

City of Tampa, Florida

Arterial Capacity Analysis
O'Brien Street between Spruce Street and Cypress Street

Technical Memorandum

Prepared for:



Prepared by:



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Introduction

The City of Tampa, Florida, is considering a project to implement capacity improvements for the O'Brien Street corridor, between Spruce Street and Cypress Street. Under a development agreement, the northern section of O'Brien, between Spruce Street and Laurel Street, will eventually be widened to a five lane cross section. The primary consideration of this evaluation is to determine the potential benefit of widening O'Brien Street to the south of Laurel Street. This technical memorandum details proposed capacity improvement alternatives along the O'Brien Street corridor.

The City has requested Albeck Gerken, Inc. to review various improvement scenarios and perform capacity analyses to determine the most effective approach to addressing these concerns. The tasks involved in this assignment include:

- Qualitative assessment of existing conditions.
- Field inventory of key elements as needed for a capacity modeling effort.
- Operational analysis for various scenarios using Synchro and SimTraffic modeling software.
- Summary of analysis and recommendations.

The intersections analyzed as part of this study include:

No.	Intersection
1	O'Brien St & Spruce St
2	O'Brien St & Laurel St
3	O'Brien St & Cypress St

O'Brien Street is a three-lane roadway with a two way left turn lane (TWLTL) from Spruce Street to Laurel Street, and a two-lane undivided roadway between Laurel Street and Cypress Street. It primarily serves commercial development and office parks in an area to the west of O'Brien, originally centered along the frontage road that ran along State Road 60 to the west but was eliminated as part of the FDOT's "Links" interchange project. To the north of Spruce Street, a short section of O'Brien Street provides access to the support facilities for Tampa International Airport. South of Cypress Street, O'Brien becomes a private parking lot. An aerial photograph of the corridor is shown in Figure 1 on page 2.

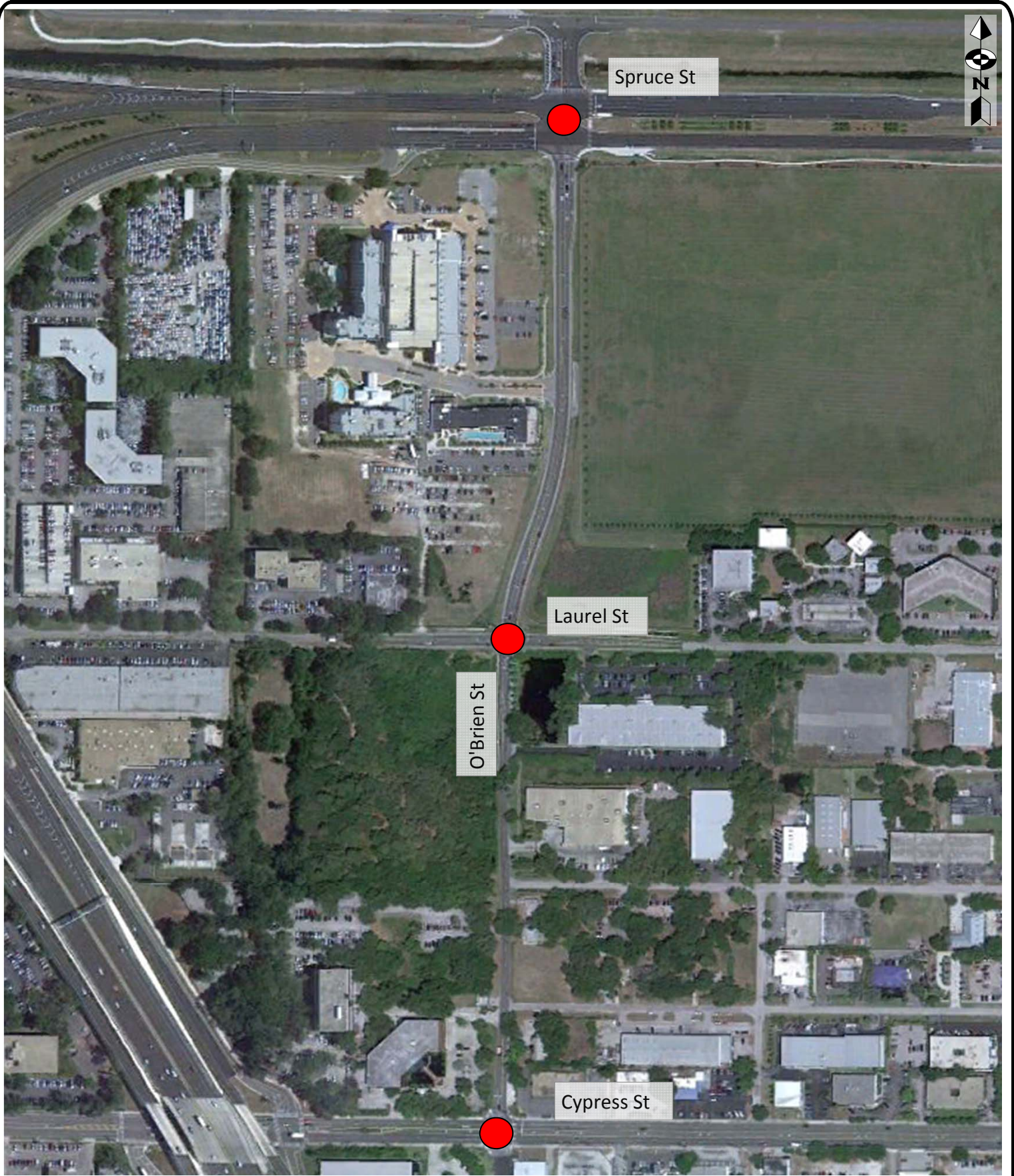
Spruce Street (State Road 616) is a major east-west arterial connecting the Veterans Expressway, Courtney Campbell Causeway, and Tampa International Airport to the International Mall complex, Dale Mabry Highway, and Raymond James Stadium. Cypress Street is a minor east-west arterial providing access to office developments and commercial properties through the West Shore Business area.

Data Collection

The City of Tampa provided the following data for the analyses:

- Signal timing data for O'Brien Street & Spruce Street, revised August 18, 2010.
- Signal timing data for O'Brien Street & Laurel Street, revised July 24, 2007.
- Signal timing data for O'Brien Street & Cypress Street, revised February 5, 2010.

In addition, Albeck Gerken, Inc. staff conducted turning movement counts (TMC) at the three referenced intersections in March, 2013. TMCs were collected from 7:00 am – 10:00 am, 11:00 am – 1:00 pm and 3:00 pm – 6:00 pm on a weekday. Detailed information for the signal timing data and TMCs are included in the Appendix.



Albeck Gerken, Inc.
Transportation Engineers

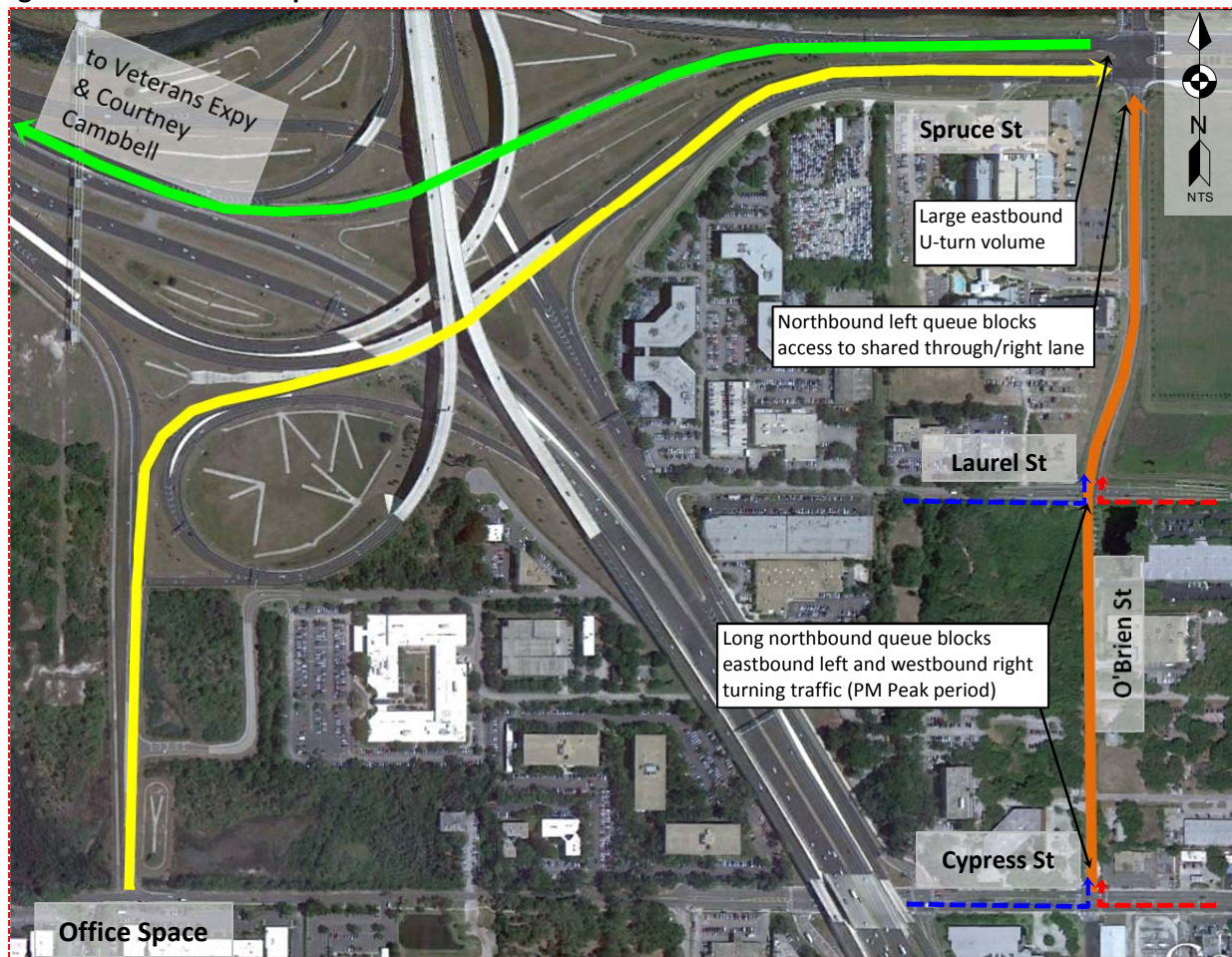
TMC Locations 

Figure 1
Study Corridor
O'Brien St

Qualitative Assessment

The corridor was observed during the peak periods of the day by Albeck Gerken, Inc., engineers. In general, the operation of the intersection of O'Brien Street with Spruce Street impacted the operations along the entire O'Brien Street corridor. Key observations of note are shown in Figure 2 below.

Figure 2 – O'Brien St & Spruce St



O'Brien Street & Spruce Street

- During the AM Peak period, westbound left turn traffic on Spruce Street, turning onto southbound O'Brien Street, experienced cycle failures on several occasions.
- During the PM Peak period, northbound traffic on O'Brien Street experienced extremely heavy congestion between 4:45 pm and 5:30 pm. Northbound through and right turning vehicles have difficulty reaching the northbound through/right lane at Spruce Street because of the queues of left turning vehicles. Queues from the dual northbound left-turn lanes frequently extended back to the south end of O'Brien Street, such that vehicles on Cypress Street desiring to head north on O'Brien could not turn onto O'Brien. The section of TWLTL on O'Brien Street, north of Laurel Street, was fully utilized by the left turn queues extending back from Spruce Street.

- There are a large number of eastbound U-turns at this intersection, particularly during the PM peak period. These vehicles appear to originate from several large office complexes on the west end of Cypress Street, utilizing the new connection to the Spruce Street ramp and making an eastbound U-turn at O'Brien Street to access the Veterans Expressway and/or Courtney Campbell Causeway.
- During the PM Peak period, westbound through traffic on Spruce Street was observed to experience significant queues, in excess of 1,500 feet.

Figure 3 – Facing Northbound (O'Brien Street) at Spruce Street



O'Brien Street & Laurel Street

During the PM Peak period, the long northbound queues from the intersection of O'Brien Street at Spruce Street blocked eastbound and westbound traffic attempting to turn from Laurel Street onto northbound O'Brien Street.

Figure 4 – Facing Northbound (O'Brien Street) at Laurel Street



O'Brien Street & Cypress Street

During the PM Peak period, long northbound queues at Spruce Street blocked eastbound and westbound traffic attempting to turn from Cypress Street onto northbound O'Brien Street.

Figure 5 – Facing Southbound (O'Brien Street) at Cypress Street



Analysis Scenarios

Two build conditions for the study corridor were developed and analyzed. All future scenarios assume a 20-year build-out date, with a traffic growth rate of 2.5% per year for the first ten years and 0.8% per year for the second ten years (based upon a meeting with City of Tampa staff on June 11, 2013).

Base Condition: Existing configuration (No Build Option).

Build 1: Full-width widening of O'Brien Street from Spruce Street to Cypress Street to a five lane cross-section. This configuration would include triple northbound left turns at Spruce Street, with the necessary advance signing on the approach to ensure the proper lane for downstream destinations. In addition, dual westbound left turn lanes at the intersection of O'Brien Street & Spruce Street would be proposed, as well as bicycle lanes and sidewalks along the corridor.

Build 2: Full-width widening of only the northern section of O'Brien Street, from Spruce Street to Laurel Street to a five lane cross-section. The intersection improvements at Spruce Street would be the same as defined in Build 1. To the south of Laurel Street, the two-lane cross section would remain, with necessary intersection improvements at the intersection of Laurel Street to transition between cross sections.

Synchro Macroscopic Analysis and SimTraffic Microscopic Analysis

The intersection was modeled using Synchro (v7) and a microscopic analysis was performed for the network using SimTraffic (v7) to evaluate each of the scenarios for existing and future conditions. The following tables combine and summarize four performance measures for all intersections in the network: total delay, total stops, total travel time, and total fuel consumption. The tables also

summarize the percent reduction of each measure, which illustrates the overall changes to the network between the no-build scenario and each of the build alternatives. Table 2 summarizes the Synchro performance measure data for the O'Brien Street corridor from Spruce Street to Cypress Street.

Table 1 – Synchro Network Performance Measures

Synchro Network Performance Measures - AM Peak Hour						
Existing	5-Lane Widening Spruce to Cypress			5-Lane Widening Spruce to Laurel		
Volumes	No-Build	Build 1		No-Build	Build 2	
Total Delay (hr)	49	42	-14.3%	49	42	-14.3%
Total Stops	3,199	3,120	-2.5%	3,199	3,138	-1.9%
Total Travel Time (hr)	89	82	-7.9%	89	82	-7.9%
Fuel Consumed (gal)	137	131	-4.4%	137	132	-3.6%
Future	5-Lane Widening Spruce to Cypress			5-Lane Widening Spruce to Laurel		
Volumes	No-Build	Build 1		No-Build	Build 2	
Total Delay (hr)	150	114	-24.0%	150	114	-24.0%
Total Stops	5,471	5,344	-2.3%	5,471	5,369	-1.9%
Total Travel Time (hr)	205	169	-17.6%	205	169	-17.6%
Fuel Consumed (gal)	263	236	-10.3%	263	236	-10.3%

Synchro Network Performance Measures - MD Peak Hour						
Existing	5-Lane Widening Spruce to Cypress			5-Lane Widening Spruce to Laurel		
Volumes	No-Build	Build 1		No-Build	Build 2	
Total Delay (hr)	42	37	-11.9%	42	37	-11.9%
Total Stops	3,076	3,014	-2.0%	3,076	3,021	-1.8%
Total Travel Time (hr)	77	72	-6.5%	77	72	-6.5%
Fuel Consumed (gal)	121	116	-4.1%	121	116	-4.1%
Future	5-Lane Widening Spruce to Cypress			5-Lane Widening Spruce to Laurel		
Volumes	No-Build	Build 1		No-Build	Build 2	
Total Delay (hr)	92	74	-19.6%	92	75	-18.5%
Total Stops	4,970	4,827	-2.9%	4,970	4,839	-2.6%
Total Travel Time (hr)	140	123	-12.1%	140	123	-12.1%
Fuel Consumed (gal)	201	186	-7.5%	201	186	-7.5%

Synchro Network Performance Measures - PM Peak Hour						
Existing	5-Lane Widening Spruce to Cypress			5-Lane Widening Spruce to Laurel		
Volumes	No-Build	Build 1		No-Build	Build 2	
Total Delay (hr)	172	144	-16.3%	172	144	-16.3%
Total Stops	6,309	6,232	-1.2%	6,309	6,256	-0.8%
Total Travel Time (hr)	232	204	-12.1%	232	204	-12.1%
Fuel Consumed (gal)	293	272	-7.2%	293	272	-7.2%
Future	5-Lane Widening Spruce to Cypress			5-Lane Widening Spruce to Laurel		
Volumes	No-Build	Build 1		No-Build	Build 2	
Total Delay (hr)	574	488	-15.0%	574	488	-15.0%
Total Stops	8,774	8,700	-0.8%	8,774	8,759	-0.2%
Total Travel Time (hr)	657	570	-13.2%	657	571	-13.1%
Fuel Consumed (gal)	649	586	-9.7%	649	587	-9.6%

Results of the Synchro analysis were similar between the two build scenarios due to the fact that stop bar geometries at the intersections remained the same. Table 3 summarizes the Simtraffic performance measure data for the O'Brien Street corridor from Spruce Street to Cypress Street.

Table 2 – SimTraffic Network Performance Measures

SimTraffic Network Performance Measures - AM Peak Hour						
Existing	5-Lane Widening Spruce to Cypress			5-Lane Widening Spruce to Laurel		
Volumes	No-Build	Build 1		No-Build	Build 2	
Total Delay (hr)	56	43	-23.4%	56	48	-14.1%
Total Stops	3,655	3,198	-12.5%	3,655	3,381	-7.5%
Total Travel Time (hr)	98	85	-13.3%	98	91	-7.6%
Fuel Consumed (gal)	60	57	-5.0%	60	59	-0.5%
Future	5-Lane Widening Spruce to Cypress			5-Lane Widening Spruce to Laurel		
Volumes	No-Build	Build 1		No-Build	Build 2	
Total Delay (hr)	217	86	-60.4%	217	87	-59.8%
Total Stops	7,525	5,122	-31.9%	7,525	4,995	-33.6%
Total Travel Time (hr)	268	141	-47.5%	268	140	-47.7%
Fuel Consumed (gal)	113	85	-24.9%	113	83	-26.4%
SimTraffic Network Performance Measures - MD Peak Hour						
Existing	5-Lane Widening Spruce to Cypress			5-Lane Widening Spruce to Laurel		
Volumes	No-Build	Build 1		No-Build	Build 2	
Total Delay (hr)	32	29	-8.4%	32	29	-10.0%
Total Stops	2,575	2,505	-2.7%	2,575	2,491	-3.3%
Total Travel Time (hr)	68	65	-4.1%	68	65	-5.4%
Fuel Consumed (gal)	48	48	-1.4%	48	47	-2.7%
Future	5-Lane Widening Spruce to Cypress			5-Lane Widening Spruce to Laurel		
Volumes	No-Build	Build 1		No-Build	Build 2	
Total Delay (hr)	79	50	-36.8%	79	51	-35.6%
Total Stops	4,684	3,766	-19.6%	4,684	3,855	-17.7%
Total Travel Time (hr)	129	100	-22.6%	129	101	-21.8%
Fuel Consumed (gal)	74	67	-8.9%	74	68	-8.3%
SimTraffic Network Performance Measures - PM Peak Hour						
Existing	5-Lane Widening Spruce to Cypress			5-Lane Widening Spruce to Laurel		
Volumes	No-Build	Build 1		No-Build	Build 2	
Total Delay (hr)	344	195	-43.4%	344	210	-38.9%
Total Stops	11,482	8,857	-22.9%	11,482	9,247	-19.5%
Total Travel Time (hr)	404	256	-36.6%	404	271	-32.8%
Fuel Consumed (gal)	147	115	-21.8%	147	118	-19.2%
Future	5-Lane Widening Spruce to Cypress			5-Lane Widening Spruce to Laurel		
Volumes	No-Build	Build 1		No-Build	Build 2	
Total Delay (hr)	1,579	1,110	-29.7%	1,579	1,093	-30.8%
Total Stops	19,785	18,394	-7.0%	19,785	18,467	-6.7%
Total Travel Time (hr)	1,642	1,182	-28.0%	1,642	1,164	-29.1%
Fuel Consumed (gal)	437	338	-22.7%	437	333	-23.8%

Build 1 (Five lane widening of O'Brien Street from Spruce Street to Cypress Street) shows a significant decrease in delay between no-build and build conditions for all peak periods.

Build 2 (Five lane widening of O'Brien Street from Spruce Street to Laurel Street) also shows a significant decrease in delay between no-build and build conditions for all peak periods.

Comparing the benefits of the two build alternatives, it is apparent that the major benefit is derived from the widening of the northern section, between Laurel and Spruce. Widening the entire corridor, between Cypress and Spruce, adds only an incremental improvement to the corridor.

Benefit/Cost Analysis

The benefits of the analysis scenarios were estimated based on two key components – total network delay (and therefore reductions in the value of time spent in the system) and operating cost reductions (fuel savings). Travel time benefits were determined by modeling the delay for both the no build and build scenarios, identifying a difference in time travel, and multiplying the difference by an average value-of-time and vehicle occupancy.

Costs of the proposed project alternatives were based upon current costs defined in the FDOT's Roadway Costs for Long Range Transportation Planning and increased by 12% for engineering design and another 12% for construction engineering and inspection. In addition, right of way costs were estimated for each alternative, assuming the need for stormwater treatment and considering the significance of business damages for adjacent properties. A cost of \$15 per square foot was used as an estimate for right of way. Benefit / cost ratios were developed for each build scenario; the present value of the project costs were determined based upon a 4% discount rate and a 20 year life of project. Table 3 shows a summary of the benefit-cost analysis.

Table 3 – Benefit-Cost Analysis

	ROW Costs	Construction Costs	Design and CEI	Total Project Costs	Calculated Benefits over Life of Project	B/C Ratio
Build 1 Five Lane Widening Spruce to Cypress	\$ 1,328,160	\$ 3,695,684	\$ 886,964	\$ 5,910,808	\$ 9,031,021	1.5:1
Build 2 Five Lane Widening Spruce to Laurel	\$ 822,240	\$ 2,287,931	\$ 549,104	\$ 3,659,275	\$ 7,907,543	2.2:1

While both build alternatives show a positive Benefit to Cost ratio, Build 2 shows a higher ratio. An evaluation of the incremental benefits versus the incremental costs of widening the section of O'Brien Street to the south of Laurel Street shows that the additional \$ 1,123,478 of benefits comes at a cost of \$ 2,251,533; this relates to a 0.5:1 benefit to cost ratio for the additional widening.

Findings and Recommendations

O'Brien Street is subject to intense congestion during the evening peak period, primarily related to the northbound (O'Brien Street) to westbound (Spruce Street) movement as commuters leave the area to reach the Veterans Expressway and Courtney Campbell Causeway. The analyses performed for this evaluation indicated that capacity improvements to the O'Brien Street / Spruce Street intersection, including triple northbound left turns, dual westbound left turns, and space for northbound queue storage along O'Brien Street, should be the primary emphasis of improvements in the area.

The widening of O'Brien Street to the north of Laurel Street, to a five lane cross section, has been planned as part of a development agreement. That project will be a cost effective improvement for the area. Based on planned developments in the area, the O'Brien Street corridor is anticipated to become a heavily utilized local arterial which may result in increased delay and queuing and blocking (particularly in the northbound direction during the PM Peak period). Although the future year analysis shows minor differences in delay between the two build alternatives, traffic queues in the northbound direction (during the PM Peak period) are longer (approximately 400 feet) in the partial five-lane build scenario than in the full five-lane build scenario because of the reduced queue storage.

Under current traffic conditions, widening of O'Brien Street to the south of Laurel Street, to a five lane cross section, does not appear to be a cost effective improvement. However, simulations of traffic conditions, with a traffic growth rate of 2.5% per year for the first ten years and 0.8% per year for the second ten years, indicates that even with the proposed improvement north of Laurel Street, the O'Brien Street & Spruce Street intersection will become oversaturated during peak periods. Although the microscopic model used in the analysis does not reassign trip distribution, it is anticipated that drivers may opt to travel southbound on O'Brien Street to access Cypress Street and exit the area. Therefore, the widening of O'Brien Street between Laurel Street and Cypress Street should also be a consideration, perhaps as a future, second phase to this project (depending on funding availability).

As the area around the study corridor is subject to significant redevelopment as part of airport expansion plans, the traffic patterns may change in the future. Future major developments should be required to evaluate proposed traffic impacts on this area with mitigation as appropriate.

Options to address the significant eastbound to westbound U-turn movement on Spruce Street should be evaluated as part of any intersection improvements.

APPENDIX

Turning Movement Counts



Albeck Gerken, Inc.
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Count Name: 1725_Obrien St &
 Spruce St_WD
 Site Code: 1725
 Start Date: 03/14/2013
 Page No: 1

City of Tampa
 Study #7 - Spruce St
 Obrien St & Spruce St
 Weekday TMC

Turning Movement Data

Start Time	Spruce St Eastbound						Spruce St Westbound						Obrien St Northbound						Obrien St Southbound						Int. Total
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	
7:00	3	27	299	79	0	408	0	30	100	12	0	142	0	20	3	5	0	28	0	9	2	1	0	12	590
7:15	2	42	324	83	0	451	0	32	124	14	1	170	0	19	2	11	0	32	0	13	3	7	0	23	676
7:30	7	27	450	88	0	572	0	40	191	19	0	250	0	27	1	12	0	40	0	15	6	0	0	21	883
7:45	6	48	437	138	0	629	0	57	175	20	0	252	0	25	5	21	0	51	0	18	4	1	0	23	955
Hourly Total	18	144	1510	388	0	2060	0	159	590	65	1	814	0	91	11	49	0	151	0	55	15	9	0	79	3104
8:00	13	39	454	142	0	648	0	33	205	11	0	249	0	25	5	18	0	48	0	12	4	3	0	19	964
8:15	8	41	396	120	0	565	0	55	172	22	0	249	0	33	3	15	0	51	0	9	5	2	0	16	881
8:30	9	33	414	144	0	600	0	57	198	15	0	270	0	33	1	11	0	45	0	14	5	1	0	20	935
8:45	10	49	365	145	0	569	1	33	189	23	0	246	0	37	7	14	0	58	0	9	4	2	0	15	888
Hourly Total	40	162	1629	551	0	2382	1	178	764	71	0	1014	0	128	16	58	0	202	0	44	18	8	0	70	3668
9:00	5	28	308	115	0	456	1	31	155	19	0	206	0	24	4	9	0	37	0	13	10	8	0	31	730
9:15	15	25	240	78	0	358	1	19	141	26	1	187	0	27	4	17	0	48	0	5	2	8	0	15	608
9:30	9	22	249	64	0	344	0	19	169	11	0	199	0	28	5	5	0	38	0	16	3	3	0	22	603
9:45	11	19	289	68	0	387	2	15	156	22	0	195	0	38	3	15	0	56	0	18	8	6	0	32	670
Hourly Total	40	94	1086	325	0	1545	4	84	621	78	1	787	0	117	16	46	0	179	0	52	23	25	0	100	2611
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:00	12	5	247	31	0	295	1	8	177	19	0	205	0	40	5	23	0	68	0	11	2	6	0	19	587
11:15	16	8	260	33	0	317	0	13	178	20	0	211	0	55	8	18	0	81	0	14	6	11	0	31	640
11:30	23	9	304	37	0	373	2	14	191	23	0	230	0	42	6	42	0	90	0	18	7	13	0	38	731
11:45	19	9	352	37	0	417	1	12	228	23	0	264	0	57	5	21	0	83	0	18	7	19	0	44	808
Hourly Total	70	31	1163	138	0	1402	4	47	774	85	0	910	0	194	24	104	0	322	0	61	22	49	0	132	2766
12:00	11	14	276	32	0	333	0	13	233	15	0	261	0	69	13	35	0	117	0	24	4	9	0	37	748
12:15	22	9	288	31	0	350	1	19	226	26	0	272	0	59	4	24	0	87	0	21	6	12	0	39	748
12:30	14	9	300	31	0	354	4	26	240	20	0	290	0	49	3	32	0	84	0	23	7	10	0	40	768
12:45	13	7	286	42	0	348	2	38	256	16	0	312	0	42	5	23	0	70	0	21	10	9	0	40	770
Hourly Total	60	39	1150	136	0	1385	7	96	955	77	0	1135	0	219	25	114	0	358	0	89	27	40	0	156	3034
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15:00	18	4	242	35	0	299	2	14	300	18	1	334	0	80	3	14	0	97	0	29	5	13	0	47	777
15:15	11	11	235	37	0	294	0	10	312	34	0	356	0	73	5	18	0	96	0	12	9	9	0	30	776
15:30	24	6	277	28	0	335	0	12	339	31	0	382	0	96	11	22	0	129	0	18	14	22	0	54	900
15:45	21	8	245	29	0	303	1	21	332	34	0	388	0	121	6	16	0	143	0	25	6	15	0	46	880
Hourly Total	74	29	999	129	0	1231	3	57	1283	117	1	1460	0	370	25	70	0	465	0	84	34	59	0	177	3333
16:00	28	6	241	32	0	307	3	15	361	25	0	404	0	167	7	20	0	194	0	19	13	38	0	70	975
16:15	27	2	310	29	0	368	0	10	435	24	0	469	0	168	5	24	0	197	0	16	11	28	0	55	1089
16:30	34	1	295	30	0	360	1	14	461	29	0	505	0	189	5	20	0	214	0	24	16	32	0	72	1151
16:45	37	7	374	33	0	451	3	17	465	22	0	507	0	222	6	35	0	263	0	24	14	45	0	83	1304
Hourly Total	126	16	1220	124	0	1486	7	56	1722	100	0	1885	0	746	23	99	0	868	0	83	54	143	0	280	4519
17:00	43	4	413	33	0	493	0	27	508	23	0	558	0	213	5	20	1	238	0	23	19	50	0	92	1381
17:15	30	6	461	30	0	527	2	29	593	21	1	645	0	201	4	23	0	228	0	24	11	40	1	75	1475
17:30	28	4	377	29	0	438	0	21	455	39	0	515	0	220	12	44	0	276	0	32	12	31	0	75	1304
17:45	23	9	406	23	0	461	1	20	423	22	0	466	0	150	8	22	0	180	0	27	15	28	0	70	1177
Hourly Total	124	23	1657	115	0	1919	3	97	1979	105	1	2184	0	784	29	109	1	922	0	106	57	149	1	312	5337
Car	547	515	10259	1826	-	13147	29	763	8511	654	-	9957	0	2529	161	638	-	3328	0	529	246	462	-	1237	27669
% Car	99.1	95.7	98.5	95.8	-	98.0	100.0	98.6	98.0	93.7	-	97.7	-	95.5	95.3	98.3	-	96.0	-	92.2	98.4	95.9	-	94.7	97.5
Truck	5	23	155	80	-	263	0	11	177	44	-	232	0	120	8	11	-	139	0	45	4	20	-	69	703
% Truck	0.9	4.3	1.5	4.2	-	2.0	0.0	1.4	2.0	6.3	-	2.3	-	4.5	4.7	1.7	-	4.0	-	7.8	1.6	4.1	-	5.3	2.5
Ped	-	-	-	-	0	-	-	-	-	-	4	-	-	-	-	-	1	-	-	-	-	-	1	-	-
% Ped	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-



Albeck Gerken, Inc.
 1911 N US Hwy 301
 Suite 410
 Tampa, Florida, United States 33619
 (813) 319-3790

Count Name: 1725_Obrien St &
 Spruce St_WD
 Site Code: 1725
 Start Date: 03/14/2013
 Page No: 2

City of Tampa
 Study #7 - Spruce St
 Obrien St & Spruce St
 Weekday TMC

Turning Movement Peak Hour Data (7:45)

Start Time	Spruce St Eastbound						Spruce St Westbound						Obrien St Northbound						Obrien St Southbound						Int. Total
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	
7:45	6	48	437	138	0	629	0	57	175	20	0	252	0	25	5	21	0	51	0	18	4	1	0	23	955
8:00	13	39	454	142	0	648	0	33	205	11	0	249	0	25	5	18	0	48	0	12	4	3	0	19	964
8:15	8	41	396	120	0	565	0	55	172	22	0	249	0	33	3	15	0	51	0	9	5	2	0	16	881
8:30	9	33	414	144	0	600	0	57	198	15	0	270	0	33	1	11	0	45	0	14	5	1	0	20	935
PHF	0.692	0.839	0.937	0.944	-	0.942	0.000	0.886	0.915	0.773	-	0.944	0.000	0.879	0.700	0.774	-	0.956	0.000	0.736	0.900	0.583	-	0.848	0.969
Car	35	158	1682	533	-	2408	0	201	729	63	-	993	0	108	12	64	-	184	0	48	18	5	-	71	3656
% Car	97.2	98.1	98.9	98.0	-	98.6	-	99.5	97.2	92.6	-	97.4	-	93.1	85.7	98.5	-	94.4	-	90.6	100.0	71.4	-	91.0	97.9
Truck	1	3	19	11	-	34	0	1	21	5	-	27	0	8	2	1	-	11	0	5	0	2	-	7	79
% Truck	2.8	1.9	1.1	2.0	-	1.4	-	0.5	2.8	7.4	-	2.6	-	6.9	14.3	1.5	-	5.6	-	9.4	0.0	28.6	-	9.0	2.1
Ped	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Ped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Count Name: 1725_Obrien St &
 Spruce St_WD
 Site Code: 1725
 Start Date: 03/14/2013
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City of Tampa
 Study #7 - Spruce St
 Obrien St & Spruce St
 Weekday TMC

Turning Movement Peak Hour Data (11:45)

Start Time	Spruce St Eastbound						Spruce St Westbound						Obrien St Northbound						Obrien St Southbound						Int. Total
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	
11:45	19	9	352	37	0	417	1	12	228	23	0	264	0	57	5	21	0	83	0	18	7	19	0	44	808
12:00	11	14	276	32	0	333	0	13	233	15	0	261	0	69	13	35	0	117	0	24	4	9	0	37	748
12:15	22	9	288	31	0	350	1	19	226	26	0	272	0	59	4	24	0	87	0	21	6	12	0	39	748
12:30	14	9	300	31	0	354	4	26	240	20	0	290	0	49	3	32	0	84	0	23	7	10	0	40	768
PHF	0.750	0.732	0.864	0.885	-	0.872	0.375	0.673	0.966	0.808	-	0.937	0.000	0.848	0.481	0.800	-	0.793	0.000	0.896	0.857	0.658	-	0.909	0.950
Car	64	37	1199	118	-	1418	6	69	912	80	-	1067	0	218	24	111	-	353	0	79	21	48	-	148	2986
% Car	97.0	90.2	98.6	90.1	-	97.5	100.0	98.6	98.4	95.2	-	98.2	-	93.2	96.0	99.1	-	95.1	-	91.9	87.5	96.0	-	92.5	97.2
Truck	2	4	17	13	-	36	0	1	15	4	-	20	0	16	1	1	-	18	0	7	3	2	-	12	86
% Truck	3.0	9.8	1.4	9.9	-	2.5	0.0	1.4	1.6	4.8	-	1.8	-	6.8	4.0	0.9	-	4.9	-	8.1	12.5	4.0	-	7.5	2.8
Ped	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Ped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Count Name: 1725_Obrien St &
 Spruce St_WD
 Site Code: 1725
 Start Date: 03/14/2013
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City of Tampa
 Study #7 - Spruce St
 Obrien St & Spruce St
 Weekday TMC

Turning Movement Peak Hour Data (16:45)

Start Time	Spruce St Eastbound						Spruce St Westbound						Obrien St Northbound						Obrien St Southbound						Int. Total
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	
16:45	37	7	374	33	0	451	3	17	465	22	0	507	0	222	6	35	0	263	0	24	14	45	0	83	1304
17:00	43	4	413	33	0	493	0	27	508	23	0	558	0	213	5	20	1	238	0	23	19	50	0	92	1381
17:15	30	6	461	30	0	527	2	29	593	21	1	645	0	201	4	23	0	228	0	24	11	40	1	75	1475
17:30	28	4	377	29	0	438	0	21	455	39	0	515	0	220	12	44	0	276	0	32	12	31	0	75	1304
PHF	0.802	0.750	0.881	0.947	-	0.906	0.417	0.810	0.852	0.673	-	0.862	0.000	0.964	0.563	0.693	-	0.910	0.000	0.805	0.737	0.830	-	0.883	0.926
Car	138	21	1610	118	-	1887	5	93	2000	99	-	2197	0	842	26	121	-	989	0	95	56	165	-	316	5389
% Car	100.0	100.0	99.1	94.4	-	98.8	100.0	98.9	99.0	94.3	-	98.7	-	98.4	96.3	99.2	-	98.4	-	92.2	100.0	99.4	-	97.2	98.6
Truck	0	0	15	7	-	22	0	1	21	6	-	28	0	14	1	1	-	16	0	8	0	1	-	9	75
% Truck	0.0	0.0	0.9	5.6	-	1.2	0.0	1.1	1.0	5.7	-	1.3	-	1.6	3.7	0.8	-	1.6	-	7.8	0.0	0.6	-	2.8	1.4
Ped	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	1	-	-
% Ped	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Turning Movement Data

Start Time	Laurel St Eastbound						Laurel St Westbound						Obrien St Northbound						Obrien St Southbound						Int. Total
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	
7:00	0	2	1	0	0	3	0	1	10	1	0	12	0	3	17	2	0	22	0	29	66	25	0	120	157
7:15	0	3	6	0	0	9	0	0	20	3	0	23	0	7	14	1	0	22	0	29	52	26	0	107	161
7:30	0	3	2	0	0	5	0	1	21	4	1	26	0	8	25	2	0	35	0	36	74	27	0	137	203
7:45	0	6	6	0	0	12	0	0	25	4	0	29	0	10	30	5	0	45	0	37	100	40	0	177	263
Hourly Total	0	14	15	0	0	29	0	2	76	12	1	90	0	28	86	10	0	124	0	131	292	118	0	541	784
8:00	0	5	2	3	1	10	0	3	10	5	0	18	0	7	24	4	0	35	0	42	111	27	0	180	243
8:15	0	2	3	3	0	8	0	5	14	4	0	23	0	9	28	3	0	40	0	44	95	30	1	169	240
8:30	0	1	4	1	0	6	0	4	15	11	0	30	0	10	33	2	0	45	0	52	102	34	0	188	269
8:45	0	8	1	2	0	11	0	6	31	6	0	43	0	3	33	3	0	39	0	46	106	29	0	181	274
Hourly Total	0	16	10	9	1	35	0	18	70	26	0	114	0	29	118	12	0	159	0	184	414	120	1	718	1026
9:00	0	6	4	3	0	13	0	7	24	3	0	34	0	7	24	4	0	35	0	52	69	29	0	150	232
9:15	0	7	6	0	0	13	0	4	21	7	0	32	0	2	19	3	0	24	0	27	48	20	0	95	164
9:30	0	5	8	1	0	14	0	3	13	9	0	25	0	4	16	2	0	22	0	25	44	14	0	83	144
9:45	0	7	7	3	0	17	0	0	8	11	0	19	0	0	28	5	0	33	0	23	45	18	0	86	155
Hourly Total	0	25	25	7	0	57	0	14	66	30	0	110	0	13	87	14	0	114	0	127	206	81	0	414	695
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:00	0	17	15	2	0	34	0	2	10	8	0	20	0	4	40	5	0	49	0	13	16	9	0	38	141
11:15	0	14	14	9	0	37	0	1	8	11	0	20	0	4	39	2	0	45	0	10	21	7	0	38	140
11:30	0	17	19	2	0	38	0	7	8	14	0	29	0	1	59	6	0	66	0	24	22	5	0	51	184
11:45	0	18	26	6	0	50	0	6	9	16	0	31	0	2	48	7	0	57	0	7	26	11	0	44	182
Hourly Total	0	66	74	19	0	159	0	16	35	49	0	100	0	11	186	20	0	217	0	54	85	32	0	171	647
12:00	0	26	27	12	0	65	0	5	6	21	0	32	0	10	58	5	0	73	0	12	35	6	0	53	223
12:15	0	12	19	3	0	34	0	11	10	11	0	32	0	11	64	4	0	79	0	14	29	4	0	47	192
12:30	0	17	19	7	0	43	0	7	15	8	0	30	0	4	51	2	1	57	0	10	29	16	0	55	185
12:45	0	6	14	9	0	29	0	2	20	8	0	30	0	12	49	8	0	69	0	14	50	21	0	85	213
Hourly Total	0	61	79	31	0	171	0	25	51	48	0	124	0	37	222	19	1	278	0	50	143	47	0	240	813
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15:00	0	23	11	9	0	43	0	3	6	14	0	23	0	8	60	4	0	72	0	9	29	11	0	49	187
15:15	0	14	11	5	0	30	0	1	3	14	0	18	0	1	61	2	0	64	0	11	27	6	0	44	156
15:30	0	18	24	14	0	56	0	2	4	17	0	23	1	1	91	4	0	97	0	13	38	6	0	57	233
15:45	0	22	13	5	0	40	0	1	6	20	0	27	0	3	74	5	0	82	0	9	33	5	0	47	196
Hourly Total	0	77	59	33	0	169	0	7	19	65	0	91	1	13	286	15	0	315	0	42	127	28	0	197	772
16:00	0	34	27	7	0	68	0	4	4	20	1	28	0	2	144	6	1	152	0	5	34	10	0	49	297
16:15	0	43	20	9	0	72	0	6	4	33	0	43	0	1	118	1	1	120	0	12	38	3	0	53	288
16:30	0	50	38	11	0	99	0	2	5	25	0	32	0	1	176	4	0	181	0	7	39	4	0	50	362
16:45	0	38	29	11	0	78	0	3	6	27	0	36	0	1	139	2	0	142	0	7	34	2	0	43	299
Hourly Total	0	165	114	38	0	317	0	15	19	105	1	139	0	5	577	13	2	595	0	31	145	19	0	195	1246
17:00	0	50	53	11	0	114	0	5	5	62	0	72	0	4	172	4	0	180	0	14	54	3	0	71	437
17:15	0	30	30	3	0	63	1	6	6	31	0	44	0	1	153	1	0	155	0	13	40	7	0	60	322
17:30	0	31	25	3	0	59	0	7	1	41	0	49	0	1	161	2	0	164	0	6	46	3	0	55	327
17:45	0	23	20	2	0	45	0	5	2	37	0	44	0	2	107	3	0	112	0	6	42	1	0	49	250
Hourly Total	0	134	128	19	0	281	1	23	14	171	0	209	0	8	593	10	0	611	0	39	182	14	0	235	1336
Car	0	553	484	154	-	1191	1	115	340	467	-	923	1	143	2074	107	-	2325	0	628	1563	452	-	2643	7082
% Car	-	99.1	96.0	98.7	-	97.8	100.0	95.8	97.1	92.3	-	94.5	100.0	99.3	96.2	94.7	-	96.4	-	95.4	98.1	98.5	-	97.5	96.8
Truck	0	5	20	2	-	27	0	5	10	39	-	54	0	1	81	6	-	88	0	30	31	7	-	68	237
% Truck	-	0.9	4.0	1.3	-	2.2	0.0	4.2	2.9	7.7	-	5.5	0.0	0.7	3.8	5.3	-	3.6	-	4.6	1.9	1.5	-	2.5	3.2
Ped	-	-	-	-	1	-	-	-	-	-	2	-	-	-	-	-	3	-	-	-	-	-	1	-	-
% Ped	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-



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City of Tampa
 Study #7 - Spruce St
 Obrien St & Laurel St
 Weekday TMC

Turning Movement Peak Hour Data (8:00)

Start Time	Laurel St Eastbound						Laurel St Westbound						Obrien St Northbound						Obrien St Southbound						Int. Total
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	
8:00	0	5	2	3	1	10	0	3	10	5	0	18	0	7	24	4	0	35	0	42	111	27	0	180	243
8:15	0	2	3	3	0	8	0	5	14	4	0	23	0	9	28	3	0	40	0	44	95	30	1	169	240
8:30	0	1	4	1	0	6	0	4	15	11	0	30	0	10	33	2	0	45	0	52	102	34	0	188	269
8:45	0	8	1	2	0	11	0	6	31	6	0	43	0	3	33	3	0	39	0	46	106	29	0	181	274
PHF	0.000	0.500	0.625	0.750	-	0.795	0.000	0.750	0.565	0.591	-	0.663	0.000	0.725	0.894	0.750	-	0.883	0.000	0.885	0.932	0.882	-	0.955	0.936
Car	0	16	9	9	-	34	0	17	70	20	-	107	0	29	112	11	-	152	0	182	414	119	-	715	1008
% Car	-	100.0	90.0	100.0	-	97.1	-	94.4	100.0	76.9	-	93.9	-	100.0	94.9	91.7	-	95.6	-	98.9	100.0	99.2	-	99.6	98.2
Truck	0	0	1	0	-	1	0	1	0	6	-	7	0	0	6	1	-	7	0	2	0	1	-	3	18
% Truck	-	0.0	10.0	0.0	-	2.9	-	5.6	0.0	23.1	-	6.1	-	0.0	5.1	8.3	-	4.4	-	1.1	0.0	0.8	-	0.4	1.8
Ped	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-
% Ped	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-



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City of Tampa
 Study #7 - Spruce St
 Obrien St & Laurel St
 Weekday TMC

Turning Movement Peak Hour Data (12:00)

Start Time	Laurel St Eastbound						Laurel St Westbound						Obrien St Northbound						Obrien St Southbound						Int. Total
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	
12:00	0	26	27	12	0	65	0	5	6	21	0	32	0	10	58	5	0	73	0	12	35	6	0	53	223
12:15	0	12	19	3	0	34	0	11	10	11	0	32	0	11	64	4	0	79	0	14	29	4	0	47	192
12:30	0	17	19	7	0	43	0	7	15	8	0	30	0	4	51	2	1	57	0	10	29	16	0	55	185
12:45	0	6	14	9	0	29	0	2	20	8	0	30	0	12	49	8	0	69	0	14	50	21	0	85	213
PHF	0.000	0.587	0.731	0.646	-	0.658	0.000	0.568	0.638	0.571	-	0.969	0.000	0.771	0.867	0.594	-	0.880	0.000	0.893	0.715	0.560	-	0.706	0.911
Car	0	61	77	30	-	168	0	25	50	42	-	117	0	37	215	18	-	270	0	44	137	43	-	224	779
% Car	-	100.0	97.5	96.8	-	98.2	-	100.0	98.0	87.5	-	94.4	-	100.0	96.8	94.7	-	97.1	-	88.0	95.8	91.5	-	93.3	95.8
Truck	0	0	2	1	-	3	0	0	1	6	-	7	0	0	7	1	-	8	0	6	6	4	-	16	34
% Truck	-	0.0	2.5	3.2	-	1.8	-	0.0	2.0	12.5	-	5.6	-	0.0	3.2	5.3	-	2.9	-	12.0	4.2	8.5	-	6.7	4.2
Ped	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	-
% Ped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-



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City of Tampa
 Study #7 - Spruce St
 Obrien St & Laurel St
 Weekday TMC

Turning Movement Peak Hour Data (16:30)

Start Time	Laurel St Eastbound						Laurel St Westbound						Obrien St Northbound						Obrien St Southbound						Int. Total
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	
16:30	0	50	38	11	0	99	0	2	5	25	0	32	0	1	176	4	0	181	0	7	39	4	0	50	362
16:45	0	38	29	11	0	78	0	3	6	27	0	36	0	1	139	2	0	142	0	7	34	2	0	43	299
17:00	0	50	53	11	0	114	0	5	5	62	0	72	0	4	172	4	0	180	0	14	54	3	0	71	437
17:15	0	30	30	3	0	63	1	6	6	31	0	44	0	1	153	1	0	155	0	13	40	7	0	60	322
PHF	0.000	0.840	0.708	0.818	-	0.776	0.250	0.667	0.917	0.585	-	0.639	0.000	0.438	0.909	0.688	-	0.909	0.000	0.732	0.773	0.571	-	0.789	0.812
Car	0	168	145	36	-	349	1	16	19	141	-	177	0	7	629	10	-	646	0	38	162	16	-	216	1388
% Car	-	100.0	96.7	100.0	-	98.6	100.0	100.0	86.4	97.2	-	96.2	-	100.0	98.3	90.9	-	98.2	-	92.7	97.0	100.0	-	96.4	97.7
Truck	0	0	5	0	-	5	0	0	3	4	-	7	0	0	11	1	-	12	0	3	5	0	-	8	32
% Truck	-	0.0	3.3	0.0	-	1.4	0.0	0.0	13.6	2.8	-	3.8	-	0.0	1.7	9.1	-	1.8	-	7.3	3.0	0.0	-	3.6	2.3
Ped	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Ped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Albeck Gerken, Inc.
 1911 N US Hwy 301
 Suite 410
 Tampa, Florida, United States 33619
 (813) 319-3790

Count Name: 2302_Obrien St &
 Cypress St_WD
 Site Code: 2302
 Start Date: 03/14/2013
 Page No: 1

City of Tampa
 Study #7 - Spruce St
 Obrien St & Cypress St
 Weekday TMC

Turning Movement Data

Start Time	Cypress St Eastbound						Cypress St Westbound						Parking Lot Northbound						Obrien St Southbound						Int. Total
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	
7:00	0	3	53	1	0	57	0	2	121	20	0	143	0	0	0	0	0	0	0	12	1	37	0	50	250
7:15	0	4	73	1	0	78	0	6	174	19	0	199	0	1	0	0	0	1	0	7	3	37	1	47	325
7:30	0	5	71	1	0	77	0	7	153	36	0	196	0	0	0	0	1	0	0	15	3	35	2	53	326
7:45	0	11	82	1	0	94	0	9	198	36	0	243	0	0	2	0	1	2	0	16	7	50	1	73	412
Hourly Total	0	23	279	4	0	306	0	24	646	111	0	781	0	1	2	0	2	3	0	50	14	159	4	223	1313
8:00	0	11	76	0	0	87	0	9	183	30	0	222	0	0	0	0	0	0	0	34	5	46	0	85	394
8:15	0	9	78	1	0	88	0	4	195	34	0	233	0	0	0	0	0	0	0	23	3	65	4	91	412
8:30	0	16	76	0	0	92	0	11	192	35	0	238	0	0	0	1	1	1	0	12	4	78	3	94	425
8:45	1	14	88	0	0	103	0	5	213	28	0	246	0	0	1	0	1	1	0	27	4	64	3	95	445
Hourly Total	1	50	318	1	0	370	0	29	783	127	0	939	0	0	1	1	2	2	0	96	16	253	10	365	1676
9:00	1	4	92	0	0	97	0	0	151	31	0	182	0	0	0	0	0	0	0	17	1	47	2	65	344
9:15	0	4	80	0	0	84	0	5	121	17	0	143	0	1	0	0	0	1	0	13	1	37	1	51	279
9:30	0	4	63	0	1	67	0	5	109	19	0	133	0	0	1	1	0	2	0	11	2	27	8	40	242
9:45	0	8	86	0	0	94	0	6	105	22	0	133	0	0	0	0	1	0	0	14	0	24	5	38	265
Hourly Total	1	20	321	0	1	342	0	16	486	89	0	591	0	1	1	1	1	3	0	55	4	135	16	194	1130
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:00	0	18	101	0	0	119	0	1	92	30	0	123	0	0	0	1	1	1	0	8	0	10	1	18	261
11:15	0	21	125	0	0	146	0	1	80	21	0	102	0	0	0	0	0	0	0	19	1	15	0	35	283
11:30	0	34	157	2	0	193	0	3	81	29	0	113	0	1	1	3	5	5	0	20	0	13	4	33	344
11:45	2	23	147	0	6	172	0	5	75	29	0	109	0	1	1	1	0	3	0	23	1	22	0	46	330
Hourly Total	2	96	530	2	6	630	0	10	328	109	0	447	0	2	2	5	6	9	0	70	2	60	5	132	1218
12:00	0	31	167	1	4	199	0	3	124	41	0	168	0	0	0	5	1	5	0	37	0	23	6	60	432
12:15	0	20	145	0	0	165	0	3	128	40	0	171	0	0	2	4	1	6	0	14	0	22	0	36	378
12:30	0	23	136	0	0	159	0	1	138	29	0	168	0	0	0	2	3	2	0	23	2	22	1	47	376
12:45	0	20	144	0	0	164	0	9	142	46	0	197	0	1	0	2	3	3	0	24	0	37	4	61	425
Hourly Total	0	94	592	1	4	687	0	16	532	156	0	704	0	1	2	13	8	16	0	98	2	104	11	204	1611
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15:00	0	35	140	0	0	175	0	2	90	36	0	128	0	0	1	1	0	2	0	20	1	17	1	38	343
15:15	0	30	122	0	0	152	0	4	88	29	0	121	0	1	0	3	1	4	0	14	1	20	0	35	312
15:30	0	46	149	1	0	196	0	3	93	49	0	145	0	1	1	1	1	3	0	34	0	23	1	57	401
15:45	0	41	123	0	0	164	0	3	81	32	0	116	0	1	3	0	4	4	0	18	0	16	1	34	318
Hourly Total	0	152	534	1	0	687	0	12	352	146	0	510	0	3	5	5	6	13	0	86	2	76	3	164	1374
16:00	0	85	185	0	0	270	0	2	86	49	0	137	0	1	0	2	1	3	0	20	0	24	0	44	454
16:15	0	64	142	0	2	206	0	2	73	50	0	125	0	1	3	4	6	8	0	27	2	28	4	57	396
16:30	0	106	229	0	0	335	0	0	100	48	0	148	0	1	5	5	2	11	0	29	0	24	0	53	547
16:45	0	76	170	0	0	246	0	0	92	44	0	136	0	3	3	3	2	9	0	32	0	26	0	58	449
Hourly Total	0	331	726	0	2	1057	0	4	351	191	0	546	0	6	11	14	11	31	0	108	2	102	4	212	1846
17:00	0	94	263	1	0	358	0	0	95	57	1	152	0	3	15	4	1	22	0	43	0	42	0	85	617
17:15	0	67	164	1	0	232	0	1	153	54	0	208	0	0	6	0	3	6	0	30	0	26	0	56	502
17:30	0	84	225	2	0	311	0	2	103	46	0	151	0	1	7	1	1	9	0	25	0	36	0	61	532
17:45	0	52	157	0	0	209	0	0	88	42	0	130	0	2	3	3	4	8	0	17	2	32	3	51	398
Hourly Total	0	297	809	4	0	1110	0	3	439	199	1	641	0	6	31	8	9	45	0	115	2	136	3	253	2049
Car	4	1051	4018	12	-	5085	0	112	3855	1059	-	5026	0	18	55	45	-	118	0	658	43	1008	-	1709	11938
% Car	100.0	98.9	97.8	92.3	-	98.0	-	98.2	98.4	93.9	-	97.4	-	90.0	100.0	95.7	-	96.7	-	97.1	97.7	98.3	-	97.8	97.7
Truck	0	12	91	1	-	104	0	2	62	69	-	133	0	2	0	2	-	4	0	20	1	17	-	38	279
% Truck	0.0	1.1	2.2	7.7	-	2.0	-	1.8	1.6	6.1	-	2.6	-	10.0	0.0	4.3	-	3.3	-	2.9	2.3	1.7	-	2.2	2.3
Ped	-	-	-	-	13	-	-	-	-	-	1	-	-	-	-	-	-	45	-	-	-	-	56	-	-
% Ped	-	-	-	-	100.0	-	-	-	-	100.0	-	-	-	-	-	-	-	100.0	-	-	-	-	100.0	-	-

City of Tampa
 Study #7 - Spruce St
 Obrien St & Cypress St
 Weekday TMC

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 Count Name: 2302_Obrien St &
 Cypress St_WD
 Site Code: 2302
 Start Date: 03/14/2013
 Page No: 2

Turning Movement Peak Hour Data (8:00)

Start Time	Cypress St Eastbound						Cypress St Westbound						Parking Lot Northbound						Obrien St Southbound						Int. Total
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	
8:00	0	11	76	0	0	87	0	9	183	30	0	222	0	0	0	0	0	0	0	34	5	46	0	85	394
8:15	0	9	78	1	0	88	0	4	195	34	0	233	0	0	0	0	0	0	0	23	3	65	4	91	412
8:30	0	16	76	0	0	92	0	11	192	35	0	238	0	0	0	1	1	1	0	12	4	78	3	94	425
8:45	1	14	88	0	0	103	0	5	213	28	0	246	0	0	1	0	1	1	0	27	4	64	3	95	445
PHF	0.250	0.781	0.903	0.250	-	0.898	0.000	0.659	0.919	0.907	-	0.954	0.000	0.000	0.250	0.250	-	0.500	0.000	0.706	0.800	0.811	-	0.961	0.942
Car	1	49	308	1	-	359	0	29	774	121	-	924	0	0	1	1	-	2	0	94	16	252	-	362	1647
% Car	100.0	98.0	96.9	100.0	-	97.0	-	100.0	98.9	95.3	-	98.4	-	-	100.0	100.0	-	100.0	-	97.9	100.0	99.6	-	99.2	98.3
Truck	0	1	10	0	-	11	0	0	9	6	-	15	0	0	0	0	-	0	0	2	0	1	-	3	29
% Truck	0.0	2.0	3.1	0.0	-	3.0	-	0.0	1.1	4.7	-	1.6	-	-	0.0	0.0	-	0.0	-	2.1	0.0	0.4	-	0.8	1.7
Ped	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	2	-	-	-	-	-	10	-	-
% Ped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-



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Count Name: 2302_Obrien St &
 Cypress St_WD
 Site Code: 2302
 Start Date: 03/14/2013
 Page No: 3

Turning Movement Peak Hour Data (12:00)

Start Time	Cypress St Eastbound						Cypress St Westbound						Parking Lot Northbound						Obrien St Southbound						Int. Total
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	
12:00	0	31	167	1	4	199	0	3	124	41	0	168	0	0	0	5	1	5	0	37	0	23	6	60	432
12:15	0	20	145	0	0	165	0	3	128	40	0	171	0	0	2	4	1	6	0	14	0	22	0	36	378
12:30	0	23	136	0	0	159	0	1	138	29	0	168	0	0	0	2	3	2	0	23	2	22	1	47	376
12:45	0	20	144	0	0	164	0	9	142	46	0	197	0	1	0	2	3	3	0	24	0	37	4	61	425
PHF	0.000	0.758	0.886	0.250	-	0.863	0.000	0.444	0.937	0.848	-	0.893	0.000	0.250	0.250	0.650	-	0.667	0.000	0.662	0.250	0.703	-	0.836	0.932
Car	0	93	581	1	-	675	0	16	525	149	-	690	0	1	2	13	-	16	0	96	2	101	-	199	1580
% Car	-	98.9	98.1	100.0	-	98.3	-	100.0	98.7	95.5	-	98.0	-	100.0	100.0	100.0	-	100.0	-	98.0	100.0	97.1	-	97.5	98.1
Truck	0	1	11	0	-	12	0	0	7	7	-	14	0	0	0	0	-	0	0	2	0	3	-	5	31
% Truck	-	1.1	1.9	0.0	-	1.7	-	0.0	1.3	4.5	-	2.0	-	0.0	0.0	0.0	-	0.0	-	2.0	0.0	2.9	-	2.5	1.9
Ped	-	-	-	-	4	-	-	-	-	-	0	-	-	-	-	-	8	-	-	-	-	-	11	-	-
% Ped	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

City of Tampa
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 Count Name: 2302_Obrien St &
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 Site Code: 2302
 Start Date: 03/14/2013
 Page No: 4

Turning Movement Peak Hour Data (16:30)

Start Time	Cypress St Eastbound						Cypress St Westbound						Parking Lot Northbound						Obrien St Southbound						Int. Total
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	
16:30	0	106	229	0	0	335	0	0	100	48	0	148	0	1	5	5	2	11	0	29	0	24	0	53	547
16:45	0	76	170	0	0	246	0	0	92	44	0	136	0	3	3	3	2	9	0	32	0	26	0	58	449
17:00	0	94	263	1	0	358	0	0	95	57	1	152	0	3	15	4	1	22	0	43	0	42	0	85	617
17:15	0	67	164	1	0	232	0	1	153	54	0	208	0	0	6	0	3	6	0	30	0	26	0	56	502
PHF	0.000	0.809	0.785	0.500	-	0.818	0.000	0.250	0.719	0.890	-	0.774	0.000	0.583	0.483	0.600	-	0.545	0.000	0.779	0.000	0.702	-	0.741	0.857
Car	0	341	816	2	-	1159	0	1	432	194	-	627	0	7	29	12	-	48	0	132	0	117	-	249	2083
% Car	-	99.4	98.8	100.0	-	99.0	-	100.0	98.2	95.6	-	97.4	-	100.0	100.0	100.0	-	100.0	-	98.5	-	99.2	-	98.8	98.5
Truck	0	2	10	0	-	12	0	0	8	9	-	17	0	0	0	0	-	0	0	2	0	1	-	3	32
% Truck	-	0.6	1.2	0.0	-	1.0	-	0.0	1.8	4.4	-	2.6	-	0.0	0.0	0.0	-	0.0	-	1.5	-	0.8	-	1.2	1.5
Ped	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	8	-	-	-	-	-	0	-	-
% Ped	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-

Signal Timing Information

City of Tampa Signal Timing Sheet

330669

Section ID: 1725 Computer: _____ CCH: _____ CCU: 24 Drop: 5 Shop ID: 2105

Timing Date: 8/18/2010 Phase Date: 8/18/2010 Controller: ECONOLITE

Intersection: SPRUCE / O'BRIEN

Phase Numbers	1	2	4	5	6	7	8
Direction	EBLT	WB	NB	WBLT	EB	NBLT	SB
Minimum Green	5	15	10	5	15	5	10
Walk	---	7	7	---	7	---	---
Flash Don't Walk	---	17	40	---	17	---	---
Vehicle Extension	2.0	3.0	3.0	2.0	3.0	3.5	3.0
Max. Green I	25	45	20	25	45	25	20
Max. Green II	20	75	25	20	75	40	25
Yellow Clearance	5.0	5.0	3.6	5.0	5.0	3.6	3.6
All Red Clearance	2.3	1.9	3.9	2.3	1.9	3.7	3.9
Phase Recall	---	MAX	---	---	MAX	---	---
Detector Memory	ON	---	---	ON	---	ON	---
Ped. Recall	---	---	---	---	ON	---	---
Flash Operation	RED	YEL	RED	RED	YEL	RED	RED

Special Modes and Times of Operation:

Surveillance Times:

Flash Source: _____ Flash Times: _____

C = Computer Flash T = Time Clock/Controller

Special Functions:

FDOT SOP: 9 MOD
Backup Protection(Y/N): N
FDOT FDW (Y/N): Y

Please Implement Within : 1 Week 1 Month

Comments:

MAX II: MONDAY THRU THURSDAY (06:15 - 09:00 & 15:15 - 18:30) / FRIDAY (06:15 - 09:00 & 14:45 - 18:30)
MAX I ALL OTHER TIMES

Submitted By: PRL
 Date: 8-24-10

Reviewed By: KS
 Date: 8-24-10

Approved By: BJ
 Date: 8/26/10

Signal Timing Implemented: As sent With the following revisions

Date: 10/06/10 By: MJF
 Signal Timing Not Implemented: Reasons: _____

RECEIVED AUG 27 2010

Date: _____ By: _____

CITY OF TAMPA COMPUTER PATTERN SHEET

1725

1725 - SPRUCE & O'BRIEN

ECONOLITE

Timing Date: 08/20/2010 DownLd Date: / / MSX: M CCU: 24 Drop: 5	MIN	15	5	10	5	
	YEL	5	3.6	3.6	5	
	RED	1.9	3.7	3.9	2.3	
	WLK	7		7		
	FDW	17		40		
	Min - 75	31	13	18	13	
Pat	CYC	OS	EW	NBLT	NS	EWLT
1 Am 0615 - 0900	120	1	70	15	18	17
2 Am off 0900 - 1100	130	9	49	28	23	30
3 Noon 1100 - 1400	130	9	64	18	18	30
4 Pm off 1400 - 1515	130	9	64	18	18	30
5 Pm 1515 - 1830	170	59	80	44	25	21
6 Evening 1830 - 2200	130	65	53	34	23	20
7 Late 2200 - 0615	90	76	46	13	18	13
8 Bucs - In	200	148	132	13	18	37
9 Bucs - Out	200	147	148	13	18	21
10	200	147	148	13	18	21
11	130	65	64	18	18	30
12 Off (TEST Pattern)	130	65	64	18	18	30
13 Air Show Outbound	130	65	64	18	18	30
14						
15						
16 Hurricane	240	77	186	13	21	20

T.B.C. Day Plan 1: M-Th patt 1-7 Day Plan 2: Fri patt 1-7 w/5 @ 14:45
Day Plan 3: S-Su patt 7 and patt 2 all other times

City of Tampa Signal Timing Sheet

Section ID: 1730 Computer: CCU: 24 DROP 4 MYLAR: SHOP ID 2111

Timing Date: 7/24/2007 Phase Date: 5/15/2007 Controller: PEEK 3000

Intersection: O'BRIEN and LAUREL

204316

Phase Numbers	2	4	6	8
Direction	SB	WB	NB	EB
Minimum Green	10	10	10	10
Walk	4	---	4	---
Flash Don't Walk	16	---	16	---
Vehicle Extension	3.0	3.0	3.0	3.0
Max. Green I	60	30	60	30
Max. Green II	60	30	60	30
Yellow Clearance	3.6	3.6	3.6	3.6
All Red Clearance	1.0	1.0	1.0	1.0
Phase Recall	MIN		MIN	
Detector Memory				
Ped. Recall				
Flash Operation	RED	RED	RED	RED

Special Modes and Times of Operations:

Surveillance Times:

Flash Source: Times:

C = Computer Flash T = Time Clock/Controller

Special Functions:

Please Implement Within: 1 Week [] 1 Month

Comments:

NEW TIMES AND TBC. SURVEILLANCE TIMES - S-S 24HRS, M-F 0900-1515 / 1830-0615.

Submitted By: GT
Date: 7-24-07

Reviewed By: JS
Date: 7-24-07

Approved By: [Signature]
Date: 7/24/07

Signal Timing Implemented: As Sent [] With Following Revisions

MF Date: 8/29/07

[] Signal Timing Not Implemented Reason:

Date: _____ By: _____

RECEIVED AUG 31 2007

CITY OF TAMPA COMPUTER PATTERN SHEET

1730

1730 - O'BRIEN & LAUREL

PEEK 3000

Timing Date: 07/13/2007 DownLd Date: / / MSX: M CCU: 24 Drop: 4	MIN	10	10
	YEL	3.6	3.6
	RED	1	1
	WLK	4	
	FDW	16	
	Min - 40	25	15
Pat	CYC	OS	NS EW
1 Am 0615 - 0900	120	0	80 40
2 Am off 0900 - 1100	65	0	40 25
3 Noon 1100 - 1400	65	0	40 25
4 Pm off 1400 - 1515	65	0	40 25
5 Pm 1515 - 1830	85	0	55 30
6 Evening 1830 - 2200	65	0	40 25
7 Late 2200 - 0615	45	0	29 16
8 Bucs - In	100	0	80 20
9 Bucs - Out	100	0	80 20
10			
11			
12 Off (TEST Pattern)			
13 Air Show Outbound			
14			
15			
16 Hurricane			

Initial Timings

Surveillance Times: M - F: 09:00 - 15:15 & 18:30 - 06:15
S - S 24 HRS

Additional programming for Controller T.B.C.

Day Plan 1: M-F patt. 1-7. Day Plan 2: S-S patt. 7 & patt. 2 all other times.

City of Tampa Signal Timing Sheet

320116

Section ID: 2302 Computer: CCH: CCU: 24 Drop: 3 Shop ID: 2106

Timing Date: 2/5/2010 Phase Date: 2/5/2010 Controller: ECONOLITE

Intersection: CYPRESS / O'BRIEN

Phase Numbers	1	2	4	6	8
Direction	EBLT	WB	NB	EB	SB
Minimum Green	5	10	5	10	5
Walk	---	4	4	4	4
Flash Don't Walk	---	16	19	16	19
Vehicle Extension	2.0	3.0	3.0	3.0	3.0
Max. Green I	15	35	20	35	20
Max. Green II	35	45	25	45	25
Yellow Clearance	4.0	4.0	4.0	4.0	4.0
All Red Clearance	1.0	1.0	1.0	1.0	1.0
Phase Recall	---	MAX	---	MAX	---
Detector Memory	---	---	---	---	---
Ped. Recall	---	ON	---	ON	---
Flash Operation	---	YEL	RED	YEL	RED

Special Modes and Times of Operation:

Surveillance Times:

Flash Source: Flash Times:

C = Computer Flash T = Time Clock/Controller

Special Functions:

FDOT SOP: 11 MOD

Backup Protection(Y/N): Y

FDOT FDW (Y/N): No

Please Implement Within : [] 1 Week [] 1 Month

Comments:

MAX II: MONDAY THRU THURSDAY (15:30 - 18:30) / FRIDAY (14:45 - 18:30)
MAX I ALL OTHER TIMES

Submitted By: PAC
Date: 2-5-10

Reviewed By: JS
Date: 2-16-10

Approved By: BJ
Date: 2-19-10

Signal Timing Implemented: As sent [] With the following revisions

Date: 3-4-10 By: K. Neal

Signal Timing Not Implemented: [] Reasons: _____

Date: _____ By: _____

CITY OF TAMPA COMPUTER PATTERN SHEET

2302

2302 - CYPRESS & O'BRIEN

Timing Date: 02/15/2010 DownLd Date: / / MSX: CCU: 24 Drop: 3	MIN	10	5	5	
	YEL	4	4	4	
	RED	1	1	1	
	WLK	4	4		
	FDW	16	19		
	Min - 48	26	11	11	
Pat	CYC	OS	EW	NS	EBLT
1 Am 0615 - 0900	80	64	40	25	15
2 Am off 0900 - 1100	70	9	35	20	15
3 Noon 1100 - 1300	70	9	35	20	15
4 Pm off 1300 - 1530	70	9	35	20	15
5 Pm 1530 - 1645	100	54	45	25	30
6 Evening 1830 - 2000	70	9	35	20	15
7 Late 2000 - 0615	70	9	35	20	15
	120	9	50	28	42
9	120	9	50	28	42
10 PM Hvy 1645 - 1800	120	9	50	28	42
11	70	9	35	20	15
12	70	9	35	20	15
13	70	9	35	20	15
14					
15					
16 Hurricane	70	9	35	20	15

PATT 5 RUNS M-F 1530 - 1645 AND 1800 - 1830
 PATT 10 RUNS M-F 1645 - 1800

T.B.C. Day Plan 1: M-Th patt 1-10 Day Plan 2: Fri patt 1-10 w/5 @ 14:45
 Day Plan 3: S-Su patt 7 and patt 2 all other times