

DEERFIELD PLACE

Development of Regional Impact # 1470

CITY OF MILTON, GA

TRAFFIC IMPACT STUDY

Prepared for:

The Sembler Company
1450 South. Johnson Ferry Road, Suite 100
Atlanta, GA 30319

Prepared by:



A&R Engineering Inc.

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www.areng.com

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July 27, 2007
A&R Project No: 06-028

EXECUTIVE SUMMARY

The purpose of this study is to determine the traffic impact that will result from the Deerfield Place development proposed along SR 9 (Cumming Highway) to the northeast of the intersection of SR 9 (Cumming Highway) / Webb Road in the City of Milton, Georgia. The development is proposed to consist of a 178,598 s.f. Super Target, 248,967 s.f. of retail space and a 1.45 acre outparcel located adjacent to Deerfield Parkway. For the purposes of the traffic analysis, it is estimated that the outparcel will be developed at 6,000 s.f. per acre for a total of 8,700 s.f. ($1.45 \text{ acres} \times 6,000 \text{ s.f. per acre} = 8,700 \text{ s.f.}$) and a grand total development size of 436,265 s.f. ($178,598 + 248,967 \text{ s.f.} + 8,700 \text{ s.f.}$). The traffic analysis evaluated the following scenarios: existing conditions, the year 2009 without additional traffic generated by the site, and the year 2009 with the traffic generated by the development.

From the existing condition analysis it was found that four of the intersections within the study area are currently not operating at the required LOS standard of D. Analysis of the Base Year 2009 conditions also revealed that four of the study intersections being analyzed will not meet the required LOS standard.

The Future 2009 traffic conditions including the site-generated traffic were then evaluated using existing lane geometry. Eleven study network intersections will not meet the required LOS standard after the project is completed if no roadway improvements are implemented. Improvements were recommended to restore these intersections back to the LOS standard. Additionally, recommendations to allow the site accesses to operate satisfactorily were identified. Details can be found in the site access analysis section of the report.

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1. PROJECT DESCRIPTION

The purpose of this study is to determine the traffic impact that will result from the Deerfield Place development proposed along SR 9 (Cumming Highway) to the northeast of the intersection of SR 9 (Cumming Highway) / Webb Road in the city of Milton, Georgia. The development is proposed to consist of a 178,598 s.f. Super Target, 248,967 s.f. of retail space and a 1.45 acre outparcel located adjacent to Deerfield Parkway. For the purposes of the traffic analysis, it is estimated that the outparcel will be developed at 6,000 s.f. per acre for a total of 8,700 s.f. ($1.45 \text{ acres} \times 6,000 \text{ s.f. per acre} = 8,700 \text{ s.f.}$) and a grand total development size of 436,265 s.f. ($178,598 + 248,967 \text{ s.f.} + 8,700 \text{ s.f.}$). The site proposes three full access driveways and two right-in / right-out driveways along SR 9 (Cumming Highway), one full access driveway and one right-in / right-out driveway along Deerfield Parkway and a right-in / right-out driveway along Webb Road. The three full access driveways along SR 9 (Cumming Highway) will align across from existing streets (Windward Village Parkway, driveway to a Habitat for Humanities development and Marrywood Drive). A location map for the site is shown in Figure 1.

1.1 Site Plan

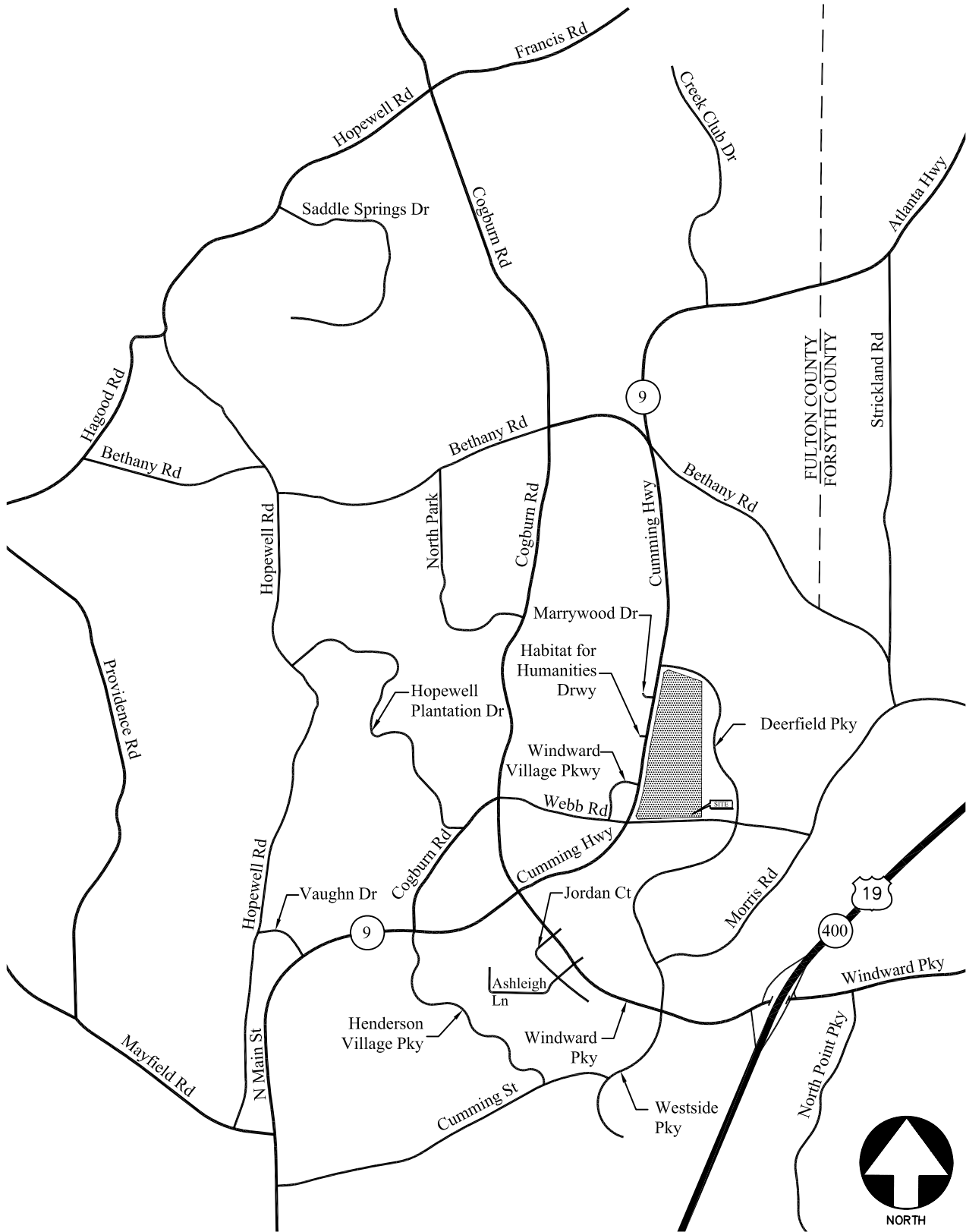
A site plan for this project is shown in Figure 2. A larger size drawing and a digital copy of the site plan are also provided with this report.

1.2 Consistency with Adopted Comprehensive County Plan

The existing and proposed zoning for the development is commercial (CBD). The zoning is consistent with the City of Milton's future land use plan.

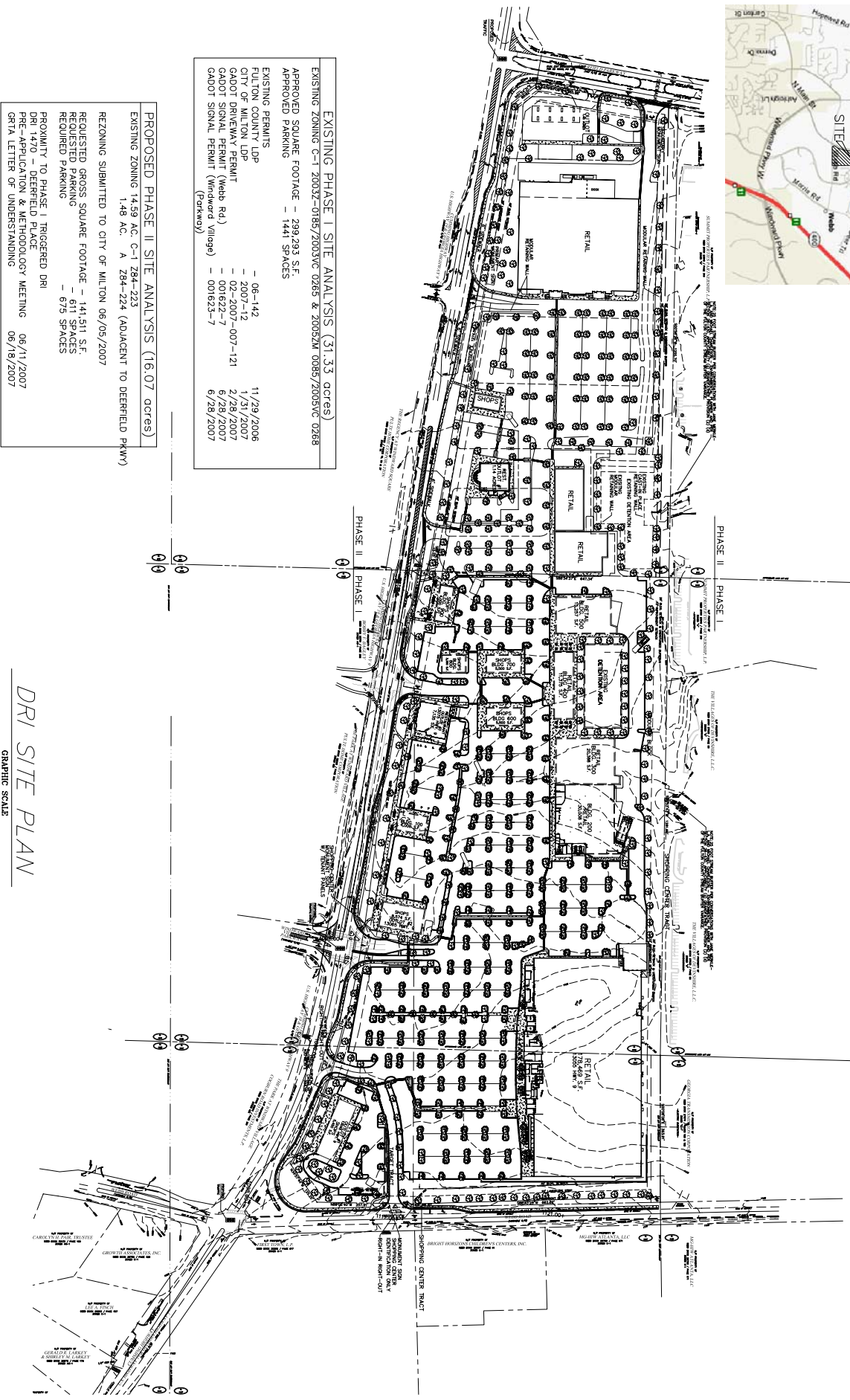
1.3 Project Phasing

The project's impact will be evaluated in one phase, estimated for completion in the year 2009. This study will evaluate the traffic operations in the vicinity of the site for existing conditions year 2007, the year 2009 without additional traffic generated by the site, and the year 2009 with the additional traffic generated by the development.



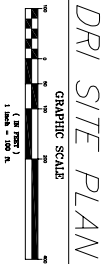
LOCATION MAP

FIGURE 1
A&R Engineering Inc.



EXISTING ZONING C-1 2003-2 0185/2003VC 0265 & 2005AM 0085/2005VC 0268	
EXISTING PHASE I SITE ANALYSIS (31.53 acres)	
APPROVED SQUARE FOOTAGE = 299,293 S.F.	
APPROVED PARKING = 1441 SPACES	
EXISTING PERMITS	
FULTON COUNTY LDP	- 06-1142
CITY OF MILTON LDP	- 2007-12
GADSD DRIVEWAY PERMIT	- 02-2007-007-121
GADSD SIGNAL PERMIT (Webb Rd.)	- 01662-7
GADSD SIGNAL PERMIT (Winthorpe Village)	- 00163-7
(Parkway)	
	11/29/2006
	1/31/2007
	2/28/2007
	6/28/2007
	6/28/2007

PROPOSED PHASE II SITE ANALYSIS (16.07 acres)
EXISTING ZONING 14.59 A.C. C-1 Z84-223 1.46 A.C. A Z84-223 (ADJACENT TO DEERFIELD PKWY)
REZONING SUBMITTED TO CITY OF MILTON 06/05/2007
REQUESTED GROSS SQUARE FOOTAGE - 141,515 S.F.
REQUESTED PARKING - 611 SPACES
PROPOSED PARKING - 675 SPACES
PROXIMITY TO PHASE I, TRIGGERED DRI
DRI #14 IDENTIFIED PLACE
DRI APPLICATION & METHODOLOGY MEETING 06/11/2007
GRI LETTER OF UNDERSTANDING 06/18/2007

[illegible]

**DEERFIELD PLACE
PHASE II**
HIGHWAY 9 AND DEERFIELD PKWY.
CITY OF MILTON, FULTON COUNTY, GEORGIA

SEMBLER
ALPHARETTA I, LLC
1450 SOUTH JOHNSON FERRY ROAD, SUITE 100
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2. TRIP GENERATION

Trip generation estimates for the project were based on the rates and equations published in the 7th edition of the Institute of Transportation Engineers (ITE) Trip Generation report. The ITE Trip Generation report contains traffic volume count data collected at similar facilities nationwide. The development is proposed to consist of a 178,598 s.f. Super Target, 248,967 s.f. of retail space and a 1.45 acre outparcel located adjacent to Deerfield Parkway. For the purposes of the traffic analysis, it is estimated that the outparcel will be developed at 6,000 s.f. per acre for a total of 8,700 s.f. The total retail square footage for use in the analysis is 257,667 s.f. Trip generation estimates for the Deerfield Place development are shown in Table 1.

TABLE 1 TRIP GENERATION – DEERFIELD PLACE								
Land Use	Total Size (s.f.)	P.M. Peak Hour			Sat Peak Hour			24-Hour 2-way
		Enter	Exit	Total	Enter	Exit	Total	
820 – Shopping Center	257,667	561	608	1,169	833	768	1,601	12,564
813 – Free Standing Superstore*	178,598	481	501	982	466	448	914	9,261
Total		1,042	1,109	2,151	1,299	1,216	2,515	21,825

*Trips for PM peak hour is calculated at the rate of 5.5 per 1,000 s.f. ($178,598 \times 5.5 = 982,289 / 1000 = 982$ trips). The directional distribution for PM peak hour is given based on ITE manual for the Land use 813.

2.1 Net Trip Ends

Due to the nature of the development Pass-by reductions was applied to the retail development on SR 9. Pass-by reductions have been taken for the PM and Saturday peak hours based on the equations published in ITE Trip Generation Handbook. Trip Generation with the applied reductions for the Deerfield Place development is shown in the Table 3.

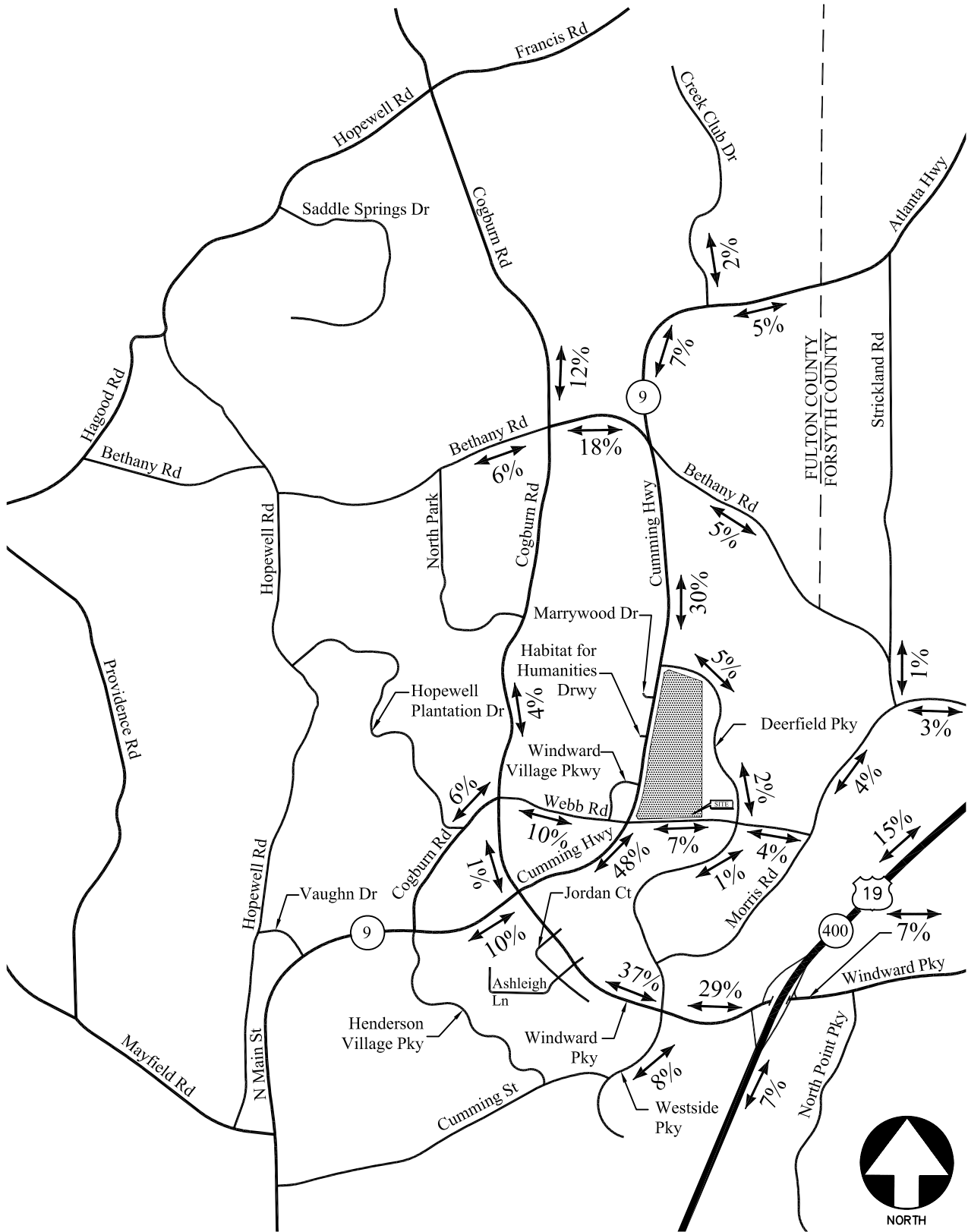
TABLE 2 TRIP GENERATION WITH REDUCTIONS – DEERFIELD PLACE								
Land Use	Total Size (s.f.)	P.M. Peak Hour			Sat Peak Hour			24-Hour 2-way
		Enter	Exit	Total	Enter	Exit	Total	
820 - Shopping Center - 257,667		561	608	1,169	833	768	1,601	12,564
- Pass-By Reduction (30% / 32%)*		-166	-180	-346	-267	-246	-512	-3,455**
813 - Free Standing Superstore - 178,598		481	501	982	466	448	914	9,261
- Pass-By Reduction (17% / 23%)*		-83	-86	-169	-106	-102	-208	-1,692**
Total without reductions		1,042	1,109	2,151	1,299	1,216	2,515	21,825
Total with reductions		793	843	1,636	926	868	1,794	16,678

* (PM Pass-by % / Sat Pass-by %)

** The 24 hour pass by reduction has been calculated by assuming the total PM peak hour pass by trip reduction is 10% of the total daily pass-by reduction.

3. TRIP DISTRIBUTION & ASSIGNMENT

The trip distribution is the percentage of the traffic generated by the site that travels to and from the site on each segment of the surrounding roadway network. The trip distribution was based on the location of major roadways, highways and residential concentrations that will serve the development. The trip distribution is shown in Figure 3. The distribution was discussed and agreed upon in the methodology meeting. The site-generated volumes were then distributed to the surrounding roadway network based on the driver's destination, and the most easily accessible route.



TRIP DISTRIBUTION

FIGURE 3

4. STUDY NETWORK DETERMINATION

The study network was determined by evaluating the amount of traffic that the proposed development will add to each roadway segment in the area. According to GRTA requirements, a roadway segment carries a “significant” amount of traffic if the project contributes 7% or more trips to the two-way daily service volumes of the roadway at the appropriate level of service standard. Upon agreement with GRTA a level of service standard of “D” was used for determining the study area network.

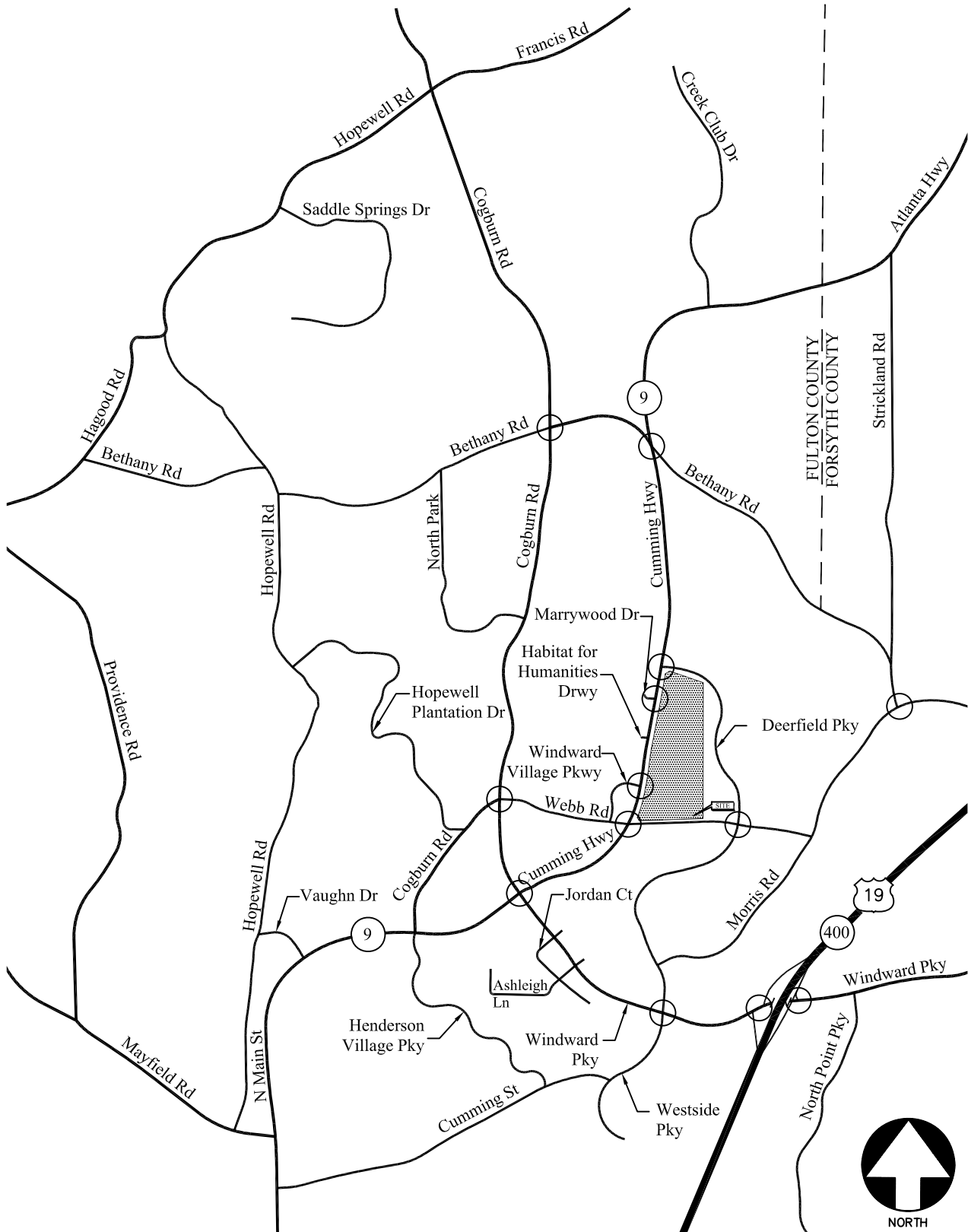
The traffic generated by the proposed project was then assigned to the area roadways using the trip distribution to determine the site-generated traffic on each roadway segment. The boundaries of the study network extend to the most distant intersections where at least 7% of the service volumes on the segment are attributed to project traffic. The following intersections fell within the 7% rule and have been included in the traffic study:

- 1) SR 9 (Cumming Highway) / Bethany Road
- 2) SR 9 (Cumming Highway) / Deerfield Parkway
- 3) SR 9 (Cumming Highway) / Webb Road
- 4) SR 9 (Cumming Highway) / Windward Parkway
- 5) SR 9 (Cumming Highway) / Windward Village Parkway
- 6) SR 9 (Cumming Highway) / Marrywood Drive
- 7) Windward Parkway / Deerfield Parkway / Westside Parkway
- 8) Windward Parkway / GA 400 Southbound Ramps
- 9) Windward Parkway / GA 400 Northbound Ramps
- 10) Webb Road / Deerfield Parkway
- 11) Webb Road / Cogburn Road / Windward Parkway
- 12) Cogburn Road / Bethany Road
- 13) Bethany Road / Morris Road / McGinnis Ferry Road

The study intersections are shown graphically in Figure 4. Other intersections within this corridor, such as unsignalized side streets, right-in / right-out driveways or private driveways were viewed as insignificant and have not been included in the study network. In addition to the above intersections, one site driveway along SR 9 and one driveway along Deerfield Parkway have been included in the analysis during the P.M. and Saturday peak hours as agreed upon in the methodology meeting.

LEGEND

- - Intersections proposed to be included in the detailed analysis



STUDY INTERSECTIONS

FIGURE 4

A&R Engineering Inc.

5. PLANNED & PROGRAMMED IMPROVEMENTS

The following improvements have been identified in the Atlanta Regional Commission's Transportation Improvement Program (TIP) and Regional Transportation Plan (RTP). These improvements are within the vicinity of the proposed development. Additional improvements for Fulton County have been identified, but they are not relevant to this project. Details of the planned programs can be found in the Appendix.

- AR-H-400: SR 400 from I-285 to McFarland Road in Forsyth County
 - Includes addition of one HOV lane in both directions for 8 miles.
- FN-067 A: SR 9 (North Main Street / Cumming Highway) from Academy Street to Windward Parkway
 - Includes widening of SR 9 from 2 lanes to four lanes.
- FN-222: SR 9 (Cumming Highway) from Windward Parkway to Forsyth County Line.
 - Includes widening of SR 9 from 2 lanes to four lanes.
- FN-224: Westside Parkway from SR 120 (Old Milton Parkway) to south of Cumming Street.
 - Includes providing a new four lane roadway which acts as a local alternative to SR 400 for short trips in the immediate area.
- GDOT Project ID 722010
 - Includes widening of SR 400 SR 140 (Holcomb Bridge Road) to McFarland Road.
- GDOT Project ID 722020
 - Includes widening of SR 400 Haynes Bridge Road (Fulton County) to SR 20 (Forsyth County).
- GDOT Project ID 722090
 - Includes an interchange at SR 400 / Windward Parkway.
- GDOT Project ID M001752
 - Includes resurface and maintenance of SR 400 from I-285 to Windward Parkway.

6. EXISTING CONDITIONS

An inventory was performed of the roadways in the area surrounding the site. The following is a brief description of each of these facilities.

6.1 Description of Transportation Facilities in Study Network

GA 400

GA 400 is a four lane (two lanes in each direction) north-south divided roadway to the east of the proposed development.

SR 9 (Cumming Highway)

SR 9 (Cumming Highway) is a north-south two-lane roadway with a posted speed limit of 45 mph in the vicinity of the site.

Windward Parkway

Windward Parkway is a four-lane divided roadway with a posted speed limit of 35 mph. It runs between Cogburn Road and McGinnis Ferry Road.

Webb Road

Webb Road is an east-west two-lane roadway that extends between Cogburn Road in the west and Morris Road in the east. Webb Road has a speed limit of 35 mph in the vicinity of the site.

Deerfield Parkway

Deerfield Parkway is a four-lane divided roadway with a speed limit of 35 mph. It runs between SR 9 (Cumming Highway) and Windward Parkway.

Westside Parkway

Westside Parkway is a north-south four-lane divided roadway with a speed limit of 35 mph. It runs from Windward Parkway in the north and terminates to a dead end approximately 1,500 feet beyond Cumming Street in the south.

Cogburn Road

Cogburn Road is a north-south two-lane roadway with a posted speed limit of 45 mph. It runs from Hopewell Road / Francis Road in the north and SR 9 in the south.

Bethany Road

Bethany Road is a two-lane roadway with a speed limit of 45 mph.

McGinnis Ferry Road

McGinnis Ferry Road is an east-west two-lane roadway with a speed limit of 45 mph.

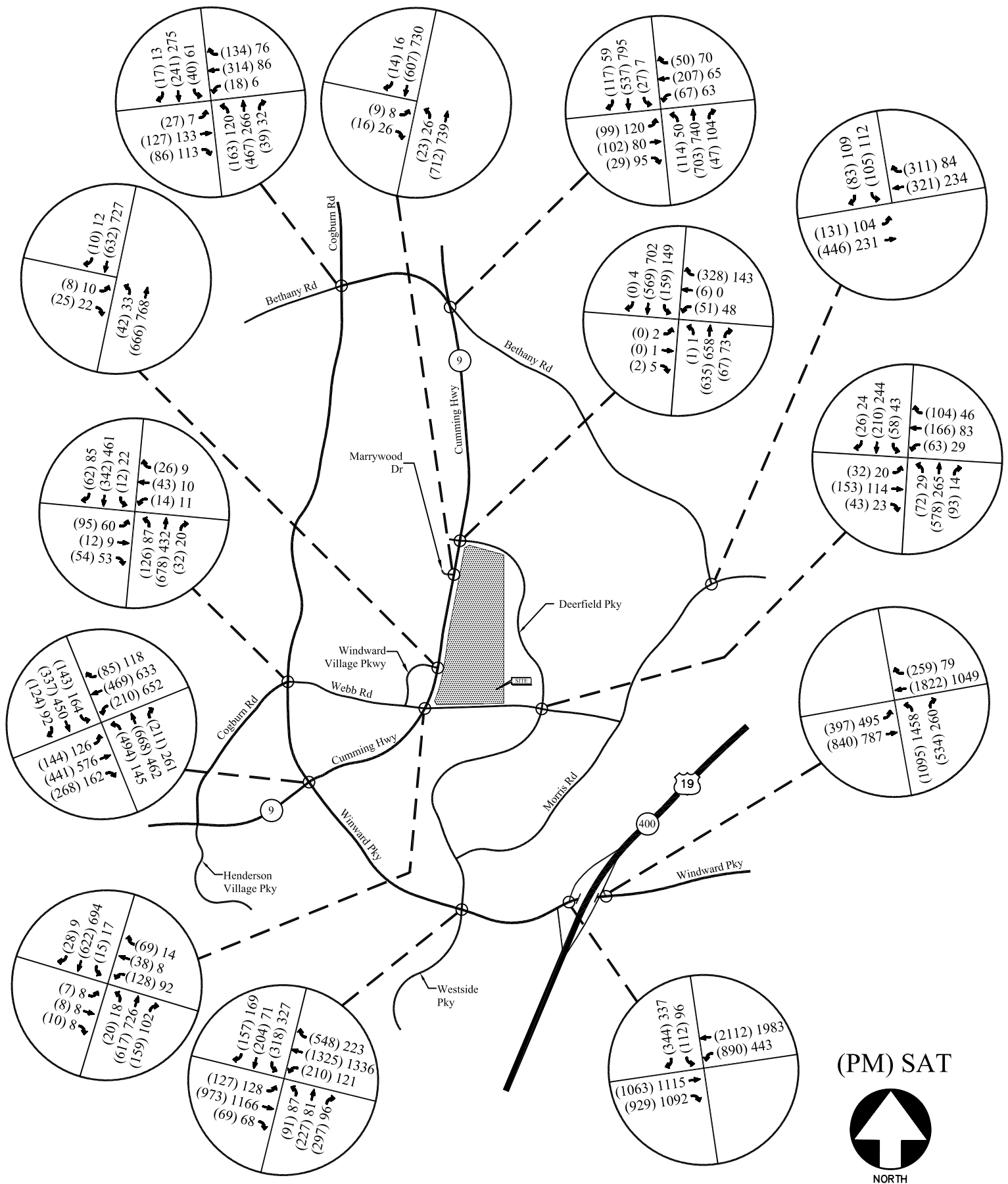
Windward Village Parkway

Windward Village Parkway is a two-lane roadway with a posted speed limit of 25 mph. It runs between SR 9 (Cumming Highway) and Webb Road.

6.2 Analysis Summary

Existing traffic counts were performed at the intersections listed in Section 4 - Study Area Network. In addition to traffic counts, intersection geometry data was also obtained. Turning movement counts were collected during the agreed upon hours of 4.00 PM – 6.00 PM on weekdays and 12.00 PM - 2:00 PM on Saturday. The four consecutive 15-minute interval volumes that summed to produce the highest volume at each intersection during each two-hour period were then determined. These volumes make up the P.M. and Saturday peak hour traffic volumes for the intersections counted. The existing traffic volumes are shown in Figure 5 and the existing intersections traffic control and lane geometry for the study area network is shown in Figure 6.

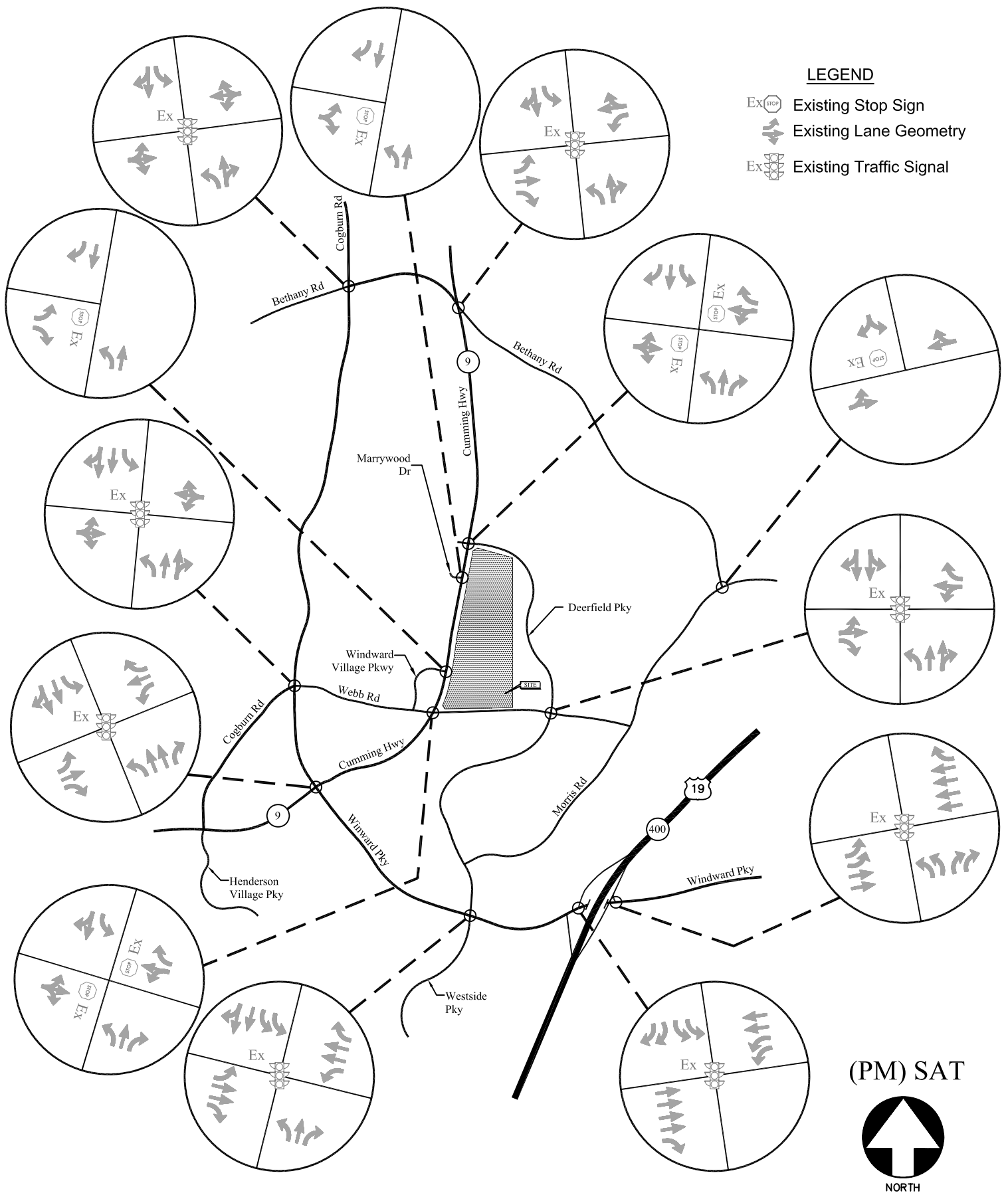
The site-generated volumes shown in Table 3 were distributed to the surrounding roadway network in accordance with the trip distribution. The site-generated volumes for the study intersections are shown in Figure 7. Existing traffic operations were analyzed at all the existing intersections in accordance with the HCM methodology using Synchro software. The results of the analysis are shown in Table 4.



EXISTING WEEKDAY PEAK-HOUR VOLUMES

FIGURE 5

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EXISTING TRAFFIC CONTROL AND LANE GEOMETRY

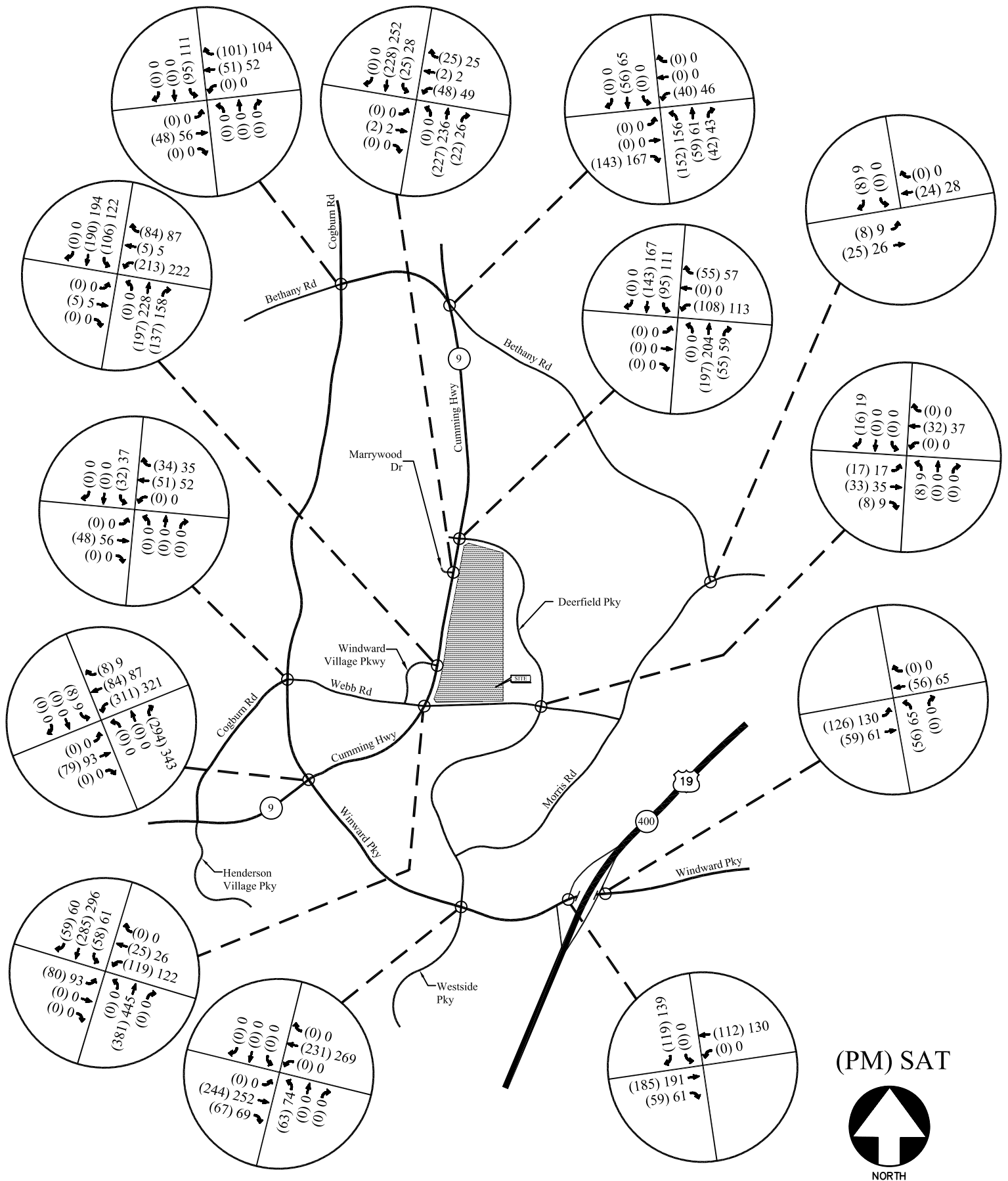
FIGURE 6

A&R Engineering Inc.

TABLE 3						
EXISTING INTERSECTION OPERATIONS						
Intersection	PM/Sat LOS Standard	Traffic Control	P.M. Peak Hour		Sat Peak Hour	
			LOS (Delay)	v/c*	LOS (Delay)	v/c*
Bethany Rd / Cogburn Rd	D/D	Signalized	B (17.4)	0.64	C (22.5)	0.35
SR 9 / Bethany Rd	D/D	Signalized	D (43.7)	0.82	C (28.7)	0.81
Webb Rd / Deerfield Pky	D/D	Signalized	D (44.6)	0.51	C (31.4)	0.29
Webb Rd / Cogburn Rd / Windward Pky	D/D	Signalized	B (17.8)	0.38	B (11.2)	0.30
SR 9 / Windward Pky	D/E	Signalized	D (35.1)	0.88	E (73.0)	1.06
Windward Pky / Deerfield Pky / Westside Pky	D/D	Signalized	C (33.3)	0.79	C (26.2)	0.67
Windward Pky / GA 400 SB Ramp	D/D	Signalized	C (29.3)	1.01	C (21.7)	0.91
Windward Pky / GA 400 NB Ramp	D/D	Signalized	D (36.9)	0.85	D (37.8)	0.87
SR 9 / Deerfield Pky / New Homes Private Drwy		Stop Controlled				
-Eastbound Approach	D/E	on Deerfield	B (12.3)	-	F (84.1)	-
-Westbound Approach	E/E	Pky / New	F (86.2)	-	F (99.3)	-
-Northbound Left	D/D	Homes Private	A (8.7)	-	A (9.3)	-
-Southbound Left	D/D	Drwy	B (10.2)	-	A (10.0)	-
SR 9 / Webb Rd		Stop Controlled				
-Eastbound Approach	E/E	on Webb Rd	F (53.9)	-	F (53.3)	-
-Westbound Approach	E/E		F (481.9)	-	F (419.4)	-
-Northbound Left	D/D		A (9.1)	-	A (9.3)	-
-Southbound Left	D/D		A (9.6)	-	A (9.7)	-
Bethany Rd / Morris Rd / McGinnis Road		Stop Controlled				
-Eastbound Left	D/D	on Bethany Rd	A (3.9)	-	A (3.4)	-
-Southbound Approach	E/D		F (79.9)	-	C (24.5)	-
SR 9 / Windward Village Pky		Stop Controlled				
-Eastbound Approach	D/D	on Windward	C (18.7)	-	C (23.2)	-
-Northbound Left	D/D	Village Pky	A (9.1)	-	A (9.4)	-
SR 9 / Marrywood Dr		Stop Controlled				
-Eastbound Approach	D/D	on Marrywood	C (21.9)	-	C (24.3)	-
-Northbound Left	D/D	Dr	A (9.1)	-	A (9.6)	-

* v/c ratios are not calculated for unsignalized intersections.

As shown in Table 4, four of the study intersections are not operating at the LOS standard.



SITE-GENERATED WEEKDAY PEAK-HOUR VOLUMES

FIGURE 7

A&R Engineering Inc.

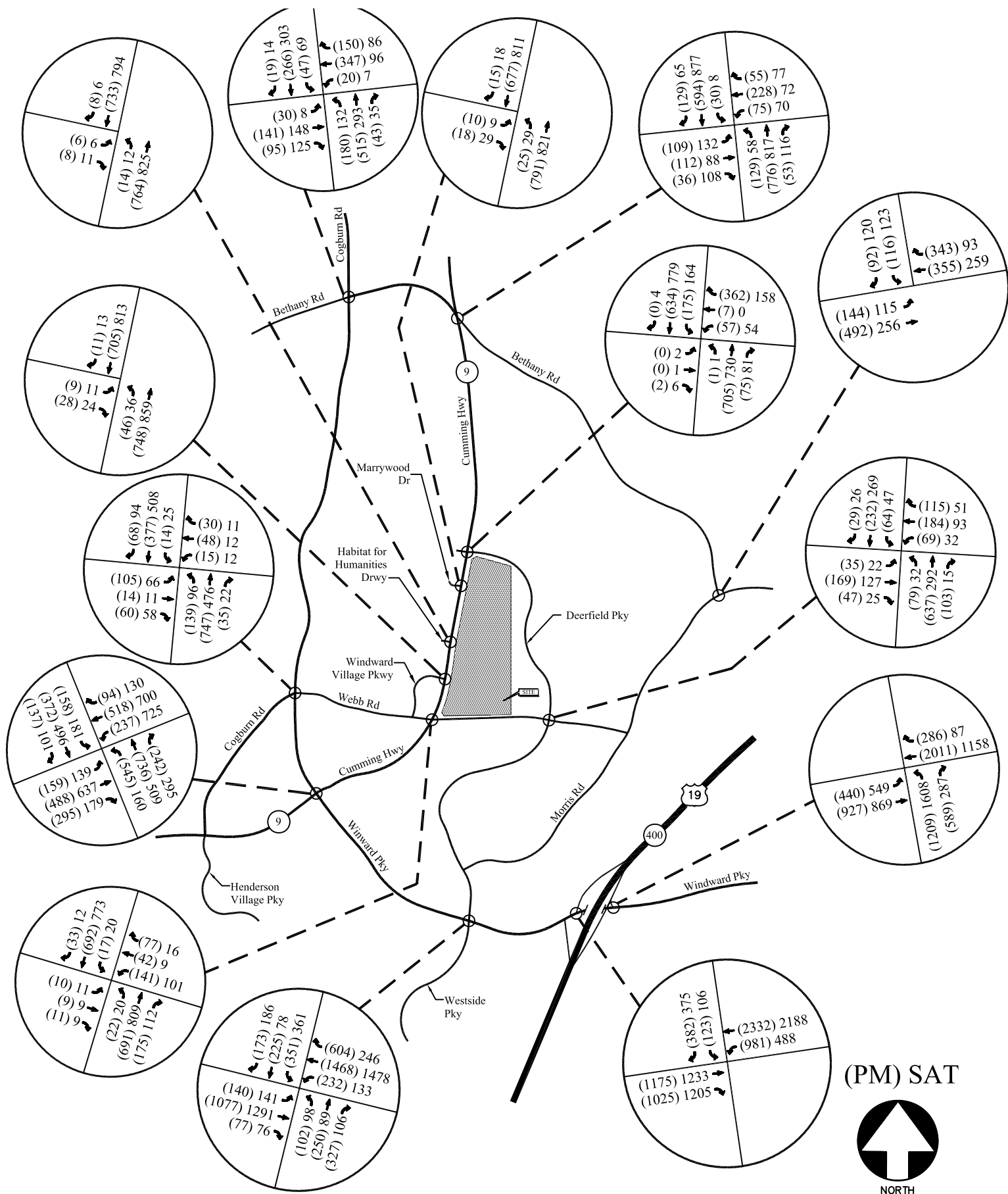
7. FUTURE YEAR BACKGROUND TRAFFIC

In order to evaluate future traffic operations in this area a projection was made of future base year traffic volumes. The Georgia Department of Transportation collected ADT's in the vicinity of the site over the last several years. Using this information, an annual growth factor of 2.7% was calculated. It was agreed upon in the methodology meeting and GRTA letter of understanding to use a growth factor of 5%. This growth factor was applied to the existing traffic volumes on the roadways to estimate the future year 2009 traffic volumes prior to the addition of the site-generated volumes. Further details are included in the correspondence section of Appendix. The future year (base) traffic volumes for 2009 at all the study intersections are shown in Figure 8.

A traffic operation analyses for the following Base Scenario was performed:

- Base Year 2009 traffic with existing lane geometry.
- Base Year 2009 traffic with additional recommended improvements to bring all intersections to LOS standard.

Results of the analyses for the above scenarios are shown in Tables 5 and 6. Recommendations to bring the intersections back to the LOS standard are discussed after Table 5.



BASE 2009 WEEKDAY PEAK HOUR VOLUMES

FIGURE 8

A&R Engineering Inc.

TABLE 4						
BASE INTERSECTION OPERATIONS						
Intersection	PM/Sat LOS Standard	Traffic Control	P.M. Peak Hour		Sat Peak Hour	
			LOS (Delay)	v/c*	LOS (Delay)	v/c*
Bethany Rd / Cogburn Rd	D/D	Signalized	B (17.3)	0.71	C (22.3)	0.40
SR 9 / Bethany Rd	D/D	Signalized	D (54.3)	0.91	D (35.9)	0.90
Webb Rd / Deerfield Pky	D/D	Signalized	D (43.7)	0.56	D (36.7)	0.33
Webb Rd / Cogburn Rd / Windward Pky	D/D	Signalized	B (17.4)	0.45	B (11.8)	0.34
SR 9 / Windward Pky	D/E	Signalized	D (46.5)	0.95	F (95.5)	1.20
Windward Pky / Deerfield Pky / Westside Pky	D/D	Signalized	D (37.8)	0.88	C (32.3)	0.78
Windward Pky / GA 400 SB Ramp	D/D	Signalized	D (50.0)	1.13	C (26.8)	1.03
Windward Pky / GA 400 NB Ramp	D/D	Signalized	D (42.3)	0.94	D (48.0)	0.97
SR 9 / Deerfield Pky / New Homes Private Drwy						
-Eastbound Approach	D/E	Stop Controlled on Deerfield Pky / New Homes Private Drwy	B (13.0)	-	F (151.3)	-
-Westbound Approach	E/E		F (174.6)	-	F (202.8)	-
-Northbound Left	D/D		A (8.9)	-	A (9.6)	-
-Southbound Left	D/D		B (10.9)	-	B (10.6)	-
SR 9 / Webb Rd						
-Eastbound Approach	E/E	Stop Controlled on Webb Rd	F (150.4)	-	F (101.9)	-
-Westbound Approach	E/E		F (932.7)	-	F (890.5)	-
-Northbound Left	D/D		A (9.4)	-	A (9.7)	-
-Southbound Left	D/D		A (10.0)	-	B (10.2)	-
Bethany Rd / Morris Rd / McGinnis Road						
-Eastbound Left	D/D	Stop Controlled on Bethany Rd	A (4.4)	-	A (3.6)	-
-Westbound Approach	E/D		F (178.8)	-	D (34.9)	-
SR 9 / Windward Village Pky						
-Eastbound Approach	D/D	Stop Controlled on Windward Village Pky	C (22.2)	-	D (28.9)	-
-Northbound Left	D/D		A (9.4)	-	A (9.8)	-
SR 9 / Habitat Drwy						
-Eastbound approach	D/D	Stop Controlled on Habitat Drwy	D (26.0)	-	D (27.4)	-
-Northbound Left	D/D		A (9.5)	-	A (9.7)	-
SR 9 / Marrywood Dr						
-Eastbound Approach	D/D	Stop Controlled on Marrywood Dr	D (26.6)	-	D (30.9)	-
-Northbound Left	D/D		A (9.4)	-	A (10.0)	-

*v/c ratio is not calculated for unsignalized intersections.

Analysis of the future year (Base 2009) traffic volumes indicates that four of the study intersections will not operate within the LOS standard of D. The following improvements were identified for those intersections that did not comply with the LOS standard.

- SR 9 / Windward Parkway
 - Add an additional westbound left turn lane on SR 9 creating dual left turn lanes per Georgia DOT standards with protected only signal phasing.
 - Add a dedicated southbound right turn lane on Windward Parkway.

- SR 9 / Deerfield Parkway / New Homes Private Driveway
 - The intersection will operate at LOS F during the Saturday peak hour for the eastbound approach (New Homes Private Driveway) and LOS F during both the PM and Saturday peak hours for the westbound approach (Deerfield Parkway). A signal warrant analysis for the peak hours were performed to determine if the peak hour warrant will be met at this intersection for the base conditions. The traffic conditions will warrant at least the peak hour signal warrant required for installation of a traffic signal for the Base 2009 volumes. Therefore, a traffic signal is recommended at this intersection for the Base 2009 condition. A detailed signal warrant analysis should be completed for the intersection prior to the installation of a traffic signal.
 - Restripe the existing westbound approach on Deerfield Parkway to include a dedicated left turn lane and a shared through / right turn lane. This restriping will not require any additional pavement.

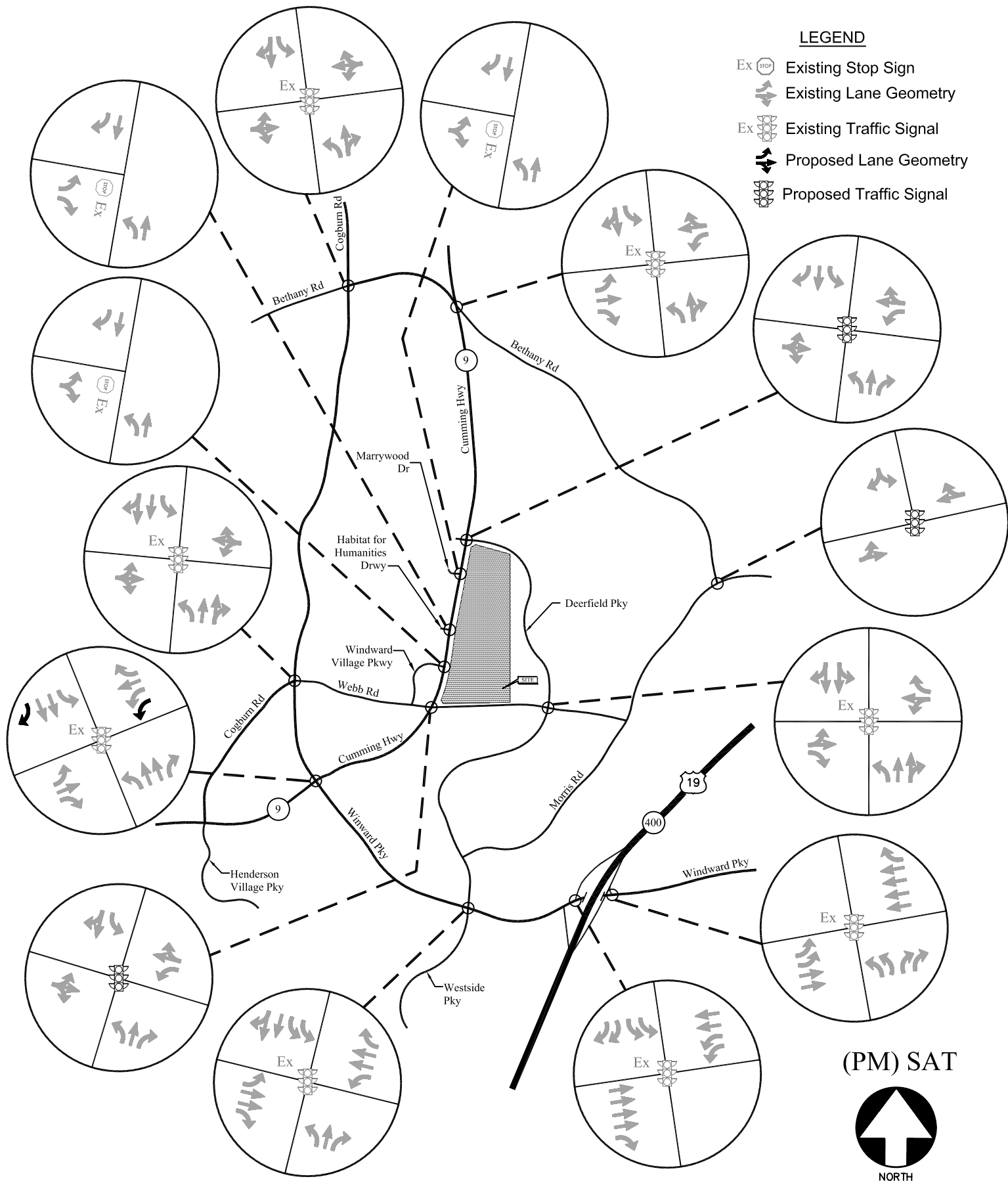
- SR 9 / Webb Road
 - The intersection will operate at LOS F during both the PM and Saturday peak hours for the eastbound and westbound approaches (Webb Road). A signal warrant analysis for the peak hours were performed to determine if the peak hour warrant will be met at this intersection for the base conditions. The traffic conditions will warrant at least the peak hour signal warrant required for installation of a traffic signal for the Base 2009 volumes. Therefore, a traffic signal is recommended at this intersection for the Base 2009 condition. A detailed signal warrant analysis should be completed for the intersection prior to the installation of a traffic signal.
 - Restripe the existing westbound approach on Webb Road to include a dedicated left turn lane and a shared through / right turn lane. This restriping will not require any additional pavement.

- Bethany Road / Morris Road / McGinnis Ferry Road
 - The intersection will operate at LOS F during the PM peak hour for the southbound approach (Bethany Road). A signal warrant analysis for the peak hours were performed to determine if the peak hour warrant will be met at this intersection for the base conditions. The traffic conditions will warrant at least the peak hour signal warrant required for installation of a traffic signal for the

Base 2009 volumes. Therefore, a traffic signal is recommended at this intersection for the Base 2009 condition. A detailed signal warrant analysis should be completed for the intersection prior to the installation of a traffic signal.

The LOS at the above intersections in the year 2009 with just background traffic after the above improvements are implemented is shown in Table 6. The recommended base intersections traffic control and lane geometry are shown in Figure 9.

TABLE 5						
BASE INTERSECTION OPERATIONS WITH IMPROVEMENTS						
Intersection	PM/Sat LOS Standard	Traffic Control	P.M. Peak Hour		Sat Peak Hour	
			LOS (Delay)	v/c*	LOS (Delay)	v/c*
SR 9 / Windward Pky	D/E	Signalized	D (47.1)	0.86	D (49.6)	0.96
SR 9 / Deerfield Pky / New Homes Private Drwy	D/D	Signalized	B (10.6)	0.56	A (9.6)	0.54
SR 9 / Webb Rd	D/D	Signalized	B (10.6)	0.56	A (7.1)	0.57
Bethany Rd / Morris Rd / McGinnis Road	D/D	Signalized	B (13.3)	0.78	B (18.9)	0.48



8. FUTURE YEAR TOTAL TRAFFIC

The traffic volumes that will be generated by the proposed development were added to the future base year 2009 traffic volumes in order to determine the traffic volumes that will be on the roadway network after completion of the project. The future traffic volumes for the year 2009 including the site-generated volumes for the study intersections are shown in Figure 10.

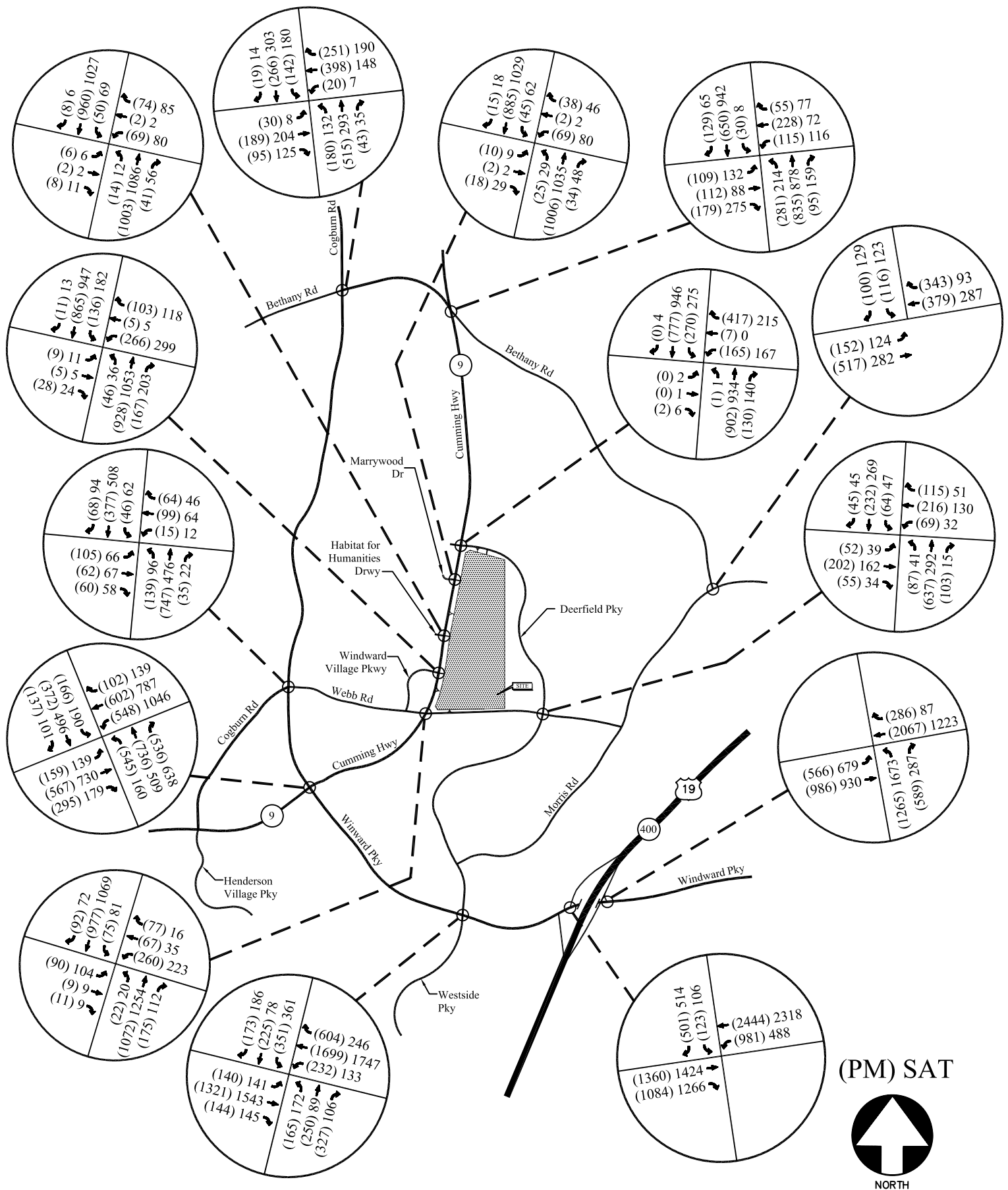
9. FACILITY NEEDS ANALYSIS

9.1 Intersection Analysis

The future year total traffic volumes were used to analyze the study network intersections. Traffic operations analyses for the following scenarios were performed:

- Future Year 2009 Traffic Volumes with site generated traffic and existing lane geometry.
- Future Year 2009 Traffic Volumes with site generated traffic and the recommended improvements to bring all intersections to LOS standard.

The results of the analysis for the above scenarios are shown in Tables 7 and 8. Recommendations to bring the intersections to the LOS standard are discussed after each appropriate section.



FUTURE 2009 WEEKDAY PEAK HOUR VOLUMES

FIGURE 10

A&R Engineering Inc.

TABLE 6						
FUTURE INTERSECTION OPERATIONS						
Intersection	PM/Sat LOS Standard	Traffic Control	P.M. Peak Hour		Sat Peak Hour	
			LOS (Delay)	v/c*	LOS (Delay)	v/c*
Bethany Rd / Cogburn Rd	D/D	Signalized	C (23.9)	0.99	C (20.2)	0.45
SR 9 / Bethany Rd	D/D	Signalized	F (87.4)	1.11	E (73.2)	1.05
Webb Rd / Deerfield Pky	D/D	Signalized	E (56.8)	0.62	F (84.3)	0.44
Webb Rd / Cogburn Rd / Windward Pky	D/D	Signalized	C (28.1)	0.55	C (31.4)	0.45
SR 9 / Windward Pky	D/E	Signalized	F (89.7)	1.27	F (160.5)	1.54
Windward Pky / Deerfield Pky / Westside Pky	D/D	Signalized	D (44.2)	0.95	C (28.6)	0.86
Windward Pky / GA 400 SB Ramp	D/D	Signalized	E (63.2)	1.20	D (37.7)	1.10
Windward Pky / GA 400 NB Ramp	D/D	Signalized	D (54.9)	1.02	E (63.2)	1.05
SR 9 / Deerfield Pky / New Homes Private Drwy						
-Eastbound Approach	D/E	Stop Controlled on Deerfield Pky / New Homes Private Drwy	B (14.8)	-	F (9999.0)	-
-Westbound Approach	E/E		F (3407.0)	-	F (4379.2)	-
-Northbound Left	D/D		A (9.5)	-	B (10.5)	-
-Southbound Left	D/D		C (15.3)	-	B (14.4)	-
SR 9 / Webb Rd						
-Eastbound Approach	E/E	Stop Controlled on Webb Rd	F (999)	-	F (999)	-
-Westbound Approach	E/E		F (999)	-	F (999)	-
-Northbound Left	D/D		B (11.2)	-	B (11.8)	-
-Southbound Left	D/D		B (13.5)	-	B (14.4)	-
Bethany Rd / Morris Rd / McGinnis Road						
-Eastbound Left	D/D	Stop Controlled on Bethany Rd	A (4.7)	-	A (3.7)	-
-Westbound Approach	E/D		F (238.6)	-	E (47.4)	-
SR 9 / Windward Village Pky / Site Drwy 1						
-Eastbound Approach	D/D	Stop Controlled on Windward Village Pky / Site Drwy 1	F (325.8)	-	F (4011.0)	-
-Westbound Approach	D/D		F (7120.9)	-	F (7099.3)	-
-Northbound Left	D/D		B (10.3)	-	B (10.7)	-
-Southbound Left	D/D		B (13.2)	-	C (16.7)	-
SR 9 / Habitat Drwy / Site Drwy 2						
-Eastbound Approach	D/D	Stop Controlled on Habitat Drwy / Site Drwy 2	F (201.9)	-	F (387.9)	-
-Westbound Approach	D/D		F (4908.7)	-	F (4925.2)	-
-Northbound Left	D/D		B (10.6)	-	B (10.9)	-
-Southbound Left	D/D		B (11.4)	-	B (12.4)	-
SR 9 / Marrywood Dr / Site Drwy 3						
-Eastbound Approach	D/D	Stop Controlled on Marrywood Dr / Site Drwy 3	F (151.3)	-	F (264.6)	-
-Westbound Approach	D/D		F (6520.6)	-	F (6413.9)	-
-Northbound Left	D/D		B (10.3)	-	B (11.2)	-
-Southbound Left	D/D		B (11.3)	-	B (11.8)	-

*v/c ratio is not calculated for unsignalized intersections.

Analysis of the future year 2009 traffic volumes indicates that eleven of the study intersections will not operate within the LOS standard. The following lists the improvements needed to restore

that intersections back to the LOS standard for the future year 2009 traffic:

- SR 9 / Bethany Road
 - Add dedicated northbound and southbound right turn lanes on SR 9 as per Georgia DOT standards.
 - Add a dedicated westbound right turn lane on Bethany Road.
- Webb Road / Deerfield Parkway
 - Add a dedicated eastbound left turn lane on Webb Road.
- SR 9 / Windward Parkway
 - Add an additional westbound left turn lane on SR 9 creating dual left turn lanes with protected only signal phasing.
 - Add an additional northbound left turn lane on Windward Parkway creating dual left turn lanes with protected only signal phasing.
 - Add an additional eastbound through lane creating two through lanes on SR 9 and change the existing striping of the northbound right turn movement from free to yield to accommodate the additional eastbound through lane.
 - Change the northbound right turn phasing from free to permissive overlap phasing.
 - It should be noted that the ARC TIP includes a plan to widen SR 9 to 4 lanes, which would likely negate the need for some or all of these recommendations.
- Windward Parkway / GA 400 Southbound Ramps
 - Add an additional eastbound right turn lane on Windward Parkway creating dual right turn lanes.
- Windward Parkway / GA 400 Northbound Ramps
 - Convert the inner dual right turn lane (closest to the left turn lane) to a shared left / right turn lane.
- SR 9 / Deerfield Parkway / New Homes Private Driveway
 - The intersection will operate at LOS F during the Saturday peak hour for the eastbound approach (New Homes Private Driveway) and LOS F during both the PM and Saturday peak hours for the westbound approach (Deerfield Parkway). A signal warrant analysis for the peak hours was performed to determine if the peak hour warrant is met at this intersection for the future conditions. The traffic conditions warrant at least the peak hour signal warrant required for installation of a traffic signal for the Future 2009 volumes. Therefore, a traffic

signal is recommended at this intersection for the Future 2009 condition. A detailed signal warrant analysis should be completed for the intersection prior to the installation of a traffic signal.

- Restripe the existing westbound approach on Deerfield Parkway to include a dedicated left turn lane and a shared through / right turn lane. This restriping will not require any additional pavement.
- SR 9 / Webb Road
 - The intersection will operate at LOS F during both the PM and Saturday peak hours for the eastbound and westbound approaches (Webb Road). A signal warrant analysis for the peak hours were performed to determine if the peak hour warrant is met at this intersection for the future conditions. The traffic conditions warrant at least the peak hour signal warrant required for installation of a traffic signal for the Future 2009 volumes. Therefore, a traffic signal is recommended at this intersection for the Future 2009 condition. A detailed signal warrant analysis should be completed for the intersection prior to the installation of a traffic signal.
 - Restripe the existing westbound approach on Webb Road to include a dedicated left turn lane and a shared through / right turn lane. This restriping will not require any additional pavement.
- Bethany Road / Morris Road / McGinnis Ferry Road
 - The intersection will operate at LOS F during the PM peak hour and LOS E during the Saturday peak hour for the southbound approach (Bethany Road). A signal warrant analysis for the peak hours were performed to determine if the peak hour warrant will be met at this intersection for the future conditions. The traffic conditions will warrant at least the peak hour signal warrant required for installation of a traffic signal for the Future 2009 volumes. Therefore, a traffic signal is recommended at this intersection for the Future 2009 condition. A detailed signal warrant analysis should be completed for the intersection prior to the installation of a traffic signal.
- SR 9 / Windward Village Parkway / Site Driveway 1
 - Will be discussed in section 9.2 Site Access Analysis section of the report.
- SR 9 / Habitat Driveway / Site Driveway 2
 - Will be discussed in section 9.2 Site Access Analysis section of the report.

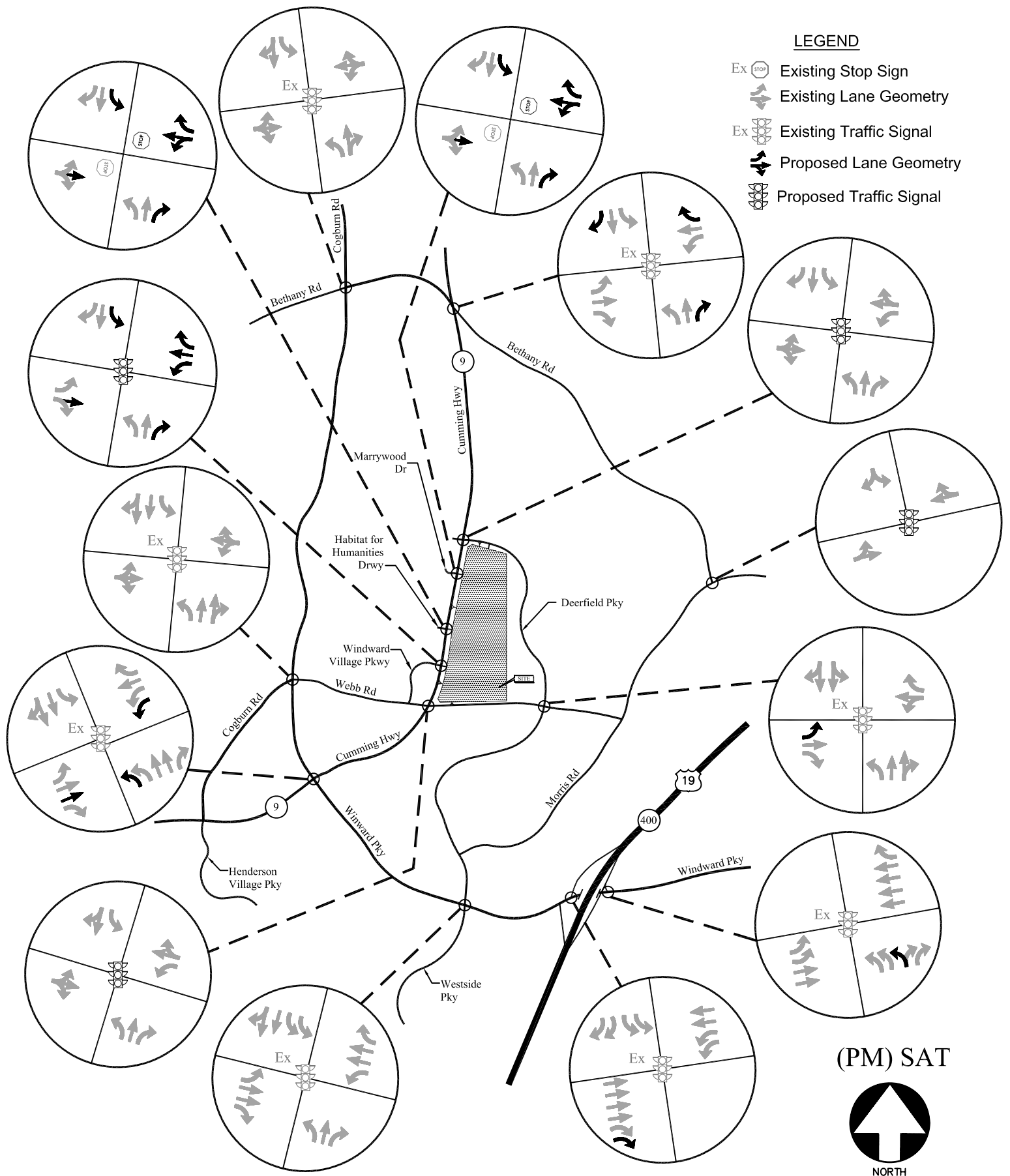
- SR 9 / Marrywood Drive / Site Driveway 3
 - Will be discussed in section 9.2 Site Access Analysis section of the report.

The LOS for the above intersections in the year 2009 with the addition of site-generated traffic after the implementation of above recommended improvement is shown in Table 8.

TABLE 7						
FUTURE INTERSECTION OPERATIONS WITH IMPROVEMENTS						
Intersection	PM/Sat LOS Standard	Traffic Control	P.M. Peak Hour		Sat Peak Hour	
			LOS (Delay)	v/c*	LOS (Delay)	v/c*
SR 9 / Bethany Rd	D/D	Signalized	D (50.3)	0.92	D (52.4)	0.95
Webb Rd / Deerfield Pky	D/D	Signalized	D (37.1)	0.56	D (36.5)	0.36
SR 9 / Windward Pky	D/E	Signalized	D (39.9)	0.83	D (51.0)	0.93
Windward Pky / GA 400 SB Ramp	D/D	Signalized	C (25.8)	0.98	B (18.8)	0.93
Windward Pky / GA 400 NB Ramp	D/D	Signalized	D (47.7)	0.95	D (44.0)	0.90
SR 9 / Deerfield Pky / New Homes Private Drwy	D/D	Signalized	D (44.2)	1.11	B (14.2)	0.98
SR 9 / Webb Rd	D/D	Signalized	C (25.0)	0.90	C (29.8)	1.24
Bethany Rd / Morris Rd / McGinnis Road	D/D	Signalized	C (22.9)	0.82	B (17.7)	0.53

*v/c ratio is not calculated for unsignalized intersections.

The future intersection traffic control and lane geometry for the study area network needed to bring all intersections to the LOS standard is shown in Figure 11.



FUTURE 2009 TRAFFIC CONTROL AND LANE GEOMETRY

FIGURE 11

A&R Engineering Inc.

9.2 Site Access Analysis

The site proposes three full accesses and two right-in / right-out site driveways along SR 9 (Cumming Highway), one full access and one right-in / right-out driveway along Deerfield Parkway and one right-in / right-out site driveway along Webb Road. The three full access site driveways along SR 9 will align across from existing streets. The future traffic volumes at the site driveways are shown in Figure 12. The recommended traffic control and lane geometry at these driveways are presented in the following sections.

The site access analysis was performed for the Future Year 2009 traffic volumes with recommended lane geometry. Results of the analysis are shown in Table 9. Traffic control and lane geometry adopted to operate the intersections at the LOS standard are discussed in the following pages.

TABLE 8						
FUTURE 2009 SITE DRIVEWAY OPERATIONS						
Intersection	PM/Sat LOS Standard	Traffic Control	P.M. Peak Hour		Sat Peak Hour	
			LOS (Delay)	v/c*	LOS (Delay)	v/c*
SR 9 / Windward Village Pky / Site Drwy 1	D/D	Signalized	C (26.3)	0.90	D (44.0)	1.0
SR 9 / Habitat Drwy / Site Drwy 2						
-Eastbound Approach	D/D	Stop Controlled on Habitat Drwy / Site Drwy 2	F (999)	-	F (999)	-
-Westbound Approach	D/D		F (999)	-	F (999)	-
-Northbound Left	D/D		B (10.6)	-	B (10.9)	-
-Southbound Left	D/D		C (24.1)	-	E (40.5)	-
SR 9 / Marrywood Dr / Site Drwy 3						
-Eastbound Approach	D/D	Stop Controlled on Marrywood Dr / Site Drwy 3	F (970.4)	-	F (999)	-
-Westbound Approach	D/D		F (6520.6)	-	F (6413.9)	-
-Northbound Left	D/D		B (12.5)	-	C (16.7)	-
-Southbound Left	D/D		B (11.3)	-	B (11.8)	-
Deerfield Pky / Site Drwy 4						
-Westbound Left	D/D	Stop Controlled on Site Drwy 4	A (3.0)	-	A (4.2)	-
-Northbound Approach	D/D		D (27.0)	-	C (19.9)	-

*v/c ratio is not calculated for unsignalized intersections.

The following lists the recommended lane geometry for the site driveways.

- SR 9 / Windward Village Parkway / Site Driveway 1
 - Signal warrants for the peak hours were evaluated to determine if the peak hour warrant will be met at the intersection. The traffic conditions warrant at least the peak hour signal warrant required for installation of a traffic signal for the Future 2009 traffic volumes with the addition of site-generated traffic. Therefore, a signal is recommended at this intersection. However, a detailed

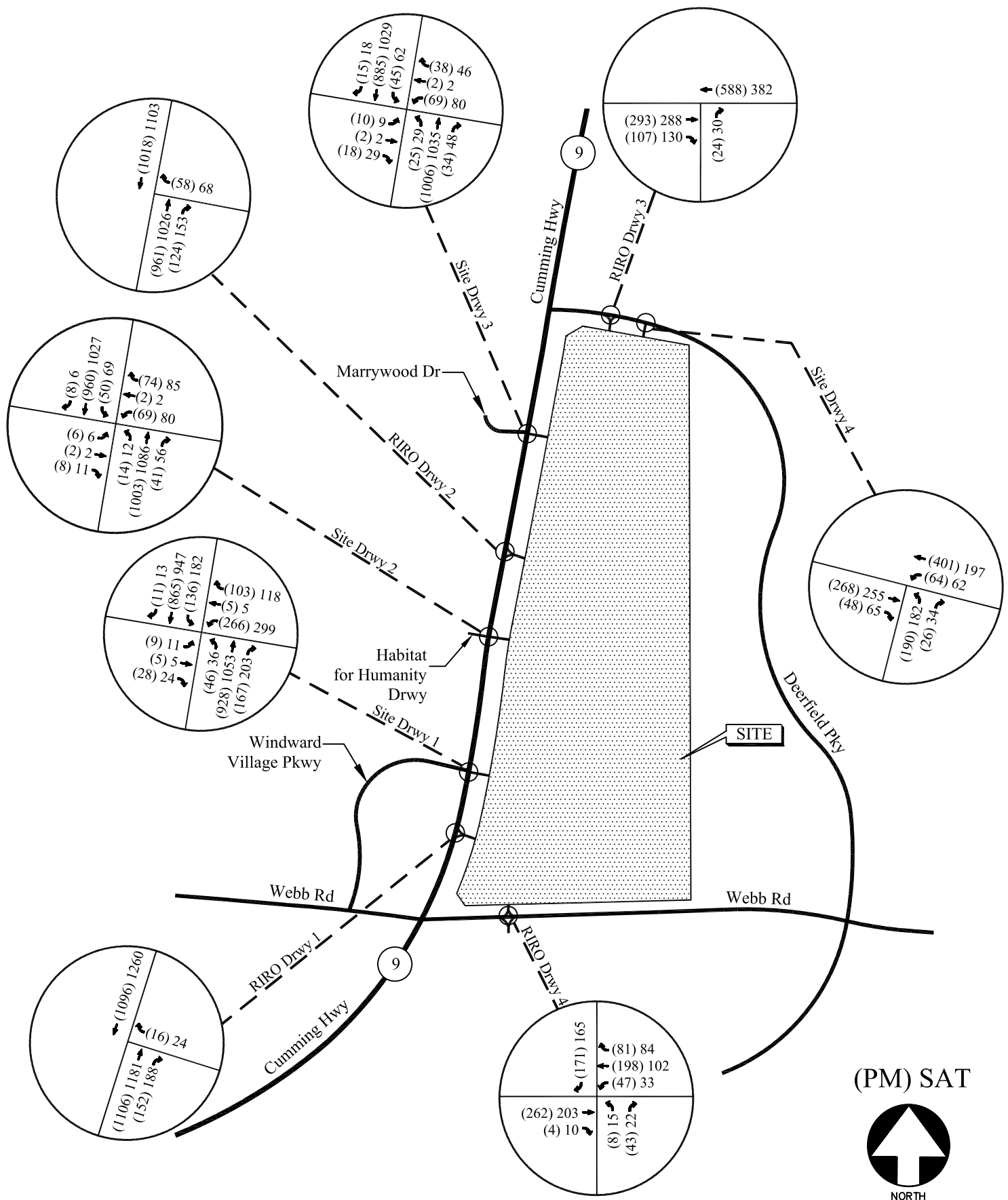
signal warrant analysis is recommended prior to the installation of a traffic signal at this location.

- Provide separate left, through and right turn lanes on the site driveway 1.
 - Provide a dedicated northbound right turn lane and southbound left turn with protected-permissive signal phasing on SR 9 as per Georgia DOT standards.
 - Restripe the existing eastbound approach on Windward Village Parkway to include a dedicated left turn lane and a shared through / right turn lane. This restriping will not require any additional pavement.
- SR 9 / Habitat Driveway / Site Driveway 2
 - It is recommended that the intersection have stop controlled side streets (Habitat Driveway and Site Driveway 2), with SR 9 remaining free flow.
 - Provide a dedicated northbound and southbound left and right turn lanes on SR 9 as per Georgia DOT standards for traffic entering the driveways.
 - Provide separate right turn lane and a shared through / left turn lane on the site driveway 2.
 - The eastbound and westbound approaches to the intersection will operate at LOS F during both the PM and Saturday peak hours after the addition of site-generated traffic from the proposed development if the recommended improvements are completed. It is not uncommon for side streets to experience delays during the peak hours. If vehicles experience excessive delays in the peak hours, alternate driveways will be utilized to exit the development. Therefore, no additional improvements are recommended for this intersection.
 - SR 9 / Marrywood Drive / Site Driveway 3
 - It is recommended that the intersection have stop controlled side streets (Marrywood Drive and Site Driveway 3), with SR 9 remaining free flow.
 - Provide a dedicated northbound and southbound left and right turn lanes on SR 9 as per Georgia DOT standards for traffic entering the driveways.
 - Provide separate right turn lane and a shared through / left turn lane on the site driveway 3.
 - The eastbound and westbound approaches to the intersection will operate at LOS F during both the PM and Saturday peak hours after the addition of site-generated traffic from the proposed development if the recommended improvements are completed. It is not uncommon for side streets to experience delays during the peak hours. If vehicles experience excessive delays in the peak hours, alternate driveways will be utilized to exit the development. Therefore, no additional improvements are recommended for this intersection.
 - Deerfield Parkway / Site Driveway 4
 - It is recommended that the intersection have stop controlled side street (Site

Driveway 4), with Deerfield Parkway remaining free flow.

- Provide a shared left / right turn lane on the site driveway 4.
- SR 9 / Right-in / Right-out Driveways 1 and 2
 - Add dedicated northbound right turn lanes at the Right-in / Right-out driveway intersections on SR 9 as per Georgia DOT standards for traffic entering the proposed development.
- Deerfield Parkway / Right-in / Right-out Driveway 3
 - It is recommended that the side street (Right-in / Right-out driveway 3) should yield to the free flowing traffic on Deerfield Parkway.
- Webb Road / Right-in / Right-out Driveway 4
 - Add a dedicated westbound right turn lane on Webb Road for traffic entering the proposed development.

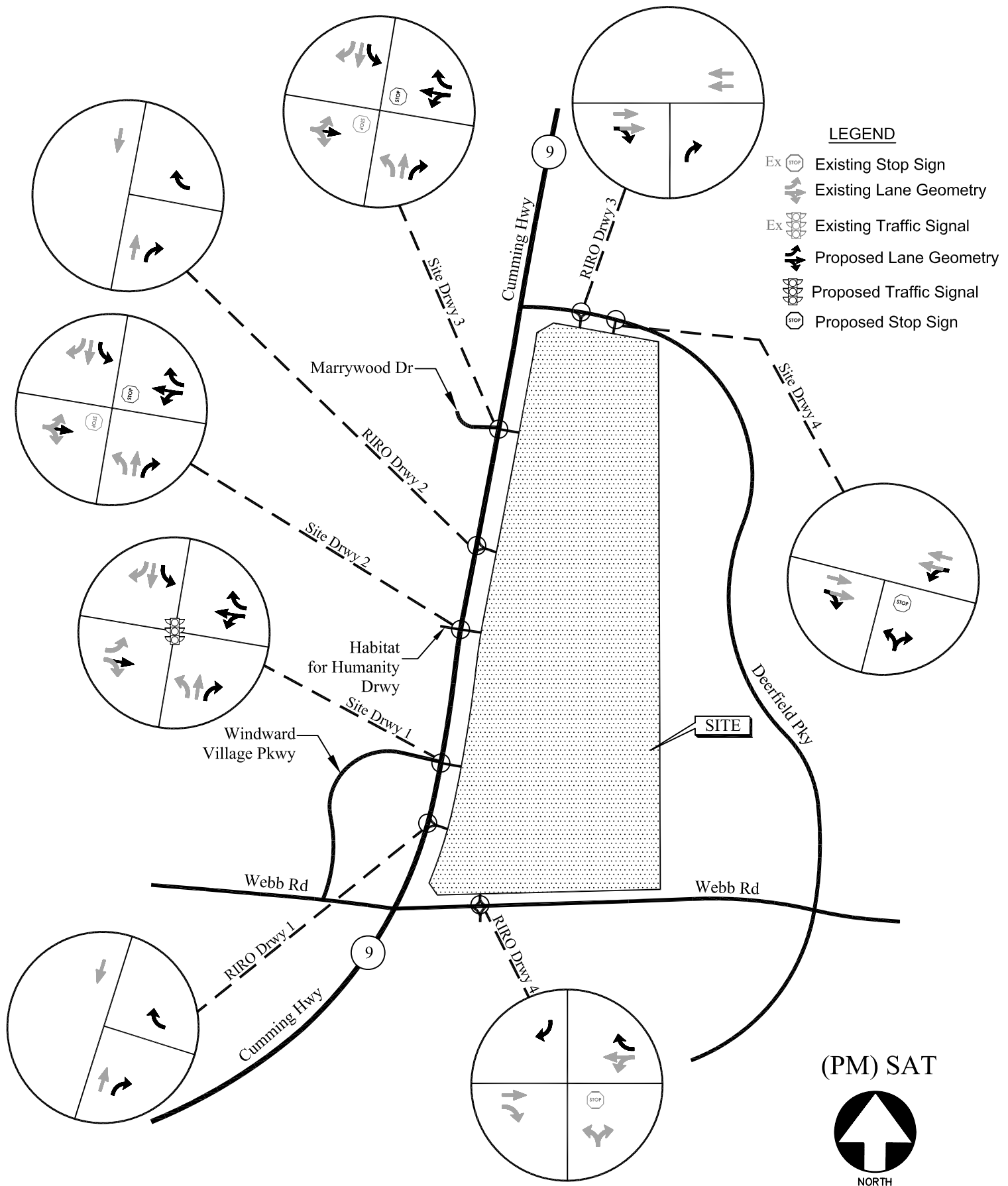
The recommended traffic control and lane geometry for the site driveways is shown in Figure 13.



FUTURE 2009 SITE ACCESS PEAK HOUR VOLUMES

FIGURE 12

A&R Engineering Inc.



FUTURE 2009 SITE ACCESS TRAFFIC CONTROL AND LANE GEOMETRY

FIGURE 13
A&R Engineering Inc.

10. NON-EXPEDITED CRITERIA

10.1 Regional Mobility and Location

1. Quality, Character, Convenience, and Flexibility of Transportation Options

The Deerfield Place development is proposed in an area where there is a significant amount of residential currently being developed. The Deerfield Place development will provide much needed retail within close proximity to these residential developments. The nearby residents will have the opportunity to find employment within the retail development. The development will also provide pedestrian connections between the various land use components. In addition, MARTA route 85 runs within close proximity of the site near the intersection of Webb Road and Deerfield Parkway, which is located approximately ¼ mile from the site boundary. MARTA route 143 also runs along Windward Parkway near the site. All these features will provide the quality, character, and convenience that is desired in a development of this magnitude.

2. Vehicle Miles Traveled

The table below displays the reductions in trip generation due to pass-by reductions.

24-hour Trip Generation	21,825
- Pass-by reductions	-5,147
Net Trips:	16,678

3. Relationship between Location of Proposed DRI and Regional Mobility

The proposed DRI is currently served by MARTA bus routes 85 and 143.

4. Relationship between Proposed DRI and Existing or Planned Transit Facilities

The proposed DRI is located in Fulton County, which has multiple transportation improvement projects planned for this area. The planned improvements are listed in the appropriate section of this report and details regarding those planned projects are included in the Appendix. Also, MARTA route 85 runs within close proximity of the site near the intersection of Webb Road and Deerfield Parkway, which is located approximately ¼ mile from the site boundary. MARTA route 143 also runs along Windward Parkway near the site.

5. Transportation Management Area Designation

The area around the proposed project is not designated as a transportation management area.

6. Offsite Trip Reduction and Trip Reduction Techniques

Due to the nature of the development significant pass-by reductions are applicable. These reductions are shown in the table at the top of this page.

7. Balance of Land Uses – Jobs/Housing Balance

Please refer to the AOI study submitted along with the DRI package.

8. Relationships between Proposed DRI and Existing Development and Infrastructure

The proposed DRI is located in an area where adequate public facilities will be available to serve the proposed development. Water and waste water services will be available for the development. Regarding transportation, the traffic study has identified transportation improvements relating to the site access, along with improvements to the surrounding roadway network, which will allow traffic in the area to operate at the LOS standard.

10.2 Pedestrian and Internal Circulation

Pedestrian facilities will be available within the development to allow appropriate pedestrian connections within and between land uses. Internal roadways will provide adequate circulation of vehicular traffic as designed in the site plan. Vehicles exiting the site will be able to move internally to the site exits without experiencing excessive delays.

11. OTHER PERTINENT INFORMATION

At this time no other pertinent information is available with regards to this development. All significant characteristics of the proposed development are fully discussed within this report. Additionally, an Area of Influence study has been prepared and submitted at the same time as the rest of this package.

12. SIGNIFICANT IMPACT ANALYSIS

Due to the annual growth in the county in addition to the site generated traffic a number of intersection improvements will be required to bring the intersections in the vicinity of the site to the LOS standard. Even with the annual growth and the addition of the site generated traffic, the implementation of the recommended improvements will allow all intersections in the study area network to operate at acceptable levels of service.

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Existing PM Intersection Analysis

Lanes, Volumes, Timings
1: Bethany Rd & Cogburn Rd

Existing PM
6/29/2007

	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	281	529	183	546	56	283
Act Effct Green (s)	45.5	45.5	66.5	66.5	66.5	66.5
Actuated g/C Ratio	0.38	0.38	0.55	0.55	0.55	0.55
v/c Ratio	0.45	0.79	0.35	0.53	0.21	0.28
Control Delay	26.3	23.1	10.7	11.8	17.6	15.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.3	23.1	10.7	11.8	17.6	15.5
LOS	C	C	B	B	B	B
Approach Delay	26.3	23.1		11.6		15.8
Approach LOS	C	C		B		B
Queue Length 50th (ft)	134	276	20	66	23	117
Queue Length 95th (ft)	207	m328	m68	477	39	178
Internal Link Dist (ft)	1654	2050		3797		1469
Turn Bay Length (ft)			150		150	
Base Capacity (vph)	766	835	516	1022	266	1022
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.37	0.63	0.35	0.53	0.21	0.28

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 68 (57%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.79
Intersection Signal Delay: 17.8
Intersection Capacity Utilization 68.5%
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis
1: Bethany Rd & Cogburn Rd

Existing PM
6/29/2007

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
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	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.95	0.95	0.95	0.96	0.96	0.96	1.00	0.99	1.00	0.99	1.00	0.99
Flt Protected	0.99	0.99	0.99	1.00	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1757	1757	1757	1785	1785	1785	1770	1840	1770	1839	1770	1839
Flt Permitted	0.84	0.84	0.84	0.97	0.97	0.97	0.53	1.00	0.53	1.00	0.53	1.00
Satd. Flow (perm)	1490	1490	1490	1731	1731	1731	994	1840	994	1840	994	1839
Volume (vph)	27	127	86	18	314	134	163	467	39	40	241	17
Peak-hour factor, PHF	0.68	0.93	0.83	0.56	0.91	0.88	0.89	0.93	0.89	0.71	0.93	0.71
Adj. Flow (vph)	40	137	104	32	345	152	183	502	44	56	259	24
RTOR Reduction (vph)	0	21	0	0	14	0	0	2	0	0	2	0
Lane Group Flow (vph)	0	260	0	0	515	0	183	544	0	56	281	0
Turn Type	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm
Protected Phases	8	8	8	4	4	4	6	6	6	2	2	2
Permitted Phases	8	8	8	4	4	4	6	6	6	2	2	2
Actuated Green, G (s)	45.5	45.5	45.5	45.5	45.5	45.5	66.5	66.5	66.5	66.5	66.5	66.5
Effective Green, g (s)	45.5	45.5	45.5	45.5	45.5	45.5	66.5	66.5	66.5	66.5	66.5	66.5
Actuated g/C Ratio	0.38	0.38	0.38	0.38	0.38	0.38	0.55	0.55	0.55	0.55	0.55	0.55
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	565	565	565	656	656	656	551	1020	551	337	1019	551
v/s Ratio Prot	0.17	0.17	0.17	0.30	0.30	0.30	0.18	0.30	0.18	0.09	0.15	0.15
v/s Ratio Perm	0.46	0.46	0.46	0.78	0.78	0.78	0.33	0.53	0.33	0.17	0.28	0.28
Uniform Delay, d1	28.0	28.0	28.0	32.9	32.9	32.9	14.6	16.9	14.6	13.1	14.1	14.1
Progression Factor	1.00	1.00	1.00	0.58	0.58	0.58	0.54	0.55	0.54	1.00	1.00	1.00
Incremental Delay, d2	0.6	0.6	0.6	3.3	3.3	3.3	1.5	1.9	1.5	1.1	0.7	0.7
Delay (s)	28.6	28.6	28.6	22.3	22.3	22.3	9.4	11.3	9.4	14.2	14.7	14.7
Level of Service	C	C	C	C	C	C	A	B	A	B	B	B
Approach Delay (s)	28.6	28.6	28.6	22.3	22.3	22.3	10.8	10.8	10.8	14.7	14.7	14.7
Approach LOS	C	C	C	C	C	C	B	B	B	B	B	B
Intersection Summary												
HCM Average Control Delay				17.4	17.4	17.4	HCM Level of Service			B		
HCM Volume to Capacity ratio				0.64	0.64	0.64						
Actuated Cycle Length (s)				120.0	120.0	120.0	Sum of lost time (s)			8.0		
Intersection Capacity Utilization				68.5%	68.5%	68.5%	ICU Level of Service			C		
Analysis Period (min)				15	15	15						
c Critical Lane Group												

Lanes, Volumes, Timings
2: Bethany Rd & SR 9

Existing PM
6/29/2007

	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	124	116	48	92	303	144	812	40	775
Act Effct Green (s)	10.0	21.5	21.5	10.4	22.0	11.7	68.8	7.2	60.3
Actuated g/C Ratio	0.08	0.18	0.18	0.09	0.18	0.10	0.57	0.06	0.50
v/c Ratio	0.84	0.35	0.15	0.60	0.90	0.83	0.77	0.38	0.84
Control Delay	94.5	42.1	12.9	68.5	74.8	84.3	27.6	64.1	36.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	94.5	42.1	12.9	68.5	74.8	84.3	27.6	64.1	36.1
LOS	F	D	B	E	E	F	C	E	D
Approach Delay	59.8								
Approach LOS	E								
Queue Length 50th (ft)	99	72	5	69	221	103	567	30	508
Queue Length 95th (ft)	#172	125	10	99	#376 m#165	738	51	618	618
Internal Link Dist (ft)	2050								
Turn Bay Length (ft)	150	335	275	250	353	177	1057	118	918
Base Capacity (vph)	148	335	324	177	353	177	1057	118	918
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.84	0.35	0.15	0.52	0.86	0.81	0.77	0.34	0.84

Intersection Summary

Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 13 (11%), Referenced to phase 2:SBT and 6:NBT, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.90	
Intersection Signal Delay: 45.4	Intersection LOS: D
Intersection Capacity Utilization 75.9%	ICU Level of Service D
Analysis Period (min) 15	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	
m Volume for 95th percentile queue is metered by upstream signal.	

HCM Signalized Intersection Capacity Analysis
2: Bethany Rd & SR 9

Existing PM
6/29/2007

	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Movement	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↖	↑	↗	↖	↑	↗	↖	↑	↗
Ideal Flow (vphpl)	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	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.96	1.00	0.99	1.00	0.97
Flt Protected	0.95	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1770	1863	1583	1770	1793	1770	1841	1770	1814
Flt Permitted	0.95	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	1770	1863	1583	1770	1793	1770	1841	1770	1814
Volume (vph)	99	102	29	67	207	50	114	703	47
Peak-hour factor, PHF	0.80	0.88	0.60	0.73	0.91	0.66	0.79	0.94	0.73
Adj. Flow (vph)	124	116	48	92	227	76	144	748	64
RTOR Reduction (vph)	0	0	39	0	10	0	2	0	0
Lane Group Flow (vph)	124	116	9	92	293	0	144	810	0
Turn Type	Prot	Perm	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Protected Phases	3	8	8	7	4	1	6	5	2
Permitted Phases									
Actuated Green, G (s)	10.0	21.6	21.6	10.4	22.0	11.7	67.2	4.8	60.3
Effective Green, g (s)	10.0	21.6	21.6	10.4	22.0	11.7	67.2	4.8	60.3
Actuated g/C Ratio	0.08	0.18	0.18	0.09	0.18	0.10	0.56	0.04	0.50
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	148	335	285	153	329	173	1031	71	912
v/s Ratio Prot	c0.07	0.06	0.05	c0.16	c0.08	0.44	0.02	c0.42	
v/s Ratio Perm	0.01								
v/c Ratio	0.84	0.35	0.03	0.60	0.89	0.83	0.79	0.56	0.84
Uniform Delay, d1	54.2	43.0	40.6	52.8	47.8	53.2	20.7	56.6	25.8
Progression Factor	1.00	0.90	0.99	1.00	1.00	0.92	1.02	1.00	1.00
Incremental Delay, d2	30.8	0.6	0.0	6.5	24.6	26.9	5.9	9.8	9.3
Delay (s)	85.1	39.3	40.4	59.3	72.4	75.9	27.1	66.4	35.1
Level of Service	F	D	D	E	E	E	C	E	D
Approach Delay (s)	59.2								
Approach LOS	E								

Intersection Summary

HCM Average Control Delay	43.7	HCM Level of Service	D
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	75.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings
3: Webb Rd & Deerfield Pky

Existing PM
6/29/2007

	EBT	EBR	WBT	WBR	NBL	NBT	SBT
Lane Group							
Lane Group Flow (vph)	209	52	264	116	100	763	396
Act Effct Green (s)	24.2	24.2	24.2	24.2	87.8	87.8	76.6
Actuated g/C Ratio	0.20	0.20	0.20	0.20	0.73	0.73	0.64
v/c Ratio	0.63	0.14	0.86	0.30	0.17	0.30	0.25
Control Delay	44.1	6.9	70.9	14.1	3.6	3.7	13.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.1	6.9	70.9	14.1	3.6	3.7	13.9
LOS	D	A	E	B	A	A	B
Approach Delay	36.7		53.5			3.7	13.9
Approach LOS	D		D			A	B
Queue Length 50th (ft)	118	0	200	19	10	32	86
Queue Length 95th (ft)	m148	m7	273	64	m23	138	116
Internal Link Dist (ft)	1660		1492			2619	3319
Turn Bay Length (ft)	135		75	230			
Base Capacity (vph)	636	639	585	660	728	2527	1586
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.33	0.08	0.45	0.18	0.14	0.30	0.25

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 109 (91%). Referenced to phase 2:SBTLL and 6:NBTL. Start of Green
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.86
 Intersection Signal Delay: 20.3
 Intersection Capacity Utilization 62.6%
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis
3: Webb Rd & Deerfield Pky

Existing PM
6/29/2007

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement												
Lane Configurations	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Ideal Flow (vphpl)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Total Lost time (s)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95
Lane Util. Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.97	0.97	0.97	0.97	0.97
Flt Protected	0.98	1.00	0.98	1.00	0.98	1.00	0.95	1.00	0.95	1.00	0.99	0.99
Satd. Flow (prot)	1843	1583	1834	1583	1770	3441					3449	
Flt Permitted	0.58	1.00	0.55	1.00	0.48	1.00					0.72	
Satd. Flow (perm)	1087	1583	1032	1583	898	3441					2512	
Volume (vph)	32	153	43	63	166	104	72	578	93	58	210	26
Peak-hour factor, PHF	0.73	0.93	0.83	0.75	0.92	0.90	0.72	0.93	0.66	0.81	0.75	0.59
Adj. Flow (vph)	44	165	52	84	180	116	100	622	141	72	280	44
RTOR Reduction (vph)	0	0	42	0	0	69	0	10	0	0	4	0
Lane Group Flow (vph)	0	209	10	0	264	47	100	753	0	0	392	0
Turn Type	Perm	Perm	Perm	Perm	Perm	pm+pt	Perm	Perm	Perm	Perm	Perm	Perm
Protected Phases	8	8	8	4	4	4	1	6	1	6	2	2
Permitted Phases	8	8	8	4	4	4	6	87.8	87.8	87.8	76.6	76.6
Actuated Green, G (s)	24.2	24.2	24.2	24.2	24.2	24.2	87.8	87.8	87.8	76.6	76.6	76.6
Effective Green, g (s)	24.2	24.2	24.2	24.2	24.2	24.2	87.8	87.8	87.8	76.6	76.6	76.6
Actuated g/C Ratio	0.20	0.20	0.20	0.20	0.20	0.20	0.73	0.73	0.73	0.64	0.64	0.64
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	219	319	319	208	319	709	2518				1603	
v/s Ratio Prot	0.19	0.01	0.01	0.26	0.03	0.09		0.22			0.16	
v/s Ratio Perm	0.95	0.03	0.03	1.27	0.15	0.14		0.30			0.24	
Uniform Delay, d1	47.4	38.5	47.9	39.4	4.7	5.5		5.5			9.3	
Progression Factor	0.85	0.66	1.00	1.00	0.55	0.58		0.58			1.32	
Incremental Delay, d2	45.3	0.0	153.4	0.2	0.1	0.3		0.3			0.3	
Delay (s)	85.5	25.3	201.3	39.6	2.7	3.5		3.5			12.6	
Level of Service	F	C	F	D	A	A		A			B	
Approach Delay (s)	73.5		151.9		3.4			3.4			12.6	
Approach LOS	E		F		A			A			B	
Intersection Summary												
HCM Average Control Delay	44.6										D	
HCM Volume to Capacity ratio	0.51											
Actuated Cycle Length (s)	120.0										8.0	
Intersection Capacity Utilization	62.6%										B	
Analysis Period (min)	15											
c Critical Lane Group												

Lanes, Volumes, Timings
4: Cogburn Rd & Webb Rd

Existing PM
6/29/2007

	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	188	108	135	735	20	475
Act Effct Green (s)	18.4	18.4	92.7	89.4	88.5	82.4
Actuated g/C Ratio	0.15	0.15	0.77	0.74	0.74	0.69
v/c Ratio	0.80	0.40	0.24	0.28	0.05	0.20
Control Delay	66.4	34.5	3.2	3.7	4.3	9.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	66.4	34.5	3.2	3.7	4.3	9.5
LOS	E	C	A	A	A	A
Approach Delay	66.4	34.5	3.7	9.3		
Approach LOS	E	C	A	A	A	A
Queue Length 50th (ft)	126	56	10	40	2	86
Queue Length 95th (ft)	114	m84	m35	98	m9	m136
Internal Link Dist (ft)	2012	2515		1866		556
Turn Bay Length (ft)			150		150	
Base Capacity (vph)	483	569	750	2619	618	2367
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.39	0.19	0.18	0.28	0.03	0.20

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 25 (21%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.80
Intersection Signal Delay: 14.5
Intersection Capacity Utilization 49.0%
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis
4: Cogburn Rd & Webb Rd

Existing PM
6/29/2007

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔			↔	↔		↔	↔	
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			1.00	0.95		1.00	0.95	
Frt	0.95			0.95			1.00	0.99		1.00	0.97	
Flt Protected	0.97			0.99			0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1729			1763			1770	3513		1770	3433	
Flt Permitted	0.67			0.92			0.45	1.00		0.37	1.00	
Satd. Flow (perm)	1189			1636			832	3513		690	3433	
Volume (vph)	95	12	54	14	43	26	126	678	32	12	342	62
Peak-hour factor, PHF	0.91	0.60	0.84	0.70	0.83	0.72	0.93	0.97	0.89	0.60	0.90	0.65
Adj. Flow (vph)	104	20	64	20	52	36	135	699	36	20	380	95
RTOR Reduction (vph)	0	19	0	0	19	0	0	0	1	0	0	9
Lane Group Flow (vph)	0	169	0	0	89	0	135	734	0	20	466	0
Turn Type	Perm	Perm	Perm	Perm	Perm	Perm	pm+pt	pm+pt	pm+pt	pm+pt	pm+pt	pm+pt
Protected Phases	8			4			1	6		5	2	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)	18.4			18.4			93.6	87.0	85.0	82.4		
Effective Green, g (s)	18.4			18.4			93.6	87.0	85.0	82.4		
Actuated g/C Ratio	0.15			0.15			0.78	0.72	0.71	0.69		
Clearance Time (s)	4.0			4.0			4.0	4.0	4.0	4.0		
Vehicle Extension (s)	3.0			3.0			3.0	3.0	3.0	3.0		
Lane Grp Cap (vph)	182			251			705	2547	512	2357		
v/s Ratio Prot							c0.01	c0.21	0.00	0.14		
v/s Ratio Perm	c0.14			0.05			0.14		0.03			
v/c Ratio	0.93			0.36			0.19	0.29	0.04	0.20		
Uniform Delay, d1	50.1			45.5			3.3	5.7	5.2	6.8		
Progression Factor	1.00			0.88			0.60	0.56	0.97	1.30		
Incremental Delay, d2	45.6			0.8			0.1	0.2	0.0	0.2		
Delay (s)	95.7			40.8			2.1	3.5	5.1	9.0		
Level of Service	F			D			A	A	A	A		
Approach Delay (s)	95.7			40.8			3.3		8.9			
Approach LOS	F			D			A		A			
Intersection Summary												
HCM Average Control Delay	17.8						HCM Level of Service					
HCM Volume to Capacity ratio	0.38						B					
Actuated Cycle Length (s)	120.0						Sum of lost time (s)					
Intersection Capacity Utilization	49.0%						ICU Level of Service					
Analysis Period (min)	15						A					
Critical Lane Group												

Lanes, Volumes, Timings
5: SR 9 & Windward Pky

Existing PM
6/29/2007

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	171	455	327	244	499	116	526	689	257	155	499
Act Effct Green (s)	44.4	35.4	35.4	52.8	40.0	40.0	59.0	44.7	120.0	31.1	20.8
Actuated g/C Ratio	0.37	0.30	0.30	0.44	0.33	0.33	0.49	0.37	1.00	0.26	0.17
v/c Ratio	0.73	0.83	0.51	0.87	0.80	0.19	0.92	0.52	0.16	0.56	0.80
Control Delay	42.0	53.9	11.3	56.6	38.6	2.8	34.1	24.1	0.1	26.0	46.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.0	53.9	11.3	56.6	38.6	2.8	34.1	24.1	0.1	26.0	46.4
LOS	D	D	B	E	D	A	C	C	A	C	D
Approach Delay	37.2			38.9			23.5			41.6	
Approach LOS	D			D			C			D	
Queue Length 50th (ft)	80	330	41	108	325	4	361	248	0	52	188
Queue Length 95th (ft)	#122	#500	93	m#203	m436	m6	m#504	m320	m0	m85	m#254
Internal Link Dist (ft)	1481			72			3686			1866	
Turn Bay Length (ft)	220	185	647	286	621	604	593	1318	1583	318	625
Base Capacity (vph)	233	549	647	286	621	604	593	1318	1583	318	625
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.73	0.83	0.51	0.85	0.80	0.19	0.89	0.52	0.16	0.49	0.80

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 67 (56%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.92

Intersection Signal Delay: 33.2

Intersection Capacity Utilization 88.8%

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

HCM Signalized Intersection Capacity Analysis
5: SR 9 & Windward Pky

Existing PM
6/29/2007

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑	↗	↖	↑	↗	↖	↑	↗	↖	↑	↗
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	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	3539	1583	1770	3382	3382
Flt Permitted	0.18	1.00	1.00	0.14	1.00	1.00	0.16	1.00	1.00	0.39	1.00	1.00
Satd. Flow (perm)	337	1863	1583	255	1863	1583	300	3539	1583	726	3382	3382
Volume (vph)	144	441	268	210	469	85	494	668	211	143	337	124
Peak-hour factor, PHF	0.84	0.97	0.82	0.86	0.94	0.73	0.94	0.97	0.82	0.92	0.96	0.84
Adj. Flow (vph)	171	455	327	244	499	116	526	689	257	155	351	148
RTOR Reduction (vph)	0	0	180	0	0	77	0	0	0	0	38	0
Lane Group Flow (vph)	171	455	147	244	499	39	526	689	257	155	461	0
Turn Type	pm+pt	pm	pm	pm+pt	pm	pm+pt	pm	pm+pt	Free	pm+pt	Free	pm+pt
Protected Phases	1	6	5	2	7	4	3	8				
Permitted Phases	6	6	2	2	4	4	4	4	4	4	4	4
Actuated Green, G (s)	44.4	35.4	35.4	53.0	40.0	40.0	59.0	44.7	120.0	31.1	20.8	20.8
Effective Green, g (s)	44.4	35.4	35.4	53.0	40.0	40.0	59.0	44.7	120.0	31.1	20.8	20.8
Actuated g/C Ratio	0.37	0.29	0.29	0.44	0.33	0.33	0.49	0.37	1.00	0.26	0.17	0.17
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	232	550	467	284	621	528	566	1318	1583	278	586	586
v/s Ratio Prot	0.06	0.24	0.09	c0.10	0.27	c0.26	0.19	0.05	0.14			
v/s Ratio Perm	0.22	0.83	0.31	0.86	0.80	0.07	0.93	0.52	0.16	0.56	0.79	0.79
Uniform Delay, d1	28.9	39.4	32.9	26.3	36.4	27.3	32.1	29.3	0.0	36.1	47.5	47.5
Progression Factor	1.00	1.00	1.00	1.17	0.77	0.41	0.57	0.77	1.00	0.84	0.81	0.81
Incremental Delay, d2	11.5	13.4	1.8	20.2	9.7	0.2	15.3	0.9	0.1	2.4	10.1	10.1
Delay (s)	40.4	52.8	34.6	51.0	37.8	11.4	33.6	23.6	0.1	32.8	48.8	48.8
Level of Service	D	D	C	D	D	B	C	C	A	C	D	D
Approach Delay (s)	44.3			38.0			23.1			45.0		
Approach LOS	D			D			C			D		
Intersection Summary												
HCM Average Control Delay	35.1			HCM Level of Service			D					
HCM Volume to Capacity ratio	0.88											
Actuated Cycle Length (s)	120.0			Sum of lost time (s)			8.0					
Intersection Capacity Utilization	88.8%			ICU Level of Service			E					
Analysis Period (min)	15											
Critical Lane Group												

Intersection Summary

HCM Average Control Delay 35.1 HCM Level of Service D

HCM Volume to Capacity ratio 0.88

Actuated Cycle Length (s) 120.0 Sum of lost time (s) 8.0

Intersection Capacity Utilization 88.8% ICU Level of Service E

Analysis Period (min) 15

c Critical Lane Group

Lanes, Volumes, Timings
6: Windward Pky & Deerfield Pky

Existing PM
6/29/2007

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	144	1035	84	253	1380	602	125	267	330	361	452
Act Effct Green (s)	59.2	49.8	49.8	68.9	55.6	120.0	32.2	23.5	23.5	15.5	30.3
Actuated g/C Ratio	0.49	0.42	0.42	0.57	0.46	1.00	0.27	0.20	0.20	0.13	0.25
v/c Ratio	0.71	0.71	0.12	0.80	0.84	0.38	0.44	0.73	0.68	0.81	0.47
Control Delay	38.4	32.6	8.0	31.0	35.1	0.4	32.7	58.5	22.7	60.9	25.0
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	38.4	32.6	8.0	31.0	35.1	0.4	32.7	58.5	22.7	60.9	25.0
LOS	D	C	A	C	D	A	C	E	C	E	C
Approach Delay	31.6			25.3			37.7			40.9	
Approach LOS	C			C			D			D	
Queue Length 50th (ft)	55	396	20	115	525	0	66	197	76	143	104
Queue Length 95th (ft)	m104	483	m30	m166	m585	m0	90	274	184	m#192	m143
Internal Link Dist (ft)	3686			1731			1018			2058	
Turn Bay Length (ft)	105	180	190	215	155	215	155	365	488	458	964
Base Capacity (vph)	212	1468	693	340	1639	1583	290	365	488	458	964
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.68	0.71	0.12	0.74	0.84	0.38	0.43	0.73	0.68	0.79	0.47

Intersection Summary

Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 17 (14%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.84	
Intersection Signal Delay: 31.2	Intersection LOS: C
Intersection Capacity Utilization 78.0%	ICU Level of Service D
Analysis Period (min) 15	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	
m Volume for 95th percentile queue is metered by upstream signal.	

Baseline
A & R Engineering Inc.

Synchro 6 Report
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HCM Signalized Intersection Capacity Analysis
6: Windward Pky & Deerfield Pky

Existing PM
6/29/2007

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔	↔↔	↔	↔↔	↔↔	↔	↔	↔	↔	↔	↔	↔
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	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	0.97	0.95	
Flt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.93	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1863	1583	3433	3290	
Flt Permitted	0.08	1.00	1.00	0.12	1.00	1.00	0.43	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	150	3539	1583	224	3539	1583	803	1863	1583	3433	3290	
Volume (vph)	127	973	69	210	1325	548	91	227	297	318	204	157
Peak-hour factor, PHF	0.88	0.94	0.82	0.83	0.96	0.91	0.73	0.85	0.90	0.88	0.85	0.74
Adj. Flow (vph)	144	1035	84	253	1380	602	125	267	330	361	240	212
RTOR Reduction (vph)	0	0	37	0	0	0	0	0	0	178	0	132
Lane Group Flow (vph)	144	1035	47	253	1380	602	125	267	152	361	320	0
Turn Type	pm+pt	Perm	pm+pt	Perm	pm+pt	Free	pm+pt	Perm	Prot			
Protected Phases	1	6	5	2	7	4	3	8				
Permitted Phases	6	6	2	2	Free	4	4	4				
Actuated Green, G (s)	59.2	49.8	49.8	69.0	55.6	120.0	32.2	23.5	23.5	15.5	30.3	
Effective Green, g (s)	59.2	49.8	49.8	69.0	55.6	120.0	32.2	23.5	23.5	15.5	30.3	
Actuated g/C Ratio	0.49	0.41	0.41	0.58	0.46	1.00	0.27	0.20	0.20	0.13	0.25	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	201	1469	657	325	1640	1583	286	365	310	443	831	
v/s Ratio Prot	0.06	0.29	0.03	c0.10	c0.39	0.03	c0.14	c0.11	0.10			
v/s Ratio Perm	0.30	0.03	0.35	0.35	0.38	0.09			0.10			
v/c Ratio	0.72	0.70	0.07	0.78	0.84	0.38	0.44	0.73	0.49	0.81	0.38	
Uniform Delay, d1	23.7	29.0	21.2	23.2	28.3	0.0	34.6	45.3	42.9	50.9	37.1	
Progression Factor	0.91	1.01	0.93	0.87	1.10	1.00	1.00	1.00	1.00	0.90	1.02	
Incremental Delay, d2	10.1	2.5	0.2	6.7	3.2	0.4	1.1	12.2	5.5	10.9	1.3	
Delay (s)	31.6	31.8	20.0	26.8	34.4	0.4	35.7	57.5	48.4	56.6	39.4	
Level of Service	C	C	B	C	C	A	D	E	D	E	D	
Approach Delay (s)	31.0			24.4			49.6			47.0		
Approach LOS	C			C			D			D		
Intersection Summary												
HCM Average Control Delay	33.3			HCM Level of Service			C					
HCM Volume to Capacity ratio	0.79											
Actuated Cycle Length (s)	120.0			Sum of lost time (s)			12.0					
Intersection Capacity Utilization	78.0%			ICU Level of Service			D					
Analysis Period (min)	15											
Critical Lane Group												

Baseline
A & R Engineering Inc.

Synchro 6 Report
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Lanes, Volumes, Timings
7: Windward Pky & GA 400 SB Ramp

Existing PM
6/29/2007

	EBT	EBR	WBL	WBT	SBL	SBR
Lane Group	1143	988	927	2223	124	366
Lane Group Flow (vph)	62.0	62.0	32.0	98.0	14.0	14.0
Act Effct Green (s)	0.52	0.52	0.27	0.82	0.12	0.12
Actuated g/C Ratio	0.35	1.01	1.01	0.77	0.31	0.99
v/c Ratio	0.35	1.01	1.01	0.77	0.31	0.99
Control Delay	9.1	39.7	65.1	5.1	50.9	91.9
Queue Delay	0.0	0.0	0.0	3.1	0.0	0.0
Total Delay	9.1	39.7	65.1	8.2	50.9	91.9
LOS	A	D	E	A	D	F
Approach Delay	23.3			24.9		
Approach LOS	C			C		
Queue Length 50th (ft)	87	~509	~325	162	45	143
Queue Length 95th (ft)	101	#920 m#492	113	76	#256	
Internal Link Dist (ft)	177			531		
Turn Bay Length (ft)	3311	981	915	2890	401	368
Base Capacity (vph)	0	0	0	548	0	0
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.35	1.01	1.01	0.95	0.31	0.99
Intersection Summary						
Cycle Length: 120						
Actuated Cycle Length: 120						
Offset: 65 (64%), Referenced to phase 2:WBT and 6:EBT, Start of Green						
Control Type: Actuated-Coordinated						
Maximum v/c Ratio: 1.01						
Intersection Signal Delay: 29.1						Intersection LOS: C
Intersection Capacity Utilization 125.2%						ICU Level of Service H
Analysis Period (min) 15						
~ Volume exceeds capacity, queue is theoretically infinite.						
Queue shown is maximum after two cycles.						
# 95th percentile volume exceeds capacity, queue may be longer.						
Queue shown is maximum after two cycles.						
m Volume for 95th percentile queue is metered by upstream signal.						

HCM Signalized Intersection Capacity Analysis
7: Windward Pky & GA 400 SB Ramp

Existing PM
6/29/2007

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	0.86	1.00	0.85	1.00	0.97	0.95	1.00	0.85	1.00	0.97	0.95	0.88
Lane Util. Factor	1.00	0.85	1.00	1.00	1.00	1.00	1.00	0.85	1.00	0.95	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	1.00	1.00	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	6408	1583	3433	3539	3539	3539	3433	3433	3433	3433	3433	2787
Flt Permitted	1.00	1.00	0.95	1.00	1.00	1.00	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	6408	1583	3433	3539	3539	3539	3433	3433	3433	3433	3433	2787
Volume (vph)	0	1063	929	890	2112	0	0	0	0	112	0	344
Peak-hour factor, PHF	0.92	0.93	0.94	0.96	0.95	0.92	0.92	0.92	0.92	0.90	0.92	0.94
Adj. Flow (vph)	0	1143	988	927	2223	0	0	0	0	124	0	366
RTOR Reduction (vph)	0	0	163	0	0	0	0	0	0	0	0	42
Lane Group Flow (vph)	0	1143	825	927	2223	0	0	0	0	124	0	324
Turn Type		Perm	Prot	Prot						Prot	custom	
Protected Phases		6	5	2						3		
Permitted Phases			6									3
Actuated Green, G (s)		62.0	62.0	32.0	98.0					14.0		14.0
Effective Green, g (s)		62.0	62.0	32.0	98.0					14.0		14.0
Actuated g/C Ratio		0.52	0.52	0.27	0.82					0.12		0.12
Clearance Time (s)		4.0	4.0	4.0	4.0					4.0		4.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0					3.0		3.0
Lane Grp Cap (vph)		3311	818	915	2890					401		325
v/s Ratio Prot		0.18		c0.27	0.63					0.04		
v/s Ratio Perm		0.35	1.01	1.01	0.77					0.31		c0.12
Uniform Delay, d1		17.1	29.0	44.0	5.4					48.6		53.0
Progression Factor		0.52	0.50	0.91	0.71					1.00		1.00
Incremental Delay, d2		0.2	30.4	24.8	1.1					48.5		48.5
Delay (s)		9.1	44.9	64.8	4.9					49.0		101.4
Level of Service		A	D	E	A					D		F
Approach Delay (s)		25.7		22.5			0.0			88.2		
Approach LOS		C		C			A			F		
Intersection Summary												
HCM Average Control Delay			29.3				HCM Level of Service			C		
HCM Volume to Capacity ratio			1.01									
Actuated Cycle Length (s)			120.0				Sum of lost time (s)			12.0		
Intersection Capacity Utilization			125.2%				ICU Level of Service			H		
Analysis Period (min)			15									
c Critical Lane Group												

Lanes, Volumes, Timings
8: Windward Pky & GA 400 NB Ramp

Existing PM
6/29/2007

	EBL	EBT	WBT	WBR	NBL	NBR
Lane Group	EBL	EBT	WBT	WBR	NBL	NBR
Lane Group Flow (vph)	446	884	1959	285	1141	568
Act Effct Green (s)	18.8	67.6	44.8	44.8	44.4	44.4
Actuated g/C Ratio	0.16	0.56	0.37	0.37	0.37	0.37
v/c Ratio	0.83	0.44	0.82	0.38	0.90	0.48
Control Delay	51.1	31.2	38.1	6.5	46.1	17.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.1	31.2	38.1	6.5	46.1	17.8
LOS	D	C	D	A	D	B
Approach Delay	37.9 34.1					
Approach LOS	D C					
Queue Length 50th (ft)	170	344	410	16	415	106
Queue Length 95th (ft)	226	422	461	78	510	163
Internal Link Dist (ft)	531 173					
Turn Bay Length (ft)	150 150					
Base Capacity (vph)	572	1995	2393	750	1316	1210
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.78	0.44	0.82	0.38	0.87	0.47
Intersection Summary						
Cycle Length: 120						
Actuated Cycle Length: 120						
Offset: 23 (19%), Referenced to phase 2:WBT and 6:EBT, Start of Green						
Control Type: Actuated-Coordinated						
Maximum v/c Ratio: 0.90						
Intersection Signal Delay: 35.9						
Intersection Capacity Utilization 125.2%						
Analysis Period (min) 15						

HCM Signalized Intersection Capacity Analysis
8: Windward Pky & GA 400 NB Ramp

Existing PM
6/29/2007

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔	↔↔	↔	↔↔↔	↔	↔	↔	↔↔	↔↔	↔	↔	↔
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	4.0	4.0			
Lane Util. Factor	0.97	0.95		0.86	1.00	0.97	0.88					
Flt	1.00	1.00		1.00	0.85	1.00	0.85					
Flt Protected	0.95	1.00		1.00	1.00	0.95	1.00					
Satd. Flow (prot)	3433	3539		6408	1583	3433	2787					
Flt Permitted	0.95	1.00		1.00	1.00	0.95	1.00					
Satd. Flow (perm)	3433	3539		6408	1583	3433	2787					
Volume (vph)	397	840	0	0	1822	259	1095	0	534	0	0	0
Peak-hour factor, PHF	0.89	0.95	0.92	0.92	0.93	0.91	0.96	0.92	0.94	0.92	0.92	0.92
Adj. Flow (vph)	446	884	0	0	1959	285	1141	0	568	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	159	0	0	145	0	0	0
Lane Group Flow (vph)	446	884	0	0	1959	126	1141	0	423	0	0	0
Turn Type	Prot	Prot			Perm	Prot	custom					
Protected Phases	1	6			2	7						
Permitted Phases						2			7			
Actuated Green, G (s)	18.8	67.6			44.8	44.8	44.4		44.4			
Effective Green, g (s)	18.8	67.6			44.8	44.8	44.4		44.4			
Actuated g/C Ratio	0.16	0.56			0.37	0.37	0.37		0.37			
Clearance Time (s)	4.0	4.0			4.0	4.0	4.0		4.0			
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0		3.0			
Lane Grp Cap (vph)	538	1994			2392	591	1270		1031			
v/s Ratio Prot	c0.13	0.25			c0.31	c0.33						
v/s Ratio Perm						0.08			0.15			
v/c Ratio	0.83	0.44			0.82	0.21	0.90		0.41			
Uniform Delay, d1	49.0	15.2			33.9	25.6	35.7		28.1			
Progression Factor	0.77	1.95			1.00	1.00	1.00		1.00			
Incremental Delay, d2	9.8	0.7			3.3	0.8	8.7		0.3			
Delay (s)	47.6	30.4			37.2	26.4	44.4		28.3			
Level of Service	D	C			D	C	D		C			
Approach Delay (s)		36.1			35.8		39.0		0.0			
Approach LOS		D			D		D		A			
Intersection Summary												
HCM Average Control Delay	36.9						HCM Level of Service					
HCM Volume to Capacity ratio	0.85						D					
Actuated Cycle Length (s)	120.0						Sum of lost time (s)					
Intersection Capacity Utilization	125.2%						ICU Level of Service					
Analysis Period (min)	15						H					
Critical Lane Group												

Lanes, Volumes, Timings
9: New Homes Private Drwy & SR 9

Existing PM
6/29/2007



Lane Group	EBT	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	4	72	357	4	690	76	212	605
Sign Control	Stop	Stop			Free			Free
Intersection Summary								
Control Type: Unsignalized								
Intersection Capacity Utilization 67.1%								
Analysis Period (min) 15								
ICU Level of Service C								

HCM Unsignalized Intersection Capacity Analysis
9: New Homes Private Drwy & SR 9

Existing PM
6/29/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔		↔		
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Grade	0%											
Volume (veh/h)	0	0	2	51	6	328	1	635	67	159	569	0
Peak Hour Factor	0.92	0.92	0.50	0.80	0.75	0.92	0.25	0.92	0.88	0.75	0.94	0.92
Hourly flow rate (vph)	0	0	4	64	8	357	4	690	76	212	605	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None											
Median storage (veh)	None											
Upstream signal (ft)												
pX, platoon unblocked												
VC, conflicting volume	1732	1728	605	1732	1728	690	605					690
VC1, stage 1 conf vol												
VC2, stage 2 conf vol												
VCu, unblocked vol	1732	1728	605	1732	1728	690	605					690
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1					4.1
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2					2.2
p0 queue free %	100	100	99	0	88	20	100					77
cM capacity (veh/h)	10	67	497	56	67	445	973					904
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3			
Volume Total	4	72	357	4	690	76	212	605	0			
Volume Left	0	64	0	4	0	0	212	0	0			
Volume Right	4	0	357	0	0	76	0	0	0			
cSH	497	57	445	973	1700	1700	904	1700	1700			
Volume to Capacity	0.01	1.26	0.80	0.00	0.41	0.04	0.23	0.36	0.00			
Queue Length 95th (ft)	1	155	182	0	0	0	23	0	0			
Control Delay (s)	12.3	323.4	38.5	8.7	0.0	0.0	10.2	0.0	0.0			
Lane LOS	B	F	E	A	A	B	B					
Approach Delay (s)	12.3	86.2		0.0		2.6						
Approach LOS	B	F										
Intersection Summary												
Average Delay	19.4											
Intersection Capacity Utilization	67.1%											
ICU Level of Service	C											
Analysis Period (min)	15											

Lanes, Volumes, Timings
10: Webb Rd & SR 9

Existing PM
6/29/2007



Lane Group	EBT	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	40	192	84	24	649	173	20	688
Sign Control	Stop	Stop	Stop	Free	Free	Free	Free	Free
Intersection Summary								
Control Type: Unsignalized								
Intersection Capacity Utilization 56.9%								
Analysis Period (min) 15								
ICU Level of Service B								

Baseline
A & R Engineering Inc.

Synchro 6 Report
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HCM Unsignalized Intersection Capacity Analysis
10: Webb Rd & SR 9

Existing PM
6/29/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Grade		0%			0%							
Volume (veh/h)	7	8	10	128	38	69	20	617	159	15	622	28
Peak Hour Factor	0.58	0.67	0.62	0.94	0.68	0.82	0.83	0.95	0.92	0.75	0.96	0.70
Hourly flow rate (vph)	12	12	16	136	56	84	24	649	173	20	648	40
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)						11						
Median type						None						
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
VC, conflicting volume	1434	1578	668	1408	1426	649	688			822		
VC1, stage 1 conf vol												
VC2, stage 2 conf vol												
VCu, unblocked vol	1434	1578	668	1408	1426	649	688			822		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	79	88	96	0	57	82	97			98		
cM capacity (veh/h)	58	104	458	98	129	469	906			807		
Direction, Lane #												
	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2					
Volume Total	40	276	24	649	173	20	688					
Volume Left	12	136	24	0	0	20	0					
Volume Right	16	84	0	0	173	0	40					
cSH	112	145	906	1700	1700	807	1700					
Volume to Capacity	0.36	1.90	0.03	0.38	0.10	0.02	0.40					
Queue Length 95th (ft)	36	531	2	0	0	2	0					
Control Delay (s)	53.9	481.9	9.1	0.0	0.0	9.6	0.0					
Lane LOS	F	F	A	A	A	A	A					
Approach Delay (s)	53.9	481.9	0.3			0.3						
Approach LOS	F	F	F			F						
Intersection Summary												
Average Delay						72.5						
Intersection Capacity Utilization						56.9%						B
Analysis Period (min)						15						

Baseline
A & R Engineering Inc.

Synchro 6 Report
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Lanes, Volumes, Timings
11: Morris Rd & Bethany Rd

Existing PM
6/29/2007



Lane Group	EBT	WBT	SBL
Lane Group Flow (vph)	621	659	215
Sign Control	Free	Free	Stop
Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 87.5%			
Analysis Period (min) 15			
ICU Level of Service E			

HCM Unsignalized Intersection Capacity Analysis
11: Morris Rd & Bethany Rd

Existing PM
6/29/2007



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	4	4	4	4	4	4
Sign Control	Free	Free	Free	Free	Stop	Stop
Grade	0%	0%	0%	0%	0%	0%
Volume (veh/h)	131	446	321	311	105	83
Peak Hour Factor	0.89	0.94	0.98	0.94	0.91	0.83
Hourly flow rate (vph)	147	474	328	331	115	100
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
VC, conflicting volume		658			1262	493
VC1, stage 1 conf vol						
VC2, stage 2 conf vol						
VCu, unblocked vol		658			1262	493
tC, single (s)		4.1			6.4	6.2
tC, 2 stage (s)						
tF (s)		2.2			3.5	3.3
p0 queue free %		84			27	83
cM capacity (veh/h)		929			158	576
Direction, Lane #						
	EB 1	WB 1	SB 1			
Volume Total	622	658	215			
Volume Left	147	0	115			
Volume Right	0	331	100			
cSH	929	1700	238			
Volume to Capacity	0.16	0.39	0.90			
Queue Length 95th (ft)	14	0	192			
Control Delay (s)	3.9	0.0	79.9			
Lane LOS	A	F	F			
Approach Delay (s)	3.9	0.0	79.9			
Approach LOS		F				
Intersection Summary						
Average Delay			13.1			
Intersection Capacity Utilization			87.5%			
ICU Level of Service			E			
Analysis Period (min)			15			

Lanes, Volumes, Timings
12: Windward Village Pky & SR 9

Existing PM
6/29/2007

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	12	36	52	709	658	16
Sign Control	Stop	Stop	Free	Free	Free	Free
Intersection Summary						
Control Type: Unsignalized						
Intersection Capacity Utilization 45.1%						
Analysis Period (min) 15						
ICU Level of Service A						

HCM Unsignalized Intersection Capacity Analysis
12: Windward Village Pky & SR 9

Existing PM
6/29/2007

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Sign Control	Stop	Stop	Free	Free	Free	Free
Grade	0%	0%	0%	0%	0%	0%
Volume (veh/h)	8	25	42	666	632	10
Peak Hour Factor	0.67	0.69	0.81	0.94	0.96	0.62
Hourly flow rate (vph)	12	36	52	709	658	16
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
VC, conflicting volume	1471	658	658			
VC1, stage 1 conf vol						
VC2, stage 2 conf vol						
vCu, unblocked vol	1471	658	658			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	91	92	94			
cM capacity (veh/h)	132	464	929			
Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	12	36	52	709	658	16
Volume Left	12	0	52	0	0	0
Volume Right	0	36	0	0	0	16
cSH	132	464	929	1700	1700	1700
Volume to Capacity	0.09	0.08	0.06	0.42	0.39	0.01
Queue Length 95th (ft)	7	6	4	0	0	0
Control Delay (s)	34.9	13.4	9.1	0.0	0.0	0.0
Lane LOS	D	B	A			
Approach Delay (s)	18.7		0.6		0.0	
Approach LOS	C					
Intersection Summary						
Average Delay	0.9					
Intersection Capacity Utilization	45.1%					
ICU Level of Service	A					
Analysis Period (min)	15					

Lanes, Volumes, Timings
14: Marrywood Dr & SR 9

Existing PM
6/29/2007

	↖	↗	↑	↓	↘
Lane Group	EBL	NBL	SBT	SBT	SBR
Lane Group Flow (vph)	32	32	749	653	20
Sign Control	Stop	Free	Free	Free	Free
Intersection Summary					
Control Type: Unsignalized					
Intersection Capacity Utilization 47.5%					
Analysis Period (min) 15					
ICU Level of Service A					

HCM Unsignalized Intersection Capacity Analysis
14: Marrywood Dr & SR 9

Existing PM
6/29/2007

	↖	↗	↑	↓	↘
Movement	EBL	EBR	NBL	SBT	SBR
Lane Configurations	↖	↗	↑	↑	↑
Sign Control	Stop	Free	Free	Free	Free
Grade	0%		0%	0%	0%
Volume (veh/h)	9	16	23	712	607
Peak Hour Factor	0.75	0.80	0.72	0.95	0.93
Hourly flow rate (vph)	12	20	32	749	653
Pedestrians					20
Lane Width (ft)					
Walking Speed (ft/s)					
Percent Blockage					
Right turn flare (veh)					
Median type	None				
Median storage (veh)					
Upstream signal (ft)					
pX, platoon unblocked					
VC, conflicting volume	1466	653	673		
VC1, stage 1 conf vol					
VC2, stage 2 conf vol					
vCu, unblocked vol	1466	653	673		
tC, single (s)	6.4	6.2	4.1		
tC, 2 stage (s)					
tF (s)	3.5	3.3	2.2		
p0 queue free %	91	96	97		
cM capacity (veh/h)	136	467	918		
Direction, Lane #					
	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	32	32	749	653	20
Volume Left	12	32	0	0	0
Volume Right	20	0	0	0	20
cSH	244	918	1700	1700	
Volume to Capacity	0.13	0.03	0.44	0.38	0.01
Queue Length 95th (ft)	11	3	0	0	0
Control Delay (s)	21.9	9.1	0.0	0.0	0.0
Lane LOS	C	A			
Approach Delay (s)	21.9	0.4	0.0		
Approach LOS	C				
Intersection Summary					
Average Delay	0.7				
Intersection Capacity Utilization	47.5%				
ICU Level of Service	A				
Analysis Period (min)	15				

Existing Saturday Intersection Analysis

Lanes, Volumes, Timings
1: Bethany Rd & Cogburn Rd

Existing Saturday
6/29/2007

	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	294	196	128	313	68	336
Act Effct Green (s)	20.5	20.5	91.5	91.5	91.5	91.5
Actuated g/C Ratio	0.17	0.17	0.76	0.76	0.76	0.76
v/c Ratio	0.88	0.58	0.20	0.22	0.10	0.24
Control Delay	67.1	25.9	3.0	2.4	5.1	5.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	67.1	25.9	3.0	2.4	5.1	5.2
LOS	E	C	A	A	A	A
Approach Delay	67.1	25.9	2.5	2.5	5.2	5.2
Approach LOS	E	C	A	A	A	A
Queue Length 50th (ft)	193	71	11	26	12	63
Queue Length 95th (ft)	265	m102	m30	60	32	120
Internal Link Dist (ft)	1654	2050		3797		1469
Turn Bay Length (ft)			150		150	
Base Capacity (vph)	831	831	642	1398	673	1408
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.35	0.24	0.20	0.22	0.10	0.24

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 113 (94%). Referenced to phase 2:SBTTL and 6:NBTL. Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.88
Intersection Signal Delay: 21.0
Intersection Capacity Utilization 48.8%
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis
1: Bethany Rd & Cogburn Rd

Existing Saturday
6/29/2007

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔	↔		↔	↔		↔	↔	
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		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	0.94	0.94		0.94	0.94		0.94	0.94		0.94	0.94	
Flt Protected	1.00	1.00		1.00	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1747	1747		1741	1741		1770	1831		1770	1846	
Flt Permitted	0.98	0.98		0.95	0.95		0.54	1.00		0.56	1.00	
Satd. Flow (perm)	1717	1717		1653	1653		1011	1831		1039	1846	
Volume (vph)	7	133	113	6	86	76	120	266	32	61	275	13
Peak-hour factor, PHF	0.58	0.88	0.86	0.75	0.90	0.83	0.94	0.96	0.89	0.90	0.87	0.65
Adj. Flow (vph)	12	151	131	8	96	92	128	277	36	68	316	20
RTOR Reduction (vph)	0	37	0	0	41	0	0	2	0	0	1	0
Lane Group Flow (vph)	0	257	0	0	155	0	128	311	0	68	335	0
Turn Type	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm
Protected Phases	8	8		4	4		6	6		2	2	
Permitted Phases	8	8		4	4		6	6		2	2	
Actuated Green, G (s)	20.5	20.5		20.5	20.5		91.5	91.5		91.5	91.5	
Effective Green, g (s)	20.5	20.5		20.5	20.5		91.5	91.5		91.5	91.5	
Actuated g/C Ratio	0.17	0.17		0.17	0.17		0.76	0.76		0.76	0.76	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	293	282		282	282		771	1396		792	1408	
v/s Ratio Prot								0.17			c0.18	
v/s Ratio Perm	c0.15	c0.15		0.09	0.09		0.13	0.17		0.07	0.07	
v/c Ratio	0.88	0.88		0.55	0.55		0.17	0.22		0.09	0.24	
Uniform Delay, d1	48.5	48.5		45.5	45.5		3.9	4.1		3.6	4.1	
Progression Factor	1.00	1.00		0.64	0.64		0.45	0.43		1.00	1.00	
Incremental Delay, d2	24.0	24.0		1.5	1.5		0.5	0.4		0.2	0.4	
Delay (s)	72.5	72.5		30.7	30.7		2.2	2.1		3.8	4.5	
Level of Service	E	E		C	C		A	A		A	A	
Approach Delay (s)	72.5	72.5		30.7	30.7		2.1	2.1		4.4	4.4	
Approach LOS	E	E		C	C		A	A		A	A	
Intersection Summary												
HCM Average Control Delay			22.5									C
HCM Volume to Capacity ratio			0.35									
Actuated Cycle Length (s)			120.0									8.0
Intersection Capacity Utilization			48.8%									A
Analysis Period (min)			15									
c Critical Lane Group												

Lanes, Volumes, Timings
2: Bethany Rd & SR 9

Existing Saturday
6/29/2007

	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	128	96	116	80	172	64	912	12	909
Act Effct Green (s)	11.4	17.1	17.1	10.0	13.6	7.8	80.6	6.3	73.1
Actuated g/C Ratio	0.10	0.14	0.14	0.08	0.11	0.06	0.67	0.05	0.61
v/c Ratio	0.76	0.36	0.36	0.54	0.76	0.56	0.74	0.13	0.81
Control Delay	67.1	42.3	9.6	66.1	62.8	84.1	11.3	56.9	27.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	67.1	42.3	9.6	66.1	62.8	84.1	11.3	56.9	27.1
LOS	E	D	A	E	E	F	B	E	C
Approach Delay	40.5								
Approach LOS	D								
Queue Length 50th (ft)	94	74	20	60	105	50	145	9	570
Queue Length 95th (ft) m#135	m94	m34	97	140	m67	m706	19	#869	
Internal Link Dist (ft)	2050								
Turn Bay Length (ft)	150	275	250	177	259	121	1230	118	1123
Base Capacity (vph)	177	268	327	177	259	121	1230	118	1123
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.72	0.36	0.35	0.45	0.66	0.53	0.74	0.10	0.81

Intersection Summary

Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 28 (23%), Referenced to phase 2:SBT and 6:NBT, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.81	
Intersection Signal Delay: 28.4	Intersection LOS: C
Intersection Capacity Utilization 69.8%	ICU Level of Service C
Analysis Period (min) 15	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	
m Volume for 95th percentile queue is metered by upstream signal.	

HCM Signalized Intersection Capacity Analysis
2: Bethany Rd & SR 9

Existing Saturday
6/29/2007

	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Movement	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Ideal Flow (vphpl)	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	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.93	1.00	0.98	1.00	0.99
Flt Protected	0.95	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1770	1863	1583	1770	1726	1770	1827	1770	1841
Flt Permitted	0.95	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	1770	1863	1583	1770	1726	1770	1827	1770	1841
Volume (vph)	120	80	95	63	65	70	50	104	7
Peak-hour factor, PHF	0.94	0.83	0.82	0.79	0.74	0.83	0.78	0.93	0.90
Adj. Flow (vph)	128	96	116	80	88	84	64	796	116
RTOR Reduction (vph)	0	0	99	0	29	0	4	0	0
Lane Group Flow (vph)	128	96	17	80	143	0	64	908	0
Turn Type	Prot	Perm	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Protected Phases	3	8	8	7	4	1	6	5	2
Permitted Phases									
Actuated Green, G (s)	11.4	17.1	17.1	8.7	14.4	6.6	76.6	1.6	71.6
Effective Green, g (s)	11.4	17.1	17.1	8.7	14.4	6.6	76.6	1.6	71.6
Actuated g/C Ratio	0.10	0.14	0.14	0.07	0.12	0.05	0.64	0.01	0.60
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	168	265	226	128	207	97	1166	24	1098
v/s Ratio Prot	c0.07	c0.05	0.01	0.05	c0.08	c0.04	0.50	0.01	c0.49
v/s Ratio Perm									
v/c Ratio	0.76	0.36	0.07	0.62	0.69	0.66	0.78	0.50	0.83
Uniform Delay, d1	53.0	46.5	44.6	54.1	50.7	55.6	15.6	58.8	19.2
Progression Factor	0.78	0.81	0.78	1.00	1.00	1.25	0.47	1.00	1.00
Incremental Delay, d2	16.9	0.8	0.1	9.2	9.5	13.3	4.6	15.4	7.1
Delay (s)	58.2	38.5	35.0	63.2	60.2	82.6	11.8	74.2	26.4
Level of Service	E	D	C	E	E	F	B	E	C
Approach Delay (s)	44.7								
Approach LOS	D								

Intersection Summary

HCM Average Control Delay	28.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	69.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings
3: Webb Rd & Deerfield Pky

Existing Saturday
6/29/2007

Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	SBT
Lane Group Flow (vph)	152	32	160	52	44	305	372
Act Effct Green (s)	15.6	15.6	15.6	15.6	96.4	96.4	90.3
Actuated g/C Ratio	0.13	0.13	0.13	0.13	0.80	0.80	0.75
v/c Ratio	0.67	0.14	0.73	0.21	0.07	0.11	0.17
Control Delay	47.2	8.9	69.0	13.6	1.6	1.2	3.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.2	8.9	69.0	13.6	1.6	1.2	3.6
LOS	D	A	E	B	A	A	A
Approach Delay	40.5		55.4			1.3	3.6
Approach LOS	D		E			A	A
Queue Length 50th (ft)	111	6	121	0	2	7	26
Queue Length 95th (ft)	m135	m12	137	35	m6	18	m41
Internal Link Dist (ft)	1660		1492			2619	3319
Turn Bay Length (ft)	135		75		230		
Base Capacity (vph)	578	549	559	562	851	2817	2230
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.26	0.06	0.29	0.09	0.05	0.11	0.17

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 72 (60%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.73
 Intersection Signal Delay: 18.8
 Intersection Capacity Utilization 40.3%
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis
3: Webb Rd & Deerfield Pky

Existing Saturday
6/29/2007

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.99	0.99	0.95	0.95
Flt	1.00	0.85	1.00	0.85	1.00	0.85	1.00	0.99	1.00	0.99	0.99	0.99
Flt Protected	0.99	1.00	0.99	1.00	0.99	1.00	0.95	1.00	0.99	1.00	0.99	0.99
Satd. Flow (prot)	1846	1583	1840	1583	1770	3504	3467	3467	3467	3467	3467	3467
Flt Permitted	0.72	1.00	0.65	1.00	0.51	1.00	0.85	0.85	0.85	0.85	0.85	0.85
Satd. Flow (perm)	1347	1583	1219	1583	946	3504	2979	2979	2979	2979	2979	2979
Volume (vph)	20	114	23	29	83	46	29	265	14	43	244	24
Peak-hour factor, PHF	0.71	0.92	0.72	0.72	0.69	0.89	0.66	0.93	0.70	0.77	0.86	0.75
Adj. Flow (vph)	28	124	32	40	120	52	44	285	20	56	284	32
RTOR Reduction (vph)	0	0	28	0	0	45	0	2	0	0	2	0
Lane Group Flow (vph)	0	152	4	0	160	7	44	303	0	0	370	0
Turn Type	Perm	Perm	Perm	Perm	Perm	Perm	pm+pt	Perm	Perm	Perm	Perm	Perm
Protected Phases	8	8	8	4	4	4	1	6	1	6	2	2
Permitted Phases	8	8	8	4	4	4	6	6	4	4	2	2
Actuated Green, G (s)	15.6	15.6	15.6	15.6	15.6	15.6	96.4	96.4	96.4	96.4	88.7	88.7
Effective Green, g (s)	15.6	15.6	15.6	15.6	15.6	15.6	96.4	96.4	96.4	96.4	88.7	88.7
Actuated g/C Ratio	0.13	0.13	0.13	0.13	0.13	0.13	0.80	0.80	0.80	0.80	0.74	0.74
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	175	206	206	158	206	785	2815	2815	2815	2815	2202	2202
v/s Ratio Prot	0.11	0.00	0.00	c0.13	0.00	0.04	c0.09	c0.09	c0.09	c0.09	c0.12	c0.12
v/c Ratio	0.87	0.02	0.02	1.01	0.03	0.06	0.11	0.11	0.11	0.11	0.17	0.17
Uniform Delay, d1	51.2	45.5	45.5	52.2	45.6	2.4	2.5	2.5	2.5	2.5	4.7	4.7
Progression Factor	0.71	0.56	0.56	1.00	1.00	0.46	0.42	0.42	0.42	0.42	0.67	0.67
Incremental Delay, d2	28.6	0.0	0.0	75.0	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1
Delay (s)	65.1	25.6	25.6	127.2	45.7	1.1	1.1	1.1	1.1	1.1	3.2	3.2
Level of Service	E	C	C	F	D	A	A	A	A	A	A	A
Approach Delay (s)	58.2			107.2			1.1	1.1	1.1	3.2	3.2	3.2
Approach LOS	E			F			A	A	A	A	A	A
Intersection Summary												
HCM Average Control Delay	31.4			HCM Level of Service			C					
HCM Volume to Capacity ratio	0.29											
Actuated Cycle Length (s)	120.0			Sum of lost time (s)			12.0					
Intersection Capacity Utilization	40.3%			ICU Level of Service			A					
Analysis Period (min)	15											
c Critical Lane Group												

Lanes, Volumes, Timings
4: Cogburn Rd & Webb Rd

Existing Saturday
6/29/2007

	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	144	52	100	487	32	596
Act Effct Green (s)	13.9	13.9	95.9	92.1	94.0	88.2
Actuated g/C Ratio	0.12	0.12	0.80	0.77	0.78	0.74
v/c Ratio	0.73	0.26	0.19	0.18	0.05	0.23
Control Delay	60.1	49.6	2.2	1.4	2.5	4.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.1	49.6	2.2	1.4	2.5	4.5
LOS	E	D	A	A	A	A
Approach Delay	60.1	49.6	1.5	4.4		
Approach LOS	E	D	A	A	A	A
Queue Length 50th (ft)	86	29	4	14	3	46
Queue Length 95th (ft)	116	m37	m7	m17	m7	m88
Internal Link Dist (ft)	2012	2515		1866		556
Turn Bay Length (ft)			150		150	
Base Capacity (vph)	475	500	729	2691	820	2541
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.10	0.14	0.18	0.04	0.23

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 4 (3%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.73
Intersection Signal Delay: 10.5
Intersection Capacity Utilization: 40.7%
Analysis Period (min): 15
m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis
4: Cogburn Rd & Webb Rd

Existing Saturday
6/29/2007

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	0.94			0.96			1.00	0.99		1.00	0.97	
Flt Protected	0.98			0.98			0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1715			1752			1770	3504		1770	3450	
Flt Permitted	0.83			0.83			0.40	1.00		0.47	1.00	
Satd. Flow (perm)	1462			1475			750	3504		884	3450	
Volume (vph)	60	9	53	11	10	9	87	432	20	22	461	85
Peak-hour factor, PHF	0.83	0.75	0.88	0.55	0.62	0.56	0.87	0.95	0.62	0.69	0.93	0.85
Adj. Flow (vph)	72	12	60	20	16	16	100	455	32	32	496	100
RTOR Reduction (vph)	0	27	0	0	14	0	0	2	0	0	6	0
Lane Group Flow (vph)	0	117	0	0	38	0	100	485	0	32	590	0
Turn Type	Perm	Perm	Perm	Perm	Perm	Perm	pm+pt	pm+pt		pm+pt		
Protected Phases	8	8	1	4	4	4	1	6	5	5	2	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)	13.9			13.9			96.5	90.5	91.7	88.1		
Effective Green, g (s)	13.9			13.9			96.5	90.5	91.7	88.1		
Actuated g/C Ratio	0.12			0.12			0.80	0.75	0.76	0.73		
Clearance Time (s)	4.0			4.0			4.0	4.0	4.0	4.0		
Vehicle Extension (s)	3.0			3.0			3.0	3.0	3.0	3.0		
Lane Grp Cap (vph)	169			171			654	2643	702	2533		
v/s Ratio Prot							c0.01	0.14	0.00	c0.17		
v/s Ratio Perm	c0.08			0.03			0.12		0.03			
v/c Ratio	0.69			0.22			0.15	0.18	0.05	0.23		
Uniform Delay, d1	51.0			48.1			2.6	4.2	3.4	5.1		
Progression Factor	1.00			1.37			0.60	0.27	0.81	0.79		
Incremental Delay, d2	11.1			0.5			0.1	0.1	0.0	0.2		
Delay (s)	62.1			66.4			1.6	1.3	2.8	4.3		
Level of Service	E			E			A	A	A	A		
Approach Delay (s)	62.1			66.4			1.3		4.2			
Approach LOS	E			E			A		A			
Intersection Summary												
HCM Average Control Delay			11.2									
HCM Volume to Capacity ratio			0.30									
Actuated Cycle Length (s)			120.0									
Intersection Capacity Utilization			40.7%									
Analysis Period (min)			15									
c Critical Lane Group												

Lanes, Volumes, Timings
5: SR 9 & Windward Pky

Existing Saturday
6/29/2007

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	135	633	180	741	659	144	156	486	284	189	579
Act Effct Green (s)	44.7	37.0	37.0	82.0	70.3	70.3	25.0	17.0	120.0	27.0	18.0
Actuated g/C Ratio	0.37	0.31	0.31	0.68	0.59	0.59	0.21	0.14	1.00	0.22	0.15
v/c Ratio	0.38	1.10	0.32	1.11	0.60	0.15	0.87	0.97	0.18	0.97	1.09
Control Delay	17.0	108.2	15.4	97.8	17.1	1.1	72.4	81.3	0.2	96.6	110.1
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	17.0	108.2	15.4	97.8	17.1	1.1	72.4	81.3	0.2	96.6	110.1
LOS	B	F	B	F	B	A	E	F	A	F	F
Approach Delay	77.6			54.3			54.9			106.8	
Approach LOS	E			D			D			F	
Queue Length 50th (ft)	32	~557	43	~601	321	5	121	210	0	131	~262
Queue Length 95th (ft)	55	#785	103	#809	431	m11	m#184	#320	m0	m#232	#380
Internal Link Dist (ft)	1481			72			3686			1866	
Turn Bay Length (ft)	220	185	560	667	1092	987	180	501	1583	195	532
Base Capacity (vph)	356	574	560	667	1092	987	180	501	1583	195	532
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.38	1.10	0.32	1.11	0.60	0.15	0.87	0.97	0.18	0.97	1.09

Intersection Summary

Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 117 (98%). Referenced to phase 2:WBT and 6:EBTL, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.11	
Intersection Signal Delay: 69.4	Intersection LOS: E
Intersection Capacity Utilization 103.2%	ICU Level of Service G
Analysis Period (min) 15	
~ Volume exceeds capacity, queue is theoretically infinite.	
Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	
m Volume for 95th percentile queue is metered by upstream signal.	

Baseline
A & R Engineering Inc.

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HCM Signalized Intersection Capacity Analysis
5: SR 9 & Windward Pky

Existing Saturday
6/29/2007

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑	↗	↖	↑	↗	↖	↑	↗	↖	↑	↗
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	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97	0.97
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	3539	1583	1770	3448	
Flt Permitted	0.41	1.00	1.00	0.10	1.00	1.00	0.24	1.00	1.00	0.22	1.00	
Satd. Flow (perm)	772	1863	1583	182	1863	1583	438	3539	1583	414	3448	
Volume (vph)	126	576	162	652	633	118	145	462	261	164	450	92
Peak-hour factor, PHF	0.93	0.91	0.90	0.88	0.96	0.82	0.93	0.95	0.92	0.87	0.94	0.92
Adj. Flow (vph)	135	633	180	741	659	144	156	486	284	189	479	100
RTOR Reduction (vph)	0	0	72	0	0	60	0	0	0	0	14	0
Lane Group Flow (vph)	135	633	108	741	659	84	156	486	284	189	565	0
Turn Type	pm+pt	Perm	pm+pt	Perm	pm+pt	Perm	pm+pt	Free	pm+pt	Free	pm+pt	
Protected Phases	1	6	5	2	7	4	4	3	8			
Permitted Phases	6	6	2	2	4	4	4	Free	8			
Actuated Green, G (s)	44.7	37.0	37.0	82.0	70.3	70.3	25.0	17.0	120.0	27.0	18.0	
Effective Green, g (s)	44.7	37.0	37.0	82.0	70.3	70.3	25.0	17.0	120.0	27.0	18.0	
Actuated g/C Ratio	0.37	0.31	0.31	0.68	0.59	0.59	0.21	0.14	1.00	0.22	0.15	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	352	574	488	667	1091	927	180	501	1583	195	517	
v/s Ratio Prot	0.02	0.34		c0.38	0.35	0.06	0.14		c0.07	c0.16		
v/s Ratio Perm	0.12		0.07	c0.38		0.05	0.12		c0.18	0.15		
v/c Ratio	0.38	1.10	0.22	1.11	0.60	0.09	0.87	0.97	0.18	0.97	1.09	
Uniform Delay, d1	25.6	41.5	30.8	41.7	15.9	10.9	43.9	51.2	0.0	43.6	51.0	
Progression Factor	1.00	1.00	1.00	0.89	0.89	0.46	1.05	1.06	1.00	0.96	0.97	
Incremental Delay, d2	0.7	68.9	1.0	68.9	2.4	0.2	25.0	27.1	0.2	54.5	66.7	
Delay (s)	26.3	110.4	31.9	106.1	16.6	5.2	70.9	81.4	0.2	96.2	116.3	
Level of Service	C	F	C	F	B	A	E	F	A	F	F	
Approach Delay (s)	83.5			58.5			54.7			111.3		
Approach LOS	F			E			D			F		
Intersection Summary												
HCM Average Control Delay	73.0			HCM Level of Service			E					
HCM Volume to Capacity ratio	1.06											
Actuated Cycle Length (s)	120.0			Sum of lost time (s)			8.0					
Intersection Capacity Utilization	103.2%			ICU Level of Service			G					
Analysis Period (min)	15											
Critical Lane Group												

Baseline
A & R Engineering Inc.

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Lanes, Volumes, Timings
6: Windward Pky & Deerfield Pky

Existing Saturday
6/29/2007

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	138	1281	76	138	1392	272	94	85	104	376	260
Act Effct Green (s)	68.7	59.6	59.6	71.3	60.9	120.0	25.0	17.3	17.3	16.7	26.3
Actuated g/C Ratio	0.57	0.50	0.50	0.59	0.51	1.00	0.21	0.14	0.14	0.14	0.22
v/c Ratio	0.69	0.73	0.09	0.59	0.78	0.17	0.34	0.32	0.33	0.78	0.31
Control Delay	29.6	16.2	3.0	25.2	27.0	0.2	34.4	50.6	11.9	61.5	16.2
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	29.6	16.2	3.0	25.2	27.0	0.2	34.4	50.6	11.9	61.5	16.2
LOS	C	B	A	C	C	A	C	D	B	E	B
Approach Delay	16.8										
Approach LOS	B										
Queue Length 50th (ft)	32	377	10	55	387	0	52	61	0	144	23
Queue Length 95th (ft)	m35	m357	m11	m85	470	m0	95	112	51	192	m74
Internal Link Dist (ft)	3686										
Turn Bay Length (ft)	105	180	190	271	1796	1583	276	268	317	515	836
Base Capacity (vph)	229	1759	814	271	1796	1583	276	268	317	515	836
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.60	0.73	0.09	0.51	0.78	0.17	0.34	0.32	0.33	0.73	0.31

Intersection Summary

Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 25 (21%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.78	
Intersection Signal Delay: 24.3	Intersection LOS: C
Intersection Capacity Utilization 70.9%	ICU Level of Service C
Analysis Period (min) 15	
m Volume for 95th percentile queue is metered by upstream signal.	

HCM Signalized Intersection Capacity Analysis
6: Windward Pky & Deerfield Pky

Existing Saturday
6/29/2007

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
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	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	0.97	0.95	0.95
Flt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	1.00	0.85	1.00	0.89
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	0.95
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1863	1583	3433	3164	3164
Flt Permitted	0.08	1.00	1.00	0.10	1.00	1.00	0.59	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	147	3539	1583	182	3539	1583	1101	1863	1583	3433	3164	3164
Volume (vph)	128	1166	68	121	1336	223	87	81	96	327	71	169
Peak-hour factor, PHF	0.93	0.91	0.90	0.88	0.96	0.82	0.93	0.95	0.92	0.87	0.94	0.92
Adj. Flow (vph)	138	1281	76	138	1392	272	94	85	104	376	76	184
RTOR Reduction (vph)	0	0	27	0	0	0	0	0	0	89	0	144
Lane Group Flow (vph)	138	1281	49	138	1392	272	94	85	15	376	116	0
Turn Type	pm+pt	pm+pt	Perm	pm+pt	Free	pm+pt	Free	pm+pt	Perm	Prot	Prot	Prot
Protected Phases	1	6	6	5	2	7	4	7	4	3	8	8
Permitted Phases	6	6	6	2	2	Free	4	4	4	4	4	4
Actuated Green, G (s)	68.7	59.6	59.6	71.3	60.9	120.0	25.0	17.3	17.3	16.7	26.3	26.3
Effective Green, g (s)	68.7	59.6	59.6	71.3	60.9	120.0	25.0	17.3	17.3	16.7	26.3	26.3
Actuated g/C Ratio	0.57	0.50	0.50	0.59	0.51	1.00	0.21	0.14	0.14	0.14	0.22	0.22
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	207	1758	786	246	1796	1583	272	269	228	478	693	693
v/s Ratio Prot	c0.05	0.36	0.03	0.05	c0.39	c0.02	0.05	0.05	c0.11	0.04	0.04	0.04
v/s Ratio Perm	0.33	0.67	0.73	0.06	0.56	0.78	0.17	0.35	0.07	0.79	0.17	0.17
v/c Ratio	0.67	0.73	0.06	0.56	0.78	0.17	0.35	0.32	0.07	0.79	0.17	0.17
Uniform Delay, d1	20.3	23.8	15.7	17.8	24.0	0.0	39.7	46.0	44.4	49.9	38.0	38.0
Progression Factor	1.10	0.62	0.42	1.17	1.00	1.00	1.00	1.00	1.00	0.99	1.23	1.23
Incremental Delay, d2	2.8	0.9	0.1	1.9	2.2	0.2	0.8	3.1	0.6	8.3	0.5	0.5
Delay (s)	25.1	15.8	6.7	22.8	26.3	0.2	40.5	49.1	44.9	57.6	47.4	47.4
Level of Service	C	B	A	C	C	A	D	D	D	E	D	D
Approach Delay (s)	16.2											
Approach LOS	B											

Intersection Summary											
HCM Average Control Delay	26.2										
HCM Volume to Capacity ratio	0.67										
Actuated Cycle Length (s)	120.0										
Intersection Capacity Utilization	70.9%										
Analysis Period (min)	15										
c Critical Lane Group											

Lanes, Volumes, Timings
7: Windward Pky & GA 400 SB Ramp

Existing Saturday
6/29/2007

	EBT	EBR	WBL	WBT	SBL	SBR
Lane Group	EBT	EBR	WBL	WBT	SBL	SBR
Lane Group Flow (vph)	1186	1092	476	2023	104	370
Act Effct Green (s)	73.7	73.7	18.7	96.4	15.6	15.6
Actuated g/C Ratio	0.61	0.61	0.16	0.80	0.13	0.13
v/c Ratio	0.30	0.93	0.89	0.71	0.23	0.89
Control Delay	9.5	25.9	58.8	3.0	48.1	66.2
Queue Delay	0.0	0.0	0.0	1.3	0.0	0.0
Total Delay	9.5	25.9	58.8	4.3	48.1	66.2
LOS	A	C	E	A	D	E
Approach Delay	17.4			14.7		
Approach LOS	B			B		
Queue Length 50th (ft)	90	247	153	353	37	135
Queue Length 95th (ft)	127	#419 m#207	m0	64	#227	
Internal Link Dist (ft)	177			531		
Turn Bay Length (ft)	3936	1169	544	2843	150	150
Base Capacity (vph)	0	0	0	562	0	0
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.93	0.88	0.89	0.23	0.87

Intersection Summary

Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 35 (29%), Referenced to phase 2:WBT and 6:EBT, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.93	
Intersection Signal Delay: 20.1	Intersection LOS: C
Intersection Capacity Utilization 134.4%	ICU Level of Service H
Analysis Period (min) 15	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	
m Volume for 95th percentile queue is metered by upstream signal.	

HCM Signalized Intersection Capacity Analysis
7: Windward Pky & GA 400 SB Ramp

Existing Saturday
6/29/2007

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1111	1111	1111	1111	1111	1111	1111	1111	1111	1111	1111	1111
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	0	0	0	4.0	4.0	4.0	0	0	0	4.0	4.0	4.0
Lane Util. Factor	0.86	1.00	0.85	1.00	0.97	0.95	1.00	0.85	1.00	0.97	0.95	0.88
Flt	1.00	1.00	0.85	1.00	1.00	1.00	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.85	1.00	1.00	1.00	1.00	0.85	1.00	1.00	1.00	0.85
Satd. Flow (prot)	6408	1583	3433	3539	3539	3539	3433	3433	3539	3433	3433	2787
Flt Permitted	1.00	1.00	0.95	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00	0.95
Satd. Flow (perm)	6408	1583	3433	3539	3539	3539	3433	3433	3539	3433	3433	2787
Volume (vph)	0	1115	1092	443	1983	0	0	0	0	96	0	337
Peak-hour factor, PHF	0.92	0.94	1.00	0.93	0.98	0.92	0.92	0.92	0.92	0.92	0.92	0.91
Adj. Flow (vph)	0	1186	1092	476	2023	0	0	0	0	104	0	370
RTOR Reduction (vph)	0	0	196	0	0	0	0	0	0	0	0	55
Lane Group Flow (vph)	0	1186	896	476	2023	0	0	0	0	104	0	315
Turn Type		Perm	Prot	Prot						Prot	custom	
Protected Phases	6	6	5	2						3		
Permitted Phases												
Actuated Green, G (s)	73.7	73.7	18.7	96.4						15.6		15.6
Effective Green, g (s)	73.7	73.7	18.7	96.4						15.6		15.6
Actuated g/C Ratio	0.61	0.61	0.16	0.80						0.13		0.13
Clearance Time (s)	4.0	4.0	4.0	4.0						4.0		4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0						3.0		3.0
Lane Grp Cap (vph)	3936	972	535	2843						446		362
v/s Ratio Prot	0.19	c0.14	0.57							0.03		
v/s Ratio Perm	c0.57											c0.11
v/c Ratio	0.30	0.92	0.89	0.71						0.23		0.87
Uniform Delay, d1	11.0	20.6	49.6	5.4						46.8		51.2
Progression Factor	0.85	1.09	0.96	0.39						1.00		1.00
Incremental Delay, d2	0.2	13.3	9.0	0.7						19.8		19.8
Delay (s)	9.4	35.7	56.8	2.9						47.1		71.0
Level of Service	A	D	E	A						D		E
Approach Delay (s)	22.0			13.1						65.8		
Approach LOS	C			B						E		

Intersection Summary

HCM Average Control Delay	21.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	134.4%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings
8: Windward Pky & GA 400 NB Ramp

Existing Saturday
6/29/2007

	EBL	EBT	WBT	WBR	NBL	NBR
Lane Group	EBL	EBT	WBT	WBR	NBL	NBR
Lane Group Flow (vph)	527	828	1104	96	1585	295
Act Effct Green (s)	21.2	52.7	27.5	27.5	59.3	59.3
Actuated g/C Ratio	0.18	0.44	0.23	0.23	0.49	0.49
v/c Ratio	0.87	0.53	0.75	0.22	0.93	0.20
Control Delay	51.4	26.6	47.5	9.1	39.6	8.4
Queue Delay	0.0	0.0	0.0	0.0	0.1	0.0
Total Delay	51.4	26.6	47.5	9.1	39.6	8.4
LOS	D	C	D	A	D	A
Approach Delay	36.2 44.5					
Approach LOS	D D					
Queue Length 50th (ft)	194	310	239	0	559	33
Queue Length 95th (ft)	#285	378	282	35	#681	57
Internal Link Dist (ft)	531 173					
Turn Bay Length (ft)	629	1553	1467	437	1745	1488
Base Capacity (vph)	0	0	0	0	0	0
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	3	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.84	0.53	0.75	0.22	0.91	0.20
Intersection Summary						
Cycle Length: 120						
Actuated Cycle Length: 120						
Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBT, Start of Green						
Control Type: Actuated-Coordinated						
Maximum v/c Ratio: 0.93						
Intersection Signal Delay: 37.8						
Intersection Capacity Utilization 134.4%						
Analysis Period (min) 15						
# 95th percentile volume exceeds capacity, queue may be longer.						
Queue shown is maximum after two cycles.						

HCM Signalized Intersection Capacity Analysis
8: Windward Pky & GA 400 NB Ramp

Existing Saturday
6/29/2007

Movement	EBL	EBT	WBL	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↔↔	↔↔	↑↑↑↑	↔↔	↔↔	↔↔	↔↔	↔↔	↔↔
Ideal Flow (vphpl)	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	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	0.86	1.00	0.97	0.88	0.85	0.85	0.85
Flt	1.00	1.00	1.00	0.85	1.00	0.95	1.00	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Satd. Flow (prot)	3433	3539	6408	1583	3433	2787	2787	2787	2787
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Satd. Flow (perm)	3433	3539	6408	1583	3433	2787	2787	2787	2787
Volume (vph)	495	787	0	0	1049	79	1458	0	260
Peak-hour factor, PHF	0.94	0.95	0.92	0.95	0.82	0.92	0.88	0.92	0.92
Adj. Flow (vph)	527	828	0	0	1104	96	1585	0	295
RTOR Reduction (vph)	0	0	0	0	74	0	73	0	0
Lane Group Flow (vph)	527	828	0	0	1104	22	1585	0	222
Turn Type	Prot	Prot	Perm	Prot	Prot	custom	custom	custom	custom
Protected Phases	1	6	2	2	7	7	7	7	7
Permitted Phases	21.2	52.7	27.5	27.5	59.3	59.3	59.3	59.3	59.3
Actuated Green, G (s)	21.2	52.7	27.5	27.5	59.3	59.3	59.3	59.3	59.3
Effective Green, g (s)	21.2	52.7	27.5	27.5	59.3	59.3	59.3	59.3	59.3
Actuated g/C Ratio	0.18	0.44	0.23	0.23	0.49	0.49	0.49	0.49	0.49
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	606	1554	1469	363	1696	1377	1377	1377	1377
v/s Ratio Prot	c0.15	0.23	c0.17	c0.46	c0.46	c0.46	c0.46	c0.46	c0.46
v/s Ratio Perm	0.87	0.53	0.75	0.06	0.93	0.16	0.16	0.16	0.16
v/c Ratio	0.87	0.53	0.75	0.06	0.93	0.16	0.16	0.16	0.16
Uniform Delay, d1	48.1	24.6	43.1	36.2	28.5	16.7	16.7	16.7	16.7
Progression Factor	0.74	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	12.4	1.3	3.6	0.3	10.0	0.1	0.1	0.1	0.1
Delay (s)	47.9	25.9	46.7	36.5	38.6	16.7	16.7	16.7	16.7
Level of Service	D	C	D	D	D	B	B	B	B
Approach Delay (s)	34.5	34.5	45.8	45.8	35.1	0.0	0.0	0.0	0.0
Approach LOS	C	C	D	D	D	A	A	A	A
Intersection Summary									
HCM Average Control Delay	37.8			HCM Level of Service			D		
HCM Volume to Capacity ratio	0.87								
Actuated Cycle Length (s)	120.0			Sum of lost time (s)			12.0		
Intersection Capacity Utilization	134.4%			ICU Level of Service			H		
Analysis Period (min)	15								
Critical Lane Group									

Lanes, Volumes, Timings
10: Webb Rd & SR 9

Existing Saturday
6/29/2007



Lane Group	EBT	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	36	124	24	24	748	116	20	747
Sign Control	Stop	Stop	Stop	Free	Free	Free	Free	Free
Intersection Summary								
Control Type: Unsignalized								
Intersection Capacity Utilization 57.1%								
Analysis Period (min) 15								
ICU Level of Service B								

HCM Unsignalized Intersection Capacity Analysis
10: Webb Rd & SR 9

Existing Saturday
6/29/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Grade	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Volume (veh/h)	8	8	8	92	8	14	18	726	102	17	694	9
Peak Hour Factor	0.67	0.67	0.67	0.82	0.67	0.58	0.75	0.97	0.88	0.85	0.95	0.56
Hourly flow rate (vph)	12	12	12	112	12	24	24	748	116	20	731	16
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)						11						
Median type						None						
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
VC, conflicting volume	1581	1691	739	1585	1583	748	747			864		
VC1, stage 1 conf vol												
VC2, stage 2 conf vol												
VCu, unblocked vol	1581	1691	739	1585	1583	748	747			864		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	84	86	97	0	88	94	97			97		
cM capacity (veh/h)	73	88	418	73	103	412	862			778		
Direction, Lane #												
	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2					
Volume Total	36	148	24	748	116	20	747					
Volume Left	12	112	24	0	0	20	0					
Volume Right	12	24	0	0	116	0	16					
cSH	109	90	862	1700	1700	778	1700					
Volume to Capacity	0.33	1.65	0.03	0.44	0.07	0.03	0.44					
Queue Length 95th (ft)	32	299	2	0	0	2	0					
Control Delay (s)	53.3	419.4	9.3	0.0	0.0	9.7	0.0					
Lane LOS	F	F	A	A	A	A	A					
Approach Delay (s)	53.3	419.4	0.3			0.3						
Approach LOS	F	F	F			F						
Intersection Summary												
Average Delay							35.1					
Intersection Capacity Utilization							57.1%					B
Analysis Period (min)							15					

Lanes, Volumes, Timings
11: Morris Rd & Bethany Rd

Existing Saturday
6/29/2007



Lane Group	EBT	WBT	SBL
Lane Group Flow (vph)	386	364	255
Sign Control	Free	Free	Stop
Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 58.2%			
Analysis Period (min) 15			
ICU Level of Service B			

HCM Unsignalized Intersection Capacity Analysis
11: Morris Rd & Bethany Rd

Existing Saturday
6/29/2007



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		4	1		W	
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	104	231	234	84	112	109
Peak Hour Factor	0.84	0.88	0.90	0.81	0.88	0.85
Hourly flow rate (vph)	124	262	260	104	127	128
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
VC, conflicting volume	364				822	312
VC1, stage 1 conf vol						
VC2, stage 2 conf vol						
VCu, unblocked vol	364				822	312
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	90				59	82
cM capacity (veh/h)	1195				308	728
Direction, Lane #						
	EB 1	WB 1	SB 1			
Volume Total	386	364	256			
Volume Left	124	0	127			
Volume Right	0	104	128			
cSH	1195	1700	434			
Volume to Capacity	0.10	0.21	0.59			
Queue Length 95th (ft)	9	0	92			
Control Delay (s)	3.4	0.0	24.5			
Lane LOS	A	C	C			
Approach Delay (s)	3.4	0.0	24.5			
Approach LOS		C				
Intersection Summary						
Average Delay			7.5			
Intersection Capacity Utilization		58.2%			ICU Level of Service	B
Analysis Period (min)		15				

Lanes, Volumes, Timings
12: Windward Village Pky & SR 9

Existing Saturday
6/29/2007

	↖	↗	↘	↙	↑	↓	↕
Movement	EBL	EBR	NBL	NBT	SBT	SBR	
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	
Lane Group Flow (vph)	12	28	40	808	749	16	
Sign Control	Stop			Free	Free		
Intersection Summary							
Control Type: Unsignalized							
Intersection Capacity Utilization	50.4%						ICU Level of Service A
Analysis Period (min)	15						

HCM Unsignalized Intersection Capacity Analysis
12: Windward Village Pky & SR 9

Existing Saturday
6/29/2007

	↖	↗	↘	↙	↑	↓	↕
Movement	EBL	EBR	NBL	NBT	SBT	SBR	
Lane Configurations	↖	↗	↘	↙	↑	↓	
Sign Control	Stop			Free	Free		
Grade	0%			0%	0%		
Volume (veh/h)	10	22	33	768	727	12	
Peak Hour Factor	0.83	0.79	0.82	0.95	0.97	0.75	
Hourly flow rate (vph)	12	28	40	808	749	16	
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type	None						
Median storage (veh)							
Upstream signal (ft)							
pX, platoon unblocked							
VC, conflicting volume	1638	749	749				
VC1, stage 1 conf vol							
VC2, stage 2 conf vol							
VCu, unblocked vol	1638	749	749				
tC, single (s)	6.4	6.2	4.1				
tC, 2 stage (s)							
tF (s)	3.5	3.3	2.2				
p0 queue free %	89	93	95				
cM capacity (veh/h)	105	412	860				
Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1	SB 2	
Volume Total	12	28	40	808	749	16	
Volume Left	12	0	40	0	0	0	
Volume Right	0	28	0	0	0	16	
cSH	105	412	860	1700	1700	1700	
Volume to Capacity	0.11	0.07	0.05	0.48	0.44	0.01	
Queue Length 95th (ft)	9	5	4	0	0	0	
Control Delay (s)	43.6	14.4	9.4	0.0	0.0	0.0	
Lane LOS	E	B	A				
Approach Delay (s)	23.2		0.4		0.0		
Approach LOS	C						
Intersection Summary							
Average Delay	0.8						
Intersection Capacity Utilization	50.4%						ICU Level of Service A
Analysis Period (min)	15						

Lanes, Volumes, Timings
14: Marrywood Dr & SR 9

Existing Saturday
6/29/2007

	↖	↗	↑	↓	↘
Movement	EBL	NBL	SBT	SBT	SBR
Lane Group	44	32	770	785	20
Lane Group Flow (vph)	44	32	770	785	20
Sign Control	Stop	Free	Free	Free	Free
Intersection Summary					
Control Type: Unsignalized					
Intersection Capacity Utilization 48.9%					
Analysis Period (min) 15					
ICU Level of Service A					

HCM Unsignalized Intersection Capacity Analysis
14: Marrywood Dr & SR 9

Existing Saturday
6/29/2007

	↖	↗	↑	↓	↘
Movement	EBL	EBR	NBL	SBT	SBR
Lane Configurations	W		W	W	W
Sign Control	Stop		Free	Free	Free
Grade	0%		0%	0%	0%
Volume (veh/h)	8	26	26	739	730
Peak Hour Factor	0.67	0.81	0.81	0.96	0.93
Hourly flow rate (vph)	12	32	32	770	785
Pedestrians					
Lane Width (ft)					
Walking Speed (ft/s)					
Percent Blockage					
Right turn flare (veh)					
Median type					
Median storage (veh)					
Upstream signal (ft)					
pX, platoon unblocked					
VC, conflicting volume	1619	785	805		
VC1, stage 1 conf vol					
VC2, stage 2 conf vol					
vCu, unblocked vol	1619	785	805		
tC, single (s)	6.4	6.2	4.1		
tC, 2 stage (s)					
tF (s)	3.5	3.3	2.2		
p0 queue free %	89	92	96		
cM capacity (veh/h)	109	393	819		
Direction, Lane #					
	EB 1	NB 1	SB 1	SB 2	
Volume Total	44	32	770	785	20
Volume Left	12	32	0	0	0
Volume Right	32	0	0	0	20
cSH	230	819	1700	1700	
Volume to Capacity	0.19	0.04	0.45	0.46	0.01
Queue Length 95th (ft)	17	3	0	0	0
Control Delay (s)	24.3	9.6	0.0	0.0	0.0
Lane LOS	C	A			
Approach Delay (s)	24.3	0.4		0.0	
Approach LOS	C				
Intersection Summary					
Average Delay			0.8		
Intersection Capacity Utilization			48.9%		A
Analysis Period (min)			15		

Base PM Intersection Analysis

Base 2009 PM

Lanes, Volumes, Timings
1: Bethany Rd & Cogburn Rd

Base PM
6/29/2007

Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	310	587	202	602	66	313
Act Effct Green (s)	50.5	50.5	61.5	61.5	61.5	61.5
Actuated g/C Ratio	0.42	0.42	0.51	0.51	0.51	0.51
v/c Ratio	0.46	0.79	0.45	0.64	0.33	0.33
Control Delay	24.1	18.6	13.9	14.2	24.9	19.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.1	18.6	13.9	14.2	24.9	19.0
LOS	C	B	B	B	C	B
Approach Delay	24.1	18.6	14.1	20.0		
Approach LOS	C	B	B	C		
Queue Length 50th (ft)	137	147	68	200	32	151
Queue Length 95th (ft)	213	m204	m81	m205	54	221
Internal Link Dist (ft)	1654	2050		3797		1469
Turn Bay Length (ft)			150		150	
Base Capacity (vph)	750	832	448	945	199	944
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.41	0.71	0.45	0.64	0.33	0.33

Intersection Summary

Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 56 (47%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.79	
Intersection Signal Delay: 17.9	Intersection LOS: B
Intersection Capacity Utilization 74.4%	ICU Level of Service D
Analysis Period (min) 15	
m Volume for 95th percentile queue is metered by upstream signal.	

Baseline
A & R Engineering Inc.

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HCM Signalized Intersection Capacity Analysis
1: Bethany Rd & Cogburn Rd

Base PM
6/29/2007

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔		↔	↔		↔	↔	↔	↔	↔	↔
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		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	0.95	0.95		0.96	0.96		0.99	0.99		1.00	0.99	
Flt Protected	0.99	0.99		1.00	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1758	1758		1784	1784		1770	1840		1770	1839	
Flt Permitted	0.84	0.84		0.96	0.96		0.49	1.00		0.26	1.00	
Satd. Flow (perm)	1488	1488		1725	1725		919	1840		478	1839	
Volume (vph)	30	141	95	20	347	150	180	515	43	47	286	19
Peak-hour factor, PHF	0.68	0.93	0.83	0.56	0.91	0.88	0.89	0.93	0.89	0.71	0.93	0.71
Adj. Flow (vph)	44	152	114	36	381	170	202	554	48	66	286	27
RTOR Reduction (vph)	0	19	0	0	13	0	0	2	0	0	2	0
Lane Group Flow (vph)	0	291	0	0	574	0	202	600	0	66	311	0
Turn Type	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm
Protected Phases	8	8		4	4		6	6		2	2	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)	50.5	50.5		50.5	50.5		61.5	61.5		61.5	61.5	
Effective Green, g (s)	50.5	50.5		50.5	50.5		61.5	61.5		61.5	61.5	
Actuated g/C Ratio	0.42	0.42		0.42	0.42		0.51	0.51		0.51	0.51	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	626	626		726	726		471	943		245	942	
v/s Ratio Prot								c0.33			0.17	
v/s Ratio Perm	0.20	0.20		c0.33	0.33		0.22			0.14		
v/c Ratio	0.46	0.46		0.79	0.79		0.43	0.64		0.27	0.33	
Uniform Delay, d1	25.0	25.0		30.2	30.2		18.3	21.2		16.5	17.2	
Progression Factor	1.00	1.00		0.52	0.52		0.52	0.49		1.00	1.00	
Incremental Delay, d2	0.5	0.5		2.3	2.3		2.7	3.1		2.7	0.9	
Delay (s)	25.6	25.6		18.1	18.1		12.2	13.5		19.2	18.1	
Level of Service	C	C		B	B		B	B		B	B	
Approach Delay (s)	25.6	25.6		18.1	18.1		13.2			18.3		
Approach LOS	C	C		B	B							

Intersection Summary

HCM Average Control Delay	17.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	74.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Baseline
A & R Engineering Inc.

Synchro 6 Report
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	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	136	127	60	103	334	163	899	44	857
Act Effct Green (s)	10.0	20.8	20.8	11.2	22.0	12.0	66.6	7.3	60.0
Actuated g/C Ratio	0.08	0.17	0.17	0.09	0.18	0.10	0.56	0.06	0.50
v/c Ratio	0.92	0.39	0.19	0.62	0.99	0.92	0.88	0.41	0.94
Control Delay	109.0	48.4	14.4	68.7	92.9	109.2	31.3	65.4	46.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	109.0	48.4	14.4	68.7	92.9	109.2	31.3	65.4	46.7
LOS	F	D	B	E	F	F	C	E	D
Approach Delay	67.6								
Approach LOS	E								
Queue Length 50th (ft)	109	80	6	77	252	122	655	33	600
Queue Length 95th (ft)	#195	m146	12	108	#446	m#190	m#863	54	#778
Internal Link Dist (ft)	2050								
Turn Bay Length (ft)	150	275	250	150	3113	150	4282	150	1558
Base Capacity (vph)	148	323	324	192	339	177	1024	118	914
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.92	0.39	0.19	0.54	0.99	0.92	0.88	0.37	0.94

Intersection Summary

Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 6 (5%), Referenced to phase 2:SBT and 6:NBT, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.99	
Intersection Signal Delay: 54.7	Intersection LOS: D
Intersection Capacity Utilization 82.1%	ICU Level of Service E
Analysis Period (min) 15	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	
m Volume for 95th percentile queue is metered by upstream signal.	

	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Movement	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔
Ideal Flow (vphpl)	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	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.96	1.00	0.99	1.00	0.97
Flt Protected	0.95	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1770	1863	1583	1770	1793	1770	1840	1770	1814
Flt Permitted	0.95	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	1770	1863	1583	1770	1793	1770	1840	1770	1814
Volume (vph)	109	112	36	75	228	55	129	776	53
Peak-hour factor, PHF	0.80	0.88	0.60	0.73	0.91	0.66	0.79	0.94	0.73
Adj. Flow (vph)	136	127	60	103	251	83	163	826	73
RTOR Reduction (vph)	0	0	50	0	10	0	0	3	0
Lane Group Flow (vph)	136	127	10	103	324	0	163	896	0
Turn Type	Prot	Perm	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Protected Phases	3	8	8	7	4	1	6	5	2
Permitted Phases									
Actuated Green, G (s)	10.0	20.8	20.8	11.2	22.0	12.0	65.8	6.2	60.0
Effective Green, g (s)	10.0	20.8	20.8	11.2	22.0	12.0	65.8	6.2	60.0
Actuated g/C Ratio	0.08	0.17	0.17	0.09	0.18	0.10	0.55	0.05	0.50
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	148	323	274	165	329	177	1009	91	907
v/s Ratio Prot	c0.08	0.07		0.06	c0.18	c0.09	0.49	0.02	c0.47
v/s Ratio Perm			0.01						
v/c Ratio	0.92	0.39	0.04	0.62	0.99	0.92	0.89	0.48	0.94
Uniform Delay, d1	54.6	44.0	41.3	52.4	48.8	53.5	23.9	55.3	28.2
Progression Factor	1.02	0.99	1.19	1.00	1.00	1.15	0.83	1.00	1.00
Incremental Delay, d2	48.0	0.7	0.1	7.2	45.3	44.3	11.2	4.0	18.1
Delay (s)	103.7	44.5	49.3	59.5	94.1	105.6	31.1	59.3	46.4
Level of Service	F	D	D	E	F	F	C	E	D
Approach Delay (s)	70.3								
Approach LOS	E								

Intersection Summary

HCM Average Control Delay	54.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	82.1%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBT	EBT	EBR	WBT	WBT	WBR	NBL	NBT	SBT
Lane Group Flow (vph)	230	57	292	128	110	841	437		
Act Effct Green (s)	27.1	27.1	27.1	27.1	27.1	84.9	73.7		
Actuated g/C Ratio	0.23	0.23	0.23	0.23	0.23	0.71	0.61		
v/c Ratio	0.62	0.14	0.88	0.30	0.20	0.34	0.30		
Control Delay	41.0	5.4	70.5	14.3	4.4	4.3	17.1		
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Total Delay	41.0	5.4	70.5	14.3	4.4	4.3	17.1		
LOS	D	A	E	B	A	A	B		
Approach Delay	33.9		53.4			4.3	17.1		
Approach LOS	C		D			A	B		
Queue Length 50th (ft)	132	1	220	25	14	52	100		
Queue Length 95th (ft)	m150	m4	295	69	m23	m148	m126		
Internal Link Dist (ft)	1660		1492			2619	3319		
Turn Bay Length (ft)	135		75	230					
Base Capacity (vph)	657	667	589	686	664	2445	1475		
Starvation Cap Reductn	0	0	0	0	0	0	0		
Spillback Cap Reductn	0	0	0	0	0	0	0		
Storage Cap Reductn	0	0	0	0	0	0	0		
Reduced v/c Ratio	0.35	0.09	0.50	0.19	0.17	0.34	0.30		

Intersection Summary

Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 4 (3%), Referenced to phase 2:SBTL and 6:NBT, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.88	
Intersection Signal Delay: 20.9	Intersection LOS: C
Intersection Capacity Utilization 67.8%	ICU Level of Service C
Analysis Period (min) 15	
m Volume for 95th percentile queue is metered by upstream signal.	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations	4	4	4	4	4	4	4	4	4	4	4
Ideal Flow (vphpl)	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	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.98	0.95	0.95
Flt Protected	0.99	1.00	0.98	1.00	0.98	1.00	0.95	1.00	0.99	0.99	0.99
Satd. Flow (prot)	1844	1583	1834	1583	1770	3441	3441	3441	3449	3449	3449
Flt Permitted	0.58	1.00	0.55	1.00	0.45	1.00	0.70	0.70	0.70	0.70	0.70
Satd. Flow (perm)	1075	1583	1024	1583	847	3441	2429	2429	2429	2429	2429
Volume (vph)	35	169	47	69	184	115	79	637	103	64	232
Peak-hour factor, PHF	0.73	0.93	0.83	0.75	0.92	0.90	0.72	0.93	0.66	0.81	0.75
Adj. Flow (vph)	48	182	57	92	200	128	110	685	156	79	309
RTOR Reduction (vph)	0	0	44	0	0	68	0	10	0	0	5
Lane Group Flow (vph)	0	230	13	0	292	60	110	831	0	0	432
Turn Type	Perm	Perm	Perm	Perm	Perm	pm+pt	Perm	Perm	Perm	Perm	Perm
Protected Phases	8	8	4	4	4	1	6	1	6	2	2
Permitted Phases	8	8	4	4	4	6	6	6	6	2	2
Actuated Green, G (s)	27.1	27.1	27.1	27.1	27.1	84.9	84.9	84.9	84.9	73.7	73.7
Effective Green, g (s)	27.1	27.1	27.1	27.1	27.1	84.9	84.9	84.9	84.9	73.7	73.7
Actuated g/C Ratio	0.23	0.23	0.23	0.23	0.23	0.71	0.71	0.71	0.71	0.61	0.61
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	243	357	357	231	357	655	2435	1492	1492	1492	1492
v/s Ratio Prot	0.21	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.18	0.18
v/s Ratio Perm	0.95	0.04	0.04	0.04	0.04	0.11	0.11	0.11	0.11	0.29	0.29
Uniform Delay, d1	45.7	36.3	36.3	46.5	37.4	5.7	6.8	6.8	6.8	10.9	10.9
Progression Factor	0.84	0.59	0.59	1.00	1.00	0.55	0.55	0.55	0.55	1.38	1.38
Incremental Delay, d2	39.8	0.0	0.0	148.6	0.2	0.1	0.3	0.3	0.3	0.4	0.4
Delay (s)	78.3	21.4	21.4	195.1	37.6	3.3	4.0	4.0	4.0	15.4	15.4
Level of Service	E	C	C	F	D	A	A	A	A	B	B
Approach Delay (s)	67.0			147.1			3.9			15.4	
Approach LOS	E			F			A			B	

Intersection Summary

HCM Average Control Delay	43.7	HCM Level of Service	D
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	67.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	209	121	149	809	23	524
Act Effct Green (s)	20.5	20.5	89.9	87.3	87.3	81.4
Actuated g/C Ratio	0.17	0.17	0.75	0.73	0.73	0.68
v/c Ratio	0.83	0.40	0.29	0.32	0.06	0.22
Control Delay	67.3	39.3	2.9	2.2	4.2	6.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	67.3	39.3	2.9	2.2	4.2	6.7
LOS	E	D	A	A	A	A
Approach Delay	67.3	39.3	2.3	2.3	6.5	6.5
Approach LOS	E	D	A	A	A	A
Queue Length 50th (ft)	142	72	9	27	3	63
Queue Length 95th (ft)	123	m101	m17	m40	m7	94
Internal Link Dist (ft)	2012	2515		1866		556
Turn Bay Length (ft)			150		150	
Base Capacity (vph)	482	582	692	2559	549	2338
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.21	0.22	0.32	0.04	0.22

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 80 (67%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.83
Intersection Signal Delay: 13.4
Intersection Capacity Utilization 52.0%
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔	↔		↔	↔	↔	↔	↔	↔
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		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Flt	0.95	0.95		0.95	0.95		1.00	0.99		1.00	0.97	
Flt Protected	0.97	0.97		0.99	0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1730	1730		1760	1760		1770	3514		1770	3433	
Flt Permitted	0.65	0.65		0.92	0.92		0.42	1.00		0.33	1.00	
Satd. Flow (perm)	1164	1164		1639	1639		787	3514		619	3433	
Volume (vph)	105	14	60	15	48	30	139	747	35	14	377	68
Peak-hour factor, PHF	0.91	0.60	0.84	0.70	0.83	0.72	0.93	0.97	0.89	0.60	0.90	0.65
Adj. Flow (vph)	115	23	71	21	58	42	149	770	39	23	419	105
RTOR Reduction (vph)	0	19	0	0	20	0	0	1	0	0	9	0
Lane Group Flow (vph)	0	190	0	0	101	0	149	808	0	23	515	0
Turn Type	Perm	Perm	Perm	Perm	Perm	Perm	pm+pt	pm+pt	pm+pt	pm+pt	pm+pt	pm+pt
Protected Phases	8	8	1	4	4	4	1	6	5	5	2	2
Permitted Phases	8	8	1	4	4	4	1	6	5	5	2	2
Actuated Green, G (s)	20.5	20.5	20.5	20.5	20.5	20.5	91.1	85.0	83.9	81.4	81.4	81.4
Effective Green, g (s)	20.5	20.5	20.5	20.5	20.5	20.5	91.1	85.0	83.9	81.4	81.4	81.4
Actuated g/C Ratio	0.17	0.17	0.17	0.17	0.17	0.17	0.76	0.71	0.70	0.68	0.68	0.68
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	199	199	199	280	280	280	647	2489	457	2329	2329	2329
v/s Ratio Prot							c0.01	c0.23	0.00	0.15	0.15	0.15
v/s Ratio Perm	c0.16	c0.16	c0.16	0.06	0.06	0.06	0.16	0.16	0.03	0.03	0.03	0.03
v/c Ratio	0.95	0.95	0.95	0.36	0.36	0.36	0.23	0.32	0.05	0.22	0.22	0.22
Uniform Delay, d1	49.3	49.3	49.3	44.0	44.0	44.0	4.0	6.6	5.5	7.3	7.3	7.3
Progression Factor	1.00	1.00	1.00	1.06	1.06	1.06	0.38	0.27	0.80	0.83	0.83	0.83
Incremental Delay, d2	50.4	50.4	50.4	0.8	0.8	0.8	1.7	2.1	4.5	6.3	6.3	6.3
Delay (s)	99.7	99.7	99.7	47.5	47.5	47.5	1.7	2.1	4.5	6.3	6.3	6.3
Level of Service	F	F	F	D	D	D	A	A	A	A	A	A
Approach Delay (s)	99.7	99.7	99.7	47.5	47.5	47.5	2.0	2.0	6.2	6.2	6.2	6.2
Approach LOS	F	F	F	D	D	D	A	A	A	A	A	A

Intersection Summary

HCM Average Control Delay	17.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	52.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings
5: SR 9 & Windward Pky

Base PM
6/29/2007

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	189	503	360	276	551	129	580	759	295	172	551
Act Effct Green (s)	42.0	34.0	34.0	53.0	41.0	41.0	59.0	42.4	120.0	31.6	19.0
Actuated g/C Ratio	0.35	0.28	0.28	0.44	0.34	0.34	0.49	0.35	1.00	0.26	0.16
v/c Ratio	0.99	0.95	0.57	0.98	0.86	0.21	0.98	0.61	0.19	0.59	0.96
Control Delay	91.8	71.9	14.9	75.3	42.6	3.6	40.0	23.9	0.1	28.0	75.4
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	91.8	71.9	14.9	75.3	42.6	3.6	40.0	23.9	0.1	28.0	75.4
LOS	F	E	B	E	D	A	D	C	A	C	E
Approach Delay	56.0										
Approach LOS	E										
Queue Length 50th (ft)	90	383	64	155	394	13	319	284	0	63	206
Queue Length 95th (ft)	#212	#598	126 m#258	m#499	m18 m#512	m320	m0	m108	m#322	1866	
Internal Link Dist (ft)	1481										
Turn Bay Length (ft)	220	185	629	283	637	618	593	1252	1583	329	574
Base Capacity (vph)	190	528	629	283	637	618	593	1252	1583	329	574
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.99	0.95	0.57	0.98	0.86	0.21	0.98	0.61	0.19	0.52	0.96

Intersection Summary

Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 80 (67%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.99	
Intersection Signal Delay: 43.8	Intersection LOS: D
Intersection Capacity Utilization 97.0%	ICU Level of Service F
Analysis Period (min) 15	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	
m Volume for 95th percentile queue is metered by upstream signal.	

Baseline
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HCM Signalized Intersection Capacity Analysis
5: SR 9 & Windward Pky

Base PM
6/29/2007

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
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	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.95	1.00
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	3539	1583	1770	3382	
Flt Permitted	0.14	1.00	1.00	0.11	1.00	1.00	0.17	1.00	1.00	0.36	1.00	
Satd. Flow (perm)	255	1863	1583	196	1863	1583	324	3539	1583	678	3382	
Volume (vph)	159	488	295	237	518	94	545	736	242	158	372	137
Peak-hour factor, PHF	0.84	0.97	0.82	0.86	0.94	0.73	0.94	0.97	0.82	0.92	0.96	0.84
Adj. Flow (vph)	189	503	360	276	551	129	580	759	295	172	388	163
RTOR Reduction (vph)	0	0	181	0	0	77	0	0	0	0	39	0
Lane Group Flow (vph)	189	503	179	276	551	52	580	759	295	172	512	0
Turn Type	pm+pt	1	6	5	2	7	4		Free	pm+pt		
Protected Phases												
Permitted Phases	6		6	2		2	4		Free	3	8	
Actuated Green, G (s)	42.0	34.0	34.0	53.0	41.0	41.0	59.0	42.4	120.0	31.6	19.0	
Effective Green, g (s)	42.0	34.0	34.0	53.0	41.0	41.0	59.0	42.4	120.0	31.6	19.0	
Actuated g/C Ratio	0.35	0.28	0.28	0.44	0.34	0.34	0.49	0.35	1.00	0.26	0.16	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	190	528	449	283	637	541	593	1250	1583	293	535	
v/s Ratio Prot	0.07	0.27		c0.12	0.30		c0.29	0.21		0.06	0.15	
v/s Ratio Perm	0.28		0.11	c0.31		0.03	c0.19		0.19	0.09		
v/c Ratio	0.99	0.95	0.40	0.98	0.86	0.10	0.98	0.61	0.19	0.59	0.96	
Uniform Delay, d1	34.3	42.2	34.8	35.0	36.9	26.9	33.0	31.9	0.0	36.1	50.1	
Progression Factor	1.00	1.00	1.00	0.91	0.76	0.46	0.50	0.70	1.00	0.91	1.01	
Incremental Delay, d2	63.4	29.0	2.6	43.8	13.4	0.3	21.1	1.1	0.1	3.0	29.4	
Delay (s)	97.8	71.2	37.4	75.8	41.6	12.6	37.4	23.4	0.1	35.9	80.2	
Level of Service	F	E	D	E	D	B	D	C	A	D	F	
Approach Delay (s)	64.4											
Approach LOS	E											
Intersection Summary												
HCM Average Control Delay	46.5											
HCM Volume to Capacity ratio	0.95											
Actuated Cycle Length (s)	120.0											
Intersection Capacity Utilization	97.0%											
Analysis Period (min)	15											
Critical Lane Group												

Baseline
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Lanes, Volumes, Timings
6: Windward Pky & Deerfield Pky

Base PM
6/29/2007

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	159	1146	94	280	1529	664	140	294	363	399	499
Act Effct Green (s)	57.9	48.9	48.9	69.7	57.0	120.0	33.0	22.2	22.2	15.8	27.1
Actuated g/C Ratio	0.48	0.41	0.41	0.58	0.48	1.00	0.28	0.18	0.18	0.13	0.23
v/c Ratio	0.81	0.79	0.14	0.89	0.91	0.42	0.53	0.85	0.75	0.88	0.57
Control Delay	45.2	41.3	13.0	48.7	31.4	0.4	35.9	70.8	26.5	70.6	31.0
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	45.2	41.3	13.0	48.7	31.4	0.4	35.9	70.8	26.5	70.6	31.0
LOS	D	D	B	D	C	A	D	E	C	E	C
Approach Delay	39.9			25.0			44.5			48.6	
Approach LOS	D			C			D			D	
Queue Length 50th (ft)	64	470	20	152	582	0	76	223	92	161	124
Queue Length 95th (ft) m#119	523	m43	m191	m627	m0	100	#339	211	m#230	m167	
Internal Link Dist (ft)	3686			1731			1018			2058	
Turn Bay Length (ft)	105	180	190	215	155					195	
Base Capacity (vph)	197	1442	682	342	1681	1583	279	344	486	458	874
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.81	0.79	0.14	0.82	0.91	0.42	0.50	0.85	0.75	0.87	0.57

Intersection Summary

Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 41 (34%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.91	
Intersection Signal Delay: 35.3	Intersection LOS: D
Intersection Capacity Utilization 84.8%	ICU Level of Service E
Analysis Period (min) 15	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	
m Volume for 95th percentile queue is metered by upstream signal.	

Baseline
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HCM Signalized Intersection Capacity Analysis
6: Windward Pky & Deerfield Pky

Base PM
6/29/2007

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
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	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	0.97	0.95	0.95
Flt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	1.00	0.85	1.00	0.93
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	0.95
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1863	1583	3433	3290	
Flt Permitted	0.08	1.00	1.00	0.08	1.00	1.00	0.32	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	152	3539	1583	149	3539	1583	599	1863	1583	3433	3290	
Volume (vph)	140	1077	77	232	1468	604	102	250	327	351	225	173
Peak-hour factor, PHF	0.88	0.94	0.82	0.83	0.96	0.91	0.73	0.85	0.90	0.88	0.85	0.74
Adj. Flow (vph)	159	1146	94	280	1529	664	140	294	363	399	265	234
RTOR Reduction (vph)	0	0	37	0	0	0	0	0	193	0	131	0
Lane Group Flow (vph)	159	1146	57	280	1529	664	140	294	170	399	368	0
Turn Type	pm+pt	pm+pt	Perm	pm+pt	Free	pm+pt	Free	pm+pt	Perm	Prot	Prot	
Protected Phases	1	6	6	5	2	2	7	4	3	3	8	
Permitted Phases	6	6	6	2	2	2	Free	4	4	4	4	
Actuated Green, G (s)	57.9	48.9	48.9	70.0	57.0	120.0	33.1	22.2	22.2	15.8	27.1	
Effective Green, g (s)	57.9	48.9	48.9	70.0	57.0	120.0	33.1	22.2	22.2	15.8	27.1	
Actuated g/C Ratio	0.48	0.41	0.41	0.58	0.48	1.00	0.28	0.18	0.18	0.13	0.23	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	195	1442	645	318	1681	1583	272	345	293	452	743	
v/s Ratio Prot	0.06	0.32		c0.13	c0.43		0.05	c0.16		c0.12	0.11	
v/s Ratio Perm	0.33	0.04	0.04	0.39		0.42	0.10		0.11			
v/c Ratio	0.82	0.79	0.09	0.88	0.91	0.42	0.51	0.85	0.58	0.88	0.50	
Uniform Delay, d1	26.8	31.2	21.8	34.8	29.1	0.0	34.4	47.3	44.6	51.2	40.5	
Progression Factor	0.76	1.17	1.33	1.09	0.92	1.00	1.00	1.00	1.00	0.97	1.04	
Incremental Delay, d2	18.5	3.7	0.2	11.8	4.2	0.4	1.6	22.5	8.1	17.9	2.3	
Delay (s)	38.9	40.3	29.2	49.7	30.9	0.4	36.1	69.8	52.8	67.3	44.5	
Level of Service	D	D	C	D	C	A	D	E	D	E	D	
Approach Delay (s)	39.4			24.8			56.1			54.7		
Approach LOS	D			C			E			D		

Intersection Summary

HCM Average Control Delay	37.8	HCM Level of Service	D
HCM Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	84.8%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Baseline
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Lane Group	EBT	EBR	WBL	WBT	SBL	SBR
Lane Group	1263	1090	1022	2455	137	406
Lane Group Flow (vph)	62.0	62.0	32.0	98.0	14.0	14.0
Act Effct Green (s)	0.52	0.52	0.27	0.82	0.12	0.12
Actuated g/C Ratio	0.38	1.11	1.12	0.85	0.34	1.15
w/c Ratio	0.89	74.8	108.2	12.7	51.4	138.6
Control Delay	0.0	0.0	0.0	0.9	0.0	0.0
Queue Delay	0.0	0.0	0.0	0.9	0.0	0.0
Total Delay	8.9	74.8	108.2	13.5	51.4	138.6
LOS	A	E	F	B	D	F
Approach Delay	39.4				41.4	
Approach LOS	D			D		
Queue Length 50th (ft)	89	~854	~484	361	51	~197
Queue Length 95th (ft)	104m	1170 m	548	m423	83	#311
Internal Link Dist (ft)	177			531		
Turn Bay Length (ft)					150	150
Base Capacity (vph)	3311	980	915	2890	401	353
Starvation Cap Reductn	0	0	0	188	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.38	1.11	1.12	0.91	0.34	1.15
Intersection Summary						
Cycle Length: 120						
Actuated Cycle Length: 120						
Offset: 88 (73%), Referenced to phase 2:WBT and 6:EBT, Start of Green						
Control Type: Actuated-Coordinated						
Maximum v/c Ratio: 1.15						
Intersection Signal Delay: 47.1						
Intersection Capacity Utilization 137.1%						
Analysis Period (min) 15						
~ Volume exceeds capacity, queue is theoretically infinite.						
Queue shown is maximum after two cycles.						
# 95th percentile volume exceeds capacity, queue may be longer.						
Queue shown is maximum after two cycles.						
Volume for 95th percentile queue is metered by upstream signal.						

[illegible]

Movement	EBL	EBT	WBT	WBR	NBL	NBR
Lane Group	EBL	EBT	WBT	WBR	NBL	NBR
Lane Group Flow (vph)	494	976	2162	314	1259	627
Act Effct Green (s)	18.0	66.0	44.0	44.0	46.0	46.0
Actuated g/C Ratio	0.15	0.55	0.37	0.37	0.38	0.38
v/c Ratio	0.96	0.50	0.92	0.42	0.96	0.53
Control Delay	92.2	16.2	43.9	7.5	52.8	21.5
Queue Delay	0.0	0.0	0.0	0.0	1.3	0.0
Total Delay	92.2	16.2	43.9	7.5	54.1	21.5
LOS	F	B	D	A	D	C
Approach Delay	41.7 39.3					
Approach LOS	D D					
Queue Length 50th (ft)	211	166	461	27	484	148
Queue Length 95th (ft)	#308	222	515	96	#634	210
Internal Link Dist (ft)	531 173					
Turn Bay Length (ft)	150 150					
Base Capacity (vph)	515	1946	2350	746	1316	1181
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	15	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.96	0.50	0.92	0.42	0.97	0.53
Intersection Summary						
Cycle Length: 120						
Actuated Cycle Length: 120						
Offset: 83 (69%), Referenced to phase 2:WBT and 6:EBT, Start of Green						
Control Type: Actuated-Coordinated						
Maximum v/c Ratio: 0.96						
Intersection Signal Delay: 41.2						
Intersection Capacity Utilization 137.1%						
Analysis Period (min) 15						
# 95th percentile volume exceeds capacity, queue may be longer.						
Queue shown is maximum after two cycles.						

Movement	EBL	EBT	WBT	WBR	NBL	NBR	SBL	SBT	SBR
Lane Configurations	EBL	EBT	WBT	WBR	NBL	NBR	SBL	SBT	SBR
Ideal Flow (vphpl)	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	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	0.86	1.00	0.97	0.88	0.85	0.85	0.85
Flt	1.00	1.00	1.00	0.85	1.00	0.95	1.00	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Satd. Flow (prot)	3433	3539	6408	1583	3433	2787	2787	2787	2787
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Satd. Flow (perm)	3433	3539	6408	1583	3433	2787	2787	2787	2787
Volume (vph)	440	927	0	2011	286	1209	0	589	0
Peak-hour factor, PHF	0.89	0.95	0.92	0.93	0.91	0.96	0.92	0.94	0.92
Adj. Flow (vph)	494	976	0	2162	314	1259	0	627	0
RTOR Reduction (vph)	0	0	0	0	165	0	0	113	0
Lane Group Flow (vph)	494	976	0	2162	149	1259	0	514	0
Turn Type	Prot	Perm	Perm	Prot	custom	custom	0	0	0
Protected Phases	1	6	2	7	7	7	0	0	0
Permitted Phases	18.0	66.0	44.0	44.0	46.0	46.0	46.0	46.0	46.0
Actuated Green, G (s)	18.0	66.0	44.0	44.0	46.0	46.0	46.0	46.0	46.0
Effective Green, g (s)	0.15	0.55	0.37	0.37	0.38	0.38	0.38	0.38	0.38
Actuated g/C Ratio	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Clearance Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Vehicle Extension (s)	515	1946	2350	580	1316	1068	1068	1068	1068
Lane Grp Cap (vph)	c0.14	0.28	60.34	60.34	60.37	60.37	60.37	60.37	60.37
v/s Ratio Prot	0.96	0.50	0.92	0.26	0.96	0.18	0.18	0.18	0.18
v/s Ratio Perm	50.6	16.8	36.3	26.6	36.0	28.0	28.0	28.0	28.0
Uniform Delay, d1	1.25	0.90	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Progression Factor	28.3	0.9	7.3	1.1	15.5	0.3	0.3	0.3	0.3
Incremental Delay, d2	91.4	16.0	43.6	27.6	51.5	28.3	28.3	28.3	28.3
Delay (s)	F	B	D	C	D	C	C	C	C
Level of Service	41.3	41.6	41.6	43.8	43.8	43.8	43.8	43.8	43.8
Approach Delay (s)	D	D	D	D	D	D	D	D	D
Approach LOS	D	D	D	D	D	D	D	D	D
Intersection Summary									
HCM Average Control Delay	42.3 HCM Level of Service								
HCM Volume to Capacity ratio	0.94								
Actuated Cycle Length (s)	120.0 Sum of lost time (s)								
Intersection Capacity Utilization	137.1% ICU Level of Service								
Analysis Period (min)	15								
c Critical Lane Group									

Lanes, Volumes, Timings
9: New Homes Private Drwy & SR 9

Base PM
6/29/2007



Lane Group	EBT	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	4	80	393	4	766	85	233	674
Sign Control	Stop	Stop	Stop	Free	Free	Free	Free	Free
Intersection Summary								
Control Type: Unsignalized								
Intersection Capacity Utilization 72.9%								
Analysis Period (min) 15								
ICU Level of Service C								

HCM Unsignalized Intersection Capacity Analysis
9: New Homes Private Drwy & SR 9

Base PM
6/29/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔		↔		
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Grade	0	0	2	57	7	362	1	705	75	175	634	0
Volume (veh/h)	0.92	0.92	0.50	0.80	0.75	0.92	0.25	0.92	0.88	0.75	0.94	0.92
Peak Hour Factor	0	0	4	71	9	393	4	766	85	233	674	0
Hourly flow rate (vph)	0	0	4	71	9	393	4	766	85	233	674	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type												
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
VC, conflicting volume	1920	1915	674	1919	1915	766	674					766
VC1, stage 1 conf vol												
VC2, stage 2 conf vol												
vCu, unblocked vol	1920	1915	674	1919	1915	766	674					766
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1					4.1
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2					2.2
p0 queue free %	100	100	99	0	81	2	100					72
cM capacity (veh/h)	1	49	454	40	49	403	917					847
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3			
Volume Total	4	81	393	4	766	85	233	674	0			
Volume Left	0	71	0	4	0	0	233	0	0			
Volume Right	4	0	393	0	0	85	0	0	0			
cSH	454	40	403	917	1700	1700	847	1700	1700			
Volume to Capacity	0.01	1.99	0.98	0.00	0.45	0.05	0.28	0.40	0.00			
Queue Length 95th (ft)	1	214	230	0	0	0	28	0	0			
Control Delay (s)	13.0	676.6	71.8	8.9	0.0	0.0	10.9	0.0	0.0			
Lane LOS	B	F	F	A	B	B	B	B	B			
Approach Delay (s)	13.0	174.6		0.0			2.8					
Approach LOS	B	F										
Intersection Summary												
Average Delay	38.1											
Intersection Capacity Utilization	72.9%						ICU Level of Service					
Analysis Period (min)	15						C					

Lanes, Volumes, Timings
10: Webb Rd & SR 9

Base PM
6/29/2007

	→	←	↖	↗	↘	↙	↕
Lane Group	EBT	WBT	WBR	NBL	NBT	NBR	SBT
Lane Group Flow (vph)	48	212	94	27	727	190	768
Sign Control	Stop	Stop	Stop	Free	Free	Free	Free
Intersection Summary							
Control Type: Unsignalized							
Intersection Capacity Utilization 61.8%							
Analysis Period (min) 15							
ICU Level of Service B							

Baseline
A & R Engineering Inc.

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HCM Unsignalized Intersection Capacity Analysis
10: Webb Rd & SR 9

Base PM
6/29/2007

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↕			↕			↕		↕		↕	
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	
Grade	0%			0%			0%					0%	
Volume (veh/h)	10	9	11	141	42	77	22	691	175	17	692	33	
Peak Hour Factor	0.58	0.67	0.62	0.94	0.68	0.82	0.83	0.95	0.92	0.75	0.96	0.70	
Hourly flow rate (vph)	17	13	18	150	62	94	27	727	190	23	721	47	
Pedestrians													
Lane Width (ft)													
Walking Speed (ft/s)													
Percent Blockage													
Right turn flare (veh)						11							
Median type						None							
Median storage (veh)													
Upstream signal (ft)													
pX, platoon unblocked													
VC, conflicting volume	1601	1760	744	1571	1594	727	768			918			
VC1, stage 1 conf vol													
VC2, stage 2 conf vol													
vCu, unblocked vol	1601	1760	744	1571	1594	727	768			918			
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1			
tC, 2 stage (s)													
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2			
p0 queue free %	47	83	96	0	39	78	97			97			
cM capacity (veh/h)	32	79	414	71	100	424	846			743			
Direction, Lane #													
Volume Total	48	306	27	727	190	23	768						
Volume Left	17	150	27	0	0	23	0						
Volume Right	18	94	0	0	190	0	47						
cSH	65	106	846	1700	1700	743	1700						
Volume to Capacity	0.74	2.88	0.03	0.43	0.11	0.03	0.45						
Queue Length 95th (ft)	84	722	2	0	0	2	0						
Control Delay (s)	150.4	932.7	9.4	0.0	0.0	10.0	0.0						
Lane LOS	F	F	A	A	A	A	A						
Approach Delay (s)	150.4	932.7	0.3			0.3							
Approach LOS	F	F	F			F							
Intersection Summary													
Average Delay							140.2						
Intersection Capacity Utilization							61.8%						
Analysis Period (min)							15						
							ICU Level of Service	B					

Baseline
A & R Engineering Inc.

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Lane Group	EBT	WBT	SBL
Lane Group Flow (vph)	685	727	238
Sign Control	Free	Free	Stop
Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 95.6%			
Analysis Period (min) 15			
ICU Level of Service F			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		4	1		W	
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	144	492	355	343	116	92
Peak Hour Factor	0.89	0.94	0.98	0.94	0.91	0.83
Hourly flow rate (vph)	162	523	362	365	127	111
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
VC, conflicting volume	727				1392	545
VC1, stage 1 conf vol						
VC2, stage 2 conf vol						
vCu, unblocked vol	727				1392	545
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	82				0	79
cM capacity (veh/h)	876				128	538
Direction, Lane #						
	EB 1	WB 1	SB 1			
Volume Total	685	727	238			
Volume Left	162	0	127			
Volume Right	0	365	111			
cSH	876	1700	198			
Volume to Capacity	0.18	0.43	1.20			
Queue Length 95th (ft)	17	0	308			
Control Delay (s)	4.4	0.0	178.8			
Lane LOS	A	F	F			
Approach Delay (s)	4.4	0.0	178.8			
Approach LOS		F				
Intersection Summary						
Average Delay			27.6			
Intersection Capacity Utilization			95.6%			F
Analysis Period (min)			15			

Lanes, Volumes, Timings
12: Windward Village Pky & SR 9

Base PM
6/29/2007

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	13	41	57	796	734	18
Sign Control	Stop			Free	Free	
Intersection Summary						
Control Type: Unsignalized						
Intersection Capacity Utilization 49.4%						
Analysis Period (min) 15						
ICU Level of Service A						

HCM Unsignalized Intersection Capacity Analysis
12: Windward Village Pky & SR 9

Base PM
6/29/2007

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	9	28	46	748	705	11
Peak Hour Factor	0.67	0.69	0.81	0.94	0.96	0.62
Hourly flow rate (vph)	13	41	57	796	734	18
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
VC, conflicting volume	1644	734	734			
VC1, stage 1 conf vol						
VC2, stage 2 conf vol						
VCu, unblocked vol	1644	734	734			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	87	90	93			
cM capacity (veh/h)	103	420	871			
Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	13	41	57	796	734	18
Volume Left	13	0	57	0	0	0
Volume Right	0	41	0	0	0	18
cSH	103	420	871	1700	1700	1700
Volume to Capacity	0.13	0.10	0.07	0.47	0.43	0.01
Queue Length 95th (ft)	11	8	5	0	0	0
Control Delay (s)	45.3	14.5	9.4	0.0	0.0	0.0
Lane LOS	E	B	A			
Approach Delay (s)	22.2		0.6		0.0	
Approach LOS	C					
Intersection Summary						
Average Delay	1.0					
Intersection Capacity Utilization	49.4%					
ICU Level of Service	A					
Analysis Period (min)	15					



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	7	9	15	830	797	9
Sign Control	Stop	Stop	Free	Free	Free	Free
Intersection Summary						
Control Type: Unsignalized						
Intersection Capacity Utilization 50.2%						
Analysis Period (min) 15						
ICU Level of Service A						



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Sign Control	Stop	Stop	Free	Free	Free	Free
Grade	0%	0%	0%	0%	0%	0%
Volume (veh/h)	6	8	14	764	733	8
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	7	9	15	830	797	9
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
VC, conflicting volume	1658	797	805			
VC1, stage 1 conf vol						
VC2, stage 2 conf vol						
VCu, unblocked vol	1658	797	805			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	94	98	98			
cM capacity (veh/h)	106	387	819			
Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	7	9	15	830	797	9
Volume Left	7	0	15	0	0	0
Volume Right	0	9	0	0	0	9
cSH	106	387	819	1700	1700	1700
Volume to Capacity	0.06	0.02	0.02	0.49	0.47	0.01
Queue Length 95th (ft)	5	2	1	0	0	0
Control Delay (s)	41.4	14.5	9.5	0.0	0.0	0.0
Lane LOS	E	B	A			
Approach Delay (s)	26.0		0.2	0.0		
Approach LOS	D					
Intersection Summary						
Average Delay	0.3					
Intersection Capacity Utilization	50.2%					
ICU Level of Service	A					
Analysis Period (min)	15					

Lane Group	EBL	NBL	SBT	SBT	SBT
Lane Group Flow (vph)	35	35	833	728	21
Sign Control	Stop	Free	Free	Free	Free
Intersection Summary					
Control Type: Unsignalized					
Intersection Capacity Utilization 51.6%					
Analysis Period (min) 15					
ICU Level of Service A					

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Sign Control	Stop	Stop	Free	Free	Free	Free
Grade	0%	0%	0%	0%	0%	0%
Volume (veh/h)	10	18	25	791	677	15
Peak Hour Factor	0.75	0.80	0.72	0.95	0.93	0.70
Hourly flow rate (vph)	13	22	35	833	728	21
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
VC, conflicting volume	1630	728	749			
VC1, stage 1 conf vol						
VC2, stage 2 conf vol						
vCu, unblocked vol	1630	728	749			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	88	95	96			
cM capacity (veh/h)	107	423	860			
Direction, Lane #						
	EB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	36	35	833	728	21	
Volume Left	13	35	0	0	0	
Volume Right	22	0	0	0	21	
cSH	202	860	1700	1700	1700	
Volume to Capacity	0.18	0.04	0.49	0.43	0.01	
Queue Length 95th (ft)	16	3	0	0	0	
Control Delay (s)	26.6	9.4	0.0	0.0	0.0	
Lane LOS	D	A				
Approach Delay (s)	26.6	0.4		0.0		
Approach LOS	D					
Intersection Summary						
Average Delay	0.8					
Intersection Capacity Utilization	51.6%					
ICU Level of Service	A					
Analysis Period (min)	15					

Base 2009 PM Improved

Lanes, Volumes, Timings
5: SR 9 & Windward Pky

Base PM - Improved
6/29/2007

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	189	503	360	276	551	129	580	759	295	172	388	163
Ideal Flow (vphpl)	46.0	37.0	37.0	10.0	38.0	38.0	41.0	41.2	120.0	15.8	16.0	16.0
Total Lost time (s)	0.38	0.31	0.31	0.08	0.32	0.32	0.34	0.34	1.00	0.13	0.13	0.13
Actuated g/C Ratio	0.97	0.88	0.54	0.97	0.93	0.22	0.96	0.62	0.19	0.74	0.82	0.46
Control Delay	103.6	57.1	12.8	92.6	61.3	9.5	41.3	18.1	0.1	74.3	69.8	17.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	103.6	57.1	12.8	92.6	61.3	9.5	41.3	18.1	0.1	74.3	69.8	17.0
LOS	F	E	B	F	E	A	D	B	A	E	E	B
Approach Delay	50.3											
Approach LOS	D											
Queue Length 50th (ft)	93	368	57	109	399	6	427	185	0	135	162	11
Queue Length 95th (ft)	#217	#561	113	#183	#623	30	m#559	m244	m0	m204	m#231	m56
Internal Link Dist (ft)	1481											
Turn Bay Length (ft)	220	185	669	286	590	579	605	1216	1583	295	472	352
Base Capacity (vph)	195	574	669	286	590	579	605	1216	1583	295	472	352
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.97	0.88	0.54	0.97	0.93	0.22	0.96	0.62	0.19	0.58	0.82	0.46

Intersection Summary

Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 48 (40%), Referenced to phase 2:WBT and 6:EBTL, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.97	
Intersection Capacity Delay: 44.4	Intersection LOS: D
Intersection Capacity Utilization 89.9%	ICU Level of Service E
Analysis Period (min) 15	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	
m Volume for 95th percentile queue is metered by upstream signal.	

Baseline
A & R Engineering Inc.

Synchro 6 Report
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HCM Signalized Intersection Capacity Analysis
5: SR 9 & Windward Pky

Base PM - Improved
6/29/2007

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	189	503	360	276	551	129	580	759	295	172	388	163
Ideal Flow (vphpl)	46.0	37.0	37.0	10.0	38.0	38.0	41.0	41.2	120.0	15.8	16.0	16.0
Total Lost time (s)	0.38	0.31	0.31	0.08	0.32	0.32	0.34	0.34	1.00	0.13	0.13	0.13
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	0.97	1.00	0.95	1.00	0.85	1.00	0.85
Fit Protected	0.95	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95
Satd. Flow (prot)	1770	1863	1583	3433	1863	1583	1770	3539	1583	1770	3539	1583
Fit Permitted	0.11	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Satd. Flow (perm)	201	1863	1583	3433	1863	1583	1863	3539	1583	1863	3539	1583
Volume (vph)	159	488	295	237	518	94	545	736	242	158	372	137
Peak-hour factor, PHF	0.84	0.97	0.82	0.86	0.94	0.73	0.94	0.97	0.82	0.92	0.96	0.84
Adj. Flow (vph)	189	503	360	276	551	129	580	759	295	172	388	163
RTOR Reduction (vph)	0	0	181	0	0	77	0	0	0	0	0	141
Lane Group Flow (vph)	189	503	179	276	551	52	580	759	295	172	388	22
Turn Type	pm+pt	Perm	Prot	Perm	pm+pt	Perm	pm+pt	Free	pm+pt	Perm	pm+pt	Perm
Protected Phases	1	6	5	2	7	4	4	3	8	8	8	8
Permitted Phases	6	37.0	37.0	10.0	38.0	38.0	41.2	41.2	120.0	16.0	16.0	16.0
Actuated Green, G (s)	46.0	37.0	37.0	10.0	38.0	38.0	41.2	41.2	120.0	16.0	16.0	16.0
Effective Green, g (s)	0.38	0.31	0.31	0.08	0.32	0.32	0.34	0.34	1.00	0.13	0.13	0.13
Actuated g/C Ratio	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	195	574	488	286	590	501	640	1215	1583	248	472	211
v/s Ratio Prot	0.07	0.27	0.11	c0.08	0.30	0.31	0.21	0.09	c0.11	0.09	c0.11	0.01
v/s Ratio Perm	c0.30	0.97	0.88	0.37	0.97	0.93	0.10	0.91	c0.19	0.69	0.82	0.10
Uniform Delay, d1	51.7	39.3	32.4	54.8	39.8	29.0	38.4	32.9	0.0	49.9	50.6	45.7
Progression Factor	1.00	1.00	1.00	0.92	0.98	1.18	0.54	0.50	1.00	1.12	1.08	1.71
Incremental Delay, d2	54.9	17.0	2.1	39.9	21.7	0.4	9.6	1.3	0.1	8.0	14.7	1.0
Delay (s)	106.5	56.3	34.5	90.3	60.6	34.6	30.5	17.6	0.1	64.0	69.5	79.3
Level of Service	F	E	C	F	E	C	C	B	A	E	E	E
Approach Delay (s)	57.9											
Approach LOS	E											

Intersection Summary

HCM Average Control Delay	47.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	89.9%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Baseline
A & R Engineering Inc.

Synchro 6 Report
Page 2

Lanes, Volumes, Timings
9: New Homes Private Drwy & SR 9

HCM Signalized Intersection Capacity Analysis
9: New Homes Private Drwy & SR 9

Base PM - Improved
6/29/2007

Base PM - Improved
6/29/2007

Lane Group	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	4	71	402	4	766	85	233	674
Act Effct Green (s)	18.5	18.5	18.5	93.5	93.5	120.0	93.5	93.5
Actuated g/C Ratio	0.15	0.15	0.15	0.78	0.78	1.00	0.78	0.78
v/c Ratio	0.01	0.33	0.87	0.01	0.53	0.05	0.60	0.46
Control Delay	0.0	34.8	26.9	3.0	7.7	0.1	6.3	1.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	0.0	34.8	26.9	3.0	7.7	0.1	6.3	1.3
LOS	A	C	C	A	A	A	A	A
Approach Delay	0.0	28.1			6.9			2.6
Approach LOS	A	C			A			A
Queue Length 50th (ft)	0	48	110	1	180	0	4	11
Queue Length 95th (ft)	0	m45	5	1	355	0	m6	m18
Internal Link Dist (ft)	150	237			596			4282
Turn Bay Length (ft)	623	340	580	463	1452	1583	390	1452
Base Capacity (vph)	0	0	0	0	0	0	0	0
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.21	0.69	0.01	0.53	0.05	0.60	0.46

Intersection Summary

Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 93 (78%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.87	
Intersection Signal Delay: 9.6	Intersection LOS: A
Intersection Capacity Utilization 79.6%	ICU Level of Service D
Analysis Period (min) 15	
m Volume for 95th percentile queue is metered by upstream signal.	

Lanes, Volumes, Timings
10: Webb Rd & SR 9

Base PM - Improved
6/29/2007

	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	48	150	156	27	727	190	23	768
Act Effct Green (s)	17.4	17.4	17.4	94.6	94.6	94.6	94.6	94.6
Actuated g/C Ratio	0.14	0.14	0.14	0.79	0.79	0.79	0.79	0.79
v/c Ratio	0.20	0.73	0.52	0.08	0.50	0.15	0.06	0.53
Control Delay	25.6	55.7	22.6	3.6	6.9	1.5	1.8	4.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.6	55.7	22.6	3.6	6.9	1.5	1.8	4.2
LOS	C	E	C	A	A	A	A	A
Approach Delay	25.6	38.9	5.7					4.1
Approach LOS	C	D	A					A
Queue Length 50th (ft)	23	114	59	1	30	0	1	31
Queue Length 95th (ft)	m34	m129	m53	m5	m263	m3	m6	333
Internal Link Dist (ft)	2515	362	2361					404
Turn Bay Length (ft)	150	150	150	150	150	150	115	
Base Capacity (vph)	476	412	540	349	1468	1280	385	1456
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.36	0.29	0.08	0.50	0.15	0.06	0.53

Intersection Summary

Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 40 (33%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.73	
Intersection Signal Delay: 10.4	Intersection LOS: B
Intersection Capacity Utilization 59.6%	ICU Level of Service B
Analysis Period (min) 15	
m Volume for 95th percentile queue is metered by upstream signal.	

HCM Signalized Intersection Capacity Analysis
10: Webb Rd & SR 9

Base PM - Improved
6/29/2007

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.95	0.95	0.95	1.00	0.91	1.00	0.85	1.00	0.85	1.00	0.99	1.00
Flt Protected	0.98	0.98	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1738	1738	1770	1694	1770	1694	1770	1863	1583	1770	1846	1770
Flt Permitted	0.87	0.87	0.76	1.00	0.32	1.00	0.32	1.00	0.32	1.00	0.33	1.00
Satd. Flow (perm)	1534	1534	1411	1694	588	1863	588	1863	583	1846	583	1846
Volume (vph)	10	9	11	141	42	77	22	691	175	17	682	33
Peak-hour factor, PHF	0.58	0.67	0.62	0.94	0.68	0.82	0.83	0.95	0.92	0.75	0.96	0.70
Adj. Flow (vph)	17	13	18	150	62	94	27	727	190	23	721	47
RTOR Reduction (vph)	0	15	0	0	55	0	0	0	32	0	1	0
Lane Group Flow (vph)	0	33	0	150	101	0	27	727	158	23	767	0
Turn Type	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm
Protected Phases	8	8	4	4	4	4	6	6	6	2	2	2
Permitted Phases	8	8	4	4	4	4	6	6	6	2	2	2
Actuated Green, G (s)	17.4	17.4	17.4	17.4	17.4	17.4	94.6	94.6	94.6	94.6	94.6	94.6
Effective Green, g (s)	17.4	17.4	17.4	17.4	17.4	17.4	94.6	94.6	94.6	94.6	94.6	94.6
Actuated g/C Ratio	0.14	0.14	0.14	0.14	0.14	0.14	0.79	0.79	0.79	0.79	0.79	0.79
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	222	205	246	205	246	246	464	1469	1248	491	1455	
v/s Ratio Prot	0.02	c0.11	0.06	c0.11	0.06	0.06	0.05	0.39	0.10	0.04	c0.42	
v/s Ratio Perm	0.15	0.73	0.41	0.73	0.41	0.41	0.06	0.49	0.13	0.05	0.53	
Uniform Delay, d1	44.8	49.1	46.6	49.1	46.6	46.6	2.8	4.4	3.0	2.8	4.6	
Progression Factor	0.81	0.80	0.66	0.80	0.66	0.66	0.83	1.14	1.25	0.39	0.54	
Incremental Delay, d2	0.3	10.4	0.9	10.4	0.9	0.9	0.2	0.9	0.2	0.2	1.3	
Delay (s)	36.4	49.8	31.7	49.8	31.7	31.7	2.5	5.9	3.9	1.3	3.8	
Level of Service	D	D	C	D	C	C	A	A	A	A	A	
Approach Delay (s)	36.4		40.6		40.6		5.4		3.7			
Approach LOS	D		D		D		A		A			

Intersection Summary

HCM Average Control Delay	10.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	59.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings
11: Morris Rd & Bethany Rd

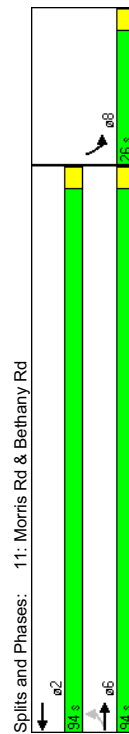
HCM Signalized Intersection Capacity Analysis
11: Morris Rd & Bethany Rd

Base PM Improved
7/27/2007

Base PM Improved
7/27/2007

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	0	1840	1736	0	1700	0
Flt Permitted	0.606		0.974			
Satd. Flow (perm)	0	1129	1736	0	1700	0
Satd. Flow (RTOR)			121		32	
Volume (vph)	144	492	355	343	116	92
Lane Group Flow (vph)	0	685	727	0	238	0
Turn Type	Perm					
Protected Phases	6	2	2		8	
Permitted Phases	6					
Total Split (s)	94.0	94.0	94.0	0.0	26.0	0.0
Act Effct Green (s)	56.7	56.7	56.7		14.4	
Actuated g/C Ratio	0.71	0.71	0.71		0.18	
v/c Ratio	0.86	0.58	0.58		0.72	
Control Delay	21.9	6.7	6.7		42.1	
Queue Delay	0.0	0.0	0.0		0.0	
Total Delay	21.9	6.7	6.7		42.1	
LOS	C	A	A		D	
Approach Delay	21.9	6.7	6.7		42.1	
Approach LOS	C	A	A		D	

Intersection Summary						
Cycle Length: 120						
Actuated Cycle Length: 80.1						
Control Type: Actuated-Uncoordinated						
Maximum v/c Ratio: 0.86						
Intersection Signal Delay: 18.1						Intersection LOS: B
Intersection Capacity Utilization 95.6%						ICU Level of Service F
Analysis Period (min) 15						



Base Saturday Intersection Analysis

Base 2009 Saturday

Lanes, Volumes, Timings
1: Bethany Rd & Cogburn Rd

Base Saturday
6/29/2007

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	327	220	140	344	77	370						
Act Effct Green (s)	22.9	22.9	89.1	89.1	89.1	89.1						
Actuated g/C Ratio	0.19	0.19	0.74	0.74	0.74	0.74						
v/c Ratio	0.90	0.60	0.24	0.25	0.12	0.27						
Control Delay	67.1	24.1	2.9	2.1	6.1	6.3						
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0						
Total Delay	67.1	24.1	2.9	2.1	6.1	6.3						
LOS	E	C	A	A	A	A						
Approach Delay	67.1	24.1	2.3	6.2								
Approach LOS	E	C	A	A	A	A						
Queue Length 50th (ft)	219	83	12	28	15	79						
Queue Length 95th (ft)	293	m108	m27	m52	39	147						
Internal Link Dist (ft)	1654	2050		3797		1469						
Turn Bay Length (ft)	814	814	586	1361	620	1371						
Base Capacity (vph)	0	0	0	0	0	0						
Starvation Cap Reductn	0	0	0	0	0	0						
Spillback Cap Reductn	0	0	0	0	0	0						
Storage Cap Reductn	0	0	0	0	0	0						
Reduced v/c Ratio	0.40	0.27	0.24	0.25	0.12	0.27						

Intersection Summary

Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 69 (58%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.90	
Intersection Signal Delay: 21.1	Intersection LOS: C
Intersection Capacity Utilization 52.8%	ICU Level of Service A
Analysis Period (min) 15	
m Volume for 95th percentile queue is metered by upstream signal.	

HCM Signalized Intersection Capacity Analysis
1: Bethany Rd & Cogburn Rd

Base Saturday
6/29/2007

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
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	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Flt Protected	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Satd. Flow (prot)	1747	1747	1747	1747	1747	1747	1747	1747	1747	1747	1747	1747
Flt Permitted	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Satd. Flow (perm)	1713	1713	1657	1657	1657	1657	1657	1657	1657	1657	1657	1657
Volume (vph)	8	148	125	7	96	86	132	293	35	69	303	14
Peak-hour factor, PHF	0.58	0.88	0.86	0.75	0.90	0.83	0.94	0.96	0.89	0.90	0.87	0.65
Adj. Flow (vph)	14	168	145	9	107	104	140	305	39	77	348	22
RTOR Reduction (vph)	0	36	0	0	40	0	0	2	0	0	1	0
Lane Group Flow (vph)	0	291	0	0	180	0	140	342	0	77	369	0
Turn Type	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm
Protected Phases	8	8	8	4	4	4	6	6	6	6	2	2
Permitted Phases	8	8	8	4	4	4	6	6	6	6	2	2
Actuated Green, G (s)	22.9	22.9	22.9	22.9	22.9	22.9	89.1	89.1	89.1	89.1	89.1	89.1
Effective Green, g (s)	22.9	22.9	22.9	22.9	22.9	22.9	89.1	89.1	89.1	89.1	89.1	89.1
Actuated g/C Ratio	0.19	0.19	0.19	0.19	0.19	0.19	0.74	0.74	0.74	0.74	0.74	0.74
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	327	327	316	316	316	316	715	1360	0.19	738	1371	c0.20
v/s Ratio Prot												
v/s Ratio Perm	0.17	0.17	0.11	0.11	0.11	0.11	0.15	0.15	0.08	0.08	0.08	0.08
v/c Ratio	0.89	0.89	0.57	0.57	0.57	0.57	0.20	0.25	0.10	0.10	0.27	0.27
Uniform Delay, d1	47.3	47.3	44.1	44.1	44.1	44.1	4.7	4.9	4.3	4.3	5.0	5.0
Progression Factor	1.00	1.00	0.61	0.61	0.61	0.61	0.32	0.29	1.00	1.00	1.00	1.00
Incremental Delay, d2	24.7	24.7	1.4	1.4	1.4	1.4	0.6	0.4	0.3	0.3	0.5	0.5
Delay (s)	72.0	72.0	28.1	28.1	28.1	28.1	2.1	1.9	4.6	4.6	5.5	5.5
Level of Service	E	E	C	C	C	C	A	A	A	A	A	A
Approach Delay (s)	72.0	72.0	28.1	28.1	28.1	28.1	1.9	1.9	5.3	5.3	5.3	5.3
Approach LOS	E	E	C	C	C	C	A	A	A	A	A	A

Intersection Summary

HCM Average Control Delay	22.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings
2: Bethany Rd & SR 9

Base Saturday
6/29/2007

	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	140	106	132	89	190	74	1007	14	1002
Act Effct Green (s)	11.0	16.7	16.7	8.7	14.4	7.9	78.0	6.5	72.8
Actuated g/C Ratio	0.09	0.14	0.14	0.07	0.12	0.07	0.85	0.05	0.61
v/c Ratio	0.86	0.41	0.40	0.70	0.81	0.63	0.85	0.15	0.90
Control Delay	83.1	42.5	9.6	81.7	67.0	82.5	19.4	57.0	33.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	83.1	42.5	9.6	81.7	67.0	82.5	19.4	57.0	33.8
LOS	F	D	A	F	E	F	B	E	C
Approach Delay	46.0 71.7 23.8 34.1								
Approach LOS	D E C C								
Queue Length 50th (ft)	106	81	23	68	119	59	231	11	684
Queue Length 95th (ft) m#176	m102	m37	#114	#114	m76	m686	21	#1012	
Internal Link Dist (ft)	2050 3113 4282 1558								
Turn Bay Length (ft)	150	275	250	133	259	121	1191	118	1119
Base Capacity (vph)	162	279	350	133	259	121	1191	118	1119
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.86	0.38	0.38	0.67	0.73	0.61	0.85	0.12	0.90

Intersection Summary

Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 108 (90%). Referenced to phase 2: SBT and 6: NBT, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.90	
Intersection Signal Delay: 35.5	Intersection LOS: D
Intersection Capacity Utilization 75.9%	ICU Level of Service D
Analysis Period (min) 15	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	
m Volume for 95th percentile queue is metered by upstream signal.	

HCM Signalized Intersection Capacity Analysis
2: Bethany Rd & SR 9

Base Saturday
6/29/2007

	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Movement	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↖	↗	↘	↖	↗	↖	↗	↖	↗
Ideal Flow (vphpl)	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	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.93	1.00	0.98	1.00	0.99
Flt Protected	0.95	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1770	1863	1583	1770	1726	1770	1827	1770	1841
Flt Permitted	0.95	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	1770	1863	1583	1770	1726	1770	1827	1770	1841
Volume (vph)	132	88	108	70	72	77	58	817	116
Peak-hour factor, PHF	0.94	0.83	0.82	0.79	0.74	0.83	0.78	0.93	0.90
Adj. Flow (vph)	140	106	132	89	97	93	74	878	129
RTOR Reduction (vph)	0	0	114	0	29	0	4	0	0
Lane Group Flow (vph)	140	106	18	89	161	0	74	1003	0
Turn Type	Prot	Perm	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Protected Phases	3	8	8	7	4	1	6	5	2
Permitted Phases									
Actuated Green, G (s)	11.0	16.7	16.7	8.7	14.4	6.6	75.6	3.0	72.0
Effective Green, g (s)	11.0	16.7	16.7	8.7	14.4	6.6	75.6	3.0	72.0
Actuated g/C Ratio	0.09	0.14	0.14	0.07	0.12	0.05	0.63	0.02	0.60
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	162	259	220	128	207	97	1151	44	1105
v/s Ratio Prot	c0.08	0.06	0.01	0.05	c0.09	c0.04	c0.55	0.01	c0.54
v/s Ratio Perm									
v/c Ratio	0.86	0.41	0.08	0.70	0.78	0.76	0.87	0.32	0.90
Uniform Delay, d1	53.8	47.1	45.0	54.4	51.2	55.9	18.2	57.5	21.0
Progression Factor	0.78	0.81	0.82	1.00	1.00	1.14	0.64	1.00	1.00
Incremental Delay, d2	32.5	1.0	0.1	15.1	16.6	25.5	7.9	4.1	12.1
Delay (s)	74.7	39.2	37.1	69.5	67.9	89.1	19.5	61.6	33.1
Level of Service	E	D	D	E	E	F	B	E	C
Approach Delay (s)	51.6 68.4 24.3 33.5								
Approach LOS	D E C C								
Intersection Summary									
HCM Average Control Delay	35.9 HCM Level of Service D								
HCM Volume to Capacity ratio	0.90								
Actuated Cycle Length (s)	120.0 Sum of lost time (s) 20.0								
Intersection Capacity Utilization	75.9% ICU Level of Service D								
Analysis Period (min)	15								
c Critical Lane Group									

Lanes, Volumes, Timings
3: Webb Rd & Deerfield Pky

Base Saturday
6/29/2007

Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	SBT
Lane Group Flow (vph)	169	35	179	57	48	335	409
Act Effct Green (s)	17.0	17.0	17.0	17.0	95.0	95.0	88.8
Actuated g/C Ratio	0.14	0.14	0.14	0.14	0.79	0.79	0.74
v/c Ratio	0.69	0.14	0.76	0.21	0.08	0.12	0.19
Control Delay	50.2	9.1	69.1	12.5	1.5	1.2	3.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.2	9.1	69.1	12.5	1.5	1.2	3.9
LOS	D	A	E	B	A	A	A
Approach Delay	43.1		55.4			1.2	3.9
Approach LOS	D		E			A	A
Queue Length 50th (ft)	122	4	135	0	3	8	29
Queue Length 95th (ft)	m142	m8	149	35	m6	18	m40
Internal Link Dist (ft)	1660		1492			2619	3319
Turn Bay Length (ft)	135	551	556	566	806	2780	2172
Base Capacity (vph)	575	551	556	566	806	2780	2172
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.06	0.32	0.10	0.06	0.12	0.19

Intersection Summary

Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 37 (31%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.76	
Intersection Signal Delay: 19.4	Intersection LOS: B
Intersection Capacity Utilization 46.1%	ICU Level of Service A
Analysis Period (min) 15	
m Volume for 95th percentile queue is metered by upstream signal.	

HCM Signalized Intersection Capacity Analysis
3: Webb Rd & Deerfield Pky

Base Saturday
6/29/2007

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Ideal Flow (vphpl)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Total Lost time (s)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Util. Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Flt Protected	0.99	1.00	0.99	1.00	0.99	1.00	0.95	1.00	0.99	0.99	0.99	0.99
Satd. Flow (prot)	1846	1583	1840	1583	1770	3506	3468	3468	3468	3468	3468	3468
Flt Permitted	0.69	1.00	0.62	1.00	0.49	1.00	0.84	0.84	0.84	0.84	0.84	0.84
Satd. Flow (perm)	1277	1583	1162	1583	907	3506	2948	2948	2948	2948	2948	2948
Volume (vph)	22	127	25	32	93	51	32	292	15	47	269	26
Peak-hour factor, PHF	0.71	0.92	0.72	0.72	0.69	0.89	0.66	0.93	0.70	0.77	0.86	0.75
Adj. Flow (vph)	31	138	35	44	135	57	48	314	21	61	313	35
RTOR Reduction (vph)	0	0	30	0	0	49	0	2	0	0	2	0
Lane Group Flow (vph)	0	169	5	0	179	8	48	333	0	0	407	0
Turn Type	Perm	Perm	Perm	Perm	Perm	pm+pt	Perm	pm	Perm	Perm	Perm	Perm
Protected Phases	8	8	8	4	4	4	1	6	1	6	2	2
Permitted Phases	8	8	8	4	4	4	6	6	4	4	2	2
Actuated Green, G (s)	17.0	17.0	17.0	17.0	17.0	17.0	95.0	95.0	95.0	95.0	87.2	87.2
Effective Green, g (s)	17.0	17.0	17.0	17.0	17.0	17.0	95.0	95.0	95.0	95.0	87.2	87.2
Actuated g/C Ratio	0.14	0.14	0.14	0.14	0.14	0.14	0.79	0.79	0.79	0.79	0.73	0.73
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	181	224	224	165	224	745	2776	2776	2142	2142	2142	2142
v/s Ratio Prot	0.13	0.00	0.00	c0.15	0.01	0.05	c0.09	c0.09	c0.14	c0.14	c0.14	c0.14
v/s Ratio Perm	0.93	0.02	1.08	0.04	0.06	0.12	0.19	0.19	0.19	0.19	0.19	0.19
Uniform Delay, d1	50.9	44.3	51.5	44.4	2.8	2.9	5.2	5.2	5.2	5.2	5.2	5.2
Progression Factor	0.80	0.62	1.00	1.00	0.38	0.35	0.65	0.65	0.65	0.65	0.65	0.65
Incremental Delay, d2	40.2	0.0	94.5	0.1	0.0	0.1	0.2	0.2	0.2	0.2	0.2	0.2
Delay (s)	80.9	27.6	146.0	44.5	1.1	1.1	3.5	3.5	3.5	3.5	3.5	3.5
Level of Service	F	C	F	D	A	A	A	A	A	A	A	A
Approach Delay (s)	71.7		121.5				3.5	3.5	3.5	3.5	3.5	3.5
Approach LOS	E		F				A	A	A	A	A	A

Intersection Summary

HCM Average Control Delay	36.7	HCM Level of Service	D
HCM Volume to Capacity ratio	0.33		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	46.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings
4: Cogburn Rd & Webb Rd

Base Saturday
6/29/2007

	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	161	61	110	536	36	657
Act Effct Green (s)	15.4	15.4	94.3	90.5	92.5	86.6
Actuated g/C Ratio	0.13	0.13	0.79	0.75	0.77	0.72
v/c Ratio	0.76	0.28	0.24	0.20	0.06	0.26
Control Delay	61.8	41.6	3.6	1.8	2.8	5.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	61.8	41.6	3.6	1.8	2.8	5.2
LOS	E	D	A	A	A	A
Approach Delay	61.8	41.6	2.1	5.1		
Approach LOS	E	D	A	A		
Queue Length 50th (ft)	100	33	5	18	4	67
Queue Length 95th (ft)	129	m38	m10	m25	m7	m110
Internal Link Dist (ft)	2012	2515		1866		556
Turn Bay Length (ft)	471	500	670	2645	774	2497
Base Capacity (vph)	0	0	0	0	0	0
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.34	0.12	0.16	0.20	0.05	0.26

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 84 (70%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.76
Intersection Signal Delay: 11.1
Intersection Capacity Utilization 44.3%
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis
4: Cogburn Rd & Webb Rd

Base Saturday
6/29/2007

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Ideal Flow (vphpl)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Total Lost time (s)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Util. Factor	0.94	0.94	0.94	0.96	0.96	0.96	0.95	0.99	1.00	0.95	1.00	0.97
Flt Protected	0.98	0.98	0.98	0.98	0.98	0.98	0.95	1.00	0.95	1.00	1.00	0.95
Satd. Flow (prot)	1717	1717	1717	1749	1749	1749	1770	3505	1770	3450	3450	1770
Flt Permitted	0.81	0.81	0.81	0.83	0.83	0.83	0.81	0.81	0.81	0.81	0.81	0.81
Satd. Flow (perm)	1429	1429	1429	1478	1478	1478	1429	3505	1429	3450	3450	1429
Volume (vph)	66	11	58	12	12	11	96	476	22	25	508	94
Peak-hour factor, PHF	0.83	0.75	0.88	0.55	0.62	0.56	0.87	0.95	0.62	0.69	0.93	0.85
Adj. Flow (vph)	80	15	66	22	19	20	110	501	35	36	546	111
RTOR Reduction (vph)	0	26	0	0	17	0	0	2	0	0	6	0
Lane Group Flow (vph)	0	135	0	0	44	0	110	534	0	36	651	0
Turn Type	Perm	Perm	Perm	Perm	Perm	Perm	pm+pt	pm+pt	pm+pt	pm+pt	pm+pt	pm+pt
Protected Phases	8	8	8	4	4	4	1	6	5	2	2	2
Permitted Phases	8	8	8	4	4	4	6	6	5	2	2	2
Actuated Green, G (s)	15.4	15.4	15.4	15.4	15.4	15.4	94.9	88.9	90.3	86.6	86.6	86.6
Effective Green, g (s)	15.4	15.4	15.4	15.4	15.4	15.4	94.9	88.9	90.3	86.6	86.6	86.6
Actuated g/C Ratio	0.13	0.13	0.13	0.13	0.13	0.13	0.79	0.74	0.75	0.72	0.72	0.72
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	183	183	183	190	190	190	604	2597	663	2490	2490	604
v/s Ratio Prot	0.09	0.09	0.09	0.03	0.03	0.03	0.01	0.15	0.00	0.19	0.19	0.01
v/s Ratio Perm	0.74	0.74	0.74	0.23	0.23	0.23	0.13	0.13	0.04	0.04	0.04	0.04
Uniform Delay, d1	50.3	50.3	50.3	47.0	47.0	47.0	3.0	4.8	3.8	5.7	5.7	3.8
Progression Factor	1.00	1.00	1.00	1.23	1.23	1.23	0.90	0.32	0.80	0.82	0.82	0.90
Incremental Delay, d2	14.3	14.3	14.3	0.5	0.5	0.5	0.1	0.1	0.0	0.2	0.2	0.1
Delay (s)	64.7	64.7	64.7	58.1	58.1	58.1	2.8	1.6	3.0	4.9	4.9	2.8
Level of Service	E	E	E	E	E	E	A	A	A	A	A	A
Approach Delay (s)	64.7	64.7	64.7	58.1	58.1	58.1	1.8	1.8	4.8	4.8	4.8	1.8
Approach LOS	E	E	E	E	E	E	A	A	A	A	A	A

Intersection Summary

HCM Average Control Delay	11.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	44.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings
5: SR 9 & Windward Pky

Base Saturday
6/29/2007

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	149	700	199	824	729	159	172	536	321	208	638
Act Effct Green (s)	46.4	38.0	38.0	81.0	68.6	68.6	26.0	18.0	120.0	28.0	19.0
Actuated g/C Ratio	0.39	0.32	0.32	0.68	0.57	0.57	0.22	0.15	1.00	0.23	0.16
v/c Ratio	0.43	1.19	0.35	1.29	0.68	0.16	0.96	1.01	0.20	1.07	1.14
Control Delay	17.5	137.3	16.5	171.3	21.4	1.5	78.7	76.7	0.2	121.2	126.0
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	17.5	137.3	16.5	171.3	21.4	1.5	78.7	76.7	0.2	121.2	126.0
LOS	B	F	B	F	C	A	E	E	A	F	F
Approach Delay	97.3			91.7			53.1			124.8	
Approach LOS	F			F			D			F	
Queue Length 50th (ft)	37	~653	53	~763	413	6	72	~205	0	~156	~300
Queue Length 95th (ft)	62	#885	116	m#959	m547	m15	m#135	m#296	m0	m#267	#422
Internal Link Dist (ft)	1481			72			3686			1866	
Turn Bay Length (ft)	220	185	573	637	1065	973	180	531	1583	195	560
Base Capacity (vph)	353	590	573	637	1065	973	180	531	1583	195	560
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.42	1.19	0.35	1.29	0.68	0.16	0.96	1.01	0.20	1.07	1.14

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 81 (68%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.29

Intersection Signal Delay: 90.5

Intersection Capacity Utilization 112.8%

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

m Queue shown is maximum after two cycles.

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

HCM Signalized Intersection Capacity Analysis
5: SR 9 & Windward Pky

Base Saturday
6/29/2007

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
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	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flt Protected	0.95	1.00	1.00	0.95	1.00	0.95	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	3539	1583	1770	3448	
Flt Permitted	0.38	1.00	1.00	0.10	1.00	1.00	0.22	1.00	1.00	0.21	1.00	
Satd. Flow (perm)	716	1863	1583	177	1863	1583	414	3539	1583	392	3448	
Volume (vph)	139	637	179	725	700	130	160	509	295	181	496	101
Peak-hour factor, PHF	0.93	0.91	0.90	0.88	0.96	0.82	0.93	0.95	0.92	0.87	0.94	0.92
Adj. Flow (vph)	149	700	199	824	729	159	172	536	321	208	528	110
RTOR Reduction (vph)	0	0	72	0	0	68	0	0	0	0	14	0
Lane Group Flow (vph)	149	700	127	824	729	91	172	536	321	208	624	0
Turn Type	pm+pt	pm+pt	pm+pt	pm+pt	pm+pt	pm+pt	pm+pt	pm+pt	pm+pt	pm+pt	pm+pt	pm+pt
Protected Phases	1	6	5	2	7	4	7	4	3	8	8	
Permitted Phases	6	6	2	2	4	4	4	4	Free	8	8	
Actuated Green, G (s)	46.4	38.0	38.0	81.0	68.6	68.6	26.0	18.0	120.0	28.0	19.0	
Effective Green, g (s)	46.4	38.0	38.0	81.0	68.6	68.6	26.0	18.0	120.0	28.0	19.0	
Actuated g/C Ratio	0.39	0.32	0.32	0.68	0.57	0.57	0.22	0.15	1.00	0.23	0.16	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	351	590	501	637	1065	905	180	531	1583	195	546	
v/s Ratio Prot	0.03	0.38		c0.42	0.39	0.06	0.15		c0.08	c0.18		
v/s Ratio Perm	0.13		0.08	c0.45		0.06	0.14					
v/s Ratio	0.42	1.19	0.25	1.29	0.68	0.10	0.96	1.01	0.20	1.07	1.14	
Uniform Delay, d1	24.6	41.0	30.5	42.7	18.1	11.7	57.9	51.0	0.0	43.5	50.5	
Progression Factor	1.00	1.00	1.00	0.90	0.95	0.62	0.90	0.86	1.00	0.98	0.99	
Incremental Delay, d2	0.8	100.2	1.2	143.1	3.4	0.2	39.2	32.3	0.2	82.7	83.9	
Delay (s)	25.5	141.2	31.7	181.7	20.7	7.5	91.1	76.1	0.2	125.2	133.7	
Level of Service	C	F	C	F	C	A	F	E	A	F	F	
Approach Delay (s)	103.9			96.9			54.9			131.6		
Approach LOS	F			F			D			F		

Intersection Summary

HCM Average Control Delay 95.5 HCM Level of Service F

HCM Volume to Capacity ratio 1.20

Actuated Cycle Length (s) 120.0

Intersection Capacity Utilization 112.8%

Analysis Period (min) 15

c Critical Lane Group

Baseline
A & R Engineering Inc.

Synchro 6 Report
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Lanes, Volumes, Timings
6: Windward Pky & Deerfield Pky

Base Saturday
6/29/2007

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	152	1419	84	151	1540	300	105	94	115	415	285
Act Effct Green (s)	70.5	60.0	60.0	69.5	59.6	120.0	24.4	16.6	16.6	17.4	26.2
Actuated g/C Ratio	0.59	0.50	0.50	0.58	0.50	1.00	0.20	0.14	0.14	0.14	0.22
v/c Ratio	0.70	0.80	0.10	0.72	0.88	0.19	0.40	0.36	0.36	0.84	0.34
Control Delay	28.5	29.3	11.8	32.3	32.2	0.1	36.0	51.9	11.8	64.8	11.8
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	28.5	29.3	11.8	32.3	32.2	0.1	36.0	51.9	11.8	64.8	11.8
LOS	C	C	B	C	C	A	D	D	B	E	B
Approach Delay	28.4			27.4			31.9			43.2	
Approach LOS	C			C			C			D	
Queue Length 50th (ft)	90	410	18	61	580	0	59	67	0	159	24
Queue Length 95th (ft)	m83	m353	m17	m87	m633	m0	104	122	54	#212	m63
Internal Link Dist (ft)	3686			1731			1018			2058	
Turn Bay Length (ft)	105	180	190	226	1757	1583	267	258	319	515	849
Base Capacity (vph)	226	1770	819	226	1757	1583	267	258	319	515	849
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.67	0.80	0.10	0.67	0.88	0.19	0.39	0.36	0.36	0.81	0.34

Intersection Summary

Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 48 (40%), Referenced to phase 2:WBT and 6:EBTL, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.88	
Intersection Capacity Utilization: 30.4	Intersection LOS: C
Analysis Period (min) 15	ICU Level of Service D
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	
m Volume for 95th percentile queue is metered by upstream signal.	

Baseline
A & R Engineering Inc.

Synchro 6 Report
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HCM Signalized Intersection Capacity Analysis
6: Windward Pky & Deerfield Pky

Base Saturday
6/29/2007

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔		
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	4.0	4.0	4.0	4.0	4.0	4.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	0.97	0.95	0.95		
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.89		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1863	1583	3433	3163	1863		
Flt Permitted	0.07	1.00	1.00	0.07	1.00	1.00	0.58	1.00	1.00	0.95	1.00	1.00		
Satd. Flow (perm)	124	3539	1583	126	3539	1583	1075	1863	1583	3433	3163	1863		
Volume (vph)	141	1291	76	133	1478	246	98	89	106	361	78	186		
Peak-hour factor, PHF	0.93	0.91	0.90	0.88	0.96	0.82	0.93	0.95	0.92	0.87	0.94	0.92		
Adj. Flow (vph)	152	1419	84	151	1540	300	105	94	115	415	83	202		
RTOR Reduction (vph)	0	0	27	0	0	0	0	0	0	99	0	158		
Lane Group Flow (vph)	152	1419	57	151	1540	300	105	94	115	415	127	0		
Turn Type	pm+pt	pm+pt	Perm	pm+pt	Free	pm+pt	Free	pm+pt	Perm	Prot	Prot	Prot		
Protected Phases	1	6	6	5	2	7	4	4	3	3	8	8		
Permitted Phases	6	6	6	2	2	4	4	4	4	4	4	4		
Actuated Green, G (s)	70.4	60.0	60.0	69.6	59.6	120.0	24.4	16.6	16.6	17.4	26.2	26.2		
Effective Green, g (s)	70.4	60.0	60.0	69.6	59.6	120.0	24.4	16.6	16.6	17.4	26.2	26.2		
Actuated g/C Ratio	0.59	0.50	0.50	0.58	0.50	1.00	0.20	0.14	0.14	0.14	0.22	0.22		
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		
Lane Grp Cap (vph)	215	1770	792	210	1758	1583	264	258	219	498	691	691		
v/s Ratio Prot	c0.06	0.40	0.04	0.06	c0.44	0.03	c0.03	0.05	c0.12	0.04	0.04	0.04		
v/s Ratio Perm	0.35	0.04	0.04	0.36	c0.19	c0.06	0.01	0.01	0.01	0.01	0.01	0.01		
v/c Ratio	0.71	0.80	0.07	0.72	0.88	0.19	0.40	0.36	0.07	0.83	0.18	0.18		
Uniform Delay, d1	28.3	25.0	15.6	26.5	26.9	0.0	40.5	46.9	45.0	49.9	38.2	38.2		
Progression Factor	1.15	1.13	1.65	0.91	1.03	1.00	1.00	1.00	1.00	0.99	0.88	0.88		
Incremental Delay, d2	1.0	0.4	0.0	6.3	3.7	0.1	1.0	3.9	0.6	11.4	0.6	0.6		
Delay (s)	33.7	28.6	25.7	30.3	31.5	0.1	41.5	50.9	45.6	60.7	34.1	34.1		
Level of Service	C	C	C	C	C	A	D	D	D	E	C	C		
Approach Delay (s)	28.9			26.7			45.8			49.9				
Approach LOS	C			C			D			D				
Intersection Summary														
HCM Average Control Delay	32.3			HCM Level of Service			C							
HCM Volume to Capacity ratio	0.78													
Actuated Cycle Length (s)	120.0			Sum of lost time (s)			16.0							
Intersection Capacity Utilization	77.0%			ICU Level of Service			D							
Analysis Period (min)	15													
c Critical Lane Group														

Baseline
A & R Engineering Inc.

Synchro 6 Report
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	EBT	EBR	WBL	WBT	SBL	SBR
Lane Group	EBT	EBR	WBL	WBT	SBL	SBR
Lane Group Flow (vph)	1312	1205	525	2233	115	412
Act Effct Green (s)	74.0	74.0	18.0	96.0	16.0	16.0
Actuated g/C Ratio	0.62	0.62	0.15	0.80	0.13	0.13
v/c Ratio	0.33	1.03	1.02	0.79	0.25	1.00
Control Delay	3.9	39.1	81.9	2.9	48.3	92.2
Queue Delay	0.0	0.0	0.0	2.1	0.0	0.0
Total Delay	3.9	39.1	81.9	5.0	48.3	92.2
LOS	A	D	F	A	D	F
Approach Delay	20.8			19.6		
Approach LOS	C			B		
Queue Length 50th (ft)	38	~929	~198	114	41	~167
Queue Length 95th (ft)	59	#1080	m#236	m94	71	#286
Internal Link Dist (ft)	177			531		
Turn Bay Length (ft)	3952	1175	515	2831	458	410
Base Capacity (vph)	0	0	0	432	0	0
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.33	1.03	1.02	0.93	0.25	1.00
Intersection Summary						
Cycle Length: 120						
Actuated Cycle Length: 120						
Offset: 93 (78%), Referenced to phase 2:WBT and 6:EBT, Start of Green						
Control Type: Actuated-Coordinated						
Maximum v/c Ratio: 1.03						
Intersection Signal Delay: 25.8						Intersection LOS: C
Intersection Capacity Utilization 147.3%						ICU Level of Service H
Analysis Period (min) 15						
~ Volume exceeds capacity, queue is theoretically infinite.						
Queue shown is maximum after two cycles.						
# 95th percentile volume exceeds capacity, queue may be longer.						
Queue shown is maximum after two cycles.						
m Volume for 95th percentile queue is metered by upstream signal.						

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	0.86	1.00	0.97	0.95	1.00	0.85	1.00	0.97	0.95	1.00	0.85	0.88
Lane Util. Factor	1.00	0.85	1.00	1.00	1.00	1.00	0.85	1.00	1.00	0.95	1.00	0.95
Flt Protected	1.00	1.00	0.95	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95
Satd. Flow (prot)	6408	1583	3433	3539	3539	1583	3433	3539	3539	1583	3433	2787
Flt Permitted	1.00	1.00	0.95	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95
Satd. Flow (perm)	6408	1583	3433	3539	3539	1583	3433	3539	3539	1583	3433	2787
Volume (vph)	0	1233	1205	488	2188	0	0	0	0	106	0	375
Peak-hour factor, PHF	0.92	0.94	1.00	0.93	0.98	0.92	0.92	0.92	0.92	0.92	0.92	0.91
Adj. Flow (vph)	0	1312	1205	525	2233	0	0	0	0	115	0	412
RTOR Reduction (vph)	0	0	199	0	0	0	0	0	0	0	0	38
Lane Group Flow (vph)	0	1312	1006	525	2233	0	0	0	0	115	0	374
Turn Type		Perm	Perm	Prot	Prot					Prot	custom	
Protected Phases	6	6	5	2						3		3
Permitted Phases												
Actuated Green, G (s)	74.0	74.0	18.0	96.0						16.0		16.0
Effective Green, g (s)	74.0	74.0	18.0	96.0						16.0		16.0
Actuated g/C Ratio	0.62	0.62	0.15	0.80						0.13		0.13
Clearance Time (s)	4.0	4.0	4.0	4.0						4.0		4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0						3.0		3.0
Lane Grp Cap (vph)	3952	976	515	2831						458		372
v/s Ratio Prot	0.20		c0.15	0.63						0.03		
v/s Ratio Perm		c0.64										
v/c Ratio	0.33	1.03	1.02	0.79						0.25		1.01
Uniform Delay, d1	11.1	23.0	51.0	6.5						46.6		52.0
Progression Factor	0.34	0.45	1.10	0.32						1.00		1.00
Incremental Delay, d2	0.2	34.1	27.2	0.7						47.9		47.9
Delay (s)	3.9	44.5	83.2	2.8						46.9		99.9
Level of Service	A	D	F	A						D		F
Approach Delay (s)	23.4			18.1						88.4		
Approach LOS	C			B						F		
Intersection Summary												
HCM Average Control Delay			26.8									C
HCM Volume to Capacity ratio			1.03									
Actuated Cycle Length (s)			120.0							12.0		
Intersection Capacity Utilization			147.3%							H		
Analysis Period (min)			15									
c Critical Lane Group												

Lanes, Volumes, Timings
8: Windward Pky & GA 400 NB Ramp

Base Saturday
6/29/2007

	EBL	EBT	WBT	WBR	NBL	NBR
Lane Group	EBL	EBT	WBT	WBR	NBL	NBR
Lane Group Flow (vph)	584	915	1219	106	1748	326
Act Effct Green (s)	21.0	50.0	25.0	25.0	62.0	62.0
Actuated g/C Ratio	0.18	0.42	0.21	0.21	0.52	0.52
v/c Ratio	0.97	0.62	0.91	0.26	0.99	0.22
Control Delay	71.3	37.8	57.7	9.0	47.1	11.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	71.3	37.8	57.7	9.0	47.1	11.0
LOS	E	D	E	A	D	B
Approach Delay	50.9 53.8					
Approach LOS	D D					
Queue Length 50th (ft)	233	366	270	0	662	50
Queue Length 95th (ft)	#353	460	#334	37	#852	76
Internal Link Dist (ft)	531 173					
Turn Bay Length (ft)	150 150					
Base Capacity (vph)	601	1475	1335	414	1774	1489
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.97	0.62	0.91	0.26	0.99	0.22
Intersection Summary						
Cycle Length: 120						
Actuated Cycle Length: 120						
Offset: 64 (53%), Referenced to phase 2:WBT and 6:EBT, Start of Green						
Control Type: Actuated-Coordinated						
Maximum v/c Ratio: 0.99						
Intersection Signal Delay: 47.7						
Intersection Capacity Utilization 147.3%						
Analysis Period (min) 15						
# 95th percentile volume exceeds capacity, queue may be longer.						
Queue shown is maximum after two cycles.						

HCM Signalized Intersection Capacity Analysis
8: Windward Pky & GA 400 NB Ramp

Base Saturday
6/29/2007

	EBL	EBT	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	EBL	EBT	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Ideal Flow (vphpl)	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	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	0.86	1.00	0.97	0.88	0.85	0.85	0.85	0.85
Flt	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Satd. Flow (prot)	3433	3539	6408	1583	3433	2787	2787	2787	2787	2787
Flt Permitted	0.95	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Satd. Flow (perm)	3433	3539	6408	1583	3433	2787	2787	2787	2787	2787
Volume (vph)	549	889	0	0	1158	87	1608	0	287	0
Peak-hour factor, PHF	0.94	0.95	0.92	0.95	0.82	0.92	0.92	0.88	0.92	0.92
Adj. Flow (vph)	584	915	0	0	1219	106	1748	0	326	0
RTOR Reduction (vph)	0	0	0	0	84	0	49	0	0	0
Lane Group Flow (vph)	584	915	0	0	1219	22	1748	0	277	0
Turn Type	Prot	Prot	Perm	Prot	Prot	custom	custom	0	0	0
Protected Phases	1	6	2	2	7	7	7	7	7	7
Permitted Phases	21.0	50.0	25.0	25.0	62.0	62.0	62.0	62.0	62.0	62.0
Actuated Green, G (s)	21.0	50.0	25.0	25.0	62.0	62.0	62.0	62.0	62.0	62.0
Effective Green, g (s)	21.0	50.0	25.0	25.0	62.0	62.0	62.0	62.0	62.0	62.0
Actuated g/C Ratio	0.18	0.42	0.21	0.21	0.52	0.52	0.52	0.52	0.52	0.52
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	601	1475	1335	330	1774	1440	1440	1440	1440	1440
v/s Ratio Prot	c0.17	0.26	c0.19	c0.51	c0.51	c0.51	c0.51	c0.51	c0.51	c0.51
v/s Ratio Perm	0.97	0.62	0.91	0.07	0.99	0.19	0.19	0.19	0.19	0.19
Uniform Delay, d1	49.2	27.5	46.4	38.1	28.6	15.6	15.6	15.6	15.6	15.6
Progression Factor	0.83	1.29	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	28.9	1.9	11.0	0.4	17.8	0.1	0.1	0.1	0.1	0.1
Delay (s)	69.5	37.4	57.5	38.5	46.4	15.6	15.6	15.6	15.6	15.6
Level of Service	E	D	E	D	D	B	B	B	B	B
Approach Delay (s)	49.9	27.5	56.0	38.5	41.5	15.6	15.6	15.6	15.6	15.6
Approach LOS	D	D	E	E	D	A	A	A	A	A
Intersection Summary										
HCM Average Control Delay										
HCM Volume to Capacity ratio										
Actuated Cycle Length (s)										
Intersection Capacity Utilization										
Analysis Period (min)										
Critical Lane Group										

Lanes, Volumes, Timings
9: New Homes Private Drwy & SR 9

Base Saturday
6/29/2007[illegible]

HCM Unsignalized Intersection Capacity Analysis
9: New Homes Private Drwy & SR 9

Base Saturday
6/29/2007

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔										
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	2	1	6	54	0	158	1	730	81	164	779	4
Peak Hour Factor	0.25	0.25	0.42	0.86	0.92	0.85	0.25	0.92	0.76	0.91	0.91	0.50
Hourly flow rate (vph)	8	4	14	63	0	186	4	793	107	180	856	8
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked vol	2018	2018	856	2034	2026	793	864					793
vC, conflicting volume VC1, stage 1 conf vol												
VC2, stage 2 conf vol												
Tc, single (s)	2018	2018	856	2034	2026	793	864					793
IC, 2 stage (s)												4.1
IF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2					2.2
p0 queue free %	57	91	96	0	100	52	99					78
cM capacity (veh/h)	19	45	357	31	45	388	779					828
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3			
Volume Total	26	63	186	4	793	107	180	856	8			
Volume Left	8	63	0	4	0	0	180	0	0			
Volume Right	14	0	186	0	0	0	107	0	0	8		
cSH	47	31	388	779	1700	1700	828	1700	1700			
Volume to Capacity	0.56	2.00	0.48	0.01	0.47	0.06	0.22	0.50	0.00			
Queue Length 95th (ft)	52	180	63	0	0	0	21	0	0			
Control Delay (s)	151.3	736.8	22.5	9.6	0.0	0.0	10.6	0.0	0.0			
Lane LOS	F	F	C	A			B					
Approach Delay (s)	151.3	202.8		0.0			1.8					
Approach LOS	F	F										
Intersection Summary												
Average Delay			25.4									
Intersection Capacity Utilization			67.2%									C
Analysis Period (min)			15									

Lanes, Volumes, Timings
10: Webb Rd & SR 9

Base Saturday
6/29/2007



Lane Group	EBT	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	42	136	28	27	834	127	24	835
Sign Control	Stop	Stop	Stop	Free	Free	Free	Free	Free
Intersection Summary								
Control Type: Unsignalized								
Intersection Capacity Utilization 62.0%								
Analysis Period (min) 15								
ICU Level of Service B								

HCM Unsignalized Intersection Capacity Analysis
10: Webb Rd & SR 9

Base Saturday
6/29/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	4	4		4	4		4	4		4	4	
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Grade												
Volume (veh/h)	11	9	9	101	9	16	20	809	112	20	773	12
Peak Hour Factor	0.67	0.67	0.67	0.82	0.67	0.58	0.75	0.97	0.88	0.85	0.95	0.56
Hourly flow rate (vph)	16	13	13	123	13	28	27	834	127	24	814	21
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)						11						
Median type						None						
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1766	1886	824	1768	1770	834	835			961		
VC1, stage 1 conf vol												
VC2, stage 2 conf vol												
VCu, unblocked vol	1766	1886	824	1768	1770	834	835			961		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	67	80	96	0	83	93	97			97		
cM capacity (veh/h)	50	66	373	50	78	368	798			716		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2					
Volume Total	43	164	27	834	127	24	835					
Volume Left	16	123	27	0	0	24	0					
Volume Right	13	28	0	0	127	0	21					
cSH	76	62	798	1700	1700	716	1700					
Volume to Capacity	0.57	2.65	0.03	0.49	0.07	0.03	0.49					
Queue Length 95th (ft)	62	413	3	0	0	3	0					
Control Delay (s)	101.9	890.5	9.7	0.0	0.0	10.2	0.0					
Lane LOS	F	F	A	A	B	B						
Approach LOS	F	F	F		0.3	0.3						
Intersection Summary												
Average Delay	73.6						ICU Level of Service					
Intersection Capacity Utilization	62.0%						B					
Analysis Period (min)	15											

Lanes, Volumes, Timings
11: Morris Rd & Bethany Rd

Base Saturday
6/29/2007



Lane Group	EBT	WBT	SBL
Lane Group Flow (vph)	428	403	281
Sign Control	Free	Free	Stop
Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 63.3%			
Analysis Period (min) 15			
ICU Level of Service B			

HCM Unsignalized Intersection Capacity Analysis
11: Morris Rd & Bethany Rd

Base Saturday
6/29/2007



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	4	4	4	4	4	4
Sign Control	Free	Free	Free	Free	Stop	Stop
Grade	0%	0%	0%	0%	0%	0%
Volume (veh/h)	115	256	259	93	123	120
Peak Hour Factor	0.84	0.88	0.90	0.81	0.88	0.85
Hourly flow rate (vph)	137	291	288	115	140	141
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
VC, conflicting volume		403			910	345
VC1, stage 1 conf vol						
VC2, stage 2 conf vol						
VCu, unblocked vol		403			910	345
tC, single (s)		4.1			6.4	6.2
tC, 2 stage (s)						
tF (s)		2.2			3.5	3.3
p0 queue free %		88			48	80
cM capacity (veh/h)		1156			269	698
Direction, Lane #						
	EB 1	WB 1	SB 1			
Volume Total	428	403	281			
Volume Left	137	0	140			
Volume Right	0	115	141			
cSH	1156	1700	389			
Volume to Capacity	0.12	0.24	0.72			
Queue Length 95th (ft)	10	0	138			
Control Delay (s)	3.6	0.0	34.9			
Lane LOS	A	D	D			
Approach Delay (s)	3.6	0.0	34.9			
Approach LOS	D		D			
Intersection Summary						
Average Delay			10.2			
Intersection Capacity Utilization		63.3%			ICU Level of Service	B
Analysis Period (min)		15				

Lanes, Volumes, Timings
12: Windward Village Pky & SR 9

Base Saturday
6/29/2007

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	13	30	44	904	838	17
Sign Control	Stop			Free	Free	
Intersection Summary						
Control Type: Unsignalized						
Intersection Capacity Utilization 55.2%						
Analysis Period (min) 15						
ICU Level of Service B						

HCM Unsignalized Intersection Capacity Analysis
12: Windward Village Pky & SR 9

Base Saturday
6/29/2007

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	11	24	36	859	813	13
Peak Hour Factor	0.83	0.79	0.82	0.95	0.97	0.75
Hourly flow rate (vph)	13	30	44	904	838	17
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
VC, conflicting volume	1830	838	838			
VC1, stage 1 conf vol						
VC2, stage 2 conf vol						
vCu, unblocked vol	1830	838	838			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	83	92	94			
cM capacity (veh/h)	79	366	796			
Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	13	30	44	904	838	17
Volume Left	13	0	44	0	0	0
Volume Right	0	30	0	0	0	17
cSH	79	366	796	1700	1700	1700
Volume to Capacity	0.17	0.08	0.06	0.53	0.49	0.01
Queue Length 95th (ft)	14	7	4	0	0	0
Control Delay (s)	59.2	15.7	9.8	0.0	0.0	0.0
Lane LOS	F	C	A			
Approach Delay (s)	28.9		0.5		0.0	
Approach LOS	D					
Intersection Summary						
Average Delay	0.9					
Intersection Capacity Utilization	55.2%					
ICU Level of Service	B					
Analysis Period (min)	15					

Lanes, Volumes, Timings
13: Habitat Drwy & SR 9

Base Saturday
6/29/2007

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	7	12	13	897	863	7
Sign Control	Stop	Stop	Free	Free	Free	Free
Intersection Summary						
Control Type: Unsignalized						
Intersection Capacity Utilization 53.4%						
Analysis Period (min) 15						
ICU Level of Service A						

HCM Unsignalized Intersection Capacity Analysis
13: Habitat Drwy & SR 9

Base Saturday
6/29/2007

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Sign Control	Stop	Stop	Free	Free	Free	Free
Grade	0%	0%	0%	0%	0%	0%
Volume (veh/h)	6	11	12	825	794	6
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	7	12	13	897	863	7
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
VC, conflicting volume	1786	863	870			
VC1, stage 1 conf vol						
VC2, stage 2 conf vol						
VCu, unblocked vol	1786	863	870			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	93	97	98			
cM capacity (veh/h)	88	354	775			
Direction, Lane #						
	EB 1	EB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	7	12	13	897	863	7
Volume Left	7	0	13	0	0	0
Volume Right	0	12	0	0	0	7
cSH	88	354	775	1700	1700	1700
Volume to Capacity	0.07	0.03	0.02	0.53	0.51	0.00
Queue Length 95th (ft)	6	3	1	0	0	0
Control Delay (s)	49.1	15.5	9.7	0.0	0.0	0.0
Lane LOS	E	C	A			
Approach Delay (s)	27.4		0.1		0.0	
Approach LOS	D					
Intersection Summary						
Average Delay	0.4					
Intersection Capacity Utilization	53.4%					
ICU Level of Service	A					
Analysis Period (min)	15					

Lanes, Volumes, Timings
14: Marrywood Dr & SR 9

Base Saturday
6/29/2007

	↖	↗	↑	↓	↙
Movement	EBL	NBL	SBT	SBT	SBR
Lane Group Flow (vph)	49	36	855	872	22
Sign Control	Stop	Free	Free	Free	Free
Intersection Summary					
Control Type: Unsignalized					
Intersection Capacity Utilization 53.2%					
Analysis Period (min) 15					
ICU Level of Service A					

HCM Unsignalized Intersection Capacity Analysis
14: Marrywood Dr & SR 9

Base Saturday
6/29/2007

	↖	↗	↑	↓	↙
Movement	EBL	EBR	NBL	SBT	SBR
Lane Configurations	↖	↗	↖	↗	↖
Sign Control	Stop	Free	Free	Free	Free
Grade	0%	0%	0%	0%	0%
Volume (veh/h)	9	29	29	821	18
Peak Hour Factor	0.67	0.81	0.81	0.96	0.93
Hourly flow rate (vph)	13	36	36	855	22
Pedestrians					
Lane Width (ft)					
Walking Speed (ft/s)					
Percent Blockage					
Right turn flare (veh)					
Median type	None				
Median storage (veh)					
Upstream signal (ft)					
pX, platoon unblocked					
VC, conflicting volume	1799	872	895		
VC1, stage 1 conf vol					
VC2, stage 2 conf vol					
vCu, unblocked vol	1799	872	895		
tC, single (s)	6.4	6.2	4.1		
tC, 2 stage (s)					
tF (s)	3.5	3.3	2.2		
p0 queue free %	84	90	95		
cM capacity (veh/h)	84	350	758		
Direction, Lane #					
	EB 1	NB 1	SB 1	SB 2	
Volume Total	49	36	855	872	22
Volume Left	13	36	0	0	0
Volume Right	36	0	0	22	
cSH	187	758	1700	1700	
Volume to Capacity	0.26	0.05	0.50	0.51	0.01
Queue Length 95th (ft)	25	4	0	0	0
Control Delay (s)	30.9	10.0	0.0	0.0	0.0
Lane LOS	D	A			
Approach Delay (s)	30.9	0.4	0.0		
Approach LOS	D				
Intersection Summary					
Average Delay	1.0				
Intersection Capacity Utilization	53.2%				
ICU Level of Service	A				
Analysis Period (min)	15				

Base 2009 Saturday Improved

Lanes, Volumes, Timings
5: SR 9 & Windward Pky

Base Saturday - Improved
6/29/2007

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	149	700	199	824	729	159	172	536	321	208	528	110
Act Effct Green (s)	58.0	46.0	46.0	29.0	63.0	63.0	19.0	120.0	21.0	21.0	21.0	21.0
Actuated g/C Ratio	0.48	0.38	0.38	0.24	0.52	0.52	0.16	0.16	1.00	0.18	0.18	0.18
v/c Ratio	0.61	0.98	0.29	0.99	0.75	0.18	0.88	0.96	0.20	0.99	0.85	0.31
Control Delay	42.1	66.4	12.0	71.6	23.3	2.1	64.7	55.9	0.2	102.9	57.2	9.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.1	66.4	12.0	71.6	23.3	2.1	64.7	55.9	0.2	102.9	57.2	9.8
LOS	D	E	B	E	C	A	E	E	A	F	E	A
Approach Delay	52.6											
Approach LOS	D											
Queue Length 50th (ft)	43	530	41	338	300	0	106	200	0	157	215	14
Queue Length 95th (ft)	125	#785	97	#453	475	10	m#153	m#287	m0	m#248	#296	m46
Internal Link Dist (ft)	1481											
Turn Bay Length (ft)	220	185	185	714	678	830	978	903	195	560	1583	210
Base Capacity (vph)	245	714	678	830	978	903	195	560	1583	210	619	360
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.61	0.98	0.29	0.99	0.75	0.18	0.88	0.96	0.20	0.99	0.85	0.31

Intersection Summary

Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 53 (44%), Referenced to phase 2:WBT and 6:EBTL, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.99	
Intersection Capacity Delay: 48.6	Intersection LOS: D
Intersection Capacity Utilization 91.6%	ICU Level of Service F
Analysis Period (min) 15	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	
m Volume for 95th percentile queue is metered by upstream signal.	

HCM Signalized Intersection Capacity Analysis
5: SR 9 & Windward Pky

Base Saturday - Improved
6/29/2007

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Ideal Flow (vphpl)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Flt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.85	1.00
Flt Protected	0.95	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	3433	1863	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.09	1.00	1.00	0.95	1.00	1.00	0.45	1.00	1.00	0.36	1.00	1.00
Satd. Flow (perm)	176	1863	1583	3433	1863	1583	844	3539	1583	677	3539	1583
Volume (vph)	139	637	179	725	700	130	160	509	295	181	496	101
Peak-hour factor, PHF	0.93	0.91	0.90	0.88	0.96	0.82	0.93	0.95	0.92	0.87	0.94	0.92
Adj. Flow (vph)	149	700	199	824	729	159	172	536	321	208	528	110
RTOR Reduction (vph)	0	0	72	0	0	72	0	0	0	0	0	83
Lane Group Flow (vph)	149	700	127	824	729	87	172	536	321	208	528	27
Turn Type	pm+pt	Perm	Prot	Perm	pm+pt	Perm	pm+pt	Free	pm+pt	Free	pm+pt	Perm
Protected Phases	1	6	5	2	7	4	3	8				
Permitted Phases	6	6	6	2	4	4	Free	8				
Actuated Green, G (s)	58.0	46.0	46.0	29.0	63.0	63.0	19.0	19.0	120.0	21.0	21.0	21.0
Effective Green, g (s)	58.0	46.0	46.0	29.0	63.0	63.0	19.0	19.0	120.0	21.0	21.0	21.0
Actuated g/C Ratio	0.48	0.38	0.38	0.24	0.52	0.52	0.16	0.16	1.00	0.18	0.18	0.18
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	244	714	607	830	978	831	195	560	1583	210	619	277
v/s Ratio Prot	0.06	c0.38		c0.24	0.39	0.06	c0.15			c0.08	0.15	
v/s Ratio Perm	0.23		0.08			0.05	0.08		0.20	c0.09		0.02
Uniform Delay, d1	44.7	36.6	24.8	45.4	22.2	14.3	48.7	50.1	0.0	57.1	48.0	41.5
Progression Factor	1.00	1.00	1.00	0.93	0.80	0.66	0.69	0.67	1.00	0.89	0.89	0.75
Incremental Delay, d2	4.5	29.2	0.8	28.7	5.0	0.2	23.2	20.7	0.2	58.7	13.7	0.7
Delay (s)	49.2	65.8	25.6	70.8	22.7	9.7	56.6	54.4	0.2	109.6	56.7	32.0
Level of Service	D	E	C	E	C	A	E	D	A	F	E	C
Approach Delay (s)	55.8											
Approach LOS	E											

Intersection Summary

HCM Average Control Delay	49.6	HCM Level of Service	D
HCM Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	91.6%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings
9: New Homes Private Drwy & SR 9

Base Saturday - Improved
6/29/2007

	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	26	63	186	4	793	107	180	856	8
Act Effct Green (s)	12.5	12.5	12.5	99.5	99.5	120.0	99.5	99.5	99.5
Actuated g/C Ratio	0.10	0.10	0.10	0.83	0.83	1.00	0.83	0.83	0.83
v/c Ratio	0.15	0.44	0.48	0.01	0.51	0.07	0.45	0.55	0.01
Control Delay	29.2	54.6	6.4	1.0	2.9	0.1	2.5	1.4	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.2	54.6	6.4	1.0	2.9	0.1	2.5	1.4	0.0
LOS	C	D	A	A	A	A	A	A	A
Approach Delay	29.2	18.6			2.5			1.6	
Approach LOS	C	B			A			A	
Queue Length 50th (ft)	9	37	1	0	24	0	1	7	0
Queue Length 95th (ft)	3	m63	m12	0	191	0	m6	m28	m0
Internal Link Dist (ft)	150		237		596			4282	
Turn Bay Length (ft)				150		140	135		150
Base Capacity (vph)	382	322	560	351	1545	1583	401	1545	1314
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.20	0.33	0.01	0.51	0.07	0.45	0.55	0.01

Intersection Summary

Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 96 (60%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.55	
Intersection Signal Delay: 4.2	Intersection LOS: A
Intersection Capacity Utilization 67.3%	ICU Level of Service C
Analysis Period (min) 15	
m Volume for 95th percentile queue is metered by upstream signal.	

HCM Signalized Intersection Capacity Analysis
9: New Homes Private Drwy & SR 9

Base Saturday - Improved
6/29/2007

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flt Protected	0.93	0.93	1.00	0.85	1.00	0.85	1.00	0.85	1.00	0.95	1.00	0.85
Satd. Flow (prot)	1701	1701	1770	1583	1770	1583	1770	1583	1770	1583	1770	1583
Flt Permitted	0.64	0.64	0.74	1.00	0.29	1.00	0.29	1.00	0.32	1.00	0.32	1.00
Satd. Flow (perm)	1106	1106	1379	1583	548	1583	548	1583	598	1863	598	1863
Volume (vph)	2	1	6	54	0	158	1	730	81	164	779	4
Peak-hour factor, PHF	0.25	0.25	0.42	0.86	0.92	0.85	0.25	0.92	0.76	0.91	0.91	0.50
Adj. Flow (vph)	8	4	14	63	0	186	4	793	107	180	856	8
RTOR Reduction (vph)	0	13	0	0	167	0	0	0	0	0	0	1
Lane Group Flow (vph)	0	13	0	63	19	0	4	793	107	180	856	7
Turn Type	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Free	Free	Perm	Perm	Perm
Protected Phases	8	8	4	4	4	4	6	6	Free	2	2	2
Permitted Phases	8	8	4	4	4	4	6	6	Free	2	2	2
Actuated Green, G (s)	12.5	12.5	12.5	12.5	12.5	12.5	99.5	99.5	120.0	99.5	99.5	99.5
Effective Green, g (s)	12.5	12.5	12.5	12.5	12.5	12.5	99.5	99.5	120.0	99.5	99.5	99.5
Actuated g/C Ratio	0.10	0.10	0.10	0.10	0.10	0.10	0.83	0.83	1.00	0.83	0.83	0.83
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	115	144	144	165	165	165	454	1545	1583	496	1545	1313
v/s Ratio Prot	0.01	0.01	c0.05	0.01	0.01	0.01	0.01	0.07	0.30	0.07	0.30	0.00
v/s Ratio Perm	0.12	0.12	0.44	0.12	0.12	0.12	0.01	0.51	0.07	0.36	0.55	0.01
Uniform Delay, d1	48.7	50.5	48.7	50.5	48.7	50.5	1.8	3.0	0.0	2.5	3.2	1.8
Progression Factor	1.00	0.94	1.51	0.94	1.51	0.94	0.37	0.46	1.00	0.12	0.14	0.02
Incremental Delay, d2	0.5	2.1	0.3	0.5	2.1	0.3	0.0	1.1	0.1	1.1	0.8	0.0
Delay (s)	49.2	49.2	49.3	73.8	73.8	73.8	0.7	2.5	0.1	1.4	1.2	0.0
Level of Service	D	D	D	E	E	E	A	A	A	A	A	A
Approach Delay (s)	49.2	49.2	49.2	67.6	67.6	67.6	2.2	2.2	1.3	1.3	1.3	1.3
Approach LOS	D	D	D	E	E	E	A	A	A	A	A	A

Intersection Summary

HCM Average Control Delay	9.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	67.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings
10: Webb Rd & SR 9

Base Saturday - Improved
6/29/2007

	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	42	123	41	27	834	127	24	835
Act Effct Green (s)	16.7	16.7	16.7	95.3	95.3	95.3	95.3	95.3
Actuated g/C Ratio	0.14	0.14	0.14	0.79	0.79	0.79	0.79	0.79
v/c Ratio	0.18	0.62	0.16	0.08	0.56	0.10	0.07	0.57
Control Delay	24.0	39.2	7.9	4.1	4.6	1.5	2.5	6.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.0	39.2	7.9	4.1	4.6	1.5	2.5	6.4
LOS	C	D	A	A	A	A	A	A
Approach Delay	24.0	31.4	31.4	4.2	4.2	4.2	6.3	6.3
Approach LOS	C	C	C	A	A	A	A	A
Queue Length 50th (ft)	15	39	1	4	115	5	0	186
Queue Length 95th (ft)	m30	m57	m4	m5	m129	m8	m6	406
Internal Link Dist (ft)	2515	362	362	2361	2361	2361	404	404
Turn Bay Length (ft)	150	150	150	329	1480	1277	329	1474
Base Capacity (vph)	433	370	453	329	1480	1277	329	1474
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.33	0.09	0.08	0.56	0.10	0.07	0.57

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 44 (37%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.62
Intersection Signal Delay: 7.6
Intersection Capacity Utilization 61.5%
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis
10: Webb Rd & SR 9

Base Saturday - Improved
6/29/2007

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBT
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBT
Lane Configurations	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.96	0.96	0.96	1.00	0.90	1.00	0.95	1.00	0.85	1.00	1.00	1.00
Flt Protected	0.98	0.98	0.98	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1752	1752	1752	1770	1672	1770	1770	1863	1583	1770	1856	1856
Flt Permitted	0.90	0.90	0.90	0.78	1.00	0.29	1.00	1.00	0.29	1.00	1.00	1.00
Satd. Flow (perm)	1612	1612	1612	1451	1672	536	1863	1583	537	1856	1856	1856
Volume (vph)	11	9	9	101	9	16	20	809	112	20	773	12
Peak-hour factor, PHF	0.67	0.67	0.67	0.82	0.67	0.58	0.75	0.97	0.88	0.85	0.95	0.56
Adj. Flow (vph)	16	13	13	123	13	28	27	834	127	24	814	21
RTOR Reduction (vph)	0	11	0	0	24	0	0	0	0	20	0	0
Lane Group Flow (vph)	0	31	0	123	17	0	27	834	107	24	835	0
Turn Type	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm
Protected Phases	8	8	8	4	4	4	6	6	6	6	2	2
Permitted Phases	8	8	8	4	4	4	6	6	6	6	2	2
Actuated Green, G (s)	16.7	16.7	16.7	16.7	16.7	16.7	95.3	95.3	95.3	95.3	95.3	95.3
Effective Green, g (s)	16.7	16.7	16.7	16.7	16.7	16.7	95.3	95.3	95.3	95.3	95.3	95.3
Actuated g/C Ratio	0.14	0.14	0.14	0.14	0.14	0.14	0.79	0.79	0.79	0.79	0.79	0.79
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	224	202	202	233	233	426	1480	1257	426	1474	1474	1474
v/s Ratio Prot	0.02	0.02	0.02	0.08	0.01	0.01	0.05	0.07	0.04	0.07	0.04	0.04
v/s Ratio Perm	0.14	0.14	0.14	0.61	0.07	0.07	0.06	0.56	0.08	0.06	0.57	0.57
Uniform Delay, d1	45.3	48.6	48.6	44.9	44.9	44.9	2.7	4.6	2.7	2.7	4.6	4.6
Progression Factor	0.89	0.57	0.57	0.33	0.33	0.33	1.04	0.68	1.25	0.58	0.92	0.92
Incremental Delay, d2	0.3	4.5	4.5	0.1	0.1	0.1	0.2	0.9	0.1	0.2	1.4	1.4
Delay (s)	31.4	32.3	32.3	14.7	14.7	14.7	3.0	4.1	3.5	1.8	5.7	5.7
Level of Service	C	C	C	B	B	B	A	A	A	A	A	A
Approach Delay (s)	31.4	31.4	31.4	27.9	27.9	27.9	4.0	4.0	4.0	5.5	5.5	5.5
Approach LOS	C	C	C	C	C	C	A	A	A	A	A	A

Intersection Summary

HCM Average Control Delay	7.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	61.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



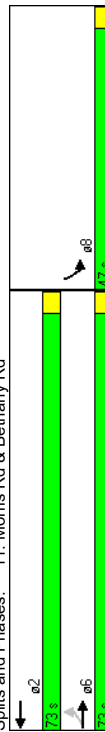
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	0	1833	1790	0	1694	0
Flt Permitted	0.676				0.976	
Satd. Flow (perm)	0	1259	1790	0	1694	0
Satd. Flow (RTOR)			28		47	
Volume (vph)	115	256	259	93	123	120
Lane Group Flow (vph)	0	428	403	0	281	0
Turn Type	Perm					
Protected Phases		6	2		8	
Permitted Phases		6				
Total Split (s)	73.0	73.0	73.0	0.0	47.0	0.0
Act Effct Green (s)		90.8	90.8		21.2	
Actuated g/C Ratio		0.76	0.76		0.18	
v/c Ratio		0.45	0.30		0.83	
Control Delay		8.4	5.7		54.0	
Queue Delay		0.0	0.0		0.0	
Total Delay		8.4	5.7		54.0	
LOS		A	A		D	
Approach Delay		8.4	5.7		54.0	
Approach LOS		A	A		D	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 97 (81%), Referenced to phase 2:WBT and 6:EBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.83
Intersection Signal Delay: 18.9
Intersection Capacity Utilization 63.3%
Analysis Period (min) 15

Intersection LOS: B
ICU Level of Service B

Splits and Phases: 11: Morris Rd & Bethany Rd



Future PM Intersection Analysis

Future 2009 PM

Lanes, Volumes, Timings
1: Bethany Rd & Cogburn Rd

Future PM
6/29/2007

	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	361	758	202	602	200	313
Act Effct Green (s)	56.0	56.0	56.0	56.0	56.0	56.0
Actuated g/C Ratio	0.47	0.47	0.47	0.47	0.47	0.47
v/c Ratio	0.51	0.93	0.49	0.70	1.06	0.36
Control Delay	23.8	13.7	13.3	14.8	115.1	21.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.8	13.7	13.3	14.8	115.1	21.7
LOS	C	B	B	B	F	C
Approach Delay	23.8	13.7	14.4	58.1		
Approach LOS	C	B	B	B	E	E
Queue Length 50th (ft)	177	110	55	163	~170	149
Queue Length 95th (ft)	268	m96	m57	m144	#222	220
Internal Link Dist (ft)	1654	2050	3797	1469		
Turn Bay Length (ft)	706	818	412	861	189	861
Base Capacity (vph)	0	0	0	0	0	0
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.51	0.93	0.49	0.70	1.06	0.36
Intersection Summary						
Cycle Length: 120						
Actuated Cycle Length: 120						
Offset: 70 (58%), Referenced to phase 2:SRTL and 6:NRTL, Start of Green						
Control Type: Actuated-Coordinated						
Maximum v/c Ratio: 1.06						
Intersection Signal Delay: 24.8						
Intersection Capacity Utilization 88.3%						
Analysis Period (min) 15						
~ Volume exceeds capacity, queue is theoretically infinite.						
# Queue shown is maximum after two cycles.						
# 95th percentile volume exceeds capacity, queue may be longer.						
Queue shown is maximum after two cycles.						
m Volume for 95th percentile queue is metered by upstream signal.						

HCM Signalized Intersection Capacity Analysis
1: Bethany Rd & Cogburn Rd

Future PM
6/29/2007

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
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	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flt	0.96	0.96	0.96	0.95	0.95	0.95	0.99	0.99	0.99	1.00	0.99	1.00
Flt Protected	0.99	0.99	0.99	1.00	1.00	1.00	0.95	0.95	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1773	1773	1773	1764	1764	1770	1840	1840	1770	1839	1770	1839
Flt Permitted	0.83	0.83	0.83	0.97	0.97	0.97	1.00	1.00	0.97	1.00	0.97	1.00
Satd. Flow (perm)	1484	1484	1484	1713	1713	1713	1840	1840	1713	1839	1713	1839
Volume (vph)	30	189	95	20	398	251	180	515	43	142	286	19
Peak-hour factor, PHF	0.68	0.93	0.83	0.56	0.91	0.88	0.89	0.93	0.89	0.71	0.93	0.71
Adj. Flow (vph)	44	203	114	36	437	285	202	554	48	200	286	27
RTOR Reduction (vph)	0	14	0	0	18	0	0	3	0	0	3	0
Lane Group Flow (vph)	0	347	0	0	740	0	202	599	0	200	310	0
Turn Type	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm
Protected Phases	8	8	8	4	4	4	6	6	6	6	2	2
Permitted Phases	8	8	8	4	4	4	6	6	6	6	2	2
Actuated Green, G (s)	56.0	56.0	56.0	56.0	56.0	56.0	56.0	56.0	56.0	56.0	56.0	56.0
Effective Green, g (s)	56.0	56.0	56.0	56.0	56.0	56.0	56.0	56.0	56.0	56.0	56.0	56.0
Actuated g/C Ratio	0.47	0.47	0.47	0.47	0.47	0.47	0.47	0.47	0.47	0.47	0.47	0.47
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	693	799	799	799	799	799	412	859	189	858	189	858
v/s Ratio Prot	0.23	0.23	0.23	0.43	0.43	0.43	0.23	0.33	0.49	0.17	0.17	0.17
v/s Ratio Perm	0.50	0.50	0.50	0.93	0.93	0.93	0.49	0.70	1.06	0.36	0.36	0.36
Uniform Delay, d1	22.3	22.3	22.3	30.1	30.1	30.1	22.1	25.3	48	20.5	20.5	20.5
Progression Factor	1.00	1.00	1.00	0.33	0.33	0.33	0.41	0.41	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.6	0.6	0.6	2.1	2.1	2.1	3.8	4.3	81.7	1.2	1.2	1.2
Delay (s)	22.8	22.8	22.8	12.0	12.0	12.0	12.9	14.6	113.7	21.7	21.7	21.7
Level of Service	C	C	C	B	B	B	B	B	F	F	F	F
Approach Delay (s)	22.8	22.8	22.8	12.0	12.0	12.0	14.2	14.2	57.6	57.6	57.6	57.6
Approach LOS	C	C	C	B	B	B	B	B	E	E	E	E
Intersection Summary												
HCM Average Control Delay							23.9	HCM Level of Service				C
HCM Volume to Capacity ratio							0.99					
Actuated Cycle Length (s)							120.0	Sum of lost time (s)				8.0
Intersection Capacity Utilization							88.3%	ICU Level of Service				E
Analysis Period (min)							15					
c Critical Lane Group												

Lanes, Volumes, Timings
2: Bethany Rd & SR 9

Future PM
6/29/2007

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	136	127	298	158	334	356	1018	44	924
Act Effct Green (s)	8.0	16.0	16.0	11.0	19.0	21.0	71.6	7.3	56.0
Actuated g/C Ratio	0.07	0.13	0.13	0.09	0.16	0.18	0.60	0.06	0.47
v/c Ratio	1.15	0.51	0.64	0.98	1.14	1.15	0.93	0.41	1.08
Control Delay	173.6	57.8	13.8	119.3	138.4	142.0	38.6	65.4	86.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	173.6	57.8	13.8	119.3	138.4	142.0	38.6	65.4	86.8
LOS	F	E	B	F	F	F	D	E	F
Approach Delay	62.5								
Approach LOS	E								
Queue Length 50th (ft)	~127	90	25	124	~294	~324	712	33	~798
Queue Length 95th (ft) m#185	2050	90	25	124	~294	~324	712	33	~798
Internal Link Dist (ft)	2050								
Turn Bay Length (ft)	150	248	469	162	294	310	1094	118	854
Base Capacity (vph)	0	0	0	0	0	0	0	0	0
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.15	0.51	0.64	0.98	1.14	1.15	0.93	0.37	1.08

Intersection Summary

Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 31 (26%), Referenced to phase 2:SBT and 6:NBT, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.15	
Intersection Signal Delay: 80.4	Intersection LOS: F
Intersection Capacity Utilization 92.3%	ICU Level of Service F
Analysis Period (min) 15	
~ Volume exceeds capacity, queue is theoretically infinite.	
Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	
m Volume for 95th percentile queue is metered by upstream signal.	

Baseline
A & R Engineering Inc.

Synchro 6 Report
Page 3

HCM Signalized Intersection Capacity Analysis
2: Bethany Rd & SR 9

Future PM
6/29/2007

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
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	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.96	1.00	0.98	1.00	0.98	1.00	0.98	1.00
Flt Protected	0.95	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95
Satd. Flow (prot)	1770	1863	1583	1770	1793	1770	1770	1827	1770	1827	1770	1817
Flt Permitted	0.95	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95
Satd. Flow (perm)	1770	1863	1583	1770	1793	1770	1770	1827	1770	1827	1770	1817
Volume (vph)	109	112	179	115	228	55	281	835	95	30	650	129
Peak-hour factor, PHF	0.80	0.88	0.60	0.73	0.91	0.66	0.79	0.94	0.73	0.68	0.84	0.86
Adj. Flow (vph)	136	127	298	158	251	83	356	888	130	44	774	150
RTOR Reduction (vph)	0	0	258	0	10	0	0	4	0	0	6	0
Lane Group Flow (vph)	136	127	40	158	324	0	356	1014	0	44	918	0
Turn Type	Prot	Perm	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Protected Phases	3	8	8	7	4	1	6	5	2			
Permitted Phases												
Actuated Green, G (s)	8.0	16.0	16.0	11.0	19.0	21.0	70.8	6.2	56.0			
Effective Green, g (s)	8.0	16.0	16.0	11.0	19.0	21.0	70.8	6.2	56.0			
Actuated g/C Ratio	0.07	0.13	0.13	0.09	0.16	0.18	0.59	0.05	0.47			
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0			
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0			
Lane Grp Cap (vph)	118	248	211	162	284	310	1078	91	848			
v/s Ratio Prot	0.08	0.07	0.03	c0.09	c0.18	c0.20	0.55	0.02	c0.51			
v/s Ratio Perm												
v/c Ratio	1.15	0.51	0.19	0.98	1.14	1.15	0.94	0.48	1.08			
Uniform Delay, d1	56.0	48.4	46.2	54.4	50.5	49.5	22.7	55.3	32.0			
Progression Factor	1.11	1.06	1.56	1.00	1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2	120.2	1.4	0.3	62.8	96.8	97.5	16.4	4.0	55.8			
Delay (s)	182.6	52.7	72.5	117.2	147.3	147.0	39.0	59.3	87.8			
Level of Service	F	D	E	F	F	F	D	E	F			
Approach Delay (s)	94.7											
Approach LOS	F											
Intersection Summary												
HCM Average Control Delay	87.4											
HCM Volume to Capacity ratio	1.11											
Actuated Cycle Length (s)	120.0											
Intersection Capacity Utilization	92.3%											
Analysis Period (min)	15											
Critical Lane Group												

Baseline
A & R Engineering Inc.

Synchro 6 Report
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Lanes, Volumes, Timings
3: Webb Rd & Deerfield Pky

Future PM
6/29/2007

	EBT	EBR	WBT	WBR	NBL	NBT	SBT
Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	SBT
Lane Group Flow (vph)	288	66	327	128	121	841	464
Act Effct Green (s)	31.4	31.4	31.4	31.4	80.6	80.6	68.9
Actuated g/C Ratio	0.26	0.26	0.26	0.26	0.67	0.67	0.57
v/c Ratio	0.76	0.14	0.89	0.27	0.24	0.36	0.34
Control Delay	51.2	6.3	68.2	13.9	6.0	6.1	18.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.2	6.3	68.2	13.9	6.0	6.1	18.4
LOS	D	A	E	B	A	A	B
Approach Delay	42.8		52.9			6.1	18.4
Approach LOS	D		D			A	B
Queue Length 50th (ft)	214	4	246	28	17	51	103
Queue Length 95th (ft)	m248	m19	316	67	m31	m221	m132
Internal Link Dist (ft)	1660		1492			2619	3319
Turn Bay Length (ft)	135		75		230		
Base Capacity (vph)	600	698	583	707	599	2322	1385
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.48	0.09	0.56	0.18	0.20	0.36	0.34
Intersection Summary							
Cycle Length: 120							
Actuated Cycle Length: 120							
Offset: 34 (28%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green							
Control Type: Actuated-Coordinated							
Maximum v/c Ratio: 0.89							
Intersection Signal Delay: 24.0	Intersection LOS: C						
Intersection Capacity Utilization 72.6%	ICU Level of Service C						
Analysis Period (min) 15							
m Volume for 95th percentile queue is metered by upstream signal.							

HCM Signalized Intersection Capacity Analysis
3: Webb Rd & Deerfield Pky

Future PM
6/29/2007

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	4	4	4	4	4	4	4	4	4	4	4	4
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	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.97	0.98	0.95	0.95
Flt Protected	0.99	1.00	1.00	0.99	1.00	0.95	1.00	1.00	0.99	0.99	0.99	0.99
Satd. Flow (prot)	1840	1583	1837	1583	1770	3441	3441	3441	3441	3441	3441	3441
Flt Permitted	0.51	1.00	0.52	1.00	0.43	1.00	0.43	1.00	0.70	0.70	0.70	0.70
Satd. Flow (perm)	946	1583	975	1583	804	3441	804	3441	2430	2430	2430	2430
Volume (vph)	52	202	55	69	216	115	87	637	103	64	232	45
Peak-hour factor, PHF	0.73	0.93	0.83	0.75	0.92	0.90	0.72	0.93	0.66	0.81	0.75	0.59
Adj. Flow (vph)	71	217	66	92	235	128	121	685	156	79	309	76
RTOR Reduction (vph)	0	0	49	0	0	60	0	11	0	0	9	0
Lane Group Flow (vph)	0	288	17	0	327	68	121	830	0	0	455	0
Turn Type	Perm	Perm	Perm	Perm	Perm	pm+pt	Perm	pm+pt	Perm	Perm	Perm	Perm
Protected Phases	8	8	8	4	4	4	1	6	1	6	2	2
Permitted Phases	8	8	8	4	4	4	6	6	6	6	6	6
Actuated Green, G (s)	31.4	31.4	31.4	31.4	31.4	31.4	80.6	80.6	80.6	80.6	68.8	68.8
Effective Green, g (s)	31.4	31.4	31.4	31.4	31.4	31.4	80.6	80.6	80.6	80.6	68.8	68.8
Actuated g/C Ratio	0.26	0.26	0.26	0.26	0.26	0.26	0.67	0.67	0.67	0.67	0.57	0.57
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	248	414	255	414	603	2311	1393	1393	1393	1393	1393	1393
v/s Ratio Prot	0.30	0.01	0.34	0.04	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12
v/s Ratio Perm	1.16	0.04	1.28	0.16	0.20	0.36	0.36	0.36	0.36	0.36	0.36	0.36
Uniform Delay, d1	44.3	33.1	44.3	34.2	7.3	8.5	13.4	13.4	13.4	13.4	13.4	13.4
Progression Factor	0.96	0.89	1.00	1.00	0.60	0.62	0.62	0.62	0.62	0.62	0.62	0.62
Incremental Delay, d2	106.2	0.0	153.6	0.2	0.1	0.3	0.6	0.6	0.6	0.6	0.6	0.6
Delay (s)	148.8	29.3	197.9	34.4	4.5	5.6	16.7	16.7	16.7	16.7	16.7	16.7
Level of Service	F	C	F	C	A	A	A	A	A	A	A	A
Approach Delay (s)	126.5	F	151.9	F	5.4	5.4	16.7	16.7	16.7	16.7	16.7	16.7
Approach LOS	F	F	F	F	A	A	B	B	B	B	B	B
Intersection Summary												
HCM Average Control Delay	56.8											
HCM Volume to Capacity ratio	0.62											
Actuated Cycle Length (s)	120.0											
Intersection Capacity Utilization	72.6%											
Analysis Period (min)	15											
c Critical Lane Group												

Lanes, Volumes, Timings
4: Cogburn Rd & Webb Rd

Future PM
6/29/2007

	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	289	229	149	809	77	524
Act Effct Green (s)	28.2	28.2	80.5	74.9	80.0	73.1
Actuated g/C Ratio	0.24	0.24	0.67	0.62	0.67	0.61
v/c Ratio	0.89	0.55	0.33	0.37	0.22	0.25
Control Delay	68.6	38.2	4.2	3.9	7.0	8.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.6	38.2	4.2	3.9	7.0	8.7
LOS	E	D	A	A	A	A
Approach Delay	68.6	38.2	4.0	8.4		
Approach LOS	E	D	A	A	A	A
Queue Length 50th (ft)	207	135	12	45	13	64
Queue Length 95th (ft)	160	m169	m22	m62	m21	m114
Internal Link Dist (ft)	2012	2515		1866		556
Turn Bay Length (ft)	534	681	604	2196	466	2103
Base Capacity (vph)	0	0	0	0	0	0
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.54	0.34	0.25	0.37	0.17	0.25

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 75 (63%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.89
Intersection Signal Delay: 18.0
Intersection Capacity Utilization 61.1%
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis
4: Cogburn Rd & Webb Rd

Future PM
6/29/2007

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	0.97			0.95			1.00	0.99		1.00	0.97	
Flt Protected												
Satd. Flow (prot)	1766			1757			1770	3514		1770	3433	
Flt Permitted	0.58			0.95			0.42	1.00		0.30	1.00	
Satd. Flow (perm)	1045			1676			790	3514		564	3433	
Volume (vph)	105	62	60	15	99	64	139	747	35	46	377	68
Peak-hour factor, PHF	0.91	0.60	0.84	0.70	0.83	0.72	0.93	0.97	0.89	0.60	0.90	0.65
Adj. Flow (vph)	115	103	71	21	119	89	149	770	39	77	419	105
RTOR Reduction (vph)	0	12	0	0	24	0	0	2	0	0	11	0
Lane Group Flow (vph)	0	277	0	0	205	0	149	807	0	77	513	0
Turn Type	Perm	Perm	Perm	Perm	Perm	Perm	pm+pt	pm+pt	pm+pt	pm+pt	pm+pt	pm+pt
Protected Phases	8	8		4	4		1	6		5	2	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)	28.2			28.2			80.8	74.1		78.8	73.1	
Effective Green, g (s)	28.2			28.2			80.8	74.1		78.8	73.1	
Actuated g/C Ratio	0.23			0.23			0.67	0.62		0.66	0.61	
Clearance Time (s)	4.0			4.0			4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0			3.0			3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	246			394			587	2170		428	2091	
v/s Ratio Prot							c0.01	c0.23		0.01	0.15	
v/s Ratio Perm	c0.26			0.12			0.16			0.11		
v/c Ratio	1.13			0.52			0.25	0.37		0.18	0.25	
Uniform Delay, d1	45.9			40.0			7.1	11.4		7.8	10.8	
Progression Factor	1.00			1.00			0.39	0.28		0.75	0.73	
Incremental Delay, d2	95.2			1.2			0.1	0.3		0.2	0.3	
Delay (s)	141.1			41.3			2.9	3.5		6.0	8.2	
Level of Service	F			D			A	A		A	A	
Approach Delay (s)	141.1			41.3			3.4			7.9		
Approach LOS	F			D			A			A		
Intersection Summary												
HCM Average Control Delay	28.1						HCM Level of Service					
HCM Volume to Capacity ratio	0.55						C					
Actuated Cycle Length (s)	120.0						Sum of lost time (s)					
Intersection Capacity Utilization	61.1%						ICU Level of Service					
Analysis Period (min)	15						B					
Critical Lane Group												

Lanes, Volumes, Timings
5: SR 9 & Windward Pky

Future PM
6/29/2007

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	189	585	360	637	640	140	580	759	654	180	551
Act Effct Green (s)	41.0	33.0	33.0	66.0	54.0	54.0	46.0	30.4	120.0	27.6	16.0
Actuated g/C Ratio	0.34	0.28	0.28	0.55	0.45	0.45	0.38	0.25	1.00	0.23	0.13
v/c Ratio	0.73	1.14	0.61	1.30	0.76	0.18	1.30	0.85	0.41	0.77	1.13
Control Delay	36.8	125.3	19.7	180.5	35.0	4.4	177.5	43.9	0.3	51.4	121.6
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	36.8	125.3	19.7	180.5	35.0	4.4	177.5	43.9	0.3	51.4	121.6
LOS	D	F	B	F	C	A	F	D	A	D	F
Approach Delay	77.0			97.4			68.5			104.3	
Approach LOS	E			F			E			F	
Queue Length 50th (ft)	71	~530	95	~584	406	4	~518	262	0	87	~244
Queue Length 95th (ft)	#106	#753	159	#758	561	21	m#601	m300	m0	m#179	m#356
Internal Link Dist (ft)	1481			72			3686			1866	
Turn Bay Length (ft)	220	185	590	490	838	784	446	896	1583	239	489
Base Capacity (vph)	259	512	590	490	838	784	446	896	1583	239	489
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.73	1.14	0.61	1.30	0.76	0.18	1.30	0.85	0.41	0.75	1.13

Intersection Summary

Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 88 (73%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.30	
Intersection Signal Delay: 83.0	Intersection LOS: F
Intersection Capacity Utilization 118.4%	ICU Level of Service H
Analysis Period (min) 15	
~ Volume exceeds capacity, queue is theoretically infinite.	
Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	
m Volume for 95th percentile queue is metered by upstream signal.	

Baseline
A & R Engineering Inc.

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HCM Signalized Intersection Capacity Analysis
5: SR 9 & Windward Pky

Future PM
6/29/2007

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
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	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Flt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.95	1.00
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	3539	1583	1770	3382	
Flt Permitted	0.28	1.00	1.00	0.11	1.00	1.00	0.20	1.00	1.00	0.25	1.00	
Satd. Flow (perm)	514	1863	1583	201	1863	1583	373	3539	1583	466	3382	
Volume (vph)	159	567	295	548	602	102	545	736	536	166	372	137
Peak-hour factor, PHF	0.84	0.97	0.82	0.86	0.94	0.73	0.94	0.97	0.82	0.92	0.96	0.84
Adj. Flow (vph)	189	585	360	637	640	140	580	759	654	180	388	163
RTOR Reduction (vph)	0	0	155	0	0	72	0	0	0	0	38	0
Lane Group Flow (vph)	189	585	205	637	640	68	580	759	654	180	513	0
Turn Type	pm+pt	1	6	pm	5	2	pm	7	4	Free	pm+pt	
Protected Phases												
Permitted Phases	6			6	2		2	4		Free	8	
Actuated Green, G (s)	41.0	33.0	33.0	66.0	54.0	54.0	46.0	30.4	120.0	27.6	16.0	
Effective Green, g (s)	41.0	33.0	33.0	66.0	54.0	54.0	46.0	30.4	120.0	27.6	16.0	
Actuated g/C Ratio	0.34	0.28	0.28	0.55	0.45	0.45	0.38	0.25	1.00	0.23	0.13	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	259	512	435	490	838	712	446	897	1583	233	451	
v/s Ratio Prot	0.05	0.31		c0.31	0.34		c0.28	0.21		0.07	0.15	
v/s Ratio Perm	0.20		0.13	c0.40		0.04	c0.22		0.41	0.10		
v/c Ratio	0.73	1.14	0.47	1.30	0.76	0.10	1.30	0.85	0.41	0.77	1.14	
Uniform Delay, d1	31.5	43.5	36.2	47.7	27.7	19.0	34.9	42.6	0.0	39.9	52.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.29	0.92	1.00	1.02	0.95	
Incremental Delay, d2	9.9	85.3	3.6	149.4	6.5	0.3	141.5	3.9	0.3	14.4	85.3	
Delay (s)	41.3	128.8	39.9	197.1	34.2	19.2	186.4	43.2	0.3	55.2	134.7	
Level of Service	D	F	D	F	C	B	F	D	A	E	F	
Approach Delay (s)	86.0			105.9			70.8			115.1		
Approach LOS	F			F			E			F		
Intersection Summary												
HCM Average Control Delay	89.7			HCM Level of Service			F					
HCM Volume to Capacity ratio	1.27											
Actuated Cycle Length (s)	120.0			Sum of lost time (s)			8.0					
Intersection Capacity Utilization	118.4%			ICU Level of Service			H					
Analysis Period (min)	15											
Critical Lane Group												

Baseline
A & R Engineering Inc.

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Lanes, Volumes, Timings
6: Windward Pky & Deerfield Pky

Future PM
6/29/2007

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	159	1405	176	280	1770	664	226	294	363	399	499
Act Effct Green (s)	64.0	56.0	56.0	75.0	63.0	120.0	33.5	19.0	19.0	14.0	18.5
Actuated g/C Ratio	0.53	0.47	0.47	0.62	0.52	1.00	0.28	0.16	0.16	0.12	0.15
v/c Ratio	0.88	0.85	0.22	0.99	0.95	0.42	0.82	1.00	0.94	1.00	0.79
Control Delay	52.1	37.2	14.0	60.5	29.9	0.2	57.7	102.4	60.6	95.0	44.2
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	52.1	37.2	14.0	60.5	29.9	0.2	57.7	102.4	60.6	95.0	44.2
LOS	D	D	B	E	C	A	E	F	E	F	D
Approach Delay	36.2			25.8			73.8			66.7	
Approach LOS	D			C			E			E	
Queue Length 50th (ft)	89	441	33	164	664	0	139	230	163	164	143
Queue Length 95th (ft)	m95	m415	m47	m#179	m686	m0	166	#376	#354	m#254	m188
Internal Link Dist (ft)	3686			1731			1018			2058	
Turn Bay Length (ft)	105	180	190	284	1858	1583	283	295	387	401	631
Base Capacity (vph)	180	1652	797	284	1858	1583	283	295	387	401	631
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.88	0.85	0.22	0.99	0.95	0.42	0.80	1.00	0.94	1.00	0.79

Intersection Summary

Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 69 (58%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.00	
Intersection Capacity Delay: 41.4	Intersection LOS: D
Intersection Capacity Utilization 91.2%	ICU Level of Service F
Analysis Period (min) 15	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	
m Volume for 95th percentile queue is metered by upstream signal.	

Baseline
A & R Engineering Inc.

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HCM Signalized Intersection Capacity Analysis
6: Windward Pky & Deerfield Pky

Future PM
6/29/2007

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
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	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	0.97	0.95	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.93
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1863	1583	3433	3290	
Flt Permitted	0.07	1.00	1.00	0.07	1.00	1.00	0.21	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	133	3539	1583	124	3539	1583	392	1863	1583	3433	3290	
Volume (vph)	140	1321	144	232	1699	604	165	250	327	351	225	173
Peak-hour factor, PHF	0.88	0.94	0.82	0.83	0.96	0.91	0.73	0.85	0.90	0.88	0.85	0.74
Adj. Flow (vph)	159	1405	176	280	1770	664	226	294	363	399	265	234
RTOR Reduction (vph)	0	0	59	0	0	0	0	0	0	136	0	123
Lane Group Flow (vph)	159	1405	117	280	1770	664	226	294	227	399	376	0
Turn Type	pm+pt	1	6	5	2	7	4	3	8			
Protected Phases												
Permitted Phases	6			6	2	Free	4		4			
Actuated Green, G (s)	64.0	56.0	56.0	75.0	63.0	120.0	33.5	19.0	19.0	14.0	18.5	
Effective Green, g (s)	64.0	56.0	56.0	75.0	63.0	120.0	33.5	19.0	19.0	14.0	18.5	
Actuated g/C Ratio	0.53	0.47	0.47	0.62	0.52	1.00	0.28	0.16	0.16	0.12	0.15	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	180	1652	739	283	1858	1583	276	295	251	401	507	
v/s Ratio Prot	0.06	0.40		c0.12	0.50	0.10	c0.16		c0.12	0.11		
v/s Ratio Perm	0.41		0.07	c0.49		c0.42	0.13			0.14		
v/c Ratio	0.88	0.85	0.16	0.99	0.95	0.42	0.82	1.00	0.90	1.00	0.74	
Uniform Delay, d1	31.0	28.3	18.4	39.1	27.1	0.0	36.7	50.5	49.6	53.0	48.5	
Progression Factor	0.94	1.19	1.82	1.06	0.92	1.00	1.00	1.00	1.00	0.97	0.99	
Incremental Delay, d2	21.4	2.9	0.2	24.8	4.3	0.2	17.0	51.6	36.4	43.1	9.3	
Delay (s)	50.6	36.6	33.8	66.2	29.3	0.2	53.7	102.0	86.0	94.2	57.2	
Level of Service	D	D	C	E	C	A	D	F	F	F	E	
Approach Delay (s)	37.6			26.0			83.1			73.7		
Approach LOS	D			C			F			E		
Intersection Summary												
HCM Average Control Delay	44.2			HCM Level of Service			D					
HCM Volume to Capacity ratio	0.95											
Actuated Cycle Length (s)	120.0			Sum of lost time (s)			8.0					
Intersection Capacity Utilization	91.2%			ICU Level of Service			F					
Analysis Period (min)	15											
Critical Lane Group												

Baseline
A & R Engineering Inc.

Synchro 6 Report
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Lanes, Volumes, Timings
7: Windward Pky & GA 400 SB Ramp

Future PM
6/29/2007

	EBT	EBR	WBL	WBT	SBL	SBR
Lane Group	EBT	EBR	WBL	WBT	SBL	SBR
Lane Group Flow (vph)	1462	1153	1022	2573	137	533
Act Effct Green (s)	60.0	60.0	30.0	94.0	18.0	18.0
Actuated g/C Ratio	0.50	0.50	0.25	0.78	0.15	0.15
v/c Ratio	0.46	1.16	1.19	0.93	0.27	1.22
Control Delay	11.7	92.1	137.9	16.0	46.7	160.6
Queue Delay	0.0	0.0	0.0	10.0	0.0	0.0
Total Delay	11.7	92.1	137.9	26.0	46.7	160.6
LOS	B	F	F	C	D	F
Approach Delay	47.2			57.8		
Approach LOS	D			E		
Queue Length 50th (ft)	161	~890	~508	387	48	~281
Queue Length 95th (ft)	m163m#1205	m#495	m368	79	#406	
Internal Link Dist (ft)	177			531		
Turn Bay Length (ft)	3204	997	858	2772	515	436
Base Capacity (vph)		0	0	225	0	0
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.46	1.16	1.19	1.01	0.27	1.22
Intersection Summary						
Cycle Length: 120						
Actuated Cycle Length: 120						
Offset: 5 (4%), Referenced to phase 2:WBT and 6:EBT, Start of Green						
Control Type: Actuated-Coordinated						
Maximum v/c Ratio: 1.22						
Intersection Signal Delay: 61.5						Intersection LOS: E
Intersection Capacity Utilization 144.2%						ICU Level of Service H
Analysis Period (min) 15						
~ Volume exceeds capacity, queue is theoretically infinite.						
Queue shown is maximum after two cycles.						
# 95th percentile volume exceeds capacity, queue may be longer.						
Queue shown is maximum after two cycles.						
m Volume for 95th percentile queue is metered by upstream signal.						

HCM Signalized Intersection Capacity Analysis
7: Windward Pky & GA 400 SB Ramp

Future PM
6/29/2007

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	0	4.0	4.0	4.0	4.0	4.0	0	0	0	4.0	4.0	4.0
Lane Util. Factor	0.86	1.00	0.85	1.00	0.97	0.95	1.00	0.85	1.00	0.97	0.88	0.88
Flt Protected	1.00	1.00	0.95	1.00	1.00	1.00	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	6408	1583	3433	3539	3539	3539	3433	3433	3433	3433	2787	2787
Flt Permitted	1.00	1.00	0.95	1.00	1.00	1.00	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	6408	1583	3433	3539	3539	3539	3433	3433	3433	3433	2787	2787
Volume (vph)	0	1360	1084	981	2444	0	0	0	0	123	0	501
Peak-hour factor, PHF	0.92	0.93	0.94	0.96	0.95	0.92	0.92	0.92	0.92	0.90	0.92	0.94
Adj. Flow (vph)	0	1462	1153	1022	2573	0	0	0	0	137	0	533
RTOR Reduction (vph)	0	0	206	0	0	0	0	0	0	0	0	18
Lane Group Flow (vph)	0	1462	948	1022	2573	0	0	0	0	137	0	515
Turn Type		Perm	Prot	Prot						Prot	custom	
Protected Phases		6	5	2						3		
Permitted Phases			6									3
Actuated Green, G (s)		60.0	60.0	30.0	94.0					18.0		18.0
Effective Green, g (s)		60.0	60.0	30.0	94.0					18.0		18.0
Actuated g/C Ratio		0.50	0.50	0.25	0.78					0.15		0.15
Clearance Time (s)		4.0	4.0	4.0	4.0					4.0		4.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0					3.0		3.0
Lane Grp Cap (vph)		3204	792	858	2772					515		418
v/s Ratio Prot		0.23		c0.30	0.73					0.04		
v/s Ratio Perm		0.46	1.20	1.19	0.93					0.27		c0.18
Uniform Delay, d1		19.4	30.0	45.0	10.3					45.2		51.0
Progression Factor		0.58	0.49	1.35	1.39					1.00		1.00
Incremental Delay, d2		0.3	96.6	87.2	0.7					123.9		123.9
Delay (s)		11.7	111.3	147.9	15.1					45.4		174.9
Level of Service		B	F	F	B					D		F
Approach Delay (s)		55.6			52.8		0.0			148.4		
Approach LOS		E			D		A			F		
Intersection Summary												
HCM Average Control Delay			63.2			HCM Level of Service				E		
HCM Volume to Capacity ratio			1.20									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)				12.0		
Intersection Capacity Utilization			144.2%			ICU Level of Service				H		
Analysis Period (min)			15									
c Critical Lane Group												

Lanes, Volumes, Timings
8: Windward Pky & GA 400 NB Ramp

Future PM
6/29/2007

	EBL	EBT	WBT	WBR	NBL	NBR
Lane Group	EBL	EBT	WBT	WBR	NBL	NBR
Lane Group Flow (vph)	636	1038	2223	314	1318	627
Act Effct Green (s)	22.0	67.0	41.0	41.0	45.0	45.0
Actuated g/C Ratio	0.18	0.56	0.34	0.34	0.38	0.38
v/c Ratio	1.01	0.53	1.02	0.45	1.02	0.55
Control Delay	94.8	18.4	62.5	9.6	68.7	23.3
Queue Delay	0.0	0.1	0.0	0.0	17.8	0.0
Total Delay	94.8	18.4	62.5	9.6	86.5	23.3
LOS	F	B	E	A	F	C
Approach Delay	47.5 55.9					
Approach LOS	D E					
Queue Length 50th (ft)	~275	195	~513	37	~560	157
Queue Length 95th (ft)	#388	258	#603	113	#695	222
Internal Link Dist (ft)	531 173					
Turn Bay Length (ft)	629 1976 2189 701 1287 1147					
Base Capacity (vph)	0 122 0 0 0 0					
Starvation Cap Reductn	0 0 0 0 0 0					
Spillback Cap Reductn	0 0 0 0 0 0					
Storage Cap Reductn	0 0 0 0 0 0					
Reduced v/c Ratio	1.01	0.56	1.02	0.45	1.07	0.55
Intersection Summary						
Cycle Length: 120						
Actuated Cycle Length: 120						
Offset: 116 (97%). Referenced to phase 2:WBT and 6:EBT, Start of Green						
Control Type: Actuated-Coordinated						
Maximum v/c Ratio: 1.02						
Intersection Signal Delay: 56.9						
Intersection Capacity Utilization 144.2%						
Analysis Period (min) 15						
~ Volume exceeds capacity, queue is theoretically infinite.						
# Queue shown is maximum after two cycles.						
# 95th percentile volume exceeds capacity, queue may be longer.						
Queue shown is maximum after two cycles.						

HCM Signalized Intersection Capacity Analysis
8: Windward Pky & GA 400 NB Ramp

Future PM
6/29/2007

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔	↔↔	↔	↔↔↔	↔	↔	↔	↔	↔	↔	↔	↔
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	4.0	4.0			
Lane Util. Factor	0.97	0.95		0.86	1.00	0.97	0.88		0.85			
Flt	1.00	1.00		1.00	0.85	1.00	0.85		1.00			
Flt Protected	0.95	1.00		1.00	1.00	0.95	1.00		1.00			
Satd. Flow (prot)	3433	3539		6408	1583	3433	2787		2787			
Flt Permitted	0.95	1.00		1.00	1.00	0.95	1.00		1.00			
Satd. Flow (perm)	3433	3539		6408	1583	3433	2787		2787			
Volume (vph)	566	986	0	0	2067	286	1265	0	589	0	0	0
Peak-hour factor, PHF	0.89	0.95	0.92	0.92	0.93	0.91	0.96	0.92	0.94	0.92	0.92	0.92
Adj. Flow (vph)	636	1038	0	0	2223	314	1318	0	627	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	161	0	102	0	0	0
Lane Group Flow (vph)	636	1038	0	0	2223	153	1318	0	525	0	0	0
Turn Type	Prot	Prot			Perm	Prot	custom					
Protected Phases	1	6			2	7						
Permitted Phases						2			7			
Actuated Green, G (s)	22.0	67.0			41.0	41.0	45.0		45.0			
Effective Green, g (s)	22.0	67.0			41.0	41.0	45.0		45.0			
Actuated g/C Ratio	0.18	0.56			0.34	0.34	0.38		0.38			
Clearance Time (s)	4.0	4.0			4.0	4.0	4.0		4.0			
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0		3.0			
Lane Grp Cap (vph)	629	1976			2189	541	1287		1045			
v/s Ratio Prot	c0.19	0.29			c0.35		c0.38					
v/s Ratio Perm						0.10			0.19			
v/c Ratio	1.01	0.53			1.02	0.28	1.02		0.50			
Uniform Delay, d1	49.0	16.6			39.5	28.8	37.5		28.9			
Progression Factor	1.20	1.04			1.00	1.00	1.00		1.00			
Incremental Delay, d2	37.3	0.9			23.2	1.3	31.4		0.4			
Delay (s)	96.1	18.2			62.7	30.1	68.9		29.3			
Level of Service	F	B			E	C	E		C			
Approach Delay (s)		47.8			58.7		56.1		0.0			
Approach LOS		D			E		E		A			
Intersection Summary												
HCM Average Control Delay	54.9						HCM Level of Service					
HCM Volume to Capacity ratio	1.02						D					
Actuated Cycle Length (s)	120.0						Sum of lost time (s)					
Intersection Capacity Utilization	144.2%						ICU Level of Service					
Analysis Period (min)	15						H					
Critical Lane Group												

Lanes, Volumes, Timings
9: New Homes Private Drwy & SR 9

Future PM
6/29/2007



Lane Group	EBT	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	4	215	453	4	980	148	360	827
Sign Control	Stop	Stop	Stop	Free	Free	Free	Free	Free
Intersection Summary								
Control Type: Unsignalized								
Intersection Capacity Utilization 88.6%								
Analysis Period (min) 15								
ICU Level of Service E								

HCM Unsignalized Intersection Capacity Analysis
9: New Homes Private Drwy & SR 9

Future PM
6/29/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	4	4	4	4	4	4	4	4	4	4	4	4
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Grade	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Volume (veh/h)	0	0	2	165	7	417	1	902	130	270	777	0
Peak Hour Factor	0.92	0.92	0.50	0.80	0.75	0.92	0.25	0.92	0.88	0.75	0.94	0.92
Hourly flow rate (vph)	0	0	4	206	9	453	4	980	148	360	827	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type												
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	2540	2535	827	2539	2535	980	827			980		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2540	2535	827	2539	2535	980	827			980		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	0	100	99	0	30	0	100			49		
cM capacity (veh/h)	0	13	372	11	13	303	804			704		
Direction, Lane #												
	EB 1	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3			
Volume Total	4	216	453	4	980	148	360	827	0			
Volume Left	0	206	0	4	0	0	360	0	0			
Volume Right	4	0	453	0	0	148	0	0	0			
cSH	372	11	303	804	1700	1700	704	1700	1700			
Volume to Capacity	0.01	19.88	1.50	0.00	0.58	0.09	0.51	0.49	0.00			
Queue Length 95th (ft)	1	Err	637	0	0	0	73	0	0			
Control Delay (s)	14.8	Err	271.7	9.5	0.0	0.0	15.3	0.0	0.0			
Lane LOS	B	F	F	A	C	C	C	C	C			
Approach Delay (s)	14.8	3407.0		0.0			4.7					
Approach LOS	B	F										
Intersection Summary												
Average Delay							763.6					
Intersection Capacity Utilization							88.6%					E
Analysis Period (min)							15					

Lanes, Volumes, Timings
10: Webb Rd & SR 9

Future PM
6/29/2007

	→	←	↖	↗	↑	↘	↙	↓
Lane Group	EBT	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	186	376	94	27	1128	190	100	1149
Sign Control	Stop	Stop	Stop	Free	Free	Free	Free	Free
Intersection Summary								
Control Type: Unsignalized								
Intersection Capacity Utilization 88.0%								
Analysis Period (min) 15								
ICU Level of Service E								

Baseline
A & R Engineering Inc.

Synchro 6 Report
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HCM Unsignalized Intersection Capacity Analysis
10: Webb Rd & SR 9

Future PM
6/29/2007

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↵				↵			↵		↵	↵	↵
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Grade	0%			0%			0%					0%
Volume (veh/h)	90	9	11	260	67	77	22	1072	175	75	977	92
Peak Hour Factor	0.58	0.67	0.62	0.94	0.68	0.82	0.83	0.95	0.92	0.75	0.96	0.70
Hourly flow rate (vph)	155	13	18	277	99	94	27	1128	190	100	1018	131
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)						11						
Median type						None						
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
VC, conflicting volume	2514	2655	1083	2424	2531	1128	1149			1319		
VC1, stage 1 conf vol												
VC2, stage 2 conf vol												
VCu, unblocked vol	2514	2655	1083	2424	2531	1128	1149			1319		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	0	24	93	0	0	62	96			81		
cM capacity (veh/h)	0	18	264	7	21	248	608			524		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2					
Volume Total	186	469	27	1128	190	100	1149					
Volume Left	155	277	27	0	0	100	0					
Volume Right	18	94	0	0	190	0	131					
cSH	0	10	608	1700	1700	524	1700					
Volume to Capacity	Err	46.54	0.04	0.66	0.11	0.19	0.68					
Queue Length 95th (ft)	Err	Err	3	0	0	17	0					
Control Delay (s)	Err	Err	11.2	0.0	0.0	13.5	0.0					
Lane LOS	F	F	B	B	B	B	B					
Approach Delay (s)	Err	Err	0.2			1.1						
Approach LOS	F	F	F			F						
Intersection Summary												
Average Delay	Err											
Intersection Capacity Utilization	88.0%											
ICU Level of Service	E											
Analysis Period (min)	15											

Baseline
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Lanes, Volumes, Timings
11: Morris Rd & Bethany Rd

Future PM
6/29/2007



Lane Group	EBT	WBT	SBL
Lane Group Flow (vph)	721	752	247
Sign Control	Free	Free	Stop
Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 99.1%			
Analysis Period (min) 15			
ICU Level of Service F			

HCM Unsignalized Intersection Capacity Analysis
11: Morris Rd & Bethany Rd

Future PM
6/29/2007



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		4	1		W	
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)		152	517	343	116	100
Peak Hour Factor		0.89	0.94	0.98	0.94	0.91
Hourly flow rate (vph)		171	550	387	365	127
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
VC, conflicting volume		752			1461	569
VC1, stage 1 conf vol						
VC2, stage 2 conf vol						
VCu, unblocked vol		752			1461	569
tC, single (s)		4.1			6.4	6.2
tC, 2 stage (s)						
tF (s)		2.2			3.5	3.3
p0 queue free %		80			0	77
cM capacity (veh/h)		858			114	522
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	721	752	248			
Volume Left	171	0	127			
Volume Right	0	365	120			
cSH	858	1700	183			
Volume to Capacity	0.20	0.44	1.35			
Queue Length 95th (ft)	18	0	362			
Control Delay (s)	4.7	0.0	238.6			
Lane LOS	A	F	F			
Approach Delay (s)	4.7	0.0	238.6			
Approach LOS		F				
Intersection Summary						
Average Delay			36.4			
Intersection Capacity Utilization			99.1%			F
Analysis Period (min)			15			

Lanes, Volumes, Timings
12: Windward Village Pky & SR 9

	→	↗	↘	←	↖	↗	↘	←	↖	→	↗	↘	←	↖	→	↗	↘	←	↖	Future PM 6/29/2007
Lane Group	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR										
Lane Group Flow (vph)	15	30	289	5	112	50	1009	182	148	940	12									
Sign Control	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free										
Intersection Summary																				
Control Type: Unsignalized																				
Intersection Capacity Utilization 87.8%																				
Analysis Period (min) 15																				

HCM Unsignalized Intersection Capacity Analysis
12: Windward Village Pky & SR 9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Grade	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Volume (veh/h)	9	5	28	266	5	103	46	928	167	136	865	11
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	10	5	30	289	5	112	50	1009	182	148	940	12
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type												
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
VC, conflicting volume	2459	2526	940	2347	2345	1009	940			1190		
VC1, stage 1 conf vol												
VC2, stage 2 conf vol												
vCu, unblocked vol	2459	2526	940	2347	2345	1009	940			1190		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	0	72	90	0	78	62	93			75		
cM capacity (veh/h)	8	19	320	14	25	292	729			587		
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3	
Volume Total	15	30	289	5	112	50	1009	182	148	940	12	
Volume Left	10	0	289	0	0	50	0	0	148	0	0	
Volume Right	0	30	0	0	112	0	0	182	0	0	12	
cSH	10	320	14	25	292	729	1700	1700	587	1700	1700	
Volume to Capacity	1.46	0.10	20.94	0.22	0.38	0.07	0.59	0.11	0.25	0.55	0.01	
Queue Length 95th (ft)	68	8	Err	16	43	6	0	0	25	0	0	
Control Delay (s)	942.5	17.4	Err	183.3	24.8	10.3	0.0	0.0	13.2	0.0	0.0	
Lane LOS	F	C	F	F	C	B	B	B	B	B	B	
Approach Delay (s)	325.8	7120.9		F		0.4		1.8				
Approach LOS	F	F		F		F		F				
Intersection Summary												
Average Delay	1042.9											
Intersection Capacity Utilization	87.8%											
Analysis Period (min)	15											

Future PM
6/29/2007

↑	SBT	SBR
	1043	9
	Free	

Future PM
6/29/2007

NBR	SB	SBT	SBT	SBT	SBT	SBT	SBT
Free	Free	Free	Free	Free	Free	Free	Free
41	50	960	0.92	0.92	0.92	0.92	0.92
45	54	1043	0.92	0.92	0.92	0.92	0.92
1135							
1135							
4.1							
2.2							
91							
616							
SB 3							
9							
0							
9							
1700							
0.01							
0							
0.0							
C							

Synchro 6 Report
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Future 2009 PM Improved

Lanes, Volumes, Timings
2: Bethany Rd & SR 9

Future PM - Improved
6/29/2007

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	136	127	298	158	251	83	356	888	130	44	774	150
Act Effct Green (s)	10.0	12.8	12.8	14.2	17.0	17.0	25.0	71.6	71.6	7.3	52.0	52.0
Actuated g/C Ratio	0.08	0.11	0.11	0.12	0.14	0.14	0.21	0.60	0.60	0.06	0.43	0.43
v/c Ratio	0.92	0.64	0.69	0.76	0.95	0.28	0.96	0.80	0.73	0.41	0.96	0.21
Control Delay	102.8	61.3	13.3	75.0	95.6	13.0	74.3	22.5	4.8	65.4	56.8	11.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	102.8	61.3	13.3	75.0	95.6	13.0	74.3	22.5	4.8	65.4	56.8	11.7
LOS	F	E	B	E	F	B	E	C	A	E	E	B
Approach Delay	45.9			75.1			34.2			50.2		
Approach LOS	D			E			C			D		
Queue Length 50th (ft)	108	94	21	121	196	1	288	574	7	33	571	35
Queue Length 95th (ft) m#158	m126	9	#188	#360	19 m#326	m620	m11	54	#737	73		
Internal Link Dist (ft)	2050			3113			4282			1558		
Turn Bay Length (ft)	150	275	250	150	150	150	150	150	150	150	150	150
Base Capacity (vph)	148	248	469	209	264	294	369	1111	973	118	807	727
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.92	0.51	0.64	0.76	0.95	0.28	0.96	0.80	0.13	0.37	0.96	0.21

Intersection Summary

Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 52 (43%), Referenced to phase 2: SBT and 6: NBT, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.96	
Intersection Signal Delay: 46.6	Intersection LOS: D
Intersection Capacity Utilization 81.2%	ICU Level of Service D
Analysis Period (min) 15	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	
m Volume for 95th percentile queue is metered by upstream signal.	

HCM Signalized Intersection Capacity Analysis
2: Bethany Rd & SR 9

Future PM - Improved
6/29/2007

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	→	↗	↖	→	↗	↖	→	↗	↖	→	↗
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	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Fr Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	1863	1583	1770	1863	1583
Fr Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	1863	1583	1770	1863	1583	1770	1863	1583	1770	1863	1583
Volume (vph)	109	112	179	115	228	55	281	835	95	30	650	129
Peak-hour factor, PHF	0.80	0.88	0.60	0.73	0.91	0.66	0.79	0.94	0.73	0.68	0.84	0.86
Adj. Flow (vph)	136	127	298	158	251	83	356	888	130	44	774	150
RTOR Reduction (vph)	0	0	266	0	0	70	0	0	30	0	0	41
Lane Group Flow (vph)	136	127	32	158	251	13	356	888	100	44	774	109
Turn Type	Prot	Perm	Prot	Perm	Prot	Perm	Prot	Perm	Prot	Perm	Prot	Perm
Protected Phases	3	8	8	7	4	4	1	6	5	5	2	2
Permitted Phases												
Actuated Green, G (s)	10.0	12.8	12.8	14.2	17.0	17.0	25.8	70.8	70.8	6.2	51.2	51.2
Effective Green, g (s)	10.0	12.8	12.8	14.2	17.0	17.0	25.8	70.8	70.8	6.2	51.2	51.2
Actuated g/C Ratio	0.08	0.11	0.11	0.12	0.14	0.14	0.22	0.59	0.59	0.05	0.43	0.43
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	148	199	169	209	264	224	381	1099	934	91	795	675
v/s Ratio Prot	0.08	0.07	0.02	c0.09	c0.13	c0.20	0.48	0.02	c0.42	0.06	0.07	0.07
v/s Ratio Perm	0.92	0.64	0.19	0.76	0.95	0.06	0.93	0.81	0.11	0.48	0.97	0.16
v/c Ratio	54.6	51.4	48.9	51.2	51.1	44.6	46.3	19.3	10.8	55.3	33.7	21.2
Uniform Delay, d1	1.01	0.98	1.18	1.00	1.00	1.00	0.98	0.93	0.84	1.00	1.00	1.00
Progression Factor	42.6	5.2	0.4	14.4	41.9	0.1	19.9	3.7	0.1	4.0	26.1	0.5
Incremental Delay, d2	97.9	55.3	57.8	65.6	93.0	44.7	65.5	21.6	9.2	59.3	59.8	21.7
Delay (s)	F	E	E	E	F	D	E	C	A	E	E	C
Level of Service												
Approach Delay (s)	67.0			76.0			31.8			53.9		
Approach LOS	E			E			C			D		
Intersection Summary												
HCM Average Control Delay	50.3			HCM Level of Service			D					
HCM Volume to Capacity ratio	0.92											
Actuated Cycle Length (s)	120.0			Sum of lost time (s)			12.0					
Intersection Capacity Utilization	81.2%			ICU Level of Service			D					
Analysis Period (min)	15											
c Critical Lane Group												

Lanes, Volumes, Timings
3: Webb Rd & Deerfield Pky

Future PM - Improved
6/29/2007

	EBL	EBT	EBR	WBT	WBR	NBL	NBT	SBT
Lane Group	EBL	EBT	EBR	WBT	WBR	NBL	NBT	SBT
Lane Group Flow (vph)	71	217	66	327	128	121	841	464
Act Effct Green (s)	29.1	29.1	29.1	29.1	29.1	82.9	82.9	71.2
Actuated g/C Ratio	0.24	0.24	0.24	0.24	0.24	0.69	0.69	0.59
v/c Ratio	0.37	0.48	0.15	0.88	0.29	0.23	0.35	0.32
Control Delay	46.3	46.7	11.6	67.4	15.6	6.0	6.0	16.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.3	46.7	11.6	67.4	15.6	6.0	6.0	16.9
LOS	D	D	B	E	B	A	A	B
Approach Delay	40.1			52.9		6.0	6.0	16.9
Approach LOS	D			D		A	A	B
Queue Length 50th (ft)	52	161	8	246	31	17	58	104
Queue Length 95th (ft)	m62	m188	m26	318	72	m31	m194	m139
Internal Link Dist (ft)		1660		1492		2619	3319	
Turn Bay Length (ft)			135		75	230		
Base Capacity (vph)	314	745	673	612	680	624	2387	1433
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.23	0.29	0.10	0.53	0.19	0.19	0.35	0.32

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 4 (3%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.88
Intersection Signal Delay: 23.2
Intersection Capacity Utilization 69.7%
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis
3: Webb Rd & Deerfield Pky

Future PM - Improved
6/29/2007

	EBL	EBT	EBR	WBL	WBR	NBL	NBT	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Ideal Flow (vphpl)	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	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.98	0.95
Flt Protected	0.95	1.00	1.00	0.99	1.00	0.95	1.00	0.99	0.98	0.95
Satd. Flow (prot)	1770	1863	1583	1837	1583	1770	3441	3423	3423	3423
Flt Permitted	0.25	1.00	1.00	0.63	1.00	0.44	1.00	0.70	0.70	0.70
Satd. Flow (perm)	466	1863	1583	1167	1583	812	3441	2431	2431	2431
Volume (vph)	52	202	55	69	216	115	87	637	103	64
Peak-hour factor, PHF	0.73	0.93	0.83	0.75	0.92	0.90	0.72	0.93	0.66	0.81
Adj. Flow (vph)	71	217	66	92	235	128	121	685	156	79
RTOR Reduction (vph)	0	0	50	0	0	59	0	11	0	0
Lane Group Flow (vph)	71	217	16	0	327	69	121	830	0	0
Turn Type	Perm	Perm	Perm	Perm	Perm	Perm	pm+pt	Perm	Perm	Perm
Protected Phases	8	8	4	4	4	1	6	2	2	2
Permitted Phases	8	8	4	4	4	6	6	2	2	2
Actuated Green, G (s)	29.1	29.1	29.1	29.1	29.1	82.9	82.9	71.2	71.2	71.2
Effective Green, g (s)	29.1	29.1	29.1	29.1	29.1	82.9	82.9	71.2	71.2	71.2
Actuated g/C Ratio	0.24	0.24	0.24	0.24	0.24	0.69	0.69	0.59	0.59	0.59
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	113	452	384	283	384	622	2377	1442	1442	1442
v/s Ratio Prot	0.15	0.12	0.01	0.01	0.01	0.01	0.01	0.19	0.19	0.19
v/s Ratio Perm	0.63	0.48	0.04	0.04	0.04	0.12	0.12	0.32	0.32	0.32
Uniform Delay, d1	40.6	39.0	34.8	45.5	36.0	6.4	7.6	12.2	12.2	12.2
Progression Factor	1.15	1.15	1.56	1.00	1.00	0.69	0.70	1.21	1.21	1.21
Incremental Delay, d2	10.0	0.8	0.0	102.3	0.2	0.1	0.3	0.5	0.5	0.5
Delay (s)	56.8	45.7	54.3	147.7	36.2	4.5	5.6	15.3	15.3	15.3
Level of Service	E	D	D	F	D	A	A	B	B	B
Approach Delay (s)	49.5			116.4		5.5		15.3		
Approach LOS	D			F		A		B		

Intersection Summary

HCM Average Control Delay	37.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	69.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings
5: SR 9 & Windward Pky

Future PM - Improved
6/29/2007

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	189	585	360	637	640	140	580	759	654	180	551
Act Effct Green (s)	34.0	34.0	34.0	26.0	48.2	48.2	23.0	32.1	58.1	21.0	21.0
Actuated g/C Ratio	0.28	0.28	0.28	0.22	0.40	0.40	0.19	0.27	0.48	0.18	0.18
v/c Ratio	0.80	0.58	0.51	0.86	0.86	0.20	0.88	0.80	0.80	0.76	0.87
Control Delay	60.1	39.7	6.1	50.3	38.5	6.8	40.3	29.8	16.2	59.7	53.1
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	60.1	39.7	6.1	50.3	38.5	6.8	40.3	29.8	16.2	59.7	53.1
LOS	E	D	A	D	D	A	D	C	B	E	D
Approach Delay	32.5			40.7			28.4			54.7	
Approach LOS	C			D			C			D	
Queue Length 50th (ft)	118	204	0	238	414	8	221	267	288	113	174
Queue Length 95th (ft)	#180	265	44	m282	m531	m16	m237	m286	m275	m#214	m#285
Internal Link Dist (ft)	1481			72			3686			1866	
Turn Bay Length (ft)	220	185	707	744	748	707	658	947	820	239	631
Base Capacity (vph)	239	1003	707	744	748	707	658	947	820	239	631
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.79	0.58	0.51	0.86	0.86	0.20	0.88	0.80	0.80	0.75	0.87

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 65 (64%), Referenced to phase 2:WBT and 6:EBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.88
Intersection Signal Delay: 36.2
Intersection Capacity Utilization 84.0%
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis
5: SR 9 & Windward Pky

Future PM - Improved
6/29/2007

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
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	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	0.97	1.00	1.00	0.97	0.95	1.00	1.00	0.95	1.00
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	3433	1863	1583	3433	3539	1583	1770	3532	1770
Flt Permitted	0.18	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	336	3539	1583	3433	1863	1583	3433	3539	1583	1770	3532	1770
Volume (vph)	159	567	295	548	602	102	545	736	536	166	372	137
Peak-hour factor, PHF	0.84	0.97	0.82	0.86	0.94	0.73	0.94	0.97	0.82	0.92	0.96	0.84
Adj. Flow (vph)	189	585	360	637	640	140	580	759	654	180	388	163
RTOR Reduction (vph)	0	0	258	0	0	72	0	0	54	0	39	0
Lane Group Flow (vph)	189	585	102	637	640	68	580	759	600	180	512	0
Turn Type	pm+pt	Perm	Prot	Perm	Prot	Perm	Prot	pm+ov	pm+pt			
Protected Phases	1	6	5	2	7	4	5	3	8			
Permitted Phases	6	6	6	6	6	6	6	6	6	6	6	6
Actuated Green, G (s)	34.0	34.0	34.0	26.0	48.2	48.2	23.0	32.1	58.1	21.0	21.0	21.0
Effective Green, g (s)	34.0	34.0	34.0	26.0	48.2	48.2	23.0	32.1	58.1	21.0	21.0	21.0
Actuated g/C Ratio	0.28	0.28	0.28	0.22	0.40	0.40	0.19	0.27	0.48	0.18	0.18	0.18
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	236	1003	449	744	748	636	658	947	766	238	592	
v/s Ratio Prot	c0.08	0.17	0.19	c0.34	0.17	c0.21	0.17	c0.21	0.17	0.08	c0.15	
v/s Ratio Perm	0.15	0.06	0.06	0.06	0.04	0.04	0.04	0.04	0.21	0.06	0.06	
v/c Ratio	0.80	0.58	0.23	0.86	0.86	0.11	0.88	0.80	0.78	0.76	0.87	
Uniform Delay, d1	54.6	36.9	32.9	45.2	32.7	22.4	47.2	41.0	25.7	54.2	48.1	
Progression Factor	1.00	1.00	1.00	0.95	0.94	1.12	0.69	0.65	0.93	0.85	0.85	
Incremental Delay, d2	17.5	2.5	1.2	5.4	6.9	0.2	5.6	2.8	2.0	12.6	15.3	
Delay (s)	72.1	39.4	34.1	48.3	37.6	25.3	38.3	29.4	25.9	58.9	56.1	
Level of Service	E	D	C	D	D	C	D	C	C	C	E	
Approach Delay (s)	43.2			41.2			30.9			56.8		
Approach LOS	D			D			C			E		
Intersection Summary												
HCM Average Control Delay	39.9			HCM Level of Service			D					
HCM Volume to Capacity ratio	0.83											
Actuated Cycle Length (s)	120.0			Sum of lost time (s)			12.0					
Intersection Capacity Utilization	84.0%			ICU Level of Service			E					
Analysis Period (min)	15											
Critical Lane Group												

Lane Group	EBT	EBR	WBL	WBT	SBL	SBR
Lane Group Flow (vph)	1462	1153	1022	2573	137	533
Act Effd Green (s)	46.0	46.0	40.0	90.0	22.0	22.0
Actuated g/C Ratio	0.38	0.38	0.33	0.75	0.18	0.18
w/C Ratio	0.60	0.77	0.89	0.97	0.22	1.02
Control Delay	24.4	9.6	31.9	13.8	42.8	90.3
Queue Delay	0.0	0.0	0.0	9.8	0.0	0.0
Total Delay	24.4	9.6	31.9	23.6	42.8	90.3
LOS	C	A	C	C	D	F
Approach Delay	17.8			25.9		
Approach LOS	B			C		
Queue Length 50th (ft)	214	65	364	204	46	~236
Queue Length 95th (ft)	m236	m105	m#460	#615	76	#365
Internal Link Dist (ft)	177			531		
Turn Bay Length (ft)					150	150
Base Capacity (vph)	2456	1500	1144	2654	629	525
Starvation Cap Reductn	0	0	0	125	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.60	0.77	0.89	1.02	0.22	1.02
Intersection Summary						
Cycle Length: 120						
Actuated Cycle Length: 120						
Offset: 84 (70%), Referenced to phase 2:WBT and 6:EBT, Start of Green						
Control Type: Actuated-Coordinated						
Maximum v/c Ratio: 1.02						
Intersection Signal Delay: 28.2						
Intersection Capacity Utilization 103.0%						
Analysis Period (min) 15						
~ Volume exceeds capacity, queue is theoretically infinite.						
Queue shown is maximum after two cycles.						
# 95th percentile volume exceeds capacity, queue may be longer.						
Queue shown is maximum after two cycles.						
Volume for 95th percentile queue is metered by upstream signal.						

[illegible]

Lanes, Volumes, Timings
8: Windward Pky & GA 400 NB Ramp

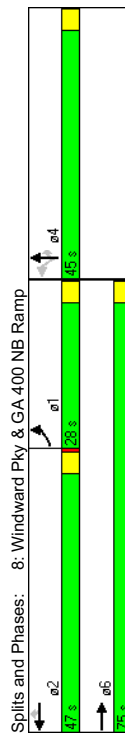
HCM Signalized Intersection Capacity Analysis
8: Windward Pky & GA 400 NB Ramp

Future PM Improved
7/27/2007

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
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	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	3433	3539	0	0	6408	1583	3221	1487	1504	0	0	0
Flt Permitted	0.950						0.950	0.963				
Satd. Flow (perm)	3433	3539	0	0	6408	1583	3221	1487	1504	0	0	0
Satd. Flow (RTOR)							250	14	107			
Volume (vph)	566	986	0	0	2067	286	1265	0	589	0	0	0
Lane Group Flow (vph)	636	1038	0	0	2223	314	946	488	511	0	0	0
Turn Type	Prot	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm
Protected Phases	1	6		2		2	4		4			
Permitted Phases												
Total Split (s)	28.0	75.0	0.0	0.0	47.0	47.0	45.0	45.0	45.0	0.0	0.0	0.0
Act Effct Green (s)	24.0	71.4			43.4	43.4	40.6	40.6	40.6			
Actuated g/C Ratio	0.20	0.60			0.36	0.36	0.34	0.34	0.34			
v/c Ratio	0.93	0.49			0.96	0.43	0.87	0.95	0.88			
Control Delay	81.3	24.1			48.9	8.5	47.0	68.2	47.6			
Queue Delay	0.0	1.5			0.0	0.0	1.3	6.7	0.0			
Total Delay	81.3	25.6			48.9	8.5	48.3	74.8	47.6			
LOS	F	C			D	A	D	E	D			
Approach Delay		46.7			43.9			54.8				
Approach LOS		D			D			D				

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Intersection Summary												
Cycle Length: 120												
Actuated Cycle Length: 120												
Offset: 115 (96%), Referenced to phase 2:WBT and 6:EBT, Start of Green												
Control Type: Actuated-Coordinated												
Maximum v/c Ratio: 0.96												
Intersection Signal Delay: 48.1												
Intersection Capacity Utilization 106.2%												
Analysis Period (min) 15												



Splits and Phases: 8: Windward Pky & GA 400 NB Ramp

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
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	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95					0.86	1.00	0.91	0.86	0.95	
Flt	1.00	1.00					1.00	0.85	1.00	0.96	0.85	
Flt Protected							1.00	1.00	0.95	0.96	1.00	
Satd. Flow (prot)	3433	3539					6408	1583	3221	1488	1504	
Flt Permitted	0.95	1.00					1.00	1.00	0.95	0.96	1.00	
Satd. Flow (perm)	3433	3539					6408	1583	3221	1488	1504	
Volume (vph)	566	986	0	0	2067	286	1265	0	589	0	0	0
Peak-hour factor, PHF	0.89	0.95	0.92	0.92	0.93	0.91	0.96	0.92	0.94	0.92	0.92	0.92
Adj. Flow (vph)	636	1038	0	0	2223	314	1318	0	627	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	160	0	9	71	0	0
Lane Group Flow (vph)	636	1038	0	0	2223	154	946	479	440	0	0	0
Turn Type	Prot	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm
Protected Phases	1	6		2		2	4		4			
Permitted Phases												
Actuated Green, G (s)	24.0	71.4			43.4	43.4	40.6	40.6	40.6			
Effective Green, g (s)	24.0	71.4			43.4	43.4	40.6	40.6	40.6			
Actuated g/C Ratio	0.20	0.60			0.36	0.36	0.34	0.34	0.34			
Clearance Time (s)	4.0	4.0			4.0	4.0	4.0	4.0	4.0			
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0			
Lane Grp Cap (vph)	687	2106			2318	573	1090	503	509			
v/s Ratio Prot	c0.19	0.29			0.10	0.29	0.32	0.29				
v/s Ratio Perm	0.93	0.49			0.96	0.27	0.87	0.95	0.86			
Uniform Delay, d1	47.1	13.9			37.4	27.1	37.2	38.7	37.1			
Progression Factor	1.35	1.65			1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2	16.3	0.7			11.3	1.2	7.5	28.2	14.2			
Delay (s)	80.0	23.7			48.7	28.2	44.7	67.0	51.4			
Level of Service	E	C			D	C	D	E	D			
Approach Delay (s)		45.1			46.2			52.0				0.0
Approach LOS		D			D			D				A
Intersection Summary												
HCM Average Control Delay												
HCM Volume to Capacity ratio												
Actuated Cycle Length (s)												
Intersection Capacity Utilization												
Analysis Period (min)												
c Critical Lane Group												

Lanes, Volumes, Timings
9: New Homes Private Drwy & SR 9

Future PM - Improved
6/29/2007

	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	4	206	482	4	980	148	360	827
Act Effct Green (s)	17.0	17.0	17.0	95.0	95.0	120.0	95.0	95.0
Actuated g/C Ratio	0.14	0.14	0.14	0.79	0.79	1.00	0.79	0.79
v/c Ratio	0.01	1.04	1.12	0.01	0.66	0.09	1.09	0.56
Control Delay	0.0	116.8	102.0	1.0	2.8	0.1	77.3	1.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	0.0	116.8	102.0	1.0	2.8	0.1	77.3	1.7
LOS	A	F	F	A	A	A	E	A
Approach Delay	0.0	106.6		2.4			24.6	
Approach LOS	A	F		A			C	
Queue Length 50th (ft)	0	~169	~256	0	47	0	~324	42
Queue Length 95th (ft)	0	#267	#256	m0	m60	m0	m#362	m62
Internal Link Dist (ft)	150	237		596			4282	
Turn Bay Length (ft)	469	199	411	428	1475	1583	329	1475
Base Capacity (vph)	0	0	0	0	0	0	0	0
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	1.04	1.12	0.01	0.66	0.09	1.09	0.56

Intersection Summary

Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 80 (67%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.12	
Intersection Signal Delay: 34.5	Intersection LOS: C
Intersection Capacity Utilization 98.6%	ICU Level of Service F
Analysis Period (min) 15	
~ Volume exceeds capacity, queue is theoretically infinite.	
Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	
m Volume for 95th percentile queue is metered by upstream signal.	

HCM Signalized Intersection Capacity Analysis
9: New Homes Private Drwy & SR 9

Future PM - Improved
6/29/2007

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Ideal Flow (vphpl)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Total Lost time (s)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Util. Factor	0.86	1.00	1.00	0.85	1.00	0.85	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1611	1770	1589	1770	1589	1770	1863	1583	1770	1863	1770	1863
Flt Permitted	1.00	0.76	1.00	0.29	1.00	0.29	1.00	0.29	1.00	0.22	1.00	0.22
Satd. Flow (perm)	1611	1407	1589	540	1863	540	1863	540	1863	416	1863	416
Volume (vph)	0	0	2	165	7	417	1	902	130	270	777	0
Peak-hour factor, PHF	0.92	0.92	0.50	0.80	0.75	0.92	0.25	0.92	0.88	0.75	0.94	0.92
Adj. Flow (vph)	0	0	4	206	9	453	4	980	148	360	827	0
RTOR Reduction (vph)	0	3	0	0	185	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1	0	206	277	0	4	980	148	360	827	0
Turn Type	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Free	Perm	Perm	Perm
Protected Phases	8	8	4	4	4	4	6	6	Free	2	2	2
Permitted Phases	8	8	4	4	4	4	6	6	Free	2	2	2
Actuated Green, G (s)	17.0	17.0	17.0	17.0	17.0	17.0	95.0	95.0	120.0	95.0	95.0	95.0
Effective Green, g (s)	17.0	17.0	17.0	17.0	17.0	17.0	95.0	95.0	120.0	95.0	95.0	95.0
Actuated g/C Ratio	0.14	0.14	0.14	0.14	0.14	0.14	0.79	0.79	1.00	0.79	0.79	0.79
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	228	199	225	199	225	199	428	1475	1583	329	1475	1475
v/s Ratio Prot	0.00	0.00	c0.17	0.15	c0.17	0.15	0.01	0.53	0.09	0.07	0.44	0.44
v/s Ratio Perm	0.00	0.00	1.04	1.23	1.23	1.04	0.01	0.66	0.09	0.09	0.56	0.56
Uniform Delay, d1	44.2	44.2	51.5	51.5	51.5	51.5	2.6	5.5	0.0	12.5	4.7	4.7
Progression Factor	1.00	0.84	0.66	0.84	0.66	0.66	0.32	0.17	1.00	0.72	0.20	0.20
Incremental Delay, d2	0.0	72.9	135.4	72.9	135.4	135.4	0.0	1.8	0.1	62.6	0.7	0.7
Delay (s)	44.2	116.3	169.4	116.3	169.4	169.4	0.9	2.7	0.1	71.6	1.7	1.7
Level of Service	D	F	F	F	F	F	A	A	A	E	A	A
Approach Delay (s)	44.2	44.2	153.0	153.0	153.0	153.0	2.4	5.5	0.0	22.9	22.9	22.9
Approach LOS	D	D	F	F	F	F	A	A	A	C	C	C

Intersection Summary

HCM Average Control Delay	44.2	HCM Level of Service	D
HCM Volume to Capacity ratio	1.11		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	98.6%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings
10: Webb Rd & SR 9

Future PM - Improved
6/29/2007

	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	186	277	193	27	1128	190	100	1149
Act Effct Green (s)	26.8	26.8	26.8	85.2	85.2	85.2	85.2	85.2
Actuated g/C Ratio	0.22	0.22	0.22	0.71	0.71	0.71	0.71	0.71
v/c Ratio	0.94	0.93	0.47	0.27	0.85	0.16	0.85	0.88
Control Delay	91.1	78.1	31.2	8.8	14.7	1.0	56.3	16.7
Queue Delay	0.0	0.0	0.0	0.0	1.6	0.0	0.0	0.9
Total Delay	91.1	78.1	31.2	8.8	16.3	1.0	56.3	17.6
LOS	F	E	C	A	B	A	E	B
Approach Delay	91.1	58.8			14.0			20.7
Approach LOS	F	E			B			C
Queue Length 50th (ft)	133	203	99	3	356	1	33	375
Queue Length 95th (ft)	#158 m#344	122	m7	608	m17 m#121 m#759			
Internal Link Dist (ft)	2515		362		2361			404
Turn Bay Length (ft)	150	150	150	150	150	150	115	
Base Capacity (vph)	207	311	431	101	1323	1159	117	1304
Starvation Cap Reductn	0	0	0	0	0	0	0	38
Spillback Cap Reductn	0	0	1	0	80	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.90	0.89	0.45	0.27	0.91	0.16	0.85	0.91

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 35 (29%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.94
Intersection Signal Delay: 27.5
Intersection Capacity Utilization 92.9%
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis
10: Webb Rd & SR 9

Future PM - Improved
6/29/2007

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.99	0.99	1.00	0.93	1.00	0.93	1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.96	0.96	0.95	1.00	0.95	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1765	1765	1770	1727	1770	1727	1770	1863	1583	1770	1831	
Flt Permitted	0.47	0.47	0.72	1.00	0.09	1.00	1.00	1.00	1.00	0.10	1.00	
Satd. Flow (perm)	856	856	1343	1727	159	1863	1583	180	1831			
Volume (vph)	90	9	11	260	67	77	22	1072	175	75	977	92
Peak-hour factor, PHF	0.58	0.67	0.62	0.94	0.68	0.82	0.83	0.95	0.92	0.75	0.96	0.70
Adj. Flow (vph)	155	13	18	277	99	94	27	1128	190	100	1018	131
RTOR Reduction (vph)	0	3	0	0	29	0	0	0	34	0	4	0
Lane Group Flow (vph)	0	183	0	277	164	0	27	1128	156	100	1145	0
Turn Type	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm
Protected Phases	8	8		4	4		6	6	6	2	2	
Permitted Phases	8	8		4	4		6	6	6	2	2	
Actuated Green, G (s)	26.8	26.8		26.8	26.8		85.2	85.2	85.2	85.2	85.2	
Effective Green, g (s)	26.8	26.8		26.8	26.8		85.2	85.2	85.2	85.2	85.2	
Actuated g/C Ratio	0.22	0.22		0.22	0.22		0.71	0.71	0.71	0.71	0.71	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	191	300		300	386		113	1323	1124	128	1300	
v/s Ratio Prot					0.10			0.61			0.63	
v/s Ratio Perm	0.21	0.21		0.21	0.17		0.17	0.10	0.10	0.56		
v/c Ratio	0.96	0.92		0.92	0.43		0.24	0.85	0.14	0.78	0.88	
Uniform Delay, d1	46.0	45.6		45.6	40.0		6.1	12.8	5.6	11.3	13.5	
Progression Factor	1.03	0.89		0.89	0.85		0.52	0.65	0.35	0.67	0.68	
Incremental Delay, d2	47.2	31.9		31.9	0.7		3.5	5.1	0.2	27.0	6.3	
Delay (s)	94.7	72.5		72.5	34.9		6.6	13.5	2.1	34.6	15.4	
Level of Service	F	E		E	C		A	B	A	C	B	
Approach Delay (s)	94.7			57.0				11.7			16.9	
Approach LOS	F			E				B			B	

Intersection Summary

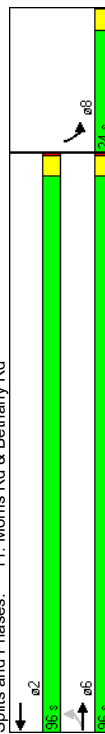
HCM Average Control Delay	25.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	92.9%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	0	1840	1740	0	1696	0
Flt Permitted	0.598			0.975		
Satd. Flow (perm)	0	1114	1740	0	1696	0
Satd. Flow (RTOR)			121		34	
Volume (vph)	152	517	379	343	116	100
Lane Group Flow (vph)	0	721	752	0	247	0
Turn Type	Perm					
Protected Phases	6	2	2	8		
Permitted Phases	6					
Total Split (s)	96.0	96.0	96.0	0.0	24.0	0.0
Act Effct Green (s)	93.6	93.6		18.4		
Actuated g/C Ratio	0.78	0.78		0.15		
v/c Ratio	0.83	0.54		0.86		
Control Delay	19.4	5.9		63.9		
Queue Delay	0.0	0.0		0.0		
Total Delay	19.4	5.9		63.9		
LOS	B	A		E		
Approach Delay	19.4	5.9		63.9		
Approach LOS	B	A		E		

Intersection Summary						
Cycle Length: 120						
Actuated Cycle Length: 120						
Offset: 12 (10%), Referenced to phase 2:WBT and 6:EBTL, Start of Green						
Control Type: Actuated-Coordinated						
Maximum v/c Ratio: 0.86						
Intersection Signal Delay: 19.9						
Intersection Capacity Utilization 99.1%						
Intersection LOS: B						
ICU Level of Service F						
Analysis Period (min) 15						

Splits and Phases: 11: Morris Rd & Bethany Rd



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Flt	1.00	0.93			0.93	
Flt Protected	0.99	1.00			0.97	
Satd. Flow (prot)	1841	1741			1697	
Flt Permitted	0.61	1.00			0.97	
Satd. Flow (perm)	1135	1741			1697	
Volume (vph)	152	517	379	343	116	100
Peak-hour factor, PHF	0.89	0.94	0.98	0.94	0.91	0.83
Adj. Flow (vph)	171	550	387	365	127	120
RTOR Reduction (vph)	0	0	27	0	29	0
Lane Group Flow (vph)	0	721	725	0	218	0
Turn Type	Perm					
Protected Phases	6	2	2	8		
Permitted Phases	6					
Actuated Green, G (s)	93.6	93.6		18.4		
Effective Green, g (s)	93.6	93.6		18.4		
Actuated g/C Ratio	0.78	0.78		0.15		
Clearance Time (s)	4.0	4.0		4.0		
Vehicle Extension (s)	3.0	3.0		3.0		
Lane Grp Cap (vph)	885	1358		260		
v/s Ratio Prot		0.42		0.13		
v/s Ratio Perm	0.64					
v/c Ratio	0.81	0.53		0.84		
Uniform Delay, d1	8.0	5.0		49.4		
Progression Factor	1.00	1.00		0.90		
Incremental Delay, d2	8.1	1.5		19.5		
Delay (s)	16.1	6.5		63.9		
Level of Service	B	A		E		
Approach Delay (s)	16.1	6.5		63.9		
Approach LOS	B	A		E		
Intersection Summary						
HCM Average Control Delay		18.8				B
HCM Volume to Capacity ratio		0.82				
Actuated Cycle Length (s)		120.0				8.0
Intersection Capacity Utilization		99.1%				F
Analysis Period (min)		15				
c Critical Lane Group						

Future Saturday Intersection Analysis

Future 2009 Saturday

Lanes, Volumes, Timings
1: Bethany Rd & Cogburn Rd

Future Saturday
6/29/2007

	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	391	402	140	344	200	370
Act Effct Green (s)	28.9	28.9	83.1	83.1	83.1	83.1
Actuated g/C Ratio	0.24	0.24	0.69	0.69	0.69	0.69
v/c Ratio	0.88	0.86	0.25	0.27	0.34	0.29
Control Delay	61.1	12.3	2.8	1.9	10.9	8.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	61.1	12.3	2.8	1.9	10.9	8.7
LOS	E	B	A	A	B	A
Approach Delay	61.1	12.3	2.2	2.2	9.5	9.5
Approach LOS	E	B	A	A	B	A
Queue Length 50th (ft)	273	79	8	18	56	97
Queue Length 95th (ft)	343	m70	m17	m33	128	178
Internal Link Dist (ft)	1654	2050		3797		1469
Turn Bay Length (ft)			150		150	
Base Capacity (vph)	800	806	553	1270	583	1280
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.49	0.50	0.25	0.27	0.34	0.29

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 93 (78%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.88
Intersection Signal Delay: 19.1
Intersection Capacity Utilization 60.5%
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis
1: Bethany Rd & Cogburn Rd

Future Saturday
6/29/2007

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.95	0.95	0.95	0.92	0.92	0.92	0.95	0.98	0.98	0.95	0.95	0.99
Flt Protected	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1766	1766	1766	1718	1718	1718	1770	1831	1770	1846	1846	1846
Flt Permitted	0.95	0.95	0.95	0.98	0.98	0.98	0.51	1.00	0.52	1.00	0.52	1.00
Satd. Flow (perm)	1687	1687	1687	1691	1691	1691	941	1831	974	1846	974	1846
Volume (vph)	8	204	125	7	148	190	132	293	35	180	303	14
Peak-hour factor, PHF	0.58	0.88	0.86	0.75	0.90	0.83	0.94	0.96	0.89	0.90	0.87	0.65
Adj. Flow (vph)	14	232	145	9	164	229	140	305	39	200	348	22
RTOR Reduction (vph)	0	24	0	0	55	0	0	2	0	0	1	0
Lane Group Flow (vph)	0	367	0	0	347	0	140	342	0	200	369	0
Turn Type	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm
Protected Phases	8	8	8	4	4	4	6	6	6	6	2	2
Permitted Phases	8	8	8	4	4	4	6	6	6	6	2	2
Actuated Green, G (s)	28.9	28.9	28.9	28.9	28.9	28.9	83.1	83.1	83.1	83.1	83.1	83.1
Effective Green, g (s)	28.9	28.9	28.9	28.9	28.9	28.9	83.1	83.1	83.1	83.1	83.1	83.1
Actuated g/C Ratio	0.24	0.24	0.24	0.24	0.24	0.24	0.69	0.69	0.69	0.69	0.69	0.69
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	406	406	406	407	407	407	652	1268	674	1278	674	1278
v/s Ratio Prot												
v/s Ratio Perm	0.22	0.22	0.22	0.21	0.21	0.21	0.15	0.19	0.21	0.21	0.21	0.20
v/c Ratio	0.90	0.90	0.90	0.85	0.85	0.85	0.21	0.27	0.30	0.30	0.29	0.29
Uniform Delay, d1	44.2	44.2	44.2	43.5	43.5	43.5	6.7	7.0	7.1	7.1	7.1	7.1
Progression Factor	1.00	1.00	1.00	0.29	0.29	0.29	0.21	0.18	0.21	0.21	1.00	1.00
Incremental Delay, d2	22.8	22.8	22.8	1.7	1.7	1.7	0.7	0.5	0.7	0.7	1.1	0.6
Delay (s)	67.0	67.0	67.0	14.4	14.4	14.4	2.1	1.7	8.3	8.3	7.7	7.7
Level of Service	E	E	E	B	B	B	A	A	A	A	A	A
Approach Delay (s)	67.0	67.0	67.0	14.4	14.4	14.4	1.8	1.8	7.9	7.9	7.9	7.9
Approach LOS	E	E	E	B	B	B	A	A	A	A	A	A

Intersection Summary

HCM Average Control Delay	20.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	60.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings
2: Bethany Rd & SR 9

Future Saturday
6/29/2007

	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	140	106	335	147	190	274	1121	14	1071
Act Effct Green (s)	9.0	14.4	14.4	9.0	14.4	17.6	80.0	6.5	63.0
Actuated g/C Ratio	0.08	0.12	0.12	0.08	0.12	0.15	0.67	0.05	0.52
v/c Ratio	1.05	0.48	0.85	1.11	0.81	1.05	0.92	0.15	1.11
Control Delay	136.5	48.0	31.5	159.9	66.8	120.5	32.5	57.0	90.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	136.5	48.0	31.5	159.9	66.8	120.5	32.5	57.0	90.7
LOS	F	D	C	F	E	F	C	E	F
Approach Delay	59.8								
Approach LOS	E								
Queue Length 50th (ft)	~116	78	101	~130	119	~251	620	11	~946
Queue Length 95th (ft)	m#212	m104	m120	#219	155	#342	#1194	21	#1205
Internal Link Dist (ft)	2050								
Turn Bay Length (ft)	150	248	275	250	133	259	260	1216	118
Base Capacity (vph)	133	248	411	133	259	260	1216	118	969
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.05	0.43	0.82	1.11	0.73	1.05	0.92	0.12	1.11
Intersection Summary									
Cycle Length: 120									
Actuated Cycle Length: 120									
Offset: 28 (23%), Referenced to phase 2:SBT and 6:NBT, Start of Green									
Control Type: Actuated-Coordinated									
Maximum v/c Ratio: 1.11									
Intersection Signal Delay: 70.2									
Intersection Capacity Utilization 94.5%									
Analysis Period (min) 15									
~ Volume exceeds capacity, queue is theoretically infinite.									
# Queue shown is maximum after two cycles.									
# 95th percentile volume exceeds capacity, queue may be longer.									
Queue shown is maximum after two cycles.									
m Volume for 95th percentile queue is metered by upstream signal.									

Baseline
A & R Engineering Inc.

Synchro 6 Report
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HCM Signalized Intersection Capacity Analysis
2: Bethany Rd & SR 9

Future Saturday
6/29/2007

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
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	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flt	1.00	1.00	0.85	1.00	0.93	1.00	0.98	1.00	0.98	1.00	0.99	1.00
Flt Protected	0.95	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1770	1726	1770	1770	1819	1770	1770	1842	1842
Flt Permitted	0.95	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	1863	1583	1770	1726	1770	1770	1819	1770	1770	1842	1842
Volume (vph)	132	88	275	116	72	77	214	878	159	8	942	65
Peak-hour factor, PHF	0.94	0.83	0.82	0.79	0.74	0.83	0.78	0.93	0.90	0.58	0.95	0.82
Adj. Flow (vph)	140	106	335	147	97	93	274	944	177	14	992	79
RTOR Reduction (vph)	0	0	203	0	29	0	0	5	0	0	2	0
Lane Group Flow (vph)	140	106	132	147	161	0	274	1116	0	14	1069	0
Turn Type	Prot		Perm	Prot	Prot		Prot			Prot		
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8											
Actuated Green, G (s)	9.0	14.4	14.4	9.0	14.4		17.6	77.6		3.0	63.0	
Effective Green, g (s)	9.0	14.4	14.4	9.0	14.4		17.6	77.6		3.0	63.0	
Actuated g/C Ratio	0.08	0.12	0.12	0.08	0.12		0.15	0.65		0.02	0.52	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	133	224	190	133	207		260	1176		44	967	
v/s Ratio Prot	0.08	0.06		c0.08	c0.09		c0.15	0.61		0.01	c0.58	
v/s Ratio Perm	c0.08											
v/c Ratio	1.05	0.47	0.69	1.11	0.78		1.05	0.95		0.32	1.11	
Uniform Delay, d1	55.5	49.3	50.7	55.5	51.2		51.2	19.4		57.5	28.5	
Progression Factor	0.88	0.85	0.76	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	88.1	1.4	9.3	109.1	16.6		70.7	16.6		4.1	62.2	
Delay (s)	137.1	43.3	47.8	164.6	67.9		121.9	35.9		61.6	90.7	
Level of Service	F	D	D	F	E		F	D		E	F	
Approach Delay (s)	68.5											
Approach LOS	E											
Intersection Summary												
HCM Average Control Delay	73.2											
HCM Volume to Capacity ratio	1.05											
Actuated Cycle Length (s)	120.0											
Intersection Capacity Utilization	94.5%											
Analysis Period (min)	15											
Critical Lane Group												

Baseline
A & R Engineering Inc.

Synchro 6 Report
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Lanes, Volumes, Timings
3: Webb Rd & Deerfield Pky

Future Saturday
6/29/2007

	EBT	EBR	WBT	WBR	NBL	NBT	SBT
Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	SBT
Lane Group Flow (vph)	231	47	232	57	62	335	434
Act Effct Green (s)	20.8	20.8	20.8	20.8	91.2	91.2	83.0
Actuated g/C Ratio	0.17	0.17	0.17	0.17	0.76	0.76	0.69
v/c Ratio	0.82	0.15	0.79	0.18	0.11	0.13	0.21
Control Delay	70.7	14.5	66.5	15.6	3.1	2.6	6.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	70.7	14.5	66.5	15.6	3.1	2.6	6.3
LOS	E	B	E	B	A	A	A
Approach Delay	61.2		56.5		2.7	6.3	
Approach LOS	E		E		A	A	A
Queue Length 50th (ft)	182	5	176	7	7	18	41
Queue Length 95th (ft)	m219	m16	180	41	m11	m26	m71
Internal Link Dist (ft)	1660		1492		2619	3319	
Turn Bay Length (ft)	135		75		230		
Base Capacity (vph)	586	597	604	597	742	2669	2027
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.39	0.08	0.38	0.10	0.08	0.13	0.21

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 93 (78%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.82

Intersection Signal Delay: 26.6

Intersection Capacity Utilization 51.4%

Analysis Period (min) 15

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

HCM Signalized Intersection Capacity Analysis
3: Webb Rd & Deerfield Pky

Future Saturday
6/29/2007

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	4	4	4	4	4	4	4	4	4	4	4	4
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	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	0.85	1.00	0.99	0.99	0.98	0.98	0.95
Flt Protected	0.99	1.00	0.99	1.00	0.99	1.00	0.95	1.00	0.99	0.99	0.99	0.99
Satd. Flow (prot)	1841	1583	1841	1583	1845	1583	1770	3506	3442	3442	3442	3442
Flt Permitted	0.50	1.00	0.57	1.00	0.57	1.00	0.47	1.00	0.85	0.85	0.85	0.85
Satd. Flow (perm)	939	1583	1064	1583	871	3506	2940					
Volume (vph)	39	162	34	32	130	51	41	292	15	47	269	45
Peak-hour factor, PHF	0.71	0.92	0.72	0.72	0.69	0.89	0.66	0.93	0.70	0.77	0.86	0.75
Adj. Flow (vph)	55	176	47	44	188	57	62	314	21	61	313	60
RTOR Reduction (vph)	0	0	39	0	0	38	0	2	0	0	5	0
Lane Group Flow (vph)	0	231	8	0	232	19	62	333	0	0	429	0
Turn Type	Perm	Perm	Perm	Perm	Perm	pm+pt	Perm	pm+pt	Perm	Perm	Perm	Perm
Protected Phases	8	8	4	4	4	1	6	2				
Permitted Phases	8	8	4	4	4	6	6	2				
Actuated Green, G (s)	20.8	20.8	20.8	20.8	20.8	91.2	91.2	82.1				
Effective Green, g (s)	20.8	20.8	20.8	20.8	20.8	91.2	91.2	82.1				
Actuated g/C Ratio	0.17	0.17	0.17	0.17	0.17	0.76	0.76	0.68				
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0				
Lane Grp Cap (vph)	163	274	184	274	700	2665	2011					
v/s Ratio Prot												
v/s Ratio Perm	0.25	0.01	0.22	0.01	0.06							
v/c Ratio	1.42	0.03	1.26	0.07	0.09	0.12	0.21					
Uniform Delay, d1	49.6	41.2	49.6	41.5	3.7	3.8	7.0					
Progression Factor	1.06	1.28	1.00	1.00	0.62	0.60	0.79					
Incremental Delay, d2	217.6	0.0	153.5	0.1	0.1	0.1	0.2					
Delay (s)	270.1	52.8	203.1	41.6	2.3	2.4	5.8					
Level of Service	F	D	F	D	A	A	A					
Approach Delay (s)	233.4		171.3		5.8							
Approach LOS	F		F		A							

Intersection Summary

HCM Average Control Delay 84.3 HCM Level of Service F

HCM Volume to Capacity ratio 0.44

Actuated Cycle Length (s) 120.0 Sum of lost time (s) 12.0

Intersection Capacity Utilization 51.4% ICU Level of Service A

Analysis Period (min) 15

c Critical Lane Group

Lanes, Volumes, Timings
4: Cogburn Rd & Webb Rd

Future Saturday
6/29/2007

	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group	235	207	110	536	90	657
Lane Group Flow (vph)	21.8	21.8	86.2	81.1	87.2	80.0
Act Effct Green (s)	0.18	0.18	0.72	0.68	0.73	0.67
Actuated g/C Ratio	0.84	0.63	0.27	0.23	0.16	0.28
v/c Ratio	67.8	47.6	6.4	6.2	4.8	8.2
Control Delay	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	67.8	47.6	6.4	6.2	4.8	8.2
Total Delay	E	D	A	A	A	A
LOS	E	D	A	A	A	A
Approach Delay	67.8	47.6	6.2	6.2	7.8	7.8
Approach LOS	E	D	A	A	A	A
Queue Length 50th (ft)	165	128	7	21	14	96
Queue Length 95th (ft)	187	m115	m25	m187	m24	m129
Internal Link Dist (ft)	2012	2515		1866		556
Turn Bay Length (ft)	535	624	602	2369	702	2309
Base Capacity (vph)	0	0	0	0	0	0
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.44	0.33	0.18	0.23	0.13	0.28

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 4 (3%), Referenced to phase 2:SBTL and 6:NBT, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.84
Intersection Signal Delay: 19.4
Intersection Capacity Utilization 49.7%
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis
4: Cogburn Rd & Webb Rd

Future Saturday
6/29/2007

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔		↔	↔		↔	↔	↔	↔	↔	↔
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
Lane Util. Factor	1.00			1.00			1.00			1.00		0.95
Frt	0.96			0.95			1.00			1.00		0.97
Flt Protected				0.99			0.95			0.95		1.00
Satd. Flow (prot)	1762			1754			1770			1770		3450
Flt Permitted	0.59			0.93			0.37			0.43		1.00
Satd. Flow (perm)	1051			1633			696			809		3450
Volume (vph)	66	67	58	12	64	46	96	476	22	62	508	94
Peak-hour factor, PHF	0.83	0.75	0.88	0.55	0.62	0.56	0.87	0.95	0.62	0.69	0.93	0.85
Adj. Flow (vph)	80	89	66	22	103	82	110	501	35	90	546	111
RTOR Reduction (vph)	0	15	0	0	25	0	0	2	0	0	7	0
Lane Group Flow (vph)	0	220	0	0	182	0	110	534	0	90	650	0
Turn Type	Perm	Perm	Perm	Perm	Perm	Perm	pm+pt	pm+pt	pm+pt	pm+pt	pm+pt	pm+pt
Protected Phases	8	8		4	4		1	6		5	2	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)	21.8			21.8			86.4	80.2		86.0	80.0	
Effective Green, g (s)	21.8			21.8			86.4	80.2		86.0	80.0	
Actuated g/C Ratio	0.18			0.18			0.72	0.67		0.72	0.67	
Clearance Time (s)	4.0			4.0			4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0			3.0			3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	191			297			557	2343		628	2300	
v/s Ratio Prot							c0.01	0.15		0.01	c0.19	
v/s Ratio Perm	c0.21			0.11			0.13			0.10		
v/c Ratio	1.15			0.61			0.20	0.23		0.14	0.28	
Uniform Delay, d1	49.1			45.2			5.2	7.8		5.1	8.2	
Progression Factor	1.00			1.05			1.06	0.69		0.84	0.90	
Incremental Delay, d2	112.5			3.7			0.1	0.1		0.1	0.3	
Delay (s)	161.6			51.2			5.6	5.5		4.4	7.7	
Level of Service	F			D			A	A		A	A	
Approach Delay (s)	161.6			51.2			5.5			7.3		
Approach LOS	F			D			A			A		
Intersection Summary												
HCM Average Control Delay	31.4						HCM Level of Service					
HCM Volume to Capacity ratio	0.45						C					
Actuated Cycle Length (s)	120.0						Sum of lost time (s)					
Intersection Capacity Utilization	49.7%						ICU Level of Service					
Analysis Period (min)	15						A					
c Critical Lane Group												

Lanes, Volumes, Timings
5: SR 9 & Windward Pky

Future Saturday
6/29/2007

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	149	802	199	1189	820	170	172	536	693	218	638
Act Effct Green (s)	43.8	36.0	36.0	82.0	70.2	70.2	25.0	17.0	120.0	27.0	18.0
Actuated g/C Ratio	0.36	0.30	0.30	0.68	0.58	0.58	0.21	0.14	1.00	0.22	0.15
v/c Ratio	0.51	1.43	0.37	1.74	0.75	0.17	0.96	1.07	0.44	1.12	1.20
Control Delay	21.5	238.8	20.1	365.8	24.1	2.3	87.8	107.7	0.4	135.3	147.2
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	21.5	238.8	20.1	365.8	24.1	2.3	87.8	107.7	0.4	135.3	147.2
LOS	C	F	C	F	C	A	F	F	A	F	F
Approach Delay	172.8			208.8			52.2			144.2	
Approach LOS	F			F			D			F	
Queue Length 50th (ft)	36	~842	64	~1330	448	2	133	~249	0	~176	~312
Queue Length 95th (ft)	60	#1082	131	#1544	619	23	m#165	m#291	m0	m#282	m#434
Internal Link Dist (ft)	1481			72			3686			1866	
Turn Bay Length (ft)	220	185	537	682	1090	995	180	501	1583	195	532
Base Capacity (vph)	296	559	537	682	1090	995	180	501	1583	195	532
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.50	1.43	0.37	1.74	0.75	0.17	0.96	1.07	0.44	1.12	1.20

Intersection Summary

Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 115 (96%). Referenced to phase 2:WBT and 6:EBTL, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.74	
Intersection Signal Delay: 152.2	Intersection LOS: F
Intersection Capacity Utilization 135.5%	ICU Level of Service H
Analysis Period (min) 15	
~ Volume exceeds capacity, queue is theoretically infinite.	
Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	
m Volume for 95th percentile queue is metered by upstream signal.	

HCM Signalized Intersection Capacity Analysis
5: SR 9 & Windward Pky

Future Saturday
6/29/2007

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
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	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.85	1.00	0.95
Flt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.95	1.00
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	3539	1583	1770	3448	
Flt Permitted	0.32	1.00	1.00	0.10	1.00	1.00	0.24	1.00	1.00	0.22	1.00	
Satd. Flow (perm)	600	1863	1583	186	1863	1583	438	3539	1583	414	3448	
Volume (vph)	139	730	179	1046	787	139	160	509	638	190	496	101
Peak-hour factor, PHF	0.93	0.91	0.90	0.88	0.96	0.82	0.93	0.95	0.92	0.87	0.94	0.92
Adj. Flow (vph)	149	802	199	1189	820	170	172	536	693	218	528	110
RTOR Reduction (vph)	0	0	62	0	0	68	0	0	0	0	14	0
Lane Group Flow (vph)	149	802	137	1189	820	102	172	536	693	218	624	0
Turn Type	pm+pt	pm+pt	pm+pt	pm+pt	pm+pt	pm+pt	pm+pt	pm+pt	pm+pt	pm+pt	pm+pt	
Protected Phases	1	6	5	2	7	4	7	4	3	8		
Permitted Phases	6	6	2	2	4	4	4	4	Free	8		
Actuated Green, G (s)	43.8	36.0	36.0	82.0	70.2	70.2	25.0	17.0	120.0	27.0	18.0	
Effective Green, g (s)	43.8	36.0	36.0	82.0	70.2	70.2	25.0	17.0	120.0	27.0	18.0	
Actuated g/C Ratio	0.36	0.30	0.30	0.68	0.59	0.59	0.21	0.14	1.00	0.22	0.15	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	295	559	475	682	1090	926	180	501	1583	195	517	
v/s Ratio Prot	0.03	0.43		c0.61	0.44	0.06	0.15		c0.08	c0.18		
v/s Ratio Perm	0.15		0.09	c0.58		0.06	0.14		c0.44	0.17		
v/s Ratio	0.51	1.43	0.29	1.74	0.75	0.11	0.96	1.07	0.44	1.12	1.21	
Uniform Delay, d1	34.1	42.0	32.2	41.2	18.5	11.0	57.9	51.5	0.0	44.4	51.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.27	1.00	0.92	0.94	
Incremental Delay, d2	1.4	205.7	1.5	340.6	4.8	0.2	33.5	47.8	0.4	99.0	109.6	
Delay (s)	35.5	247.7	33.7	381.9	23.3	11.3	110.3	113.0	0.4	139.9	157.7	
Level of Service	D	F	C	F	C	B	F	F	A	F	F	
Approach Delay (s)	183.2			218.0			57.0			153.2		
Approach LOS	F			F			E			F		

Intersection Summary

HCM Average Control Delay	160.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.54		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	135.5%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings
6: Windward Pky & Deerfield Pky

Future Saturday
6/29/2007

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	152	1696	161	151	1820	300	185	94	115	415	285
Act Effct Green (s)	72.9	65.0	65.0	73.1	65.1	120.0	29.0	16.0	16.0	15.0	18.0
Actuated g/C Ratio	0.61	0.54	0.54	0.61	0.54	1.00	0.24	0.13	0.13	0.12	0.15
v/c Ratio	0.85	0.88	0.18	0.84	0.95	0.19	0.62	0.38	0.37	0.97	0.47
Control Delay	43.4	9.6	0.6	40.7	31.8	0.1	44.2	52.5	12.6	86.4	23.6
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	43.4	9.6	0.6	40.7	31.8	0.1	44.2	52.5	12.6	86.4	23.6
LOS	D	A	A	D	C	A	D	D	B	F	C
Approach Delay	11.4										
Approach LOS	B										
Queue Length 50th (ft)	74	311	0	63	681	0	113	67	1	167	50
Queue Length 95th (ft)	m47	m92	m0	m76	m#741	m0	180	122	56	#255	m94
Internal Link Dist (ft)	3686										
Turn Bay Length (ft)	105	180	190	902	180	1920	1583	311	248	309	429
Base Capacity (vph)	180	1917	902	180	1920	1583	311	248	309	429	604
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.84	0.88	0.18	0.84	0.95	0.19	0.59	0.38	0.37	0.97	0.47

Intersection Summary

Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBTL, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.97	
Intersection Signal Delay: 26.8	Intersection LOS: C
Intersection Capacity Utilization 87.1%	ICU Level of Service E
Analysis Period (min) 15	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	
m Volume for 95th percentile queue is metered by upstream signal.	

Baseline
A & R Engineering Inc.

Synchro 6 Report
Page 11

HCM Signalized Intersection Capacity Analysis
6: Windward Pky & Deerfield Pky

Future Saturday
6/29/2007

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
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	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	0.97	0.95	0.95
Flt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.89	0.89
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1863	1583	3433	3163	3163
Flt Permitted	0.06	1.00	1.00	0.06	1.00	1.00	0.46	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	115	3539	1583	114	3539	1583	855	1863	1583	3433	3163	3163
Volume (vph)	141	1543	145	133	1747	246	172	89	106	361	78	186
Peak-hour factor, PHF	0.93	0.91	0.90	0.88	0.96	0.82	0.93	0.95	0.92	0.87	0.94	0.92
Adj. Flow (vph)	152	1696	161	151	1820	300	185	94	115	415	83	202
RTOR Reduction (vph)	0	0	44	0	0	0	0	0	0	98	0	130
Lane Group Flow (vph)	152	1696	117	151	1820	300	185	94	117	415	155	0
Turn Type	pm+pt	Perm	pm+pt	Free	pm+pt	Free	pm+pt	Perm	Prot			
Protected Phases	1	6	5	2	7	4	3	8				
Permitted Phases	6	6	2	Free	4	4	4					
Actuated Green, G (s)	72.9	65.0	65.0	73.1	65.1	120.0	29.0	16.0	16.0	15.0	18.0	18.0
Effective Green, g (s)	72.9	65.0	65.0	73.1	65.1	120.0	29.0	16.0	16.0	15.0	18.0	18.0
Actuated g/C Ratio	0.61	0.54	0.54	0.61	0.54	1.00	0.24	0.13	0.13	0.12	0.15	0.15
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	179	1917	857	180	1920	1583	306	248	211	429	474	474
v/s Ratio Prot	0.06	0.48	0.06	c0.06	c0.51	0.07	0.05		c0.12	0.05		
v/s Ratio Perm	0.46	0.88	0.14	0.84	0.95	0.19	c0.08		0.01			
w/s Ratio	0.85	0.88	0.14	0.84	0.95	0.19	0.60	0.38	0.08	0.97	0.33	
Uniform Delay, d1	33.3	24.2	13.6	31.4	25.9	0.0	38.6	47.5	45.6	52.3	45.6	
Progression Factor	1.61	0.35	0.09	0.96	1.01	1.00	1.00	1.00	1.00	0.96	0.97	
Incremental Delay, d2	3.6	0.6	0.0	12.0	5.2	0.1	3.4	4.4	0.7	34.5	1.8	
Delay (s)	57.1	9.1	1.2	42.3	31.3	0.1	41.9	51.8	46.3	84.6	45.9	
Level of Service	E	A	A	D	C	A	D	D	D	F	D	
Approach Delay (s)	12.1											
Approach LOS	B											
Intersection Summary												
HCM Average Control Delay	28.6											
HCM Volume to Capacity ratio	0.86											
Actuated Cycle Length (s)	120.0											
Intersection Capacity Utilization	87.1%											
Analysis Period (min)	15											
Critical Lane Group												

Intersection Summary

HCM Average Control Delay	28.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	87.1%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Baseline
A & R Engineering Inc.

Synchro 6 Report
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Lane Group	EBT	EBR	WBL	WBT	SBL	SBR
Lane Group	EBT	EBR	WBL	WBT	SBL	SBR
Lane Group Flow (vph)	1515	1266	525	2365	115	565
Act Effd Green (s)	70.0	70.0	17.0	91.0	21.0	21.0
Actuated g/C Ratio	0.58	0.58	0.14	0.76	0.18	0.18
v/c Ratio	0.41	1.08	1.08	0.88	0.19	1.11
Control Delay	5.4	58.6	92.4	4.3	43.2	116.3
Queue Delay	0.0	0.0	0.0	16.5	0.0	0.0
Total Delay	5.4	58.6	92.4	20.8	43.2	116.3
LOS	A	E	F	C	D	F
Approach Delay	29.6			33.8		
Approach LOS	C			C		
Queue Length 50th (ft)	97	~872	~226	119	39	~274
Queue Length 95th (ft)	m10/m#1104	m#211	m104	67	#401	
Internal Link Dist (ft)	177			531		
Turn Bay Length (ft)					150	150
Base Capacity (vph)	3738	1176	486	2684	601	510
Starvation Cap Reductn	0	0	0	380	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.41	1.08	1.08	1.03	0.19	1.11
Intersection Summary						
Cycle Length: 120						
Actuated Cycle Length: 120						
Offset: 54 (45%), Referenced to phase 2:WBT and 6:EBT, Start of Green						
Control Type: Actuated-Coordinated						
Maximum v/c Ratio: 1.11						
Intersection Signal Delay: 39.5						
Intersection Capacity Utilization 155.3%						
Analysis Period (min) 15						
~ Volume exceeds capacity, queue is theoretically infinite.						
Queue shown is maximum after two cycles.						
# 95th percentile volume exceeds capacity, queue may be longer.						
Queue shown is maximum after two cycles.						
Volume for 95th percentile queue is metered by upstream signal.						

[illegible]

Lanes, Volumes, Timings
8: Windward Pky & GA 400 NB Ramp

Future Saturday
6/29/2007

	EBL	EBT	WBT	WBR	NBL	NBR	
Lane Group	EBL	EBT	WBT	WBR	NBL	NBR	
Lane Group Flow (vph)	722	979	1287	106	1818	326	
Act Effct Green (s)	24.0	52.0	24.0	24.0	60.0	60.0	
Actuated g/C Ratio	0.20	0.43	0.20	0.20	0.50	0.50	
v/c Ratio	1.05	0.64	1.00	0.26	1.06	0.23	
Control Delay	87.3	38.2	74.1	9.3	69.3	12.3	
Queue Delay	0.0	0.0	0.0	0.0	7.9	0.0	
Total Delay	87.3	38.2	74.1	9.3	77.2	12.3	
LOS	F	D	E	A	E	B	
Approach Delay	59.1 69.1						
Approach LOS	E E						
Queue Length 50th (ft)	~324	408	~294	0	~797	53	
Queue Length 95th (ft)	#450	490	#378	37	#933	82	
Internal Link Dist (ft)	531 173						
Turn Bay Length (ft)	150 150						
Base Capacity (vph)	687	1534	1282	401	1717	1440	
Starvation Cap Reductn	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	31	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	1.05	0.64	1.00	0.26	1.08	0.23	
Intersection Summary							
Cycle Length: 120							
Actuated Cycle Length: 120							
Offset: 24 (20%), Referenced to phase 2:WBT and 6:EBT, Start of Green							
Control Type: Actuated-Coordinated							
Maximum v/c Ratio: 1.06							
Intersection Signal Delay: 65.1							Intersection LOS: E
Intersection Capacity Utilization 155.3%							ICU Level of Service H
Analysis Period (min) 15							
~ Volume exceeds capacity, queue is theoretically infinite.							
Queue shown is maximum after two cycles.							
# 95th percentile volume exceeds capacity, queue may be longer.							
Queue shown is maximum after two cycles.							

HCM Signalized Intersection Capacity Analysis
8: Windward Pky & GA 400 NB Ramp

Future Saturday
6/29/2007

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔	↔↔	↔	↔↔↔	↔	↔	↔↔	↔↔	↔↔	↔	↔	↔
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	4.0	4.0			
Lane Util. Factor	0.97	0.95		0.86	1.00	0.97	0.88					
Flt	1.00	1.00		1.00	0.85	1.00	0.85					
Flt Protected	0.95	1.00		1.00	1.00	0.95	1.00					
Satd. Flow (prot)	3433	3539		6408	1583	3433	2787					
Flt Permitted	0.95	1.00		1.00	1.00	0.95	1.00					
Satd. Flow (perm)	3433	3539		6408	1583	3433	2787					
Volume (vph)	679	930	0	0	1223	87	1673	0	287	0	0	0
Peak-hour factor, PHF	0.94	0.95	0.92	0.92	0.95	0.82	0.92	0.92	0.88	0.92	0.92	0.92
Adj. Flow (vph)	722	979	0	0	1287	106	1818	0	326	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	85	0	0	47	0	0	0
Lane Group Flow (vph)	722	979	0	0	1287	21	1818	0	280	0	0	0
Turn Type	Prot	Prot			Perm	Prot	custom					
Protected Phases	1	6			2	7						
Permitted Phases						2			7			
Actuated Green, G (s)	24.0	52.0			24.0	24.0	60.0		60.0			
Effective Green, g (s)	24.0	52.0			24.0	24.0	60.0		60.0			
Actuated g/C Ratio	0.20	0.43			0.20	0.20	0.50		0.50			
Clearance Time (s)	4.0	4.0			4.0	4.0	4.0		4.0			
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0		3.0			
Lane Grp Cap (vph)	687	1534			1282	317	1717		1394			
v/s Ratio Prot	c0.21	0.28			c0.20		c0.53		0.10			
v/s Ratio Perm						0.01						
v/c Ratio	1.05	0.64			1.00	0.07	1.06		0.20			
Uniform Delay, d1	48.0	26.6			48.0	38.9	30.0		16.7			
Progression Factor	0.84	1.35			1.00	1.00	1.00		1.00			
Incremental Delay, d2	47.5	1.9			26.1	0.4	39.2		0.1			
Delay (s)	87.7	37.8			74.1	39.3	69.2		16.7			
Level of Service	F	D			E	D	E		B			
Approach Delay (s)	59.0						71.4	61.2	0.0			
Approach LOS	E						E	E	A			
Intersection Summary												
HCM Average Control Delay	63.2						HCM Level of Service					
HCM Volume to Capacity ratio	1.05						E					
Actuated Cycle Length (s)	120.0						Sum of lost time (s)					
Intersection Capacity Utilization	155.3%						ICU Level of Service					
Analysis Period (min)	15						H					
Critical Lane Group												

Lanes, Volumes, Timings
9: New Homes Private Drwy & SR 9

Future Saturday
6/29/2007

[illegible]

HCM Unsignalized Intersection Capacity Analysis

9: New Homes Private Drwy & SR 9

Future Saturday
6/29/2007

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔ Sign Control 0%						← Stop 0%	↑ Free 0%	→ Free 0%	↖ Free 0%	↗ Free 0%	↘ Free 0%
Volumes (veh/h)	2	1	6	167	0	215	1	934	140	275	946	4
Peak Hour Factor	0.25	0.25	0.42	0.86	0.92	0.85	0.25	0.92	0.76	0.91	0.91	0.50
Hourly flow rate (vph)	8	4	14	194	0	253	4	1015	184	302	1040	8
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None											
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked VC, conflicting volume VC1, stage 1 conf vol VC2, stage 2 conf vol	2667	2667	1040	2683	2675	1015	1048			1015		
Tc, single (s)	2667	2667	1040	2683	2675	1015	1048			1015		
Ic, 2 stage (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
IF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	0	68	95	0	100	13	99			56		
dM capacity (veh/h)	1	12	280	7	12	289	664			663		
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3			
Volume Total	26	194	253	4	1015	184	302	1040	8			
Volume Left	8	194	0	4	0	0	302	0	0			
Volume Right	14	0	253	0	0	184	0	0	8			
cSH	4	7	289	664	1700	1700	683	1700	1700			
Volume to Capacity	7.03	28.49	0.87	0.01	0.60	0.11	0.44	0.61	0.00			
Queue Length 95th (ft)	Err	Err	193	0	0	0	57	0	0			
Control Delay (s)	Err	Err	64.8	10.5	0.0	0.0	14.4	0.0	0.0			
Lane LOS	F	F	F	B	B	B	B	B	B			
Approach Delay (s)	9999.0	4379.2		0.0			3.2					
Approach LOS	F	F										
Intersection Summary												
Average Delay	735.2											
Intersection Capacity Utilization	90.3%											
Analysis Period (min)	15											
	E											

Lanes, Volumes, Timings
10: Webb Rd & SR 9

Future Saturday
6/29/2007

	→	←	↖	↗	↑	↘	↙	↓
Lane Group	EBT	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	181	324	28	27	1293	127	95	1254
Sign Control	Stop	Stop	Stop	Free	Free	Free	Free	Free
Intersection Summary								
Control Type: Unsignalized								
Intersection Capacity Utilization 88.9%								
Analysis Period (min) 15								
ICU Level of Service E								

HCM Unsignalized Intersection Capacity Analysis
10: Webb Rd & SR 9

Future Saturday
6/29/2007

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↔	↔	↔	↔	↔	↔
Sign Control		Stop			Stop		Free	Free	Free	Free	Free	Free
Grade		0%			0%		0%	0%	0%	0%	0%	0%
Volume (veh/h)	104	9	9	223	35	16	20	1254	112	81	1069	72
Peak Hour Factor	0.67	0.67	0.67	0.82	0.67	0.58	0.75	0.97	0.88	0.85	0.95	0.56
Hourly flow rate (vph)	155	13	13	272	52	28	27	1293	127	95	1125	129
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)						11						
Median type						None						
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
VC, conflicting volume	2752	2854	1190	2682	2791	1293	1254			1420		
VC1, stage 1 conf vol												
VC2, stage 2 conf vol												
VCu, unblocked vol	2752	2854	1190	2682	2791	1293	1254			1420		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	0	0	94	0	0	86	95			80		
cM capacity (veh/h)	0	13	229	0	14	199	555			479		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2					
Volume Total	182	352	27	1293	127	95	1254					
Volume Left	155	272	27	0	0	95	0					
Volume Right	13	28	0	0	127	0	129					
cSH	0	0	555	1700	1700	479	1700					
Volume to Capacity	Err	Err	0.05	0.76	0.07	0.20	0.74					
Queue Length 95th (ft)	Err	Err	4	0	0	18	0					
Control Delay (s)	Err	Err	11.8	0.0	0.0	14.4	0.0					
Lane LOS	F	F	B	B	B	B	B					
Approach Delay (s)	Err	Err	0.2			1.0						
Approach LOS	F	F	F			F						
Intersection Summary												
Average Delay	Err											
Intersection Capacity Utilization	88.9%											
Analysis Period (min)	15											
											E	

Lanes, Volumes, Timings
11: Morris Rd & Bethany Rd

Future Saturday
6/29/2007



Lane Group	EBT	WBT	SBL
Lane Group Flow (vph)	468	434	292
Sign Control	Free	Free	Stop
Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 67.2%			
Analysis Period (min) 15			
ICU Level of Service C			

HCM Unsignalized Intersection Capacity Analysis
11: Morris Rd & Bethany Rd

Future Saturday
6/29/2007



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		4	1		W	
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	124	282	287	93	123	129
Peak Hour Factor	0.84	0.88	0.90	0.81	0.88	0.85
Hourly flow rate (vph)	148	320	319	115	140	152
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
VC, conflicting volume		434			992	376
VC1, stage 1 conf vol						
VC2, stage 2 conf vol						
VCu, unblocked vol		434			992	376
tC, single (s)		4.1			6.4	6.2
tC, 2 stage (s)						
tF (s)		2.2			3.5	3.3
p0 queue free %		87			41	77
cM capacity (veh/h)		1126			237	670
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	468	434	292			
Volume Left	148	0	140			
Volume Right	0	115	152			
cSH	1126	1700	357			
Volume to Capacity	0.13	0.26	0.82			
Queue Length 95th (ft)	11	0	178			
Control Delay (s)	3.7	0.0	47.4			
Lane LOS	A	E	E			
Approach Delay (s)	3.7	0.0	47.4			
Approach LOS		E				
Intersection Summary						
Average Delay			13.0			
Intersection Capacity Utilization		67.2%			ICU Level of Service	C
Analysis Period (min)		15				

Future Saturday
6/29/2007

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control												
Grade	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Volume (veh/h)	11	5	24	299	5	118	36	1053	203	182	947	13
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	12	5	26	325	5	128	39	1145	221	198	1029	14

HCM Unsignalized Intersection Capacity Analysis
12: Windward Village Pky & SR 9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control	4											
Grade	0%				0%			0%			Free	Free
Volume (veh/h)	11	5	24	299	5	118	36	1053	203	182	947	13
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	12	5	26	325	5	128	39	1145	221	198	1029	14
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None				None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
VC, conflicting volume	2779	2868	1029	2651	2648	1145	1029			1365		
VC1, stage 1 conf vol												
VC2, stage 2 conf vol												
VCu, unblocked vol	2779	2868	1029	2651	2648	1145	1029			1365		
Tc, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
IC, 2 stage (s)												
IF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	0	43	91	0	59	47	94			61		
dM capacity (veh/h)	3	9	284	5	13	243	675			503		
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3	
Volume Total	17	26	325	5	128	39	1145	221	198	1029	14	
Volume Left	12	0	325	0	0	39	0	0	198	0	0	
Volume Right	0	26	0	0	128	0	0	221	0	0	14	
cSH	3	284	5	13	243	675	1700	1700	503	1700	1700	
Volume to Capacity	5.02	0.09	62.22	0.41	0.53	0.06	0.67	0.13	0.39	0.61	0.01	
Queue Length 95th (ft)	Err	8	Err	26	7.0	5	0	0	46	0	0	
Control Delay (s)	Err	19.0	Err	406.2	35.2	10.7	0.0	0.0	16.7	0.0	0.0	
Lane LOS	F	C	F	F	E	B			C			
Approach Delay (s)			7099.3			0.3			2.7			
Approach LOS	F		F									
Intersection Summary												
Average Delay			1091.1									
Intersection Capacity Utilization			98.7%						F			
Analysis Period (min)			15									

Lanes, Volumes, Timings
13: Habitat Drwy & SR 9

Future Saturday
6/29/2007

	→	←	↖	↗	↑	↘	↙	↓	↕
Lane Group	EBT	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	21	89	92	13	1180	61	75	1116	7
Sign Control	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Intersection Summary									
Control Type: Unsignalized									
Intersection Capacity Utilization 75.8%									
Analysis Period (min) 15									
ICU Level of Service D									

HCM Unsignalized Intersection Capacity Analysis
13: Habitat Drwy & SR 9

Future Saturday
6/29/2007

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Grade	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Volume (veh/h)	6	2	11	80	2	85	12	1086	56	69	1027	6
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	7	2	12	87	2	92	13	1180	61	75	1116	7
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type												
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
VC, conflicting volume	2566	2534	1116	2486	2479	1180	1123			1241		
VC1, stage 1 conf vol												
VC2, stage 2 conf vol												
VCu, unblocked vol	2566	2534	1116	2486	2479	1180	1123			1241		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	25	91	95	0	91	60	98			87		
cM capacity (veh/h)	9	23	252	16	25	232	622			561		
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3			
Volume Total	21	89	92	13	1180	61	75	1116	7			
Volume Left	7	87	0	13	0	0	75	0	0			
Volume Right	12	0	92	0	0	61	0	0	7			
cSH	23	16	232	622	1700	1700	561	1700	1700			
Volume to Capacity	0.89	5.65	0.40	0.02	0.69	0.04	0.13	0.66	0.00			
Queue Length 95th (ft)	66	Err	45	2	0	0	11	0	0			
Control Delay (s)	387.9	Err	30.5	10.9	0.0	0.0	12.4	0.0	0.0			
Lane LOS	F	F	D	B	B	B	B	B	B			
Approach Delay (s)	387.9	4925.2		0.1			0.8					
Approach LOS	F	F										
Intersection Summary												
Average Delay	340.2											
Intersection Capacity Utilization	75.8%						ICU Level of Service					
Analysis Period (min)	15						D					

Future Saturday
6/29/2007

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control												
Grade	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Volume (veh/h)	9	2	29	80	2	46	29	1035	48	62	1029	18
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	10	2	32	87	2	50	32	1125	52	67	1118	20

HCM Unsignalized Intersection Capacity Analysis

14: Marrywood Dr & SR 9

[illegible]

Synchro 6 Report
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Synchro 6 Report
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Future 2009 Saturday Improved

Lanes, Volumes, Timings
2: Bethany Rd & SR 9

Future Saturday - Improved
6/29/2007

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	140	106	335	147	97	93	274	944	177	14	992	79
Act Effct Green (s)	13.9	12.4	12.4	13.0	11.4	11.4	17.0	78.1	78.1	6.5	61.7	61.7
Actuated g/C Ratio	0.12	0.10	0.10	0.11	0.10	0.10	0.14	0.65	0.65	0.05	0.51	0.51
v/c Ratio	0.68	0.55	0.79	0.77	0.54	0.40	1.09	0.78	0.78	0.15	1.04	0.10
Control Delay	72.3	58.9	26.4	78.5	62.6	14.8	118.1	13.9	2.2	57.0	68.5	9.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	72.3	58.9	26.4	78.5	62.6	14.8	118.1	13.9	2.2	57.0	68.5	9.6
LOS	E	E	C	E	E	B	F	B	A	E	E	A
Approach Delay	43.4			56.3			32.9			64.1		
Approach LOS	D			E			C			E		
Queue Length 50th (ft)	110	82	66	112	73	0	~240	163	0	11	~836	17
Queue Length 95th (ft)	#241	126	118	#207	102	40	#331	#801	m26	21	#1087	38
Internal Link Dist (ft)	2050			3113			4282			1558		
Turn Bay Length (ft)	150	275	250	150	150	150	150	150	150	150	150	150
Base Capacity (vph)	205	248	462	191	248	292	251	1212	1063	118	958	830
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.68	0.43	0.73	0.77	0.39	0.32	1.09	0.78	0.17	0.12	1.04	0.10

Intersection Summary

Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 45 (38%), Referenced to phase 2:SBT and 6:NBT, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.09	
Intersection Signal Delay: 47.0	Intersection LOS: D
Intersection Capacity Utilization 85.4%	ICU Level of Service E
Analysis Period (min) 15	
~ Volume exceeds capacity, queue is theoretically infinite.	
Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	
m Volume for 95th percentile queue is metered by upstream signal.	

HCM Signalized Intersection Capacity Analysis
2: Bethany Rd & SR 9

Future Saturday - Improved
6/29/2007

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
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	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flt Protected	0.95	1.00	0.85	1.00	0.95	1.00	0.95	1.00	0.85	1.00	0.95	1.00
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	1863	1583	1770	1863	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	1863	1583	1770	1863	1583	1770	1863	1583	1770	1863	1583
Volume (vph)	132	88	275	116	72	77	214	878	159	8	942	65
Peak-hour factor, PHF	0.94	0.83	0.82	0.79	0.74	0.83	0.78	0.93	0.90	0.58	0.95	0.82
Adj. Flow (vph)	140	106	335	147	97	93	274	944	177	14	992	79
RTOR Reduction (vph)	0	0	259	0	0	84	0	0	35	0	0	17
Lane Group Flow (vph)	140	106	76	147	97	97	274	944	142	14	992	62
Turn Type	Prot	Perm	Prot	Perm	Prot	Perm	Prot	Perm	Prot	Perm	Prot	Perm
Protected Phases	3	8	8	7	4	4	1	6	5	5	2	2
Permitted Phases	14.0	12.4	12.4	13.0	11.4	11.4	19.4	75.6	75.6	3.0	59.2	59.2
Actuated Green, G (s)	14.0	12.4	12.4	13.0	11.4	11.4	19.4	75.6	75.6	3.0	59.2	59.2
Effective Green, g (s)	0.12	0.10	0.10	0.11	0.10	0.10	0.16	0.63	0.63	0.02	0.49	0.49
Actuated g/C Ratio	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Clearance Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Vehicle Extension (s)	207	193	164	192	177	150	286	1174	997	44	919	781
Lane Grp Cap (vph)	0.08	c0.06	0.05	c0.08	0.05	0.05	c0.15	0.51	0.09	0.01	c0.53	0.04
v/s Ratio Prot	0.68	0.55	0.46	0.77	0.55	0.06	0.96	0.80	0.14	0.32	1.08	0.08
v/c Ratio	50.8	51.1	50.7	52.0	51.8	49.4	49.9	16.6	9.0	57.5	30.4	16.0
Uniform Delay, d1	1.09	0.96	1.36	1.00	1.00	1.00	0.81	0.55	0.40	1.00	1.00	1.00
Progression Factor	7.9	3.0	1.9	16.5	3.4	0.2	35.9	4.7	0.2	4.1	53.5	0.2
Incremental Delay, d2	63.2	52.3	70.6	68.5	55.3	49.6	76.5	13.8	3.8	61.6	83.9	16.2
Delay (s)	E	D	E	E	E	D	E	B	A	E	F	B
Level of Service	65.5			59.5			24.9			78.7		
Approach Delay (s)	E			E			C			E		
Approach LOS	E			E			C			E		

Intersection Summary

HCM Average Control Delay	52.4	HCM Level of Service	D
HCM Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	85.4%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings
3: Webb Rd & Deerfield Pky

Future Saturday - Improved
6/29/2007

	EBL	EBT	EBR	WBT	WBR	NBL	NBT	SBT
Lane Group	EBL	EBT	EBR	WBT	WBR	NBL	NBT	SBT
Lane Group Flow (vph)	55	176	47	232	57	62	335	434
Act Effct Green (s)	20.0	20.0	20.0	20.0	20.0	92.0	92.0	82.9
Actuated g/C Ratio	0.17	0.17	0.17	0.17	0.17	0.77	0.77	0.69
v/c Ratio	0.35	0.57	0.15	0.81	0.19	0.11	0.12	0.21
Control Delay	52.0	55.6	15.5	69.3	16.0	4.8	4.5	10.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.0	55.6	15.5	69.3	16.0	4.8	4.5	10.1
LOS	D	E	B	E	B	A	A	B
Approach Delay	48.1			58.8		4.5	10.1	
Approach LOS	D			E		A	A	B
Queue Length 50th (ft)	38	128	4	176	7	13	37	73
Queue Length 95th (ft)	m47	m153	m9	180	41	m19	m54	m113
Internal Link Dist (ft)		1660		1492		2619	3319	
Turn Bay Length (ft)		135		75		230		
Base Capacity (vph)	339	668	597	611	597	751	2690	2025
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.26	0.08	0.38	0.10	0.08	0.12	0.21

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 29 (24%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.81
Intersection Signal Delay: 26.1
Intersection Capacity Utilization 49.3%
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis
3: Webb Rd & Deerfield Pky

Future Saturday - Improved
6/29/2007

	EBL	EBT	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Ideal Flow (vphpl)	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	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.98	0.95	0.98
Flt Protected	0.95	1.00	1.00	0.99	1.00	0.95	1.00	0.95	0.99	0.95	0.99
Satd. Flow (prot)	1770	1863	1583	1845	1583	1770	3506	3442	3442	3442	3442
Flt Permitted	0.28	1.00	1.00	0.72	1.00	0.47	1.00	0.85	0.85	0.85	0.85
Satd. Flow (perm)	526	1863	1583	1341	1583	871	3506	2940	2940	2940	2940
Volume (vph)	39	162	34	32	130	51	41	292	15	47	269
Peak-hour factor, PHF	0.71	0.92	0.72	0.72	0.69	0.89	0.66	0.93	0.70	0.77	0.86
Adj. Flow (vph)	55	176	47	44	188	57	62	314	21	61	313
RTOR Reduction (vph)	0	0	39	0	0	38	0	2	0	0	5
Lane Group Flow (vph)	55	176	8	0	232	19	62	333	0	0	429
Turn Type	Perm	Perm	Perm	Perm	Perm	pm+pt	Perm	Perm	Perm	Perm	Perm
Protected Phases	8	8	4	4	4	1	6	1	6	2	2
Permitted Phases	8	8	4	4	4	6	6	6	6	2	2
Actuated Green, G (s)	20.0	20.0	20.0	20.0	20.0	92.0	92.0	92.0	92.0	82.1	82.1
Effective Green, g (s)	20.0	20.0	20.0	20.0	20.0	92.0	92.0	92.0	92.0	82.1	82.1
Actuated g/C Ratio	0.17	0.17	0.17	0.17	0.17	0.77	0.77	0.77	0.77	0.68	0.68
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	88	311	264	224	264	712	2688	2011	2011	2011	2011
v/s Ratio Prot	0.10	0.09	0.00	0.00	0.17	0.01	0.06	c0.15	c0.15	c0.15	c0.15
v/c Ratio Perm	0.62	0.57	0.03	0.03	1.04	0.07	0.09	0.12	0.21	0.21	0.21
Uniform Delay, d1	46.5	46.0	41.9	50.0	42.2	3.5	3.6	3.6	7.0	7.0	7.0
Progression Factor	1.10	1.09	1.33	1.00	1.00	1.03	1.09	1.09	1.28	1.28	1.28
Incremental Delay, d2	11.6	2.1	0.0	69.8	0.1	0.0	0.1	0.1	0.2	0.2	0.2
Delay (s)	62.7	52.4	55.9	119.8	42.3	3.7	4.0	4.0	9.2	9.2	9.2
Level of Service	E	D	E	F	D	A	A	A	A	A	A
Approach Delay (s)	55.0			104.5		4.0		9.2			
Approach LOS	E			F		A		A			

Intersection Summary

HCM Average Control Delay	36.5	HCM Level of Service	D
HCM Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	49.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings
5: SR 9 & Windward Pky

Future Saturday - Improved
6/29/2007

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	149	802	199	1189	820	170	172	536	693	218	638	
Act Effct Green (s)	30.0	30.0	30.0	43.0	64.0	64.0	8.0	19.0	62.0	23.0	23.0	
Actuated g/C Ratio	0.25	0.25	0.25	0.36	0.53	0.53	0.07	0.16	0.52	0.19	0.19	
v/c Ratio	0.76	0.91	0.40	0.97	0.82	0.19	0.75	0.96	0.82	0.91	0.95	
Control Delay	63.1	58.6	14.9	54.4	30.6	3.9	53.6	55.8	26.9	81.1	65.9	
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	63.1	58.6	14.9	54.4	30.6	3.9	53.6	55.8	26.9	81.1	65.9	
LOS	E	E	B	D	C	A	D	E	C	F	E	
Approach Delay	51.6											
Approach LOS	D											
Queue Length 50th (ft)	95	318	36	458	480	7	64	205	346	149	229	
Queue Length 95th (ft)	#168	#431	103	m#562	m612	m20	m75	m#252	m410	m#238	m#366	
Internal Link Dist (ft)	1481											
Turn Bay Length (ft)	220	185	500	1230	994	913	229	560	842	239	675	
Base Capacity (vph)	195	885	500	1230	994	913	229	560	842	239	675	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.76	0.91	0.40	0.97	0.82	0.19	0.75	0.96	0.82	0.91	0.95	

Intersection Summary

Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 44 (37%), Referenced to phase 2:WBT and 6:EBTL, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.97	
Intersection Signal Delay: 47.9	Intersection LOS: D
Intersection Capacity Utilization 87.9%	ICU Level of Service E
Analysis Period (min) 15	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	
m Volume for 95th percentile queue is metered by upstream signal.	

HCM Signalized Intersection Capacity Analysis
5: SR 9 & Windward Pky

Future Saturday - Improved
6/29/2007

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
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	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	0.97	1.00	1.00	0.97	0.95	1.00	0.85	1.00	0.95
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	0.95
Satd. Flow (prot)	1770	3539	1583	3433	1863	1583	3433	3539	1583	1770	3448	
Flt Permitted	0.19	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.36	1.00	
Satd. Flow (perm)	355	3539	1583	3433	1863	1583	3433	3539	1583	677	3448	
Volume (vph)	139	730	179	1046	787	139	160	509	638	190	496	101
Peak-hour factor, PHF	0.93	0.91	0.90	0.88	0.96	0.82	0.93	0.95	0.92	0.87	0.94	0.92
Adj. Flow (vph)	149	802	199	1189	820	170	172	536	693	218	528	110
RTOR Reduction (vph)	0	0	104	0	0	69	0	0	24	0	15	0
Lane Group Flow (vph)	149	802	95	1189	820	101	172	536	669	218	623	0
Turn Type	pm+pt	Perm	Prot	Perm	Prot	Perm	Prot	pm+ov	pm+pt			
Protected Phases	1	6	6	5	2	2	7	4	5	3	8	
Permitted Phases	6											
Actuated Green, G (s)	30.0	30.0	30.0	43.0	64.0	64.0	8.0	19.0	62.0	23.0	23.0	
Effective Green, g (s)	30.0	30.0	30.0	43.0	64.0	64.0	8.0	19.0	62.0	23.0	23.0	
Actuated g/C Ratio	0.25	0.25	0.25	0.36	0.53	0.53	0.07	0.16	0.52	0.19	0.19	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	195	885	396	1230	994	844	229	560	818	239	661	
v/s Ratio Prot	0.06	c0.23		c0.35	0.44		0.05	c0.15	0.29	0.09	c0.18	
v/s Ratio Perm	0.13		0.06		0.06				0.13	0.08		
v/c Ratio	0.76	0.91	0.24	0.97	0.82	0.12	0.75	0.96	0.82	0.91	0.94	
Uniform Delay, d1	56.1	43.6	35.9	37.8	23.3	14.0	55.0	50.1	24.3	55.4	47.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.08	0.78	0.75	1.71	0.90	0.91
Incremental Delay, d2	16.2	14.6	1.4	15.6	6.3	0.2	6.2	17.2	3.0	34.8	23.2	
Delay (s)	72.2	58.2	37.3	53.4	29.7	15.3	49.1	54.6	44.5	85.0	66.5	
Level of Service	E	E	D	D	C	B	D	D	D	F	E	
Approach Delay (s)	56.4											
Approach LOS	E											

Intersection Summary

HCM Average Control Delay	51.0	HCM Level of Service	D
HCM Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	87.9%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	WBL	WBT	SBL	SBR
Lane Group Flow (vph)	1515	1266	525	2365	115	565
Act Effd Green (s)	60.6	60.6	22.0	86.6	25.4	25.4
Actuated g/C Ratio	0.50	0.50	0.18	0.72	0.21	0.21
w/C Ratio	0.47	0.66	0.83	0.93	0.16	0.93
Control Delay	10.2	4.1	39.8	8.5	39.0	68.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.2	4.1	39.8	8.5	39.0	68.3
LOS	B	A	D	A	D	E
Approach Delay	7.4			14.2		
Approach LOS	A			B		
Queue Length 50th (ft)	168	101	208	126	37	236
Queue Length 95th (ft)	m177	m97	m235	87	63	#351
Internal Link Dist (ft)	177			531		
Turn Bay Length (ft)					150	150
Base Capacity (vph)	3238	1932	629	2555	744	620
Starvation Cap Reductn	0	0	0	3	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced w/C Ratio	0.47	0.66	0.83	0.93	0.15	0.91
Intersection Summary						
Cycle Length: 120						
Actuated Cycle Length: 120						
Offset: 84 (70%), Referenced to phase 2:WBT and 6:EBT, Start of Green						
Control Type: Actuated-Coordinated						
Maximum w/C Ratio: 0.93						
Intersection Signal Delay: 16.5						
Intersection Capacity Utilization 105.3%						
Analysis Period (min) 15						
Intersection LOS: B						
ICU Level of Service G						
# 95th percentile volume exceeds capacity, queue may be longer.						
Queue shown is maximum after two cycles.						
Volume for 95th percentile queue is metered by upstream signal.						

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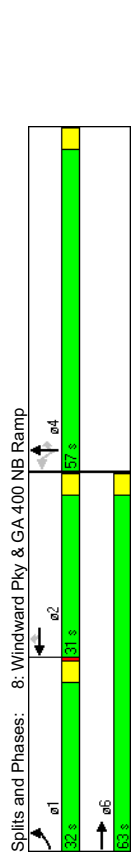
Lanes, Volumes, Timings
8: Windward Pkwy & GA 400 NB Ramp

HCM Signalized Intersection Capacity Analysis
8: Windward Pkwy & GA 400 NB Ramp

Future Sat Improved
7/27/2007

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
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	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	3433	3539	0	6408	1583	3221	1522	1504	0	0	0	0
Flt Permitted	0.950						0.950	0.950				
Satd. Flow (perm)	3433	3539	0	6408	1583	3221	1522	1504	0	0	0	0
Satd. Flow (RTOR)							106	77				
Volume (vph)	679	930	0	0	1223	87	1673	0	287	0	0	0
Lane Group Flow (vph)	722	979	0	0	1287	106	1214	604	326	0	0	0
Turn Type	Prot	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm
Protected Phases	1	6	2	2	4	4						
Permitted Phases												
Total Split (s)	32.0	63.0	0.0	0.0	31.0	31.0	57.0	57.0	57.0	0.0	0.0	0.0
Act Effct Green (s)	27.2	60.6			29.4	29.4	51.4	51.4	51.4			
Actuated g/C Ratio	0.23	0.50			0.24	0.24	0.43	0.43	0.43			
v/c Ratio	0.93	0.55			0.82	0.23	0.88	0.93	0.47			
Control Delay	78.0	25.4			48.6	8.3	40.0	54.3	20.6			
Queue Delay	0.0	0.0			0.0	0.0	0.3	1.1	0.0			
Total Delay	78.0	25.4			48.6	8.3	40.3	55.4	20.6			
LOS	E	C			D	A	D	E	C			
Approach Delay		47.8			45.5			41.6				
Approach LOS		D			D			D				

Intersection Summary												
Cycle Length: 120												
Actuated Cycle Length: 120												
Offset: 83 (69%), Referenced to phase 2:WBT and 6:EBT, Start of Green												
Control Type: Actuated-Coordinated												
Maximum v/c Ratio: 0.93												
Intersection Signal Delay: 44.6												
Intersection Capacity Utilization 106.3%												
Analysis Period (min) 15												



Lanes, Volumes, Timings
9: New Homes Private Drwy & SR 9

Future Saturday - Improved
6/29/2007

Lane Group	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	26	194	253	4	1015	184	302	1040	8
Act Effct Green (s)	17.0	17.0	17.0	95.0	120.0	95.0	95.0	95.0	95.0
Actuated g/C Ratio	0.14	0.14	0.14	0.79	0.79	1.00	0.79	0.79	0.79
v/c Ratio	0.15	0.99	0.63	0.01	0.69	0.12	0.99	0.71	0.01
Control Delay	30.2	109.8	14.0	1.0	2.9	0.1	36.7	1.9	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.2	109.8	14.0	1.0	2.9	0.1	36.7	1.9	0.2
LOS	C	F	B	A	A	A	D	A	A
Approach Delay	30.2	55.6	55.6	2.5	2.5			9.7	
Approach LOS	C	E	E	A	A			A	
Queue Length 50th (ft)	8	149	8	0	52	0	31	76	0
Queue Length 95th (ft)	3	#280	73	m0	m77	m0	m#280	m69	m0
Internal Link Dist (ft)	150	237	237	596	596			4282	
Turn Bay Length (ft)	171	195	399	292	1475	1583	306	1475	1255
Base Capacity (vph)	0	0	0	0	0	0	0	0	0
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.99	0.63	0.01	0.69	0.12	0.99	0.71	0.01

Intersection Summary

Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 75 (63%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.99	
Intersection Signal Delay: 13.8	Intersection LOS: B
Intersection Capacity Utilization 90.3%	ICU Level of Service E
Analysis Period (min) 15	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	
m Volume for 95th percentile queue is metered by upstream signal.	

HCM Signalized Intersection Capacity Analysis
9: New Homes Private Drwy & SR 9

Future Saturday - Improved
6/29/2007

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Ideal Flow (vphpl)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Total Lost time (s)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Util. Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Flt Protected	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Satd. Flow (prot)	1701	1701	1701	1770	1770	1770	1770	1770	1770	1770	1770	1770
Flt Permitted	0.65	0.65	0.65	0.74	0.74	0.74	0.20	0.20	0.20	0.21	0.21	0.21
Satd. Flow (perm)	1121	1121	1121	1379	1379	1379	368	368	368	388	388	388
Volume (vph)	2	1	6	167	0	215	1	934	140	275	946	4
Peak-hour factor, PHF	0.25	0.25	0.42	0.86	0.92	0.85	0.25	0.92	0.76	0.91	0.91	0.50
Adj. Flow (vph)	8	4	14	194	0	253	4	1015	184	302	1040	8
RTOR Reduction (vph)	0	12	0	0	175	0	0	0	0	0	0	2
Lane Group Flow (vph)	0	14	0	194	78	0	4	1015	184	302	1040	6
Turn Type	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Free	Free	Perm	Perm	Perm
Protected Phases	8	8	4	4	4	4	6	6	Free	2	2	2
Permitted Phases	8	8	4	4	4	4	6	6	Free	2	2	2
Actuated Green, G (s)	17.0	17.0	17.0	17.0	17.0	17.0	95.0	95.0	120.0	95.0	95.0	95.0
Effective Green, g (s)	17.0	17.0	17.0	17.0	17.0	17.0	95.0	95.0	120.0	95.0	95.0	95.0
Actuated g/C Ratio	0.14	0.14	0.14	0.14	0.14	0.14	0.79	0.79	1.00	0.79	0.79	0.79
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	159	195	224	195	224	224	291	1475	1583	307	1475	1253
v/s Ratio Prot	0.01	0.01	c0.14	0.01	0.01	0.01	0.01	0.54	0.12	0.78	0.56	0.00
v/s Ratio Perm	0.09	0.09	0.35	0.35	0.35	0.35	0.01	0.69	0.12	0.98	0.71	0.01
Uniform Delay, d1	44.8	51.5	46.5	51.5	46.5	46.5	2.6	5.7	0.0	11.8	5.9	2.6
Progression Factor	1.00	0.88	0.56	0.88	0.56	0.56	0.45	0.21	1.00	0.46	0.16	0.12
Incremental Delay, d2	0.2	62.6	0.9	0.2	62.6	0.9	0.1	1.7	0.1	25.2	0.9	0.0
Delay (s)	45.0	107.8	26.8	51.7	26.8	26.8	1.2	2.9	0.1	30.6	1.9	0.3
Level of Service	D	F	C	D	C	C	A	A	A	C	A	A
Approach Delay (s)	45.0	45.0	61.9	61.9	61.9	61.9	2.4	2.4	8.3	8.3	8.3	A
Approach LOS	D	D	E	E	E	E	A	A	A	A	A	A

Intersection Summary

HCM Average Control Delay	14.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	90.3%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings
10: Webb Rd & SR 9

Future Saturday - Improved
6/29/2007

	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	181	272	80	27	1293	127	95	1254
Act Effct Green (s)	21.0	21.0	21.0	91.0	91.0	91.0	91.0	91.0
Actuated g/C Ratio	0.18	0.18	0.18	0.76	0.76	0.76	0.76	0.76
v/c Ratio	0.82	1.09	0.25	0.26	0.92	0.10	1.27	0.90
Control Delay	73.1	125.7	29.2	5.8	14.7	0.7	183.9	13.1
Queue Delay	0.0	0.0	0.0	0.0	37.6	0.0	0.0	1.4
Total Delay	73.1	125.7	29.2	5.8	52.4	0.7	183.9	14.4
LOS	E	F	C	A	D	A	F	B
Approach Delay	73.1	103.8			47.0			26.4
Approach LOS	E	F			D			C
Queue Length 50th (ft)	139	~239	34	3	225	0	~94	341
Queue Length 95th (ft)	152	m#357	m51	m5	m#588	m4	m#107	m506
Internal Link Dist (ft)	2515		362		2361			404
Turn Bay Length (ft)	150		150	150	1413	1221	75	1395
Base Capacity (vph)	222	249	326	105	1413	1221	75	1395
Starvation Cap Reductn	0	0	0	0	0	0	0	45
Spillback Cap Reductn	0	0	2	0	216	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.82	1.09	0.25	0.26	1.08	0.10	1.27	0.93

Intersection Summary

Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 28 (23%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.27	
Intersection Signal Delay: 46.0	Intersection LOS: D
Intersection Capacity Utilization 87.4%	ICU Level of Service E
Analysis Period (min) 15	
~ Volume exceeds capacity, queue is theoretically infinite.	
Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	
m Volume for 95th percentile queue is metered by upstream signal.	

HCM Signalized Intersection Capacity Analysis
10: Webb Rd & SR 9

Future Saturday - Improved
6/29/2007

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.99	0.99	1.00	0.95	1.00	0.95	1.00	0.85	1.00	0.98	1.00	0.98
Flt Protected	0.96	0.96	0.95	1.00	0.95	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1769	1769	1770	1765	1770	1765	1770	1863	1583	1770	1834	1834
Flt Permitted	0.68	0.68	0.76	1.00	0.76	1.00	0.07	1.00	1.00	0.05	1.00	1.00
Satd. Flow (perm)	1256	1256	1422	1765	1422	1765	138	1863	1583	98	1834	1834
Volume (vph)	104	9	9	223	35	16	20	1254	112	81	1089	72
Peak-hour factor, PHF	0.67	0.67	0.67	0.82	0.67	0.58	0.75	0.97	0.88	0.85	0.95	0.56
Adj. Flow (vph)	155	13	13	272	52	28	27	1293	127	95	1125	129
RTOR Reduction (vph)	0	2	0	0	17	0	0	0	21	0	3	0
Lane Group Flow (vph)	0	179	0	272	64	0	27	1293	106	95	1251	0
Turn Type	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm
Protected Phases	8	8	4	4	4	4	6	6	6	2	2	2
Permitted Phases	8	8	4	4	4	4	6	6	6	2	2	2
Actuated Green, G (s)	21.0	21.0	21.0	21.0	21.0	21.0	91.0	91.0	91.0	91.0	91.0	91.0
Effective Green, g (s)	21.0	21.0	21.0	21.0	21.0	21.0	91.0	91.0	91.0	91.0	91.0	91.0
Actuated g/C Ratio	0.18	0.18	0.18	0.18	0.18	0.18	0.76	0.76	0.76	0.76	0.76	0.76
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	220	249	309	309	309	309	105	1413	1200	74	1391	1391
v/s Ratio Prot												
v/s Ratio Perm	0.14	c0.19	c0.19	0.21	0.21	0.21	0.20	0.69	0.07	0.97	0.88	0.88
v/c Ratio	0.81	1.09	0.21	0.21	0.21	0.21	0.26	0.92	0.09	1.28	0.90	0.90
Uniform Delay, d1	47.6	49.5	42.4	42.4	42.4	42.4	4.4	11.4	3.8	14.5	11.0	11.0
Progression Factor	1.01	0.88	0.84	0.84	0.84	0.84	0.57	0.69	0.40	0.61	0.59	0.59
Incremental Delay, d2	18.3	83.7	0.3	0.3	0.3	0.3	2.7	5.5	0.1	171.2	5.5	5.5
Delay (s)	66.2	127.3	36.0	36.0	36.0	36.0	5.2	13.4	1.6	180.1	12.0	12.0
Level of Service	E	F	D	D	D	D	A	B	A	F	B	B
Approach Delay (s)	66.2		106.5		106.5					23.8		
Approach LOS	E		F		F					C		

Intersection Summary

HCM Average Control Delay	29.8	HCM Level of Service	C
HCM Volume to Capacity ratio	1.24		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	87.4%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

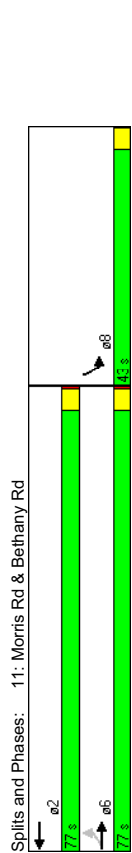
Lanes, Volumes, Timings
11: Morris Rd & Bethany Rd

HCM Signalized Intersection Capacity Analysis
11: Morris Rd & Bethany Rd

Future Sat Improved
7/27/2007

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	0	1833	1796	0	1693	0
Flt Permitted	0.664				0.977	
Satd. Flow (perm)	0	1237	1796	0	1693	0
Satd. Flow (RTOR)			28		48	
Volume (vph)	124	282	287	93	123	129
Lane Group Flow (vph)	0	468	434	0	292	0
Turn Type	Perm					
Protected Phases	6	2			8	
Permitted Phases	6					
Total Split (s)	77.0	77.0	77.0	0.0	43.0	0.0
Act Effct Green (s)	89.1	89.1			22.9	
Actuated g/C Ratio	0.74	0.74			0.19	
v/c Ratio	0.51	0.32			0.81	
Control Delay	9.8	6.3			49.8	
Queue Delay	0.0	0.0			0.0	
Total Delay	9.8	6.3			49.8	
LOS	A	A			D	
Approach Delay	9.8	6.3			49.8	
Approach LOS	A	A			D	

Intersection Summary						
Cycle Length: 120						
Actuated Cycle Length: 120						
Offset: 49 (41%), Referenced to phase 2:WBT and 6:EBTL, Start of Green						
Control Type: Actuated-Coordinated						
Maximum v/c Ratio: 0.81						
Intersection Signal Delay: 18.3						
Intersection Capacity Utilization 67.2%						
Analysis Period (min) 15						



Future Site Access Analysis

Future 2009 PM Site Access Analysis

Lanes, Volumes, Timings
12: Windward Village Pky & SR 9

Future PM - Improved
6/29/2007

Movement	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	10	35	289	5	112	50	1009	182	148	940
Act Effct Green (s)	27.5	27.5	27.5	27.5	27.5	27.5	72.0	72.0	84.5	84.5
Actuated g/C Ratio	0.23	0.23	0.23	0.23	0.23	0.23	0.60	0.60	0.70	0.70
v/c Ratio	0.03	0.09	0.92	0.01	0.25	0.21	0.90	0.18	0.79	0.72
Control Delay	35.2	14.8	80.0	34.8	8.0	9.4	24.0	3.1	47.0	17.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	4.1	0.0	0.0	0.3
Total Delay	35.2	14.8	80.0	34.8	8.0	9.4	28.1	3.1	47.0	17.5
LOS	D	B	E	C	A	A	C	A	D	B
Approach Delay	19.3									
Approach LOS	B									
Queue Length 50th (ft)	6	3	216	3	0	13	549	12	59	498
Queue Length 95th (ft)	21	30	#375	14	46	m16	m#970	m17	m#156	m582
Internal Link Dist (ft)	169									
Turn Bay Length (ft)	340	415	330	450	467	234	1123	992	188	1312
Base Capacity (vph)	0	0	0	0	0	0	68	0	0	0
Starvation Cap Reductn	0	1	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	1	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.08	0.88	0.01	0.24	0.21	0.96	0.18	0.79	0.76
Intersection Summary										
Cycle Length: 120										
Actuated Cycle Length: 120										
Offset: 60 (50%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green										
Control Type: Actuated-Coordinated										
Maximum v/c Ratio: 0.92										
Intersection Signal Delay: 27.9										
Intersection Capacity Utilization 87.8%										
Analysis Period (min) 15										
# 95th percentile volume exceeds capacity, queue may be longer.										
Queue shown is maximum after two cycles.										
m Volume for 95th percentile queue is metered by upstream signal.										

HCM Signalized Intersection Capacity Analysis
12: Windward Village Pky & SR 9

Future PM - Improved
6/29/2007

Movement	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Ideal Flow (vphpl)	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	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fit Protected	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1770	1623	1770	1623	1770	1623	1770	1623	1770	1623
Fit Permitted	0.75	1.00	0.73	1.00	0.73	1.00	0.73	1.00	0.73	1.00
Satd. Flow (perm)	1405	1623	1368	1623	1368	1623	1405	1623	1368	1623
Volume (vph)	9	5	28	266	5	103	46	928	167	136
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	10	5	30	289	5	112	50	1009	182	148
RTOR Reduction (vph)	0	23	0	0	0	86	0	0	37	0
Lane Group Flow (vph)	10	12	0	289	5	26	50	1009	145	148
Turn Type	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm
Protected Phases	8	8	4	4	6	6	6	5	2	2
Permitted Phases	8	8	4	4	6	6	6	5	2	2
Actuated Green, G (s)	27.5	27.5	27.5	27.5	27.5	27.5	72.0	72.0	84.5	84.5
Effective Green, g (s)	27.5	27.5	27.5	27.5	27.5	27.5	72.0	72.0	84.5	84.5
Actuated g/C Ratio	0.23	0.23	0.23	0.23	0.23	0.23	0.60	0.60	0.70	0.70
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	322	372	314	427	363	246	1118	950	194	1312
v/s Ratio Prot	0.01	0.01	c0.21	0.00	0.02	0.12	c0.54	0.05	c0.50	0.01
v/s Ratio Perm	0.03	0.03	0.92	0.01	0.07	0.20	0.90	0.15	0.76	0.01
Uniform Delay, d1	35.9	35.9	45.2	35.7	36.2	10.9	20.9	10.6	33.2	5.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	0.66	0.73	0.53	0.86	1.23
Incremental Delay, d2	0.0	0.0	31.0	0.0	0.1	7.2	0.2	14.2	2.9	0.0
Delay (s)	35.9	35.9	76.2	35.8	36.3	8.3	22.5	5.8	42.6	6.0
Level of Service	D	D	E	D	D	A	C	A	D	B
Approach Delay (s)	35.9									
Approach LOS	D									
Intersection Summary										
HCM Average Control Delay	26.3									
HCM Volume to Capacity ratio	0.90									
Actuated Cycle Length (s)	120.0									
Intersection Capacity Utilization	87.8%									
Analysis Period (min)	15									
c Critical Lane Group										

Lanes, Volumes, Timings
13: Habitat Drwy & SR 9

Future PM - Improved
6/29/2007

	→	←	↖	↗	↑	↘	↙	↓	↕
Lane Group	EBT	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	18	77	80	15	1090	45	54	1043	9
Sign Control	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Intersection Summary									
Control Type: Unsignalized									
Intersection Capacity Utilization 70.7%									
Analysis Period (min) 15									
ICU Level of Service C									

HCM Unsignalized Intersection Capacity Analysis
13: Habitat Drwy & SR 9

Future PM - Improved
6/29/2007

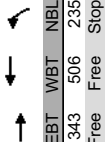
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔				↔			↔		↔		
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Grade	0%			0%			0%			0%		
Volume (veh/h)	6	2	8	69	2	74	14	1003	41	50	960	8
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	7	2	9	75	2	80	15	1090	45	54	1043	9
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)								691				
Upstream signal (ft)												
pX, platoon unblocked	0.45	0.45		0.45	0.45	0.45				0.45		
VC, conflicting volume	2354	2317	1043	2283	2282	1090	1052			1135		
VC1, stage 1 conf vol												
VC2, stage 2 conf vol												
vCu, unblocked vol	3981	3900	1043	3823	3821	1199	1052			1297		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	0	0	97	0	0	22	98			78		
cM capacity (veh/h)	0	1	278	0	1	103	662			243		
Direction, Lane #												
EB 1	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3				
Volume Total	17	77	80	15	1090	45	54	1043	9			
Volume Left	7	75	0	15	0	0	54	0	0			
Volume Right	9	0	80	0	0	45	0	0	9			
cSH	0	0	103	662	1700	1700	243	1700	1700			
Volume to Capacity	Err	Err	0.78	0.02	0.64	0.03	0.22	0.61	0.01			
Queue Length 95th (ft)	Err	Err	107	2	0	0	21	0	0			
Control Delay (s)	Err	Err	112.7	10.6	0.0	0.0	24.1	0.0	0.0			
Lane LOS	F	F	F	B	C	C	C	C	C			
Approach Delay (s)	Err	Err		0.1			1.2					
Approach LOS	F	F										
Intersection Summary												
Average Delay	Err											
Intersection Capacity Utilization	70.7%											
Analysis Period (min)	15											
	ICU Level of Service											
	C											

[illegible]

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔										
Sign Control		Stop			4	↗	↖	↗	↖	↗	↖	↗
Grade		0%			0%			0%			Free	0%
Volume (veh/h)	10	2	18	69	2	38	25	1006	34	45	885	15
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	2	20	75	2	41	27	1093	37	49	962	16
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												676
pX, platoon unblocked	0.72	0.72	0.72	0.72	0.72		0.72					
vC, conflicting volume	2250	2245	962	2228	2224	1093	978					1130
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2746	2739	947	2716	2710	1093	970					1130
Tc, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1					4.1
IC, 2 stage (s)												
IF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2					2.2
p0 queue free %	0	83	91	0	83	84	95					92
dM capacity (veh/h)	6	13	227	7	13	260	509					618
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3			
Volume Total	33	77	41	27	1093	37	49	962	16			
Volume Left	11	75	0	27	0	0	49	0	0			
Volume Right	20	0	41	0	0	0	37	0	0	16		
cSH	16	7	260	509	1700	1700	618	1700	1700			
Volume to Capacity	2.03	10.94	0.16	0.05	0.64	0.02	0.08	0.57	0.01			
Queue Length 95th (ft)	117	Err	14	4	0	0	6	0	0			
Control Delay (s)	970.4	Err	21.4	12.5	0.0	0.0	11.3	0.0	0.0			
Lane LOS	F	F	C	B			B					
Approach Delay (s)				0.3			0.5					
Approach LOS	F	F										
Intersection Summary												
Average Delay			344.7									
Intersection Capacity Utilization			69.6%				ICU Level of Service				C	
Analysis Period (min)			15									

Lanes, Volumes, Timings
15: Deerfield Pky & Site Drwy 4

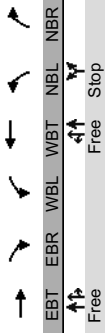
Future PM - Improved
6/29/2007



Lane Group	EBT	WBT	NBL
Lane Group Flow (vph)	343	506	235
Sign Control	Free	Free	Stop
Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 44.0%			
Analysis Period (min) 15			
ICU Level of Service A			

HCM Unsignalized Intersection Capacity Analysis
15: Deerfield Pky & Site Drwy 4

Future PM - Improved
6/29/2007



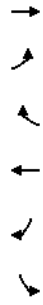
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Sign Control	Free	Free	Free	Free	Stop	Stop
Grade	0%	0%	0%	0%	0%	0%
Volume (veh/h)	268	48	64	401	190	26
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	291	52	70	436	207	28
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage (veh)						
Upstream signal (ft)	514					
pX, platoon unblocked						
VC, conflicting volume			343		674	172
VC1, stage 1 conf vol						
VC2, stage 2 conf vol						
VCu, unblocked vol			343		674	172
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			94		44	97
cM capacity (veh/h)			1212		366	842
Direction, Lane #						
	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2
Volume Total	194	149	215	291	235	
Volume Left	0	0	70	0	207	
Volume Right	0	52	0	0	28	
cSH	1700	1700	1212	1700	392	
Volume to Capacity	0.11	0.09	0.06	0.17	0.60	
Queue Length 95th (ft)	0	0	5	0	94	
Control Delay (s)	0.0	0.0	3.0	0.0	27.0	
Lane LOS			A		D	
Approach Delay (s)	0.0		1.3		27.0	
Approach LOS			D		D	
Intersection Summary						
Average Delay			6.4			
Intersection Capacity Utilization			44.0%			
Analysis Period (min)			15			
ICU Level of Service A						

Lanes, Volumes, Timings
16: Right-in/Right-out Drwy 1 & SR 9

HCM Unsignalized Intersection Capacity Analysis
16: Right-in/Right-out Drwy 1 & SR 9

Future PM - Improved
6/29/2007

Lane Group	WBR	NBT	NBR	SBT
Lane Group Flow (vph)	17	1202	165	1191
Sign Control	Free	Free	Free	Free



Intersection Summary
Control Type: Unsignalized
Intersection Capacity Utilization 68.2%
Analysis Period (min) 15
ICU Level of Service C

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Yield		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	0	16	1106	152	0	1096
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	17	1202	165	0	1191
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)			484			314
pX, platoon unblocked		0.72	0.48		0.48	
VC, conflicting volume		2393	1202		1202	
VC1, stage 1 conf vol						
VC2, stage 2 conf vol						
vCu, unblocked vol		1960	1418		1418	
tC, single (s)		6.4	6.2		4.1	
tC, 2 stage (s)						
tF (s)		3.5	3.3		2.2	
p0 queue free %		100	79		100	
cM capacity (veh/h)		50	81		233	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1		
Volume Total	17	1202	165	1191		
Volume Left	0	0	0	0		
Volume Right	17	0	165	0		
cSH	81	1700	1700	1700		
Volume to Capacity	0.21	0.71	0.10	0.70		
Queue Length 95th (ft)	19	0	0	0		
Control Delay (s)	61.0	0.0	0.0	0.0		
Lane LOS	F					
Approach Delay (s)	61.0	0.0	0.0	0.0		
Approach LOS	F					
Intersection Summary						
Average Delay			0.4			
Intersection Capacity Utilization			68.2%			ICU Level of Service C
Analysis Period (min)			15			

Lanes, Volumes, Timings
17: Right-in/Right-out Drwy 2 & SR 9

HCM Unsignalized Intersection Capacity Analysis
17: Right-in/Right-out Drwy 2 & SR 9

Future PM - Improved
6/29/2007



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group	WBR	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	63	1045	135	135	1107	1107
Sign Control	Free	Free	Free	Free	Free	Free
Intersection Summary						
Control Type: Unsignalized	ICU Level of Service B					
Intersection Capacity Utilization	60.8%					
Analysis Period (min)	15					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Yield	Yield	Free	Free	Free	Free
Sign Control	Yield	Yield	Free	Free	Free	Free
Grade	0%	0%	0%	0%	0%	0%
Volume (veh/h)	0	58	961	124	0	1018
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	63	1045	135	0	1107
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)			1188			1224
pX, platoon unblocked		0.63	0.50		0.50	
VC, conflicting volume		2151	1045		1045	
VC1, stage 1 conf vol						
VC2, stage 2 conf vol						
VCu, unblocked vol		2167	1090		1090	
tC, single (s)		6.4	6.2		4.1	
tC, 2 stage (s)						
tF (s)		3.5	3.3		2.2	
p0 queue free %		100	52		100	
cM capacity (veh/h)		33	130		319	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1		
Volume Total	63	1045	135	1107		
Volume Left	0	0	0	0		
Volume Right	63	0	135	0		
cSH	130	1700	1700	1700		
Volume to Capacity	0.48	0.61	0.08	0.65		
Queue Length 95th (ft)	56	0	0	0		
Control Delay (s)	56.2	0.0	0.0	0.0		
Lane LOS	F					
Approach Delay (s)	56.2	0.0	0.0	0.0		
Approach LOS	F					
Intersection Summary						
Average Delay	1.5					
Intersection Capacity Utilization	60.8%					
ICU Level of Service	B					
Analysis Period (min)	15					

Lanes, Volumes, Timings
18: Deerfield Pky & Right-in/Right-out Drwy 3

HCM Unsignalized Intersection Capacity Analysis
18: Deerfield Pky & Right-in/Right-out Drwy 3

Future PM - Improved
6/29/2007



Movement	EBT	WBT	NBR
Lane Group Flow (vph)	434	639	26
Sign Control	Free	Free	Free
Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization	21.5%		
Analysis Period (min)	15		
ICU Level of Service	A		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↕↕			↕↕		↕
Sign Control	Free			Free		Yield
Grade	0%			0%		0%
Volume (veh/h)	293	107	0	588	0	24
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	318	116	0	639	0	26
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type						None
Median storage (veh)						
Upstream signal (ft)	317					
pX, platoon unblocked						
VC, conflicting volume			318		696	217
VC1, stage 1 conf vol						
VC2, stage 2 conf vol						
VCu, unblocked vol	318				696	217
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %			100		100	97
cM capacity (veh/h)			1238		376	787
Direction, Lane #						
	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2
Volume Total	212	222	320	320	26	
Volume Left	0	0	0	0	0	
Volume Right	0	116	0	0	26	
cSH	1700	1700	1700	1700	787	
Volume to Capacity	0.12	0.13	0.19	0.19	0.03	
Queue Length 95th (ft)	0	0	0	0	3	
Control Delay (s)	0.0	0.0	0.0	0.0	9.7	
Lane LOS					A	
Approach Delay (s)	0.0		0.0		9.7	
Approach LOS					A	
Intersection Summary						
Average Delay				0.2		
Intersection Capacity Utilization				21.5%		
ICU Level of Service					A	
Analysis Period (min)				15		

Lanes, Volumes, Timings
19: Webb Rd & Right-in/Right-out Drwy 4

Future PM - Improved
6/29/2007

	→	↗	←	↖	↑	↘	↙
Movement	EBT	EBR	WBT	WBR	NBT	SBR	
Lane Group	EBT	EBR	WBT	WBR	NBT	SBR	
Lane Group Flow (vph)	285	4	266	88	56	186	
Sign Control	Free	Free	Free	Free	Yield	Yield	
Intersection Summary							
Control Type: Unsignalized							
Intersection Capacity Utilization 40.1%							
Analysis Period (min) 15							
ICU Level of Service A							

HCM Unsignalized Intersection Capacity Analysis
19: Webb Rd & Right-in/Right-out Drwy 4

Future PM - Improved
6/29/2007

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰	↰		↰	↰		↰		↰	↰	↰
	Sign Control	Free	Free		Free	Free		Yield		Yield	Yield	
	Grade	0%			0%			0%			0%	
Volume (veh/h)	0	262	4	47	198	81	8	0	43	0	0	171
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	285	4	51	215	88	9	0	47	0	0	186
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None		None		
Median storage (veh)												
Upstream signal (ft)		442										
pX, platoon unblocked												
VC, conflicting volume	215		285				602	602	285	602	602	215
VC1, stage 1 conf vol												
VC2, stage 2 conf vol												
vCu, unblocked vol	215		285				602	602	285	602	602	215
tC, single (s)	4.1		4.1				7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2		2.2				3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100		96				97	100	94	100	100	77
cM capacity (veh/h)	1355		1277				309	397	754	374	397	825
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
Volume Total	285	4	266	88	55	186						
Volume Left	0	0	51	0	9	0						
Volume Right	0	4	0	88	47	186						
cSH	1700	1700	1277	1700	615	825						
Volume to Capacity	0.17	0.00	0.04	0.05	0.09	0.23						
Queue Length 95th (ft)	0	0	3	0	7	22						
Control Delay (s)	0.0	0.0	1.8	0.0	11.4	10.6						
Lane LOS			A		B	B						
Approach Delay (s)	0.0		1.4		11.4	10.6						
Approach LOS			B		B	B						
Intersection Summary												
Average Delay	3.5											
Intersection Capacity Utilization	40.1%											
Analysis Period (min)	15											
	A											

Future 2009 Saturday Site Access Analysis

Lanes, Volumes, Timings
12: Windward Village Pky & SR 9

Future Saturday - Improved
6/29/2007

Movement	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	12	31	325	5	128	39	1145	221	198	1029
Act Effct Green (s)	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0
Actuated g/C Ratio	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23
v/c Ratio	0.04	0.08	1.02	0.01	0.27	0.21	1.04	0.23	1.02	0.79
Control Delay	36.2	15.8	100.4	35.6	7.9	9.9	50.8	3.6	90.7	19.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	23.4	0.0	0.0	0.0
Total Delay	36.2	15.8	100.4	35.6	7.9	9.9	74.1	3.6	90.7	19.6
LOS	D	B	F	D	A	A	E	A	F	B
Approach Delay	21.5 73.8 61.2									
Approach LOS	C E E									
Queue Length 50th (ft)	7	3	~259	3	0	11	~950	25	~105	556
Queue Length 95th (ft)	24	29	#448	14	50	m13m#1144	m31 m#233	m626	m3	
Internal Link Dist (ft)	169 122 234									
Turn Bay Length (ft)	328	400	320	435	488	182	1102	977	195	1304
Base Capacity (vph)	0	0	0	0	0	0	60	0	0	0
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.08	1.02	0.01	0.27	0.21	1.10	0.23	1.02	0.79
Intersection Summary										
Cycle Length: 120										
Actuated Cycle Length: 120										
Offset: 60 (50%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green										
Control Type: Actuated-Coordinated										
Maximum v/c Ratio: 1.04										
Intersection Signal Delay: 50.5										
Intersection Capacity Utilization 98.7%										
Analysis Period (min) 15										
~ Volume exceeds capacity, queue is theoretically infinite.										
# Queue shown is maximum after two cycles.										
# 95th percentile volume exceeds capacity, queue may be longer.										
Queue shown is maximum after two cycles.										
m Volume for 95th percentile queue is metered by upstream signal.										

HCM Signalized Intersection Capacity Analysis
12: Windward Village Pky & SR 9

Future Saturday - Improved
6/29/2007

Movement	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Ideal Flow (vphpl)	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	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flt	1.00	0.87	1.00	1.00	0.85	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1770	1628	1770	1863	1583	1770	1863	1583	1770	1863
Flt Permitted	0.75	1.00	0.74	1.00	1.00	0.16	1.00	1.00	0.05	1.00
Satd. Flow (perm)	1405	1628	1373	1863	1583	307	1863	1583	99	1863
Volume (vph)	11	5	24	299	5	118	36	1053	203	182
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	12	5	26	325	5	128	39	1145	221	198
RTOR Reduction (vph)	0	20	0	0	0	98	0	40	0	0
Lane Group Flow (vph)	12	11	0	325	5	30	39	1145	181	198
Turn Type	Perm	Perm	Perm	Perm	Perm	Perm	Perm	pm+pt	Perm	Perm
Protected Phases	8	8	4	4	4	6	6	5	2	2
Permitted Phases	8	8	4	4	4	6	6	5	2	2
Actuated Green, G (s)	28.0	28.0	28.0	28.0	28.0	71.0	71.0	71.0	84.0	84.0
Effective Green, g (s)	28.0	28.0	28.0	28.0	28.0	71.0	71.0	71.0	84.0	84.0
Actuated g/C Ratio	0.23	0.23	0.23	0.23	0.23	0.59	0.59	0.59	0.70	0.70
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	328	380	320	435	369	182	1102	937	195	1304
v/s Ratio Prot	0.01	0.01	c0.24	0.00	0.02	0.13	0.61	0.11	c0.08	0.55
v/c Ratio Perm	0.04	0.03	1.02	0.01	0.08	0.21	1.04	0.19	1.02	0.79
Uniform Delay, d1	35.6	35.5	46.0	35.4	35.9	11.5	24.5	11.3	57.7	12.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	0.67	0.72	0.54	0.91	1.22
Incremental Delay, d2	0.0	0.0	54.3	0.0	0.1	1.5	31.3	0.3	61.6	4.0
Delay (s)	35.6	35.5	100.3	35.4	36.0	9.2	48.9	6.3	113.9	18.7
Level of Service	D	D	F	D	D	A	D	A	F	B
Approach Delay (s)	35.6 81.7									
Approach LOS	D F									
Intersection Summary										
HCM Average Control Delay	44.0 HCM Level of Service									
HCM Volume to Capacity ratio	1.00									
Actuated Cycle Length (s)	120.0 Sum of lost time (s)									
Intersection Capacity Utilization	98.7% ICU Level of Service									
Analysis Period (min)	15									
Critical Lane Group										

Lanes, Volumes, Timings	Future Saturday - Improved
13: Habitat Drwy & SR 9	6/29/2007

[illegible]

HCM Unsignalized Intersection Capacity Analysis		Future Saturday - Improved
13: Habitat Drwy & SR 9		6/29/2007

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	6	2	11	80	2	85	12	1086	56	69	1027	6
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	7	2	12	87	2	92	13	1180	61	75	1116	7
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None											
Median storage (veh)												
Upstream signal (ft)									891			
p/x, platoon unblocked	0.42	0.42		0.42	0.42	0.42				0.42		
VC, conflicting volume	2566	2534	1116	2486	2479	1180	1123			1241		
VC1, stage 1 conf vol												
VC2, stage 2 conf vol	4755	4676	1116	4562	4546	1433	1123			1578		
VCU, unblocked vol	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
IC, single (s)												
IC2, stage (s)												
IF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	0	0	95	0	0	0	98			57		
cM capacity (veh/h)	0	0	252	0	0	69	622			174		
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3			
Volume Total	21	89	92	13	1180	61	75	1116	7			
Volume Left	7	87	0	13	0	0	75	0	0			
Volume Right	12	0	92	0	0	61	0	0	7			
cSH	0	0	69	622	1700	1700	174	1700	1700			
Volume to Capacity	Err	Err	1.35	0.02	0.69	0.04	0.43	0.66	0.00			
Queue Length 95th (ft)	Err	Err	189	2	0	0	49	0	0			
Control Delay (s)	Err	Err	330.0	10.9	0.0	0.0	40.5	0.0	0.0			
Lane LOS	F	F	F	B	B		E					
Approach Delay (s)	Err	Err										
Approach LOS	F	F		0.1			2.5					
Intersection Summary												
Average Delay	Err										D	
Intersection Capacity Utilization	75.8%										15	
Analysis Period (min)												

Lanes, Volumes, Timings
14: Marrywood Dr & SR 9

Future Saturday - Improved
6/29/2007

	→	←	↖	↗	↑	↖	↗	↓	↖
Lane Group	EBT	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	44	89	50	32	1125	52	67	1118	20
Sign Control	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Intersection Summary									
Control Type: Unsignalized									
Intersection Capacity Utilization 72.3%									
Analysis Period (min) 15									
ICU Level of Service C									

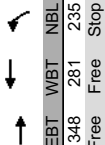
HCM Unsignalized Intersection Capacity Analysis
14: Marrywood Dr & SR 9

Future Saturday - Improved
6/29/2007

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔				↔		↔	↔	↔	↔	↔	↔
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free
Grade	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Volume (veh/h)	9	2	29	80	2	46	29	1035	48	62	1029	18
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	10	2	32	87	2	50	32	1125	52	67	1118	20
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type												
Median storage (veh)												
Upstream signal (ft)												676
pX, platoon unblocked	0.60	0.60	0.60	0.60	0.60	0.60	0.60					
vC, conflicting volume	2492	2493	1118	2474	2461	1125	1138					1177
VC1, stage 1 conf vol												
VC2, stage 2 conf vol												
vCu, unblocked vol	3493	3495	1198	3462	3440	1125	1231					1177
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1					4.1
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2					2.2
p0 queue free %	0	29	77	0	35	80	91					89
cM capacity (veh/h)	1	3	135	1	3	250	339					593
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3			
Volume Total	43	89	50	32	1125	52	67	1118	20			
Volume Left	10	87	0	32	0	0	67	0	0			
Volume Right	32	0	50	0	0	52	0	0	20			
cSH	3	1	250	339	1700	1700	593	1700	1700			
Volume to Capacity	14.64	135.38	0.20	0.09	0.66	0.03	0.11	0.66	0.01			
Queue Length 95th (ft)	Err	Err	18	8	0	0	10	0	0			
Control Delay (s)	Err	Err	23.0	16.7	0.0	0.0	11.8	0.0	0.0			
Lane LOS	F	F	C	C	C	B	B					
Approach Delay (s)	Err	6413.9		0.4			0.7					
Approach LOS	F	F										
Intersection Summary												
Average Delay	511.6											
Intersection Capacity Utilization	72.3%											
Analysis Period (min)	15											
	ICU Level of Service											
	C											

Lanes, Volumes, Timings
15: Deerfield Pky & Site Drwy 4

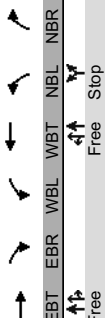
Future Saturday - Improved
6/29/2007



Lane Group	EBT	WBT	NBL
Lane Group Flow (vph)	348	281	235
Sign Control	Free	Free	Stop
Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 38.5%			
Analysis Period (min) 15			
ICU Level of Service A			

HCM Unsignalized Intersection Capacity Analysis
15: Deerfield Pky & Site Drwy 4

Future Saturday - Improved
6/29/2007



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Sign Control	Free	Free	Free	Free	Stop	Stop
Grade	0%	0%	0%	0%	0%	0%
Volume (veh/h)	255	65	62	197	182	34
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	277	71	67	214	198	37
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage (veh)						
Upstream signal (ft)	514					
pX, platoon unblocked						
VC, conflicting volume			348		554	174
VC1, stage 1 conf vol						
VC2, stage 2 conf vol						
VCu, unblocked vol			348		554	174
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			94		55	96
cM capacity (veh/h)			1208		436	839
Direction, Lane #						
	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2
Volume Total	185	163	139	143	235	
Volume Left	0	0	67	0	198	
Volume Right	0	71	0	0	37	
cSH	1700	1700	1208	1700	472	
Volume to Capacity	0.11	0.10	0.06	0.08	0.50	
Queue Length 95th (ft)	0	0	4	0	68	
Control Delay (s)	0.0	0.0	4.2	0.0	19.9	
Lane LOS			A		C	
Approach Delay (s)	0.0		2.1		19.9	
Approach LOS			C		C	
Intersection Summary						
Average Delay			6.1			
Intersection Capacity Utilization			38.5%			
ICU Level of Service					A	
Analysis Period (min)			15			

Lanes, Volumes, Timings
16: Right-in/Right-out Drwy 1 & SR 9

HCM Unsignalized Intersection Capacity Analysis
16: Right-in/Right-out Drwy 1 & SR 9

Future Saturday - Improved
6/29/2007



Lane Group	WBR	NBT	NBR	SBT
Lane Group Flow (vph)	26	1284	204	1370
Sign Control	Free	Free	Free	Free
Intersection Summary				
Control Type: Unsignalized				
Intersection Capacity Utilization	72.2%			
Analysis Period (min)	15			
ICU Level of Service C				

Movement	WBL	WBR	NBT	NBR	SBT
Lane Configurations	Yield	Free	Free	Free	Free
Sign Control	Yield	Free	Free	Free	Free
Grade	0%	0%	0%	0%	0%
Volume (veh/h)	0	24	1181	188	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	26	1284	204	0
Pedestrians					
Lane Width (ft)					
Walking Speed (ft/s)					
Percent Blockage					
Right turn flare (veh)					
Median type	None				
Median storage (veh)					
Upstream signal (ft)			484		314
pX, platoon unblocked		0.51	0.26		0.26
VC, conflicting volume		2653	1284		1284
VC1, stage 1 conf vol					
VC2, stage 2 conf vol					
vCu, unblocked vol		2074	2076		2076
tC, single (s)		6.4	6.2		4.1
tC, 2 stage (s)					
tF (s)		3.5	3.3		2.2
p0 queue free %		100	0		100
cM capacity (veh/h)		30	18		71
Direction, Lane #					
	WB 1	NB 1	NB 2	SB 1	
Volume Total	26	1284	204	1370	
Volume Left	0	0	0	0	
Volume Right	26	0	204	0	
cSH	18	1700	1700	1700	
Volume to Capacity	1.47	0.76	0.12	0.81	
Queue Length 95th (ft)	92	0	0	0	
Control Delay (s)	692.7	0.0	0.0	0.0	
Lane LOS	F				
Approach Delay (s)	692.7	0.0	0.0		
Approach LOS	F				
Intersection Summary					
Average Delay	6.3				
Intersection Capacity Utilization	72.2%				
ICU Level of Service	C				
Analysis Period (min)	15				

Lanes, Volumes, Timings
17: Right-in/Right-out Drwy 2 & SR 9

HCM Unsignalized Intersection Capacity Analysis
17: Right-in/Right-out Drwy 2 & SR 9

Future Saturday - Improved
6/29/2007



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group	WBR	NBT	NBR	SBT		
Lane Group Flow (vph)	74	1115	166	1199		
Sign Control	Free	Free	Free	Free		
Intersection Summary						
Control Type: Unsignalized						
Intersection Capacity Utilization 64.9%						
Analysis Period (min) 15						
ICU Level of Service C						

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Yield	Free	Free	Free	Free	Free
Sign Control	Yield	Free	Free	Free	Free	Free
Grade	0%	0%	0%	0%	0%	0%
Volume (veh/h)	0	68	1026	153	0	1103
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	74	1115	166	0	1199
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)			1188			1224
pX, platoon unblocked		0.63	0.44		0.44	
VC, conflicting volume		2314	1115		1115	
VC1, stage 1 conf vol						
VC2, stage 2 conf vol						
vCu, unblocked vol		2164	1260		1260	
tC, single (s)		6.4	6.2		4.1	
tC, 2 stage (s)						
tF (s)		3.5	3.3		2.2	
p0 queue free %		100	20		100	
cM capacity (veh/h)		33	92		244	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1		
Volume Total	74	1115	166	1199		
Volume Left	0	0	0	0		
Volume Right	74	0	166	0		
cSH	92	1700	1700	1700		
Volume to Capacity	0.80	0.66	0.10	0.71		
Queue Length 95th (ft)	106	0	0	0		
Control Delay (s)	126.5	0.0	0.0	0.0		
Lane LOS	F					
Approach Delay (s)	126.5	0.0	0.0	0.0		
Approach LOS	F					
Intersection Summary						
Average Delay			3.7			
Intersection Capacity Utilization		64.9%				C
Analysis Period (min)		15				

Lanes, Volumes, Timings
18: Deerfield Pky & Right-in/Right-out Drwy 3

HCM Unsignalized Intersection Capacity Analysis
18: Deerfield Pky & Right-in/Right-out Drwy 3

Future Saturday - Improved
6/29/2007

Future Saturday - Improved
6/29/2007



Lane Group	EBT	WBT	NBR
Lane Group Flow (vph)	454	415	33
Sign Control	Free	Free	
Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization	22.1%		
Analysis Period (min)	15		
ICU Level of Service A			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↕	↕	↕	↕	↕	↕
Sign Control	Free	Free	Free	Free	Yield	Yield
Grade	0%	0%	0%	0%	0%	0%
Volume (veh/h)	288	130	0	382	0	30
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	313	141	0	415	0	33
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage (veh)						
Upstream signal (ft)	317					
pX, platoon unblocked						
VC, conflicting volume			313		591	227
VC1, stage 1 conf vol						
VC2, stage 2 conf vol						
vCu, unblocked vol			313		591	227
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	96
cM capacity (veh/h)			1244		438	776
Direction, Lane #						
	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2
Volume Total	209	246	208	208	33	
Volume Left	0	0	0	0	0	
Volume Right	0	141	0	0	33	
cSH	1700	1700	1700	1700	776	
Volume to Capacity	0.12	0.14	0.12	0.12	0.04	
Queue Length 95th (ft)	0	0	0	0	3	
Control Delay (s)	0.0	0.0	0.0	0.0	9.8	
Lane LOS					A	
Approach Delay (s)	0.0		0.0		9.8	
Approach LOS					A	
Intersection Summary						
Average Delay	0.4					
Intersection Capacity Utilization	22.1%				ICU Level of Service	
Analysis Period (min)	15				A	

Lanes, Volumes, Timings
19: Webb Rd & Right-in/Right-out Drwy 4

Future Saturday - Improved
6/29/2007

	→	↗	←	↖	↑	↘	↙
Lane Group	EBT	EBR	WBT	WBR	NBT	SBR	
Lane Group Flow (vph)	221	11	147	91	40	179	
Sign Control	Free	Free	Free	Free	Yield	Yield	
Intersection Summary							
Control Type: Unsignalized							
Intersection Capacity Utilization 31.2%							
Analysis Period (min) 15							
ICU Level of Service A							

HCM Unsignalized Intersection Capacity Analysis
19: Webb Rd & Right-in/Right-out Drwy 4

Future Saturday - Improved
6/29/2007

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free
	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Volume (veh/h)	0	203	10	33	102	84	15	0	22	0	0	165
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	221	11	36	111	91	16	0	24	0	0	179
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type												
Median storage (veh)												
Upstream signal (ft)												
exX, platoon unblocked												
VC, conflicting volume	111		221				403	403	221	403	403	111
VC1, stage 1 conf vol												
VC2, stage 2 conf vol												
vCu, unblocked vol	111		221				403	403	221	403	403	111
tC, single (s)	4.1		4.1				7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2		2.2				3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100		97				96	100	97	100	100	81
cM capacity (veh/h)	1479		1349				442	522	819	530	522	942
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
Volume Total	221	11	147	91	40	179						
Volume Left	0	0	36	0	16	0						
Volume Right	0	11	0	91	24	179						
cSH	1700	1700	1349	1700	609	942						
Volume to Capacity	0.13	0.01	0.03	0.05	0.07	0.19						
Queue Length 95th (ft)	0	0	2	0	5	17						
Control Delay (s)	0.0	0.0	2.1	0.0	11.3	9.7						
Lane LOS			A		B	A						
Approach Delay (s)	0.0		1.3		11.3	9.7						
Approach LOS			B		B	A						
Intersection Summary												
Average Delay	3.6						A					
Intersection Capacity Utilization	31.2%						A					
Analysis Period (min)	15											

Traffic Volume Worksheets

A&R Engineering
June-07

Bethany Road / Bethany Bend / Cogburn Road

P.M. Peak Hour

SAT Peak Hour

A-141

A&R Engineering
June-07

P.M. Peak Hour

SAT Peak Hour

A-142

A&R Engineering
June-07

P.M. Peak Hour

SAT Peak HourA-143

A&R Engineering
June-07

P.M. Peak Hour

SAT Peak HourA-144

06-028 Deerfield Place DRI
Traffic Volumes
Future Conditions

A&R Engineering
June-07

SR 9 (Cumming Highway) / Winward Parkway

P.M. Peak Hour

Condition	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Existing:	494	668	211	143	337	124	144	441	268	210	469	85
Growth Factor (%):	5	5	5	5	5	5	5	5	5	5	5	5
Base Condition:	545	736	242	158	372	137	159	488	295	237	518	94
Trips due to Habitat for Humanity Homes	0	0	9	0	0	0	0	2	0	5	1	0
Trips due to Retail development	0	0	294	8	0	0	0	79	0	311	84	8
Future Traffic Volumes:	545	736	536	166	372	137	159	567	295	548	602	102
			1817			674			1021			1251

SAT Peak Hour

Condition	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Existing:	145	462	261	164	450	92	126	576	162	652	633	118
Growth Factor (%):	5	5	5	5	5	5	5	5	5	5	5	5
Base Condition:	160	509	295	181	496	101	139	637	179	725	700	130
Trips due to Habitat for Humanity Homes	0	0	7	0	0	0	0	2	0	6	2	0
Trips due to Retail development	0	0	343	9	0	0	0	93	0	321	87	9
Future Traffic Volumes:	160	509	638	190	496	101	139	730	179	1046	787	139
			1307			787			1048			1972

06-028 Deerfield Place DRI
Traffic Volumes
Future Conditions

A&R Engineering
June-07

Winward Parkway / Westside Parkway / Deerfield Parkway

P.M. Peak Hour

Condition	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing:	91	227	297	615	318	204	157	679	127	973	69	1169
Growth Factor (%):	5	5	5		5	5	5		5	5	5	
Base Condition:	102	250	327	680	351	225	173	749	140	1077	77	1294
Trips due to Habitat for Humanity Homes	2	0	0	2	0	0	0	0	0	4	1	5
Trips due to Retail development	63	0	0	63	0	0	0	0	0	244	67	311
Future Traffic Volumes:	165	250	327	743	351	225	173	749	140	1321	144	1605

SAT Peak Hour

Condition	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing:	87	81	96	264	327	71	169	567	128	1166	68	1362
Growth Factor (%):	5	5	5		5	5	5		5	5	5	
Base Condition:	98	89	106	293	361	78	186	625	141	1291	76	1508
Trips due to Habitat for Humanity Homes	2	0	0	2	0	0	0	0	0	5	1	6
Trips due to Retail development	74	0	0	74	0	0	0	0	0	252	69	321
Future Traffic Volumes:	172	89	106	367	361	78	186	625	141	1543	145	1829

06-028 Deerfield Place DRI
Traffic Volumes
Future Conditions

A&R Engineering
June-07

Winward Parkway / GA 400 Southbound Off-Ramp

P.M. Peak Hour

Condition	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	Tot	L	T	L	T	R	L	T	Tot
Existing:	0	0	0	0	112	0	0	1063	929	890	2112	0
Growth Factor (%):	5	5	5		5	5	5	5	5	5	5	5
Base Condition:	0	0	0	0	123	0	0	1175	1025	981	2332	0
Trips due to Habitat for Humanity Homes	0	0	0	0	0	0	0	3	1	0	4	0
Trips due to Retail development	0	0	0	0	0	0	0	185	59	0	112	0
Future Traffic Volumes:	0	0	0	0	123	0	0	1360	1084	981	2444	0
												3426

SAT Peak Hour

Condition	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	Tot	L	T	L	T	R	L	T	Tot
Existing:	0	0	0	0	96	0	0	1115	1092	443	1983	0
Growth Factor (%):	5	5	5		5	5	5	5	5	5	5	5
Base Condition:	0	0	0	0	106	0	0	1233	1205	488	2188	0
Trips due to Habitat for Humanity Homes	0	0	0	0	0	0	0	4	1	0	2	0
Trips due to Retail development	0	0	0	0	0	0	0	191	61	0	130	0
Future Traffic Volumes:	0	0	0	0	106	0	0	1424	1266	488	2318	0
												2807

06-028 Deerfield Place DRI
Traffic Volumes
Future Conditions

A&R Engineering
June-07

Winward Parkway / GA 400 Northbound Off-Ramp

P.M. Peak Hour

Condition	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing:	1095	0	534	1629	0	0	0	0	397	840	0	1237
Growth Factor (%):	5	5	5		5	5	5		5	5	5	
Base Condition:	1209	0	589	1798	0	0	0	0	440	927	0	1367
Trips due to Habitat for Humanity Homes	2	0	0	2	0	0	0	0	2	1	0	3
Trips due to Retail development	56	0	0	56	0	0	0	0	126	59	0	185
Future Traffic Volumes:	1265	0	589	1854	0	0	0	0	566	986	0	1552

SAT Peak Hour

Condition	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing:	1458	0	260	1718	0	0	0	0	495	787	0	1282
Growth Factor (%):	5	5	5		5	5	5		5	5	5	
Base Condition:	1608	0	287	1895	0	0	0	0	549	869	0	1417
Trips due to Habitat for Humanity Homes	1	0	0	1	0	0	0	0	3	1	0	4
Trips due to Retail development	65	0	0	65	0	0	0	0	130	61	0	191
Future Traffic Volumes:	1673	0	287	1960	0	0	0	0	679	930	0	1608

06-028 Deerfield Place DRI
Traffic Volumes
Future Conditions

A&R Engineering
June-07

SR 9 (Cumming Highway) / Deerfield Parkway / New Homes Private Driveway

P.M. Peak Hour

Condition	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing:	1	635	67	703	159	569	0	728	0	0	2	2
Growth Factor (%):	5	5	5		5	5	5		5	5	5	
Base Condition:	1	705	75	781	175	634	0	810	0	0	2	2
Trips due to Habitat for Humanity Homes	0	5	1	6	0	7	0	7	0	0	0	0
Trips due to Retail development	0	197	55	252	95	143	0	238	0	0	0	0
Future Traffic Volumes:	1	902	130	1033	270	777	0	1048	0	0	2	2

SAT Peak Hour

Condition	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing:	1	658	73	732	149	702	4	855	2	1	5	8
Growth Factor (%):	5	5	5		5	5	5		5	5	5	
Base Condition:	1	730	81	813	164	779	4	948	2	1	6	9
Trips due to Habitat for Humanity Homes	0	5	1	6	0	5	0	5	0	0	0	0
Trips due to Retail development	0	204	59	263	111	167	0	278	0	0	0	0
Future Traffic Volumes:	1	934	140	1076	275	946	4	1226	2	1	6	9

A&R Engineering
June-07

P.M. Peak Hour

SAT Peak Hour

A-150

06-028 Deerfield Place DRI
Traffic Volumes
Future Conditions

A&R Engineering
June-07

Bethany Road / Morris Road / McGinnis Ferry Road

P.M. Peak Hour

Condition	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing:	0	0	0	0	105	0	83	188	131	446	0	577
Growth Factor (%):	5	5	5		5	5	5		5	5	5	
Base Condition:	0	0	0	0	116	0	92	207	144	492	0	636
Trips due to Habitat for Humanity Homes	0	0	0	0	0	0	0	0	0	0	0	0
Trips due to Retail development	0	0	0	0	0	0	8	8	8	25	0	33
Future Traffic Volumes:	0	0	0	0	116	0	100	215	152	517	0	669

SAT Peak Hour

Condition	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing:	0	0	0	0	112	0	109	221	104	231	0	335
Growth Factor (%):	5	5	5		5	5	5		5	5	5	
Base Condition:	0	0	0	0	123	0	120	244	115	256	0	370
Trips due to Habitat for Humanity Homes	0	0	0	0	0	0	0	0	0	1	0	1
Trips due to Retail development	0	0	0	0	0	0	9	9	9	26	0	35
Future Traffic Volumes:	0	0	0	0	123	0	129	253	124	282	0	405

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June-07

P.M. Peak Hour

SAT Peak HourA-152

06-028 Deerfield Place DRI
Traffic Volumes
Future Conditions

A&R Engineering
June-07

SR 9 (Cumming Highway) / Habitat Driveway / Site Driveway 2

P.M. Peak Hour

Condition	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing:	0	693	0	693	0	665	0	665	0	0	0	0
Growth Factor (%):	5	5	5		5	5	5		5	5	5	
Base Condition:	14	764	0	778	0	733	8	741	6	0	8	14
Pass-by Reductions	0	-15	15	0	20	-20	0	0	0	0	0	0
Trips due to Habitat for Humanity Homes	14	0	0	14	0	0	8	8	6	0	8	14
Trips due to Retail Development	0	254	26	280	30	247	0	277	0	2	0	2
Future Traffic Volumes:	14	1003	41	1058	50	960	8	1018	6	2	8	16

SAT Peak Hour

Condition	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing:	0	748	0	748	0	720	0	720	0	0	0	0
Growth Factor (%):	5	5	5		5	5	5		5	5	5	
Base Condition:	12	825	0	837	0	794	6	800	6	0	11	17
Pass-by Reductions	0	-26	26	0	34	-34	0	0	0	0	0	0
Trips due to Habitat for Humanity Homes	12	0	0	12	0	0	6	6	6	0	11	17
Trips due to Retail Development	0	287	30	317	35	267	0	302	0	2	0	2
Future Traffic Volumes:	12	1086	56	1154	69	1027	6	1102	6	2	11	19

06-028 Deerfield Place DRI
Traffic Volumes
Future Conditions

A&R Engineering
June-07

SR 9 (Cumming Highway) / Marrywood Drive / Site Driveway 3

P.M. Peak Hour

Condition	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing:	23	712	0	735	0	607	14	621	9	0	16	25
Growth Factor (%):	5	5	5		5	5	5		5	5	5	
Base Condition:	25	791	0	816	0	677	15	693	10	0	18	28
Pass-by Reductions	0	-12	12	0	20	-20	0	0	0	0	0	0
Trips due to Habitat for Humanity Homes	0	6	0	6	0	8	0	8	0	0	0	0
Trips due to Retail development	0	227	22	249	25	228	0	253	0	2	0	2
Future Traffic Volumes:	25	1006	34	1065	45	885	15	946	10	2	18	30

SAT Peak Hour

Condition	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing:	26	739	0	765	0	730	16	746	8	0	26	34
Growth Factor (%):	5	5	5		5	5	5		5	5	5	
Base Condition:	29	821	0	849	0	811	18	828	9	0	29	37
Pass-by Reductions	0	-22	22	0	34	-34	0	0	0	0	0	0
Trips due to Habitat for Humanity Homes	0	6	0	6	0	6	0	6	0	0	0	0
Trips due to Retail development	0	236	26	262	28	252	0	280	0	2	0	2
Future Traffic Volumes:	29	1035	48	1111	62	1029	18	1108	9	2	29	39

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June-07

P.M. Peak Hour

SAT Peak HourA-155

06-028 Deerfield Place DRI
Traffic Volumes
Future Conditions

A&R Engineering
June-07

SR 9 (Cumming Highway) / Right-in / Right-out Driveway 1

P.M. Peak Hour

Condition	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing:	0	703	0	703	0	622	0	622	0	0	0	0
Growth Factor (%):	5	5	5		5	5	5		5	5	5	
Base Condition:	0	789	0	789	0	694	0	694	0	0	0	0
Pass-by Reductions	0	-15	22	7	0	0	0	0	0	0	0	0
Trips due to Habitat for Humanity Homes	0	14	0	14	0	8	0	8	0	0	0	0
Trips due to Retail development	0	332	130	462	0	402	0	402	0	0	0	0
Future Traffic Volumes:	0	1106	152	1258	0	1096	0	1096	0	0	0	0

SAT Peak Hour

Condition	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing:	0	732	0	732	0	755	0	755	0	0	0	0
Growth Factor (%):	5	5	5		5	5	5		5	5	5	
Base Condition:	0	819	0	819	0	843	0	843	0	0	0	0
Pass-by Reductions	0	-26	37	11	0	0	0	0	0	0	0	0
Trips due to Habitat for Humanity Homes	0	12	0	12	0	11	0	11	0	0	0	0
Trips due to Retail development	0	388	151	539	0	417	0	417	0	0	0	0
Future Traffic Volumes:	0	1181	188	1369	0	1260	0	1260	0	0	0	0

06-028 Deerfield Place DRI
Traffic Volumes
Future Conditions

A&R Engineering
June-07

SR 9 (Cumming Highway) / Right-in / Right-out Driveway 1

P.M. Peak Hour

Condition	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing:	0	693	0	693	0	665	0	665	0	0	0	0
Growth Factor (%):	5	5	5		5	5	5		5	5	5	
Base Condition:	0	770	0	770	0	741	0	741	0	0	0	0
Pass-by Reductions	0	-12	12	0	0	0	0	0	0	0	0	0
Trips due to Habitat for Humanity Homes	0	6	0	6	0	8	0	8	0	0	0	0
Trips due to Retail development	0	203	112	315	0	277	0	277	0	0	0	0
Future Traffic Volumes:	0	961	124	1085	0	1018	0	1018	0	0	0	0

SAT Peak Hour

Condition	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing:	0	748	0	748	0	720	0	720	0	0	0	0
Growth Factor (%):	5	5	5		5	5	5		5	5	5	
Base Condition:	0	831	0	831	0	800	0	800	0	0	0	0
Pass-by Reductions	0	-22	22	0	0	0	0	0	0	0	0	0
Trips due to Habitat for Humanity Homes	0	6	0	6	0	6	0	6	0	0	0	0
Trips due to Retail development	0	217	131	348	0	303	0	303	0	0	0	0
Future Traffic Volumes:	0	1026	153	1179	0	1103	0	1103	0	0	0	0

A&R Engineering
June-07

P.M. Peak Hour

SAT Peak Hour

A-158

06-028 Deerfield Place DRI
Traffic Volumes
Future Conditions

A&R Engineering
June-07

Webb Road / Fry's Electronics Driveway / Right-in / Right-out Driveway 4

P.M. Peak Hour

Condition	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing:	7	0	39	46	0	0	0	0	0	185	4	189
Growth Factor (%):	5	5	5		5	5	5		5	5	5	
Base Condition:	8	0	43	51	0	0	0	0	0	204	4	208
Pass-by Reductions	0	0	0	0	0	0	27	27	0	0	0	0
Trips due to Habitat for Humanity Homes	0	0	0	0	0	0	0	0	0	0	0	0
Trips due to Retail development	0	0	0	0	0	0	144	144	0	58	0	58
Future Traffic Volumes:	8	0	43	51	0	0	171	171	0	262	4	266

SAT Peak Hour

Condition	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing:	14	0	20	34	0	0	0	0	0	128	9	137
Growth Factor (%):	5	5	5		5	5	5		5	5	5	
Base Condition:	15	0	22	37	0	0	0	0	0	142	10	152
Pass-by Reductions	0	0	0	0	0	0	17	17	0	0	0	0
Trips due to Habitat for Humanity Homes	0	0	0	0	0	0	0	0	0	1	0	1
Trips due to Retail development	0	0	0	0	0	0	148	148	0	61	0	61
Future Traffic Volumes:	15	0	22	37	0	0	165	165	0	203	10	213

Planned and Programmed Improvements

Short TitleSR 400 HOV LANES FROM I-285 TO MCFARLAND ROAD
IN FORSYTH COUNTY**GDOT Project No.**

0001757

Federal ID No.

MSL-0001-00(757)

Status

Programmed

Detailed Description and Justification

Addition of 1 HOV lane in both directions for 8 miles from I-285 to McFarland Road. Dedicated HOV-only ramps will be provided but have not been determined at this time. The HOV lanes will be barrier-separated with median breaks in certain locations to allow for ingress and egress from the HOV lanes as well as emergency vehicle access.

Service Type

HOV Lanes

Sponsor

GDOT

Jurisdiction

Multi-County

Existing Thru Lane

0 (applicable for road projects only)

Planned Thru Lane

2/4 (applicable for road projects only)

Corridor Length

8.1 miles (not applicable for all project types)

Network Year

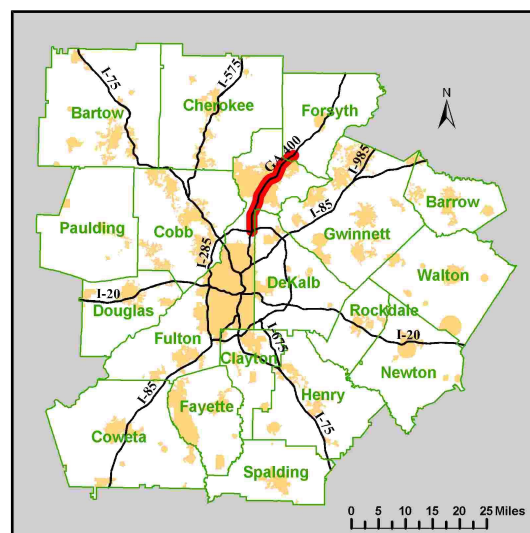
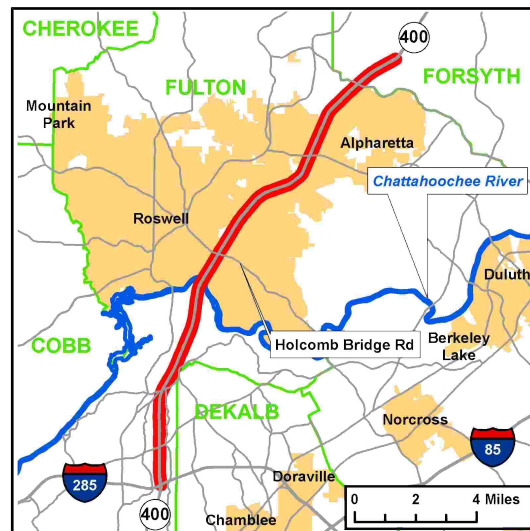
2015 (required if modeled for conformity)

Completion Date

2015

Analysis Level

In the Region's Air Quality Conformity Analysis



Phase Status & Funding Information for 06-11 TIP		FISCAL YEAR	TOTAL PHASE COST	BREAKDOWN OF TOTAL PHASE COST BY FUNDING SOURCE			
				FEDERAL	STATE	BONDS	LOCAL/OTHER
PE	National Highway System	2005	\$0,000	\$0,000	\$0,000	\$0,000	\$0,000
PE	Interstate Maintenance	2007	\$11,619,000	\$10,457,100	\$1,161,900	\$0,000	\$0,000
PE	High Priority Projects from TEA-21	2007	\$1,000,000	\$800,000	\$200,000	\$0,000	\$0,000
ROW	GRV BONDS (GARVEE Bond Program)	2009	\$30,000,000	\$0,000	\$0,000	\$30,000,000	\$0,000
CST	National Highway System	LR 2012-2020	\$205,000,000	\$164,000,000	\$41,000,000	\$0,000	\$0,000
				\$175,257,100	\$42,361,900	\$30,000,000	\$0,000

PE: Preliminary Engineering / Design / Study

ROW: Right-of-way Acquisition

CST: Construction / Implementation

For additional information about this project, please visit the Atlanta Regional Commission at www.atlantaregional.com or call (404) 463-3100.

Short Title

 SR 9 (NORTH MAIN STREET / CUMMING HIGHWAY)
FROM ACADEMY STREET TO WINDWARD PARKWAY

GDOT Project No.

721780-

Federal ID No.

STP-114-1(84)

Status

Long Range

Detailed Description and Justification

FN-067A is a roadway capacity project on SR 9/North Main Street/Cumming Highway from Academy Street to Windward Parkway. The roadway will be widened from 2 to 4 lanes along this 1.97 mile stretch.

Service Type

General Purpose Roadway Capacity

Sponsor

GDOT

Jurisdiction

Fulton (North)

Existing Thru Lane

2 (applicable for road projects only)

Planned Thru Lane

4 (applicable for road projects only)

Corridor Length

1.97 miles (not applicable for all project types)

Network Year

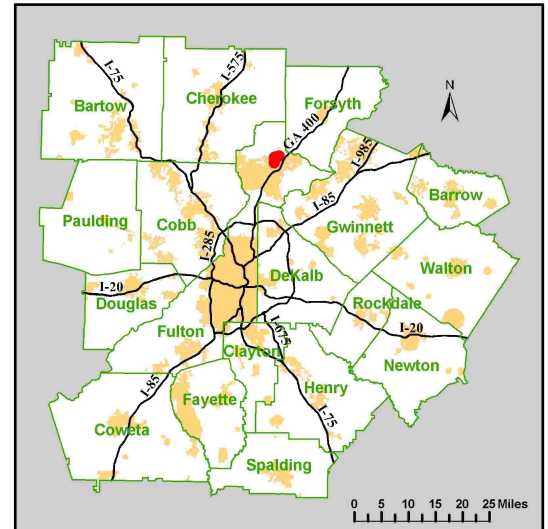
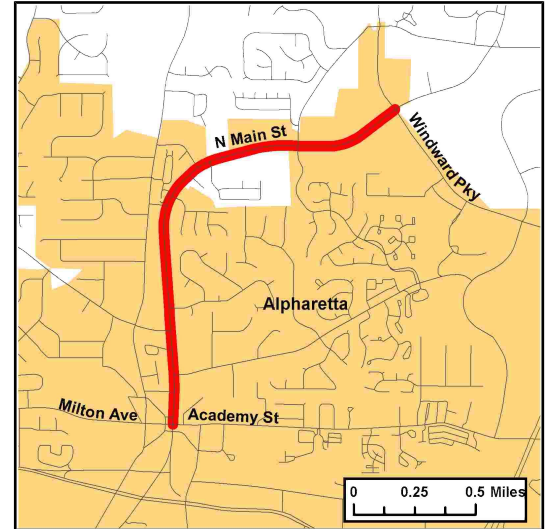
2030 (required if modeled for conformity)

Completion Date

2030

Analysis Level

In the Region's Air Quality Conformity Analysis



Phase Status & Funding Information for 06-11 TIP		FISCAL YEAR	TOTAL PHASE COST	BREAKDOWN OF TOTAL PHASE COST BY FUNDING SOURCE			
				FEDERAL	STATE	BONDS	LOCAL/OTHER
PE	STP - Statewide Flexible (GDOT)	2007	\$0,000	\$0,000	\$0,000	\$0,000	\$0,000
PE	STP - Statewide Flexible (GDOT)	AUTH	\$0,000	\$0,000	\$0,000	\$0,000	\$0,000
ROW	General Federal Aid - 2014-2030	LR 2021-2030	\$5,622,000	\$4,497,600	\$1,124,400	\$0,000	\$0,000
CST	General Federal Aid - 2014-2030	LR 2021-2030	\$10,401,600	\$8,321,280	\$2,080,320	\$0,000	\$0,000
				\$12,818,880	\$3,204,720	\$0,000	\$0,000

PE: Preliminary Engineering / Design / Study

ROW: Right-of-way Acquisition

CST: Construction / Implementation


 For additional information about this project, please visit the Atlanta Regional Commission at www.atlantaregional.com or call (404) 463-3100.


Short Title

SR 9 (CUMMING HIGHWAY) FROM WINDWARD PARKWAY TO FORSYTH COUNTY LINE

GDOT Project No.

0007838

Federal ID No.

CSSTP-0007-00(838)

Status

Long Range

Detailed Description and Justification

None

Service Type

General Purpose Roadway Capacity

Sponsor

GDOT

Jurisdiction

Fulton (North)

Existing Thru Lane

2 (applicable for road projects only)

Planned Thru Lane

4 (applicable for road projects only)

Corridor Length

3.0 miles (not applicable for all project types)

Network Year

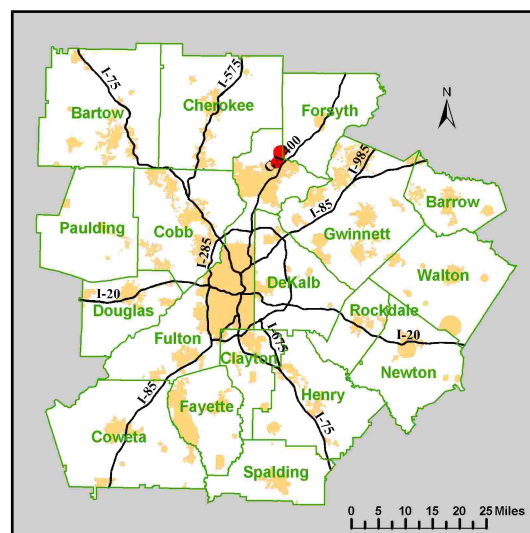
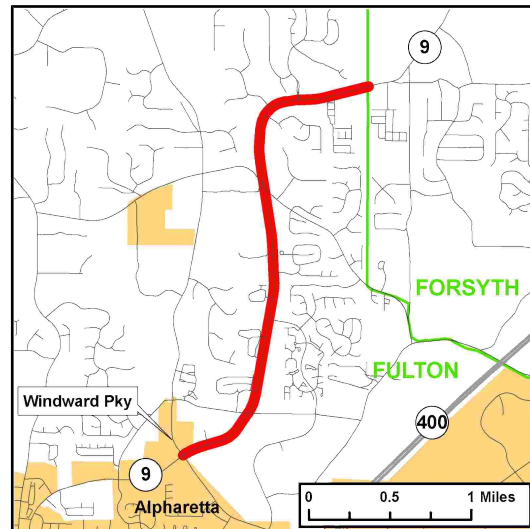
2030 (required if modeled for conformity)

Completion Date

2030

Analysis Level

In the Region's Air Quality Conformity Analysis



Phase Status & Funding Information for 06-11 TIP		FISCAL YEAR	TOTAL PHASE COST	BREAKDOWN OF TOTAL PHASE COST BY FUNDING SOURCE			
				FEDERAL	STATE	BONDS	LOCAL/OTHER
PE	General Federal Aid - 2014-2030	LR 2021-2030	\$1,124,000	\$899,200	\$224,800	\$0,000	\$0,000
ROW	General Federal Aid - 2014-2030	LR 2021-2030	\$2,156,000	\$1,724,800	\$431,200	\$0,000	\$0,000
CST	General Federal Aid - 2014-2030	LR 2021-2030	\$16,051,200	\$12,840,960	\$3,210,240	\$0,000	\$0,000
				\$15,464,960	\$3,866,240	\$0,000	\$0,000

PE: Preliminary Engineering / Design / Study

ROW: Right-of-way Acquisition

CST: Construction / Implementation


 For additional information about this project, please visit the Atlanta Regional Commission at www.atlantaregional.com or call (404) 463-3100.


Short Title

WESTSIDE PARKWAY: SEGMENT 3 FROM SR 120 (OLD MILTON PARKWAY) TO SOUTH OF CUMMING STREET [SEE ALSO FN-173]

GDOT Project No.

0007530

Federal ID No.

CSHPP-0007-00(530)

Status

Programmed

Detailed Description and Justification

FN-224 is a new roadway capacity project that will provide gap closure along the Westside Parkway corridor and provide a local alternative to SR 400 for short trips in the immediate area.

Service Type

General Purpose Roadway Capacity

Sponsor

City of Alpharetta

Jurisdiction

Fulton (North)

Existing Thru Lane

0 (applicable for road projects only)

Planned Thru Lane

4 (applicable for road projects only)

Corridor Length

1.7 miles (not applicable for all project types)

Network Year

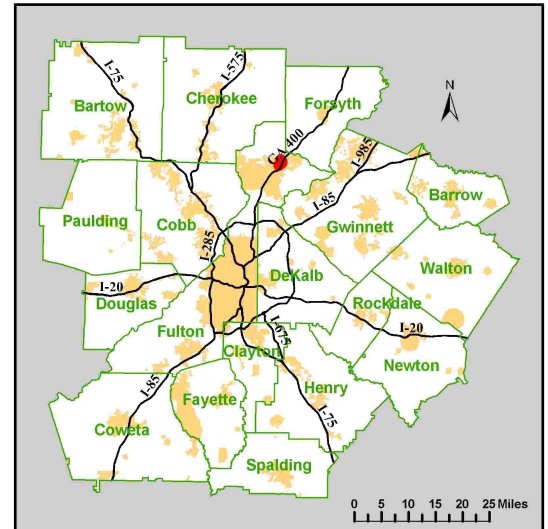
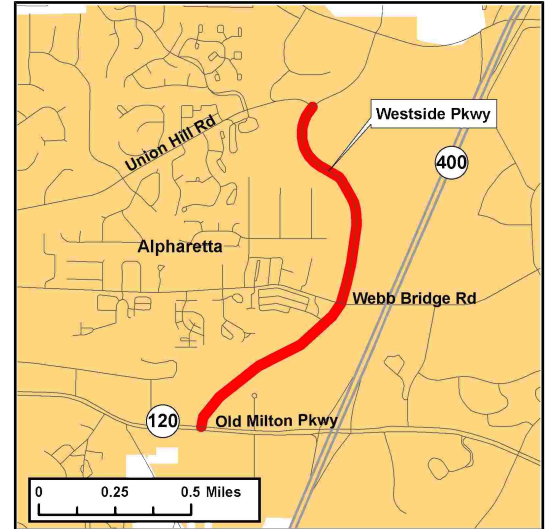
2010 (required if modeled for conformity)

Completion Date

2010

Analysis Level

In the Region's Air Quality Conformity Analysis



Phase Status & Funding Information for 06-11 TIP		FISCAL YEAR	TOTAL PHASE COST	BREAKDOWN OF TOTAL PHASE COST BY FUNDING SOURCE			
				FEDERAL	STATE	BONDS	LOCAL/OTHER
PE	Local Jurisdiction/Municipality Funds	2005	\$0,000	\$0,000	\$0,000	\$0,000	\$0,000
ROW	Local Jurisdiction/Municipality Funds	2006	\$5,600,000	\$0,000	\$0,000	\$0,000	\$5,600,000
CST	High Priority Projects from TEA-21	2008	\$6,900,000	\$4,800,000	\$0,000	\$0,000	\$2,100,000
				\$4,800,000	\$0,000	\$0,000	\$7,700,000

PE: Preliminary Engineering / Design / Study

ROW: Right-of-way Acquisition

CST: Construction / Implementation



For additional information about this project, please visit the Atlanta Regional Commission at www.atlantaregional.com or call (404) 463-3100.



Project ID	0001757	
Project Type	Reconstruction/Rehabilitation	
STIP Code	Yes	
Construction Status Code	Long Range Program	
Corridor		
Project Manager Office	Urban Design	
County	Forsyth,Fulton	
Project Accounting Number	MSL-0001-00(757)	
Primary Work Type	HOV Lanes	
Description	SR 400 FM I-285 TO MCFARLAND ROAD/FORSYTH CO HOV LANES	
RCLink:	1171040000	
	Begin Mile Point	0.0
	Prop Length	1.49
	End Mile Point	1.49
RCLink:	1211040000	
	Begin Mile Point	6.9
	Prop Length	15.57
	End Mile Point	22.47
Let Status	UNLET	
Priority Code	PTIP	

Project ID	0002778							
Project Type	Planning							
STIP Code	Lump Sum							
Construction Status Code	Under Construction							
Corridor								
Project Manager Office								
County	Fulton							
Project Accounting Number	MSL-0002-00(778)							
Primary Work Type	Miscellaneous Improvements							
Description	NORTHERN ATLANTA SUB-AREA STUDY FOR AREAS AWAY FROM SR 400							
RCLink:	1211040000 <table border="1" data-bbox="565 810 1341 947"> <tr> <td>Begin Mile Point</td> <td>0.0</td> </tr> <tr> <td>Prop Length</td> <td>22.47</td> </tr> <tr> <td>End Mile Point</td> <td>22.47</td> </tr> </table>		Begin Mile Point	0.0	Prop Length	22.47	End Mile Point	22.47
Begin Mile Point	0.0							
Prop Length	22.47							
End Mile Point	22.47							
Let Status	LET							
Priority Code								

Project ID	0006335	
Project Type	Safety	
STIP Code	Yes	
Construction Status Code	Construction Work Program	
Corridor		
Project Manager Office	Traffic Safety & Design	
County	Forsyth,Fulton	
Project Accounting Number	CSNHS-0006-00(335)	
Primary Work Type	ATMS/ITS	
Description	SR 400 FM SR 120/OLD MILTON TO SR 20 - ATMS COMM/SURVEILANCE	
RCLink:	1171040000	
	Begin Mile Point	0.0
	Prop Length	8.43
	End Mile Point	8.43
RCLink:	1211040000	
	Begin Mile Point	19.58
	Prop Length	2.89
	End Mile Point	22.47
Let Status	UNLET	
Priority Code	PTIP	

Project ID	0006727							
Project Type	Safety							
STIP Code	Yes							
Construction Status Code	Construction Work Program							
Corridor								
Project Manager Office	Traffic Safety & Design							
County	Fulton							
Project Accounting Number	CSSTP-0006-00(727)							
Primary Work Type	ATMS/ITS							
Description	SR 9/ROSWELL ROAD FM ABERNATHY ROAD TO FORSYTH COUNTY LINE							
RCLink:	1211000900 <table border="1" data-bbox="565 810 1341 947"> <tr> <td>Begin Mile Point</td> <td>12.2</td> </tr> <tr> <td>Prop Length</td> <td>17.90</td> </tr> <tr> <td>End Mile Point</td> <td>30.1</td> </tr> </table>		Begin Mile Point	12.2	Prop Length	17.90	End Mile Point	30.1
Begin Mile Point	12.2							
Prop Length	17.90							
End Mile Point	30.1							
Let Status	UNLET							
Priority Code								

Project ID	0007838							
Project Type	Reconstruction/Rehabilitation							
STIP Code	No							
Construction Status Code	Long Range Program							
Corridor								
Project Manager Office	District 7							
County	Fulton							
Project Accounting Number	CSSTP-0007-00(838)							
Primary Work Type	Widening							
Description	SR 9/CUMMING HWY FROM WINDWARD PKWY TO FORSYTH COUNTY LINE							
RCLink:	1211000900 <table border="1" data-bbox="548 812 1341 947"> <tr> <td>Begin Mile Point</td> <td>26.75</td> </tr> <tr> <td>Prop Length</td> <td>3.04</td> </tr> <tr> <td>End Mile Point</td> <td>29.79</td> </tr> </table>		Begin Mile Point	26.75	Prop Length	3.04	End Mile Point	29.79
Begin Mile Point	26.75							
Prop Length	3.04							
End Mile Point	29.79							
Let Status	UNLET							
Priority Code								

Project ID	0007998	
Project Type	Safety	
STIP Code	Lump Sum	
Construction Status Code	Construction Work Program	
Corridor		
Project Manager Office	Traffic Safety & Design	
County	Clayton,Cobb,Cobb,Douglas,Fulton,Fulton,Fulton,Cobb,Fulton,Fulton	
Project Accounting Number	CSSFT-0007-00(998)	
Primary Work Type	Signing	
Description	SIGN UPGRADES ON SEV SR @ SEV SR LOCATIONS IN DISTRICT 7	
RCLink:	0631000300	
	Begin Mile Point	0.0
	Prop Length	16.23
	End Mile Point	16.23
RCLink:	0671000800	
	Begin Mile Point	0.0
	Prop Length	8.55
	End Mile Point	8.55
RCLink:	0671012000	
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	Prop Length	20.89
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RCLink:	0971000800	
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	Prop Length	18.09
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RCLink:	1211007000	
	Begin Mile Point	0.0
	Prop Length	28.83
	End Mile Point	28.83
RCLink:	1211012000	
	Begin Mile Point	0.0
	Prop Length	17.21

	End Mile Point	17.21	
RCLink:	1211001400		
	Begin Mile Point	1.35	
	Prop Length	22.65	
	End Mile Point	24.0	
RCLink:	0671000500		
	Begin Mile Point	1.62	
	Prop Length	12.46	
	End Mile Point	14.08	
RCLink:	1211000900		
	Begin Mile Point	10.31	
	Prop Length	19.48	
	End Mile Point	29.79	
RCLink:	1211014100		
	Begin Mile Point	15.61	
	Prop Length	5.43	
	End Mile Point	21.04	
Let Status	UNLET		
Priority Code			

Project ID	0008444	
Project Type	Reconstruction/Rehabilitation	
STIP Code	Yes	
Construction Status Code	Construction Work Program	
Corridor		
Project Manager Office		
County	Forsyth,Fulton	
Project Accounting Number	CSNHS-0008-00(444)	
Primary Work Type		
Description	SR 400 FROM CR 209/SPALDING DR TO CR 458/MCFARLAND ROAD	
RCLink:	1171040000	
	Begin Mile Point	0.0
	Prop Length	1.47
	End Mile Point	1.47
RCLink:	1211040000	
	Begin Mile Point	10.08
	Prop Length	12.23
	End Mile Point	22.31
Let Status	UNLET	
Priority Code		

Project ID	721780-							
Project Type	Reconstruction/Rehabilitation							
STIP Code	Yes							
Construction Status Code	Long Range Program							
Corridor								
Project Manager Office	Consultant Design							
County	Fulton							
Project Accounting Number	STP-114-1(84)							
Primary Work Type	Widening							
Description	SR 9/N MAIN ST FM ACADEMY ST TO WINDWARD PKWY							
RCLink:	1211000900 <table border="1" data-bbox="602 741 1344 875"> <tr> <td>Begin Mile Point</td><td>25.07</td></tr> <tr> <td>Prop Length</td><td>1.97</td></tr> <tr> <td>End Mile Point</td><td>27.04</td></tr> </table>		Begin Mile Point	25.07	Prop Length	1.97	End Mile Point	27.04
Begin Mile Point	25.07							
Prop Length	1.97							
End Mile Point	27.04							
Let Status	UNLET							
Priority Code								

Project ID	722010-	
Project Type	Reconstruction/Rehabilitation	
STIP Code	Yes	
Construction Status Code	Under Construction	
Corridor		
Project Manager Office	Urban Design	
County	Forsyth,Fulton	
Project Accounting Number	NH-056-1(59)	
Primary Work Type	Widening	
Description	SR 400 FROM SR 140/HOLCOMB BRIDGE RD TO MCFARLAND RD GRTA	
RCLink:	1171040000	
	Begin Mile Point	0.0
	Prop Length	1.47
	End Mile Point	1.47
RCLink:	1211040000	
	Begin Mile Point	14.92
	Prop Length	7.39
	End Mile Point	22.31
Let Status	LET	
Priority Code	PTIP	

Project ID	722020-	
Project Type	Reconstruction/Rehabilitation	
STIP Code	No	
Construction Status Code	Long Range Program	
Corridor		
Project Manager Office	Urban Design	
County	Forsyth,Fulton	
Project Accounting Number	NH-056-1(60)	
Primary Work Type	Widening	
Description	SR 400 FM HAYNES BRIDGE RD/FULTON TO SR 20/FORSYTH - GRTA	
RCLink:	1171040000	
	Begin Mile Point	0.0
	Prop Length	8.45
	End Mile Point	8.45
RCLink:	1211040000	
	Begin Mile Point	18.25
	Prop Length	4.22
	End Mile Point	22.47
Let Status	UNLET	
Priority Code	PTIP	

Project ID	722090-						
Project Type	Reconstruction/Rehabilitation						
STIP Code	Amendment						
Construction Status Code	Under Construction						
Corridor							
Project Manager Office	Urban Design						
County	Fulton						
Project Accounting Number	NH-056-1(62)						
Primary Work Type	Interchange						
Description	SR 400 AT WINDWARD PARKWAY						
RCLink:	1211040000 <table border="1"> <tr> <td>Begin Mile Point</td><td>20.84</td></tr> <tr> <td>Prop Length</td><td>0.40</td></tr> <tr> <td>End Mile Point</td><td>21.239</td></tr> </table>	Begin Mile Point	20.84	Prop Length	0.40	End Mile Point	21.239
Begin Mile Point	20.84						
Prop Length	0.40						
End Mile Point	21.239						
Let Status	LET						
Priority Code							

Project ID	722140-						
Project Type	Planning						
STIP Code	No						
Construction Status Code	Construction Work Program						
Corridor							
Project Manager Office	Planning						
County	Fulton						
Project Accounting Number	HPP-7221-00(400)						
Primary Work Type	Miscellaneous Improvements						
Description	NORTHERN ATLANTA SUB-AREA STUDY						
RCLink:	1211040000 <table border="1"> <tr> <td>Begin Mile Point</td><td>0.0</td></tr> <tr> <td>Prop Length</td><td>22.47</td></tr> <tr> <td>End Mile Point</td><td>22.47</td></tr> </table>	Begin Mile Point	0.0	Prop Length	22.47	End Mile Point	22.47
Begin Mile Point	0.0						
Prop Length	22.47						
End Mile Point	22.47						
Let Status	UNLET						
Priority Code							

Project ID	870351-							
Project Type	Safety							
STIP Code	Yes							
Construction Status Code	Under Construction							
Corridor								
Project Manager Office	Traffic Safety & Design							
County	Forsyth,Fulton							
Project Accounting Number	STP-00TS(78)							
Primary Work Type	Signing							
Description	NON-INTERSTATE LIMITED ACCESS HIGHWAY SIGN UPGRADE - SR 400							
RCLink:	1171040000 <table border="1"> <tr> <td>Begin Mile Point</td> <td>0.0</td> </tr> <tr> <td>Prop Length</td> <td>14.81</td> </tr> <tr> <td>End Mile Point</td> <td>14.81</td> </tr> </table>		Begin Mile Point	0.0	Prop Length	14.81	End Mile Point	14.81
Begin Mile Point	0.0							
Prop Length	14.81							
End Mile Point	14.81							
RCLink:	1211040000 <table border="1"> <tr> <td>Begin Mile Point</td> <td>0.0</td> </tr> <tr> <td>Prop Length</td> <td>22.47</td> </tr> <tr> <td>End Mile Point</td> <td>22.47</td> </tr> </table>		Begin Mile Point	0.0	Prop Length	22.47	End Mile Point	22.47
Begin Mile Point	0.0							
Prop Length	22.47							
End Mile Point	22.47							
Let Status	LET							
Priority Code								

Project ID	M001752						
Project Type	Maintenance						
STIP Code	Lump Sum						
Construction Status Code	Under Construction						
Corridor							
Project Manager Office	Maintenance						
County	Fulton						
Project Accounting Number	NHS-M001-00(752)						
Primary Work Type	Resurface & Maintenance						
Description	SR 400 FROM I-285 TO WINDWARD PARKWAY						
RCLink:	1211040000 <table border="1"> <tr> <td>Begin Mile Point</td><td>6.9</td></tr> <tr> <td>Prop Length</td><td>14.14</td></tr> <tr> <td>End Mile Point</td><td>21.04</td></tr> </table>	Begin Mile Point	6.9	Prop Length	14.14	End Mile Point	21.04
Begin Mile Point	6.9						
Prop Length	14.14						
End Mile Point	21.04						
Let Status	LET						
Priority Code							

Project ID	M003160							
Project Type	Maintenance							
STIP Code	Lump Sum							
Construction Status Code	Under Construction							
Corridor								
Project Manager Office	Maintenance							
County	Fulton							
Project Accounting Number	CSSTP-M003-00(160)							
Primary Work Type	Resurface & Maintenance							
Description	SR 9 FROM CS 9049/CHURCH STREET TO FORSYTH COUNTY LINE							
RCLink:	1211000900 <table border="1" data-bbox="583 774 1341 911"> <tr> <td>Begin Mile Point</td> <td>24.93</td> </tr> <tr> <td>Prop Length</td> <td>4.86</td> </tr> <tr> <td>End Mile Point</td> <td>29.79</td> </tr> </table>		Begin Mile Point	24.93	Prop Length	4.86	End Mile Point	29.79
Begin Mile Point	24.93							
Prop Length	4.86							
End Mile Point	29.79							
Let Status	LET							
Priority Code								

MARTA Information

marta

Metropolitan Atlanta Rapid Transit Authority



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EXPLORING ATLANTA

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Map Viewer

Map Viewer

- How To Use This Map
- Other Helpful Maps

Please be patient when zooming or panning - images download on-the-fly!

Map Viewer

910

Zoom: + -
 Pan: ↑ ↓ ← →
 Reset: ↺
 Print: 🖨️

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Route Quick Link: Schedules



Other Helpful Maps:
MARTA System Map

Cobb Community Transit (CCT) System Map



Route 85 - Roswell / Alpharetta - Description

[Return to Route 85 home page](#)

Void links have been placed on all headings in this description, use the tab key to navigate between sections.

85 TO MANSELL P & R VIA: HOLCOMB BRIDGE ROAD

1. cont. ramp to Ga. 400 N/B
2. Right onto Exit 6 - Northridge Dr.
3. Right onto Northridge Dr.
4. Right onto Dunwoody Pl.
5. Right onto Roswell Rd.
6. cont. S. Atlanta St.
7. cont. N. Atlanta St.
8. cont. Alpharetta Hwy.
9. Right onto Holcomb Bridge Rd.
10. Left onto onto Ga. 400 Northbound.
11. Right onto Exit 8 - Mansell Rd.
12. Left onto Mansell Rd. at light.
13. Directly under 400 overpass
14. Move into extrme left lane
15. (Park & Ride to left.)
16. 1st light after overpass
17. Take left onto entrance to
18. Ga. 400 Southbound.
19. Merge left into bus area
20. adjacent to P/R lot.
21. Pick up passengers.

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85 TO MANSELL ROAD PARK/RIDE VIA MANSELL ROAD:

1. Ramp To Georgia
2. Hwy. 400 Northbound
3. Continue Georgia 400
4. Right onto Exit 6 - Northridge Dr.
5. Right onto Northridge Dr.
6. Right onto Dunwoody Place
7. Right onto Roswell Rd.
8. Continue onto S. Atlanta St.
9. Continue onto N. Atlanta St.

10. Continue onto Alpharetta Hwy.
11. Right onto Mansell Rd.
12. Take right into entrance to
13. GA 400 Southbound
14. Merge left into bus area
15. Adjacent to Park/Ride lot
16. Pick up passengers

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85 TO WINDWARD P/R LOT VIA:ROSWELL RD/ALPHARETTA HWY

1. & WINDWARD PKWY:
2. cont. ramp to Ga. 400 N/B
3. Right onto Exit 6 - Northridge Dr.
4. Right onto Northridge Dr.
5. Right onto Dunwoody Pl.
6. Right onto Roswell Rd.
7. cont. S. Atlanta St.
8. cont. N. Atlanta St.
9. cont. Alpharetta Hwy.
10. cont. S. Main
11. Continue onto N. Main St.
12. Continue onto State Hwy 9
13. Right onto Windward Pkwy.
14. Right onto North Point Pkwy.
15. Right onto Dryden Rd.
16. Continue onto Windward P/R Lot
17. End of Line.

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85 TO N. SPRINGS STATIONVIA HOLCOMB BRIDGE RD.

1. Continue onto Ramp to Ga. 400 SB
2. Right onto Exit 7 - Holcomb Bridge Rd.
3. Right onto Holcomb Bridge Rd.
4. Left onto Alpharetta Hwy.
5. cont. N. Atlanta St.
6. cont. S. Atlanta St.
7. cont. Roswell Rd.
8. Left onto Dunwoody Pl.
9. cont. across Northridge Dr.
10. cont. ramp to Ga. 400 S/B
11. Right onto Exit 5C - North Springs Stn.

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85 TO N. SPRINGS STATIONVIA MANSELL ROAD:

1. Right onto Mansell Rd.
2. Be in extreme left lane
3. at the Ga. 400 overpass.
4. 1st light after overpass -

5. Immediate - left.
6. U-turn into bus loop.
7. Do not cont. up ramp to 400.
8. cont. Mansell Rd.
9. Left onto Alpharetta Hwy.
10. cont. N. Atlanta St.
11. cont. S. Atlanta St.
12. cont. Roswell Rd.
13. Left onto Dunwoody Pl.
14. cont.across Northridge Dr.
15. cont ramp to Ga. 400 S/B
16. Right onto Exit 5C - North Springs Stn.

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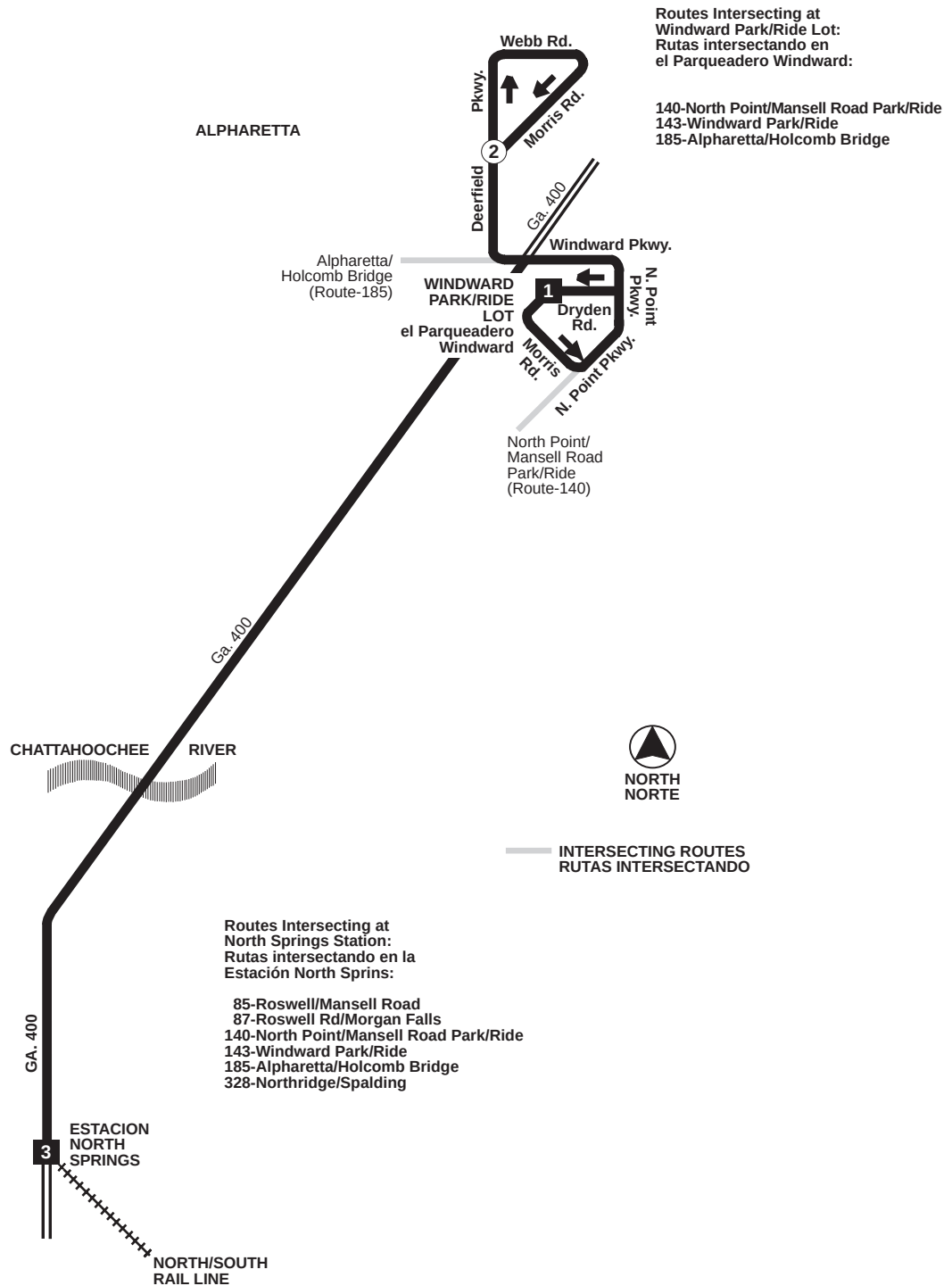
85 TO NORTH SPRINGS STATION VIA WINDWARD PKWY &

1. ALPHARETTA HWY & ROSWELL RD
2. Continue onto Dryden Rd.
3. Left onto Morris Rd.
4. Left onto North Point Pkwy.
5. Left onto Windward Pkwy.
6. Left onto State Hwy 9.
7. Continue onto N.Main St.
8. Continue onto S. Main St.
9. Continue onto Alpharetta Hwy.
10. Continue onto N. Atlanta St.
11. Continue onto S. Atlanta St.
12. Continue onto Roswell Rd.
13. Left onto Dunwoody Pl.
14. Continue onto across Northridge
15. Continue onto Ramp to Ga-400 S/B
16. Right onto Exit 5C - North Springs Stn.

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Route 143 - Windward Park / Ride - Description

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Void links have been placed on all headings in this description, use the tab key to navigate between sections.

143 TO WINDWARD PK/RD VIA GA 400 NB

1. Continue onto Ramp to GA. 400 NB.
2. Right onto Exit 11 - Windward Pkwy.
3. Right onto Windward Pkwy.
4. Right onto North Point Pkwy.
5. Right onto Dryden Rd.
6. To End of Line.

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143 TO WINDWARD P/R LOT VIA: DEERFIELD PKWY & MORRIS RD.

1. Continue onto ramp to Ga. 400 N/B.
2. Right onto Ramp to Exit 11 Windward Pkwy.
3. Left onto Windward Pkwy.
4. Right onto Deerfield Pkwy.
5. Right onto Webb Rd.
6. Right onto Morris Rd.
7. Left onto Deerfield Pkwy.
8. Left onto Windward Pkwy.
9. Right onto North Point Pkwy.
10. Right onto Dryden Rd.
11. Continue onto Windward P/R lot.
12. End of Line.

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143 TO N. SPRINGS STATION VIA GA. 400 SOUTHBOUND

1. Continue onto Dryden Rd.
2. Left onto Morris Rd.
3. Left onto N. Point Pkwy
4. Left onto Windward Pkwy.
5. Left onto Ramp to Ga. 400 Southbound
6. Right onto Exit 5C - N. Springs Station

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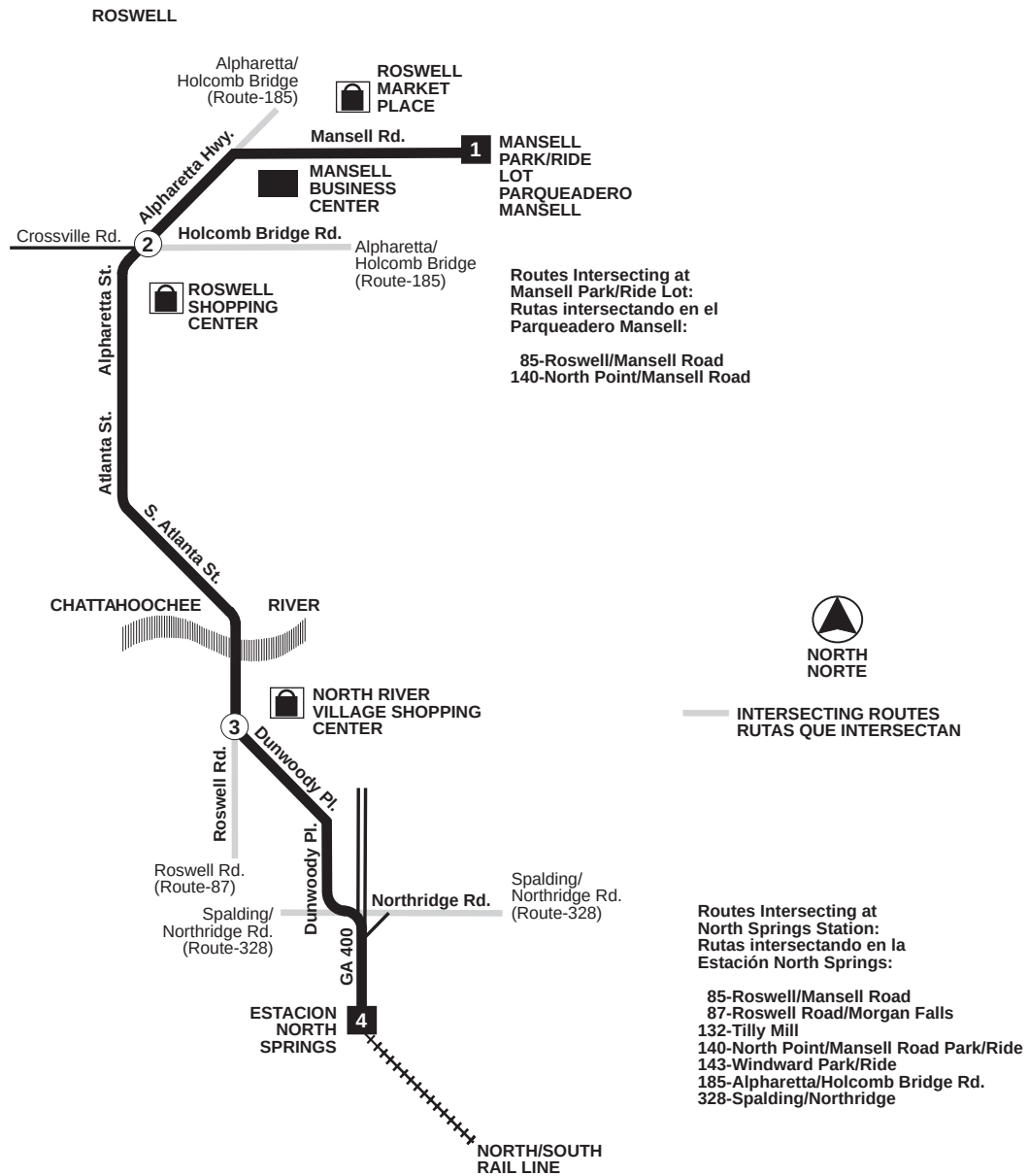
143 TO NORTH SPRINGS STATION VIA DEERFIELD PKWY &

1. MORRIS RD.
2. Continue onto Dryden Rd.
3. Left onto Morris Rd.
4. Left onto North Point Pkwy.
5. Left onto Windward Pkwy.
6. Right onto Deerfield Pkwy.
7. Right onto Webb Rd.
8. Right onto Morris Rd.
9. Left onto Deerfield Pkwy.
10. Left onto Windward Pkwy.
11. Right onto Ramp GA 400 SB
12. Continue onto GA 400 SB
13. Right onto Exit 5C - North Springs Stn.

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Correspondence

Brannon Sabbarese

From: Jones, Abbie [abbie.jones@cityofmiltonga.us]
Sent: Thursday, July 26, 2007 10:04 AM
To: Brannon Sabbarese
Cc: Abdul Amer
Subject: RE: Scoping Mtg: Proposed Church on Cogburn Rd at Francis Rd

Perfect.

Use LOS D on DRI. That is what was passed in the final version by council.

Abbie Jones, PE
Transportation and Stormwater

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Proposed Facility Site Plan