BURGESS & NIPLE

Memorandum

1800 Pembrook Drive | Suite 265 | Orlando, FL 32810 | 407.401.8527

To: City of Maitland

From: Burgess & Niple, Inc.

Subject: Maitland Boulevard and Maitland Avenue Grade Separated Interchange Feasibility Study

Date: December 18, 2015 (FINAL)

Background and Purpose

Burgess & Niple (B&N) has completed the first phase of a study of the feasibility of constructing a grade separated crossing at the intersection of Maitland Boulevard and Maitland Avenue. Maitland Boulevard is currently an east/west four-lane divided urban principal arterial that provides direct access to Interstate 4 and US 17/92 (Orlando Avenue). Maitland Avenue is currently a four-lane divided urban collector road oriented in the north/south direction. Parallel to Interstate 4 and US 17/92 (Orlando Avenue), Maitland Avenue connects the City of Maitland to Altamonte Springs.

Volume Development

In order to estimate the future volumes expected at the intersection of Maitland Boulevard and Maitland Avenue, the Travel Demand Model (TDM) output was obtained from MetroPlan Orlando for this area. Base year (2009) and future year (2040) model outputs were used in the volume development. Existing AM and PM peak period (7:00 AM to 9:00 AM and 4:00 PM to 6:00 PM) intersection counts from October 2014 were provided by the City. The following process was used to develop the future 2040 volumes for analysis:

- Existing average daily traffic (ADT) volumes were obtained from the FDOT Florida Traffic Online Map for the east and west Maitland Boulevard approaches. Roadway count summaries from between September 30, 2014 and October 2, 2014 were provided by the City for Maitland Avenue from the Seminole County Line to Orlando Avenue. Because the locations of these ADT counts were not on the approaches immediately adjacent to the intersection, a factor was developed from these counts to expand the peak period counts (7:00 AM to 9:00 AM and 4:00 PM to 6:00 PM) to ADT volumes for each approach.
- The base year 2009 and future year 2040 Metroplan TDM output was obtained for all four intersection approaches. The model predicts the east and south legs to grow by approximately 20% between 2009 and 2040 while it predicts the west leg to grow by 30%. The model predicts that the north leg will actually decrease slightly in volume between 2009 and 2040. Given that Maitland Avenue to the north connects to several residential and commercial developments as well as Altamonte Drive, a major arterial to the north; and the significant growth experienced on the other intersection approaches; in our judgment, it is unlikely that the north leg volumes will not grow in the future as predicted by the model. Thus, a nominal 10% growth was applied to the 2009 TDM output on the north leg to generate a 2040 ADT estimate.

- The Ratio and Difference Methods factoring procedures outlined in the NCHRP 765 report were used to calibrate link volumes. The adjusted link volumes were used as an input to developing design turning movement volumes for the study intersection.
- Based on the *Project Traffic Forecasting Handbook* published by FDOT, the standard K factor of 0.9 was used for all approaches for the AM and PM peak hours.
- Directional factors (D factors) were calculated from the existing intersection counts.

The 2040 forecasted AM and PM peak hour volumes are illustrated in **Figure 1**.

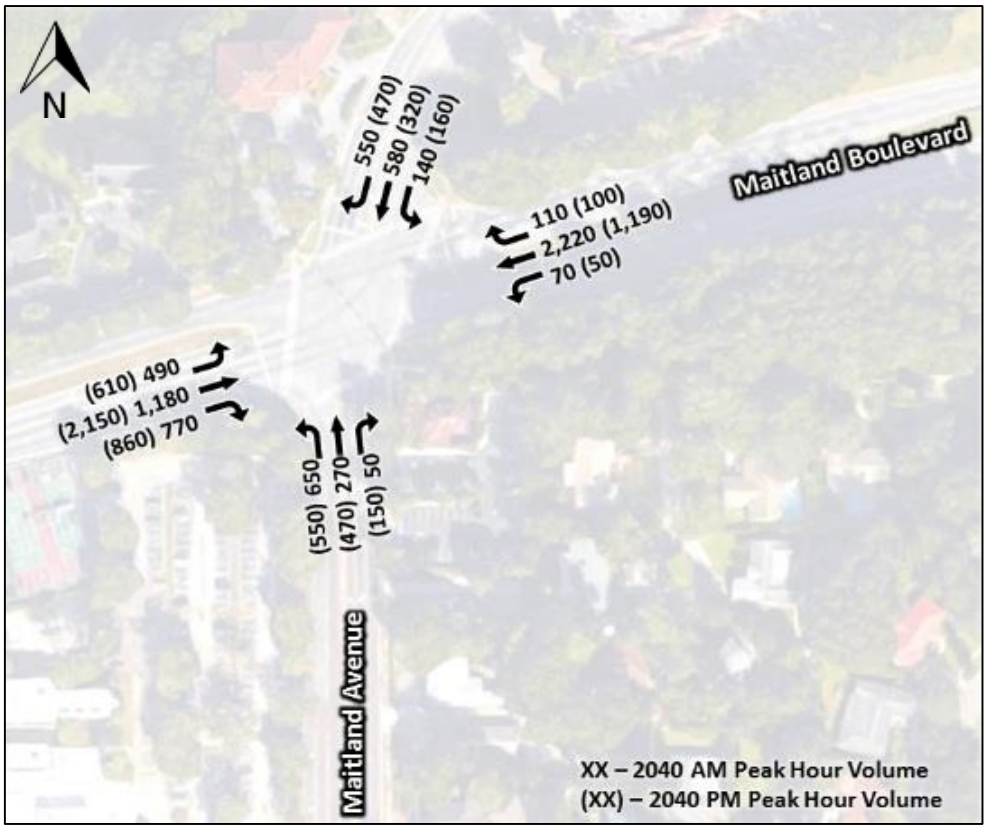


Figure 1: 2040 Peak Hour Volumes

These forecasts provide a good basis for this feasibility analysis. However, if the concept is advanced to a more detailed preliminary engineering study, the Metroplan TDM should be updated to include this intersection as grade separated and the forecasts recalculated based on the new model runs.

Intersection Analysis

The current at-grade intersection was analyzed with its existing lane configurations under 2014 traffic volumes as well as under the proposed FDOT Maitland Boulevard widening project lane configurations and

forecasted 2040 traffic volumes. These analyses will serve as a base to compare the operation of future grade separated intersections.

Analyses were completed using *Synchro 8* software which uses methodologies provided in the *Highway Capacity Manual (HCM)*. *SimTraffic* software, the microscopic simulation tool associated with Synchro, was used to determine the 95th percentile queue lengths. A total of 10 separate model runs were conducted to account for the random nature of the microscopic *SimTraffic* model.

Results from these analyses are presented in **Table 1** and **Table 2**.

Table 1:
Existing At-Grade Intersection Analysis Results (2014 traffic)

	Overall LOS	Eastbound (Maitland Boulevard)			Westbound (Maitland Boulevard)			Northbound (Maitland Avenue)			Southbound (Maitland Avenue)		
		LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
AM Peak Hour													
LOS	F	F	C	C	E	F	A	F	D		F	F	F
Delay	108.2	166.3	28.8	31.7	78.6	164.2	0.1	200.8	47.7		184.5	109.6	112.7
		E 61.2			F 155.1			F 101.9			118.4 F		
V/C Ratio	--	1.17	0.59	0.62	0.42	1.26	0.06	12.3	1.16		1.08	1.01	1.05
95th Percentile Queue		550’	1,000’		300’	925’	300’	725’	975’		275’	1,075’	250’
PM Peak Hour													
LOS	E	F	F	E	F	E	A	F	D		E	F	E
Delay	78.9	92.7	89.6	76.8	236.6	60.2	0.1	133.2	47.0		69.8	101.9	56.6
		F 86.7			E 63.0			E 75.5			E 75.9		
V/C Ratio	--	0.97	1.08	1.01	1.09	0.89	0.06	1.09	0.79		0.59	0.95	0.73
95th Percentile Queue		650’	1,550’		150’	475’	175’	700’	1,000’		200’	350’	250’

Table 2: Post FDOT Widening At-Grade Intersection Analysis Results (2040)													
	Overall LOS	Eastbound (Maitland Boulevard)			Westbound (Maitland Boulevard)			Northbound (Maitland Avenue)			Southbound (Maitland Avenue)		
		LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
AM Peak Hour													
LOS	F	F	E		F	F	A	F	E		E	F	F
Delay	151.0	204.2	64.0		177.7	219.8	0.1	256.5	56.9		79.8	137.8	123.0
		F 92.1			F 208.5			F 190.6			F 125.0		
V/C Ratio	--	1.27	1.13		1.01	1.38	0.08	1.40	0.53		0.71	1.12	1.10
95th Percentile Queue		600’	1,550’		425’	1,300’	375’	700’	1,150’		425’	1,300’	250’
PM Peak Hour													
LOS	F	E	F		F	D	A	F	F		F	E	D
Delay	140.7	72.4	198.6		299.3	52.6	0.1	212.8	121.6		224.0	77.8	50.0
		F 177.3			E 58.0			F 164.4			F 88.7		
V/C Ratio	--	0.91	1.36		1.27	0.84	0.07	1.30	1.08		1.24	0.81	0.75
95th Percentile Queue		625’	1,550’		250’	500’	125’	725’	1,050’		350’	525’	250’

The long delays and high volume-to-capacity (v/c) ratios indicate that an at-grade intersection, even with the proposed FDOT widening lane configuration, will not provide acceptable operations at this location in 2040.

The study intersection was analyzed under three proposed grade separated configurations for the 2040 AM and PM peak hours. The three grade separated configurations include a Single Point Urban Diamond Interchange (SPUI), a Median Urban Diamond (MUD) Interchange, and a Tight Diamond Interchange. All analyses were completed using *Synchro 8* software which uses methodologies provided in the *Highway Capacity Manual (HCM)*. The lane configurations for the concepts are the minimum to provide LOS D or better on each intersection approach, and a volume-to-capacity ratio 1.0 or less for all traffic movements, for 2040 traffic forecasts. Because the proposed grade separated intersection will be part of the Maitland Avenue signal system, cycle lengths will be dictated by the network and not the isolated operations of this intersection. A cycle length of 90 seconds was used for both the AM and PM peak hours for all three configurations. *PASSER* software was used to determine the signal timings for the tight diamond interchange configuration, which were then transferred to *Synchro* for optimization and analysis.

SimTraffic software, the microscopic simulation tool associated with Synchro, was used to determine the 95th percentile queue lengths. A total of 10 separate model runs were conducted to account for the random nature of the microscopic *SimTraffic* model. Analysis results for the three grade separated configurations are summarized below.

Single Point Urban Interchange (SPUI)

The SPUI consolidates the two intersections of a typical diamond interchange into a single signalized intersection. The analysis results for the SPUI configuration that is illustrated in attached **Exhibit A** are summarized in **Table 3**.

Table 3:
SPUI Operational Analysis Results

	Overall LOS	Eastbound		Westbound		Northbound			Southbound		
		LT	RT	LT	RT	LT	TH	RT	LT	TH	RT
AM Peak Hour											
LOS	C	D	A	C	A	D	C	A	D	D	A
Delay	27.4	47.8	1.6	31.8	0.1	50.8	25.0	0.0	42.6	47.5	0.8
		B 19.6		B 12.5		D 41.0			C 26.8		
V/C Ratio	--	0.85	0.58	0.23	0.08	0.92	0.30	0.04	0.57	0.88	0.41
95th Percentile Queue		300’	225’	100’	0’	500’	350’	0’	175’	325’	225’
PM Peak Hour											
LOS	C	D	A	C	A	C	C	A	D	D	A
Delay	24.2	50.1	2.2	28.1	0.1	30.4	34.4	0.2	40.6	52.5	0.7
		C 22.0		A 9.5		C 28.1			C 24.9		
V/C Ratio	--	0.91	0.65	0.14	0.07	0.63	0.65	0.11	0.57	0.81	0.35
95th Percentile Queue		400’	125’	75’	0’	300’	200’	0’	175’	200’	200’

All movements and the overall intersection operate acceptably at LOS D or better during both peak hours under the SPUI configuration.

Median Urban Diamond (MUD) Interchange

Similar to the SPUI, the MUD also consolidates the two ramp intersections into one signalized intersection. However, with the MUD, the ramps merge and diverge from the mainline on the left instead of the right. A MUD has the advantage of a smaller right-of-way footprint than most interchanges since the exit ramps are

in the median and requires shorter vehicle clearance times than a SPUI because of the smaller intersection width. The analysis results for the MUD Interchange illustrated in **Exhibit B** are summarized in **Table 4**.

Table 4:
MUD Operational Analysis Results

	Overall LOS	Eastbound		Westbound		Northbound			Southbound		
		LT	RT	LT	RT	LT	TH	RT	LT	TH	RT
AM Peak Hour											
LOS	D	C	D	F	A	E	C	C	D	E	B
Delay	43.0	23.0	52.3	100.8	0.1	59.3	28.6	21.7	40.3	64.7	16.5
		D 40.9		D 39.4		D 48.8			D 41.1		
V/C Ratio	--	0.46	1.00	0.85	0.08	0.96	0.35	0.03	0.53	0.97	0.63
95th Percentile Queue		300’	450’	125’	25’	400	150’	0’	150’	300’	200’
PM Peak Hour											
LOS	D	C	D	E	A	C	C	C	E	E	B
Delay	35.0	21.2	40.1	68.0	0.1	33.2	34.4	23.0	55.8	79.2	16.7
		C 32.3		C 22.9		C 32.4			D 44.4		
V/C Ratio	--	0.51	0.98	0.61	0.07	0.68	0.65	0.09	0.74	0.97	0.54
95th Percentile Queue		250’	200’	75’	0’	325’	200’	0’	175’	225’	200’

All approaches operate acceptably at LOS D or better for 2040 forecasts during both peak hours under the MUD configuration.

Tight Diamond Interchange

The Tight Diamond Interchange is similar to a typical diamond interchange but is compressed for a smaller footprint and less right-of-way requirements. These interchanges are typically controlled from a single traffic signal controller so that the timings are coordinated to clear out the traffic between the closely spaced intersections and to keep backups from blocking the upstream intersection. The analysis results for the configuration shown in **Exhibit C** are summarized in **Table 5**.

Table 5:
Tight Diamond Interchange Operational Analysis Results

		Overall LOS	Westbound		Northbound		Southbound	
			LT	RT	LT	TH	TH	RT
North Intersection (WB Maitland Blvd)	AM Peak Hour							
	LOS	B	D	D	B	A	B	B
	Delay	11.5	45.9	37.7	12.7	1.7	13.7	11.4
			D 40.9		A 6.7		B 12.7	
	V/C Ratio	--	0.44	0.08	0.79	0.29	0.31	0.58
	95th Percentile Queue		100’	75’	25’	25’	200’	225’
	PM Peak Hour							
	LOS	A	D	D	B	A	B	B
	Delay	9.7	42.3	37.6	10.0	3.9	12.8	10.0
			D 39.1		A 5.9		B 11.4	
	V/C Ratio	--	0.32	0.07	0.67	0.42	0.21	0.49
	95th Percentile Queue		75’	75’	50’	50’	125’	175’
		Overall LOS	Eastbound		Northbound		Southbound	
			LT	RT	TH	RT	LT	TH
South Intersection (EB Maitland Blvd)	AM Peak Hour							
	LOS	C	A	C	D	A	D	C
	Delay	30.9	9.9	28.8	47.3	1.9	52.4	23.6
			C 21.4		D 45.0		C 28.7	
	V/C Ratio	--	0.27	0.89	0.90	0.04	0.80	0.61
	95th Percentile Queue		200’	400’	600’	25’	175’	250’
	PM Peak Hour							
	LOS	C	B	D	D	A	E	B
	Delay	34.9	11.0	39.3	50.5	2.2	70.5	18.8
			C 27.6		D 44.3		C 34.4	
	V/C Ratio	--	0.35	0.95	0.94	0.11	0.91	0.34
	95th Percentile Queue		250’	450’	250’	50’	200’	150’

The Tight Diamond Interchange configuration operates acceptably at LOS D or better for all approaches and the overall intersection during both the AM and PM peak hours with minimal queue lengths for both intersections.

To compare the operations of 2040 volumes for the three grade separated intersections and the at-grade intersection post FDOT widening, the average peak hour delay per vehicle (in seconds) for the overall intersection including the through movements on Maitland Boulevard are summarized in **Table 6**.

Table 6: 2040 Operational Analysis Results Summary

	Post FDOT Widening At-Grade	SPUI	MUD	Tight Diamond
AM Peak Hour	151.0	14.2	22.3	17.9
PM Peak Hour	140.7	12.8	18.5	19.4

IMPACTS

The interchange configurations investigated at this location all are anticipated to have some R/W and access impacts. The MUD alternative appears to require the least amount of R/W of the three configurations. All three have similar access concerns that would require some investigation to see if they can be mitigated. Below is a summary of impacts for each alternative.

Median Urban Diamond

Maitland Avenue – Maitland Avenue must be widened to accommodate the necessary lane configuration of the MUD, which includes dual left turn lanes for the NB to WB movement. This requires a wider median section on the north side of Maitland Avenue in order to line up the through lanes through the intersection. However, the proposed number of lanes on the north side matches the existing number of lanes, so it is not anticipated that additional R/W would be needed once the alternative is optimized geometrically. On the south side, an additional two proposed lanes are needed over the existing lane configuration to account for the second NB dedicated left turn lane and a dedicated right turn lane. This width increase will require some R/W in the SE quadrant; this alternative could be optimized to push the southern leg to the west to reduce the R/W impacts in the SE quadrant; this may be desirable due to the close proximity of the Fertility Center of Orlando building. This building could see some changes to their access due to their existing access proximity to the existing intersection. It would be expected that their access would need to be converted to Right-in/Right-out in order to meet Access Management requirements in the proximity of an interchange. Similarly, the MNH Medical Surgery Center property will have access impacts. Again because of their close proximity to the ramp intersection, their existing access would most likely need to be converted to a right-in/right-out access. One idea to mitigate this would be to investigate developing an access off of the east side of the existing cul-de-sac along Lake Faith Drive. This would allow them to have full access to their property.

West Side - The MUD configuration utilizes tight geometry on the west side of Maitland Avenue using retaining walls between the freeway facility and the median ramps connecting Maitland Boulevard to Maitland Avenue. This west side also yields tight existing R/W footprint. Even with the tight footprint envisioned for the MUD, R/W impacts are anticipated in the NW and SW quadrants. The R/W impacts could be minimized by holding the northern R/W limit and working south. This would allow the existing cul-de-sac on West Lake Faith Drive to remain. Performing this strategy will impact the existing tennis courts and parking at the Roth Jewish Community Center property in the SW quadrant. There doesn't appear to be any change in access required on the west side; this configuration assumes that both the freeway and the ramps can meet back up geometrically prior to the existing intersection with Lake Faith Drive.

East Side – Because of the width needed on the west side to accommodate the needed turn lanes on the median ramps, the east side has a wider footprint than what is needed due to lining up the lanes on each side of Maitland Avenue. It is anticipated that a very small amount of R/W may be needed in the SE quadrant as a result of the current alignment of Maitland Boulevard and the ramp configuration. This configuration could be optimized by skewing the bridge crossing over Maitland Avenue and pulling Maitland Boulevard in tighter to the center on the east side; this will reduce the R/W impacts in the SE quadrant. Access to Greenwood Road and further down to Orlando Avenue would need to be reconfigured. The existing Maitland/Orlando interchange is a trumpet with dedicated ramps for each movement. Currently, the EB access from Maitland Boulevard to SB Orlando Avenue is made via this ramp movement just east of Maitland Avenue. The MUD would eliminate this ramp in its current configuration. To mitigate this, converting the existing connection of EB Maitland to NB Orlando to a full intersection would allow the EB to SB movement to be relocated and would allow it to be maintained.

<u>Tight Diamond</u>

Maitland Avenue – Maitland Avenue must be widened to accommodate the necessary lane configuration of the Tight Diamond, which includes dual left turn lanes for the NB to WB movement. The challenge with a Tight Diamond configuration is that because the ramp intersections are so close to each other, vehicles cannot be stored between the intersections. As a result, vehicles need to be stored outside of the interchange area, which will make the width of the approach pavement wider than for the MUD. On the north side, additional width is required due to the need to have a wide enough median to be offset from the NB dual left turn lanes and still allow the through lanes to line up through the intersections. Because of this, R/W would be necessary in the NW quadrant. On the south side, an additional two proposed lanes are needed over the existing lane configuration to account for the second NB dedicated left turn lane and a dedicated right turn lane. Additional width is also needed on the south side to account for a wider median, again designed to offset the SB left turn lane and allow the through lanes to line up through the intersection. This width increase will require some R/W in the SE and SW quadrants; this alternative could be optimized to push the southern leg to the west to reduce the R/W impacts in the SE quadrant; this may be desirable due to the close proximity of the Fertility Center of Orlando building. This building could see some changes

to their access due to their existing access proximity to the existing intersection. It would be expected that their access would need to be converted to Right-in/Right-out in order to meet Access Management requirements in the proximity of an interchange. Similarly, the MNH Medical Surgery Center property will have access impacts. Again because of their close proximity to the ramp intersection, their existing access would most likely need to be converted to a right-in/right-out access. One idea to mitigate this would be to investigate developing an access off of the east side of the existing cul-de-sac along Lake Faith Drive. This would allow them to have full access to their property.

West Side – Similar to the MUD, the Tight Diamond configuration utilizes tight geometry on the west side of Maitland Avenue using retaining walls between the freeway facility and the ramps connecting Maitland Boulevard to Maitland Avenue. However, the Tight Diamond will require a wider footprint than the MUD due to the needed lanes on the two ramp roadways. This west side also yields tight existing R/W footprint. As a result, the R/W impacts anticipated in the NW and SW quadrants are anticipated to be more significant as a result of the Tight Diamond than the anticipated impacts as a result of the MUD. The R/W impacts could be minimized by holding the northern R/W limit and working south. This would allow the existing cul-de-sac on West Lake Faith Drive to remain. Performing this strategy will impact the existing tennis courts and parking at the Roth Jewish Community Center property in the SW quadrant. There doesn't appear to be any change in access required on the west side; this configuration assumes that both the freeway and the ramps can meet back up geometrically prior to the existing intersection with Lake Faith Drive.

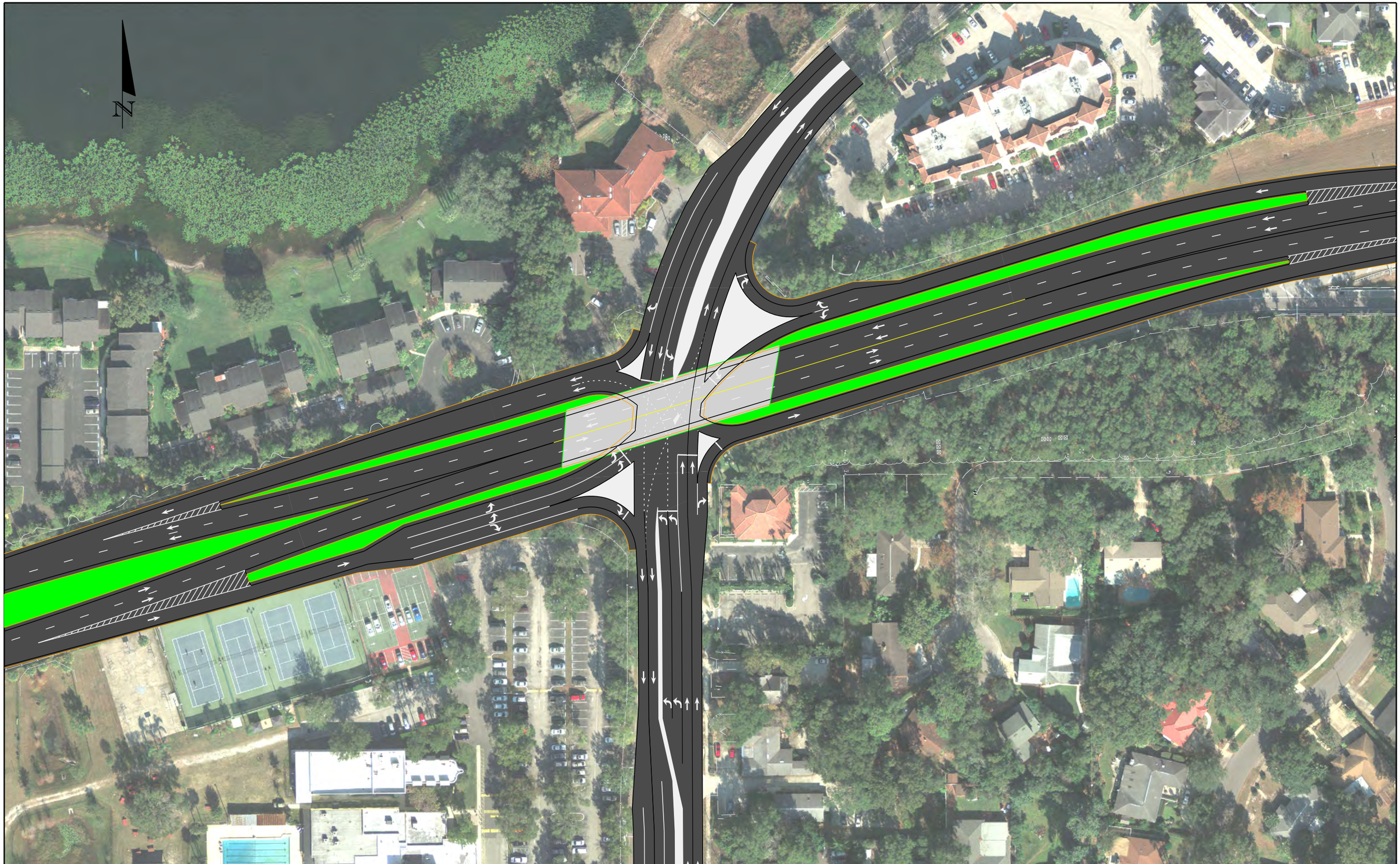
East Side – Because of the width needed on the west side to accommodate the required number of lanes on the ramps, the east side has a wider footprint than what is needed due to lining up the lanes on each side of Maitland Avenue. It is anticipated that a very small amount of R/W may be needed in the SE quadrant as a result of the current alignment of Maitland Boulevard and the ramp configuration. Access to Greenwood Road and further down to Orlando Avenue would need to be reconfigured. The existing Maitland/Orlando interchange is a trumpet with dedicated ramps for each movement. Currently, the EB access from Maitland Boulevard to SB Orlando Avenue is made via this ramp movement just east of Maitland Avenue. The MUD would eliminate this ramp in its current configuration. To mitigate this, converting the existing connection of EB Maitland to NB Orlando to a full intersection would allow the EB to SB movement to be relocated and would allow it to be maintained.

<u>Single Point Urban Interchange</u>

Because of the presence of a single intersection in a similar location as the MUD option, the impacts along Maitland Avenue should be the same as the MUD. The impacts along the ramps, assuming a tight footprint with retaining walls separating the outside ramps from the freeway, will be similar to the Tight Diamond. Access impacts will closely match those of the MUD option.

Appendix A

Single Point Urban Interchange Exhibit



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

BURGESS & NIPLE

1800 PEMBROOK DRIVE, SUITE 265
ORLANDO, FL 32810

CITY OF MAITLAND

JOB	PROJECT
54466	MAITLAND BLVD INTERCHANGE STUDY

EXHIBIT A
SPUI

SHEET NO.

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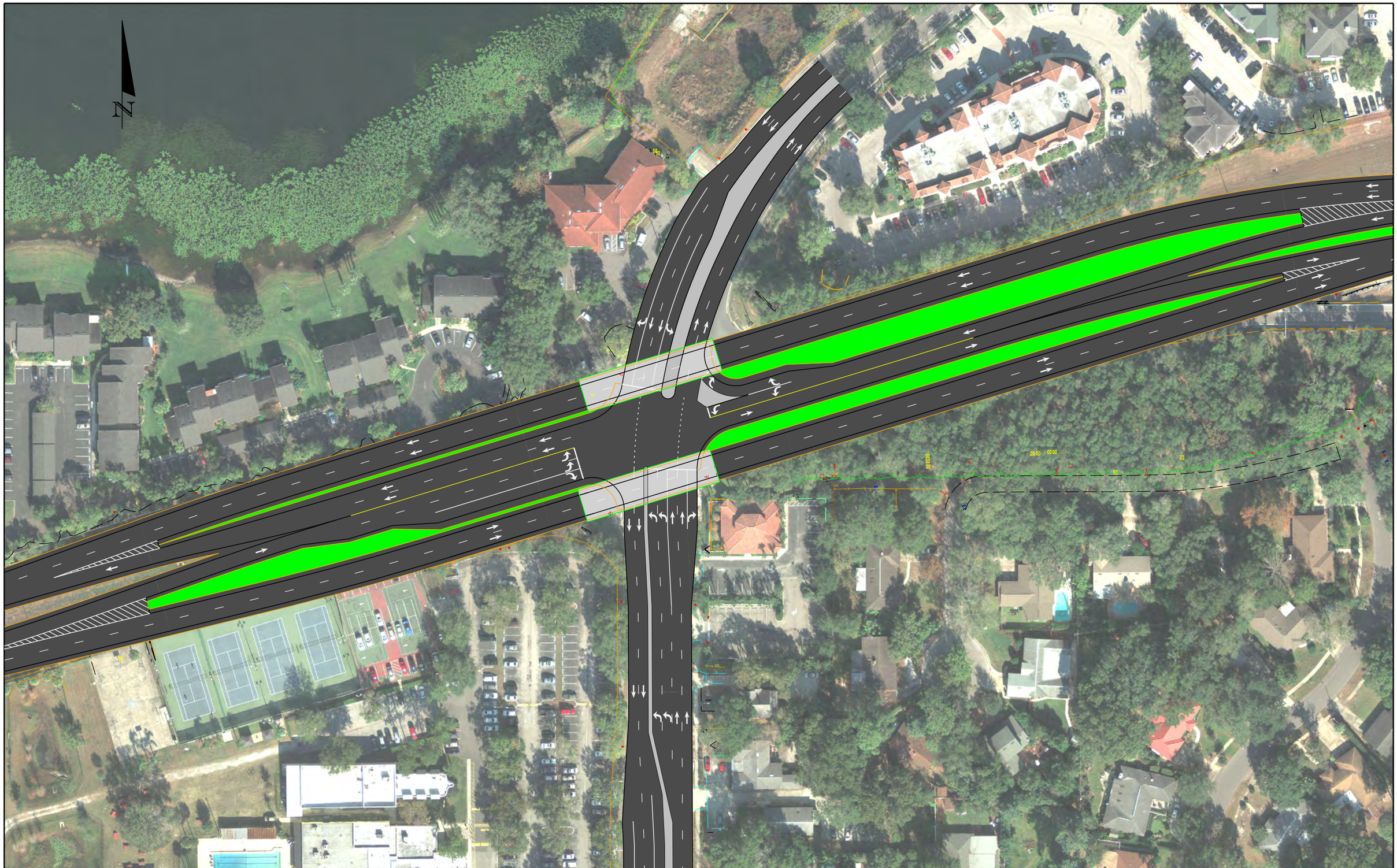
Appendix B

Median Urban Diamond Interchange Exhibit



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BURGESS & NIPLE

1800 PEMBROOK DRIVE, SUITE 265
ORLANDO, FL 32810

CITY OF MAITLAND

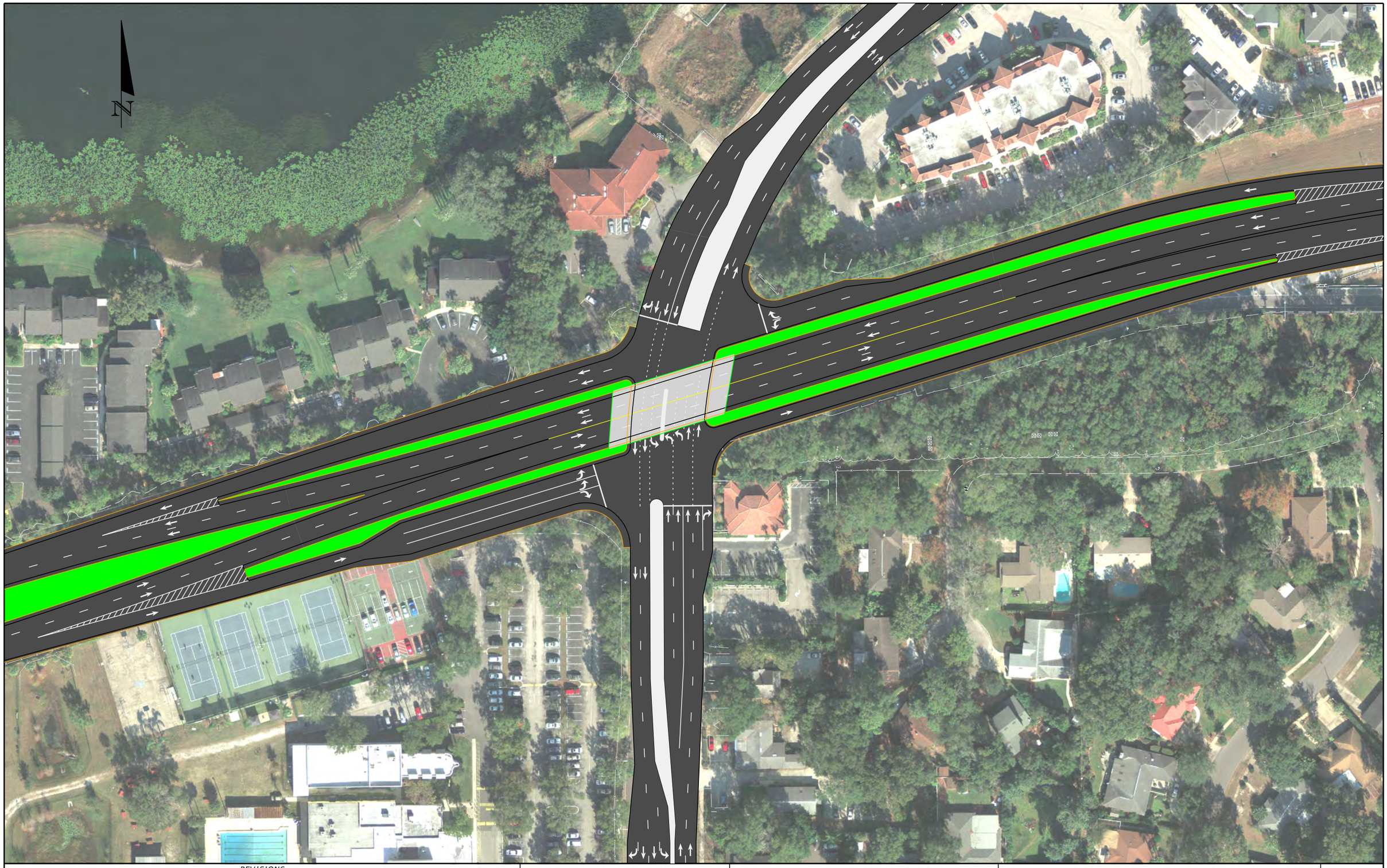
JOB	PROJECT
54466	MAITLAND BLVD INTERCHANGE STUDY

EXHIBIT B
MEDIAN URBAN DIAMOND

SHEET NO.

Appendix C

Tight Urban Diamond Interchange Exhibit



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

BURGESS & NIPLE

1800 PEMBROOK DRIVE, SUITE 265
ORLANDO, FL 32810

CITY OF MAITLAND

JOB	PROJECT
54466	MAITLAND BLVD INTERCHANGE STUDY

EXHIBIT C
TIGHT DIAMOND

SHEET NO.

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Appendix D

Traffic Analyses Exhibit

2014 Existing Turning Movement Counts

Roadway Count Summary

GMB Engineers & Planners, Inc.

County	Orange	**City**	Maitland
Intersection	Maitland ave	&	Maitland blvd
Date	October 7, 2014		**All Vehicles**
Time Period	7:00 to 9:00		

GMB Project #: 0

Time Period	Northbound Left	Northbound Through	Northbound Right	Southbound Left	Southbound Through	Southbound Right
7:00 - 7:15	68	30	3	13	59	84
7:15 - 7:30	100	29	6	24	72	116
7:30 - 7:45	134	43	6	20	110	121
7:45 - 8:00	144	64	6	29	121	138
8:00 - 8:15	112	41	7	23	97	118
8:15 - 8:30	87	46	10	35	129	134
8:30 - 8:45	118	54	22	27	108	109
8:45 - 9:00	118	65	13	27	117	111
	881	372	73	198	813	931

Time Period	Eastbound Left	Eastbound Through	Eastbound Right	Westbound Left	Westbound Through	Westbound Right
7:00 - 7:15	45	174	95	7	366	4
7:15 - 7:30	91	195	104	5	480	9
7:30 - 7:45	103	228	149	8	364	16
7:45 - 8:00	131	219	172	11	352	29
8:00 - 8:15	103	228	146	18	443	22
8:15 - 8:30	57	168	107	7	429	14
8:30 - 8:45	83	167	90	11	376	8
8:45 - 9:00	66	146	120	20	345	12
	679	1,525	983	87	3,155	114

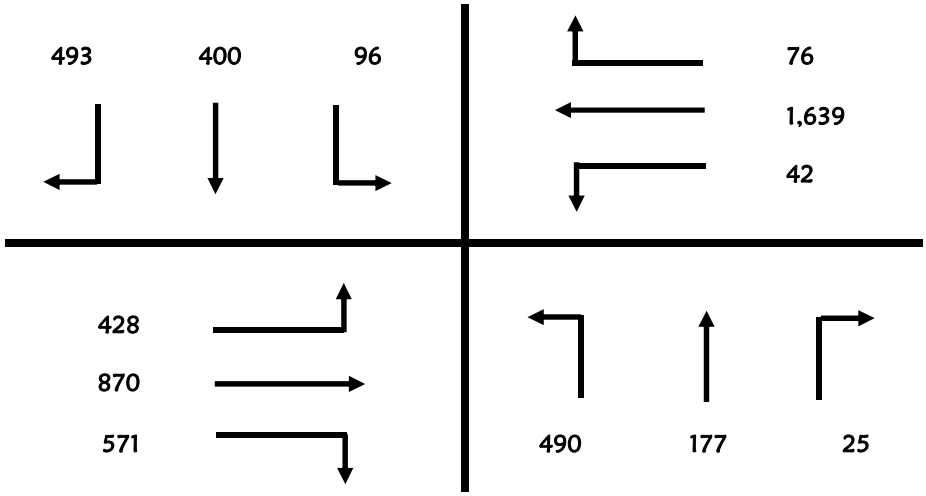
North / South
Maitland ave

East / West
Maitland blvd

Peak Hour
7:15 - 8:15

Peak Hour Factor
0.94

Total Pk Hr Voume
5,307



Roadway Count Summary

GMB Engineers & Planners, Inc.

County	Orange	**City**	Maitland
Intersection	Maitland ave	&	Maitland blvd
Date	October 7, 2014		**All Vehicles**
Time Period	16:00 to 18:00		

GMB Project #: 13-084.01

Time Period	Northbound Left	Northbound Through	Northbound Right	Southbound Left	Southbound Through	Southbound Right
16:00 - 16:15	107	56	18	21	77	97
16:15 - 16:30	121	101	19	15	84	82
16:30 - 16:45	106	77	14	23	65	68
16:45 - 17:00	137	119	34	28	66	100
17:00 - 17:15	87	81	25	40	87	110
17:15 - 17:30	138	149	38	26	63	83
17:30 - 17:45	105	105	28	34	105	99
17:45 - 18:00	118	139	22	27	67	82
	919	827	198	214	614	721

Time Period	Eastbound Left	Eastbound Through	Eastbound Right	Westbound Left	Westbound Through	Westbound Right
16:00 - 16:15	113	344	85	6	238	20
16:15 - 16:30	83	334	83	8	208	13
16:30 - 16:45	126	385	98	7	231	18
16:45 - 17:00	112	332	90	12	199	13
17:00 - 17:15	103	393	86	6	220	15
17:15 - 17:30	108	382	81	14	228	27
17:30 - 17:45	184	401	75	11	190	26
17:45 - 18:00	78	334	153	5	184	9
	907	2,905	751	69	1,698	141

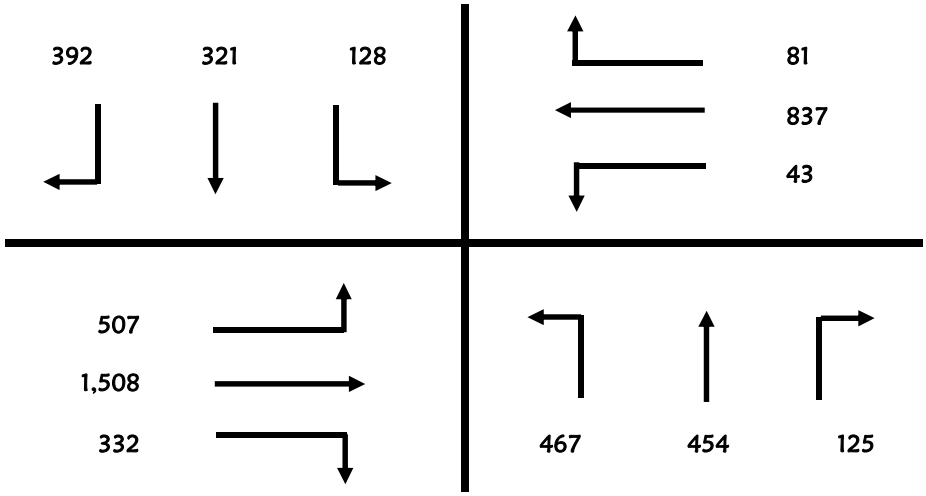
North / South
Maitland ave

East / West
Maitland blvd

Peak Hour
16:45 - 17:45

Peak Hour Factor
0.95

Total Pk Hr Voume
5,195



Existing ADT Count Estimates

Existing Counts

7:00 - 9:00 AM

		IN	OUT		
		1942	1165		
OUT	4967	19622		3356	IN
IN	3187			1796	OUT
		1883	1326		
		OUT	IN		

4:00 - 6:00 PM

		IN	OUT		
		1549	1803		
OUT	3338	19928		1908	IN
IN	4563			3317	OUT
		1506	1944		
		OUT	IN		

Percentage of ADT (4 hours)
Same as South Leg Counts

0.300471

From Site 750578 FDOT: 0.32232

0.293592: From Site 750578 FDOT

0.300471
From Roadway Count Summary

EXISTING COUNT ADT

21496

49811

35345

22162

NCHRP Calculations

USER INPUT
OPTIONAL INPUT
FINAL REFINED FORECAST

	COL 1	COL 2	COL 3	COL 4	COL 4	COL 5	COL 6	COL 7	COL 8	COL 8.5	COL 9	COL 10	COL 10.5	COL 11	COL 12	COL 13	COL 14	COL 15	COL 16	COL 17	COL 18	COL 19	COL 20
					NCHRP255 adjustment process										*Interpolate opening & design year & adjust for more recent count*								
					near base model		2009		2040						Selected	Selected	most recent	most recent	recent count	2040	2040	growth factors	
	Road/Link	lin	Dax	Rse	count year	count data	Ab	Ab^interpolate	Af-D	SLRATIO	RATIO	DIFF	MRATIO	RAf	Adjustment	Volume	count year	count data	delta	opening year	design yr	opening yr	design year
(east leg)	Maitland Boulevard	0.5	2	Dis	2014	35345	22945	24062	29868	28027	43874	41151	43345	42248	**RAf**	**42248**			0	42248	42248	1.195	1.195
(north leg)	Maitland Avenue	0.5	2	Dis	2014	21496	31335	31840	34469	32344	23271	24125	23336	23731	**RAf**	**23731**			0	23731	23731	1.104	1.104
(west leg)	Maitland Boulevard	0.5	2	Dis	2014	49811	43957	46806	61619	57821	65575	64624	65346	64985	**RAf**	**64985**			0	64985	64985	1.305	1.305
(south leg)	Maitland Avenue	0.5	2	Dis	2014	22162	33539	34567	39913	37453	25589	27508	25846	26677	**RAf**	**26677**			0	26677	26677	1.204	1.204
Total						**128814**		**137275**															

There are hidden rows if you want more roads in your intersection/screenline

There are hidden columns for opening year model results if you have them

Optional Capacity Adjuster
Use this for screenlines, not intersection approaches

Capacity	delta opening yr	delta design year	revised volume opening yr	revised volume design year	growth factors opening yr	growth factors design year
	-42248	-42248	42248	42248	1.195	1.195
	-23731	-23731	23731	23731	1.104	1.104
	-64985	-64985	64985	64985	1.305	1.305
	-26677	-26677	26677	26677	1.204	1.204
0	**0**	**0**				
	-157641	**-157641**				

	Year
Model Base	2009
Model Opening (opt)	
Model Forecast	2040
Project Opening	2040
Project Design	2040

if Yo=Yb then also must = Yc (col4)
must be > Yb

General Notes

General rule: if MR<1 then if ***RATIO*** *<= 1.0 then use* ***RAT***
OR if RATIO >= 2 then use DIFF else use Raf ,
if MR>1 then if RATIO <=0.5 then use MRATIO, OR
if RATIO >=2 then use DIFF, else use Raf(based on MRATI
Which you can change if it makes sense,
make both of columns 2-3 very large to force ratios,
make them 0 to force differences

Make sure model opening year (if used)
is greater existing and less than forecast
EXCEPT...
If you want to use a base year build run
to establish trends, set Af-ON=Ab
set model open year=base year=count year
Place build run in Af-OB
Do not use cols 14-15 in this case

If you have a non-model forecast you
want to enter to interpolate and calculate
growth rate, put it in column 8 (Af) then copy
column 5 to column 6 and set model base
to count year (Type toggle does this for you on TM sheet

Design year no build is a separate alternative
create a new sheet for i

You can omit open year model, have just an
open year no build or both no build and
build, but don't have a build without
a no build unless it's a new link.

If you have a new link it will get a growth rate of 1.
To get forecast turn movements for new links you mus
enter the model turns in section 2 of the turn movement sheets

A value of zero in a field usually means zero, leave fields blank if you want ther
ignored. If link doesn't exist in base, count=Ab=blank. If link doesn't exist in build
make zero, not blank in this case (Af-OB actually controls this)

There is no guarantee a forecast volume of zero will
be respected as zero by the 255 adjustments

If you have an existing intersection link that wasn't in the mode
enter its counts in the appropriate places here and on the
TM sheets. You will need to over-ride columns 19-20
of this sheet with an exogenously supplied growth rate

If you have a new intersection on an existing road you ca
enter the main line counts/model volumes (Ab and Af-ON
here and on the TM sheets (as Thru movements) and ther
the full set of volumes/turns for Af-OB and Af-D
You may want to disable screenlines in this case

Field Definiations

	COLUMN	VARIABLE	DEFINITION
	1	**Road/Link**	The name/route number of each facility bisected by the screenline and/or the link (node) numbers from the network.
	2	Min Diff	Minimum Count/Model Ratio for using differences, below this use ratios alone
	3	Max Rat	Maximum Count/Model Ratio for using ratios, above this use differences alone
	3.5	Use SL	Set to "Enable" to allow use of screen line adjustments for this leg if no count available, set to "Disable" to disable giving no adjustment of model result, set to "Force" to force SL adjustment
	4	**COUNT year**	year of the actual base year traffic count
	5	**COUNT**	actual base year traffic count
	6	**Ab**	base year traffic assignment - user to input year:
	7	**Ab^interpolate**	interpolation between base and future year assignment -- used when year of count data differs from base year assignment, will use open-nobuild to base interp if open nobuild exists, otherwise will use design to base interp
	7.1	**R**	Calculated Ratio **(COUNT/Ab)**
	7.2	**D**	Calculated Difference **(COUNT-Ab)**
	7.3	**MR**	Model Ratio **(Afd/Ab)**
	7.4	**SLR**	Screenline Ratio **(ΣCount/ΣAb)**
*	**8**	**Af**	future year traffic assignment - Af-D= (near) design yr model run, Af-ON=optional (near) opening year no build model run, Af-OB=optional (near) opening year build model run
*	**8.5**	**SLRATIO**	adjusted future year traffic forecast **(ΣCount/ΣAb)*Af**
*	**9**	**RATIO**	adjusted future year traffic forecast **COUNT/Ab) * Af**
*	**10**	**DIFF**	adjusted future year traffic forecast **COUNT - Ab) + Af**
*	**10.5**	**MRATIO**	adjusted future year traffic forecast modified "ratio method" to weight towards DIFF method for large model increases: if MR<1 = RATIO else = ((MR-1)*DIFF + RATIO)/MR
*	**11**	**RAf**	adjusted future year traffic forecast (AVERAGE(**RATIO**, **DIFF**))
*	**12**	**elected Adjustme**	Selects the type of future year adjustment based on the ratio of actual base year traffic count to interpolated base year traffic assignment *general rule: if MR<1 then if RATIO <= 1.0 then use RATIO, OR if RATIO >= 2 then use DIFF else use Raf , if MR>1 then if RATIO <=0.5 then use MRATIO, OR if RATIO >=2 then use DIFF, e*
*	**13**	**Selected Volume**	The selected adjusted forecast year model volume
	14	**most recent cou**	year of the most recently available actual count data (should be <Yo, if Yo=Yb generally won't use)
	15	**most recent cou**	most recently available actual count data for the facility
	16	**ecent Count Delt**	Forecast adjustment based on difference of more recent count from interpolation resulting from base count and first forecast ye
	17	**opening year**	final refined forecast for the opening year - user to input yea
	18	**design year**	final refined forecast for the design year - user to input yea
	19	**growth factorop**	growth factor to apply to most recent count to obtain opening year (SET to 1.0 if no count given)
	20	**growth factorde**	growth factor to apply to most recent count to obtain design year (SET to 1.0 if no count given)

* Columns 8-13 repeated for open year build and nobuild (hidden)

Four Interpolation Cases

1. Have base count and open yr model run and interp year<model open yr THUS interpolate btwn base count and adj open yr model run except for open yr<model open yr which uses case
2. Have open yr model run and interp yr> open model yr (or interpolating any opening year) THUS interopolate btwn adj open yr and adj design yr model run
3. (standard) Have base count and NO open yr model run THUS interpolate btwn count and adj design yr model run
4. Have no base count THUS interpolate calculate growth from Unadj base and design yr model runs and apply growth rate to number of years different from model design

Screenline Options (see field 3.5 description)
Enable
Disable
Force

result from iteration #10	Rounded to nearest 10 vehicles				
DESIGN YEAR		E LEG	**leg 1**	**Maitland Bou**	0.00%
0		N LEG	**Leg 2**	**Maitland Ave**	0.00%
P.M. peak hour		W LEG	**Leg 3**	**Maitland Bou**	0.00%
12:00 AM		S LEG	**Leg 4**	**Maitland Ave**	0.00%

				Leg 2		↓		↑		
						950		1180		
			470	320		160				
			↵	↓		↳				
							↥	100		
	←	2210					←	1190		**leg 1**
	→	3620	610	↥			↧	50	1340	←
Leg 3			2150	→					2460	→
			860	↴		↰	↑	↱		
						550	470	150		
					1230	1170				
					↓	↑				
						Leg 4				

result from iteration #10	Rounded to nearest 10 vehicles				
DESIGN YEAR		E LEG	**leg 1**	**Maitland Bou**	-1.00%
0		N LEG	**Leg 2**	**Maitland Ave**	0.00%
A.M. peak hour		W LEG	**Leg 3**	**Maitland Bou**	1.00%
12:00 AM		S LEG	**Leg 4**	**Maitland Ave**	-1.00%

				Leg 2	↓		↑			
					1270		870			
			550	580	140					
			↵	↓	↳					
							↥	110		
	←	3420					←	2220		**leg 1**
	→	2440	490	↥			↧	70	2400	←
Leg 3			1180	→					1370	→
			770	↴	↰	↑	↱			
					650	270	50			
				1420	970					
				↓	↑					
					Leg 4					

Passer Timings

B&N
Maitland & Maitland
Maitland Boulevard @ Maitland Avenue
Tight Diamond

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(To update the Table of Contents in Microsoft Word, press Ctrl A, followed by F9, select Update Entire Table, and Press OK)

1.1 Project Information

Freeway Name	Maitland Boulevard
City Name, State	Maitland, Florida
Date	09/07/04
Data File Name:	2040 AM_Tight Diamond.P3I
Analyst	TrafficSection
Reporting Date and Time	10/1/2004 2:13:14 AM

Maitland & Maitland
Maitland Boulevard @ Maitland Avenue
Tight Diamond

1.2 System Parameters and Options

Number of Interchanges	1
Lower Cycle Limit (sec)	60
Upper Cycle Limit (sec)	120
Cycle Increment (sec)	10
Turning Movements	Volumes (vph)
Peak Hour Factor	1.00
Analysis Period (min)	15

1.3 Volume Growth Factor

Growth Rate (%)	0
Period (years)	1
Growth Factor	1.00

1.4 Options

Metric Units	No
Calculate Saturation Flow Rates	Yes
Calculate Travel Times	Yes
Calculate Queue Storage	Yes

1.5 Parameters for Storage Space Calculations

Storage space per stopped car (ft)	23
Storage space per stopped truck (ft)	40

1.6 Parameters for Operating Cost Estimates

Delay Cost ($/hr/veh)	13.00
Stop Cost ($/stop)	0.03
Fuel Cost ($/g)	1.28

1.7 Parameters for LOS E&F Identification

Degree of Saturation	0.90
Control Delay (sec/veh)	55.00
Storage Ratio	0.80

1.8 Notes

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Maitland Boulevard @ Maitland Avenue
Tight Diamond
(↑ points East)

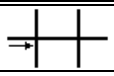
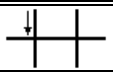
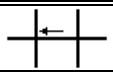
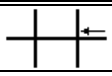
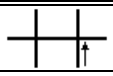
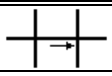
2.1 Interchange

Cross Street Name:	Maitland Avenue	Controller Type:	8-phase

2.2 Phasing Data

	Phase Sequence	Optimize Offset	Fixed Offset (sec)
Special Phasing	Basic 3 Phase	Yes	-
	Extended 3 Phase	Yes	-
	TTI 4-phase	Yes	-
Standard Phasing	Lead-Lead	Yes	-
	Lead-Lag	No	-
	Lag-Lead	No	-
	Lag-Lag	No	-

2.3 Approach Data

Parameters						
Ideal Sat. Flow (pcphgpl)	2000	2000	2000	2000	2000	2000
Grade (%)	0	0	0	0	0	0
Min. Phase Time (sec)	10	10	10	10	10	10
No. of Lanes	4	2	4	5	3	3
Assignment	T-T-T-R	L-R	L-L-T-T	T-T-T-T-R	L-L-R	L-T-T
Width (ft)	12-12-12-12	12-12	12-12-12-12	12-12-12-12-12	12-12-12	12-12-12
Truck Percentage in specified movements:						
U-turn	N/A	2	N/A	N/A	2	N/A
Left-turn	N/A	2	2	N/A	2	2
Through	2	2	2	2	2	2
Right-turn	2	2	N/A	2	2	N/A

Maitland & Maitland
Maitland Boulevard @ Maitland Avenue
Tight Diamond
(↑ points East)

2.4 Interior Link Data

	←	→
Link Length (ft)	300	300
No. of Lanes (at Stop Bar)	4	3
No. of Short Lanes	0	0
Short Lane Length (ft)	-	-
Speed (mph)	35	35
Left-Turn Treatment	Protected Only	Protected Only
Left-Turn Storage (veh)	26	13
Thru Storage (veh)	26	26
Travel Time (sec)	13	13

2.5 Movement Data

Movements**	Flow Rate (vph)	Sat. Flow (vphg)	Movements	Flow Rate (vph)	Sat. Flow (vphg)
SB-R	550	1667	NB-T-L	650	5541
SB-T-T	580	4738	EB-R	770	1667
SB-T-L	140	1144	EB-T	0	0
WB-R	110	1667	EB-L-T	490	3725
WB-T	0	0	EB-L-L	0	0
WB-L-T	70	1863	NB-L	650	3725
WB-L-L	0	0	NB-T	760	3922
NB-R	50	1667	SB-L	140	1863
NB-T-T	270	2302	SB-T	650	3922

* If indicated, the autocalculate feature for the data variable is off.
The calculated values may have been changed by the user.

** EB=Eastbound WB=Westbound NB=Northbound SB=Southbound
L=Left T=Through R=Right e.g.: EB-L=Eastbound Left

Maitland & Maitland
Maitland Boulevard @ Maitland Avenue
Tight Diamond
(↑ points East)

3.1 System Performance Summary of Signal Timing Plans Analyzed

Case No.	Cycle Length (sec)	Phasing Sequence	Total Delay (veh-h/hr)	Total Stops (veh/hr)	Total Fuel (g/h)	Operating Cost ($/hr)	No. of LOS E&F
1	60	Lead-Lead	27.4	3986	474.20	1081.38	0
2	70	Lead-Lead	27.6	3675	472.70	1061.05	0
3	80	Lead-Lead	29.4	3546	473.10	1087.48	0
4	70	Extd. 3-Phase	31.0	3760	475.70	1116.00	0
5	90	Lead-Lead	31.2	3414	473.90	1115.30	1
6	60	Extd. 3-Phase	31.3	4145	478.00	1149.74	0
7	80	Extd. 3-Phase	32.6	3642	475.90	1138.46	1
8	90	Extd. 3-Phase	33.7	3503	476.30	1157.87	2
9	100	Lead-Lead	33.8	3362	475.60	1152.47	2
10	70	TTI 4-phase	34.6	3820	478.40	1187.98	5
11	60	TTI 4-phase	35.2	4127	480.70	1195.40	5
12	110	Lead-Lead	36.0	3285	476.60	1174.95	2
13	100	Extd. 3-Phase	36.8	3465	478.30	1203.33	2
14	120	Lead-Lead	38.8	3265	478.40	1209.26	3
15	110	Extd. 3-Phase	38.9	3411	479.50	1220.96	2
16	80	TTI 4-phase	39.2	3791	481.70	1242.78	5
17	90	TTI 4-phase	41.6	3685	482.80	1280.79	5
18	120	Extd. 3-Phase	42.1	3407	481.70	1258.58	3
19	100	TTI 4-phase	45.0	3664	485.00	1321.82	9
20	110	TTI 4-phase	48.2	3600	487.40	1360.99	10
21	120	TTI 4-phase	52.3	3588	490.10	1411.73	10
22	70	Basic 3-Phase	207.7	468408	3172.90	20807.42	5
23	110	Basic 3-Phase	209.4	298899	2237.40	14552.08	5
24	120	Basic 3-Phase	209.7	274255	2101.30	13646.58	5
25	60	Basic 3-Phase	210.6	10540	644.60	3883.71	7
26	100	Basic 3-Phase	210.6	328497	2402.00	15665.78	5
27	90	Basic 3-Phase	213.2	364678	2603.70	17045.75	5
28	80	Basic 3-Phase	219.3	409976	2858.40	18808.26	5

(Please Note: Final Selected alternative is shaded in grey)

Maitland & Maitland
Maitland Boulevard @ Maitland Avenue
Tight Diamond
(↑ points East)
Case 5: Cycle Length = 90 seconds, Lead-Lead Phasing

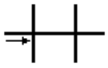
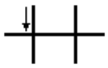
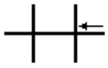
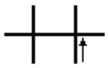
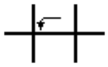
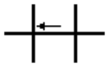
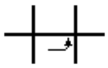
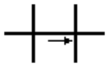
4.1 Movement Performance:

Movement	Direction	Flow Rate (veh/hr)	Phase Time (sec)	Degree of Saturation (X-Ratio)		Control Delay (sec/veh)	Max. Queue (veh)	Total Stops (veh/hr)	Total Fuel (g/h)	Total Cost ($/hr)
	SB-R	550	49.0	0.66	*	20.9	11.2	401	53.70	123.74
	SB-T-T	580	49.0	0.24		13.0	8.4	302	55.00	111.00
	SB-T-L	140	49.0	0.24		13.0	2.0	73	13.30	26.82
	WB-R	110	13.0	0.66	*	57.7!	3.5	127	11.80	41.50
	WB-T	0	13.0	0.00		0.0	0.0	0	0.00	0.00
	WB-L-T	70	13.0	0.38		43.6	1.9	69	7.30	22.64
	WB-L-L	0	13.0	0.00		0.0	0.0	0	0.00	0.00
	NB-R	50	18.0	0.19		34.7	1.2	44	5.10	14.53
	NB-T-T	270	18.0	0.75	*	40.7	6.9	248	27.70	84.06
	NB-T-L	650	18.0	0.75	*	40.7	16.6	598	66.70	202.38
	EB-R	770	59.0	0.76	*	17.9	15.4	554	74.60	157.09
	EB-T	0	59.0	0.00		0.0	0.0	0	0.00	0.00
	EB-L-T	490	59.0	0.22		8.1	5.6	201	45.70	78.10
	EB-L-L	0	59.0	0.00		0.0	0.0	0	0.00	0.00
	NB-L	650	28.0	0.65	*	5.8	5.7	202	32.50	61.10
	NB-T	760	77.0	0.24		0.6	0.6	23	36.00	46.08
	SB-L	140	13.0	0.75	*	53.5	4.2	150	8.90	42.19
	SB-T	650	31.0	0.55		20.6	11.8	422	35.60	104.07

Note: Level of Service (LOS) E&F are identified with !. See Table 4.4 for more details.
***: Critical Movement among on the Approach*

Maitland & Maitland
Maitland Boulevard @ Maitland Avenue
Tight Diamond
(↑ points East)
Case 5: Cycle Length = 90 seconds, Lead-Lead Phasing

4.2 Approach Performance

Approach (or) Movement	Direction	Flow Rate (veh/hr)	Degree of Saturation (X-Ratio)	Control Delay (sec/veh)	Total Stops (veh/hr)	Total Fuel (g/h)	Total Cost ($/hr)
	SB	1270	0.42	16.4	776	122.00	261.56
	WB	180	0.55	52.2	196	19.10	64.14
	NB	970	0.72	40.4	890	99.50	300.97
	EB	1260	0.55	14.1	755	120.30	235.19
	NB	650	0.65	5.8	202	32.50	61.10
	NB	760	0.24	0.6	23	36.00	46.08
	SB	140	0.75	53.5	150	8.90	42.19
	SB	650	0.55	20.6	423	35.60	104.07

4.3 Interchange Performance

Grouped by	Flow Rate (veh/hr)	Control Delay (sec/veh)	Total Stops (veh/hr)	Total Fuel (g/h)	Total Cost ($/hr)
Left Intersection	2860	12.1	1196	209.60	432.88
Right Intersection	3020	25.8	2218	264.30	682.42
Interchange Total	5880	19.1	3414	473.90	1115.30

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Maitland Boulevard @ Maitland Avenue
Tight Diamond
(↑ points East)
Case 5: Cycle Length = 90 seconds, Lead-Lead Phasing

4.4 LOS E&F:

Movement	Direction	Degree of Saturation	Control Delay (sec/veh)	Storage Ratio
	SB-R	-	-	-
	SB-T-T	-	-	-
	SB-T-L	-	-	-
	WB-R	-	57.7 > 55.0	-
	WB-T	-	-	-
	WB-L-T	-	-	-
	WB-L-L	-	-	-
	NB-R	-	-	-
	NB-T-T	-	-	-
	NB-T-L	-	-	-
	EB-R	-	-	-
	EB-T	-	-	-
	EB-L-T	-	-	-
	EB-L-L	-	-	-
	NB-L	-	-	-
	NB-T	-	-	-
	SB-L	-	-	-
	SB-T	-	-	-

See Table 4.1 for more movement specific data.

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Tight Diamond
(↑ points East)
Case 5: Cycle Length = 90 seconds, Lead-Lead Phasing
Note: All timing plans should be fine-tuned in the field according to site specific characteristics.

5.1 Timing by Phase Interval

Movements		Phase Interval	Interval (sec)	Cumulative (sec)
Left Intersection	**Right Intersection**			
Arterial	Frontage/Ramp	→ ↑	38	38
Arterial	Left Turn	→ ↱	11	49
Frontage/Ramp	Left Turn	↓ ↱	2	51
Frontage/Ramp	Arterial	↓ ←	11	62
Left Turn	Arterial	↰ ←	7	69
Left Turn	Frontage/Ramp	↰ ↑	21	90

Offset between start of Left Side Arterial phase and end of Right Side Frontage/Ramp phase is 38 seconds

5.2 Movement Timing for Dual Controllers

	Left Intersection			Right Intersection		
Movement	↰ **Left Turn**	→ **Arterial**	↓ **Frontage/Ramp**	↱ **Left Turn**	← **Arterial**	↑ **Frontage/Ramp**
Total (sec)	28	49	13	13	18	59

5.3 Controller Timing Plan (8-Phase Controllers Only)

A standard 8-phase controller or an 8-phase controller using Texas Diamond Specification Mode CANNOT HANDLE this phase sequence!

Version 1.0
January 1998

PASSER™ III-98

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(To update the Table of Contents in Microsoft Word, press Ctrl A, followed by F9, select Update Entire Table, and Press OK)

1.1 Project Information

Freeway Name	Maitland Boulevard
City Name, State	Maitland, Florida
Date	09/07/04
Data File Name:	2040 PM_Tight Diamond.P3I
Analyst	TrafficSection
Reporting Date and Time	10/1/2004 2:21:17 AM

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Maitland Boulevard @ Maitland Avenue
Tight Diamond

1.2 System Parameters and Options

Number of Interchanges	1
Lower Cycle Limit (sec)	60
Upper Cycle Limit (sec)	120
Cycle Increment (sec)	10
Turning Movements	Volumes (vph)
Peak Hour Factor	1.00
Analysis Period (min)	15

1.3 Volume Growth Factor

Growth Rate (%)	0
Period (years)	1
Growth Factor	1.00

1.4 Options

Metric Units	No
Calculate Saturation Flow Rates	Yes
Calculate Travel Times	Yes
Calculate Queue Storage	Yes

1.5 Parameters for Storage Space Calculations

Storage space per stopped car (ft)	23
Storage space per stopped truck (ft)	40

1.6 Parameters for Operating Cost Estimates

Delay Cost ($/hr/veh)	13.00
Stop Cost ($/stop)	0.03
Fuel Cost ($/g)	1.28

1.7 Parameters for LOS E&F Identification

Degree of Saturation	0.90
Control Delay (sec/veh)	55.00
Storage Ratio	0.80

1.8 Notes

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Maitland Boulevard @ Maitland Avenue
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(↑ points East)

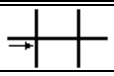
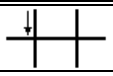
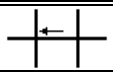
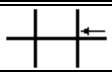
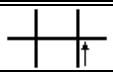
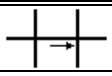
2.1 Interchange

Cross Street Name:	Maitland Avenue	Controller Type:	8-phase

2.2 Phasing Data

	Phase Sequence	Optimize Offset	Fixed Offset (sec)
Special Phasing	Basic 3 Phase	Yes	-
	Extended 3 Phase	Yes	-
	TTI 4-phase	Yes	-
Standard Phasing	Lead-Lead	Yes	-
	Lead-Lag	No	-
	Lag-Lead	No	-
	Lag-Lag	No	-

2.3 Approach Data

Parameters						
Ideal Sat. Flow (pcphgpl)	2000	2000	2000	2000	2000	2000
Grade (%)	0	0	0	0	0	0
Min. Phase Time (sec)	10	10	10	10	10	10
No. of Lanes	4	2	4	5	3	3
Assignment	T-T-T-R	L-R	L-L-T-T	T-T-T-T-R	L-L-R	L-T-T
Width (ft)	12-12-12-12	12-12	12-12-12-12	12-12-12-12-12	12-12-12	12-12-12
Truck Percentage in specified movements:						
U-turn	N/A	2	N/A	N/A	2	N/A
Left-turn	N/A	2	2	N/A	2	2
Through	2	2	2	2	2	2
Right-turn	2	2	N/A	2	2	N/A

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Maitland Boulevard @ Maitland Avenue
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(↑ points East)

2.4 Interior Link Data

	←	→
Link Length (ft)	300	300
No. of Lanes (at Stop Bar)	4	3
No. of Short Lanes	0	0
Short Lane Length (ft)	-	-
Speed (mph)	35	35
Left-Turn Treatment	Protected Only	Protected Only
Left-Turn Storage (veh)	26	13
Thru Storage (veh)	26	26
Travel Time (sec)	13	13

2.5 Movement Data

Movements**	Flow Rate (vph)	Sat. Flow (vphg)	Movements	Flow Rate (vph)	Sat. Flow (vphg)
SB-R	470	1667	NB-T-L	550	4229
SB-T-T	320	3921	EB-R	860	1667
SB-T-L	160	1961	EB-T	0	0
WB-R	100	1667	EB-L-T	610	3725
WB-T	0	0	EB-L-L	0	0
WB-L-T	50	1863	NB-L	550	3725
WB-L-L	0	0	NB-T	1080	3922
NB-R	150	1667	SB-L	160	1863
NB-T-T	470	3614	SB-T	370	3922

* If indicated, the autocalculate feature for the data variable is off.
The calculated values may have been changed by the user.

** EB=Eastbound WB=Westbound NB=Northbound SB=Southbound
L=Left T=Through R=Right e.g.: EB-L=Eastbound Left

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(↑ points East)

3.1 System Performance Summary of Signal Timing Plans Analyzed

Case No.	Cycle Length (sec)	Phasing Sequence	Total Delay (veh-h/hr)	Total Stops (veh/hr)	Total Fuel (g/h)	Operating Cost ($/hr)	No. of LOS E&F
1	70	Lead-Lead	30.5	3652	478.00	1113.25	3
2	80	Lead-Lead	31.4	3481	477.70	1116.36	1
3	60	Lead-Lead	32.4	4042	481.60	1143.74	4
4	70	Extd. 3-Phase	32.4	3784	480.20	1152.15	3
5	90	Lead-Lead	32.8	3344	478.00	1128.15	1
6	80	Extd. 3-Phase	33.2	3554	479.40	1141.53	1
7	90	Extd. 3-Phase	34.5	3400	479.60	1160.20	1
8	100	Lead-Lead	34.5	3249	478.70	1148.15	1
9	60	Extd. 3-Phase	35.5	4343	485.60	1208.25	4
10	100	Extd. 3-Phase	36.3	3333	480.50	1176.45	1
11	110	Lead-Lead	37.0	3218	480.40	1180.33	2
12	120	Lead-Lead	39.1	3153	481.70	1221.49	5
13	110	Extd. 3-Phase	39.7	3347	483.10	1217.17	2
14	80	TTI 4-phase	40.5	3735	485.80	1251.72	4
15	70	TTI 4-phase	41.5	4025	488.10	1289.95	6
16	120	Extd. 3-Phase	41.7	3293	484.20	1255.99	5
17	90	TTI 4-phase	45.1	3693	489.10	1314.72	8
18	100	TTI 4-phase	46.7	3566	489.50	1338.75	10
19	60	TTI 4-phase	49.1	4650	497.20	1418.30	5
20	110	TTI 4-phase	50.5	3531	492.00	1386.95	11
21	120	TTI 4-phase	55.9	3552	496.20	1460.84	11
22	70	Basic 3-Phase	148.2	8423	590.60	2936.97	8
23	100	Basic 3-Phase	152.0	328504	2362.30	14841.34	6
24	110	Basic 3-Phase	152.3	298932	2199.10	13748.94	7
25	60	Basic 3-Phase	152.4	8769	595.60	3009.96	9
26	90	Basic 3-Phase	152.7	364732	2563.20	16201.60	6
27	120	Basic 3-Phase	153.2	274277	2063.70	12864.73	10
28	80	Basic 3-Phase	155.7	409944	2815.30	17931.88	6

(Please Note: Final Selected alternative is shaded in grey)

Maitland & Maitland
Maitland Boulevard @ Maitland Avenue
Tight Diamond
(↑ points East)
Case 5: Cycle Length = 90 seconds, Lead-Lead Phasing

4.1 Movement Performance:

Movement	Direction	Flow Rate (veh/hr)	Phase Time (sec)	Degree of Saturation (X-Ratio)		Control Delay (sec/veh)	Max. Queue (veh)	Total Stops (veh/hr)	Total Fuel (g/h)	Total Cost ($/hr)
	SB-R	470	49.0	0.56	*	18.4	8.8	320	45.50	100.54
	SB-T-T	320	49.0	0.16		12.4	4.4	160	30.30	57.98
	SB-T-L	160	49.0	0.16		12.4	2.2	80	15.10	28.93
	WB-R	100	13.0	0.60	*	53.7	3.1	111	10.60	35.57
	WB-T	0	13.0	0.00		0.0	0.0	0	0.00	0.00
	WB-L-T	50	13.0	0.27		41.0	1.3	48	5.10	15.53
	WB-L-L	0	13.0	0.00		0.0	0.0	0	0.00	0.00
	NB-R	150	18.0	0.58		44.3	4.1	149	15.60	48.47
	NB-T-T	470	18.0	0.84	*	43.8	12.5	451	48.60	151.51
	NB-T-L	550	18.0	0.84	*	43.8	14.6	528	56.90	177.33
	EB-R	860	59.0	0.84	*	22.6	19.7	705	84.70	194.42
	EB-T	0	59.0	0.00		0.0	0.0	0	0.00	0.00
	EB-L-T	610	59.0	0.27		8.4	7.3	262	57.00	97.36
	EB-L-L	0	59.0	0.00		0.0	0.0	0	0.00	0.00
	NB-L	550	28.0	0.55	*	2.9	1.9	66	26.60	39.55
	NB-T	1080	77.0	0.34		0.8	0.8	32	51.10	65.41
	SB-L	160	13.0	0.86	*	68.2!	5.4	195	10.80	60.22
	SB-T	370	31.0	0.31		18.0	6.6	237	20.10	55.33

Note: Level of Service (LOS) E&F are identified with !. See Table 4.4 for more details.
***: Critical Movement among on the Approach*

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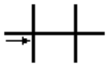
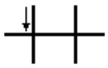
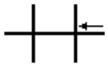
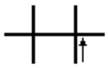
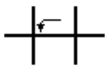
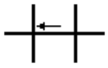
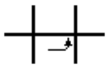
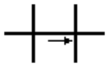
Tight Diamond
(↑ points East)
Case 5: Cycle Length = 90 seconds, Lead-Lead Phasing

4.2 Approach Performance

Approach (or) Movement	Direction	Flow Rate (veh/hr)	Degree of Saturation (X-Ratio)	Control Delay (sec/veh)	Total Stops (veh/hr)	Total Fuel (g/h)	Total Cost ($/hr)
	SB	950	0.36	15.4	560	90.90	187.45
	WB	150	0.49	49.5	159	15.70	51.10
	NB	1170	0.81	43.9	1128	121.10	377.31
	EB	1470	0.60	16.7	968	141.70	291.78
	NB	550	0.55	2.9	66	26.60	39.55
	NB	1080	0.34	0.8	32	51.10	65.41
	SB	160	0.86	68.2	195	10.80	60.22
	SB	370	0.31	18.0	237	20.10	55.33

4.3 Interchange Performance

Grouped by	Flow Rate (veh/hr)	Control Delay (sec/veh)	Total Stops (veh/hr)	Total Fuel (g/h)	Total Cost ($/hr)
Left Intersection	2730	9.0	817	184.30	343.51
Right Intersection	3170	29.5	2527	293.70	784.64
Interchange Total	5900	20.0	3344	478.00	1128.15

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Tight Diamond
(↑ points East)
Case 5: Cycle Length = 90 seconds, Lead-Lead Phasing

4.4 LOS E&F:

Movement	Direction	Degree of Saturation	Control Delay (sec/veh)	Storage Ratio
	SB-R	-	-	-
	SB-T-T	-	-	-
	SB-T-L	-	-	-
	WB-R	-	-	-
	WB-T	-	-	-
	WB-L-T	-	-	-
	WB-L-L	-	-	-
	NB-R	-	-	-
	NB-T-T	-	-	-
	NB-T-L	-	-	-
	EB-R	-	-	-
	EB-T	-	-	-
	EB-L-T	-	-	-
	EB-L-L	-	-	-
	NB-L	-	-	-
	NB-T	-	-	-
	SB-L	-	68.2 > 55.0	-
	SB-T	-	-	-

See Table 4.1 for more movement specific data.

Maitland & Maitland
Maitland Boulevard @ Maitland Avenue
Tight Diamond
(↑ points East)
Case 5: Cycle Length = 90 seconds, Lead-Lead Phasing
Note: All timing plans should be fine-tuned in the field according to site specific characteristics.

5.1 Timing by Phase Interval

Movements		Phase Interval	Interval (sec)	Cumulative (sec)
Left Intersection	**Right Intersection**			
Arterial	Frontage/Ramp	→ ↑	38	38
Arterial	Left Turn	→ ↱	11	49
Frontage/Ramp	Left Turn	↓ ↱	2	51
Frontage/Ramp	Arterial	↓ ←	11	62
Left Turn	Arterial	↰ ←	7	69
Left Turn	Frontage/Ramp	↰ ↑	21	90

Offset between start of Left Side Arterial phase and end of Right Side Frontage/Ramp phase is 38 seconds

5.2 Movement Timing for Dual Controllers

	Left Intersection			Right Intersection		
Movement	↰ **Left Turn**	→ **Arterial**	↓ **Frontage/Ramp**	↱ **Left Turn**	← **Arterial**	↑ **Frontage/Ramp**
Total (sec)	28	49	13	13	18	59

5.3 Controller Timing Plan (8-Phase Controllers Only)

A standard 8-phase controller or an 8-phase controller using Texas Diamond Specification Mode CANNOT HANDLE this phase sequence!

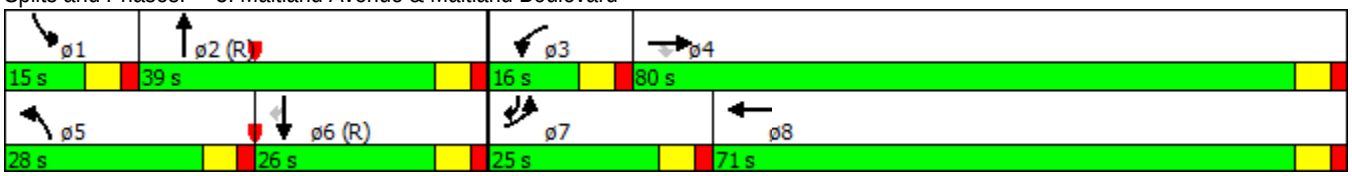
Synchro Analysis Results

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	428	870	571	42	1639	76	490	177	25	96	400	493
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	0.91	0.91	0.95	1.00	0.95	1.00
Frt			0.850			0.850		0.992				0.850
Flt Protected	0.950			0.950			0.950	0.973		0.950		
Satd. Flow (prot)	3213	3312	1482	1671	3343	1495	1507	3062	0	1656	3312	1482
Flt Permitted	0.950			0.950			0.950	0.590		0.950		
Satd. Flow (perm)	3213	3312	1482	1671	3343	1495	1507	1857	0	1656	3312	1482
Satd. Flow (RTOR)			354			240		4				109
Adj. Flow (vph)	476	967	634	47	1821	84	544	197	28	107	444	548
Lane Group Flow (vph)	476	967	634	47	1821	84	272	497	0	107	444	548
Turn Type	Prot	NA	Perm	Prot	NA	Free	Prot	NA		Prot	NA	pm+ov
Protected Phases	7	4		3	8		5	2		1	6	7
Permitted Phases			4			Free						6
Total Split (s)	25.0	80.0	80.0	16.0	71.0		28.0	39.0		15.0	26.0	25.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	6.0
Act Effct Green (s)	19.0	74.0	74.0	10.0	65.0	150.0	22.0	48.0		9.0	20.0	45.0
Actuated g/C Ratio	0.13	0.49	0.49	0.07	0.43	1.00	0.15	0.32		0.06	0.13	0.30
v/c Ratio	1.17	0.59	0.70	0.42	1.26	0.06	1.23	1.16dl		1.08	1.01	1.05
Control Delay	155.6	29.1	16.5	79.4	158.3	0.1	187.8	120.3		176.8	108.1	94.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	155.6	29.1	16.5	79.4	158.3	0.1	187.8	120.3		176.8	108.1	94.2
LOS	F	C	B	E	F	A	F	F		F	F	F
Approach Delay		54.2			149.6			144.2			107.8	
Approach LOS		D			F			F			F	

Intersection Summary

Cycle Length: 150
Actuated Cycle Length: 150
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Control Type: Pretimed
Maximum v/c Ratio: 1.26
Intersection Signal Delay: 107.5 — Intersection LOS: F
Intersection Capacity Utilization 104.4% — ICU Level of Service G
Analysis Period (min) 15
dl Defacto Left Lane. Recode with 1 though lane as a left lane.

Splits and Phases: 3: Maitland Avenue & Maitland Boulevard



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	428	870	571	42	1639	76	490	177	25	96	400	493
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	4.0	6.0	6.0		6.0	6.0	6.0
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	0.91	0.91		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.97		0.95	1.00	1.00
Satd. Flow (prot)	3213	3312	1482	1671	3343	1495	1507	3062		1656	3312	1482
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.59		0.95	1.00	1.00
Satd. Flow (perm)	3213	3312	1482	1671	3343	1495	1507	1857		1656	3312	1482
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	476	967	634	47	1821	84	544	197	28	107	444	548
RTOR Reduction (vph)	0	0	179	0	0	0	0	3	0	0	0	81
Lane Group Flow (vph)	476	967	455	47	1821	84	272	494	0	107	444	467
Heavy Vehicles (%)	9%	9%	9%	8%	8%	8%	9%	9%	9%	9%	9%	9%
Turn Type	Prot	NA	Perm	Prot	NA	Free	Prot	NA		Prot	NA	pm+ov
Protected Phases	7	4		3	8		5	2		1	6	7
Permitted Phases			4			Free						6
Actuated Green, G (s)	19.0	74.0	74.0	10.0	65.0	150.0	22.0	48.0		9.0	20.0	39.0
Effective Green, g (s)	19.0	74.0	74.0	10.0	65.0	150.0	22.0	48.0		9.0	20.0	39.0
Actuated g/C Ratio	0.13	0.49	0.49	0.07	0.43	1.00	0.15	0.32		0.06	0.13	0.26
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	6.0
Lane Grp Cap (vph)	406	1633	731	111	1448	1495	221	770		99	441	444
v/s Ratio Prot	c0.15	0.29		0.03	c0.54		c0.18	0.09		0.06	0.13	c0.13
v/s Ratio Perm			0.31			0.06		0.11				0.18
v/c Ratio	1.17	0.59	0.62	0.42	1.26	0.06	1.23	1.16dl		1.08	1.01	1.05
Uniform Delay, d1	65.5	27.2	27.8	67.2	42.5	0.0	64.0	43.6		70.5	65.0	55.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	100.8	1.6	4.0	11.4	121.7	0.1	136.8	4.1		114.0	44.6	57.2
Delay (s)	166.3	28.8	31.7	78.6	164.2	0.1	200.8	47.7		184.5	109.6	112.7
Level of Service	F	C	C	E	F	A	F	D		F	F	F
Approach Delay (s)		61.2			155.1			101.9			118.4	
Approach LOS		E			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	108.2	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.24		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	104.4%	ICU Level of Service	G
Analysis Period (min)	15		

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

c Critical Lane Group

Intersection: 3: Maitland Avenue & Maitland Boulevard

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB
Directions Served	L	L	T	T	R	L	T	T	R	L	LT	TR
Maximum Queue (ft)	446	490	850	847	175	400	798	796	300	600	847	829
Average Queue (ft)	327	368	427	415	152	83	729	724	89	505	656	558
95th Queue (ft)	510	557	1004	961	221	300	906	914	307	720	985	962
Link Distance (ft)			1204	1204			736	736			796	796
Upstream Blk Time (%)			6	1			48	46			35	14
Queuing Penalty (veh)			0	0			0	0			0	0
Storage Bay Dist (ft)	400	400			125	300			200	400		
Storage Blk Time (%)	11	25	0	19	8		52	52		52	67	
Queuing Penalty (veh)	49	110	1	108	37		21	39		175	164	

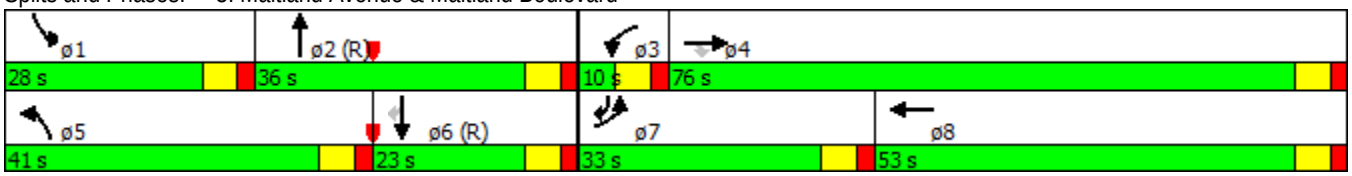
Intersection: 3: Maitland Avenue & Maitland Boulevard

Movement	SB	SB	SB	SB
Directions Served	L	T	T	R
Maximum Queue (ft)	327	953	995	225
Average Queue (ft)	136	482	596	220
95th Queue (ft)	284	973	1072	251
Link Distance (ft)		1017	1017	
Upstream Blk Time (%)		2	10	
Queuing Penalty (veh)		0	0	
Storage Bay Dist (ft)	240			125
Storage Blk Time (%)	2	15	31	60
Queuing Penalty (veh)	5	15	154	119

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	507	1508	751	43	837	81	467	454	125	128	321	392
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	0.91	0.91	0.95	1.00	0.95	1.00
Frt			0.850			0.850		0.973				0.850
Flt Protected	0.950			0.950			0.950	0.991		0.950		
Satd. Flow (prot)	3213	3312	1482	1671	3343	1495	1507	3059	0	1656	3312	1482
Flt Permitted	0.950			0.950			0.950	0.551		0.950		
Satd. Flow (perm)	3213	3312	1482	1671	3343	1495	1507	1701	0	1656	3312	1482
Satd. Flow (RTOR)			255			240		15				109
Adj. Flow (vph)	563	1676	834	48	930	90	519	504	139	142	357	436
Lane Group Flow (vph)	563	1676	834	48	930	90	384	778	0	142	357	436
Turn Type	Prot	NA	Perm	Prot	NA	Free	Prot	NA		Prot	NA	pm+ov
Protected Phases	7	4		3	8		5	2		1	6	7
Permitted Phases			4			Free						6
Total Split (s)	33.0	76.0	76.0	10.0	53.0		41.0	36.0		28.0	23.0	33.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	6.0
Act Effct Green (s)	27.0	70.0	70.0	4.0	47.0	150.0	35.0	35.0		22.0	17.0	50.0
Actuated g/C Ratio	0.18	0.47	0.47	0.03	0.31	1.00	0.23	0.23		0.15	0.11	0.33
v/c Ratio	0.97	1.08	1.01	1.09	0.89	0.06	1.09	1.07		0.59	0.95	0.77
Control Delay	92.0	87.8	61.0	226.7	60.4	0.1	127.9	107.1		70.5	101.1	43.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	92.0	87.8	61.0	226.7	60.4	0.1	127.9	107.1		70.5	101.1	43.6
LOS	F	F	E	F	E	A	F	F		E	F	D
Approach Delay		81.3			62.8			113.9			69.6	
Approach LOS		F			E			F			E	

Intersection Summary	
Cycle Length: 150	
Actuated Cycle Length: 150	
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Control Type: Pretimed	
Maximum v/c Ratio: 1.09	
Intersection Signal Delay: 82.4	Intersection LOS: F
Intersection Capacity Utilization 94.0%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 3: Maitland Avenue & Maitland Boulevard



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	507	1508	751	43	837	81	467	454	125	128	321	392
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	4.0	6.0	6.0		6.0	6.0	6.0
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	0.91	0.91		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.99		0.95	1.00	1.00
Satd. Flow (prot)	3213	3312	1482	1671	3343	1495	1507	3061		1656	3312	1482
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.55		0.95	1.00	1.00
Satd. Flow (perm)	3213	3312	1482	1671	3343	1495	1507	1701		1656	3312	1482
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	563	1676	834	48	930	90	519	504	139	142	357	436
RTOR Reduction (vph)	0	0	136	0	0	0	0	9	0	0	0	77
Lane Group Flow (vph)	563	1676	698	48	930	90	384	769	0	142	357	359
Heavy Vehicles (%)	9%	9%	9%	8%	8%	8%	9%	9%	9%	9%	9%	9%
Turn Type	Prot	NA	Perm	Prot	NA	Free	Prot	NA		Prot	NA	pm+ov
Protected Phases	7	4		3	8		5	2		1	6	7
Permitted Phases			4			Free						6
Actuated Green, G (s)	27.0	70.0	70.0	4.0	47.0	150.0	35.0	58.0		22.0	17.0	44.0
Effective Green, g (s)	27.0	70.0	70.0	4.0	47.0	150.0	35.0	58.0		22.0	17.0	44.0
Actuated g/C Ratio	0.18	0.47	0.47	0.03	0.31	1.00	0.23	0.39		0.15	0.11	0.29
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	6.0
Lane Grp Cap (vph)	578	1545	691	44	1047	1495	351	975		242	375	494
v/s Ratio Prot	c0.18	c0.51		0.03	0.28		c0.25	0.18		0.09	c0.11	0.13
v/s Ratio Perm			0.47			0.06		0.12				0.11
v/c Ratio	0.97	1.08	1.01	1.09	0.89	0.06	1.09	0.79		0.59	0.95	0.73
Uniform Delay, d1	61.2	40.0	40.0	73.0	49.0	0.0	57.5	40.6		59.8	66.1	47.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	31.6	49.6	36.8	163.6	11.2	0.1	75.7	6.4		10.0	35.8	9.0
Delay (s)	92.7	89.6	76.8	236.6	60.2	0.1	133.2	47.0		69.8	101.9	56.6
Level of Service	F	F	E	F	E	A	F	D		E	F	E
Approach Delay (s)		86.7			63.0			75.5			75.9	
Approach LOS		F			E			E			E	

Intersection Summary			
HCM 2000 Control Delay	78.9	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.09		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	94.0%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Intersection: 3: Maitland Avenue & Maitland Boulevard

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB
Directions Served	L	L	T	T	R	L	T	T	R	L	LT	TR
Maximum Queue (ft)	343	500	1260	1262	175	263	544	497	300	600	853	842
Average Queue (ft)	203	434	1151	1172	159	53	326	284	46	533	703	668
95th Queue (ft)	302	641	1525	1538	221	158	482	435	183	712	988	991
Link Distance (ft)			1204	1204			736	736			796	796
Upstream Blk Time (%)			17	31							43	32
Queuing Penalty (veh)			0	0							0	0
Storage Bay Dist (ft)	400	400			125	300			200	400		
Storage Blk Time (%)	0	0	34	41	9		12	18		40	73	
Queuing Penalty (veh)	0	0	170	308	67		5	15		184	171	

Intersection: 3: Maitland Avenue & Maitland Boulevard

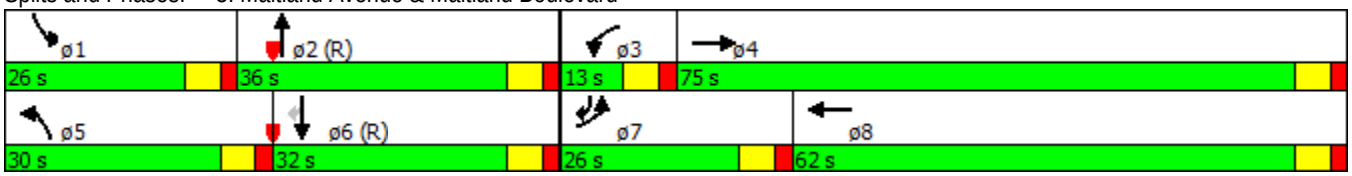
Movement	SB	SB	SB	SB
Directions Served	L	T	T	R
Maximum Queue (ft)	277	400	454	225
Average Queue (ft)	110	186	176	137
95th Queue (ft)	210	323	345	245
Link Distance (ft)		1017	1017	
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	240			125
Storage Blk Time (%)	0	5	20	13
Queuing Penalty (veh)	0	6	78	21

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	490	1180	770	70	2220	110	650	270	50	140	580	550
Lane Util. Factor	0.97	0.91	0.91	1.00	0.91	1.00	0.97	0.95	0.95	1.00	0.95	1.00
Frt		0.941				0.850		0.976				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3213	4478	0	1671	4803	1495	3213	3232	0	1656	3312	1482
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3213	4478	0	1671	4803	1495	3213	3232	0	1656	3312	1482
Satd. Flow (RTOR)		145				196		13				65
Adj. Flow (vph)	544	1311	856	78	2467	122	722	300	56	156	644	611
Lane Group Flow (vph)	544	2167	0	78	2467	122	722	356	0	156	644	611
Turn Type	Prot	NA		Prot	NA	Free	Prot	NA		Prot	NA	pm+ov
Protected Phases	7	4		3	8		5	2		1	6	7
Permitted Phases						Free						6
Total Split (s)	26.0	75.0		13.0	62.0		30.0	36.0		26.0	32.0	26.0
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	6.0
Act Effct Green (s)	20.0	69.0		7.0	56.0	150.0	24.0	30.0		20.0	26.0	52.0
Actuated g/C Ratio	0.13	0.46		0.05	0.37	1.00	0.16	0.20		0.13	0.17	0.35
v/c Ratio	1.27	1.13dr		1.01	1.38	0.08	1.40	0.54		0.71	1.12	1.10
Control Delay	189.4	60.1		174.1	209.5	0.1	237.8	55.3		80.3	130.5	108.5
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	189.4	60.1		174.1	209.5	0.1	237.8	55.3		80.3	130.5	108.5
LOS	F	E		F	F	A	F	E		F	F	F
Approach Delay		86.1			198.9			177.5			115.4	
Approach LOS		F			F			F			F	

Intersection Summary

Cycle Length: 150
Actuated Cycle Length: 150
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Control Type: Pretimed
Maximum v/c Ratio: 1.40
Intersection Signal Delay: 142.1 — Intersection LOS: F
Intersection Capacity Utilization 111.4% — ICU Level of Service H
Analysis Period (min) 15
dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Splits and Phases: 3: Maitland Avenue & Maitland Boulevard



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	490	1180	770	70	2220	110	650	270	50	140	580	550
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0	4.0	6.0	6.0		6.0	6.0	6.0
Lane Util. Factor	0.97	0.91		1.00	0.91	1.00	0.97	0.95		1.00	0.95	1.00
Frt	1.00	0.94		1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3213	4477		1671	4803	1495	3213	3234		1656	3312	1482
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	3213	4477		1671	4803	1495	3213	3234		1656	3312	1482
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	544	1311	856	78	2467	122	722	300	56	156	644	611
RTOR Reduction (vph)	0	78	0	0	0	0	0	10	0	0	0	45
Lane Group Flow (vph)	544	2089	0	78	2467	122	722	346	0	156	644	566
Heavy Vehicles (%)	9%	9%	9%	8%	8%	8%	9%	9%	9%	9%	9%	9%
Turn Type	Prot	NA		Prot	NA	Free	Prot	NA		Prot	NA	pm+ov
Protected Phases	7	4		3	8		5	2		1	6	7
Permitted Phases						Free						6
Actuated Green, G (s)	20.0	69.0		7.0	56.0	150.0	24.0	30.0		20.0	26.0	46.0
Effective Green, g (s)	20.0	69.0		7.0	56.0	150.0	24.0	30.0		20.0	26.0	46.0
Actuated g/C Ratio	0.13	0.46		0.05	0.37	1.00	0.16	0.20		0.13	0.17	0.31
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	6.0
Lane Grp Cap (vph)	428	2059		77	1793	1495	514	646		220	574	513
v/s Ratio Prot	c0.17	0.47		0.05	c0.51		c0.22	c0.11		0.09	0.19	c0.15
v/s Ratio Perm						0.08						0.24
v/c Ratio	1.27	1.13dr		1.01	1.38	0.08	1.40	0.53		0.71	1.12	1.10
Uniform Delay, d1	65.0	40.5		71.5	47.0	0.0	63.0	53.8		62.2	62.0	52.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	139.2	23.5		106.2	172.8	0.1	193.5	3.2		17.6	75.8	71.0
Delay (s)	204.2	64.0		177.7	219.8	0.1	256.5	56.9		79.8	137.8	123.0
Level of Service	F	E		F	F	A	F	E		E	F	F
Approach Delay (s)		92.1			208.5			190.6			125.0	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	151.0	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.35		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	111.4%	ICU Level of Service	H
Analysis Period (min)	15		

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

c Critical Lane Group

Intersection: 3: Maitland Avenue & Maitland Boulevard

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	B1	B1
Directions Served	L	L	T	T	TR	L	T	T	T	R	T	T
Maximum Queue (ft)	450	500	1257	1238	1231	400	728	709	710	300	389	387
Average Queue (ft)	396	445	846	830	703	157	679	645	629	122	323	314
95th Queue (ft)	552	603	1557	1489	1247	420	801	781	803	364	479	492
Link Distance (ft)			1198	1198	1198		612	612	612		327	327
Upstream Blk Time (%)			32	5	2		44	25	25		45	35
Queuing Penalty (veh)			0	0	0		0	0	0		0	0
Storage Bay Dist (ft)	400	400				300				200		
Storage Blk Time (%)	26	57	1				56		58			
Queuing Penalty (veh)	102	225	4				39		63			

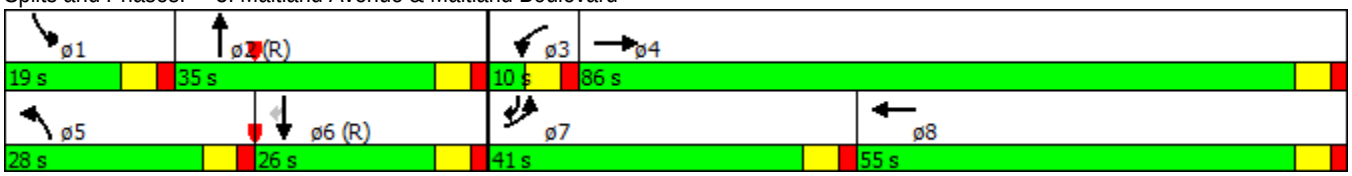
Intersection: 3: Maitland Avenue & Maitland Boulevard

Movement	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	L	T	TR	L	T	T	R
Maximum Queue (ft)	500	600	852	786	340	1056	1078	225
Average Queue (ft)	469	564	674	243	224	770	828	220
95th Queue (ft)	585	708	1149	650	412	1267	1301	256
Link Distance (ft)			795	795		1021	1021	
Upstream Blk Time (%)			55	0		9	34	
Queuing Penalty (veh)			0	0		0	0	
Storage Bay Dist (ft)	400	400			240			125
Storage Blk Time (%)	52	72			3	55	66	41
Queuing Penalty (veh)	71	97			9	77	359	117

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	610	2150	860	50	1190	100	550	470	150	160	320	470
Lane Util. Factor	0.97	0.91	0.91	1.00	0.91	1.00	0.97	0.95	0.95	1.00	0.95	1.00
Frt		0.957				0.850		0.964				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3213	4554	0	1671	4803	1495	3213	3193	0	1656	3312	1482
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3213	4554	0	1671	4803	1495	3213	3193	0	1656	3312	1482
Satd. Flow (RTOR)		103				240		25				109
Adj. Flow (vph)	678	2389	956	56	1322	111	611	522	167	178	356	522
Lane Group Flow (vph)	678	3345	0	56	1322	111	611	689	0	178	356	522
Turn Type	Prot	NA		Prot	NA	Free	Prot	NA		Prot	NA	pm+ov
Protected Phases	7	4		3	8		5	2		1	6	7
Permitted Phases						Free						6
Total Split (s)	41.0	86.0		10.0	55.0		28.0	35.0		19.0	26.0	41.0
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	6.0
Act Effct Green (s)	35.0	80.0		4.0	49.0	150.0	22.0	29.0		13.0	20.0	61.0
Actuated g/C Ratio	0.23	0.53		0.03	0.33	1.00	0.15	0.19		0.09	0.13	0.41
v/c Ratio	0.91	1.35		1.27	0.84	0.07	1.30	1.08		1.24	0.81	0.78
Control Delay	72.4	190.6		279.8	52.9	0.1	197.3	113.2		208.6	77.9	39.8
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	72.4	190.6		279.8	52.9	0.1	197.3	113.2		208.6	77.9	39.8
LOS	E	F		F	D	A	F	F		F	E	D
Approach Delay		170.7			57.5			152.7			81.1	
Approach LOS		F			E			F			F	

Intersection Summary	
Cycle Length: 150	
Actuated Cycle Length: 150	
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Control Type: Pretimed	
Maximum v/c Ratio: 1.35	
Intersection Signal Delay: 134.3	Intersection LOS: F
Intersection Capacity Utilization 110.7%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 3: Maitland Avenue & Maitland Boulevard



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	610	2150	860	50	1190	100	550	470	150	160	320	470
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0	4.0	6.0	6.0		6.0	6.0	6.0
Lane Util. Factor	0.97	0.91		1.00	0.91	1.00	0.97	0.95		1.00	0.95	1.00
Frt	1.00	0.96		1.00	1.00	0.85	1.00	0.96		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3213	4555		1671	4803	1495	3213	3192		1656	3312	1482
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	3213	4555		1671	4803	1495	3213	3192		1656	3312	1482
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	678	2389	956	56	1322	111	611	522	167	178	356	522
RTOR Reduction (vph)	0	48	0	0	0	0	0	20	0	0	0	69
Lane Group Flow (vph)	678	3297	0	56	1322	111	611	669	0	178	356	453
Heavy Vehicles (%)	9%	9%	9%	8%	8%	8%	9%	9%	9%	9%	9%	9%
Turn Type	Prot	NA		Prot	NA	Free	Prot	NA		Prot	NA	pm+ov
Protected Phases	7	4		3	8		5	2		1	6	7
Permitted Phases						Free						6
Actuated Green, G (s)	35.0	80.0		4.0	49.0	150.0	22.0	29.0		13.0	20.0	55.0
Effective Green, g (s)	35.0	80.0		4.0	49.0	150.0	22.0	29.0		13.0	20.0	55.0
Actuated g/C Ratio	0.23	0.53		0.03	0.33	1.00	0.15	0.19		0.09	0.13	0.37
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	6.0
Lane Grp Cap (vph)	749	2429		44	1568	1495	471	617		143	441	602
v/s Ratio Prot	0.21	c0.72		0.03	0.28		c0.19	c0.21		0.11	0.11	c0.18
v/s Ratio Perm						0.07						0.13
v/c Ratio	0.91	1.36		1.27	0.84	0.07	1.30	1.08		1.24	0.81	0.75
Uniform Delay, d1	55.9	35.0		73.0	46.9	0.0	64.0	60.5		68.5	63.1	41.5
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	16.5	163.6		226.3	5.7	0.1	148.8	61.1		155.5	14.6	8.4
Delay (s)	72.4	198.6		299.3	52.6	0.1	212.8	121.6		224.0	77.8	50.0
Level of Service	E	F		F	D	A	F	F		F	E	D
Approach Delay (s)		177.3			58.0			164.4			88.7	
Approach LOS		F			E			F			F	

Intersection Summary			
HCM 2000 Control Delay	140.7	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.34		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	110.7%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Intersection: 3: Maitland Avenue & Maitland Boulevard

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	L	T	T	TR	L	T	T	T	R	L	L
Maximum Queue (ft)	417	500	1245	1253	1255	393	576	532	396	274	500	600
Average Queue (ft)	261	441	975	1093	1130	88	362	323	231	15	446	532
95th Queue (ft)	386	623	1477	1543	1529	261	502	460	349	118	602	723
Link Distance (ft)			1198	1198	1198		612	612	612			
Upstream Blk Time (%)			6	15	30		0	0				
Queuing Penalty (veh)			0	0	0		0	0				
Storage Bay Dist (ft)	400	400				300				200	400	400
Storage Blk Time (%)	0	1	29			0	18		8	0	45	64
Queuing Penalty (veh)	2	7	178			0	9		8	0	106	151

Intersection: 3: Maitland Avenue & Maitland Boulevard

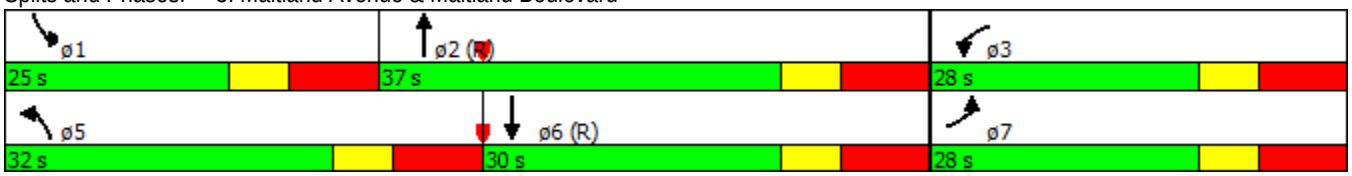
Movement	NB	NB	SB	SB	SB	SB
Directions Served	T	TR	L	T	T	R
Maximum Queue (ft)	850	801	320	527	533	225
Average Queue (ft)	621	486	217	254	237	163
95th Queue (ft)	1061	860	361	536	501	260
Link Distance (ft)	795	795		1021	1021	
Upstream Blk Time (%)	38	0				
Queuing Penalty (veh)	0	0				
Storage Bay Dist (ft)			240			125
Storage Blk Time (%)	2		28	1	18	18
Queuing Penalty (veh)	9		45	1	84	28

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	490	0	770	70	0	110	650	270	50	140	580	550
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	0.97	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3213	0	1482	1671	0	1495	3213	3312	1482	1656	3312	1482
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3213	0	1482	1671	0	1495	3213	3312	1482	1656	3312	1482
Satd. Flow (RTOR)			542			327			327			611
Adj. Flow (vph)	544	0	856	78	0	122	722	300	56	156	644	611
Lane Group Flow (vph)	544	0	856	78	0	122	722	300	56	156	644	611
Turn Type	Prot		Free	Prot		Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	7			3			5	2		1	6	
Permitted Phases			Free			Free			Free			Free
Total Split (s)	28.0			28.0			32.0	37.0		25.0	30.0	
Total Lost Time (s)	10.0			10.0			10.0	10.0		10.0	10.0	
Act Effct Green (s)	18.0		90.0	18.0		90.0	22.0	27.0	90.0	15.0	20.0	90.0
Actuated g/C Ratio	0.20		1.00	0.20		1.00	0.24	0.30	1.00	0.17	0.22	1.00
v/c Ratio	0.85		0.58	0.23		0.08	0.92	0.30	0.04	0.57	0.88	0.41
Control Delay	48.6		1.6	32.4		0.1	51.9	25.3	0.0	43.4	48.5	0.8
Queue Delay	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.6		1.6	32.4		0.1	51.9	25.3	0.0	43.4	48.5	0.8
LOS	D		A	C		A	D	C	A	D	D	A
Approach Delay								41.8			27.3	
Approach LOS								D			C	

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Control Type: Pretimed
Maximum v/c Ratio: 0.92
Intersection Signal Delay: 27.9 — Intersection LOS: C
Intersection Capacity Utilization 73.6% — ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 3: Maitland Avenue & Maitland Boulevard



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	490	0	770	70	0	110	650	270	50	140	580	550
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	10.0		4.0	10.0		4.0	10.0	10.0	4.0	10.0	10.0	4.0
Lane Util. Factor	0.97		1.00	1.00		1.00	0.97	0.95	1.00	1.00	0.95	1.00
Frt	1.00		0.85	1.00		0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3213		1482	1671		1495	3213	3312	1482	1656	3312	1482
Flt Permitted	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3213		1482	1671		1495	3213	3312	1482	1656	3312	1482
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	544	0	856	78	0	122	722	300	56	156	644	611
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	544	0	856	78	0	122	722	300	56	156	644	611
Heavy Vehicles (%)	9%	9%	9%	8%	8%	8%	9%	9%	9%	9%	9%	9%
Turn Type	Prot		Free	Prot		Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	7			3			5	2		1	6	
Permitted Phases			Free			Free			Free			Free
Actuated Green, G (s)	18.0		90.0	18.0		90.0	22.0	27.0	90.0	15.0	20.0	90.0
Effective Green, g (s)	18.0		90.0	18.0		90.0	22.0	27.0	90.0	15.0	20.0	90.0
Actuated g/C Ratio	0.20		1.00	0.20		1.00	0.24	0.30	1.00	0.17	0.22	1.00
Clearance Time (s)	10.0			10.0			10.0	10.0		10.0	10.0	
Lane Grp Cap (vph)	642		1482	334		1495	785	993	1482	276	736	1482
v/s Ratio Prot	0.17			0.05			c0.22	0.09		0.09	c0.19	
v/s Ratio Perm			c0.58			0.08			0.04			0.41
v/c Ratio	0.85		0.58	0.23		0.08	0.92	0.30	0.04	0.57	0.88	0.41
Uniform Delay, d1	34.7		0.0	30.2		0.0	33.1	24.2	0.0	34.5	33.8	0.0
Progression Factor	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	13.1		1.6	1.6		0.1	17.7	0.8	0.0	8.1	13.8	0.8
Delay (s)	47.8		1.6	31.8		0.1	50.8	25.0	0.0	42.6	47.5	0.8
Level of Service	D		A	C		A	D	C	A	D	D	A
Approach Delay (s)		19.6			12.5			41.0			26.8	
Approach LOS		B			B			D			C	

Intersection Summary			
HCM 2000 Control Delay	27.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	30.0
Intersection Capacity Utilization	73.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Intersection: 3: Maitland Avenue & Maitland Boulevard

Movement	EB	EB	EB	WB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	L	R	L	L	L	T	T	L	T	T	R
Maximum Queue (ft)	281	312	392	137	438	512	332	222	193	397	300	308
Average Queue (ft)	173	215	47	48	282	337	91	85	88	198	166	68
95th Queue (ft)	262	294	228	104	446	511	347	244	163	325	267	231
Link Distance (ft)		1199					783	783		1008	1008	
Upstream Blk Time (%)							1	0		0		
Queuing Penalty (veh)							0	0		0		
Storage Bay Dist (ft)	700		650	850	400	400			500			500
Storage Blk Time (%)					3	8	0					0
Queuing Penalty (veh)					4	11	0					0

Network Summary

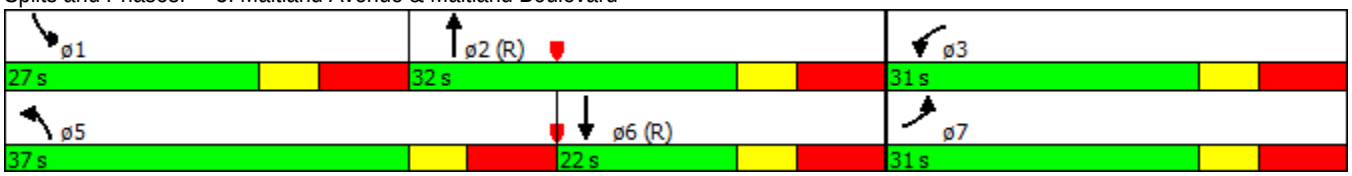
Network wide Queuing Penalty: 16

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	610	0	860	50	0	100	550	470	150	160	320	470
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	0.97	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3213	0	1482	1671	0	1495	3213	3312	1482	1656	3312	1482
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3213	0	1482	1671	0	1495	3213	3312	1482	1656	3312	1482
Satd. Flow (RTOR)			715			327			327			522
Adj. Flow (vph)	678	0	956	56	0	111	611	522	167	178	356	522
Lane Group Flow (vph)	678	0	956	56	0	111	611	522	167	178	356	522
Turn Type	Prot		Free	Prot		Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	7			3			5	2		1	6	
Permitted Phases			Free			Free			Free			Free
Total Split (s)	31.0			31.0			37.0	32.0		27.0	22.0	
Total Lost Time (s)	10.0			10.0			10.0	10.0		10.0	10.0	
Act Effct Green (s)	21.0		90.0	21.0		90.0	27.0	22.0	90.0	17.0	12.0	90.0
Actuated g/C Ratio	0.23		1.00	0.23		1.00	0.30	0.24	1.00	0.19	0.13	1.00
v/c Ratio	0.91		0.65	0.14		0.07	0.63	0.65	0.11	0.57	0.81	0.35
Control Delay	51.1		2.2	28.6		0.1	30.8	34.8	0.2	41.3	53.4	0.7
Queue Delay	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.1		2.2	28.6		0.1	30.8	34.8	0.2	41.3	53.4	0.7
LOS	D		A	C		A	C	C	A	D	D	A
Approach Delay								28.5			25.3	
Approach LOS								C			C	

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Control Type: Pretimed
Maximum v/c Ratio: 0.91
Intersection Signal Delay: 24.6 — Intersection LOS: C
Intersection Capacity Utilization 66.9% — ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 3: Maitland Avenue & Maitland Boulevard



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	610	0	860	50	0	100	550	470	150	160	320	470
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	10.0		4.0	10.0		4.0	10.0	10.0	4.0	10.0	10.0	4.0
Lane Util. Factor	0.97		1.00	1.00		1.00	0.97	0.95	1.00	1.00	0.95	1.00
Frt	1.00		0.85	1.00		0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3213		1482	1671		1495	3213	3312	1482	1656	3312	1482
Flt Permitted	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3213		1482	1671		1495	3213	3312	1482	1656	3312	1482
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	678	0	956	56	0	111	611	522	167	178	356	522
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	678	0	956	56	0	111	611	522	167	178	356	522
Heavy Vehicles (%)	9%	9%	9%	8%	8%	8%	9%	9%	9%	9%	9%	9%
Turn Type	Prot		Free	Prot		Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	7			3			5	2		1	6	
Permitted Phases			Free			Free			Free			Free
Actuated Green, G (s)	21.0		90.0	21.0		90.0	27.0	22.0	90.0	17.0	12.0	90.0
Effective Green, g (s)	21.0		90.0	21.0		90.0	27.0	22.0	90.0	17.0	12.0	90.0
Actuated g/C Ratio	0.23		1.00	0.23		1.00	0.30	0.24	1.00	0.19	0.13	1.00
Clearance Time (s)	10.0			10.0			10.0	10.0		10.0	10.0	
Lane Grp Cap (vph)	749		1482	389		1495	963	809	1482	312	441	1482
v/s Ratio Prot	0.21			0.03			0.19	0.16		0.11	0.11	
v/s Ratio Perm			c0.65			0.07			0.11			0.35
v/c Ratio	0.91		0.65	0.14		0.07	0.63	0.65	0.11	0.57	0.81	0.35
Uniform Delay, d1	33.5		0.0	27.4		0.0	27.2	30.5	0.0	33.2	37.9	0.0
Progression Factor	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	16.5		2.2	0.8		0.1	3.2	3.9	0.2	7.4	14.6	0.7
Delay (s)	50.1		2.2	28.1		0.1	30.4	34.4	0.2	40.6	52.5	0.7
Level of Service	D		A	C		A	C	C	A	D	D	A
Approach Delay (s)		22.0			9.5			28.1			24.9	
Approach LOS		C			A			C			C	

Intersection Summary			
HCM 2000 Control Delay	24.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	30.0
Intersection Capacity Utilization	66.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Intersection: 3: Maitland Avenue & Maitland Boulevard

Movement	EB	EB	EB	WB	NB	NB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	R	L	L	L	T	T	R	L	T	T
Maximum Queue (ft)	395	433	247	94	315	361	236	225	15	209	235	228
Average Queue (ft)	224	264	16	31	154	208	122	123	0	94	128	103
95th Queue (ft)	372	410	116	74	268	302	202	202	0	168	205	185
Link Distance (ft)		1199					783	783			1008	1008
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	700		650	850	400	400			400	500		
Storage Blk Time (%)					0	0						
Queuing Penalty (veh)					0	0						

Intersection: 3: Maitland Avenue & Maitland Boulevard

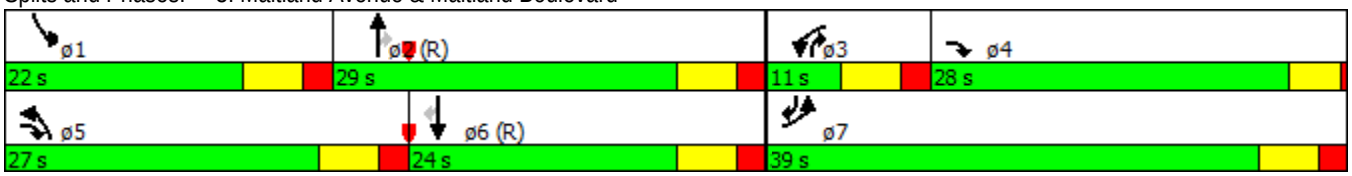
Movement	SB
Directions Served	R
Maximum Queue (ft)	291
Average Queue (ft)	59
95th Queue (ft)	210
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	500
Storage Blk Time (%)	
Queuing Penalty (veh)	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	490	0	770	70	0	110	650	270	50	140	580	550
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	0.97	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3213	0	1482	1671	0	1495	3213	3312	1482	1656	3312	1482
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3213	0	1482	1671	0	1495	3213	3312	1482	1656	3312	1482
Satd. Flow (RTOR)			109			255			109			36
Adj. Flow (vph)	544	0	856	78	0	122	722	300	56	156	644	611
Lane Group Flow (vph)	544	0	856	78	0	122	722	300	56	156	644	611
Turn Type	Prot		pt+ov	Prot		Free	Prot	NA	pm+ov	Prot	NA	pm+ov
Protected Phases	7		4 5	3			5	2	3	1	6	7
Permitted Phases						Free			2			6
Total Split (s)	39.0			11.0			27.0	29.0	11.0	22.0	24.0	39.0
Total Lost Time (s)	6.0			6.0			6.0	6.0	6.0	6.0	6.0	6.0
Act Effct Green (s)	33.0		51.0	5.0		90.0	21.0	23.0	34.0	16.0	18.0	57.0
Actuated g/C Ratio	0.37		0.57	0.06		1.00	0.23	0.26	0.38	0.18	0.20	0.63
v/c Ratio	0.46		0.97	0.85		0.08	0.96	0.35	0.09	0.53	0.97	0.64
Control Delay	23.3		41.0	104.2		0.1	60.7	28.9	0.8	41.0	66.1	13.4
Queue Delay	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.3		41.0	104.2		0.1	60.7	28.9	0.8	41.0	66.1	13.4
LOS	C		D	F		A	E	C	A	D	E	B
Approach Delay								48.7			40.5	
Approach LOS								D			D	

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Control Type: Pretimed
Maximum v/c Ratio: 0.97
Intersection Signal Delay: 40.5 — Intersection LOS: D
Intersection Capacity Utilization 79.3% — ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 3: Maitland Avenue & Maitland Boulevard



Lane Group	ø4
Lane Configurations	
Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	4
Permitted Phases	
Total Split (s)	28.0
Total Lost Time (s)	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	490	0	770	70	0	110	650	270	50	140	580	550
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		4.0	6.0		4.0	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	0.97		1.00	1.00		1.00	0.97	0.95	1.00	1.00	0.95	1.00
Frt	1.00		0.85	1.00		0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3213		1482	1671		1495	3213	3312	1482	1656	3312	1482
Flt Permitted	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3213		1482	1671		1495	3213	3312	1482	1656	3312	1482
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	544	0	856	78	0	122	722	300	56	156	644	611
RTOR Reduction (vph)	0	0	50	0	0	0	0	0	39	0	0	16
Lane Group Flow (vph)	544	0	806	78	0	122	722	300	17	156	644	595
Heavy Vehicles (%)	9%	9%	9%	8%	8%	8%	9%	9%	9%	9%	9%	9%
Turn Type	Prot		pt+ov	Prot		Free	Prot	NA	pm+ov	Prot	NA	pm+ov
Protected Phases	7		4 5	3			5	2	3	1	6	7
Permitted Phases						Free			2			6
Actuated Green, G (s)	33.0		49.0	5.0		90.0	21.0	23.0	28.0	16.0	18.0	51.0
Effective Green, g (s)	33.0		49.0	5.0		90.0	21.0	23.0	28.0	16.0	18.0	51.0
Actuated g/C Ratio	0.37		0.54	0.06		1.00	0.23	0.26	0.31	0.18	0.20	0.57
Clearance Time (s)	6.0			6.0			6.0	6.0	6.0	6.0	6.0	6.0
Lane Grp Cap (vph)	1178		806	92		1495	749	846	559	294	662	938
v/s Ratio Prot	0.17		c0.54	0.05			0.22	c0.09	0.00	0.09	c0.19	c0.23
v/s Ratio Perm						0.08			0.01			0.17
v/c Ratio	0.46		1.00	0.85		0.08	0.96	0.35	0.03	0.53	0.97	0.63
Uniform Delay, d1	21.7		20.5	42.1		0.0	34.1	27.4	21.6	33.6	35.8	13.2
Progression Factor	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.3		31.8	58.7		0.1	25.2	1.2	0.1	6.7	28.9	3.3
Delay (s)	23.0		52.3	100.8		0.1	59.3	28.6	21.7	40.3	64.7	16.5
Level of Service	C		D	F		A	E	C	C	D	E	B
Approach Delay (s)		40.9			39.4			48.8			41.1	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	43.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.07		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	79.3%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Intersection: 3: Maitland Avenue & Maitland Boulevard

Movement	EB	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	R	L	R	L	L	T	T	L	T	T
Maximum Queue (ft)	263	427	533	140	17	409	460	191	172	187	331	307
Average Queue (ft)	100	163	267	56	0	221	271	64	79	81	198	173
95th Queue (ft)	212	287	453	113	16	352	399	135	142	154	294	270
Link Distance (ft)		1201			1001			819	819		1046	1046
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	700		650	850		400	400			500		
Storage Blk Time (%)			0			0	1					
Queuing Penalty (veh)			1			0	1					

Intersection: 3: Maitland Avenue & Maitland Boulevard

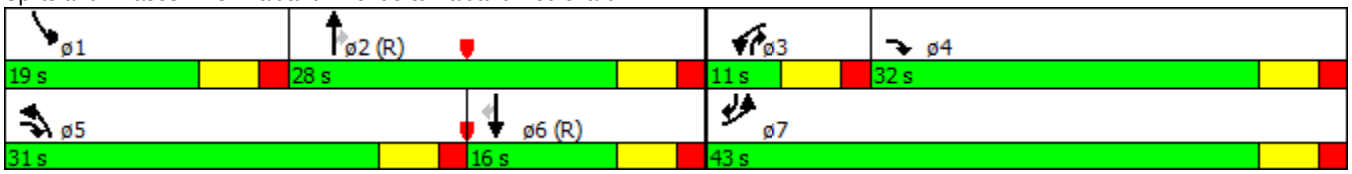
Movement	SB
Directions Served	R
Maximum Queue (ft)	274
Average Queue (ft)	61
95th Queue (ft)	210
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	500
Storage Blk Time (%)	
Queuing Penalty (veh)	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	610	0	860	50	0	100	550	470	150	160	320	470
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	0.97	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3213	0	1482	1671	0	1495	3213	3312	1482	1656	3312	1482
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3213	0	1482	1671	0	1495	3213	3312	1482	1656	3312	1482
Satd. Flow (RTOR)			109			327			167			109
Adj. Flow (vph)	678	0	956	56	0	111	611	522	167	178	356	522
Lane Group Flow (vph)	678	0	956	56	0	111	611	522	167	178	356	522
Turn Type	Prot		pt+ov	Prot		Free	Prot	NA	pm+ov	Prot	NA	pm+ov
Protected Phases	7		4 5	3			5	2	3	1	6	7
Permitted Phases						Free			2			6
Total Split (s)	43.0			11.0			31.0	28.0	11.0	19.0	16.0	43.0
Total Lost Time (s)	6.0			6.0			6.0	6.0	6.0	6.0	6.0	6.0
Act Effct Green (s)	37.0		57.0	5.0		90.0	25.0	22.0	33.0	13.0	10.0	53.0
Actuated g/C Ratio	0.41		0.63	0.06		1.00	0.28	0.24	0.37	0.14	0.11	0.59
v/c Ratio	0.51		0.98	0.61		0.07	0.68	0.65	0.26	0.74	0.97	0.57
Control Delay	21.5		39.9	70.0		0.1	33.6	34.8	4.4	57.3	81.1	11.7
Queue Delay	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.5		39.9	70.0		0.1	33.6	34.8	4.4	57.3	81.1	11.7
LOS	C		D	E		A	C	C	A	E	F	B
Approach Delay								30.4			42.8	
Approach LOS								C			D	

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Control Type: Pretimed
Maximum v/c Ratio: 0.98
Intersection Signal Delay: 34.0 — Intersection LOS: C
Intersection Capacity Utilization 78.8% — ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 3: Maitland Avenue & Maitland Boulevard



Lane Group	ø4
Lane Configurations	
Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	4
Permitted Phases	
Total Split (s)	32.0
Total Lost Time (s)	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	610	0	860	50	0	100	550	470	150	160	320	470
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		6.0	6.0		4.0	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	0.97		1.00	1.00		1.00	0.97	0.95	1.00	1.00	0.95	1.00
Frt	1.00		0.85	1.00		0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3213		1482	1671		1495	3213	3312	1482	1656	3312	1482
Flt Permitted	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3213		1482	1671		1495	3213	3312	1482	1656	3312	1482
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	678	0	956	56	0	111	611	522	167	178	356	522
RTOR Reduction (vph)	0	0	40	0	0	0	0	0	117	0	0	52
Lane Group Flow (vph)	678	0	916	56	0	111	611	522	50	178	356	470
Heavy Vehicles (%)	9%	9%	9%	8%	8%	8%	9%	9%	9%	9%	9%	9%
Turn Type	Prot		pt+ov	Prot		Free	Prot	NA	pm+ov	Prot	NA	pm+ov
Protected Phases	7		4 5	3			5	2	3	1	6	7
Permitted Phases						Free			2			6
Actuated Green, G (s)	37.0		57.0	5.0		90.0	25.0	22.0	27.0	13.0	10.0	47.0
Effective Green, g (s)	37.0		57.0	5.0		90.0	25.0	22.0	27.0	13.0	10.0	47.0
Actuated g/C Ratio	0.41		0.63	0.06		1.00	0.28	0.24	0.30	0.14	0.11	0.52
Clearance Time (s)	6.0			6.0			6.0	6.0	6.0	6.0	6.0	6.0
Lane Grp Cap (vph)	1320		938	92		1495	892	809	543	239	368	872
v/s Ratio Prot	0.21		c0.62	0.03			0.19	0.16	0.01	0.11	c0.11	c0.22
v/s Ratio Perm						0.07			0.03			0.10
v/c Ratio	0.51		0.98	0.61		0.07	0.68	0.65	0.09	0.74	0.97	0.54
Uniform Delay, d1	19.8		15.9	41.5		0.0	29.0	30.5	22.7	36.9	39.8	14.3
Progression Factor	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.4		24.2	26.5		0.1	4.3	3.9	0.3	18.9	39.4	2.4
Delay (s)	21.2		40.1	68.0		0.1	33.2	34.4	23.0	55.8	79.2	16.7
Level of Service	C		D	E		A	C	C	C	E	E	B
Approach Delay (s)		32.3			22.9			32.4			44.4	
Approach LOS		C			C			C			D	

Intersection Summary			
HCM 2000 Control Delay	35.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.08		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	78.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Intersection: 3: Maitland Avenue & Maitland Boulevard

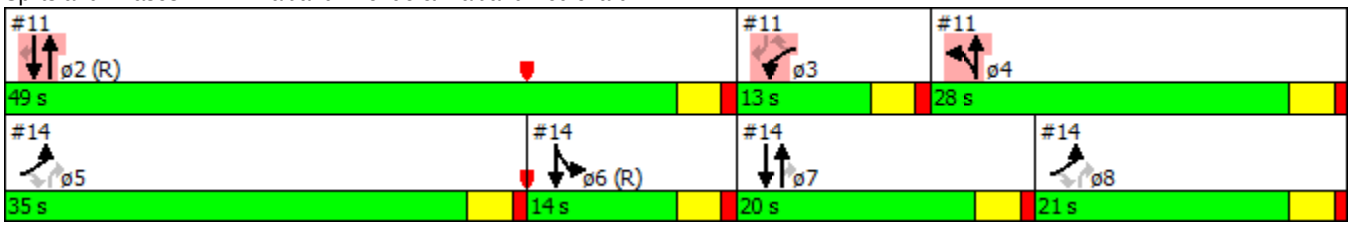
Movement	EB	EB	EB	WB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	L	R	L	L	L	T	T	L	T	T	R
Maximum Queue (ft)	248	298	330	113	335	378	236	223	221	260	232	269
Average Queue (ft)	128	174	42	39	159	212	124	122	99	143	119	56
95th Queue (ft)	224	252	196	85	278	315	201	197	182	233	211	197
Link Distance (ft)		1205					822	822		1046	1046	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	700		650	850	400	400			500			500
Storage Blk Time (%)					0	0						
Queuing Penalty (veh)					0	0						

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	70	0	110	650	760	0	0	720	550
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.95	1.00	1.00	0.91	1.00
Frt						0.850						0.850
Flt Protected				0.950			0.950					
Satd. Flow (prot)	0	0	0	1770	0	1583	3433	3539	0	0	5085	1583
Flt Permitted				0.950			0.950					
Satd. Flow (perm)	0	0	0	1770	0	1583	3433	3539	0	0	5085	1583
Satd. Flow (RTOR)						158						61
Adj. Flow (vph)	0	0	0	78	0	122	722	844	0	0	800	611
Lane Group Flow (vph)	0	0	0	78	0	122	722	844	0	0	800	611
Turn Type				Prot		Perm	Prot	NA			NA	custom
Protected Phases				3			4	2 4			2	
Permitted Phases						3						2 3
Total Split (s)				13.0		13.0	28.0				49.0	
Total Lost Time (s)				4.0		4.0	4.0				4.0	
Act Effct Green (s)				9.0		9.0	24.0	73.0			45.0	58.0
Actuated g/C Ratio				0.10		0.10	0.27	0.81			0.50	0.64
v/c Ratio				0.44		0.41	0.79	0.29			0.31	0.59
Control Delay				46.6		7.5	13.1	1.7			13.8	10.9
Queue Delay				0.0		0.0	50.7	0.3			0.0	0.0
Total Delay				46.6		7.5	63.8	2.0			13.8	10.9
LOS				D		A	E	A			B	B
Approach Delay								30.5			12.5	
Approach LOS								C			B	

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2:NBSB and 6:, Start of Green
Control Type: Pretimed
Maximum v/c Ratio: 0.90
Intersection Signal Delay: 22.0 — Intersection LOS: C
Intersection Capacity Utilization 105.5% — ICU Level of Service G
Analysis Period (min) 15

Splits and Phases: 11: Maitland Avenue & Maitland Boulevard WB



Lane Group	ø5	ø6	ø7	ø8
Lane Configurations				
Volume (vph)				
Lane Util. Factor				
Frt				
Flt Protected				
Satd. Flow (prot)				
Flt Permitted				
Satd. Flow (perm)				
Satd. Flow (RTOR)				
Adj. Flow (vph)				
Lane Group Flow (vph)				
Turn Type				
Protected Phases	5	6	7	8
Permitted Phases				
Total Split (s)	35.0	14.0	20.0	21.0
Total Lost Time (s)				
Act Effct Green (s)				
Actuated g/C Ratio				
v/c Ratio				
Control Delay				
Queue Delay				
Total Delay				
LOS				
Approach Delay				
Approach LOS				

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	70	0	110	650	760	0	0	720	550
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0		4.0	4.0	4.0			4.0	4.0
Lane Util. Factor				1.00		1.00	0.97	0.95			0.91	1.00
Frt				1.00		0.85	1.00	1.00			1.00	0.85
Flt Protected				0.95		1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)				1770		1583	3433	3539			5085	1583
Flt Permitted				0.95		1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)				1770		1583	3433	3539			5085	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	0	78	0	122	722	844	0	0	800	611
RTOR Reduction (vph)	0	0	0	0	0	110	0	0	0	0	0	22
Lane Group Flow (vph)	0	0	0	78	0	12	722	844	0	0	800	589
Turn Type				Prot		Perm	Prot	NA			NA	custom
Protected Phases				3			4	2 4			2	
Permitted Phases						3						2 3
Actuated Green, G (s)				9.0		9.0	24.0	73.0			45.0	58.0
Effective Green, g (s)				9.0		9.0	24.0	73.0			45.0	58.0
Actuated g/C Ratio				0.10		0.10	0.27	0.81			0.50	0.64
Clearance Time (s)				4.0		4.0	4.0				4.0	
Lane Grp Cap (vph)				177		158	915	2870			2542	1020
v/s Ratio Prot				0.04			c0.21	0.24			0.16	
v/s Ratio Perm						0.01						c0.37
v/c Ratio				0.44		0.08	0.79	0.29			0.31	0.58
Uniform Delay, d1				38.1		36.7	30.6	2.1			13.4	9.1
Progression Factor				1.00		1.00	0.31	0.68			1.00	1.00
Incremental Delay, d2				7.8		1.0	3.0	0.2			0.3	2.4
Delay (s)				45.9		37.7	12.7	1.7			13.7	11.4
Level of Service				D		D	B	A			B	B
Approach Delay (s)		0.0			40.9			6.7			12.7	
Approach LOS		A			D			A			B	

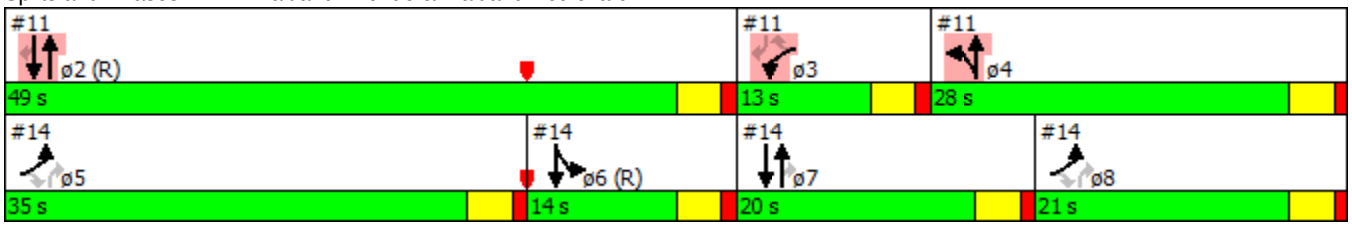
Intersection Summary			
HCM 2000 Control Delay	11.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	105.5%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	490	0	770	0	0	0	0	920	50	140	650	0
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.86	1.00	1.00	0.95	1.00
Frt			0.850						0.850			
Flt Protected	0.950									0.950		
Satd. Flow (prot)	3433	0	1583	0	0	0	0	6408	1583	1770	3539	0
Flt Permitted	0.950									0.950		
Satd. Flow (perm)	3433	0	1583	0	0	0	0	6408	1583	1770	3539	0
Satd. Flow (RTOR)			109						56			
Adj. Flow (vph)	544	0	856	0	0	0	0	1022	56	156	722	0
Lane Group Flow (vph)	544	0	856	0	0	0	0	1022	56	156	722	0
Turn Type	Prot		Perm					NA	custom	Prot	NA	
Protected Phases	5 8							7		6	6 7	
Permitted Phases			5 8						5 7 8			
Total Split (s)								20.0		14.0		
Total Lost Time (s)								4.0		4.0		
Act Effct Green (s)	52.0		52.0					16.0	72.0	10.0	30.0	
Actuated g/C Ratio	0.58		0.58					0.18	0.80	0.11	0.33	
v/c Ratio	0.27		0.89					0.90	0.04	0.80	0.61	
Control Delay	10.0		28.1					47.9	0.6	55.2	23.9	
Queue Delay	0.0		0.0					16.4	0.0	0.0	6.4	
Total Delay	10.0		28.1					64.3	0.6	55.2	30.3	
LOS	A		C					E	A	E	C	
Approach Delay								61.0			34.7	
Approach LOS								E			C	

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 0 (0%), Referenced to phase 2:NBSB and 6:, Start of Green	
Control Type: Pretimed	
Maximum v/c Ratio: 0.90	
Intersection Signal Delay: 37.5	Intersection LOS: D
Intersection Capacity Utilization 105.5%	ICU Level of Service G
Analysis Period (min) 15	

Splits and Phases: 14: Maitland Avenue & Maitland Boulevard EB



Lane Group	ø2	ø3	ø4	ø5	ø8
Lane Configurations					
Volume (vph)					
Lane Util. Factor					
Frt					
Flt Protected					
Satd. Flow (prot)					
Flt Permitted					
Satd. Flow (perm)					
Satd. Flow (RTOR)					
Adj. Flow (vph)					
Lane Group Flow (vph)					
Turn Type					
Protected Phases	2	3	4	5	8
Permitted Phases					
Total Split (s)	49.0	13.0	28.0	35.0	21.0
Total Lost Time (s)					
Act Effct Green (s)					
Actuated g/C Ratio					
v/c Ratio					
Control Delay					
Queue Delay					
Total Delay					
LOS					
Approach Delay					
Approach LOS					

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	490	0	770	0	0	0	0	920	50	140	650	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0					4.0	4.0	4.0	4.0	
Lane Util. Factor	0.97		1.00					0.86	1.00	1.00	0.95	
Frt	1.00		0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95		1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	3433		1583					6408	1583	1770	3539	
Flt Permitted	0.95		1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	3433		1583					6408	1583	1770	3539	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	544	0	856	0	0	0	0	1022	56	156	722	0
RTOR Reduction (vph)	0	0	46	0	0	0	0	0	11	0	0	0
Lane Group Flow (vph)	544	0	810	0	0	0	0	1022	45	156	722	0
Turn Type	Prot		Perm					NA	custom	Prot	NA	
Protected Phases	5 8							7		6	6 7	
Permitted Phases			5 8						5 7 8			
Actuated Green, G (s)	52.0		52.0					16.0	72.0	10.0	30.0	
Effective Green, g (s)	52.0		52.0					16.0	72.0	10.0	30.0	
Actuated g/C Ratio	0.58		0.58					0.18	0.80	0.11	0.33	
Clearance Time (s)								4.0		4.0		
Lane Grp Cap (vph)	1983		914					1139	1266	196	1179	
v/s Ratio Prot	0.16							c0.16		c0.09	0.20	
v/s Ratio Perm			c0.51						0.03			
v/c Ratio	0.27		0.89					0.90	0.04	0.80	0.61	
Uniform Delay, d1	9.5		16.4					36.2	1.9	39.0	25.1	
Progression Factor	1.00		1.00					1.00	1.00	0.66	0.85	
Incremental Delay, d2	0.3		12.4					11.1	0.1	26.8	2.3	
Delay (s)	9.9		28.8					47.3	1.9	52.4	23.6	
Level of Service	A		C					D	A	D	C	
Approach Delay (s)		21.4			0.0			45.0			28.7	
Approach LOS		C			A			D			C	

Intersection Summary			
HCM 2000 Control Delay	30.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	105.5%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Intersection: 11: Maitland Avenue & Maitland Boulevard WB

Movement	WB	WB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	R	L	L	T	T	T	T	T	R
Maximum Queue (ft)	125	86	44	30	32	30	137	215	185	272
Average Queue (ft)	53	39	8	6	5	7	46	125	81	119
95th Queue (ft)	102	69	32	24	24	27	103	196	170	215
Link Distance (ft)	630	630	244	244	244	244	1041	1041	1041	
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)										300
Storage Blk Time (%)										0
Queuing Penalty (veh)										0

Intersection: 14: Maitland Avenue & Maitland Boulevard EB

Movement	EB	EB	EB	NB	NB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	R	T	T	T	T	R	L	T	T
Maximum Queue (ft)	223	251	511	548	528	490	409	43	202	255	233
Average Queue (ft)	105	57	217	356	339	232	148	8	97	175	153
95th Queue (ft)	185	204	407	593	567	516	378	31	174	243	222
Link Distance (ft)	634	634	634	1606	1606	1606	1606		244	244	244
Upstream Blk Time (%)	0	0	1						0	0	0
Queuing Penalty (veh)	0	0	0						0	1	0
Storage Bay Dist (ft)								300			
Storage Blk Time (%)							0				
Queuing Penalty (veh)							0				

Zone Summary

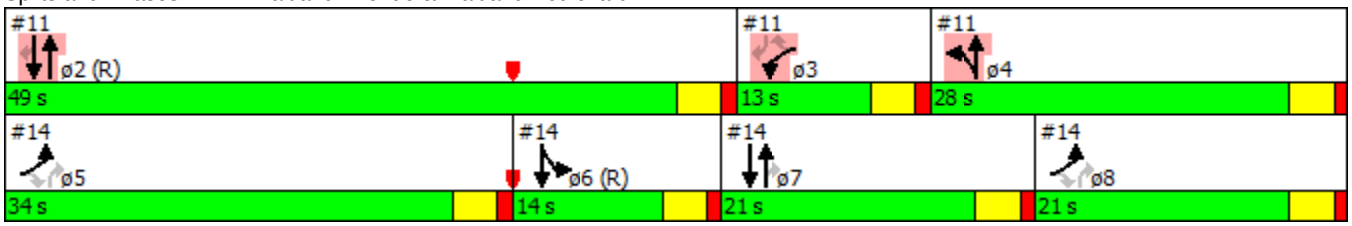
Zone wide Queuing Penalty: 2

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	50	0	100	550	1080	0	0	480	470
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.95	1.00	1.00	0.91	1.00
Frt						0.850						0.850
Flt Protected				0.950			0.950					
Satd. Flow (prot)	0	0	0	1770	0	1583	3433	3539	0	0	5085	1583
Flt Permitted				0.950			0.950					
Satd. Flow (perm)	0	0	0	1770	0	1583	3433	3539	0	0	5085	1583
Satd. Flow (RTOR)						158						61
Adj. Flow (vph)	0	0	0	56	0	111	611	1200	0	0	533	522
Lane Group Flow (vph)	0	0	0	56	0	111	611	1200	0	0	533	522
Turn Type				Prot		Perm	Prot	NA			NA	custom
Protected Phases				3			4	2 4			2	
Permitted Phases						3						2 3
Total Split (s)				13.0		13.0	28.0				49.0	
Total Lost Time (s)				4.0		4.0	4.0				4.0	
Act Effct Green (s)				9.0		9.0	24.0	73.0			45.0	58.0
Actuated g/C Ratio				0.10		0.10	0.27	0.81			0.50	0.64
v/c Ratio				0.32		0.37	0.67	0.42			0.21	0.50
Control Delay				42.9		6.0	10.1	3.9			12.8	9.3
Queue Delay				0.0		0.0	10.0	0.4			0.0	0.0
Total Delay				42.9		6.0	20.2	4.3			12.8	9.3
LOS				D		A	C	A			B	A
Approach Delay								9.6			11.1	
Approach LOS								A			B	

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2:NBSB and 6:, Start of Green
Control Type: Pretimed
Maximum v/c Ratio: 0.96
Intersection Signal Delay: 10.6 — Intersection LOS: B
Intersection Capacity Utilization 107.1% — ICU Level of Service G
Analysis Period (min) 15

Splits and Phases: 11: Maitland Avenue & Maitland Boulevard WB



Lane Group	ø5	ø6	ø7	ø8
Lane Configurations				
Volume (vph)				
Lane Util. Factor				
Frt				
Flt Protected				
Satd. Flow (prot)				
Flt Permitted				
Satd. Flow (perm)				
Satd. Flow (RTOR)				
Adj. Flow (vph)				
Lane Group Flow (vph)				
Turn Type				
Protected Phases	5	6	7	8
Permitted Phases				
Total Split (s)	34.0	14.0	21.0	21.0
Total Lost Time (s)				
Act Effct Green (s)				
Actuated g/C Ratio				
v/c Ratio				
Control Delay				
Queue Delay				
Total Delay				
LOS				
Approach Delay				
Approach LOS				

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	50	0	100	550	1080	0	0	480	470
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0		4.0	4.0	4.0			4.0	4.0
Lane Util. Factor				1.00		1.00	0.97	0.95			0.91	1.00
Frt				1.00		0.85	1.00	1.00			1.00	0.85
Flt Protected				0.95		1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)				1770		1583	3433	3539			5085	1583
Flt Permitted				0.95		1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)				1770		1583	3433	3539			5085	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	0	56	0	111	611	1200	0	0	533	522
RTOR Reduction (vph)	0	0	0	0	0	100	0	0	0	0	0	22
Lane Group Flow (vph)	0	0	0	56	0	11	611	1200	0	0	533	500
Turn Type				Prot		Perm	Prot	NA			NA	custom
Protected Phases				3			4	2 4			2	
Permitted Phases						3						2 3
Actuated Green, G (s)				9.0		9.0	24.0	73.0			45.0	58.0
Effective Green, g (s)				9.0		9.0	24.0	73.0			45.0	58.0
Actuated g/C Ratio				0.10		0.10	0.27	0.81			0.50	0.64
Clearance Time (s)				4.0		4.0	4.0				4.0	
Lane Grp Cap (vph)				177		158	915	2870			2542	1020
v/s Ratio Prot				0.03			c0.18	0.34			0.10	
v/s Ratio Perm						0.01						c0.32
v/c Ratio				0.32		0.07	0.67	0.42			0.21	0.49
Uniform Delay, d1				37.6		36.7	29.4	2.4			12.6	8.3
Progression Factor				1.00		1.00	0.29	1.44			1.00	1.00
Incremental Delay, d2				4.6		0.9	1.4	0.4			0.2	1.7
Delay (s)				42.3		37.6	10.0	3.9			12.8	10.0
Level of Service				D		D	B	A			B	B
Approach Delay (s)		0.0			39.1			5.9			11.4	
Approach LOS		A			D			A			B	

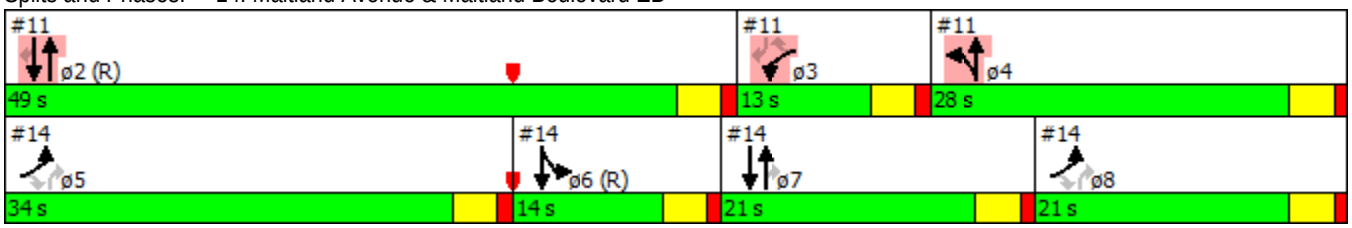
Intersection Summary			
HCM 2000 Control Delay	9.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	107.1%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	610	0	860	0	0	0	0	1020	150	160	370	0
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.86	1.00	1.00	0.95	1.00
Frt			0.850						0.850			
Flt Protected	0.950									0.950		
Satd. Flow (prot)	3433	0	1583	0	0	0	0	6408	1583	1770	3539	0
Flt Permitted	0.950									0.950		
Satd. Flow (perm)	3433	0	1583	0	0	0	0	6408	1583	1770	3539	0
Satd. Flow (RTOR)			230						131			
Adj. Flow (vph)	678	0	956	0	0	0	0	1133	167	178	411	0
Lane Group Flow (vph)	678	0	956	0	0	0	0	1133	167	178	411	0
Turn Type	Prot		Perm					NA	custom	Prot	NA	
Protected Phases	5 8							7		6	6 7	
Permitted Phases			5 8						5 7 8			
Total Split (s)								21.0		14.0		
Total Lost Time (s)								4.0		4.0		
Act Effct Green (s)	51.0		51.0					17.0	72.0	10.0	31.0	
Actuated g/C Ratio	0.57		0.57					0.19	0.80	0.11	0.34	
v/c Ratio	0.35		0.96					0.94	0.13	0.91	0.34	
Control Delay	11.2		36.1					51.3	0.8	74.7	19.0	
Queue Delay	0.0		0.0					3.5	0.0	0.0	0.7	
Total Delay	11.2		36.1					54.7	0.8	74.7	19.7	
LOS	B		D					D	A	E	B	
Approach Delay								47.8			36.3	
Approach LOS								D			D	

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 0 (0%), Referenced to phase 2:NBSB and 6:, Start of Green	
Control Type: Pretimed	
Maximum v/c Ratio: 0.96	
Intersection Signal Delay: 35.7	Intersection LOS: D
Intersection Capacity Utilization 107.1%	ICU Level of Service G
Analysis Period (min) 15	

Splits and Phases: 14: Maitland Avenue & Maitland Boulevard EB



Lane Group	ø2	ø3	ø4	ø5	ø8
Lane Configurations					
Volume (vph)					
Lane Util. Factor					
Frt					
Flt Protected					
Satd. Flow (prot)					
Flt Permitted					
Satd. Flow (perm)					
Satd. Flow (RTOR)					
Adj. Flow (vph)					
Lane Group Flow (vph)					
Turn Type					
Protected Phases	2	3	4	5	8
Permitted Phases					
Total Split (s)	49.0	13.0	28.0	34.0	21.0
Total Lost Time (s)					
Act Effct Green (s)					
Actuated g/C Ratio					
v/c Ratio					
Control Delay					
Queue Delay					
Total Delay					
LOS					
Approach Delay					
Approach LOS					

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	610	0	860	0	0	0	0	1020	150	160	370	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0					4.0	4.0	4.0	4.0	
Lane Util. Factor	0.97		1.00					0.86	1.00	1.00	0.95	
Frt	1.00		0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95		1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	3433		1583					6408	1583	1770	3539	
Flt Permitted	0.95		1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	3433		1583					6408	1583	1770	3539	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	678	0	956	0	0	0	0	1133	167	178	411	0
RTOR Reduction (vph)	0	0	100	0	0	0	0	0	26	0	0	0
Lane Group Flow (vph)	678	0	856	0	0	0	0	1133	141	178	411	0
Turn Type	Prot		Perm					NA	custom	Prot	NA	
Protected Phases	5 8							7		6	6 7	
Permitted Phases			5 8						5 7 8			
Actuated Green, G (s)	51.0		51.0					17.0	72.0	10.0	31.0	
Effective Green, g (s)	51.0		51.0					17.0	72.0	10.0	31.0	
Actuated g/C Ratio	0.57		0.57					0.19	0.80	0.11	0.34	
Clearance Time (s)								4.0		4.0		
Lane Grp Cap (vph)	1945		897					1210	1266	196	1218	
v/s Ratio Prot	0.20							c0.18		c0.10	c0.12	
v/s Ratio Perm			c0.54						0.09			
v/c Ratio	0.35		0.95					0.94	0.11	0.91	0.34	
Uniform Delay, d1	10.5		18.4					36.0	2.0	39.5	21.9	
Progression Factor	1.00		1.00					1.00	1.00	0.68	0.83	
Incremental Delay, d2	0.5		20.9					14.5	0.2	43.6	0.7	
Delay (s)	11.0		39.3					50.5	2.2	70.5	18.8	
Level of Service	B		D					D	A	E	B	
Approach Delay (s)		27.6			0.0			44.3			34.4	
Approach LOS		C			A			D			C	

Intersection Summary			
HCM 2000 Control Delay	34.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	107.1%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Intersection: 11: Maitland Avenue & Maitland Boulevard WB

Movement	WB	WB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	R	L	L	T	T	T	T	T	R
Maximum Queue (ft)	93	92	44	42	41	37	126	140	96	214
Average Queue (ft)	38	40	23	23	26	26	51	71	30	94
95th Queue (ft)	77	73	40	42	42	43	104	127	77	172
Link Distance (ft)	630	630	244	244	244	244	1041	1041	1041	
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)										300
Storage Blk Time (%)										
Queuing Penalty (veh)										

Intersection: 14: Maitland Avenue & Maitland Boulevard EB

Movement	EB	EB	EB	NB	NB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	R	T	T	T	T	R	L	T	T
Maximum Queue (ft)	250	276	527	293	284	266	226	76	221	171	150
Average Queue (ft)	127	81	224	171	157	147	123	21	117	103	78
95th Queue (ft)	206	241	442	254	248	224	203	58	202	156	132
Link Distance (ft)	634	634	634	1606	1606	1606	1606		244	244	244
Upstream Blk Time (%)	0	0	1						0		
Queuing Penalty (veh)	0	0	0						1		
Storage Bay Dist (ft)								300			
Storage Blk Time (%)							0				
Queuing Penalty (veh)							0				

Zone Summary

Zone wide Queuing Penalty: 1