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Memorandum - DRAFT

To: Steven Stancel, City of Sarasota
From: Ken Sides, P.E., PTOE
Date: February 5, 2016
Re: Fruitville Road Traffic Assessment - DRAFT

As part of the Fruitville Road project it was critical for Sam Schwartz Engineering (*Sam Schwartz*) to first undertake a traffic study to determine what space could be reallocated with the existing Fruitville Road corridor to maintain conditions for motorized travel while significantly improving the conditions for non-motorized travel.

This study analyzed existing and future (year 2038) traffic operations for the Fruitville Road corridor bounded by N. Tamiami Trail (US 41) to the east and N. Washington Boulevard (US 301) to the west for two alternatives:

- Alternative 1: Implement streetscape and traffic calming improvements while maintaining four 10.5-foot travel lanes

- Alternative 2: Reduce the cross-section from four lanes to two lanes from N. Tamiami Trail (US 41) to midway between the N. Lemon Avenue and N. Orange Avenue intersections and replace three signalized intersections with roundabouts; maintain a four-lane cross-section east of that point.

The analysis results show that these two alternatives are viable, providing different levels of improvement for all modes of travel. This memorandum describes the study methodology and compares the analysis results for the two design alternatives for Fruitville Road.

TRAFFIC VOLUMES

The Fruitville Road study corridor consists of the following intersections from west to east:

- N. Tamiami Trail (US 41)
- Cocoanut Avenue
- Central Avenue
- N. Lemon Avenue
- N. Orange Avenue
- Goodrich Avenue
- N. Osprey Avenue
- N. Links Avenue
- N. Washington Boulevard (US 301)

Existing study area traffic volumes were based on traffic data collected by the City of Sarasota. The City's traffic counts were performed in March 2015 during the weekday morning (7:00 AM to 9:00 AM), weekday midday (11:00 AM to 2:00 PM), and weekday evening (4:00 PM to 6:00 PM) peak periods and included vehicles, bicycles, and pedestrians.

Based on this data, the peak hours were determined to be the following:

- Weekday morning (AM) peak hour: 8:00 to 9:00 AM
- Weekday midday (MD) peak hour: 12:00 to 1:00 PM
- Weekday evening (PM) peak hour: 4:45 to 5:45 PM

The resulting peak hour traffic volumes are shown in **Figures 1, 2, and 3**. Peak hour bicycle volumes are shown in **Figures 4, 5, and 6**, while peak hour pedestrian volumes are shown in **Figure 7**.

Future volume projections were prepared for the 2038 design year, which represents 20 years beyond the expected construction completion date of 2018. Based on conversations with the City of Sarasota, it was determined that a 1% annual growth rate would be used for the first 10 years of growth (2015-2025) and a 0.5% annual growth rate would be used for the remaining 13 years (2025-2038) growth to reflect an expected slowing of traffic growth over time. Based on these growth rates, the total growth over the 23-year period is just under 18%.

Note that the projections were conservatively assumed to be unconstrained, meaning that traffic was assumed to grow without considering existing roadway capacity. In reality, each end of the corridor currently experiences oversaturated conditions, which limits their ability to accommodate traffic growth. The metering effects of these two constrained intersections could hold peak hour volumes steady, while the peak period would get longer as more time would be needed to accommodate the unmet demand.

Pedestrian volumes were projected at the same rate as the vehicular traffic for the 2038 No Build Condition. However, for the Build Condition, existing pedestrian traffic was doubled (i.e., grown by 100%) to reflect the anticipated higher pedestrian activity under the Build Condition with the streetscape improvements and/or road diet implemented.

TRAFFIC CHARACTERISTICS

Fruitville Road is known throughout the Sarasota area as major east-west arterial. Traffic counts confirm that intersection volumes within the project limits are dominated by east-west movements and range from 70% to 90% of the total intersection traffic volumes. Hourly volumes in the westbound direction drop significantly from N. Washington Blvd. (US 301) to N. Tamiami Trail (US 41). The largest count is the midday peak hour, and the reduction in westbound traffic from US 301 (1,510 vph) to US 41 (603 vph) is 60%. AM and PM peak hour reductions in eastbound traffic are 63% and 48% respectfully.

Eastbound traffic volumes increase from N. Tamiami Trail (US 41) to N. Washington Boulevard (US 301) during the peak periods: AM from 544 to 755, MD from 522 to 1,257, and PM from 480 to 1,417. The very large increases during the MD and PM peaks are generated mostly from the downtown area south of Fruitville Road, with 70% in the MD peak and 80% in the PM peak. The

increase generated from the Rosemary District and Gillespie Park to the north of Fruitville Road are 30% in the MD peak and 20% in the PM peak.

While the west end of the corridor (excluding US 41) experiences the lowest vehicular volumes, the west end also experiences the highest pedestrian volumes. The highest pedestrian movements are the north-south movements. Bicycle volumes are generally very low on Fruitville Road and no count logged more than 5 bikes per hour at any one location.

TRAFFIC ANALYSIS

Traffic analyses were performed using the Synchro/SimTraffic software (version 8), and the base traffic network was created using a scaled aerial photography as a background. Signal timing data was obtained from the City of Sarasota and intersection geometry was obtained from existing base mapping.

2015 Existing Conditions

Table 1 presents the 2015 Existing Conditions capacity analysis results for the study intersections. Based on the Synchro results, the majority of the analyzed intersection approaches and lane groups operate at LOS D or better (<55.0 seconds of delay) during the three analysis peak hours, and aside from the oversaturated intersections with N. Tamiami Trail (US 41) and N. Washington Boulevard (US 301), the Fruitville Road eastbound (EB) and westbound (WB) approaches generally operate at LOS A or B with a few exceptions. At Cocoanut Avenue, the Fruitville Road EB and WB approaches operate at LOS C during the PM peak hour, while at Orange Avenue, the EB and WB approaches have lane groups that operate at LOS C or D during all three peak hours.

The lane groups operating at LOS E or F are as follows:

N. Tamiami Trail (US 41) Intersection

- During the AM peak hour, the WB left-turn lane group operates at LOS E with an average delay of 76.9 seconds. The WB shared left/through lane group operates at LOS E with an average delay of 77.2 seconds. The northbound (NB) shared through/right lane group operates at LOS E with an average delay of 60.5 seconds. The southbound (SB) left-turn lane group operates at LOS E with an average delay of 69.0 seconds.
- During the MD peak hour, the WB left-turn lane group operates at LOS F with an average delay of 124.9 seconds. The WB shared left/through lane group operates at LOS F an average delay of 80.5 seconds. The SB left-turn lane group operates at LOS F with an average delay of 160.9 seconds.
- During the PM peak hour, the WB left-turn lane group and WB shared left/through lane group both operate at LOS E with an average delay of 67.8 seconds. The NB shared through/right lane group operates at LOS E with an average delay of 67.5 seconds. The SB left-turn lane group operates at LOS F with an average delay of 277.8 seconds.

Cocoanut Avenue Intersection

- During the AM peak hour, the NB shared left/through lane group operates at LOS F with an average delay of 80.6 seconds.
- During the MD peak hour, the NB shared left/through lane group operates at LOS F with an average delay of 126.4 seconds.

- During the PM peak hour, the NB shared left/through lane group operates at LOS F with an average delay of 85.4 seconds.

Central Avenue Intersection

- During the AM peak hour, the SB left-turn lane group operates at LOS E with an average delay of 78.0 seconds.
- During the MD peak hour, the NB left-turn lane group operates at LOS E with an average delay of 61.1 seconds. The SB left-turn lane group operates at LOS F with an average delay of 129.1 seconds. The SB shared through/right lane group operates at LOS E with an average delay of 55.6 seconds.

N. Lemon Avenue Intersection

- During the AM peak hour, the NB through lane group operates at LOS E with an average delay of 71.2 seconds. The SB left lane group operates at LOS E with an average delay of 65.6 seconds.
- During the MD peak hour, the NB through lane group operates at LOS E with an average delay of 71.2 seconds. The SB left lane group operates at LOS E with an average delay of 56.6 seconds.
- During the PM peak hour, the NB through lane group operates at LOS F with an average delay of 80.1 seconds.

N. Orange Avenue Intersection

- During the AM peak hour, the SB shared through/right lane group operates at LOS E with an average delay of 68.4 seconds.
- During the MD peak hour, the NB shared through/right lane group operates at LOS E with an average delay of 66.9 seconds. The SB shared through/right lane group operates at LOS E with an average delay of 55.4 seconds.
- During the PM peak hour, the NB shared through/right lane group operates at LOS E with an average delay of 75.8 seconds.

Goodrich Avenue Intersection

- During the AM peak hour, the NB shared left/through/right lane group operates at LOS E with an average delay of 64.8 seconds.
- During the MD peak hour, the NB shared left/through/right lane group operates at LOS E with an average delay of 74.4 seconds.
- During the PM peak hour, the NB shared left/through/right lane group operates at LOS F with an average delay of 88.7 seconds.

N. Osprey Avenue Intersection

- During the AM peak hour, the SB shared left/through/right lane group operates at LOS F with an average delay of 82.4 seconds.
- During the MD peak hour, the NB shared left/through/right lane group operates at LOS E with an average delay of 65.5 seconds. The SB shared left/through/right lane group operates at LOS E with an average delay of 61.9 seconds.

- During the PM peak hour, the NB shared left/through/right lane group operates at LOS E with an average delay of 69.3 seconds.

N. Links Avenue Intersection

- During the AM peak hour, the NB left lane group operates at LOS E with an average delay of 71.7 seconds. The NB right lane group operates at LOS E with an average delay of 71.9 seconds.
- During the MD peak hour, the NB left lane group operates at LOS E with an average delay of 58.1 seconds. The NB right lane group operates at LOS F with an average delay of 83.1 seconds.
- During the PM peak hour, the NB right lane group operates at LOS F with an average delay of 86.4 seconds.

N. Washington Boulevard (US 301) Intersection

- During the AM peak hour, the EB shared through/right lane group operates at LOS E with an average delay of 56.5 seconds. The WB through lane group operates at LOS E with an average delay of 62.0 seconds. The NB shared through/right lane group operates at LOS E with an average delay of 60.2 seconds. The SB left lane group operates at LOS E with an average delay of 68.3 seconds. The SB through lane group operates at LOS E with an average delay of 55.9 seconds.
- During the MD peak hour, the EB shared through/right lane group operates at LOS F with an average delay of 100.6 seconds. The WB left lane group operates at LOS E with an average delay of 61.9 seconds. The WB through lane group operates at LOS E with an average delay of 62.4 seconds. The NB shared through/right lane group operates at LOS E with an average delay of 78.5 seconds. The SB left lane group operates at LOS F with an average delay of 104.1 seconds. The overall intersection operates at LOS E with an average delay of 67.9 seconds.
- During the PM peak hour, the EB left lane group operates at LOS E with an average delay of 72.7 seconds. The EB shared through/right lane group operates at LOS F with an average delay of 115.4 seconds. The WB through lane group operates at LOS E with an average delay of 65.8 seconds. The NB shared through/right lane group operates at LOS F with an average delay of 92.8 seconds. The SB left lane group operates at LOS F with an average delay of 175.0 seconds. The overall intersection operates at LOS E with an average delay of 79.4 seconds.

Summary

As can be expected for a major east-west arterial, east-west levels of service along the corridor are very good except for the constrained intersections of Fruitville Road at N. Tamiami Trail (US 41) and Fruitville Road at N. Washington Boulevard (US 301), with most of the green time allocated to the Fruitville Road signal phases. The trade-off in prioritizing Fruitville Road is that north-south levels of service for the minor street approaches are generally poor.

2038 No Build Conditions

The No Build Conditions reflect future traffic conditions without any improvements along Fruitville Road. The 2038 volumes were projected assuming unconstrained growth between

2015 and 2038 per the annual growth rates confirmed by the City of Sarasota. The resulting 2038 No Build peak hours traffic volumes are shown in **Figures 8, 9, and 10**.

Table 2 presents the No Build condition results for the study intersections. Due to the additional growth, some lane groups would operate at a worse LOS than existing conditions, and the N. Tamiami Trail (US 41) and N. Washington Boulevard (US 301) intersections would continue to have several lane groups operating at LOS E and F. At the other intersections, additional Fruitville Road EB and WB approaches would operate at LOS C when compared to the Existing Condition, and the Fruitville Road WB through movement at N. Orange Avenue would degrade from LOS D to LOS E during the PM peak hour.

Comparison of Alternatives (2038 Build Conditions)

The 2038 Build Condition considers two alternatives that modify the cross-section of Fruitville Road:

- Alternative 1: Implement streetscape and traffic calming improvements while maintaining four 10-foot travel lanes.

- Alternative 2: Reduce cross-section from four lanes to two lanes between N. Tamiami Trail (US 41) and N. Lemon Avenue and replace three signalized intersections with roundabouts; maintain four-lane cross-section east of N. Lemon Avenue.

Alternative 1
For Alternative 1, the modifications within the right-of-way will not have any effect on the number or width of the travel lanes; therefore, the Synchro capacity analysis results for Alternative 1 are generally the same as the 2038 No Build Condition. The slight increases in delay are due to the higher projected pedestrian volumes (100% growth for Alternative 1 compared to approximately 18% growth for the No Build Condition), but in general, overall LOS results are unaffected by the implementation of Alternative 1.

Alternative 2
For Alternative 2, the Fruitville Road cross-section would be reduced from four lanes to two lanes from N. Tamiami Trail (US 41) to midway between the N. Lemon Avenue and N. Orange Avenue intersections, with the intersections at Cocoanut Avenue, Central Avenue, and N. Lemon Avenue redesigned to be single-lane roundabouts. The traffic analysis results for the roundabout intersections were performed using the SIDRA software, which provides more accurate results for roundabouts than Synchro, and the analysis assumptions for the roundabouts are detailed in the memorandum included in Appendix A. The other intersections, which would remain signalized, would have the same geometry as Alternative 1 and therefore the same analysis results (from Synchro).

The analysis results for Alternatives 1 and 2 are shown in **Tables 3 and 4**, respectively.

Travel Times

Corridor travel times for the Existing and No Build conditions were estimated by assuming an average free flow speed of 35 miles per hour (mph) and then adding in the average delays based on the Synchro and SIDRA traffic analysis results. For the two alternatives, a reduced free flow speed of 30 mph was used for the four-lane segments to reflect the expected traffic calming effects and increased pedestrian activity for the modified roadway. In Alternative 2, the free flow speed was further reduced to 25 mph along the two-lane segment between N. Tamiami Trail (US 41) and N. Orange Avenue to reflect the traffic calming effects of the reduced

cross-section as well as the horizontal deflections associated with the implementation of roundabouts. A comparison of the calculated travel times for each scenario and peak hour are shown in **Table 5**.

Table 5 - Travel Time Comparison (min:sec)

Direction	Peak Hour	2015 Existing	2038 No Build	2038 Alt 1	2038 Alt 2
Eastbound	AM Peak	04:45	06:46	07:03	06:12
	MD Peak	07:11	08:50	09:09	06:50
	PM Peak	09:53	12:24	12:41	08:27
Westbound	AM Peak	04:38	04:59	04:59	05:14
	MD Peak	05:27	06:34	06:41	06:41
	PM Peak	05:54	07:03	07:03	06:35

The estimates show that both Alternatives 1 and 2 would provide similar corridor travel times in the westbound direction, while Alternative 2 would provide significantly lower travel times in the eastbound direction. The key difference is that while travel speeds would generally be lower along the two-lane segment, the three roundabouts would provide significantly reduced intersection delays when compared to the signalized intersections.

Most importantly, both Alternatives 1 and 2 provide improved travel times when compared to the No Build Condition. Alternative 1 provides a slight increase for eastbound traffic and no significant change for westbound traffic, while Alternative 2 provides a significant decrease for eastbound traffic and no significant change for westbound traffic. Therefore, the results show that implementing either alternative would provide traffic calming and safety benefits for Fruitville Road without causing additional travel delays through the corridor.

CONCLUSION

The traffic analysis results show the following for the 2038 Build Condition Alternative 2:

- The single lane roundabout intersections of Cocoanut Avenue at Fruitville Road; Central Avenue and Fruitville Road; and N. Lemon Avenue and Fruitville Road perform significantly better in overall LOS for both east-west and north-south movements than the 2038 No Build and 2038 Alternative 1 (Build) Conditions.

- Travel time along the corridor is significantly improved in the eastbound direction while there is no significant change in the westbound direction.

TABLE 1
2015 Existing Conditions: Capacity Analysis Results
Synchro 8 Results

Intersection & Approach	Weekday AM				Weekday MD				Weekday PM			
	Lane Group	LOS	Delay (sec)	v/c Ratio	Lane Group	LOS	Delay (sec)	v/c Ratio	Lane Group	LOS	Delay (sec)	v/c Ratio
US Route 41 N. Tamiami Trail and Fruitville Road												
Eastbound	LT	currently closed			LT	currently closed			LT	currently closed		
	R				R				R			
Westbound	L	E	76.9	0.74	L	F	124.9	1.01	L	E	67.8	0.58
	LT	E	77.2	0.74	LT	F	80.5	0.76	LT	E	67.8	0.58
	R	A	8.9	0.45	R	B	10.0	0.51	R	C	28.1	0.71
Northbound	L	currently closed			L	currently closed			L	currently closed		
	TR	E	60.5	0.95	TR	D	48.5	0.95	TR	E	67.5	1.05
Southbound	L	E	69.0	0.87	L	F	160.9	1.16	L	F	277.8	1.45
	T	B	17.1	0.70	T	C	20.1	0.70	T	B	14.9	0.64
	R	currently closed			R	currently closed			R	currently closed		
Overall Intersection		**D**	**42.6**		**Int.**	**D**	**47.3**		**Int.**	**D**	**54.2**	
Cocoanut Avenue and Fruitville Road												
Eastbound	L	A	7.3	0.02	L	A	7.0	0.03	L	B	13.0	0.03
	TR	B	13.8	0.31	TR	B	15.2	0.31	TR	C	21.8	0.31
Westbound	L	A	5.0	0.18	L	A	6.7	0.30	L	B	19.1	0.23
	TR	A	5.5	0.32	TR	A	8.8	0.38	TR	C	25.3	0.40
Northbound	LT	F	80.6	0.58	LT	F	126.4	0.97	LT	F	85.4	0.81
	R	A	8.0	0.45	R	B	15.9	0.61	R	A	9.8	0.55
Southbound	L	D	49.3	0.32	L	D	52.1	0.50	L	D	48.1	0.44
	TR	D	51.7	0.48	TR	D	46.8	0.38	TR	D	43.0	0.27
Overall Intersection		**B**	**17.2**		**Int.**	**C**	**24.1**		**Int.**	**C**	**30.3**	
Central Avenue and Fruitville Road												
Eastbound	L	A	4.9	0.03	L	A	4.2	0.09	L	A	3.9	0.13
	TR	A	4.7	0.28	TR	A	4.3	0.34	TR	A	3.7	0.38
Westbound	L	A	2.4	0.18	L	A	7.2	0.30	L	A	9.4	0.17
	TR	A	1.7	0.36	TR	A	4.9	0.35	TR	A	9.8	0.36
Northbound	L	D	51.4	0.18	L	E	61.1	0.43	L	C	30.8	0.28
	TR	D	38.3	0.27	TR	D	47.1	0.61	TR	C	31.4	0.67
Southbound	L	E	78.0	0.75	L	F	129.1	0.94	L	D	45.7	0.57
	TR	D	42.2	0.39	TR	E	55.6	0.50	TR	C	22.9	0.28
Overall Intersection		**B**	**12.7**		**Int.**	**B**	**17.0**		**Int.**	**B**	**11.9**	
N. Lemon Avenue and Fruitville Road												
Eastbound	L	A	4.4	0.04	L	A	5.7	0.09	L	B	10.4	0.26
	TR	B	11.1	0.38	TR	B	12.7	0.43	TR	B	17.0	0.46
Westbound	L	A	2.0	0.26	L	A	4.7	0.29	L	B	10.8	0.26
	TR	A	1.5	0.40	TR	A	5.1	0.42	TR	B	15.5	0.46
Northbound	L	D	51.9	0.17	L	D	53.7	0.39	L	D	54.8	0.36
	T	E	71.2	0.33	T	E	71.2	0.48	T	F	80.1	0.68
	R	A	3.8	0.29	R	B	19.5	0.59	R	B	13.5	0.60
Southbound	L	E	65.6	0.55	L	E	56.6	0.45	L	D	54.5	0.36
	TR	D	41.9	0.35	TR	D	49.7	0.36	TR	D	49.6	0.16
Overall Intersection		**B**	**11.1**		**Int.**	**B**	**14.8**		**Int.**	**C**	**22.3**	
N. Orange Avenue and Fruitville Road												
Eastbound	L	B	13.3	0.10	L	A	9.3	0.19	L	B	12.8	0.35
	TR	B	16.6	0.53	TR	B	17.3	0.59	TR	C	24.8	0.60
Westbound	L	C	34.2	0.70	L	C	32.8	0.59	L	C	33.3	0.41
	TR	A	9.3	0.56	TR	D	37.2	0.60	TR	D	47.1	0.60
Northbound	L	C	32.3	0.22	L	D	36.5	0.34	L	D	36.9	0.32
	TR	D	43.5	0.39	TR	E	66.9	0.84	TR	E	75.8	0.91
Southbound	L	C	33.5	0.24	L	D	42.6	0.51	L	D	43.9	0.48
	TR	E	68.4	0.84	TR	E	55.4	0.63	TR	D	46.6	0.38
Overall Intersection		**C**	**23.8**		**Int.**	**C**	**34.4**		**Int.**	**D**	**42.5**	
Goodrich Avenue and Fruitville Road												
Eastbound	L	A	0.5	0.02	L	A	1.4	0.04	L	A	1.2	0.12
	TR	A	0.5	0.31	TR	A	1.5	0.42	TR	A	2.4	0.40
Westbound	L	A	5.7	0.16	L	A	7.1	0.20	L	A	1.8	0.20
	TR	A	8.8	0.39	TR	A	6.1	0.40	TR	A	1.0	0.37
Northbound	LTR	E	64.8	0.13	LTR	E	74.4	0.54	LTR	F	88.7	0.66
Southbound	LTR	D	52.4	0.37	LTR	D	46.7	0.20	LTR	D	52.9	0.20
Overall Intersection		**A**	**6.3**		**Int.**	**A**	**6.2**		**Int.**	**A**	**6.1**	
N. Osprey Avenue and Fruitville Road												
Eastbound	L	A	6.2	0.04	L	A	4.8	0.09	L	A	6.6	0.11
	T	A	5.0	0.34	T	B	10.6	0.49	T	B	11.1	0.50
Westbound	L	B	15.1	0.39	L	B	14.5	0.45	L	B	12.7	0.25
	T	B	12.1	0.47	T	A	8.1	0.51	T	B	10.7	0.47
Northbound	LTR	D	54.7	0.64	LTR	E	65.5	0.85	LTR	E	69.3	0.86
Southbound	LTR	F	82.4	0.82	LTR	E	61.9	0.66	LTR	D	38.0	0.26
Overall Intersection		**B**	**17.0**		**Int.**	**B**	**17.4**		**Int.**	**B**	**19.6**	
N. Links Avenue and Fruitville Road												
Eastbound	LTR	A	6.7	0.34	LTR	A	6.8	0.50	LTR	B	17.5	0.55
Westbound	L	A	7.9	0.52	L	A	9.7	0.37	L	B	17.5	0.37
	T	A	3.3	0.45	T	A	6.1	0.44	T	B	11.7	0.44
Northbound	L	E	71.7	0.37	L	E	58.1	0.37	L	D	51.5	0.23
	R	E	71.9	0.34	R	F	83.1	0.77	R	F	86.4	0.87
Overall Intersection		**A**	**7.0**		**Int.**	**B**	**12.0**		**Int.**	**C**	**23.2**	
N. Washington Boulevard and Fruitville Road												
Eastbound	L	D	45.2	0.69	L	D	52.5	0.79	L	E	72.7	0.93
	TR	E	56.5	0.73	TR	F	100.6	0.95	TR	F	115.4	0.98
Westbound	L	C	34.8	0.56	L	E	61.9	0.83	L	D	43.1	0.64
	T	E	62.0	0.88	T	E	62.4	0.86	T	E	65.8	0.86
	R	B	16.4	0.51	R	C	21.0	0.50	R	C	30.4	0.56
Northbound	L	D	48.1	0.62	L	D	39.2	0.54	L	D	36.8	0.50
	TR	E	60.2	0.79	TR	E	78.5	0.97	TR	F	92.8	1.04
Southbound	L	E	68.3	0.91	L	F	104.1	0.98	L	F	175.0	1.22
	T	E	55.9	0.85	T	D	54.8	0.74	T	D	50.1	0.68
	R	C	25.6	0.50	R	B	12.8	0.34	R	B	10.3	0.28
Overall Intersection		**D**	**52.4**		**Int.**	**E**	**67.9**		**Int.**	**E**	**79.4**	

TABLE 2
2038 No Build Conditions: Capacity Analysis Results
Synchro 8 Results

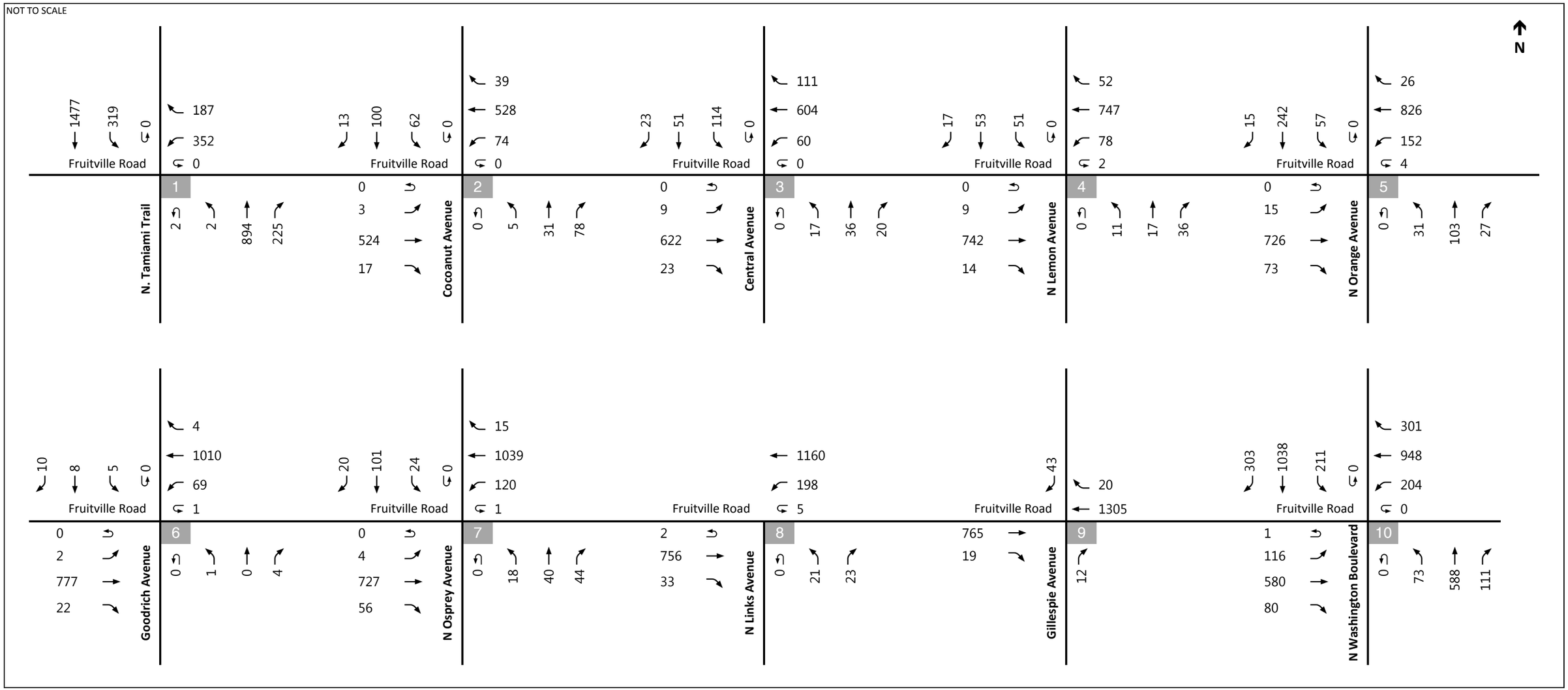
Intersection & Approach	Weekday AM				Weekday MD				Weekday PM			
	Lane Group	LOS	Delay (sec)	v/c Ratio	Lane Group	LOS	Delay (sec)	v/c Ratio	Lane Group	LOS	Delay (sec)	v/c Ratio
US Route 41 N. Tamiami Trail and Fruitville Road												
Eastbound	LT	currently closed			LT	currently closed			LT	currently closed		
	R				R				R			
Westbound	L	E	68.5	0.71	L	F	177.0	1.20	L	E	72.7	0.68
	LT	E	68.5	0.71	LT	F	94.5	0.90	LT	E	72.7	0.68
	R	A	7.8	0.45	R	B	14.2	0.58	R	D	44.9	0.85
Northbound	L	currently closed			L	currently closed			L	currently closed		
	TR	F	112.8	1.13	TR	F	97.4	1.12	TR	F	143.6	1.24
Southbound	L	F	172.8	1.23	L	F	235.9	1.37	L	F	387.6	1.72
	T	C	30.0	0.88	T	C	25.5	0.83	T	B	18.2	0.75
	R	currently closed			R	currently closed			R	currently closed		
Overall Intersection		**E**	**73.5**		**Int.**	**E**	**76.0**		**Int.**	**F**	**95.9**	
Cocoanut Avenue and Fruitville Road												
Eastbound	L	A	7.8	0.03	L	A	7.2	0.04	L	B	15.2	0.05
	TR	B	15.7	0.37	TR	B	16.1	0.37	TR	C	25.6	0.39
Westbound	L	A	6.9	0.24	L	A	7.2	0.39	L	C	21.7	0.32
	TR	A	8.0	0.39	TR	A	8.8	0.44	TR	C	30.3	0.49
Northbound	LT	F	81.6	0.62	LT	F	184.3	1.19	LT	F	82.9	0.84
	R	B	11.9	0.51	R	B	16.4	0.67	R	B	13.0	0.59
Southbound	L	D	48.8	0.36	L	E	61.1	0.66	L	D	46.4	0.50
	TR	D	52.5	0.53	TR	D	48.7	0.46	TR	D	40.6	0.29
Overall Intersection		**B**	**19.2**		**Int.**	**C**	**29.1**		**Int.**	**C**	**33.0**	
Central Avenue and Fruitville Road												
Eastbound	L	A	5.8	0.05	L	A	5.9	0.13	L	A	5.2	0.20
	TR	A	5.7	0.34	TR	A	5.8	0.41	TR	A	4.4	0.46
Westbound	L	A	3.5	0.25	L	B	12.1	0.44	L	B	11.9	0.26
	TR	A	2.4	0.44	TR	A	7.7	0.43	TR	B	11.9	0.44
Northbound	L	D	49.1	0.20	L	E	58.8	0.45	L	C	28.9	0.30
	TR	D	37.8	0.28	TR	D	47.4	0.63	TR	C	32.0	0.70
Southbound	L	E	77.6	0.78	L	F	144.4	1.03	L	D	52.1	0.67
	TR	D	42.7	0.41	TR	D	52.7	0.50	TR	C	21.5	0.29
Overall Intersection		**B**	**13.3**		**Int.**	**B**	**19.4**		**Int.**	**B**	**13.2**	
N. Lemon Avenue and Fruitville Road												
Eastbound	L	A	4.4	0.06	L	A	5.8	0.13	L	B	13.5	0.38
	TR	B	11.7	0.45	TR	B	14.6	0.53	TR	C	20.2	0.56
Westbound	L	A	4.6	0.36	L	B	12.4	0.41	L	B	17.1	0.38
	TR	A	1.7	0.49	TR	A	8.3	0.53	TR	C	20.0	0.57
Northbound	L	D	52.0	0.20	L	D	52.6	0.40	L	D	53.0	0.38
	T	E	72.0	0.37	T	E	72.2	0.52	T	F	84.0	0.76
	R	A	4.9	0.34	R	B	18.7	0.62	R	C	30.3	0.74
Southbound	L	E	69.8	0.62	L	E	55.7	0.47	L	D	54.4	0.43
	TR	D	42.0	0.39	TR	D	47.7	0.31	TR	D	47.6	0.16
Overall Intersection		**B**	**11.8**		**Int.**	**B**	**16.9**		**Int.**	**C**	**27.0**	
N. Orange Avenue and Fruitville Road												
Eastbound	L	B	17.6	0.16	L	B	14.5	0.30	L	C	31.4	0.56
	TR	C	22.1	0.66	TR	C	20.5	0.74	TR	C	32.9	0.77
Westbound	L	F	126.2	1.11	L	E	74.6	0.92	L	D	54.7	0.65
	TR	B	14.0	0.71	TR	D	42.1	0.75	TR	E	63.0	0.77
Northbound	L	C	31.4	0.27	L	D	36.4	0.40	L	D	35.5	0.35
	TR	D	43.6	0.45	TR	E	70.8	0.89	TR	F	80.7	0.96
Southbound	L	C	32.2	0.29	L	D	47.3	0.62	L	D	53.9	0.63
	TR	E	70.3	0.89	TR	D	54.7	0.67	TR	D	44.4	0.40
Overall Intersection		**C**	**34.0**		**Int.**	**D**	**39.9**		**Int.**	**D**	**52.5**	
Goodrich Avenue and Fruitville Road												
Eastbound	L	A	0.5	0.02	L	A	1.5	0.05	L	A	1.8	0.18
	TR	A	0.6	0.36	TR	A	1.6	0.49	TR	A	2.2	0.47
Westbound	L	A	5.2	0.22	L	B	12.7	0.31	L	A	3.0	0.30
	TR	A	9.4	0.46	TR	B	10.3	0.48	TR	A	1.2	0.44
Northbound	LTR	E	64.7	0.15	LTR	E	75.5	0.58	LTR	F	88.5	0.70
Southbound	LTR	D	52.6	0.42	LTR	D	46.1	0.25	LTR	D	50.2	0.23
Overall Intersection		**A**	**6.6**		**Int.**	**A**	**8.3**		**Int.**	**A**	**6.1**	
N. Osprey Avenue and Fruitville Road												
Eastbound	L	B	11.0	0.07	L	A	8.6	0.15	L	B	10.7	0.19
	T	A	8.7	0.42	T	B	14.8	0.61	T	B	16.9	0.63
Westbound	L	C	26.8	0.58	L	D	50.2	0.81	L	C	22.7	0.46
	T	B	16.7	0.57	T	B	11.6	0.63	T	B	13.5	0.60
Northbound	LTR	E	56.9	0.69	LTR	E	66.3	0.88	LTR	E	66.9	0.88
Southbound	LTR	F	84.0	0.86	LTR	E	56.3	0.65	LTR	D	35.3	0.26
Overall Intersection		**C**	**21.4**		**Int.**	**C**	**21.7**		**Int.**	**C**	**22.9**	
N. Links Avenue and Fruitville Road												
Eastbound	LTR	A	5.9	0.41	LTR	A	6.5	0.60	LTR	B	19.3	0.68
Westbound	L	C	21.6	0.75	L	C	22.4	0.59	L	D	49.0	0.69
	T	A	4.2	0.53	T	A	7.5	0.53	T	B	15.1	0.53
Northbound	L	E	72.4	0.41	L	E	58.1	0.40	L	D	49.6	0.25
	R	E	72.8	0.38	R	F	89.8	0.85	R	F	89.5	0.92
Overall Intersection		**A**	**8.3**		**Int.**	**B**	**13.2**		**Int.**	**C**	**26.4**	
N. Washington Boulevard and Fruitville Road												
Eastbound	L	E	65.8	0.85	L	E	73.8	0.91	L	F	123.1	1.11
	TR	E	61.8	0.82	TR	F	113.3	1.11	TR	F	133.2	1.17
Westbound	L	D	42.0	0.73	L	F	84.9	0.96	L	D	51.2	0.74
	T	E	75.5	0.98	T	F	86.6	1.02	T	F	90.2	1.02
	R	C	24.4	0.59	R	C	29.6	0.60	R	D	39.4	0.68
Northbound	L	F	98.7	0.92	L	E	72.9	0.82	L	E	57.2	0.75
	TR	E	77.7	0.96	TR	F	126.2	1.14	TR	F	157.5	1.23
Southbound	L	F	214.3	1.33	L	F	169.7	1.20	L	F	256.1	1.43
	T	F	87.8	1.04	T	E	66.0	0.90	T	E	55.7	0.80
	R	C	33.4	0.62	R	B	18.4	0.42	R	B	14.4	0.34
Overall Intersection		**E**	**76.0**		**Int.**	**F**	**91.8**		**Int.**	**F**	**110.0**	

TABLE 3
2038 Alternative 1 (Build) Conditions: Capacity Analysis Results
Synchro 8 Results

Intersection & Approach	Weekday AM				Weekday MD				Weekday PM			
	Lane Group	LOS	Delay (sec)	v/c Ratio	Lane Group	LOS	Delay (sec)	v/c Ratio	Lane Group	LOS	Delay (sec)	v/c Ratio
US Route 41 N. Tamiami Trail and Fruitville Road												
Eastbound	LT	currently closed			LT	currently closed			LT	currently closed		
	R				R				R			
Westbound	L	E	68.5	0.71	L	F	194.8	1.25	L	E	72.7	0.68
	LT	E	68.5	0.71	LT	F	94.5	0.90	LT	E	72.7	0.68
	R	A	7.8	0.45	R	B	14.2	0.58	R	D	44.9	0.85
Northbound	L	currently closed			L	currently closed			L	currently closed		
	TR	F	113.8	1.13	TR	F	98.4	1.12	TR	F	144.2	1.24
Southbound	L	F	172.8	1.23	L	F	235.9	1.37	L	F	387.6	1.72
	T	C	30.0	0.88	T	C	25.5	0.83	T	B	18.2	0.75
	R	currently closed			R	currently closed			R	currently closed		
Overall Intersection		**E**	**73.8**		**Int.**	**E**	**77.4**		**Int.**	**F**	**96.1**	
Cocoanut Avenue and Fruitville Road												
Eastbound	L	A	7.8	0.03	L	A	7.2	0.04	L	B	15.2	0.05
	TR	B	15.7	0.37	TR	B	16.1	0.37	TR	C	25.7	0.39
Westbound	L	A	7.0	0.24	L	A	7.3	0.39	L	C	21.9	0.32
	TR	A	8.0	0.39	TR	A	8.7	0.44	TR	C	30.4	0.49
Northbound	LT	F	81.7	0.63	LT	F	184.3	1.19	LT	F	83.2	0.84
	R	B	11.9	0.51	R	B	17.0	0.68	R	B	14.3	0.61
Southbound	L	D	48.8	0.36	L	E	61.4	0.66	L	D	46.2	0.49
	TR	D	52.5	0.53	TR	D	48.7	0.46	TR	D	40.5	0.29
Overall Intersection		**B**	**19.2**		**Int.**	**C**	**29.2**		**Int.**	**C**	**33.3**	
Central Avenue and Fruitville Road												
Eastbound	L	A	5.9	0.05	L	A	6.1	0.13	L	A	5.2	0.20
	TR	A	5.7	0.34	TR	A	5.9	0.41	TR	A	4.4	0.46
Westbound	L	A	3.6	0.25	L	B	12.3	0.45	L	B	12.0	0.27
	TR	A	2.5	0.44	TR	A	7.9	0.43	TR	B	12.0	0.44
Northbound	L	D	48.8	0.20	L	E	58.1	0.45	L	C	29.0	0.30
	TR	D	37.6	0.28	TR	D	47.2	0.63	TR	C	32.0	0.70
Southbound	L	E	77.5	0.78	L	F	141.9	1.02	L	D	52.1	0.67
	TR	D	42.4	0.41	TR	D	52.1	0.49	TR	C	21.4	0.29
Overall Intersection		**B**	**13.3**		**Int.**	**B**	**19.3**		**Int.**	**B**	**13.3**	
N. Lemon Avenue and Fruitville Road												
Eastbound	L	A	4.4	0.06	L	A	5.9	0.13	L	B	13.4	0.38
	TR	B	11.6	0.45	TR	B	14.6	0.53	TR	C	20.3	0.56
Westbound	L	A	4.6	0.36	L	B	12.8	0.41	L	B	17.1	0.38
	TR	A	1.7	0.49	TR	A	8.4	0.53	TR	C	20.1	0.57
Northbound	L	D	52.1	0.20	L	D	52.3	0.40	L	D	53.1	0.38
	T	E	72.0	0.37	T	E	71.2	0.51	T	F	84.0	0.76
	R	A	5.0	0.34	R	C	24.5	0.66	R	C	32.9	0.76
Southbound	L	E	70.3	0.63	L	E	55.7	0.47	L	D	54.7	0.44
	TR	D	42.1	0.39	TR	D	47.4	0.31	TR	D	47.6	0.16
Overall Intersection		**B**	**11.8**		**Int.**	**B**	**17.3**		**Int.**	**C**	**27.2**	
N. Orange Avenue and Fruitville Road												
Eastbound	L	B	17.7	0.16	L	B	14.7	0.30	L	C	31.5	0.56
	TR	C	22.2	0.67	TR	C	20.7	0.74	TR	C	33.2	0.77
Westbound	L	F	126.2	1.11	L	E	75.4	0.92	L	D	54.8	0.65
	TR	B	14.0	0.71	TR	D	42.3	0.75	TR	E	63.3	0.78
Northbound	L	C	31.4	0.27	L	D	36.4	0.40	L	D	35.4	0.35
	TR	D	43.6	0.45	TR	E	71.2	0.89	TR	F	81.2	0.96
Southbound	L	C	32.3	0.29	L	D	47.0	0.61	L	D	53.1	0.63
	TR	E	70.5	0.89	TR	D	54.5	0.66	TR	D	44.3	0.40
Overall Intersection		**C**	**34.1**		**Int.**	**D**	**40.1**		**Int.**	**D**	**52.7**	
Goodrich Avenue and Fruitville Road												
Eastbound	L	A	0.5	0.02	L	A	1.5	0.05	L	A	1.8	0.18
	TR	A	0.6	0.36	TR	A	1.6	0.49	TR	A	2.2	0.47
Westbound	L	A	5.1	0.22	L	B	12.8	0.31	L	A	3.0	0.30
	TR	A	9.4	0.46	TR	B	10.4	0.48	TR	A	1.2	0.44
Northbound	LTR	E	64.7	0.15	LTR	E	75.4	0.58	LTR	F	88.8	0.70
Southbound	LTR	D	52.6	0.42	LTR	D	46.1	0.25	LTR	D	50.1	0.23
Overall Intersection		**A**	**6.6**		**Int.**	**A**	**8.4**		**Int.**	**A**	**6.1**	
N. Osprey Avenue and Fruitville Road												
Eastbound	L	B	11.0	0.07	L	A	8.7	0.15	L	B	10.7	0.19
	T	A	8.7	0.42	T	B	15.0	0.62	T	B	17.0	0.63
Westbound	L	C	26.8	0.58	L	D	51.6	0.81	L	C	22.8	0.46
	T	B	16.7	0.57	T	B	11.8	0.64	T	B	13.5	0.60
Northbound	LTR	E	56.9	0.69	LTR	E	66.4	0.88	LTR	E	66.8	0.88
Southbound	LTR	F	83.9	0.86	LTR	E	55.7	0.65	LTR	D	35.2	0.26
Overall Intersection		**C**	**21.4**		**Int.**	**C**	**21.9**		**Int.**	**C**	**22.9**	
N. Links Avenue and Fruitville Road												
Eastbound	LTR	A	5.9	0.41	LTR	A	6.4	0.60	LTR	B	19.2	0.68
Westbound	L	C	21.6	0.75	L	C	22.4	0.59	L	D	49.0	0.69
	T	A	4.2	0.53	T	A	7.5	0.53	T	B	15.1	0.53
Northbound	L	E	72.4	0.41	L	E	58.1	0.40	L	D	49.6	0.25
	R	E	72.8	0.38	R	F	89.8	0.85	R	F	89.5	0.92
Overall Intersection		**A**	**8.3**		**Int.**	**B**	**13.2**		**Int.**	**C**	**26.3**	
N. Washington Boulevard and Fruitville Road												
Eastbound	L	E	65.8	0.85	L	E	73.8	0.91	L	F	123.1	1.11
	TR	E	61.7	0.82	TR	F	114.3	1.11	TR	F	133.2	1.17
Westbound	L	D	42.0	0.73	L	F	84.9	0.96	L	D	51.2	0.74
	T	E	75.5	0.98	T	F	86.6	1.02	T	F	90.2	1.02
	R	C	24.7	0.59	R	C	29.7	0.60	R	D	39.4	0.68
Northbound	L	F	98.7	0.92	L	E	72.9	0.82	L	E	57.2	0.75
	TR	E	78.2	0.96	TR	F	127.4	1.14	TR	F	157.9	1.23
Southbound	L	F	214.3	1.33	L	F	169.7	1.20	L	F	256.1	1.43
	T	F	87.8	1.04	T	E	66.0	0.90	T	E	55.7	0.80
	R	C	33.6	0.62	R	C	23.6	0.44	R	B	14.5	0.34
Overall Intersection		**E**	**76.1**		**Int.**	**F**	**92.4**		**Int.**	**F**	**110.1**	

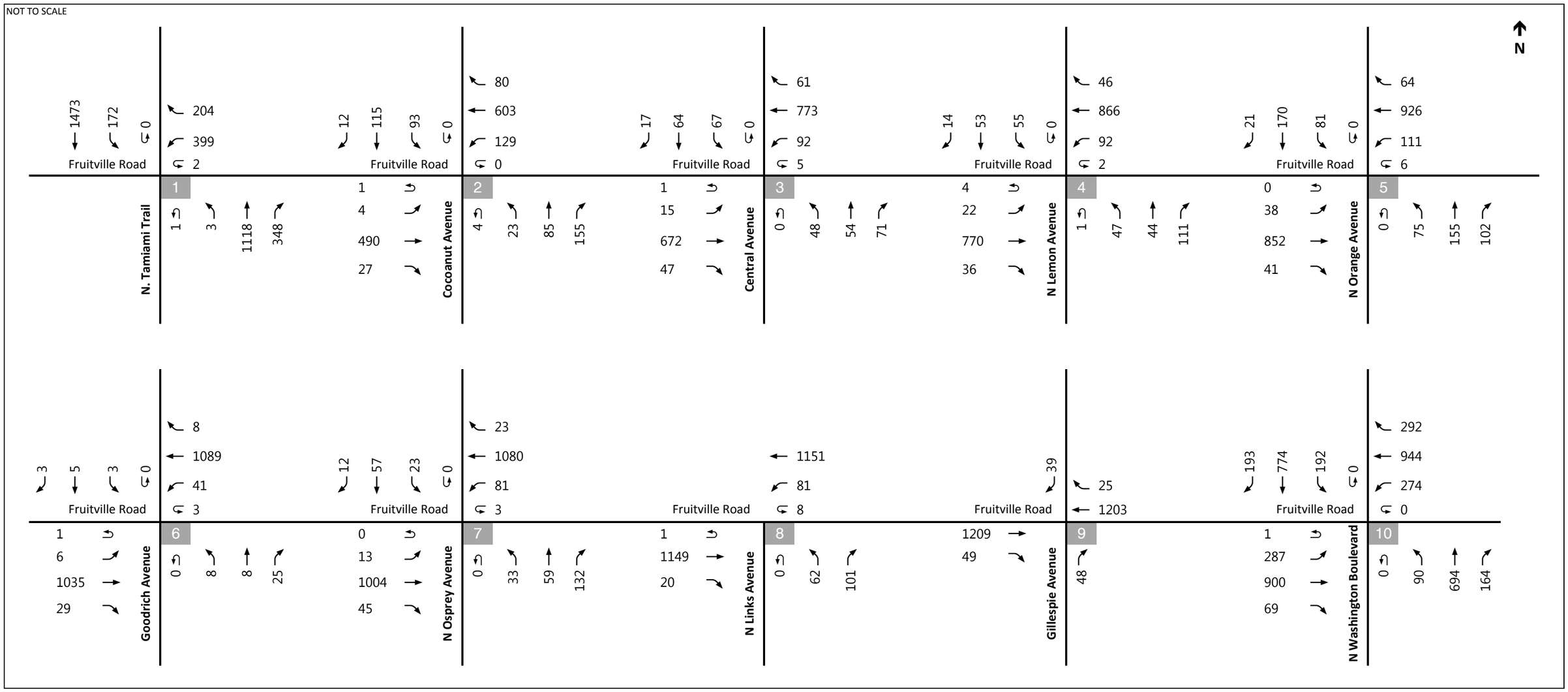
TABLE 4
2038 Alternative 2 (Build) Conditions: Capacity Analysis Results
Synchro 8 and SIDRA 6.1 Results (*SIDRA used for roundabouts where noted)

Intersection & Approach	Weekday AM				Weekday MD				Weekday PM			
	Lane Group	LOS	Delay (sec)	v/c Ratio	Lane Group	LOS	Delay (sec)	v/c Ratio	Lane Group	LOS	Delay (sec)	v/c Ratio
US Route 41 N. Tamiami Trail and Fruitville Road												
Eastbound	LT	currently closed			LT	currently closed			LT	currently closed		
	R				R				R			
Westbound	L	E	68.5	0.71	L	F	194.8	1.25	L	E	72.7	0.68
	LT	E	68.5	0.71	LT	F	94.5	0.90	LT	E	72.7	0.68
	R	A	7.8	0.45	R	B	14.2	0.58	R	D	44.9	0.85
Northbound	L	currently closed			L	currently closed			L	currently closed		
	TR	F	115.7	1.14	TR	F	98.4	1.12	TR	F	144.2	1.24
Southbound	L	F	172.8	1.23	L	F	235.9	1.37	L	F	387.6	1.72
	T	C	30.0	0.88	T	C	25.5	0.83	T	B	18.2	0.75
	R	currently closed			R	currently closed			R	currently closed		
Overall Intersection		**E**	**74.4**		**Int.**	**E**	**77.4**		**Int.**	**F**	**96.1**	
Cocoanut Avenue and Fruitville Road (Roundabout)*												
Eastbound	LTR	A	1.1	0.48	LTR	A	1.9	0.51	LTR	A	6.7	0.43
Westbound	LTR	A	0.2	0.48	LTR	A	0.6	0.63	LTR	B	10.4	0.66
Northbound	LTR	A	3.4	0.16	LTR	A	3.7	0.36	LTR	B	10.3	0.52
Southbound	LTR	A	3.9	0.23	LTR	A	6.2	0.38	LTR	A	9.6	0.32
Overall Intersection		**A**	**1.2**		**Int.**	**A**	**2.1**		**Int.**	**A**	**9.4**	
Central Avenue and Fruitville Road (Roundabout)*												
Eastbound	LTR	A	8.7	0.57	LTR	A	1.4	0.63	LTR	A	1.0	0.64
Westbound	LTR	A	8.0	0.58	LTR	A	0.8	0.73	LTR	A	1.1	0.69
Northbound	LTR	A	6.7	0.13	LTR	A	5.9	0.31	LTR	A	8.3	0.43
Southbound	LTR	A	7.4	0.28	LTR	B	10.2	0.37	LTR	A	7.0	0.27
Overall Intersection		**A**	**8.1**		**Int.**	**A**	**2.2**		**Int.**	**A**	**2.2**	
N. Lemon Avenue and Fruitville Road (Roundabout)*												
Eastbound	LTR	A	9.7	0.63	LTR	B	11.5	0.70	LTR	B	11.8	0.72
Westbound	LTR	A	9.8	0.66	LTR	B	14.2	0.79	LTR	B	13.9	0.77
Northbound	LTR	A	8.3	0.14	LTR	B	14.7	0.46	LTR	C	29.2	0.73
Southbound	LTR	A	9.1	0.24	LTR	B	18.5	0.41	LTR	B	12.0	0.26
Overall Intersection		**A**	**9.7**		**Int.**	**B**	**13.5**		**Int.**	**B**	**15.0**	
N. Orange Avenue and Fruitville Road												
Eastbound	L	B	18.7	0.16	L	B	18.6	0.30	L	C	32.3	0.56
	TR	C	31.9	0.67	TR	C	33.0	0.74	TR	D	44.5	0.77
Westbound	L	F	128.2	1.11	L	E	75.4	0.92	L	D	54.8	0.65
	TR	B	14.1	0.71	TR	D	42.3	0.75	TR	E	63.3	0.78
Northbound	L	C	31.4	0.27	L	D	36.4	0.40	L	D	35.4	0.35
	TR	D	43.5	0.45	TR	E	71.2	0.89	TR	F	81.2	0.96
Southbound	L	C	32.2	0.29	L	D	47.0	0.61	L	D	53.1	0.63
	TR	E	70.7	0.89	TR	D	54.5	0.66	TR	D	44.3	0.40
Overall Intersection		**D**	**37.5**		**Int.**	**D**	**44.3**		**Int.**	**E**	**56.4**	
Goodrich Avenue and Fruitville Road												
Eastbound	L	A	0.5	0.02	L	A	1.5	0.05	L	A	1.8	0.18
	TR	A	0.6	0.36	TR	A	1.6	0.49	TR	A	2.2	0.47
Westbound	L	A	5.1	0.22	L	B	12.8	0.31	L	A	3.0	0.30
	TR	A	9.4	0.46	TR	B	10.4	0.48	TR	A	1.2	0.44
Northbound	LTR	E	64.7	0.15	LTR	E	75.4	0.58	LTR	F	88.8	0.70
Southbound	LTR	D	52.6	0.42	LTR	D	46.1	0.25	LTR	D	50.1	0.23
Overall Intersection		**A**	**6.6**		**Int.**	**A**	**8.4**		**Int.**	**A**	**6.1**	
N. Osprey Avenue and Fruitville Road												
Eastbound	L	B	11.0	0.07	L	A	8.6	0.15	L	B	10.8	0.19
	T	A	9.0	0.42	T	B	14.8	0.62	T	B	16.9	0.63
Westbound	L	C	26.8	0.58	L	D	51.6	0.81	L	C	22.8	0.46
	T	B	16.7	0.57	T	B	11.8	0.64	T	B	13.5	0.60
Northbound	LTR	E	56.9	0.69	LTR	E	66.4	0.88	LTR	E	66.8	0.88
Southbound	LTR	F	83.9	0.86	LTR	E	55.7	0.65	LTR	D	35.2	0.26
Overall Intersection		**C**	**21.5**		**Int.**	**C**	**21.8**		**Int.**	**C**	**22.9**	
N. Links Avenue and Fruitville Road												
Eastbound	LTR	A	5.9	0.41	LTR	A	6.3	0.60	LTR	B	19.1	0.68
Westbound	L	C	21.6	0.75	L	C	22.4	0.59	L	D	49.0	0.69
	T	A	4.2	0.53	T	A	7.5	0.53	T	B	15.1	0.53
Northbound	L	E	72.4	0.41	L	E	58.1	0.40	L	D	49.6	0.25
	R	E	72.8	0.38	R	F	89.8	0.85	R	F	89.5	0.92
Overall Intersection		**A**	**8.3**		**Int.**	**B**	**13.2**		**Int.**	**C**	**26.3**	
N. Washington Boulevard and Fruitville Road												
Eastbound	L	E	65.8	0.85	L	E	73.8	0.91	L	F	123.1	1.11
	TR	E	61.7	0.82	TR	F	114.3	1.11	TR	F	133.2	1.17
Westbound	L	D	42.0	0.73	L	F	84.9	0.96	L	D	51.2	0.74
	T	E	75.5	0.98	T	F	86.6	1.02	T	F	90.2	1.02
	R	C	24.7	0.59	R	C	29.7	0.60	R	D	39.4	0.68
Northbound	L	F	98.7	0.92	L	E	72.9	0.82	L	E	57.2	0.75
	TR	E	78.2	0.96	TR	F	127.4	1.14	TR	F	157.9	1.23
Southbound	L	F	214.3	1.33	L	F	169.7	1.20	L	F	256.1	1.43
	T	F	87.8	1.04	T	E	66.0	0.90	T	E	55.7	0.80
	R	C	33.6	0.62	R	C	23.6	0.44	R	B	14.5	0.34
Overall Intersection		**E**	**76.1**		**Int.**	**F**	**92.4**		**Int.**	**F**	**110.1**	



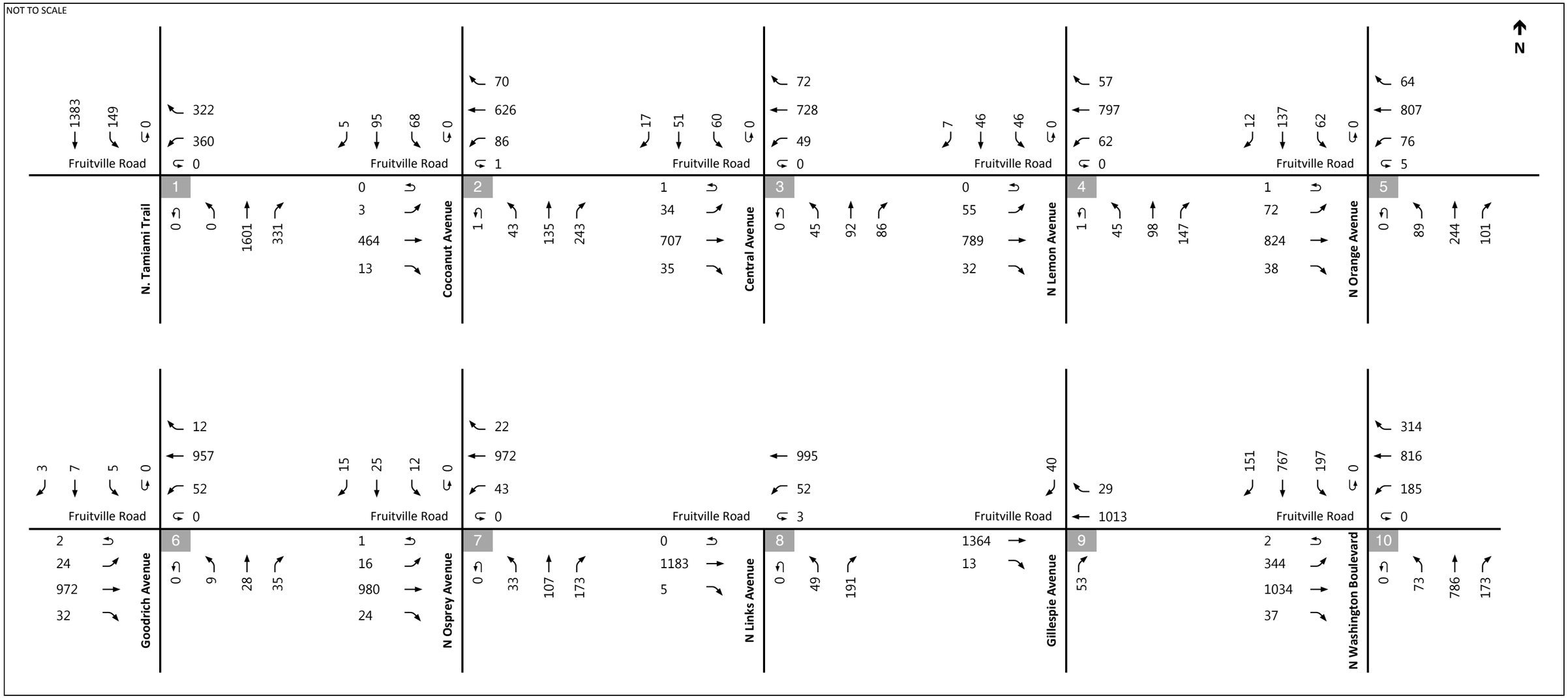
FRUITVILLE ROAD
STREETSCAPE ENHANCEMENT PROJECT

2015 Existing Condition Traffic Volumes
Weekday AM Peak Hour
Figure 1



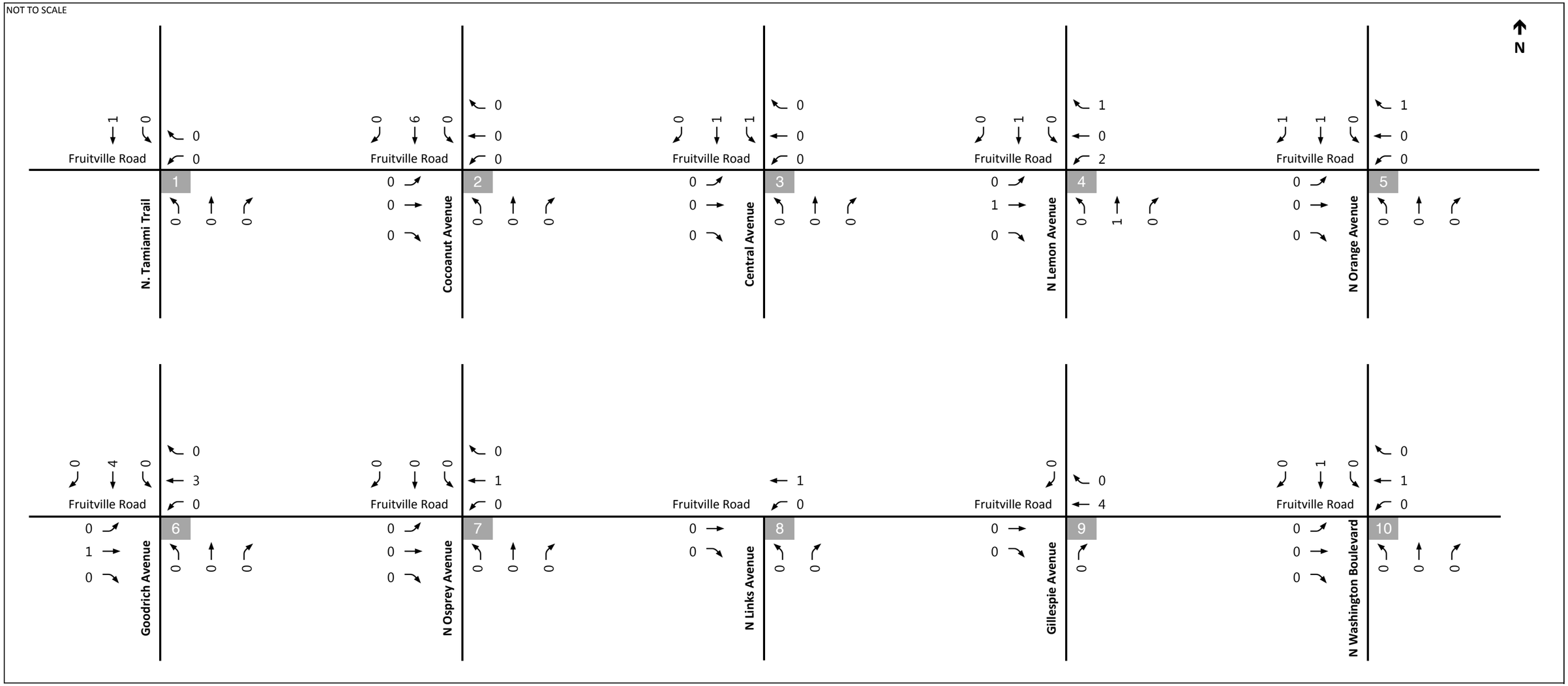
FRUITVILLE ROAD
STREETSCAPE ENHANCEMENT PROJECT

2015 Existing Condition Traffic Volumes
Weekday MD Peak Hour
Figure 2



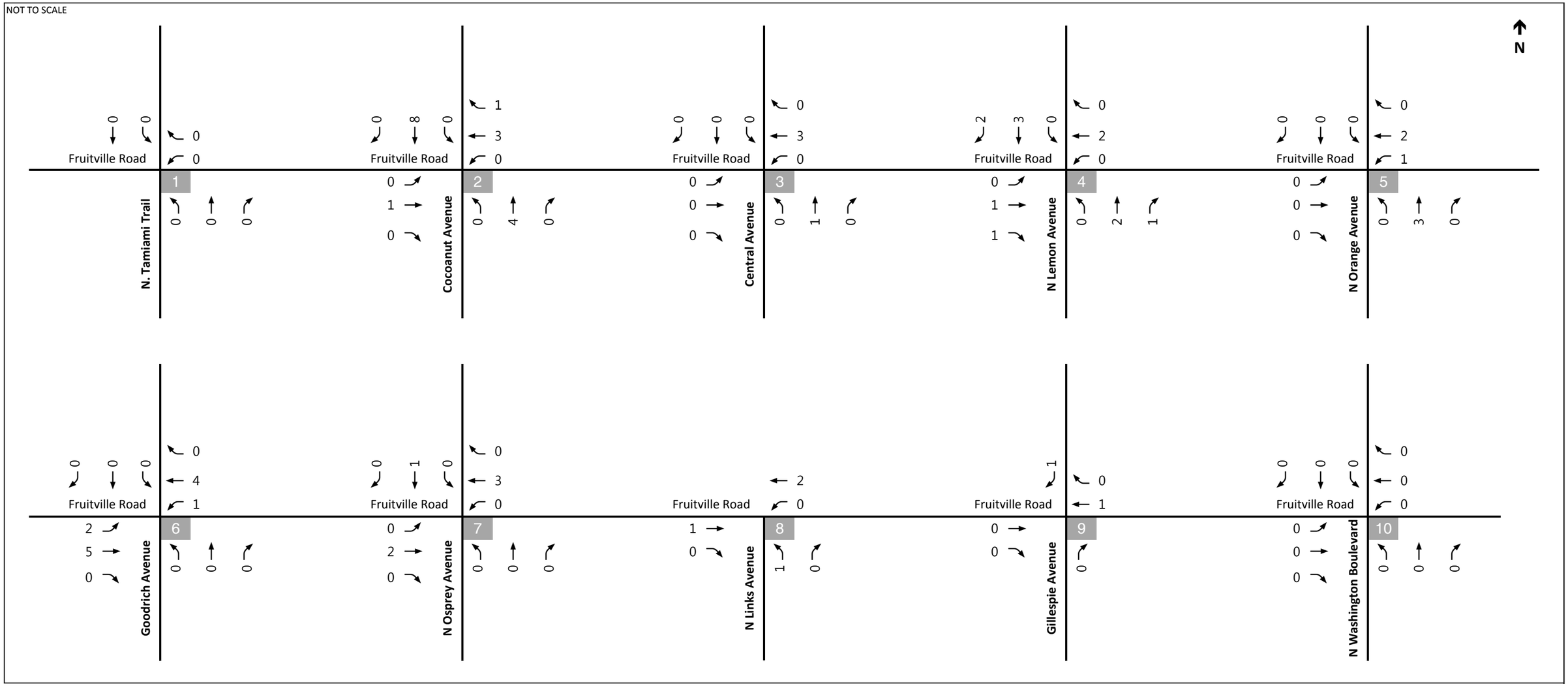
FRUITVILLE ROAD
STREETSCAPE ENHANCEMENT PROJECT

2015 Existing Condition Traffic Volumes
Weekday PM Peak Hour
Figure 3



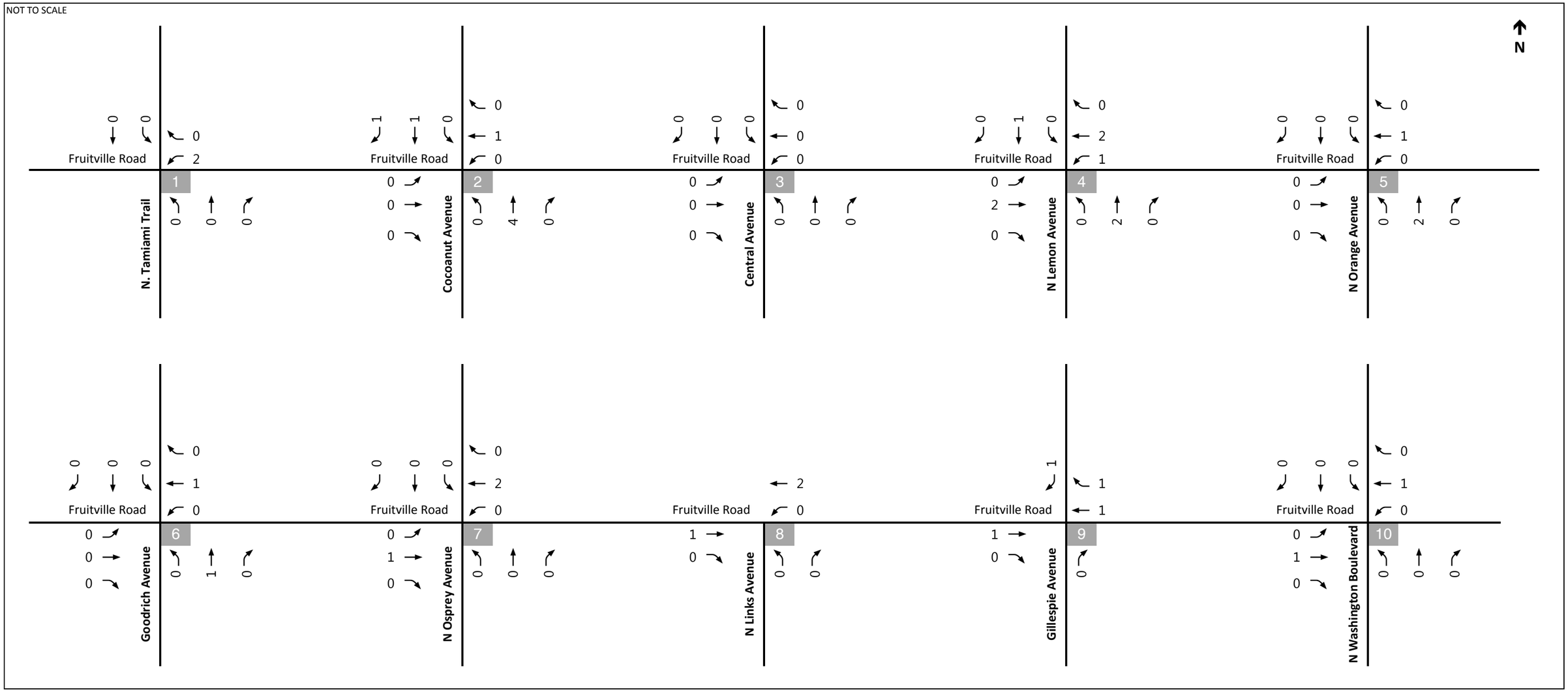
FRUITVILLE ROAD
STREETSCAPE ENHANCEMENT PROJECT

2015 Existing Condition Bicycle Volumes
Weekday AM Peak Hour
Figure 4



FRUITVILLE ROAD
STREETSCAPE ENHANCEMENT PROJECT

2015 Existing Condition Bicycle Volumes
Weekday MD Peak Hour
Figure 5

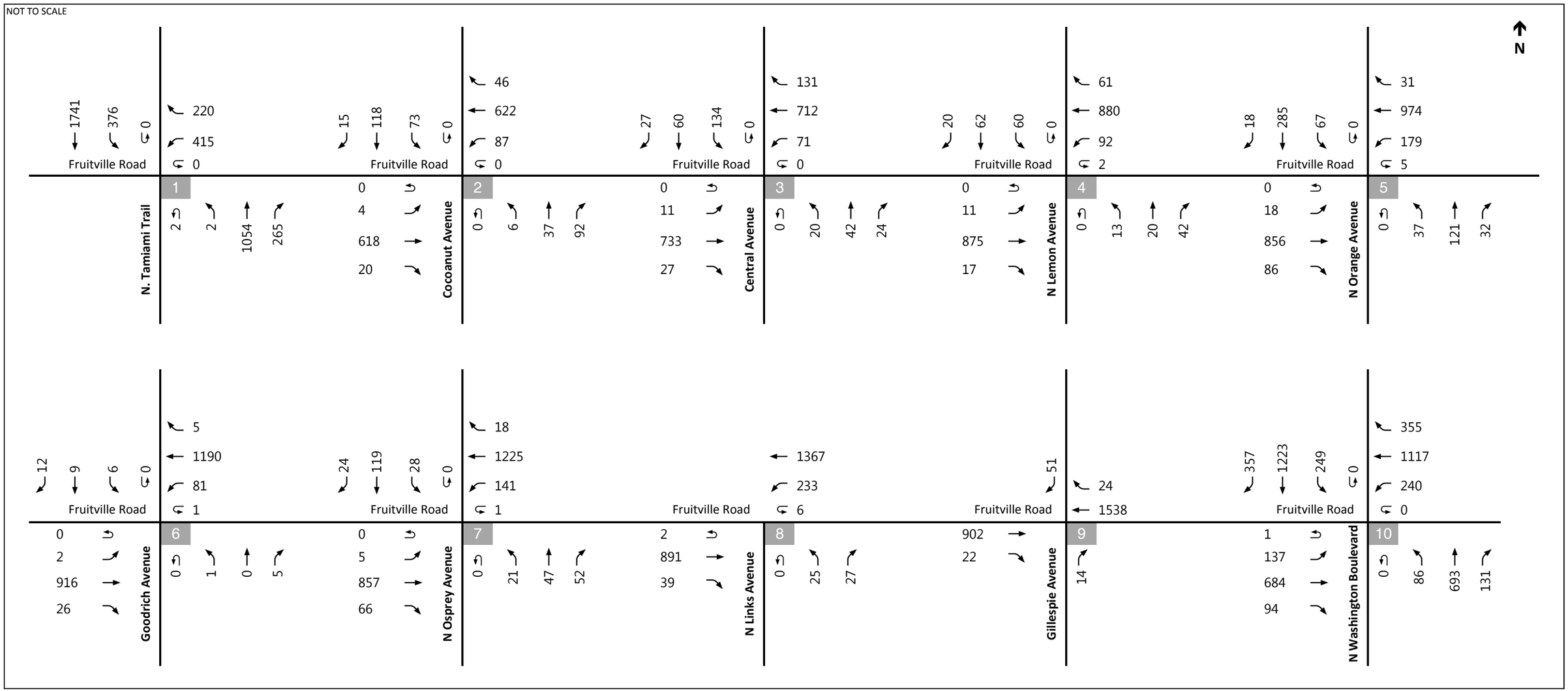


FRUITVILLE ROAD
STREETSCAPE ENHANCEMENT PROJECT

2015 Existing Condition Bicycle Volumes
Weekday PM Peak Hour
Figure 6

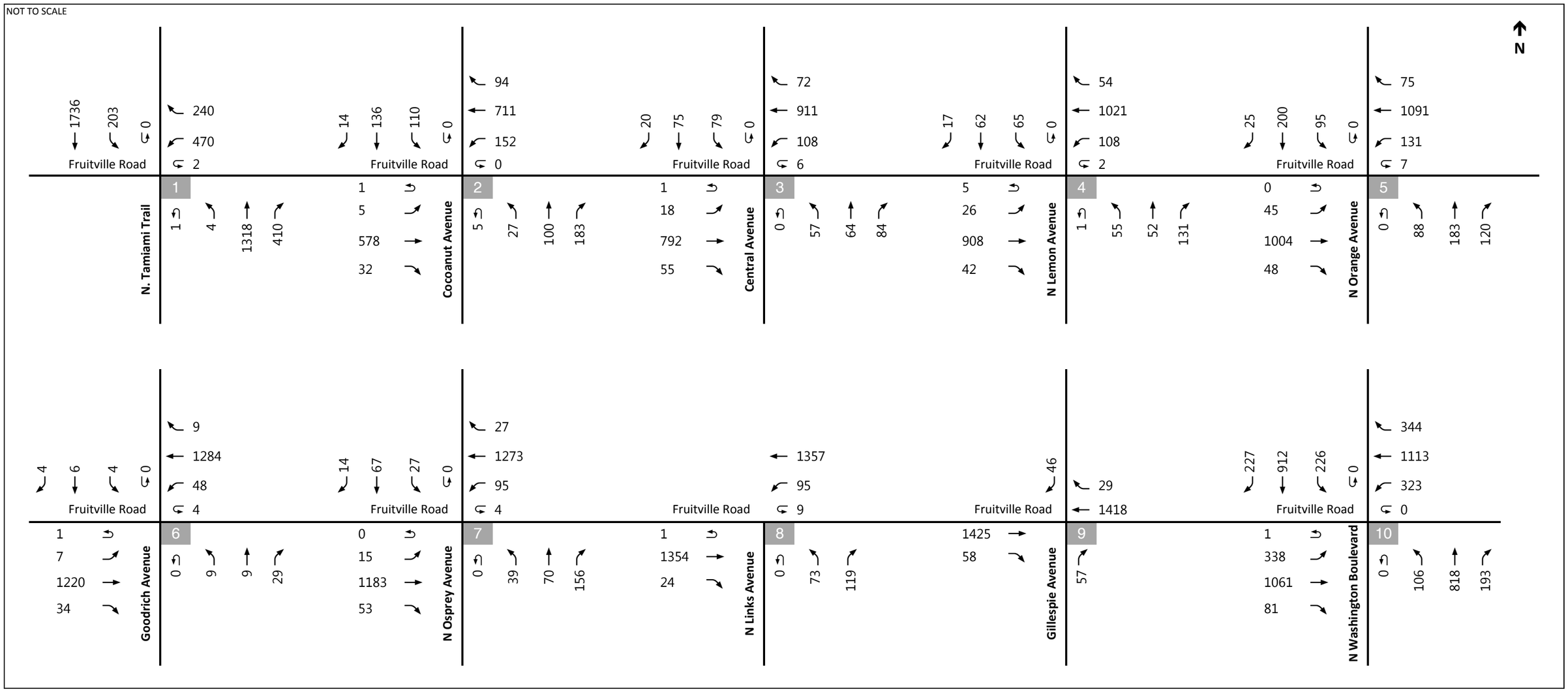
FRUITVILLE ROAD
STREETSCAPE ENHANCEMENT PROJECT

2015 Existing Condition Pedestrian Volumes
Weekday AM, Midday, and PM Peak Hours
Figure 7



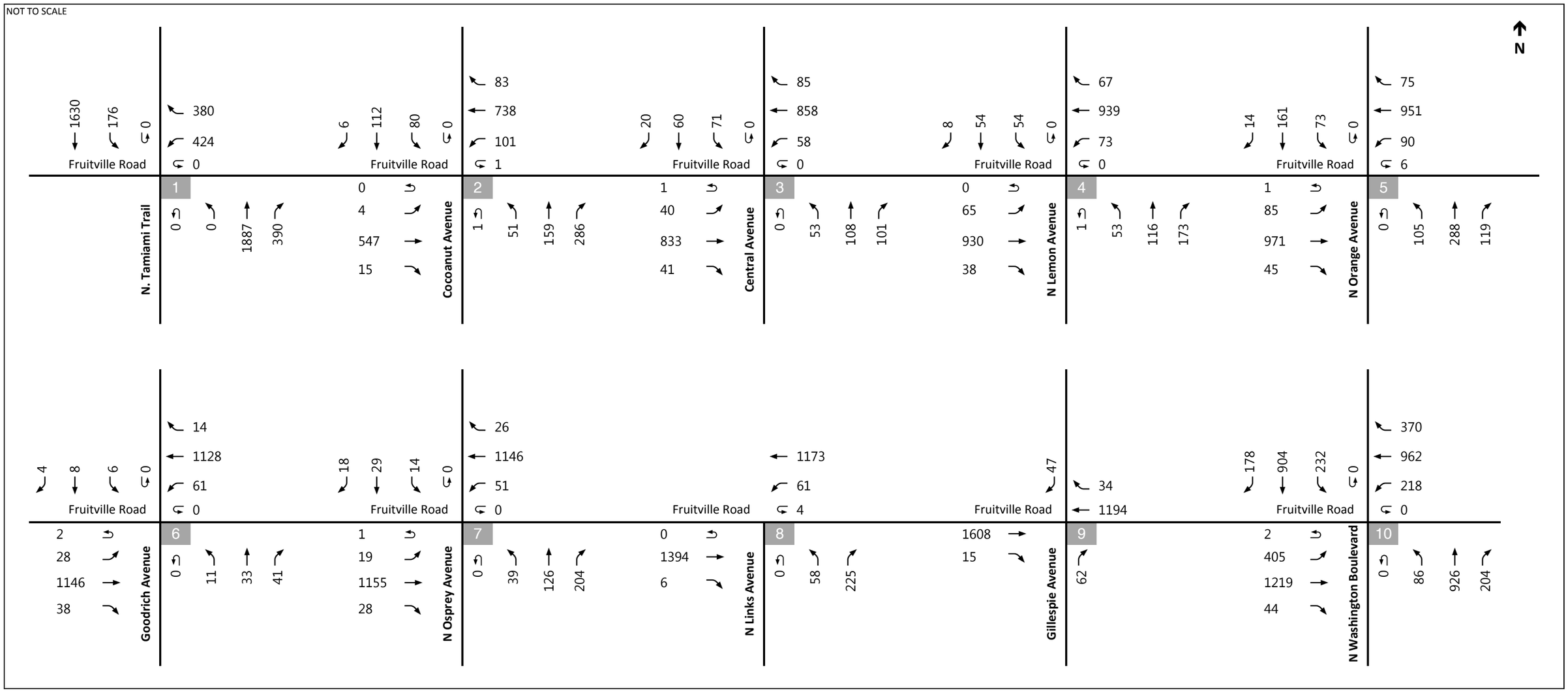
FRUITVILLE ROAD
STREETSCAPE ENHANCEMENT PROJECT

2038 Future Condition Traffic Volumes
Weekday AM Peak Hour
Figure 8



FRUITVILLE ROAD
STREETSCAPE ENHANCEMENT PROJECT

2038 Future Condition Traffic Volumes
Weekday MD Peak Hour
Figure 9



FRUITVILLE ROAD
STREETSCAPE ENHANCEMENT PROJECT

2038 Future Condition Traffic Volumes
Weekday PM Peak Hour
Figure 10

APPENDIX A

Roundabout Analysis Memorandum

Alternate Street Design, PA

TECHNICAL MEMORANDUM DRAFT

To: Jeffrey D. Trim, PE, PTOE

From: Michael Wallwork, P.E.

Date: January 12, 2016

Re: Roundabout Capacity Analyses - Fruitville Road

Capacity Analysis Summary

The Fruitville Road Streetscape Enhancements project has objectives that include slowing speeds with affecting level of service; facilitating safe pedestrian activity and walkability between the downtown core and the Rosemary and Gillespie Park Neighborhoods; enhancing the aesthetic value of one of the primary gateways into the City; and, promotion of economic development and vitality of the corridor. At the public workshop, the top priorities were sidewalks, pedestrian crossings and roundabouts.

Following is a summary of the capacity analyses for roundabouts located at Cocoanut Avenue, Central Avenue, N. Lemon Avenue, N. Orange Avenue, Goodrich Avenue, N. Osprey Avenue, and N. Links Avenue. Gillespie Avenue was not included due to low turning volumes and its vicinity to N. Washington Avenue.

Capacity Analyses

Initially each intersection was analyzed as a stand-alone intersection. Then, within SIDRA, each intersection was combined into three networks, one for each peak period, AM, Midday and PM. The network was then analyzed and the results for each intersection are shown in Table 1 below.

Criteria used in the analyses are as follows:

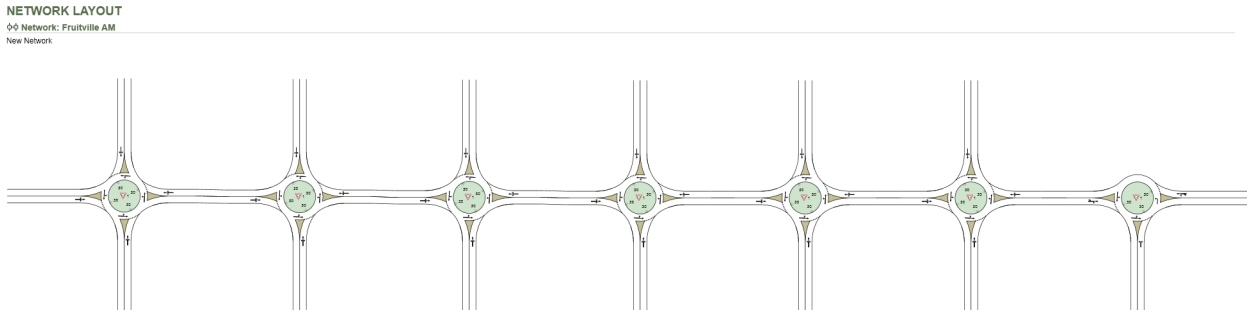
- Projected traffic in 2038. Opening year is projected for 2018
- Pedestrian volumes as per recent detailed pedestrian counts
- Peak hour factor - 0.97 (FDOT maximum) although in reality it could be 1.00.
- 3 percent trucks
- Environmental factor was set as 1.0.
- 30-foot central island diameter although this could be enlarged at several intersections following conceptual designs
- Circulating road width of 18 feet
- Level-of-service service compared roundabouts to signals
- HCM delay formula

- Gap acceptance was set at 3.0 seconds based on observations of driver behavior at other roundabouts in Sarasota.
- Approximate spacing between roundabouts for the isolated intersections and network analyses were measured from Google maps
- One Lane Roundabout
- Truck percentages was per recent truck counts

Table 1 - Capacity Analysis Summary

Configuration	Peak Period	Level-of-Service	Average Delay (sec)	Average Queue (ft.)	95th Percentile Queue (ft.)	Volume/ capacity ratio
Cocoanut Avenue	AM	A	1.2	37	91 E	0.483
	Midday	A	2.1	45	147 E	0.663
	PM	A	9.4	62	154 E	0.657
Central Avenue	AM	A	8.1	49	122 E	0.575
	Midday	A	2.2	80	197 E	0.728
	PM	A	2.2	69	170 E	0.694
N. Lemon Avenue	AM	A	9.7	69	170 E	0.661
	Midday	B	13.5	65	255 E	0.787
	PM	B	14.1	93	243 S	0.766
N. Orange Avenue	AM	D	45.1	483	1202 N	1.327
	Midday	E	73.7	449	1.438 N	1.596
	PM	E	70.5	793	1,970 S	1.549
Goodrich Avenue	AM	B	11.0	117	292 E	0.778
	Midday	B	13.6	299	359 W	0.809
	PM	B	12.7	93	232 W	0.769
N. Osprey Avenue	AM	B	15.8	151	375 E	0.834
	Midday	C	25.1	210	522 E	0.919
	PM	C	23.3	243	603 S	0.996
N. Links Avenue	AM	C	26.6	1202	2,996 E	0.990
	Midday	C	28.4	297	695 E	0.982
	PM	C	34.9	384	954 S	1.323

Below is the network that was used to check if operating as a network, improvements could be made to the intersections. The above figures for each intersection have been taken from the post network anlaysis.



Comments For Consideration

As mentioned in the start of the capacity analysis section the analyses have been fine-tuned based on the experience of many drivers within Sarasota. Also, some drivers traveling along Fruitville Road would also pass through St Armands Circle. In summary most drivers will be familiar with driving roundabouts. With the construction of roundabouts on US 41 to start soon, drivers will gain even more roundabout experience. That said these analyses are based on a low-speed environment along Fruitville Road similar to La Jolla Boulevard, which carries around 20,000 vehicles a day and has vehicle queues at the end roundabouts.

Orange Avenue is the worst performing roundabout due to the high north/south volume that is considerably higher than other streets, a situation that is not likely to change. This intersection does present the opportunity to add a right turn lane to Orange Avenue north and south. If the roundabout design shows that two right turn lanes are feasible then the delay on Orange Avenue north and south will decrease significantly, but not entirely. The other congested intersection N. Links Avenue is narrow and therefore does not offer the same opportunity for any turn lanes.

Because vehicle queues westward from N. Washington Boulevard often extend through the N. Links Avenue intersection, and can even extend through N. Osprey Avenue it reduces the feasibility of using roundabouts at these intersections.

The latest plan from the Florida Department of Transportation for the design of the US-41 roundabouts at Gulfstream and Fruitville Road, shows that there will only be a single lane from US 41 onto Fruitville Road for either the left turn or the right turn and two lanes exiting Fruitville Road to US 41.

Exiting intersections at both ends of Fruitville Road, at US- 1 and at N. Washington Boulevard , are close to or at saturation and hence will limit increases in vehicle volumes along Fruitville Road, while developments north and south of Fruitville Road, will increase pedestrian and vehicle volumes. Both of which will impact the operation of these intersections.

Because of the above and saturation of the major road network, US 41 and US 301 vehicle growth in Sarasota is likely to extend the length of peak periods rather than increase peak hour volumes, similar to what is occurring in other great cities.

Capacity Analysis Summary Sheets

MOVEMENT SUMMARY

Site: Cocoanut AM

New Site
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Cocoanut											
3	L2	6	7.0	0.163	3.4	LOS A	1.0	26.4	0.71	0.59	26.6
8	T1	38	7.0	0.163	3.4	LOS A	1.0	26.4	0.71	0.59	27.1
18	R2	95	7.0	0.163	3.4	LOS A	1.0	26.4	0.71	0.59	26.2
Approach		139	7.0	0.163	3.4	LOS A	1.0	26.4	0.71	0.59	26.5
East: Frutiville											
1	L2	90	7.0	0.483	0.2	LOS A	3.5	91.2	0.22	0.09	28.7
6	T1	641	7.0	0.483	0.2	LOS A	3.5	91.2	0.22	0.09	29.2
16	R2	47	7.0	0.483	0.2	LOS A	3.5	91.2	0.22	0.09	28.2
Approach		778	7.0	0.483	0.2	LOS A	3.5	91.2	0.22	0.09	29.1
North: Cocoanut											
7	L2	75	1.0	0.228	3.9	LOS A	1.4	36.1	0.72	0.61	26.3
4	T1	122	1.0	0.228	3.9	LOS A	1.4	36.1	0.72	0.61	26.7
14	R2	15	1.0	0.228	3.9	LOS A	1.4	36.1	0.72	0.61	25.9
Approach		212	1.0	0.228	3.9	LOS A	1.4	36.1	0.72	0.61	26.5
West: Frutiville											
5	L2	4	3.0	0.475	1.1	LOS A	3.2	81.3	0.51	0.36	28.1
2	T1	637	3.0	0.475	1.1	LOS A	3.2	81.3	0.51	0.36	28.6
12	R2	21	3.0	0.475	1.1	LOS A	3.2	81.3	0.51	0.36	27.7
Approach		662	3.0	0.475	1.1	LOS A	3.2	81.3	0.51	0.36	28.6
All Vehicles		1792	4.8	0.483	1.2	LOS A	3.5	91.2	0.42	0.29	28.4

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option is selected.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: Cocoanut - Midday

New Site
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Cocoanut											
3	L2	28	1.0	0.356	3.7	LOS A	2.6	64.4	0.80	0.71	26.9
8	T1	103	1.0	0.356	3.7	LOS A	2.6	64.4	0.80	0.71	27.3
18	R2	189	1.0	0.356	3.7	LOS A	2.6	64.4	0.80	0.71	26.5
Approach		320	1.0	0.356	3.7	LOS A	2.6	64.4	0.80	0.71	26.8
East: Frutiville											
1	L2	157	3.0	0.633	0.6	LOS A	5.7	146.8	0.46	0.26	28.1
6	T1	733	3.0	0.633	0.6	LOS A	5.7	146.8	0.46	0.26	28.6
16	R2	97	3.0	0.633	0.6	LOS A	5.7	146.8	0.46	0.26	27.6
Approach		987	3.0	0.633	0.6	LOS A	5.7	146.8	0.46	0.26	28.4
North: Cocoanut											
7	L2	113	1.0	0.381	6.2	LOS A	2.8	71.4	0.90	0.84	24.6
4	T1	140	1.0	0.381	6.2	LOS A	2.8	71.4	0.90	0.84	25.0
14	R2	14	1.0	0.381	6.2	LOS A	2.8	71.4	0.90	0.84	24.2
Approach		268	1.0	0.381	6.2	LOS A	2.8	71.4	0.90	0.84	24.8
West: Frutiville											
5	L2	5	4.0	0.514	1.9	LOS A	3.7	96.1	0.65	0.52	27.5
2	T1	596	4.0	0.514	1.9	LOS A	3.7	96.1	0.65	0.52	28.0
12	R2	33	4.0	0.514	1.9	LOS A	3.7	96.1	0.65	0.52	27.0
Approach		634	4.0	0.514	1.9	LOS A	3.7	96.1	0.65	0.52	27.9
All Vehicles		2208	2.8	0.633	2.1	LOS A	5.7	146.8	0.62	0.47	27.5

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option is selected.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: Cocoanut PM

New Site
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Cocoanut											
3	L2	53	3.0	0.523	10.3	LOS B	4.4	113.3	0.81	0.77	22.4
8	T1	164	3.0	0.523	10.3	LOS B	4.4	113.3	0.81	0.77	22.8
18	R2	295	3.0	0.523	10.3	LOS B	4.4	113.3	0.81	0.77	22.1
Approach		511	3.0	0.523	10.3	LOS B	4.4	113.3	0.81	0.77	22.4
East: Frutiville											
1	L2	104	3.0	0.657	10.4	LOS B	6.0	153.7	0.61	0.41	22.5
6	T1	761	3.0	0.657	10.4	LOS B	6.0	153.7	0.61	0.41	22.8
16	R2	86	3.0	0.657	10.4	LOS B	6.0	153.7	0.61	0.41	22.2
Approach		951	3.0	0.657	10.4	LOS B	6.0	153.7	0.61	0.41	22.7
North: Cocoanut											
7	L2	82	3.0	0.315	9.6	LOS A	2.3	59.1	0.90	0.83	22.5
4	T1	115	3.0	0.315	9.6	LOS A	2.3	59.1	0.90	0.83	22.8
14	R2	6	3.0	0.315	9.6	LOS A	2.3	59.1	0.90	0.83	22.2
Approach		204	3.0	0.315	9.6	LOS A	2.3	59.1	0.90	0.83	22.6
West: Frutiville											
5	L2	4	3.0	0.427	6.7	LOS A	2.8	72.1	0.52	0.37	24.9
2	T1	564	3.0	0.427	6.7	LOS A	2.8	72.1	0.52	0.37	25.3
12	R2	15	3.0	0.427	6.7	LOS A	2.8	72.1	0.52	0.37	24.5
Approach		584	3.0	0.427	6.7	LOS A	2.8	72.1	0.52	0.37	25.2
All Vehicles		2249	3.0	0.657	9.4	LOS A	6.0	153.7	0.66	0.52	23.2

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: SIDRA Standard.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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MOVEMENT SUMMARY

Site: Central - AM

New Site
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Central											
3	L2	21	4.0	0.130	6.7	LOS A	0.9	22.4	0.82	0.69	24.3
8	T1	43	4.0	0.130	6.7	LOS A	0.9	22.4	0.82	0.69	24.7
18	R2	25	4.0	0.130	6.7	LOS A	0.9	22.4	0.82	0.69	24.0
Approach		89	4.0	0.130	6.7	LOS A	0.9	22.4	0.82	0.69	24.4
East: Fruitville											
1	L2	73	3.0	0.575	8.0	LOS A	4.8	122.4	0.31	0.14	23.9
6	T1	734	3.0	0.575	8.0	LOS A	4.8	122.4	0.31	0.14	24.3
16	R2	135	3.0	0.575	8.0	LOS A	4.8	122.4	0.31	0.14	23.6
Approach		942	3.0	0.575	8.0	LOS A	4.8	122.4	0.31	0.14	24.1
North: Central											
7	L2	138	2.0	0.275	7.4	LOS A	1.8	46.7	0.79	0.70	23.5
4	T1	62	2.0	0.275	7.4	LOS A	1.8	46.7	0.79	0.70	23.8
14	R2	28	2.0	0.275	7.4	LOS A	1.8	46.7	0.79	0.70	23.2
Approach		228	2.0	0.275	7.4	LOS A	1.8	46.7	0.79	0.70	23.5
West: Fruitville											
5	L2	11	3.0	0.566	8.7	LOS A	4.3	110.1	0.56	0.40	23.6
2	T1	756	3.0	0.566	8.7	LOS A	4.3	110.1	0.56	0.40	24.0
12	R2	28	3.0	0.566	8.7	LOS A	4.3	110.1	0.56	0.40	23.3
Approach		795	3.0	0.566	8.7	LOS A	4.3	110.1	0.56	0.40	24.0
All Vehicles		2054	2.9	0.575	8.1	LOS A	4.8	122.4	0.48	0.33	24.0

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: SIDRA Standard.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: Central Midday

New Site
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Central											
3	L2	59	1.0	0.314	5.9	LOS A	2.3	58.6	0.90	0.82	25.0
8	T1	66	1.0	0.314	5.9	LOS A	2.3	58.6	0.90	0.82	25.3
18	R2	87	1.0	0.314	5.9	LOS A	2.3	58.6	0.90	0.82	24.6
Approach		211	1.0	0.314	5.9	LOS A	2.3	58.6	0.90	0.82	24.9
East: Frutiville											
1	L2	111	3.0	0.728	0.8	LOS A	7.8	198.8	0.56	0.33	27.8
6	T1	939	3.0	0.728	0.8	LOS A	7.8	198.8	0.56	0.33	28.3
16	R2	74	3.0	0.728	0.8	LOS A	7.8	198.8	0.56	0.33	27.4
Approach		1125	3.0	0.728	0.8	LOS A	7.8	198.8	0.56	0.33	28.2
North: Central											
7	L2	81	2.0	0.369	10.2	LOS B	2.8	72.1	0.99	0.96	22.1
4	T1	77	2.0	0.369	10.2	LOS B	2.8	72.1	0.99	0.96	22.4
14	R2	21	2.0	0.369	10.2	LOS B	2.8	72.1	0.99	0.96	21.9
Approach		179	2.0	0.369	10.2	LOS B	2.8	72.1	0.99	0.96	22.2
West: Frutiville											
5	L2	19	3.0	0.633	1.4	LOS A	5.3	135.6	0.61	0.44	27.7
2	T1	816	3.0	0.633	1.4	LOS A	5.3	135.6	0.61	0.44	28.2
12	R2	57	3.0	0.633	1.4	LOS A	5.3	135.6	0.61	0.44	27.3
Approach		892	3.0	0.633	1.4	LOS A	5.3	135.6	0.61	0.44	28.2
All Vehicles		2407	2.7	0.728	2.2	LOS A	7.8	198.8	0.64	0.46	27.3

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option is selected.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: Central - PM

New Site
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Central											
3	L2	55	0.0	0.427	8.3	LOS A	3.5	87.7	0.95	0.94	23.7
8	T1	111	0.0	0.427	8.3	LOS A	3.5	87.7	0.95	0.94	24.0
18	R2	104	0.0	0.427	8.3	LOS A	3.5	87.7	0.95	0.94	23.4
Approach		270	0.0	0.427	8.3	LOS A	3.5	87.7	0.95	0.94	23.7
East: Frutiville											
1	L2	60	2.0	0.694	1.1	LOS A	6.7	170.0	0.61	0.40	27.8
6	T1	885	2.0	0.694	1.1	LOS A	6.7	170.0	0.61	0.40	28.3
16	R2	88	2.0	0.694	1.1	LOS A	6.7	170.0	0.61	0.40	27.3
Approach		1032	2.0	0.694	1.1	LOS A	6.7	170.0	0.61	0.40	28.2
North: Central											
7	L2	73	2.0	0.266	7.0	LOS A	2.0	49.8	0.92	0.85	23.9
4	T1	62	2.0	0.266	7.0	LOS A	2.0	49.8	0.92	0.85	24.3
14	R2	21	2.0	0.266	7.0	LOS A	2.0	49.8	0.92	0.85	23.6
Approach		156	2.0	0.266	7.0	LOS A	2.0	49.8	0.92	0.85	24.0
West: Frutiville											
5	L2	41	4.0	0.639	1.0	LOS A	5.5	141.0	0.53	0.35	27.9
2	T1	859	4.0	0.639	1.0	LOS A	5.5	141.0	0.53	0.35	28.4
12	R2	42	4.0	0.639	1.0	LOS A	5.5	141.0	0.53	0.35	27.4
Approach		942	4.0	0.639	1.0	LOS A	5.5	141.0	0.53	0.35	28.3
All Vehicles		2400	2.6	0.694	2.2	LOS A	6.7	170.0	0.64	0.47	27.3

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option is selected.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: Lemon - AM

New Site
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Lemon											
3	L2	13	11.0	0.141	8.3	LOS A	0.9	25.3	0.86	0.76	22.9
8	T1	21	11.0	0.141	8.3	LOS A	0.9	25.3	0.86	0.76	23.3
18	R2	43	11.0	0.141	8.3	LOS A	0.9	25.3	0.86	0.76	22.6
Approach		77	11.0	0.141	8.3	LOS A	0.9	25.3	0.86	0.76	22.8
East: Fruitville											
1	L2	95	7.0	0.661	9.8	LOS A	6.5	170.5	0.29	0.11	22.6
6	T1	907	7.0	0.661	9.8	LOS A	6.5	170.5	0.29	0.11	22.9
16	R2	63	7.0	0.661	9.8	LOS A	6.5	170.5	0.29	0.11	22.3
Approach		1065	7.0	0.661	9.8	LOS A	6.5	170.5	0.29	0.11	22.9
North: Lemon											
7	L2	62	2.0	0.243	9.1	LOS A	1.7	43.0	0.89	0.82	22.8
4	T1	64	2.0	0.243	9.1	LOS A	1.7	43.0	0.89	0.82	23.1
14	R2	21	2.0	0.243	9.1	LOS A	1.7	43.0	0.89	0.82	22.5
Approach		146	2.0	0.243	9.1	LOS A	1.7	43.0	0.89	0.82	22.9
West: Fruitville											
5	L2	11	3.0	0.633	9.7	LOS A	5.2	132.4	0.54	0.37	23.0
2	T1	902	3.0	0.633	9.7	LOS A	5.2	132.4	0.54	0.37	23.4
12	R2	18	3.0	0.633	9.7	LOS A	5.2	132.4	0.54	0.37	22.7
Approach		931	3.0	0.633	9.7	LOS A	5.2	132.4	0.54	0.37	23.3
All Vehicles		2220	5.1	0.661	9.7	LOS A	6.5	170.5	0.46	0.29	23.1

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: SIDRA Standard.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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MOVEMENT SUMMARY

Site: Lemon - Midday

New Site
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Lemon											
3	L2	57	3.0	0.460	14.7	LOS B	4.0	101.1	0.99	1.03	20.1
8	T1	54	3.0	0.460	14.7	LOS B	4.0	101.1	0.99	1.03	20.4
18	R2	135	3.0	0.460	14.7	LOS B	4.0	101.1	0.99	1.03	19.9
Approach		245	3.0	0.460	14.7	LOS B	4.0	101.1	0.99	1.03	20.0
East: Fruitville											
1	L2	111	3.0	0.787	14.2	LOS B	10.0	255.0	0.62	0.36	20.6
6	T1	1053	3.0	0.787	14.2	LOS B	10.0	255.0	0.62	0.36	20.9
16	R2	56	3.0	0.787	14.2	LOS B	10.0	255.0	0.62	0.36	20.4
Approach		1220	3.0	0.787	14.2	LOS B	10.0	255.0	0.62	0.36	20.8
North: Lemon											
7	L2	67	3.0	0.411	18.5	LOS B	3.4	86.9	1.00	1.05	18.5
4	T1	64	3.0	0.411	18.5	LOS B	3.4	86.9	1.00	1.05	18.7
14	R2	21	3.0	0.411	18.5	LOS B	3.4	86.9	1.00	1.05	18.3
Approach		152	3.0	0.411	18.5	LOS B	3.4	86.9	1.00	1.05	18.5
West: Fruitville											
5	L2	27	3.0	0.697	11.5	LOS B	6.6	169.9	0.63	0.45	22.0
2	T1	936	3.0	0.697	11.5	LOS B	6.6	169.9	0.63	0.45	22.3
12	R2	43	3.0	0.697	11.5	LOS B	6.6	169.9	0.63	0.45	21.7
Approach		1006	3.0	0.697	11.5	LOS B	6.6	169.9	0.63	0.45	22.3
All Vehicles		2623	3.0	0.787	13.5	LOS B	10.0	255.0	0.68	0.50	21.1

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: SIDRA Standard.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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MOVEMENT SUMMARY

Site: Lemon - PM

New Site
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Lemon											
3	L2	55	4.0	0.734	29.2	LOS C	9.4	243.2	1.00	1.29	15.3
8	T1	120	4.0	0.734	29.2	LOS C	9.4	243.2	1.00	1.29	15.5
18	R2	178	4.0	0.734	29.2	LOS C	9.4	243.2	1.00	1.29	15.2
Approach		353	4.0	0.734	29.2	LOS C	9.4	243.2	1.00	1.29	15.3
East: Fruitville											
1	L2	75	1.0	0.766	13.9	LOS B	9.1	230.2	0.72	0.52	20.9
6	T1	968	1.0	0.766	13.9	LOS B	9.1	230.2	0.72	0.52	21.2
16	R2	69	1.0	0.766	13.9	LOS B	9.1	230.2	0.72	0.52	20.7
Approach		1112	1.0	0.766	13.9	LOS B	9.1	230.2	0.72	0.52	21.1
North: Lemon											
7	L2	56	4.0	0.262	12.0	LOS B	2.0	50.7	0.97	0.92	21.1
4	T1	56	4.0	0.262	12.0	LOS B	2.0	50.7	0.97	0.92	21.4
14	R2	8	4.0	0.262	12.0	LOS B	2.0	50.7	0.97	0.92	20.9
Approach		120	4.0	0.262	12.0	LOS B	2.0	50.7	0.97	0.92	21.2
West: Fruitville											
5	L2	67	4.0	0.715	11.8	LOS B	6.9	177.6	0.58	0.38	21.8
2	T1	959	4.0	0.715	11.8	LOS B	6.9	177.6	0.58	0.38	22.1
12	R2	39	4.0	0.715	11.8	LOS B	6.9	177.6	0.58	0.38	21.5
Approach		1065	4.0	0.715	11.8	LOS B	6.9	177.6	0.58	0.38	22.0
All Vehicles		2649	2.7	0.766	15.0	LOS B	9.4	243.2	0.71	0.58	20.4

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: SIDRA Standard.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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MOVEMENT SUMMARY

Site: Orange AM

New Site
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Orange											
3	L2	38	3.0	0.392	13.7	LOS B	3.2	82.1	1.00	0.96	20.7
8	T1	125	3.0	0.392	13.7	LOS B	3.2	82.1	1.00	0.96	20.9
18	R2	33	3.0	0.392	13.7	LOS B	3.2	82.1	1.00	0.96	21.1
Approach		196	3.0	0.392	13.7	LOS B	3.2	82.1	1.00	0.96	20.9
East: Fruitville											
1	L2	185	6.0	0.848	18.6	LOS B	13.5	354.6	0.82	0.55	19.3
6	T1	1004	6.0	0.848	18.6	LOS B	13.5	354.6	0.82	0.55	19.5
16	R2	32	6.0	0.848	18.6	LOS B	13.5	354.6	0.82	0.55	19.1
Approach		1221	6.0	0.848	18.6	LOS B	13.5	354.6	0.82	0.55	19.5
North: Orange											
7	L2	69	4.0	1.327	204.6	LOS F	46.6	1202.1	1.00	2.36	4.2
4	T1	294	4.0	1.327	204.6	LOS F	46.6	1202.1	1.00	2.36	4.0
14	R2	19	4.0	1.327	204.6	LOS F	46.6	1202.1	1.00	2.36	3.9
Approach		381	4.0	1.327	204.6	LOS F	46.6	1202.1	1.00	2.36	4.0
West: Fruitville											
5	L2	19	4.0	0.857	22.6	LOS C	15.0	387.7	0.98	1.06	17.4
2	T1	882	4.0	0.857	22.6	LOS C	15.0	387.7	0.98	1.06	18.3
12	R2	89	4.0	0.857	22.6	LOS C	15.0	387.7	0.98	1.06	17.2
Approach		990	4.0	0.857	22.6	LOS C	15.0	387.7	0.98	1.06	18.2
All Vehicles		2788	4.8	1.327	45.1	LOS D	46.6	1202.1	0.91	1.01	12.7

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: SIDRA Standard.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: Orange - Midday

New Site
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Orange											
3	L2	91	3.0	1.139	125.2	LOS F	33.8	866.0	1.00	2.06	5.9
8	T1	189	3.0	1.139	125.2	LOS F	33.8	866.0	1.00	2.06	5.9
18	R2	124	3.0	1.139	125.2	LOS F	33.8	866.0	1.00	2.06	6.3
Approach		403	3.0	1.139	125.2	LOS F	33.8	866.0	1.00	2.06	6.0
East: Fruitville											
1	L2	135	3.0	0.989	39.7	LOS D	34.9	894.3	1.00	1.11	13.8
6	T1	1125	3.0	0.989	39.7	LOS D	34.9	894.3	1.00	1.11	13.9
16	R2	77	3.0	0.989	39.7	LOS D	34.9	894.3	1.00	1.11	13.7
Approach		1337	3.0	0.989	39.7	LOS D	34.9	894.3	1.00	1.11	13.9
North: Orange											
7	L2	98	4.0	1.596	331.1	LOS F	55.7	1438.3	1.00	2.36	2.7
4	T1	206	4.0	1.596	331.1	LOS F	55.7	1438.3	1.00	2.36	2.6
14	R2	26	4.0	1.596	331.1	LOS F	55.7	1438.3	1.00	2.36	2.6
Approach		330	4.0	1.596	331.1	LOS F	55.7	1438.3	1.00	2.36	2.6
West: Fruitville											
5	L2	46	4.0	0.857	20.6	LOS C	14.4	372.0	0.90	0.82	18.1
2	T1	1035	4.0	0.857	20.6	LOS C	14.4	372.0	0.90	0.82	19.0
12	R2	49	4.0	0.857	20.6	LOS C	14.4	372.0	0.90	0.82	17.9
Approach		1131	4.0	0.857	20.6	LOS C	14.4	372.0	0.90	0.82	18.9
All Vehicles		3201	3.5	1.596	73.7	LOS E	55.7	1438.3	0.97	1.26	9.3

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: SIDRA Standard.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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MOVEMENT SUMMARY

Site: Orange PM

New Site
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Orange											
3	L2	108	3.0	1.549	289.6	LOS F	77.0	1970.2	1.00	2.96	2.9
8	T1	297	3.0	1.549	289.6	LOS F	77.0	1970.2	1.00	2.96	2.9
18	R2	123	3.0	1.549	289.6	LOS F	77.0	1970.2	1.00	2.96	3.1
Approach		528	3.0	1.549	289.6	LOS F	77.0	1970.2	1.00	2.96	2.9
East: Fruitville											
1	L2	93	3.0	0.898	25.1	LOS C	18.0	460.7	0.99	0.97	17.3
6	T1	980	3.0	0.898	25.1	LOS C	18.0	460.7	0.99	0.97	17.5
16	R2	77	3.0	0.898	25.1	LOS C	18.0	460.7	0.99	0.97	17.1
Approach		1151	3.0	0.898	25.1	LOS C	18.0	460.7	0.99	0.97	17.4
North: Orange											
7	L2	75	3.0	0.749	39.9	LOS D	9.0	231.0	1.00	1.25	13.7
4	T1	166	3.0	0.749	39.9	LOS D	9.0	231.0	1.00	1.25	13.1
14	R2	14	3.0	0.749	39.9	LOS D	9.0	231.0	1.00	1.25	12.9
Approach		256	3.0	0.749	39.9	LOS D	9.0	231.0	1.00	1.25	13.3
West: Fruitville											
5	L2	88	3.0	0.866	21.4	LOS C	15.3	390.7	0.94	0.86	17.8
2	T1	1001	3.0	0.866	21.4	LOS C	15.3	390.7	0.94	0.86	18.7
12	R2	46	3.0	0.866	21.4	LOS C	15.3	390.7	0.94	0.86	17.6
Approach		1135	3.0	0.866	21.4	LOS C	15.3	390.7	0.94	0.86	18.6
All Vehicles		3069	3.0	1.549	70.5	LOS E	77.0	1970.2	0.97	1.29	9.6

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: SIDRA Standard.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: Goodrich - AM

New Site
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Goodrich											
3	L2	2	0.0	0.011	5.1	LOS A	0.1	1.8	0.78	0.52	26.3
8	T1	1	0.0	0.011	5.1	LOS A	0.1	1.8	0.78	0.52	26.0
18	R2	5	0.0	0.011	5.1	LOS A	0.1	1.8	0.78	0.52	24.1
Approach		8	0.0	0.011	5.1	LOS A	0.1	1.8	0.78	0.52	24.9
East: Fruitville											
1	L2	84	6.0	0.778	13.0	LOS B	11.2	292.1	0.10	0.02	19.9
6	T1	1227	6.0	0.778	13.0	LOS B	11.2	292.1	0.10	0.02	20.9
16	R2	5	6.0	0.778	13.0	LOS B	11.2	292.1	0.10	0.02	19.6
Approach		1315	6.0	0.778	13.0	LOS B	11.2	292.1	0.10	0.02	20.9
North: Goodrich											
7	L2	6	0.0	0.073	10.5	LOS B	0.5	13.0	0.97	0.82	21.2
4	T1	9	0.0	0.073	10.5	LOS B	0.5	13.0	0.97	0.82	22.6
14	R2	12	0.0	0.073	10.5	LOS B	0.5	13.0	0.97	0.82	22.8
Approach		28	0.0	0.073	10.5	LOS B	0.5	13.0	0.97	0.82	22.4
West: Fruitville											
5	L2	2	3.0	0.595	8.4	LOS A	4.1	105.2	0.30	0.15	24.5
2	T1	944	3.0	0.595	8.4	LOS A	4.1	105.2	0.30	0.15	23.9
12	R2	27	3.0	0.595	8.4	LOS A	4.1	105.2	0.30	0.15	24.2
Approach		973	3.0	0.595	8.4	LOS A	4.1	105.2	0.30	0.15	23.9
All Vehicles		2325	4.7	0.778	11.0	LOS B	11.2	292.1	0.20	0.09	22.1

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: SIDRA Standard.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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MOVEMENT SUMMARY

Site: Goodrich - Midday

New Site
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Goodrich											
3	L2	9	2.0	0.123	11.1	LOS B	0.9	22.6	0.97	0.87	22.6
8	T1	9	2.0	0.123	11.1	LOS B	0.9	22.6	0.97	0.87	22.2
18	R2	30	2.0	0.123	11.1	LOS B	0.9	22.6	0.97	0.87	20.5
Approach		48	2.0	0.123	11.1	LOS B	0.9	22.6	0.97	0.87	21.3
East: Fruitville											
1	L2	49	3.0	0.809	14.3	LOS B	14.0	359.2	0.30	0.09	19.5
6	T1	1324	3.0	0.809	14.3	LOS B	14.0	359.2	0.30	0.09	20.5
16	R2	9	3.0	0.809	14.3	LOS B	14.0	359.2	0.30	0.09	19.2
Approach		1382	3.0	0.809	14.3	LOS B	14.0	359.2	0.30	0.09	20.5
North: Goodrich											
7	L2	4	0.0	0.046	12.3	LOS B	0.3	8.5	1.00	0.82	20.2
4	T1	6	0.0	0.046	12.3	LOS B	0.3	8.5	1.00	0.82	21.7
14	R2	4	0.0	0.046	12.3	LOS B	0.3	8.5	1.00	0.82	21.8
Approach		14	0.0	0.046	12.3	LOS B	0.3	8.5	1.00	0.82	21.3
West: Fruitville											
5	L2	7	3.0	0.775	13.0	LOS B	9.1	231.8	0.35	0.15	22.0
2	T1	1258	3.0	0.775	13.0	LOS B	9.1	231.8	0.35	0.15	21.3
12	R2	35	3.0	0.775	13.0	LOS B	9.1	231.8	0.35	0.15	21.8
Approach		1300	3.0	0.775	13.0	LOS B	9.1	231.8	0.35	0.15	21.3
All Vehicles		2745	3.0	0.809	13.6	LOS B	14.0	359.2	0.34	0.14	20.9

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: SIDRA Standard.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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MOVEMENT SUMMARY

Site: Goodrich - PM

New Site
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Goodrich											
3	L2	11	0.0	0.206	11.7	LOS B	1.5	38.2	0.98	0.91	22.6
8	T1	34	0.0	0.206	11.7	LOS B	1.5	38.2	0.98	0.91	22.2
18	R2	42	0.0	0.206	11.7	LOS B	1.5	38.2	0.98	0.91	20.4
Approach		88	0.0	0.206	11.7	LOS B	1.5	38.2	0.98	0.91	21.4
East: Fruitville											
1	L2	63	3.0	0.758	12.5	LOS B	9.1	231.8	0.41	0.19	20.3
6	T1	1163	3.0	0.758	12.5	LOS B	9.1	231.8	0.41	0.19	21.4
16	R2	14	3.0	0.758	12.5	LOS B	9.1	231.8	0.41	0.19	20.1
Approach		1240	3.0	0.758	12.5	LOS B	9.1	231.8	0.41	0.19	21.3
North: Goodrich											
7	L2	6	7.0	0.049	10.3	LOS B	0.3	8.9	0.94	0.78	20.9
4	T1	8	7.0	0.049	10.3	LOS B	0.3	8.9	0.94	0.78	22.3
14	R2	4	7.0	0.049	10.3	LOS B	0.3	8.9	0.94	0.78	22.3
Approach		19	7.0	0.049	10.3	LOS B	0.3	8.9	0.94	0.78	21.8
West: Fruitville											
5	L2	29	4.0	0.769	13.0	LOS B	8.6	222.4	0.40	0.19	21.9
2	T1	1181	4.0	0.769	13.0	LOS B	8.6	222.4	0.40	0.19	21.2
12	R2	39	4.0	0.769	13.0	LOS B	8.6	222.4	0.40	0.19	21.7
Approach		1249	4.0	0.769	13.0	LOS B	8.6	222.4	0.40	0.19	21.2
All Vehicles		2596	3.4	0.769	12.7	LOS B	9.1	231.8	0.43	0.22	21.3

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: SIDRA Standard.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: Osprey AM

New Site
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Osprey											
3	L2	22	4.0	0.200	8.3	LOS A	1.4	36.9	0.88	0.78	22.4
8	T1	48	4.0	0.200	8.3	LOS A	1.4	36.9	0.88	0.78	23.8
18	R2	54	4.0	0.200	8.3	LOS A	1.4	36.9	0.88	0.78	21.5
Approach		124	4.0	0.200	8.3	LOS A	1.4	36.9	0.88	0.78	22.6
East: Fruitville											
1	L2	145	6.0	0.834	16.5	LOS B	14.3	374.8	0.58	0.28	17.7
6	T1	1160	6.0	0.834	16.5	LOS B	14.3	374.8	0.58	0.28	16.7
16	R2	19	6.0	0.834	16.5	LOS B	14.3	374.8	0.58	0.28	17.5
Approach		1324	6.0	0.834	16.5	LOS B	14.3	374.8	0.58	0.28	16.8
North: Osprey											
7	L2	29	1.0	0.651	38.4	LOS D	7.2	181.6	1.00	1.26	11.9
4	T1	123	1.0	0.651	38.4	LOS D	7.2	181.6	1.00	1.26	13.5
14	R2	25	1.0	0.651	38.4	LOS D	7.2	181.6	1.00	1.26	12.3
Approach		176	1.0	0.651	38.4	LOS D	7.2	181.6	1.00	1.26	13.1
West: Fruitville											
5	L2	5	3.0	0.692	11.7	LOS B	6.9	175.5	0.67	0.52	20.8
2	T1	884	3.0	0.692	11.7	LOS B	6.9	175.5	0.67	0.52	19.2
12	R2	68	3.0	0.692	11.7	LOS B	6.9	175.5	0.67	0.52	20.5
Approach		957	3.0	0.692	11.7	LOS B	6.9	175.5	0.67	0.52	19.3
All Vehicles		2580	4.5	0.834	15.8	LOS B	14.3	374.8	0.66	0.46	17.4

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: SIDRA Standard.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: Osprey - Midday

New Site
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Osprey											
3	L2	40	1.0	0.884	62.8	LOS E	14.2	357.5	1.00	1.49	9.0
8	T1	72	1.0	0.884	62.8	LOS E	14.2	357.5	1.00	1.49	9.9
18	R2	161	1.0	0.884	62.8	LOS E	14.2	357.5	1.00	1.49	8.5
Approach		273	1.0	0.884	62.8	LOS E	14.2	357.5	1.00	1.49	9.0
East: Fruitville											
1	L2	98	3.0	0.919	24.5	LOS C	20.4	521.8	0.90	0.52	15.1
6	T1	1312	3.0	0.919	24.5	LOS C	20.4	521.8	0.90	0.52	14.0
16	R2	28	3.0	0.919	24.5	LOS C	20.4	521.8	0.90	0.52	15.0
Approach		1438	3.0	0.919	24.5	LOS C	20.4	521.8	0.90	0.52	14.1
North: Osprey											
7	L2	28	1.0	0.692	65.0	LOS E	6.3	159.4	1.00	1.22	8.4
4	T1	69	1.0	0.692	65.0	LOS E	6.3	159.4	1.00	1.22	9.7
14	R2	14	1.0	0.692	65.0	LOS E	6.3	159.4	1.00	1.22	8.8
Approach		111	1.0	0.692	65.0	LOS E	6.3	159.4	1.00	1.22	9.3
West: Fruitville											
5	L2	15	3.0	0.856	18.7	LOS B	13.6	348.2	0.76	0.53	17.7
2	T1	1220	3.0	0.856	18.7	LOS B	13.6	348.2	0.76	0.53	16.0
12	R2	55	3.0	0.856	18.7	LOS B	13.6	348.2	0.76	0.53	17.5
Approach		1290	3.0	0.856	18.7	LOS B	13.6	348.2	0.76	0.53	16.1
All Vehicles		3112	2.8	0.919	26.9	LOS C	20.4	521.8	0.86	0.63	13.7

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: SIDRA Standard.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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MOVEMENT SUMMARY

Site: Osprey PM

New Site
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: RoadName											
3	L2	40	4.0	0.996	78.6	LOS E	23.4	603.5	1.00	1.85	7.7
8	T1	130	4.0	0.996	78.6	LOS E	23.4	603.5	1.00	1.85	8.4
18	R2	210	4.0	0.996	78.6	LOS E	23.4	603.5	1.00	1.85	7.3
Approach		380	4.0	0.996	78.6	LOS E	23.4	603.5	1.00	1.85	7.7
East: RoadName											
1	L2	53	1.0	0.835	17.1	LOS B	12.9	325.1	0.78	0.53	17.8
6	T1	1181	1.0	0.835	17.1	LOS B	12.9	325.1	0.78	0.53	16.6
16	R2	27	1.0	0.835	17.1	LOS B	12.9	325.1	0.78	0.53	17.5
Approach		1261	1.0	0.835	17.1	LOS B	12.9	325.1	0.78	0.53	16.7
North: RoadName											
7	L2	14	0.0	0.197	15.0	LOS B	1.5	38.5	1.00	0.93	18.4
4	T1	30	0.0	0.197	15.0	LOS B	1.5	38.5	1.00	0.93	20.4
14	R2	19	0.0	0.197	15.0	LOS B	1.5	38.5	1.00	0.93	18.8
Approach		63	0.0	0.197	15.0	LOS B	1.5	38.5	1.00	0.93	19.5
West: RoadName											
5	L2	20	4.0	0.770	13.1	LOS B	9.0	232.6	0.47	0.24	20.0
2	T1	1191	4.0	0.770	13.1	LOS B	9.0	232.6	0.47	0.24	18.4
12	R2	29	4.0	0.770	13.1	LOS B	9.0	232.6	0.47	0.24	19.7
Approach		1239	4.0	0.770	13.1	LOS B	9.0	232.6	0.47	0.24	18.5
All Vehicles		2943	2.6	0.996	23.3	LOS C	23.4	603.5	0.68	0.59	14.7

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: SIDRA Standard.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: N. Links - Midday

New Site
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: N. Links											
3	L2	75	2.0	0.982	107.7	LOS F	16.8	425.6	1.00	1.59	5.7
18	R2	123	2.0	0.982	107.7	LOS F	16.8	425.6	1.00	1.59	6.6
Approach		198	2.0	0.982	107.7	LOS F	16.8	425.6	1.00	1.59	6.3
East: Fruitville											
1u	U	9	3.0	0.925	24.6	LOS C	27.1	694.5	0.85	0.40	17.0
1	L2	98	3.0	0.925	24.6	LOS C	27.1	694.5	0.85	0.40	16.8
6	T1	1399	3.0	0.925	24.6	LOS C	27.1	694.5	0.85	0.40	15.3
Approach		1506	3.0	0.925	24.6	LOS C	27.1	694.5	0.85	0.40	15.4
West: Fruitville											
5u	U	1	3.0	0.893	21.3	LOS C	18.6	475.1	0.79	0.43	12.5
2	T1	1396	3.0	0.893	21.3	LOS C	18.6	475.1	0.79	0.43	16.4
12	R2	25	3.0	0.893	21.3	LOS C	18.6	475.1	0.79	0.43	16.0
Approach		1422	3.0	0.893	21.3	LOS C	18.6	475.1	0.79	0.43	16.4
All Vehicles		3126	2.9	0.982	28.4	LOS C	27.1	694.5	0.83	0.49	14.3

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: SIDRA Standard.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: N. Links - AM

New Site
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: N. Links											
3	L2	26	2.0	0.088	6.9	LOS A	0.6	15.7	0.87	0.71	22.2
18	R2	28	2.0	0.088	6.9	LOS A	0.6	15.7	0.87	0.71	23.5
Approach		54	2.0	0.088	6.9	LOS A	0.6	15.7	0.87	0.71	23.0
East: Fruitville											
1u	U	6	5.0	0.990	35.9	LOS D	114.9	2986.3	1.00	0.34	14.0
1	L2	240	5.0	0.990	35.9	LOS D	114.9	2986.3	1.00	0.34	13.8
6	T1	1409	5.0	0.990	35.9	LOS D	114.9	2986.3	1.00	0.34	12.5
Approach		1656	5.0	0.990	35.9	LOS D	114.9	2986.3	1.00	0.34	12.7
West: Fruitville											
5u	U	2	3.0	0.691	11.6	LOS B	7.2	184.8	0.70	0.50	15.5
2	T1	919	3.0	0.691	11.6	LOS B	7.2	184.8	0.70	0.50	20.5
12	R2	40	3.0	0.691	11.6	LOS B	7.2	184.8	0.70	0.50	20.0
Approach		961	3.0	0.691	11.6	LOS B	7.2	184.8	0.70	0.50	20.5
All Vehicles		2670	4.2	0.990	26.6	LOS C	114.9	2986.3	0.89	0.41	14.8

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: SIDRA Standard.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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MOVEMENT SUMMARY

Site: N. Links - PM

New Site
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: N. Links											
3	L2	60	1.0	1.323	216.3	LOS F	37.9	953.9	1.00	2.22	3.2
18	R2	232	1.0	1.323	216.3	LOS F	37.9	953.9	1.00	2.22	3.7
Approach		292	1.0	1.323	216.3	LOS F	37.9	953.9	1.00	2.22	3.6
East: Fruitville											
1u	U	4	2.0	0.754	12.1	LOS B	11.1	281.3	0.38	0.14	22.1
1	L2	63	2.0	0.754	12.1	LOS B	11.1	281.3	0.38	0.14	21.8
6	T1	1209	2.0	0.754	12.1	LOS B	11.1	281.3	0.38	0.14	20.3
Approach		1276	2.0	0.754	12.1	LOS B	11.1	281.3	0.38	0.14	20.4
West: Fruitville											
5u	U	1	3.0	0.868	18.4	LOS B	15.9	407.3	0.52	0.24	13.3
2	T1	1437	3.0	0.868	18.4	LOS B	15.9	407.3	0.52	0.24	17.5
12	R2	6	3.0	0.868	18.4	LOS B	15.9	407.3	0.52	0.24	17.0
Approach		1444	3.0	0.868	18.4	LOS B	15.9	407.3	0.52	0.24	17.4
All Vehicles		3012	2.4	1.323	34.9	LOS C	37.9	953.9	0.51	0.39	12.9

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: SIDRA Standard.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.