5			
Vehicle Extension (s)	3.0	3.0			3.0		3.0		3.0			
Lane Grp Cap (vph)	500	3952		in die be	3018	1583	243	7 2 1.3	402	. \$		
v/s Ratio Prot	0.12	c0.63			0.50		c0.12		0.10			
v/s Ratio Perm					111 2	0.46			. :	:		
v/c Ratio	0.82	0.81	,		0.83	0.46	0.80		0.69			
Uniform Delay, d1	58.1	9.4	e de Caraba	: ':	22.9	0.0	58.0		56.9			
Progression Factor	1.33	1.11			1.00	1.00	1.00		1.00			
Incremental Delay, d2	0.t	0.2	file by		2.9	1.0	17.2	· · · · · · · · · · · · · · · · · · ·	4.8			
Delay (s)	78.5	10.6			25.8	1.0	75. <u>1</u>		61.7			
Level of Service	· <b></b>	В				- # <b>A</b>	E	1.11	E			
Approach Delay (s)		18.3			20.2	grants e tv		67.3			0.0	
Approach LOS		: B			C	Alle and the		: . €		. :	Α	
HCM Average Control Del	ay *		22.3	H	CM Leve	of Servi	ce	`	С			
HCM Volume to Capacity	ratio		0.81			2007 - 400-1756			•			
Actuated Cycle Length (s)		• 1	140.0	S	um of los	t time (s)		:	11.0			
Intersection Capacity Utiliz			108.5%			of Service			G			
Analysis Period (min)											•	
c Critical Lane Group												

	<b>†</b>	ß	Ļ	<b>↓</b>	€	*					
					N. 184						
Lane Configurations	ተተተ	7		ĦĦ		7					
Volume (veh/h)	2588	653	0	3026	0	132	.: .	· .			
Sign Control	Free			Free	Stop						
Grade	0%	.,		0%	0%						
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93					•
Hourly flow rate (vph)	2783	702	0	3254	0	142					
Pedestrians											
Lane Width (ft)								:			•
Walking Speed (ft/s)											
Percent Blockage						41.					
Right turn flare (veh)											
Median type	None	: ::		None							
Median storage veh)											
Upstream signal (ft)	633					. :					
pX, platoon unblocked	*		0.62		0.62	0.62					
vC, conflicting volume			2783		3596	928				. ** .	
vC1, stage 1 conf vol		·····									
vC2, stage 2 conf vol	" i		4700	·	00.40	1 1 1	100				
vCu, unblocked vol			1738		3046	0					
tC, single (s)			4.3		6.8	7.1					
tC, 2 stage (s)			0.6		: AC P	0.4					
tF (s) p0 gueue free %			2.3 100	٠	3.5	3.4					
cM capacity (veh/h)	3.5		207		100 6	78 656 -					
cist capacity (value)					- 0						
	The state of the s							NE A			
Volume Total	928	928	928	702	813	813	813	813	142	*	
Volume Left	0	0	0	0	0	0	0	0	0		
Volume Right		0	0	702	0	0	0	0	142		
cSH Valuma to Consolts	1700	1700	1700	1700	1700	1700	1700	1700	656		
Volume to Capacity	0.55	0.55	0.55	0.41	0.48	0.48	0.48	0.48	0.22		
Queue Length 95th (ft) Control Delay (s)	0	0	0	0	0	0	0	0	20		
Lane LOS	Ó'O	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.0		
Approach Delay (s)	0.0				0.0				B 12:0		
Approach LOS	9.0				O.Ģ				12.0 B		
• •		<u>.</u>									
					:						
Average Delay	w.		0.2	. =					_		
Intersection Capacity Utiliza	ation	;	64.8%	10	U Level	of Service	:	•	C		
Analysis Period (min)			15								



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Carl Section (1)

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	٠	<b>→</b>	•	<b>←</b>	•	<b>\</b>	<b>†</b>	-	1	<b>↓</b>		
	12		4 (P)		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1				150			
Lane Group Flow (vph)	166	952	1677	1049	524	335	568	1089	833	1295		
//c Ratio	0.80	1.21	1.40	0.76	0.56	1.28	0.98	0.69	1.45	1.43		
Control Delay	91.5	152.2	210.7	20.2	4.9	202.8	90.0	25.4	253.1	235.9		
Queue Delay	0.0	0.0	0.0	0.5	0.2	0.0	0.0	0.0	0.0	0.0		
Total Delay	91.5	152.2	210.7	20.7	5.1	202.8	90.0	25.4	253.1	235.9		
Queue Length 50th (fil)	78	~369	~1075	442	67	~199	274	392	~531	~836		
Queue Length 95th (ft)	#138	#465	m#971	m400	m80	#300	#397	481	#661	#978		
nternal Link Dist (ft)		1569		280		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	2748			1756		
Turn Bay Length (ft)	450					300		300	240		!	
Base Capacity (vph)	207	787	1197	1383	929	261	581	1568	574	908		
Starvation Cap Reductn	0	0	0	82	67	0	0	0	0	0		
Spillback Cap Reductn	0	. 0	0	0 %	0	0	- 0	0	0	0		
Storage Cap Reductn	0	0	0	0	Ó	0	0	0	0	0		-
Reduced v/c Ratio	0.80	1.21	1.40	0.81	0.61	1.28	0.98	0.69	1.45	1.43		٠.

Volume exceeds capacity queue is theoretically infinite.
 Queue shown is maximum after two cycles.

<sup># 95</sup>th 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.

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#### 18: SR 421 & I-95 SB Ramps

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		11 ja 12		1.00	3/3	(2 m/ 5) (2 m/ 5)		
Lane Group Flow (vph)	2317	289	345	2370	1301	739		
v/c Ratio	1.31	0.18	0.91	1.12	1.21	1.31	:	B
Control Delay	171.3	0.0	96.6	82.1	144.0	189.5		
Queue Delay	0.0	0.0	0.0	0.0	8.1	0.0		
Total Delay	171.3	0.0	96.6	82.1	152.1	189.5		·
Queue Length 50th (ft)	~1016	0	335	~1279	~742	~884	. ::	general de la companya de la company
Queue Length 95th (ft)	m#823	m0	m#412	#1414	#879	#1129		
Internal Link Dist (ft)	273	iri		477	1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	· Valuation	.:	
Turn Bay Length (ft)		200						
Base Capacity (vph)	1774	1599	402	2116	1077	564		The second of th
Starvation Cap Reductn	0	0	0	Ó	0	0		
Spillback Cap Reductn	0	<b>0</b> .	• • • • • • • • • • • • • • • • • • • •	.0	16		e ii.	William Control to the State of
Storage Cap Reductn	0	0	0	0	0	0		the state of the section of the sect
Reduced v/c Ratio	1.31	0.18	0.86	1.12	1.23	1.31		The state of the s

Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.

<sup># 95</sup>th 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.

#### 1 : 3/3 Lane Group Flow (vph) 410 3209 2520 733 195 276 v/c Ratio 0.82 0.81 0.83 0.46 0.80 0.69 Control Delay 78.8 11.5 27.0 1.0 81.4 65.8 Queue Delay 0.0 15.2 0.4 0.0 384.6 0.0 Total Delay 78.8 26.7 27.4 466.0 1.0 65.8 Queue Length 50th (ft) . 0 204 376 682 172 136 Queue Length 95th (ft) m155 m298 778 0 258 188 Internal Link Dist (ft) 477 553 Turn Bay Length (ft) 650 330 330 Base Capacity (vph) 283 534 3953 3020 1583 468 Starvation Cap Reductn 0 819 0 0 0 Spillback Cap Fleductn 0 0 129 0 177 Storage Cap Reductn 0 0 0 0 0 0 Reduced v/c Ratio 0.77 1.02 0.87 0.46 1.84 0.59

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



#### Summary of All Intervals

End Time	7:15				
Total Time (min)	20				
Time Recorded (min)	15				
# of Intervals	2		•		
# of Recorded Intvls	1				
Vehs Entered	2215		·		:
Vehs Exited	175 <del>9</del>			\$1.50m	•
Starting Vehs	540			1.5	
Ending Vehs	996				
Denied Entry Before	10 House		121 800 - 121 - 121 - 121 - 121 - 121 - 121 - 121 - 121 - 121 - 121 - 121 - 121 - 121 - 121 - 121 - 121 - 121 - 121	×	
Denied Entry After	474				
Travel Distance (mi)	1997	**		Andrew Commencer	1 1 4
Travel Time (hr)	244.9				
Total Delay (hr)	244.9 189.2	estantian estat de la participación de la part		1 19 1 19 1 19 1 1 1 1 1 1 1 1 1 1 1 1	and the second of the second of
Tutal Stups	2010				
Fuel Used (gal)	1085	, Judi	Bart de la companya d		

#### Interval #0 Information Seeding

Start Time	6:55
End Time	7:00
Total Time (min)	5
Volumes adjusted by	
No data recorded this	

#### Interval #1 Information Recording

Start Time	7:00
End Time	7:15
Total Time (min)	15
Volumes adjusted by	v Growth Factors

Vehs Exited	1759
Starting Vehs	540
Ending Vehs	996
Denied Entry Before	. 10
Denied Entry After	474
Travel Distance (mi)	1997
Travel Time (hr)	244.9
Total Delay (hr)	189.2
Total Stops	5616
Fuel Used (gal)	108.5

# 1: SR 421 & Williamson Blvd Performance by movement

		100 M/20 / 100 / 1			(%) <u>B</u> 4.		7.3	102		(7) <b>a</b> .		\
Total Delay (hr)	1.5	11.7	5.8	6.4	1.0	0.2	2.1	4.4	6.7	12.0	11.2	1.9
Delay / Veh (s)	145.0	356.1	534.5	119.0	34.2	10.7	111.6	112.1	91.3	273.3	196.7	192.2
Total Stops	65	307	104	273	76	36	85	165	339	506	531	87
Travel Dist (mi)	10.7	35.3	10.4	17.6	9.8	4.6	37.3	77.5	144.9	50.4	66.4	11.6
Travel Time (hr)	1.8	12.5	6.1	7.0	1.2	0.3	3.2	6.7	Ĩ1.1	13.5	13.1	2.2
Avg Speed (mph)	7	3	2	3	8	13	14	14	16	4	5	5
Vehicles Entered	36	141	52	212	111	50	75	149	279	168	222	38
Vehicles Exited	38	96	26	175	105	53	61	134	247	148	188	33
Hourly Exit Rate	152	384	104	700	420	212	244	536	988	592	752	132
Input Volume	154	636	249	1560	987	487	312	528	1013	775	1016	189
% of Volume	99	60	42	45	43	44	78	102	98	76	74	70
Denied Entry Before	0	n di	883. <b>4</b> 3	0	0	0	2	3	. 2	0	0	0
Denied Entry After	8	19	8	0	0	0	0	1	8	0	0	0

#### 1: SR 421 & Williamson Blvd Performance by movement

<b>とくだち、美</b> しい。				
Total Delay (hr)	64.7			
Delay / Veh (s)	164.4		en e	
Total Stops	2574			
Travel Dist (mi)	476.4	 . 41	anti, is	1.
Travel Time (hr)	78.8			
Avg Speed (mph)	98. ja 48. <b>6</b> km ka 5 km km			:.
Vehicles Entered	1533			
Vehicles Exited	1304			
Hourly Exit Rate	5216			
Input Volume	7906	 :		•
% of Volume	00			
Denied Entry Before	<b>00</b>	 	·	
Denied Entry After	44			

#### 3: SR 421 & Taylor Branch Rd. Performance by movement

		, <u>; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ;</u>					 · · · · · · · · · · · · · · · · · · ·		
Total Delay (hr)	0.3	0.1	14.2	0.2	14.9				
Delay / Veh (s)	2.5	5.8	85.9	18.1	45.4				
Total Stops	0	0	677	37	714				
Travel Dist (mi)	53.2	9.3	189.6	2.0	254.1				
Travel Time (hr)	1.6	0.4	18.7	0.3	21.0				
Avg Speed (mph)	34	21	11	7	13	. A. a. E. a. g.			
Vehicles Entered	459	86	681	36	1262				
Vehicles Exited	464	87	513	37	1101	44.4			
Hourly Exit Rate	1856	348	2052	148	4404				
Input Volume	2640	653	3026	132	6451			: .	
% of Volume	70	53	68	112	68				
Denied Entry Before	0.1	. 0	_4:: # <b>0</b>	0.	0				:
Denied Entry After	0	0	27	0	27				

## 5: I-95 SB Ramps & Performance by movement

J 1640.	\$11.	£ 1, "		
Total Delay (hr)	57.7	2.9	60.6	
Delay / Veh (s)	1870.4		1965.9	
Total Stops	233	2	235	
Travel Dist (mi)	18.3	0.0	18.3	
Travel Time (hr)	58.3	2.9	61.3	
Avg Speed (mph)	1	0	- 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
Vehicles Entered	120	1	121	
Vehicles Exited	102	t. 1,0	102	
Hourly Exit Rate	408	0	408	
Input Volume	1897	132	2029	
% of Volume	22	O	20	
Denied Entry Before	_	0	. 0	
Denied Entry After	370	28	398	· · · · · · · · · · · · · · · · · · ·

#### 6: SR 421 & Performance by movement

engener	¥4.			
Total Delay (hr)	3.5	2.2	5.6	
Delay / Veh (s)	24.8	20.3	22.8	
Total Stops	276	102	378	
Travel Dist (mi)	31.3	14.1	45.4	
Travel Time (hr)	4.8	2.5	7.2	
Avg Speed (mph)	<b>7</b>	6		
Vehicles Entered	510	387	897	
Vehicles Exited	505	377	882	· · · · · · · · · · · · · · · · · · ·
Hourly Exit Rate	2020	1508	3528	
Input Volume	2473	2935	5542	
% of Volume	82	51	64	
Denied Entry Before	0	0	0	
Denied Entry After	0	1	1	

## 17: SR 421 & I-95 NB Ramps Performance by movement

			782			: 37				
Total Delay (hr)	1.4	1.1	9.2	0.2	3.7	1.9	17.5			
Delay / Veh (s)	68.3	7.8	83.6	7.5	411.3	137.0	54.2			
Total Stops	77	91	413	4	69	72	726	•		
Travel Dist (mi)	7.5	53.2	43.4	8.6	9.7	14.6	137.0			
Travel Time (hr)	1.6	2.4	10.2	0.5	3.9	2.3	20.9			
Avg Speed (mph)	5.	22	4	18	3	6	7			
Vehicles Entered	71	484	404	114	41	64	1178			
Vehicles Exited	74	504	388	117	23	37	1143			
Hourly Exit Rate	296	2016	1552	468	92	148	4572			
Input Volume	381	2997	2374	682	181	257	6872			
% of Volume	78	67	65	69	51	58	67			
Denied Entry Before	0	" · Ö :	0	. 0	0.	0	0			
Denied Entry After	0	0	4	0	0	O	4			

## 18: SR 421 & I-95 SB Ramps Performance by movement

		257		· PASA			10 E V 20 E -	<u>å. 2</u> -	<u>-</u>	
Total Delay (hr)	5.7	0.5	1.3	7.4	2.8	0.1	1.7	19.6		
Delay / Veh (s)	47.2	28.6	81.9	72.5	97.2	126.7	3134.3	68.1		
Total Stops	236	34	62	338	70	2	7	749		
Travel Dist (mi)	28.2	3.4	5.8	38.5	3.4	0.1	0.1	<b>79.</b> 5		• • • •
Travel Time (hr)	6.4	0.6	1.5	8.2	3.0	0.1	1.7	21.5		
Avg Speed (mph)	4.	5	1 se 14 e	5	, epos <b>1</b> -	· 1	0	4		
Vehicles Entered	427	66	53	356	101	2	2	1007		
Vehicles Exited	448	68	59	374	108	··· - 2:	2	1061		
Hourly Exit Rate	1792	272	236	1496	432	8	8	4244		
Input Volume	2160	269	321	2213	1210	19	687	6879		1.
% of Volume	83	101	74	68	36	42	1	62		
Denied Entry Before	0	0.	, <b>0</b>	ŧ	0	0	0	. : 1 <b>1</b>		
Denied Entry After	0	0	0	0	0	0	0	0		

## **Total Network Performance**

Total Delay (hr)	189.2		· · · · · · ·				
Delay / Veh (s)	342.7	b.,		**		.:	
Total Stops	5616				•		
Travel Dist (mi)	1996.8						
					·		
Travel Time (hr) Avg Speed (mph)	10		10 m 10 m 20 m 20 m 20 m 20 m 20 m 20 m		The same	in the second	
Vehicles Entered	2215						
Vehicles Exited	1759			: •	48 - 11		
Hourty Exit Rate	7036						
nout Volume					٠.		
% of Volume	14						
Denied Entry Before	a	and the state of the			:		
Denied Entry After	474				•		



#### Summary of All Intervals

	ing. S					
Start Time	6:55	6:55	6:55	6:55	6:55	6:55
End Time	7:15	7:15	7:15	7:15	7:15	7:15
Total Time (min)	20	20	20	20	20	20
Time Recorded (min)	15	15	15	15	15: ::	. : 1 <b>5</b> .
# of Intervals	2	2	2	2	2	2
# of Recorded Intvis	* * <b>*</b> * *			1	No. 2 - 1	1
Vehs Entered	2260	2291	2262	2284	2297	2279
Vehs Exited	1900	1941	1950	1987	1927	1940
Starting Vehs	522	582	539	544	580	552
Ending Vehs	882	932	851	841	950	895
Denied Entry Before	12	11	14	2	6	7
Denied Entry After	409	458	459	403	361	.m. 419.54 5.1 35 45
Travel Distance (mi)	2149	2176	2168	2194	2149	2167
Travel Time (hr)	224.7	244.9	<b>230</b> .5	214.4	233.0	229.5
Total Delay (hr)	164.7	184.2	170.2	153.3	173.4	169.1
Total Stops	-5143	5774	5066	4855	5554	<b>5277</b> 3 25 2 3 3 4 4 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5
Fuel Used (gal)	108.6	114.4	110.4	106.7	109.9	110.0

#### Interval #0 Information Seeding

Start Time 6:55
End Time 7:00
Total Time (min) 5

Volumes adjusted by Growth Factors.

No data recorded this interval.

#### Interval #1 Information Recording

Start Time 7:00
End Time 7:15
Total Time (min) 15
Volumes adjusted by Growth Factors.

		<u>à</u>	· 첫				
Vehs Entered	2260	2291	2262	2284	2297	2279	
Vehs Exited	1900	1941	1950	1987	1927	1940	
Starting Vehs	522	582	539	544	580	552	•
Ending Veha	882	932	851	841	950	895	. ".
Denied Entry Before	12	11	14	2	6	7	
Denied Entry After	409	458	459	403	361	419	
Travel Distance (mi)	2149	2176	2168	2194	2149	2167	
Travel Time (hr)	224.7	244.9	230.5	214.4	233.0	229.5	
Total Delay (hr)	164.7	184.2	170.2	153.3	173.4	169.1	
Total Stops	5143	5774	5066	4855	5554	5277	And the second s
Fuel Used (gal)	108.6	114.4	110.4	106.7	109.9	110.0	

## 1: SR 421 & Williamson Blvd Performance by movement

					raymong re- ra (277 Linkasa	2 <b>5</b> 45	) <u> </u>	<u> </u>	5.5			\$450°
Total Delay (hr)	0.	.8 6.2	4.3	4.5	1.2	0.2	3.8	3.2	3.7	10.3	13.1	2.8
Delay / Veh (s)	72	9 148.6	278.3	64.0	29.3	9.7	198.8	90.9	56.2	241.9	229.3	232.9
Total Stops	4	0 255	159	256	93	37	132	133	194	435	569	126
Travel Dist (mi)	11.	3 44.9	16.6	23.1	13.9	6.1	40.8	67.5	129.5	49.3	67.2	14.1
Travel Time (hr)	1.	1 7.3	4.7	5.3	1.5	0.4	5.0	5.1	7.7	11.8	15.0	3.2
Avg Speed (mph)	` 1	1 6	. 4	4	9	: -14.	: 9	15	20	4	. 4	4
Vehicles Entered	3	8 155	63	268	153	66	78	129	248	164	217	46
Vehicles Exited	4	0 148	46	240	144	65	59	121	231	143	194	41
Hourly Exit Rate	16	0 592	184	960	576	260	236	484	924	572	776	164
Input Volume	15	4 636	249	1560	987	487	312	528	1013	775	1016	189
% of Volume	10	4 93	74	62	58	53	76	92	91	74	76	87
Denied Entry Before		1 - 4	oje, regli	. 0	· · · · · O	: # 1 5 <b>Q</b> 5	<u>.</u> 1	1	1	0	. 0	0
Denied Entry After		1 1	1	0	0	0	1	4	8	Ô	0	0

# 1: SR 421 & Williamson Blvd Performance by movement

1. 设建门建	:	
Total Delay (hr)	53.9	
Delay / Veh (s)	1250	
Total Stops	2429	
Travel Dist (mi)		
Travel Time (hr)	68.2	
Avg Speed (mph)	ALCHERT TOLER	
Vehicles Entered	1625	
Vehicles Exited	1472	
Hourly Exit Rate	58 <b>88</b>	
Input Volume	ALB 16-7	
% of Volume	74	
Denied Entry Before	6	
Denied Entry After	16	

#### 3: SR 421 & Taylor Branch Rd. Performance by movement

Singer i	<u> </u>	<u> </u>	3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5			
Total Delay (hr)	0.4	0.2	10.9	0.2	11.6	
Delay / Veh (s)	2.8	6.9	55.6	19.1	32.1	
Total Stops	0	0	597	31	628	·
Travel Dist (mi)	52.3	11.5	226.1	1.7	291.6	
Travel Time (hr)	1.6	0.6	16.2	0.2	18.6	
Avg Speed (mph)	33	20	15	. 7	_ ∄ a 17	
Vehicles Entered	458	108	751	31	1348	
Vehicles Exited	456	108	660	32	1256	
Hourly Exit Rate	1824	432	2640	128	5024	
Input Volume		653			6451	
% of Volume	69	66	87	97	78	
	. 0	. 0		0	1:	
Denied Entry After	0	0	14	0	14	

## 5: I-95 SB Ramps & Performance by movement

A CONTRACTOR	¥11	1915		
Total Delay (hr)	56.6	4.6	61.2	
Delay / Veh (s)	1712.2	2364.1	1748.5	1
Total Stops	230	15	245	
Travel Dist (mi)	20.0	1.i :	21.1	
Travel Time (hr)	57.3	4.6	61.9	
Avg Speed (mph)	1	0	1	
Vehicles Entered	118	7	125	
Vehicles Exited	120	6	126	
Hourly Exit Rate	480	24	504	
Input Volume	1897	132	2029	
% of Volume	25	18	25	"
Denied Entry Before	0	0	0	
Denied Entry After	353	23	376	

#### 6: SR 421 & Performance by movement

	11.00 g ( ) 1.00 g ( ) 1.00 g ( )		1525					7 : X. /	
Total Delay (hr)	1.0	1.3	0.0	0.0	2.3				
Delay / Veh (s)	6.7	9.6		9.2	8.1			.:	
Total Stops	87	95	0	4	186				
Travel Dist (mi)	33.8	18.2	0.0	0.4	52.4				
Travel Time (hr)	2.3	1.7	0.0	0.0	4.1				
Avg Speed (mph)	15	nic <b>11</b> %	34	12	13	1.32			
Vehicles Entered	534	495	0	7	1036				
Vehicles Exited	526	486	0	7	1019				
Hourly Exit Rate	2104	1944	0	28	4076				
Input Volume	2473	2935	. 2	132	5542	21 - 15	The second secon	. * *	
% of Volume	85	66	0	21	74				
and the state of t		0.1	0	0	<b>0</b> 0		190 15 15	 h	44
Denied Entry After	0	1	0	0	1				

## 17: SR 421 & I-95 NB Ramps Performance by movement

Aprigists/		137						
Total Delay (hr)	1.8	1.3	7.4	0.4	3.3	1.9	16.1	
Delay / Veh (s)	77.9	9.4	52.3	10.1	319.8	130.9	43.6	
Total Stops	83	124	398	9	80	76	770	
Travel Dist (mi)	9.0	53.8	56.5	11.3	11.3	14.5	156.4	
Travel Time (hr)	2.1	2.7	8.7	0.7	3.6	2.3	20.1	
Avg Speed (mph)	4	20	7	17	3	7	8	
Vehicles Entered	85	491	513	151	45	56	1341	
Vehicles Exited	84	506	506	151	30	47	1324	
Hourly Exit Rate	336	2024	2024	604	120	188	5296	
Input Volume	381	2997	2374	682	181	257	6872	
% of Volume	88	68	85	89	66	73	77	
Denied Entry Before	0	0 -	0	0	0	0	0	
Denied Entry After	0	0	1	1	2	2	6	

## 18: SR 421 & I-95 SB Ramps Performance by movement

	8 207 2.3,	<u> </u>	V:V <b>§</b> 1	, <u>, , , , , , , , , , , , , , , , , , </u>	3 (5) 2 (5)	225			 	
Total Delay (hr)	3.7	0.2	1.8	4.7	2.1	0.0	2.4	14.9	•	
Delay / Veh (s)	28.3	14.9	87.5	36.1	72.3	112.2	517.1	45.3		
Total Stops	203	19	74	262	55	0	14	627		
Travel Dist (mi)	30.0	3.0	7.5	49.5	3.5	0.0	0.6	94.1		
Travel Time (hr)	4.3	0.3	2.0	5.8	2.2	0.0	2.5	17.2		
Avg Speed (mph)	7	· 9·	· :4	9	2	1	0	6		
Vehicles Entered	460	58	71	461	103	1	17	1171		
Vehicles Exited	470	57	73	471	105	1	16	1193	 ·:	
Hourly Exit Rate	1880	228	292	1884	420	4	<del>6</del> 4	4772		
Input Volume	2160	269	321	2213	1210	19	687	6879	 :	
% of Volume	87	85	91	85	35	21	9	69		
Denied Entry Before	0	O a		0	0	0	.0	0.		
Denied Entry After	0	0	0	0	2	0	3	5		

## **Total Network Performance**

Total Delay (hr)	169.1	
Delay / Veh (s)	288.5	
Total Stops	5277	
Travel Dist (mi)	2167.1	
Travel Time (hr)	229.5	
Avg Speed (mph)	12	
Vehicles Entered	2279	
Vehicles Exited	1940	organization of the control of the c
Hourly Exit Rate	7760	
Input Volume	50110	
% of Volume	15	
Denied Entry Before	7	
Denied Entry After	419	

#### Intersection: 1: SR 421 & Williamson Blvd

	1000 1000 1000 1000	100 to 10		: (C.2) (Y.0)	10.165 10.16 10.25 100.75							
Directions Served	L	L	Т	Т	TR	L	L	T	Т	R	L	
Maximum Queue (ft)	102	284	967	1012	250	488	464	428	212	128	307	321
Average Queue (ft)	58	88	629	759	246	481	338	200	121	40	205	232
95th Queue (ft)	96:	224	1214	1322	272	487	469	459	231	110	326	353
Link Distance (ft)			1594	1594		248	248	248	248	248		
Upstream Blk Time (%)	. ::					35	. 28	0	<b>i</b> 1			
Queuing Penalty (veh)						215	169	2	5			
Storage Bay Dist (ft)	450	450	•		200						300	300
Storage Blk Time (%)			9	22	77						0	5
Queuing Penalty (veh)	· · · · · · · · · · · · · · · · · · ·	pi y	13	100	164		1111	1 4 2		29.5	.1	12

#### Intersection: 1: SR 421 & Williamson Blvd

: 6.4 79.1					3.5	\$\frac{1}{2}\frac{1}{2}	/s§	W.,	13.		 
Directions Served	Т	T	R	R	L	L	Ţ	TR	T	T	
Maximum Queue (ft)	510	434	322	312	289	340	1820	1822	1665	1667	
Average Queue (ft)	272	305	257	250	242	309	1548	1510	501	481	
95th Queue (ft)	485	604	366	346	323	398	2241	2235	1546	1531	**
Link Distance (ft)	2762	2762					1748	1748	2790	2790	
Upstream Blk Time (%)			: :				30	27	a - 10°	0	
Queuing Penalty (veh)	•						0	Ö	0	0	
Storage Bay Dist (ft)	11. 14		300	300	240	240	14 A.		:		
Storage Blk Time (%)	3	2	3	3	21	38	56				
Queuing Penalty (veh)	8	25	8	7	109	194	437	: .	•		

#### Intersection: 3: SR 421 & Taylor Branch Rd.

			777	3, K	32	
Directions Served	Т	T	Т	Т	R	
Maximum Queue (ft)	265	1276	1345	1308	124	
Average Queue (ft)	85	569	660	519	68	
95th Queue (ft)	257	1450	1481	1408	136	
Link Distance (ft)		1657	1657	1657	251	
Upstream Blk Time (%)	. :	2	-2	· 1		
Queuing Penalty (veh)		Ö	0	0		·
Storage Bay Dist (ft)	250	.:				
Storage Blk Time (%)	1	6				
Queuing Penalty (veh)	5	44			•	• .

#### Intersection: 5: I-95 SB Ramps &

	3.5	âE.	<u> 35</u>	(6, <b>x</b> . (3, <u>x</u> . (3, <u>x</u> .	
Directions Served	L	L	L	Т	
Maximum Queue (ft)	963	1027	1028	1015	
Average Queue (ft)	446	951	1001	971	
95th Queue (ft)	1155	1095	1072	1078	
Link Distance (ft)	1012	1012	1012	1012	
Upstream Blk Time (%)	9	32	68	32	
Queuing Penalty (veh)	0	0	0	0	
Storage Bay Dist (ft)					
Storage Blk Time (%)					•
Queuing Penalty (veh)			4 + 5 + 10 1 - 10 + 1	:	

#### Intersection: 6: SR 421 &

1.44		. 53	, W	1.15		Si (		
Directions Served	Т	Ţ	Т	Т	Т	R		
Maximum Queue (ft)	270	264	276	219	217	72	10 mm 1 m	
Average Queue (ft)	102	98	113	203	164	12		
95th Queue (ft)	312	301	311	240	269	61		per two
Link Distance (ft)	248	248	248	130	130	188		
Upstream Blk Time (%)	. 2	2	2	· 17	12			
Queuing Penalty (veh)	17	16	20	239	167	•		
Storage Bay Dist (ft)			:	:		en e	•	
Storage Blk Time (%)								
Queuing Penalty (veh)	1. 15							

#### Intersection: 17: SR 421 & I-95 NB Ramps

	77 1 7 11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	11. V	7 (2) (2) (2) (3) (4) (4) (4) (4) (4) (4) (4) (4) (4) (4	12.00		1000		<u> </u>			7 (10 / 10 / 10 / 10 / 10 / 10 / 10 / 10		
Directions Served		L	L	Ţ	Т	Т	Т	Т	Т	R	L	R	R
Maximum Queue (ft)		221	224	251	268	330	582	586	570	350	348	842	162
Average Queue (ft)		155	144	124	140	196	430	528	554	142	288	414	94
95th Queue (ft)	: :	226	. 222	277	293	378	711	631	583	542	417	1134	176
Link Distance (ft)				491	491	491	545	545	545	545		1439	
Upstream Blk Time (%)						•	10	18	33	₃ <b>3</b> ∵	•	4.	
Queuing Penalty (veh)							72	135	252	22	••	0	
Storage Bay Dist (ff)		650	650								330		330
Storage Blk Time (%)											37		
Queuing Penalty (veh)									ı		94		

#### Intersection: 18: SR 421 & I-95 SB Ramps

	13, 9. 3 %	:# s .::5		्रह	<u>्रि</u>	. <u>(₹</u>	) <u> </u>	3.5	387	
Directions Served	Ţ	Т	T	L	Т	Т	L	L	R	
Maximum Queue (ft)	362	361	360	450	517	519	190	201	192	
Average Queue (ft)	275	288	303	301	419	459	120	135	185	
95th Queue (ft)	441	447	440	530	626	661	251	263	194	
Link Distance (ft)	130	130	130	491	491	491	54	54	54	
Upstream Blk Time (%)	33	32	37	8	10	22	43	· 48	97	
Queuing Penalty (veh)	267	258	299	64	81	185	274	306	610	
Storage Bay Dist (ft)					الربا			:		10.00 10.00
Storage Blk Time (%)			37							
Queuing Penalty (veh)			100	:	٠.					

#### **Network Summary**

Network wide Queuing Penalty: 4994

# INTERIM IMPROVEMENTS EVALUATION



	۶	-	•	•	←	•	4	Ť	~	-	Ţ	1
	· 38.	- 252 2 4	- 13 360			77 <b>3</b> 7	1940.		w (CP)	(1) N	-800	9.50 9.50
Lane Configurations	ħ	<u>ተ</u> ተተ	7f	ሻሻ	ተተ	7	ሻሻ	ተተ	14 14	ሻሻ	<b>4</b> 4	### + g
Volume (vph)	0	636	249	1560	975	488	312	528	1013	775	1016	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width		12	12	11	12	12	11	12	12	11		12
Total Lost time (s)		6.0	6.0	5.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0	
Lane Util. Factor	is nich	0,91	1.00	0.97	*0.83		0.97	0.95	0.88	0.97	0.95	
Frt		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected		1,00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		5136	1583	3351	3123	1568	3319	3539	2814	3351	3574	
Flt Permitted		1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00		1.00	
Satd. Flow (perm)		5136	1583	3351	3123	1568	3319	3539	2814	3351	3574	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	<4.0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	0	684	268	1677	1048	525	335	568	1089	833	1092	0
RTOR Reduction (vph)	0	• 0	120	0	0	2352 <b>76</b> 2	0.	0		Ű.		0
Lane Group Flow (vph)	Ö	684	148	1677	1048	449	335	568	1089	833	1092	0
Heavy Vehicles (%)	5%	1%	2%	1%	1%	3%	2%	2%	1%	1%		1%
Turn Type	Prot		Perm	Prot		pt+ov	Prot		pt+ov	Prot		
Protected Phases	5	🧓 <b>2</b> .	778		6	•	3	8	81	7	4	
Permitted Phases		••••	2			*						
Actuated Green, G (s)	er Terrer Zikija, k Baran Baran Baran Baran	20.9	20,9	50.1	76.0	106.0	11.0	23.0	73.1	24.0	36.0	4,
Effective Green, g (s)		20.9	20.9	50.1	76.0	106.0	11.0	23.0	73.1	24.0	36.0	
Actuated g/C Ratio		0.15	0.15	0.36	0.54	0.76	0.08	. 0.16	0.52	0.17	0.26	
Clearance Time (s)		6.0	6.0	5.0	6.0		5.0	6.0		5.0	6.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		767	236	1199	1695	1187	261	581	1469	574	919	
v/s Ratio Prot		<b>c0.13</b>		c0.50	0.34	0.29	0.10	0.16	0.39	c0.25	c0.31	
v/s Ratio Perm			0.09						•			
v/c Ratio	3 % JA	0.89	0.63	1.40	0.62	0.38	1.28	0.98	0.74	1.45	1.19	
Uniform Delay, d1		58.4	55.9	44.9	22.0	5.8	64.5	58.2	26.1	58.0	52.0	
Progression Factor	. et , , , , , , , , , , , , , , , , , , ,	1.00	1.00	0.58	0.28	0.19	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		14.8	12.0	181.2	0.6	0.1	153.5	31.3	2.1	212.7	95.7	
Delay (s)		73.3	67.9	207.5	6.7	1.2	218.0	89.6	28.1	270.7	147.7	
Level of Service		Σ, Ε	E	F	A	A	F	F	C	F	F	
Approach Delay (s)								77.6	$(x_1, \beta_1, \beta_2)_{i=1}$		200.9	
Approach LOS		Ε			F			Е			F	
					•							
HCM Average Control Delay			118.9		ICM Leve	of Service	~o		F			
HCM Volume to Capacity rati	io:		1.24	. •	10111 2010	// O/ QO/ V/			•			
Actuated Cycle Length (s)			140.0	ç	Sum of los	t time (s)			16.0			
Intersection Capacity Utilizati	on		112.1%			of Service	3		н			
Analysis Period (min)			15		~ (* . <del>~   *</del> . <del>* *</del> *		- 1		•••			
c Critical Lane Group		*. i.v				in the second			+ 41		•	
1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	:	2.74				en						

	•	<b>→</b>	•	1	<b>←</b>	•	4	<b>†</b>	<i>&gt;</i>	-	ļ	4
	포함. 등학.	149.5	1.00 mg (2)	400		1 1457	26.			- <del>4</del> <u>- 4</u> .		**************************************
Lane Configurations		ተተተ	7	<b>Ť</b>	<b>^</b> ^	n. · nttr	North Notice		v Arrest	لولول	, 1.	7
Volume (vph)	0	2155	269	446	2204	0	0	Ö	0	1210	0	687
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	- 257	6.5	4.0	5.5	6.5					5.5		6.5
Lane Util. Factor		0.91	1.00	1.00	0.95					0.94	•	1.00
Fither the state of the state o		1.00	0.85	1.00		· § .			1	1.00		0.85
Flt Protected		1.00	1.00	0.95	1.00	:!7				0.95		1.00
Satd. Flow (prot)	at carac	5036	1599	1787	3505		l e. g. 18			5040	a see as	1599
Flt Permitted		1.00	1.00	0.95	1.00	S				0.95		1.00
Satd. Flow (perm)	The second secon	5036	1599	1787	3505	n de la companya de l	il.		in	5040		1599
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	2317		480	2370		. 0	0		1301		
RTOR Reduction (vph)	0	0	0	0	0	0	0	Ō	Ô	0	0	0
Lane Group Flow (vph)	0	2317	289	480	2370	0	. <b>0</b> . 1	.0	> 0	1301	*********	739
Heavy Vehicles (%)	0%	3%	1%	1%	3%	0%	0%	0%	0%	1%	0%	1%
Turn Type	ा ४ के प्रस्तिक स्थाप		Free	Prot		e je skale i Halifikan	national de la company de l La company de la company d		\$ans	Prot		custom
Protected Phases	Island 1 11	6	No. 100 11	5	2	* ** ***	/	P\$ 14 19 5 3		8		
Permitted Phases		6	Free				Barrier St.		eriya Tagan ka	iå.		6
Actuated Green, G (s)	an	47.5	140.0	33.9	86.9			** *.1.*	1. *	41.1		47.5
Effective Green, g (s)	n - Programa (n. 1841). n - Programa (n. 1841). n - House (n. 1841).	47.5	140.0	33,9	86.9	and the second of the second o	er seemen	. "	11 11 11 11 11 11 11 11 11 11	41.1		47.5
Actuated g/C Ratio	35. 1.152.1.1.1.1	0.34	1.00	0.24	0.62					0.29		0.34
Clearance Time (s)	ay	6.5	ign vi lys tore :	5.5	6.5			Jana		5.5		6.5
Vehicle Extension (s)		3.0		3.0	3.0					3.0		3.0
Lane Grp Cap (vph)	rate in	1709	1599	433	2176	L			Tall the control of t	1480		543
v/s Ratio Prot		0.46		0.27	c0.68				4 .*	c0.26		9.24
v/s Ratio Perm	15. + 41. 2. +	1 - 2 19 0 - 4 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	0.18							30.23		c0.46
v/c Ratio	ŕ	1.36	0.18	1.11	1.09			•		0.88		1.36
Uniform Delay, d1	and the second	46.2	0.0	53.0	26.6	n Agelo of Charles Light CA Light				47.1	No.	46.2
Progression Factor		0.96	1.00	1.21	0.34	-61 n				1.00		1.00
Incremental Delay, d2		160.5		68.2	45.8	Part of a second	10 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	4.		6.3		174.1
Delay (s)		204.8	0.0	132.6	54.7			\$3 - 1-		53.4		220.3
Level of Service		F	Ä	F	D					D		F
Approach Delay (s)		182.1			67.8			0.0		-"	113.9	
Approach LOS		grafia			E			Α		٠.	F	
Turk Carl Switter												
HCM Average Control Delay	8.0 80 · · · :		480.4	. N	10141	4 - 10 - 3	<u></u>		F			
			120.1	· · · · · · · · · · · · · · · · · · ·	KOM LOVE	of Service	₽		۲		•	
HCM Volume to Capacity rat	IIO		1.16			nation 1924			40.5			
Actuated Cycle Length (s)	ion		140.0			st time (s)			18.5			
Intersection Capacity Utilizat	IUN		114.3%	I	UU Level	of Service			Н			
Analysis Period (min)		, is	15									
c Critical Lane Group												

	٠	<b>→</b>	•	•	<b>←</b>	•	4	<b>†</b>	<i>&gt;</i>	<b>\</b>	ļ	1
45 KN/80		35	: J.	170.382	· 1957		78.	W.#!		10.20	85 ·	1872
Lane Configurations	ሻሻ	ተተተ			ተተተ	7	ħ	1 K 4 TV	7 7		i ilida	e hm
Volume (vph)	381	2984	0	.0	2344	682	181	.0	257	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5			5.5	4.0	5.5		5.5			.000
Lane Util. Factor	0.97	0.91			0.91	1.00	1.00		0.88	8 2.7 = 2		
Fritz-september 2000	1.00	1.00			1,00	0.85	1.00	1	0.85			
Flt Protected	0.95	1.00	Bu .		1.00	1.00	0.95		1.00			
Satd. Flow (prot)	3467	5085	Table 1		5085	1583	1687	:	2787	ta.		
Flt Permitted	0.95	1.00			1.00	1.00	0.95		1.00			
Satd. Flow (perm)	3467	5085			5085	1583	1687		2787	energy of the		
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)	410	3209	0.	0	2520	733	195	. 0	276	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	Ö	0	0	0	0	ō	ō
Lane Group Flow (vph)	410	3209	0	0	2520	733	195	0	276	· · · · · · · · · · · · · · · · · · ·	Ŏ	ō
Heavy Vehicles (%)	1%	2%	0%	0%	2%	2%	7%	0%	2%	0%	0%	0%
Tum Type	Prot	alienti Lea		oli, alla sila sila di alla sila sila sila di alla sila sila sila sila sila sila sil		Free	Prot	1 %	custom	and and the second		
Protected Phases	5	2	****	i. y · · · · · · · · · · · · · · · · · ·	6	V.330	3	. ' .	8	**. * * **		
Permitted Phases		3		Mark to the second	:	Free	Nacidal.	1			şî.	
Actuated Green, G (s)	20.5	108.8			82.8	140.0	20.2		20.2			
Effective Green, g (s)	20.5	108.8		a la laba	82.8	140.0	20.2	٠	20,2	er san Di ana	1.5	
Actuated g/C Ratio	0.15	0.78			0.59	1.00	0.14		0.14			
Clearance Time (s)	5.5	5.5			5.5		5.5		5,5	, ж		
Vehicle Extension (s)	3.0	3.0			3.0		3.0		3.0			
Lane Grp Cap (vph)	508	3952			3007	1583	243	* 7 7	402			
v/s Ratio Prot	0.12	c0.63			0.50		c0.12		0.10			
v/s Ratio Perm	- 85 Fem					0.46	:,					
v/c Ratio	0.81	0.81			0.84	0.46	0.80		0.69			
Uniform Delay, d1	57.8				23.2	0.0	58.0		56.9	1 184		
Progression Factor	0.52	1.06			1.00	1.00	1.00		1.00			
Incremental Delay, d2	0.9	0.2			3.0	1.0	17.2		4.8	: " *m / -	•	
Delay (s)	30.8	10.2	,		26.1	1.0	75.1		61.7			
Level of Service	C.	8 P 7			C	* <b>A</b> *	E		E			·
Approach Delay (s)		12.5			20.5			67.3			0.0	
Approach LOS		,;⊩ B	* *		Ç			Ε.			Α	
	. : '						:					
HCM Average Control De	ay		19.6	Н	CM Leve	of Servic	e :		В	* ::		
<b>HCM Volume to Capacity</b>			0.81				•		_			
Actuated Cycle Length (s)			140.0	S	um of los	t time (s)			11.0			
Intersection Capacity Utili			103.9%			of Service			Ğ			
Analysis Period (min)		4	15	111		4.7%			_			
c Critical Lane Group		•						7				

	<b>†</b>	ß	Į,	ţ	•	*					
		10.5		\$\$.		7 V-4 (F					
Lane Configurations	<b>ተተተ</b>	7	***************************************	1111	<u></u>	7		saint and		<u> </u>	
Volume (veh/h)	2588	653	0	3926	0	132					
Sign Control	Free			Free	Stop						
Grade	0%	*		0%	0%	F- 1					
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93			•		
Hourly flow rate (vph)	2783	702	0	3254	0	142				,	
Pedestrians											
Lane Width (ft)			:			1 EU-Eur					
Walking Speed (ft/s)		11.75									
Percent Blockage									•		
Right turn flare (veh)	,										
Median type	None	4		None		·					•
Median storage veh)											
Upstream signal (ft) pX, platoon unblocked	633		0.00		0.00	0.00					
vC, conflicting volume			0.62 2783		0.62	0.62					
vC1, stage 1 conf vol		1	2/00	1 1 1 1	3596	928				* *.	
vG2, stage 2 cont vol		. :.					•				
MCu. unblooked vol.	255	1.11.11.11	1738		3046	0	1.,				
tC, single (s)			4.3		6.8	7.1					
	1. P. 1.	*	-1,00		,	A. A. B.					
			2.3		3.5	3.4					
p0 queue free %			100		100	78	1 1 1	•			
cM capacity (velvh)			207		6	656	r 54		. ·		
									· · · · · · · · · · · · · · · · · · ·	."	
		200									
Volume Total	928	928	928	702	813	813	813	813	142	1.	
Volume Left	0	0	0	0	0	. 0	0	0	0		
Volume Right cSH	1700	0	0	702	0	0	Q	0	142		
Volume to Capacity	1700 <b>0.55</b>	1700	1700	1700	1700	1700	1700	1700	656		
Queue Length 95th (ft)		0.55	0.55	0.41	0.48	0.48	0.48	0.48	0.22		
Control Delay (s)	0 <b>0.0</b>	0. <b>0</b>	0.0	0	0	0	0	0	20		
Lane LOS	ULU	0.0	U.U	0.0	0.0	0.0	0.0	0.0	12.0		
Approach Delay (s)	0.0				0.0				B		
Approach LOS	Uto				0.0				12.0 B		
	·					<u>.                                    </u>					
Average Delay			0.2								
Intersection Capacity Utiliz	ation		64.8%	ĮC	U Level c	of Service	)		C		
Analysis Period (min)			15								
and the second second	4.										



#### 1: SR 421 & Williamson Blvd

	-	*	•	<b>—</b>	•	4	<b>†</b>	-	-	<b>↓</b>	
	# #	¥. <u>\$</u> .7	1 /32 2					1	. 47 47.		
Lane Group Flow (vph)	684	268	1677	1048	525	335	568	1089	833	1092	
v/c Ratio	0.89	. 0.75	1.40	0.62	0.42	1.28	0,98	0.75	1.45	1.19	. :
Control Delay	73.1	40.7	207.2	6.7	1.2	202.8	90.0	18.5	253.1	140.4	
Queue Delay	0.0	0.0	0.0	0.3	0.5	0.0	0.0	0.0	0.0	0.0	
Total Delay	73.1	40.7	207.2	7.0	1.7	202.8	90.0	18.5	253.1	140.4	
Queue Length 50th (ft)	226	113	~1051	158	12	~199	274	202	~531	-628	•
Queue Length 95th (ft)	#295	#236	m#980	m139	m10	#300	#397	269	#661	#767	•
Internal Link Dist (ft)	1569			280			2748			1756	
Turn Bay Length (ft)	- ^	200				300		300	240		
Base Capacity (vph)	770	357	1198	1695	1255	. 261	. 581	1448	574	919	
Starvation Cap Reductn	0	0	0	187	357	0	0	0	0	0	
Spillback Cap Reductn	0	. 0	0	0	0	0	0	: <b>0</b> >		0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.89	0.75	1.40	0.69	0,58	1.28	0.98	0.75	1.45	1.19	

Paragraphy and

Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

<sup># 95</sup>th 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.

	-	$\rightarrow$	1	<b>←</b>	-	1	
	. Jak		1750 L			(8) (1) (8) (8) (4) (8)	
Lane Group Flow (vph)	2317	289	480	2370	1301	739	
v/c Ratio	1.36	0.18	1.11	1.09	0.88	1.36	
Control Delay	196.2	0.0	125.1	57.3	54.8	210.8	•
Queue Delay	0.0	0.0	0.0	0.0	0.1	0.0	
Total Delay	196.2	0.0	125.1	57.3	54.9	210.8	
Queue Length 50th (ft)	~1032	0	~460	~1190	395	~884	the second secon
Queue Length 95th (ft)	m#921	m0	m#593	#1196	450	#1129	
Internal Link Dist (ft)	273		. Fr n - p - malik n - p - malik	477	ni an an Jarge eta	gjan og	
Turn Bay Length (ft)		200					·
Base Capacity (vph)	1709	1599	433	2176	1566	543	And the state of t
Starvation Cap Reductn	0	0	0	0	0	0	
Spillback Cap Reductn		0	0	0	18	· 🔭 0	SECTION OF THE SECTIO
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	1.36	0.18	1.11	1.09	0.84	1.36	erio (n. 1904), a tendrata en especial de la companya de la companya de la companya de la companya de la compa La companya de la co La companya de la co

and the state of t

Volume exceeds capacity, queue is theoretically infinite Queue shown is maximum after two cycles.

<sup># 95</sup>th 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.

#### 17: SR 421 & I-95 NB Ramps

	•	-	+	•		-	
		5) (2) 27 (3) (4)	. 33				
Lane Group Flow (vph)	410	3209	2520	733	195	276	
v/c Ratio	0,81	0.81	0.84	0.46	0.80	0.69	
Control Delay	31.4	11.1	27.3	1.0	81.4	65.8	·
Queue Delay	0.0	2.0	0.0	0.0	0.0	0.0	
Total Delay	31.4	13.0	27.3	1.0	81.4	65.8	
Queue Length 50th (ft)	204	282	678	0	172	136	And the second s
Queue Length 95th (ft)	m150	m265	778	0	258	188	
Internal Link Dist (ft)		477	553		in r	:	
Turn Bay Length (ft)	650				330	330	
Base Capacity (vph)	532	3953	3010	1583	283	468	
Starvation Cap Reductn	0	565	0	0	0	0	
Spillback Cap Reductn	0.5	0	. 0	O	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.77	0,95	0.84	0.46	0.69	0.59	

The second secon

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



#### Summary of All Intervals

849596 Tooler British - 1942 - 1955		
End Time 7:15		
Total Time (min)	And the second s	
Time Recorded (min) 15		
# of Intervals 2		
# of Recorded Intvis 1		
Vehs Entered 11 12 11 11 11 11 11 11 11 11 11 11 11	and the second s	
Vehs Exited 1411		
Starting Vehs 586	. dia sa Maria di Santa da Cara da Car La caracterista da Cara da Car	
Ending Vehs 1022		
Denied Entry Before		The state of the s
Denied Entry After 826	which the transfer of	
Travel Distance (mi) 1604		
Travel Time (hr) 302.2	a experience	
Total Delay (hi)	The state of the s	en e
Total Stops 6528		
Fuel Used (gal)		Harris Santa Barria de Carlos de Car

#### Interval #0 Information Seeding

Start Time	6:55
End Time	7:00
Total Time (min)	<b>5 5</b>
Volumes adjusted by Growth I	Factors.
No data recorded this interval.	

#### Interval #1 Information Recording

Start Time	7:00
End Time	7:15
Total Time (min)	15
Volumes adjusted by Growth F	actors

148 Samme ii 11	
Vehs Exited	1411
Starting Vehs	586
Ending Vehs	1022
Denied Entry Before	11
Denied Entry After	826
Travel Distance (mi)	1604
Travel Time (hr)	302.2
Total Delay (hr)	257.4
Total Stops	6528
Fuel Used (gal)	112.6

## 1: SR 421 & Williamson Blvd Performance by movement

Zichat l	Control of	S182					1.021	<u> </u>		135		
Total Delay (hr)	18.8	9.6	6.7	0.8	0.0	3.8	4.2	16.2	16.6	6.6	83.4	
Delay / Veh (s)	878.0	1386.9	123.6	26.8	3.6	206.8	124.3	270.5	616.3	140.6	266.1	
Total Stops	146	73	246	54	7	180	249	1018	530	323	2826	
Travel Dist (mi)	20.9	6.3	17.6	10.2	4.3	37.4	62.9	114.8	32.3	53.0	359.7	
Travel Time (hr)	19.3	9.8	7.3	1.1	0.2	5.0	6.0	19.7	17.6	8.1	94.0	
Avg Speed (mph)	- E 2:		2	11.	20	`*∵ ⊌8′∙	i (11	6	2	. 7	, <b>4</b>	
Fuel Used (gal)	4.9	2.4	2.1	0.7	0.2	2.0	3.0	7.0	4.8	3.2	30.2	
HC Emissions (g)	16		10	12	4	9	্, 19	16	~ 3 <b>7</b> ~ 3	27	123	
CO Emissions (g)	704	205	249	490	149	374	691	832	374	699	47 <b>6</b> 6	
NOx Emissions (g)	41	<b></b>	<b>22</b>	29	12	40	73	87	28	85	424	
Vehicles Entered	81	41	198	114	48	75	118	238	120	158	1191	
	74.	· . · · 9 -	193	114	46	60	126	192	- 74	177	1065	
Hourly Exit Rate	296	36	772	456	184	240	504	768	296	708	4260	
Input Volume	636	249	1560	986	488	312	528	1013	· 775	1016	7563	
% of Volume	47	14	49	46	38	77	95	76	38	70	56	
Denied Entry Before	0	• • • • • • • • • • • • • • • • • • • •	~ ( <b>0</b>	» O	0	0.4	<b>113-0</b>	9:	14.0	0	0	See Supplies
Denied Entry After	74	29	0	0	0	0	0	1	0	0	104	

#### 3: SR 421 & Taylor Branch Rd. Performance by movement

				1111	::	
Total Delay (hr)	0.2	0.1	46.8	0.1	47.1	
Delay / Veh (s)	2.0	5.0	335.0	9.9	181.3	
Total Stops	0	0	1056	21	1077	
Travel Dist (mi)	38.5	8.3	161.0	1.2	209.0	
Travel Time (hr)	1.1	0.4	50.6	0.1	52.2	
Avg Speed (mph)	35	22	5	10	7.	Discovered to the second of th
Fuel Used (gal)	2.0	0.2	15.2	0.0	17.5	
HC Emissions (g)	63	1	98	0	162	
CO Emissions (g)	2107	82	2853	2	5044	
NOx Emissions (g)	183	, <b>7</b> ,	259	0	449	Marketine in the second of the
Vehicles Entered	332	79	543	22	976	
Vehicles Exited	336	76	463	21	896	
Hourly Exit Rate	1344	304	1852	84	3584	
Input Volume	2640	653	3026	132	6451	n magailtíon agus an tagailtíon ag Magailtíon agus an tagailtíon agus agus agus agus agus agus agus agus
% of Volume	51	47	61	64	56	
Denied Entry Before	0.	0	3	0.	3	nerry for the control of the control
Denied Entry After	0	0	259	0	259	

## 17: SR 421 & I-95 NB Ramps Performance by movement

			24.54		<u> </u>	- 15. P		
Total Delay (hr)	8.0	1.0	9.0	0.3	3.6	1.6	16.3	
Delay / Veh (s)	46.9	9.9	87.9	8.5	275.0	113.7	59.0	
Total Stops	63	98	367	9	125	84	746	·
Travel Dist (mi)	7.2	38.1	40.1	8.0	14.5	14.0	121.9	and the state of t
Travel Time (hr)	1.0	2.0	9.9	0.5	4.0	2.0	19.4	
Avg Speed (mph)		19	i. 5-4;	17	4	7.,	· 6: · · .	
Fuel Used (gal)	0.5	2.6	3.4	0.2	1.2	0.8	8.6	
HC Emissions (g)		76	ii. 19	4	30.	3	134	1
CO Emissions (g)	154	2721	611	73	627	187	4372	
NOx Emissions (g)	" <b>*f</b> f*	217	65	‡ <b>8</b> ⊕	58	12	371	
Vehicles Entered	67	345	366	108	57	57	1000	
Vehicles Exited	60	- 361	371	111	. 38	48	989	
Hourly Exit Rate	240	1444	1484	444	152	192	3956	
Input Volume	381	2997	2374	682	181	257	6872	the second of th
% of Volume	63	48	63	65	84	75	58	
Denied Entry Before	-0	0		~~~ <b>`</b> 0.		5.44 <b>0</b>	0.2	AND REPORT OF THE CONTROL OF THE CON
Denied Entry After	0	0	0	0	0	0	0	The second secon

## 18: SR 421 & I-95 SB Ramps Performance by movement

<u>. 41 } </u>	:		j.						
Total Delay (hr)	3.7	0.3	2.3	10.4	2.5	0.0	2.6	22.0	-
Delay / Veh (s)	41.5	26.0	126.2	106.1	125.8	2,3	9509.0	91.8	Table as to the control of
Total Stops	183	14	80	282	49	0	0	608	
Travel Dist (mi)	20.5	2.2	7.1	36.6	2.4	0.1	0.0	68.8	
Travel Time (hr)	4.2	0.4	2.6	11.3	2.6	0.0	2.6	23.7	
Avg Speed (mph)	5	6.	4	5	. 1	20	: 1 .::: 0	4	
Fuel Used (gal)	1.6	0.2	0.7	3.5	0.7	0.0	0.6	7.2	
HC Emissions (g)	26	0	1	37	5	2	9	80	
CO Emissions (g)	584	22	87	737	97	26	135	1687	
NOx Emissions (g)	72	3	6	81	8	4	6	180	
Vehicles Entered	314	43	70	352	67	3	1	850	
Vehicles Exited	332	41	65	356	76	3	. 1	874	
Hourly Exit Rate	1328	164	260	1424	304	12	4	3496	
Input Volume	2160	269	446	2204	1210	19	687	6995	
% of Volume	61	61	58	65	25	63	1	50	
Denied Entry Before	0	0	0.	3	4	0	0.	7:	•
Denied Entry After	0	0	5	15	2	0	3	25	<del></del>

## **Total Zone Performance**

Total Delay (hr)	168.8			_
Delay / Veh (s)	5193.8			
Total Stops	5257			
Travel Dist (mi)	759.3			
Travel Time (hr)	189.3			
Avg Speed (mph)	uun (pagajar kat <b>5</b> ar ja			Secretary of the second
Fuel Used (gal)	63.5			
HC Emissions (g)	499	<ul> <li>A control of the second of the</li></ul>	Section 1	
CO Emissions (g)	15870			
NOx Emissions (g)	1424	<ul> <li>A service of the servic</li></ul>		
Vehicles Entered	1259			
Vehicles Exited		e die to de la	a' 1 :	
Hourly Exit Rate	84			
Input Volume	27881	Be faith the control of the second of the se	A sky of the control	and the second
% of Volume	U			
Denied Entry Before	<b>30 .</b>	1. The state of th		
Denied Entry After	388			

#### Intersection: 1: SR 421 & Williamson Blvd

				i. £.				Š.	
Movement(s) Served	WBL	EBT	NBL	\$BT	EBL	WBT	SBL	NBT	-
Maximum Green (s)	50.0	21.0	11.0	36.0	9.0	62.0	24.0	23.0	
Minimum Green (s)	5.0	10.0	5.0	6.0	5.0	10.0	5.0	6.0	
Recall	None	C-Min	None	None	None	C-Min	None	None	the state of the s
Avg. Green (s)	50.0	21.0	11.0	36.0	0.0	76.0	24.0	23.0	
g/C Ratio	0.36	0.15	0.08	0.26	0.00	0.54	0.17	0.16	1 The Control of the
Cycles Skipped (%)	-	0	0	0	100	0	0	0	
Cycles @ Minimum (%)	a	. 0	⊹ା ୁ0ା	0	0	0.	0	0	en e
Cycles Maxed Out (%)	100	100	100	100	0	100	100	100	
Cycles with Peds (%)	0	0	# 1	0	0	0	0	0	

B. Parky (Marky Andrews ) postability (Parky 1997) (1998) (1998) (1998) (1997)

Average Cycle Length (s): 140.0

Number of Complete Cycles: 6

#### Intersection: 17: SR 421 & I-95 NB Ramps

F 14 1				:	*** **	
Movement(s) Served	EBT	NBL	EBL	WBT	NBR	
Maximum Green (s)	105.5	23.5	21.5	78.5	23.5	
Minimum Green (s)	20.0	12.0	8.0	20.0	12.0	
Recall	C-Min	None	None	C-Min	None	
Avg. Green (s)	100.0			78.5	27.3	
Avg. Green (s) g/C Ratio	0.71	0.19	0.11	0.56	0.19	28 - 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 -
Cycles Skipped (%)	0	0	0	0	0	
Cycles @ Minimum (%)	0	0	0	0	0	
Cycles Maxed Out (%)	100	83	O	100	83	
Cycles with Peds (%)	0.	0	. 0	0	0	

please for more than the person of the perso

Average Cycle Length (s): 140.0

Number of Complete Cycles: 6

The control of the co

## Intersection: 18: SR 421 & I-95 SB Ramps

<u> 1999</u>	, j	n de la Paris. Secondo de la Carego		<u></u>	
Movement(s) Served	WBT	WBL	EBT	SBL	
Maximum Green (s)	84.5	31.5	47.5	43.5	
Minimum Green (s)	20.0	5.0	20.0	12.0	
Recall	C-Min	None	C-Min	None	district the second of the
Avg. Green (s)	84.5	24.3	61.1	37.2	
g/C Ratio	0.50	* 0.17	0.44	0.22	State the Brown State of the Control
Cycles Skipped (%)	17	0	0	17	
Cycles @ Minimum (%)	0.	» 0		17:	A STATE OF THE STA
Cycles Maxed Out (%)	83	43	100	67	The state of the s
Cycles with Peds (%)	**** <b>0</b>	0	0	0	TOTAL TO THE PROPERTY OF THE

Average Cycle Length (s): 140.0 Number of Complete Cycles: 6



#### Summary of All Intervals

<u> 24 - 1775 - 1</u>				· · · · · · · · · · · · · · · · · · ·		1.02	
Start Time	6:55	6:55	6:55	6:55	6:55	6:55	
End Time	7:15	7:15	7:15	7:15	7:15	7:15	
Total Time (min)	20	20	20	20	20	20	
Time Recorded (min)	15	15	15	15	15	15	
# of Intervals	2	2	2	2	2	2	
# of Recorded Intvis	4	1	: <b>1</b> , 3	100	1	1	:
Vehs Entered	2109	1886	2047	1953	2027	2004	
Vehs Exited	1698	1471	1592	1506	1581	1569	e e
Starting Vehs	519	538	577	544	552	544	
Ending Vehs	930	953	1032	991	998	981	
Denied Entry Before	14	23	29	6	15	18	
Denied Entry After	555	792	683	626	620	656	
Travel Distance (mi)	1909	1655	1767	1658	1759	1750	
Travel Time (hr)	253.8	288.0	288.2	268.3	273.7	274.4	and the state of t
Total Delay (hr)	200.9	242.1	239.1	222.2	224.7	225.8	
Total Stops	5718	6042	6618	5757	6337	6096	and the second of the second o
Fuel Used (gal)	108.8	110.0	113.2	105.4	110.2	109.5	

The state of the s

The second secon

#### Interval #0 Information Seeding

Start Time 6:55
End Time 7:00
Total Time (min) 5

Volumes adjusted by Growth Factors.

No data recorded this interval.

#### Interval #1 Information Recording

Start Time 7:00
End Time 7:15
Total Time (min) 15
Volumes adjusted by Growth Factors.

				ia ia		1.	
Vehs Entered	2109	1886	2047	1953	2027	2004	
Vehs Exited	1698	1471	1592	1506	1581	1569	
Starting Vehs	519	538	577	544	552	544	
Ending Vehs	930	953	1032	991	998	981	
Denied Entry Before	14	23	29	6	15	18	
Denied Entry After	555	792	683	626	620	656	
Travel Distance (mi)	1909	1655	1767	1658	1759	1750	
Travel Time (hr)	253.8	288.0	288.2	268.3	273.7	274.4	
Total Delay (hr)	200.9	242.1	239.1	222.2	224.7	225.8	
Total Stops	5718	6042	6618	5757	6337	6096	
Fuel Used (gal)	108.8	110.0	113.2	105.4	110.2	109.5	

## 1: SR 421 & Williamson Blvd Performance by movement

Sarahan III		#5:30 - ************************************			<u> </u>			14.2	\$2.1.	0:5;1 <sup>-1</sup>	. i 7 	
Total Delay (hr)	21.8	7.6	5.1	8.0	0.1	4.4	5.5	16.9	15.1	7.3	84.6	_
Delay / Veh (s)	1122.4	1244.7	83.3	20.9	7.8	235.0	156.0	288.8	532.8	148.3	256.9	
Total Stops	159	57	250	54	11	162	239	885	535	343	2695	
Travel Dist (mi)	20.3	5.6	19.9	12.1	5.1	38.1	63.2	111.1	34.8	56.7	366.8	
Travel Time (hr)	22.3	7.7	5.8	1.0	0.3	5.5	7.3	20.3	16.2	8.9	95.5	
Avg Speed (mph)	ii <b></b>	Sec. 3.	: ":: <b>3</b>	12	17		*11	6	· · · · <b>.2</b> .	6	-4	
Fuel Used (gal)	5.7	1.9	1.8	0.9	0.2	2.1	3.2	7.0	4.5	3.4	30.7	
HC Emissions (g)	12 14	7	10	10	- 5	10 -	31	25	11.	15	138	
CO Emissions (g)	741	225	243	613	165	352	881	945	407	518	5090	
NOx Emissions (g)	33	11	25	35	12	38	97	97	37	64	448	100
Vehicles Entered	89	34	236	134	56	77	127	239	123	169	1284	
Vehicles Exited	50	10,	206	133	55	58	127	185	81	184	1089	el e
Hourly Exit Rate	200	40	824	532	220	232	508	740	324	736	4356	
Input Volume	636	249	1560	986	488	312	528	1013	775	1016	7563	
% of Volume	31	16	53	54	45	74	96	73	42	72	58	•
Denied Entry Before	0			4.0	0	4.78 <b>4</b> 3	1 2	4	. 0	0	<b>8</b>	1880 - 1 1880 - 1
Denied Entry After	74	27	1	0	0	8	8	22	0	Ô	140	

## 3: SR 421 & Taylor Branch Rd. Performance by movement

	1.00	194	S	:	ν.	
Total Delay (hr)	0.2	0.1	20.2	0.1	20.6	
Delay / Veh (s)	2.0	5.3	110.8	12.7	66.7	TO BUTTON THE CONTROL OF THE CONTROL
Total Stops	0	0	935	38	973	
Travel Dist (mi)	39.3	8.0	208.6	2.1	257.9	
Travel Time (hr)	1.2	0.4	25.0	0.2	26.8	
Avg Speed (mph)	34	22	10	9	11	
Fuel Used (gal)	2.0	0.2	10.3	0.1	12.7	
HC Emissions (g)	58	<b>3</b>	101	1.	162	
CO Emissions (g)	2024	99	3117	15	5255	
NOx Emissions (g)	174	. 10	309	2	494	
Vehicles Entered	342	74	706	38	1160	
Vehicles Exited	345	76	603	37	1061	
Hourly Exit Rate	1380	304	2412	148	4244	
Input Volume	2640	653	3026	132	6451	
% of Valume	52	47	80	112	66	
Denied Entry Before	0 1	0		0	4	
Denied Entry After	0	0	57	0	57	

## 17: SR 421 & I-95 NB Ramps Performance by movement

Service of the servic		25.15p.				1135		
Total Delay (hr)	0.6	1.0	9.0	0.6	1.4	1.1	13.7	
Delay / Ven (s)	42.2	10.3	68.2	14.8	116.7	64.9	44.5	
Total Stops	54	102	458	14	55	56	739	
Travel Dist (mi)	6.2	36.5	<b>52.5</b>	10.2	12.2	17.1	134.6	
Travel Time (hr)	0.8	1.9	10.2	0.8	1.7	1.6	17.1	
Avg Speed (mph)	:: <b>7</b> :	19	5	16	7	41	8	e de la companya del companya de la companya de la companya del companya de la co
Fuel Used (gal)	0.4	2.4	3.7	0.3	0.7	0.7	8.1	·
HC Emissions (g)	°3:	55	23	2	19	6	107	
CO Emissions (g)	144	2267	694	54	416	279	3854	
NOx Emissions (g)	10	165	76	5	43	22	321	
Vehicles Entered	59	328	473	134	45	62	1101	
Vehicles Exited	52	343	476	136	. 44	61	1112	1
Hourly Exit Rate	208	1372	1904	544	176	244	4448	
Input Volume	381	2997	2374	682	181	257	6872	19 · · · · · · · · · · · · · · · · · · ·
% of Volume	55	46	80	80	97	95	65	
Denied Entry Before		0.	. 0	- Î <b>0</b> -			( • • • • • • • • • • • • • • • • • • •	
Denied Entry After	0	0	3	2	1	0	6	

## 18: SR 421 & I-95 SB Ramps Performance by movement

	:			:	1 % _	Marian.	Territy Section				
Total Delay (hr)	3.7	0.3	3.5	7.9	1.7	0.0	2.7	19.9			
Delay / Veh (s)	45.9	32.4	140.9	65.1	77.6	24.2	9622.7	76.3		1.35 B. 18.25	
Total Stops	149	13	107	301	50	0	0	620			
Travel Dist (mi)	18.6	1.9	9.4	45.6	2.9	0.0	0.0	78.3		1371.5	
Travel Time (hr)	4.2	0.4	3.8	9.0	1.9	0.0	2.7	21.9			
Avg Speed (mph)	4.8	<b>. 5</b> .	<b>3</b>	1 7	2.0	3	0	4			
Fuel Used (gal)	1.6	0.2	1.1	3.1	0.5	0.0	0.6	7.0			
HC Emissions (g)	22	*	1	28	4.1		0	54			
CO Emissions (g)	556 6 <b>2</b>	28	Q1	633	41	12	29	1389			
NOx Emissions (g)	62	* 4	7	76	3	2	0	153	,		
Vehicles Entered	286	37	93	439	78	1	1	935	•		
Vehicles Exited	301	37	87	434	84	T T	1	945			
Hourly Exit Rate	1204	148	348	1736	336	4	4	3780			
Input Volume	2160	269	446	2204	1210	19	687	6995			
% of Volume	56	55	78	79	28	21	1	54			
Denied Entry Before	0	.0	.0	2	0 *	0	<u> </u>	· 3			
Denied Entry After	0	0	3	13	2	0	3	21			

## **Total Zone Performance**

Total Delay (hr) 138	.8
Delay / Veh (s) 3309	.5
Total Stops 50.	27
Travel Dist (mi) 837	
Travel Time (hr) 161	
Avg Speed (mph)	
Fuel Used (gal) 58	h. <b>6</b>
HC Emissions (g)	💇 i i 🖑 i sa in la marka. In marka in ing marka in ing marka ing
CO Emissions (g) 155	38
NOx Emissions (g) 14	Company of the state of the sta
Vehicles Entered 14	
Véhicles Exited	A state of the second of the second second of the second o
Hourly Exit Rate	<b>54</b>
Input Volume 278	The spinite country to the state that the spinite country to the state of the spinite country to the state of the spinite country to the
% of Volume	
Denied Entry Before	
Denied Entry After 2	24

## Intersection: 1: SR 421 & Williamson Blvd

	#77 12-4	<u> </u>	1 A 3		203	. 17%	3 ( <u>T</u>			×	: ( <u>}</u>	(12)
Directions Served	T	Т	Т	R	Ĺ	L	T	T	R	L	L	T
Maximum Queue (ft)	800	1347	1606	183	486	476	472	156	303	255	324	2469
Average Queue (ft)	477	955	1334	39	479	362	180	56	24	177	198	1526
95th Queue (ft)	1125	1660	1956	170	502	511	495	137	157	298	320	2810
Link Distance (ft)	1594	1594	1594		248	248	248	248	248			2754
Upstream Blk Time (%)	1 " Fran	13	51	* .	42	28	1 ( )					1
Queuing Penalty (veh)		0	0		257	170						0
Storage Bay Dist (ft)			e ij s	200						300	300	
Storage Blk Time (%)	7	·	95	1						1	2	3
Queuing Penalty (veh)	0	10 100 3 0 0 <u>0</u> 1	237	.m., mai . ( <b>3</b> )			. 1185			3	4	9

#### Intersection: 1: SR 421 & Williamson Blvd

e banga ja	100		: ".		):: ::::::::::::::::::::::::::::::::::		. 3		: .	
Directions Served	T	R	R	L	L	Т	Т	Т	T	
Maximum Queue (ft)	2502	325	312	289	340	1824	1821	2170	2150	83 (17) 87 (17)
Average Queue (ft)	1666	322	307	113	339	1693	1544	749	732	
95th Queue (ft)	2820	334	319	293	342	2119	2273	1932	1931	
Link Distance (ft)	2754					1748	1748	2790	2790	•
Upstream Blk Time (%)	. 2	196 E.		-1		57	36	···.		The second secon
Queuing Penalty (veh)	0					0	0	•••		
Storage Bay Dist (ff)		300	300	240	240					
Storage Blk Time (%)	3	34	41		77	26				
Queuing Penalty (veh)	35	91	108	1764 1 - 177 177	390					

## Intersection: 3: SR 421 & Taylor Branch Rd.

	. N.E		. <u>24</u>		(\$18)	- 4.0	
Directions Served	Т	Т	1	Т	Т	R	
Maximum Queue (ft)	3	257	1514	1527	1476	104	
Average Queue (ft)	0	146	841	953	849	61	
OSH OHOHO HI	5	340	1864	1913	1857	106	
Link Distance (ft)	545		1657	1657	1657	251	
Upstream Blk Time (%)			6	7	5	By Charles	
Queuing Penalty (veh)			0	0	0		
Storage Bay Dist (ft)		250					v.
Storage Blk Time (%)		6	15	**			·
Queuing Penalty (veh)		46	117				

## Intersection: 17: SR 421 & I-95 NB Ramps

4250.	1		<u></u>	:27 5 E: 5	07 S. 226 R			200		<u> </u>	.:8	
Directions Served	L	Ļ	Т	Т	Т	Т	Τ	T	R	L	R	R
Maximum Queue (ft)	176	175	181	193	220	598	572	572	471	314	318	161
Average Queue (ft)	101	96	83	93	127	459	524	546	150	218	157	101
95th Queue (ft)	186	179	181	200	256	728	624	602	533	370	450	173
Link Distance (ft)	485	485	485	485	485	545	545	545	545		1438	
Upstream Blk Time (%)		:			a≯A.	18	24	42	-	S		
Queuing Penalty (veh)						133	182	315	24			
Storage Bay Dist (ft)		10 - 2 grad 8 15	- 4 .1 ·188 ·			i de la companya de l				330		330
Storage Blk Time (%)	, ,									9		
Queuing Penalty (veh)			r da se est Se als de les est		•	:		4.1.1	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	22	• •	

#### Intersection: 18: SR 421 & I-95 SB Ramps

1 906		. Pa	i.e		÷			:: 1				
Directions Served	Т	T	Т	L	T	Т	Ļ	L	R			
Maximum Queue (ft)	254	363	359	487	509	530	195	204	194		3 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	4: -
Average Queue (ft)	118	319	346	382	438	486	82	150	191			
95th Queue (ft)	248	455	383	556	628	581	225	290	196			·
Link Distance (ft)	124	124	124	485	485	485	51	51	51			
Upstream Blk Time (%)	. 13	26	47	7.	17	- 22	20	·51	100	iller 15		
Queuing Penalty (veh)	102	208	378	61	140	188	95	241	474			
Storage Bay Dist (ft)				* ::	3 - 17 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		1 (1 (1 (1 (1 (1 (1 (1 (1 (1 (1 (1 (1 (1	8 4 G.				
Storage Blk Time (%)			47									
Queuing Penalty (veh)		20 1 3 1 3 1 4 1 H	126	- 2 4 4 4			ngs.					

## Zone Summary

Zone wide Queuing Penalty: 4359

and the second s

#### Intersection: 1: SR 421 & Williamson Blvd

			Ģ.				· · · · · · · · · · · · · · · · · · ·				,
Movement(s) Served	WBL	EBT	NBL	SBT	EBL	WBT	SBL	NBT			
Maximum Green (s)	50.0	21.0	11.0	36.0	9.0	62.0	24.0	23.0		·.	
Minimum Green (s)	5.0	10.0	5.0	6.0	5.0	10.0	5.0	6.0			
Recall	None	C-Min	None	None	None	C-Min	None	None			
Avg. Green (s)	50.0	21.0	11.0	36.0	0.0	76.0	24.0	23.0			
g/C Ratio	0.36	0.15	0.08	0.26	0.00	0.54	0.17. <sub>11</sub>	0,16	1801		
Cycles Skipped (%)	0	0	0	0	100	0	0	0			
Cycles @ Minimum (%)	0	0	0	. 0	0	: 4 € <b>0</b> %	. 0	- 0			
Cycles Maxed Out (%)	100	100	100	100	0	100	100	100			
Cycles with Peds (%)	0,	. 0	0	. <b>0</b> .	0	0	0	Ō,	. 1 .		

Average Cycle Length (s): 140.0 Number of Complete Cycles: 6

#### Intersection: 17: SR 421 & I-95 NB Ramps

1.000			1.2.		
Movement(s) Served	EBT	NBL	EBL	WBT	NBR
Maximum Green (s)	105.5	23.5	21.5	78.5	23.5
Minimum Green (s)	20.0	12.0	8.0	20.0	12.0
Recall	C-Min	None	None	C-Min	None and a second secon
Avg. Green (s)	102.2	26.5	14.6	82.1	<b>26.</b> 5
g/Č Ratio	V-1 U	0.19	0.10	0.59	0.19
Cycles Skipped (%)	0	0	0	0	0
Cycles @ Minimum (%)	0	0	0	0	
Cycles Maxed Out (%)	100	50	0	100	50
Taggicinal contact Till that Tall callians Tiggic grown in	0	0	0	0	

Average Cycle Length (s): 140.0

Number of Complete Cycles: 6

## Intersection: 18: SR 421 & I-95 SB Ramps

	Name of the second of the seco	. Ž.	·		
Movement(s) Served	WBT	WBL	EBT	ŞBL	
Maximum Green (s)	84.5	31.5	47.5	43.5	
Minimum Green (s)	20.0	5.0	20.0	12.0	
Recall	C-Min	None	C-Min	None	С
Avg. Green (s)	93.0	34.5	61.0	43.1	
g/C Ratio	0.53	0.25	0.36	0.25	And the second s
Cycles Skipped (%)	20	0	17	20	
Cycles @ Minimum (%)	0,	. 0	.0	0	et de de la de de la dela de
Cycles Maxed Out (%)	80	67	83	60	· "
Cycles with Peds (%)	0	. 0	0	0	the state of the s

Average Cycle Length (s) 140.0

Number of Complete Cycles: 6

# ULTIMATE IMPROVEMENTS EVALUATION

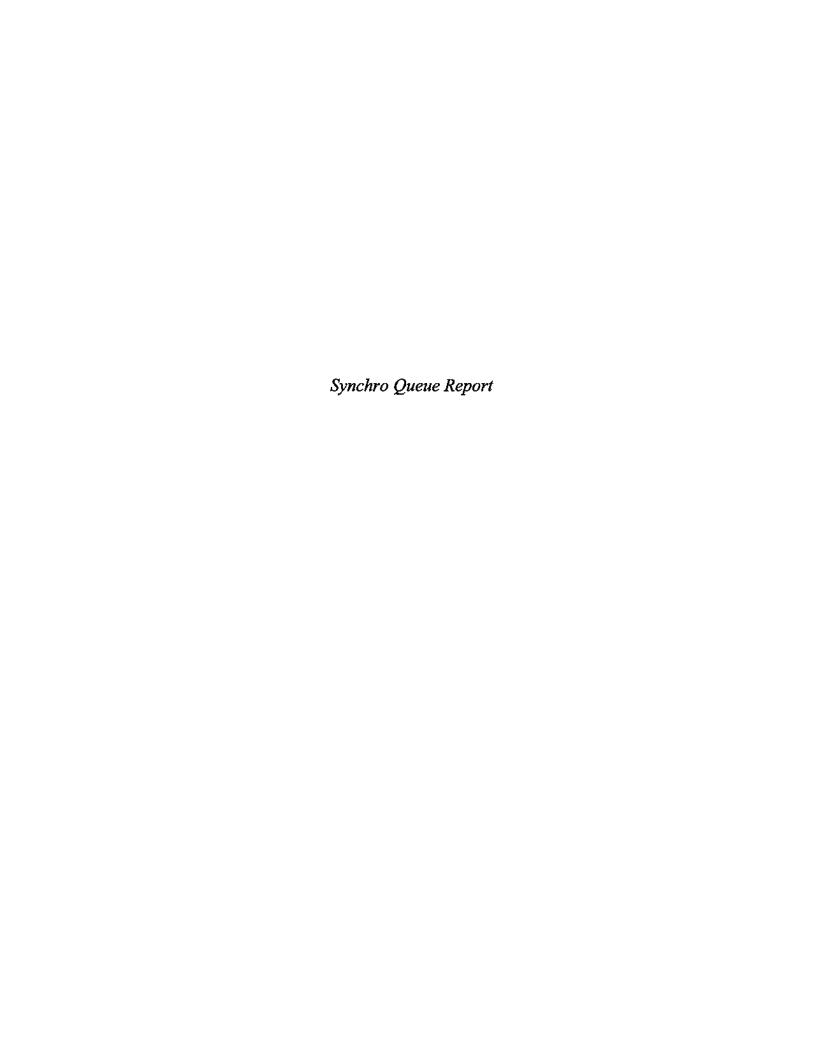


	٦	<b>→</b>	•	*	+	*	4	Ť	~	<b>\</b>	<b>+</b>	4
	Aggi Aggi					VEV	) (官) ) 2 (字).5		130.5	1		
Lane Configurations	e	1111		ሻሻ	^ <b>↑</b>	7	44	<u> </u>	77	44	<b>†</b> †	
Volume (vph)	)	636		1560	975	488		528	1013	775	1016	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width		12		11	12		11	12	12	11	12	12
Total Lost time (s)	s 1811, 21 0 1 200	6.0	5.0	5.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0	4 11 1
Lane Util. Factor	a diki Giri Maryi. Calib malabasi	0.86		0.97			0.97	0.95	0.88	0.97	0.95	g de la company
Frt Ell Protected	er falstjarkelt	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	γ
Satd. Flow (prot)		1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	in it
Fit Permitted	risk kombonistick	6471 1.00	1583 1,00	3351	3574	1568	3319	3539	2814	3351	3574	
Den a chancelland in a . P	The same states		😥	0.95	1,00	OTT	0.95	1.00	1.00	0.95	1.00	. :
Satd. Flow (perm)	0.00	6471	1583	3351	3574	1568	3319	3539	2814	3351	3574	0.60
Peak-hour factor, PHF	0.93	0.93		0.93			0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	0 0	684	268	1677	1048	525	335	568	1089	833	1092	0
RTOR Reduction (vph)  Lane Group Flow (vph)				1077		245 280	* 0,	. 40 (10). COO		. 0	1000	0
Heavy Vehicles (%)	0 5‰.	684 1%	266 2%	1677 1%	1048 1%	260 3%	335 2%	568 2%	1089 1%	833 1%	1092 1%	0
	J70 .	1.70			·· :13/0.			270			176	1%
Turn Type Protected Phases	e novel kommerge		pm+ov 3	Prot	.o.	Perm	Prot		pt+ov 8.1	Prot	4	
Permitted Phases			•		6	6	٠,3	8	0.1.	an haif	4	
Actuated Green, G (s)	er grand geent leegige ee grand geent leegige	15.0	2 26.0	52.0	72.0	72.0	11.0	19.0	76.0	27.0	35.0	
Effective Green, g (s)	in inmeleckiolisis	15.0	26.0	52.0	72.0 72.0	72.0	11.0	19.0	71.0	27.0	35.0	
Actuated g/C Ratio		0.11	0.19	0.39	0.53	0.53	0.08		0.53	0.20	0.26	
Clearance Time (s)		6.0	5.0	5.0	6.0	6.0	5.0	6.0	0.05	5.0	6.0	
Vehicle Extension (s)	n gla			3.0				3.0	- 1981	3.0		
Lane Grp Cap (vph)	3. 0. S. 0.	719	305	1291	1906	836	270	498	1480	670	927	-
v/s Ratio Prot	r ene ur as emunava Notae e e exemp	c0.11		c0.50	0.29			c0.16	0,39	0.25	c0.31	
v/s Ratio Perm	n jawi hay Ale	CALL	0.10	SU.DU	U.ES	0.18	0.10		0.38	0.20	(0,01	
v/c Ratio		. 0.95	0.10	1.30	0.55		1.24	1.14	0.74	1.24	1.18	
Uniform Delay, d1		59.6	52.9	41.5	20.8	17.9	62.0	58.0	24.7	54.0	50.0	
Progression Factor		1.00	1.00	0.93	20.6 0.71	0.12	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	ri di ar A	23.6	22.7	138.5	0.8	0.7	135.8	85.1	1.9	121.8	91.4	
Delay (e)		83.2	75.5	177.3			197.8	143.1	26.7	175.8	141.4	
Level of Service		F	10.5 E	F	,о.о. В	. م.م. ه. ه. A	F	F	20.1 C	F.	F	
				٠ ، •	97.0		•	88.6	, •	*	156.3	
Approach LOS		F			F			F			F	
	<u>.</u>			·				<u>.</u> .				
HCM Average Control Dela			107.1	<del> </del>	ICM Leve	of Servi	ce		F			
HCM Volume to Capacity r	atio		1.24								٠.	
Actuated Cycle Length (s)			135.0		Sum of los	st time (s)			23.0			
Intersection Capacity Utiliz	ation		110.7%			of Servic			H	i.		
Analysis Period (min)			15									
c Critical Lane Group		PACIFICATION			.:			to the	:			

	۶	-	•	•	<b>←</b>	•	•	<b>†</b>	/	<b>\</b>	ļ	1
	. 55	675 1 <del>42</del> 643				11.7874	148.0	11.9		5/2	8 3 7 7 7 7 1 2 2 3 7 7 7 7 7 1	3.3
Lane Configurations		41111		ሻሻ	<b>†††</b>			· · · · · · · · · · · · · · · · · · ·		ሻሻሻ	##*** <u>.</u>	77
Volume (vph)	0	1805	.294	321	2204	0	. 0	0 :	0	1210	0	819
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.5		5.5	6.5					5.5		5,5
Lane Util. Factor		0.81		0.97	0.86					0.94		0.88
Frt - Till Till Till Till Till Till Till Ti		0.98	图 鬼人	1.00	1.00					1.00	44 C. A.	0.85
Flt Protected		1.00		0.95	1.00					0.95		1.00
Satd. Flow (prot)		7334		3467	6346	* **				5040		2814
Flt Permitted		1.00		0.95	1.00					0.95		1.00
Satd. Flow (perm)		7334		3467	6346			<u> </u>		5040	Agrica a	2814
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	1941	316	345	2370	0	0	. 0	0	1301	0	881
RTOR Reduction (vph)	0	20	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	2237	0	345	2370	nium, " <b>O</b> r	Ö	. 0	. 0	1301	0	881
Heavy Vehicles (%)	0%	3%	1%	1%	3%	0%	0%	0%	0%	1%	0%	1%
Turn Type			# 15 mm 15 m	Prot	50 mm 1 mm 2 mm 2 mm 2 mm 2 mm 2 mm 2 mm		TO SERVICE STATE			Prot		custom
Protected Phases		6		5	2					3		3
Permitted Phases	7,44			4 8. E.S.			79 Jan 19 19 19 19 19 19 19 19 19 19 19 19 19	via A		in the	1	
Actuated Green, G (s)		48.8		23.1	76.4			, .		46.6		46.6
Effective Green, g (s)	.44 %	48.8		23.1	76.4		1981	· i		46.6		46.6
Actuated g/C Ratio		0.36		0.17	0.57					0.35		0.35
Clearance Time (s)		5.5	.2	5.5	6.5	les de la companya de				5.5	:	5.5
Vehicle Extension (s)		3.0		3.0	3.0					3.0		3.0
Lane Grp Cap (vph)		2651		593	3591	water the		1 1 5 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	10 to	1740		971
v/s Ratio Prot		c0.30	ere, eren	0.10	c0.37		as one.			0.26	4:	c0.31
v/s Ratio Perm;	1117	:	eni eni :	·		41 - C.	3 4 5 E			. 4 . 4	· *.1	
v/c Ratio		0.84		0.58	0.66		· ·			0.75		0.91
Uniform Delay, d1		39.6		51.5	e e e e	H.A.				39.0		42.1
Progression Factor		0.77		1.14	0.14					1.00		1.00
Incremental Delay, d2	10 10 10 1	1.3		1.0	0.7	Strategic S		į.		1.8		11.9
Delay (s) Level of Service		31.7 C		60.0	3.6		· •			40.8		54.0
Approach Delay (s)		31.7		"; ;;. <b>Ę</b> ,	A 10.8					Ď.	3 40 4	D
Approach LOS	in the second				10.6 B			0.0			46.1	
причаст соо	· · · ·				D			A			D	
HCM Average Control Delay			28.1		ICM Leve	of Service	De .	4.: .	C.		• • • •	
HCM Volume to Capacity ratio			0.86				•					
Actuated Cycle Length (s)		4	135.0			st time (s)			17.5			
Intersection Capacity Utilization	n		80.8%	, le	CU Level	of Service	9		D			
Analysis Period (min) c Critical Lane Group			15		3 " "		4					

	۶	-	•	•	•	4	1	<b>†</b>	~	<b>/</b>	<del> </del>	- ✓
	7. Y 2. Z	.: <del>1</del> [8]			T (1)	S BY E	. 10. 3. 11. 20.	383	1 1 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			300
Lane Configurations	ሻሻ	ተተተ			613		ሻ		77			
Volume (vph)	.381	2984	0	0	2344	682	181	0	257	0	:0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	6.5		4 10	6.5		5.5	. 1.	5.5			•
Lane Util. Factor	0.97	0.91			0.76		1.00		0.88			
<b>Fi</b>	1.00	1.00		1 (1 (1 (1 (1 (1 (1 (1 (1 (1 (1 (1 (1 (1	0,97	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1,00		0.85			
Flt Protected	0.95	1.00			1.00		0.95		1.00			•
Satd. Flow (prot)	3467	5085	v		8207	associal in the	1687	· ·	2787			
Flt Permitted	0.95	1.00			1.00		0.95		1.00		•	
Satd. Flow (perm)	3467	5085			8207	\$* \$*	1687		2787	- 1 T		17.4
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)	410	3209	0	0	2520	733	195	0	276	0	0	0
RTOR Reduction (vph)	0	0	O	Ö	36	0	0	0	0	0	0	0
Lane Group Flow (vph)	410	3209	0	0	3217	0	195	.0	276	0	0	0
Heavy Vehicles (%)	1%	2%	0%	0%	2%	2%	7%	0%	2%	0%	0%	0%
Tum Type	Prot						Prot		custom		Tankin Kara	
Protected Phases	5	2		FR 14 3343	6	40 * A.D.E   4.74 A. 74	8		8		1 1 1 1 2 1	
Permitted Phases	The Arthur	•					in of N			and the second of the second o	100	
Actuated Green, G (s)	22.5	103.2			75.2		19.8		19.8			
Effective Green, g (s)	22.5	103.2		militar inggrad Militar Alicha Militar inggrade	75.2	Andrews Andrews	19.8		19.8	i Tagan ja		
Actuated g/C Ratio	0.17	0.76			0.56		0.15		0.15			
Clearance Time (s)	. 5.5	6.5	```	·x'.	6.5		5.5		5.5	*	1 : 1	:
Vehicle Extension (s)	3.0	3.0			3.0		3.0	•	3.0			
Lane Grp Cap (vph)	578	3887			4572		247		409			
v/s Ratio Prot	0.12	c0.63		<u>.</u>	0.39		c0.12		0.10			
v/s Ratio Perm		100 100 p		*		15 (15.8 2 (15.6) km 3 (15.6)						
v/c Ratio	0.71	0.83			0.70		0.79		0.67			
Uniform Delay, d1	53.2	10.2			21.8		55.6		54.6		20040	
Progression Factor	0.56	1.04			1.00		1.00		1.00			
Incremental Delay, d2	3.3	1.6		100	0.9	- 18 THE	15.3	. :	4.4	enation of the second of the s		
Delay (s)	32.8	12.2			22.7		70.9		58.9			
Level of Service		В	:		C	er de la companya de	E		ur A. Ek	The Bridge		
Approach Delay (s)		14.6			22.7			63.9			0.0	
Approach LOS		···· <b>B</b>			C			E:			Α	
						٠						
HCM Average Control D	olou e		04.0	. , in	CM Carr	draf Camera	D: 2.5					
HCM Volume to Capacity	- x	111	21.3	:~ \Q	CM FAA	of Service	<b>6</b> 1244 4	1	Ü			
Actuated Cycle Length (			0.82 135.0	c	مما الم مس	et finis (a)			10.0			
Intersection Capacity Uti						st time (s) of Service			12.0			
Analysis Period (min)	IIZAIKUH		80.8%	, IL					D			
c Critical Lane Group		· ···	15				*1		× · · ·		•	
Comical Lane Group												

	<b>†</b>	إلىام	. ↓	F	*				
						: ::			-
Lane Configurations	<b>^</b>	7	1111		7		·		
Volume (veh/h)	2588	653	0 3026	.0	132		i .	100	
Sign Control	Free		Free	Stop					
Grade	0%	****	0%	0%		4,75			
Peak Hour Factor	0.93		93 0.93	0.93	0.93			- 4 ·	
Hourly flow rate (vph)	2783	702	0 3254	. 0	142				
Pedestrians									
Lane Width (ft)					•,•	. '			
Walking Speed (ft/s)	to was t								
Percent Blockage		1.7			2.5				
Right turn flare (veh) Median type	Mana		*****						
Median storage veh)	None		None				i .		
Upstream signal (ft)	633		**						
pX, platoon unblocked		0.6	30.	0.60	0.60		٠		
vC, conflicting volume		27		3596	928	ш р.			
vC1, stage 1 conf vol			<b>~</b> . ∷		<u> </u>			• •	
vC2, stage 2 conf vol	-1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1			** * * *	- T-			5 .	
vCu, unblocked vol	25.7	163	38	2994	0				
tC, single (s)			3	6.8	7.1		4		
tC, 2 stage (s)	_	•						F1	
tF(s)			.3	3.5	3.4	Ψ L			
p0 queue free %			)0	100	78				
cM capacity (veh/h)		,	19	7	634	". 			
2.330 A S		193		1.5	10	525			
Volume Total	928	928 92	8 702	813	813	813 8	13 142		<u></u>
Volume Left	0	Ő	0 0	0	0	0	0 0		
Volume Right	0		0 702	: 0	0	0	**		
cSH	1700	1700 170		1700	1700	1700 17	00 634		
Volume to Capacity	0.55	0.55 0.5		0.48	0.48	0.48 0.	48 0.22	. :	
Queue Length 95th (ft)	0	***	0 0	0	0	0	0 21		
Control Delay (s)	0.0	0.0 0.	0.0	0.0	0.0	0.0	).0 12.3		
Lane LOS Approach Delay (s)	. 00			ALA.			В		
Approach LOS	0.0			0.0			12.3		
							В		
					<u></u>				
Average Delay	nave in	0.							
Intersection Capacity Utiliz	zation	64.8		U Level of	Service		C	i	
Analysis Period (min)		, 1	5						



#### 1: SR 421 & Williamson Blvd

	-	$\rightarrow$	1	←	•	1	<b>†</b>		-	ļ		
a partie de	197 g 197 1- 3				10.7	इ. इ.		1.33	1.46	327		
Lane Group Flow (vph)	684	268	1677	1048	525	335	568	1089	833	1092		
v/c Ratio	0.95	0.84	1.30	0.55	0.49	1.24	1.14	0.69	1.24	1.18		
Control Delay	83.0	54.3	172.1	15.7	1.2	185.2	135.9	23.9	166.1	135.0		
Queue Delay	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0		
Total Delay	83.0	54.3	172.1	15.7	1.4	185.2	135.9	23.9	166.1	135.0		
Queue Length 50th (ft)	175	124	~987	279	0	~187	~305	371	~467	~602	* 5-7-	4.
Queue Length 95th (ft)	#240	#254	#1128	m307	m0	#287	#425	458	#595	#740		•
Internal Link Dist (ft)	1569	TO BETTER AND SPRING TO BE A TO BE READ TO BE		633	jajan in ek Inghijasi in ek Selena	Vertical (All Free Section ) and a legislating (All Free Section ) and the contract of the con	2748	1 . 1		1756		
Turn Bay Length (ft)		200			500	300		300	240			
Base Capacity (vph)	719	319	1291	1906	1081	270	498	1584	· 670	927	1.1	
Starvation Cap Reductn	0	0	0	0	125	0	0	0	0	0		*****
Spillback Cap Reductn	Ø	0	0	0	0 -	0	Ò	0	0	0		: .
Storage Cap Reductn	Ö	0	Ő	0	0	0	O	Ò	0	0	•	
Reduced v/c Ratio	0.95	0,84	1.30	0,55	0.55	1.24	1.14	0.69	1.24	1.18		

Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.

<sup># 95</sup>th 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.

	<b>→</b>	•	. ←	-	4	
184. 197 <del>4.</del> 3		- Page sa jer		i wa		
Lane Group Flow (vph)	2257	345	2370	1201	001	ter in comment that the second terms are the second terms and the second terms are the second
v/c Ratio		0,58	0.66	1301 0.75	881 0.91	
Control Delay	31.5	62.3	3.6	42.1	56.0	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	31.5	62.3	3.7	42.1	56.0	
Queue Length 50th (ft)	394	<b>≉106</b>	63	351	412	andra (n. 1884). 18 de - Branda Maria, de Maria (n. 1884). 18 de - Branda Maria, de Maria (n. 1884).
Queue Length 95th (ft)	m405	158	64	407	#543	
Internal Link Dist (ff)	633	:	477			
Turn Bay Length (ft)						
Base Capacity (vph)	2675	706	3592	1773	990	· · · · · ·
Starvation Cap Reductn	U	ل موستان	198	U - a⊲	U ::- ≪ກ:-	atazag valantaria
Spillback Cap Reductn Storage Cap Reductn		ነት ማህ። ሰ			0	
Reduced v/c Ratio	0.84	0.49	0.70	0.73	0.89	

<sup># 95</sup>th 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.

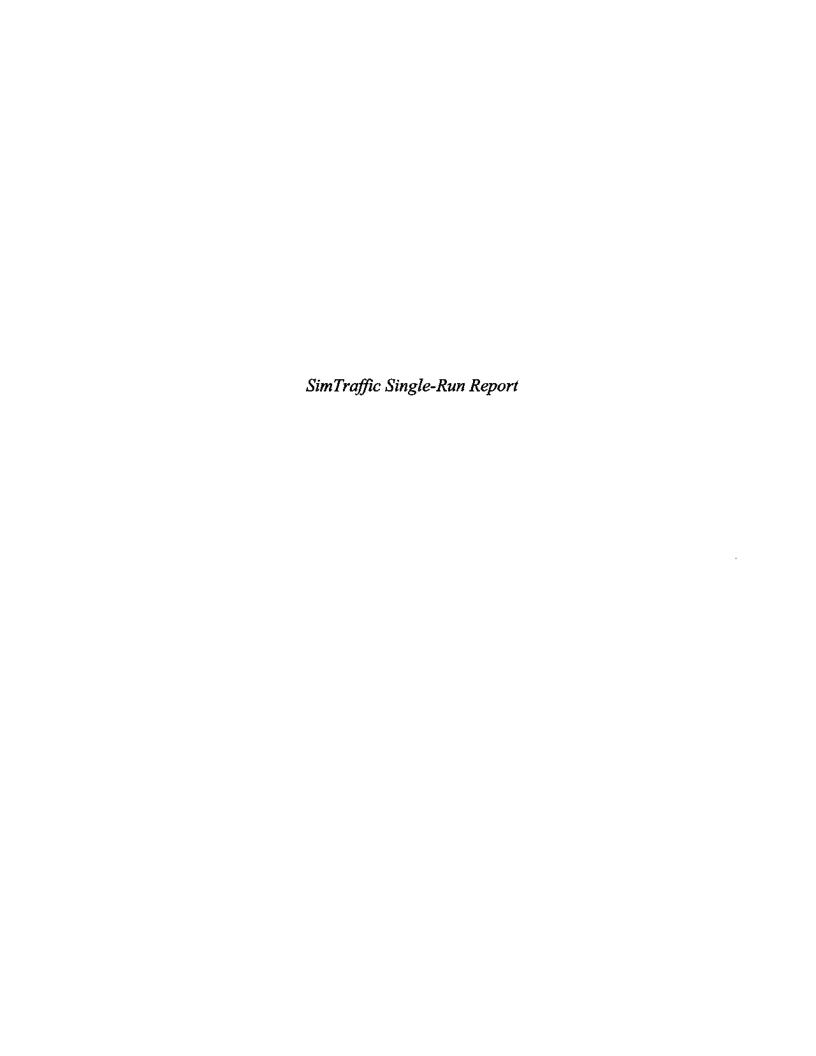
# **♪ → ← < /**

	-	_		•	•	
.80.40.0	#F.B.	127 E F				
Lane Group Flow (vph)	410	3209	3253	195	276	
v/c Ratio	0.71	0.83	0.71	0.79	0.68	
Control Delay	35.4	13.0	22.9	77.7	63.0	
Queue Delay	0.0	0.5	0.0	0.0	0.0	
Total Delay	35.4	13.5	22.9	77.7	63.0	
Queue Length 50th (ft)	162	367	451	166	130	
Queue Length 95th (ft)	m165	359	491	#253	181	
Internal Link Dist (ft)		477	553			17. The control part of the form of the second the second the second the second the second the second that is second to the second that is second that is second to the second that is seco
Turn Bay Length (ft)				330	330	
Base Capacity (vph)	619	<b>3889</b>	4608	281	465	The state of the s
Starvation Cap Reductn	0	270	0	0	0	
Spillback Cap Reductn	0	0.	√0	0	0.	and the first term of the firs
Storage Cap Reductn	0	0	0	0	Q	
Reduced v/c Ratio	0.66	0.89	0.71	0.69	0.59	

<sup># 95</sup>th 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.



#### Summary of All Intervals

245-77 <u>3</u>	6.83		
End Time	7:15		
Total Time (min)	20	analisis in the second of the	
Time Recorded (min)	15		
# of Intervals	2	garage and the second of the s	
# of Recorded Intvis	1		
Vehs Entered	2694		
Vehs Exited	2458		
Starting Vehs	553		
Ending Vehs	789		
Denied Entry Before	21		ay in the Adjance of
Denied Entry After	13		
Travel Distance (mi)	2494	William Communication of Market States and Communication of the American States of the Communication of the Com	$= \inf_{n \in \mathcal{N}} \left\{ \frac{1}{n} \left( \frac{1}{n} + \frac{1}{n} \right) \right\} = \frac{1}{n} \left\{ \frac{1}{n} \left( \frac{1}{n} + \frac{1}{n} \right) \right\} = \frac{1}{n} \left\{ \frac{1}{n} \left( \frac{1}{n} \left( \frac{1}{n} \right) \right\} = \frac{1}{n} \left\{ \frac{1}{n} \left( \frac{1}{n} \left( \frac{1}{n} \right) \right\} = \frac{1}{n} \left\{ \frac{1}{n} $
Travel Time (hr)	170.4		
Total Delay (hr)	100.0	(1, 1, 2, 2, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3,	
Total Stops	5558		
Fuel Used (gal)	1070,1		

## Interval #0 Information Seeding

Start Time	6:55			
End Time	7:00			
Total Time (min)	5	The state of the s	Television of the Community of the Commu	
Volumes adjusted by Growth I	Factors.			
No data recorded this interval				

## Interval #1 Information Recording

Start Time	7:00
End Time	7:15
Total Time (min)	15
Volumes adjusted by Growth Factor	

Vehs Exited	2458	
Starting Vehs	553	
Ending Vehs	789	
Denied Entry Before	21 13	
Denied Entry After	13	
Travel Distance (mi)	2494	
Travel Time (hr)	170.4	
Total Delay (hr)	100.0	
Total Stops	5558	
Fuel Used (gal)	1070.1	

## 1: SR 421 & Williamson Blvd Performance by movement

							- PAL.		<u> 9,81</u>	22	<u> </u>
Total Delay (hr)	3.1	0.8	7.2	1.0	0.3	6.6	4.6	3.7	7.6	9.1	44.0
Delay / Veh (s)	72.7	36.9	93.8	15.3	6.8	295.2	121.7	57.1	153.8	134.4	90.0
Total Stops	140	70	366	84	49	229	235	224	393	474	2264
Travel Dist (mi)	45.4	21.8	34.4	29.3	17.2	48.2	71,3	126.7	58.8	81.2	534.5
Travel Time (hr)	4.2	1.4	8.5	1.8	1.0	8.1	6.6	7.7	9.5	11.4	60.0
Avg Speed (mph)	3113	17	.Heil <b>ia</b> r	16	18	6	11	18	6:	: . <b>7</b> %	°9. ∠
Fuel Used (gal)	21.3	7.7	28.9	13.2	5.6	28.1	31.8	44.4	32.8	43.0	256.9
HC Emissions (g)	2	1	1	2	1.	4	<b>2</b>	3	2	. 2	19
CO Emissions (g)	966	390	367	757	254	736	623	915	506	555	6068
NOx Emissions (g)	6	3:	4.	7	2	9.4	6	12	6	7	63
Vehicles Entered	153	71	289	245	137	94	144	248	194	257	1832
Vehicles Exited	152	77	267	242	138	69	127	224	165	230	1691
Hourly Exit Rate	608	308	1068	968	552	276	508	896	660	920	6764
Input Volume	636	249	1560	1008	488	312	528	1013	775	1016	7585
% of Volume	96	124	68	96	113	88	96	88	85	91	89
Denied Entry Before	. 0.	. <b></b>	0.00	0.	0:	4	1	2	0.	0	8
Denied Entry After	0	1	0	0	0	0	0	1	0	0	2

## 3: SR 421 & Taylor Branch Rd. Performance by movement

		1,312	1000	11 143		
Total Delay (hr)	0.7	0.4	10.7	0.3	12.0	
Delay / Veh (s)	3.8	7.7	52.0	31.2	27.4	The state of the s
Total Stops	0	0	603	34	637	
Travel Dist (mi)	74.0	17.6	237,8	1.8	331.1	The BANK TELEPOON CONTINUES AND THE CONTINUES AN
Travel Time (hr)	2.4	0.9	16.3	0.4	20.0	
Avg Speed (mph)	31	19	16	5	18	of the dispersion of the second of the secon
Fuel Used (gal)	40.1	5.5	87.6	1.0		
HC Emissions (g)	7	0	- 11	0	19	
CO Emissions (g)	3043	145	3714	11	6912	
NOx Emissions (g)	26	2	34	. 0.	61	And the second s
Vehicles Entered	633	164	770	34	1601	
Vehicles Exited	644	164	715	33	1556	The Market Control of the Control of
Hourly Exit Rate	2576	656	2860	132	6224	
Input Volume	2640	653	3026	132	6451	
% of Volume	98	100	95	100	96	
Denied Entry Before	1	0	<b>11</b>	0	12	
Denied Entry After	0	0	Ö	0	0	

## 17: SR 421 & I-95 NB Ramps Performance by movement

14 <sup>8</sup> 504.992.90 24 <b>:2</b> 45:4854	100 g 1 g 1 g 1 g 1 g 1 g 1 g 1 g 1 g 1			(18.9)				
Total Delay (hr)	0.9	3.3	10.2	1.8	0.7	1.0	18.0	
Delay / Veh (s)	31.7	16.4	67.5	42.4	59.1	61.9	39.7	em communication of the commun
Total Stops	96	328	566	84	38	51	1163	
Travel Dist (mi)	10.2	81.1	61.1	11.8	11.9	15.8	191.8	
Travel Time (hr)	1.2	5.8	11.6	2.2	1.0	1.4	23.3	
Avg Speed (mph)	3, <b>9</b>	15	<b>5</b> ,	7	12	. * 14.	9 : S	The state of the state of
Fuel Used (gal)	5.9	46. <del>9</del>	43.7	7.7	5.0	6.4		
HC Emissions (g)		<b>4. 6</b> .	3	0	·· · 2:	1	12	·美尔科技、安斯克里·美兰
CO Emissions (g)	192	2195	1174	117	373	263	4315	
NOx Emissions (g)	2	21	- 10	· 2	4	3	41	
Vehicles Entered	103	733	557	158	43	57	1651	
Vehicles Exited	100	729	535	154	46	57	1621	
Hourly Exit Rate	400	2916	2140	616	184	228	6484	
Input Volume	381	2986	2374	682	181.	257	6861	A STATE OF THE STA
% of Volume	105	98	90	90	102	89	95	·
Denied Entry Before		0	0.	<b>1</b> .	0	<b>0</b> 3	<u> 1</u>	and the second of the second o
Denied Entry After	0	0	3	3	0	2	8	

## 18: SR 421 & I-95 SB Ramps Performance by movement

1 1 2		935 635		12	277	A ] 1	79 1 77	
Total Delay (hr)	4.4	0.3	8.0	8.7	4.5	2.4	21.1	
Delay / Veh (s)	32.8	21.0	37,1	65.4	52.3	41.8	47.1	
Total Stops	320	36	30	539	320	171	1416	· · · · · · · · · · · · · · · · · · ·
Travel Dist (mi)	56.3	6.0	8.6	52.1	48.8	32.5	204.2	
Travel Time (hr)	6.2	0.5	1.1	9.9	6.1	3.5	27.5	
Avg Speed (mph)	9	: 2 <b>1)</b>	. 8	5	8	9	7	
Fuel Used (gal)	36.9	3.0	4.4	43.6	26.7	14.8	129.4	•
HC Emissions (g)	4	0	. 0	4	2		- 11	in a gradual de la companya de la c La companya de la co
CO Emissions (g)	1444	66	116	1591	1155	626	4999	
NOx Emissions (g)	14	1	1,	15	7	3	39	
Vehicles Entered	487	60	79	501	294	198	1619	<del>.</del>
Vehicles Exited	478	56	85	455	326	212	1612	
Hourly Exit Rate	1912	224	340	1820	1304	848	6448	
Input Volume	2163	294	321	2213	1210	819	7020	
% of Volume	88	76	106	82	108	104	92	·
Denied Entry Before	0	0	0	0	0	0	0	
Denied Entry After	0	0	0	0	0	0	0	

## **Total Network Performance**

Total Delay (hr)	100.0		" " <del>"</del>	_
Delay / Veh (s)	139.7			
Total Stops	5558			
Travel Dist (mi)	2494.3		and the second of the second o	
Travel Time (hr)	170.4			
Avg Speed (mph)	15		A STATE OF THE STA	
Fuel Used (gal)	1070.1	_		
HC Emissions (g)	( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( )		AND THE CONTRACT OF THE CONTRA	
CO Emissions (g)	40353			
NOx Emissions (g)	399		The state of the s	
Vehicles Entered	2694			
Vehicles Exited	2458		of in the control of the control o	
Hourly Exit Rate	9832			
	41688		make the first of the state of	
% of Volume	24			
Denied Entry Before	*\$			
Denied Entry After	13			

## Intersection: 1: SR 421 & Williamson Blvd

		1 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0				<del></del>	į.	
Movement(s) Served	WBL	EBT	NBL	SBT	WBT	SBL	NBT	
Maximum Green (s)	52.0	15.0	11.0	35.0	72.0	27.0	19.0	
Minimum Green (s)	8.0	13.0	8.0	9.0	13.0	8.0	9.0	
Recall	None	C-Min	None	None	C-Min	None	None	1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1
Avg. Green (s)	52.0	15.0	11.0	35.0	72.0	27.0	19.0	
g/C Ratio	0.39	0.11	80.0	0.26	0.53	0.20	0.14	A STATE OF THE STA
Cycles Skipped (%)	0	0	0	0	0	0	0	
Cycles @ Minimum (%)	D	0	0	0	· 0	£\$20	° 0.	and the second of the second o
Cycles Maxed Out (%)	100	100	100	100	100	100	100	
Cycles with Peds (%)	0	0.	0	0	0	- ( <b>0</b> )	0	: · · · · · · · · · · · · · · · · · · ·

Average Cycle Length (s): 135.0 Number of Complete Cycles: 6

Intersection: 17: SR 421 & I-95 NB Ramps

5-340 ·	:	**	÷		
Movement(s) Served	EBT	EBL	WBT	NBL	<del>"</del>
Maximum Green (s)	100.5	24.1	70.9	22.5	(2) The state of the state o
Minimum Green (s)	23.0	8.0	23.0	15.0	- And the second se
Recall	C-Min	None	C-Min	None	The second secon
Avg. Green (s)	103.1	23.4	74.2	20.3	
Avg. Green (s) g/C Ratio	0.76	0.17	0.55	0.15	in the state of th
Cycles Skipped (%)	0	0	0	0	and the control of th
Cycles @ Minimum (%)	0	0	0	14	
Cycles Maxed Out (%)	100	50	100	29	
Cycles with Peds (%)	0	0	0	0	
					· · · · · · · · · · · · · · · · · · ·

CONTROL THE SECOND STATE OF THE SECOND STATE O

Average Cycle Length (s): 135.0 Number of Complete Cycles: 6

## Intersection: 18: SR 421 & I-95 SB Ramps

Property					
Movement(s) Served	WBT	SBL	WBL	EBT	
Maximum Green (s)	75.5	47.5	27.5	43.5	
Minimum Green (s)	23.0	8.0	23.0	15.0	
Recall -	C-Min	None	Min	C-Min	en andre de la companya de la compa
Avg. Green (s)	75.5	47.5	26.2	45.0	
g/C Ratio	0.56	0.35	0.19	0.33	The second secon
Cycles Skipped (%)	0	0	0	Ő	
Cycles @ Minimum (%)	0	0/	29	· · · · · · · · · · · · · · · · · · ·	en e
Cycles Maxed Out (%)	100	100	57	100	total Communication of the Com
Cycles with Peds (%)	<b></b>	J. G.	0	0	The state of the s
The state of the s					

Average Cycle Length (s): 135.0

Number of Complete Cycles: 6



#### Summary of All Intervals

	.: ::		10 10 10 10 10 10 10 10 10 10 10 10 10				
Start Time	6:55	6:55	6:55	6:55	6:55	6:55	
End Time	<i>7</i> :15	7:15	7:15	7:15	7:15	7:15	
Total Time (min)	20	20	20	20	20	20	
Time Recorded (min)	15	: 1 <b>5</b>	15	15	15	15:	
# of Intervals	2	2	2	2	2	2	
# of Recorded Intvis			1	. 1		a	programme services
Vehs Entered	2737	2746	2676	2598	2611	2672	
Vehs Exited	2363	2448	2329	2292	2333	2351	Control of the Contro
Starting Vehs	484	502	500	518	478	500	
Ending Vehs	858	800	847	824	756	817	erikan di sebagai di s Sebagai di sebagai di
Denied Entry Before	34	11	15	16	6	17	
Denied Entry After	5	11	12	15.	17	14	
Travel Distance (mi)	2423	2468	2367	2344	2403	2401	
Travel Time (hr)	184.8	166.5	165.1	170.8	146.6	0.0	ey da Herri
Total Delay (hr)	116.5	96.7	98.4	104.9	78.9	99.1	
Total Stops	5928	5463	5242	5572	4336	5307	and the second of the second o
Fuel Used (gal)	1079.3	1050.2	1016.0	1021.9	982.3	1029.9	

pp. and the late of the late o

#### Interval #0 Information Seeding

Start Time 6:55
End Time 7:00
Total Time (min) 5

Volumes adjusted by Growth Factors.

No data recorded this interval.

#### Interval #1 Information Recording

Start Time 7:00

End Time 7:15

Total Time (min) 15

Volumes adjusted by Growth Factors.

ňa, alibrita								
Vehs Entered	2737	2746	2676	2598	2611	2672		
Vehs Exited	<b>236</b> 3	2 <b>44</b> 8	2329	2292	2333	2351	· 1	
Starting Vehs	484	502	500	518	478	500		
Ending Vehs	858	800	847	824	756	817		
Denied Entry Before	34	11	15	16	6	17		
Denied Entry After	5	11	12	15	17	14		
Travel Distance (mi)	2423	2468	2367	2344	2403	2401		
Travel Time (hr)	184.8	166.5	165.1	170.8	146.6	0.0		
Total Delay (hr)	116.5	96.7	98.4	104.9	78.9	99.1		
Total Stops	5928	5463	5242	5572	4336	5307		
Fuel Used (gal)	1079.3	1050.2	1016.0	1021.9	982.3	1029.9		

## **Total Network Performance**

Total Delay (hr)	99.1		
Delay / Veh (s)	142.2		
Total Stops	5307		
Travel Dist (mi)	2400.9		and the second s
Travel Time (hr)	0.0		
Avg Speed (mph)	-693	The second secon	
Fuel Used (gal)	1029.9		
HC Emissions (g)	107		
CO Emissions (g)	38535		
NOx Emissions (g)	<b>377</b>	en in State (Control of Control o	A STATE OF THE STA
Vehicles Entered	<b>2</b> 672		
Vehicles Exited	2351	<ul> <li>A section of the transfer of the section of the secti</li></ul>	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Hourly Exit Rate	9404		
Input Volume	41688		1
% of Volume	23	···	
Denied Entry Before	4	A STATE OF THE STA	
Denied Entry After	14		**************************************

## Intersection: 1: SR 421 & Williamson Blvd

						41726		1.5		:		
Directions Served	T	Т	T	Т	R	L	L	Ŧ	Τ	R	L	L
Maximum Queue (ft)	198	216	523	321	225	555	560	296	204	106	280	324
Average Queue (ft)	126	150	221	228	151	549	548	143	127	41	210	238
95th Queue (ft)	219	231	624	363	270	559	560	399	298	104	349	377
Link Distance (ft)	1595	1595	1595	1595		536	536	536	536			
Upstream Blk Time (%)	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		0		:	28	29	0			ž	
Queuing Penalty (veh)			0			215	220	1				
Storage Bay Dist (ft)	, :	enger blev inge Alle aansk in			200					500	300	300
Storage Blk Time (%)				18	7						2	14
Queuing Penalty (veh)	11 ( 44 14 ( 42) 35 ( 44)	ort on a Gleggier Mikaneria		46	12					1.45	4	37

#### Intersection: 1: SR 421 & Williamson Blvd

Madagaa.	νå	27	4	. J		\$10	<u> </u>	<u> </u>	7. 7.	4 + 2	
Directions Served	Т	T	R	R	L	Ĺ	Т	T	Т	Ţ	
Maximum Queue (ft)	572	602	313	304	281	339	1590	1509	217	175	100
Average Queue (ft)	378	393	281	269	235	321	1264	1141	74	55	
95th Queue (ft)	771	748	361	330	312	392	1944	1847	336	290	
Link Distance (ft)	2744	2744					1744	1744	2790	2790	
Upstream Blk Time (%)		* 1815		se* 1		1 1,	. 11	<b>5</b>			
Queuing Penalty (veh)							0	0			
Storage Bay Dist (ft)			300	300	240	240	and the second	an the .	10 m		
Storage Blk Time (%)	4	5	3	2	23	38	54				
Queuing Penalty (veh)	12	46	7	5	115	195	422	5.5	11.14 A.		

## Intersection: 3: SR 421 & Taylor Branch Rd.

ng taona a Latana - Kanada a ana ana ana ana ana		250		(2).5°	28.5	e de la Companya de La companya de la Com	Welly Zervio	 	
Directions Served	Ţ	Т	Ţ	T	Ţ	R	T		
Maximum Queue (ft)	10	205	461	840	1034	130	33		
Average Queue (ft)	1	42	99	232	306	87	8		
95th Queue (ft)	14	194	424	775	928	186	61		
Link Distance (ft)	544		1657	1657	1657	251	659		
Upstream Blk Time (%)		74.4				3			
Queuing Penalty (veh)						0			
Storage Bay Dist (ft)		250							
Storage Blk Time (%)		2	7						
Queuing Penalty (veh)		15	55	:: .	**. *				

## Intersection: 17: SR 421 & I-95 NB Ramps

	Æ.	13.77 18.77		1 (1 (2 (2 (2 (2 (2 (2 (2 (2 (2 (2 (2 (2 (2	ini Nav	1						95
Directions Served	L	Ł	Т	Т	Т	Т	T	Т	T	T	TR	L
Maximum Queue (ft)	234	223	383	403	442	207	498	546	568	<b>597</b>	536	226
Average Queue (ft)	154	143	263	287	347	77	235	353	401	439	453	142
95th Queue (ft)	247	240	429	433	491	176	573	609	689	744	655	234
Link Distance (ft)	496	496	496	496	496	544	544	544	544	544		
Upstream Blk Time (%)	198	data da		4, " "			9:	15	17	. 8	6	
Queuing Penalty (veh)							56	90	104	50	0	
Storage Bay Dist (ft)		1 10000	1.31.11	:	the second second				1.1	1.40	500	-330
Storage Blk Time (%)		0								1	12	
Queuing Penalty (veh)							. :			10	48	

#### Intersection: 17: SR 421 & I-95 NB Ramps

Directions Served	RR	<del></del> -
Maximum Queue (ft)	181 - 150	The state of the s
Average Queue (ft)	87 103	
95th Queue (ft)	147 167	
Link Distance (ft)	1437	
Upstream Blk Time (%)	The state of the s	
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)	The state of the s	

## Intersection: 18: SR 421 & I-95 SB Ramps

	·" ·	- 55 Q.		3.7	4. Y.			2 3 % 			5 1 2 5 5 1 2 5	. 10, 10 . 13, 2 
Directions Served	T	T	T	Т	TR	L	L	Т	T	Т	Ŧ	一
Maximum Queue (ft)	108	296	320	453	496	166	180	532	539	552	· 511	331
Average Queue (ft)	31	115	226	272	350	76	70	456	468	346	280	121
95th Queue (ft)	80	287	374	492	566	166	180	648	642	691	624	381
Link Distance (ft)		536	536	536	536	496	496	496	496	496	496	834
Upstream Blk Time (%)	in a superment of Andrews of Andrews of the			0	aca in		30 S	32	34	6⊹	1	.:
Queuing Penalty (veh)				0	3	*		133	142	26	3	·
Storage Bay Dist (ft)	400								7 H			
Storage Blk Time (%)						•						
Queuing Penalty (veh)	1 4 5 5	1 2	1.4	i i i i i i i i i i i i i i i i i i i	erik i de erik Market i Fransk bil	7.7% T.						

Intersection: 18: SR 421 & I-95 SB Ramps

	A 85		N.	
Directions Served	L L	L R	R	
Maximum Queue (ft)	492 514	472 658	596	
Average Queue (ft)	305 318	329 487	321	
95th Queue (ft)	544 550	494 844	652	
Link Distance (ft)	834 834	834 834	834	
Upstream Blk Time (%)	0 - 0	0/4/8/6 F7 <b>3</b>		a ·
Queuing Penalty (veh)	0 0	0	0	
Storage Bay Dist (ft)		1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -		**
Storage Blk Time (%)				
Queuing Penalty (veh)	a all a sale as the			rado e e de la como

#### **Network Summary**

Network wide Queuing Penalty: 2074

#### Intersection: 1: SR 421 & Williamson Blvd

Movement(s) Served	WBL	EBT	NBL	SBT	WBT	SBL	NBT	
Maximum Green (s)	52.0	15.0	11.0	35.0	72.0	27.0	19.0	
Minimum Green (s)	8.0	13.0	8.0	9.0	13.0	8.0	9.0	•
Recall	None	C-Min	None	None	C-Min	None	None	the state of the s
Avg. Green (s)	52.0	15.0	11.0	35.0	72.0	27.0	19.0	
g/C Ratio	0.39	0.11	0.08	0.26	0.53	0.20	.0.14	and the second s
Cycles Skipped (%)	0	0	0	0	0	0	0	
Cycles @ Minimum (%)		3280	. 0	<b></b>	0	/ O	13 3 <b>0</b> 22 3 2 1 1 2 1 1	19-1
Cycles Maxed Out (%)	100	100	100	100	100	100	100	
Cycles with Peds (%)	0	0	0	0	0	0,	roden og skipter	

Average Cycle Length (s): 135.0

Number of Complete Cycles: 6

## Intersection: 17: SR 421 & I-95 NB Ramps

:		<u>}</u>	🖗 .		
EBT	EBL	WBT	NBL		
100.5	24.1	70,9	22.5	regerations in the magnetic production in the many transport of th	Mental Committee
23.0	8.0	23.0	15.0		
C-Min	None	C-Min	None		A CONTRACTOR
103.0	23.0	74.5	24.0		
0.76	0.17		0.18		
0	0	0	0		
0	## <b>.0</b> -	0	0		
100	50	100	33		·
0	0	0	0		
	23.0 C-Min 103.0 0.76 0	100.5 24.1 23.0 8.0 C-Min None 103.0 23.0 0.76 0.17 0 0 100 50	100.5 24.1 70.9 23.0 8.0 23.0 C-Min None C-Min 103.0 23.0 74.5 0.76 0.17 0.55 0 0 0 0 0 0	100.5 24.1 70.9 22.5 23.0 8.0 23.0 15.0 C-Min None C-Min None 103.0 23.0 74.5 24.0 0.76 0.17 0.55 0.18 0 0 0 0 0 0 0 100 50 100 33	100.5 24.1 70.9 22.5 23.0 8.0 23.0 15.0  C-Min None C-Min None  103.0 23.0 74.5 24.0 0.76 0.17 0.55 0.18 0 0 0 0 0 100 50 100 33

Average Cycle Length (s): 135.0 Number of Complete Cycles: 6

ong a contract of the contract

## Intersection: 18: SR 421 & I-95 SB Ramps

Movement(s) Served	WBT	SBL	WBL	EBT	
• • •	75.5	47.5	27.5	43.5	
Minimum Green (s)	23.0	8.0	23.0	15.0	
Recall	C-Min	None	Min	C-Min	ages to the first the second of the second o
Avg. Green (s)	86.9	55.1	27.4	54.3	•
g/C Ratio	0.64	0.41	0.20	0.40	ingula pala maka matah mengan penganan kananan dan diberah mengan berahasan berahasan dan diberah mengan berahasan dan diberahasan dan dib
Cycles Skipped (%)	0	0	0	0	
Cycles @ Minimum (%)		0	2 . 17	0	A STATE OF THE STA
Cycles Maxed Out (%)	100	100		100	
Cycles with Peds (%)	0	. 0	0	0	The second secon

Jack State Control of the Control of t

Average Cycle Length (s): 135.0 Number of Complete Cycles: 6

## **EVALUATION WITH PIONEER TRAIL/I-95 INTERCHANGE**



## 1: SR 421 & Williamson Blvd

	۶	<b>→</b>	*	•	<b>←</b>	•	4	<b>†</b>	<i>&gt;</i>	-	ļ	1
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	ሻሻ	ተተኈ		44	<b>十</b> 个	7	44	<b>^</b>	76.56	ሻሻ	<b>†</b> \$	
Volume (vph)	154	645	242	1327	992	518	302	521	850	803	1003	220
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	12	12	11	12	12	11	12	12	11	12	12
Total Lost time (s)	5.0	6.0		5.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0	
Lane Util. Factor	0.97	0.91		0.97	*0.83	1.00	0.97	0.95	0.88	0.97	0.95	
Frt	1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	3224	4912		3351	3123	1568	3319	3539	2814	3351	3478	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	3224	4912		3351	3123	1568	3319	3539	2814	3351	3478	
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)	166	694	260	1427	1067	557	325	560	914	863	1078	237
RTOR Reduction (vph)	0	48	0	0	0	245	0	0	0	0	14	0
Lane Group Flow (vph)	166	906	ŏ	1427	1067	312	325	560	914	863	1301	Õ
Heavy Vehicles (%)	5%	1%	2%	1%	1%	3%	2%	2%	1%	1%	1%	1%
Turn Type	Prot	1,0	2,70	Prot	1 70	Perm	Prot		pt+ov	Prot	170	- 170
Protected Phases	5	2		1	6	I CIIII	3	8	81	7	4	
Permitted Phases	J	ے		•	· ·	6	U	0	01	•	-	
Actuated Green, G (s)	9.0	24.0		44.0	59.0	59.0	11.0	23.0	72.0	27.0	39.0	
Effective Green, g (s)	9.0	24.0		44.0	59.0	59.0	11.0	23.0	67.0	27.0	39.0	
Actuated g/C Ratio	0.06	0.17		0.31	0.42	0.42	0.08	0.16	0.48	0.19	0.28	
Clearance Time (s)	5.0	6.0		5.0	6.0	6.0	5.0	6.0	0.40	5.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
<del></del>		842							1047			
Lane Grp Cap (vph)	207			1053	1316	661	261	581	1347	646	969	
v/s Ratio Prot	0.05	c0.18		c0.43	0.34	0.00	c0.10	0.16	0.32	0.26	c0.37	
v/s Ratio Perm	0.00	4.00		4.00	0.04	0.20	4.05	0.00	0.00	4.04	4.04	
v/c Ratio	0.80	1.08		1.36	0.81	0.47	1.25	0.96	0.68	1.34	1.34	
Uniform Delay, d1	64.6	58.0		48.0	35.6	29.2	64.5	58.1	28.2	56.5	50.5	
Progression Factor	1.00	1.00		0.75	0.69	0.30	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	19.6	53.5		160.4	0.4	0.3	138.3	29.4	1.4	161.5	161.3	
Delay (s)	84.2	111.5		196.3	24.8	8.9	202.8	<b>87</b> .5	29.6	218.0	211.8	
Level of Service	F	F		F	0	Α	F	r	С	F	r	
Approach Delay (s)		107.5			102.1			78.9			214.3	
Approach LOS		F			F			E			F	
Intersection Summary			407.7		<u> </u>							
HCM Average Control Delay			127.7	H	CM Level	of Service	æ		F			
HCM Volume to Capacity ratio			1.28	_								
Actuated Cycle Length (s)			140.0		um of lost				22.0			
Intersection Capacity Utilization			117.4%	IC	U Level o	of Service	!		Н			
Analysis Period (min)			15									
c Critical Lane Group												

18: SR 421 & I-95 \$	SB Ramps
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	۶	<b>→</b>	•	1	+	4	1	†	~	-	1	1
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		ተተተ	7	'n	朴朴					14.34		7
Volume (vph)	0	2016	283	358	2169	0	0	0	0	1192	0	547
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.5	4.0	5.5	6.5					5.5		5.5
Lane Util. Factor		0.91	1.00	1.00	0.95					0.97		1.00
Frt		1.00	0.85	1.00	1.00					1.00		0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (prot)		5036	1599	1787	3505					3467		1599
Fit Permitted		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (perm)		5036	1599	1787	3505					3467		1599
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	2168	304	385	2332	0	0	0	0	1282	0	588
RTOR Reduction (vph)	Ŏ	0	0	0	0	Ō	ō	ō	Ō	0	Ō	0
Lane Group Flow (vph)	ŏ	2168	304	385	2332	Ŏ	ŏ	ō	Ō	1282	Ŏ	588
Heavy Vehicles (%)	0%	3%	1%	1%	3%	0%	0%	0%	0%	1%	0%	1%
Turn Type			Free	Prot						Prot		custom
Protected Phases		6	, , , , ,	5	2					3		3
Permitted Phases		•	Free	•	_					_		•
Actuated Green, G (s)		51.5	140.0	28.5	84.5					43.5		43.5
Effective Green, g (s)		51.5	140.0	28.5	84.5					43.5		43.5
Actuated g/C Ratio		0.37	1.00	0.20	0.60					0.31		0.31
Clearance Time (s)		5.5		5.5	6.5					5.5		5.5
Vehicle Extension (s)		3.0		3.0	3.0					3.0		3.0
Lane Grp Cap (vph)		1853	1599	364	2116					1077		497
v/s Ratio Prot		c0.43	1000	0.22	c0.67					c0.37		0.37
v/s Ratio Perm		VV10	0.19	V	00.07					50.01		0.01
v/c Ratio		1.17	0.19	1.06	1.10					1.19		1.18
Uniform Delay, d1		44.2	0.0	55.8	27.8					48.2		48.2
Progression Factor		0.80	1.00	1.29	0.24					1.00		1.00
Incremental Delay, d2		77.1	0.0	48.8	50.1					95.1		101.4
Delay (s)		112.5	0.0	120.5	56.7					143.3		149.7
Level of Service		F	0.0 A	,20.5 F	50.7 E					140.5 F		F
Approach Delay (s)		98.7	Α.	,	65.8			0.0		'	145.3	•
Approach LOS		F			E			Α.			F	
Intersection Summary												
HCM Average Control Delay			98.4	H	CM Level	of Service	}		F			
HCM Volume to Capacity ratio			1.20									
Actuated Cycle Length (s)			140.0	S	um of lost	time (s)			17.5			
Intersection Capacity Utilization			106.5%	IC	U Level o	of Service			G			
Analysis Period (min)			15									
c Critical Lane Group												

	۶	<b>→</b>	*	•	+	•	1	<b>†</b>	<b>/</b>	<b>/</b>	<b>†</b>	✓
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	<b>J.J.</b>	<b>ተ</b> ተተ			<b>^</b>	7	7		N N			
Volume (vph)	300	2908	0	0	2325	665	202	0	287	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	6.5			6.5	4.0	5.5		5.5			
Lane Util. Factor	0.97	0.91			0.91	1.00	1.00		0.88			
Frt	1.00	1.00			1.00	0.85	1.00		0.85			
Fit Protected	0.95	1.00			1.00	1.00	0.95		1.00			
Satd. Flow (prot)	3467	5085			5085	1583	1687		2787			
Flt Permitted	0.95	1.00			1.00	1.00	0.95		1.00			
Satd. Flow (perm)	3467	5085			5085	1583	1687		2787			
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)	323	3127	0	0	2500	715	217	0	309	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	323	3127	0	0	2500	715	217	0	309	0	0	0
Heavy Vehicles (%)	1%	2%	0%	0%	2%	2%	7%	0%	2%	0%	0%	0%
Turn Type	Prot					Free	Prot		custom			
Protected Phases	5	2			6		8		8			
Permitted Phases	_				_	Free	_		_			
Actuated Green, G (s)	17.5	102.5			79.5	140.0	25.5		25.5			
Effective Green, g (s)	17.5	102.5			79.5	140.0	25.5		25.5			
Actuated g/C Ratio	0.12	0.73			0.57	1.00	0.18		0.18			
Clearance Time (s)	5.5	6.5			6.5		5.5		5.5			
Vehicle Extension (s)	3.0	3.0			3.0		3.0		3.0			
Lane Grp Cap (vph)	433	3723			2888	1583	307		508			
v/s Ratio Prot	0.09	c0.61			0.49		c0.13		0.11			
v/s Ratio Perm					Ų	0.45			••••			
v/c Ratio	0.75	0.84			0.87	0.45	0.71		0.61			
Uniform Delay, d1	59.1	13.0			25.7	0.0	53.7		52.7			
Progression Factor	0.45	0.95			1.00	1.00	1.00		1.00			
Incremental Delay, d2	0.7	0.2			3.8	0.9	12.9		5.3			
Delay (s)	27.2	12.6			29.5	0.9	66.6		58.0			
Level of Service	C	В			C	Α	E		E			
Approach Delay (s)	_	14.0			23.1			61.6	_		0.0	
Approach LOS		В			C			E			A	
Intersection Summary												
HCM Average Control Delay			21.5	H	CM Level	of Service	æ		С			
HCM Volume to Capacity ratio			0.81									
Actuated Cycle Length (s)			140.0	S	um of lost	t time (s)			12.0			
Intersection Capacity Utilization	1		106.5%	IC	U Level o	of Service	1		G			
Analysis Period (min)			15									
c Critical Lane Group												

	<b>†</b>	P	J <sub>k</sub>	ļ	•	*				
Movement	NBT	NBR	ŞBL	ŞBT	NWL	NWR				
Lane Configurations	ተተተ	7		1111		7				
Volume (veh/h)	2562	633	0	2990	0	131				
Sign Control	Free			Free	Stop					
Grade	0%			0%	0%					
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93				
Hourly flow rate (vph)	2755	681	0	3215	0	141				
Pedestrians										
Lane Width (ft)										
Walking Speed (ft/s)										
Percent Blockage										
Right turn flare (veh)										
Median type	None			None						
Median storage veh)										
Upstream signal (ft)	633									
pX, platoon unblocked			0.58		0.58	0.58				
vC, conflicting volume			2755		3559	918				
vC1, stage 1 conf vol										
vC2, stage 2 conf vol										
vCu, unblocked vol			1474		2868	0				
tC, single (s)			4.3		6.8	7.1				
tC, 2 stage (s)										
tF (s)			2.3		3.5	3.4				
p0 queue free %			100		100	77				
cM capacity (veh/h)			245		8	609				
Direction, Lane #	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB3	SB 4	NW 1	
Volume Total	918	918	918	681	804	804	804	804	141	
Volume Left	0	0	0	0	0	0	0	0	0	
Volume Right	0	0	0	681	0	0	0	0	141	
cSH	1700	1700	1700	1700	1700	1700	1700	1700	609	
Volume to Capacity	0.54	0.54	0.54	0.40	0.47	0.47	0.47	0.47	0.23	
Queue Length 95th (ft)	0	0	0	0	0	0	0	0	22	
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.7	
Lane LOS									В	
Approach Delay (s)	0.0				0.0				12.7	
Approach LOS									В	
Intersection Summary										
Average Delay			0.3	_						
Intersection Capacity Utilizat	ion		64.3%	IC	U Level	of Service			C	
Analysis Period (min)			15							



#### 1: SR 421 & Williamson Blvd

	•	<b>→</b>	•	<b>←</b>	•	1	<b>†</b>	*	<b>\</b>	ļ
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	166	954	1427	1067	557	325	560	914	863	1315
v/c Ratio	0.80	1.07	1.36	0.81	0.61	1.25	0.96	0.63	1.34	1.34
Control Delay	91.5	102.0	191.6	25.3	3.6	189.1	87.1	26.9	204.5	197.9
Queue Delay	0.0	13.0	0.0	0.1	0.2	0.0	0.0	3.3	0.0	0.0
Total Delay	91.5	115.1	191.6	25.4	3.8	189.1	87.1	30.2	204.5	197.9
Queue Length 50th (ft)	78	~335	~874	439	28	~189	270	331	~525	~816
Queue Length 95th (ft)	#138	#431	m#727	m360	m25	#289	#388	409	#656	#958
Internal Link Dist (ft)		1569		280			2748			1756
Turn Bay Length (ft)	450					300		300	240	
Base Capacity (vph)	207	890	1053	1316	906	261	581	1447	646	983
Starvation Cap Reductn	0	0	0	17	48	0	0	0	0	0
Spillback Cap Reductn	0	26	0	0	0	0	0	419	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.80	1.10	1.36	0.82	0.65	1.25	0.96	0.89	1.34	1.34
Intersection Summary										

Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.

<sup># 95</sup>th 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.

#### 18: SR 421 & I-95 SB Ramps

	-	•	1	•	1	1
Lane Group	EBT	EBR	WBL	WBT	SBL	SBR
Lane Group Flow (vph)	2168	304	385	2332	1282	588
v/c Ratio	1.17	0.19	1.06	1.10	1.19	1.18
Control Delay	110.4	0.0	114.3	60.9	137.1	143.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	110.4	0.0	114.3	60.9	137.1	143.6
Queue Length 50th (ft)	~859	0	~373	~1273	~724	~642
Queue Length 95th (ft)	m#735	m0	m#490	#1378	#861	#874
Internal Link Dist (ft)	273			477		
Turn Bay Length (ft)		200				
Base Capacity (vph)	1853	1599	364	2116	1077	497
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.17	0.19	1.06	1.10	1.19	1.18
Intersection Summary						

Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.

<sup># 95</sup>th 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.

Intersection Summary

	•	<b>→</b>	<b>←</b>	•	4	-
Lane Group	EBL	EBT	WBT	WBR	NBL	NBR
Lane Group Flow (vph)	323	3127	2500	715	217	309
v/c Ratio	0.75	0.84	0.87	0.45	0.71	0.61
Control Delay	27.9	13.0	29.9	0.9	67.4	58.4
Queue Delay	0.0	6.0	0.0	0.0	0.0	0.0
Total Delay	27.9	19.0	29.9	0.9	67.4	58.4
Queue Length 50th (ft)	161	402	682	0	188	148
Queue Length 95th (ft)	m134	m342	752	0	282	205
Internal Link Dist (ft)		477	553			
Turn Bay Length (ft)	650				330	330
Base Capacity (vph)	433	3723	2888	1583	307	508
Starvation Cap Reductn	0	565	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.75	0.99	0.87	0.45	0.71	0.61

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



# Summary of All Intervals

Start Time	18 (46.5) 100 100 100 100 100 100 100 100 100 10	The second secon	
End Time	7:15		
Total Time (min)	20		
Time Recorded (min)	15		
# of Intervals	2		
# of Recorded Intvls	1		
Vehs Entered	2504		
Vehs Exited	2063		
Starting Vehs	531		
Ending Vehs	972		
Denied Entry Before	23		
Denied Entry After	108		
Travel Distance (mi)	2255		
Travel Time (hr)	204.4		
Total Delay (hr)	140.8		
Total Stops	6712		
Fuel Used (gal)	107.1		

#### Interval #0 Information Seeding

Start Time	6:55
End Time	7:00
Total Time (min)	5
Volumes adjusted by Growth Fa	actors.
No data recorded this interval.	

# Interval #1 Information Recording

Start Time	7:00
End Time	7:15
Total Time (min)	15
Volumes adjusted by Growth Fact	tors.

Vens Entered	2504	minger and a minger of the company o	Silver Schoolsplan 12-	31 51 - 18 1000 30
Vehs Exited	2063	 		
Starting Vehs	531			
Ending Vehs	972			
Denied Entry Before	23			
Denied Entry After	108			
Travel Distance (mi)	2255			
Travel Time (hr)	204.4			
Total Delay (hr)	140.8			
Total Stops	6712			
Fuel Used (gal)	107.1			

#### 1: SR 421 & Williamson Blvd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR.	»NBL	NBT	* NBR	SBL	SBT	SBR
Total Delay (hr)	0.8	8.1	5. t	6.3	1.4	0.2	2.5	4.1	4.2	10.6	9.2	1.8
Delay / Veh (s)	85.7	183.7	318.5	107.6	30.1	8.0	128.2	108.8	<b>72</b> .5	226.4	168.3	146.6
St Del/Veh (s)	74.2	159.0	289.5	96.9	22.0	5.9	117.4	93.6	54.4	192.3	136.0	119.0
Total Stops	39	349	200	246	91	45	99	172	249	448	454	93
Travel Dist (mi)	9.9	48.4	18.1	19.0	15.4	9.3	39.5	74.8	116.7	58.5	67.5	15.0
Travel Time (hr)	1.0	9.2	5.6	7.0	1.8	0.6	3.7	6.3	7.8	12.4	11.1	2.3
Avg Speed (mph)	10	5	3	3	9	15	1 <b>1</b>	13	17	5	6	6
Vehicles Entered	34	165	66	221	165	98	78	140	228	183	219	50
Vehicles Exited	32	152	50	201	175	100	62	131	192	155	174	40
Hourly Exit Rate	128	608	200	804	700	400	248	524	768	620	696	160
Input Volume	154	645	242	1327	1004	518	302	521	850	803	1003	220
% of Volume	83	94	83	61	70	77	82	101	90	77	69	73
Denied Entry Before	1	1	1	0	0	0	0	0	1	0	0	0
Denied Entry After	0	0	0	0	0	0	0	1	1	0	0	0

#### 1: SR 421 & Williamson Blvd Performance by movement

Movement		The tracing in the production of the control of the
Total Delay (hr)	54.3	
Delay / Veh (s)	125.8	
St Del/Veh (s)	106.7	
Total Stops	2485	
Travel Dist (mi)	492.0	
Travel Time (hr)	68.8	
Avg Speed (mph)	7	
Vehicles Entered		
Vehicles Exited	1464	
Hourly Exit Rate	5856	
Input Volume	7589	
% of Volume	77	
Denied Entry Bef		
Denied Entry Afte		

#### 3: SR 421 & Taylor Branch Rd. Performance by movement

Movement	's NET	NBA	SBT	NWR.	. All		
Total Delay (hr)	0.4	0.3	31.6	0.2	32.6		
Delay / Veh (s)	3.0	6.9	197.8	19.9	91.5		
St Del/Veh (s)	0.2	0.0	160.9	19.7	72.9		
Total Stops	0	0	1225	37	1262		
Travel Dist (mi)	61.0	15.1	179.6	2.0	257.7		
Travel Time (hr)	1.9	8.0	35.9	0.3	38.8		
Avg Speed (mph)	32	20	7	7	9		
Vehicles Entered	530	142	633	37	1342		
Vehicles Exited	526	140	519	37	1222		
Hourly Exit Rate	2104	560	2076	148	4888		
Input Volume	2613	633	2990	131	6367		
% of Volume	81	88	69	113	77		
Denied Entry Before	0	0	13	0	13		
Denied Entry After	0	0	100	0	100		

#### 17: SR 421 & I-95 NB Ramps Performance by movement

Movement	EBL	EBT	WBT	.WBR	NBL	NBR.	All	
Total Delay (hr)	0.3	2.0	8.1	0.3	1.0	1.1	12.9	
Delay / Veh (s)	20.3	12.6	69.4	11.4	93.0	54.6	36.2	
St Del/Veh (s)	14.3	6.2	53.9	2.4	87.3	50.6	26.8	
Total Stops	49	210	501	5	45	62	872	
Travel Dist (mi)	6.7	63.0	46.4	8.3	11.2	19.7	155.3	
Travel Time (hr)	0.6	3.8	9.1	0.6	1.3	1.6	17.0	
Avg Speed (mph)	12	17	5	14	9	13	9	
Vehicles Entered	65	570	417	109	41	73	1275	
Vehicles Exited	58	596	422	111	38	70	1295	
Hourly Exit Rate	232	2384	1688	444	152	280	5180	
Input Volume	300	2919	2355	665	202	287	6728	
% of Volume	77	82	72	67	75	98	77	
Denied Entry Before	0	0	1	0	1	0	2	
Denied Entry After	0	0	1	0	0	0	1	

## 18: SR 421 & I-95 SB Ramps Performance by movement

Movement	EBT	EBR	WBL	WBT	SBL	SBT	/ SBA	AL.	The state of the s
Total Delay (hr)	5.8	0.5	4.1	6.9	3.9	0.0	1.5	22.7	<del></del>
Delay / Veh (s)	49.9	25.9	167.4	68.8	63.6	5.3	57.8	65.3	
St Del/Veh (s)	40.9	19.0	152.2	52.6	60.6	0.4	53.5	55.3	
Total Stops	266	29	154	414	110	1	50	1024	
Travel Dist (mi)	26.9	3.3	9.5	38.7	7.4	0.1	3.3	89.2	
Travel Time (hr)	6.4	0.5	4.4	7.9	4.2	0.0	1.7	25.2	
Avg Speed (mph)	4	6	2	5	2	12	2	4	
Vehicles Entered	417	64	89	368	225	3	98	1264	
Vehicles Exited	420	62	87	358	216	3	95	1241	
Hourly Exit Rate	1680	248	348	1432	864	12	380	4964	
Input Volume	2022	283	358	2177	1192	18	547	6597	
% of Volume	83	88	97	66	72	67	69	75	
Denied Entry Before	1	0	0	1	2	0	0	4	•
Denied Entry After	0	0	0	0	3	0	0	3	

#### **Total Zone Performance**

* * 1775 * * * * * * * * * * * * * * * * * *			"有"等,用带,"有",这一点"横"的时,"有"之外,用"有"之外,"有"之,"有"之,"有"之,"有"之,"有"之,"有"之,"有"之,"有"之
Total Delay (I	ır)	122.5	
Delay / Veh (	3)	2464.6	
St Del/Veh (s	)	2028.1	
Total Stops		5643	
Travel Dist (m	ni)	994.2	
Travel Time (	hr)	149.8	
Avg Speed (n	nph)	7	
Vehicles Ente	red	1488	
Vehicles Exite	ed.	26	
Hourly Exit Ra	ate	104	
Input Volume		27281	
% of Volume		0	
Denied Entry	Before	23	
Denied Entry	After	106	



#### Summary of All Intervals

Run Muraber		2			F: 240 <b>5</b>	Avg	
Start Time	6:55	6:55	6:55	6:55	6:55	6:55	
End Time	7:15	7:15	7:15	7:15	7:15	7:15	
Total Time (min)	20	20	20	20	20	20	
Time Recorded (min)	15	15	15	15	15	15	
# of Intervals	2	2	2	2	2	2	
# of Recorded Intvis	1	1	1	1	1	1	
Vehs Entered	2488	2504	2525	2422	2455	2479	
Vehs Exited	2037	2050	2067	1993	1965	2022	
Starting Vehs	520	540	508	520	542	526	
Ending Vehs	971	994	966	949	1032	980	
Denied Entry Before	6	5	10	6	10	6	
Denied Entry After	47	133	142	198	114	126	
Travel Distance (mi)	2232	2264	2248	2201	2148	2219	
Travel Time (hr)	198.6	209.9	198.0	204.7	211.5	204.5	
Total Delay (hr)	135.5	145.8	134.3	142.6	150.9	141.8	
Total Stops	6913	6959	6466	6516	6805	6732	
Fuel Used (gal)	105.7	108.9	105.5	105.9	105.8	106.4	

## Interval #0 Information Seeding

 Start Time
 6:55

 End Time
 7:00

 Total Time (min)
 5

Volumes adjusted by Growth Factors.

No data recorded this interval.

# Interval #1 Information Recording

Start Time 7:00
End Time 7:15
Total Time (min) 15
Volumes adjusted by Growth Factors.

Plun Number		2	8	4.	5	Avg	
Vehs Entered	2488	2504	2525	2422	2455	2479	· · · · · · · · · · · · · · · · · · ·
Vehs Exited	2037	2050	2067	1993	1965	2022	
Starting Vehs	520	540	508	520	542	526	
Ending Vehs	971	994	966	949	1032	980	
Denied Entry Before	6	5	10	6	10	6	
Denied Entry After	47	133	142	198	114	126	
Travel Distance (mi)	2232	2264	2248	2201	2148	2219	
Travel Time (hr)	198.6	209.9	198.0	204.7	211,5	204.5	
Total Delay (hr)	135.5	145.8	134.3	142.6	150.9	141.8	
Total Stops	6913	6959	6466	6516	6805	6732	
Fuel Used (gal)	105.7	108.9	105.5	105.9	105.8	106.4	

# Total Zone Performance By Run

<u>Fun Number</u>		1 2 2		4	5	Avg
Total Delay (hr)	103.	9 115.7	108.7	120.2	123.4	114.4
Delay / Veh (s)	2945.	3 2686.3	2717.7	2865.5	2057.4	2606.2
St Del/Veh (s)	2346.	4 2199.7	2236.3	2380.5	1718.9	2141.4
Total Stops	524	2 5433	5087	5337	5435	5308
Travel Dist (mi)	974.	0 992.8	985.1	953.8	963.8	973.9
Travel Time (hr)	130.	6 142.9	135.7	146.3	149.7	141.0
Avg Speed (mph)		8 7	8	7	7	7
Vehicles Entered	144	7 1481	1498	1376	1490	1458
Vehicles Exited	3	2 31	33	35	30	32
Hourly Exit Rate	12	8 124	132	140	120	128
Input Volume	2728	1 27281	27281	27281	27281	27281
% of Volume		0 0	0	1	0	0
Denied Entry Before	1	6 5	10	6	10	6
Denied Entry After	4	7 131	138	197	100	123

Intersection: 1: SR 421 & Williamson Blvd

Movement	EB	EB	EB.	::: <b>EB</b> .	EB	WB	WB	WB.	WB	WB	. NB	NB
Directions Served	L	L	T	Ţ	TR	L	L.	T		R	L	I
Maximum Queue (ft)	128	284	930	969	250	489	459	473	192	189	261	284
Average Queue (ft)	81	117	584	717	249	488	376	238	146	66	201	213
95th Queue (ft)	137	340	1160	1296	251	493	488	452	201	152	316	331
Link Distance (ft)			1594	1594		248	248	248	248	248	0.0	•••
Upstream Blk Time (%)			0	1		43	48	0	0	•		
Queuing Penalty (veh)			0	0		245	272	Ö	ō			
Storage Bay Dist (ft)	450	450			200			•	_		300	300
Storage Blk Time (%)			12	20	72						0	1
Queuing Penalty (veh)			19	92	155						1	2

Intersection: 1: SR 421 & Williamson Blvd

Movement	NB	NB	NB	NB	SB	⇒ SB	SB	SB	B14	- B14	San San San
Directions Served	Т	Т _	R	 	L	L	Т	TR	Ţ	Ť	
Maximum Queue (ft)	366	462	305	306	290	340	1825	1821	1362	1328	
Average Queue (ft)	228	278	233	226	256	323	1615	1478	461	441	
95th Queue (ft)	353	466	342	320	337	395	2179	2255	1349	1344	
Link Distance (ft)	2762	2762					1748	1748	2790	2790	
Upstream Blk Time (%)							34	23			
Queuing Penalty (veh)							0	0			
Storage Bay Dist (ft)			300	300	240	240		_			
Storage Blk Time (%)	1	1	3	3	20	47	49				
Queuing Penalty (veh)	2	<b>†1</b>	9	7	102	236	390				

Intersection: 3: SR 421 & Taylor Branch Rd.

Movement	SB :	SB	SB	SB	NW.	The state of the s	or a state of	4 8 6
Directions Served	Т	T	T	T	R			
Maximum Queue (ft)	202	1671	1679	1673	87			
Average Queue (ft)	97	1057	1126	1061	55			
95th Queue (ft)	291	1963	1940	1990	95			
Link Distance (ft)		1657	1657	1657	251			
Upstream Blk Time (%)		14	16	14		-		
Queuing Penalty (veh)		0	0	0				
Storage Bay Dist (ft)	250							
Storage Blk Time (%)	2	8						
Queuing Penalty (veh)	13	58						

Intersection: 17: SR 421 & I-95 NB Ramps

<b>Movement</b>	B	EB.	<b>EB</b>	EΒ	EB**	WB	WB	WB	WB	NB	NB	NB
Directions Served	L	L	T	T	Т	Т	T	T	R		R	R
Maximum Queue (ft)	128	129	297	302	327	584	602	573	114	338	501	185
Average Queue (ft)	83	82	254	260	290	364	534	557	16	230	200	118
95th Queue (ft)	137	134	338	344	381	626	658	574	126	392	496	190
Link Distance (ft)			491	491	491	545	545	545	545		1439	
Upstream Blk Time (%)						6	20	57	0.0		1-100	
Queuing Penalty (veh)						45	150	424				
Storage Bay Dist (ft)	650	650								330		330
Storage Blk Time (%)										12		•••
Queuing Penalty (veh)										34		

Intersection: 18: SR 421 & I-95 SB Ramps

Movement	<b>EB</b> ar	EB	EB.	₩B	WB	WB	SB	⇒SB ∵	SB	
Directions Served	T	T	T	L	T	T		L	R	 
Maximum Queue (ft)	363	370	360	402	515	523	195	198	206	
Average Queue (ft)	358	359	350	240	466	504	191	192	193	
95th Queue (ft)	376	376	392	424	605	553	202	201	204	
Link Distance (ft)	123	123	123	491	491	491	54	54	54	
Upstream Blk Time (%)	43	42	48	0	14	29	69	70	70	
Queuing Penalty (veh) Storage Bay Dist (ft)	328	324	365	4	116	241	402	409	409	
Storage Blk Time (%)			48							
Queuing Penalty (veh)			135							

#### Zone Summary

Zone wide Queuing Penalty: 4999

# **EVALUATION WITH MADELINE AVENUE EXTENSION**



	•	<b>→</b>	•	1	<b>←</b>	•	4	<b>†</b>	<u> </u>	<b>/</b>		<b>√</b>
1 1 Cocco p 1 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	100		GINE		T- TYPE		1.00					
Lane Configurations	14.44	ተተጐ	A 10 10 10 10 10 10 10 10 10 10 10 10 10	لولو	<b>^</b> ^		77	个个	77	14.54	ተ <sub>ጉ</sub>	. 1247.
Volume (vph)	154	593		1560	912		312	528	1013	763	+1016	189
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11		12		12	12	11	12	12	11	12	12
Total Lost time (s)	5.0	6.0		5.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0	. 12
Lane Util Factor	0.97	0.91		0.97	*0.83		0.97	0.95	0.88	0.97	0.95	
Frt	1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98	
Fit Protected	0.95	1.00	u reger e Tala u su Biller salah	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	3224	4893		3351	3123	1568	3319	3539	2814	3351	3490	
Fit Permitted	0.95	1.00	j	0.95	1.00	1.00	0.95	1.00	1.00	0.95		
Satd. Flow (perm)	3224	4893		3351	3123	1568	3319	3539	2814	3351	3490	•
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)	166	638	268	1677	981	517	335	568	1089	820	1092	203
RTOR Reduction (vph)	0	50	. O	0	. 0	245	. 0	0	0	- 0	10	Ø
Lane Group Flow (vph)	166	856	. 0	1677	981	272	335	568	1089	820	1285	0
Heavy Vehicles (%)	5%	1%	2%	1%	1%	3%	2%	2%	1%	1%	1%	1%
Turn Type	Prot			Prot		Perm	Prot		pt+ov	Prot		
Protected Phases	5	2		- i	6		3.	8	81	7.	4	
Permitted Phases						6						
Actuated Green, G (s)	15.4	24.0		48.0	56.6	56.6	13.0	26.0	74.0	30.0	43.0	1.0
Effective Green, g (s)	15.4	24.0		48.0	56.6	56.6	13.0	26.0	74.0	30.0	43.0	
Actuated g/C Platio	0.10	0.16		0.32	0.38	0.38	0.09	0.17	0.49	0.20	0.29	
Clearance Time (s)	5.0	6.0		5.0	6.0	6.0	5.0	6.0		5.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	:	3.0	3.0	<u> </u>
Lane Grp Cap (vph)	331	783		1072	1178	592	288	613	1388	670	1000	
v/s Ratio Prot	0.05	c0.17		c0.50	0.31		c0.10	0.16	0.39	0.24	c0.37	
v/s Ratio Perm						0.17						
v/c Ratio	0.50	1.09	: :	1.56	0.83		1.16	0.93	0.78	1.22	1.29	
Uniform Delay, d1	63.7	63.0		51.0	42.4	35.2	68.5	61.1	31.4	60.0	53.5	
Progression Factor	1.00	1.00	٠.	0.77	0.76	0.32	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.2	60.4		256.7	3.2	0.4	104.7	22.2	3.0	113.8	135.9	
Delay (s)	64.9	123.4	. :	295.8	35.4	11.6	173,2	83.2	34.4	173.8	189.4	
Level of Service	Ε	F		F	D_	, B	F	F	C	F	F	
Approach Delay (s)		114.4		. !!	169.0			71.7			183.3	
Approach LOS		F			F			E			F	
						:		1 1				
HCM Average Control Delay			142.4		ICM Leve	el of Servi	Ce		F			
HCM Volume to Capacity rati	0		1.34						•		4 .	
Actuated Cycle Length (s)			150.0		um of los	st time (s)	•		22.0			
Intersection Capacity Utilizati	<b>e</b> n	1, 1,500	122.9%			of Service			H.			
Analysis Period (min)			15									
c Critical Lane Group												

	۶	<b>→</b>	•	•	•	•	1	<u>†</u>	<b>/</b>	<b>\</b>	<b>+</b>	<b>√</b>
A\$20165	73.		7.00		1.97		. T 50 :	K 127 47	10 3 12 10 8 12		88	(V. a.)
Lane Configurations		<b>^</b>	7	<u> </u>	**					ሻሻ		7
Volume (vph)	0	2100	269	321	2154	. 0	0	0.	0	1200	. 0	669
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7. 7. 24.	5.5	4.0	5.5	6.5			:		5.5		5.5
Lane Util. Factor		0.91	1.00	1.00	0.95					0.97		1.00
Frt		1.00	0.85	1.00	1.00	The state of the s				1.00	. :	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (prot)	in the	5036	1599	1787	3505	. tu . 12. 13.		.* *	en e	3467		1599
Flt Permitted		1.00	1.00	0.95	1.00		-			0.95		1.00
Satd. Flow (perm)		5036	1599	1787	3505	10 4 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			1,87	3467	. :	1599
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	2258	289	345	2316	0	. 0	0	. 0	1290	0	719
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	Ö	0	0	0
Lane Group Flow (vph)	0	2258	289	345	2316	0	0.	0	0	1290	10	719
Heavy Vehicles (%)	0%	3%_	1%	1%	3%	<u>0</u> %	0%	0%	0%	1%	0%	1%
Turn Type		e.:	Free	Prot	1 8 1	inger in	and the second			Prot		custom
Protected Phases		6		5	2					3		3
Permitted Phases		180	Free	1	:	21 21 4						
Actuated Green, G (s)		47.5	150.0	31.5	83.5					54.5		54.5
Effective Green, g (s)	* 100	47.5	150.0	31,5	83,5				. 8	54.5		54.5
Actuated g/C Ratio	1 01 ° V	0.32	1.00	0.21	0.56					0.36		0.36
Clearance Time (s)		5.5		5.5	6.5	ă .		· · · · · ·		5.5		5.5
Vehicle Extension (s)		3.0		3.0	3.0				•	3.0		3.0
Lane Grp Cap (vph)		1595	1599	375	1951		125 m - 12 125 m - 12 m	· .	:	1260		581
v/s Ratio Prot		c0.45		0.19	c0.66					0.37		c0.45
v/s Ratio Perm		127	0.18	•	111	4	•					
v/c Ratio		1.42	0.18	0.92	1.19					1.02		1.24
Uniform Delay, d1		51.2	0.0	58.0	33.2		k in the		. :	47.8	:	47.8
Progression Factor		0.89	1.00	1.32	0.33					1.00		1.00
Incremental Delay, d2		187.4	0.0	18.6						31.6		121.1
Delay (s)		232.9	0.0	94.9	98.2					79.3		168.9
Level of Service	- ':	F	<b>A</b> ,	- F	F	1.				Ε		F
Approach Delay (s)		206.5			97.8			0.0			111.4	
Approach LOS	•	F			· F			A			F	
SARRICH KARAT	·				· · · · · · · · · · · · · · · · · · ·							
HCM Average Control Delay		:	139.9	. H	ICM Leve	of Service	<b>3</b> #150 1		F			
HCM Volume to Capacity rati	io		1.33		•				-			
Actuated Cycle Length (s)			150.0	S	ium of los	t time (s)			17.5			
Intersection Capacity Utilizati	on		111.0%			of Service			Н			
Analysis Period (min)			15	,								
c Critical Lane Group												

-	•	<b>→</b>	•	1	+	4	4	†	<i>&gt;</i>	<b>/</b>	<b>↓</b>	1
			527						%.5/a	\$ 1500 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		
Lane Configurations	44	444			<b>ተተተ</b>	7	ሻ		14 14			
Volume (vph)	371	2919	0	0	2284	682	181	0	257	:0	0.	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	6.5	e and di		6.5	4.0	5.5		5.5	1.	4	
Lane Util. Factor	0.97	0.91			0.91	1.00	1.00		0.88			
Fitta in the second	1.00	1.00			1.00	0.85	1.00		0.85	To the second		
Flt Protected	0.95	1.00			1.00	1.00	0.95		1.00			
Satd. Flow (prot)	3467	5085			5085	1583	1687		2787	<u> </u>		
Flt Permitted	0.95	1.00			1.00	1.00	0.95		1.00			
Satd: Flow (perm)	3467	5085	**		5085	1583	1687	1	2787		21.	
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)	399	×3139	0	0.	2456	733	195	0	276	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	399		0	0	2456	733	195	0	276	0	. 0	0
Heavy Vehicles (%)	1%	2%	0%	0%	2%	2%	7%	0%	2%	0%	0%	0%
Turn Type	Prot	na godina z Godina zasta	35.2		4 .	Free	Prot		custom	4 - 7 - 5	ar 5 %	
Protected Phases	5	2	A 25	/ ::.	6	· n	8		8	-:	3 - C	
Permitted Phases		· 2	e ignire			Free		1				
Actuated Green, G (s)	23.0	114.0			85.5	150.0	24.0	•	24.0			
Effective Green, g (s)	23.0	114.0	The state of the s		85.5	150.0	24.0	4	24.0			
Actuated g/C Ratio	0.15	0.76			0.57	1.00	0.16		0.16			
Clearance Time (s)	5.5	6.5		** ** ** ** ** ** ** ** ** ** ** ** **			5.5	1. 17. 4.	5.5	: .	1	
Vehicle Extension (s)	3.0	3.0			3.0	3 92 00	3.0		3.0			
Lane Grp Cap (vph)	532	3865		1 % 14	2898	1583	270		446			
v/s Ratio Prot	0.12	c0.62			0.48	W. V	c0.12	•	0.10			
v/s Ratio Perm						0.46						
v/c Ratio	0.75	0.81			0.85	0.46	0.72		0.62			
Uniform Delay, d1	60.7	11.3			26.8	0.0	59.8	:	58.7			
Progression Factor	0.61	0.94			1.00	1.00	1.00		1.00			
Incremental Delay, d2	0.6	0.1	#1.		3.3	1.0	15.4		6.3			
Delay (s)	37.4	10.7			30.1	1.0	75.3		65.1			
Level of Service	D	13 to <b>B</b>	:: .		C	A	E		E			
Approach Delay (s)		13.7			23.4			69.3			0.0	
Approach LOS		В			C			E			A	
2.23.4.2 [A.27]							·	·				
HCM Average Control Delay		( · .	21.7	Н	CM Leve	of Servic	e		C			
HCM Volume to Capacity ratio			0.80	* * *	<b></b>	<del>-</del>	-		•		•	
Actuated Cycle Length (s)		7	150.0	Si	um of los	t time (s)	2.		12.0			
Intersection Capacity Utilizatio	n		111.0%			of Service	l		H			
Analysis Period (min)	:. :		15			:						
c Critical Lane Group			- •									

	† r	i k	ļ •	*		
Lane Configurations	**************************************	( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( )	1111 1111	<u> </u>		
Volume (veh/h) Sign Control	2533 640 Free	. 1.3002 (2000) . 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	2966 0 Free Stop	182	ET	
Grade Peak Hour Factor	0% 0.93 0.93 0.93		0% 0% 0.93 0.93	0.93	The first of the second of the	
Hourly flow rate (vph)	2724 69		3189 0	142		rajstv British
Lane Width (ft)			33.3			
Walking Speed (ft/s) Percent Blockage	en de la companya de La companya de la co					
Right turn flare (veh) Median fype	None		lone	viewienie in der bei d	W. Zoh, A. Salin deskari.	. #
Median storage veh) Upstream signal (ft)	633		de, ar en de se a ser mont lindegenden en ar gropte		- The Control of th	ese i
pX, platoon unblocked VC, conflicting volume		0.62 <b>2724</b>	0.62 3 <b>521</b>	0.62 <b>306</b>	userumati : 《特别····································	
vC1, stage 1 conf vol vG2, stage 2 conf vol			. www.mee.com			
vCu, unblocked vol		1625 4.3	2916	0	Band of the late o	
tC, single (s) tC, 2 stage (s)				71.	कि भीकर् स्वीतक्षा अधिकार है। जिल्लामा अधिकार स्वीतकार स्वातकार है।	
iF (s) p0 queue free %		2.3 100	3.5 100	3.4 78	Berger	
cM capacity (velvh)		228	8.4	652		
Volume Total	908 908	908	<b>691</b> 797	797 797 797	KONG CONTENT OF SECTION AND AND AND AND AND AND AND AND AND AN	
Volume Left Volume Right	0 ( 0 (	0	0 0 <b>691 0</b>	0 0 0		
cSH Volume to Capacity	1700 1700 0.53 0.53		700 1700 0.41 0.47	1700 1700 1700 0.47 0.47 0.47		
Queue Length 95th (ft) Control Delay (s)	0 0 0.0 0.0	<del>.</del>	0 0 0.0 0.0	0 0 0 00 00 00	<del>-</del> ·	
Lane LOS Approach Delay (s)	0.0		0.0		B 12.0	
Approach LOS				The Maria Committee of the Committee of	B	
Average Delay		0.3				
Infersection Capacity Utilization Analysis Period (min)	k fill 1:17.	63.8 <b>%</b> 15	ICU Level of	Service	$\mathbb{R}^{n} = \mathbf{B}^{(n)} = \mathbb{R}^{n} \mathbb{R}^{n} \mathbb{R}^{n}$	
- The state of the			. ::-	and the state of t		



	•	<b>→</b>	•	•	•	4	<b>†</b>	~	-	ļ	
	Par I					¥ 357		- 1			
Lane Group Flow (vph)	166	906	1677	981	517	335	568	1089	820	1295	
v/c Ratio	0.50	1.09	1.56	0.83	0.62	1.16	0.93	0.80	1.22	1.28	
Control Delay	70.6	110.9	283.3	34.2	11.9	162.1	82.9	22.0	162.7	177.0	A.
Queue Delay	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	1
Total Delay	70.6	110.9	283.3	34.4	11.9	162.1	82.9	22.0	162.7	177.0	
Queue Length 50th (ft)	81	~345	~920	401	36	~200	292	244	~507	~842	STATES
Queue Length 95th (ft)	#141	#441	m519	m260	m20	#304	#402	312	#638	#984	
	round Bask Arman Guyard Bask Dieler Abeldand	1569		280			2748	1 14 4		1756	48.
Turn Bay Length (ft)	450					300		300	240		
Base Capacity (vph)	331	834	1072	1291	879	288	613	1369	670	1010	
Starvation Cap Reductn	0	0	0	31	12	0	0	0	0	0	
Spillback Gap Reductn	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.50	1.09	1.56	0.78	0.60	1.16	0.93	0.80	1.22	1,28	•

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Volume exceeds capacity; queue is theoretically infinite.
 Queue shown is maximum after two cycles.

<sup># 95</sup>th 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.

	-	7	1	_	-	4			
	100 de 100 d 100 de 100 d	12 %				î Çiye			
Lane Group Flow (vph)	2258	289	345	2316	1290	719			
v/c Ratio	1.42	0.18	0.92	1.19	1.02	1.24			
Control Delay	222.6	0.0	93.5	102.8	78.1	161.5			
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0			
Total Delay	222.6	0.0	93.5	102.8	78.1	161.5		:	:
Queue Length 50th (ft)	~1096	0.	288	~1430	~690	~869		e produce de la companya del companya del companya de la companya	
	m#997	m0	m#432	#1518	#827	#1119			
Internal Link Dist (ft)	273	- 1000 miles - 1180 miles	1	477			ar Park		
Turn Bay Length (ft)		200						••	
	1595	1599	375	1951	1260	581			
Starvation Cap Reductn	. 0	0	0	0	0	Ð			
Spillback Cap Reductn	0	0	0	0	0	. 0		e de la companya de l	
Storage Cap Reductn	0	0	0	0	0	0			
Reduced v/c Patio	1.42	0.18	0.92	1.19	1.02	1.24	handert "		

Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.

<sup># 95</sup>th 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.

Marine Committee 
#### 17: SR 421 & I-95 NB Ramps

	•	<b>→</b>	-	•	1	-			
		17.1	, På	19.3					
Lane Group Flow (vph)	399	3139	2456	733	195	276			
v/c Ratio	0.75	0.81	0.85	0.46	0.72	0.62	. 2	9.4	
Control Delay	37.7	10.9	30.5	1.0	76.4	66.1			
Queue Delay	0.0	6.1	0.0	0.0	1.4	0.0		1 *1 4	
Total Delay	37.7	17.0	30.5	1.0	77.8	66.1			•
Queue Length 50th (ft)	213	291	707	0	186	147		+ 4	A CANADA A C
Queue Length 95th (ft)	m149	m238	773	0	#305	203			
Internal Link Dist (ft)		477	553		1.		4 1 4 17 17 17 17 17 17 17 17 17 17 17 17 17		The second secon
Turn Bay Length (ft)	650				330	330	٠.		
Base Capacity (vph)	566	3915	2898	1583	270	446	en e		
Starvation Cap Reductn	0	743	0	0	0	0			
Spillback Cap Reductn	0	0	15	0	14	. 0		*	The second secon
Storage Cap Reductn	0	0	0	0	0	0			
Reduced v/c Ratio	0.70	0.99	0.85	0.46	0.76	0.62	A ALLEY CO	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Section 11.

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<sup># 95</sup>th 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.



#### Summary of All Intervals

Start Times **********	*** 655.41 30	
End Time	7:15	
Total Time (min)	20	
Time Recorded (min)	15	
# of Intervals	2	
# of Recorded Intvls	1	
Vehs Entered	2339	
Vehs Exited	1780	
Starting Vehs	557	
Ending Vehs	1116	
Denied Entry Before	31	
Denied Entry After	482	
Travel Distance (mi)	1905	
Travel Time (hr)	261.7	
Total Delay (hr)	207.8	
Total Stops	6266	
Fuel Used (gal)	1096.9	

#### Interval #0 Information Seeding

Start Time 6:55
End Time 7:00
Total Time (min) 5
Volumes adjusted by Growth Factors.

No data recorded this interval.

#### Interval #1 Information Recording

Start Time 7:00
End Time 7:15
Total Time (min) 15
Volumes adjusted by Growth Factors.

Vehs Entered	<b>12</b> 1. 25. 23001	
Vehs Exited	1780	
Starting Vehs	557	
Ending Vehs	1116	
Denied Entry Before	31	
Denied Entry After	482	
Travel Distance (mi)	1905	
Travel Time (hr)	261.7	
Total Delay (hr)	207.8	
Total Stops	6266	
Fuel Used (gal)	1096.9	

#### 1: SR 421 & Williamson Blvd Performance by movement

Movementary	· EBL	Ja EBT,	, EBB.,	WBL:	· WBT	WBR -	NBL	LANBT.	NBR	i SBL	*SBT.	ALSER
Total Delay (hr)	0.6	3.5	2.3	21.7	9.9	3.4	3.5	2.9	5.4	15.2	9.8	1.0
Delay / Veh (s)	49.1	96.2	145.9	583.0	423.1	288.0	161.8	87.6	78.7	540.5	180.9	146.6
Total Stops	31	147	106	268	75	38	131	129	377	408	427	41
Travel Dist (mi)	12.9	40.1	18.7	11.8	7.6	4.0	44.0	62.8	132.7	33.1	67.8	7.8
Travel Time (hr)	0.9	4.5	2.8	22.1	10.0	3.6	4.8	4.8	9.5	16.2	11.8	1.3
Avg Speed (mph)	15	9	7	1	4	9	10	14	15	2	6	6
Fuel Used (gal)	5.1	19.4	9.9	53.7	25.5	9.0	20.1	24.8	48.4	43.5	41.7	4.4
HC Emissions (g)	1	1	1	0	1	3	1	3	3	0	2	0
CO Emissions (g)	237	707	388	286	256	399	298	710	866	289	574	38
NOx Emissions (g)	2	4	3	1	2	2	3	9	11	2	7	0
Vehicles Entered	42	136	61	143	80	43	86	113	253	125	203	24
Vehicles Exited	45	128	54	125	88	43	71	126	243	77	189	26
Hourly Exit Rate	180	512	216	500	352	172	284	504	972	308	756	104
Input Volume	154	593	249	1560	912	481	312	528	1013	763	1016	189
% of Volume	117	86	87	32	39	36	91	95	96	40	74	55
Denied Entry Before	0	0	1	15	7	1	0	0	1	0	0	0
Denied Entry After	0	0	0	91	57	24	5	2	11	0	0	0

#### 1: SR 421 & Williamson Blvd Performance by movement

Movement	ALEXAL PROPERTY.	1. 19 1. 19 1. 19 1. 19 1. 19 1. 19 1. 19 1. 19 1. 19 1. 19 1. 19 1. 19 1. 19 1. 19 1. 19 1. 19 1. 19 1. 19 1.
Total Delay (hr)	79.3	
Delay / Veh (s)	226.3	
Total Stops	2178	
Travel Dist (mi)	443.3	
Travel Time (hr)	92.3	
Avg Speed (mph)	7	
Fuel Used (gal)	305.5	
HC Emissions (g)	16	
CO Emissions (g)	5047	
NOx Emissions (g)	47	
Vehicles Entered	1309	
Vehicles Exited	1215	
Hourly Exit Rate	4860	
Input Volume	7770	
% of Volume	63	
Denied Entry Before	25	
Denied Entry After	190	

# 3: SR 421 & Taylor Branch Rd. Performance by movement

Movement***	- Av. NBT	A NBPA	# SBT	NWB	· All	
Total Delay (hr)	0.5	0.2	45.9	0.1	46.8	
Delay / Veh (s)	3.6	6.7	376.6	11.6	152.5	
Total Stops	0	0	1033	35	1068	
Travel Dist (mi)	59.3	11.6	139.9	2.0	212.8	
Travel Time (hr)	1.9	0.6	49.2	0.2	51.9	
Avg Speed (mph)	31	20	4	9	6	
Fuel Used (gal)	29.4	3.5	140.8	0.6	174.2	
HC Emissions (g)	6	0	13	0	19	
CO Emissions (g)	2289	96	3134	26	5545	
NOx Emissions (g)	19	1	28	0	49	
Vehicles Entered	520	108	524	37	1189	
Vehicles Exited	521	108	354	36	1019	
Hourly Exit Rate	2084	432	1416	144	4076	
Input Volume	2584	643	2966	132	6325	
% of Volume	81	67	48	109	64	
Denied Entry Before	0	0	3	0	3	
Denied Entry After	0	0	229	0	229	

#### 5: I-95 SB Ramps & Performance by movement

Movementa: 4	SB€	#SET#	
Total Delay (hr)	13.8	0.4	14.3
Delay / Veh (s)	135.3	94.5	133.3
Total Stops	541	20	561
Travel Dist (mi)	70.5	3.0	73.5
Travel Time (hr)	16.3	0.5	16.8
Avg Speed (mph)	4	6	5
Fuel Used (gal)	51.7	2.3	54.0
HC Emissions (g)	2	0	2
CO Emissions (g)	804	52	856
NOx Emissions (g)	7	0	8
Vehicles Entered	414	19	433
Vehicles Exited	323	14	337
Hourly Exit Rate	1292	56	1348
Input Volume	1869	130	1999
% of Volume	69	43	67
Denied Entry Before	1	0	1
Denied Entry After	38	t	39

#### 6: SR 421 & Performance by movement

Movement	AWA EBT	WBT	SWR	an All	
Total Delay (hr)	4.2	2.3	0.1	6.6	
Delay / Veh (s)	33.7	26.5	32.7	30.8	
Total Stops	245	109	8	362	
Travel Dist (mi)	28.3	10.4	0.8	39.5	
Travel Time (hr)	5.3	2.6	0.2	8.1	
Avg Speed (mph)	5	4	5	5	
Fuel Used (gal)	21.7	10.0	0.5	32.2	
HC Emissions (g)	1	1	0	2	
CO Emissions (g)	436	180	4	620	
NOx Emissions (g)	5	2	0	8	
Vehicles Entered	454	307	14	775	
Vehicles Exited	449	308	14	771	
Hourly Exit Rate	1796	1232	56	3084	
Input Volume	2416	2823	130	5371	
% of Volume	74	44	43	57	
Denied Entry Before	0	0	0	0	
Denied Entry After	1	0	0	1	

#### 17: SR 421 & I-95 NB Ramps Performance by movement

Movement	EBL	EBTø	Wetta	WBR.	. NBL	* NBR	Alle	
Total Delay (hr)	0.4	2.2	11.5	0.3	4.6	3.1	22.2	
Delay / Veh (s)	27.2	14.1	161.4	11.6	534.4	205.9	75.0	
Total Stops	57	186	357	20	77	81	778	
Travel Dist (mi)	6.3	61.5	28.0	7.6	9.1	14.1	126.7	
Travel Time (hr)	0.7	3.9	12.1	0.5	4.8	3.5	25.6	
Avg Speed (mph)	10	16	2	14	2	4	5	
Fuel Used (gal)	3.7	38.3	35.5	2.0	12.7	10.8	103.0	
HC Emissions (g)	0	5	2	0	3	0	11	
CO Emissions (g)	116	2237	679	40	574	200	3846	
NOx Emissions (g)	1	18	6	0	5	2	31	
Vehicles Entered	59	553	262	101	46	68	1089	
Vehicles Exited	59	569	251	106	16	43	1044	
Hourly Exit Rate	236	2276	1004	424	64	172	4176	
Input Volume	371	2932	2313	682	181	257	6736	
% of Volume	64	78	43	62	35	67	62	
Denied Entry Before	0	0	0	1	0	0	1	
Denied Entry After	0	0	5	0	1	7	13	

#### 18: SR 421 & I-95 SB Ramps Performance by movement

Movement 📜 😁 🚓	EBT.	EBB\$	WEE	e£WBT.i	, SBL	SBI.;	SBR.	er All !	
Total Delay (hr)	7.7	0.5	0.6	9.4	4.1	0.1	1.9	24.2	
Delay / Veh (s)	71.0	35.1	66.5	151.6	65.0	75.8	74.9	85.8	
Total Stops	260	21	26	305	96	3	51	762	
Travel Dist (mi)	25.3	2.6	3.6	23.7	7.5	0.1	3.2	65.9	
Travel Time (hr)	8.3	0.5	0.7	9.9	4.4	0.1	2.1	26.0	
Avg Speed (mph)	3	5	5	3	2	1	2	3	
Fuel Used (gal)	26.1	2.2	2.5	27.4	12.1	0.1	5.5	75.9	
HC Emissions (g)	2	0	0	2	0	0	0	5	
CO Emissions (g)	369	55	67	446	102	37	31	1108	
NOx Emissions (g)	4	1	0	4	1	0	0	11	
Vehicles Entered	390	50	34	228	228	3	94	1027	
Vehicles Exited	390	48	33	218	222	3	89	1003	
Hourly Exit Rate	1560	192	132	872	888	12	356	4012	
Input Volume	2105	269	321	2154	1200	18	669	6736	
% of Volume	74	71	41	40	74	67	53	60	
Denied Entry Before	0	0	0	1	0	0	0	1	
Denied Entry After	0	0	0	4	4	0	2	10	

#### **Total Network Performance**

	and the second second	
Total Delay (hr)	207.8	
Delay / Veh (s)	363.4	
Total Stops	6266	
Travel Dist (mi)	1904.7	
Travel Time (hr)	261.7	
Avg Speed (mph)	9	
Fuel Used (gal)	1096.9	
HC Emissions (g)	104	
CO Emissions (g)	32335	
NOx Emissions (g)	320	•
Vehicles Entered	2339	
Vehicles Exited	1780	
Hourly Exit Rate	7120	
Input Volume	49195	
% of Volume	14	
Denied Entry Before	31	
Denied Entry After	482	



#### Summary of All Intervals

RunžNumber 🧼 🚜		. 2			- 5	A Are Avg	The special state
Start Time	6:55	6:55	6:55	6:55	6:55	6:55	•
End Time	7:15	7:15	7:15	7:15	7:15	7:15	
Total Time (min)	20	20	20	20	20	20	
Time Recorded (min)	15	15	15	15	15	15	
# of Intervals	2	2	2	2	2	2	
# of Recorded Intvls	1	1	1	1	1	1	
Vehs Entered	2632	2283	2346	2384	2326	2396	
Vehs Exited	2092	1721	1791	1882	1805	1856	
Starting Vehs	532	582	555	554	558	558	
Ending Vehs	1072	1144	1110	1056	1079	1091	
Denied Entry Before	37	25	61	43	22	38	
Denied Entry After	172	621	440	379	337	389	
Travel Distance (mi)	2159	1815	1884	2054	1926	1968	
Travel Time (hr)	230.9	287.7	276.2	245.5	240.3	0.0	
Total Delay (hr)	169.9	236.1	222.9	187.4	186.0	200.5	
Total Stops	6374	6 <b>4</b> 41	6050	6076	6023	6192	
Fuel Used (gal)	1099.4	1132.2	1129.1	1096.9	1058.8	1103.3	

## Interval #0 Information Seeding

Start Time 6:55
End Time 7:00
Total Time (min) 5
Volumes adjusted by Growth Factors.
No data recorded this interval.

#### Interval #1 Information Recording

Start Time 7:00 End Time 7:15 Total Time (min) 15 Volumes adjusted by Growth Factors.

Run Numberses Status	n. is as it dist	t/151/62e/	3-1	:=1:::4	<b>#7</b> 552	A Avg 25	
Vehs Entered	2632	2283	2346	2384	2326	2396	
Vehs Exited	2092	1721	1791	1882	1805	1856	
Starting Vehs	532	582	555	554	558	558	
Ending Vehs	1072	11 <del>44</del>	1110	1056	1079	1091	
Denied Entry Before	37	25	61	43	22	38	
Denied Entry After	172	621	440	379	337	389	
Travel Distance (mi)	2159	1815	1884	2054	1926	1968	
Travel Time (hr)	230.9	287.7	276.2	245.5	240.3	0.0	
Total Delay (hr)	169.9	236.1	222.9	187.4	186.0	200.5	
Total Stops	6374	6441	6050	6076	6023	6192	
Fuel Used (gal)	1099.4	1132.2	1129.1	1096.9	1058.8	1103.3	

#### **Total Network Performance**

The First		
Total Delay (hr)	200.5	
Delay / Veh (s)	340.1	
Total Stops	6192	
Travel Dist (mi)	1967.7	
Travel Time (hr)	0.0	
Avg Speed (mph)	-54	
Fuel Used (gai)	1103.3	
HC Emissions (g)	96	
CO Emissions (g)	31514	
NOx Emissions (g)	308	
Vehicles Entered	2396	
Vehicles Exited	1856	
Hourly Exit Rate	7424	
Input Volume	49195	
% of Volume	15	
Denied Entry Before	38	
Denied Entry After	389	

Intersection: 1: SR 421 & Williamson Blvd

Movement 124 - 124	FB.]	TAEBY		"webb	ar EB	. WBT	¥≗WBa	::WB:	HEWE .	- WB	in MB	NB
Directions Served	L	L	Т	Ţ	TR	L	L	Т	Т	R	L	L
Maximum Queue (ft)	88	292	737	771	250	483	447	436	342	435	309	322
Average Queue (ft)	59	101	458	557	249	481	362	250	183	106	248	268
95th Queue (ft)	105	289	779	880	251	484	476	514	374	369	371	390
Link Distance (ft)			1594	1594		248	248	248	248	248		
Upstream Blk Time (%)						56	54	6	3	0		
Queuing Penalty (veh)						270	261	29	15	1		
Storage Bay Dist (ft)	450	450			200						300	300
Storage Blk Time (%)			8	21	73						9	23
Queuing Penalty (veh)			13	93	145						23	61

#### Intersection: 1: SR 421 & Williamson Blvd

Movements		A NB	⊥:NBÆ	NB¥	¥≟SB≱	SB <sub>4</sub>	wa_SB-	(FSB)	E , B14:	B14.	
Directions Served	Т	Т	R	R	L.	L	T	TR	Ţ	T	
Maximum Queue (ft)	749	797	325	312	289	340	1762	1764	2285	2397	
Average Queue (ft)	452	480	286	265	260	336	1508	1439	768	802	
95th Queue (ft)	917	946	375	347	340	352	2160	2144	2277	2405	
Link Distance (ft)	2762	2762					1748	1748	2790	2790	
Upstream Blk Time (%)							46	34	4	7	
Queuing Penalty (veh)							0	0	0	0	
Storage Bay Dist (ft)			300	300	240	240					
Storage Blk Time (%)	4	3	7	6	45	81	37				
Queuing Penalty (veh)	12	35	20	16	227	410	281				

## Intersection: 3: SR 421 & Taylor Branch Rd.

Movement	数编 NB。	≠_:SB:	ù± SBæ	. Set	i SB.		
Directions Served	Т	Т	Ţ	Т	T	R	
Maximum Queue (ft)	12	274	1678	1682	1672	84	
Average Queue (ft)	2	186	1032	1095	1020	53	
95th Queue (ft)	15	375	2014	1988	2002	90	
Link Distance (ft)	545		1657	1657	1657	251	
Upstream Blk Time (%)			13	22	11		
Queuing Penalty (veh)			0	0	0		
Storage Bay Dist (ft)		250					
Storage Blk Time (%)		9	42				
Queuing Penalty (veh)		69	313				

#### Intersection: 5: I-95 SB Ramps &

Movements = 14 2 4 2 4	SB.	SB,	. SB.	: SB	
Directions Served	L	L	L	Ţ	
Maximum Queue (ft)	1029	1040	1031	984	
Average Queue (ft)	753	781	801	691	
95th Queue (ft)	1233	1236	1189	1189	
Link Distance (ft)	1012	1012	1012	1012	
Upstream Blk Time (%)	13	15	15	1	
Queuing Penalty (veh)	0	0	0	0	
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

#### Intersection: 6: SR 421 &

Movementa : : : : : : : :	des EBG	e EBA	SEEBL	WBs	. WB2,	¥asw ∈	
Directions Served	T	Т	T	Т	Т	Ŕ	
Maximum Queue (ft)	365	313	348	214	222	58	
Average Queue (ft)	311	266	285	204	192	23	
95th Queue (ft)	401	316	340	260	268	60	
Link Distance (ft)	248	248	248	130	130	188	
Upstream Blk Time (%)	23	23	34	31	35		
Queuing Penalty (veh)	185	180	272	437	490		
Storage Bay Dist (ft)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

#### Intersection: 17: SR 421 & I-95 NB Ramps

Movement ve	<b>- 64</b> EB 4	1#EB⊒	E 5 (	EB	o≱-EB	₩B	www.	₩B.:	ù WB	YINBI	MARIEN	ME NB
Directions Served	L	L	Т	Т	T	Т	T	Т	R	L	R	R
Maximum Queue (ft)	200	183	341	333	352	585	582	580	428	354	1158	156
Average Queue (ft)	119	110	240	244	272	517	552	558	103	292	466	92
95th Queue (ft)	195	183	361	357	375	622	595	578	448	421	1208	180
Link Distance (ft)			491	491	491	545	545	545	545		1439	
Upstream Blk Time (%)						17	51	60	1		1	
Queuing Penalty (veh)						124	379	447	4		0	
Storage Bay Dist (ft)	650	650								330		330
Storage Blk Time (%)										47		
Queuing Penalty (veh)										120		

Intersection: 18: SR 421 & I-95 SB Ramps

Directions Served	T	Т	Т	L	Т	Т	L	L	R	
Maximum Queue (ft)	378	366	372	292	523	526	209	196	196	
Average Queue (ft)	361	354	353	205	496	501	192	191	192	
95th Queue (ft)	388	390	391	346	577	564	208	197	200	
Link Distance (ft)	130	130	130	491	491	491	54	54	54	
Jpstream Blk Time (%)	65	64	64		39	45	70	70	73	
Queuing Penalty (veh)	516	508	503		319	371	436	436	456	
Storage Bay Dist (ft)										
Storage Blk Time (%)			64							
Queuing Penalty (veh)			171							

**Network Summary** 

Network wide Queuing Penalty: 8647