

# Traffic Impact Analysis

*Walden Lake*

Plant City, Florida

## Technical Addendum

March 2015

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The final report for the Walden Lake traffic impact analysis, dated January 2015, included level of service analyses for numerous intersections in the vicinity of the development. All of these analyses were conducted based on existing geometry and traffic control. It is now understood that signalization of the intersection of Turkey Creek Road and Sydney Road is imminent.<sup>1</sup> Signalization of the intersection in its current layout is anticipated in the spring/summer of 2015, with additional intersection improvements (likely to include the installation of a southbound left turn lane and a westbound right turn lane) proposed as part of an ongoing Turkey Creek Road corridor roadway project.

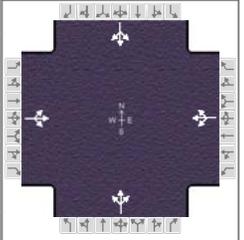
In light of these plans, a supplemental analysis of the Turkey Creek Road at Sydney Road intersection with a signal assumed to be in place was conducted for the “background plus project traffic scenario” in both the AM peak and PM peak periods. The results are shown in the table below, which corresponds to a portion of Table 6 in the original report (with two new columns added in bold font). The results indicate that signalization of the intersection is expected to significantly reduce delays and improve the intersection’s level of service to an acceptable level. It should be noted that these analyses do not include the potential turn lane improvements, meaning that the results (below) likely represent a worst-case scenario based on existing traffic characteristics.

Intersection Name	Movement	AM Peak Period			PM Peak Period		
		Background	with Project	<b>with Signal</b>	Background	with Project	<b>with Signal</b>
Turkey Creek Rd @ Sydney Rd	EB	B	B	<b>B</b>	C	C	<b>A</b>
	WB	B	C	<b>B</b>	E	E	<b>B</b>
	NB	D	E	<b>A</b>	E	F	<b>B</b>
	SB	B	B	<b>A</b>	F	F	<b>B</b>
	Overall	C	C	<b>A</b>	E	F	<b>B</b>

<sup>1</sup> Based on discussion with Benjamin Kniesly, Hillsborough County Project Manager.

# HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information		
Agency		Duration, h	0.25			
Analyst		Analysis Date	3/17/2015		Area Type	Other
Jurisdiction		Time Period		PHF	0.91	
Intersection	Sydney	Analysis Year	2015	Analysis Period	1 > 7:00	
File Name	Turkey Creek_Sydney_signal_AM.xus					
Project Description	AM					



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	28	121	41	110	58	35	37	324	122	26	163	16

Signal Information													
Cycle, s	30.7	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	Yes	Simult. Gap E/W	On	Green	11.6	7.2	0.0	0.0	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	0.0	0.0	0.0	0.0			
				Red	2.0	2.0	0.0	0.0	0.0	0.0			

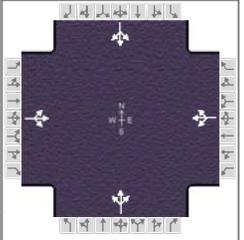
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		8.0		8.0		8.0		8.0
Phase Duration, s		13.2		13.2		17.6		17.6
Change Period, (Y+R <sub>c</sub> ), s		6.0		6.0		6.0		6.0
Max Allow Headway (MAH), s		3.1		3.1		3.1		3.1
Queue Clearance Time (g <sub>s</sub> ), s		5.1		6.5		10.1		4.9
Green Extension Time (g <sub>e</sub> ), s		0.8		0.8		1.4		1.4
Phase Call Probability		0.97		0.97		1.00		1.00
Max Out Probability		0.00		0.00		0.00		0.00

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h	204			219			518			223		
Adjusted Saturation Flow Rate (s), veh/h/ln	1697			1324			1731			1587		
Queue Service Time (g <sub>s</sub> ), s	0.0			1.5			2.6			0.0		
Cycle Queue Clearance Time (g <sub>c</sub> ), s	3.1			4.5			8.1			2.9		
Green Ratio (g/C)	0.23			0.23			0.38			0.38		
Capacity (c), veh/h	530			490			779			730		
Volume-to-Capacity Ratio (X)	0.385			0.446			0.665			0.306		
Available Capacity (c <sub>a</sub> ), veh/h	3345			2660			3444			3056		
Back of Queue (Q), veh/ln (50th percentile)	0.7			0.8			1.4			0.5		
Queue Storage Ratio (RQ) (50th percentile)	0.00			0.00			0.00			0.00		
Uniform Delay (d <sub>1</sub> ), s/veh	10.3			10.7			8.5			6.9		
Incremental Delay (d <sub>2</sub> ), s/veh	0.2			0.2			0.4			0.1		
Initial Queue Delay (d <sub>3</sub> ), s/veh	0.0			0.0			0.0			0.0		
Control Delay (d), s/veh	10.4			10.9			8.8			7.0		
Level of Service (LOS)	B			B			A			A		
Approach Delay, s/veh / LOS	10.4	B		10.9	B		8.8	A		7.0	A	
Intersection Delay, s/veh / LOS	9.1						A					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.1	B	2.1	B	2.1	B	2.1	B
Bicycle LOS Score / LOS	0.8	A	0.8	A	1.3	A	0.9	A

# HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information		
Agency		Duration, h	0.25			
Analyst		Analysis Date	3/17/2015		Area Type	Other
Jurisdiction		Time Period		PHF	0.87	
Intersection	Sydney	Analysis Year	2015		Analysis Period	1 > 7:00
File Name	Turkey Creek_Sydney_signal_PM.xus					
Project Description	PM					



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	26	75	59	129	135	71	34	245	91	22	332	29

Signal Information				Signal Timing (s)								Signal Phases			
Cycle, s	34.0	Reference Phase	2	Green	11.3	10.7	0.0	0.0	0.0	0.0	1	2	3	4	
Offset, s	0	Reference Point	End	Yellow	4.0	4.0	0.0	0.0	0.0	0.0	5	6	7	8	
Uncoordinated	Yes	Simult. Gap E/W	On	Red	2.0	2.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Simult. Gap N/S	On												

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		8.0		8.0		8.0		8.0
Phase Duration, s		16.7		16.7		17.3		17.3
Change Period, (Y+R <sub>c</sub> ), s		6.0		6.0		6.0		6.0
Max Allow Headway (MAH), s		3.1		3.1		3.1		3.1
Queue Clearance Time (g <sub>s</sub> ), s		4.8		9.6		9.5		9.6
Green Extension Time (g <sub>e</sub> ), s		1.1		1.1		1.7		1.7
Phase Call Probability		0.99		0.99		1.00		1.00
Max Out Probability		0.00		0.00		0.00		0.00

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h	177			377			415			437		
Adjusted Saturation Flow Rate (s), veh/h/ln	1613			1514			1632			1718		
Queue Service Time (g <sub>s</sub> ), s	0.0			5.0			0.0			0.1		
Cycle Queue Clearance Time (g <sub>c</sub> ), s	2.8			7.6			7.5			7.6		
Green Ratio (g/C)	0.31			0.31			0.33			0.33		
Capacity (c), veh/h	632			624			659			684		
Volume-to-Capacity Ratio (X)	0.280			0.604			0.629			0.638		
Available Capacity (c <sub>a</sub> ), veh/h	2826			2738			2882			3066		
Back of Queue (Q), veh/ln (50th percentile)	0.6			1.5			1.6			1.7		
Queue Storage Ratio (RQ) (50th percentile)	0.00			0.00			0.00			0.00		
Uniform Delay (d <sub>1</sub> ), s/veh	9.0			10.5			10.1			10.1		
Incremental Delay (d <sub>2</sub> ), s/veh	0.1			0.4			0.4			0.4		
Initial Queue Delay (d <sub>3</sub> ), s/veh	0.0			0.0			0.0			0.0		
Control Delay (d), s/veh	9.0			10.9			10.4			10.5		
Level of Service (LOS)	A			B			B			B		
Approach Delay, s/veh / LOS	9.0	A		10.9	B		10.4	B		10.5	B	
Intersection Delay, s/veh / LOS	10.4						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.1	B	2.1	B	2.1	B	2.1	B
Bicycle LOS Score / LOS	0.8	A	1.1	A	1.2	A	1.2	A